

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	WBS 47854	1	12

REFERENCE: WBS 47854

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

ROADWAY
SUBSURFACE INVESTIGATION

COUNTY HAYWOOD
 PROJECT DESCRIPTION INTERSECTION IMPROVEMENTS
AT NC 215/SR 1882 (SONOMA RD.) AND NC 215
(OLD RIVER RD.)

CONTENTS

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
I	TITLE SHEET
2, 2A	LEGEND
3	SITE PLAN
4-7	BORE LOGS
8-9	DCP RESULTS
10	PAVEMENT CORE PHOTOGRAPHS
II	LABORATORY TEST RESULTS

PERSONNEL

WEIS, J.M.

LANE, R.W.

INVESTIGATED BY WEIS, J.M.

DRAWN BY CROCKETT, S.C.

CHECKED BY HAMM, J.R.

SUBMITTED BY FALCON ENG.

DATE DECEMBER 2018

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:

- I. 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.

PROJECT: 47854



DocuSigned by:

Jeremy R Hamm

12/19/2018

ED7938089E22487...

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 (PAGE 1 OF 2)

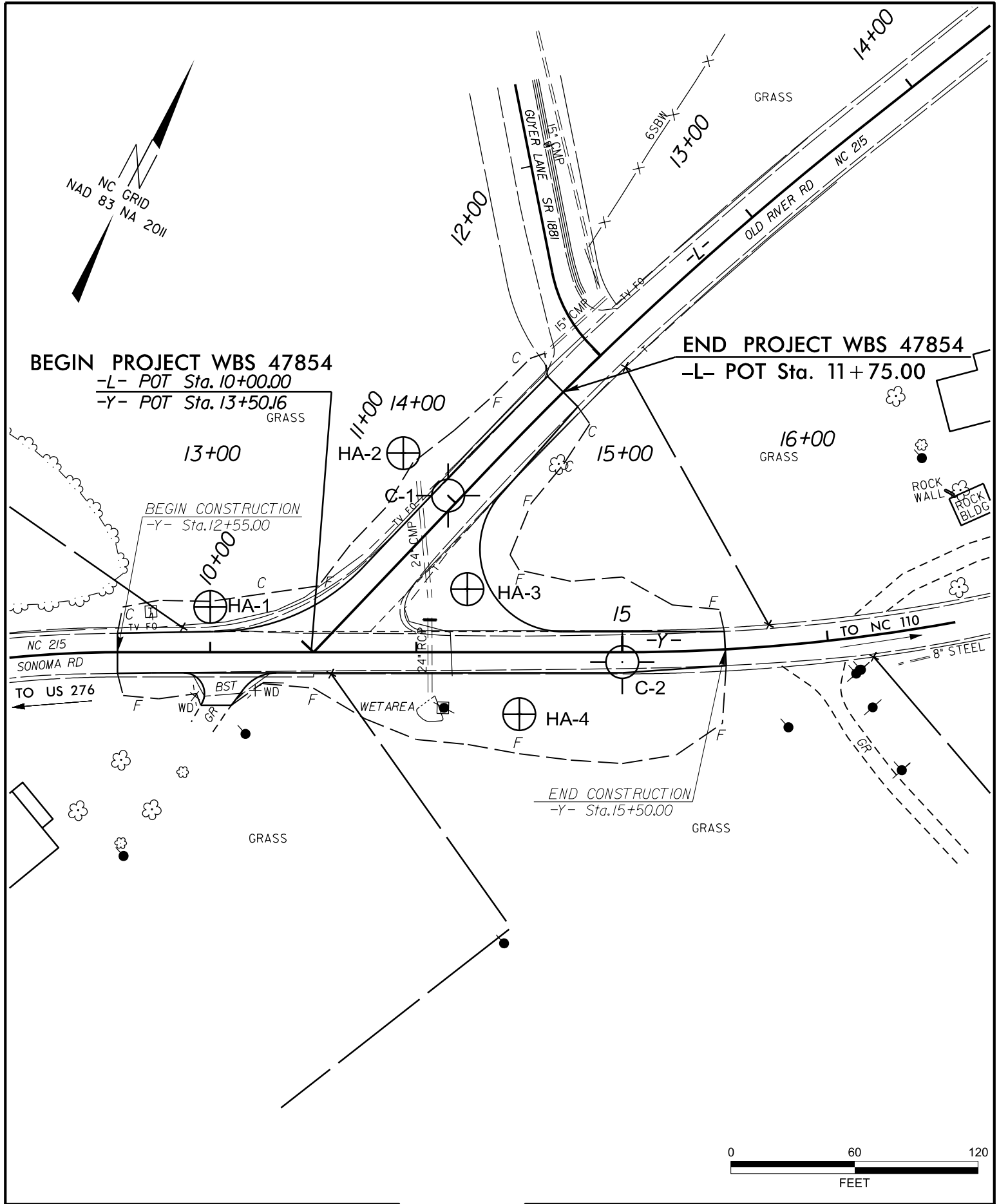
SOIL DESCRIPTION										GRADATION																																																																																																																																														
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS 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, VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6										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.																																																																																																																																														
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FOSS. - FOSSILIFEROUS	SLL. - SLIGHTLY	RT - RECOMPACTED TRIAXIAL																																																																																																																																																						
FRAC. - FRACTURED, FRACTURES	TCR - TRICONE REFUSAL	CBR - CALIFORNIA BEARING RATIO																																																																																																																																																						
FRAGS. - FRAGMENTS	w - MOISTURE CONTENT																																																																																																																																																							
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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.																																																																																																																																																								

