

CONTRACT: C201644 **TIP PROJECT: B-4000**

CONTENTS

LINE	STATION	PLAN	XSECTS
-L-	14+30 - 28+30	4	5-16

NOTE: SEE SHEET 2A FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

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

ROADWAY
SUBSURFACE INVESTIGATION

STATE PROJ. 33368.1.1 I.D. B-4000 F.A. PROJ. BRZ-1002(11)
 COUNTY ALAMANCE
 PROJECT DESCRIPTION APPROACH TO BRIDGE NO. 45 ON SR 1002
(JEFFRIES CROSS RD.) OVER JORDAN CREEK

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4000	1	16
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33368.1.1	BRZ-1002(11)	P.E.	
33368.2.1	BRZ-1002(11)	R/W & UTIL	
33368.3.1	BRZ-1002(11)	CONST.	

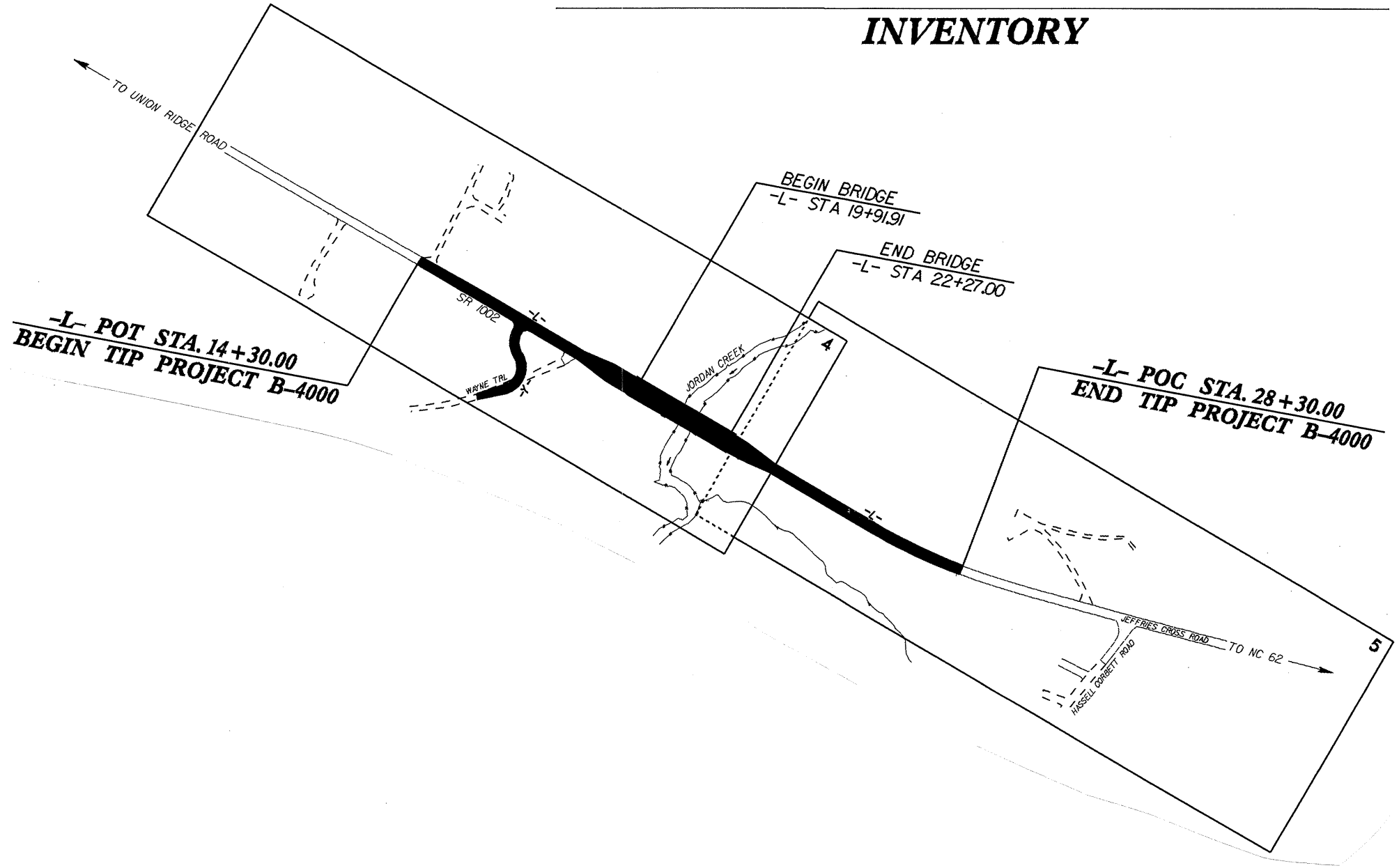
CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WAS 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 UNIT @ 909/250-4000. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA IS PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (ON-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THIS 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.

INVENTORY



- PERSONNEL
- H.R. CONLEY
 - C.D. CZAJKA
 - N.D. MOHS
 - N.T. ROBERSON

INVESTIGATED BY C.D. CZAJKA
 CHECKED BY N.T. ROBERSON
 SUBMITTED BY N.T. ROBERSON
 DATE JULY 2005



DRAWN BY: A.N. KARPA

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IS IT CONSIDERED TO BE PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

NOTE - 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.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

