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STATE OF NORTH CAROLINA

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY ______GUILFORD

PROJECT DESCRIPTION GREENSBORO EASTERN LOOP I-85 BYPASS (-L-) FROM US 29 NORTH OF GREENSBORO TO EAST OF LAWNDALE DRIVE SITE DESCRIPTION <u>SITE</u> #3 (STRUCTURE #4 AND #5) BRIDGE NO. 1243 AND 1244 ON I-85 BYPASS (-L-) OVER NORFOLK SOUTHERN RAILROAD (-Y2-)

34821 PROJEC

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U–2525C	1	30

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNIKG AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOLI TEST DATA AVAILABLE MAY BE REVEWED OR INSPECTED IN RALEICH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1991 707-6860. THE SUBSIFACE 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 UNPELACE)TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. 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 CAUTONED 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 DOS NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERRETATIONS MADE, OR OPNION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONSTRONG TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY IMINSELF 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 FOM THE ACUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES: I. 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.

PERSONNEL

D. KUBINSKI
R. TOOTHMAN
W. ALLEN
INVESTIGATED BY <u>D. KUBINSKI</u>
DRAWN BY T. WELLS
CHECKED BY <u>X. BARRETT</u>
SUBMITTED BYKLEINFELDER, INC
DATE SEPTEMBER 2017
KLEINFELDER Bright People. Right Solutions. 1743 WEST FRENDLY AVENUE, SUITE B GREUNSBORD, NC 2740 ENCNEERING FRW LICENSE NO. F-132
SEAL 037998
Thomas R. Wells 10/10/2017
-7DA5D2D0518F4B0 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

			ç	SOIL DE	ESCRI	IOIT9	1						GRA	ADATION						F	ROCK DES	CRIPTION
BE PENET ACCORDIN IS B	CONSIDERED RATED WITH NG TO THE ASED ON TH	H A CONTI STANDARD HE AASHT(NUOUS FI) PENETR) SYSTEM	IGHT POWE ATION TES BASIC DE	ER AUGER T (AASHT ESCRIPTI	r and y to t 201 Ions gen	VIELD LESS 16.ASTM D NERALLY I	6 THAN 10 1586), SOI NCLUDE TH	Ø BLOWS PE L CLASSIFI E FOLLOWI	ER FOOT CATION NG:	WELL GRADED - INDICAT UNIFORMLY GRADED - IN GAP-GRADED - INDICATES	DICATE	ES THAT SOIL P IXTURE OF UNIF	PARTICLES ARE ALI	L APPROXIMA ZES OF TWO	TELY THE SAME SIZE.	ROCK LINE INE SPT REFUSAL	DICATES IS PEN N-COAS	S THE LEVE NETRATION I TAL PLAIN	/EL AT WH: BY A SPL N MATERIA	IICH NON-COAS .IT SPOON SAM AL, THE TRAN	ULD YIELD SPT REFUSAL IF TEST FAL PLAIN MATERIAL WOULD YIEL PLER EQUAL TO OR LESS THAN Ø SITION BETWEEN SOIL AND ROCK
AS	NCY, COLOR, 5 MINERALO	GICAL COM	POSITION	, ANGULAR	ITY, STRL	UCTURE, F	PLASTICIT	Y,ETC.FO	R EXAMPLE,					TY OF GRAIN SOIL GRAINS IS DE		Y THE TERMS.	ROCK MATERIA					•
v	ERY STIFF.G						AND LAYERS				ANGULAR, SUBAN	IGULAR,	, <u>SUBROUNDED</u> , O	R ROUNDED.		T THE TENNS:	WEATHERED ROCK (WR)				OASTAL PLAIN LOWS PER FOO	MATERIAL THAT WOULD YIELD SF T IF TESTED.
GENERAL CLASS.	(Granular i ≤ 35% pass	ING •200)		(> 35	-Clay Mat 5% Passin	IG =200)		IGANIC MATER	ALS		MES SU	ICH AS QUARTZ,	FELDSPAR, MICA, TO THEY ARE CONSID	ALC, KAOLIN,		CRYSTALLINE ROCK (CR)			🖌 would		AIN IGNEOUS AND METAMORPHIC R EFUSAL IF TESTED. ROCK TYPE I IST.ETC.
0	A-1 A-1-a A-1-b	A-3 A-2		A-2-6 A-2-7		A-5 A-	-6 A-7 A-7-5, A-7-6	A-1, A-2 A-3	A-4, A-5 A-6, A-7					ESSIBILITY	LL < 31		NON-CRYSTALL ROCK (NCR)	INE		FINE SEDIM	TO COARSE GR ENTARY ROCK	AIN METAMORPHIC AND NON-COAST THAT WOULD YEILD SPT REFUSAL S PHYLLITE, SLATE, SANDSTONE, E
SYMBOL 8	000000000000000000000000000000000000000					<u> </u>			SILT-		MODEF	RATELY	Y COMPRESSIBLE	:	LL = 31 - LL > 50	50	COASTAL PLAIN SEDIMENTARY			COAST SPT R	AL PLAIN SED	IMENTS CEMENTED INTO ROCK, BUT TYPE INCLUDES LIMESTONE, SAND
	50 MX 30 MX 50 MX	51 MN						GRANULAR SOILS	CLAY	MUCK, PEAT		F		E OF MATER	IAL		-				WEATH	ERING
	5 MX 25 MX	10 MX 35 M	1X 35 MX	35 MX 35 MX	36 MN 3	36 MN 36	MN 36 MN	30123	SOILS		ORGANIC MATERIAL		GRANULAR SOILS	SILT - CLAY SOILS	OTHEF	MATERIAL	FRESH F	ROCK F	RESH, CRYST	TALS BRIG	HT.FEW JOINTS	MAY SHOW SLIGHT STAINING. ROCK
MATERIAL PASSING #40 LL PI	_ 6 MX			40 MX 41 MN 11 MN 11 MN				LITT	S WITH LE OR ERATE	HIGHLY	TRACE OF ORGANIC MA LITTLE ORGANIC MATT MODERATELY ORGANIC HIGHLY ORGANIC		2 - 3% 3 - 5% 5 - 10% > 10%	3 - 5% 5 - 12% 12 - 20% > 20%	TRACE LITTLE SOME HIGHLY	1 - 10% 10 - 20% 20 - 35% 35% AND ABOVE	VERY SLIGHT F (V SLI.)	HAMMER ROCK GI CRYSTAI	R IF CRYSTA	ALLINE. FRESH, JOIM BROKEN SPE	NTS STAINED, S	DME JOINTS MAY SHOW THIN CLAY INE BRIGHTLY. ROCK RINGS UNDER
OF MAJOR	Ø STONE FRAGS. GRAVEL, AND	Ø FINE SAND	Ø SILTY OR GRAVEL AI		8 MX 1 SILT SOIL	TY	MX NO MX CLAYEY SOILS	amou Oro	NTS OF GANIC TTER	ORGANIC SOILS			ER LEVEL IN BO	ND WATER		DRILLING	(SLI.) 1	1 INCH. CRYSTAI	OPEN JOINT	NTS MAY CO JLL AND DIS	ONTAIN CLAY. I SCOLORED. CRY	ND DISCOLORATION EXTENDS INTO R GRANITOID ROCKS SOME OCCASION STALLINE ROCKS RING UNDER HAMME
MATERIALS GEN. RATING AS SUBGRADE	Sand	EXCELLENT				FAIR TO PO		Fair to Poor	POOR	UNSUITABLE	▼ <u> </u>	PERC		EL AFTER <u>24</u> H ITURATED ZONE, OR		RING STRATA	(MOD.) (GRANITO DULL SI	OID ROCKS,M	MOST FELC R HAMMER	DSPARS ARE DU	OLORATION AND WEATHERING EFFEC LL AND DISCOLORED, SOME SHOW CL DWS SIGNIFICANT LOSS OF STRENGT
	1						UBGROUP IS	> LL - 30			000											STAINED. IN GRANITOID ROCKS, ALL
		1	CUNSI	STENCY		DENSI E OF ST			GE OF UNC		<u> </u>		MISCELLAN	NEOUS SYMBO	<u>ILS</u>							OLINIZATION. ROCK SHOWS SEVERE 'S PICK. ROCK GIVES "CLUNK" SOUND
PRIMARY S		CC	ACTNESS NSISTEN	CY .	PENETRA		ESISTENCE		PRESSIVE S (TONS/F1	TRENGTH	ROADWAY EMBA WITH SOIL DES					SLOPE INDICATOR	SEVERE ((SEV.)	ALL RO	D IN STREN	OUARTZ D	ISCOLORED OR TRONG SOIL. IN	STAINED. ROCK FABRIC CLEAR AND GRANITOID ROCKS ALL FELDSPARS
GRANULA	٩R	MEI	LOOSE	ISE		4 TO 1 10 TO 3			N/A					131 1141		INSTALLATION					GMENTS OF STR T N VALUES >	RONG ROCK USUALLY REMAIN. 100 BPF
MATERIA (NON-COF	HESIVE)	VE	DENSE RY DENS	E		30 TO 5 > 50 < 2	50		< 0.25		ARTIFICIAL FI THAN ROADWAY	Y EMBA) AUGER BORING	<u>م</u>	CONE PENETROMETER TEST SOUNDING ROD	SEVERE E	BUT MA REMAINI	NSS IS EFFE	ECTIVELY F	REDUCED TO SO N EXAMPLE OF	STAINED. ROCK FABRIC ELEMENTS A IL STATUS, WITH ONLY FRAGMENTS I ROCK WEATHERED TO A DEGREE THA N. <i>IF TESTED, WOULD YIELD SPT N</i>
GENERAL SILT-CLA MATERIA (COHESIV	AY IL		SOFT DIUM ST STIFF ERY STIF			2 TO 4 4 TO 8 8 TO 1 15 TO 3	8 15 30		0.25 TO 0.5 TO 1 1 TO 2 2 TO 4	.0	INFERRED ROC		<u>د</u>	MONITORING WE PIEZOMETER INSTALLATION	ш 🔶	TEST BORING WITH CORE SPT N-VALUE	COMPLETE	ROCK RI SCATTEI	EDUCED TO) SOIL. ROC NTRATIONS.	CK FABRIC NOT	DISCERNIBLE, OR DISCERNIBLE ONLY BE PRESENT AS DIKES OR STRINGER
				TURE C		> 30			> 4					ATION SYMB							ROCK HA	RDNESS
								070								SIFIED EXCAVATION -						PICK. BREAKING OF HAND SPECIME
U.S. STD. SIE OPENING (MM			4 4.76		40 0.42 COARSI			270 5 0.053				🖾 UN:	SUITABLE WAST	re La	ACCEPT است≝ USED IN	ABLE, BUT NOT TO BE N THE TOP 3 FEET OF MENT OR BACKFILL	HARD (CAN BE		D BY KNIFE	E GEOLOGIST'S E OR PICK ONL	Y WITH DIFFICULTY. HARD HAMMER
BOULDER (BLDR.)		BBLE COB.)	GRAVE (GR.)		SAND (CSE, SI		SAND (F SD		SILT (SL.)	CLAY (CL.)			ICLASSIFIED EXC CEPTABLE DEGR	RADABLE ROCK			MODERATELY (CAN BE	SCRATCHED	D BY KNIFE		GES OR GROOVES TO 0.25 INCHES ('S PICK. HAND SPECIMENS CAN BE
GRAIN MM SIZE IN.		75 3		2.0		0.25	5	0.05	0.005	i	AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED							CAN BE		OR GOUGED		DEEP BY FIRM PRESSURE OF KNIFE
	S	OIL M	οιςτυ	RE - C	ORRE	LATIC	ON OF	TERMS			CL CLAY CPT - CONE PENETRATION	N TEST		MODERATELY DN PLASTIC		UNIT WEIGHT DRY UNIT WEIGHT			OF A GEOLO			ices 1 inch maximum size by hard
	MOISTURE : ERBERG LIN			FIELD MOI DESCRIP	TION				STURE DES		CSE COARSE DMT - DILATOMETER TES DPT - DYNAMIC PENETRAT		EST SAP S	PRESSUREMETER TE SAPROLITIC	ST <u>SA</u> S-B	MPLE ABBREVIATIONS	۱ F	FROM C	CHIPS TO SE	EVERAL INC		IFE OR PICK. CAN BE EXCAVATED I Y MODERATE BLOWS OF A PICK POI RE.
۲۲ – ۲		LIMIT		- SATURA1 (SAT.)	ED -				Y WET, USU DUND WATE		e - VOID RATIO F - FINE FOSS FOSSILIFEROUS			AND, SANDY LT, SILTY LIGHTLY		SPLIT SPOON SHELBY TUBE ROCK	SOFT (RE IN THICK			ATED READILY WITH POINT OF PICK FINGER PRESSURE. CAN BE SCRATC
PLASTIC RANGE <				- WET - (W)		MISOLID: F		DRYING TO STURE	I	FRAC FRACTURED, FRAC FRAGS FRAGMENTS	TURES	w - MOI	IRICONE REFUSAL ISTURE CONTENT		RECOMPACTED TRIAXIAL CALIFORNIA BEARING			URE SP	ACING		BEDDING
(PI) PL		C LIMIT									HI HIGHLY			ON SUBJECT		RATIO	VERY WIDE		MOE	SPACING RE THAN 1		TERM VERY THICKLY BEDDED
	OM OPTIMUM MOISTURE - MOIST - (M) SOLID: AT OR NEAR OPTIMUM I SL SHRINKAGE LIMIT - ORY - (D) REQUIRES ADDITIONAL WATER								DRILL UNITS:	ANCING TOOLS:	UN SUBJECT		WIDE MODERATEL CLOSE		3 SE	3 TO 10 F 1 TO 3 FE 0.16 TO 1 F	EET	THICKLY BEDDED THINLY BEDDED Ø VERY THINLY BEDDED Ø.				
				- DRY - (())		OUIRES A)	X CME-55	CORE SIZ	VERY CLOSE	E	LESS	S THAN Ø.		THICKLY LAMINATED 0.0 THINLY LAMINATED				
				PLA	STICI	ΤY							8 HOLLOW AUG		Ш-в _	∐-+	<u> </u>				INDURA	
SLIG	PLASTIC GHTLY PLAS			PLASTIC	0-5 6-15)EX (PI)		<u>D</u>	RY STRENG VERY LOW SLIGHT		CME-550		HARD FACED FI	INSERTS			FOR SEDIMENT		JUKS, INDUR	RU	JBBING WITH F	IG OF MATERIAL BY CEMENTING,H INGER FREES NUMEROUS GRAINS; (HAMMER DISINTEGRATES SAMPLE
	ERATELY PL ILY PLASTI				16-25 OR MOR				MEDIUM HIGH		PORTABLE HOIST		CASING	STEEL TEETH	POS	IT HOLE DIGGER	MODERA	TELY I	INDURATED	BR	REAKS EASILY	SEPARATED FROM SAMPLE WITH S WHEN HIT WITH HAMMER.
 				Ľ	OLOR						4 🗂 🤺			15/16 TUNGCARB.	SOL	INDING ROD	INDURAT	ſED				FICULT TO SEPARATE WITH STEEL REAK WITH HAMMER.
	DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-G MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.												CORE BIT			IE SHEAR TEST	EXTREM	ELY IN	DURATED	SH	ARP HAMMER I	BLOWS REQUIRED TO BREAK SAMPL ACROSS GRAINS.