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

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS (PAGE 2 OF 2)

ROCK DESCRIPTION		TERMS AND DEFINITIONS	
<p>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:</p>		<p>ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, 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 DISLODGED 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 (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>	
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.	
WEATHERING			
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, WOULD YIELD SPT N VALUES > 100 BPF</i>		
VERY SEVERE (V 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. <i>IF TESTED, WOULD YIELD 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.		
ROCK HARDNESS			
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 GROOVED 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 GROOVED 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 FINGERNAIL.		
FRACTURE SPACING		BEDDING	
TERM	SPACING	TERM	THICKNESS
VERY WIDE	MORE THAN 10 FEET	VERY THICKLY BEDDED	4 FEET
WIDE	3 TO 10 FEET	THICKLY BEDDED	1.5 - 4 FEET
MODERATELY CLOSE	1 TO 3 FEET	THINLY BEDDED	0.16 - 1.5 FEET
CLOSE	0.16 TO 1 FOOT	VERY THINLY BEDDED	0.03 - 0.16 FEET
VERY CLOSE	LESS THAN 0.16 FEET	THICKLY LAMINATED	0.008 - 0.03 FEET
		THINLY LAMINATED	< 0.008 FEET
INDURATION			
FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF 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.		
<p>BENCH MARK: ELEVATIONS TAKEN FROM TIN FILE NC215_LS_TIN.TIN DATED JUNE, 2018.</p> <p style="text-align: right;">ELEVATION: FEET</p> <p>NOTES: FIAD - FILLED IMMEDIATELY AFTER DRILLING</p>			
DATE: 8-15-14			



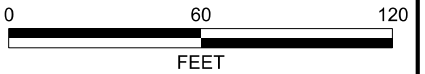
NOTES:

- PLANS ADOPTED FROM ELECTRONIC FILES RECEIVED FROM MA ENGINEERING DATED OCTOBER 2018.

FALCON ENGINEERING
 FALCON ENGINEERING, INC.
 1210 TRINITY ROAD, SUITE 110
 CARY, NC 27513
 PHONE: 919.871.0800

SITE PLAN

INTERSECTION IMPROVEMENTS AT NC 215/SR 1882 (SONOMA RD.) AND NC 215 (OLD RIVER RD.) HAYWOOD COUNTY, NORTH CAROLINA
 WBS NO.: 47854 | TIP NO.: N/A
 FALCON PROJECT NO.: G18034.01