ID	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
B-4000	33368.1.1	2	16

SUBSURFACE INVESTIGATION

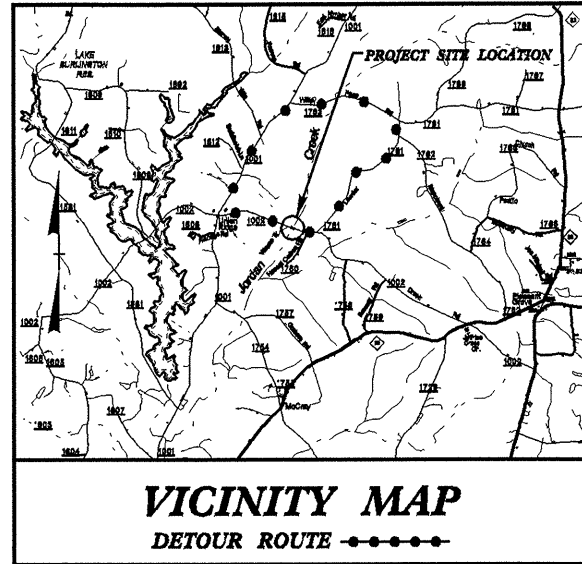
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION				GRADATION				ROCK DESCRIPTION				TERMS AND DEFINITIONS																							
<p>SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED OR WEATHERED EARTH MATERIALS WHICH CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND WHICH YIELDS LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (ASHTO T208, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM AND BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:</p> <p align="center"><i>VERY STIFF, GRAY SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HEAVY PLASTIC, A-7-6</i></p>				<p><u>WELL GRADED</u>- INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE UNIFORM. INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)</p> <p><u>GAP-GRADED</u>- INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.</p>				<p>HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WHEN TESTED, WOULD YIELD SPT REFUSAL, 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><u>ALLUVIUM (ALLUV.)</u>- SOILS WHICH HAVE BEEN TRANSPORTED BY WATER.</p> <p><u>AQUIFER</u> - A WATER BEARING FORMATION OR STRATA.</p> <p><u>ARENACEOUS</u> - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.</p> <p><u>ARGILLACEOUS</u> - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.</p> <p><u>ARTESIAN</u> - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.</p> <p><u>CALCAREOUS (CALC.)</u>- SOILS WHICH CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.</p> <p><u>COLLUVIUM</u> - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.</p> <p><u>CORE RECOVERY (REC.)</u>- TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.</p> <p><u>DIKE</u> - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.</p> <p><u>DIP</u> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.</p> <p><u>DIP DIRECTION (DIP AZIMUTH)</u>- THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.</p> <p><u>FAULT</u> - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.</p> <p><u>FISSILE</u> - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.</p> <p><u>FLOAT</u> - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.</p> <p><u>FLOOD PLAIN (F.P.)</u>- LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.</p> <p><u>FORMATION (FM.)</u>- A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.</p> <p><u>JOINT</u> - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.</p> <p><u>LEDGE</u> - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.</p> <p><u>LENS</u> - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.</p> <p><u>MOTTLED (MOTT.)</u>- IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.</p> <p><u>PERCHED WATER</u> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.</p> <p><u>RESIDUAL SOIL</u> - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.</p> <p><u>ROCK QUALITY DESIGNATION (R.Q.D.)</u>- 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.</p> <p><u>SAPROLITE (SAP.)</u>- RESIDUAL SOIL WHICH RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.</p> <p><u>SILL</u> - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, WHICH HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRODUCED ROCKS.</p> <p><u>SLICKENSIDE</u> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.</p> <p><u>STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT)</u>- NUMBER OF BLOWS (N OR B.P.F.) 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 LESS THAN 0.1 FOOT PENETRATION WITH 60 BLOWS.</p> <p><u>STRATA CORE RECOVERY (SREC.)</u>- TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.</p> <p><u>STRATA ROCK QUALITY DESIGNATION (S.R.Q.D.)</u>- A MEASURE OF ROCK QUALITY DESCRIBED BY: TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 10 CENTIMETERS DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.</p> <p><u>TOPSOIL (T.S.)</u>- SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>																							
SOIL LEGEND AND AASHTO CLASSIFICATION				MINERALOGICAL COMPOSITION				WEATHERING				INDURATION																							
<p>GENERAL CLASS. GRANULAR MATERIALS (< 5% PASSING #200) SILT-CLAY MATERIALS (< 85% PASSING #200) ORGANIC MATERIALS</p> <p>GROUP CLASS. A-1-a, A-1-b, A-3, A-2, A-2-4, A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7, A-7-5, A-7-6, A-8</p> <p>SYMBOL</p> <p>PERCENTAGE PASSING</p> <p>LIQUID LIMIT</p> <p>PLASTIC INDEX</p> <p>GROUP INDEX</p> <p>USUAL TYPES OF MAJOR MATERIALS</p> <p>GEN. RATING AS A SUBGRADE</p> <p align="center">P.I. OF A-7-5 ≤ L.L. - 30 ; P.I. OF A-7-6 > L.L. - 30</p>				<p>MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.</p> <p>COMPRESSIBILITY</p> <p>SLIGHTLY COMPRESSIBLE</p> <p>MODERATELY COMPRESSIBLE</p> <p>HIGHLY COMPRESSIBLE</p> <p>PERCENTAGE OF MATERIAL</p> <table border="1"> <tr> <th>ORGANIC MATERIAL</th> <th>GRANULAR SOILS</th> <th>SILT-CLAY SOILS</th> <th>OTHER MATERIAL</th> </tr> <tr> <td>TRACE OF ORGANIC MATTER</td> <td>2 - 3%</td> <td>3 - 5%</td> <td>TRACE</td> </tr> <tr> <td>LITTLE ORGANIC MATTER</td> <td>3 - 5%</td> <td>5 - 12%</td> <td>LITTLE</td> </tr> <tr> <td>MODERATELY ORGANIC</td> <td>5 - 10%</td> <td>12 - 20%</td> <td>SOME</td> </tr> <tr> <td>HIGHLY ORGANIC</td> <td>>10%</td> <td>>20%</td> <td>HIGHLY</td> </tr> </table> <p>GROUND WATER</p> <p>WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING.</p> <p>STATIC WATER LEVEL AFTER 24 HOURS.</p> <p>PERCHED WATER, SATURATED ZONE OR WATER BEARING STRATA</p> <p>SPRING OR SEEPAGE</p>				ORGANIC MATERIAL	GRANULAR SOILS	SILT-CLAY SOILS	OTHER MATERIAL	TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE	LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	LITTLE	MODERATELY ORGANIC	5 - 10%	12 - 20%	SOME	HIGHLY ORGANIC	>10%	>20%	HIGHLY	<p>CRYSTALLINE ROCK (CR)</p> <p>NON-CRYSTALLINE ROCK (NCR)</p> <p>COASTAL PLAIN SEDIMENTARY ROCK (CP)</p> <p>WEATHERED ROCK (WR)</p> <p>FRESH</p> <p>VERY SLIGHT (V. SL.)</p> <p>SLIGHT (SL.)</p> <p>MODERATE (MOD.)</p> <p>MODERATELY SEVERE (MOD. SEV.)</p> <p>SEVERE (SEV.)</p> <p>VERY SEVERE (V. SEV.)</p> <p>COMPLETE</p>				<p>TERMS AND DEFINITIONS</p> <p>INDURATION</p> <p>FR friable</p> <p>MO moderately indurated</p> <p>IN indurated</p> <p>EX extremely indurated</p> <p>RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.</p> <p>GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.</p> <p>GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.</p> <p>SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</p>			
ORGANIC MATERIAL	GRANULAR SOILS	SILT-CLAY SOILS	OTHER MATERIAL																																
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE																																
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CONSISTENCY OR DENSENESS				MISCELLANEOUS SYMBOLS				ROCK HARDNESS				ABBREVIATIONS																							
<p>PRIMARY SOIL TYPE</p> <p>COMPACTNESS OR CONSISTENCY</p> <p>RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)</p> <p>RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²)</p>				<p>ROADWAY EMBANKMENT WITH SOIL DESCRIPTION</p> <p>SOIL SYMBOL</p> <p>ARTIFICIAL FILL OTHER THAN ROADWAY EMBANKMENTS</p> <p>INFERRED SOIL BOUNDARIES</p> <p>INFERRED ROCK LINE</p> <p>ALLUVIAL SOIL BOUNDARY</p> <p>DIP/DIP DIRECTION OF ROCK STRUCTURES</p> <p>SOUNDING ROD</p> <p>SPT 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>SPT N-VALUE</p> <p>SPT REFUSAL</p>				<p>VERY HARD</p> <p>HARD</p> <p>MODERATELY HARD</p> <p>MEDIUM HARD</p> <p>SOFT</p> <p>VERY SOFT</p>				<p>AR - AUGER REFUSAL</p> <p>BT - BORING TERMINATED</p> <p>CL - CLAY</p> <p>CPT - CONE PENETRATION TEST</p> <p>CSE - COARSE</p> <p>DMT - DILATOMETER TEST</p> <p>DPT - DYNAMIC PENETRATION TEST</p> <p>φ - VOID RATIO</p> <p>F. - FINE</p> <p>FOSS. - FOSSILIFEROUS</p> <p>FRAC. - FRACTURED</p> <p>FRAGS. - FRAGMENTS</p> <p>MED. - MEDIUM</p> <p>PMT - PRESSUREMETER TEST</p> <p>SD - SAND, SANDY</p> <p>SL - SILT, SILTY</p> <p>SLI - SLIGHTLY</p> <p>TCR - TRICONE REFUSAL</p> <p>γ - UNIT WEIGHT</p> <p>w - DRY UNIT WEIGHT</p> <p>w - MOISTURE CONTENT</p> <p>v. - VERY</p> <p>VST - VANE SHEAR TEST</p>				<p>AR - AUGER REFUSAL</p> <p>BT - BORING TERMINATED</p> <p>CL - CLAY</p> <p>CPT - CONE PENETRATION TEST</p> <p>CSE - COARSE</p> <p>DMT - DILATOMETER TEST</p> <p>DPT - DYNAMIC PENETRATION TEST</p> <p>φ - VOID RATIO</p> <p>F. - FINE</p> <p>FOSS. - FOSSILIFEROUS</p> <p>FRAC. - FRACTURED</p> <p>FRAGS. - FRAGMENTS</p> <p>MED. - MEDIUM</p> <p>PMT - PRESSUREMETER TEST</p> <p>SD - SAND, SANDY</p> <p>SL - SILT, SILTY</p> <p>SLI - SLIGHTLY</p> <p>TCR - TRICONE REFUSAL</p> <p>γ - UNIT WEIGHT</p> <p>w - DRY UNIT WEIGHT</p> <p>w - MOISTURE CONTENT</p> <p>v. - VERY</p> <p>VST - VANE SHEAR TEST</p>																			
TEXTURE OR GRAIN SIZE				EQUIPMENT USED ON SUBJECT PROJECT				FRACTURE SPACING				BEDDING																							
<p>U.S. STD. SIEVE SIZE</p> <p>OPENING (MM)</p> <p>BOULDER (BLDR.)</p> <p>COBBLE (COB.)</p> <p>GRAVEL (GR.)</p> <p>COARSE SAND (CSE, SD.)</p> <p>FINE SAND (F, SD.)</p> <p>SILT (SL.)</p> <p>CLAY (CL.)</p> <p>GRAIN SIZE</p>				<p>DRILL UNITS:</p> <p>MOBILE B-_____</p> <p>BK-51</p> <p>CME-45C</p> <p>CME-550</p> <p>PORTABLE HOIST</p> <p>OTHER _____</p> <p>OTHER _____</p> <p>ADVANCING TOOLS:</p> <p>CLAY BITS</p> <p>6" CONTINUOUS FLIGHT AUGER</p> <p>8" HOLLOW AUGERS</p> <p>HARD FACED FINGER BITS</p> <p>TUNG.-CARBIDE INSERTS</p> <p>CASING</p> <p>TRICONE *STEEL TEETH</p> <p>TRICONE *TUNG.-CARB.</p> <p>CORE BIT</p> <p>OTHER _____</p> <p>HAMMER TYPE:</p> <p>AUTOMATIC</p> <p>MANUAL</p> <p>CORE SIZE:</p> <p>B</p> <p>N</p> <p>H</p> <p>HAND TOOLS:</p> <p>POST HOLE DIGGER</p> <p>HAND AUGER</p> <p>SOUNDING ROD</p> <p>VANE SHEAR TEST</p> <p>OTHER _____</p>				<p>VERY WIDE</p> <p>WIDE</p> <p>MODERATELY CLOSE</p> <p>CLOSE</p> <p>VERY CLOSE</p> <p>MORE THAN 10 FEET</p> <p>3 TO 10 FEET</p> <p>1 TO 3 FEET</p> <p>0.16 TO 1 FEET</p> <p>LESS THAN 0.16 FEET</p>				<p>TERM</p> <p>VERY THICKLY BEDDED</p> <p>THICKLY BEDDED</p> <p>THINLY BEDDED</p> <p>VERY THINLY BEDDED</p> <p>THICKLY LAMINATED</p> <p>THINLY LAMINATED</p> <p>> 4 FEET</p> <p>1.5 - 4 FEET</p> <p>0.16 - 1.5 FEET</p> <p>0.03 - 0.16 FEET</p> <p>0.008 - 0.03 FEET</p> <p>< 0.008 FEET</p>				<p>BENCH MARK:</p> <p>_____</p> <p>_____</p> <p>ELEVATION: _____</p> <p>NOTES:</p> <p>_____</p> <p>_____</p> <p>_____</p>																			
SOIL MOISTURE - CORRELATION OF TERMS				SOIL MOISTURE - CORRELATION OF TERMS				PLASTICITY				COLOR																							
<p>SOIL MOISTURE SCALE (ATTERBERG LIMITS)</p> <p>FIELD MOISTURE DESCRIPTION</p> <p>GUIDE FOR FIELD MOISTURE DESCRIPTION</p> <p>LL - LIQUID LIMIT</p> <p>PL - PLASTIC LIMIT</p> <p>OM - OPTIMUM MOISTURE</p> <p>SL - SHRINKAGE LIMIT</p> <p>- SATURATED - (SAT.)</p> <p>- WET - (W)</p> <p>- MOIST - (M)</p> <p>- DRY - (D)</p>				<p>SOIL MOISTURE SCALE (ATTERBERG LIMITS)</p> <p>FIELD MOISTURE DESCRIPTION</p> <p>GUIDE FOR FIELD MOISTURE DESCRIPTION</p> <p>LL - LIQUID LIMIT</p> <p>PL - PLASTIC LIMIT</p> <p>OM - OPTIMUM MOISTURE</p> <p>SL - SHRINKAGE LIMIT</p> <p>- SATURATED - (SAT.)</p> <p>- WET - (W)</p> <p>- MOIST - (M)</p> <p>- DRY - (D)</p>				<p>PLASTICITY INDEX (PI)</p> <p>DRY STRENGTH</p> <p>NONPLASTIC</p> <p>LOW PLASTICITY</p> <p>MED. PLASTICITY</p> <p>HIGH PLASTICITY</p>				<p>DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YEL.-BRN, BLUE-GRAY) MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.</p>																							

