

REFERENCE: U-2524D

PROJECT: 34820

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY GUILFORD
PROJECT DESCRIPTION GREENSBORO- WESTERN LOOP
FROM NORTH OF US 220 (BATTLEGROUND
AVENUE) TO SR 2302 (LAWNDALE DRIVE)
SITE DESCRIPTION BRIDGES ON GREENSBORO
WESTERN LOOP OVER -Y8- (LAWNDALE DRIVE)
AT -LREV- STA. 495 + 22

CONTENTS

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4, 5	PROFILES
6, 7	CROSS SECTIONS
8-11	BORE LOGS
12	SITE PHOTOGRAPH

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2524D	1	12

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) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT 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 CONTRACTOR 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 THE 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.

- NOTES:
1. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 2. 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.

PERSONNEL

N. MOHS
TRIGON
W. WHICHARD
R. BLINSON

2006 PERSONNEL

W. DUGGINS

INVESTIGATED BY N. MOHS, LG
DRAWN BY N. MOHS, LG
CHECKED BY D. BROWN, PE
SUBMITTED BY N. MOHS, LG
DATE NOVEMBER 2015



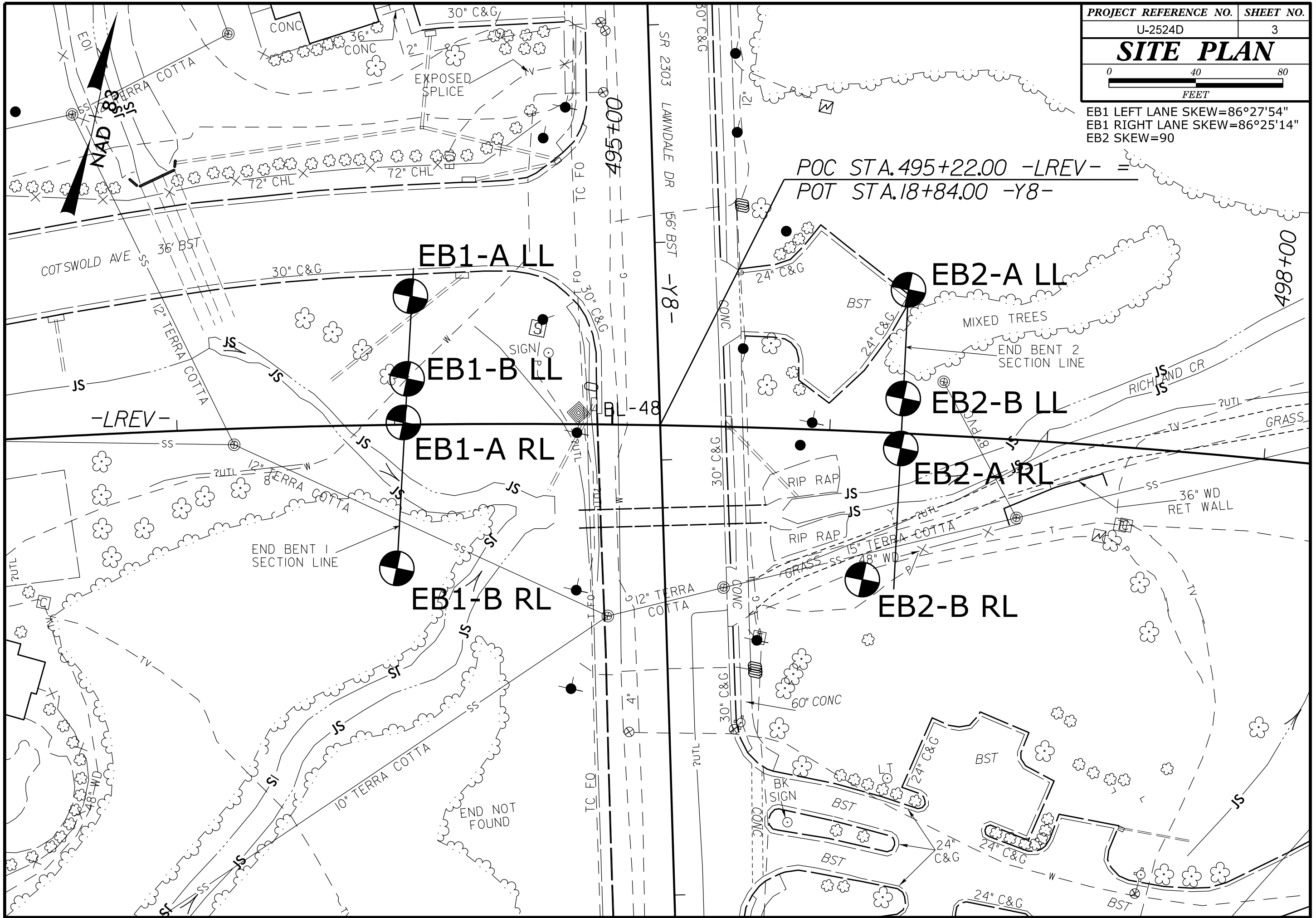
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Nathan Daniel Mohs 1/3/2016
95B46AF191F3448 SIGNATURE DATE

