

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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

PROJ. REFERENCE NO. 42337.1.1 (B-5162) F.A. PROJ. BRSTP-1523 (7)  
 COUNTY CASWELL  
 PROJECT DESCRIPTION REPLACEMENT OF BRIDGE NO. 35 OVER  
NORTH FORK RATTLESNAKE CREEK ON SR 1523 AND A  
DETOUR BRIDGE OVER NORTH FORK RATTLESNAKE CREEK

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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 1919 707-6850. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

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

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

**PERSONNEL**

W. WHICHARD

G. TRAPP

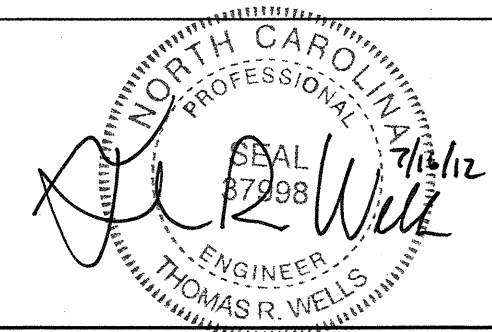
D. GOODNIGHT

INVESTIGATED BY T. WELLS

CHECKED BY T. WELLS

SUBMITTED BY KLEINFELDER

DATE JULY 2012



**PROJECT: 42337.1.1 ID: B-5162**

DRAWN BY: SLK

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IT IS 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

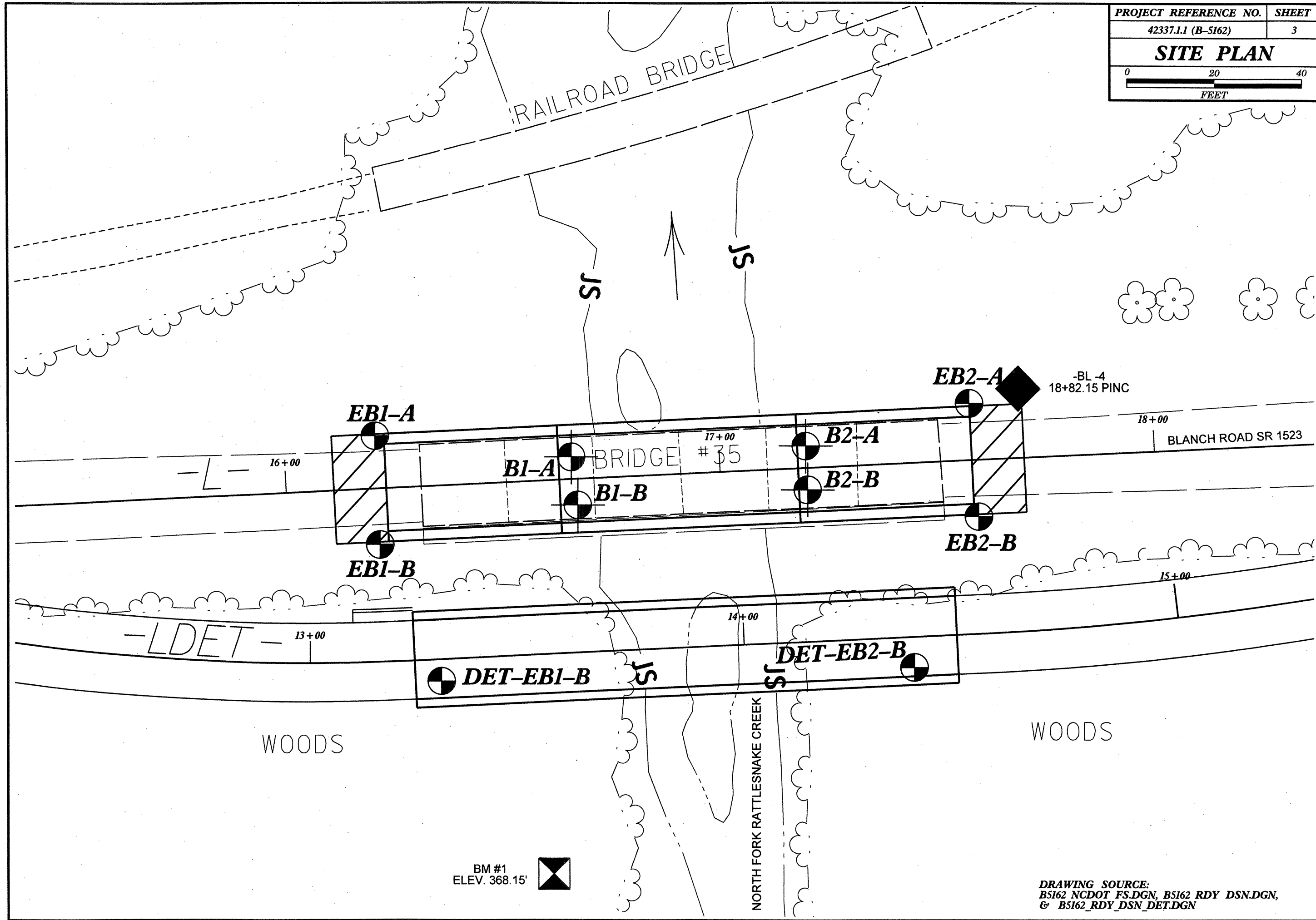
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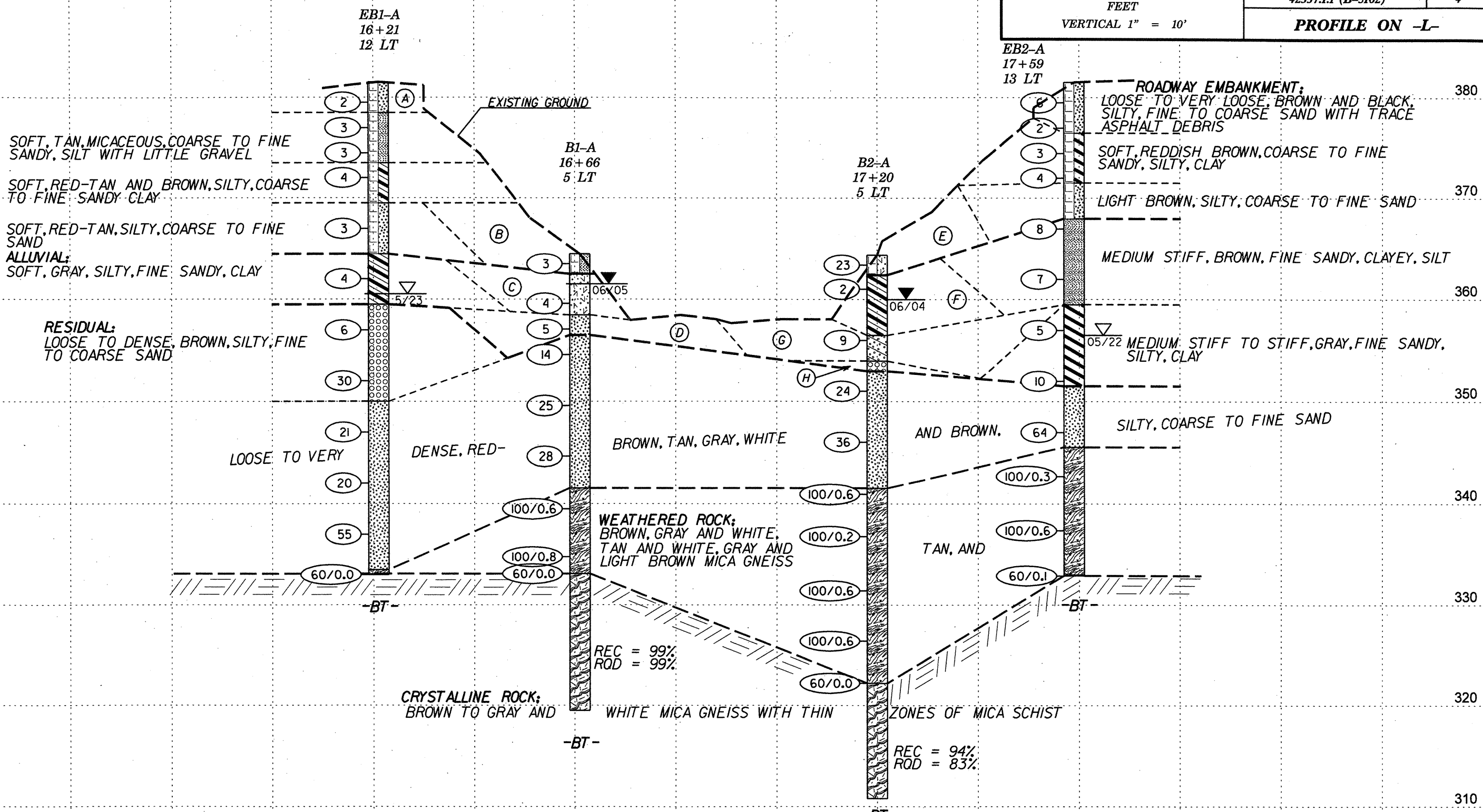
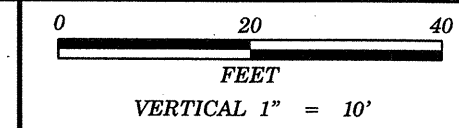
SUBSURFACE INVESTIGATION

