

CONTRACT: 33434.1.1 ID: B-4071

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	33434.1.1	1	14

# STATE OF NORTH CAROLINA

## DEPARTMENT OF TRANSPORTATION

### DIVISION OF HIGHWAYS

### GEOTECHNICAL ENGINEERING UNIT

# STRUCTURE SUBSURFACE INVESTIGATION

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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 @ (919) 250-4088. 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.

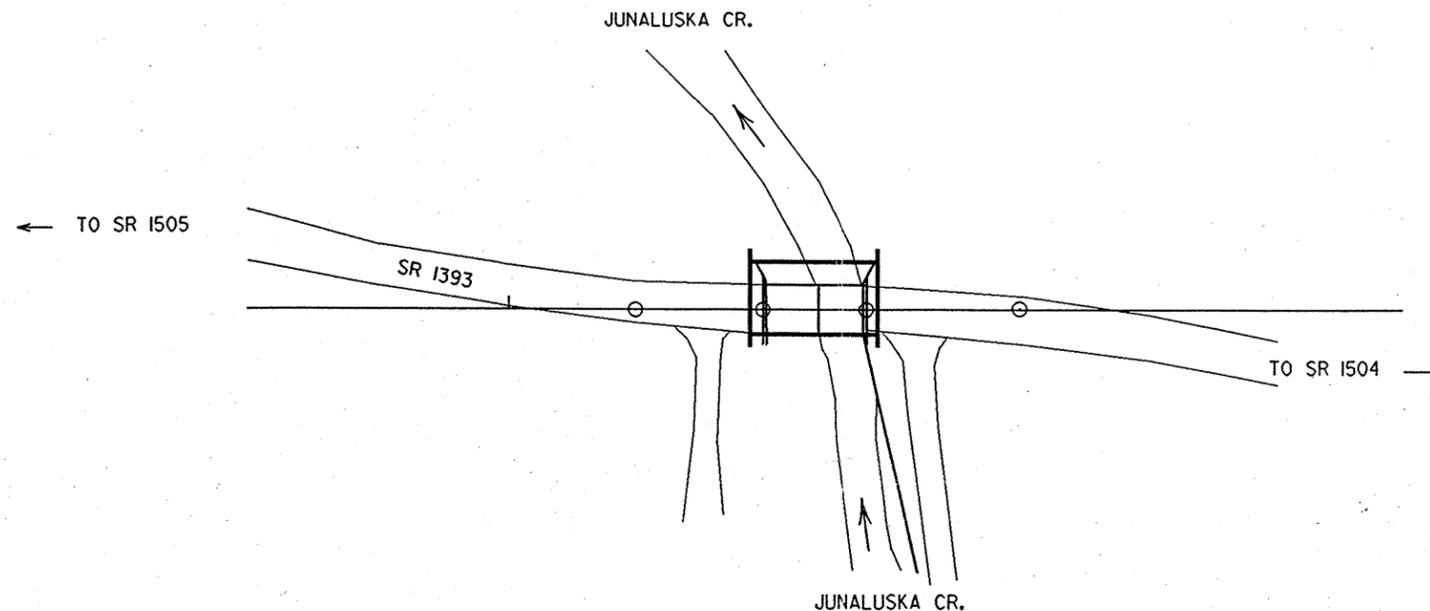
STATE PROJECT 33434.1.1 I.D. NO. B-4071

F.A. PROJECT \_\_\_\_\_

COUNTY CHEROKEE

PROJECT DESCRIPTION BRIDGE #32 ON  
