9874 REFERENCE

STATE OF NORTH CAROLINA

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

CONTENTS

SHEET NO. **DESCRIPTION** TITLE SHEET LEGEND (SOIL & ROCK) SITE PLAN 4 - 5 **PROFILES** 6 - 10 BORF LOGS SOIL TEST RESULTS

STRUCTURE SUBSURFACE INVESTIGATION

ROBESON COUNTY _ PROJECT DESCRIPTION <u>I-95 IMPROVEMENTS</u> FROM SOUTH OF US 301 (EXIT 22) TO NORTH OF SR 1758 (McDUFFIE CROSSING ROAD) SITE DESCRIPTION SITE 2 - ABUTMENT RETAINING WALLS AT END BENT 1 AND END BENT 2 OF BRIDGE ON -YIA- (US 301) OVER -L- (I-95) AT -Y1A-STA.41+19.02

STATE PROJECT REFERENCE NO I-5987A

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

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

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

NOTES:

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.

PERSONNEL

DEGON, A. N.

PESL, W. (F&R)

PAINTER, B. (F&R)

TURNAGE, J. R.

KELLY, N. S.

SMITH, R. (NCDOT)

TIGNOR, D. (F&R)

INVESTIGATED BY TERRACON CONSULTANTS

DRAWN BY FIELDS, W. D.

CHECKED BY RIGGS, Jr., A. F.

SUBMITTED BY ALEXANDER, M. J.

DATE JANUARY, 2022

Prepared in the Office of:





01/28/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REPERENCE NO. SHEET NO.

I-5987A

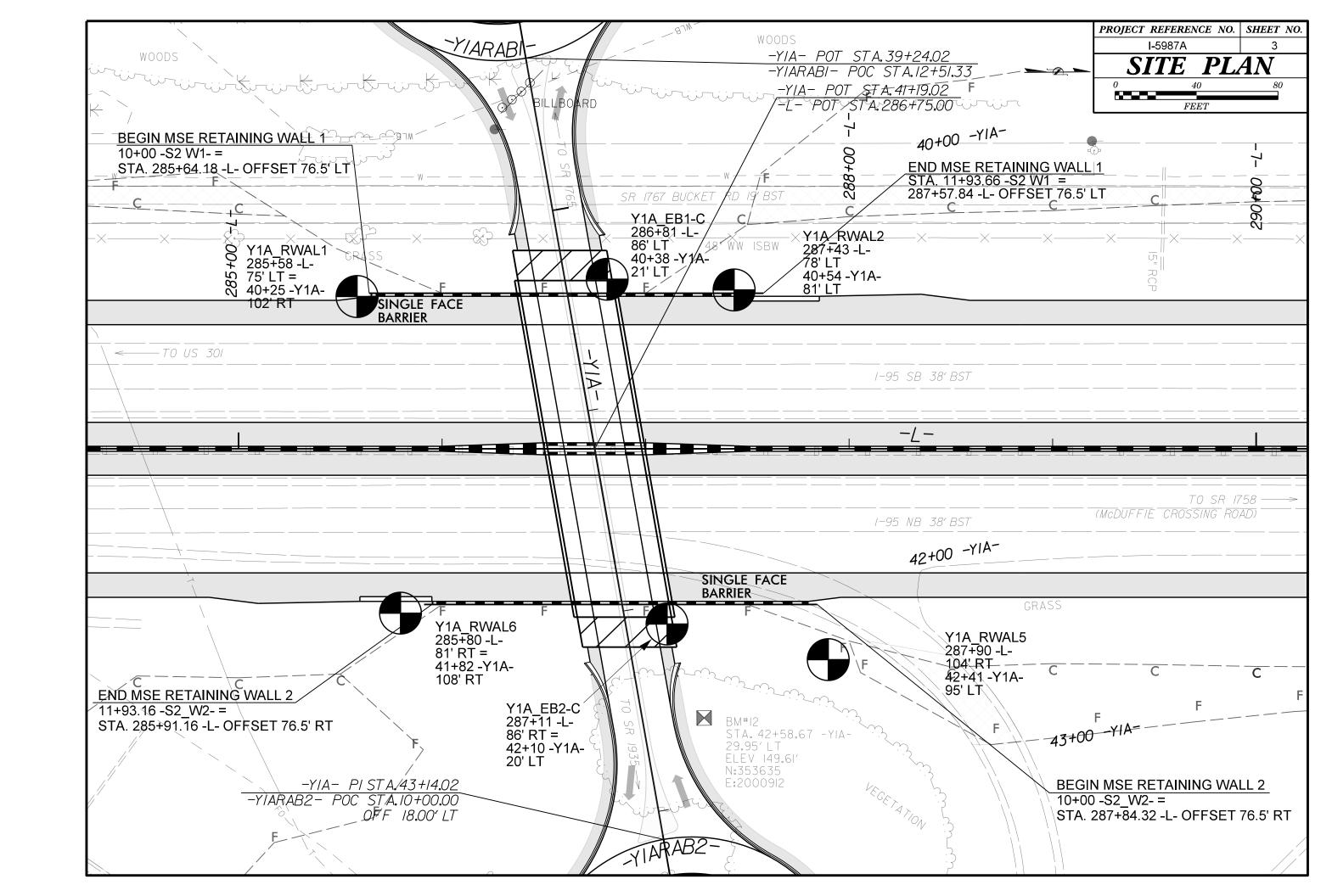
2

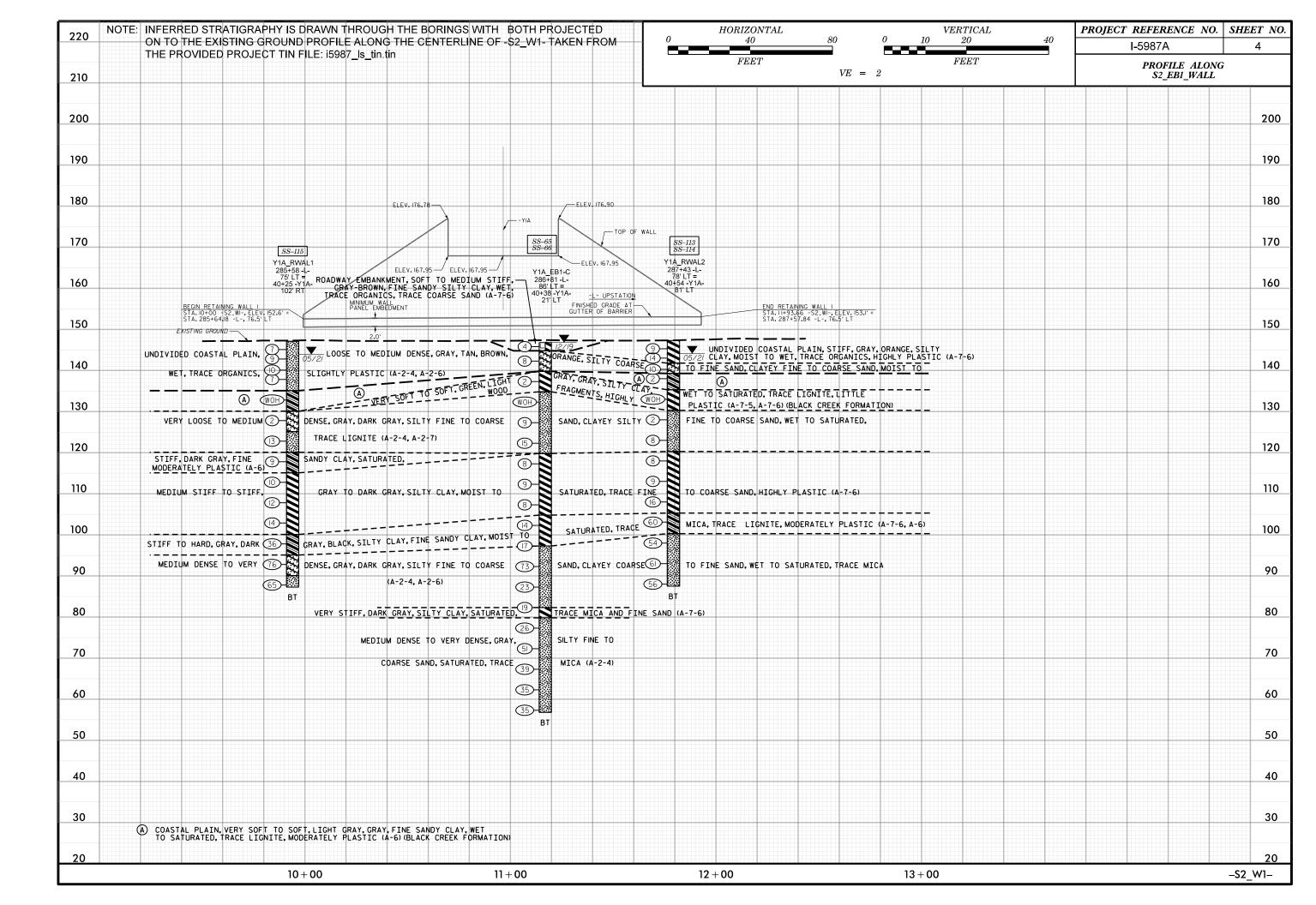
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT

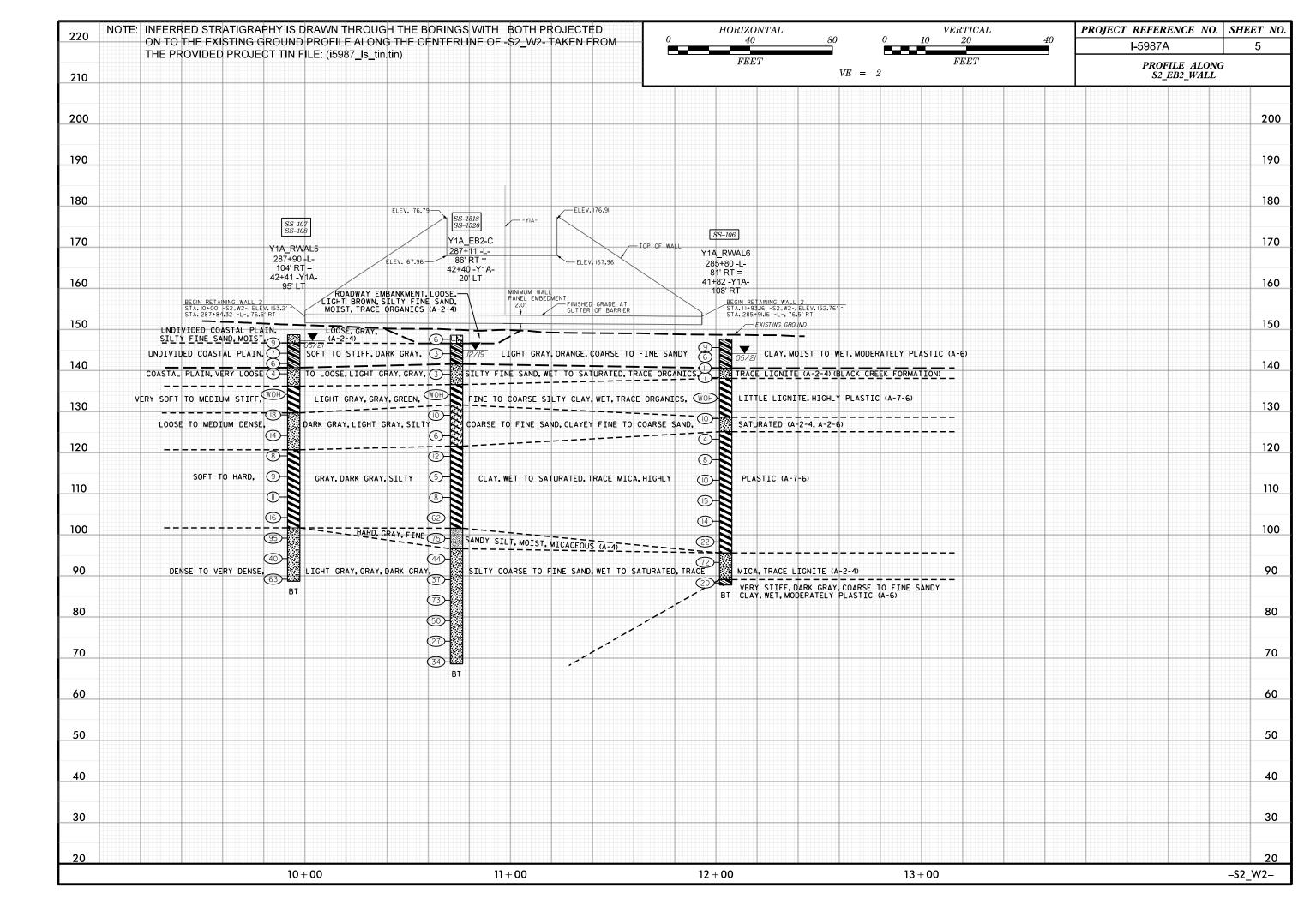
SUBSURFACE INVESTIGATION

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 | 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 | ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. |
| BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION | <u>UNIFORMLY GRADED</u> - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. <u>GAP-GRADED</u> - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES. | ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 | 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. | ARENACEDUS - 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 > 100 BLOWS PER FOOT IF TESTED. | 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 | FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT | ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND |
| CLASS. (≤ 35% PASSING *200) (> 35% PASSING *200) ORGANIC MATERIALS | MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. | LOCATSTALLINE 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. | UNE ISS, GABBRU, SUHIST, 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-7-6 | COMPRESSIBILITY | NON-CRYSTALLINE ROCK (NCR) SEDIMENTARY ROCK THAT WOULD YELLD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC. | COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. |
| SYMBOL 00000d0000d | SLIGHTLY COMPRESSIBLE LL < 31 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 SILT- | HIGHLY COMPRESSIBLE LL > 50 | SEDIMENTARY ROCK SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC. | BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. |
| *10 50 MX GRANULAR CLAY MUCK, *40 30 MX 50 MX 51 MN SOILS CRAY PEAT | PERCENTAGE OF MATERIAL | WEATHERING | DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. |
| *200 15 MX 25 MX 10 MX 35 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN 36 MN 36 MN | GRANULAR SILT - CLAY ORGANIC MATERIAL SOILS SOILS OTHER MATERIAL | FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER | DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE |
| MATERIAL DESCRIPTION AND | 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. |
| PASSING *40 40 MX 41 MN LITTLE OR | MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35% | VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, (V SLI.) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF | DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE |
| PI 6 MX NP 10 MX 10 MX 11 MN 11 MN 10 MX 10 MX 11 MN 11 MN MODERATE HIGHLY | HIGHLY ORGANIC > 10%, > 20%, HIGHLY 35% AND ABOVE | OF A CRYSTALLINE NATURE. | LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. |
| GROUP INDEX Ø Ø Ø 4 MX 8 MX 12 MX 16 MX NO MX AMOUNTS OF ORGANIC SOILS | GROUND WATER | SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO (SLI.) 1 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. |
| OF MATOR CRAYEL AND FINE SILTY OR CLAYEY SILTY CLAYEY MATTER | | (SLI.) 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS. | FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. |
| 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 POOR UNSUITABLE | <u> </u> | (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 SUBURADE PURE | 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 |
| PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30 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 DANCE OF UNCONFINED | | (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 (N-VALUE) (TONS/FT²) | 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 4.4 | SPI CLOSS WINGSTON | 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. |
| GRANIII AR LOOSE 4 TO 10 | SOIL SYMBOL SOIL SYMBOL 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 MEDIUM DENSE 10 10 30 N/A | ARTIFICIAL FILL (AF) OTHER AUGER BORING CONE PENETROMETER THAN ROADWAY EMBANKMENT AUGER BORING TEST | 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 | T THE ROADWAY EMBANKANENT TO 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 WITH CORE | 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. ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF |
| MATERIAL STIFF 8 TO 15 1 TO 2 (COHESIVE) VERY STIFF 15 TO 30 2 TO 4 | A ALLUMAN CON POINTARY A PIEZOMETER | SCATTERED CONCENTRATIONS, QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS, SAPROLITE IS | ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE |
| HARD > 30 > 4 | TTTT ALLUVIAL SOIL BOUNDARY A FIEZUMETER SPT N-VALUE | ALSO AN EXAMPLE. | RUN AND EXPRESSED AS A PERCENTAGE. |
| TEXTURE OR GRAIN SIZE | RECOMMENDATION SYMBOLS | ROCK HARDNESS VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECIMENS REQUIRES | 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 | UNDERCUT UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE | 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 | | 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 THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. |
| BOULDER COBBLE GRAVEL COARSE FINE SILT CLAY | SHALLOW UNDERCUT UNCLASSIFIED EXCAVATION - USED IN THE TOP 3 FEET OF ACCEPTABLE DEGRADABLE ROCK EMBANKMENT OR BACKFILL | TO DETACH HAND SPECIMEN. 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 |
| (BLDR.) (COB.) (GR.) (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 0.005 | 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 REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL |
| SIZE IN. 12 3 | BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED CL CLAY MOD MODERATELY 7 - 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 1 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 SOIL MOISTURE SCALE FIELD MOISTURE | CPT - CONE PENETRATION TEST NP - NON PLASTIC $\gamma_{ m d}$ - DRY UNIT WEIGHT | POINT OF A GEOLOGIST'S PICK. | TO OR LESS THAN Ø.1 FOOT PER 60 BLOWS. |
| SOIL MOISTURE SCALE FIELD MOISTURE GUIDE FOR FIELD MOISTURE DESCRIPTION (ATTERBERG LIMITS) DESCRIPTION | CSE COARSE ORG ORGANIC DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST SAMPLE ABBREVIATIONS | 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 | STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY 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 (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL |
| (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 | 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. |
| PLASTIC LIQUID LIMIT | FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK | FINGERNAIL. | TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER. |
| RANGE / - WET - (W) SEMISULID; REQUIRES DRYING TO | FRAGS FRAGMENTS | FRACTURE SPACING BEDDING | BENCH MARK: B.M. #12; BENCH NAIL SET IN BASE OF 18" PINE; |
| (P) PL PLASTIC LIMIT ATTAIN OPTIMUM MOISTURE | HI HIGHLY V - VERY RATIO | TERM SPACING TERM THICKNESS | 129.95' LEFT OF STA. 42+58.67 -YIA- |
| OM OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE | EQUIPMENT USED ON SUBJECT PROJECT | VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET WIDE 3 TO 10 FEET THICKLY BEDDED 1.5 - 4 FEET | N: 353,635; E: 2,000,912 ELEVATION: 149.61 FEET |
| SL _ SHRINKAGE LIMIT | DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE: | MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.16 - 1.5 FEET | NOTES: |
| - DRY - (D) REQUIRES ADDITIONAL WATER TO | CME-45C CLAY BITS X AUTOMATIC MANUAL | VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET | FIAD - FILLED IMMEDIATELY AFTER DRILLING |
| ATTAIN OPTIMUM MOISTURE | X CME-55 (RF00074) G'CONTINUOUS FLIGHT AUGER CORE SIZE: | THINLY LAMINATED < 0.008 FEET | |
| PLASTICITY | ■ SHULLUW AUGERS □ □-B □ □-H □ □-B | INDURATION | NOTE-ELEVATIONS OF BORINGS YIA_EBI-C AND YIA_EB2-C PERFORMED BY F&R INC. OBTAINED FROM PROVIEDE TIN FILE: 15987_Is_+in_tin_DATED: II-14-2019 |
| PLASTICITY INDEX (PI) DRY STRENGTH | L CME-550 HARD FACED FINGER BITS | FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. RUBBING WITH FINGER FREES NUMEROUS GRAINS; | THE TIEL ISSUITED THE THE DATED. IT IM-ZOIS |
| NON PLASTIC 0-5 VERY LOW SLIGHTLY PLASTIC 6-15 SLIGHT | VANE SHEAR TEST TUNG,-CARBIDE INSERTS HAND TOOLS. | FRIABLE GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE. | |
| MODERATELY PLASTIC 16-25 MEDIUM | X CASING W/ ADVANCER POST HOLE DIGGER | MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; | |
| HIGHLY PLASTIC 26 OR MORE HIGH | PORTABLE HOIST X TRICONE 2% STEEL TEETH HAND AUGER | BREAKS EASILY WHEN HIT WITH HAMMER. | |
| COLOR | TRICONE TUNGCARB. SOUNDING ROD | GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; INDURATED DIFFICULT TO BREAK WITH HAMMER. | |
| DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). | X 21/4" HOLLOW STEM AUGERS VANE SHEAR TEST | CHARD HAMMED DI ONE DECITIOEN TO DREAM CAMBLE. | |
| MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE. | X CME-55 X 3½" HOLLOW STEM AUGERS | EXTREMELY INDURATED SHARP HAMMER BLOWS REGULATED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS. | |











