## **CONTENTS**

4499

33

	-
HEET	<b>DESCRIPTION</b>
1	TITLE SHEET
2	LEGEND
3	SITE VICINITY MAPS
4	SITE PLAN
5	PROFILE
6-8	CROSS SECTIONS
9-13	BORE LOG & CORE REPORT(S)
14	SOIL TEST RESULTS
15	ROCK SUMMARY
6-17	CORE PHOTOGRAPH(S)
18	SITE PHOTOGRAPH(S)

# STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

# STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. <u>33732.I.I</u> COUNTY <u><b>DAVIDSON</b></u>	F.A. PROJ. <u>BRZ-1792(2)</u>
PROJECT DESCRIPTION <u>BRIDGE #158 ON SR</u> <u>I-85 BUSINESS</u>	1792 OVER US 29/70/
SITE DESCRIPTION BRIDGE #158 ON SR 179.  I-85 BUSINESS	2 OVER US 29/70/

STATE	STATE PROJECT REPERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4499	1	18
	L	<u> </u>	

#### **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 VARROUS FELD BORNE LOSS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, CEOTECHNICAL ENGINEERING LINT AT 1919 250-4088. NEITHER THE SUBSURFECT PLANS AND REPORTS, NOT THE FIELD BORNOL LOSS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

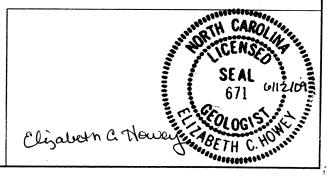
GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT IT WE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORNOS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLED DATA AND THE IN STU UNIPLACED TEST DATA CAN BE RELED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOSITURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOSITURE CONDITIONS MAY VARY CONSIDERERALLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES. PRECIPITATION, AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

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

# For Letting

	PERSUNNEL
	D. RACEY
	C. PRICE
	S. DAVIS
	Q. ARTIS
	D. JENKS
******	
INVESTIGATED BY	F&R, INC.
CHECKED BY E.	C. HOWEY, P.G., P.E.
SUBMITTED BY	E.C. HOWEY, P.G., P.E.

**IUNE 2009** 



DRAWN BY: D. RACEY

THE APPROXITE OF THE PROPERTY OF THE PROPERTY OF THE SERVER BY THE SERVER SHE FOR THE PROPERTY OF THE PROPERTY

10.15 An Habro Filing Fift field enduling the common operation of a supplementation of an expensive root that Bares has perfectled ending the Committee of Endergy and C

## NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

#### DIVISION OF HIGHWAYS

#### GEOTECHNICAL ENGINEERING UNIT

# SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

	SOIL DESCRIPTION		·		DOK BEGEND, TEK	·10, 01 MBOE5,	, AND ADDICE	IATIONS		
SOU IS CONSIDERED TO BE THE IN	NCONSOLIDATED, SEMI-CONSOLIDATED, OR WEA		WELL GRADED - INDICATES	GRADATION  A GOOD REPRESENTATION OF PARTICLE SIZES	FROM FINE TO COADCE	NABO BOCK IC MON		DESCRIPTION HAT IF TESTED, WOULD YIELD SPT F		TERMS AND DEFINITIONS
			UNIFORM - INDICATES THAT POORLY GRADEDI	SOIL PARTICLES ARE ALL APPROXIMATELY T	HE SAME SIZE. (ALSO	ROCK LINE INDICAT	TES THE LEVEL AT WHICH NOW	N-COASTAL PLAIN MATERIAL WOULD	YIFI D SPT REFUSAL	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
CLASSIFICATION IS BASED ON THE	O STANDARD PENETRATION TEST (AASHTO TO AASHTO SYSTEM, RASIC DESCRIPTIONS CEME	206, ASTM D-15861, SOIL	GAP-GRADED - INDICATES A	MIXTURE OF UNIFORM PARTICLES OF TWO OR		IN NON-COASTAL P	LAIN MATERIAL, THE TRANSIT	ON SAMPLER EQUAL TO OR LESS TH TION BETWEEN SOIL AND ROCK IS O	AN 0.1 FOOT PER 60 BLOWS. FTEN REPRESENTED BY A ZONE	AQUIFER - A WATER BEARING FORMATION OR STRATA.
I COMPIDITE TO COLOR, IEXIORE, MUISI	TURE, AASHTO CLASSIFICATION, AND OTHER P IGULARITY, STRUCTURE, PLASTICITY, ETC. EXAM	PERTINENT EACTODE CIRCL	THE MICH ARITY OR COUNTY	ANGULARITY OF GRAINS THESS OF SOIL GRAINS IS DESIGNATED BY THE		OF WEATHERED ROOM ROCK MATERIALS A	CK. ARE TYPICALLY DIVIDED AS FO	OLLOWS:		ARGILLACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.  ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS,
VERW STIFF, GRAN, SA	KTY CLAY, MOIST WITH WITERBEDOED FINE SAND LAYERS, HIGHLY	I PUSTIC A-7-6	SUBANGULAR, SUBROUNDED,	OR ROUNDED.	E TERMS: ANGULAR,	WEATHERED	NON-COASTAL	PLAIN MATERIAL THAT WOULD YIEL	D SPT N VALUES > 100	OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.
SOIL LEGE	END AND AASHTO CLASSIFI	ICATION		MINERALOGICAL COMPOSIT	ION	ROCK (WR)	BLOWS PER F	OOT IF TESTED.		ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL
GENERAL GRANULAR MAT CLASS. (≤ 35% PASSING	TERIALS SILT-CLAY MATERIALS	000000000000000000000000000000000000000	MINERAL NAMES SUCH AS OL	JARTZ, FELOSPAR, MICA, TALC, KAOLIN, ETC. ARE	USED IN DESCRIPTIONS	CRYSTALLINE ROCK (CR)		RSE GRAIN IGNEOUS AND METAMORPH SPT REFUSAL IF TESTED, ROCK TY		AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROWN SURFACE.
GROUP A-I A-3		7 A-1, A-2 A-4, A-5	WHENEVER THEY ARE CONSID				GNEISS, GABBR	RO, SCHIST, ETC. ISE GRAIN METAMORPHIC AND NON-C	JACTAL CLAIM	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
	4A-2-5A-2-6A-2-7	A-1, A-2 A-4, A-5 A-3 A-6, A-7	SLIGHTLY COMPRE	COMPRESSIBILITY SSIBLE LIGHTOLINE	T LESS THAN 31	NON-CRYSTALLINE ROCK (NCR)	SEDIMENTARY	ROCK THAT WOULD YELLD SPT REFL	SAL IF TESTED, ROCK TYPE	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
SYMBOL COCCOCCOCC			MODERATELY COMP	PRESSIBLE LIQUID LIMI	T EQUAL TO 31-50	COASTAL PLAIN	COASTAL PLAT	LLITE, SLATE, SANOSTONE, ETC. N SEDIMENTS CEMENTED INTO ROCK	BUT MAY NOT YIELD	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL
% PASSING	33.23		More Corrects	PERCENTAGE OF MATERI	T GREATER THAN 50	SEDIMENTARY ROCK (CP)	SPT REFUSAL. SHELL BEDS, E	ROCK TYPE INCLUDES LIMESTONE, S TC.	SANOSTONE, CEMENTED	LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
* 10 56 MX * 40 30 MX 56 MX 51 MN		GRANULAR SILT- CLAY SOILS CON C PEAT	ORGANIC MATERIAL	GRANULAR SILT - CLAY	OTHER MATERIAL		W	EATHERING		DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.
* 200 15 MX 25 MX 10 MX 35 MX	X 35 HX 35 HX 35 HX 36 HN 36 HN 36 HN 36 H	N SOILS SOILS	TRACE OF ORGANIC MATTER	SOILS SOILS 2 - 3% 3 - 5% Ti	RACE 1 - 10%	FRESH ROCK F	RESH, CRYSTALS BRIGHT, FEW	JOINTS MAY SHOW SLIGHT STAININ	G. ROCK RINGS UNDER	OIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE
LIQUID LIMIT 40 MX PLASTIC INDEX 6 MX NP 10 MX	(41 HN 48 HX 41 HN 48 HX 41 HN 48 HX 41 H	SOILS WITH	LITTLE ORGANIC MATTER MODERATELY ORGANIC		ITTLE 10 - 20%	1	R IF CRYSTALLINE. GENERALLY ERESH JOINTS STA	NIHT WOH2 YAM STNIOL 3MO2, CINIA	CLAY COATINGS IS OPEN	HORIZONTAL.
man has	10 MX II MN II MN I0 MX I0 MX II MN II MN	LITTLE OR HIGHLY	HIGHLY ORGANIC		OME 20 - 35% IGHLY 35% AND ABOVE	(V SLI.) CRYSTA	ALS ON A BROKEN SPECIMEN F	FACE SHINE BRIGHTLY, ROCK RINGS	UNDER HAMMER BLOWS IF	DIP DIRECTION (DIP AZIMUTHI - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
USUM TYPES STONE FRAGS.	1   0   12   10   10	MODERATE ORGANIC AMOUNTS OF SOILS		GROUND WATER		1	CRYSTALLINE NATURE. GENERALLY FRESH JOINTS STA	NINEO AND DISCOLORATION EXTENDS	INTO ROCK UP TO	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE
OF MAJOR CRAVEL, AND FINE SIL	TY OR CLAYEY SILTY CLAYEY AVEL AND SAND SOILS SOILS	ORGANIC MATTER	l —	LEVEL IN BORE HOLE IMMEDIATELY AFTER	ORILLING	(SLI.) I INCH.	OPEN JOINTS MAY CONTAIN C	CLAY. IN GRANITOID ROCKS SOME OF	CASIONAL FELOSPAR	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
MATERIALS SAND SAND GRA			<del>-i</del>	WATER LEVEL AFTER 24 HOURS		•		D. CRYSTALLINE ROCKS RING UNDER IN DISCOLORATION AND WEATHERING		FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACEO PARALLEL PLANES.  FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM
AS A EXCELLENT TO SUBGRADE	COOD FAIR TO POOR	FAIR TO POOR UNSUITABLE	PERCHEI	D WATER, SATURATED ZONE, OR WATER BEAF	RING STRATA	(MOD.) GRANITI	OID ROCKS, MOST FELDSPARS	ARE DULL AND DISCOLORED, SOME S AND SHOWS SIGNIFICANT LOSS OF S	HOW CLAY. ROCK HAS	PARENT MATERIAL.
	IS ≤ LL - 30 : PI OF A-7-6 SUBGF	1 1	OM SPRING	OR SEEP			RESH ROCK.	HUN SUMMS STOUTESCHUS COSS OF S	THENGTH AS COMPARED	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY
	DISTENCY OR DENSENESS		- 0 0	MISCELLANEOUS SYMBOL	ς	MODERATELY ALL RO	CK EXCEPT QUARTZ DISCOLORI	ED OR STAINED. IN GRANITOID ROCK HOW KAOLINIZATION. ROCK SHOWS S	S. ALL FELDSPARS DULL	THE STREAM.  FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN
	CTNESS OR RANGE OF STANDARD PENETRATION RESISTENCE	RANGE OF UNCONFINED COMPRESSIVE STRENGTH	F) ROADWAY EMBAN		<del></del>	(MOD. SEV.) AND CA	N BE EXCAVATED WITH A GEO	LOGIST'S PICK. ROCK GIVES "CLUNK	SOUND WHEN STRUCK.	THE FIELD.
	(N-VALUE)	(TONS/FT2)	WITH SOIL DESC				TED, WOULD YIELD SPT REFUSA			JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
