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## STATE OF NORTH CAROLINA

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

# **STRUCTURE** SUBSURFACE INVESTIGATION

COUNTY HENDERSON

440108 AND 440112 PROJECT DESCRIPTION I-26, GREEN RIVER CROSSING

STRUCTURE REHABILITATION

SITE DESCRIPTION

SPECIFIC INVENTORY FOR FOUNDATION RECOMMENDATIONS BETWEEN EXISTING END ABUTMENTS

# REFERENCE

| STATE | STATE PROJECT REFERENCE NO. | SHEET<br>NO. | TOTAL<br>SHEETS |
|-------|-----------------------------|--------------|-----------------|
| N.C.  | 15BPR.20                    | 1            | 10              |

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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 REVEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1991 707-680. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

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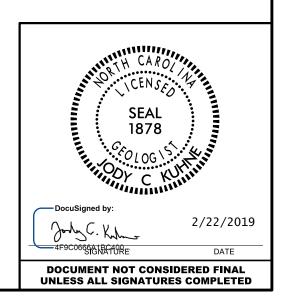
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NOTES:

- FES: 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. 2.

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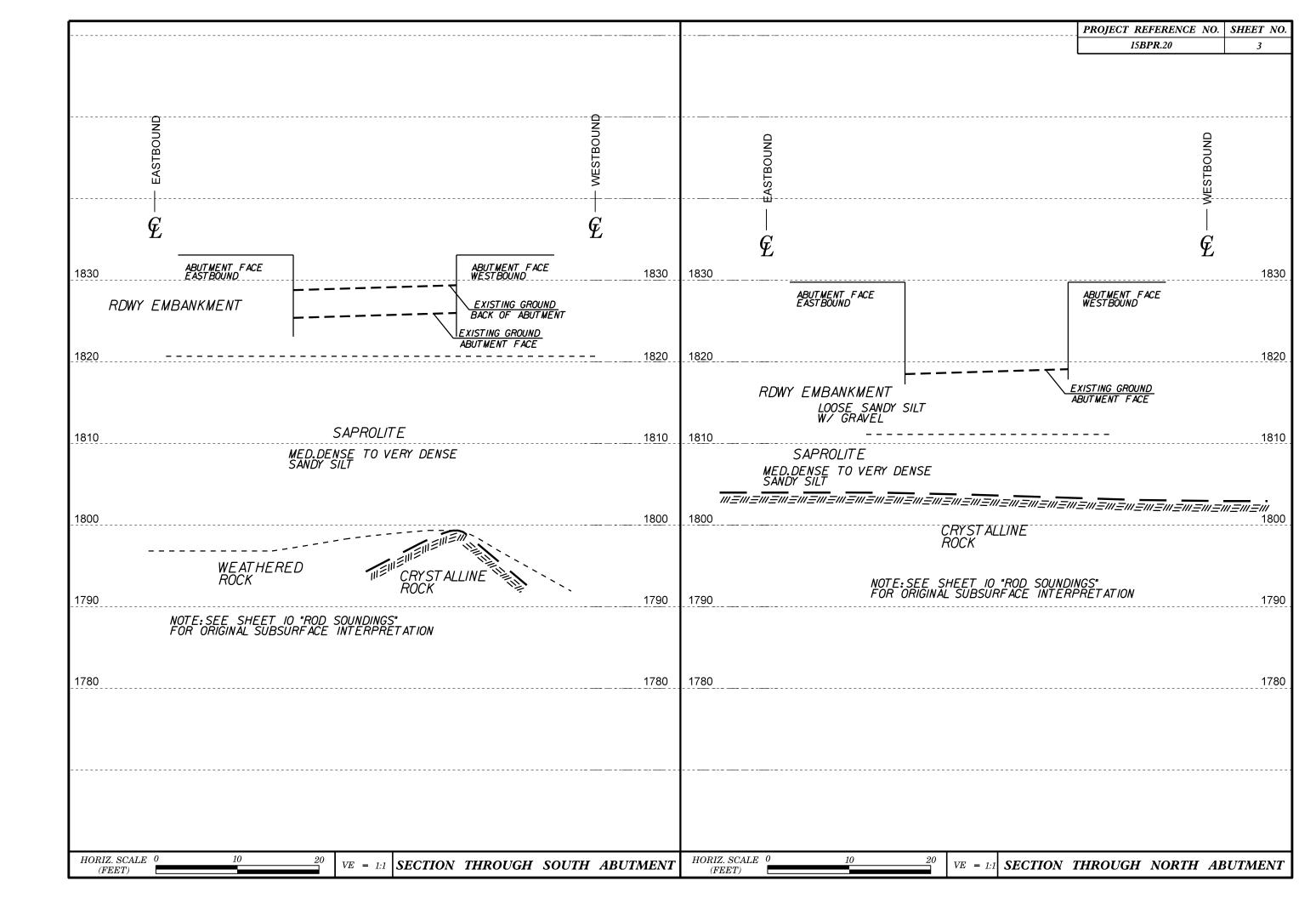


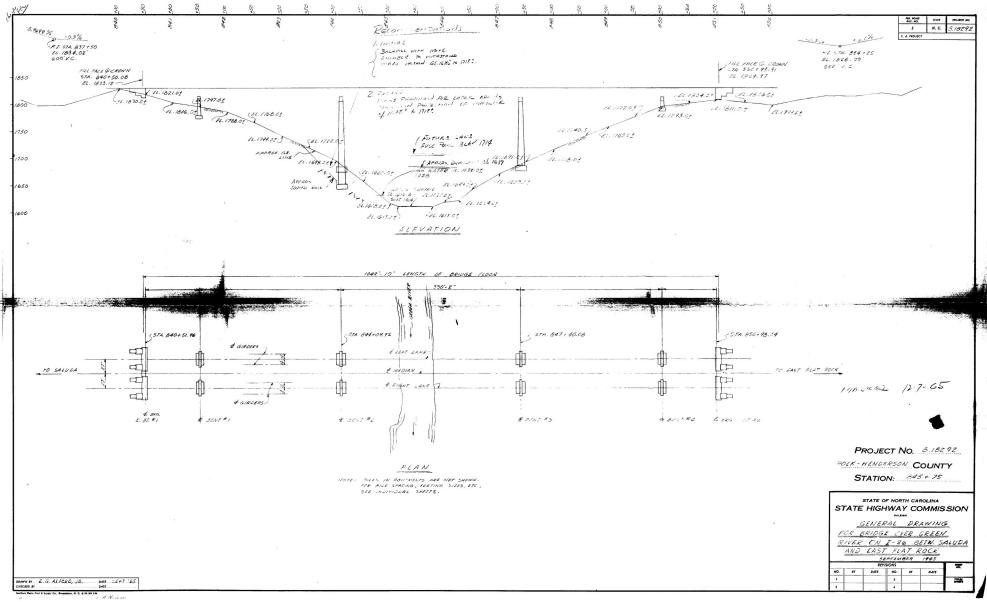
# NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

