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REFERENCE

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DESCRIPTION

STATE OF NORTH CAROLINA

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY _GUILFORD

PROJECT DESCRIPTION BRIDGE NO. 456 OVER BRUSH CREEK ON SR 2136

46059 PROJEC

STATE N.C

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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 SOLI TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEICH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENCINEERING UNIT AT (1991) 707-8050. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOCS, ROCK CORES AND SOLI TEST DATA ARE NOT PART OF THE CONTRACT.

CENERAL 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 UNPELACED TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST WETHOD. THE OBSERVED WATER LEVELS OR SOLL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOLL MOISTURE CONDITIONS MAY YARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING 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 GUARANTTEE THE SUFFICIENCY OF ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPHIONO OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONSTRUCTIONS 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 CONDENSION OF FOR AN THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

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 WAVES 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.

PERSONNEL

M. BAHIRADHAN

T. WELLS

J. WHITT

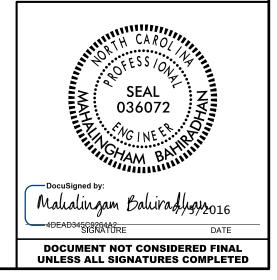
TRIGON EXP.

INVESTIGATED BY <u>T.</u> WELLS

DRAWN BY C. BUTLER

SUBMITTED BY ______ SCHNABEL_ ENG.