OEINCHALL!	LOOSE (4 DSE 4 TO 10		SOIL SYMBOL	AUGER BORING	S - BULK SAMPLE	(SEV.) IN STRI	ENGTH TO STRONG SOIL. IN G	IED OR STAINED. ROCK FABRIC CLEA RANITOID ROCKS ALL FELDSPARS AI	RE KAOLINIZED TO SOME	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO
MATERIAL MEDIU	IM DENSE 10 TO 30	N/A	ARTIFICIAL FILL	(AF) OTHER	SS - SPLIT SPOON SAMPLE	EXTENT	. SOME FRAGMENTS OF STRON TED. YIELDS SPT N VALUES >	G ROCK USUALLY REMAIN.		ITS LATERAL EXTENT.  LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
(NON-COHESIVE) VERY			THAN ROADWAY		ST - SHELBY TUBE	VERY SEVERE ALL RO	CK EXCEPT QUARTZ DISCOLOR	ED OR STAINED. ROCK FABRIC ELEM	ENTS ARE DISCERNIBLE BUT	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN
VERY	1 - 1	<0.25	- INFERRED SOIL	BOUNDARY	SAMPLE	(V SEV.) THE MA	ISS IS EFFECTIVELY REDUCED	TO SOIL STATUS, WITH ONLY FRAGI LE OF ROCK WEATHERED TO A DEGR	ENTS OF STRONG ROCK	SOILS USUALLY INDICATES POOR AFRATION AND LACK OF GOOD DRAINAGE.  PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN
GENERALLY SOF SILT-CLAY MEDIUM	T 2 TO 4	0.25 TO 0.50	INFERRED ROCK	LINE A PIEZOMETER	RS - ROCK SAMPLE	VESTICE	ES OF THE ORIGINAL ROCK FA	BRIC REMAIN. IF TESTED, TIELDS	SPT N VALUES ( 100 BPF	INTERVENING IMPERVIOUS STRATUM.
MATERIAL STIF	FF 8 TO 15	0.5 TO 1.0 1 TO 2	ALLUVIAL SOIL	△ INCTALLATION	RT - RECOMPACTED TRIAXIAL	COMPLETE ROCK RE	EDUCED TO SOIL. ROCK FABRIC	C NOT DISCERNIBLE, OR DISCERNIBLE	ONLY IN SMALL AND	RESIDUAL IRES, I SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
HARD		2 TO 4	25/025 DIP & DIP DIREC	SLOPE INDICAT	SAMPLE OR CBR - CALIFORNIA BEARING		N EXAMPLE.	MAY BE PRESENT AS DIKES OR ST	RINGERS. SAPROLITE IS	ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AN
T	EXTURE OR GRAIN SIZE		ROCK STRUCTURE	is	RATIO SAMPLE		ROCI	K HARDNESS		EXPRESSED AS A PERCENTAGE.
U.S. STO. SIEVE SIZE	4 10 40 60 200	3 270	SOUNDING ROD	SPT N-VALUE				R SHARP PICK, BREAKING OF HAND	SPECIMENS REQUIRES	SAPROLITE ISAP RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.
OPENING (MM)	4.76 2.00 0.42 0.25 0.075			REF SPT REFUSAL		1	AL HARD BLOWS OF THE GEOL	.OGIST'S PICK. ICK ONLY WITH DIFFICULTY. HARD H		SILL - AN INTRUSIVE 800Y OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND
	GRAVEL COARSE FINE		AR - AUGER REFUSAL	ABBREVIATIONS HI HIGHLY	w - MOISTURE CONTENT		TACH HAND SPECIMEN.	ICK UNCT WITH DIFFICULTT, MARU F	AMMER BLUWS REQUIRED	RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
(8LDR.) (COB.)	(GR.) SAND SAND (CSE, SD.) (F SC	1 1 1 1 1 1	BT - BORING TERMINATED	MED MEDIUM	V - VERY	MODERATELY CAN BE	E SCRATCHED BY KNIFE OR PI	ICK. GOUGES OR GROOVES TO 0.25	NCHES DEEP CAN BE	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR
GRAIN MM 305 75 SIZE IN. 12 3	2.0 0.25	0.05 0.005	CL CLAY CPT - CONE PENETRATION	MICA MICACEOUS TEST MOD MODERATELY	VST - VANE SHEAR TEST WEA WEATHERED		ATED BY HARD BLOW OF A GE DERATE BLOWS.	EOLOGIST'S PICK. HAND SPECIMENS	CAN BE DETACHED	SLIP PLANE.
	TURE - CORRELATION OF 1		CSE COARSE	NP - NON PLASTIC	7 - UNIT WEIGHT	MEDIUM CAN 8	E GROOVED OR GOUGED 0.05 I	INCHES DEEP BY FIRM PRESSURE OF	KNIFE OR PICK POINT.	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
SOIL MOISTURE SCALE	FIFLD MOISTURE		OMT - DILATOMETER TEST OPT - DYNAMIC PENETRAT		$\gamma_{ m d}$ - DRY UNIT WEIGHT		E EXCAVATED IN SMALL CHIPS OF A GEOLOGIST'S PICK.	S TO PEICES I INCH MAXIMUM SIZE	BY HARD BLOWS OF THE	A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS
(ATTERBERG LIMITS)	DESCRIPTION GUIDE FOR	FIELD MOISTURE DESCRIPTION	e - VOIO RATIO F - FINE	SAP SAPROLITIC SD SAND, SANDY				Y BY KNIFE OR PICK. CAN BE EXCA		THAN 8.1 FOOT PER 60 BLOWS.  STRATA CORE RECOVERY ISREC1 - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH
	- SATURATED - USUALLY LI	10010; VERY WET, USUALLY	FOSS FOSSILIFEROUS	SL SILT, SILTY		PIECES	CAN BE BROKEN BY FINGER	I SIZE BY MODERATE BLOWS OF A I PRESSURE.	PICK POINT. SMALL, THIN	OF STRATUM AND EXPRESSED AS A PERCENTAGE.
LL_ LIQUIO LIMIT	(SAT.) FROM BELO	OW THE GROUND WATER TABLE	FRAC, - FRACTURED, FRACTI FRAGS, - FRAGMENTS	URES SLL - SLIGHTLY TCR - TRICONE REFUSAL				E EXCAVATED READILY WITH POINT		STRATA ROCK QUALITY DESIGNATION (SROO) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE
PLASTIC PANCE	SEMISOLIO:	REQUIRES DRYING TO		Tell Mileone Mel Oshe		SOFT OR MOR		OKEN BY FINGER PRESSURE. CAN BE	SCRATCHED READILY BY	TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
(PI) PL PLASTIC LIMIT		TIMUM MOISTURE	EOU	JIPMENT USED ON SUBJECT I	PROJECT	FRACTU	RE SPACING	BEDO	NG	10PSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
-			ORICL UNITS:	ADVANCING TOOLS:	HAMMER TYPE:	IERM	SPACING	TERM VERY THICKLY BEODED	THICKNESS > 4 FEET	BENCH MARK: BM #2: -BL- STA. 21+46.84 54.21' RT.: RR SPIKE IN PP
OM DPTIMUM MOISTURE SL SHRINKAGE LIMIT	- MOIST - (M) SOLID; AT	OR NEAR OPTIMUM MOISTURE		CLAY BITS	X AUTOMATIC MANUAL	VERY WIDE WIDE	MORE THAN 10 FEET 3 TO 10 FEET	THICKLY BEDOED	1.5 - 4 FEET	
SCAL SIMINANCE CHAIN	DECUMPSE A	ADDITIONAL WATER TO	MOBILE 8	6 CONTINUOUS FLIGHT AUGER	COOK 0175	MODERATELY CLOS	E 1 TO 3 FEET	THINLY BEDOED VERY THINLY BEDOED	0.16 - 1.5 FEET 0.03 - 0.16 FEET	ELEVATION: 799.24 FT.
		TIMUM MOISTURE	8K-5I	X 8" HOLLOW AUGERS	CORE SIZE:	CLOSE VERY CLOSE	0.16 TO 1 FEET LESS THAN 0.16 FEET	THICKLY LAMINATED	0.008 - 0.03 FEET	NOTES:
1	PLASTICITY			HARD FACED FINGER BITS	☐-8	<b> </b>	INI	THINLY LAMINATED DURATION	< 0.008 FEET	
	PLASTICITY INDEX (PI)	DRY STRENGTH	CME-45C		X -N 03	FOR SEDIMENTARY ROCK		NING OF THE MATERIAL BY CEMENT	ING, HEAT, PRESSURE, ETC.	
NONPLASTIC LOW PLASTICITY	0-5	VERY LOW	X CME-550	TUNGCARBIDE INSERTS		FRIABLE	RUBBIN	G WITH FINGER FREES NUMEROUS G	RAINS;	
MED. PLASTICITY	6-15 16-25	SLIGHT MEDIUM		X CASING X W/ ADVANCER	HAND TOOLS:	1		BLOW BY HAMMER DISINTEGRATES		
HIGH PLASTICITY	26 OR MORE	нісн	PORTABLE HOIST	X TRICONE STEEL TEETH	POST HOLE DIGGER	MODERATELY		CAN BE SEPARATED FROM SAMPLE EASILY WHEN HIT WITH HAMMER,	WITH STEEL PROBE:	
	COLOR		O	TRICONE TUNGCARB.	HAND AUGER	INDURATED		ARE DIFFICULT TO SEPARATE WITH	STEEL PROBE-	
DESCRIPTIONS MAY INCLUDE COLOR	OR COLOR COMBINATIONS (TAN, RED, YE	ELLOW-BROWN, BLUE-GRAYI.		X CORE BIT	SOUNDING ROD	INDUMATED		ULT TO BREAK WITH HAMMER.	. J.CCC FRUDC:	
MUDIFICAS SUCH AS LIGHT, DARK	K, STREAKED, ETC. ARE USED TO DESCRIE	BE APPEARANCE.	U	LJ	VANE SHEAR TEST	EXTREMELY		HAMMER BLOWS REQUIRED TO BREA	C SAMPLE:	
		I		1		1	SAMPLE	E BREAKS ACROSS GRAINS.		1

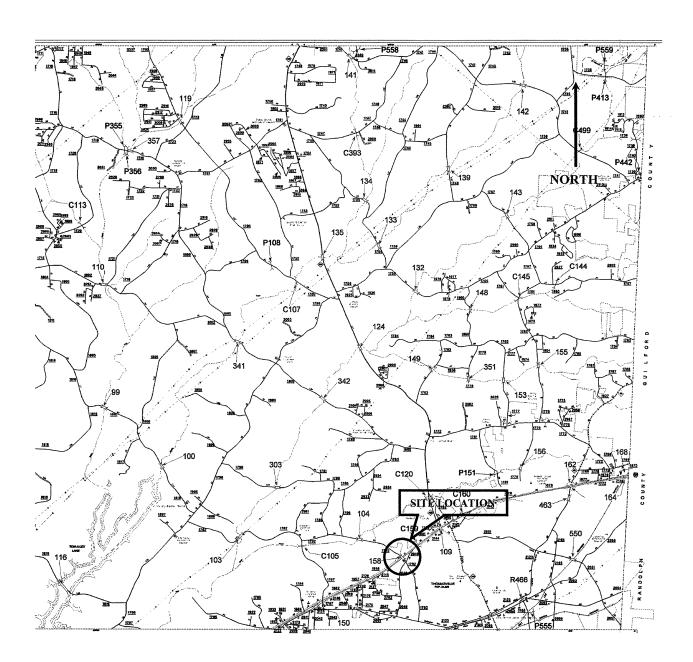
PROJECT REFERENCE NO. 33732.I.I (B-4499)

SHEET NO.

