56055 REFERENCE

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P13.R010 B

STATE OF NORTH CAROLINA

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY MADISON

PROJECT DESCRIPTION REPLACE BRIDGE 552 ON SR 1460 (NCDOT SATELLITE YARD RD.) OVER BIG LAUREL CREEK

STATE PROJECT REFERENCE NO. TOTAL SHEETS BP13.R010 SF-560552

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 1991 707-6805. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

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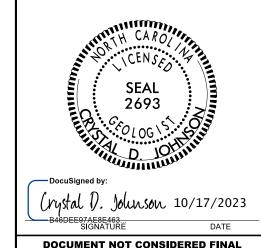
THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT 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 PERFORM INDEPENDENT SUBSURFACE INVESTIGATIONS AND MAKE INTERPRETATIONS AS NECESSARY TO CONFIRM CONDITIONS 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.

CE STEWMAN CJ COFFEY ID WORLEY INVESTIGATED BY <u>CE</u> STEWMAN DRAWN BY _CD_JOHNSON CHECKED BY DC ELLIOTT SUBMITTED BY _DC ELLIOTT DATE .



UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO. SHEET NO.

BP13.R010 SF-560552 2

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	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. GAP-GRADED - 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.	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
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS ORGANIC MATERIALS CLASS. (≤ 35% PASSING *200) (> 35% PASSING *200) ORGANIC MATERIALS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC.	CRYSTALLINE ROCK (CR) FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT 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, CABBRO, SCHIST, 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	PROCE (NER) SEDIMENTARY ROCK THAT WOULD YEILD 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	ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC. COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD	OF SLOPE.
7. PASSING	HIGHLY COMPRESSIBLE LL > 50	SEDIMENTARY ROCK STATE SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
"10 50 MX GRANULAR SIL1- MUCK,	PERCENTAGE OF MATERIAL	CP) SHELL BEDS, ETC. WEATHERING	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT
*40	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%	HAMMER IF CRYSTALLINE.	<u>DIP</u> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
PASSING *40 SOILS WITH	LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20% 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,	<u>DIP DIRECTION (DIP AZIMUTH)</u> - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE
LL - - 40 MX 41 MN 40 MX 41 MN 40 MX 41 MN 40 MX 41 MN LITTLE OR HIGHLY	HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE	(V SLI.) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY, ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.	LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
CROLIP INDEX A A A A MY 8 MY 12 MY 16 MY NO MY AMOUNTS OF ORGANIC	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
USUAL TYPES STONE FRACS ORGANIC	✓ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING	(SLI.) 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
OF MAJOR GRAVEL, AND SAND CAND SAND SAND SAND SAND SAND SAND SAND S	▼ STATIC WATER LEVEL AFTER 24 HOURS	CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
MATERIALS SANU		MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.
GEN. RATING AS SUBGRADE EXCELLENT TO GOOD FAIR TO POOR POOR UNSUITABLE		DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED	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	- O-M⊶ SPRING OR SEEP	WITH FRESH ROCK.	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE
CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION, ROCK SHOWS SEVERE LOSS OF STRENGTH	FIELO.
COMPACTNESS OR RANGE OF STANDARD RANGE OF UNCONFINED	□ 25,425	(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 CONSISTENCY PENETRATION RESISTENCE COMPRESSIVE STRENGTH (N-VALUE) (TONS/FT ²)	ROADWAY EMBANKMENT (RE) 25/025 DIP & DIP DIRECTION WITH SOIL DESCRIPTION OF ROCK STRUCTURES	IF TESTED, WOULD YIELD SPT REFUSAL	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO
VERY LODGE (4	SPT CLOBE INDICATOR	SEVERE 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	ITS LATERAL EXTENT.
CRAMILAR LOOSE 4 TO 10	SOIL SYMBOL OPT ONT TEST BORING INSTALLATION SLOPE INDICATOR INSTALLATION	TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF	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
