

PROJECT: 32669.1.1 ID: B-2576

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-2576	1	32
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
32669.1.1	BRSTP-1421 (3)	P.E. CONST.	

# STATE OF NORTH CAROLINA

## DEPARTMENT OF TRANSPORTATION

### DIVISION OF HIGHWAYS

### GEOTECHNICAL ENGINEERING UNIT

# STRUCTURE SUBSURFACE INVESTIGATION

STATE PROJECT 32669.1.1 I.D. NO. B-2576  
 F.A. PROJECT BRSTP-1421(3)  
 COUNTY IREDELL  
 PROJECT DESCRIPTION REPLACEMENT OF  
BRIDGE NO. 513 OVER ALEXANDER RAILROAD,  
BRIDGE NO. 514 OVER NORFOLK SOUTHERN  
RAILROAD, AND ASHEVILLE AVENUE  
ON SR 1421(WILSON LEE BLVD)

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**CAUTION NOTICE**

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WAS 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 UNIT @ 19191250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA IS 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.

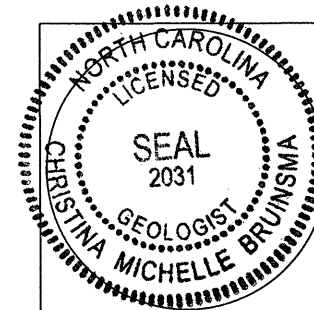
INVESTIGATED BY C. BRUINSMA PERSONNEL P. ZHANG  
 CHECKED BY G. LANG, P.E. C. BRUINSMA  
 SUBMITTED BY TIERRA, INC. B. SAWASKA  
 DATE MARCH 20, 2008

For Letting

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.

DRAWN BY: B. SAWASKA, C. BRUINSMA



SEAL

SIGNATURE

3/20/08

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS  
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

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SOIL DESCRIPTION				GRADATION				ROCK DESCRIPTION				TERMS AND DEFINITIONS																																																																																																																																																																																																																														
<p>SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED OR WEATHERED EARTH MATERIALS WHICH CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND WHICH YIELDS LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM AND BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE: VERY STIFF, GRAY SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</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) DAP- GRADED- INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.</p> <p>THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS ARE DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.</p>				<p>HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WHEN 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 WHICH 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 WHICH 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 DISLODGED FROM PARENT MATERIAL. FLOOD PLAIN (F.P.) - 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 SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (R.Q.D.) - 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 WHICH 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, WHICH 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 B.P.F. 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 LESS THAN 0.1 FOOT PENETRATION WITH 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 (S.R.Q.D.) - 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 (T.S.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>																																																																																																																																																																																																																														
<p>SOIL LEGEND AND AASHTO CLASSIFICATION</p> <table border="1"> <tr> <th>GENERAL CLASS.</th> <th colspan="4">GRANULAR MATERIALS (&lt; 75% PASSING #200)</th> <th colspan="4">SILT-CLAY MATERIALS (&gt; 75% PASSING #200)</th> <th colspan="4">ORGANIC MATERIALS</th> </tr> <tr> <th>GROUP CLASS.</th> <th>A-1</th> <th>A-3</th> <th>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="4"></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 colspan="4"></td> </tr> <tr> <th>% PASSING</th> <td>50 MM</td> <td>30 MM</td> <td>15 MM</td> <td>7.5 MM</td> <td>4.75 MM</td> <td>2.0 MM</td> <td>0.85 MM</td> <td colspan="4"></td> <td>GRANULAR SOILS</td> <td>SILT-CLAY SOILS</td> <td>MUCK, PEAT</td> <td></td> </tr> <tr> <th>LIQUID LIMIT</th> <td colspan="2">6 MX</td> <td colspan="2">N.P.</td> <td colspan="2">40 MX</td> <td colspan="2">40 MN</td> <td colspan="2">40 MN</td> <td colspan="2">40 MN</td> <td colspan="2">40 MN</td> <td colspan="2">SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER</td> <td colspan="2">HIGHLY ORGANIC SOILS</td> </tr> <tr> <th>GROUP INDEX</th> <td colspan="2">0</td> <td colspan="2">0</td> <td colspan="2">4 MX</td> <td colspan="2">8 MX</td> <td colspan="2">12 MX</td> <td colspan="2">16 MX</td> <td colspan="2">20 MX</td> <td colspan="2"></td> <td colspan="2"></td> </tr> <tr> <th>USUAL TYPES OF MAJOR MATERIALS</th> <td colspan="2">GRAVEL AND SAND</td> <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"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> </tr> <tr> <th>GEN. 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ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.</p>				<p>COMPRESSIBILITY</p> <table border="1"> <tr> <th>SLIGHTLY COMPRESSIBLE</th> <th>MODERATELY COMPRESSIBLE</th> <th>HIGHLY COMPRESSIBLE</th> <th>LIQUID LIMIT LESS THAN 30</th> <th>LIQUID LIMIT 31-50</th> <th>LIQUID LIMIT GREATER THAN 50</th> </tr> <tr> <td colspan="3"></td> <td colspan="3">PERCENTAGE OF MATERIAL</td> </tr> <tr> <td colspan="3">ORGANIC MATERIAL</td> <td colspan="2">GRANULAR SOILS</td> <td colspan="1">SILT-CLAY SOILS</td> </tr> <tr> <td colspan="3">TRACE OF ORGANIC MATTER</td> <td colspan="2">2 - 3%</td> <td colspan="1">3 - 5%</td> </tr> <tr> <td colspan="3">LITTLE ORGANIC MATTER</td> <td colspan="2">3 - 5%</td> <td colspan="1">5 - 12%</td> </tr> <tr> <td colspan="3">MODERATELY ORGANIC</td> <td colspan="2">5 - 10%</td> <td colspan="1">12 - 20%</td> </tr> <tr> <td colspan="3">HIGHLY ORGANIC</td> <td colspan="2">&gt;10%</td> <td colspan="1">&gt;20%</td> </tr> <tr> <td colspan="3"></td> <td colspan="2">OTHER MATERIAL</td> <td colspan="1">LITTLE</td> </tr> <tr> <td colspan="3"></td> <td colspan="2"></td> <td colspan="1">10 - 20%</td> </tr> <tr> <td colspan="3"></td> <td colspan="2"></td> <td colspan="1">20 - 35%</td> </tr> <tr> <td colspan="3"></td> <td colspan="2"></td> <td colspan="1">HIGHLY</td> </tr> <tr> <td colspan="3"></td> <td colspan="2"></td> <td colspan="1">35% AND ABOVE</td> </tr> </table>				SLIGHTLY COMPRESSIBLE	MODERATELY COMPRESSIBLE	HIGHLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 30	LIQUID LIMIT 31-50	LIQUID LIMIT GREATER THAN 50				PERCENTAGE OF MATERIAL			ORGANIC MATERIAL			GRANULAR SOILS		SILT-CLAY SOILS	TRACE OF ORGANIC MATTER			2 - 3%		3 - 5%	LITTLE ORGANIC MATTER			3 - 5%		5 - 12%	MODERATELY ORGANIC			5 - 10%		12 - 20%	HIGHLY ORGANIC			>10%		>20%				OTHER MATERIAL		LITTLE						10 - 20%						20 - 35%						HIGHLY						35% AND ABOVE	<p>WEATHERING</p> <table border="1"> <tr> <th>FRESH</th> <th>VERY SLIGHT (V. 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ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.	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.	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	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.	ALL ROCKS 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>	ALL ROCKS 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 &gt; 100 BPF</i>	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 &lt; 100 BPF</i>																																																																																																																																																																																																																																				
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<input type="checkbox"/> CME-550	<input type="checkbox"/> HARD FACED FINGER BITS	<input type="checkbox"/> -N.D___																																																																																																																																																																																																																																								
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<p>COLOR</p> <p>DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YEL-BRN, BLUE-GRAY) MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.</p>				<p>NOTES:</p> <p>HP - INDICATES HIGHLY PLASTIC CLAYS</p> <p>PI - REFERS TO PLASTICITY INDEX OF SOILS</p>																																																																																																																																																																																																																																						
<p>BENCH MARK: BL-3-, STA. 13+59.74, 19.35' RT -L- POT</p> <p>ELEVATION: 945.32</p>				<p>FRAC. SPACING</p> <p>INDURATION</p>																																																																																																																																																																																																																																						

STATE PROJECT NO.: 32669.1.1

I.D. NO.: B-2576

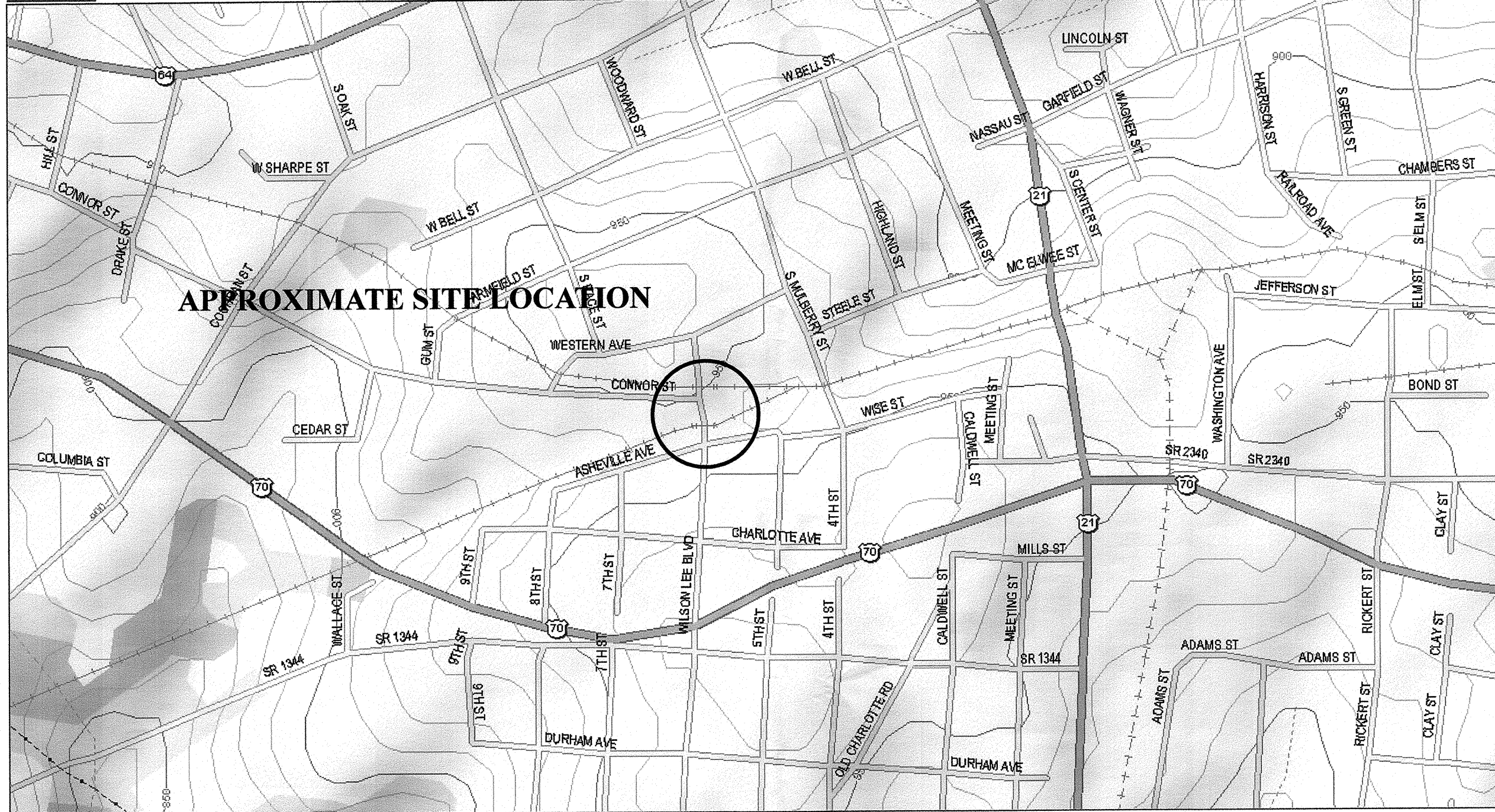
COUNTY: Iredell

PROJECT DESCRIPTION: Br. No. 513 over Alexander RR, Br. No. 514 over NSRR, and Asheville Ave. on SR 1421 (Wilson Lee Blvd.)

### NOTES TO DESIGNER

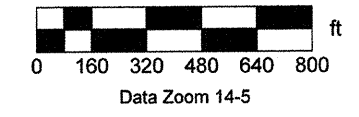
Based on our field exploration the following conditions may impact design and construction of the proposed structure. Therefore the designer should be aware of the following subsurface conditions:

- Highly plastic residual clay and silt exists beneath EB1 from elevation 922.2 feet (MSL) to 893.2 feet at EB1-A, and 942.6 feet to 930.6 feet at EB1-B.
  - EB1A; 0.0-5.5' (PI=20), 23.0-52.0' (PI=14)
  - EB1B; 0.0-5.6'
  - EB2A; 6.5-12.0' (PI=28)
- Approximately 5.0 to 12.0 feet of highly plastic clay was encountered in potential cut areas at Bent 3 and Bent 4. Highly plastic clays were also encountered along B1 and B2. Exact locations and depths are:
  - B1A; 3.0-7.0' (PI=34)
  - B1B; 3.0-7.0'
  - B2A; 2.5-7.0'
  - B2B; 3.0-8.0' (PI=33)
  - B3B; 0.0-3.0' (PI=27), 6.0-12.0' (PI=22)
  - B4A; 0.0-12.0' (PI=20, 34)
  - B4B; 7.0-12.0' (PI=19)
- Some evidence of slump was observed along the south facing slope at Bent 3. The slump block is located at approximate station 19+90, 10 feet right of the centerline.
- The existing structure at the top of slope adjacent to Bent 2 is showing signs of distress in the form of cracking and separation in the exterior block walls. Distress may be a result of creep in the adjacent steep slope and/or settlement.
- Shallower zones of weathered rock were encountered above the weathered rock line at elevation 896.5 feet in B2-B (4.5 ft. thick), elevation 911.3 feet at B3-A (5 ft. thick), and elevation 929.7 feet at B4-A (3.3 ft. thick).




**APPROXIMATE SITE LOCATION**

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 www.delorme.com



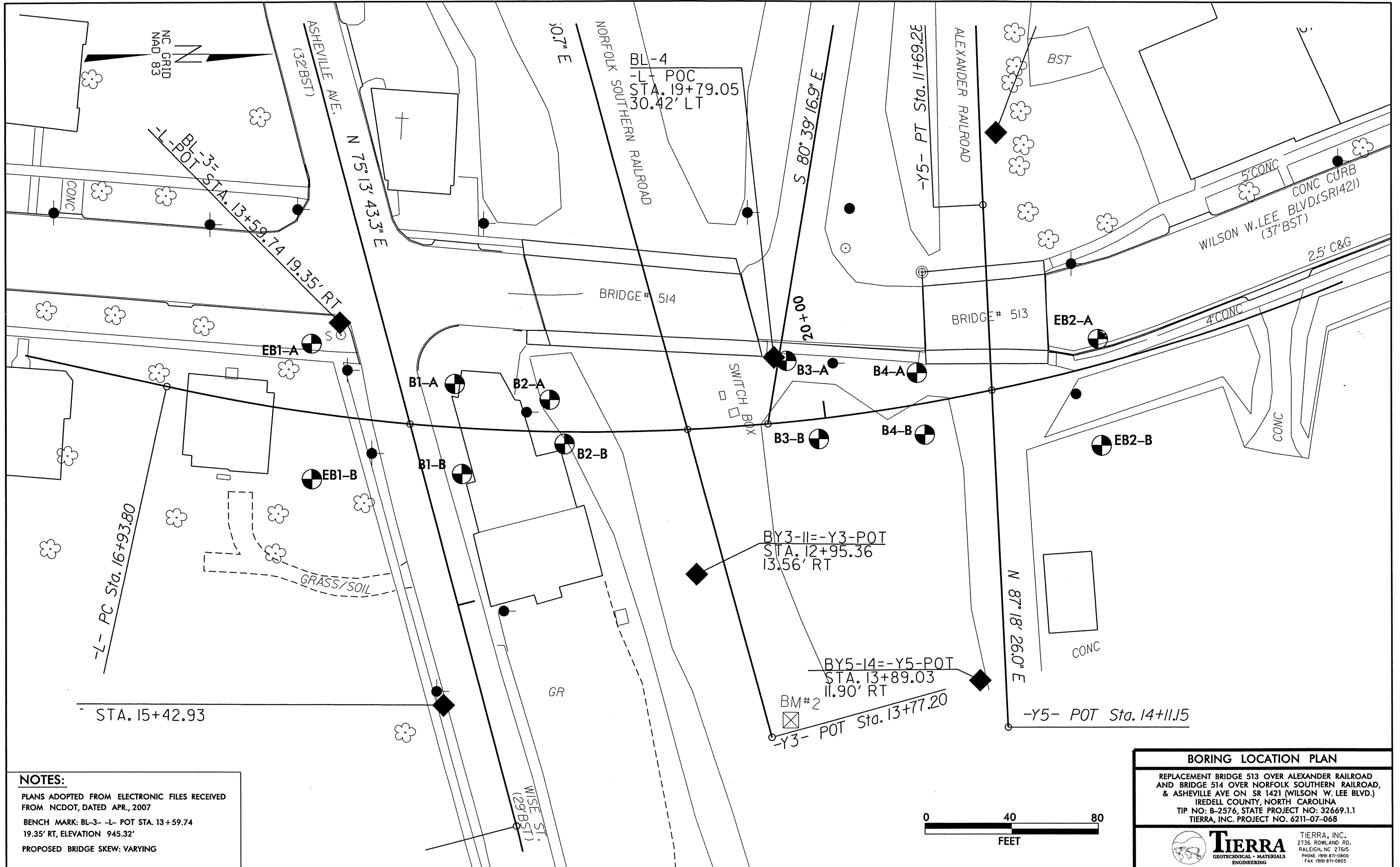
**SITE VICINITY MAP**

**REPLACE BR 513 OVER ALEXANDER RR, BR 514 OVER  
 NSRR, AND ASHEVILLE AVE ON SR 1421  
 IREDELL COUNTY, NORTH CAROLINA  
 TIP NO: B-2576 STATE PROJECT NO: 32669.1.1**

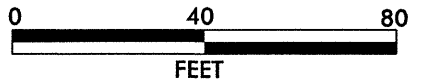


TIERRA, INC.  
 2736 ROWLAND RD.  
 RALEIGH, NC 27615  
 PHONE (919) 871-0800  
 FAX (919) 871-0803





**NOTES:**  
 PLANS ADOPTED FROM ELECTRONIC FILES RECEIVED FROM NCDOT, DATED APR., 2007  
 BENCH MARK: BL-3 -L- POT STA. 13+59.74 19.35' RT, ELEVATION 945.32'  
 PROPOSED BRIDGE SKEW: VARYING



