

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION				GRADATION				ROCK DESCRIPTION				TERMS AND DEFINITIONS																																																																																																															
<p>SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</p>				<p>WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.</p>				<p>HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED, 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 0.1 FOOT PER 60 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 THAT 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, SUCH AS SHALE, SLATE, ETC. ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CALCAREOUS (CALC.) - SOILS THAT 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 (FP) - 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. JUNTI - 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. MOTTLING 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 (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT 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, THAT 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 OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 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 (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>																																																																																																															
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<p>MINERALOGICAL COMPOSITION</p> <p>MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.</p>				<p>COMPRESSIONIBILITY</p> <p>SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50</p>				<p>COASTAL PLAIN SEDIMENTARY ROCK (CP) - COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.</p>																																																																																																																			
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<p>DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.</p>				<p>INDURATION FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. FRIABLE - RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE. MODERATELY INDURATED - GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER. INDURATED - GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER. EXTREMELY INDURATED - SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</p>				<p>INDURATION FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. FRIABLE - RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE. MODERATELY INDURATED - GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER. INDURATED - GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER. EXTREMELY INDURATED - SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</p>				<p>INDURATION FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. FRIABLE - RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE. MODERATELY INDURATED - GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER. INDURATED - GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER. EXTREMELY INDURATED - SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</p>																																																																																																															

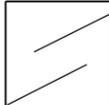
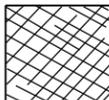
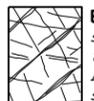
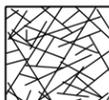
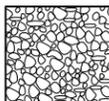
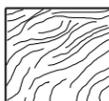
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GEOTECHNICAL ENGINEERING UNIT

