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REFERENCE: U-5725/R-3822

PROJECT: 50162 / 37765

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY HAILFAX
 PROJECT DESCRIPTION WIDENING NC 125 FROM I-95
TO OLD FARM ROAD
 SITE DESCRIPTION CULVERT ON NC 125 OVER CREEK
(-L- STA. 84 + 52)

CONTENTS

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
4	PROFILE
5	BORE LOGS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5725/R-3822	1	5

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P.M. WEAVER

C.R. PASTRANA

AMERIDRILL

INVESTIGATED BY ESP Associates, P.A.

DRAWN BY C.R. PASTRANA

CHECKED BY P.M. WEAVER

SUBMITTED BY ESP Associates, P.A.

DATE DECEMBER 2017

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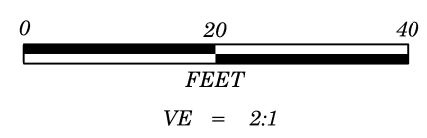
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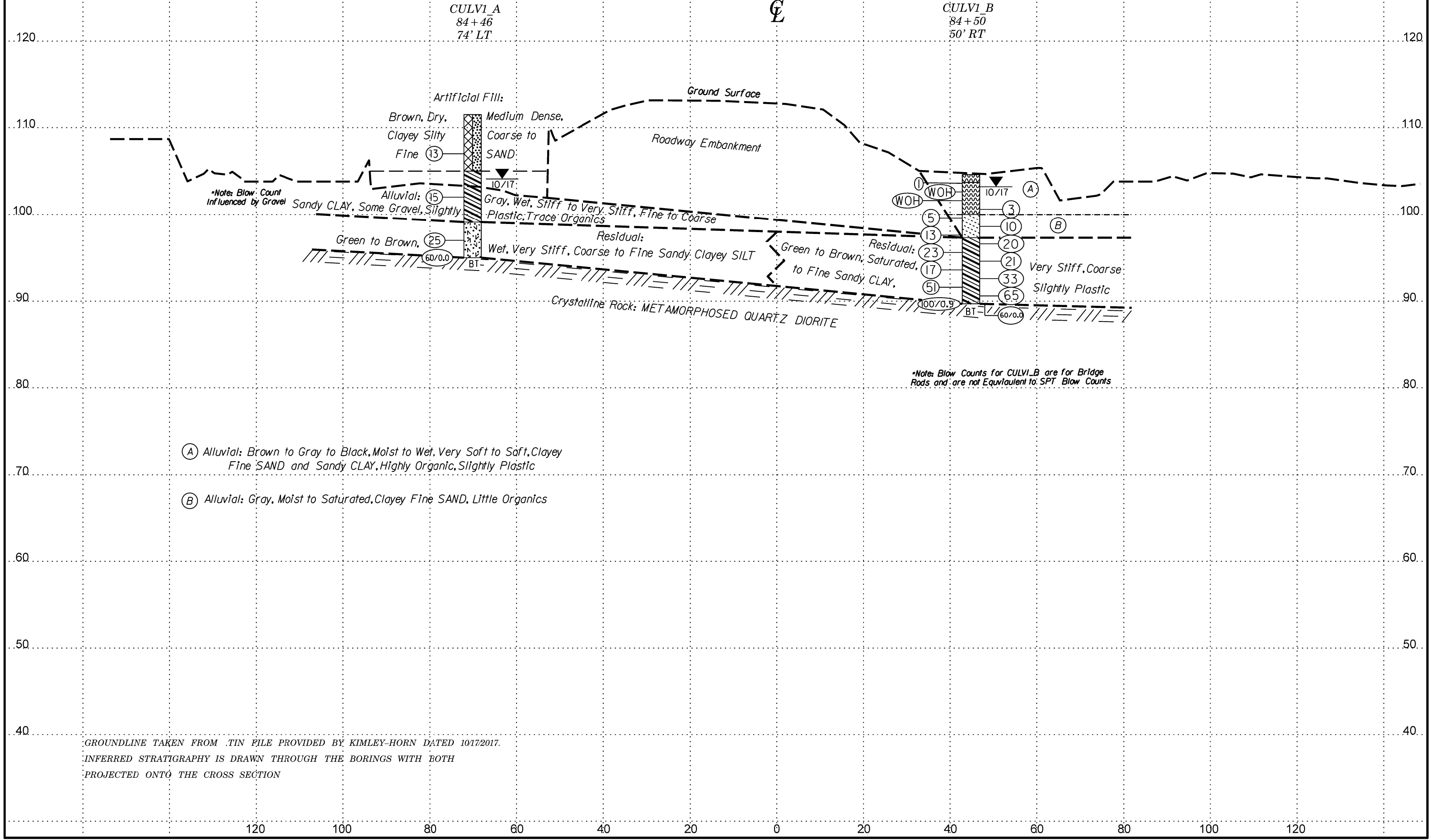
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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION										GRADATION					ROCK DESCRIPTION					TERMS AND DEFINITIONS				
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>										WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.					HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED, AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:					ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING 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 WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. 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. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL. 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. 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. 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. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (IN OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. 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. TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.				
SOIL LEGEND AND AASHTO CLASSIFICATION										ANGULARITY OF GRAINS					WEATHERED ROCK (WR)					NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.				
MINERALOGICAL COMPOSITION										MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.					CRYSTALLINE ROCK (CR)					FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.				
COMPRESSIONIBILITY										SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50					NON-CRYSTALLINE ROCK (NCR)					FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.				
PERCENTAGE OF MATERIAL										ORGANIC MATERIAL GRANULAR SOILS SILT - CLAY SOILS OTHER MATERIAL TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10% LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20% MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35% HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE					COASTAL PLAIN SEDIMENTARY ROCK (CP)					COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.				
GROUND WATER										WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING					FRESH					ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.				
MISCELLANEOUS SYMBOLS										ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION					SOIL SYMBOL					ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT				
TEXTURE OR GRAIN SIZE										U.S. STD. SIEVE SIZE OPENING (MM) 4 10 40 60 200 270 4.75 2.00 0.42 0.25 0.075 0.053					BOULDER (BLDR.) COBBLE (COB.) GRAVEL (GR.) COARSE SAND (CSE. SD.) FINE SAND (F SD.) SILT (SL.) CLAY (CL.)					GRAIN SIZE MM 305 75 2.0 0.25 0.05 0.005 IN. 12 3				
SOIL MOISTURE - CORRELATION OF TERMS										SOIL MOISTURE SCALE (ATTERBERG LIMITS)					FIELD MOISTURE DESCRIPTION					GUIDE FOR FIELD MOISTURE DESCRIPTION				
PLASTICITY										PLASTICITY INDEX (PI)					DRY STRENGTH					NON PLASTIC 0-5 VERY LOW SLIGHTLY PLASTIC 6-15 SLIGHT MODERATELY PLASTIC 16-25 MEDIUM HIGHLY PLASTIC 26 OR MORE HIGH				
COLOR										DESCRIPTORS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.					EQUIPMENT USED ON SUBJECT PROJECT					HAMMER TYPE: AUTOMATIC MANUAL CORE SIZE: B H N HAND TOOLS: POST HOLE DIGGER HAND AUGER SOUNDING ROD VANE SHEAR TEST				
FRACTURE SPACING										TERM SPACING VERY WIDE MORE THAN 10 FEET WIDE 3 TO 10 FEET MODERATELY CLOSE 1 TO 3 FEET CLOSE 0.16 TO 1 FOOT VERY CLOSE LESS THAN 0.16 FEET					BEDDING					TERM THICKNESS VERY THICKLY BEDDED 4 FEET THICKLY BEDDED 1.5 - 4 FEET THINLY BEDDED 0.16 - 1.5 FEET VERY THINLY BEDDED 0.03 - 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET THINLY LAMINATED < 0.008 FEET				
INDURATION										FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.					FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE. MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER. INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER. EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.									



PROJECT REFERENCE NO.	SHEET NO.
U-5725 / R-3822	4
SECTION THROUGH -L- 84+52 SKEW=66 DEGREES	



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 50162.1.1 / 37765.1.5		TIP U-5725 / R-3822		COUNTY HALIFAX		GEOLOGIST Pastrana, C.R.										
SITE DESCRIPTION Widening of NC 125 from I-95 to Old Farm Road							GROUND WTR (ft)									
BORING NO. CULV1_A		STATION 84+46		OFFSET 74 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 111.5 ft		TOTAL DEPTH 16.5 ft		NORTHING 975,154		EASTING 2,398,666										
DRILL RIG/HAMMER EFF./DATE AME9553 CME-550X 74% 01/09/2015		DRILL METHOD H.S. Augers		HAMMER TYPE Automatic												
DRILLER Meatyard, C.		START DATE 10/23/17		COMP. DATE 10/23/17		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
115																
																111.5 GROUND SURFACE 0.0
																ARTIFICIAL FILL Brown, Medium Dense, Clayey Silty Coarse to Fine SAND
110	108.0	3.5	5	6	7									D		
105	103.0	8.5	6	9	6									W		105.0 ALLUVIAL Gray, Stiff to Very Stiff, Fine to Coarse Sandy CLAY, Some Gravel, Trace Organics Note: Blow count influenced by gravel 6.5
100	98.0	13.5	18	13	12									W		99.1 RESIDUAL Green to Brown, Very Stiff, Coarse to Fine Sandy Clayey SILT 12.4
95	95.0	16.5	60/0.0											W		95.0 Boring Terminated with Standard Penetration Test Refusal at Elevation 95.0 ft on Crystalline Rock: METAMORPHOSED QUARZ DIORITE 16.5

WBS 50162.1.1 / 37765.1.5		TIP U-5725 / R-3822		COUNTY HALIFAX		GEOLOGIST Pastrana, C.R.										
SITE DESCRIPTION Widening of NC 125 from I-95 to Old Farm Road							GROUND WTR (ft)									
BORING NO. CULV1_B		STATION 84+50		OFFSET 50 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 104.6 ft		TOTAL DEPTH 14.9 ft		NORTHING 975,128		EASTING 2,398,787										
DRILL RIG/HAMMER EFF./DATE N/A		DRILL METHOD Rod Sounding		HAMMER TYPE N/A												
DRILLER N/A		START DATE 10/20/17		COMP. DATE 10/20/17		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
105																
																104.6 GROUND SURFACE 0.0
																103.7 ALLUVIAL Brown to Black, Soft, Clayey Fine SAND, Highly Organic, Trace Gravel 0.9
																100.0 Gray to Black, Very Soft to Soft, Fine Sandy CLAY, Highly Organic, Slightly Plastic 4.6
																97.3 Gray, Medium Dense, Clayey Fine SAND, Little Organics 7.3
																RESIDUAL Green to Brown, Very Stiff, Coarse to Fine Sandy CLAY, Slightly Plastic
																89.7 Boring Terminated at Elevation 89.7 ft on Crystalline Rock: METAMORPHOSED QUARZ DIORITE 14.9
																Note: Rod sounding blow counts are not equivalent to SPT blow counts

NCDOT BORE DOUBLE_R3822 & U5725 ALL BORINGS.GPJ NC_DOT_GDT_12/6/17

REFERENCE: R-3822

PROJECT: 37765

CONTENTS

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
2A	SUPPLEMENTAL LEGEND (GSI)
3	SITE PLAN
4	PROFILE
5-10	CROSS SECTIONS
11-38	BORE LOGS, CORE LOGS, & CORE PHOTOGRAPHS

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GEOTECHNICAL ENGINEERING UNIT

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY HALIFAX
 PROJECT DESCRIPTION PREMIER BLVD. EXTENSION
(-LI-) FROM NC 125 TO SOUTH OF US 158

SITE DESCRIPTION BRIDGE ON PREMIER BLVD.
EXTENSION OVER CHOCKOYOTTE CREEK

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-3822	1	39

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P.M. WEAVER

C.R. PASTRANA

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INVESTIGATED BY ESP Associates, P.A.

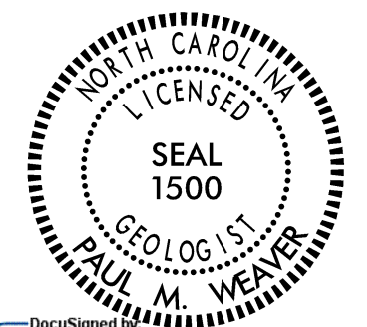
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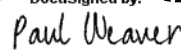
CHECKED BY P.M. WEAVER

SUBMITTED BY ESP Associates, P.A.

DATE JANUARY 2018


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 WWW.ESPASSOCIATES.COM



DocuSigned by:


01947D2739AD49C
 SIGNATURE

DATE

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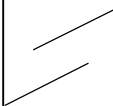
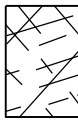
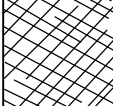




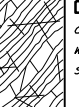




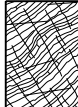

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT**

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 (Marinos and Hoek, 2000)

AASHTO LRFD Figure 10.4.6.4-2 — Determination of GSI for Tectonically Deformed Heterogeneous Rock Masses (Marinos and Hoek, 2000)

GEOLOGICAL STRENGTH INDEX (GSI) FOR JOINTED ROCKS (Hoek and Marinos, 2000)		SURFACE CONDITIONS					GSI FOR HETEROGENEOUS ROCK MASSES SUCH AS FLYSCH (Marinos, P and Hoek E., 2000)		SURFACE CONDITIONS OF DISCONTINUITIES (Predominantly bedding planes)				
From the lithology, structure and surface conditions of the discontinuities, estimate the average value of GSI. Do not try to be too precise. Quoting a range from 33 to 37 is more realistic than stating that GSI = 35. Note that the table does not apply to structurally controlled failures. Where weak planar structural planes are present in an unfavorable orientation with respect to the excavation face, these will dominate the rock mass behaviour. The shear strength of surfaces in rocks that are prone to deterioration as a result of changes in moisture content will be reduced if water is present. When working with rocks in the fair to very poor categories, a shift to the right may be made for wet conditions. Water pressure is dealt with by effective stress analysis.		VERY GOOD	GOOD	FAIR	POOR	VERY POOR	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 fair, poor and very poor conditions. Water pressure does not change the value of GSI and it is dealt with by using effective stress analysis.		VERY GOOD	GOOD	FAIR	POOR	VERY POOR
STRUCTURE		DECREASING SURFACE QUALITY →					COMPOSITION AND STRUCTURE						
	INTACT OR MASSIVE - intact rock specimens or massive in situ rock with few widely spaced discontinuities	90			N/A	N/A		70					
	BLOCKY - well interlocked undisturbed rock mass consisting of cubical blocks formed by three intersecting discontinuity sets	80	70					60	50				
	VERY BLOCKY - interlocked, partially disturbed mass with multi-faceted angular blocks formed by 4 or more joint sets		60	50					40	30			
	BLOCKY/DISTURBED/SEAMY - folded with angular blocks formed by many intersecting discontinuity sets. Persistence of bedding planes or schistosity			40	30					20			
	DISINTEGRATED - poorly interlocked, heavily broken rock mass with mixture of angular and rounded rock pieces				20						10		
	LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes	N/A	N/A			10						10	
	DECREASING INTERLOCKING OF ROCK PIECES ↓												10
													10

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.