| SOIL DESCRIPTION  | GRADATION  | ROCK DESCRIPTION  | TERMS AND DEFINITIONS   |  |  |  |  |
|---|--|---|---|--|--|--|--|
| SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN<br>BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT  | WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.<br>UNIFORMLY GRADED - 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<br>ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL.   | ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.  |  |  |  |  |
| ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION  | <u>GAP-GRADED</u> - 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<br>BLOWS IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN   | AQUIFER - A WATER BEARING FORMATION OR STRATA.  |  |  |  |  |
| IS BASED ON THE AASHTO SYSTEM, BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING:<br>CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH  | ANGULARITY OF GRAINS   | REPRESENTED BY A ZONE OF WEATHERED ROCK.  | ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.  |  |  |  |  |
| AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE,<br>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:   | ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:  | ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING<br>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 ><br>ROCK (WR) 100 BLOWS PER FOOT IF TESTED.   | ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT  |  |  |  |  |
| GENERAL CRANULAR 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. ( \$ 354 PASSING *200) ( > 354 PASSING *200)   | MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC.   | ROCK (CR) WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE,<br>GNEISS, GABBRO, SCHIST, ETC.  | 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-3         A-6, A-7   | COMPRESSIBILITY  | NON COVETALLINE FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN  | CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.   |  |  |  |  |
| A-/-6   | 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<br>OF SLOPE.  |  |  |  |  |
| SYMBOL  | 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  |  |  |  |  |
| 2 PASSING<br>*10 50 MX  | HIGHLY COMPRESSIBLE LL > 50 PERCENTAGE OF MATERIAL   | SEDIMENTARY ROCK SEDIMENTARY SEDIMENTARY ROCK SEDIMENTARY ROCK SEDIMENTARY ROCK SEDIMENTARY ROCK SEDIMENTARY SEDIMENTARY SEDIMENTARY SEDIMENTARY SEDIMENTARY SEDIMENTARY SEDIMENT | BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.  |  |  |  |  |
| *10 50 MX<br>*40 30 MX 50 MX 51 MN<br>50 LS 50 MX 51 MN<br>50 LS 50 L |  | WEATHERING  | DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT<br>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  | 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<br>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 ULTLE OD   | 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,<br>(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 NOCANIT   | HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE  | OF A CRYSTALLINE NATURE.  | LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.   |  |  |  |  |
| GROUP INDEX 0 0 0 4 MX 8 MX 12 MX 16 MX NO MX AMOUNTS OF SOILS  | GROUND WATER   | SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO<br>(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<br>SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.   |  |  |  |  |
| USUAL TYPES STONE FRAGS.<br>OF MAJOR GRAVEL AND CAUPE SILTY OR CLAYEY SILTY CLAYEY MATTER<br>OF MAJOR GRAVEL, AND CAUPE STATE, AND CAUPE SOLICE COLOR   | ✓ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING  | (SLI.) 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR<br>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 POOR UNSUITAB  | F PRCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA  | (MOD.) GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY, ROCK HAS<br>DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED  | PARENT MATERIAL.  |  |  |  |  |
| AS SUBURAUE YUUK  |  | 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.  |  |  |  |  |
| CONSISTENCY OR DENSENESS  | MISCELLANEOUS SYMBOLS  | SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH<br>(MOD.SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES 'CLUNK' SOUND WHEN STRUCK.   | J <u>OINT</u> - 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   |  |  |  |  |
|   | WITH SOIL DESCRIPTION - OF ROCK STRUCTURES   | SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC CLEAR AND EVIDENT BUT  | ITS LATERAL EXTENT.   |  |  |  |  |
| GENERALLY VERY LOOSE < 4<br>LOOSE 4 TO 10   | SOIL SYMBOL  | (SEV.) REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED<br>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.   |  |  |  |  |
| MATERIAL MEDIUM DENSE 10 TO 30 N/A  | 网 一 一 一 一 一 一 一 一 一 一 一 一 一 一 一 一 一 一 一  | 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<br>VERY DENSE > 50  | ARTIFICIAL FILL (AF) OTHER AUGER BORING CONE PENETROMETER  | VERY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE<br>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   | COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND<br>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   | TTTTT ALLUVIAL SOIL BOUNDARY A PIEZOMETER OF SPT N-VALUE   | ALSO AN EXAMPLE.  | ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE<br>RUN AND EXPRESSED AS A PERCENTAGE.   |  |  |  |  |
| HARD > 30 > 4<br>TEXTURE OR GRAIN SIZE  | RECOMMENDATION SYMBOLS   | ROCK HARDNESS   | SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT   |  |  |  |  |
|   |  | 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<br>OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053   | UNDERCUT UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE UNCLASSIFIED EXCAVATION -  | SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.   | SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO                  |  |  |  |  |
|   | UNCLASSIFIED EXCAVATION - USED IN THE TOP 3 FEET OF<br>ACCEPTABLE DEGRADABLE ROCK USED IN THE TOP 3 FEET OF<br>EMBANKMENT OR BACKFILL  | HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED<br>TO DETACH HAND SPECIMEN.   | THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.   |  |  |  |  |
| BOULDER COBBLE GRAVEL SAND SAND SILI CLAY   |  | 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  |  |  |  |  |
| (LSE, SU,) (F SU,)  |  | HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED<br>BY MODERATE BLOWS.   | OR SLIP PLANE.  |  |  |  |  |
| GRAIN MM 305 75 2.0 0.25 0.05 0.005<br>SIZE IN. 12 3  | AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST<br>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.   | STANDARD PENETRATION TEST (PENETRATION RESISTANCE)(SPT) - NUMBER OF BLOWS (N OR BPF) OF<br>A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL   |  |  |  |  |
|   | CLCLAY MOD MODERATELY $\gamma$ - UNIT WEIGHT   | 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  | _ CPT - CONE PENETRATION TEST NP - NON PLASTIC $\gamma_{d}$ - DRY UNIT WEIGHT CSE COARSE ORG ORGANIC   | POINT OF A GEOLOGIST'S PICK.  | TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.<br><u>STRATA CORE RECOVERY (SREC.)</u> - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY  |  |  |  |  |
| (ATTERBERG LIMITS) DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION   | DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST SAMPLE ABBREVIATIONS   | SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS<br>FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN   | TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.  |  |  |  |  |
| - SATURATED - USUALLY LIQUID; VERY WET, USUALLY   | DPT - DYNAMIC PENETRATION TEST         SAP SAPROLITIC         S - BULK           e - VOID RATIO         SD SAND, SANDY         SS - SPLIT SPOON  | PIECES CAN BE BROKEN BY FINGER PRESSURE.  | <u>STRATA ROCK QUALITY DESIGNATION (SROD)</u> – A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL<br>LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY |  |  |  |  |
| (SAT.) FROM BELOW THE GROUND WATER TABLE  | F - FINE SL SILT, SILTY ST - SHELBY TUBE   | VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH<br>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.   |  |  |  |  |
|   | FOSS FOSSILIFEROUS         SLI SLIGHTLY         RS - ROCK           FRAC FRACTURED, FRACTURES         TCR - TRICONE REFUSAL         RT - RECOMPACTED TRIAXIAL  | FINGERNAIL.   | TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.  |  |  |  |  |
| RANGE - WET - (W) ATTAIN OPTIMUM MOISTUP  | FRAGS FRAGMENTS W - MOISTURE CONTENT CBR - CALIFORNIA BEARING  | FRACTURE SPACING BEDDING  | BENCH MARK:   |  |  |  |  |
|   | HI HIGHLY V - VERY RATIO   | TERM SPACING TERM THICKNESS   |   |  |  |  |  |
| - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE  | EQUIPMENT USED ON SUBJECT PROJECT  | VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET<br>WIDE 3 TO 10 FEET THICKLY BEDDED 1.5 - 4 FEET   | ELEVATION: FEET   |  |  |  |  |
| OM _ OPTIMUM MOISTURE SULTER SULTER OF THOM MOISTURE  | DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE:   | MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.16 - 1.5 FEET  | NOTES:  |  |  |  |  |
|   | CME-45C CLAY BITS 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   | CME-55   | THINLY LAMINATED < 0.008 FEET   |   |  |  |  |  |
| PLASTICITY  | □ 8' HOLLOW AUGERS   | INDURATION  |   |  |  |  |  |
| PLASTICITY INDEX (PI) DRY STRENGTH  | CME-550 HARD FACED FINGER BITS   | FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.   |   |  |  |  |  |
| NON PLASTIC         0-5         VERY LOW           SLIGHTLY PLASTIC         6-15         SLIGHT   | VANE SHEAR TEST UNGCARBIDE INSERTS HAND TOOLS:   | FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS:<br>GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.   |   |  |  |  |  |
| MODERATELY PLASTIC 16-25 MEDIUM   | CASING W/ ADVANCER   | CRAINS CAN BE SERARATER FROM CAMPLE WITH STEEL PROPE  |   |  |  |  |  |
| HIGHLY PLASTIC 26 OR MORE HIGH  | PORTABLE HOIST TRICONE STEEL TEETH HAND AUGER  | MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE;<br>BREAKS EASILY WHEN HIT WITH HAMMER.   |   |  |  |  |  |
| COLOR   |  | INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE;  |   |  |  |  |  |
| DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY).   |  | UIFFICULT TU BREAK WITH HAMMER.   |   |  |  |  |  |
| MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.  |  | EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE;<br>SAMPLE BREAKS ACROSS GRAINS.  | DATE: 8-15-14   |  |  |  |  |

