

REFERENCE: BP13.R019

PROJECT: 560023

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP13.R019	1	7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY MADISON
 SITE DESCRIPTION STRUCTURE NO. 560023 OVER PAINT
FORK CREEK ON SR 1530 (PAINT FORK ROAD)

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PERSONNEL

CG2 EXPLORATION

T. WENNER, P.G.

INVESTIGATED BY CG2, PLLC

DRAWN BY S. N. PATTERSON, P.G.

CHECKED BY M. BREWER, P.E.

SUBMITTED BY CG2, PLLC

DATE FEBRUARY 2023

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE 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 ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT 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.

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NOTES:

- THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
- 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.

CADD Work Prepared in the Office of:
 **CAROLINAS
 GEOTECHNICAL
 GROUP**
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DocuSigned by:

D. Matthew Brewer

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02/17/2023

SIGNATURE

DATE

**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION**

**SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS
(PAGE 1 OF 2)**

SOIL DESCRIPTION										GRADATION									
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, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-G</i>										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.									
THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.										MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.									
SOIL LEGEND AND AASHTO CLASSIFICATION										COMPRESSIONIBILITY									
GENERAL CLASS.										SLIGHTLY COMPRESSIBLE MODERATELY COMPRESSIBLE HIGHLY COMPRESSIBLE									
GROUP CLASS.										LL < 31 LL = 31 - 50 LL > 50									
SYMBOL										PERCENTAGE OF MATERIAL									
% PASSING										ORGANIC MATERIAL TRACE OF ORGANIC MATTER LITTLE ORGANIC MATTER MODERATELY ORGANIC HIGHLY ORGANIC									
MATERIAL PASSING #40										GRANULAR SOILS SILT-CLAY SOILS MUCK, PEAT									
GROUP INDEX										GROUND WATER									
USUAL TYPES OF MAJOR MATERIALS										▽ 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 SEEP									
GEN. RATING AS SUBGRADE										EXCELLENT TO GOOD FAIR TO POOR FAIR TO POOR POOR UNSUITABLE									
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30										MISCELLANEOUS SYMBOLS									
PRIMARY SOIL TYPE										ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION									
COMPACTNESS OR CONSISTENCY										DIP & DIP DIRECTION OF ROCK STRUCTURES									
RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)										TEST BORING									
RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)										SLOPE INDICATOR INSTALLATION									
VERY LOOSE										ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT									
LOOSE										INFERRED SOIL BOUNDARY									
MEDIUM DENSE										INFERRED ROCK LINE									
DENSE										ALLUVIAL SOIL BOUNDARY									
VERY DENSE										RECOMMENDATION SYMBOLS									
VERY SOFT										UNDERCUT									
SOFT										UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE									
MEDIUM STIFF										UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK									
STIFF										UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL									
VERY STIFF										ABBREVIATIONS									
HARD										AR - AUGER REFUSAL BT - BORING TERMINATED CL - CLAY CPT - CONE PENETRATION TEST CSE - COARSE DMT - DILATOMETER TEST DPT - DYNAMIC PENETRATION TEST e - VOID RATIO F - FINE FOSS. - FOSSILIFEROUS FRAC. - FRACTURED, FRACTURES FRAGS. - FRAGMENTS HL - HIGHLY									
TEXTURE OR GRAIN SIZE										MED. - MEDIUM MICA - MICACEOUS MOD. - MODERATELY NP - NON PLASTIC ORG. - ORGANIC PMT - PRESSUREMETER TEST SAP. - SAPROLITIC SD. - SAND, SANDY SL. - SILT, SILTY SLI. - SLIGHTLY TCR - TRICONE REFUSAL w - MOISTURE CONTENT V - VERY									
U.S. STD. SIEVE SIZE OPENING (MM)										VST - VANE SHEAR TEST WEA. - WEATHERED γ - UNIT WEIGHT γ _d - DRY UNIT WEIGHT									
BOULDER (BLDR.)										SAMPLE ABBREVIATIONS									
COBBLE (COB.)										S - BULK SS - SPLIT SPOON ST - SHELBY TUBE RS - ROCK RT - RECOMPACTED TRIAXIAL CBR - CALIFORNIA BEARING RATIO									
GRAVEL (GR.)										EQUIPMENT USED ON SUBJECT PROJECT									
COARSE SAND (CSE, SD.)										DRILL UNITS: CME-45C CME-55 CME-550X VANE SHEAR TEST PORTABLE HOIST DIEDRICH D-50									
FINE SAND (F SD.)										ADVANCING TOOLS: CLAY BITS 6" CONTINUOUS FLIGHT AUGER 8" HOLLOW AUGERS HARD FACED FINGER BITS TUNG.-CARBIDE INSERTS CASING w/ ADVANCER TRICONE * STEEL TEETH TRICONE * TUNG.-CARB. CORE BIT									
SILT (SL.)										HAMMER TYPE: AUTOMATIC MANUAL									
CLAY (CL.)										CORE SIZE: -B -H -N									
GRAIN SIZE										HAND TOOLS: POST HOLE DIGGER HAND AUGER SOUNDING ROD VANE SHEAR TEST									
SOIL MOISTURE - CORRELATION OF TERMS																			
SOIL MOISTURE SCALE (ATTERBERG LIMITS)																			
FIELD MOISTURE DESCRIPTION																			
GUIDE FOR FIELD MOISTURE DESCRIPTION																			
SATURATED - (SAT.)																			
WET - (W)																			
MOIST - (M)																			
DRY - (D)																			
PLASTICITY																			
PLASTICITY INDEX (PI)																			
DRY STRENGTH																			
NON PLASTIC																			
SLIGHTLY PLASTIC																			
MODERATELY PLASTIC																			
HIGHLY PLASTIC																			
COLOR																			
DESCRIPTORS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.																			