MATERIAL MEDIUM DENSE 30 TO 50	ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT AUGER BORING CONE PENETROMETER	VERY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE	USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
(NON-COHESIVE) VERY DENSE > 50	THAN ROADWAY EMBANKMENT TEST	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 VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <i>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</i>	OF AN INTERVENING IMPERVIOUS STRATUM.
GENERALLY SOFT 2 TO 4 0.25 TO 0.5 SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1.0	INFERRED ROCK LINE MN MONITORING WELL TEST BORING	COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
MATERIAL STIFF 8 TO 15 1 TO 2	WITH CORE	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)	→ → → → ← ALLUVIAL SOIL BOUNDARY \(\triangle \) FIEZUMETER \(\triangle \) 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
U.S. STD. SIEVE SIZE 4 10 40 60 200 270		VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.	ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND
OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053	UNSUITABLE WASTE ACCEPTABLE, BUT NOT TO BE	HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY, HARD HAMMER BLOWS REQUIRED	RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO
BOULDER COBBLE GRAVEL COARSE FINE SILT CLAY	SHALLOW UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION - EMBANKMENT OR BACKFILL	TO DETACH HAND SPECIMEN.	THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
(BLDR.) (COB.) (GR.) (CSE. SD.) (F SD.) (SL.) (CL.)	ABBREVIATIONS	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	HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 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.
SOU MOISTURE SCALE FIFLD MOISTURE	CPT - CONE PENETRATION TEST NP - NON PLASTIC $\gamma_{ m d}$ - DRY UNIT WEIGHT 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 GUIDE FOR FIELD MOISTURE DESCRIPTION	DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST <u>SAMPLE ABBREVIATIONS</u>	FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT, SMALL, THIN	TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY	DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC S - BULK e - VOID RATIO SD SAND, SANDY SS - SPLIT SPOON	PIECES CAN BE BROKEN BY FINGER PRESSURE.	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
(SAT.) FROM BELOW THE GROUND WATER TABLE	F - FINE SL SILT, SILTY ST - SHELBY TUBE	VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH 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 CEMICOLIDE DECULIDES DOVING TO	FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL	FINGERNAIL.	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
	FRAGS FRAGMENTS w - MOISTURE CONTENT CBR - CALIFORNIA BEARING	FRACTURE SPACING BEDDING	BENCH MARK: ROW MONUMENT LOCATED @ N803420.9356, E949713.4081
(PI) PL PLASTIC LIMITATTAIN OPTIMUM MOISTURE	HI HIGHLY V - VERY RATIO	TERM SPACING TERM THICKNESS VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET	
OM OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE	EQUIPMENT USED ON SUBJECT PROJECT	WIDE 3 TO 10 FEET THICKLY BEDDED 1.5 - 4 FEET	ELEVATION: 2967.30 FEET
SL _ SHRINKAGE LIMIT	DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE: X CME-45C CLAY BITS X AUTOMATIC MANUAL	MODERATELY CLOSE	NOTES:
- DRY - (D) REQUIRES ADDITIONAL WATER TO		VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET	EXISTING BM ARE N/A; ROW @ NOTED LOCATION
ATTAIN OPTIMUM MOISTURE	CME-55 CME-55 CONTINUOUS FLIGHT AUGER CORE SIZE:	THINLY LAMINATED < 0.008 FEET	WAS SURVEYED FOR BH ELEVATIONS
PLASTICITY	■ 8*HOLLOW AUGERS ■ □-H	INDURATION	
PLASTICITY INDEX (PI) DRY STRENGTH	CME-550 HARD FACED FINGER BITS X -N	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	
NON PLASTIC 0-5 VERY LOW SLIGHTLY PLASTIC 6-15 SLIGHT	VANE SHEAR TEST UNGCARBIDE INSERTS HAND TOOLS:	FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.	
MODERATELY PLASTIC 16-25 MEDIUM	X CASING X W/ ADVANCER POST HOLE DIGGER	COANG CAN DE CEDADATED EDON CANDIE VITA CASE DOOD	
HIGHLY PLASTIC 26 OR MORE HIGH	PORTABLE HOIST TRICONE STEEL TEETH HAND AUGER	MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.	
COLOR	TRICONE TUNGCARB. SOUNDING ROD	INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE;	
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY).	X CORE BIT SUCNDING ROD VANE SHEAR TEST	DIFFICULT TO BREAK WITH HAMMER.	
MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.		EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-1-
		SHITTLE BREHAS HURUSS URAINS.	Date: 8-15-1