2



# FIGURE 1



## SITE VICINITY MAP

Adapted from an NCDOT Bridge Location Map of Davidson County, North Carolina, dated January 1, 1990.

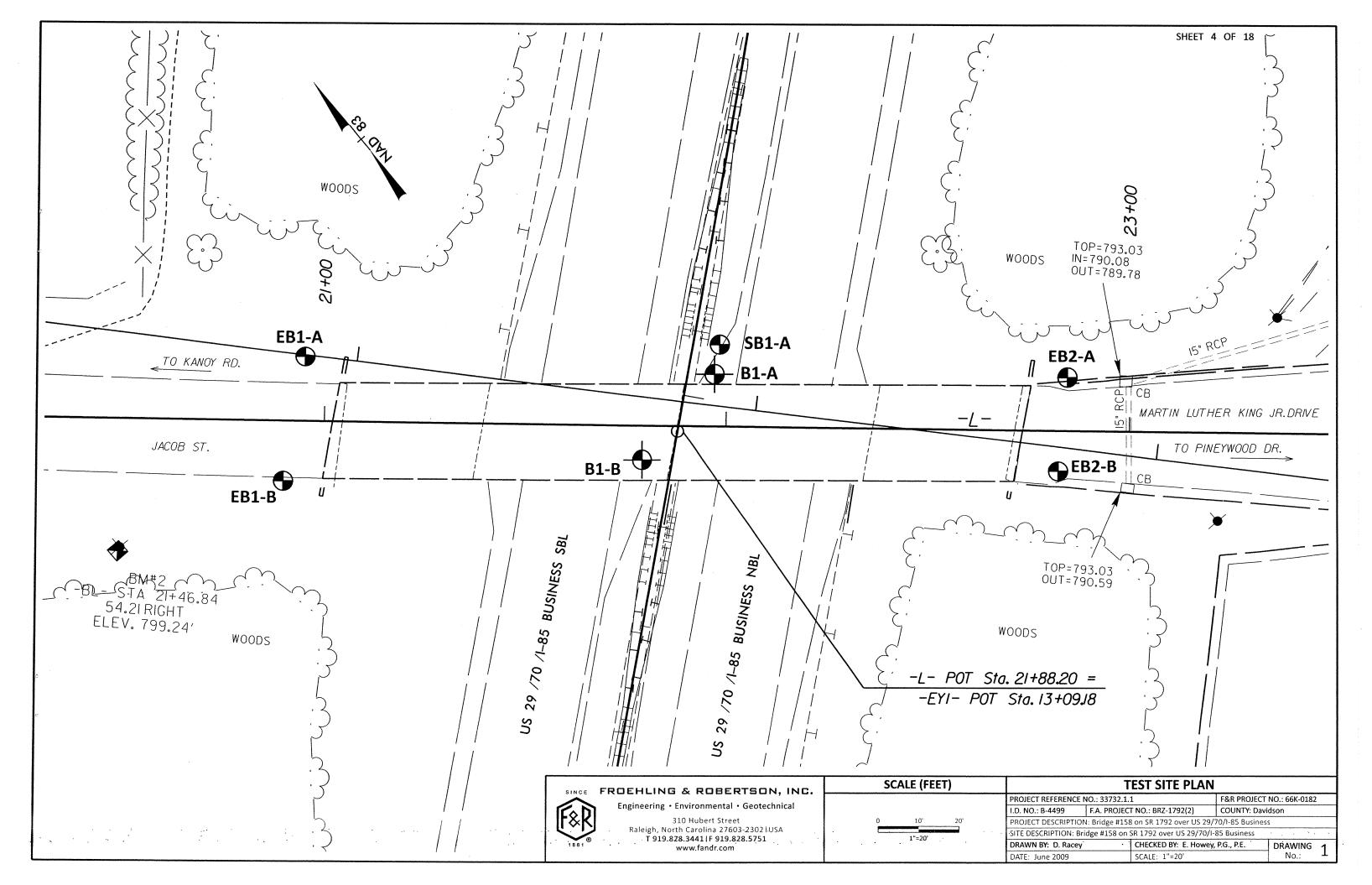
Not to Scale

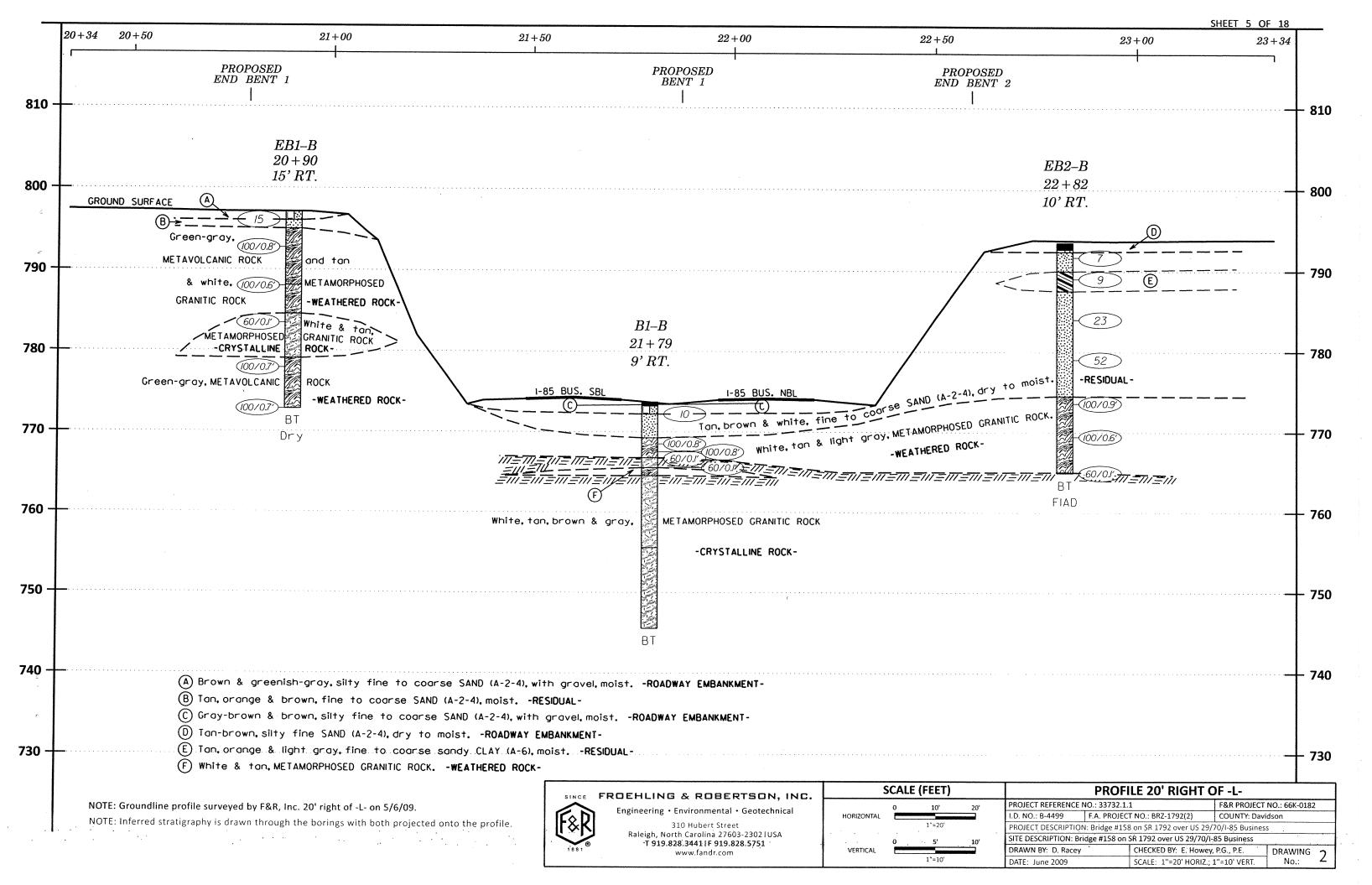
# FIGURE 2

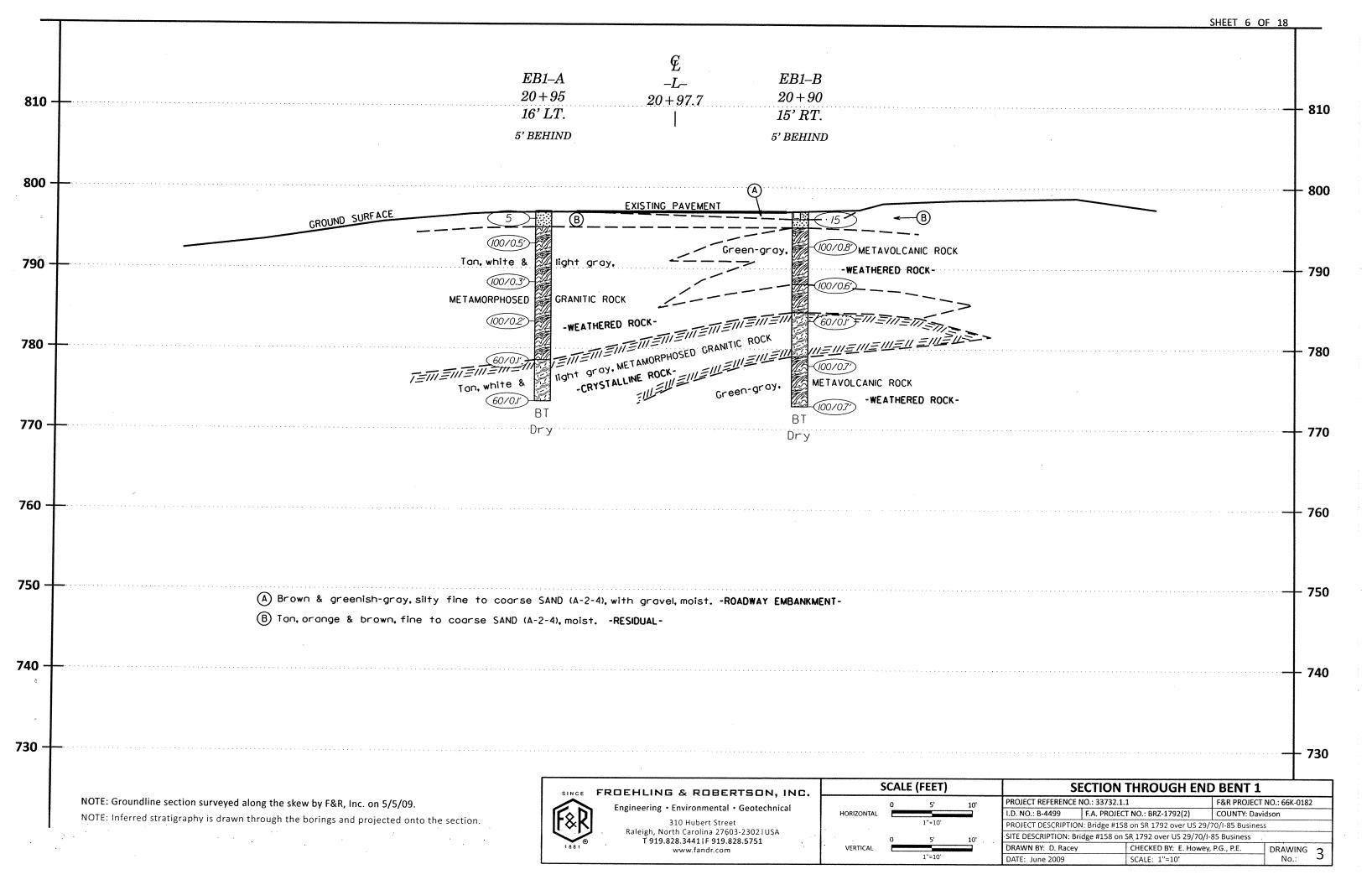


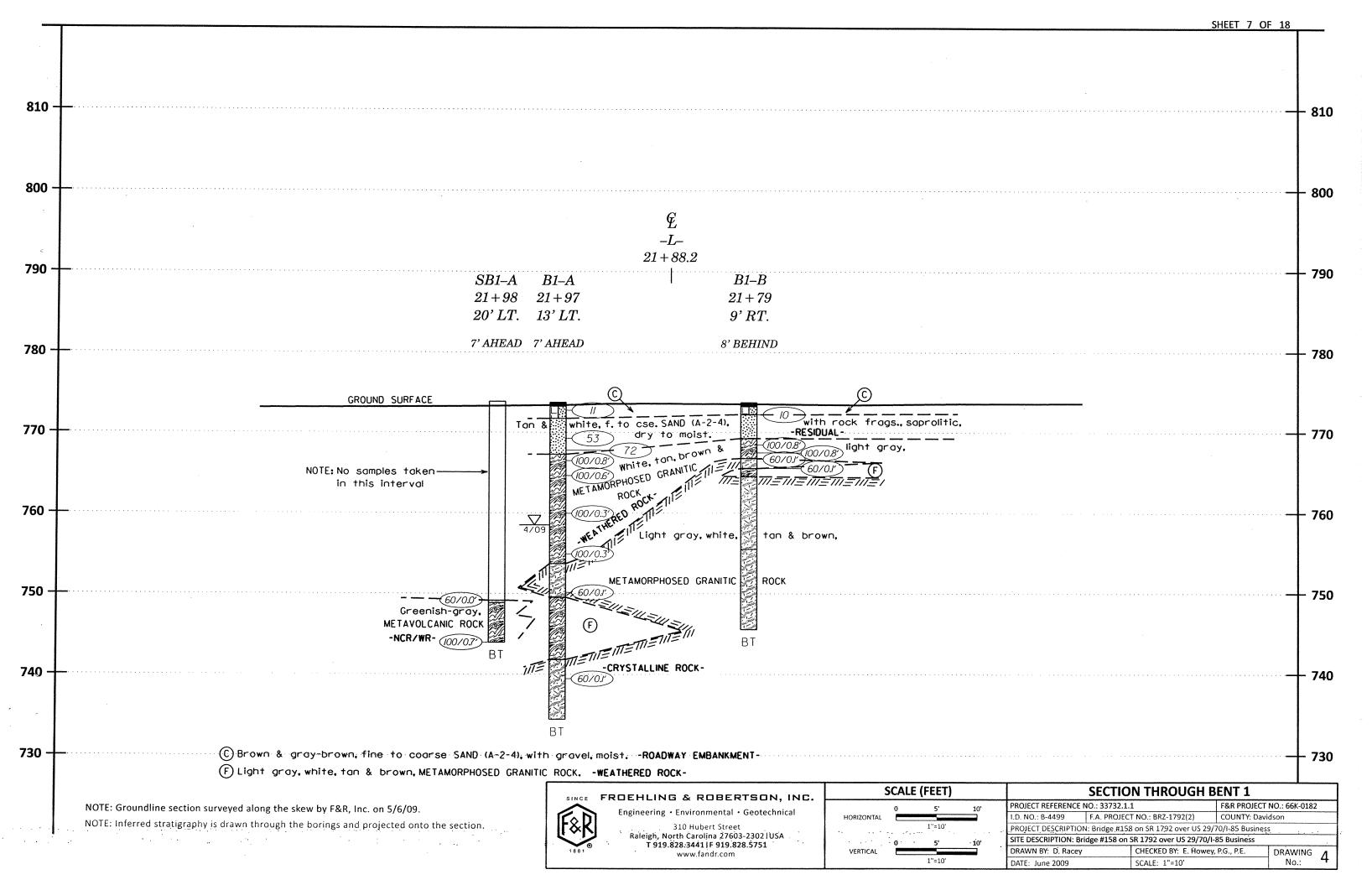
## SITE LOCATION PLAN

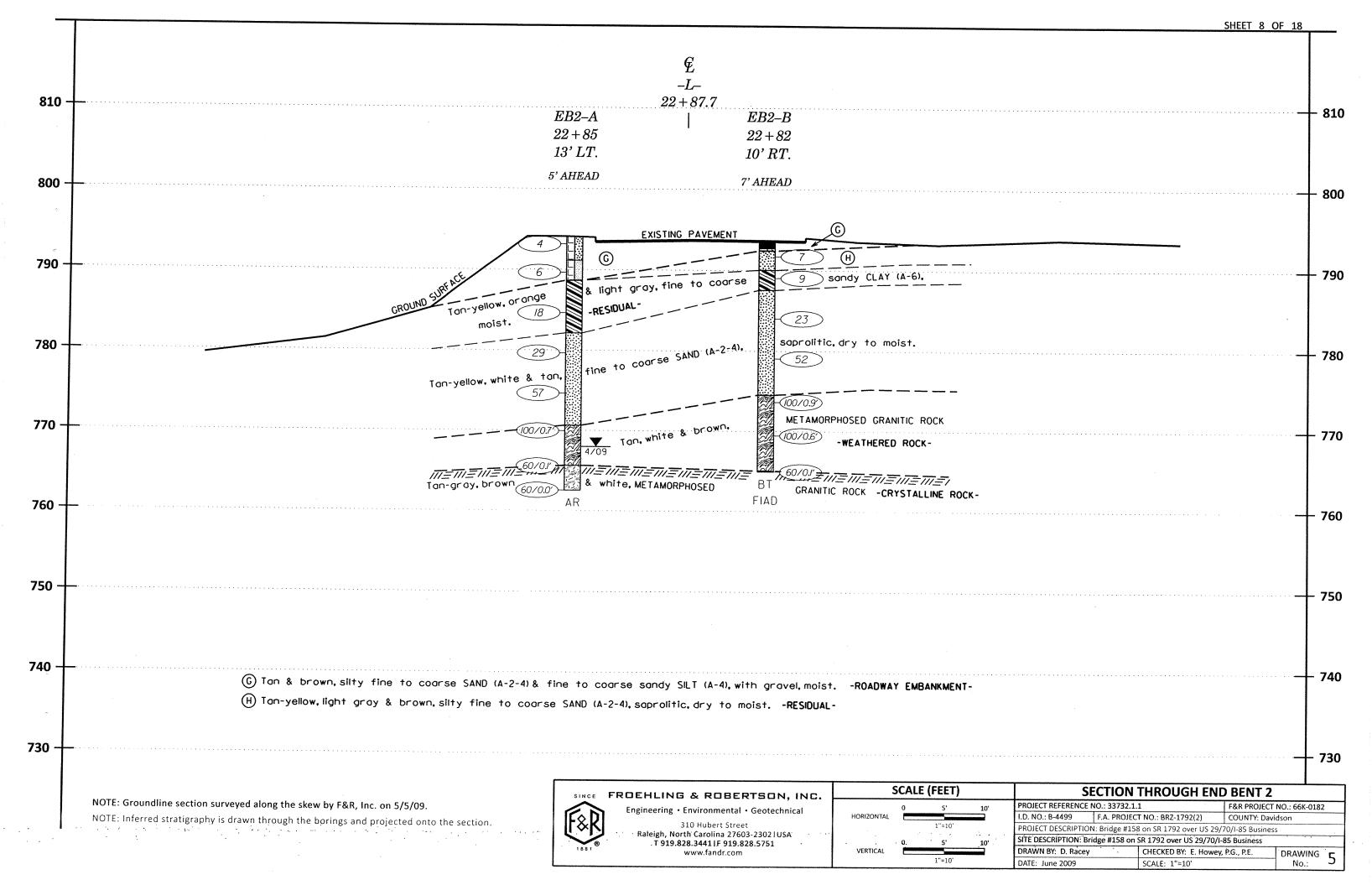
Adapted from a USGS Quadrangle 7.5 min. Topographic Map Of Thomasville, North Carolina. Not to Scale













SHEET .