SR 1393 OVER JUNALUSKA CREEK

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



INVESTIGATED BY P.Q. LOCKAMY PERSONNEL P.Q. LOCKAMY

CHECKED BY W.D. FRYE D.O. CHEEK

SUBMITTED BY W.D. FRYE C.J. COFFEY

DATE 8.31.05 L.E. LANKFORD

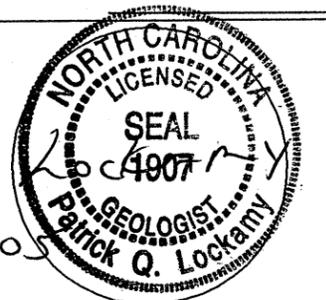
R.G. CHILDERS

M. M. HAGER

DRAWN BY: J.T. WILLIAMS

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

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



P. Q.  
8-31-05

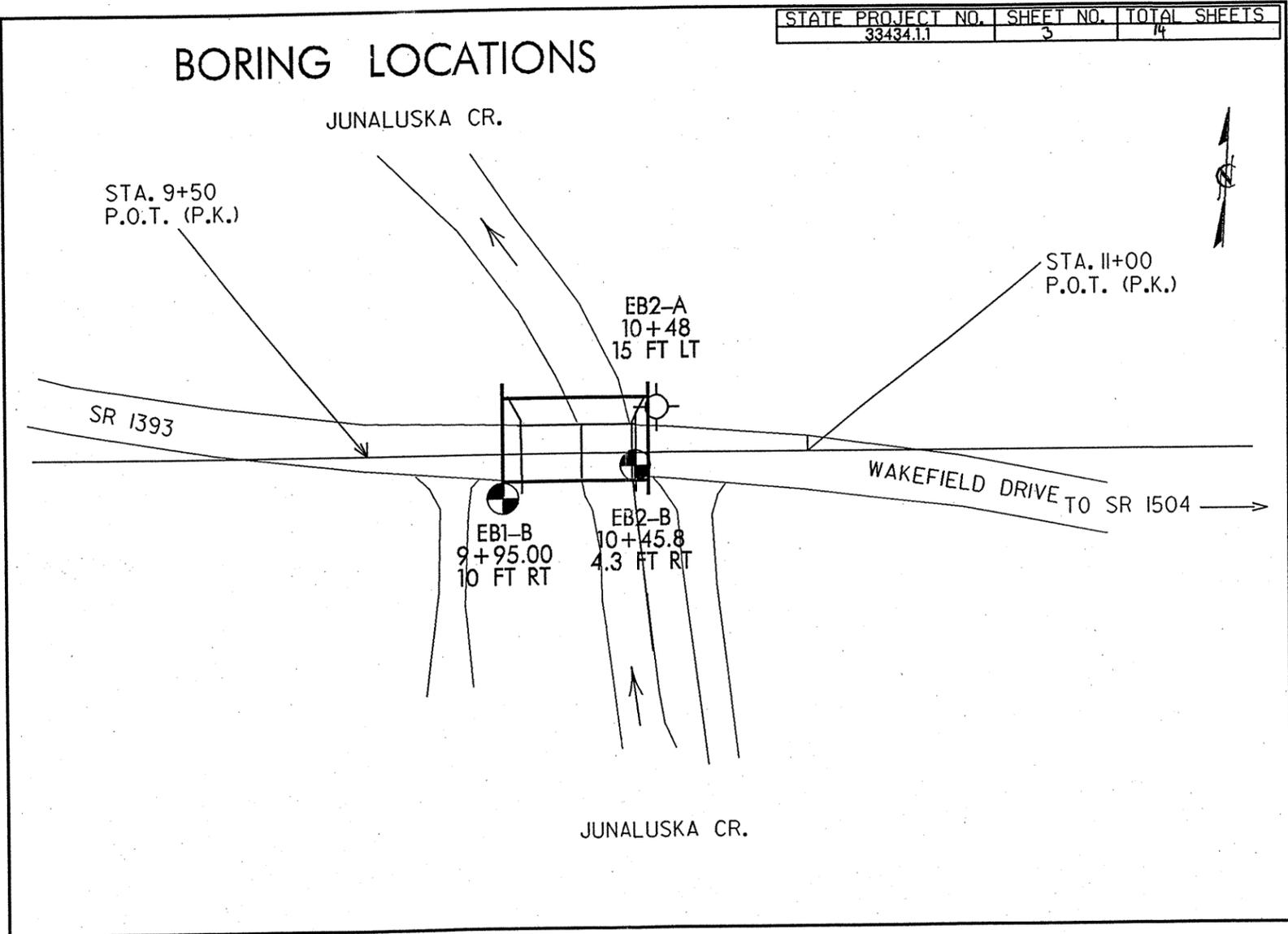
SUBSURFACE INVESTIGATION

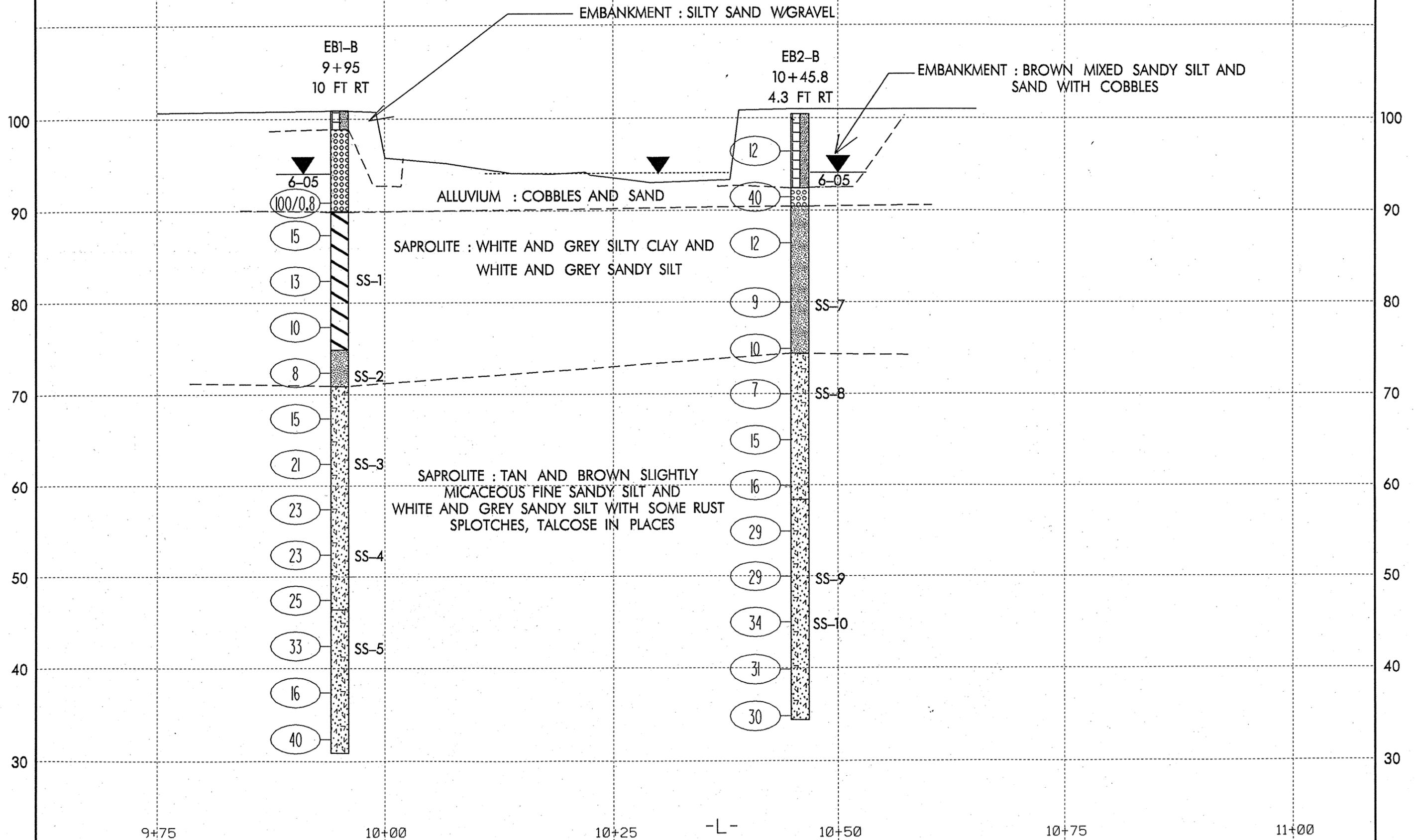
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

