

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-4748	1	40
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
40118.1.1		P.E.	
40118.2.1		ROW & UTIL	
40118.3.1		CONST.	

CONTENTS

LINE	STATION	PLAN	PROFILE	XSECT
-L-	10+90.00-56+10.89	4-7	9-12	15-35
-Y1-	10+00.00-13+65.00	4	12	36
-Y2-	10+45.00-21+62.84	7	13	37-38
-Y3-	10+33.00-26+10.00	7-8	-	-
-Y4-	11+00.00-15+73.62	7	-	-
-Y5-	10+00.00-22+20.00	7-8	14	39-40
-Y6-	13+66.13-16+16.05	8	-	-
-DRI-	10+00.00-11+51.22	7	-	-
-DR2-	10+00.00-11+78.83	7	-	-
-GW-	10+00.00-14+96.55	5	-	-

ROADWAY  
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. R-4748 F.A. PROJ. N/A  
COUNTY MACON  
PROJECT DESCRIPTION NEW ROUTE-FROM SR 1660 (SILER ROAD)  
TO SR 1662 (WILEY BROWN ROAD) SOUTH OF US 441

INVENTORY

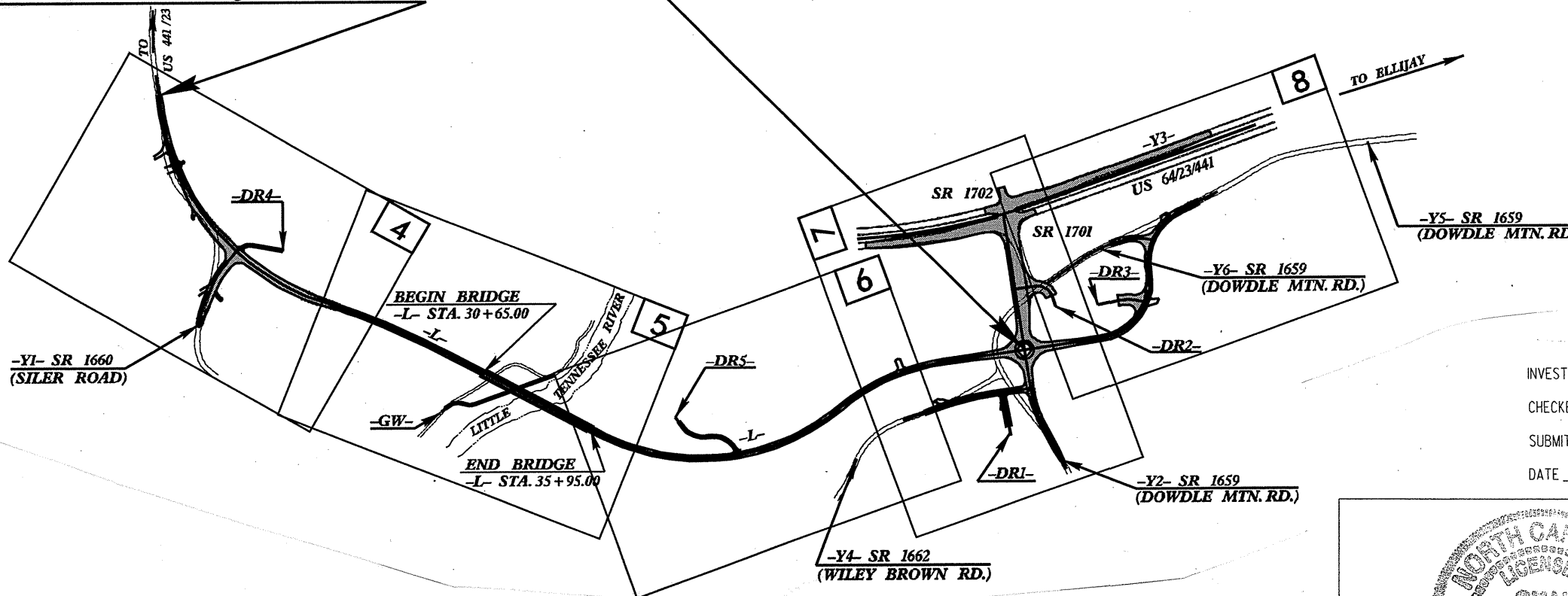
**CAUTION NOTICE**  
THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 19191 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE 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 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.

ID: R-4748

CONTRACT: C202556

STA. 10+90.00 -L- BEGIN TIP PROJECT R-4748

STA. 56+10.89 -L- END TIP PROJECT R-4748



- PERSONNEL
- P. Q. LOCKAMY
  - D. O. CHEEK
  - C. J. COFFEY
  - R. D. CHILDERS

INVESTIGATED BY P. Q. LOCKAMY  
CHECKED BY W. D. FRYE  
SUBMITTED BY W. D. FRYE  
DATE 12.09.08



DRAWN BY: J. T. WILLIAMS





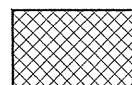
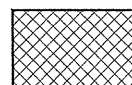
NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IS IT CONSIDERED TO BE PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

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

## SUBSURFACE INVESTIGATION

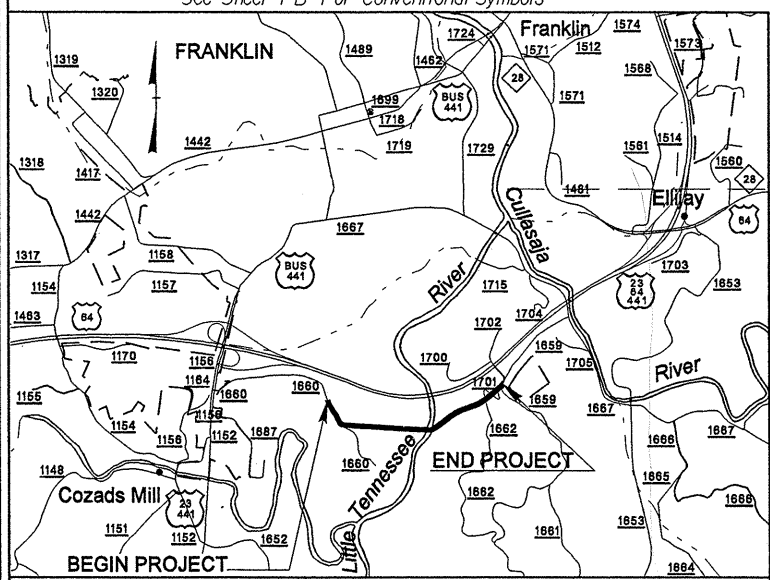
### SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS
SOIL IS CONSIDERED TO BE THE 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 STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:  <i>VERY STIFF, GRAY, SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>	WELL GRADED - 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) GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.  <b>ANGULARITY OF GRAINS</b> THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: <u>ANGULAR</u> , <u>SUBANGULAR</u> , <u>SUBROUNDED</u> , OR <u>ROUNDED</u> .	HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF 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:  WEATHERED ROCK (WR)  NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.  CRYSTALLINE ROCK (CR)  FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.  NON-CRYSTALLINE ROCK (NCR)  FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.  COASTAL PLAIN SEDIMENTARY ROCK (CP)  COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEGS, ETC.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC. ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOGGED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
<b>SOIL LEGEND AND AASHTO CLASSIFICATION</b>	<b>MINERALOGICAL COMPOSITION</b>	<b>WEATHERING</b>	
GENERAL CLASS. GRANULAR MATERIALS (<= 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE. VERY SLIGHT (V SLI.) 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. SLIGHT (SLI.) 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. MODERATE (MOD.) SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK. MODERATELY SEVERE (MOD. SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. IF TESTED, WOULD YIELD SPT REFUSAL. SEVERE (SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. IF TESTED, YIELDS SPT N VALUES > 100 BPF. VERY SEVERE (V SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. IF TESTED, YIELDS SPT N VALUES < 100 BPF. COMPLETE 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.	
<b>SOIL LEGEND AND AASHTO CLASSIFICATION</b>	<b>COMPRESSION</b>	<b>GROUND WATER</b>	
GROUP CLASS. A-1, A-3, A-2, A-4, A-5, A-6, A-7, A-7-5, A-7-6, A-7-7, A-7-8, A-1, A-2, A-3, A-4, A-5, A-6, A-7	SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31 MODERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50 HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50	WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING STATIC WATER LEVEL AFTER 24 HOURS PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA SPRING OR SEEP	
<b>SOIL LEGEND AND AASHTO CLASSIFICATION</b>	<b>PERCENTAGE OF MATERIAL</b>	<b>MISCELLANEOUS SYMBOLS</b>	
SYMBOL % PASSING #10, #40, #200	ORGANIC MATERIAL GRANULAR SOILS SILT-CLAY SOILS OTHER MATERIAL TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10% LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20% MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35% HIGHLY ORGANIC >10% >20% HIGHLY 35% AND ABOVE	ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION SOIL SYMBOL ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT INFERRED SOIL BOUNDARY INFERRED ROCK LINE ALLUVIAL SOIL BOUNDARY DIP & DIP DIRECTION OF ROCK STRUCTURES SOUNDING ROD	
<b>SOIL LEGEND AND AASHTO CLASSIFICATION</b>	<b>GROUND WATER</b>	<b>ABBREVIATIONS</b>	
GROUP INDEX	PI OF A-7-5 SUBGROUP IS <= LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30	AR - AUGER REFUSAL BT - BORING TERMINATED CL - CLAY CPT - CONE PENETRATION TEST CSE - COARSE DMT - DILATOMETER TEST DPT - DYNAMIC PENETRATION TEST e - VOID RATIO F - FINE FOSS - FOSSILIFEROUS FRAC - FRACTURED, FRACTURES FRAGS. - FRAGMENTS HI. - HIGHLY MED. - MEDIUM MICA - MICACEOUS MOD. - MODERATELY NP - NON PLASTIC ORG. - ORGANIC PMT - PRESSUREMETER TEST SAP. - SAPROLITIC SD. - SAND, SANDY SL. - SILT, SILTY SLI. - SLIGHTLY TCR - TRICONE REFUSAL w - MOISTURE CONTENT v - VERY VST - VANE SHEAR TEST WEA. - WEATHERED % - UNIT WEIGHT %d - DRY UNIT WEIGHT	
<b>SOIL LEGEND AND AASHTO CLASSIFICATION</b>	<b>TEXTURE OR GRAIN SIZE</b>	<b>EQUIPMENT USED ON SUBJECT PROJECT</b>	
GENERAL CLASS. GRANULAR MATERIALS (<= 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS	U.S. STD. SIEVE SIZE OPENING (MM) 4, 10, 40, 60, 200, 270 4.76, 2.00, 0.42, 0.25, 0.075, 0.053	DRILL UNITS: MOBILE B-51, BK-51, CME-45C, CME-550, PORTABLE HOIST ADVANCING TOOLS: CLAY BITS, 6" CONTINUOUS FLIGHT AUGER, 8" HOLLOW AUGERS, HARD FACED FINGER BITS, TUNG-CARBIDE INSERTS, CASING w/ ADVANCER, TRICONE 2 1/16" STEEL TEETH, TRICONE TUNG-CARB., CORE BIT HAMMER TYPE: AUTOMATIC, MANUAL CORE SIZE: B, N, XWL, H HAND TOOLS: POST HOLE DIGGER, HAND AUGER, SOUNDING ROD, VANE SHEAR TEST	
<b>SOIL LEGEND AND AASHTO CLASSIFICATION</b>	<b>TEXTURE OR GRAIN SIZE</b>	<b>FRACTURE SPACING</b>	
GENERAL CLASS. GRANULAR MATERIALS (<= 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS	BOULDER (BLDR.), COBBLE (COB.), GRAVEL (GR.), COARSE SAND (CSE. SD.), FINE SAND (F SD.), SILT (SL.), CLAY (CL.) GRAIN SIZE MM 305, 75, 2.0, 0.25, 0.05, 0.005 IN. 12, 3	TERM SPACING THICKNESS VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED > 4 FEET WIDE 3 TO 10 FEET THICKLY BEDDED 1.5 - 4 FEET MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.16 - 1.5 FEET CLOSE 0.16 TO 1 FEET VERY THINLY BEDDED 0.03 - 0.16 FEET VERY CLOSE LESS THAN 0.16 FEET THINLY LAMINATED 0.008 - 0.03 FEET THINLY LAMINATED < 0.008 FEET	
<b>SOIL LEGEND AND AASHTO CLASSIFICATION</b>	<b>TEXTURE OR GRAIN SIZE</b>	<b>INDURATION</b>	
GENERAL CLASS. GRANULAR MATERIALS (<= 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS	SOIL MOISTURE - CORRELATION OF TERMS SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION LL - LIQUID LIMIT - SATURATED - (SAT.) USUALLY LIQUID; VERY WET. USUALLY FROM BELOW THE GROUND WATER TABLE PL - PLASTIC LIMIT - WET - (W) SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE OM - OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE SL - SHRINKAGE LIMIT - DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE. MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER. INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER. EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.	
<b>SOIL LEGEND AND AASHTO CLASSIFICATION</b>	<b>PLASTICITY</b>	<b>INDURATION</b>	
GENERAL CLASS. GRANULAR MATERIALS (<= 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS	PLASTICITY INDEX (PI) DRY STRENGTH NONPLASTIC 0-5 VERY LOW LOW PLASTICITY 6-15 SLIGHT MED. PLASTICITY 16-25 MEDIUM HIGH PLASTICITY 26 OR MORE HIGH		
<b>SOIL LEGEND AND AASHTO CLASSIFICATION</b>	<b>COLOR</b>	<b>INDURATION</b>	
GENERAL CLASS. GRANULAR MATERIALS (<= 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS	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.		
<b>SOIL LEGEND AND AASHTO CLASSIFICATION</b>	<b>COLOR</b>	<b>INDURATION</b>	
GENERAL CLASS. GRANULAR MATERIALS (<= 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS			BENCH MARK:  ELEVATION: _____ FT. NOTES:  EXISTING FILL

09/208/99  
 CONTRACT: R-4748  
 TIP PROJECT: R-4748  
 \$\$\$SYTIME\$\$\$  
 \$\$\$DCN\$\$\$  
 \$\$\$USERNAME\$\$\$

**CONTRACT: R-4748**  
**TIP PROJECT: R-4748**

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



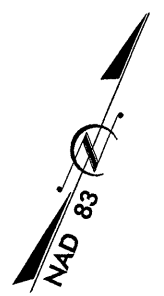
VICINITY MAP

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
**MACON COUNTY**

**LOCATION: FRANKLIN - NEW ROUTE FROM SR 1660 (SILER ROAD)  
TO SR 1662 (WILEY BROWN ROAD) SOUTH OF US 441**

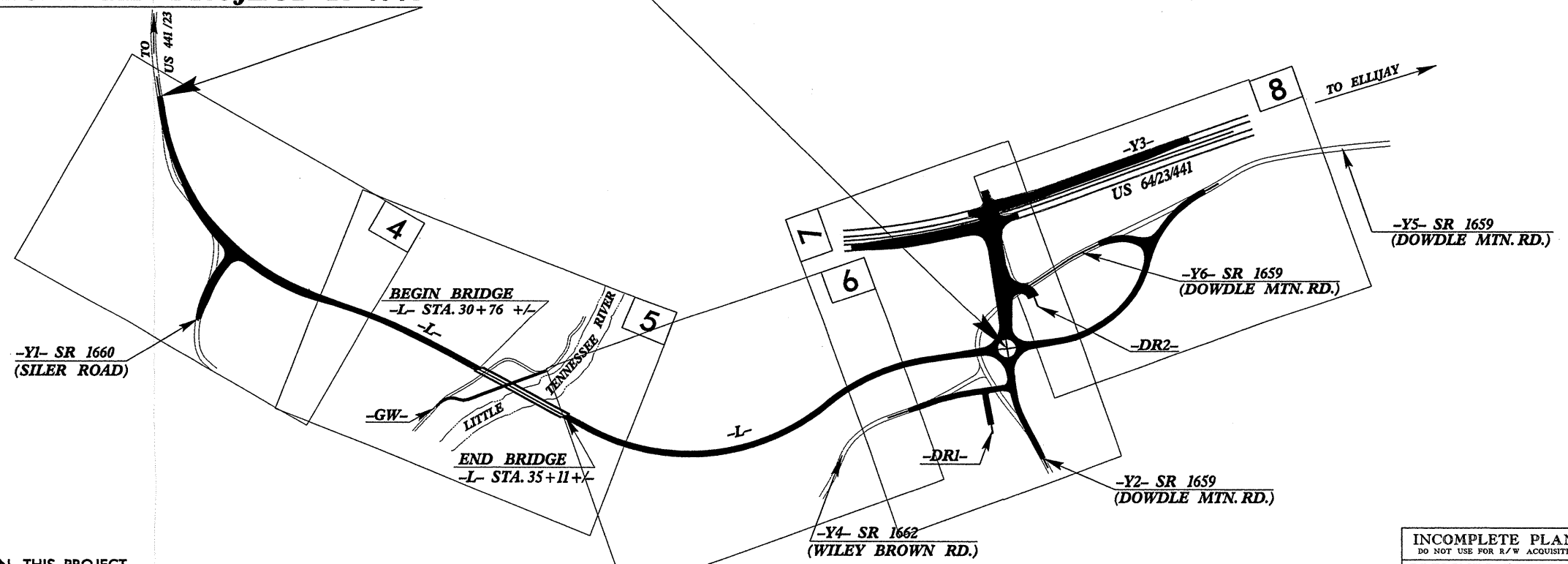
**TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-4748	2A	40
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
40118.1.1		P.E.	



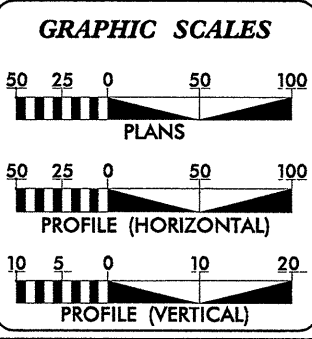
**STA. 10+90.00 -L- BEGIN TIP PROJECT R-4748**

**STA. 56+10.89 -L- END TIP PROJECT R-4748**



THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.  
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD \_\_\_\_\_.

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



**DESIGN DATA**

ADT 2010 =	8,600
ADT 2030 =	14,400
DHV =	9 %
D =	60 %
T =	3 % *
V =	40 MPH
FUNC. CLASS. =	RURAL COLLECTOR
* TTST 1	DUAL 2

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT R-4748 =	0.774 MILES
LENGTH STRUCTURE TIP PROJECT R-4748 =	0.082 MILES
<b>TOTAL LENGTH TIP PROJECT R-4748 =</b>	<b>0.856 MILES</b>

Prepared in the Office of:  
**DIVISION OF HIGHWAYS**  
1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: **MAY 15, 2009**

LETTING DATE: **JUNE 15, 2010**

**GARY LOVERING, PE**  
PROJECT ENGINEER

**RON McCOLLUM, PE**  
PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

\_\_\_\_\_  
SIGNATURE: P.E.

**ROADWAY DESIGN ENGINEER**

\_\_\_\_\_  
SIGNATURE: P.E.

**DIVISION OF HIGHWAYS**  
**STATE OF NORTH CAROLINA**

STATE HIGHWAY DESIGN ENGINEER P.E.

# EARTHWORK BALANCE SHEET

Volumes in Cubic Yards

PROJECT R-4748

COUNTY Macon

DATE 03/03/2010 RAS

SHEET 3 OF 40 SHEET

LINE	STATION	STATION	TOTAL EXCAV. (UNCL.)	ROCK EXCAV.	UNDERCUT EXCAV.	UNSUIT. EXCAV.	SUITABLE EXCAV.	TOTAL EMB.	ROCK EMB.	UNDERCUT EMB.	EARTH EMB.	EMBANK. 15%	BORROW	SUITABLE WASTE	UNSUIT. WASTE	TOTAL WASTE
L	10+90.00	30+65.00	150901				150901	17049			17049	19606	0	131295		131295
		BEGIN BRIDGE														
-Y1-	10+18.04	13+65.00	7333				7333	66			66	76	0	7257		7257
-GW-	10+00.00	14+96.55	28				28	313			313	360	332	0		0
-DR4-	10+04.00	11+88.02	2970				2970	0			0	0	0	2970		2970
<b>SUBTOTAL 1</b>			<b>161232</b>				<b>161232</b>	<b>17428</b>			<b>17428</b>	<b>20042</b>	<b>332</b>	<b>141522</b>		<b>141522</b>
-L-	35+95.00	55+45.89	22415				22415	57590			57590	66229	43814	0		0
		END BRIDGE														
-DR5-	10+25.00	13+26.35	5984				5984	1955			1955	2248	0	3736		3736
<b>SUBTOTAL 2</b>			<b>28399</b>				<b>28399</b>	<b>59545</b>			<b>59545</b>	<b>68477</b>	<b>43814</b>	<b>3736</b>		<b>3736</b>
-Y2-	10+45.00	21+18.43	61419				61419	6140			6140	7061	0	54358		54358
-DR2-	10+50.00	11+76.83	33				33	264			264	304	271	0		0
-Y3- EB	10+33.00	17+77.64	5361				5361	120			120	138	0	5223		5223
-Y3- WB	15+71.05	26+10.00	70				70	0			0	0	0	70		70
-Y3- MED	10+33.00	16+00.00	103				103	45			45	52	0	51		51
	17+50.00	26+10.00	116				116	325			325	374	258	0		0
-Y4-	11+00.00	15+59.27	4440				4440	2018			2018	2321	0	2119		2119
-DR1-	10+17.01	11+51.22	321				321	59			59	68	0	253		253
-Y5-	10+65.00	21+42.00	41507				41507	2561			2561	2945	0	38562		38562
-DR3-	10+90.00	11+95.24	920				920	0			0	0	0	920		920
-Y6-	13+28.89	14+98.45	3988				3988	323			323	371	0	3617		3617
<b>SUBTOTAL 3</b>			<b>118278</b>				<b>118278</b>	<b>11855</b>			<b>11855</b>	<b>13634</b>	<b>529</b>	<b>105173</b>		<b>105173</b>
<b>PROJECT SUBTOTAL</b>			<b>307909</b>				<b>307909</b>	<b>88828</b>			<b>88828</b>	<b>102153</b>	<b>44675</b>	<b>250431</b>		<b>250431</b>
WASTE IN LIEU OF BORROW													-44675	-44675		-44675
LOSS DUE TO CLEARING & GRUBBING			-150				-150							-150		-150
<b>PROJECT TOTAL</b>			<b>307759</b>				<b>307759</b>	<b>88828</b>			<b>88828</b>	<b>102153</b>	<b>0</b>	<b>205606</b>		<b>205606</b>
SAY			307760										0			

\* 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.

UNDERCUT EXCAVATION = 405 CY

ESTIMATED SHOULDER BORROW = 5,400 CY

SHALLOW UNDERCUT = 50 CY



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY  
GOVERNOR

LYNDO TIPPETT  
SECRETARY

December 9, 2008

STATE PROJECT: 40118.1.1 (R-4748)  
COUNTY: Macon  
  
DESCRIPTION: Franklin – New Route from SR-1660 (Siler Road)  
To SR-1662 (Wiley Brown Road) south of US-441  
  
SUBJECT: Geotechnical Report – Inventory

**Project Description**

This project provides secondary road linkage between Georgia Road (US-441/23), the Southwestern Community College and Macon County Library on Siler Road (SR-1660) to Wells Grove Road (SR-1646). It also improves access to Oak Forest Road (SR-1701) at the intersection with US-441/64/23 and traverses the Little Tennessee River on a 430± foot long bridge. It is located on the south side of Franklin.

The subsurface investigation was conducted in the fall of 2008 during a period of extended drought. A CME-550 ATV mounted drill was used. Standard Penetration Tests were performed at 5-foot intervals using an automatic hammer. Forty-one soil samples were taken and submitted for quality testing. Three Shelby tubes were taken for triaxial CD testing. Rock was cored at the proposed bridge site to determine the nature of the bedrock there. Twelve samples of cored rock were point load tested.

The following alignments were investigated:

<u>Line</u>	<u>Station Interval</u>
-L-	10+90.00 – 56+10.89
-Y1-	10+00.00 – 13+65.00
-Y2-	10+45.00 – 21+62.84
-Y3-	10+33.00 – 26+10.00
-Y4-	11+00.00 – 15+73.62
-Y5-	10+00.00 – 22+20.00
-Y6-	13+66.13 – 16+16.05

MAILING ADDRESS:  
NC DEPARTMENT OF TRANSPORTATION  
GEOTECHNICAL UNIT  
1589 MAIL SERVICE CENTER  
RALEIGH NC 27699-1589

TELEPHONE: 919-250-4088  
FAX: 919-250-4237

WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:  
CENTURY CENTER COMPLEX  
BUILDING B  
1020 BIRCH RIDGE DRIVE  
RALEIGH NC 27610

<u>Line</u>	<u>Station Interval</u>
-DR1-	10+00.00 – 11+51.22
-DR2-	10+00.00 – 11+76.83
-GW-	10+00.00 – 14+96.55

**Areas of Special Geotechnical Interest**

(1) Floodplain Deposits: Alluvial soils are present at the following locations.