Terracon GEOTECHNICAL BORING REPORT

SHEET 6 OF 11

| | ulting Eng | | inu Scie | entists | | IP I-5987 | | | ORE L | | | | CEOLOGIST DECON A N | | |
|------|---------------|-------------------|----------|---------|-------|---|-------------|--|----------------|---------|---------|-------------|--|--------------------------------|---------------------|
| | 47533 | | CITE | - 0 4 | | | A/ALLC AT | | Y ROBESC | | 1 3/4 4 | 0\/5 | GEOLOGIST DEGON, A. N. | CDOLIND | MTD (64) |
| | ING NO. | | | | | TATION 4 | | EB1 AND | OFFSET | | | - 0/1 | ER -L- AT -Y1A- STA. 14+92.02 ALIGNMENT -Y1A- | GROUND 0 HR. | WIR (II) N/A |
| | LAR ELE | | | -1 | | | rth 59.8 f | • | NORTHING | | • | | EASTING 2,000,704 | 24 HR. | 3.2 |
| | | | | C TCC | | | 0 79% 12/31 | | NORTHING | DRILL M | |) Mu | 1 | J 24 FIK. MER TYPE A | |
| | LER TU | | | | | | E 05/11/2 | | COMP. DA | | | J IVIU | SURFACE WATER DEPTH N | | utomatic |
| ELEV | DDIVE | DEPTH | ŕ | W CO | | | | PER FOOT | | SAMP. | | 11 | SURFACE WATER DEFIN | /A | |
| (ft) | ELEV (ft) | (ft) | 0.5ft | 1 | 0.5ft | 0 | | 50 | 75 100 | | MO | O G | SOIL AND ROCK DES | SCRIPTION | DEPTH (f |
| | | | | | | | | • | | | | | \ | | , |
| 150 | | _ | | | | | | | | | | | _ | | |
| | - | _ | | | | | | | | | | | | | _ |
| | 146.1 | 1.0 | | | | | <u> </u> | T : : : : | 1:::: | | | | 147.1 GROUND SURI UNDIVIDED COAST | AL PLAIN | 0. |
| 145 | 143.8 - | - - 3.3 | 2 | 4 | 3 |] | | <u> </u> | | | | | _ LOOSE TO MEDIUM DE BROWN, ORANGE, SILT | Y COARSE T | O |
| | _ | - | 4 | 5 | 4 | 9 | | | | | W | | . FINE SAND, MOIST TO ORGANICS, SLIGHTLY P | | |
| 140 | 141.1 | 6.0 - | 2 | 4 | 6 | 10- | | | | | w | <u> </u> | - | | |
| | 138.8 - | - 8.3 - | 3 | 2 | 5 | ┤│ <i>∶;</i> ;;; | | | | SS-115 | w | | NO ORGANI | CS | |
| 105 | - | - | | | | .T' . | | | | | | | · 135.1 | | 12. |
| 135 | 133.8 - | - - 13.3 | | | | | | : : : : | | | | | COASTAL PL | | |
| | - | - | WOH | WOH | WOH | 0: : : | | | | | Sat. | | VERY SOFT, LIGHT GRA CLAY, SATURATED, TR | ACE LIGNITE | <u>,</u> |
| 130 | | - | | | | | | | | | | | MODERATELY PLASTIC 130.1 CREEK FORMA | TÌON) ` | <u> </u> |
| | 128.8 - | - 18.3 - | WOH | WOH | 2 | | | | | | Sat. | | VERY LOOSE, DARK G COARSE TO FINE SAND | , SATURATE | |
| 125 | | - | | | | ``; : : : | | : : : : | | | | | SLIGHTLY PLASTI | C (A-2-7) | 22 |
| 120 | 123.8 - | - - 23.3 | 3 | 7 | 6 | - \ | 1 | : : : : | | | | | MEDIUM DENSE, DARK COARSE TO FINE SAND | | |
| | - | - - | 3 | ′ | " | | | | | | Sat. | | NON PLASTIC (| | Σ, |
| 120 | 1400 | - | | | | | | | | | | | 120.1STIFF, DARK GRAY, FINE | SANDY CLA | <u> 27</u> |
| | 118.8 - | - 28.3 - | 3 | 4 | 5 | | | | | | Sat. | | SATURATED, MODERA (A-6) | | |
| 115 | - | - | | | | : ::: | | | | | | | _ 115.1 | | 32 |
| | 113.8 - | - 33.3 | 4 | 4 | 6 |] - ; | | | | | | | STIFF, DARK GRAY, SILT HIGHLY PLASTIC | | Τ, |
| | - | _ | ' | l ' | | 10 : | | : : : : | | | W | | • | -7 | |
| 110 | 108.8 - | - - 38.3 | | | | - 1 | ļ · · · · · | ļ · · · · · | ļ · · · · · | | | | · - | | |
| | - 100.0 | - 30.3 | 4 | 5 | 7 | 12 | | | | | W | | • | | |
| 105 |] | [| | | | | | | | | | | | | |
| | 103.8 - | - 43.3 | 4 | 6 | 8 | | | | | | l w | | - · | | |
| |] | _ | | | | 14 | | | | | | | | | |
| 100 | 98.8 - | - - 48.3 | | | | | | | | | | | HARD, DARK GRAY, FINE | | Y , — 47 |
| | - | - | 8 | 15 | 21 | 11 : : : : | 36 | | | | W | | WET, TRACE MICA AN MODERATELY PLAS | | |
| 95 | | - | | | | | <u> </u> | \ | | | | | _ 95.1 | | 52 |
| | 93.8 - | - 53.3 - | 20 | 32 | 44 | ┨ : : : : | | | 76 | | w | / // | VERY DENSE, GRAY, CL TO FINE SAND, WET, | TRACE MICA, | |
| 00 | | - - | | | | | | | / [:::: | | | | SLIGHTLY PLASTI | ∪ (A-2-6) | E-7 |
| 90 | 88.8 - | - - 58.3 | | | |] | | / . | | | | | 90.1VERY DENSE, GRAY, SIL | | |
| | - | - | 20 | 30 | 35 | • • • • | | •65 | 5 | | W | | FINE SAND, WET, TRAI CLAY (A-2- | 4) | / 59 |
| | - | - | | | | | | | | | | | Boring Terminated at Elec COASTAL PLAIN SILTY | SAND (BLAC | |
| | | - | | | | | | | | | | | CREEK FORMA | • | |
| | | - | | | | | | | | | | | STA. 285+58 -L- | 75' LT | |
| | - | - | | | | | | | | | | | <u>-</u> · | | |
| | - | - | | | | | | | | | | | | | |
| | | - | | | | | | | | | | | - | | |
| | | - | | | | | | | | | | | · · | | |
| |] | <u> </u> | | 1 | | | | | | | | 1 | • | | |