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>VERY STIFF, GRAY, SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, MEDIUM 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) GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.</p> <p>THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.</p>		<p>HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT 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 SPON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:</p>		<p>ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.                  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 (N 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>	
SOIL LEGEND AND AASHTO CLASSIFICATION		MINERALOGICAL COMPOSITION		WEATHERING		ROCK HARDNESS	
<p>GENERAL CLASS. GRANULAR MATERIALS (&lt;= 35% PASSING #200) SILT-CLAY MATERIALS (&gt; 35% PASSING #200) ORGANIC MATERIALS</p> <p>GROUP CLASS. A-1, A-3, A-2, A-4, A-5, A-6, A-7, A-1, A-2, A-4, A-5, A-6, A-7</p> <p>SYMBOL</p> <p>% PASSING: 10, 40, 200</p> <p>LIQUID LIMIT PLASTIC INDEX</p> <p>GROUP INDEX</p> <p>USUAL TYPES OF MAJOR MATERIALS</p> <p>GEN. RATING AS A SUBGRADE</p>		<p>MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.</p> <p>COMPRESSIBILITY</p> <p>PERCENTAGE OF MATERIAL</p> <p>GROUND WATER</p> <p>MISCELLANEOUS SYMBOLS</p>		<p>WEATHERED ROCK (WR)</p> <p>CRYSTALLINE ROCK (CR)</p> <p>NON-CRYSTALLINE ROCK (NCR)</p> <p>COASTAL PLAIN SEDIMENTARY ROCK (CP)</p> <p>FRESH</p> <p>VERY SLIGHT (V SL.)</p> <p>SLIGHT (SL.)</p> <p>MODERATE (MOD.)</p> <p>MODERATELY SEVERE (MOD. SEV.)</p> <p>SEVERE (SEV.)</p> <p>VERY SEVERE (V SEV.)</p> <p>COMPLETE</p>		<p>ALLUVIUM (ALLUV.)</p> <p>AQUIFER</p> <p>ARENACEOUS</p> <p>ARGILLACEOUS</p> <p>ARTESIAN</p> <p>CALCAREOUS (CALC.)</p> <p>COLLUVIUM</p> <p>CORE RECOVERY (REC.)</p> <p>DIKE</p> <p>DIP</p> <p>DIP DIRECTION (DIP AZIMUTH)</p> <p>FAULT</p> <p>FISSILE</p> <p>FLOAT</p> <p>FLOOD PLAIN (FP)</p> <p>FORMATION (FM.)</p> <p>JOINT</p> <p>LEDGE</p> <p>LENS</p> <p>MOTTLED (MOT.)</p> <p>PERCHED WATER</p> <p>RESIDUAL (RES.) SOIL</p> <p>SAPROLITE (SAP.)</p> <p>SILL</p> <p>SLICKENSIDE</p> <p>STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT)</p> <p>STRATA CORE RECOVERY (SREC.)</p> <p>STRATA ROCK QUALITY DESIGNATION (SRQD)</p> <p>TOPSOIL (TS.)</p>	
<p>PI OF A-7-5 SUBGROUP IS &lt;= LL - 30; PI OF A-7-6 SUBGROUP IS &gt; LL - 30</p>		<p>ORGANIC MATERIAL GRANULAR SOILS SILT-CLAY SOILS OTHER MATERIAL</p> <p>TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10%</p> <p>LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20%</p> <p>MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35%</p> <p>HIGHLY ORGANIC &gt;10% &gt;20% HIGHLY 35% AND ABOVE</p>		<p>ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. IF TESTED, WOULD YIELD SPT REFUSAL</p> <p>ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. IF TESTED, YIELDS SPT N VALUES &gt; 100 BPF</p> <p>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. IF TESTED, YIELDS SPT N VALUES &lt; 100 BPF</p> <p>ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.</p>		<p>VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.</p> <p>HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.</p> <p>MODERATELY HARD CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.</p> <p>MEDIUM HARD CAN BE GROOVED OR GOUGED 0.25 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.</p> <p>SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.</p> <p>VERY SOFT CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.</p>	