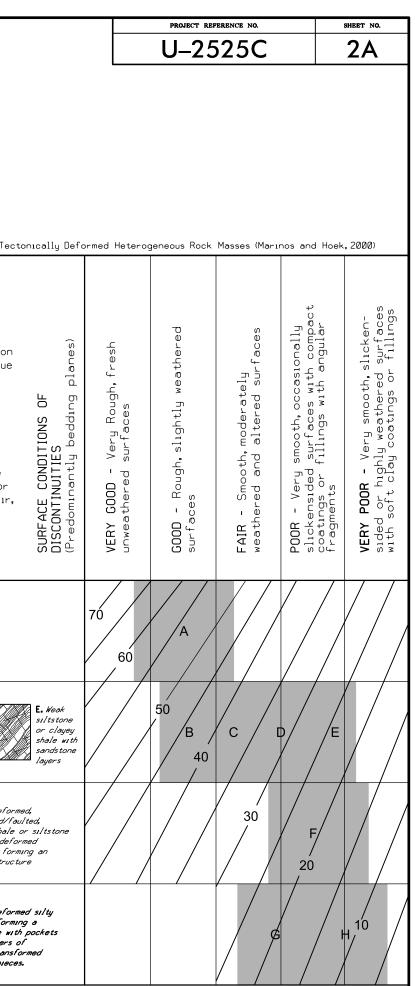
project reference no.

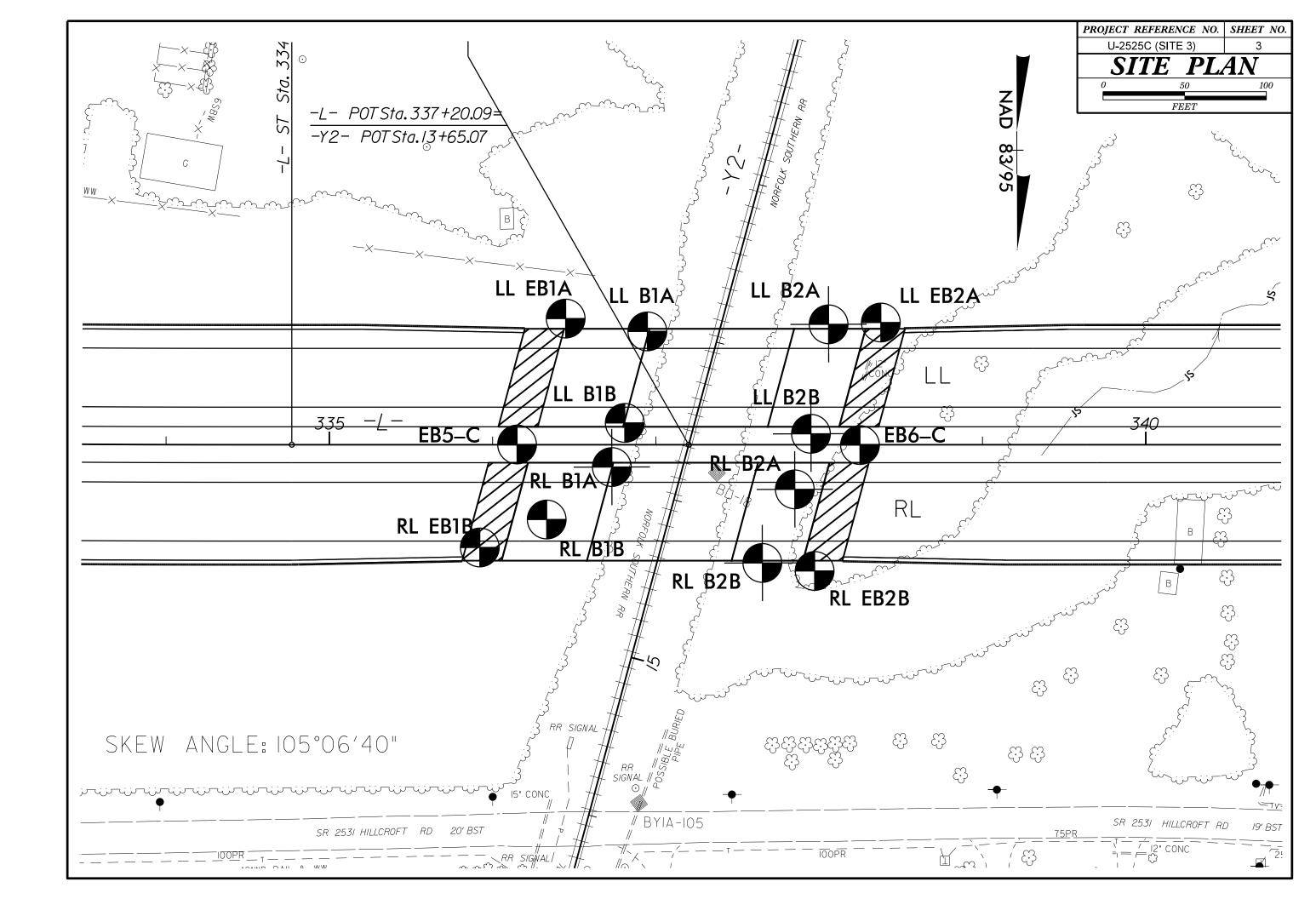
	TERMS AND DEFINITIONS
TED. AN INFERRED D SPT REFUSAL.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
.1 FOOT PER 60	ADUIFER - A WATER BEARING FORMATION OR STRATA.
IS OFTEN	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
PT N VALUES >	ABGILACEOUS - 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.
OCK THAT NCLUDES GRANITE,	APTESIAN - 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.
AL PLAIN	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
IF TESTED. TC.	$\underline{\text{COLLUVIUM}}$ - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
T MAY NOT YIELD DSTONE, CEMENTED	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.
RINGS UNDER	$\underline{\text{DIP}}$ - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
COATINGS IF OPEN. HAMMER BLOWS IF	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
OCK UP TO AL FELDSPAR	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
ER BLOWS. TS. IN	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM
AY. ROCK HAS	<u>FLUAI</u> - RUCK FRAGMENTS UN SURFACE NEAK THEIR URIGINAL PUSITIUN AND DISLUDGED FRUM PARENT MATERIAL.
'H AS COMPARED	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
FELDSPARS DULL LOSS OF STRENGTH	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.
WHEN STRUCK.	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
EVIDENT BUT ARE KAOLINIZED	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.
HIL KHULINIZED	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
RE DISCERNIBLE	MUTTED MULL- TRREGULARLY MARKED WITH SPUTS OF DIFFERENT CULURS. MUTTEING IN SUILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
OF STRONG ROCK	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.
VALUES < 100 BPF	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
' IN SMALL AND RS. SAPROLITE IS	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.
NS REQUIRES BLOWS REQUIRED	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.
DEEP CAN BE DETACHED	<u>SLICKENSIDE</u> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.
OR PICK POINT. D BLOWS OF THE	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.
N FRAGMENTS NT. SMALL, THIN	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
. PIECES 1 INCH	STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEOMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
CHED READILY BY	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
THICKNESS 4 FEET	<u>E)</u>
1.5 - 4 FEET 1.6 - 1.5 FEET	ELEVATION: 851.37 FEET
03 - 0.16 FEET	NOTES:
008 - 0.03 FEET < 0.008 FEET	FIAD: FILLED IMMEDIATELY AFTER DRILLING
	BORINGS EB5-C AND EB6-C WERE OBTAINED FROM THE ROADWAY INVESTIGATION PERFORMED BY S&ME FROM 11-15 TO 12-15.
EAT, PRESSURE, ETC.	
TEEL PROBE:	
PROBE;	
.E;	
	DATE: 8-15-14

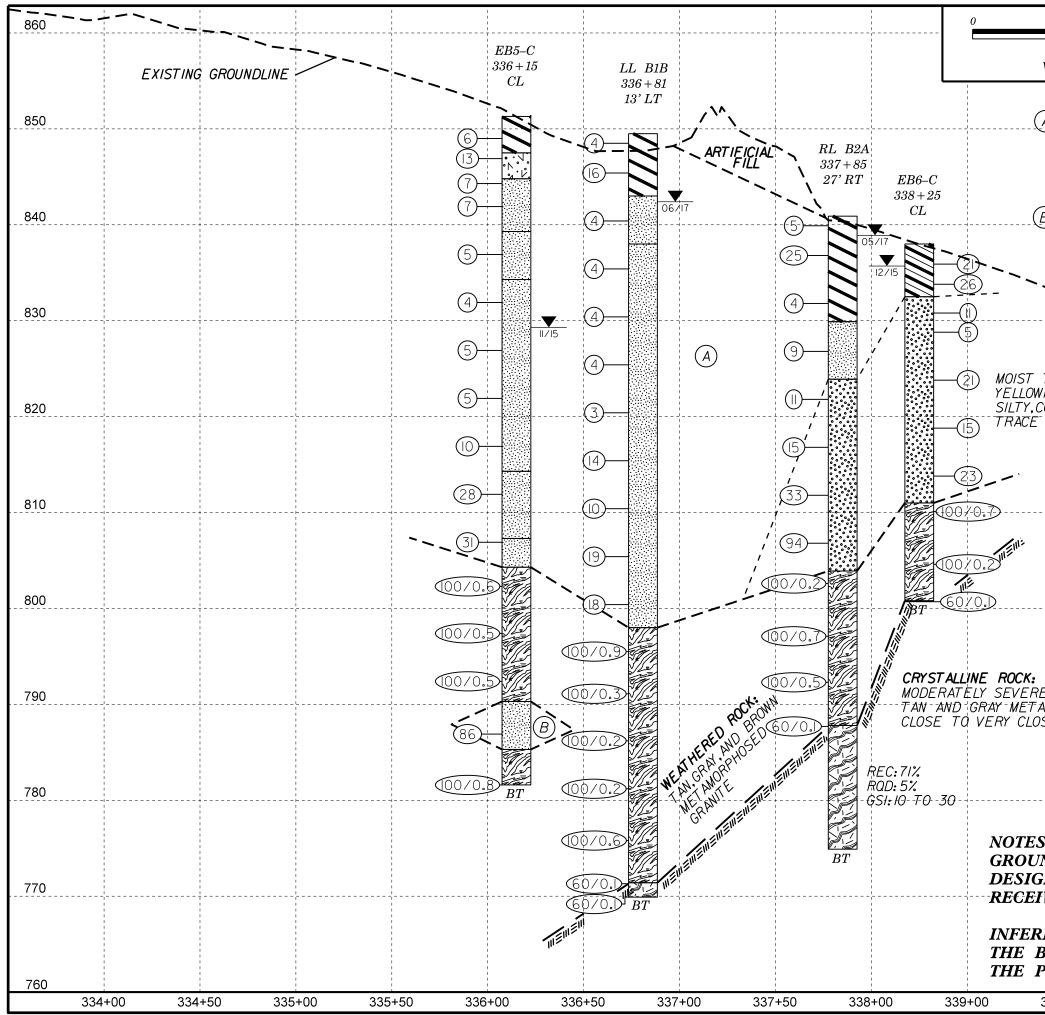
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT SUBSURFACE INVESTIGATION

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 P	Rock Mass (Marı	nos and Hoek,2	2000)			AASHTO LRFD Figure 10.4.6.4–2 $-$ Determination of GSI for T
GEOLOGICAL STRENGTH INDEX (GSI) FOR JOINTED ROCKS (Hoek and Marinos, 2000)	surfaces	taıned		faces	aces g	GSI FOR HETEROGENEOUS ROCK MASSES SUCH AS FLYSCH (Marinos. P and Hoek E., 2000) From a description of the lithology, structure and
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.	VERY GOOD Very rough, fresh unweathered surf	GOOD Rough, slightly weathered, iron stai surfaces	FAIR Smooth, moderately weathered and altered surfaces	POOR Slickensided, highly weathered surf with compact coatings or fillings or angular fragments	VERY POOR Slickensided, highly weathered surf. with soft clay coatings or fillings	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 fai poor and very poor conditions. Water pressure does not change the value of GSI and it is dealt with by using effective stress analysis.
STRUCTURE	DEC	REASING SU	JRFACE QUA	ALITY 💳	-	COMPOSITION AND STRUCTURE
INTACT OR MASSIVE - intact rock specimens or massive in situ rock with few widely spaced discontinuities	90			N/A	N/A	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.
BLOCKY - well interlocked un- disturbed rock mass consisting of cubical blocks formed by three intersecting discontinuity sets		70 60				B. Sand- stone with thin inter-
VERY BLOCKY - interlocked, partially disturbed mass with multi-faceted angular blocks formed by 4 or more joint sets BLOCKY/DISTURBED/SEAMY - folded with angular blocks		5	0			layers of siltstone amounts stone layers
formed by many intersecting			40	30		C. D. E. and G - may be more or less folded than illustrated but this does not change the strength. Tectonic deformation, faulting and loss of continuity moves these categories to F and H.
discontinuity sets. Persistence of bedding planes or schistosity DISINTEGRATED - poorly inter- locked, heavily broken rock mass with mixture of angular and rounded rock pieces				20		G. Undisturbed silty or clayey shale with or without a few very thin sandstone layers
LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes	N/A	N/A			10	Mans deformation after tectonic disturbance







