

1/22

**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-1, A-2	A-4, A-5	A-6, A-7		
SYMBOL													
% PASSING	#10 #40 #200	50 MX 30 MX 15 MX	50 MN 30 MN 15 MN	35 MX 35 MN 10 MN	35 MX 35 MN 10 MN	35 MX 35 MN 10 MN	35 MX 35 MN 10 MN	35 MN 36 MN 36 MN	36 MN 36 MN 36 MN	36 MN 36 MN 36 MN	36 MN 36 MN 36 MN		
(PASSING #40)	LL PI	6 MX	N.P.	40 MX 10 MX	41 MN 10 MN	40 MX 11 MN	41 MN 11 MN	40 MX 10 MN	41 MN 11 MN	40 MX 11 MN	41 MN 11 MN		
GROUP INDEX		0	0	4 MX	8 MX	12 MX	16 MX	NO 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	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT	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	0.05	0.005							
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										
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		DESCRIPTION										
HARD ROCK (HR)	CORED ROCK	INFERRED ROCK LINE <sup>2</sup>	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										
		SOFT WEATHERED ROCK (SWR)	MATERIAL THAT CAN BE PENETRATED WITH SOME DIFFICULTY USING POWER AUGERS AND YIELDS SPT VALUES > 100 BPF BUT < SPT REFUSAL										
<sup>1</sup> SPT REFUSAL ≤ 1 INCH OF PENETRATION PER 50 BLOWS. <sup>2</sup> 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%.													
Signature: <u>F.R. Glass, Jr.</u>													
GROUND WATER													
<input type="checkbox"/> WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING (I.A.D.) <input type="checkbox"/> SOON AFTER DRILLING (____ HRS.) <input type="checkbox"/> STATIC WATER LEVEL (AFTER ____ HRS.) <input type="checkbox"/> PERCHED WATER (PW), SATURATED ZONE, OR WATER BEARING STRATA <input type="checkbox"/> 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 OF BEDS		SLOPE INDICATOR INSTALLATION		RS-ROCK SAMPLE								
	APPARENT DIP (NORMAL TO ____)		SPT N-COUNT										
	ROD SOUNDING												
ABBREVIATIONS													
ALLUV.	ALLUVIUM	MIC.	MICACEOUS										
AR	AUGER REFUSAL	MOT.	MOTTLED										
BLDR.	BOULDER	NS	NO SAMPLE TAKEN										
BPF	BLOWS PER FOOT	ORG.	ORGANIC										
CALC.	CALCAREOUS	P.P.	POCKET PENETROMETER										
CL.	CLAY	REF.	REFER TO										
CLY.	CLAYEY	RES.	RESIDUAL										
COB.	COBBLE	S.	SOFT										
CSE.	COARSE	SAT.	SATURATED										
DPT	DYNAMIC PENETRATION TEST	SD.	SAND										
EST.	ESTIMATED	SDY.	SANDY										
F.	FINE	SED(S).	SEDIMENT(S)										
FIAD	FILLED IMMED. AFTER DRILLING	SL.	SILT, SILTY										
FOSS.	FOSSILIFEROUS	SLI.	SLIGHTLY										
FRAC.	FRACTURED	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												
BENCH MARK: BM-2 P.K. NAIL IN SOUTHEAST CORNER OF CONCRETE WINGWALL OF BRIDGE NO. 113, 881 FT. LT. OF STA. 16+98.2 -BL-													
ELEV. 2822.64 FT.													
STATE PROJECT NO. 8-2711301													
T.I.P. NO. B-2905 F.A. NO. BRZ-1179(1)													
COUNTY ASHE ROUTE SR 1179													
SITE DESCRIPTION BRIDG NO. 113 ON SR 1179 OVER SOUTH FORK NEW RIVER													
PROJECT GEOLOGIST J.W. MANN SUBMITTED BY F.R. GLASS													
PERSONNEL B.L. CREASMAN													
R.E. RIDDLE													
D.O. CHEEK DATE SUBMITTED													
E.A. SMITH													
REV. 8/11/98													

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