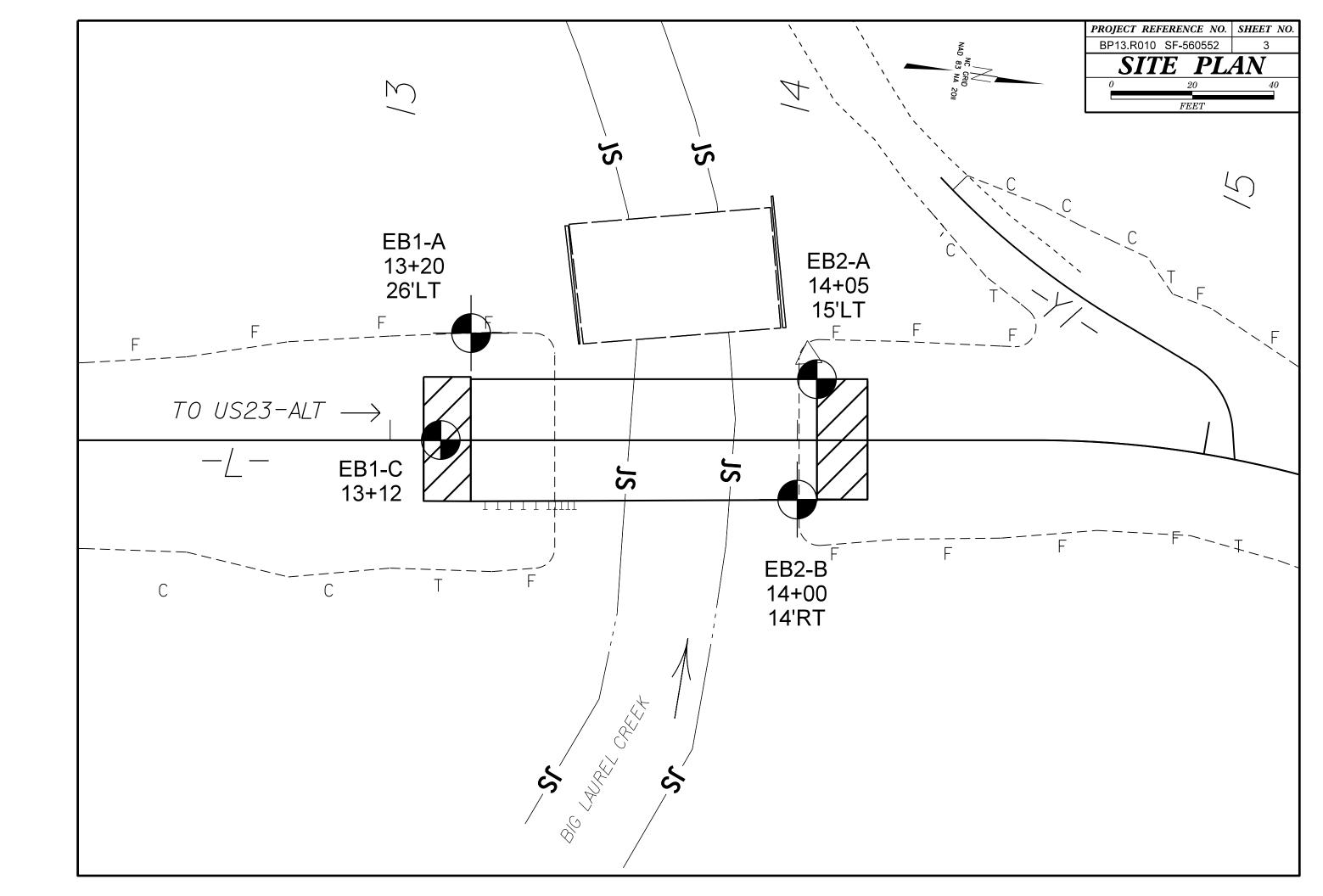
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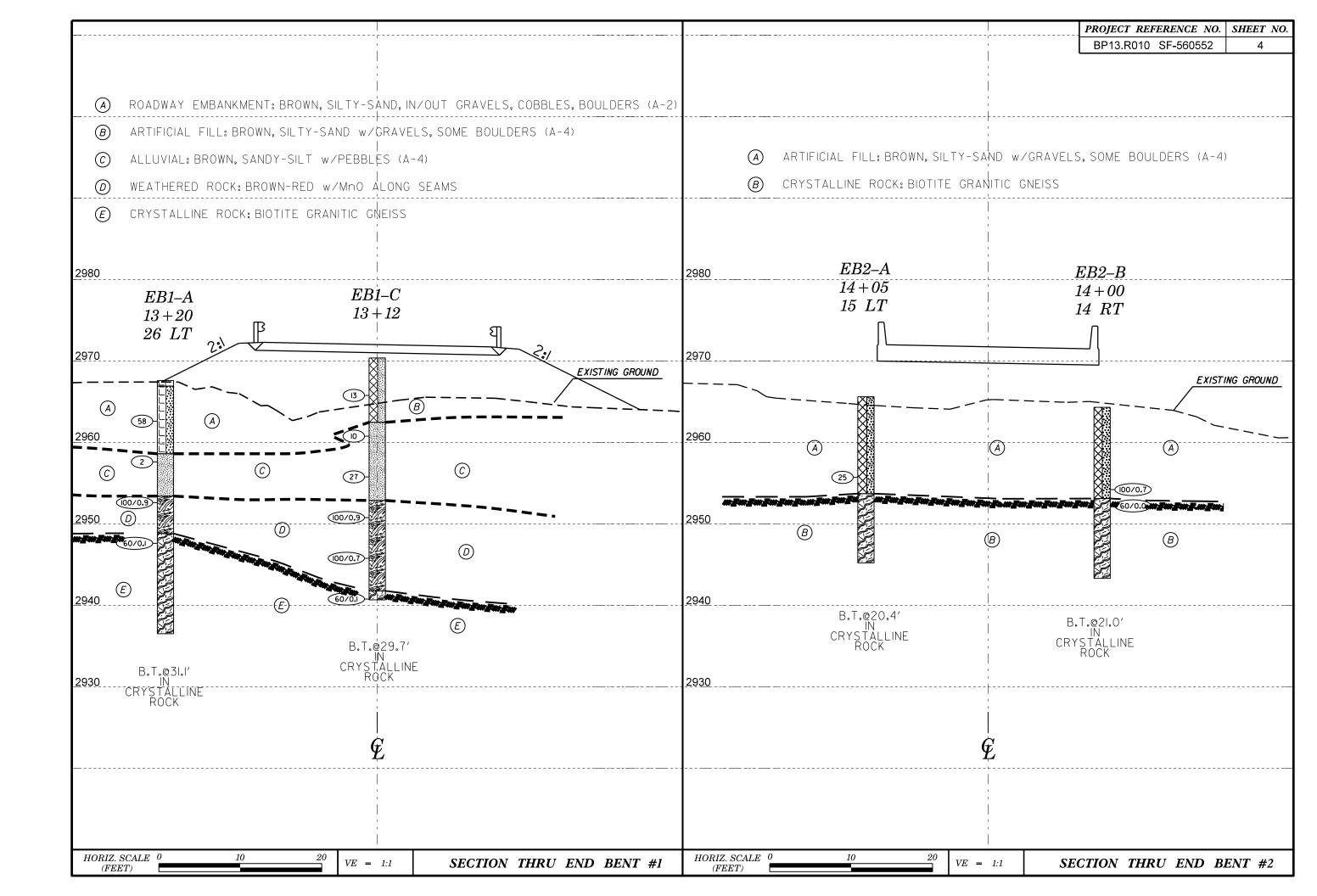
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SUPPLEMENTAL LEGEND, GEOLOGICAL STRENGTH INDEX (GSI) TABLES

