**DESCRIPTION** 

TITLE SHEET

CROSS SECTIONS

LEGEND

SITE PLAN

BORE LOGS

PROFILE

# **CONTENTS** SHEET NO. $\overline{\mathbf{V}}$ 2 3 513, 5-7 8-14 N REFERENCE 0 m 34165. Ë PROJEC

# STATE OF NORTH CAROLINA

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

# **STRUCTURE** SUBSURFACE INVESTIGATION

COUNTY BUNCOMBE

PROJECT DESCRIPTION BRIDGE NO. 902 ON -Y5RPA-OVER BLUE RIDGE SOUTHERN RAILROAD

STATE	TOWN OF HOLLY SPRINGS PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I–2513AA	1	14

#### **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 SOLI TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1991 707-6850. THE SUBSIFFACE 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 CONSDERABLY WITH TWE ACCORDING TO CLIMATIC CONDITIONS INVESTIGATION CHANGE OBCORDING AND AND AND AS WELL AS COMEN DATA 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 OPNION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONSTRUCTIONS 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 ON OF OR AN THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

NOTES

- TES: 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 REDUESTED 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.
- 2.

PERSONNEL

**CG**2

GOODNIGHT, D.J.

INVESTIGATED BY \_\_\_\_\_FALCON ENG.

DRAWN BY <u>CROCKETT</u>, S.C.

CHECKED BY \_\_\_\_\_\_\_ HUNSBERGER, W.S.

SUBMITTED BY \_\_\_\_\_\_ FALCON ENG.

DATE MARCH 2023



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

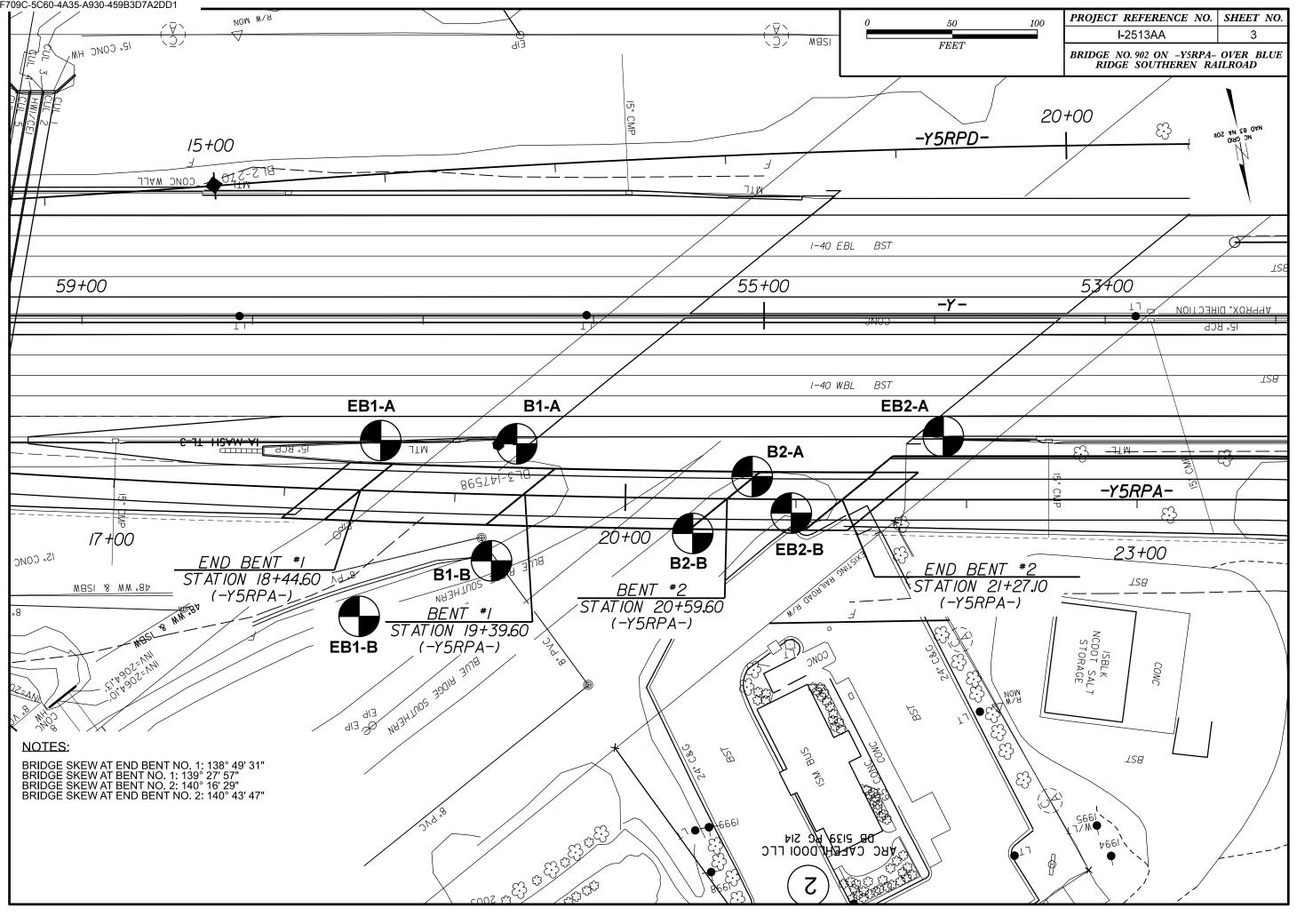
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