TIP PROJECT: B-4000

PROJECT: 33368.1.1

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



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

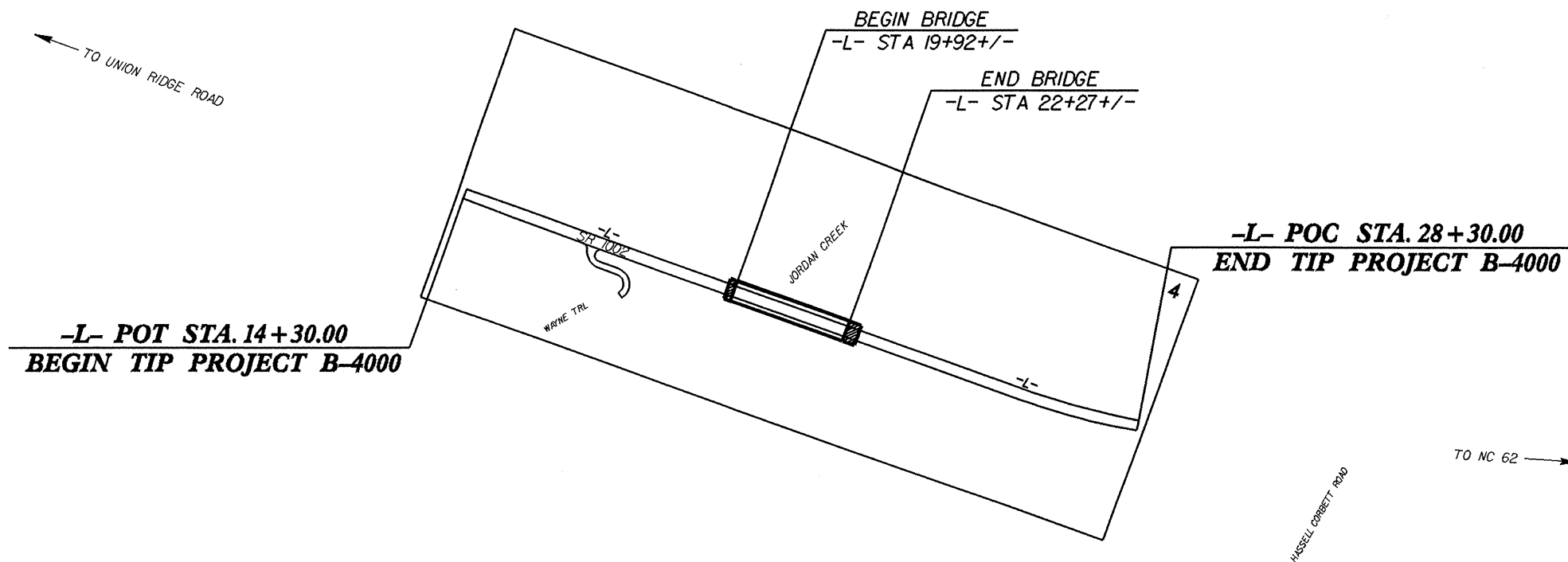
ALAMANCE COUNTY

LOCATION: BRIDGE NO. 45 OVER JORDAN CREEK ON SR 1002

**TYPE OF WORK: GRADING, DRAINAGE, PAVING,
STRUCTURE, AND RESURFACING.**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4000	2A	16
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33368.1.1	BRZ-1002(11)	P.E.	

NC GRID NAD 83



NC DOT CONTACT: CATHY HOUSER, PE
PROJECT ENGINEER - ROADWAY DESIGN, ENGINEERING COORDINATION
ROBERT J. STROUP, PE
PROJECT DESIGN ENGINEER - ROADWAY DESIGN, ENGINEERING COORDINATION

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS SHOWN BY METHOD _____

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

<p>GRAPHIC SCALES</p>	<p>DESIGN DATA</p> <p>ADT 2006 = 767 ADT 2026 = 1434 DHV = 10 % D = 55 % T = 7 % * V = 55 MPH * (TTST 1% + DUAL 6%)</p> <p>FUNCTIONAL CLASSIFICATION: RURAL MINOR COLLECTOR</p> <p>DESIGN EXCEPTION REQUIRED FOR VERTICAL CURVATURE AND MAXIMUM GRADE.</p>	<p style="text-align: center;">PROJECT LENGTH</p> <p>LENGTH ROADWAY TIP PROJECT B-4000 = 0.221 mi LENGTH STRUCTURE TIP PROJECT B-4000 = 0.045 mi TOTAL LENGTH OF TIP PROJECT B-4000 = 0.265 mi</p>	<p>PLANS PREPARED BY: 2002 STANDARD SPECIFICATIONS</p> <p>RIGHT OF WAY DATE: JUNE 17, 2005</p> <p>LETTING DATE: JUNE 20, 2006</p>	<p>PLANS PREPARED FOR: DIVISION OF HIGHWAYS 1000 Birch Ridge Dr. Raleigh, NC 27610</p> <p>THOMAS R. HEPLER, PE PLS PROJECT ENGINEER</p> <p>KEVIN W. BISBY, PE PROJECT DESIGN ENGINEER</p>	<p>HYDRAULICS ENGINEER</p> <p style="text-align: center;">MULKEY, INC.</p> <p>SIGNATURE: _____ P.E. ROADWAY DESIGN ENGINEER</p> <p>SIGNATURE: _____ P.E.</p>	<p style="text-align: center;">DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA</p> <p style="text-align: center;">STATE DESIGN ENGINEER P.E. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION</p> <p>APPROVED DIVISION ADMINISTRATOR DATE</p>
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

Michael F. Easley
GOVERNOR

P.O. BOX 25201, RALEIGH, N.C. 27611-5201

Lyndo Tippet
SECRETARY

July 26, 2005

STATE PROJECT: 33368.1.1 (B-4000)
FEDERAL PROJECT: BRZ-1002 (11)
COUNTY: Alamance

DESCRIPTION: Approach to Bridge No. 45 on SR 1002 (Jeffries Cross Rd.) over Jordan Creek

SUBJECT: Geotechnical Report - Inventory

Project Description

This project consists of construction of the new bridge to replace the existing structure and upgrading of the roadway approach. The total length of the roadway project is 0.265 miles.

A geotechnical investigation was conducted during March and April 2005. Representative soil samples were collected for visual classification in the field and selected samples were submitted for laboratory analysis by the Materials and Tests Unit. The -L- alignment from station 14+30 to 28+30 was investigated using a CME-550 drill rig and hand auger.

Areas of Special Geotechnical Interest

1) Highly Plastic Clays: Highly plastic clays were encountered on the project at the following location:

<u>Line</u>	<u>Station</u>
-L-	14+30 to 18+25

2) Groundwater: Shallow groundwater was encountered in one boring at the following location:

<u>Line</u>	<u>Station</u>
-L-	17+00

Physiography and Geology

The project is located in gently rolling terrain of the Piedmont Physiographic Province. The area consists of wooded land, wetlands, and sparse dwellings. Geologically, the site is located within the Carolina Slate Belt and is underlain by metamorphosed granite.

Soil Properties

Soils present at the project site include roadway embankment, alluvial, and residual soils.

Roadway embankment soil is present in the embankment of the existing roadway. These soils consist primarily of brown, dense, dry, sandy silt with gravel (AASHTO classification A-4) and orange-brown, stiff, moist, silty clay with gravel (A-7).

Alluvial soils are present in the floodplain of Jordan Creek. They consist primarily of brown and gray, loose, moist to saturated, silty fine to coarse sand (A-2-4) and brown to gray, medium stiff, wet to saturated, sandy silt (A-4). Lessor amounts of brown, soft, moist, sandy clay (A-6) are also present.

Residual soils are derived from the in-place weathering of the underlying metamorphosed granite. They consist primarily of orange-brown, stiff, moist to wet, moderately to highly plastic, silty clay (A-7) and light brown to brown, stiff, dry to moist, sandy silt (A-4). Lessor amounts of orange-brown and brown, medium dense, dry to moist, clayey and silty sand (A-2-7, A-2-4) are also present.

Rock Properties

Weathered rock was encountered in one boring and is derived from the underlying metamorphosed granite.

Respectfully submitted,

Neil T. Roberson, LG
Regional Geologist

Volumes in Cubic Yard

PROJECT: B-4000

COUNTY: ALAMANCE

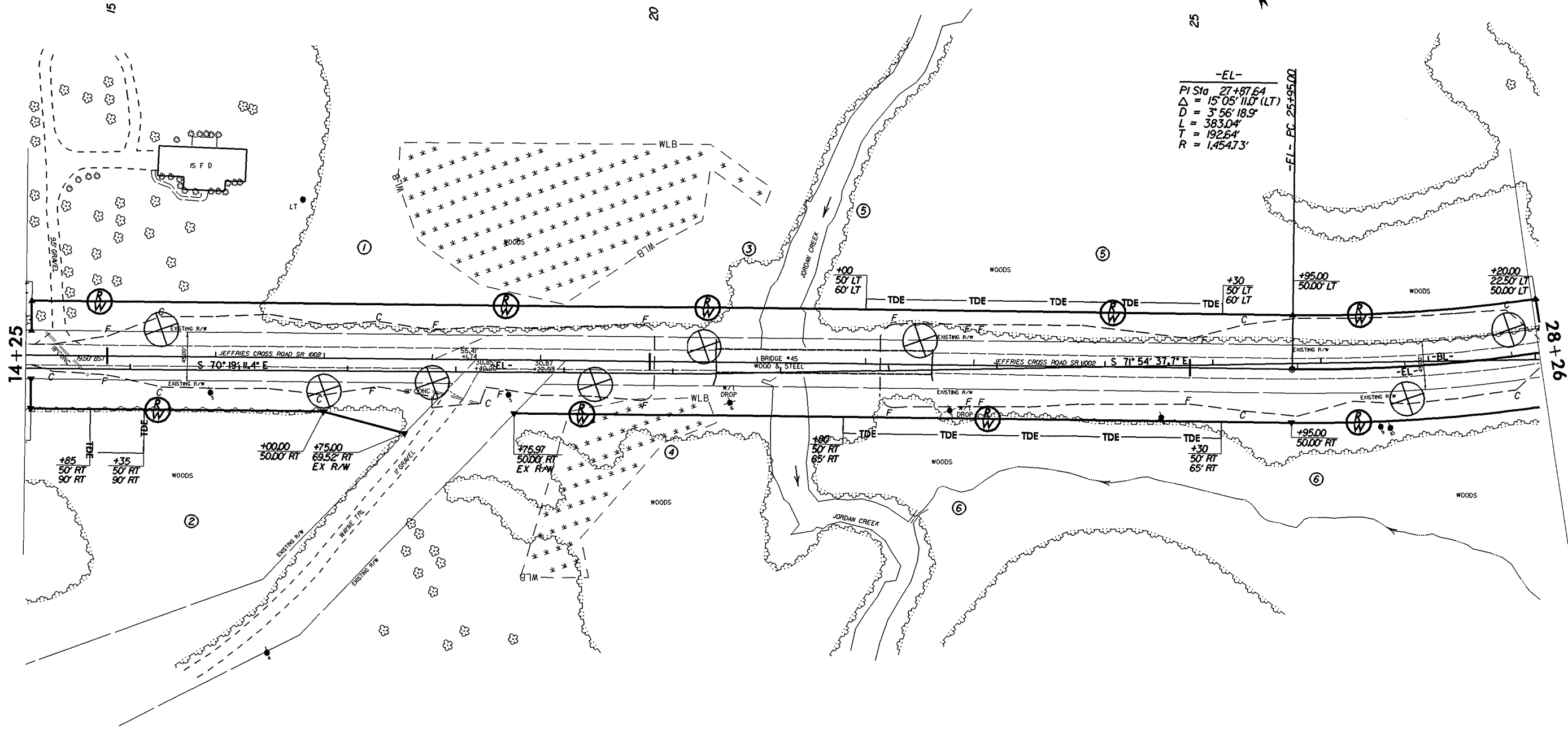
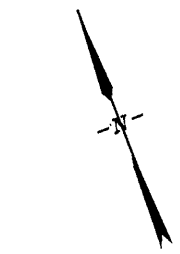
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COMPILED BY: RBE

STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
		TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. (+) 20%		ROCK	SUITABLE	UNSUIT.	TOTAL
PHASE I															
-L- 14+30	19+92	659	0	0	529	130	822	0	822	986	856	0	0	529	529
-L- 22+27	28+30	1025	0	0	0	1025	4760	0	4760	5712	4687	0	0	0	0
-Y- 10+00	11+75	42	0	0	0	42	109	0	109	131	89	0	0	0	0
PHASE I SUBTOTAL		1726	0	0	529	1726	5691	0	5691	6829	5632	0	0	529	529
PROJECT SUBTOTAL															
LOSS DUE TO CLEAR. & GRUB.*		-200				-200					200				
UNCL STRUCT EXCAV IN LIEU OF BORROW											-575		0	0	0
PROJCTC TOTALS		1,526	0	0	529	1526	5691	0	5691	6829	5257	0	0	529	529
EST 5% TO REPLACE TOPSOIL ON BORROW PIT											263				
GRAND TOTAL		1,526									5520	0	0	529	529
SAY		1610									5550				560
DRAINAGE DITCH EXCAVATION: 490 CY PAVEMENT STRUCTURE VOLUME: 6100 CY SELECT GRANULAR MATERIAL (CLASS II OR III): 500 CY* CLASS IV SUBGRADE STABILIZATION MATERIAL: 100 TONS* UNDERCUT FOR EMBANKMENT STABILITY: 500 CY* SUBGRADE UNDERCUT: 100 CY* FABRIC FOR SOIL STABILIZATION: 500 SY* * PER GEOTECHNICAL REPORT DATED 7/26/05															

NOTE : EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT.
 THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

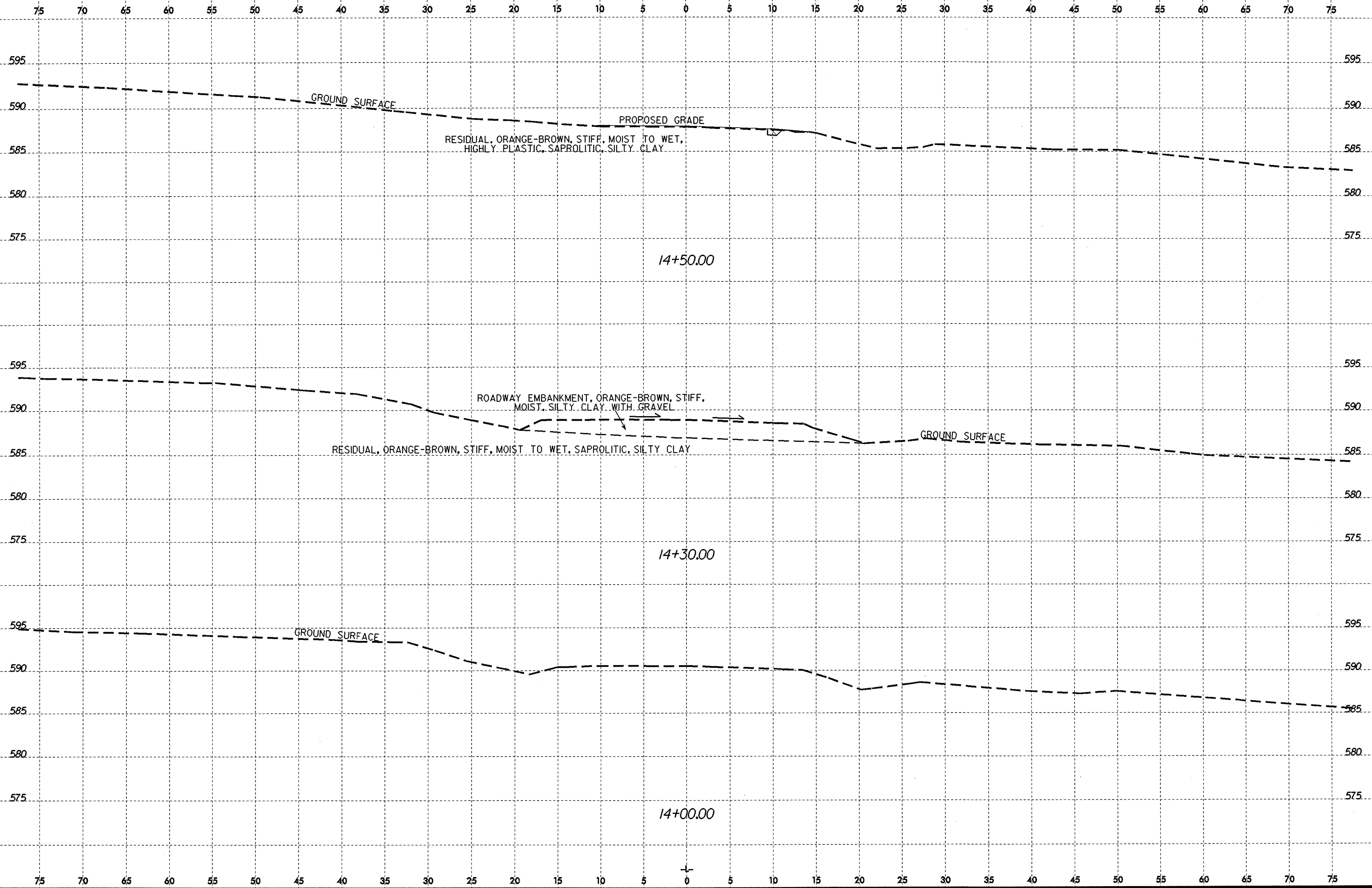
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B-4000		4	
R/W SHEET NO.			
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INCOMPLETE PLANS DO NOT USE FOR ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			



