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#### STATE OF NORTH CAROLINA

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

# **STRUCTURE** SUBSURFACE INVESTIGATION

**DAVIDSON** 

PROJECT DESCRIPTION REPLACE BRIDGE NO. 42 OVER MUDDY CREEK ON SR 1485 (HAMPTON ROAD)

COUNTY\_

# 341 42. **PROJECT:**

STATE N.C

1

PERSONNEL





#### **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 RALEIGH 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.

INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CALITORIED 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 WARANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPNION 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 OF FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FOM THE ACTUAL CONDENSATION.

NOTES:

- TES: THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT. BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCRESSED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
- 2.

STICKNEY, J. K.
<i>SMITH</i> , <i>C. L.</i>
<i>MOORE, M. R.</i>
INVESTIGATED BYSTICKNEY, J. K.
DRAWN BY <u>Alexander, M. J.</u>
CHECKED BYMILLER, K. B.
SUBMITTED BYMILLER, K. B.
DATE AUGUST 2016
SEAL 2029 Docusigned by
957A789AED704CB 8/2/2016
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

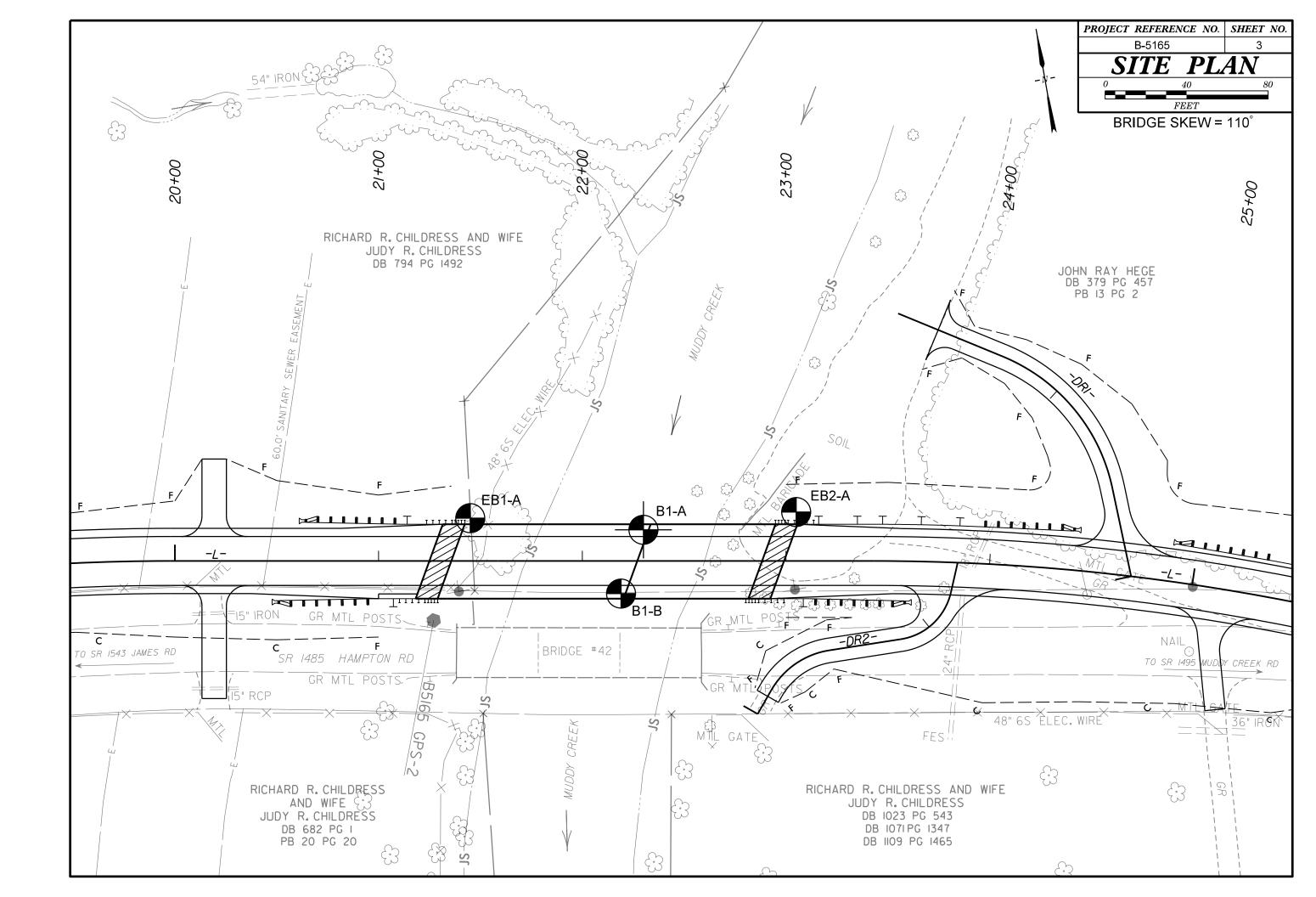
			SOIL C	ESCR	IPTIO	N						GF	RADATION						ROCK	DESC	RIPTION	
BE PENET ACCORDI IS B	TRATED WITH ING TO THE BASED ON TH	) UNCONSOLIDA H A CONTINUOU STANDARD PEN HE AASHTO SYS , TEXTURE, MOIS	5 FLIGHT PO ETRATION TE TEM. BASIC	WER AUGE ST (AASH DESCRIPT	ER AND HTO T 20 TIONS GE	VIELD LES 16.ASTM D NERALLY I	5 THAN 100 1586). SOIL NCLUDE THE	BLOWS PE CLASSIFIC E FOLLOWIN	R FOOT ATION IG:	WELL GRADED - INDICAT UNIFORMLY GRADED - IN GAP-GRADED - INDICATE	NDICATES ES A MIX	S THAT SOIL KTURE OF UNI	PARTICLES ARE AL	LL APPROXI IZES OF TW	MATELY THE SAME SIZE.	ROCK LINE SPT REFUSA BLOWS IN N	INDICATE AL IS PE NON-COA	ES THE LEVE INETRATION STAL PLAIN	EL AT WHICH NO BY A SPLIT SPO	ON-COASTA OON SAMPL HE TRANSI	LD YIELD SPT REFUSAL I AL PLAIN MATERIAL WOUL LER EQUAL TO OR LESS TION BETWEEN SOIL AN	LD YIELD THAN 0.1
A	S MINERALO	GICAL COMPOSI	TION, ANGULA	RITY, STR	RUCTURE,	PLASTICIT	Y,ETC. FOR	EXAMPLE,	5 5008	THE ANGULARIT			SOIL GRAINS IS D		BY THE TERMS:				Y DIVIDED AS F			