<p>CONSISTENCY OR DENSENESS</p> <p>PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT<sup>2</sup>)</p>		<p>ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION</p> <p>SOIL SYMBOL</p> <p>ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT</p> <p>INFERRED SOIL BOUNDARY</p> <p>INFERRED ROCK LINE</p> <p>ALLUVIAL SOIL BOUNDARY</p> <p>DIP &amp; DIP DIRECTION OF ROCK STRUCTURES</p> <p>SOUNDING ROD</p>		<p>TEST BORING</p> <p>AUGER BORING</p> <p>CORE BORING</p> <p>MONITORING WELL</p> <p>PIEZOMETER INSTALLATION</p> <p>SLOPE INDICATOR INSTALLATION</p> <p>SPT N-VALUE</p> <p>SPT REFUSAL</p>		<p>MOISTURE CONTENT</p> <p>VERY</p> <p>VST - VANE SHEAR TEST</p> <p>WEA - WEATHERED</p> <p>UNIT WEIGHT</p> <p>DRY UNIT WEIGHT</p>	
<p>TEXTURE OR GRAIN SIZE</p> <p>U.S. STD. SIEVE SIZE OPENING (MM)</p> <p>BOULDER (BLDR.) COBBLE (COB.) GRAVEL (GR.) COARSE SAND (CSE, SD.) FINE SAND (F SD.) SILT (SL.) CLAY (CL.)</p>		<p>AR - AUGER REFUSAL</p> <p>BT - BORING TERMINATED</p> <p>CL - CLAY</p> <p>CPT - CONE PENETRATION TEST</p> <p>CSE - COARSE</p> <p>DMT - DILATOMETER TEST</p> <p>DPT - DYNAMIC PENETRATION TEST</p> <p>F - FINE</p> <p>FSSS - FOSSILIFEROUS</p> <p>FRAC. - FRACTURED, FRACTURES</p> <p>FRAGS. - FRAGMENTS</p>		<p>HI - HIGHLY</p> <p>MED. - MEDIUM</p> <p>MICA - MICACEOUS</p> <p>MOD. - MODERATELY</p> <p>NP - NON PLASTIC</p> <p>ORG. - ORGANIC</p> <p>PMT - PRESSUREMETER TEST</p> <p>SAP. - SAPROLITIC</p> <p>SD. - SAND, SANDY</p> <p>SL. - SILT, SILTY</p> <p>SLI. - SLIGHTLY</p> <p>TCR - TRICONE REFUSAL</p>		<p>FRACURE SPACING</p> <p>BEDDING</p> <p>INDURATION</p>	
<p>SOIL MOISTURE - CORRELATION OF TERMS</p> <p>SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION</p>		<p>DRILL UNITS:</p> <p>MOBILE B-</p> <p>BK-51</p> <p>CME-45C</p> <p>CME-550</p> <p>PORTABLE HOIST</p> <p>OTHER</p> <p>OTHER</p>		<p>ADVANCING TOOLS:</p> <p>CLAY BITS</p> <p>6" CONTINUOUS FLIGHT AUGER</p> <p>HOLLOW AUGERS</p> <p>HARD FACED FINGER BITS</p> <p>TUNG-CARBIDE INSERTS</p> <p>CASING W/ ADVANCER</p> <p>TRICONE STEEL TEETH</p> <p>TRICONE TUNG-CARB.</p> <p>CORE BIT</p> <p>OTHER</p>		<p>FRACURE SPACING</p> <p>VERY WIDE MORE THAN 10 FEET</p> <p>WIDE 3 TO 10 FEET</p> <p>MODERATELY CLOSE 1 TO 3 FEET</p> <p>CLOSE 0.6 TO 1 FEET</p> <p>VERY CLOSE LESS THAN 0.6 FEET</p> <p>BEDDING</p> <p>VERY THICKLY BEDDED &gt; 4 FEET</p> <p>THICKLY BEDDED 1.5 - 4 FEET</p> <p>THINLY BEDDED 0.16 - 1.5 FEET</p> <p>VERY THINLY BEDDED 0.03 - 0.16 FEET</p> <p>THICKLY LAMINATED 0.008 - 0.03 FEET</p> <p>THINLY LAMINATED &lt; 0.008 FEET</p> <p>INDURATION</p> <p>FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.</p> <p>MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.</p> <p>INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.</p> <p>EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</p>	
<p>PLASTICITY</p> <p>NONPLASTIC LOW PLASTICITY MED. PLASTICITY HIGH PLASTICITY</p> <p>PLASTICITY INDEX (PI) DRY STRENGTH</p>		<p>COLOR</p> <p>DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.</p>		<p>BENCH MARK: BRIDGE NAIL IN POWER POLE</p> <p>STA. 12+05 13' LT</p> <p>ELEVATION: 100.00 FT.</p> <p>NOTES:</p>			

STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
33434.1.1	3	4

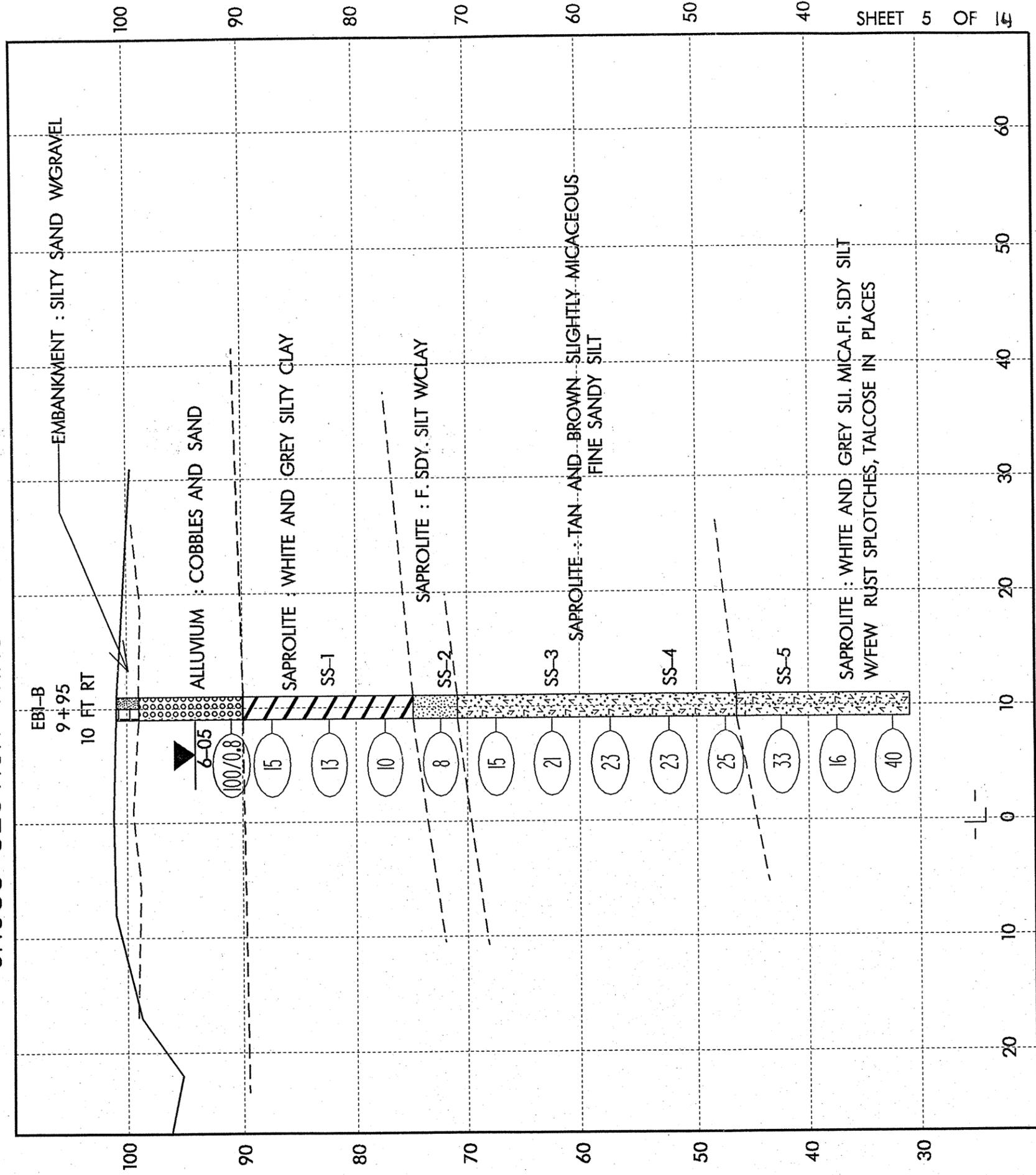
# BORING LOCATIONS





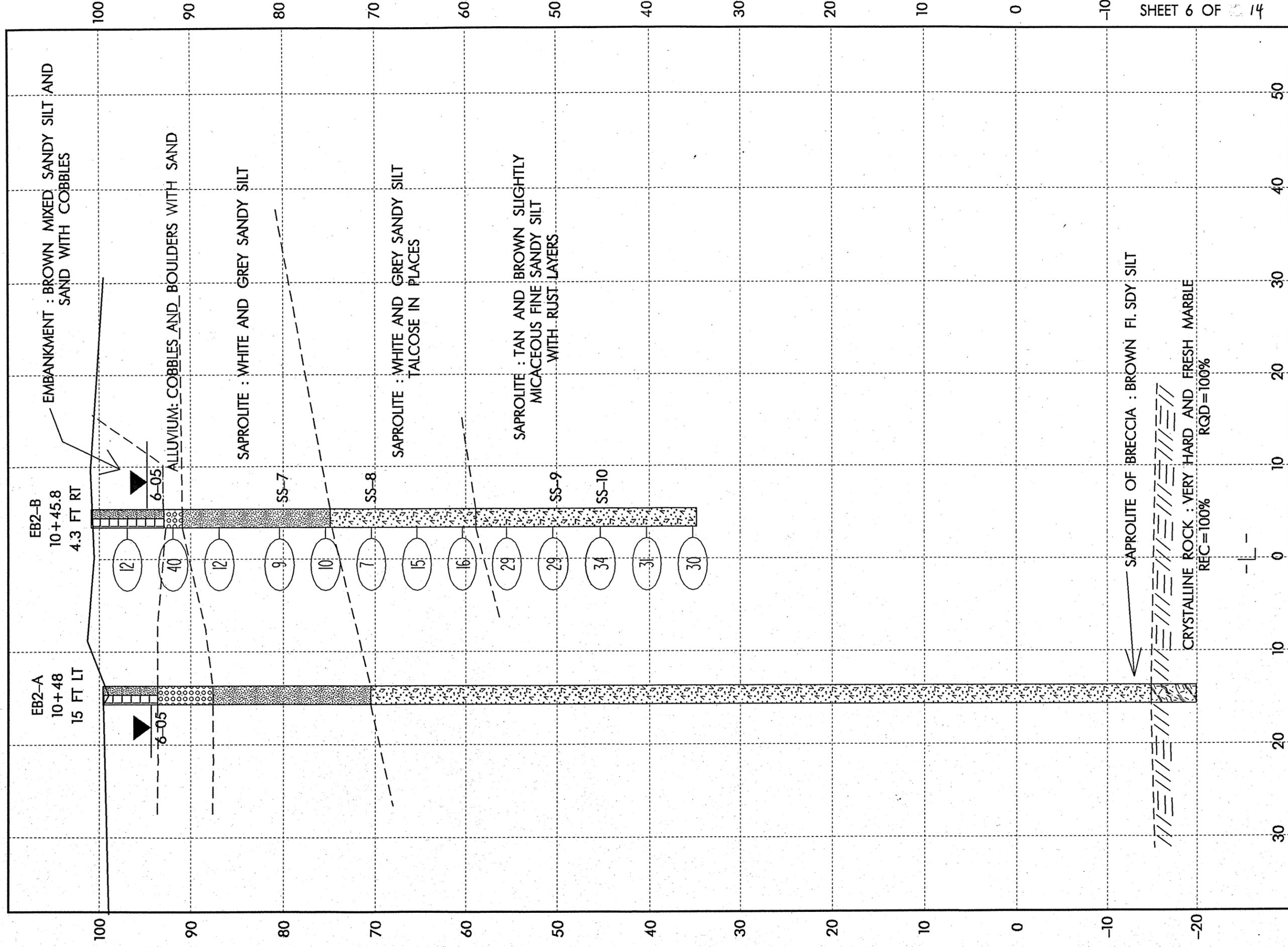
CROSS SECTION THROUGH EBI

BRIDGE NO. 32, 33434.1.1 (B-4071)



# CROSS SECTION THROUGH EB2

BRIDGE NO. 32, 33434.1.1 (B-4071)









NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
 GEOTECHNICAL UNIT BORING LOG

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
 GEOTECHNICAL UNIT BORING LOG

10/14

PROJECT NO 33434.1.1		ID B-4071		COUNTY CHEROKEE		GEOLOGIST P.Q. LOCKAMY							
SITE DESCRIPTION BRDG. #32 ON S.R. 1393 OVER JUNALUSKA CREEK							GND WATER						
BORING NO EB2-B		NORTHING 0.00		EASTING 0.00		0 HR N/A							
ALIGNMENT - L-		BORING LOCATION 10+45.800		OFFSET 4.30ft RT		24 HR N/A							
