

REFERENCE: BR-0115

PROJECT: 67115

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY Iredell
 SITE DESCRIPTION Bridge No. 166 on SR 1595
(Coolbrook Rd.) over Rocky Creek

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0115	1	16

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 (919) 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 (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION 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 INTERPRETATIONS 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:
- THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 - BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

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C.L. Smith

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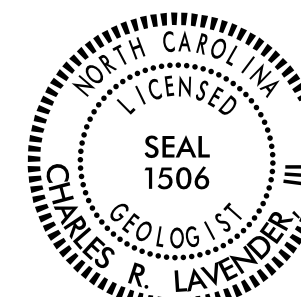
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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
 SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

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, VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6.	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 INTRODUCED 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 (SRQD) - 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 THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.	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.	COMPRESSION SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50	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.
PERCENTAGE OF MATERIAL	GROUND WATER	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.
ORGANIC MATERIAL TRACE OF ORGANIC MATTER 2 - 3% LITTLE ORGANIC MATTER 3 - 5% MODERATELY ORGANIC 5 - 10% HIGHLY ORGANIC > 10%	WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING STATIC WATER LEVEL AFTER 24 HOURS PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA SPRING OR SEEP	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.
TEXTURE OR GRAIN SIZE	MISCELLANEOUS SYMBOLS	WEATHERING	WEATHERING
U.S. STD. SIEVE SIZE OPENING (MM) 4 10 40 60 200 270 0.42 0.25 0.075 0.053	ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION SOIL SYMBOL ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT INFERRED SOIL BOUNDARY INFERRED ROCK LINE ALLUVIAL SOIL BOUNDARY	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE. VERY SLIGHT (V SLI.) ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN. CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE. SLIGHT (SLI.) ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS. MODERATE (MOD.) SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK. MODERATELY SEVERE (MOD. SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. IF TESTED, WOULD YIELD SPT REFUSAL. SEVERE (SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF. VERY SEVERE (V SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF. 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 ALSO AN EXAMPLE.	ROCK HARDNESS VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK. HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN. MODERATELY HARD CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS. MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK. HARD CAN BE GROOVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE. SOFT CAN BE GROOVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE. VERY SOFT CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGER NAIL.
CONSISTENCY OR DENSENESS	DIP & DIP DIRECTION OF ROCK STRUCTURES SLOPE INDICATOR INSTALLATION CONE PENETROMETER TEST SOUNDING ROD TEST BORING WITH CORE SPT N-VALUE	ROCK HARDNESS MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK. HARD CAN BE GROOVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE. SOFT CAN BE GROOVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE. VERY SOFT CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGER NAIL.	ROCK HARDNESS MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK. HARD CAN BE GROOVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE. SOFT CAN BE GROOVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE. VERY SOFT CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGER NAIL.
RECOMMENDATION SYMBOLS	RECOMMENDATION SYMBOLS	ROCK HARDNESS	ROCK HARDNESS
ABBREVIATIONS	RECOMMENDATION SYMBOLS	ROCK HARDNESS	ROCK HARDNESS
AR - AUGER REFUSAL BT - BORING TERMINATED CL - CLAY CPT - CONE PENETRATION TEST CSE - COARSE DMT - DILATOMETER TEST DPT - DYNAMIC PENETRATION TEST e - VOID RATIO F - FINE FOSS. - FOSSILIFEROUS FRAC. - FRACTURED, FRACTURES FRAGS. - FRAGMENTS HL - HIGHLY	UNDERCUT SHALLOW UNDERCUT UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK	ROCK HARDNESS	ROCK HARDNESS
SOIL MOISTURE - CORRELATION OF TERMS	ABBREVIATIONS	ROCK HARDNESS	ROCK HARDNESS
SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION	MED. - MEDIUM MICA - MICACEOUS MOD. - MODERATELY NP - NON PLASTIC ORG. - ORGANIC PMT - PRESSUREMETER TEST SAP. - SAPROLITIC SD. - SAND, SANDY SL. - SILT, SILTY SLL. - SLIGHTLY TCR - TRICONE REFUSAL w - MOISTURE CONTENT V - VERY	ROCK HARDNESS	ROCK HARDNESS
LL - LIQUID LIMIT PL - PLASTIC LIMIT OM - OPTIMUM MOISTURE SL - SHRINKAGE LIMIT	VST - VANE SHEAR TEST WEA. - WEATHERED % - UNIT WEIGHT % - DRY UNIT WEIGHT SAMPLE ABBREVIATIONS S - BULK SS - SPLIT SPOON ST - SHELBY TUBE RS - ROCK RT - RECOMPACTED TRIAXIAL CBR - CALIFORNIA BEARING RATIO	ROCK HARDNESS	ROCK HARDNESS
PLASTICITY	EQUIPMENT USED ON SUBJECT PROJECT	ROCK HARDNESS	ROCK HARDNESS
PLASTICITY INDEX (PI) DRY STRENGTH	DRILL UNITS: CME-45C CME-55 CME-550 VANE SHEAR TEST PORTABLE HOIST CME-550X	ROCK HARDNESS	ROCK HARDNESS
COLOR	ADVANCING TOOLS: CLAY BITS 6" CONTINUOUS FLIGHT AUGER 8" HOLLOW AUGERS HARD FACED FINGER BITS TUNG.-CARBIDE INSERTS CASING w/ ADVANCER TRICONE * STEEL TEETH TRICONE * TUNG.-CARB. CORE BIT	ROCK HARDNESS	ROCK HARDNESS
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-BROWN). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.	HAMMER TYPE: AUTOMATIC MANUAL CORE SIZE: B H N WL-2 HAND TOOLS: POST HOLE DIGGER HAND AUGER SOUNDING ROD VANE SHEAR TEST	ROCK HARDNESS	ROCK HARDNESS
FRACURE SPACING	INDURATION	ROCK HARDNESS	ROCK HARDNESS
TERM SPACING VERY WIDE MORE THAN 10 FEET WIDE 3 TO 10 FEET MODERATELY CLOSE 1 TO 3 FEET CLOSE 0.15 TO 1 FOOT VERY CLOSE LESS THAN 0.16 FEET	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.	ROCK HARDNESS	ROCK HARDNESS
BEDDING	INDURATION	ROCK HARDNESS	ROCK HARDNESS
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	BENCH MARK: BM#1; RR SPIKE IN BASE OF 18" HICKORY, -BL- STA. 13+33.00, 64' RIGHT, N: 829,986, E: 1,407,394 N: 829,986, E: 1,407,394 ELEVATION: N/A FEET	ROCK HARDNESS	ROCK HARDNESS
NOTES: FIAD = FILLED IMMEDIATELY AFTER DRILLING	DATE: 8-15-14	ROCK HARDNESS	ROCK HARDNESS