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 (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><i>VERY STIFF, GRAY, SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGH 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) GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.</p> <p><b>ANGULARITY OF GRAINS</b> 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>WEATHERED ROCK (WR) CRYSTALLINE ROCK (CR) NON-CRYSTALLINE ROCK (NCR) COASTAL PLAIN SEDIMENTARY ROCK (CP)</p>										<p>ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC. ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOGGED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS IN OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (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. TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>																																																																																																																																																																																																																																										
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ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.</p> <p><b>COMPRESSIBILITY</b></p> <table border="1"> <tr> <td>SLIGHTLY COMPRESSIBLE</td> <td>LIQUID LIMIT LESS THAN 31</td> </tr> <tr> <td>MODERATELY COMPRESSIBLE</td> <td>LIQUID LIMIT EQUAL TO 31-50</td> </tr> <tr> <td>HIGHLY COMPRESSIBLE</td> <td>LIQUID LIMIT GREATER THAN 50</td> </tr> </table> <p><b>PERCENTAGE OF MATERIAL</b></p> <table border="1"> <tr> <th>ORGANIC MATERIAL</th> <th>GRANULAR SOILS</th> <th>SILT-CLAY SOILS</th> <th>OTHER MATERIAL</th> </tr> <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> </table>										SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 31	MODERATELY COMPRESSIBLE	LIQUID LIMIT EQUAL TO 31-50	HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50	ORGANIC MATERIAL	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>FRESH - ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. 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SIEVE SIZE</th> <th>4</th><th>10</th><th>40</th><th>60</th><th>200</th><th>270</th> </tr> <tr> <th>OPENING (MM)</th> <td>4.76</td><td>2.00</td><td>0.42</td><td>0.25</td><td>0.075</td><td>0.053</td> </tr> <tr> <th>BOULDER (BLDR.)</th> <td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <th>COBBLE (COB.)</th> <td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <th>GRAVEL (GR.)</th> <td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <th>COARSE SAND (CS, SD.)</th> <td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <th>FINE SAND (F SD.)</th> <td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <th>SILT (SL.)</th> <td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <th>CLAY (CL.)</th> <td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <th>GRAIN SIZE</th> <td>305</td><td>75</td><td>2.0</td><td>0.25</td><td>0.05</td><td>0.005</td> </tr> <tr> <th>IN.</th> <td>12</td><td>3</td><td></td><td></td><td></td><td></td> </tr> </table>										U.S. STD. SIEVE SIZE	4	10	40	60	200	270	OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053	BOULDER (BLDR.)							COBBLE (COB.)							GRAVEL (GR.)							COARSE SAND (CS, SD.)							FINE SAND (F SD.)							SILT (SL.)							CLAY (CL.)							GRAIN SIZE	305	75	2.0	0.25	0.05	0.005	IN.	12	3					<p><b>MISCELLANEOUS SYMBOLS</b></p> <ul style="list-style-type: none"> <li>ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION</li> <li>SOIL SYMBOL</li> <li>ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT</li> <li>INFERRED SOIL BOUNDARY</li> <li>INFERRED ROCK LINE</li> <li>ALLUVIAL SOIL BOUNDARY</li> <li>DIP &amp; DIP DIRECTION OF ROCK STRUCTURES</li> <li>ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION</li> <li>SPT DMT TEST BORING</li> <li>AUGER BORING</li> <li>CORE BORING</li> <li>MONITORING WELL</li> <li>PIEZOMETER INSTALLATION</li> <li>SLOPE INDICATOR INSTALLATION</li> <li>CONE PENETROMETER TEST</li> <li>SOUNDING ROD</li> <li>TEST BORING W/ CORE</li> <li>SPT N-VALUE</li> <li>SPT REFUSAL</li> </ul>										<p><b>ABBREVIATIONS</b></p> <ul style="list-style-type: none"> <li>AR - AUGER REFUSAL</li> <li>BT - BORING TERMINATED</li> <li>CL - CLAY</li> <li>CPT - CONE PENETRATION TEST</li> <li>CSE - COARSE</li> <li>DMT - DILATOMETER TEST</li> <li>DPT - DYNAMIC PENETRATION TEST</li> <li>e - VOID RATIO</li> <li>F - FINE</li> <li>FOSS. - FOSSILIFEROUS</li> <li>FRAC. - FRACTURED, FRACTURES</li> <li>FRAGS. - FRAGMENTS</li> <li>HL - HIGHLY</li> <li>MD. - MEDIUM</li> <li>MICA. - MICACEOUS</li> <li>MOD. - MODERATELY</li> <li>NP - NON PLASTIC</li> <li>ORG. - ORGANIC</li> <li>PMT - PRESSUREMETER TEST</li> <li>SAP. - SAPROLITIC</li> <li>SD. - SAND, SANDY</li> <li>SL. - SILT, SILTY</li> <li>SLI. - SLIGHTLY</li> <li>TCR - TRICONE REFUSAL</li> <li>w - MOISTURE CONTENT</li> <li>v - VERY</li> <li>VST - VANE SHEAR TEST</li> <li>WEA. - WEATHERED</li> <li>UNIT WEIGHT</li> <li>DRY UNIT WEIGHT</li> <li>SAMPLE ABBREVIATIONS</li> <li>S - BULK</li> <li>SS - SPLIT SPOON</li> <li>ST - SHELBY TUBE</li> <li>RS - ROCK</li> <li>RT - RECOMPACTED TRIAXIAL</li> <li>CBR - CALIFORNIA BEARING RATIO</li> </ul>									
GRANULAR MATERIALS (≤ 35% PASSING #200)	SILT-CLAY MATERIALS (> 35% PASSING #200)		ORGANIC MATERIALS																																																																																																																																																																																																																																																																					
GROUP CLASS.	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-1, A-2	A-3	A-4, A-5	A-6, A-7																																																																																																																																																																																																																																																													
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ORGANIC MATERIAL	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																																																																																																																																																																																																																																																																					
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▽PW	PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA																																																																																																																																																																																																																																																																							
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<p>NONPLASTIC 0-5 LOW PLASTICITY 6-15 MED. PLASTICITY 16-25 HIGH PLASTICITY 26 OR MORE</p> <p>PLASTICITY INDEX (PI) DRY STRENGTH VERY LOW SLIGHT MEDIUM HIGH</p>										<p>FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.</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>BL-4 (100396.93 FT. N, 1913866.8 FT. E) ELEVATION: 380.39 FT.</p>										<p>NOTES: N/A</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>																																																																																																																																																																																																																																																																								

