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REFERENCE: R-3830

PROJECT: 38887

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY LEE
PROJECT DESCRIPTION NC 42 FROM US 421 TO SR 1579
(MAIN STREET) IN SANFORD AND ALONG SR 1579
FROM NC 42 TO SR 1538 (E. HARRINGTON AVE.) IN
BROADWAY
SITE DESCRIPTION RETAINING WALL 1 ON -L- FROM
19+27.37 TO 21+44.74, RIGHT

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| 7 | SOIL TEST RESULTS |

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-------|-----------------------------|-----------|--------------|
| N.C. | R-3830 | 1 | 7 |

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 INDICATED 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 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:
- 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.

| KLEINFELDER PERSONNEL | F&R PERSONNEL |
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| <u>E. ESTEP</u> | <u>S. DAVIS</u> |
| | <u>J. DAVIS</u> |
| | |
| | |

INVESTIGATED BY F&R, Inc.
KLEINFELDER
DRAWN BY T.T. WALKER
CHECKED BY P. ALTON
SUBMITTED BY P. ALTON
DATE JANUARY 2018

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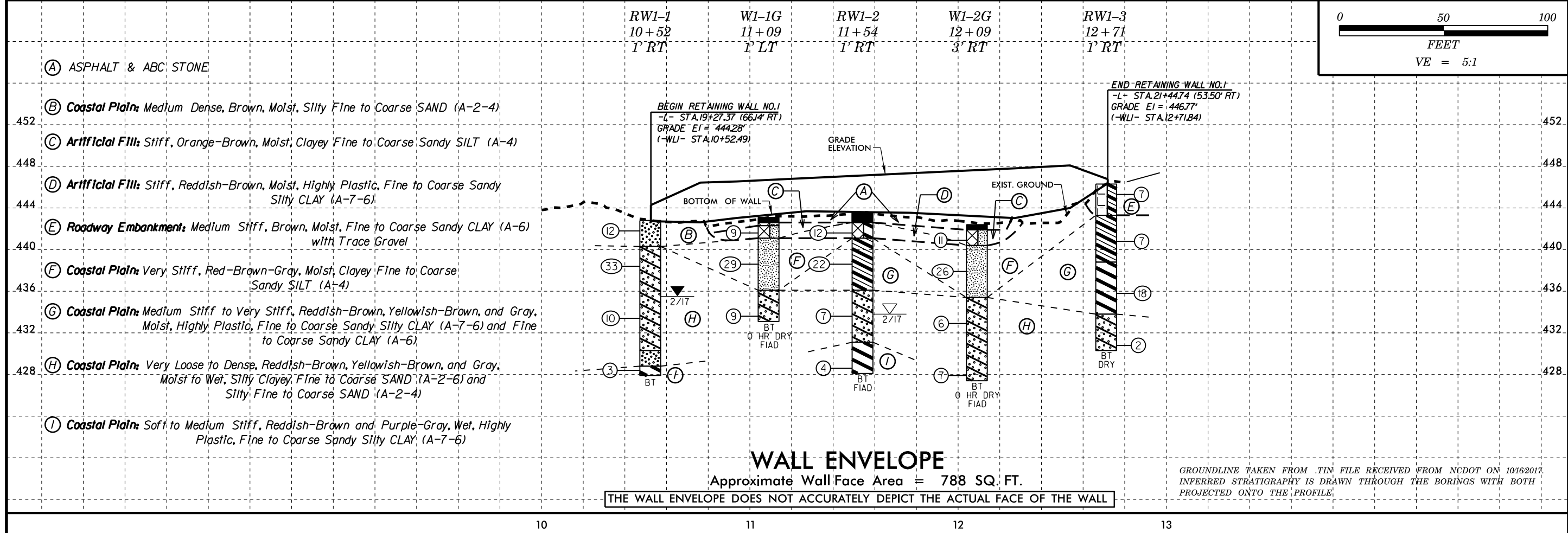
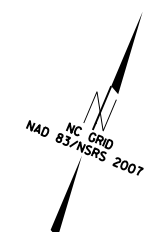
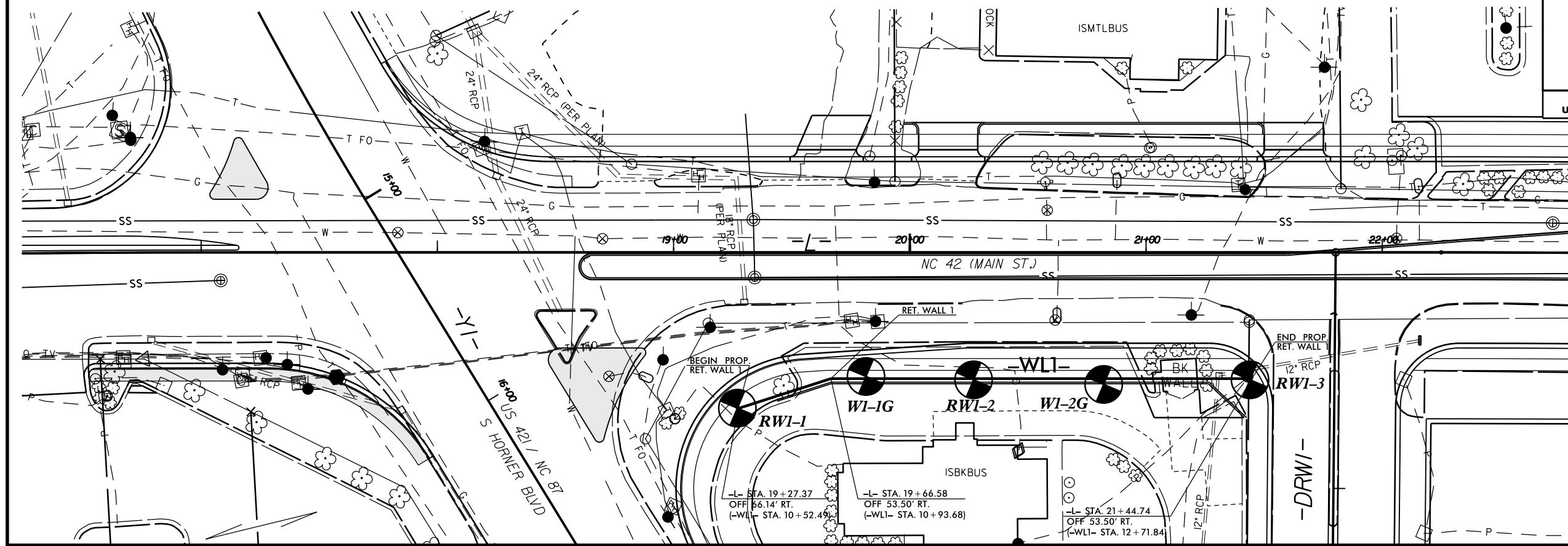
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**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS**

| SOIL DESCRIPTION | GRADATION | ROCK DESCRIPTION | TERMS AND DEFINITIONS |
|--|---|---|--|
| SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN 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 IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6 | WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES. | HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED, AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 60 BLOWS PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS: WEATHERED ROCK (WR) NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED. CRYSTALLINE ROCK (CR) FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC. NON-CRYSTALLINE ROCK (NCR) FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLITE, SLATE, SANDSTONE, ETC. COASTAL PLAIN SEDIMENTARY ROCK (CP) COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC. | ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC. 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 SURFACE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL. 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 FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. 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 USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. 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 ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. 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 THE BEDDING OR SCHISTOSITY OF THE INTRODUCED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS IN OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER. |
| SOIL LEGEND AND AASHTO CLASSIFICATION | ANGULARITY OF GRAINS THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED. | WEATHERING FRESH VERY SLIGHT (V SLI.) SLIGHT (SLI.) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE | MINERALOGICAL COMPOSITION MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE. |
| COMPRESSION SLIGHTLY COMPRESSIBLE MODERATELY COMPRESSIBLE HIGHLY COMPRESSIBLE | MINERALOGICAL COMPOSITION MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE. | VERY HARD HARD MODERATELY HARD MEDIUM HARD SOFT VERY SOFT | PERCENTAGE OF MATERIAL ORGANIC MATERIAL TRACE OF ORGANIC MATTER LITTLE ORGANIC MATTER MODERATELY ORGANIC HIGHLY ORGANIC |
| GRADATION GENERAL CLASS. GROUP CLASS. SYMBOL % PASSING *10 *40 *200 MATERIAL PASSING *40 LL PL GROUP INDEX USUAL TYPES OF MAJOR MATERIALS GEN. RATING AS SUBGRADE | COMPRESSION SLIGHTLY COMPRESSIBLE MODERATELY COMPRESSIBLE HIGHLY COMPRESSIBLE | ROCK HARDNESS VERY HARD HARD MODERATELY HARD MEDIUM HARD SOFT VERY SOFT | GROUND WATER WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING STATIC WATER LEVEL AFTER 24 HOURS PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA SPRING OR SEEP |
| CONSISTENCY OR DENSENESS | PERCENTAGE OF MATERIAL ORGANIC MATERIAL TRACE OF ORGANIC MATTER LITTLE ORGANIC MATTER MODERATELY ORGANIC HIGHLY ORGANIC | ROCK HARDNESS VERY HARD HARD MODERATELY HARD MEDIUM HARD SOFT VERY SOFT | MISCELLANEOUS SYMBOLS ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION SOIL SYMBOL ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT INFERRED SOIL BOUNDARY INFERRED ROCK LINE ALLUVIAL SOIL BOUNDARY |
| TEXTURE OR GRAIN SIZE | PERCENTAGE OF MATERIAL ORGANIC MATERIAL TRACE OF ORGANIC MATTER LITTLE ORGANIC MATTER MODERATELY ORGANIC HIGHLY ORGANIC | ROCK HARDNESS VERY HARD HARD MODERATELY HARD MEDIUM HARD SOFT VERY SOFT | RECOMMENDATION SYMBOLS UNDERCUT SHALLOW UNDERCUT UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK |
| SOIL MOISTURE - CORRELATION OF TERMS | PERCENTAGE OF MATERIAL ORGANIC MATERIAL TRACE OF ORGANIC MATTER LITTLE ORGANIC MATTER MODERATELY ORGANIC HIGHLY ORGANIC | ROCK HARDNESS VERY HARD HARD MODERATELY HARD MEDIUM HARD SOFT VERY SOFT | ABBREVIATIONS AR - AUGER REFUSAL BT - BORING TERMINATED CL - CLAY CPT - CONE PENETRATION TEST CSE - COARSE DMT - DILATOMETER TEST DPT - DYNAMIC PENETRATION TEST e - VOID RATIO F - FINE FOSS. - FOSSILIFEROUS FRAC. - FRACTURED, FRACTURES FRAGS. - FRAGMENTS HL - HIGHLY MED. - MEDIUM MICA - MICACEOUS MOD. - MODERATELY NP - NON PLASTIC ORG. - ORGANIC PMT - PRESSUREMETER TEST SAP. - SAPROLITIC SD. - SAND, SANDY SL. - SILT, SILTY SLL. - SLIGHTLY TCR - TRICONE REFUSAL w - MOISTURE CONTENT V - VERY VST - VANE SHEAR TEST WEA. - WEATHERED % - UNIT WEIGHT % - DRY UNIT WEIGHT SAMPLE ABBREVIATIONS SS - BULK SS - SPLIT SPOON ST - SHELBY TUBE RS - ROCK RT - RECOMPACTED TRIAXIAL CBR - CALIFORNIA BEARING RATIO |
| PLASTICITY | PERCENTAGE OF MATERIAL ORGANIC MATERIAL TRACE OF ORGANIC MATTER LITTLE ORGANIC MATTER MODERATELY ORGANIC HIGHLY ORGANIC | ROCK HARDNESS VERY HARD HARD MODERATELY HARD MEDIUM HARD SOFT VERY SOFT | EQUIPMENT USED ON SUBJECT PROJECT DRILL UNITS: CME-45C CME-55 CME-550 VANE SHEAR TEST PORTABLE HOIST MOBILE-57 ADVANCING TOOLS: CLAY BITS 6" CONTINUOUS FLIGHT AUGER 8" HOLLOW AUGERS HARD FACED FINGER BITS TUNG.-CARBIDE INSERTS CASING w/ ADVANCER TRICONE * STEEL TEETH TRICONE * TUNG.-CARB. CORE BIT HAMMER TYPE: AUTOMATIC MANUAL CORE SIZE: B H N HAND TOOLS: POST HOLE DIGGER HAND AUGER SOUNDING ROD VANE SHEAR TEST |
| PLASTICITY | PERCENTAGE OF MATERIAL ORGANIC MATERIAL TRACE OF ORGANIC MATTER LITTLE ORGANIC MATTER MODERATELY ORGANIC HIGHLY ORGANIC | ROCK HARDNESS VERY HARD HARD MODERATELY HARD MEDIUM HARD SOFT VERY SOFT | FRACATURE SPACING TERM VERY WIDE WIDE MODERATELY CLOSE CLOSE VERY CLOSE SPACING MORE THAN 10 FEET 3 TO 10 FEET 1 TO 3 FEET 0.15 TO 1 FOOT LESS THAN 0.16 FEET |
| COLOR | PERCENTAGE OF MATERIAL ORGANIC MATERIAL TRACE OF ORGANIC MATTER LITTLE ORGANIC MATTER MODERATELY ORGANIC HIGHLY ORGANIC | ROCK HARDNESS VERY HARD HARD MODERATELY HARD MEDIUM HARD SOFT VERY SOFT | BEDDING TERM VERY THICKLY BEDDED THICKLY BEDDED THINLY BEDDED VERY THINLY BEDDED THICKLY LAMINATED THINLY LAMINATED THICKNESS 4 FEET 1.5 - 4 FEET 0.16 - 1.5 FEET 0.03 - 0.16 FEET 0.008 - 0.03 FEET 0.008 FEET |
| DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE. | PERCENTAGE OF MATERIAL ORGANIC MATERIAL TRACE OF ORGANIC MATTER LITTLE ORGANIC MATTER MODERATELY ORGANIC HIGHLY ORGANIC | ROCK HARDNESS VERY HARD HARD MODERATELY HARD MEDIUM HARD SOFT VERY SOFT | INDURATION FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. FRIABLE MODERATELY INDURATED INDURATED EXTREMELY INDURATED RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE. GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER. GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER. SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS. |
| | | | NOTES: FIAD= FILLED IMMEDIATELY AFTER DRILLING F&R BORING ELEVATIONS OBTAINED FROM .JTN FILE RECEIVED FROM NCDOT ON 10/16/2017 |