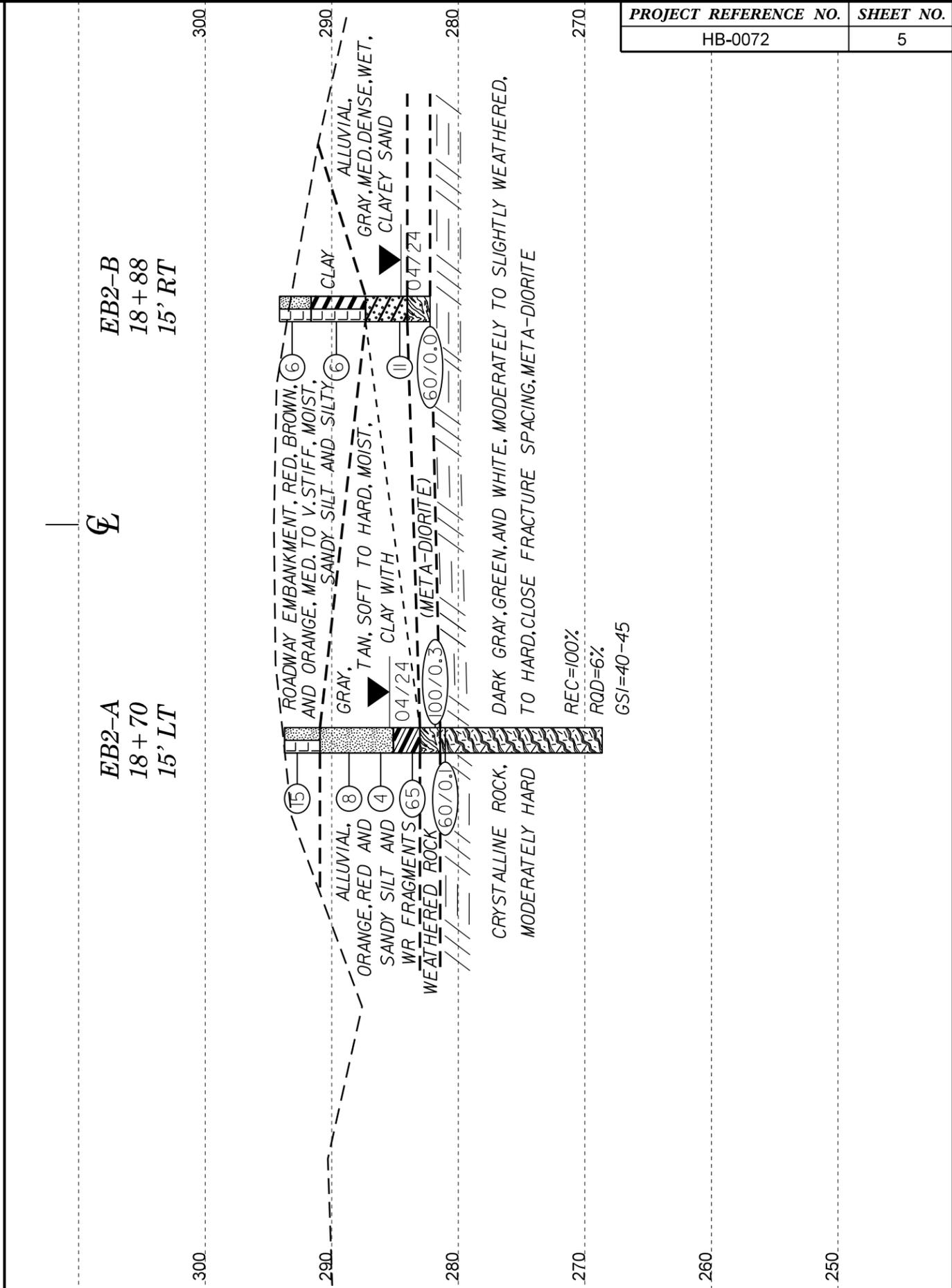
SUBSURFACE INVESTIGATION

SUPPLEMENTAL LEGEND, GEOLOGICAL STRENGTH INDEX (GSI) TABLES
 FROM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

AASHTO LRFD Figure 10.4.6.4-1 — Determination of GSI for Jointed Rock Mass (Marinos and Hoek, 2000)

AASHTO LRFD Figure 10.4.6.4-2 — Determination of GSI for Tectonically Deformed Heterogeneous Rock Masses (Marinos and Hoek, 2000)

