# 7000-BR-REFERENCE

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# 67002

#### STATE OF NORTH CAROLINA

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

#### **DESCRIPTION STRUCTURE**

#### LEGEND (SOIL & ROCK) SUPPLEMENTAL LEGEND (GSI) SUBSURFACE INVESTIGATION SITE PLAN PROFILES CROSS SECTIONS BORE LOGS & CORE REPORTS CORE PHOTOGRAPHS

COUNTY _		rTION $R$	<b>EPLAC</b>	E BRIDGE	' #8	ON	NC	 194
	NORTH							<del>-</del>
SITE DES	SCRIPTION							<u> </u>

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#### **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 SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (INP-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE DESTREED HAVE EVELS OR SOIL MOISTURE CONDITIONS NDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS NOW SOIL MOISTURE ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

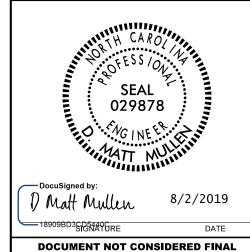
THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT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

- NOTES:

  1. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.

  2. BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

	C.D. JOHNSON
	D.O. CHEEK
	C.J. COFFEY
INVESTIGATED	BY
DRAWN BY	DMM
CHECKED BY _	J.C. KUHNE
SUBMITTED BY	JCK
DATE <i>8/1/20</i>	19



**UNLESS ALL SIGNATURES COMPLETED** 

PROJECT REPERENCE NO. SHEET NO.

BR-0002
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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 ELIGHT POWER AUGER AND VIELD LESS THAN 100 BLOWS PER FOOT	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.	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.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION	<u>UNIFORMLY GRADED</u> - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. <u>GAP-GRADED</u> - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.	SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60	AQUIFER - A WATER BEARING FORMATION OR STRATA.
IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH	ANGULARITY OF GRAINS	BLOWS IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE,	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS:	ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:	ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING
VERY STIFF,GRAY,SILTY CLAY,MOIST WITH INTERBEDDED FINE SAND LAYERS,HIGHLY PLASTIC,A-7-6	ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.	WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES >	A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
SOIL LEGEND AND AASHTO CLASSIFICATION  GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS	MINERALOGICAL COMPOSITION	ROCK (WR) 100 BLOWS PER FOOT IF TESTED.  FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT	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
CLASS. (≤ 35% PASSING "200) (> 35% PASSING "200) ORGANIC MATERIALS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC.	ROCK (CP) WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE,	SURFACE.
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 IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.	UNEISS, CHEBRO, SCRIST, ETC.	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
CLASS. A-1-a A-1-b A-2-4 A-2-5 A-2-6 A-2-7 A-7-5 A-3 A-6, A-7	COMPRESSIBILITY	BOOK (NICE) SEDIMENTARY ROCK THAT WOULD YELLD SPT REFUSAL IF TESTED.	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM
SYMBOL 000000000000000000000000000000000000	SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50	COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD	OF SLOPE.  CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED
% PASSING	HIGHLY COMPRESSIBLE LL > 50	SEDIMENTARY ROCK SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.	BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
*10 50 MX   GRANULAR CLAY MUCK, **40 30 MX 50 MX 51 MN   SOILS CRAY PEAT	PERCENTAGE OF MATERIAL	WEATHERING	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT
200 15 MX 25 MX 10 MX 35 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN 36 MN 36 MN	GRANULAR SILT - CLAY  ORGANIC MATERIAL SOILS SOILS OTHER MATERIAL	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER	ROCKS OR CUTS MASSIVE ROCK.
MATERIAL	TRACE OF ORGANIC MATTER 2 - 3%, 3 - 5%, TRACE 1 - 10%, LITTLE ORGANIC MATTER 3 - 5%, 5 - 12%, LITTLE 10 - 20%	HAMMER IF CRYSTALLINE.	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
PASSING *40	MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35%	VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, (V SLI.) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE
PI 6 MX NP 10 MX 10 MX 11 MN 11 MN 10 MX 10 MX 11 MN 11 MN 11 MN MODERATE HIGHLY	HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE	OF A CRYSTALLINE NATURE.	LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
GROUP INDEX 0 0 0 4 MX 8 MX 12 MX 16 MX NO MX AMOUNTS OF SOLIS	GROUND WATER	SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
USUAL TYPES STONE FRAGS. FINE SILTY OR CLAYEY SILTY CLAYEY MATTER		(SLI.) 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
OF MAJOR GRAVEL, AND SAND GRAVEL AND SAND SOILS SOILS	STATIC WATER LEVEL AFTER 24 HOURS	MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM
CEN PATING		(MOD.) GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS	PARENT MATERIAL.
AS SUBGRADE EXCELLENT TO GOOD FAIR TO POOR POOR UNSUITABLE	SPRING OR SEEP	DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ;PI OF A-7-6 SUBGROUP IS > LL - 30	· · · · · · · · · · · · · · · · · · ·	MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.
CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH (MOD. SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK, ROCK GIVES "CLUNK" SOUND WHEN STRUCK.	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
PRIMARY SOIL TYPE COMPACTNESS OR RANGE OF STANDARD RANGE OF UNCONFINED PENETRATION RESISTENCE COMPRESSIVE STRENGTH	ROADWAY EMBANKMENT (RE) 25/025 DIP & DIP DIRECTION	IF TESTED, WOULD YIELD SPT REFUSAL	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO
CONSISTENCY (N-VALUE) (TONS/FT <sup>2</sup> )	WITH SOIL DESCRIPTION → OF ROCK STRUCTURES	SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT	ITS LATERAL EXTENT.
GENERALLY VERY LOOSE < 4  LOOSE 4 TO 10	SOIL SYMBOL  SOIL SYMBOL  SUPE INDICATOR INSTALLATION	(SEV.) REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN.	<u>LENS</u> - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
MATERIAL MEDIUM DENSE 10 TO 30 N/A	附	IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
(NON-COHESIVE) DENSE 30 TO 50  VERY DENSE > 50	THAN ROADWAY EMBANKMENT AUGER BORING CONE PENETROMETER	VERY  ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC ELEMENTS ARE DISCERNIBLE SEVERE  BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE
VERY SOFT < 2 < 0.25	— — INFERRED SOIL BOUNDARY — CORE BORING ● SOUNDING ROD	(V SEV.) REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR	OF AN INTERVENING IMPERVIOUS STRATUM.
GENERALLY SOFT 2 TO 4 0.25 TO 0.5	TEST BORING	VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <u>IF TESTED, WOULD YIELD SPT N VALUES &lt; 100 BPF</u>	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
SILT-CLAY   MEDIUM STIFF   4 TO 8   0.5 TO 1.0   MATERIAL   STIFF   8 TO 15   1 TO 2	INFERRED ROCK LINE MONITORING WELL WITH CORE	COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS	ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE
(COHESIVE) VERY STIFF 15 TO 30 2 TO 4 HARD > 30 > 4	→ → → → → → ← → ALLUVIAL SOIL BOUNDARY \( \triangle \) PIEZOMETER INSTALLATION \( \triangle \)— SPT N-VALUE	ALSO AN EXAMPLE.	RUN AND EXPRESSED AS A PERCENTAGE.
TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS	ROCK HARDNESS	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT
		VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES	ROCK.
U.S. STD. SIEVE SIZE 4 10 40 60 200 270 OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053	UNSUITABLE WASTE	SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK,  HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY, HARD HAMMER BLOWS REQUIRED	SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO
BOULDER COBBLE GRAVEL COARSE FINE SILT CLAY	SHALLOW UNDERCUT UNCLASSIFIED EXCAVATION - USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL	TO DETACH HAND SPECIMEN.	THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
(BLDR.) (COB.) (GR.) (CSE. SD.) (F SD.) (SL.) (CL.)	ABBRE VIATIONS	MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK, GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.
GRAIN MM 305 75 2.0 0.25 0.05 0.005	AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST	HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.	STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF
SIZE IN. 12 3	BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED	MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT.	A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL
SOIL MOISTURE - CORRELATION OF TERMS	CL CLAY  MOD MODERATELY  7 - UNIT WEIGHT  CPT - CONE PENETRATION TEST  NP - NON PLASTIC  7 - DRY UNIT WEIGHT	HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES I INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.	WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
SOIL MOISTURE SCALE FIELD MOISTURE CHIDE FOR FIELD MOISTURE DESCRIPTION	CSE COARSE ORG ORGANIC	SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY
(ATTERBERG LIMITS) DESCRIPTION BOIDE FOR FIELD MOISTORE DESCRIPTION	DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST SAMPLE ABBREVIATIONS  DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC S - BULK	FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.	TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY	e - VOID RATIO SD SAND, SANDY SS - SPLIT SPOON	VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH	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
(SAT.) FROM BELOW THE GROUND WATER TABLE  LL _ LIOUID LIMIT	F - FINE SL SILT, SILTY ST - SHELBY TUBE FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK	SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY	THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
PLASTIC SEMISOLIDA PEDILIPES DRYING TO	FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL	FINGERNAIL.	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
(PI)   ATTAIN UPTIMUM MUISTURE	FRAGS FRAGMENTS	FRACTURE SPACING BEDDING	BENCH MARK: BL-7
	EQUIPMENT USED ON SUBJECT PROJECT	TERM SPACING TERM THICKNESS  VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET	ELEVATION 2000 OC EFFT
OM OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE	DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE:	WIDE 3 TO 10 FEET THICKLY BEDDED 1.5 - 4 FEET MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.16 - 1.5 FEET	ELEVATION: 2686.06 FEET
SL SHRINKAGE LIMIT	X CME-45C CLAY BITS X AUTOMATIC MANUAL	CLOSE 0.16 TO 1 FOOT VERY THINLY BEDDED 0.03 - 0.16 FEET	NOTES:
- DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE	6° CONTINUOUS FLIGHT AUGER	VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET THINLY LAMINATED < 0.008 FEET	
PLASTICITY	CME-55	INDURATION	1
		FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	1
PLASTICITY INDEX (PI) DRY STRENGTH  NON PLASTIC 0-5 VERY LOW	CME-550 HARD FACED FINGER BITS  TUNGCARBIDE INSERTS  X-N XWL	RUBBING WITH FINGER FREES NUMEROUS GRAINS:	
SLIGHTLY PLASTIC 6-15 SLIGHT	VANE SHEAR TEST Y CASING Y W/ ADVANCER HAND TOOLS:	GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.	
MODERATELY PLASTIC 16-25 MEDIUM HIGHLY PLASTIC 26 OR MORE HIGH	POST HOLE DIGGER	MODERATELY INDURATED  GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.	
COLOR	TRISONE TABLE CARD	CRAINS ARE DISCISLED TO SERARATE WITH STEEL PROPE.	
	TRICONE TUNGCARB. SOUNDING ROD	INDURATED DIFFICULT TO BREAK WITH HAMMER.	
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY).  MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.	CORE BIT VANE SHEAR TEST	EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE;	
		SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-1-

