

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	34483.1.1(R-2612A)	1	18

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

STRUCTURE
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 34483.1.1(R-2612A) F.A. PROJ. NHF-421(11)
COUNTY GUILFORD
PROJECT DESCRIPTION US 421 AT SR 3389 (WOODY MILL ROAD)
SOUTH OF GREENSBORO

SITE DESCRIPTION BRIDGE OVER US 421 AT SR 3389
(WOODY MILL ROAD) SOUTH OF GREENSBORO

INVENTORY

CONTENTS

<u>SHEET</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4	PROFILE(S)
5 - 6	CROSS SECTION(S)
7 -14	BORE LOG & CORE REPORT(S)
15	SOIL TEST RESULTS
16 - 17	CORE PHOTOGRAPHS)
18	SITE PHOTOGRAPHS)

CAUTION NOTICE

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

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

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

PROJECT: 34483.1.1 ID: R-2612A

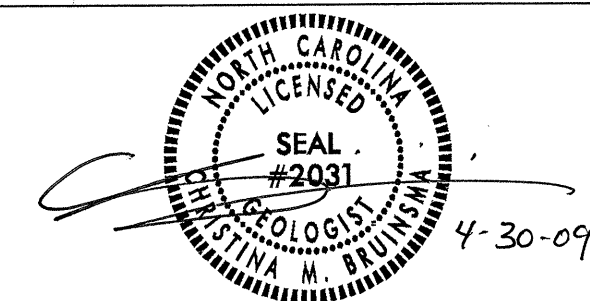
PERSONNEL
C.M. BRUINSMA

INVESTIGATED BY **C.M. BRUINSMA**

CHECKED BY **N.T. ROBERSON**

SUBMITTED BY **N.T. ROBERSON**

DATE **APRIL 2009**



DRAWN BY: **T.T. WALKER**

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.

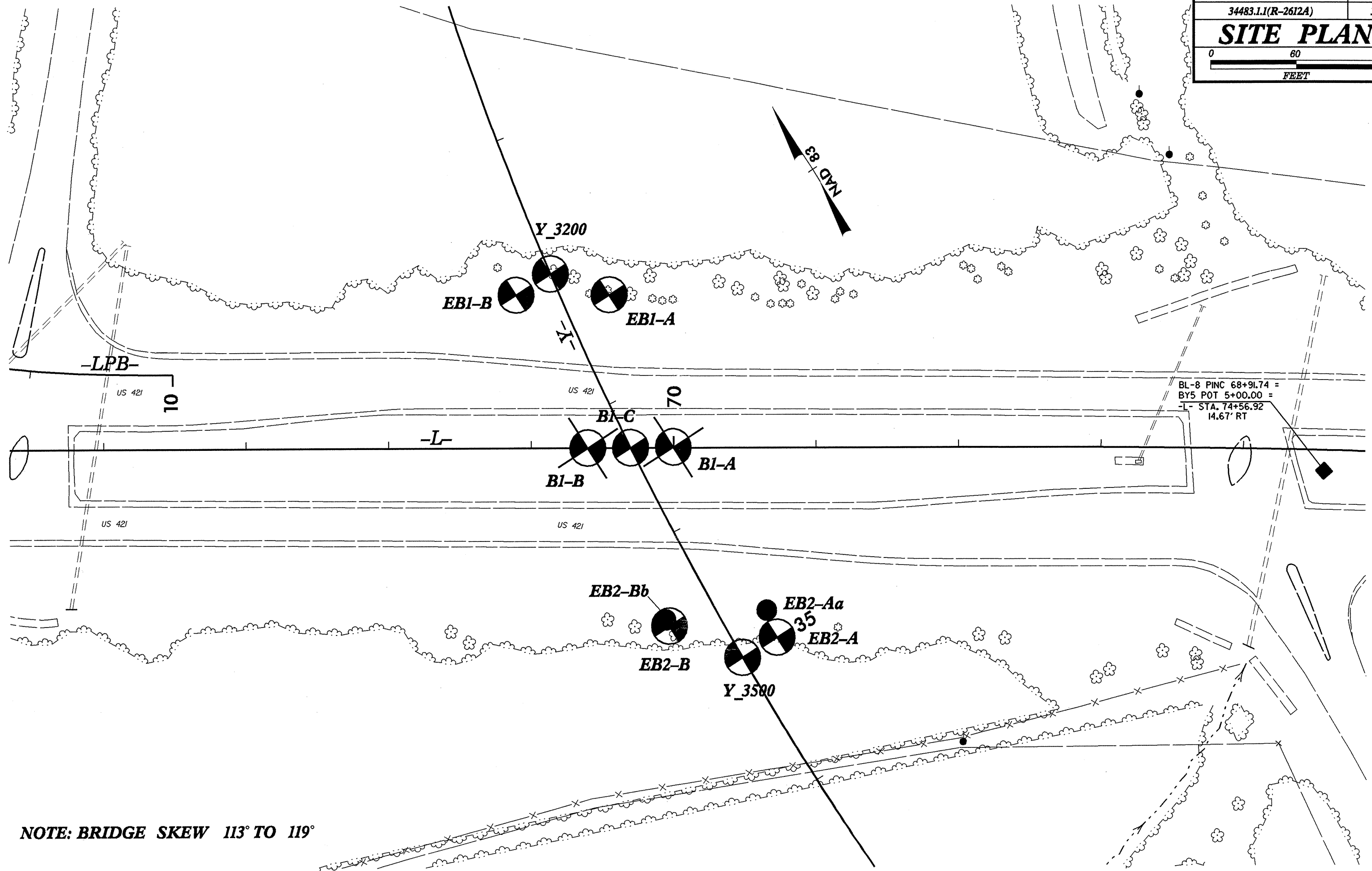
NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION		GRADATION		ROCK DESCRIPTION		TERMS AND DEFINITIONS					
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. EXAMPLES: <i>VERY STIFF, GRAY, SETTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGH PLASTIC, A-7-6</i>		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. THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.		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: WEATHERED ROCK (WR) NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED. CRYSTALLINE ROCK (CR) FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC. NON-CRYSTALLINE ROCK (NCR) FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC. COASTAL PLAIN SEDIMENTARY ROCK (CP) COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.		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 (SRC.) - 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.					
SOIL LEGEND AND AASHTO CLASSIFICATION		MINERALOGICAL COMPOSITION		WEATHERING		SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER					
GENERAL CLASS. GRANULAR MATERIALS (<= 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS		MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.		FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER HAMMER IF CRYSTALLINE. VERY SLIGHT (V SL.) ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY, ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE. SLIGHT (SL.) 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. MODERATE (MOD.) SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK. MODERATELY SEVERE (MOD. SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES 'CLUNK' SOUND WHEN STRUCK. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i> SEVERE (SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. <i>IF TESTED, YIELDS SPT N VALUES > 100 BPF</i> VERY SEVERE (V SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. <i>IF TESTED, YIELDS SPT N VALUES < 100 BPF</i> COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.		SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31 MODERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50 HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50		ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC. FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC. COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.		SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER HIGHLY ORGANIC SOILS	
PERCENTAGE OF MATERIAL		GROUND WATER		MISCELLANEOUS SYMBOLS		ROCK HARDNESS					
ORGANIC MATERIAL GRANULAR SOILS SILT - CLAY SOILS OTHER MATERIAL		WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING STATIC WATER LEVEL AFTER 24 HOURS PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA SPRING OR SEEP		ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION SOIL SYMBOL ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT INFERRED SOIL BOUNDARY INFERRED ROCK LINE ALLUVIAL SOIL BOUNDARY DIP & DIP DIRECTION OF ROCK STRUCTURES SOUNDING ROD		SPT TEST BORING AUGER BORING CORE BORING MONITORING WELL PIEZOMETER INSTALLATION SLOPE INDICATOR INSTALLATION SPT N-VALUE SPT REFUSAL		VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK. HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN. 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. MEDIUM HARD CAN BE GROUDED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK. SOFT CAN BE GROUDED 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. VERY SOFT CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK, PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGER NAIL.			
CONSISTENCY OR DENSENESS		COMPRESSION		ABBREVIATIONS		INDURATION					
PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)		SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31 MODERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50 HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50		AR - AUGER REFUSAL BT - BORING TERMINATED CL - CLAY CPT - CONE PENETRATION TEST CSE - COARSE DMT - DILATOMETER TEST DPT - DYNAMIC PENETRATION TEST F - FINE FOSS. - FOSSILIFEROUS FRAC. - FRACTURED, FRACTURES FRAGS. - FRAGMENTS HL - HIGHLY MED. - MEDIUM MICA - MICACEOUS MOD. - MODERATELY NP - NON PLASTIC ORG. - ORGANIC PMT - PRESSUREMETER TEST SAP. - SAPROLITIC SD. - SAND, SANDY SL. - SILT, SILTY SLI. - SLIGHTLY SLR. - TRICONE REFUSAL # - MOISTURE CONTENT V - VERY VST - VANE SHEAR TEST WEA. - WEATHERED % - UNIT WEIGHT % - DRY UNIT WEIGHT		FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE. MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER. INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER. EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.					
TEXTURE OR GRAIN SIZE		EQUIPMENT USED ON SUBJECT PROJECT		FRACTURE SPACING		BEDDING					
U.S. STD. SIEVE SIZE OPENING (MM) 4 10 40 60 200 270 4.75 2.00 0.42 0.25 0.075 0.053		DRILL UNITS: MOBILE B- BK-51 CME-45C CME-550 PORTABLE HOIST D-50		ADVANCING TOOLS: CLAY BITS 6" CONTINUOUS FLIGHT AUGER 8" HOLLOW AUGERS HARD FACED FINGER BITS TUNG-CARBIDE INSERTS CASING w/ ADVANCER TRICONE STEEL TEETH TRICONE 2,25 TUNG-CARB. CORE BIT		TERM SPACING VERY WIDE MORE THAN 10 FEET WIDE 3 TO 10 FEET MODERATELY CLOSE 1 TO 3 FEET CLOSE 0.16 TO 1 FEET VERY CLOSE LESS THAN 0.16 FEET		TERM THICKNESS VERY THICKLY BEDDED > 4 FEET THICKLY BEDDED 1.5 - 4 FEET THINLY BEDDED 0.16 - 1.5 FEET VERY THINLY BEDDED 0.03 - 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET THINLY LAMINATED < 0.008 FEET			
SOIL MOISTURE - CORRELATION OF TERMS		PLASTICITY		INDURATION		INDURATION					
SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION		NONPLASTIC PLASTICITY INDEX (PI) DRY STRENGTH VERY LOW SLIGHT MEDIUM HIGH		HAMMER TYPE: AUTOMATIC MANUAL CORE SIZE: B-N-H HAND TOOLS: POST HOLE DIGGER HAND AUGER SOUNDING ROD VANE SHEAR TEST		BENCH MARK: BL-8, PINC -L- Sta. 74+56.92, 14.67' RT ELEVATION: 692.00 FT. NOTES:					
LL LIQUID LIMIT SATURATED (SAT) USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE PLASTIC RANGE (PI) PL PLASTIC LIMIT WET - (W) SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE OM OPTIMUM MOISTURE MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE SL SHRINKAGE LIMIT DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE		PLASTICITY INDEX (PI) DRY STRENGTH VERY LOW SLIGHT MEDIUM HIGH		FRAGMENTS		FRAGMENTS					
COLOR		DESCRIPTIONS		DESCRIPTIONS		DESCRIPTIONS					
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.		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.		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.		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.					



