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2

579A

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REFERENCE

<u>SHEET NO.</u>	DESCRIPTION
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## STATE OF NORTH CAROLINA

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

## **STRUCTURE** SUBSURFACE INVESTIGATION

COUNTY FORSYTH

PROJECT DESCRIPTION WINSTON-SALEM BELTWAY FROM US 421/I-40 BUS TO I-40

SITE DESCRIPTION BRIDGE NO. 724 ON -Y15REV-(I-40 BYPASS) OVER -L- (WINSTON SALEM **BELTWAY**)

# 4839 Õ PROIEC

STATE	STATE PROJECT REPERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2579AB	1	22

### 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 SOLT TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (1991) 707-6805. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

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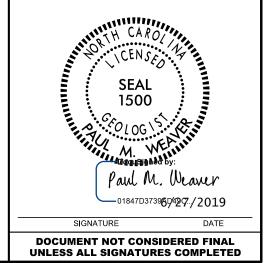
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PERSONNEL

DM WEAVED

C.R. PASTRANA
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INVESTIGATED BY <i>ESP Associates, Inc.</i>
DRAWN BYC.R. PASTRANA
CHECKED BY P.M. WEAVER
SUBMITTED BY <b>ESP</b> Associates, Inc.
DATE <u>MAY 2019</u>





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

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

	SOIL	DESCRIPTION				GRADATION			ROCK DE	SCRIPTION
BE PENETRATED WI ACCORDING TO TH IS BASED ON	ED UNCONSOLIDATED, SEMI-CO ITH A CONTINUOUS FLIGHT PO E STANDARD PENETRATION T THE AASHTO SYSTEM, BASIC	DWER AUGER AND YIELD LESS EST (AASHTO T 206, ASTM D DESCRIPTIONS GENERALLY II	5 THAN 100 BLOWS PER 1586). SOIL CLASSIFICA NCLUDE THE FOLLOWING:	FOOT TION	UNIFORMLY GRADED - I	TES A GOOD REPRESENTATION OF PARTICI NDICATES THAT SOIL PARTICLES ARE ALL ES A MIXTURE OF UNIFORM PARTICLE SIZ	APPROXIMATELY THE SAME SIZE. ES OF TWO OR MORE SIZES.	ROCK LINE INDICA SPT REFUSAL IS BLOWS IN NON-CO	TES THE LEVEL AT WHICH NON-CO PENETRATION BY A SPLIT SPOON S	WOULD YIELD SPT REFUSAL IF TESTED. AN INFER ASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSA AMPLER EQUAL TO OR LESS THAN Ø.1 FOOT PER 6 ANSITION BETWEEN SOIL AND ROCK IS OFTEN
AS MINERAL	DR, TEXTURE, MOISTURE, AASHT LOGICAL COMPOSITION, ANGUL/	ARITY, STRUCTURE, PLASTICIT	Y, ETC. FOR EXAMPLE,	SULH		ANGULARITY OF GRAIN			ARE TYPICALLY DIVIDED AS FOLLO	WS:
		AASHTO CLASSIFI				NGULAR, SUBROUNDED, OR ROUNDED. MINERALOGICAL COMPOSI		WEATHERED ROCK (WR)	NON-COASTAL PLA 100 BLOWS PER F	IN MATERIAL THAT WOULD YIELD SPT N VALUES > OOT IF TESTED.
GENERAL CLASS.	Granular Materials (≤ 35% Passing ■200)	SILT-CLAY MATERIALS ( > 35% PASSING =200)	ORGANIC MATERIAL	S	MINERAL NA	MES SUCH AS QUARTZ, FELDSPAR, MICA, TA		CRYSTALLINE		GRAIN IGNEOUS AND METAMORPHIC ROCK THAT REFUSAL IF TESTED, ROCK TYPE INCLUDES GRAN
GROUP A-1	A-3 A-2	A-4 A-5 A-6 A-7	A-1, A-2 A-4, A-5		ARE USED I	N DESCRIPTIONS WHEN THEY ARE CONSIDE	ERED OF SIGNIFICANCE.	ROCK (CR)	GNEISS, GABBRO, S	
CLASS. A-1-a A-1-b	b A-2-4 A-2-5 A-2-6 A-	2-7 A-7-5, A-7-6	A-3 A-6, A-7		SI 10	COMPRESSIBILITY	LL < 31	NON-CRYSTALLINE ROCK (NCR)	SEDIMENTARY ROC	K THAT WOULD YEILD SPT REFUSAL IF TESTED. DES PHYLLITE, SLATE, SANDSTONE, ETC.
SYMBOL 80000000					морі	ERATELY COMPRESSIBLE	LL = 31 - 50 LL > 50	COASTAL PLAIN SEDIMENTARY ROC	COASTAL PLAIN S	EDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIE CK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENT
2 PASSING 10 50 MX			GRANULAR SILT-	MUCK,	110	PERCENTAGE OF MATER		(CP)	SHELL BEDS, ETC.	
■40 30 MX 50 M ■200 15 MX 25 M	1X 51 MN 1X 10 MX 35 MX 35 MX 35 MX 35	MX 36 MN 36 MN 36 MN 36 MN	SOILS SOILS	PEAT	ORGANIC MATERIA	GRANULAR SILT - CLAY	OTHER MATERIAL	FRESH ROCI		HERING
MATERIAL					TRACE OF ORGANIC N	1ATTER 2 - 3% 3 - 5%	TRACE 1 - 10%		MER IF CRYSTALLINE.	TS MAT SHOW SEIGHT STAINING, NUCK NINGS UNDER
PASSING •40 LL –	- 40 MX 41 MN 40 MX 41	MN 40 MX 41 MN 40 MX 41 MN	SOILS WITH		LITTLE ORGANIC MAT MODERATELY ORGANIC	5 - 10% 12 - 20%	LITTLE 10 - 20% SOME 20 - 35%			SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OF SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS
PI 6 MX		MN 10 MX 10 MX 11 MN 11 MN	LITTLE OR MODERATE	HIGHLY ORGANIC	HIGHLY ORGANIC	> 10% > 20%	HIGHLY 35% AND ABOVE		A CRYSTALLINE NATURE.	
GROUP INDEX Ø	0 0 4 MX	8 MX 12 MX 16 MX NO MX	Amounts of Organic	SOILS		GROUND WATER				AND DISCOLORATION EXTENDS INTO ROCK UP TO IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR
USUAL TYPES STONE FRAGE OF MAJOR GRAVEL, AND		SILTY CLAYEY SOILS SOILS	MATTER			WATER LEVEL IN BORE HOLE IMMEDIA		CRY	STALS ARE DULL AND DISCOLORED. C	RYSTALLINE ROCKS RING UNDER HAMMER BLOWS.
MATERIALS SAND		30123 30123			<b>▼</b> ▼P₩_	STATIC WATER LEVEL AFTER <u>24</u> H PERCHED WATER, SATURATED ZONE, OR				ISCOLORATION AND WEATHERING EFFECTS. IN DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS
GEN. RATING AS SUBGRADE	EXCELLENT TO GOOD	FAIR TO POOR	FAIR TO POOR L	UNSUITABLE		SPRING OR SEEP	WHIER DEHNING STRATA	DUL		SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED
•		30 ; PI OF A-7-6 SUBGROUP IS	> LL - 30		<u> </u>					OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DU
		CY OR DENSENESS				MISCELLANEOUS SYMBO	LS			KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STREN ST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK.
PRIMARY SOIL TYPE	E COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE	COMPRESSIVE STR	RENGTH		BANKMENT (RE) 25/025 DIP & DIP DIRE		<u>IF</u> :	TESTED, WOULD YIELD SPT REFUSAL	
	VERY LOOSE	(N-VALUE) < 4	(TONS/FT <sup>2</sup> )	)		- 597				OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZE
GENERALLY GRANULAR	LOOSE	4 TO 10 10 TO 30	N/A		SOIL SYMBOL				SOME EXTENT. SOME FRAGMENTS OF S TESTED, WOULD YIELD SPT N VALUES	
MATERIAL (NON-COHESIVE)	MEDIUM DENSE DENSE	30 TO 50	N/H		ARTIFICIAL F	TILL (AF) OTHER AUGER BORING	CONE PENETROMETER	VERY ALL	ROCK EXCEPT QUARTZ DISCOLORED	R STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBL
	VERY DENSE	> 50	< 0.25		INFERRED SO		SOUNDING ROD			SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROC F ROCK WEATHERED TO A DEGREE THAT ONLY MINOR
GENERALLY	SOF T	2 TO 4	Ø.25 TO Ø.5			MV C				AAIN. <u>IF TESTED, WOULD YIELD SPT N VALUES &lt; 100</u>
SILT-CLAY MATERIAL	MEDIUM STIFF STIFF	4 TO 8 8 TO 15	0.5 TO 1.0 1 TO 2		INFERRED RO		WITH CORE	SCA	TTERED CONCENTRATIONS. QUARTZ MA	DT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND Y BE PRESENT AS DIKES OR STRINGERS. SAPROLITE I
(COHESIVE)	VERY STIFF HARD	15 TO 30 > 30	2 TO 4 > 4		イエティイ ALLUVIAL SO		- SPT N-VALUE	ALS	D AN EXAMPLE.	
	TEXTURE	OR GRAIN SIZE	•			RECOMMENDATION SYMBO	DLS	VERY HARD CAN		ARDNESS
U.S. STD. SIEVE SIZE			270			UNCLASSIFIED EXCAVATION -	ACCEPTABLE, BUT NOT TO BE	SEVI	ERAL HARD BLOWS OF THE GEOLOGIS	I'S PICK.
OPENING (MM)	4.76 2.00	0 0.42 0.25 0.075 COARSE FINE			SHALLOW	UNCLASSIFIED EXCAVATION -	USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL		BE SCRATCHED BY KNIFE OR PICK O DETACH HAND SPECIMEN.	NLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRE
	COBBLE GRAVEL (COB.) (GR.)	SAND SAND (CSE. SD.) (F SD.)	/ (su)	CLAY (CL.)		ACCEPTABLE DEGRADABLE ROCK		MODERATELY CAN	BE SCRATCHED BY KNIFE OR PICK. (	GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE
GRAIN MM 305	75 2.0		<u> </u>		AR - AUGER REFUSAL	MED MEDIUM	VST - VANE SHEAR TEST		AVATED BY HARD BLOW OF A GEOLOG MODERATE BLOWS.	IST'S PICK. HAND SPECIMENS CAN BE DETACHED
SIZE IN. 12	3				BT - BORING TERMINATE CL CLAY	D MICA MICACEOUS MOD MODERATELY	WEA WEATHERED $\gamma$ - UNIT WEIGHT			S DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF TH
		CORRELATION OF	TERMS		CPT - CONE PENETRATIC	IN TEST NP - NON PLASTIC	$\gamma_{\rm d}$ - DRY UNIT WEIGHT		IT OF A GEOLOGIST'S PICK.	FEICES I INCH MHAIMUM SIZE BI HHND BLUWS OF TH
SOIL MOISTURE (ATTERBERG L		IOISTURE GUIDE FOR F	FIELD MOISTURE DESCR	RIPTION	CSE COARSE DMT - DILATOMETER TES	ORG ORGANIC ST PMT - PRESSUREMETER TE	ST SAMPLE ABBREVIATIONS			KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS E BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN
	- SATUF	RATED - USUALLY LIC	DUID: VERY WET, USUAL	LY	DPT - DYNAMIC PENETRA e - VOID RATIO	ATION TEST SAP SAPROLITIC SD SAND, SANDY	S - BULK SS - SPLIT SPOON	PIEC	ES CAN BE BROKEN BY FINGER PRES	SURE.
	(SAT		THE GROUND WATER		F - FINE	SL SILT, SILTY SLI SLIGHTLY	ST - SHELBY TUBE	VERY CAN SOFT OR	BE CARVED WITH KNIFE. CAN BE EXU MORE IN THICKNESS CAN BE BROKEN	CAVATED READILY WITH POINT OF PICK. PIECES 1 INC BY FINGER PRESSURE. CAN BE SCRATCHED READILY B
	- WET -	SEMISOLID: F	REQUIRES DRYING TO		FOSS FOSSILIFEROUS FRAC FRACTURED, FRA		RS – ROCK RT – RECOMPACTED TRIAXIAL		GERNAIL.	
		ATTAIN OPTI	IMUM MOISTURE		FRAGS FRAGMENTS HI HIGHLY	ω - MOISTURE CONTENT V - VERY	CBR - CALIFORNIA BEARING RATIO	TERM	CTURE SPACING SPACING	BEDDING
			R NEAR OPTIMUM MOIS	TIPE	EG	UIPMENT USED ON SUBJECT	PROJECT	VERY WIDE	MORE THAN 10 FEET	VERY THICKLY BEDDED 4 FEET
	MUM MUISTURE	(iii) 50E10; HT 0			DRILL UNITS:	ADVANCING TOOLS:	HAMMER TYPE:	WIDE MODERATELY C		THINLY BEDDED 0.16 - 1.5 FEET
	- DRY -		DDITIONAL WATER TO		X CME-45C	CLAY BITS		CLOSE VERY CLOSE	0.16 TO 1 FOOT LESS THAN 0.16 FEET	VERY THINLY BEDDED 0.03 - 0.16 FEE THICKLY LAMINATED 0.008 - 0.03 FEE
		ATTAIN UPT	IMUM MOISTURE		CME-55	6° CONTINUOUS FLIGHT AUGER				THINLY LAMINATED < 0.008 FEET
		ASTICITY			Сме-550			FOR SEDIMENTARY		KATIUN NING OF MATERIAL BY CEMENTING,HEAT,PRESSURE
NON PLASTIC		0-5	DRY STRENGTH VERY LOW	1		TUNGCARBIDE INSERTS	X-N Q	FRIABLE	RUBBING WITH	FINGER FREES NUMEROUS GRAINS;
SLIGHTLY PL		6-15 16-25	SLIGHT MEDIUM		VANE SHEAR TEST		HAND TOOLS:			BY HAMMER DISINTEGRATES SAMPLE.
HIGHLY PLAS		26 OR MORE	HIGH		PORTABLE HOIST		POST HOLE DIGGER	MODERATEL		E SEPARATED FROM SAMPLE WITH STEEL PROBE: Y WHEN HIT WITH HAMMER.
		COLOR				TRICONE TUNGCARB.		INDURATED		IFFICULT TO SEPARATE WITH STEEL PROBE:
	Y INCLUDE COLOR OR COLOR			GRAY).		CORE BIT	VANE SHEAR TEST			BREAK WITH HAMMER.
MODIFIERS	SUCH AS LIGHT, DARK, STRE	AKED, ETC. ARE USED TO DE	ESCRIBE APPEARANCE.					EXTREMELY		R BLOWS REQUIRED TO BREAK SAMPLE; KS ACROSS GRAINS.