| | | | | | | | | D | URE L | .00 | | | | |
|-------|----------------|---------------|---------|--------|----------------|---|-------------------|----------------|--|----------|---------------|--------------------|--|--------------------------|
| WBS | 47533 | 3.1.1 | | | TI | P I-5987 | | COUNTY | ROBESO | N | | | GEOLOGIST W. Pesl | |
| SITE | DESCR | IPTION | SITE | 2 - AI | BUTME | ENT RET. W | /ALLS AT | EB1 AND | EB2 OF BR | DGE ON | I -Y1A- C | OVE | R -L- AT -Y1A- STA. 14+92.02 | GROUND WTR (ft |
| BORI | NG NO. | Y1A_ | EB1-C | ; | S ⁻ | TATION 4 | 0+38 | | OFFSET | 21 ft LT | | | ALIGNMENT -Y1A- | 0 HR. N/A |
| COLL | AR ELE | EV. 14 | 16.8 ft | | T | OTAL DEPT | TH 90.0 ft | | NORTHING | 353,58 | 39 | | EASTING 2,000,696 | 24 HR. 0.0 |
| DRILL | RIG/HAN | MER EF | F./DAT | E RFC | 00074 C | ME-55 80% | 03/08/2019 | | | DRILL M | ETHOD | Mud | Rotary HAMM | ER TYPE Automatic |
| DRILI | L ER R. | . Smith | | | S ⁻ | TART DATE | E 12/10/19 | 9 | COMP. DA | TE 12/1 | 11/19 | | SURFACE WATER DEPTH N/ | A |
| ELEV | DRIVE | DEPTH | BLC | ow co | UNT | | BLOWS F | PER FOOT | | SAMP. | | | | |
| (ft) | ELEV (ft) | (ft) | 0.5ft | 0.5ft | 0.5ft | 0 : | 2,5 5 | 50 | 75 100 | NO. | MOIL | | SOIL AND ROCK DES ELEV. (ft) | CRIPTION DEPTH (|
| | | | | | | | | | | | , | | | 52(|
| 150 | | | | | | | | | | | | | | |
| 150 | | ‡ | | | | | | | | | | | | |
| | - 146.8 - | 0.0 | | | | | | | | | | <u> </u> | 146.8 GROUND SURF | ACE 0 |
| 145 | - | | WOH | 1 | 3 | 4 · · · | | | | | W | N | ROADWAY EMBAN 144.8 SOFT TO MEDIUM | |
| | 143.3 | 3.5 | | | | ':¬: | | | | | | | GRAY-BROWN, FINE SA | ANDY SILTY |
| | - | | 2 | 4 | 4 | . . 8 | | | | | w 🔆 | | CLAY, WET, TRACE ORG | |
| 140 | - | ţ | | | | 1 | | | | | / ://: | $\frac{1}{2}$ | COASTAL PLA | |
| | 138.3 | 8.5 | | | | $ f \leq 1$ | | | | | | Ŧ | TO COARSE SAND, WET | (A-2-6) (BLACK) |
| | - | F | WOH | WOH | 2 | • 2 | : : : : | : : : : | | SS-65 | 76% | 7 | CREEK FORMAT SOFT, LIGHT GRAY, SILT | |
| 135 | - | ļ. | | | | ا | | | | | | 1 | <u>134.8</u> LITTLÉ WOOD, HIGHLY P | LASTIC (A-7-5) <u>12</u> |
| | 133.3 | 13.5 | I WOH | WOH | WOH | | | | | SS-66 | w | | VERY LOOSE TO MEDIUM GRAY, CLAYEY SILTY FIN | |
| | - | ţ | "" | ''' | | Q 0 | | | | 33-00 | ۷۷ | <u></u> | SAND, WET TO SATURA LIGNITE (A-2- | |
| 130 | - | | | | | ` | <u> </u> | | + | | | - | LIOITIL (/\ Z |) |
| | 128.3 | 18.5 | 2 | 4 | 5 | | | : : : : | | | Sat. | F | | |
| 125 | - | ‡ | | | | . 1, | | | | | | # | | |
| 120 | 123.3 | 22.5 | | | | \ | | | | | | * | | |
| • | | | 5 | 7 | 8 | 15 | | | | | Sat. | | | |
| 120 | - | ł | | | | / | | | | | | - | 119.8 | 27 |
| | 118.3 | 28.5 | | | | | | | | | | 1 | MEDIUM STIFF TO STIFF, | DARK GRAY, |
| | - | ļ | 3 | 4 | 4 | . / | | | | | М | * | SILTY CLAY, MOIST, TRA COARSE SAND (A | |
| 115 | - | ‡ | | | | 1 - 1 | | | | | | 土 | | |
| - | 113.3 | 33.5 | 2 | 4 | 5 | ::::: | | | | | | 1 | | |
| | - | + | _ | * | 3 | . •9 | | | | | М | } | | |
| 110 | _ | F | | | | | | | | | | 7 | | |
| | 108.3 | 38.5 | 2 | 4 | 4 | | | : : : : | | | м | 7 | | |
| 105 | - | ‡ | | | | | | | | | " | 3 | | |
| 105 | 400.0 | 40.5 | | | | | | | | | | + | 104.8STIFF TO VERY STIFF, E | BLACK-DARK 42 |
| • | 103.3 | 43.5 | 4 | 6 | 8 | | | : : : : | : : : : | | м | 1 | GRAY, SILTY CLAY, MO LIGNITE (A-7- | |
| 100 | - | F | | | | ::\tau | | : : : : | | | | 3 | LIOINIE (AT | 0) |
| | 98.3 | 48.5 | | | | 4 . | | | | | | 7 | | |
| | - | ‡ | 4 | 6 | 11 | 17 | [:::: | : : : : | :::: | | М | \ \ \ \ | 97.3 MEDIUM DENSE TO VERY | DENSE. DARK |
| 95 | - | ‡ | | | | | 17. | : : : : | | | | :: <u> </u> | GRAY, SILTY FINE TO CO | DARSE SAND, |
| | 93.3 | 53.5 | - | 200 | AF | | :::: | \ .\.\. | :::: | | | ::: | SATURATED, TRACE CL (A-2-4) | AT AND MICA |
| | - | + | 5 | 28 | 45 | | | | 73 | | Sat. | + | | |
| 90 | _ | F | | | | | | <u> </u> | | | | ::- | | |
| | 88.3 | 58.5 | 16 | 17 | 6 | ::::: | <u> </u> | : : : : | | | Sat. | ::‡ | | |
| | - | ‡ | | ' | | ::::: | 23 | : : : : | : : : : | | Jai. | :: | | |
| 85 | | <u> </u> | | | | ! | | | + | | | * | | |
| | 83.3 | 63.5 | 8 | 9 | 10 | : : : / | 9 | | | | Sat. | <u>:</u> | 82.3 | 64 |
| 80 | - | F | | | | ::::7 | | : : : : | | | | y . | VERY STIFF, DARK GRAY SATURATED, TRACE MI | A AND EINE |
| 30 | 78.3 | 68.5 | | | | | | : : : : | : : : : | | | * | <u>′ ^{3.0}</u> ¬ SAND (A-7-6 |) 1— <u>"</u> |
| | | J. 30.5 | 9 | 12 | 14 | :::: | 26 | : : : : | :::: | | Sat. | :: | MEDIUM DENSE TO VE GRAY, SILTY FINE TO CO | DARSE SAND, |
| 75 | = | t | | | | | <u></u> | <u> </u> | | | | ::- | SATURATED, TRACE N | /IICA (A-2-4) |
| | 73.3 | 73.5 | | | | | | | | | | F | | |
| | - | ļ | 13 | 29 | 22 | | ::::`` | 51 | | | Sat. | ::‡ | | |
| 70 | - | t | | | | | 1/ |] | | | | ::† | | |