<u>Line</u>	<u>Station Interval</u>
-L-	31+30 - 35+00 Recent Alluvium
-L-	35+00 - 40+00 Terrace Alluvium
-Y5-	16+70± – 19+50± Buried Alluvium

(2) Water Wells: A residential water well is located within the construction limits at -L- Station 16+23, 100 Rt. The two story frame dwelling to the right of -L- Station 19+50 is suspected to have a water well though one was not observed there.

(3) Drain Field: Part of a large septic drain field is located within the construction limits to the right of -Y5- from Station 18+80 to 20+10.

(4) Sediment Ponds: Two sedimentation basins and outflow are located to the left, right and within the construction limits of -L- from Station 40+00 to 44+00.

(5) Fill: Fill is located within the construction limits at the following locations.

<u>Line</u>	<u>Station</u>
-L-	LT of 17+00 – 19+50
-L-	RT of 19+50 – LT of 21+00
-L-	41+30 – 45+60
-L-	53+00 – 54+60
-Y2-	LT of 17+5 – 18+80
-Y5-	16+70 – LT of 20+20
-Y6-	RT of 13+70 – 16+16

**Physiography and Geology**

The area is between confluences of three large drainages and has thick mats of saprolitic soils and weathered rock. Residual clays are present where isolated from erosion, usually on flatter slopes and in swales near ridges. The project begins on top of a narrow, steep sided ridge top separating Cartoogechaye Creek and the Little Tennessee River. It crosses the Greenway and the Little Tennessee River and runs into a tall engineered fill before crossing another drainage divide. The east half of the project contains extensive areas of fill and some buried alluvium. Rock exposures are rare. Bedrock is generically described

as basement age gneisses exhibiting some mylonized/flow texture. Intrusions or pegmatites were not observed.

The active floodplain of the Little Tennessee River is rather narrow with a thin basal cobble/boulder layer which is visible in the shallow water. River sides tend to be bare, nearly vertical and about 10 feet tall. Numerous small slumps were observed near the river bank on the east side.

The floodplain has two distinct ages of alluvium. Recent alluvium consists of sandy soil with trace organics and some silts and basal material which is in contact with crystalline rock. Older, significantly weathered terraced alluvium has a thick reddish clay cap and is underlain by deep saprolites and weathered rock. Terrace alluvium is present along several hundred feet of -L-.

**Soil Properties**

Soils along the project are predominantly saprolitic fine sandy silts and silty sands. They are deep across the majority of the project with shallow crystalline rock found in proposed fill areas on the west side of the Little Tennessee River. Large areas of existing fill derived from saprolite are found along -L- and -Y5-. Smaller areas of fill are present in proposed cut areas along -L- near -Y1-. Other soils present include occasional residual clays and alluvial terrace clays. Recent alluvium in the floodplain includes very loose sands with trace organics and soft silts over a thin layer of basal sand and gravel with cobbles and boulders.

Rock Test Results

A RocTest Telemac point load tester Model PIL-7 was used to test rock cored from the vicinity of the proposed bridge over the river.

<u>Station -L-</u>	<u>Depth</u>	<u>Weathering</u>	<u>Reading (PSI)</u>
31+03 CL	11.8	MOD. SEV.	160
31+03 CL	12.0	MOD. SEV.	689
31+03 CL	13.7	FRESH	2255
32+50 CL	17.0	SLI.	1946
32+50 CL	17.3	SLI.	2634
32+50 CL	31.7	SLI.	2331
32+50 CL	31.9	SLI.	2252
32+50 CL	32.4	FRESH	1975

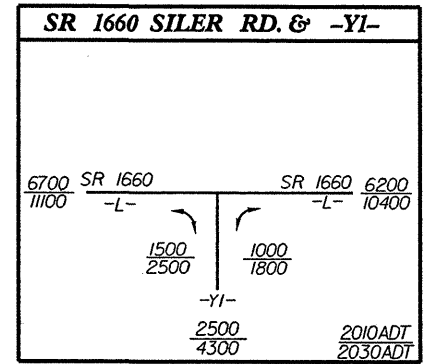
<u>Station -L-</u>	<u>Depth</u>	<u>Weathering</u>	<u>Reading (PSI)</u>
34+30 CL	27.5	FRESH	2780
34+30 CL	27.7	FRESH	3668
34+30 CL	32.0	MOD. SEV.	875
34+30 CL	32.6	MOD. SEV.	959

Respectfully Submitted,

P. Q. Lockamy, PG

8/17/99

# STA. 10+90.00 -L- BEGIN TIP PROJECT R-4748



PROJECT REFERENCE NO. R-4748	SHEET NO. 4/40
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

POT Sta. 10+00.00

-BL-2 8+36.50 PINC  
-L- STA. 11+34.29  
OFF 14.59 RT.

PC Sta. 11+70.81

-BL-3 11+37.99 PINC  
-L- STA. 14+24.54  
OFF 56.30 RT.

-BL-4 14+57.87 PINC  
-L- 17+31.49  
OFF 16.34 LT.

-L- POC Sta. 18+64.52  
-YI- POT Sta. 10+00.00  
BRG AH = S 14° 52' 32.4" W

-BL-6 19+43.76 PINC  
-L- STA. 20+81.26  
OFF 8.01 LT.

PRC Sta. 23+00.76

-BL-7 22+25.76 PINC  
-L- STA. 23+64.97  
OFF 1.72 LT.

-BL-5 16+97.67 PINC  
-L- STA. 18+99.50 OFF 144.67 RT.  
-BYI- 5+00.00 POT  
-YI- STA. 11+49.87 OFF 25.15 LT.

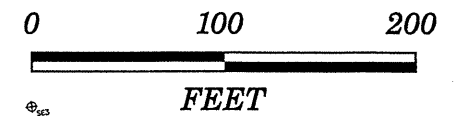
PT. Sta. 13+47.24  
BRG AH = S 12° 40' 26.6" E

POT Sta. 13+76.82

-BYI-20 7+21.72 PINC  
-YI- STA. 13+68.90  
OFF 23.26 RT.

END CONST.  
-YI- STA. 13+65.00

-L-		-YI-	
PI Sta 17+98.81	PI Sta 26+18.40	PI Sta 12+15.27	
$\Delta = 62^{\circ} 15' 04.8"$ (LT)	$\Delta = 9^{\circ} 37' 56.4"$ (RT)	$\Delta = 27^{\circ} 32' 59.1"$ (LT)	
D = 5' 30" 33.2"	D = 1' 31" 11.2"	D = 10' 13" 53.0"	
L = 1129.95'	L = 633.80'	L = 269.27'	
T = 628.00'	T = 317.65'	T = 137.29'	
R = 1040.00'	R = 3770.00'	R = 560.00'	
SE = (SEE PLANS)	SE = (SEE PLANS)	SE = (SEE PLANS)	



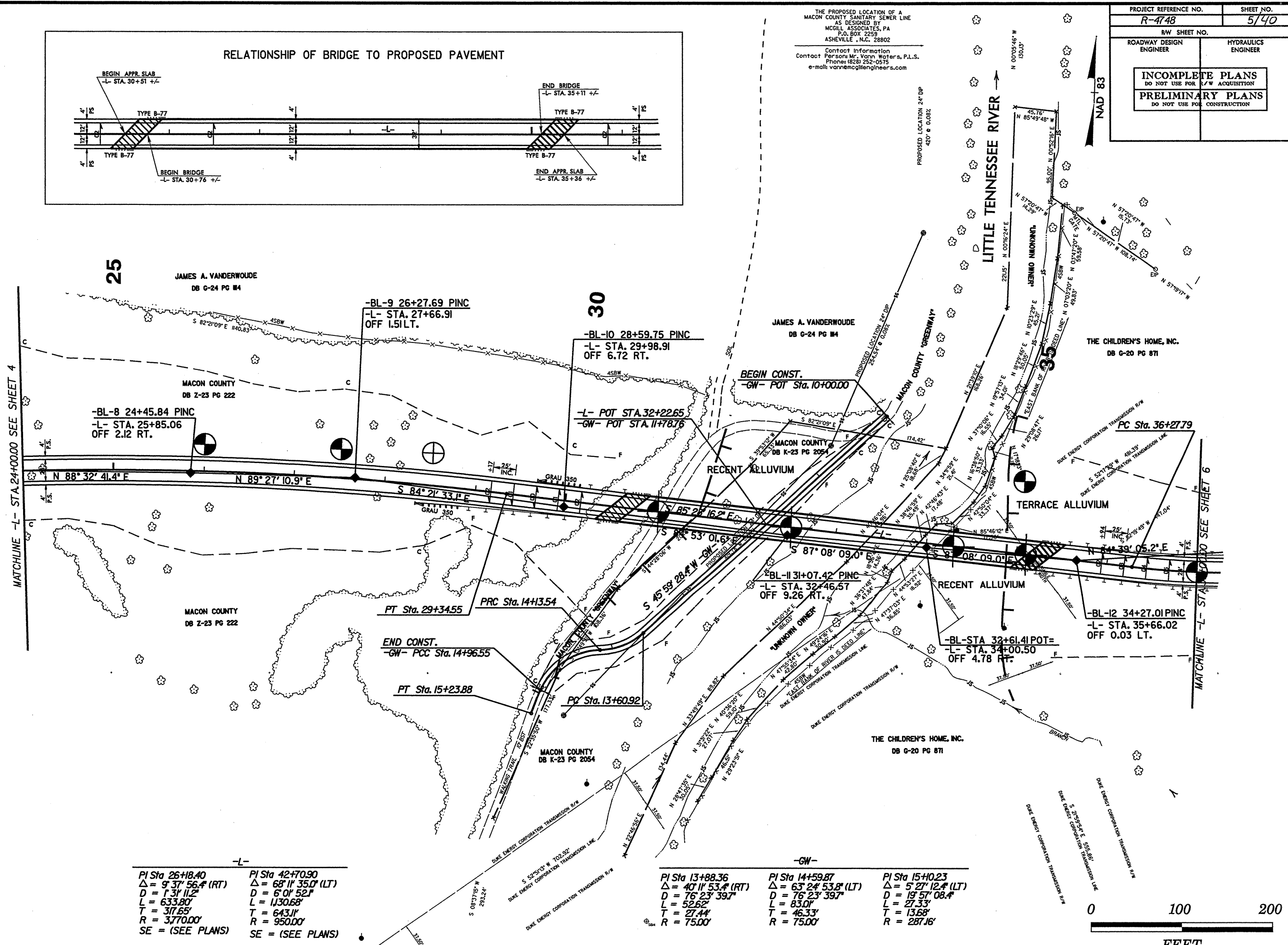
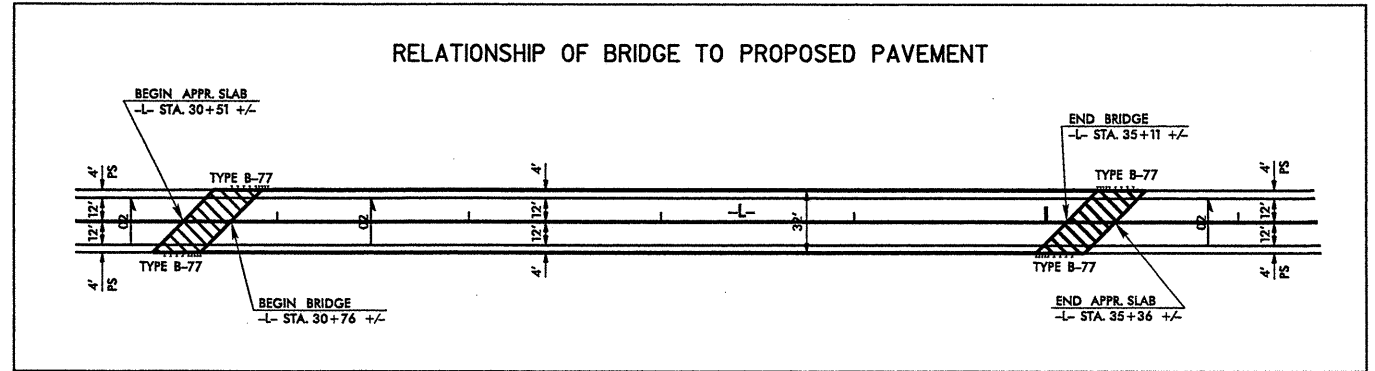
REVISIONS

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THE PROPOSED LOCATION OF A  
 MACON COUNTY SANITARY SEWER LINE  
 AS DESIGNED BY  
 MCGILL ASSOCIATES, PA  
 P.O. BOX 2259  
 ASHEVILLE, N.C. 28802

Contact Information  
 Contact Person: Mr. Vann Waters, P.L.S.  
 Phone: (828) 252-0575  
 e-mail: vann@mcgillengineers.com

PROJECT REFERENCE NO.		SHEET NO.	
R-4748		5/40	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION			

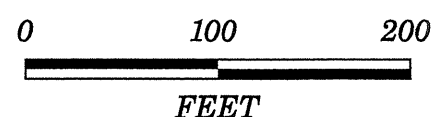


MATCHLINE -L- STA. 24+00.00 SEE SHEET 4

MATCHLINE -L- STA. 36+00.00 SEE SHEET 6

-L-	-L-
PI Sta 26+18.40	PI Sta 42+70.90
Δ = 9° 37' 56.4" (RT)	Δ = 68° 11' 35.0" (LT)
D = 1' 31" 11.2"	D = 6' 01" 52.1"
L = 633.80'	L = 1130.68'
T = 317.65'	T = 643.11'
R = 3,770.00'	R = 950.00'
SE = (SEE PLANS)	SE = (SEE PLANS)

-GW-	-GW-	-GW-
PI Sta 13+88.36	PI Sta 14+59.87	PI Sta 15+02.23
Δ = 40° 11' 53.4" (RT)	Δ = 63° 24' 53.8" (LT)	Δ = 5° 27' 12.4" (LT)
D = 76' 23" 39.7"	D = 76' 23" 39.7"	D = 19' 57" 08.4"
L = 52.62'	L = 83.01'	L = 27.33'
T = 27.44'	T = 46.33'	T = 13.68'
R = 75.00'	R = 75.00'	R = 287.16'



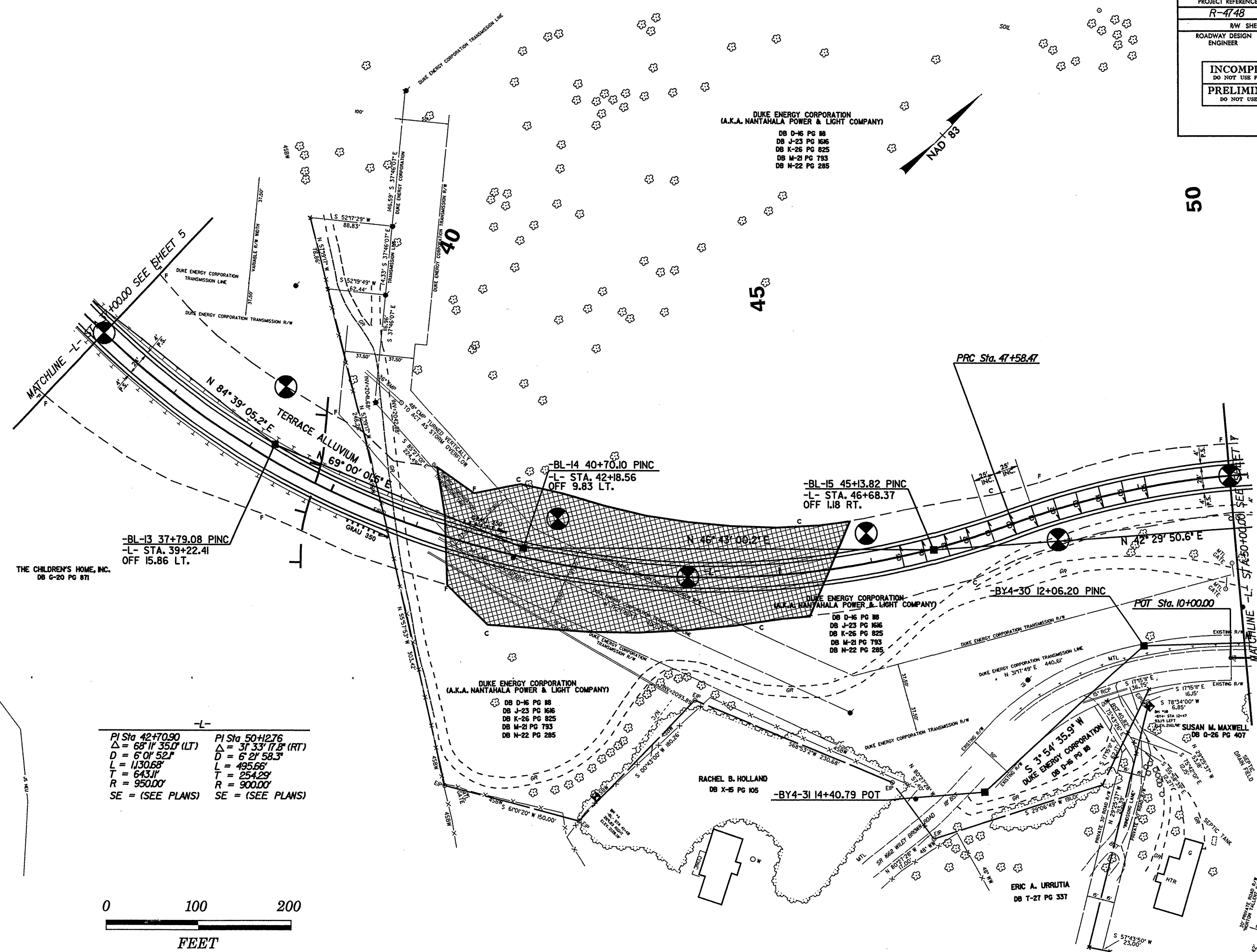
REVISIONS



8/17/99

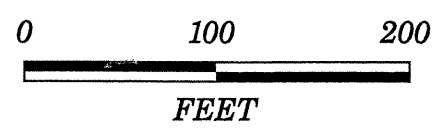
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USER:NAME

PROJECT REFERENCE NO. <b>R-4748</b>	SHEET NO. <b>6/40</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



THE CHILDREN'S HOME, INC.  
DB C-20 PG 871

-L-	-L-
PI Sta 42+70.90	PI Sta 50+276
$\Delta = 68^{\circ} 11' 35.0''$ (LT)	$\Delta = 31^{\circ} 33' 17.8''$ (RT)
D = 6' 01' 52.1"	D = 6' 21' 58.3"
L = 1130.68'	L = 495.66'
T = 643.11'	T = 254.29'
R = 950.00'	R = 900.00'
SE = (SEE PLANS)	SE = (SEE PLANS)



REVISIONS

DUKE ENERGY CORPORATION  
(A.K.A. NANTAHALA POWER & LIGHT COMPANY)  
DB D-16 PG 88  
DB J-23 PG 1616  
DB K-26 PG 825  
DB M-21 PG 793  
DB N-22 PG 285

DUKE ENERGY CORPORATION  
(A.K.A. NANTAHALA POWER & LIGHT COMPANY)  
DB D-16 PG 88  
DB J-23 PG 1616  
DB K-26 PG 825  
DB M-21 PG 793  
DB N-22 PG 285

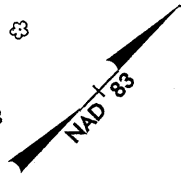
RACHEL B. HOLLAND  
DB X-15 PG 105

ERIC A. URRUTIA  
DB T-27 PG 337

50

45

40



MATCHLINE -L- SEE SHEET 5  
DUKE ENERGY CORPORATION TRANSMISSION LINE  
DUKE ENERGY CORPORATION TRANSMISSION R/W  
VARIABLE R/W WIDTH 37.50'

TERRACE ALLUVIUM  
N 84° 39' 05.2" E  
N 69° 00' 00.5" E

-BL-14 40+70.10 PINC  
-L- STA. 42+18.56  
OFF 9.83 LT.

-BL-15 45+13.82 PINC  
-L- STA. 46+68.37  
OFF 1.18 RT.

PRC Sta. 47+58.47

-BY4-30 12+06.20 PINC  
DUKE ENERGY CORPORATION TRANSMISSION R/W  
DUKE ENERGY CORPORATION TRANSMISSION LINE  
N 311° 49' E 440.61'

POT Sta. 10+00.00

-BY4-31 14+40.79 POT  
DUKE ENERGY CORPORATION TRANSMISSION R/W  
DUKE ENERGY CORPORATION TRANSMISSION LINE  
N 311° 49' E 440.61'

DUKE ENERGY CORPORATION  
(A.K.A. NANTAHALA POWER & LIGHT COMPANY)  
DB D-16 PG 88  
DB J-23 PG 1616  
DB K-26 PG 825  
DB M-21 PG 793  
DB N-22 PG 285

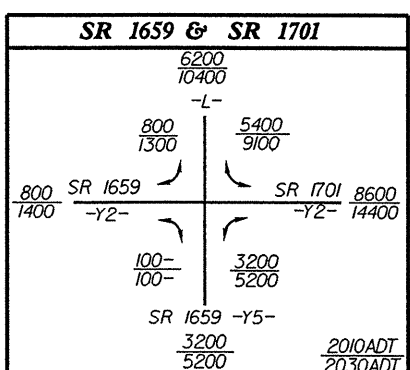
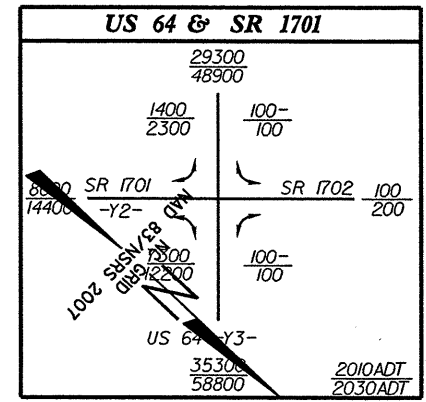
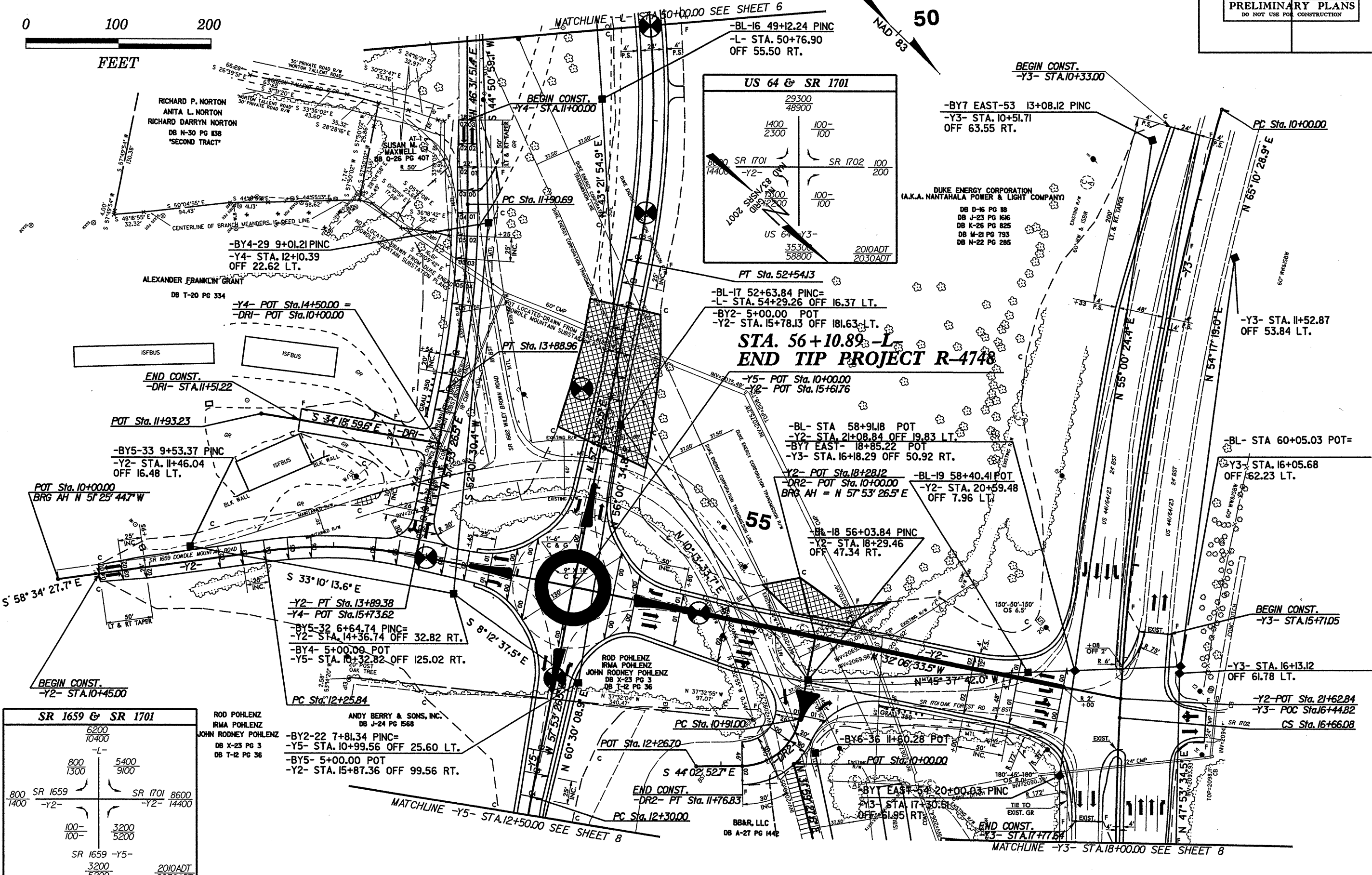
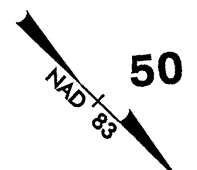
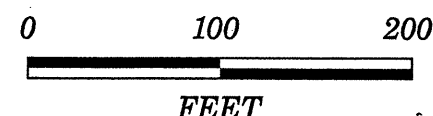
SUSAN M. MAXWELL  
DB O-26 PG 407

