

REFERENCE: HL-0033

PROJECT: 36249

SEE SHEET 3 FOR PLAN SHEET LAYOUT  
AT TIME OF INVESTIGATION

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

ROADWAY  
SUBSURFACE INVESTIGATION

COUNTY WAKE  
PROJECT DESCRIPTION EXTENSION OF AIRPORT  
BOULEVARD (SR 3I26) FROM GARDEN SQUARE  
LANE TO CHURCH ST (SR I637) IN MORRISVILLE

INVENTORY

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-------|-----------------------------|-----------|--------------|
| N.C.  | HL-0033                     | 1         | 26           |

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 (9I9) 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              |
| <u>SUMMIT SERVICES</u> |
| <u>GOODNIGHT, D.J.</u> |
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INVESTIGATED BY FALCON ENG.  
DRAWN BY HILL, M.J.  
CHECKED BY HUNSBERGER, W.S.  
SUBMITTED BY FALCON ENG.  
DATE NOVEMBER 2025



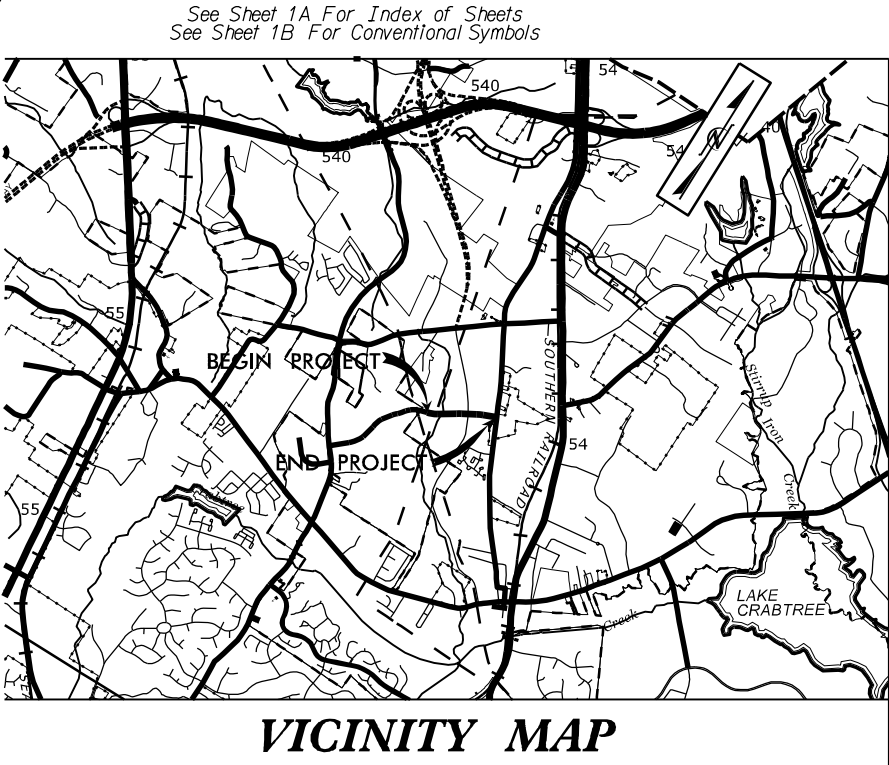
Signed by: W. Scott Hunsberger 11/10/2025  
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SIGNATURE DATE

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i> |  |  |  |  |  |  |  |  |  | WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.<br>UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.<br>GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES. |  |  |  |  |  |  |  |  |  | HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 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:<br><br>WEATHERED ROCK (WR)<br><br>CRYSTALLINE ROCK (CR)<br><br>NON-CRYSTALLINE ROCK (NCR)<br><br>COASTAL PLAIN SEDIMENTARY ROCK (CP)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |  |  |  |  |  |  |  |  | ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.<br>AQUIFER - A WATER BEARING FORMATION OR STRATA.<br>ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.<br>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.<br>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.<br>CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.<br>COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.<br>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.<br>DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.<br>DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.<br>DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.<br>FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.<br>FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.<br>FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.<br>FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.<br>FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.<br>JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.<br>LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.<br>LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.<br>MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.<br>PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.<br>RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.<br>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.<br>SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.<br>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.<br>SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.<br>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.<br>STRATA CORE RECOVERY (SCRC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.<br>STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.<br>TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER. |  |  |  |  |  |  |  |  |  |
| SOIL LEGEND AND AASHTO CLASSIFICATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |  |  |  |  |  | MINERALOGICAL COMPOSITION                                                                                                                                                                                                                                         |  |  |  |  |  |  |  |  |  | WEATHERING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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| GENERAL CLASS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |  |  |  |  |  | MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.                                                                                                                               |  |  |  |  |  |  |  |  |  | FRESH<br>VERY SLIGHT (V SL.)<br>SLIGHT (SL.)<br>MODERATE (MOD.)<br>MODERATELY SEVERE (MOD. SEV.)<br>SEVERE (SEV.)<br>VERY SEVERE (V SEV.)<br>COMPLETE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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| SILT-CLAY MATERIALS (> 35% PASSING #200)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |  |  |  |  |  |  |  | COMPRESSIBILITY                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  | ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.<br>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.<br>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.<br>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.<br>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. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i><br>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. <i>IF TESTED, WOULD YIELD SPT N VALUES &gt; 100 BPF</i><br>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. <i>IF TESTED, WOULD YIELD SPT N VALUES &lt; 100 BPF</i><br>ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE. |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |  |  |  |  |  |  |
| GENERAL CLASS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |  |  |  |  |  | PERCENTAGE OF MATERIAL                                                                                                                                                                                                                                            |  |  |  |  |  |  |  |  |  | ROCK HARDNESS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             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| GROUP CLASS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |  |  |  |  |  |  | GROUND WATER                                                                                                                                                                                                                                                      |  |  |  |  |  |  |  |  |  | VERY HARD<br>HARD<br>MODERATELY HARD<br>MEDIUM HARD<br>SOFT<br>VERY SOFT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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| SYMBOL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |  |  |  |  |  |  | ORGANIC MATERIAL<br>TRACE OF ORGANIC MATTER<br>LITTLE ORGANIC MATTER<br>MODERATELY ORGANIC<br>HIGHLY ORGANIC                                                                                                                                                      |  |  |  |  |  |  |  |  |  | CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.<br>CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.<br>CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.<br>CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.<br>CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.<br>CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGER NAIL.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |  |  |  |  |  |  |
| % PASSING #10 #40 #200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |  |  |  |  |  |  | MISCELLANEOUS SYMBOLS                                                                                                                                                                                                                                             |  |  |  |  |  |  |  |  |  | FRACTURE SPACING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| MATERIAL PASSING #40 LL PL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |  |  |  |  |  | RECOMMENDATION SYMBOLS                                                                                                                                                                                                                                            |  |  |  |  |  |  |  |  |  | BEDDING                                          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| GROUP INDEX                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |  |  |  |  |  | ABBREVIATIONS                                                                                                                                                                                                                                                     |  |  |  |  |  |  |  |  |  | INDURATION                                       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| USUAL TYPES OF MAJOR MATERIALS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |  |  |  |  |  | EQUIPMENT USED ON SUBJECT PROJECT                                                                                                                                                                                                                                 |  |  |  |  |  |  |  |  |  | FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |  |  |  |  |  | ADVANCING TOOLS:                                                                                                                                                                                                                                                  |  |  |  |  |  |  |  |  |  | RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.<br>GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.<br>GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.<br>SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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| PRIMARY SOIL TYPE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |  |  |  |  |  |  |  | CLAY BITS<br>6" CONTINUOUS FLIGHT AUGER<br>8" HOLLOW AUGERS<br>HARD FACED FINGER BITS<br>TUNG.-CARBIDE INSERTS<br>CASING<br>TRICONE<br>TRICONE<br>CORE BIT                                                                                                        |  |  |  |  |  |  |  |  |  |                                                  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| COMPACTNESS OR CONSISTENCY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |  |  |  |  |  | VANE SHEAR TEST<br>PORTABLE MOIST                                                                                                                                                                                                                                 |  |  |  |  |  |  |  |  |  |                                                  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| RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |                                                  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| RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT <sup>2</sup> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |                                                  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| VERY LOOSE<br>LOOSE<br>MEDIUM DENSE<br>DENSE<br>VERY DENSE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |                                                  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| TEXTURE OR GRAIN SIZE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |                                                  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| GRAVEL (GR.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |                                                  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| COARSE SAND (CSE. 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| FINE SAND (F. 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| SILT (SL.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |                                                  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| GRAIN SIZE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |                                                  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| SOIL MOISTURE - CORRELATION OF TERMS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |                                                  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| SOIL MOISTURE SCALE (ATTERBERG LIMITS)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |                                                  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| FIELD MOISTURE DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |                                                  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| GUIDE FOR FIELD MOISTURE DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |                                                  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| LL - LIQUID LIMIT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |                                                  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| PL - PLASTIC LIMIT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |                                                  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| OM - OPTIMUM MOISTURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |                                                  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| SL - SHRINKAGE LIMIT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |                                                  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| PLASTICITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |                                                  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| NON PLASTIC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |                                                  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| SLIGHTLY PLASTIC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |                                                  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| MODERATELY PLASTIC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |                                                  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| HIGHLY PLASTIC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |                                                  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| COLOR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |                                                  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| DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                            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| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.   | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C.            | HL-0033                     | 3           | 26           |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION |              |
| 36249.4033      | N/A                         | PE          |              |
| 49618.2.1       | 3126001                     | R/W         |              |
| 49618.2.2       | N/A                         | UTIL        |              |
| 49618.3.1       | 3126001                     | CONST.      |              |
|                 |                             |             |              |
|                 |                             |             |              |
|                 |                             |             |              |