GEOTECHNICAL BORING REPORT

SHEET 7 OF 11

| | | | | | | | | | <u>ORE L</u> | | | | | | | |
|--------------|-----------------------|-----------------------------|---------|-------|---------|-----------------|------------------|----------|--------------|---------|--------|-------------|--|--------------------|------------------|----------|
| | 47533 | | | | | P I-5987 | | | ROBESO | | | | GEOLOGIST W. Pesl | | | |
| | | | | | | | | EB1 AND | | | 1 -Y1A | - OVE | ER -L- AT -Y1A- STA. 14+92 | 2.02 | GROUND W | ΓR (ft) |
| BOR | ING NO. | Y1A_ | EB1-C | | | TATION 40 | | | OFFSET 2 | | | | ALIGNMENT -Y1A- | | 0 HR. | N/A |
| COLI | LAR ELE | EV. 14 | 6.8 ft | | TC | OTAL DEPT | H 90.0 ft | | NORTHING | 353,5 | 89 | | EASTING 2,000,696 | | 24 HR. | 0.0 |
| DRILL | _ RIG/HAN | IMER EF | F./DATI | E RFC | 00074 C | ME-55 80% 0 | 3/08/2019 | | | DRILL N | 1ETHO[|) Mu | d Rotary | HAMM | ER TYPE Autor | natic |
| DRIL | LER R | . Smith | | | S | TART DATE | 12/10/19 | 9 | COMP. DA | TE 12/ | 11/19 | | SURFACE WATER DEPT | Γ H N/. | A | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | 0.5ft | 0.5ft | _ | 0 2 | | PER FOOT | 75 100 | SAMP. | MOI | L O G | SOIL AND ROC | K DES | | EPTH (ft |
| 70 | ļ | | | | | | Matc | h Line | | ļ | | | | | DV DENGE | |
| 65 | 68.3 | 78.5 - - - 83.5 | 4 | 16 | 23 | | | | | | Sat. | | MEDIUM DENSE GRAY, SILTY FINE SATURATED, TF (cont | TO CC | DARSE SAND, | |
| 60 | 583 7885 | | | | | | | | | | Sat. | | 56.8 Boring Terminated | at Eleva | ation 56.8 ft in | 90. |
| | - | <u> </u> | | | | | | | | | | | – SAND (COASTAL PL FORM | LAIN) (E 1ATION | BLACK CREEK) | |
| | - | _ | | | | | | | | | | | 1. SURFICIAL ORG | SANIC S | SOIL: 0.0 - 0.2' | |
| | | | | | | | | | | | | | | | | |
| | - | | | | | | | | | | | | | | | |



| Consu | ulting Eng | gineers a | and Scie | entists | | | | B | ORE | <u> </u> | <u>.OG</u> | | | _ | | | | |
|--------------|-----------------------|------------------------|----------|---------|------|----------------------------|----------------------|-------------------------|-----------|----------|--------------|--------|--|--|------------------------------|--------------------------|----------|-----------|
| WBS | 47533 | 3.1.1 | | | Т | IP I-5987 | | COUNT | Y ROB | ESO | N | | | GEOLOGI | ST DEGON | , A. N. | | |
| SITE | DESCR | IPTION | SITE | 2 - AI | BUTM | ENT RET. V | VALLS AT | EB1 AND | EB2 OF | - BRI | DGE ON | I -Y1A | - OVI | ER -L- AT -Y1 | A- STA. 14+9 | 92.02 | GROUN | D WTR (f |
| BORI | NG NO. | Y1A | RWAL | .2 | s | TATION 4 | 0+54 | | OFFSI | ET 8 | 31 ft LT | | | ALIGNME | NT -Y1A- | | 0 HR. | N/ |
| | LAR ELI | | | | | OTAL DEP | TH 59.8 f | t | | | 353,65 | 51 | | FASTING | 2,000,702 | | 24 HR. | 3 |
| | | | | E TER | | IEDRICH D-50 | | | HOILI | | DRILL M | |) Mi | | 2,000,702 | Тылли | ER TYPE | |
| | | | | | | | | | | | | | J IVIU | , , , , , , , , , , , , , , , , , , , | | | | Automatic |
| DRIL | LER T | URNAG | · · | | | TART DAT | | | | . DA | TE 05/1 | | / | SURFACE | WATER DEF | TH N/ | Α | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | 0.5ft | 0.5ft | | 0 | | PER FOOT 50 | 75 | 100 | SAMP. NO. | / | O I G | ELEV. (ft) | SOIL AND RO | OCK DES | CRIPTION | DEPTH |
| 150 | | | | | | | | | | | | | | - - 147.3 | GPOUN | ID SURF | ACE. | |
| | 146.3 | 1.0 | | | _ | 1 : 1: : : | T:::: | T : : : : | | : : | | | | - | UNDIVIDED | COASTA | L PLAIN | |
| 145 | 144.0 | 1 3.3 | 4 | 4 | 5 | 9 | | ļ | + | | | | | | TIFF, GRAY, O OIST TO WET | | | |
| | 144.0 | ‡ "" | 5 | 5 | 9 | 14 | | | | : : | SS-113 | 22% | | - | HIGHLY P | | | |
| | 141.3 | 6.0 | 4 | 4 | 6 | ::/:: | | | | | | | | <u> </u> | MEDIUM DENS | E, GRAY | ORANGE | |
| 140 | 139.0 | 8.3 | * | 4 | 0 | 10 | • • • • | | | | | W | | - _{139.3} CL/ | AYEY COARSE | | SAND, W | /ET |
| | 153.0 | ‡ ° ° ° | 2 | 1 | 1 | •2 · · · | | | | : : | | W | | | | A-2-6) TAL PLA | IN | / |
| | | İ | | | | i : : : : | 1 : : : : | 1 : : : : | | | | | | | FT, GRAY, CO | ARSE TO | FINE SAM | |
| 135 | 134.0 | I I 13.3 | | | | [| ļ · · · · · | ļ | <u> </u> | | | | | - 135.3 → MO | CLAY, WET, DERATELY PL | | | ACK 1 - 1 |
| | 134.0 | 13.3 | WOH | WOH | WOH | | | | | | SS-114 | 62% | | · | CREEK | FORMAT | ION) 🗋 | |
| | | ŧ | | | | | | | . | | | | | | RY SOFT, GR AY, SATURAT | | | F |
| 130 | | ‡ | | | | | | | 1 | | | | | = 130.3 | HIGHLY P | LASTIC (| A-7-6) | /— 1 |
| ŀ | 129.0 | 18.3 | WOH | 1 | 1 | 1 | • • • • | | . | | | Sat. | | | RY LOOSE TO | | | |
| | | Į | | | | 1 2 | : : : : | | | : : | | Jai. | | - 60 | ARSE TO FINI TRACE | E SAND, CLAY (A: | | ED, |
| 125 | | t | | | | j | 1 | | | | | | | - | | • | , | |
| | 124.0 | 23.3 | 3 | 5 | 3 | 1 7 | | | | | | | | - - | | | | |
| | | İ | 3 |) | 3 | 8 | | | | | | Sat. | | - | | | | |
| 120 | | Į | | | | : : : : | : : : : | : : : : | | : : | | | | 120.3 | | | | 2 |
| 120 | 119.0 | 28.3 | | | |] . i | | | + : : | | | | | = | FF TO VERY | | | ARK |
| | | + | 3 | 3 | 5 | . ∳8 | | | . | | | Sat. | | - | GRAY, SILTY (HIGHLY P | | | , |
| | | ‡ | | | | : : : : | | : : : : | | : : | | | | - | | 2.01.0 | ,,,, | |
| 115 | 114.0 | 1 33.3 | | | | . i | | $+\cdots$ | $+\cdots$ | | | | | _ | | | | |
| | | 1 33.3 | 3 | 4 | 5 | | | | | | | Sat. | | - | | | | |
| | - | ŧ | | | | . 7 | | | . | | | | | - | | | | |
| 110 | | Į | | | | | 1 | | 1 | | | | | - | | | | |
| | 109.0 | 38.3 | 6 | 8 | 8 | | | | • • | | | Sat. | | - | | | | |
| | | Į | | | | | \- <u>``</u> ` | : : : : | | : : | | Out. | | - - | | | | |
| 105 | | İ | | | | | l | ` | | | | | | 105.3 | | | 5.55 | 4 |
| | 104.0 | 43.3 | 40 | 60/0.4 | - | | | | + | | | Sat. | | - ' | HARD, GRAY, SATURATE | | | , |
| | | ‡ | 40 | 00/0.4 | | | | | 10 | 0/1.0 |] | Out. | | - | MODERATE | | | |
| 100 | | ŧ | | | | | | | | | | | | 100.3 | | | | 4 |
| | 99.0 | 48.3 | 1 | 00 | 05 | | | 1. ,/. | | | | | | | Y DENSE, GR E SAND, SATI | | | |
| | - | t | 17 | 29 | 25 | | | ●54 | . | | | Sat. | | - ' ' ' ' ' | | LAY (A-2 | | IICA |
| 95 | | Į | | | | | : : : : | \ | | : : | | | | - - | | | | |
| 90 | 94.0 | 53.3 | | | | <u> </u> | | : \; : . | + : : | | | | | - | | | | |
| | | + | 12 | 26 | 35 | | | · •61 · | . | | | Sat. | | - | | | | |
| | | ‡ | | | | | | :1:: | | : : | | | | - - | | | | |
| 90 | 89.0 | ⊥ I _{58.3} | | | | | + | .! | $+\cdots$ | | | | | _ | | | | |
| | | 1 00.0 | 22 | 26 | 30 | 1 : : : : | | ●56 | | : : | | Sat. | | - - 87.5 | | | | 5 |
| İ | - | ŧ | | | | | • | | | | | | | - Bo | ring Terminate | | | t IN |
| | _ | Į | | | | | | | | | | | | - C(| DASTAL PLAIN CREEK | I SILTY S FORMAT | | CK |
| | | ‡ | | | | | | | | | | | | <u>.</u> | | | , | |
| | | + | | | | | | | | | | | | - | STA. 287 | +43 -L-; 7 | '8' LT | |
| | | İ | | | | | | | | | | | 1 1 | <u>.</u> | | | | |
| | | Ŧ | | | | | | | | | | | | • | | | | |
| | | İ | | | | | | | | | | | | - - | | | | |
| | | Ŧ | | | | | | | | | | | | - | | | | |
| | - | İ | | | | | | | | | | | 1 1 | - | | | | |
| | | Ŧ | | | | | | | | | | | | - | | | | |
| | | İ | | | | | | | | | | | 1 1 | - | | | | |
| | | Ι | | | | | | | | | | | | - | | | | |