	JECT I						B-4499		COUNTY	Davids	on		0	SEOLOGIST D.	Racey	
SITE	DESC	RIPTIC	ON Brid	dge #1	58 o	on S	SR 1792 over US	29/70/I-85 E	Business						GROUND W	/TR (ft
BOR	RING NO	D. EB1	1-A			ST	<b>ATION</b> 20+95		OFFSET	16ft LT			ALIGNMENT	-L-	0 HR.	Dry
COL	LAR EI	LEV. 7	97.1 ft			то	TAL DEPTH 23	3.6 ft	NORTHIN	G 782,	364		EASTING 1,	672,839	24 HR.	Dry
DRIL	L MAC	HINE	CME 5	5 Trac	k	DR	RILL METHOD 2	.25" ID HSA		***************************************				HAMMER TYPE	E Automatic	
STA	RT DAT	TE 04/	06/09		,	СО	MP. DATE 04/0	6/09	SURFACE	WATE	R DE	PTH I	N/A	DEPTH TO RO	CK 18.5 ft	
LEV	DRIVE ELEV	DEFII	' <b>`</b>	ow co			BLO	WS PER FOO	Г	SAMP	·   V /	L		W. AND DOCK DE	COURTION	
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5	ft	0 25	50 1	75 100	NO.	MC	)  G	ELEV. (ft)	OIL AND ROCK DE		EPTH (ft)
300	_	-											<b>_</b>			
	797 1	100											. 707.4	CDOUND CUD	-105	
95		1	1.	1	4	$\exists$	<b>\$</b> 5		1	<del> </del>	M		797.1	GROUND SURF RESIDUAL		0.0
~	793.6 ·	3.5							+				795.1 Tan, fin	e to coarse SAND ( trace clay & fine roo	A-2-4), with little its, saprolitic.	2.0
			100/0.5						100/0.5	١	D			WEATHERED R	ROCK	
90	-	‡												GRANITIC RO		
	788.6	8.5	100/0.3	.							M					
.	_								100/0,3							
85	- 783.6 -	135											<del></del>			
		-	100/0.2	.					100/0.2		D					
80	_	_														
-	778.6	18.5	60/0.1	***************************************							D		778.6	CRYSTALLINE F	2001	18.5
	1	-											Light gra	ay, METAMORPHO		
75	773.6 <b>-</b>	- 23.5											770.6	ROCK.		
Ī			60/0.1		~~~	7			60/0.1		D		773.5 Boring	Terminated at Elevi	ation 773.5 ft in	23.6
	1											F	CRYSTA	LLINE ROCK (ME GRANITIC RO		)
	1											F	•			
	1			-									NOTES:			
5	1	-										-	_	indicates harder dri	lling at a	
	Ī												depth o		iiiig at a	
0	$\pm$		.									F				
	1		1									-	•			
	1											-				
5	+	.										-				
	Ŧ	l														
0	Ŧ															
	7												•			
1	Ŧ								,			-				
15	‡															
	‡						•									l
0	‡											<u> </u>				
<b>-</b>	‡	1		***************************************						1						l
.	‡											E				l
5	1											F				l
	1											F				
	ł		l									F				ĺ
	$\pm$											F				I
	Ŧ	ĺ	***************************************		-							F				ŀ
5	Ŧ											F				
	‡		Tables States	***								-				
	ļ											L				
0								-			1	F				



SHEET 9 OF 10

								0/1	·	—т						·····	<del></del>		
ļ	JECT N						4499				COUNTY	С	avidso	n			GEOLOGIST D. I	Racey	
SITE	DESC	RIPTIO	N Bri	dge #1	58 on	SR	1792 ov	er US 2	29/70/1-8	5 Bu	siness							GROUND	WTR (ft
BOR	ING NO	. EB1	-B		s	TAT	10N 20	0+90			OFFSET	15	oft RT			ALIGNMENT	Г -L-	0 HR.	Dry
COL	LAR EL	EV. 79	97.0 ft		Т	OTA	L DEP	TH 24.2	2 ft		NORTHIN	IG	782,3	44		EASTING 1	,672,815	24 HR.	Dry
DRIL	L MAC	HINE (	CME 5	550	D	RILI	L METH	OD 2.2	25" ID H	SA							HAMMER TYPE	Automatic	
STAI	RT DAT	E 04/0	9/09		С	OM	P. DATE	E 04/09	/09	П	SURFAC	E١	VATE	R DEF	PTH	N/A	DEPTH TO ROO	CK 12.5 ft	
ELEV	DRIVE	DEPTH	BL	ow co	UNT	П		BLOW	S PER F	 00T	***************************************	П	SAMP.	<b>V</b> /	L				
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5ft	0	2	25	50	7	75 100	о	NO.	МО	O I G	ELEV. (ft)	OIL AND ROCK DES	SCRIPTION	DEPTH (ft)
						$\Pi$		·				$\parallel$						· · · · · · · · · · · · · · · · · · ·	<i>DEI</i> 111(11)
800																			
000	-	-														<del>-</del>			
	797.0	0.0		1	L.,	Ш.					_	Ш			<u></u>	797.0	GROUND SURF		0.0
795	-		2	3.	12		• • • 15							М		796.0 795.0 Brown	ROADWAY EMBAI & greenish-gray, sil	ty fine to coars	1.0 se 2.0
	793.5	3.5	55	45/0.3										D.		SAN	D (A-2-4), with grave RESIDUAL		_1
	-		33	45/0.5		-					100/0.8	1				Tan, o	range & brown, fine	to coarse SAN	D
790	700.5	- 0.5				1						-				F L	(A-2-4), with little WEATHERED R	OCK	J
	788.5	- 8.5 -	82	18/0.1	1						100/0.6			D			en-gray, METAVOLO		9.0
785	-	-														_	GRANITIC RO		
	783.5 <sup>-</sup>	- 13.5										11		D		— 784.5 -	CRYSTALLINE I	ROCK	12.5
	-	-	60/0.1	1							60/0 1			U		Tan	& light gray, METAN GRANITIC RO	10RPHOSED CK	
780	-	-				11						41				779.0			*0.0
	778.5	18.5	31	69/0.2							100/0 7			D	10		WEATHERED R		18 0
775	-	_				11.					100/0 /	$\  \ $				- Gree	en-gray, METAVOLO	ANIC ROCK.	
113		- - 23.5										11			110	_			
		-	26	74/0.2		╀╌	<del></del>	L			100/0 7	•		D	The same	772.8 Boring	Terminated at Elevi	ation 772.8 ft i	24 2 n
770		-															THERED ROCK (ME ROCK)		
		-															ποσπ		
	-	-																	
765	-	-														NOTES	•		
	1	• •															ogist indicates strata at depths of 1.0' & 9		
760	-	-														2) Drille	r indicates harder dri s of 2.0' & 12.5'.		
100	-	-														3) Drille	r indicates softer drill	ing at a	
	-	- -														4) Drille	of 18.0'. r indicates zones of s	softer & harder	
755	_	-														L arilling	from 13.6'-18.0'.		
	-											ĺ				_			
												.				_			
750	_	-														_			
	1																		
745	1																		
	+	-														<del></del>			
	1															<del>-</del> -			
740	1	-														_			
İ	1																		
į	1																		
735	+	-														_			
	1															-			
730	1															-			
- 33	†	-														  -			
ĺ	1															<u>-</u>			
725	1																		
	. 🖠			-  -														÷	
İ	Ŧ			'			÷	•	-	٠							•	•	
720																			

# NCDOT GEOTECHNICAL ENGINEERING UNIT

SHEET

PRO	JECT I	NO. 3	3732.1	1.1		D.	B-4499		-	cour	YTY	Davids	on	****		GEOLOGIST D.	Racey	
SITE	DESC	RIPTIO	ON Br	idge #	158	on:	SR 1792 o	ver US 29	/70/I-85 E	Busines	s						GROUND V	VTR (f
BOF	RING NO	O. B1-	Α			S	TATION 2	21+97	<del></del>	OFFS	ET	13ft LT			ALI	GNMENT -L-	0 HR.	15.2
COL	LAR EI	LEV. 7	773.7	ft		TO	OTAL DEF	TH 39.3 f	ft	NORT	HING	3 782,	 295			STING 1,672,914	24 HR.	N/A
DRII	L MAC	HINE	CME	55 Tra	ck		RILL MET			L						HAMMER TYP		14//
STA	RT DA1	TE 04/	08/09				OMP. DAT			г		WATE	D DE	DTU	N/A	DEPTH TO RO	·	
ELEV	DRIVE	<b></b>		.OW CC	L TNUC				PER FOOT	l	102	SAMP	7	71	T	DEFINIORO		
(ft)	ELEV (ft)	(ft)	0.5f				0		50	75	100	NO.	17	OII G	ELEV.	SOIL AND ROCK DE		) = DTII (
						T		1					IVIC	711 6	ELEV.	(11)		DEPTH (f
775																*		
•	773.7	0.0	1	1	<u> </u>	_				-					- - 773.7	GROUND SUR	FACE	8:
		‡	12	5	6		111						M		771.7	ROADWAY EMBA ASPHALT/GRAV		2.
770	770.2	T	14	22	31	$\dashv$							١		_	Brown, fine to coarse SAI		1
	768.7 767.2	5.0 6.5	16	25	47				●53 			SS-12	M 7%		<u> </u>	gravel.  RESIDUAL		J
700	•	T	47	53/0.3	1					100	: 1/0.8	00-12	Ď	777	767.2	Tan & white, fine to coarse with little silt, trace clay, r		) 6.
765	765.2	8.5	76	24/0.1	1						0/0.6		D		-	saprolitic.		]
		ł													-	WEATHERED F White, tan & brown, META	AMORPHOSED	
760	760.2	13.5				ĺ									-	GRANITIC RO	CK.	
	-		100/0.	3'						100	0/0.3		\ \frac{1}{2}		_			
	1														_			
755	755.2		100/0.	] 3'									D		_			
	1	-	100/0.							100	0/0.3				753.7	CRYSTALLINE	BUCK	20.
,,,	7500															Light gray, METAMORPHO		0
750	750.2	23.5	60/0.1							60	/0.1		D		<del></del> 749.5	ROCK.	***************************************	24.
	1	-													-	WEATHERED F Light gray, METAMORPHO		
45	+	•													-	ROCK.		
	Ŧ														-			
	‡														741.8			31.
40	739.5													1	-	CRYSTALLINE I Light gray-white wil	h black	
	‡		60/0.1							60	/0.1°				-	METAMORPHOSED GR	ANITIC ROCK.	
25	1											(RS-1)			-			
35	‡					$\perp \! \! \perp$				<u> </u>					<del>-</del> 734.4			39.3
	<u> </u>														-	Boring Terminated at Elev CRYSTALLINE ROCK (ME	TAMORPHOSE	D
30	1														-	GRANITIC RO	CK)	
	+														-			
	Ŧ															NOTES:		
25	7														-	1) Driller indicates harder dri	lling at a	
	‡	Ì		1												depth of 20.0'.  2) Began coring at a depth of	f 24.2'.	
20	‡															0 hr. water level measured coring.	d prior to	
	‡			1											_	4) 24 hr. water level not mea water introduced for coring		
	<u>†</u>											l				water infroduced for coffing		
15	+																	
	Ŧ														<del>-</del>			
-	‡	1																
10	‡	ĺ										l						
	‡			ľ														
	<u>†</u>													F				
)5	+		-												-			
	‡			l														
00	‡												ļ					
<u> </u>	‡														-			
	İ	.						•	•				. :	. F				
15	1	1												-	•			