RETAINING WALL NO. 1 (PRELIMINARY DESIGN)

| | |
|---|-----------------------|
| PROJECT REFERENCE NO. R-3830 | SHEET NO. 3 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |



GEOTECHNICAL BORING REPORT

BORE LOG

| WBS 38887.1.1 | | TIP R-3830 | | COUNTY LEE | | GEOLOGIST D. Kubinski | | | | | | | | | | |
|---|-----------------|---------------------|--------------------------|---------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|------------|--|------|
| SITE DESCRIPTION Retaining Wall 1 on -L- from 19+27.37 to 21+44.74, Right | | | | | | | GROUND WTR (ft) | | | | | | | | | |
| BORING NO. RW1-1 | | STATION 10+52 | | OFFSET 1 ft RT | | ALIGNMENT -WL1- | | | | | | | | | | |
| COLLAR ELEV. 442.8 ft | | TOTAL DEPTH 14.9 ft | | NORTHING 622,234 | | EASTING 1,956,748 | | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 90% 02/22/2016 | | | DRILL METHOD H.S. Augers | | | HAMMER TYPE Automatic | | | | | | | | | | |
| DRILLER E. Estep | | START DATE 02/20/17 | | COMP. DATE 02/20/17 | | SURFACE WATER DEPTH N/A | | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | | |
| 445 | 442.8 | 0.0 | 2 | 5 | 7 | | | | | | | | | 442.8 | GROUND SURFACE | 0.0 |
| 440 | 439.4 | 3.4 | 7 | 11 | 22 | | | | | | | | | 440.3 | COASTAL PLAIN Brown, silty fine to coarse SAND (A-2-4) Reddish-brown/yellowish-brown, silty clayey fine to coarse SAND (A-2-6) | 2.5 |
| | 434.4 | 8.4 | 4 | 5 | 5 | | | | | | | | | 430.3 | Yellowish-brown, gray, silty fine to coarse SAND (A-2-4) | 12.5 |
| 430 | 429.4 | 13.4 | 2 | 1 | 2 | | | | | | | | | 428.8 | Yellowish-brown, gray to purple-gray, highly plastic, fine to coarse sandy silty CLAY (A-7-6) | 14.0 |
| | | | | | | | | | | | | | | 427.9 | Boring Terminated at Elevation 427.9 ft in CLAY (COASTAL PLAIN) | 14.9 |
| | | | | | | | | | | | | | | | Topsoil (0.0 to 0.3 foot) | |

| WBS 38887.1.1 | | TIP R-3830 | | COUNTY LEE | | GEOLOGIST S. Woods | | | | | | | | | | |
|---|-----------------|---------------------|--------------------------|---------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|------------|---|------|
| SITE DESCRIPTION Retaining Wall 1 on -L- from 19+27.37 to 21+44.74, Right | | | | | | | GROUND WTR (ft) | | | | | | | | | |
| BORING NO. W1-1G | | STATION 11+09 | | OFFSET 1 ft LT | | ALIGNMENT -WL1- | | | | | | | | | | |
| COLLAR ELEV. 443.1 ft | | TOTAL DEPTH 10.0 ft | | NORTHING 622,268 | | EASTING 1,956,793 | | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017 | | | DRILL METHOD H.S. Augers | | | HAMMER TYPE Automatic | | | | | | | | | | |
| DRILLER S. Davis | | START DATE 12/04/17 | | COMP. DATE 12/04/17 | | SURFACE WATER DEPTH N/A | | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | | |
| 445 | 442.6 | 0.5 | 3 | 3 | 6 | | | | | | | | | 443.1 | GROUND SURFACE | 0.0 |
| 440 | 439.6 | 3.5 | 11 | 13 | 16 | | | | | | | | | 441.1 | ASPHALT | 0.5 |
| | 436.1 | 7.5 | | | | | | | | | | | | 441.1 | ABC STONE | 2.0 |
| 435 | 434.6 | 8.5 | 4 | 5 | 4 | | | | | | | | | 436.1 | ARTIFICIAL FILL Orange-brown, clayey fine to coarse sandy SILT (A-4) | 7.0 |
| | | | | | | | | | | | | | | 433.1 | COASTAL PLAIN Red-brown, clayey fine to coarse sandy SILT (A-4), with trace quartz fragments Yellow-brown, clayey fine to coarse SAND (A-2-6) | 10.0 |
| | | | | | | | | | | | | | | | Boring Terminated at Elevation 433.1 ft in SAND (COASTAL PLAIN) | |

NOTES:
1) Boring Filled Immediately After Drilling (FIAD) due to location in parking lot

GEOTECHNICAL BORING REPORT

BORE LOG

| WBS 38887.1.1 | | TIP R-3830 | | COUNTY LEE | | GEOLOGIST D. Kubinski | | | | | | | | | |
|---|-----------------|---------------------|--------------------------|---------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|---|--|
| SITE DESCRIPTION Retaining Wall 1 on -L- from 19+27.37 to 21+44.74, Right | | | | | | | GROUND WTR (ft) | | | | | | | | |
| BORING NO. RW1-2 | | STATION 11+54 | | OFFSET 1 ft RT | | ALIGNMENT -WL1- | | | | | | | | | |
| COLLAR ELEV. 443.6 ft | | TOTAL DEPTH 15.5 ft | | NORTHING 622,284 | | EASTING 1,956,836 | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 90% 02/22/2016 | | | DRILL METHOD H.S. Augers | | | HAMMER TYPE Automatic | | | | | | | | | |
| DRILLER E. Estep | | START DATE 02/20/17 | | COMP. DATE 02/20/17 | | SURFACE WATER DEPTH N/A | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | |
| 445 | | | | | | | | | | | | | | | |
| | 442.6 | 1.0 | 1 | 4 | 8 | | | | | | | | M | 443.6 GROUND SURFACE 0.0 442.6 ASPHALT 1.0 | |
| 440 | 439.6 | 4.0 | 7 | 10 | 12 | | | | | | | | M | 441.1 ARTIFICIAL FILL Reddish-brown, highly plastic, fine to coarse sandy silty CLAY (A-7-6) 2.5 | |
| | 436.1 | 7.0 | | | | | | | | | | | M | COASTAL PLAIN Reddish-brown, gray, orange, fine to coarse sandy CLAY (A-6) 7.5 | |
| 435 | 434.6 | 9.0 | 3 | 3 | 4 | | | | | | | | M | 436.1 Yellowish-brown, clayey fine to coarse SAND (A-2-6) 7.5 | |
| 430 | 429.6 | 14.0 | 2 | 2 | 2 | | | | | | | | W | 431.1 Purple, reddish-brown, gray, highly plastic, fine to coarse sandy silty CLAY (A-7-6) 12.5 428.1 Boring Terminated at Elevation 428.1 ft in CLAY (COASTAL PLAIN) 15.5 | |

| WBS 38887.1.1 | | TIP R-3830 | | COUNTY LEE | | GEOLOGIST S. Woods | | | | | | | | | |
|---|-----------------|---------------------|--------------------------|---------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|---|--|
| SITE DESCRIPTION Retaining Wall 1 on -L- from 19+27.37 to 21+44.74, Right | | | | | | | GROUND WTR (ft) | | | | | | | | |
| BORING NO. W1-2G | | STATION 12+09 | | OFFSET 3 ft RT | | ALIGNMENT -WL1- | | | | | | | | | |
| COLLAR ELEV. 442.4 ft | | TOTAL DEPTH 15.0 ft | | NORTHING 622,304 | | EASTING 1,956,887 | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017 | | | DRILL METHOD H.S. Augers | | | HAMMER TYPE Automatic | | | | | | | | | |
| DRILLER S. Davis | | START DATE 12/04/17 | | COMP. DATE 12/04/17 | | SURFACE WATER DEPTH N/A | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | |
| 445 | | | | | | | | | | | | | | | |
| | 441.9 | 0.5 | 4 | 5 | 6 | | | | | | | | | 442.4 GROUND SURFACE 0.0 441.9 ASPHALT 0.5 | |
| 440 | 438.9 | 3.5 | 7 | 12 | 14 | | | | | | | | SS-1 20% | 440.4 ARTIFICIAL FILL Orange-brown, clayey fine to coarse sandy SILT (A-4) 2.0 | |
| | 435.4 | 7.0 | | | | | | | | | | | | COASTAL PLAIN Red-brown-gray, clayey fine to coarse sandy SILT (A-4) 7.0 | |
| 435 | 433.9 | 8.5 | 2 | 3 | 3 | | | | | | | | SS-2 16% | 435.4 Yellowish-brown, clayey fine to coarse SAND (A-2-6) 7.0 | |
| 430 | 428.9 | 13.5 | 3 | 3 | 4 | | | | | | | | SS-3 21% | 428.9 Boring Terminated at Elevation 427.4 ft in SAND (COASTAL PLAIN) 15.0 | |