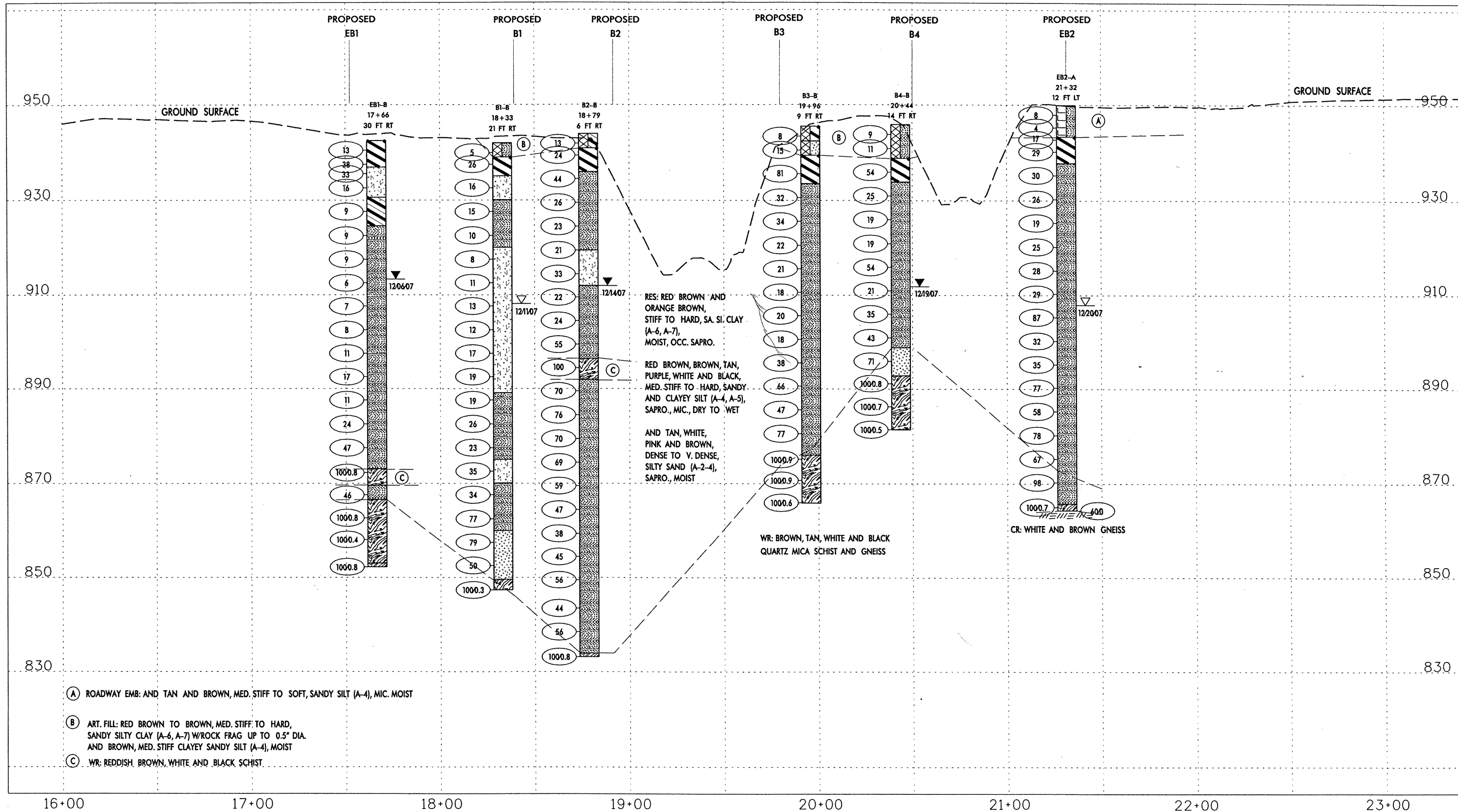
**BORING LOCATION PLAN**

REPLACEMENT BRIDGE 513 OVER ALEXANDER RAILROAD AND BRIDGE 514 OVER NORFOLK SOUTHERN RAILROAD, & ASHEVILLE AVE ON SR 1421 (WILSON W. LEE BLVD.) IREDELL COUNTY, NORTH CAROLINA  
 TIP NO: B-2576, STATE PROJECT NO: 32669.1.1  
 TIERRA, INC. PROJECT NO. 6211-07-068

 <b>TIERRA</b> GEOTECHNICAL • MATERIALS ENGINEERING	TIERRA, INC. 2736 ROWLAND RD. RALEIGH, NC 27615 PHONE (919) 871-0800 FAX (919) 871-0803
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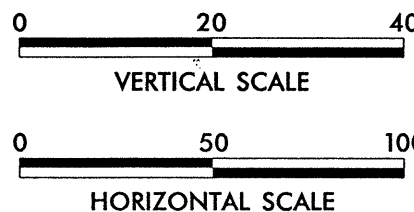
ELEV. (Feet)

ELEV. (Feet)



NOTE: Boring elevations based off of Bench Mark: BL-3-, -L- POT STA. 13+59.74 19.35' RT. ELEV. 945.32'

Profile extracted from NCDOT files dated April 2007.



**STRUCTURE PROFILE**  
CL of -L-

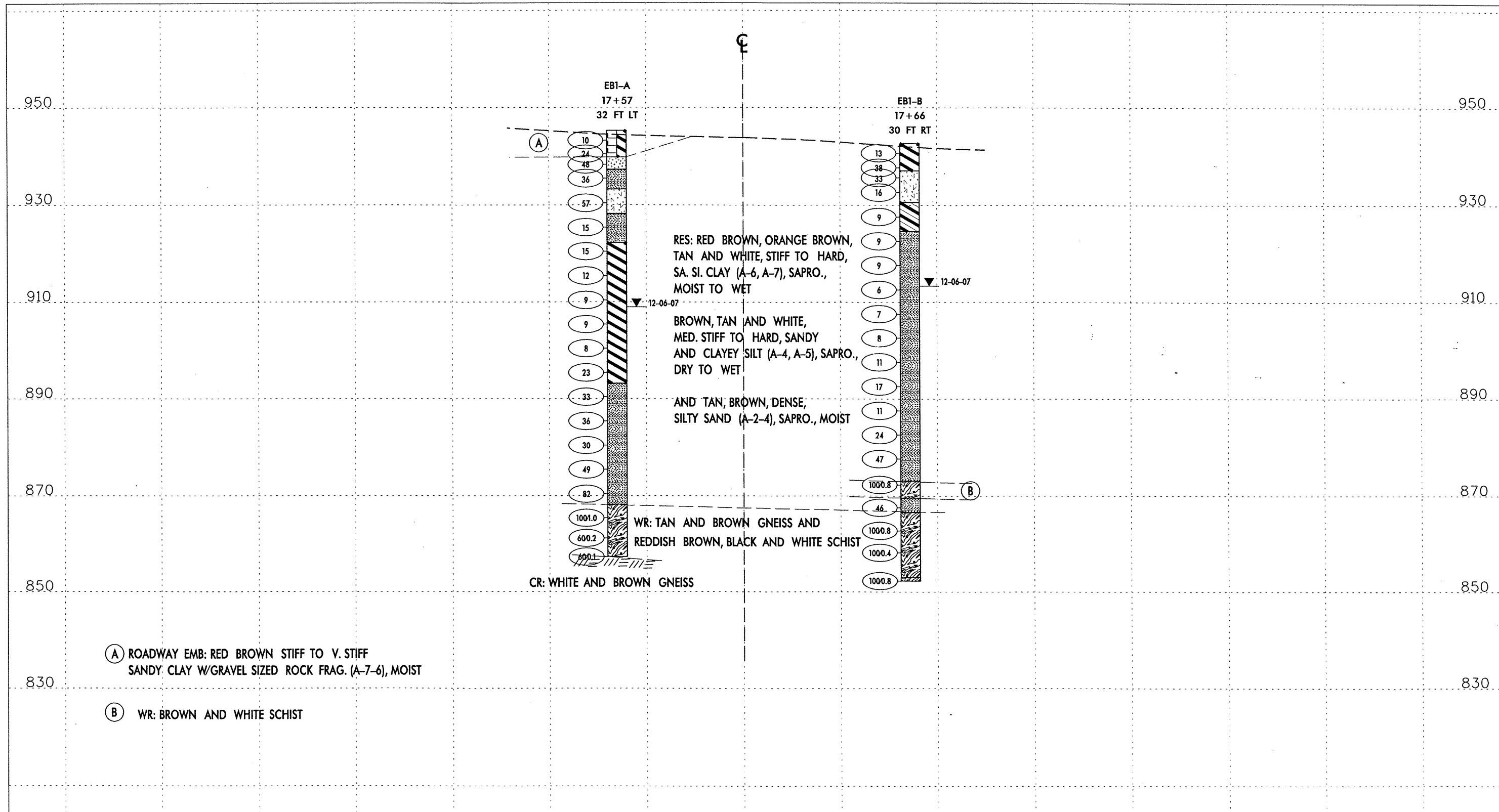
REPLACEMENT BRIDGE 513 OVER ALEXANDER RAILROAD AND BRIDGE 514 OVER NORFOLK SOUTHERN RAILROAD & ASHEVILLE AVE ON SR 1421 (WILSON W. LEE BLVD.) IREDELL COUNTY, NORTH CAROLINA  
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**TIERRA**  
GEOTECHNICAL - MATERIALS  
ENGINEERING

TIERRA, INC.  
7736 HOWLAND RD.  
DANFORTH, NC 27615  
PHONE 919.871.0000  
FAX 919.871.0000

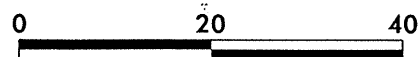
ELEV. (Feet)

ELEV. (Feet)



NOTE: Boring elevations based off of Bench Mark: BL-3-, -L- POT STA. 13+59.74 19.35' RT. ELEV. 945.32'

Cross section extracted from NCDOT files dated April 2007.



CROSS SECTION EB1

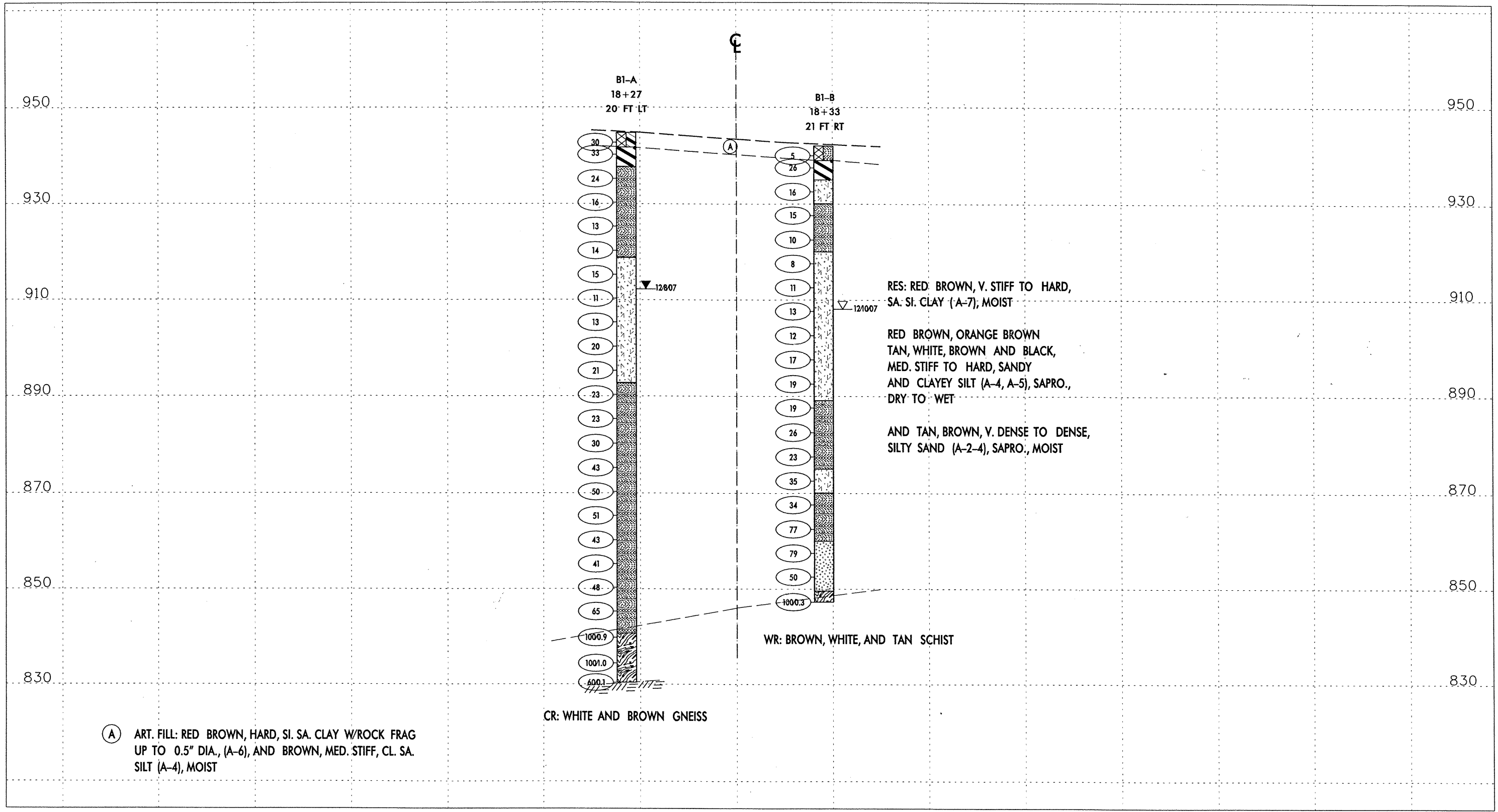
REPLACEMENT BRIDGE 513 OVER ALEXANDER RAILROAD  
AND BRIDGE 514 OVER NORFOLK SOUTHERN RAILROAD  
& ASHEVILLE AVE ON SR 1421 (WILSON W. LEE BLVD.)  
IREDELL COUNTY, NORTH CAROLINA  
TIP NO: B-2576, STATE PROJECT NO: 32669.1.1  
TIERRA, INC. PROJECT NO. 6211-07-068



TIERRA, INC.  
2726 HOWLAND RD.  
RALEIGH, NC 27615  
PHONE 919.871.8800  
FAX 919.871.8802

ELEV. (Feet)

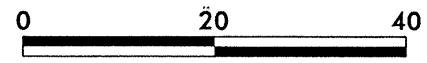
ELEV. (Feet)



(A) ART. FILL: RED BROWN, HARD, SI. SA. CLAY W/ROCK FRAG  
UP TO 0.5" DIA., (A-6), AND BROWN, MED. STIFF, CL. SA.  
SILT (A-4), MOIST

NOTE: Boring elevations based off of Bench Mark: BL-3-, -L- POT STA. 13+59.74 19.35' RT. ELEV. 945.32'

Cross section extracted from NCDOT files dated April 2007.



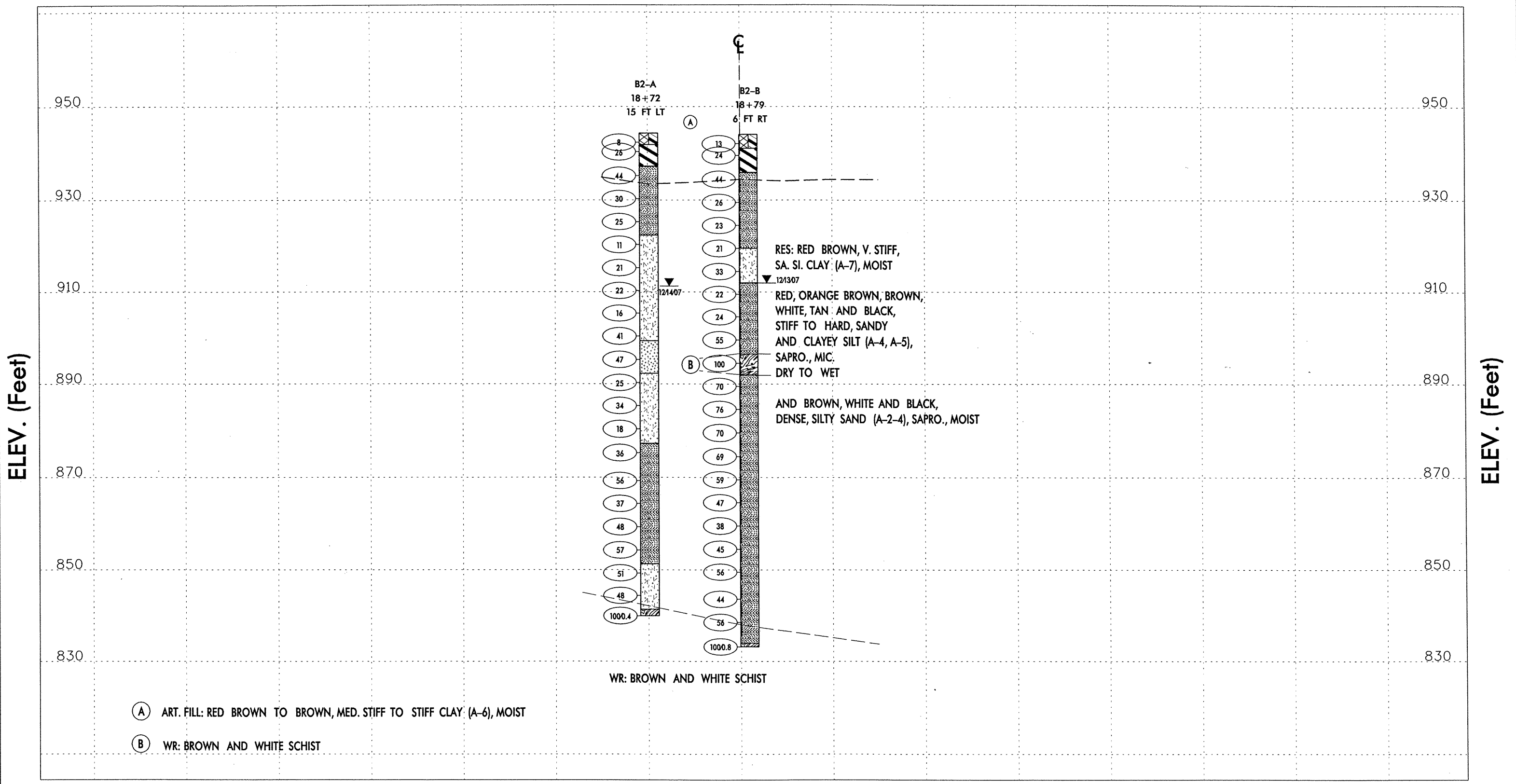
**CROSS SECTION B1**

REPLACEMENT BRIDGE 513 OVER ALEXANDER RAILROAD  
AND BRIDGE 514 OVER NORFOLK SOUTHERN RAILROAD  
& ASHEVILLE AVE ON SR 1421 (WILSON W. LEE BLVD.)  
IREDELL COUNTY, NORTH CAROLINA  
TIP NO: B-2576, STATE PROJECT NO: 32669.1.1  
TIERRA, INC. PROJECT NO. 6211-07-068

**TIERRA**  
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ENGINEERING

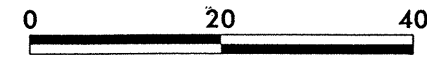
TIERRA, INC.  
2726 ROWLAND RD.  
RALEIGH, NC 27615  
PHONE 919 871-8800  
FAX 919 871-8802





NOTE: Boring elevations based off of Bench Mark: BL-3-, -L- POT STA. 13+59.74 19.35' RT. ELEV. 945.32'

Cross section extracted from NCDOT files dated April 2007.