### SHEET NO.

2

### PROJECT REFERENCE NO.

U-2579AB

TERMS AND DEFINITIONS ED AN INFERRED ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. ED. AN INFERRED SPT REFUSAL. I FOOT PER 60 IS OFTEN AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. <u>ARGILLACEOUS</u> - 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. ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CLUDES GRANITE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.

MAY NOT YIELD STONE, 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.  $\underline{\text{DIKE}}$  - 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. CATINGS IF OPEN. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH, AMMER BLOWS IF  $\underline{\texttt{Fault}}$  - A fracture or fracture zone along which there has been displacement of the sides relative to one another parallel to the fracture. CK UP TO E FELDSPAR FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.  $\underline{\mathsf{FLOAT}}$  - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL. S. IN Y. ROCK HAS 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 FIELD. FELDSPARS DULL OSS OF STRENGTH WHEN STRUCK. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. VIDENT BUT 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 USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. RE DISCERNIBLE PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. ONLY MINOR ALUES < 100 BPF RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. IN SMALL AND 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 5. SAPROLITE IS RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. IS REQUIRES <u>SILL</u> - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO LOWS REQUIRED THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.  $\underline{\text{SLICKENSIDE}}$  - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. eep can be Detached 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 I FOOT INTO SOIL OR PICK POINT. WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL BLOWS OF THE TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. FRAGMENTS NT. SMALL, THIN STRATA ROCK QUALITY DESIGNATION (SROD) - 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 TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. PIECES 1 INCH HED READILY BY TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER. BENCH MARK: BL-48: N 848,016.4680 E 1,663,910.4720 THICKNESS 4 FEET 1.5 - 4 FEET ELEVATION: 894.60 FEET 16 - 1.5 FFF1 NOTES 3 - 0.16 FEE 08 - 0.03 FEET FIAD= FILLED IN AFTER DRILLING 0.008 FEET

EAT. PRESSURE. ETC.

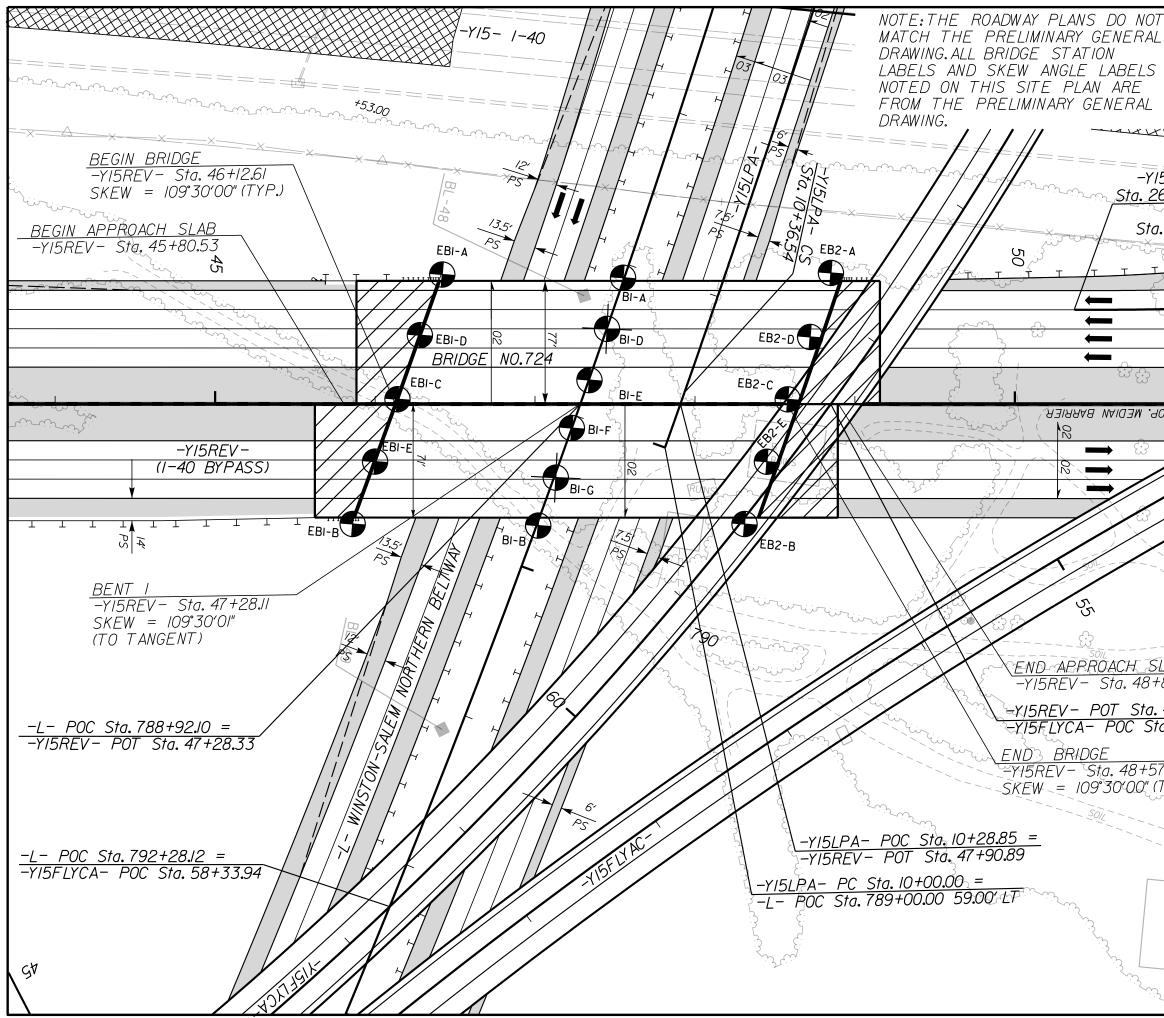
## NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT SUBSURFACE INVESTIGATION

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	Rock Mass (Marı	nos and Hoek,2	2000)			AASHTO LRFD Figure 10.4.6.4-2 — Determination of GSI for T
AASHTO LRFD Figure 10.4.6.4-1 — Determination of GSI for Jointed GEOLOGICAL STRENGTH INDEX (GSI) FOR JOINTED ROCKS (Hoek and Marinos, 2000) 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 rough, fresh unweathered surfaces	600D Rough, slightly weathered, iron stained surfaces	AIR mooth, moderately weathered and ltered surfaces	POOR Slickensided, highly weathered surfaces with compact coatings or fillings or angular fragments	VERY POOR Slickensided, highly weathered surfaces with soft clay coatings or fillings	AASHTO LRFD Figure 10.4.6.4-2 — Determination of GSI for T GSI FOR HETEROGENEOUS ROCK MASSES SUCH AS FLYSCH (Marinos. P and Hoek E., 2000) From a description of the lithology, structure and 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 fail 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		REASING SI			-	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 X of cubical blocks formed by three intersecting discontinuity sets		70 60				B. Sand- stone with thin inter-
VERY BLOCKY - interlocked, 00 partially disturbed mass with 21 multi-faceted angular blocks 20 formed by 4 or more joint sets 20 20 20 20 20 20 20 20 20 20 20 20 20 2		5	0			thun inter- layers of siltstone siltstone amounts
folded with angular blocks			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	Many Sonstane de d'a Into small rock pi Means deformation after tectonic disturbance

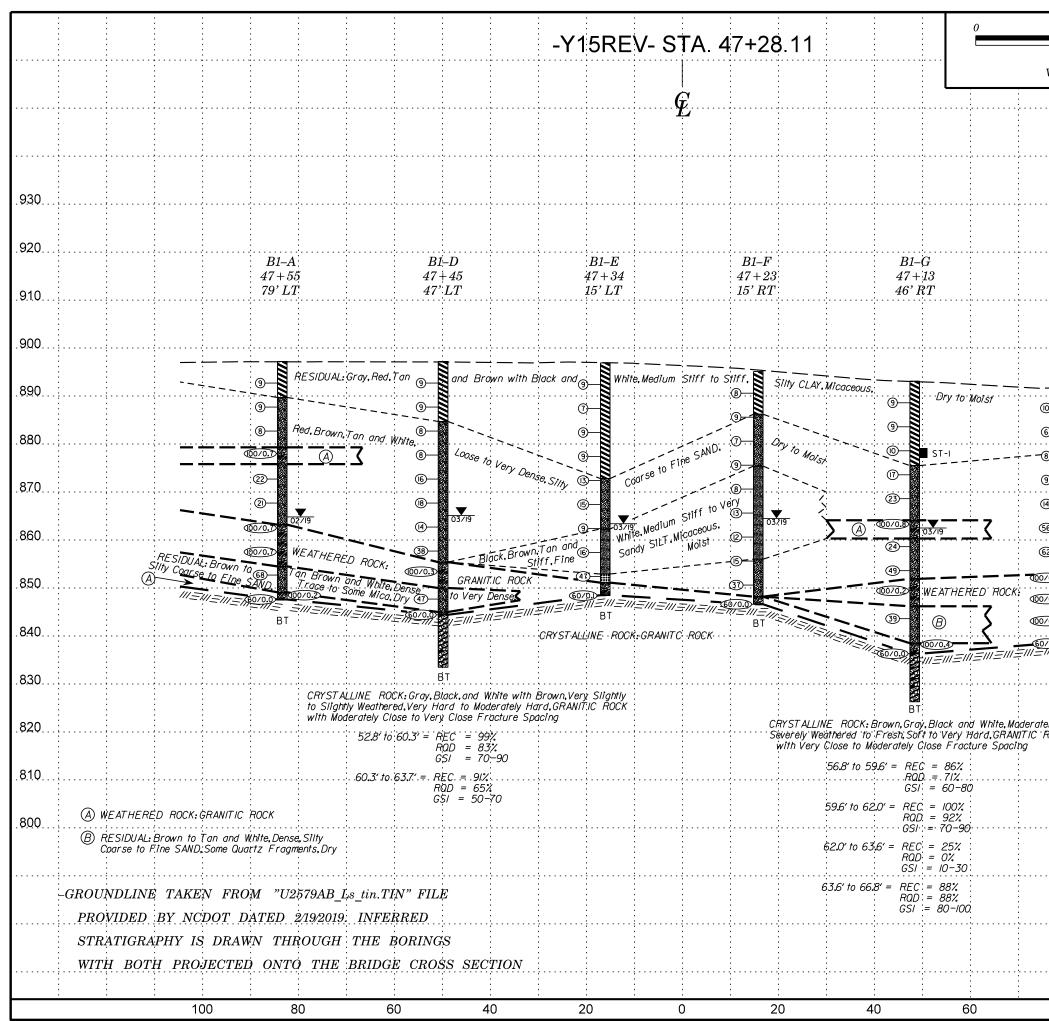
## U-2579AB

2A



PROJECT REFERENCE NO. SHEET NO. U-2579AB 3 SITE PLAN 60 120 FEET - art HHH BRIDGE NO. 724 KKKK -YI5LPA- ST Sta. 26+95.04 = ~YI5REV~ Sta. 50+37.24 59'.00 LT , C **\_\_\_** ← 2 20 PROP. MEDIAN BARRIER 12 źφ -Y15REV - POT Sta 52+00.08 = £ S END APPROACH SLAB -YI5REV - Sta. 48+89.69 -XI5REV- POT Sta. 48+84.90 = -Y15FLYCA- POC Sta. 62+52.47 END'S BRIDGE -Y15REV - Sta. 48+57.61 SKEW = 109°30'00" (TYP.) 11 83 NAD