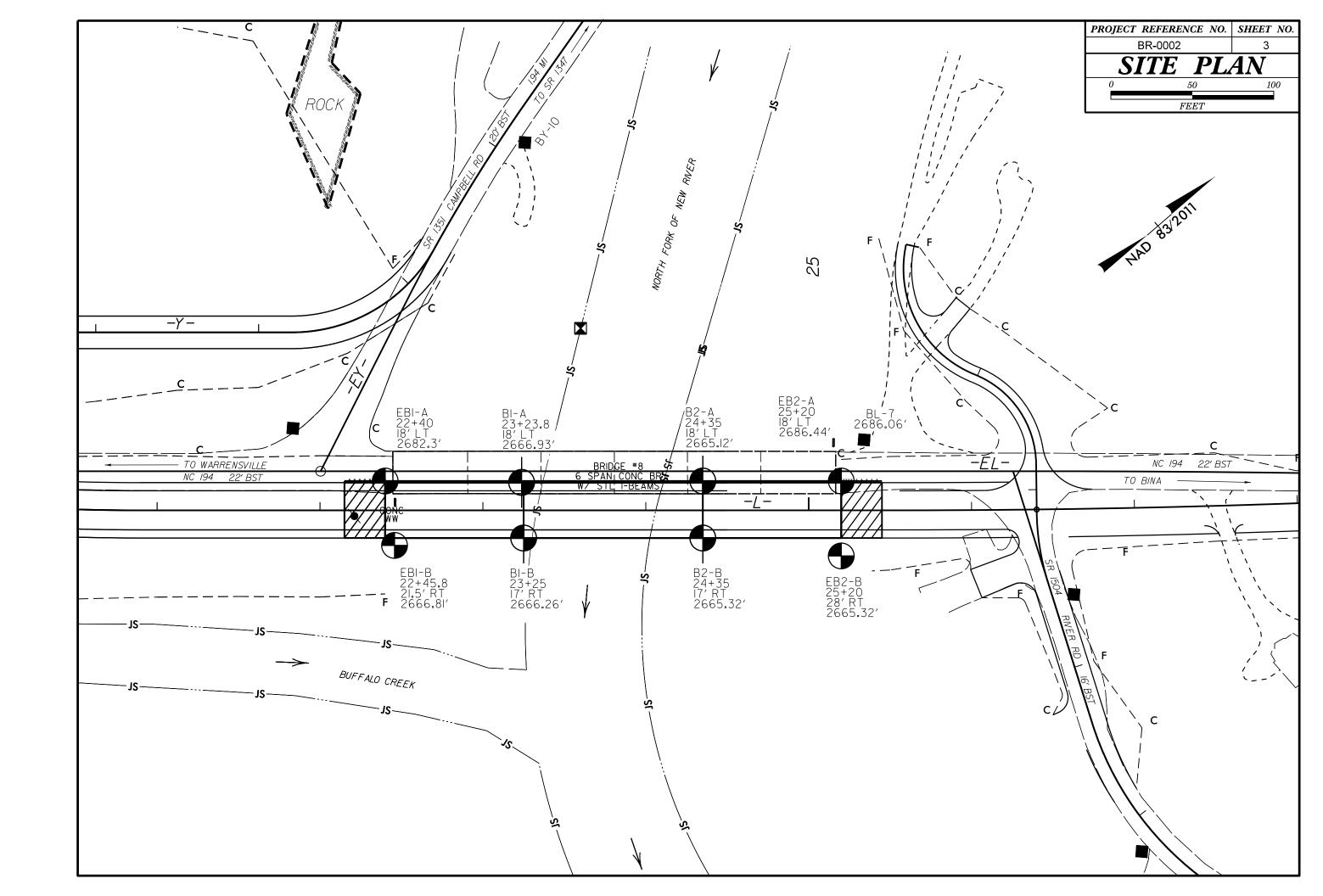
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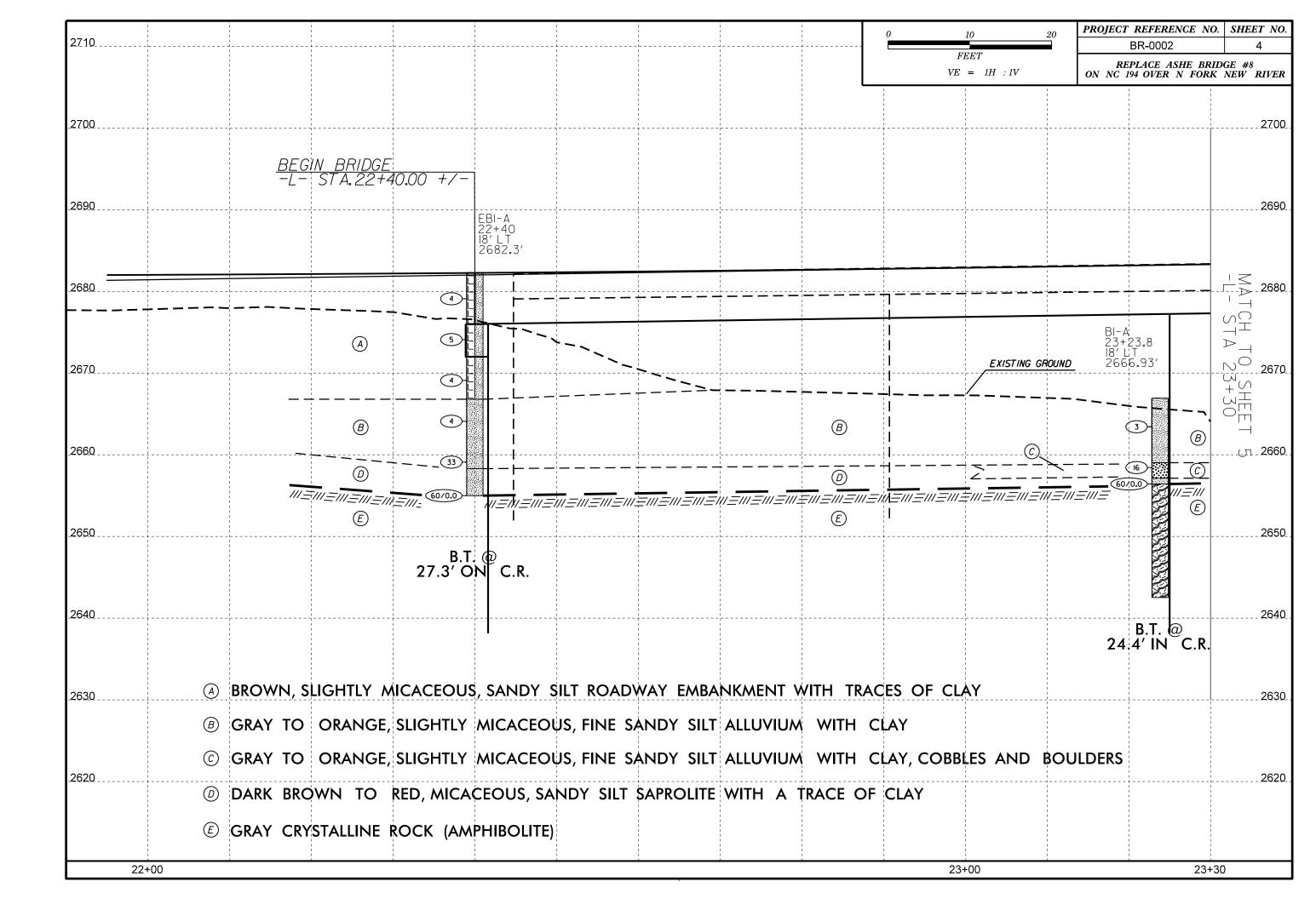
#### NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT

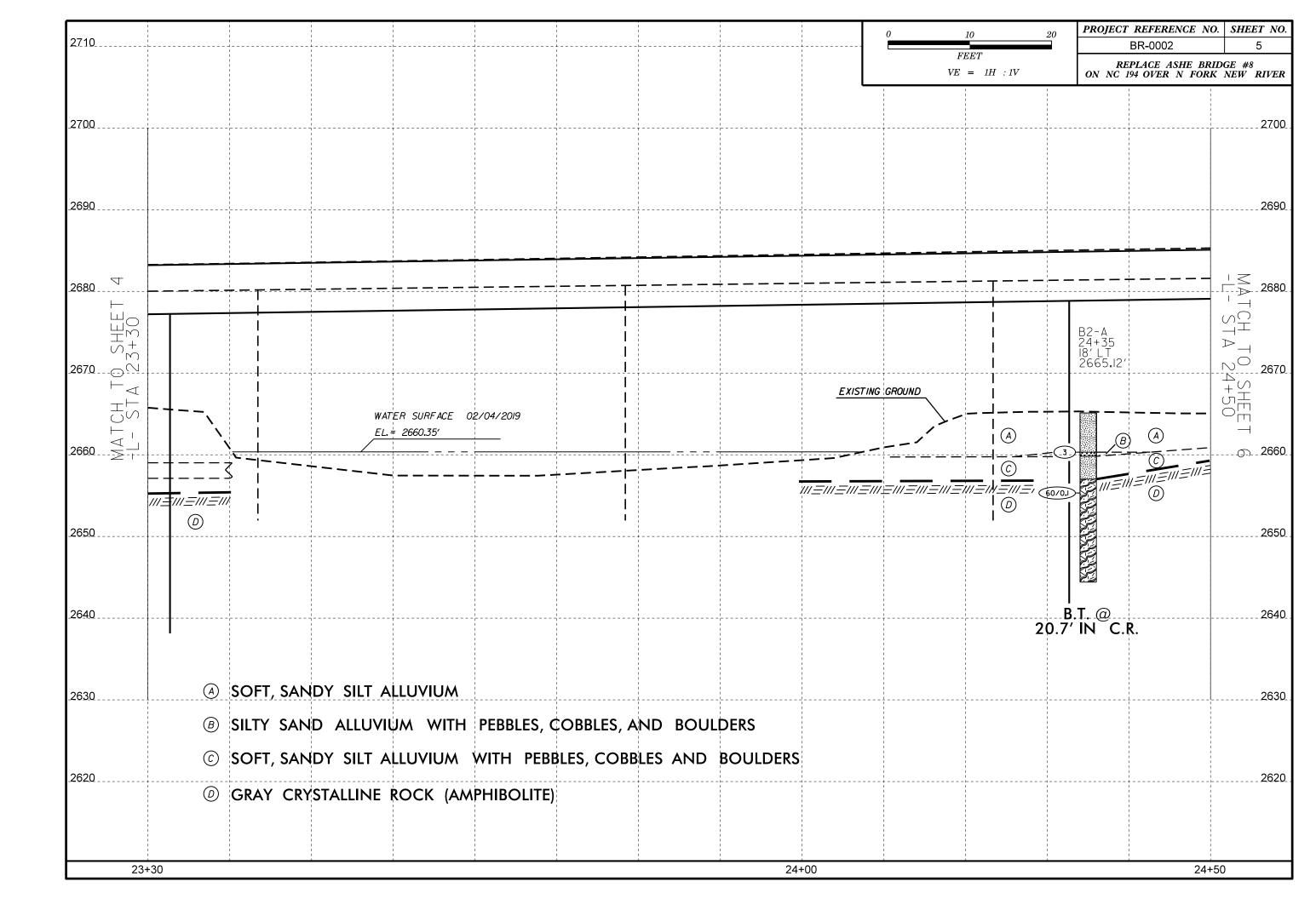
## SUBSURFACE INVESTIGATION

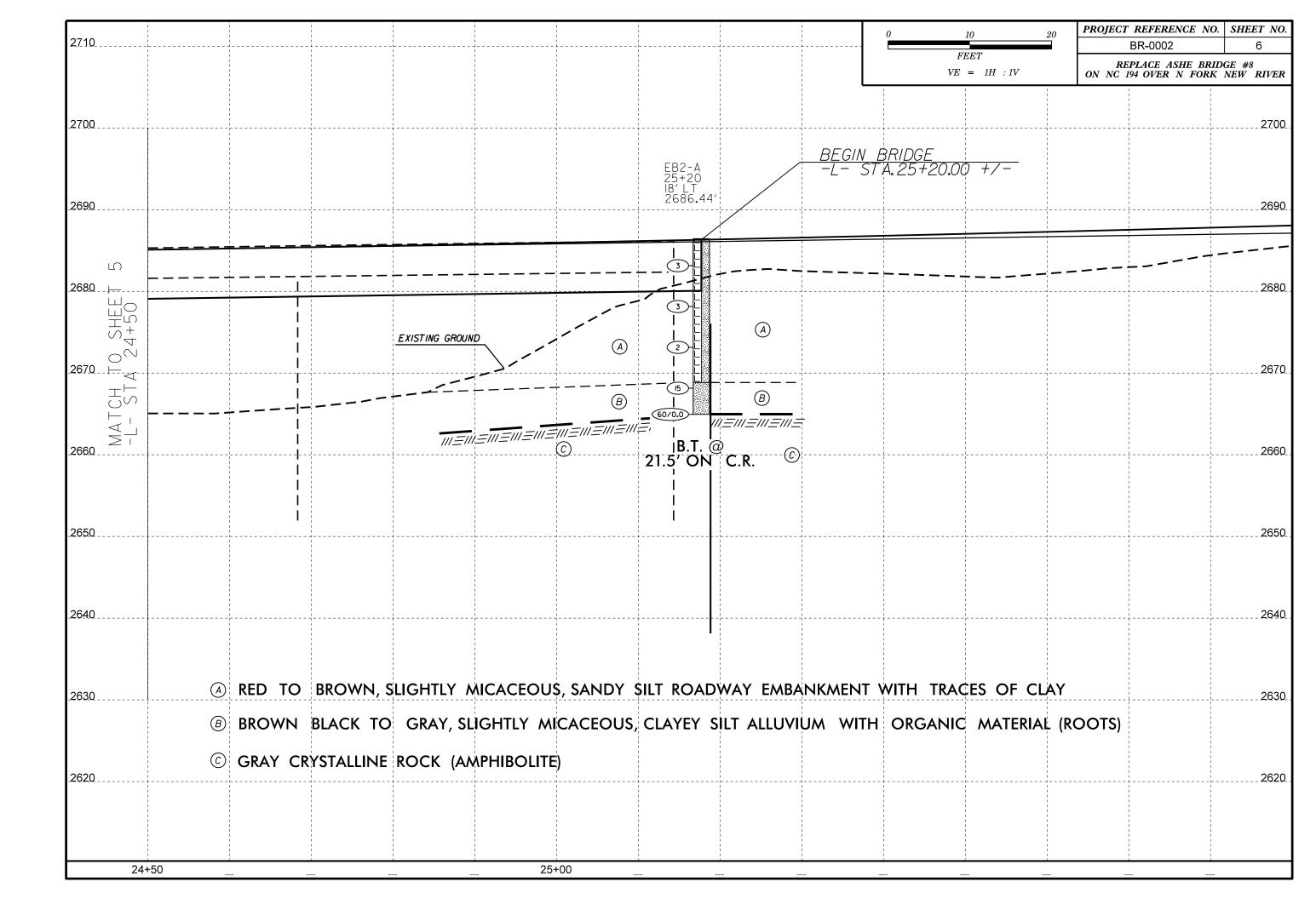
SUPPLEMENTAL LEGEND, GEOLOGICAL STRENGTH INDEX (GSI) TABLES

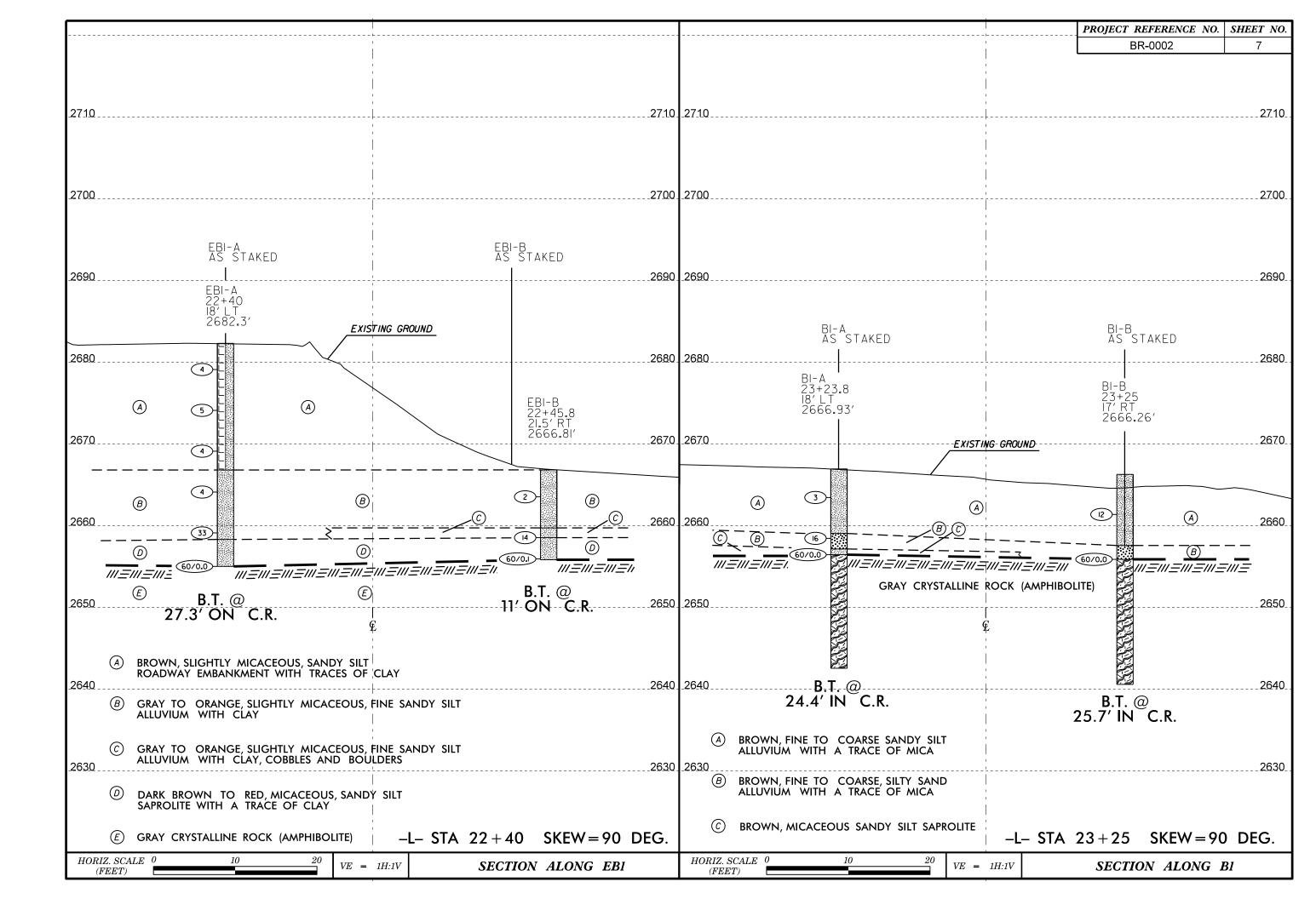
AASHTO LRFD Figure 10.4.6.4-1 — Determination of GSI for Join	ted Ro			HIO LRFI	D BRID	GE DESIGN SPECIFICATIONS  AASHTO LRFD Figure 10.4.6.4-2 — Determination of GSI for Tectonically Deformed Heterogeneous Rock Masses (Marinos and Hoek, 2000)
GEOLOGICAL STRENGTH INDEX (GSI) FOR JOINTED ROCKS (Hoek and Marinos, 2000)		(0		у Ф О	s e o	GSI FOR HETEROGENEOUS ROCK MASSES SUCH AS FLYSCH (Marinos. P and Hoek E., 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.	SURFACE CONDITIONS	VERY GOOD Very rough, fresh unweathered sur COOD Rough, slightly weathered, iron sta	FAIR Smooth, moderately weathered and altered surfaces	POOR Slickensided, highly weathered surfa with compact coatings or fillings or angular fragments	<b>VERY POOR</b> Slickensided, highly weathered surf with soft clay coatings or fillings	Surface conditions (barticularly of the pedding blanes) choose a pox in the chart. Tocate the bosition in the pox that corresponds to the condition of the discontinuities and estimate the average value of GSI from the contours. Do not attempt to be too breast continuous may blane although the sathered counting surfaces.  NERY GOOD - Rough, slightly weathered counting surfaces with company these will dominate the personnel of surfaces with company to the conditions. Were although the breaded surfaces with company to the colours of tolerance of surfaces with company to the colours of tolerance of surfaces with company to the colours of tolerance of surfaces with company to the colours of tolerance of surface of surface of tolerance of surface of surface of surface of tolerance of surface of surfa