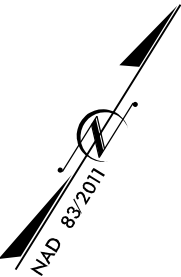
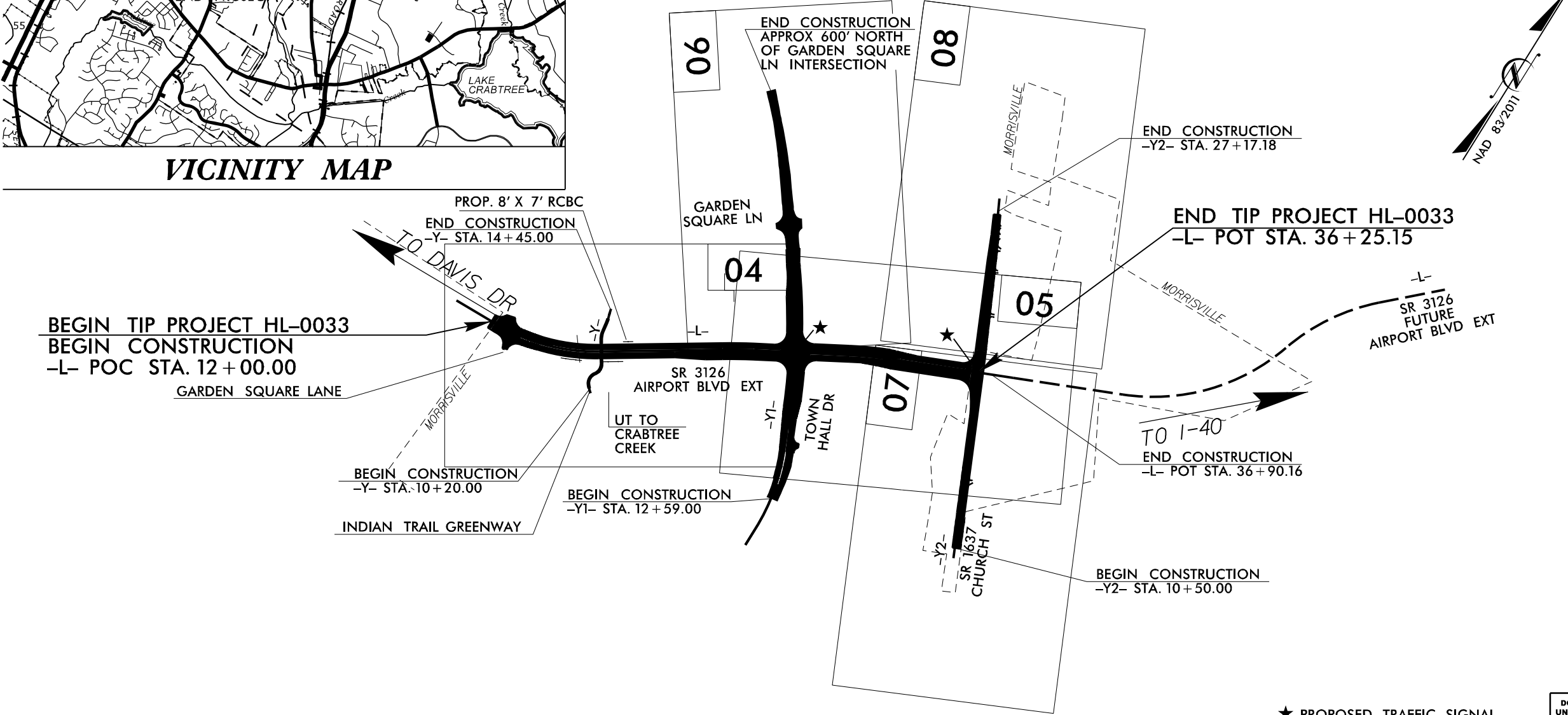
VICINITY MAP

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**WAKE COUNTY**

**LOCATION: EXTENSION OF AIRPORT BOULEVARD (SR 3126)  
FROM GARDEN SQUARE LANE TO CHURCH ST (SR 1637)  
IN MORRISVILLE. CONSTRUCT ROADWAY ON NEW LOCATION.**

**TYPE OF WORK: GRADING, DRAINAGE, CULVERT, SIGNALS, AND PAVING**



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

★ PROPOSED TRAFFIC SIGNAL

**GRAPHIC SCALES**

50 25 0 50 100  
PLANS

50 25 0 50 100  
PROFILE (HORIZONTAL)

10 5 0 10 20  
PROFILE (VERTICAL)

**DESIGN DATA**

ADT 2026 = 6,450  
ADT 2046 = 17,600  
K = 11 %  
D = 60 %  
T = 4 % \*  
V = 50 MPH  
\* TTST = 1% DUAL 3%  
FUNC CLASS = MINOR ARTERIAL  
REGIONAL TIER

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT HL-0033 = 0.459 Miles

TOTAL LENGTH TIP PROJECT HL-0033 = 0.459 Miles

Prepared In the Office of:

**Lochner**  
11 W. LOCHNER, INC.  
7440 PINE PLAZA, SUITE 202  
RALEIGH, NC 27617  
(919) 271-1711  
NC License Number P-30129

**vhb**  
VHB Engineering NC, P.C. (C-3705)  
940 Main Campus Drive, Suite 500  
Raleigh, NC 27606

2024 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
JANUARY 24, 2022

**LETTING DATE:**  
FEBRUARY 17, 2026

**BRIAN K. EASON, PE**  
PROJECT ENGINEER

**CHRISTINA Y. FITZGERALD, PE**  
PROJECT DESIGN ENGINEER

**KYRILLOS HELMY, EI**  
NCDOT CONTACT

**HYDRAULICS ENGINEER**

**ROADWAY DESIGN ENGINEER**

SIGNATURE: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

SEAL 20147  
ENGINEER  
FRANK F. FLEMING  
P.E.

SEAL 048043  
ENGINEER  
CHRISTINA Y. FITZGERALD  
P.E.

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION



## Roadway Subsurface Investigation Report - Inventory

**Extension of Airport Boulevard (SR 3126) From Garden Square  
Lane to Church St (SR 1637) in Morrisville  
Morrisville, North Carolina  
Project Reference No.: HL-0033  
Falcon Project No.: G20008.00**

**Prepared for:**  
LOCHNER  
2840 Plaza Place  
Raleigh, NC 27612

Submitted by:  
Falcon Engineering, Inc.  
1210 Trinity Road, Suite 110  
Cary, North Carolina 27513  
(919) 871-0800  
www.falconengineers.com

November 10, 2025

**PROJECT REFERENCE NO.:** HL-0033  
**COUNTY:** Wake  
**DESCRIPTION:** Extension of Airport Boulevard (SR 3126) From Garden Square Lane to Church St (SR 1637) in Morrisville

**SUBJECT:** Roadway Subsurface Investigation – Inventory

### PROJECT DESCRIPTION

This project consists of approximately 0.43 miles of proposed new roadway construction extending Airport Boulevard from the existing dead end just east of Garden Square lane to Church Street in Morrisville in Wake County. A new intersections will be constructed with Town Hall Drive. Tie-ins and minor improvements to Y-lines and small drives are also included at various locations. A new culvert will be constructed over a tributary to Crabtree Creek. The structure recommendations will be submitted under separate cover.

The investigation was conducted between July 20<sup>th</sup> and 23<sup>rd</sup>, 2021 in general accordance with our Scope and Fee Estimate for Geotechnical Investigation and Engineering Services. The information provided in this report is based solely on our site reconnaissance, soil test borings and laboratory test data, engineering evaluation of these data, and generally accepted soil and foundation engineering practices and principles.

A total of sixteen (16) Standard Penetration Test (SPT) and one (1) hand auger borings were drilled for the proposed roadway alignments. All mechanical borings were drilled using a CME-550X ATV mounted drill rig equipped with 2 ¼-inch inside diameter hollow-stem augers, and SPT testing was performed with an automatic hammer. Representative soil samples, collected with a split-barrel sampler were selected for laboratory testing to verify visual field classifications. In addition, one bulk sample was collected for standard Proctor compaction and California Bearing Ratio (CBR) testing. At four (4) locations along the existing roadway, existing pavements were cored, measured and Dual Mass Dynamic Cone Penetrometer (DCP) testing completed on the subgrade to correlate in-situ CBR values to depths of up to three feet below subgrade. The dual mass DCP used is manufactured by Kessler Soils Engineering Products, Inc. CBR values were estimated using software provided by the manufacturer which utilizes correlations established by the Army Corps of Engineers Waterways Experiment Station.





Portions of the following alignments, totaling approximately 0.9 miles were investigated. Other minor driveways are included on the project but improvements are not anticipated to be significant enough to warrant investigation.

| <u>Alignment</u>                  | <u>Station (ft)</u> |
|-----------------------------------|---------------------|
| -L- (Airport Boulevard Extension) | 13+60 to 36+25.47   |
| -Y1- (Town Hall Drive)            | 15+00 to 25+00      |
| -Y2- (Church Street)              | 10+50 to 27+00      |

AREAS OF SPECIAL GEOTECHNICAL INTEREST

- I. The following locations encountered groundwater within one foot of the existing ground surface. This may lead to issues at the time of construction:

| <u>Alignment</u> | <u>Station (ft)</u> |
|------------------|---------------------|
| -L-              | 16+03               |

- II. The following locations contain very soft to soft/very loose soils with an N-value less than 4 near the ground surface:

| <u>Alignment</u> | <u>Station (ft)</u> |
|------------------|---------------------|
| -L-              | 16+03               |
| -L-              | 19+90               |

- III. The following locations contain highly plastic soils with plasticity indices (PI) greater than 25 within 3 feet of proposed subgrade elevations:

| <u>Alignment</u> | <u>Station (ft)</u> |
|------------------|---------------------|
| -L-              | 25+80               |
| -L-              | 30+93               |
| -Y1-             | 23+91               |

PHYSIOGRAPHY AND GEOLOGY

According to the *Geologic Map of North Carolina* (1985), the site is located in the Triassic Basin geologic formation. The Triassic Basin was formed by the infilling of a Rift Basin along the Jonesboro Fault with upland sediments, and subsequent consolidation of these sediments into rock. Specifically, rocks at the site are noted as the Chatham Group **(TRc)**, consisting of conglomerate, fanglomerate, sandstone, and mudstone. This region of North Carolina is also known to be intruded by numerous dikes and sills of diabase, a form of crystalline, igneous rock formed when magma is forced up through or into the earth's crust.

Project topography is gently rolling, predominantly sloping down to the northwest. The project corridor is a wooded area surrounded by residential houses and two schools. The alignment crosses two small streams. Existing roadways in the immediate vicinity are constructed predominantly at grade.





SOIL PROPERTIES

A variety of soils were encountered along the project, including existing Triassic residual soils, weathered and non-crystalline rock.

Triassic Residual soils were encountered at the ground surface, or beneath topsoil throughout the project. These soils consist of moist to saturated, loose to very dense, silty sand (A-2-4) and stiff to hard, sandy silts and sandy and silty clays (A-4, A-6, A-7).

Weathered Rock (WR) is a very hard material with properties intermediate of soil and rock. WR is classified as having an N-value of greater than 100 blows per one foot. WR generally consisted of red and brown weathered mudstone and sandstone.

Non-Crystalline Rock (NCR), in the form of Triassic mudstone, was encountered beneath weathered rock at one location explored. NCR is classified as material that yields auger refusal or SPT refusal (blow count of 60/0.0 or 60/0.1 feet.)

GROUNDWATER PROPERTIES

Groundwater levels were measured at the time of boring completion, and in most cases after a waiting period of at least 24 hours. Borings drilled within and in close proximity to existing roadways, and within residential or commercial areas were backfilled immediately after completion due to safety considerations. Groundwater measurements were generally dry, with the exceptions of those areas noted above in the areas of special interest.

Two small creeks cross the project corridor at approximately -L- Sta. 16+42 and 18+81.

Detailed groundwater measurements are included in the attached subsurface profiles and cross sections, and noted areas of shallow groundwater are included in the Areas of Special Geotechnical Interest earlier in this report.

ADDITIONAL LABORATORY TESTING

The following bulk sample was obtained:

| <u>Sample</u> | <u>Location</u>     | <u>Depth (ft)</u> | <u>Test</u>                                |
|---------------|---------------------|-------------------|--------------------------------------------|
| BS-1          | 17+99, 58' RT, -Y1- | 1.0 – 8.5         | California Bearing Ratio, Standard Proctor |

Classification test results for the bulk sample is included in the subsurface profiles and cross sections and Standard Proctor and California Bearing Ratio (CBR) data is attached in the Appendix.

CLOSING

Falcon appreciates the opportunity to have provided our geotechnical engineering services for the above referenced project. If you have any questions concerning the contents of this report or need additional information, please do not hesitate to contact our office.

FALCON ENGINEERING, INC.

Report Prepared By:

Report Reviewed By:

W. Scott Hunsberger, PE  
Geotechnical Engineer

Jeremy R. Hamm, PE  
Geotechnical Engineering Manager





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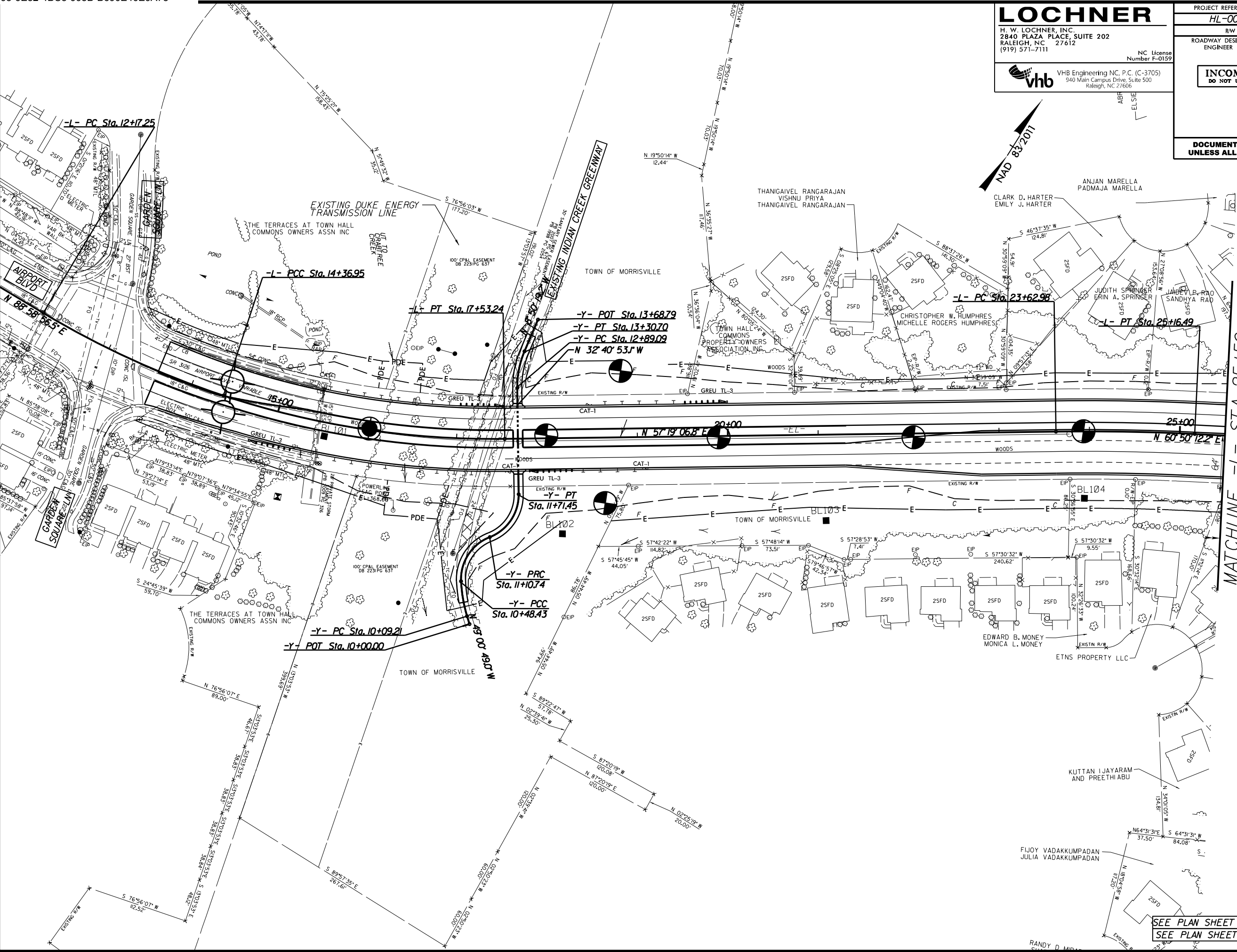
PROJECT REFERENCE NO. SHEET NO.

HL-0033 04

R/W SHEET NO.  
ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

**INCOMPLETE PLANS**  
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MATCHLINE -L- STA. 25+50  
SEE SHEET 5

SEE PLAN SHEET 10 FOR -Y- PROFILE  
SEE PLAN SHEET 9 FOR -L- PROFILE

REVISIONS

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NAD 83/2011



|                                                         |
|---------------------------------------------------------|
| SEE PLAN SHEET 9 FOR -L- PROFILE                        |
| SEE PLAN SHEET 10 FOR -Y1- PROFILE                      |
| SEE PLAN SHEET 11 FOR -Y2- PROFILE                      |
| ALL INTERSECTION RADII IS 60'<br>UNLESS OTHERWISE NOTED |

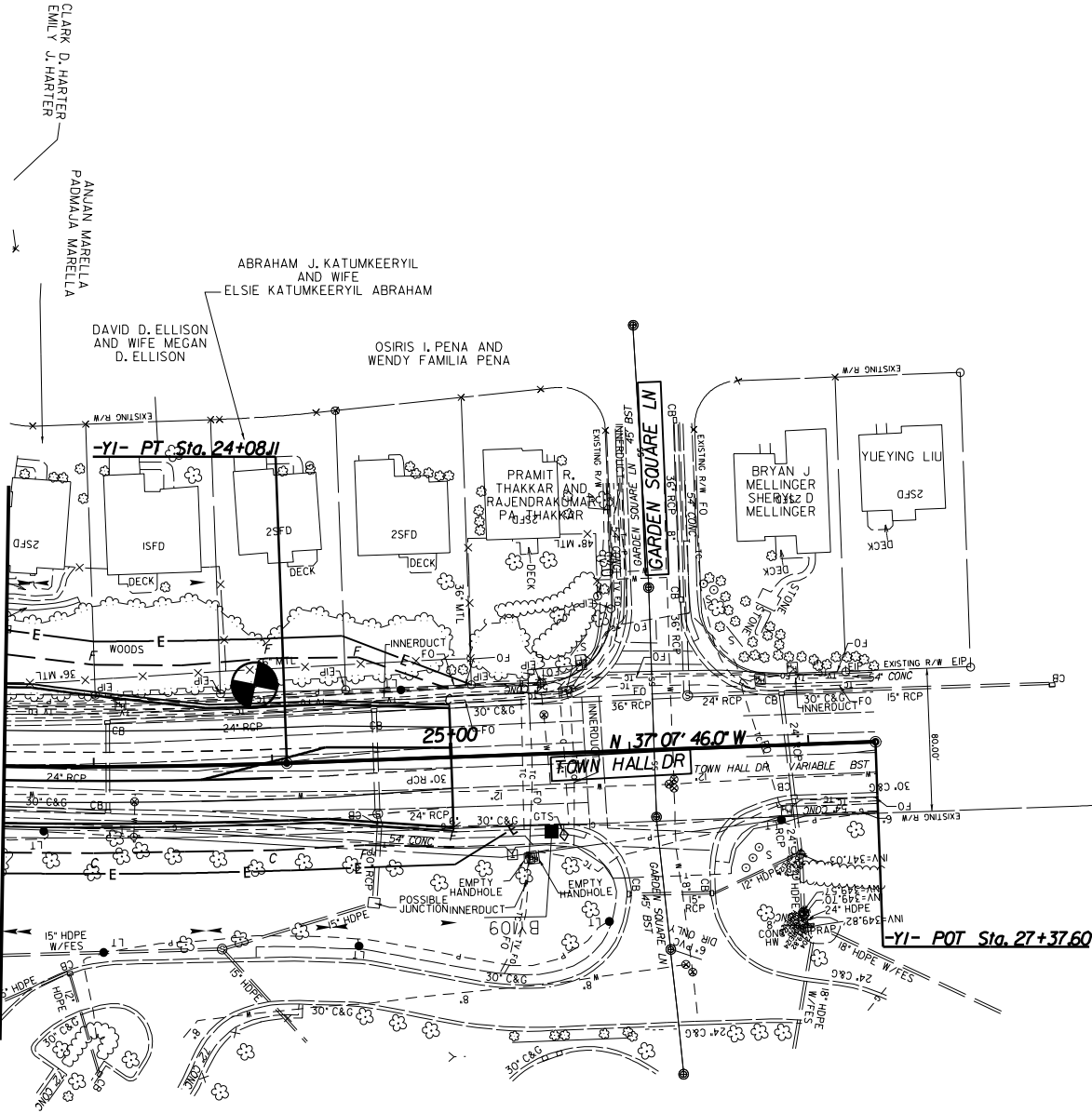


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REVISIONS

MATCHLINE -YI- STA. 22+50  
SEE SHEET 5



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HL-0033 06

R/W SHEET NO.

ROADWAY DESIGN  
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SEE PLAN SHEET 10 FOR -YI- PROFILE

8/17/99

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REVISIONS

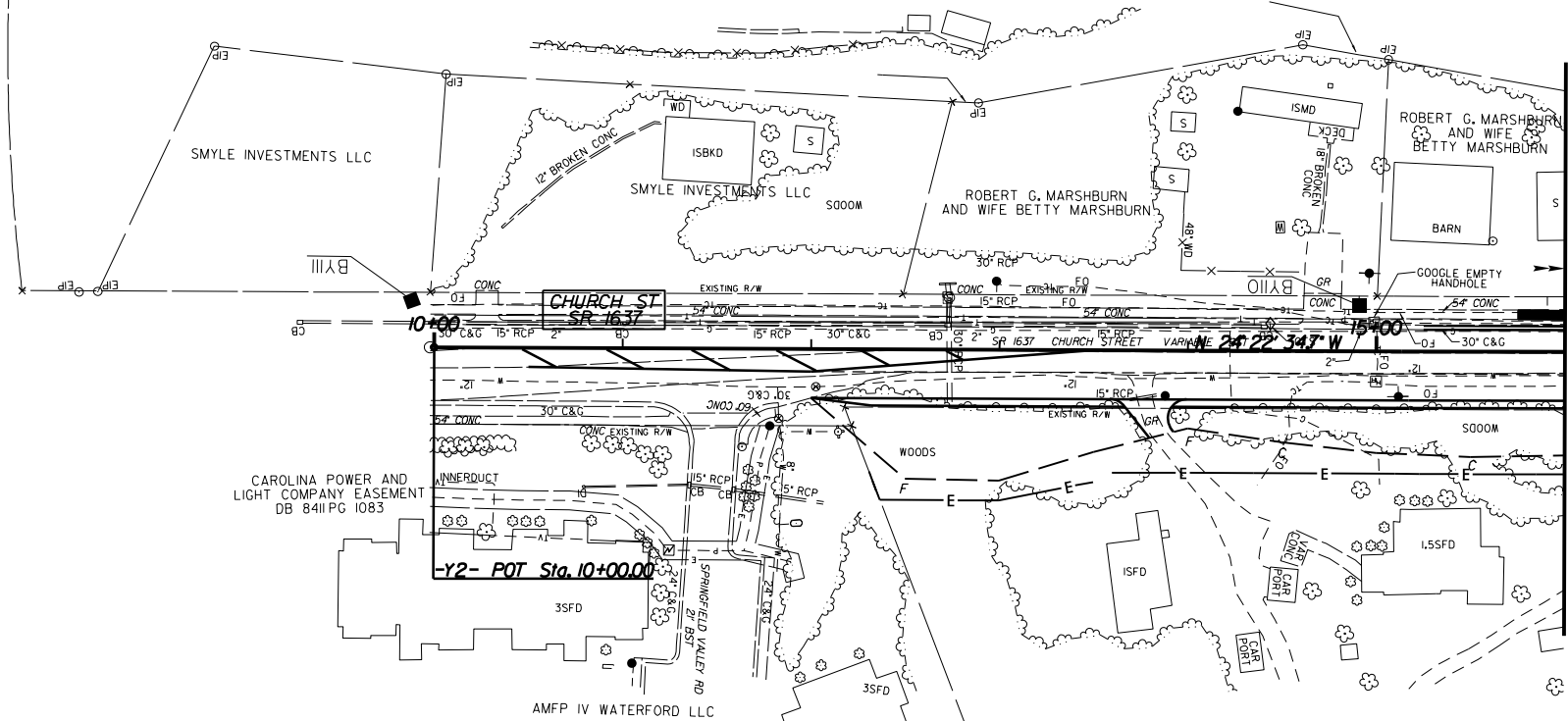
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|                                                                  |  |                        |  |
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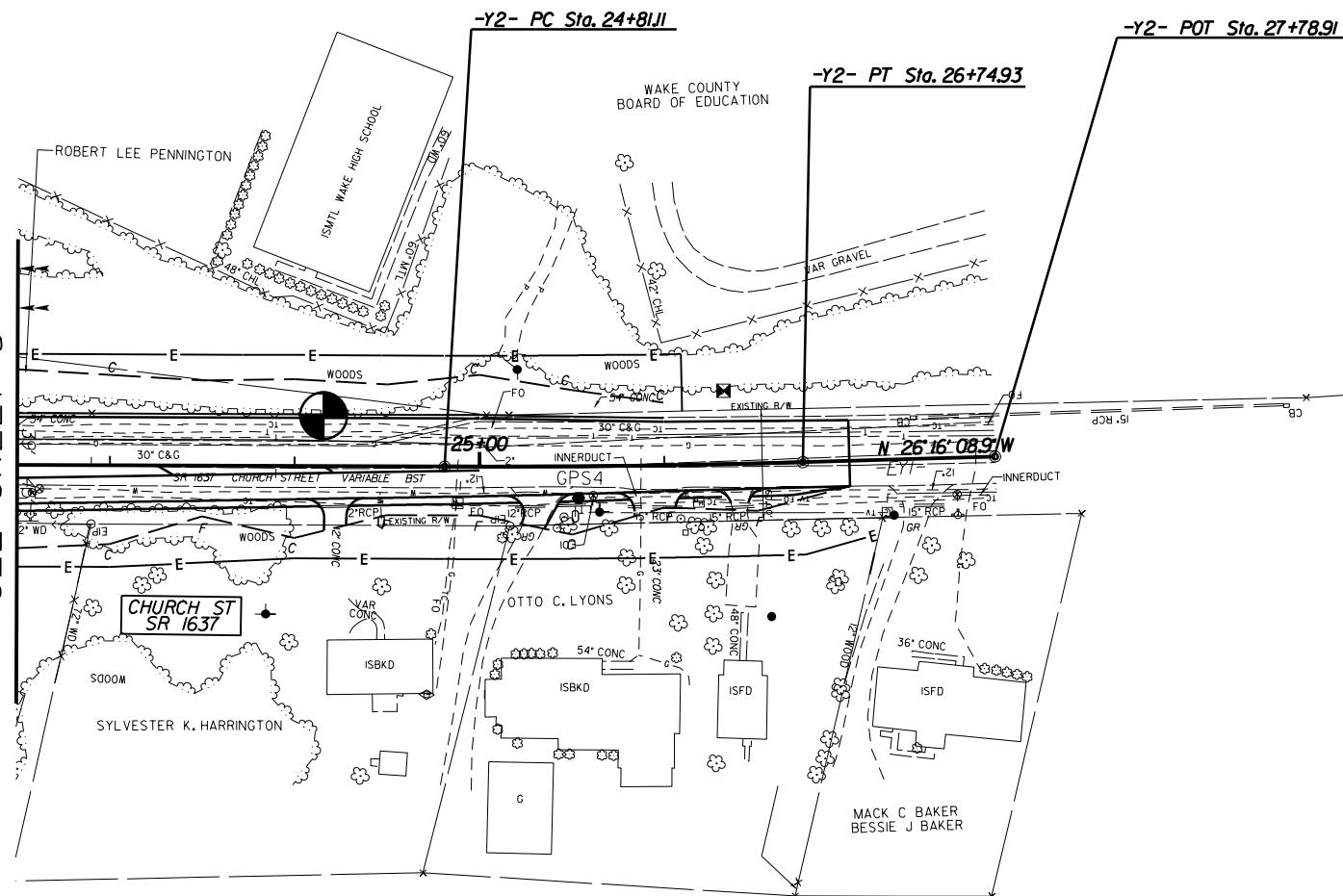


MATCHLINE -Y2- STA. 16+00  
SEE SHEET 5

NO BORINGS ON THIS SHEET

NOTE: ALL DRIVE RADII ARE 10'  
UNLESS OTHERWISE NOTED

SEE PLAN SHEET 11 FOR -Y2- PROFILE



NAD 83/2011

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RW SHEET NO.

ROADWAY DESIGN  
ENGINEER

**HYDRAULICS  
ENGINEER**

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NOTE: ALL DRIVE RADII ARE 10'  
UNLESS OTHERWISE NOTED

SEE PLAN SHEET II FOR -Y2- PROFILE



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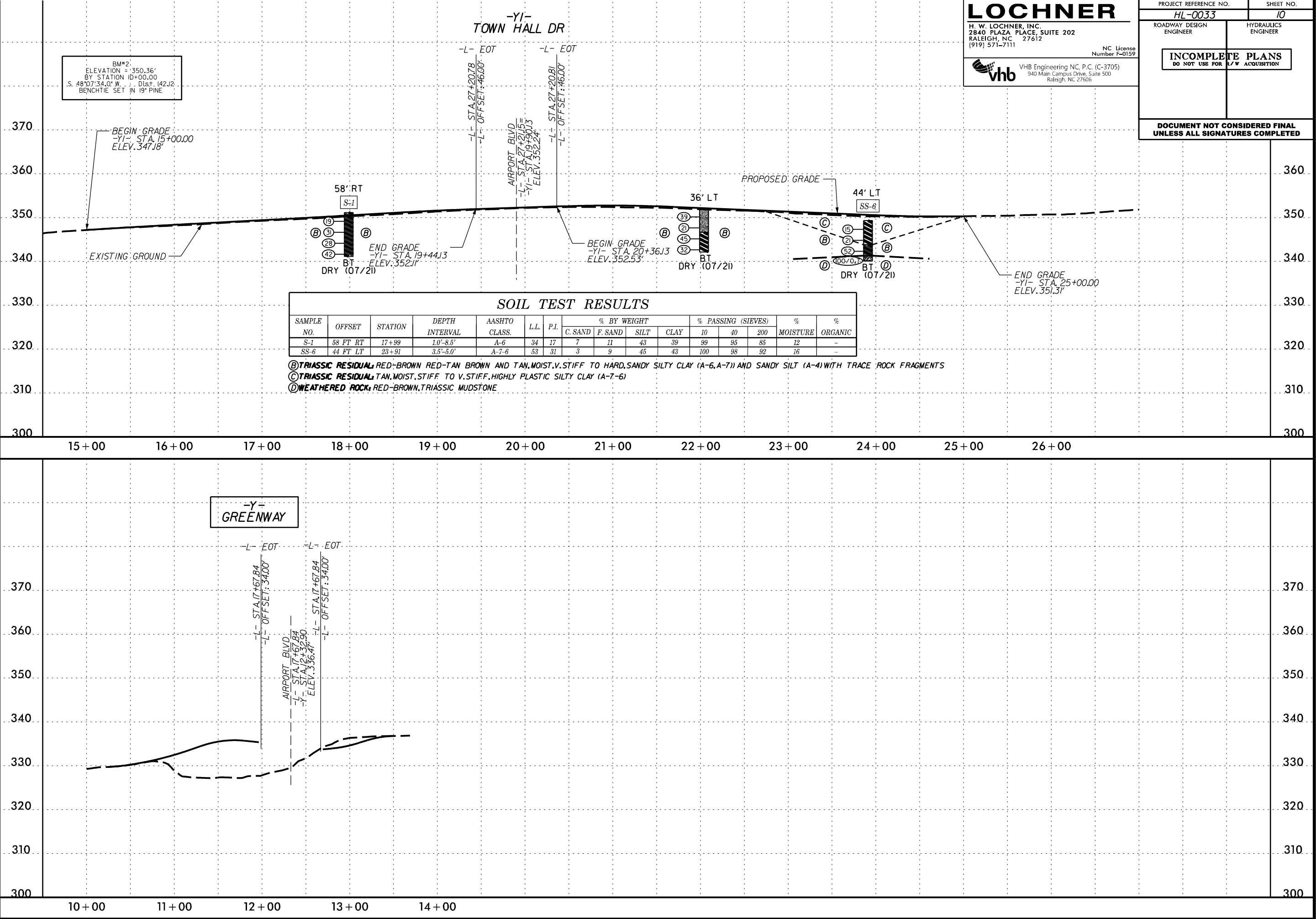
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ROADWAY DESIGN  
ENGINEER

HYDRAULICS  
ENGINEER

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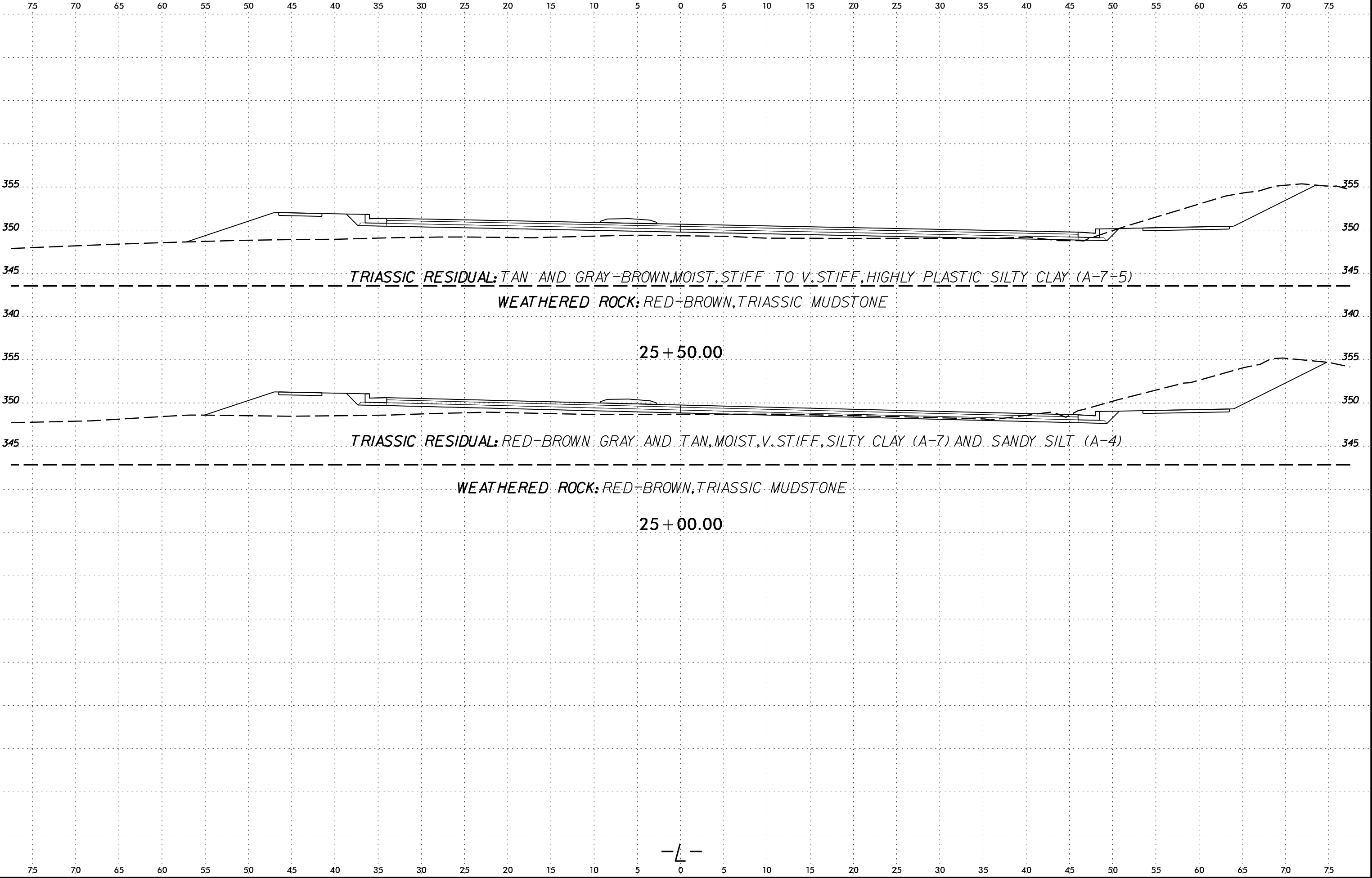


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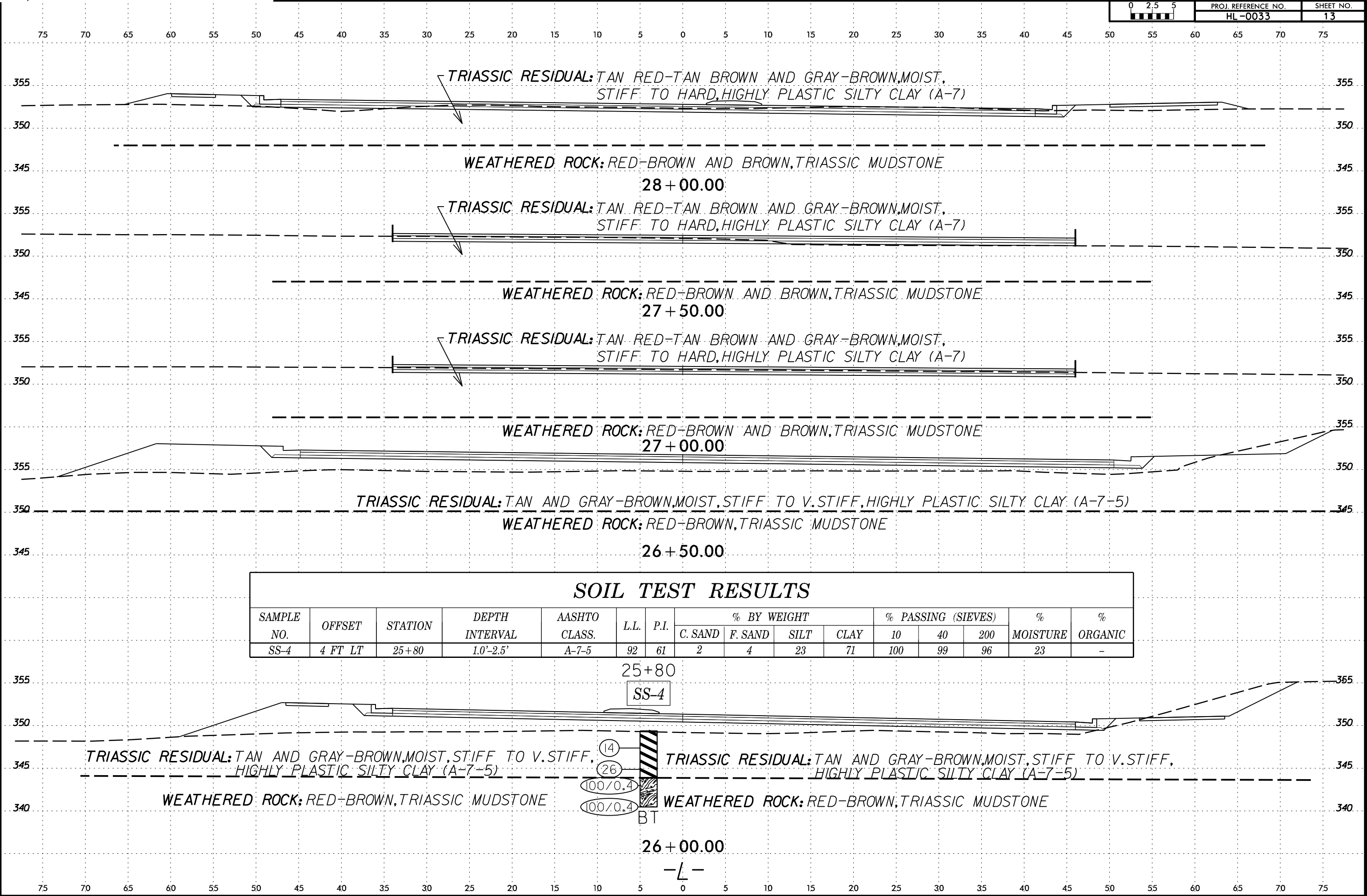
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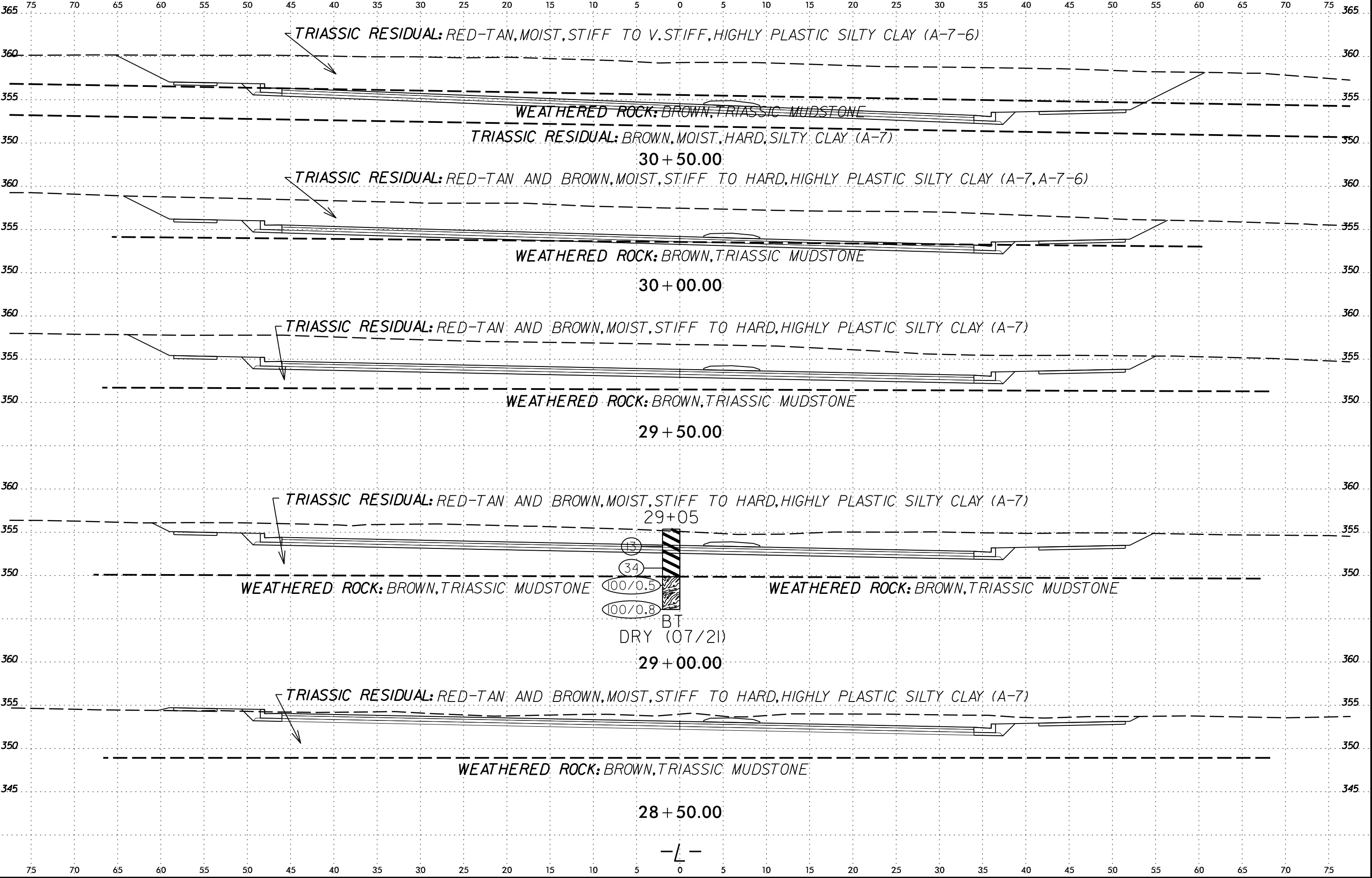


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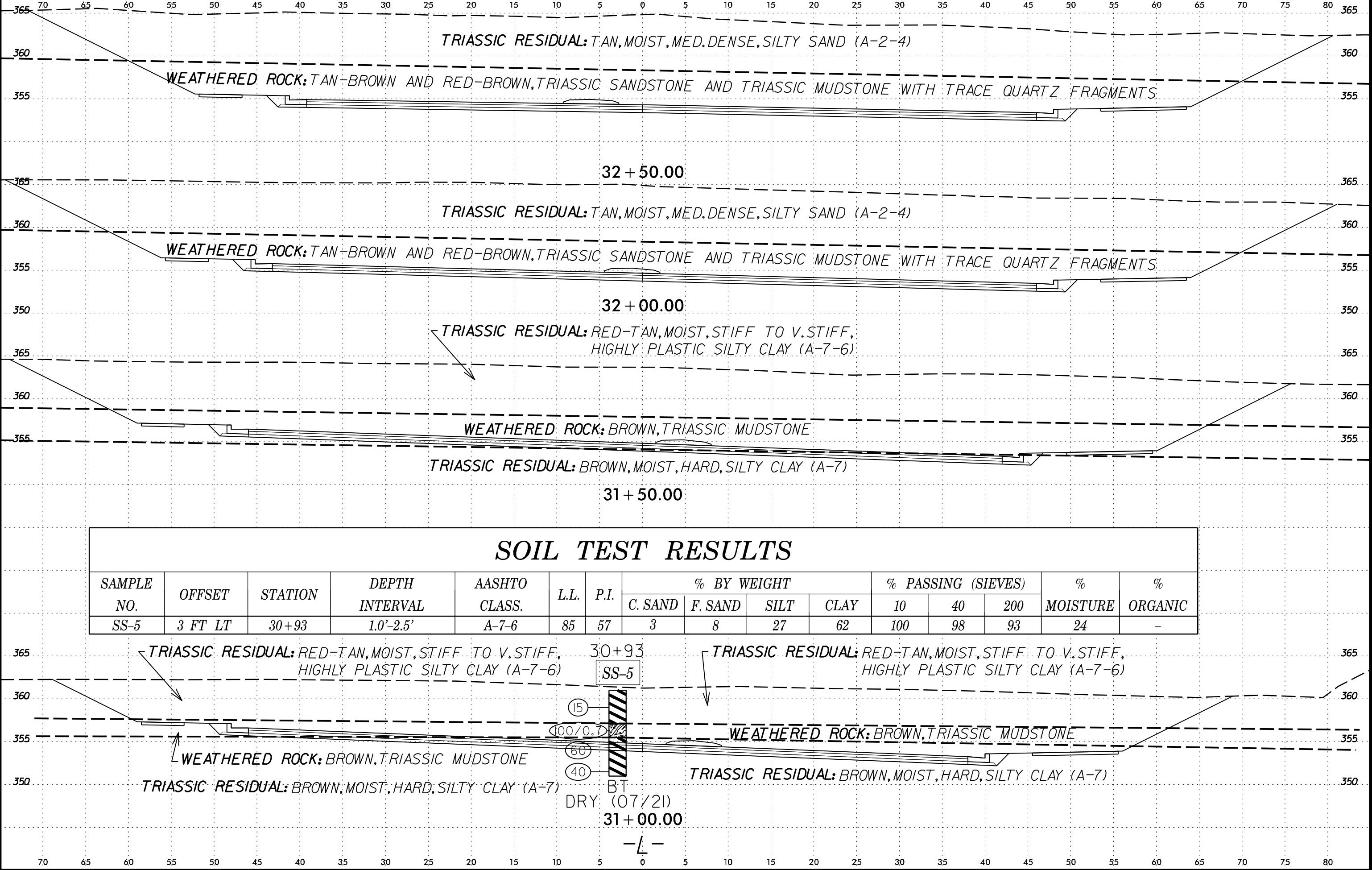
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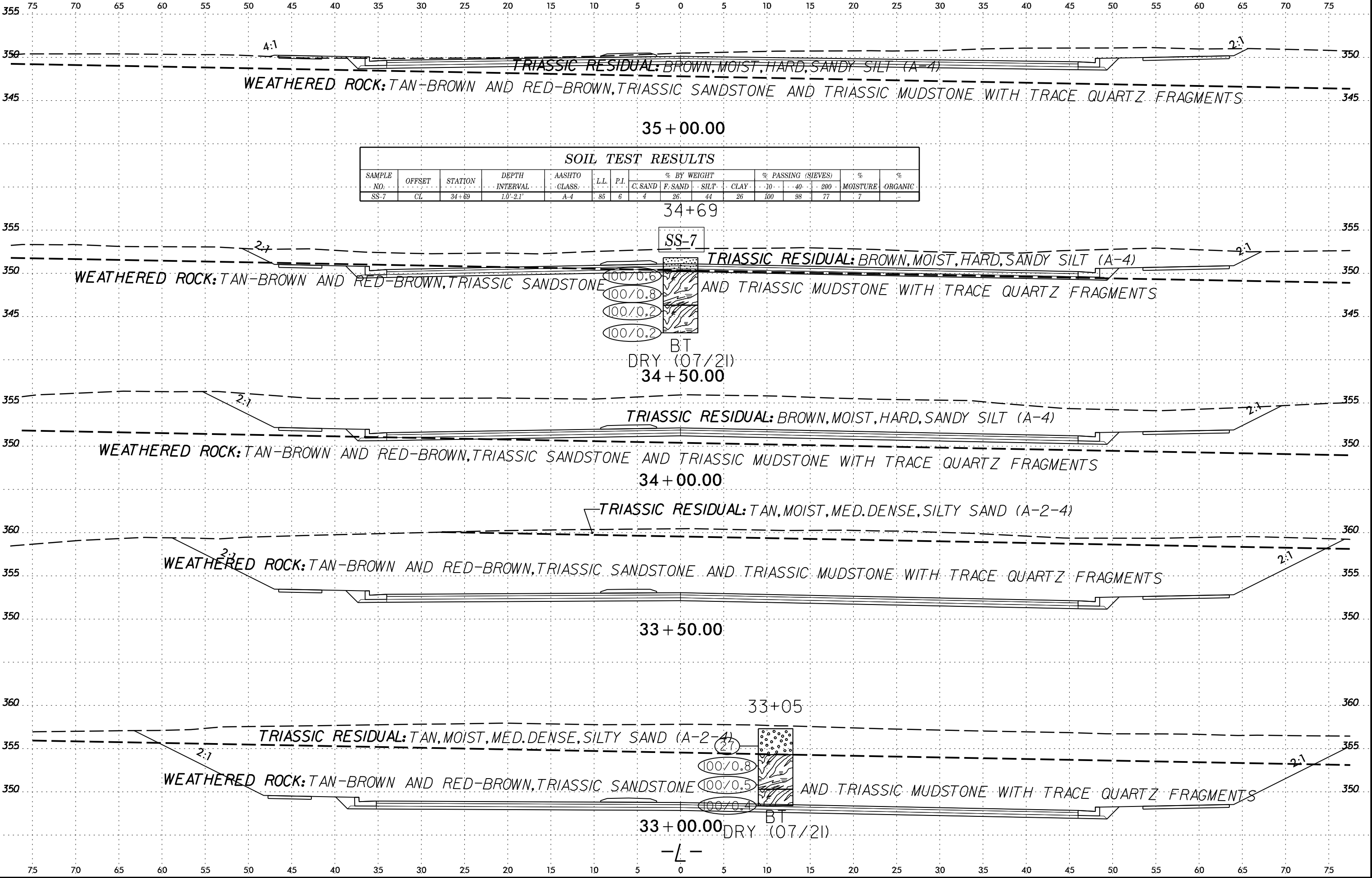
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6/23/16



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| HL-0033             | 16        |



| SOIL TEST RESULTS |        |         |                |               |      |      |             |         |      |      |                    |    |     |          |         |
|-------------------|--------|---------|----------------|---------------|------|------|-------------|---------|------|------|--------------------|----|-----|----------|---------|
| SAMPLE NO.        | OFFSET | STATION | DEPTH INTERVAL | AASHTO CLASS. | L.L. | P.I. | % BY WEIGHT |         |      |      | % PASSING (SIEVES) |    |     | %        | %       |
|                   |        |         |                |               |      |      | C. SAND     | F. SAND | SILT | CLAY | 10                 | 40 | 200 | MOISTURE | ORGANIC |
| SS-7              | CL     | 34+69   | 1.0'-2.1'      | A-4           | 85   | 6    | 4           | 26      | 44   | 26   | 100                | 98 | 77  | 7        | —       |

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REFERENCE: HL-0033

PROJECT: 36249

| PROJECT REFERENCE NO. | SHEET NO. |
|-----------------------|-----------|
| HL-0033               | 17        |

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GEOTECHNICAL ENGINEERING UNIT  
SUBSURFACE INVESTIGATION  
APPENDIX A  
PAVEMENT INVESTIGATION

|                       |            |
|-----------------------|------------|
| Initial<br><i>WSH</i> | 11/10/2025 |
| INITIALS              | DATE       |



Falcon Engineering, Inc.

1210 Trinity Road, Suite 110 Cary, NC 27513

PAVEMENT SECTION AND SUBGRADE CONDITION SUMMARY

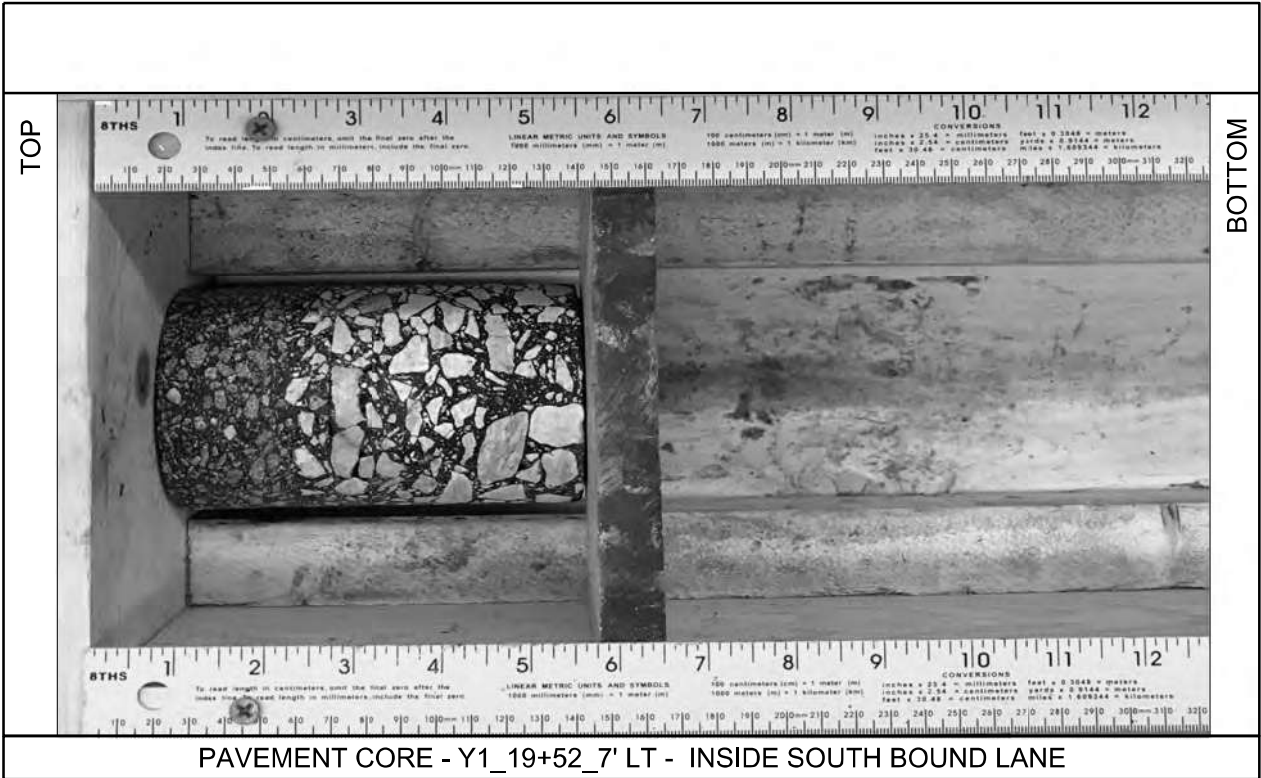
EXTENSION OF AIRPORT BOULEVARD (SR 3126) FROM GARDEN SQUARE LANE TO CHURCH STREET (SR 1637) IN MORRISVILLE