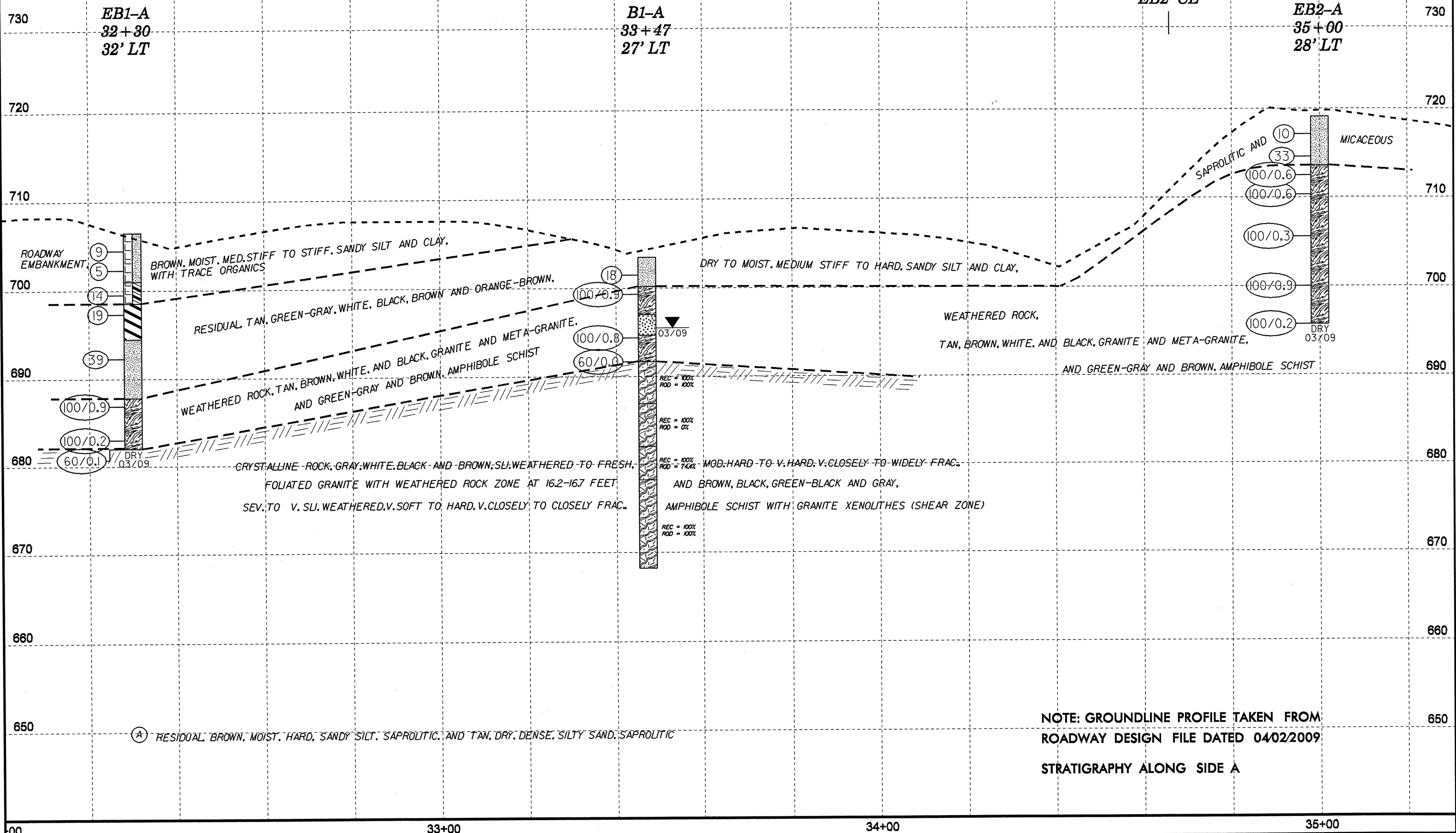
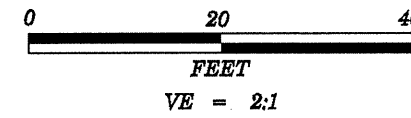
NOTE: BRIDGE SKEW 113° TO 119°