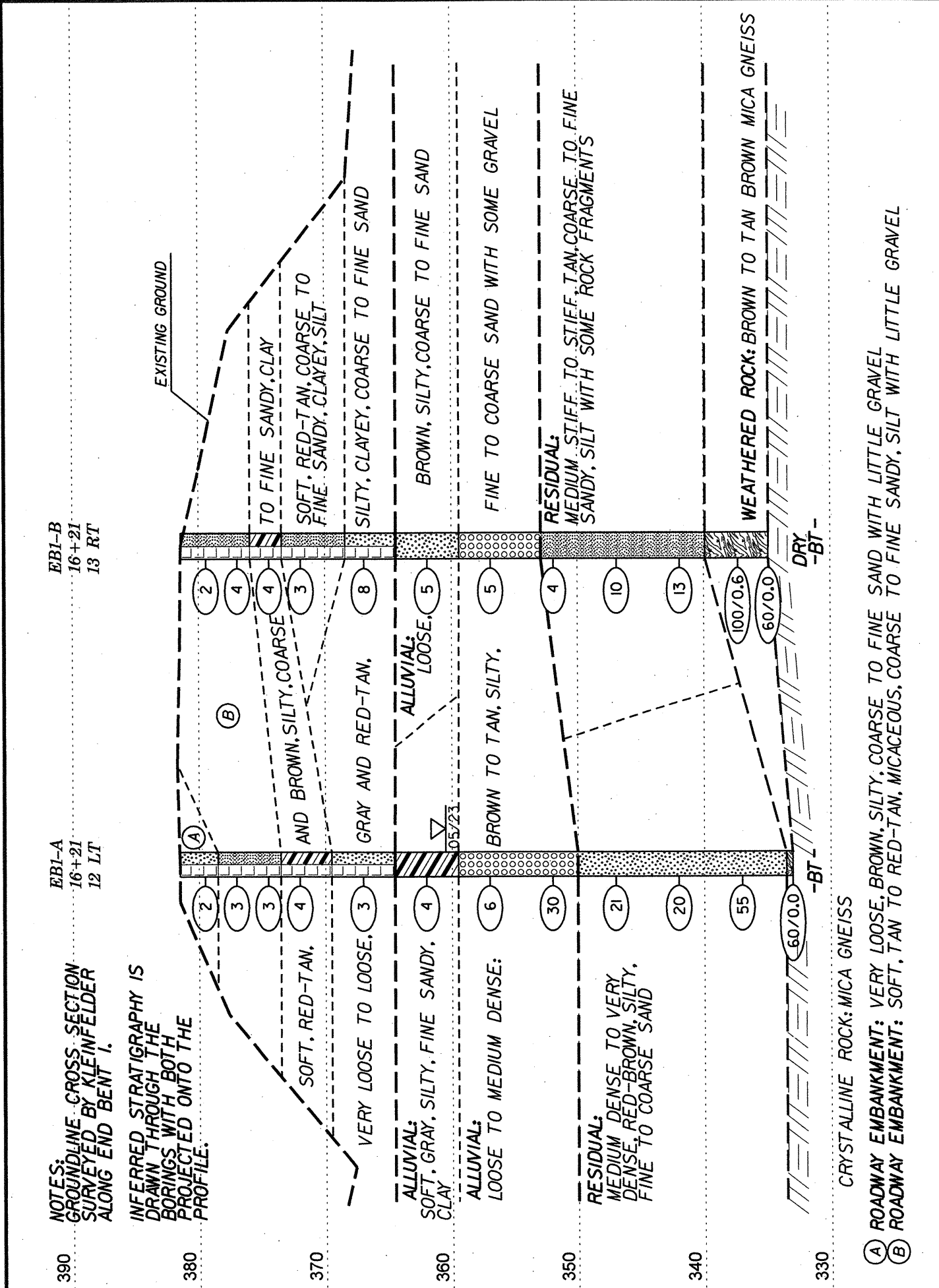


DRAWING SOURCE:  
 B5162 NCDOT FS.DGN, B5162 RDY DSN.DGN,  
 & B5162\_RDY\_DSN\_DET.DGN

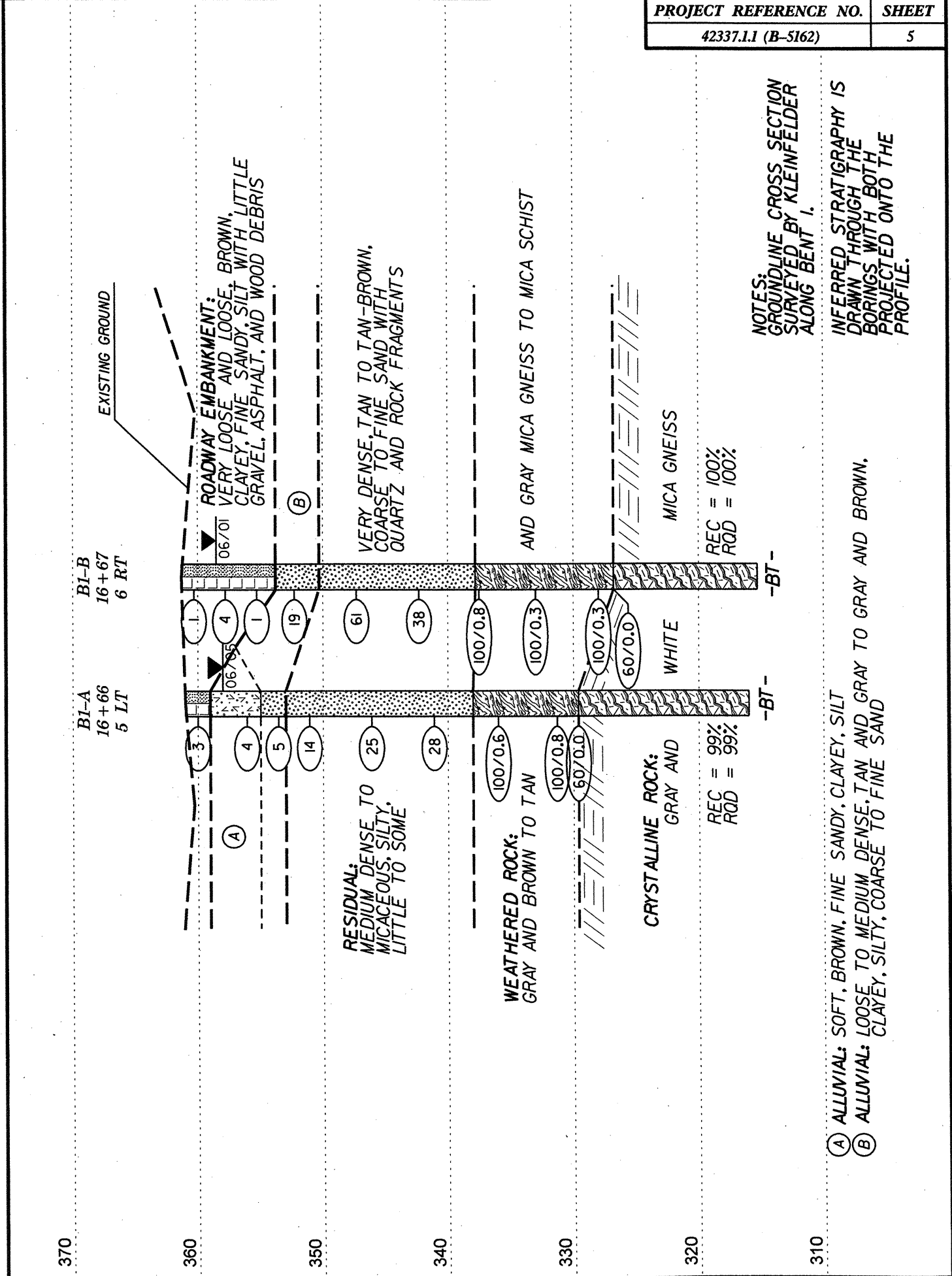


- (A) ROADWAY EMBANKMENT: VERY LOOSE, BROWN, SILTY, COARSE TO FINE SAND WITH LITTLE GRAVEL
- (B) ROADWAY EMBANKMENT: SOFT, BROWN, CLAYEY, FINE SANDY, SILT WITH LITTLE ASPHALT DEBRIS AND GRAVEL
- (C) ALLUVIAL: SOFT, BROWN, FINE SANDY, CLAYEY, SILT
- (D) ALLUVIAL: LOOSE, GRAY AND BROWN, CLAYEY, SILTY, COARSE TO FINE SAND
- (E) ROADWAY EMBANKMENT: VERY STIFF, BROWN, FINE SANDY, CLAYEY, SILT WITH SOME GRAVEL
- (F) VERY SOFT, BROWN, SILTY, FINE SANDY, CLAY
- (G) ALLUVIAL: LOOSE, BROWN, SILTY, CLAYEY, FINE SAND
- (H) ALLUVIAL: GRAVEL

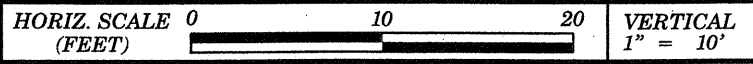
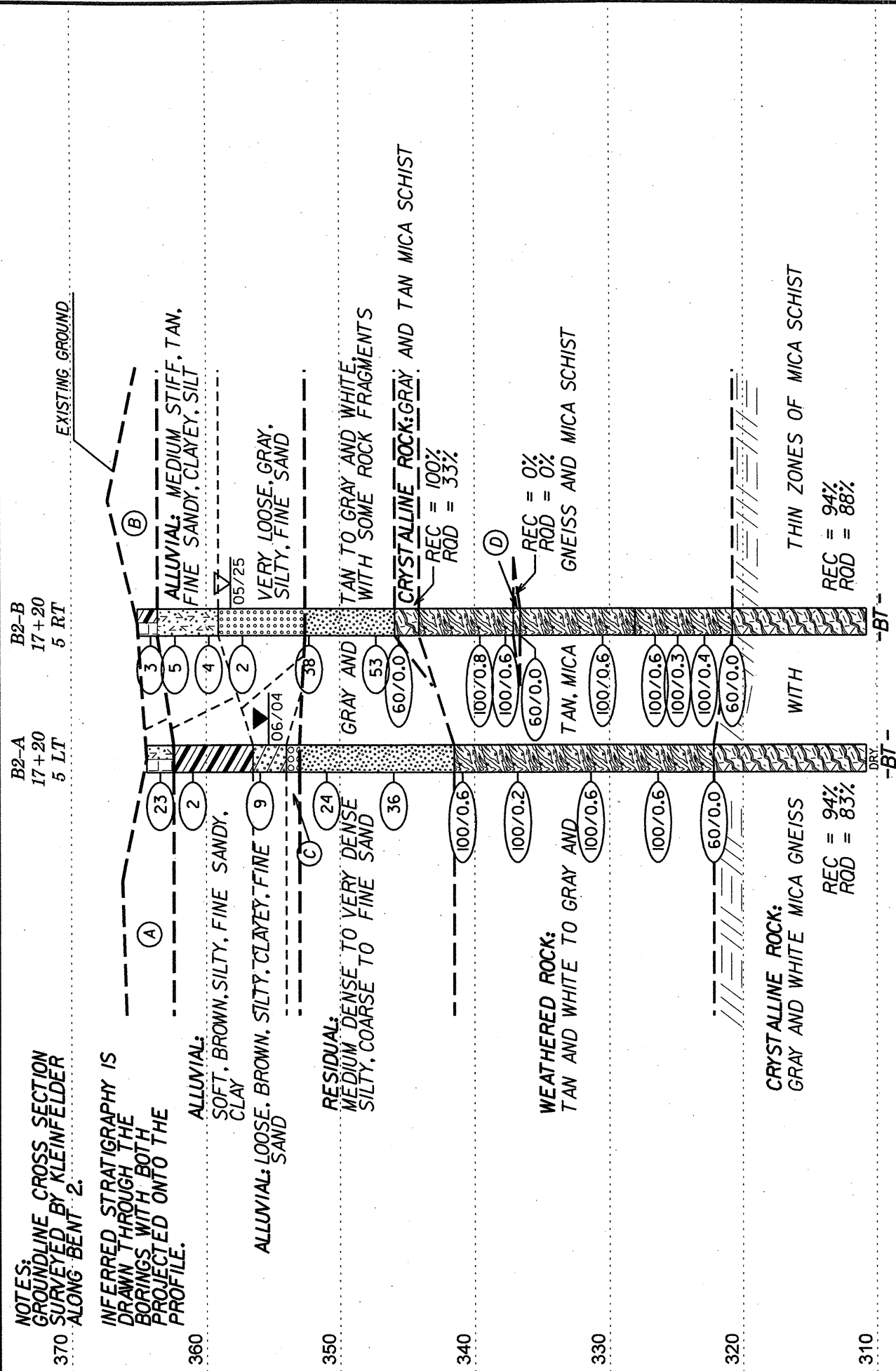
**NOTES:**  
GROUNDLINE PROFILE SURVEYED BY KLEINFELDER AT 10 FEET RIGHT OF -L-  
INFERRED STRATIGRAPHY IS DRAWN AT THE PROFILE OFFSET WITH THE BORINGS PROJECTED ONTO THE PROFILE.



