REFERENCE

#### STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION **DIVISION OF HIGHWAYS** GEOTECHNICAL ENGINEERING UNIT

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## **STRUCTURE** SUBSURFACE INVESTIGATION

COUNTY \_GRAHAM PROJECT DESCRIPTION UPGRADE US 129 FROM SOUTH OF SR 1275 (FIVE POINTS ROAD) TO NC 143 AND UPGRADE NC 143 FROM US 129 TO SR 1223 (BEECH CREEK ROAD) SITE DESCRIPTION RETAINING WALL #6: SOIL NAIL WALL WITH ARCHITECTURAL FINISH ON -L- FROM 186+75 RT TO 192+05 RT

STATE PROJECT REFERENCE NO. 16 A-0009CA

#### **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 (1991) 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 BORCHOLE. 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 INCLORDED TO CLIMATIC CONDITIONS INCLORDED TO CLIMATIC CONDITIONS INCLORDING TO CLIMATIC CONDITIONS INCLORDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS, AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES:

  1. 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.

  2. 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.

S. BRAUN D. GOODNIGHT N. MCLAREN CG2 EXPLORATION INVESTIGATED BY \_\_CG2 DRAWN BY \_\_M. BREWER, P.E. CHECKED BY R. KRAL, P.E. SUBMITTED BY <u>M. Brewer</u>, P.E. DATE MARCH 2022



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

3/22/2022

PROJECT REFERENCE NO. SHEET NO.

A-0009CA

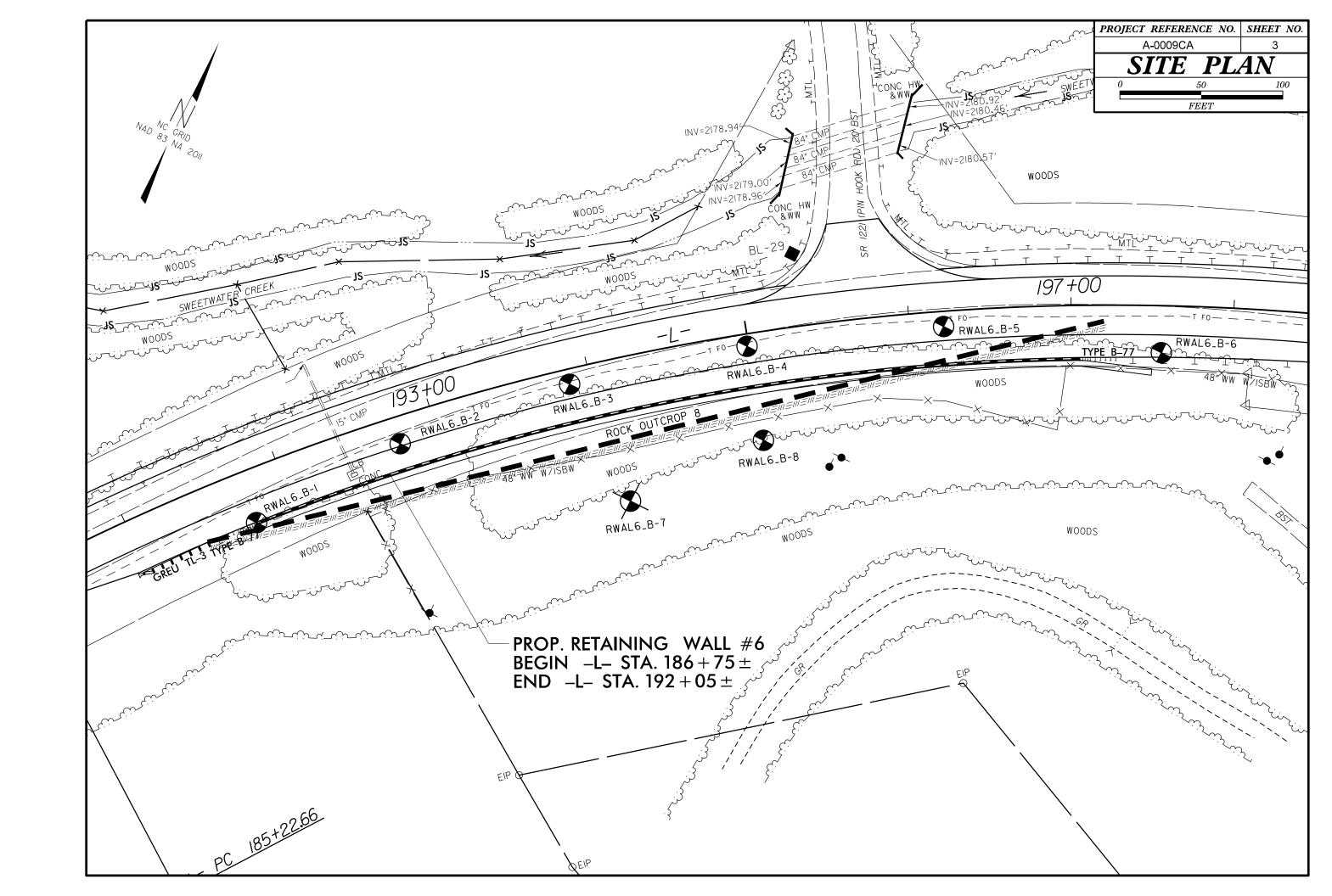
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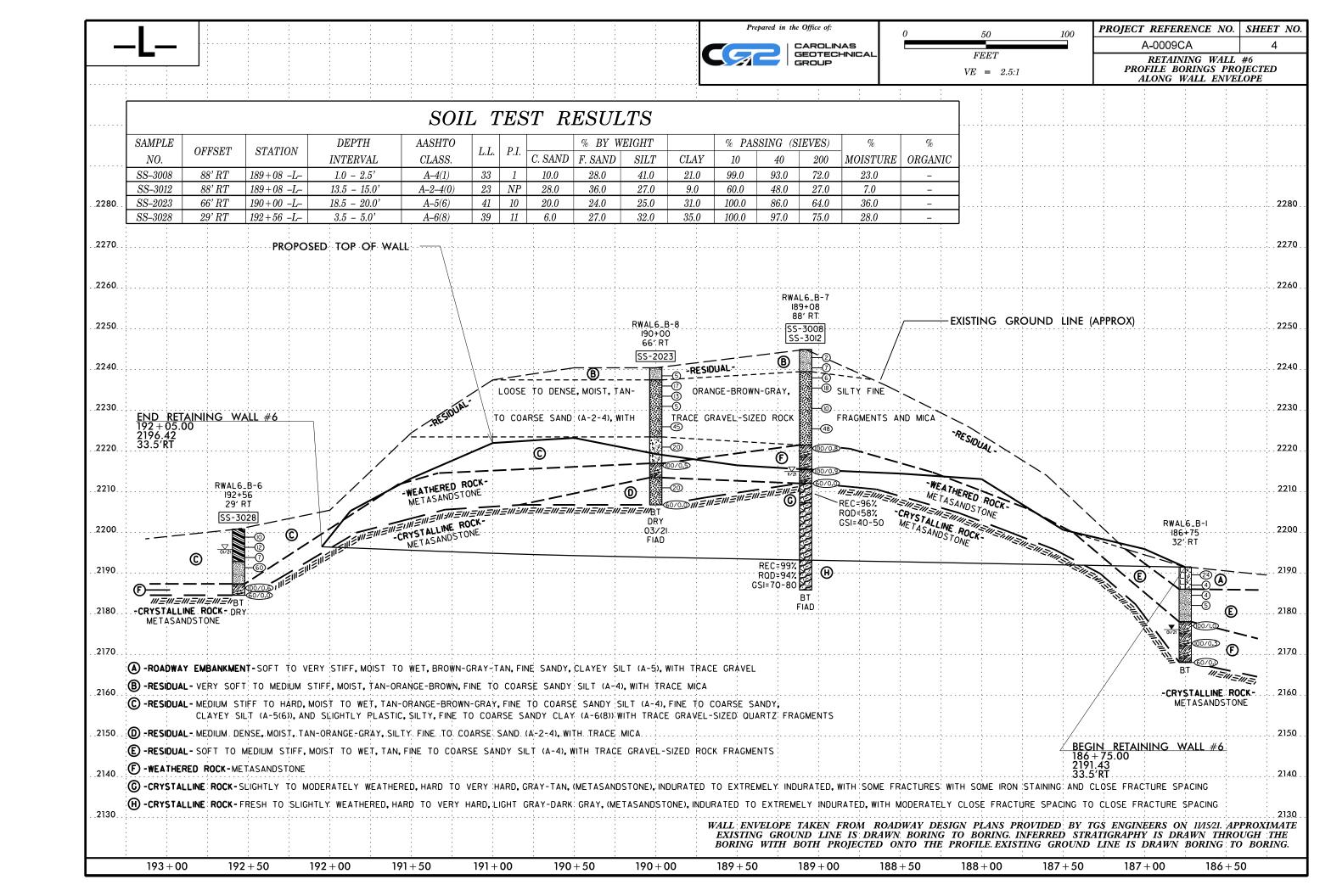
# NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT

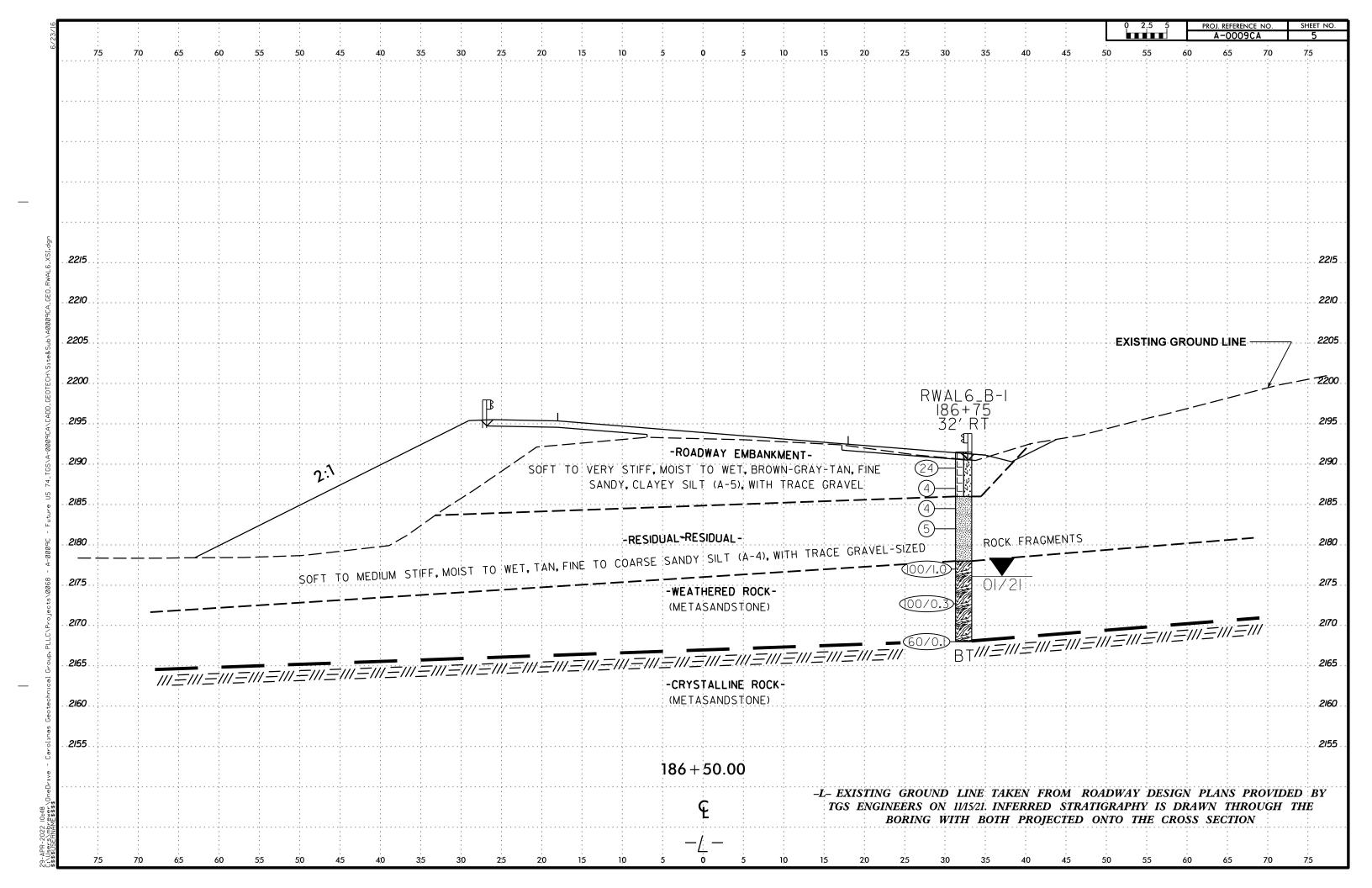
# SUBSURFACE INVESTIGATION

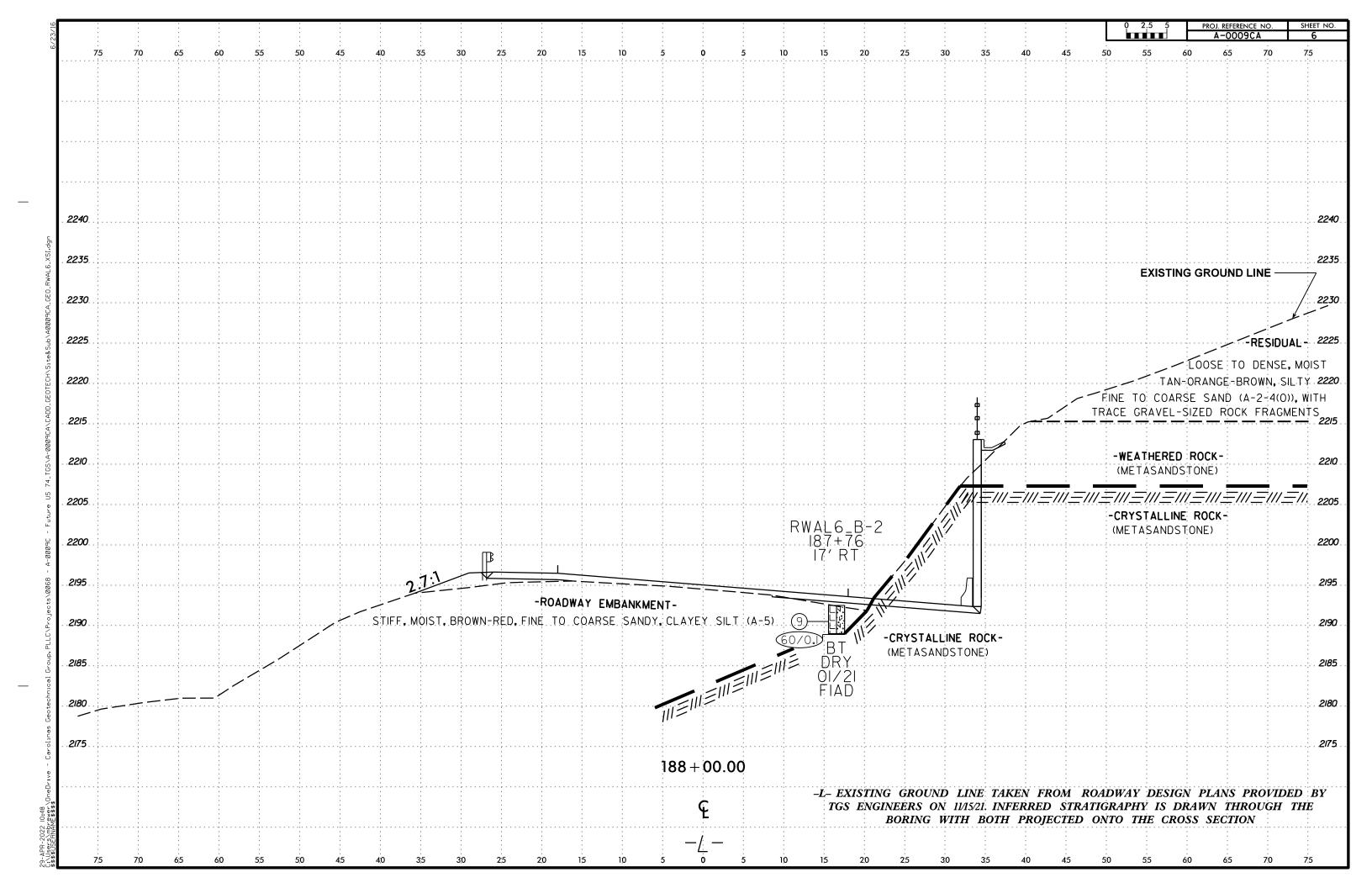
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