DATE ______ 2016



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

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

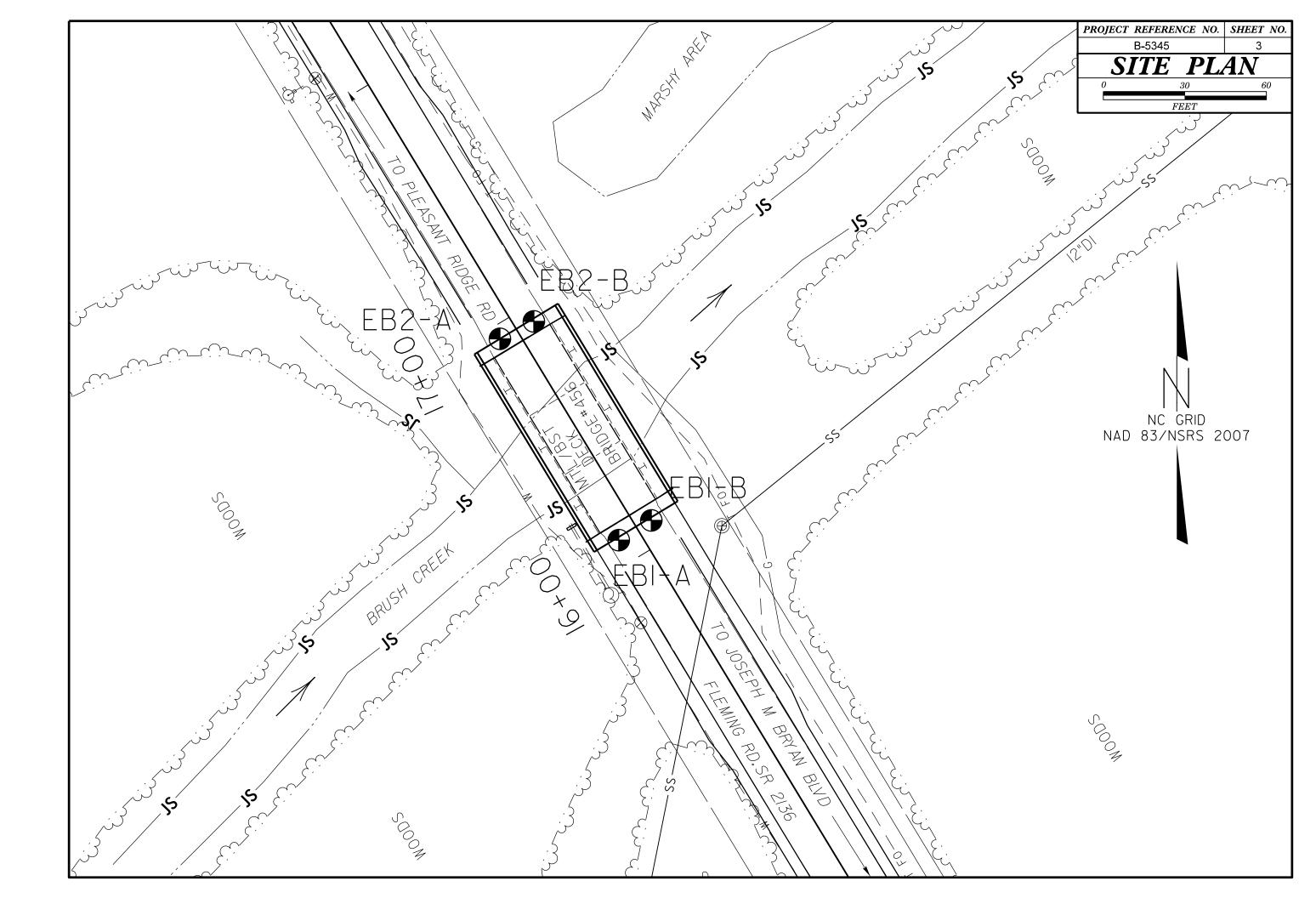
SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION
SOIL IS CONSIDERED UNCONSULIDATED, SEMI-CONSULIDATED, OR WEATHERED EARTH MATERIALS THAT CAM BE PENETRATED WITH A CONTINUOUS FLICHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206,ASTM D1586), SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM, BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING CONSISTENCY, COLOR, TEXTURE, MONISTURE, AASHTO T CLASSIFICATION, MON	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. ANGULARITY OF GRAINS	HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TEST ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN Ø, BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK REPRESENTED BY A ZONE OF WEATHERED ROCK.
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	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS:	ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:
SOIL LEGEND AND AASHTO CLASSIFICATION	ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED. MINERALOGICAL COMPOSITION	WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SP ROCK (WR) 100 BLOWS PER FOOT IF TESTED.
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS ORGANIC MATERIALS CLASS. (≤ 357, PASSING *200) (> 357, PASSING *200) (> 357, PASSING *200) (> 357, PASSING *200)	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.	CRYSTALLINE ROCK (CR) FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC R(WOULD YIELD SPT REFUSAL IF TESTED, ROCK TYPE IN GNEISS, GABBRO, SCHIST, ETC.
GROUP A-1 A-3 A-2 A-4 A-5 A-6 A-7 A-1, A-2 A-4, A-5 CLASS. A-1-a A-1-b A-2-4 A-2-6 A-2-7 A-7, A-7, A-7, A-7, A-7, A-7, A-7, A-7,	COMPRESSIBILITY	NON-CRYSTALLINE FINE TO COARSE GRAIN METAMORPHIC AND NON-COAST
SYMBOL BOOCOCCUL STATES S	SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50	ROCK (NCR) ROCK TITYE INCLUDES PHYLLITE, SLATE, SANDSTONE, ET COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT
X PASSING SILT-	HIGHLY COMPRESSIBLE LL > 50	SEDIMENTARY ROCK SEDIMENTARY SE
*10 50 MX *40 30 MX 50 MX 51 MN 2000 CLAY PEAT 2000 SOILS SOILS SOILS	PERCENTAGE OF MATERIAL	WEATHERING
• 200 15 MX 25 MX 18 MX 35 MX 35 MX 35 MX 36 MN 36 MN <th< td=""><td>ORGANIC MATERIAL SOILS OTHER MATERIAL TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10% LITILE ORGANIC MATTER 3 - 5% 5 - 12% LITILE 10 - 20% MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35%</td><td>FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK HAMMER IF CRYSTALLINE. VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY C (Y SLI) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER H</td></th<>	ORGANIC MATERIAL SOILS OTHER MATERIAL TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10% LITILE ORGANIC MATTER 3 - 5% 5 - 12% LITILE 10 - 20% MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35%	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK HAMMER IF CRYSTALLINE. VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY C (Y SLI) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER H
PI 6 MX NP 10 MX 10 MX 11 MN 10 MX 10 MX 11 MN 10 MX 10 MX 11 MN 11 MN MODERATE OPCANI	HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE	OF A CRYSTALLINE NATURE.
USUAL TYPES STONE FRAGS, FINE SILTY OR CLAYEY SILTY CLAYEY MATTER	WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING	SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO RE (SLI.) I INCH, OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONE CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMEI
MATERIALS SAND SAND GRAVEL AND SAND SOILS SOILS	STATIC WATER LEVEL AFTER <u>24</u> HOURS ✓PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA	MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECT (MOD.) GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLA
GEN. RATING EXCELLENT TO GOOD FAIR TO POOR POOR UNSUITAE	LE CPW PERCHED WHIER, SHICKHIED ZONE, OR WHIER BEARING STRATH	DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH WITH FRESH ROCK.
PI OF A-7-5 SUBGROUP IS \leq LL - 30 ;PI OF A-7-6 SUBGROUP IS > LL - 30 CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE L
COMPACTNESS OF RANGE OF STANDARD RANGE OF UNCONFINED	□ <u>⊃5 /0</u> ⊃5	(MOD. SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND
PRIMARY SUIL TYPE CONSISTENCY PENETRATION RESISTENCE CUMPRESSIVE STRENCT (N-VALUE) (TONS/FT ²) CENERALLY VERY LOOSE < 4	ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION SOIL SYMBOL SOIL SYMBOL SOIL SYMBOL SOIL SYMBOL SOIL SYMBOL SOIL SYMBOL SOIL SYMBOL	IF TESTED, WOULD YIELD SPT REFUSAL SEVERE ALL ROCK EXCEPT OUARTZ DISCOLORED OR STAINED, ROCK FABRIC CLEAR AND E (SEV.) REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS O TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN.
OERCHAEL LOOSE 4 TO 10 GRANULAR MEDIUM DENSE 10 TO 30 N/A MATERIAL DENSE 30 TO 50		IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF
(NON-COHESIVE) VERY DENSE > 50 VERY SOFT < 2	Infinite Routuwal Emperiation () Inferred Soil Boundary Core Boring Sounding Rod	VERY ALL ROCK EXCEPT OUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS AF SEVERE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS O (V SEV.) REMAINING, SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <u>IF TESTED, WOULD YIELD SPT N</u>
SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1.0 MATERIAL STIFF 8 TO 15 1 TO 2 (COHESIVE) VERY STIFF 15 TO 30 2 TO 4	INFERRED ROCK LINE MONITORING WELL TEST BORING WITH CORE INFERRED ROCK LINE PIEZOMETER INSTALLATION SPT N-VALUE	COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY SCATTERED CONCENTRATIONS, QUARTZ MAY BE PRESENT AS DIKES OR STRINGER ALSO AN EXAMPLE.
HARD 300 > 4 TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS	ROCK HARDNESS
U.S. STD. SIEVE SIZE 4 10 40 60 200 270	UNCLASSIFIED EXCAVATION - TA UNCLASSIFIED EXCAVATION -	VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMEN SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
0PENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053	UNSUITABLE WASTE LACEPTABLE, BUT NOT TO BE SHALLOW UNCLASSIFIED EXCAVATION - USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL	HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER B TO DETACH HAND SPECIMEN.
BOULDER (BLDR,) COBBLE (COB,) GRAVEL (GR,) COMOL SAND (GR,) FINE SAND (CSE, SD,) SILT (F SD,) CLAY (SL) GRAIN MM 305 75 2.0 0.25 0.05 0.005	ABBREVIATIONS AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST	MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES D HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE D BY MODERATE BLOWS.
SIZE IN 12 3 SOIL MOISTURE - CORRELATION OF TERMS	BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED CL CLAY MOD MODERATELY γ - UNIT WEIGHT CPT - CONE PENETRATION TEST NP - NON PLASTIC $\gamma_{\rm d}$ - DRY UNIT WEIGHT	MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE (HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD POINT OF A GEOLOGIST'S PICK.
SOIL MOISTURE SCALE FIELD MOISTURE (ATTERBERG LIMITS) DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION	CSE, - COARSE ORG ORGANIC	SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POIN PIECES CAN BE BROKEN BY FINCER PRESSURE.
- SATURATED - USUALLY LIQUID, VERY WET, USUALLY (SAT.) FROM BELOW THE GROUND WATER TABLE	e - VOID RATIO SD SAND, SANDY SS - SPLIT SPON F - FINE SL SILT, SILT ST - SHELBY TUBE FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK	VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCH FINGERMAIL.
PLASTIC SEMISOLID: REQUIRES DRYING TO RANCE - WET - (W) ATTAIN OPTIMUM MOISTURE	FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL FRAGS FRAGMENTS w - MOISTURE CONTENT CBR - CALIFORNIA BEARING	FRACTURE SPACING BEDDING
	HI HIGHLY V - VERY RATIO	TERM SPACING TERM
OM OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE SL SHRINKAGE LIMIT	EQUIPMENT USED ON SUBJECT PROJECT DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE: CME-45C CLAY BITS	VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED WIDE 3 TO 10 FEET THICKLY BEDDED 1 MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0. CLOSE 0.16 TO 1 FOOT VERY THILY BEDDED 0.0
- DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE	X CME-55	VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.0 THINLY LAMINATED 4.0
PLASTICITY		INDURATION
PLASTICITY INDEX (PI) DRY STRENGTH NON PLASTIC 0-5 VERY LOW	CME-550 HARD FACED FINGER BITS	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HE RUBBING WITH FINGER FREES NUMEROUS GRAINS;
SLIGHTLY PLASTIC 6-15 SLIGHT MODERATELY PLASTIC 16-25 MEDIUM HIGHLY PLASTIC 26 OR MORE HIGH		GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE. MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH ST BREAKS EASILY WHEN HIT WITH HAMMER.
COLOR		GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL
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.	CORE BIT UNAL SHEAR TEST	INDURATED DIFFICULT TO BREAK WITH HAMMER. EXTREMELY INDURATED SAMPLE BREAKS ACROSS GRAINS.