B. Sandstone with thin inter-layers of siltstone

C. Sandstone and siltstone in similar amounts

D. Siltstone or silty shale with sandstone layers

E. Weak siltstone or clayey shale with sandstone layers

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**.

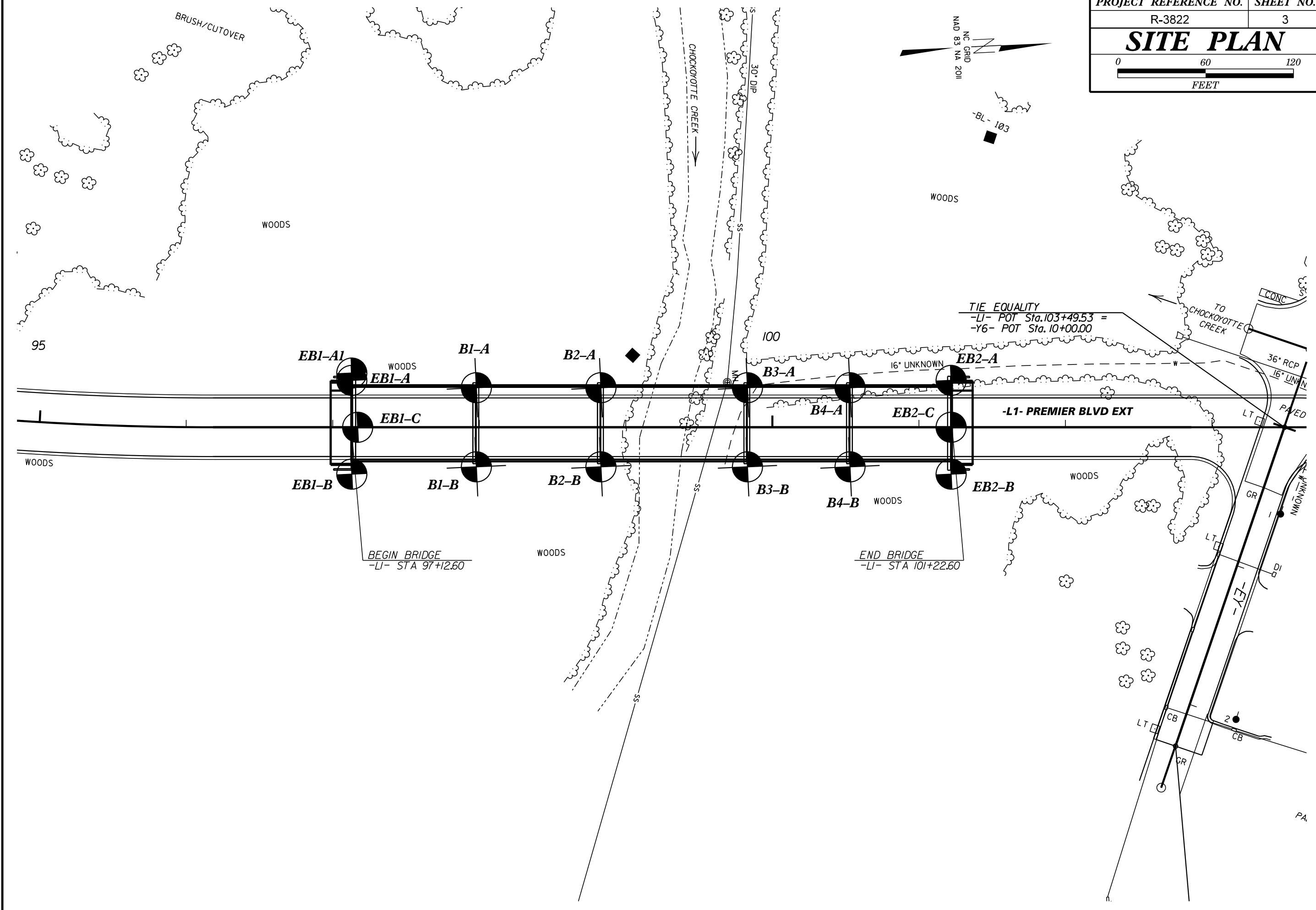
F. Tectonically deformed, intensively folded/faulted, sheared clayey shale or siltstone with broken and deformed sandstone layers forming an almost chaotic structure

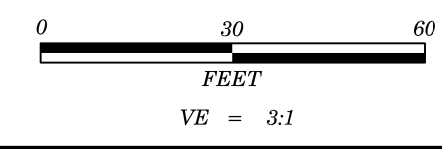
G. Undisturbed silty or clayey shale with or without a few very thin sandstone layers

H. Tectonically deformed silty or clayey shale forming a chaotic structure with pockets of clay. Thin layers of sandstone are transformed into small rock pieces.

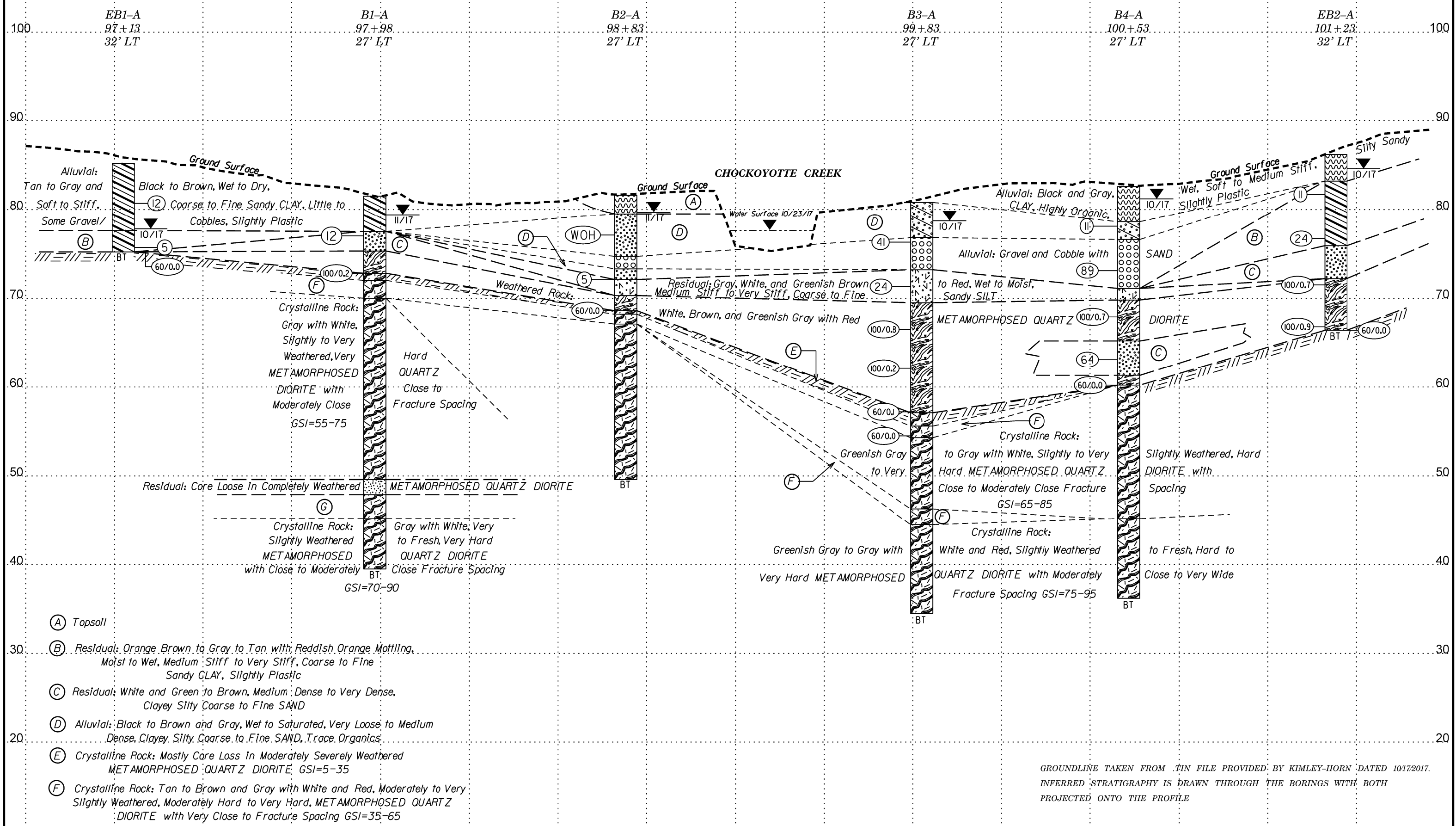
→ Means deformation after tectonic disturbance

PROJECT REFERENCE NO.	SHEET NO.
R-3822	3
SITE PLAN	





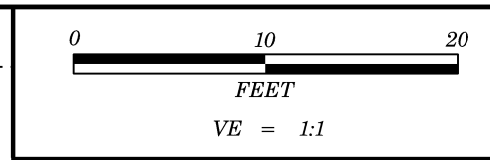
PROJECT REFERENCE NO.	SHEET NO.
R-3822	4
PROFILE BORINGS PROJECTED 27' LEFT ALONG -L-	



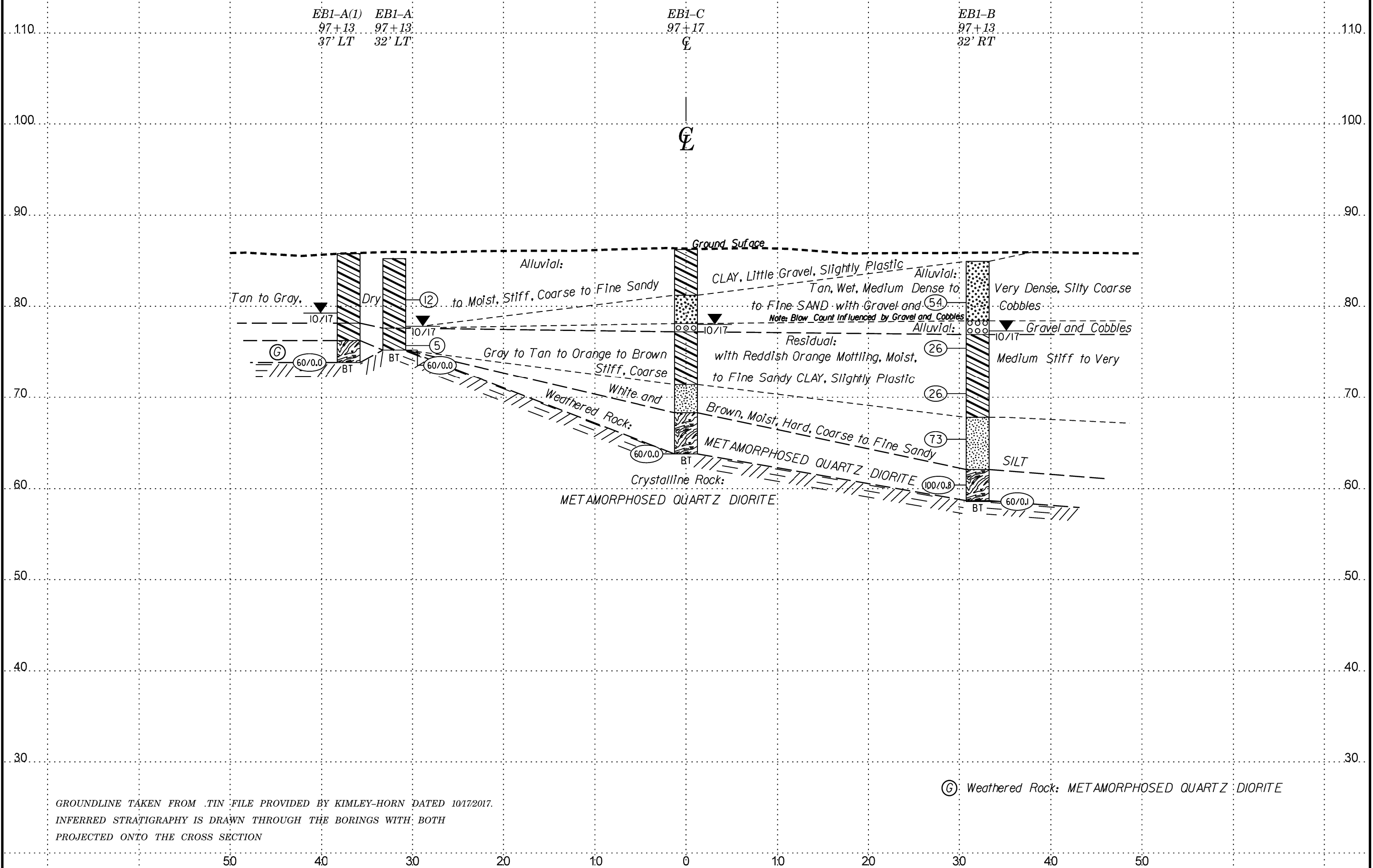
98+00

101+00

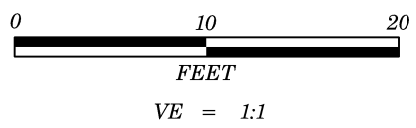
GROUNDLINE TAKEN FROM TIN FILE PROVIDED BY KIMLEY-HORN DATED 10/17/2017. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE



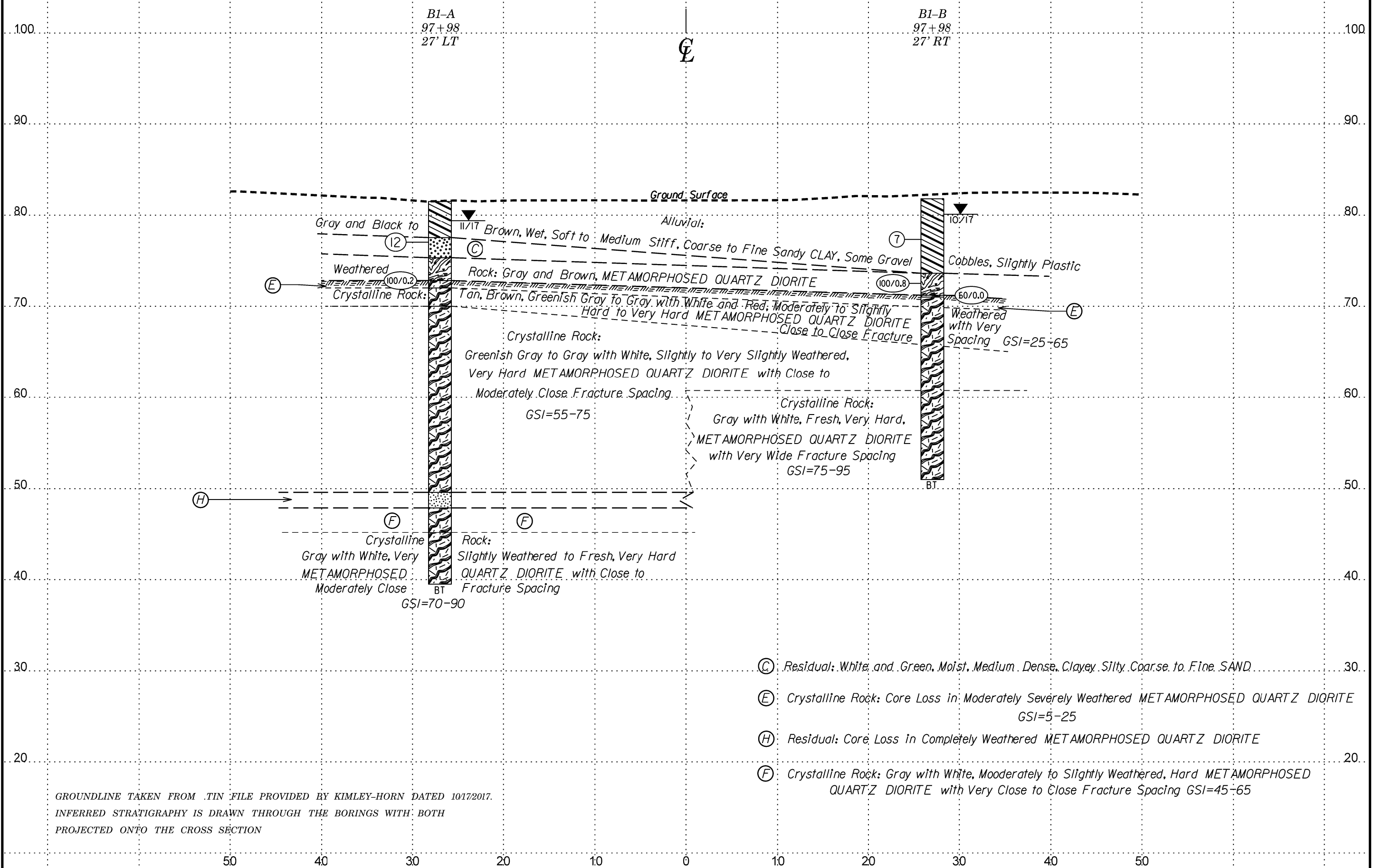
PROJECT REFERENCE NO.	SHEET NO.
R-3822	5
CROSS SECTION THROUGH END BENT 1	
AT STA. 97+12.60	
SKEW=90 DEGREES	



GROUNDLINE TAKEN FROM .TIN FILE PROVIDED BY KIMLEY-HORN DATED 10/17/2017.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION

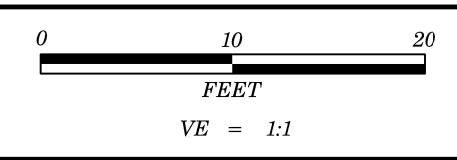


PROJECT REFERENCE NO.	SHEET NO.
R-3822	6
CROSS SECTION THROUGH BENT 1 AT STA. 97+97.60 SKEW=90 DEGREES	

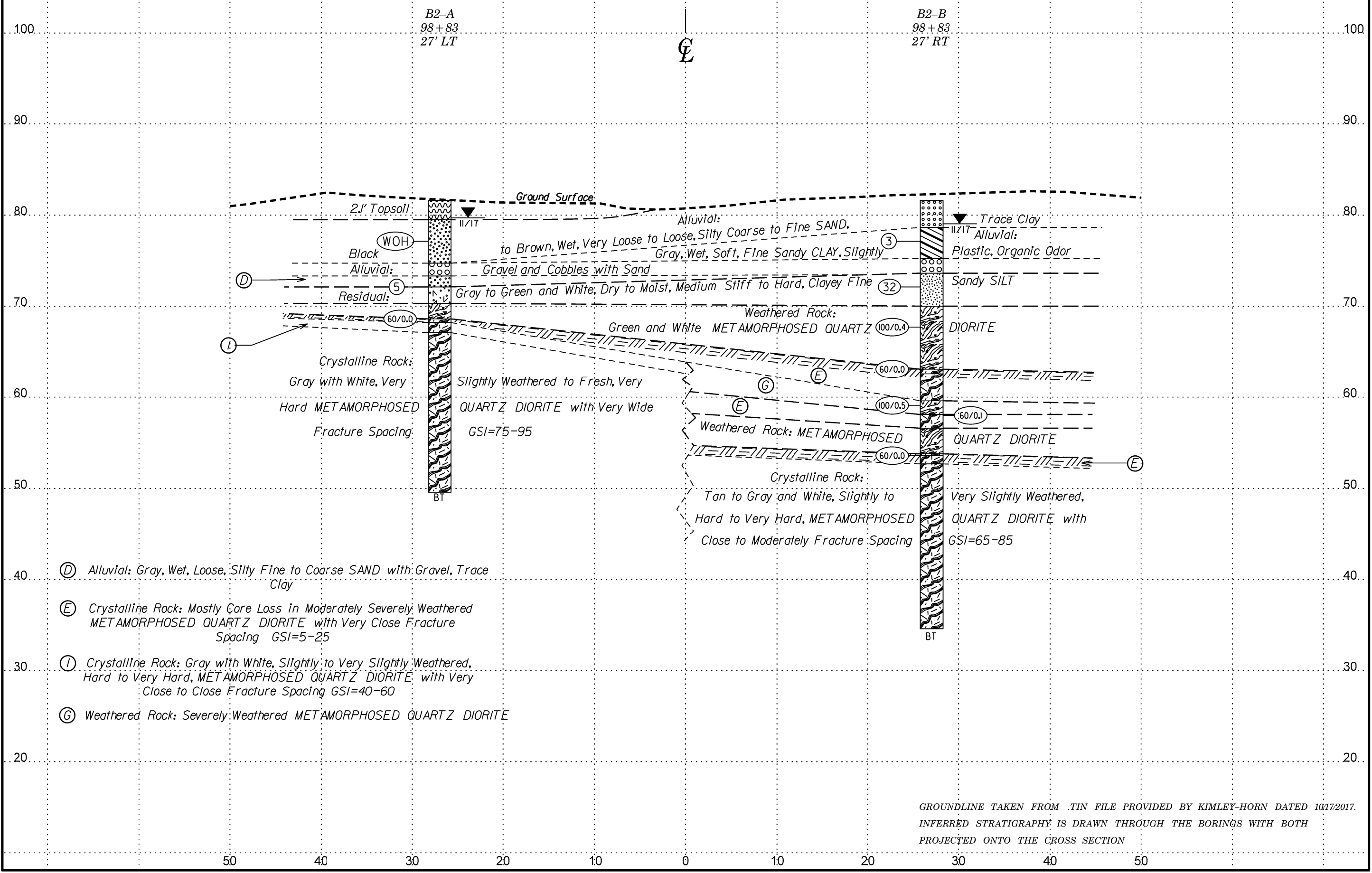


- (C) Residual: White and Green, Moist, Medium Dense, Clayey Silty Coarse to Fine SAND
- (E) Crystalline Rock: Core Loss in Moderately Severely Weathered METAMORPHOSED QUARTZ DIORITE GSI=5-25
- (H) Residual: Core Loss in Completely Weathered METAMORPHOSED QUARTZ DIORITE
- (F) Crystalline Rock: Gray with White, Moderately to Slightly Weathered, Hard METAMORPHOSED QUARTZ DIORITE with Very Close to Close Fracture Spacing GSI=45-65

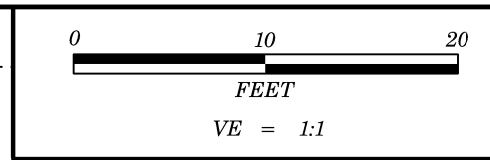
GROUNDLINE TAKEN FROM TIN FILE PROVIDED BY KIMLEY-HORN DATED 10/17/2017.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION



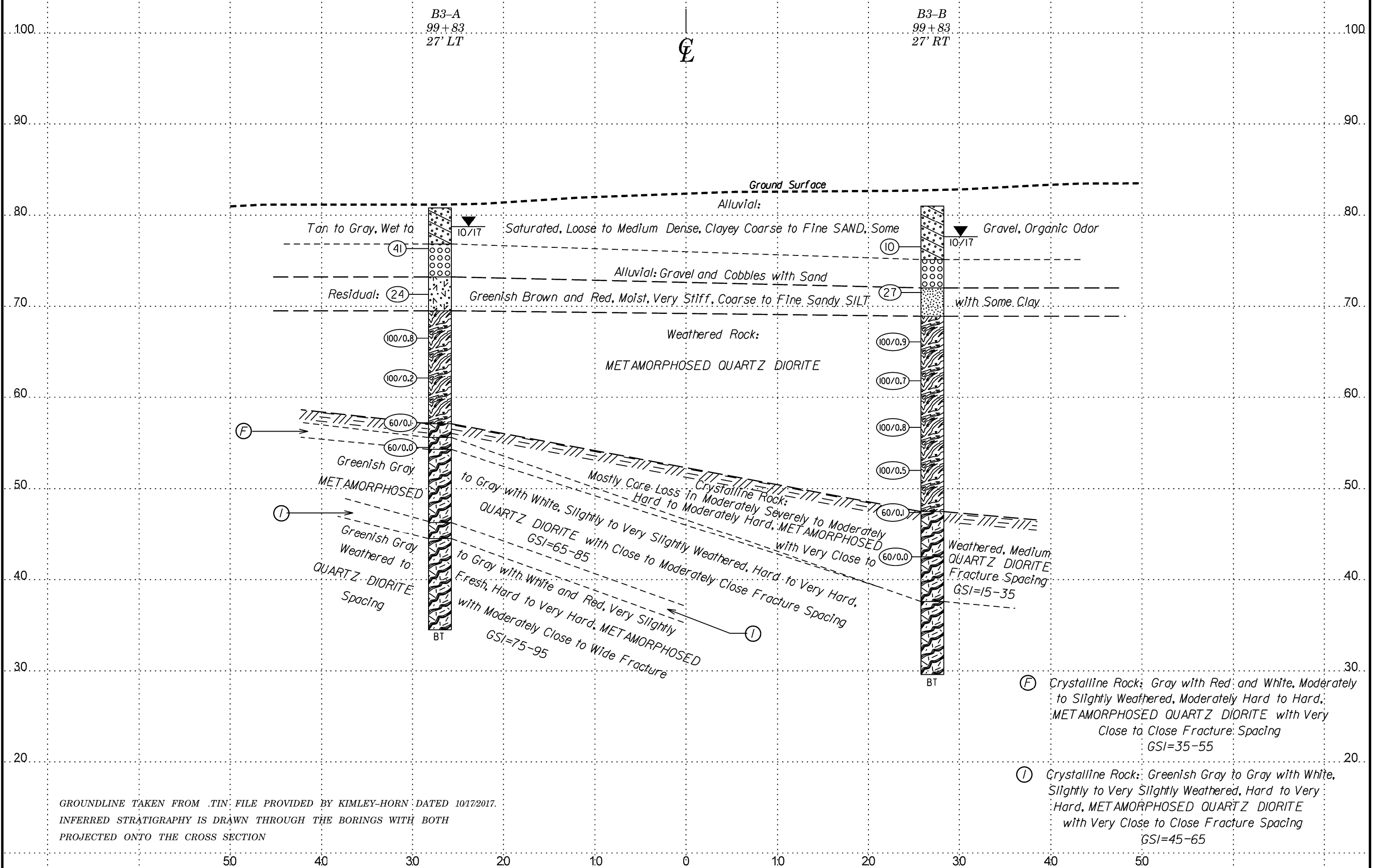
PROJECT REFERENCE NO.	SHEET NO.
R-3822	7
CROSS SECTION THROUGH BENT 2 AT STA. 98+82.60 SKEW=90 DEGREES	



GROUNDLINE TAKEN FROM .TIN FILE PROVIDED BY KIMLEY-HORN DATED 10/17/2017.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION



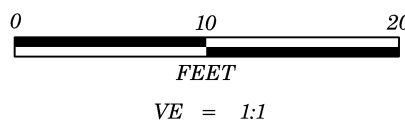
PROJECT REFERENCE NO.	SHEET NO.
R-3822	8
CROSS SECTION THROUGH BENT 3	
AT STA. 99+82.60	
SKEW=90 DEGREES	



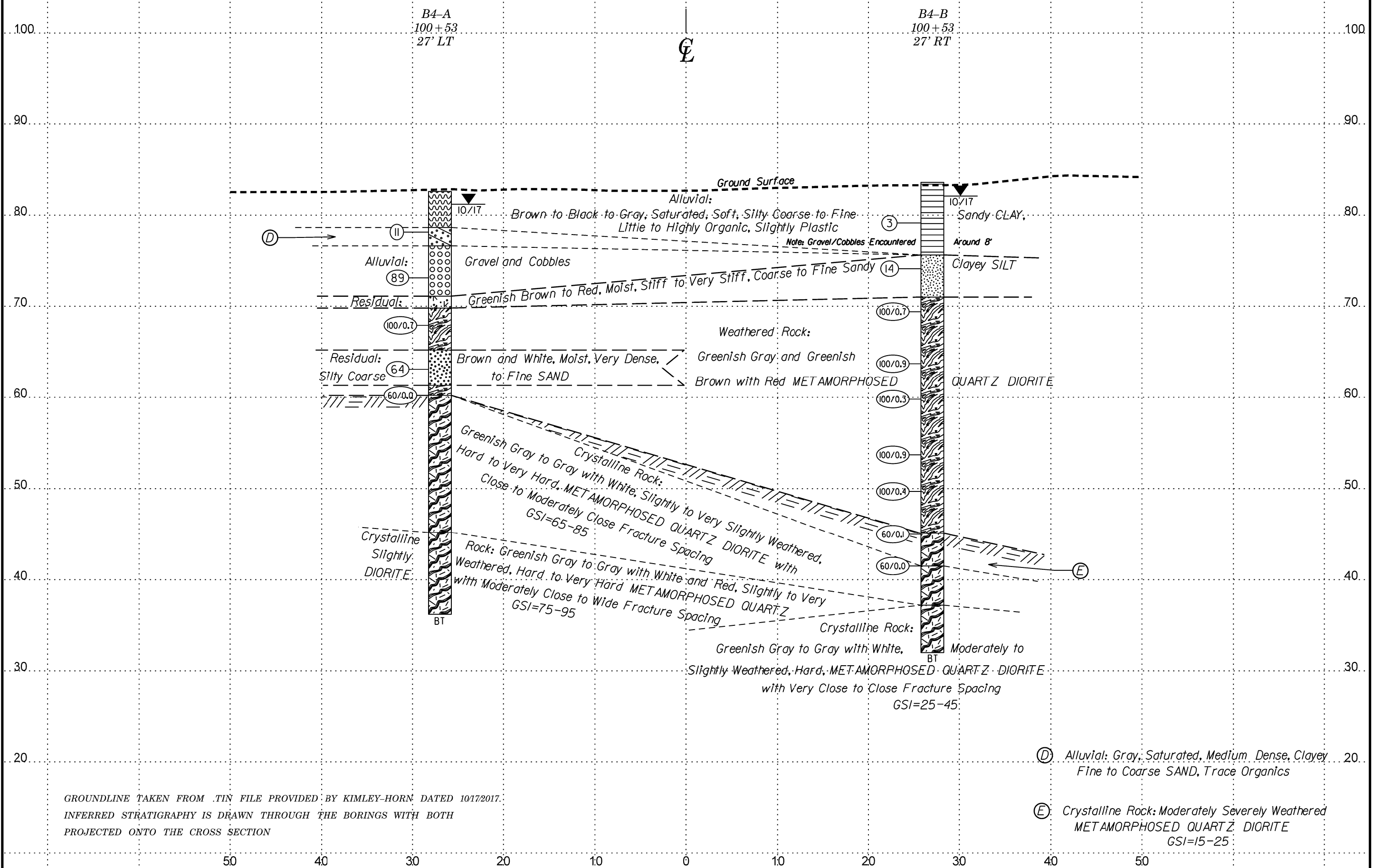
GROUNDLINE TAKEN FROM .TIN. FILE PROVIDED BY KIMLEY-HORN DATED 10/17/2017.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION

(F) Crystalline Rock: Gray with Red and White, Moderately to Slightly Weathered, Moderately Hard to Hard, METAMORPHOSED QUARTZ DIORITE with Very Close to Close Fracture Spacing GSI=35-55

(I) Crystalline Rock: Greenish Gray to Gray with White, Slightly to Very Slightly Weathered, Hard to Very Hard, METAMORPHOSED QUARTZ DIORITE with Very Close to Close Fracture Spacing GSI=45-65

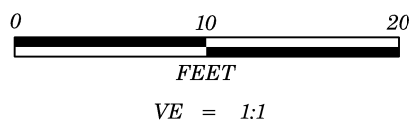


PROJECT REFERENCE NO.	SHEET NO.
R-3822	9
CROSS SECTION THROUGH BENT 4 AT STA. 100+52.60 SKEW=90 DEGREES	

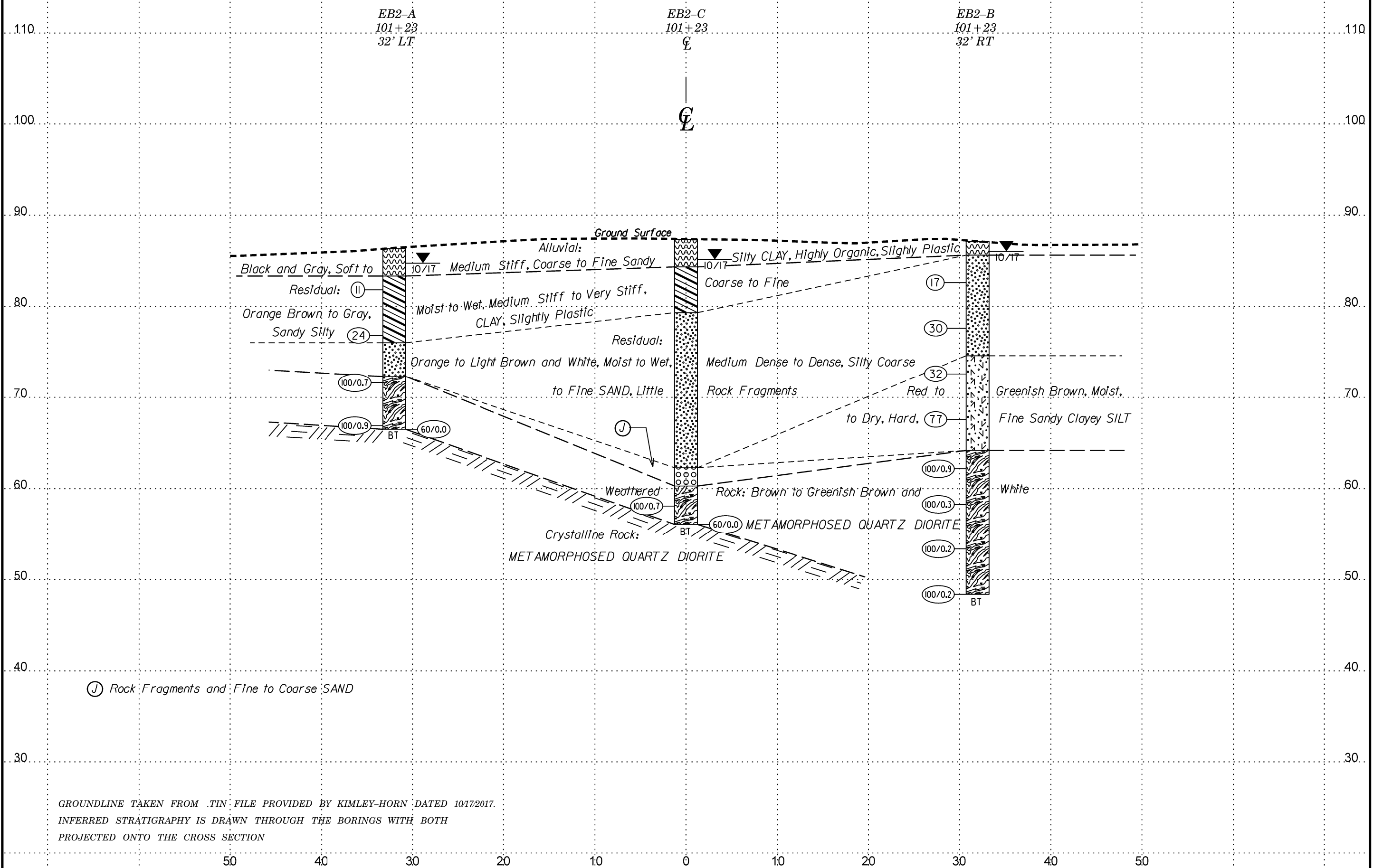


GROUNDLINE TAKEN FROM TIN FILE PROVIDED BY KIMLEY-HORN DATED 10/17/2017.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION

- (D) Alluvial: Gray, Saturated, Medium Dense, Clayey Fine to Coarse SAND, Trace Organics
- (E) Crystalline Rock: Moderately Severely Weathered METAMORPHOSED QUARTZ DIORITE GSI=15-25



PROJECT REFERENCE NO.	SHEET NO.
R-3822	10
CROSS SECTION THROUGH END BENT 2 AT STA. 101+22.60 SKEW=90 DEGREES	



GROUNDLINE TAKEN FROM TIN FILE PROVIDED BY KIMLEY-HORN DATED 10/17/2017.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 37765.1.5		TIP R-3822		COUNTY HALIFAX		GEOLOGIST Pastrana, C.R.										
SITE DESCRIPTION Bridge on Premier Boulevard Extension Over Chockoyotte Creek							GROUND WTR (ft)									
BORING NO. EB1-A1		STATION 97+13		OFFSET 37 ft LT		ALIGNMENT -L1-										
COLLAR ELEV. 86.0 ft		TOTAL DEPTH 11.9 ft		NORTHING 974,726		EASTING 2,401,465										
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Meatyard, C.		START DATE 10/27/17		COMP. DATE 10/27/17		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
90																
85																
80																
75	74.1	11.9														

WBS 37765.1.5		TIP R-3822		COUNTY HALIFAX		GEOLOGIST Pastrana, C.R.										
SITE DESCRIPTION Bridge on Premier Boulevard Extension Over Chockoyotte Creek							GROUND WTR (ft)									
BORING NO. EB1-A		STATION 97+13		OFFSET 32 ft LT		ALIGNMENT -L1-										
COLLAR ELEV. 85.2 ft		TOTAL DEPTH 10.0 ft		NORTHING 974,726		EASTING 2,401,470										
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Meatyard, C.		START DATE 10/25/17		COMP. DATE 10/25/17		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
90																
85																
80	81.7	3.5	7	6	6											
	76.7	8.5														
	75.2	10.0	1	2	3											

NCDOT BORE DOUBLE R3822_GINT LOGS - CORE LOGS.GPJ NC_DOT.GDT 11/7/17

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 37765.1.5		TIP R-3822		COUNTY HALIFAX		GEOLOGIST Long, B.									
SITE DESCRIPTION Bridge on Premier Boulevard Extension Over Chockoyotte Creek							GROUND WTR (ft)								
BORING NO. EB1-C		STATION 97+17		OFFSET CL		ALIGNMENT -L1-									
COLLAR ELEV. 86.2 ft		TOTAL DEPTH 22.4 ft		NORTHING 974,728		EASTING 2,401,502									
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Meatyard, C.		START DATE 10/25/17		COMP. DATE 10/25/17		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
90															
85															
80															
75															
70															
65	63.8	22.4													60/0.0
Boring Terminated with Standard Penetration Test Refusal at Elevation 63.8 ft on Crystalline Rock: METAMORPHOSED QUARTZ DIORITE															

WBS 37765.1.5		TIP R-3822		COUNTY HALIFAX		GEOLOGIST Pastrana, C.R.									
SITE DESCRIPTION Bridge on Premier Boulevard Extension Over Chockoyotte Creek							GROUND WTR (ft)								
BORING NO. EB1-B		STATION 97+13		OFFSET 32 ft RT		ALIGNMENT -L1-									
COLLAR ELEV. 84.9 ft		TOTAL DEPTH 26.3 ft		NORTHING 974,723		EASTING 2,401,534									
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Meatyard, C.		START DATE 10/25/17		COMP. DATE 10/25/17		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
85															
80	81.4	3.5	14	25	29										
75	76.4	8.5	9	13	13										
70	71.4	13.5	10	13	13										
65	66.4	18.5	15	36	37										
60	61.4	23.5	66	44/0.3											
	58.7	26.2	60/0.1												60/0.1
Boring Terminated with Standard Penetration Test Refusal at Elevation 58.6 ft in Crystalline Rock: METAMORPHOSED QUARTZ DIORITE															

NCDOT BORE DOUBLE R3822_GEO_BRDG_GINT LOGS.GPJ NC_DOT.GDT 11/7/17

GEOTECHNICAL BORING REPORT BORE LOG

WBS 37765.1.5			TIP R-3822			COUNTY HALIFAX			GEOLOGIST Pastrana, C.R.					
SITE DESCRIPTION Bridge on Premier Boulevard Extension Over Chockoyotte Creek								GROUND WTR (ft)						
BORING NO. B1-A			STATION 97+98			OFFSET 27 ft LT			ALIGNMENT -L1-					
COLLAR ELEV. 81.5 ft			TOTAL DEPTH 42.0 ft			NORTHING 974,810			EASTING 2,401,479					
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic					
DRILLER Meatyard, C.			START DATE 10/27/17			COMP. DATE 10/31/17			SURFACE WATER DEPTH N/A					
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)
85														81.5 GROUND SURFACE 0.0
80	78.0	3.5	4	5	7	.....	.....	.....	.....	.....			M	77.5 ALLUVIAL Black to Brown, Soft to Medium Stiff, Coarse to Fine Sandy CLAY, Some Gravel/Cobbles, Slightly Plastic 4.0
75						.....	.....	.....	.....	.....				75.3 RESIDUAL White and Green, Medium Dense, Clayey Silty Coarse to Fine SAND 6.2
70	73.0 72.8	8.5 8.7	100/0.2 60/0.0			.....	.....	.....	.....	.....	100/0.2 60/0.0			72.8 WEATHERED ROCK 8.7 72.0 METAMORPHOSED QUARTZ DIORITE 9.5
65						.....	.....	.....	.....	.....				70.0 CRYSTALLINE ROCK 11.5 Core Loss in Moderately Severely Weathered METAMORPHOSED QUARTZ DIORITE Tan to Brown and Gray with White and Red, Moderately Weathered, Very Hard METAMORPHOSED QUARTZ DIORITE with Very Close to Close Fracture Spacing, Very Quartzitic Gray with White, Slightly to Very Slightly Weathered, Very Hard METAMORPHOSED QUARTZ DIORITE with Close to Moderately Close Fracture Spacing
60						.....	.....	.....	.....	.....
55						.....	.....	.....	.....	.....
50						.....	.....	.....	.....	.....				49.6 RESIDUAL 31.9 Core Loss in Completely Weathered METAMORPHOSED QUARTZ DIORITE 33.6
45						.....	.....	.....	.....	.....				45.2 CRYSTALLINE ROCK 36.3 Gray with White, Moderately to Slightly Weathered, Hard METAMORPHOSED QUARTZ DIORITE with Very Close to Close Fracture Spacing
40						.....	.....	.....	.....	.....				39.5 42.0 Gray with White, Very Slightly Weathered to Fresh, Very Hard METAMORPHOSED QUARTZ DIORITE with Close to Moderately Close Fracture Spacing Boring Terminated at Elevation 39.5 ft in Crystalline Rock: METAMORPHOSED QUARTZ DIORITE

NCDOT BORE DOUBLE R3822_GEO_BRDG_GINT LOGS.GPJ NC_DOT.GDT 11/7/17

GEOTECHNICAL BORING REPORT

CORE LOG

WBS 37765.1.5		TIP R-3822		COUNTY HALIFAX		GEOLOGIST Pastrana, C.R.					
SITE DESCRIPTION Bridge on Premier Boulevard Extension Over Chockoyotte Creek							GROUND WTR (ft)				
BORING NO. B1-A		STATION 97+98		OFFSET 27 ft LT		ALIGNMENT -L1-					
COLLAR ELEV. 81.5 ft		TOTAL DEPTH 42.0 ft		NORTHING 974,810		EASTING 2,401,479					
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic					
DRILLER Meatyard, C.		START DATE 10/27/17		COMP. DATE 10/31/17		SURFACE WATER DEPTH N/A					
CORE SIZE NQ		TOTAL RUN 33.3 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)	REC. (%)	RQD (%)			
72.8	72.8	8.7	2.8	4:58/1.0 8:21/1.0 10:27/0.8	(1.8) 64%	(0.0) 0%	(0.0) 0%	(0.0) 0%		Begin Coring @ 8.7 ft CRYSTALLINE ROCK	8.7
70	70.0	11.5	5.0	7:19/1.0 13:04/1.0 15:41/1.0 17:40/1.0 20:21/1.0	(4.9) 98%	(4.7) 94%	(1.8) 90%	(0.0) 0%		Core Loss in Moderately Severely Weathered METAMORPHOSED QUARTZ DIORITE	11.5
65	65.0	16.5	5.0	6:06/1.0 6:34/1.0 8:05/1.0 10:53/1.0 13:07/1.0	(4.0) 80%	(3.1) 62%	(18.4) 90%	(16.0) 78%		Tan to Brown and Gray with White and Red, Moderately Weathered, Very Hard METAMORPHOSED QUARTZ DIORITE with Very Close to Close Fracture Spacing, Very Quartzitic Majority of joints at 10 degrees to 20 degrees 1 vertical fracture 0.8' long All fracture faces heavily iron stained GSI = 45-65	
60	60.0	21.5	5.0	6:03/1.0 7:30/1.0 9:55/1.0 8:18/1.0 15:52/1.0	(4.6) 92%	(3.9) 78%				Gray with White, Slightly to Very Slightly Weathered, Very Hard METAMORPHOSED QUARTZ DIORITE with Close to Moderately Close Fracture Spacing Majority of joints at 10 degrees to 20 degrees 4 joints at 70 degrees to 80 degrees Very close fracture spacing 15.6 to 15.9', 18.2' to 18.4', 21.1' to 22.0', and 25.6' to 26.4' GSI = 55-75	
55	55.0	26.5	5.5	23:38/1.0 13:38/1.0 14:21/1.0 14:18/1.0 5:58/1.5	(4.9) 89%	(4.3) 78%					49.6
50	49.5	32.0	5.0	:48/0.5 4:16/1.0 4:40/1.0 5:47/1.0 10:15/1.0	(3.4) 68%	(1.9) 38%	(0.0) 0%	(0.0) 0%		Core Loss in Completely Weathered METAMORPHOSED QUARTZ DIORITE	31.9
45	44.5	37.0	5.0	5:39/1.0 5:30/1.0 5:27/1.0 7:44/1.0 13:29/1.0	(4.9) 98%	(4.6) 92%	(2.7) 100%	(1.2) 44%		CRYSTALLINE ROCK	36.3
40	39.5	42.0	5.0				(5.6) 98%	(5.3) 93%		Gray with White, Moderately to Slightly Weathered, Hard METAMORPHOSED QUARTZ DIORITE with Very Close to Close Fracture Spacing Joints at 10 degrees to 80 degrees with light to heavy iron staining GSI = 45-65	42.0
										Gray with White, Very Slightly Weathered to Fresh, Very Hard METAMORPHOSED QUARTZ DIORITE with Close to Moderately Close Fracture Spacing Joints at 10 degrees to 20 degrees GSI = 70-90	
										Boring Terminated at Elevation 39.5 ft in Crystalline Rock: METAMORPHOSED QUARTZ DIORITE	