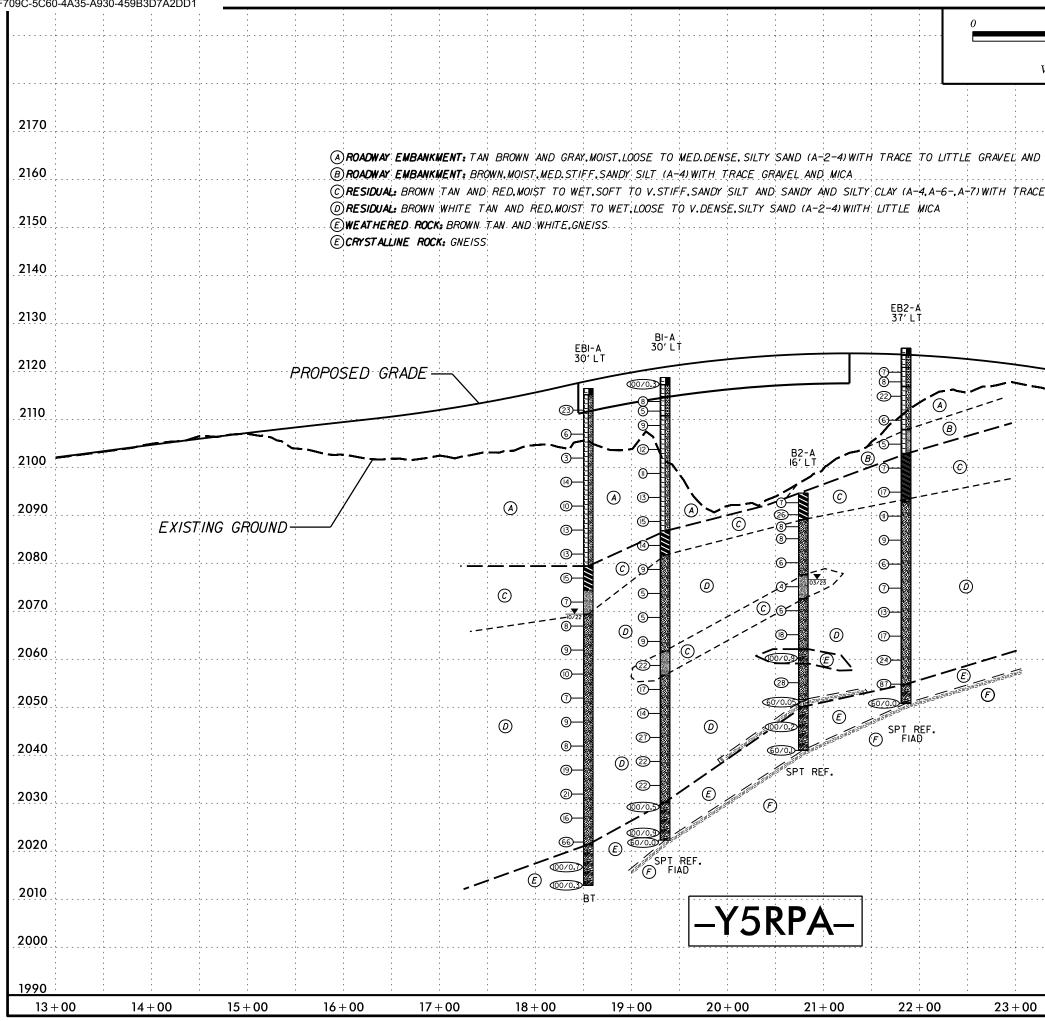
SOIL DESCRIPTION SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN	GRADATION WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.	ROCK DESCRIPTION HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED, AN INFERRED	TERMS AND DEFINITIONS
BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT	UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.	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 IS BASED ON THE AASHTO SYSTEM, BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING:	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 BLOWS IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN	AQUIFER - A WATER BEARING FORMATION OR STRATA.
CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH	ANGULARITY OF GRAINS	REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
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	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS:	SU//ASU//A	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.
SOIL LEGEND AND AASHTO CLASSIFICATION	ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.	WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > ROCK (WR)	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS ORGANIC MATERIALS	MINERALOGICAL COMPOSITION	CRYSTALLINE	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND
ULASS. ( \$ 35% PASSING 2000) ( > 35% PASSING 2000)	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.	ROCK (CR) 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           CLASS.         A-1-a         A-1-b         A-2-4         A-2-5         A-2-6         A-2-7         A-7         A-1, A-2         A-4, A-5	COMPRESSIBILITY	NON-CRYSTALLINE FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
	SLIGHTLY COMPRESSIBLE LL < 31	ROCK (NCR) SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED.	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
SYMBOL 60000 CONTRACTOR STATE	MODERATELY COMPRESSIBLE LL = 31 - 50	COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED
7. PASSING 10 50 MX SILT- CRANULAR SILT-	HIGHLY COMPRESSIBLE LL > 50 PERCENTAGE OF MATERIAL	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 58 MX *40 38 MX 56 MX 51 MN *326 MX 56 MX 51 MN		WEATHERING	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.
אוויז של אוויז של אוויז של אוויז של אוויז של אוויז בל אוז בל אוז בל אוז בל אוז בל אוויז בל אוויז בי אוויז בי ששבי	ORGANIC MATERIAL SOILS OTHER MATERIAL	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE
MATERIAL PASSING +40	TRACE OF ORGANIC MATTER         2         - 3%         3         - 5%         TRACE         1         10%           LITTLE ORGANIC MATTER         3         - 5%         5         - 12%         LITTLE         10         - 20%	HAMMER IF CRYSTALLINE.	HORIZONTAL.
LL – – 40 MX 41 MN	MODERATELY ORGANIC         5 - 10%         12 - 20%         SOME         20 - 35%           HIGHLY ORGANIC         > 10%         > 20%         HIGHLY 35%         AND ABOVE	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 10 MX 10 MX 11 MN 11 MN MODERATE OPCANIC		OF A CRYSTALLINE NATURE.	LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
CROUP INDEX 0 0 0 4 MX 8 MX 12 MX 16 MX NO MX AMOUNTS OF SOILS		SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO (SLI.) I INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
DE MA IOR CRAVEL AND FINE SILTY OR CLAYEY SILTY CLAYEY MATTER	✓ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING	CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
MATERIALS SAND SAND GRAVEL AND SAND SOILS SOILS	▼STATIC WATER LEVEL AFTER <u>24</u> HOURS	MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM
GEN. RATING EXCELLENT TO GOOD FAIR TO POOR UNSUITABL	F PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA	(MOD,) 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	PARENT MATERIAL.
AS SUBGRAUE PULK		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.
	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 COMPACTNESS OR PRIMARY SOIL TYPE CONSISTENCY 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
		SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC CLEAR AND EVIDENT BUT (SEV.) REDUCED IN STRENGTH TO STRONG SOIL, IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED	ITS LATERAL EXTENT.
GENERALLY VERY LOOSE < 4 CRANNER LOOSE 4 TO 10	SOIL SYMBOL	(SEV.) REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN.	LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
GRANULAR MEDIUM DENSE 10 TO 30 N/A		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 COURS 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		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
(COHESIVE) VERY STIFF 15 TO 30 2 TO 4		ALSO AN EXAMPLE.	ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
HARD > 30 > 4		ROCK HARDNESS	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT
TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS	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	UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION -	SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.	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           DOW RED         COARSE         FINE         OVER LOW RED         FINE         OVER LOW RED         OVER LOW RED	SHALLOW UNCLASSIFIED EXCAVATION - USED IN THE TOP 3 FEET OF	HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.	RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
BUOLDER LOBBLE GRAVEL SAND SAND SILT LLAY		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
(CSE, SD.) (F SD.) (SL.) (CL.)	ABBREVIATIONS	HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK, HAND SPECIMENS CAN BE DETACHED	OR SLIP PLANE.
GRAIN MM 305 75 2.0 0.25 0.05 0.005 SIZE IN. 12 3	AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED	BY MODERATE BLOWS.	STANDARD PENETRATION TEST (PENETRATION RESISTANCE)(SPT) - NUMBER OF BLOWS (N OR BPF)OF A 140 LB. HAMMER FALLING 30 INCHES REDUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL
	_ CL CLAY MOD MODERATELY $\gamma$ - UNIT WEIGHT	MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES I INCH MAXIMUM SIZE BY HARD BLOWS OF THE	WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL
SOIL MOISTURE - CORRELATION OF TERMS	CPT - CONE PENETRATION TEST NP - NON PLASTIC $\dot{\gamma}_{ m d}$ - DRY UNIT WEIGHT	POINT OF A GEOLOGIST'S PICK.	TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
SOIL MOISTURE SCALE FIELD MOISTURE (ATTERBERG LIMITS) DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION	CSE COARSE ORG ORGANIC DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST <u>SAMPLE ABBREVIATIONS</u>	SOFT CAN BE GROVED 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	<u>STRATA CORE RECOVERY (SREC.)</u> - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
	DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC S - BULK	PIECES CAN BE BROKEN BY FINGER PRESSURE.	STRATA ROCK OUALITY 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
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY (SAT.) FROM BELOW THE GROUND WATER TABLE	e - VOID RATIO         SD SAND, SANDY         SS - SPLIT SPOON           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	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.
	FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK	SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
PLASTIC SEMISOLID; REQUIRES DRYING TO	FRAC FRACTURED, FRACTURES         TCR - TRICONE REFUSAL         RT - RECOMPACTED TRIAXIAL           FRAGS FRAGMENTS         w - MOISTURE CONTENT         CBR - CALIFORNIA BEARING	FRACTURE SPACING BEDDING	
	HI HIGHLY V - VERY RATIO	TERM SPACING TERM THICKNESS	BENCH MARK:BL-3, -L- STA. 14+55, 29' RT N: 586385 E: 605071
	EQUIPMENT USED ON SUBJECT PROJECT	VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET	ELEVATION: 2039.89 FEET
	DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE:	MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.16 - 1.5 FEET	
	CME-45C CLAY BITS X AUTOMATIC MANUAL	CLOSE 0.16 TO 1 FOOT VERY THINLY BEDDED 0.03 - 0.16 FEET VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET	
- DRY - (D) ATTAIN OPTIMUM MOISTURE	G* CONTINUOUS FLIGHT AUGER CORE SIZE:	THICKLY LAMINATED 0.008 FEET	FIAD - FILLED IMMEDIATELY AFTER DRILLING
PLASTICITY	CME-55 X в' HOLLOW AUGERS СОЙЕ 51263	INDURATION	
PLASTICITY INDEX (PI) DRY STRENGTH	X         CME-550X         HARD FACED FINGER BITS         -N	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	
NON PLASTIC 0-5 VERY LOW		FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS;	
SLIGHTLY PLASTIC 6-15 SLIGHT MODERATELY PLASTIC 16-25 MEDIUM	VANE SHEAR TEST	GENILE BLUW BY HAMMER DISINIEGRAIES SAMPLE.	
HIGHLY PLASTIC 26 OR MORE HIGH		MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.	
COLOR		CRAINS ARE DISCIDUT TO SERADATE WITH STEEL DROPE.	
		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.		EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE;	
		EXTREMELT INDUKATED SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-14