· · · · ·		GRAY. SILTY CLAY.	ND AND					5T/C.A-7-6		ANGULAR, SUBAN	NGULAR, S	SUBROUNDED,	OR ROUNDED.			WEATHERED ROCK (WR)			NON-COASTAN		MATERIAL THAT WOULD YI IF TESTED.	IELD SP1
GENERAL CLASS.		Granular mater ≤ 35% passing ■	200)	(>:	T-CLAY MA 35% Passii	IG \$200)	ORG	anic materia	ALS		MES SUC	H AS QUARTZ	CAL COMPOS	TALC, KAOLI		CRYSTALLIN ROCK (CR)	ιE		FINE TO COA WOULD YIELD	D SPT REF	IN IGNEOUS AND METAMOR FUSAL IF TESTED. ROCK	RPHIC RC TYPE IN
GROUP CLASS.	A-1 A-1-a A-1-b	A-3	A-2 2-5 A-2-6 A-2	_	A-5 4	A-7-5.	A-1, A-2 A-3	A-4, A-5 A-6, A-7		HRE USED IN	DESCRI		RESSIBILITY		SIGNIFICHINCE.	NON-CRYSTA	ALLINE		FINE TO COA	ARSE GRAI	IN METAMORPHIC AND NON HAT WOULD YEILD SPT RE	
SYMBOL						A-7-6						MPRESSIBLE		LL < 3		COASTAL PL			ROCK TYPE	INCLUDES	PHYLLITE, SLATE, SANDST IENTS CEMENTED INTO RC	TONE, ETC
ő % PASSING	00000000000			Second				SILT-			LY COMPI	COMPRESSIBL PRESSIBLE		LL = 31 LL > 51		SEDIMENTAR (CP)	AN ROCK			L. ROCK T	TYPE INCLUDES LIMESTON	
	50 MX 30 MX 50 MX	51 MN					GRANULAR SOILS	CLAY	MUCK, PEAT		P		GE OF MATER	<u> IAL</u>						EATHER	RING	
		10 MX 35 MX 35	MX 35 MX 35 I	1X 36 MN	36 MN 36	MN 36 MN		SOILS		ORGANIC MATERIAL	-	GRANULAR SOILS	SILT - CLAY SOILS		ER MATERIAL	FRESH				JOINTS 1	MAY SHOW SLIGHT STAININ	NG. ROCK
MATERIAL PASSING #40							SOILS	NITU		TRACE OF ORGANIC MAL	TER	2 - 3% 3 - 5%	3 - 5% 5 - 12%	TRACE	E 10 - 20%	VERY SLIGHT		R IF CRYSTA GENERALLY F		AINED. SOF	1E JOINTS MAY SHOW THIN	N CLAY C
LL PI	_ 6 мх		MN 40 MX 41 M MX 11 MN 11 M				LITTLE	e or	HIGHLY	MODERATELY ORGANIC HIGHLY ORGANIC		5 - 10% > 10%	12 - 20% > 20%	SOME HIGHL	20 - 35% Y 35% AND ABOVE	(V SLI.)	CRYST		ROKEN SPECIMEN		NE BRIGHTLY. ROCK RINGS	
GROUP INDEX	0	0 0	4 MX			MX NO MX	Modef Amount	TS OF	ORGANIC SOILS			GROI	JND WATER			SLIGHT				AINED AND	DISCOLORATION EXTENDS	into ro
	STONE FRAGS. GRAVEL, AND	FINE SILT	OR CLAYEY	SIL	LTY	CLAYEY	ORGA MAT1		50125	$\nabla$	WATER	R LEVEL IN I	BORE HOLE IMMEDI	ATELY AFT	ER DRILLING	(SLI.)					GRANITOID ROCKS SOME OC ALLINE ROCKS RING UNDER	
MATERIALS	SAND	SAND GRAV	l and sand	SOI	ILS	SOILS							VEL AFTER 24			MODERATE					ORATION AND WEATHERING	
GEN. RATING AS SUBGRADE		EXCELLENT TO G	0D		FAIR TO F	OOR	FAIR TO POOR	POOR	UNSUITABLE		PERCH	HED WATER, S	ATURATED ZONE, OF	₹ WATER BE	ARING STRATA	(MOD.)	DULL	SOUND UNDEF			. AND DISCOLORED, SOME S VS SIGNIFICANT LOSS OF S	