**CROSS SECTION B2**

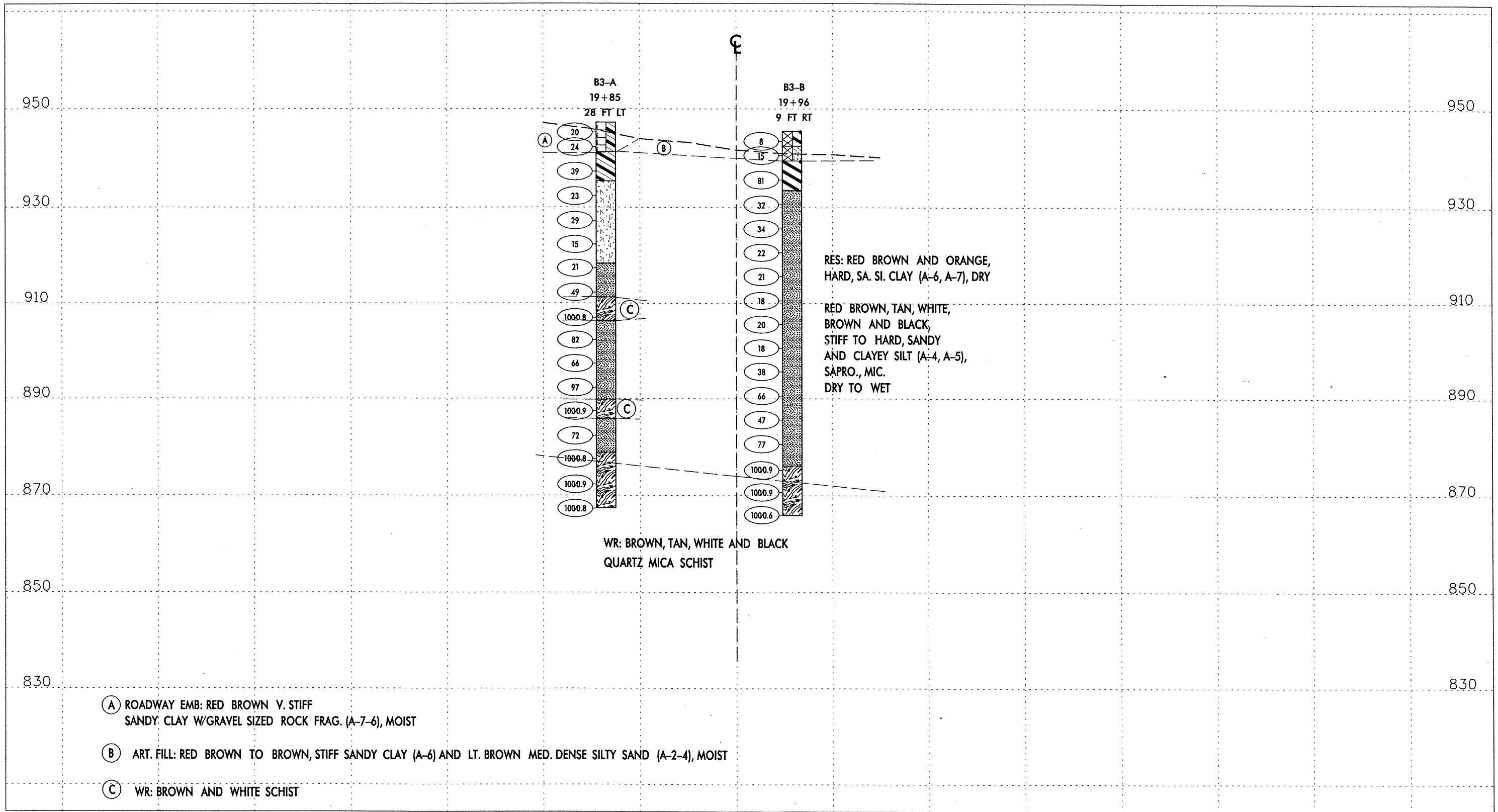
REPLACEMENT BRIDGE 513 OVER ALEXANDER RAILROAD AND BRIDGE 514 OVER NORFOLK SOUTHERN RAILROAD & ASHEVILLE AVE ON SR 1421 (WILSON W. LEE BLVD.) IREDELL COUNTY, NORTH CAROLINA  
TIP NO: B-2576, STATE PROJECT NO: 32669.1.1  
TIERRA, INC. PROJECT NO. 6211-07-068

**TIERRA**  
GEOTECHNICAL MATERIALS ENGINEERING

TIERRA, INC.  
2724 HOWLAND RD.  
RALEIGH, NC 27615  
PHONE 919 871-0880  
FAX 919 871-0888

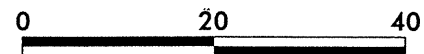
ELEV. (Feet)

ELEV. (Feet)



NOTE: Boring elevations based off of Bench Mark: BL-3, -L- POT STA. 13+59.74 19.35' RT. ELEV. 945.32'

Cross section extracted from NCDOT files dated April 2007.



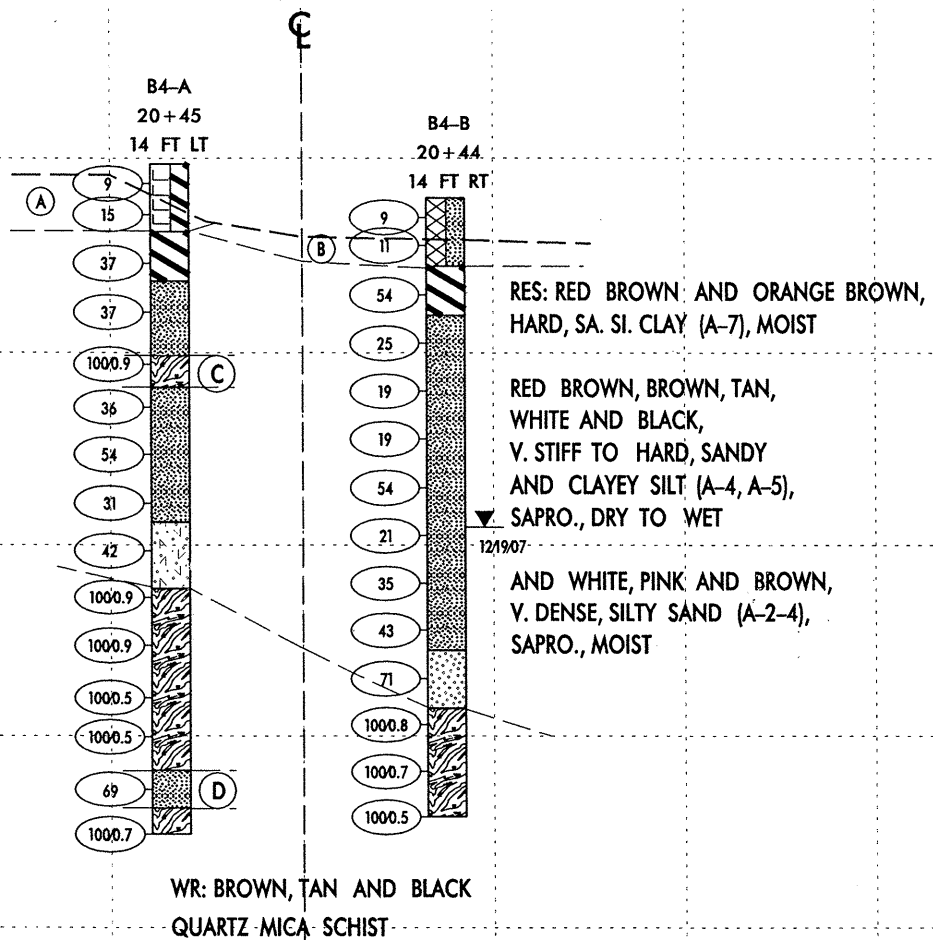
**CROSS SECTION B3**

REPLACEMENT BRIDGE 513 OVER ALEXANDER RAILROAD  
AND BRIDGE 514 OVER NORFOLK SOUTHERN RAILROAD  
& ASHEVILLE AVE ON SR 1421 (WILSON W. LEE BLVD.)  
IREDELL COUNTY, NORTH CAROLINA  
TIP NO: B-2576, STATE PROJECT NO: 32669.1.1  
TIERRA, INC. PROJECT NO. 6211-07-068



ELEV. (Feet)

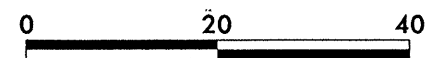
ELEV. (Feet)



- (A) ROADWAY EMB: RED BROWN STIFF, SANDY CLAY W/ROCK FRAG. UP TO 0.5" DIA. (A-7-6), MOIST
- (B) ART. FILL: RED BROWN TO ORANGE BROWN, STIFF, SANDY CLAYEY SILT (A-4), MOIST
- (C) WR: REDDISH BROWN, WHITE AND BLACK SCHIST
- (D) RES: BROWN AND TAN, HARD, SANDY SILT (A-4), SAPRO., WET

NOTE: Boring elevations based off of Bench Mark: BL-3-, -L- POT STA. 13+59.74 19.35' RT. ELEV. 945.32'

Cross section extracted from NCDOT files dated April 2007.



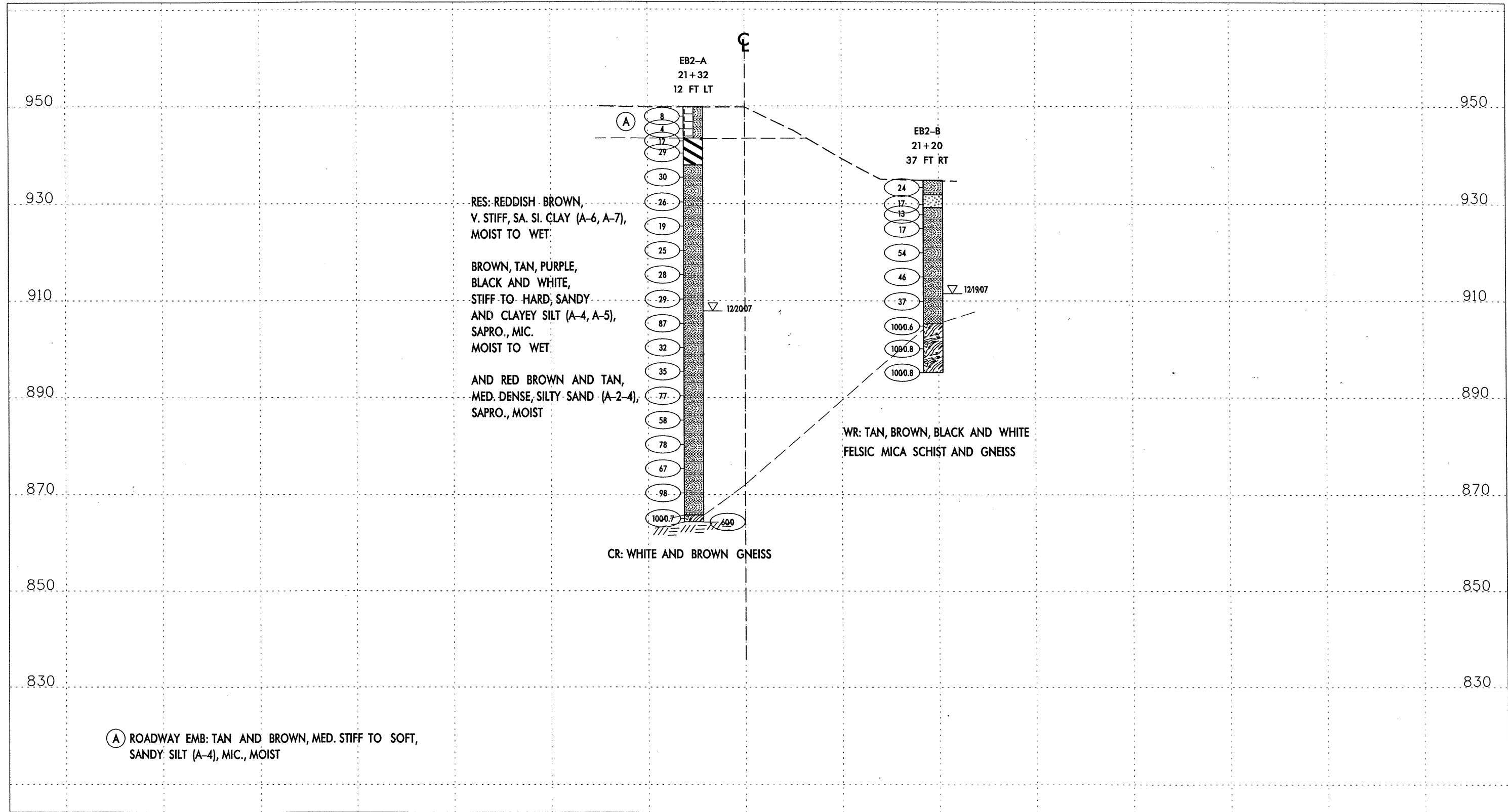
**CROSS SECTION B4**

REPLACEMENT BRIDGE 513 OVER ALEXANDER RAILROAD AND BRIDGE 514 OVER NORFOLK SOUTHERN RAILROAD & ASHEVILLE AVE ON SR 1421 (WILSON W. LEE BLVD.) IREDELL COUNTY, NORTH CAROLINA  
 TIP NO: B-2576, STATE PROJECT NO: 32669.1.1  
 TIERRA, INC. PROJECT NO. 6211-07-068



ELEV. (Feet)

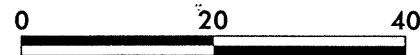
ELEV. (Feet)



(A) ROADWAY EMB: TAN AND BROWN, MED. STIFF TO SOFT, SANDY SILT (A-4), MIC., MOIST

NOTE: Boring elevations based off of Bench Mark: BL-3--L- POT STA. 13+59.74 19.35' RT. ELEV. 945.32'

Cross section extracted from NCDOT files dated April 2007.



CROSS SECTION EB2

REPLACEMENT BRIDGE 513 OVER ALEXANDER RAILROAD AND BRIDGE 514 OVER NORFOLK SOUTHERN RAILROAD & ASHEVILLE AVE ON SR 1421 (WILSON W. LEE BLVD.) IREDELL COUNTY, NORTH CAROLINA  
 TIP NO: B-2576, STATE PROJECT NO: 32669.1.1  
 TIERRA, INC. PROJECT NO. 6211-07-068





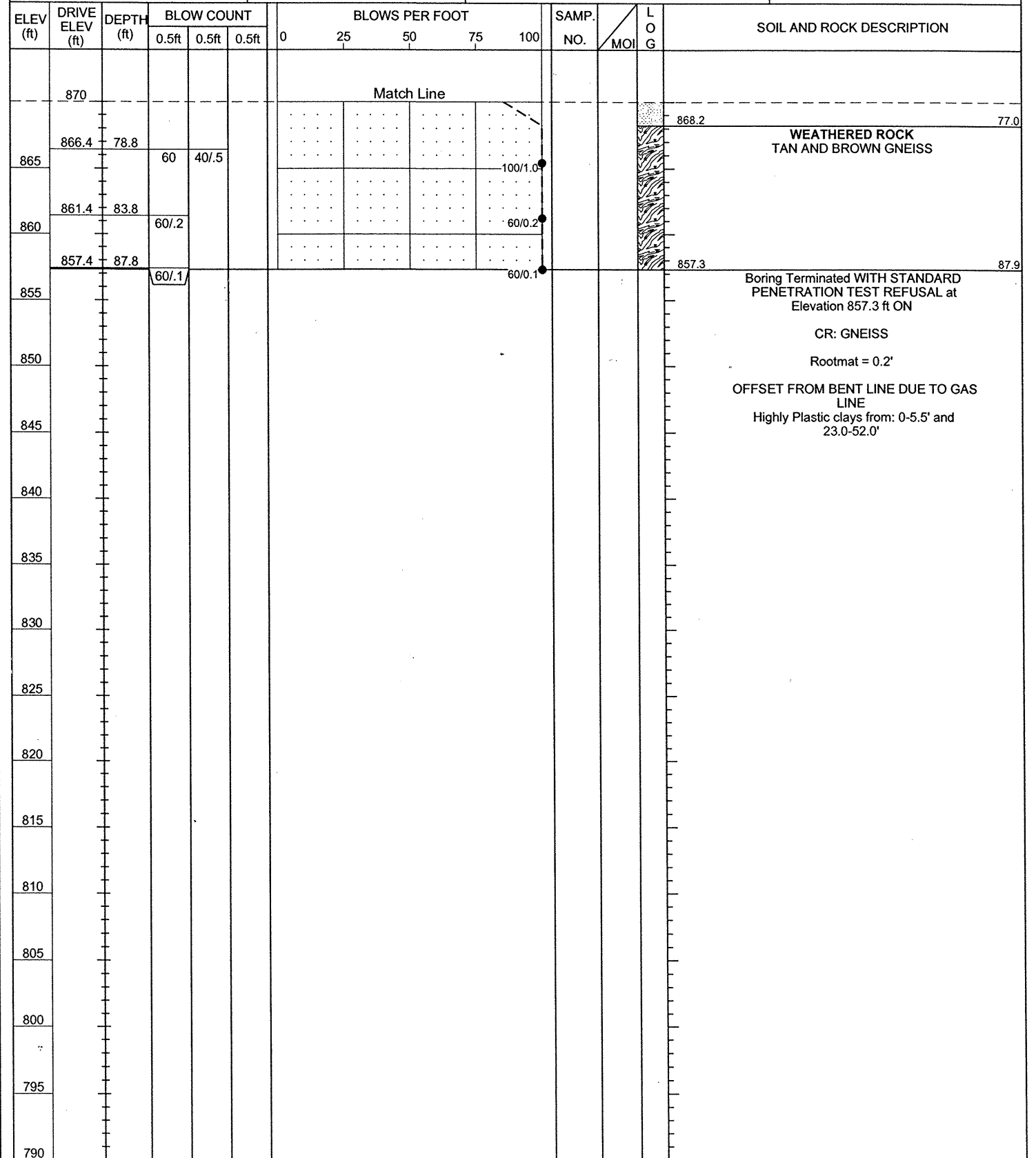
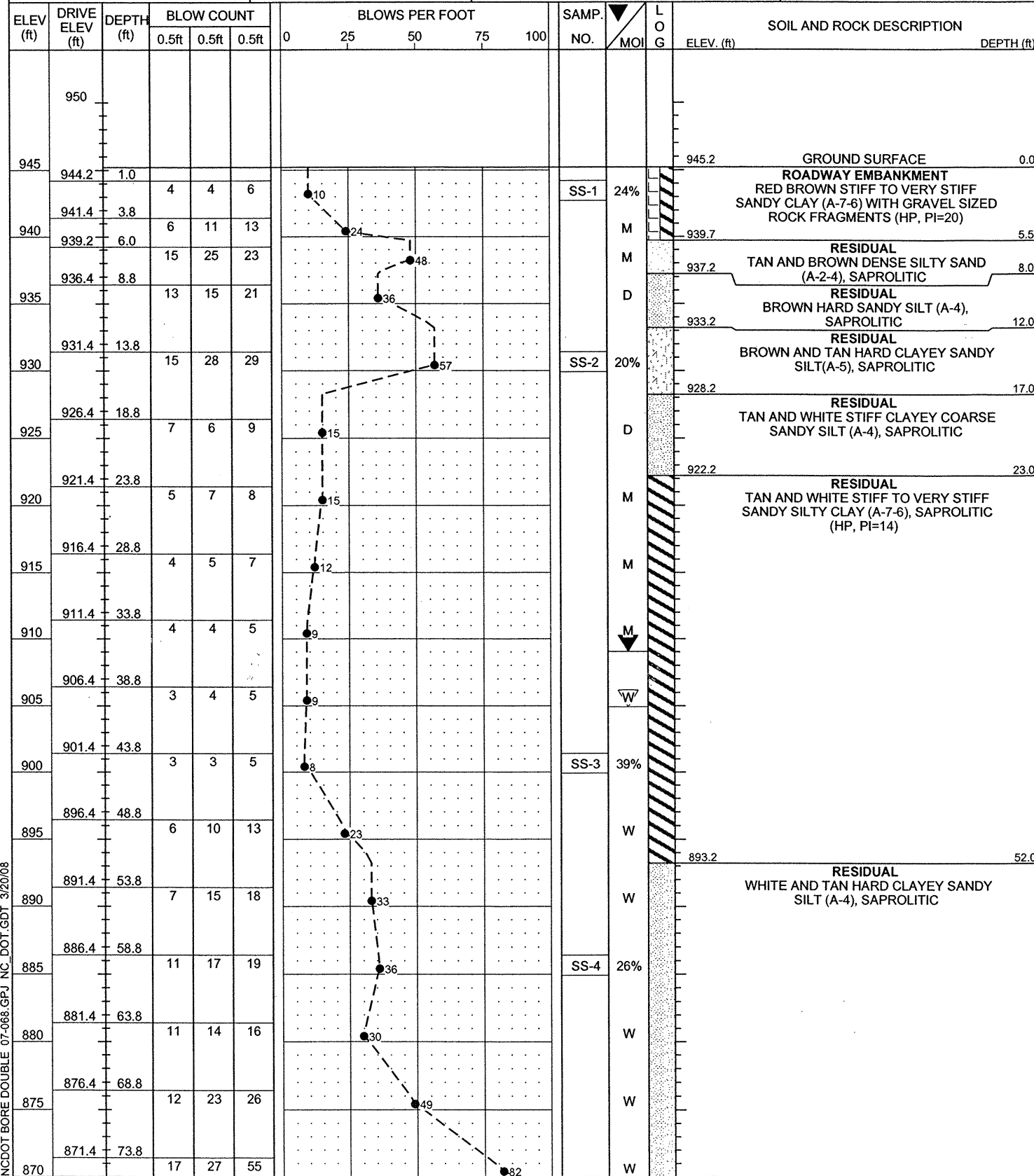


# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

PROJECT NO. 32669.1.1	ID. B-2576	COUNTY IREDELL	GEOLOGIST C. Bruinsma
SITE DESCRIPTION BR 513 OVER ALEXANDER RR AND BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421			GROUND WTR (ft)
BORING NO. EB1-A	STATION 17+57	OFFSET 32ft LT	ALIGNMENT L
COLLAR ELEV. 945.2 ft	TOTAL DEPTH 87.9 ft	NORTHING 742,056	EASTING 1,439,206
DRILL MACHINE D-50	DRILL METHOD H.S. Augers	HAMMER TYPE Manual	
START DATE 12/05/07	COMP. DATE 12/05/07	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 87.9 ft