NCDOT CORE DOUBLE R3822_GEO_BRDG_GINT LOGS - CORE LOGS.GPJ NC_DOT.GDT 11/17/17

CORE PHOTOGRAPHS

WBS No. 37765.1.5

TIP No. R-3822

Project Description: Bridge on Premier Blvd. Ext. Over Chockoyotte Creek
Halifax County, North Carolina

B1-A (-L1-, STA. 97+98, 27' LT)

Box 1: 8.7 Feet to 11.5 Feet



Box 2: 11.5 Feet to 20.4 Feet



FEET

Box 3: 20.4 Feet to 28.3 Feet



CORE PHOTOGRAPHS

WBS No. 37765.1.5

TIP No. R-3822

Project Description: Bridge on Premier Blvd. Ext. Over Chockoyotte Creek
Halifax County, North Carolina

B1-A (-L1-, STA. 97+98, 27' LT)

Box 4: 28.3 Feet to 37.0 Feet



FEET

Box 5: 37.0 Feet to 42.0 Feet



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 37765.1.5		TIP R-3822		COUNTY HALIFAX		GEOLOGIST Nance, D.S.	
SITE DESCRIPTION Bridge on Premier Boulevard Extension Over Chockoyotte Creek							GROUND WTR (ft)
BORING NO. B1-B		STATION 97+98		OFFSET 27 ft RT		ALIGNMENT -L1-	
COLLAR ELEV. 81.8 ft		TOTAL DEPTH 30.8 ft		NORTHING 974,808		EASTING 2,401,533	
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic	
DRILLER Meatyard, C.		START DATE 10/26/17		COMP. DATE 10/26/17		SURFACE WATER DEPTH N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)
85														
														81.8 GROUND SURFACE 0.0
80	78.3	3.5	3	3	4									ALLUVIAL Gray and Brown, Medium Stiff, Coarse to Fine Sandy CLAY, Slightly Plastic
75														73.6 8.2
	73.3	8.5	40	60/0.3										WEATHERED ROCK Gray and Brown METAMORPHOSED QUARTZ DIORITE
70	71.2	10.6	60/0.0							100/0.8				71.2 10.6 71.0 10.8 70.0 11.8
														CRYSTALLINE ROCK METAMORPHOSED QUARTZ DIORITE Core Loss in Moderately Severely Weathered METAMORPHOSED QUARTZ DIORITE
65														65.8 16.0
														61.4 20.4
60														Greenish Gray to Gray with White, Slightly to Very Slightly Weathered, Very Hard METAMORPHOSED QUARTZ DIORITE with Close to Moderately Close Fracture Spacing
														Greenish Gray to Gray with White and Red, Moderately to Slightly Weathered, Hard METAMORPHOSED QUARTZ DIORITE with Very Close to Close Fracture Spacing
55														Gray with White, Fresh, Very Hard METAMORPHOSED QUARTZ DIORITE with Very Wide Fracture Spacing
														51.0 30.8
														Boring Terminated at Elevation 51.0 ft in Crystalline Rock: METAMORPHOSED QUARTZ DIORITE

NCDOT BORE DOUBLE R3822_GEO_BRDG_GINT LOGS.GPJ NC_DOT.GDT 11/7/17

GEOTECHNICAL BORING REPORT

CORE LOG

WBS 37765.1.5		TIP R-3822		COUNTY HALIFAX		GEOLOGIST Nance, D.S.					
SITE DESCRIPTION Bridge on Premier Boulevard Extension Over Chockoyotte Creek							GROUND WTR (ft)				
BORING NO. B1-B		STATION 97+98		OFFSET 27 ft RT		ALIGNMENT -L1-					
COLLAR ELEV. 81.8 ft		TOTAL DEPTH 30.8 ft		NORTHING 974,808		EASTING 2,401,533					
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic					
DRILLER Meatyard, C.		START DATE 10/26/17		COMP. DATE 10/26/17		SURFACE WATER DEPTH N/A					
CORE SIZE NQ		TOTAL RUN 20.0 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %			
71										Begin Coring @ 10.8 ft	
70	71.0	10.8	5.0	4:03/1.0 14:25/1.0 4:08/1.0 5:29/1.0 8:55/1.0	(3.5) 70%	(0.5) 10%	(0.0) 0%	(0.0) 0%		Core Loss in Moderately Severely Weathered METAMORPHOSED QUARTZ DIORITE GSI = 5-25	10.8 11.8
65	66.0	15.8	5.0	6:30/1.0 4:28/1.0 5:54/1.0 7:08/1.0 12:42/1.0	(4.8) 96%	(2.8) 56%	(4.4) 100%	(2.4) 55%		Greenish Gray to Gray with White and Red, Moderately to Slightly Weathered, Hard METAMORPHOSED QUARTZ DIORITE with Very Close to Close Fracture Spacing Abundant low to high angle fractures with heavy iron staining GSI = 25-45	16.0
60	61.0	20.8	5.0	5:12/1.0 7:08/1.0 7:12/1.0 7:19/1.0 10:56/1.0	(5.0) 100%	(5.0) 100%	(10.4) 100%	(10.4) 100%		Greenish Gray to Gray with White, Slightly to Very Slightly Weathered, Very Hard METAMORPHOSED QUARTZ DIORITE with Close to Moderately Close Fracture Spacing 6 joints at 0 degrees to 10 degrees 4 joints at 35 degrees to 45 degrees with some iron staining 2 joints at 80 degrees GSI = 55-75	20.4
55	56.0	25.8	5.0	6:45/1.0 7:26/1.0 7:28/1.0 7:27/1.0 7:48/1.0	(5.0) 100%	(5.0) 100%				Gray with White, Fresh, Very Hard METAMORPHOSED QUARTZ DIORITE with Very Wide Fracture Spacing No natural fractures GSI = 75-95	30.8
	51.0	30.8								Boring Terminated at Elevation 51.0 ft in Crystalline Rock: METAMORPHOSED QUARTZ DIORITE	

NCDOT CORE DOUBLE R3822_GEO_BRDG_GINT LOGS - CORE LOGS.GPJ NC_DOT.GDT 11/17/17

CORE PHOTOGRAPHS

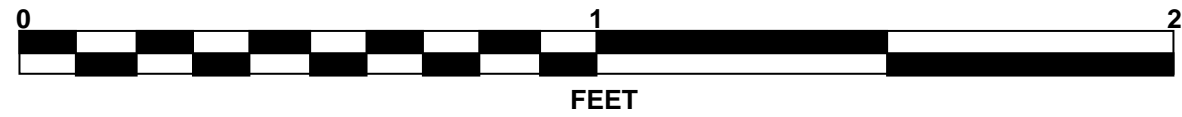
WBS No. 37765.1.5

TIP No. R-3822

Project Description: Bridge on Premier Blvd. Ext. Over Chockoyotte Creek
Halifax County, North Carolina

B1-B (-L1-, STA. 97+98, 27' RT)

Box 1: 10.8 Feet to 21.2 Feet



CORE PHOTOGRAPHS

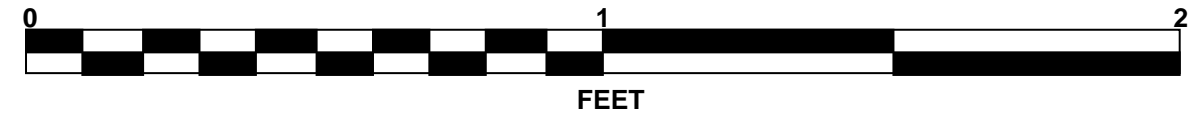
WBS No. 37765.1.5

TIP No. R-3822

Project Description: Bridge on Premier Blvd. Ext. Over Chockoyotte Creek
Halifax County, North Carolina

B1-B (-L1-, STA. 97+98, 27' RT)

Box 2: 21.2 Feet to 30.8 Feet



GEOTECHNICAL BORING REPORT BORE LOG

WBS 37765.1.5	TIP R-3822	COUNTY HALIFAX	GEOLOGIST Pastrana, C.R.
SITE DESCRIPTION Bridge on Premier Boulevard Extension Over Chockoyotte Creek			GROUND WTR (ft)
BORING NO. B2-A	STATION 98+83	OFFSET 27 ft LT	ALIGNMENT -L1-
COLLAR ELEV. 81.6 ft	TOTAL DEPTH 32.0 ft	NORTHING 974,895	EASTING 2,401,483
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER Meatyard, C.	START DATE 10/31/17	COMP. DATE 11/01/17	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
85																
														81.6	GROUND SURFACE	0.0
80														79.5	2.1' Topsoil	2.1
	78.1	3.5	1	WOH	WOH								W	74.7	ALLUVIAL Black to Brown, Very Loose, Silty Fine SAND, Trace Clay, Trace Organics	6.9
75														73.3	GRAVEL and COBBLES with Sand	8.3
	73.1	8.5	5	3	2								W	72.1	Gray, Loose, Silty Fine to Coarse SAND with Gravel, Trace Clay	9.5
70														70.3	RESIDUAL Gray and White, Moist, Medium Stiff, Fine Sandy Clayey SILT	11.3
	68.6	13.0	60/0.0											68.6		13.0
65														67.1	WEATHERED ROCK METAMORPHOSED QUARTZ DIORITE	14.5
															CRYSTALLINE ROCK Core Loss in Moderately Severely Weathered METAMORPHOSED QUARTZ DIORITE	
60															Gray with White, Slightly to Very Slightly Weathered, Hard to Very Hard METAMORPHOSED QUARTZ DIORITE with Very Close to Close Fracture Spacing	
55															Gray with White, Very Slightly Weathered to Fresh, Very Hard METAMORPHOSED QUARTZ DIORITE with Very Wide Fracture Spacing	
50														49.6	Boring Terminated at Elevation 49.6 ft in Crystalline Rock: METAMORPHOSED QUARTZ DIORITE	32.0

NCDOT BORE DOUBLE R3822_GEO_BRDG_GINT LOGS.GPJ NC_DOT.GDT 11/7/17

GEOTECHNICAL BORING REPORT

CORE LOG

WBS 37765.1.5		TIP R-3822		COUNTY HALIFAX		GEOLOGIST Pastrana, C.R.					
SITE DESCRIPTION Bridge on Premier Boulevard Extension Over Chockoyotte Creek							GROUND WTR (ft)				
BORING NO. B2-A		STATION 98+83		OFFSET 27 ft LT		ALIGNMENT -L1-					
COLLAR ELEV. 81.6 ft		TOTAL DEPTH 32.0 ft		NORTHING 974,895		EASTING 2,401,483					
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic					
DRILLER Meatyard, C.		START DATE 10/31/17		COMP. DATE 11/01/17		SURFACE WATER DEPTH N/A					
CORE SIZE NQ		TOTAL RUN 19.0 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	SAMP. NO.	REC. (ft) %			
68.6										Begin Coring @ 13.0 ft	
	68.6	13.0	4.0	8:01/1.0 6:09/1.0 7:12/1.0 5:59/1.0	(3.6) 90%	(2.9) 73%	(0.0) 0%	(0.0) 0%		CRYSTALLINE ROCK Core Loss in Moderately Severely Weathered METAMORPHOSED QUARTZ DIORITE GSI = 5-25	13.0 13.4 14.5
65	64.6	17.0	5.0	8:03/1.0 4:39/1.0 5:04/1.0 5:37/1.0 5:17/1.0	(5.0) 100%	(5.0) 100%	(1.1) 100%	(0.4) 36%		Gray with White, Slightly to Very Slightly Weathered, Hard to Very Hard METAMORPHOSED QUARTZ DIORITE with Very Close to Close Fracture Spacing Joints at 10 degrees to 20 degrees GSI = 40-60	
60	59.6	22.0	5.0	6:07/1.0 4:50/1.0 6:06/1.0 7:07/1.0 7:40/1.0	(5.0) 100%	(5.0) 100%	(17.5) 100%	(17.5) 100%		Gray with White, Very Slightly Weathered to Fresh, Very Hard METAMORPHOSED QUARTZ DIORITE with Very Wide Fracture Spacing No natural fractures GSI = 75-95	
55	54.6	27.0	5.0	4:25/1.0 5:21/1.0 7:22/1.0 5:57/1.0 7:12/1.0	(5.0) 100%	(5.0) 100%					
50	49.6	32.0								Boring Terminated at Elevation 49.6 ft in Crystalline Rock: METAMORPHOSED QUARTZ DIORITE	32.0