AASHTO LRFD Figure 10.4.6.4-1 — Determination of GSI for Join	nted Ro	ock Mass (Marinos and Hoek, 2	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)		aces		S O	s e c	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 surf GOOD Rough, slightly weathered, iron stai	FAIR Smooth, moderately weathered and altered surfaces	POOR Slickensided, highly weathered surfa with compact coatings or fillings or angular fragments	VERY POOR Slickensided, highly weathered surfacturity soft clay coatings or fillings	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 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 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.
STRUCTURE		DECREASING SU	JRFACE QU	ALITY ==	>	COMPOSITION AND STRUCTURE
INTACT OR MASSIVE - intact rock specimens or massive in situ rock with few widely spaced discontinuities BLOCKY - well interlocked un-	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. A. Thick bedded, very blocky sandstone 70 A
disturbed rock mass consisting of cubical blocks formed by three intersecting discontinuity sets VERY BLOCKY - interlocked,	IG OF ROCK	70 60				8. Sand- stone with thin inter- layers of siltstone siltstone amounts D. Siltstone or silty shale with sand- stone layers stone layers Appears A
partially disturbed mass with multi-faceted angular blocks formed by 4 or more joint sets	OCKING		i0 /			And the layers 40
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	 DECRE# 			20		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 unto small rock everes
LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes	♡	N/A N/A			10 /	Into small rock pieces. → Means deformation after tectonic disturbance





