Ŕ REFERENCE

CONTENTS

DESCRIPTION

TITLE SHEET LEGEND SITE PLAN

PROFILE

BORE LOGS

SHEET NO.

5-6

38367.

STATE OF NORTH CAROLINA

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY BRUNSWICK

PROJECT DESCRIPTION BRIDGE NO. 163 ON SR 1349 (BRIDGERS RD.) OVER MULBERRY BRANCH AT -L-STA. 18 + 90.36

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-------|-----------------------------|--------------|-----------------|
| N.C. | B-4440 | 1 | 6 |

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 1999 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 (MIN-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 MOLCATED IN THE SUBSURFACE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS MICKLORY OF THE INVESTIGATION. THE SUBSURFACE INVESTIGATION THE SUBSURFACE INVESTIGATION THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED ANY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS MICKLORY. 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 DIES 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.

- 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 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.

| | JKC |
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| | JRS |
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| INVESTIGATED BY | J.L. STONE |
| DRAWN BY | |

PERSONNEL

SUBMITTED BY __D.N. ARGENBRIGHT DATE OCTOBER 2014

CHECKED BY __D.N. ARGENBRIGHT



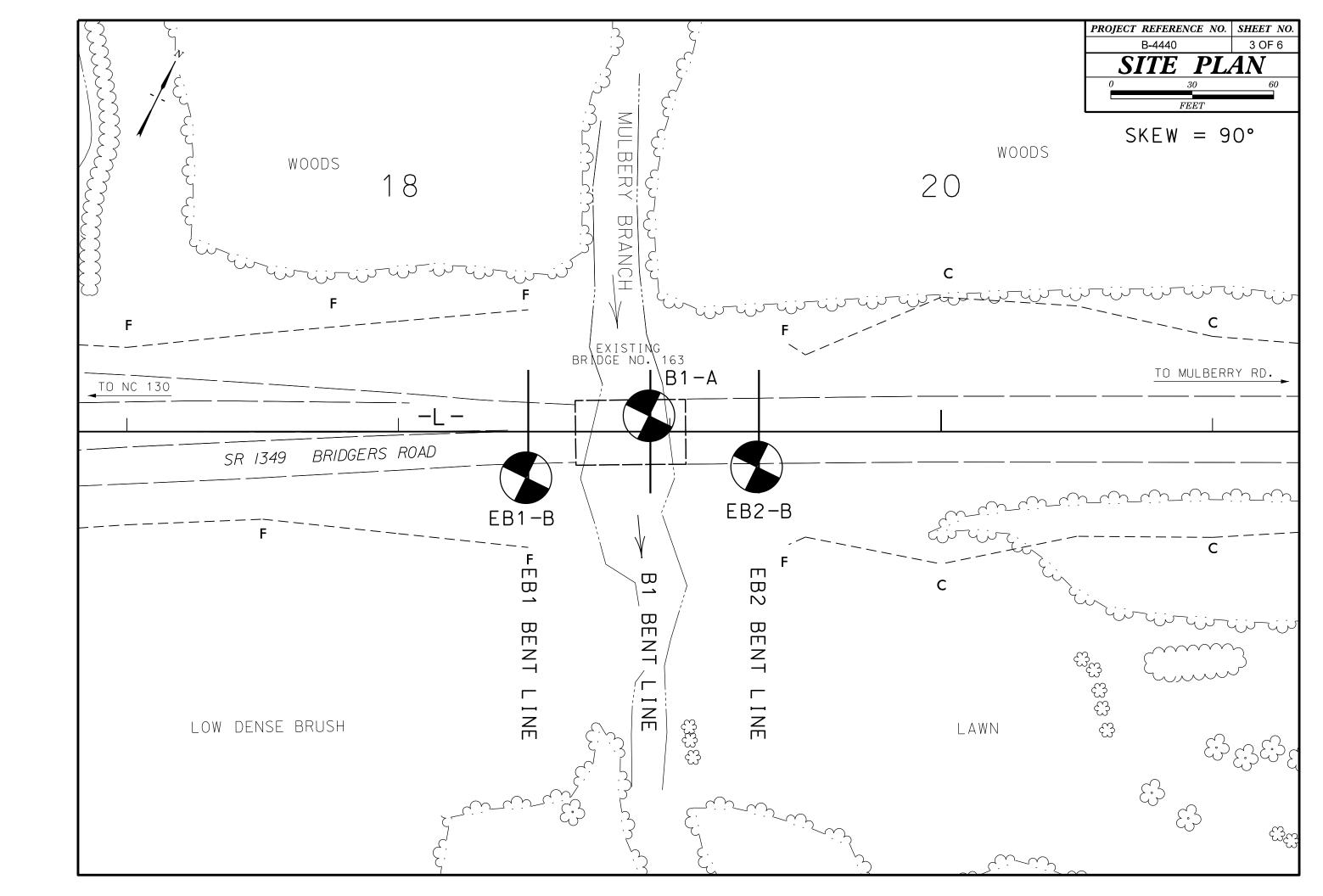
PROJECT REFERENCE NO. SHEET NO. B-4440 $2 \ OF \ 6$