NCDOT CORE DOUBLE R3822_GEO_BRDG_GINT LOGS - CORE LOGS.GPJ NC_DOT.GDT 11/17/17

CORE PHOTOGRAPHS

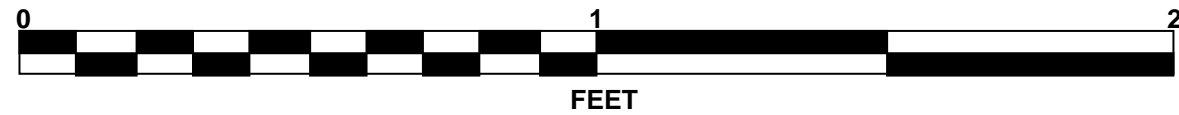
WBS No. 37765.1.5

TIP No. R-3822

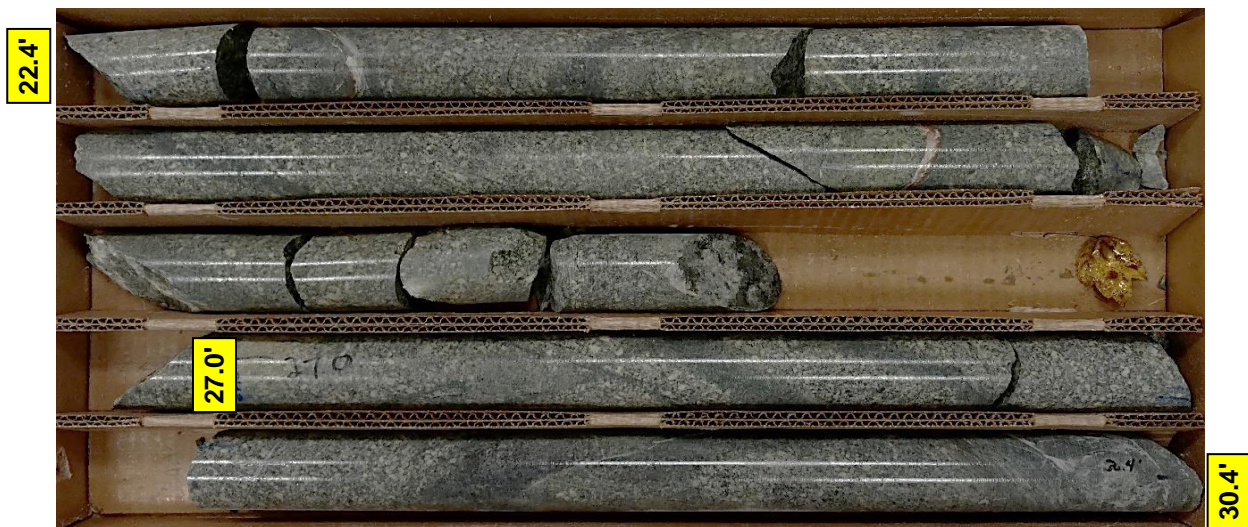
Project Description: Bridge on Premier Blvd. Ext. Over Chockoyotte Creek
Halifax County, North Carolina

B2-A (-L1-, STA. 98+83, 27' LT)

Box 1: 13.0 Feet to 22.4 Feet



Box 2: 22.4 Feet to 30.4 Feet



CORE PHOTOGRAPHS

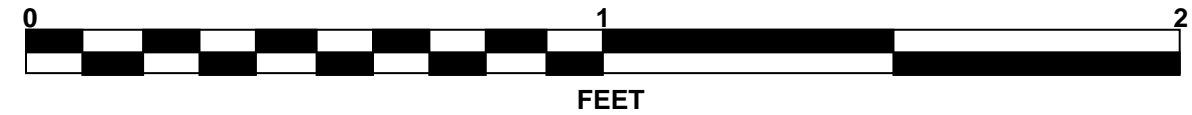
WBS No. 37765.1.5

TIP No. R-3822

Project Description: Bridge on Premier Blvd. Ext. Over Chockoyotte Creek
Halifax County, North Carolina

B2-A (-L1-, STA. 98+83, 27' LT)

Box 3: 30.4 Feet to 32.0 Feet



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 37765.1.5		TIP R-3822		COUNTY HALIFAX		GEOLOGIST Pastrana, C.R.	
SITE DESCRIPTION Bridge on Premier Boulevard Extension Over Chockoyotte Creek							GROUND WTR (ft)
BORING NO. B2-B		STATION 98+83		OFFSET 27 ft RT		ALIGNMENT -L1-	
COLLAR ELEV. 81.8 ft		TOTAL DEPTH 47.0 ft		NORTHING 974,893		EASTING 2,401,537	
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic	
DRILLER Meatyard, C.		START DATE 11/01/17		COMP. DATE 11/03/17		SURFACE WATER DEPTH N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
85														81.8	GROUND SURFACE	0.0
80	78.3	3.5	1	1	2								W	78.8	ALLUVIAL Black to Brown, Loose, Coarse to Fine SAND, Trace Clay	3.0
75														75.4	Gray, Soft, Fine Sandy CLAY, Slightly Plastic, Organic Odor	6.4
70	73.3	8.5	7	11	21								D	73.8	GRAVEL and COBBLES with Sand	8.0
65	68.3	13.5	100/0.4											70.2	RESIDUAL Green and White with Red, Hard, Clayey Fine Sandy SILT	11.6
60	63.3	18.5	60/0.0											63.3	WEATHERED ROCK Green and White METAMORPHOSED QUARTZ DIORITE	18.5
55	59.8	22.0	100/0.5											62.8	CRYSTALLINE ROCK METAMORPHOSED QUARTZ DIORITE	19.0
50	58.3	23.5	60/0.1											59.8	Mostly Core Loss in Moderately Severely Weathered METAMORPHOSED QUARTZ DIORITE	22.0
45	56.8	25.0												58.3	Weathered METAMORPHOSED QUARTZ DIORITE	23.5
40	54.0	27.8												56.8	WEATHERED ROCK Severely Weathered METAMORPHOSED QUARTZ DIORITE	25.0
35	53.8	28.0	60/0.0											54.0	WEATHERED ROCK METAMORPHOSED QUARTZ DIORITE	27.8
														53.8	CRYSTALLINE ROCK METAMORPHOSED QUARTZ DIORITE	28.0
														52.9	WEATHERED ROCK METAMORPHOSED QUARTZ DIORITE	28.9
															Mostly Core Loss in Moderately Severely Weathered METAMORPHOSED QUARTZ DIORITE with Very Close Fracture Spacing	
															Tan to Gray and White, Slightly to Very Slightly Weathered, Hard to Very Hard METAMORPHOSED QUARTZ DIORITE with Close to Moderately Close Fracture Spacing	
														34.8	Boring Terminated at Elevation 34.8 ft in Crystalline Rock: METAMORPHOSED QUARTZ DIORITE	47.0

NCDOT BORE DOUBLE R3822_GINT LOGS.GPJ NC_DOT_GDT 11/7/17

GEOTECHNICAL BORING REPORT

CORE LOG

WBS 37765.1.5		TIP R-3822		COUNTY HALIFAX		GEOLOGIST Pastrana, C.R.					
SITE DESCRIPTION Bridge on Premier Boulevard Extension Over Chockoyotte Creek							GROUND WTR (ft)				
BORING NO. B2-B		STATION 98+83		OFFSET 27 ft RT		ALIGNMENT -L1-					
COLLAR ELEV. 81.8 ft		TOTAL DEPTH 47.0 ft		NORTHING 974,893		EASTING 2,401,537					
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic					
DRILLER Meatyard, C.		START DATE 11/01/17		COMP. DATE 11/03/17		SURFACE WATER DEPTH N/A					
CORE SIZE NW		TOTAL RUN 22.0 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	SAMP. NO.	REC. (ft) %			
62.8	62.8	19.0	3.0	9:32/1.0 7:53/1.0 13:43/1.0	(0.6) 20%	(0.0) 0%	(0.6) 20%	(0.0) 0%		Begin Coring @ 19.0 ft	19.0
60	59.8	22.0		N=100/0.5 N=60/0.0						Mostly Core Loss in Moderately Severely Weathered METAMORPHOSED QUARTZ DIORITE GSI = 5-25	22.0
										WEATHERED ROCK Severely Weathered METAMORPHOSED QUARTZ DIORITE	23.5
										CRYSTALLINE ROCK METAMORPHOSED QUARTZ DIORITE	25.0
55	53.8	28.0								WEATHERED ROCK METAMORPHOSED QUARTZ DIORITE	27.8
			4.0	2:11/1.0 4:34/1.0 4:54/1.0 5:46/1.0	(3.6) 90%	(2.5) 63%	(0.5) 56%	(0.0) 0%		CRYSTALLINE ROCK METAMORPHOSED QUARTZ DIORITE	28.0
50	49.8	32.0					(18.1) 100%	(13.9) 77%		Mostly Core Loss in Moderately Severely Weathered METAMORPHOSED QUARTZ DIORITE with Very Close Fracture Spacing GSI = 5-25	28.9
			5.0	6:59/1.0 6:19/1.0 7:23/1.0 9:45/1.0 9:30/1.0	(5.0) 100%	(3.4) 68%				Tan to Gray and White, Slightly to Very Slightly Weathered, Hard to Very Hard METAMORPHOSED QUARTZ DIORITE with Close to Moderately Close Fracture Spacing Majority of joints at 10 degrees to 20 degrees Isolated fractures at 35 degrees to 45 degrees Very close fracture spacing 31.3' to 31.6', 35.9' to 36.3', 36.6' to 36.8', and 41.5' to 41.7' GSI = 65-85	
45	44.8	37.0									
			5.0	9:27/1.0 12:02/1.0 10:34/1.0 23:02/1.0 27:17/1.0	(5.0) 100%	(3.6) 72%					
40	39.8	42.0									
			5.0	13:40/1.0 19:01/1.0 18:22/1.0 8:41/1.0 5:57/1.0	(5.0) 100%	(4.4) 88%					
35	34.8	47.0								Boring Terminated at Elevation 34.8 ft in Crystalline Rock: METAMORPHOSED QUARTZ DIORITE	47.0

NCDOT CORE DOUBLE R3822_GEO_BRDG_GINT LOGS - CORE LOGS.GPJ NC_DOT.GDT 11/17/17

CORE PHOTOGRAPHS

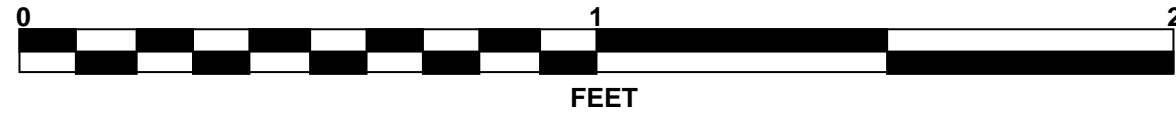
WBS No. 37765.1.5

TIP No. R-3822

Project Description: Bridge on Premier Blvd. Ext. Over Chockoyotte Creek
Halifax County, North Carolina

B2-B (-L1-, STA. 98+83, 27' RT)

Box 1: 13.0 Feet to 22.0 Feet



Box 2: 28.0 Feet to 37.0 Feet



CORE PHOTOGRAPHS

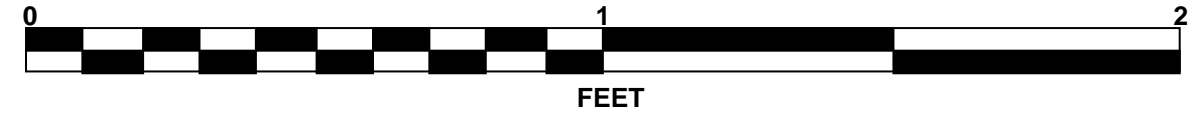
WBS No. 37765.1.5

TIP No. R-3822

Project Description: Bridge on Premier Blvd. Ext. Over Chockoyotte Creek
Halifax County, North Carolina

B2-A (-L1-, STA. 98+83, 27' RT)

Box 3: 37.0 Feet to 45.2 Feet



Box 4: 45.2 Feet to 47.0 Feet



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 37765.1.5		TIP R-3822		COUNTY HALIFAX		GEOLOGIST Pastrana, C.R.	
SITE DESCRIPTION Bridge on Premier Boulevard Extension Over Chockoyotte Creek							GROUND WTR (ft)
BORING NO. B3-A		STATION 99+83		OFFSET 27 ft LT		ALIGNMENT -L1-	0 HR. N/A
COLLAR ELEV. 80.8 ft		TOTAL DEPTH 46.3 ft		NORTHING 974,995		EASTING 2,401,488	24 HR. 2.1
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic	
DRILLER Meatyard, C.		START DATE 10/18/17		COMP. DATE 10/19/17		SURFACE WATER DEPTH N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)
85														
80														80.8 GROUND SURFACE 0.0
75	77.3	3.5	3	30	11									76.8 ALLUVIAL Gray, Loose to Medium Dense, Clayey Coarse to Fine SAND, Organic Odor, Some Gravel Note: Blow count influenced by gravel and cobbles 4.0
70	72.3	8.5	5	11	13									73.2 GRAVEL and COBBLES with Sand 7.8 RESIDUAL Greenish Brown to Red, Very Stiff, Coarse to Fine Sandy Clayey SILT 69.5 11.3
65	67.3	13.5	26	74/0.3										WEATHERED ROCK White and Green METAMORPHOSED QUARTZ DIORITE 100/0.8
60	62.3	18.5	100/0.2											100/0.2
55	57.3	23.5	60/0.1											57.1 23.7 55.6 25.2 54.3 26.5 CRYSTALLINE ROCK Mostly Core Loss in Moderately Severely to Moderately Weathered, Medium Hard to Moderately Hard METAMORPHOSED QUARTZ DIORITE with Very Close Fracture Spacing
50	54.5	26.3	60/0.0											46.3 34.5 44.5 36.3 Greenish Gray to Gray with White, Moderately to Slightly Weathered, Moderately Hard to Hard METAMORPHOSED QUARTZ DIORITE with Very Close to Close Fracture Spacing
45														Greenish Gray to Gray with White, Slightly to Very Slightly Weathered, Hard to Very Hard METAMORPHOSED QUARTZ DIORITE with Close to Moderately Close Fracture Spacing
40														Greenish Gray to Gray with White, Slightly to Very Slightly Weathered, Hard to Very Hard METAMORPHOSED QUARTZ DIORITE with Very Close to Close Fracture Spacing
35														Greenish Gray to Gray with White and Red, Very Slightly Weathered to Fresh, Hard to Very Hard METAMORPHOSED QUARTZ DIORITE with Moderately Close to Wide Fracture Spacing 34.5 46.3 Boring Terminated at Elevation 34.5 ft in Crystalline Rock: METAMORPHOSED QUARTZ DIORITE