STRUCTURE		DECREASING SI	URFACE QU	ALITY ===	>	COMPOSITION AND STRUCTURE
INTACT OR MASSIVE - intact rock specimens or massive in situ rock with few widely spaced discontinuities	PIECES -	90 80		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 undisturbed rock mass consisting of cubical blocks formed by three intersecting discontinuity sets	OF ROCK 1	70 60				B. Sand- stone with thin inter- siltstone siltstone siltstone with sand- sor clayey  B. Weak siltstone or silty shale with sand- siltstone or clayey  B. C. D
VERY BLOCKY - interlocked, partially disturbed mass with multi-faceted angular blocks formed by 4 or more joint sets	OCKING	5	50			layers of siltstone amounts stone layers shale with sandstone layers
BLOCKY/DISTURBED/SEAMY - folded with angular blocks formed by many intersecting discontinuity sets. Persistence of bedding planes or schistosity	 ASING INTERL 		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.  F. Tectonically deformed, intensively folded/faulted, sheared clayey shale or siltstone with broken and deformed sandstone layers forming an almost chaotic structure
DISINTEGRATED - poorly inter- locked, heavily broken rock mass with mixture of angular and rounded rock pieces	- <b>-</b> DECRE			20		G. Undisturbed silty or clayey shale with or clayey shale forming a chaotic structure with pockets of clay. Thin layers of 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 sorts of sandstone are transformed into small sorts.
LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes	Ÿ	N/A N/A		$\left\langle \cdot \right\rangle$	10 /	into small rock pieces.  → Means deformation after tectonic disturbance