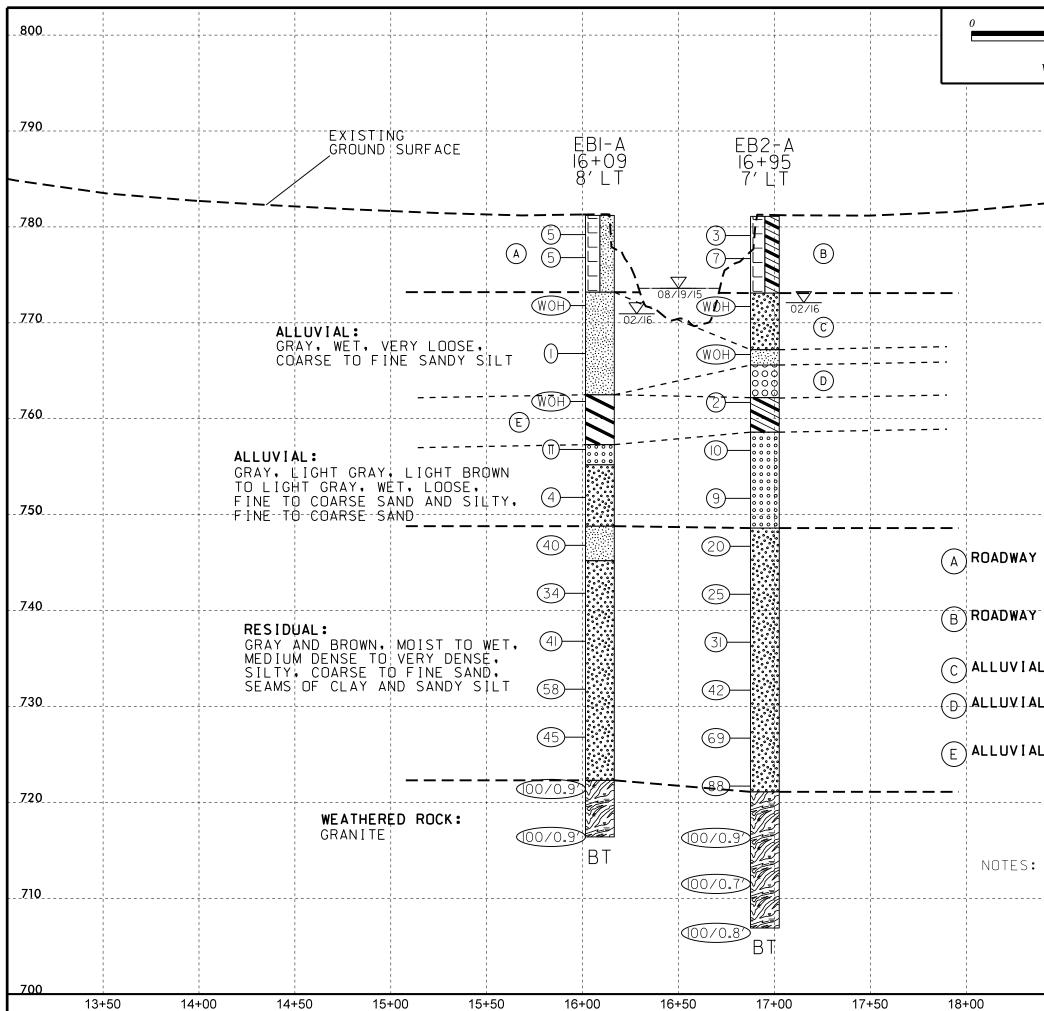
PROJECT REFERENCE NO.