PROPOSED
EB1 CL

PROPOSED
B1 CL

PROPOSED
EB2 CL

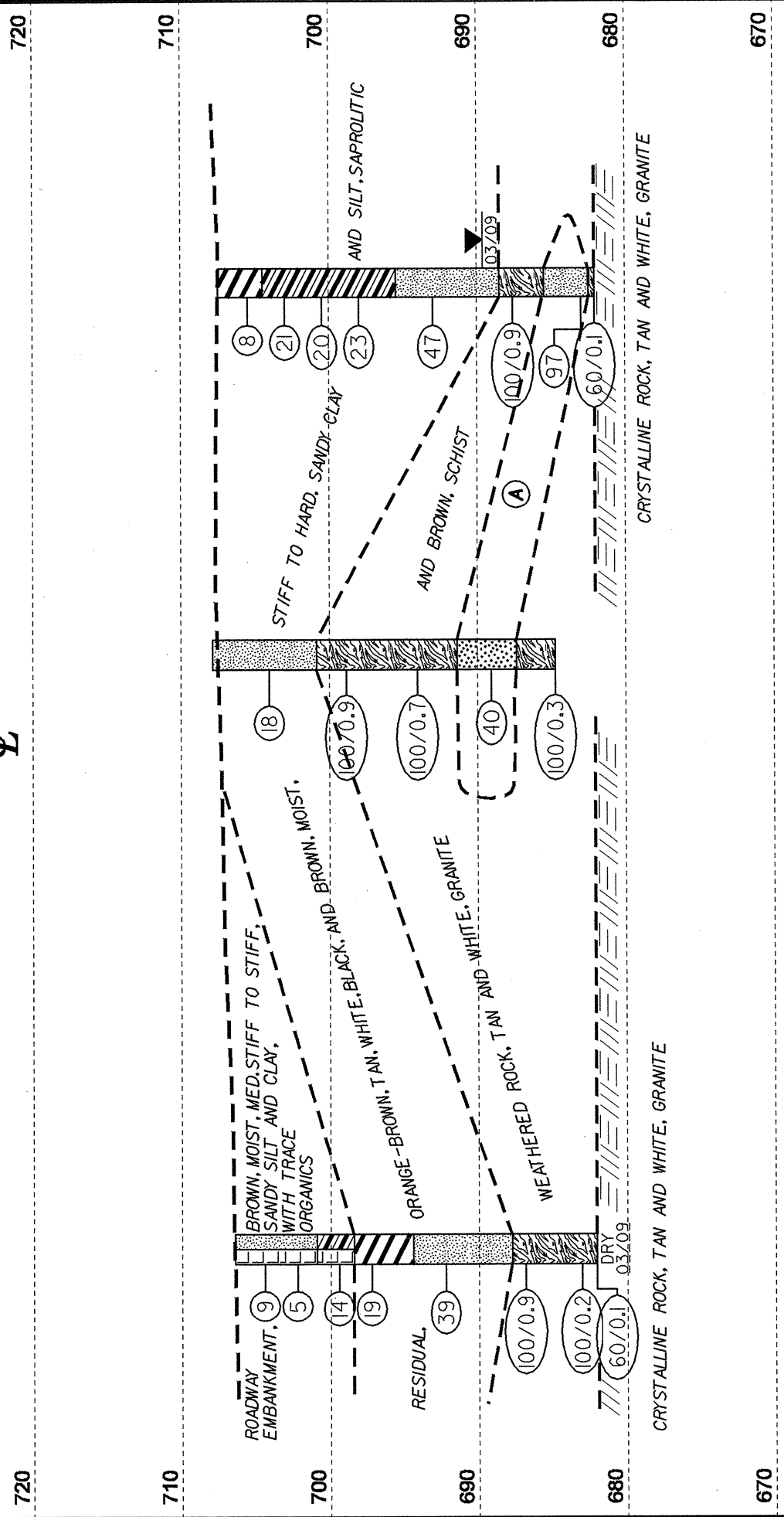
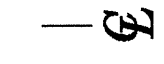
PROJECT REFERENCE NO.	SHEET
34483.1.1(R-2612A)	4
FENCE DIAGRAM OF BORINGS ALONG -Y-	



NOTE: GROUNDLINE PROFILE TAKEN FROM ROADWAY DESIGN FILE DATED 04/02/2009.
STRATIGRAPHY ALONG SIDE A

EB1-A
32+30
32' LT

Y-3200
32+00
CL



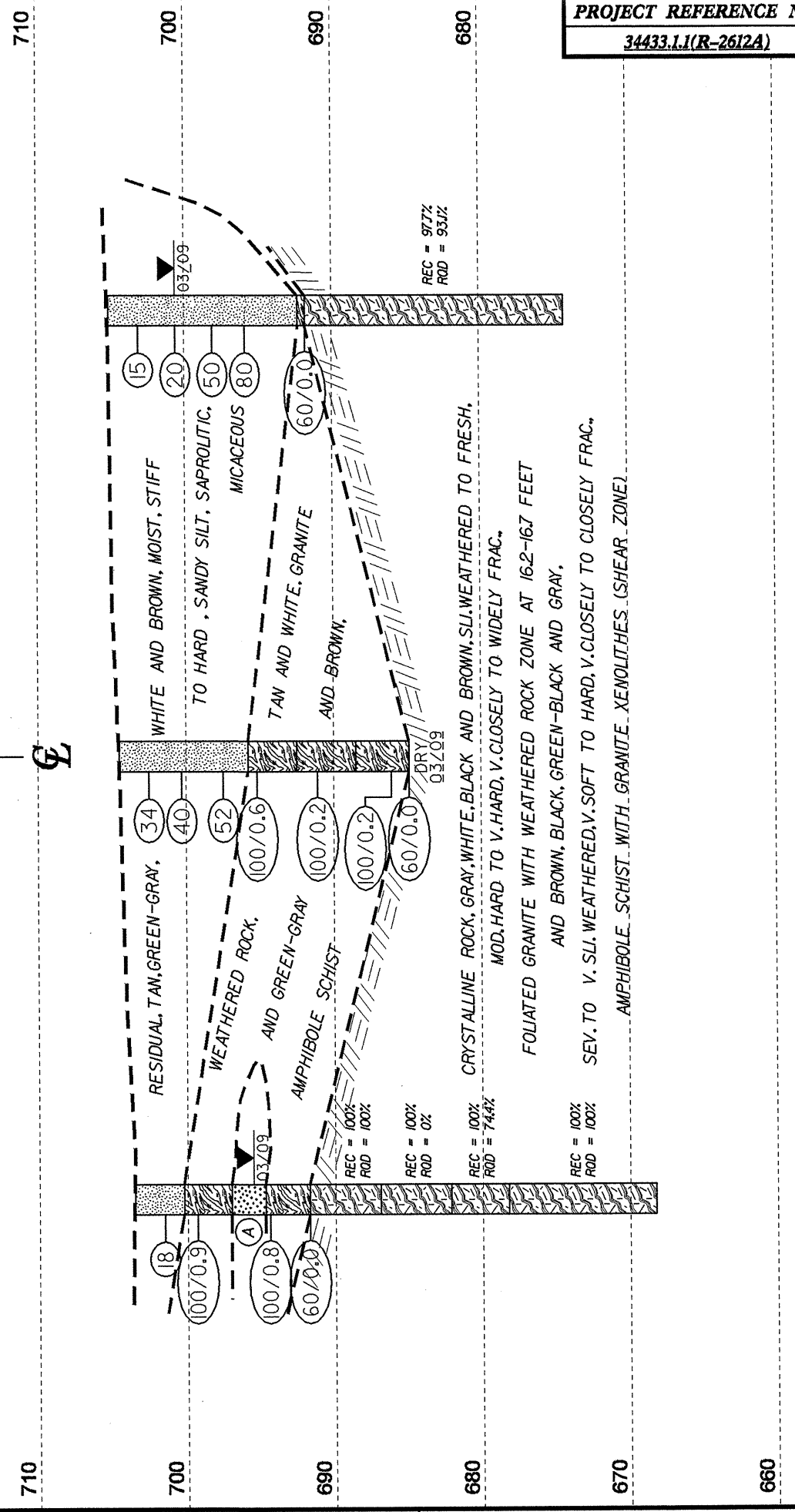
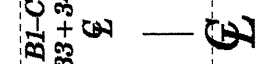
HORIZ. SCALE 0 10 20 (FEET)

VE = 1:1

CROSS SECTION THROUGH END BENT 1

EB1-B
33+21
27' RT

BI-C
33+34
CL



HORIZ. SCALE 0 10 20 (FEET)