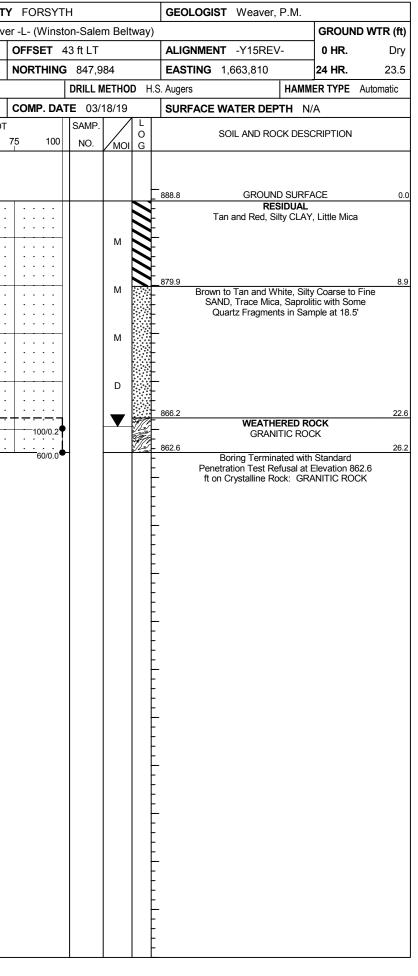
							<b>TA</b> 40	10.01		0 20	40		REFERENC	CE NO. SH	HEET NO
					-Y15R	EV-S	IA 46	+12.61		FEET			J-5979AB		4
: :				: :						VE = 1.0		SEC	WANGLE =	UGH END BEN 109°30'00" (TY	ΥΡ.)
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930							· · · · · · · · · · · · · · · · · · ·								930
				: :											
920							· · · · · · · · · · · · · · · · · · ·								920
	EB1–A		EB1-D			EB1-C			EB1-E	EB1-B					
910	46+42 81' LT		46 + 28 43' LT			46+14 3' LT			46 + 00 36' RT	45+86 75' RT					910
	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	•••••	; ; ;		••••	••••••••••••••••••••••••••••••••••••••		·····						
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. 900				}}					÷						900
890	Tao nod part i	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	; ; ;							EXISTING G	ROUND			890
	<u> </u>	own to Orange-Brown with E	Black, Med		DUAL: Tan to B	: rown and 🔜 w	hite with Gray,	Nodum Donoo							-
.880				Stiff to	Silty Coar Stiff Stur	se to II F	The CAND MAL								880
						Y. 0	Micaceous, M	oist to Wet							
970			0rai	: nge,Tan,Br.c	own and White,L			– – – – – – – – – nse, Silty Coarse		SAND.Wet to Moist					970
. 870		· · · · · · · · · · · · · · · · · · ·	····	· · · · · · · · · · · · · · · · · · ·	÷		<u></u>	rown, Brown and		Fine SAND	Trace to Little	e			
	UIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		00/0.2 4 03/1		White,Gray and	Brown		rse to Fine San		SILT. Micaceous. No coarse to T	Moist				
860	DRY 3√l9		(60/0.0) I = 11/ = 11/= 11/ BT	EATHERED	ROCK		Stire	19e-	<i>dy</i> 	03/19					
	CRYS	: TALLINE ROCK:GRANITIC R	ROCK		I SII SII SII	C ROCK	<sup>to</sup> Ho,	rd ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~		005e 10 Della					
850								a. Fine Sandy SI	Sond While.						850
						BI.		SIL	Micoce	OUS: MOIS III CRYST ALLINE ROCK: GRANITIC	ROCK				
0.40											, noon				
. 840	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		:		••••	: : :		60/0.D		•••••				
									BT						-
.830				:			;;;								
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820				: :					:						820
910															. 010
810			•••••				·····				••••••			····· :	810
800							<u>.</u>		<u>.</u>						800
		· · · · · · · · · · · · · · · · · · ·					·								
-GROUI	NDLINE TAKEN FROM "U	2579AB Ls tin.TIN" F	FILE												
	VIDED BY NCDOT DATED														
				;;			·····								
	ATIGRAPHY IS DRAWN TH		•				· · · · · · · · · · · · · · · · · · ·								
WITH	H BOTH PROJECTED ONT	O THE BRIDGE CH	RUSS SEC	TION									·····		
<u> </u>				: :			· · ·				:			<u> </u>	<u> </u>
	100	80 60	4	0	20		0	20	40	60 80	100				



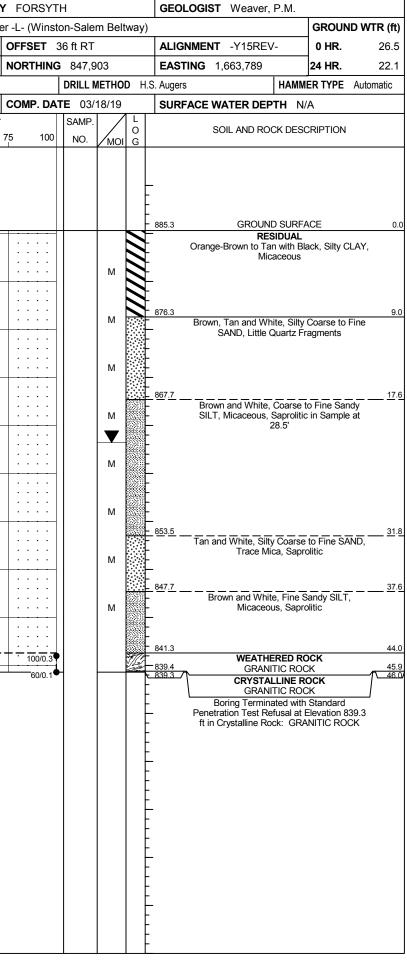
	20		40	PROJECT			O. SHI	EET NO.
	EET		┛┝		J-5979A ECTION 1			5
	= 1.0			5	SKEW AN	GLE = 10 TANGEN	9°30'01"	
			:				: : :	
					- - - -	- - - -		
							:	930
								020
	l–B			•				920
	+02 RT							
							· · · · · · · · · · · · · · · · · · ·	
			UST ING.	GROUND				900
			<u> </u>					890
0								
6 		: :-:	: : :				: :	
8 <del>- 1</del> 0								
9—  14—								. 870
 @—	•••••			•				<u>8</u> 60
)/0 <b>.</b> 9	03/19							850
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0/0.4								
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tely ROCK								. 820
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			:				:	810
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8	0	1(	00					

:							0	20 40	PROJECT REFERENCE NO	O. SHEET NO
			-Y15	REV-STA 48	8+57 61			FEET	U-5979AB	6
							· · ·	TE = 1.0	SECTION THROUGH EI SKEW ANGLE = 109°30	ND BENT 2
••••••		······	······:	····· £	·····	·····				
									•••••	
930									·····	930
		EB2–A		EB2–Ċ		EB2– $E$		ת מת		
920		2B2-A 8+85	EB2-D $48+72$	EB2-C 48+58		EB2-E 48+45		EB2–B 48 + 31		920
	٤	82'LT	42' LT	3' LT		36' RT	7	5' RT		
010										010
.910		·····								910
:								EXISTIN	NG GROUND	
900					; ;	<u>,</u>				900
	Tan and Red with Gray. Fine_SAND,Littu	Loose, Silty Coarse / eMica_Moist		and Red 5— with Black, Loc	se to Medium Dense.	Silty Coarse	to Fine SAND, Moist (10)	÷ :	• • • • •	
890	(E)	RESIDUAL: Tan, Orange, Pink,	Red. Brown, Gray, and White, Mea	ium ①— Stiff to Very	Stiff, Fine Sandy SILT					890
	®	8260	®—	8-Medi		)				
880				The SANDEMO						880
	@	······································	Бг <i>б</i> у	Orange to	e SAND. Moist to Dry	>─-	······································	····		
:			Dense, S.		SAND, MOIST 10 -		White and 8		<i>ck.</i>	
.870		Medium Dense.	;;;;;;	Cogrise to Fill	·	 ⋑—	Medium Stiff	to Stiff, Fine Sandy SIL	, MOIST	870
	© Tan to Brown and White. @ Silty Coarse to Fine SAND. Some Quartz ©	Little Mica, >	③— 	<11tV				Gray and White.		
860	Silty Coarse to Fine Solution		10 - Using to Very Dense	<b>6-</b>		9- 	own. Orange-Diese	03/19 SILI Moist		860
			() () () () () () () () () ()	80	(	₿── Medium Sti	own, Orange-Brown, Co f to Hard, Fine Sandy			
850		Brown,Orange+Brown,Tan,G	ray and 69							850
	<b></b>	Brown, Orongo	®—	(100/0.R)		0.0			······	
:				BT DRY		0.0				
.840	00/00			3/19		BT:	40070	<b>沙耀</b>		
					WĘAT	HERED ROCK.GRA	NITIC ROCK			
830		BT	B.T					;;	; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;	830
:										
820		WEATHEREL	D ROCK GRANITIC ROCK							820
			······································							
810	(A) WEATHERED ROCK. GRANITIC RO	ск				•••••				810
800	B RESIDUAL: Gray, Tan and White wi Silty Coarse to Fine SAND, Saproti	tic, Dry							·····	800
	-GROUNDLINE TAKEN FROM	M "U2579AB Ls tin.TIN"	' FILE							· · · · · · · · · · · · · · · · · · ·
:	PROVIDED BY NCDOT DA									
	•••••••••	• • • • • • • • • • • • • • • • • • • •	•••••••••••••••••••••••••••••••••••••••							
:	STRATIGRAPHY IS DRAW	: : :								
	WITH BOTH PROJECTED	UNTO THE BRIDGE	CROSS SECTION							
									: · · · · · · · · · · · · · · · ·	
	100	80 60	40 20	0	20	40	60	80 100		

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	34839					IP U-2				OUNT							OLOGI	ST Wea	ver, P.M.	1			3483					P U-25		COUNTY
	DESCR			lge No					Вура	ss) ove					eltway					-	ND WTR (ft)					dge No				Bypass) ove
	NG NO.					TATIO							31 ft LT			_		<b>NT</b> -Y15		0 HR.	Dry		ING NC					TATION		
	AR ELE					OTAL [					NORT	THING	<b>8</b> 48,					1,663,82		24 HR.	Dry		LAR EL						<b>PTH</b> 26.2	
DRILL	RIG/HAI	MMER E	FF./DA	TE R												H.S. Auge	ers		HAM	MER TYPE	Automatic	DRIL	RIG/HA	MMER	EFF./DA	ATE R	D285584	4 CME-45	C 84% 03/18	3/2019
	L <b>ER</b> S	eiler, M					DATE					P. DA	TE 03		9	SUF	RFACE	WATER	DEPTH N	I/A		DRIL	LER		-				<b>TE</b> 03/18	
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)		0.5ft	UNT 0.5ft	0	25		'S PEF 50	R FOOT	75	100	SAMP NO.	с. <b>Т</b>	DIG	ELEV.		SOIL AND	ROCK DES	SCRIPTION	DEPTH (ft)	ELEV (ft)	DRIVE ELEV (ft)	DEPTI (ft)	· —	OW CO 0.5ft	_	0	BLOW 25	S PER FOOT
895		-														E						890		 				·		
890	- - -	- - - -						<u> </u>		<u> </u>	<u> </u>					890.3			OUND SURF RESIDUAL CLAY, Mica		0.0	885	885.3	- - 3.5 -	3	5	6	· · · · · · · · · · · · · · · · · · ·	· · · · ·	· · · · · · ·
885	- - <u>886.8</u> - -	- <u>3.5</u> -	2	3	3		· · · · · · · · · · · · · · · · · · ·	· · · ·	· · ·	· · · ·	· · · · · · · · · · · · · · · · · · ·	· · ·		w		886.7		Brown, an	d White, Silt Little to Tra	v Coarse to	3.6	880	880.3	+ - - 8.5	3	4	4	. l . . l	· · · · · · · · · · · · · · · · · · ·	· · · · · ·
880	- - 881.8 -	- - 8.5 -	3	2	2		· · · · · · · · · · · · · · · · · · ·	· · · · · · · ·	· · ·	· · · ·	· · · · · · · · · · · · · · · · · · ·	· · · ·		м								875	875.3	+ + 13.5	5	5	5	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · ·	· · · · · ·
875	- - - - -	- <u>13.5</u>	5	5	4			· · · · · · ·				· ·		м								870	870.3	- - - - 18.5	7	9	10	· · · / · · · · / ·		
870	- - - - - - -	- - 18.5 -	5	5	6	-      -	· · · · · 11 ·	· · · · · · · ·	.   .	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	· ·		м								865	865.3	+ - - 23.5	100/0					· · · · · · · · · · · · · · · · · · ·
	867.3						•••									867.4					22.9 23.0/		862.6	T - 26.2	100/0.	2				
																	Pen	etration Te	minated wit st Refusal at e Rock: GR	Elevation 8										



