

REFERENCE: R-5737

PROJECT: 50195

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY DAVIDSON
PROJECT DESCRIPTION US 29/US 70/BUSINESS 85 AT
SR 1798 (OLD GREENSBORO ROAD) CONVERT AT-
GRADE INTERSECTION TO INTERCHANGE
SITE DESCRIPTION RWAL 1: LEFT OF -L- STA. 49+50
RWAL 2: RIGHT OF -L- STA. 50+00
RWAL 3: RIGHT OF -L- STA. 62+00
RWAL 4: LEFT OF -L- STA. 69+50

CONTENTS

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
2A	SUPPLEMENTAL LEGEND (GSI)
3-7	RETAINING WALL ENVELOPES
8	SOIL TEST RESULTS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5737	1	8

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:
1. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 2. BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

N. D. MOHS, LG

W. M. JOHNSON, LG

T. C. MCILROY

SUMMIT

INVESTIGATED BY N. D. MOHS, LG

DRAWN BY N. D. MOHS

CHECKED BY M. D. VALIQUETTE, PE

SUBMITTED BY N. D. MOHS, LG

DATE JANUARY 2019



Digitally signed by:
Nathan Daniel Mohs
35A8C1164EEA4098
1/31/2019

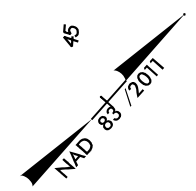
SIGNATURE DATE

**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

SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS																																																																																																																																																																																																																																																																																																																																																																																															
<p>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 208, 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</p>										<p>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.</p>										<p>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 0.1 FOOT 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:</p>										<p>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 (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE 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 INTRUDED 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 (N 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 0.1 FOOT PER 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 (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>																																																																																																																																																																																																																																																																																																																																																																																															
<p style="text-align: center;">SOIL LEGEND AND AASHTO CLASSIFICATION</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th rowspan="2">GENERAL CLASS.</th> <th colspan="5">GRANULAR MATERIALS (<= 35% PASSING #200)</th> <th colspan="5">SILT-CLAY MATERIALS (> 35% PASSING #200)</th> <th colspan="5">ORGANIC MATERIALS</th> </tr> <tr> <th>A-1</th> <th>A-3</th> <th>A-2</th> <th>A-4</th> <th>A-5</th> <th>A-6</th> <th>A-7</th> <th>A-1, A-2</th> <th>A-3</th> <th>A-4, A-5</th> <th>A-6, A-7</th> <th></th> <th></th> <th></th> <th></th> </tr> <tr> <td>GROUP CLASS.</td> <td>A-1-a</td> <td>A-1-b</td> <td>A-2-4</td> <td>A-2-5</td> <td>A-2-6</td> <td>A-2-7</td> <td>A-7-5</td> <td>A-7-6</td> <td>A-3</td> <td>A-4, A-5</td> <td>A-6, A-7</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>SYMBOL</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>% PASSING #10 #40 #200</td> <td>50 MX 30 MX 15 MX</td> <td>50 MX 25 MX</td> <td>51 MN 35 MX</td> <td>35 MX 35 MX</td> <td>35 MX 35 MX</td> <td>36 MN 36 MN</td> <td>36 MN 36 MN</td> <td>36 MN 36 MN</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>MATERIAL PASSING #40 LL PI</td> <td>-</td> <td>-</td> <td>40 MX 10 MN</td> <td>41 MN 11 MN</td> <td>40 MX 11 MN</td> <td>40 MX 11 MN</td> <td>40 MX 11 MN</td> <td>40 MX 11 MN</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>GROUP INDEX</td> <td>0</td> <td>0</td> <td>0</td> <td>4 MX</td> <td>8 MX</td> <td>12 MX</td> <td>16 MX</td> <td>NO MX</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>USUAL TYPES OF MAJOR MATERIALS</td> <td>STONE GRAVEL, SAND</td> <td>FINE SAND</td> <td>SILTY OR CLAYEY GRAVEL AND SAND</td> <td>SILTY SOILS</td> <td>CLAYEY SOILS</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>GEN. RATING AS SUBGRADE</td> <td colspan="3">EXCELLENT TO GOOD</td> <td colspan="3">FAIR TO POOR</td> <td>FAIR TO POOR</td> <td>POOR</td> <td>UNSATURABLE</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="10">PI OF A-7-5 SUBGROUP IS <= LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30</td> <td colspan="5"></td> <td colspan="5"></td> </tr> <tr> <td colspan="10"> <p style="text-align: center;">CONSISTENCY OR DENSENESS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>PRIMARY SOIL TYPE</th> <th>COMPACTNESS OR CONSISTENCY</th> <th>RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)</th> <th>RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²)</th> </tr> <tr> <td>GENERALLY GRANULAR MATERIAL (NON-COHESIVE)</td> <td>VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE</td> <td>< 4 4 TO 10 10 TO 30 30 TO 50 > 50</td> <td>N/A</td> </tr> <tr> <td>GENERALLY SILT-CLAY MATERIAL (COHESIVE)</td> <td>VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD</td> <td>< 2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 > 30</td> <td>< 0.25 0.25 TO 0.5 0.5 TO 1.0 1 TO 2 2 TO 4 > 4</td> </tr> </table> </td> <td colspan="10"> <p style="text-align: center;">MISCELLANEOUS SYMBOLS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td></td> <td>ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION</td> <td></td> <td>DIP & DIP DIRECTION OF ROCK STRUCTURES</td> <td></td> <td>SOIL SYMBOL</td> <td></td> <td>ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT</td> <td></td> <td>AUGER BORING</td> <td></td> <td>CONE PENETROMETER TEST</td> <td></td> <td>INFERRED SOIL BOUNDARY</td> <td></td> <td>MONITORING WELL</td> <td></td> <td>SOUNDING ROD</td> <td></td> <td>TEST BORING WITH CORE</td> <td></td> <td>PIEZOMETER INSTALLATION</td> <td></td> <td>SPT N-VALUE</td> <td></td> <td>INFERRED ROCK LINE</td> <td></td> <td>ALLUVIAL SOIL BOUNDARY</td> </tr> </table> </td> </tr> <tr> <td colspan="10"> <p style="text-align: center;">TEXTURE OR GRAIN SIZE</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>U.S. STD. SIEVE SIZE OPENING (MM)</th> <td>4</td> <td>10</td> <td>40</td> <td>60</td> <td>200</td> <td>270</td> </tr> <tr> <td></td> <td>4.75</td> <td>2.00</td> <td>0.42</td> <td>0.25</td> <td>0.075</td> <td>0.053</td> </tr> <tr> <th>BOULDER (BLDR.)</th> <th>COBBLE (COB.)</th> <th>GRAVEL (GR.)</th> <th>COARSE SAND (CSE. SD.)</th> <th>FINE SAND (F SD.)</th> <th>SILT (SL.)</th> <th>CLAY (CL.)</th> </tr> <tr> <td>GRAIN SIZE</td> <td>MM 305 IN. 12</td> <td>75 3</td> <td>2.0</td> <td>0.25</td> <td>0.05</td> <td>0.005</td> </tr> </table> </td> <td colspan="10"> <p style="text-align: center;">RECOMMENDATION SYMBOLS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td></td> <td>UNDERCUT</td> <td></td> <td>UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</td> <td></td> <td>UNCLASSIFIED EXCAVATION - ACCEPTABLE ROCK</td> <td></td> <td>UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</td> </tr> </table> </td> </tr> <tr> <td colspan="10"> <p style="text-align: center;">SOIL MOISTURE - CORRELATION OF TERMS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>SOIL MOISTURE SCALE (ATTERBERG LIMITS)</th> <th>FIELD MOISTURE DESCRIPTION</th> <th>GUIDE FOR FIELD MOISTURE DESCRIPTION</th> </tr> <tr> <td>LL - LIQUID LIMIT</td> <td>- SATURATED - (SAT.)</td> <td>USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE</td> </tr> <tr> <td>PL - PLASTIC LIMIT</td> <td>- WET - (W)</td> <td>SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE</td> </tr> <tr> <td>OM - OPTIMUM MOISTURE</td> <td>- MOIST - (M)</td> <td>SOLID; AT OR NEAR OPTIMUM MOISTURE</td> </tr> <tr> <td>SL - SHRINKAGE LIMIT</td> <td>- DRY - (D)</td> <td>REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE</td> </tr> </table> </td> <td colspan="10"> <p style="text-align: center;">ABBREVIATIONS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>AR - AUGER REFUSAL</td> <td>BT - BORING TERMINATED</td> <td>CL - CLAY</td> <td>CPT - COARSE PENETRATION TEST</td> <td>CSE - COARSE</td> <td>DMT - DILATOMETER TEST</td> <td>DPT - DYNAMIC PENETRATION TEST</td> <td>e - VOID RATIO</td> <td>F - FINE</td> <td>FOSS. - FOSSILIFEROUS</td> <td>FRAC. - FRACTURED, FRACTURES</td> <td>FRAGS. - FRAGMENTS</td> <td>HI. - HIGHLY</td> <td>MED. - MEDIUM</td> <td>MICA. - MICACEOUS</td> <td>MOD. - MODERATELY</td> <td>NP - NON PLASTIC</td> <td>ORG. - ORGANIC</td> <td>PMT - PRESSUREMETER TEST</td> <td>SAP. - SAPROLITIC</td> <td>SD. - SAND, SANDY</td> <td>SL. - SILT, SILTY</td> <td>SLI. - SLIGHTLY</td> <td>TCR - TRICONE REFUSAL</td> <td>w - MOISTURE CONTENT</td> <td>V - VERY</td> <td>VST - VANE SHEAR TEST</td> <td>WEA. - WEATHERED</td> <td>UNIT WEIGHT</td> <td>DRY UNIT WEIGHT</td> </tr> <tr> <td colspan="10"></td> <td colspan="10"> <p style="text-align: center;">EQUIPMENT USED ON SUBJECT PROJECT</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td><input type="checkbox"/> CME-45C</td> <td><input type="checkbox"/> CLAY BITS</td> <td><input checked="" type="checkbox"/> AUTOMATIC</td> <td><input type="checkbox"/> MANUAL</td> </tr> <tr> <td><input type="checkbox"/> CME-55</td> <td><input type="checkbox"/> 6" CONTINUOUS FLIGHT AUGER</td> <td colspan="2">CORE SIZE:</td> </tr> <tr> <td><input checked="" type="checkbox"/> CME-550</td> <td><input checked="" type="checkbox"/> 8" HOLLOW AUGERS</td> <td><input type="checkbox"/> -B</td> <td><input type="checkbox"/> -H</td> </tr> <tr> <td><input type="checkbox"/> VANE SHEAR TEST</td> <td><input checked="" type="checkbox"/> HARD FACED FINGER BITS</td> <td colspan="2">HAND TOOLS:</td> </tr> <tr> <td><input type="checkbox"/> PORTABLE HOIST</td> <td><input type="checkbox"/> TUNG-CARBIDE INSERTS</td> <td><input type="checkbox"/> POST HOLE DIGGER</td> <td><input type="checkbox"/> HAND AUGER</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/> CASING <input type="checkbox"/> W/ ADVANCER</td> <td><input type="checkbox"/> SOUNDING ROD</td> <td><input type="checkbox"/> VANE SHEAR TEST</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/> TRICONE * STEEL TEETH</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/> TRICONE * TUNG-CARB.</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/> CORE BIT</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table> </td> </tr> </table></td></tr></table>										GENERAL CLASS.	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<input checked="" type="checkbox"/> CME-550	<input checked="" type="checkbox"/> 8" HOLLOW AUGERS	<input type="checkbox"/> -B	<input type="checkbox"/> -H																																																																																																																																																																																																																																																																																																																																																																																																																										
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-RPB- ST Sta. 10+00.00 =
-L- POT 47+20.00 (36' RT)