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 47854			TIP N/A			COUNTY HAYWOOD			GEOLOGIST WEIS, J.M.							
SITE DESCRIPTION INTERSECTION IMPROVEMENTS AT NC 215/SR 1882 (SONOMA RD.) AND NC 215 (OLD RIVER RD.)									GROUND WTR (ft)							
BORING NO. HA-1			STATION 13+00			OFFSET 22 ft LT			ALIGNMENT -Y-							
COLLAR ELEV. 2,685.8 ft			TOTAL DEPTH 6.0 ft			NORTHING 650,422			EASTING 841,643							
DRILL RIG/HAMMER EFF./DATE N/A						DRILL METHOD Hand Auger			HAMMER TYPE N/A							
DRILLER LANE, R.W.			START DATE 10/18/18			COMP. DATE 10/18/18			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						
2690																
2685	2,685.8	0.0													2,685.8	0.0
	2,683.8	2.0	7	6	5	11										
	2,681.8	4.0	5	6	5	11										
2680	2,679.8	6.0	4	3	2	5									2,679.8	6.0
			6	6	7	13										
Boring Terminated at Elevation 2,679.8 ft IN RES: SANDY CLAY (A-6) BLOW COUNTS ARE DCP BLOWS PER 1.75 INCHES																

NCDOT BORE SINGLE 47854_BORINGS.GPJ NC_DOT.GDT 12/17/18

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 47854			TIP N/A			COUNTY HAYWOOD			GEOLOGIST LANE, R.W.						
SITE DESCRIPTION INTERSECTION IMPROVEMENTS AT NC 215/SR 1882 (SONOMA RD.) AND NC 215 (OLD RIVER RD.)									GROUND WTR (ft)						
BORING NO. HA-2			STATION 11+00			OFFSET 35 ft LT			ALIGNMENT -L-						
COLLAR ELEV. 2,684.8 ft			TOTAL DEPTH 6.0 ft			NORTHING 650,532			EASTING 841,691						
DRILL RIG/HAMMER EFF./DATE N/A						DRILL METHOD Hand Auger			HAMMER TYPE N/A						
DRILLER WEIS, J.M.			START DATE 10/19/18			COMP. DATE 10/19/18			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					ELEV. (ft)
2685	2,684.8	0.0	3	3	5	•	•	•	•	•			2,684.8	TOPSOIL 0.4'	0.0
	2,682.8	2.0	3	3	4	•	•	•	•	•			2,682.3	RESIDUAL TAN, MOIST, CLAYEY SAND (A-2-6) WITH TRACE MICA	2.5
2680	2,680.8	4.0	9	10	12	•	•	•	•	•			2,678.8	BROWN AND GRAY, MOTTLED, MOIST, SANDY CLAY (A-6) WITH TRACE MICA	6.0
	2,678.8	6.0	5	6	13	•	•	•	•	•				Boring Terminated at Elevation 2,678.8 ft IN RES: SANDY CLAY (A-6)	
														BLOW COUNTS ARE DCP BLOWS PER 1.75 INCHES	

NCDOT BORE SINGLE 47854_BORINGS.GPJ NC_DOT.GDT 12/17/18

GEOTECHNICAL BORING REPORT BORE LOG

WBS 47854			TIP N/A			COUNTY HAYWOOD			GEOLOGIST LANE, R.W.									
SITE DESCRIPTION INTERSECTION IMPROVEMENTS AT NC 215/SR 1882 (SONOMA RD.) AND NC 215 (OLD RIVER RD.)									GROUND WTR (ft)									
BORING NO. HA-3			STATION 14+25			OFFSET 31 ft LT			ALIGNMENT -Y-									
COLLAR ELEV. 2,683.9 ft			TOTAL DEPTH 6.0 ft			NORTHING 650,488			EASTING 841,749									
DRILL RIG/HAMMER EFF./DATE N/A						DRILL METHOD Hand Auger			HAMMER TYPE N/A									
DRILLER WEIS, J.M.			START DATE 10/19/18			COMP. DATE 10/19/18			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)			
2685	2,683.9	0.0													2,683.9	TOPSOIL 0.5'	0.0	
	2,681.9	2.0	3	2	4	6												
2680	2,679.9	4.0	4	3	4	7					S-2	46%						
	2,677.9	6.0	6	6	6	12									2,677.9		6.0	
	2,677.9	6.0	6	7	9	16										Boring Terminated at Elevation 2,677.9 ft IN RES: SANDY CLAY (A-6)		
																BLOW COUNTS ARE DCP BLOWS PER 1.75 INCHES		