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	BP13,					P SF-560		COUNT						GEOLOGIST Stewman, C. E.	1	
				place E	<u>_</u>		1460 (NCI	DOT Sate			-	Big La	aurel (1	1	D WTR (ft)
	NG NO.				_	TATION 1					6 ft LT			ALIGNMENT -L-	0 HR.	N/A
	AR ELE						TH 31.1 ft		NOR	THING	803,3			EASTING 949,720	24 HR.	Dry
				ATE A			79% 04/11/20				DRILL N		D M			Automatic
	DRIVE		T			TART DAT	E 09/25/2			P. DAT	E 09/2	25/23	1 1 1	SURFACE WATER DEPTH N	A	
LEV (ft)	ELEV (ft)	DEPTH (ft)	0.5ft	OW CO	UNT 0.5ft			PER FOOT 50	75	100	SAMP.	\ V	0	SOIL AND ROCK DESC	CRIPTION	
	(11)		0.010	0.010	0.011		1	Ĭ.			110.	/MOI	G	ELEV. (ft)		DEPTH (ft
970																
	-	-												- 2,967.7 GROUND SURFA	VCE	0.0
	-									: :				ROADWAY EMBANI PAVEMENT INTO	KMENT	<u>, </u>
965	-	[+ : : : :		$+$ \vdots					- ROADWAY EMBANI	KMENT	
-	2,962.7-	5.0	54	31	28	: : : :								IN/OUT GRAVELS/COBBLE w/BROWN SILTY-SAI		:RS
960	_	_	•	•				. ₱59				M		_		
	_ 2.957.7-	10.0				-:-:-:	- -:-:÷	<u></u>	: :				LI:	2,958.7 ALLUVIAL		9.0
	-	10.0	1	1	1	•2 · · ·			: :			М	<u> </u>	BROWN SANDY-SILT W/F COBBLES (A-4		&
955	_	_				'	 	- <u></u>	+ : :				<u> </u>	- 2,953.5	•)	14.:
-	2,952.7-	15.0	40	60/0.4	1					1			100	WEATHERED RO BROWN-RED WEA RK, W		
950	-	_							. 1	00/0.9				SEAMS	IVIIIO ALOI	
	_ 2.947.7-	20.0				: : : :				$:: \downarrow$				2,948.9 CRYSTALLINE R		18.
	-		60/0.1							60/0.1				BIOTITE GRANITIC	SNEISS	
945	_	-							+ : :					-		
	-					::::				::						
940	-	_							<u> </u>	• •				-		
	-					: : : :										
}	-	-									1			2,936.6 Boring Terminated at Elevation	on 2,936.6	31. ⁻ ft IN
	-	-												- CRYSTALLINE R	OCK	
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GEOTECHNICAL BORING REPORT CORE LOG

