## NORTH CAROLINA DIVISION OF HIGHWAYS GEOTECHNICAL UNIT

## SOIL AND ROCK CLASSIFICATION, LEGEND, AND ABBREVIATIONS

		OIL L									<b>ICA</b>	TION			CC	NSISTEN	CY	OR DE	NSE	ENESS
	GENERAL CLASS.	(≤ 35	% PA		ERIALS #200)	- 1	SILT-0	PASS	ING *	200)		IC MATI	<del></del>		MARY TYPE	COMPACTNESS OR CONSISTENCY	PENETE			RANGE OF UNCONFINE COMPRESSIVE STRENGTH (qu (kN / m²)
z	GROUP CLASS. SYMBOL PASSING	A-1 A-1-a A-1-1 0000000000000000000000000000000000	A-3	A-2-4	A-2 A-2-5A-2-	6A-2-7	A-4	A-5	A-6	A-7 A-7-8	A-3 Granulai	A-4,A-5 A-6,A-7	MUCK.	GRAN	RALLY IULAR RIAL	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE		< 4 4 TO 10 10 TO 30 30 TO 50 > 50		N/A
GF	#40 #200 ASSING •46 LL PI ROUP INDE	30 MX 50 M 15 MX 25 M 11 MX 25 M 11 MX	N.P.	40 MX	41 MN 49 M 10 MX 11 MR	X 41 MN N 11 MN	40 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	LITTL	CLAY SOILS WITH E OR RATE NTS OF	HIGHLY ORGANIC SOILS	SILT- MATE	RALLY -CLAY RIAL	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD		< 2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 > 30		<pre></pre>
10	F MAJOR	S STONE FRAGS	FINE	SILT	Y OR CLA	YEY	SIL SOI		CLA SOII		ORGAN MATTI	VIC .	30103			GRO			R	
M	ATERIALS	SAND .	L		< (LL-30)						<u> </u>			<u> </u>						TER DRILLING (LA.D. ILLING (0 HRS.)
			TEX	TUF	RE OF	₹ GF	PAIN	1 S	ΙΖΕ					<b>V</b>	_	IC WATER LEVEL				
	BOULDE	R COE	BLE	GRA	VEL	CDARS SAND		FII SA		S	ILT	CI	_AY	000	==	IG OR SEEPAGE	SATURA	IED ZUNE.	UR WF	TER BEARING STRATA
	RAIN (mm	305		5 3	2		0.2	5	0	.05	Ø.	005		<u> </u>		ANEOUS SY	/MB0	LS AND	AB	BREVIATIONS
F	SO				- CC	RRE	LA	TIOI	N O	FI	ERM	IS				Y EMBANKMENT WITH	1 6	SPT OPT TEST VST	BORING	SAMPLE DESIGNATIONS
	SOIL MO	ISTURE SO	ALE	FIE	LD MOIS	TURE						DESCR	IPTION	쁘	SOIL UE	SCRIPTION YMBOL	€	) AUGER I	BORING	S-BULK SAMPLE
		LIQUID LI			SATURAT (SAT.)	ED-						USUALI WATER			ROADWAY	AL FILL OTHER THA EMBANKMENTS	\ ^	)- CORE BI		SS-SPLIT SPOON SAMPLE ST-SHELBY TUBE SAMPLE
F	ASTIC ANGE (PI) PL	PLASTIC L		WET- (W	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE					ATTAIN	25°	INFERRED SOIL BOUNDARIES 🔼 INSTALLATION RS-RO					RS-ROCK SAMPLE OR			
		OPTIMUM MO SHRINKAGE			MOIST- (	M)	SOLID; AT OR NEAR OPTIMUM MOISTURE					TURE	•	APPARE!	NT DIP TO)		> SPT N-V	ALUE		
	-DRY- (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE									•	ROD SOL	<u> </u>				ELL				
				RC	CK [	DESC	RIP	TIC	N					ABBREVIATIONS						