VE = 1:1

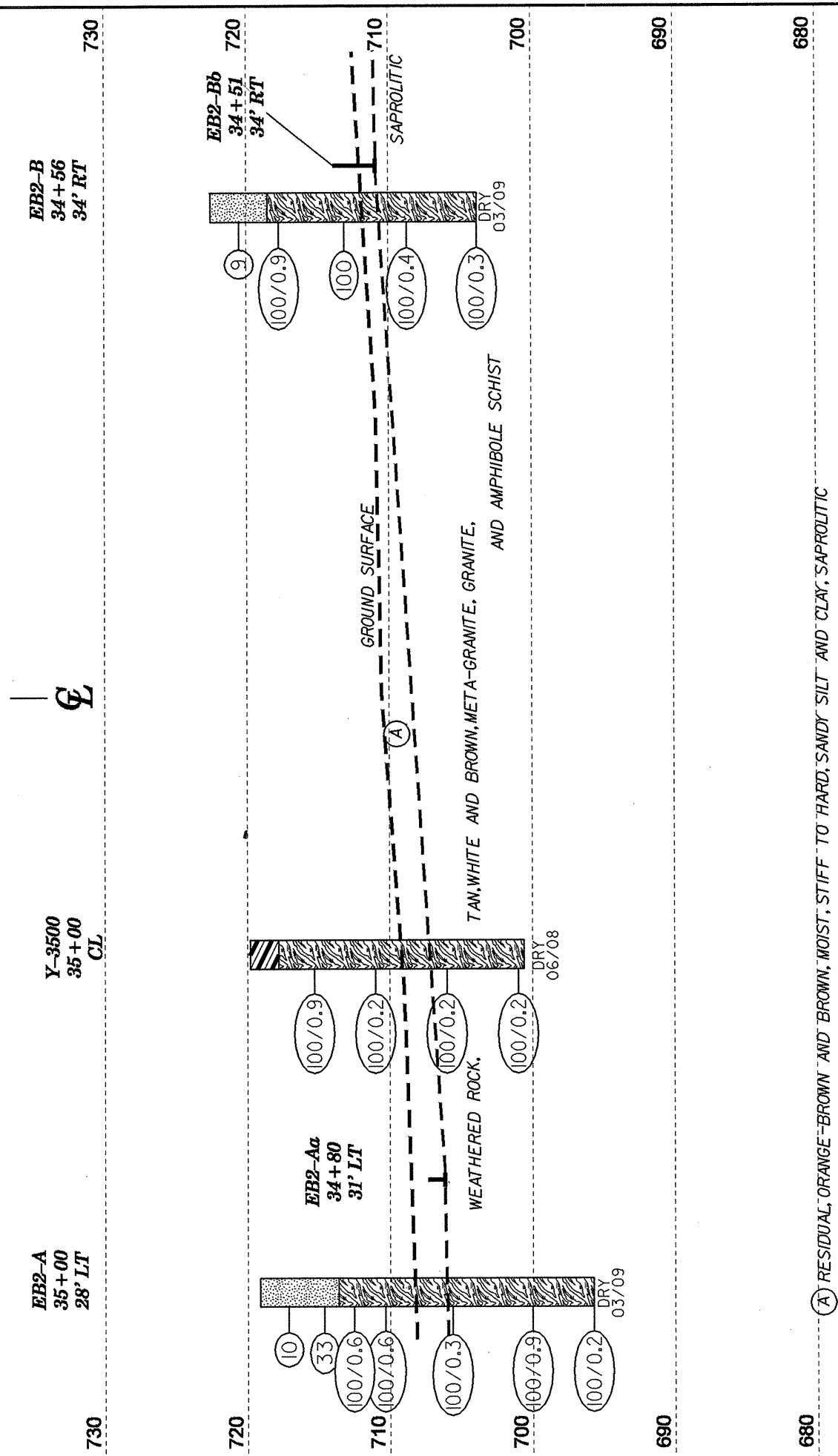
CROSS SECTION THROUGH BENT 1

(A) RESIDUAL BROWN, MOIST, DENSE, SILTY SAND, SAPROLITIC



VE = 1:1

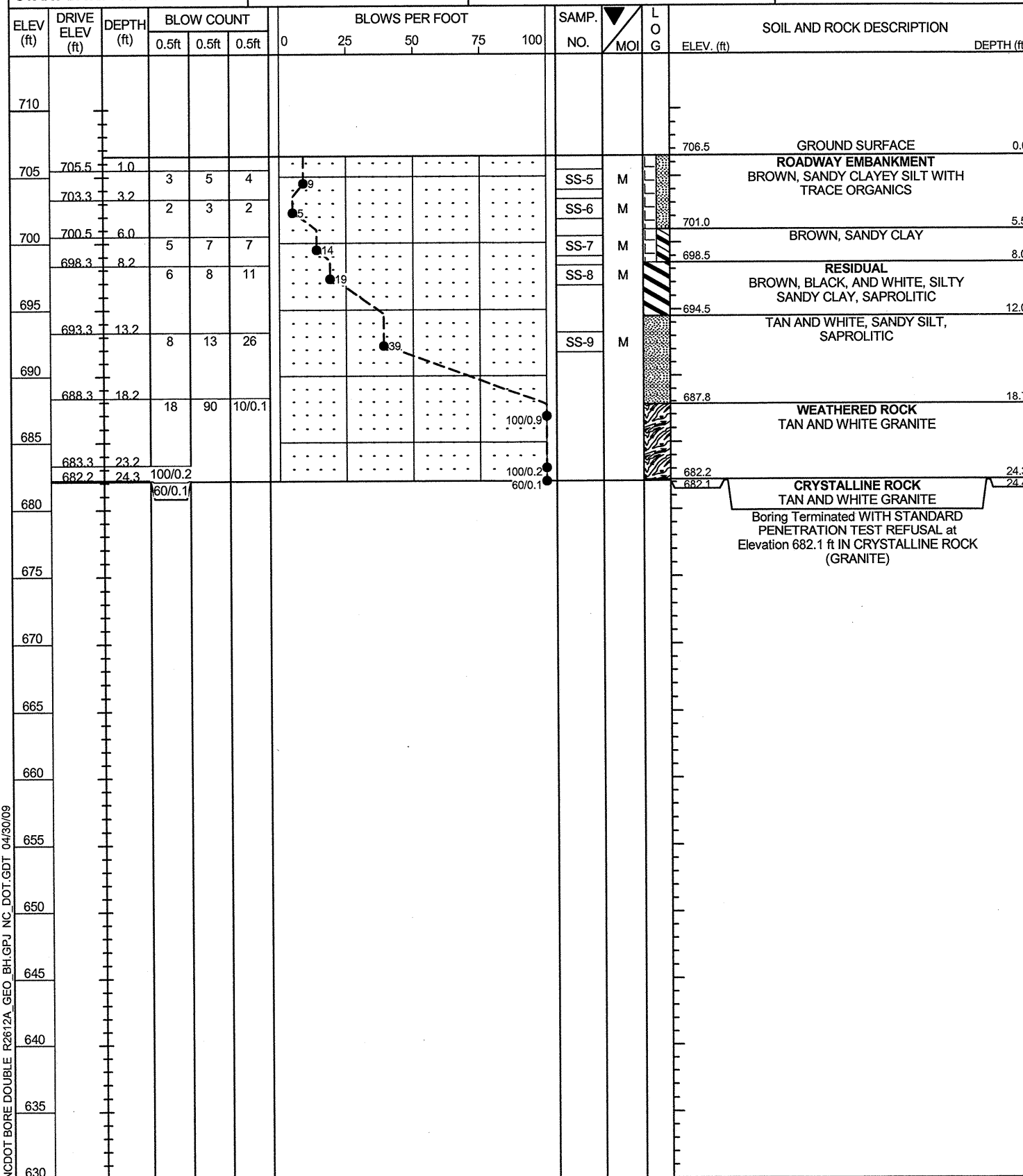
CROSS SECTION THROUGH END BENT 2



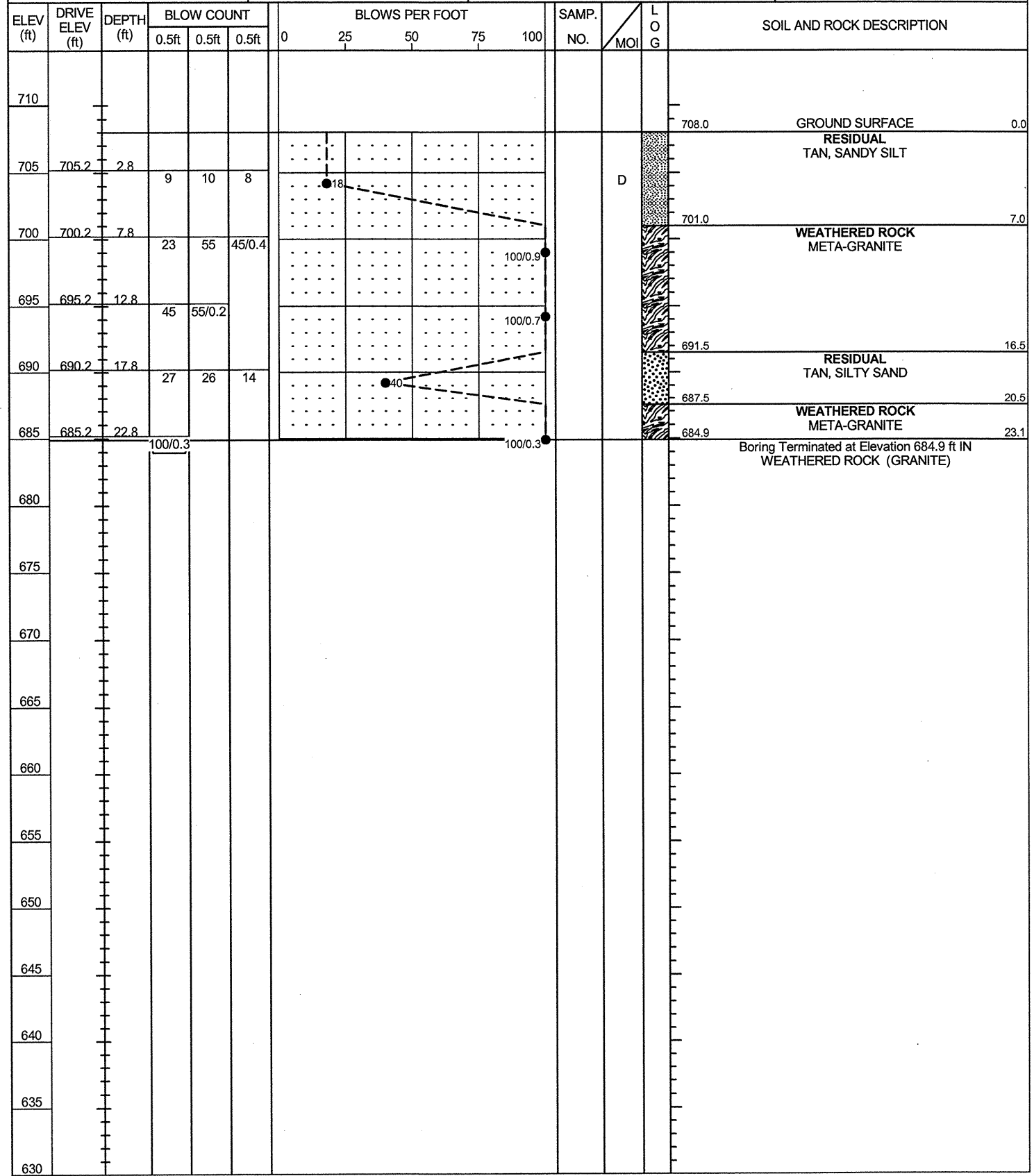
(A) RESIDUAL, ORANGE-BROWN AND BROWN, MOIST, STIFF TO HARD, SANDY SILT AND CLAY, SAPROLITIC

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

PROJECT NO. 34483.1.1	ID. R-2612A	COUNTY GUILFORD	GEOLOGIST Bruinsma, C. M.
SITE DESCRIPTION BRIDGE OVER US 421 at SR 3389 (WOODY MILL ROAD) SOUTH OF GREENSBORO			GROUND WTR (ft)
BORING NO. EB1-A	STATION 32+30	OFFSET 32ft LT	ALIGNMENT -Y-
COLLAR ELEV. 706.5 ft	TOTAL DEPTH 24.4 ft	NORTHING 806,379	EASTING 1,791,803
DRILL MACHINE D-50	DRILL METHOD H.S. Augers	HAMMER TYPE Automatic	
START DATE 03/23/09	COMP. DATE 03/23/09	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 24.3 ft



PROJECT NO. 34483.1.1	ID. R-2612A	COUNTY GUILFORD	GEOLOGIST Kuntukova, Y.
SITE DESCRIPTION BRIDGE OVER US 421 at SR 3389 (WOODY MILL ROAD) SOUTH OF GREENSBORO			GROUND WTR (ft)
BORING NO. Y_3200	STATION 32+00	OFFSET CL	ALIGNMENT -Y-
COLLAR ELEV. 708.0 ft	TOTAL DEPTH 23.1 ft	NORTHING 806,413	EASTING 1,791,776
DRILL MACHINE CME-550	DRILL METHOD H.S. Augers	HAMMER TYPE Automatic	
START DATE 06/04/08	COMP. DATE 06/04/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A



NCDOT BORE DOUBLE R2612A GEO_BH.GPJ NC_DOT.GDT 04/30/09



PROJECT NO. 34483.1.1	ID. R-2612A	COUNTY GUILFORD	GEOLOGIST Bruinsma, C. M.
SITE DESCRIPTION BRIDGE OVER US 421 at SR 3389 (WOODY MILL ROAD) SOUTH OF GREENSBORO			GROUND WTR (ft)
BORING NO. B1-A	STATION 33+47	OFFSET 27ft LT	ALIGNMENT -Y- 0 HR. N/A