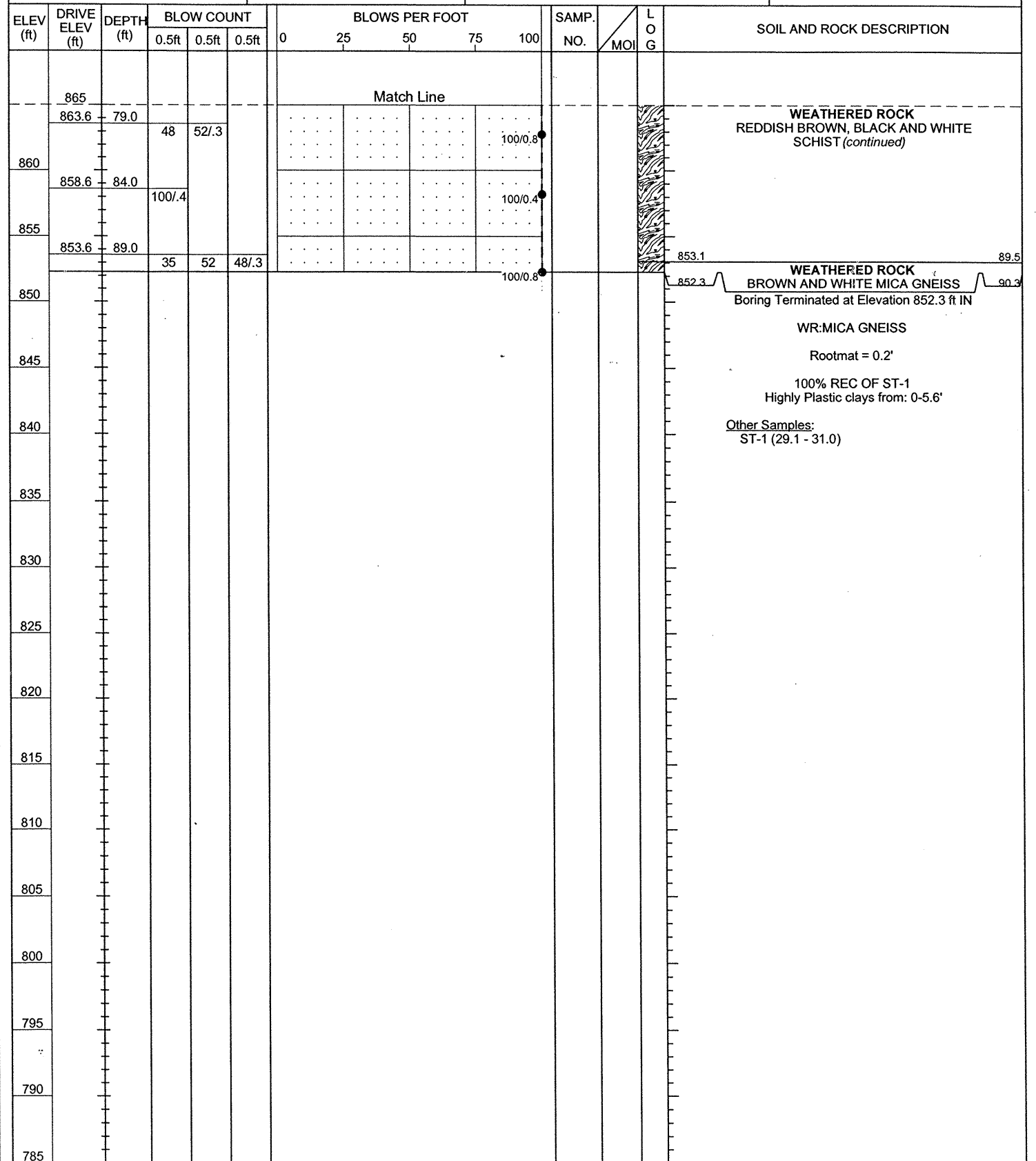
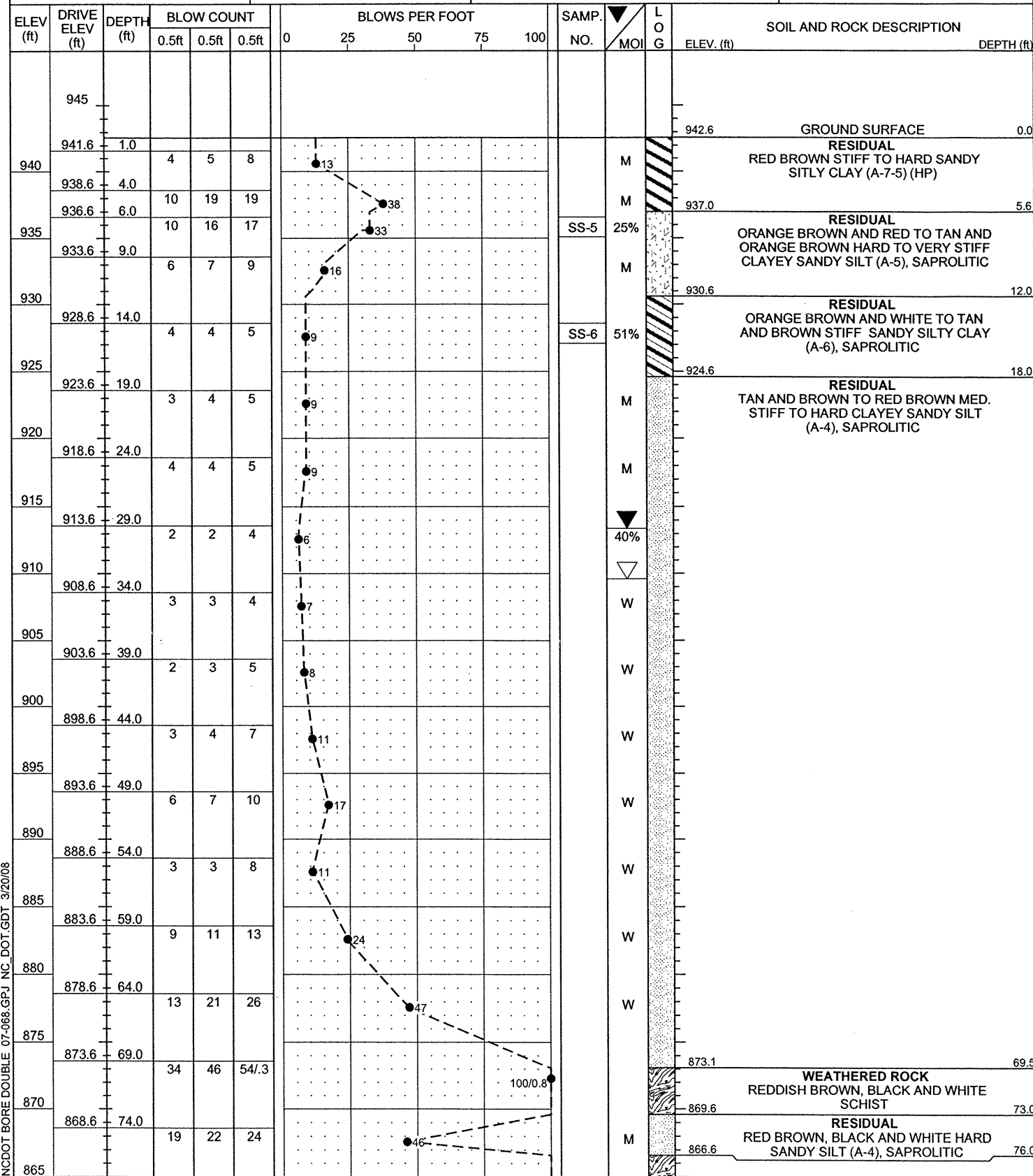
PROJECT NO. 32669.1.1	ID. B-2576	COUNTY IREDELL	GEOLOGIST C. Bruinsma
SITE DESCRIPTION BR 513 OVER ALEXANDER RR AND BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421			GROUND WTR (ft)
BORING NO. EB1-A	STATION 17+57	OFFSET 32ft LT	ALIGNMENT L
COLLAR ELEV. 945.2 ft	TOTAL DEPTH 87.9 ft	NORTHING 742,056	EASTING 1,439,206
DRILL MACHINE D-50	DRILL METHOD H.S. Augers	HAMMER TYPE Manual	
START DATE 12/05/07	COMP. DATE 12/05/07	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 87.9 ft



NCDOT BORE DOUBLE 07-068.GPJ NC\_DOT.GDT 3/20/08

PROJECT NO. 32669.1.1	ID. B-2576	COUNTY IREDELL	GEOLOGIST C. Bruinsma
SITE DESCRIPTION BR 513 OVER ALEXANDER RR AND BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421			GROUND WTR (ft)
BORING NO. EB1-B	STATION 17+66	OFFSET 30ft RT	ALIGNMENT L
COLLAR ELEV. 942.6 ft	TOTAL DEPTH 90.3 ft	NORTHING 742,056	EASTING 1,439,269
DRILL MACHINE D-50	DRILL METHOD H.S. Augers	HAMMER TYPE Manual	
START DATE 12/04/07	COMP. DATE 12/05/07	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

PROJECT NO. 32669.1.1	ID. B-2576	COUNTY IREDELL	GEOLOGIST C. Bruinsma
SITE DESCRIPTION BR 513 OVER ALEXANDER RR AND BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421			GROUND WTR (ft)
BORING NO. EB1-B	STATION 17+66	OFFSET 30ft RT	ALIGNMENT L
COLLAR ELEV. 942.6 ft	TOTAL DEPTH 90.3 ft	NORTHING 742,056	EASTING 1,439,269
DRILL MACHINE D-50	DRILL METHOD H.S. Augers	HAMMER TYPE Manual	
START DATE 12/04/07	COMP. DATE 12/05/07	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A



NCDOT BORE DOUBLE 07-068.GPJ NC DOT.GDT 3/20/08

**WEATHERED ROCK**  
 REDDISH BROWN, BLACK AND WHITE SCHIST (continued)

**WEATHERED ROCK**  
 BROWN AND WHITE MICA GNEISS  
 Boring Terminated at Elevation 852.3 ft IN

WR:MICA GNEISS  
 Rootmat = 0.2'  
 100% REC OF ST-1  
 Highly Plastic clays from: 0-5.6'

Other Samples:  
 ST-1 (29.1 - 31.0)

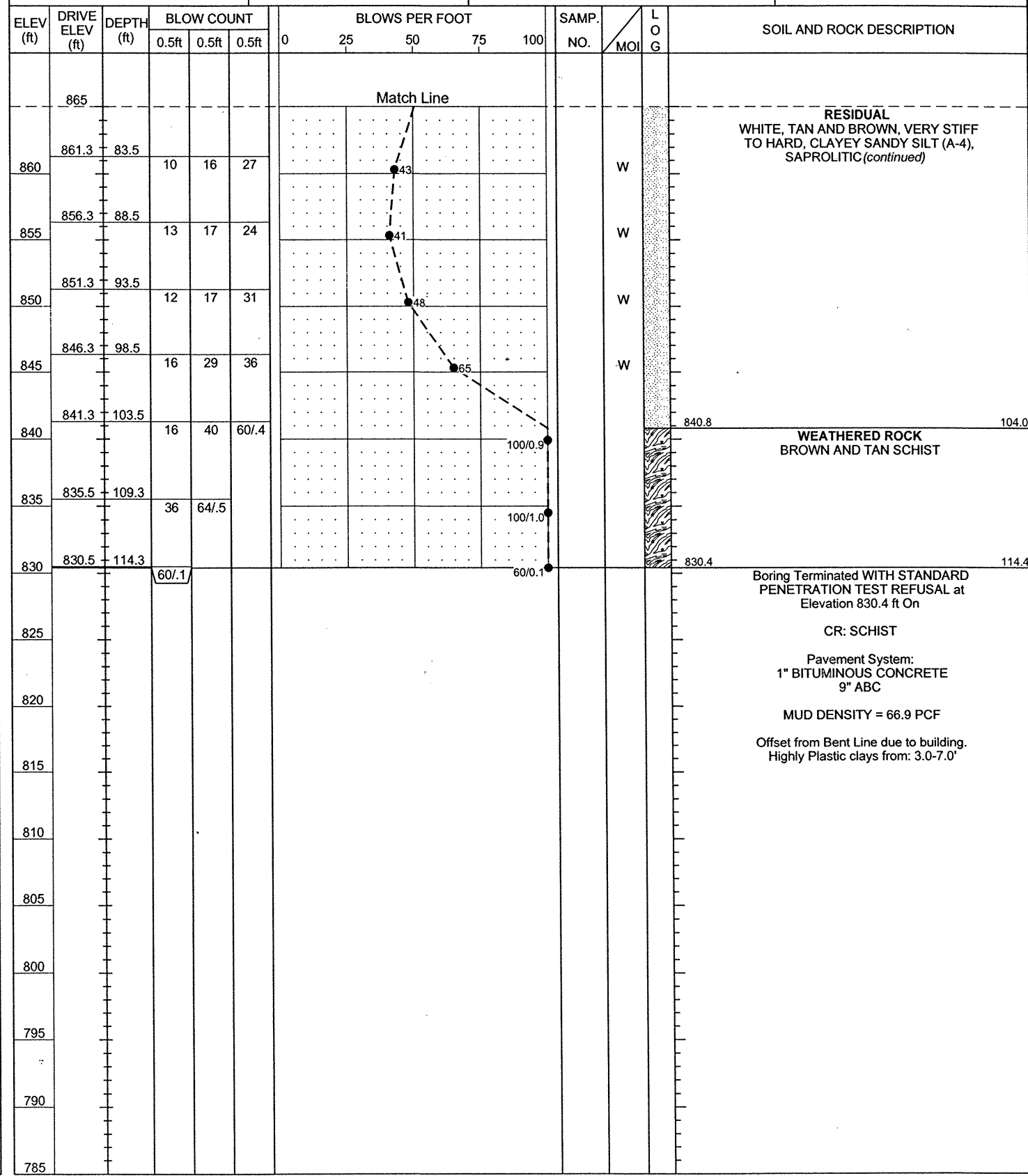
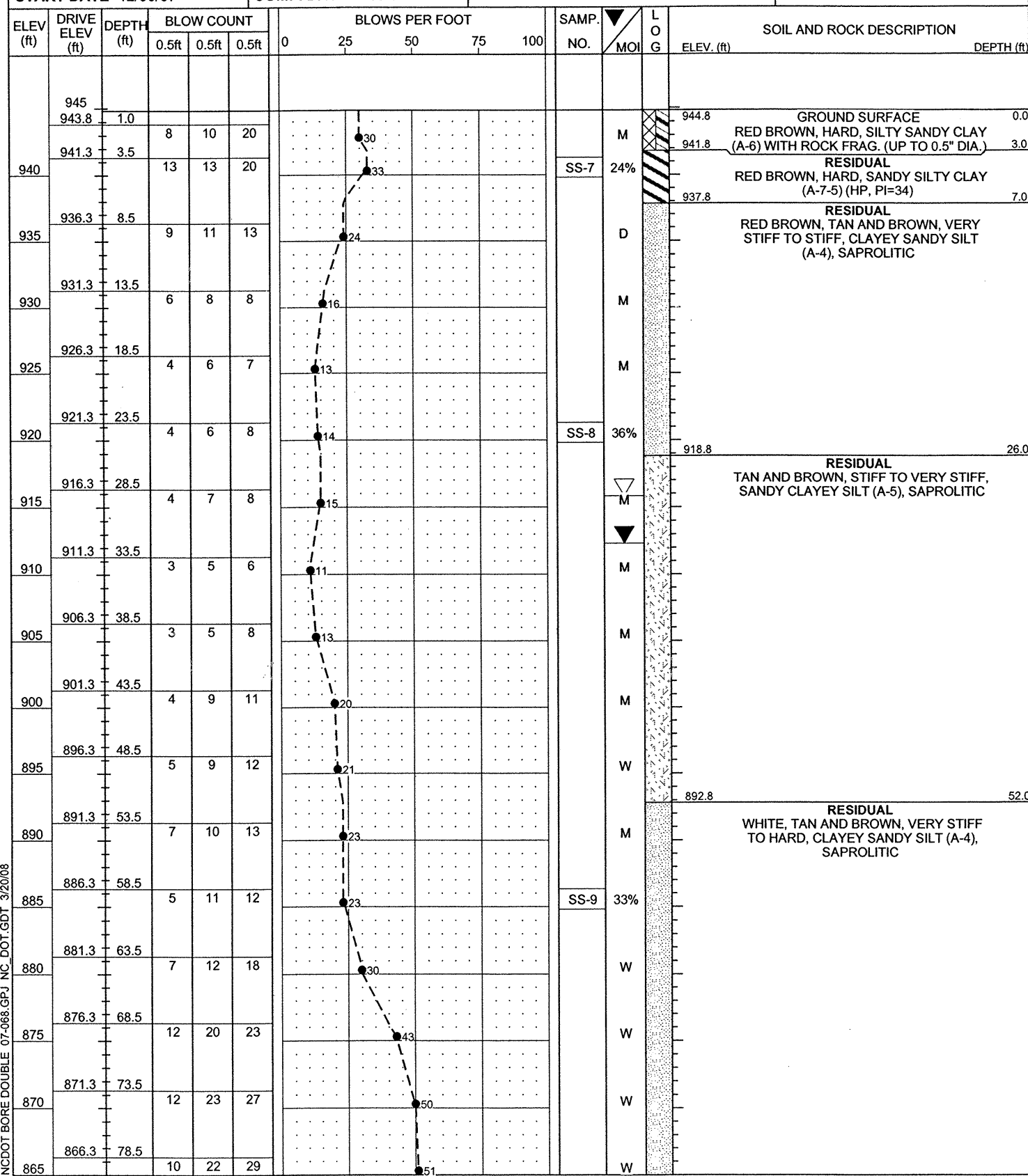


# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

PROJECT NO. 32669.1.1	ID. B-2576	COUNTY IREDELL	GEOLOGIST C. Bruinsma
SITE DESCRIPTION BR 513 OVER ALEXANDER RR AND BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421			GROUND WTR (ft)
BORING NO. B1-A	STATION 18+27	OFFSET 20ft LT	ALIGNMENT L
COLLAR ELEV. 944.8 ft	TOTAL DEPTH 114.4 ft	NORTHING 742,122	EASTING 1,439,225
DRILL MACHINE D-50	DRILL METHOD H.S. Augers	HAMMER TYPE Manual	
START DATE 12/06/07	COMP. DATE 12/07/07	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 114.4 ft

PROJECT NO. 32669.1.1	ID. B-2576	COUNTY IREDELL	GEOLOGIST C. Bruinsma
SITE DESCRIPTION BR 513 OVER ALEXANDER RR AND BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421			GROUND WTR (ft)
BORING NO. B1-A	STATION 18+27	OFFSET 20ft LT	ALIGNMENT L
COLLAR ELEV. 944.8 ft	TOTAL DEPTH 114.4 ft	NORTHING 742,122	EASTING 1,439,225
DRILL MACHINE D-50	DRILL METHOD H.S. Augers	HAMMER TYPE Manual	
START DATE 12/06/07	COMP. DATE 12/07/07	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 114.4 ft



NCDOT BORE DOUBLE 07-068.GPJ NC DOT.GDT 3/20/08

PROJECT NO. 32669.1.1	ID. B-2576	COUNTY IREDELL	GEOLOGIST C. Bruinsma
SITE DESCRIPTION BR 513 OVER ALEXANDER RR AND BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421			GROUND WTR (ft)
BORING NO. B1-B	STATION 18+33	OFFSET 21ft RT	ALIGNMENT L
COLLAR ELEV. 942.1 ft	TOTAL DEPTH 94.8 ft	NORTHING 742,125	EASTING 1,439,266
DRILL MACHINE D-50	DRILL METHOD Mud Rotary	HAMMER TYPE Manual	
START DATE 12/10/07	COMP. DATE 12/11/07	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