NCDOT BORE DOUBLE R3822_GEO_BRDG_GINT LOGS.GPJ NC_DOT.GDT 11/7/17

GEOTECHNICAL BORING REPORT

CORE LOG

WBS 37765.1.5		TIP R-3822		COUNTY HALIFAX		GEOLOGIST Pastrana, C.R.							
SITE DESCRIPTION Bridge on Premier Boulevard Extension Over Chockoyotte Creek							GROUND WTR (ft)						
BORING NO. B3-A		STATION 99+83		OFFSET 27 ft LT		ALIGNMENT -L1-							
COLLAR ELEV. 80.8 ft		TOTAL DEPTH 46.3 ft		NORTHING 974,995		EASTING 2,401,488							
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic							
DRILLER Meatyard, C.		START DATE 10/18/17		COMP. DATE 10/19/17		SURFACE WATER DEPTH N/A							
CORE SIZE NQ		TOTAL RUN 22.6 ft											
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)		
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %					
57.1										Begin Coring @ 23.7 ft			
55	57.1 54.5	23.7 26.3	2.6	2:13/0.6 9:38/1.0 10:16/1.0	(1.4) 54%	(0.3) 12%	(0.3) 20%	(0.0) 0%			23.7 25.2 26.5		
50	49.5	31.3	5.0	4:30/1.0	(5.0)	(3.7)	(1.3)	(0.3)		Mostly Core Loss in Moderately Severely to Moderately Weathered, Medium Hard to Moderately Hard METAMORPHOSED QUARTZ DIORITE with Very Close Fracture Spacing GSI = 15-35 Gray with Red and White, Moderately to Slightly Weathered, Moderately Hard to Hard METAMORPHOSED QUARTZ DIORITE with Very Close to Close Fracture Spacing Joints at 10 degrees to 30 degrees with heavy iron staining GSI = 35-55			
				6:46/1.0	100%	74%	(8.0)	(6.4)			80%		
				8:27/1.0									
				6:13/1.0 8:48/1.0									
45	44.5	36.3	5.0	7:23/1.0 7:39/1.0 7:25/1.0 8:34/1.0 9:27/1.0	(5.0) 100%	(3.1) 62%	(1.8) 100%	(0.4) 22%		34.5 36.3			
40	39.5	41.3	5.0	10:17/1.0	(5.0)	(4.9)	(10.0)	(9.7)	Greenish Gray to Gray with White, Slightly to Very Slightly Weathered, Hard to Very Hard METAMORPHOSED QUARTZ DIORITE with Close to Moderately Close Fracture Spacing Fractures from 45 degrees to 90 degrees Multiple near vertical fractures from 28.0' to 29.3' GSI = 65-85	Greenish Gray to Gray with White, Slightly to Very Slightly Weathered, Hard to Very Hard METAMORPHOSED QUARTZ DIORITE with Very Close to Close Fracture Spacing Joints from 30 degrees to 60 degrees GSI = 45-65			
				10:54/1.0	100%	98%							
				11:09/1.0									
				12:04/1.0 11:16/1.0									
35	34.5	46.3	5.0	9:16/1.0 9:02/1.0 8:46/1.0 11:38/1.0 9:54/1.0	(5.0) 100%	(4.8) 96%				46.3			
Greenish Gray to Gray with White and Red, Very Slightly Weathered to Fresh, Hard to Very Hard METAMORPHOSED QUARTZ DIORITE with Moderately Close to Wide Fracture Spacing Joints at 10 degrees to 20 degrees GSI = 75-95 Boring Terminated at Elevation 34.5 ft in Crystalline Rock: METAMORPHOSED QUARTZ DIORITE													

NCDOT CORE DOUBLE R3822_GEO_BRDG_GINT LOGS - CORE LOGS.GPJ NC_DOT.GDT 11/17/17

CORE PHOTOGRAPHS

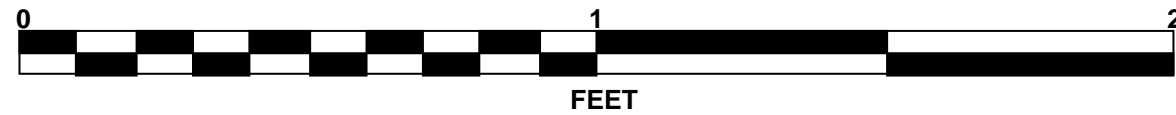
WBS No. 37765.1.5

TIP No. R-3822

Project Description: Bridge on Premier Blvd. Ext. Over Chockoyotte Creek
Halifax County, North Carolina

B3-A (-L1-, STA. 99+83, 27' LT)

Box 1: 23.7 Feet to 32.5 Feet



Box 2: 32.5 Feet to 41.3 Feet



CORE PHOTOGRAPHS

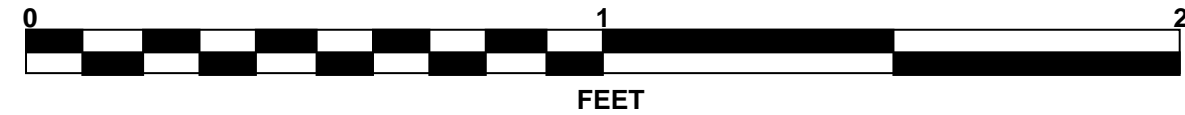
WBS No. 37765.1.5

TIP No. R-3822

Project Description: Bridge on Premier Blvd. Ext. Over Chockoyotte Creek
Halifax County, North Carolina

B3-A (-L1-, STA. 99+83, 27' LT)

Box 3: 41.3 Feet to 46.3 Feet



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 37765.1.5	TIP R-3822	COUNTY HALIFAX	GEOLOGIST Pastrana, C.R.
SITE DESCRIPTION Bridge on Premier Boulevard Extension Over Chockoyotte Creek			GROUND WTR (ft)
BORING NO. B3-B	STATION 99+83	OFFSET 27 ft RT	ALIGNMENT -L1-
COLLAR ELEV. 81.0 ft	TOTAL DEPTH 51.4 ft	NORTHING 974,992	EASTING 2,401,542
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
DRILLER Meatyard, C.	START DATE 10/19/17	COMP. DATE 10/20/17	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
85														
81.0												W	GROUND SURFACE	0.0
77.5	3.5		4	5	5								ALLUVIAL Tan to Gray, Loose to Medium Dense, Clayey Coarse to Fine SAND, Some Gravel	
75.1												M	GRAVEL and COBBLES with SAND	5.9
72.5	8.5		6	12	15								RESIDUAL Greenish Brown with Red, Very Stiff, Clayey Coarse to Fine Sandy SILT	9.0
68.9													WEATHERED ROCK Greenish Gray METAMORPHOSED QUARTZ DIORITE	12.1
67.5	13.5		16	42	58/0.4									
65														
62.5	18.5		54	46/0.2										
60														
57.5	23.5		60	40/0.3										
55														
52.5	28.5		100/0.5											
50														
47.5	33.5		60/0.1										CRYSTALLINE ROCK METAMORPHOSED QUARTZ DIORITE	33.5
45														
42.5	38.5		60/0.0										Brown with Gray, Moderately Severely to Moderately Weathered, Medium Hard to Moderately Hard METAMORPHOSED QUARTZ DIORITE with Very Close to Close Fracture Spacing	38.5
40														
37.6													Greenish Gray to Gray with White, Slightly to Very Slightly Weathered, Hard METAMORPHOSED QUARTZ DIORITE with Close to Moderately Close Fracture Spacing	43.4
35														
30													Boring Terminated at Elevation 29.6 ft in Crystalline Rock: METAMORPHOSED QUARTZ DIORITE	51.4

NCDOT BORE DOUBLE R3822_GEO_BRDG_GINT LOGS.GPJ NC_DOT_GDT 11/7/17

GEOTECHNICAL BORING REPORT

CORE LOG

WBS 37765.1.5		TIP R-3822		COUNTY HALIFAX		GEOLOGIST Pastrana, C.R.					
SITE DESCRIPTION Bridge on Premier Boulevard Extension Over Chockoyotte Creek							GROUND WTR (ft)				
BORING NO. B3-B		STATION 99+83		OFFSET 27 ft RT		ALIGNMENT -L1-					
COLLAR ELEV. 81.0 ft		TOTAL DEPTH 51.4 ft		NORTHING 974,992		EASTING 2,401,542					
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic					
DRILLER Meatyard, C.		START DATE 10/19/17		COMP. DATE 10/20/17		SURFACE WATER DEPTH N/A					
CORE SIZE NQ		TOTAL RUN 12.9 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	SAMP. NO.	REC. (ft) %			
42.5	42.5	38.5	2.9	9:52/0.9 11:22/1.0 7:34/1.0	(2.0) 69%	(0.6) 21%	(4.0) 82%	(0.6) 12%		Begin Coring @ 38.5 ft	
40	39.6	41.4	5.0	13:09/1.0 12:55/1.0 15:36/1.0 10:12/1.0 13:49/1.0	(5.0) 100%	(2.1) 42%	(8.0) 100%	(6.3) 79%		Brown with Gray, Moderately Severely to Moderately Weathered, Medium Hard to Moderately Hard METAMORPHOSED QUARTZ DIORITE with Very Close to Close Fracture Spacing Numerous fractures from 0 degrees to 90 degrees with iron staining Core loss scattered throughout strata GSI = 15-35	38.5 43.4
35	34.6	46.4	5.0	4:55/1.0 5:54/1.0 6:04/1.0 7:21/1.0 8:31/1.0	(5.0) 100%	(4.2) 84%				Greenish Gray to Gray with White, Slightly to Very Slightly Weathered, Hard METAMORPHOSED QUARTZ DIORITE with Close to Moderately Close Fracture Spacing Fractures from 0 degrees to 90 degrees with iron staining Very close fracture spacing 47.9' to 48.1' and 50.3' to 50.7' GSI = 65-85	51.4
30	29.6	51.4								Boring Terminated at Elevation 29.6 ft in Crystalline Rock: METAMORPHOSED QUARTZ DIORITE	

NCDOT CORE DOUBLE R3822_GEO_BRDG_GINT LOGS - CORE LOGS.GPJ NC_DOT.GDT 11/17/17

CORE PHOTOGRAPHS

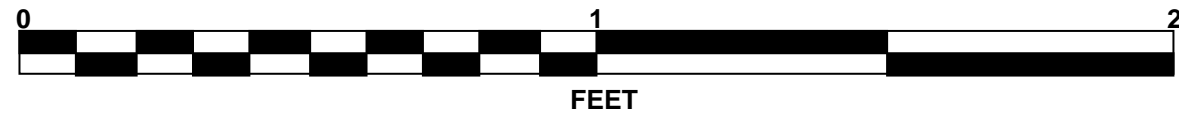
WBS No. 37765.1.5

TIP No. R-3822

Project Description: Bridge on Premier Blvd. Ext. Over Chockoyotte Creek
Halifax County, North Carolina

B3-B (-L1-, STA. 99+83, 27' RT)

Box 1: 38.5 Feet to 46.4 Feet



CORE PHOTOGRAPHS

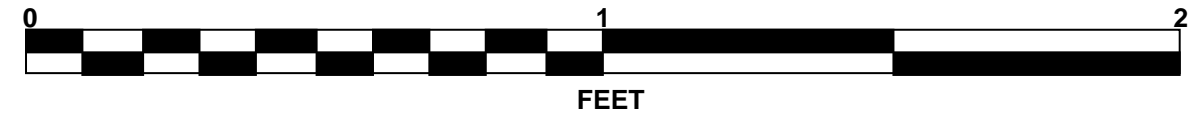
WBS No. 37765.1.5

TIP No. R-3822

Project Description: Bridge on Premier Blvd. Ext. Over Chockoyotte Creek
Halifax County, North Carolina

B3-B (-L1-, STA. 99+83, 27' RT)

Box 2: 46.4 Feet to 51.4 Feet



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 37765.1.5		TIP R-3822		COUNTY HALIFAX		GEOLOGIST Pastrana, C.R.										
SITE DESCRIPTION Bridge on Premier Boulevard Extension Over Chockoyotte Creek							GROUND WTR (ft)									
BORING NO. B4-A		STATION 100+53		OFFSET 27 ft LT		ALIGNMENT -L1-										
COLLAR ELEV. 82.6 ft		TOTAL DEPTH 46.4 ft		NORTHING 975,065		EASTING 2,401,491										
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Meatyard, C.		START DATE 10/17/17		COMP. DATE 10/18/17		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
85														82.6	0.0	GROUND SURFACE
80	79.1	3.5	3	6	5									78.6	4.0	ALLUVIAL Black, Fine Sandy CLAY, Highly Organic, Slightly Plastic
75	74.1	8.5	25	40	49									76.6	6.0	Gray, Medium Dense, Clayey Fine to Coarse SAND, Trace Organics GRAVEL and COBBLES
70	69.1	13.5	26	63	37/0.2									71.1	11.5	RESIDUAL Greenish Brown to Red, Very Stiff, Coarse to Fine Sandy Clayey SILT
65	64.1	18.5	21	38	26									65.2	17.4	WEATHERED ROCK Greenish Gray with Red METAMORPHOSED QUARTZ DIORITE
60	60.2	22.4	60/0.0											61.3	21.3	RESIDUAL Brown and White, Very Dense, Silty Coarse to Fine SAND
55														60.2	22.4	WEATHERED ROCK White and Green METAMORPHOSED QUARTZ DIORITE
50																CRYSTALLINE ROCK Greenish Gray to Gray with White, Slightly to Very Slightly Weathered, Hard to Very Hard METAMORPHOSED QUARTZ DIORITE with Close to Moderately Close Fracture Spacing
45														45.2	37.4	Greenish Gray to Gray with White and Red, Slightly to Very Slightly Weathered, Hard to Very Hard METAMORPHOSED QUARTZ DIORITE with Moderately Close to Wide Fracture Spacing
40														36.2	46.4	Boring Terminated at Elevation 36.2 ft in Crystalline Rock: METAMORPHOSED QUARTZ DIORITE

NCDOT BORE DOUBLE R3822_GEO_BRDG_GINT LOGS.GPJ NC_DOT.GDT 11/17/17

GEOTECHNICAL BORING REPORT

CORE LOG

WBS 37765.1.5		TIP R-3822		COUNTY HALIFAX		GEOLOGIST Pastrana, C.R.					
SITE DESCRIPTION Bridge on Premier Boulevard Extension Over Chockoyotte Creek							GROUND WTR (ft)				
BORING NO. B4-A		STATION 100+53		OFFSET 27 ft LT		ALIGNMENT -L1-					
COLLAR ELEV. 82.6 ft		TOTAL DEPTH 46.4 ft		NORTHING 975,065		EASTING 2,401,491					
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic					
DRILLER Meatyard, C.		START DATE 10/17/17		COMP. DATE 10/18/17		SURFACE WATER DEPTH N/A					
CORE SIZE NQ		TOTAL RUN 24.0 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)	REC. (%)	RQD (%)			
66.2										Begin Coring @ 22.4 ft	
	60.2	22.4	4.0	2:53/1.0 7:55/1.0 5:18/1.0 6:55/1.0	(4.0) 100%	(3.0) 75%	(14.9) 99%	(11.1) 74%	CRYSTALLINE ROCK	Greenish Gray to Gray with White, Slightly to Very Slightly Weathered, Hard to Very Hard METAMORPHOSED QUARTZ DIORITE with Close to Moderately Close Fracture Spacing	22.4
	56.2	26.4	5.0	9:26/1.0 8:44/1.0 6:43/1.0 8:26/1.0 10:07/1.0	(4.9) 98%	(3.5) 70%			Majority of joints at 0 degrees to 10 degrees with iron staining 2 joints at 70 degrees with heavy iron staining Very close fracture spacing 23.9' to 24.4', 27.7' to 27.9', 28.4' to 28.7', and 31.5' to 31.8' Several partially healed high angle fractures GSI = 65-85		
	51.2	31.4	5.0	6:42/1.0 6:10/1.0 7:42/1.0 7:45/1.0 8:10/1.0	(5.0) 100%	(3.7) 74%					
	46.2	36.4	5.0	5:41/1.0 7:57/1.0 10:05/1.0 11:01/1.0 11:07/1.0	(5.0) 100%	(4.9) 98%	(9.0) 100%	(9.0) 100%	Greenish Gray to Gray with White and Red, Slightly to Very Slightly Weathered, Hard to Very Hard METAMORPHOSED QUARTZ DIORITE with Moderately Close to Wide Fracture Spacing	45.2	
	41.2	41.4	5.0	8:26/1.0 10:08/1.0 9:46/1.0 9:22/1.0 9:37/1.0	(5.0) 100%	(5.0) 100%			1 joint at 30 degrees with iron staining Several partially healed high angle fractures GSI = 75-95	37.4	
	36.2	46.4							Boring Terminated at Elevation 36.2 ft in Crystalline Rock: METAMORPHOSED QUARTZ DIORITE	46.4	