# project reference no.





| HOLE NO.                         | HOLENOLL   | HOLE NO 3 HO          |
|----------------------------------|--|-----------------------|
| ELEV. LOG BLOWS/FT. ELEV.LO      | ELEV-LOG   |                       |
| 800 A-5 180267                   | A-7-5  |                       |
| 720<br>AF4                       |  |                       |
| 780<br>Crosty Sapronite          |  | A-7-5                 |
| 770 WIN GIFERNATING              | BX Cosing Petrosof   |                       |
| Poch Tayer<br>760<br>RR & crusts | ROCK<br>HAROROCK   | Excerning Refueld SAL |
| 750 HARD ROCK 564                |  | TOLK LAYER            |
| 740<br>771.1 bottom              |  | HARD ROCK 1921        |
|                                  |  |                       |
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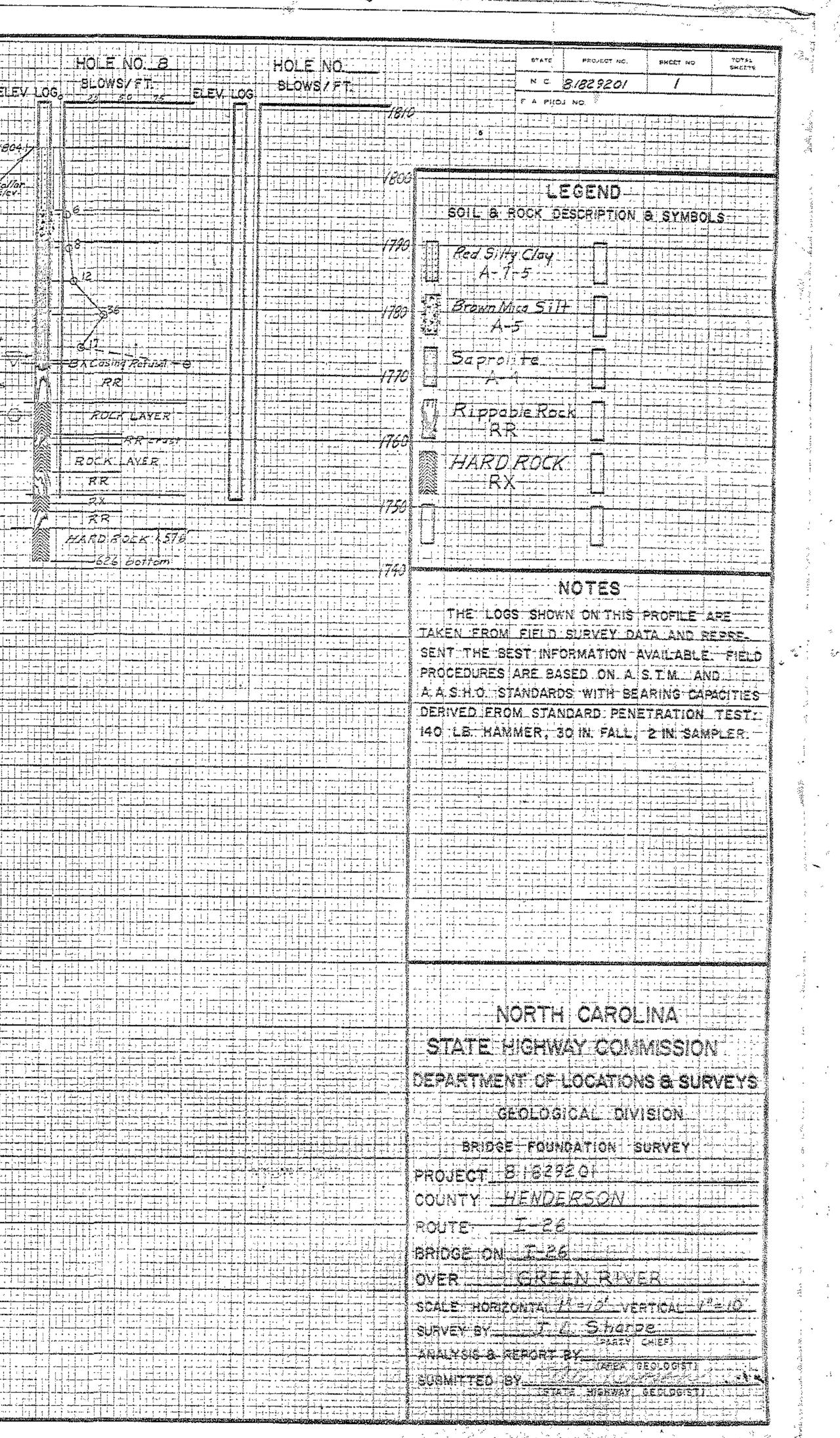
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╺╬╶╡╱┥┝╴┝╴╡┝┝╏┥╼┊┿╾┝╽╷ NO 4 HOLE NO 5 HOLE NO. 5 HOLE NO. HOLE NO. Z BLOWS/F LOWS / FT- E EV LOG BLOWS/FT BLOWS / FT. ELEV. LOG 18073, ┝┝┶┷╾┿┿╢┥┥┥ ورجد منه إلغم و Collar - ---- Eles Callar , /c/ -╷╵╴┙╶┥┑╏┆╎╎┕╻╌┶╞╼╎┥╵ ╍<del>┉┥┑╍╶┥╺┢┍┣╸</del>╋┽┼╌┯┽┼┼┼╎ 11-44 ╱╡┊┦┊┥┅┿┯┦╍╎╬╘╠┋┈┟╭┊ 222905 ╶╷╷╷╎┊┊┊╷╌┊╷┥╌╬╌╎┥<sub>╋</sub>┽╡╷┠<sub>┻┯╼</sub>╡╖╠ A-4-1757.7 Coller Elcyd 13 A Cr. 15 A 1 1 1 --- 1 --- 1 - 4 i i i - 4 < i Åves <del>¦−+−q</del>−q−q−q−q −-q−−q +−− ▓<sup>™</sup>╋╼╊╼┨╺╡╶╡╺┅┑┫╺╸<u>┣</u>┅┥╏╎┧╸╂╺╖╒┠╍╡╺╻┊┆ \*\*\*\*\* ┟┟╍╧╍╞┶╎┥┽╍╺┥ A75 · ( ) [ 슈타] [ 슈타] [ 슈타] . . . . . . . . . . . . . . . . . . . 18 4 4 1 1 1 BX County Refuent & VI RR Crost -BX Casing Bettesat-RRWIGRE BX Casing Refined 36 - 88 -----RRRR WITS PRISTS PX ROCK Crust ROCK LAYER Casing Ring Junit ROCKIAYER ATR -RX CEUS ╷┟┿┤┽║╷ 4OCKLAVER 25.2 CK 1 1 - 4 - 4 - 4 PR with thin PR crusts 1 1 4 4 4 4 4 4 4 TRAF WIRS TATA AT Shusts RX HARD ROCK 134 RD ROCK · · · · · · HARD ROCK 569 -37.0 boffom HARD ROCK 1436+ -441 Dottom بإصر فممصوعته { , | , | ~ } - ; + | + ------1 1 1 1 1 1 1 1 1 1 · ] = ] [ ] = ] = [ ] = ╤╏┇╏╏╏┇╔╲╍╏╏╸┉╡┷╍╣╗╓╴┇┥┥╡╺╍╡╢╏ ┥┙╽╷┿┶┤┽┆╱╻┥┾┪┇╎┧┊╞┵╎┯╬┝┤┇┧╤┿╍┝╎╽<sub>┛╴╵</sub>╡┷╽┿ ┊╴┇╴╞╴┎┄│ │ ┇ ╸╶┇╼╡╴╽╶╿ ┶╾╍┶┶┶┶┺╸╎╺┿╼┥╞┉┶┵┙╌╍╌╴╎┍┥╶┤┾┾╼┯┷ ┟╴╞╌╴╴╴╴╴╴╴╎╶┥╼╎╼╴╴╡╼┶┶┝╍┝╍┝╼┾╌┥╴╴╴╡ #2 ┊┋╴╴╴╴┊┊┊╡╡┥┥┊┊┋┍┈┊┶┊╡╢╴╘┱┷┵┵┷┊┆╴╡┿╼╎┫╼┊╺┶╞╼┊┨╓╶╶╴┊╶╶ . . . . ╡╺┈╹╲┉┥┥╕╏┇╢╺╾┙╾╼┩╼┥╎┆╺╄╼╍╼╣┍╼╬╺╲╿╞<u>╶</u>╖╖╺╬╖╡╝╶╡╼╺┊╏╎ 1 Parto #5 @ -ويستحدث يهجروه ماريسيسيان وأحضم مستشيشين والمراجع ومحمد والعامي والمستقدمون ┝╼╎┷┊┷╌╍┋┙┝╾┝┊┊╞╌╎┠╸╷╌╡╶╴╡╌╾╉╎╶┵╌┝╧╼╎╾┷╡╪╌┦ ╼╍┝┙┝╍╗┙┝╍╍┝╺╴┝┙╶╾╴┷┙╴╴╸╸╸╴ <u>╶╎┍╷╶╶╌╡┝╿╘┽╧╤╺╢╷┋╡╪╪╍╠╬┉┿┝╏╎┼╍╡╓╴╘</u>┾┍╞╡ ................ ╧╬╧╧╧╪╪┾┽┉╪┑┍╄╎╻╪┑╡╴╎┆┝┚┑╴╢╎╎┥╎┿╍┤┉╿╷┥╎╽ 6 44 -----┊╍┝╷┊┥┦╡┫┍┉╎╎╎┆╎╎╶┋╌┦┊╎╷╸╵ ┊╡╩╎┿┥┷┿┙┍╍┥╵╇┪┪╻╷┥┶┙ ╡╞┊╿╿╡╍╠╡╿┯┨╷╎┿╇╝┷┠┯┨╓╡┟┙┆┅ Bent #1 Drill Hole Location Plan ╺╾╞╶╲┋┚┊╹┚╺╍┙╶╌┰╺╍┋┍╶╽╏╽╉╎┍╍┰╺╲┋╽┩╎╽╏┆┙┥╽╽╽╏╡╍┿╇╽╋┽╽╔╇╺╼╽╕╽╽┪