GEOTECHNICAL BORING REPORT BORE LOG

SHEET 8 OF 11

| | | | | | | | | | | UKE | | | | | | |
|----------|--------------|-----------------|------------|-------|--------|-------|--|-------------------|--------------|---------------|------------|---------|-------------|--------------------|--|--------------------------|
| W | BS 4 | 47533. | 1.1 | | | TI | P I-5987 | | COUNT | r ROBE | 102 | N | | | GEOLOGIST DEGON, A. N. | |
| SI | ΓE DI | ESCRI | PTION | SITE | 2 - AE | BUTME | ENT RET. \ | VALLS AT E | B1 AND | EB2 OF I | BRII | DGE ON | I -Y1A | - OVE | R -L- AT -Y1A- STA. 14+92.02 | GROUND WTR (ft) |
| ВС | RING | G NO. | Y1A_I | RWAL | .5 | S | TATION 4 | 2+41 | | OFFSE1 | r 9 | 5 ft LT | | | ALIGNMENT -Y1A- | 0 HR. N/A |
| | | | . 14 | | | To | OTAL DEP | TH 60.0 ft | | NORTHI | NG | 353 60 | 96 | | EASTING 2,000,884 | 24 HR. 1.5 |
| | | | | | E TER | | | 79% 12/31/ | 2020 | | 1 | DRILL M | |) Muc | <u> </u> | R TYPE Automatic |
| | | | | | | | | | | | | | |) IVIUC | | |
| DF | | | JRNAG | | | | TART DAT | E 05/06/21 | | COMP. | DAI | |)6/21 | | SURFACE WATER DEPTH N/A | \ |
| ELE | =∨ ϝ | DRIVE ELEV | DEPTH | | W CO | | | BLOWS F | | | | SAMP. | ▼/ | | SOIL AND ROCK DESC | RIPTION |
| (ft | , | (ft) | (ft) | 0.5ft | 0.5ft | 0.5ft | 0 | 25 5 | 0 | 75 1 | 00 | NO. | <u>/moi</u> | G | ELEV. (ft) | DEPTH (ft) |
| | | | | | | | | | | | | | | | | |
| 15 | 0 | | | | | | | | | | | | | | | |
| | | 7 | | | | | | _ | 1 | _ | | | | IF | 148.7 GROUND SURFA | |
| | | 147.7 | - 1.0 - | 5 | 6 | 3 | | | | | - | | V | | UNDIVIDED COASTAI 146.7 _ LOOSE, GRAY, SILTY FINE | |
| 14 | 5_1 | 145.2 | 3.5 | 4 | | 2 | · <u>7</u> .° · · | | | | - | | | | (A-2-4) MEDIUM STIFF TO STIFF, | |
| | | 440 7 | - 00 | 4 | 4 | 3 | • 7 · · | | | | - | | W | | COARSE TO FINE SANDY | CLAY, WET, |
| | | 142.7 | - 6.0 | 1 | 3 | 3 | j | | : : : : | : : : | - | | W | | TRACE ORGANICS, MOI PLASTIC (A-6) | |
| 14 | 0 1 | 140.2 | 8.5 | 3 | 3 | 1 | 1 1 | | | | _ | | _ | | - COASTAL PLAI | 0.0 |
| | | + | - | 3 | 3 | ' | • 4 · · · | | | | | SS-107 | Sat. | l :::t | LOOSE, LIGHT GRAY, SILT SATURATED, TRACE LIG | |
| | | 7 | - | | | | | | : : : : | : : : | - | | | F | 136.2 (BLACK CREEK FORM | |
| 13 | 5_1 | 135.2 | 13.5 | WOH | WOH | WOH | <u> </u> | : : : : | | ļ : : : | _ | 20.400 | 0001 | | VERY SOFT, LIGHT GRAY, | SILTY CLAY, |
| | | 1 | - | WOII | WOII | WOII | • 0 | | | | : | SS-108 | 66% | | SATURATED, HIGHLY PLA | STIC (A-7-6) |
| | | 7 | - | | | | N | | | | - | | | | | |
| 13 | 0 1 | 130.2 | 18.5 | 4 | 8 | 10 | · · · · · | | | | _ | | 0-4 | | _129.7 | 19.0 |
| | | 1 | - | | | 10 | | 8 | | | : | | Sat. | l t | MEDIUM DENSE, DARK G COARSE TO FINE SAND, S | |
| | | 7 | - | | | | :::;;: | | | | - | | | F | (A-2-4) | DATORATED |
| 12 | 5_1 | 125.2 | 23.5 | 5 | 7 | 7 | / - | | | ļ : : : | _ | | 0-4 | | - | |
| | | 1 | | | ' | , i | ● 14 / | | | | : | | Sat. | | | |
| | | + | - | | | | · · <i>j</i> · · | | | | - | | | - | 120.7 | 20.0 |
| 12 | 0 1 | 120.2 | 28.5 | 2 | 3 | 5 | . / | | | 1 | _ | | Cot | | STIFF TO VERY STIFF, D | |
| | | 1 | | _ | | | ·¶8 · · | | | | : | | Sat. | | SILTY CLAY, WET TO SA TRACE MICA, HIGHLY PLA | TURATED, STIC (A-7-6) |
| | | + | - | | | | - | | | | - | | | | 110 (32 (0.07), 1 (0.12) 1 2 | (110 (1110) |
| 11 | 5_1 | 115.2 | 33.5 | 2 | 3 | 6 | 1 | | | ļ : : : | _ | | Sat. | | - | |
| | | ‡ | - | _ | | | · • 9 · · | | | | | | Sal. | | | |
| | | + | - | | | | . | | | | - | | | | | |
| 11 | 0 1 | 110.2 | 38.5 | 4 | 4 | 7 | 1 | | | 1 | - | | w | | - | |
| | | 1 | - | | | | . • • 11 . | | | | | | • • • | | | |
| | | İ | - | | | | : :/: : | 1 : : : : | : : : : | 1 : : : | : | | | | | |
| 10 | 51 | 105.2 | 43.5 | 5 | 6 | 10 | | | | | _ | | w | | TRACE LIGNIT | E |
| | | 1 | - | | | | •16 | , | | | : | | | | | |
| | | 🖠 | - | | | | | | · : | | : | | | | DENSE TO VERY DENSE, I | |
| 10 | <u>0 1</u> | 100.2 | 48.5 | 15 | 40 | 55 | | | ļ | | | | w | - | SILTY COARSE TO FINE SA | AND, WET TO |
| | | ‡ | - | | | | | | : : : : | \ | · | | | ## | SATURATED, TRACE M | UA (A-Z-4) |
| | | <u>, , †</u> | - 50 5 | | | | : : : : | | : _ : _ : : | 1::: | | | | | | |
| 98 | + | 95.2] | 53.5 | 18 | 20 | 20 | | •40 | | + | \dashv | | w | :::: - | - | |
| | | 7 | | | | | | | : : : : | | . | | | F | | |
| | | 90.2 | - 50.5 | | | | :::: | : : : ` | N. III | | | | | | | |
| 90 | _ | 90.2 | 58.5 | 12 | 28 | 35 | | | 63. | + | - | | Sat. | | - 88.7 | 60.0 |
| ı | | - | - | | | | | | | | | | | 1 | Boring Terminated at Eleva | tion 88.7 ft IN |
| | | 1 | - | | | | | | | | | | | | UNDIVIDED COASTAL PI SAND (BLACK CREEK FO | |
| ı | | - | - | | | | | | | | | | | 1 E | - | , |
| | | 7 | - | | | | | | | | | | | F | STA. 287+90 -L-; 10 | ** (\ I |
| Ί | | ‡ | - | | | | | | | | | | | | | |
| | | + | - | | | | | | | | | | | | - | |
| | | 1 | - | | | | | | | | | | | F | | |
| | | 1 | - - | | | | | | | | | | | | | |
| | | + | - | | | | | | | | | | | - | - | |
| | | 1 | - | | | | | | | | | | | F | | |
| | | ‡ | - | | | | | | | | | | | | | |
| <u> </u> | | | _ | | L | | l | | | | | | | L L | | |