1 11	i the Broai	JEST MEANING	. HARD	PACK 1	C CONCIDE	חד חשר														
15	ARBITRAR	BY CONVENTION Y. TRANSITION THE PURPOSE	NAL SO	il sam Een si	PLING TOOL DIL AND R	_s or to OCK is	ECHN1OL OFTEN	JES. TI REPRE	HE BOUN	NDARY 8 D BY A	etween Zone o	SOIL AND OF "WEATH	ROCK	ALLU AR BLDR CALC CL. CLY.	. E	ALLUVIUM AUGER REFUS, BOULDER CALCAREOUS CLAY CLAYEY		MIC. MOT. N NS ORG. P.P.	MOT BLO NO ORG	ACEOUS TLED WS / 30 CM SAMPLE TAKEN ANIC T PENETROMETER
IS Ri	ARBITRAR	r.TRANSITION THE PURPOSE	NAL SO N BETW OF T	IL SAM EEN SI HIS IN	PLING TOOL DIL AND R VESTIGATI	S OR TI	echniou Often Se ma	IES. TI REPRE TERIAL	HE BOUN SENTEI S ARE DESC	NDARY 8 D BY A DIVID	etween Zone o Ed as f	SOIL AND OF "WEATH FOLLOWS:	ROCK IERED	AR BLDR CALC CL. CLY. COB.	. E	AUGER REFUS BOULDER CALCAREOUS CLAY CLAYEY COBBLE		MOT. N NS ORG. P.P. REF.	MOT BLO NO ORG POCK! REF	TLED WS / 30 CM SAMPLE TAKEN ANIC T PENETROMETER ER TO
IS Re	ARBITRAR	r.TRANSITION THE PURPOSE	NAL SO N BETW OF T SYMBC	IL SAMEEN SINUS INFEROCE	PLING TOOL DIL AND R VESTIGATI  RRED  LINE 2 LINE 2	S OR THE	OFTEN SE MA	IES. TI REPRE TERIAL HAT CA EPT IN	HE BOUNTSENTER S ARE DESC ANNOT I THIN	DARY BODIVIDO	ZONE C ZONE C ED AS F ON NETRATE S, AND F	SOIL AND OF "WEATH FOLLOWS: OBY PO REQUIRES	ROCK IERED WER	AR BLDR CALC CL. CLY. COB. CSE. DPT EST.	. E	AUGER REFUS/ BOULDER CALCAREOUS CLAYEY COBBLE COARSE LYNAMIC PENETRATION STIMATED	I TEST	MOT. N NS ORG. P.P. REF. RES. S.	MOT BLO NO ORG POCK! REF RES SOF SAT	TLED WS / 30 CM SAMPLE TAKEN ANIC IT PENETROMETER ER TO IDUAL T URATED
IS R	ATHERED	r.TRANSITION THE PURPOSE	NAL SO N BETW OF T SYMBC	IL SAMEEN SI HIS IN LS INFE ROCK HA WEAT ROCK	PLING TOOL DIL AND R VESTIGATI  RRED  LINE  RD HERED (HWR)	OCK IS ON, THE MATER AUGER ROCK MATER DIFFICE	ECHNIOL OFTEN SE MA RIAL TH SS, EXCE CORING RIAL TH ULTY US	REPRE TERIAL HAT CA EPT IN TOOL HAT CA ENT IN TOOL	HE BOUNTSENTER S ARE DESC ANNOT I THIN S FOR THE BOWER ARE	NDARY BOD BY A DIVIDOR BE PER LEDGE OBTAI PENETR UGERS (	ETWEEN ZONE C ED AS F ON NETRATE S, AND F NING A RATED W AND YIEL	SOIL AND OF "WEATH FOLLOWS: OBY PO REQUIRES SAMPLE TITH GREA LOS SPT R	ROCK HERED  WER  THE TENT TO T	AR BLDR CALC CL. CLY. COB. CSE. DPT EST. F. FIAD FOSS	E C C C C C C C C C C C C C C C C C C C	AUGER REFUS/ BOULDER CALCAREOUS CLAYEY COBBLE COARSE YMANIC PENETRATION CSTIMATED TINE LLED IMAED, AFTER DR	i Test Lling	MOT. N NS ORG. P.P. REF. RES. S. SAT. SD. SDY. SED(S).	MOT BLO NO ORG POCKE REF RES SOF SAT SAN SED	TLED WS / 30 CM SAMPLE TAKEN ANIC T PENETROMETER ER TO IDUAL T URATED D DY IMENT(S)