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

**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 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 THE STANDARD PENETRATION TEST (AASHTO T 208, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>										WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.										HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED, AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD 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:										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, SUCH 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 DISLOADED 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 (ROD) - 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 (SROD) - 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										ANGULARITY OF GRAINS										WEATHERED ROCK (WR)										CRYSTALLINE ROCK (CR)																			
GENERAL CLASS. GRANULAR MATERIALS (<= 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS										THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.										NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.										FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.																			
MINERALOGICAL COMPOSITION										COMPRESSION										NON-CRYSTALLINE ROCK (NCR)										COASTAL PLAIN SEDIMENTARY ROCK (CP)																			
MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.										SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50										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.																			
PERCENTAGE OF MATERIAL										GROUND WATER										WEATHERING																													
ORGANIC MATERIAL GRANULAR SOILS SILT - CLAY SOILS OTHER MATERIAL										WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING										FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.																													
TRACE OF ORGANIC MATTER 2 - 3% LITTLE ORGANIC MATTER 3 - 5% MODERATELY ORGANIC 5 - 10% HIGHLY ORGANIC > 10%										STATIC WATER LEVEL AFTER 24 HOURS										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.																													
										PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA										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.																													
										SPRING OR SEEP										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.																													
MISCELLANEOUS SYMBOLS										RECOMMENDATION SYMBOLS										SEVERE (MOD. SEV.)										SEVERE (SEV.)																			
ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION										UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE										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										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, WOULD YIELD SPT N VALUES > 100 BPF																			
SOIL SYMBOL										UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK										ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF										ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. FABRIC MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.																			
ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT										DIP & DIP DIRECTION OF ROCK STRUCTURES										VERY SEVERE (SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF										COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. FABRIC MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.																			
INFERRED SOIL BOUNDARY										SLOPE INDICATOR INSTALLATION										VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.																													
INFERRED ROCK LINE										CONE PENETROMETER TEST										HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.																													
ALLUVIAL SOIL BOUNDARY										SOUNDING ROD										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.																													
										TEST BORING WITH CORE										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.																													
										SPT N-VALUE										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.																													
TEXTURE OR GRAIN SIZE										ABBREVIATIONS										FRACTURE SPACING										BEDDING																			
U.S. STD. SIEVE SIZE OPENING (MM) 4 10 40 60 200 270										AR - AUGER REFUSAL MED. - MEDIUM VST - VANE SHEAR TEST										TERM SPACING										TERM THICKNESS																			
BOULDER (BLDR.) COBBLE (COB.) GRAVEL (GR.) COARSE SAND (CS.E. SD.) FINE SAND (F SD.) SILT (SL.) CLAY (CL.)										BT - BORING TERMINATED MICA - MICACEOUS WEA. - WEATHERED										VERY WIDE MORE THAN 10 FEET										VERY THICKLY BEDDED 4 FEET																			
GRAIN SIZE MM 305 75 2.0 0.25 0.05 0.005										CL. - CLAY MOD. - MODERATELY UNIT WEIGHT										WIDE 3 TO 10 FEET										THICKLY BEDDED 1.5 - 4 FEET																			
										CPT - CONE PENETRATION TEST NP - NON PLASTIC										MODERATELY CLOSE 1 TO 3 FEET										THINLY BEDDED 0.16 - 1.5 FEET																			
										CSE. - COARSE DPT - DYNAMIC PENETRATION TEST										CLOSE 0.16 TO 1 FOOT										VERY THINLY BEDDED 0.03 - 0.16 FEET																			
										DMT - DILATOMETER TEST SAP. - SAPROLITIC SL. - SILT, SILTY										VERY CLOSE LESS THAN 0.16 FEET										THICKLY LAMINATED 0.008 - 0.03 FEET																			
										e - VOID RATIO SD. - SAND, SANDY SLI. - SLIGHTLY																				THINLY LAMINATED < 0.008 FEET																			
										F - FINE FOSS. - FOSSILIFEROUS TCR - TRICONE REFUSAL																																							
										FRAC. - FRACTURED, FRACTURES w - MOISTURE CONTENT																																							
										FRAG. - FRAGMENTS HI. - HIGHLY V - VERY																																							
SOIL MOISTURE - CORRELATION OF TERMS										EQUIPMENT USED ON SUBJECT PROJECT										INDURATION																													
SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION										DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE:										FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.																													
LL - LIQUID LIMIT - SATURATED - (SAT.) USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE										CME-45C CLAY BITS AUTOMATIC										FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.																													
PL - PLASTIC LIMIT - WET - (W) SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE										CME-55 6" CONTINUOUS FLIGHT AUGER CORE SIZE: -B -H										MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.																													
OM - OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE										CME-550 HARD FACED FINGER BITS -N										INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.																													
SL - SHRINKAGE LIMIT - DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE										VANE SHEAR TEST TUNG-CARBIDE INSERTS HAND TOOLS: POST HOLE DIGGER										EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.																													
										PORTABLE HOIST TRICONE * STEEL TEETH																																							
										B-57 TRICONE * TUNG-CARB. CORE BIT																																							
PLASTICITY																																																	
NON PLASTIC SLIGHTLY PLASTIC MODERATELY PLASTIC HIGHLY PLASTIC																																																	
PLASTICITY INDEX (PI) DRY STRENGTH																																																	
0-5 VERY LOW 6-15 SLIGHT 16-25 MEDIUM 26 OR MORE HIGH																																																	
COLOR																																																	
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-BROWN). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.																																																	