NCDOT CORE DOUBLE R3822_GEO_BRDG_GINT LOGS - CORE LOGS.GPJ NC_DOT.GDT 11/17/17

CORE PHOTOGRAPHS

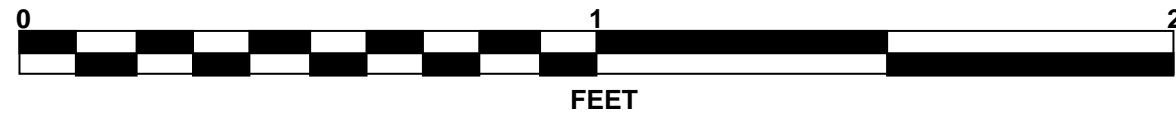
WBS No. 37765.1.5

TIP No. R-3822

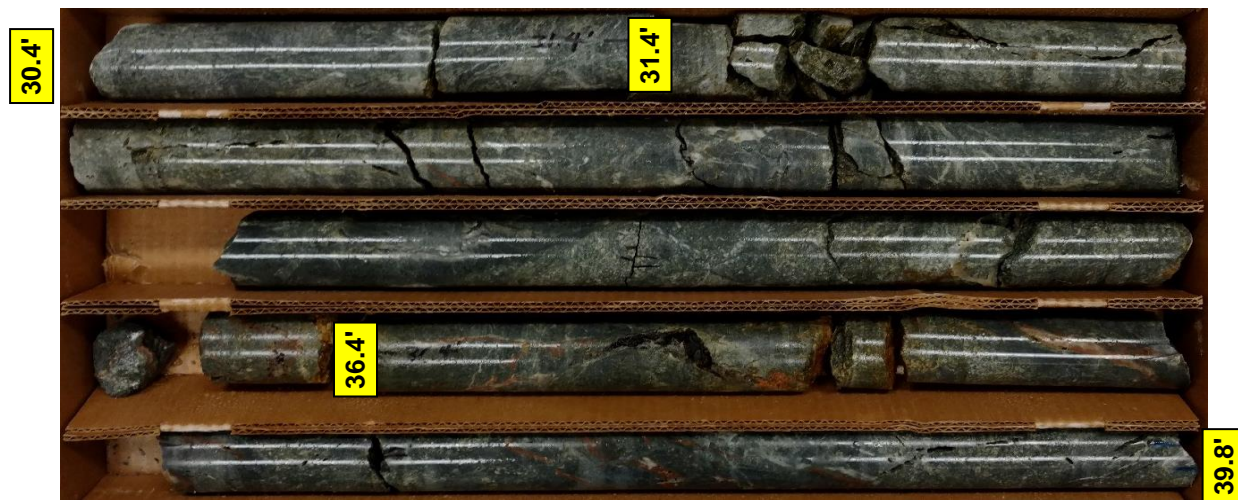
Project Description: Bridge on Premier Blvd. Ext. Over Chockoyotte Creek
Halifax County, North Carolina

B4-A (-L1-, STA. 100+53, 27' LT)

Box 1: 22.4 Feet to 30.44 Feet



Box 2: 30.4 Feet to 39.8 Feet



CORE PHOTOGRAPHS

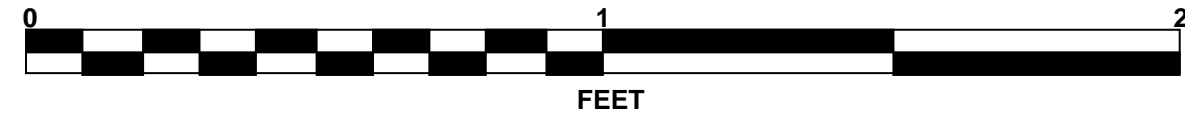
WBS No. 37765.1.5

TIP No. R-3822

Project Description: Bridge on Premier Blvd. Ext. Over Chockoyotte Creek
Halifax County, North Carolina

B4-A (-L1-, STA. 100+53, 27' LT)

Box 3: 39.8 Feet to 46.4 Feet



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 37765.1.5		TIP R-3822		COUNTY HALIFAX		GEOLOGIST Pastrana, C.R.										
SITE DESCRIPTION Bridge on Premier Boulevard Extension Over Chockoyotte Creek							GROUND WTR (ft)									
BORING NO. B4-B		STATION 100+53		OFFSET 27 ft RT		ALIGNMENT -L1-	0 HR. N/A									
COLLAR ELEV. 83.6 ft		TOTAL DEPTH 51.6 ft		NORTHING 975,062		EASTING 2,401,545	24 HR. 1.5									
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Meatyard, C.		START DATE 10/23/17		COMP. DATE 10/23/17		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
85														83.6	0.0	GROUND SURFACE
80	80.1	3.5	2	2	1	3							Sat.			ALLUVIAL Brown to Black to Gray, Soft, Silty Coarse to Fine Sandy CLAY, Little to Moderately Organic, Slightly Plastic Note: Gravel/Cobbles encountered around 8'
75	75.1	8.5	5	5	9	14							M	75.6	8.0	RESIDUAL Greenish Brown to Red, Stiff, Clayey Fine to Coarse Sandy SILT
70	70.1	13.5	34	66/0.2						100/0.7				71.0	12.6	WEATHERED ROCK Greenish Gray METAMORPHOSED QUARTZ DIORITE
65	65.1	18.5	26	31	69/0.4					100/0.9						
60	60.1	23.5	100/0.3							100/0.3						
55	55.1	28.5	31	34	66/0.4					100/0.9						
50	50.1	33.5	100/0.4							100/0.4						
45	45.1	38.5	60/0.1							60/0.1				45.1	38.5	CRYSTALLINE ROCK METAMORPHOSED QUARTZ DIORITE
40	41.5	42.1	60/0.0							60/0.0				41.5	42.1	Greenish Gray to Gray with White, Slightly to Very Slightly Weathered, Hard METAMORPHOSED QUARTZ DIORITE with Close Fracture Spacing
35														37.2	46.4	Greenish Gray to Gray with White, Moderately to Slightly Weathered, Hard METAMORPHOSED QUARTZ DIORITE with Very Close to Close Fracture Spacing
														32.0	51.6	Boring Terminated at Elevation 32.0 ft in Crystalline Rock: METAMORPHOSED QUARTZ DIORITE

NCDOT BORE DOUBLE R3822_GEO_BRDG_GINT LOGS.GPJ NC_DOT_GDT 11/7/17

GEOTECHNICAL BORING REPORT

CORE LOG

WBS 37765.1.5		TIP R-3822		COUNTY HALIFAX		GEOLOGIST Pastrana, C.R.					
SITE DESCRIPTION Bridge on Premier Boulevard Extension Over Chockoyotte Creek							GROUND WTR (ft)				
BORING NO. B4-B		STATION 100+53		OFFSET 27 ft RT		ALIGNMENT -L1-					
COLLAR ELEV. 83.6 ft		TOTAL DEPTH 51.6 ft		NORTHING 975,062		EASTING 2,401,545					
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic					
DRILLER Meatyard, C.		START DATE 10/23/17		COMP. DATE 10/23/17		SURFACE WATER DEPTH N/A					
CORE SIZE NQ		TOTAL RUN 9.5 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %			
41.5										Begin Coring @ 42.1 ft	
40	41.5	42.1	5.0	7:07/1.0 8:45/1.0 11:30/1.0 12:10/1.0 9:59/1.0	(4.2) 84%	(2.5) 50%	(3.5) 81%	(2.5) 58%	41.5	Greenish Gray to Gray with White, Slightly to Very Slightly Weathered, Hard METAMORPHOSED QUARTZ DIORITE with Close Fracture Spacing Joints at 30 degrees to 45 degrees Most of core loss occurred at the start of the run GSI = 65-85	42.1
	36.5	47.1							37.2		46.4
35			4.5	6:14/1.0 7:59/1.0 10:57/1.0 5:58/1.0 5:17/0.5	(3.3) 73%	(0.0) 0%	(4.0) 77%	(0.0) 0%	32.0	Greenish Gray to Gray with White, Moderately to Slightly Weathered, Hard METAMORPHOSED QUARTZ DIORITE with Very Close to Close Fracture Spacing Abundant high angle fractures Very broken Core loss scattered throughout strata GSI = 25-45 Boring Terminated at Elevation 32.0 ft in Crystalline Rock: METAMORPHOSED QUARTZ DIORITE	51.6

NCDOT CORE DOUBLE R3822_GEO_BRDG_GINT LOGS - CORE LOGS.GPJ NC_DOT.GDT 11/17/17

CORE PHOTOGRAPHS

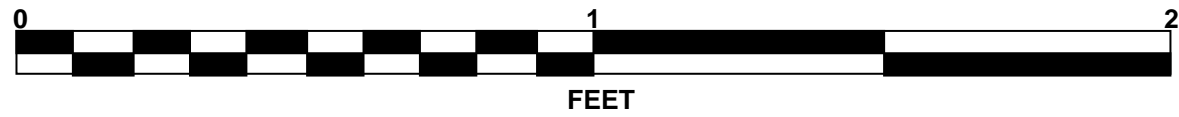
WBS No. 37765.1.5

TIP No. R-3822

Project Description: Bridge on Premier Blvd. Ext. Over Chockoyotte Creek
Halifax County, North Carolina

B4-B (-L1-, STA. 100+53, 27' RT)

Box 1: 41.5 Feet to 51.6 Feet



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 37765.1.5		TIP R-3822		COUNTY HALIFAX		GEOLOGIST Pastrana, C.R.										
SITE DESCRIPTION Bridge on Premier Boulevard Extension Over Chockoyotte Creek							GROUND WTR (ft)									
BORING NO. EB2-A		STATION 101+23		OFFSET 32 ft LT		ALIGNMENT -L1-										
COLLAR ELEV. 86.2 ft		TOTAL DEPTH 19.8 ft		NORTHING 975,135		EASTING 2,401,489										
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Meatyard, C.		START DATE 10/17/17		COMP. DATE 10/17/17		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
90																
85	82.7	3.5	2	5	6									86.2	GROUND SURFACE	0.0
80	77.7	8.5	7	11	13									83.2	ALLUVIAL Black and Gray, Soft to Medium Stiff, Silty CLAY with Gravel, Highly Organic, Slightly Plastic, Trace Sand	3.0
75	72.7	13.5	10	15	85/0.2									75.9	RESIDUAL Orange Brown to Gray, Stiff to Very Stiff, Coarse to Fine Sandy Silty CLAY, Slightly Plastic	10.3
70	67.7	18.5	46	54/0.4										72.2	Brown and White, Medium Dense, Silty Coarse to Fine SAND	14.0
	66.4	19.8	60/0.0											66.4	WEATHERED ROCK Brown and White Metamorphosed Quartz Diorite	19.8
															Boring Terminated with Standard Penetration Test Refusal at Elevation 66.4 ft on Crystalline Rock: METAMORPHOSED QUARTZ DIORITE	

WBS 37765.1.5		TIP R-3822		COUNTY HALIFAX		GEOLOGIST Pastrana, C.R.										
SITE DESCRIPTION Bridge on Premier Boulevard Extension Over Chockoyotte Creek							GROUND WTR (ft)									
BORING NO. EB2-C		STATION 101+23		OFFSET CL		ALIGNMENT -L1-										
COLLAR ELEV. 87.3 ft		TOTAL DEPTH 31.2 ft		NORTHING 975,134		EASTING 2,401,521										
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Meatyard, C.		START DATE 10/17/17		COMP. DATE 10/17/17		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
90																
85														87.3	GROUND SURFACE	0.0
80														84.3	ALLUVIAL Black to Gray, Soft to Medium Stiff, Coarse to Fine Sandy Silty CLAY, Highly Organic, Slightly Plastic	3.0
75														79.3	RESIDUAL Orange Brown, Medium Stiff, Silty CLAY, Slightly Plastic	8.0
70															Orange Brown, Medium Dense, Clayey Silty Coarse to Fine SAND	
65																
60														62.3	Rock Fragments and Fine to Coarse SAND	25.0
	58.8	28.5	56	44/0.2										60.3	WEATHERED ROCK METAMORPHOSED QUARTZ DIORITE	27.0
	56.1	31.2	60/0.0											56.1	Boring Terminated with Standard Penetration Test Refusal at Elevation 56.1 ft on Crystalline Rock: METAMORPHOSED QUARTZ DIORITE	31.2

NCDOT BORE DOUBLE R3822_GINT LOGS - CORE LOGS.GPJ NC_DOT.GDT 11/17/17

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 37765.1.5		TIP R-3822		COUNTY HALIFAX		GEOLOGIST Pastrana, C.R.										
SITE DESCRIPTION Bridge on Premier Boulevard Extension Over Chockoyotte Creek							GROUND WTR (ft)									
BORING NO. EB2-B		STATION 101+23		OFFSET 32 ft RT		ALIGNMENT -L1-										
COLLAR ELEV. 87.1 ft		TOTAL DEPTH 38.7 ft		NORTHING 975,132		EASTING 2,401,553										
DRILL RIG/HAMMER EFF./DATE AME9533 CME-550X 83% 01/01/2015				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Meatyard, C.		START DATE 10/16/17		COMP. DATE 10/16/17		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
90														87.1	GROUND SURFACE	0.0
														85.6	1.5' Topsoil	1.5
	83.6	3.5	3	7	10								M		RESIDUAL Orange Brown to Light Brown, Medium Dense to Dense, Silty Coarse to Fine SAND, Little Rock Fragments	
85																
	78.6	8.5	10	16	14								W		Red to Greenish Brown, Hard, Fine Sandy Clayey SILT	
80																
	73.6	13.5	10	13	19								M		WEATHERED ROCK Greenish Brown METAMORPHOSED QUARTZ DIORITE	
75																
	68.6	18.5	13	27	50								D		Boring Terminated at Elevation 48.4 ft in Weathered Rock: METAMORPHOSED QUARTZ DIORITE	
70																
	63.6	23.5	26	50	50/0.4											
65																
	58.6	28.5	100/0.3													
60																
	53.6	33.5	100/0.2													
55																
	48.6	38.5	100/0.2													
50																

NCDOT BORE DOUBLE R3822_GEO_BRDG_GINT LOGS.GPJ NC_DOT.GDT 11/7/17