PLATE 3 - CROWS SECTION OF 6 5 6.6 STANDARD 105% RAG PAPER - MADEJAND PRINTED IN V.S. A 2005NE DIETZGEN CO., CRATIONE, N. C. . . .

# SHEET 5



|   |                               | HOLE NO. 10<br>BLOWSVFT   |             |   |  |
|---|-------------------------------|---|-------------|---|--|
|   |                               |   |             |   |  |
| 690<br>76855<br>511 CA<br>680   | 16860<br>- 17<br>- 17<br>- 17 |   |             | A-4<br>Isty A-4 to RR<br>Costill Refusal<br>TRR   | 1689.37<br>31/4<br>15                                  |
| Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>Барланте<br>С<br>С<br>С<br>С<br>С<br>С<br>С<br>С<br>С<br>С<br>С<br>С<br>С<br>С<br>С<br>С<br>С<br>С<br>С |                               | Soft RR   |             | <b>丁 え み</b><br>一 一 一<br>の <i>よ ら</i> の FT  | <b>G</b><br>15<br>11                                   |
|   |                               | SOFT RR<br>With fay RX crus<br>   |             | TRR<br>Cosing Rotust<br>RD ROCK 130   |  |
| 1650 HARD   | ROCKASHO BIT                  | HARD ROCK   |             | <b>36.6</b> 007.000   |  |
|   |                               |   |             |   |  |
|   |                               | - <u>80770</u> M. 0.4   | FOOTING ELE |   |  |
|   |                               | $\forall + \epsilon \chi/s r/$<br>$\ominus + A \epsilon \nu/s \epsilon$ |             |   | $\begin{array}{c c c c c c c c c c c c c c c c c c c $ |
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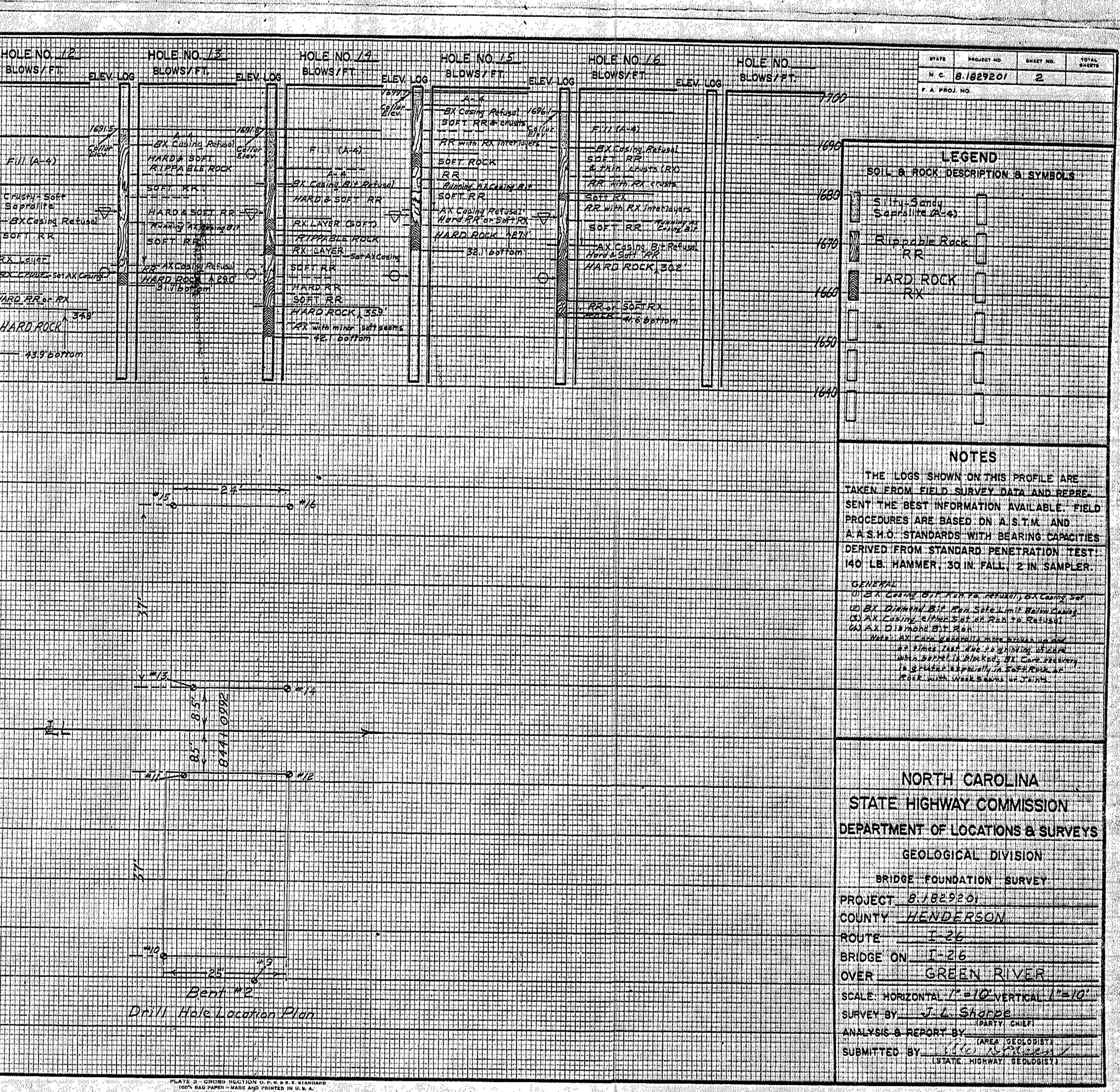