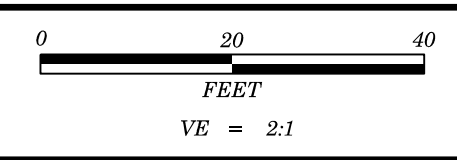
EB1 LEFT LANE SKEW=86°27'54"
 EB1 RIGHT LANE SKEW=86°25'14"
 EB2 SKEW=90



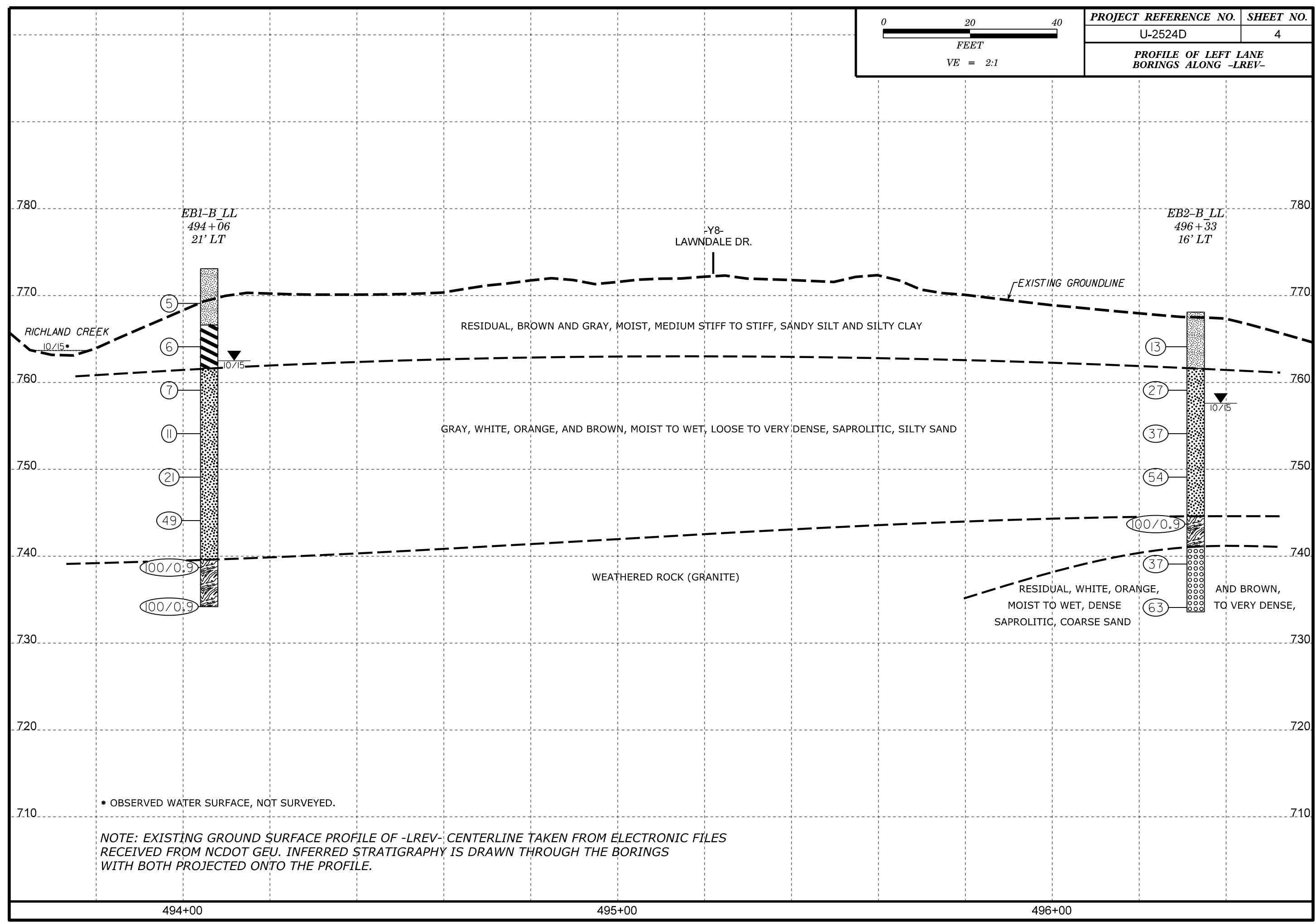
POC STA. 495+22.00 -LREV- =
 POT STA. 18+84.00 -Y8-

-LREV-

END NOT FOUND



PROJECT REFERENCE NO.	SHEET NO.
U-2524D	4
PROFILE OF LEFT LANE BORINGS ALONG -LREV-	



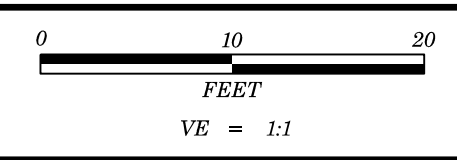
* OBSERVED WATER SURFACE, NOT SURVEYED.

NOTE: EXISTING GROUND SURFACE PROFILE OF -LREV- CENTERLINE TAKEN FROM ELECTRONIC FILES RECEIVED FROM NCDOT GEU. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE.