	VBS BP13,R010 TIP SF-560552 COUNTY MADISON GEOLOGIST Stewman, C. E.																					
WBS	BP13,	R010			TIP	SF-56	30552	C	OUNT	Υ	MADISON			GEOLOGIST Stewman								
SITE	DESCR	IPTION	Rep	lace Brid	ge 552	2 on S	R 1460 (NCDO	T Sat	ellite	e Yard Rd.)	over Big Laur	el Cı	reek		GROUN	D WTR (ft)					
BOR	NG NO.	EB1-	Α		STAT	ΓΙΟΝ	13+20			O	FFSET 26	ft LT		ALIGNMENT -L-		0 HR.	N/A					
COL	AR ELE	EV. 2,9	967.7	ft	TOT	AL DE	PTH 31.	.1 ft		N	ORTHING	803,338		EASTING 949,720		24 HR.	Dry					
DRILL	RIG/HAI	MMER E	FF./DA	TE AFO6	D6744 CME - 45C 79% 04/11/2022						D	RILL METHOD	NW	Casing W/SPT & Core	HAMME	R TYPE	Automatic					
	LER C				STAF	RT DA	TE 09/2	5/23		C	OMP. DATE	09/25/23 SURFACE WATER DEPTH N/A										
COR	E SIZE	NXWL					N 10.1 f			L												
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	JN RQD (ft) %	SAMP. NO.	STR REC. (ft) %	RQD (ft) %	L O G)		DI	ESCRIPTION AND REMARK	S		DEPTH (ft)					
2946.68	3 2,946.7_	21.0		0.00/4 4	(5.4)	(4.4)				رهجي			0.	Begin Coring @ 21.0 ft	()							
2945	2,940.7	- 21.0	5.1	2:33/1.1 1:52/1.0	(5.1) 100%	(1.1) 22%					4		Ci	RYSTALLINE ROCK (continu	iea)							
	0.044.0	00.4		2:13/1.0 2:17/1.0							4		E	BIOTITE GRANITIC GNEISS	3							
2940	2,941.6-	- 20.1	5.0	2:47/1.0 2:42/1.0	(4.3)	(0.4)	i				4											
20.0	2,936.6-	- - - - 31 1		2:21/1.0 2:53/1.0 6:39/1.0 1:51/1.0	86%	8%					2,936.6			GSI = 35 - 45			31.1					
	-	-		1.51/1.0								Boring Termin	nated	d at Elevation 2,936.6 ft IN CF	RYSTALL	NE ROCK						
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WBS	BP13,	,R010			TI	P SF-5	6055	52	COUN	TY I	/ADISC	N			GEOLOGIST Stewman, C. E.		
SITE	DESCR	IPTION	I Rep	olace	Bridge	552 on S	R 14	460 (NC	DOT Sa	tellite	Yard R	d.) ove	r Big La	aurel (Creek	GROUN	D WTR (ft)
BORI	NG NO.	EB1-	-C		s ⁻	TATION	13+	-12		OF	FSET	N/A			ALIGNMENT -L-	0 HR.	N/A
COLL	AR ELE	EV . 2,	970.4	ft	TO	OTAL DE	PTH	l 29.7 f	t	NC	RTHIN	3 8,03	33,335		EASTING 949,747	24 HR.	Dry
DRILL	.RIG/HAI	MMER E	FF./DA	TE A	FO6744	CME - 450	79%	6 04/11/20)22	•		DRILL	. METHO	D N	V Casing w/ SPT HAMM	ER TYPE	Automatic
DRIL	LER C	offey, c	Jr., C.		S	TART DA	TE	09/26/2	23	CC	MP. DA	TE 09	9/26/23		SURFACE WATER DEPTH N	'A	
LEV	DRIVE	DEPTH	BLC	OW CC	UNT			BLOWS	PER FOO)T		SAME	P. 🔻	1 4	COIL AND DOOK DESC	CDIDTION	
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5ft	О	25		50	75	100	NO.	МО	O G	SOIL AND ROCK DESC ELEV. (ft)	CRIPTION	DEPTH (ft
975	- - -	- - -												-	-		
970	_	-		 			-			-			+		2,970.4 GROUND SURFA ARTIFICIAL FII		0.0
	-	<u> </u>				::: :	:								BROWN SILTY-SAND w/ EMPLACED BOULDERS		
065	2,965.8-	4.6				: : :										, - (,	
965	-	_	2	3	10	 1	3		 				M		-		
	-	<u> </u>				: :j:									2,962.5 ALLUVIAL		7.
960	2,960.8-	9.6	5	5	5								М	H	BROWN SANDY-SILT w/SU	JBANG. PE	BS,
	-	F					- [l w	F	- (A-4)		
		†				: : : .,	$\langle $							F	*IN/OUT COBS/BOU	LDERS	
955	2,955.8-	14.6	15	14	13		•	27					М		-		
	-	‡					: [· · · ·		· _ _ :	· · ·				2,952.9		17.
	- -2.950.8	19.6													WEATHERED RO BROWN WEA.		
50	_	L	12	45	55/0.4	 	\pm		+		100/0.9				-		
	-	F															
45	2,945.8-	24.6	40	60/0.2	2		:										
,40	-	 	40	00/0.2	-		-		1		100/0.7				-		
	-	_													2,941.8		28.
	2,940.8-	29.6	60/0.1							. .	60/0.1	H			2,940.7 CRYSTALLINE R BIOTITE GRANITIC		29.
	-	F	00/0.1	1										F	Boring Terminated WITH		/ D
	-	ţ													PENETRATION TEST R Elevation 2,940.7 ft IN CRYS		
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SHEET 6