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WE:	ATHERED  S ARBITRAR  TERM  HARD  ROCK  HR)  ATHERED  S PT REF  AN INFE  THE HAF  A DESCR	T. TRANSITION  THE PURPOSE  CORED RO  CORED RO  USAL ≤ 2.5  RRED ROCK  ROCK SYMIPTION OF F	NAL SO I BETWOOK I	IL SAM LS INFEEN SI INFE ROCK SC WEAT ROCK PENE	PLING TOOL  PLING TOOL  RRED 2  C LINE 2  C LINE 1  RD  HERED  HERED  HERED  FT  HERED  FT  HERED  FT  HERED  FRATION PR  TRATION PR  TRAT	MATER DIFFICE SPT VERSOCK IS	ECHNIOL  OFTEN  SE MA  RIAL THE  CORING  RIAL THE  ULTY US  RIAL THE  ULTY US  RIAL THE  CULTY  FALUES  GLOWS I	HES. THE REPRESENTED TO THE REPR	DESC DESC ANNOT I THIN S FOR DWER AND BE POWER BLOWS GERS CONLY	DORY BODRY BODRY BE PER LEDGE OBTAIN PENETF AUGERS AUGERS BUT	ZONE C ZONE C ZONE C ED AS F ON WETRATE S, AND F NING A RATED W RS AND KATED W RS	SOIL AND F "WEATH FOLLOWS:  D BY PO REQUIRES SAMPLE TH GREA DS SPT R TH SOME YIELDS REFUSAL GER PENE	ROCK HERED  WER  AT 1 EFUSAL  TRATE.	AR BLDR CALC CL. CCLY. COB. CSE. DPT EST. F. FIAD FOSS. FRAC. FRAG	E F F F G G S G G S G G	AUGER REFUS/ BOULDER CALCAREOUS CLAY COBBLE COARSE	I TEST LLING	MOT. N NS ORG. P.P. REF. RES. S. SAT. SD. SDY. SED(S). SLI.	MOT BLO NO ORG POCKE RES SOF SAT SAN SED SILT SLIG STANC TOP	TLED WS / 30 CM SAMPLE TAKEN ANIC TO THE THE TO THE
WE:	ARBITRAR DCK*, FOR THE HARD ROCK WR)  SPT REF AN INFE THE HAF A DESCE CORE RE	COVERY (REC	MAL SO OF T  SYMBC CK  Cm OF T  BBOL I  BBOL I  BBOC I  BOCK I	IL SAM HEEN SI HIS IN LS INFE ROCK WEAT ROCK SC WEAT ROCK PENE* PONE SO	PLING TOOL  PLING TOOL  RRED  LINE  RD  HERED  (HWR)  FT  HERED  FT  TRATION PR  TES THE L  WN WHEN F  N, INCLUDIT  TOTAL LEE  TOTAL	S OR TI	COREINS THE COREINS CO	HAT CALLER TO THE TOTAL TO THE TOTAL	HE BOUNT SENTEL  DESC  DESC  THEN THEN S FOR NO BE BLOWS  ONLY  N THE RUN 1	NOARY BO DIVIDIO BY A DIVIDIO B	ZONE CO ZONE CO ED AS F ON WETRATES, AND F NING A RATED W RS AND C SPT F NO LONG AT DEP1 BARREL 00%.	SOIL AND SOIL AND F "WEATH FOLLOWS:  D BY PO REQUIRES SAMPLE FITH GREA LOS SPT R FITH SOME YIELDS REFUSAL  DIVIDED  DIVIDED	ROCK HERED  WER  AT 1 EFUSAL  TRATE.	AR BLDR CALC CL. CCLY. COB. DPT EST. F. FIAD FOSS. FRAC. FRAGG GR. GS GW MED.	