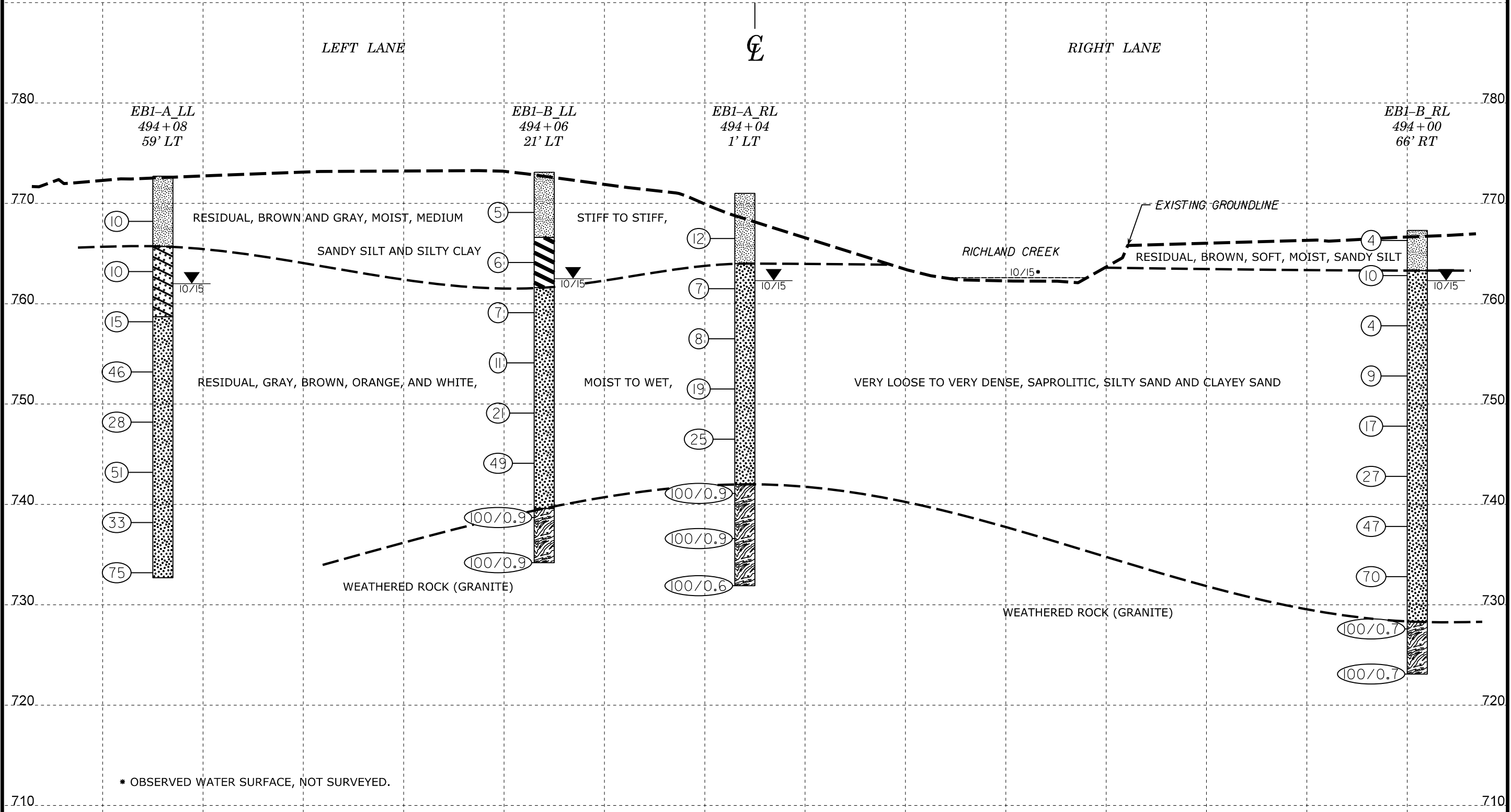
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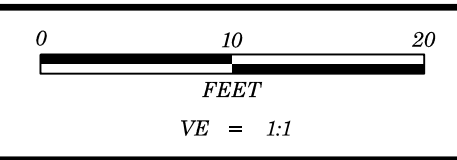
PROJECT REFERENCE NO.	SHEET NO.
U-2524D	6
END BENT 1 CROSS SECTION ACROSS LEFT & RIGHT LANES	