													.0G									-											
	34839					IP U-				COUN							OLOGI	ST Wea	ver, P.M.					4839.1					<b>TIP</b> U-25			COUN	
SITE	DESCR	RIPTION	Brid	ge No	. 724	on -Y	15RE\	V- (I-40	0 Вур	oass) o			ton-Sale	m Bel	Itway					GRO	OUND WTR (ft)	SIT	E DE	SCRIP	NOIT	Bric	dge No		on -Y15F			pass) o	ver
BOR	NG NO	. EB1-	-C		s	TATIC	<b>DN</b> 46	6+14			OFF	SET	3 ft LT			ALI	GNME	<b>NT</b> -Y15	REV-	0 H	<b>IR.</b> 31.6	BO	RING	NO.	EB1-	-E		s	STATION	46+0	0		0
COLI	AR EL	<b>EV.</b> 88	36.7 ft		Т	OTAL	DEPT	<b>H</b> 33	3.3 ft		NOF	RTHING	<b>G</b> 847,9	943		EAS	STING	1,663,7	99	24 H	<b>IR.</b> 22.5	CO	LLAF	R ELEV	1. 88	35.3 ft		Т	TOTAL DE	PTH	46.0 ft		N
DRILL	. RIG/HA	MMER E	FF./DA	TE RI	028558	84 CME	-45C 8	4% 03/	/18/20	19			DRILL	METHC	DD H	H.S. Auge	ers		HAMN	MER TY	PE Automatic	DRII	LL RIC	g/ham	/IER E	FF./DA	TE R	D2855	84 CME-45	C 84%	03/18/20	019	
DRIL	LER S	seiler, N	1.		S	TART	DATE	03/1	18/19	)	CON	1P. DA	<b>TE</b> 03/	18/19	1	SUF	RFACE	WATER	DEPTH N	N/A		DRI	ILLEF	<b>R</b> Sei	ler, N	1.		S	START DA	TE (	03/18/19	9	C
ELEV	DRIVE ELEV	DEPTH	BLC	w co	JNT			BLO	WS PI	ER FOO	Т		SAMP.	<b>V</b> /	L			SOIL AND	ROCK DES	SCRIPT	ION	ELE			EPTH	BLC	ow co	UNT		В	LOWS F	PER FO	тс
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	2	25	50	0	75	100	NO.	Имо		ELEV.	(ft)				DEPTH (f	) (ft)		(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	5	50	75
890		Ļ														L						890	)										
		ŧ														F								ŧ									
		<u> </u>													*****	886.7		GR	OUND SURF		0.	1		Ŧ									
885	-	Ŧ					<u>.</u>				-					F	Ta	an to Brown	and White w	with Gra	ay, Silty	885	5	Ŧ					<del>   <u> </u></del>	—	<del></del>		-
	883.2	3.5	3	6	5	+  : <sub>.</sub>					.   .	· · ·		м		ļ.		COa	ise lo fine a	SAND			90	31.8	3.5								
880		Ŧ				:	<b>T</b> "::									F						880		<u>, , , , , , , , , , , , , , , , , , , </u>	0.0	2	3	3			· · · ·		
	878.2	8.5					i														-		1	Ŧ					. \				
		+	4	5	4		 9		•••	· · · · · ·	.   .			м		<u>- 877.6</u>	Та	an and Bro	wn, Silty CLA	AY, Mica	9.º aceous	11	87	76.8	8.5	4	6	6	: <u>/</u> :	·   ·	· · · · · ·		
875	-	‡					$\left( \begin{array}{c} \cdot & \cdot \\ \cdot & \cdot \end{array} \right)$	· ·	•••							873.9					12.8	875	5	+		*		l °	• • • 12	<u></u>			
	873.2	13.5	4	5	6	4 :				· · · · · ·	.   .			м		- <u>073.5</u>	— — T	an, Brown	and White w	with Gray	v, Silty			‡							· · · ·		••
870		‡		-	-		¶11 . 1 · ·	· · ·	•••	· · · · · ·		· · ·						Coarse to r	Fragments		luanz	870		71.8 <u>+</u> +	13.5	7	7	7	-    : : <b> </b> ' -    : : ●1	4	· · · · · ·	· · ·	
0/0	969.2	+ 18.5					<u>j:</u> :				: :					869.2		nite Grav a	nd Brown, Fi	ine San	<u>dy SII T</u> <u>17.</u>	0/0	, 	+									
	000.2	+ <sup>10.5</sup>	3	6	5	1 :,	.↓ ●11 .		· ·	· · · · · ·		· · ·		м		-	vvi	nte, oray a	Micaceous	S	ay oil i,		86	56.8 +	18.5					· ·	· · · · · ·		
865	_	‡					1 · ·	· ·	•••		·   ·					-						865	5	+		6	8	8		16	· · ·		·
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000	•	‡		<b>–</b>	Ŭ	· (	●10 ·	· · ·	· ·	· · ·		· · ·		M		L.								51.8 <u>+</u>	23.5	6	7	13		<b>1 1</b> . <b>1</b> . <b>1</b> . <b>1</b> . <b>1</b> . <b>1</b> . <b></b>	· · ·	 	
860	-	+					<u>⊦ · ·</u>				: :					-						860	)	+						<b>1</b>			
	858.2	28.5	3	3	6		 9	· ·	· ·	· · ·		· · ·		м									85	56.8 +	28.5					i   :	· · · · · ·		
855		ŧ					l	<u></u>	<u> </u>	· <u></u> -	·	<u></u>			H	- 855.6		WE	ATHERED R	ROCK	31.	855	5	1		6	8	11		<b>1</b> 9			•
	853.4	33.3	60/0.0			<u>   ·</u>						60/0.0				853.4		G	RANITIC RO	CK	33.:			ŧ						: ] .		 	
		ŧ	00/0.0													Ł		etration Te	rminated with st Refusal at	t Elevati	ion 853.4			51.8	33.5	18	22	28		· ·			
	-	ŧ														F	ft c	on Crystallir	ne Rock: GR	RANITIC	CROCK	850	)	$\pm$						<u> </u>		50	
		Ŧ														E							84	46.8	38.5					.   .	· /·	 	
,		Ł														F						845		1	00.0	16	18	17	1		€35 ·		
5		ł														E								ł								 	
		Ŧ														E								<u>41.8</u>	43.5	17	100/0.	3			<u>i .</u> .		
	-	Ŧ														E						840	) 83	39.4	45.9					<u> </u>	· · · ·		<u> </u>
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NBS 34839	9.1.8			Т	IP U-2579AB	COUNT	Y FORSYT	H	GEOL	.OGIST Weaver, P.M.	
SITE DESCR	RIPTION	l Brid	ge No.	. 724 (	on -Y15REV- (I-4	0 Bypass) ov	er -L- (Winst	on-Salem Belt	/ay)		GROUND WTR (f
BORING NO	. EB1-	B		S	<b>TATION</b> 45+86		OFFSET 7	'5 ft RT	ALIGN	MENT -Y15REV-	0 HR. 22.0
COLLAR EL				_	OTAL DEPTH 2	5.9 ft	NORTHING			ING 1,663,778	
			TE RO		4 CME-45C 84% 03			DRILL METHOD			IMER TYPE Automatic
DRILLER S					TART DATE 03			E 03/18/19		ACE WATER DEPTH	
	1		W COL		1	WS PER FOOT	<u> </u>	SAMP.		ACE WATER DEPTH	IN/A
(ff) ELEV	DEPTH (ft)	0.5ft			0 25	50	75 100		0	SOIL AND ROCK DE	
(ft) (ft)		0.51	0.511	0.511				NO. MOI	G ELEV. (ft)	)	DEPTH
85	ł								883.7	GROUND SUR	EACE
	‡				. <b>!</b>				- 000.7	RESIDUA	L
	±					· ·   · · · ·	.     .		880.9	Tan and Red, Silty C	
880.2	<u> </u>	3	4	4			<u> </u>	м		Orange, Tan and White, Si SAND, Little I	Ity Coarse to Fine Vica
	Ŧ										
875 875.2	T 8.5								876.0	Orange-Brown and Brown,	Eino Sandy SILT
	<u> </u>	3	3	3	↓ · · · · · · · · · · · · · · · · · · ·			М	874.4	Micaceou	s /
	t				j::: ::	· ·   · · · ·	.     .			Orange-Tan, Brown and W to Fine SAND, Trace	/hite, Silty Coarse to Little Mica
70 870.2	13.5										
	Ŧ	3	3	3	<b>4</b> 6			M			
	ŧ					· ·   · · · ·					
65 865.2	18.5	5	10	7		· ·   · · ·					
	ŧ			,		· ·   · · · · ·   · · ·	·   · · · ·   ·   · · · ·				
	t										
60 860.2	23.5	30	70/0.3				100/0 0		860.2	WEATHERED	
857.9	25.8	60/0.1					· 100/0.8		857.9	GRANITIC R	
	‡	00/0.1					00/0.1		-	GRANITIC R	OCK

										В	OF	KE L	<u>.0G</u>							
WBS	34839	).1.8			TI	P U-25	579AI	3	C	OUNT	ΥF	ORSY	ГН			GEOLOG	ST Pastran	a, C.R.	-	
SITE	DESCR	IPTION	Brio	dge No	. 724 (	on -Y15	REV-	(I-40 E	Зура	ss) ov	er -L	- (Wins	ton-Sale	em Bel	ltway)				GROUN	ND WTR (ft
BORI	NG NO.	B1-A	۱.		S	TATION	47+	-55			OF	FSET	79 ft LT	•		ALIGNME	NT -Y15RE	V-	0 HR.	Dry
COLL	AR ELE	<b>EV.</b> 89	97.2 ft		т	OTAL D	EPTH	<b>4</b> 9.6	6 ft		NO	RTHIN	<b>G</b> 848,	030		EASTING	1,663,934		24 HR.	32.4
DRILL	RIG/HAI	MMER E	FF./DA	TE RI	D285584	4 CME-4	5C 849	% 03/18	/2019		•		DRILL	METHC	DD H.	S. Augers		HAM	MER TYPE	Automatic
DRILI	LER S	eiler, N	1.		ST	FART D	ATE	03/20	/19		СО	MP. DA	<b>TE</b> 03	/20/19		SURFACE	WATER DE	PTH N	I/A	
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLC 0.5ft	OW COI	UNT 0.5ft	0	25	BLOW	S PER 50	R FOOT	Г 75	100	SAMP NO.	. Мо	L O I G	ELEV. (ft)	SOIL AND RO	DCK DES	CRIPTION	DEPTH (1
900		-							<u></u>							897.2		ND SURF		0
895	- 893.7 -	- 3.5	3	4	5	· · ·	· ·	· · · ·	· ·	· · ·	  	· · · · · · · ·		м		Re 	ed-Brown to Ta	<b>SIDUAL</b> In-Brown ′, Micace	to Brown, S	Silty
890	- 888.7 - -	- - - 8.5 -	4	4	5	• • •	· · ·	· · · ·	· ·	· · · · · · · · · · · · · · · · · · ·	· · ·	· · · ·		D		- <u>889.7</u> - -	an-Brown, Silty	Coarse	to Fine SAN	<u> </u>
885	- 883.7 - -	- - - 13.5 -	5	4	4	• • •		· · · ·	· · ·	· · ·	· · · · · ·	· · · ·		D		-  - -				
880	- 878.7 - -	- - - 18.5 -	44	56/0.2				· · · ·	· ·	· · ·	· · ·	100/0.7				- 879.3		<b>IERED R</b> NITIC RO		
875	- 873.7 -	- - 23.5	17	12	10		• • • • • • • • • • • • • • • • • • •	<u> </u>	·	· <del>· ·</del> · · · · · · · · · · · · · · · ·		<u>· · · ·</u>		D	\/ <u>/</u>	<u>875.8</u> 	, Brown and W	hite, Silty , Trace N	Coarse to	2' Fine
870	868.7 -	- 28.5	5	10	11		· · · · · · · · · · · · · · · · · · ·	· · · ·	· ·	· · ·	  	· · · ·		D		-  - -				
865	863.7 -	- 33.5	39	55	45/0.2		· · · · · · · · · · · · · · · · · · ·	· · · ·	· ·	· · ·	· · ·	100/0.7	•					IERED R		34
860	- 858.7 - -	- - - 38.5 -	36	62	38/0.2	· · · ·	· ·	· · · ·	· · ·	· · ·	  					-  - -	GRAM	NITIC RO	ICK	
855	 	- <u>43.5</u>	25	31	37	· · · ·	· · ·	· · · ·	· ·	· · · [	68	· · · ·		D		- 	Vhite and Brow	<b>IC RESII</b> m, Silty C , Trace N	oarse to Fi	4
850		- 48.5 - 49.6 -	100/0.2 60/0.0			· · ·		· · · ·		L L		100/0.2 60/0.0	- 			849.1	GRAN	HERED R	CK	48 49
																	Boring Termi netration Test R on Crystalline R	Refusal at	Elevation 8	