20 100 U-2525C 4 FEET SITE #1 (STRUCTURE #4 AND #5) CENTERLINE PROFILE ON _L	50 100	PROJECT REFERENCE NO	SHEET NO.
VE = 5:1 SITE #3 (STRUCTURE #4 AND #5) CENTERINE PROFILE ON _L A) RESIDUAL: 850 MOIST TO WET, SOFT TO HARD,YELLOWISH BROWN, ORANGE, RED,YELLOM, BROWN, TAN, GRAY, AND GREEN-BLACK, FINE SANDY, SLITY CLAY TO CLAYEY SILT WITH MANGANESE 840 B) RESIDUAL: 840 MOIST, HARD, GREEN-BLACK, MICACEOUS, SILT TRACE ROCK FRAGMENTS 840 TO WET, LOOSE TO VERY DENSE. WISH BROWN, GRAY TO GRAY-WHITE, COARSE TO FINE SAND WITH 820 CLAY AND MANGANESE 810 B10 810 CLAY AND MANGANESE 810 SI 810 FE WEATHERING, MEDIUM HARD, MORPHOSED GRANITE WITH ISE FRACTURE SPACING 790 SI 780 SI 780 SI 780 SI 770 WED MARCH 7, 2017 770 RED STRATIGRAPHY IS DRAWN THROUGH BORINGS WITH BOTH PROJECTED ONTO PROFILE 760		U-2525C	4
MOIST TO WET, SOFT TO HARD, YELLOWISH BROWN, ORANGE, RED, YELLOW, BROWN, TAN, GRAY, AND GREEN-BLACK, FINE SANDY SILT WITH MANGANESE BRESIDUAL: MOIST, HARD, GREEN-BLACK, MICACEOUS, SILT WITH TRACE ROCK FRAGMENTS NOT WET, LOOSE TO VERY DENSE, VISH BROWN, GRAY TO GRAY-WHITE, COARSE TO FINE SAND WITH CLAY AND MANGANESE 810 810 810 810 810 800 800 800 800 800			
B) RESIDUAL: 840 MOIST. HARD, GREEN-BLACK, MICACEOUS, SILT WITH TRACE ROCK FRAGMENTS 830 TO WET.LOOSE TO VERY DENSE, 830 VISH BROWN, GRAY TO GRAY-WHITE, 200 COARSE TO FINE SAND WITH 820 CLAY AND MANGANESE 810 WEATHERING, MEDIUM HARD, 790 AMORPHOSED GRAVITE WITH 790 SE FRACTURE SPACING 780 SS: 780 SN FILE U252SC LS TIN.TIN 770 RRED STRATIGRAPHY IS DRAWN THROUGH 770 BORINGS WITH BOTH PROJECTED ONTO 760	MOIST TO WET, SOF ORANGE, RED, YELLOW GREEN-BLACK, FINE SILT AND COARSE	V,BROWN,TAN,GRAY,AND SANDY,SILTY CLAY TO C TO FINE SANDY	ROWN,
TO WET,LOOSE TO VERY DENSE, VISH BROWN.GRAY TO GRAY -WHITE, COARSE TO FINE SAND WITH CLAY AND MANGANESE 810 810 810 800 800 800 800 800	BRESIDUAL: MOIST.HARD.GREEN-	-BLACK, MICACEOUS, SILT	
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YE WEATHERING, MEDIUM HARD, AMORPHOSED GRANITE WITH DSE FRACTURE SPACING 780 S: NDLINE TAKEN FROM ROADWAY GN FILE U2525C LS TIN.TIN FILE U2525C LS TIN.TIN TVED MARCH 7, 2017 RRED STRATIGRAPHY IS DRAWN THROUGH BORINGS WITH BOTH PROJECTED ONTO PROFILE 760			810
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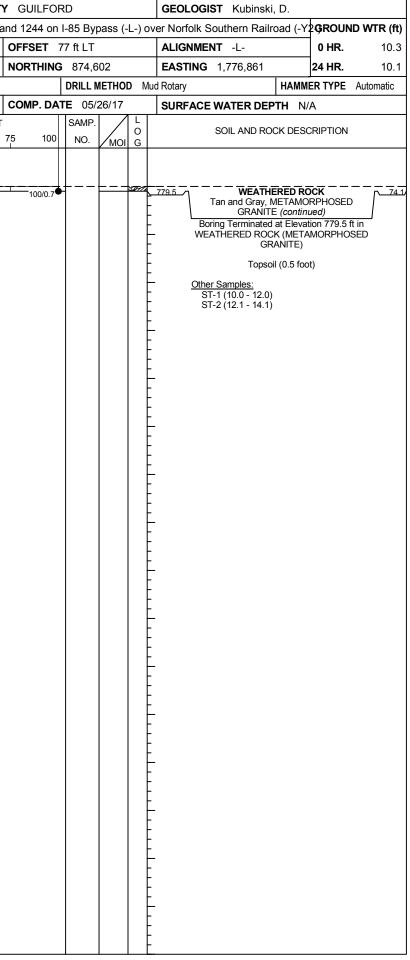
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830			- 				05/1/ 	ORANGE -	Wa O WET.SOFT TO VERY SH BROWN,GRAY,WHITE, BROWN,AND TAN-ORAN WDY AND SILTY CLAY,A LAYEY SILT	IGE.COARSE	<u>ro</u>	- 8-				_i		🚮		
1						0		SANDY.CL	LAYEY SILT				MOIST TO WET.L YELLOWISH BROM WHITE.SILTY FIN	OOSE TO VI	RY DENSE.			5—		
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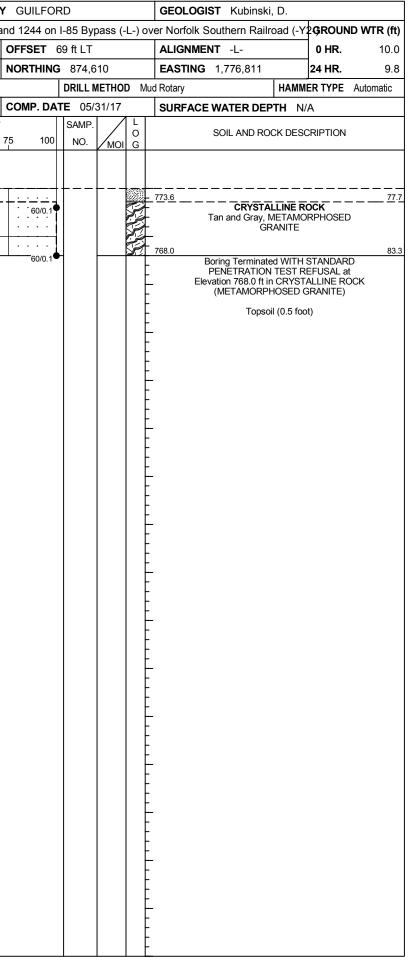
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WBS	34821	1.1.1			T	IP U-25	25C		COUNT	Y GUIL	FORD)			GEOL	OGIST Kubinsk	ki, D.		WBS	3 482	1.1.1			TIF	P U-252	25C	COUN	NTY
SITE	DESCR	RIPTION	Site	e #3 (S	Structu	re #4 & #	45) - Brio	dge No	o. 1243 a	and 1244	on I-8	85 Byp	bass (-	-L-) o	ver Norf	olk Southern Rail	road (-Y	GROUND WTR (ft)	SITE	DESC	RIPTION	Site	e #3 (S	tructur	e #4 & #	5) - Bridge	No. 124	3 and
BOR	NG NO). LL_E	B1A		S	TATION	336+4	5		OFFSE	T 77	ft LT			ALIG	MENT -L-		0 HR. 10.3	BOR	RING NO) . LL_E	EB1A		ST	ATION	336+45		C
COLI	AR EL	EV. 85	53.6 ft		Т	OTAL DE	PTH 7	74.1 ft		NORTH	IING	874,6	02		EAST	ING 1,776,861		24 HR. 10.1	COL	LAR EL	EV . 8	53.6 ft		тс	TAL DE	PTH 74.1	1 ft	N
					RI0055	CME-55 8	31% 02/2	20/2017		1		RILL	IETHO	D M	lud Rotary		НАММ	ER TYPE Automatic	DRIL	L RIG/H/	AMMER	FF./DA	TE TE			1% 02/20/20	017	
		oothma				TART DA				COMP.						ACE WATER DE					Toothma					TE 05/25		C
		1		OW CO					PER FOOT			SAMP.		1 L T				~				1	OW CO				S PER FO	
ELEV (ft)	ELEV (ft)	DEPTH (ft)	·		0.5ft	0	25		0			NO.	мо	O G	ELEV. (ft	SOIL AND RO	OCK DESC	CRIPTION DEPTH (ft	ELEV (ft)	DRIVE ELEV (ft)	(ft)	· I	0.5ft	1	0	25	50	75
	(14)							I	I						ELEV. (II)		DEPTH (IL		(11)					+	I	I	L
860		+													_				780	+	+	47	53/0.2			Na	atch Line	
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000	- 853.6	+ 0.0													853.6		ND SURFA	ACE 0.0	þ		‡							
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850	850.2	3.4									•				-	, tou and orange,		.,, end en			Ŧ							
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845	845.2	8.4	2	4	4						•				-	Red, Yellow, and Fine	Yellowish E Sandy SIL				‡							
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830	830.2	23.4				<u> i · ·</u>									-	Red and Yellowish and Tan, Coarse	n Brown to to Fine Sa	Brown, Gray, ndy SILT with			Ŧ							
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795	795.2	⁺ _{58 4}						· · · ·	••••						-						Ŧ							
135		+	28	60	40/0.2					100	/0.7			977A	794.7 		IERED RC		41		‡							
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790	790.2	63.4		4-				· · [-			·				<u> </u>	`RE	SIDUAL	/	11		±							
	-	Ŧ	12	17	28			•45	5		.][W		-	Tan and Gray, Co	arse to Fir	ie Sandy SILT			ł							
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785	785.2	<u>† 68.4</u>	31	35	40		· · ·		· · · 、	· · · ·	<u> </u>		1.47		-						‡							
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780	780.2	T 73.4			1									V/L							I							



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	34821					P U-2						GUILFC						GIST Butler, L.	1			34821					P U-252			COUNT	
				#3 (St	ructur	e #4 &	#5) -	Bridg	e No.	1243	_			ypass	s (-L-)			k Southern Railroad (-							#3 (S	tructur	re #4 & #5	5) - Brio	dge No). 1243 a	and
BORI	ING NO.	. EB5-	С		SI	TATION	33	6+15			OF	FSET	CL				ALIGN	MENT -L-	0 HR. N	/A	BORI	NG NO.	RL_E	EB1B		S	TATION	335+9	2		OF
COLL	AR ELI	EV. 85	1.3 ft		т	DTAL D	EPT	H 69.	7 ft		NC	ORTHIN	G 874,	,679			EASTIN	IG 1,776,891	24 HR. 22.0 Cav	ed	COLL	AR ELE	V. 84	8.3 ft		т	OTAL DEF	PTH 5	59.1 ft		NC
DRILL	. RIG/HA	MMER E	FF./DA	TE SN	IE9403	CME-55	50X 8	3% 01/	14/201	16			DRILL	METH	HOD	Mud F	Rotary	НАМ	MER TYPE Automati		DRILL	RIG/HAI	/MER E	FF./DA	TE TF	RI0055	CME-55 81	% 02/2	0/2017		
DRIL	LER N	lorwood	, R.		SI	TART D	ATE	11/1	9/15		cc	MP. DA	ATE 11	/20/1	15	:	SURFA	CE WATER DEPTH	N/A	I	DRILL	ER To	oothma	ın, R.		S	TART DAT	TE 05	5/24/17	,	СС
ELEV	DRIVE ELEV	IDEFIN	BLC	W COU	INT			BLOV	VS PEI	r foo	T		SAMF	P. 🔻				SOIL AND ROCK DES	SCRIPTION	E		DRIVE ELEV	DEPTH	BLO	w col	JNT		BLO	OWS PE	ER FOOT	
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	5	50		75	100	NO.	И			_EV. (ft)		DEPTI	l (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50	3	75
855		Ļ																			850		_								
	-	ŧ														F					-	848.3	0.0	1	1	3	μ		1	· · · · ·	
	-	<u> </u>					•••	<u> </u>	•		• • •					- 85	51.3	GROUND SURI RESIDUAI		0.0	~·-	-	-			Ŭ	▲4 · · ·	· · · · · ·		· · · ·	. .
850	850.0	1 I	3	2	4	6								м				Orange-Brown Silty CLA			845	845.1	3.2	4	7	10		17			
	847.9 -	3.4	4	5	8				•	· · ·				м		84	7.5	Organics		3.8		-	-								
845	845.3	6.0		2		Ŀ/			•						N N		4.8			6.5	840	840.1	8.2								
	842.9	8.4	3	3	4		· ·		:		: :			M	1	E		Orange-Tan S				-	-	2	4	14	•	18			
	-	ł	2	3	4	•7	•••							W	v 🕺	Ľ						-	-				· · <i>i</i>	.			
840	-	ł				+										<u> </u>	<u></u>			12.0	835	835.1	13.2	4	4	7		<u> </u>			-
	837.9	13.4	2	2	3	1.	•••		•	· · ·	. .			Sa	at 🐰	Ł		Orange-Gray SILT with	Manganese			-	_					.			
835	-	Ŧ					•••			• • •						F					830	830.1	18.2				$ \cdot\cdot\rangle$.			
	832.9	 18.4					•••		•		•					<u>83</u>	<u>34.3</u>	Tan-Orange Fine San	dy SILT with	17.0		-	-	7	9	10		19			
		-	2	2	2	4					. .			Sa	ıt. 🛞	F		Manganese	9			-	-					<u>\</u> ::			
830	-	Ŧ													Z 🖉	F					825	825.1	23.2	9	10	15					+
	827.9	23.4	2	2	3									Sa	,	F						-	-					· • • • •			
825	-	Ŧ			-	•5·				· · · · · ·				3a	ii. (8)	F					820	- 820.1	28.2					:/ ::			
	. 822.9	28.4							•				1			F						-	-	7	8	12	(20			
	- 022.3 -	- 20	2	2	3	• <u></u> 5·		· · · ·		· · · ·				Sa	ıt. 🕅							-	-							· · · · ·	
820	-	Ŧ				<u>-</u> <u></u> - <u></u> - <u></u>			·		· · ·					Ē					815	815.1	33.2	13	15	15					+
-	817.9	33.4	4	5	5	· ľ		· · · ·						Sa		F						-	-								
815	-	Ŧ			-		0 · 0			· · · · · ·				3a	ii. (8)	F					810	810.1	- 38.2					.			
	812.9	381							•				1			81	4.3	Tan-Gray Fine Sar		<u>37.0</u>		-	-	15	19	16			35 .		
		- 00.4	7	13	15			€ 10 10 10 10 10 10 10 10 10 10		· · · ·				Sa	ıt. 🞇	F						-	-								
810	-	Ŧ						<u> </u>	·		· · ·					Ē					805	805.1	43.2	15	27	48	·				
-	807.9	43.4	6	13	18				-	· · · ·	. .			w	,	<u> </u>	<u></u>			14.0		-	-							· · · · ·	; T ''
805	-	Ŧ					•••	●31 · 1 · ·		•••					'	F		Green-Black Fine Sandy S Mica, Quartz Seam	at 44.8 ft		800	- - 800.1	- 48.2								- 1
	802.9	48.4					•••	<u> </u>	· - +		-+-				9 77	<u>80</u> 2	14.3	WEATHERED F	ROCK	17.0		-	-	42	58/0.2						
			90	10/0.1		· · ·		· · · ·		· · · ·	. .	100/0.6	 			J.		(Metamorphosed	Granite)			-	-					· · · · · · · ·		· · · · ·	•
800	-	Ŧ				···			· -	· · ·			<u> </u>			Ŧ					795	795.1	53.2	55	45/0.1					· · · · ·	-
ŗ	797.9	53.4	100/0.5								. .	100/0.5				j.						-	-					.			. .
795	-	Ŧ						· · · · · ·		· · · · · ·		100/0.5	[]			j.					790	- 790.1	- 58.2					· · · · · ·			
	792.9	- - - 58.4							•				1			F							-	41	59/0.4			-			
790		- <u>00.4</u>	100/0.5					· · · ·		· · · · · ·	. .	100/0.5	•									-	-								
790	-	Ŧ				· ·		· · ·		•••		<u> </u>	-			79	90.3	RESIDUAL	-	61.0		-	-								
ľ	787.9	63.4	20	37	49			· · · · · ·	•	· · · · · ·	. .			м	, 🕅	F		Green-Black Micaceous Sl Rock Fragments, Quartz				-	-								
785	-	Ŧ						· · · · · ·		· · · · · ·		•86 ·					35.3			6.0		-	-								
	- 782.9	+ - 68.4											11					WEATHERED F (Metamorphosed)				-	-								
ļ			21	35	65/0.3		· · · ·	· · ·		· · · · · ·		100/0.8	┥			78	31.6	Poring Terminated at Elec		69.7		-	-								
	-	Ŧ										100/0.0				F		Boring Terminated at Elev NEATHERED ROCK: MET	AMORPHOSED			-	-								
	-	Ŧ														F		GRANITE				-	-								
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GUILFORD	GEOLOGIST Kubinski, D.
nd 1244 on I-85 Bypass (-L-) ov	er Norfolk Southern Railroad (-Y2 GROUND WTR (ft)
OFFSET 63 ft RT	ALIGNMENT -L- 0 HR. 8.1
NORTHING 874,742	EASTING 1,776,914 24 HR. 4.9
DRILL METHOD Mud	d Rotary HAMMER TYPE Automatic
COMP. DATE 05/25/17	SURFACE WATER DEPTH N/A
SAMP.	SOIL AND ROCK DESCRIPTION
75 100 NO. MOI G	
	848.3 GROUND SURFACE 0.0 RESIDUAL
	Yellowish Brown, Tan, Red, and Orange, Fine Sandy, Silty CLAY
· · · · · V N	
	841.3 7.0
	Orange and Gray, Clayey, Coarse to Fine Sandy SILT
	836.3 Orange, Tan, and Gray 12.0
<u></u> w -	
	831.3 17.0
	Yellowish Brown, Tan, and Gray, Silty, Fine to Coarse SAND
w	
	821.3 27.0
	Yellowish Brown, Tan, and Gray, Coarse to Fine Sandy SILT
	816.3 Yellowish Brown, Tan, and Gray, Silty, Fine 32.0
W	to Coarse SAND
w	
•75 W	
	801.3 WEATHERED ROCK 47.0
· 100/0.7	Tan and Gray, METAMORPHOSED GRANITE
	GRANITE
· 100/0.6	
100/0.9	789.2 59.1 Boring Terminated at Elevation 789.2 ft in
	WEATHERED ROCK (METAMORPHOSED GRANITE)
	Topsoil (0.5 foot)
	···· · ··· · · · · · · · · · · · · · ·
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	3 482					TIP U-2525C		Y GUILFO				GEOLOGIST Kubinski, D.			3 4821					U-2525C	COUNTY
				e #3 (S			No. 1243			pass (-		Norfolk Southern Railroad (-)	_					#3 (Stru		#4 & #5) - Bridge	No. 1243 and
BOR	RING NO	. LL_E	31A		S	STATION 336+95		OFFSET	69 ft LT		A	ALIGNMENT -L-	0 HR. 10.0	BOF	RING NO.	LL_E	81A		STA	ATION 336+95	c
COL	LAR EL	EV. 85	51.3 ft		Т	OTAL DEPTH 83.3	ft	NORTHING	G 874,6	610	E	EASTING 1,776,811	24 HR. 9.8	COL	LAR ELE	EV. 85	51.3 ft		ТО	TAL DEPTH 83.3	ft N
DRIL	L RIG/HA	MMER E	FF./DA	TE TR	RI0055	CME-55 81% 02/20/201	7		DRILL N	IETHO	D Mud R	Rotary HAMN	MER TYPE Automatic	DRIL	L RIG/HAI	MMER E	FF./DAT	E TRIO	055 CI	ME-55 81% 02/20/20	17
DRIL	LER T		an, R.		S	START DATE 05/30/	17	COMP. DA		· 4	s	SURFACE WATER DEPTH N	J/A	DRI	LER To	oothma	in, R.		ST/	ART DATE 05/30/	'17 C
ELEV			· — —	SW COL			PER FOOT		SAMP.		L	SOIL AND ROCK DES	SCRIPTION	ELEV	ELEV	DEPTH		N COUN			PER FOOT
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0 25	50	75 100	NO.	ИОІ	G EL	EV. (ft)	DEPTH (ft	(ft)	(ft)	(ft)	0.5ft	0.5ft 0	.5ft	0 25	50 75
855		+												775			+	·	-+	Mat	ch Line
		Ŧ													773.1	78.2	60/0.1				
850	851.3	<u>† 0.0</u> †	1	2	3					М		1.3 GROUND SURF		770	-	F					
	848.3	- - 3.0			_	<u> </u>]		84	0range, Fine Sandy, S Red, Orange, and Yellow	2.0		768.1	83.2					
		Ŧ	4	5	6			· · · · · · ·		М	F	Sandy, SILT	r F		-	-	60/0.1				
845		Ŧ						· · · · · ·			Ē.				_	F					
	843.1	8.2	2	1	2	$\left \left \begin{array}{c} 1 \\ 1 \\ 2 \\ 2 \\ 3 \\ 2 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3$		· · · · · · · · · · · · · · · · · · ·			F				-	F					
840		Ŧ									F				-	F					
	838.1	13.2							1		<u> </u>	Red, Yellowish Brown, Ta			-	F					
		Ŧ	1	2	1	$\left \begin{array}{cccc} \cdot & \cdot & \cdot & \cdot \\ \bullet & 3 & \cdot & \cdot \\ \bullet & \cdot & \cdot & \cdot \\ \bullet & \bullet & \cdot & \cdot \end{array} \right $.		W	F	Brown, Gray, and Yellow, F with Manganese S	Fine Sandy SILT Seams		-	F					
835		Ŧ									F				-	F					
	833.1	18.2	2	2	2			· · · · · · · · · · · · · · · · · · ·		w	F				-	F					
830		Ŧ									F				-	F					
	828.1	T 23.2]		F				-	F					
		Ŧ	2	2	2	$\left \begin{array}{c cccccccccccccccccccccccccccccccccc$				W	F				-	F					
825		Ŧ									F				-	F					
	823.1	<u> </u>	2	3	5			· · · · · · · · · · · · · · · · · · ·		w	F				-	F					
820		Ŧ									F				-	F					
	818.1	T 33.2				<u></u>					F				-	F					
		Ŧ	4	10	13					W	F					F					
815		Ŧ									F				-	E					
	813.1	<u> 38.2</u> 	6	12	12					w	E				-	E					
810		Ŧ				/					E				-	E					
	808.1	43.2				<i>i</i>					Ŀ				-	Ł					
_		ŧ	3	4	8	$12 \cdot 12 \cdot$		· · · · · · · · · · · · · · · · · · ·		w	Ŀ					Ł					
805		ŧ						· · · · · ·			Ŀ				-	F					
	803.1	<u> 48.2</u> 	9	10	12	$- \begin{vmatrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \bullet^{22} \cdot \cdot \cdot \\ \cdot & \cdot & \cdot & \bullet^{22} \cdot \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot &$				w						ŧ					
800		±									Ł					ŧ					
د z	798.1	53.2			10	4 ::: ¦ ::::					L I					ŧ					
		‡	4	7	13	$ \begin{vmatrix} & \cdot & \cdot & \bullet \\ & \cdot & \cdot & \bullet \\ & \cdot & \cdot & \bullet & \bullet \\ & \cdot & \cdot & \cdot & \bullet & \bullet \\ & \cdot & \cdot & \cdot & \bullet & \bullet \\ & \cdot & \cdot & \bullet & \bullet & \bullet \\ & \cdot & \cdot & \bullet & \bullet & \bullet \\ & \cdot & \cdot & \bullet & \bullet & \bullet \\ & \cdot & \cdot & \bullet & \bullet & \bullet \\ & \cdot & \cdot & \bullet & \bullet & \bullet \\ & \cdot & \cdot & \bullet & \bullet & \bullet \\ & \cdot & \cdot & \bullet & \bullet & \bullet \\ & \cdot & \cdot & \bullet & \bullet & \bullet \\ & \cdot & \cdot & \bullet & \bullet & \bullet \\ & \cdot & \cdot & \bullet & \bullet & \bullet \\ & \cdot & \cdot & \bullet & \bullet & \bullet \\ & \cdot & \cdot & \bullet & \bullet & \bullet \\ & \cdot & \cdot & \bullet & \bullet & \bullet \\ & \cdot & \cdot & \bullet & \bullet & \bullet \\ & \cdot & \cdot & \bullet & \bullet & \bullet \\ & \cdot & \bullet & \bullet & \bullet \\ & \cdot & \bullet & \bullet & \bullet \\ & \cdot & \bullet & \bullet & \bullet \\ & \cdot & \bullet & \bullet & \bullet \\ & \bullet & \bullet & \bullet & \bullet \\ & \bullet & \bullet$				W						ŧ					
795	-	±						<u> </u>	-						-	ŧ					
	793.1	58.2	19	41	59					w						ŧ					
790		ŧ						·			Ł					Ł					
	788.1	63.2					,	 . .			Ŀ					ŧ					
785		ŧ	11	17	20	37.				W						ŧ					
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JUBL	783.1	68.2	16	22	29		• · · ·			w						ŧ					
80 780		ŧ									Ł					F					
В С	778.1	73.2			<u>.</u>	_ _	i									ŧ					
LOGD		ŧ	18	20	24		44			w	Ŀ					Ł					
ž 775		1		1		<u> </u>										L					