COLLAR ELEV. 703.5 ft	TOTAL DEPTH 35.3 ft	NORTHING 806,265	EASTING 1,791,783 24 HR. 8.0
DRILL MACHINE D-50	DRILL METHOD Wash Boring	HAMMER TYPE Automatic	
START DATE 03/25/09	COMP. DATE 03/26/09	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 11.8 ft

PROJECT NO. 34483.1.1	ID. R-2612A	COUNTY GUILFORD	GEOLOGIST Bruinsma, C. M.
SITE DESCRIPTION BRIDGE OVER US 421 at SR 3389 (WOODY MILL ROAD) SOUTH OF GREENSBORO			GROUND WTR (ft)
BORING NO. B1-A	STATION 33+47	OFFSET 27ft LT	ALIGNMENT -Y- 0 HR. N/A
COLLAR ELEV. 703.5 ft	TOTAL DEPTH 35.3 ft	NORTHING 806,265	EASTING 1,791,783 24 HR. 8.0
DRILL MACHINE D-50	DRILL METHOD Wash Boring	HAMMER TYPE Automatic	
START DATE 03/25/09	COMP. DATE 03/26/09	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 11.8 ft

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						
705																
703.5																GROUND SURFACE
702.5	702.5	1.0														RESIDUAL TAN, SANDY CLAYEY SILT, SAPROLITIC
700	700.7	2.8	5	7	11											WEATHERED ROCK TAN, WHITE AND BROWN, GRANITE
695	695.7	7.8	21	36	64/0.4											RESIDUAL TAN AND WHITE, SILTY SAND, SAPROLITIC
691.7	691.7	11.8	10	18	82/0.3											WEATHERED ROCK TAN, WHITE AND BROWN, GRANITE
690			60/0													CRYSTALLINE ROCK GRAY, WHITE, PINK AND BROWN, FOLIATED GRANITE
685																REC=100%, RQD=100% BROWN, BLACK, WHITE AND GRAY, AMPHIBOLE SCHIST WITH GRANITE (SHEAR ZONE)
680																REC=100%, RQD=0% GREEN-BLACK, WHITE AND GRAY, AMPHIBOLE SCHIST WITH GRANITE XENOLITHS (SHEAR ZONE)
675																REC=100%, RQD=74.4% GRAY, WHITE AND BLACK, GRANITE
670																REC=100%, RQD=100%
665																Boring Terminated at Elevation 668.2 ft IN CRYSTALLINE ROCK (GRANITE)