#### TOWN OF HOLLY SPRINGS PROJECT NO.



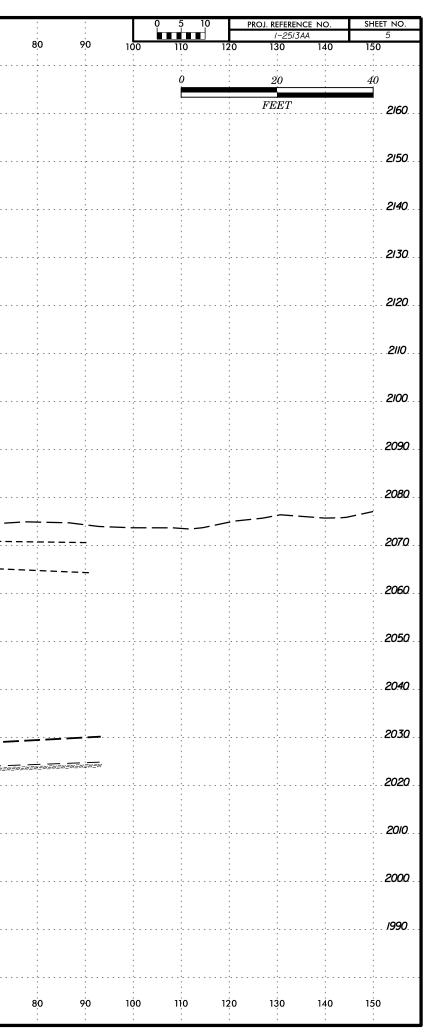
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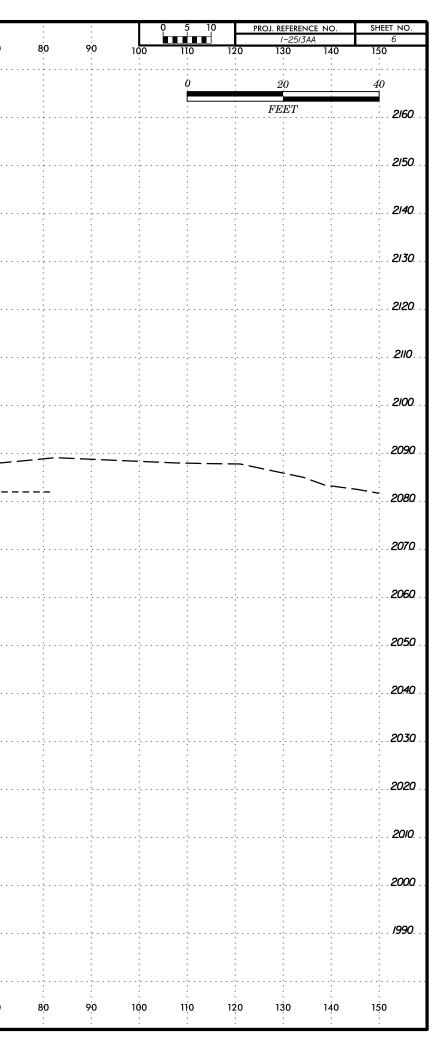