NOTES:
1) Boring Filled Immediately After Drilling (FIAD) due to location in parking lot

GEOTECHNICAL BORING REPORT BORE LOG

| | | | |
|---|---------------------|--------------------------|-------------------------|
| WBS 38887.1.1 | TIP R-3830 | COUNTY LEE | GEOLOGIST D. Kubinski |
| SITE DESCRIPTION Retaining Wall 1 on -L- from 19+27.37 to 21+44.74, Right | | | GROUND WTR (ft) |
| BORING NO. RW1-3 | STATION 12+71 | OFFSET 1 ft RT | ALIGNMENT -WL1- |
| COLLAR ELEV. 446.3 ft | TOTAL DEPTH 16.0 ft | NORTHING 622,330 | EASTING 1,956,943 |
| DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 90% 02/22/2016 | | DRILL METHOD H.S. Augers | HAMMER TYPE Automatic |
| DRILLER E. Estep | START DATE 02/20/17 | COMP. DATE 02/20/17 | SURFACE WATER DEPTH N/A |

| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG MOI | LOG G | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | | |
|-----------|-----------------|------------|------------|-------|-------|----------------|----|----|----|-----|-----------|---------|-------|---------------------------|------------|---|------|
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | | | |
| 450 | | | | | | | | | | | | | | | | | |
| | 446.3 | 0.0 | | | | | | | | | | | | | 446.3 | GROUND SURFACE | 0.0 |
| 445 | | | 2 | 4 | 3 | | | | | | | | | M | 443.3 | ROADWAY EMBANKMENT Brown, fine to coarse sandy CLAY (A-6), with trace gravel | 3.0 |
| | 441.8 | 4.5 | | | | | | | | | | | | | | COASTAL PLAIN Yellowish-brown, fine to coarse sandy CLAY (A-6) | |
| 440 | | | 1 | 3 | 4 | | | | | | | | | M | 438.8 | Reddish-brown, gray, yellowish-brown, highly plastic, fine to coarse sandy silty CLAY (A-7-6) | 7.5 |
| | 436.8 | 9.5 | | | | | | | | | | | | | | | |
| 435 | | | 6 | 8 | 10 | | | | | | | | | M | 433.8 | Reddish-brown to gray, silty clayey fine to coarse SAND (A-2-6) | 12.5 |
| | 431.8 | 14.5 | | | | | | | | | | | | | | | |
| | | | 2 | 1 | 1 | | | | | | | | | M | 430.3 | Boring Terminated at Elevation 430.3 ft in SAND (COASTAL PLAIN) | 16.0 |
| | | | | | | | | | | | | | | | | Topsoil (0.0 to 0.4 foot) | |

NCDOT BORE DOUBLE R3830 GEO_BH_WALLS.GPJ NC_DOT.GDT 1/11/18

**North Carolina Department of Transportation
Division of Highways
Materials and Test Unit
Soils Laboratory**

T.I.P. ID NO.: R-3830
DESCRIPTION: Retaining Wall 1 on -L- from 19+27.37 to 21+44.74, Right

REPORT ON SAMPLES OF: SOIL FOR QUALITY

WBS No.: 38887.1.1
DATE SAMPLED: 12/17
SAMPLED FROM: -WL1-
SUBMITTED BY: D. Racey

COUNTY: Lee
RECEIVED: 12/17
REPORTED: 12/17
BY: S. Alkhafaji
Certification No. 101-01-0603

| PROJ. SAMPLE NO. | SS-1 | SS-2 | SS-3 | | | | | | | | | | | |
|----------------------|-------|-------|-------|--|--|--|--|--|--|--|--|--|--|--|
| BORING NO. | W1-2G | W1-2G | W1-2G | | | | | | | | | | | |
| Retained #4 Sieve % | 0.2 | 0.8 | 0.0 | | | | | | | | | | | |
| Passing #10 Sieve % | 99.3 | 97.9 | 99.9 | | | | | | | | | | | |
| Passing #40 Sieve % | 80.4 | 73.0 | 78.7 | | | | | | | | | | | |
| Passing #200 Sieve % | 51.3 | 43.2 | 29.7 | | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|-------------------------|--------|--------|----------|--|--|--|--|--|--|--|--|--|--|--|
| SOIL MORTAR - 100% | | | | | | | | | | | | | | |
| Coarse Sand Ret - #60 % | 32.3 | 41.3 | 46.8 | | | | | | | | | | | |
| Fine Sand Ret - #270 % | 18.1 | 16.0 | 24.4 | | | | | | | | | | | |
| Silt 0.053 - 0.010 mm % | 6.0 | 4.5 | 2.2 | | | | | | | | | | | |
| Clay < 0.010 mm % | 43.6 | 38.2 | 26.6 | | | | | | | | | | | |
| L.L. | 30 | 38 | 37 | | | | | | | | | | | |
| P.L. | NP | NP | 23 | | | | | | | | | | | |
| P.I. | NP | NP | 14 | | | | | | | | | | | |
| AASHTO Classification | A-4(0) | A-4(0) | A-2-6(0) | | | | | | | | | | | |
| Station | 12+09 | 12+09 | 12+09 | | | | | | | | | | | |
| Offset | 3' RT. | 3' RT. | 3' RT. | | | | | | | | | | | |
| Depth (ft) | 0.5 | 3.5 | 8.5 | | | | | | | | | | | |
| to | 2.0 | 5.0 | 10.0 | | | | | | | | | | | |
| Alignment | -WL1- | -WL1- | -WL1- | | | | | | | | | | | |
| Moisture Content (%) | 19.5 | 16.4 | 21.3 | | | | | | | | | | | |
| Organic Content (%) | NT | NT | NT | | | | | | | | | | | |

NP = Not plastic
NT = Not tested
ND = Not Determined
CL = Centerline

W.P. Alton, P.E.
Soils Engineer

PROJECT: 38887 REFERENCE: R-3830

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY LEE
 PROJECT DESCRIPTION NC 42 FROM US 421 TO SR 1579
(MAIN STREET) IN SANFORD AND ALONG SR 1579
FROM NC 42 TO SR 1538 (E. HARRINGTON AVE.) IN
BROADWAY
 SITE DESCRIPTION RETAINING WALL 2 ON -L- FROM
22 + 84.00 TO 27 + 70.00, RIGHT

CONTENTS

| <u>SHEET NO.</u> | <u>DESCRIPTION</u> |
|------------------|----------------------|
| 1 | TITLE SHEET |
| 2 | LEGEND (SOIL & ROCK) |
| 3 | SITE PLAN & PROFILE |
| 4-8 | BORE LOGS |
| 9 | SOIL TEST RESULTS |

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-------|-----------------------------|-----------|--------------|
| N.C. | R-3830 | 1 | 9 |

CAUTION NOTICE

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 - 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.

| KLEINFELDER PERSONNEL | F&R PERSONNEL |
|-----------------------|-----------------|
| <u>D. KUBINSKI</u> | <u>S. WOODS</u> |
| <u>E. ESTEP</u> | <u>S. DAVIS</u> |
| | <u>J. DAVIS</u> |
| | |
| | |

INVESTIGATED BY F&R, Inc.
KLEINFELDER

DRAWN BY T.T. WALKER

CHECKED BY P. ALTON

SUBMITTED BY P. ALTON

DATE JANUARY 2018

SINCE **Prepared in the Office of:**
FROEHLING & ROBERTSON, INC.
Engineering Stability Since 1881
 310 Hubert Street
 Raleigh, North Carolina 27603-2302 | USA
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 www.fandr.com