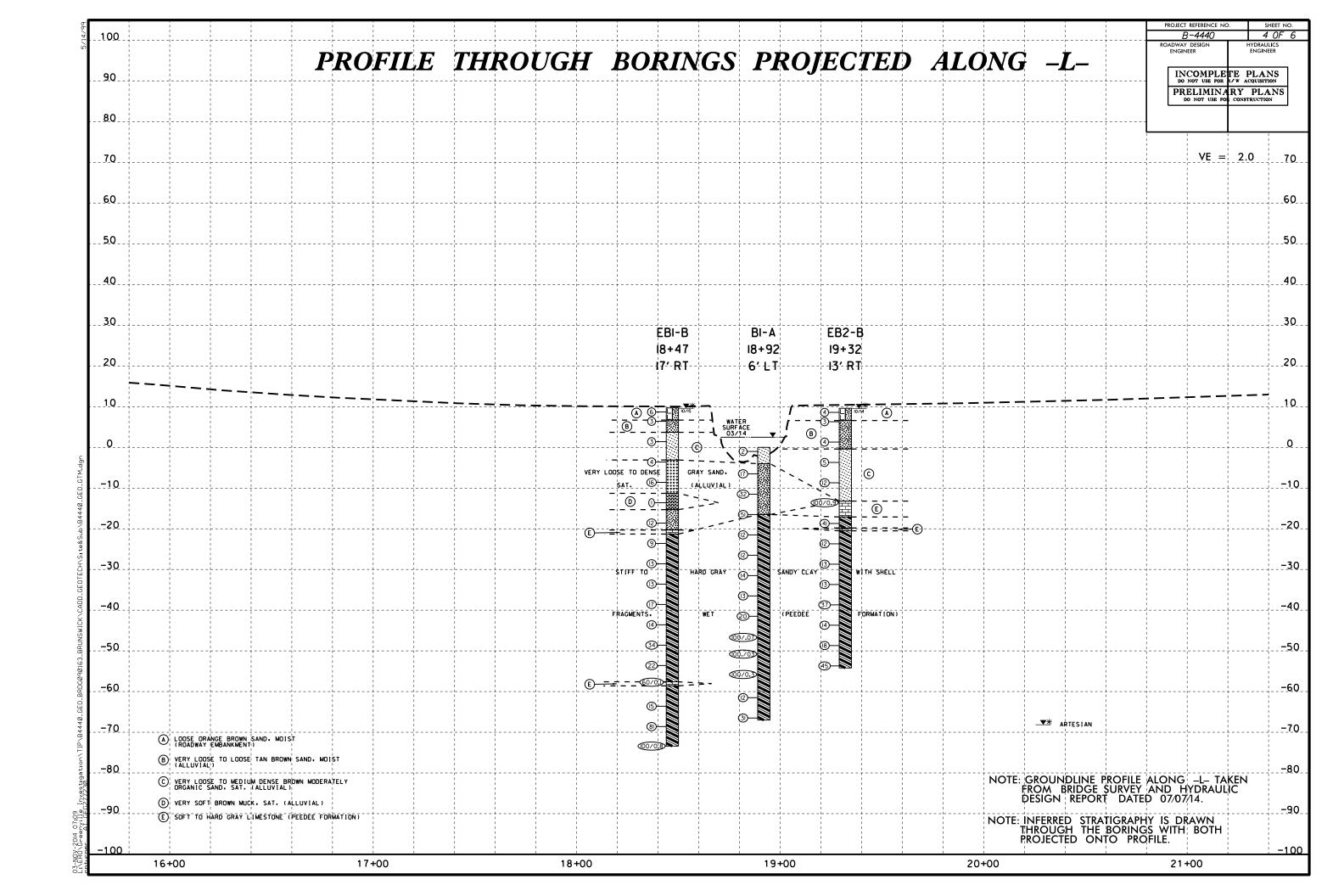
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT

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 | <u>WELL GRADED</u> - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. <u>UNIFORMLY GRADED</u> - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. | 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 DI586). 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//2SU//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 V// NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED. | 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 CRYSTALLINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT | WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND | | |
| CLASS. (\(\sigma \) 35% PASSING -2001 (> 35% PASSING -2001) | 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, GNEISS, GABBRO, SCHIST, ETC. | SURFACE. | | |
| CROUP 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-1 A-7-5 A-3 A-6, A-7 | COMPRESSIBILITY | NON-CRYSTALLINE FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN | CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM | | |
| 000000000 | SLIGHTLY COMPRESSIBLE LL < 31 | ROCK (NCR) SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC. | OF SLOPE. | | |
| SYMBOL 000000000000000000000000000000000000 | MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50 | COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SEDIMENTARY ROCK SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED | CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED | | |
| 7. PASSING SILT- GRANULAR SILT- MUCK, | PERCENTAGE OF MATERIAL | (CP) SHELL BEDS, ETC. | BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. | | |
| *40 30 MX 50 MX 51 MN S1 MN SOILS COILS PEAT | GRANULAR SILT - CLAY | - WEATHERING | DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. | | |
| 25 MX 35 MX 35 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN | ORGANIC MATERIAL SOILS SOILS OTHER MATERIAL TRACE OF ORGANIC MATTER 2 - 3%, 3 - 5%, TRACE 1 - 10% | FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER HAMMER IF CRYSTALLINE. | DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE | | |
| MATERIAL PASSING *40 | LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20% | VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, | HORIZONTAL. | | |
| LL - - 40 MX 41 MN 40 MX 41 MN 40 MX 41 MN 40 MX 41 MN 11TTE OR | MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35% HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE | (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 LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. | | |
| PI 6 MX NP IU MX IU MX II MN II MN II MN II MN II MN II MN MODERATE OPCANIC | GROUND WATER | OF A CRYSTALLINE NATURE. | FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE | | |
| GROUP INDEX 8 W 4 MX 8 MX 12 MX 16 MX NU MX AMUNTS OF SOILS | | SLIGHT 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 | SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. | | |
| USUAL TYPES STONE FRAGS. OF MAJOR GRAVEL, AND CHAPTER 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 24 HOURS | MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN | FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM | | |
| GEN, RATING EXCELLENT TO GOOD FAIR TO POOR POOR UNSUITABLE | | (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 SUBGRADE 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. | 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 | | |
| 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 | FIELD. | | |
| DANCE OF CTANDARD BANCE OF UNCONFINED | THIS CELERINEOUS STILLOUS | (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 CONSISTENCY PENETRATION RESISTENCE COMPRESSIVE STRENGTH (IN-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 LOOSE < 4 | SPT C CLOSE INDICATOR | 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. | | |
| GENERALLT LOOSE 4 TO 10 | SOIL SYMBOL OPT DAT TEST BORING SLOPE INDICATOR INSTALLATION | 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. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS | | |
| MATERIAL DENSE 10 10 30 N/A | ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT AUGER BORING CONE PENETROMETER | IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF 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. <u>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</u> | 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 | A DIEZOMETED | SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS | ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE | | |
| (COHESIVE) VERY STIFF 15 TO 30 2 TO 4 HARD > 30 > 4 | TTTTT ALLUVIAL SOIL BOUNDARY A INSTALLATION 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 ROCK. | | |
| U.S. STD. SIEVE SIZE 4 10 40 60 200 270 | UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE | VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECIMENS REQUIRES 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 | USED IN THE TOP 3 FEET OF | 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 UNDERCUT UNCLASSIFIED EXCAVATION - EMBANKMENT OR BACKFILL 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 HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK, HAND SPECIMENS CAN BE DETACHED | SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. | | |
| GRAIN MM 305 75 2.0 0.25 0.005 0.005 | AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST | 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 WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL | | |
| SOIL MOISTURE - CORRELATION OF TERMS | CL CLAY MOD MODERATELY γ - UNIT WEIGHT CPT - CONE PENETRATION TEST NP - NON PLASTIC $\gamma_{\rm d}$ - DRY 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. | TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. | | |
| SOIL MOISTURE SCALE FIELD MOISTURE GUIDE FOR FIELD MOISTURE DESCRIPTION | CSE COARSE ORG ORGANIC | SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS | STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY | | |
| (ATTERBERG LIMITS) DESCRIPTION COLDE FOR FIELD MOISTORE DESCRIPTION | DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST SAMPLE ABBREVIATIONS DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC S - BULK | FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE. | TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. | | |
| - SATURATED - USUALLY LIQUID; VERY WET, USUALLY | e - VOID RATIO SD SAND, SANDY SS - SPLIT SPOON | VERY CAN BE CARVED WITH KNIFE, CAN BE EXCAVATED READILY WITH POINT OF PICK, PIECES 1 INCH | STRATA ROCK QUALITY DESIGNATION (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 FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK | SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY | THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. | | |
| PLASTIC SEMISOLID; REQUIRES DRYING TO | FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL | FINGERNAIL. | TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER. | | |
| (PI) PLASTIC LIMIT | FRAGS FRAGMENTS | FRACTURE SPACING BEDDING TERM SPACING TERM THICKNESS | BENCH MARK: RAILROAD SPIKE IN 18" GUM AT -L- 18+46.2, 140.2' RT | | |
| | EQUIPMENT USED ON SUBJECT PROJECT | VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET | N 83085, E 2182192 ELEVATION: 8.08 FEET | | |
| OM _ OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE | DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE: | WIDE 3 TO 10 FEET THICKLY BEDDED 1.5 - 4 FEET MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.16 - 1.5 FEET | | | |
| SL _ SHRINKAGE LIMIT | CME-45C CLAY BITS X AUTOMATIC MANUAL | CLOSE 0.16 TO 1 FOOT VERY THINLY BEDDED 0.03 - 0.16 FEET | NOTES: | | |
| - DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE | 6° CONTINUOUS FLIGHT AUGER CORE SIZE: | VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET THINLY LAMINATED < 0.008 FEET | | | |
| PLASTICITY | CME-55 8* HOLLOW AUGERS CORE SIZE: | INDURATION | 1 | | |
| | | FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. | 1 | | |
| PLASTICITY INDEX (PI) DRY STRENGTH NON PLASTIC 0-5 VERY LOW | TUNG-CARRIDE INSERTS | RUBBING WITH FINGER FREES NUMEROUS GRAINS; | | | |
| SLIGHTLY PLASTIC 6-15 SLIGHT | VANE SHEAR TEST X CASING WY ADVANCER HAND TOOLS: | GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE. | | | |
| MODERATELY PLASTIC 16-25 MEDIUM HIGHLY PLASTIC 26 OR MORE HIGH | POST HOLE DIGGER | MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER. | | | |
| COLOR | 1 TOLOGUE ATTIME COOL | CRAINS ARE DISEIGN T TO SERARATE WITH STEEL PROPE. | | | |
| | TRICONE TUNGCARB. SOUNDING ROD | INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER. | | | |
| DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE. | CORE BIT VANE SHEAR TEST | SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; | | | |
| MODIFIERS SUCH MS LIGHT, DHAN, STREMMED, ETC. ARE USED TO DESCRIBE AFFEARANCE. | | EXTREMELY INDURATED SAMPLE BREAKS ACROSS GRAINS. | DATE: 8-15-1- | | |
| | | | | | |