PROJECT NO. 32669.1.1	ID. B-2576	COUNTY IREDELL	GEOLOGIST C. Bruinsma
SITE DESCRIPTION BR 513 OVER ALEXANDER RR AND BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421			GROUND WTR (ft)
BORING NO. B1-B	STATION 18+33	OFFSET 21ft RT	ALIGNMENT L
COLLAR ELEV. 942.1 ft	TOTAL DEPTH 94.8 ft	NORTHING 742,125	EASTING 1,439,266
DRILL MACHINE D-50	DRILL METHOD Mud Rotary	HAMMER TYPE Manual	
START DATE 12/10/07	COMP. DATE 12/11/07	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 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						
945																
940	941.1	1.0	3	2	3										942.1	GROUND SURFACE
	938.6	3.5	5	10	16										939.1	ARTIFICIAL FILL BROWN, MED. STIFF, CLAYEY SANDY SILT (A-4)
935	933.6	8.5	5	7	9										935.1	RESIDUAL RED BROWN, VERY STIFF, SANDY SILTY CLAY (A-7-5) (HP)
930	928.6	13.5	4	6	9										930.1	RESIDUAL TAN AND ORANGE-BROWN, VERY STIFF, SANDY CLAYEY SILT (A-5), SAPROLITIC
925	923.6	18.5	3	4	6										920.1	RESIDUAL RED BROWN AND TAN TO TAN AND BROWN, STIFF, CLAYEY SANDY SILT (A-4), SAPROLITIC
920	918.6	23.5	2	3	5										920.1	RESIDUAL TAN AND BROWN, MED. STIFF TO VERY STIFF, SANDY CLAYEY SILT (A-5), SAPROLITIC
915	913.6	28.5	3	4	7											
910	908.6	33.5	5	5	8											
905	903.6	38.5	4	5	7											
900	898.6	43.5	4	7	10											
895	893.6	48.5	8	7	12											
890	888.6	53.5	5	8	11											
885	883.6	58.5	7	10	16											
880	878.6	63.5	6	10	13											
875	873.6	68.5	9	13	22											
870	868.6	73.5	9	16	18											

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						
865																
860	863.6	78.5	22	27	50											
	858.6	83.5	42	44	35											
855	853.6	88.5	13	25	25											
850	847.6	94.5	100/0.3													
845																
840																
835																
830																
825																
820																
815																
810																
805																
800																
795																
790																
785																

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Match Line

RESIDUAL  
WHITE, BROWN AND BLACK, HARD, CLAYEY SANDY SILT (A-4), SAPROLITIC  
*(continued)*

RESIDUAL  
WHITE, BROWN AND BLACK, VERY DENSE TO DENSE, SILTY SAND (A-2-4), SAPROLITIC

WEATHERED ROCK  
BROWN AND WHITE SCHIST

Boring Terminated at Elevation 847.3 ft IN

WR: SCHIST

Pavement System:  
<1" Bituminous concrete

MUD DENSITY = 66.9 PCF

Offset from Bent Line due to building.  
Groundwater cave @ 30.5'  
Highly Plastic clays from: 3.0-7.0'



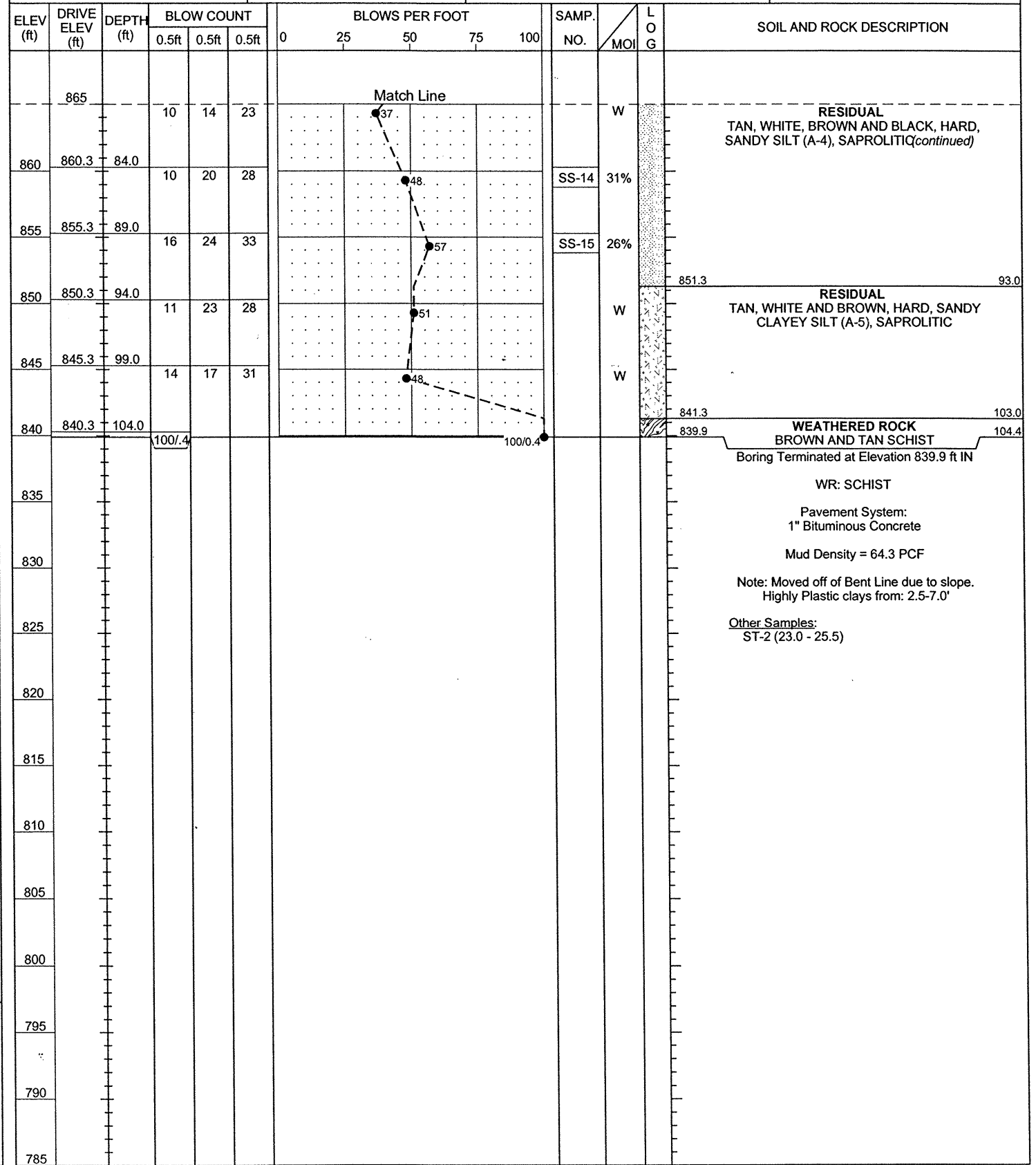
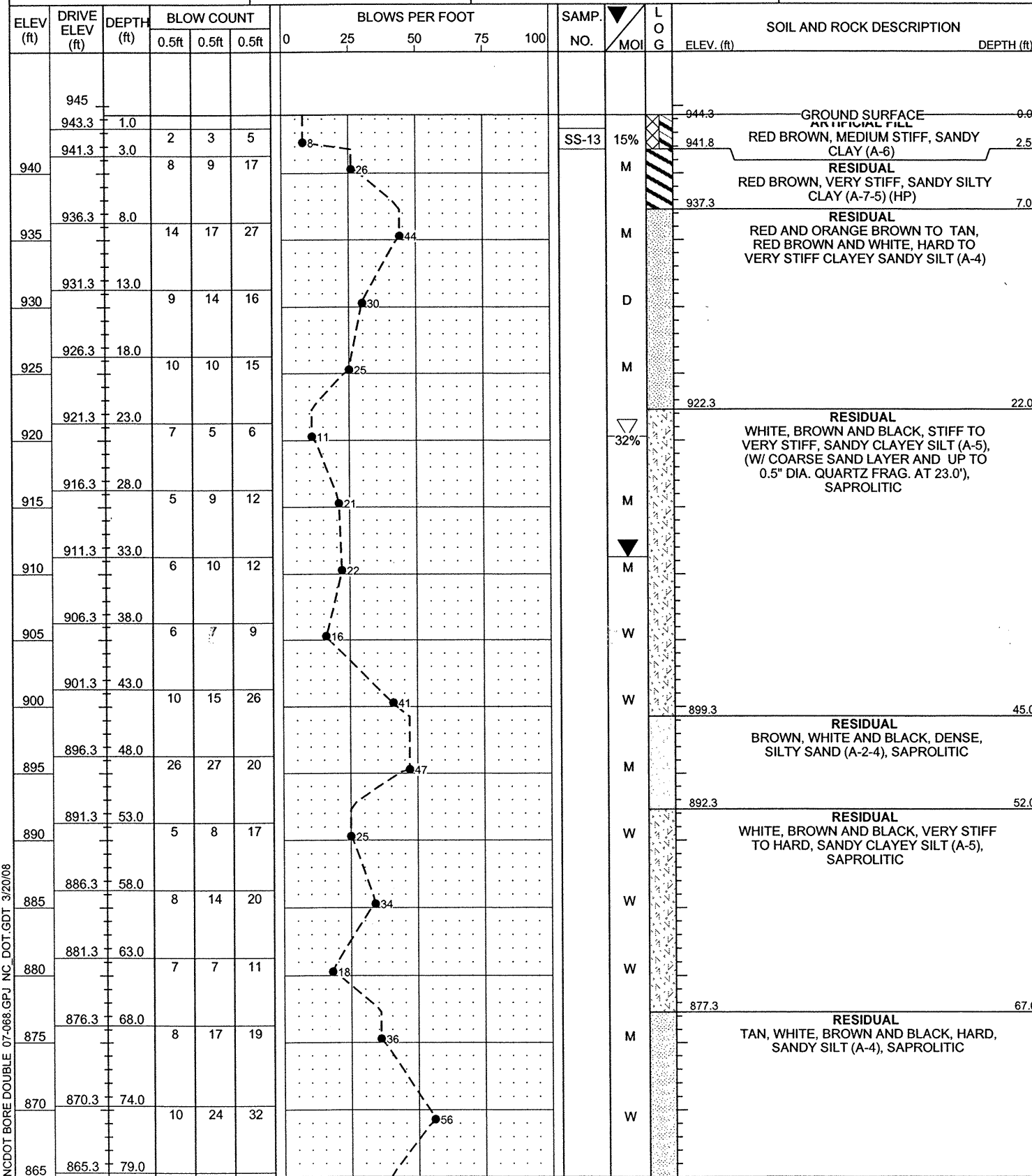


# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

PROJECT NO. 32669.1.1	ID. B-2576	COUNTY IREDELL	GEOLOGIST C. Bruinsma
SITE DESCRIPTION BR 513 OVER ALEXANDER RR AND BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421			GROUND WTR (ft)
BORING NO. B2-A	STATION 18+72	OFFSET 15ft LT	ALIGNMENT L
COLLAR ELEV. 944.3 ft	TOTAL DEPTH 104.4 ft	NORTHING 742,166	EASTING 1,439,232
DRILL MACHINE D-50	DRILL METHOD Mud Rotary	HAMMER TYPE Manual	
START DATE 12/12/07	COMP. DATE 12/13/07	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

PROJECT NO. 32669.1.1	ID. B-2576	COUNTY IREDELL	GEOLOGIST C. Bruinsma
SITE DESCRIPTION BR 513 OVER ALEXANDER RR AND BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421			GROUND WTR (ft)
BORING NO. B2-A	STATION 18+72	OFFSET 15ft LT	ALIGNMENT L
COLLAR ELEV. 944.3 ft	TOTAL DEPTH 104.4 ft	NORTHING 742,166	EASTING 1,439,232
DRILL MACHINE D-50	DRILL METHOD Mud Rotary	HAMMER TYPE Manual	
START DATE 12/12/07	COMP. DATE 12/13/07	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A



NCDOT BORE DOUBLE 07-068.GPJ NC\_DOT.GDT 3/20/08

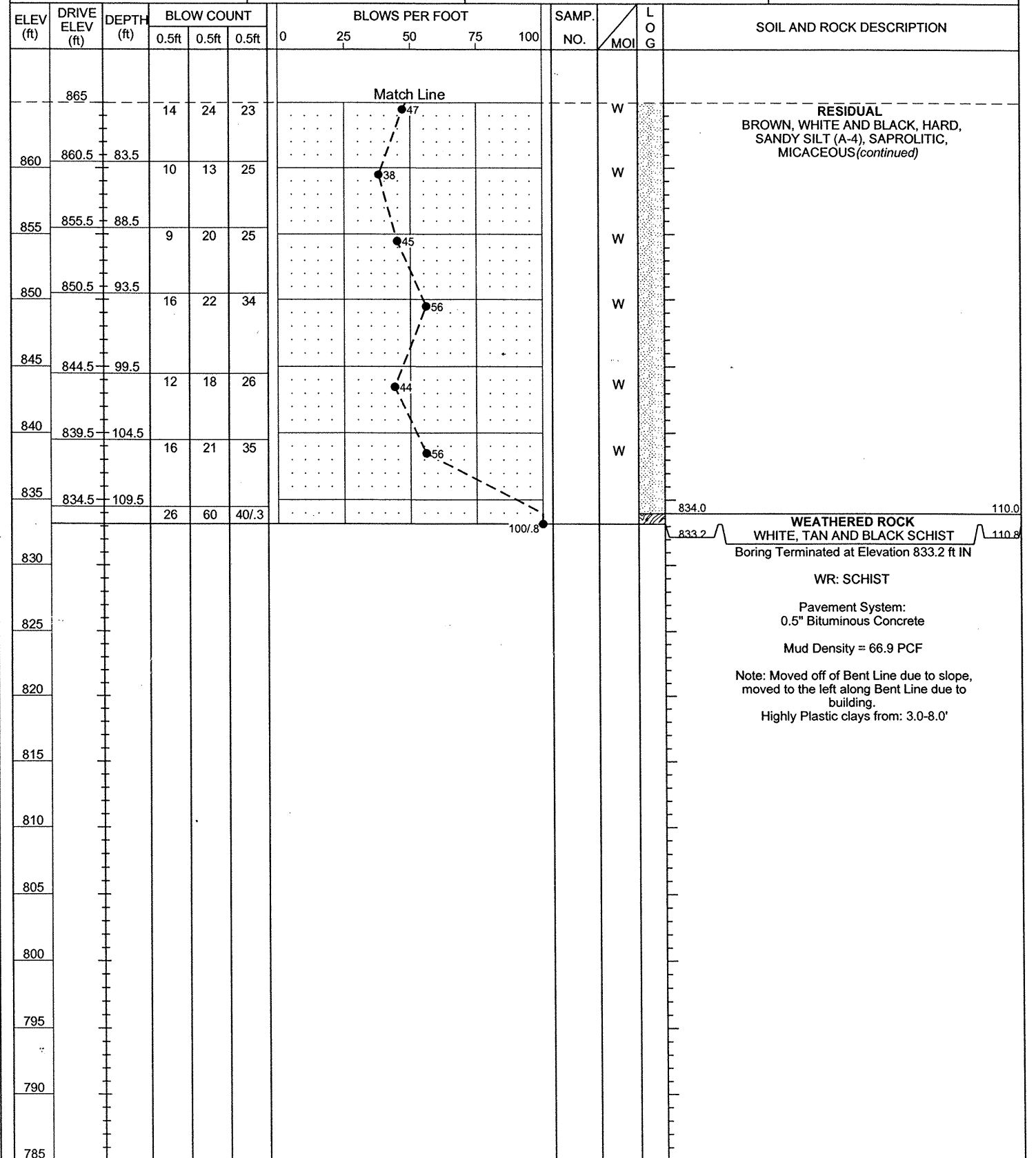
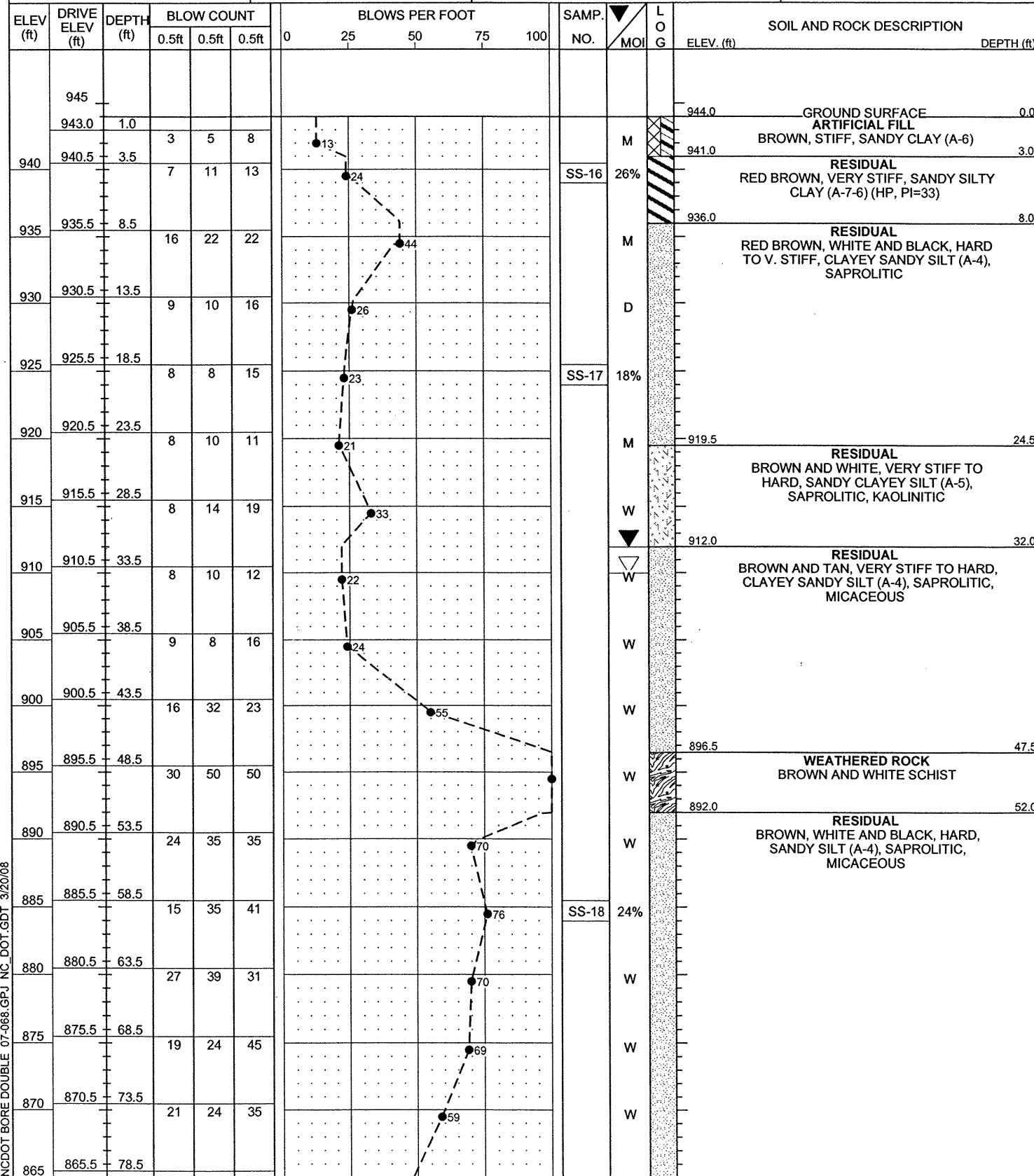


# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

PROJECT NO. 32669.1.1	ID. B-2576	COUNTY IREDELL	GEOLOGIST C. Bruinsma
SITE DESCRIPTION BR 513 OVER ALEXANDER RR AND BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421			GROUND WTR (ft)
BORING NO. B2-B	STATION 18+79	OFFSET 6ft RT	ALIGNMENT L
COLLAR ELEV. 944.0 ft	TOTAL DEPTH 110.8 ft	NORTHING 742,172	EASTING 1,439,253
DRILL MACHINE D-50	DRILL METHOD Mud Rotary	HAMMER TYPE Manual	
START DATE 12/11/07	COMP. DATE 12/12/07	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

PROJECT NO. 32669.1.1	ID. B-2576	COUNTY IREDELL	GEOLOGIST C. Bruinsma
SITE DESCRIPTION BR 513 OVER ALEXANDER RR AND BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421			GROUND WTR (ft)
BORING NO. B2-B	STATION 18+79	OFFSET 6ft RT	ALIGNMENT L
COLLAR ELEV. 944.0 ft	TOTAL DEPTH 110.8 ft	NORTHING 742,172	EASTING 1,439,253
DRILL MACHINE D-50	DRILL METHOD Mud Rotary	HAMMER TYPE Manual	
START DATE 12/11/07	COMP. DATE 12/12/07	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A