-RPB- SC Sta. 11+00.00

BEGIN PROP. RETAINING WALL RW1
w/ SINGLE FACE BARRIER
-RPB- 11+80.00
(23.5' LT)

-RPB- PRC Sta. 15+05.88

END PROP. RETAINING WALL RW1
w/ SINGLE FACE BARRIER
-RPB- 16+80.00
(23.5' LT)

RPB 1230

RPB 1330

RPB 1430

RPB 1530

RPB 1630

RPB 1680

PROP. RETAINING WALL
w/ SINGLE FACE BARRIER

N 51° 49' 43.2" E

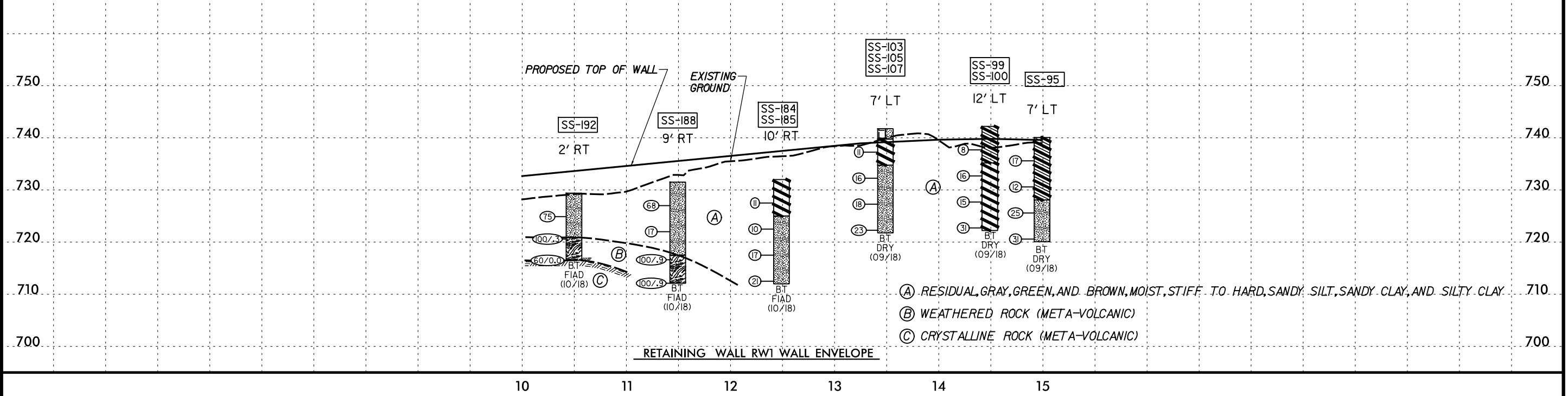
-RPB- PT Sta. 21+26.14

N 51° 49' 43.2" E

-L- TS Sta. 57+90.64

-L- SC Sta. 58+90.64

RETAINING WALL RW1 PLAN VIEW



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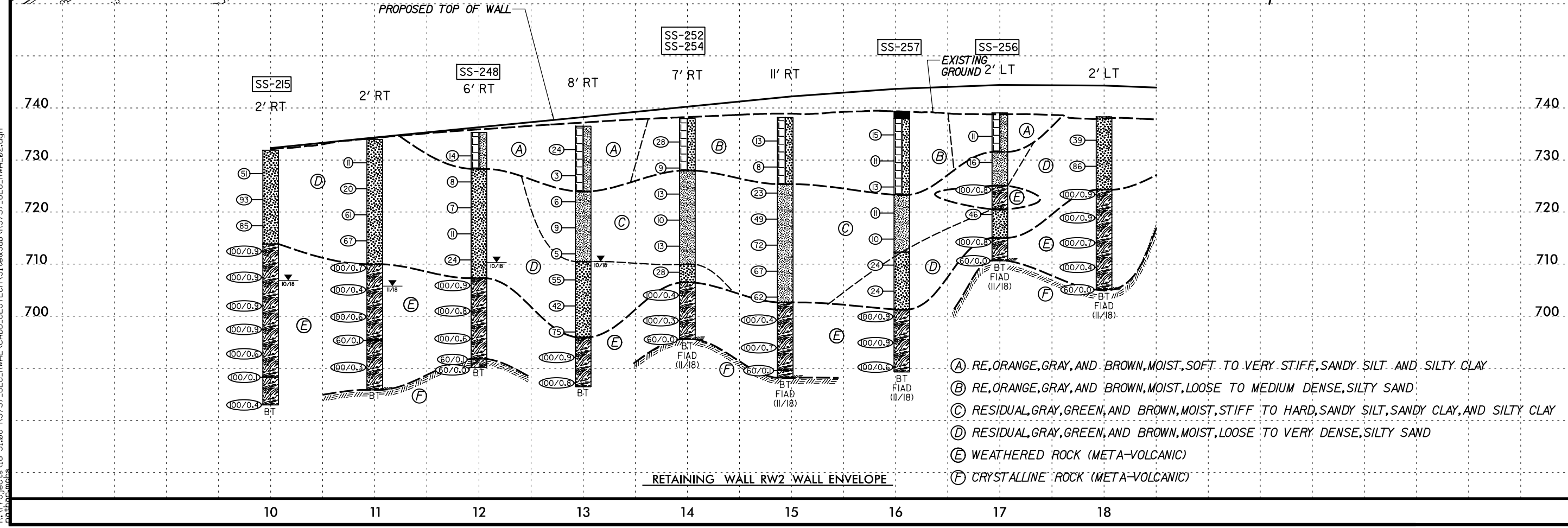
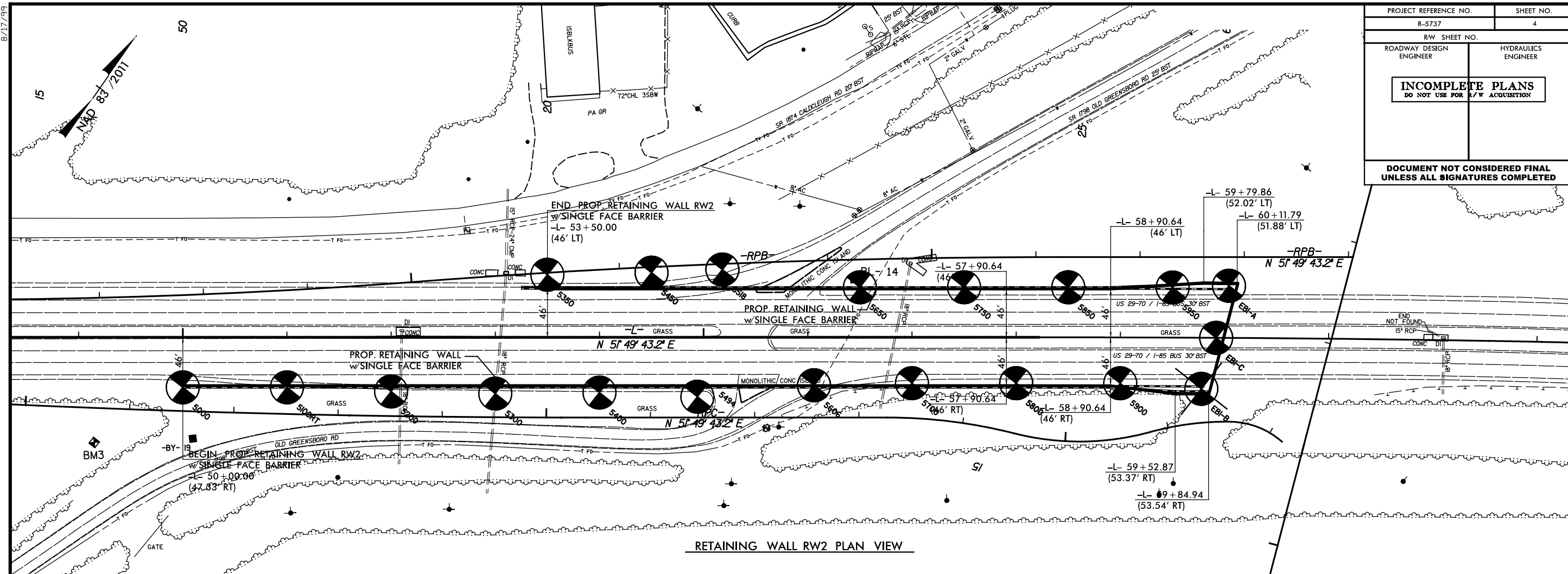
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RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ICE of CAROLINAS, PLLC