COLLAR ELEV 100.90ft		TOTAL DEPTH 66.00ft		START DATE 6/07/05		COMPLETION DATE 06/07/05							
DRILL MACHINE CME-550			DRILL METHOD CASING			HAMMER TYPE AUTOMATIC							
SURFACE WATER DEPTH N/A			DEPTH TO ROCK N/A			Log EB2-B, Page 1 of 2							
ELEV	DEPTH	BLOW CT			PEN (ft)	BLOWS PER FOOT				SAMPLE NO	LOG	SOIL AND ROCK DESCRIPTION	
		6in	6in	6in		0	25	50	75				100
100.90													
	3.00	4	7	5	1.0								EMBANKMENT: BROWN MIXED SANDY SILT AND SAND WITH COBBLES
	8.00	17	19	21	1.0								ALLUVIUM: COBBLES AND BOULDERS WITH SAND
	13.00	4	6	6	1.0								SAPROLITE: WHITE AND GRAY CLAYEY SILT (SAPROLITE OF MARBLE) TALCOSE IN PLACES
	19.50	2	4	5	1.0								SS-7
	24.50	3	4	6	1.0								
	29.50	2	3	4	1.0								SS-8
	34.50	4	6	9	1.0								
	39.50	4	7	9	1.0								
	60.00												

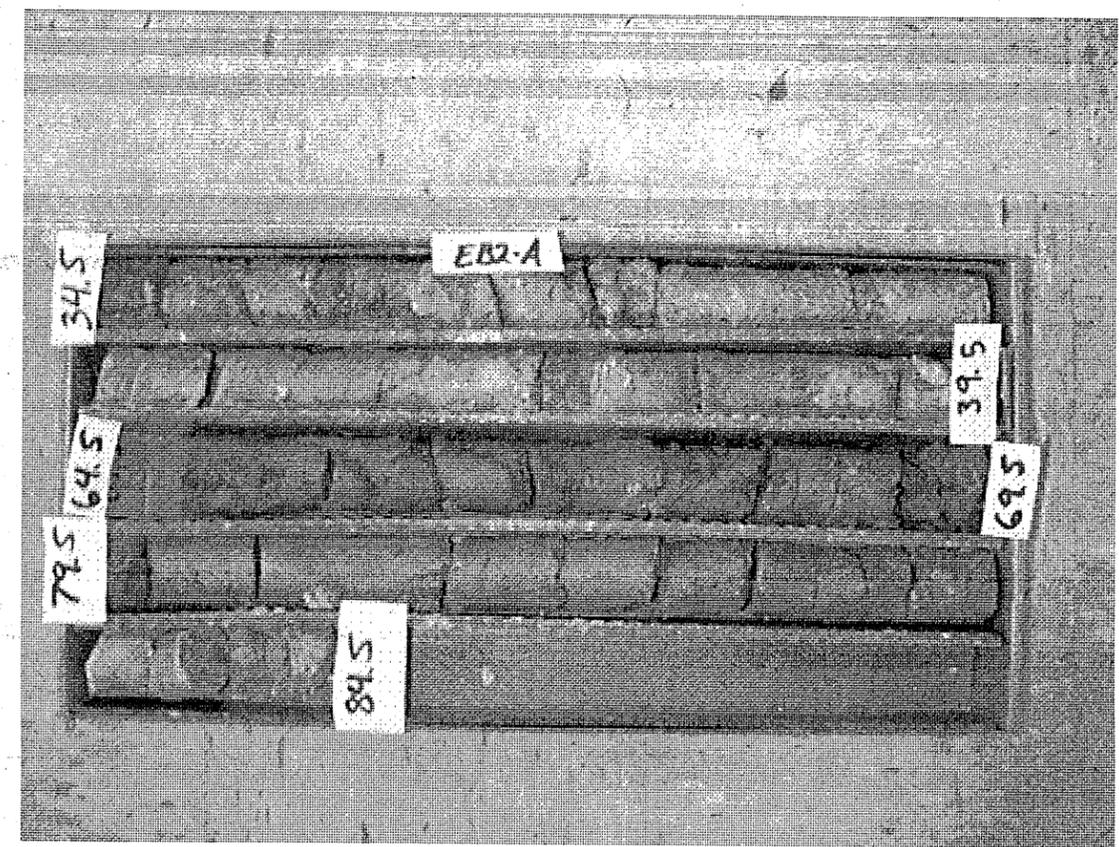
Continued on the next page.