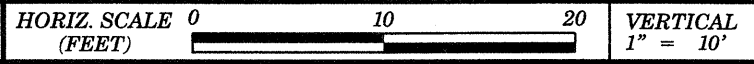
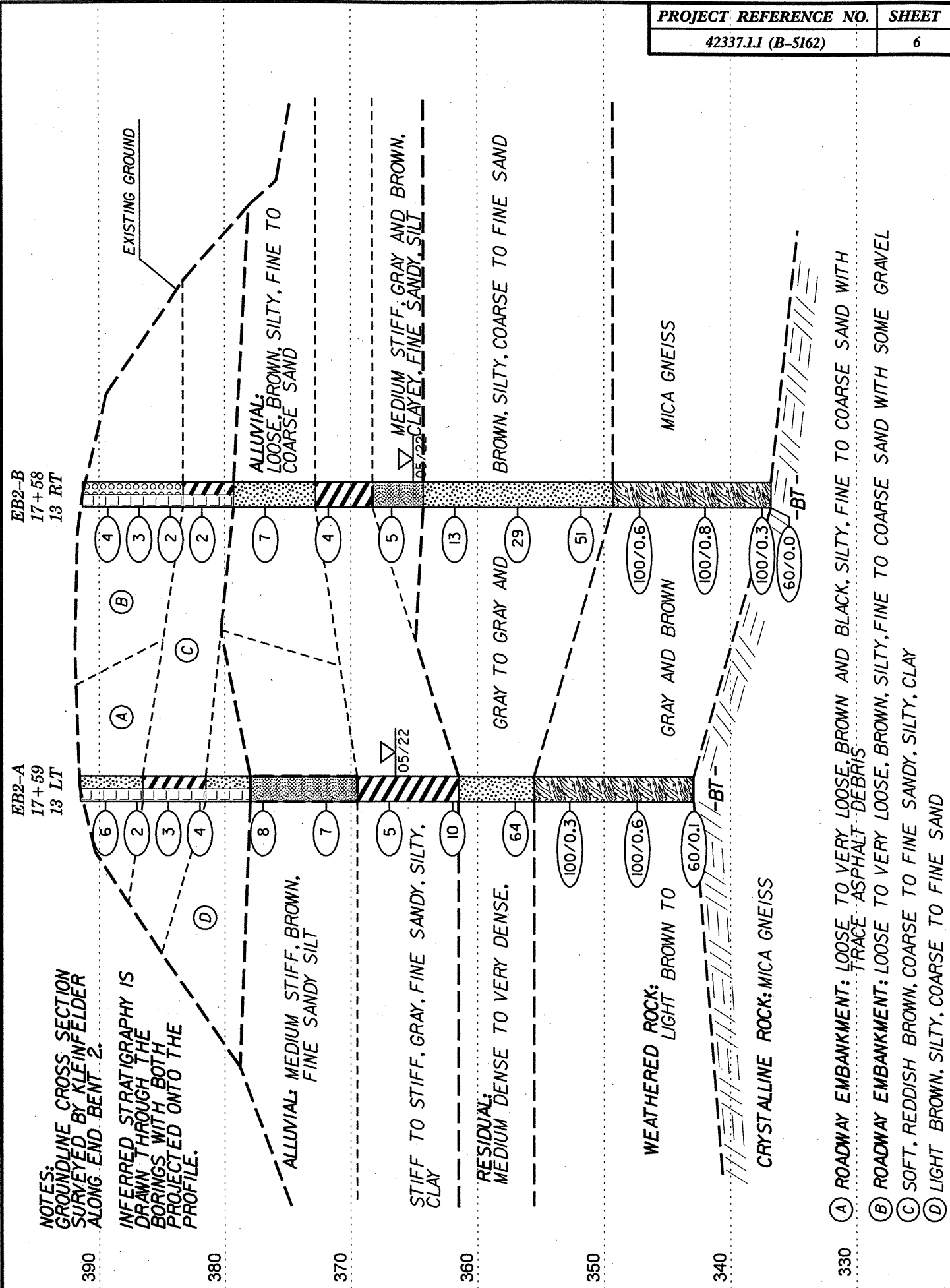
HORIZ. SCALE 0 10 20 (FEET)  
 VERTICAL 1" = 10'  
**END BENT 1 CROSS SECTION**



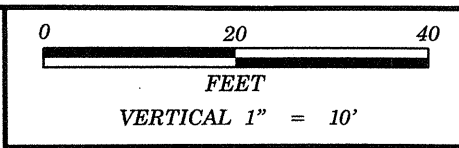
HORIZ. SCALE 0 10 20 (FEET)  
 VERTICAL 1" = 10'  
**BENT 2 CROSS SECTION**



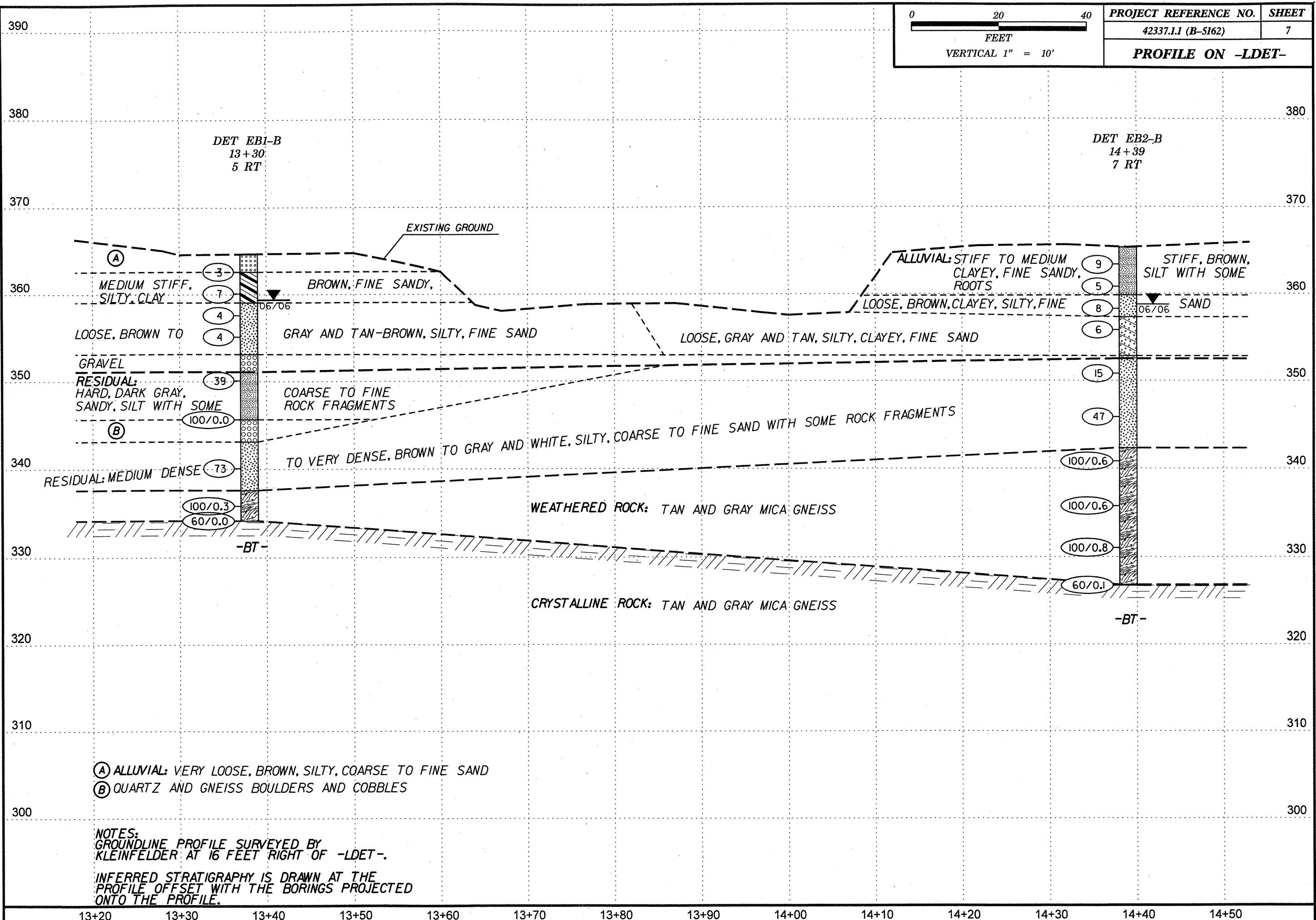
**BENT 2 CROSS SECTION**



**END BENT 2 CROSS SECTION**



PROJECT REFERENCE NO.	SHEET
42337.1.1 (B-5162)	7
PROFILE ON -LDET-	



DET EB1-B  
13+30  
5 RT

DET EB2-B  
14+39  
7 RT

(A)  
MEDIUM STIFF,  
SILTY CLAY

LOOSE, BROWN TO  
GRAVEL

RESIDUAL:  
HARD, DARK GRAY,  
SANDY, SILT WITH SOME

RESIDUAL: MEDIUM DENSE

BROWN, FINE SANDY.

GRAY AND TAN-BROWN, SILTY, FINE SAND

COARSE TO FINE  
ROCK FRAGMENTS

TO VERY DENSE, BROWN TO GRAY AND WHITE, SILTY, COARSE TO FINE SAND WITH SOME ROCK FRAGMENTS

WEATHERED ROCK: TAN AND GRAY MICA GNEISS

CRYSTALLINE ROCK: TAN AND GRAY MICA GNEISS

ALLUVIAL: STIFF TO MEDIUM  
CLAYEY, FINE SANDY,  
ROOTS

LOOSE, BROWN, CLAYEY, SILTY, FINE

STIFF, BROWN,  
SILT WITH SOME  
SAND

- (A) ALLUVIAL: VERY LOOSE, BROWN, SILTY, COARSE TO FINE SAND
- (B) QUARTZ AND GNEISS BOULDERS AND COBBLES

NOTES:  
GROUNDLINE PROFILE SURVEYED BY  
KLEINFELDER AT 16 FEET RIGHT OF -LDET-.  
INFERRED STRATIGRAPHY IS DRAWN AT THE  
PROFILE OFFSET WITH THE BORINGS PROJECTED  
ONTO THE PROFILE.