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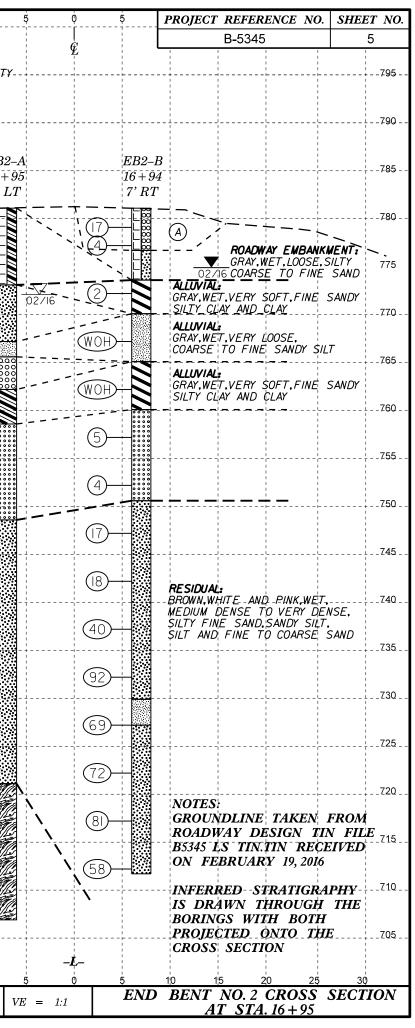
	TERMS AND DEFINITIONS
D. AN INFERRED	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
SPT REFUSAL. FOOT PER 60	AQUIFER - A WATER BEARING FORMATION OR STRATA.
IS OFTEN	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
	ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING
N VALUES >	A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
N THEORY	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT
ICK THAT	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND
CLUDES GRANITE,	SURFACE.
L PLAIN	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
IF TESTED.	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
MAY NOT YIELD	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED
TONE, CEMENTED	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
RINGS UNDER	ROCKS OR CUTS MASSIVE ROCK.
NINGS GADEN	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
OATINGS IF OPEN.	
AMMER BLOWS IF	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
CK UP TO L FELDSPAR	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
5. IN	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM
Y. ROCK HAS AS COMPARED	PARENT MATERIAL.
HS COMPARED	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
ELDSPARS DULL	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE
OSS OF STRENGTH	
WHEN STRUCK.	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
VIDENT BUT	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.
RE KAOLINIZED	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.
E DISCERNIBLE F STRONG ROCK	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE
ONLY MINOR	OF AN INTERVENING IMPERVIOUS STRATUM.
ALUES < 100 BPF	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
IN SMALL AND S. SAPROLITE IS	ROCK QUALITY DESIGNATION (ROD) - 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
S REQUIRES	ROCK.
	SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND
LOWS REQUIRED	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
EEP CAN BE ETACHED	OR SLIP PLANE.
Lineneb	STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF
R PICK POINT.	A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL
BLOWS OF THE	WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
EDACMENTS	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY
FRAGMENTS T. SMALL, THIN	TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
	STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL
PIECES 1 INCH	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.
ED READILY BY	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
THICKNESS	BENCH MARK: BM #1, N 871373.00 E 1730504.00, -L- SAT. 16+24.48 OFFSET 401.43' RT
4 FEET	ELEVATION: 775.09 FEET
.5 - 4 FEET 16 - 1.5 FEET	
3 - 0.16 FEET	NOTES:
08 - 0.03 FEET	FIAD = FILLED IMMEDIATELY AFTER DRILLING
0.008 FEET	
AT, PRESSURE, ETC.	
EEL PROBE:	
CCC FRODE:	
PROBE;	
a	
	DATE: 8-15-14