PROJECT NO 33434.1.1		ID B-4071		COUNTY CHEROKEE		GEOLOGIST P.Q. LOCKAMY							
SITE DESCRIPTION BRDG. #32 ON S.R. 1393 OVER JUNALUSKA CREEK							GND WATER						
BORING NO EB2-B		NORTHING 0.00		EASTING 0.00		0 HR N/A							
ALIGNMENT - L-		BORING LOCATION 10+45.800		OFFSET 4.30ft RT		24 HR N/A							
COLLAR ELEV 100.90ft		TOTAL DEPTH 66.00ft		START DATE 6/07/05		COMPLETION DATE 06/07/05							
DRILL MACHINE CME-550			DRILL METHOD CASING			HAMMER TYPE AUTOMATIC							
SURFACE WATER DEPTH N/A			DEPTH TO ROCK N/A			Log EB2-B, Page 2 of 2							
ELEV	DEPTH	BLOW CT			PEN (ft)	BLOWS PER FOOT				SAMPLE NO	LOG	SOIL AND ROCK DESCRIPTION	
		6in	6in	6in		0	25	50	75				100
60.00													
	44.50	9	14	15	1.0								SAPROLITE: TAN AND BROWN, SLIGHTLY MICACEOUS; FINE SANDY SILT (SAPROLITE OF SCHIST)
	49.50	5	11	18	1.0								
	54.50	14	18	16	1.0								SS-10
	59.50	8	13	18	1.0								
	64.50	10	14	16	1.0								
	34.90												

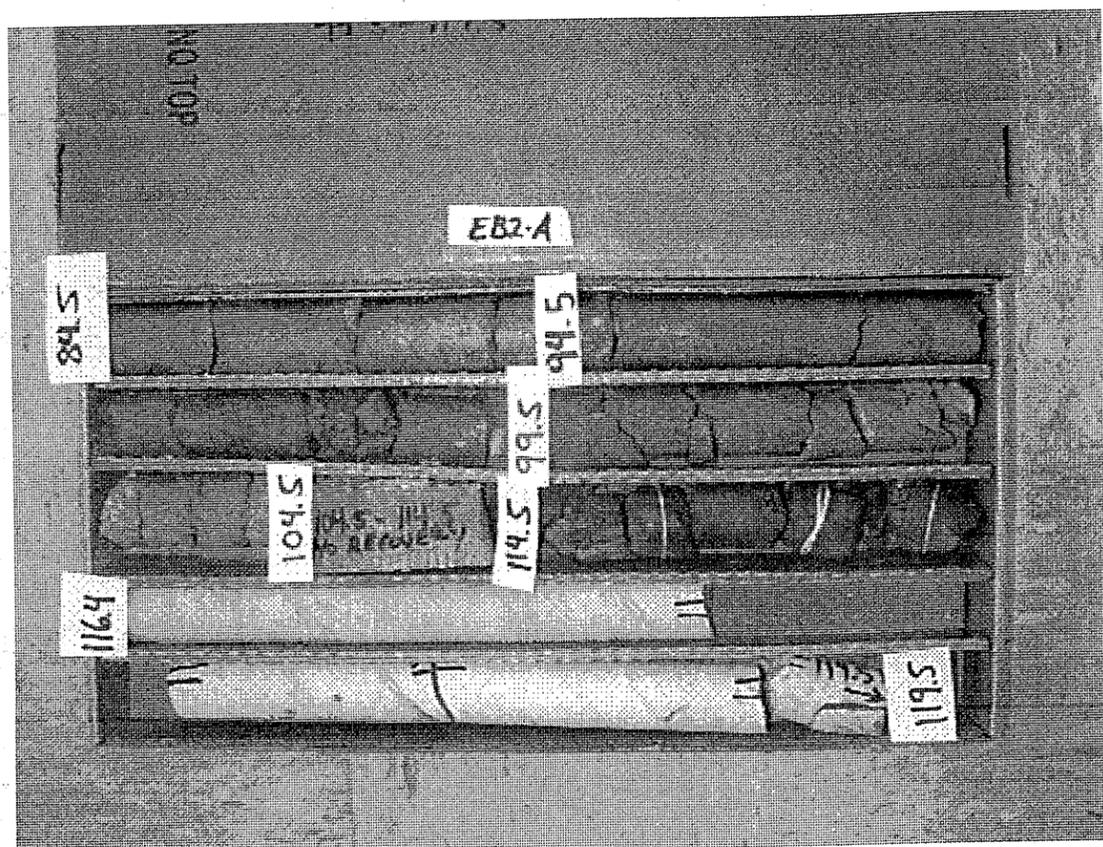
DRILLING TERMINATED @ 66.0' IN  
 VERY STIFF SLIGHTLY  
 MICACEOUS FINE SANDY SILT  
 SAPROLITE