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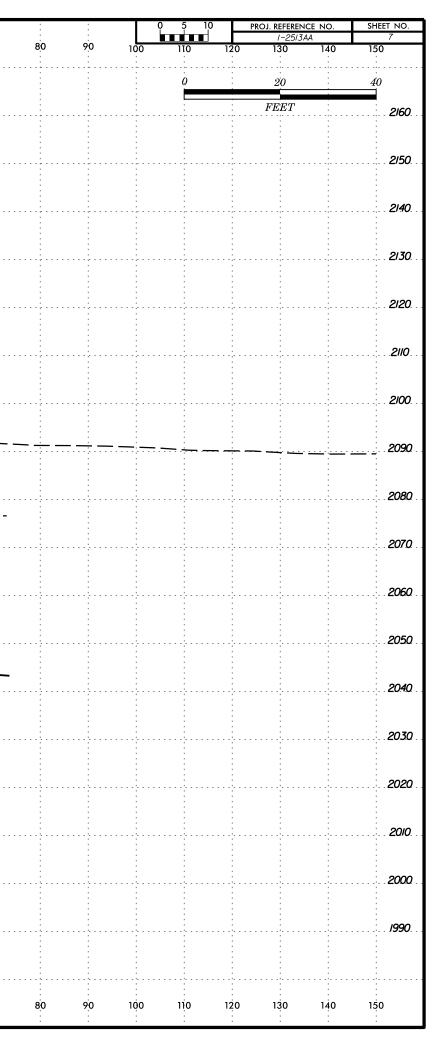
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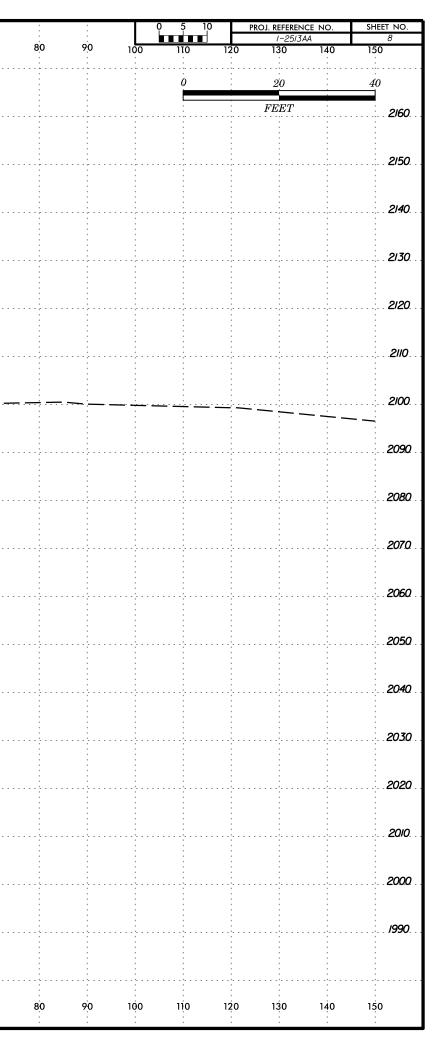
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### GEOTECHNICAL BORING REPORT BORE LOG

**WBS** 34165.1.2 TIP 1-2513AA COUNTY BUNCOMBE GEOLOGIST Goodnight, D.J. SITE DESCRIPTION BRIDGE ON - Y5RPA- OVER BLUE RIDGE SOUTHERN RAILROAD BETWEEN I-26 AND ALT. US-74 **GROUND WTR (ft)** BORING NO. EB1-A **STATION** 18+55 OFFSET 30 ft LT ALIGNMENT -Y5RPA-0 HR. 50.0 TOTAL DEPTH 103.8 ft **NORTHING** 678,192 **EASTING** 919,187 **COLLAR ELEV.** 2,116.4 ft 24 HR. 47.0 DRILL RIG/HAMMER EFF./DATE CG20446 Diedrich D50 87% 05/10/2022 HAMMER TYPE Automatic DRILL METHOD H.S. Augers DRILLER Odom, C. **START DATE** 10/18/22 COMP. DATE 10/19/22 SURFACE WATER DEPTH N/A ELEV DRIVE DEPTH BLOW COUNT **BLOWS PER FOOT** SAMP. SOIL AND ROCK DESCRIPTION ELEV 0 (ft) (ft) 0.5ft 0.5ft 0.5ft 50 25 75 100 NO. (ft) MOIL G ELEV. (ft) DEPTH ( 2120 GROUND SURFACE 2,116.4 ASPHALT PAVEMENT 2,115.1 2115 ROADWAY EMBANKMENT - -- -BROWN AND GRAY, V. LOOSE TO MED. 2.112.93 5 10 12 11 DENSE, SILTY SAND (A-2-4) WITH М . . . TRACE GRAVEL AND TRACE TO LITTLE - -. . . - -2110 MICA . . . . . 2 107 . . . . . . -3 4 2 М . . . - -. . 2105 . . . . . . . . 2 102 9-13.5 . . . . . . 2 М . . . . . . . . . . . . 2100 . . . . . . . 2.097.9**I** 18.5 Μ . . . • ┢14 . . . . . . . . 2095 . . . . . . . . . 2.092.9 . . . . . . 5 5 Μ . . . **6**10 . . . 2090 . . . . . . . . 2.087.9 28.5 . . . 4 6 М ••13-. . . . . . . . . . . 2085 . . . - -2.082.9-33.5 . . . 6 М ••13• . . . . . . . . . . . 2080 2,079.4 37.0 ۰**٦** . . . . . . . . RESIDUAL 2,077.9 38.5 BROWN, STIFF TO V. STIFF, SANDY . . . 3 6 9 . . . Μ **•**18 CLAY (A-6) WITH TRACE ORGANICS . . . . . AND ROCK FRAGMENTS 2075 . . . . . 2,072.9 43.5 WITH TRACE MICA 2 3 4 М . . . . . . . . . . . . . 2070 2,069.4 <u>\_\_\_\_ 47.0</u> . . . BROWN AND WHITE, LOOSE TO MED. . . . . . . 2,067.9\_ . . . . . DENSE, SILTY SAND (A-2-4) WITH 3 5 М . . . . . . LITTLE TO SOME MICA . . . . . . ଞ୍ଚି 2065 . . . . . . . . 2.062.9 53.5 . . . 2 3 6 W . . . . . . . . . . . . - -5 2060 . . . . . 2,057. 58.5 . . . . . . 6 W 4 . . . 10 . . . . . . . 2055 . . . . . . . . 2.052.9. . 63 5 - - -. . . 3 4 W . . . . . . . . . . . . . . 2050 . . . . . . . .  $2.047.9 \pm 68.5$ W . . . . . . . . . . . . 2045 . . . . . . . . . . 2,042.9 73. . . . 4 2 W . . . ¥I 2040

#### **BORE LOG WBS** 34165.1.2 **TIP** 1-2513AA COUNTY BUNCOMBE GEOLOGIST Goodnight, D.J. SITE DESCRIPTION BRIDGE ON -Y5RPA- OVER BLUE RIDGE SOUTHERN RAILROAD BETWEEN I-26 AND ALT. US-74 **GROUND WTR (ft)** BORING NO. EB1-A **STATION** 18+55 OFFSET 30 ft LT ALIGNMENT -Y5RPA-0 HR. 50.0 COLLAR ELEV. 2,116,4 ft TOTAL DEPTH 103.8 ft **NORTHING** 678,192 EASTING 919,187 24 HR. 47.0 DRILL RIG/HAMMER EFF./DATE CG20446 Diedrich D50 87% 05/10/2022 HAMMER TYPE Automatic DRILL METHOD H.S. Augers DRILLER Odom, C. **START DATE** 10/18/22 COMP. DATE 10/19/22 SURFACE WATER DEPTH N/A ELEV DRIVE DEPTH BLOW COUNT (ft) (ft) 0.5ft 0.5ft 0.5ft **BLOWS PER FOOT** SAMP. SOIL AND ROCK DESCRIPTION 0 0.5ft 0.5ft 0.5ft 50 25 75 100 NO. MOIL G ELEV. (ft DEPTH Match Line 2040 BROWN AND WHITE, LOOSE TO MED. DENSE, SILTY SAND (A-2-4) WITH 2,037.9 78.5 LITTLE TO SOME MICA (continued) 8 М - -- -2035 . . . • • 2 032 9⊥ 83 5 5 8 13 М . . - -- -2030 . 1 . . 027 88.5 -1 . . . . . 6 10 4 М . . . . . . . . 2025 . . . . 2.022.9 93.5 . . 20 28 38 М €66 2,021.4 WEATHERED ROCK 2020 BROWN AND WHITE, GNEISS . . . . 2.017.9 J 98.5 . . 50 50/0.2 16 100/0.7 . . 2015 2,012.6 . . . . . . . . . . 2,012.9 103.5 103.8 00/0. 100/0 3 Boring Terminated at Elevation 2,012.6 ft in WR: GNEISS