300' WINDY ROAD  
NORTH WINDY ROAD

8/17/99

<b>-L-</b> PI Sta 50+1276 Δ = 31' 33" 17.8' (RT) D = 6' 21" 58.3" L = 495.66' T = 254.29' R = 900.00' SE = (SEE PLANS)	<b>-Y2-</b> PI Sta 13+08.40 Δ = 19' 19" 11.2' (RT) D = 11' 48" 48.8" L = 163.54' T = 82.55' R = 485.00' SE = (SEE PLANS)	<b>-Y3-</b> PI Sta 13+34.55 Δ = 13' 19" 17.8' (LT) D = 2' 00" 00.0" L = 666.08' T = 334.55' R = 2,864.79' SE = EXISTING	<b>-Y4-</b> PI Sta 12+90.15 Δ = 11' 21" 35.1' (RT) D = 5' 43" 46.5" L = 198.27' T = 99.46' R = 1,000.00' SE = (SEE PLANS)	<b>-Y5-</b> PI Sta 15+54.22 Δ = 67' 31" 29.8' (LT) D = 11' 48" 48.8" L = 571.59' T = 324.22' R = 485.00' SE = (SEE PLANS)	<b>-DR2-</b> PI Sta 11+42.07 Δ = 78' 03" 40.8' (RT) D = 90' 56" 44.5" L = 85.83' T = 51.07' R = 63.00'
---	---	--	--	--	--

PROJECT REFERENCE NO. <b>R-4748</b>	SHEET NO. <b>7/40</b>
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR A/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



REVISIONS

03-DEC-2008 12:47  
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 \$\$\$USERNAME\$\$\$

ROD POHLENZ  
 IRMA POHLENZ  
 JOHN RODNEY POHLENZ  
 DB X-23 PG 3  
 DB T-12 PG 36

ANDY BERRY & SONS, INC.  
 DB J-24 PG 568

ROD POHLENZ  
 IRMA POHLENZ  
 JOHN RODNEY POHLENZ  
 DB X-23 PG 3  
 DB T-12 PG 36

BBAR, LLC  
 DB A-27 PG 1442

MATCHLINE -Y3- STA.18+00.00 SEE SHEET 8

MATCHLINE -Y5- STA.12+50.00 SEE SHEET 8

MATCHLINE -L- STA.50+00.00 SEE SHEET 6

BEGIN CONST. -Y3- STA.10+33.00

BEGIN CONST. -Y3- STA.15+71.05

END CONST. -DRI- STA.11+51.22

**STA. 56+10.89 -L- END TIP PROJECT R-4748**

BEGIN CONST. -Y2- STA.10+45.00

END CONST. -Y3- STA.17+77.84

-BY2-22 7+81.34 PINC=  
 -Y5- STA. 10+99.56 OFF 25.60 LT.  
 -BY5- 5+00.00 POT  
 -Y2- STA. 15+87.36 OFF 99.56 RT.

-BL- STA 58+91.8 POT  
 -Y2- STA. 21+08.84 OFF 19.83 LT.  
 -BY7 EAST- 18+85.22 POT  
 -Y3- STA. 16+18.29 OFF 50.92 RT.

-Y2- POT Sta.18+28.12  
 -DR2- POT Sta.10+00.00  
 BRG AH = N 57' 53" 26.5' E  
 -BL-19 58+40.41 POT  
 -Y2- STA. 20+59.48 OFF 7.96 LT.

-BL-18 56+03.84 PINC  
 -Y2- STA. 18+29.46 OFF 47.34 RT.

-BL- STA 60+05.03 POT=  
 -Y3- STA. 16+05.68 OFF 62.23 LT.

-Y3- STA. 16+13.12 OFF 61.78 LT.

-Y2-POT Sta. 21+62.84  
 -Y3- POC Sta.16+44.82  
 CS Sta. 16+66.08

POT Sta. 10+00.00 BRG AH N 57' 25" 44.7' W

-BY5-33 9+53.37 PINC  
 -Y2- STA. 11+46.04 OFF 16.48 LT.

POT Sta. 11+93.23

-Y4- POT Sta.14+50.00 =  
 -DRI- POT Sta.10+00.00

-BY4-29 9+01.21 PINC  
 -Y4- STA. 12+10.39 OFF 22.62 LT.

BEGIN CONST. -Y4- STA.11+00.00

-BL-16 49+12.24 PINC  
 -L- STA. 50+76.90 OFF 55.50 RT.

-BY7 EAST-53 13+08.12 PINC  
 -Y3- STA. 10+51.71 OFF 63.55 RT.

-Y3- STA. 11+52.87 OFF 53.84 LT.

ALEXANDER FRANKLIN GRANT  
 DB T-20 PG 334

RICHARD P. NORTON  
 ANITA L. NORTON  
 RICHARD DARRYN NORTON  
 DB N-30 PG 138  
 'SECOND TRACT'

SUSAN M. MAXWELL  
 DB D-26 PG 407

DUKE ENERGY CORPORATION  
 (A.K.A. NANTHALA POWER & LIGHT COMPANY)  
 DB D-16 PG 18  
 DB J-23 PG 136  
 DB K-26 PG 825  
 DB M-21 PG 793  
 DB N-22 PG 285

PT Sta. 52+54.13

-BL-17 52+63.84 PINC=  
 -L- STA. 54+29.26 OFF 16.37 LT.  
 -BY2- 5+00.00 POT  
 -Y2- STA. 15+78.13 OFF 181.63 LT.

-Y5- POT Sta. 10+00.00  
 -Y2- POT Sta. 15+161.76

PT Sta. 13+88.96

POT LOCATED-DRAWN FROM  
 DOWDLE MOUNTAIN SUBSTATION



ROD POHLENZ  
 IRMA POHLENZ  
 JOHN RODNEY POHLENZ  
 DB X-23 PG 3  
 DB T-12 PG 36

POT Sta. 12+26.70

END CONST. -DR2- PT Sta. 11+76.83  
 PC Sta. 12+30.00

POT Sta. 10+00.00

-BY6-36 11+60.28 POT  
 -Y2- STA. 17+30.81 OFF 51.95 RT.

-BY7 EAST- 20+00.03 PINC  
 -Y3- STA. 17+30.81 OFF 51.95 RT.

END CONST. -Y3- STA.17+77.84

BEGIN CONST. -Y3- STA.15+71.05

-Y3- STA. 16+13.12 OFF 61.78 LT.

-Y2-POT Sta. 21+62.84  
-Y3- POC Sta.16+44.82  
CS Sta. 16+66.08

-BL- STA 60+05.03 POT=  
-Y3- STA. 16+05.68 OFF 62.23 LT.

-Y3- STA. 16+13.12 OFF 61.78 LT.

-Y2-POT Sta. 21+62.84  
-Y3- POC Sta.16+44.82  
CS Sta. 16+66.08

MATCHLINE -Y3- STA.18+00.00 SEE SHEET 8

MATCHLINE -Y5- STA.12+50.00 SEE SHEET 8

MATCHLINE -L- STA.50+00.00 SEE SHEET 6

BEGIN CONST. -Y3- STA.10+33.00

BEGIN CONST. -Y3- STA.15+71.05

END CONST. -DRI- STA.11+51.22

**STA. 56+10.89 -L- END TIP PROJECT R-4748**

BEGIN CONST. -Y2- STA.10+45.00

END CONST. -Y3- STA.17+77.84

-BY2-22 7+81.34 PINC=  
 -Y5- STA. 10+99.56 OFF 25.60 LT.  
 -BY5- 5+00.00 POT  
 -Y2- STA. 15+87.36 OFF 99.56 RT.

-BL- STA 58+91.8 POT  
 -Y2- STA. 21+08.84 OFF 19.83 LT.  
 -BY7 EAST- 18+85.22 POT  
 -Y3- STA. 16+18.29 OFF 50.92 RT.

-Y2- POT Sta.18+28.12  
 -DR2- POT Sta.10+00.00  
 BRG AH = N 57' 53" 26.5' E  
 -BL-19 58+40.41 POT  
 -Y2- STA. 20+59.48 OFF 7.96 LT.

-BL-18 56+03.84 PINC  
 -Y2- STA. 18+29.46 OFF 47.34 RT.

-BL- STA 60+05.03 POT=  
 -Y3- STA. 16+05.68 OFF 62.23 LT.

-Y3- STA. 16+13.12 OFF 61.78 LT.

-Y2-POT Sta. 21+62.84  
 -Y3- POC Sta.16+44.82  
 CS Sta. 16+66.08

POT Sta. 10+00.00 BRG AH N 57' 25" 44.7' W

-BY5-33 9+53.37 PINC  
 -Y2- STA. 11+46.04 OFF 16.48 LT.

POT Sta. 11+93.23

-Y4- POT Sta.14+50.00 =  
 -DRI- POT Sta.10+00.00

-BY4-29 9+01.21 PINC  
 -Y4- STA. 12+10.39 OFF 22.62 LT.

BEGIN CONST. -Y4- STA.11+00.00

-BL-16 49+12.24 PINC  
 -L- STA. 50+76.90 OFF 55.50 RT.

-BY7 EAST-53 13+08.12 PINC  
 -Y3- STA. 10+51.71 OFF 63.55 RT.

-Y3- STA. 11+52.87 OFF 53.84 LT.

ALEXANDER FRANKLIN GRANT  
 DB T-20 PG 334

RICHARD P. NORTON  
 ANITA L. NORTON  
 RICHARD DARRYN NORTON  
 DB N-30 PG 138  
 'SECOND TRACT'

SUSAN M. MAXWELL  
 DB D-26 PG 407

DUKE ENERGY CORPORATION  
 (A.K.A. NANTHALA POWER & LIGHT COMPANY)  
 DB D-16 PG 18  
 DB J-23 PG 136  
 DB K-26 PG 825  
 DB M-21 PG 793  
 DB N-22 PG 285

PT Sta. 52+54.13

-BL-17 52+63.84 PINC=  
 -L- STA. 54+29.26 OFF 16.37 LT.  
 -BY2- 5+00.00 POT  
 -Y2- STA. 15+78.13 OFF 181.63 LT.

-Y5- POT Sta. 10+00.00  
 -Y2- POT Sta. 15+161.76

PT Sta. 13+88.96

POT LOCATED-DRAWN FROM  
 DOWDLE MOUNTAIN SUBSTATION



ROD POHLENZ  
 IRMA POHLENZ  
 JOHN RODNEY POHLENZ  
 DB X-23 PG 3  
 DB T-12 PG 36

POT Sta. 12+26.70

END CONST. -DR2- PT Sta. 11+76.83  
 PC Sta. 12+30.00

POT Sta. 10+00.00

-BY6-36 11+60.28 POT  
 -Y2- STA. 17+30.81 OFF 51.95 RT.

-BY7 EAST- 20+00.03 PINC  
 -Y3- STA. 17+30.81 OFF 51.95 RT.

END CONST. -Y3- STA.17+77.84

BEGIN CONST. -Y3- STA.15+71.05

-Y3- STA. 16+13.12 OFF 61.78 LT.

-Y2-POT Sta. 21+62.84  
-Y3- POC Sta.16+44.82  
CS Sta. 16+66.08

-BL- STA 60+05.03 POT=  
-Y3- STA. 16+05.68 OFF 62.23 LT.

-Y3- STA. 16+13.12 OFF 61.78 LT.

-Y2-POT Sta. 21+62.84  
-Y3- POC Sta.16+44.82  
CS Sta. 16+66.08

MATCHLINE -Y3- STA.18+00.00 SEE SHEET 8

MATCHLINE -Y5- STA.12+50.00 SEE SHEET 8

MATCHLINE -L- STA.50+00.00 SEE SHEET 6

BEGIN CONST. -Y3- STA.10+33.00

BEGIN CONST. -Y3- STA.15+71.05

END CONST. -DRI- STA.11+51.22

**STA. 56+10.89 -L- END TIP PROJECT R-4748**

BEGIN CONST. -Y2- STA.10+45.00

END CONST. -Y3- STA.17+77.84

-BY2-22 7+81.34 PINC=  
 -Y5- STA. 10+99.56 OFF 25.60 LT.  
 -BY5- 5+00.00 POT  
 -Y2- STA. 15+87.36 OFF 99.56 RT.

-BL- STA 58+91.8 POT  
 -Y2- STA. 21+08.84 OFF 19.83 LT.  
 -BY7 EAST- 18+85.22 POT  
 -Y3- STA. 16+18.29 OFF 50.92 RT.

-Y2- POT Sta.18+28.12  
 -DR2- POT Sta.10+00.00  
 BRG AH = N 57' 53" 26.5' E  
 -BL-19 58+40.41 POT  
 -Y2- STA. 20+59.48 OFF 7.96 LT.

-BL-18 56+03.84 PINC  
 -Y2- STA. 18+29.46 OFF 47.34 RT.

-BL- STA 60+05.03 POT=  
 -Y3- STA. 16+05.68 OFF 62.23 LT.

-Y3- STA. 16+13.12 OFF 61.78 LT.

-Y2-POT Sta. 21+62.84  
 -Y3- POC Sta.16+44.82  
 CS Sta. 16+66.08

POT Sta. 10+00.00 BRG AH N 57' 25" 44.7' W

-BY5-33 9+53.37 PINC  
 -Y2- STA. 11+46.04 OFF 16.48 LT.

POT Sta. 11+93.23

-Y4- POT Sta.14+50.00 =  
 -DRI- POT Sta.10+00.00

-BY4-29 9+01.21 PINC  
 -Y4- STA. 12+10.39 OFF 22.62 LT.

BEGIN CONST. -Y4- STA.11+00.00

-BL-16 49+12.24 PINC  
 -L- STA. 50+76.90 OFF 55.50 RT.

-BY7 EAST-53 13+08.12 PINC  
 -Y3- STA. 10+51.71 OFF 63.55 RT.

-Y3- STA. 11+52.87 OFF 53.84 LT.

ALEXANDER FRANKLIN GRANT  
 DB T-20 PG 334

RICHARD P. NORTON  
 ANITA L. NORTON  
 RICHARD DARRYN NORTON  
 DB N-30 PG 138  
 'SECOND TRACT'

SUSAN M. MAXWELL  
 DB D-26 PG 407

DUKE ENERGY CORPORATION  
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 DB D-16 PG 18  
 DB J-23 PG 136  
 DB K-26 PG 825  
 DB M-21 PG 793  
 DB N-22 PG 285

PT Sta. 52+54.13

-BL-17 52+63.84 PINC=  
 -L- STA. 54+29.26 OFF 16.37 LT.  
 -BY2- 5+00.00 POT  
 -Y2- STA. 15+78.13 OFF 181.63 LT.

-Y5- POT Sta. 10+00.00  
 -Y2- POT Sta. 15+161.76

PT Sta. 13+88.96

POT LOCATED-DRAWN FROM  
 DOWDLE MOUNTAIN SUBSTATION



ROD POHLENZ  
 IRMA POHLENZ  
 JOHN RODNEY POHLENZ  
 DB X-23 PG 3  
 DB T-12 PG 36

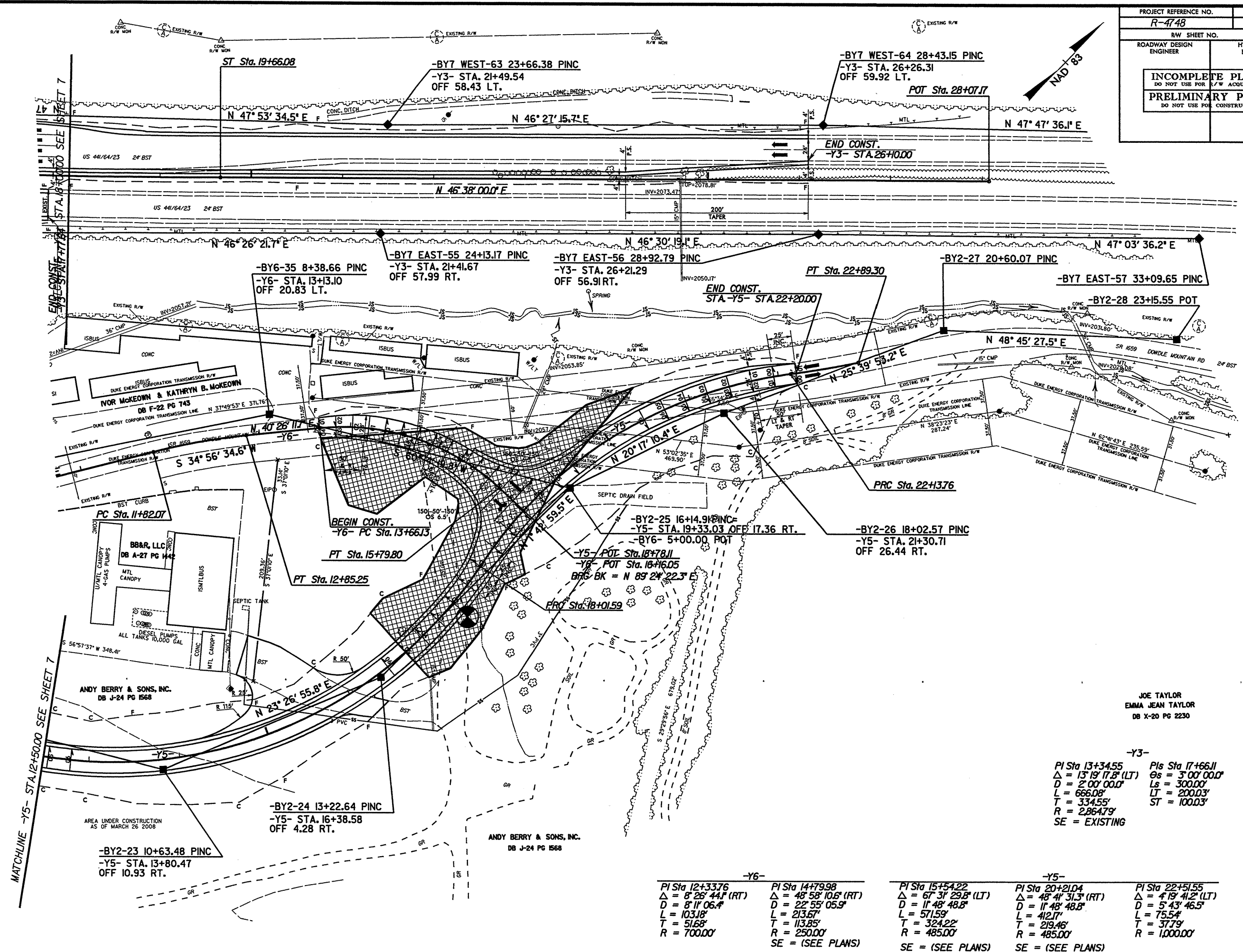
POT Sta. 12+26.70

END CONST. -DR2- PT Sta. 11+76.83  
 PC Sta. 12+30.00

POT Sta. 10+00.00

-BY6-36 11+60.28 POT  
 -Y2- STA. 17+30.81 OFF 51.95 RT.

-BY7 EAST- 20+00.03 PINC  
 -Y3- STA. 17+

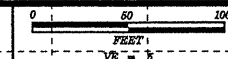


-Y3-  
 PI Sta 13+34.55      PI Sta 17+66.11  
 $\Delta = 13' 19" 17.8" (LT)$        $\Theta_s = 3' 00" 00.0"$   
 $D = 2' 00" 00.0"$        $L_s = 300.00'$   
 $L = 666.08'$        $L = 200.03'$   
 $T = 334.55'$        $ST = 100.03'$   
 $R = 2,864.79'$   
 SE = EXISTING

-Y6- PI Sta 12+33.76 $\Delta = 8' 26' 44.1" (RT)$ $D = 8' 11' 06.4"$ $L = 103.18'$ $T = 51.68'$ $R = 700.00'$	-Y6- PI Sta 14+79.98 $\Delta = 48' 58' 10.6" (RT)$ $D = 22' 55' 05.9"$ $L = 213.67'$ $T = 113.85'$ $R = 250.00'$ SE = (SEE PLANS)	-Y5- PI Sta 15+54.22 $\Delta = 67' 31' 29.8" (LT)$ $D = 11' 48' 48.8"$ $L = 571.59'$ $T = 324.22'$ $R = 485.00'$ SE = (SEE PLANS)	-Y5- PI Sta 20+21.04 $\Delta = 48' 41' 31.3" (RT)$ $D = 11' 48' 48.8"$ $L = 412.17'$ $T = 219.46'$ $R = 485.00'$ SE = (SEE PLANS)	-Y5- PI Sta 22+51.55 $\Delta = 4' 19' 41.2" (LT)$ $D = 5' 43' 46.5"$ $L = 75.54'$ $T = 37.79'$ $R = 1,000.00'$
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8/17/99  
 REVISIONS  
 03-DEC-2008 12:47  
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 JOE TAYLOR  
 EMMA JEAN TAYLOR  
 DB X-20 PG 2230

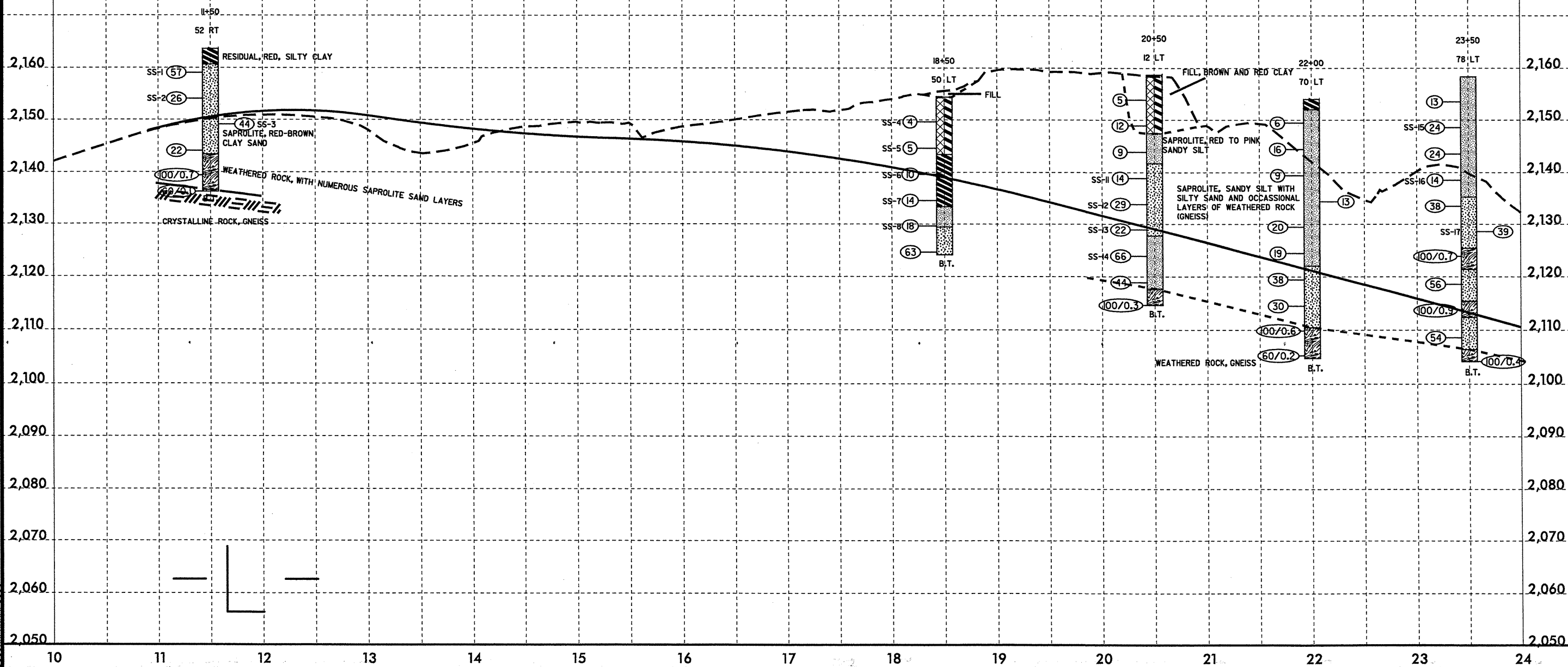
5/14/99



PROJECT REFERENCE NO. <b>R-4748</b>	SHEET NO. <b>9/40</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR ACQUISITION	
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