SHEET 100F18

<u> </u>				ILL L			<i>J   \ L</i> _		// //			
	JECT N				D. B				·	1	UNTY Davidson GEOLOGIST D. Racey	
SITE	DESC	RIPTIO	N Brid	dge #158	on SR	1792	over US	29/70	1-85 E	Busin	ess GROUND	WTR (ft
BOR	ING NO	). B1-A	`		STA	TION	21+97			OF	FSET 13ft LT ALIGNMENT -L- 0 HR.	15.2
COL	LAR EL	EV. 77	73.7 ft		TOT.	AL DE	PTH 39.	.3 ft		NO	RTHING 782,295 EASTING 1,672,914 24 HR.	N/A
DRIL	L MAC	HINE (	OME 5	5 Track	<del> </del>		THOD 2.		HSA			
	RT DAT				<del> </del>		TE 04/0			T	RFACE WATER DEPTH N/A DEPTH TO ROCK 20.0 ft	
	E SIZE			·	┼		N 15.0 f			┼	ILLER C. Price	······································
ELEV	RUN	DEPTH	RUN	DRILL	R	UN		STF	ATA	L		
(ft)	ELEV (ft)	(ft)	(ft)	RATE (Min/ft)	REC. (ft) %	RQD (ft) %	SAMP. NO.	REC. (ft) %	RQD (ft) %	O G		DEPTH (ft
749.5	749.5 -	24.2	5.0	1:31/1.0	(0.0)	(0.0)		(0.0)	N/A	977	Begin Coring @ 24.2 ft - 749.5 WEATHERED ROCK	24.2
745	- - - 744.5	29.2		1:28/1.0 2:12/1.0 2:18/1.0 3:05/1.0	0%	0%		`0%´			Light gray, METAMORPHOSED GRANITIC ROCK.	
İ	777.5	25.2	5.0	3:23/1.0	(2.3)	(0.0)					-	
	-	l		2:41/1.0 2:00/1.0	46%	0%		(6.7)	(2.6)		. 741.8 CRYSTALLINE ROCK	31.9
740	739.5 – 739.4	34.2 34.3		5:00/1.0 5:50/1.0				92%	(2.6) 36%		Light gray-white with black, fresh to slightly weathered, hard to very har	rd
	-	1	5.0	W=60/0.1/ 2:35/1.0 2:55/1.0 6:40/1.0 2:45/1.0 3:40/1.0	(4.4) 88%	(2.6) 52%	RS-1 /				<ul> <li>METĂMORPHOSED GRANITIC ROČK, very close to moderately close.</li> <li>fracture spacing.</li> </ul>	e
735	-	†		2.55/1.0 6:40/1.0 2:45/1.0	-/-	-/-	110-1				- 1 joint @ 70°, 6 joints @ 40°-45°. RS-1: 35.6'-35.9' qu=4,655 psi	
-, 55	734.4	39.3		3:40/1.0							- 734.4  Boring Terminated at Elevation 734.4 ft in CRYSTALLINE ROCK  (METAMORPHOSED GRANITIC ROCK)	39.3
730	-	Ī										
	-										- NOTES:	
	-	‡									.  1) Driller indicates harder drilling at a	
725	_	-									depth of 20.0".	
											<ul><li>2) Began coring at a depth of 24.2'</li><li>3) 0 hr. water level measured prior to</li></ul>	
720	-	-									coring. 4) 24 hr. water level not measured due to	
720	-	-									water introduced for coring.	
		-										
715	_	_										
											<del>-</del> ·	
	-											
710	-	_									<del>-</del>	
	-											
705	4	-										
, ,,,		-									<del>-</del> ·	
	-	-										
700		-								E	-	
	-	_										
										F		
695	-1										<del>-</del>	
	-											
690	1											
0.30	-	-									<del>-</del> :	
	1	-										
685	_	-								<u> </u>	_	
	-	_								F		
	1											
680	1	-									- -	
	1	-										
675	‡	-										
0,0	+	-									<u>-</u>	
	1	-										
670	1	-						·		F		
	-+	- 1			- 1	. 1				ı +		

NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

SHEET IN OF 18

	JECT N						-4499	110.55	70// 5-			Davidso	on			GEOLOGIST		
				dge #1	<del></del>		1792 ove		70/I-85						T	***	GROUND \	
	ING NO						TION 21				FSET :				ALIGNME		0 HR.	N/A
	AR EL						AL DEPT				RTHING				EASTING	1,672,920	24 HR.	N/A
	L MACH			5 Trac			_L METH									HAMMER	TYPE Automatic	
	RT DAT		г			OM	IP. DATE				RFACE		·	<i>x</i>	I/A	DEPTH TO	ROCK 24.7 ft	
LEV (ft)	ELEV	DEPTH (ft)	0.5ft	0.5ft	·	$\left\  \cdot \right\ _{0}$	) 2:	BLOWS	PER FOC 50	75	100	SAMP.	'/	0		SOIL AND ROC	K DESCRIPTION	
	(ft)		0.311	0.511	0.511	╫			Ĭ			INO.	МО	I G	ELEV. (ft)			DEPTH (
775		-							· • • • • • • • • • • • • • • • • • • •						773.8		SURFACE	0
	-	-													Aι	gered to a depth taken in th	of 24.7', no samples is interval.	
770	_	- -								-   -					_			
	-	-												-				
65	-	-																
~	-	-								-   -					_			
	-													-				
60	-	-				1			<u> </u>					1	_			
		-																
55		-																
	7	-			***************************************									F	<del>-</del>			
	]	_													٠			
50	749.1	24.7				$\parallel$			<del> </del>	_	:00/0.01				749.1			24
	-	-	60/0.0	"]							. 60/0.0						ALLINE ROCK VOLCANIC ROCK.	<u> </u>
45	- 744.6	- - 29.2													G		RED ROCK VOLCANIC ROCK.	
			31	69/0.2	-	╫			<u> </u>		100/0.7	· <del> </del>			743.9 Bor	ing Terminated a	t Elevation 743.9 ft in	29
40		-													VVE	RO	:K (METAVOLCANIC CK)	
	-	-													<del>-</del>			
	1														NOT	ES:		
735	-					1											th of 24.7', began	
															2) Au	t spoon sampling ger refusal at a d	epth of 24.7'.	
730	-	_													bel	ow auger refusal	one bit to advance depth.	
	-	_															vanced to take split	
705	1	-														n samples in the : e material was no		
725		-													_			
	4	-					`											
720	_	-																
	-	-																
715	-	<del>-</del>			-													
		-													-			
	-																	
710	-																	
	-																	
705	-																	
		-													<del>-</del> ·			
	-																	•
700	-	<u> </u>																
	• -				1		•		٠.					.				*•
	_	ţ			1	1		•				1	1	1 1	• .			



SHEET

	DJECT N						B-449							Davids	son				GEOLOGIST D	. Racey	
SITI	DESC	RIPTIC	ON B	ridge #	#158 	on	SR 17	92 ov	er US	29/70	0/I-85 E	Busine	ss				ar.			GROUND V	VTR (f
	RING NO					S	TATIO	N 21	1+79	·		OFF	SET	9ft RT			ALIC	GNMEN	T -L-	0 HR.	N/A
COL	LAR EL	.EV. 7	73.7	ft		T	OTAL	DEP	TH 28	.2 ft		NOF	RTHIN	<b>G</b> 782,	290		EAS	TING	1,672,886	24 HR.	N/A
DRII	LL MAC	HINE	CME	55 Tr	ack	D	RILL N	METH	OD 2	.25" I	D HSA	/NQ-3	Core						HAMMER TYP	PE Automatic	
STA	RT DAT		07/09			С	OMP.	DATE	04/0	7/09		SUF	FAC	WATE	R DE	PTH	V/A		DEPTH TO RO	OCK 7.0 ft	
ELEV (ft)	DRIVE	DEPT	·	LOWC			41				R F00	Γ		SAME	· 🔻	L			OIL AND ROCK DI	CCRIPTION	
(10)	(ft)	(ft)	0.5f	t 0.5	ft 0.	5ft	0	2	5	50 		75	100	NO.	MC	) G	ELEV. (				EPTH (
775		-																			
	773.2	0.5	5	5	5	3		[				Τ.		<del>                                     </del>	<del> </del>		- <u>773.7</u> - 773.2		GROUND SUF		8
70	-					,	•1	a +	+ $+$ $+$	_	 				M		772.2	1	ASPHALT Sh	oulder	<del></del>
, 0	769.7 – 768.2	5.5	35	64	36/0	0.3						-			D		769.2		-brown & brown, si ND (A-2-4), with gra		4.
	766.7 -	- 70	15	85/0.	3								00/0.8		D		- - 766.7	Tan 8	RESIDUA white, fine to coars	L Se SAND (A-2-4)	
65	765.6 -	- 8.1	60/0. 60/0.							.			60/0.1° 60/0.1°		D		765.5		with rock fragment WEATHERED	s, little silt.	7. 8.
		_	Journ.	1				: :									– 764.5 -	W	hite & tan, METAM	ORPHOSED	9.
	-	-	ŀ					: :										<b> </b>	GRANITIC RECEIVED	ROCK	
30	-	-					l		-		-	+		RS-2	1		-	W	hite & tan, METAM GRANITIC RI		
	1					-												100	WEATHERED hite & tan, METAM		
55	1													RS-3	1		755 5		GRANITIC R	OCK.	18
	1									.   .			-, ·				_	White	CRYSTALLINE tan & brown, MET	AMORPHOSED	
	1											: :						L	GRANITIC Ro Light gray/white w		
50	+	-					<u> </u>							RS-4	1		_	MET	AMORPHOSED GI	RANITIC ROCK.	
	Ŧ											1 : :									
15																	745 5				28.
٦	Ŧ																_		Terminated at Ele ALLINE ROCK (MI		
	Ŧ																		GRANITIC RO		
0	+																-				
	‡					1												NOTES			
55	‡															1 -		1) Geolo	ogist indicates strat	a break in split	
٦	†															E	-	spoon 2) Bega	at a depth of 1.5'. In coring at a depth	of 8-2'	
	‡															1 E		3) Wate	r levels not measur	ed due to water	
0	‡															<u> </u>	_				
	‡															F					
_	1	i														1 F					
5	+															F					
	Ì																				
0	• 1															l. F					
	Ŧ																				
	Ŧ															-					
5	‡																				
	Ŧ																				
	‡		ļ													<u> </u>					
	‡																				
	‡															-					
5	‡															F					
	1																				
	1																				
	+																				
	Ŧ			:					. • •					.							
.1	+	1:	- 1	- 1		i						•		- 1	- 1	L	٠.				