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	34821					IP U-2				COUNT									Kubinsł		1			3482						U-2525C		COUN	
				e #3 (S					e No.	. 1243	-				s (-L-)					road (-Y	-	D WTR (ft)					e #3 (S				Bridge N	No. 1243	-
	NG NO.					TATIO							13 ft L					MENT			0 HR.	7.7		ING NC						ION 33			OF
	AR ELE					OTAL					NOF	RTHIN	G 874	,666		E	ASTIN	IG 1,7	776,825		24 HR.	7.1	COLI	AR EL	EV. 8	349.5 ft		ר	ΟΤΑ		H 79.6 f	ft	NO
	RIG/HAI			TE TI												Mud R	otary			HAMM	ER TYPE	Automatic									02/20/201		
DRIL	LER TO					TART	DATE					/IP. D/	TE 0		- 4	s	URFA	CE WA	TER DE	PTH N/	A		DRIL	LER					STAR	T DATE	05/30/1		co
ELEV (ft)	ELEV	DEPTH (ft)	· — —				~			R FOO		400		P.	/ C			SO	IL AND RO	OCK DESC	CRIPTION		ELEV (ft)	DRIVE ELEV	DEPT (ft)	· · ·		-		0		PER FOC	
(11)	(ft)	(11)	0.5ft	0.5ft	0.5ft		2	5	50		75 I	100	NO	· / M	NOI G	EL EL	EV. (ft)					DEPTH (ft)	(11)	(ft)	(11)	0.5ft	0.5ft	0.5ft	0	25	5	50	75
850	849.5	- 0.0															9.5			ND SURFA	ACE	0.0	770		+	60/0.	1 -				Mato	ch Line	
	-	Ŧ	'	2	2	♠4 .						· · · ·			и [Yellowi	sh Brown,	SIDUAL Orange, a	and Red, Fir	ne			Ŧ		1						
845	846.4 -	T3.1 T	4	6	10	: `	•16								~ E				Sandy	, Silty CLA	ΑY				Ŧ								
	-	Ŧ					<i>[</i>						1		- 5	F 843	3.0					6.5			Ŧ								
	841.4	8.1					•••											Yellow	, Orange, Sa	and Red, ndy, SILT	Clayey, Fin	e			Ŧ								
840	-	F	2	1	3	▲ 4_	· ·					· · · ·	-	1	N	F				,,					Ŧ								
	-	Ŧ					•••				. .	· · · ·				83	B <u>.0</u>	Brown.	Tan. Orar	de. and G	ray, Coarse	to <u>11.5</u>			Ŧ								
835	836.4 -	<u>† 13.1</u>	1	2	2		•••								N	F					anese Sear				Ŧ								
	-	Ŧ										 	1			F									Ŧ								
	- 831.4 ⁻	18.1				<u> </u>	•••									F									Ŧ								
830	_	Ŧ	1	2	2	 • ⁴ -	· ·		•				$\left\{ \right\}$	1	N	Ë.									Ŧ								
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825	826.4	<u>† 23.1</u>	1	1	3		•••			· · ·		· · · · · ·			N	F									Ŧ								
	-	Ŧ														-									Ŧ								
	- 821.4 ⁻	† 28.1				<u> </u> ::	•••			· · · · · ·		· · · · · ·				Ē									Ŧ								
820	-	ŧ	3	1	2	_ 3_			·		· ·	· · ·		V	N	- -									Ŧ								
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815	816.4 -	<u>† 33.1</u> †	4	5	9		 14			•••		· · · · · ·			N	- -									Ŧ								
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	- 811.4	T 38.1					j.:			•••		· · · · · ·				Ē									Ŧ								
810	_	ŧ	3	4	6	•	10		·	· · ·	· ·	· · ·		V	N										Ŧ								
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805	806.4	† 43.1 †	7	8	11		·\.		:	· · · · · ·	: :	· · ·			N										ŧ								
	-	ŧ				 								-									ŧ								
	- 801.4 ⁻	+ - 48.1		_] ::	· · · ·		:	· · · · · ·	· ·	· · · · · ·				×F									Ŧ								
800	-	‡ _	6	7	11		. 1 8		•		• •	•••		۷ ا	N	Ľ,									ŧ								
	-	Ŧ					Ë.		<u> </u>		· ·					79	8.0		WFATH	IERED RO	DCK	51.5			Ŧ								
795	796.4 -	<u>† 53.1</u>	38	62/0.4	-		· · · ·		:	· · · ·	· ·						Т	Fan, Gra	iy, and Bro	WN, META	MORPHOS	SED			Ŧ								
	-	Ŧ									. .		1						G						Ŧ								
	- 791.4 ⁻	58.1					•••			· · · · · ·		· · ·				j.									Ŧ								
790	-	Ŧ	100/0.3	1			•••	· · ·	•			100/0.3	T			j.									Ŧ								
	-	Ŧ					•••		:	· · · · · ·	. .	· · · · · ·				j.									Ŧ								
785	786.4 -	<u>† 63.1</u>	100/0.2	2			•••	· · · ·		· · · · · ·		 100/0.2	•			計									Ŧ								
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	- 781.4 ⁻	68.1					•••			· · · · · ·		· · ·				j.									Ŧ								
780	-	ŧ ¯	100/0.2	1			••		•			100/0.2	T			j.									ŧ								
	-	Ŧ					•••			· · · · · ·	. .	· · · · · ·				j.									Ŧ								
775	776.4 -	† 73.1 T	80	20/0.1			· · · ·	· · · ·		· · · · · ·		 100/0.6	↓												ŧ								
	-	ŧ				11							1			Į.									ŧ								
780 775 770	- 771.4 -	+ 78.1				11	· · · ·			· · · · · ·	. .	· · ·				77	1.4					78.1			Ŧ								
770	770.0	79.5	60/0.1				•••	• • •	•			• 60/0.1	T I		5	76	9.9					79.6			<u>t</u>								

INTY GUILFORD	GEOLOGIST Kubinski, D.	
43 and 1244 on I-85 Bypass (-L-) ov	er Norfolk Southern Railroad (-)	29ROUND WTR (ft)
OFFSET 13 ft LT	ALIGNMENT -L-	0 HR. 7.7
NORTHING 874,666	EASTING 1,776,825	24 HR. 7.1
DRILL METHOD Mud	d Rotary	IER TYPE Automatic
COMP. DATE 05/31/17	SURFACE WATER DEPTH	I/A
DOT SAMP. L	SOIL AND ROCK DES	
75 100 NO. MOI G	SOIL AND ROCK DES	
60/0.1 <u> </u>	CRYSTALLINE F Tan and Gray, METAM	DRPHOSED
	GRANITE (contin Boring Terminated WITH	
	PENETRATION TEST F Elevation 769.9 ft in CRYS	REFUSAL at
	(METAMORPHOSED	
	Topsoil (0.4 fo	ot)
F		
E		