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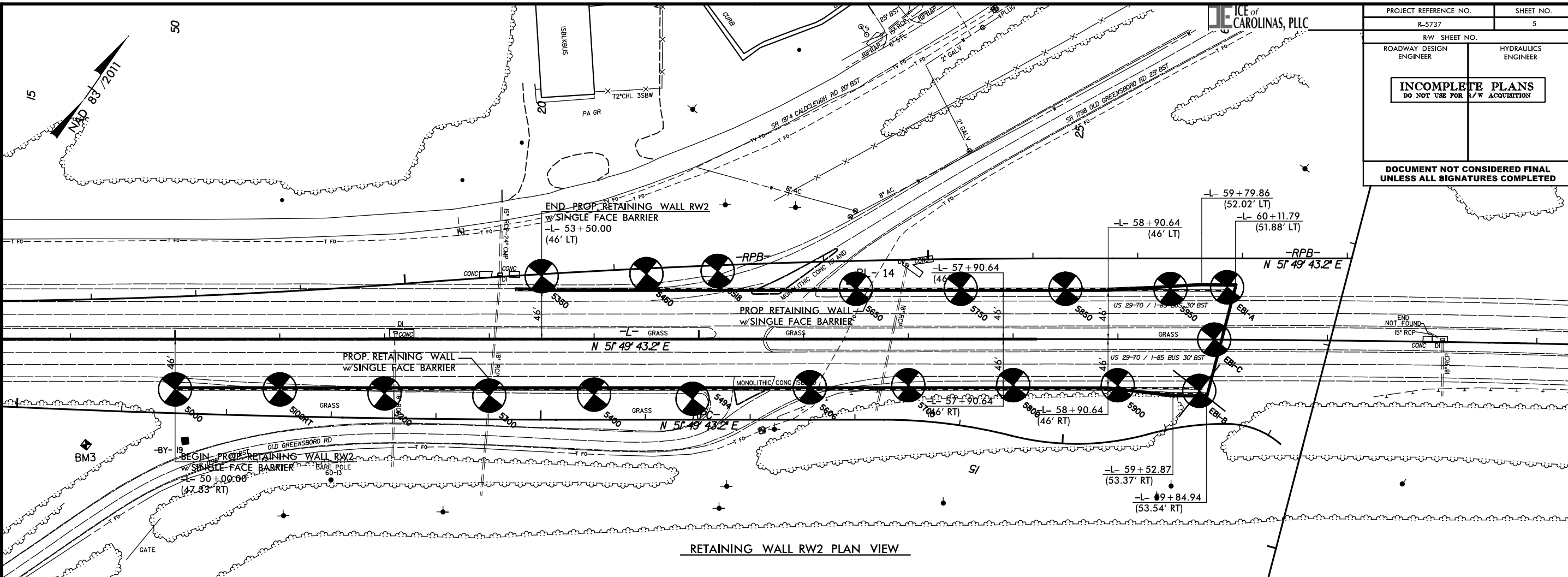
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RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