13+20    13+30    13+40    13+50    13+60    13+70    13+80    13+90    14+00    14+10    14+20    14+30    14+40    14+50

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

WBS 42337.1.1	TIP B-5162	COUNTY CASWELL	GEOLOGIST Goodnight, D. J.
SITE DESCRIPTION Replacement of Bridge No. 35 over North Fork Rattlesnake Creek on SR 1523 (Blanch Road)			GROUND WTR (ft)
BORING NO. EB1-A	STATION 16+21	OFFSET 12 ft LT	ALIGNMENT -L-
COLLAR ELEV. 381.5 ft	TOTAL DEPTH 48.5 ft	NORTHING 1,003,960	EASTING 1,913,718
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER Whichard, S. W.	START DATE 05/23/12	COMP. DATE 05/23/12	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	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
385															
380	380.5	1.0	1	1	1										381.5 GROUND SURFACE 0.0
	378.0	3.5	WOH	1	2										378.5 ROADWAY EMBANKMENT 3.0
	375.5	6.0	WOH	2	1										375.5 ROADWAY EMBANKMENT 3.0
	373.0	8.5		1	2	2									373.5 ROADWAY EMBANKMENT 3.0
	368.0	13.5		1	2	1									368.5 ROADWAY EMBANKMENT 3.0
	363.0	18.5		2	1	3									364.5 ROADWAY EMBANKMENT 3.0
	358.0	23.5		2	3	3									359.5 ROADWAY EMBANKMENT 3.0
	353.0	28.5		15	17	13									350.0 ROADWAY EMBANKMENT 3.0
	348.0	33.5		5	13	8									350.0 ROADWAY EMBANKMENT 3.0
	343.0	38.5		6	8	12									350.0 ROADWAY EMBANKMENT 3.0
	338.0	43.5		40	32	23									350.0 ROADWAY EMBANKMENT 3.0
	333.0	48.5		60/0.0											350.0 ROADWAY EMBANKMENT 3.0

333.5	48.0														WEATHERED ROCK 48.0
333.0	48.5														WEATHERED ROCK 48.5
Boring Terminated with Standard Penetration Test Refusal at Elevation 333.0 ft on Crystalline Rock: MICA GNEISS															

WBS 42337.1.1	TIP B-5162	COUNTY CASWELL	GEOLOGIST Goodnight, D. J.
SITE DESCRIPTION Replacement of Bridge No. 35 over North Fork Rattlesnake Creek on SR 1523 (Blanch Road)			GROUND WTR (ft)
BORING NO. EB1-B	STATION 16+21	OFFSET 13 ft RT	ALIGNMENT -L-
COLLAR ELEV. 381.4 ft	TOTAL DEPTH 46.5 ft	NORTHING 1,003,937	EASTING 1,913,718
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER Whichard, S. W.	START DATE 05/23/12	COMP. DATE 05/23/12	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	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
385															
380	380.4	1.0	2	1	1										381.4 GROUND SURFACE 0.0
	377.9	3.5	1	2	2										378.5 ROADWAY EMBANKMENT 3.0
	375.4	6.0	1	2	2										375.5 ROADWAY EMBANKMENT 3.0
	372.9	8.5	1	2	1										373.5 ROADWAY EMBANKMENT 3.0
	367.9	13.5	7	5	3										368.5 ROADWAY EMBANKMENT 3.0
	362.9	18.5	2	3	2										364.5 ROADWAY EMBANKMENT 3.0
	357.9	23.5	1	2	3										359.5 ROADWAY EMBANKMENT 3.0
	352.9	28.5	4	2	2										350.0 ROADWAY EMBANKMENT 3.0
	347.9	33.5	5	4	6										350.0 ROADWAY EMBANKMENT 3.0
	342.9	38.5	4	5	8										350.0 ROADWAY EMBANKMENT 3.0
	337.9	43.5	65	35/0.1											350.0 ROADWAY EMBANKMENT 3.0
	334.9	46.5	60/0.0												350.0 ROADWAY EMBANKMENT 3.0

334.9	46.5														WEATHERED ROCK 46.5
Boring Terminated with Standard Penetration Test Refusal at Elevation 334.9 ft on Crystalline Rock: MICA GNEISS															

NCDOT BORE DOUBLE BS162 GEO BRDG0035.GPJ NC\_DOT\_GDT 7/16/12





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



**NCDOT GEOTECHNICAL ENGINEERING UNIT**  
**CORE BORING REPORT**

WBS 42337.1.1		TIP B-5162		COUNTY CASWELL		GEOLOGIST Goodnight, D. J.									
SITE DESCRIPTION Replacement of Bridge No. 35 over North Fork Rattlesnake Creek on SR 1523 (Blanch Road)							GROUND WTR (ft)								
BORING NO. B1-A		STATION 16+66		OFFSET 5 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 361.0 ft		TOTAL DEPTH 45.0 ft		NORTHING 1,003,958		EASTING 1,913,763									
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011		DRILL METHOD NQ Casing W/SPT & Core		HAMMER TYPE Automatic											
DRILLER Whichard, S. W.		START DATE 06/04/12		COMP. DATE 06/04/12		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					
365															
360	361.0	0.0	WOH	1	2										
	357.1	3.9		1	2										
355	354.6	6.4		2	3										
	352.1	8.9		12	7										
350	347.1	13.9		6	9										
345	342.1	18.9		17	14										
340	337.1	23.9		25	42										
335	332.1	28.9		40	60/0.3										
330	329.6	31.4		60/0.0											
325															
320															

WBS 42337.1.1		TIP B-5162		COUNTY CASWELL		GEOLOGIST Goodnight, D. J.						
SITE DESCRIPTION Replacement of Bridge No. 35 over North Fork Rattlesnake Creek on SR 1523 (Blanch Road)							GROUND WTR (ft)					
BORING NO. B1-A		STATION 16+66		OFFSET 5 ft LT		ALIGNMENT -L-						
COLLAR ELEV. 361.0 ft		TOTAL DEPTH 45.0 ft		NORTHING 1,003,958		EASTING 1,913,763						
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011		DRILL METHOD NQ Casing W/SPT & Core		HAMMER TYPE Automatic								
DRILLER Whichard, S. W.		START DATE 06/04/12		COMP. DATE 06/04/12		SURFACE WATER DEPTH N/A						
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	TOTAL RUN 13.6 ft		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	ROD (%)		REC. (%)	ROD (%)			
329.6												
	329.6	31.4	3.6	N=60/0.0 4:09/1.0 3:34/1.0 3:49/1.0 1:48/0.6	(3.6)	(3.6)	RS-1	(13.5)	(13.4)		Begin Coring @ 31.4 ft	31.4
	326.0	35.0	5.0	4:10/1.0 4:28/1.0 3:38/1.0 3:48/1.0 4:49/1.0	(5.0)	(5.0)					Gray and White, Very Slight Weathering to Fresh, Hard to Very Hard MICA GNEISS with Moderately Close to Close Fracture Spacing	
	321.0	40.0	5.0	3:30/1.0 2:30/1.0 3:01/1.0 3:04/1.0 2:24/1.0	(4.9)	(4.8)					3 Joints at 10 Degrees to 20 Degrees 2 Joints at 0 Degrees to 5 Degrees Highly Fractured Zone from 44.0 feet to 44.2 feet	
	316.0	45.0									R1=12, R2=20, R3=10, R4=20, R5=4 RMR=66 Rock Type=E	
											Boring Terminated at Elevation 316.0 ft in Crystalline Rock: MICA GNEISS	45.0

NCDOT BORE DOUBLE B5162\_GEO\_BRD0035.GPJ NC\_DOT\_GDT 7/18/12

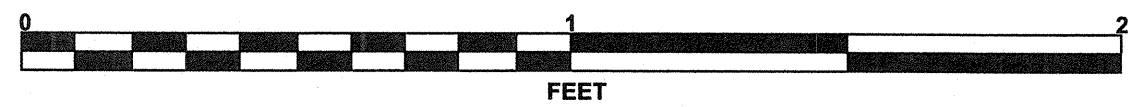
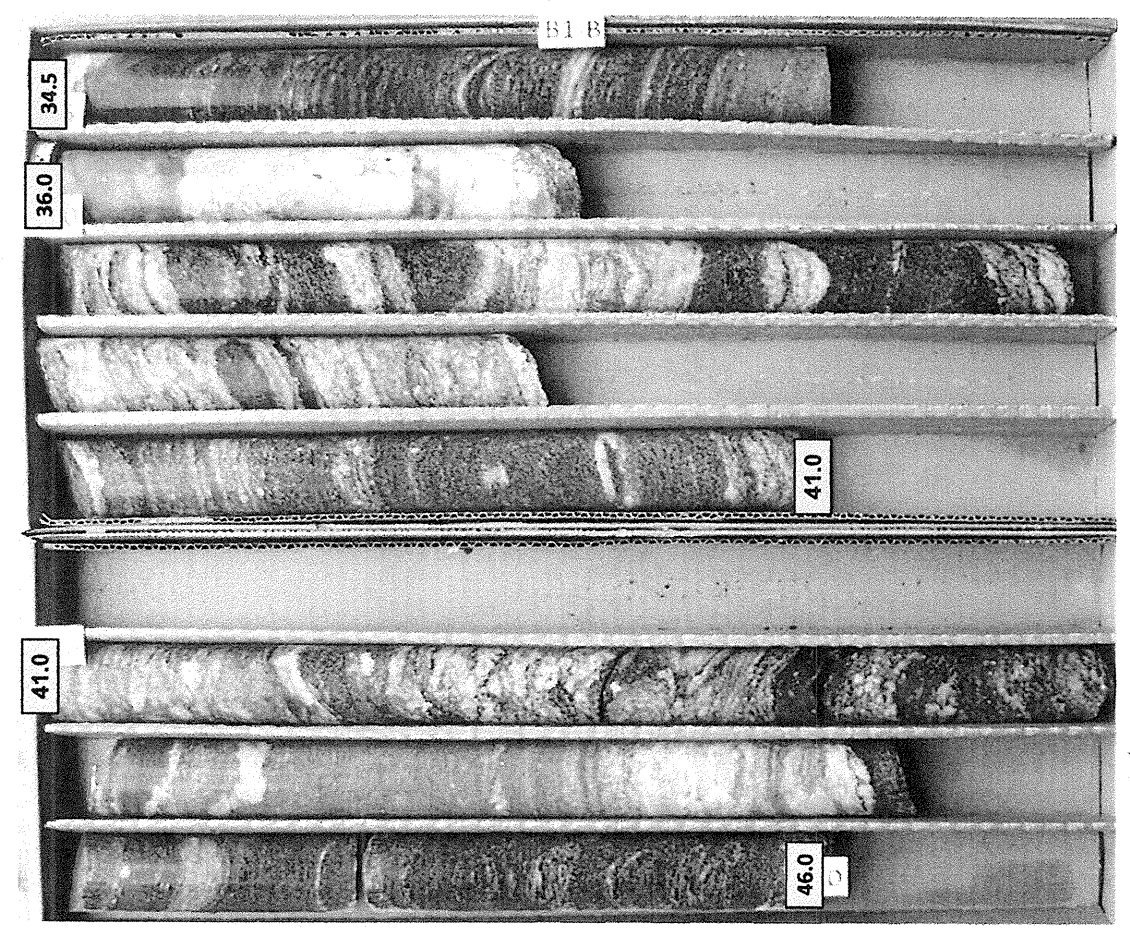