DocuSigned by:
Patrick Alton 1/30/2018

A270EF78A6SIGNATURE DATE

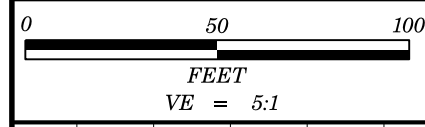
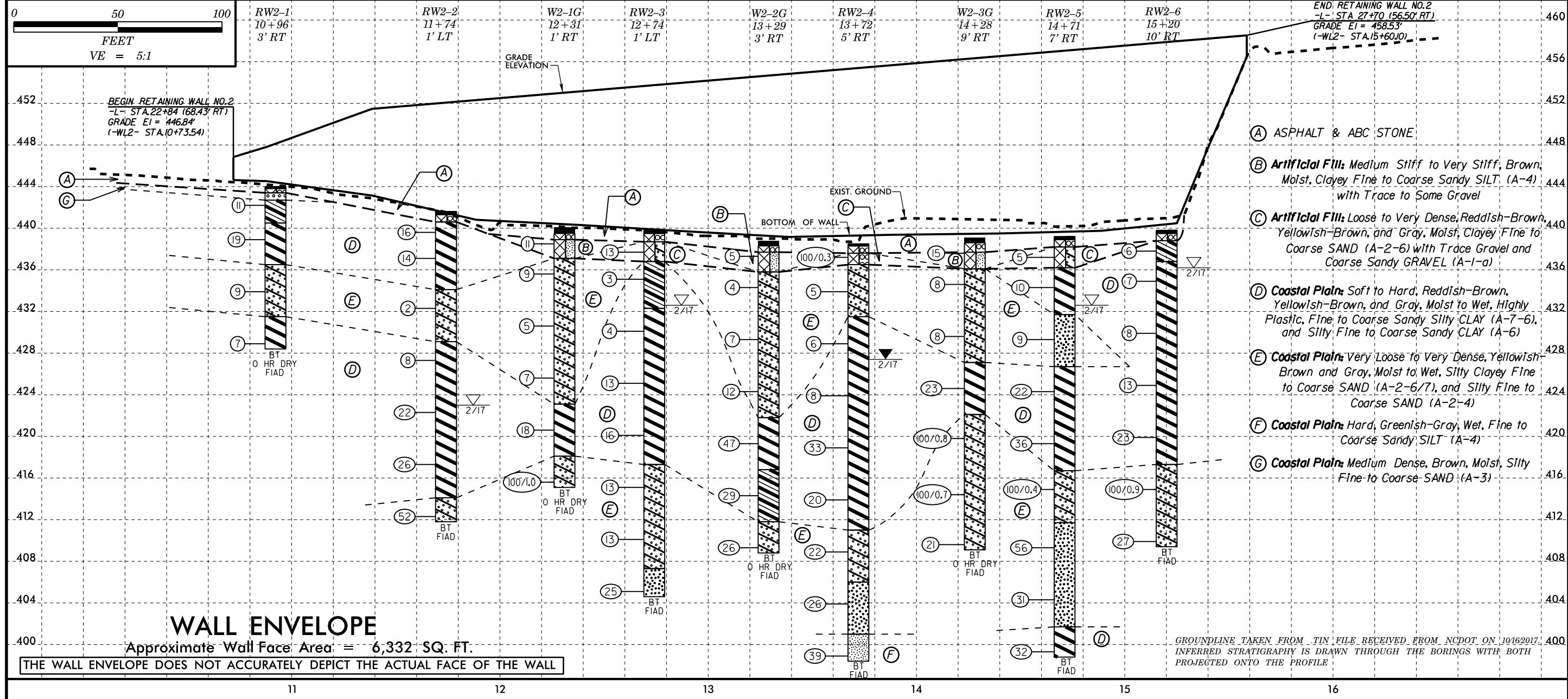
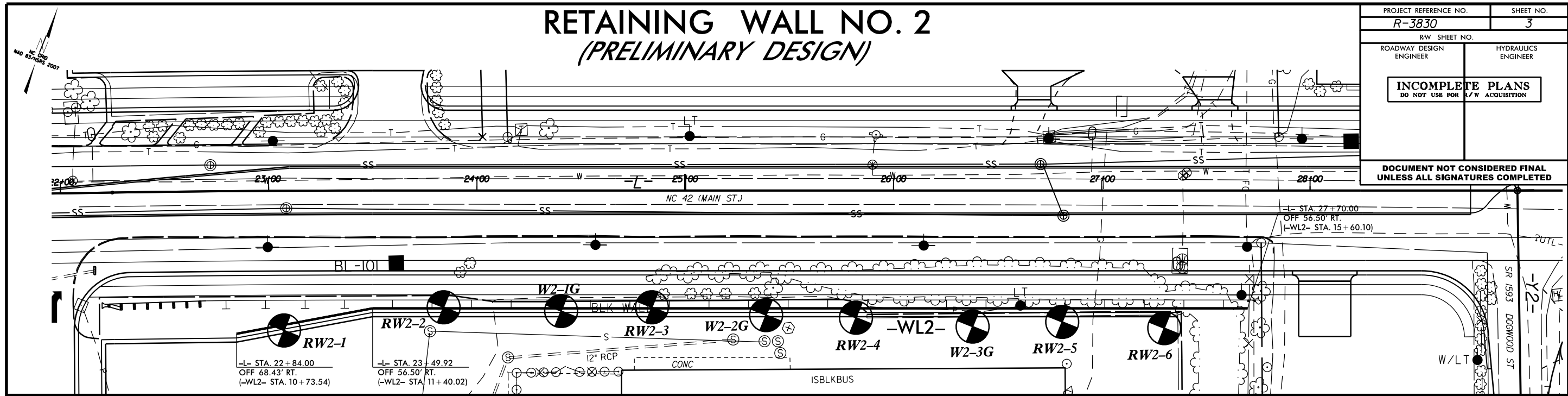
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 UNLESS ALL SIGNATURES COMPLETED**

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

Table with 4 main columns: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, and TERMS AND DEFINITIONS. Includes sub-sections like SOIL LEGEND AND AASHTO CLASSIFICATION, CONSISTENCY OR DENSENESS, TEXTURE OR GRAIN SIZE, SOIL MOISTURE - CORRELATION OF TERMS, PLASTICITY, and COLOR.

RETAINING WALL NO. 2 (PRELIMINARY DESIGN)

| | |
|--|-----------------------|
| PROJECT REFERENCE NO. R-3830 | SHEET NO. 3 |
| RW SHEET NO. | HYDRAULICS ENGINEER |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |



BEGIN RETAINING WALL NO. 2
-L- STA. 22+84 (68.43' RT)
GRADE E1 = 446.84'
(-WL2- STA. 10+73.54)

- (A) ASPHALT & ABC STONE
- (B) Artificial Fill: Medium Stiff to Very Stiff, Brown, Moist, Clayey Fine to Coarse Sandy SILT (A-4) with Trace to Some Gravel
- (C) Artificial Fill: Loose to Very Dense, Reddish-Brown, Yellowish-Brown, and Gray, Moist, Clayey Fine to Coarse SAND (A-2-6) with Trace Gravel and Coarse Sandy GRAVEL (A-1-a)
- (D) Coastal Plain: Soft to Hard, Reddish-Brown, Yellowish-Brown, and Gray, Moist to Wet, Highly Plastic, Fine to Coarse Sandy Silty CLAY (A-7-6), and Silty Fine to Coarse Sandy CLAY (A-6)
- (E) Coastal Plain: Very Loose to Very Dense, Yellowish-Brown and Gray, Moist to Wet, Silty Clayey Fine to Coarse SAND (A-2-6/7), and Silty Fine to Coarse SAND (A-2-4)
- (F) Coastal Plain: Hard, Greenish-Gray, Wet, Fine to Coarse Sandy SILT (A-4)
- (G) Coastal Plain: Medium Dense, Brown, Moist, Silty Fine to Coarse SAND (A-3)

GEOTECHNICAL BORING REPORT

BORE LOG

| WBS 38887.1.1 | | TIP R-3830 | | COUNTY LEE | | GEOLOGIST D. Kubinski | | | | | | | | | | |
|---|-----------------|---------------------|------------|--------------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|------------|--|--|
| SITE DESCRIPTION Retaining Wall 2 on -L- from 22+84.00 to 27+70.00, Right | | | | | | | GROUND WTR (ft) | | | | | | | | | |
| BORING NO. RW2-1 | | STATION 10+96 | | OFFSET 3 ft RT | | ALIGNMENT -WL2- | | | | | | | | | | |
| COLLAR ELEV. 444.0 ft | | TOTAL DEPTH 15.6 ft | | NORTHING 622,381 | | EASTING 1,957,098 | | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 90% 02/22/2016 | | | | DRILL METHOD H.S. Augers | | HAMMER TYPE Automatic | | | | | | | | | | |
| DRILLER E. Estep | | START DATE 02/20/17 | | COMP. DATE 02/20/17 | | SURFACE WATER DEPTH N/A | | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | | |
| 445 | | | | | | | | | | | | | | | | |
| | 443.2 | 0.8 | 7 | 6 | 5 | | | | | | | | | | | |
| 440 | 439.9 | 4.1 | 6 | 8 | 11 | | | | | | | | | | | |
| 435 | 434.9 | 9.1 | 3 | 5 | 4 | | | | | | | | | | | |
| 430 | 429.9 | 14.1 | 2 | 3 | 4 | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

| WBS 38887.1.1 | | TIP R-3830 | | COUNTY LEE | | GEOLOGIST D. Kubinski | | | | | | | | | | |
|---|-----------------|---------------------|------------|--------------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|------------|--|--|
| SITE DESCRIPTION Retaining Wall 2 on -L- from 22+84.00 to 27+70.00, Right | | | | | | | GROUND WTR (ft) | | | | | | | | | |
| BORING NO. RW2-2 | | STATION 11+74 | | OFFSET 1 ft LT | | ALIGNMENT -WL2- | | | | | | | | | | |
| COLLAR ELEV. 441.6 ft | | TOTAL DEPTH 29.8 ft | | NORTHING 622,420 | | EASTING 1,957,165 | | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 90% 02/22/2016 | | | | DRILL METHOD Wash Boring | | HAMMER TYPE Automatic | | | | | | | | | | |
| DRILLER E. Estep | | START DATE 02/20/17 | | COMP. DATE 02/21/17 | | SURFACE WATER DEPTH N/A | | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | | |
| 445 | | | | | | | | | | | | | | | | |
| | 441.6 | 0.0 | | | | | | | | | | | | | | |
| 440 | 440.6 | 1.0 | 4 | 7 | 9 | | | | | | | | | | | |
| | 438.1 | 3.5 | 4 | 6 | 8 | | | | | | | | | | | |
| 435 | 433.3 | 8.3 | 1 | 1 | 1 | | | | | | | | | | | |
| 430 | 428.3 | 13.3 | 2 | 3 | 5 | | | | | | | | | | | |
| 425 | 423.3 | 18.3 | 5 | 8 | 14 | | | | | | | | | | | |
| 420 | 418.3 | 23.3 | 7 | 11 | 15 | | | | | | | | | | | |
| 415 | 413.3 | 28.3 | 11 | 23 | 29 | | | | | | | | | | | |

NCDOT BORE DOUBLE R3830_GEO_BH_WALLS.GPJ NC_DOT.GDT 1/1/18

GEOTECHNICAL BORING REPORT BORE LOG

| WBS 38887.1.1 | | TIP R-3830 | | COUNTY LEE | | GEOLOGIST S. Woods | | | | | | | | | | | | |
|---|-----------------|---------------------|--------------------------|---------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|-----|---------------------------|------------|--|---|---|
| SITE DESCRIPTION Retaining Wall 2 on -L- from 22+84.00 to 27+70.00, Right | | | | | | | GROUND WTR (ft) | | | | | | | | | | | |
| BORING NO. W2-1G | | STATION 12+31 | | OFFSET 1 ft RT | | ALIGNMENT -WL2- | | | | | | | | | | | | |
| COLLAR ELEV. 440.1 ft | | TOTAL DEPTH 25.0 ft | | NORTHING 622,439 | | EASTING 1,957,218 | | | | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017 | | | DRILL METHOD H.S. Augers | | | HAMMER TYPE Automatic | | | | | | | | | | | | |
| DRILLER S. Davis | | START DATE 12/04/17 | | COMP. DATE 12/04/17 | | SURFACE WATER DEPTH N/A | | | | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | MOI | LOG | SOIL AND ROCK DESCRIPTION | | | | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | ELEV. (ft) | DEPTH (ft) | | | |
| 445 | | | | | | | | | | | | | | | | | | |
| 440 | 439.5 | 0.6 | 8 | 5 | 6 | | | | | | | | | | | | GROUND SURFACE 440.1 0.0 | |
| | | | | | | | | | | | | | | | | | ASPHALT 439.5 0.3 | |
| 435 | 436.6 | 3.5 | 3 | 4 | 5 | | | | | | | | | | | | ABC STONE 438.9 1.2 | |
| | | | | | | | | | | | | | | | | | ARTIFICIAL FILL 437.1 3.0 | |
| 430 | 431.6 | 8.5 | 3 | 2 | 3 | | | | | | | | | | | | Brown, clayey fine to coarse sandy SILT (A-4), with some gravel | |
| | | | | | | | | | | | | | | | | | COASTAL PLAIN | |
| 425 | 426.6 | 13.5 | 3 | 4 | 3 | | | | | | | | | | | | White-gray, clayey fine to coarse SAND (A-2-7) | |
| | | | | | | | | | | | | | | | | | | |
| 420 | 421.6 | 18.5 | 5 | 7 | 11 | | | | | | | | | | | | Brown-red, silty CLAY (A-7-6), with trace fine sand | |
| | | | | | | | | | | | | | | | | | | |
| | 416.6 | 23.5 | 23 | 43 | 57 | | | | | | | | | | | | Gray, clayey fine to coarse SAND (A-2-6) | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | Boring Terminated at Elevation 415.1 ft in SAND (COASTAL PLAIN) |
| NOTES: | | | | | | | | | | | | | | | | | | |
| 1) Boring Filled Immediately After Drilling (FIAD) due to location in parking lot | | | | | | | | | | | | | | | | | | |