<p>GEOLOGICAL STRENGTH INDEX (GSI) FOR JOINTED ROCKS (Hoek and Marinos, 2000)</p> <p>From the lithology, structure and surface conditions of the discontinuities, estimate the average value of GSI. Do not try to be too precise. Quoting a range from 33 to 37 is more realistic than stating that GSI = 35. Note that the table does not apply to structurally controlled failures. Where weak planar structural planes are present in an unfavorable orientation with respect to the excavation face, these will dominate the rock mass behaviour. The shear strength of surfaces in rocks that are prone to deterioration as a result of changes in moisture content will be reduced if water is present. When working with rocks in the fair to very poor categories, a shift to the right may be made for wet conditions. Water pressure is dealt with by effective stress analysis.</p>		<p>SURFACE CONDITIONS</p> <p>VERY GOOD Very rough, fresh unweathered surfaces</p> <p>GOOD Rough, slightly weathered, iron stained surfaces</p> <p>FAIR Smooth, moderately weathered and altered surfaces</p> <p>POOR Slickensided, highly weathered surfaces with compact coatings or fillings or angular fragments</p> <p>VERY POOR Slickensided, highly weathered surfaces with soft clay coatings or fillings</p> <p>DECREASING SURFACE QUALITY →</p>					<p>GSI FOR HETEROGENEOUS ROCK MASSES SUCH AS FLYSCH (Marinos, P and Hoek E., 2000)</p> <p>From a description of the lithology, structure and surface conditions (particularly of the bedding planes), choose a box in the chart. Locate the position in the box that corresponds to the condition of the discontinuities and estimate the average value of GSI from the contours. Do not attempt to be too precise. Quoting a range from 33 to 37 is more realistic than giving GSI = 35. Note that the Hoek-Brown criterion does not apply to structurally controlled failures. Where unfavourably oriented continuous weak planar discontinuities are present, these will dominate the behaviour of the rock mass. The strength of some rock masses is reduced by the presence of groundwater and this can be allowed for by a slight shift to the right in the columns for fair, poor and very poor conditions. Water pressure does not change the value of GSI and it is dealt with by using effective stress analysis.</p>		<p>SURFACE CONDITIONS OF DISCONTINUITIES (Predominantly bedding planes)</p> <p>VERY GOOD - Very Rough, fresh unweathered surfaces</p> <p>GOOD - Rough, slightly weathered surfaces</p> <p>FAIR - Smooth, moderately weathered and altered surfaces</p> <p>POOR - Very smooth, occasionally slickensided surfaces with compact coatings or fillings with angular fragments</p> <p>VERY POOR - Very smooth, slickensided or highly weathered surfaces with soft clay coatings or fillings</p>				
<p>STRUCTURE</p>		<p>DECREASING INTERLOCKING OF ROCK PIECES ↓</p>					<p>COMPOSITION AND STRUCTURE</p>		<p>DECREASING INTERLOCKING OF ROCK PIECES ↓</p>				
 <p>INTACT OR MASSIVE - intact rock specimens or massive in situ rock with few widely spaced discontinuities</p>	90			N/A	N/A	 <p>A. Thick bedded, very blocky sandstone. The effect of pelitic coatings on the bedding planes is minimized by the confinement of the rock mass. In shallow tunnels or slopes these bedding planes may cause structurally controlled instability.</p>	70	A					
 <p>BLOCKY - well interlocked undisturbed rock mass consisting of cubical blocks formed by three intersecting discontinuity sets</p>	80	70				 <p>B. Sandstone with thin inter-layers of siltstone</p>	60	B	C	D	E		
 <p>VERY BLOCKY - interlocked, partially disturbed mass with multi-faceted angular blocks formed by 4 or more joint sets</p>		60	50			 <p>C. Sandstone and siltstone in similar amounts</p>	50	B	C	D	E		
 <p>BLOCKY/DISTURBED/SEAMY - folded with angular blocks formed by many intersecting discontinuity sets. Persistence of bedding planes or schistosity</p>			40	30		 <p>F. Tectonically deformed, intensively folded/faulted, sheared clayey shale or siltstone with broken and deformed sandstone layers forming an almost chaotic structure</p>	40	B	C	D	E		
 <p>DISINTEGRATED - poorly interlocked, heavily broken rock mass with mixture of angular and rounded rock pieces</p>				20		 <p>G. Undisturbed silty or clayey shale with or without a few very thin sandstone layers</p>	30	B	C	D	E		
 <p>LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes</p>	N/A	N/A		10		 <p>H. Tectonically deformed silty or clayey shale forming a chaotic structure with pockets of clay. Thin layers of sandstone are transformed into small rock pieces.</p>	20	B	C	D	E		
							<p>→ Means deformation after tectonic disturbance</p>						



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 51609.1.1		TIP HB-0072		COUNTY GRANVILLE		GEOLOGIST Moore, N. O.										
SITE DESCRIPTION BRIDGE NO. 199 ON SR 1629 (FLAT ROCK ROAD) OVER FORD CREEK							GROUND WTR (ft)									
BORING NO. EB1-A		STATION 17+69		OFFSET 16 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 294.8 ft		TOTAL DEPTH 10.8 ft		NORTHING 872,470		EASTING 2,135,101										
DRILL RIG/HAMMER EFF./DATE GFC0075 CME-45C 90% 11/21/2022				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Walker, C. M.		START DATE 04/22/24		COMP. DATE 04/22/24		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
295	294.8	0.0	2	2	1									294.8	0.0	GROUND SURFACE
	291.4	3.4	6	3	2											ROADWAY EMBANKMENT RED-BROWN, SANDY CLAY WITH TRACE ROOT FRAGMENTS AND GRAVEL
290														288.3	6.5	WEATHERED ROCK (METADIORITE)
	286.4	8.4	41	50	50/0.4									284.5	10.3	CRYSTALLINE ROCK (METADIORITE) Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 284.0 ft IN CRYSTALLINE ROCK (METADIORITE)
285	284.1	10.7	60/0.1											284.0	10.8	