PLATE 3. CHORE BECTION D. P. N. & H. E. STANDARD IGO'S NAG PAPER MADE AND PRINTED IN IS. W. A. SUGENE DISTORN CO., CHARLOTTE, N. G.

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| 4 (4 Se C // Se Level 1 / Se   |   |

NOTES THE LOGS SHOWN ON THIS PROFILE ARE TAKEN FROM FIELD SURVEY DATA AND REPRES SENT THE BEST INFORMATION AVAILABLE. FIELD PROCEDURES ARE BASED ON A STM AND A A S.H.O. STANDARDS WITH BEARING COPACITIES DERIVED FROM STANDARD PENETRATION TEST

140 LB. HAMMER. 30 IN. FALL, 2 IN. SAMPLER. GENERAL U.S. Course Off Nor to return for Course Set 12 BX Diamond Bit Rom Setelling Berling Courses 13 AX Cosing Contract Set of Ren to Return Lang 140 AX Diamond Bit Rom 2 - 2/

# NORTH CAROLINA STATE HIGHWAY COMMISSION DEPARTMENT OF LOCATIONS & SURVEYS

GEOLOGICAL DIVISION BRIDGE FOUNDATION SURVEY PROJECT 81829201 COUNTY HENDERSON ROUTE BRIDGE ON I-26 OVER LEGREEN RIMERIE

|                                  |  |   |  | SHEET 7   |
|----------------------------------|--|---|--|---|
| HOLE NO. /<br>ELEV-LOG BLOWS/FT. | HOLE NO. 18<br>BLOWS/FT. BLOWS/FT. ELEV.LOG  | HOLE NO 20<br>BLOWS / FIT. ELEV. LOG BLOWS / FT. ELEV. LOG BLOWS / FT. ELEV.  | OG BLOWSZET. ELEVLOG ELOWSZET  | HOLE NO III IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII   |
|                                  |  | 169807<br>Sandy Saprol Ite<br>Sandy Saprol Ite<br>Soft Crusts 1691.87   | Sandy Sapronne<br>A-F-1 - 9<br>Soft Crust - 1 - 7<br>7 11 - Republe Rock   |   |
| Color Fill CA- 9<br>Elev<br>V680 | $\frac{1}{2} = -\frac{1}{6829}$ $\frac{1}{6829}$ $1$ | Soft Crusts Mica: Srite (A-9) Soprolite (A-4)   | Srity-Saprolite<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A-4)<br>(A- | LEGEND<br>SOIL & ROCK DESCRIPTION & SYMBOLS   |
| 10 Rippoble Ro                   |  | Hard Rock C 16692   | Hard Rock 16753 Hard Rock  | $\sum_{i=1}^{n} \sum_{j=1}^{n} \sum_{i=1}^{n} \sum_{i$ |
|                                  |  | High % Recovery   |  | Micaceous Silty   |
| 4.50<br>                         |  |   |  | Hord Rock   |
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|                                  |  |   |  | THE LOGS SHOWN ON THIS PROFILE ARE  |
|                                  | $\frac{1}{C} = \frac{1}{BOTTOM} OF FORTING FIFTATIONS$   |   |  | TAKEN EROM FIELD SURVEY DATA AND REPRE-   |
|                                  |  |   |  | A.A.S.H.O.: STANDARDS WITH BEARING CAPACITIES<br>DERIVED FROM STANDARD PENETRATION TEST:<br>140 LB. HAMMER, 30 IN. FALL, 2 IN SAMPLER:<br>Remorks START, RUNNING FINISH   |
|                                  |  |   |  | Hole 17 BX count BX diamond AX diamond<br>18' 1' 8' 1' 1' 1' 1' BX diamond<br>19' 1' 8' 1' 8' 1' 1' 1' BX diamond<br>19' 1' 1' 1' 1' 1' 1' 1' 1' 1' 1' 1' 1' 1'   |
|                                  |  |   |  | 22. BX Cosing "   |
|                                  | 846+50<br>841+00   |   | 8+00   | Nore: B-52 Mover With Specially hordened  |
|                                  |  | $\frac{1}{2}$   |  | NORTH CAROLINA<br>STATE HIGHWAY COMMISSION  |
|                                  |  |   |  | DEPARTMENT OF LOCATIONS & SURVEYS   |
|                                  |  |   |  | BRIDGE FOUNDATION SURVEY  |
|                                  |  |   |  | COUNTY HENDERSON<br>ROUTE I 26<br>BRIDGE ON I-26<br>OVER GREEN RIVER  |
|                                  |  |   |  | SCALE: HORIZONTAL 1"=10" VERTICAL 1"=12"  |
|                                  |  |   |  | ANALYSIS & REPORT BY  |
|                                  |  | PLATE 3 - GROUN SILCTION D. F. H. AH. & ATANDARD<br>TOD'S HAS PAPER MADE AND POINTED IN U. S. A.<br>SUGINE DISTROCH CO., CHARLOTTE, N. C. | <u>╞╲╞╶╎╶╎╶╡╶╪╶╞╶╞╶╎╴┤┥╍┥╶┥╴╡╍╞╶┝╶┥</u> ╡╍┥┋╍┊╶┥╌╅╌┱┅┊┇╶┇╌╦┑╸╈╍┇┿┻╍┇╍┠╼╋╍╛╌╌╴╪╍╅╍┨╖┻╶║╲╺┽╺   |   |