**GEOTECHNICAL BORING REPORT** 

SHEET 11

NDC	34839	10				P U-2579AB		ORE L				GEOLOGIST Pastrana, C.R.		
-			Drid			on -Y15REV- (I-40 By				m Poli	W2W	CLUCUSISI Fastidiid, U.R.	GROUN	ID WTR (ft)
	NG NO.			ige no		<b>TATION</b> 47+45	pass) ove	OFFSET 4			.way)	ALIGNMENT -Y15REV-	0 HR.	
	AR ELE									07		EASTING 1,663,927		37.4
-			-			OTAL DEPTH 63.7 ft		NORTHING			<b>D</b> 11/		24 HR.	32.1
				IE R	-	4 CME-45C 84% 03/18/2					U H.3		MER TYPE	Automatic
	LER S					TART DATE 03/20/1		COMP. DA	SAMP.	21/19		SURFACE WATER DEPTH	/A	
ELEV (ft)	ELEV	DEPTH (ft)	0.5ft	0W CO	1	4	PER FOOT 50	75 100	NO.		0	SOIL AND ROCK DES	CRIPTION	
	(ft)		0.011	0.011	0.011		<u>1</u>	1	110.	/моі	G	ELEV. (ft)		DEPTH (f
900		-										-		
	-					· · · · · · · · · · · · · · · ·		· · · · · · ·				897.2 GROUND SURF		0.
395	-											Red-Brown to Tan-Brown	and Red, S	
+	893.7 -	3.5	4	4	5	.         . <b>l</b>				м	N	CLAY, Micaceous, Some R	lock Fragme	ents
	_		-							IVI	N			
390	888.7 -	- 8.5									N	-		
F	- 000.7	- 0.5	5	4	5	$\left  \begin{array}{c} \cdot \cdot \cdot \cdot \cdot \\ \cdot \\ \bullet \\ 9 \\ \cdot \\ \bullet \\ 0 \\ \cdot \\ \cdot$				D	N			
385	-	F									N	004.7		10
_	883.7 -	- 13.5	5		4						F	_884.7 Tan-Brown and White, Silty		<u>12</u> . Fine
	-	F	5	4	4	. • • • • • • • • • • • • • • • • • • •				D	-	SAND, Trace M	lica	
380	-	È.									-	-		
ŀ	878.7 -	- 18.5 -	4	4	4					D	-			
375	-	-									-			
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	873.7 -	- 23.5			-						-	-		
	-	-	6	7	9		· · · ·			D	-			
370	-	L										-		
ŀ	868.7 -	- 28.5	6	9	9	<b>!</b>				м				
	-													
365	- 863.7	- - 33.5										-		
F		- 33.5	4	6	8	· · • • 14   · · · · ·				М	F			
360	-	F									F			
_	858.7 -	38.5	8	15	23	· · · · · <u>· · · ·</u>					F	-		
	-	F	0		20	· · · · · · · · • • • • • • • • • • •				M	-			
355	-	-										855.4 WEATHERED R	оск	41.
F	853.7 -	- 43.5 -	100/0.3	3				- 100/0.3				GRANITIC RO	CK	
350	-	ŧ.										850.0		47.
	- 848.7	- - 48.5	40		10			+			-	RESIDUAL Brown to Tan-Brown with Wi	hita Silty C	
	-	F	40	28	19	: : :   : : : <b>!</b>	47			D	-	to Fine SAND, Son	ne, Sily Co ie Mica	00100
345	- 844.4	52.8				i		+				845.0 844.4 WEATHERED R		52.
	-	-	60/0.0	1			· · · ·	· · 60/0.0			Ø	GRANITIC RO	CK	
340	-	L.					· · · ·				8	CRYSTALLINE F Gray, Black and White,	Very Slightl	v
40	-	-										<ul> <li>Weathered, Hard to Very H ROCK with Close to Mod</li> </ul>	lard, GRAN	ITIC
	-	t F										836.9 Fracture Space REC=99% RQD=83%	ina	
335	-	Ļ					· · · ·	· · ·			Ø	White with Gray and Bro	own, Slightly	y
╞	-	-							-		F#	833.5 Weathered, Moderately B GRANITIC ROCK with Very	/ Close to C	d, <u>63.</u> lose
	-	F										Fracture Space REC=91% RQD=65%	ĞSI=50-70	
	-	F									E	- Boring Terminated at Eleva Crystalline Rock: GRAN	ation 833.5	ft in
	-	Ł												-
	-	Ł									F	_		
	-	Ē									F			
	-	F									ΙĒ			

WBS	34839.1.8			TIP	U-257	'9AB	С			RE L			GEOLOGIST Pastra	na, C.R.		
		Brid	ge No. 72								on-Salem Beltwa	ay)			GROUN	ND WTR (
BOR	ING NO. B1-D		-	STA	ΓΙΟΝ	47+45			OF	FSET 4	7 ft LT		ALIGNMENT -Y15R	EV-	0 HR.	37.
COL	LAR ELEV. 89	7.2 ft		тот	AL DE	<b>PTH</b> 63	.7 ft		NC	RTHING	847,997		EASTING 1,663,927		24 HR.	32
DRILI	L RIG/HAMMER E	F./DA	FE RD28	5584 C	ME-450	84% 03/	18/2019		1		DRILL METHOD	H.S	. Augers	HAM		Automatic
DRIL	LER Seiler, M			STA	RT DA	<b>TE</b> 03/2	20/19		cc	MP. DA	E 03/21/19		SURFACE WATER D		I/A	
	E SIZE NQ			тоти	AL RUI	<b>N</b> 10.9 f	ť						1			
ELEV (ft)	RUN ELEV (ft) DEPTH	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	JN RQD (ft) %	SAMP. NO.	STF REC. (ft) %	RATA RQD (ft) %	L O G	ELEV. (f	t)	D	ESCRIPTION AND REMAN	RKS		DEPTH
844 4	(1)		(	70	70		/0	70			. <u>,</u>		Begin Coring @ 52.8	ft		DEI II
<u>844.4</u> <u>840</u> <u>835</u>	844.4 52.8 840.5 56.7 835.5 61.7 833.5 63.7 833.5 63.7 	3.9 5.0 2.0	1:48/1.0 1:33/1.0 2:01/1.0 1:20/0.9 1:43/1.0 1:36/1.0 2:08/1.0 1:27/1.0	(3.8) 97% (5.0) 100% (1.7) 85%	(3.0) 77% (4.4) 88% (1.0) 50%		(7.4) 99% (3.1) 91%	(6.2) 83% (2.2) 65%		844.4 836.9 833.5 833.5 - - - - - - - - - - - - -	GRÀNITIC R S Three a White with Gray GRANITI Iroi	COCK Some Iso and C RO n stai	Begin Coring @ 52.8 CRYSTALLINE ROCK White, Very Slightly Weathered (0.16' thick with very closs lated iron staining of fractu GSI=70-90 Brown, Slightly Weathered, CK with Very Close to Clos oning and micacous silt on f Core loss occurred at end of GSI=50-70 at Elevation 833.5 ft in Crys ROCK	ed, Hard t lose Fract 0 degrees fracture s e faces Moderate e Fracture acture fac f run	ure Spacing pacing ly Hard to H Spacing es	g Hard,

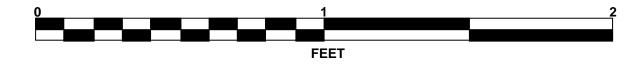
### GEOTECHNICAL BORING REPORT

## **CORE PHOTOGRAPHS**

B1-D BOX 1: 52.8 - 61.7 FEET

B1-D BOX 2: 61.7 - 63.7 FEET

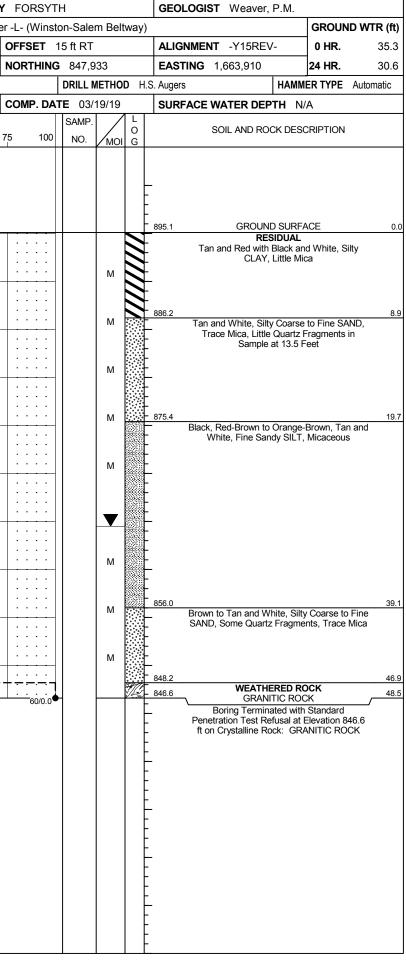






SHEET 12 34839.1.8 (U-2579AB)/BRIDGE NO. 724

													LUC	_																					
	3483					<b>IP</b> U-2						ORS						OLOC	GIST	Weav	er, P.M.				<b>3</b> 48						U-2579			COUN	
				idge N		on -Y15			Вура	ass) o					Belt	way)						-	UND WTR (ft)			RIPTIO		dge N						pass)	
BOR	ING NO	. B1-E	Ξ		s	TATION	47-	+34			OF	FSET	15 ft l	T			ALI	GNM	ENT	-Y15R	EV-	0 HF	<b>R.</b> 35.5	BOF	RING N	<b>O.</b> B1-	F			STAT		47+23	,		0
COLI	LAR EL	<b>EV.</b> 8	96.9 f	ť	Т	OTAL D	EPTH	<b>1</b> 48.	5 ft		NC	ORTHI	<b>NG</b> 84	7,964	4		EA	STINC	<b>G</b> 1,6	663,918		24 HF	<b>R.</b> 33.5	COL	LAR E	LEV. 8	895.1 ft	t		тот	AL DEP	'TH 4	48.5 ft		N
DRILL	RIG/HA	MMER E	EFF./D	ATE F	D28558	34 CME-4	5C 84	% 03/1	8/2019	9			DRIL	L ME	THO	) Н.	.S. Aug	ers			HAM	MER TYP	PE Automatic	DRIL	L RIG/H	AMMER	EFF./DA	ATE F	RD285	584 C	ME-45C	84% 0	)3/18/20	/19	
DRIL	LER S	Seiler, N	Λ.		S	TART D	ATE	03/19	9/19		CC	OMP. C	DATE (	03/19	9/19		SU	RFAC	E WA	ATER D	EPTH N	N/A		DRII		Seiler, I	М.			STAF	rt dat	<b>E</b> 03	3/19/19	Э	C
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	I BL 0.5f	LOW CO	OUNT 0.5ft	0	25	BLOW	/S PEI 50		75 75	10	00 NC	_   '	моі	L O G	ELEV	. (ft)	SO	IL AND F	ROCK DES	SCRIPTIC	ON DEPTH (ft	ELEV (ft)	DRIV ELE\ (ft)	DEPT	· · ·	OW C0	_	ft 0		BL0 25	.OWS P 5(		OT 75
900		Ŧ															-							900		+									
895	-							· · · ·	•								896.9			Red to R	JND SURF RESIDUAL ed-Brown v y CLAY, N	with Blacl		895	_						<del></del>		<u> </u>		
890	<u>893.4</u> 888.4		4	4	5	- - - - - - - - - - - - - - - - - - -	· · ·	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·	· · ·				м		- - - -				, <u> </u>			890	891.6	3 <u>- 3.5</u>	4	4	4		• • • • • • • • • • • • • • • • • • •		· · · ·		· ·
885	883.4		3	3	4	· + · · · · · · · · · · · · · · · · · ·	· · ·	· · · ·	•	· · · ·	· ·	· · · · ·			М		- - - -							885	886.6	<u>} = 8.5</u> 	5	5	4		· · · · · · · · · · · · · · · · · · ·	  	· · · ·	· · ·	· ·
880	-		4	5	4	- . <b>9</b> . <b>1</b> . . <b>9</b> . <b>1</b> .	· ·	· · · ·	•	· · · ·	· ·	· · · · ·			М		- - -							880	881.6	) <u>+</u> 13.5 +	4	3	4		•	  	· · · ·	· · ·	· ·
875	878.4 	- 18.5 - - - - - - - - - - - - - - -	3		5	- - - - - - - - - - - - - - - - - - -	· · ·	· · · ·	· ·	· · · ·	· · ·	· · · · ·			М		- - - -							875	876.6	) <u>-</u> ) <u>-</u> <u>-</u>  	4	5	4		· [· · · · · [· · · · · • 9 · · ·	· · ·	· · · ·	· · ·	· · ·
870	868.4		4		7		13	· · · ·	· ·	· · · ·	· · ·	· · · · ·			М		_ 872.8 - - -	Bro	own to SAND,	Tan and Little Mi	White, Sili ca and Qua	lty Coarse artz Frag	e to Fine gments	870	871.6	5 <u>+</u> 23.5 + + +	3	4	4		·  · · · · ·  · · · · · • 8 · ·	  	· · · ·	· · · ·	· ·
865	863.4	- - - 33.5	4		8		15 · ·	· · · ·		· · · · · · · ·	· · ·	· · · · ·			м ▼		- - - -							865	866.6	<u>5 <del>-</del></u> 28.5 	3	6	7			· · ·	· · · ·	· · ·	· · ·
860	858.4	- - - - 38.5	3		5	. • • • • • • • • • • • • • • • • • • •	· · ·	· · · ·	•	· · · ·	· ·	· · · · ·			W		- 862.3 - - -		Black, Whit	, Brown, te, Fine \$	Tan, Orang Sandy SILT	ge-Browr ſ, Micace	n and eous	860	861.6	<u>5 = 33.5</u> 	3	5	7		• • • • • • • • • • • • • • • • • • •	· · ·	· · · · · · · · · · ·	• • • •	• • • • •
855	853.4	+ + + + + 43.5	5	8	8				· · ·	· · · · · · · ·	· ·	· · · · ·			М		- - - - 852.9						44.(	855	856.6	<u>5 - 38.5</u> 	6	7	8			;	· · · ·		· ·
850	848.5	+ + + + + 48.4	9		29	· · · · · · · · · · · · · · · · · · ·	· · ·	· · · ·	•47 . <b>L</b>	· · · ·	· · ·	· · · · ·			M		851.1 - 848.5	B	Black, E	WEA GR/	d White, S <i>I</i> icaceous <b>HERED R</b> MITIC RO	ROCK	SAND, 45.8	850	851.6	<u>) + 43.5</u> + +	7	13	24		· · · · ·		••••••••••••••••••••••••••••••••••••••		· · ·
	-		60/0.									<u>    60/0</u> .					<u>848.4</u> 	 Pe	enetrat	GR/ ring Terr tion Test	FALLINE F NITIC RO ninated wit Refusal at Rock: GR	OCK th Standa t Elevatio	on 848.4		846.6	+ + + + + + + + + + + + + + + + + + +	60/0.0	0		- I I	<u></u>		· · · · ]		
	-	+ + + + + + + + + + + + + + + + + + + +															-																		