# GEOTECHNICAL BORING REPORT

SHEET 9

# GEOTECHNICAL BORING REPORT BORE LOG

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WBS	34165	.1.2			TI	IP 1-251	3AA		С	OUNT	ΥB	UNCO	ИВЕ			GEOLO	<b>GIST</b> G	odnight,	D.J.		
SITE	DESCR	PTION	BRID	DGE O	N -Y5F	RPA- OVE	ER B	LUE F	RIDGE	E SOL	JTHE	RN RAI	LROAD	BETW	/EEN I	-26 AND A	ALT. US-7	4	(	GROUND W	/TR (ft
BORI	NG NO.	EB1-I	В		S	TATION	18+	46			OF	FSET	74 ft R1	Г		ALIGN	MENT -Y	5RPA-		0 HR.	16.9
COLI	AR ELE	<b>V.</b> 2,0	088.2 f	ft	т	OTAL DE	РТН	65.0	) ft		NO	RTHING	<b>6</b> 78,	291		EASTIN	<b>IG</b> 919,2	17	2	4 HR.	17.0
DRILL	RIG/HAM	MER EF	F./DATE	E CG2	20446 D	iedrich D50	87%	05/10/2	2022				DRILL	METHO	DD H.S	S. Augers		H	HAMMER	TYPE Auto	matic
DRIL	LER O	dom, C			S	TART DA	TE	03/06	6/23		co	MP. DA	TE 03	/06/23	5	SURFA	CE WATE		H N/A		
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLC 0.5ft	OW CO 0.5ft	<b></b>	0	25 	BLOW	S PEF 50	R FOO	T 75	100	SAMF NO.	р. <b>Т</b>		ELEV. (ft)	SOIL A	ND ROCK	DESCR		DEPTH (
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	2.082.2	6.0		Ŭ	-	<b>9</b>			-		.   .			M		2,082.7		MICA AND	GRÁVE	L	<u> </u>
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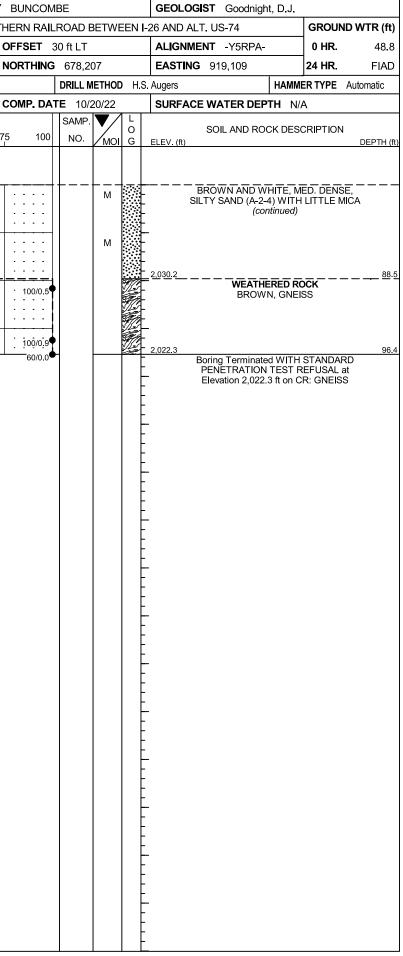
### **GEOTECHNICAL BORING REPORT** POPEIOC

							B	ORE L	OG						
WBS	34165	.1.2			TI	P 1-2513AA	COUNT	Y BUNCOM	BE			GEOLOGIST Goodnigh	t, D.J.		
SITE	DESCR	PTION	BRID	DGE O	N -Y5F	RPA- OVER BLUE I	RIDGE SOU	THERN RAIL	ROAD B	ETWE	EN I-	26 AND ALT. US-74		GROUN	ID WTR (ft)
BOR	NG NO.	B1-A			ST	<b>ATION</b> 19+35		OFFSET 3	80 ft LT			ALIGNMENT -Y5RPA-		0 HR.	48.8
COL	LAR ELE	<b>EV.</b> 2,	118 <u>.</u> 7 f	ft	тс	DTAL DEPTH 96.4	1 ft	NORTHING	678,20	7		EASTING 919,109		24 HR.	FIAD
DRILL	. Rig/Hai	IMER EI	F./DATI	E CG2	20446 Di	edrich D50 87% 05/10	2022		DRILL ME	THOD	H.S	Augers	HAMM	ER TYPE	Automatic
DRIL	LER O	dom, C	; <u> </u>		ST	ART DATE 10/19	9/22	COMP. DAT	E 10/20	0/22		SURFACE WATER DEP	TH N/	Ą	
ELEV (ft)		DEPTH (ft)	BLC 0.5ft	0.5ft		BLOW 0 25	S PER FOO 50	T 75 100	SAMP NO		L O	SOIL AND ROO	CK DES	CRIPTION	
	(ft)		0.010	0.011	0.011		1	<u> </u>		<u>/ MOI</u>	G	ELEV. (ft)			DEPTH (ft)
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2120	-	-													0.0
	2,117.6	1.1	100/0.3	3						м		2,117.2 CONCRET	E PAVE		1.5
2115	- 2,114.7-	4.0				· · · · · · · · · · · ·		· · · · · ·		L		_2,114.7			4.0
	- 2,112.7-	t	2	3	5					мL	000	GRAY TAN AND B			. то
		ŧ	3	1	4					мL		CSE. SAND (A- 2.110.7	1-a) WÍ	TH LITTLE	
2110	2,109.7-	9.0	3	4	5			· · · · · · ·		мΙ		TAN AND BROW	N, LOO	SE TO ME	D.
	-	Ł				• • • • • • • • • • • • • • • • • • •		.			-	DENSE, SILTY S TRACE TO LITTL	E MICÀ		
2105	- 2.104.7-	- 14.0								Ĺ	-	ORC	SANICS		
	-2,104.7	L 14.0	3	6	6	· •12 · · ·				м	-				
	-	Ł								Ĺ					
2100	2,099.7-	- 19.0	2	5	6						-				
	-	F								ML	-				
2095	2.094.7-									Ļ	-				
	- 2,094.7-	- 24.0 -	4	6	7	· ·••13 <sup>•</sup> · · ·				м	-				
	-	ŧ								Ļ	_				
2090	2,089.7-	29.0		6						L	_				
	-	t t	3	6	9			.   .		M					
2085	-	+						·   · · · · ·							<u> </u>
2003	2,084.7-	- 34.0	3	6	8	·· <b>b</b> 14				м	N-	BROWN, STIFF,	SANDY A-7)	SILTY CL	AY
	-	ŧ.					· · · · ·	·   · · · ·			N.	2,081.7			
2080	- 2,079.7-	- 39.0			_			· · · · · ·			-	RED TAN AND BR SAND (A-2-4) V			
	-	ł	3	4	5	: <b>∳</b> 9∶:   : : :				М	-				
2075	-	ł				!! : : :   : : :		.     .			-				
2075	2,074.7-	- 44.0 -	2	2	3					м					
	-	ł						.     .			_				
2070	- 2.069.7-	49.0								••••					
	-	ł	2	2	3	<b>♦</b> 5 <sup>°</sup>		·   · · · ·   ·   · · · ·		м					
0005	-	ŧ	1			<u>i</u> ::: :::		.							
2065	2,064.7-	- 54.0	3	3	6					м	_				
	-	l l										2,061.7			57.0
2060	2.059.7-	- 59.0									E	TAN, V. STIFF, SA	NDY SIL _E MICA		
I			3	9	13					м	۵Ľ			•	
	-	Ł				::: <i>i</i>  :::					<u></u>	2,056.7 BROWN AND W	HITE M	ED DENS	62.0
2055	2,054.7-	64.0	3	7	10							- SILTY SAND (A-2-4			
	-	Ł			``	<b>1</b> • • <b>7</b> <sup>17</sup>				M	F				
2050	2.049.7		1								F	_			
	-2,049.7-	- 09.0	2	5	9	••••14				м	F	-			
	-	F	1							•••	÷				
2045	2,044.7-	74.0	6	11	16	<b>\</b>					-				
	-	F				P27				M					
2040	-	F									F				
		-	-												