NCDOT BORE SINGLE 47854_BORINGS.GPJ NC_DOT.GDT 12/17/18

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 47854			TIP N/A			COUNTY HAYWOOD			GEOLOGIST WEIS, J.M.							
SITE DESCRIPTION INTERSECTION IMPROVEMENTS AT NC 215/SR 1882 (SONOMA RD.) AND NC 215 (OLD RIVER RD.)									GROUND WTR (ft)							
BORING NO. HA-4			STATION 14+50			OFFSET 30 ft RT			ALIGNMENT -Y-							
COLLAR ELEV. 2,680.0 ft			TOTAL DEPTH 6.0 ft			NORTHING 650,446			EASTING 841,800							
DRILL RIG/HAMMER EFF./DATE N/A						DRILL METHOD Hand Auger			HAMMER TYPE N/A							
DRILLER LANE, R.W.			START DATE 10/18/18			COMP. DATE 10/18/18			SURFACE WATER DEPTH N/A							
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
2680														2,680.0	0.0	TOPSOIL 0.4'
	2,680.0	0.0	7	6	5	•						ROADWAY EMBANKMENT RED-BROWN, MOIST, SANDY CLAY (A-6) WITH TRACE GRAVEL
	2,678.0	2.0	5	6	5	•						
2675	2,676.0	4.0	4	3	2	•						
	2,674.0	6.0	6	6	7	•				2,674.0	6.0	
																Boring Terminated at Elevation 2,674.0 ft IN R.E.: SANDY CLAY (A-6) BLOW COUNTS ARE DCP BLOWS PER 1.75 INCHES

NCDOT BORE SINGLE 47854_BORINGS.GPJ NC_DOT.GDT 12/17/18

DCP TEST DATA

File Name:

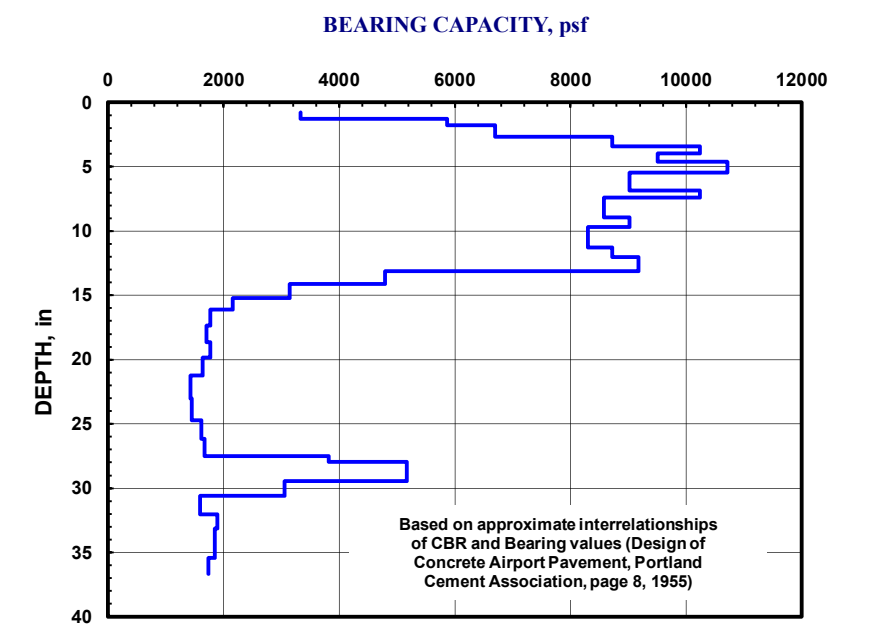
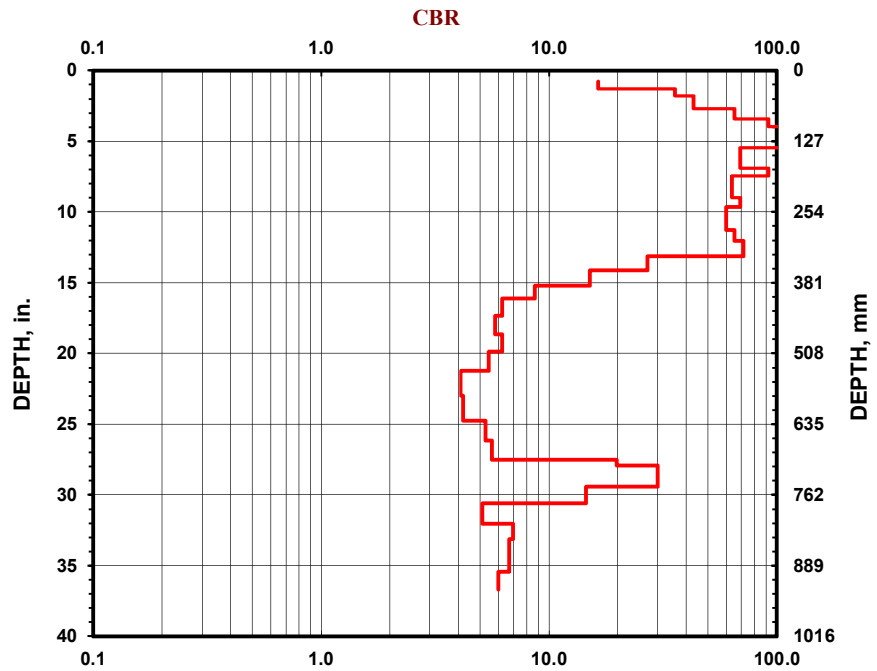
Project: G18034.01 C-1
 Location: Haywood County