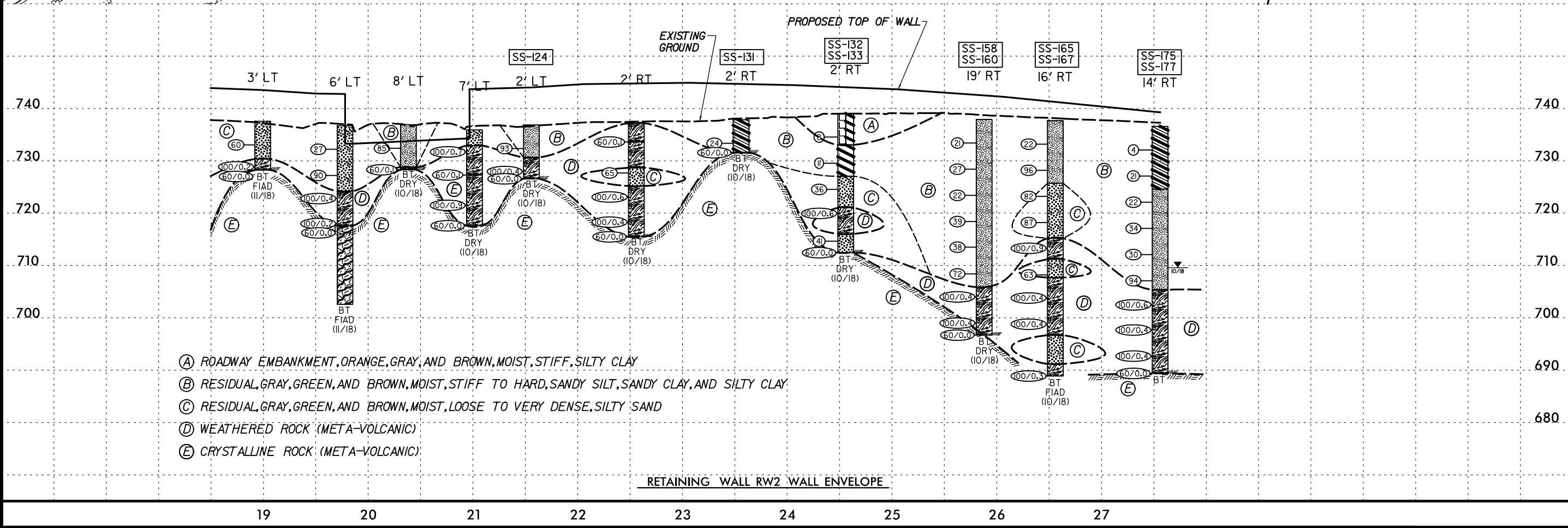
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10:45:59 AM R:\Projects\18-51_06 R5737_GEO_RWAL\CADD_GEO\TECH\Site&Sub\R5737_GEO_RWAL\02A.dgn



RETAINING WALL RW2 PLAN VIEW



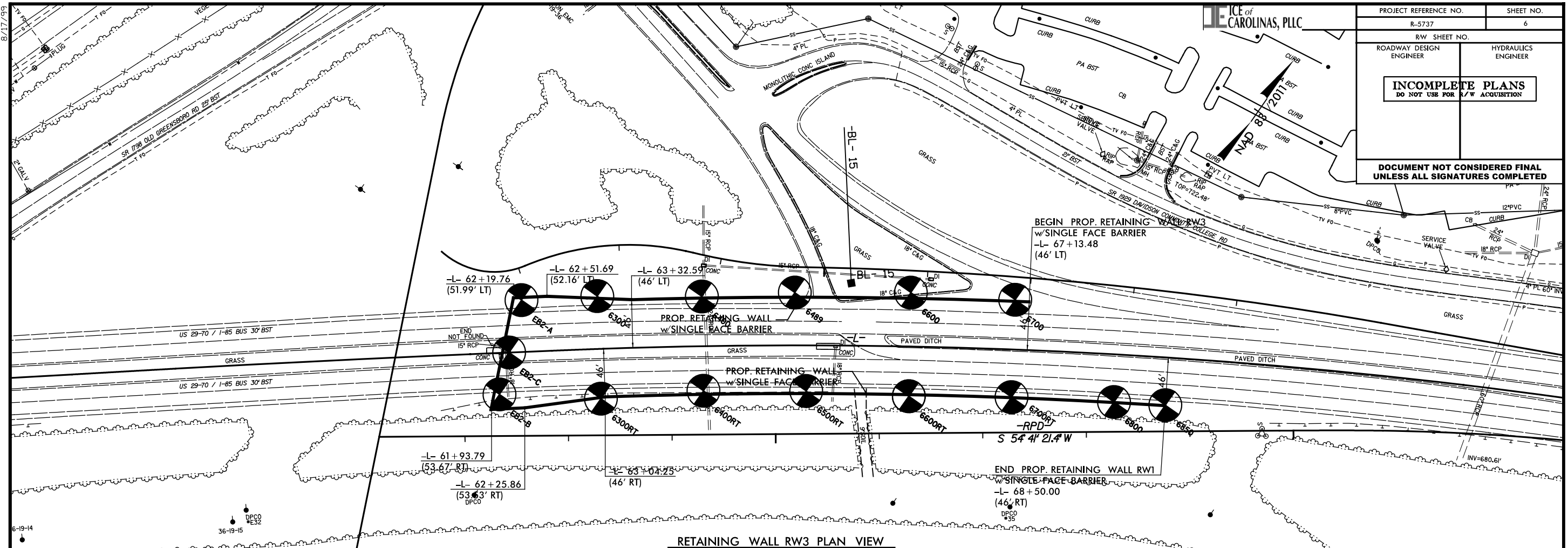
RETAINING WALL RW2 WALL ENVELOPE

- (A) ROADWAY EMBANKMENT, ORANGE, GRAY, AND BROWN, MOIST, STIFF, SILTY CLAY
- (B) RESIDUAL, GRAY, GREEN, AND BROWN, MOIST, STIFF TO HARD, SANDY SILT, SANDY CLAY, AND SILTY CLAY
- (C) RESIDUAL, GRAY, GREEN, AND BROWN, MOIST, LOOSE TO VERY DENSE, SILTY SAND
- (D) WEATHERED ROCK (META-VOLCANIC)
- (E) CRYSTALLINE ROCK (META-VOLCANIC)