		PI OF A-7-5 SUBC	ROUP IS ≤ LL	- 30 ; PI (	OF A-7-6 \$	SUBGROUP IS	> LL - 30				SPRIN	NG OR SEEP				MODERATELY		FRESH ROCK.			TAINED. IN GRANITOID ROCH	אר או ד
		CON	SISTENC	YOR	DENS	ENESS	1				<u> </u>	MISCELLA	NEOUS SYMB	OLS		SEVERE	AND D	ISCOLORED A	ND A MAJORITY	SHOW KAOL	LINIZATION. ROCK SHOWS S	SEVERE L
PRIMARY S	SOIL TYPE	COMPACT CONSIS			IGE OF S RATION R	TANDARD ESISTENCE		E OF UNCO RESSIVE S	TRENGTH							(MOD. SEV.)			<u>YIELD SPT REFU</u>		PICK. ROCK GIVES CLUNK	SUUND
		VERY			(N-VALU < 4			(TONS/FT	2)		SCRIPTIC	-	OF ROCK STRU SPT	_	SLOPE INDICATOR	SEVERE (SEV.)					TAINED. ROCK FABRIC CLEA GRANITOID ROCKS ALL FELO	
GENERAL GRANULA		LOC	SE		4 TO	10				SOIL SYMBOL			OPT DMT TEST BO	RING	INSTALLATION		TO SO	ME EXTENT.		S OF STRO	NG ROCK USUALLY REMAIN.	
MATERIA (NON-CO	ΑL.	MEDIUM	SE		10 TO 30 TO	50		N/A		ARTIFICIAL FI			AUGER BORING	, <b>(</b>	CONE PENETROMETER	VERY					TAINED. ROCK FABRIC ELEM	MENTS AF
		VERY			> 50			< 0.25		INFERRED SOI		لے	- CORE BORING	-	SOUNDING ROD	SEVERE (V SEV.)					STATUS, WITH ONLY FRAG	
GENERAL		SO	т		2 TO	4		Ø.25 TO Ø							TEST BORING		VESTI	GES OF ORIGI	INAL ROCK FABRI	IC REMAIN.	IF TESTED, WOULD YIELD	SPT N V
SILT-CL MATERIA	AL.	MEDIUM STI	F		4 TO 8 TO	15		0.5 TO 1. 1 TO 2		INFERRED ROC	CK LINE	~~C			WITH CORE	COMPLETE					ISCERNIBLE, OR DISCERNIBL PRESENT AS DIKES OR S	
(COHESI)	VE)	VERY HA			15 TO > 30			2 TO 4 > 4		ALLUVIAL SOI	L BOUND	DARY 🛆	NISTALLATION	C	)- SPT N-VALUE		ALSO	AN EXAMPLE.				
		<u>'</u> т	EXTURE	OR GF	RAIN	SIZE					R	ECOMMEN	DATION SYME	JOLS		VERY HARD		T BE SCRATE		CK HAR	UNESS PICK. BREAKING OF HAND S	
U.S. STD. SIE			4 10	40			270					CLASSIFIED E SUITABLE WAS			ASSIFIED EXCAVATION - PTABLE.BUT NOT TO BE		SEVER	AL HARD BLC	WS OF THE GEOL	LOGIST'S P	PICK.	
OPENING (MM			.76 2.00	0.42 COARS		5 0.075 FINE				SHALLOW UNDERCUT		CLASSIFIED E	XCAVATION -	USED	IN THE TOP 3 FEET OF NKMENT OR BACKFILL	HARD		E SCRATCHED TACH HAND S		ICK ONLY	WITH DIFFICULTY. HARD H	iammer bi
BOULDER (BLDR.)			GR.)	SANI (CSE. S	ID	SAND (F SD	' ' ' '	SILT SLJ	CLAY (CL.)				RADABLE ROCK			MODERATELY					ES OR GROOVES TO 0.25 I	
GRAIN MM	1 305	75	2.0		0.2			0.005		AR - AUGER REFUSAL			MEDIUM	VST	- VANE SHEAR TEST	HARD		DERATE BLOW		1000015115	S PICK. HAND SPECIMENS C	JAN BE DI
SIZE IN.	. 12	3								BT - BORING TERMINATED	D		MICACEOUS		A WEATHERED - UNIT WEIGHT	MEDIUM HARD					EP BY FIRM PRESSURE OF ES 1 INCH MAXIMUM SIZE E	