| WBS 38887.1.1 | | TIP R-3830 | | COUNTY LEE | | GEOLOGIST D. Kubinski | | | | | | | | | | | | | |
|---|-----------------|---------------------|--------------------------|---------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|-----|---------------------------|------------|--|--|---|---|
| SITE DESCRIPTION Retaining Wall 2 on -L- from 22+84.00 to 27+70.00, Right | | | | | | | GROUND WTR (ft) | | | | | | | | | | | | |
| BORING NO. RW2-3 | | STATION 12+74 | | OFFSET 1 ft LT | | ALIGNMENT -WL2- | | | | | | | | | | | | | |
| COLLAR ELEV. 439.8 ft | | TOTAL DEPTH 35.2 ft | | NORTHING 622,457 | | EASTING 1,957,257 | | | | | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 90% 02/22/2016 | | | DRILL METHOD Wash Boring | | | HAMMER TYPE Automatic | | | | | | | | | | | | | |
| DRILLER E. Estep | | START DATE 02/21/17 | | COMP. DATE 02/21/17 | | SURFACE WATER DEPTH N/A | | | | | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | MOI | LOG | SOIL AND ROCK DESCRIPTION | | | | | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | ELEV. (ft) | DEPTH (ft) | | | | |
| 440 | | | | | | | | | | | | | | | | | | | |
| | 438.7 | 1.1 | 6 | 7 | 6 | | | | | | | | | | | | | GROUND SURFACE 439.8 0.0 | |
| 435 | 436.1 | 3.7 | 2 | 2 | 1 | | | | | | | | | | | | | ASPHALT 439.5 0.3 | |
| | | | | | | | | | | | | | | | | | | ABC STONE 438.7 1.1 | |
| 430 | 431.1 | 8.7 | 1 | 2 | 2 | | | | | | | | | | | | | ARTIFICIAL FILL 436.8 3.0 | |
| | | | | | | | | | | | | | | | | | | Reddish-brown, yellowish-brown, clayey fine to coarse SAND (A-2-6), with trace gravel | |
| 425 | 426.1 | 13.7 | 2 | 4 | 9 | | | | | | | | | | | | | COASTAL PLAIN | |
| | | | | | | | | | | | | | | | | | | Gray, yellowish-brown, fine to coarse sandy CLAY (A-6) | |
| 420 | 421.1 | 18.7 | 3 | 7 | 9 | | | | | | | | | | | | | Gray, yellowish-brown, reddish-brown, highly plastic, coarse to fine sandy silty CLAY (A-7-6) | |
| | | | | | | | | | | | | | | | | | | | |
| 415 | 416.1 | 23.7 | 3 | 5 | 8 | | | | | | | | | | | | | Brown-red, silty CLAY (A-7-6), with trace fine sand | |
| | | | | | | | | | | | | | | | | | | | |
| 410 | 411.1 | 28.7 | 5 | 5 | 8 | | | | | | | | | | | | | Gray, silty clayey fine to coarse SAND (A-2-6) | |
| | | | | | | | | | | | | | | | | | | | |
| 405 | 406.1 | 33.7 | 6 | 11 | 14 | | | | | | | | | | | | | Gray, silty clayey fine to coarse SAND (A-2-6) | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | Boring Terminated at Elevation 404.6 ft in SAND (COASTAL PLAIN) |

NCDOT BORE DOUBLE R3830_GEO_BH_WALLS.GPJ NC_DOT.GDT 1/1/18

GEOTECHNICAL BORING REPORT

BORE LOG

| WBS 38887.1.1 | | TIP R-3830 | | COUNTY LEE | | GEOLOGIST S. Woods | | | | | | | | |
|---|-----------------|---------------------|------------|--------------------------|-------|-------------------------|-----------------|----|----|-----|-----------|---------|---|------------|
| SITE DESCRIPTION Retaining Wall 2 on -L- from 22+84.00 to 27+70.00, Right | | | | | | | GROUND WTR (ft) | | | | | | | |
| BORING NO. W2-2G | | STATION 13+29 | | OFFSET 3 ft RT | | ALIGNMENT -WL2- | | | | | | | | |
| COLLAR ELEV. 438.8 ft | | TOTAL DEPTH 30.0 ft | | NORTHING 622,474 | | EASTING 1,957,310 | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017 | | | | DRILL METHOD H.S. Augers | | HAMMER TYPE Automatic | | | | | | | | |
| DRILLER S. Davis | | START DATE 12/04/17 | | COMP. DATE 12/04/17 | | SURFACE WATER DEPTH N/A | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG MOI | SOIL AND ROCK DESCRIPTION | DEPTH (ft) |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | |
| 440 | 438.3 | 0.5 | 7 | 2 | 3 | | | | | | | | GROUND SURFACE 438.8 | 0.0 |
| | | | | | | | | | | | | | ASPHALT 438.3 | 0.9 |
| | | | | | | | | | | | | | ABC STONE 437.7 | 1.4 |
| 435 | 435.3 | 3.5 | 2 | 2 | 2 | | | | | | | | ARTIFICIAL FILL 435.8 | 3.0 |
| | | | | | | | | | | | | | Brown, clayey fine to coarse sandy SILT (A-4), with trace gravel | |
| | | | | | | | | | | | | | COASTAL PLAIN | |
| | | | | | | | | | | | | | White-gray, clayey fine to coarse SAND (A-2-7) | |
| 430 | 430.3 | 8.5 | 2 | 3 | 4 | | | | | | | | | |
| 425 | 425.3 | 13.5 | 3 | 5 | 7 | | | | | | | | | |
| 420 | 420.3 | 18.5 | 5 | 14 | 33 | | | | | | | | 421.8 | 17.0 |
| | | | | | | | | | | | | | Brown-red, silty CLAY (A-7-6), with trace fine sand | |
| 415 | 415.3 | 23.5 | 8 | 11 | 18 | | | | | | | | 416.8 | 22.0 |
| | | | | | | | | | | | | | Gray, fine to coarse sandy CLAY (A-6) | |
| 410 | 410.3 | 28.5 | 8 | 11 | 15 | | | | | | | | 411.8 | 27.0 |
| | | | | | | | | | | | | | Gray, clayey fine to coarse SAND (A-2-6) | |
| | | | | | | | | | | | | | 408.8 | 30.0 |
| | | | | | | | | | | | | | Boring Terminated at Elevation 408.8 ft in SAND (COASTAL PLAIN) | |
| | | | | | | | | | | | | | NOTES: 1) Boring Filled Immediately After Drilling (FIAD) due to location in parking lot | |

| WBS 38887.1.1 | | TIP R-3830 | | COUNTY LEE | | GEOLOGIST D. Kubinski | | | | | | | | |
|---|-----------------|---------------------|------------|--------------------------|-------|-------------------------|-----------------|----|----|-----|-----------|---------|--|------------|
| SITE DESCRIPTION Retaining Wall 2 on -L- from 22+84.00 to 27+70.00, Right | | | | | | | GROUND WTR (ft) | | | | | | | |
| BORING NO. RW2-4 | | STATION 13+72 | | OFFSET 5 ft RT | | ALIGNMENT -WL2- | | | | | | | | |
| COLLAR ELEV. 438.5 ft | | TOTAL DEPTH 40.1 ft | | NORTHING 622,489 | | EASTING 1,957,351 | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 90% 02/22/2016 | | | | DRILL METHOD Wash Boring | | HAMMER TYPE Automatic | | | | | | | | |
| DRILLER E. Estep | | START DATE 02/21/17 | | COMP. DATE 02/21/17 | | SURFACE WATER DEPTH N/A | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG MOI | SOIL AND ROCK DESCRIPTION | DEPTH (ft) |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | |
| 440 | 438.5 | 0.0 | | | | | | | | | | | GROUND SURFACE 438.5 | 0.0 |
| | | | | | | | | | | | | | ASPHALT 437.6 | 0.9 |
| | | | | | | | | | | | | | ABC STONE 436.5 | 2.0 |
| 435 | 434.9 | 3.6 | 2 | 2 | 3 | | | | | | | | ARTIFICIAL FILL 435.8 | 3.0 |
| | | | | | | | | | | | | | Gray, coarse sandy GRAVEL (A-1-a) | |
| | | | | | | | | | | | | | COASTAL PLAIN | |
| | | | | | | | | | | | | | Yellowish-brown, silty clayey fine to coarse SAND (A-2-6) | |
| 430 | 429.9 | 8.6 | 2 | 3 | 3 | | | | | | | | 431.5 | 7.0 |
| | | | | | | | | | | | | | Yellowish-brown, gray, highly plastic, coarse to fine sandy silty CLAY (A-7-6) | |
| 425 | 424.9 | 13.6 | 3 | 3 | 5 | | | | | | | | | |
| 420 | 419.9 | 18.6 | 6 | 12 | 21 | | | | | | | | | |
| 415 | 414.9 | 23.6 | 8 | 9 | 11 | | | | | | | | | |
| 410 | 409.9 | 28.6 | 6 | 11 | 11 | | | | | | | | 411.0 | 27.5 |
| | | | | | | | | | | | | | Gray, silty clayey fine to coarse SAND (A-2-6) | |
| 405 | 404.9 | 33.6 | 8 | 11 | 15 | | | | | | | | 406.0 | 32.5 |
| | | | | | | | | | | | | | Gray, silty fine to coarse SAND (A-2-4) | |
| 400 | 399.9 | 38.6 | 8 | 17 | 22 | | | | | | | | 401.0 | 37.5 |
| | | | | | | | | | | | | | Greenish-gray, fine to coarse sandy SILT (A-4) | |
| | | | | | | | | | | | | | 398.4 | 40.1 |
| | | | | | | | | | | | | | Boring Terminated at Elevation 398.4 ft in SILT (COASTAL PLAIN) | |