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EN	BANKMENT:	DARK	BROWN,	BROWN A	١D		
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EN	BANKMENT:		SH BRO	WN, WET,			7 <u>4</u> 0
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				ES:						
05	(A) ROADWAY EMBANKMENT: MOIST.LOOSE TO MEDIUM DE	NSE.GRAY	[₽] GROU	UNDLINI	E TAKEN FROM RO FILE B5345 LS TIN.			MOIST.	NY EMBANKMEN OOSE TO MEL	DIUM DENSE,GRAY
95	BLACK-AND-WHITE,SANDY-GR COARSE TO FINE SANDY GRA				N FEBRUARY 19, 2010		795795		AND WHITE, SA TO FINE SA	ANDY-GRAVEL AND NDY GRAVEL
90					TRATIGRAPHY IS D		790 790			
					HE BORINGS WITH ONTO THE CROSS S	BOIH				
85		EB1–A		B1–B			785785			
	EXIST ING GROUND	$\begin{array}{c} 16+09\\ 8^{\prime}LT \end{array}$	- +	+09 RT					STING GROUND	2
80					~		780 - 780			
				-			-		ROADWAY EM	(3)-
75				- 80 - 80 - 80 - 80 - 80 - 80 - 80 - 80			775 - 775		REDDISH BR	ROWN, WET', FF, FINE 'SANDY CL
	LOOSE.CO <u>ARSE TO FINE</u>	WOH)			02/16 GRAYISH BROWN, ALLUVIAL: AND GRAY, VERY FINE TO COARSE	LIGHT BRU LOOSE, SIL	OWN TY	ALLU	IVIAL:	+ $ +$ $ -$
70				<u> </u>	- <u></u> <u>FINE</u> <u>FO</u> -COAR\$E	Ξ- <i>-</i> SANЦ		¦BR0	YISH¦ BROWN,L WN-AND-GRAX Y FINE TO CU	,VERY- LOOSE,
	GRAY,WET,VERY LOOSE, COARSE TO FINE SANDY SILT		/(WOH)		NIAL: GRAY,WET,VERY SOF SANDY SILTY CLAY A	WD CLAY		AND	FINE TO CO	ARSE SAND
65) 		VIAL: .WET.VERY LOOSE.CLAYEY		765765		UVIAL:	LOOSE,CLAYEY SAI
			WOH							
50	· · · · · · · · · · · · · · · · · · ·			ALLUN			760 - 760			·
5	ALLUVIAL:		WOH-	GRAY	WET.VERY SOFT.FINE \$4	WDY	755 _ 755	ALLUVIA		
	MEDIUM DENSE, FINE TO CO							MEDIUM	D-BROWN,WE	TO COARSE
50	SAND AND SILTY FINE TO COARSE SAND	(4)					750 _ 750	COARSE	ND \$ILTY FIN SAND	9-
				••••						
45		40 +	(59)				745 _ 745			(20)
		(34)								(25)
LO	· · · · · · · · · · · · · · · · · · ·		40				740 _ 740			23
		(41)	20-	MI 11	ROWN,WHITE AND PINK,WE EDIUM DENSE TO VERY D ITY FINF SAND SANDY SII	ENSE.				(31)-
35	· · · · · · · · · · · · · · · · · · ·			SI.	LTY FINE SAND, SANDY SIL LT_AND_FINE_TO_COARSE	SAND	735 _ 735		+	
		58-	(30)	0 0 0 0 0 0 0 0 0 0 0 0						(42)
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25	· · · · · · · · · · · · · · · · · · ·						725725			·
20		00/0.9	00/0.7				720_720			
					ATHERED ROCK: ANITE					·
15		00/0.9	00/0.8				715715			00/0.
				RE DI	SIDUAL: IK AND BROWN, MOIST.VER	א חבאקב			WEATHE GRANITE	RED ROCK:
10	· · · · · · · · · · · · · · · · · · ·		<u>(96)</u>	SIL	TY FINE TO COARSE SAN	IDENSE,	710710			00/0.
				WE GR	ATHERED ROCK: ANITE					
)5	· · · · · · · · · · · · · · · · · · ·		00/0.67				705705	· · · · · · · · · · · · · · · · · · ·		00/0.
			- L -							
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SITE DE	SCRI	PTION	Rep	blace E	Bridge	No. 456 on SR 2136	over Brus	h Creek					GROUND WTR (ft)
BORING	NO.	EB1-	A		S	TATION 16+09		OFFSET 8	3 ft LT			ALIGNMENT -L-	0 HR. 10.3
COLLAR	R ELE	V. 78	31.2 ft		Т	OTAL DEPTH 64.8	ft	NORTHING	871,1	47		EASTING 1,730,162	24 HR. FIAD
DRILL RIG	G/HAN	IMER E	FF./DA	TE TF	RI9435	CME-55 85% 02/22/201	6		DRILL N	IETHOD	Mu	Id Rotary HAMM	ER TYPE Automatic
DRILLEF	R To	othma	ın, R.		S	ART DATE 04/04/	16	COMP. DAT	FE 04/0	04/16		SURFACE WATER DEPTH N	'A
ELEV DR	RIVE	DEPTH	BLC	OW CO	UNT	BLOWS	PER FOOT		SAMP.		L		
	_EV (ft)	(ft)	0.5ft	0.5ft	0.5ft	0 25	50	75 100	NO.	моі	0 G	SOIL AND ROCK DESC	DEPTH (f
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	+										E		
	Į										E	781.2 ASPHALT	0.
780 78	30.2	1.0	8	2	3	4 5	+ • • • •		SS-1	мL	- E	- ROADWAY EMBAN DARK BROWN, MICACEOU	
77	77.8	3.4	2	2	3							FINE SANDY SI AT 3.4: BROWN ANI	LT
775	Ŧ			2					SS-2	M			
	†	-								L	-8-		8.
_//	72.8 - -	<u>8.4</u>	1	WOH	WOH				SS-3	w		GRAY, MICACEOUS, COA	
770	4	-									8 -	_ SANDY SILT	
76	57.8 +	13.4									8 -		
765	‡		1	WOH	1	• 1 ¹ · · · · · · · · · · · ·			SS-4	W	-		
705	+	-					<u> </u>				╞	-	
76	52.8	18.4	wон	WOH	WOH				SS-5	w		762.5 GRAY, MICACEOUS, FINE	18. SANDY SILTY
760	1	-				<u> </u>					Ł	CLAY	ON THE POIL P
75	57.8	23.4									Ŀ	757.0	
			2	5	6				SS-6	w		757.3 LIGHT BROWN TO LIGHT O	
755	-	-				·····	+ • • • •			0000	<u> </u>	COARSE SAN GRAY, MICACEOUS, SIL	
75	52.8	28.4	2	2	2	$\left \begin{array}{c} \cdot \\ \cdot $						COARSE SAN	
750	‡		2	2	2				SS-7	W			
	+	-								• • •		748.8	32.
74	17.8 	33.4	10	17	23				SS-8	м	_	RESIDUAL BROWN, MICACEOUS, CO	ARSE TO FINE
745	1	-				· · · · · · · · · · · · · · · · · · ·					<u> </u>	<u>545.2</u> SANDY SILT BROWN, MICACEOUS, SILT	<u>36</u> .
74	12.8	38.4				:::: :/::				• • •		FINE SAND	
740	1		13	16	18	· · · · · · · · · • • • • • • • • • • •			SS-9	М	-	AT43.4: GRAY AND BROWN SEAMS OF CL/	ΑY
740	+	-				· · · · · · · · · · · · · · · · · · ·	<u> </u>	<u> </u>		• • • •		_ AT 48.4: NO CLAY 5	SEAMS
73	37.8	43.4	26	27	14	$ \ldots \ldots \ldots $			SS-10	м			
735	Ŧ					4	<u> </u>	· · · ·	00-10	111		_	
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			15	22	36		••58•••		SS-11	м			
730	4	-					/	+ • • • •				-	
72	27.8	53.4	16	19	26		/::::						