		SOIL MOIS				ON OF	TERMS			CPT - CONE PENETRATION	N TEST	NP - N	ON PLASTIC ORGANIC		- DRY UNIT WEIGHT		POINT	OF A GEOLO	GIST'S PICK.			
	MOISTURE		FIELD MI DESCRI	PTION			FIELD MOIS			CSE COARSE DMT - DILATOMETER TES DPT - DYNAMIC PENETRA		PMT -	PRESSUREMETER TI SAPROLITIC		SAMPLE ABBREVIATIONS BULK	SOFT	FROM	CHIPS TO SE		N SIZE BY	E OR PICK. CAN BE EXCAV MODERATE BLOWS OF A P	
			- SATUR (SAT.				DUID:VERY / THE GROU			e – VOID RATIO F – FINE			SAND, SANDY SILT, SILTY		- SPLIT SPOON - SHELBY TUBE	VERY SOF T					TED READILY WITH POINT I	
PLASTIC		LIMIT .								<ul> <li>FOSS FOSSILIFEROUS</li> <li>FRAC FRACTURED, FRAC</li> </ul>	TURES		SLIGHTLY TRICONE REFUSAL		- ROCK - RECOMPACTED TRIAXIAL	SUFT	FINGE		NESS LAN BE BR	JKEN BT F	INDER PRESSURE, LAN BE	SCRATCH
RANGE <			- WET -	(W)			REQUIRES D IMUM MOIST			FRAGS FRAGMENTS	- One O	<i>w</i> - M	OISTURE CONTENT		- CALIFORNIA BEARING			TURE SP		$\square$		DING
PL L	+ PLASTI	C LIMIT								HI HIGHLY			ON SUBJEC			VERY WI		MOR	E THAN 10 FEE	т	TERM VERY THICKLY BEDDED	с
OM SL		M MOISTURE	- MOIST	- (M)	SC	LID;AT O	R NEAR OP	TIMUM MOI	ISTURE	DRILL UNITS:		NCING TOOLS:	0.1 000020		R TYPE:	WIDE MODERAT	FELY CLO		3 TO 10 FEET 1 TO 3 FEET		THICKLY BEDDED THINLY BEDDED	1. Ø.1
SL		AGE LIMIT .			RE	QUIRES A	DDITIONAL	WATER TO		CME-45C		CLAY BITS		X A	UTOMATIC MANUAL	CLOSE VERY CL		Ø	.16 TO 1 FOOT 5 THAN 0.16 FEE		VERY THINLY BEDDED THICKLY LAMINATED	
			- DRY -	(D)			IMUM MOIST			CME-55			S FLIGHT AUGER	CORE S	SIZE:		002	LUU			THINLY LAMINATED	<
				ASTIC								8" HOLLOW AU		-в						NDURAT		
NON	PLASTIC		PLAST	<u>ICITY IN</u> Ø-5	NDEX (PI)			Y STRENG		X CME-550X		HARD FACED		X-N	<u>×</u>			ULKS, INDUR			OF MATERIAL BY CEMEN	
SL10	GHTLY PLAS DERATELY P			6-15 16-25				SLIGHT		VANE SHEAR TEST		_	W/ ADVANCER	HAND T		FRIA	DLL		GENTLE	BLOW BY	HAMMER DISINTEGRATES	SAMPLE.
	HLY PLASTI		2	16-25 6 OR MC				HIGH		PORTABLE HOIST			STEEL TEETH		OST HOLE DIGGER	MODE	RATELY	INDURATED			EPARATED FROM SAMPLE HEN HIT WITH HAMMER.	WITH ST
			l	COLOR	7					1			• TUNGCARB.		AND AUGER OUNDING ROD	INDU	IRATED		GRAINS #	ARE DIFFI	CULT TO SEPARATE WITH	I STEEL
		INCLUDE COLC									X	CORE BIT	—		ANE SHEAR TEST	1100					AK WITH HAMMER.	
		JCH AS LIGHT,														EXTR	EMELY J	NDURATED			OWS REQUIRED TO BREAK CROSS GRAINS.	< SAMPLE