NCDOT BORE DOUBLE R3830_GEO_BH_WALLS.GPJ NC_DOT.GDT 1/23/18

GEOTECHNICAL BORING REPORT

BORE LOG

| WBS 38887.1.1 | | TIP R-3830 | | COUNTY LEE | | GEOLOGIST S. Woods | | | | | | | | | | |
|---|-----------------|---------------------|--------------------------|---------------------|--------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|------------|--|------|
| SITE DESCRIPTION Retaining Wall 2 on -L- from 22+84.00 to 27+70.00, Right | | | | | | | GROUND WTR (ft) | | | | | | | | | |
| BORING NO. W2-3G | | STATION 14+28 | | OFFSET 9 ft RT | | ALIGNMENT -WL2- | | | | | | | | | | |
| COLLAR ELEV. 439.1 ft | | TOTAL DEPTH 30.0 ft | | NORTHING 622,506 | | EASTING 1,957,404 | | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017 | | | DRILL METHOD H.S. Augers | | | HAMMER TYPE Automatic | | | | | | | | | | |
| DRILLER S. Davis | | START DATE 12/04/17 | | COMP. DATE 12/04/17 | | SURFACE WATER DEPTH N/A | | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | | |
| 440 | 438.6 | 0.5 | 16 | 9 | 6 | | | | | | | | | 439.1 | GROUND SURFACE | 0.0 |
| | | | | | | | | | | | | | | 438.6 | ASPHALT | 0.5 |
| | | | | | | | | | | | | | | 437.7 | ABC STONE | 1.4 |
| 435 | 435.6 | 3.5 | 3 | 4 | 4 | | | | | | | | | 436.1 | ARTIFICIAL FILL Brown, clayey fine to coarse sandy SILT (A-4), with trace gravel | 3.0 |
| | | | | | | | | | | | | | | | COASTAL PLAIN Yellow-brown to gray-brown, clayey fine to coarse SAND (A-2-6/7), with trace mica | |
| 430 | 430.6 | 8.5 | 2 | 4 | 4 | | | | | | | | | 427.1 | Gray-brown, silty CLAY (A-7-6), with trace fine sand | 12.0 |
| 425 | 425.6 | 13.5 | 6 | 9 | 14 | | | | | | | | | 422.1 | Gray, clayey fine to coarse SAND (A-2-6) | 17.0 |
| 420 | 420.6 | 18.5 | 29 | 71/0.3 | | | | | | | | | | | | |
| 415 | 415.6 | 23.5 | 28 | 55 | 45/0.2 | | | | | | | | | | | |
| 410 | 410.6 | 28.5 | 8 | 9 | 12 | | | | | | | | | | | |
| | | | | | | | | | | | | | | 409.1 | Boring Terminated at Elevation 409.1 ft in SAND (COASTAL PLAIN) | 30.0 |
| NOTES: 1) Boring Filled Immediately After Drilling (FIAD) due to location in parking lot | | | | | | | | | | | | | | | | |

| WBS 38887.1.1 | | TIP R-3830 | | COUNTY LEE | | GEOLOGIST D. Kubinski | | | | | | | | | | |
|---|-----------------|---------------------|--------------------------|---------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|------------|--|------|
| SITE DESCRIPTION Retaining Wall 2 on -L- from 22+84.00 to 27+70.00, Right | | | | | | | GROUND WTR (ft) | | | | | | | | | |
| BORING NO. RW2-5 | | STATION 14+71 | | OFFSET 7 ft RT | | ALIGNMENT -WL2- | | | | | | | | | | |
| COLLAR ELEV. 439.2 ft | | TOTAL DEPTH 40.4 ft | | NORTHING 622,524 | | EASTING 1,957,443 | | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 90% 02/22/2016 | | | DRILL METHOD Wash Boring | | | HAMMER TYPE Automatic | | | | | | | | | | |
| DRILLER E. Estep | | START DATE 02/22/17 | | COMP. DATE 02/22/17 | | SURFACE WATER DEPTH N/A | | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | | |
| 440 | | | | | | | | | | | | | | 439.2 | GROUND SURFACE | 0.0 |
| | | | | | | | | | | | | | | 438.2 | ASPHALT | 1.0 |
| | | | | | | | | | | | | | | 436.2 | ABC STONE | 3.0 |
| 435 | 435.3 | 3.9 | 3 | 4 | 6 | | | | | | | | | | ARTIFICIAL FILL Reddish-brown, yellowish-brown, clayey fine to coarse SAND (A-2-6), with trace gravel | |
| | | | | | | | | | | | | | | 431.7 | COASTAL PLAIN Gray & yellowish-brown, highly plastic, fine to coarse sandy silty CLAY (A-7-6) | 7.5 |
| 430 | 430.3 | 8.9 | 2 | 4 | 5 | | | | | | | | | 426.7 | Gray, yellowish-brown, silty fine to coarse SAND (A-2-4) | 12.5 |
| 425 | 425.3 | 13.9 | 4 | 9 | 13 | | | | | | | | | | Gray, reddish-brown, highly plastic, coarse to fine sandy silty CLAY (A-7-6) | |
| 420 | 420.3 | 18.9 | 9 | 14 | 22 | | | | | | | | | | | |
| 415 | 415.3 | 23.9 | 100/0.4 | | | | | | | | | | | 416.7 | Gray, reddish-brown, silty clayey fine to coarse SAND (A-2-6) | 22.5 |
| | | | | | | | | | | | | | | 411.7 | Gray, silty fine to coarse SAND (A-2-4) | 27.5 |
| 410 | 410.3 | 28.9 | 12 | 22 | 34 | | | | | | | | | | | |
| 405 | 405.3 | 33.9 | 6 | 13 | 18 | | | | | | | | | 401.7 | Gray & black, highly plastic, coarse to fine sandy silty CLAY (A-7-6), with trace gravel & wood | 37.5 |
| 400 | 400.3 | 38.9 | 11 | 20 | 12 | | | | | | | | | 398.8 | Boring Terminated at Elevation 398.8 ft in CLAY (COASTAL PLAIN) | 40.4 |

NCDOT BORE DOUBLE R3830_GEO_BH_WALLS.GPJ NC_DOT.GDT 1/1/18

GEOTECHNICAL BORING REPORT BORE LOG

| | | | |
|---|---------------------|--------------------------|-------------------------|
| WBS 38887.1.1 | TIP R-3830 | COUNTY LEE | GEOLOGIST D. Kubinski |
| SITE DESCRIPTION Retaining Wall 2 on -L- from 22+84.00 to 27+70.00, Right | | | GROUND WTR (ft) |
| BORING NO. RW2-6 | STATION 15+20 | OFFSET 10 ft RT | ALIGNMENT -WL2- |
| COLLAR ELEV. 439.8 ft | TOTAL DEPTH 30.4 ft | NORTHING 622,540 | EASTING 1,957,490 |
| DRILL RIG/HAMMER EFF/DATE TRI8016 MOBILE B-57 90% 02/22/2016 | | DRILL METHOD Wash Boring | HAMMER TYPE Automatic |
| DRILLER E. Estep | START DATE 02/22/17 | COMP. DATE 02/23/17 | SURFACE WATER DEPTH N/A |

| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | |
|-----------|-----------------|------------|------------|-------|--------|----------------|----|----|----|-----|-----------|-----|---------------------------|--|--|
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | |
| 440 | | | | | | | | | | | | | | 439.8 GROUND SURFACE 0.0 | |
| | 438.8 | 1.0 | 5 | 3 | 3 | | | | | | | | | 439.5 ASPHALT 0.3 | |
| | 438.8 | | | | | | | | | | | | | 438.8 ABC STONE 1.0 | |
| | 435.9 | 3.9 | 2 | 3 | 4 | | | | | | | | | 436.8 COASTAL PLAIN 3.0 | |
| 435 | | | | | | | | | | | | | | Gray, yellowish-brown, silty fine to coarse sandy CLAY (A-6) | |
| | | | | | | | | | | | | | | Gray, yellowish-brown, highly plastic, coarse to fine sandy silty CLAY (A-7-6) | |
| 430 | 430.9 | 8.9 | 5 | 4 | 4 | | | | | | | | | | |
| 425 | 425.9 | 13.9 | 4 | 5 | 8 | | | | | | | | | | |
| 420 | 420.9 | 18.9 | 8 | 10 | 13 | | | | | | | | | | |
| 415 | 415.9 | 23.9 | 17 | 45 | 55/0.4 | | | | | | | | | 417.3 Gray, yellowish-brown, silty clayey SAND (A-2-6) 22.5 | |
| 410 | 410.9 | 28.9 | 9 | 11 | 16 | | | | | | | | | 409.4 Boring Terminated at Elevation 409.4 ft in SAND (COASTAL PLAIN) 30.4 | |

NCDOT BORE DOUBLE R3830_GEO_BH_WALLS.GPJ NC_DOT.GDT 1/11/18

**North Carolina Department of Transportation
Division of Highways
Materials and Test Unit
Soils Laboratory**

T.I.P. ID NO.: R-3830
DESCRIPTION: Retaining Wall 2 on -L- from 22+84.00 to 27+70.00, Right

REPORT ON SAMPLES OF: SOIL FOR QUALITY

WBS No.: 38887.1.1
DATE SAMPLED: 12/17
SAMPLED FROM: -WL2-
SUBMITTED BY: D. Racey

COUNTY: Lee
RECEIVED: 12/17
REPORTED: 12/17
BY: S. Alkhafaji
Certification No. 101-01-0603

| PROJ. SAMPLE NO. | SS-5 | SS-6 | SS-7 | SS-9 | | | | | | | | | | |
|----------------------|-------|-------|-------|-------|--|--|--|--|--|--|--|--|--|--|
| BORING NO. | W2-1G | W2-1G | W2-1G | W2-2G | | | | | | | | | | |
| Retained #4 Sieve % | 29.0 | 0.0 | 0.0 | 0.0 | | | | | | | | | | |
| Passing #10 Sieve % | 65.3 | 99.6 | 100.0 | 100.0 | | | | | | | | | | |
| Passing #40 Sieve % | 52.4 | 70.5 | 99.8 | 93.2 | | | | | | | | | | |
| Passing #200 Sieve % | 38.4 | 33.7 | 97.5 | 40.5 | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|-------------------------|--------|----------|-----------|--------|--|--|--|--|--|--|--|--|--|--|
| SOIL MORTAR - 100% | | | | | | | | | | | | | | |
| Coarse Sand Ret - #60 % | 28.8 | 52.9 | 0.4 | 19.2 | | | | | | | | | | |
| Fine Sand Ret - #270 % | 16.1 | 13.9 | 5.4 | 43.8 | | | | | | | | | | |
| Silt 0.053 - 0.010 mm % | 19.9 | 0.0 | 27.3 | 7.0 | | | | | | | | | | |
| Clay < 0.010 mm % | 35.2 | 33.4 | 66.9 | 30.0 | | | | | | | | | | |
| L.L. | 34 | 48 | 58 | 37 | | | | | | | | | | |
| P.L. | NP | 22 | 23 | 19 | | | | | | | | | | |
| P.I. | NP | 26 | 35 | 18 | | | | | | | | | | |
| AASHTO Classification | A-4(0) | A-2-7(3) | A-7-6(38) | A-6(3) | | | | | | | | | | |
| Station | 12+31 | 12+31 | 12+31 | 13+29 | | | | | | | | | | |
| Offset | 1' RT. | 1' RT. | 1' RT. | 3' RT. | | | | | | | | | | |
| Depth (ft) | 1.2 | 3.5 | 18.5 | 23.5 | | | | | | | | | | |
| to | 2.1 | 5.0 | 20.0 | 25.0 | | | | | | | | | | |
| Alignment | -WL2- | -WL2- | -WL2- | -WL2- | | | | | | | | | | |
| Moisture Content (%) | 11.6 | 18.7 | 22.3 | 17.6 | | | | | | | | | | |
| Organic Content (%) | NT | NT | NT | NT | | | | | | | | | | |

NP = Not plastic
NT = Not tested
ND = Not Determined
CL = Centerline

W.P. Alton, P.E.
Soils Engineer

REFERENCE: R-3830

PROJECT: 38887

CONTENTS

| <u>SHEET NO.</u> | <u>DESCRIPTION</u> |
|------------------|----------------------|
| 1 | TITLE SHEET |
| 2 | LEGEND (SOIL & ROCK) |
| 3 | SITE PLAN & PROFILE |
| 4-6 | BORE LOGS |
| 7 | SOIL TEST RESULTS |

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GEOTECHNICAL ENGINEERING UNIT

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY LEE
 PROJECT DESCRIPTION NC 42 FROM US 421 TO SR 1579
(MAIN STREET) IN SANFORD AND ALONG SR 1579
FROM NC 42 TO SR 1538 (E. HARRINGTON AVE.) IN
BROADWAY
 SITE DESCRIPTION RETAINING WALL 3 ON -L- FROM
102 + 14.88 TO 105 + 03.34, LEFT

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-------|-----------------------------|-----------|--------------|
| N.C. | R-3830 | 1 | 7 |

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 (ON-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY 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 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:
- 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.