725	‡			19	20		45 * * * * *		SS-12	M			
	+						· · · ·	<u> </u>		• • •		-	
72	22.8 +	<u>58.4</u>	18	33	67/0.4	· · · · · · · 	+ <u>· · · · ·</u> · · ·	$\left \begin{array}{c} \cdot \cdot \cdot \cdot \cdot \cdot \\ - \cdot \cdot \cdot \cdot \cdot \\ - \cdot \cdot \cdot \cdot \\ - \cdot \cdot \cdot \\ - \cdot \cdot \cdot \\ - \cdot \\ $	SS-13			722.3 WEATHERED RO	58. DCK
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71	17.8	63.4											
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SITE DESCRIPTION Replace Bridge No. 456 on SR 2136 over Brush CreekGROUND WTR (ft)BORING NO. EB1-BSTATION 16+09OFFSET 6 ft RTALIGNMENT -L-0 HR.7.0COLLAR ELEV. 781.2 ftTOTAL DEPTH 74.6 ftNORTHING 871,155EASTING 1,730,17424 HR.7.7DRILL RIG/HAMMER EFF./DATETRI9435 CME-55 85% 02/22/2016DRILL METHODMud RotaryHAMMER TYPE AutomaticDRILL RIG/HAMMER EFF./DATETRI9435 CME-55 85% 02/22/2016DRILL RIG/HAMMER EFF./DATESTART DATE 04/06/16COMP. DATE 04/07/16SURFACE WATER DEPTH N/ADEPTH (ft)BLOW COUNTBLOW SPER FOOT (ft)SAMP.L 0SOIL AND ROCK DESCRIPTION ELEV. (ft)DEPTH (ft)BLOW COUNTBLOW COUNTBLOW SPER FOOT 0DEPTH (ft)DEPTH (ft)BLOW COUNTBLOW SPER FOOT 0SAMP.L 0 COIL AND ROCK DESCRIPTION ELEV. (ft)DEPTH (ft)BLOW COUNTBLOW COUNTBLOW SPER FOOT 0SAMP.L 0 COIL AND ROCK DESCRIPTION ELEV. (ft)DEPTH (ft)BLOW COUNTBLOW COUNTBLOW SPER FOOT 0MOIL GCOIL AND ROCK DESCRIPTION ELEV. (ft)DEPTH (ft)D.5ft0.5ft0.5ft0.5ft02550790IIIIIIIIIIIIIII710IIIIIIIIIIIIIIIIIII790IIIIII <th< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>- -</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>_</th><th></th><th></th><th></th><th></th><th></th></th<>										- -											_					
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DPULLER TODINGS R. TART DATE DOUGH ONE CARDING DUBLACE WATER DEPTH NA DEPLLER TODING NATION RN	1	1 74.6 ft	TAL DEPTI	то		1.2 ft	. 78	R ELEV.	OLL	С	24 HR. 7.7	FING 1,730,174	EASTI	55	3 871,1	NORTHING	1	74.6 ft	PTH 7	DTAL DEP	то		1.2 ft	V. 78	AR ELE	COL
No. No. <td></td> <td>02/22/2016</td> <td>ME-55 85%</td> <td>₹19435 C</td> <td>TE TF</td> <td>FF./DA1</td> <td>/IER EI</td> <td>IG/HAMME</td> <td>RILL</td> <td>D</td> <td>AMMER TYPE Automatic</td> <td>/ HAN</td> <td>Mud Rotary</td> <td>IETHOD</td> <td>DRILL N</td> <td></td> <td></td> <td>2/2016</td> <td>5% 02/22</td> <td>CME-55 85</td> <td>9435 C</td> <td>E TR</td> <td>F./DAT</td> <td>IMER EI</td> <td>RIG/HAN</td> <td>DRIL</td>		02/22/2016	ME-55 85%	₹19435 C	TE TF	FF./DA1	/IER EI	IG/HAMME	RILL	D	AMMER TYPE Automatic	/ HAN	Mud Rotary	IETHOD	DRILL N			2/2016	5% 02/22	CME-55 85	9435 C	E TR	F./DAT	IMER EI	RIG/HAN	DRIL
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(m) (R FOOT	BLOWS PEF		JNT	w cou	BLO	EPTH		LEV	EI			Γ		SAMP.		R FOOT	OWS PER	BLC		NT	w cou	BLO'	DEPTH		ELEV
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149 742.7 38.5 20 21 25 26 SAND AND TRACE GRAVEL FINE TO COARSE SAND 28.8 740 727.7 43.5 10 9 11 55.54 M 728.4 SAND AND FINE SULTY FINE TO COARSE SAND 28.8 735 732.7 43.5 10 9 11 55.54 M 728.4 SR-55 M 728.4 ORANGISH BROWN JAND FINK AND GRAVEL 41.8 730 727.7 53.5 12 17 13 33 45 100.00 55.57 M 728.4 ORANGISH BROWN JAND FINK AND GRAVEL 48.8 12 17 13 33 45 100.00 55.57 M 724.4 SR-56 M 724.4 SR-57 M 724.4 TORANGISH BROWN JAND WITH SOME SILT 48.8 720 727.7 53.5 58 420.27 58.57 M 724.4 TORANGISH BROWN JAND WITH SOME SILT 48.8 720 727.7 58.5 58 420.27 58.57 M 724.4 TORANGISH BROWN JAND WITH SOME SILT 59.8 717.7								±			(WITH BLACK AND	ORANGISH BROWN (W		М	SS-53		59				32	27	14	-		
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737.7 43.5 10 9 11								‡						М	SS-54	1 1	· · · · ·	· · • • 46	· · · · · · ·		25	21	20	-	-	740
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735 735 732 732 734 7								ŧ			SILT WITH TRACE	MAROON, SANDY SILT		м	SS-55	1	· · · ·				11	9	10	43.5	737.7 -	
732.7 48.5								+				GRAVEL		IVI	33-33	1 1			•20 ·\ · ·	9		-		-	-	735
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730								‡					° • •	M	SS-56		· · · · ·	· · ·			13	17	12	- 48.5 -	- 732.7	
727.7 53.5								‡			0.0.0.22	/112 11102 0	- -	000000000000000000000000000000000000000			· · · ·	· · · ·						-	-	
T22.7 58.5 58 42/0.2' Image: Constraint of the second seco								t					°	000				::: `						- 53 5	727 7	
T22.7 58.5 58 42/0.2' Image: Constraint of the second seco								+					•	M	SS-57	8/9					45	33	13	-	- 121.1	
722.7 58.5 58 42/0.2'								Ŧ		;			724.4	0000			· · · · ·							-	-	
720								ŧ					1		00.50							40/0.01		- 58.5	722.7 -	
717.7 63.5								‡			· /		1		<u>SS-58</u>	100/0.7'			: : :			+2/0.2'	58 4	-	-	700
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713								ł					1		SQ 50						19/0.31	51 4	31	63.5	717.7 -	
T12.7 68.5 33 44 52 52 53 60 M PINK AND LIGHT BROWN, SILTY FINE TO T								Ŧ							00-09							Ť	5	-	-	715
								Ŧ		$\left \right $			₹ 			<u> </u> ;								-		
								‡			WN, SILTY FINE TO	PINK AND LIGHT BROWN		м	6 SS-60		· · · · · · · ·		: : :		52	44	33	- 68.5 -	712.7 -	
								+		JL		CC,					 		• • •					-	-	710