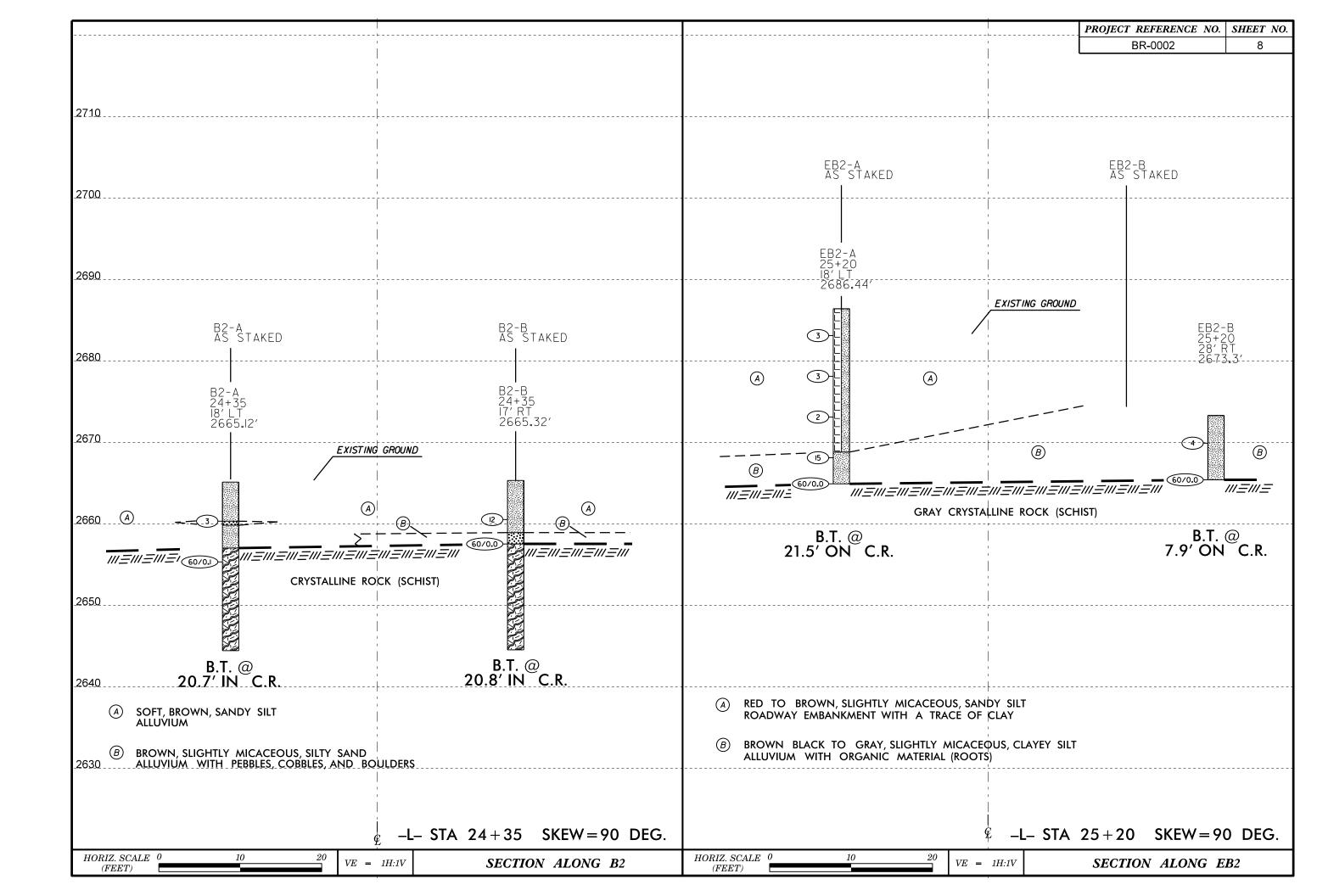












N/A

4.2

**GROUND WTR (ft)** 

0 HR.

24 HR.

**GROUND SURFACE** 

ALLUVIAL

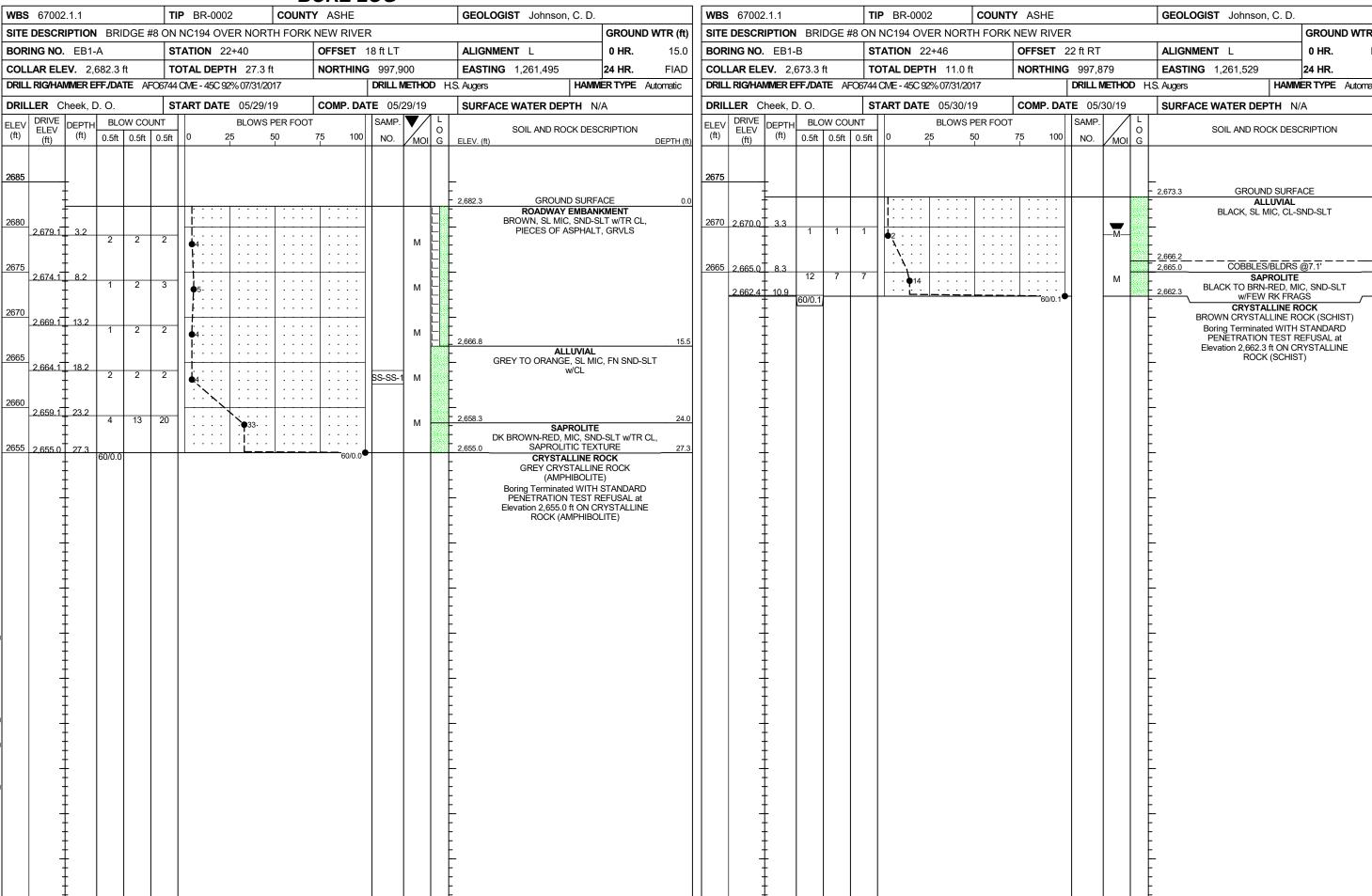
SAPROLITE

w/FEW RK FRAGS CRYSTALLINE ROCK

ROCK (SCHIST)