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

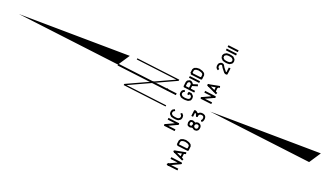
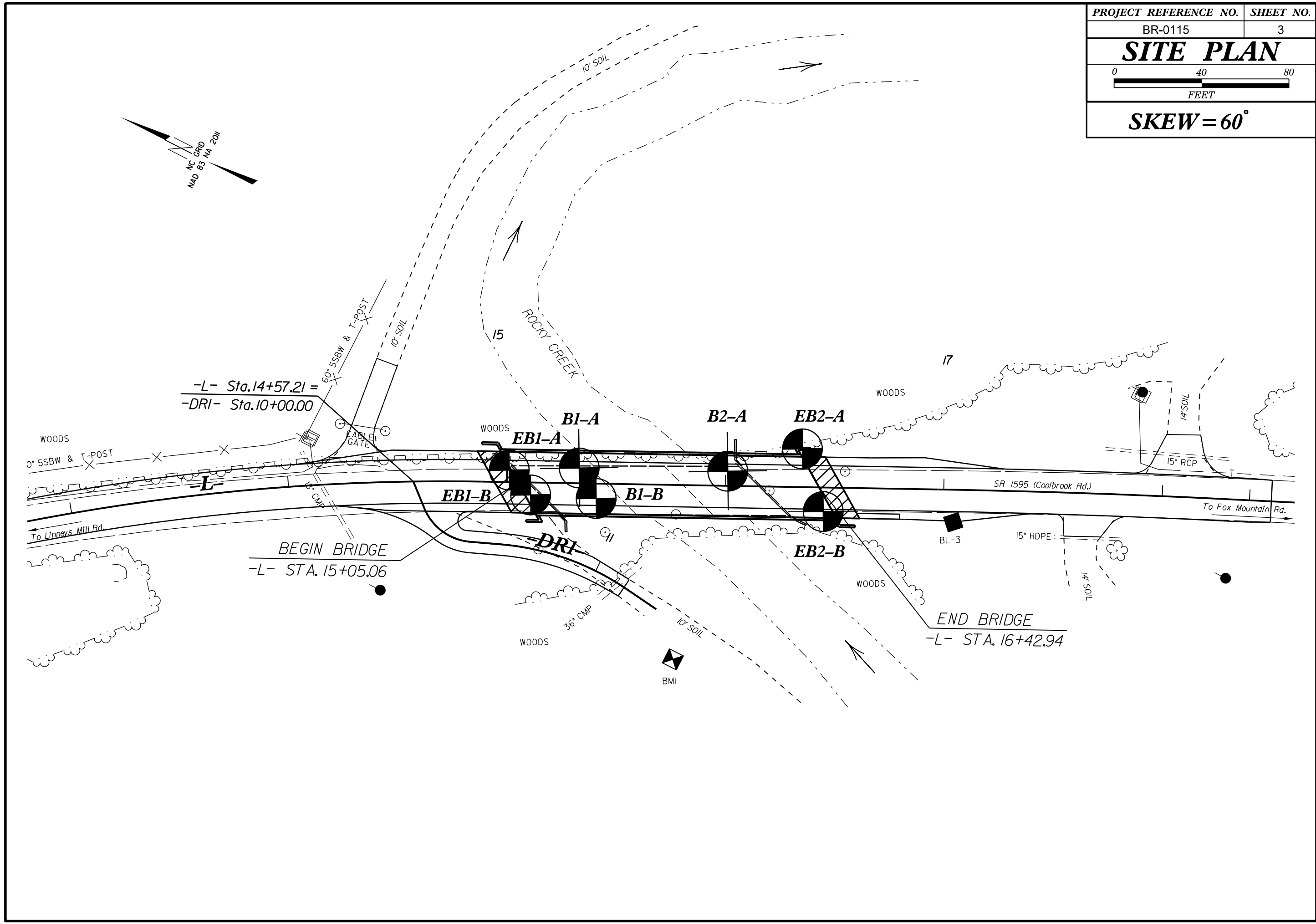
**SUPPLEMENTAL LEGEND, GEOLOGICAL STRENGTH INDEX (GSI) TABLES
 FROM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS**

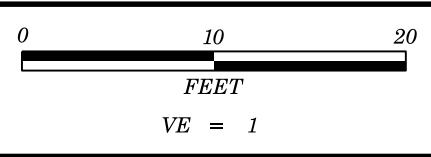
AASHTO LRFD Figure 10.4.6.4-1 — Determination of GSI for Jointed Rock Mass (Marinos and Hoek, 2000)

