

**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 (N - VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (qu) (kN / m ²)
GROUP CLASS.	A-1	A-3	A-2		A-4	A-5	A-6	A-7	A-1,A-2 A-3	A-4,A-5 A-6,A-7				
SYMBOL														
% PASSING	#10 50 MX	#40 30 MX	#200 15 MX	51 MN	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN		
(PASSING #40)					40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN		
LL														
PI	6 MX	N.P.			10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN		
GROUP INDEX	0	0	0	4 MX	8 MX	12 MX	16 MX	ND MX						
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS GRAVEL & SAND	FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND		SILTY SOILS		CLAYEY SOILS		SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS			
* PI OF A-7-5 < (LL-30); PI OF A-7-6 > (LL-30)														
TEXTURE OR GRAIN SIZE														
	BOULDER	COBBLE	GRAVEL	COARSE SAND	FINE SAND	SILT	CLAY							
GRAIN (mm)	305	75	2	0.25	0.075	0.0075								
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											
DM	OPTIMUM MOISTURE SHRINKAGE LIMIT	-MOIST- (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE											
SL		-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		DESCRIPTION											
HARD ROCK (HR)		INFERRED ROCK LINE ²	MATERIAL THAT CANNOT BE PENETRATED BY POWER AUGERS, EXCEPT IN THIN LEDGES, AND REQUIRES ROCK CORING TOOLS FOR OBTAINING A SAMPLE											
WEATHERED ROCK (WR)		HARD WEATHERED ROCK (HWR)	MATERIAL THAT CAN BE PENETRATED WITH GREAT DIFFICULTY USING POWER AUGERS AND YIELDS SPT REFUSAL ¹											
		SOFT WEATHERED ROCK (SWR)	MATERIAL THAT CAN BE PENETRATED WITH SOME DIFFICULTY USING POWER AUGERS AND YIELDS SPT VALUES > 100 BLOWS BUT < SPT REFUSAL											
¹ SPT REFUSAL ≤ 2.5 cm OF PENETRATION PER 50 BLOWS IN SPT. 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: <u>CORE RECOVERY (REC.)</u> - TOTAL LENGTH OF ROCK RECOVERED IN THE CORE BARREL DIVIDED BY THE TOTAL LENGTH OF THE CORE RUN TIMES 100%. <u>ROCK QUALITY DESIGNATION (ROD)</u> - TOTAL LENGTH OF SOUND ROCK SEGMENTS RECOVERED THAT ARE LONGER THAN OR EQUAL TO 0.1 m DIVIDED BY THE TOTAL LENGTH OF THE CORE RUN TIMES 100%.														
GROUND WATER														
WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING (I.A.D.) (SOON AFTER DRILLING (___ HRS.)) STATIC WATER LEVEL (AFTER 24 HRS.) PERCHED WATER (PW), SATURATED ZONE, OR WATER BEARING STRATA SPRING OR SEEPAGE														
MISCELLANEOUS SYMBOLS AND ABBREVIATIONS														
	ROADWAY EMBANKMENT WITH SOIL DESCRIPTION			SPT TEST BORING		SAMPLE DESIGNATIONS								
	SOIL SYMBOL			AUGER BORING		S-BULK SAMPLE								
	ARTIFICIAL FILL OTHER THAN ROADWAY EMBANKMENTS			CORE BORING		SS-SPLIT SPOON SAMPLE								
	INFERRED SOIL BOUNDARIES			PIEZOMETER INSTALLATION		ST-SHELBY TUBE SAMPLE								
	STRIKE AND DIP			SLOPE INDICATOR INSTALLATION		RS-ROCK SAMPLE								
	APPARENT DIP (NORMAL TO ___)			SPT N-VALUE										
	ROD SOUNDING			MONITORING WELL										
ABBREVIATIONS														
ALLUV.	ALLUVIUM		MIC.	MICACEOUS										
AR	AUGER REFUSAL		MOT.	MOTTLED										
BLDR.	BOULDER		N	BLOWS / 30 CM										
CALC.	CALCAREOUS		NS	NO SAMPLE TAKEN										
CL.	CLAY		ORG.	ORGANIC										
CLY.	CLAYEY		P.P.	POCKET PENETROMETER										
COB.	COBBLE		REF.	REFER TO										
CSE.	COARSE		RES.	RESIDUAL										
DPT	DYNAMIC PENETRATION TEST		S.	SOFT										
EST.	ESTIMATED		SAT.	SATURATED										
F.	FINE		SD.	SAND										
FIAD	FILLED IMMED. AFTER DRILLING		SDY.	SANDY										
FOSS.	FOSSILIFEROUS		SED(S).	SEDIMENT(S)										
FRAC.	FRACTURED		SL.	SILT, SILTY										
FRAG(S).	FRAGMENT(S)		SLL	SLIGHTLY										
GR.	GRAVEL		SPT	STANDARD PENETRATION TEST										
GS	SPECIFIC GRAVITY		TS.	TOPSOIL										
GW	GROUND WATER		VST	VANE SHEAR TEST										
MED.	MEDIUM		V.	VERY										
			W/	WITH										
BENCH MARK: BL-831-PING Sta. 118+08.052, -L2. Sta. 110+81.000														
Offset - 10.0 m LT														
ELEVATION: 58.275 m														
REV. 8/11/98														

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.