NCDOT BORE DOUBLE HB0072_GEO_BRD50199_BH.GPJ NC_DOT.GDT 7/2/25

GEOTECHNICAL BORING REPORT BORE LOG

GEOTECHNICAL BORING REPORT CORE LOG

WBS 51609.1.1	TIP HB-0072	COUNTY GRANVILLE	GEOLOGIST Moore, N. O.
SITE DESCRIPTION BRIDGE NO. 199 ON SR 1629 (FLAT ROCK ROAD) OVER FORD CREEK			GROUND WTR (ft)
BORING NO. EB1-B	STATION 18+03	OFFSET 15 ft RT	ALIGNMENT -L-
COLLAR ELEV. 294.6 ft	TOTAL DEPTH 26.6 ft	NORTHING 872,478	EASTING 2,135,146
DRILL RIG/HAMMER EFF./DATE GFO0075 CME-45C 90% 11/21/2022		DRILL METHOD NW Casing W/SPT & Core	HAMMER TYPE Automatic
DRILLER Walker, C. M.	START DATE 04/23/24	COMP. DATE 04/23/24	SURFACE WATER DEPTH N/A

WBS 51609.1.1	TIP HB-0072	COUNTY GRANVILLE	GEOLOGIST Moore, N. O.
SITE DESCRIPTION BRIDGE NO. 199 ON SR 1629 (FLAT ROCK ROAD) OVER FORD CREEK			GROUND WTR (ft)
BORING NO. EB1-B	STATION 18+03	OFFSET 15 ft RT	ALIGNMENT -L-
COLLAR ELEV. 294.6 ft	TOTAL DEPTH 26.6 ft	NORTHING 872,478	EASTING 2,135,146
DRILL RIG/HAMMER EFF./DATE GFO0075 CME-45C 90% 11/21/2022		DRILL METHOD NW Casing W/SPT & Core	HAMMER TYPE Automatic
DRILLER Walker, C. M.	START DATE 04/23/24	COMP. DATE 04/23/24	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
295	294.6	0.0	1	2	3								294.6	GROUND SURFACE	0.0
													291.9	ROADWAY EMBANKMENT BROWN AND ORANGE, SANDY CLAY WITH TRACE GRAVEL	2.7
290	290.8	3.8	6	4	2								286.7	ALLUVIAL LIGHT GRAY AND BROWN, SANDY SILT WITH TRACE GRAVEL	7.9
	288.4	6.2	2	6	10								285.9	LIGHT GRAY AND ORANGE, CLAYEY SAND	8.7
	286.4	8.2	4	19	81/0.4								284.8	WEATHERED ROCK (METADIORITE)	9.8
285	284.1	10.5								100/0.9			282.3	CRYSTALLINE ROCK (METADIORITE)	12.3
	282.3	12.3	60/0.1							60/0.1					
280			60/0.0							60/0.0					
275															
270															

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC (ft) %	RQD (ft) %		REC (ft) %	RQD (ft) %			
282.3	282.3	12.3	1.8	N=60/0.0 2:02/1.0 4:05/0.8	(1.8)	(0.4)		(13.9)	(4.1)		Begin Coring @ 12.3 ft	
280	280.5	14.1	1.5	3:51/1.0 2:14/0.5	(1.1)	(0.0)					DARK GRAY AND WHITE, MODERATELY TO SLIGHTLY WEATHERED, MODERATELY HARD TO HARD, CLOSE FRACTURE SPACING, METADIORITE	12.3
	279.0	15.6	5.0	2:04/1.0 2:59/1.0 2:47/1.0	(5.0)	(1.8)					GSi= 40-45	
275	274.0	20.6	1.0	2:58/1.0 3:24/1.0	(1.0)	(0.0)						
	273.0	21.6	5.0	1:37/1.0 3:20/1.0 2:56/1.0	(5.0)	(1.9)						
270	268.0	26.6		3:13/1.0 3:48/1.0	100%	38%						