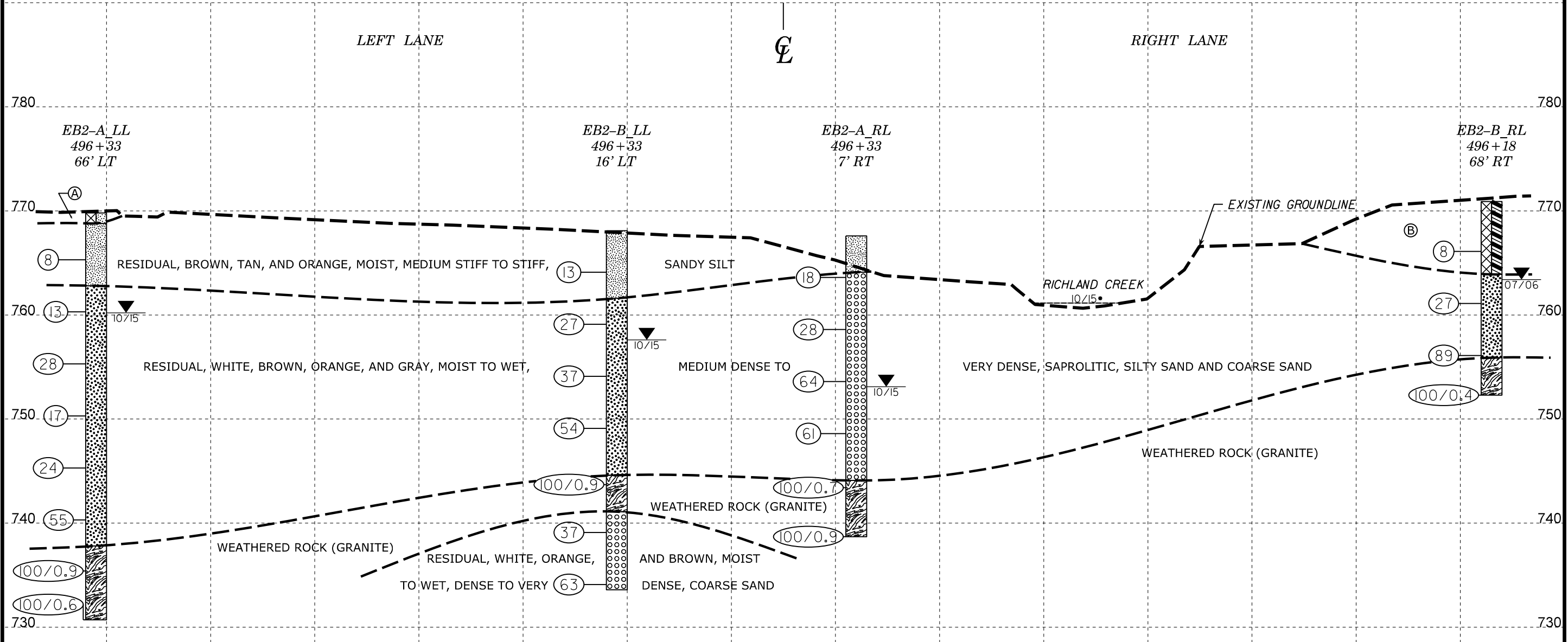
* OBSERVED WATER SURFACE, NOT SURVEYED.

NOTE: EXISTING GROUND SURFACE CROSS SECTION OF END BENT 1 TAKEN FROM ELECTRONIC FILES RECEIVED FROM NCDOT GEU. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

SKEW=86°27'54"



PROJECT REFERENCE NO.	SHEET NO.
U-2524D	7
END BENT 2 CROSS SECTION ACROSS LEFT & RIGHT LANES	



- (A) ARTIFICIAL FILL, BROWN, MOIST, SANDY SILT WITH GRAVEL
- (B) ARTIFICIAL FILL, BROWN, MOIST TO WET, MEDIUM STIFF, SANDY CLAY WITH CONCRETE
- * OBSERVED WATER SURFACE, NOT SURVEYED.

NOTE: EXISTING GROUND SURFACE CROSS SECTION OF END BENT 2 TAKEN FROM ELECTRONIC FILES RECEIVED FROM NCDOT GEU. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

SKEW=90°

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34820.1.2		TIP U-2524D		COUNTY GUILFORD		GEOLOGIST N. Mohs											
SITE DESCRIPTION Bridges on Greensboro Western Loop over -Y8- (Lawndale Drive) at -LREV- Sta. 495+22							GROUND WTR (ft)										
BORING NO. EB1-A_LL		STATION 494+08		OFFSET 59 ft LT		ALIGNMENT -LREV-											
COLLAR ELEV. 772.7 ft		TOTAL DEPTH 40.0 ft		NORTHING 871,415		EASTING 1,753,781											
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 68% 02/20/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER W. Whichard		START DATE 10/22/15		COMP. DATE 10/22/15		SURFACE WATER DEPTH N/A											
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
775																	
770	769.2	3.5	5	5	5	10							M		772.7	GROUND SURFACE RESIDUAL Brown, Sandy Silt	0.0
765	764.2	8.5	4	4	6	10							M		765.7	Gray, Saprolitic, Clayey Sand	7.0
760	759.2	13.5	6	7	8	15							M		758.7	Gray, Orange, and Brown, Saprolitic, Silty Sand	14.0
755	754.2	18.5	18	23	23	46							M				
750	749.2	23.5	6	12	16	28							M				
745	744.2	28.5	16	24	27	51							M				
740	739.2	33.5	10	17	16	33							M				
735	734.2	38.5	22	37	38	75							M		732.7	Boring Terminated at Elevation 732.7 ft in Silty Sand	40.0
*24 Hour Water Level Checked at 8 Hours																	

