

NORTH CAROLINA DIVISION OF HIGHWAYS

GEOTECHNICAL UNIT

SOIL AND ROCK CLASSIFICATION, LEGEND, AND ABBREVIATIONS

SOIL LEGEND AND AASHTO CLASSIFICATION										CONSISTENCY OR DENSENESS			
GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)			SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTANCE (BLOWS PER FOOT)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (q <sub>u</sub> ) (TONS/FT <sup>2</sup> )
GROUP CLASS.	A-1	A-3	A-2	A-4	A-5	A-6	A-7	A-LA-2	A-4.A-5 A-6.A-7				
SYMBOL													
% PASSING	#10 #40 #200	#10 #40 #200	#10 #40 #200	#10 #40 #200	#10 #40 #200	#10 #40 #200	#10 #40 #200	#10 #40 #200	#10 #40 #200	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT	
(PASSING #40)	LL PI									SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS	
GROUP INDEX	0	0	0	4 MX	8 MX	12 MX	16 MX	NO MX					
USUAL TYPES OF MAJOR MATERIALS	GRAVEL & SAND	FINE GRAVEL & SAND	SILTY OR CLAYEY GRAVEL AND SAND	SILTY SOILS	CLAYEY SOILS								

TEXTURE OR GRAIN SIZE						
BOULDER	COBBLE	GRAVEL	COARSE SAND	MED. SAND	FINE SAND	CLAY
GRAIN (MM)	305	75	2	0.6	0.425	0.2
SIZE (IN)	12"	3"				

SOIL MOISTURE - CORRELATION OF TERMS		
SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
LL LIQUID LIMIT	-SATURATED- (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
PLASTIC RANGE (PI) PL PLASTIC LIMIT	-WET- (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
OM OPTIMUM MOISTURE	-MOIST- (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
SL SHRINKAGE LIMIT	-DRY- (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

ROCK DESCRIPTION	
IN THE BROADEST MEANING, HARD ROCK IS CONSIDERED TO BE THAT INDURATED EARTH MATERIAL WHICH CANNOT BE SAMPLED BY CONVENTIONAL SOIL SAMPLING TOOLS OR TECHNIQUES. THE BOUNDARY BETWEEN SOIL AND ROCK IS ARBITRARY. TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF "WEATHERED ROCK". FOR THE PURPOSE OF THIS INVESTIGATION, THESE MATERIALS ARE DIVIDED AS FOLLOWS:	
TERM	SYMBOLS
HARD ROCK (HR)	
WEATHERED ROCK (WR)	

ABBREVIATIONS			
ALLUV.	ALLUVIUM	MIC.	MICACEOUS
AR	AUGER REFUSAL	MOT.	MOTTLED
BLDR.	BOULDER	NS	NO SAMPLE TAKEN
BPF	BLOWS PER FOOT	ORG.	ORGANIC
CALC.	CALCAREOUS	REF.	REFER TO
CL.	CLAY	RES.	RESIDUAL
CLY.	CLAYEY	S.	SOFT
COB.	COBBLE	SAT.	SATURATED
CSE.	COARSE	SD.	SAND
DPT	DYNAMIC PENETRATION TEST	SDY.	SANDY
EST.	ESTIMATED	SED(S).	SEDIMENT(S)
F.	FINE	SL.	SILT, SILTY
FOSS.	FOSSILIFEROUS	SLI.	SLIGHTLY
FRAC.	FRAGMENT(S)	SPT	STANDARD PENETRATION TEST
FRAG(S).	FRAGMENT(S)	TS.	TOPSOIL
GR.	GRAVEL	VST	VANE SHEAR TEST
GS	SPECIFIC GRAVITY	V.	VERY
GW	GROUND WATER	W/	WITH
MED.	MEDIUM		

1 SPT REFUSAL ≤ 1 INCH OF PENETRATION PER 50 BLOWS.  
 2 AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH AUGERS COULD NO LONGER PENETRATE. THE HARD ROCK SYMBOL IS SHOWN WHEN ROCK IS CORED AND ONLY TO THAT DEPTH CORED. A DESCRIPTION OF ROCK IS GIVEN, INCLUDING:  
 CORE RECOVERY (REC.) - TOTAL LENGTH OF ROCK RECOVERED IN THE CORE BARREL DIVIDED BY THE TOTAL LENGTH OF THE CORE RUN TIMES 100%.  
 ROCK QUALITY DESIGNATION (ROD) - TOTAL LENGTH OF SOUND ROCK SEGMENTS RECOVERED THAT ARE LONGER THAN OR EQUAL TO 4" DIVIDED BY THE TOTAL LENGTH OF THE CORE RUN TIMES 100%.

CAUTION NOTICE

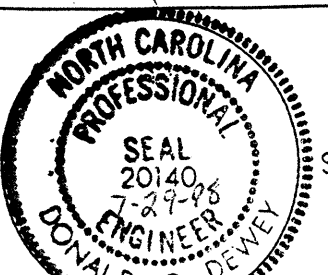
THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WAS MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING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

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

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

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

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



SEAL  
 DONALD DEWEY  
 DON Dewey

BENCH MARK: BL - 4 @ STA. 17 + 02.84 on  
 baseline - Elev. = 232.08ft.  
 STATE PROJECT NO. 8-2352201  
 T.I.P. NO. B - 2963 F.A. NO. BRSTP - 1107 (4)  
 COUNTY Durham ROUTE SR 1107  
 SITE DESCRIPTION Bridge No. 111 on SR 1107  
 over New Hope Creek  
 PROJECT GEOLOGIST D. Dewey SUBMITTED BY CIL  
 PERSONNEL K. Morrow  
 T. Finkenbinder  
 DATE SUBMITTED 7-8-98