**HAMMER TYPE** Automatic

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



# GEOTECHNICAL BORING REPORT

#### GEOTECHNICAL BORING REPORT BORE LOG

March   Marc	BORE LOG		C	ORE LOG
Company   Comp	WBS         67002.1.1         TIP         BR-0002         COUNTY         ASHE	GEOLOGIST Johnson, C. D.	WBS         67002.1.1         TIP         BR-0002         COUNT	Y ASHE GEOLOGIST Johnson, C. D.
COLUMN   C	SITE DESCRIPTION BRIDGE #8 ON NC194 OVER NORTH FORK NEW RIVER	GROUND WTR (ft)	SITE DESCRIPTION BRIDGE #8 ON NC194 OVER NORTH FORK	NEW RIVER GROUND WTR (ft)
Delication   Del	BORING NO. B1-A STATION 23+24 OFFSET 18 ft LT	ALIGNMENT L 0 HR. N/A	BORING NO. B1-A STATION 23+24	OFFSET 18 ft LT ALIGNMENT L 0 HR. N/A
Declaration	<b>COLLAR ELEV.</b> 2,666.9 ft <b>TOTAL DEPTH</b> 24.4 ft <b>NORTHING</b> 997,963	<b>EASTING</b> 1,261,551 <b>24 HR.</b> 6.0 Caved	COLLAR ELEV. 2,666.9 ft TOTAL DEPTH 24.4 ft	<b>NORTHING</b> 997,963 <b>EASTING</b> 1,261,551 <b>24 HR.</b> 6.0 Caved
Building	DRILL RIG/HAMMER EFF/DATE AF06744 CWE - 45C 92% 07/31/2017 DRILL METHO	D NW Casing W/SPT & Core HAMMER TYPE Automatic	<b>DRILL RIG/HAMMER EFF./DATE</b> AFO6744 CME - 45C 92% 07/31/2017	DRILL METHOD NW Casing W/SPT & Core HAMMER TYPE Automatic
10   10   10   10   10   10   10   10	DRILLER Cheek, D. O. START DATE 05/30/19 COMP. DATE 05/30/19	SURFACE WATER DEPTH N/A	DRILLER Cheek, D. O. START DATE 05/30/19	COMP. DATE 05/30/19 SURFACE WATER DEPTH N/A
100 m	ELEV DRIVE DEPTH BLOW COUNT BLOWS PER FOOT SAMP.	SOIL AND ROCK DESCRIPTION	CORE SIZE nxwl TOTAL RUN 13.9 ft	
200 2 200 1 2	(ff) (ff) (ff) 0.5ft 0.5ft 0.5ft 0 25 50 75 100 NO. MOI		$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	L         O         DESCRIPTION AND REMARKS           G         ELEV. (ft)         DEPTH (ft)
2002 10.0 10.0 10.0 10.0 10.0 10.0 10.0	2670		2656 43	Begin Coring @ 10.5 ft
260 24 1 1 2 2 2 2 3 3 4 4 1 2 3 3 4 4 1 2 3 3 4 4 1 2 3 3 4 4 1 2 3 3 3 4 4 1 2 3 3 3 4 4 1 2 3 3 3 4 4 1 2 3 3 3 4 4 1 2 3 3 3 4 4 1 3 3 3 3 4 4 1 3 3 3 3 4 4 1 3 3 3 3			2655 2,000.4+ 10.5 3.9 N=60/0.0 (3.6) (3.0) 92% 77%	CRYSTALLINE ROCK 10.8
2004   32		ALLUVIAL	2,652.5 14.4	
200. 2 2 2 3 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	2665	Brown, fine to coarse sandy silt with a trace of mica		
2000 2 20	' +   2   2   1     \( \frac{1}{2} \cdot \cdo	<u></u>		GSI 80 - 90
ALLOWARD STATE OF THE PROOF OF	2660	Ł	+ 5.0 (5.0) (4.7)	
2002 - 1	2,658.4 8.5 0 7 0 7	ALLUVIAL	2645	[-
Brown SARCHE by sext	2,656.4 † 10.5	Diown, fine to coarse sitty said with a trace	2,642.5 + 24.4	Design Tempirated at Flourities 0.040 F # IN ODVOTALLING DOCK
2860  2860  Define Tensinated at Canadan 2.650.5 THN CRYSTALINE ROCK (C-960)  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2000			SCHIST)
2652  2653  Soving Territoried at Devolen 2.65.5 ft IN Carvis IALINIs ROCK (GC 467)  1				<del> </del>
2645.  Borng Terminatol of Equation 2,562,5 th IN  O'CSCTIALINE SCCK (GCASCT)  Decrease of the control of the c		E		
264.5.  Borng Tommated at Biocation 2,842.6 ft N CRYSTALLEM ROCK (CCHIST)  Borng Tommated at Biocation 2,842.6 ft N CRYSTALLEM ROCK (CCHIST)  Borng Tommated at Biocation 2,842.6 ft N CRYSTALLEM ROCK (CCHIST)  Borng Tommated at Biocation 2,842.6 ft N CRYSTALLEM ROCK (CCHIST)  Borng Tommated at Biocation 2,842.6 ft N CRYSTALLEM ROCK (CCHIST)  Borng Tommated at Biocation 2,842.6 ft N CRYSTALLEM ROCK (CCHIST)  Borng Tommated at Biocation 2,842.6 ft N CRYSTALLEM ROCK (CCHIST)  Borng Tommated at Biocation 2,842.6 ft N CRYSTALLEM ROCK (CCHIST)  Borng Tommated at Biocation 2,842.6 ft N CRYSTALLEM ROCK (CCHIST)  Borng Tommated at Biocation 2,842.6 ft N CRYSTALLEM ROCK (CCHIST)  Borng Tommated at Biocation 2,842.6 ft N CRYSTALLEM ROCK (CCHIST)  Borng Tommated at Biocation 2,842.6 ft N CRYSTALLEM ROCK (CCHIST)	Ţ	F		
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GRYSTALINE ROCK (SCHST)		B : T : 1   1   5   1   0   0   0   5   0   1		
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BROONZ BROSONS ASHE BOTEHOLES GPJ NC DOT GDT		F		
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BROOKS_BROCKONS_ASHE_BOTEHOLES GPJ_NC_DOT_GDT_ 				
BROOKS_BROCKONS_ASHE_BOTEHOLES GPJ_NC_DOT_GDT_ 	1907     <del>                                 </del>	_	1/81/1	
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BIE BROOZ BRDGOOZ BRDG		-		
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# IG REPORT

<b>GEOTECHI</b>	<b>VICAL</b>	<b>BORIN</b>
	COR	E LOG

										BORE	LOC	}		_	
	6700				TI		R-0002			Y ASHE				<b>GEOLOGIST</b> Johnson, C. D.	
SITE	DESCI	RIPTION	BRI	DGE #					TH FORK	NEW RIVE					GROUND WTR (ft
		). B1-B			-	ΓΑΤΙΟ				OFFSET				ALIGNMENT L	<b>0 HR.</b> N/A
		. <b>EV.</b> 2,6						<b>H</b> 25.7		NORTHING				<b>EASTING</b> 1,261,577	<b>24 HR.</b> 6.5
		MMER E		TE A	-06744	CME -	45C 92	% 07/31/2	2017		DRILL	/IETHO	D N	W Casing W/SPT & Core HAMIN	MER TYPE Automatic
DRIL		Cheek, D				TART	DATE	05/30/		COMP. DA		30/19	1	SURFACE WATER DEPTH N	I/A
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	0.5ft	0.5ft		0	2		50 50	Γ 75 100	SAMP.	моі	0	SOIL AND ROCK DES	CRIPTION
2670	(it)		o.o.c	0.010	o.o.t							/ IVIOI	G	_	
2665		<u> </u>					<u> </u>							- 2,666.3 GROUND SURF	
	2,661.4	4.9	2	2	10									Brown, slightly micaceous pebbles and rock fra	sandy silt with agments
2660		+	2	2	10		12		<del>-</del> - : : :					 - 2,657.6 - ALLUVIAL	8.
2655	2,655.9	10.4	60/0.0											Brown, slightly micaceous pebbles, cobbles, b	silty sand with ooulders
2650		<del> </del> <del> </del>												<del>-</del>	
2645		† † †												• • •	
		† † <u>†</u>					  		· · · · · · · · · · · · · · · · · · ·						
		+ + + + + + + + + + + + + + + + + + +												Boring Terminated at Elevat CRYSTALLINE ROCK CRYSTALLINE	
		+ + + + + + + + + + + + + + + + + + +													