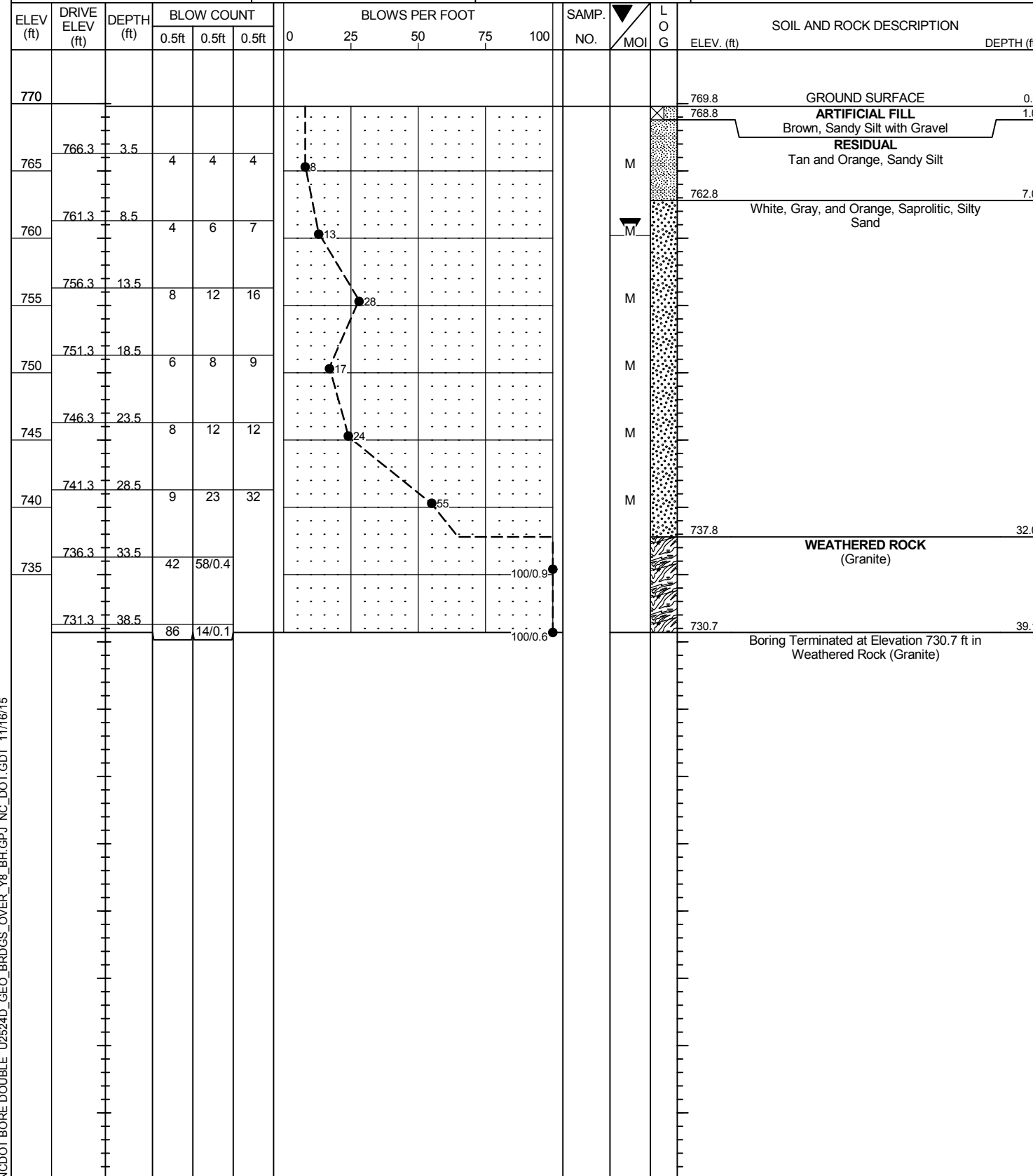
WBS 34820.1.2		TIP U-2524D		COUNTY GUILFORD		GEOLOGIST N. Mohs											
SITE DESCRIPTION Bridges on Greensboro Western Loop over -Y8- (Lawndale Drive) at -LREV- Sta. 495+22							GROUND WTR (ft)										
BORING NO. EB1-B_LL		STATION 494+06		OFFSET 21 ft LT		ALIGNMENT -LREV-											
COLLAR ELEV. 773.1 ft		TOTAL DEPTH 38.9 ft		NORTHING 871,377		EASTING 1,753,787											
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 68% 02/20/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER W. Whichard		START DATE 10/22/15		COMP. DATE 10/22/15		SURFACE WATER DEPTH N/A											
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
775																	
770	770.1	3.0	2	2	3	5							M		773.1	GROUND SURFACE RESIDUAL Brown, Sandy Silt	0.0
765	765.1	8.0	2	3	3	6							M		766.6	Gray, Silty Clay	6.5
760	760.1	13.0	2	3	4	7							M		761.6	Gray and White, Saprolitic, Silty Sand	11.5
755	755.1	18.0	3	4	7	11							M				
750	750.1	23.0	6	9	12	21							M				
745	745.1	28.0	12	24	25	49							M				
740	740.1	33.0	22	48	52/0.4								M		739.6	WEATHERED ROCK (Granite)	33.5
735	735.1	38.0	26	74/0.4									M		734.2	Boring Terminated at Elevation 734.2 ft in Weathered Rock (Granite)	38.9