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SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS (PAGE 2 OF 2)

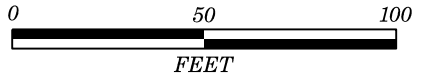
ROCK DESCRIPTION		TERMS AND DEFINITIONS	
<p>HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 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.</p> <p>AQUIFER - A WATER BEARING FORMATION OR STRATA.</p> <p>ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.</p> <p>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.</p> <p>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.</p> <p>CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.</p> <p>COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.</p> <p>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.</p> <p>DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.</p> <p>DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.</p> <p>DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.</p> <p>FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.</p> <p>FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.</p> <p>FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOGGED FROM PARENT MATERIAL.</p> <p>FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.</p> <p>FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.</p> <p>JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.</p> <p>LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.</p> <p>LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.</p> <p>MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.</p> <p>PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.</p> <p>RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.</p> <p>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.</p> <p>SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.</p> <p>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.</p> <p>SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.</p> <p>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.</p> <p>STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.</p> <p>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.</p> <p>TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>	
WEATHERING			
FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.		
VERY SLIGHT (V SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.		
SLIGHT (SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH, OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.		
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.		
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i>		
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. <i>IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF</i>		
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <i>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</i>		
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.		
ROCK HARDNESS			
VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.		
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.		
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.		
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.		
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.		
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.		
FRACTURE SPACING		BEDDING	
TERM	SPACING	TERM	THICKNESS
VERY WIDE	MORE THAN 10 FEET	VERY THICKLY BEDDED	4 FEET
WIDE	3 TO 10 FEET	THICKLY BEDDED	1.5 - 4 FEET
MODERATELY CLOSE	1 TO 3 FEET	THINLY BEDDED	0.16 - 1.5 FEET
CLOSE	0.16 TO 1 FOOT	VERY THINLY BEDDED	0.03 - 0.16 FEET
VERY CLOSE	LESS THAN 0.16 FEET	THICKLY LAMINATED	0.008 - 0.03 FEET
		THINLY LAMINATED	< 0.008 FEET
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.		
		BENCH MARK: 23-1	
		ELEVATION: 2282.71 FEET	
NOTES:			
FIAD = FILLED IMMEDIATELY AFTER DRILLING			
ROADWAY DESIGN FILES PROVIDED TGS ENGINEERS ON DECEMBER 15, 2022			
DATE: 8-15-14			

PROJECT REFERENCE NO. SHEET NO.