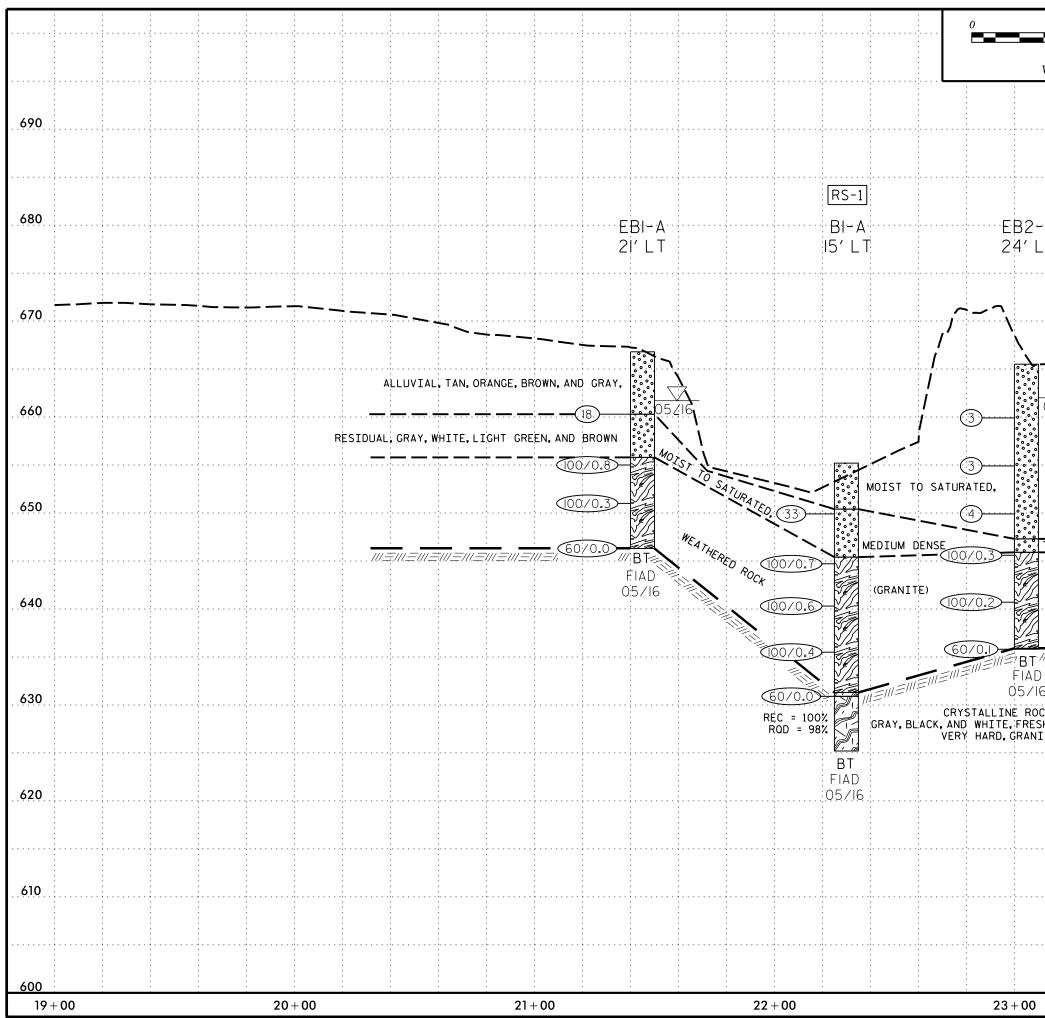
#### PROJECT REFERENCE NO. B-5165



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TED. AN INFERRED	
D SPT REFUSAL.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
.1 FOOT PER 60 IS OFTEN	ADUIFER - A WATER BEARING FORMATION OR STRATA.
	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING
PT N VALUES >	A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
. A THEORY	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT
ROCK THAT	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.
NCLUDES GRANITE,	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
TAL PLAIN IF TESTED.	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM
TC.	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.
K RINGS UNDER	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE
COATINGS IF OPEN,	HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE
HAMMER BLOWS IF	LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
ROCK UP TO	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE
AL FELDSPAR	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
ER BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
TS. IN .AY. ROCK HAS	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.
TH AS COMPARED	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE
FELDSPARS DULL LOSS OF STRENGTH	FIELD.
WHEN STRUCK.	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
EVIDENT BUT	<u>LEDGE</u> - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.
ARE 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
ARE DISCERNIBLE	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
AT ONLY MINOR VALUES < 100 BPF	OF AN INTERVENING IMPERVIOUS STRATUM.
IN SMALL AND	<u>RESIDUAL (RES.)SOIL</u> - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF
RS. SAPROLITE IS	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	<u>SILL</u> - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND
BLOWS REQUIRED	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.
DE THOMED	STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF
OR PICK POINT.	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
D BLOWS OF THE	TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
N FRAGMENTS	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY
INT. SMALL, THIN	TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
. PIECES 1 INCH	<u>STRATA ROCK QUALITY DESIGNATION (SROD)</u> - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY
CHED READILY BY	THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
THICKNESS	BENCH MARK: B5165 GPS-2 (N:799906.8850; E:1597953.9780)
4 FEET	ELEVATION: 670.90 FEET
1.5 - 4 FEET 3.16 - 1.5 FEET	ELEVATION: 610.30 FEET
.03 - 0.16 FEET	NOTES:
008 - 0.03 FEET	FIAD - FILLED IMMEDIATELY AFTER DRILLING
< 0.008 FEET	NM - NOT MEASURED
EAT. PRESSURE. ETC.	
EHI, FRESSURE, EIU.	
STEEL PROBE:	
PROBE:	
_	
_E;	