NCDOT BORE DOUBLE U2524D_GEO_BRDGS_OVER_Y8_BH.GPJ NC_DOT.GDT 11/16/15

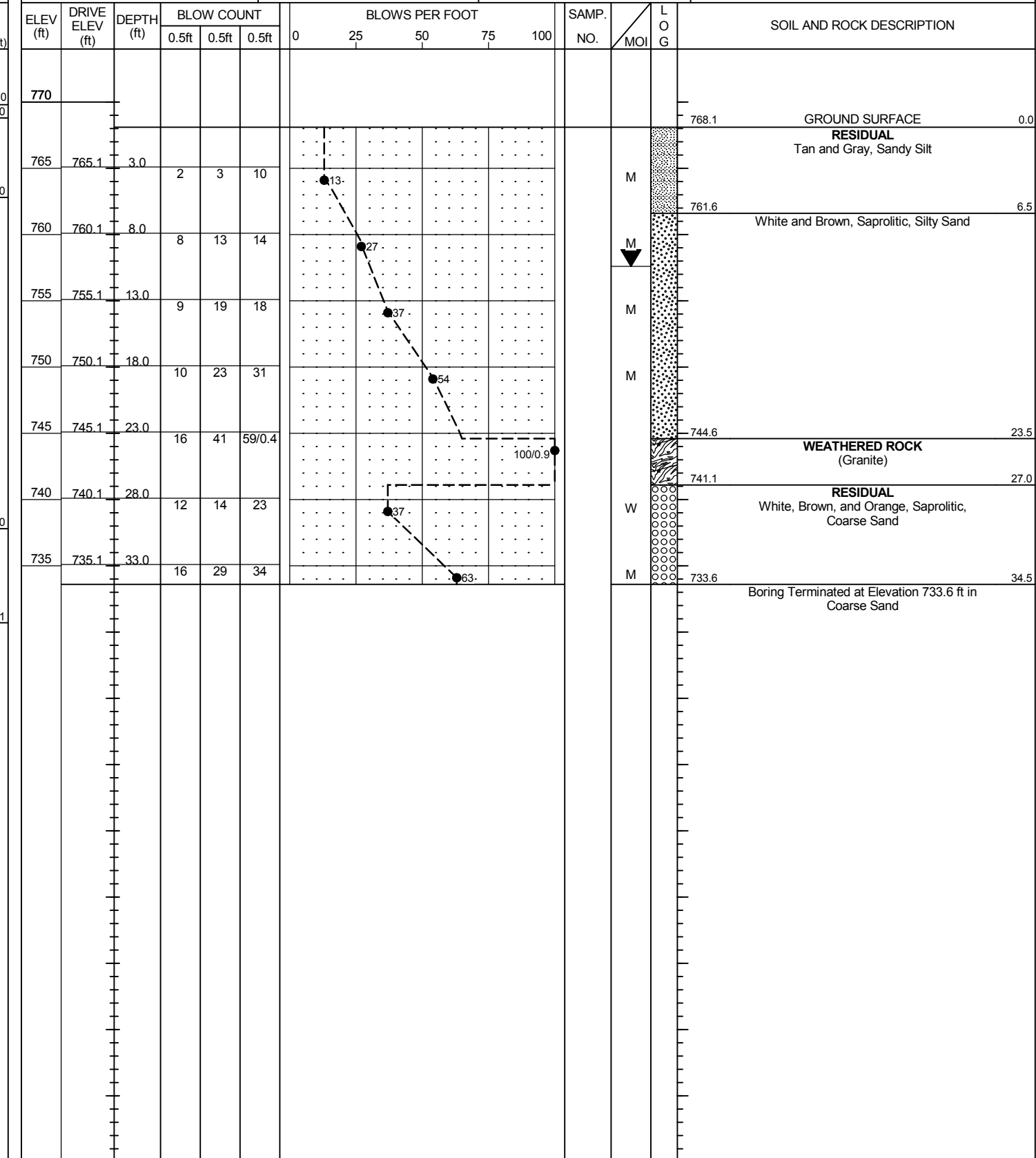
GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34820.1.2	TIP U-2524D	COUNTY GUILFORD	GEOLOGIST N. Mohs
SITE DESCRIPTION Bridges on Greensboro Western Loop over -Y8- (Lawndale Drive) at -LREV- Sta. 495+22			GROUND WTR (ft)
BORING NO. EB2-A_LL	STATION 496+33	OFFSET 66 ft LT	ALIGNMENT -LREV-
COLLAR ELEV. 769.8 ft	TOTAL DEPTH 39.1 ft	NORTHING 871,465	EASTING 1,754,004
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 68% 02/20/2015		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER W. Whichard	START DATE 10/20/15	COMP. DATE 10/20/15	SURFACE WATER DEPTH N/A



WBS 34820.1.2	TIP U-2524D	COUNTY GUILFORD	GEOLOGIST N. Mohs
SITE DESCRIPTION Bridges on Greensboro Western Loop over -Y8- (Lawndale Drive) at -LREV- Sta. 495+22			GROUND WTR (ft)
BORING NO. EB2-B_LL	STATION 496+33	OFFSET 16 ft LT	ALIGNMENT -LREV-
COLLAR ELEV. 768.1 ft	TOTAL DEPTH 34.5 ft	NORTHING 871,416	EASTING 1,754,012
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 68% 02/20/2015		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER W. Whichard	START DATE 10/20/15	COMP. DATE 10/20/15	SURFACE WATER DEPTH N/A