F&R PERSONNEL

S. WOODS

S. DAVIS

J. DAVIS

INVESTIGATED BY F&R, Inc.

DRAWN BY T.T. WALKER

CHECKED BY P. ALTON

SUBMITTED BY P. ALTON

DATE JANUARY 2018

SINCE **Prepared in the Office of:**
F&R FROEHLING & ROBERTSON, INC.
 Engineering Stability Since 1881
 310 Hubert Street
 Raleigh, North Carolina 27603-2302 | USA
 T 919.828.3441 | F 919.828.5751
 www.fandr.com



DocuSigned by:
Patrick Alton 1/30/2018
 A270EF78A636447E SIGNATURE DATE

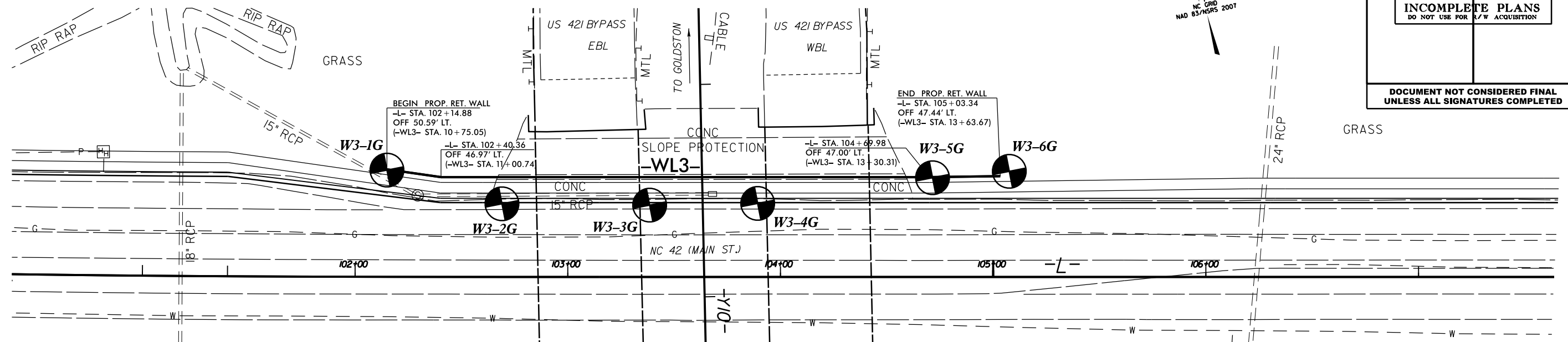
**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

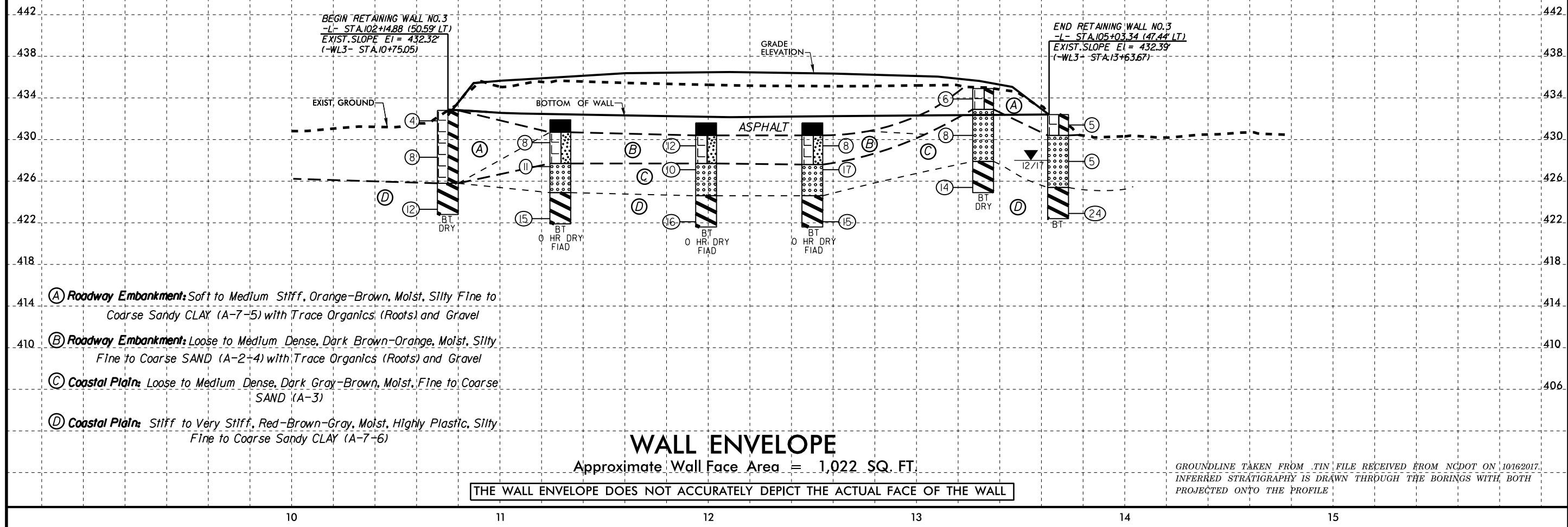
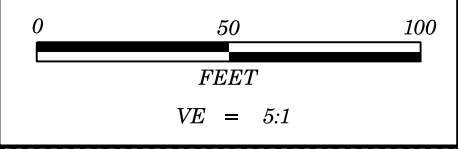
Table with 4 main columns: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, and TERMS AND DEFINITIONS. Includes sub-sections like SOIL LEGEND AND AASHTO CLASSIFICATION, CONSISTENCY OR DENSENESS, TEXTURE OR GRAIN SIZE, SOIL MOISTURE - CORRELATION OF TERMS, PLASTICITY, and COLOR.

RETAINING WALL NO. 3 (PRELIMINARY DESIGN)

| | |
|--|-----------------------|
| PROJECT REFERENCE NO. R-3830 | SHEET NO. 3 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |



| | | | | | |
|---------------------|--------------------------|--------------------------|--------------------------|---------------------|-------------------------|
| W3-1G 10+75 ℄ | W3-2G 11+29 13' RT | W3-3G 11+99 13' RT | W3-4G 12+50 12' RT | W3-5G 13+32 ℄ | W3-6G 13+68 2' LT |
|---------------------|--------------------------|--------------------------|--------------------------|---------------------|-------------------------|



GEOTECHNICAL BORING REPORT

BORE LOG

| WBS 38887.1.1 | | TIP R-3830 | | COUNTY LEE | | GEOLOGIST S. Woods | | | | | | | | | |
|--|-----------------|---------------------|--------------------------|---------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|---|------|
| SITE DESCRIPTION Retaining Wall 3 on -L- from 102+14.88 to 105+03.34, Left | | | | | | | GROUND WTR (ft) | | | | | | | | |
| BORING NO. W3-1G | | STATION 10+75 | | OFFSET CL | | ALIGNMENT -WL3- | | | | | | | | | |
| COLLAR ELEV. 432.8 ft | | TOTAL DEPTH 10.0 ft | | NORTHING 622,642 | | EASTING 1,964,616 | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017 | | | DRILL METHOD H.S. Augers | | | HAMMER TYPE Automatic | | | | | | | | | |
| DRILLER S. Davis | | START DATE 12/05/17 | | COMP. DATE 12/05/17 | | SURFACE WATER DEPTH N/A | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | |
| 435 | | | | | | | | | | | | | | | |
| | 432.8 | 0.0 | 2 | 2 | 2 | | | | | | | | M | 432.8 GROUND SURFACE | 0.0 |
| 430 | 429.3 | 3.5 | 3 | 4 | 4 | | | | | | | | M | ROADWAY EMBANKMENT Orange-brown, silty fine to coarse sandy CLAY (A-7-5), with trace organics (roots) & gravel from 0-1.5' | |
| 425 | 424.3 | 8.5 | 3 | 4 | 8 | | | | | | | | M | COASTAL PLAIN Red-brown-gray, silty fine to coarse sandy CLAY (A-7-6) | 10.0 |
| | | | | | | | | | | | | | | Boring Terminated at Elevation 422.8 ft in CLAY (COASTAL PLAIN) | |

| WBS 38887.1.1 | | TIP R-3830 | | COUNTY LEE | | GEOLOGIST S. Woods | | | | | | | | | |
|--|-----------------|---------------------|--------------------------|---------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|--|------|
| SITE DESCRIPTION Retaining Wall 3 on -L- from 102+14.88 to 105+03.34, Left | | | | | | | GROUND WTR (ft) | | | | | | | | |
| BORING NO. W3-2G | | STATION 11+29 | | OFFSET 13 ft RT | | ALIGNMENT -WL3- | | | | | | | | | |
| COLLAR ELEV. 431.9 ft | | TOTAL DEPTH 10.0 ft | | NORTHING 622,616 | | EASTING 1,964,666 | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017 | | | DRILL METHOD H.S. Augers | | | HAMMER TYPE Automatic | | | | | | | | | |
| DRILLER S. Davis | | START DATE 12/05/17 | | COMP. DATE 12/05/17 | | SURFACE WATER DEPTH N/A | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | |
| 435 | | | | | | | | | | | | | | | |
| | 431.9 | 0.0 | | | | | | | | | | | M | 431.9 GROUND SURFACE | 0.0 |
| 430 | 430.7 | 1.2 | 5 | 4 | 4 | | | | | | | | M | ROADWAY EMBANKMENT ASPHALT | 1.2 |
| | 428.4 | 3.5 | 3 | 5 | 6 | | | | | | | | M | ROADWAY EMBANKMENT Dark brown-orange, silty fine to coarse SAND (A-2-4), with trace organics (roots) & gravel | 4.2 |
| 425 | 424.9 | 7.0 | | | | | | | | | | | M | COASTAL PLAIN Dark gray-brown, fine to coarse SAND (A-3) | 7.0 |
| | 423.4 | 8.5 | 3 | 7 | 8 | | | | | | | | M | COASTAL PLAIN Red-brown-gray, silty fine to coarse sandy CLAY (A-7-6) | 10.0 |
| | | | | | | | | | | | | | | Boring Terminated at Elevation 421.9 ft in CLAY (COASTAL PLAIN) | |
| | | | | | | | | | | | | | | NOTES: 1) Boring Filled Immediately After Drilling (FIAD) due to location on shoulder of highway | |