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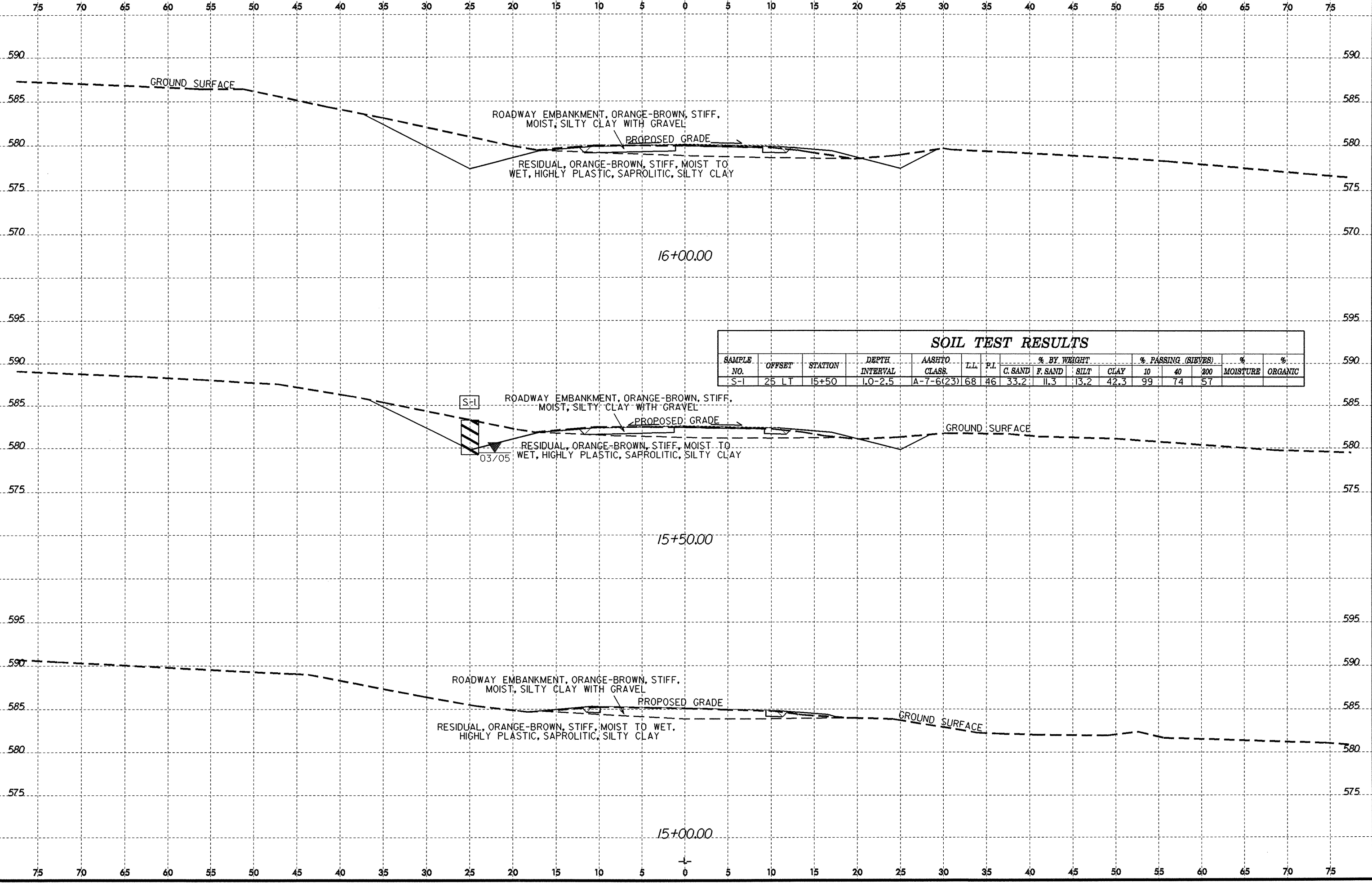
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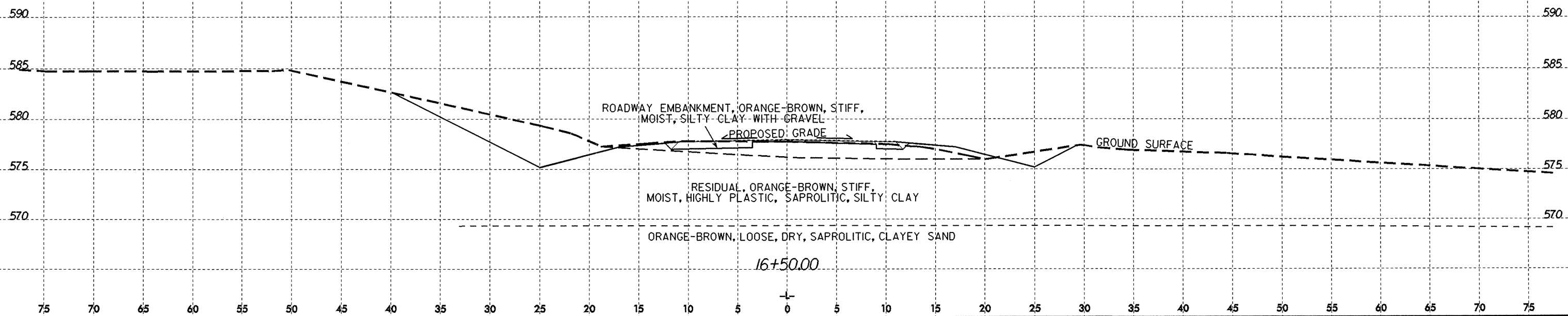
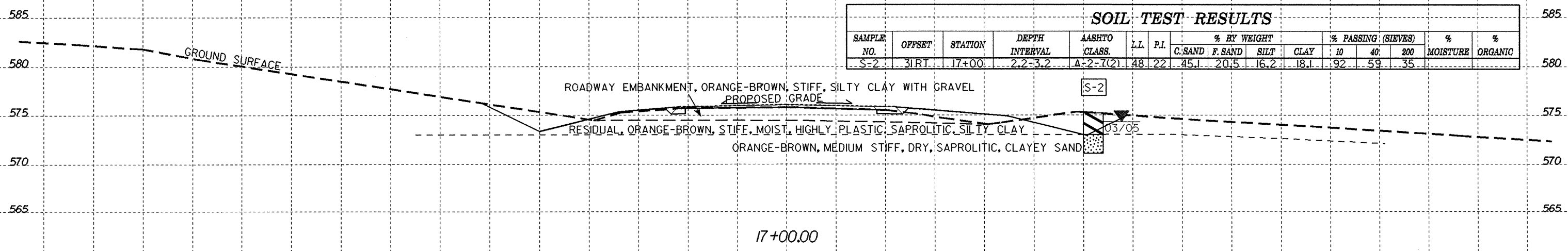
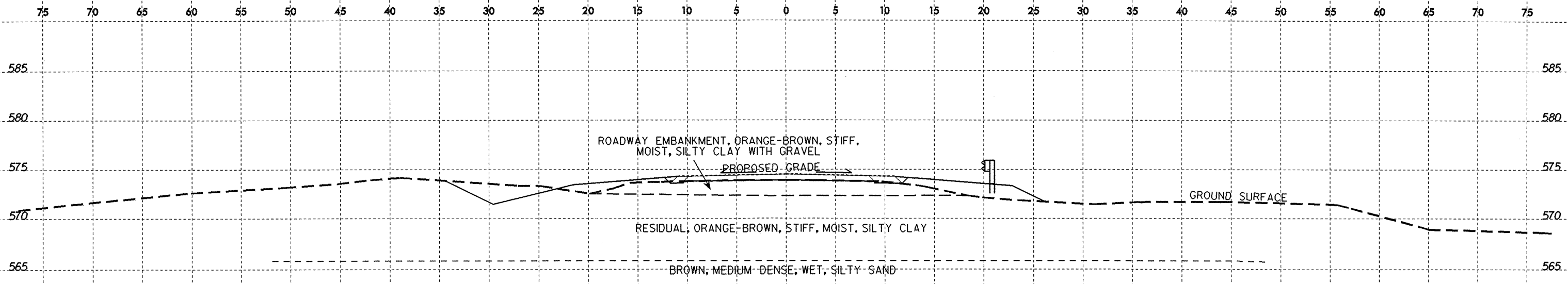
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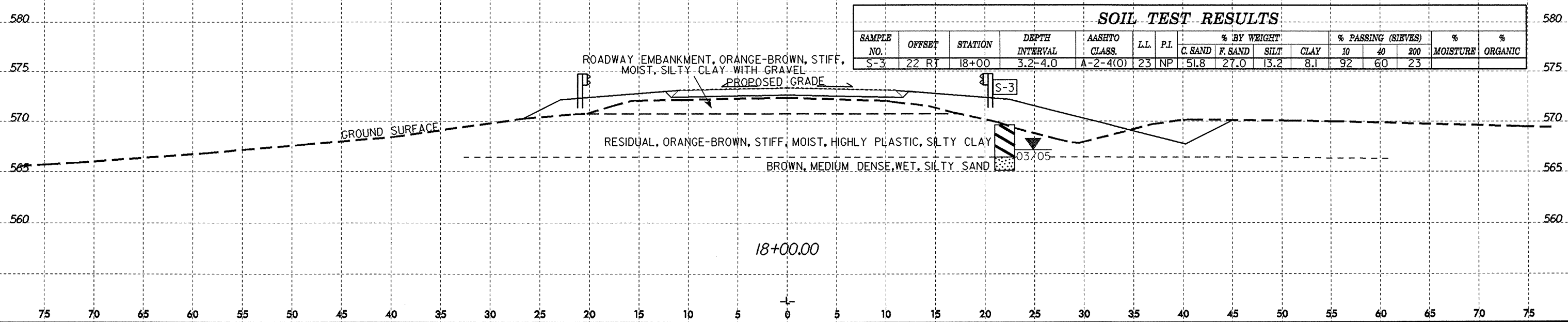
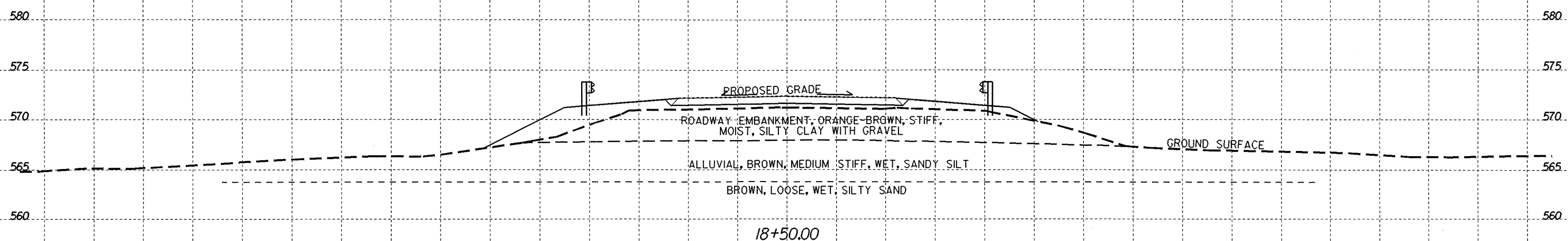
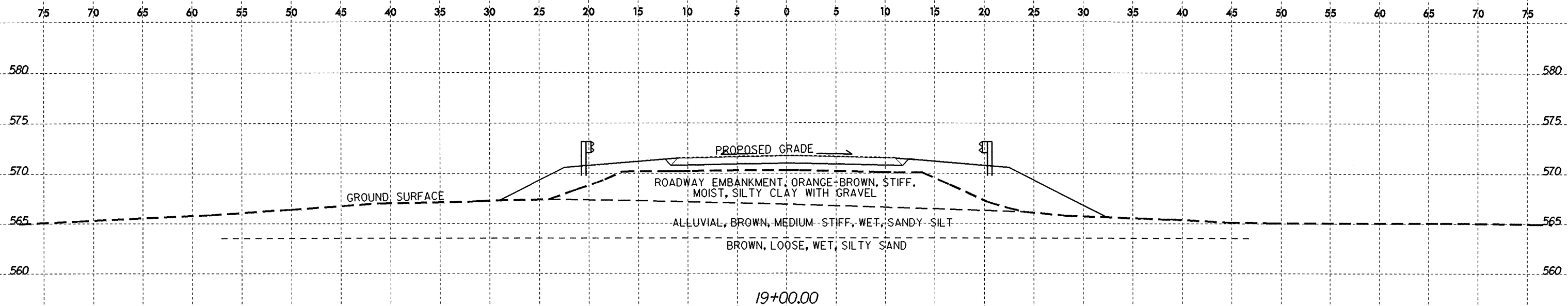
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SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-1	25 LT	15+50	1.0-2.5	A-7-6(23)	68	46	33.2	11.3	13.2	42.3	99	74	57		