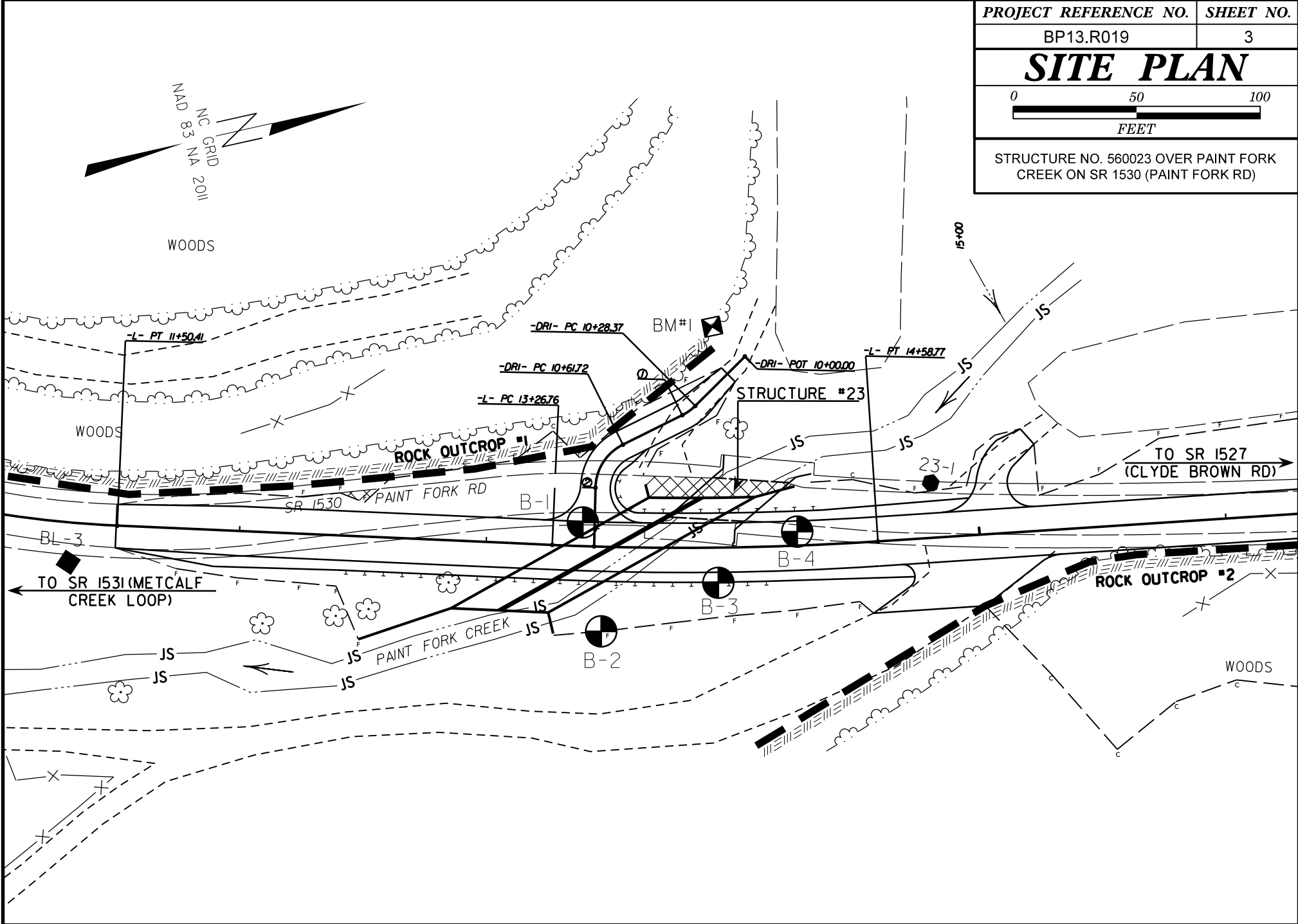
BP13.R019

3

SITE PLAN



STRUCTURE NO. 560023 OVER PAINT FORK CREEK ON SR 1530 (PAINT FORK RD)



GEOTECHNICAL BORING REPORT

BORE LOG

WBS BP13.R019		TIP 560023		COUNTY MADISON		GEOLOGIST T. Wenner, P.G.										
SITE DESCRIPTION Structure No. 560023 over Paint Fork Creek on SR 1530 (Paint Fork Rd)							GROUND WTR (ft)									
BORING NO. B-1		STATION 13+39		OFFSET 10 ft LT		ALIGNMENT -L-	0 HR. Dry									
COLLAR ELEV. 2,283.4 ft		TOTAL DEPTH 16.0 ft		NORTHING 780,557		EASTING 975,879	24 HR. FIAD									
DRILL RIG/HAMMER EFF./DATE CG20446 Diedrich D50 87% 05/10/2022				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER C. Odom		START DATE 08/23/22		COMP. DATE 08/23/22		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2285														2,283.4	TOPSOIL (1.0 FT)	0.0
	2,282.4	1.0	1	1	3	•	•	•	•	•		M	ROADWAY EMBANKMENT Soft to Medium Stiff, Brown, Fine to Coarse Sandy CLAY (A-6), with trace gravel			
2280	2,279.5	3.9	4	2	2	•	•	•	•	•		M				
	2,276.9	6.5	2	2	1	•	•	•	•	•		M				
2275	2,274.4	9.0	WOH	WOH	4	•	•	•	•	•		M	ALLUVIAL Soft to Medium Stiff, Gray-Brown, Fine Sandy CLAY (A-6), organic odor	7.5		
	2,272.4					•	•	•	•	•		M	RESIDUAL Very Dense, Tan-Orange, Silty Fine to Coarse SAND (A-2-4)	11.0		
2270	2,269.9	13.5	24	30	36	•	•	•	•	•		D				
	2,267.4	16.0	60/0.0			•	•	•	•	66		D	Boring Terminated by Auger Refusal at Elevation 2,267.4 ft On Crystalline Rock (Mica Schist)	16.0		
										60/0.0			Notes: Hard Drilling encountered at approximately 14.0 feet			