								1												1_				
	34821					P U-25250			Y GUILFC				GEOLOGIST Kubinski, D.		-	34821.1					U-2525		COU	
				#3 (S				No. 1243	1			L-) oʻ	er Norfolk Southern Railroad (-Y29			DESCRIP			3 (Stru	-		-	e No. 124	-
BOR	ING NO	. RL_E	31A		S	TATION 33	36+73		OFFSET	14 ft RT	-		-	0 HR. 11.0		NG NO.					TION 3			C
	LAR ELI					OTAL DEPT			NORTHIN				<u> </u>	4 HR. 6.5		AR ELEV					AL DEP			N
				TE TI		CME-55 81%					METHO	D Mu	,	TYPE Automatic		RIG/HAM			TRI00	1				
DRIL	LER T					TART DATE			COMP. DA				SURFACE WATER DEPTH N/A		DRIL	LER Too	othman			I	RT DAT			С
ELEV	ELEV	DEFIN		W CO	-			PER FOOT		SAMP.	· 🔨	L O	SOIL AND ROCK DESCRI	IPTION	ELEV	DRIVE ELEV			COUN		•		S PER FC	
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0 2	25	50	75 100) NO.	МОІ	G	ELEV. (ft)	DEPTH (ft)	(ft)	(ft)	(ft)	0.5ft 0	0.5ft 0.	.5ft	0	25	50	75
850	849.0	+											849.0 GROUND SURFACE	E 0.0	770	+-		+		-+		Ma	atch Line	
	-043.0	+ 0.0	WOH	WOH	2	2 0 2 · · ·					М	V	RESIDUAL Orange, Yellowish, and Brown,			Ŧ								
845	845.8	3.2	4	8	10		· · · · ·		· · · · · ·				Silty CLAY	r ine Gandy,	765	Ŧ					· · · · ·		· · · · · · · ·	
	-	ŧ	-			18		· · ·			W					Ŧ								
	-	ŧ							· · · · · ·				842.5 Red, Gray, and Yellow, Clayey,	Fine Sandy6.5		Ŧ					· · · · ·		· · · ·	
840	840.8 -	+ 8.2 +	2	3	4	•7					w		SILT		760	+						+ • • •	· · · ·	
	-	ŧ							· · · · · ·			-				ŧ					· · · ·		· · · ·	· ·
835	835.8 -	13.2		1			· · · · ·		· · · · · ·			-				‡								
000	-	ŧ	2	1	3	• ⁴				1	W	-				Ŧ								
	-	†					· · · · ·		· · · · · ·			-	832.5 Tan, Gray, and Brown, Coarse to	o Fine Sandy		‡								
830	830.8 -	+ 18.2 +	2	1	3	 · · · · •●4					w	-	SILT with Manganese and	Quartz		+								
	-	ŧ				<u>]</u>]]]]]]]]]]]]]]]]]]			· · · · · ·							‡								
825	825.8 -	23.2				$ \cdot \cdot$	· · · ·		· · · · · ·							‡								
025	-	ŧ	2	4	7					-	W	-				+								
	-	‡					· · · ·		· · · · · ·							‡								
820	820.8 -	- <u>28.2</u>	3	4	8	· · .				41	w					+								
	-	ŧ				· · · · ·	· · · · ·		· · · · · ·							1								
045	815.8 -	33.2					· · · · ·		. .							1								
815	-	ŧ	5	8	13		1 21	<u> </u>			w					+								
	-	ŧ										t				ŧ								
810	810.8 -	- 38.2	17	28	40						w					1								
	-	ł					· · · ·						807.5	41.5		ŧ								
	805.8 -	43.2						· · · '		·			WEATHERED ROCI	к		Ŧ								
805	-	-	100/0.4					+	100/0.4	•	1 1	1/2	Tan and Gray, METAMORF GRANITE	TIOSED		+								
	-	ŧ			1	 . .		+		41		97	802.5 	<u> </u>		Ŧ								
800	800.8	48.2	5	6	13		· · · ·				w	F	Brown and Gray, Coarse to Fine	e Sandy SILT		Ī								
	-	ŧ						· · ·				Ľ				Ŧ								
	795.8 -	53.2					$\left[\begin{array}{c} & & \\ & & \\ & & \\ & & \\ \end{array} \right]$	· · ·				Ľ				ŧ								
795		+	8	17	21		38-	+			w	E				Ŧ								
	-	ŧ											792.5 Gray, Silty, Fine to Coarse	<u>56.5</u>		Ŧ								
790	790.8	58.2	8	10	41		· · ·				w		Gray, Silly, Fille to Coalse			Ī								
	-	Ŧ			1			51								Ŧ								
785	785.8 -	63.2			1								705.0			Ŧ								
	- 100.0 -		20	50	50/0.3	· · · · ·	 .	<u> </u>	100/0.8			ЯЙ.	785.3 WEATHERED ROCI			Ŧ								
	-	Ŧ			1				.				Brown, Gray, and Tan, METAM GRANITE with Manganese a	ORPHOSED nd Quartz		ŧ								
780	780.8	68.2	100/0.4		1				· · · · · ·				3			ŧ								
		Ŧ,			1]			777.7	71.3		Ŧ								
775		+ 71.3 T	60/0.0		1					•		5Ŧ	CRYSTALLINE ROC			ŧ								
775	-	Ŧ			1			+ • • •	• • • • • •	41			Tan and Gray, METAMORF	/ 13.8		+								
	-	ŧ											772.0 Tan and Gray, METAMORF			‡								
770	-	Ŧ			1		· · · · ·		· · · · · ·	<u>RS-1</u>	1		GRANITE			‡								
		L			1		L								L		I		I					

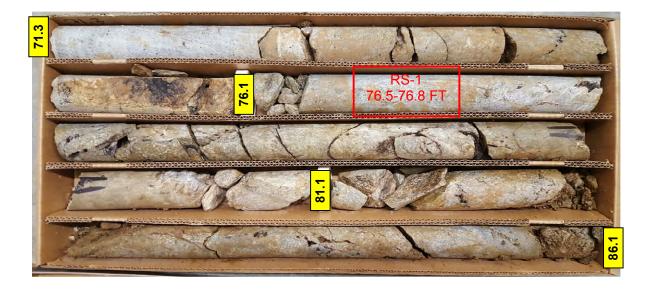
GUILFOR	D			GEOLOGIST Kubinski, D).		
nd 1244 on I	-85 Byp	bass (-	L-) o	ver Norfolk Southern Railroa	d (-Y	GROUN	D WTR (ft)
OFFSET 1	4 ft RT			ALIGNMENT -L-		0 HR.	11.0
NORTHING	874,6	93		EASTING 1,776,833		24 HR.	6.5
	DRILL N	IETHO	DM	ud Rotary H	IAMME	R TYPE	Automatic
COMP. DAT	E 06/0	02/17		SURFACE WATER DEPTH	H N/A	4	
75 100	SAMP. NO.		L O G	SOIL AND ROCK	DESC	RIPTION	
		<u>/ MOI</u>	G	CRYSTALL Tan and Gray, ME			
				GRANITE (0	continu	ed)	84.0
				WEATHERI Brown, METAMORP			Ē
				- 761.7 - CRYSTALLI - Tan and Gray, ME ⁻			87.3
			S?	757.9 GRAN	IITE		91.1
				Boring Terminated at CRYSTALLINE ROCK	(META	on 757.9 f MORPHO	t in SED
				- Topsoil (0).4 foot)	
				- - -			
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											RELOG
WBS	34821	.1.1			TIP	U-252	25C	С	OUNT	Υ	GUILFORD GEOLOGIST Kubinski, D.
SITE	DESCR	IPTION	I Site	e #3 (Stru	cture #	#4 & #	5) - Bridg	e No.	1243 a	and	1244 on I-85 Bypass (-L-) over Norfolk Southern Railroad (-Y2GROUND WTR (
BORI	NG NO.	. RL_E	31A		STA	ΓΙΟΝ	336+73			OF	FFSET 14 ft RT ALIGNMENT -L- 0 HR. 11
COLL	AR ELE	EV. 84	19.0 ft		тот	AL DE	PTH 91	.1 ft		NO	DRTHING 874,693 EASTING 1,776,833 24 HR. 6
DRILL	RIG/HAI	MMER E	FF./DA	TE TRIOO	55 CM	E-55 8′	1% 02/20/2	2017		1	DRILL METHOD Mud Rotary HAMMER TYPE Automation
DRIL	LER T	oothma	an, R.		STA	RT DA	TE 06/0	1/17		СО	DMP. DATE 06/02/17 SURFACE WATER DEPTH N/A
CORI	E SIZE	NQ			TOTA	AL RUI	N 19.8 f	ť			
ELEV	RUN	DEPTH	RUN	DRILL	REC.	JN RQD	SAMP.	STR REC.	ATA RQD	L	
(ft)	ELEV (ft)	(ft)	(ft)	RATE (Min/ft)	(ft) %	(ft) %	NO.	(ft) %	(ft) %	G	DESCRIPTION AND REMARKS ELEV. (ft) DEPTH
777.7											Begin Coring @ 71.3 ft
775	-	_ 71.3 _	4.8	N=60/0.0 2:29/0.8 2:56 3:42 2:02 2:15	(2.6) 54%	(1.1) 23%		(2.6) 100%	(1.1) 42%		777.7 CRYSTALLINE ROCK Moderate to Moderately Severe Weathering, Moderately Hard to Medium
115	-			3:42 2:02				(0.0)	N/A	1	Hard, Tan and Gray METAMORPHOSED GRANITE with Close to Very Close Fracture Spacing
	772.9	76.1	5.0	<u>2:15</u> 2:12 2:26	(4.1)	(2.7)	RS-1	0%	(4.5)		
770	-	ŧ.		2:46	82%	54%		(7.0) 100%	(4.5) 64%		7 Fractures at 0 to 20 Degrees WEATHERED ROCK
	767.9	81.1		2:44 2:04							Severe Weathering, Soft, Tan and Gray METAMORPHOSED GRANITE
	-	ŧ	5.0	2:35 2:48	(3.0) 60%	(1.8) 36%					CRYSTALLINE ROCK Moderate to Moderately Severe Weathering, Moderately Hard to Medium
765		+		2:36 4:55				(0.1)	N/A		765.0 Hard, Tan and Gray METAMORPHOSED GRANITE with Close to Very Close Fracture Spacing, Quartz Injection
-	762.9	86.1	5.0	4:46 2:31	(3.8)	(1.2)		3%			761.7 GSI 40 to 60
760	-	Ł		3:24 2:07	76%	24%		(3.8) 100%	(1.2) 32%	R	7 Fractures at 0 to 10 Degrees 4 Fractures at 40 to 60 Degrees
	757.9	91.1		3:14 3:25						R	757.9 WEATHERED ROCK
	-	ŧ									Severe Weathering, Soft to Very Soft, Brown, METAMORPHOSED GRANITE
	-	F									CRYSTALLINE ROCK Moderate to Moderately Severe Weathering, Moderately Hard to Medium
	-	ŧ									Hard, Tan and Gray METAMORPHOSED GRANITE with Close to Very Close Fracture Spacing, Quartz Injection
	-	Ł									- GSI 20 to 40
	-	ŧ									- 3 Fractures at 0 to 10 Degrees 3 Fractures at 20 to 40 Degrees
	-	Ł									- 3 Fractures at 50 to 70 Degrees
	-	Ł									Boring Terminated at Elevation 757.9 ft in CRYSTALLINE ROCK (METAMORPHOSED GRANITE)
	-	Ł									Topsoil (0.4 foot)
	-	Ł									Ł
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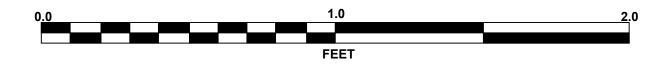
CORE PHOTOGRAPHS

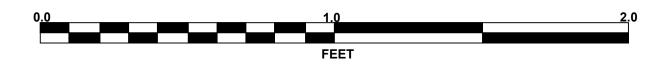
RL_B1A BOX 1: 71.3 to 86.1 FEET











SHEET 15 SITE #3 (STRUCTURE #4 & #5) - BRIDGE NO. 1243 AND 1244 ON I-85 BYPASS (-L-) OVER NORFOLK SOUTHERN RAILROAD (-Y2-)

										DRE L								
WBS	34821	.1.1			T	IP U-252	5C	COL	INTY	GUILFOF	RD			GEOLOGI	ST Kubinsk	ki, D.		
SITE	DESCR	IPTION	I Site	e #3 (S	tructu	re #4 & #5) - Bridge	No. 12	43 ar	nd 1244 on	I-85 Byp	bass (-L	-) 0\	ver Norfolk S	outhern Rai	lroad (-Y	2 Ģ ROUI	ND WTR (ft
BORI	NG NO.	RL_E	31B		S	TATION	336+33			OFFSET 4	46 ft RT			ALIGNME	NT -L-		0 HR.	10.2
COLL	AR ELE	EV . 84	7.4 ft		Т	OTAL DEP	TH 69.1	ft		NORTHING	874,7	25		EASTING	1,776,873		24 HR.	FIAD
DRILL	RIG/HAM	MMER E	FF./DA	TE TR	RI0055	CME-55 81	% 02/20/20	17			DRILL	IETHOD	Mu	Id Rotary		HAMM	ER TYPE	Automatic
DRILL	ER To	oothma	in, R.		S	TART DAT	E 06/01	/17		COMP. DA	TE 06/	02/17		SURFACE	WATER DE	PTH N	Ά	
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLC 0.5ft	OW CO	-	0	BLOWS 25	S PER F0 50		75 100	SAMP. NO.		L O G	ELEV. (ft)	SOIL AND RO	DCK DES	CRIPTION	DEPTH (f
850	_	-											-	-				
845	<u>847.4</u>		WOH 8	WOH	3		· · · · · · · · 7 · · ·	· · · ·	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		M		Ora	RE Inge and Yello	ND SURF/ ESIDUAL wish Brow Ity CLAY		0. ndy,
840	839.2	- - 8.2	2	3	6		· · · ·	· · · ·	· · ·	· · · · ·		w	X	<u>840.4</u>	Orange, Claye	ey, Fine S	andy, SILT	7.
835	- - - 834.2	- - - 13.2					· · · · · · · · · · · · · · · · · · ·	· · · ·	· · · ·	· · · · ·		vv		-				
830	- - - 829.2	-	4	5	7			· · · · · · · · · · · · · · · · · · ·	· · ·			w		_ <u>833.4</u> (Gray and Tan, Ma	Fine Sandanganese	ly SILT wit	<u> </u>
825		-	8	13	14		27	· · · · · · · · · · · · · · · · · · ·	· · · · · ·	· · · · · · · · · · · · · · · · · · ·		w						
820	824.2	23.2	4	5	13		18	· · · ·	 			w		-				
	819.2	28.2	28	60	40/0.3					100/0.8		גפווג < גע יי		818.7 815.4	Tan and Gray,	IERED RO METAMC RANITE		28) 32
815	814.2 - -	33.2	18	22	22			44 	· <u> </u>	·		W				SIDUAL	Coarse S	
810		- 38.2 -	22	61	39/0.4		· · · · · · · ·			100/0.9				808.7	Tan and Gray,			38 D
805	804.2	43.2	65	35/0.3	_	· · · · ·	· · · · · · · · · · · · · · · · · · ·	· · · ·	· · ·	 - 100/0.8	,	גמווג < גמווג < גז		-	G	RANITE		
800		48.2	100/0.4	1			· · · · ·	· · · ·	· · ·	100/0.4		ער גמווג ב גר גמווג ב		-				
795	- - 794.2	53.2	100/0.4	1			· · · · · · · · · · · · · · · · · · ·	· · · ·	· · ·	100/0.4		שועכצמוי		-				
790	- - - - - -	58.2	100/0.3	3			· · · ·	· · · ·	· · ·	100/0.3	,	<pre>ckairt<kairt< pre=""></kairt<></pre>		-				
785	- - - 784.2	63.2	60/0.1				· · · · · · · · · · · · · · · · · · ·	· · · ·	· · ·	<u>.</u>		7111221145 EGI14		784.2				63
780	779.2	68.2	. 32	68/0.4			· · · ·	· · · ·	· · ·	· · · · · · · · · · · · · · · · · · ·		1			rown, METAM	TERED RO	DCK D GRANI	
		- - - - -								100/0.8				Boi WE/		d at Eleva CK (META RANITE) oil (0.4 foc	MORPHO	ft in ISED