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

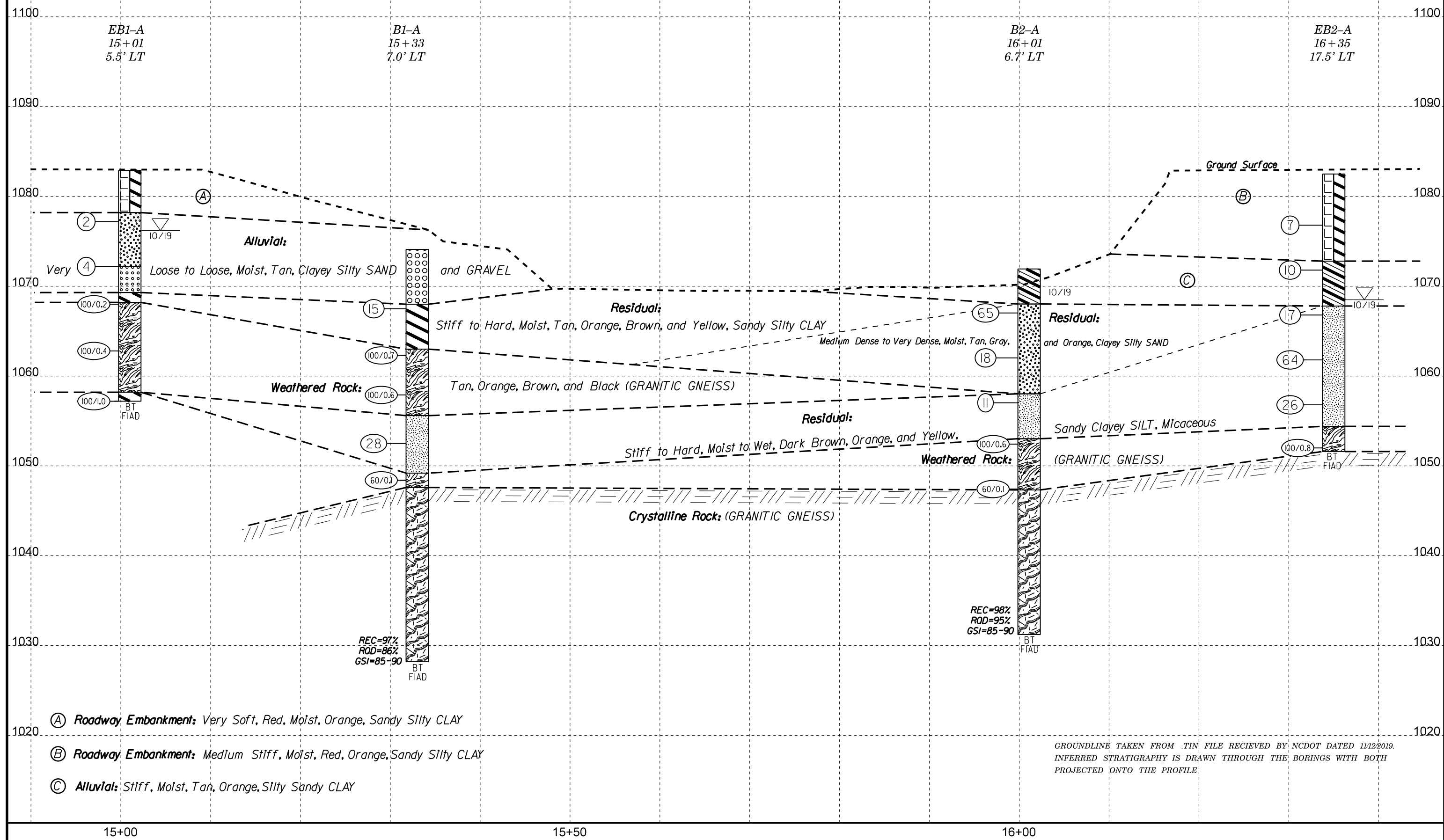
GEOLOGICAL STRENGTH INDEX (GSI) FOR JOINTED ROCKS (Hoek and Marinos, 2000)		SURFACE CONDITIONS					GSI FOR HETEROGENEOUS ROCK MASSES SUCH AS FLYSCH (Marinos, P and Hoek E., 2000)		SURFACE CONDITIONS OF DISCONTINUITIES (Predominantly bedding planes)					
<p>From the lithology, structure and surface conditions 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.</p>		VERY GOOD	GOOD	FAIR	POOR	VERY POOR	<p>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.</p>		VERY GOOD	GOOD	FAIR	POOR	VERY POOR	
		Very rough, fresh unweathered surfaces	Rough, slightly weathered, iron stained surfaces	Smooth, moderately weathered and altered surfaces	Slickensided, highly weathered surfaces with compact coatings or fillings or angular fragments	Slickensided, highly weathered surfaces with soft clay coatings or fillings			Very Rough, fresh unweathered surfaces	Rough, slightly weathered surfaces	Smooth, moderately weathered and altered surfaces	Very smooth, occasionally slickensided surfaces with compact coatings or fillings with angular fragments	Very smooth, slickensided or highly weathered surfaces with soft clay coatings or fillings	
STRUCTURE		DECREASING SURFACE QUALITY					COMPOSITION AND STRUCTURE							
<p>INTACT OR MASSIVE - intact rock specimens or massive in situ rock with few widely spaced discontinuities</p>		90			N/A	N/A	<p>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.</p>		70					
<p>BLOCKY - well interlocked undisturbed rock mass consisting of cubical blocks formed by three intersecting discontinuity sets</p>		80	70				<p>B. Sandstone with thin inter-layers of siltstone</p> <p>C. Sandstone and siltstone in similar amounts</p> <p>D. Siltstone or silty shale with sandstone layers</p> <p>E. Weak siltstone or clayey shale with sandstone layers</p>		60	A				
<p>VERY BLOCKY - interlocked, partially disturbed mass with multi-faceted angular blocks formed by 4 or more joint sets</p>			60	50			<p>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.</p>		50	B	C	D	E	
<p>BLOCKY/DISTURBED/SEAMY - folded with angular blocks formed by many intersecting discontinuity sets. Persistence of bedding planes or schistosity</p>				40	30		<p>F. Tectonically deformed, intensively folded/faulted, sheared clayey shale or siltstone with broken and deformed sandstone layers forming an almost chaotic structure</p>		40					
<p>DISINTEGRATED - poorly interlocked, heavily broken rock mass with mixture of angular and rounded rock pieces</p>					20		<p>G. Undisturbed silty or clayey shale with or without a few very thin sandstone layers</p> <p>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.</p>		30					
<p>LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes</p>						10			20					
		N/A	N/A						10					

PROJECT REFERENCE NO.	SHEET NO.
BR-0115	3
SITE PLAN	
 0 40 80 FEET	
SKEW = 60°	





PROJECT REFERENCE NO.	SHEET NO.
BR-0115	4
PROFILE BORING PROJECTED ALONG -L-	



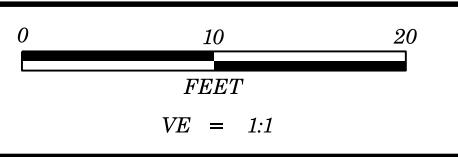
- Ⓐ **Roadway Embankment:** Very Soft, Red, Moist, Orange, Sandy Silty CLAY
- Ⓑ **Roadway Embankment:** Medium Stiff, Moist, Red, Orange, Sandy Silty CLAY
- Ⓒ **Alluvial:** Stiff, Moist, Tan, Orange, Silty Sandy CLAY

GROUNDLINE TAKEN FROM .TIN FILE RECEIVED BY NCDOT DATED 11/22/2019.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE PROFILE