B-4071  
33434.1.1  
Cherokee County Br. No. 32  
EB2-A 10+48 15 LT

B-4071  
33434.1.1  
Cherokee County Br. No. 32  
EB2-A 10+48 15 LT



B-4071  
33434.1.1  
Cherokee County Br. No. 32  
EB2-A 10+48 15 LT



JJL

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS-MATERIALS AND TESTS UNIT  
SOILS TEST REPORT-SOILS LABORATORY

T.I.P. ID #: B-4071

REPORT ON SAMPLES OF: Soils for Classification

PROJECT:	33434.1.1	COUNTY:	Cherokee	Owner:	--
DATE SAMPLED:	6.05	DATE RECEIVED:	6.28.05	DATE REPORTED:	7.6.05
SAMPLED FROM:	EB1-B	SAMPLED BY:	P. Q. Lockamy		
SUBMITTED BY:	W. D. Frye	2002	STANDARD SPECIFICATION		
LABORATORY:	Asheville				

TEST RESULTS

Project Sample No.	SS-1	SS-2	SS-3	SS-4	SS-5	SS-7	SS-8	SS-9
Lab Sample No. A	149514	149515	149516	149517	149518	149519	149520	149521
HiCAMS Sample #	--	--	--	--	--	--	--	--
Retained #4 Sieve %	--	--	--	--	--	--	--	--
Passing #10 Sieve %	100	100	98	100	100	100	100	96
Passing #40 Sieve %	100	99	95	99	98	99	99	93
Passing #200 Sieve %	92	87	71	77	86	91	91	69

MINUS #10 FRACTION

Soil Mortar - 100%								
Coarse Sand -Ret. #60	1	1	6	3	3	3	2	5
Fine Sand - Ret. #270	17	27	39	40	26	13	19	42
Silt 0.05-0.005 mm %	64	48	37	39	59	70	61	37
Clay < 0.005 mm %	18	24	18	18	12	14	18	16
Passing # 40 Sieve %	--	--	--	--	--	--	--	--
Passing # 200 Sieve %	--	--	--	--	--	--	--	--

Liquid Limit	42	35	41	50	41	35	42	41
Plastic Index	15	5	3	NP	10	1	10	NP
AASHTO Classification	A-7-6 (10)	A-4 (8)	A-5 (7)	A-5 (10)	A-5 (8)	A-4 (8)	A-5 (8)	A-5 (7)
Quantity								
Parent Material	MARBLE	MARBLE	SCHIST	SCHIST	MARBLE	MARBLE	MARBLE	SCHIST
Station	9+95	9+95	9+95	9+95	9+95	10+46	10+46	10+46
Hole No.	EB1-B	EB1-B	EB1-B	EB1-B	EB1-B	EB2-B	EB2-B	EB2-B
Depth (ft) From:	15.0	28.0	39.0	49.0	59.0	20.0	30.0	45.0
To:	19.0	29.0	40.0	50.0	60.0	21.0	31.0	46.0

Remarks:

A-149514 - 149521

CC:

P. Q. Lockamy	
File	

SOILS ENGINEER:

JJL

13/14

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS-MATERIALS AND TESTS UNIT  
SOILS TEST REPORT-SOILS LABORATORY

T.I.P. ID #: B-4071

REPORT ON SAMPLES OF: Soil for Classification

PROJECT:	33434.1.1	COUNTY:	Cherokee	Owner:	--
DATE SAMPLED:	6.05	DATE RECEIVED:	6.28.05	DATE REPORTED:	7.6.05
SAMPLED FROM:	EB2-B	SAMPLED BY:	P. Q. Lockamy		
SUBMITTED BY:	W. D. Frye	2002	STANDARD SPECIFICATION		
LABORATORY:	Asheville				

TEST RESULTS

Project Sample No.	SS-10							
Lab Sample No. A	149522							
HiCAMS Sample #	--							
Retained #4 Sieve %	--							
Passing #10 Sieve %	98							
Passing #40 Sieve %	96							
Passing #200 Sieve %	87							

MINUS #10 FRACTION

Soil Mortar - 100%								
Coarse Sand -Ret. #60	4							
Fine Sand - Ret. #270	50							
Silt 0.05-0.005 mm %	30							
Clay < 0.005 mm %	16							
Passing # 40 Sieve %	--							
Passing # 200 Sieve %	--							

Liquid Limit	41							
Plastic Index	NP							
AASHTO Classification	A-5 (8)							
Quantity								
Parent Material	SCHIST							
Station	10+46							
Hole No.	EB2-B							
Depth (ft) From:	55.0							
To:	56.0							

Remarks:

A-149522

CC:

P. Q. Lockamy	
File	

SOILS ENGINEER:

