

REFERENCE: B-5717

PROJECT: 45673

SEE SHEET 3 FOR PLAN SHEET LAYOUT
AT TIME OF INVESTIGATION

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

| | | | |
|-------|-----------------------------|-----------|--------------|
| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
| N.C. | B-5717 | 1 | 26 |

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ROADWAY
SUBSURFACE INVESTIGATION

COUNTY GUILFORD
PROJECT DESCRIPTION REPLACE BRIDGES 109 AND 121
ON SR 4240 (E. GATE CITY BLVD.) OVER
SOUTH BUFFALO CREEK

INVENTORY

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 1919 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.

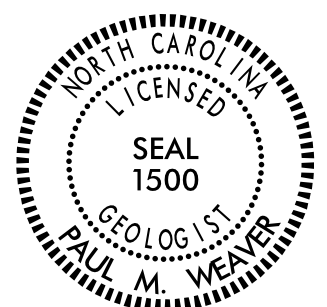
- NOTES:
- THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 - BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR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

PERSONNEL

P.M. WEAVER
C.R. PASTRANA
SUMMIT

INVESTIGATED BY ESP Associates, Inc.
DRAWN BY C.R. PASTRANA
CHECKED BY P.M. WEAVER
SUBMITTED BY ESP Associates, Inc.
DATE May 2020

 **ESP ASSOCIATES, INC.**
7011 ALBERT PICK RD
SUITE E
GREENSBORO, NC 27409
FIRM # C-0587
WWW.ESPASSOCIATES.COM



DocuSigned by:
Paul Weaver 5/8/2020
01847D3738AD49C
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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <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 DISLOGGED 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 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;"> <thead> <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-2</th> <th>A-3</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> </thead> <tbody> <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-4</td> <td>A-5</td> <td>A-6</td> <td>A-7</td> <td>A-1, A-2</td> <td>A-3</td> <td>A-4, A-5</td> <td>A-6, A-7</td> <td></td> </tr> <tr> <td>SYMBOL</td> <td colspan="5">[Pattern]</td> <td colspan="5">[Pattern]</td> <td colspan="5">[Pattern]</td> </tr> <tr> <td>% PASSING #10 #40 #200</td> <td>50 MX 30 MX 15 MX</td> <td>50 MX 25 MX 10 MX</td> <td>51 MN 35 MX 35 MX</td> <td>40 MX 41 MN 10 MX 11 MN</td> <td>40 MX 41 MN 10 MX 11 MN</td> <td>40 MX 41 MN 10 MX 11 MN</td> <td>40 MX 41 MN 10 MX 11 MN</td> <td>40 MX 41 MN 10 MX 11 MN</td> <td>40 MX 41 MN 10 MX 11 MN</td> <td>40 MX 41 MN 10 MX 11 MN</td> <td>40 MX 41 MN 10 MX 11 MN</td> <td>40 MX 41 MN 10 MX 11 MN</td> <td>40 MX 41 MN 10 MX 11 MN</td> <td>40 MX 41 MN 10 MX 11 MN</td> <td>40 MX 41 MN 10 MX 11 MN</td> </tr> <tr> <td>MATERIAL PASSING #40 LL PI</td> <td colspan="5"></td> <td colspan="5"></td> <td colspan="5"></td> </tr> <tr> <td>GROUP INDEX</td> <td colspan="5">0</td> <td colspan="5">4 MX</td> <td colspan="5">8 MX 12 MX 16 MX NO MX</td> </tr> <tr> <td>USUAL TYPES OF MAJOR MATERIALS</td> <td colspan="2">STONE FRAGS. GRAVEL, AND SAND</td> <td colspan="2">FINE SAND</td> <td colspan="2">SILTY OR CLAYEY GRAVEL AND SAND</td> <td colspan="2">SILTY SOILS</td> <td colspan="2">CLAYEY SOILS</td> <td colspan="5">SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER</td> </tr> <tr> <td>GEN. RATING AS SUBGRADE</td> <td colspan="5">EXCELLENT TO GOOD</td> <td colspan="5">FAIR TO POOR</td> <td colspan="5">FAIR TO POOR POOR UNSUITABLE</td> </tr> </tbody> </table> | | | | | | | | | | GENERAL CLASS. | GRANULAR MATERIALS (≤ 35% PASSING #200) | | | | | SILT-CLAY MATERIALS (> 35% PASSING #200) | | | | | ORGANIC MATERIALS | | | | | A-1 | A-2 | A-3 | A-4 | A-5 | A-6 | A-7 | A-1, A-2 | A-3 | A-4, A-5 | A-6, A-7 | | | | | GROUP CLASS. | A-1-a | A-1-b | A-2-4 | A-2-5 | A-2-6 | A-2-7 | A-4 | A-5 | A-6 | A-7 | A-1, A-2 | A-3 | A-4, A-5 | A-6, A-7 | | SYMBOL | [Pattern] | | | | | [Pattern] | | | | | [Pattern] | | | | | % PASSING #10 #40 #200 | 50 MX 30 MX 15 MX | 50 MX 25 MX 10 MX | 51 MN 35 MX 35 MX | 40 MX 41 MN 10 MX 11 MN | 40 MX 41 MN 10 MX 11 MN | 40 MX 41 MN 10 MX 11 MN | 40 MX 41 MN 10 MX 11 MN | 40 MX 41 MN 10 MX 11 MN | 40 MX 41 MN 10 MX 11 MN | 40 MX 41 MN 10 MX 11 MN | 40 MX 41 MN 10 MX 11 MN | 40 MX 41 MN 10 MX 11 MN | 40 MX 41 MN 10 MX 11 MN | 40 MX 41 MN 10 MX 11 MN | 40 MX 41 MN 10 MX 11 MN | MATERIAL PASSING #40 LL PI | | | | | | | | | | | | | | | | GROUP INDEX | 0 | | | | | 4 MX | | | | | 8 MX 12 MX 16 MX NO MX | | | | | USUAL TYPES OF MAJOR MATERIALS | STONE FRAGS. GRAVEL, AND SAND | | FINE SAND | | SILTY OR CLAYEY GRAVEL AND SAND | | SILTY SOILS | | CLAYEY SOILS | | SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER | | | | | GEN. RATING AS SUBGRADE | EXCELLENT TO GOOD | | | | | FAIR TO POOR | | | | | FAIR TO POOR POOR UNSUITABLE | | | | | <p style="text-align: center;">MINERALOGICAL COMPOSITION</p> <p>MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.</p> | | | | | | | | | | <p style="text-align: center;">WEATHERING</p> <p>FRESH: ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.</p> <p>VERY SLIGHT (IV SL.): ROCK GENERALLY FRESH, JOINTS STAINED. SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN. CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.</p> <p>SLIGHT (SL.): ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.</p> <p>MODERATE (MOD.): SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.</p> <p>MODERATELY SEVERE (MOD. SEV.): ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. IF TESTED, WOULD YIELD SPT REFUSAL.</p> <p>SEVERE (SEV.): ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF.</p> <p>VERY SEVERE (IV SEV.): ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF.</p> <p>COMPLETE: ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. FABRIC MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.</p> | | | | | | | | | |
| GENERAL CLASS. | GRANULAR MATERIALS (≤ 35% PASSING #200) | | | | | SILT-CLAY MATERIALS (> 35% PASSING #200) | | | | | ORGANIC MATERIALS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | A-1 | A-2 | A-3 | A-4 | A-5 | A-6 | A-7 | A-1, A-2 | A-3 | A-4, A-5 | A-6, A-7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| SYMBOL | [Pattern] | | | | | [Pattern] | | | | | [Pattern] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| MATERIAL PASSING #40 LL PI | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GROUP INDEX | 0 | | | | | 4 MX | | | | | 8 MX 12 MX 16 MX NO MX | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| USUAL TYPES OF MAJOR MATERIALS | STONE FRAGS. GRAVEL, AND SAND | | FINE SAND | | SILTY OR CLAYEY GRAVEL AND SAND | | SILTY SOILS | | CLAYEY SOILS | | SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GEN. RATING AS SUBGRADE | EXCELLENT TO GOOD | | | | | FAIR TO POOR | | | | | FAIR TO POOR POOR UNSUITABLE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p style="text-align: center;">CONSISTENCY OR DENSENESS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <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> </thead> <tbody> <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> </tbody> </table> | | | | | | | | | | PRIMARY SOIL TYPE | COMPACTNESS OR CONSISTENCY | RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) | RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²) | GENERALLY GRANULAR MATERIAL (NON-COHESIVE) | VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE | < 4 4 TO 10 10 TO 30 30 TO 50 > 50 | N/A | GENERALLY SILT-CLAY MATERIAL (COHESIVE) | VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD | < 2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 > 30 | < 0.25 0.25 TO 0.5 0.5 TO 1.0 1 TO 2 2 TO 4 > 4 | <p style="text-align: center;">GROUND WATER</p> <p>▽ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING</p> <p>▽ 24 HOURS STATIC WATER LEVEL AFTER 24 HOURS</p> <p>▽ PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA</p> <p>○ SPRING OR SEEP</p> | | | | | | | | | | <p style="text-align: center;">MISCELLANEOUS SYMBOLS</p> <p>ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION</p> <p>SOIL SYMBOL</p> <p>ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT</p> <p>INFERRED SOIL BOUNDARY</p> <p>INFERRED ROCK LINE</p> <p>ALLUVIAL SOIL BOUNDARY</p> <p>DIP & DIP DIRECTION OF ROCK STRUCTURES</p> <p>SPT DMT TEST BORING</p> <p>AUGER BORING</p> <p>CORE BORING</p> <p>MONITORING WELL</p> <p>PIEZOMETER INSTALLATION</p> <p>SLOPE INDICATOR INSTALLATION</p> <p>CONE PENETROMETER TEST</p> <p>SOUNDING ROD</p> <p>TEST BORING WITH CORE</p> <p>SPT N-VALUE</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PRIMARY SOIL TYPE | COMPACTNESS OR CONSISTENCY | RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) | RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <p style="text-align: center;">TEXTURE OR GRAIN SIZE</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>U.S. STD. SIEVE SIZE OPENING (MM)</th> <th>4</th> <th>10</th> <th>40</th> <th>60</th> <th>200</th> <th>270</th> </tr> </thead> <tbody> <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> <td>Boulder (BLDR.)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Cobble (COB.)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Gravel (GR.)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Coarse Sand (CS, SD.)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Fine Sand (F SD.)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Silt (SL.)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Clay (CL.)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | | | | | | | | | | U.S. STD. SIEVE SIZE OPENING (MM) | 4 | 10 | 40 | 60 | 200 | 270 | | 4.75 | 2.00 | 0.42 | 0.25 | 0.075 | 0.053 | Boulder (BLDR.) | | | | | | | Cobble (COB.) | | | | | | | Gravel (GR.) | | | | | | | Coarse Sand (CS, SD.) | | | | | | | Fine Sand (F SD.) | | | | | | | Silt (SL.) | | | | | | | Clay (CL.) | | | | | | | <p style="text-align: center;">RECOMMENDATION SYMBOLS</p> <p>UNDERCUT</p> <p>SHALLOW UNDERCUT</p> <p>UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</p> <p>UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK</p> <p>UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</p> | | | | | | | | | | <p style="text-align: center;">ABBREVIATIONS</p> <p>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 HI. - HIGHLY</p> <p>MED. - MEDIUM MICA - MICACEOUS MOD. - MODERATELY NP - NON PLASTIC ORG. - ORGANIC PMT - PRESSUREMETER TEST SAP. - SAPROLITIC SD. - SAND, SANDY SL. - SILT, SILTY SLI. - SLIGHTLY TCR - TRICONE REFUSAL w - MOISTURE CONTENT V - VERY</p> <p>VST - VANE SHEAR TEST WEA. - WEATHERED γ - UNIT WEIGHT γ_d - DRY UNIT WEIGHT</p> <p>SAMPLE ABBREVIATIONS</p> <p>S - BULK SS - SPLIT SPOON ST - SHELBY TUBE RS - ROCK RT - RECOMPACTED TRIAXIAL CBR - CALIFORNIA BEARING RATIO</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| U.S. STD. SIEVE SIZE OPENING (MM) | 4 | 10 | 40 | 60 | 200 | 270 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4.75 | 2.00 | 0.42 | 0.25 | 0.075 | 0.053 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Boulder (BLDR.) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cobble (COB.) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gravel (GR.) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coarse Sand (CS, SD.) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fine Sand (F SD.) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Silt (SL.) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clay (CL.) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| SOIL MOISTURE SCALE (ATTERBERG LIMITS) | FIELD MOISTURE DESCRIPTION | GUIDE FOR FIELD MOISTURE DESCRIPTION | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| PL - PLASTIC LIMIT | - WET - (W) | SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| OM - OPTIMUM MOISTURE | - MOIST - (M) | SOLID; AT OR NEAR OPTIMUM MOISTURE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SL - SHRINKAGE LIMIT | - DRY - (D) | REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <p style="text-align: center;">COLOR</p> <p>DESCRIPTORS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.</p> | | | | | | | | | | <p style="text-align: center;">NOTES:</p> <p>F.I.A.D = FILLED IMMEDIATELY AFTER DRILLING</p> <p>TIN FILE "B5717.LS.TIN.I70209.tin" WAS USED TO DETERMINE ROADWAY BORING ELEVATIONS</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <p style="text-align: center;">TEXTURE OR GRAIN SIZE</p> | | | | | | | | | | <p style="text-align: center;">RECOMMENDATION SYMBOLS</p> | | | | | | | | | | <p style="text-align: center;">ROCK HARDNESS</p> | | | | | | | | | | <p style="text-align: center;">TERMS AND DEFINITIONS</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <p style="text-align: center;"><</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

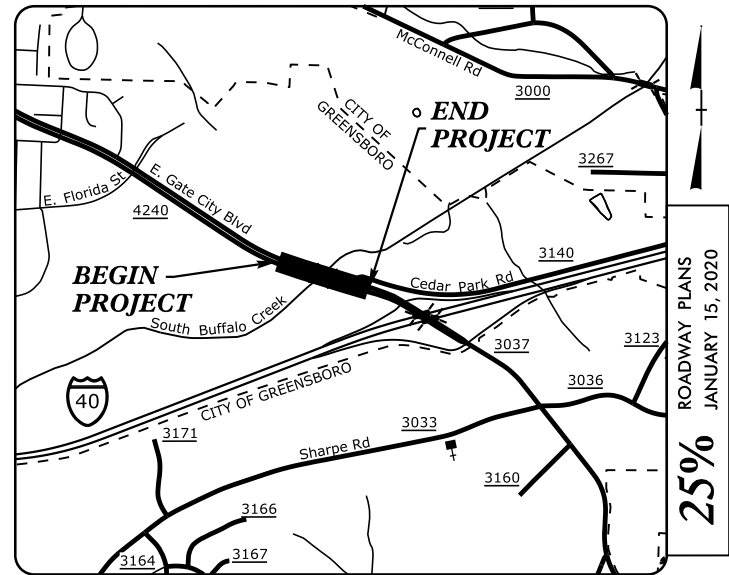
| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C. | B-5717 | 3 | 26 |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| 45673.1.2 | | PE | |
| | | | |
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| | | | |
| | | | |

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

LOCATION: BRIDGES 109 AND 121 ON SR 4240 (E. GATE CITY BLVD)
OVER SOUTH BUFFALO CREEK

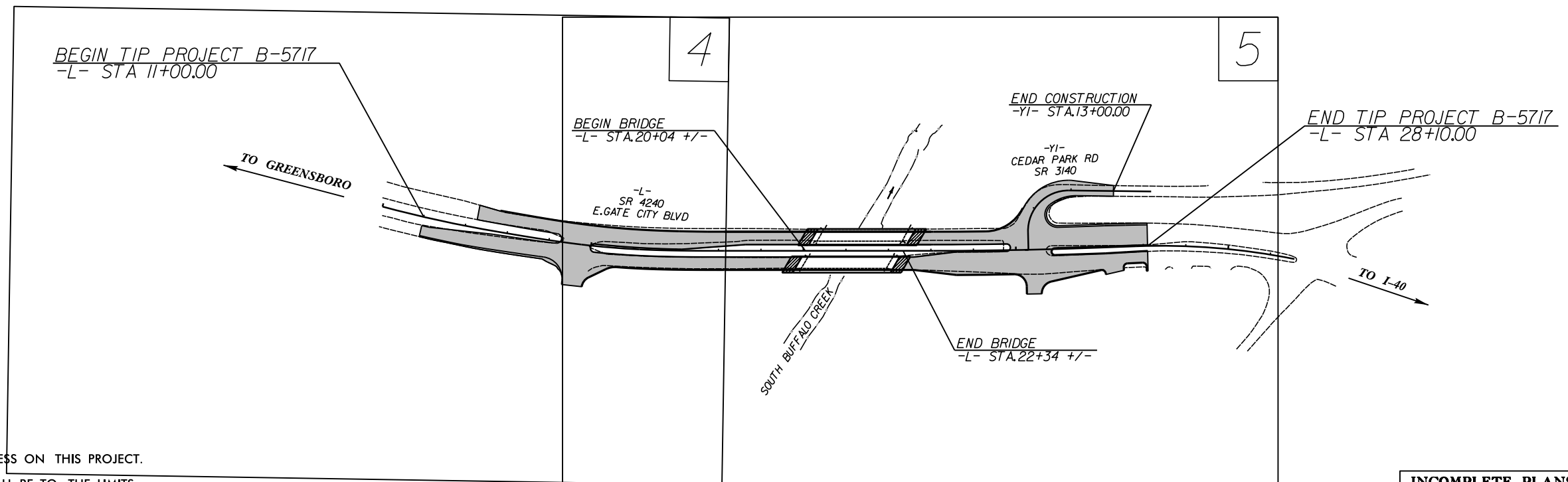
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURES



VICINITY MAP

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols

ROADWAY PLANS
JANUARY 15, 2020
25%



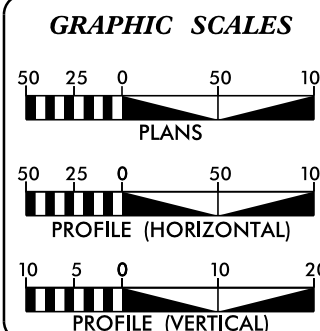
THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.

CLEARING ON THE PROJECT SHALL BE TO THE LIMITS ESTABLISHED USING METHOD _____.

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF GREENSBORO.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CONTRACT:



DESIGN DATA

| | |
|--------------|--------------------|
| ADT 2020 = | 18,184 |
| ADT 2040 = | 20,100 |
| K = | 11 % |
| D = | 65 % |
| T = | 5% % * |
| V = | 50 MPH |
| * TTST = | 1% DUAL 4% |
| FUNC CLASS = | PRINCIPAL ARTERIAL |
| | REGIONAL TIER |

PROJECT LENGTH

| | |
|---------------------------------------|----------|
| LENGTH ROADWAY TIP PROJECT B-5717 = | 0.280 MI |
| LENGTH STRUCTURE TIP PROJECT B-5717 = | 0.044 MI |
| TOTAL LENGTH TIP PROJECT B-5717 = | 0.324 MI |

Prepared In the Office of:

AECOM
NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JUNE 15, 2020

LETTING DATE: FEBRUARY 16, 2021

NEIL J. DEAN, P.E.
PROJECT ENGINEER

TIMOTHY KLOTZ, P.E.
PROJECT DESIGN ENGINEER

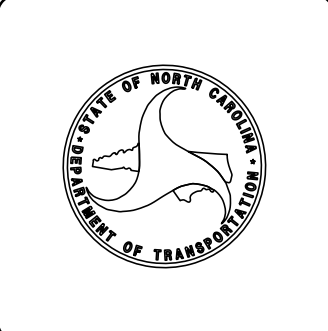
DAVID STUTTS, P.E.
NCDOT PROJECT ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.



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rsrpost

May 7, 2020

STATE PROJECT: 45673.1.2
 TIP: B-5717
 COUNTY: Guilford
 DESCRIPTION: Replace Bridges 109 and 121 on SR 4240 (E. Gate City Blvd.) over South Buffalo Creek
 SUBJECT: Geotechnical Report – Roadway Inventory

Project Description

This proposed project is located in Greensboro, North Carolina. It begins at Station 11+00 and continues to Station 28+10, which is approximately 280 feet east of the intersection of -L- (East Gate City Boulevard) and -Y1- (Cedar Park Road). The total project length is approximately 0.32 miles. The existing East Gate City Boulevard within the project corridor consist of a four-lane roadway with a grassed median between the westbound and eastbound lanes. Several businesses are located within the project corridor.

The proposed project construction consists of the following:

- The replacement of the existing dual bridges (Bridge Nos. 109 and 121) over South Buffalo Creek
- Raising the grade of the roadway approaches to the bridges to accommodate the increased heights of the proposed new bridges
- Raising the grade of -Y1- (Cedar Park Road) in the vicinity of its intersection with -L- to match the new grades of the -L- roadway
- Widening the existing roadway on each side of -L- to accommodate the construction of sidewalks with curb and gutter on both sides of the roadway
- Widening, raising the grade, and reworking the turn lanes at the -L- and -Y1- intersection

The proposed maximum new embankment fill heights are approximately 10 feet. The only proposed cuts along -L- are for the proposed curb and gutter, are less than 1 foot, and are only proposed in isolated areas, while a maximum proposed cut depth of approximately 2 feet is proposed for a side ditch on the right side of -Y1- in the vicinity of Station 11+00.

The drainage along the project is handled by concrete drains with catch basins within the median. It should be noted that there are numerous, significant gullies and holes all along the top of the existing embankment along the left side of the roadway beginning just inside the guardrails and continuing down the slope; this appears to indicate that significant water runoff from the left side of the existing road is going over the slopes instead of into the median.

The only intersection along the project is at Cedar Park Road (-Y1-) which intersects -L- at Station 25+29.55 -L- and Station 10+00 -Y1-.

This geotechnical investigation was confined to the areas of proposed construction.

Initial site scoping was performed on February 26, 2020. The field roadway investigation was performed from March 9 to March 16, 2020. Standard Penetration Test borings were advanced with a CME 550X drill machine equipped with an automatic hammer. Hand augers were utilized to gather subsurface information in areas not accessible to drilling equipment. Representative soil samples were collected for visual classification in the field and for laboratory analyses.

The following alignments were investigated. Subsurface cross sections of these alignments are included in this report.

| Alignment | Station (±) |
|-----------|----------------|
| -L- | 11+00 to 28+10 |
| -Y1- | 10+00 to 13+00 |

Physiography and Geography

The project corridor is located in the Carolina Slate Belt within the Piedmont Physiographic Province. The Carolina Slate Belt lies to the east of the Charlotte Metamorphic Belt and west of the Raleigh and Kiokee Metamorphic Belts. It is composed dominantly of Later Proterozoic to Cambrian age lower grade metamorphosed greenschist facies metavolcanic rocks, metasedimentary rocks, and several post-metamorphic plutons. The Geologic Map of North Carolina (1985) shows the project corridor area to consist of “Metamorphosed Granitic Rock (520-650 my) – Megacrystic, well-foliated, locally contains hornblende; Fountain intrusive”. No rock coring was performed during ESP’s exploration.

The roadway along East Gate City Boulevard (-L-) generally slopes up from the beginning (west end) of the project to the end (east end) of the project with elevations ranging from approximately 694 feet (MSL) at the bottom of the creek bed to approximately 726 feet (MSL) along the centerline at the end of the project. Swampy areas are present extending out from the toe of the existing embankment along the left side between approximately Station 12+50 and approximately Station 23+00, and along the right side between approximately Station 18+00 and approximately Station 19+40.

Soil Properties

Soils encountered within this project area have been divided into five categories: roadway embankment, artificial fill, alluvial deposits, residual soils, and weathered rock.

The roadway embankment ranged in thickness from approximately 5 feet to approximately 13 feet, and was generally composed of medium dense, silty sand (A-2-4) and of soft to very stiff, sandy silt (A-4), sandy clay (A-6), and silty clay (A-7). Plasticities within the cohesive roadway embankment material range from slightly plastic to highly plastic with laboratory plasticity index results ranging from 5 to 27. Boulders and/or rip rap was encountered in the lower portion of the roadway embankment within the median area at each end of the existing bridges extending out approximately 15 to 20 feet from each end of the bridges.

Artificial fill material is present right of the existing roadway embankment between approximately Station 12+50 and approximately Station 18+25. The artificial fill, where encountered in test borings, consists of medium stiff to stiff, silty clay (A-7-5) with wood fragments and asphalt pieces. This material encountered in the test borings extends to depths below the existing ground surface ranging from approximately 4 to 5.5 feet, and is most likely backfill in overexcavated areas for the water line. The majority of the artificial fill, which is right of the proposed

construction area and was therefore not tested, is fill placed to construct the pad for the Penske Truck business. Plasticities within the artificial fill ranged from slightly to moderately plastic.

Soils identified as alluvial deposits were encountered either beginning at the existing ground surface or underlying the roadway embankment in many of the borings drilled for this project. The alluvium extended to depths ranging from 3.2 feet to 28.2 feet below the existing ground surface. In borings where the alluvium was encountered underlying roadway embankment fill, the top of alluvium ranged from depths of 5.2 feet to 11.7 feet below the existing ground surface. The alluvial deposits encountered generally consist of very loose to loose, silty sand (A-2-4), and of very soft to stiff, sandy silt (A-4), sandy clay (A-6) and silty clay (A-7). Plasticity within the cohesive alluvium materials is slightly plastic with a laboratory plasticity index results ranging from 12 to 13. Trace organics were present within the some of the alluvial materials. With the exception of Boring L-1491, all of the borings west (downstation) of Station 19+80 were terminated in alluvium

Residual soils were encountered in the majority of the borings drilled for the bridges and in the borings drilled on the east (upstation) side of the existing bridges. The exceptions were Borings EB1-C through C3 and EB2-C which were terminated on rip rap/boulders, Boring EB2-A which encountered crystalline rock directly below the alluvium, and Borings EB2-C1 and EB2-B which encountered weathered rock directly underlying the alluvium. The residual soils consisted of medium dense to dense, silty sand (A-2-4), and of medium stiff to very stiff, sandy silt (A-4), sandy clay (A-6), and silty clay (A-7-5). Plasticities within the cohesive residual soils range from slightly plastic to highly plastic with laboratory plasticity index results ranging from 12 to 27.

The weathered rock was encountered at depths ranging from 8.3 feet to 27.9 feet below the existing ground surface which corresponds to elevations ranging from 713.8 feet to 688.2 feet.

Rock Properties

Crystalline rock was encountered either directly underlying the alluvium or underlying weathered rock in some of the borings drilled for this project. The crystalline rock was encountered at depths ranging from 8.3 feet to 29.7 feet below the existing ground surface which correspond with elevations ranging from 711.1 feet to 685.4 feet. The crystalline rock along the project corridor classifies as a Metamorphosed Granitic Rock.

Groundwater Properties

Ground water data was collected in March, 2020. Twenty-four-hour ground water depths ranged from 1.6± to 13.8± feet below the existing ground surface, and groundwater elevations ranged from 709.7± to 702.2± feet above sea level. It should be noted that heavy seasonal rains at the time of this investigation may have resulted in higher than average recorded ground water elevations.

Areas of Special Geotechnical Interest

1) The following areas contain soft and/or wet to saturated alluvial material at the base of the proposed embankment extensions for the project. These areas flood periodically.

| Alignment | STA (±) to STA (±) | Offset (±) |
|-----------|--------------------|-------------------|
| -L- | 12+50 to 17+75 | 65' LT to +90' LT |
| -L- | 18+25 to 19+25 | 70' RT to +80' RT |
| -L- | 19+25 to 20+30 | 70' LT to +90' LT |
| -L- | 22+55 to 23+00 | 70' LT to +90' LT |

2) The following area contains soils exhibiting a slight to strong petroleum odor indicating potential soil hydrocarbon contamination:

| Alignment | STA to STA (±) | Offset (±) | Notes |
|-----------|----------------|----------------|--|
| -L- | 23+00 to 27+00 | CL to +110' RT | Very strong petroleum odor with PID reading of 1352 ppm in sample from 8.5' to 10.0' at Sta. 23+95, 52' Rt. Slight petroleum odor in sample from 3.5' to 5.0' at Sta. 25+95, 55' Rt. |

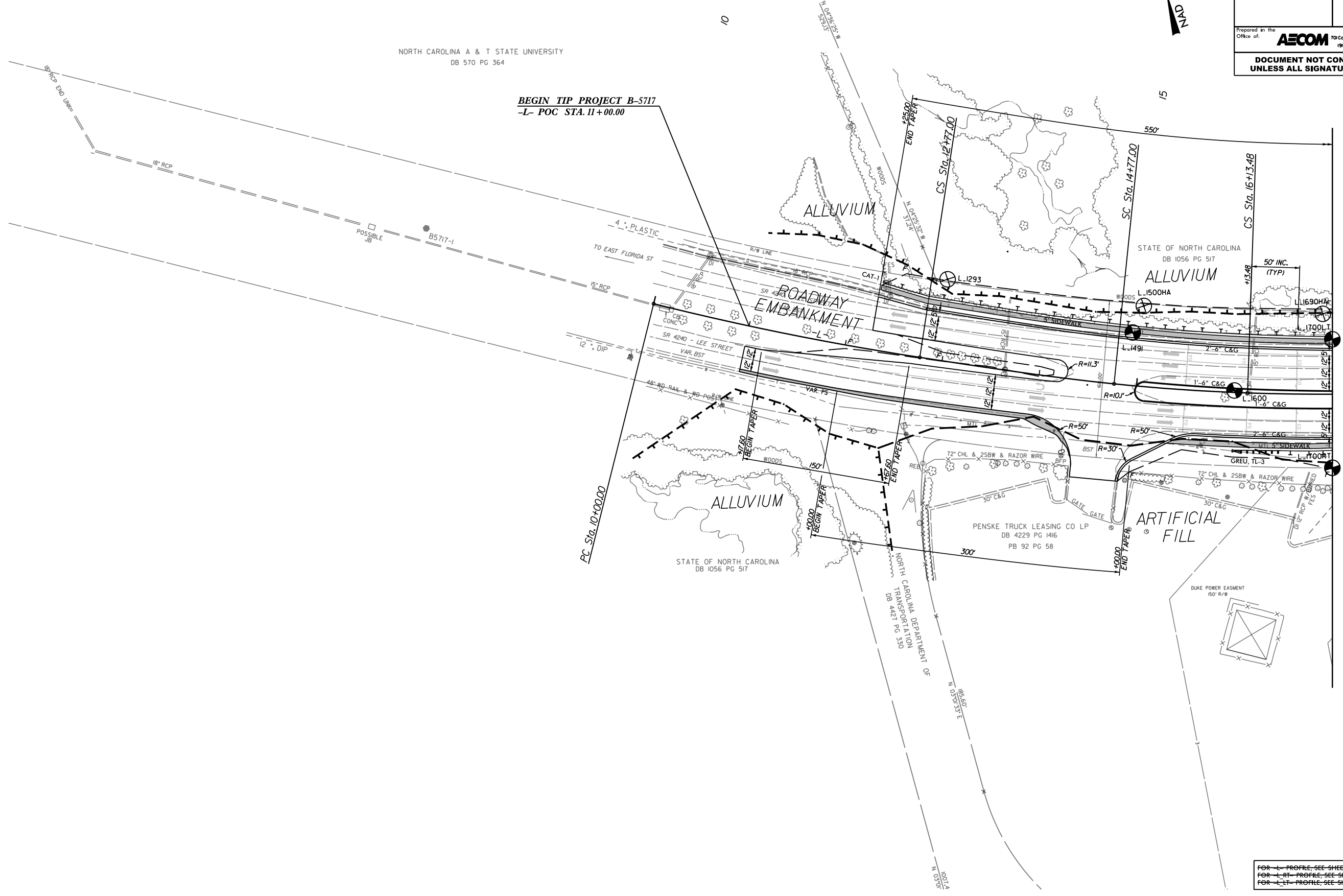
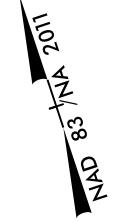
Water Wells

No water wells were identified in the field or on the project plans.

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| PROJECT REFERENCE NO. B-5717 | SHEET NO. 4 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION | |
| Prepared in the Office of: AECOM NC FIRM LICENSE No. F-0342 70 Corporate Center Drive, Suite 475 Raleigh, NC 27601 (919) 854-6200 • (919) 854-6299 FAX | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

-L-

| | | | |
|---|--|---|--|
| PI Sta 11+38.60 Δ = 5° 20' 27.8" (LT) D = 1° 55' 41.5" L = 277.00' T = 138.60' R = 2,971.46' | PIs Sta 14+10.35 Θs = 2° 51' 53.2" Ls = 200.00' LT = 133.35' ST = 66.68' | PI Sta 15+45.26 Δ = 3° 54' 35.5" (LT) D = 2° 51' 53.2" L = 136.48' T = 68.27' R = 2,000.00' e = 0.04 FT/FT R.O. = 200' | PIs Sta 16+80.16 Θs = 2° 51' 53.2" Ls = 200.00' LT = 133.35' ST = 66.68' |
|---|--|---|--|



BEGIN TIP PROJECT B-5717
-L- POC STA. 11+00.00

MATCHLINE -L- 17+00
SEE SHEET 5

FOR -L- PROFILE, SEE SHEET NO. 6
FOR -L- RT- PROFILE, SEE SHEET NO. 6
FOR -L- LT- PROFILE, SEE SHEET NO. 6

REVISIONS

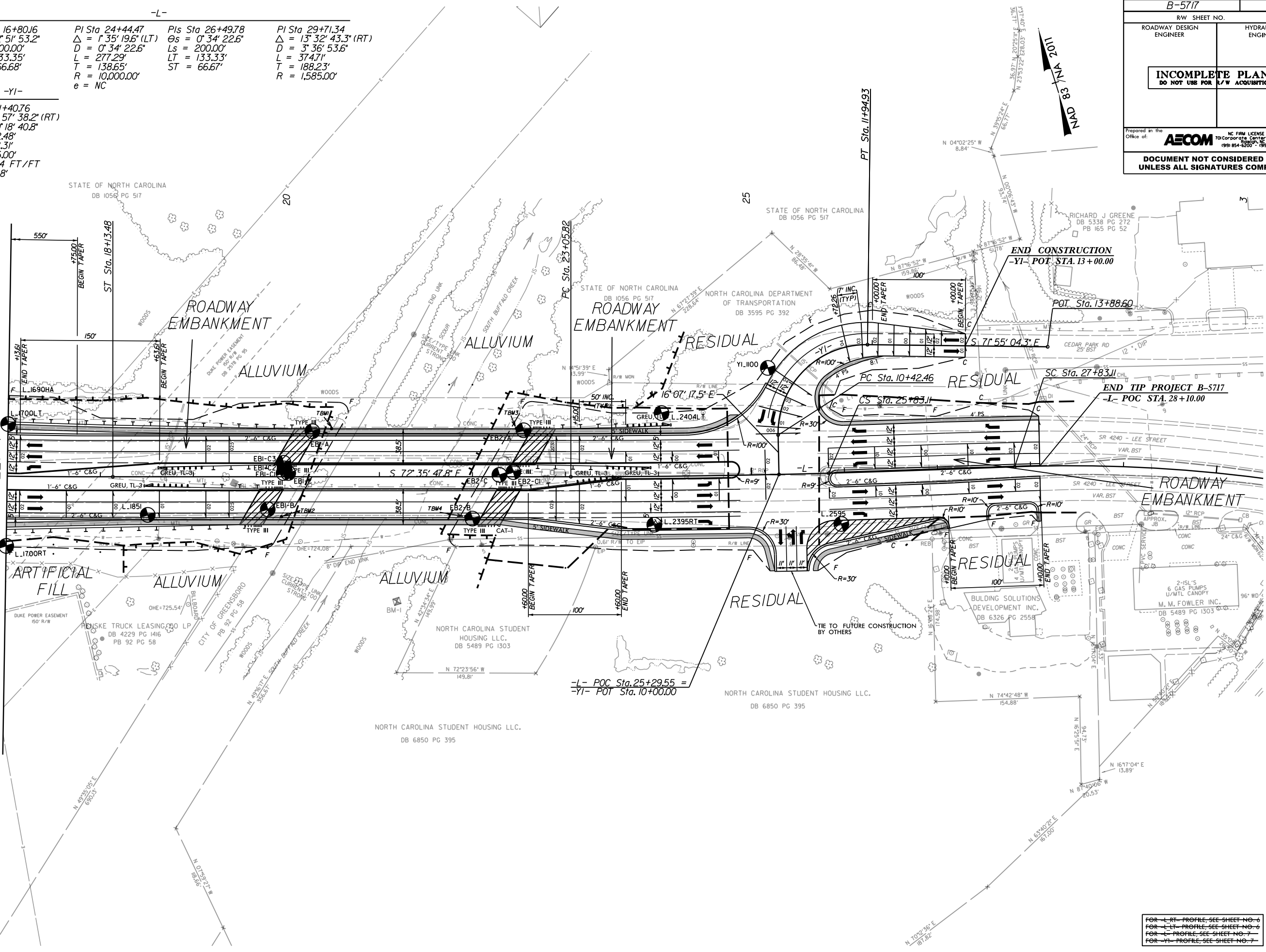
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| ROADWAY DESIGN ENGINEER | | HYDRAULICS ENGINEER | |
| INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION | | | |
| Prepared in the Office of: AECOM NC FIRM LICENSE No. F-0342 70 Corporate Center Drive, Suite 475 Raleigh, NC 27601 (919) 854-6200 (919) 854-6259 FAX | | | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | | | |

-L-
 Pls Sta 16+80.16 $\Delta = 2^{\circ} 51' 53.2"$ $Ls = 200.00'$ $LT = 133.35'$ $ST = 66.68'$
 PI Sta 24+44.47 $\Delta = 1^{\circ} 35' 19.6" (LT)$ $D = 0^{\circ} 34' 22.6"$ $L = 277.29'$ $R = 138.65'$ $T = 10,000.00'$ $e = NC$
 Pls Sta 26+49.78 $\Delta = 0^{\circ} 34' 22.6"$ $Ls = 200.00'$ $LT = 133.33'$ $ST = 66.67'$
 PI Sta 29+71.34 $\Delta = 13^{\circ} 32' 43.3" (RT)$ $D = 3^{\circ} 36' 53.6"$ $L = 374.71'$ $T = 188.23'$ $R = 1,585.00'$

-YI-
 PI Sta 11+40.76 $\Delta = 9^{\circ} 57' 38.2" (RT)$ $D = 60^{\circ} 18' 40.8"$ $L = 152.48'$ $T = 98.31'$ $R = 95.00'$ $e = 0.04 FT/FT$ $R.O. = 68'$

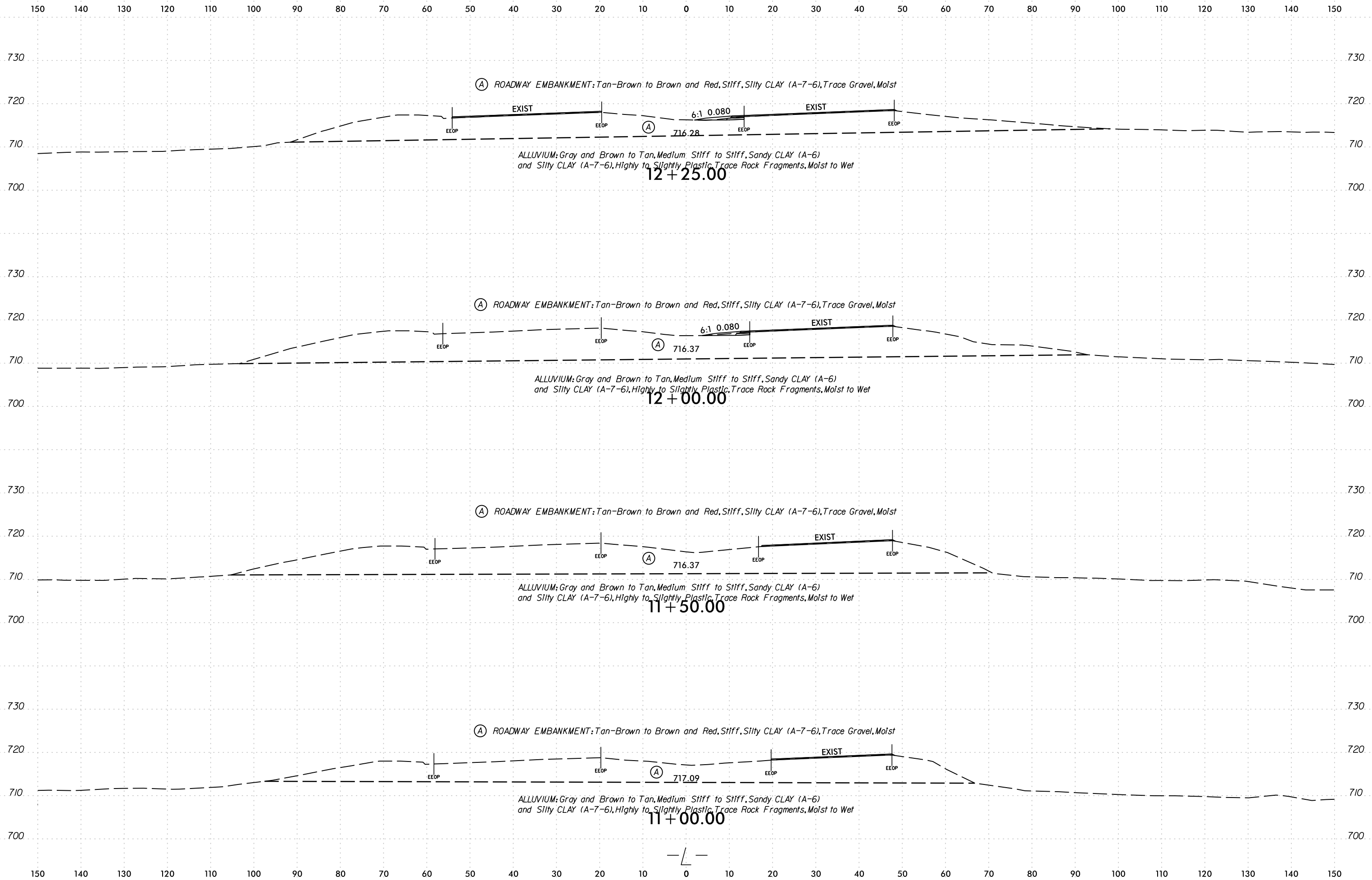
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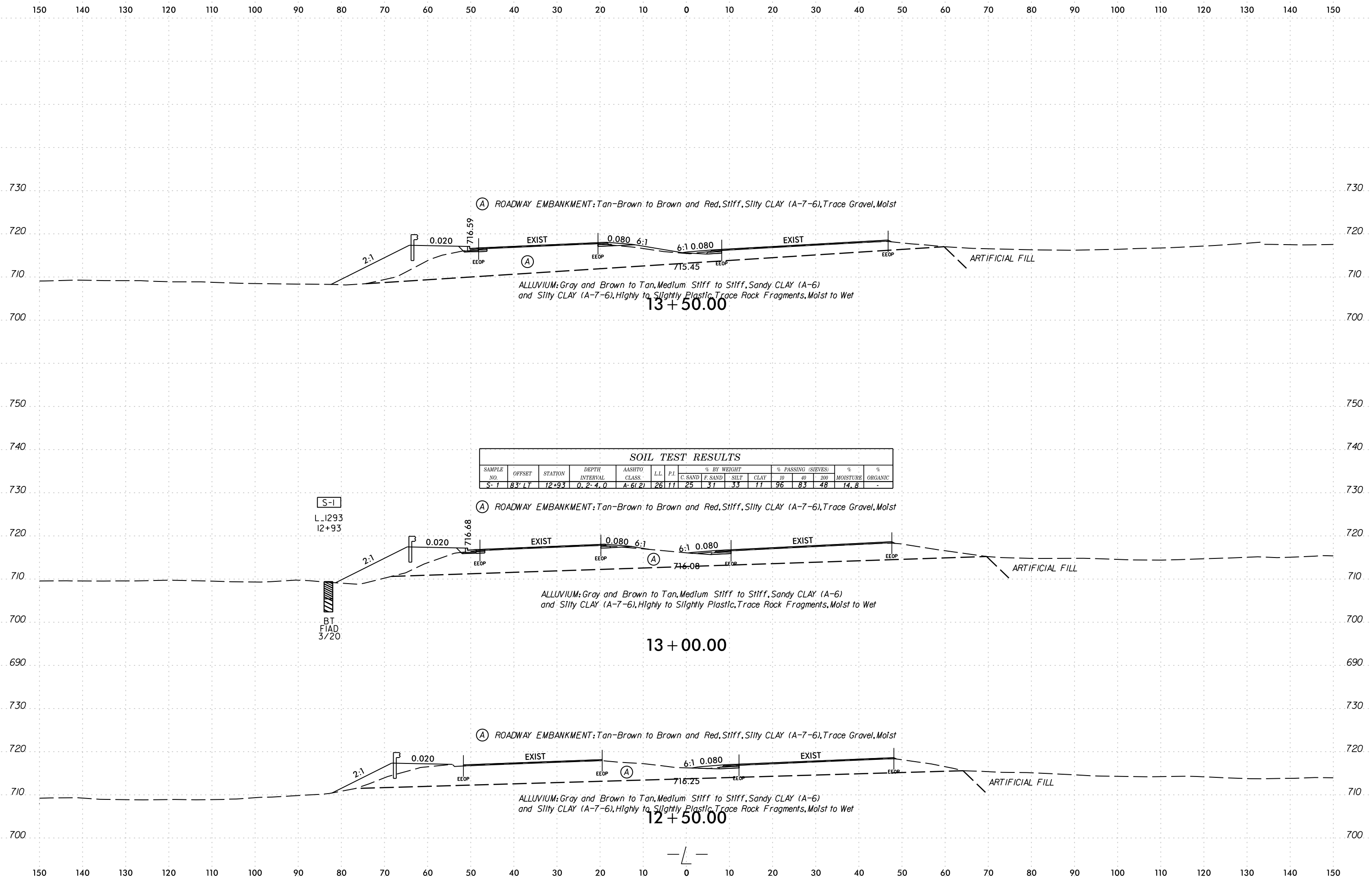


REVISIONS

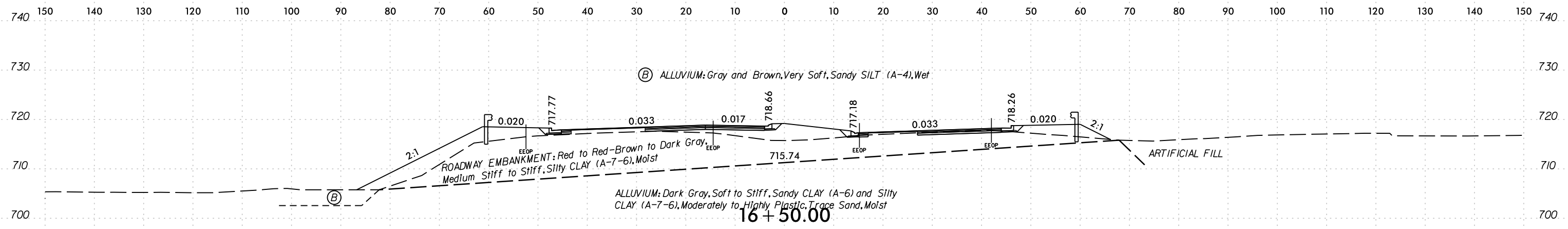
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FOR -L- PROFILE, SEE SHEET NO. 6
 FOR -LT- PROFILE, SEE SHEET NO. 6
 FOR -YI- PROFILE, SEE SHEET NO. 7
 FOR -YI- PROFILE, SEE SHEET NO. 7



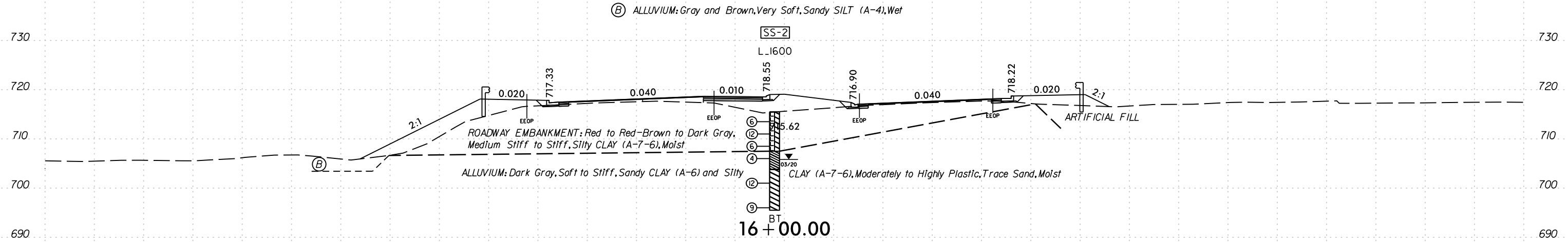


| SOIL TEST RESULTS | | | | | | | | | | | | | | | |
|-------------------|--------|---------|----------------|---------------|----|------|-------------|---------|------|------|--------------------|----|-----|------------|-----------|
| SAMPLE NO. | OFFSET | STATION | DEPTH INTERVAL | AASHTO CLASS. | LL | P.I. | % BY WEIGHT | | | | % PASSING (SIEVES) | | | % MOISTURE | % ORGANIC |
| | | | | | | | C. SAND | F. SAND | SILT | CLAY | 10 | 40 | 200 | | |
| S-1 | 83' LT | 12+93 | 0, 2-4, 0 | A-6(2) | 26 | 11 | 25 | 31 | 33 | 11 | 96 | 83 | 48 | 14.8 | - |

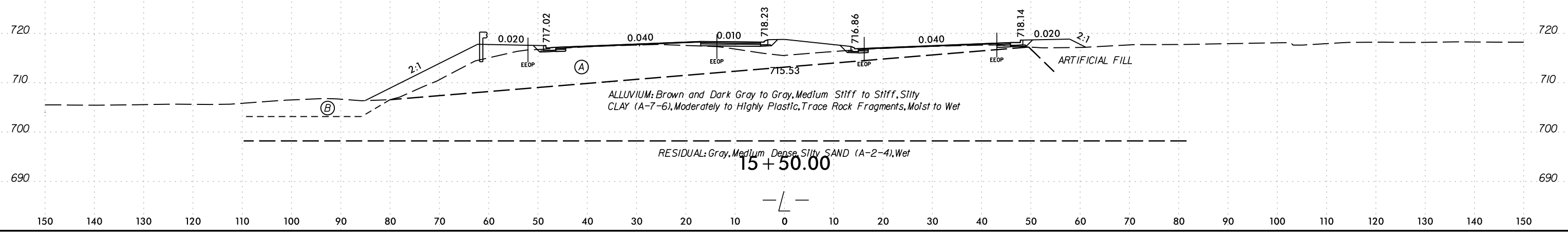


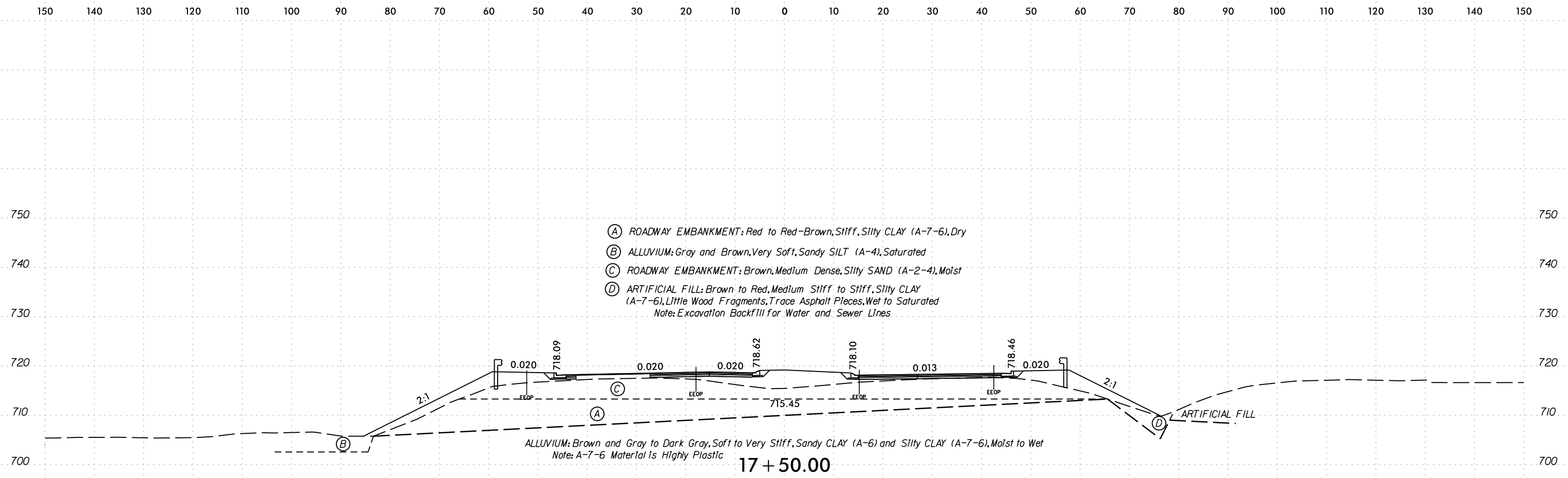
SOIL TEST RESULTS

| SAMPLE NO. | OFFSET | STATION | DEPTH INTERVAL | AASHTO CLASS. | LL | P.I. | % BY WEIGHT | | | | % PASSING (SIEVES) | | | % MOISTURE | % ORGANIC |
|------------|--------|---------|----------------|---------------|----|------|-------------|---------|------|------|--------------------|----|-----|------------|-----------|
| | | | | | | | C. SAND | F. SAND | SILT | CLAY | 10 | 40 | 200 | | |
| SS-2 | 2' LT | 16+00 | 8.5-10.0 | A-6(2) | 26 | 13 | 26 | 31 | 31 | 12 | 96 | 83 | 46 | 19.0 | - |



- (A) ROADWAY EMBANKMENT: Tan-Brown to Brown and Red, Stiff, Silty CLAY (A-7-6), Trace Gravel, Moist
- (B) ALLUVIUM: Gray and Brown, Very Soft, Sandy SILT (A-4), Wet





- (A) ROADWAY EMBANKMENT: Red to Red-Brown, Stiff, Silty CLAY (A-7-6), Dry
- (B) ALLUVIUM: Gray and Brown, Very Soft, Sandy SILT (A-4), Saturated
- (C) ROADWAY EMBANKMENT: Brown, Medium Dense, Silty SAND (A-2-4), Moist
- (D) ARTIFICIAL FILL: Brown to Red, Medium Stiff to Stiff, Silty CLAY (A-7-6), Little Wood Fragments, Trace Asphalt Pieces, Wet to Saturated
Note: Excavation Backfill for Water and Sewer Lines

ALLUVIUM: Brown and Gray to Dark Gray, Soft to Very Stiff, Sandy CLAY (A-6) and Silty CLAY (A-7-6), Moist to Wet
Note: A-7-6 Material is Highly Plastic

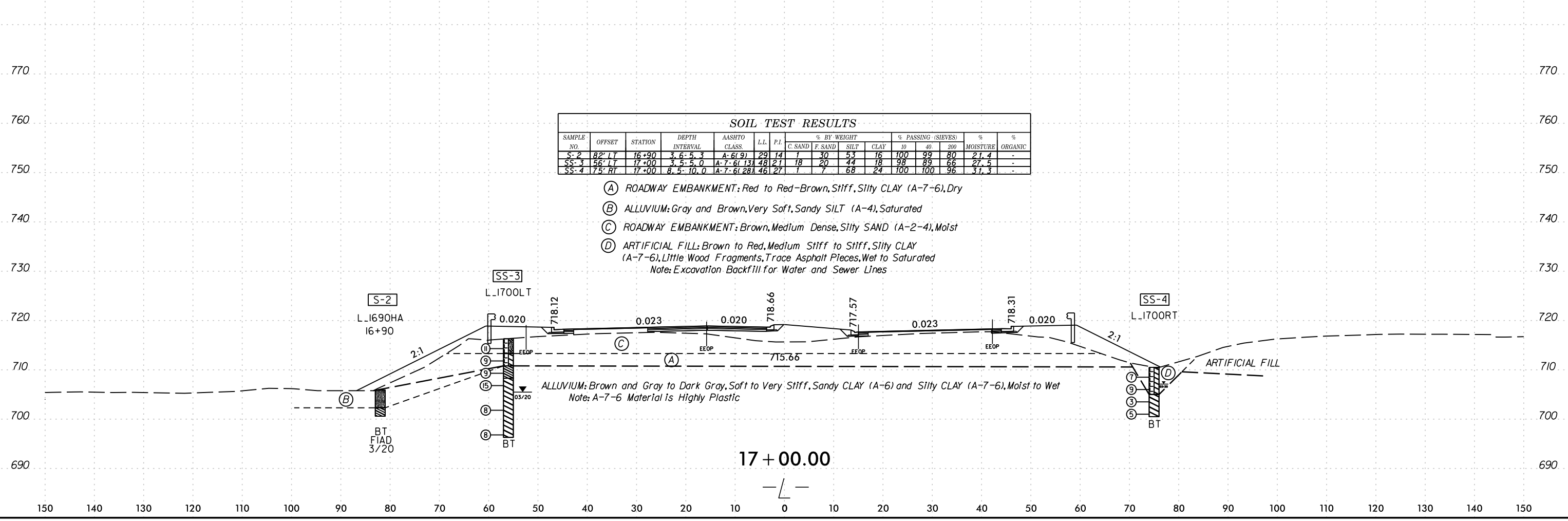
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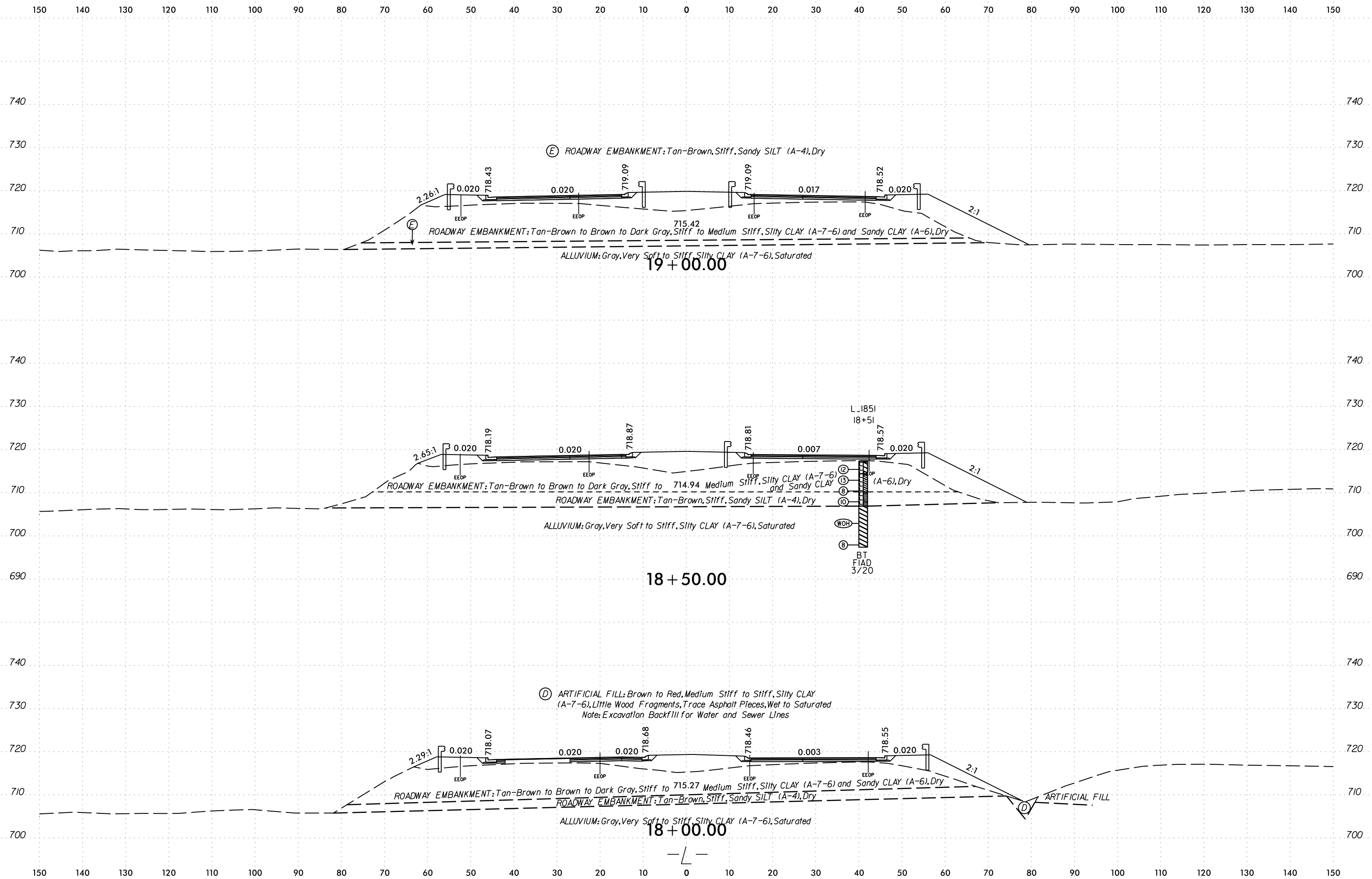
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| SAMPLE NO. | OFFSET | STATION | DEPTH INTERVAL | AASHTO CLASS | LL | P.I. | % BY WEIGHT | | | | % PASSING (SIEVES) | | | % MOISTURE | % ORGANIC |
| | | | | | | | C SAND | F SAND | SILT | CLAY | 10 | 40 | 200 | | |
| S-2 | 82' LT | 16+90 | 3.6-5.3 | A-6(9) | 29 | 14 | 1 | 30 | 53 | 16 | 100 | 99 | 80 | 21.4 | - |
| SS-3 | 56' LT | 17+00 | 3.5-5.0 | A-7-6(13) | 48 | 21 | 18 | 20 | 44 | 18 | 98 | 89 | 66 | 27.6 | - |
| SS-4 | 75' RT | 17+00 | 8.5-10.0 | A-7-6(28) | 46 | 27 | 7 | 68 | 24 | 100 | 100 | 96 | 31.3 | - | |

- (A) ROADWAY EMBANKMENT: Red to Red-Brown, Stiff, Silty CLAY (A-7-6), Dry
- (B) ALLUVIUM: Gray and Brown, Very Soft, Sandy SILT (A-4), Saturated
- (C) ROADWAY EMBANKMENT: Brown, Medium Dense, Silty SAND (A-2-4), Moist
- (D) ARTIFICIAL FILL: Brown to Red, Medium Stiff to Stiff, Silty CLAY (A-7-6), Little Wood Fragments, Trace Asphalt Pieces, Wet to Saturated
Note: Excavation Backfill for Water and Sewer Lines

ALLUVIUM: Brown and Gray to Dark Gray, Soft to Very Stiff, Sandy CLAY (A-6) and Silty CLAY (A-7-6), Moist to Wet
Note: A-7-6 Material is Highly Plastic

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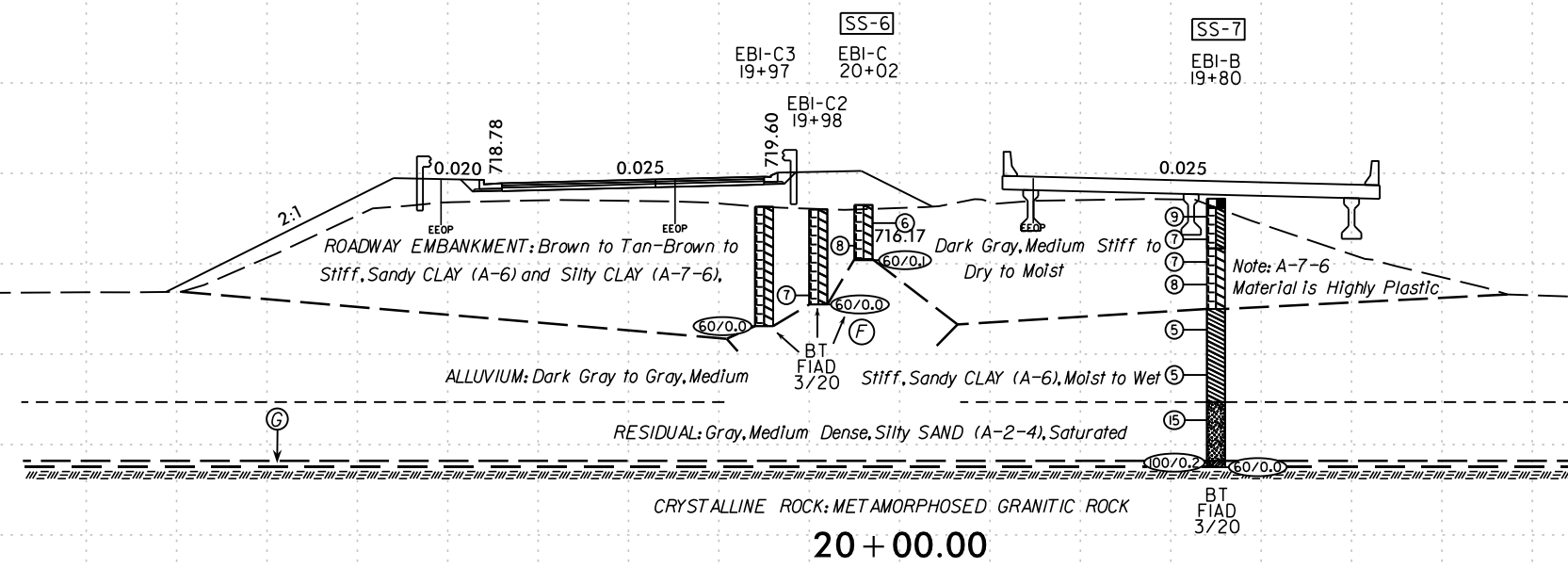
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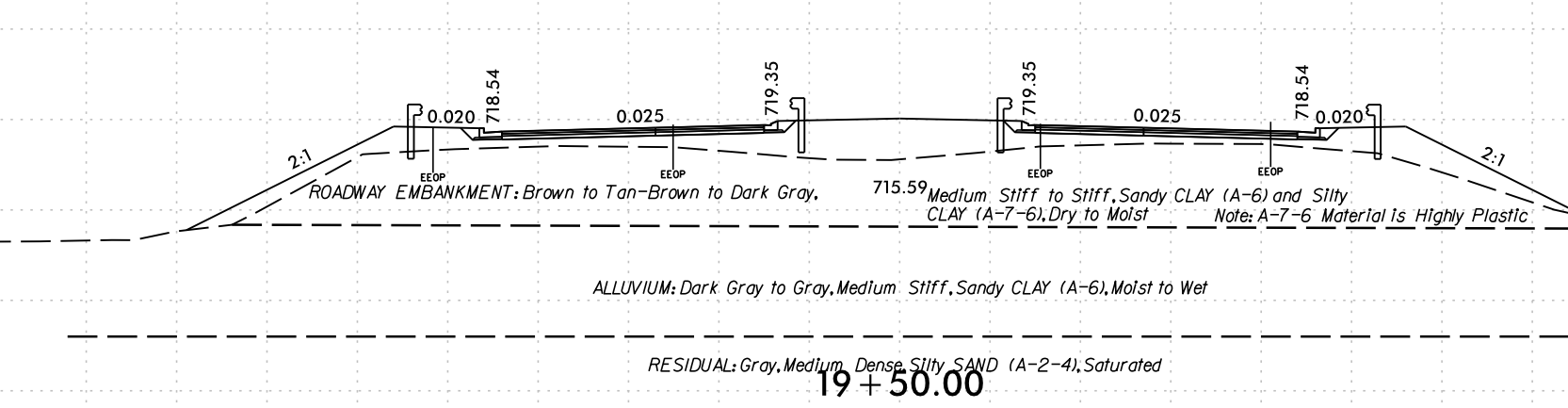
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| SOIL TEST RESULTS | | | | | | | | | | | | | | | |
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| SAMPLE NO. | OFFSET | STATION | DEPTH INTERVAL | AASHTO CLASS. | LL | P.I. | % BY WEIGHT | | | | % PASSING (SIEVES) | | | MOISTURE | ORGANIC |
| | | | | | | | C SAND | F SAND | SILT | CLAY | 10 | 40 | 200 | | |
| SS-6 | 4' LT | 20+02 | 1.0-2.5 | A-7-6(16) | 49 | 27 | 17 | 21 | 44 | 18 | 98 | 89 | 65 | 24.3 | - |
| SS-7 | 35' RT | 19+80 | 13.5-15.0 | A-6(8) | 28 | 13 | 1 | 29 | 55 | 15 | 100 | 100 | 81 | 21.6 | - |

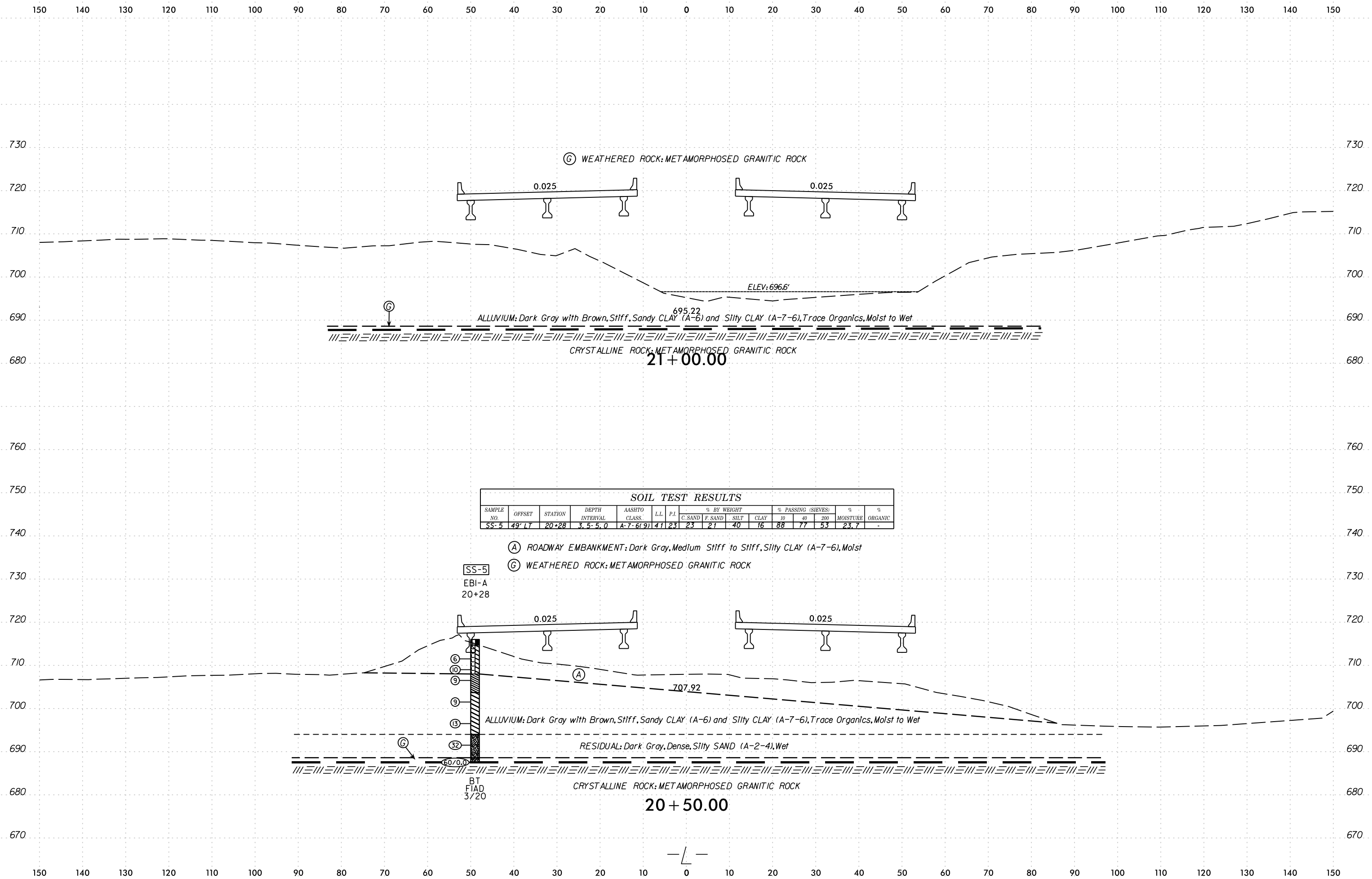
- (F) ROADWAY EMBANKMENT: RIP RAP /BOULDERS
- (G) WEATHERED ROCK: METAMORPHOSED GRANITIC ROCK



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| SOIL TEST RESULTS | | | | | | | | | | | | | | | |
|-------------------|---------|---------|----------------|--------------|----|------|-------------|--------|------|------|--------------------|----|-----|----------|---------|
| SAMPLE NO. | OFFSET | STATION | DEPTH INTERVAL | AASHTO CLASS | LL | P.I. | % BY WEIGHT | | | | % PASSING (SIEVES) | | | MOISTURE | ORGANIC |
| | | | | | | | C SAND | F SAND | SILT | CLAY | 10 | 40 | 200 | | |
| SS-10 | 145' LT | 22+00 | 8.5'-10.0' | A-6(4) | 33 | 12 | 18 | 30 | 44 | 8 | 92 | 84 | 54 | 21.8 | - |

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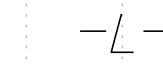
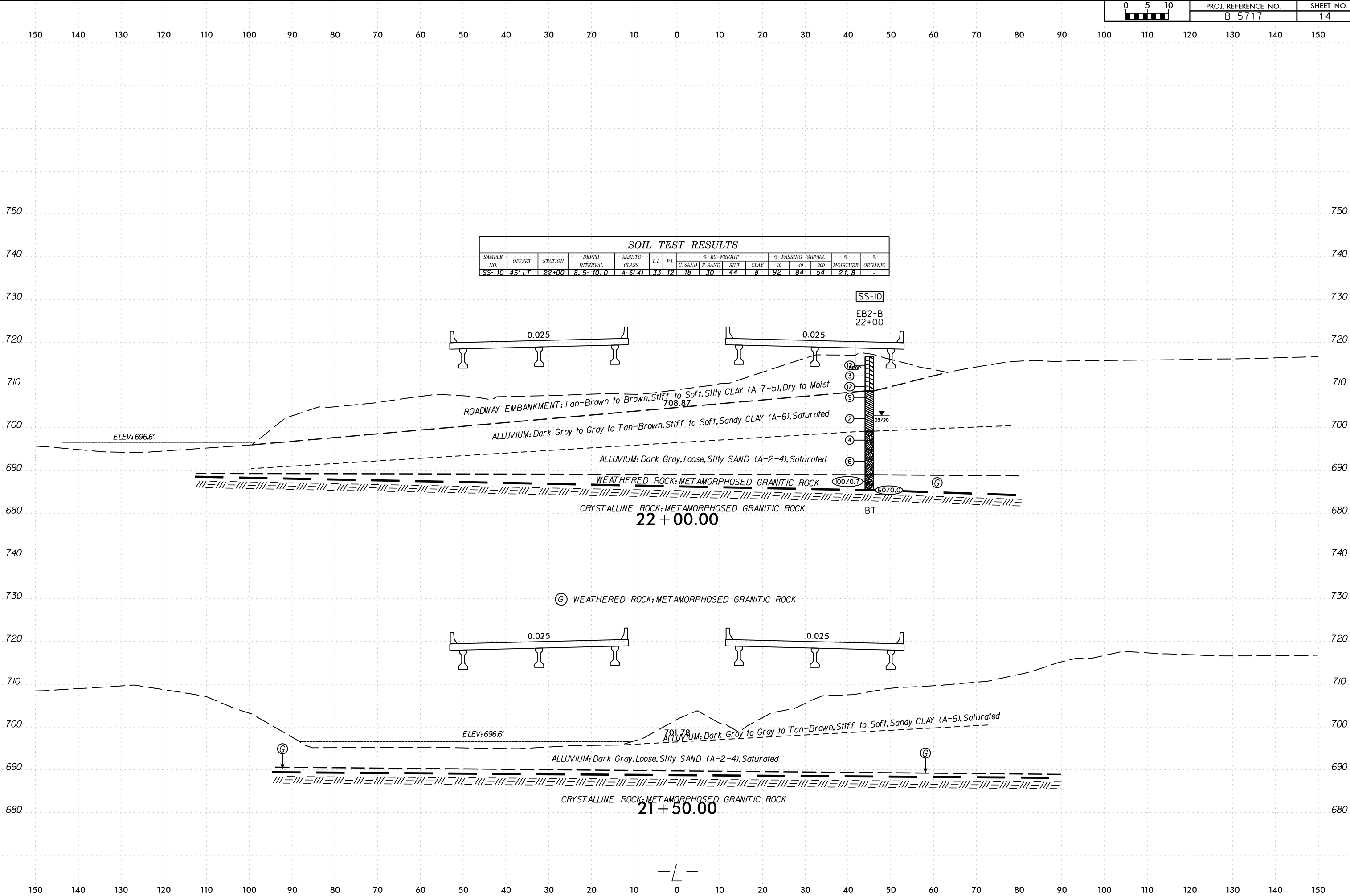
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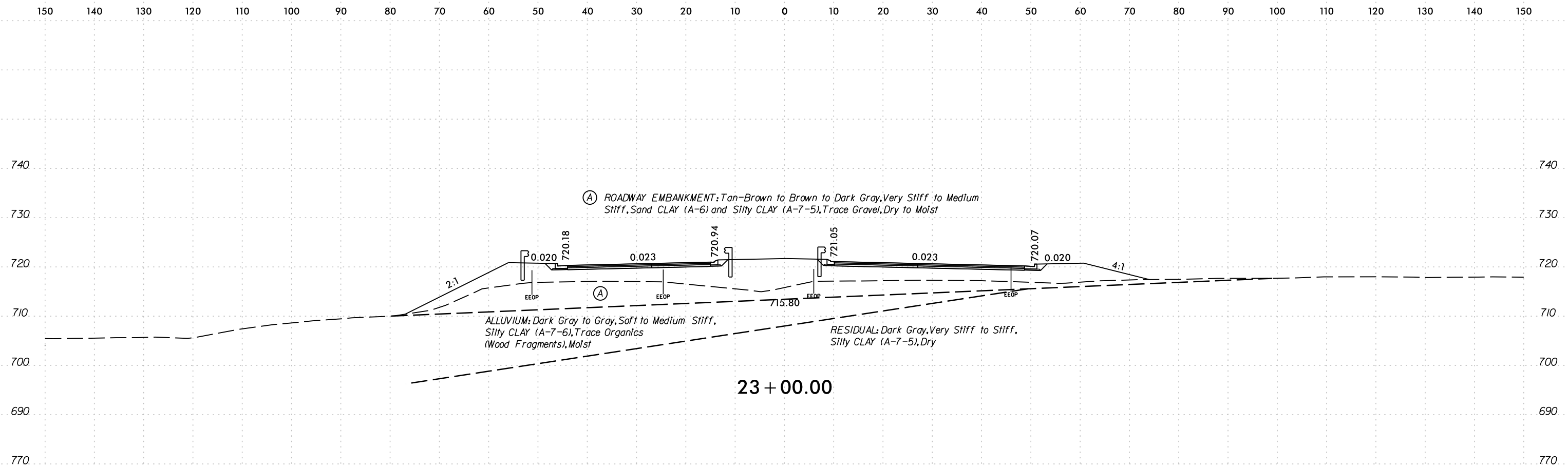
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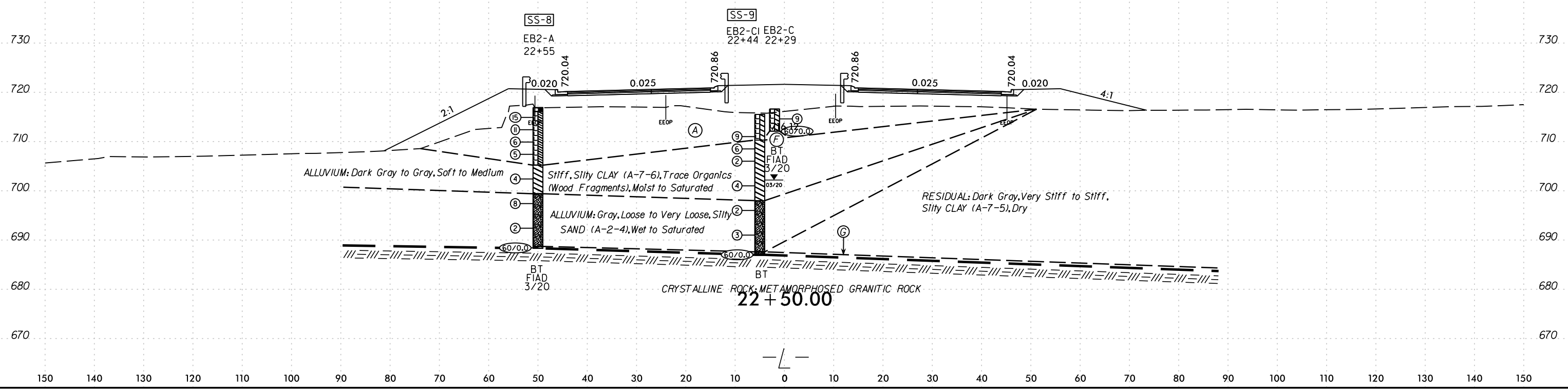
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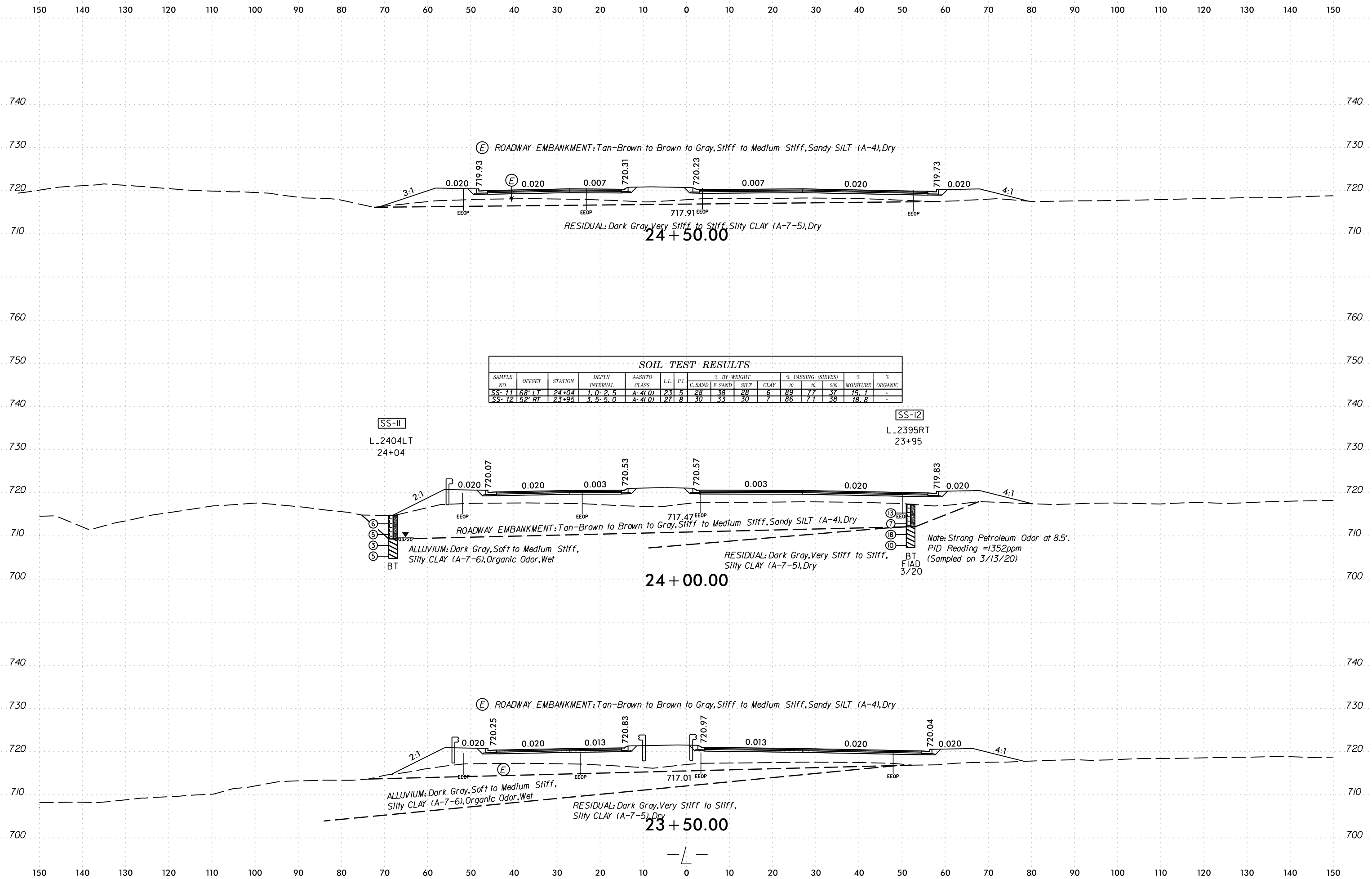




| SOIL TEST RESULTS | | | | | | | | | | | | | | | |
|-------------------|--------|---------|----------------|---------------|----|------|-------------|---------|------|------|--------------------|----|-----|------------|-----------|
| SAMPLE NO. | OFFSET | STATION | DEPTH INTERVAL | AASHTO CLASS. | LL | P.I. | % BY WEIGHT | | | | % PASSING (SIEVES) | | | % MOISTURE | % ORGANIC |
| | | | | | | | C. SAND | F. SAND | SILT | CLAY | 10 | 40 | 200 | | |
| SS-8 | 50' LT | 20+55 | 6.0-7.5 | A-6(2) | 28 | 12 | 25 | 31 | 35 | 9 | 92 | 81 | 46 | 17.2 | - |
| SS-9 | 5' LT | 20+44 | 18.5-20.0 | A-2-4(0) | NP | NP | 50 | 34 | 7 | 9 | 97 | 77 | 18 | - | - |

- (A) ROADWAY EMBANKMENT: Tan-Brown to Brown to Dark Gray, Very Stiff to Medium Stiff, Sand CLAY (A-6) and Silty CLAY (A-7-5), Trace Gravel, Dry to Moist
- (F) ROADWAY EMBANKMENT: RIP RAP / BOULDERS
- (G) WEATHERED ROCK: METAMORPHOSED GRANITIC ROCK



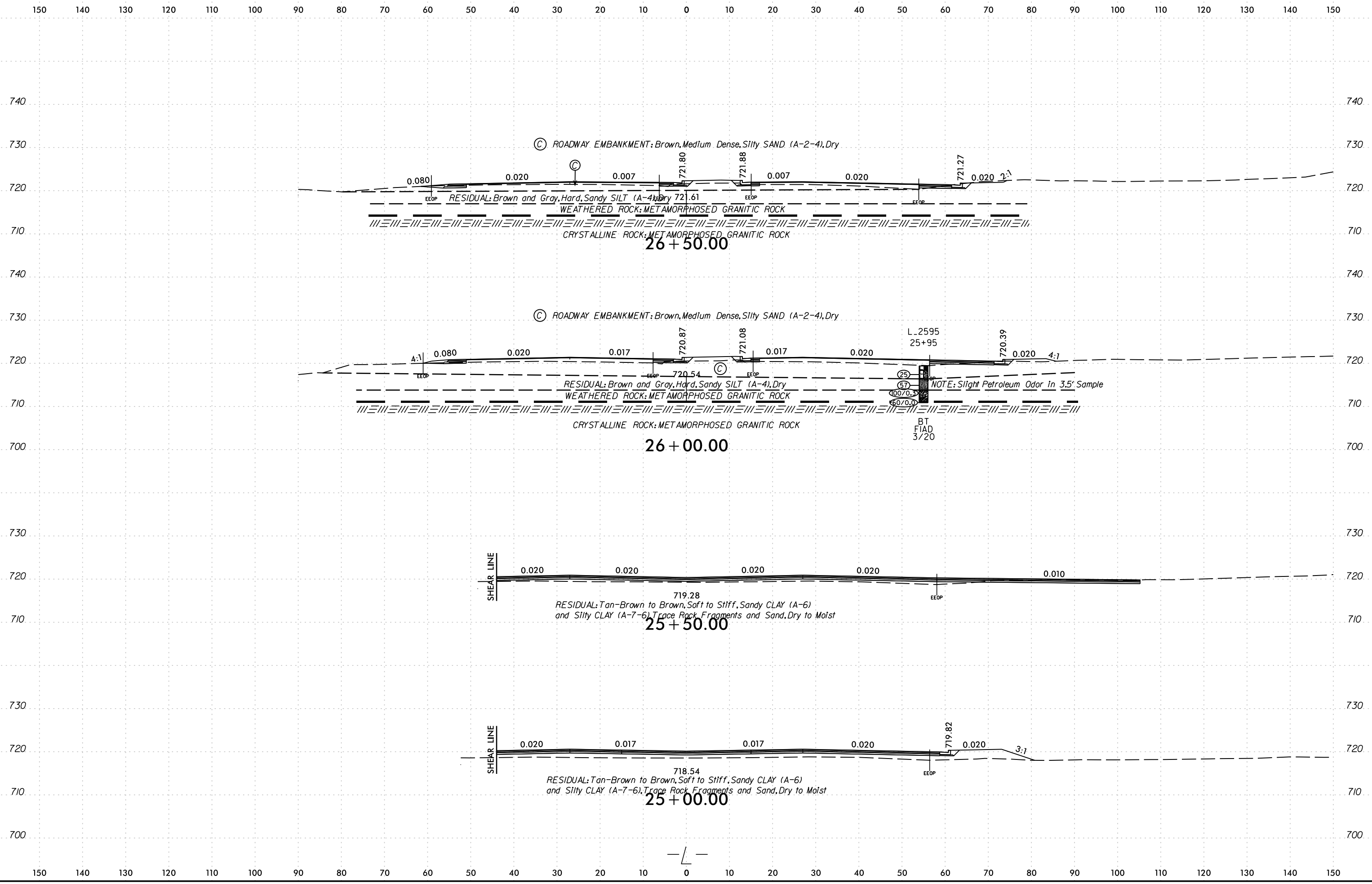


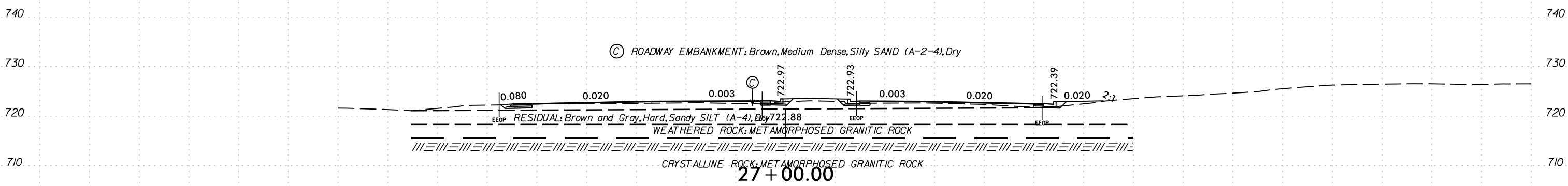
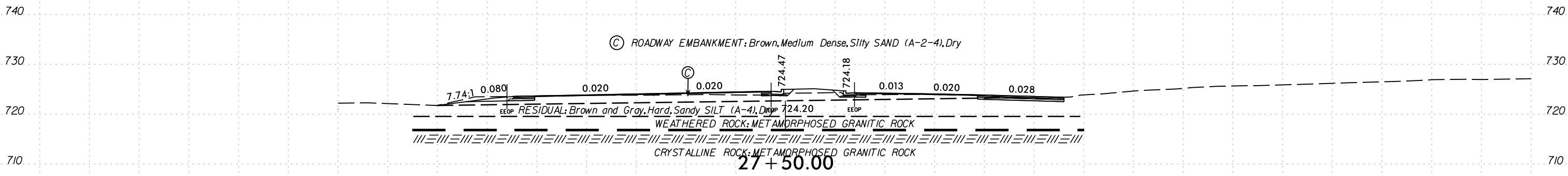
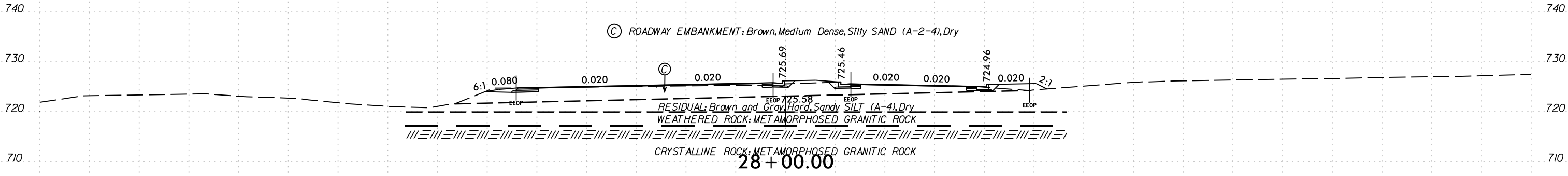
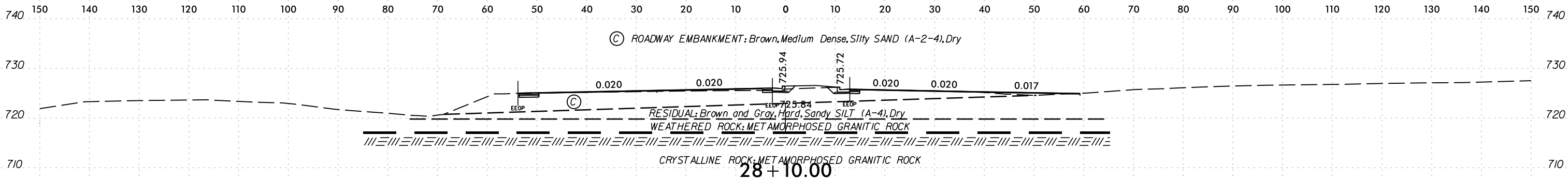
SOIL TEST RESULTS

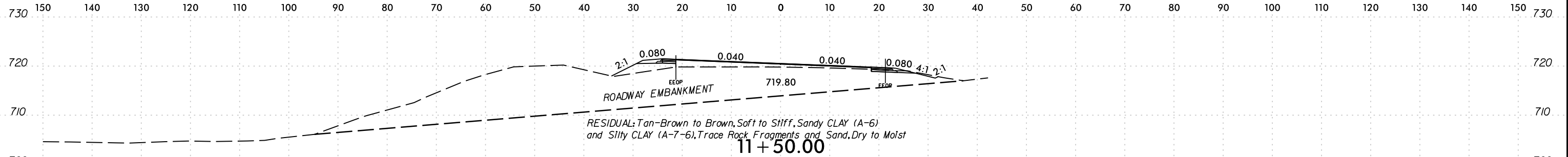
| SAMPLE NO. | OFFSET | STATION | DEPTH INTERVAL | AASHTO CLASS. | L.L. | P.L. | % BY WEIGHT | | | | % PASSING (SIEVES) | | | % MOISTURE | % ORGANIC |
|------------|--------|---------|----------------|---------------|------|------|-------------|--------|------|------|--------------------|----|-----|------------|-----------|
| | | | | | | | C SAND | F SAND | SILT | CLAY | 10 | 40 | 200 | | |
| SS-11 | 68' LT | 24+04 | 1.0-2.5 | A-4(0) | 23 | 5 | 28 | 38 | 28 | 6 | 89 | 77 | 37 | 15.1 | - |
| SS-12 | 52' RT | 23+95 | 3.5-5.0 | A-4(0) | 27 | 8 | 30 | 33 | 30 | 7 | 86 | 71 | 38 | 18.8 | - |