| BORELOG REPORT | | | | | | | | | |
|---|---|----------------|----------------------------|---------------|--------------------------------|---------------------------------------|------------------|--------------------------|-----------------------------------|
| WBS 38367.1.1 TIP B-4440 COUNTY BRUNSWICK | GEOLOGIST Crenshaw, J. K. | | WBS 38367.1.1 | | TIP B-4440 COUN | NTY BRUNS | WICK | GEOLOGIST Crenshav | v, J. K. |
| SITE DESCRIPTION BRIDGE NO. 163 ON -L- (SR 1349) OVER MULBERRY BRANCH | GR | ROUND WTR (ft) | SITE DESCRIPTION | BRIDGE NO | O. 163 ON -L- (SR 1349) OVER N | MULBERRY E | BRANCH | | GROUND WTR (ft) |
| BORING NO. EB1-B STATION 18+47 OFFSET 17 ft RT | ALIGNMENT -L- 0 H | HR. N/A | BORING NO. EB1- | } | STATION 18+47 | OFFSET | 17 ft RT | ALIGNMENT -L- | 0 HR. N/A |
| COLLAR ELEV. 9.7 ft TOTAL DEPTH 83.1 ft NORTHING 83,187 | EASTING 2,182,122 24 F | HR. 0.1 | COLLAR ELEV. 9.7 | ft | TOTAL DEPTH 83.1 ft | NORTHIN | G 83,187 | EASTING 2,182,122 | 24 HR. 0.1 |
| DRILL RIG/HAMMER EFF./DATE RF00074 CME-55 92% 07/12/2011 DRILL METH | D Mud Rotary HAMMER TY | TYPE Automatic | DRILL RIG/HAMMER EF | F./DATE RFC | O0074 CME-55 92% 07/12/2011 | | DRILL METHOD | Mud Rotary | HAMMER TYPE Automatic |
| DRILLER Pinter, D. G. START DATE 10/14/14 COMP. DATE 10/14/15 | SURFACE WATER DEPTH N/A | | DRILLER Pinter, D. | | START DATE 10/14/14 | COMP. DA | ATE 10/14/15 | SURFACE WATER DEP | TH N/A |
| ELEV (ft) DRIVE DEPTH BLOW COUNT BLOWS PER FOOT SAMP. VIII SAMP. | O SOIL AND ROCK DESCRIPT | PTION | ELEV DRIVE DEPTH (ft) (ft) | BLOW COUN | I | | SAMP. | SOIL AND ROO | CK DESCRIPTION |
| (ft) (ft) (ft) 0.5ft 0.5ft 0.5ft 0 25 50 75 100 NO. | G ELEV. (ft) | DEPTH (ft) | (ft) (ft) (ft) | 0.5ft 0.5ft (| 0.5ft 0 25 50 | 75 100 | NO. MOI G | | |
| | | | | | | | | | |
| 10 9.7 0.0 2 2 4 1 2 | 9.7 GROUND SURFACE ROADWAY EMBANKMEN | | -70 | + - | Match Line | | - | | |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | ORANGE BROWN SAND, MO | MOIST | -72.6 + 82.3 | 73 27/0.3 | | · · · · · · · · · · · · · · · · · · · | | -73.4 | 83.1 |
| 5 | TAN DOOMN CAND MOIST TO | TO SAT. | | | | 100/0.8 | | | at Elevation -73.4 ft ON STONE |
| 24 + 73 | 3.7 — — — — — — ALLUVIAL — — — | 6.0 | | | | | | F | ELEVATION = 9.6' |
| 0 + 1 2 1 •3 | BROWN MODERATELY ORGANI MOIST TO SAT. | NIC SAND, | | | | | | - | |
| | | | | | | | | F | |
| -2.6 | -3.1 ALLUVIAL | 12.8 | | | | | | F | |