								B	}(
WBS	34165	5.1.2			TI	<b>P</b> 1-25	13AA	COUNT	Y
SITE	DESCR	IPTION	BRI	DGE O	N -Y5	RPA- OV	ER BLUE R	DGE SOL	Т
BOR	NG NO.	B1-A			S	TATION	19+35		
COLI	LAR ELI	<b>EV.</b> 2,	118.7	ť	<u></u> Т	OTAL DE	<b>PTH</b> 96.4	ft	
DRILL	. RIG/HAN	IMER EF	F./DAT	E CG2	20446 D	iedrich D5	0 87% 05/10/20	)22	
DRIL	LER O	dom, C	•		S	TART DA	<b>ATE</b> 10/19/2	22	
ELEV	DRIVE ELEV	DEPTH	BLC	w co	UNT			PER FOO	
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50	
2040	2,039.7						Mat	ch Line	-
		Ţ	4	9	13				:
2025	-	ŧ							:
2035	2,034.7-	- 84.0 -	9	10	12		• <b>†</b>   •••22		
	-	ŧ							•
2030	2,029.7-	- 89.0					.   \+ <del></del>		-
		t	100/0.5						•
		ŧ							:
2025	2,024.7	94.0	21	79/0.4					-
	2,022.3	96.4	60/0.0					• • • •	•
		ł	60/0.0						
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# **GEOTECHNICAL BORING REPORT**

# **BORE LOG**



# GEOTECHNICAL BORING REPORT BORE LOG

						BORE LOG		
WBS	34165.1	1.2			Т	1-2513AA COUNTY BUNCOMBE GEOLOGIST	Goodnight, D.J.	
SITE	DESCRIP	PTION	BRID	GE ON	-Y5F	A- OVER BLUE RIDGE SOUTHERN RAILROAD BETWEEN I-26 AND ALT. U	JS-74	GROUND WTR (ft)
BORI	ing no.	B1-B			S	FION 19+22 OFFSET 39 ft RT ALIGNMENT	-Y5RPA-	<b>0 HR.</b> 18.8
COLI	LAR ELE	<b>V.</b> 2,0	090.0 ft	t	т	AL DEPTH 71.7 ft NORTHING 678,272 EASTING 9	19,135	24 HR. 15.5
DRILL	. RIG/HAMN	IER EF	F./DATE	CG204	446 D	ich D50 87% 05/10/2022 DRILL METHOD H.S. Augers	HAMME	RTYPE Automatic
DRIL	LER Odd	om, C.			S	RT DATE 03/06/23 COMP. DATE 03/06/23 SURFACE W	ATER DEPTH N/A	Ą
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLO 0.5ft	W COUN 0.5ft	NT D.5ft	BLOWS PER FOOT         SAMP.         L         O         SC           25         50         75         100         NO.         MOI         G         ELEV. (ft)	DIL AND ROCK DESC	CRIPTION DEPTH (ft
	(ft) 2,089.0 2,086.0 2,084.0 2,081.0 2,076.0 2,071.0 2,066.0 2,066.0 2,066.0 2,056.0	(ft) 1.0 4.0 6.0 9.0 14.0 29.0 24.0 29.0 34.0 39.0 44.0	<u> </u>	0.5ft ( 3 3		25       50       75       100       NO.       MOI       G       ELEV.(ft)         2.090.0       2.080.0       F       2.080.0       F         7          M       2.082.0       F         8           M       2.082.0       F         7            M       2.082.0       F         8            M       7           6 <td>GROUND SURFA ROADWAY EMBANK RAILROAD BALLAST N, MED. STIFF, SANI WITH LITTLE GR2 BROWN, MED. STIF SANDY SILTY CLAY BROWN TAN AND WI IED. DENSE, SILTY S RACE TO HIGHLY MIC</td> <td>DEPTH (ft ACE 0.0 (MENT 1.0 STONE 3.0 DY CLAY (A-6) , 3.0 AVEL 3.0 AVEL 3.0 F TO STIFF, ( (A-7) 8.0 HITE, LOOSE 8.0 HITE, LOOSE 8.0 BAND (A-2-4)</td>	GROUND SURFA ROADWAY EMBANK RAILROAD BALLAST N, MED. STIFF, SANI WITH LITTLE GR2 BROWN, MED. STIF SANDY SILTY CLAY BROWN TAN AND WI IED. DENSE, SILTY S RACE TO HIGHLY MIC	DEPTH (ft ACE 0.0 (MENT 1.0 STONE 3.0 DY CLAY (A-6) , 3.0 AVEL 3.0 AVEL 3.0 F TO STIFF, ( (A-7) 8.0 HITE, LOOSE 8.0 HITE, LOOSE 8.0 BAND (A-2-4)
2035	2,036.0	54.0	5	5	8	· · · · · · · · · · · · · · · · · · ·	AN, STIFF, SANDY S	ILT (A-4) <u>53.0</u>
2030	2,031.0	59.0	6	10	13	TAN BI	ROWN AND WHITE, V. DENSE, SILTY SA ITLE TO HIGHLY MIC	MED. DENSE ND (A-2-4)
2025	2,026.0		10	30	58	M	<b>WEATHERED RC</b> WHITE AND TAN, G	
2020	2,021.0		100/0.3 60/0.0				ng Terminated WITH NETRATION TEST R vation 2,018.3 ft on Cl	EFUSAL at
2035 2030 2025 2020								

