

REFERENCE: U-2525C

PROJECT: 34821

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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

COUNTY GUILFORD  
PROJECT DESCRIPTION GREENSBORO EASTERN LOOP  
FROM US 29 NORTH OF GREENSBORO TO SR  
2303 (LAWNSDALE DRIVE)  
SITE DESCRIPTION MSE WALLS AT END BENT 1  
AND END BENT 2 - SITE #2 (STRUCTURE #2  
AND #3) ON I-85 BYPASS (-L-) OVER LEES  
CHAPEL ROAD (-Y1-)

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2525C	1	11

**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 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 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

D. KUBINSKI

R. TOOTHMAN

W. ALLEN

B. JOHNSON

INVESTIGATED BY D. KUBINSKI

DRAWN BY T. WELLS

CHECKED BY X. BARRETT

SUBMITTED BY KLEINFELDER, INC.

DATE NOVEMBER 2017

Prepared in the Office of:



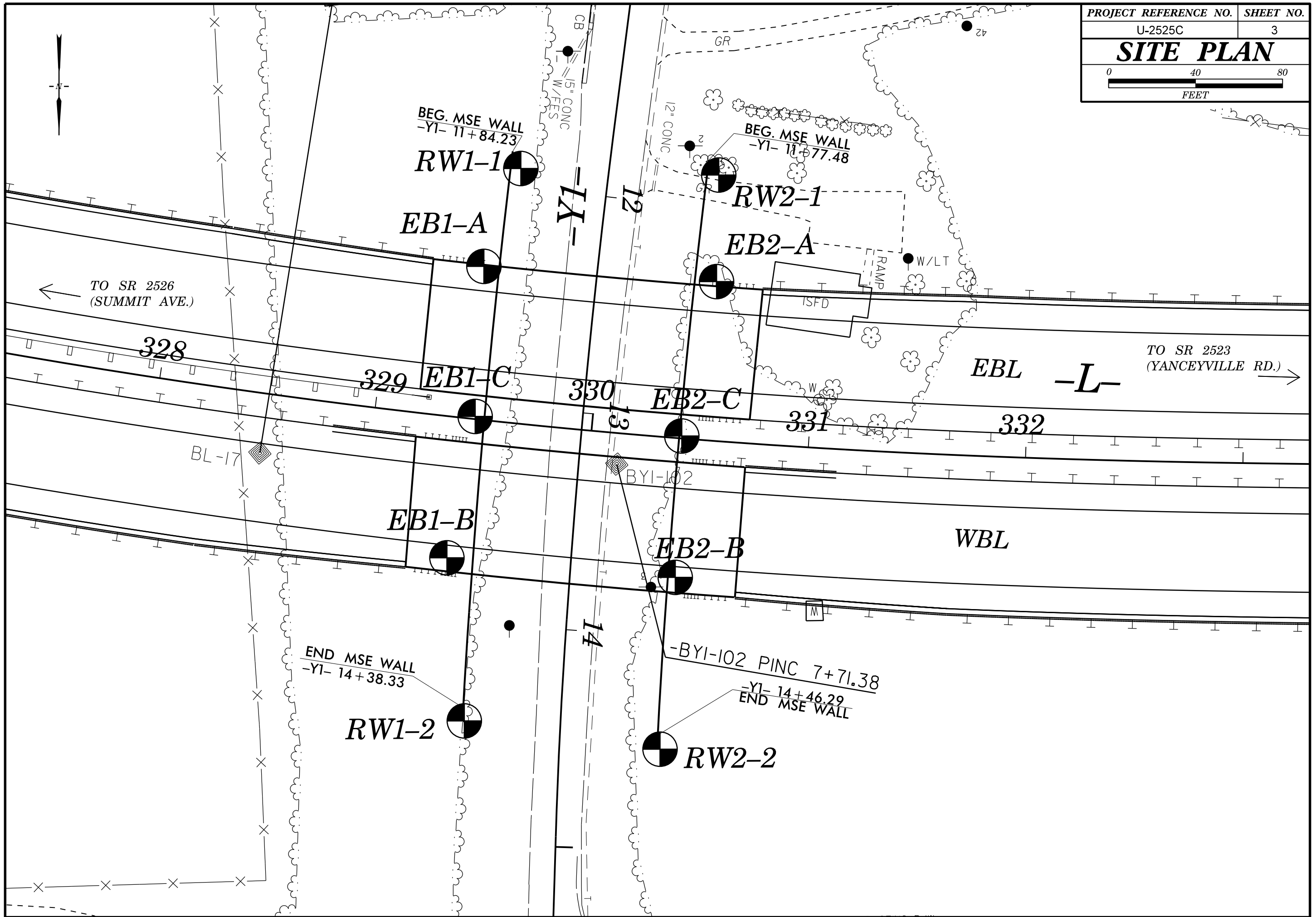
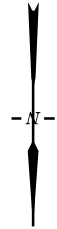
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Xavier C. Barrett 11/22/2017