### SOIL TEST RESULTS

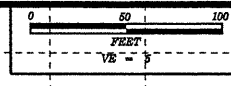
SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE ORGANIC	
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-1	11+50	52 RT	4.1-5.1	A-2-4(0)	27	NP	42	33	5	20	90	70	24		
SS-2	11+50	52 RT	9.1-14.1	A-2-4(0)	32	NP	38	37	7	18	95	73	30		
SS-3	11+50	52 RT	14.1-15.1	A-2-4(0)	30	NP	41	42	7	16	76	57	19		
SS-4	18+50	50 LT	4.8-5.3	A-7-5(11)	55	21	14	26	9	51	93	86	61		
SS-5	18+50	50 LT	9.8-10.3	A-7-6(6)	41	16	17	29	16	38	92	85	55		
SS-6	18+50	50 LT	14.3-15.3	A-7-5(6)	43	13	19	27	6	48	100	95	57		
SS-7	18+50	50 LT	19.8-20.3	A-7-6(10)	46	20	17	25	12	46	99	94	58		
SS-8	18+50	50 LT	24.8-25.3	A-4(0)	29	NP	19	54	9	18	100	96	36		
SS-11	20+50	12 LT	19.8-20.3	A-2-4(0)	33	NP	33	42	5	20	84	70	27		
SS-12	20+50	12 LT	24.8-25.3	A-2-4(0)	32	NP	34	32	20	14	70	56	25		
SS-13	20+50	12 LT	29.8-30.3	A-2-4(0)	34	NP	33	39	16	12	84	67	31		
SS-14	20+50	12 LT	34.8-35.3	A-4(0)	33	NP	22	45	17	16	95	85	40		
SS-15	23+50	78 LT	9.3-10.3	A-4(2)	40	NP	16	52	16	16	100	94	44		
SS-16	23+50	78 LT	19.3-20.3	A-4(0)	38	NP	19	60	15	16	100	95	42		
SS-17	23+50	78 LT	29.3-30.3	A-2-4(0)	37	NP	35	39	14	12	83	67	27		



09-DEC-2008 08:20  
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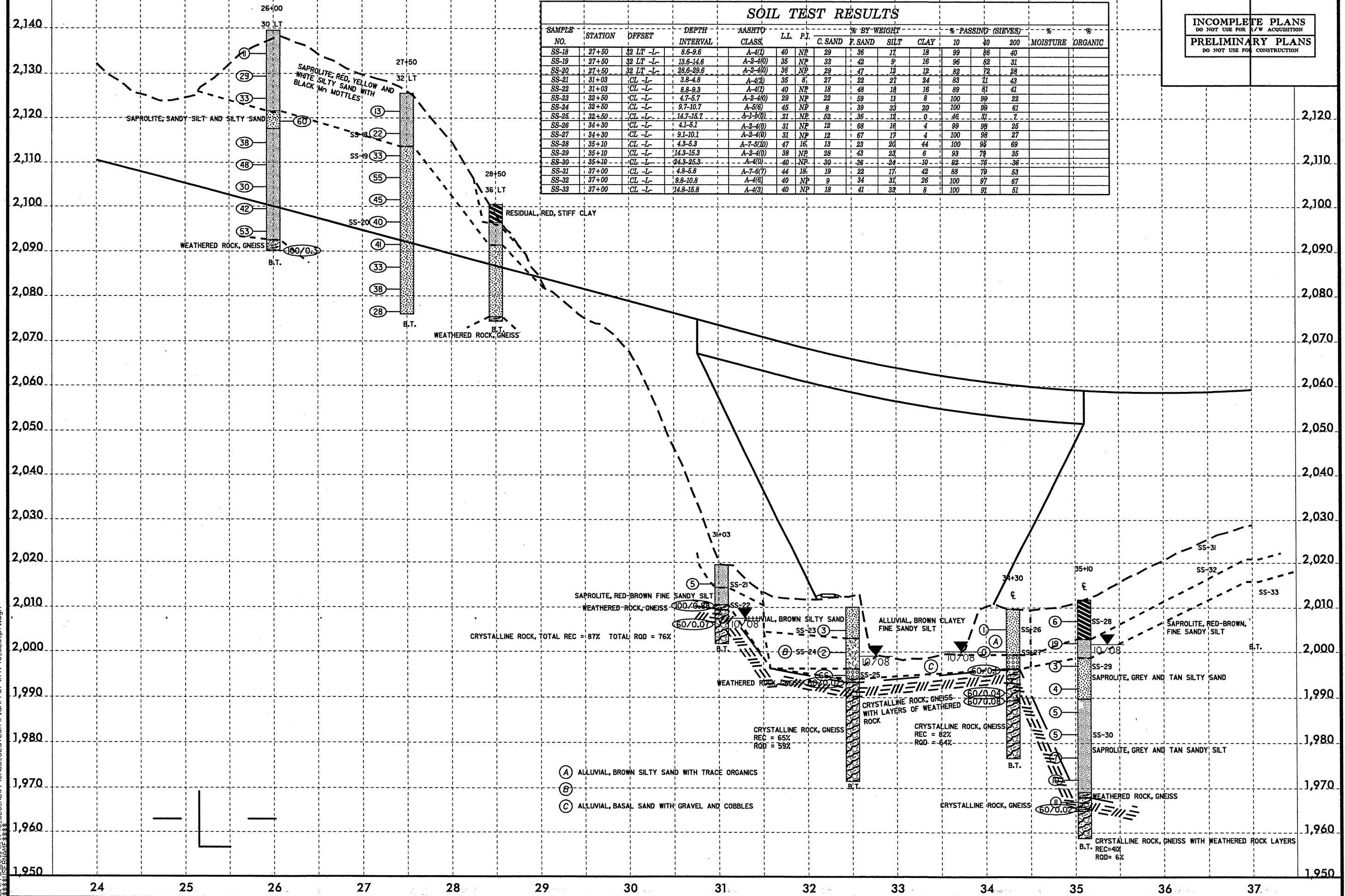
5/14/99



PROJECT REFERENCE NO. <b>R-4748</b>	SHEET NO. <b>10/40</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

### SOIL TEST RESULTS

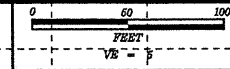
SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS	LL	P.I.	% BY WEIGHT				% - PASSING (SIEVES)			% MOISTURE	% ORGANIC
							G. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-18	27+50	32 LT -L-	8.6-9.6	A-4(1)	40	NP	29	36	17	18	99	86	40		
SS-19	27+50	32 LT -L-	13.6-14.6	A-2-4(0)	35	NP	33	42	9	16	96	82	31		
SS-20	27+50	32 LT -L-	28.6-29.6	A-2-4(0)	36	NP	29	47	12	12	82	72	28		
SS-21	31+03	CL -L-	3.8-4.8	A-4(3)	35	8	27	22	27	24	83	71	43		
SS-22	31+03	CL -L-	8.8-9.8	A-4(2)	40	NP	18	48	18	16	89	81	41		
SS-23	32+50	CL -L-	4.7-5.7	A-2-4(0)	29	NP	22	59	11	8	100	99	22		
SS-24	32+50	CL -L-	9.7-10.7	A-5(6)	45	NP	8	39	33	20	100	99	61		
SS-25	32+50	CL -L-	14.7-15.7	A-3-5(0)	21	NP	52	36	12	0	46	31	7		
SS-26	34+30	CL -L-	4.1-5.1	A-2-4(0)	31	NP	12	68	19	4	99	98	25		
SS-27	34+30	CL -L-	9.1-10.1	A-2-4(0)	31	NP	12	67	17	4	100	98	27		
SS-28	35+10	CL -L-	4.3-5.3	A-7-5(10)	47	16	13	23	20	44	100	95	69		
SS-29	35+10	CL -L-	14.3-15.3	A-2-4(0)	38	NP	28	43	23	6	93	79	35		
SS-30	35+10	CL -L-	24.3-25.3	A-4(0)	40	NP	30	36	24	10	92	75	36		
SS-31	37+00	CL -L-	4.8-5.8	A-7-6(7)	44	18	19	22	17	42	88	79	53		
SS-32	37+00	CL -L-	9.8-10.8	A-4(6)	40	NP	9	34	31	26	100	97	67		
SS-33	37+00	CL -L-	14.8-15.8	A-4(3)	40	NP	18	41	33	8	100	91	51		



- (A) ALLUVIAL, BROWN SILTY SAND WITH TRACE ORGANICS
- (B) ALLUVIAL, BASAL SAND WITH GRAVEL AND COBBLES
- (C) ALLUVIAL, BASAL SAND WITH GRAVEL AND COBBLES

CRISTALLINE ROCK, GNEISS WITH WEATHERED ROCK LAYERS  
B.T. REC=41% ROD= 6%

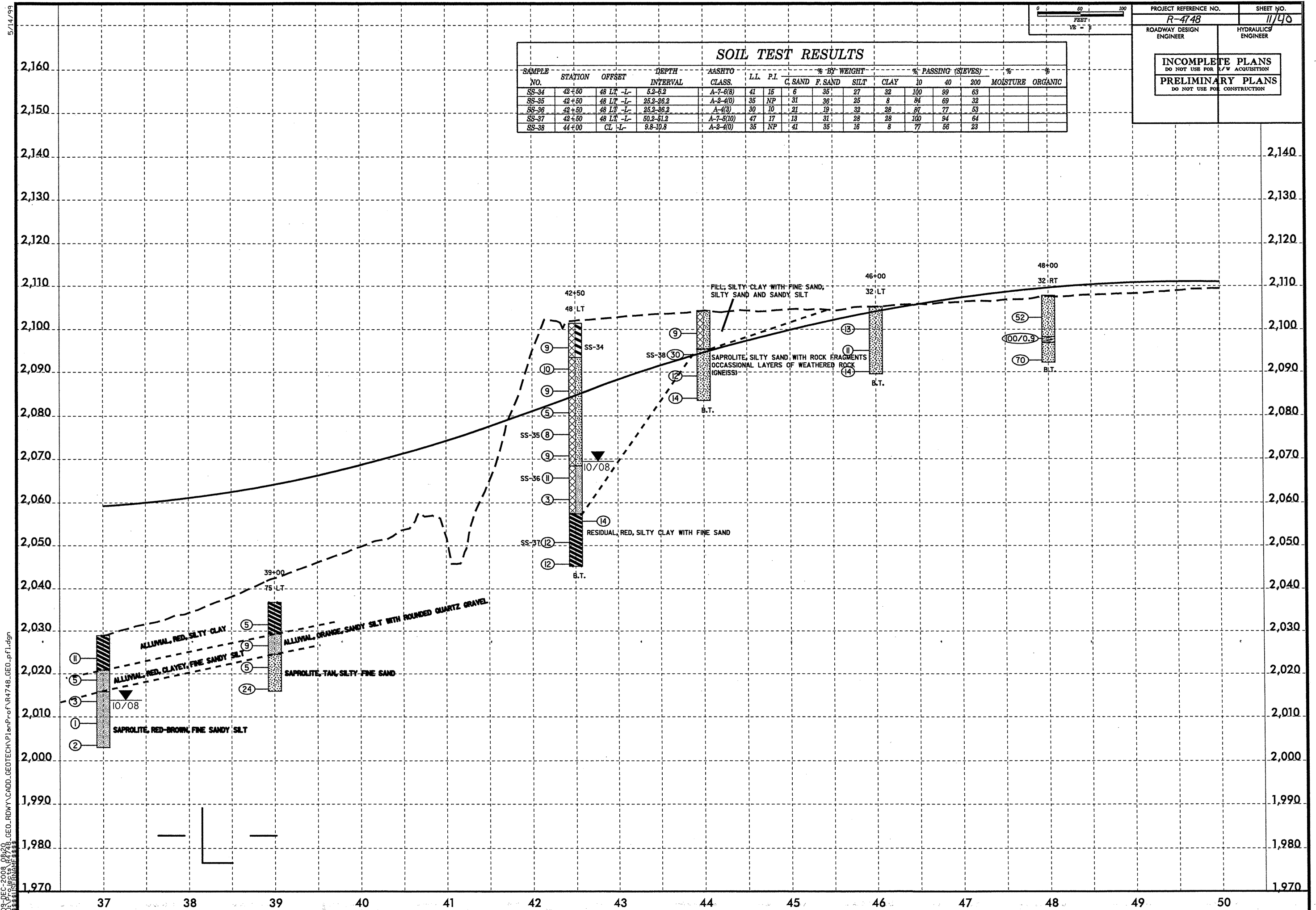
5/14/99



PROJECT REFERENCE NO. <b>R-4748</b>	SHEET NO. <b>11/40</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR A/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

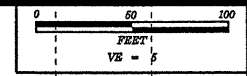
### SOIL TEST RESULTS

SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	LL	P.I.	% BY WEIGHT				% PASSING (SIEVES)		% MOISTURE ORGANIC	
							G. SAND	F. SAND	SILT	CLAY	10	40	200	
SS-34	42+50	48 LT -L	5.2-6.2	A-7-6(8)	41	15	6	35	27	32	100	99	63	
SS-35	42+50	48 LT -L	25.2-26.2	A-2-4(0)	35	NP	31	36	25	8	84	69	32	
SS-36	42+50	48 LT -L	25.2-26.2	A-4(3)	30	10	21	19	32	28	87	77	53	
SS-37	42+50	48 LT -L	50.2-51.2	A-7-5(10)	47	17	13	31	28	28	100	94	64	
SS-38	44+00	CL -L	9.8-10.8	A-2-4(0)	35	NP	41	35	16	8	77	56	23	



09-DEC-2008 09:20 08420 GEO\_RDWY\CADD\_GEOTECH\Plan\Prof\AR4748\_GEO.pfl.dgn  
 \$\$\$\$ITERNAME\$\$\$\$

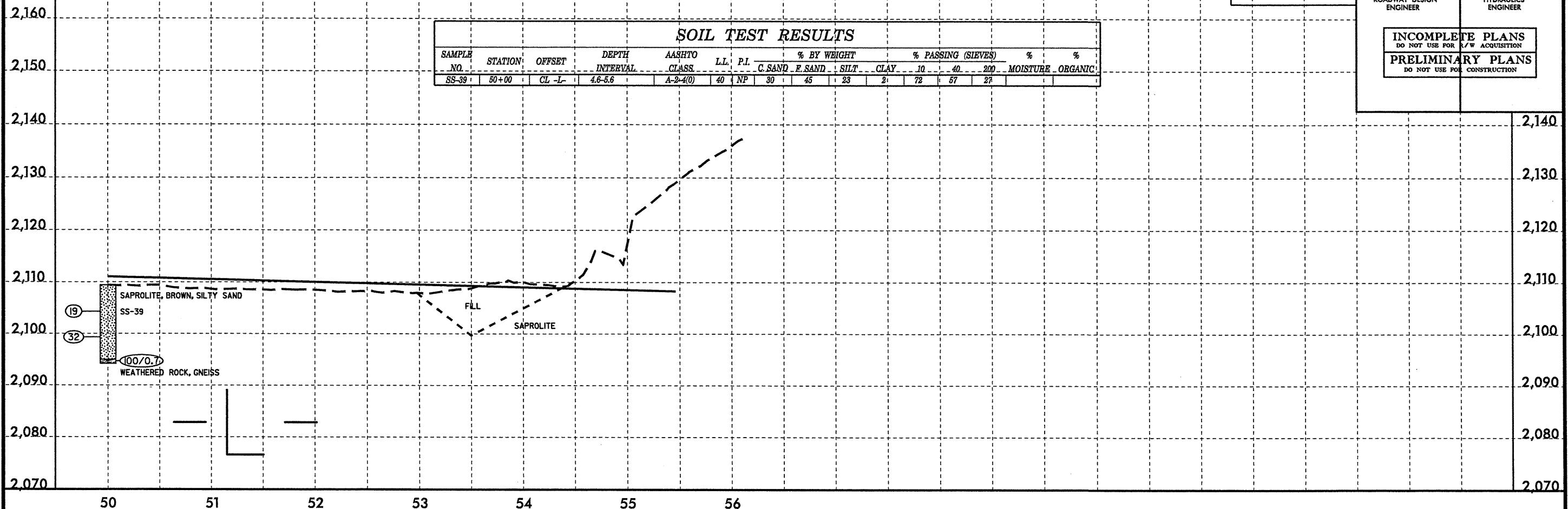
5/28/99



PROJECT REFERENCE NO. <b>R-4748</b>	SHEET NO. <b>12/48</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> <small>DO NOT USE FOR ACQUISITION</small>	
<b>PRELIMINARY PLANS</b> <small>DO NOT USE FOR CONSTRUCTION</small>	

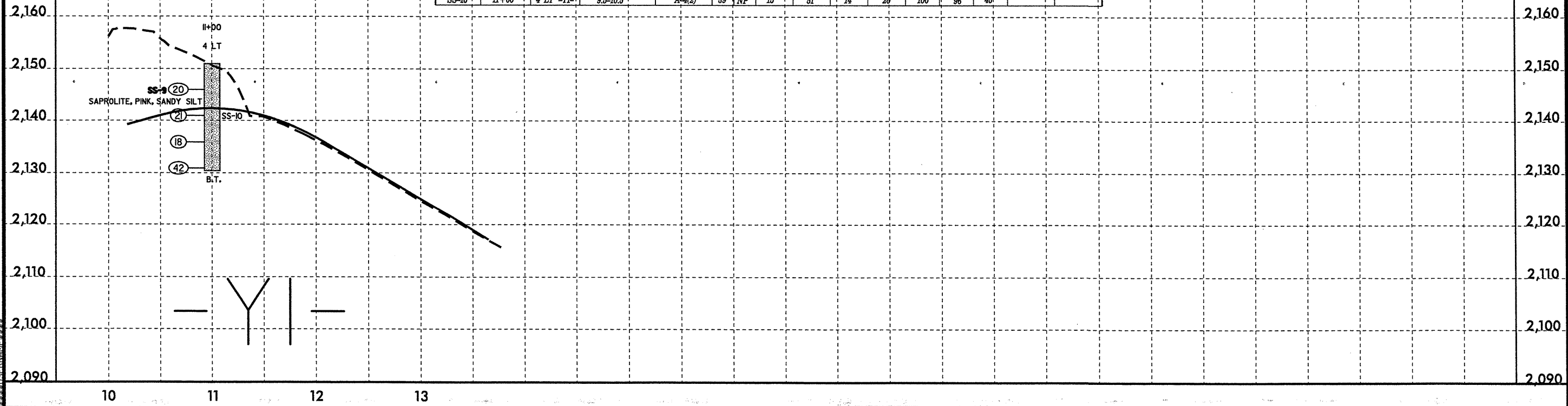
### SOIL TEST RESULTS

SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS	LL	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-39	50+00	CL -L-	4.6-5.6	A-2-4(0)	40	NP	30	45	23	2	72	57	27		



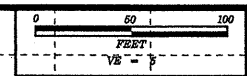
### SOIL TEST RESULTS

SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS	LL	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-9	11+00	4 LT -Y-	4.5-5.5	A-4(2)	38	NP	17	52	11	20	100	97	43		
SS-10	11+00	4 LT -Y-	9.5-10.5	A-4(2)	39	NP	15	51	14	20	100	96	45		

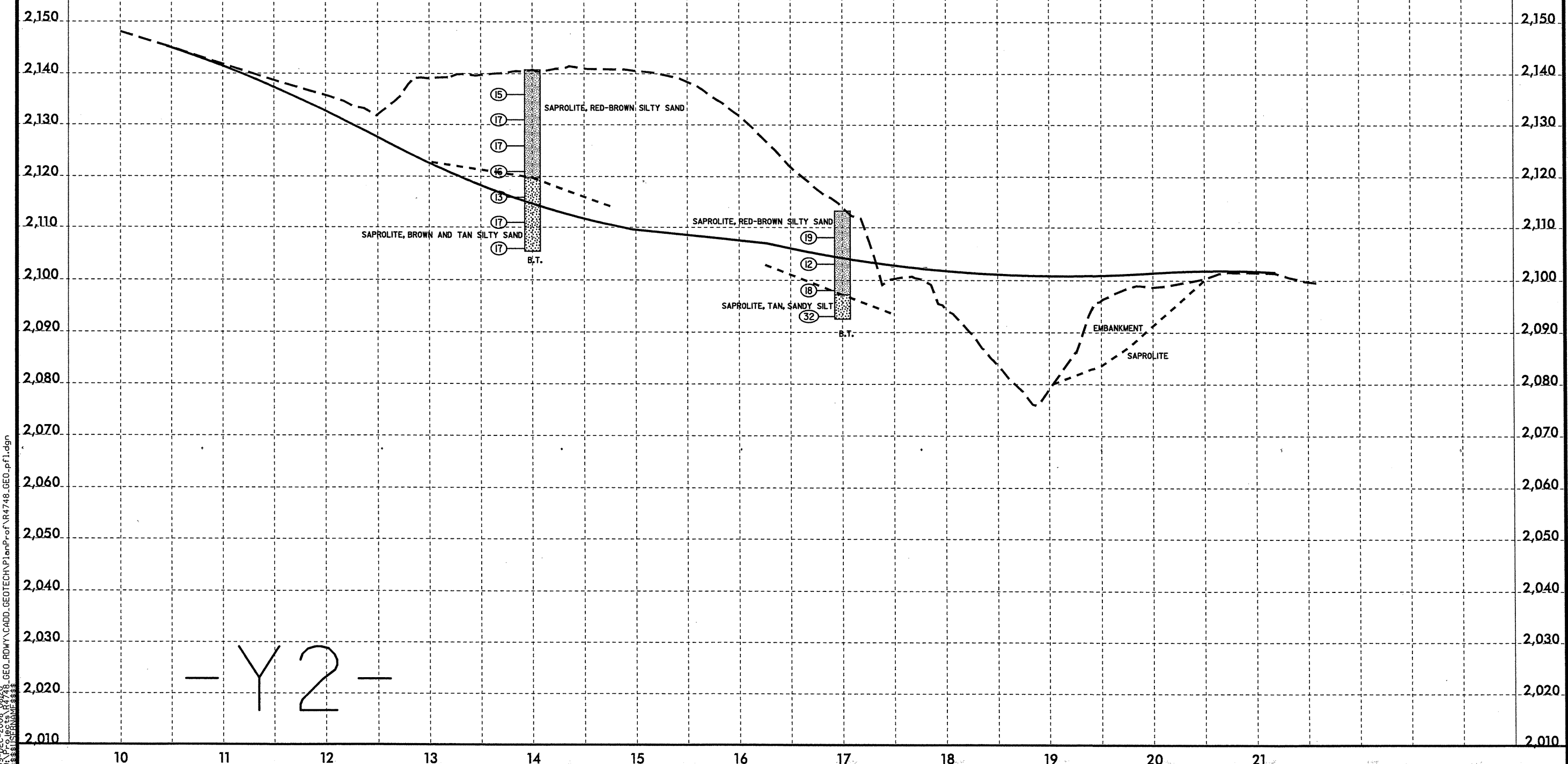


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 \$\$\$\$DISPERNME\$\$\$\$

5/14/99



PROJECT REFERENCE NO. <i>R-4748</i>	SHEET NO. <i>13/40</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR A/W ACQUISITION	
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