ELEV (ft)	CORE SIZE	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
						REC. (%)	ROD (ft)		REC. (%)	ROD (ft)			
691.7	NQ											Begin Coring @ 11.8 ft	
690		691.7	11.8	3.5	8:30 5:40 4:30	(3.5) 100%	(3.5) 100%		(4.8) 100%	(4.8) 100%		CRYSTALLINE ROCK GRAY, WHITE, PINK AND BROWN, SLI. TO VERY SLI. WEATHERED, HARD, MOD. CLOSELY TO WIDELY FRAC., FOLIATED GRANITE	11.8
685		688.2	15.3	5.0	3:30/0.5 3:25 3:20 2:30 2:45 3:50	(5.0) 100%	(1.3) 26%		(4.8) 100%	(0.0) 0%		BROWN, BLACK, WHITE AND GRAY, SEV. TO MOD. SEV. WEATHERED, V. SOFT TO SOFT, V. CLOSELY TO CLOSELY FRAC., AMPHIBOLE SCHIST WITH GRANITE (SHEAR ZONE)	16.6
680		683.2	20.3	5.0	4:30 3:30 2:30 2:45 3:00	(5.0) 100%	(2.9) 58%	RS-1	(3.9) 100%	(2.9) 74%		GREEN-BLACK, WHITE AND GRAY, SLI. TO V. SLI. WEATHERED, HARD, CLOSELY TO MOD. CLOSELY FRAC., AMPHIBOLE SCHIST WITH GRANITE XENOLITHS (SHEAR ZONE)	21.4
675		678.2	25.3	5.0	3:20 2:45 3:15 4:00 5:30	(5.0) 100%	(5.0) 100%	RS-2	(10.0) 100%	(10.0) 100%		GRAY, WHITE AND BLACK, V. SLI. WEATHERED TO FRESH, V. HARD, WIDELY FRAC., GRANITE	25.3
670		673.2	30.3	5.0	4:30 4:15 4:30 4:15 5:15	(5.0) 100%	(5.0) 100%						
665		668.2	35.3									Boring Terminated at Elevation 668.2 ft IN CRYSTALLINE ROCK (GRANITE)	35.3

NCDOT BORE DOUBLE R2612A GEO_BH.GPJ NC_DOT.GDT 04/28/09



NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

PROJECT NO. 34483.1.1	ID. R-2612A	COUNTY GUILFORD	GEOLOGIST Bruinsma, C. M.
SITE DESCRIPTION BRIDGE OVER US 421 at SR 3389 (WOODY MILL ROAD) SOUTH OF GREENSBORO			GROUND WTR (ft)
BORING NO. B1-C	STATION 33+34	OFFSET CL	ALIGNMENT -Y-
COLLAR ELEV. 704.5 ft	TOTAL DEPTH 19.6 ft	NORTHING 806,281	EASTING 1,791,757
DRILL MACHINE D-50	DRILL METHOD H.S. Augers	HAMMER TYPE Automatic	
START DATE 03/26/09	COMP. DATE 03/26/09	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 19.6 ft

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					
705													704.5 GROUND SURFACE	0.0
	703.5	1.0											RESIDUAL TAN, WHITE, AND GREEN-GRAY, SANDY SILT, SAPROLITIC WITH OCCASIONAL ROCK FRAGMENTS	
	701.3	3.2	9	12	22									
700			13	16	24									
	698.5	6.0											WEATHERED ROCK TAN, WHITE AND BROWN, GRANITE	
	696.3	8.2	14	23	29									
695			24	55	45/0.1									
	691.3	13.2											GREEN-GRAY AND BROWN, AMPHIBOLE SCHIST	12.0
690														
	686.3	18.2											TAN, WHITE AND BOWN, GRANITE	16.0
685	684.9	19.6												
													Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 684.9 ft ON CRYSTALLINE ROCK (GRANITE)	19.6
680														
675														
670														
665														
660														
655														
650														
645														
640														
635														
630														
625														

NCDOT BORE SINGLE R2612A GEO_BH.GPJ NC_DOT.GDT 04/27/09



NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT



NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

PROJECT NO. 34483.1.1	ID. R-2612A	COUNTY GUILFORD	GEOLOGIST Bruinsma, C. M.
SITE DESCRIPTION BRIDGE OVER US 421 at SR 3389 (WOODY MILL ROAD) SOUTH OF GREENSBORO			GROUND WTR (ft)
BORING NO. B1-B	STATION 33+21	OFFSET 27ft RT	ALIGNMENT -Y-
COLLAR ELEV. 705.1 ft	TOTAL DEPTH 30.8 ft	NORTHING 806,297	EASTING 1,791,732
DRILL MACHINE D-50	DRILL METHOD Wash Boring	HAMMER TYPE Automatic	
START DATE 03/24/09	COMP. DATE 03/24/09	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 13.3 ft

PROJECT NO. 34483.1.1	ID. R-2612A	COUNTY GUILFORD	GEOLOGIST Bruinsma, C. M.
SITE DESCRIPTION BRIDGE OVER US 421 at SR 3389 (WOODY MILL ROAD) SOUTH OF GREENSBORO			GROUND WTR (ft)
BORING NO. B1-B	STATION 33+21	OFFSET 27ft RT	ALIGNMENT -Y-
COLLAR ELEV. 705.1 ft	TOTAL DEPTH 30.8 ft	NORTHING 806,297	EASTING 1,791,732
DRILL MACHINE D-50	DRILL METHOD Wash Boring	HAMMER TYPE Automatic	
START DATE 03/24/09	COMP. DATE 03/24/09	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 13.3 ft

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					
710															
705	704.1	1.0												705.1	GROUND SURFACE
700	701.6	3.5	4	7	8										RESIDUAL TAN AND WHITE TO BROWN, SANDY SILT, SAPROLITIC, MICACEOUS
695	699.1	6.0	7	9	11										
690	696.6	8.5	15	23	27										
690	691.8	13.3	16	34	46									692.3	WEATHERED ROCK BROWN, GRANITE
685														691.8	CRYSTALLINE ROCK GRAY, WHITE, BLACK, AND BROWN, FOLIATED GRANITE WITH WEATHERED ROCK LAYER FROM 16.2 - 16.7 FEET.
680															CRYSTALLINE ROCK GRAY, WHITE, BLACK, AND BROWN, FOLIATED GRANITE WITH WEATHERED ROCK LAYER FROM 16.2 - 16.7 FEET. REC=97.7%, RQD=93.1%
675														674.3	Boring Terminated at Elevation 674.3 ft IN CRYSTALLINE ROCK (GRANITE)
670															
665															
660															
655															
650															
645															
640															
635															
630															

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %			
691.8											Begin Coring @ 13.3 ft	
690	691.8	13.3	2.5	4:55	(2.5)	(2.3)		(17.1)	(16.3)		CRYSTALLINE ROCK	13.3
	689.3	15.8		4:00	100%	92%		98%	93%		GRAY, WHITE, BLACK, AND BROWN, SLI. WEATHERED TO FRESH, MOD. HARD TO V. HARD, V. CLOSELY TO WIDELY FRAC., FOLIATED GRANITE WITH WEATHERED ROCK LAYER FROM 16.2 - 16.7 FEET.	
685			5.0	2:30/0.5	(4.7)	(4.4)	RS-3					
	684.3	20.8		4:30	94%	88%						
680			5.0	4:50								
	679.3	25.8		5:30	(5.0)	(4.7)						
			5.0	6:00	100%	94%						
675				5:20								
	674.3	30.8		4:50	(4.9)	(4.9)					Boring Terminated at Elevation 674.3 ft IN CRYSTALLINE ROCK (GRANITE)	30.8
				7:00	98%	98%						
670				7:30								
665				7:10								
660				8:00								
655												
650												
645												
640												
635												
630												
625												
620												
615												

NCDOT BORE DOUBLE R2612A GEO. BH.GPJ NC DOT.GDT 04/30/09



NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

PROJECT NO. 34483.1.1	ID. R-2612A	COUNTY GUILFORD	GEOLOGIST Bruinsma, C. M.
SITE DESCRIPTION BRIDGE OVER US 421 at SR 3389 (WOODY MILL ROAD) SOUTH OF GREENSBORO			GROUND WTR (ft)
BORING NO. EB2-A	STATION 35+00	OFFSET 28ft LT	ALIGNMENT -Y-
COLLAR ELEV. 719.1 ft	TOTAL DEPTH 23.4 ft	NORTHING 806,114	EASTING 1,791,772
DRILL MACHINE D-50	DRILL METHOD H.S. Augers	HAMMER TYPE Automatic	
START DATE 03/24/09	COMP. DATE 03/24/09	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						
720															719.1	0.0
	718.1	1.0		2	4	6										
715	715.6	3.5		8	11	22										
	713.1	6.0		68	32/0.1											
710	710.9	8.2		90	10/0.1											
	705.9	13.2		100/0.3												
705																
	700.9	18.2		40	60/0.4											
700																
	695.9	23.2		100/0.2												
695																
690																
685																
680																
675																
670																
665																
660																
655																
650																
645																
640																