GEOTECHNICAL BORING REPORT

						BORE L															ORE	LOG			
WBS 348	21.1.1		TI	• U-2525C		NTY GUILFO			GEOL	.OGIST Kubinski,	D.		WBS	34821.	1.1		·	TIP U-252	25C		ry Guilf		GEOLOGIST Kubin	ski, D.	
SITE DESC		Site #3	(Structur	e #4 & #5) - Br	idge No. 124	43 and 1244 or	n I-85 By	pass (-L	-) over Norf	olk Southern Railro	bad (-Y2GROUNE	OWTR (ft)	SITE I	DESCRI	PTION	Site #3 (Struct	ture #4 & #	5) - Bridg	ge No. 1243	and 1244 o	on I-85 Bypass (-L-)	over Norfolk Southern R	ailroad (-Y2 G	ROUND WTR (ft
BORING N	10 . LL_E	32A	ST	ATION 338+	06	OFFSET	74 ft LT		ALIG	MENT -L-	0 HR.	14.9	BORI	NG NO.	LL_B2	٩	:	STATION	338+06		OFFSET	74 ft LT	ALIGNMENT -L-	C	HR. 14.9
COLLAR E	LEV. 83	37.8 ft	тс	TAL DEPTH	60.9 ft	NORTHIN	G 874,6	606	EAST	ING 1,776,700	24 HR.	6.5	COLL	AR ELE	V. 837.	8 ft	•	TOTAL DE	PTH 60).9 ft	NORTHI	NG 874,606	EASTING 1,776,70) 24	HR. 6.5
DRILL RIG/H	IAMMER E	FF./DATE	TRI0055 (CME-55 81% 02/	/20/2017	I	DRILL	METHOD	Mud Rotary		HAMMER TYPE	Automatic	DRILL	RIG/HAM	IMER EFF	./DATE 1	TRI005	5 CME-55 8	1% 02/20/	2017		DRILL METHOD	Mud Rotary	HAMMER	TYPE Automatic
DRILLER	Toothma	an, R.	ST	ART DATE 0)5/17/17	COMP. DA	ATE 05/	18/17	SURF	ACE WATER DEP	TH N/A		DRILL	ER To	othman,	R.	:	START DA	TE 05/	17/17	COMP. D	ATE 05/18/17	SURFACE WATER D	EPTH N/A	
ELEV DRIV		BLOW C			LOWS PER FO				L	SOIL AND ROO	CK DESCRIPTION		CORE	E SIZE	NQ		٦	TOTAL RU	N 7.8 ft						
(ft) (ft)	v (ft)	0.5ft 0.5	oft 0.5ft	0 25	50	75 100	NO.	MOI	G ELEV. (ft			DEPTH (ft)	ELEV (ft)	RUN ELEV (ft)	DEPTH F (ft)	RUN DR (ft) RA (Mir	RILL NTE ^I n/ft)	RUN REC. RQD (ft) (ft) % %	SAMP. NO.	STRATA REC. RQD (ft) (ft) % %	L O G		DESCRIPTION AND REMA	RKS	
840													784.7										Begin Coring @ 53.1		
837.	8 4 0.0								837.8		O SURFACE	0.0		784.7	53.1	2.8 N=60 1:35	0/0.0 5/0.8	(1.2) (0.0) 43% 0% (3.3) (0.4) 66% 8%		(5.5) (0.4) 71% 5%	784.7	, Moderately	CRYSTALLINE ROC Severe Weathering, Medium	Hard, Tan and (53 Gray,
005	ţ	1 2	3	I UD	· · · · · · ·	· · · · · · ·		м	835.3	RES Yellowish Brown, F	BIDUAL ine Sandy, Silty CLA	Y 2.5	780	/01.9	. 55.9	5.0 1:3	34 21	(3.3) (0.4)	-			METAMORPHOS	ED GRANITE with Close to V	ery Close Fractu	ire Spacing
835 834.	7 <u>+</u> 3.1	6 7	8	· · · · 15						Yellowish Brown a	nd Gray, Clayey, Fin dy SILT	ie <u></u>	100	+	-	2:4	46 20	00% 0%					GSI 10 to 30 6 Fractures at 0 to 10 Deg	rees	
	‡				· · · · ·	· · · · · · · ·			- -	San				776.9	60.9	1:3	30		_		776.9		inated at Elevation 776.9 ft in		
830 829	7 - 8.1			· · · · [· ·		· · · · · · ·			- 829.2			8.6		Ŧ	-							Doning Ferri	(METAMORPHOSED GRA		
	ŧ	6 8	12	9 ²⁰ .	· · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		W		Yellowish Brown a	nd Gray, Silty, Fine t	.0		Ŧ									Topsoil (0.7 foot)		
825 824	‡			$\begin{vmatrix} \cdot \cdot \cdot \\ \cdot \cdot \\ \cdot \cdot \end{vmatrix} \cdot \begin{vmatrix} \cdot \\ \cdot \end{vmatrix}$	· · · · · · · · · ·	· · · · · · ·				Court				Ŧ							F				
824.	7 <u>+ 13.1</u> +	3 5	7	· • • 12 · ·				w	-					Ŧ											
	Ŧ					· · · · · · ·								ł											
820 819.	7 - 18.1	9 14	4 16											+	-										
	Ŧ			$\left \begin{array}{c} \cdot \cdot \cdot \cdot \cdot \\ \cdot \cdot \cdot \cdot \cdot \end{array}\right \stackrel{\bullet}{\not}$	30			W						ļ											
815 814	$\frac{1}{7 - 23.1}$													+	·										
014.	<u>1</u>	11 10	0 15	· · · · • • 25				w						ŧ											
	Ī					· · · · · ·								ŧ											
810 809.	7 + 28.1	30 60	0 40/0.2						809.2			28.6		+											
	ł				· · · · ·		Ť.			Yellowish Brown, T	RED ROCK an, Gray, and Brown	n,		‡	.										
805 804.	7 + 33.1									METAMORPH	IOSED GRANITE			4	-										
	+	78 22/0	0.1	. .	· · · · · · · · · ·		•							ļ											
800	‡			. .	· · · · ·	· · · · · · ·	i I							Ŧ											
800 799.	7 38.1	40 60/0	0.3			100/0.8								+											
	‡				· · · · · · · · · ·									Ŧ											
795 794.	7 43.1	05 05 0					-							-	-										
	ŧ	65 35/0	J.Z		· · · · ·		†							Ŧ							ΙE				
790 780	7 - 48.1				· · · · ·									Ŧ							ΙĿ				
/89.	<u>1</u>	100/0.3		1			•		22 23 24 24 25 25 25 25 25 25 25 25 25 25 25 25 25					ŧ											
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785 784.	7 - 53.1	60/0.0			· · · · · · · · · · · · · · · · · · ·	60/0.0	 			CRYSTA	LINE ROCK	53.1		+	.										
	ŧ								St.	Tan and Gray, N	IETAMORPHOSED ANITE			ŧ	.										
780	+									Site Site	=			+	.										
	‡			1	· · · · ·				1					‡											
	+	+		<u> </u>			4		<u>776.9</u>		at Elevation 776.9 ft			Ŧ							ļĒ				
	‡								F	CRYSTALLINE ROC GR/	K (METAMORPHOS ANITE)	SED		+	.						F				
	‡								ļ.	Topsoil	(0.7 foot)			Ŧ							F				
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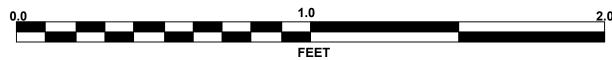
GEOTECHNICAL BORING REPORT

SHEET 18 SITE #3 (STRUCTURE #4 & #5) - BRIDGE NO. 1243 AND 1244 ON I-85 BYPASS (-L-) OVER NORFOLK SOUTHERN RAILROAD (-Y2-)

CORE PHOTOGRAPHS

LL_B2A BOX 1: 53.1 to 60.9 FEET





									-						6-			1						1.				
	34821					IP U-					GUILFO			· • ·		GIST Kubinski, D.				3482					P U-252		COUN	
				e #3 (S				-	No. 12			-	pass	(-L-) (k Southern Railroad (#3 (St			5) - Bridge	e No. 1243	
	ING NO.					TATIO					OFFSET					MENT -L-	0 HR	-		ING NO				_		337+95		0
	LAR ELI							H 71.1			NORTHIN	1				IG 1,776,711	24 HR			LAR EL						PTH 71. ⁴		N
	RIG/HA			TE TH											/lud Rotary			E Automatic					TE TR			1% 02/20/20		
DRIL	LER T					TART	DATE	05/18			COMP. DA			, /		CE WATER DEPTH	N/A		DRIL	LER T					ART DA	TE 05/18		С
ELEV (ft)	ELEV	DEPTH (ft)	· — —				2	BLOWS			F 100	SAMP.	17			SOIL AND ROCK DE	SCRIPTIO	N	ELEV (ft)	DRIVE ELEV	DEPTH (ft)	BLC	W COL				S PER FO	
(11)	(ft)	(14)	0.5ft	0.5ft	0.5ft	0	2	25	50 I	1	5 100	NO.	Имо	I G	ELEV. (ft)			DEPTH (ft)	(14)	(ft)	(11)	0.5ft	0.5ft	0.5ft	0	25	50	75
850		+													_				770							Ma	atch Line	
	-	Ŧ													F						Ŧ							
845	-	Ŧ													F						Ŧ							
0.0	-	ŧ													F					-	ŧ							
	-	‡													840.8	GROUND SUF		0.0			ŧ							
840	840.8 -	<u>+ 0.0</u> +	2	3	2								м		Ē	RESIDUA	L			-	ŧ							
	837.3	+ + 35				1 1			.		· · · · ·				<u> </u>	ellowish Brown and Gray		· · · · · · · · · · · · · · · · · · ·			ŧ							
835	-	+	4	4	4	 ∶∳	 8		· · · · · ·	•••	· · · ·					Gray and White, Clayey Sandy Sll	, Fine to Co	barse			ŧ							
000		ŧ													<u>834.3</u>	ellowish Brown and Gray		6.5		-	ŧ							
	832.3	8.5	1	2	2		· · ·		. .	•••	· · · ·		w			CLAY	,	., e,			ŧ							
830		‡				■			· · ·	•••					L L					· -	‡							
	927 3 ⁻	+ + 13.5					NI I		· · ·		· · · ·				<u>828.8</u> E	Brown and Gray, Coarse t	Fine Sand	12.0 by SILT			ŧ							
005	- 027.5	+ 13.5	6	7	10	1 ::			· · · · · ·	•••	· · · · ·		w		-						+							
825		ŧ													823.8			17.0		-	ŧ							
	822.3	18.5	13	15	27	4 ::	· · ·		· · · · · ·		· · · ·					Yellowish Brown and Gr Coarse SA	ay, Silty, Fi ND	ne to		· ·	ŧ							
820		ŧ							42	•••			W		-						ŧ.							
		±							:	•••											ł							
	817.3	<u>† 23.5</u>	21	30	32	1 : :	· · ·			 062.			w								ł							
815		Ŧ							· / · ·						-					-	ŧ							
	812.3	28.5	17	17	10	11		· · /		•••											ł							
810	-	ł	17	17	13			●30 .	.	• • •			W								Ł							
	-	ŧ							.	•••											ł							
	807.3	<u>† 33.5</u>	27	41	59/0.3					_:	100/0.8				806.8	WEATHERED	ROCK	34.0			Ŧ							
805		Ŧ													_	Yellowish Brown METAMORPHOSE	and Gray,	_		-	Ŧ							
	802.3	38.5				11				•••						METAMORFHOSE	J GRANITL	-			Ŧ							
800	-	Ŧ	75	25/0.1		11				•••	100/0.6	•									Ŧ							
5	-	Ŧ													-					-	Ŧ							
795	797.3	<u>† 43.5</u> †	27	73/0.3	-		· · ·														Ŧ							
		Ŧ							· · ·	· · ·	. 100/0.8				7 <u>94.3</u>			46.5		-	Ŧ							
790	792.3	+ + _{48.5}				11				· [·]						RESIDUA Yellowish Brown and Gr	L av, Silty, Fi	ne to			ŧ							
790	-	Ŧ	42	40	28	11	· · ·				· · · · ·		w		F	Yellowish Brown and Gr Coarse SA	ND				ŧ							
100		ŧ													-					-	ŧ							
	787.3	<u>+ 53.5</u>	11	23	17	 	· · ·			•••	· · · · · · · ·		w		786.0			54.8			ŧ							
785		‡						•4	• • •	•••						Brown, Fine Sar	idy SILT			-	ŧ							
	7823	+ + 58.5					· · ·		· · · ·	•••	· · · ·				-						ŧ							
780		+	26	74/0.3	1	11	· · ·	· · Ľ	:	- <u></u> · · ·	100/0.8	∳		T	781.8	WEATHERED		59.0			‡							
	-	‡							.		 				<u> -</u> -	Brown and Black, MET GRANIT		SED		-	‡							
	777.3	63.5	60/0.1	-		::	· · ·		. .	•••	· · 60/0.1				777.3	CRYSTALLINE	ROCK	63.5			‡							
775	-	‡								•••					È.	Tan and Gray, METAL GRANIT	MORPHOSI	ED		. –	‡							
775	-	ŧ				::			: : :		· · · ·				È	GRANII	=				ŧ							
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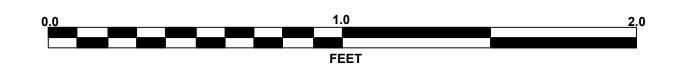
GUILFOR	D			GEOLOGIST Kubinski,	D.		
nd 1244 on I	-85 Byp	bass (-	L-) ov	er Norfolk Southern Railro	ad (-Y	2 GROUN	D WTR (ft)
OFFSET 7	ft LT			ALIGNMENT -L-		0 HR.	7.0
NORTHING	874,6	73		EASTING 1,776,711		24 HR.	4.5
	DRILL		D Mu	d Rotary		R TYPE	
COMP. DAT			-	SURFACE WATER DEPT			
	SAMP.		L	1			
75 100	NO.	моі	O G	SOIL AND ROC	K DESC	RIPTION	
· · · · · · · · · · · · · · · · · · ·							
	+		╼╁	769.7 Boring Terminated a	at Elevati	ion 769.7 f	<u> </u>
			E	769.7 Boring Terminated a CRYSTALLINE ROCH GRA	(META	MORPHC	SED
			Ŀ		(0.4 foot		
			-	IOPSOI	(0.4 1001	9	
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COLLAR ELEV. 840.8 ft TOTAL DEPTH 71.1 ft NORTHING 874,673 EASTING 1,776,711 24 HR. 4.5 DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 81% 02/20/2017 DRILL METHOD Mud Rotary HAMMER TYPE Automatic DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 81% 02/20/2017 DRILL METHOD Mud Rotary HAMMER TYPE Automatic DRILLER Toothman, R. START DATE 05/18/17 COMP. DATE 05/19/17 SURFACE WATER DEPTH N/A CORE SIZE NQ TOTAL RUN 7.5 ft DESCRIPTION AND REMARKS DESCRIPTION AND REMARKS DEPTH (ft) Min/ft) Min/ft) Min/ft) Min/ft) Strata Continued from previous page Continued from previous page DEPTH (ft) DEPTH (ft) Moderately Aird to Medium 777.2 777.2 66.6 6.30 2:16 (2.4) 83% 30% Moderately Severe Weathering, Moderately Hard to Medium Hard, Tan and Gray METAMORPHOSED GRANITE with Close to Very Close Fracture Spacing, Quartz Injection										<u> </u>	RELOG			
BORING NO. LL_B2B STATION 337+95 OFFSET 7 ft LT ALIGNMENT -L- 0 HR. 7.0 COLLAR ELEV. 840.8 ft TOTAL DEPTH 71.1 ft NORTHING 874,673 EASTING 1,776,711 24 HR. 4.5 DRILL RIG/HAMMER EFF/DATE TRI0055 CME-55 81% 02/20/2017 DRILL METHOD Mud Rotary HAMMER TYPE Automatic DRILL RIG/HAMMER EFF/DATE TRI0055 CME-55 81% 02/20/2017 DRILL METHOD Mud Rotary HAMMER TYPE Automatic DRILL RIG/HAMMER EFF/DATE TRIO055 CME-55 81% 02/20/2017 DRILL METHOD Mud Rotary HAMMER TYPE Automatic DRILL RIG/HAMMER EFF/DATE TROTAL RUN 7.5 ft COMP. DATE 05/19/17 SURFACE WATER DEPTH N/A CORE SIZE NQ TOTAL RUN 7.5 ft Continued from previous page CRYSTALLINE ROCK DEPTH (ft) Moderate NOK CRYSTALLINE ROCK CRYSTALLINE ROCK CRYSTALLINE ROCK CRYSTALLINE ROCK SI20 to 40 SI20 to 40 SI20 to 4	WBS	34821	.1.1			TIP	U-252	25C	С	OUNT	GUILFORD	GEOLOGIST K	ubinski, D.	
COLLAR ELEV. 640.8 ft TOTAL DEPTH 71.1 ft NORTHING 874,673 EASTING 1,776,711 24 HR. 4.5 DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 81% 02/20/2017 DRILL METHOD Mud Rotary HAMMER TYPE Automatic DRILLER Toothman, R. START DATE 05/18/17 COMP. DATE 05/19/17 SURFACE WATER DEPTH N/A CORE SIZE NQ TOTAL RUN 7.5 ft ELEV PEPTH RUN PRILL RUN REC. ROD DESCRIPTION AND REMARKS DESCRIPTION AND REMARKS DEPTH (ft) DEPTH (ft) RUN REC. <	SITE	DESCR		Site	#3 (Stru	cture #	4 & #	5) - Bridg	e No.	1243	1244 on I-85 Bypass (-L-	over Norfolk Southe	rn Railroad (-Y	
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 81% 02/20/2017 DRILL METHOD Mud Rotary HAMMER TYPE Automatic DRILLER Toothman, R. START DATE 05/18/17 COMP. DATE 05/19/17 SURFACE WATER DEPTH N/A CORE SIZE NQ TOTAL RUN 7.5 ft TOTAL ELEV RUN DEPTH (ft) RILL REC. ROD Continued from previous page 777.2 - - - - Continued from previous page CrystalLine ROCK 775 774.2 66.6 0.58 (1.0) 83% 30% 22% - - - Continued from previous page -	BOR	ING NO.	LL_B	32B		STA	ΓΙΟΝ	337+95			FFSET 7 ft LT	ALIGNMENT -L	-	0HR. 7.0
DRILLER Toothman, R. START DATE 05/18/17 COMP. DATE 05/19/17 SURFACE WATER DEPTH N/A CORE SIZE NQ TOTAL RUN 7.5 ft STRATA COMP. DATE 05/19/17 SURFACE WATER DEPTH N/A ELEV (ft) RUN (ft) RUN (ft) RUN (ft) STRATA (ft) STRATA (ft) STRATA (ft) COMP. DATE 05/19/17 SURFACE WATER DEPTH N/A 777.2 DESCRIPTION AND REMARKS DRILL (ft) REC. (ft) ROD. STRATA REC. (ft) Continued from previous page 777.2 63.6 3.0 2:16 (2.4) (1.1) (6.2) (2.1) Continued from previous page 775 774.2 66.6 6:58 3.00 2:16 (3.8) (1.0) 83% 30% 30% 4.5 32:1 83% 30% 70% Feaster and Gray METAMORPHOSED GRANITE with Close to Very Close Fracture Spacing, Quartz Injection 770 769.7 71.1 5:22/0.5 84% 22% 84% 22% 876.10 88% 876.10 71.1 66.6 6.52 6.52/0.5 6.52/0.5 6.52	COLI		EV. 84	10.8 ft		тот	AL DEI	PTH 71	.1 ft		ORTHING 874,673	EASTING 1,776	6,711	24 HR. 4.5
CORE SIZE NQ TOTAL RUN 7.5 ft ELEV (ft) RUN (ft) DRILL (ft) RUN (ft) DRILL (ft) RUN (ft) SAMP. (ft) STRATA (ft) L (ft) DESCRIPTION AND REMARKS 777.2	DRILL	. RIG/HAI	MMER E	FF./DA	TE TRIO)55 CM	E-55 81	1% 02/20/2	2017		DRILL METHOD	Mud Rotary	НАММ	ER TYPE Automatic
CORE SIZE NQ TOTAL RUN 7.5 ft ELEV (ft) RUN (ft) DRILL (ft) RUN (ft) DRILL (ft) RUN (ft) SAMP. (ft) STRATA (ft) L (ft) DESCRIPTION AND REMARKS 777.2	DRIL	LER T	oothma	an, R.		STA	RT DA	TE 05/1	8/17		OMP. DATE 05/19/17	SURFACE WATE	ER DEPTH N/	Ά
ELEV (ft) RUN (ft) DEPTH (ft) RUN (ft) DBPTH (ft) RUN (ft) DBILL RATE (Min/ft) RUN % SAMP. NO. STRATA NO. L G (ft) DESCRIPTION AND REMARKS 777.2 63.6 3.0 2:16 (2.4) (1.1) SAMP. % SAMP. % Continued from previous page Centinued from previous page 777.5 774.2 66.6 6:58 3.0 2:16 (2.4) (1.1) 83% 30% Weatheret to Moderately Severe Weathering, Moderately Hard to Medium Hard, Tan and Gray METAMORPHOSED GRANITE with Close to Very Close Fracture Spacing, Quartz Injection 770 769.7 71.1 5:22/0.5 5:22/0.5 5:22/0.5 Fractures at 10 to 20 Degrees 71. 66.6 5:22/0.5 5:22/0.5 5:22/0.5 Fractures at 10 to 20 Degrees 71.	COR	E SIZE	NQ											
(ft)		RUN	I	RUN			JN	SAMP	STR					
777.2 63.6 3.0 2:16 (2.4) (1.1) (6.2) (2.1) Continued from previous page 775 774.2 66.6 6:58 80% 37% 83% 30% Moderate by Severe Weathering, Moderately Hard to Medium Hard, Tan and Gray METAMORPHOSED GRANITE with Close to Very Close Fracture Spacing, Quartz Injection 770 769.7 71.1 2:32 5:22/0.5 65.8 6.5 6.5 769.7 3 Fractures at 10 to 20 Degrees 71. 769.7 71.1 5:22/0.5 5:22/0.5 769.7 71.1 769.7 3 Fractures at 60 to 70 Degrees 71. 8 Fracture at 60 to 70 Degrees 71. 5:22/0.5 769.7 8 Fractures at 60 to 70 Degrees 71. 8 Fractures at 60 to 70 Degrees 71. 60.6 6.6 6.6 6.6 6.6 6.6 6.6 71. 8 Fractures at 60 to 70 Degrees 71. 6.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6 71. 8 6 6 6.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6 <td< td=""><td></td><td></td><td></td><td></td><td></td><td>(ft)</td><td>(ft) %</td><td></td><td>(ft) %</td><td>(ft)</td><td></td><td>DESCRIPTION AND R</td><td>REMARKS</td><td>DEPTH (ft</td></td<>						(ft)	(ft) %		(ft) %	(ft)		DESCRIPTION AND R	REMARKS	DEPTH (ft
777.2 63.6 3.0 2:16 (2.4) (1.1) 775 774.2 66.6 6:58 80% 37% 770 769.7 71.1 2:32 83% 30% CRYSTALLINE ROCK 770 769.7 71.1 2:32 83% 30% Case of the second sec	777.2											Continued from prev	ious page	
774.2 66.6 6:58 Hard, Tan and Gray METAMORPHOSED GRANITE with Close to Very Close Fracture Spacing, Quartz Injection 770 4.5 3:21 (3.8) (1.0) 770 769.7 71.1 2:32 GSI 20 to 40 769.7 71.1 5:22/0.5 66.6 feet and 70.4 and 71.1 feet (continued) 8 Fractures at 60 to 70 Degrees 71. 6 6.6 feet and 70.4 and 71.1 feet (continued) 80 ring Terminated at Elevation 769.7 ft in CRYSTALLINE ROCK (METAMORPHOSED GRANITE)		777.2 -	63.6	3.0	2:16 2:34	(2.4)	(1.1)		(6.2)	(2.1)	Moderate to Mo	CRYSTALLINE	ROCK	ard to Medium
770 2:46 84% 22% 770 769.7 71.1 2:32 5:22/0.5 5:22/0.5 5:22/0.5 GSI 20 to 40 2:32 3 Fractures at 10 to 20 Degrees 5:22/0.5 5:22/0.5 Weathered Rock Seams Present From 66.0 to 66.6 feet and 70.4 and 71.1 feet (continued) Boring Terminated at Elevation 769.7 tin CRYSTALLINE ROCK (METAMORPHOSED GRANITE)		774.2	66.6	45	6:58						Hard, Tan and	Gray METAMORPHOSE	O GRANITE with (Close to Very
770 769.7 71.1 2:32 769.7 3 Fractures at 10 to 20 Degrees 71.1 5:22/0.5 5:22/0.5 8 Fractures at 60 to 70 Degrees 8 Fractures at 60 to 70 Degrees 71.1 Heat Boring Terminated at Elevation 769.7 ft in CRYSTALLINE ROCK (METAMORPHOSED GRANITE) 8 Fractures at 20 to 20 Degrees 71.1		-	ŧ		2:46								•	
Weathered Rock Seams Present From 66.0 to 66.6 feet and 70.4 and 71.1 Feet (continued) Boring Terminated at Elevation 769.7 ft in CRYSTALLINE ROCK (METAMORPHOSED GRANITE)	770	769.7	71.1		2:32						769.7	3 Fractures at 10 to 2	20 Degrees	71.1
- feet (continued) - Boring Terminated at Elevation 769.7 ft in CRYSTALLINE ROCK - (METAMORPHOSED GRANITE)		-	ŧ		0.22/0.0	1							•	
+ (METAMORPHOSED GRANITE)		-	ŧ								- 1	feet (continue	ed)	
			ŧ								Boring Term	nated at Elevation 769.7 (METAMORPHOSED	ft in CRYSTALLII GRANITE)	NE ROCK
		-	ŧ								Ę	-		
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CORE PHOTOGRAPHS