GUILFOR	D			GEOLOGIST Whitt, J.			
n Creek						GROUN	D WTR (ft)
OFFSET 6	ft RT			ALIGNMENT -L-		0 HR.	7.0
NORTHING		55		EASTING 1,730,174		24 HR.	7.7
	DRILL N		D M	ud Rotary		R TYPE	
COMP. DAT				SURFACE WATER DEP			
	SAMP.		L				
75 100	NO.	моі	O G	SOIL AND ROC	CK DESC	RIPTION	
				709.4	RED RO	ск	
	SS-61			WEATHERED F	ROCK (G	RANITE)	74.6
100/0.6'				- Boring Terminated a Weathered	at Elevati Rock (Gr	ion 706.6 f anite)	't In
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	46059					FIP B					GUILFO	RD			GEOLOGIST Wells, T.			WBS 4605					P B-5345		fy Gu
	DESCR			blace I	— ř				6 ove								ND WTR (ft)				lace B	_ <u>ī</u> _	No. 456 on SR 213	6 over Bru	-
	ING NO.					STATIC					OFFSET				ALIGNMENT -L-	0 HR.	9.0	BORING NO				_	ATION 16+95		OFFS
COL	LAR ELI	EV. 78	31.1 ft			TOTAL	DEPT	H 74.2	2 ft		NORTHING	871,2	21		EASTING 1,730,118	24 HR.	FIAD	COLLAR EL	EV. 78	31.1 ft		ТС	TAL DEPTH 74.2	2 ft	NORT
DRIL	L RIG/HA	MMER E	FF./DA	TE T	RI9435	5 CME-5	55 85%	02/22/20)16			DRILL N	IETHC	D N	lud Rotary H.	MMER TYPE	Automatic	DRILL RIG/HA	MMER E	FF./DA	TE TR	19435 (CME-55 85% 02/22/20)16	
DRIL	LER T					START	DATE	04/04			COMP. DA				SURFACE WATER DEPTH	N/A		DRILLER				_	ART DATE 04/04		COM
ELEV	DRIVE ELEV	DEPTH	BLC		-					R FOOT		SAMP.	'/		SOIL AND ROCK	ESCRIPTION		ELEV DRIVE	DEPTH	BLO	W COL			S PER FOO	
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5f	0	2	25	50	1	75 100	NO.	/мо	I G	ELEV. (ft)		DEPTH (ft)	(ft) (ft)	(ft)	0.5ft	0.5ft	0.5ft	0 25	50	75
790		ł													_			710	+			+		tch Line	
	-	ŧ													-			707.7	73.4	40	54/0.01			· · · · ·	
785	-	‡													-				‡	46	54/0.3				· · · 10
100	-	ŧ													-				ŧ						
	-	‡													- 781.1 ASPH/	LT	0.0		‡						
780	780.1	1.0	5	1	2				—			00.45	14/		ROADWAY EM REDDISH BROWN, F	BANKMENT			‡						
	777.7	- 3.4					· · ·	· · · ·	: :	· · · ·		SS-15	W			INE SAINDT CL	AT		‡						
775	-	‡	2	3	4)	7	· · · · · ·	· · ·	•••	· · · ·	SS-16	W		-				‡						
775	-	ŧ																	‡						
	772.7 -	- 8.4	2	1	WOH	╗╹	· · ·	· · · · · ·	· ·			SS-17	w				<u>_8.0</u>		ŧ						
770	-	t							• •			00 11			GRAY, SILTY COARS	E TO FINE SA	ND		ŧ						
	767.7 -	+ + 13.4					· · ·	· · ·	: :						-		10.0		ŧ						
		10.1	WOH	WOH	WOł	1 ∳0:			· ·			SS-18	W			INE SANDY S	13.9 ILT <u>15.5</u>		ŧ						
765	-	ŧ												000	GRAY, SILTY FINE TO WITH LITTLE	COARSE SA	ND		ŧ						
	762.7	18.4	2	1	1	-			: :			SS-19	w	000	762.2		18.9		ł						
760	-	Ŧ	-			Q ²						33-19	vv		GRAY, MICACEOUS, I	INE SANDY C	LAY		Ŧ						
	757.7 -	Ŧ															<u>22.5</u>		Ŧ						
	- 157.7 -	<u>- 23.4</u> -	2	6	4		10		. .			SS-20	W	0000		J COARSE SA			Ŧ						
755	-	Ŧ												0000	-				Ŧ						
	752.7	28.4	4	4	5	:	Ì							0000	-				Ŧ						
750	-	Ŧ	4	4	5		9 			•••	· · · · ·	SS-21	W	0000					Ŧ						
		Ŧ					<u> </u>							0000			32.5		Ŧ						
	747.7 -	+ 33.4 +	5	9	11		· · · · • •					SS-22	W		- RESIDI	SE TO FINE S	AND		Ŧ						
745	-	ŧ					<u> </u>	· · ·	· ·						-				Ŧ						
	742.7 -	38.4	10	11	14				: :						-				Ŧ						
740	-	ŧ			14		::: ·	•25 · · ·	· · ·			SS-23	W		-				ŧ						
01/2/2		†						<u>\</u>	. .						-				ŧ						
	737.7 -	+ 43.4 +	8	13	18		· · · · · ·	↓ ↓ 31 ·	: :			SS-24	w		-				ŧ						
735 730 730 730 725		‡					· · ·	·\· ·	· ·						-				‡						
	732.7	+ + 48.4	45	40		_ :	· · · · · ·		: :	· · · · · ·					-				ŧ						
2 730	-	‡	15	18	24		· · · · · ·		42	· · ·	· · · · ·	SS-25	W		-				‡						
200	1 -	ŧ							·	<u>.</u>					-				‡						
105 105	727.7 -	- <u>53.4</u>	17	32	37		· · · · · ·	· · · · · ·	: :		· · · · 9 · · · ·	SS-26	w		-				‡						
725	-	‡					· · ·		· ·						-				‡						
	722.7	- - 58.4					· · · · · ·		: :	· · ·					-				‡						
25 6 720	-	‡	26	36	52		· · ·	· · ·	. .		· · • <u>88</u> ·	SS-27	W	an.			<u> </u>		‡						
	-	ŧ						· · ·							WEATHERED RO	CK (GRANITE)			‡						
715	717.7	<u>+ 63.4</u>	32	49	51/0.4		 	· · ·	. .			SS-28			-				±						
715	-	ŧ					· · ·				• 100/0.9')			-				‡						
	712.7	- - 68.4					· · ·	 							-				ŧ						
710	-		26	57	43/0.	2 .	· · ·		. .			SS-29			_				t						
2 710														11-1											