### SHEET 12

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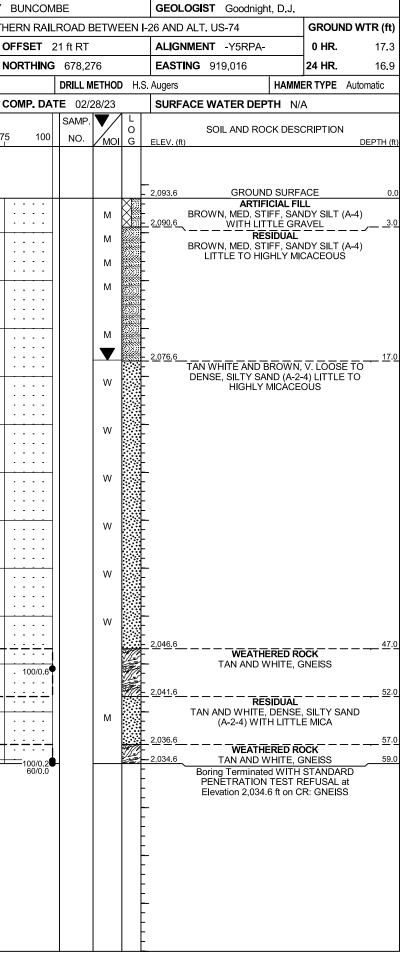
### **GEOTECHNICAL BORING REPORT** PODEIOC

							B	ORE L	OG						
WBS	34165	.1.2			TI	<b>P</b> 1-2513AA	COUNT	Y BUNCON	IBE			GEOLOGIST Goodnigh	nt, D.J.		
SITE	DESCR	PTION	BRI	DGE O	N -Y5F	RPA- OVER BLUE RIC	GE SOU	THERN RAIL	.ROAD E	BETWE	EEN I-	26 AND ALT. US-74		GROUN	ID WTR (ft)
BOR	NG NO.	B2-A			SI	<b>ATION</b> 20+79		OFFSET	16 ft LT			ALIGNMENT -Y5RPA-		0 HR.	18.5
COL	LAR ELE	<b>EV.</b> 2,	094.6	ft	т	DTAL DEPTH 53.6 ft		NORTHING	678,2	49		EASTING 918,976		24 HR.	18.0
DRILL	. RIG/HAN	IMER EF	F./DAT	E CG2	20446 Di	edrich D50 87% 05/10/202	22		DRILL N	IETHOD	H.S	Augers	HAMM	ER TYPE	Automatic
DRIL	LER O	dom, C			ST	ART DATE 02/28/2	3	COMP. DA	TE 02/2	28/23		SURFACE WATER DEP	TH N//	4	
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLC 0.5ft	0.5ft	UNT 0.5ft	BLOWS F 0 25 5	PER FOO <sup>-</sup> 50	T 75 100	SAMP. NO.	моі	L O G	SOIL AND RO	CK DES	CRIPTION	DEPTH (ft)
2095	2,093.6-	10					1					_2,094.6 GROUN	D SURF/	ACE	0.0
2090	2,093.6	- 3.5 -	2 6	2 11	5 15	•7				M M		RED-BROWN, ME SANDY SILTY CL/ QUARTZ 2,089.1	d. Stiff Ay (A-7) Fragme	WITH LIT ENTS	TLE 5.5
2085	2,086.0 - 2,086.1 -	L	2 2	4	4 5	••••••••••••••••••••••••••••••••••••••				M M					
2080	2,081.1	13.5	2	2	4	• • • • • • • • • • • • • • • • • • •				м		-			
2075	2,076.1	<u>18.5_</u>	2	1	3	▲ 				w		<u>2,077.6</u> BROWN, SOFT TO SILT (A-4) HIG			
2070	2,071.1	23.5	2	2	3	• • • • • • • • • • • • • • • • • • •	· · · · ·	· · · · · · ·		w		TAN AND BROW DENSE, SIL			<u>22.0</u> D.
2065	- 2,066.1	28.5	4	6	12	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		· · · · · · · ·		w		-			
2060	_2,061.1	- 33.5 -	33	67/0.4				100/0.9					ROWN, (	GNEISS	<u>32.5</u> <u>35.5</u>
2055	2,056.1	38.5	6	12	16	↓            ↓           ↓         ↓           ↓         ↓           ↓         ↓           ↓         ↓           ↓         ↓           ↓         ↓		· · · · · · · · · · · · · · · · · · ·		w		BROWN, MED. L (A-2-4) WIT -			
2050	2,051.1	43.5	60/0.0					60/0.05				2.051.6 2.050.1 ■ TAN AND B ■ <b>WEATH</b> GRAN AND	rown, ( Ered ro	GNEISS	43.0 44.5
2045	2,046.1		100/0.2					100/0.2				-			
	2.041.1	<u>53.5</u>	60/0.1				1	60/0.1	► 			2.041.1 2.041.0 CRYSTA GRAY Boring Terminate PENETRATION Elevation 2,041	, GNEIS d WITH TEST R	S STANDAI EFUSAL	at
												-			

													В	O
WBS	34165	.1.2			Т	Ρ	1-251	I3A	A		C	OU	NT	<b>/</b> E
SITE D	ESCR	PTION	BRID	DGE O							DG	E SO	CU-	
BORIN					S	T/	TION	20	)+40					OF
COLLA	AR ELE	<b>V.</b> 2,0	093.6 f	it	Т	21	fal de	PT	H t	59.0 ·	ft			NC
DRILL R	ig/ham	MER EF	F./DATE	E CG2	-									
DRILLE		dom, C					ART DA	TE						СС
	elev	DEPTH (ft)					0	0	BL) 25	ows	50	R FC	тос	
	(ft)	()	0.5ft	0.5ft	0.5ft	H	0	2	.J		1			75 
2095		-												
2	,092.6	- 1.0	3	4	3		·   · ·	:	:				: :	
2090 2	,090.1	3.5					·¶'· ·	•	-			•••	•••	
1	- .087.6-	- 60	2	3	5		• <b>•</b> 8 -	:	:			· ·	•••	
		-	3	3	5		<b>•</b> 8	:	:			•••		
2085 2	,085.1	8.5	2	3	3		 							+
	-	_						•		· · ·				
2080 2	080.1	13.5					$\frac{1}{1}$	:	:			• •	•••	
	-	-	2	3	3		<b>6</b>	-	-					
	-	-					į	•		· · ·		•••	•••	
2075 2	,075.1	18.5	1	1	2		1	•	.	· · ·		· ·		+
	-	-					<b>U</b> 3 · ·	:				•••		
2070 2	070 1	-					$ \cdot \cdot \cdot \cdot  $	:		· · ·		•••	•••	
		-	1	2	2		<b>4</b> · ·							1
	-	-					1	:	:			•••		
2065 2	,065.1_	28.5	2	2	4		$\frac{1}{1}$	•	.					+
	-	-					●6· · ·\.			· · ·		· ·	· ·	
2060 2	- 060.1	- 33 -					· \ ·	:	:	· · ·		· ·	· ·	
2000 2			2	5	8		· ·••1	- 3-	.					1
	-	-					· ·  .	:		· · ·		· ·	· ·	
2055 2	,055.1	_ 38.5	5	6	8		· · ŀ	•	:   -	· · ·		•••	•••	
	-	-			5		· · •	14		· · ·		•••	: :	
2050		-					· · · · · ·		[``,	 		· ·	· ·	
2050 2	,050.1_ -	_ 43.5 -	11	20	26		· · · ·		:		46	• •		+
	-	-					· · · ·	:	:	 	¦_	 		
2045 2	,045.1_	48.5	65	35/0.1				•	·		Ţ			
	-	-	co	33/0.1			· · ·	:	:	· · ·		· ·	· ·	
00.10	-	-					· · ·	:	:	: -:		÷÷	÷÷	_
2040 2	.,040.1	_ 53.5 -	16	18	22		· · · ·		<u>.</u>	- •40	,			+
	_	-					· · ·	:	:	.   . .   .		· ·	· ·	
2035 2	035.1	- 58.5 59.0	100/0					•	·	. : <del>-</del>				
	, <del>US4.0</del>	- 08.0	100/0.2 60/0.0			Γ			•					
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# **GEOTECHNICAL BORING REPORT**