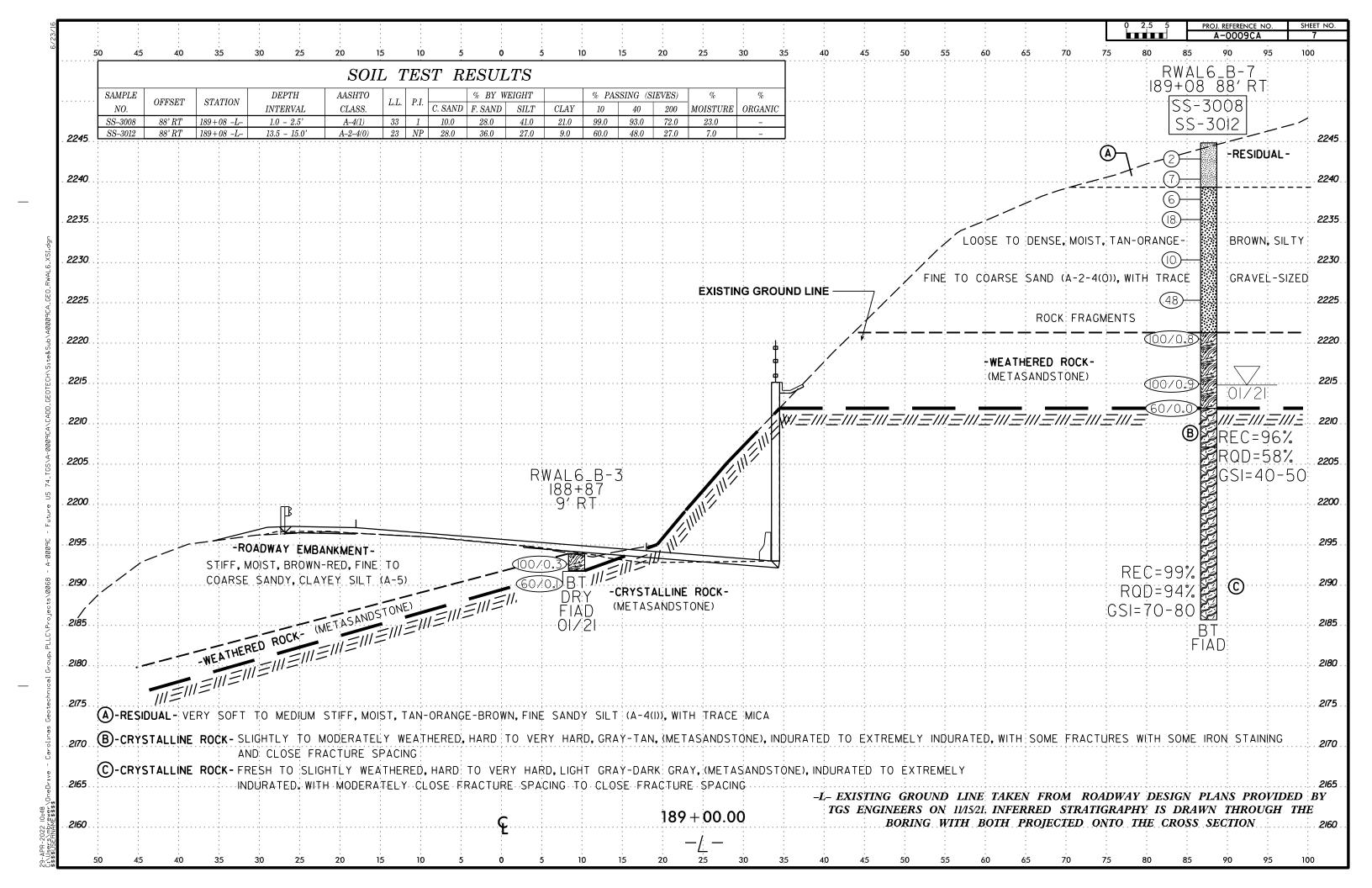
SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT	<u>WELL GRADED</u> - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.	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.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION	<u>UNIFORMLY GRADED</u> - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.  GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.	SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60	AQUIFER - A WATER BEARING FORMATION OR STRATA.
IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH		REPRESENTED BY A ZONE OF WEATHERED ROCK.	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE,	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS:	ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:	ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING
VERY STIFF.GRAY.SILTY CLAY.MOIST WITH INTERBEDDED FINE SAND LAYERS,HIGHLY PLASTIC,A-7-6 SOIL LEGEND AND AASHTO CLASSIFICATION	ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.	WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES >	
CENERAL CRANIII AR MATERIALS SILT-CLAY MATERIALS	MINERALOGICAL COMPOSITION	FINE TO COARSE CRAIN IGNEOUS AND METAMORPHIC ROCK THAT	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND
CLASS. (≤ 35% PASSING *200) (> 35% PASSING *200) ORGANIC MATERIALS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC.	WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE,	SURFACE.
GROUP A-1 A-3 A-2 A-4 A-5 A-6 A-7 A-1, A-2 A-4, A-5		EINE TO COARSE CRAIN METAMORPHIC AND NON-COASTAL DLAIN	
CLASS. A-1-a A-1-b A-2-4 A-2-5 A-2-6 A-2-7 A-7-6 A-3 A-6, A-7		- SEDIMENTARY ROCK THAT WOULD TELLD SPI REFUSAL IF TESTED.	
SYMBOL 000000000000000000000000000000000000	MODERATELY COMPRESSIBLE LL = 31 - 50	COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD	1
% PASSING SILT-			BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
#40 20 MV E0 MV E1 MN   COLIC   CLAT   DEAT		WEATHERING	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT
*200 15 MX 25 MX 10 MX 35 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN 36 MN 36 MN	ORGANIC MATERIAL SOILS SOILS OTHER MATERIAL	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER	
MATERIAL PASSING *40			HORIZONTAL.
LL 40 MX 41 MN LITTLE OR	MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35%		DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE
PI 6 MX NP IW MX IW MX II MN II MN IW MX II MN II MN II MN MODERATE ORGANIC		OF A CRYSTALLINE NATURE.	
GROUP INDEX W W 4 MX 8 MX 12 MX 16 MX NU MX AMUNTS OF SOILS			SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
USUAL TITES STUNE FRAUS. FINE SILTY OR CLAYEY SILTY CLAYEY MATTER		CRYSTALS ARE DULL AND DISCOLORED, CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
MATERIALS SAND SAND GRAVEL AND SAND SOILS SOILS	STATIC WATER LEVEL AFTER 24 HOURS	MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM
GEN. RATING EXCELLENT TO GOOD FAIR TO POOR POOR POOR UNSUITABLE	<u>∨PW</u> PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA		
AS SUBURAUE POUR		WITH FRESH ROCK.	I
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30  CONSISTENCY OR DENSENESS	_	MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, IN GRANITOID ROCKS, ALL FELDSPARS DULL	FIELD.
DANCE OF CTANDARD DANCE OF UNICONSTITUT	THISCELERINEOUS STRIBUES	(MOD.SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK.	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY PENETRATION RESISTENCE COMPRESSIVE STRENGTH (IN-VALUE) (TONS/FT <sup>2</sup> )	ROADWAY EMBANKMENT (RE) 25/025 DIP & DIP DIRECTION		<u>LEDGE</u> - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO
VERY LOOSE < 4	T SPT C SLOPE INDICATOR		
GENERALLY LOOSE 4 TO 10	SOIL SYMBOL DET ONT TEST BORING INSTALLATION	TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN.	l —
MATERIAL MEDIUM DENSE 10 10 30 N/A	ARTIFICIAL FILL (AF) OTHER AUGER BORING CONE PENETROMETER		USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
(NON-COHESIVE) VERY DENSE > 50	I IHAN RUADWAT EMBANKMENI 🔾 🔾	SEVERE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE
VERY SOFT < 2 < 0.25	— INFERRED SOIL BOUNDARY — CORE BORING ● SOUNDING ROD	(V SEV.) REMAINING, SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FARRIC REMAIN. IF TESTED WOULD VIELD SPT. N. VALUES (100 RPF	
GENERALLY   SOFT   2 TO 4   0.25 TO 0.5     SILT-CLAY   MEDIUM STIFF   4 TO 8   0.5 TO 1.0	INFERRED ROCK LINE MONITORING WELL TEST BORING		<u> </u>
MATERIAL STIFF 8 TO 15 1 TO 2	A DIEZOMETED	SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS	ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE
(COHESIVE) VERY STIFF 15 TO 30 2 TO 4 HARD > 30 > 4	INSTALLATION SPT N-VALUE		RUN AND EXPRESSED AS A PERCENTAGE.
TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS		
U.S. STD. SIEVE SIZE 4 10 40 60 200 270	UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION -	SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.	
OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053	HIGED IN THE TOP 2 FEET OF	HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY, HARD HAMMER BLOWS REQUIRED	RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO
BOULDER COBBLE GRAVEL COARSE FINE SILT CLAY	UNDERCUT ONCEASSIFIED EXCAVATION - EMBANKMENT OR BACKFILL	TO DETACH HAND SPECIMEN.	
(BLDR.) (COB.) (GR.) (GSE. SD.) (F SD.) (SL.) (CL.)	ABBREVIATIONS		OR SLIP PLANE.
GRAIN MM 305 75 2.0 0.25 0.05 0.005	AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST	BY MODERATE BLOWS.	STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF
SIZE IN. 12 3	PRECISE OF THE PROPERTY AND ADDRESS   1   1   1   1   1   1   1   1   1		
SOIL MOISTURE - CORRELATION OF TERMS			
SOIL MOISTURE SCALE FIELD MOISTURE GUIDE FOR FIELD MOISTURE DESCRIPTION  OFFICE OF SOURCE OF SOU	CSE COARSE ORG ORGANIC		
THITEROENG CIMITS) DESCRIPTION			
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY (SAT.) FROM BELOW THE GROUND WATER TABLE		VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH	■ LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY
PLASTIC   SEMISOLID; REQUIRES DRYING TO			
(PI) PLASTIC LIMIT			BENCH MARK: N/A
- MOIST - (M) COLID. AT OR NEAR ORTIMIN MOISTURE	EQUIPMENT USED ON SUBJECT PROJECT	VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET	ELEVATION: FEET
OM OPTIMUM MOISTURE			
PENLIPES ANDITIONAL WATER TO	CME-45C CLAY BITS X AUTOMATIC MANUAL		
- DRY - (D) ATTAIN OPTIMUM MOISTURE	6° CONTINUOUS FLIGHT AUGER CORE SIZE:		ON 11/15/2021
PLASTICITY	1   CME-33	INDURATION	
PLASTICITY INDEX (PI) DRY STRENGTH	<b>-</b>		
NON PLASTIC 0-5 VERY LOW	TUNGCARBIDE INSERTS		
SLIGHTLY PLASTIC 6-15 SLIGHT MODERATELY PLASTIC 16-25 MEDIUM	L CASING   W/ ADVANCER	CRAINC CAN BE CERABATED FROM CAMBLE WITH CIFFL BRORE.	
HIGHLY PLASTIC 26 OR MORE HIGH	D BORTARI E HOICT D TRICONE SCREET TEETH H		
COLOR	TRICONE TUNG-CARB. COUNDING DOD		
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY).	X DIEDRICH D50		
MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.			DATE: 0 IE 1
		SHMIFLE DREHKS ACKUSS UKAINS.	DATE: 8-15-1