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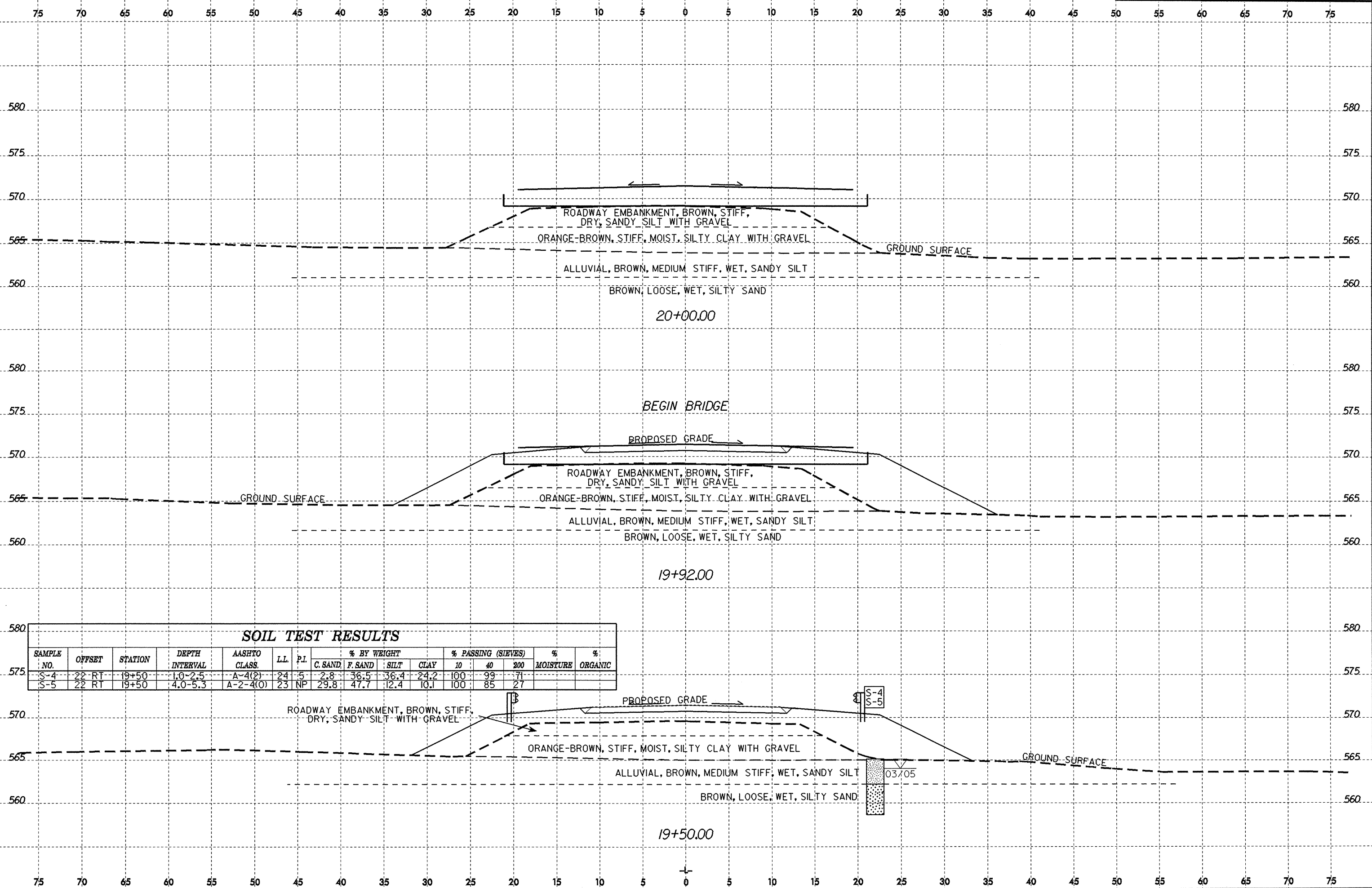
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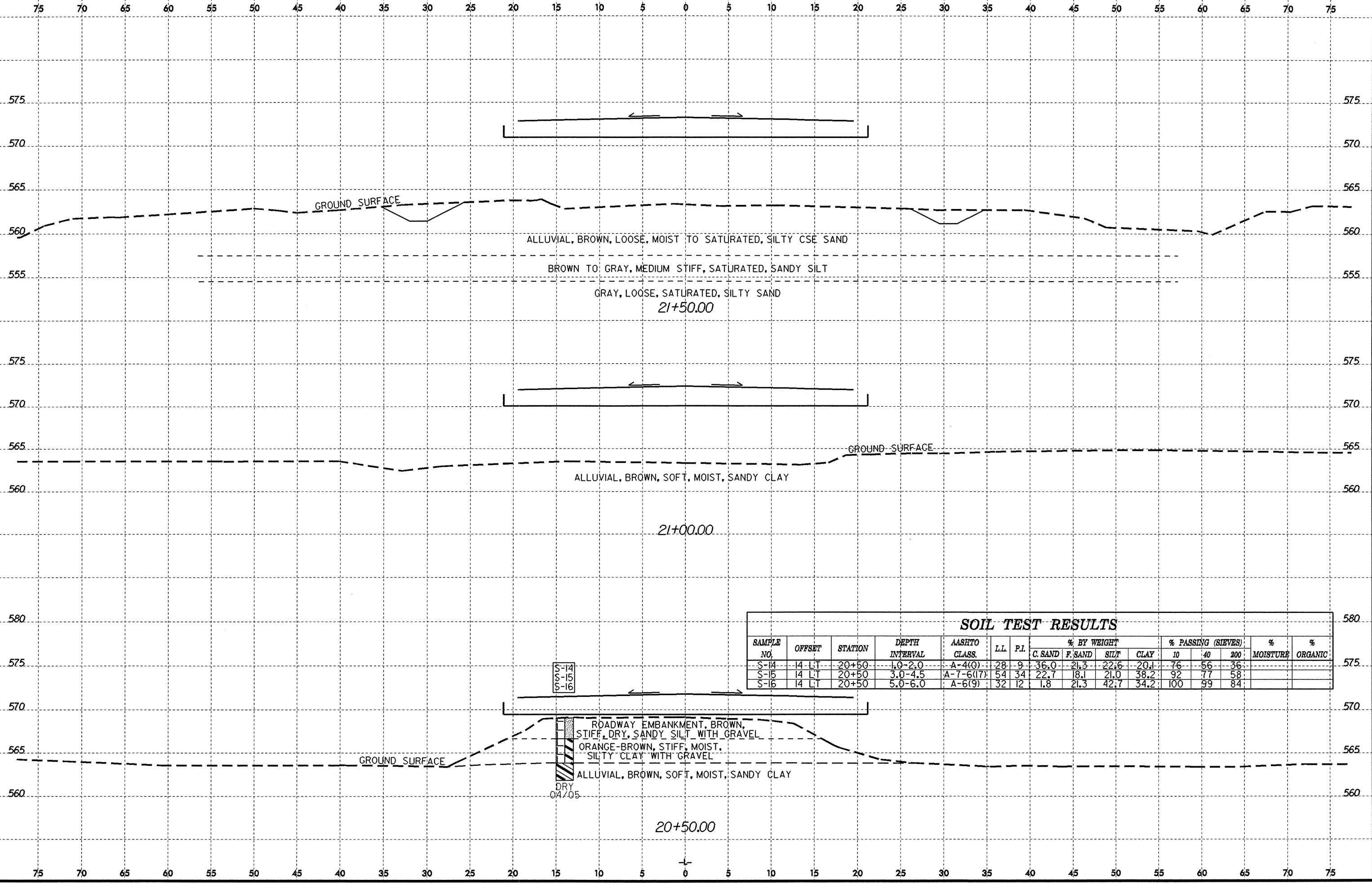
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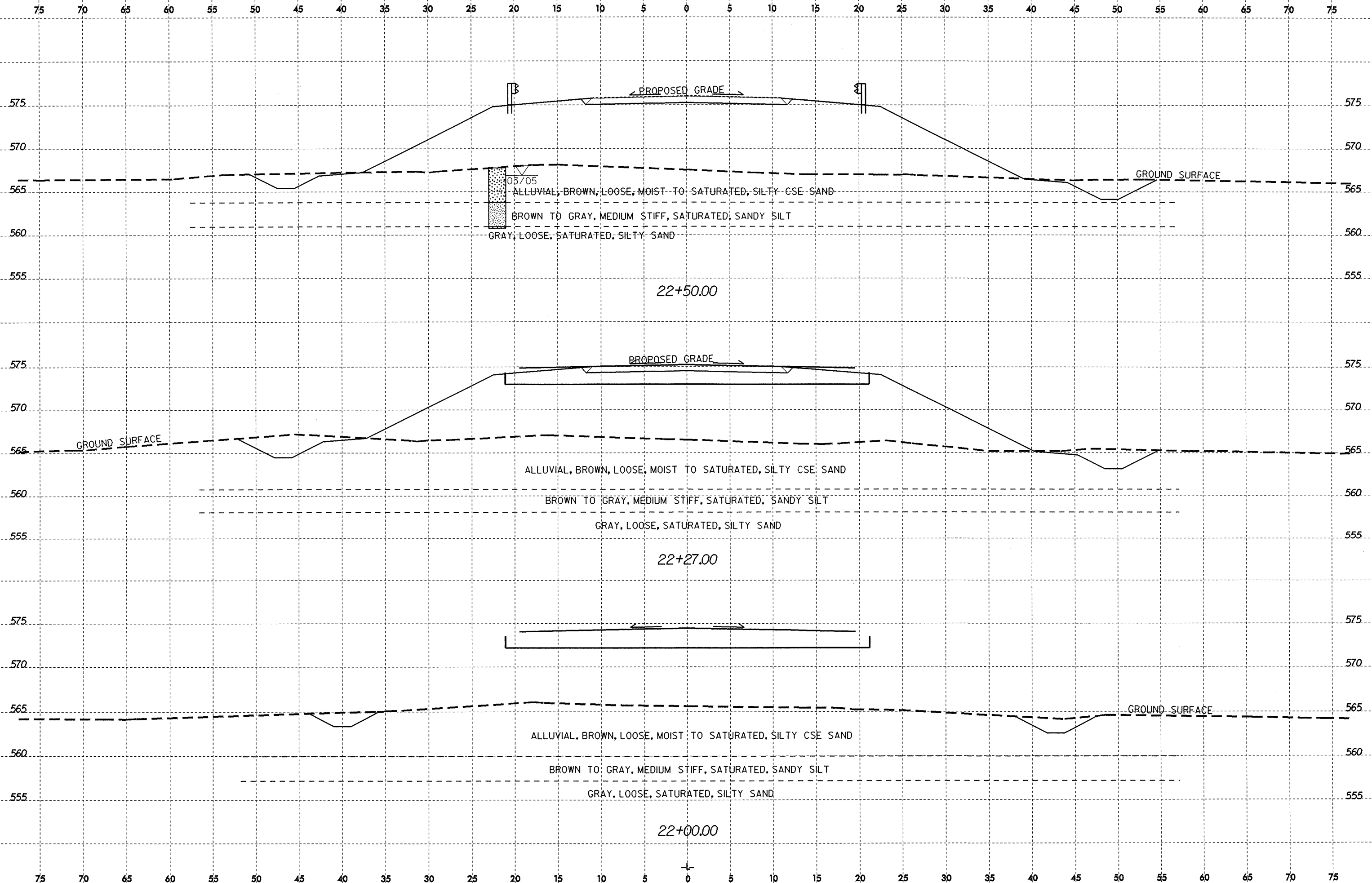
SOIL TEST RESULTS