MDC I									ORE I				T		
	BP13,					P SF-5605	l.		Y MADISO				GEOLOGIST Stewman, C. E	1	
				olace I		552 on SR 1		OT Sate			Big La	urel (-	O WTR (ft)
BORING						TATION 14			OFFSET				ALIGNMENT -L-	0 HR.	N/A
OLLA					- 1	OTAL DEPTH			NORTHIN				EASTING 949,719	24 HR.	Dry
				AIE A		CME - 45C 799						א ט	,	IER TYPE	Automatic
		offey,	1			TART DATE			COMP. DA		21/23 I	L	SURFACE WATER DEPTH N	/A	
(ft) E	ORIVE ELEV (ft)	DEPTH (ft)	0.5ft	0.5ft		0 25	BLOWS P		75 100	SAMP. NO.	MOI	O G	SOIL AND ROCK DES	CRIPTION	DEPTH (ft
965	-	- - - - - -							1				. 2,965.6 GROUND SURF	LL	0.0
960	-	† - - - -			*NO DRIVE	BÖÜLD	ER\$						GREY, SANDY-SILT W// COBS/BOULDER:		
955 2,	- 955.7-, - -	9.9	21	15	10		25 <u> </u>				М		. 2,953.7 CRYSTALLINE F		11.9
950	-	<u>-</u>											BIOTITE GRANITIC	GINEIOO	
	-	 	-					• • • •		Ц			2,945.2 Boring Terminated at Elevat	ion 2,945.2 f	20.4 t IN

GEOTECHNICAL BORING REPORT CORE LOG

	WBS BP13,R010 TIP SF-560552 COUNTY MADISON GEOLOGIST Stewman, C. E.													
WBS BP13,R010	TIP SF-560552 COUNT	NTY MADISON GEOLOGIST Stewman, C. E.												
SITE DESCRIPTION Replace	Bridge 552 on SR 1460 (NCDOT Sat	Satellite Yard Rd.) over Big Laurel Creek GROUND WTR (ft)												
BORING NO. EB2-A	STATION 14+05	OFFSET 15 ft LT ALIGNMENT -L- 0 HR. N/A												
COLLAR ELEV. 2,965.6 ft	TOTAL DEPTH 20.4 ft	NORTHING 803,424 EASTING 949,719 24 HR. Dry												
DRILL RIG/HAMMER EFF./DATE	FO6744 CME - 45C 79% 04/11/2022	DRILL METHOD NW Casing W/SPT & Core HAMMER TYPE Automatic												
DRILLER Coffey, Jr., C.	START DATE 09/20/23	COMP. DATE 09/21/23 SURFACE WATER DEPTH N/A												
CORE SIZE NXWL	TOTAL RUN 8.5 ft													
ELEV RUN ELEV (ft) DEPTH RUN (ft) RA (Mi	TE REC. RQD SAIVIF. REC. RQD	QD O DESCRIPTION AND REMARKS												
2953.68		Continued from previous page												
2,953.7 11.9 3.5 4:09 5:36 2950 2,950.2 15.4 6:15	/1.0 100% 57%	2,953.7 CRYSTALLINE ROCK 11.9 BIOTITE GRANTIIC GNEISS												
5.0 4:13 4:26 5:02 4:51	/1.0 (5.0) (4.7) /1.0 100% 94% /1.0	GSI = 40 - 50												
2,945.2 20.4 5:12	/1.0	2,945.2 20.4												
		Boring Terminated at Elevation 2,945.2 ft IN CRYSTALLINE ROCK												