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|---------------------------------------|---------------|---|---|--------------------------------------|--|---------------------------------------|----------------------|---|-------------|---------------------------------------|------------|--------------|---------------------------------------|---|----------|--|----------------|--|---|-------|--|---------------|---------|------------------|---|--|-------|--|---------------|---|----------|---------------------------------------|-----------------|---|--|------------------------|
| · · · · · · · · · · · · · · · · · · · | 186           |   | -67                                       |                                      | BLO<br>25  |                                       |                      | • • • • • • •                           |             | E1.                                   | EV.        |              | <br>  <br>                            | )<br>                                   | LO       | NS   | / F            | T  | 75  |       | EL                                     | EV            |         | G                |   | ) i i                                  | w.    | 1  | īłī           | 75  |          | 5                                     | LE              |   | OG<br>T  |                        |
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| •                                     | /790          | 2<br>   |   | 8                                    | 10<br>19   | (4<br> <br>                           | -4)<br>-5)           |   |             | V                                     | 7          | native state |                                       | SI                                      | <u>/</u> | r<br>+(  | SA<br>A        | PR<br>F)   | our<br>L                                  | TE    |  |               |         |                  |   |  |       |  |               |   |          |                                       | 786             | 27  |  |                        |
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| ÷.,                                   | 177           |   | ĥ   | (A)                                  | 2  |                                       | 6 49<br>             | /                                       | 194         | ere                                   | ( )        |              |                                       | \$71<br>[]]                             | ΤY       | (4   | :5)<br>:   4   | Ϋ́́Ρ.  | 201                                       | 172   |  | 7             |         |                  |   | 13                                     |       |  | 4)            |   |          |                                       | D<br>V          |   |  |                        |
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|                                       | 760           | 2   | Ŋ   |                                      | 705  |                                       |                      | 70                                      | 24          | 0                                     |            |              |                                       | VZ                                      | R        | - 47   | R<br>A A       | 2)<br>2 D  | RI  |       |  |               |         | ()<br>           |   |  | ZEC   | ng<br>Ve   | Bii<br>n<br>5 | R   | 7624<br> |                                       |                 |   | y<br>1   |                        |
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|                                       | (74.0         | <u> </u>  | S   |                                      | (<br>( 22)   | ing. (                                | 9/ <u>+</u>          | N cri<br>Refus                          |             |                                       |            |              |                                       | VE<br>A                                 | RY<br>UG | HA<br>E F  | . R I<br>2 - J | R<br>R<br>R  | R<br>US                                   |       |  |               |         |                  |   | 28                                     |       | <u>الم</u>   | so<br>I       | ) <u>F</u> T  | 5E       | AM                                    |                 |   |  | 1 in -in               |
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| :<br>*                                |               | , <b>h</b> . <b>e</b> i i i i i i i i i i i i i i i i i i i |   | -                                    |  |                                       |                      |   |             |                                       |            |              | · · · · · · · · · · · · · · · · · · · |   |          | 5 x 5 4<br>3 x 5 x 6<br>4 x 7<br>4 x |                |  |   | 8×    |  | ¢.            | - 9     | 4<br>            | 2A -  |  | 10    | ' <i>R</i>   | זאיע<br>דר⊤   |   |          | n                                     |                 |   | 4<br>4<br>9<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1 |                        |
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|                                       |               | ╌┲┵┧╴╧╼ᢤ╼┥<br>╺╴┠╴┅╴╢╴<br>╌╽┈┿╍┿╌┾╼┥                        |   |                                      |  | - ∳- + · }-                           | ·∗~∲-+               | - + + + + + + + + + + + + + + + + + + + |             |                                       |            |              |                                       |   |          |  |                | ui⊹adaan<br>daalaa<br>maalaan<br>maalaan   |   | ┢     | ┯┅┫┲┯┥╍                                |               |         |                  |   |  |       |  |               |   |          |                                       |                 |   |  |                        |
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|                                       |               |   | ••••••••••••••••••••••••••••••••••••••    | [- <u>;</u> - <u></u> ,- <u>i</u> ,- | ······································   |                                       |                      | • · · · · · · · · · · · · · · · · · · · |             |                                       |            |              |                                       |   |          |  |                |  |   | · + • | •                                      |               | 4       |                  |   |  |       |  |               |   |          | • • • • • • • • • • • • • • • • • • • | +               | .  <br>   |  |                        |
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|                                       |               | $10^{12}$   | <u></u>                                   | · .                                  |  |                                       |                      | )                                       |             |                                       |            |              |                                       |   |          |  |                |  |   |       |  |               |         |                  |   |  |       |  |               |   |          |                                       |                 |   |  |                        |