PROJECT NO. 34483.1.1	ID. R-2612A	COUNTY GUILFORD	GEOLOGIST Kuntukova, Y.
SITE DESCRIPTION BRIDGE OVER US 421 at SR 3389 (WOODY MILL ROAD) SOUTH OF GREENSBORO			GROUND WTR (ft)
BORING NO. Y_3500	STATION 35+00	OFFSET CL	ALIGNMENT -Y-
COLLAR ELEV. 719.8 ft	TOTAL DEPTH 19.2 ft	NORTHING 806,115	EASTING 1,791,745
DRILL MACHINE CME-550	DRILL METHOD H.S. Augers	HAMMER TYPE Automatic	
START DATE 05/15/08	COMP. DATE 05/15/08	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						
725															719.8	0.0
720															717.8	2.0
	716.2	3.6		35	65/0.4											
715																
	711.2	8.6		100/0.2												
710																
	706.2	13.6		100/0.2												
705																
	701.2	18.6		100/0.2												
700																
695																
690																
685																
680																
675																
670																
665																
660																
655																
650																
645																
640																

NCDOT BORE DOUBLE R2612A GEO_BH.GPJ NC_DOT.GDT 04/30/09

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

PROJECT NO. 34483.1.1	ID. R-2612A	COUNTY GUILFORD	GEOLOGIST Bruinsma, C. M.
SITE DESCRIPTION BRIDGE OVER US 421 at SR 3389 (WOODY MILL ROAD) SOUTH OF GREENSBORO			GROUND WTR (ft)
BORING NO. EB2-Aa	STATION 34+80	OFFSET 31ft LT	ALIGNMENT -Y-
COLLAR ELEV. 707.3 ft	TOTAL DEPTH 1.2 ft	NORTHING 806,133	EASTING 1,791,776
DRILL MACHINE N/A	DRILL METHOD Rod Sounding	HAMMER TYPE Manual	
START DATE 04/03/09	COMP. DATE 04/03/09	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					
710														
													707.3 GROUND SURFACE	0.0
													706.1 RESIDUAL TAN, SANDY SILT, SAPROLITIC	1.2
705													Boring Terminated with Rod Sounding Refusal at Elevation 706.1 ft ON WEATHERED ROCK (GRANITE)	
700														
695														
690														
685														
680														
675														
670														
665														
660														
655														
650														
645														
640														
635														
630														

PROJECT NO. 34483.1.1	ID. R-2612A	COUNTY GUILFORD	GEOLOGIST Bruinsma, C. M.
SITE DESCRIPTION BRIDGE OVER US 421 at SR 3389 (WOODY MILL ROAD) SOUTH OF GREENSBORO			GROUND WTR (ft)
BORING NO. EB2-Bb	STATION 34+51	OFFSET 34ft RT	ALIGNMENT -Y-
COLLAR ELEV. 713.9 ft	TOTAL DEPTH 3.0 ft	NORTHING 806,166	EASTING 1,791,713
DRILL MACHINE N/A	DRILL METHOD Rod Sounding	HAMMER TYPE Manual	
START DATE 04/03/09	COMP. DATE 04/03/09	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					
715													713.9 GROUND SURFACE	0.0
													710.9 RESIDUAL TAN, SANDY SILT, SAPROLITIC	3.0
710													Boring Terminated with Rod Sounding Refusal at Elevation 710.9 ft ON WEATHERED ROCK (GRANITE)	
705														
700														
695														
690														
685														
680														
675														
670														
665														
660														
655														
650														
645														
640														
635														

NCDOT BORE DOUBLE R2612A GEO_BH.GPJ INC. DOT.GDT 04/30/09

EB1-A

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-5	32 LT	32+30	1.0-2.5	A-4(0)	26	6	29.6	27.8	22.4	20.3	91	75	44	-	-
SS-6	32 LT	32+30	3.2-4.7	A-4(0)	15	2	28.2	34.7	16.9	20.3	100	87	42	-	-
SS-7	32 LT	32+30	6.0-7.5	A-6(2)	30	14	32.0	28.3	11.3	28.3	98	83	42	-	-
SS-8	32 LT	32+30	8.2-9.7	A-7-6(6)	42	18	26.9	26.5	16.2	30.4	100	85	51	-	-
SS-9	32 LT	32+30	13.2-14.7	A-4(0)	29	4	36.5	30.6	18.7	14.2	100	79	39	-	-

EB1-B

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-1	28 RT	32+04	1.0-2.5	A-7-6(9)	44	19	22.7	23.9	18.9	34.4	100	89	57	-	-
SS-2	28 RT	32+04	3.5-5.0	A-6(2)	35	11	28.8	31.6	15.3	24.3	100	88	44	-	-
SS-3	28 RT	32+04	13.5-15.0	A-4(2)	34	5	13.2	38.9	37.8	10.1	100	96	59	-	-
SS-4	28 RT	32+04	23.5-25.0	A-4(0)	36	7	35.9	25.7	22.2	16.2	82	62	36	-	-

B1-A

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-14	27 RT	33+47	1.0-2.5	A-4(4)	31	6	6.7	23.7	45.3	24.3	98	95	74	-	-
SS-15	27 LT	33+47	7.8-8.8	A-2-4(0)	24	3	50.1	26.7	15.1	8.1	92	58	26	-	-

B1-C

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-16	CL	33+34	1.0-2.5	A-4(1)	29	3	13.0	31.8	39.0	16.2	100	95	63	-	-
SS-17	CL	33+34	3.2-4.7	A-4(0)	27	3	22.1	33.4	30.3	14.2	100	87	52	-	-

B1-B

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-12	27 RT	33+21	1.0-2.5	A-4(0)	26	1	27.0	39.7	21.2	12.2	100	89	39	-	-
SS-13A	27 RT	33+21	8.5-9.2	A-4(0)	24	3	27.6	37.1	25.2	10.1	100	88	42	-	-
SS-13B	27 RT	33+21	9.2-10.0	A-4(7)	36	8	3.9	28.6	57.4	10.1	100	99	81	-	-

EB2-A

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-11	28 LT	35+00	1.0-2.5	A-4(0)	25	5	24.3	29.4	22.0	24.3	99	88	51	-	-

EB2-B

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-10	34 RT	34+56	1.0-2.5	A-4(2)	32	10	25.7	29.6	22.4	22.3	98	84	49	-	-