NCDOT BORE DOUBLE U2524D_GEO_BRDGS_OVER_Y8_BH.GPJ NC_DOT.GDT 11/16/15

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34820.1.2		TIP U-2524D		COUNTY GUILFORD		GEOLOGIST N. Mohs									
SITE DESCRIPTION Bridges on Greensboro Western Loop over -Y8- (Lawndale Drive) at -LREV- Sta. 495+22							GROUND WTR (ft)								
BORING NO. EB1-A_RL		STATION 494+04		OFFSET 1 ft LT		ALIGNMENT -LREV-									
COLLAR ELEV. 771.0 ft		TOTAL DEPTH 39.1 ft		NORTHING 871,357		EASTING 1,753,789									
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 68% 02/20/2015			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER W. Whichard		START DATE 10/22/15		COMP. DATE 10/22/15		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
775															
770															
765	767.5	3.5	6	6	6	12						M	RESIDUAL Brown, Sandy Silt	7.0	
760	762.5	8.5	5	3	4	7						W	Tan, Gray, Brown, and White, Saprolitic, Silty Sand	29.0	
755	757.5	13.5	2	3	5	8						M			
750	752.5	18.5	4	7	12	19						M			
745	747.5	23.5	5	11	14	25						M			
740	742.5	28.5	22	47	53/0.4	100/0.9							WEATHERED ROCK (Granite)	29.0	
735	737.5	33.5	35	65/0.4		100/0.9									
	732.5	38.5	82	18/0.1		100/0.6									
Boring Terminated at Elevation 731.9 ft in Weathered Rock (Granite)															

WBS 34820.1.2		TIP U-2524D		COUNTY GUILFORD		GEOLOGIST N. Mohs									
SITE DESCRIPTION Bridges on Greensboro Western Loop over -Y8- (Lawndale Drive) at -LREV- Sta. 495+22							GROUND WTR (ft)								
BORING NO. EB1-B_RL		STATION 494+00		OFFSET 66 ft RT		ALIGNMENT -LREV-									
COLLAR ELEV. 767.3 ft		TOTAL DEPTH 44.2 ft		NORTHING 871,291		EASTING 1,753,800									
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 68% 02/20/2015			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER W. Whichard		START DATE 10/22/15		COMP. DATE 10/22/15		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
770															
765	767.3	0.0	1	1	3	4						M	GROUND SURFACE	0.0	
760	763.8	3.5	5	5	5	10						M	RESIDUAL Brown, Sandy Silt	4.0	
755	758.8	8.5	1	2	2	4						W	Orange, Brown, and White, Saprolitic, Silty Sand	4.0	
750	753.8	13.5	2	3	6	9						M			
745	748.8	18.5	3	8	9	17						M			
740	743.8	23.5	8	13	14	27						M			
735	738.8	28.5	10	22	25	47						M			
730	733.8	33.5	17	30	40	70						M			
725	728.8	38.5	21	70	30/0.2	100/0.7							WEATHERED ROCK (Granite)	39.0	
	723.8	43.5	62	38/0.2		100/0.7									
Boring Terminated at Elevation 723.1 ft in Weathered Rock (Granite)															

NCDOT BORE DOUBLE U2524D_GEO_BRDGS_OVER_Y8_BH.GPJ NC_DOT.GDT 11/16/15

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34820.1.2		TIP U-2524D		COUNTY GUILFORD		GEOLOGIST N. Mohs	
SITE DESCRIPTION Bridges on Greensboro Western Loop over -Y8- (Lawndale Drive) at -LREV- Sta. 495+22							GROUND WTR (ft)
BORING NO. EB2-A_RL		STATION 496+33		OFFSET 7 ft RT		ALIGNMENT -LREV-	
COLLAR ELEV. 767.6 ft		TOTAL DEPTH 28.9 ft		NORTHING 871,393		EASTING 1,754,016	
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 68% 02/20/2015			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic	
DRILLER W. Whichard		START DATE 10/20/15		COMP. DATE 10/20/15		SURFACE WATER DEPTH N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
770																
765	764.6	3.0	6	9	9										767.6	GROUND SURFACE
															764.1	RESIDUAL Orange, Sandy Silt
760	759.6	8.0	10	12	16											White and Orange, Saprolitic, Coarse Sand
755	754.6	13.0	18	30	34											
750	749.6	18.0	12	23	38											
745	744.6	23.0	29	65	35/0.2										744.1	WEATHERED ROCK (Granite)
740	739.6	28.0	31	69/0.4											738.7	Boring Terminated at Elevation 738.7 ft in Weathered Rock (Granite)

WBS 34820.1.2		TIP U-2524D		COUNTY GUILFORD		GEOLOGIST N. Mohs	
SITE DESCRIPTION Bridges on Greensboro Western Loop over -Y8- (Lawndale Drive) at -LREV- Sta. 495+22							GROUND WTR (ft)
BORING NO. EB2-B_RL		STATION 496+18		OFFSET 68 ft RT		ALIGNMENT -LREV-	
COLLAR ELEV. 770.9 ft		TOTAL DEPTH 18.6 ft		NORTHING 871,331		EASTING 1,754,011	
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 (Hammer calibration data not available)			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic	
DRILLER W. Duggins		START DATE 07/24/06		COMP. DATE 07/24/06		SURFACE WATER DEPTH N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
775																
770															770.9	GROUND SURFACE
765	767.1	3.8	4	5	3											Artificial Fill Brown, Sandy Clay with Broken Concrete
760	762.1	8.8	10	13	14											RESIDUAL Green and Gray, Saprolitic, Silty Sand
755	757.1	13.8	12	15	74											WEATHERED ROCK (Granite)
	752.7	18.2													752.3	Boring Terminated at Elevation 752.3 ft in Weathered Rock (Granite)

NCDOT BORE DOUBLE U2524D_GEO_BRDGS_OVER_Y8_BH.GPJ NC_DOT.GDT 11/16/15

SITE PHOTOGRAPH



VIEW ALONG -Y8- (LAWNDALE DR.) LOOKING NORTH