E C C C C C C C C C C C C C C C C C C C	AUGER REFUS/ BOULDER CALCAREOUS CLAYEY CLAYEY COBBLE COARSE VINAMIC PENETRATION STIMATED TINE LLED IAMED, AFTER OR COSSILIFEROUS RACTURED RAGMENT(S) RAVEL PECIFIC GRAV ROUND WATER	I TEST LLING ITY R	MOT. N NS ORG. P.P. REF. RES. SAT. SDY. SED(S). SLI. SPT TS. VST V.	MOT BLO ORG POCKE REF SAT SAN SED SILT SLIG STAN VAN VER	TLED WS / 30 CM SAMPLE TAKEN ANIC TO THE THE TO THE
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WE:	ARBITRAR DCK*, FOR THE HARD ROCK WR)  SPT REF AN INFE THE HAF A DESCE CORE RE	COVERY (REC	MAL SO OF T  SYMBC CK  Cm OF T  BBOL I  BBOL I  BBOC I  BOCK I	IL SAM HEEN SI HIS IN LS INFE ROCK WEAT ROCK SC WEAT ROCK PENE* PONE SO	PLING TOOL  RRED  LINE  RED  LINE  RED  LINE  RED  LINE  RED  LINE  RED  LINE	S OR TI OCK IS OON, THE MATER AUGER ROCK MATER DIFFICI MATER CONTROL MATER DIFFICI MAT	CORECTOR OF THE CONTROL OF THE CONTR	JES. TI REPRE TERIAL HAT CAPEPT IN TOOL HAT CAPEPT	HE BOUNT SENTEIL S ARE  DESC ANNOT I THIN I THIN IS FOR NO BE NO BE NO BE NO BE NO BE RUN I THE	NOARY BE A COMMENT OF THE COMMENT OF	ZONE CO ZONE CO ZONE CO ZONE CO ZONE ZONE ZONE ZONE ZONE ZONE ZONE ZON	SOIL AND SOIL SOIL AND SOIL SOIL AND SOIL AND SOIL SOIL AND SOIL SOIL AND SOIL SOIL SOIL SOIL SOIL SOIL SOIL SOIL	ROCK HERED  WER  TEFUSAL  TRATE.	AR BLDR CALC CL. CCLY. COB. DPT EST. F. FIAD FOSS. FRAC. FRAGG GR. GS GW MED.	- E - C - C - C - C - C - C - C - C - C	AUGER REFUS/ BOULDER CALCAREOUS CLAY COBBLE COARSE YMANIC PENETRATION CSTIMATED TINE LLED INAED, AFTER DR COSSILIFEROUS RACTURED RAGMENT(S) RAVEL PECIFIC GRAV ROUND WATER MEDIUM  BY17- PINC 1003	I TEST LLING ITY R	MOT. N NS ORG. P.P. REF. RES. S. SAT. SD. SED(S). SLI. SPT TS. VST V. W/	MOT BLO ORG POCKE REF SAT SAN SED SILT SLIG STAN VAN VER	TLED WS / 30 CM SAMPLE TAKEN ANIC TT PENETROMETER ER TO IDUAL T URATED D DY IMENT(S) , SILTY HTLY JARD PENETRATION TEST SOIL E SHEAR TEST Y
WE:	ARBITRAR  DCK*, FOR THE TERM  HARD ROCK  HHR)  STHERED  STHERED  STHERED  STHERED  ORIGINAL  ORI	CORED RO  SCORED RO  USAL ≤ 2.5 RRED ROCK D ROCK SYMIPTION OF F COVERY (REC PALITY DESIGNATE:	MAL SO OF T  SYMBC CK  Cm OF T  BBOL I  BBOL I  BBOC I  BOCK I	IL SAM EEN SI HIS IN LS INFE ROCK WEAT ROCK PENE ROCK PENE S SHOV	PLING TOOL  PLING TOOL  RRED  LINE  LINE  RD  HERED  HERED  HERED  FT  HERED  FT  HERED  FT  HERED  FT  HERED  RATION PR  ES THE LE  WIN WHEN F  N, INCLUDI  ENGTH OF  TOTAL LE  TOTAL LE  ARE