NCDOT BORE DOUBLE R3830_GEO_BH_WALLS.GPJ NC_DOT.GDT 1/1/18

GEOTECHNICAL BORING REPORT

BORE LOG

| WBS 38887.1.1 | | TIP R-3830 | | COUNTY LEE | | GEOLOGIST S. Woods | | | | | | | | | |
|---|-----------------|---------------------|------------|--------------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|--|--|
| SITE DESCRIPTION Retaining Wall 3 on -L- from 102+14.88 to 105+03.34, Left | | | | | | | GROUND WTR (ft) | | | | | | | | |
| BORING NO. W3-3G | | STATION 11+99 | | OFFSET 13 ft RT | | ALIGNMENT -WL3- | | | | | | | | | |
| COLLAR ELEV. 431.6 ft | | TOTAL DEPTH 10.0 ft | | NORTHING 622,602 | | EASTING 1,964,734 | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017 | | | | DRILL METHOD H.S. Augers | | HAMMER TYPE Automatic | | | | | | | | | |
| DRILLER S. Davis | | START DATE 12/05/17 | | COMP. DATE 12/05/17 | | SURFACE WATER DEPTH N/A | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | |
| 435 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| 430 | 430.4 | 1.2 | 5 | 6 | 6 | | | | | | | | | 431.6 GROUND SURFACE 0.0 | |
| | | | | | | | | | | | | | | 430.4 ASPHALT 1.2 | |
| | 428.1 | 3.5 | 3 | 5 | 5 | | | | | | | | | 427.7 ROADWAY EMBANKMENT 3.9 | |
| | | | | | | | | | | | | | | Dark brown-orange, silty fine to coarse SAND (A-2-4), with trace organics (roots) & gravel | |
| 425 | | | | | | | | | | | | | | 424.6 COASTAL PLAIN 7.0 | |
| | | | | | | | | | | | | | | Dark gray, fine to coarse SAND (A-3) | |
| | 423.1 | 8.5 | 3 | 6 | 10 | | | | | | | | | Red-brown-gray, silty fine to coarse sandy CLAY (A-7-6) 10.0 | |
| | | | | | | | | | | | | | | Boring Terminated at Elevation 421.6 ft in CLAY (COASTAL PLAIN) | |
| NOTES: | | | | | | | | | | | | | | | |
| 1) Boring Filled Immediately After Drilling (FIAD) due to location on shoulder of highway | | | | | | | | | | | | | | | |

| WBS 38887.1.1 | | TIP R-3830 | | COUNTY LEE | | GEOLOGIST S. Woods | | | | | | | | | |
|---|-----------------|---------------------|------------|--------------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|--|--|
| SITE DESCRIPTION Retaining Wall 3 on -L- from 102+14.88 to 105+03.34, Left | | | | | | | GROUND WTR (ft) | | | | | | | | |
| BORING NO. W3-4G | | STATION 12+50 | | OFFSET 12 ft RT | | ALIGNMENT -WL3- | | | | | | | | | |
| COLLAR ELEV. 431.6 ft | | TOTAL DEPTH 10.0 ft | | NORTHING 622,593 | | EASTING 1,964,784 | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017 | | | | DRILL METHOD H.S. Augers | | HAMMER TYPE Automatic | | | | | | | | | |
| DRILLER S. Davis | | START DATE 12/05/17 | | COMP. DATE 12/05/17 | | SURFACE WATER DEPTH N/A | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | |
| 435 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| 430 | 430.4 | 1.2 | 4 | 3 | 5 | | | | | | | | | 431.6 GROUND SURFACE 0.0 | |
| | | | | | | | | | | | | | | 430.4 ASPHALT 1.2 | |
| | 428.1 | 3.5 | 7 | 9 | 8 | | | | | | | | | 427.6 ROADWAY EMBANKMENT 4.0 | |
| | | | | | | | | | | | | | | Dark brown-orange, silty fine to coarse SAND (A-2-4), with trace organics (roots) & gravel | |
| 425 | | | | | | | | | | | | | | 424.6 COASTAL PLAIN 7.0 | |
| | | | | | | | | | | | | | | Gray-brown, fine to coarse SAND (A-3) | |
| | 423.1 | 8.5 | 4 | 5 | 10 | | | | | | | | | Red-brown-gray, silty fine to coarse sandy CLAY (A-7-6) 10.0 | |
| | | | | | | | | | | | | | | Boring Terminated at Elevation 421.6 ft in CLAY (COASTAL PLAIN) | |
| NOTES: | | | | | | | | | | | | | | | |
| 1) Boring Filled Immediately After Drilling (FIAD) due to location on shoulder of highway | | | | | | | | | | | | | | | |

GEOTECHNICAL BORING REPORT

BORE LOG

| WBS 38887.1.1 | | TIP R-3830 | | COUNTY LEE | | GEOLOGIST S. Woods | | | | | | | | | |
|--|-----------------|---------------------|--------------------------|---------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|------------|--|
| SITE DESCRIPTION Retaining Wall 3 on -L- from 102+14.88 to 105+03.34, Left | | | | | | | GROUND WTR (ft) | | | | | | | | |
| BORING NO. W3-5G | | STATION 13+32 | | OFFSET CL | | ALIGNMENT -WL3- | | | | | | | | | |
| COLLAR ELEV. 435.1 ft | | TOTAL DEPTH 10.0 ft | | NORTHING 622,589 | | EASTING 1,964,867 | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017 | | | DRILL METHOD H.S. Augers | | | HAMMER TYPE Automatic | | | | | | | | | |
| DRILLER S. Davis | | START DATE 12/05/17 | | COMP. DATE 12/05/17 | | SURFACE WATER DEPTH N/A | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | |
| 440 | | | | | | | | | | | | | | | |
| 435 | 435.1 | 0.0 | | | | | | | | | | | | | |
| | | | 3 | 3 | 3 | | | | | | | | | | |
| | 431.6 | 3.5 | | | | | | | | | | | | | |
| | | | 3 | 4 | 4 | | | | | | | | | | |
| | 426.6 | 8.5 | | | | | | | | | | | | | |
| | | | 3 | 5 | 9 | | | | | | | | | | |
| | | | | | | | | | | | | | | | |

| WBS 38887.1.1 | | TIP R-3830 | | COUNTY LEE | | GEOLOGIST S. Woods | | | | | | | | | |
|--|-----------------|---------------------|--------------------------|---------------------|-------|-------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|------------|--|
| SITE DESCRIPTION Retaining Wall 3 on -L- from 102+14.88 to 105+03.34, Left | | | | | | | GROUND WTR (ft) | | | | | | | | |
| BORING NO. W3-6G | | STATION 13+68 | | OFFSET 2 ft LT | | ALIGNMENT -WL3- | | | | | | | | | |
| COLLAR ELEV. 432.6 ft | | TOTAL DEPTH 10.0 ft | | NORTHING 622,585 | | EASTING 1,964,903 | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017 | | | DRILL METHOD H.S. Augers | | | HAMMER TYPE Automatic | | | | | | | | | |
| DRILLER S. Davis | | START DATE 12/05/17 | | COMP. DATE 12/05/17 | | SURFACE WATER DEPTH N/A | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | DEPTH (ft) | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | | | |
| 435 | | | | | | | | | | | | | | | |
| | 432.6 | 0.0 | | | | | | | | | | | | | |
| | | | 3 | 2 | 3 | | | | | | | | | | |
| | 429.1 | 3.5 | | | | | | | | | | | | | |
| | | | 4 | 3 | 2 | | | | | | | | | | |
| | 424.1 | 8.5 | | | | | | | | | | | | | |
| | | | 6 | 9 | 15 | | | | | | | | | | |

NCDOT BORE DOUBLE R3830_GEO_BH_WALLS.GPJ NC_DOT.GDT 1/1/18

**North Carolina Department of Transportation
Division of Highways
Materials and Test Unit
Soils Laboratory**

T.I.P. ID NO.: R-3830
DESCRIPTION: Retaining Wall 3 on -L- from 102+14.88 to 105+03.34, Left

REPORT ON SAMPLES OF: SOIL FOR QUALITY

WBS No.: 38887.1.1
DATE SAMPLED: 12/17
SAMPLED FROM: -WL3-
SUBMITTED BY: D. Racey

COUNTY: Lee
RECEIVED: 12/17
REPORTED: 12/17
BY: S. Alkhafaji
Certification No. 101-01-0603

| | | | | | | | | | | | | | | |
|----------------------|-------|-------|--|--|--|--|--|--|--|--|--|--|--|--|
| PROJ. SAMPLE NO. | SS-12 | SS-14 | | | | | | | | | | | | |
| BORING NO. | W3-6G | W3-6G | | | | | | | | | | | | |
| Retained #4 Sieve % | 17.1 | 0.0 | | | | | | | | | | | | |
| Passing #10 Sieve % | 81.1 | 99.9 | | | | | | | | | | | | |
| Passing #40 Sieve % | 69.6 | 86.3 | | | | | | | | | | | | |
| Passing #200 Sieve % | 55.7 | 70.1 | | | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|-------------------------|-----------|-----------|--|--|--|--|--|--|--|--|--|--|--|--|
| SOIL MORTAR - 100% | | | | | | | | | | | | | | |
| Coarse Sand Ret - #60 % | 20.0 | 16.1 | | | | | | | | | | | | |
| Fine Sand Ret - #270 % | 15.1 | 19.6 | | | | | | | | | | | | |
| Silt 0.053 - 0.010 mm % | 22.4 | 15.7 | | | | | | | | | | | | |
| Clay < 0.010 mm % | 42.5 | 48.6 | | | | | | | | | | | | |
| L.L. | 57 | 52 | | | | | | | | | | | | |
| P.L. | 35 | 24 | | | | | | | | | | | | |
| P.I. | 22 | 28 | | | | | | | | | | | | |
| AASHTO Classification | A-7-5(11) | A-7-6(19) | | | | | | | | | | | | |
| Station | 13+68 | 13+68 | | | | | | | | | | | | |
| Offset | 2' LT. | 2' LT. | | | | | | | | | | | | |
| Depth (ft) | 0.0 | 8.5 | | | | | | | | | | | | |
| to | 1.5 | 10.0 | | | | | | | | | | | | |
| Alignment | -WL3- | -WL3- | | | | | | | | | | | | |
| Moisture Content (%) | 21.0 | 21.4 | | | | | | | | | | | | |
| Organic Content (%) | NT | NT | | | | | | | | | | | | |

NP = Not plastic
NT = Not tested
ND = Not Determined
CL = Centerline

W.P. Alton, P.E.
Soils Engineer