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HOLE NO. 28 HOLE NO. 29 HOLE NO. BLOWS/FT. BLOWS/FT ┫┙┋┙╠╸┠╺┞╴┫╸┫╺╋┑┫╱┿╸┠╺╋╶┫╼┪┥╗┲╍┨┅┝╶┠╴┝╱╎╖┥╾┩╸┥╱╣╴ Crusts RR 1 (A-4) (A - #) ┆┿┝╘┥┽┤┥╡┊┨╞╘╎┅┥┠┥╏┊╏┝╏┅┿╗┅┿┪┅ ┇╴┥╶╡╺┅┥╶╡╺┋╾║╌┼╴┠╼┽╸┝┉┥┻╴┫╼╞╍┼╌┥╺┥╌┥╻┠╍╎╴╴┥╺ ┥┿╪╍┝┽┙┫╍┇╌┠╾┿┥┿┓╋╍┇╸┠┥┷┥┿┥┿╸┥┥╺╕╸╸╸ ╱╌╵┶╌╵┥╶╛╴╏╴╞╴┥┥╴┥┑╍╖┍╋╍╝╸┠┥┻┥┿┥┥┥╺╕╸╸╸ ╱╍╵┝╍┅┍┥┙┫╍┇╌┠╾┿┥┿╻┪╍╢╍┨╍┨╸┨╴╢╴╸╴╴ \$2<sup>4</sup> (A-5) 54 (C) ROCKY Crust (RX) ╸<del>┦╸╡╺┨┍┙**╸╿╴╿╺**┥╸┥╸┥╸┥╸┥╸┥╸┥╸┥╸┥╸╸╴╴┿╷┥╴┥╸</del> SILTY SAPROLITE RUSTY SAPROLITE Meduum - Tough 48) 60 ┊┥╺┉┧╸┇╻╸┲┉┥╴╉╗╔╋┍┝╖╅╺╓╢╞┅┫╺┝┑┝┥╷╷ HARDESOFT │**╴╉╼╞╸┠╍┼╾╊╶╊┅┨╺┼╶╶**┨╸┤**╱**╄┶┼╾┫╴╬╾┨╼┢╍╄╍╄╼╄╱╝┈┨╺╽╴╎╖ CRUSTY SAPROLUTE (RR) Estimated 100° BPE Ihraughout RIPPABLE ROCK egmonte crust 2 100 ┣╍┝╍╉╍┼╍╀┅┪┅┨╸┠╺╆╶┠╺┠╸╂┄┥╶┨┍┛╸┠┉┠┈┟╴┥╾┨╶╬┅╞╴╎╺┥ Cosing Bit Metusal 6 ╴┝╶┩╺╵╺╴┥╾║╺╲┑┉┥╶╻╼┥╌║┝╼╵╎╌┙╻╌ ┈┙┈┶╍┯╌┱╼┲╦╢╍┶╺┲╼┱┱┅┅┎┱┲╖┍╶┱┱┱╸ - AUGER REFUSAL-OFT STIFF(A4) OFTHARD (RR) ter termine to the second s ╊┝┅╄╍╸┝╶┩╺┦┅╡┋┟╘╶┃╴╞╴╎╍╄╌┋┉┇╸┝╍┲┉┥╲┥┙┥╶┲┉┨╖┿┉ OFT CRR2 ┿╸┝┥┥┥╢╴╬╶┠┙╵╎╱┥┉┙┥┝┝┝╶║╢┥┫╋┿┅┩╌┝┥╖╆╊╋┿┫┿┶┿┥┾╓╢┫╌┾┟┼┼┟┥┫┊┟╎┥┥┝┞┽╎╴╏╵┚╕┍╿╏┽╓┿┽╍┝┽╡╏╢┙┥┧╶┧┇╏┋╞╎╨╣╞┨╶┊╫╍╿╖┙ ╡┑╗┑╴╗┑╕╖╘┑┫╖┇┑┑┑┝┥┥┥╻╶┲╼<mark>╴</mark>┟╶┥╍┝╸┨╼╪╌┋╱┿╍╅┯┿╍┥┯╲┙┲╎╸┟╴┾┑┾┯┑╴┫╍╅╍┥╖╌┿╴┨╶┿╍╅╍┥╶┨╛╸┨╼┿┅╉╖╝╴╄╖╝ ┠╍┡╍┝╍┝╍╇┉┫╺┫┉┇╍┝╶┇╸┥╼╬╴┇╾╏╾┽╶ ╵┋╶╿╶╏┙╎┉┼╸┥╸┥╍╋╾╏┿╏╾╏╌╿╌┦╌┼╌┥╌┥┑┨╴┠╍┞╶╎╍┥╌┽╌┨╶┥╌┨╼┝╼┨╍┇╍╏┉┽╾┨┉ ┊╞╶╎╌╃╷┊┊┉╬╓╴╔┇╶╞╌╢┅┿╌╵╵┿┇╘╺╬╌╵┕╄┿┿╌┿╼╉╾╣┅╿┍╕╸┫╌┨┿╋╋╋╍╋╍┼╍┨┍┽╌┨┈┇╶┨╶╉╴╿╌┿╼┨╧┝╸┫╴┢╴╏╴╬┑╠╌╢╴╵┶┾┅┥┵╄╌┨╶╃┙┨╌┩╺┨╓╇╍┨┱ ┝┥╎╎┥╍┋╶╎┍┝╶╽╍╋╍┥╍┎┥┍╋┍┥┙┥╋╺┝╸┥┝╸┝╸┝╸┝╸┝ 70 EAST FLATROCK╎┪┙┫┅┫╾┋╸╞╶┊╶╎╴╡╺┫╺╞╶╞╶╎╍╁╍╡┉╡╴  $\sim$ ┥┥**╡┊╢┝╶**┦╵┝╍┫╍┵╸┨╺┝╍┣┅<sub>╋┉</sub>┥ ┝╌╴╶┝╾╸╲╴╸╻╸╸╸ ┱╴╶┷┶┑┫╍┠╼┠╍┠╍┠╸ ┨┯┪<sub>╋</sub>┉┲┩╌┝╸┠┅┠╛**┙╅┉┨╼╁╴**╏┝╎╎┙┥╏╸┊╞╎╎╎╎┧╖┫╸┩║┝┉╎╎╎┝╎┼╵╵┓┙┥┑╵┇┉╿┑┥╍╽╌┿┙┩╍┪┙╻┝╵┏┿╌┝┈╵ <u>L</u>BÈN ╔┝┥┥┥╡┇╏╬╦║╵└┤┼┉┨┉╏┠┝╆┾╎┾╦┉┇╎╄┥┧╡╏╎┉┤┧┥┨╞╔╎┝┽╡┥┥┊╡┥║╬╔╦╊┽╞┿╡╢┥║╗┩╞╢┿╞┿┿┿╞┙┨┿╡╽┉╡╏╎╬╋┿╞┷┉

PLATE O- CHOUS MACTION O P. H. & P. C. STANDARD 100" AND PAPER-MADE AND PRINTED IN U. D. A. EUGENE DIETZGEN CO., CHARLOTTE, N. C.

SHEET 8 144.5 TOTAL SHEET NO. -

LEGEND SOIL & ROCK DESCRIPTION & SYMBOLS  $\begin{array}{c}
SILTY \subseteq LAY \\
(A=7-3) \\
SILTY SAPROLIE \\
(A=7) \\
SAND & SAPROLIE \\
(A=7) \\
SAND & SAPROLIE \\
(A=2-4) \\
SAND & SAPROLIE \\
SAND & SA$ MICACEOUS SAPROLITE HARD ROCK

1760

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الرواية - الا متوادية الأمري ( منها مدين من الماني المركبين ومعرفة من المركبين ( من المركبين ) من ا

# NOTES THE LOGS SHOWN ON THIS PROFILE ARE

TAKEN FROM FIELD SURVEY DATA AND REPRE-SENT THE BEST INFORMATION AVAILABLE FIELD PROCEDURES ARE BASED DN A ST.M. AND A.A.S.H.O. STANDARDS WITH BEARING CAPACITIES DERIVED FROM STANDARD PENETRATION TEST: 140 LB. HAMMER, 30 IN. FALL, 2 IN SAMPLER. Drill Rigs Ilsed 11 B-52 Holes 25, 26, 8-29 drilled with & topometer power orgen & specially hardened teefs, cased hole = 25 at the relisal & cored to 700 (2) B-40 Holes 27 & 28 by drawlia powered crawler, ron only cosing & diamond bits, drave Samples inside cosing Note BPE estimated indicated by declard line

Note BPF estimated indicated by deshed line intersection and absence of volve laireled of 1005