**NCDOT GEOTECHNICAL ENGINEERING UNIT**  
**CORE BORING REPORT**

WBS 42337.1.1		TIP B-5162		COUNTY CASWELL		GEOLOGIST Goodnight, D. J.					
SITE DESCRIPTION Replacement of Bridge No. 35 over North Fork Rattlesnake Creek on SR 1523 (Blanch Road)							GROUND WTR (ft)				
BORING NO. B1-B		STATION 16+67		OFFSET 6 ft RT		ALIGNMENT -L-	0 HR. 3.2				
COLLAR ELEV. 361.3 ft		TOTAL DEPTH 46.0 ft		NORTHING 1,003,947		EASTING 1,913,763	24 HR. 3.0				
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011				DRILL METHOD NQ Casing W/SPT & Core		HAMMER TYPE Automatic					
DRILLER Whichard, S. W.		START DATE 05/30/12		COMP. DATE 05/31/13		SURFACE WATER DEPTH N/A					
CORE SIZE NQ		TOTAL RUN 11.5 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %			
326.8										Begin Coring @ 34.5 ft	
325	326.8 325.3	34.5 36.0	1.5 5.0	N=60/0.0 2:03/0.5 4:08/1.0 4:41/1.0 4:22/1.0 3:48/1.0 4:18/1.0 3:32/1.0	(1.5) 100%	(1.5) 100%	(11.5) 100%	(11.5) 100%		CRYSTALLINE ROCK Gray and White, Very Slight to Slight Weathering, Moderately Hard to Hard, MICA GNEISS with Moderately Close Fracture Spacing	34.5
320	320.3	41.0	5.0	3:46/1.0 4:41/1.0 4:37/1.0 4:34/1.0 4:12/1.0	(5.0) 100%	(5.0) 100%				4 Joints at 20 Degrees to 30 Degrees 1 Joint at 5 Degrees	
	315.3	46.0								Boring Terminated at Elevation 315.3 ft in Crystalline Rock: MICA GNEISS	46.0

**CORE PHOTOGRAPHS**

**B1-B**  
**BOX 1 and 2: 34.5 - 46.0 FEET**



NCDOT CORE DOUBLE B5162 GEO\_BRDG0035.GPJ NC\_DOT.GDT 7/16/12



WBS 42337.1.1		TIP B-5162		COUNTY CASWELL		GEOLOGIST Goodnight, D. J.											
SITE DESCRIPTION Replacement of Bridge No. 35 over North Fork Rattlesnake Creek on SR 1523 (Blanch Road)							GROUND WTR (ft)										
BORING NO. B2-A		STATION 17+20		OFFSET 5 ft LT		ALIGNMENT -L-											
COLLAR ELEV. 364.4 ft		TOTAL DEPTH 53.6 ft		NORTHING 1,003,963		EASTING 1,913,817											
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011		DRILL METHOD NQ Casing W/SPT & Core		HAMMER TYPE Automatic													
DRILLER Whichard, S. W.		START DATE 05/31/12		COMP. DATE 06/01/12		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							
365	364.4	0.0	50	21	2									364.4	GROUND SURFACE	0.0	
	362.0	2.4	WOH	WOH	2									362.4	ROADWAY EMBANKMENT Brown, Low Plasticity, Fine Sandy, Clayey, SILT with Some Gravel	2.0	
360															ALLUVIAL Brown, Medium Plasticity, Silty, Fine Sandy, CLAY		
355	357.0	7.4	1	4	5									356.5	Brown, Medium Plasticity, Silty, Clayey, Fine SAND	7.9	
350	352.0	12.4	6	12	12									354.0 353.0	Gravel	10.4 11.4	
345	347.0	17.4	12	17	19										RESIDUAL Gray and Tan, Non-Plastic, Silty, Coarse to Fine SAND with Some Rock Fragments		
340	342.0	22.4	16	49	51/0.1									341.5	WEATHERED ROCK Tan and White to Gray and Tan MICA GNEISS	22.9	
335	337.0	27.4	100/0.2														
330	332.0	32.4	60	40/0.1													
325	327.0	37.4	28	72/0.1													
320	322.2	42.2	60/0.0											322.2	CRYSTALLINE ROCK Gray and White MICA GNEISS with Thin Zones of MICA SCHIST	42.2	
315														310.8	Boring Terminated at Elevation 310.8 ft in Crystalline Rock: MICA GNEISS	53.6	

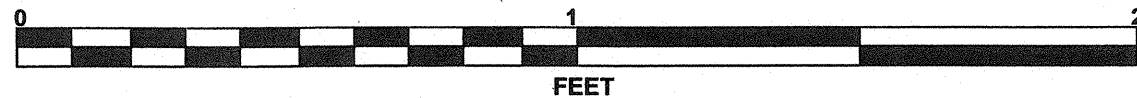
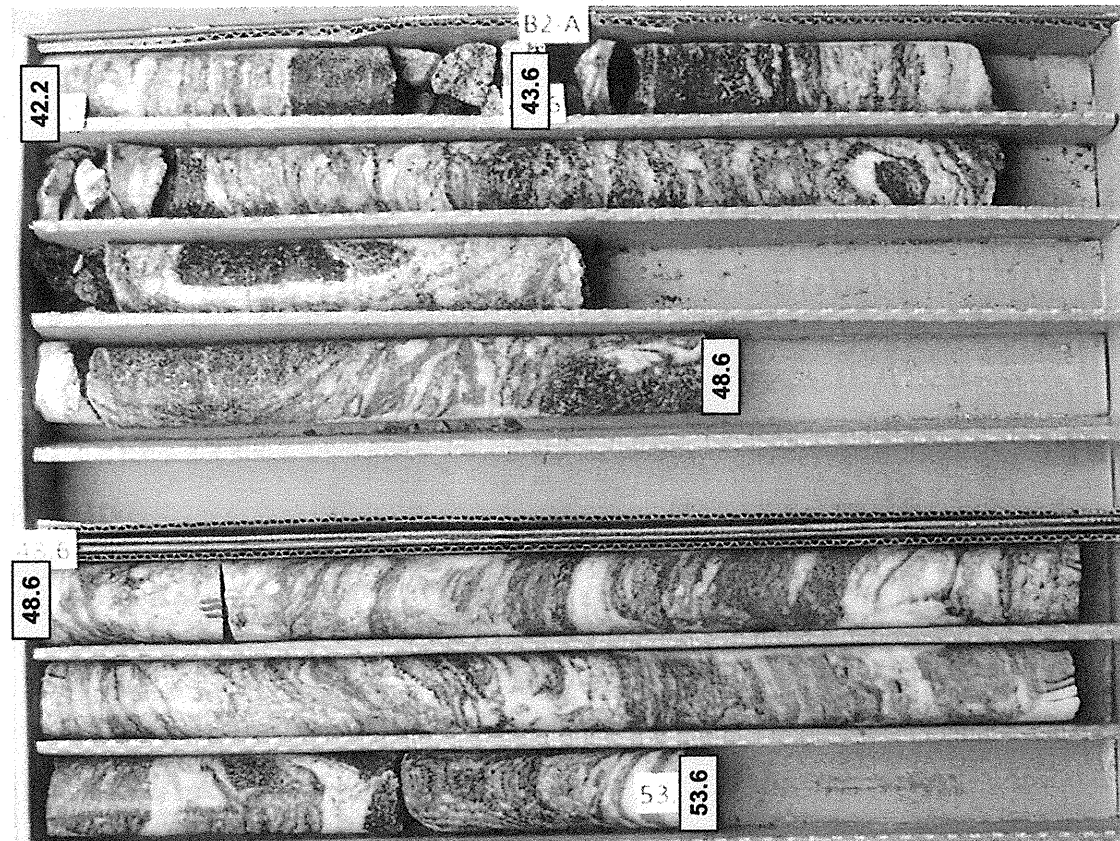
WBS 42337.1.1		TIP B-5162		COUNTY CASWELL		GEOLOGIST Goodnight, D. J.						
SITE DESCRIPTION Replacement of Bridge No. 35 over North Fork Rattlesnake Creek on SR 1523 (Blanch Road)							GROUND WTR (ft)					
BORING NO. B2-A		STATION 17+20		OFFSET 5 ft LT		ALIGNMENT -L-						
COLLAR ELEV. 364.4 ft		TOTAL DEPTH 53.6 ft		NORTHING 1,003,963		EASTING 1,913,817						
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011		DRILL METHOD NQ Casing W/SPT & Core		HAMMER TYPE Automatic								
DRILLER Whichard, S. W.		START DATE 05/31/12		COMP. DATE 06/01/12		SURFACE WATER DEPTH N/A						
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)		REC. (%)	RQD (%)			
322.2	322.2	42.2	1.4	N=60/0.0 1:49/0.4 2:09/1.0	(0.9) 64%	(0.7) 50%		(10.7) 94%	(9.5) 83%		Begin Coring @ 42.2 ft	42.2
320	320.8	43.6	5.0	3:18/1.0 3:29/1.0 3:51/1.0 3:28/1.0 4:10/1.0	(4.8) 96%	(3.8) 76%					CRYSTALLINE ROCK Gray and White, Slight to Very Slight Weathering, Moderately Hard to Hard, MICA GNEISS with Close to Moderately Close Fracture Spacing  3 Joints at 10 Degrees to 20 Degrees	
315	315.8	48.6	5.0	2:05/1.0 2:40/1.0 2:48/1.0 3:02/1.0 3:34/1.0	(5.0) 100%	(5.0) 100%					Thin zones of Brown, Moderately Severe Weathering, Soft to Medium Hard, MICA SCHIST with Very Close Fracture Spacing	
	310.8	53.6									Boring Terminated at Elevation 310.8 ft in Crystalline Rock: MICA GNEISS	53.6