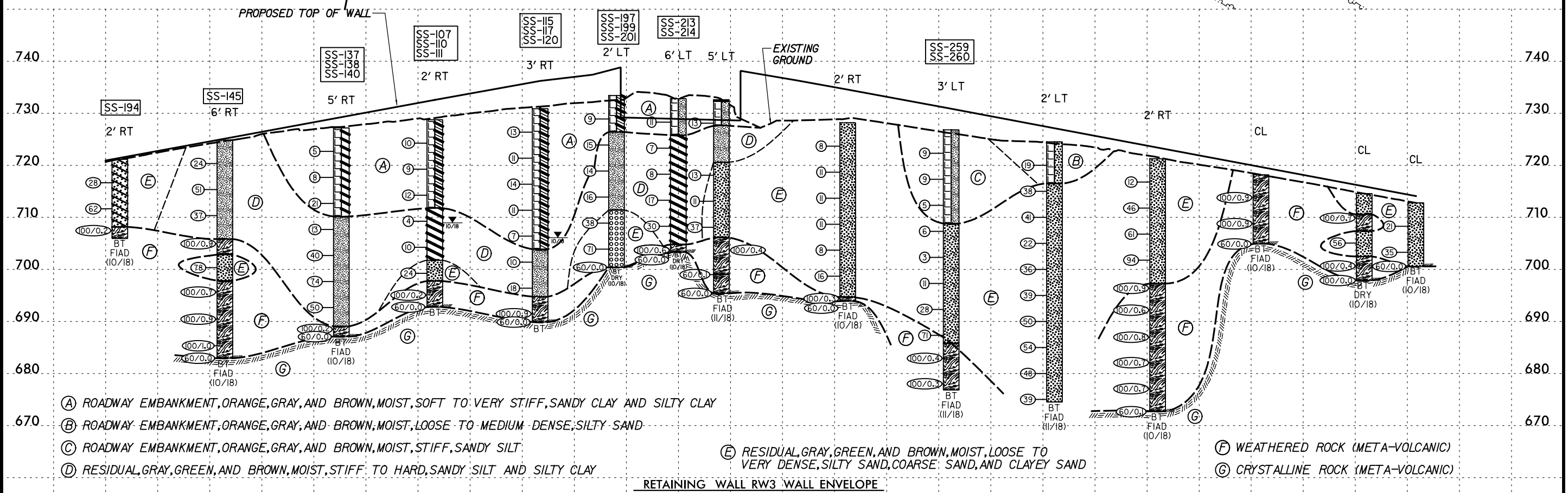
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ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

ICE of CAROLINAS, PLLC

PROJECT REFERENCE NO.	SHEET NO.
R-5737	6
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



RETAINING WALL RW3 PLAN VIEW

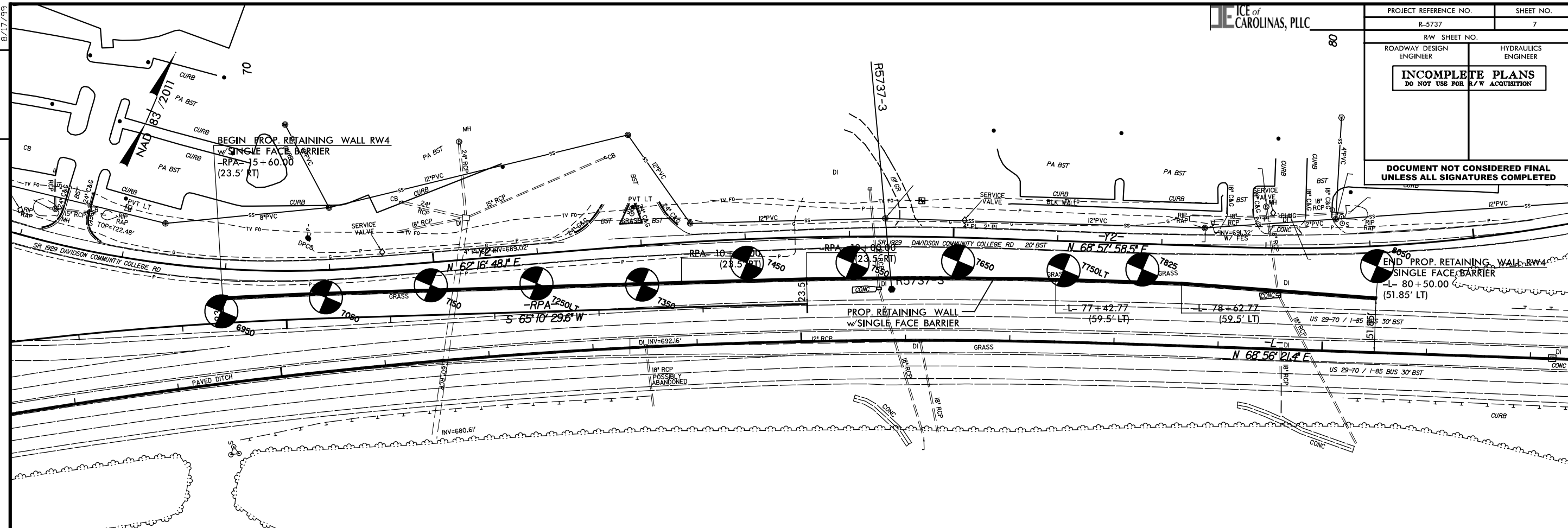


- (A) ROADWAY EMBANKMENT, ORANGE, GRAY, AND BROWN, MOIST, SOFT TO VERY STIFF, SANDY CLAY AND SILTY CLAY
- (B) ROADWAY EMBANKMENT, ORANGE, GRAY, AND BROWN, MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND
- (C) ROADWAY EMBANKMENT, ORANGE, GRAY, AND BROWN, MOIST, STIFF, SANDY SILT
- (D) RESIDUAL, GRAY, GREEN, AND BROWN, MOIST, STIFF TO HARD, SANDY SILT AND SILTY CLAY
- (E) RESIDUAL, GRAY, GREEN, AND BROWN, MOIST, LOOSE TO VERY DENSE, SILTY SAND, COARSE SAND, AND CLAYEY SAND
- (F) WEATHERED ROCK (META-VOLCANIC)
- (G) CRYSTALLINE ROCK (META-VOLCANIC)