								URE L							,									
	<b>3</b> 4839					<b>P</b> U-2579AB		Y FORSY					OGIST Weaver, P.M.	1	-	3483					• U-2579A		COUNT	
SITE	DESCR	RIPTION	Bric	dge No	. 724 (	on -Y15REV- (I-40 By	pass) ov	er -L- (Wins	ton-Sale	m Bel	tway	)		GROUND WTR (ft)	SITE	DESCR	RIPTION	l Bride	ge No.	724 o	n -Y15REV	/- (I-40 By	pass) ov	'er -l
BOR	ING NO	. B1-C	3		S	<b>ATION</b> 47+13		OFFSET	46 ft RT			ALIG	NMENT -Y15REV-	0 HR. 31.3	BOR	ING NO	. B1-G	<b>;</b>		ST	ATION 47	7+13		OF
COL	LAR EL	<b>EV</b> . 89	93.1 ft		т	DTAL DEPTH 66.8 f	t	NORTHIN	<b>G</b> 847,9	02		EAS	<b>ING</b> 1,663,902	24 HR. 30.6	COL	LAR EL	<b>EV.</b> 89	93.1 ft		то	TAL DEPT	<b>H</b> 66.8 f	t	NC
DRIL	L RIG/HA	MMER E	FF./DA	TE R	D285584	4 CME-45C 84% 03/18/2	019	1		ИЕТНО	D H	.S. Augers		ER TYPE Automatic	DRIL	L RIG/HA	MMER E	FF./DAT	E RD	285584	CME-45C 84	4% 03/18/2	019	-
DRIL	LER S	Seiler, N	1.		S	ART DATE 03/19/1	9	COMP. DA	TE 03/2	21/19		SURF	ACE WATER DEPTH N//	A	DRIL	LER S	eiler, M	l.		ST	ART DATE	03/19/1	9	cc
ELEV	DRIVE	DEPTH	1	ow co			PER FOOT		SAMP.		1 L				ELEV	DRIVE	DEPTH		W COL				PER FOOT	
(ft)	ELEV (ft)	(ft)		0.5ft	0.5ft	0 25 5	50	75 100	NO.	мо	O G	ELEV. (f	SOIL AND ROCK DESC	CRIPTION DEPTH (ft	(ft)	ELEV (ft)	(ft)	<u> </u>	0.5ft		0 2		50	75
							1						,									•		
905															015							Mate	h Line	
895		ŧ										 893.1	GROUND SURFA	ACE 0.0	8 <u>15</u> _	+	±	+		+	· ·			
		<u>+</u>										- 093.1	RESIDUAL				t							
890		- 3.5										-	Gray, Tan, Red to Brown an CLAY, Micaceou	nd White, Silty us		_	ŧ							
	009.0	+ 3.5	4	4	5					м		-					+							
		Ŧ										-					Ŧ							
885	884.6 -	8.5							- 1			-				-	Ŧ							
		ŧ	4	4	5			· · · · · · ·		D		-					ŧ							
000		ŧ						·   · · · · ·				-					‡							
880	879.6 -	13.5	4	4	6				-			-				-	ŧ							
		ŧ				$\left \begin{array}{c c} \cdot \mathbf{q}^{10} \\ \cdot \cdot \cdot \cdot \\ \\ \cdot \\ \cdot \\ \cdot \\ \cdot \\ \\ \cdot \\ \\ \cdot \\ \cdot \\ \cdot \\ \cdot \\ \\ \cdot \\ \\ \cdot \\$				23%	$\square$	-					ŧ							
875	074.6	1.05				· · · · · · · · · · · · · · · · · · ·						- 875.5	Brown to Tan and White, Silty	17.6			£							
	0/4.0	+ 18.5 T	7	8	9					D		-	SAND, Trace Mica and Qua				Ŧ							
		Ŧ										-					Ŧ							
870	869.6 -	23.5				· · · · · · · · · · · · · · · · · · ·		• • • • • •	-			-				-	‡							
		ŧ	6	10	13					D		-					ŧ							
005		ŧ						.   .				-					‡							
865	864.6-	28.5	26	54	46/0.3				-			864.1		29.0		-	ŧ							
		Ŧ			10/0.0			100/0.0	<b>•</b>			-	WEATHERED RO GRANTIC ROC	DCK K			+							
860		Ŧ					<u> </u>		i			860.3		32.8			Ŧ							
	859.6	+ 33.5 +	15	14	10				1	м		-	RESIDUAL Brown to Tan and White wit	ith Gray, Silty		-	Ŧ							
		ŧ						.   .				-	Coarse to Fine SAND, So Fragments	ome Quartz			Ŧ							
855	854.6-	38.5							-			-	i reginerite			-	‡							
		‡	15	14	35		49			м		-					‡							
050		‡					└─ ·─ - └ · · · ·	• + ·   · · · ·	1			_ 851.9 -	WEATHERED RO		1		‡							
61/8 61/8	849.6-	43.5	100/0.2	2				- 100/0.2	•			_	GRANITIC ROC	Ж		-	ŧ							
L 5/1		ŧ						.	!			-					ŧ							
845	014.0	+ 40.5				<del></del>			<b>!</b>			846.2	RESIDUAL	46.9	1		ł							
	044.0	+ 48.5 +	17	22	17	· · · · • • • 39				D		-	Brown to Tan and White, Silty SAND, Some Quartz Fr				Ŧ							
u' z		Ŧ										-		0			Ŧ							
දි <u>840</u>	839.6 -	53.5		45	100/0 (				- 1			-				-	ŧ							
LOGS.		ŧ	11	15	100/0.4	· · · · · · · · · · · · · ·	- <u></u>	100/0.4	•		977	- 838.5 -	WEATHERED RO	54.6 DCK	{		ŧ							
누	836.3	56.8	60/0.0						<b>↓</b>			- 836.3 -	GRANITIC ROC CRYSTALLINE RO				‡							
5 <u>835</u>	-	ŧ							i			- 833.5	Gray, Black and White, Mode	erately Severely		-	ŧ							
33072		ŧ							!			_	to Moderately Weathered, S Hard, GRANITIC ROCK with	Very Close to	1		ŧ							
830		ł							i I			831.1 829.5	Close Fracture Spa REC=86% RQD=71%	acing 62.0 GSI=60-80 63.6	1		ł							
		Ŧ							]			- 029.5	White with Gray and Brown, S	Slighlty to Very	1		Ŧ							
79AB		ŧ										- 826.3	Slightly Weathered, Hard to GRANITIC ROCK with Close	to Moderately 66.8			Ŧ							
U2579AB	_	ŧ				·			7			-	Close Fracture Spa REC=100% RQD=92%	acing	]		‡							
BLE		ŧ										-	White, Brown, Black and Gra	ay, Moderately			ŧ							
DOUBL		ŧ										_	Severely to Moderately Weat Medium Hard, GRANITIC RC	OCK with Very			t							
BORE [	-	f											Close Fracture Spa REC=25% RQD=0% C				f							
OT BO		Ŧ										-	Gray, Black and White, V	ery Slightly			Ŧ							
ICDC		‡										-	Weathered to Fresh, Hard t GRANITIC ROCK with Mod				‡							
z		L			I					I			1		J L	<u> </u>	L							

NT	Y FORSYT	Н			GEOLOGIST Wea	ver, P.M.		
ove	er -L- (Winsto	on-Sale	m Belt	way)			GROUN	D WTR (ft)
	OFFSET 4	6 ft RT			ALIGNMENT -Y15	REV-	0 HR.	31.3
	NORTHING	847,9	02		EASTING 1,663,90	02	24 HR.	30.6
		DRILL N	IETHO	<b>D</b> H.S	S. Augers	HAMM	ER TYPE	Automatic
	COMP. DAT	TE 03/2	21/19		SURFACE WATER	DEPTH N/	A	
ют		SAMP.		L O		ROCK DESC		
	75 100	NO.	моі		SOIL AND	ROCK DESC		
<u> </u>								
				E	Fr REC=88%	RQD=88%	ig GSI=80-10	0
				F	Boring Termin	ated at Elevat	ion 826.3 f	t in
				F		Rock: GRANI		
				F	<u>Other Samples:</u> ST-1 (14.0 - 1	16.0)		
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WBS	34839	9.1.8			TIP	U-257	79AB	C	OUNT	ΥF	ORSY	ГН	GEOLOGIST Weaver,	P.M.		
SITE	DESCR	IPTION	Bric	lge No. 7	24 on	-Y15R	EV- (I-40	Вура	ss) ov	er -L	- (Wins	ton-Salem Beltway)			GROUND W	/TR (ft)
BORI	NG NO.	B1-G	3		STA	TION	47+13			OF	FSET	46 ft RT	ALIGNMENT -Y15REV	′_	0 HR.	31.3
COLI	AR ELE	<b>EV</b> . 89	93.1 ft				<b>PTH</b> 66	.8 ft		NO	RTHIN	<b>G</b> 847,902	EASTING 1,663,902		24 HR.	30.6
				TE RD28						1.3		DRILL METHOD H.S			RTYPE Aut	
	LER S						<b>TE</b> 03/1					<b>TE</b> 03/21/19	SURFACE WATER DEP			
			1.									<b>TE</b> 03/21/19	SURFACE WATER DEP		1	
	RUN		1	DRILL		JN	<b>N</b> 10.0 f		ATA							
ELEV (ft)	ELEV (ft)	DEPTH (ft)	RUN (ft)	RATE (Min/ft)	REC. (ft) %	RQD (ft) %	SAMP. NO.	REC. (ft) %	RQD (ft) %	0 G	ELEV.		ESCRIPTION AND REMARKS	6	ſ	DEPTH (ft
336.3					/0			70	70				Begin Coring @ 56.8 ft			
835	836.3 -	- 56.8	5.0	1:34/1.0 1:00/1.0	(4.6) 92%	(4.2) 84%		(2.4) 86%	(2.0) 71%	K	836.3	Gray, Black and White	CRYSTALLINE ROCK e, Moderately Severely to Mode	erately We	eathered, Soft	56.8
	-	Ē		1:45/1.0 1:21/1.0				(2.4)	(2.2)	R	- 833.5 -		RANITIC ROCK with Very Clo Spacing		se Fracture	59.6
830	831.3 -	61.8	5.0	1:17/1.0 0:55/1.0	(3.4)	(2.8)		100%	(0.0)		<u>831.1</u> 829.5	Isolate	d foliation at 10 degrees to 30 Some mica silt on fracture face	degrees es		62.0 63.6
	-	Ļ		0:38/1.0 1:36/1.0 1:45/1.0	68%	56%		25% (2.8)	<u>0%</u> (2.8)	R	-	White with Gray and	GSI=60-80 Brown, Slightly to Very Slightl	ly Weathe	red, Hard to	
-	826.3	66.8		2:37/1.0				88%	88%		826.3	Very Hard, GRANI	TIC ROCK with Close to Mode Spacing	rately Clos	se Fracture	66.8
	-	F F									-		No foliation GSI=70-90			
	-	+									-		ack and Gray, Moderately Seventian Seventiation (Seventiation Seventiation S Seventiation Seventiation Seventiatio Seventiation Seventiation Seventiation Seventiation Seventiation Seventiation Seventiation Seventiation Seventia			1
	-	+									-		Fracture Spacing GSI=10-30			
	-	ł									-		hite, Very Slightly Weathered to CROCK with Moderately Close			-
	-	t t									-		One fracture at 10 degrees		Spacing	
	-	F									-		d foliateion at 10 degrees to 30 e: Bottom 0.4' of core not retri			
	-	F									-	Boring Terminated	GSI=80-100 at Elevation 826.3 ft in Crystalli	ine Rock:	GRANITIC	J
	-	F									_		ROCK			
	-	E									-	<u>Other Samples:</u> ST-1 (14.0 - 16.0)				
	-	F									-					
	-	F									-					
	-	E									-					
	_	E									_					
	-	L									-					
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## **CORE PHOTOGRAPHS**

**B1-G** BOX 1: 56.8 - 66.8 FEET

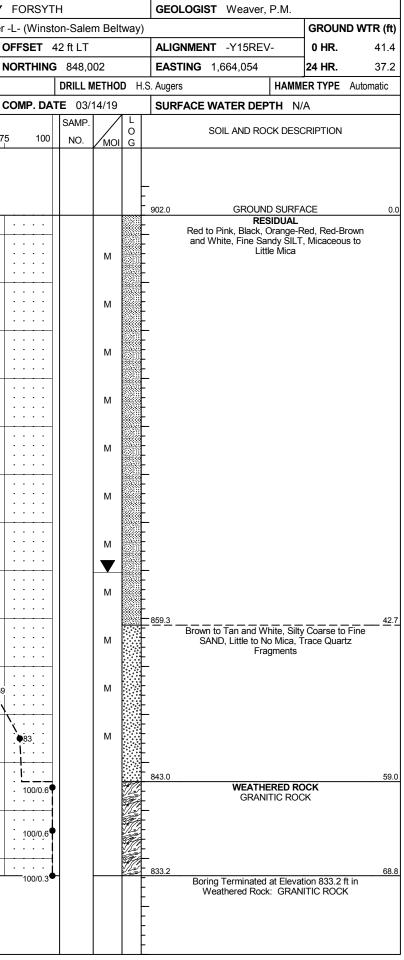




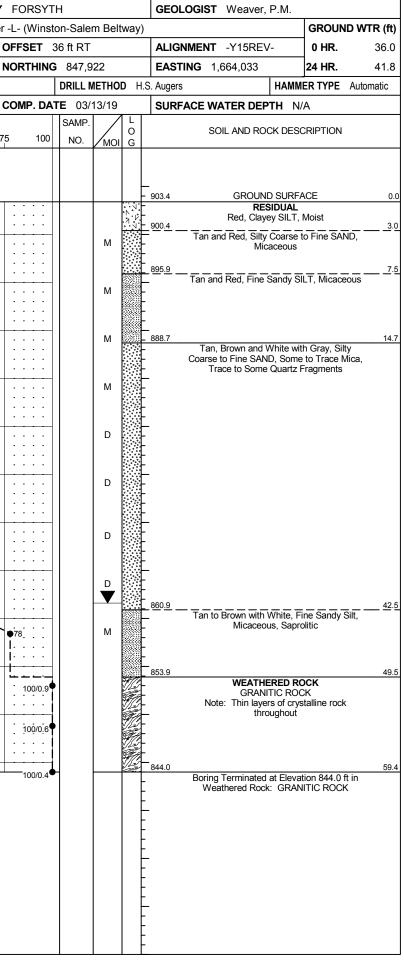
SHEET 16 34839.1.8 (U-2579AB)/BRIDGE NO. 724