NCDOT BORE DOUBLE B5162\_GEO\_BRDG0035.GPJ NC\_DOT.GDT 7/16/12

CORE PHOTOGRAPHS

B2-A

BOX 1 and 2: 42.2 - 53.6 FEET



WBS 42337.1.1		TIP B-5162		COUNTY CASWELL		GEOLOGIST Goodnight, D. J.									
SITE DESCRIPTION Replacement of Bridge No. 35 over North Fork Rattlesnake Creek on SR 1523 (Blanch Road)							GROUND WTR (ft)								
BORING NO. B2-B		STATION 17+20		OFFSET 5 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 365.1 ft		TOTAL DEPTH 54.3 ft		NORTHING 1,003,950		EASTING 1,913,818									
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011				DRILL METHOD NQ Casing W/SPT & Core		HAMMER TYPE Automatic									
DRILLER Whichard, S. W.		START DATE 05/24/12		COMP. DATE 05/25/12		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					ELEV. (ft)
370															
365	365.1	0.0													365.1 GROUND SURFACE 0.0
	363.3	1.8	WOH	2	1	3							M		363.6 ROADWAY EMBANKMENT 1.5
	360.8	4.3		2	3	2							M		Red-Brown, Medium Plasticity, Silty, Coarse to Fine Sandy, CLAY with Little Gravel
360	360.8	4.3		3	1	3							M		ALLUVIAL
	358.3	6.8		1	1	1							Sat		Tan, Low Plasticity, Fine Sandy, Clayey, SILT
	353.3	11.8		8	14	24									359.1 Gray, Non-Plastic, Silty, Fine SAND 6.0
355	353.3	11.8													352.6 RESIDUAL 12.5
	348.3	16.8		15	15	38							M		Gray and White, Non-Plastic, Silty, Coarse to Fine SAND
350	348.3	16.8													345.9 CRYSTALLINE ROCK 19.2
	345.6	19.5		60/0.0											Gray and Tan MICA SCHIST
345	345.6	19.5													WEATHERED ROCK
	340.9	24.2		29	46	54/0.3									Tan and White MICA SCHIST
340	340.9	24.2													344.1 CRYSTALLINE ROCK 21.0
	338.3	26.8													Tan MICA SCHIST
	337.1	28.0		65	35/0.1										WEATHERED ROCK
335	337.1	28.0		60/0.0											Tan and White MICA SCHIST
	331.1	34.0		75	25/0.1										337.1 CRYSTALLINE ROCK 28.0
330	331.1	34.0													336.6 Tan MICA SCHIST 28.5
	327.2	37.9		70	30/0.1										WEATHERED ROCK
325	327.2	37.9													Tan MICA GNEISS
	323.3	41.8		100/0.3											328.1 Tan MICA GNEISS 37.0
	320.8	44.3		100/0.4											320.8 CRYSTALLINE ROCK 44.3
320	320.8	44.3		60/0.0											Gray and White MICA GNEISS
315															310.8 Boring Terminated at Elevation 310.8 ft in Crystalline Rock: MICA GNEISS 54.3

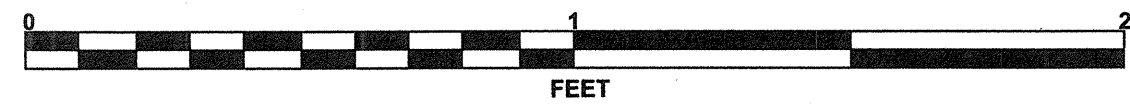
NCDOT BORE SINGLE B5162\_GEO\_BRDG0035.GPJ NC\_DOT\_GDT 7/16/12

**NCDOT GEOTECHNICAL ENGINEERING UNIT**  
**CORE BORING REPORT**

WBS 42337.1.1		TIP B-5162		COUNTY CASWELL		GEOLOGIST Goodnight, D. J.					
SITE DESCRIPTION Replacement of Bridge No. 35 over North Fork Rattlesnake Creek on SR 1523 (Blanch Road)							GROUND WTR (ft)				
BORING NO. B2-B		STATION 17+20		OFFSET 5 ft RT		ALIGNMENT -L-	0 HR. 6.9				
COLLAR ELEV. 365.1 ft		TOTAL DEPTH 54.3 ft		NORTHING 1,003,950		EASTING 1,913,818	24 HR. N/A				
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011				DRILL METHOD NQ Casing W/SPT & Core		HAMMER TYPE Automatic					
DRILLER Whichard, S. W.		START DATE 05/24/12		COMP. DATE 05/25/12		SURFACE WATER DEPTH N/A					
CORE SIZE NQ		TOTAL RUN 20.7 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)	REC. (%)	RQD (%)			
345.6										Begin Coring @ 19.5 ft	
345.6	345.6	19.5	4.7	N=60/0.0 1:18/0.7 1:56/1.0 0:53/1.0 0:37/1.0 0:33/1.0 N=100/0.6	(1.5) 32%	(0.5) 11%	(1.5) 100%	(0.5) 33%		CRYSTALLINE ROCK Gray and Tan, Moderate to Moderately Severe Weathering, Moderately Hard to Hard GNEISS with Close Fracture Spacing 4 Joints at 20 Degrees to 30 Degrees 3 Joints at 0 Degrees to 5 Degrees (continued)	21.0
340	340.9	24.2								WEATHERED ROCK Tan and White MICA SCHIST	28.0
335	337.1	28.0								CRYSTALLINE ROCK Tan, Moderately Severe Weathering, Medium Hard MICA SCHIST with Very Close Fracture Spacing	28.5
335	336.1	29.0	1.0	N=60/0.0 0:58/1.0 0:47/1.0 0:54/1.0 0:43/1.0 0:32/1.0 0:38/1.0 N=100/0.6	(0.0) 0%	(0.0) 0%	(0.0) 0%	(0.0) 0%		WEATHERED ROCK Tan and White MICA SCHIST	
330	331.1	34.0								Tan MICA GNEISS	37.0
325											
320	320.8	44.3								CRYSTALLINE ROCK Gray and White, Slight to Very Slight Weathering, Moderately Hard to Hard, MICA GNEISS with Close to Moderately Close Fracture Spacing 5 Joints at 0 Degrees to 5 Degrees	44.3
315	315.8	49.3	5.0	N=60/0.0 2:21/1.0 3:20/1.0 3:35/1.0 4:01/1.0 3:53/1.0	(4.6) 92%	(4.3) 86%	(9.4) 94%	(8.8) 88%			
315			5.0	3:36/1.0 4:06/1.0 4:38/1.0 3:54/1.0 4:06/1.0	(4.8) 96%	(4.5) 90%					
	310.8	54.3								Boring Terminated at Elevation 310.8 ft in Crystalline Rock: MICA GNEISS	54.3