IT	GUILFO	R	D				GEOLOGIST Wells, T.			
us	h Creek	_							GROUN	D WTR (ft)
	OFFSET	7	ft LT				ALIGNMENT -L-		0 HR.	9.0
	NORTHING	G	871,2	21			EASTING 1,730,118		24 HR.	FIAD
		Ι	DRILL N	IETHO	D N	luc	Rotary	HAMM	ER TYPE	Automatic
	COMP. DA	.Τ	E 04/0	05/16			SURFACE WATER DEP	TH N/	Ą	
тс			SAMP.		L					
	75 100		NO.	моі	O G		SOIL AND ROO	CK DESC	RIPTION	
	•									
	· · · ·	ţ.			1D	F	WEATHE			
•	100/0.8		SS-30		<u>III</u>	<u> </u>	706.9 (con	tinued)		74.2
						Ē	Boring Terminated Weathered	at Elevat Rock (Gi	ion 706.9 f 'anite)	t ín
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WBS	46059	.1.1			Т	I P B-53	845		CC	UNT	/ GL	JILFOF	RD			GEOLOGIST Wells, T.; Wh	itt, J.	
SITE	DESCR	IPTION	Rep	lace E	Bridge	No. 456	on S	R 213	6 ove	r Brus	h Cre	ek					GROUND WTR	(ft)
BORI	NG NO.	EB2-	В		S	TATION	16+	-94			OFFS	SET 7	7 ft RT			ALIGNMENT -L-	0 HR. 6	6.2
COLL	AR ELE	V . 78	1.1 ft		Т	OTAL D	EPTH	69.4	ft		NOR	THING	871,2	28		EASTING 1,730,131	24 HR . 6	6.2
DRILL	RIG/HAM	/MER E	FF./DA	TE TE		CME-55	85% ()2/22/20	16	I			DRILL		D Mu	d Rotary	MMER TYPE Automati	ic
	LER TO					TART D					COM	ΡΠΔ	TE 04/0			SURFACE WATER DEPTH		
	DRIVE	DEPTH		OW CO				BLOWS		FOOT	0011		SAMP.		1 - 1		11/7	
ELEV (ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	-	0	25		50		75	100	NO.	мо	O G	SOIL AND ROCK D	ESCRIPTION DEPTH	
	(11)										1						DEFT	<u>п (</u> і
785		_																
	-	-													I F			
780	780.1	1.0					1.									781.1 ASPHAL ROADWAY EMB		0.
100	778.2		10	8	9		• 17				1.		SS-31			GRAY, SILTY COARSE	TO FINE SANDY	
ŀ	_//0.2	- 2.9	3	2	2	• 4 .		· · ·	: :	· · · · · ·	· ·		SS-32			GRAVE		4.
775	-	-				· · ·	•••									GRAY, SILTY COARSE	TO FINE SAND	_
	773.2	7.9]			. .							773.6		<u>7</u> .
	1	-	1	1	1	• 2 · ·				· · ·			SS-33	w	N	GRAY, FINE SANDY		
770	4	-					•••	• • •	· ·		· ·	•••			N	.770.1		<u>11</u> .
	768.2	12.9	WOLL			: : :		· · ·	: :	· · ·	· ·					WITH TRACE CL		
	-	_	WOH	1	WOH	•1 • •	••					••	SS-34	W				
765		-														DARK GRAY, MICACEO		<u>16</u> .
-	763.2	17.9	WOH	WOH	WOH	 : : :		· · ·	: :	· · · ·			SS-35	w	N	SILTY CL		
700	4	-						· · ·	: :	· · · · · ·		•••	33-35	vv	N	700.4		~
760	-	_				<u>}</u>			<u> </u>		+ : :					LIGHT GRAY AND BR	OWN, FINE TO	<u>21</u> .
-	758.2	22.9	3	2	3				. .				SS-36	w	• • • • • • • • • • •	COARSE S AT 27.9: LIGHT		
755	1	-								· · · · · ·						/		
100	750 0	- 27.9							. .		1.							
	753.2		2	2	2				: :	· · ·	· ·	•••	SS-37	w				
750	-	-				<u>Ľ</u> _	· ·		. .						0 0 0 0 0 0 0 0 0 0 0 0	750.6 RESIDU		<u>30</u> .
	748.2	32.9					1.									BROWN, SILTY FINE TO) COARSE SAND	
		-	5	7	10		•17	· · · · · ·	: :	· · · · · ·			SS-38	w		AT 37.9: WITH TRA FRAGMEN	CE QUARTZ ITS	
745	4	-					'i:		• •	· · ·	· ·	• •				AT 42.9: NO QUARTZ	FRAGMENTS	
	743.2	37.9	_					· · ·	: :	· · ·	· ·	· ·						
	-	-	5	6	12		.	• • •	. .				SS-39	W				
740	-	-					· · `	· · · ·		· · ·								
-	738.2	42.9	16	20	20				: :	· · · ·			00.40					
	4	-	10	20	20			· · • •4	0	· · · · · ·	· ·	•••	SS-40	W				
735	-	_							+									
-	733.2	47.9	14	35	57				. .		<u> </u>		SS-41	w				
730	1	-						· · · ·		· · ·		• 92 • • •				700.0		E 4
730	700 0	-									1.				-	LIGHT BROWN AND	BLACK, SILT	<u>51</u> .
ŀ	728.2	52.9	24	28	41	1		· · ·	: :		1 59	::	SS-42	м	<u>-</u>			53.
725	-	_					•••	••••	· ·	· · }	<u> </u>	• •				BROWN AND PINK AN FINE TO COAR	SE SAND	
	723.2	57.9							. .									
Ī	-	-	19	29	43			· · · · · ·	: :		72 · ·		SS-43	w				
720	4	-					•••		· ·		<u>\</u>	•••						
	718.2	62.9	05	40				· · ·	: :	· · ·	\ \	::						
	-	-	25	40	41			• • •	. .		9 8'	1	SS-44	W				
715	4	-							· ·	· · ·	4	· · ·						
-	713.2	67.9	21	24	34			· · · · · ·	: :	· / ·			00.17					
ł			~ 1	<u></u>					. .(58			SS-45	W		711.7 Boring Terminated at Ele	evation 711.7 ft In	69.
	+	_														Silty Sar		
	1	-													F			
	1	-													[

SITE PHOTOGRAPHS BRIDGE NO. 456 OVER BRUSH CREEK ON SR 2136



View of SR 2136 looking northwest.



View of Brush Creek looking southeast.

SHEET NO. 10 B-5345 GUILFORD COUNTY