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FEET		B-5165		4
VE = 4:1			E ALONG AIDGE NO. 4	
				690
- A				680
_T				
				(70
			NG GROUND	670
		EXISTI		
05/16				660
VERY LOOSE, CLAYEY SIL	TY SAND.			
	ITH GRAVE			650
		05000		
TO DENSE, CLAYEY SILTY	SAND, MICA	CEOUS		
				640
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ICK,				630
SH WEATHERING, ITE				
				620
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				610
NOTES:			· · · · · · · · · · · · · · · · · · ·	
BORINGS PROJECT	ED TO P	ROFILE	-	
EXISTING GROUND				
b5165_Ls_tin.tin			D BY NC	DOT. 600
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670	RS-	1	· · · · · · · · · · · · · · · · · · ·				
		 A	<u>B</u>	-B			
660	22+30 15′ L	L - _T	22 I61	I-B 2+19 7 RT			
		_					
	ALLUVIAL, GRAY, WHITE, TAN, AND BROWN,	MOIST TO SATURAT		CLAYEY	SILTY SAN		 ₹AV
	RESIDUAL, GRAY, WHITE, LIGHT GREEN, AND	BROWN, MOIST TO S	ATURATED, MEDIUM	DENSE 1	ΓΟ DENSE, C	LAYEY SIL	. T Y
			00/0.9				
640	00/0.6	WEATHERED (GRANIT	ROCK 0.6				
	00/0.4						
630		<i>~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~</i>		3T	<u></u>	<u>=///=</u> /// <u>=///</u>	
	REC = 100% ROD = 98%	_ FRESH WEATHERIN	E ROCK, FI ND WHITE, FI G, VERY HARD, OS	IAD 5/16			
620	B FI/ 05/	GRANI Ad	TE				
NOTES:			· · · · · · · · · · · · · · · · · · ·				
EXISTING G	ROUND LINE DRAWN USING						
	n.tin FILE PROVIDED BY NCDOT.						
70 65 6	<u>50 55 50 45 40 35 30 25 20</u>	15 10 5	HORIZ. SCALE 0	15 <b>20</b> 10	<b>25 30</b> 20	$\frac{35  40}{VE = 1:1}$	Т
			(FEET)				

		PROJECT	REFERENCE N	IO. SHEET NO
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				680
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				670
				· · · · · · · · · · · · · · · · · · ·
				660
· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
				· · · · · · · · · · · · · · · · · · ·
	D,WITH GRAVEL	EXISTING (	GROUND	
<u> </u>				650
TO DENSE, C	LAYEY SILTY SA	ND, MICACEO	US	
				640
<u>=///=///=///=</u> ///	<u>=/////////</u> _//			
				620
				· · · · · · · · · · · · · · · · · · ·
				610
				· · · · · · · · · · · · · · · · · · ·
25 30			5 60 6	
20	VE = 1:1	CROSS SEC AT S	TION ALON TA. 22+27.00	G BENT 1 -L-

						D	<u>ORE L</u>	UG					
WBS	42341			TI	IP B-5165	COUNT	Y DAVIDS	NC			GEOLOGIST Stickney, J. K.		
			DGE		2 OVER MUDDY CRE	EKONS			I ROA	D)	1	-	D WTR (ft)
	ING NO. EB1			S	<b>TATION</b> 21+45		OFFSET 2	21 ft LT			ALIGNMENT -L-	0 HR.	5.1
COLI	LAR ELEV. 66	56.8 ft		Т	OTAL DEPTH 20.5 ft		NORTHING				EASTING 1,598,047	24 HR.	FIAD
			TE H		2 CME-550X 85% 05/20/2					D N\		IER TYPE	Automatic
DRIL	LER Smith, C	-			TART DATE 05/16/1		COMP. DA		16/16	<del></del> .	SURFACE WATER DEPTH	I/A	
ELEV (ft)	DRIVE ELEV (ft)	BLC 0.5ft	OW CO 0.5ft	1	4	PER FOOT	75 100	SAMP. NO.	MOI	L O G	SOIL AND ROCK DES	CRIPTION	DEPTH (fi
670											- 666.8 GROUND SURF		0.
665	+				l.     <del></del>						ALLUVIAL TAN, BROWN, AND ORANG		AND
	<u> </u>					 							
660	661.3 5.5	5	2	16		· · · ·			$\square$		660.3		6.
660			-	10	■						- RESIDUAL BROWN AND WHITE, C		
	+ 656.3 T 10.5										SAND, WITH SOM		
655		8	64	36/0.3	· · · · · · · · · · · · · · · · · · ·		100/0.8	,			655.8 - WEATHERED R		11.
	+										(GRANITE)		
650	651.3 + 15.5	100/0.3	3				· · · · ·	,					
000											-		
	646.3 + 20.5	60/0.0					60/0.0				646.3		20.
	*******************										<ul> <li>PENETRATION TESTI Elevation 646.3 ft ON CRYS (GRANITE)</li> <li>-</li> <li>-<td>TALLINE R</td><td></td></li></ul>	TALLINE R	