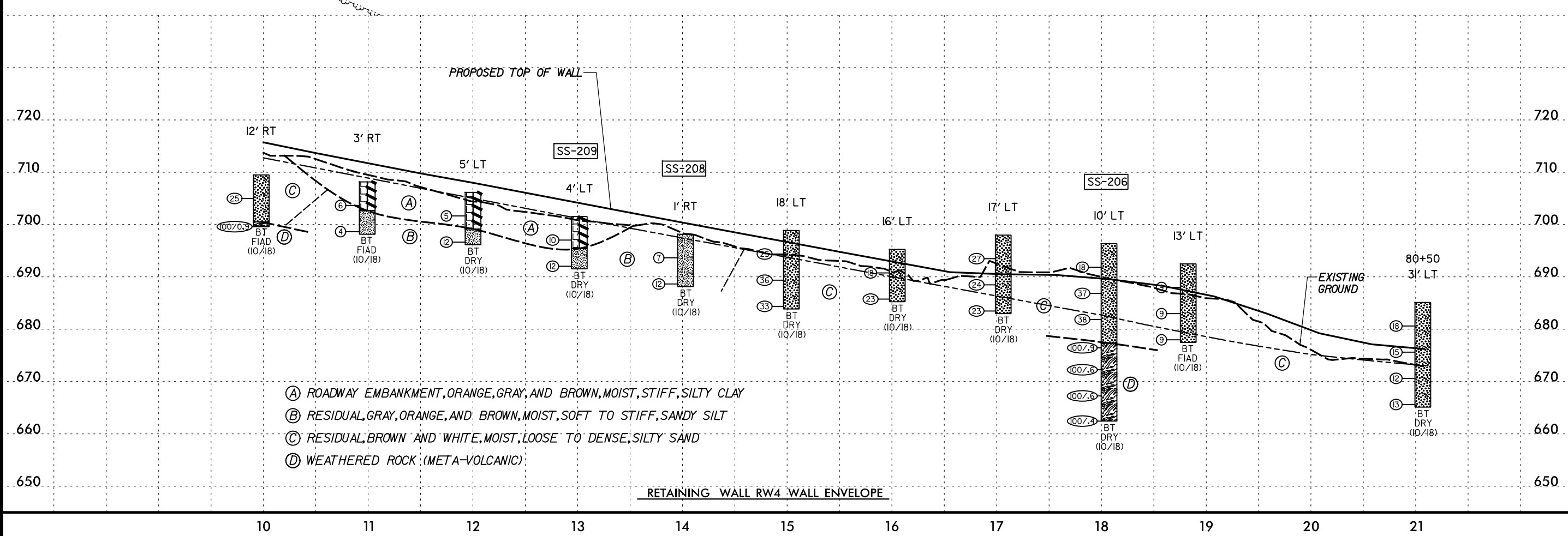
RETAINING WALL RW3 WALL ENVELOPE

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 8/17/99

PROJECT REFERENCE NO. R-5737	SHEET NO. 7
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



RETAINING WALL RW4 PLAN VIEW



RETAINING WALL RW4 WALL ENVELOPE

- (A) ROADWAY EMBANKMENT, ORANGE, GRAY, AND BROWN, MOIST, STIFF, SILTY CLAY
- (B) RESIDUAL, GRAY, ORANGE, AND BROWN, MOIST, SOFT TO STIFF, SANDY SILT
- (C) RESIDUAL, BROWN AND WHITE, MOIST, LOOSE TO DENSE, SILTY SAND
- (D) WEATHERED ROCK (META-VOLCANIC)