WAKE COUNTY, NORTH CAROLINA

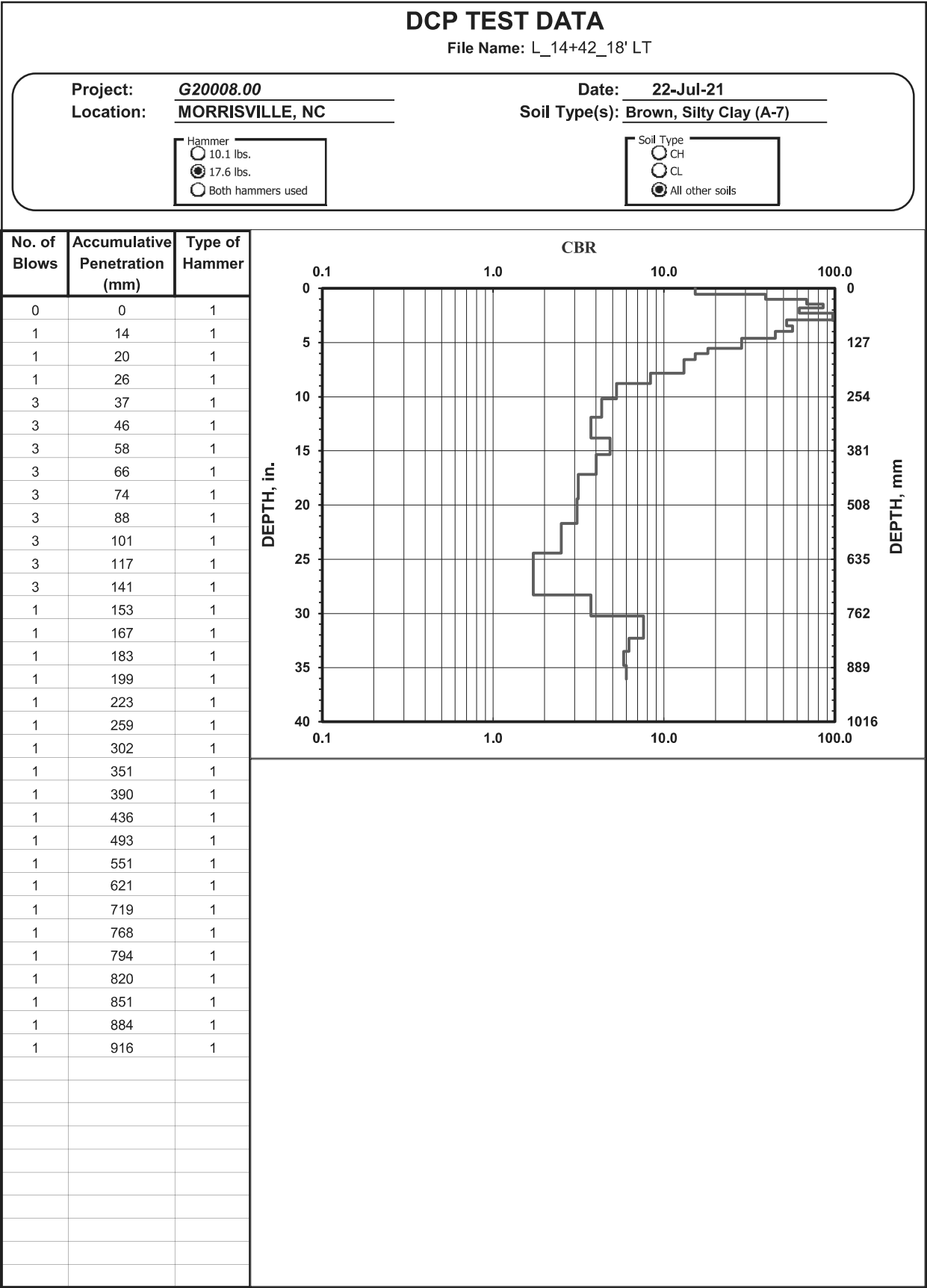
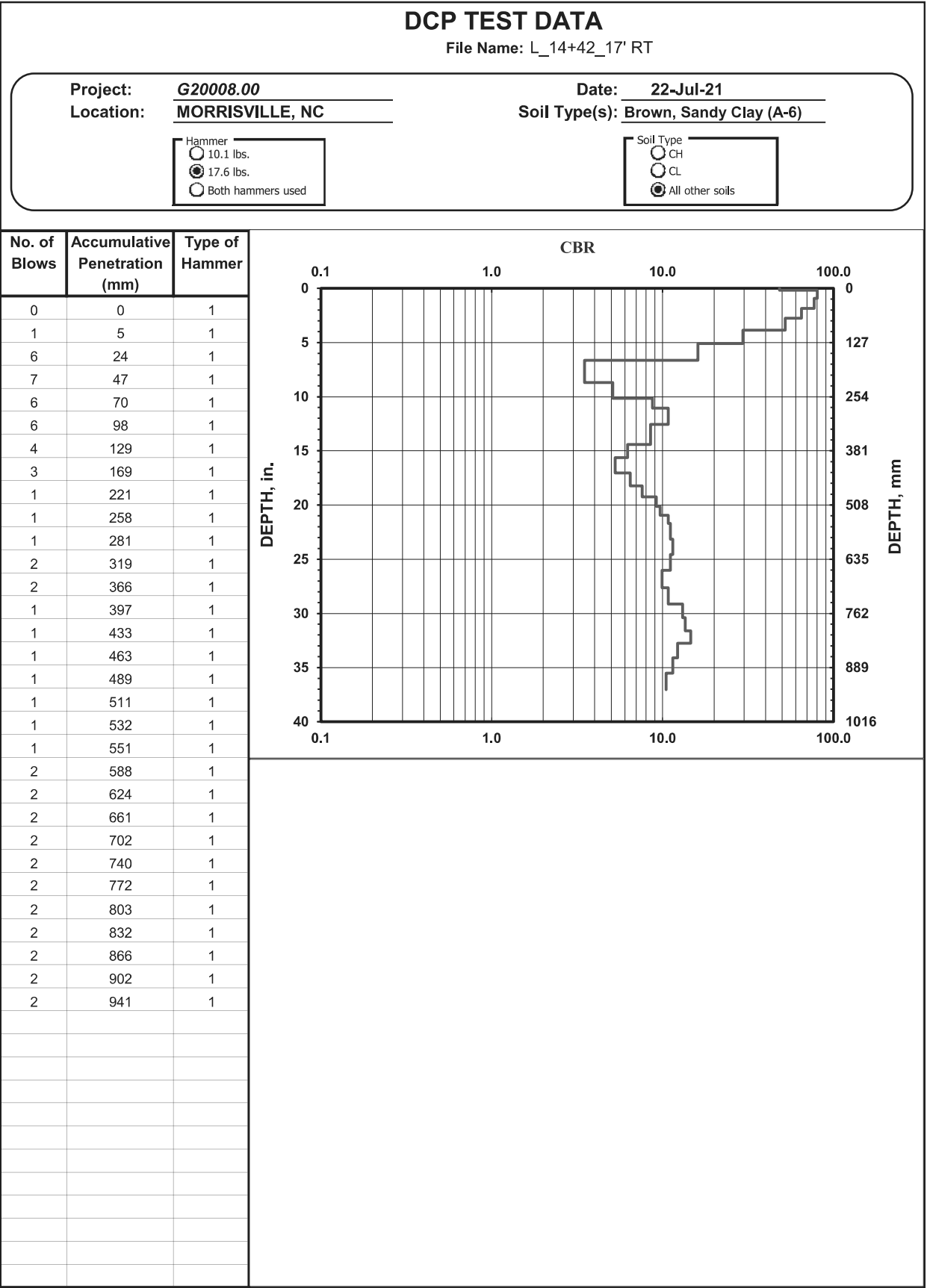
Falcon Project No.: G20008.00