NCDOT BORE DOUBLE 07-068.GPJ NC DOT.GDT 3/20/08

**WEATHERED ROCK**  
 WHITE, TAN AND BLACK SCHIST  
 Boring Terminated at Elevation 833.2 ft IN

WR: SCHIST

Pavement System:  
 0.5" Bituminous Concrete

Mud Density = 66.9 PCF

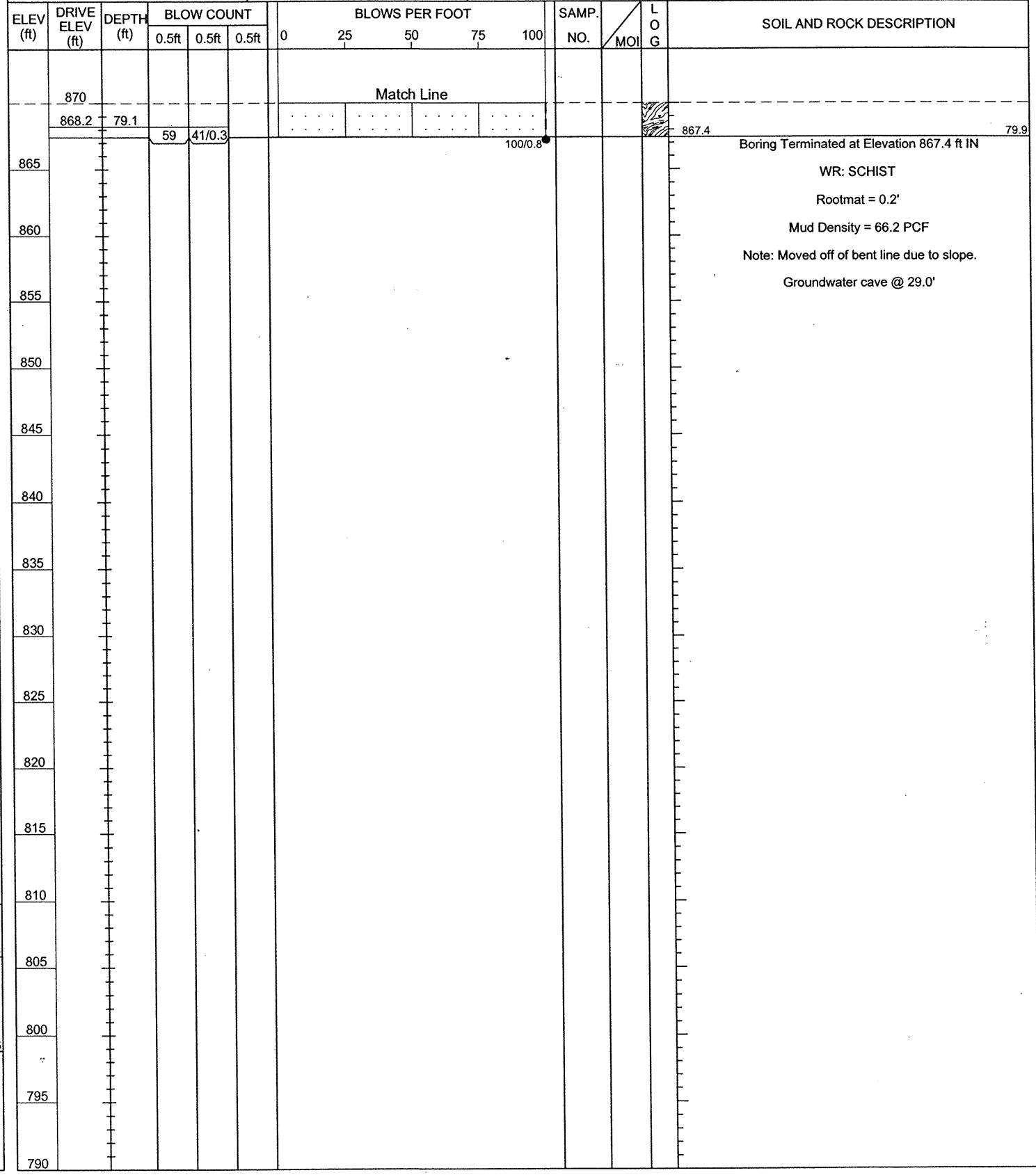
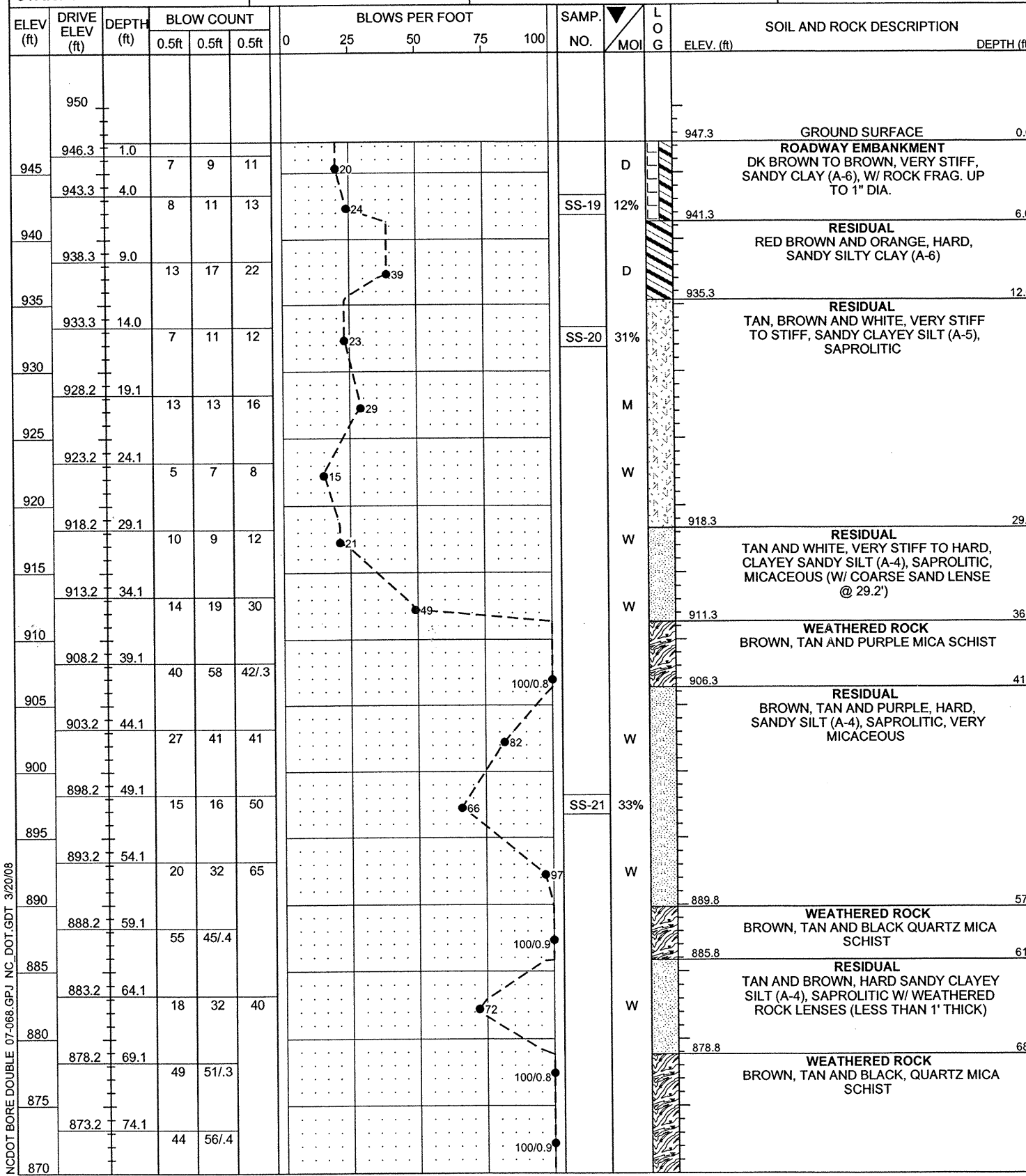
Note: Moved off of Bent Line due to slope,  
 moved to the left along Bent Line due to  
 building.

Highly Plastic clays from: 3.0-8.0'

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

PROJECT NO. 32669.1.1	ID. B-2576	COUNTY IREDELL	GEOLOGIST C. Bruinsma
SITE DESCRIPTION BR 513 OVER ALEXANDER RR AND BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421			GROUND WTR (ft)
BORING NO. B3-A	STATION 19+85	OFFSET 28ft LT	ALIGNMENT L
COLLAR ELEV. 947.3 ft	TOTAL DEPTH 79.9 ft	NORTHING 742,275	EASTING 1,439,214
DRILL MACHINE D-50	DRILL METHOD Mud Rotary	HAMMER TYPE Manual	
START DATE 12/13/07	COMP. DATE 12/14/07	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

PROJECT NO. 32669.1.1	ID. B-2576	COUNTY IREDELL	GEOLOGIST C. Bruinsma
SITE DESCRIPTION BR 513 OVER ALEXANDER RR AND BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421			GROUND WTR (ft)
BORING NO. B3-A	STATION 19+85	OFFSET 28ft LT	ALIGNMENT L
COLLAR ELEV. 947.3 ft	TOTAL DEPTH 79.9 ft	NORTHING 742,275	EASTING 1,439,214
DRILL MACHINE D-50	DRILL METHOD Mud Rotary	HAMMER TYPE Manual	
START DATE 12/13/07	COMP. DATE 12/14/07	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A



NCDOT BORE DOUBLE 07-068.GPJ NC\_DOT.GDT 3/20/08

Boring Terminated at Elevation 867.4 ft IN  
 WR: SCHIST  
 Rootmat = 0.2'  
 Mud Density = 66.2 PCF  
 Note: Moved off of bent line due to slope.  
 Groundwater cave @ 29.0'



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

PROJECT NO. 32669.1.1	ID. B-2576	COUNTY IREDELL	GEOLOGIST C. Bruinsma
SITE DESCRIPTION BR 513 OVER ALEXANDER RR AND BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421			GROUND WTR (ft)
BORING NO. B3-B	STATION 19+96	OFFSET 9ft RT	ALIGNMENT L
COLLAR ELEV. 945.5 ft	TOTAL DEPTH 79.6 ft	NORTHING 742,290	EASTING 1,439,250
DRILL MACHINE D-50	DRILL METHOD H.S. Augers	HAMMER TYPE Manual	
START DATE 12/18/07	COMP. DATE 12/18/07	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

PROJECT NO. 32669.1.1	ID. B-2576	COUNTY IREDELL	GEOLOGIST C. Bruinsma
SITE DESCRIPTION BR 513 OVER ALEXANDER RR AND BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421			GROUND WTR (ft)
BORING NO. B3-B	STATION 19+96	OFFSET 9ft RT	ALIGNMENT L
COLLAR ELEV. 945.5 ft	TOTAL DEPTH 79.6 ft	NORTHING 742,290	EASTING 1,439,250
DRILL MACHINE D-50	DRILL METHOD H.S. Augers	HAMMER TYPE Manual	
START DATE 12/18/07	COMP. DATE 12/18/07	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 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					
950															
945	944.5	1.0												945.5	0.0
			3	4	4									942.5	3.0
940	941.6	3.9	5	8	7									939.5	6.0
														933.5	12.0
935	936.6	8.9	20	40	41										
930	931.6	13.9	11	12	20										
925	926.6	18.9	14	15	19										
920	921.6	23.9	10	10	12										
915	916.6	28.9	7	8	13										
910	911.6	33.9	5	6	12										
905	906.6	38.9	5	9	11										
900	901.6	43.9	5	6	12										
895	896.6	48.9	5	13	25										
890	891.6	53.9	21	31	35										
885	886.6	58.9	13	23	24										
880	881.6	63.9	17	33	44										
875	876.6	68.9	11	27	73/4										
870	871.6	73.9	30	70/4											

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					
	870														
	866.6	78.9	80	20/0.1										865.9	79.6
865															
860															
855															
850															
845															
840															
835															
830															
825															
820															
815															
810															
805															
800															
795															
790															

NCDOT BORE DOUBLE 07-066.GPJ NC DOT.GDT 3/20/08

**WEATHERED ROCK**  
BROWN, WHITE AND BLACK QUARTZ  
MICA SCHIST (continued)

Boring Terminated at Elevation 865.9 ft IN

WR: SCHIST

Rootmat = 0.2'

Note: Moved off of bent line due to slope.

Groundwater cave @ 32.4'

Highly Plastic clays from: 0-3.0', 6.0-12.0'



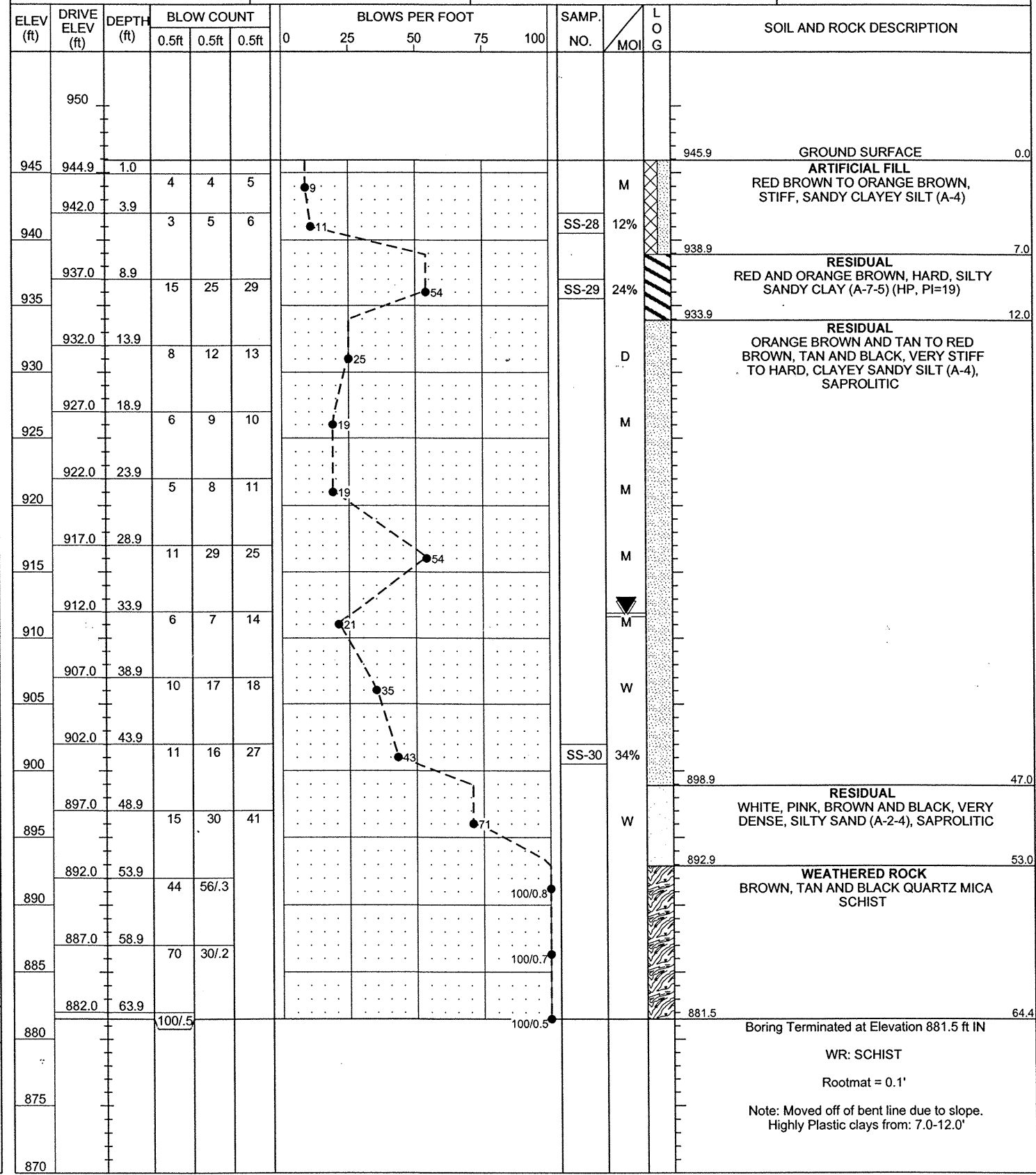
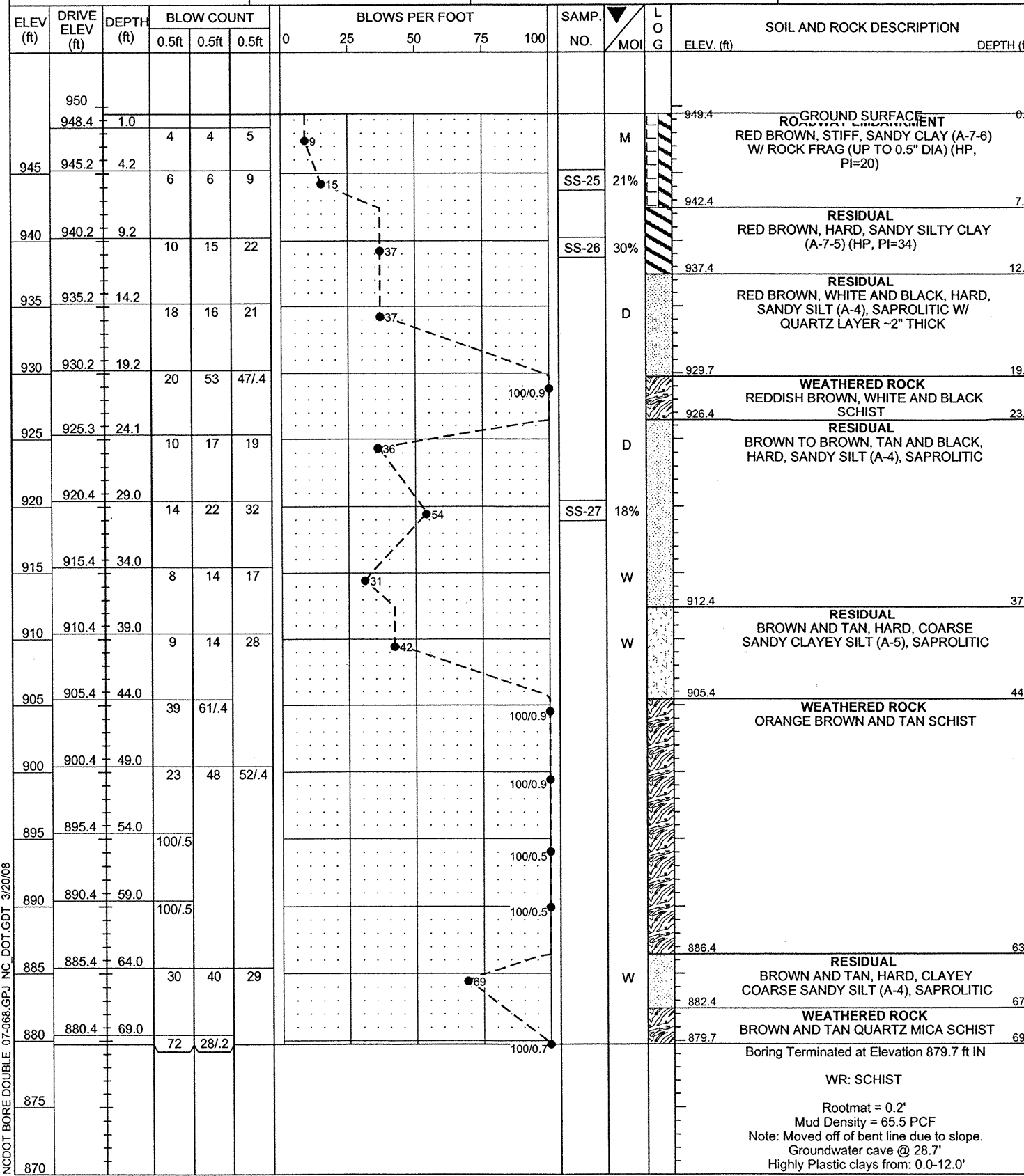


# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

PROJECT NO. 32669.1.1	ID. B-2576	COUNTY IREDELL	GEOLOGIST C. Bruinsma
SITE DESCRIPTION BR 513 OVER ALEXANDER RR AND BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421			GROUND WTR (ft)
BORING NO. B4-A	STATION 20+45	OFFSET 14ft LT	ALIGNMENT L
COLLAR ELEV. 949.4 ft	TOTAL DEPTH 69.7 ft	NORTHING 742,335	EASTING 1,439,220
DRILL MACHINE D-50	DRILL METHOD Mud Rotary	HAMMER TYPE Manual	
START DATE 12/14/07	COMP. DATE 12/17/07	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