GEOTECHNICAL BORING REPORT

BORE LOG

WBS BP13.R019		TIP 560023		COUNTY MADISON		GEOLOGIST T. Wenner, P.G.										
SITE DESCRIPTION Structure No. 560023 over Paint Fork Creek on SR 1530 (Paint Fork Rd)							GROUND WTR (ft)									
BORING NO. B-2		STATION 13+47		OFFSET 34 ft RT		ALIGNMENT -L-	0 HR. Dry									
COLLAR ELEV. 2,276.9 ft		TOTAL DEPTH 11.9 ft		NORTHING 780,555		EASTING 975,923	24 HR. 4.5									
DRILL RIG/HAMMER EFF./DATE CG20446 Diedrich D50 87% 05/10/2022				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER C. Odom		START DATE 08/22/22		COMP. DATE 08/22/22		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2280																
															2,276.9	0.0
2275	2,274.4	2.5	3	2	3								M			
	2,272.6	4.3	2	2	11											
2270	2,270.1	6.8	18	34	56/0.3								M			
	2,267.6	9.3	24	46	54/0.3					100/0.8						
	2,265.0	11.9								100/0.8						
			60/0.0							60/0.0						
															2,271.6	5.3
															2,269.6	7.3
															2,265.0	11.9

NCDOT BORE SINGLE MADISON023.GPJ NC_DOT.GDT 1/23/23

Boring Terminated by Auger Refusal at Elevation 2,265.0 ft On Crystalline Rock (Mica Schist)

Notes:
Hard Drilling encountered at approximately 7.0 feet

GEOTECHNICAL BORING REPORT

BORE LOG

WBS BP13.R019			TIP 560023			COUNTY MADISON			GEOLOGIST T. Wenner, P.G.										
SITE DESCRIPTION Structure No. 560023 over Paint Fork Creek on SR 1530 (Paint Fork Rd)									GROUND WTR (ft)										
BORING NO. B-3			STATION 13+94			OFFSET 14 ft RT			ALIGNMENT -L-										
COLLAR ELEV. 2,278.6 ft			TOTAL DEPTH 18.9 ft			NORTHING 780,606			EASTING 975,914										
DRILL RIG/HAMMER EFF./DATE CG20446 Diedrich D50 87% 05/10/2022						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic										
DRILLER C. Odom			START DATE 08/22/22			COMP. DATE 08/22/22			SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)					
			0.5ft	0.5ft	0.5ft	0	25	50	75	100									
2280																			
	2,277.6	1.0												2,278.6	0.0				
	2,275.1	3.5	3	3	3														
2275	2,272.6	6.0	3	9	11													2,274.1	4.5
	2,270.1	8.5	40	50	40														
2270	2,270.1	8.5	27	61	39/0.3									2,269.6	9.0				
	2,265.1	13.5																	
2265	2,265.1	13.5	82	19/0.2															
	2,260.1	18.5																	
2260	2,260.1	18.5	100/0.4											2,259.7	18.9				
Boring Terminated at Elevation 2,259.7 ft In Weathered Rock (Mica Schist)																			

NCDOT BORE SINGLE MADISON023.GPJ NC_DOT_GDT 1/23/23

GEOTECHNICAL BORING REPORT

BORE LOG

WBS BP13.R019		TIP 560023		COUNTY MADISON		GEOLOGIST T. Wenner, P.G.									
SITE DESCRIPTION Structure No. 560023 over Paint Fork Creek on SR 1530 (Paint Fork Rd)							GROUND WTR (ft)								
BORING NO. B-4		STATION 14+26		OFFSET 6 ft LT		ALIGNMENT -L-	0 HR. Dry								
COLLAR ELEV. 2,282.8 ft		TOTAL DEPTH 15.4 ft		NORTHING 780,641		EASTING 975,900	24 HR. FIAD								
DRILL RIG/HAMMER EFF./DATE CG20446 Diedrich D50 87% 05/10/2022				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER C. Odom		START DATE 08/23/22		COMP. DATE 08/23/22		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2285														2,282.8	0.0
	2,280.9	1.9	3	2	2								M	2,278.8	4.0
2280	2,277.9	4.9	WOH	1	1								M		
	2,275.5	7.3		1	1								M		
2275	2,273.7	9.1	3	8	37								M	2,272.7	10.1
	2,268.7	14.1												2,268.1	14.7
2270	2,267.4	15.4	16	84	0.2					100/0.7			M	2,267.4	15.4
			60/0.0							60/0.0					

Notes:
Hard Drilling encountered at approximately 12.0 feet