| | | | | | | | D | UKE L | <u>.UG</u> | | | | |
|---------------|-----------------------|---------|---------|--------|--|---|---------------------------------------|------------------------|------------|------------|--------------|---|-------------------|
| WBS 47 | 533.1.1 | | | TI | P I-5987 | | COUNTY | ROBESC | N | | | GEOLOGIST B. Painter | |
| SITE DES | CRIPTION | N SITI | E 2 - A | BUTME | NT RET. W | ALLS AT I | EB1 AND | EB2 OF BR | IDGE ON | I -Y1A- | OVE | R -L- AT -Y1A- STA. 14+92.02 | GROUND WTR (fi |
| BORING I | NO. Y1A | _EB2-0 | 2 | S | TATION 42 | 2+10 | | OFFSET | 20 ft LT | | | ALIGNMENT -Y1A- | 0 HR. N/ |
| COLLAR | ELEV. 1 | 48.6 ft | | TO | OTAL DEPT | H 80.0 ft | | NORTHING | 353,61 | 17 | | EASTING 2,000,866 | 24 HR. 3. |
| DRILL RIG/I | HAMMER E | FF./DAT | E F&R | 3495 C | ME-55 82% (| 3/01/2019 | | | DRILL M | ETHOD | Mud | d Rotary HAMM | ER TYPE Automatic |
| DRILLER | D. Tigno | or | | S | TART DATE | 12/10/19 | 9 | COMP. DA | TE 12/1 | 0/19 | | SURFACE WATER DEPTH N | 'A |
| ELEV DRI | | H BLO | ow col | UNT | | BLOWS F | ER FOOT | | SAMP. | | L | | |
| (ft) ELE | =V _(ft) | 0.5ft | 0.5ft | 0.5ft | 0 2 | 25 5 | 50 | 75 100 | NO. | | 0 G | SOIL AND ROCK DES | CRIPTION DEPTH |
| , | <u> </u> | | | | | l . | | | | , | | | 52 |
| 455 | | | | | | | | | | | | | |
| 155 | | | | | | | | | | | þ | - | |
| | ‡ | | | | | | | | | | E | | |
| 150 | <u>±</u> | | | | | | | | | | Ŀ | _ | |
| _148 | 3.6 T 0.0 | 1 1 | 2 | 4 | . | I | | | | | F | 148.6 GROUND SURF | |
| | Ŧ | ' | | 4 | 6 | | : : : : | : : : : | | М | | ROADWAY EMBAN _ <u>146.6</u> _ LOOSE, LIGHT BROWN | , SILTY FINE |
| 145 145 | 5.1 🕇 3.5 | WOH | 1 1 | 2 | | | | | 00 4546 | 040/ | | SAND, MOIST, TRACE ORG COASTAL PLA | |
| | ‡ | "" | ` ` | _ | ● 3 · · · | | | | SS-1518 | 21% | 3 | SOFT, ORANGE-GRAY | Y, FINE TO |
| | ‡ | | | | ::::: | | | | | | * | COARSE SANDY CLA MODERATELY PLASTIC | (A-6) (BLACK / |
| 140 140 | 0.1 4 8.5 | 3 | 2 | 1 | 1 | | | | | Sat. | | CREEK_FORMAT VERY LOOSE, GRAY, CI | |
| | Ŧ | | | | | | | | | | - | FINE SAND, SATURAT | ED, TRACE |
| 135 135 | T 5.1 T 13.5 | | | | | | : : : : | : : : : | | | | ORGANICS (A-: VERY SOFT, LIGHT GR | |
| 100 15. | 10.0 | WOH | WOH | WOH | 0 | | | | SS-1520 | 20% | 3 | COARSE SANDY SILTY TRACE ORGANICS, HIGH | |
| | ‡ | | | | | | | | | | 3 | 131.6 (A-7-6) | 1 |
| 130 130 | 0.1 18.5 | | | | | | | | | % % | \mathbf{x} | LOOSE TO MEDIUM DE GRAY TO LIGHT GRAY, (| |
| | ± | 2 | 3 | 7 | . • 10 - | | | | | Sat. | | TO COARSE SAND, SATÚ | RATED (A-2-6) |
| | Ŧ | | | | . j | | : : : : | | | % % | $\sqrt{}$ | (BLACK CREEK FOR | MATION) |
| 125 125 | 5.1 ‡ 23.5 | 7 | 4 | 2 | 1 | | | ļ · · · · · | | Sat. | \setminus | - | |
| | ‡ | | ' | _ | 9 6· · · | | | | | Sal. | | | |
| 400 | ‡ | | | | :';::: | | | | | % * | | | . GRAY, FINE 2 |
| 120 120 | 0.1 28.5 | 3 | 5 | 7 | · •12· | | | | - | w | 3 | - SANDY SILTY CLAY, SATURATED (A | WET TO |
| | + | | | | $ \cdot \tilde{f}^{\frac{n}{2}}\cdot $ | | | | | | 3 | SATURATED (A | -7-0) |
| 115 115 | T 5.1 T 33.5 | | | | :/: : : | | : : : : | : : : : | | | 7 | | |
| | | WOH | 2 | 3 | ∮5 | | | | | w | 3 | - | |
| | ‡ | | | | | | | | | | 7 | | |
| 110 110 | 0.1 🕇 38.5 | 3 | | - | .1 | | | | | | 3 | _ | |
| | <u>†</u> | " | 3 | 5 | 8 | | | | | Sat. | 3 | | |
| | <u>†</u> | | | | ::::` | ```.`` | | | | | 3 | | |
| 105 105 | 5.1 <u>T</u> 43.5 | 3 | 4 | 58 | | <u>`</u> | | + | | w | 7 | - | |
| | Ŧ | | | | | | | | | | 7 | 404.0 | |
| 100100 |),1 [†] 48.5 | | | | | | : : : ;′ | | | | Ì | HARD, GRAY, FINE SAND | |
| 100 | | 17 | 20 | 55 | | | · · · · · · · · · · · · · · · · · · · | 75 | 11 | М | 뽥 | - MICACEOUS (A | \-4) |
| | ‡ | | | | | | : ;/: | | | | # | 96.6 | 5 |
| 95 95 | .1 + 53.5 | 1 - | 10 | OF. | | | / | | | | Œ | DENSE TO VERY DEN CLAYEY SILTY FINE TO C | SE, GRAY, |
| | ‡ | 7 | 19 | 25 | | · · · • • • • • • • • • • • • • • • • • | í | | | Sat. | ::: <u>t</u> | SATURATED, TRACE LIC | GNITE (A-2-4) |
| | <u>†</u> | | | | | ::/: | : : | | | | ∰ | | |
| 90 90 | .1 🕇 58.5 | 9 | 15 | 22 | | | | + | | Sat. | \mathbb{F} | _ | |
| | ‡ | | | | | | [:::: | | | Jai. | * | | |
| 85 85 | , ‡ | | | | | | | | | | ** | | |
| 85 85 | .1 63.5 | 16 | 31 | 42 | | | · · · · · · · · · · · · · · · · · · · | · · · · · | | Sat. | 計 | - | |
| | ‡ | | | | | | : : <i>.?</i> | | | | 計 | | |
| 80 80 | .1 1 68.5 | | | | | | ·/··· | <u> </u> | | | :: | _ | |
| | Ŧ | 22 | 26 | 24 | | | 50 | | | Sat. | # | - | |
| | ‡ | | | | | : : ;/. | : : : : | : : : : | | | 쏾 | | |
| 75 | 1 + 73.5 | | 1 | | • • • • | . / | | | | | :: | | |

GEOTECHNICAL BORING REPORT BORE LOG

SHEET 9 OF 11

| | | | | | | | | | | D | JK | | <u>OG</u> | | | | | | | |
|--------------|-----------------------|-----------------|--------------|--------|--------------|---------------|---------|----------|---------|------|--------|-------------|--------------|--------|-------------|--------------------|-----------------|---------------------------------|--------------------------------------|-----------|
| WBS | 47533 | .1.1 | | | TI | P I-598 | 87 | | COU | NTY | ROB | ESON | ٧ | | | GEOLOGI | IST B. Paint | er | _ | |
| SITE | DESCR | IPTION | SITE | 2 - AE | BUTME | NT RE | T. WA | LLS AT | EB1 A | ND E | B2 OF | BRII | DGE ON | N -Y1A | - OV | ER -L- AT -Y | 1A- STA. 14+ | 92.02 | GROUND W | TR (ft) |
| BOR | ING NO. | Y1A_ | EB2-C | | S | TATION | 42+ | 10 | | | OFFSI | ET 2 | 0 ft LT | | | ALIGNME | NT -Y1A- | | 0 HR. | N/A |
| COL | LAR ELE | E V . 14 | 8.6 ft | | т | OTAL D | EPTH | 80.0 f | t | | NORTI | HING | 353,6 | 17 | | EASTING | 2,000,866 | | 24 HR. | 3.6 |
| DRILL | RIG/HAN | IMER EF | F./DATE | F&R | 3495 C | ME-55 8 | 32% 03/ | 01/2019 | | | | | DRILL N | 1ETHO[|) Mi | ud Rotary | | HAMM | ER TYPE Auto | matic |
| DRIL | LER D | Tignor | | | S | TART D | ATE | 12/10/1 | 9 | | COMP | . DAT | E 12/ | 10/19 | | SURFACE | WATER DE | PTH N/ | A | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLO 0.5ft | W COI | JNT 0.5ft | 0 | 25 | BLOWS | PER FO | | 75 | 100 | SAMP. NO. | MOI | L O G | ELEV. (ft) | SOIL AND RO | OCK DES | | DEPTH (ft |
| 75 70 | 70.1 | | 11 | 13 | | | \ | 27 · · · | ch Line | | | | | Sat. | | _ CL# _ S# _ | ATURATED, T | NE TO C | OARSE SAND, | |
| | | | 11 | 13 | 21 | | | - • 34 - | | | | | | Sat. | | - SAN - | | PLAIN) (RMATION RGANIC S | BLACK CREEK) SOIL: 0.0 - 0.2' | 80.0 |