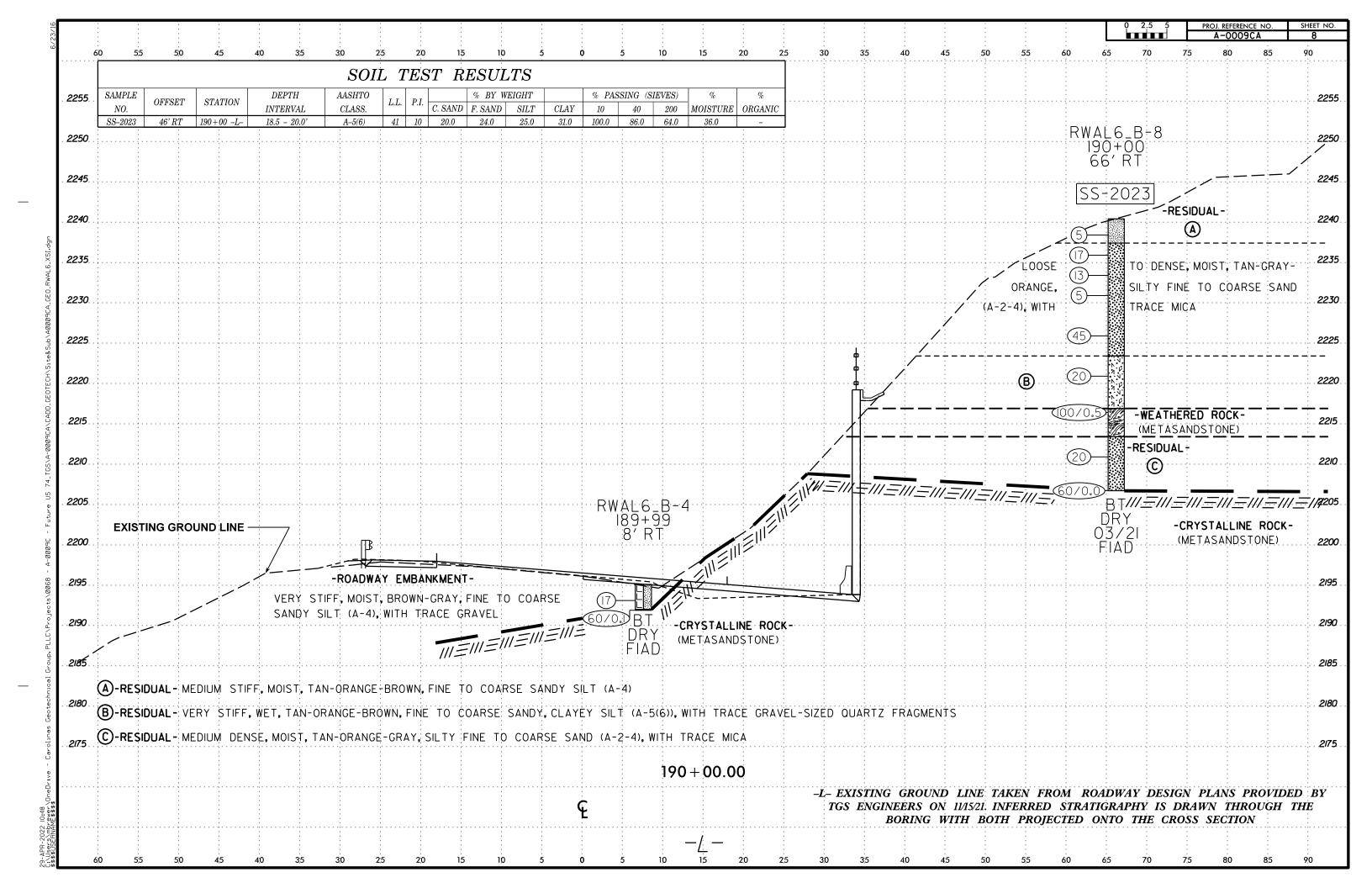


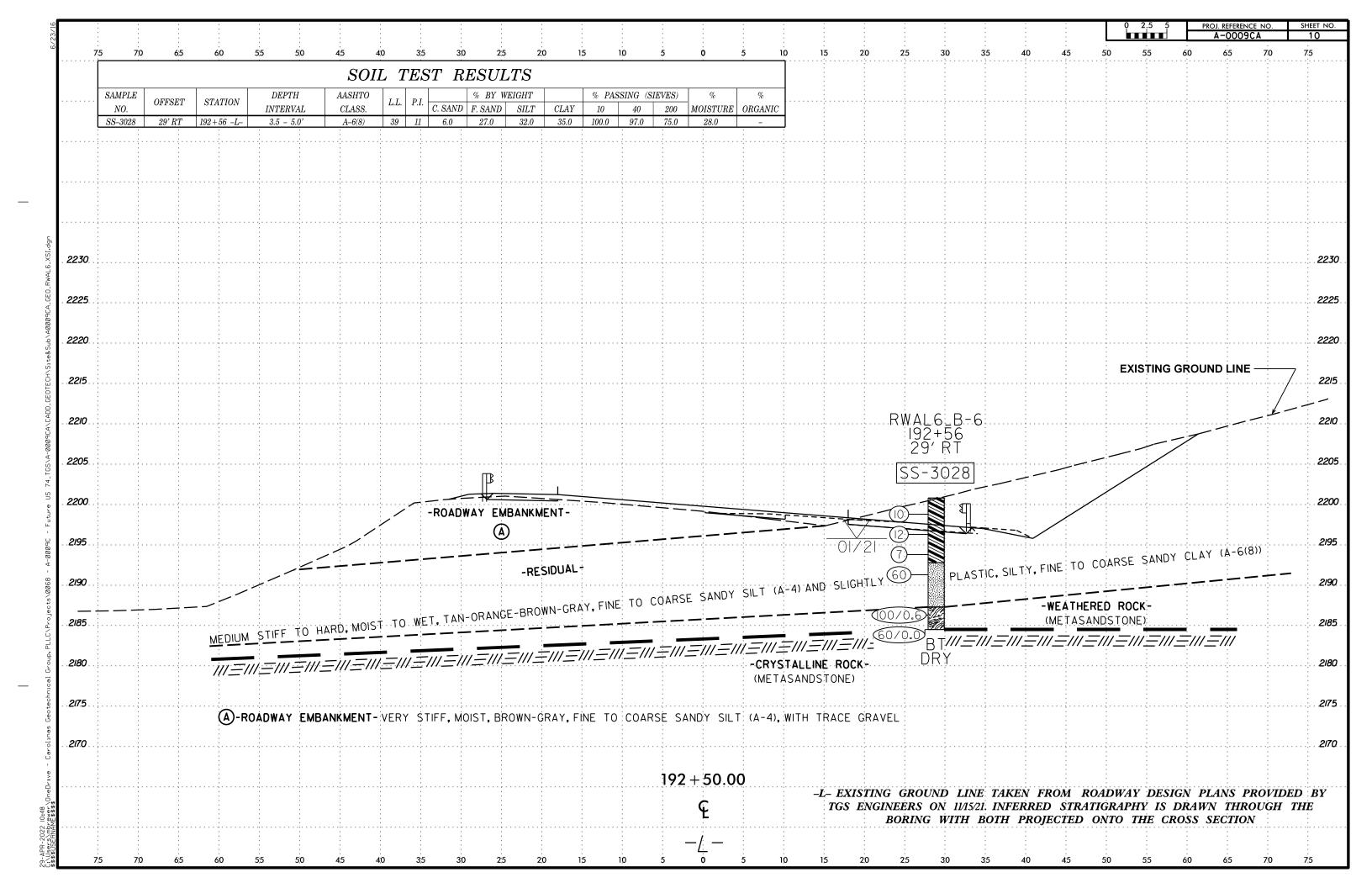


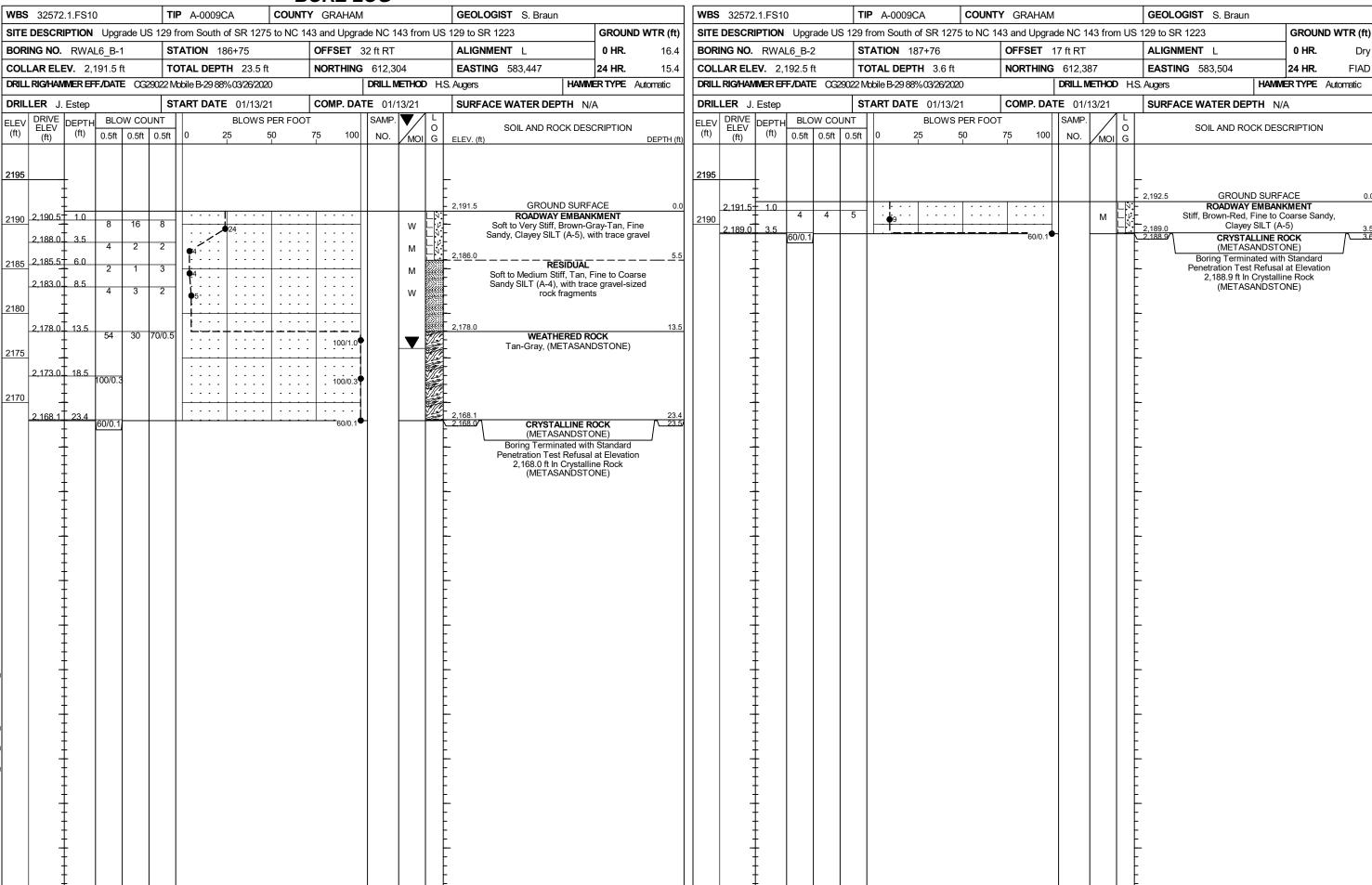




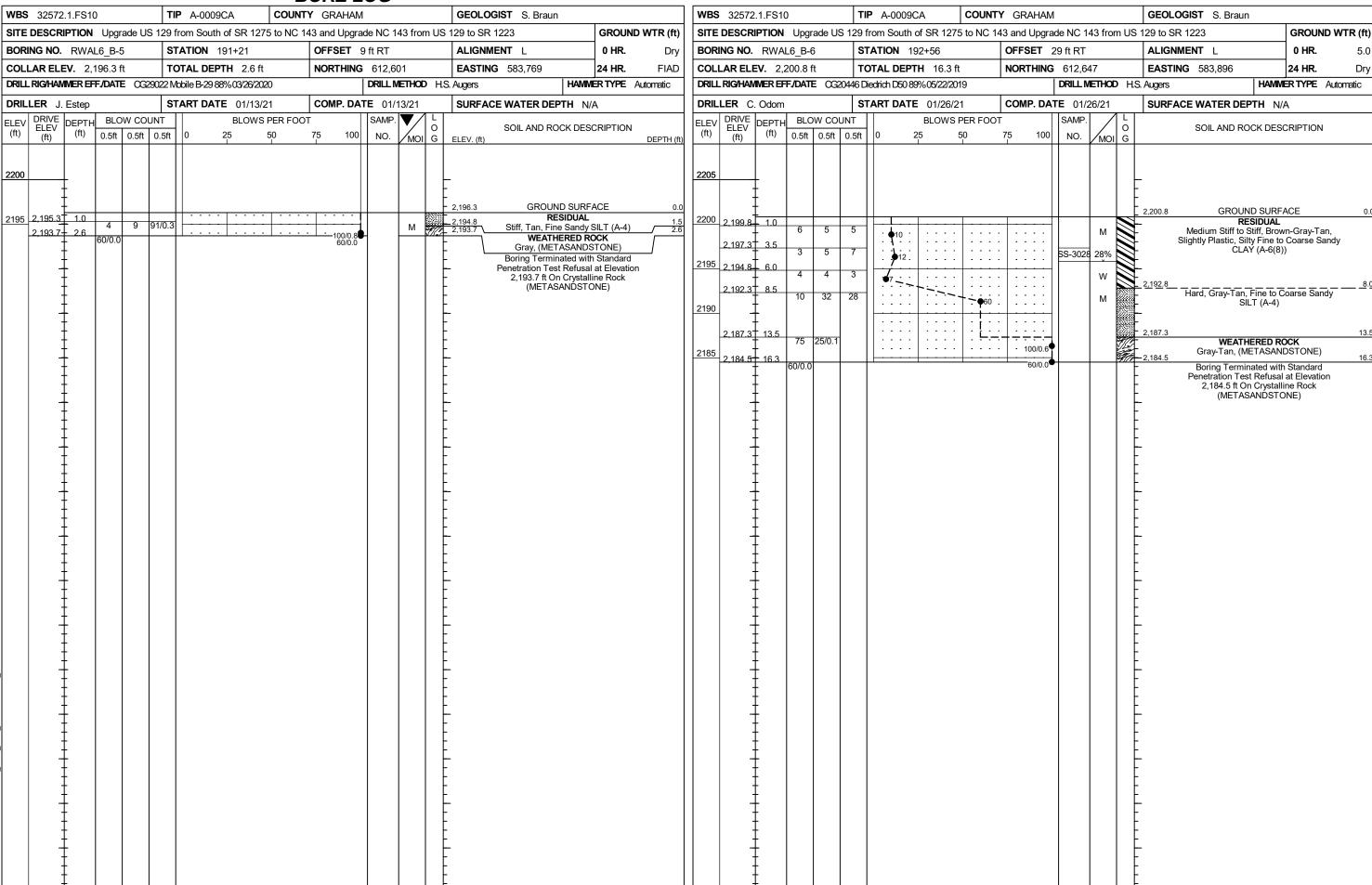








		BORE LOG								
<b>WBS</b> 32572.1.FS10	TIP A-0009CA COUN	TY GRAHAM	GEOLOGIST S. Braun		<b>WBS</b> 32572.1.FS	0	TIP A-0009CA COUN	TY GRAHAM	GEOLOGIST S. Braun	
SITE DESCRIPTION Upgrade U	S 129 from South of SR 1275 to NC	143 and Upgrade NC 143 fro	m US 129 to SR 1223	GROUND WTR (ft)	SITE DESCRIPTION Upgrade US 129 from South of SR 1275 to NC 143 and Upgrade NC 143 from U			S 129 to SR 1223	GROUND WTR (ft)	
<b>BORING NO.</b> RWAL6_B-3	<b>STATION</b> 188+87	OFFSET 9 ft RT	ALIGNMENT L	<b>0 HR.</b> Dry	BORING NO. RWA	AL6_B-4	<b>STATION</b> 189+99	OFFSET 8 ft RT	ALIGNMENT L	<b>0 HR</b> . Dry
<b>COLLAR ELEV.</b> 2,194.0 ft	TOTAL DEPTH 2.2 ft	<b>NORTHING</b> 612,466	<b>EASTING</b> 583,580	24 HR. FIAD	COLLAR ELEV. 2	,195.1 ft	TOTAL DEPTH 3.2 ft	<b>NORTHING</b> 612,536	<b>EASTING</b> 583,667	24 HR. FIAD
DRILL RIG/HAMMER EFF/DATE CG	29022 Mobile B-29 88% 03/26/2020	DRILL METHO	D H.S. Augers HAMM	ER TYPE Automatic	DRILL RIG/HAMMER E	FF./DATE CG2902	22 Mobile B-29 88% 03/26/2020	DRILL METHOD H	.S. Augers HAV	IMER TYPE Automatic
DRILLER J. Estep	<b>START DATE</b> 01/13/21	<b>COMP. DATE</b> 01/13/21	SURFACE WATER DEPTH N/	A	DRILLER J. Estep		<b>START DATE</b> 01/13/21	<b>COMP. DATE</b> 01/13/21	SURFACE WATER DEPTH	N/A
ELEV (ft) DEPTH BLOW CO (5t) 0.5ft 0	0.5ft BLOWS PER FOO	75 100 NO. MO	O SOIL AND ROCK DESC G ELEV. (ft)  2,194.0 GROUND SURF WEATHERED RO 2,191.9 Gray, (METASANDS 2,191.8 CRYSTALLINE R	DEPTH (ft)  ACE 0.0  OCK  STONE) 2.1  OCK  -2.2	ELEV DRIVE ELEV (ft)  2200	0.5ft 0.5ft 0.5		75 100 NO. MOI G	SOIL AND ROCK DE	
		60/0.1		OCK DNE)  n Standard at Elevation ne Rock	2195 2,194.1 1.0 2,192.0 3.1	60/0.1			2,195.1 GROUND SUF ROADWAY EMBA Very Stiff, Brown-Gray, Sandy SILT (A-4), with Gray, (METASANI Boring Terminated w Penetration Test Refus 2,191.9 ft In Crysta (METASANDS'	Fine to Coarse h trace gravel  SOCK DSTONE) with Standard sal at Elevation alline Rock



#### GEOTECHNICAL BORING REPORT CORE LOG

		BORE LOG					ORE LOG	