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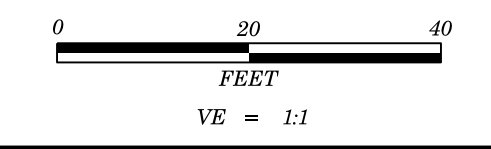
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**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GEOTECHNICAL ENGINEERING UNIT  
SUBSURFACE INVESTIGATION  
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS**

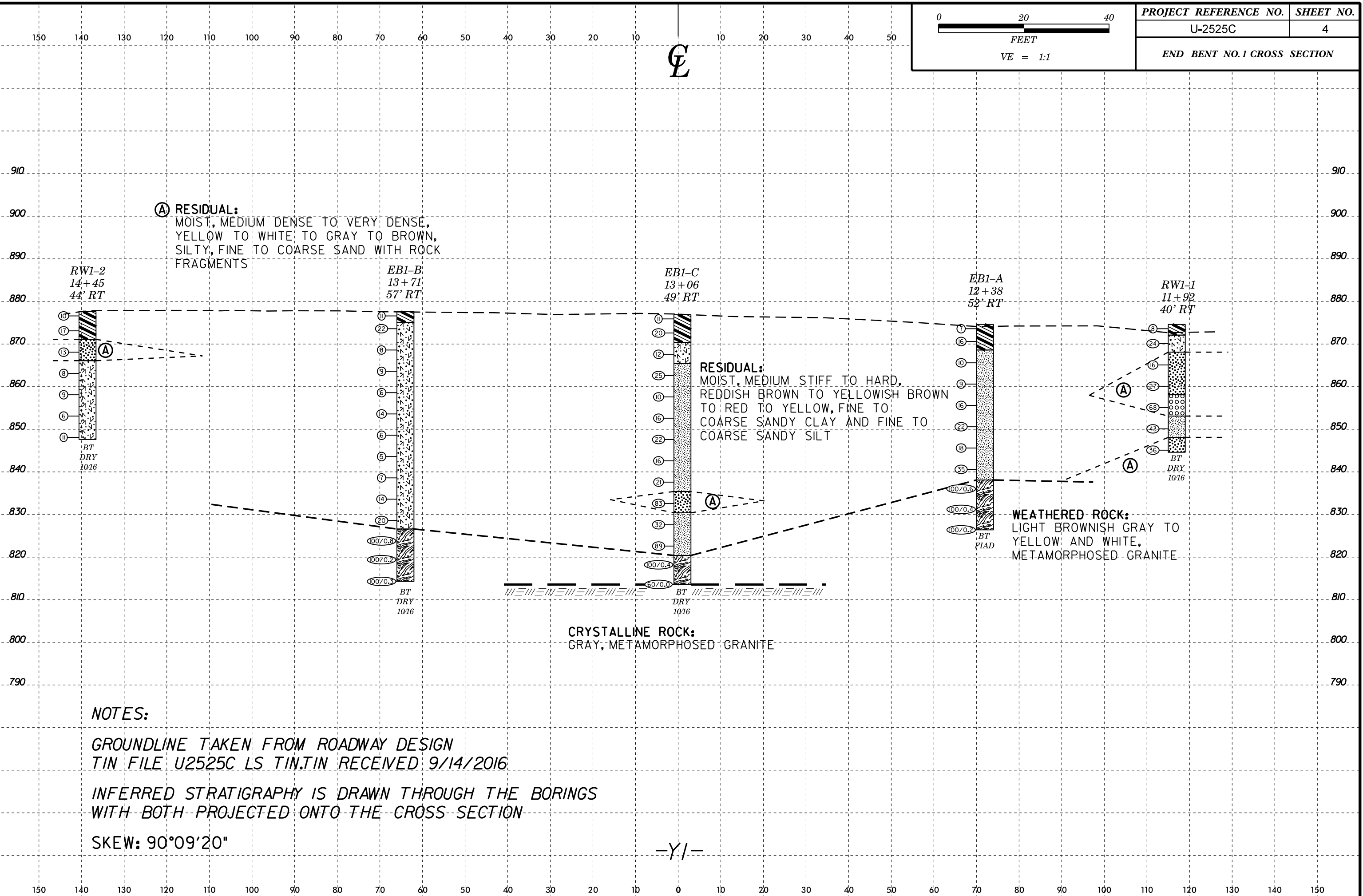
SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS									
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, 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. 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 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 (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.									
<b>SOIL LEGEND AND AASHTO CLASSIFICATION</b>										<b>ANGULARITY OF GRAINS</b>										<b>WEATHERED ROCK (WR)</b>										<b>CRYSTALLINE ROCK (CR)</b>									
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.									
<b>MINERALOGICAL COMPOSITION</b>										<b>NON-CRYSTALLINE ROCK (NCR)</b>										<b>COASTAL PLAIN SEDIMENTARY ROCK (CP)</b>										<b>WEATHERING</b>									
MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.										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.										ROCK GENERALLY FRESH, JOINTS STAINED, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.										ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN. CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.									
<b>COMPRESSION</b>										<b>PERCENTAGE OF MATERIAL</b>										<b>SLIGHT (SLI.)</b>										<b>MODERATE (MOD.)</b>									
SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50										ORGANIC MATERIAL GRANULAR SOILS SILT - CLAY SOILS OTHER MATERIAL TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10% LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20% MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35% HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE										ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.										SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.									
<b>GROUND WATER</b>										<b>SEVERE (MOD. SEV.)</b>										<b>SEVERE (SEV.)</b>										<b>VERY SEVERE (IV SEV.)</b>									
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										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										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									
<b>MISCELLANEOUS SYMBOLS</b>										<b>VERY HARD</b>										<b>HARD</b>										<b>MODERATELY HARD</b>									
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 SPT DMT TEST BORING AUGER BORING CORE BORING MONITORING WELL PIEZOMETER INSTALLATION										SLOPE INDICATOR INSTALLATION CONE PENETROMETER TEST SOUNDING ROD TEST BORING WITH CORE SPT N-VALUE										CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK. CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN. 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. 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. 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. 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.									
<b>CONSISTENCY OR DENSENESS</b>										<b>RECOMMENDATION SYMBOLS</b>										<b>SOFT</b>										<b>VERY SOFT</b>									
PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT <sup>2</sup> )										UNDERCUT UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL SHALLOW UNDERCUT UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK										AR - AUGER REFUSAL BT - BORING TERMINATED CL - CLAY CPT - CONE PENETRATION TEST CSE - COARSE DMT - DILATOMETER TEST DPT - DYNAMIC PENETRATION TEST e - VOID RATIO F - FINE FOSS. - FOSSILIFEROUS FRAC. - FRACTURED, FRACTURES FRAGS. - FRAGMENTS HI. - 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 TCR - TRICONE REFUSAL w - MOISTURE CONTENT V - VERY VST - VANE SHEAR TEST WEA. - WEATHERED UNIT WEIGHT DRY UNIT WEIGHT SAMPLE ABBREVIATIONS S - BULK SS - SPLIT SPOON ST - SHELBY TUBE RS - ROCK RT - RECOMPACTED TRIAXIAL CBR - CALIFORNIA BEARING RATIO										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.									
<b>TEXTURE OR GRAIN SIZE</b>										<b>ABBREVIATIONS</b>										<b>MODERATELY HARD</b>										<b>MEDIUM HARD</b>									
U.S. STD. SIEVE SIZE OPENING (MM) 4 10 40 60 200 270 2.00 0.42 0.25 0.075 0.053										GRAIN SIZE MM 305 75 2.0 0.25 0.05 0.005 IN. 12 3										VERY HARD										HARD									
<b>SOIL MOISTURE - CORRELATION OF TERMS</b>										<b>VERY HARD</b>										<b>HARD</b>										<b>MODERATELY HARD</b>									
SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION										CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.										CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.										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.									
LL - LIQUID LIMIT PL - PLASTIC LIMIT OM - OPTIMUM MOISTURE SHRINKAGE LIMIT										- SATURATED - (SAT.) USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE										- WET - (W) SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE										- MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE									
<b>PLASTICITY</b>										<b>VERY HARD</b>										<b>HARD</b>										<b>MODERATELY HARD</b>									
NON PLASTIC SLIGHTLY PLASTIC MODERATELY PLASTIC HIGHLY PLASTIC										PLASTICITY INDEX (PI) DRY STRENGTH VERY LOW SLIGHT MEDIUM HIGH										CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.										CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.									
<b>COLOR</b>										<b>VERY HARD</b>										<b>HARD</b>										<b>MODERATELY HARD</b>									
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.										EQUIPMENT USED ON SUBJECT PROJECT										<b>VERY HARD</b>										<b>HARD</b>									
										DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE: CORE SIZE: HAND TOOLS:										CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.										CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.									
										CME-45C CLAY BITS AUTOMATIC CME-55 6" CONTINUOUS FLIGHT AUGER 8" HOLLOW AUGERS HARD FACED FINGER BITS TUNG-CARBIDE INSERTS CASING w/ ADVANCER TRICONE 2-1/8" STEEL TEETH TRICONE TUNG-CARB. CORE BIT										-B -H -N POST HOLE DIGGER HAND AUGER SOUNDING ROD VANE SHEAR TEST										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.									
<b>INDURATION</b>										<b>VERY HARD</b>										<b>HARD</b>										<b>MODERATELY HARD</b>									
FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.										FRIBLE 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.										<b>VERY HARD</b>										<b>HARD</b>									
										ELEVATION: 874.57 FEET										<b>VERY HARD</b>										<b>HARD</b>									
										NOTES: FIAD: FILLED IMMEDIATELY AFTER DRILLING										<b>VERY HARD</b>										<b>HARD</b>									