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		
S-4	22 RT	19+50	1.0-2.5	A-4(2)	24	5	2.8	36.5	36.4	24.2	100	99	71		
S-5	22 RT	19+50	4.0-5.3	A-2-4(0)	23	NP	29.8	47.7	12.4	10.1	100	85	27		

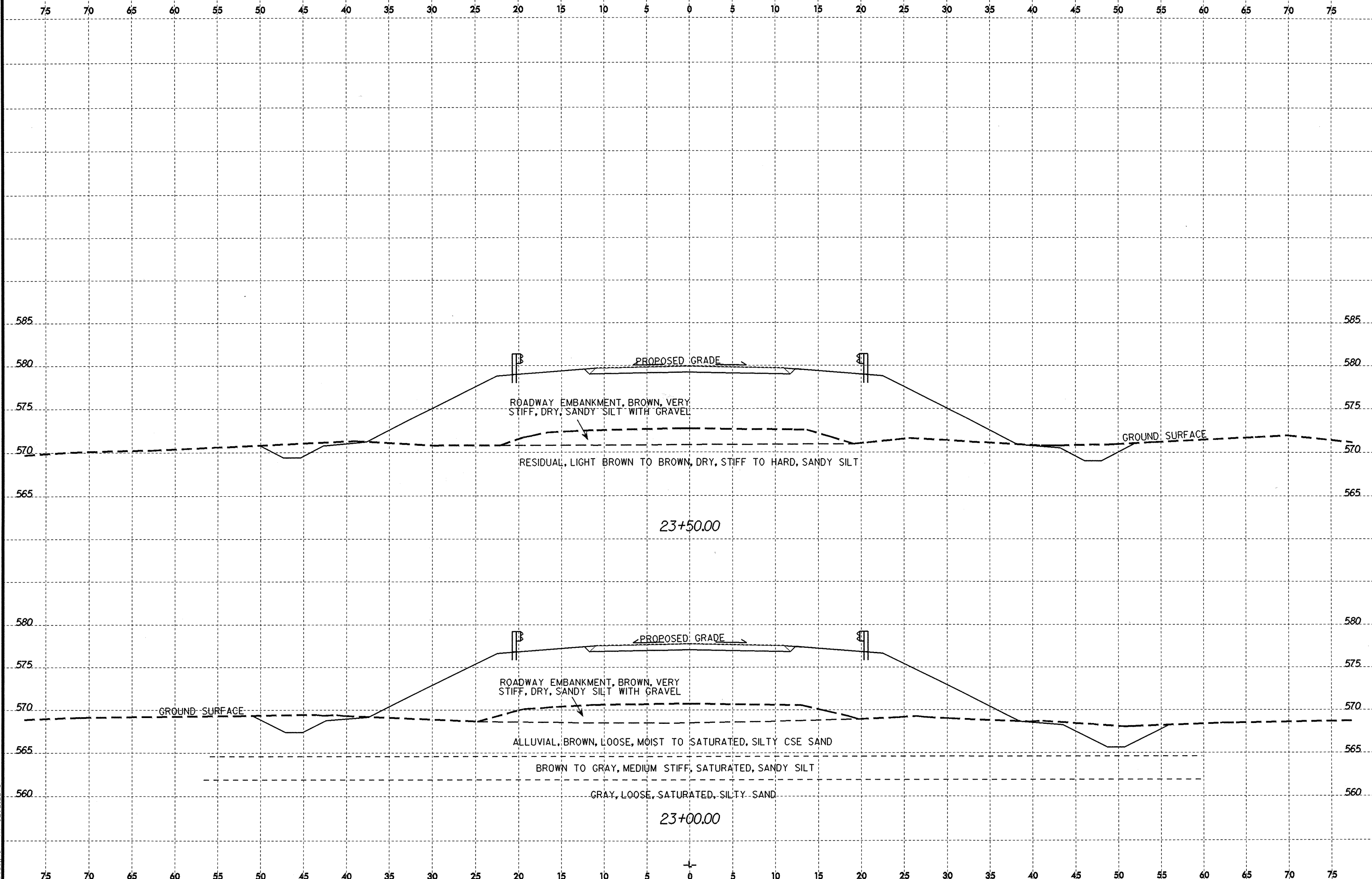
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							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-14	14 LT	20+50	1.0-2.0	A-4(0)	28	9	36.0	21.3	22.6	20.1	76	56	36		
S-15	14 LT	20+50	3.0-4.5	A-7-6(17)	54	34	22.7	18.1	21.0	38.2	92	77	58		
S-16	14 LT	20+50	5.0-6.0	A-6(9)	32	12	1.8	21.3	42.7	34.2	100	99	84		