SHEET 10 OF 11

| Consu | ılting Eng | gineers a | ınd Scie | entists | | | B | ORE L | <u>OG</u> | | | | | | |
|--------------|----------------------------------|---------------------------------|--------------|---------|----------------|------------------------|----------|------------------|---------------|----------|-------------|--|--|--|------------------|
| WBS | 47533 | 3.1.1 | | | TI | IP I-5987 | COUNT | Y ROBESON | ١ | | | GEOLOGIST DEGON | l, A. N. | | |
| SITE | DESCR | IPTION | SITE | 2 - AE | BUTME | ENT RET. WALLS AT | EB1 AND | EB2 OF BRII | OGE ON | -Y1A- | OVE | R -L- AT -Y1A- STA. 14+ | 92.02 | GROUND | WTR (f |
| BORII | NG NO. | Y1A_ | RWAL | .6 | S ⁻ | TATION 41+82 | | OFFSET 1 | 08 ft RT | | | ALIGNMENT -Y1A- | | 0 HR. | N/ |
| COLL | AR ELI | EV. 14 | 7.6 ft | | T | OTAL DEPTH 59.8 ft | | NORTHING | 353,48 | 86 | | EASTING 2,000,860 | | 24 HR. | 3 |
| DRILL | RIG/HAM | MER EF | F./DATE | E TER | 299 DI | IEDRICH D-50 79% 12/31 | /2020 | | DRILL M | ETHOD | Muc | d Rotary | HAMMI | ER TYPE A | utomatic |
| DRILL | LER T | URNAG | E, J. F | ₹. | S | TART DATE 05/05/2 | 1 | COMP. DAT | E 05/0 | 6/21 | | SURFACE WATER DE | PTH N/ | Ą | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLO 0.5ft | 0.5ft | | 4 | PER FOOT | 75 100 | SAMP. NO. | MOI | L O G | SOIL AND RO | OCK DES | CRIPTION | DEPTH |
| 150 | 146.6 - | - | 5 | 5 | 4 | | | | | | | - 147.6 GROUI WINDIVIDED MEDIUM STIFF I - LIGHT GRAY, C | O STIFF, | L PLAIN DARK GRA | |
| | 141.6 | ļ | 3 | 3 | 7 | 6 | | | | V | | FINE SANDY C MODERATE | LAY, MOIS | ST TO WET, | |
| 140 | 139.3 8.3 3 5 2 | | | | | ./ | | | | W W | | | SILTY COA WET (A-2 STAL PLA | 2-4) | NE |
| 135 | 134.3 13.3 WOH WOH WOH | | | | | •0 | | | SS-106 | 87% | | VERY SOFT TO GREEN, SILTY LIGNITE, HIGI (BLACK CR | MEDIUM (CLAY, W HLY PLAS | STIFF, GRA` 'ET, LITTLE TIC (A-7-6) | Υ, |
| 130 | 129.3 18.3 2 4 6 | | | | | 10 | | | | Sat. | | - | | | |
| 125 | 124.3 - - | + 2 4 6 · · · · · | | | | | | | | Sat. | | | (A-2-4) 7 STIFF, C SATURA | RAY, SILTY TED, TRACE | , — i |
| 120 | 119.3 - - | 28.3 | 3 | 3 | 5 | . • 8 | | | | Sat. | | - | | | |
| 115 | 114.3 | | 4 | 4 | 6 | . l | | | | Sat. | | - | | | |
| 105 | 109.3 | | 6 | 6 | 9 | | | | | Sat. | | - | | | |
| 100 | 104.3 - - - - 99.3 - | 43.3 | 4 | 5 | 9 | | | | | W | | - | | | |
| 95 | - - - | 53.3 | 7 | 10 | 12 | 22 | | | | W | | 95.6VERY DENSE | , DARK GI | RAY, SILTY | |
| 90 | - - - | 58.3 | 27 | 32 | 40 | | | •72 | | Sat. | | ⁻ 89.1 | (A-2-4) | | |
| | | | 9 | 11 | 9 | 20 | :::: | 1:::: | | W | | 87.8 VERY STIFF, DA FINE SANDY CLA PLA Boring Terminate UNDIVIDED CC CLAY (BLACK) | .Y, WET, I STIC (A-6 ed at Eleva ASTAL PI | MODERATE) ation 87.8 ft II _AIN SANDY DRMATION) | O LY N |
| | - - - - - - | † - - - - - - | | | | | | | | | | - | | | |

LABORATORY TESTING SUMMARY

| PROJECT NUMBER: | 47533.1.2 | TIP:_ | I-5987A | COUNTY: | ROBESON | |
|-----------------|-----------|-------------------------------|-----------------------|-------------------------------------|---|----------|
| DESCRIPTION: | | SITE 2 - ABUTMENT RETAINING W | ALLS AT END BENT 1 AN | ID END BENT 2 OF BRIDGE ON -Y1A- (L | JS 301) OVER -L- (I-95) AT -Y1A- STA. 4 | 11+19.02 |

| | | | Offset | Depth | AASHTO | | | | % by V | /eight | | % | % | Passing (siev | es) | | % |
|------------|---------|-----------|--------|--------------------|------------|------|------|----------------|-----------|--------|------|----------------------|-----|---------------|------|------------|---------------|
| Sample No. | Station | Alignment | (feet) | Interval (feet) | Class. | L.L. | P.I. | Coarse Sand | Fine Sand | Silt | Clay | Retained #4 Sieve | #10 | #40 | #200 | % Moisture | 76 Organic |
| SS-106 | 41+82 | -Y1A- | 108 RT | 13.3 - 14.8 | A-7-6 (29) | 57 | 36 | 1.9 | 26.3 | 25.5 | 46.3 | 0 | 100 | 99 | 78 | 87.1 | |
| SS-107 | 42+41 | -Y1A- | 95 LT | 8.5 - 10.0 | A-2-4 (0) | 24 | 3 | 4.5 | 76.2 | 2.0 | 17.3 | 0 | 100 | 98 | 21 | | |
| SS-108 | 42+41 | -Y1A- | 95 LT | 13.5 - 15.0 | A-7-6 (44) | 66 | 43 | 1.2 | 8.0 | 21.2 | 69.6 | 0 | 100 | 100 | 92 | 65.5 | |
| SS-113 | 40+54 | -Y1A- | 81 LT | 3.3 - 4.8 | A-7-6 (9) | 44 | 28 | 28.3 | 23.0 | 23.4 | 25.3 | 0 | 100 | 85 | 49 | 21.7 | |
| SS-114 | 40+54 | -Y1A- | 81 LT | 13.3 - 14.8 | A-7-6 (46) | 72 | 54 | 1.5 | 20.9 | 17.6 | 60.0 | 0 | 100 | 100 | 81 | 61.9 | |
| SS-115 | 40+25 | -Y1A- | 102 RT | 8.3 - 9.8 | A-2-4 (0) | 25 | 8 | 20.6 | 61.6 | 2.1 | 15.7 | 0 | 100 | 88 | 18 | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | 1 | | | | | | | | | 1 | | | |

Stephanie H. Huffman

Certified Lab Technician Signature

114-01-1203 Certification Number

| | | | Offset | Depth | AASHTO | | | | % by V | Veight | | % | % | Passing (siev | res) | | % |
|------------|---------|-----------|--------|--------------------|-----------|------|------|----------------|-----------|--------|------|----------------------|-----|---------------|------|------------|---------|
| Sample No. | Station | Alignment | (feet) | Interval (feet) | Class. | L.L. | P.I. | Coarse Sand | Fine Sand | Silt | Clay | Retained #4 Sieve | #10 | #40 | #200 | % Moisture | Organic |
| SS-65 | 40+38 | -Y1A- | 21 LT | 8.5-10.0' | A-7-5(53) | 81 | 32 | 2.6 | 8.6 | 17.4 | 71.4 | 0.0 | 100 | 99 | 92 | 75.8 | |
| SS-66 | 40+38 | -Y1A- | 21 LT | 13.5-15.0' | A-2-4(0) | NP | NP | 59.2 | 24.3 | 7.5 | 9.0 | 0.0 | 98 | 69 | 17 | - | - |
| SS-1518 | 42+40 | -Y1A- | 20 LT | 3.5-5.0' | A-6(6) | 40 | 17 | 24.0 | 29.9 | 8.1 | 38.0 | 0.0 | 100 | 87 | 48 | 21.0 | - |
| SS-1520 | 42+40 | -Y1A- | 20 LT | 13.5-15.0' | A-7-6(20) | 54 | 24 | 11.6 | 22.2 | 14.6 | 51.6 | 0.0 | 100 | 95 | 69 | 19.8 | - |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | • | | | | | • | • | | | • | | | | | | | |
| | | | | | | | | | | | | | | | | | |

D. COUNCIL - F&R

Certified Lab Technician Signature

101-02-0603

Certification Number