GEOTECHNICAL BORING REPORT CORE LOG

					BORE LOG																		CC	DRE	LOG							
W	BS B	P13,R010)		ТІ	P SF-560	552		TY MADI				GE	OLOGIST Stewm	an, C. E	 Е.		WBS E	P13,R0)10			TIP SF-5	60552	COUN	COUNTY MADISON GEOLOGIST Stewman, C. E.						
S	TE DE	SCRIPTIO)N Re	place	Bridge	552 on SR	1460 (N	CDOT Sa	atellite Yar	d Rd.) o	ver Big	Laure	l Creek			GROUNI	D WTR (ft)	SITE DE	SCRIPT	TION	Repla	ace Brid	dge 552 on S	SR 1460 (NCDOT S	atellite \	Yard Rd	.) over Big Laur	el Creek		GROUND W	VTR (ft)
В	RING	NO. EB	2-B		S	TATION 1	4+00		OFFSE	T 14 ft	RT		ALI	GNMENT -L-		0 HR.	N/A	BORING	NO. E	EB2-B			STATION	14+00		OFF	SET 1	4 ft RT	ALIGNMENT -L-		0 HR.	N/A
С	DLLAF	ELEV.	2,964.3	ft	TO	OTAL DEP	TH 21.1	l ft	NORTH	IING 8	03,424		EA	STING 949,749		24 HR.	Dry	COLLAF	R ELEV.	2,96	64.3 ft		TOTAL DE	EPTH 21	.1 ft	NOF	RTHING	803,424	EASTING 949,749		4 HR.	Dry
DI	ILL RIC	HAMMER	EFF./D/	ATE A	AFO6744	CME - 45C 7	9% 04/11/2	2022		DR	ILL MET	HOD	VW Casi	ng W/SPT & Core	HAMI	MER TYPE	Automatic	DRILL RI	G/HAMMI	ER EFF	F./DATE	E AFO6	6744 CME - 450	C 79% 04/1	1/2022	'		DRILL METHOD	DD NW Casing W/SPT & Core HAMMER TYPE Autom			
D	RILLEF	R Coffey	, Jr., C.		S	TART DAT	E 09/20	/23	COMP.	DATE	09/20/2	23	SU	RFACE WATER DE	PTH N	N/A		DRILLE	R Coffe	ey, Jr.	, C.		START DA	ATE 09/2	20/23	CON	MP. DAT	E 09/20/23	SURFACE WATER DE	PTH N/A		
EL	V DF	EV DEPT		ow cc				S PER FOC		11	MP.	/ L		SOIL AND R	OCK DES	SCRIPTION		CORE S	IZE N	XWL			TOTAL RU						•			
(1		ft) (ft)	0.5ft	0.5ft	0.5ft	0	25	50	75 ·	100 N	10. N	101 <u>G</u>	ELEV	EV. (ft)		DEPTH (ft)		ELEV F		EPTH F (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. RQD (ft) (ft) %	SAMP. NO.	STRATA REC. RQI (ft) (ft) % %	LOG			DESCRIPTION AND REMARK	KS		
29	35													0001	ND OUD	NEA OF		0050.04											Continued from previous p	age		
		Ŧ	+					-	-	-			2,964	ART SANDY-SILT W/AE	ND SURF	FILL	0.0	2950	52.2 1	2.1	3.9	V=60/0.0 3:23/0.9	(3.9) (3.3) 100% 85% (5.0) (2.2) 100% 44%						CRYSTALLINE ROCK (contin	nued)		
		Ŧ										X	Ŧ	SANDY-SILT W/AE COE	BC GRVL: BBLES (A	LS, BOULDER A-2)	RS &	2,9	948.3 1	6.0		3:47/1.0 3:31/1.0 4:19/1.0					-		BIOTITE GRANITIC GNEISS			
29	60	\pm			****														Ŧ		5.0	3:29/1.0 2:40/1.0	(5.0) (2.2) 100% 44%						GSI = 60 - 70			
		Ŧ			*NO DRIVE*					· []			E					2945	‡			2:59/1.0 3:31/1.0					_					
29	55	土					ļ · · ·						Ł					2,9	943.3 + 2	21.0	-	2:55/1.0		_			2,943.3	Boring Term	nated at Elevation 2,943.2 ft IN C	RYSTALLIN	IE ROCK	21.0
	'	54.2 10.1	14	14	84/0.2					4 1			2,953	1			11.2		Ŧ							F						
		52.2 12.1	60/0.0	7					. 60/	0.0			1	BIOTITE G	ALLINE I	C GNEISS			Ŧ							F	-					
29	50	+					1			_			1						Ŧ							l E						
		‡								:			1						Ŧ							1 E	_					
29	15	‡											1						Ŧ							l E						
										<u>· </u>	_		2,943	3 Boring Terminated	Lat Floya	ation 2 0/3 2 f	21.0		1							<u> </u>	-					
		‡											ļ	CRYST	ALLINE F	ROCK	C IIV		‡													
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CORE PHOTOGRAPHS

EB1-A

BOX 1: 21.0 - 31.1 FEET

EB2-A

BOX 1: 11.9 - 20.4 FEET





GEOLOGICAL STRENGTH INDEX (GSI):

21.0 - 31.1 FT: 35 - 45





GEOLOGICAL STRENGTH INDEX (GSI): 11.9 - 20.4 FT: 40-50

CORE PHOTOGRAPHS

EB2-B

BOX 1: 12.1 - 21.0 FEET





GEOLOGICAL STRENGTH INDEX (GSI): 12.1 - 21.0 FT: 60-70