# NORTH CAROLINA STATE HIGHWAY COMMISSION DEPARTMENT OF LOCATIONS & SURVEYS GEOLOGICAL DIVISION BRIDGE FOUNDATION SURVEY

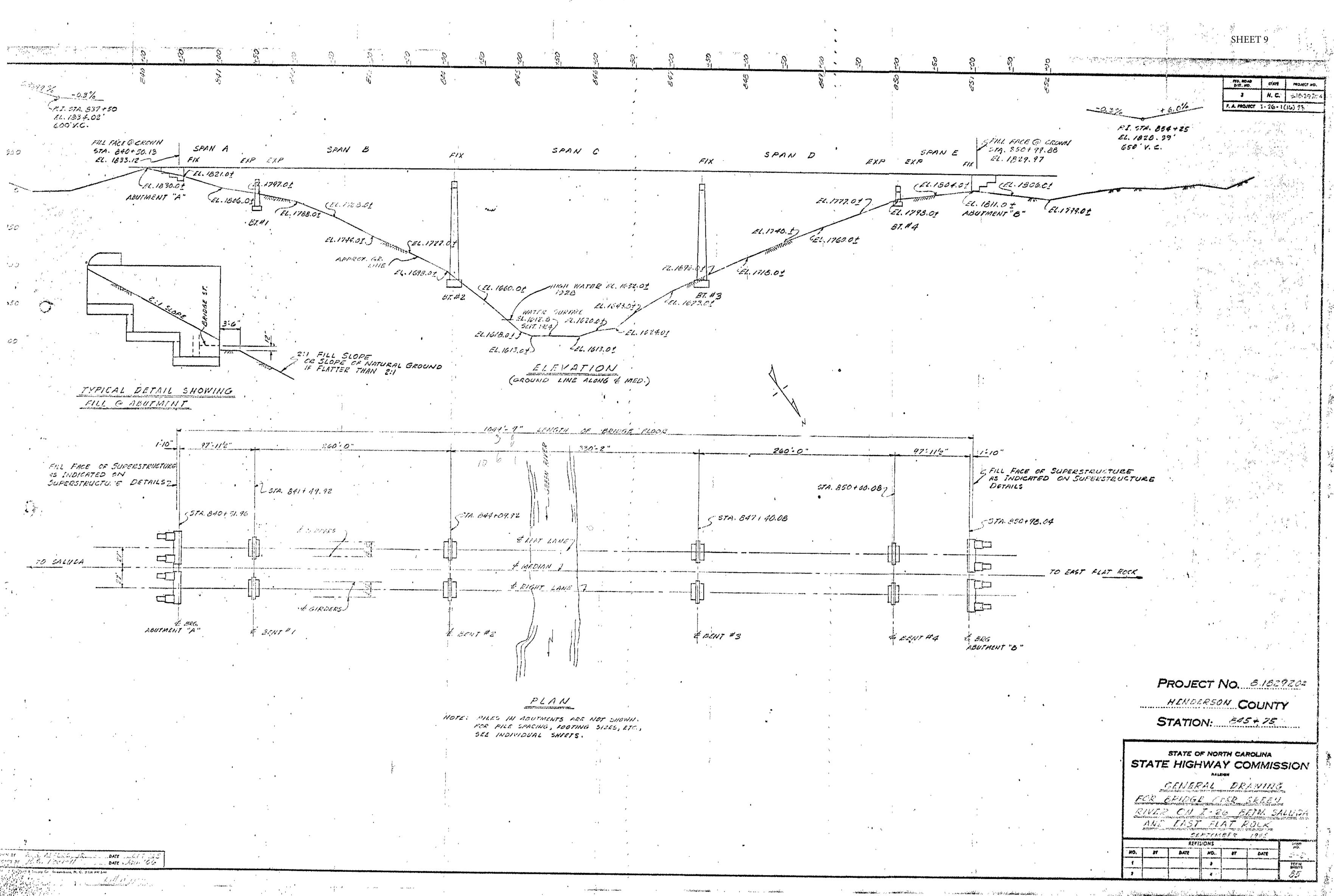
PROJECT 81829201 COUNTY HENDERSON ROUTE 

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|  | :                                      |  | · ·                    |  |  |
| 57A. 890+ 3  | 07. (514. 840                          | +50 STA.   | 841+102                | - STA. 841+60.                                       | 5  |
|  | <u> </u>                               |  | 6                      | ~  |  |
| 20   |  | 1<br>  | 5                      | 8  |  |
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| 0 5  |  | <b>.</b>   |                        |  |  |
| S.L.   | m1 6 6                                 |  | 20                     | 3.   |  |
|  | 20                                     | ,  | 10 10<br>5 7 44        | , .  |  |
| 189 1 199 1 199 1 199 1 199 1 199 1 199 1 199 1 199 1 199 1 199 1 199 1 199 1 199 1 199 1 199 1 199 1 199 1 199  | ABUT. "A"                              | 1820   | 207, 44                |  | ,  |
| CEL.1832.01  |  |  | •                      |  |  |
|  | 1828.0t                                | 1010   | CFL. 1310:01           |  |  |
| 15 B.P.F.O.S.O   | CEL.1825.02                            | •  | 10 200 65!             |  |  |
| 220 415BPER150   | lin anori []                           | -EL. 1822.02<br>1800   | 10 3000 01             | I  |  |
| 120 0000001 201  | FJ • 11 EF                             | 5 BPF @ 5'<br>70 BPF @ 5'  | 10 0000                | SENCS' SEL. 1794.0                                   | <u>z</u> .                                   |
| 40 ENF @ 250 20  | BAR @15' 40 BAR @10'                   | - EL. 1812.07 1290   | 65 1105 @ 25"          | CAFEID<br>CAFEID                                     | •  |
| 11 12 ROLA 2001  | BRF @ 20' 20 BPF@15'                   | (ROCK OR BOULD<br>EPF @ 10   | (R) Inderserve         | 15 84 650 15 84 65                                   | ( ri mad)                                    |
| 150 BPF @ 32.9   |  | BPS @ 20'  | Acres                  | میرانی میں اسلام کی<br>العبر الاستان کی الاستان کی ا | à  |
|  | 700000                                 | 2PT @ 25' 1700   |                        | CORNEZZS   | 10 000 005                                   |
| EL. 1799.01 FL. 161  |  | 8PF & 30'  | CALINTZOT              | .1779.01 60 MPF@ 20                                  | 10 BAFEI                                     |
| 291 3 1<br>El  | 1792.91 8 12.07 8 12.                  | 5 3PF @ 31' 1770<br>EL.1791.01   | 6 5                    | 150 8118 28<br>EL.1112.01                            | 40 20001                                     |
|  |  |  | <b>'.</b>              | 1  | JEL. 1764.                                   |
| zes StA. a   | 340 + 30                               | 1760   |                        | ,<br>,   | 2. (RUCK.                                    |
| · · · · · · · · · · · · · · · · · · ·  | ······································ |  |                        | 574. 541+40  | ······································       |
|  | $\mathfrak{B}_{-1}$                    | -  |                        |  |  |
|  |  |  |                        | . •  |  |
|  |  | 1820)  | . •                    | · ·  |  |
| C.EL. 1826.01  |  | *  | 1                      |  |  |
| 10 800 5' CAL 102  | EL. 1820.0 2                           | 1310   | •                      |  |  |
| 20 800 10° 15 2  | aras'                                  | 1.1816.02  | Sel. 1807.01           |  |  |
|  | 0,0= \$10. 5 BAR \$5'                  | BARE TE BE   | 5 846 5 GE             | 6.117902   |  |
| 1 50 647 C 20  | 20 1111 5 -                            | 1300 - 1300<br>1307 0 10   | 5 BATOM'               | :<br>المعرية مراجرات                                 |  |
| 20 Bar @ 25 10   | ATTO 25 COLLONDI                       | conce orde   | 15 1100 15             | PPP @ 5' C 01.1992.01                                | •  |
| i li 31  |  | 30 LAP @ 201 1790  | 165 311 9195           | O BARDIS BRAZOS                                      | ,  |
| 150 EPRE 30 200<br>CEL. 1796-01 CEL.11   | 96.01 C 26.7                           | 80 6PF @ 25'   | CEL IZAAA+             | o an ead to an ero                                   | EL. 1702.0                                   |
| 2 1  | 11                                     | 30 Her 6 20' 1760  |                        | O CARGES BOOKE IS                                    | . EOBAT OS                                   |
|  | J.                                     | 175 BHF 032'   |                        |  |  |
|  | 6                                      | 64.1 <b>784.01</b><br>1170   |                        | L.ITHOL ROD SPRGED                                   | 15 40 BPF @ 15                               |
| •  |  |  | 8                      | 90.51-620<br>1.177401 100 200020<br>11.1112.01<br>1  | 410 504 @18                                  |
| TA: E  | 840 + 50                               | 12.3   | ۰<br>۲۰۰۰ - ۲۰۰۰       | 141+60   | - FL. 1764.0<br>3                            |
| ·  |  |  |                        | · · · · · · · · · · · · · · · · · · ·                | <u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u> |
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AND ST ST. ALECTOR LR. DATE SLAT. 55. LCKID & St. S. A. G. governe BATE OCT., 1965.

E. H. Marginess