GEOTECHNICAL BORING REPORT

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WBS	67002	2.1.1			TIP	BR-0	002	С	OUNT	Y A	ASHE			GEOLOG	IST Johnson	n, C. D.		
SITE	DESCR	RIPTION	BRI	DGE #8 (	ON NC	C194 C	OVER NO	RTH	FORK	NΕ\	W RIVER	2					GROUN	D WTR (ft)
BOR	ING NO	. B1-B			STA	TION	23+25			OF	FSET 1	7 ft RT		ALIGNME	NT L		0 HR.	N/A
COL	LAR ELI	<b>EV.</b> 2,	666.3	ft	тот	AL DE	<b>PTH</b> 25	.7 ft		NC	RTHING	997,942		EASTING	1,261,577		24 HR.	6.5
DRILL	RIG/HA	MMER E	FF./DA	TE AFO6	744 CN	/E - 45C	92% 07/3	1/2017				DRILL MET	HOD N/	V Casing W/SF	T & Core	HAMM	ER TYPE	Automatic
DRIL	LER C	heek, [	D. O.		STAI	RT DA	<b>TE</b> 05/3	0/19		СС	OMP. DAT	E 05/30/	19	SURFACE	WATER DE	PTH N/	'A	
COR	E SIZE	nxwl			TOTA	AL RU	<b>N</b> 15.3 f	t						1				
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	JN RQD (ft) %	SAMP. NO.	STR REC. (ft) %	ATA RQD (ft) %	L O G			С	DESCRIPTION	N AND REMARI	KS		
2655.86	2,655.9	40.4						70	70	Ŭ				Begin Cor	ing @ 10.4 ft			
2000	2,000.9_	10.4	5.3	N=60/0.0	(4.8) 91%	(4.2) 79%					2,655.9 _			CRYSTA	LLINE ROCK			10.4
		‡									-							
2650	2,650.6	15.7	5.0		(5.0)	(4.7)					_							
		‡			(5.0) 100%	94%					L							
00.45	2,645.6·	20.7									L	GSI 80	0 - 90					
2645	-	‡	5.0		(5.0) 100%	(4.9) 98%					-							
		‡			1.55%						-							
	2,640.6	25.7									L	Borina	Terminate	ed at Elevation	2,640.6 ft IN C	RYSTALL	INE ROCK	
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#### GEOTECHNICAL BORING REPORT BORE LOG

#### GEOTECHNICAL BORING REPORT CORE LOG

BORE LOG			CORE LOG
WBS         67002.1.1         TIP         BR-0002         COUNTY         ASHE	GEOLOGIST Johnson, C. D.	WBS 67002.1.1 TIP BR-0002 COUN	ITY ASHE GEOLOGIST Johnson, C. D.
SITE DESCRIPTION BRIDGE #8 ON NC194 OVER NORTH FORK NEW RIVER	GROUND WTR (ft)	SITE DESCRIPTION BRIDGE #8 ON NC194 OVER NORTH FOR	K NEW RIVER GROUND WTR (fi
BORING NO. B2-A STATION 24+35 OFFSET 18 ft LT	ALIGNMENT L 0 HR. N/A	BORING NO. B2-A STATION 24+35	OFFSET 18 ft LT ALIGNMENT L 0 HR. N//
<b>COLLAR ELEV.</b> 2,665.1 ft <b>TOTAL DEPTH</b> 20.7 ft <b>NORTHING</b> 998,048	<b>EASTING</b> 1,261,623 <b>24 HR.</b> 4.0 Caved	COLLAR ELEV. 2,665.1 ft TOTAL DEPTH 20.7 ft	NORTHING 998,048 EASTING 1,261,623 24 HR. 4.0 Caved
DRILL RIG/HAMMER EFF./DATE AFO6744 CME - 45C 92% 07/31/2017 DRILL METHOD N	W Casing W/SPT & Core HAMMER TYPE Automatic	<b>DRILL RIG/HAMMER EFF./DATE</b> AFO6744 CME - 45C 92% 07/31/2017	DRILL METHOD NW Casing WSPT & Core HAMMER TYPE Automatic
DRILLER Cheek, D. O. START DATE 05/30/19 COMP. DATE 05/30/19	SURFACE WATER DEPTH N/A	DRILLER Cheek, D. O. START DATE 05/30/19	COMP. DATE 05/30/19 SURFACE WATER DEPTH N/A
ELEV DRIVE DEPTH BLOW COUNT BLOWS PER FOOT SAMP. V L	SOIL AND ROCK DESCRIPTION	CORE SIZE nxwl TOTAL RUN 11.4 ft	
(ft) (ft) (ft) 0.5ft 0.5ft 0.5ft 0 25 50 75 100 NO. MOI G	ELEV. (ft) DEPTH (ft)	ELEV (ft) (ft) DEPTH RUN (ft) DRILL RATE (Min/ft) (ft) RATE (Min/ft) (ft) (ft) (ft) (ft) (ft) (ft) (ft) (	D DESCRIPTION AND REMARKS
		(ft) (ft) (ft) (ft) (ft) (ft) (ft) (ft)	D         O         DESCRIPTION AND REMARKS           G         ELEV. (ft)         DEPTH (
2670	_	2655.82 2655.8 9.3 1.4 N=60/0.1 (1.2) (1.2) 2,654.4 10.7 5.0 (1.2) 86% 86%	Continued from previous page
	<u>-</u> -	2655 2,655.8 9.3 1.4 N=60/0.1 (1.2) (1.2) 86% 86%	
	-	3.0 (5.0) (4.5) 100% 90%	
2665	ALLUVIAL	2,649.4 15.7	
	Soft sandy silt	5.0 (4.9) (4.9) 98%	
2660 2,660.3 7 4.8	- 2,660.3 4.8 -2,659.8 ALLIMAL 5.3		
50 2 1 93	boulder	2645 2,644.4 20.7	GSI 80 - 90
	Brown, slightly micaceous, sandy silt with pebbles, cobbles, boulders		
2655 2,655.3 9.8 60/0.1	pebbles, cobbles, boulders - CRYSTALLINE ROCK		
2650	<u>-</u>		
	-		
	-		
2645	— Posice Terrain shed at Flourities 0.044.4 ft IN		
	Boring Terminated at Elevation 2,644.4 ft IN CRYSTALLINE ROCK (SCHIST)		
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#### GEOTECHNICAL BORING REPORT BORE LOG