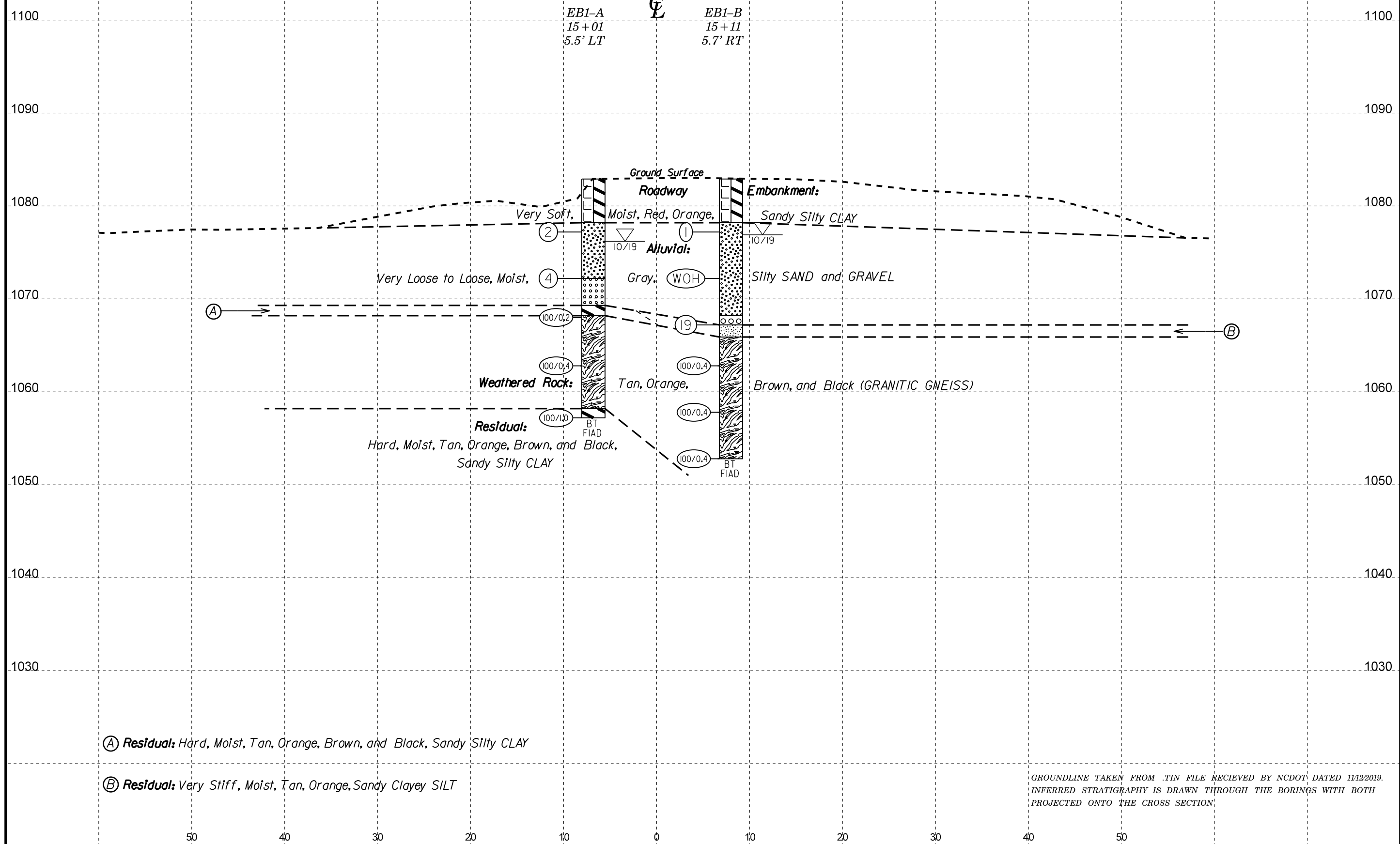
15+00

15+50

16+00



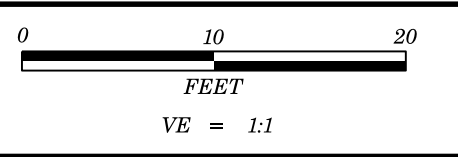
PROJECT REFERENCE NO.	SHEET NO.
BR-0115	5
CROSS SECTION THROUGH END BENT 1	
AT -L- STATION 15+05.06	
SKEW=60°	



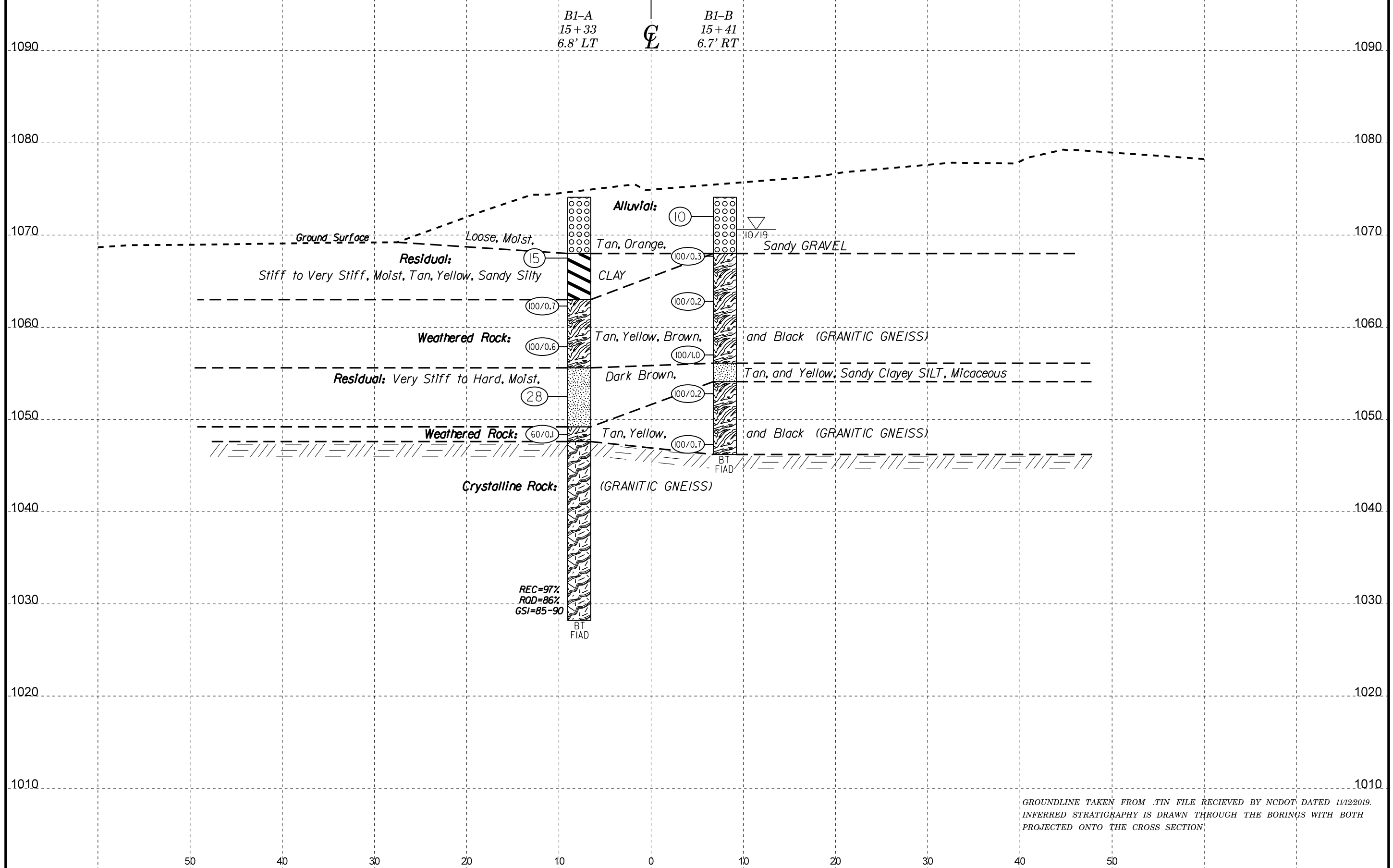
(A) **Residual:** Hard, Moist, Tan, Orange, Brown, and Black, Sandy Silty CLAY