#### GEOTECHNICAL BORING REPORT

#### BORF I OG

#### GEOTECHNICAL BORING REPORT BORE LOG

									ORE L						
WBS	4234	1			Т	IP B-5165		COUNTY	Y DAVIDS	NC			GEOLOGIST Stickney, J. K.	1	
				IDGE		2 OVER MU		EK ON S			I ROA	D)		GROUND WT	• •
BORI	NG NO	. B1-A	۱		S	TATION 22	+30		OFFSET	15 ft LT			ALIGNMENT -L-	0 HR.	N/A
	AR EL					OTAL DEPTI			NORTHING	799,9	53		EASTING 1,597,980	24 HR.	N/A
DRILL	. RIG/HA	MMER E	FF./DA	ATE H	IFO0072	2 CME-550X 85	% 05/20/2	016		DRILL N	IETHO	D NV	V Casing W/SPT & Core HAMM	IER TYPE Autor	matic
DRIL	LER S	mith, C	). L.		S	TART DATE	05/09/1	6	COMP. DA		10/16		SURFACE WATER DEPTH 5.	3ft	
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	0.5ft	OW CO 0.5ft	1	0 25		PER FOOT	75 100	SAMP. NO.	моі	L O G	SOIL AND ROCK DES		EPTH (ft
660		+											-		
655		ŧ											655.2 GROUND SURF.	ACE	0.0
		Ŧ										╞	- ALLUVIAL GRAY, CLAYEY SILTY S	and, with	
	650.9	4.3											GRAVEL		
650		+	5	15	18						м	F	- 650.4 - RESIDUAL		4.8
		Ŧ										E	GRAY, WHITE, AND LIG CLAYEY SILTY SAND, M		
645	645.9	9.3	22	70	30/0.2			· · · · ·					645.4	201/	9.8
		ł							. 100/0.7	'			- WEATHERED RO (GRANITE)	JUK	
	640.9	14.3													
640	-	+	71	29/0.1	1				100/0.6	·			_		
		Ŧ													
635	635.9	19.3	100/0	4					100/0.4	,					
	-	Ŧ											-		
	630.9	‡ _, _					· · · · ·					4	631.3		23.9
630	630.9	<u> </u>	60/0.0	ז			· · · ·		60/0.0	2			- 630.9 CRYSTALLINE R (GRANITE)	OCK	24.3
		‡					· · · · ·					R			
		ŧ					· · · ·			RS-1		Ø	625.2		30.0
	-	<u>+</u>											<ul> <li>Boring Terminated at Eleva</li> </ul>	tion 625.2 ft IN	30.0
		+										-	CRYSTALLINE ROCK (	GRANITE)	
		ł										-			
		Ŧ											-		
		‡													
	_	‡											_		
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		1	ORE LOG		
WBS 42341	TIP B-5165		Y DAVIDSON	GEOLOGIST Stickney, J. K.	
SITE DESCRIPTION BRIDGE		EEK ON S		· · · · · · · ·	GROUND WTR (ft)
BORING NO. B1-A	STATION 22+30		OFFSET 15 ft LT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 655.2 ft	TOTAL DEPTH 30.0 f		<b>NORTHING</b> 799,953	EASTING 1,597,980	24 HR. N/A
DRILL RIG/HAMMER EFF./DATE	1		DRILL METHOD NW		MER TYPE Automatic
DRILLER Smith, C. L.	START DATE 05/09/1	16	COMP. DATE 05/10/16	SURFACE WATER DEPTH 5	.3ft
CORE SIZE NX	TOTAL RUN 5.7 ft	STRATA			
ELEV (ft) (ft) DEPTH RUN (ft) (ft) (ft)	REC. RQD SAMP. R	8EC. RQD (ft) (ft) % %	L O G ELEV. (ft)	ESCRIPTION AND REMARKS	DEPTH (
630.9 630 630.9 24.3 0.7 N=60		E 7) (E C)	630.9	Begin Coring @ 24.3 ft CRYSTALLINE ROCK	24.
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	2.0 (0.7) (0.7) 7 100% 100% 10 0 (5.0) (4.9) .0 100% 98% RS-1	5.7) (5.6) 00% 98%		ND WHITE, FRESH WEATHERING, GRANITE	
625.2 <u>30.0</u> 1:34 1:31			625.2 Decision Transistor	ed at Elevation 625.2 ft IN CRYSTALI	30
				(GRANITE)	

#### SHEET 7 OF 10

#### GEOTECHNICAL BORING REPORT CODELOC

## **CORE PHOTOGRAPHS**

42341 (B-5165) BRIDGE NO. 42 OVER MUDDY CREEK ON SR 1485 (HAMPTON ROAD)