6/23/16  
27-OCT-2017 13:48  
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PROJECT REFERENCE NO.	SHEET NO.
U-2525C	4
END BENT NO.1 CROSS SECTION	

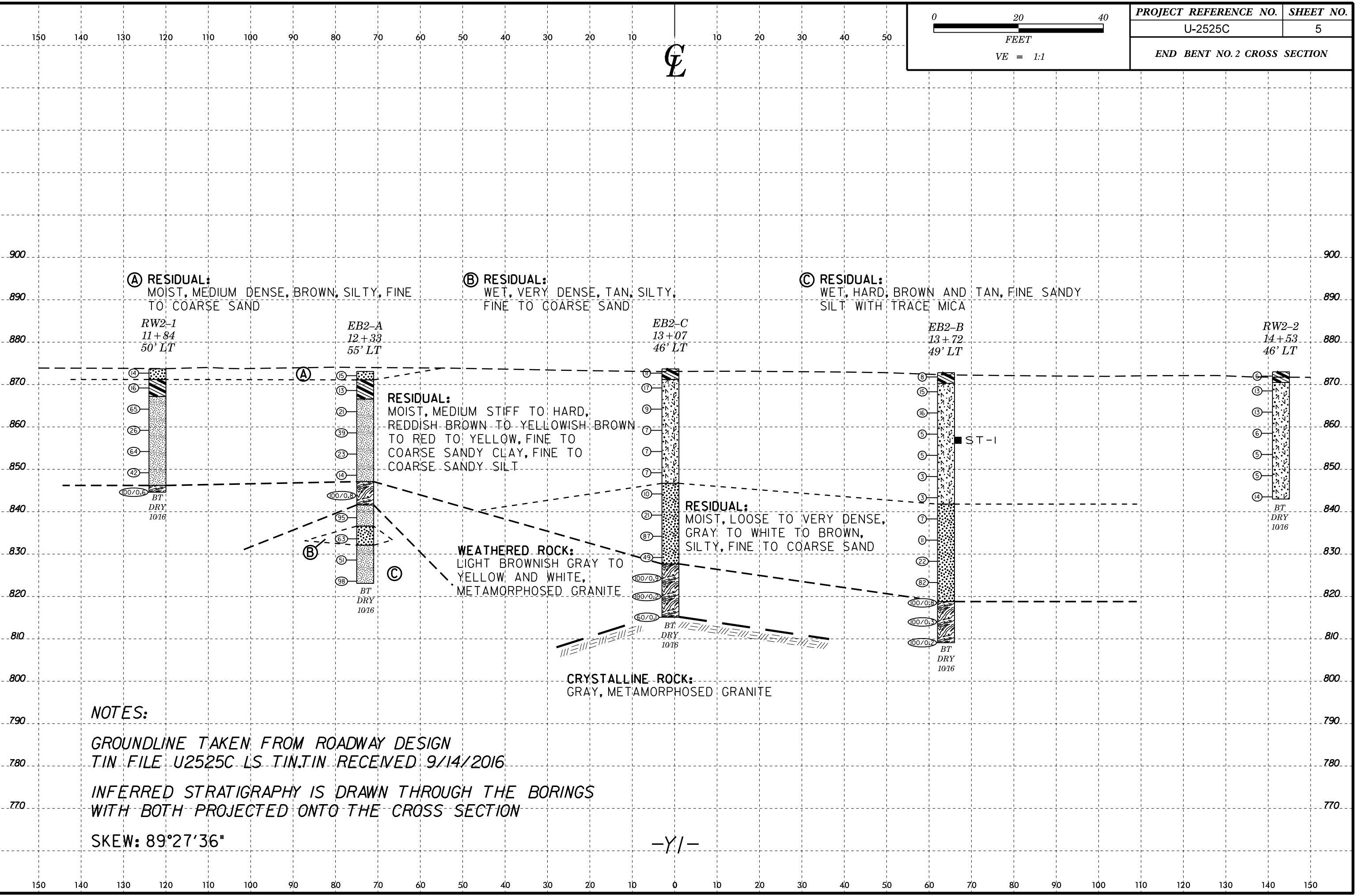


**NOTES:**  
GROUNDLINE TAKEN FROM ROADWAY DESIGN  
TIN FILE U2525C LS TIN.TIN RECEIVED 9/14/2016  
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS  
WITH BOTH PROJECTED ONTO THE CROSS SECTION  
SKEW: 90°09'20"

-Y/-

27-OCT-2017 13:32  
U:\Share\GEO\TECHNICAL\Projects\Active\Projects\20151548\0046A U-2525C Site #2 Retaining Walls\U2525C\_GEO\_RWAL\_Site2\CADD\GEO\U2525C\_geo\_xsc\_sheet.dgn

0	20	40
FEET		
VE = 1:1		
PROJECT REFERENCE NO.	SHEET NO.	
U-2525C	5	
END BENT NO. 2 CROSS SECTION		



**NOTES:**  
GROUNDLINE TAKEN FROM ROADWAY DESIGN  
TIN FILE U2525C\_LS\_TIN.TIN RECEIVED 9/14/2016  
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS  
WITH BOTH PROJECTED ONTO THE CROSS SECTION  
SKEW: 89°27'36"