SHEET 21 SITE #3 (STRUCTURE #4 & #5) - BRIDGE NO. 1243 AND 1244 ON I-85 BYPASS (-L-) OVER NORFOLK SOUTHERN RAILROAD (-Y2-)



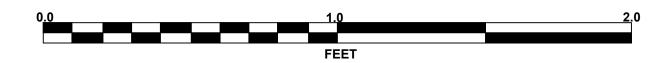
WBS 34821.1.1		INTY GUILFORD	GEOLOGIST Kubinski, D.	[WRS	34821.1	1		тір	U-2525	50	CO		GUILFORD GEO	LOGIST Kubinski, D.	
			L-) over Norfolk Southern Railroad (-Y2GROUNE					Sito #3 (St						d 1244 on I-85 Bypass (-L-) over No		
BORING NO. RL_B2A	STATION 337+85	OFFSET 27 ft RT	ALIGNMENT -L- 0 HR.			NG NO.		,		TION 3		110.12		, , ,	SIMENT -L-	0 HR. 14
COLLAR ELEV. 840.9 ft		NORTHING 874,707		1 -			_) #			TING 1,776,721	
DRILL RIG/HAMMER EFF./DATE TRI	TOTAL DEPTH 66.0 ft	DRILL METHO						/DATE TRI			TH 66.0			NORTHING 874,707 EAS		24 HR. 2 MMER TYPE Automatic
DRILLER Toothman, R.	START DATE 05/18/17	COMP. DATE 05/22/17									E 05/18				-	
			SURFACE WATER DEPTH N/A					К.	_					SUP: DATE 03/22/17	FACE WATER DEPTH	N/A
ELEV (ft) DRIVE ELEV (ft) DEPTH (ft) 0.5ft 0.5ft		75 100 NO. MOI	O SOIL AND ROCK DESCRIPTION	DEPTH (ft)			EPTH R	UN DRILL (ft) (Min/ft	REC.		SAMP. NO.	STRA REC. F	TA RQD (ft)	L O DESCR	PTION AND REMARKS	
845					787.7	787.7			//0) (1.9)					ed from previous page	h. I land és Mastinus
840 2 2	3	·	840.9 GROUND SURFACE RESIDUAL	0.0	785	<u>784.9</u>		1:52 5.0 2:16 2:19 3:09	(3.0)) (1.2) 24%		/1/0 -		Hard, Tan and Gray METAN to Ver	IORPHOSED GRANITE wit y Cloes Fracture Spacing	h Moderately Close
837.8 3.1 6 11 835	14 25 · · · · · · · · · · · · · · · · · ·	· · · · · · · w	Yellowish Brown and Gray, Fine to Coar Sandy, Silty CLAY		780	779.9		2:49 2:56 5.0 2:27 2:15	(3.7)) (3.1)				Continue C Moderate to Moderately Se Hard, Tan and Gray METAM to Ver 7 Fra 6 Fractures 774.9	GSI 30 to 50 tures at 0 to 20 Degrees at 60 to 80 Degrees <i>(continu</i>	ued)
832.8 = 8.1 2 2	2 4	· · · · · · · w			775	774.9	66.0	2:16 1:27 1:03			-				levation 774.9 ft in CRYST/	ALLINE ROCK
830 827.8 13.1 3 5	4 4	···	829.9 Brown to Gray, Clayey, Fine Sandy SILT Manganese	<u>11.0</u> with											MORPHOSED GRANITE) Topsoil (0.7 foot)	
825		· · · · · · · · · · · · · · · · · · ·	823.9 Yellowish Brown and Gray, Silty, Fine to	<u>17.0</u>		t t								- - - -		
820			Coarse SAND			Ī										
815 4 6	9	· · · · · · · · · · · · · · · · · · ·				+								 - -		
812.8 28.1 9 12 810	21	· · · · · · · · · · · · · · · · · · ·				+								- - -		
807.8 33.1 805 17 25	69 · · · · · · · · · · · · · · · ·					+								- -		
802.8 38.1 100/0.2			803.9	<u>37.0</u> SED												
797.8 43.1 75 25/0.2		· · · · · · · · · · · · · · · · · · ·				+ +										
792.8 48.1 100/0.5		· · · · · · · · · · · · · · · · · · ·	Gray, Tan, and Brown, METAMORPHOS GRANITE 787.8 CRYSTALLINE ROCK Tan and Gray, METAMORPHOSED											- - -		
787.8 - 53.1 60/0.1			787.8 CRYSTALLINE ROCK Tan and Gray, METAMORPHOSED GRANITE	53.1										- - -		
785		· · · · · · · · · · · · · · · · · · ·	GRANITE											- - - -		
		· · · · · · · · · · · · · · · · · · ·														
			774.9 Boring Terminated at Elevation 774.9 ft CRYSTALLINE ROCK (METAMORPHOS GRANITE) Topsoil (0.7 foot)	66.0 t in SED		+										
														- -		

SHEET 23 SITE #3 (STRUCTURE #4 & #5) - BRIDGE NO. 1243 AND 1244 ON I-85 BYPASS (-L-) OVER NORFOLK SOUTHERN RAILROAD (-Y2-)