<b>WBS</b> 32572.1.FS10	TIP A-0009CA COUNT	TY GRAHAM (	GEOLOGIST N. McLaren / D. Goodnight	t	<b>WBS</b> 32572.1.FS10	TIP A-0009CA COUNT	TY GRAHAM	GEOLOGIST N. McLaren / D. Goodnight
SITE DESCRIPTION Upgrade US 12	9 from South of SR 1275 to NC 1	43 and Upgrade NC 143 from US 12	9 to SR 1223 <b>GROUN</b>	ID WTR (ft)	SITE DESCRIPTION Upgrade US	129 from South of SR 1275 to NC 1	143 and Upgrade NC 143 from U	JS 129 to SR 1223 GROUND WTR (ft)
BORING NO. RWAL6_B-7	<b>STATION</b> 189+08	OFFSET 88 ft RT	ALIGNMENT L 0 HR.	30.0	BORING NO. RWAL6_B-7	<b>STATION</b> 189+08	OFFSET 88 ft RT	ALIGNMENT L 0 HR. 30.0
COLLAR ELEV. 2,244.9 ft	TOTAL DEPTH 59.1 ft		<b>EASTING</b> 583,646 <b>24 HR.</b>	FIAD	COLLAR ELEV. 2,244.9 ft	TOTAL DEPTH 59.1 ft	<b>NORTHING</b> 612,419	<b>EASTING</b> 583,646 <b>24 HR.</b> FIAD
DRILL RIG/HAMMER EFF/DATE CG20446	6 Diedrich D50 83% 06/16/2020	DRILL METHOD NW Ca	sing W/SPT & Core HAMMER TYPE	Automatic	DRILL RIG/HAMMER EFF/DATE CG204	146 Diedrich D50 83% 06/16/2020	DRILL METHOD	WCasing WSPT & Core HAMMER TYPE Automatic
	<b>START DATE</b> 01/26/21		SURFACE WATER DEPTH N/A		DRILLER C. Odom	<b>START DATE</b> 01/26/21	<b>COMP. DATE</b> 11/01/21	SURFACE WATER DEPTH N/A
ELEV (ft)   DEPTH   BLOW COUNT (ft)   0.5ft   0.5ft		'/   0	SOIL AND ROCK DESCRIPTION		CORE SIZE NQ	TOTAL RUN 26.2 ft		
(ft) (ft) (ft) 0.5ft 0.5ft 0.5	ift 0 25 50	75 100 NO. MOI G EL	.EV. (ft)	DEPTH (ft)	ELEV RUN DEPTH RUN DRILL RATE	RUN   STRATA   REC.   RQD   (ft)   (ft)	- L	DESCRIPTION AND REMARKS
					(ft) (ft) (ft) (ft) (Min/ft)	(ft) (ft) NO. (ft) (ft) %	G <sub>ELEV. (ft)</sub>	DEPTH (fi
2245 2,243.9 1.0		2,2	244.9 GROUND SURFACE  RESIDUAL	0.0	2212	2 (1 1) (0 0) (4 6) (2 8)	2 212 0	Begin Coring @ 32.9 ft CRYSTALLINE ROCK 32.9
		E	Very Soft to Medium Stiff, Tan-Orange-Brown, Fine Sandy SIL	_	+   5.0   00:32/0.2	$\begin{pmatrix} 1.1 & 0.0 \\ 92\% & 0\% \\ (4.0) & (4.3) \end{pmatrix}$ $\begin{pmatrix} 4.6 \\ 96\% \\ 58\% \end{pmatrix}$	2,212.0 Slightly to Mo	oderately Weathered, Hard to Very Hard, Gray-Tan, DNE), Indurated to Extremely Indurated, with some iron