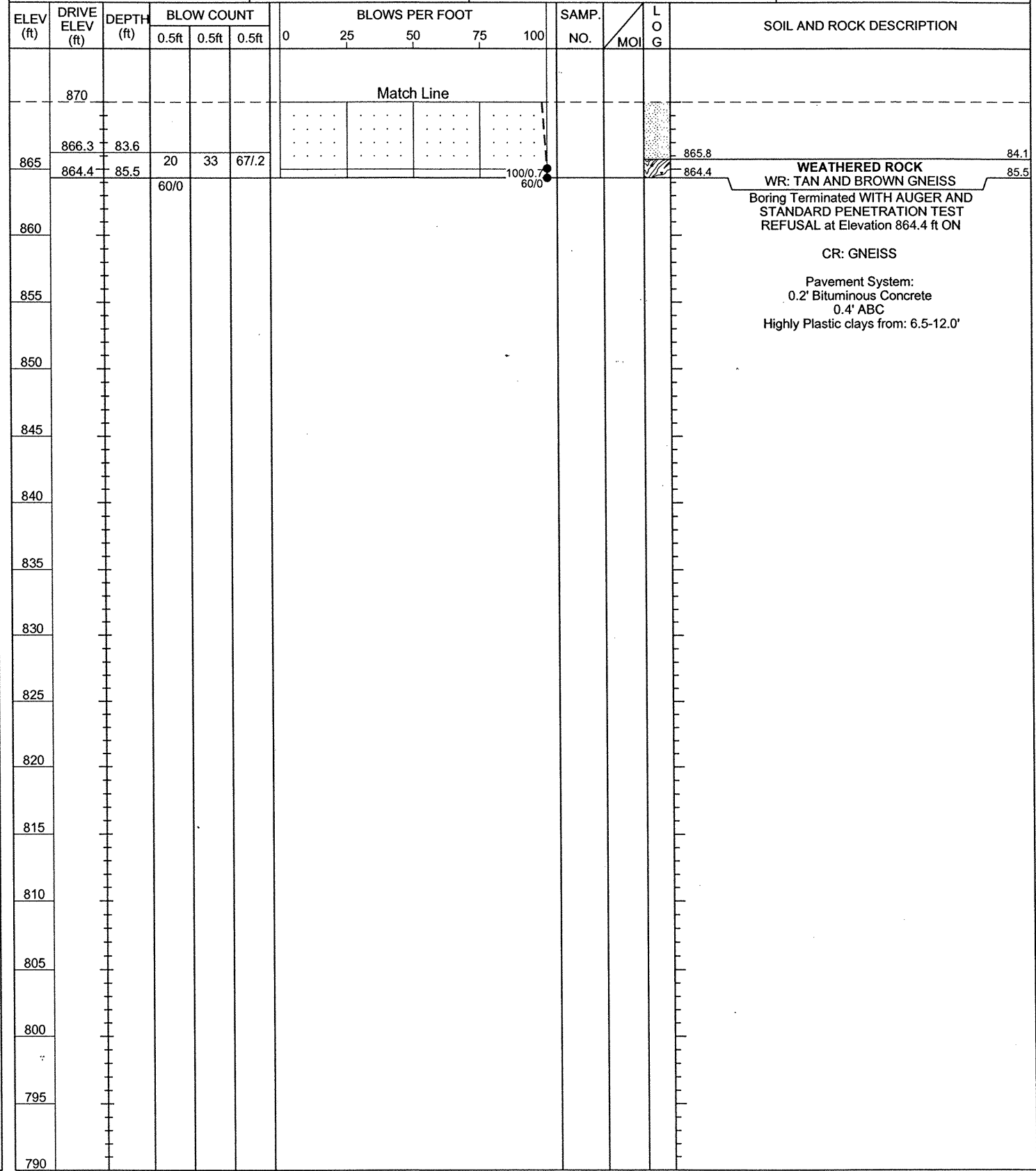
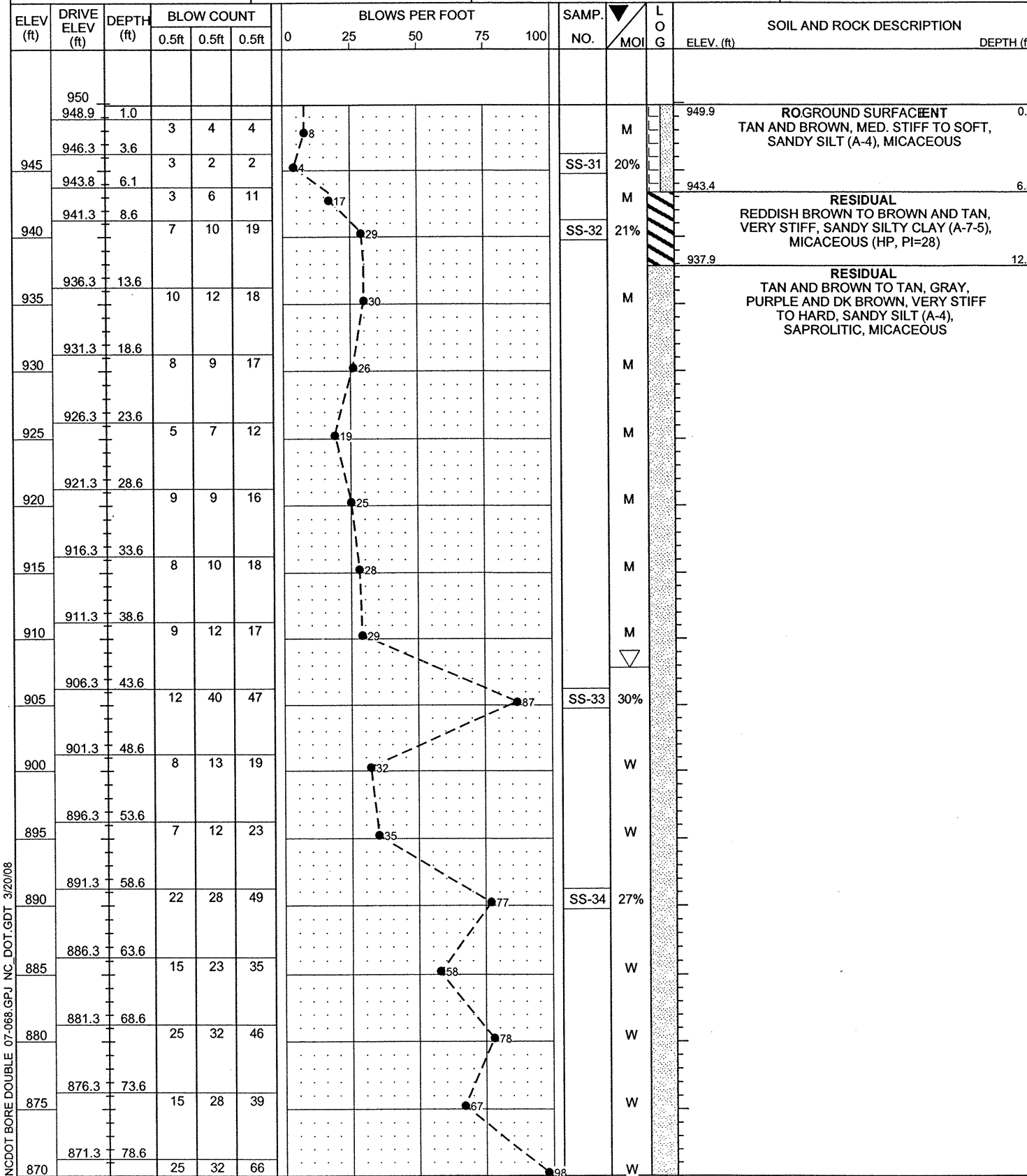
PROJECT NO. 32669.1.1	ID. B-2576	COUNTY IREDELL	GEOLOGIST C. Bruinsma
SITE DESCRIPTION BR 513 OVER ALEXANDER RR AND BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421			GROUND WTR (ft)
BORING NO. B4-B	STATION 20+44	OFFSET 14ft RT	ALIGNMENT L
COLLAR ELEV. 945.9 ft	TOTAL DEPTH 64.4 ft	NORTHING 742,339	EASTING 1,439,248
DRILL MACHINE D-50	DRILL METHOD H.S. Augers	HAMMER TYPE Manual	
START DATE 12/17/07	COMP. DATE 12/18/07	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A



NCDOT BORE DOUBLE 07-068.GPJ NC\_DOT.GDT 3/20/08

PROJECT NO. 32669.1.1	ID. B-2576	COUNTY IREDELL	GEOLOGIST P. Zhang
SITE DESCRIPTION BR 513 OVER ALEXANDER RR AND BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421			GROUND WTR (ft)
BORING NO. EB2-A	STATION 21+32	OFFSET 12ft LT	ALIGNMENT L
COLLAR ELEV. 949.9 ft	TOTAL DEPTH 85.5 ft	NORTHING 742,419	EASTING 1,439,204
DRILL MACHINE D-50	DRILL METHOD H.S. Augers	HAMMER TYPE Manual	
START DATE 12/20/07	COMP. DATE 12/20/07	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 85.5 ft

PROJECT NO. 32669.1.1	ID. B-2576	COUNTY IREDELL	GEOLOGIST P. Zhang
SITE DESCRIPTION BR 513 OVER ALEXANDER RR AND BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421			GROUND WTR (ft)
BORING NO. EB2-A	STATION 21+32	OFFSET 12ft LT	ALIGNMENT L
COLLAR ELEV. 949.9 ft	TOTAL DEPTH 85.5 ft	NORTHING 742,419	EASTING 1,439,204
DRILL MACHINE D-50	DRILL METHOD H.S. Augers	HAMMER TYPE Manual	
START DATE 12/20/07	COMP. DATE 12/20/07	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 85.5 ft



NCDOT BORE DOUBLE 07-068.GPJ NC DOT.GDT 3/20/08

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

PROJECT NO. 32669.1.1	ID. B-2576	COUNTY IREDELL	GEOLOGIST C. Bruinsma
SITE DESCRIPTION BR 513 OVER ALEXANDER RR AND BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421			GROUND WTR (ft)
BORING NO. EB2-B	STATION 21+20	OFFSET 37ft RT	ALIGNMENT L
COLLAR ELEV. 934.8 ft	TOTAL DEPTH 39.7 ft	NORTHING 742,421	EASTING 1,439,253
DRILL MACHINE D-50	DRILL METHOD H.S. Augers	HAMMER TYPE Manual	
START DATE 12/19/07	COMP. DATE 12/19/07	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 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					
935	934.3	0.5												GROUND SURFACE	0.0
			9	11	13							M		RED BROWN, WHITE AND BLACK, VERY STIFF, CLAYEY SANDY SILT (A-4), SAPROLITIC, MICACEOUS	3.0
930	930.9	3.9	5	8	9							D		RESIDUAL RED BROWN AND TAN, MED. DENSE, SILTY SAND (A-2-4), SAPROLITIC	5.5
	928.8	6.0	4	5	8							M		RESIDUAL TAN, BROWN, BLACK AND WHITE TO ORANGE AND RED BROWN, STIFF TO HARD, CLAYEY SANDY SILT (A-4), SAPROLITIC, MICACEOUS	
925	925.9	8.9	5	6	11							SS-35	25%		
	920.9	13.9	10	27	27							M			
915	915.9	18.9	11	17	29							M			
	910.9	23.9	9	17	20							M			
905	905.9	28.9	26	73	271.1									WEATHERED ROCK BROWN, WHITE AND BLACK FELSIC MICA SCHIST	29.4
	900.9	33.9	45	55/3											
900	895.9	38.9	60	40/3											
895														Boring Terminated at Elevation 895.1 ft IN	39.7
890														WR: SCHIST	
														Pavement System: 5.5" Portland Concrete	
885															
880															
875															
870															
865															
860															
855															

NCDOT BORE DOUBLE 07-088.GPJ NC\_DOT.GDT 3/20/08

AASHTO SOIL CLASSIFICATION AND GRADATION SHEET

REPLACE BR. 513 OVER ALEXANDER RR, BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421

NCDOT Project No: 32669.1.1 - T.I.P. No: B-2576

IREDELL COUNTY

TIERRA, INC. PROJECT NO: 6211-07-068

BORING #			SAMPLE #			TOTAL SAMPLE			MINUS 2.00 mm FRACTION				Atterberg Limits		MC
AASHTO Classification			PERCENT PASSING			PERCENT RETAINED				LL	PI	%			
STATION #	OFFSET (FEET)	DEPTH (FEET)	#10	#40	#200	Coarse Sand	Fine Sand	SILT	CLAY	LL	PI	%			
EB1-A SS-1			90	82	57	16	25	22	37	42	20	24.0			
A-7-6															
17+57	31.5' LT	1.0-2.5													
EB1-A SS-2			86	76	52	19	27	35	19	45	NP	19.8			
A-5															
17+57	31.5' LT	13.8-15.3													
EB1-A SS-3			99	77	59	30	13	35	22	42	14	39.4			
A-7-6															
17+57	31.5' LT	43.8-45.3													
EB1-A SS-4			99	76	51	32	21	32	15	27	NP	25.7			
A-4															
17+57	31.5' LT	58.8-60.3													
EB1-B SS-5			100	95	72	10	25	37	29	45	NP	24.5			
A-5															
17+66	30.3' RT	6.0-7.5													
EB1-B SS-6			99	91	36	17	20	35	28	38	11	51.3			
A-6															
17+66	30.3' RT	14.0-15.5													
B1-A SS-7			95	89	70	12	18	13	57	67	34	24.0			
A-7-5															
18+27	20.1' LT	3.5-5.0													
B1-A SS-8			100	85	65	23	16	45	16	39	NP	36.2			
A-4															
18+27	20.1' LT	23.5-25.0													
B1-A SS-9			98	93	76	82	23	52	17	38	NP	33.3			
A-4															
18+27	20.1' LT	58.5-60.0													

AASHTO SOIL CLASSIFICATION AND GRADATION SHEET

REPLACE BR. 513 OVER ALEXANDER RR, BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421

NCDOT Project No: 32669.1.1 - T.I.P. No: B-2576

IREDELL COUNTY

TIERRA, INC. PROJECT NO: 6211-07-068

BORING #			SAMPLE #			TOTAL SAMPLE			MINUS 2.00 mm FRACTION				Atterberg Limits		MC
AASHTO Classification			PERCENT PASSING			PERCENT RETAINED				LL	PI	%			
STATION #	OFFSET (FEET)	DEPTH (FEET)	#10	#40	#200	Coarse Sand	Fine Sand	SILT	CLAY	LL	PI	%			
B1-B SS-10			98	90	53	18	33	25	24	22	10	16.2			
A-4															
18+33	21.0' RT	1.0-2.5													
B1-B SS-11			75	63	43	24	25	37	14	39	NP	35.4			
A-4															
18+33	21.0' RT	13.5-15.0													
B1-B SS-12			87	65	51	33	11	37	19	43	NP	38.3			
A-5															
18+33	21.0' RT	33.5-35.0													
B2-A SS-13			99	90	55	17	32	19	32	25	11	15.1			
A-6															
18+72	14.9' LT	1.0-2.5													
B2-A SS-14			96	72	47	34	22	30	14	30	NP	31.1			
A-4															
18+72	14.9' LT	84.0-85.5													
B2-A SS-15			95	75	45	33	26	29	12	25	NP	26.3			
A-4															
18+72	14.9' LT	89.0-90.5													
B2-B SS-16			99	94	73	11	19	18	52	57	33	25.8			
A-7-6															
18+79	5.5' RT	3.5-5.0													
B2-B SS-17			95	74	40	34	30	14	12	32	NP	18.4			
A-4															
18+79	5.5' RT	18.5-20.0													
B2-B SS-18			94	76	42	28	35	29	8	28	NP	24.4			
A-4															
18+79	5.5' RT	58.5-60.0													
B3-A SS-19			94	85	52	18	32	33	17	27	11	12.2			
A-6															
19+85	28.2' LT	4.0-5.5													

AASHTO SOIL CLASSIFICATION AND GRADATION SHEET

REPLACE BR. 513 OVER ALEXANDER RR, BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421

NCDOT Project No: 32669.1.1 - T.I.P. No: B-2576

IREDELL COUNTY

TIERRA, INC. PROJECT NO: 6211-07-068

BORING #		SAMPLE #	TOTAL SAMPLE			MINUS 2.00 mm FRACTION				Atterberg Limits		MC
AASHTO Classification			PERCENT PASSING			PERCENT RETAINED				LL	PI	%
STATION #	OFFSET (FEET)	DEPTH (FEET)	#10	#40	#200	Coarse Sand	Fine Sand	SILT	CLAY	LL	PI	%
B3-A		SS-20	100	96	84	8	12	50	30	44	8	30.6
A-5												
19+85	28.2' LT	14.0-15.5										
B3-A		SS-21	100	89	46	21	42	30	7	36	NP	33.2
A-4												
19+85	28.2' LT	49.0-50.5										
B3-B		SS-22	99	82	57	-	-	-	-	50	27	26.2
A-7-5												
19+96	9.3' RT	1.0-2.5										
B3-B		SS-23	99	84	50	28	25	12	35	48	22	15.9
A-7-6												
19+96	9.3' RT	8.9-10.4										
B3-B		SS-24	100	82	63	25	17	46	12	39	NP	39.2
A-4												
19+96	9.3' RT	33.9-35.4										
B4-A		SS-25	90	85	63	12	24	24	41	41	20	20.7
A-7-6												
20+45	14.4' LT	4.2-5.7										
B4-A		SS-26	100	97	77	7	19	15	59	65	34	29.7
A-7-5												
20+45	14.4' LT	9.2-10.7										
B4-A		SS-27	97	83	44	26	36	24	14	37	NP	18.3
A-4												
20+45	14.4' LT	29.0-30.5										
B4-B		SS-28	96	87	59	17	29	37	18	35	NP	11.8
A-4												
20+44	14.4' RT	3.9-5.4										

AASHTO SOIL CLASSIFICATION AND GRADATION SHEET

REPLACE BR. 513 OVER ALEXANDER RR, BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421

NCDOT Project No: 32669.1.1 - T.I.P. No: B-2576

IREDELL COUNTY

TIERRA, INC. PROJECT NO: 6211-07-068

BORING #		SAMPLE #	TOTAL SAMPLE			MINUS 2.00 mm FRACTION				Atterberg Limits		MC
AASHTO Classification			PERCENT PASSING			PERCENT RETAINED				LL	PI	%
STATION #	OFFSET (FEET)	DEPTH (FEET)	#10	#40	#200	Coarse Sand	Fine Sand	SILT	CLAY	LL	PI	%
B4-B		SS-29	99	87	71	20	11	30	40	57	19	24.2
A-7-5												
20+44	14.4' RT	8.9-10.4										
B4-B		SS-30	97	83	46	27	32	25	16	37	NP	33.5
A-4												
20+44	14.4' RT	43.9-45.4										
EB2-A		SS-31	76	65	41	24	27	32	18	37	NP	19.8
A-4												
21+32	11.7' LT	3.6-5.1										
EB2-A		SS-32	94	88	66	13	21	19	47	60	28	21.2
A-7-5												
21+32	11.7' LT	8.6-10.1										
EB2-A		SS-33	86	68	42	29	27	29	15	35	NP	30.1
A-4												
21+32	11.7' LT	43.6-45.1										
EB2-A		SS-34	99	80	47	30	29	29	12	36	8	26.7
A-4												
21+32	11.7' LT	58.6-60.1										
EB2-B		SS-35	93	81	51	22	30	35	13	37	NP	25.3
A-4												
21+20	36.5' RT	8.9-10.4										
EB1-B		ST-1	99	91	67	-	-	-	-	38	4	39.6
A-4												
17+66	30.3' RT	29.1-31.1										
B1-A		ST-2	81	69	53	-	-	-	-	43	4	31.6
A-5												
18+27	20.1' LT	23.0-25.5										