(B) **Residual:** Very Stiff, Moist, Tan, Orange, Sandy Clayey SILT

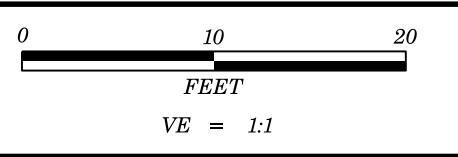
GROUNDLINE TAKEN FROM .TIN FILE RECIEVED BY NCDOT DATED 11/22/2019.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION



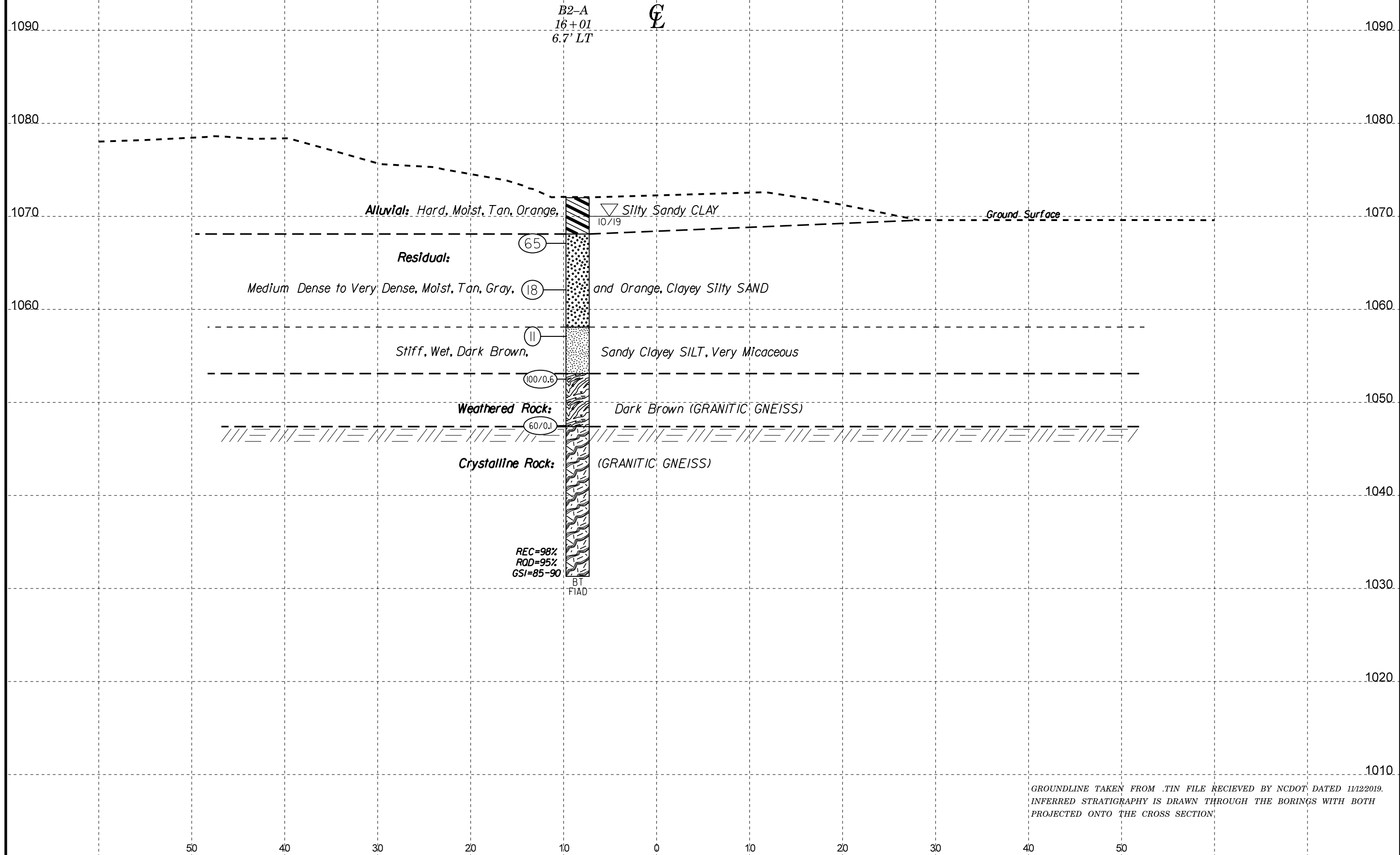
PROJECT REFERENCE NO.	SHEET NO.
BR-0115	6
CROSS SECTION THROUGH BENT 1	
AT -L- STATION 15+36.43	
SKEW=60°	



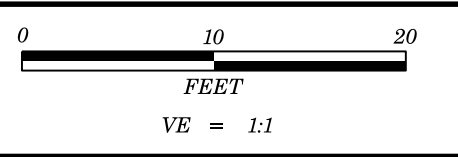
GROUNDLINE TAKEN FROM .TIN FILE RECEIVED BY NCDOT DATED 11/22/2019.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION



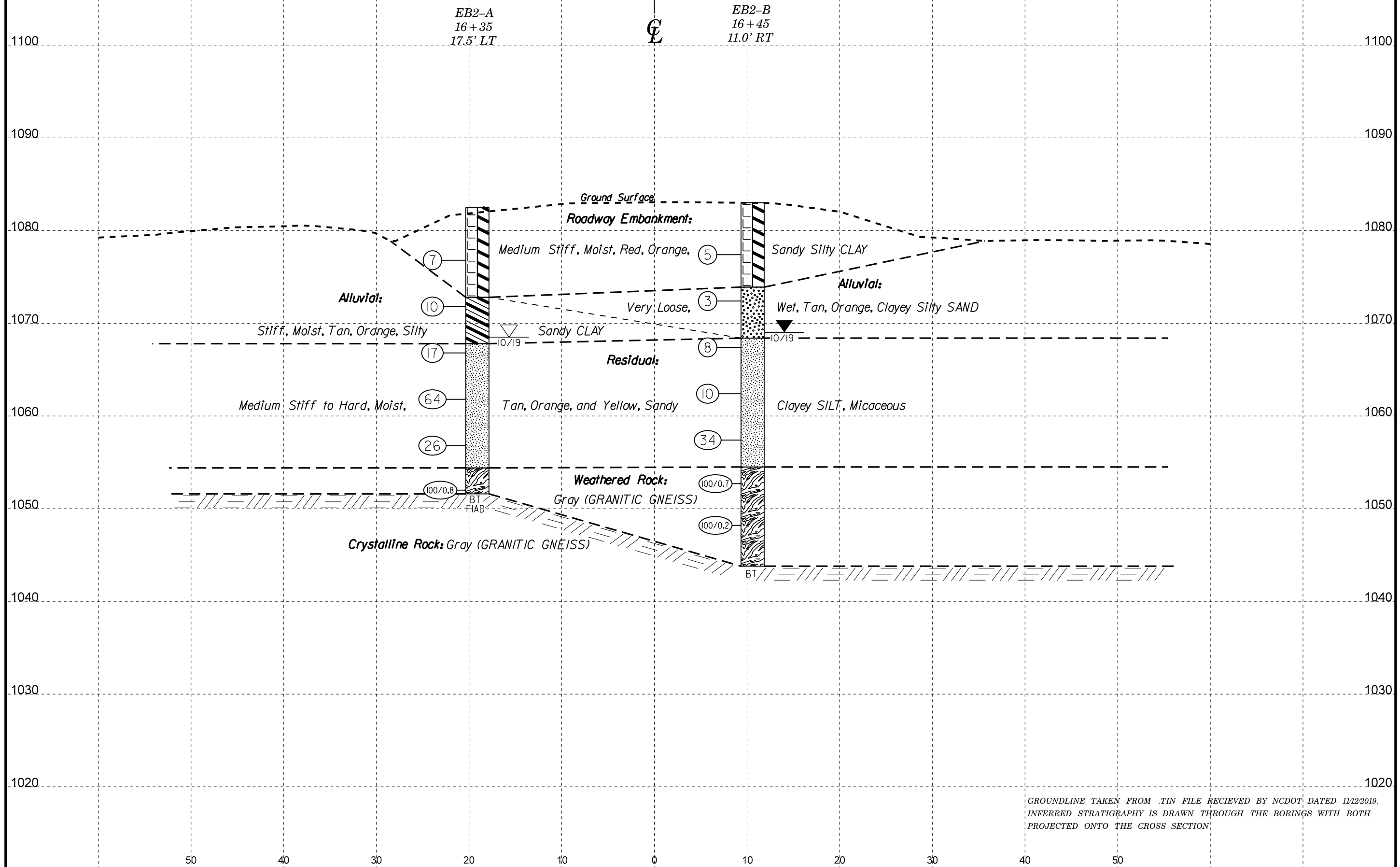
PROJECT REFERENCE NO.	SHEET NO.
BR-0115	7
CROSS SECTION THROUGH BENT 2 AT -L- STATION 16+05.57 SKEW=60°	



GROUNDLINE TAKEN FROM .TIN FILE RECIEVED BY NCDOT DATED 11/22/2019.
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION



PROJECT REFERENCE NO.	SHEET NO.
BR-0115	8
CROSS SECTION THROUGH END BENT 2	
AT -L- STATION 16+42.94	
SKEW=60°	



GROUNDLINE TAKEN FROM .TIN FILE RECEIVED BY NCDOT DATED 11/12/2019.
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION

GEOTECHNICAL BORING REPORT

BORE LOG

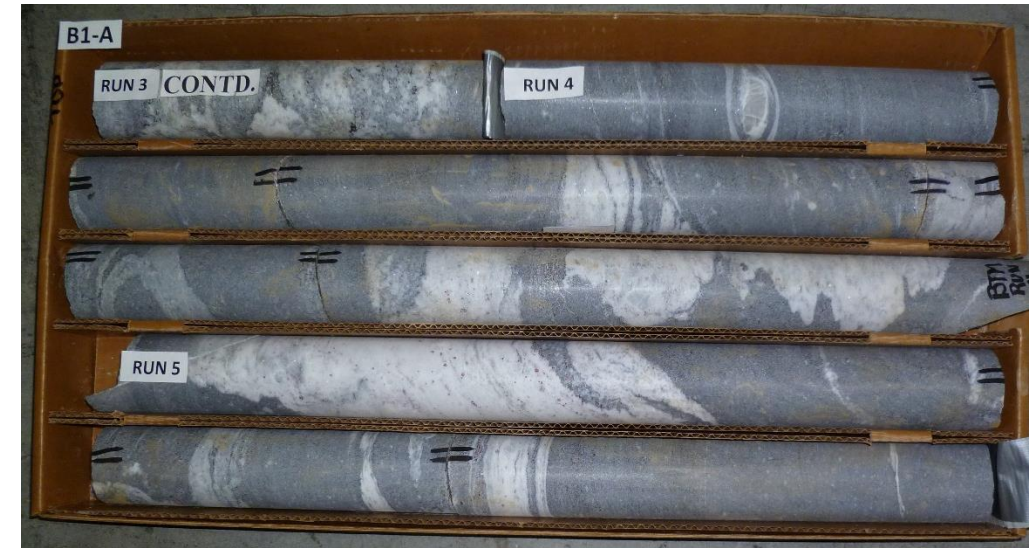
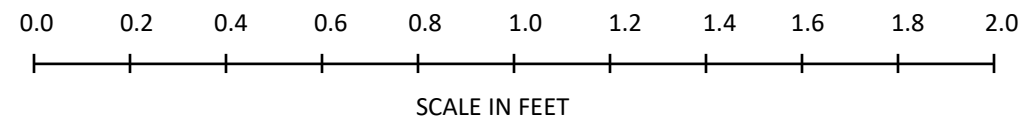
WBS 67115.1.1		TIP BR-0115		COUNTY IREDELL		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION Bridge No. 166 on SR 1595 (Coolbrook Rd.) over Rocky Creek							GROUND WTR (ft)									
BORING NO. EB1-A		STATION 15+01		OFFSET 6 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 1,082.9 ft		TOTAL DEPTH 25.7 ft		NORTHING 830,092		EASTING 1,407,438										
DRILL RIG/HAMMER EFF./DATE HFC0072 CME-550X 92% 08/15/2018			DRILL METHOD NW Casing w/ Advancer			HAMMER TYPE Automatic										
DRILLER Smith, C. L.		START DATE 10/17/19		COMP. DATE 10/17/19		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						
1085														1,082.9	0.0	GROUND SURFACE
1080	1,078.2	4.7	1	1	1									1,078.2	4.7	ROADWAY EMBANKMENT Red, orange, sandy, silty, CLAY
1075	1,073.2	9.7	WOH	WOH	4									1,072.2	10.7	ALLUVIAL Gray, clayey, silty, SAND
1070	1,068.2	14.7	100/0.2											1,069.3	13.6	Gray, clayey, silty, sandy, GRAVEL
1065	1,063.2	19.7	100/0.4											1,068.2	14.7	RESIDUAL Tan, orange, brown, and black, sandy, silty, CLAY
1060	1,058.2	24.7	42	58/0.5										1,058.2	24.7	WEATHERED ROCK Tan, orange, brown, and black, (Granitic Gneiss)
														1,057.2	25.7	RESIDUAL Tan, orange, brown, and black, sandy, silty, CLAY
																Boring Terminated at Elevation 1,057.2 ft in sandy, silty CLAY