**CORE PHOTOGRAPHS**

**B2-B**  
**BOX 1 and 2: 19.2 - 54.3 FEET**

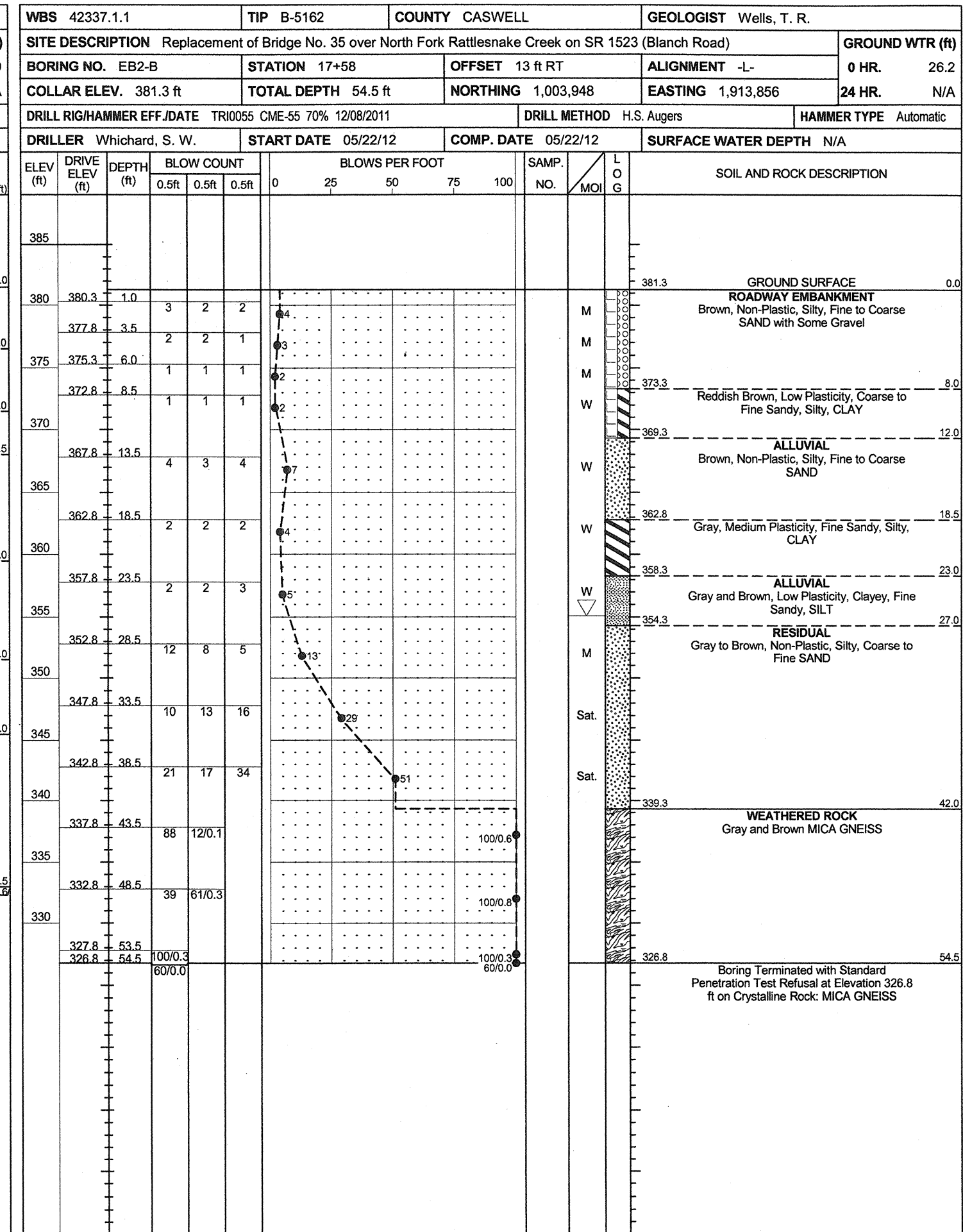
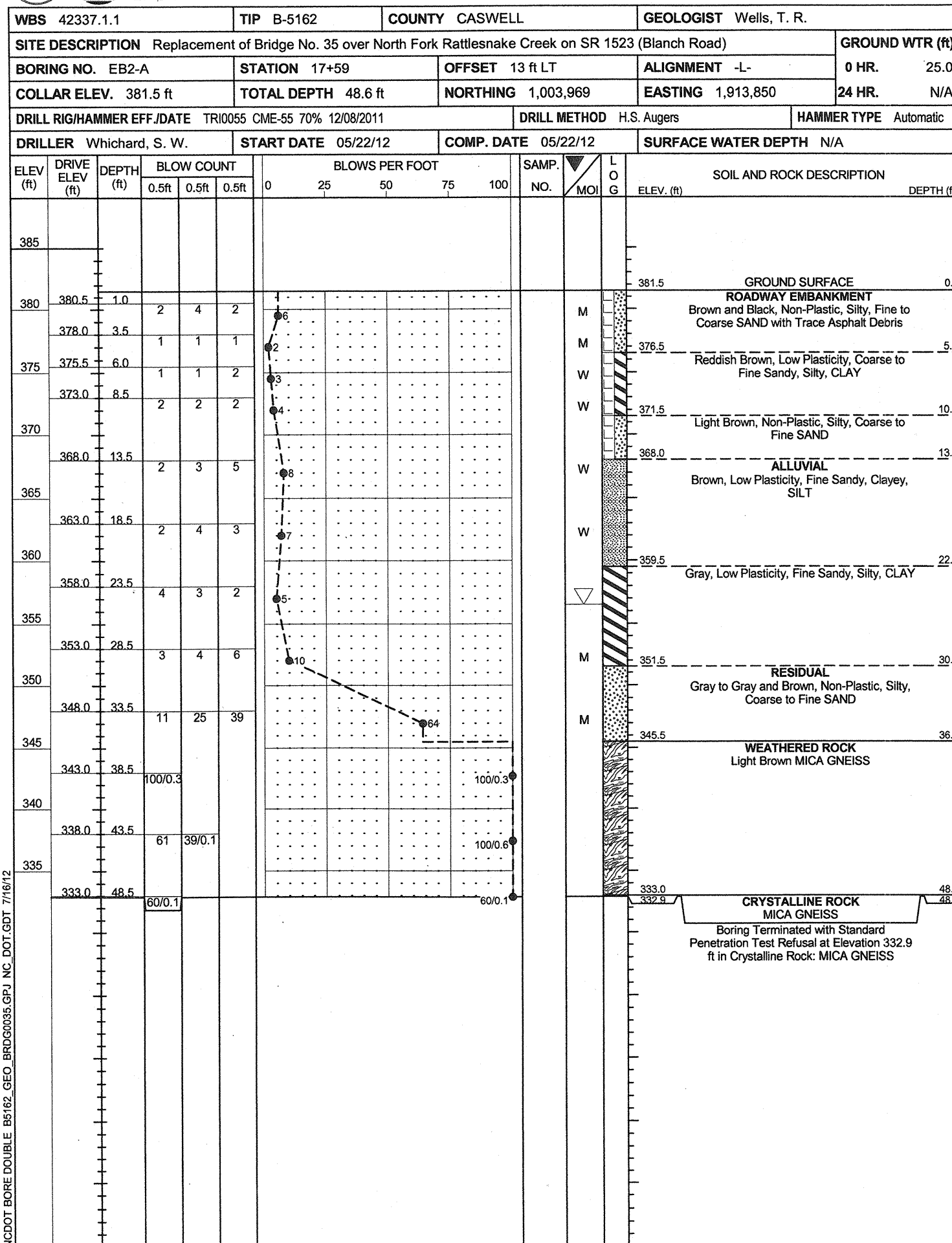


NCDOT CORE DOUBLE B5162 GEO BRDG0035.GPJ NC\_DOT.GDT 7/16/12



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT



NCDOT BORE DOUBLE B5162 GEO\_BRD0035.GPJ NC\_DOT.GDT 7/16/12



WBS 42337.1.1		TIP B-5162		COUNTY CASWELL		GEOLOGIST Goodnight, D. J.										
SITE DESCRIPTION Replacement of Bridge No. 35 over North Fork Rattlesnake Creek on SR 1523 (Blanch Road)							GROUND WTR (ft)									
BORING NO. DET EB1-B		STATION 13+30		OFFSET 5 ft RT		ALIGNMENT -DET-										
COLLAR ELEV. 364.5 ft		TOTAL DEPTH 30.5 ft		NORTHING 1,003,902		EASTING 1,913,734										
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Whichard, S. W.		START DATE 06/05/12		COMP. DATE 06/05/12		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
365														364.5	0.0	GROUND SURFACE
	363.5	1.0	2	2	1							M		362.5	2.0	ALLUVIAL Brown, Non-Plastic, Silty, Coarse to Fine SAND
	361.0	3.5	2	4	3									359.0	5.5	Brown, Medium Plasticity, Fine Sandy, Silty, CLAY
	358.5	6.0	2	2	2											Brown to Gray and Tan-Brown, Non-Plastic, Silty, Fine SAND
	356.0	8.5	3	2	2											
	351.0	13.5	7	14	25									353.0	11.5	Gravel
	346.0	18.5	16	100/0.0										351.0	13.5	RESIDUAL Dark Gray, Non-Plastic, Coarse to Fine Sandy, SILT with Some Rock Fragments
	341.0	23.5	15	27	46									345.5	19.0	Quartz and Gneiss Boulders and Cobbles
	336.0	28.5	100/0.3											343.0	21.5	Brown, Non-Plastic, Silty, Coarse to Fine SAND with Some Rock Fragments
	334.0	30.5	60/0.0											337.5	27.0	WEATHERED ROCK Tan and Gray MICA GNEISS
														334.0	30.5	Boring Terminated with Standard Penetration Test Refusal at Elevation 334.0 ft on Crystalline Rock: MICA GNEISS

WBS 42337.1.1		TIP B-5162		COUNTY CASWELL		GEOLOGIST Goodnight, D. J.										
SITE DESCRIPTION Replacement of Bridge No. 35 over North Fork Rattlesnake Creek on SR 1523 (Blanch Road)							GROUND WTR (ft)									
BORING NO. DET EB2-B		STATION 14+39		OFFSET 7 ft RT		ALIGNMENT -DET-										
COLLAR ELEV. 365.3 ft		TOTAL DEPTH 38.6 ft		NORTHING 1,003,905		EASTING 1,913,834										
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 70% 12/08/2011				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Whichard, S. W.		START DATE 06/05/12		COMP. DATE 06/05/12		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
370														365.3	0.0	GROUND SURFACE
	364.3	1.0	3	4	5											ALLUVIAL Brown, Low Plasticity, Clayey, Fine Sandy, SILT with Some Roots
	361.8	3.5	2	2	3									359.8	5.5	Brown, Non-Plastic, Clayey, Silty, Fine SAND
	359.3	6.0	2	4	4									357.3	8.0	Gray and Tan, Low Plasticity, Silty, Clayey, Fine SAND
	356.8	8.5	1	3	3									352.8	12.5	Gravel
	351.8	13.5	6	6	9									352.5	12.8	RESIDUAL Gray and White, Non-Plastic, Silty, Coarse to Fine SAND
	346.8	18.5	12	21	26											
	341.8	23.5	25	50	50/0.1									342.3	23.0	WEATHERED ROCK Tan and Gray MICA GNEISS
	336.8	28.5	45	45	55/0.1											
	331.8	33.5	50	50/0.3												
	326.8	38.5	60/0.1											326.8	38.5	CRYSTALLINE ROCK Tan and Gray MICA GNEISS
														326.7	38.6	Boring Terminated with Standard Penetration Test Refusal at Elevation 326.7 ft in Crystalline Rock: MICA GNEISS

NCDOT BORE DOUBLE B5162 GEO\_BRDG0035.GPJ NC\_DOT.GDT 7/16/12





### SITE PHOTOGRAPHS



View Looking Upsation along -L- from End Bent 1



View of Bent 2 Looking Left to Right



View of Bent 1 Looking Left to Right



View Looking Upsation along -LDET- from End Bent 1