**DIRECT SHEAR**  
ASTM D 3080-98 (SOP-S21)

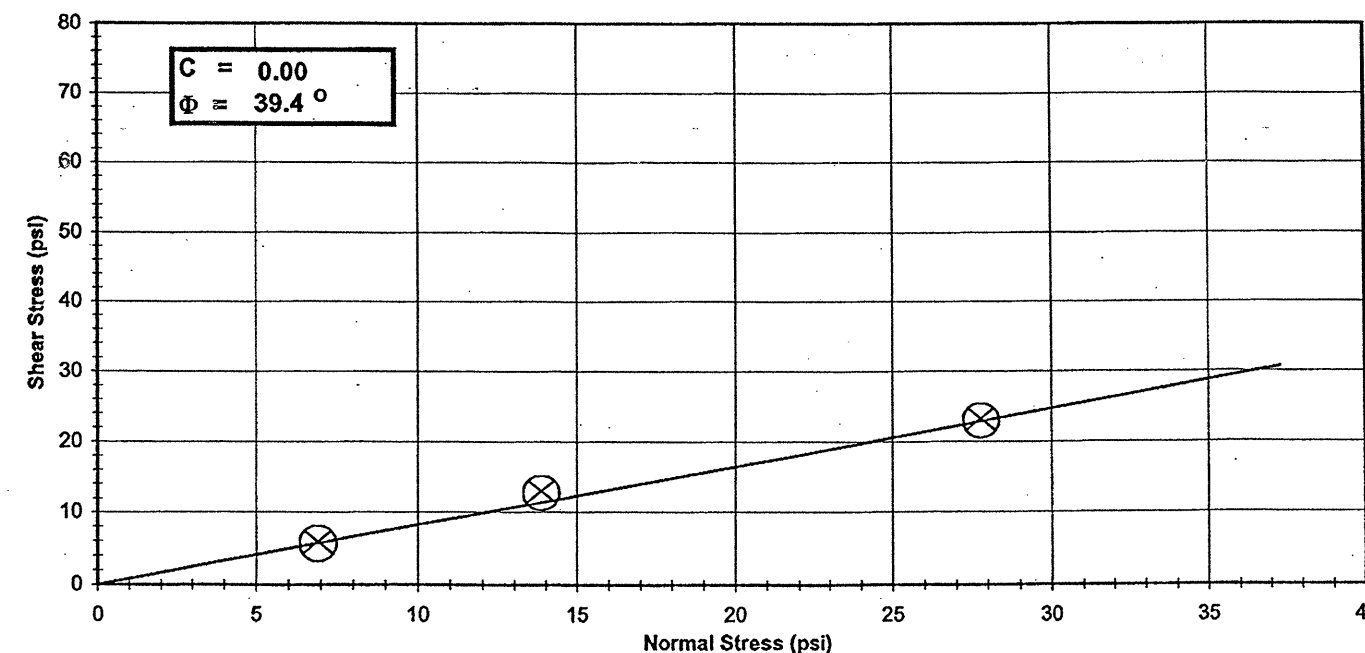
Client	TIERRA, INC.	Boring No.	B2A
Client Reference	STATESVILLE B-2576	Depth (ft)	23.0-25.5
Project No.	2008-501-01	Sample No.	ST-2
Lab ID	2008-501-01-02	Visual Description	ORANGE BROWN SANDY SILT (#4 MATERIAL)

**Sample Conditions:** UNDISTURBED, INUNDATED AND DOUBLE DRAINED

Maximum Shear Stress (psi)	Normal Stress (psi)	Overall Regression Analysis	
5.50 (1)	6.94	Slope =	0.82
12.59 (2)	13.89	C =	0.40
22.81 (3)	27.8	Φ =	39.2 degrees

Selected Points	Shear Stress (psi)	Normal Stress (psi)	Selected Points Regression	
0	0.00	0	Slope =	0.82
3	22.81	27.8	C =	0.00
			Φ =	39.4 degrees

**SHEAR STRESS vs. NORMAL STRESS**



Note: Graph not to scale

Tested By JBD Date 1/11/08 Approved By MS Date 1-11-08

Client  
Client Reference  
Project No.  
Lab ID

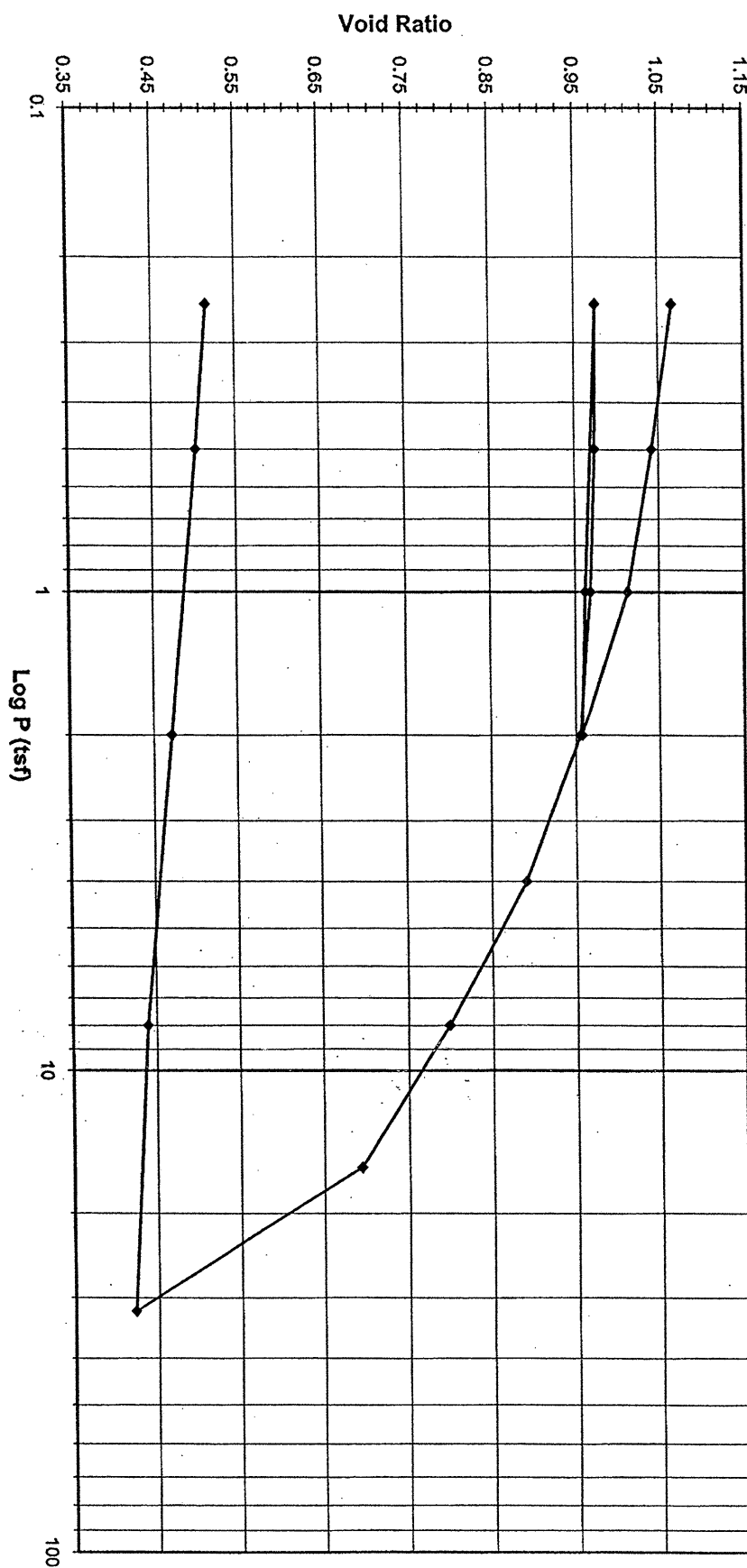
TIERRA, INC.  
STATESVILLE B-2576  
2008-501-01  
2008-501-01-01

**ONE DIMENSIONAL CONSOLIDATION**  
ASTM D 2435-96 (SOP-S24)

Boring No.  
Depth (ft)  
Sample No.  
Visual Description

EB1B  
30.8 - 31.0  
ST-1  
ORANGEWHITE SANDY SILT

**Sample Conditions:** UNDISTURBED, INUNDATED AND DOUBLE DRAINED







ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24)

Client Reference: TIERRA, INC. Boring No. EB1E
Project No. STATESVILLE B-2576 Depth (ft) 30.8 - 31.0
Lab ID 2008-501-01-01 Sample No. ST-1 Visual Description ORANGE/WHITE SANDY SILT

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

Consolidometer No. 1

1 Division = 0.0001 (in)

Sample Properties: Initial Final

Table with 2 columns: Water Content, Sample Parameters, and Sample Properties. Includes values for Tare Number, Wt. Tare & WS, Wt. Water, Wt. DS, Water Content, Sample Diameter, Sample Height, Sample Volume, Wt. Wet Sample + Ring, Wt. of Ring, Wt. of Wet Sample, Wet Density, Water Content, Wt. of Dry Sample, Dry Density, Void Ratio, Saturation, and Specific Gravity.

Test Data Summary

Table with 10 columns: Applied Pressure, Final Reading, Machine Deflection, Corrected Reading, Height of Sample, Volume, Dry Density, and Void Ratio. Shows data for various load increments from 0 to 0.25 tsf.

page 2 of 4

DCN:CT-S24F Date: 11/16/00 Revision: 4

Tested By JBD Date 1/16/08 Input Checked By Date

C:\Documents and Settings\Michael P. Smith\Local Settings\Temporary Internet Files\Content.IE5\FM0CZABY\2008-501-01-01 CONFORMAL C-216127SF

2200 Westinghouse Boulevard • Suite 105 • Raleigh, NC 27604 • Phone (919) 876-0405 • Fax (919) 876-0460



ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24)

Client Reference: TIERRA, INC. Boring No. EB1E
Project No. STATESVILLE B-2576 Depth (ft) 30.8 - 31.0
Lab ID 2008-501-01-01 Sample No. ST-1 Visual Description ORANGE/WHITE SANDY SILT

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

Consolidometer No. 1

1 Division = 0.0001 (in)

Sample Properties: Initial Final

Table with 2 columns: Water Content, Sample Parameters, and Sample Properties. Includes values for Tare Number, Wt. Tare & WS, Wt. Water, Wt. DS, Water Content, Sample Diameter, Sample Height, Sample Volume, Wt. Wet Sample + Ring, Wt. of Ring, Wt. of Wet Sample, Wet Density, Water Content, Wt. of Dry Sample, Dry Density, Void Ratio, Saturation, and Specific Gravity.

Cv Test Data Summary

Table with 8 columns: Load Increment, Dial Reading, Machine Deflection, Corrected Dial Reading, Sample Height, Time, Cv, and Cv (cm^2/sec). Shows data for various load increments from 0 to 2.0 tsf.

page 4 of 4

DCN:CT-S24F Date: 11/16/00 Revision: 4

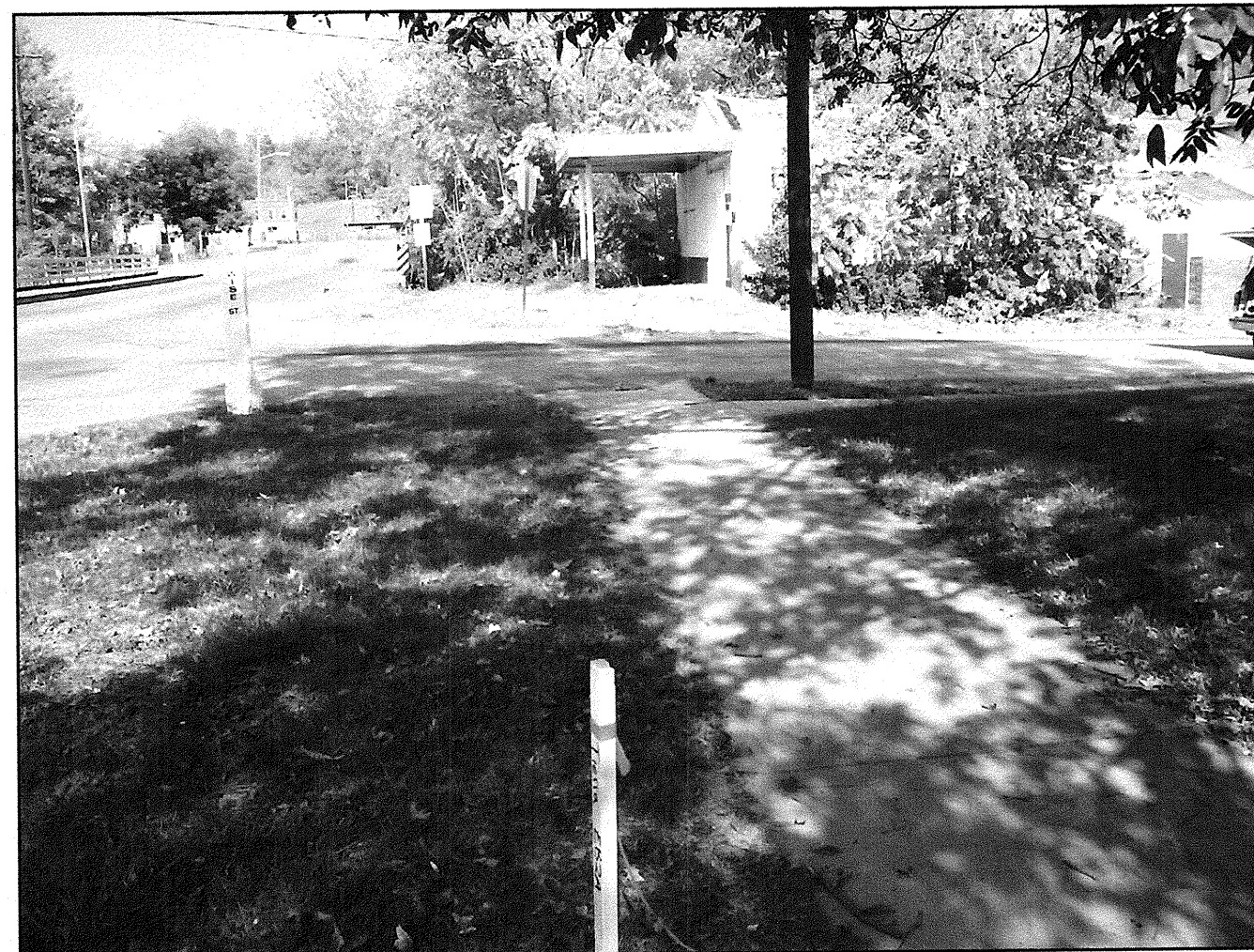
Tested By JBD Date 1/16/08 Input Checked By Date 1-22-08

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**OVERVIEW OF SITE, TOWARDS BRIDGES FROM MULBERRY ST.**



**PROFILE, LOOKING UPSTATION FROM END BENT 1 (A SIDE).**

**SITE PHOTOGRAPHS**

**REPLACE BR. 513 OVER ALEXANDER RR, BR 514 OVER  
NSRR, AND ASHEVILLE AVE ON SR 1421  
IREDELL COUNTY, NORTH CAROLINA  
TIP NO: B-2576 STATE PROJECT NO: 32669.1.1**



TIERRA, INC.  
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FAX (919) 871-0803





**END BENT 1, LOOKING LEFT TO RIGHT FROM WILSON LEE BLVD.**



**BENT 1, LOOKING LEFT TO RIGHT FROM INTERSECTION OF WILSON LEE BLVD AND ASHEVILLE AVE.**

**SITE PHOTOGRAPHS**

**REPLACE BR. 513 OVER ALEXANDER RR, BR 514 OVER NSRR, AND ASHEVILLE AVE ON SR 1421 IREDELL COUNTY, NORTH CAROLINA  
TIP NO: B-2576 STATE PROJECT NO: 32669.1.1**



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**BENT 2, LOOKING LEFT TO RIGHT FROM WILSON LEE BLVD.**



**BENT 3, LOOKING LEFT TO RIGHT FROM WILSON LEE BLVD.**

**SITE PHOTOGRAPHS**

**REPLACE BR. 513 OVER ALEXANDER RR, BR 514 OVER  
NSRR, AND ASHEVILLE AVE ON SR 1421  
IREDELL COUNTY, NORTH CAROLINA  
TIP NO: B-2576 STATE PROJECT NO: 32669.1.1**

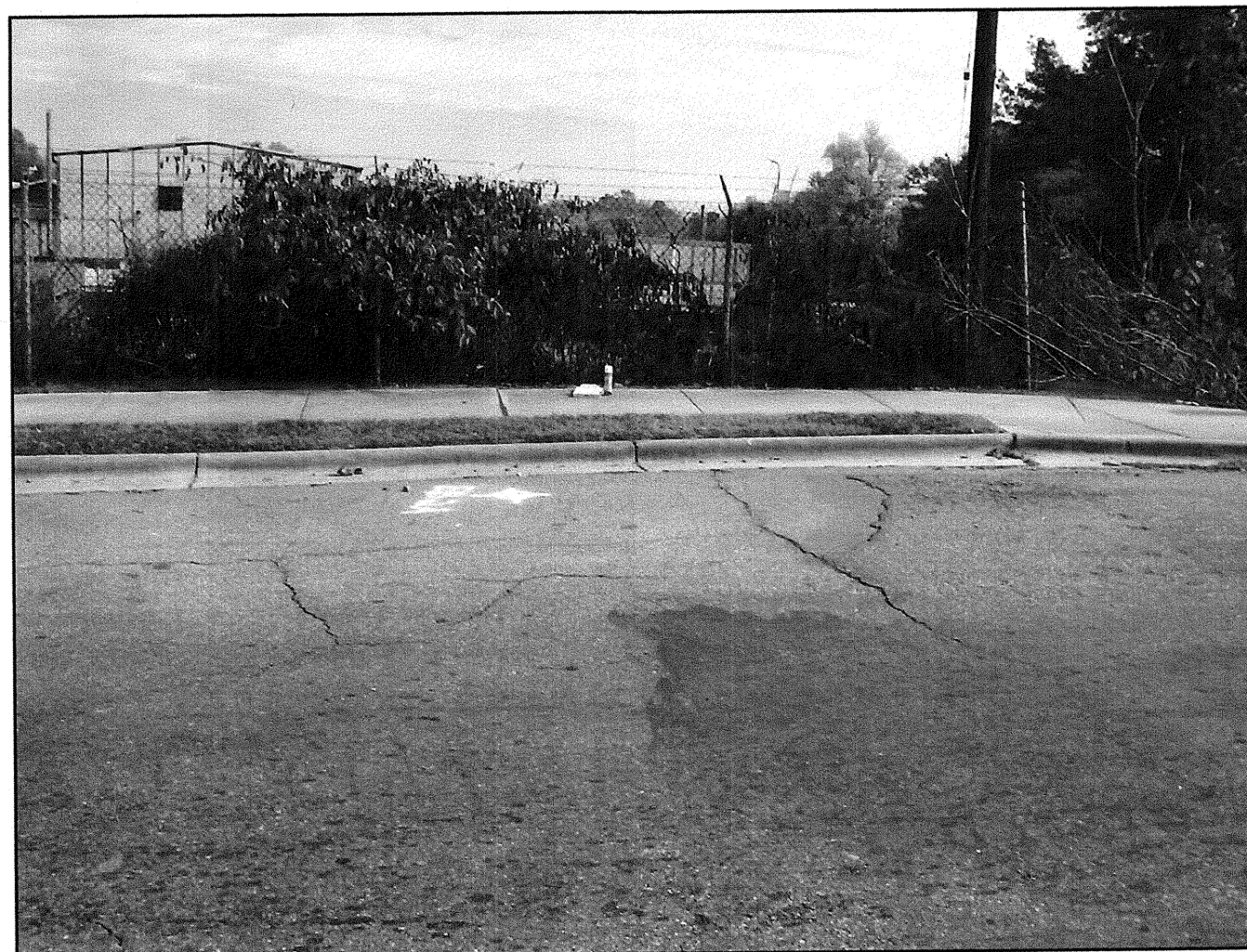


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**BENT 4, LOOKING LEFT TO RIGHT FROM WILSON LEE BLVD.**



**END BENT 2, LOOKING LEFT TO RIGHT FROM WILSON LEE BLVD.**

**SITE PHOTOGRAPHS**

**REPLACE BR. 513 OVER ALEXANDER RR, BR 514 OVER  
 NSRR, AND ASHEVILLE AVE ON SR 1421  
 IREDELL COUNTY, NORTH CAROLINA  
 TIP NO: B-2576 STATE PROJECT NO: 32669.1.1**



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**LOOKING TOWARDS BENT 3 FROM BENT 2 AREA.  
NOTE EXPOSED SOIL SURFACES ON SLOPE.**



**POTENTIAL SLUMP BLOCK, LOOKING SOUTHEAST FROM B3-B.  
GRAY ARROW POINTS TO SLUMP BLOCK SURFACE.**

**SITE PHOTOGRAPHS**

**REPLACE BR. 513 OVER ALEXANDER RR, BR 514 OVER  
NSRR, AND ASHEVILLE AVE ON SR 1421  
IREDELL COUNTY, NORTH CAROLINA  
TIP NO: B-2576 STATE PROJECT NO: 32669.1.1**



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