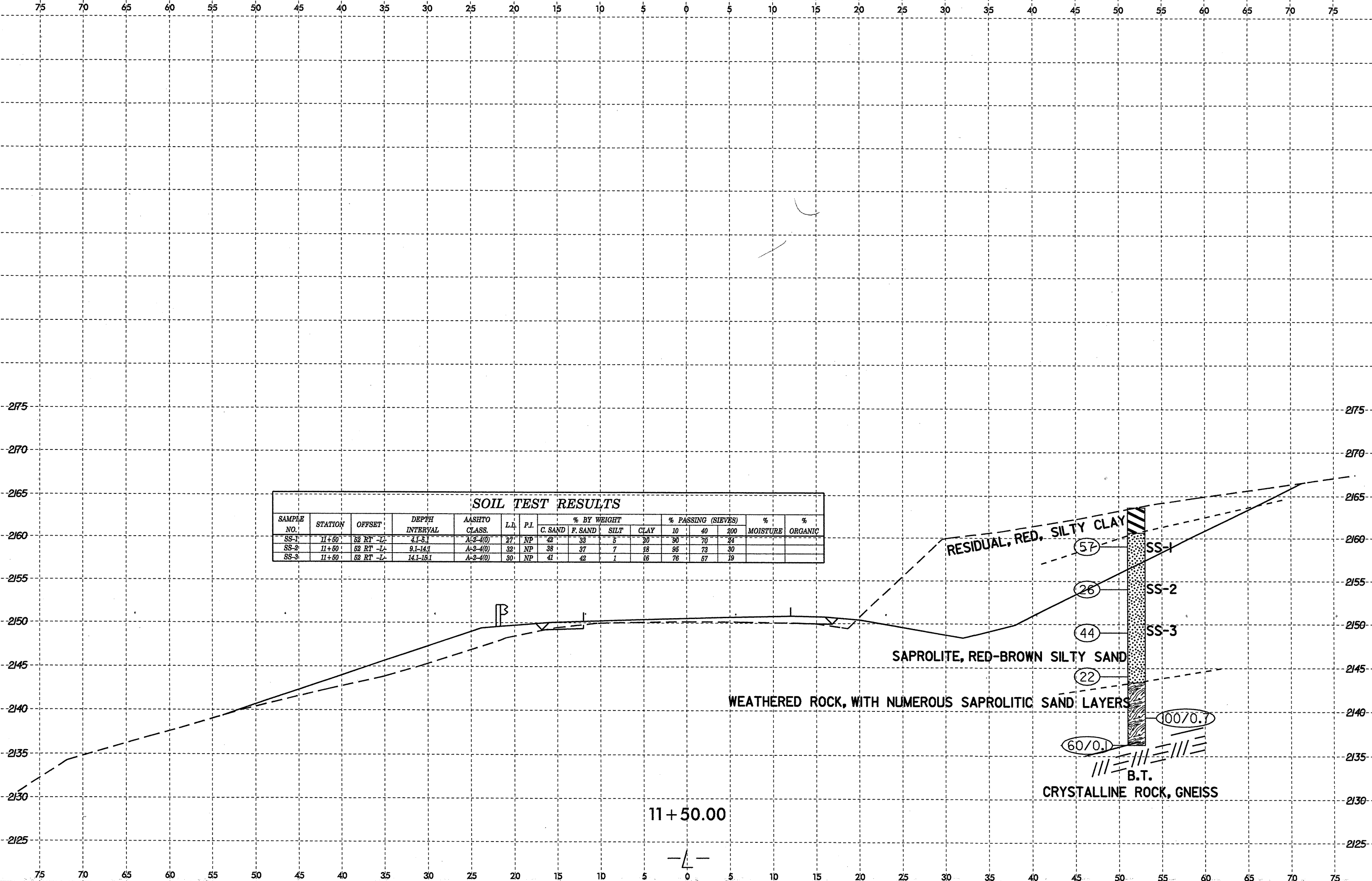


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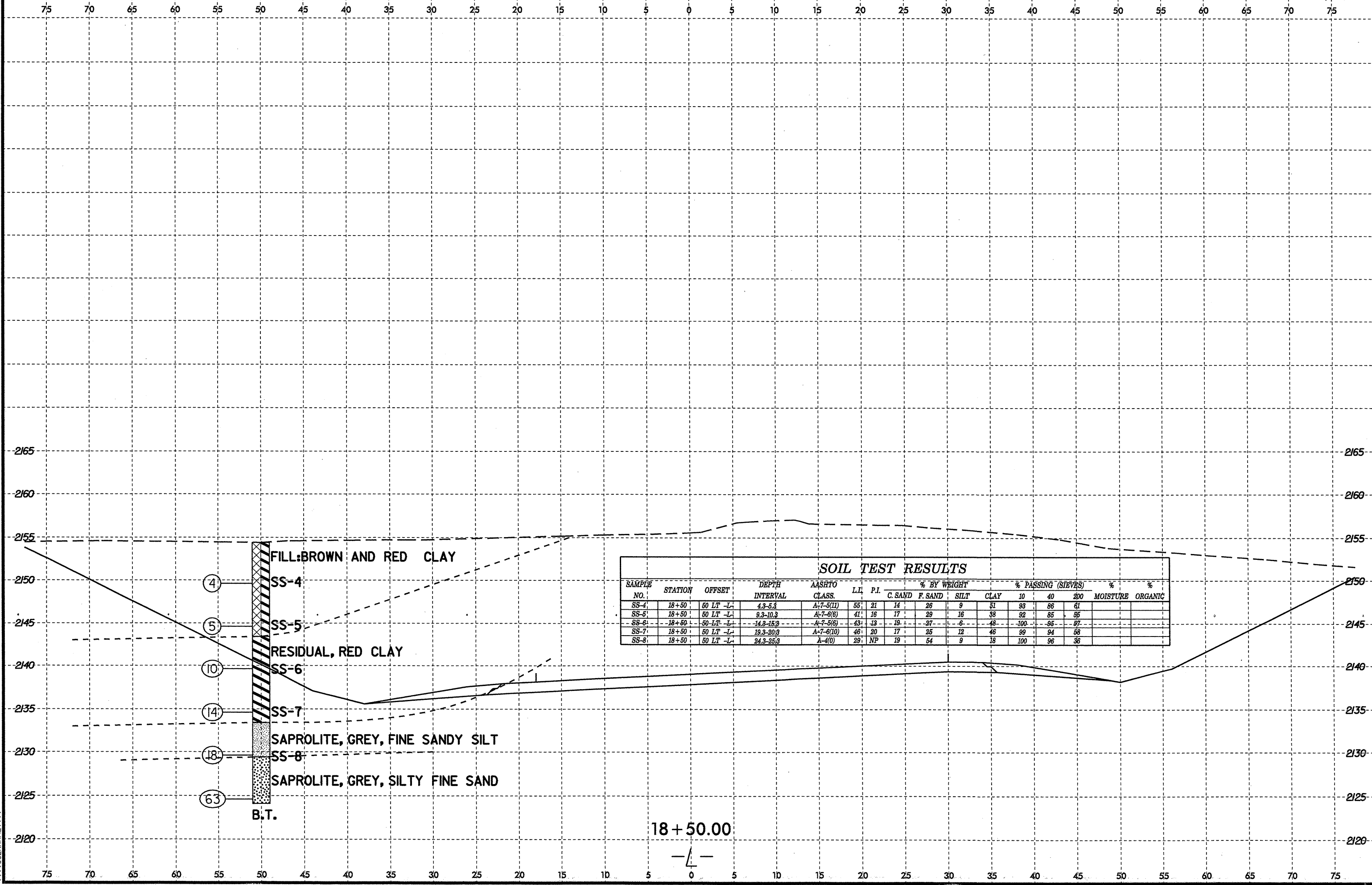
SOIL TEST RESULTS															
SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-1	11+50.1	52 RT -L	4.1-5.1	A-2-4(0)	27	NP	42	33	5	20	90	70	24		
SS-2	11+50.1	52 RT -L	9.1-14.1	A-2-4(0)	32	NP	38	37	7	18	95	73	30		
SS-3	11+50.1	52 RT -L	14.1-16.1	A-2-4(0)	30	NP	41	42	1	16	76	57	19		

26-NOV-2008 10:46  
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11 + 50.00

-4-

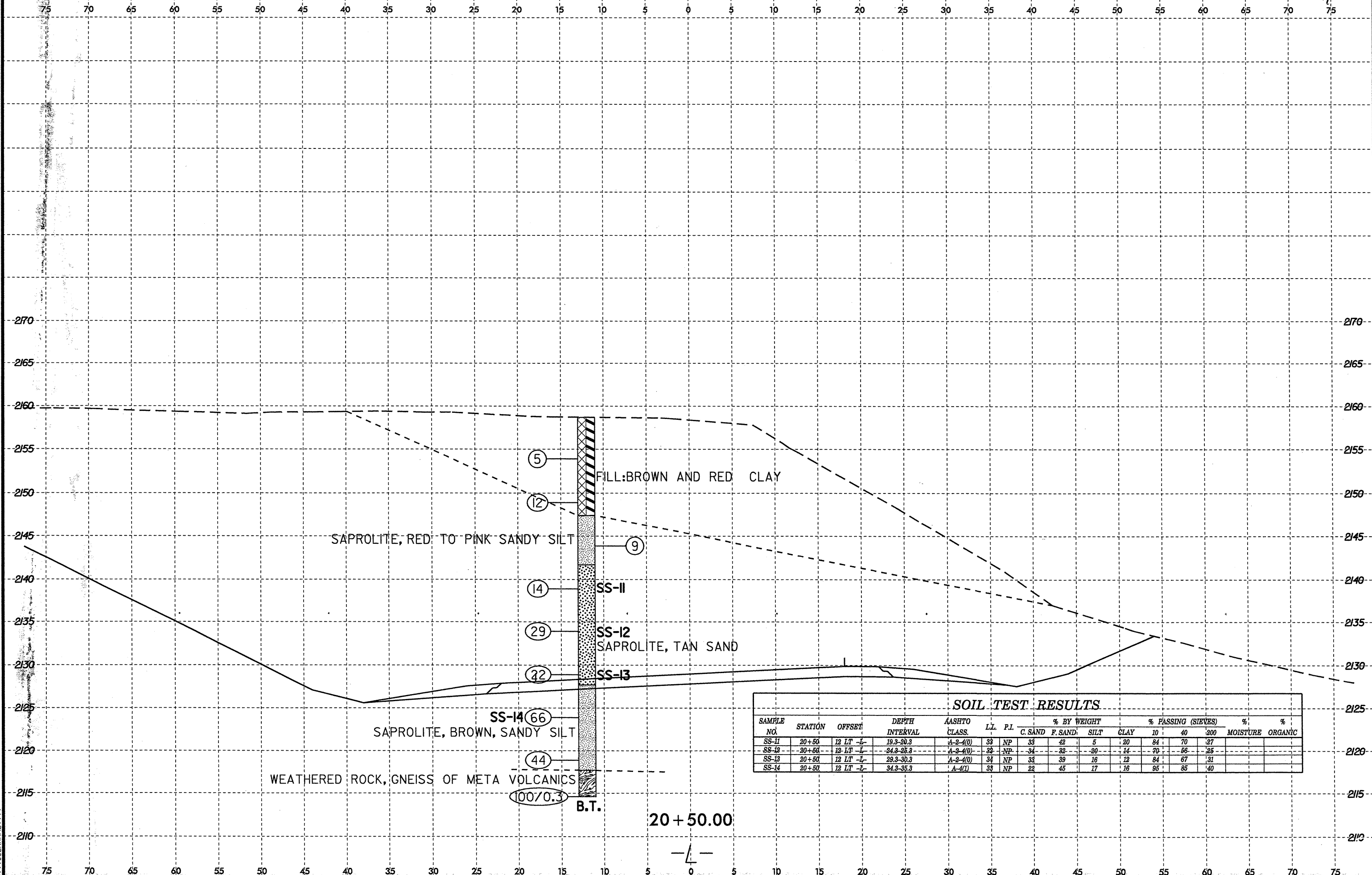
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SOIL TEST RESULTS															
SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	L.I.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-4	18+50	50 LT -L	4.3-5.3	A-7-5(11)	55	21	14	26	9	51	93	86	61		
SS-5	18+50	50 LT -L	9.3-10.3	A-7-6(6)	41	16	17	29	16	38	92	85	55		
SS-6	18+50	50 LT -L	14.3-15.3	A-7-6(6)	43	13	19	27	6	48	100	95	67		
SS-7	18+50	50 LT -L	19.3-20.3	A-7-6(10)	46	20	17	25	12	46	99	94	58		
SS-8	18+50	50 LT -L	24.3-25.3	A-4(0)	29	NP	19	54	9	19	100	96	36		

18 + 50.00  
 — 4 —

8/23/99

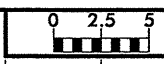


**SOIL TEST RESULTS**

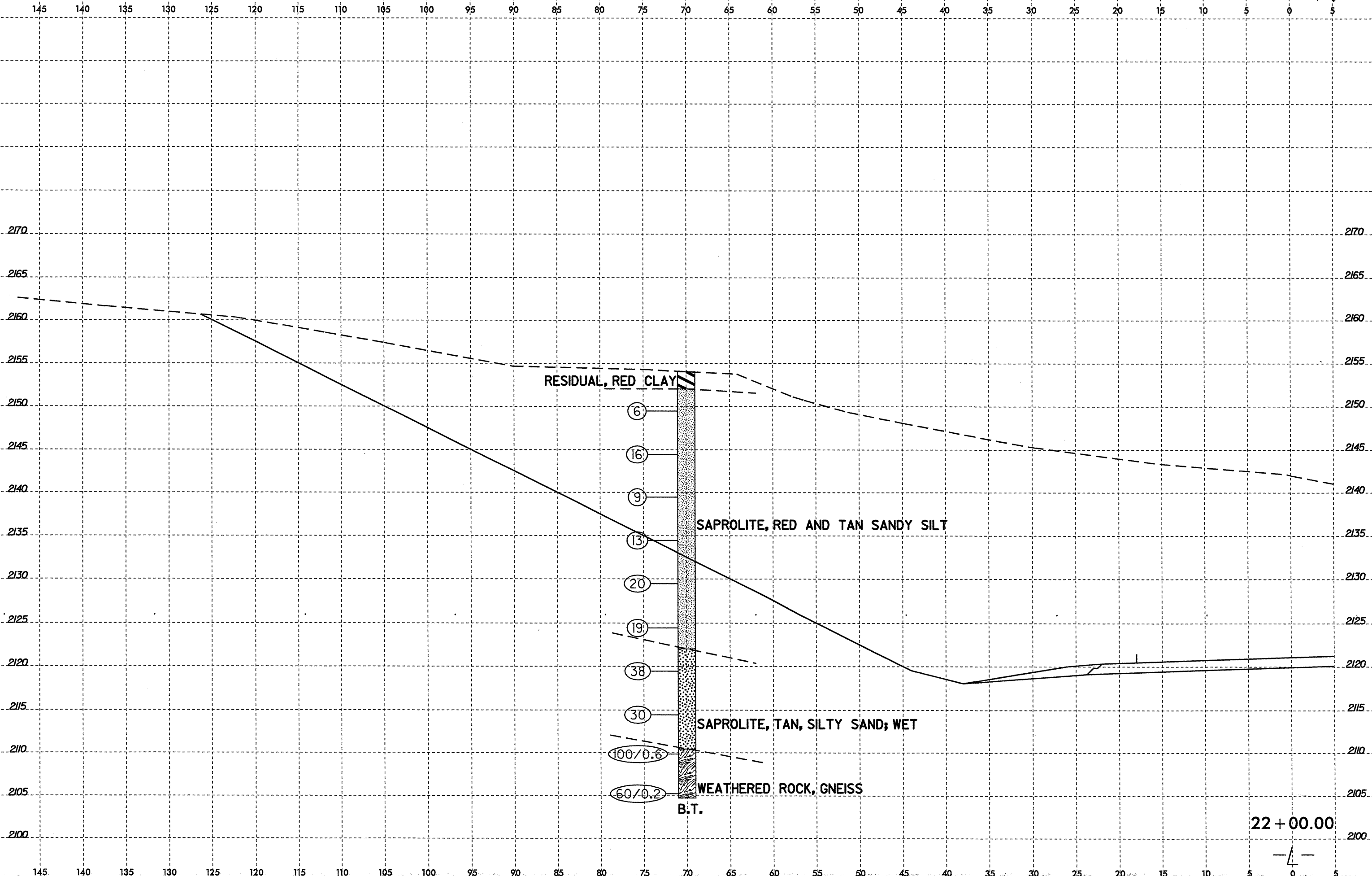
SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	LL	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-II	20+50	12 LT -L-	19.3-20.3	A-2-4(0)	33	NP	33	42	5	20	84	70	27		
SS-12	20+50	12 LT -L-	24.3-25.3	A-2-4(0)	32	NP	34	32	20	14	70	56	25		
SS-13	20+50	12 LT -L-	29.3-30.3	A-2-4(0)	34	NP	33	39	16	12	84	67	31		
SS-14	20+50	12 LT -L-	34.3-35.3	A-4(1)	33	NP	22	45	17	16	95	85	40		

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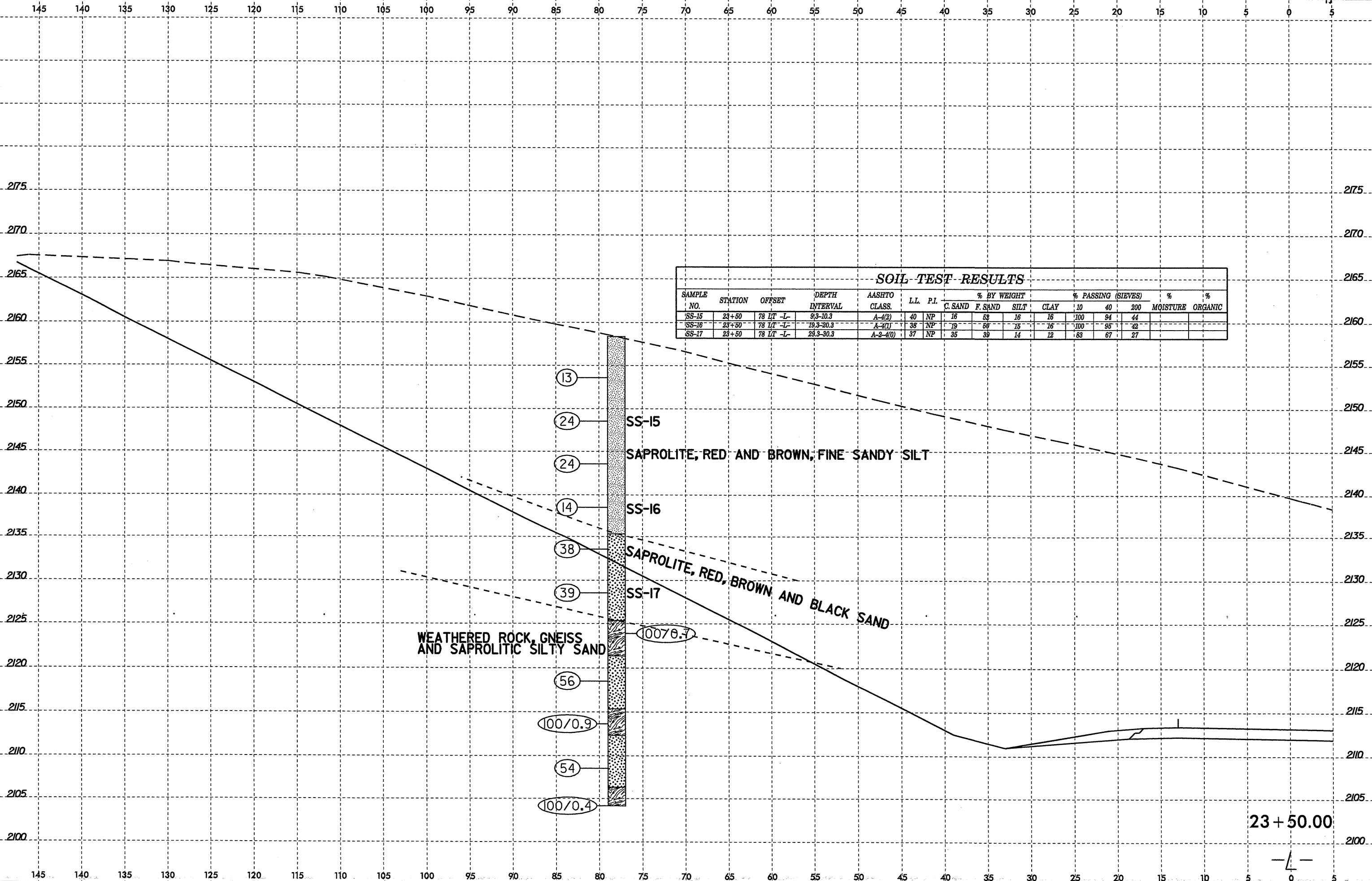


PROJ. REFERENCE NO. R-2519B SHEET NO. 18/40



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8/23/99

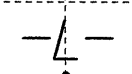


**SOIL TEST RESULTS**

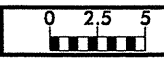
SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	LL	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-15	23+50	78 LT -L-	9.3-10.3	A-4(2)	40	NP	16	62	16	16	100	94	44		
SS-16	23+50	78 LT -L-	19.3-20.3	A-4(U)	38	NP	19	59	15	16	100	95	42		
SS-17	23+50	78 LT -L-	29.3-30.3	A-2-4(0)	37	NP	35	39	14	12	83	67	27		

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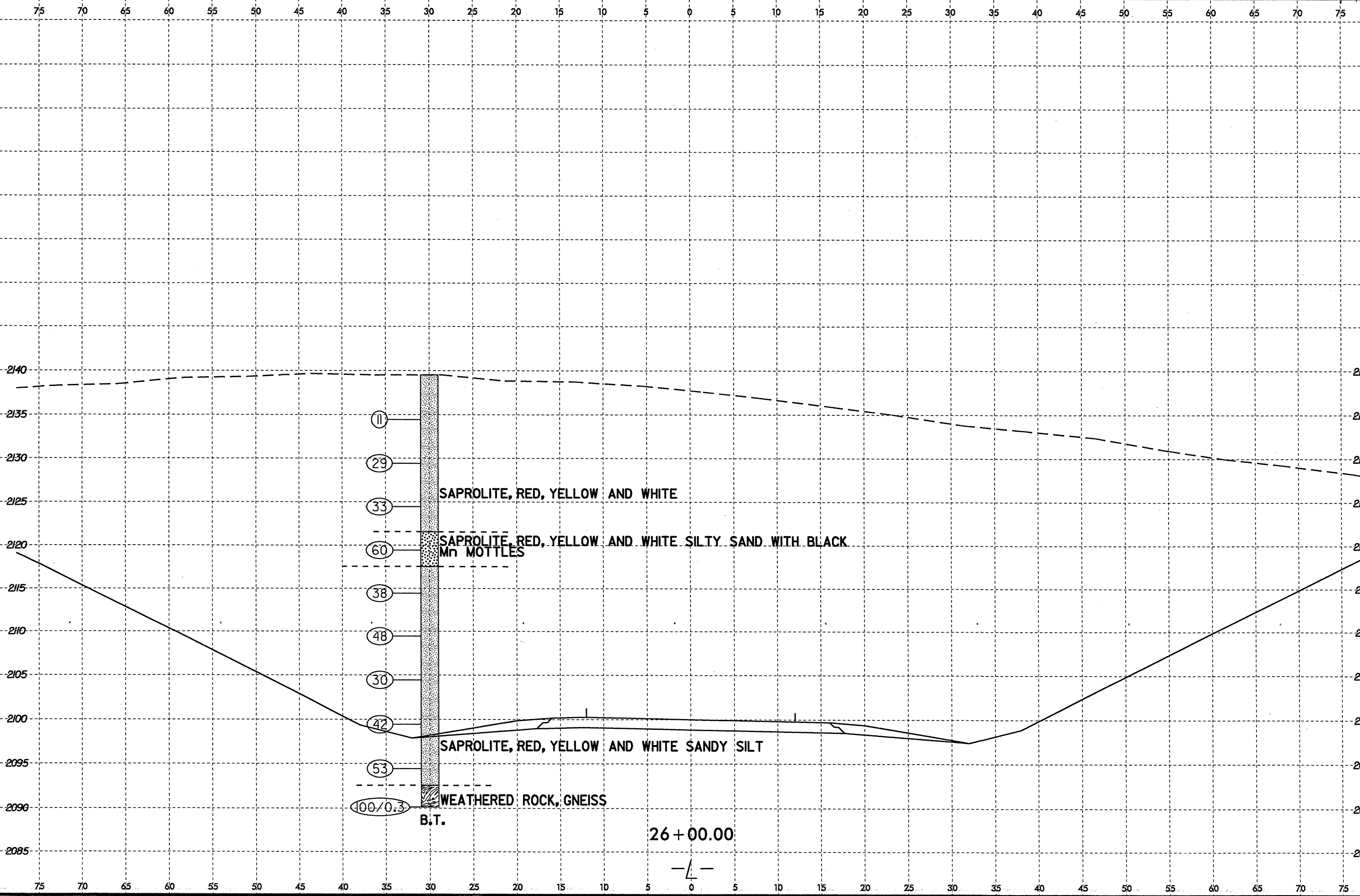
23 + 50.00



8/23/99



PROJ. REFERENCE NO. R-4748 SHEET NO. 20/40



26-NOV-2008 10:41  
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\*\*\*\*\*USER NAME\*\*\*\*\*

SAPROLITE, RED, YELLOW AND WHITE

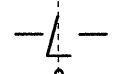
SAPROLITE, RED, YELLOW AND WHITE SILTY SAND WITH BLACK Mn MOTTLES

SAPROLITE, RED, YELLOW AND WHITE SANDY SILT

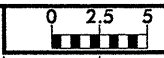
WEATHERED ROCK, GNEISS

B.T.