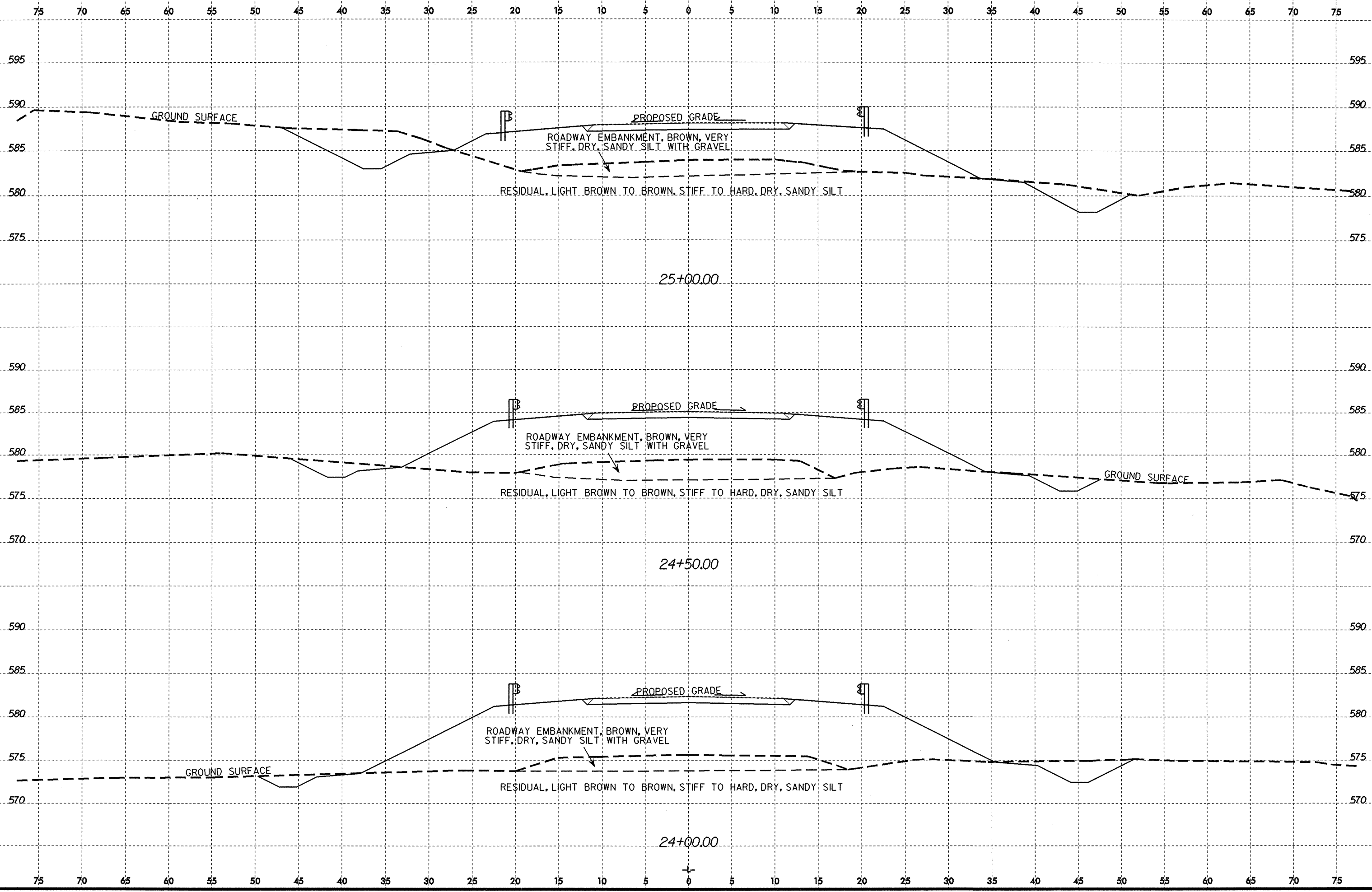
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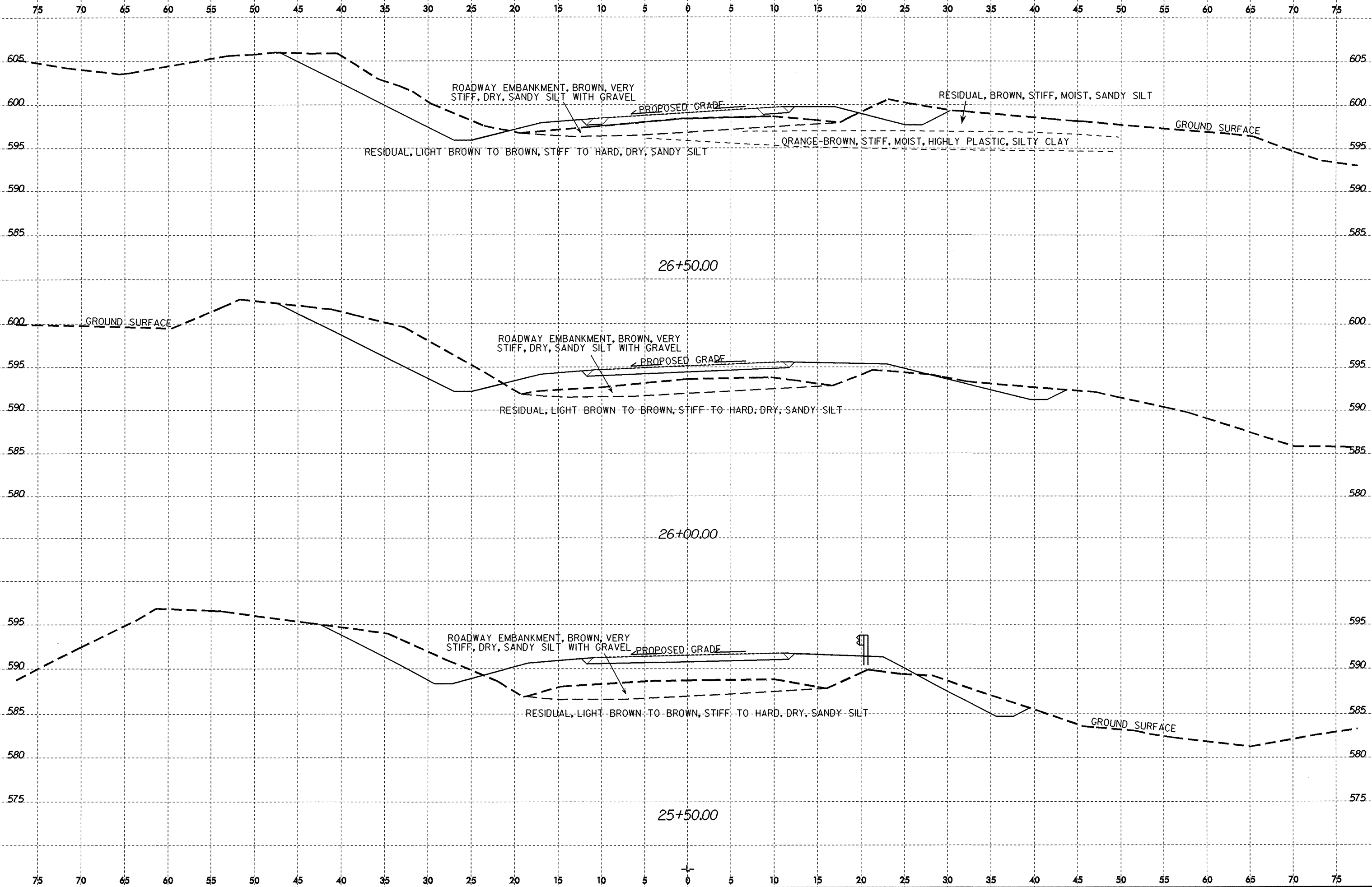
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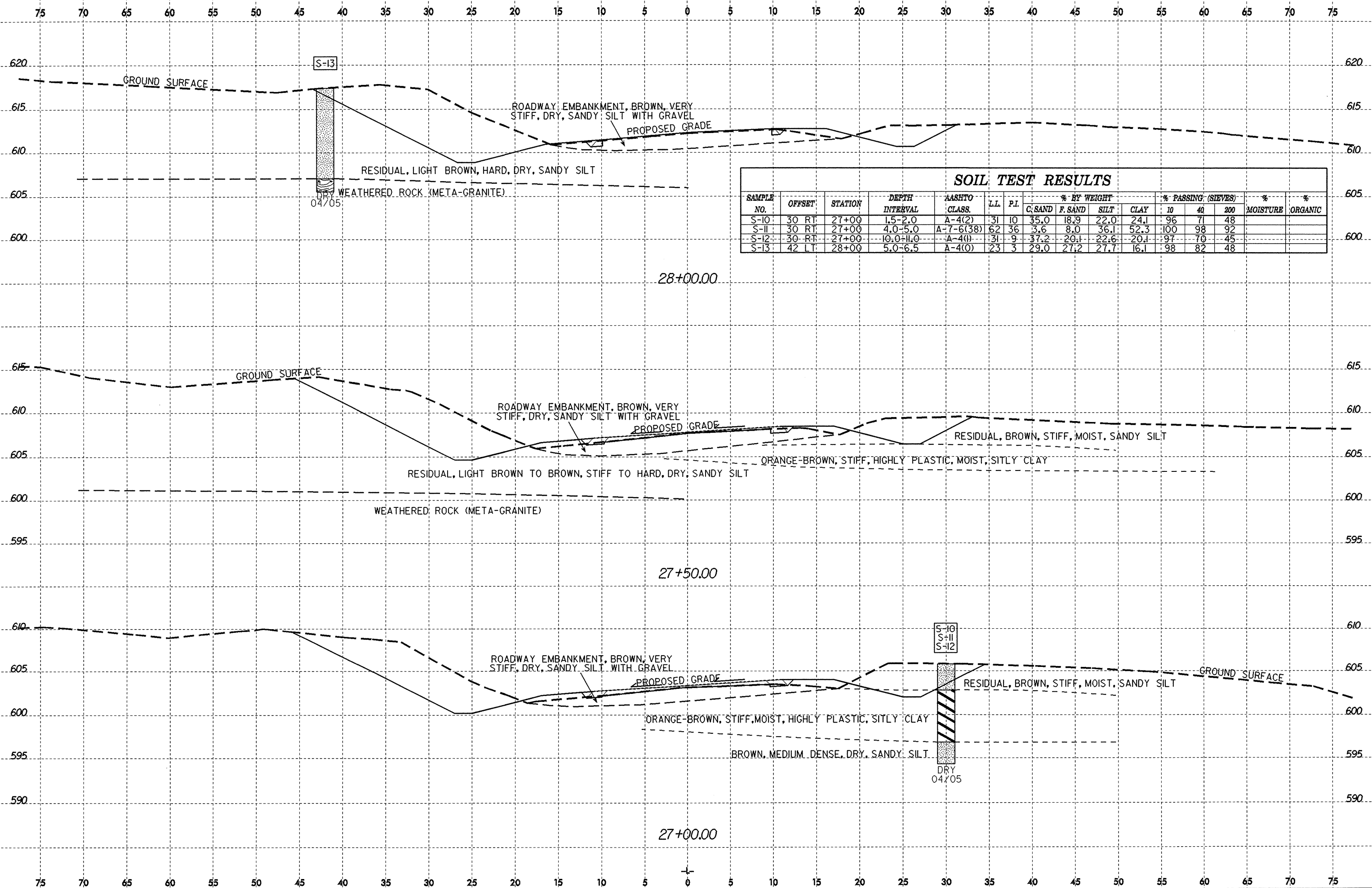


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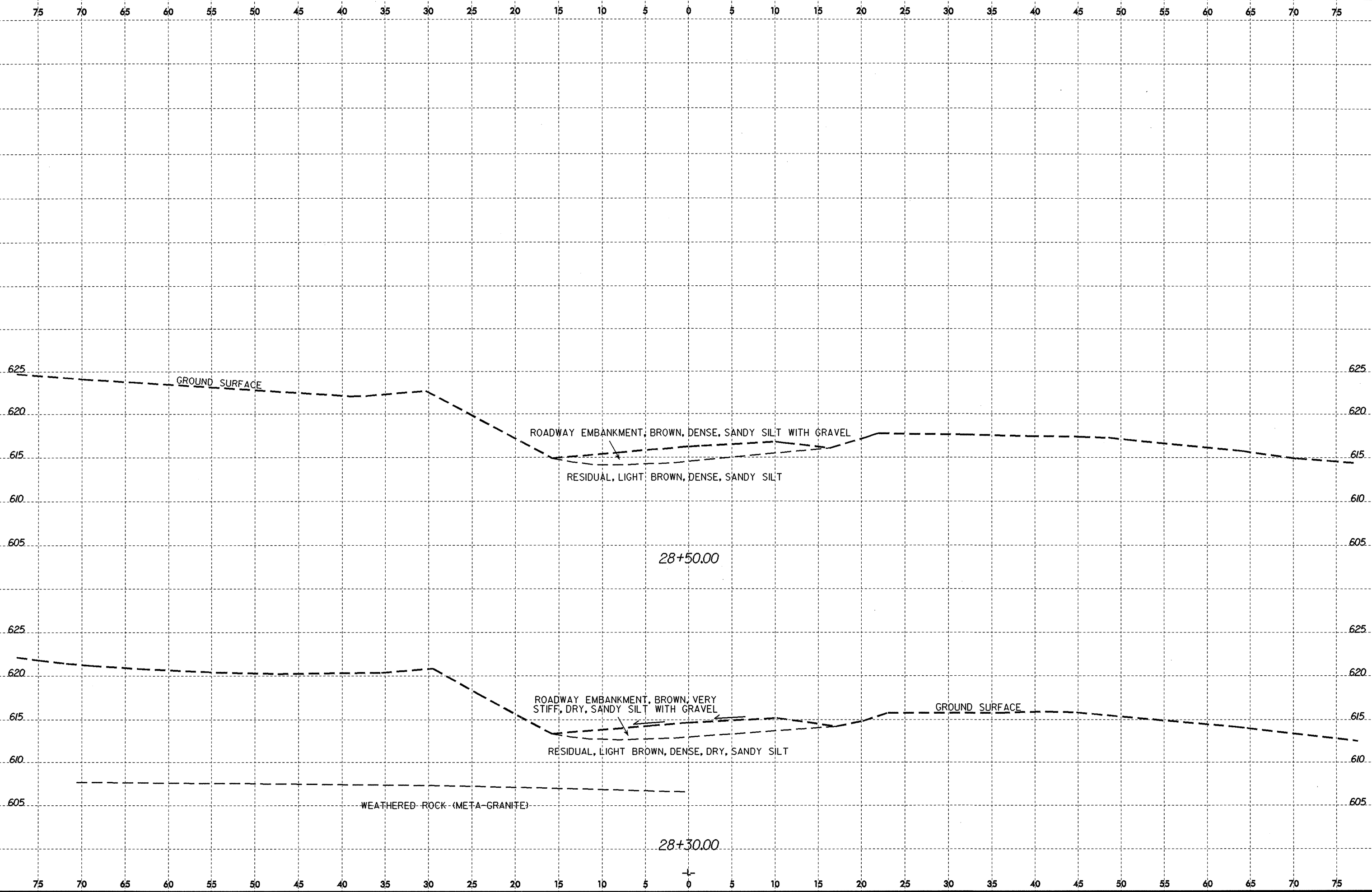


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SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-10	30 RT	27+00	1.5-2.0	A-4(2)	31	10	35.0	18.9	22.0	24.1	96	71	48		
S-11	30 RT	27+00	4.0-5.0	A-7-6(38)	62	36	3.6	8.0	36.1	52.3	100	98	92		
S-12	30 RT	27+00	10.0-11.0	A-4(1)	31	9	37.2	20.1	22.6	20.1	97	70	45		
S-13	42 LT	28+00	5.0-6.5	A-4(0)	23	3	29.0	27.2	27.7	16.1	98	82	48		

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