2240 2,241.4 3.5 2 3 4		:   : : : :         <sub>M</sub>	(A-4(1)), with trace mica	-'		98% 58% (4.9) (4.2) 98% 84% (21.1) (20.2) 99% 94% (5.0) (5.0) (5.0) 100% 100% (5.0) (4.8) 100 (5.0) (4.8) 100 (5.0) (4.8) 100 (5.0) (4.8) 100 (5.0) (4.8) 100 (5.0) (4.8) 100 (5.0) (4.8) 100 (5.0) (4.8) 100 (5.0) (4.8) 100 (5.0) (4.8) 100 (5.0) (4.8) 100 (5.0) (4.8) 100 (5.0) (4.8)	2,207.2	staining and close fracture spacing
2,238.9 6.0 3 4 2	- I	2.2 	Loose to Dense, Tan-Orange-Brown,	Silty 5.5	2,205.8 39.1 02:24/1. 02:38/1.0 2205 5.0 07:03/1.0	(21.1) (20.2	Fresh to Slightly (METASANDSTC	Weathered, Hard to Very Hard, Light Gray-Dark Gray, DNE) Indurated to Extremely Indurated, with moderately
2.236.4 8.5		-	Fine to Coarse SAND (A-2-4(0)), with t gravel-sized rock fragments	trace	5.0 05:00/1.0 03:15/1.0 03:37/1.0 03:02/1.0	0 (4.7) (4.2) 94% 84% 99% 94%	close	e fracture spacing to close fracture spacing
2235 6 4 14	18	M M M			2,200.8 44.1 02:37/1.03:02/1.0 03:02/1.0 04:31/1.0			
					2200 44.1 04.31/1.0 - 5.0 04.11/1.0 03:52/1.0	0 (5.0) (5.0) 0 100% 100%		
2230 2,231.4 13.5 4 5 5	—	SS-3012 7%			03.52/1.0 04:00/1.0 03:45/1.0	0 100% 100%		
<del></del> +	1				2,195.8 49.1 03:44/1.0	0 (5.0) (4.8)		
2,226.4 18.5					5.0   03:14/1.0   04:04/1.0   03:35/1.0	0 (5.0) (4.8) 0 100% 96%		
2225 22 18 30	48	M M M M M M M M M M M M M M M M			2,190.8 54.1 03.35/1.0 03:47/1.0 03:21/1.0			
					2190	0 (5.0) (4.8)		
2,221.4	:::: :::: +:-	100/0.8	WEATHERED ROCK	23.5	03:09/1.0 02:43/1.0	0 100% 96%		
<del></del>			Tan-Gray, (METASANDSTONE)		2,185.8 59.1 02:53/1.0 02:53/1.0		2,185.8	59.
2.216.4		100/0.8					Boring Fern	minated at Elevation 2,185.8 ft In Crystalline Rock (METASANDSTONE)
2215		100/0.9						
2.212.0 32.9			212.0	32.9				
2210 32.9 60/0.0		60/0.0	CRYSTALLINE ROCK Gray-Tan, (METASANDSTONE)					
+								
		2,2	REC: 96% RQD: 58% GSI: 40-50	37.7			-	
2205			Light to Dark Gray (METASANDSTO	NE)				
			REC: 99%	,				
			RQD: 94% GSI: 70-80					
2200			331. 70 33					
2195								
<u>4</u>								
5     2100       +								
							-	
			Boring Terminated at Elevation 2,185.8 Crystalline Rock (METASANDSTON	59.1 3 ft In				
			Crystalline Rock (METASANDSTON	IE)				
					±			
)					±			
							-	
CDOT BORE DOUBLE A-0009CA_GEO_RDY_GTM.GPU NC_DOT.GDT								
							<u> </u>	
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ğ								