WBS 67115.1.1		TIP BR-0115		COUNTY IREDELL		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION Bridge No. 166 on SR 1595 (Coolbrook Rd.) over Rocky Creek							GROUND WTR (ft)									
BORING NO. EB1-B		STATION 15+11		OFFSET 6 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 1,082.9 ft		TOTAL DEPTH 30.1 ft		NORTHING 830,078		EASTING 1,407,432										
DRILL RIG/HAMMER EFF./DATE HFC0070 CME-550X 81% 06/04/2018			DRILL METHOD NW Casing w/ Advancer			HAMMER TYPE Automatic										
DRILLER Smith, C. L.		START DATE 10/17/19		COMP. DATE 10/17/19		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						
1085														1,082.9	0.0	GROUND SURFACE
1080	1,078.2	4.7	1	0	1									1,078.2	4.7	ROADWAY EMBANKMENT Red, orange, sandy, silty, CLAY
1075	1,073.2	9.7	WOH	WOH	4									1,072.2	10.7	ALLUVIAL Gray, clayey, silty, SAND
1070	1,068.2	14.7	7	6	13									1,068.2	14.7	Gray, clayey, silty, sandy, GRAVEL
1065	1,063.2	19.7	100/0.4											1,067.2	15.7	RESIDUAL Tan, orange, brown, and black, sandy, silty, CLAY
1060	1,058.2	24.7	100/0.4											1,065.9	17.0	RESIDUAL Tan, orange, sandy, clayey, SILT
1055	1,053.2	29.7	100/0.4											1,052.8	30.1	WEATHERED ROCK Tan, brown, orange, black (Granitic Gneiss)
																Boring Terminated at Elevation 1,052.8 ft in Weathered Rock (Granitic Gneiss)

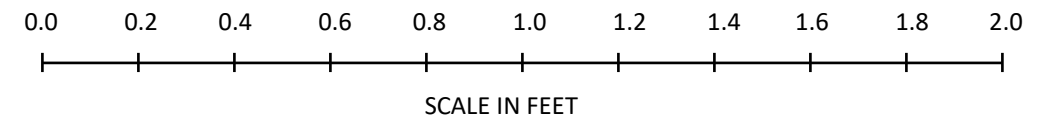
NCDOT BORE DOUBLE BR0115_GEO_BRDG166_BL.GPJ NC_DOT.GDT 11/24/19

CORE PHOTOGRAPHS: Bridge No. 166 on SR1595 (Coolbrook Rd.) over Rocky Creek, B1-A 15+33, 7.0' LT

Begin
26.5 feet



End
41.9 feet



GEOTECHNICAL BORING REPORT BORE LOG

GEOTECHNICAL BORING REPORT CORE LOG

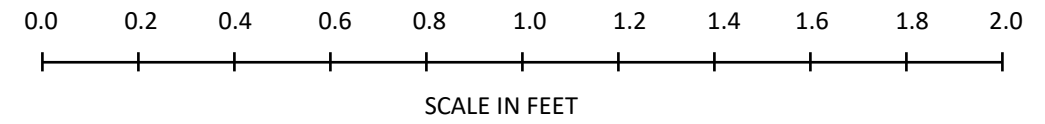
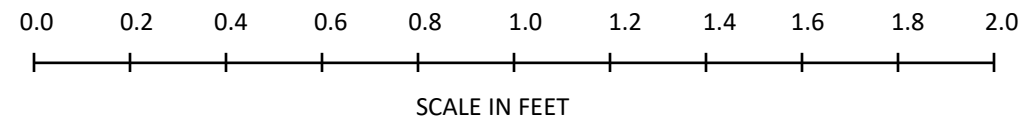
WBS 67115.1.1		TIP BR-0115		COUNTY IREDELL		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION Bridge No. 166 on SR 1595 (Coolbrook Rd.) over Rocky Creek							GROUND WTR (ft)									
BORING NO. B2-A		STATION 16+01		OFFSET 7 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 1,072.0 ft		TOTAL DEPTH 40.7 ft		NORTHING 830,003		EASTING 1,407,483										
DRILL RIG/HAMMER EFF./DATE HFC0070 CME-550X 81% 06/04/2018				DRILL METHOD NW Casing w/ Core		HAMMER TYPE Automatic										
DRILLER Smith, C. L.		START DATE 10/10/19		COMP. DATE 10/10/19		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)		
1075																
														1,072.0	GROUND SURFACE	0.0
1070														1,068.1	ALLUVIAL Tan, orange, silty, sandy, CLAY	3.9
1065	1,068.1	3.9	12	35	30									1,068.1	RESIDUAL Tan, gray, orange, clayey, silty, SAND	3.9
1060	1,063.1	8.9	15	10	8									1,058.1	WEATHERED ROCK Dark brown, sandy, clayey, SILT, very micaceous	13.9
1055	1,058.1	13.9	5	4	7									1,053.1	WEATHERED ROCK Dark brown (Granitic Gneiss)	18.9
1050	1,053.1	18.9	42	58/0.1										1,048.1	CRYSTALLINE ROCK (Granitic Gneiss)	24.6
1045	1,048.1	23.9	60/0.1											1,047.4	CRYSTALLINE ROCK (Granitic Gneiss)	24.6
1040																
1035														1,031.3	Boring Terminated at Elevation 1,031.3 ft in Crystalline Rock (Granitic Gneiss)	40.7