-Y/-

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 34821.1.5		TIP U-2525C		COUNTY GUILFORD		GEOLOGIST Kubinski, D.									
SITE DESCRIPTION Site #2 (Structure #2 and #3) - Bridge No. 1241 and 1242 on I-85 Bypass (-L-) over Lees Chapel Road (-Y1-)						GROUND WTR (ft)									
BORING NO. EB1-A		STATION 12+38		OFFSET 52 ft RT		ALIGNMENT -Y1-									
COLLAR ELEV. 874.6 ft		TOTAL DEPTH 48.2 ft		NORTHING 874,587		EASTING 1,777,555									
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 77% 02/22/2016				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic									
DRILLER Toothman, R.		START DATE 10/10/16		COMP. DATE 10/10/16		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
875	874.6	0.0	2	2	5								M	GROUND SURFACE	0.0
	871.6	3.0	7	7	9								M	RESIDUAL Brown and Yellowish Brown to Red, Fine Sandy CLAY	
870	866.6	8.0	4	5	5								M	Yellowish Brown and Yellow to Gray to Olive Yellow, Fine to Coarse SANDY SILT	6.0
865	861.6	13.0	3	4	5								M		
860	856.6	18.0	5	7	9								M		
855	851.6	23.0	5	10	12								M		
850	846.6	28.0	5	8	10								M		
845	841.6	33.0	12	15	20								M		
840	836.6	38.0	84	16/0.1									M		36.5
835	831.6	43.0	100/0.4										M	WEATHERED ROCK Light Brownish Gray, METAMORPHOSED GRANITE	36.5
830	826.6	48.0	100/0.2										M	Boring Terminated at Elevation 826.4 ft in WEATHERED ROCK: METAMORPHOSED GRANITE  Topsoil 0.0 to 0.4 foot	48.2

WBS 34821.1.5		TIP U-2525C		COUNTY GUILFORD		GEOLOGIST Kubinski, D.									
SITE DESCRIPTION Site #2 (Structure #2 and #3) - Bridge No. 1241 and 1242 on I-85 Bypass (-L-) over Lees Chapel Road (-Y1-)						GROUND WTR (ft)									
BORING NO. EB1-C		STATION 13+06		OFFSET 49 ft RT		ALIGNMENT -Y1-									
COLLAR ELEV. 876.9 ft		TOTAL DEPTH 63.3 ft		NORTHING 874,656		EASTING 1,777,559									
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 77% 02/22/2016				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic									
DRILLER Toothman, R.		START DATE 10/06/16		COMP. DATE 10/06/16		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
880	876.9	0.0	5	6	5								M	GROUND SURFACE	0.0
875	873.6	3.3	6	9	11								M	RESIDUAL Red, Fine Sandy CLAY with Trace Mica	
870	868.6	8.3	5	5	7								M	Red, Fine Sandy SILT with Trace Mica	6.5
865	863.6	13.3	8	11	14								M	Red to Olive and Yellow to Light Brownish Gray, Fine Sandy SILT with Trace Mica	11.5
860	858.6	18.3	5	4	6								M		
855	853.6	23.3	4	6	10								M		
850	848.6	28.3	7	10	12								M		
845	843.6	33.3	8	7	9								M		
840	838.6	38.3	6	9	12								M		
835	833.6	43.3	21	32	51								M	Olive, Silty, Fine to Coarse SAND	41.5
830	828.6	48.3	13	14	18								M	Olive and Yellow, Fine Sandy SILT with Trace Mica	46.5
825	823.6	53.3	17	31	58								M		
820	818.6	58.3	100/0.4										M	WEATHERED ROCK Light Brownish Gray, METAMORPHOSED GRANITE	56.5
815	813.6	63.3	60/0.0										M	Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 813.6 ft on CRYSTALLINE ROCK: METAMORPHOSED GRANITE  Topsoil 0.0 to 0.4 foot	63.3

NCDOT BORE DOUBLE U2525C\_GEO\_BRDG\_SITE#2.GPJ NC\_DOT.GDT 11/13/17

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 34821.1.5		TIP U-2525C		COUNTY GUILFORD		GEOLOGIST Kubinski, D.	
SITE DESCRIPTION Site #2 (Structure #2 and #3) - Bridge No. 1241 and 1242 on I-85 Bypass (-L-) over Lees Chapel Road (-Y1-)						GROUND WTR (ft)	
BORING NO. EB1-B		STATION 13+71		OFFSET 57 ft RT		ALIGNMENT -Y1-	
COLLAR ELEV. 877.6 ft		TOTAL DEPTH 63.3 ft		NORTHING 874,721		EASTING 1,777,572	
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 77% 02/22/2016				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic	
DRILLER Toothman, R.		START DATE 10/06/16		COMP. DATE 10/06/16		SURFACE WATER DEPTH N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
880	877.6	0.0											GROUND SURFACE	0.0
875	874.6	3.0	5	5	6	11						M	RESIDUAL Reddish Brown, Fine Sandy CLAY	2.5
870	869.6	8.0	6	10	12	22						M	Reddish Brown to Gray and Yellow to Light Brownish Gray, Fine to Coarse Sandy SILT with Trace Mica	
865	864.6	13.0	3	4	4	8						M		
860	859.6	18.0	3	4	5	9						M		
855	854.6	23.0	3	2	4	6						M		
850	849.6	28.0	5	6	8	14						M		
845	844.6	33.0	2	3	3	6						M		
840	839.6	38.0	2	2	3	5						M		
835	834.6	43.0	3	3	4	7						M		
830	829.6	48.0	3	6	8	14						M		
825	824.6	53.0	3	7	13	20						M		
820	819.6	58.0	40	60/0.3						100/0.8			WEATHERED ROCK Yellow and Gray, METAMORPHOSED GRANITE	51.0
815	814.6	63.0	100/0.2							100/0.2				
			100/0.3							100/0.3			Boring Terminated at Elevation 814.3 ft in WEATHERED ROCK: METAMORPHOSED GRANITE Topsoil 0.0 to 0.5 foot	63.3