### Upgrade US 129 from South of SR 1275 to NC 143 and Upgrade NC 143 from US 129 to SR 1223

#### Rock Core Photographs Boring: RWAL6\_B-7

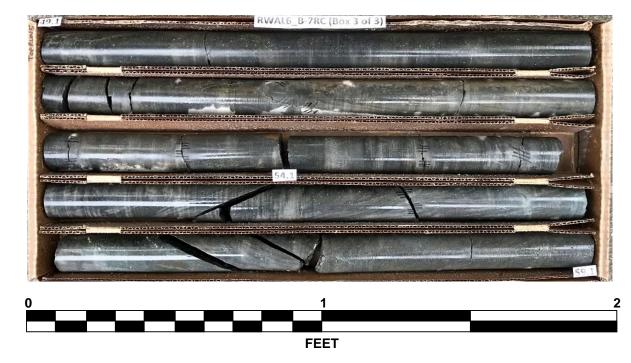
32.9 to 49.1 Feet



FEET

#### Rock Core Photographs Boring: RWAL6\_B-7

49.1 to 59.1 Feet



WBS         32572.1.FS10         TIP         A-0009CA         COUNTY         GRAHAM         GEOLOGIST         N. McLaren           SITE DESCRIPTION         Upgrade US 129 from South of SR 1275 to NC 143 and Upgrade NC 143 from US 129 to SR 1223         GROUND V           BORING NO.         RWAL6_B-8         STATION 190+00         OFFSET 66 ft RT         ALIGNMENT L         0 HR.           COLLAR ELEV.         2,240.4 ft         TOTAL DEPTH 33.7 ft         NORTHING 612,489         EASTING 583,702         24 HR.           DRILL RIGHAMMER EFF, DATE         CG29022 Mobile B-29 88% 03/26/2020         DRILL METHOD         H.S. Augers         HAMMER TYPE         Aut           DRILLER         C. Odom         START DATE         03/26/21         COMP. DATE         03/26/21         SURFACE WATER DEPTH         N/A           ELEV         DRIVE ELEV         DEPTH ELEV         BLOW COUNT         BLOW S PER FOOT         SAMP.         COMP. DATE         COMP. DATE <th>Dry FIAD</th>	Dry FIAD
BORING NO.         RWAL6_B-8         STATION         190+00         OFFSET         66 ft RT         ALIGNMENT         L         0 HR.           COLLAR ELEV.         2,240.4 ft         TOTAL DEPTH         33.7 ft         NORTHING         612,489         EASTING         583,702         24 HR.           DRILL RIG/HAMMER EFF/DATE         CG29022 Mobile B-29 88% 03/26/2020         DRILL METHOD         H.S. Augers         HAMMER TYPE         Aut           DRILLER         C. Odom         START DATE         03/26/21         COMP. DATE         03/26/21         SURFACE WATER DEPTH         N/A           ELEV         DRIVE ELEV         DEPTH         BLOW COUNT         BLOWS PER FOOT         SAMP.         V         L         O         SOIL AND ROCK DESCRIPTION	Dry FIAD
COLLAR ELEV.         2,240.4 ft         TOTAL DEPTH         33.7 ft         NORTHING         612,489         EASTING         583,702         24 HR.           DRILL RIGHAMMER EFF/DATE         CG29022 Mobile B-29 88% 03/26/2020         DRILL METHOD         H.S. Augers         HAMMER TYPE         Aut           DRILLER         C. Odom         START DATE         03/26/21         COMP. DATE         03/26/21         SURFACE WATER DEPTH         N/A           ELEV         DRIVE DEPTH         BLOW COUNT         BLOWS PER FOOT         SAMP.         O         SOIL AND ROCK DESCRIPTION	FIAD
DRILL RIG/HAMMER EFF/DATE CG29022 Mobile B-29 88% 03/26/2020  DRILL METHOD H.S. Augers  HAMMER TYPE Aut  DRILLER C. Odom  START DATE 03/26/21  COMP. DATE 03/26/21  SURFACE WATER DEPTH N/A  ELEV DRIVE DEPTH BLOW COUNT  BLOWS PER FOOT  SOIL AND ROCK DESCRIPTION	
DRILLER C. Odom START DATE 03/26/21 COMP. DATE 03/26/21 SURFACE WATER DEPTH N/A  ELEV DRIVE ELEV DRIVE DEPTH BLOW COUNT BLOWS PER FOOT SAMP.   SOIL AND ROCK DESCRIPTION	omatic
BLOWS PER FOOT  SAMP.   L  SOIL AND ROCK DESCRIPTION	
ELEV ELEV SOIL AND ROCK DESCRIPTION	
(ft) (ft) (ft) 0.5ft 0.5ft 0.5ft 0 25 50 75 100 NO. MOI G ELEV. (ft)	DEPTH (ft)
2245	
2340 +	0.0
2,239.4 1.0 RESIDUAL	
2 236 9 3 5 Coarse Sandy SILT (A-4)	
3 8 9 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
2,234.4 6.0 4 7 6 MM	
2,231.9 8.5	
2230	
2 226 9 13.5	
2225 7 16 29 M	
2223	17.0
2,221.9 18.5 Very Stiff, Tan-Orange-Brown, Fine to	
2220 SS-2023 36% Trace gravel-sized quartz fragments	
2,216.9 23.5 2,216.9 WEATHERED ROCK	23.5
2215 Tan-Brown (METASANDSTONE)	
2,211.9 28.5 RESIDUAL  RESIDUAL  Madium Dance Tan Orange Gray Sithy	<u>27</u> .0
2,211.9	
#	
2.206.7 33.7	33.7
60/0.0 Boring Terminated with Standard Penetration Test Refusal at Elevation	
- 2,206.7 ft On Crystalline Rock	
†     (METASANDSTONE)	
<del>                                    </del>	

SHEET 16