NCDOT BORE DOUBLE BR0115_GEO_BRD166_BL.GPJ NC_DOT.GDT 11/24/19

NCDOT CORE DOUBLE BR0115_GEO_BRD166_BL.GPJ NC_DOT.GDT 11/24/19

WBS 67115.1.1		TIP BR-0115		COUNTY IREDELL		GEOLOGIST Stickney, J. K.					
SITE DESCRIPTION Bridge No. 166 on SR 1595 (Coolbrook Rd.) over Rocky Creek							GROUND WTR (ft)				
BORING NO. B2-A		STATION 16+01		OFFSET 7 ft LT		ALIGNMENT -L-					
COLLAR ELEV. 1,072.0 ft		TOTAL DEPTH 40.7 ft		NORTHING 830,003		EASTING 1,407,483					
DRILL RIG/HAMMER EFF./DATE HFC0070 CME-550X 81% 06/04/2018				DRILL METHOD NW Casing w/ Core		HAMMER TYPE Automatic					
DRILLER Smith, C. L.		START DATE 10/10/19		COMP. DATE 10/10/19		SURFACE WATER DEPTH N/A					
CORE SIZE NWL-2			TOTAL RUN 16.1 ft								
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	
					REC. (ft) %	ROD (ft) %	REC. (ft) %	ROD (ft) %		ELEV. (ft)	DEPTH (ft)
1047.4	1,047.4	24.6	0.8		(0.8)	(0.8)	(15.8)	(15.3)			Begin Coring @ 24.6 ft
1045	1,046.6	25.4	5.0		100%	100%	98%	95%			CRYSTALLINE ROCK Gray, white, fresh, hard to very hard Granitic Gneiss, wide fracture spacing. GSI 85 - 90.
1040	1,041.6	30.4	5.2		(5.2)	(4.9)					
1035	1,036.4	35.6	5.1		(5.0)	(5.0)					
	1,031.3	40.7									Boring Terminated at Elevation 1,031.3 ft in Crystalline Rock (Granitic Gneiss)

CORE PHOTOGRAPHS: Bridge No. 166 on SR1595 (Coolbrook Rd.) over Rocky Creek, B2-A 16+01, 7.0' LT



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 67115.1.1		TIP BR-0115		COUNTY IREDELL		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION Bridge No. 166 on SR 1595 (Coolbrook Rd.) over Rocky Creek							GROUND WTR (ft)									
BORING NO. EB2-A		STATION 16+35		OFFSET 18 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 1,082.5 ft		TOTAL DEPTH 30.9 ft		NORTHING 829,977		EASTING 1,407,507										
DRILL RIG/HAMMER EFF./DATE HFC0072 CME-550X 92% 08/15/2018			DRILL METHOD NW Casing w/ Advancer			HAMMER TYPE Automatic										
DRILLER Smith, C. L.		START DATE 10/11/19		COMP. DATE 10/11/19		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						
1085														1,082.5	GROUND SURFACE	0.0
1080	1,077.8	4.7	3	3	4								M	ROADWAY EMBANKMENT Red, orange, sandy, silty, CLAY		
1075	1,072.8	9.7	3	6	4								M	ALLUVIAL Tan, orange, silty, sandy, CLAY	9.7	
1070	1,067.8	14.7	6	7	10								M	RESIDUAL Tan, orange, yellow, sandy, clayey, SILT, to Dark brown clayey sandy SILT, micaceous	14.7	
1065	1,062.8	19.7	25	26	38								M			
1060	1,057.8	24.7	33	16	10								M			
1055	1,052.8	29.7	50	50/0.3									M	WEATHERED ROCK (Granitic gneiss)	28.1	
														1,051.6	Boring Terminated at Elevation 1,051.6 ft on Crystalline Rock (Granitic Gneiss)	30.9

WBS 67115.1.1		TIP BR-0115		COUNTY IREDELL		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION Bridge No. 166 on SR 1595 (Coolbrook Rd.) over Rocky Creek							GROUND WTR (ft)									
BORING NO. EB2-B		STATION 16+45		OFFSET 11 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 1,083.0 ft		TOTAL DEPTH 39.2 ft		NORTHING 829,955		EASTING 1,407,486										
DRILL RIG/HAMMER EFF./DATE HFC0070 CME-550X 81% 06/04/2018			DRILL METHOD NW Casing w/ Advancer			HAMMER TYPE Automatic										
DRILLER Smith, C. L.		START DATE 10/11/19		COMP. DATE 10/11/19		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						
1085														1,083.0	GROUND SURFACE	0.0
1080	1,078.4	4.6	2	3	2								M	ROADWAY EMBANKMENT Red, orange, sandy, silty, CLAY		
1075	1,073.4	9.6	WOH	1	2								W	ALLUVIAL Tan, orange, clayey, silty, SAND	9.1	
1070	1,068.4	14.6	2	4	4								M	RESIDUAL Tan, orange, yellow, clayey, sandy, SILT, with thin layers of gray, orange, and tan, clayey, sandy, SILT, micaceous	14.6	
1065	1,063.4	19.6	3	4	6								M			
1060	1,058.4	24.6	10	10	24								M			
1055	1,053.4	29.6	19	81/0.2									M	WEATHERED ROCK Gray, alternating layers of hard and soft (Granitic Gneiss)	28.5	
1050	1,048.4	34.6	100/0.2													
1045														1,043.8	Boring Terminated at Elevation 1,043.8 ft on Crystalline Rock (Granitic Gneiss)	39.2

NCDOT BORE DOUBLE BR0115_GEO_BRDG166_BL.GPJ NC_DOT.GDT 11/24/19

Bridge No. 166 on SR 1595 (Coolbrook Rd.) over Rocky Creek

SITE PHOTOGRAPHS



Photograph No. 1: Looking at End Bent 1 toward End Bent 2



Photograph No. 2: Looking Downstream