REVISIONS

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LABORATORY TESTING SUMMARY

PROJECT NUMBER: 50195.1.1

TIP: R-5737

COUNTY: Davidson

DESCRIPTION: US 29/US 70/Business 85 at SR 1798

Sample No.	Alignment	Station	Offset (feet)	Depth Interval (feet)	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
								Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
SS-215	-L-	50+00	48' RT	3.5 - 5.0	A-4 (0)	30	8	35.0	30.9	2.0	32.1	0	96	70	40	--	--
SS-248	-L-	52+00	52' RT	13.5 - 15.0	A-7-6 (12)	41	22	14.8	29.0	27.8	28.4	0	97	87	64	--	--
SS-175	-L-	53+50	60' LT	3.5 - 5.0	A-6 (4)	34	18	26.0	31.3	24.2	18.5	2	89	73	44	20.3	--
SS-177	-L-	53+50	60' LT	13.5 - 15.0	A-4 (0)	24	0	18.8	51.2	23.6	6.4	0	100	92	40	10.9	--
SS-252	-L-	54+00	53' RT	3.5 - 5.0	A-4 (1)	30	10	28.4	32.7	22.0	16.9	0	95	76	44	9.3	--
SS-254	-L-	54+00	53' RT	13.5 - 15.0	A-7-6 (26)	55	31	3.9	23.4	28.8	43.9	0	100	98	80	29.5	--
SS-165	-L-	54+50	62' LT	3.5 - 5.0	A-4 (0)	29	4	18.2	48.8	24.0	9.0	0	100	90	44	10.0	--
SS-167	-L-	54+50	62' LT	13.5 - 15.0	A-2-4 (0)	25	4	40.0	34.2	18.8	7.0	0	93	66	31	6.3	--
SS-158	-L-	55+18	65' LT	8.5 - 10.0	A-4 (0)	34	6	39.5	26.7	23.2	10.6	0	100	70	40	14.6	--
SS-160	-L-	55+18	65' LT	18.5 - 20.0	A-4 (0)	28	4	22.4	43.0	27.7	6.9	0	99	88	44	11.5	--
SS-257	-L-	56+06	46' RT	18.5 - 20.0	A-7-6 (65)	98	69	7.1	12.2	14.2	66.5	0	100	96	84	37.6	--
SS-132	-L-	56+50	48' LT	3.5 - 5.0	A-7-6 (10)	41	24	20.6	25.5	20.2	33.7	1	91	78	55	19.9	--
SS-133	-L-	56+50	48' LT	8.5 - 10.0	A-7-6 (17)	51	30	11.9	31.7	25.4	31.0	0	100	93	64	26.0	--
SS-256	-L-	57+00	44' RT	3.5 - 5.0	A-4 (0)	28	9	35.8	32.9	20.0	11.3	0	98	72	38	9.8	--
SS-131	-L-	57+50	48' LT	3.5 - 5.0	A-6 (4)	37	13	18.5	37.0	24.7	19.8	1	92	81	51	16.6	--
SS-124	-L-	59+50	48' LT	3.5 - 5.0	A-4 (0)	22	0	17.8	51.3	24.8	6.1	0	100	91	42	21.1	--
SS-115	-L-	63+00	51' LT	3.5 - 5	A-6 (6)	34	18	18.3	37.5	24.9	19.3	1	96	86	51	37.6	--
SS-117	-L-	63+00	51' LT	13.5 - 15.0	A-6 (6)	31	16	20.1	26.5	25.5	27.9	1	94	80	56	28.1	--
SS-120	-L-	63+00	51' LT	28.5 - 30.0	A-4 (0)	35	6	27.6	42.8	23.6	6.0	0	98	82	38	38.6	--
SS-107	-L-	64+00	48' LT	3.5 - 5.0	A-6 (3)	34	15	20.7	38.7	23.2	17.4	1	94	82	46	29.8	--
SS-110	-L-	64+00	48' LT	18.5 - 20.0	A-7-6 (11)	43	26	17.8	24.8	24.4	33.0	2	90	78	57	34.7	--
SS-111	-L-	64+00	48' LT	23.5 - 25.0	A-7-6 (50)	84	57	5.2	19.1	19.0	56.7	1	99	96	80	55.3	--
SS-259	-L-	64+00	43' RT	3.5 - 5.0	A-4 (1)	32	10	28.7	36.6	19.7	15.0	3	90	73	39	--	--
SS-260	-L-	64+00	43' RT	23.5 - 25.0	A-4 (0)	20	NP	19.6	37.5	26.3	16.6	1	95	82	50	--	--
SS-137	-L-	64+89	51' LT	3.5 - 5.0	A-7-6 (12)	44	24	12.8	33.8	28.4	25.0	1	98	90	61	23.9	--
SS-138	-L-	64+89	51' LT	8.5 - 10.0	A-7-6 (11)	45	24	16.5	30.1	23.7	29.7	2	95	84	57	22.7	--
SS-140	-L-	64+89	51' LT	18.5 - 20.0	A-4 (0)	31	7	20.7	48.0	22.1	9.2	0	97	88	39	18.7	--
SS-145	-L-	66+00	52' LT	3.5 - 5.0	A-4 (2)	34	6	9.6	48.6	33.1	8.7	0	100	97	56	14.3	--
SS-194	-L-	67+00	48' RT	3.5 - 5.0	A-2-6 (0)	38	17	49.6	19.2	17.0	14.2	14	73	43	26	13.1	--
SS-209	-L-	72+50	67' LT	3.5 - 5.0	A-7-6 (26)	58	33	5.8	23.3	22.9	48.0	0	100	97	76	30.0	--
SS-208	-L-	73+50	CL	3.5 - 5.0	A-4 (1)	33	6	16.2	46.5	28.6	8.7	0	100	94	47	16.3	--
SS-206	-L-	77+50	75' LT	3.5 - 5.0	A-2-4 (0)	32	5	36.8	30.8	23.6	8.8	0	89	65	35	12.2	--
SS-192	-RPB-	12+30	8' RT	3.5 - 5.0	A-4 (0)	23	0	12.0	50.7	28.6	8.7	0	100	95	51	8.0	--
SS-188	-RPB-	13+30	15' LT	3.5 - 5.0	A-4 (0)	23	0	15.5	46.0	30.8	7.7	0	100	92	51	7.1	--
SS-184	-RPB-	14+30	14' LT	3.5 - 5.0	A-7-6 (19)	51	26	6.3	28.0	31.4	34.3	0	100	98	73	30.5	--
SS-185	-RPB-	14+30	14' LT	8.5 - 10.0	A-4 (3)	38	9	9.7	49.4	27.9	13.0	0	100	97	52	15.8	--
S-107	-RPB-	15+30	30' LT	0.0 - 1.5	A-4 (1)	26	8	11.9	40.7	31.0	16.4	9	82	78	49	10.6	--
SS-103	-RPB-	15+30	30' LT	3.5 - 10.0	A-7-6 (15)	47	27	13.2	30.5	29.6	26.7	0	99	93	64	27.5	--
SS-105	-RPB-	15+30	30' LT	13.5 - 15.0	A-4 (0)	30	4	19.2	48.8	22.6	9.4	0	100	90	43	15.4	--
SS-99	-RPB-	16+30	35' LT	3.5 - 5.0	A-6 (3)	33	17	31.7	26.9	12.7	28.7	1	88	67	41	18.6	--
SS-100	-RPB-	16+30	35' LT	8.5 - 10.0	A-7-6 (11)	45	19	7.7	39.7	33.4	19.2	0	100	97	65	25.2	--
SS-95	-RPB-	16+80	30' LT	3.5 - 5.0	A-6 (12)	40	21	8.5	36.6	32.4	22.5	0	100	96	65	23.0	--