26 + 00.00

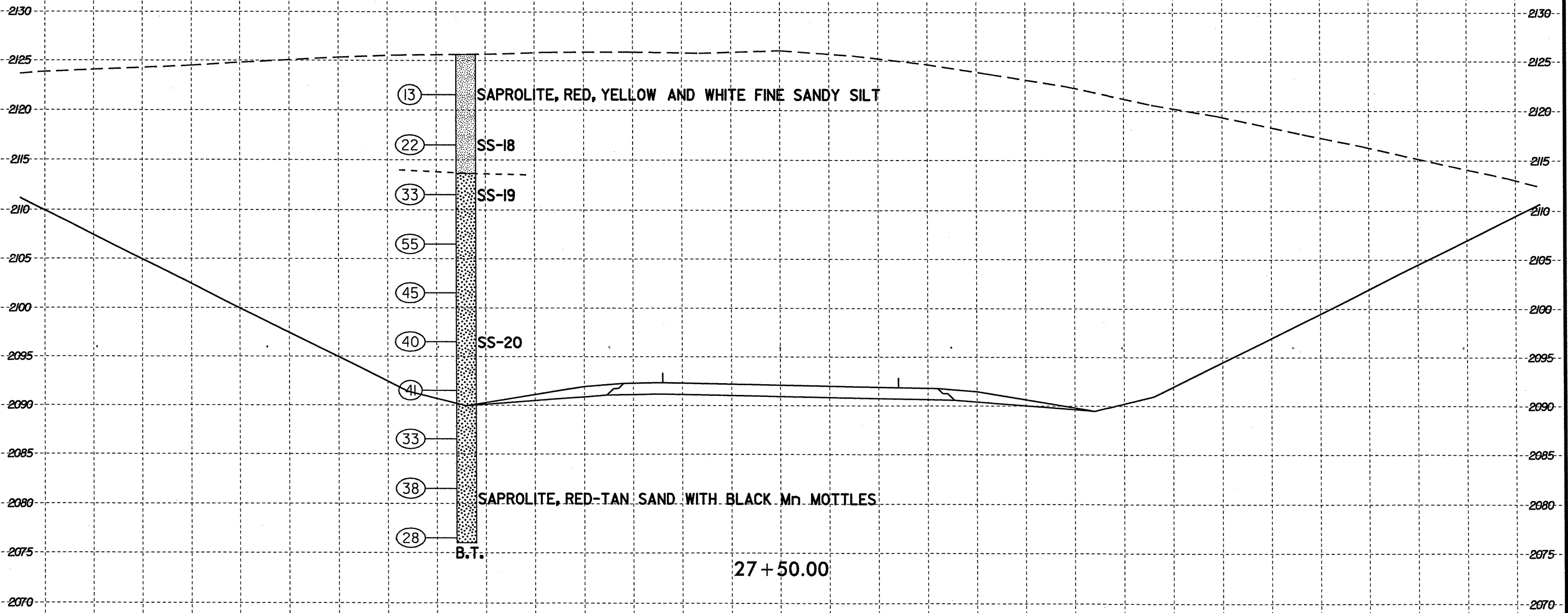


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PROJ. REFERENCE NO. R-4748 SHEET NO. 21/40

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75



(13) SAPROLITE, RED, YELLOW AND WHITE FINE SANDY SILT

(22) SS-18

(33) SS-19

(55)

(45)

(40) SS-20

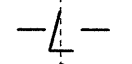
(41)

(33)

(38) SAPROLITE, RED-TAN SAND WITH BLACK Mn MOTTLES

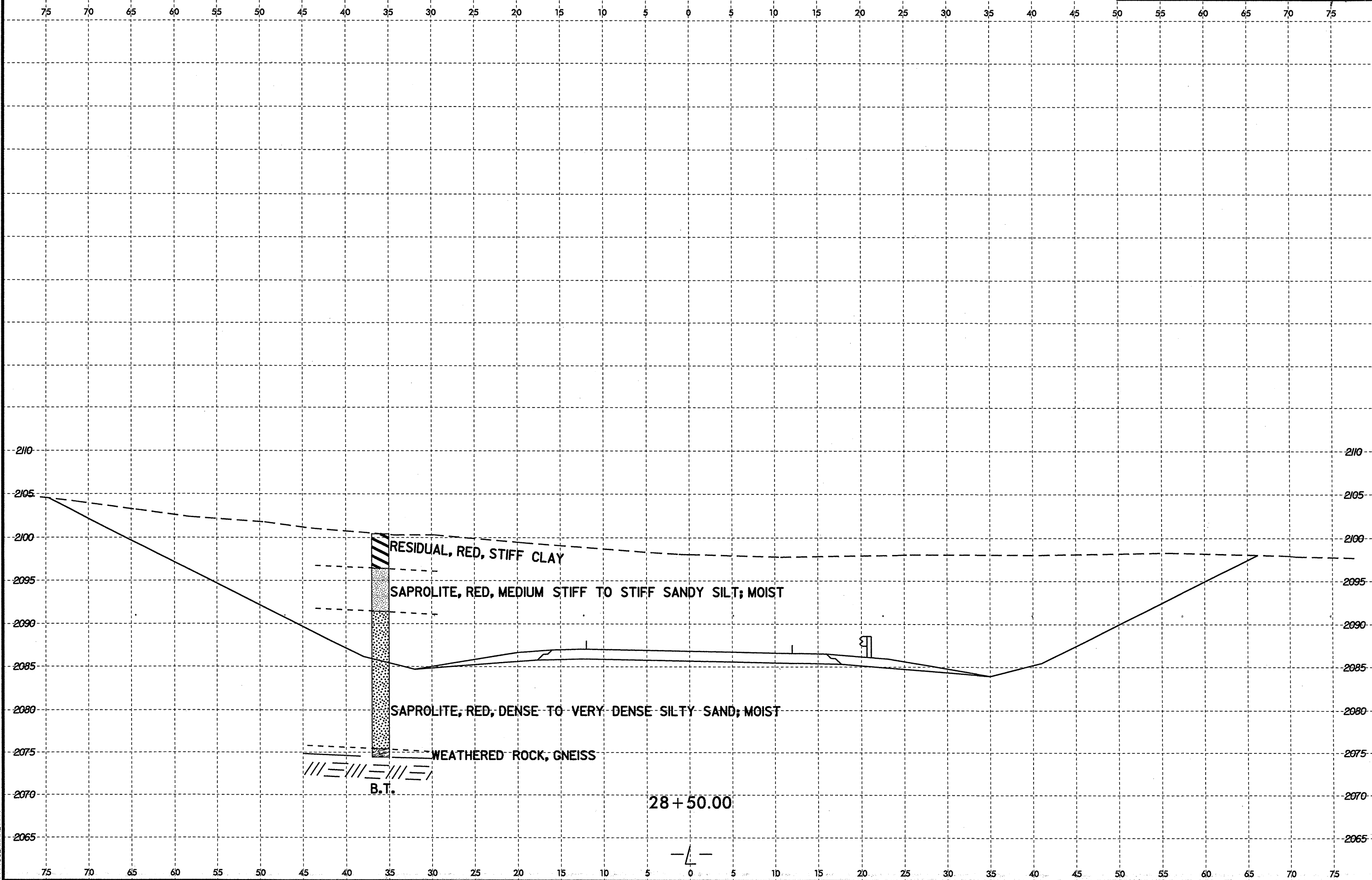
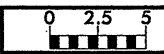
(28) B.T.

27+50.00

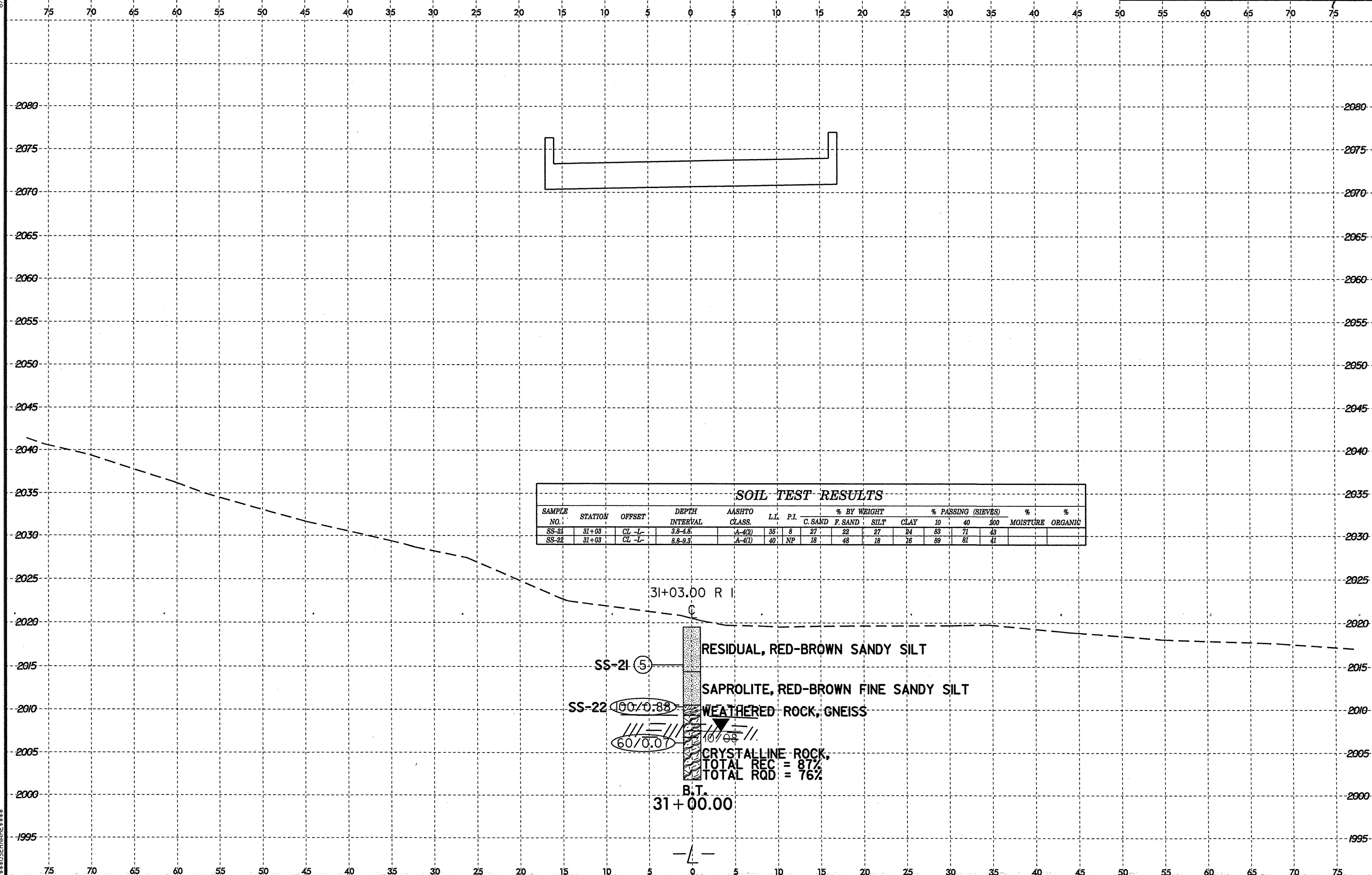
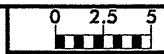


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\$\$\$\$\$USERNAME\$\$\$\$\$





8/23/99



**SOIL TEST RESULTS**

SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	LL	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							G. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-21	31+03	CL -L-	3.8-4.8	A-4(2)	35	8	27	22	27	24	83	71	43		
SS-22	31+03	CL -L-	8.8-9.3	A-4(1)	40	NP	18	48	18	16	89	81	41		

31+03.00 R I

SS-21 (5)

SS-22 (100/0.88)

(60/0.07)

RESIDUAL, RED-BROWN SANDY SILT

SAPROLITE, RED-BROWN FINE SANDY SILT

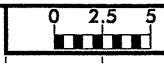
WEATHERED ROCK, GNEISS

CRYSTALLINE ROCK,  
TOTAL REC = 87%  
TOTAL RQD = 76%

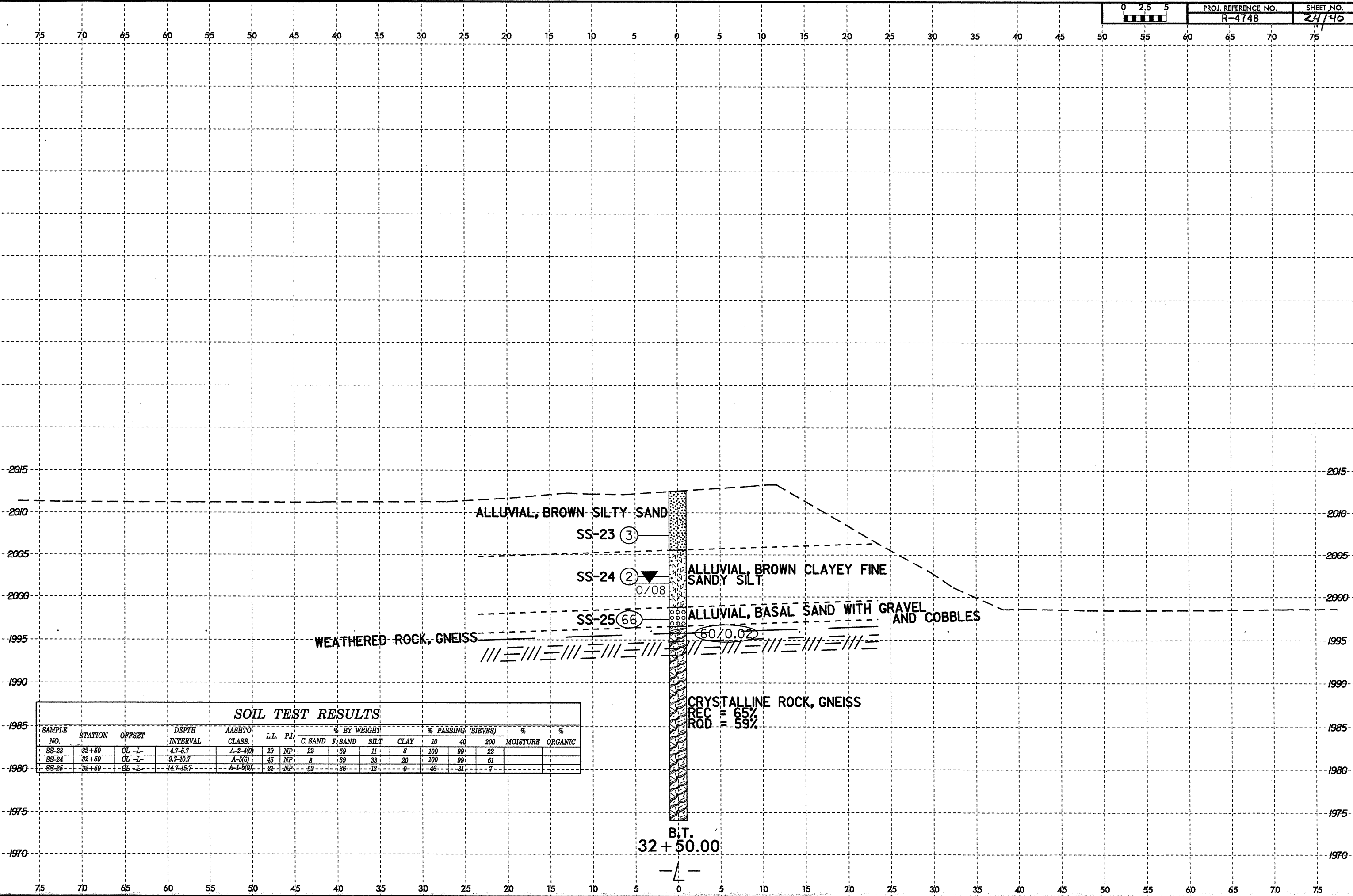
B.T.  
31+00.00

26-NOV-2008 10:23:39 GEO\_RDWY\CADD\_GEO\TECH\Plan\Prof\R-4748\_GEO\_xst.l.dgn

8/23/99  
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PROJ. REFERENCE NO. R-4748	SHEET NO. 24/46
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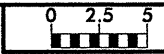


**SOIL TEST RESULTS**

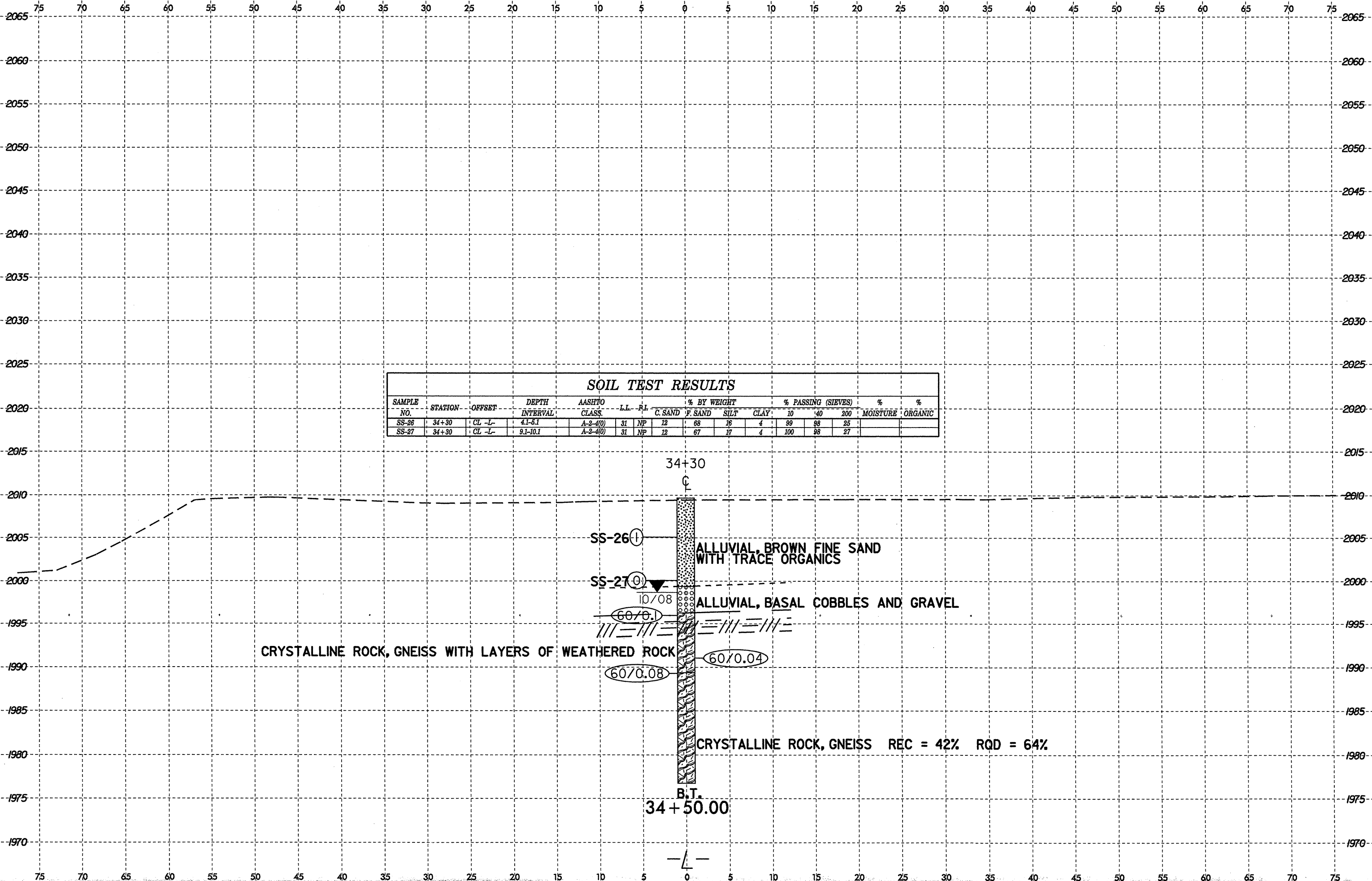
SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS	LL	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE ORGANIC	
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-23	32+50	CL -L-	4.7-5.7	A-2-4(0)	29	NP	22	59	11	8	100	99	22		
SS-24	32+50	CL -L-	9.7-10.7	A-5(6)	45	NP	8	39	33	20	100	99	61		
SS-25	32+50	CL -L-	14.7-15.7	A-1-4(0)	21	NP	62	36	12	0	46	31	7		

B.T.  
32 + 50.00

8/23/99



PROJ. REFERENCE NO. R-4748 SHEET NO. 25/40



SOIL TEST RESULTS

SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	LL	PI	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-26	34+30	CL -L-	4.1-5.1	A-2-4(0)	31	NP	12	68	16	4	99	98	25		
SS-27	34+30	CL -L-	9.1-10.1	A-2-4(0)	31	NP	12	67	17	4	100	98	27		

CRYSTALLINE ROCK, GNEISS WITH LAYERS OF WEATHERED ROCK

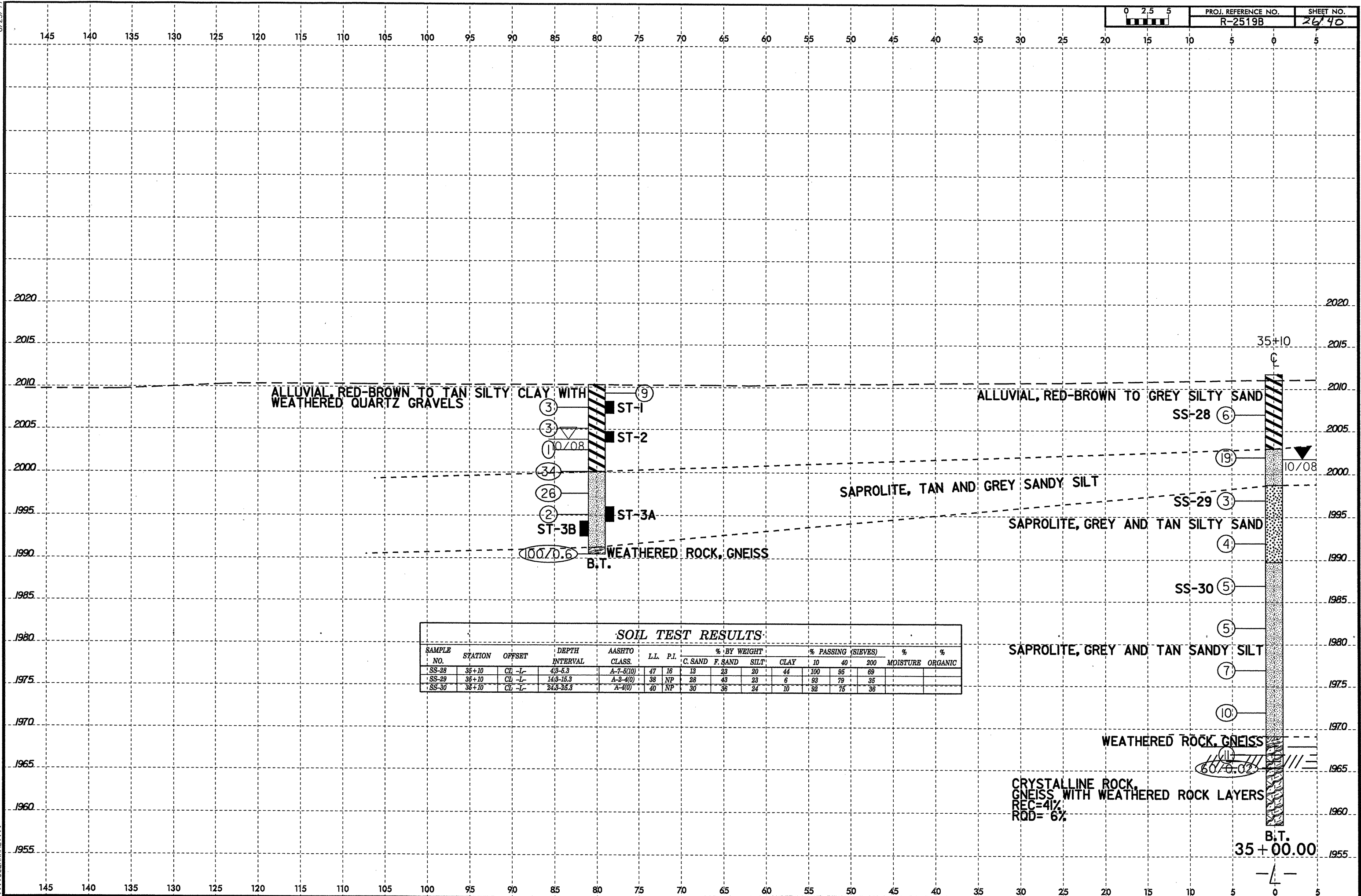
ALLUVIAL, BROWN FINE SAND WITH TRACE ORGANICS

ALLUVIAL, BASAL COBBLES AND GRAVEL

CRYSTALLINE ROCK, GNEISS REC = 42% RQD = 64%

26-NOV-2008 10:31 60 P:\PROJECTS\4748\_GEO\_RDMY\CADD\_GEO\RDY\CADD\_GEO\RDY-4748\_GEO.dwg

8/23/99



ALLUVIAL, RED-BROWN TO TAN SILTY CLAY WITH WEATHERED QUARTZ GRAVELS

ALLUVIAL, RED-BROWN TO GREY SILTY SAND

SAPROLITE, TAN AND GREY SANDY SILT

SAPROLITE, GREY AND TAN SILTY SAND

WEATHERED ROCK, GNEISS B.T.