5/17/2020 7:39:00 AM
 C:\Users\rpastro\OneDrive\Documents\CADD\GEO\TECH\SSC\B5717_Geo_xpl.L.dgn
 rpastro

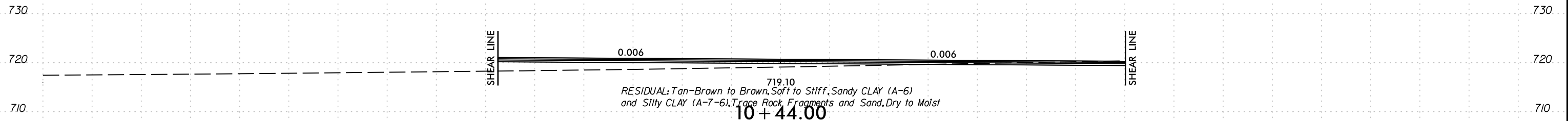
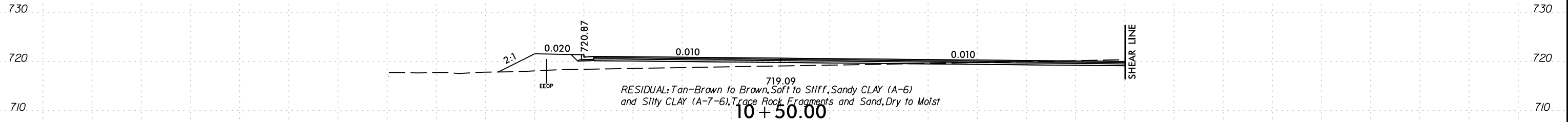
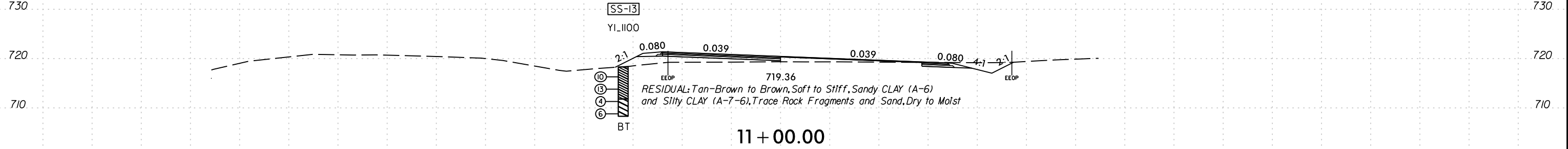
Note: Strong Petroleum Odor at 8.5'.
 PID Reading =1352ppm
 (Sampled on 3/13/20)





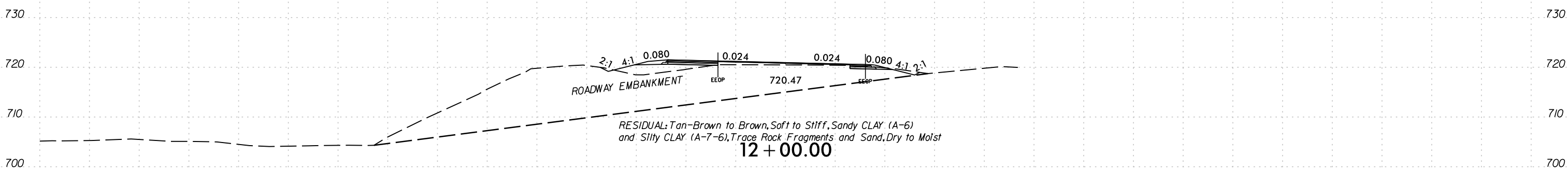
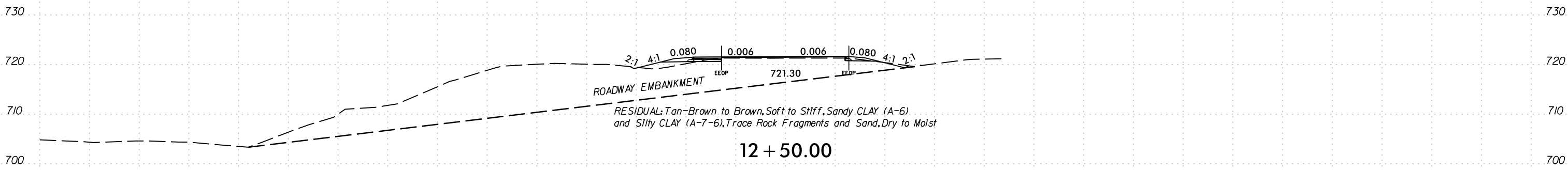
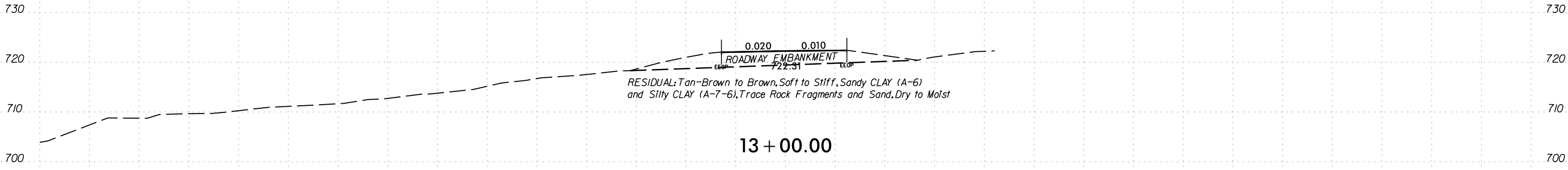


| SOIL TEST RESULTS | | | | | | | | | | | | | | | |
|-------------------|--------|---------|----------------|---------------|----|------|-------------|---------|------|------|--------------------|----|-----|------------|-----------|
| SAMPLE NO. | OFFSET | STATION | DEPTH INTERVAL | AASHTO CLASS. | LL | P.I. | % BY WEIGHT | | | | % PASSING (SIEVES) | | | % MOISTURE | % ORGANIC |
| | | | | | | | C. SAND | F. SAND | SILT | CLAY | 10 | 40 | 200 | | |
| SS-13 | 32' LT | 11+00 | 1.0-2.5 | A-6(1) | 30 | 12 | 31 | 28 | 34 | 7 | 83 | 67 | 39 | 12.6 | - |



-Y/-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



-Y/-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
APPENDIX A
LABORATORY TEST RESULTS SUMMARY

REFERENCE: B-5717

PROJECT: 45673



ESP ASSOCIATES, INC.
7011 ALBERT PICK RD
SUITE E
GREENSBORO, NC 27409
FIRM # C-0587
WWW.ESPASSOCIATES.COM

SOILS LABORATORY TESTS RESULTS

WBS NO.: 45673.1.2

TIP NO.: B-5717

COUNTY: Guilford

SITE DESCRIPTION: Replace Bridges 109 and 121 on SR 4240 (E. Gate City Blvd.) over South Buffalo Creek

| BORING NO. | SAMPLE NO. | BORING LOCATION | DEPTH INTERVAL (FT) | AASHTO CLASS | N | L.L | P.I. | % BY WEIGHT | | | | % PASSING SIEVES | | | % MOISTURE | % ORGANIC |
|------------|------------|------------------------|---------------------|--------------|----|-----|------|-------------|---------|------|------|------------------|-----|-----|------------|-----------|
| | | | | | | | | CSE. SAND | F. SAND | SILT | CLAY | 10 | 40 | 200 | | |
| L_1293 | S-1 | -L- STA. 12+93, 83' LT | 0.2-4.0 | A-6 (2) | - | 26 | 11 | 25 | 31 | 33 | 11 | 96 | 83 | 48 | 14.8 | - |
| L_1491 | SS-1 | -L- STA. 14+91, 54' LT | 1.0-2.5 | A-7-6 (10) | 11 | 41 | 19 | 14 | 28 | 44 | 14 | 97 | 91 | 62 | 24.2 | - |
| L_1600 | SS-2 | -L- STA. 16+00, 2' LT | 8.5-10.0 | A-6 (2) | 4 | 26 | 13 | 26 | 31 | 31 | 12 | 96 | 83 | 46 | 19.0 | - |
| L_1690HA | S-2 | -L- STA. 16+90, 82' LT | 3.6-5.3 | A-6 (9) | - | 29 | 14 | 1 | 30 | 53 | 16 | 100 | 99 | 80 | 21.4 | - |
| L_1700LT | SS-3 | -L- STA. 17+00, 56' LT | 3.5-5.0 | A-7-6 (13) | 9 | 48 | 21 | 18 | 20 | 44 | 18 | 98 | 89 | 66 | 27.5 | - |
| L_1700RT | SS-4 | -L- STA. 17+00, 75' RT | 8.5-10.0 | A-7-6 (28) | 5 | 46 | 27 | 1 | 7 | 68 | 24 | 100 | 100 | 96 | 31.3 | - |
| EB1-A | SS-5 | -L- STA. 20+28, 49' LT | 3.5-5.0 | A-7-6 (9) | 6 | 41 | 23 | 23 | 21 | 40 | 16 | 88 | 77 | 53 | 23.7 | - |
| EB1-C | SS-6 | -L- STA. 20+02, 4' LT | 1.0-2.5 | A-7-6 (16) | 6 | 49 | 27 | 17 | 21 | 44 | 18 | 98 | 89 | 65 | 24.3 | - |
| EB1-B | SS-7 | -L- STA. 19+80, 35' RT | 13.5-15.0 | A-6 (8) | 5 | 28 | 13 | 1 | 29 | 55 | 15 | 100 | 100 | 81 | 21.6 | - |
| EB2-A | SS-8 | -L- STA. 22+55, 50' LT | 6.0-7.5 | A-6 (2) | 6 | 28 | 12 | 25 | 31 | 35 | 9 | 92 | 81 | 46 | 17.2 | - |
| EB2-C1 | SS-9 | -L- STA. 22+44, 5' LT | 18.5-20.0 | A-2-4 (0) | 2 | NP | NP | 50 | 34 | 7 | 9 | 97 | 77 | 18 | - | - |
| EB2-B | SS-10 | -L- STA. 22+00, 45' RT | 8.5-10.0 | A-6 (4) | 9 | 33 | 12 | 18 | 30 | 44 | 8 | 92 | 84 | 54 | 21.8 | - |
| L_2404LT | SS-11 | -L- STA. 24+04, 68' LT | 1.0-2.5 | A-4 (0) | 6 | 23 | 5 | 28 | 38 | 28 | 6 | 89 | 77 | 37 | 15.1 | - |
| L_2395RT | SS-12 | -L- STA. 23+95, 52' RT | 3.5-5.0 | A-4 (0) | 7 | 27 | 8 | 30 | 33 | 30 | 7 | 86 | 71 | 38 | 18.8 | - |
| Y1_1100 | SS-13 | -Y1 STA. 11+00, 32' LT | 1.0-2.5 | A-6 (1) | 10 | 30 | 12 | 31 | 28 | 34 | 7 | 83 | 67 | 39 | 12.6 | - |

Jony Dummar
 Certification No. 121-01-1108

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
APPENDIX B
BORING LOGS

REFERENCE: B-5717

PROJECT: 45673



ESP ASSOCIATES, INC.
7011 ALBERT PICK RD
SUITE E
GREENSBORO, NC 27409
FIRM # C-0587
WWW.ESPASSOCIATES.COM

GEOTECHNICAL BORING REPORT

BORE LOG

| WBS 45673.1.2 | | TIP B-5717 | | COUNTY GUILFORD | | GEOLOGIST Pastrana, C.R. | | | | | | | | | |
|--|-----------------|---------------------|------------|--------------------------|-------|--------------------------|-----------------|----|----|-----|-----------|-----|---------------------------|------------|--|
| SITE DESCRIPTION Replace Bridges 109 and 121 on SR 4240 (E. Gate City Blvd.) over South Buffalo Creek | | | | | | | GROUND WTR (ft) | | | | | | | | |
| BORING NO. EB1-C1 | | STATION 19+97 | | OFFSET 4 ft LT | | ALIGNMENT -L- | | | | | | | | | |
| COLLAR ELEV. 716.1 ft | | TOTAL DEPTH 6.2 ft | | NORTHING 839,119 | | EASTING 1,781,368 | | | | | | | | | |
| DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 90% 11/19/2018 | | | | DRILL METHOD H.S. Augers | | HAMMER TYPE Automatic | | | | | | | | | |
| DRILLER Gonzales, L. | | START DATE 03/10/20 | | COMP. DATE 03/10/20 | | SURFACE WATER DEPTH N/A | | | | | | | | | |
| ELEV (ft) | DRIVE ELEV (ft) | DEPTH (ft) | BLOW COUNT | | | BLOWS PER FOOT | | | | | SAMP. NO. | LOG | SOIL AND ROCK DESCRIPTION | | |
| | | | 0.5ft | 0.5ft | 0.5ft | 0 | 25 | 50 | 75 | 100 | | | ELEV. (ft) | DEPTH (ft) | |
| 720 | | | | | | | | | | | | | | | |
| 715 | | | | | | | | | | | | | | 716.1 | GROUND SURFACE 0.0 |
| | | | | | | | | | | | | | | | ROADWAY EMBANKMENT Brown to Tan-Brown, Silty CLAY, Highly Plastic |
| 710 | 709.9 | 6.2 | | | | | | | | | | | | 709.9 | 6.2 |
| | | | | | | | | | | | | | | | Boring Terminated with Standard Penetration Test Refusal at Elevation 709.9 ft on Rip Rap/Boulders |

NCDOT BORE DOUBLE B5717_GINT LOGS.GPJ NC_DOT.GDT 4/8/20