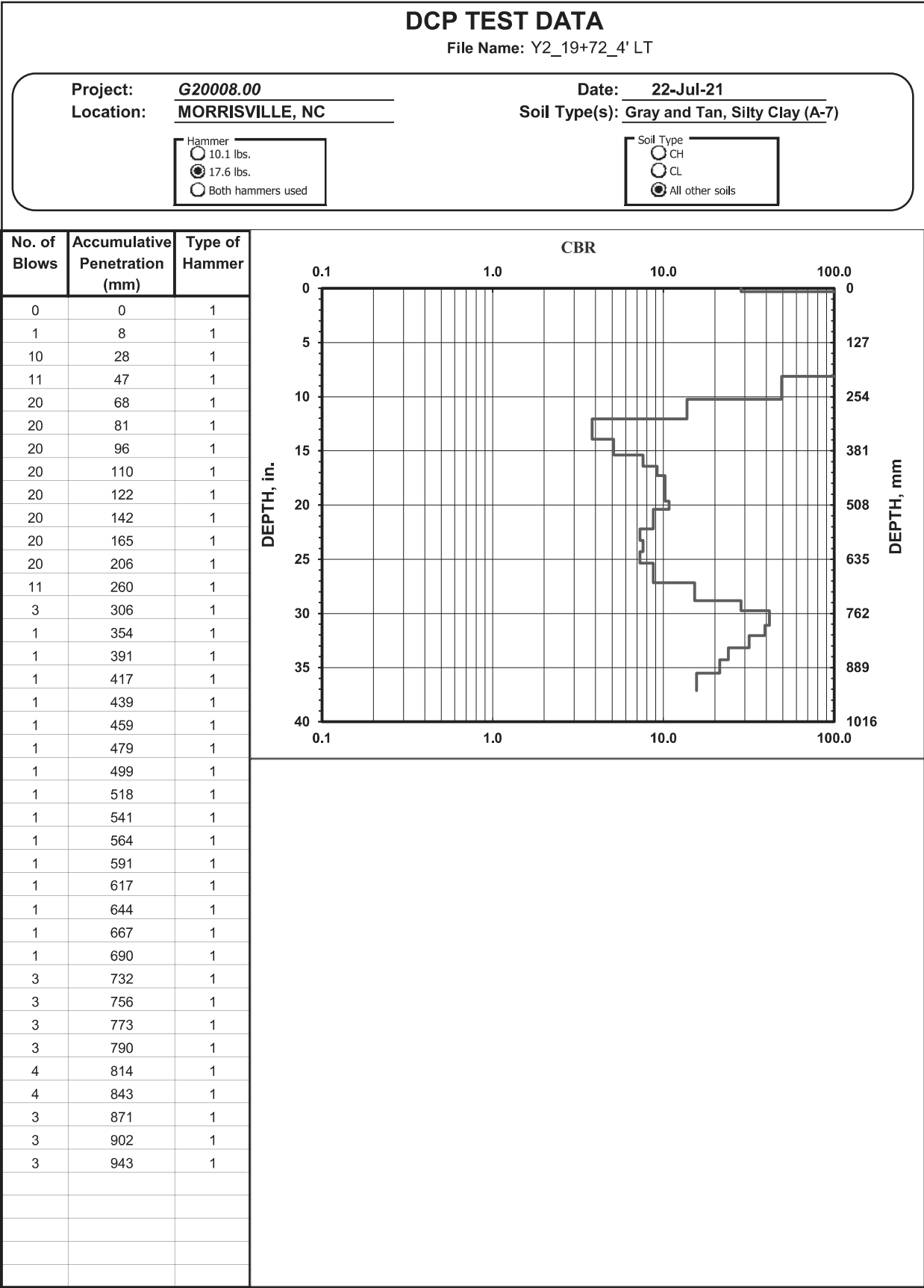
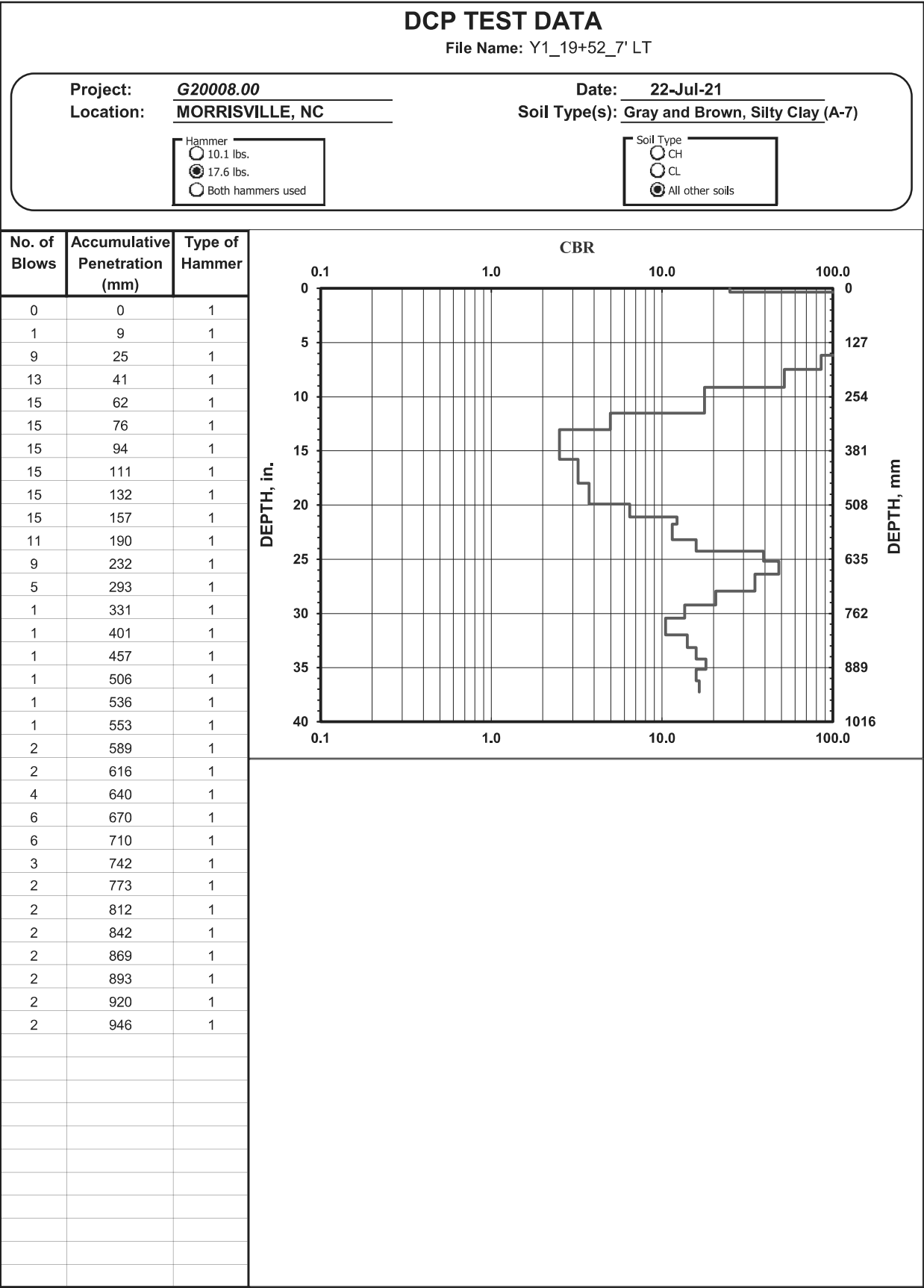
| TEST LOCATION          |         |         |        | PAVEMENT SECTION THICKNESS (INCHES) |                   |       | SUBGRADE        | NOTES/SUBGRADE MATERIAL                                  |
|------------------------|---------|---------|--------|-------------------------------------|-------------------|-------|-----------------|----------------------------------------------------------|
| ALIGNMENT              | LANE    | STATION | OFFSET | HMA                                 | AGGREGATE<br>BASE | TOTAL | IN-SITU<br>CBR* |                                                          |
| -L-                    | EB, ISL | 14+42   | 17' RT | 6.25                                | 6.00              | 12.25 | 6               | -<br>Subgrade Soil -Brown, Sandy Clay (A-6)              |
| -L-                    | WB, ISL | 14+42   | 18' LT | 7.00                                | 5.00              | 12.00 | 6               | -<br>Subgrade Soil -Brown, Silty Clay (A-7)              |
| -Y1-                   | SB, ISL | 19+52   | 7' LT  | 5.75                                | 10.00             | 15.75 | 5               | Multiple Lifts<br>Subgrade Soil -Brown, Silty Clay (A-7) |
| -Y2-                   | NB, TL  | 19+72   | 4' RT  | 5.00                                | 0.00              | 5.00  | 8               | Multiple Lifts<br>Subgrade Soil -Brown, Silty Clay (A-7) |
| REPRESENTATIVE AVERAGE |         |         |        | 6.00                                | 5.25              | 11.25 | 6               | -                                                        |

LEGEND: SB- SOUTHBOUND, NB- NORTHBOUND, EB - EASTBOUND, WB - WESTBOUND, TL - TRAVEL LANE, ISL - INSIDE LANE









REFERENCE: HL-0033

PROJECT: 36249

| PROJECT REFERENCE NO. | SHEET NO. |
|-----------------------|-----------|
| HL-0033               | 22        |

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GEOTECHNICAL ENGINEERING UNIT  
SUBSURFACE INVESTIGATION  
APPENDIX B  
LABORATORY RESULTS

|                |            |
|----------------|------------|
| Initial<br>WSH | 11/10/2025 |
| INITIALS       | DATE       |

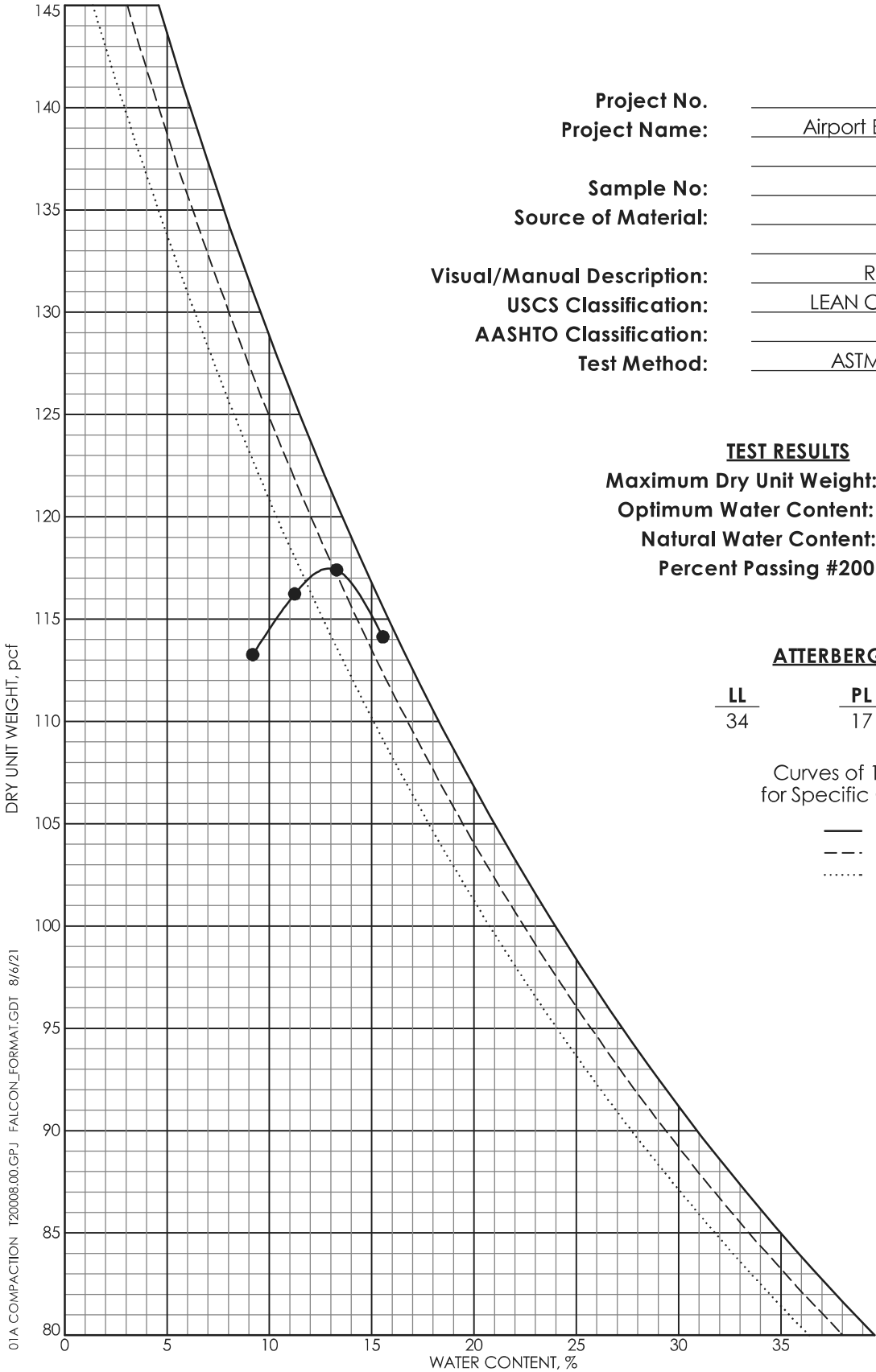


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LABORATORY COMPACTION TEST RESULTS

PAGE 1 OF 1



FALCON ENGINEERING

1210 TRINITY RD., SUITE 110, Cary, NC 27513

CBR (CALIFORNIA BEARING RATIO) OF LABORATORY COMPACTED SOIL

AASHTO T-193 / ASTM D-1883

PROJECT G20008.00 TEST PERFORMED BY: J.G. / C.S. DATE: 8/2/2021

PROJECT NAME: Airport Boulevard Extension

BORING #: R-11 SAMPLE #: BS-01 DEPTH: 1.0'-8.5'

SOIL DESCRIPTION: Reddish Brown Lean Clay with Sand (CL)

| COMPACTION METHOD        | ASTM D1883 | SOAK                      | 96 HRS.       |
|--------------------------|------------|---------------------------|---------------|
| MAXIMUM DRY DENSITY      | 117.5 PCF  | STRAIN RATE               | .05 IN / MIN. |
| OPTIMUM MOISTURE CONTENT | 13.0%      | LOAD CELL                 | 6000          |
| TEST DATA                |            | SURCHARGE WEIGHT          | 10 lb.        |
| DRY DENSITY              | 115.3 PCF  | SURCHARGE PER SQUARE FOOT | 51 lbs/sq.ft. |
| MOISTURE CONTENT         | 12.9%      | FINAL MOISTURE CONTENT    | 26.0%         |
| PERCENT COMPACTION       | 98.1%      | SWELL                     | 4.65%         |