SHEET 12 OF 18

PRO	JECT N	O. 33	732.1.	1	D. B-	-4499				CO	UNTY Davidson		GEOLOGIST D	. Racey	
SITE	DESC	RIPTIO	<b>N</b> Bric	lge #158	on SR	1792	over US	29/70	/I-85 E	Busin	ess			GROUND	VTR (ft)
BOR	ING NO	). B1-E	3		STA	TION	21+79			OF	FSET 9ft RT	ALIGNMEN	T -L-	0 HR.	N/A
COL	LAR EL	EV. 77	73.7 ft		тот	AL DE	PTH 28	.2 ft		NO	RTHING 782,290	EASTING 1	,672,886	24 HR.	N/A
DRIL	L MAC	HINE (	CME 5	5 Track	DRIL	L ME	THOD 2	.25" IC	) HSA	/NQ-	3 Core		HAMMER TY	PE Automatic	
STAI	RT DAT	E 04/0	7/09		COM	IP. DA	TE 04/0	7/09		su	RFACE WATER DEPTH N	I/A	DEPTH TO RO	OCK 7.0 ft	
COR	E SIZE	NQ-3	-	*			N 20.01			DR	ILLER C. Price				
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	UN RQD (ft) %	SAMP. NO.	STF REC. (ft) %	RATA RQD (ft) %	L 0 G	ELEV. (ft)	DESCRIPTION A	ND REMARKS		DEPTH (ft)
765.5	707											Begin Coring	g @ 8.2 ft		
700	765.5 - - - 760.5 -	- 8.2 - - - 13.2	5.0	1:21/1.0 1:17/1.0 1:29/1.0 1:29/1.0 1:38/1.0	(4.0) 80%	(0.8) 16%		(0.0) 0% (8.4) 93%	(3.4) 38%		White, tan &	CRYSTALL brown, moderate	HOSED GRANITION  INE ROCK  Iv weathered mod	erately hard	
760	-		5.0	1:34/1.0 1:35/1.0 1:35/1.0	(4.4) 88%	(2.6) 52%	RS-2				_ METAMORPHOS	ED GRANITIC R fracture s 3 joints @ 65°-70	OCK, very close to spacing. °, 2 joints @ 40°.	moderately close	
755	755.5 -	18.2		3:25/1.0 3:28/1.0			RS-3				· 755.5	RS-2: 13.3'-13. RS-3: 16.7'-17.0	.6' qu=993 psi 0' qu=5,200 psi		18.2
750	750.5		5.0	2:20/1.0 3:44/1.0 3:23/1.0 3:27/1.0 9:29/1.0	96%	(2.0) 40%	\ RS-4	(9.4) 94%	(6.6) 66%		Light gray/white with GRANITIC ROC			ED	
	-		5.0	4:50/1.0 4:12/1.0 4:01/1.0 4:45/1.0	(4.6) 92%	(4.6) 92%					<b></b> - -				
745	745.5 - -	- 28.2		15:00/1.0									745.5 ft in CRYSTA D GRANITIC ROC		28.2
740	-	-									NOTES:				***************************************
735	-										1) Geologist indicates spoon at a depth of 2) Began coring at a 3) Water levels not m introduced for corin	f 1.5'. depth of 8.2'. neasured due to w			
730	-	-									-	y.			
725	-	-									-				
720	_	-									-				
715		-									-				
710	-	- - -									-				
	+	-													
705	-	-									-				
700	1	-									-				
005	1	- -								-					
695	1	-   -									<u>.</u>				
690		-	-		THE PARTY OF THE P					ļ .	-,	. •	·	. <i>•</i>	

# NCDOT GEOTECHNICAL ENGINEERING UNIT

SHEET

PRO	DJECT	NO. 3	3/32.1	1.1		D.	B-4499		COUNTY	Davids	on			GEOLOGIST I	D. Racey	
SITI	E DESC	RIPTI	ON Br	ridge #	158 (	on	SR 1792 over U	S 29/70/I-85 B	usiness						GROUND W	VTR (
BO	RING NO	o. EB	2-A			S.	<b>TATION</b> 22+85	***	OFFSET	13ft LT			ALIGN	NMENT -L-	0 HR.	Dr
COL	LAR E	LEV.	794.11	ft		TO	OTAL DEPTH 3	1.6 ft	NORTHIN	<b>G</b> 782.	237			ING 1,672,980	24 HR.	26.3
DRI	LL MAC	HINE	CME	55 Tra	ıck	DI	RILL METHOD	2.25" ID HSA							PE Automatic	
STA	RT DAT	ΓE 04	/09/09			├	OMP. DATE 04/		SURFACE	- WATE	R DE	ртн	N/Δ	DEPTH TO R		
ELEV	DRIVE	DEPT	н Ві	OWC	L TNUC	Ц.,,	TT	WS PER FOOT		SAMP		7 L	T	DEFINIOR	OCK 20.5 it	
(ft)	ELEV (ft)	(ft)	0.5f	t 0.5ft	0.5	5ft	0 25	50	75 100	1 1	17	O O I G	ELEV. (ft)	SOIL AND ROCK [		COTU
											1		CELV. (II)		U	EPTH
795																
ņ	794.1	00	+	2	2	+			T	<b> </b>	<del> </del>	1 10.	794.1	GROUND SU		
		Ŧ					<b>T</b> <sup>4</sup>				M		701.4	ROADWAY EME Brown, tan-red & light	gray, sitty fine to	
790	790.6	3.5	3	3	3		6			SS-26	15%		791.1	coarse SAND (A-2-4), gravel, some c	with trace roots, ay, mica.	<del></del>
		ŧ								00 20	1 ""		788.6	Brown, fine to coarse sa with some	indy SILT (A-4(0)),	, 
785	785.6	8.5											<u> </u>	RESIDU	AL	
00	-	<u> </u>	5	8	10					SS-27	20%		-	Tan-yellow, fine to coa (A-6(4)), with s	orse sandy CLAY ome silt.	
		-											782.1			1
80	780.6 -	13.5	8	12	17	+								Tan-yellow, fine to coarse some silt, trace clay,	SAND (A-2-4), with	h
		_					29				D/M		-		anda, aspirantia	
	775.6 -	18.5								l			-			
75			14	24	33			●57			D/M		_			
									1200				<u>-</u>			
70	770.6	- 23.5	71	29/0.2								7077	- - 770.6			2
	1	-	'	2510.2					100/0.7	·	D		<del></del> -	WEATHERED Tan & white, METAI		
	705.0										<b>-</b>		-	GRANITIC F	ROCK.	
55	765.6	<u> 28.5</u>	60/0.1						60/0 1		D		- 765.6 	CRYSTALLIN	E ROCK	2
	762.5	31.6											- - 762.5	Tan-gray, METAMORPH ROCK.	IOSED GRANITIC	3
0	-‡		60/0.0						60/0.0				_	Boring Terminated	vith Standard	
$\exists$	7	•												Penetration Test Refusal ft in CRYSTALLI	NE ROCK	
	‡												-	(METAMORPHOSED (	GRANITIC ROCK)	
5	#												-			
	‡		1										_	IOTES:		
0	‡												- 1	) Auger refusal at a depti	n of 31.6'.	
-	+												-			
	1												-			
5	1												-			
	<u> </u>												-			
	Ŧ															
2	Ŧ												-			
	Ţ															
5	Ŧ												• •			
	‡			-								ŀ				
	‡											L				
	‡			-								E	<del>-</del>			
	‡											F				
_	1	ĺ										F				
5	$\pm$	.										F	_			
	Ŧ											þ				
	Ŧ		1									F				
	‡		-	.								F	-			
İ	ţ	ŀ				ľ		•				ŀ				
5	+	- 1	1						I		- 1					



SHEET 13 OF 18

PROJECT NO. 33732.11   10. 8-4499   COUNTY Davidson   GROLOGIST D. Racey   GROLOGIST D. Ra	$\sim$						GKE	UKI						~~~			
DORING NO. EB2-6	<del> </del>										Davidso	on			GEOLOGIST D.	Racey	
COLLAR ELEV. 793.5 ↑ TOTAL DEPTH 28.6 ↑ NORTHING 782.221 EASTING 1.672.963 24 R.  DRILL MACHINE CME 55 Track  DRILL METHOD 2.55* ID HSA  START DATE 0.409090 SURFACE WATER DEPTH NA  DEPTH 0.609090 DEPTH 0.609090 SURFACE WATER DEPTH NA  DEPTH 0.609090 DEPTH 0.609090 SURFACE WATER DEPTH NA  DEPTH 0.609090 DEPTH 0.60909090 DEPTH 0.609090 SURFACE WATER DEPTH NA  DEPTH 0.609090 DEPTH 0.60909090 DEPTH 0.609090 SURFACE WATER DEPTH NA  DEPTH 0.609090 DEPTH 0.60909090 DEPTH 0.609090 SURFACE WATER DEPTH NA  DEPTH 0.60909090 DEPTH 0.60909090 DEPTH 0.60909090 SURFACE WATER DEPTH NA  DEPTH 0.6090909090 DEPTH 0.60909090 DEPTH 0.60909090 SURFACE WATER DEPTH NA  DEPTH 0.6090909090 DEPTH 0.60909090 DEPH 0.609090 DEPTH 0.609090	SITE	DESC	RIPTIC	N Bri	dge #1	58 on	SR 1792 o	ver US 29/70/	I-85 Bu	siness						GROUND	WTR (ft
DRILL MACHINE CME 55 Trace   DRILL METHOD 2.25* ID HSA   START DATE (4/19/99)   COMP. DATE (4/09/99)   SURFACE WATER DEPTH NA   DEPTH TO ROCK 28.5 ft   CLEVE   DRIVE   CREW	BOF	RING NO	D. EB2	?-B		S	STATION 2	2+82	(	OFFSET	10ft RT			ALIGNME	NT -L-	0 HR.	Dry
START DATE 04/09/09   SUMPACE WATER DEPTH N/A   DEPTH TO ROCK 28.5	COL	LAR E	<b>.EV</b> . 7	93.5 ft		T	OTAL DEP	TH 28.6 ft	ľ	NORTHING	<b>3</b> 782,2	21		EASTING	1,672,963	24 HR.	FIAD
ELEV   CREW	DRII	L MAC	HINE	CME :	55 Trac	ck D	RILL METH	1 <b>OD</b> 2.25" ID	HSA						HAMMER TYPI	E Automatic	
CEV   CEV	STA	RT DAT	TE 04/	09/09		С	OMP. DAT	E 04/09/09	1	SURFACE	WATE	R DEF	1 HTC	V/A	DEPTH TO RO	CK 28.5 ft	
795	(ft)	ELEV	DEPT	<b>'</b>	<del></del>	·	0 :			5 100	1	MO		ELEV. (ft)		SCRIPTION	DEPTH (ft)
Total		702.7	ļ -												GROUND SURI	FACE	0.0
785 785.0 8.5 7 9 9 14 789 785.0 8.5 7 9 9 14 789 785.0 8.5 7 9 9 14 789 785.0 8.5 7 9 9 14 789 785.0 8.5 7 9 9 14 789 785.0 8.5 7 9 9 14 789 785.0 8.5 7 9 9 14 789 785.0 8.5 7 9 9 14 789 785.0 8.5 7 9 9 14 789 785.0 8.5 7 9 9 14 785.0 8.5 7 9 14 785.	790		‡								SS-19			792.4	ASPHALT n-brown, silty fine SAN		3.5
28	785	785.0	8.5								00 10	2270		Tan	RESIDUAL -yellow, light gray & br coarse SAND (A-2-4)	own, silty fine to , saprolitic.	6.0
18	780	790.0	12.5		9	14		23				M		Tan-y	sandy CLAY (A-6(8)), vellow, white & tan, fine	with little silt.  to coarse SAN	
770   770		7000	13.3	18	25	27		• • • • • • • • • • • • • • • • • • •			SS-21	8%		 - -			
765	775	775.0	18.5	34	48	52/0.4				100/0 9		D		-	te, tan & brown, META	MORPHOSED	19.0
50/0.1   60/0.1     278/3     CRYSTALLINE ROCK   Brown & while, METAMORPHOSED   GRANITIC ROCK   Brown & while, METAMORPHOSED   GRANITIC ROCK   Brown & while, METAMORPHOSED   GRANITIC ROCK   Brown & while, METAMORPHOSED   GRANITIC ROCK   Brown & depth of 1.0   CRYSTALLINE ROCK   METAMORPHOSEI   GRANITIC ROCK   To be a spoon at a depth of 1.1   CRYSTALLINE ROCK   To be a spoon at a depth of 1.0   CRYSTALLINE ROCK   GRANITIC ROCK   To be a spoon at a depth of 1.0   CRYSTALLINE ROCK   GRANITIC ROCK   CRYSTALLINE ROCK   GRANITIC ROCK   CRYSTALLINE ROCK   GRANITIC ROCK   CRYSTALLINE ROCK   GRANITIC ROCK   CRYSTALLINE ROCK   GRANITIC ROCK   CRYSTALLINE ROCK   GRANITIC ROCK   CRYSTALLINE ROCK   GRANITIC ROCK   CRYSTALLINE ROCK   GRANITIC ROCK   CRYSTALLINE ROCK   GRANITIC ROCK   CRYSTALLINE ROCK   GRANITIC ROCK   CRYSTALLINE ROCK   GRANITIC ROCK   CRYSTALLINE ROCK   GRANITIC ROCK   CRYSTALLINE ROCK   GRANITIC ROCK   CRYSTALLINE ROCK   GRANITIC ROCK   CRYSTALLINE ROCK   GRANITIC ROCK   CRYSTALLINE ROCK   GRANITIC ROCK   CRYSTALLINE ROCK   CRYSTALLIN	770	770.0	23.5	78	22/0.1					100/0.6		D		- - - -	GRANITIC RO	CK.	
755  750  750  750  750  750  750  750	765	765.0	28.5	60/0.1						60/0.1				764.9_/			28.5 \28.6
750  750  750  750  750  750  750  750	760	-												Bori	GRANITIC RO ng Terminated at Elev STALLINE ROCK (ME	CK. ation 764.9 ft in TAMORPHOSE	
750  750  750  750  750  750  750  750	755													- - - Note	S:		
745         740         735         730         725	750	- - - -				w.									on at a depth of 1.1'. ler indicates harder dri th of 10.5'. ing backfilled upon co	lling at a	
735	745	-  -												. to lo	cation in roadway.		
730	740	-												<del>.</del>			
725	735	- - - -												· · ·			
	730	-	-														
720	725	-		:													
		- - - - -	-											<b>-</b>			
715		-	- - , -						•					· ·			