WBS 34821.1.5		TIP U-2525C		COUNTY GUILFORD		GEOLOGIST Kubinski, D.	
SITE DESCRIPTION Site #2 (Structure #2 and #3) - Bridge No. 1241 and 1242 on I-85 Bypass (-L-) over Lees Chapel Road (-Y1-)						GROUND WTR (ft)	
BORING NO. EB2-A		STATION 12+33		OFFSET 55 ft LT		ALIGNMENT -Y1-	
COLLAR ELEV. 873.1 ft		TOTAL DEPTH 50.0 ft		NORTHING 874,594		EASTING 1,777,448	
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 77% 02/22/2016				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic	
DRILLER Toothman, R.		START DATE 10/03/16		COMP. DATE 10/03/16		SURFACE WATER DEPTH N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
875	873.1	0.0											GROUND SURFACE	0.0
870	869.6	3.5	4	6	9	15						M	RESIDUAL Brown to Tan, Silty, Fine SAND with Trace of Organic Matter	2.0
865	864.6	8.5	6	7	6	13						M	Tan, Fine Sandy CLAY	6.5
860	859.6	13.5	8	11	10	21						W	Tan, Micaceous, Fine Sandy SILT	
855	854.6	18.5	17	19	20	39						W		
850	849.6	23.5	6	8	15	23						W		
845	844.6	28.5	3	6	8	14						W	WEATHERED ROCK Tan, METAMORPHOSED GRANITE	26.0
840	839.6	33.5	53	47/0.3						100/0.8		W	RESIDUAL Brown and Tan, Fine Sandy SILT with Trace Mica	31.5
835	834.6	38.5	20	33	62	95						W	Tan, Silty, Fine to Coarse SAND	36.5
830	829.6	43.5	35	27	36	63						W	Brown, Fine Sandy SILT with Trace Mica	41.0
825	824.6	48.5	14	20	31	51						W		
			23	32	66	98						W	Boring Terminated at Elevation 823.1 ft in RESIDUAL: Sandy SILT Topsoil 0.0 to 0.3 foot	50.0

NCDOT BORE DOUBLE U2525C\_GEO\_BRDG\_SITE#2.GPJ NC\_DOT.GDT 11/13/17

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 34821.1.5		TIP U-2525C		COUNTY GUILFORD		GEOLOGIST Kubinski, D.	
SITE DESCRIPTION Site #2 (Structure #2 and #3) - Bridge No. 1241 and 1242 on I-85 Bypass (-L-) over Lees Chapel Road (-Y1-)						GROUND WTR (ft)	
BORING NO. EB2-C		STATION 13+07		OFFSET 46 ft LT		ALIGNMENT -Y1-	
COLLAR ELEV. 873.7 ft		TOTAL DEPTH 58.6 ft		NORTHING 874,665		EASTING 1,777,464	
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 77% 02/22/2016				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic	
DRILLER Toothman, R.		START DATE 10/04/16		COMP. DATE 10/04/16		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		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
875	873.7	0.0	3	5	6									873.7	0.0	GROUND SURFACE
870	870.2	3.5	6	8	9									871.2	2.5	RESIDUAL Reddish Brown, Fine Sandy CLAY Red and Light Brown and Brown to Red to White, Fine to Coarse Sandy SILT with Trace Mica
865	865.2	8.5	4	4	5											
860	860.2	13.5	3	3	4											
855	855.2	18.5	3	3	4											
850	850.2	23.5	3	3	4											
845	845.2	28.5	4	4	6									846.7	27.0	Light Brown to Gray, Silty, Fine to Coarse SAND
840	840.2	33.5	6	9	12											
835	835.2	38.5	18	32	55											
830	830.2	43.5	14	19	30											
825	825.2	48.5	28	72/0.4										827.7	46.0	WEATHERED ROCK Light Brownish Gray, METAMORPHOSED GRANITE
820	820.2	53.5	100/0.2													
	815.2	58.5	60/0.1											815.2	58.5	CRYSTALLINE ROCK METAMORPHOSED GRANITE Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 815.1 ft IN CRYSTALLINE ROCK: METAMORPHOSED GRANITE  Topsoil 0.0 to 0.3 foot