Boring Terminated at Elevation 268.0 ft IN CRYSTALLINE ROCK (METADIORITE)

Boring Terminated at Elevation 268.0 ft IN CRYSTALLINE ROCK (METADIORITE)

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 51609.1.1		TIP HB-0072		COUNTY GRANVILLE		GEOLOGIST Moore, N. O.										
SITE DESCRIPTION BRIDGE NO. 199 ON SR 1629 (FLAT ROCK ROAD) OVER FORD CREEK							GROUND WTR (ft)									
BORING NO. EB2-B		STATION 18+88		OFFSET 15 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 294.1 ft		TOTAL DEPTH 11.9 ft		NORTHING 872,546		EASTING 2,135,198										
DRILL RIG/HAMMER EFF./DATE GFC0075 CME-45C 90% 11/21/2022				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Walker, C. M.		START DATE 04/25/24		COMP. DATE 04/25/24		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
295	294.1	0.0	2	3	3									294.1	0.0	GROUND SURFACE
290	290.6	3.5	2	3	3						SS-9	M		291.6	2.5	ROADWAY EMBANKMENT BROWN, SANDY SILT
	287.3													287.3	6.8	ORANGE-BROWN, SILTY CLAY
285	285.6	8.5	6	5	6									284.0	10.1	ALLUVIAL GRAY, CLAYEY SAND WITH TRACE WOOD DEBRIS
	282.2	11.9												282.2	11.9	WEATHERED ROCK (METADIORITE)
																Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 282.2 ft ON CRYSTALLINE ROCK (METADIORITE)

NCDOT BORE DOUBLE HB0072_GEO_BRD50199_BH.GPJ NC_DOT.GDT 7/2/25

PROJ. NO. - 51609.1.1
ID NO. - HB-0072
COUNTY - GRANVILLE

EB1-B

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-1	15' RT	18+03	0.0-1.5	A-6(3)	34	12	30.1	24.6	17.0	28.4	94	77	47	-	-
SS-2	15' RT	18+03	3.8-5.3	A-4(0)	27	7	33.9	26.8	19.0	20.3	90	72	40	-	-
SS-3	15' RT	18+03	6.2-7.7	A-4(0)	24	9	36.1	27.4	16.1	20.3	90	72	36	-	-
SS-4	15' RT	18+03	8.2-9.6	A-2-6(0)	29	11	47.5	18.7	13.5	20.3	66	43	24	-	-

EB2-A

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-5	15' LT	18+70	0.0-1.5	A-4(0)	33	7	39.2	25.0	21.6	14.2	90	67	37	-	-
SS-6	15' LT	18+70	4.1-5.6	A-4(1)	29	9	28.4	31.7	17.6	22.3	97	84	44	-	-
SS-7	15' LT	18+70	6.6-8.1	A-4(0)	26	6	25.4	39.6	16.8	18.3	100	93	41	-	-
SS-8	15' LT	18+70	9.1-10.6	A-6(3)	37	14	23.4	38.8	17.6	20.3	96	89	43	-	-

EB2-B

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-9	15' RT	18+88	0.0-1.5	A-4(0)	32	8	32.1	24.8	20.8	22.3	85	68	41	-	-
SS-10	15' RT	18+88	3.5-5.0	A-7-6(4)	41	14	32.1	19.5	24.1	24.4	95	77	49	-	-

CORE PHOTOGRAPHS

EB1-B

BOXES 1 & 2: 12.3 - 26.6 FEET



EB2-A

BOXES 1 & 2: 12.7 - 25.1 FEET



SITE PHOTOGRAPH

Bridge No. 199 on -L- (SR 1629, Flat Rock Rd.) over Ford Creek



Looking Southeast towards End Bent 1