LI	S OR TI OCK IS ON, THE MATER AUGER ROCK MATER DIFFIC SPT V ROCK MATER CEVEL 15 ROCK NGTH C ROCK NGTH C ROCK ROCK ROCK ROCK ROCK ROCK ROCK ROC	CORECTOR OF THE CONTROL OF THE CONTR	JES. TI REPRE TERIAL HAT CAPEPT IN TOOL HAT CAPEPT	HE BOUNT SENTEIL S ARE  DESC. ANNOT I THIN I THIN S FOR NN BE POWER AN BLOWS NN THE RUN I THE RU	NDARY B DIVIDIO  OIVIDIO  REPITI  BE PET LEDGE OBTAI  PENETF LAUGEI S BUT  OULD 1  CORE IMES 1  SEGMEN  OLI m  OLI m  OLI m	ZONE CO ZONE CO ED AS F  ON WETRATES, AND F NING A RATED W AND YIEL RATED W RS AND CO ED AT DEPT  BARREL  ØØ%. TS RECC DIVIDED 5 100%.	SOIL AND SOIL SOIL AND SOIL SOIL AND SOIL AND SOIL SOIL AND SOIL SOIL AND SOIL SOIL SOIL SOIL SOIL SOIL SOIL SOIL	ROCK HERED  WER  TEFUSAL  TRATE.	AR BLDR CALC CL. CCLY. COB. DPT EST. F. FIAD FOSS. FRAC. FRAGG GR. GS GW MED.	- E - C - C - C - C - C - C - C - C - C	AUGER REFUS/ BOULDER CALCAREOUS CLAY COBBLE COARSE YMANIC PENETRATION CSTIMATED TINE LLED INAED, AFTER DR COSSILIFEROUS RACTURED RAGMENT(S) RAVEL PECIFIC GRAV ROUND WATER MEDIUM  BY17- PINC 1003	I TEST LLING ITY R	MOT. N NS ORG. P.P. REF. RES. S. SAT. SD. SED(S). SLI. SPT TS. VST V. W/	MOT BLO ORG POCKE REF SAT SAN SED SILT SLIG STAN VAN VER	TLED WS / 30 CM SAMPLE TAKEN ANIC TT PENETROMETER ER TO IDUAL T URATED D DY IMENT(S) , SILTY HTLY JARD PENETRATION TEST SOIL E SHEAR TEST Y
WE:	ATHERED OCK WR)  SPT REF AN INFE THE HARD A DESCRETE RECK OU	CORED RO  CORED RO  USAL ≤ 2.5 RRED ROCK NO ROCK SYN  IPTION OF F  COVERY (REC  ALITY DESIG	MAL SO OF T  SYMBC CK  Cm OF T  BBOL I  BBOL I  BBOC I  BOCK I	IL SAM EEN SI HIS IN LS INFE ROCK WEATI ROCK SC WEATI ROCK SC WEATI LI	PLING TOOL  PLING TOOL  PLING TOOL  PRED  CLIP IN INTERPRED  CHWR)  FT  HERED  HORE	S OR TI OCK IS ON, THE MATER AUGER AUGER FOR MATER DIFFICI MATER DIFFICI MATER LEVEL A ROCK MOTH CLENGTH LENGTH LS:	ECHNIOLO OFTEN SE MA' RIAL TH IS, EXCICOTINE RIAL TH ULTY US RIAL TH ALLUES BLOWS I ALLUES BLOWS I THAN C COREI THAN THO F TH	HAT CALE TO THE TENDER OF THE	DESC. ANNOT THEN NO SERVICE ONLY NO THE RUN TH	NOARY BE A COMMENTED THE COMMENT OF	ZONE CO ZONE CO ED AS F  ON WETRATES, AND F NING A RATED W AND YIEL RATED W RS AND CO ED AT DEPT  BARREL  ØØ%. TS RECC DIVIDED 5 100%.	SOIL AND SOIL SOIL AND SOIL AND SOIL SOIL AND SOIL AND SOIL AND SOIL SOIL AND SOIL AND SOIL SOIL AND SOIL SOIL SOIL SOIL SOIL SOIL SOIL SOIL	ROCK HERED  WER  TEFUSAL  TRATE.	