WBS 34821.1.5		TIP U-2525C		COUNTY GUILFORD		GEOLOGIST Kubinski, D.	
SITE DESCRIPTION Site #2 (Structure #2 and #3) - Bridge No. 1241 and 1242 on I-85 Bypass (-L-) over Lees Chapel Road (-Y1-)						GROUND WTR (ft)	
BORING NO. EB2-B		STATION 13+72		OFFSET 49 ft LT		ALIGNMENT -Y1-	
COLLAR ELEV. 872.8 ft		TOTAL DEPTH 63.7 ft		NORTHING 874,730		EASTING 1,777,467	
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 77% 02/22/2016				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic	
DRILLER Toothman, R.		START DATE 10/04/16		COMP. DATE 10/04/16		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		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
875	872.8	0.0	2	3	5									872.8	0.0	GROUND SURFACE
870	869.3	3.5	6	6	9									870.3	2.5	RESIDUAL Brown, Fine Sandy CLAY Reddish Brown to Dark Reddish Brown to Yellow to Yellow and White, Fine to Coarse Sandy SILT with Trace Mica
865	864.3	8.5	4	7	9											
860	859.3	13.5	2	2	3											
855	854.3	18.5	2	2	3											
850	849.3	23.5	2	1	2											
845	844.3	28.5	2	1	2											
840	839.3	33.5	3	3	4									841.8	31.0	Yellow and White, Silty, Fine to Coarse SAND
835	834.3	38.5	4	5	6											
830	829.3	43.5	7	10	12											
825	824.3	48.5	21	36	46											
820	819.3	53.5	38	61	39/0.3									818.8	54.0	WEATHERED ROCK Yellow and White, METAMORPHOSED GRANITE
815	814.3	58.5	100/0.3													
810	809.3	63.5	100/0.2											809.1	63.7	Boring Terminated at Elevation 809.1 ft in WEATHERED ROCK: METAMORPHOSED GRANITE  Topsoil 0.0 to 0.7 foot  Other Samples: ST-1 (15.1 - 16.8)

NCDOT BORE DOUBLE U2525C\_GEO\_BRDG\_SITE#2.GPJ NC\_DOT.GDT 11/13/17



# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 34821.1.5		TIP U-2525C		COUNTY GUILFORD		GEOLOGIST Kubinski, D.									
SITE DESCRIPTION Site #2 (Structure #2 and #3) - Bridge No. 1241 and 1242 on I-85 Bypass (-L-) over Lees Chapel Road (-Y1-)							GROUND WTR (ft)								
BORING NO. RW1-1		STATION 11+92		OFFSET 40 ft RT		ALIGNMENT -Y1-									
COLLAR ELEV. 874.6 ft		TOTAL DEPTH 30.0 ft		NORTHING 874,542		EASTING 1,777,538									
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 77% 02/22/2016			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER Toothman, R.		START DATE 10/05/16		COMP. DATE 10/05/16		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
875	874.6	0.0	3	4	4							M	874.6	GROUND SURFACE	0.0
														<b>RESIDUAL</b>	
														Yellowish Brown, Fine Sandy CLAY	
870	871.1	3.5	8	10	14							M	872.1	Yellow and Red, Fine Sandy SILT	2.5
865	866.1	8.5	4	6	10							M	868.1	Yellow to Yellow and Gray, Silty, Fine to Coarse SAND with Some Rock Fragments and Trace Mica	6.5
860	861.1	13.5	10	13	14							M	858.1	White, Gray and Brown, Silty, Fine to Coarse Sandy Rock Fragments	16.5
855	856.1	18.5	15	40	28							M	853.1	Olive and Gray, Fine to Coarse Sandy SILT with Little Rock Fragments and Trace Mica	21.5
850	851.1	23.5	8	17	26							M	848.1	Gray, Silty, Fine to Coarse SAND with Trace Mica	26.5
845	846.1	28.5	6	12	24							M	844.6	Boring Terminated at Elevation 844.6 ft in RESIDUAL: Silty SAND	30.0
														Topsoil 0.0 to 0.7 foot	

WBS 34821.1.5		TIP U-2525C		COUNTY GUILFORD		GEOLOGIST Kubinski, D.									
SITE DESCRIPTION Site #2 (Structure #2 and #3) - Bridge No. 1241 and 1242 on I-85 Bypass (-L-) over Lees Chapel Road (-Y1-)							GROUND WTR (ft)								
BORING NO. RW1-2		STATION 14+45		OFFSET 44 ft RT		ALIGNMENT -Y1-									
COLLAR ELEV. 877.6 ft		TOTAL DEPTH 30.0 ft		NORTHING 874,796		EASTING 1,777,564									
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 77% 02/22/2016			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER Toothman, R.		START DATE 10/05/16		COMP. DATE 10/05/16		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
880	877.6	0.0										M	877.6	GROUND SURFACE	0.0
														<b>RESIDUAL</b>	
														Reddish Brown, Fine Sandy CLAY	
875	874.1	3.5	3	4	6							M	871.1	Red, Silty, Fine to Coarse SAND	6.5
870	869.1	8.5	7	8	9							M	866.1	Red and Yellow to Red, Brown and Yellow, Micaceous, Fine to Coarse Sandy SILT	11.5
865	864.1	13.5	5	6	7							M	858.1	White, Gray and Brown, Silty, Fine to Coarse Sandy Rock Fragments	16.5
860	859.1	18.5	3	3	5							M	853.1	Olive and Gray, Fine to Coarse Sandy SILT with Little Rock Fragments and Trace Mica	21.5
855	854.1	23.5	2	3	3							M	848.1	Gray, Silty, Fine to Coarse SAND with Trace Mica	26.5
850	849.1	28.5	1	5	6							M	844.6	Boring Terminated at Elevation 847.6 ft in RESIDUAL: Sandy SILT	30.0
														Topsoil 0.0 to 0.4 foot	