SAPROLITE, GREY AND TAN SANDY SILT

WEATHERED ROCK, GNEISS

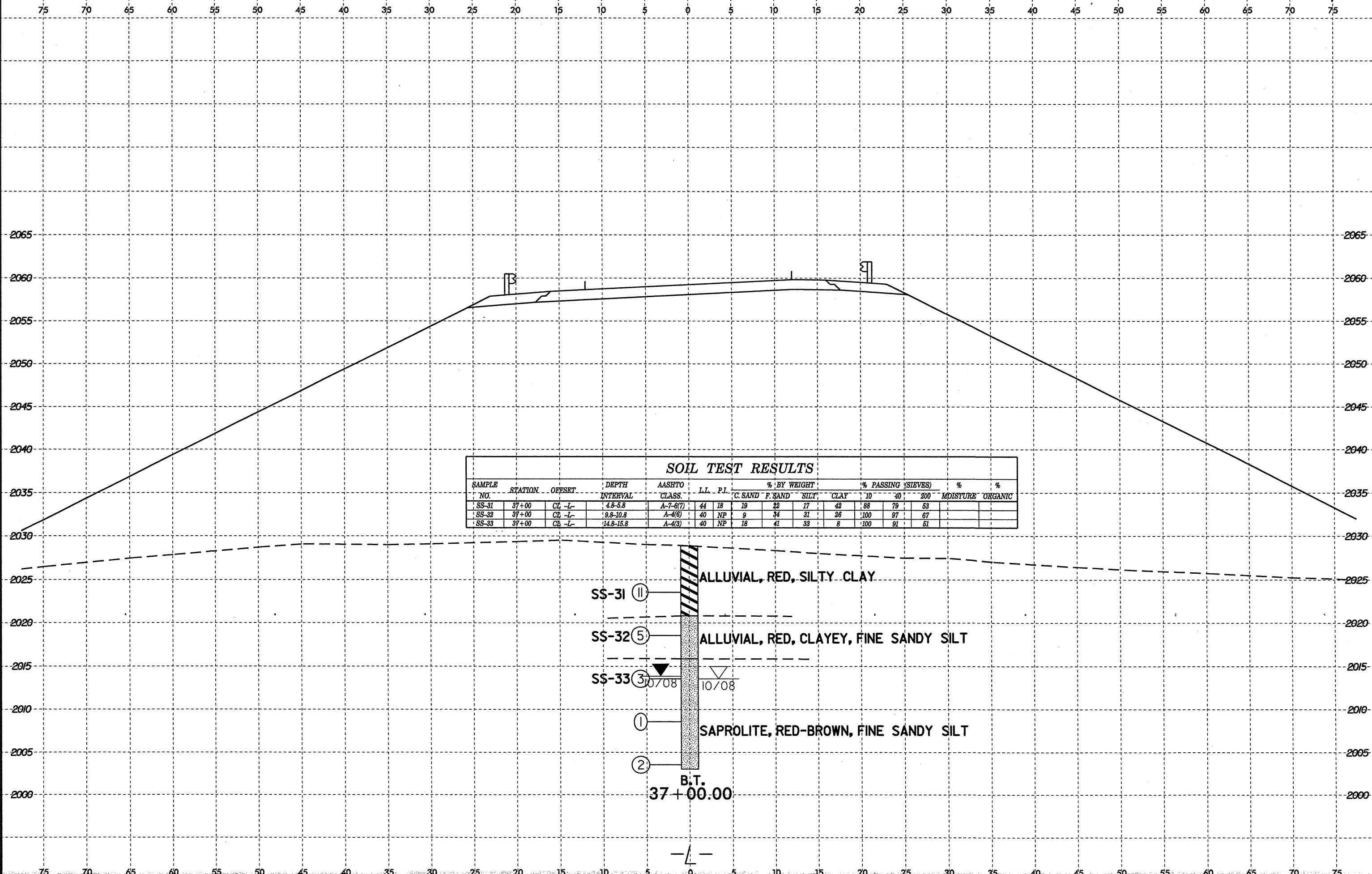
CRYSTALLINE ROCK, GNEISS WITH WEATHERED ROCK LAYERS  
REC=41%  
ROD=6%

SOIL TEST RESULTS

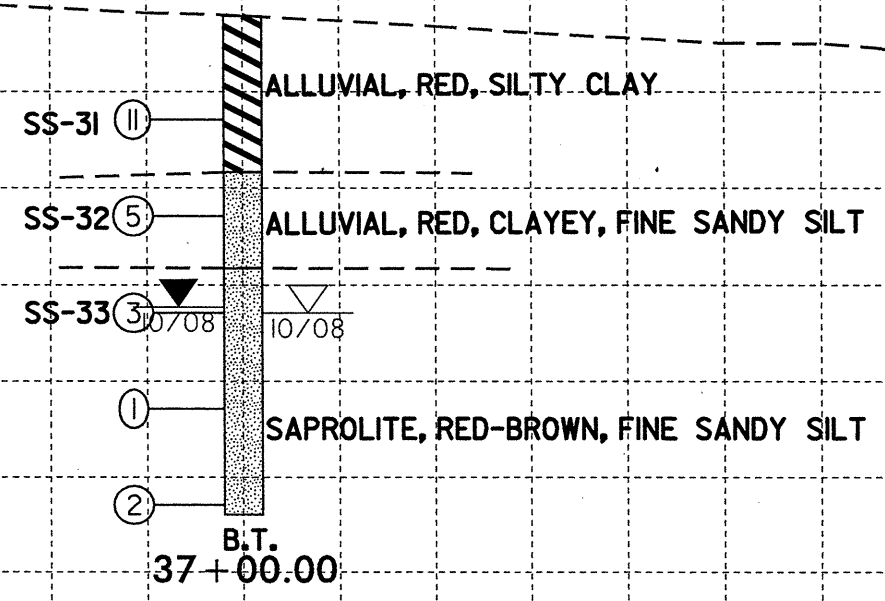
SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	LL	PI	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-28	35+10	CL -L-	4.3-5.3	A-7-5(10)	47	16	13	23	20	44	100	95	69		
SS-29	36+10	CL -L-	14.3-15.3	A-2-4(0)	38	NP	28	43	23	6	93	79	35		
SS-30	36+10	CL -L-	24.3-25.3	A-4(0)	40	NP	30	36	24	10	92	75	36		

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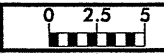


SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	LL	P.I.	% BY WEIGHT				% PASSING (SIEVES)			MOISTURE %	ORGANIC %
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-31	37+00	CL -L-	4.8-5.8	A-7-6(7)	44	18	19	22	17	42	88	79	53		
SS-32	37+00	CL -L-	9.8-10.8	A-4(6)	40	NP	9	34	31	26	100	97	67		
SS-33	37+00	CL -L-	14.8-15.8	A-4(3)	40	NP	18	41	33	8	100	91	51		

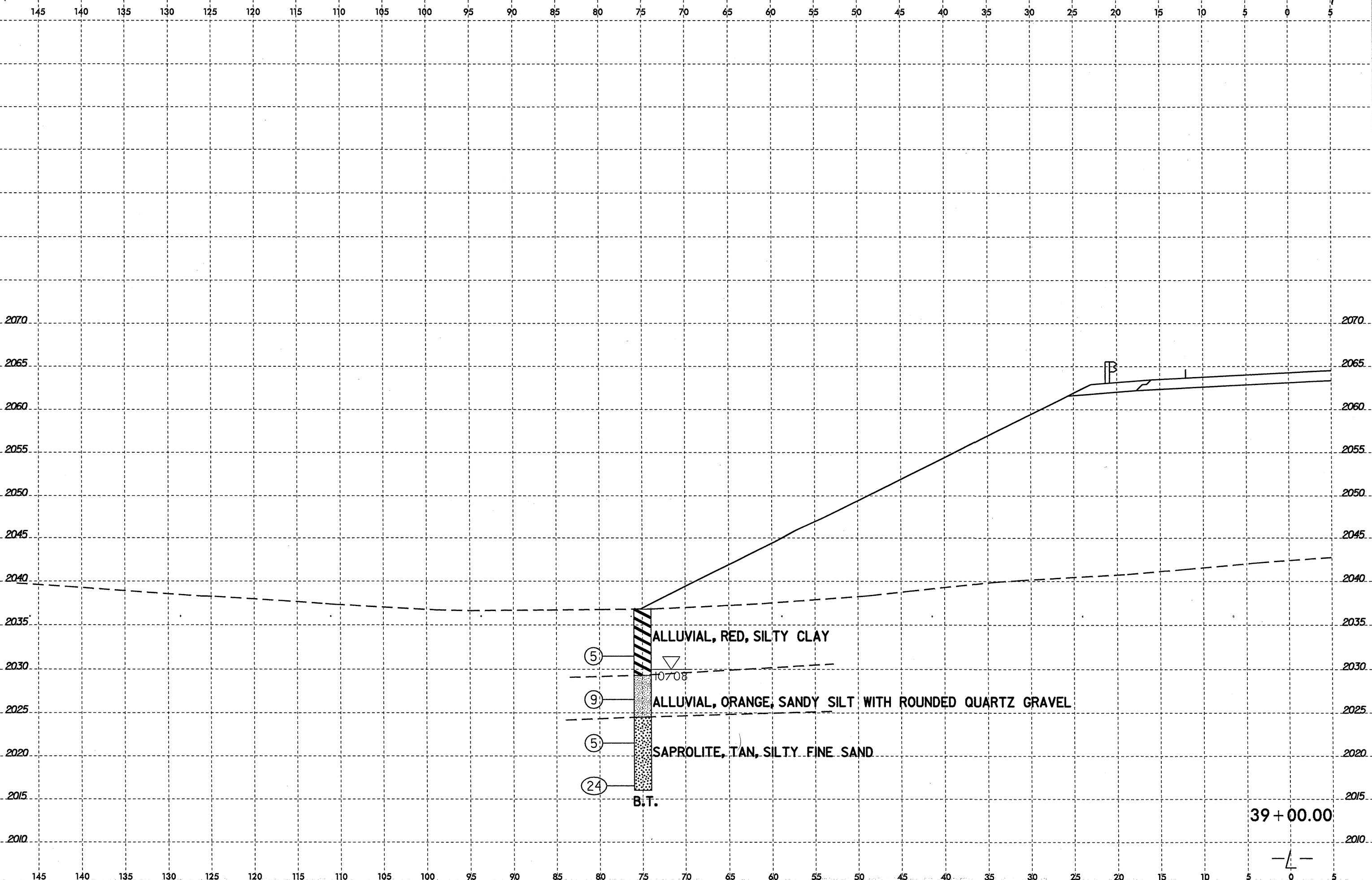


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\$\$\$\$USERNAME\$\$\$\$



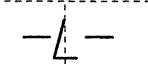
PROJ. REFERENCE NO. R-2519B  
SHEET NO. 28/40



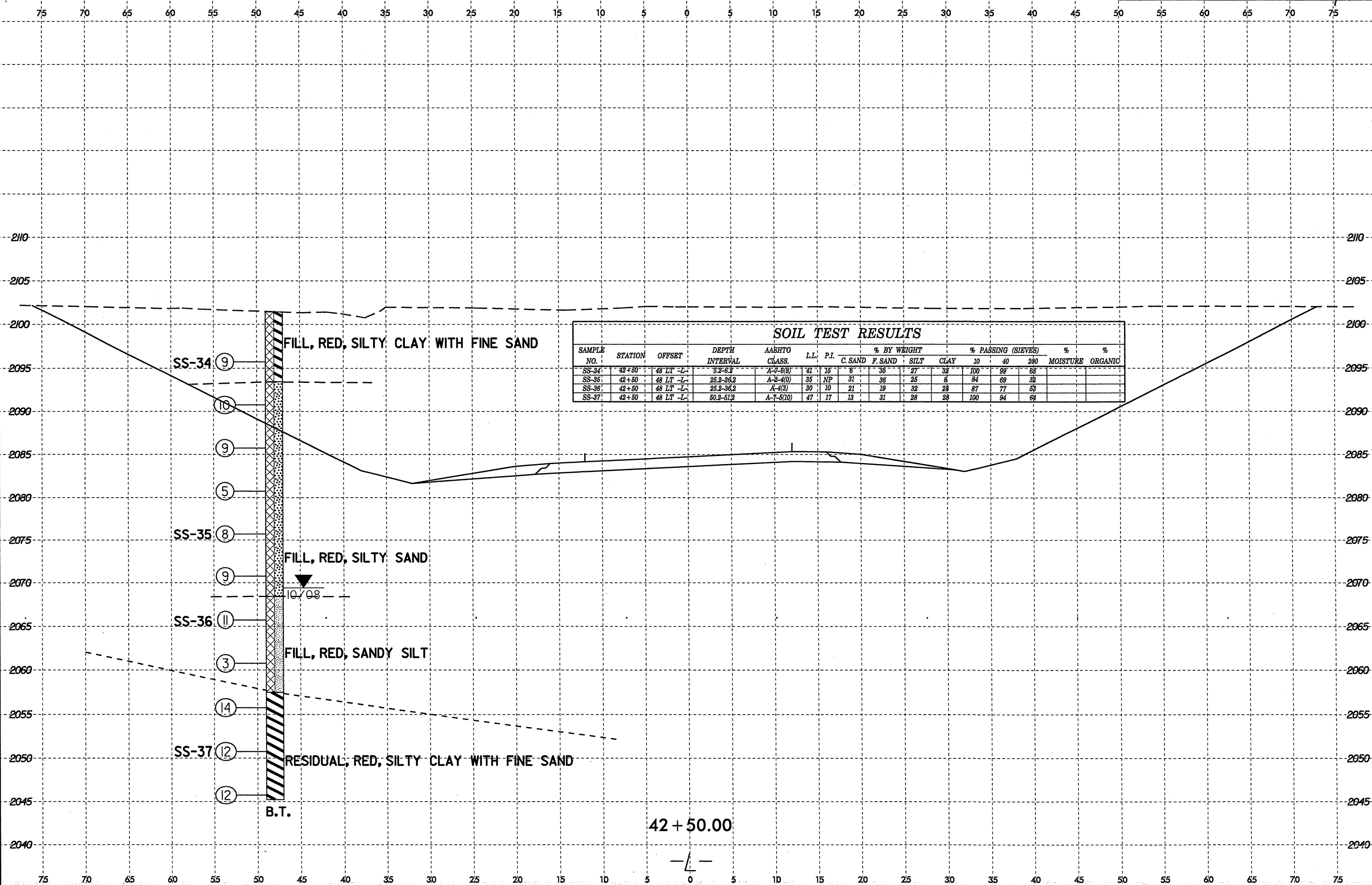
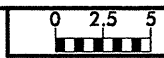
5' ALLUVIAL, RED, SILTY CLAY  
9' ALLUVIAL, ORANGE, SANDY SILT WITH ROUNDED QUARTZ GRAVEL  
5' SAPROLITE, TAN, SILTY FINE SAND  
B.T.

▽  
10708

39+00.00



8/23/99



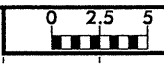
**SOIL TEST RESULTS**

SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	LL	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-34	42+50	48 LT -L-	5.2-6.2	A-7-6(8)	41	15	6	36	27	32	100	99	68		
SS-35	42+50	48 LT -L-	25.2-26.2	A-2-4(0)	35	NP	31	36	25	8	84	69	32		
SS-36	42+50	48 LT -L-	25.2-36.2	A-4(3)	30	10	21	19	32	28	87	77	53		
SS-37	42+50	48 LT -L-	50.2-51.2	A-7-5(10)	47	17	13	31	28	28	100	94	64		

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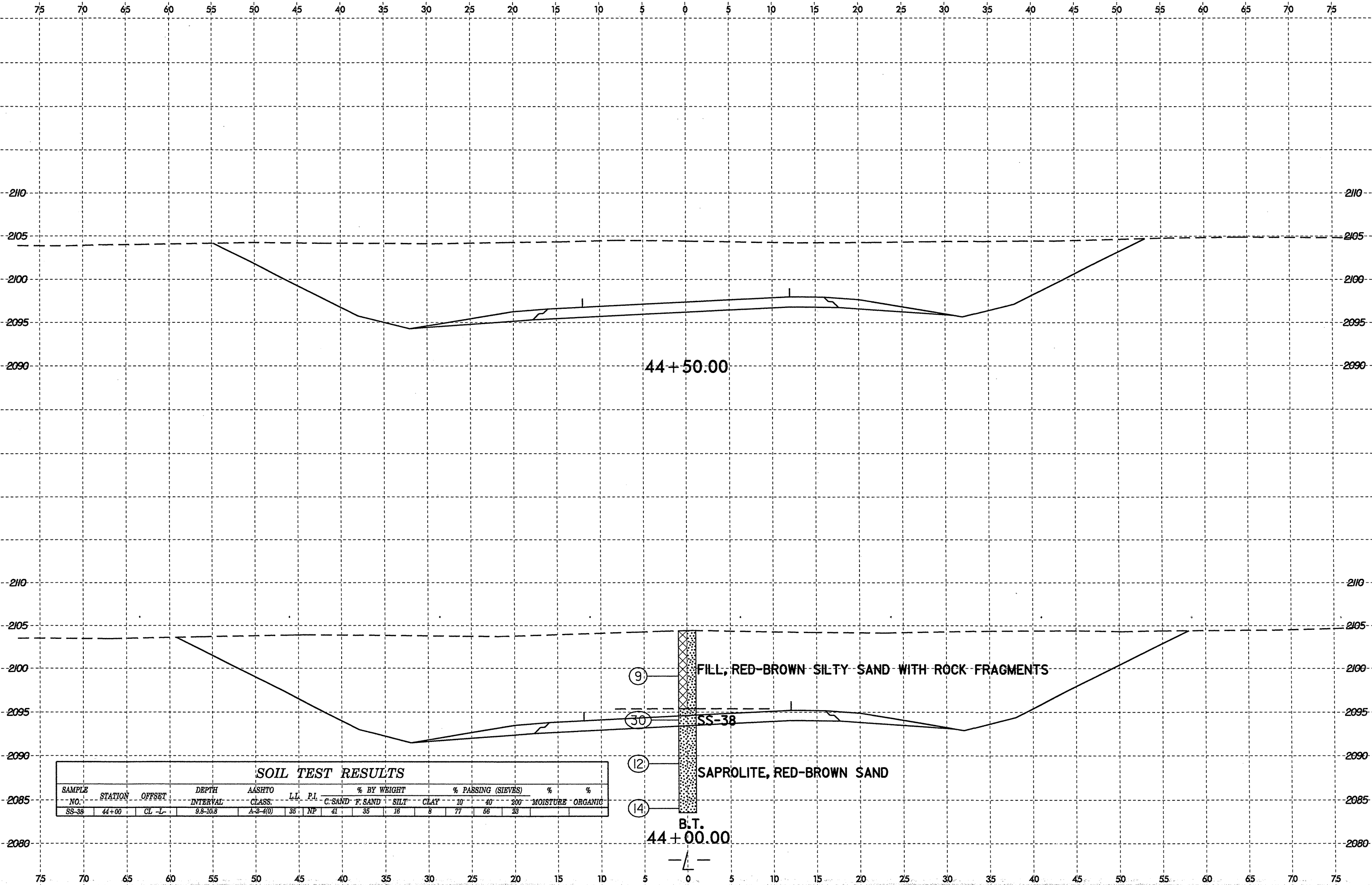


8/23/99



PROJ. REFERENCE NO. R-4748

SHEET NO. 30/40

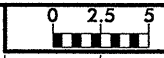


SOIL TEST RESULTS

SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS	LL	P.I.	% BY WEIGHT				% PASSING (SIEVES)			MOISTURE %	ORGANIC %
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-38	44+00	CL -L-	9.8-10.8	A-3-4(0)	35	NP	41	35	16	8	77	56	29		

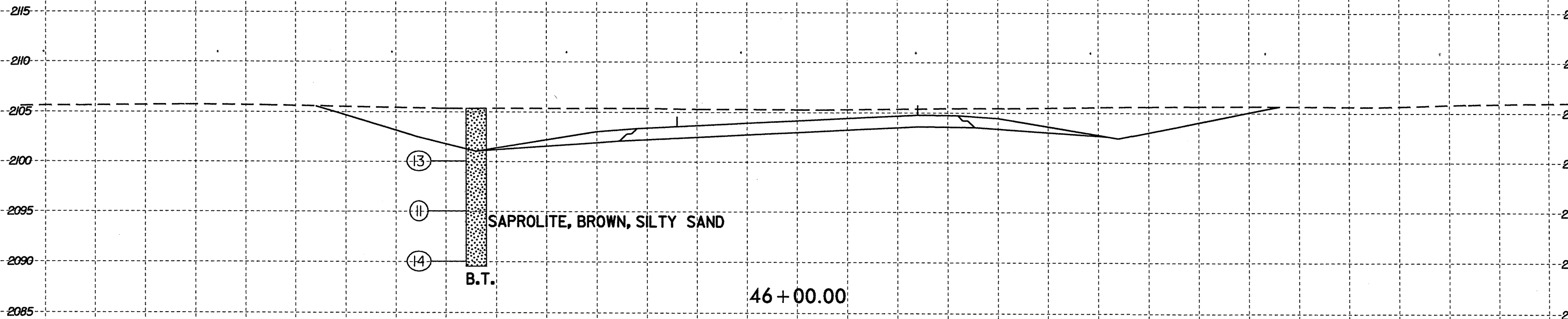
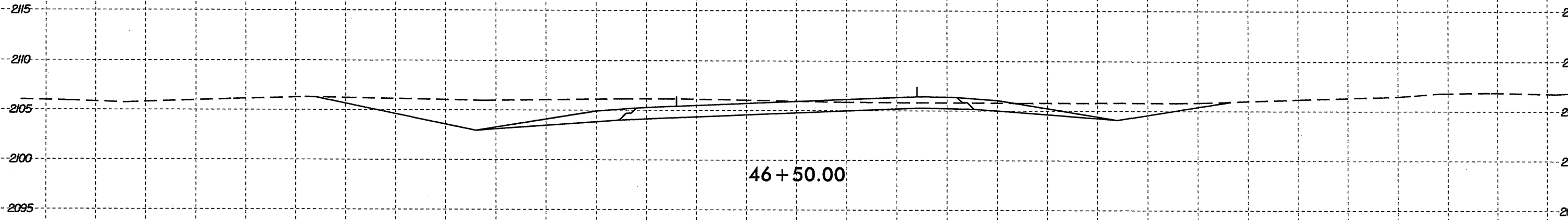
96-NOV-2008 10:35 D:\P\4748.GEO...RDWY\CADD\GEO\TECH\Plan\Prof\4748.GEO...xsi...1.dgn