CORE PHOTOGRAPHS

RL_B2A BOX 1: 53.2 to 66.0 FEET



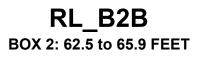


				WBS 34821.1.1		TY GUILFORD	CEOLOCICE Kukinaki D
WBS 34821.1.1	TIP U-2525C COUNTY G		GEOLOGIST Kubinski, D.				GEOLOGIST Kubinski, D.
			Norfolk Southern Railroad (-Y2GROUND WTR (ft)				ver Norfolk Southern Railroad (-Y2GROUND WTR (ft
BORING NO. RL_B2B			LIGNMENT -L- 0 HR. 2.1	BORING NO. RL_B2B	STATION 337+65	OFFSET 72 ft RT	ALIGNMENT -L- 0 HR. 2.7
COLLAR ELEV. 839.4 ft			ASTING 1,776,741 24 HR. 0.3	COLLAR ELEV. 839.4 ft	TOTAL DEPTH 65.9 ft	NORTHING 874,752	EASTING 1,776,741 24 HR. 0.3
DRILL RIG/HAMMER EFF./DATE TRIO	055 CME-55 81% 02/20/2017	DRILL METHOD Mud R	otary HAMMER TYPE Automatic	DRILL RIG/HAMMER EFF./DATE TRI00	55 CME-55 81% 02/20/2017	DRILL METHOD M	HAMMER TYPE Automatic
DRILLER Toothman, R.	START DATE 05/24/17 COM		SURFACE WATER DEPTH N/A	DRILLER Toothman, R.	START DATE 05/24/17	COMP. DATE 05/25/17	SURFACE WATER DEPTH N/A
		SAMP.	SOIL AND ROCK DESCRIPTION		TOTAL RUN 17.8 ft		
(ft) (ft) (ft) 0.5ft 0.5ft 0	0.5ft 0 25 50 75	100 NO. MOI G ELI	EV. (ft) DEPTH (ft)	ELEV RUN DEPTH RUN DRILL	RUN SAMP. STRATA		DESCRIPTION AND REMARKS
				(ft) (ft) (ft) (ft) (Min/ft)	(ft) (ft) NO. (ft) (ft)	G ELEV. (ft)	DEPTH
840 0.0			9.4 GROUND SURFACE 0.0	791.3 790 791.3 + 48.1 2.8 N=60/0.0		C	ontinued from previous page
	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		RESIDUAL Gray, White, and Yellowish Brown, Coarse to	790 791.3 + 48.1 2.8 788.5 + 50.9 788.5 + 50.9 2.48 3.22	(1.6) (0.8) 57% 29% (7.4) (2.8 80% 30%) 791.3 Moderate to Moder	CRYSTALLINE ROCK 4 ately Severe Weathering, Moderately Hard to Medium
836.3 3.1			Fine Sandy, Silty CLAY	5.0 3:22	(4.0) (0.7) 80% 14%	Hard, Tan and Gray	METAMORPHOSED GRANITE with Moderately Close to Very Close Fracture Spacing
				785 5.0 2:12 2:14 8:38 6:44	00% 14%	E	GSI 20 to 40
				783.5 + 55.9 4:28		RF .	11 Fractures at 50 to 70 Degrees 3 Fractures at 30 to 50 Degrees
831.3 8.1 830 2 2				780 5.0 1:43 2:16 3:04	(2.3) (1.3) 46% 26% (1.0) N/A	782.0	2 Fractures at 0 to 10 Degrees5
			7.9 11.5		46% 26% (1.0) N/A 27%	Moderately Severe V	Neathering, Moderately Hard, Light Gray QUARTZ with Very Close Fracture Spacing
826.3 13.1	$= \left \left \cdot i \cdot \cdot \cdot \right \cdot \cdot \cdot \cdot \right \cdot \cdot \cdot \cdot \left \cdot \cdot \cdot \cdot \right \cdot$		Yellowish Brown and Gray, Silty, Fine to Coarse Sand		(5.0) (2.2) (4.8) (2.2) 778.3	GSI 10 to 30
825 - 3 3	5			775 2:27 3:13	(5.0) (2.2) 100% 44% (4.8) (2.2 100% 46%		2 Fractures at 80 to 90 Degrees 2 Fractures at 0 to 5 Degrees
				7:10 773.5 + 65.9 3:07	RS-2	Slight to Moderate	Weathering, Hard to Moderately Hard, Tan and Gray SED GRANITE with Moderately Close to Very Close
821.3 18.1 4 6	$\begin{array}{c c c c c c c c c c c c c c c c c c c $						Fracture Spacing
							GSI 30 to 50
816.3 23.1							8 Fractures at 50 to 70 Degrees 6 Fractures at 10 to 30 Degrees
815 7 8	9	w				Boring Termina	ated at Elevation 773.5 ft in CRYSTALLINE ROCK (METAMORPHOSED GRANITE)
	:: <i>i</i> : :::: :::: :						
810 811.3 28.1	<u>-</u> <i>l</i>						Topsoil (0.8 foot)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		W					
806.3 7 33.1 9 9		· · · w					
	· · · · · · · · · · · · · · · · ·						
801.3 38.1		801					
800 60/0.1	+		CRYSTALLINE ROCK Tan and Gray, METAMORPHOSED				
			GRANITE				
796.3 43.1 60/0.1		· · · · · · · · · 60/0.1	5.9 Red, QUARTZ 43.5				
			Tan and Gray, METAMORPHOSED GRANITE				
791.3 48.1		· · · · · · · · · · · · · · · · · · ·	1.3 48.1				
790 40.1 60/0.0		· 60/0.0	CRYSTALLINE ROCK Tan and Gray, METAMORPHOSED				
			GRANITE				
						-	
			2.057.4			I F	
780			Light Gray, QUARTZ				
			8.3 61.1 K			-	
			Tan and Gray, METAMORPHOSED GRANITE				
		· · · · RS-2 773	ے۔ اور				
		··· RS-2 773					
			CRYSTALLINE ROCK (METAMORPHOSED ق GRANITE)				
			Topsoil (0.8 foot)				
				<u>5</u> 			
						 	

IICAL BORING REPORT CORE LOG

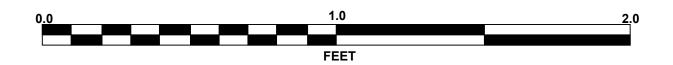
CORE PHOTOGRAPHS

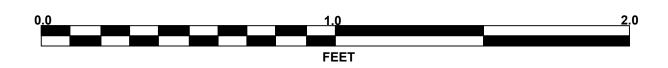
RL_B2B BOX 1: 48.1 to 62.5 FEET





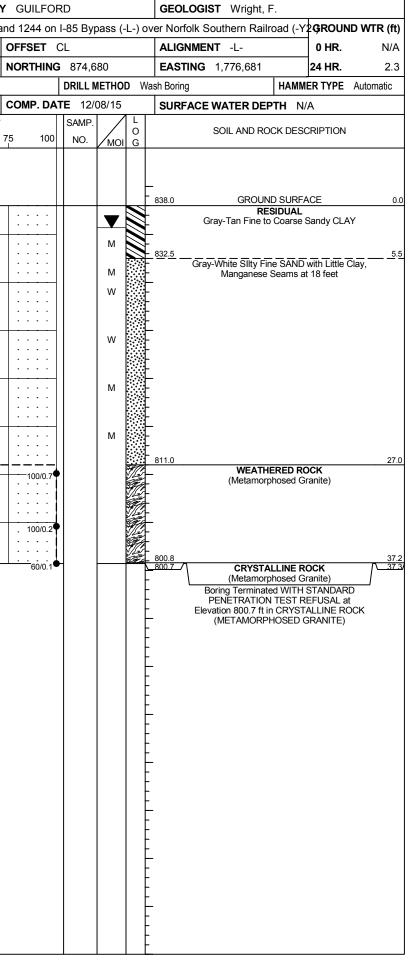






SHEET 25 SITE #3 (STRUCTURE #4 & #5) - BRIDGE NO. 1243 AND 1244 ON I-85 BYPASS (-L-) OVER NORFOLK SOUTHERN RAILROAD (-Y2-)

									<u>ORE L</u>	.00			_												-
WBS	3 482	1.1.1			Т	IP U-2525	5C	COUNT	Y GUILFC	RD			GEO	LOGIST K	ubinski, D.	-	WB	3 3482	1.1.1			TI	P U-2525	5C	COUNTY
SITE	DESCR		Site	e #3 (S	Structu	re #4 & #5) - Bridge N	lo. 1243 a	and 1244 or	n I-85 By	pass (-L-) o	ver Nor	folk Souther	rn Railroad (-Y		SITE	DESCR	RIPTIO	N Site	e #3 (S	tructur	re #4 & #5)) - Bridge N	No. 1243 an
BOR	ING NO	. LL_E	B2A		S	TATION 3	338+38		OFFSET	75 ft LT			ALIG	NMENT -L	-	0 HR. 3.3	BOF	ring no	. EB6	-C		ST	TATION 3	338+25	C
COL	LAR EL	EV. 83	39.8 ft		Т	OTAL DEP	PTH 43.7 f	t	NORTHIN	G 874,6	605		EAS	TING 1,776	6,668	24 HR. 6.1	COL	LAR EL	EV. 8	38.0 ft		т	OTAL DEP	TH 37.3	ft 🚺
DRIL	l rig/ha	MMER E	FF./DA	TE T	RI0055	CME-55 819	% 02/20/201	7		DRILL	METHO	D Mu	ud Rotary	/	HAMN	IER TYPE Automatic	DRIL	L RIG/HA	MMER I	EFF./DA	TE SM	NE275	CME-55 899	% 01/15/201	6
DRIL	LER T	oothma	an, R.		S	TART DAT	E 05/16/1	7	COMP. DA	TE 05/	/16/17		SUR	FACE WATE	ER DEPTH N	I/A	DRI	LER V	Villiam	s, T.		ST	TART DAT	E 12/08/ ⁻	15 C
ELEV	DRIVE ELEV	DEPTH	BLC	ow co	UNT		BLOWS	PER FOOT		SAMP.				SOIL A	AND ROCK DES		ELEV	, DRIVE ELEV	IDEFIL	BLC	SW COL	JNT		BLOWS	PER FOOT
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50	75 100	NO.	Имо		ELEV. (1			DEPTH (f) (ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50 7
840	- <u></u>												_ 839.8		GROUND SURF		840		Ļ						
	839.8	1 0.0	2	4	4	: ● 8 : :					М	N	- 9373	Yellowish E	RESIDUAL Brown and Gray,				<u>†</u>						
	836.3	3.5	3	4	5								<u>837.3</u>	Sandy,	Brown and Gray, Silty CLAY with 1 e, and Brown to 1	Coarse to Fine		836.9	<u> </u>	4	9	12		21	
835	-	ł		4	5	9 <u>-</u>	<u> </u>	<u></u>	· · · · ·	-			_	and Gra	ay, Clayey, Fine	Sandy SILT	835	834.8 -	3.2	7	8	18			
		ł										1888	-					831.8	6.2						
830	831.3	8.5	5	8	8		6				w		-				830	829.8 -	Ŧ	4	5	6	• • 11 •		
		Ŧ										-	-					020.0-	+ 0.2	3	2	3	4 5		
	826.3	13.5]]]]]]							-						Ŧ				1		
825		Ŧ	3	3	4					-	W		 			16.	825	824.8-	13.2	6	10	11			
		ŧ											- 023.0	Yellowish	Brown and Gray Coarse SANI	/, Silty, Fine to			ŧ			''			
820	821.3	18.5	3	12	22						w		-		COarse SAM	D	820		‡						
	-	ŧ										-	-					819.8 -	+ 18.2 +	11	8	7	•••		
	816.3	+ 					$ \cdot \cdot$						-						ŧ				:::\`		
815			7	18	21	1	39			-	w		-				815	814.8-	23.2		10		<i></i>		
		ŧ											-						‡	11	10	13			
910	811.3	28.5	16	40	60						w		-				810	810.8	27.2				· · · ·	<u> </u>	- · · · ·
810	-	ŧ							100/1.0	?			-					-	ŧ	55	45/0.2				
	906 2 ·	-					.					<i>77</i>	<u>807.8</u>		WEATHERED R	<u>оск</u> <u>32</u> .			‡						
805	000.3	- 33.5	100/0.3	3					100/0.3	•			-	Yel MET/	llowish Brown an AMORPHOSED	ld Gray, GRANITE	805	804.8 -	33.2						
		ŧ											-						ŧ	100/0.2	2		· · · · ·		
	801.3	38.5	100/0.3	7									-					800.8	37.2						
800	-	÷	100/0.	1			<u> </u>		100/0.3	Ī			-					-	ŧ	60/0.1				·	
		<u> </u>											-						ŧ						
	/96.3	<u> 43.5 </u>	100/0.2						100/0.2	•			796.1	Boring Ter	minated at Eleva	43. ation 796.1 ft in	<u>'</u>	_	ŧ						
		ł											-	WEATHER	ED ROCK (MET) GRANITE)	AMORPHOSED			ŧ						
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WBS	34821	.1.1			TI	IP U-2525C	со	UNTY	GUILFOF	RD			GEOLOGI	ST Kubinsk	i, D.		
SITE	DESCR	IPTION	Site	: #3 (S	tructur	re #4 & #5) - B	ridge No. 12	243 a	nd 1244 on	I-85 Byp	bass (-l	L-) ov	ver Norfolk S	outhern Rail	road (-Y	2 GROUN	ID WTR (ft
BORI	NG NO.	RL_E	EB2B		S	TATION 337+	+97		OFFSET 7	77 ft RT			ALIGNME	NT -L-		0 HR.	2.2
COLL	AR ELE	EV. 83	37.9 ft		т	OTAL DEPTH	48.6 ft		NORTHING	i 874,7	57		EASTING	1,776,709		24 HR.	0.5
DRILL	RIG/HAI	MMER E	FF./DA	TE TF	RI0055	CME-55 81% 02	2/20/2017			DRILL	IETHOD) Mu	d Rotary		HAMM	ER TYPE	Automatic
DRILL	LER T	oothma	an, R.		S		05/15/17		COMP. DA	TE 05/	15/17		SURFACE	WATER DE	PTH N	/A	
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLC 0.5ft	OW COU 0.5ft		0 25	BLOWS PER F 50		75 100	SAMP. NO.	MOI	L O G	ELEV. (ft)	SOIL AND RO	OCK DES	CRIPTION	DEPTH (1
840	007.0											-	837.9	GROUN	ID SURF/	ACE	0
835	837.9 - - - 834.4 -	0.0 - - 3.5	1	1	1			· · ·				Į		RE owish Brown a	SIDUAL	Coarse to	
830	-		9	12	11	23 		· · · ·	· · · · · · · · · · · · · · · · · · ·		w	X	<u>831.4</u>	Bray, Brown, ar			<u> </u>
	829.4 -	- <u>8.5</u> -	3	2	3	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		w	_ _ _	-	Coa	rse SANE)	
825	824.4 -	13.5 -	4	5	5			 	· · · · · · · · · · · · · · · · · · ·		w	-					
820	819.4	- - 18.5 -	5	5	7		· · · · · ·	· · · ·	· · · · ·		w	- - -	-				
815	- - 814.4 -	- - - 23.5	7	7	5		· · · · · ·	· · · ·	· · · · · ·		w	- - -					
810	809.4	28.5	10	10	12			· · · · · · · ·					-				
805	- - - 804.4	- 33.5						· · · ·	· · · · · · · · · · · · · · · · · · ·		W	-	-				
300			23	30	56			· · · ·	***		W		801.4				3
795			100/0.3	3				· · · ·	· 100/0.3				В	rown and Gray Gl	, METAM RANITE	ORPHUSE	Ð
/95	794.4 - - -	- 43.5 - -	100/0.3	3				 	100/0.3								
790	789.4	48.5	60/0.4	ļ					60/0 1				789.4	00/07			4
			60/0.1						60/0.1				E	METAMORP oring Terminat PENETRATION /ation 789.3 ft i (METAMORP	ed WITH N TEST R n CRYST	GRANITE STANDAR EFUSAL a ALLINE RO GRANITE)	t

LABORATORY SUMMARY SHEET FOR ROCK CORE SAMPLES

PROJECT NO.: 34821.1.1 (U-2525C) COUNTY: GUILFORD

SITE #3 (STRUCTURE #4 & #5) - BRIDGE NO. 1243 AND 1244 ON I-85 BYPASS (-L-) OVER NORFOLK SOUTHERN RAILROAD (-Y2-)

Sample #	Boring #	Depth (ft)	Rock Type	Geologic Map Unit	Run RQD	Length (in)	Diameter (in)	Unit Weight (PCF)	Unconfined Compressive Strength (PSI)	Modulus	Splitting Tensile Strength (PSI)	Remarks
RS-1	RL_B1A	76.5-76.8	GRANITE	PzZG	54	3.96	1.98	165.3	5,739	N/A	N/A	GSI from 40 to 60
RS-2	RL_B2B	65.0-65.3	GRANITE	PzZG	44	4.04	2.00	159.7	2,335	N/A	N/A	GSI from 30 to 50

Lab Technician: Saja Alkhafaji

S. Alkhafaji

SITE PHOTOGRAPHS



View Looking South along -Y2- from Hillcroft Road

View Looking West on East Side of Bridge along -L-