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WBS	67002	2.1.1			TII	<b>P</b> BF	R-000	2		COUN	VTV	ASI	ΗE				<b>GEOLOGIST</b> Johnson, C.	D.	
SITE	DESCR	IPTION	BRI	DGE #	#8 ON	NC19	4 OV	ER N	ORTI	H FOR	K N	IEW I	RIVEF	?				GROU	JND WTR (ft)
BOR	ING NO.	B2-B	i		ST	TATIO	N 2	4+35			-	OFFS	ET 1	7 ft RT			ALIGNMENT L	0 HR	. N/A
	LAR ELE							<b>ΓH</b> 2			1	NORT	HING	998,0			<b>EASTING</b> 1,261,649	24 HR	
DRILL	_RIG/HAI	MMER E	FF./DA	TE AF	<del>-</del> 06744	CME -	45C 9	2% 07/	31/201	17				DRILL N	VETHO	D NV	/Casing W/SPT & Core HA	MMER TYP	E Automatic
DRIL	LER C	heek, D	D. O.		ST	ART	DATE	E 05/	/30/19	9		COM	P. DA	<b>FE</b> 05/	30/19		SURFACE WATER DEPTH	N/A	
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLC 0.5ft	0.5ft	-	0	2	BLC 25	OWS P	PER FOO	OT 7	5	100	SAMP. NO.	MOI	L O G	SOIL AND ROCK D	ESCRIPTIO	N
2670	-	_ - -														  -  -			
2665	-	<u> </u>														F	2,665.3 GROUND SL		0.0
2000	-					T	1									-	<b>ALLUVI</b> Brown, sandy silt with n		ace of
2660	2,660.5	4.8	4	6	9		.   .		: :		· ·				_	-	clay 2,658.9	nod and a tre	6.4
2655	2,657.5 - - -	7.8	60/0.0					7	÷ ÷	- <u>;-;-</u> ;-;	<del>-</del> -	- <del>: - :</del> -	:   :			2000	2,657.5 ALLUVI Brown, silty sand with co	bbles and bo	7.8
2000	- - -	<u> </u>														-			
2650	- - -	<u> </u>														-			
2645	- - -						-		• •							-	Boring Terminated at Ele CRYSTALLINE RO	vation 2,644	I.5 ft IN

# GEOTECHNICAL BORING REPORT

CORE LOG														13					
WBS	67002	2.1.1		TIP	BR-0002 COUNTY ASHE GEOLOGIST Johnson, C. D										n, C. D.				
SITE DESCRIPTION BRIDGE #8 ON NC194 OVER NORTH FORM									ORK	NEW RIVER							GROUN	D WTR (ft)	
BOR	ING NO.	B2-B			STA	STATION 24+35					OFFSET 17 ft RT			ALIGNMENT L			0 HR.	N/A	
COLLAR ELEV. 2,665.3 ft TOTAL DEPTH 20.8										NO	RTHING	998,025		EASTING	1,261,649		24 HR.	5.3	
DRILL RIG/HAMMER EFF./DATE AFO6744 CVE - 45C 92% 07/31/2017												DRILL METH	HOD NW	Casing W/SF	PT & Core	HAMIN	ER TYPE	Automatic	
DRIL	LER C	heek, D	D. O.		STAI	<b>START DATE</b> 05/30/19					COMP. DATE 05/30/19 SURFACE WATER DEPTH N/A						'A		
COR	E SIZE	nxwl			TOTAL RUN 13.0 ft														
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RI REC. (ft) %	JN RQD (ft) %	SAMP. NO.	STR REC. (ft) %	ATA RQD (ft) %	_1 O G	O DESCRIPTION AND REMARKS								
2657.52	!												Co	ntinued fro	m previous p	age			
2655	2,657.5-	+	3.0		(2.9) 97%	(2.9) 97%					- 2,657.5 -			CRYSTA	ALLINE ROCK			7.8	
	2,654.5	10.8	5.0		(4.9)	(4.7)					-								
	-	‡			98%	94%					= =								
2650	2,649.5	15.8				(1.1)					- -	(	GSI 80 - 9	90					
		-	5.0		(4.5) 90%	(4.1) 82%					-								
2645	-										-								
	2,644.5	20.8									-	Boring 1	Terminated	d at Elevation	2,644.5 ft IN C	RYSTALL	INE ROCK	,	
	-	Ŧ									-			(3	SCHIST)				
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Dry

FIAD

**GROUND WTR (ft)** 

0 HR.

24 HR.

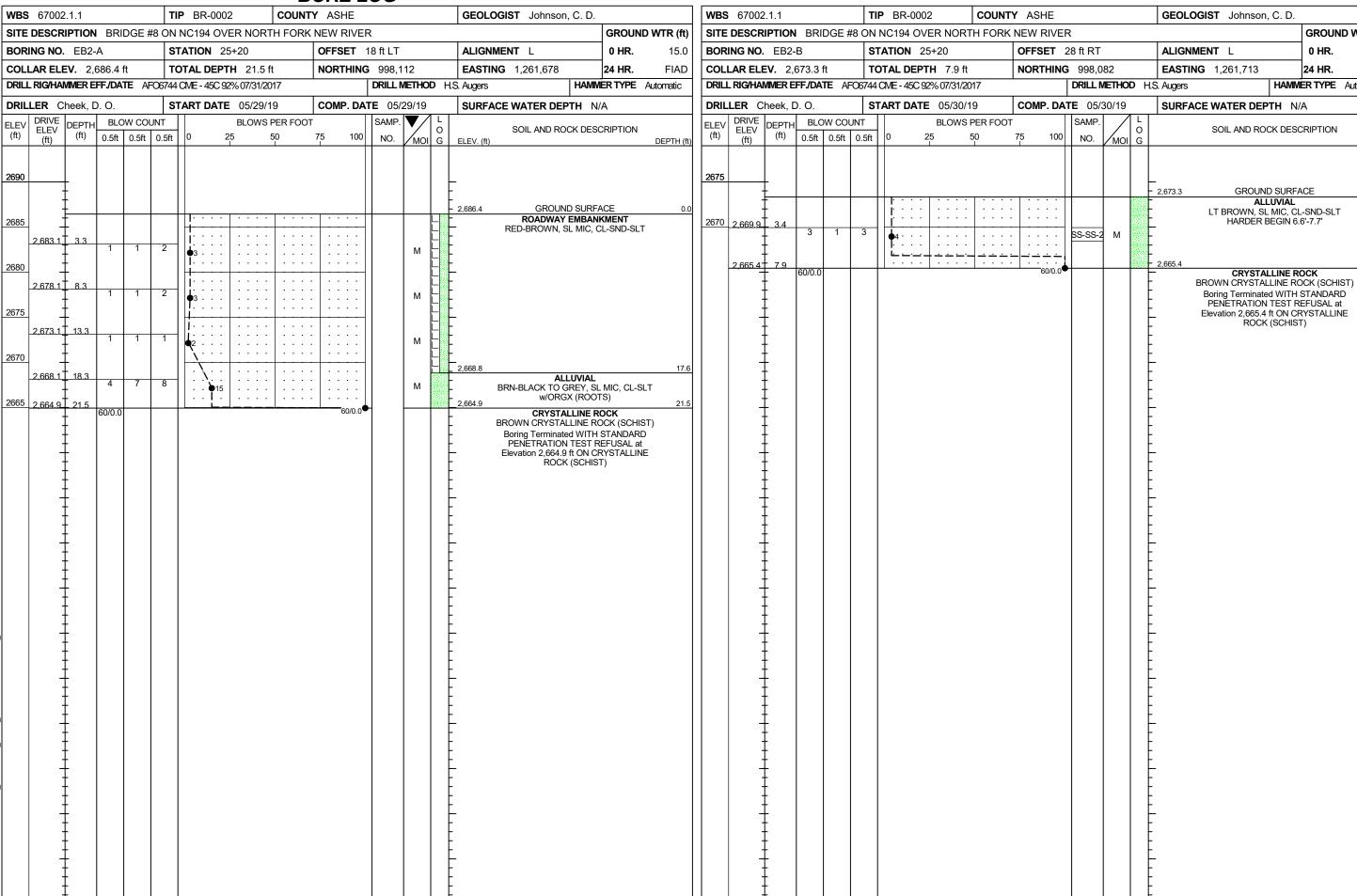
GROUND SURFACE ALLUVIAL

CRYSTALLINE ROCK

ROCK (SCHIST)

**HAMMER TYPE** Automatic

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



B1-A

BOX 1 OF 2: 10.5 - 19.4 FEET GSI 80 - 90

#### **B1-A**

BOX 2 OF 2: 19.4 - 24.4 FEET GSI 80 - 90



FEET





**B1-B**BOX 1 OF 2: 10.4 - 20.2 FEET
GSI 80 - 90

**B1-B**BOX 2 OF 2: 20.2 - 25.7 FEET
GSI 80 - 90





**B2-A** 

BOX 1 OF 2: 9.3 - 17.5 FEET GSI 80 - 90 **B2-A** 

BOX 2 OF 2: 17.5 - 20.7 FEET GSI 80 - 90





**B2-B**BOX 1 OF 2: 7.8 - 15.8 FEET
GSI 80 - 90

**B2-B**BOX 2 OF 2: 15.8 - 20.8 FEET
GSI 80 - 90



