

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

ID	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
R-0977A	34357.1.1	2	19



SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION				GRADATION				ROCK DESCRIPTION				TERMS AND DEFINITIONS																																																																																																																																																																																														
<p>SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED OR WEATHERED EARTH MATERIALS WHICH CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND WHICH YIELDS LESS THAN 100 BLOWS PER 30 cm ACCORDING TO STANDARD PENETRATION TEST (AASHTO T208, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM AND BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXEMPLE:</p> <p align="center"><i>VERY STIFF, GRAY SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGH PLASTIC, A-7-6</i></p>				<p>WELL GRADED- INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE UNIFORM- INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE (ALSO POORLY GRADED). GAP-GRADED- INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.</p>				<p>HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WHEN TESTED, WOULD YIELD SPT REFUSAL. 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 2.5 cm PER 50 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 WHICH 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, AS SHALE, SLATE, ETC. ARTESIAN - CRYSTALLINE ROCK THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CALCAREOUS (CALC.) - SOILS WHICH 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 (F.P.) - 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, MOTTLED 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 SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (R.Q.D.) - A MEASURE OF ROCK QUALITY DESCRIBED BY: TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 10 CENTIMETERS DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL WHICH 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, WHICH 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 (N) OF A 63.5 kg HAMMER FALLING 0.76 METERS REQUIRED TO PRODUCE A PENETRATION OF 30 cm INTO SOIL WITH A 5 cm OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS LESS THAN 2.5 cm PENETRATION WITH 50 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 (S.R.Q.D.) - A MEASURE OF ROCK QUALITY DESCRIBED BY: TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 10 CENTIMETERS DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (T.S.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>																																																																																																																																																																																														
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<p align="center">GROUND WATER</p> <p>▽ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING. ▼ STATIC WATER LEVEL AFTER 24 HOURS. ▽PW PERCHED WATER, SATURATED ZONE OR WATER BEARING STRATA ◊ SPRING OR SEEPAGE</p>				<p align="center">MISCELLANEOUS SYMBOLS</p> <table border="1"> <tr> <td>[Symbol] ROADWAY EMBANKMENT WITH SOIL DESCRIPTION</td> <td>[Symbol] SPT TEST BORING</td> <td>[Symbol] SAMPLE DESIGNATIONS</td> </tr> <tr> <td>[Symbol] SOIL SYMBOL</td> <td>[Symbol] AUGER BORING</td> <td>S- BULK SAMPLE</td> </tr> <tr> <td>[Symbol] ARTIFICIAL FILL OTHER THAN ROADWAY EMBANKMENTS</td> <td>[Symbol] CORE BORING</td> <td>SS- SPLIT SPOON SAMPLE</td> </tr> <tr> <td>[Symbol] INFERRED SOIL BOUNDARIES</td> <td>[Symbol] MONITORING WELL</td> <td>ST- SHELBY TUBE SAMPLE</td> </tr> <tr> <td>[Symbol] INFERRED ROCK LINE</td> <td>[Symbol] PIEZOMETER INSTALLATION</td> <td>RS- ROCK SAMPLE</td> </tr> <tr> <td>[Symbol] ALLUVIAL SOIL BOUNDARY</td> <td>[Symbol] SLOPE INDICATOR INSTALLATION</td> <td>RT- RECOMPACTED TRIAXIAL SAMPLE</td> </tr> <tr> <td>[Symbol] DIP/DIP DIRECTION OF ROCK STRUCTURES</td> <td>[Symbol] SPT N-VALUE</td> <td>CBR - CBR SAMPLE</td> </tr> <tr> <td>[Symbol] SOUNDING ROD</td> <td>[Symbol] SPT REFUSAL</td> <td></td> </tr> </table>				[Symbol] ROADWAY EMBANKMENT WITH SOIL DESCRIPTION	[Symbol] SPT TEST BORING	[Symbol] SAMPLE DESIGNATIONS	[Symbol] SOIL SYMBOL	[Symbol] AUGER BORING	S- BULK SAMPLE	[Symbol] ARTIFICIAL FILL OTHER THAN ROADWAY EMBANKMENTS	[Symbol] CORE BORING	SS- SPLIT SPOON SAMPLE	[Symbol] INFERRED SOIL BOUNDARIES	[Symbol] MONITORING WELL	ST- SHELBY TUBE SAMPLE	[Symbol] INFERRED ROCK LINE	[Symbol] PIEZOMETER INSTALLATION	RS- ROCK SAMPLE	[Symbol] ALLUVIAL SOIL BOUNDARY	[Symbol] SLOPE INDICATOR INSTALLATION	RT- RECOMPACTED TRIAXIAL SAMPLE	[Symbol] DIP/DIP DIRECTION OF ROCK STRUCTURES	[Symbol] SPT N-VALUE	CBR - CBR SAMPLE	[Symbol] SOUNDING ROD	[Symbol] SPT REFUSAL																																																																																																																																																																												
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BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F. SD.)	SILT (SL.)	CLAY (CL.)																																																																																																																																																																																																				
MM 305	75	2.0	0.25	0.05	0.005																																																																																																																																																																																																					
IN. 12"	3"																																																																																																																																																																																																									
AR - AUGER REFUSAL	PMT - PRESSUREMETER TEST																																																																																																																																																																																																									
BT - BORING TERMINATED	SD. - SAND, SANDY																																																																																																																																																																																																									
CL - CLAY	SL. - SILT, SILTY																																																																																																																																																																																																									
CPT - CONE PENETRATION TEST	SLI. - SLIGHTLY																																																																																																																																																																																																									
CSE. - COARSE	TCR - TRICONE REFUSAL																																																																																																																																																																																																									
DMT - DILATOMETER TEST	γ - UNIT WEIGHT																																																																																																																																																																																																									
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