# North Carolina Department of Transportation Division of Highways Materials and Test Unit Soils Laboratory

T.I.P. ID NO.:

B-4499

DESCRIPTION:

Bridge No. 158 on SR 1792 over US 29/70/I-85 Business

REPORT ON SAMPLES OF:

SOIL FOR QUALITY

PROJECT:	33732.1.1	COUNTY:	Davidson
DATE SAMPLED:	4/09	RECEIVED:	4/23/09
SAMPLED FROM:	-L-	REPORTED:	4/30/09
SUBMITTED BY:	E.C. Howey, P.G., P.E.	BY:	D. Jenks D. Denks/ECH
			Cert No. 101-02-0603

#### TEST RESULTS

PROJ. SAMPLE NO.	B1-A	EB2-A	EB2-A	EB2-B	EB2-B		T	T		1	T	
BORING NO.	SS-12	SS-26	SS-27	SS-19	SS-21							
			·									
Retained #4 Sieve %	0.0	0.7	0.0	0.0	0.0	T	-					
Passing #10 Sieve %	96.9	96.0	99.2	99.0	98.4							
Passing #40 Sieve %	63.8	75.6	80.1	87.5	75.2							
Passing #200 Sieve %	26.4	48.5	53.2	63.0	32.5							

#### MINUS #10 FRACTION

SOIL MORTAR - 100%										
Coarse Sand Ret - #60 %	48.1	31.4	27.6	18.4	38.5					
Fine Sand Ret - #270 %	30.6	24.0	24.7	23.6	35.7					
Silt 0.053 - 0.010 mm %	13.1	24.0	20.0	14.8	16.2					
Clay < 0.010 mm %	8.2	20.6	27.7	43.2	9.6					
L.L.	23	27	35	39	24					
P.L.	NP	22	24	24	NP					
P.I.	NP	5	11	15	NP					
AASHTO Classification	A-2-4 (0)	A-4 (0)	A-6 (4)	A-6 (8)	A-2-4 (0)					
Station (-L-)	21+97	22+85	22+85	22+80	22+80			,		
Offset	13' LT	15' LT	15' LT	10' RT	10' RT					
Depth (ft)	5.0	3.5	8.5	35	13.5					
to	6.5	5.0	10.0	5.0	15.0					
Moisture Content (%)	7.3	14.9	20.3	22.0	8.4					

NP=Not plastic

E.C. Howey, P.G., P.E.
Soils Engineer

## LABORATORY SUMMARY SHEET FOR ROCK CORE SAMPLES

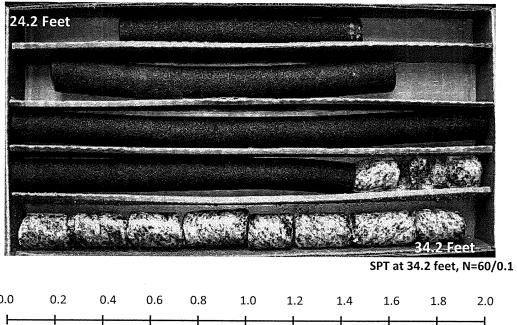
PROJECT NO.: 33732.1.1
TIP NO.: B-4499
COUNTY: Davidson

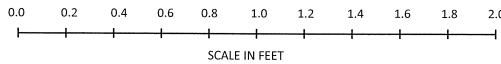
DESCRIPTION: Bridge No. 158 on SR 1792 over US 29/70/I-85 Business

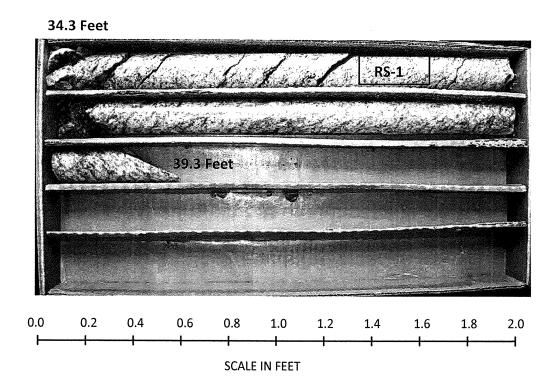
	I	I				<u> </u>		11:4	11	I v	Cation Table	
								Unit	Unconfined	Young's	Splitting Tensile	
C	5 . "	5 .1 (6)		Geologic	Run			Weight	Compressive	Modulus	Strength	
Sample #	Boring #	Depth (ft)	Rock Type	Map Unit	RQD	Length (in)	Diameter (in)	(pcf)	Strength (psi)	(psi)	(psi)	Remarks
			Metamorphosed					,				
RS-1	B1-A	35.6 - 35.9	Granitic Rock	CZg	52%	3.78	1.76	165.1	4,655			
			Metamorphosed									
RS-2	B1-B	13.3 - 13.6	Granitic Rock	CZg	52%	4.09	1.76	159.4	993			
			Metamorphosed									
RS-3	B1-B	16.7 - 17.0	Granitic Rock	CZg	52%	3.96	1.76	162.3	5,200			
			Metamorphosed			<u> </u>						
RS-4	B1-B	22.6 - 22.9	Granitic Rock	CZg	40%	4.01	1.76	163.3	8,356			
				<u> </u>					,			
							. '					
												······
					·							
					······································							
					***							
										- Andrewson		



# CORE PHOTOGRAPHS: B1-A: Station 21+97, 13 Feet Left

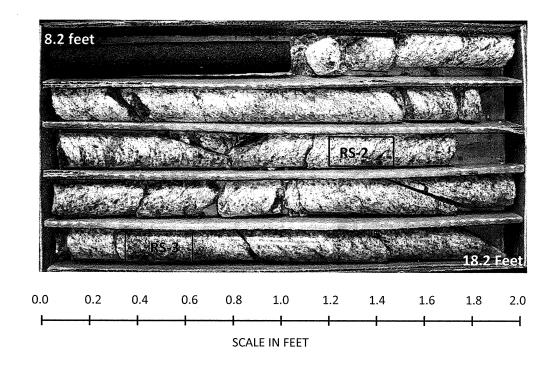


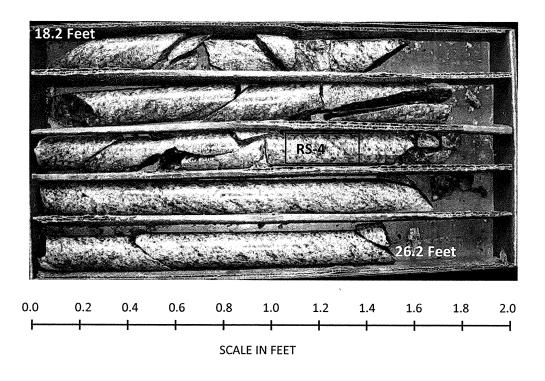


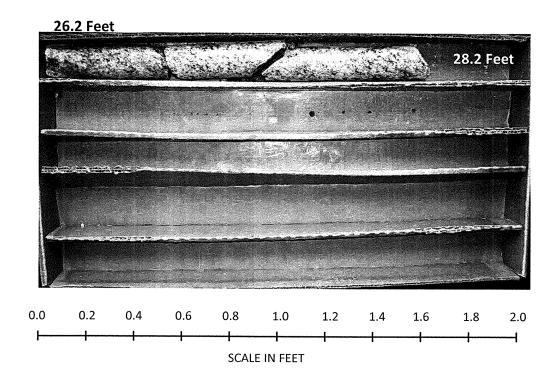




# CORE PHOTOGRAPHS: B1-B: Station 21+79, 9 Feet Right











**Photograph No. 1:** View of Profile looking southeast.



Photograph No. 2: View of End Bent 1 Section looking northeast.



Photograph No. 3: View of Bent 1 Section looking northeast.



Photograph No. 4: View of End Bent 2 Section looking northeast.