Date: 18-Oct-18
 Soil Type(s): Type in the soil type

- Hammer
- 10.1 lbs.
 - 17.6 lbs.
 - Both hammers used

- Soil Type
- CH
 - CL
 - All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	20	1
1	33	1
2	46	1
2	57	1
2	68	1
5	87	1
5	101	1
10	118	1
10	139	1
10	175	1
5	189	1
10	228	1
5	246	1
10	287	1
5	306	1
8	334	1
3	359	1
2	387	1
1	410	1
1	441	1
1	474	1
1	505	1
1	540	1
1	585	1
1	629	1
1	665	1
1	699	1
1	710	1
5	748	1
2	777	1
1	814	1
1	842	1
1	871	1
1	900	1
1	932	1
		1
		1
		1
		1
		1
		1
		1
		1
		1
		1



DCP TEST DATA

File Name:

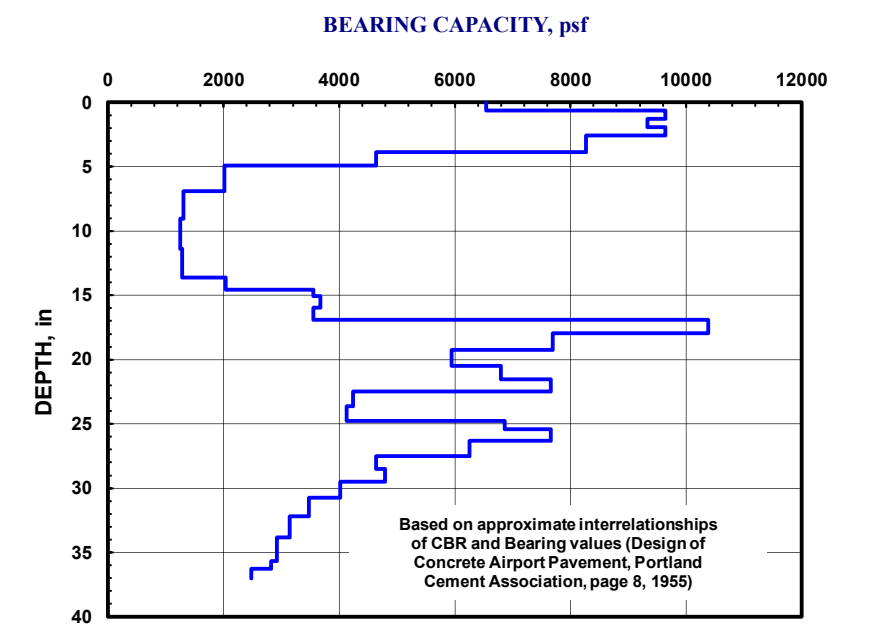
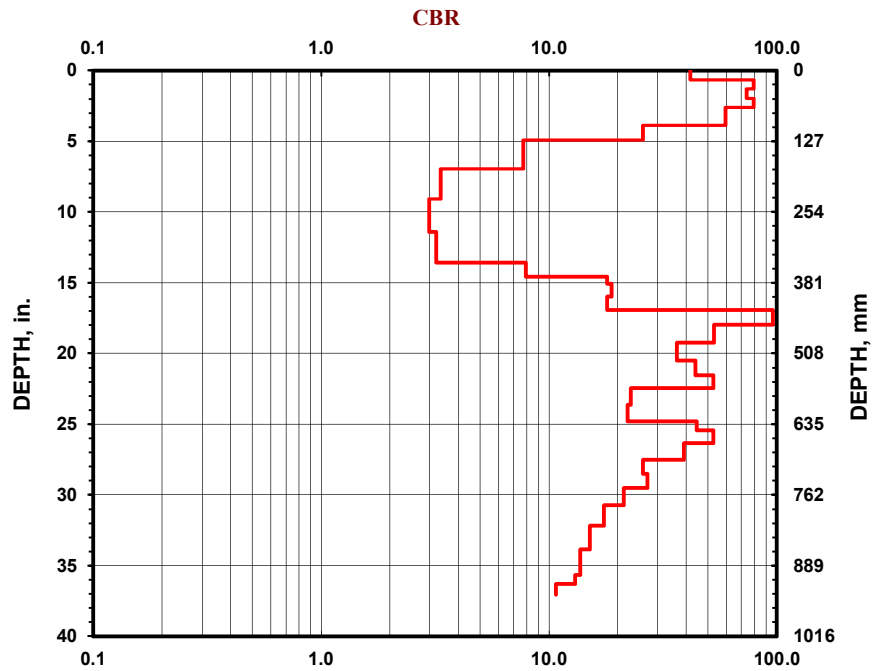
Project: G18034.01 C-2
 Location: Haywood County

Date: 18-Oct-18
 Soil Type(s): Type in the soil type

Hammer
 10.1 lbs.
 17.6 lbs.
 Both hammers used

Soil Type
 CH
 CL
 All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
3	17	1
5	33	1
5	50	1
5	66	1
8	99	1
3	125	1
2	176	1
1	230	1