B1-A

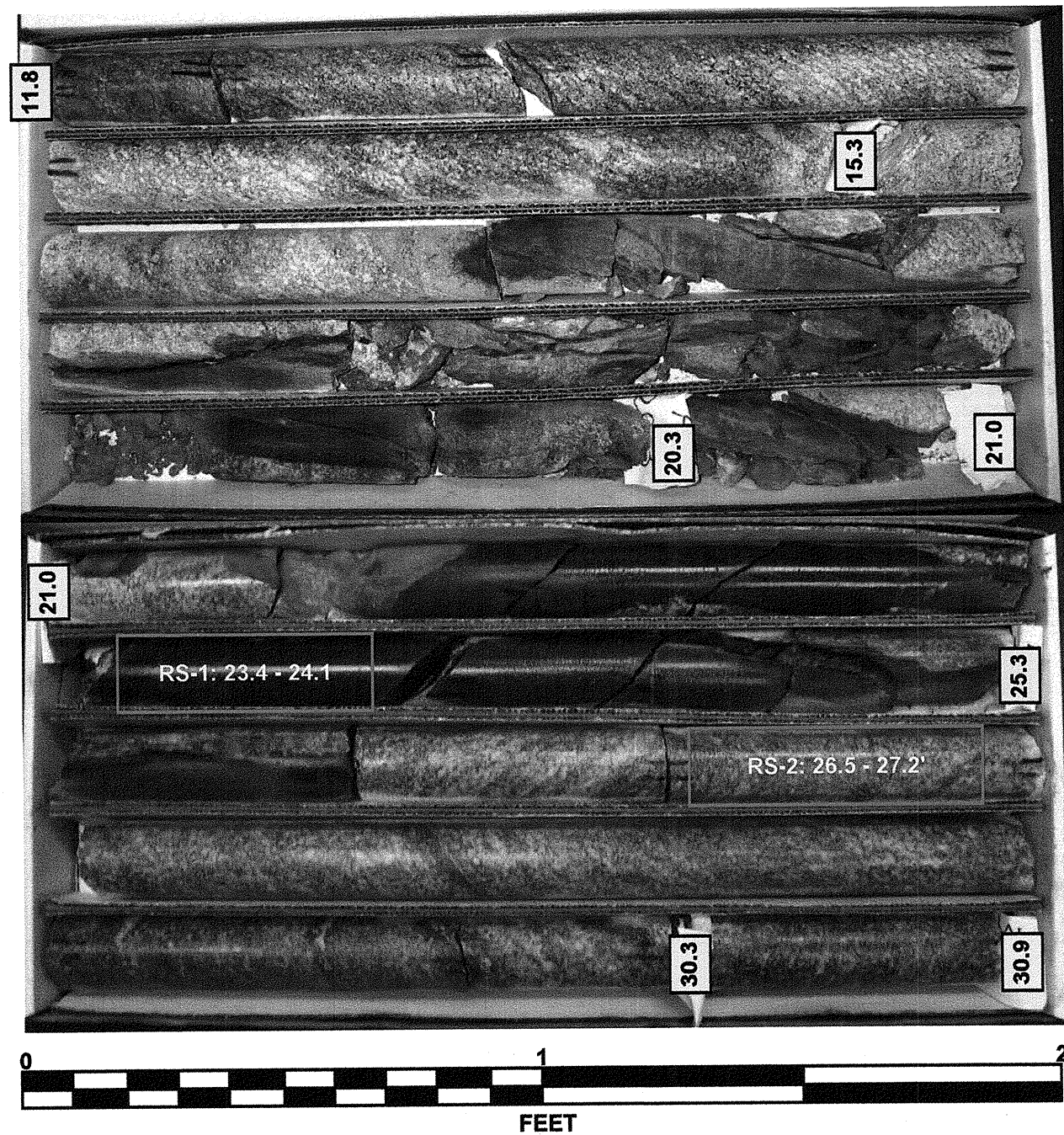
ROCK TEST RESULTS									
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	UNIT WEIGHT (lbs/ft ³)	H/D RATIO	ULTIMATE LOAD (ksi)	ULTIMATE LOAD (lbf)	SEC MOD @ 40% (Mpsi)	40% ULTIMATE LOAD (lbf)
RS-1	27 RT	33+47	23.4-24.1	187.7	2.02	5.49	64100	4.62	6830
RS-2	27 LT	33+47	26.5-27.2	167.2	2.04	20.6	17080	5.19	25600

B1-B

ROCK TEST RESULTS									
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	UNIT WEIGHT (lbs/ft ³)	H/D RATIO	ULTIMATE LOAD (ksi)	ULTIMATE LOAD (lbf)	SEC MOD @ 40% (Mpsi)	40% ULTIMATE LOAD (lbf)
RS-3	27 RT	33+21	17.3-18.1	164.3	2.02	2.68	8340	2.82	3340

CORE PHOTOGRAPHS

B1-A
BOXES 1 & 2: 11.8 - 30.9 FEET

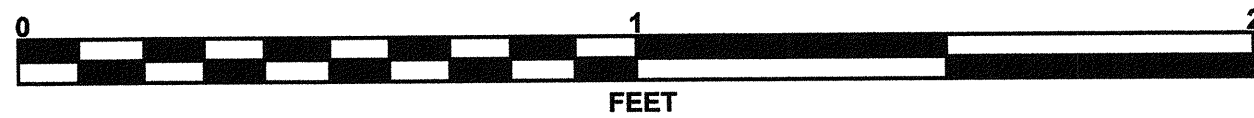
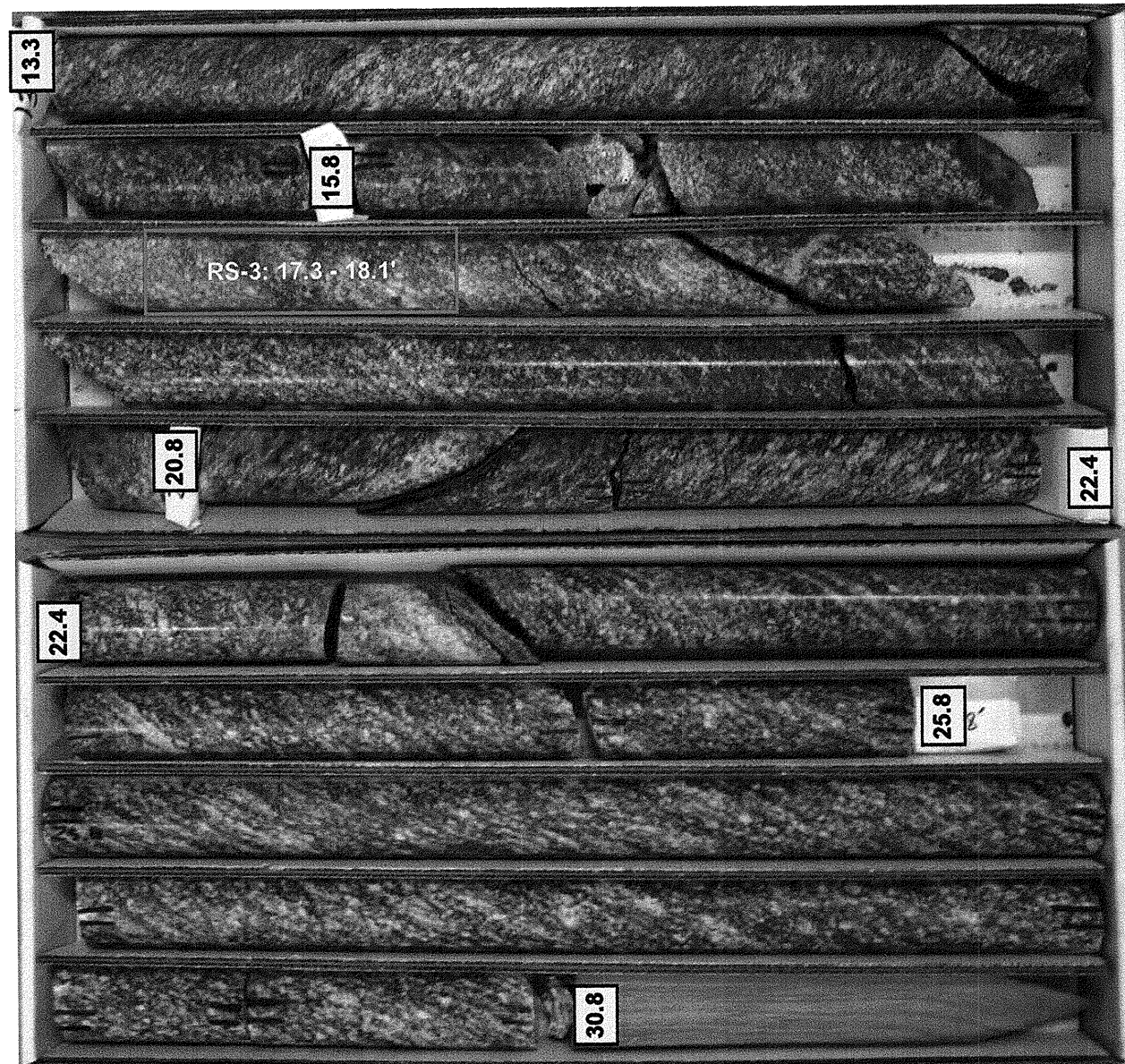


B1-A
BOX 3: 30.9 - 35.3 FEET



CORE PHOTOGRAPHS

B1-B
BOXES 1 & 2: 13.3 - 30.9 FEET



SITE PHOTO

BRIDGE OVER US 421 AT SR 3389 (WOODY MILL ROAD) SOUTH OF GREENSBORO



LOOKING NORTHEAST