AR BLDR CALC CL. CCLY. COB. DPT EST. F. FIAD FOSS. FRAC. FRAGG GR. GS GW MED.	- E - C - C - C - C - C - C - C - C - C	AUGER REFUS/ BOULDER CALCAREOUS CLAY COBBLE COARSE YMANIC PENETRATION CSTIMATED TINE LLED INAED, AFTER DR COSSILIFEROUS RACTURED RAGMENT(S) RAVEL PECIFIC GRAV ROUND WATER MEDIUM  BY17- PINC 1003	I TEST LLING ITY R	MOT. N NS ORG. P.P. REF. RES. S. SAT. SD. SED(S). SLI. SPT TS. VST V. W/	MOT BLO ORG POCKE REF SAT SAN SED SILT SLIG STAN VAN VER	TLED WS / 30 CM SAMPLE TAKEN ANIC TT PENETROMETER ER TO IDUAL T URATED D DY IMENT(S) , SILTY HTLY JARD PENETRATION TEST SOIL E SHEAR TEST Y
WE:	ARBITRAR DCK*, FOR THE HARD ROCK ATHERED TO SPT REF AN INFE THE HAR A DESCR CORE RE ROCK OU  DRILL X MC	CORED RO  CORED RO  CORED RO  CORED RO  CORED RO  CORED RO  COVERY (RECOVERY (RECOVER	MAL SO OF T  SYMBC CK  Cm OF T  BBOL I  BBOL I  BBOC I  BOCK I	IL SAM EEN SI HIS IN LS INFE ROCK SC WEATI ROCK PENE HID	PLING TOOL  PLING TOOL  PRED 2  LEME WESTIGATI  RD  HERED (HWR)  FT  HERED (SWR)  FT  FT  FT  FT  FT  FT  FT  FT  FT  F	S OR TI OCK IS ON, THE MATER AUGER OFFICI MATER DIFFICI MA	ECHNIOLO OFTEN SE MA' RIAL THES, EXCLORED RIAL THE LULTY US RIAL THE RIAL T	HAT CALE TO THE TENDER OF THE	DESC. ANNOT THEN NO SERVICE ONLY NO THE RUN TH	NOARY BO DIVIDION OF THE PROPERTY OF THE PROPE	ZONE CO ZONE CO ED AS F  ON WETRATES, AND F NING A RATED W AND YIEL RATED W RS AND CO ED AT DEPT  BARREL  ØØ%. TS RECC DIVIDED 5 100%.	SOIL AND SOIL SOIL AND SOIL AND SOIL SOIL AND SOIL AND SOIL AND SOIL SOIL AND SOIL AND SOIL SOIL AND SOIL SOIL SOIL SOIL SOIL SOIL SOIL SOIL	ROCK HERED  WER  TEFUSAL  TRATE.	AR BLDR CALC CL. CCLY. COB. DPT EST. F. FIAD FOSS. FRAC. FRAGG GR. GS GW MED.	- E - C - C - C - C - C - C - C - C - C	AUGER REFUS/ BOULDER CALCAREOUS CLAY COBBLE COARSE YMANIC PENETRATION CSTIMATED TINE LLED INAED, AFTER DR COSSILIFEROUS RACTURED RAGMENT(S) RAVEL PECIFIC GRAV ROUND WATER MEDIUM  BY17- PINC 1003	I TEST LLING ITY R	MOT. N NS ORG. P.P. REF. RES. S. SAT. SD. SED(S). SLI. SPT TS. VST V. W/	MOT BLO ORG POCKE REF SAT SAN SED SILT SLIG STAN VAN VER	TLED WS / 30 CM SAMPLE TAKEN ANIC TT PENETROMETER ER TO IDUAL T URATED D DY IMENT(S) , SILTY HTLY JARD PENETRATION TEST SOIL E SHEAR TEST Y
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  FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE
  CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.