### **B1-A**

BOX 1: 24.3 - 30.0 FEET





#### SHEET 8 OF 10

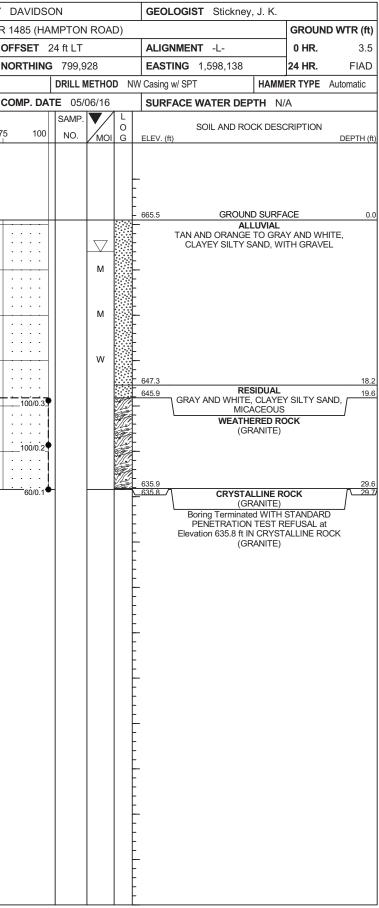
#### **GEOTECHNICAL BORING REPORT** BORE LOG

											DRE		G							
WBS	42341				TI	<b>P</b> B-5	165		COUN	NTY	DAVID	SON				GEOLOGI	ST Stickne	y, J. K.	1	
			BRI	DGE					EEK ON		R 1485 (H			ROA	D)	-			-	ID WTR (ft
	NG NO.					TATION					OFFSET					ALIGNMEN			0 HR.	N/A
	AR ELE					OTAL D				1	NORTHIN						1,598,063		24 HR.	N/A
	. RIG/HAI			TE HF											D N\	N Casing w/ SP				Automatic
DRIL	LER S	mith, C	. L.		S	TART D					COMP. D			0/16		SURFACE	WATER DE	<b>PTH</b> 4.	9ft	
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLC 0.5ft	0.5ft	JNT 0.5ft	0	25	BLOWS	PER FO	OT 7	5 10		.MP. 10.	моі	L O G	ELEV. (ft)	SOIL AND R	OCK DES	CRIPTION	DEPTH (İ
660 655		-														655.4		ND SURF/	ACE	0.
	-	-								•••							GRAY, WHITE			
	- 650.7	- 4.7														CL 650.7	LAYEY SILTY	SAND, W	ITH GRAV	EL 4.
650		- 4. <i>1</i> - - -	13	15	14			29		· · ·	· · · · ·			М		-	AY, WHITE, LI BROWN, CL		TY SAND,	
645	645.7 -	9.7	41	59/0.4				· · · <u>·</u>		<u></u>	_```	1			977	645.7				9.
	-										100/0.9	<b>••</b>						RANITE)		
	- 640.7	- - 14.7																		
640	-	-	68	32/0.1					<u> </u>		100/0.6	» <b>•</b>				_				
	-	-							· · ·	· ·	· · · ·	!								
635	635.7 -	- 19.7	63	37/0.1		· ·				· ·	100/0.6					_				
	-	_							· · · ·		100/0.6	Ϋ́								
	- 630.7 -	- - 24.7							· · ·		 					- 631.6 - 630.7	CRYST	ALLINE R	OCK	<u>23</u> . 24.
																· I	oring Termina PENETRATIO ration 630.7 ft	N TEST R	REFUSAL a	ıt

	42341 DESCR		I BRI	DGE I				-516 ER I		DDY	CRE		ou		Y
COL	ING NO. LAR ELE L RIG/HAI	E <b>V</b> . 66	65.5 ft	TE HI	Т	0	ΓAL	. DE	PT		9.7 f		6		C N
DRIL	LER S	mith, C	. L.		s	T/	٩RT	DA	TE	05	/06/1	6			С
ELEV	DRIVE	DEPTH	BLC	W CO	JNT					BLC	OWS	PEF	R FC	тос	
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5ft		0		25	5		50			75
670		-													
665	- - -	- - -								<u> </u>		-			
660	660.9	4.6	1	1	2	-	i 1. ∳3	· · · ·	• • •	· · ·	· · ·			· ·	
655	655.9	9.6	1	1	2		·  ·	· · · · ·			· · ·		•		
GE0	- - 650.9 -	14.6					<b>T</b> .  .  .  .	· · · ·		· · ·	· · · · · · · · · · · · · · · · · · ·	- - -		· ·	
650	-		1	2	2		- <b>4</b> 4	· · ·			· · ·				
645	645.9 -	<u>19.6</u>	100/0.3				•	· ·	· :			` - - -			
640	640.9	24.6	100/0.2				•	· ·		· ·	· · ·		:		-
	635.9	29.6	60/0.1					· ·		· ·	· · · ·			· ·	
	-	-													
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#### **GEOTECHNICAL BORING REPORT**

BORE LOG



# LABORATORY SUMMARY SHEET FOR ROCK CORE SAMPLES

#### WBS: 42341 TIP: B-5165 COUNTY: DAVIDSON BRIDGE NO. 42 OVER MUDDY CREEK ON SR 1485 (HAMPTON ROAD)

Sample #	Boring #	Depth (ft)	Rock Type	Geologic Map Unit	Run RQD (%)	Length (in)	Diameter (in)	Unit Weight (PCF)	Unconfined Compressive Strength (KSI)	Remarks
RS-1	B1-A	27.6 - 30.1	GRANITE	PPg	100	3.4	1.87	166.5	9.25	GSI=95-98

#### SHEET 10 OF 10