1	290	1
1	346	1
1	371	1
1	383	1
2	406	1
2	430	1
10	457	1
7	489	1
5	521	1
5	548	1
5	571	1
3	600	1
3	630	1
3	646	1
5	669	1
5	699	1
3	725	1
3	750	1
3	781	1
3	818	1
3	860	1
3	906	1
1	922	1
1	941	1
		1
		1
		1
		1
		1
		1
		1
		1
		1
		1







LABORATORY TEST RESULTS
Intersection of NC 215/SR 1882 and NC 215
Haywood County, NC
NCDOT Project: 47854
Falcon Engineering Project No: G18034.01

SHEET 11

NO.	SAMPLE LOCATION	DEPTH INTERVAL	AASHTO CLASS.	ATTERBERG LIMITS		PERCENT BY WEIGHT				PERCENT PASSING SIEVE			MOISTURE (%)	BULK DENSITY (pcf)	ORGANICS (%)
				LL	PI	C.SAND	F.SAND	SILT	CLAY	#10	#40	#200			
S-1	HA-1	1.0-1.5	A-6(9)	39	19	20	24	17	39	98	87	59	26	N/A	N/A
S-2	HA-3	1.0-1.5	A-7-5(23)	57	25	7	15	34	44	99	95	81	46	N/A	N/A

Reviewed By

Patrick Clark

A handwritten signature in blue ink that reads "Patrick Clark".

Certification: 105-01-0803

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