												RE L								
WBS	34839	9.1.8			T	IP U	-2579	AB		COUN	ΤY	FORSY	ГН			GEOLOGI	ST Weaver	, P.M.		
SITE	DESCR	IPTION	N Bri	dge No	. 724	on -Y	15RE	V- (I-40	0 Вур	oass) o	ver -	L- (Wins	ton-Sale	em Belt	way)				GROUI	ND WTR (f
BOR	NG NO	B1-E	3		S	TATIO	<b>DN</b> 4	7+02			0	FFSET	76 ft R1	-		ALIGNME	NT -Y15RE	V-	0 HR.	33.
COLL	AR ELI	<b>EV.</b> 89	92.0 ft		<u></u> Т	OTAL	DEP1	<b>FH</b> 53	3.6 ft		N	ORTHIN					1,663,894		24 HR.	35.
DRILL	RIG/HA	MMER E	FF./DA	ATE R	D28558	4 CME	E-45C 8	4% 03	18/20	19			DRILL	METHO	) Н.	S. Augers		HAMN	IER TYPE	Automatic
DRIL	L <b>ER</b> S	eiler, N	-			TART	DATE	03/	13/19	)	C	omp. Da				SURFACE	WATER DE	PTH N	/A	
ELEV (ft)	DRIVE ELEV	DEPTH (ft)	' <b> </b>	ow co						ER FOC		400	SAMP				SOIL AND RO	OCK DES	CRIPTION	
(14)	(ft)	(11)	0.5ft	0.5ft	0.5ft	0		25	50	J	75	100	NO.	/ MOI	G	ELEV. (ft)				DEPTH
895	-	Ł													ł	_				
	-	-														892.0		ND SURF	ACE	
890	-	Ł									•				N	- Tan	RE and Red-Brow	<b>SIDUAL</b> n, Silty C	LAY, Micad	ceous
	888.5	3.5	3	4	6			· ·	· ·	· · ·	•				N	-		-		
	-	Ł			ľ		• <sup>10</sup>		· ·	· · ·	•			М	N	-				
885	883.5					-;		<u> </u>							N	-				
		0.5	3	3	3	1	6	· ·	 	· · ·	•			м	N	-				
880	-	<u> </u>				_i		· ·			•				N	-				
	878.5	13.5	3	4	4				· ·	· · ·	:	· · · ·		м		878.2	to Top and V			1
075	-	ŧ				.¶	8		· ·	· · ·	•	· · · ·		IVI		SA	n to Tan and V ND, Some to I	_ittle Qua	rtz Fragme	o Fine ints,
875	873.5	- 185					· · ·	1								-	Little to	o Trace N	lica	
	- 07 3.5	10.5	5	5	4	1 :	9		· ·	· · ·	•	· · · ·		м						
870	-	ŧ					1	· ·	•••		•					-				
	868.5	23.5	11	8	6		·j	· ·		· · ·				D		-				
005	-	ŧ					• <u>14</u>		· ·	· · ·	•	· · · ·								
865	863.5	- 28 5							$\overline{\mathbf{x}}$							-				
		- 20.0	20	28	28	11:	 		::`	<b>9</b> 56	•	· · · ·		D		-				
860	-	ŧ.							•••	<u>'': '</u>	·					_				
	858.5	33.5	16	29	33	:	· · · · · ·	· ·	· ·	· / ·		· · · · · · · ·				-				
855	-	ŧ					· · · · · ·		· ·	· · • • • •	2.	· · · ·				-				
000	853.5	- 38.5						1		<u>. i</u> :						- 953.0				
	-	+	32	41	59/0.4		· · · · · ·		· ·	· .∟	- <del> </del> -	100/0.9			11	- 853.0	WEATH		OCK	3
850	_	ŧ							•••		•				10	_	GRAN	NITIC RO	CK	
	848.5	43.5	25	75/0.3	-	•	· · · · · ·			· · · · · ·	:				10	-				
845	-	+					· · · · · ·	· ·   · ·	· ·	· · · · · ·	•	. 100/0.8			10	-				
0-10	- 843.5	- 48.5				<del>.</del>		1							10	-				
	-	ŧ	100/0.	4		:	· · ·		•••	· · · · · ·		100/0.4	<b>7</b>			-				
840	-	ŧ					· · ·		•••		•	· · · ·			Ø	-				-
	838.5	53.5	60/0. <sup>-</sup>	1		·			••		•	60/0.1	•			<u>838.7</u>	CRYST		ROCK	5
	-	ŧ													ļ		GRAN Boring Termin	NITIC RO	CK n Standard	
	-	+													ļ		etration Test R n Crystalline R	Refusal at	Elevation 8	838.4
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	34839.1.8					J-2579A				FORSY					LOGIST	Weaver, I					<b>3</b> 4839					I <b>P</b> U-25			COUN	
	ESCRIPTI		dge N					Bypass	· ·				ltway	·				GROUND W	TR (ft)	-				ge No.					ypass) oʻ	ver -
BORIN	g no. ee	2-A		5	STATI	<b>ON</b> 48	8+85			OFFSET	82 ft LT	-		ALIC	SNMENT	-Y15REV	-	0 HR.	43.1	BOR	ING NO	. EB2-	-D		S	TATION	48+7	72		0
COLLA	R ELEV.	902.3 f	t	ר	OTAL	DEPT	<b>H</b> 68.7	′ ft		NORTHIN	<b>IG</b> 848,	043		EAS	TING 1	,664,063	2	24 HR.	38.2	COL	LAR EL	<b>EV.</b> 90	02.0 ft		<u>т</u>	OTAL DI	EPTH	68.8 ff	t	N
DRILL R	IG/HAMMEF	EFF./D	ATE F	RD2855	84 CM	E-45C 8	4% 03/18	/2019			DRILL	METH	OD I	H.S. Auger	rs		HAMME	R TYPE Auto	matic	DRIL	l Rig/Ha	MMER E	FF./DA1	TE RD	028558	4 CME-45	5C 84%	03/18/20	019	
DRILLE	ER Seiler,	М.		5	START		03/14	/19		COMP. D	<b>ATE</b> 03	/15/19	)	SUR	FACE W	ATER DEP	TH N/A	4		DRIL	LER S	eiler, N	1.		S	TART D	ATE (	03/14/1	9	C
		···	ow co	_				S PER F			SAMP	P. <b>▼</b> ∕			S	OIL AND ROC	K DESCI	RIPTION		ELEV	DRIVE ELEV	DEPTH	' <b> </b>	W COL	JNT			BLOWS F	PER FOO	
	(ft) (ft)	0.5f	t 0.5ft	0.5ft	0	2	25	50	7	75 10	0 NO.	Имс		ELEV.					EPTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	<u> </u>	50	75
905														L						905		Ļ								
	ţ													- 902.3		GROUND		CE	0.0			ŧ								
	ŧ.				<u>   </u>	· · · ·		: :	· · ·					502.5	Dev	RES	IDUAL		0.0			<u> </u>				<u>  </u> .			<u> </u>	.
900	4 898.8 + 3.5							<u>.</u>			-1				Red	d with Tan, Fin	ie Sandy	SILT, Wet	10	900	898.5	- 3.5							+	+
	1	3	3	4		7 · ·			 			м		898.3	Tan an	d Red with Gr	ay, Silty C	Coarse to Fine	4.0		090.0		3	4	5	: •: 9 :	·   ·			•
895	Ŧ					• • •		•	• • •					894.7		SAND, I	Little Mica	а	7.6	895		Ŧ				: - :	• •	• • •		•
_8	893.8 - 8.5	2	3	3	-  [-]										Tar	n, Red-Brown i	to Orange	e-Brown to	<u>.</u>		893.5	8.5			4					
	Ŧ	-	ľ	Ű	•	6		.   .				M		F	Reu-Oi	Fine Sandy S	SILT, Mica	nite with Black, aceous				Ŧ	2	3	4	<b>!</b> ∳? .		•••		
890		.			+			· ·	· · ·					F						890		ŧ					·   ·	· · ·	+	·
	888.8 <u>-</u> 13. +	3	3	5	:	· · ·		:   :				м		-							888.5	+ 13.5 +	2	4	4		:   :			
885	‡						· · · ·	· · ·	· · · · · ·					-						885		‡				.¶ <sup>8</sup> .    .	· · ·	•••		:
	883.8 <u>+</u> 18.		<u> </u>			<u>↓ · ·</u>  · · ·					-			-						000	883.5	+ + 18.5							<u> </u>	
	‡	3	4	5		•9 · ·	· · ·   · · ·	:   :	· · ·	· · · ·		M		-								‡	4	5	5	<b>1</b>		· · ·	· · · ·	:
880	1							· ·	· · ·					-						880		1					· ·	· · ·	<u> </u>	·
_8	878.8 <mark>- 2</mark> 3.	5 3	5	7		.  ∗ <b>⊨</b> 12 ·	· · ·	·   ·	· · ·			м		L							878.5	23.5	3	4	5					:
	ŧ						· · ·	· ·	· · ·	· · · ·				L								ł			Ū	. •9. . i	· · ·		· · ·	•
875	873.8 <u>+</u> 28.	,				$\frac{1}{1}$		<u>.</u>						L						875	070 5						: :	<u> </u>	+	
		3	4	6	11:	↓10 ·						м		F							873.5	+ 28.5 	3	4	6					
870	Ŧ													<u>870.7</u> .		Proug and Wh	ito Ciltu	Coarse to Fine	<u> 31.6</u>	870		Ŧ				:[:				
_{	868.8 - 33.	5 7	5	7	_  [-									F	SAND,	Little Mica, So	ome Qua	rtz Fragments			868.5	33.5								
	Ŧ			'		<b>1</b> <sup>12</sup> .			· · ·			M		F		in Sample	at 38.5 F	-eet				ŧ	3	4	5	. <b>•</b> 9.				
865		.				· [· ·		· ·	· · ·					F						865		ŧ					· · ·	· · ·	+ • • •	·
	863.8 <u>-</u> 38. +	4	7	9		• • 16		.   .				м									863.5	+ 38.5 +	3	4	7		, ·   ·			.
860	‡					· · · ·			· · · · · ·					860.8					41.5	860		‡				· <del>·</del> ·		· · · · ·		:
	858.8 + 43.	5				· · · ·					-			-	Orar	nge-Brown, Bro Sandy SIL				000	858.5	+ 43.5					<u>,                                     </u>		<u> </u>	
	‡	5	7	11		<b>∳</b> 18		:   :	 	· · · · ·		M		Ļ								‡	6	10	10	$\left  \left  \begin{array}{c} \cdot \cdot \cdot \\ \cdot \cdot \end{array} \right  \right $	€20			:
855	‡					· · [. 		•   •	· · ·		_11			L						855		‡					·   ·	<u> </u>	<u> </u>	·
{8	853.8 <u>+</u> 48. +	25	45	55/0.3	3 .	:: <b>!</b> :_		÷–;–	· · · ·	<u> </u>			41	853.3		WEATHE		ск	49.0		853.5	48.5	19	29	40					
050	‡					· · · · · ·	 	:   :	: <b>_</b> :_:-	<u> </u>	B		V/1-2	<u>– 851.7</u> ⊷	<b>`</b>	GRANIT	LIC ROCH		50.6	050		‡						 	'	
850		5							+ .	<u> </u>				ţ.	Brown,	, Tan and Whi	IDUAL te, Silty C	Coarse to Fine		850	848.5	- 53.5					.   .			-
	‡	16	28	34		· · ·	· · ·	.   .	<b>•</b> 62 :	 		D		ļ.		SA	AND					+ 00.0	17	31	52	 	.   .		· · · ·	
845	Ŧ							·   ·	.  -  <u></u>	· · · ·									57.5	845		t								•
_8	843.8 - 58.	5 100/0	.3		:			·   ·	· · ·	. 100/0.3	3♥					WEATHE GRANIT	RED ROO				843.5	58.5	27	64	36/0.1					:
	Ŧ				.	· · · ·		.   .	· · · ·						Note:			ers throughout				£		04	JU/U. I		.   .			
840							+		· · · 	 				1						840		<u> </u>							+	+
	<u></u>	100/0	.2		11			.   .		100/0.2	2		11	Ŧ							838.5	+ 63.5 T	70	30/0.1			.   .			
835	Ŧ					· · · ·		.   .	· · ·					Ŧ						835		Ŧ								
	<u>833.8 – 68.</u>	5 100/0								100/0.3	 ,●		M	833.6		<b>.</b>			68.7		833.5	68.5	100/0							
	‡	100/0	.e							100/0.2				F	Boring We	g Terminated a athered Rock:	at Elevatio	on 833.6 ft in TIC ROCK				Ŧ	100/0.3			[ .				
	‡													F							-	ŧ								
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39.1.8 <b>RIPTION</b> <b>O.</b> EB2- <b>LEV.</b> 90 <b>AMMER E</b> Seiler, M <u>C.</u> DEPTH (ft)	C )1.6 ft <b>FF./DAT</b> I. BLO	_	724 c   ST   TC 285584   ST   NT	TATION	REV- ( 48+5 EPTH 5C 84%	(I-40 By 58 54.3 f 0 03/18/2	/pass) c t	ver -L	ORSYT - (Winst FSET	on-Sale 3 ft LT		tway	)	DGIST Weaver, P.M.	GROUND WTR (ft)		34839 DESCR	IPTION		ge No	. 724 c	P U-257 on -Y15RE	EV- (I-40 E	COUN Bypass) (	over -l
0. EB2- LEV. 90 AMMER E Seiler, M	C )1.6 ft <b>FF./DAT</b> I. BLO	E RD2	ST TC 285584 ST NT	TATION DTAL DE CME-45	48+5 <b>EPTH</b> iC 84%	58 54.3 f 0 03/18/2	ït	OF	FSET	3 ft LT		tway			GROUND WTR (ft)	SITE	DESCR			ge No				Bypass) (	over -l
LEV. 90 AMMER E Seiler, M	)1.6 ft <b>FF./DA1</b> I. BLO	W COUI	<b>TC</b> 285584 <b>ST</b>	DTAL DE	EPTH 6C 84%	54.3 f 03/18/2		_					ALIGN						<b>C</b>				48+45		OF
AMMER E Seiler, M	FF./DAT	W COUI	285584 ST	CME-45	iC 84%	03/18/2		NO	RTHING	847 9				MENT -Y15REV-	0 HR. 42.7	BOR	ING NO.	EB2-	L		5				
Seiler, M	I. BLO	W COUI	S1 √⊺				019			• 047,0	62		EAST	<b>NG</b> 1,664,043	24 HR. Dry	COL	LAR ELE	<b>IV.</b> 90	3.4 ft		т	DTAL DEF	<b>TH</b> 59.4	ft	NC
DEPTH	BLO		νт	ART DA	TE (	00/44/4				DRILL N	ЛЕТНО	D H	I.S. Augers	HAMM	<b>IER TYPE</b> Automatic	DRIL	L RIG/HAI	MMER E	FF./DA	TE RE	D285584	CME-45C	84% 03/18	/2019	
						03/14/1	9	со	MP. DA	<b>TE</b> 03/	14/19		SURF		I/A	DRIL	.LER S	eiler, M			ST	ART DAT	<b>E</b> 03/13	/19	C
(ft)	0.5ft	0.5ft	~ - a		E	3LOWS	PER FOO	T		SAMP.	▼⁄	L		SOIL AND ROCK DES	CRIPTION	ELEV	DRIVE ELEV	DEPTH	BLO	w col	JNT		BLOWS	S PER FO	от
_			0.5π	0	25		50	75	100	NO.	мо		ELEV. (ft)		DEPTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50	75
+																									
													_			905		_							
1													-				-	-				·			
<u> </u>				+									- 901.6 -	GROUND SURF RESIDUAL	ACE 0.0		-	-							
$\pm$							<u> </u>					N N V V	898.8	Tan and Red, Clayey S	2.0	900	899.9	- 3.5	4	4	5		+	· · · ·	
1 3.5 1	3	2	3	5.	-   -		· · ·	: :			м			Tan and Red, Silty Coarse	to Fine SAND		-	-							
Ŧ				I.									-			895	894.9	85							
T 8.5				1									894.1	Tan and Brown, Fine Sandy	SILT, Micaceous		-	- 0.0	3	3	5	·•8 · ·			
Ŧ	3	3	4	•7 .							м		-				-	-							
Ŧ					·   ·			·   ·					_			890	889.9	13.5	2	3	6				
13.5	3	4	4										-				-	-	_			• • • • • • •			
Ŧ				•••8 •									-			885	-	-						• • • •	
+				1.									8 <u>83.7</u>		17.9		- 004.9	- 10.5	4	4	5	- <b>•</b> 9 · ·			
+ 10.0	6	6	5	↓ · • • 11	.   .			:   :			м		-	Coarse to Fine S	and Gray, Silty		-	-							
<b>‡</b>					·   ·			·   ·					- <u>879.6</u>		22.0	880	879.9	- 23.5	6	7	9			· · · ·	
23.5	6	5	5	: <b>i</b> :				:   :					-	Gray-Brown and White, Fir Micaceous	ne Sandy SILT,		-	-	Ŭ	'		• • • • • • • • • • • • • • • • • • •		· · · ·	
‡			Ĩ	· • 10		· · · ·							-			875	-	-				::1:		• • • • •	
+													-			0/5	874.9_	- 28.5	9	8	9		7		
- <u>-</u>	5	8	9		17	· · · ·	· · ·   · · ·	: :	· · · ·		м		872.0		29.6		-	-				· · · · · ·		 	
1					<u>'</u> ''	· · · ·		• •					-	to Fine SAND, Micaceous	, Trace Quartz	870	-	- 34.0						· · · ·	
33.5	-	-10	10		.\		· · ·	:   :	· · · ·				-	Fragments in Sample at 3	8.5', Saprolitic				10	12	11		¢23	· · · ·	
‡		12	13			; N	· · ·	: :	· · · ·		м		-			005	-	-						 	
÷				· · · ·												865	864.4	39.0	10	12	12		<u>i</u>		
38.5	16	26	35	· · ·				: :	· · ·		D		-				-	-	10	12	12		•24 		
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43.5				· · ·		· · · ·	· · ·	N.	· · ·		$\vdash \lor$		-					 	21	29	49				<u>`</u> .
t	19	32	48				· · ·	: Þ	80 • •		м		855.8		45.8		-	-							· ·
$\pm$				<u></u>			<u> </u>									855	854.4	49.0	10	30	61/0.4		<u> </u>		<u> </u>
48.5 L	43	57/0.2			-   -		· · ·	: :	100/0 7	,		<u>II</u>	_				-	-	19	39	01/0.4				•••
Ŧ													-			850	-								
53.5												<u>J</u>	_				849.4		90	10/0.1					
+	53	47/0.3_							100/0.8	H		SI TA	- 847.3	Boring Terminated at Eleva	ation 847 3 ft in		-	-							
Ŧ													_	Weathered Rock: GRAI	NITIC ROCK	845	844.4	59.0	100/0 4						
	18.5 23.5 28.5 33.5 38.5 43.5 48.5	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	3.5 $3$ $2$ $3$ $8.5$ $3$ $3$ $4$ $13.5$ $3$ $4$ $4$ $13.5$ $3$ $4$ $4$ $13.5$ $3$ $4$ $4$ $18.5$ $6$ $6$ $5$ $23.5$ $6$ $5$ $5$ $28.5$ $5$ $8$ $9$ $33.5$ $7$ $12$ $13$ $38.5$ $16$ $26$ $35$ $43.5$ $19$ $32$ $48$ $48.5$ $43$ $57/0.2$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	3.5       3       2       3       -	3.5       3       2       3       2       3       4       4       5       7       7       7       7       7       7       12.0       10.0       7       10.0       1	3.5       3       2       3       4       -	3.5       3       2       3       4	3.5       3       2       3       4       4       5       10 </td <td>3.5       3       2       3       4</td> <td>3.5       -</td> <td>3.5       -</td> <td>3.5       3       2       3       4       4       5       880       800.9       8.5       880.9       8.5       8.5       8.5       8.5       8.5       8.5       8.5       8.5       8.5       8.5       8.5       8.5       8.5       8.5       8.5       8.5       8.5       8.5</td> <td>3.8       -</td> <td>3.5.       -</td>	3.5       3       2       3       4	3.5       -	3.5       -	3.5       3       2       3       4       4       5       880       800.9       8.5       880.9       8.5       8.5       8.5       8.5       8.5       8.5       8.5       8.5       8.5       8.5       8.5       8.5       8.5       8.5       8.5       8.5       8.5       8.5	3.8       -	3.5.       -				