| -5 + | ALLUVIAL GRAY SAND, SAT. | | | | | | | F | |
| -7.6 | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | | | | | | | [| |
| 10 | 0 | | | | | | | _ | |
| -12.6 + 22.3 | ••••• | 21.0 | | | | | | _ | |
| † | BROWN MUCK, WET | Г | | | | | | _ | |
| 15 \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\ | ************************************** | | | | | | | - | |
| -17.6 + 27.3 .\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\. | GRAY SAND, SAT. | | | | | | | ‡ | |
| -20 | | 30.0 | | | | | | _ | |
| -22.6 + 32.3 | COASTAL PLAIN | | | | | | | - | |
| 3 4 5 · · · · · · · · · · · · · · · · · · | GRAY SANDY CLAY WITH SI FRAGMENTS, WET (PEED | SHELL EDEE | | | | | | - | |
| | FORMATION) | | | | | | | F | |
| -27.6 + 37.3 | | | | | | | | [| |
| 30 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | | | | | | | | |
| -32.6 + 42.3 | | | | | | | | _ | |
| _35 | | | | | | | | _ | |
| -37.6 + 47.3 | | | | | | | | - | |
| -40 13 8 9 | | | | | | | | ‡ | |
| | | | | | | | | - | |
| [] | | | | | | | | - | |
| <u> </u> | - | | | | | | | F | |
| 2 -47.6 + 57.3 | | | | | | | | [| |
| $ \mathcal{L} $ $ $ | | | | | | | | _ | |
| 3 -50 -52.6 -62.3 | | | | | | | | - | |
| $\frac{Z}{R}$ 7 9 13 $\cdot \cdot \cdot$ | | | | | | | | _ | |
| \(\text{\tint{\text{\tint{\text{\text{\text{\text{\text{\tint{\text{\text{\text{\tint{\text{\tint{\text{\text{\text{\text{\text{\tint{\text{\tint{\text{\tint{\text{\text{\text{\text{\text{\tinit}}\\ \text{\text{\text{\text{\text{\text{\text{\text{\tinit}\xi}\\ \text{\text{\text{\text{\text{\text{\text{\tinit}\xint{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\tinit}\xinitit{\text{\tinit}\xint{\text{\text{\text{\text{\tinitt{\text{\text{\text{\tinit}\xint{\text{\text{\text{\text{\tinit}\xiiitt{\text{\text{\text{\text{\text{\text{\text{\tinit}}\xiiittitht{\text{\text{\tinitt{\text{\texitit}}\xiiittit{\text{\tinithtet{\tinithtet{\text{\tinit}\xiiittit{\text{\texitil}}\text{\tiint{\tiiittit{\tiint{\tiiittit{\tiiitt{\tiiittit{\t | | | ‡ | | | | | F | |
| | -57.6 -58.6 GRAY LIMESTONE | <u>67.3</u> | | | | | | ‡ | |
| 8 -60 | COASTAL PLAIN GRAY SANDY CLAY WITH SI | SHELL | | | | | | <u> </u> | |
| <u>-62.6 + 72.3 </u> | FRAGMENTS, WET (PEED FORMATION) | | | | | | | <u> </u> | |
| □ -62.6 | 1 ONWATION) | | ı † | 1 1 | | | | F | |
| | | l | † | | | | | F | |
| 6 -67.6 + 77.3 | | | | | | | | <u> </u> | |