NCDOT BORE DOUBLE U2525C\_GEO\_BRDG\_SITE#2.GPJ NC\_DOT.GDT 11/13/17

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 34821.1.5		TIP U-2525C		COUNTY GUILFORD		GEOLOGIST Kubinski, D.									
SITE DESCRIPTION Site #2 (Structure #2 and #3) - Bridge No. 1241 and 1242 on I-85 Bypass (-L-) over Lees Chapel Road (-Y1-)							GROUND WTR (ft)								
BORING NO. RW2-1		STATION 11+84		OFFSET 50 ft LT		ALIGNMENT -Y1-									
COLLAR ELEV. 873.7 ft		TOTAL DEPTH 29.1 ft		NORTHING 874,545		EASTING 1,777,447									
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 77% 02/22/2016			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER Toothman, R.		START DATE 10/05/16		COMP. DATE 10/05/16		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
875	873.7	0.0	2	5	9								M	GROUND SURFACE	0.0
														<b>RESIDUAL</b> Brown, Silty, Fine SAND	2.5
870	870.2	3.5	8	8	8								M	Yellowish Brown, Fine Sandy CLAY	
														White and Yellow to Olive, Fine Sandy SILT with Trace Mica	6.5
865	865.2	8.5	31	28	37								M		
860	860.2	13.5	10	10	16								M		
855	855.2	18.5	11	20	44								M		
850	850.2	23.5	10	15	27								M		
845	845.2	28.5	88	12/0.1									M	<b>WEATHERED ROCK</b> Gray, METAMORPHOSED GRANITE Boring Terminated at Elevation 844.6 ft in WEATHERED ROCK: METAMORPHOSED GRANITE  Topsoil 0.0 to 0.9 foot	29.1

WBS 34821.1.5		TIP U-2525C		COUNTY GUILFORD		GEOLOGIST Kubinski, D.									
SITE DESCRIPTION Site #2 (Structure #2 and #3) - Bridge No. 1241 and 1242 on I-85 Bypass (-L-) over Lees Chapel Road (-Y1-)							GROUND WTR (ft)								
BORING NO. RW2-2		STATION 14+53		OFFSET 46 ft LT		ALIGNMENT -Y1-									
COLLAR ELEV. 873.0 ft		TOTAL DEPTH 30.0 ft		NORTHING 874,809		EASTING 1,777,474									
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 77% 02/22/2016			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER Toothman, R.		START DATE 10/05/16		COMP. DATE 10/05/16		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
875	873.0	0.0	1	2	4								M	GROUND SURFACE	0.0
														<b>RESIDUAL</b> Reddish Brown, Fine Sandy CLAY	2.5
870	869.5	3.5	4	6	7								M	Reddish Brown to Yellow and Red, Fine Sandy SILT with Trace Mica	
865	864.5	8.5	5	5	8								M		
860	859.5	13.5	3	2	4								M		
855	854.5	18.5	2	2	3								M		
850	849.5	23.5	2	2	3								M		
845	844.5	28.5	4	5	9								M	Boring Terminated at Elevation 843.0 ft in RESIDUAL: Sandy SILT  Topsoil 0.0 to 0.4 foot	30.0

NCDOT BORE DOUBLE U2525C\_GEO\_BRDG\_SITE#2.GPJ NC\_DOT.GDT 11/13/17

**SUMMARY OF LABORATORY TEST DATA**

**PROJECT NO. 34821.1.5 (U-2525C)**

**COUNTY: GUILFORD**

**SITE #2 (STRUCTURE #2 AND #3) – BRIDGE NO. 1241 AND 1242 ON I-85 BYPASS (-L-) OVER LEES CHAPEL ROAD (-Y1-)**

Sample No.	Boring Number	Station	Offset	Alignment	Sample Depth (ft.)	AASHTO Class	Atterberg Limits			Gradation Results							
							L.L.	P.L.	P.I.	Pass #10	Pass #40	Pass #200	Retained #270	Coarse Sand	Fine Sand	Silt (%)	Clay (%)
ST-1 *	EB2-B	330+44	64' RT	-L-	15.1-16.8	A-5 (3)	45	38	7	99.71	77.34	52.28	53.6	29.89	23.71	37.21	9.19

SS = Split-Barrel Sample (ASTM-D-1586) ST = Shelby Tube (Undisturbed) Sample

S = Grab Sample

NP -- Non Plastic

NA-- Non Applicable

\* CONSOLIDATION TEST RESULTS CAN BE FOUND UNDER SEPARATE COVER

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Lab Technician: NCDOT Certification No.: 129-01-0411 – Geotechnics, Raleigh, NC