										BC	DRE L	.00	7									
<b>WBS</b> 3483	39.1.8			TI	P U	2579/	٩B		COU	NTY	FORSY	ΓH			GI	EOLOG	IST	Weave	r, P.M	•		
SITE DESC	RIPTION	N Brid	dge No	. 724 (	on -Y	15RE\	/- (I-4	0 By	pass)	over	-L- (Wins	ton-Sa	alem I	Beltwa	y)					GRO	DUND	NTR
BORING NO	<b>).</b> EB2	-В		S	TATIC	<b>DN</b> 48	3+31			•	OFFSET	75 ft F	RT		AL	IGNME	NT	-Y15RE	EV-	0 H	R.	36
COLLAR E	L <b>EV.</b> 89	99.8 ft		Т	OTAL	DEPT	<b>H</b> 58	8.9 ft			NORTHING	<b>G</b> 84	7,882		E/	ASTING	1,6	64,022		24 H	R.	3
DRILL RIG/H	AMMER E	FF./DA	ATE RI	D28558	4 CME	-45C 8	4% 03	/18/20	19			DRIL	L MET	HOD	H.S. Au	gers			HAI	MMER TY	PE Au	Itomati
DRILLER	Seiler, N	1.		S	TART	DATE	03/	15/19	9		COMP. DA	TE (	03/15/	/19	SL	JRFACE	E WA	TER DE	PTH	N/A		
			ow co	UNT			BLO	WS P	ER FO	ОТ		SAN	/IP.				SOI	L AND R	OCK DI	ESCRIPTI	ON	
(ft) (ft)	(ft)	0.5ft	0.5ft	0.5ft	0	2	25	5	0	7	5 100	NC	). /I	MOI G		V. (ft)					-	DEPT
900	+															8			ND SU			
	‡						· ·	•••	· · · ·	· ·	· · · · · · · ·				j.	_	R		ESIDU/ Sandy S	<b>al.</b> SILT, Mois	st	
896.3	3.5	3	5	5				· · · ·	· · · ·	· · · ·	· · · ·			M	<u> </u>		an and			Silty Fine	SAND,	
95	‡		Ŭ			10								M	-			L	ittle Mic	a		
001.0	±					.1 .1	· ·	•••	· · · ·	 	· · · ·			000	891.							
<u>891.3</u> 90	<u> </u>	4	6	7		• 13_		• •						м	E	W	/hite, E		d Tan, I licaceou	Fine Sand	y SILT,	
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85	Ŧ	4	6	6		<b>Q</b> 12	· ·							D						ilty Coarse race Mica		9
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876.3	+ 23.5				:			•••	· · · ·	· ·					876.	0						
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871.3	28.5	3	4	12		· \	· ·   · ·	· · · ·	· · · ·	· · · ·	· · · · ·			D	- 870.	2						
70	‡					<b>9</b> .16_ 										W	hite a			n, Silty Co	barse to	
866.3	+ 33.5				·   .,	Ź::	· ·   · ·	· ·	 	 	· · · · · · · ·				<u> </u>	Wr	nite, D	ark Gray	ine SAN , Tan, a	ind Orang	e-Browr	. <u> </u>
65		2	3	3				•••	•••	· ·					<u>_</u>	to	o Brow	n, Fine s	Sandy S Saproliti	GILT, Mica c	ceous,	
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861.3	38.5	8	5	9		· · · ·	· ·	· ·	· · ·	 												
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	±							•••	· ·	 					<u> </u>	3	- <u>-</u> -		<del></del>			
<u>856.3</u> 55	<u>+</u> 43.5	15	19	30				<u>``</u>	 49					D			y, ran	to Fine \$	SAND, S	Black, Silf Saprolitic	ly Coars	e
	ł							•••						Ť.	<u>854.</u>	4		WEAT	HERED	ROCK		
851.3	48.5		50/0.0					•••	•••	· ·					1			GRA	NITIC F	KUCK		
50	÷	50	50/0.3								100/0.8											
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<u>846.3</u> 45	T 53.5	100/0.	3			• • •		•••	• •	•••	100/0.3				4							
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841.3	T 58.5							•••							840.	9						
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### SOILS LABORATORY TESTS RESULTS

**WBS NO.:** 34839.1.8

**TIP NO.:** U-2579AB

**COUNTY:** Forsyth

SITE DESCRIPTION: Bridge No. 724 on -Y1REV- (I-40 Bypass) over -L- (Winston-Salem Beltway)

BORING	SAMPLE	BORING	DEPTH	AASHTO	N	L.L	P.I.		% BY WE	IGHT		% P/	ASSING SIE	EVES	%	UNIT
NO.	NO.	LOCATION	INTERVAL (FT)	CLASS				CSE. SAND	F. SAND	SILT	CLAY	10	40	200	MOISTURE	WT (pcf)
B1-G	ST-1	-Y15REV- STA. 47+13, 46' RT	14.0-16.0	A-7-5 (4)	N/A	51	13	31	27	22	20	100	78	47	23	68.3

Jun F. Jaw Signed:

NCDOT Certification No.

### SHEET NO. 21

129-04-0411

SITE PHOTOGRAPHS Bridge No. 724 on –Y15REV– (I-40 Bypass) over -L- (Winston-Salem Beltway)

View of Along End Bent 1 Looking Left to Right



View of Along End Bent 2 Looking Left to Right



View Along Bent 1 Looking Left to Right



SHEET 22 Project #34839.1.8 TIP #U-2579AB Forsyth County