# **BORE LOG**



# GEOTECHNICAL BORING REPORT BORE I OG

	24165 4 0				<b>1</b> 1 251244								
WBS 34165.1.2 SITE DESCRIPTION BRIDGE ON -					• 1-2513AA			) — <del></del> 1 • / -		GEOLOGIST Goodnight			
			JGEO			IGE SOU			s⊨⊺WE	EN I-			ND WTR (fi
BORING NO. EB2-A COLLAR ELEV. 2,124.8 ft			-	ATION 21+86	OFFSET		45		ALIGNMENT -Y5RPA-	0 HR.	48.		
					<b>DTAL DEPTH</b> 74.0 ft	NORTHING 678,245				<b>EASTING</b> 918,862	24 HR.	FIA	
			E CG2		edrich D50 87% 05/10/202					H.S		HAMMER TYPE	Automatic
	RIVE				ART DATE 10/20/22		COMP. DA	1	20/22	L	SURFACE WATER DEPT	'H N/A	
=LEV   E		H BLC 0.5ft	0.5ft	0.5ft		PER FOOT 50	75 100	SAMP. NO		0	SOIL AND ROC	K DESCRIPTIO	
	(ft) (it)	0.51	0.51	0.51			100	NO.	/мог	G	ELEV. (ft)		DEPTH
2125	<u> </u>	_										SURFACE	
	ł										2,123.3	STONE	· · · · ·
2120 2,	120.8 4.0	3	3	4					D		2,120.8	MBANKMENT	4
2,	118.8 6.0	2	4	4	•						GRAY, LOOSE, F. T	O CSE. SAND (/	A-1-a)
	115.8 <u>+</u> 9.0			.					D		<u>2,116.8</u> BROWN, LOOSE TO		
2115	<u>115.8 9.0</u> +	5	7	15	22		+ • • • •		м		- SAND (A-2-4) WIT		
	Ŧ												
2110 2,	110.8 14.0	3	2	4									
	Ŧ			4	<b>•</b> 6				м		-		
	‡						· · · · ·				_2,107.8	F, SANDY SILT	(A-4) 1
<u>2105</u> 2,	105.8+ 19.0 -+	2	2	3	<b>1</b> · · · · · · · · · · · · · · · · · · ·				м	LSL	WITH TRACE G	RAVEL AND MIC	CA
	+										_2,102.8		<u> </u>
2	100.8 - 24.0										RES BROWN, MED. S	<b>IDUAL</b> STIFF TO V. STIF	=F,
2100	+	2	3	4					М			CLAY (A-6)	,
	Ŧ												
2095 2,	095.8 29.0	4	7	10					м				
	Ŧ				17 $17$ $17$				111				3
2	 									-	BROWN AND WH DENSE, SILTY S		5V
2090		4	5	6	<b>↓</b> 11 <b>↓ ↓ ↓ ↓</b>				м	Ľ		E MICA	
	Ŧ									ļ			
2085 2,	085.8 39.0	2	4	5						ļ			
2000	‡		4	5					м	-	-		
	‡									-			
2080 2,	<u>.080.8+ 44.0</u> +	2	3	3					м		-		
	‡									-			
2	 									-			
2075	+	2	2	5	•	· · · ·	· · · · ·		м		-		
	‡				: <b>\</b> : :   : : : :								
2070 2,	<u>.070.8 54.0</u>	3	5	8					м		-		
	ţ												
2	065.8 59.0												
2065	<u> </u>	5	7	10	17				м		-		
	ł				<i>Y</i>					F			
2060 2,	.060.8 64.0	8	10	14					N.4	F	_		
	Ŧ	Ĭ			24			1	М	F	-		
	055 at												
2055 2,	<u>.055.8+ 69.0</u> +	8	11	76		· · · ` `			м		_2,054.3		7
	‡						· · · · ·				WEATHE	RED ROCK WHITE, GNEISS	•
2.	<u>.050.8</u> 74.0	00/0 0					60/0.0				2,050.8		74
	‡	60/0.0					60/0.0				Boring Terminated	TEST REFUSAL	at
	+							1		-	Elevation 2,050.8	ft on CR: GNE	SS

	4165.	10						ORE L			
						P 1-2513AA		BUNCOM		GEOLOGIST Goodnight, D.J.	
				DGE OI	-		DGE SOU			II-26 AND ALT. US-74	
Boring					-	<b>TATION</b> 20+97		OFFSET 8		ALIGNMENT -Y5RPA-	<b>0 HR.</b> 22.
OLLAF						OTAL DEPTH 56.0 f		NORTHING	,	EASTING 918,957	24 HR. 19.8
				CG2		Diedrich D50 87% 05/10/20					MER TYPE Automatic
		lom, C	1			TART DATE 03/02/2			E 03/02/23		I/A
LEV EL	RIVE LEV (ft)	DEPTH (ft)	BLO 0.5ft	W COL 0.5ft	JNT 0.5ft	4	PER FOOT 50 	75 100	SAMP. U NO. MOI G	SOIL AND ROCK DES	SCRIPTION DEPTH
100		-								- 2,098.3 GROUND SUR	FACE
2,0	97.3	1.0	3	3	3				мВ	RESIDUAL RED-BROWN, MED. ST	
095	94.3	•⊿∩			-		· · · ·	· · · ·	<sup>™</sup>	SANDY SILTY CL	AY (A-7)
	)94.3 )92.3	•	2	5	7					2,092.8	
	,	. 0.0	4	8	11	· · · <b>`</b> •.  · · · · ·				TAN, V. STIFF, SAND	( CLAY (A-6)
<u>090</u> 2,0	89.3	9.0	8	14	24		+	+		BROWN AND WHITE, D	DENSE, SILTY
	ł			'4	24				M	SAND (A-2-4) WITH LIT	S
085						/					
2,0	)84.3 	14.0	1	1	2				w 🖉	TO MED. STIFF, SANE	
	Ŧ	•								F	
<u>080</u> 2,0	080.3	18.0	1	1	1		+ • • • •	+	<b>₩</b> ₽	F	
	‡	-								F	
075	‡										
2,0	074.3	24.0	1	1	2	$\frac{1}{1} + \frac{1}{1} + \frac{1}$				-	
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# GEOTECHNICAL BORING REPORT

# BORE LOG