8/23/99



PROJ. REFERENCE NO.	SHEET NO.
R-4748	31/40

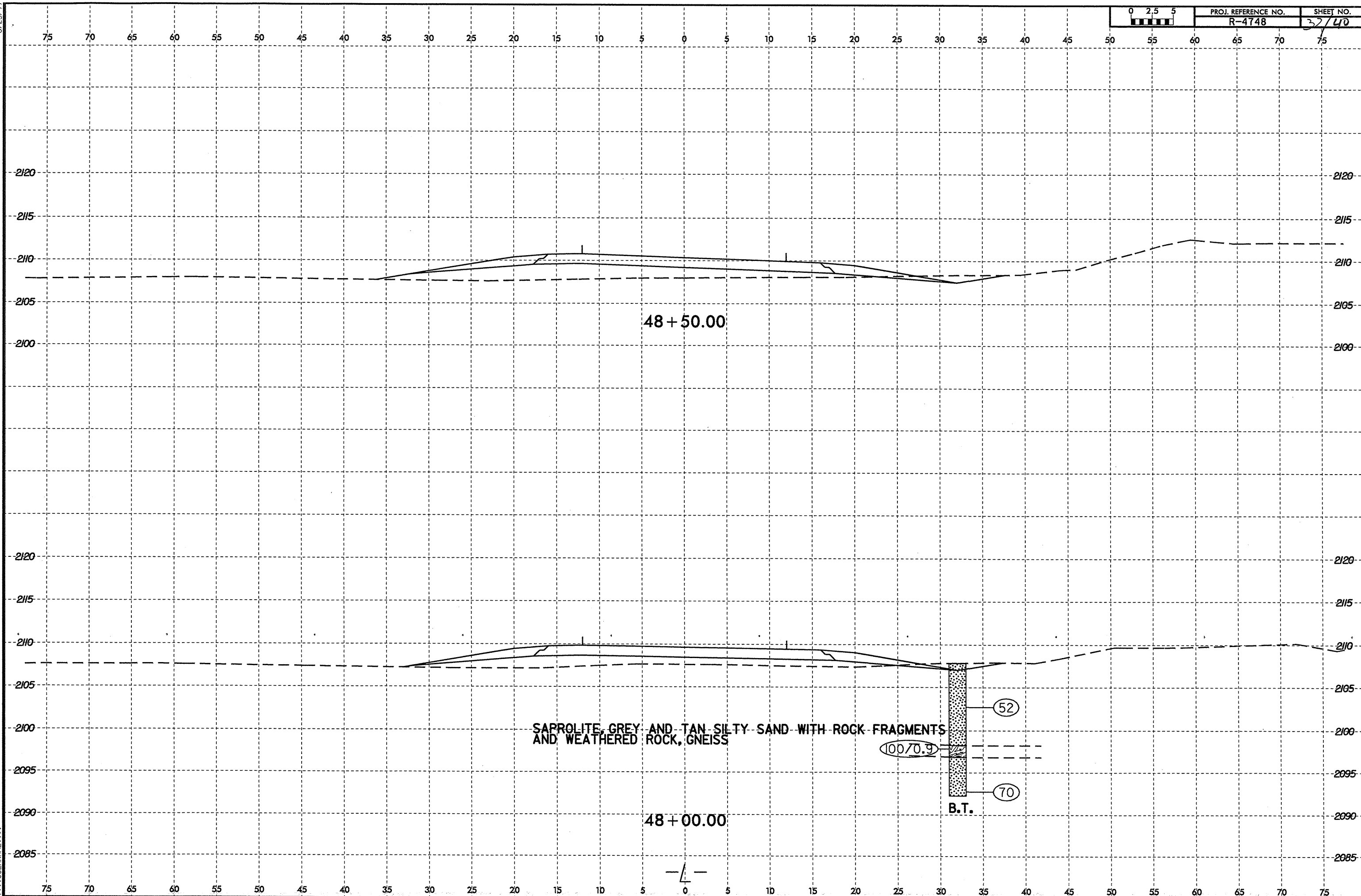
75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75



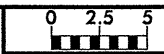
26-NOV-2008 10:42  
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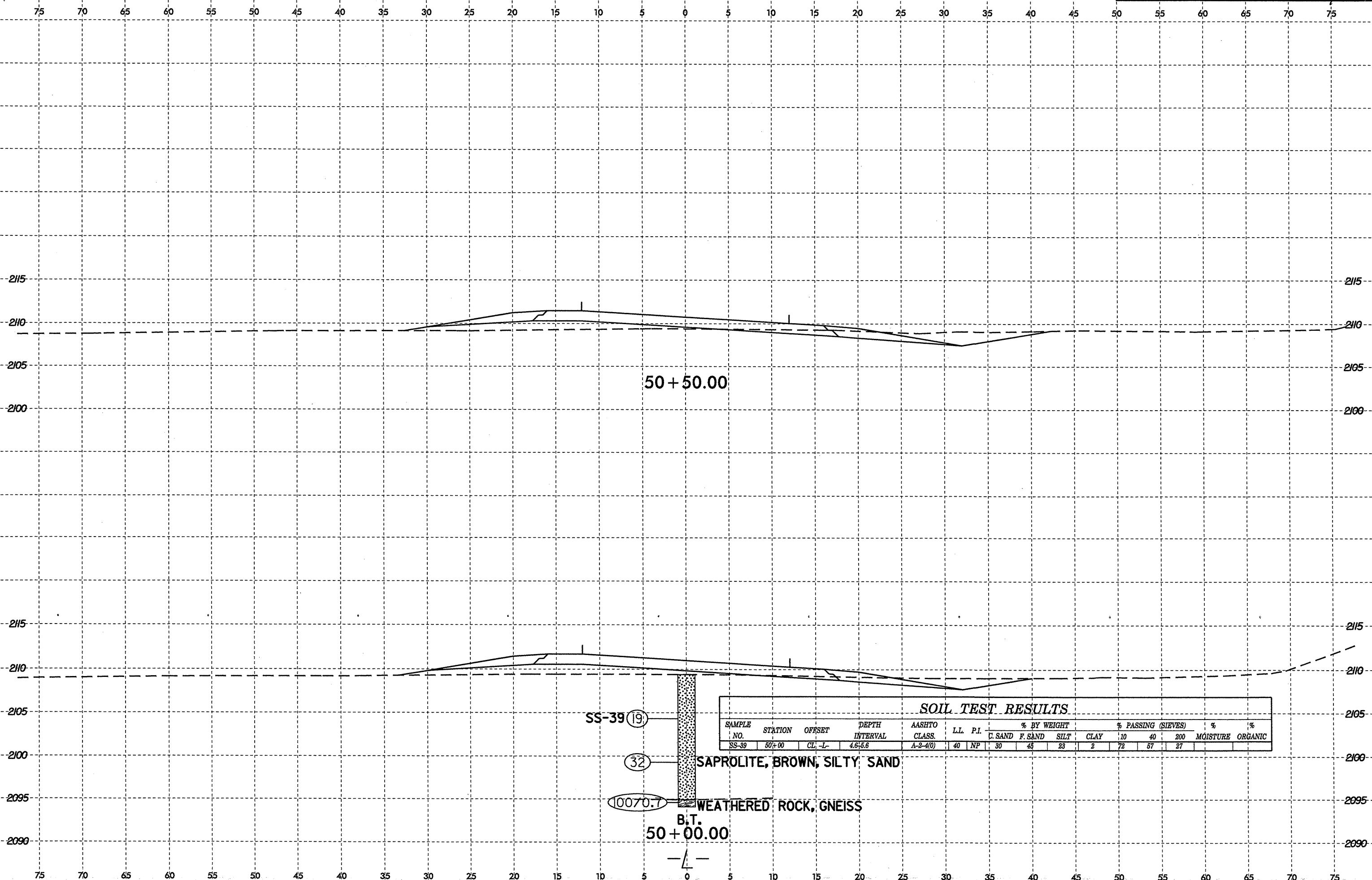
8/23/99  
01-DEC-2008 09:31  
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\$\$\$\$SUBSERIAL\$\$\$\$



8/23/99



PROJ. REFERENCE NO. R-4748 SHEET NO. 33/40



50 + 50.00

SS-39 (19)

(32)

(10070.7)

B.T.  
50 + 00.00

SOIL TEST RESULTS

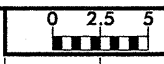
SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	LL	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE ORGANIC	
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-39	50+00	CL -L-	4.6-5.6	A-2-4(0)	40	NP	30	45	23	2	72	57	27		

SAPROLITE, BROWN, SILTY SAND

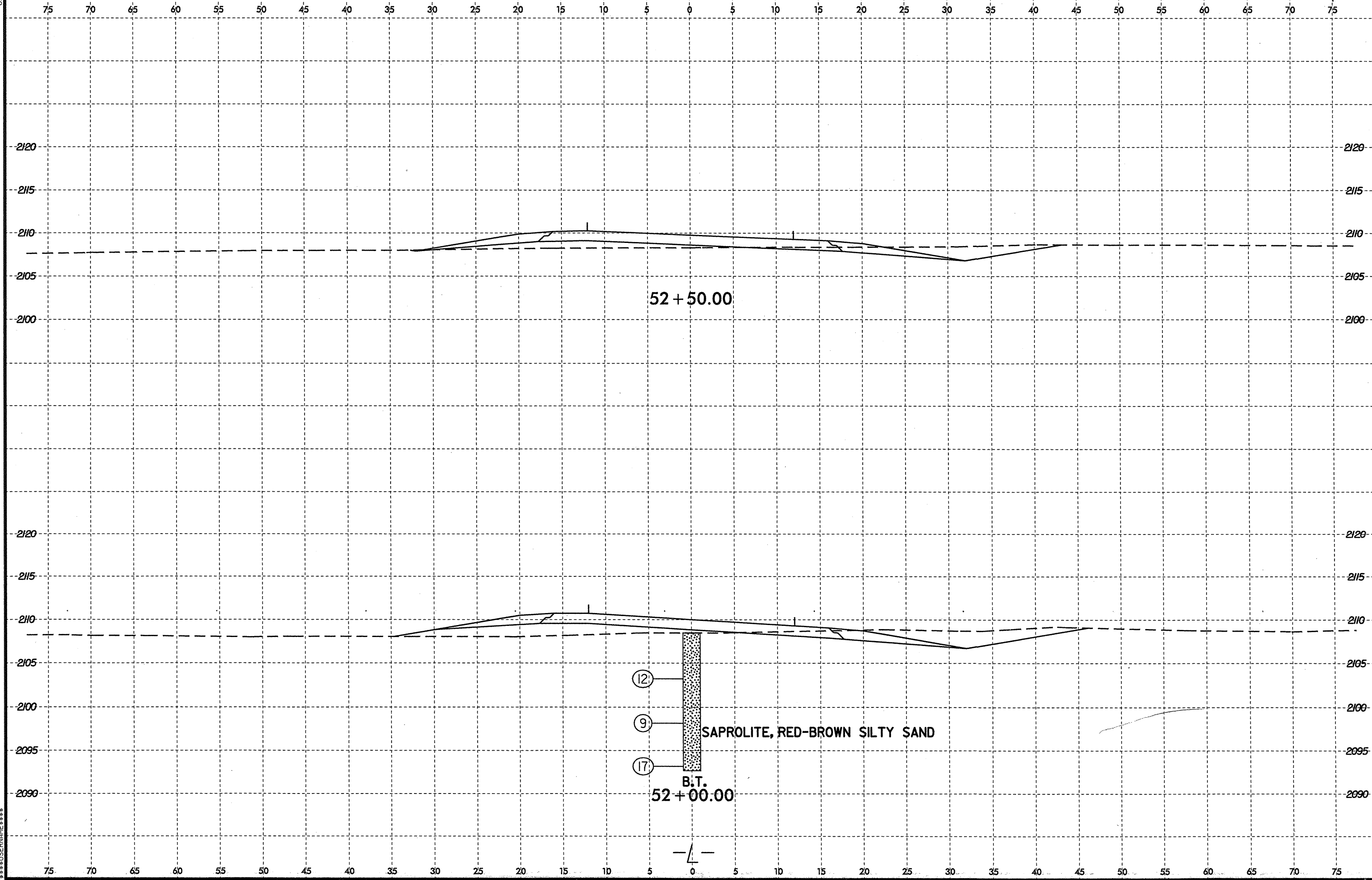
WEATHERED ROCK, GNEISS

26-NOV-2008 10:43  
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8/23/99



PROJ. REFERENCE NO.	SHEET NO.
R-4748	347/40



52 + 50.00

(12)

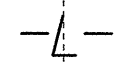
(9)

(17)

SAPROLITE, RED-BROWN SILTY SAND

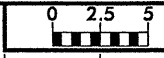
B.T.

52 + 00.00



Q:\DEC-2008 08\01 GEO.RDW\Y\CADD.GEOTECH\Plan\Prof\R-4748\_GEO\_xs1\_1.dgn  
 \$\$\$\$GERRAINE\$\$\$\$

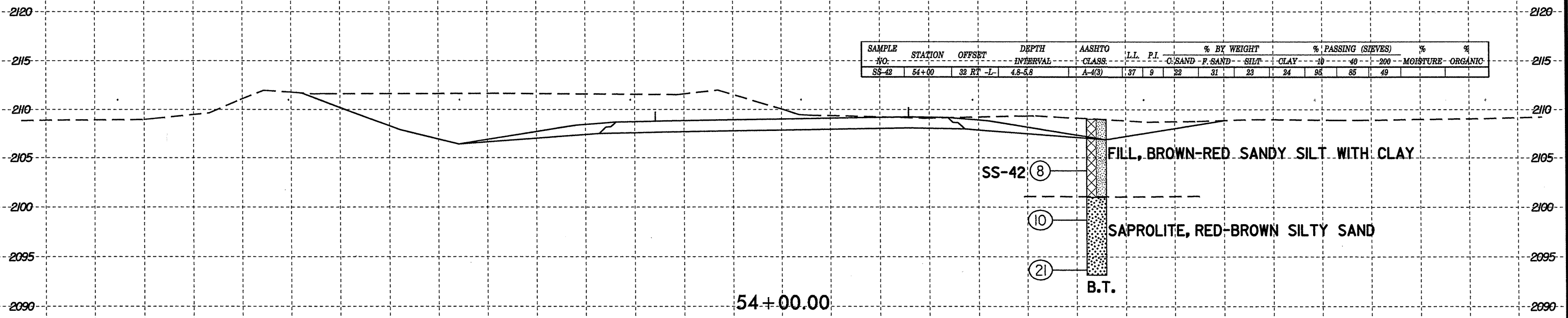
8/23/99



PROJ. REFERENCE NO.  
R-4748

SHEET NO.  
35/48

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75



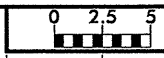
SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			MOISTURE %	ORGANIC %
							C. SAND	F. SAND	SILT	CLAY	#10	#40	#200		
SS-42	54+00	32 RT -L	4.8-5.8	A-4(3)	37	9	22	31	23	24	95	85	49		

OC:\DEC-2008\13148\_GEO\_RDWY\CADD\_GEO\TECH\Plan\Prof\VR-4748\_GEO\_xsi.l.dgn  
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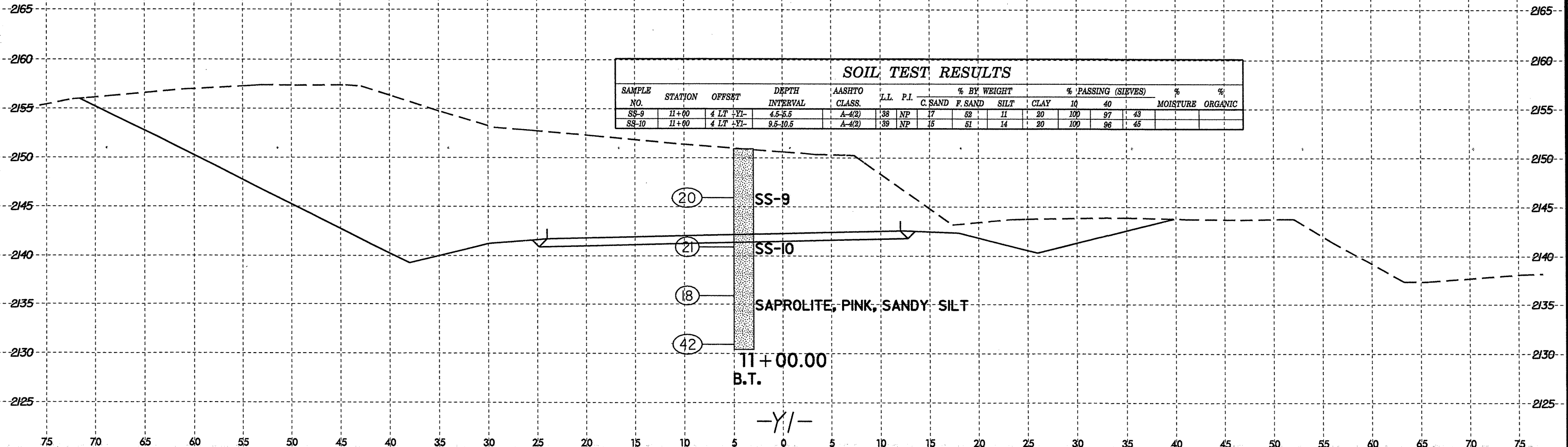
75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

8/23/99



PROJ. REFERENCE NO. R-4748 SHEET NO. 36/40

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75



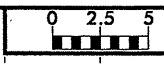
**SOIL TEST RESULTS**

SAMPLE NO.	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS	LL	P.I.	% BY WEIGHT				% PASSING (SIEVES)		% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40		
SS-9	11+00	4 LT	4.5-5.5	A-4(2)	38	NP	17	52	11	20	100	97	43	
SS-10	11+00	4 LT	9.5-10.5	A-4(2)	39	NP	15	51	14	20	100	96	45	

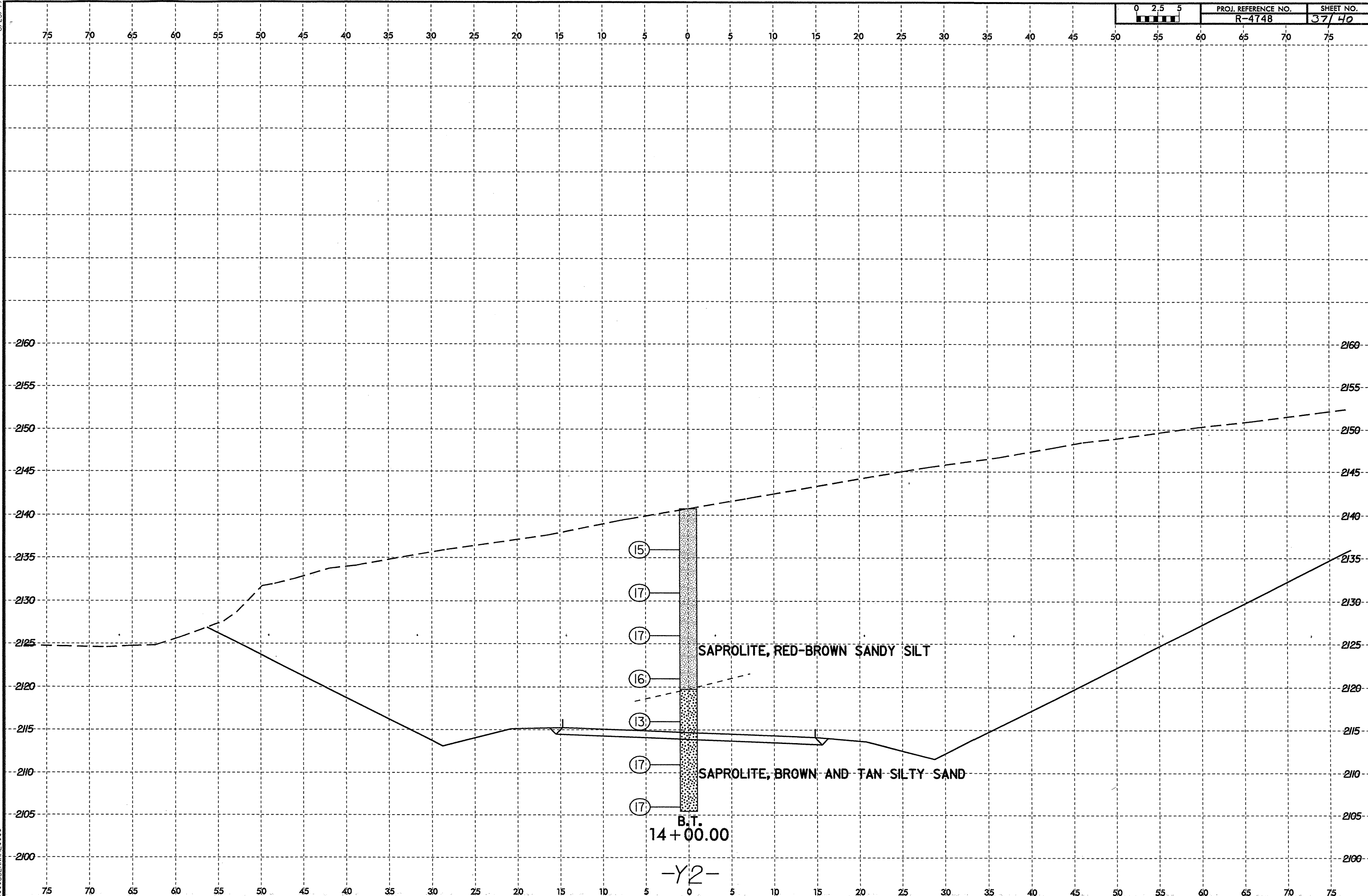
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8/23/99  
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PROJ. REFERENCE NO.	SHEET NO.
R-4748	37/40



15

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17

SAPROLITE, RED-BROWN SANDY SILT

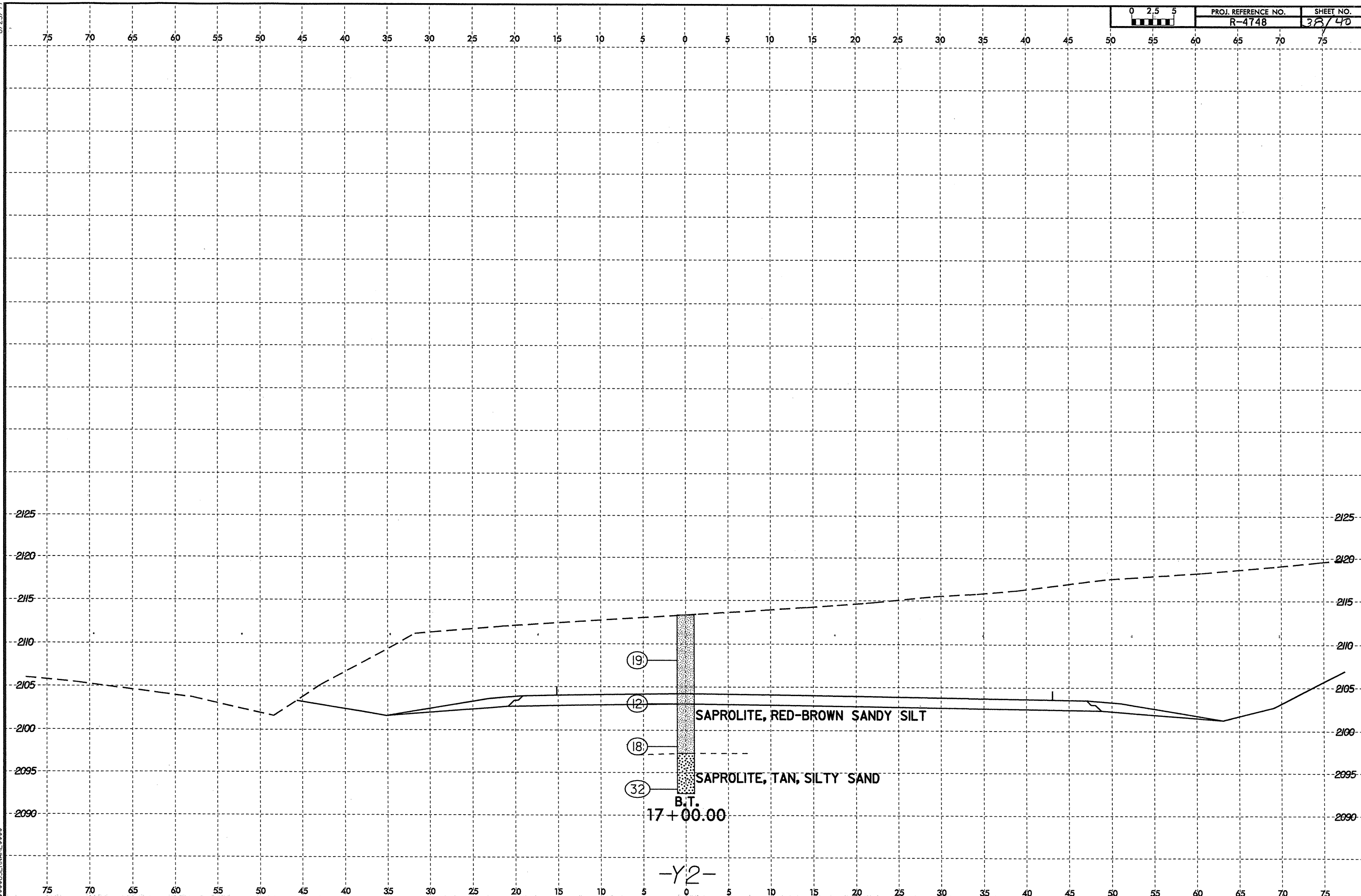
SAPROLITE, BROWN AND TAN SILTY SAND

B.T.  
14+00.00

-Y2-



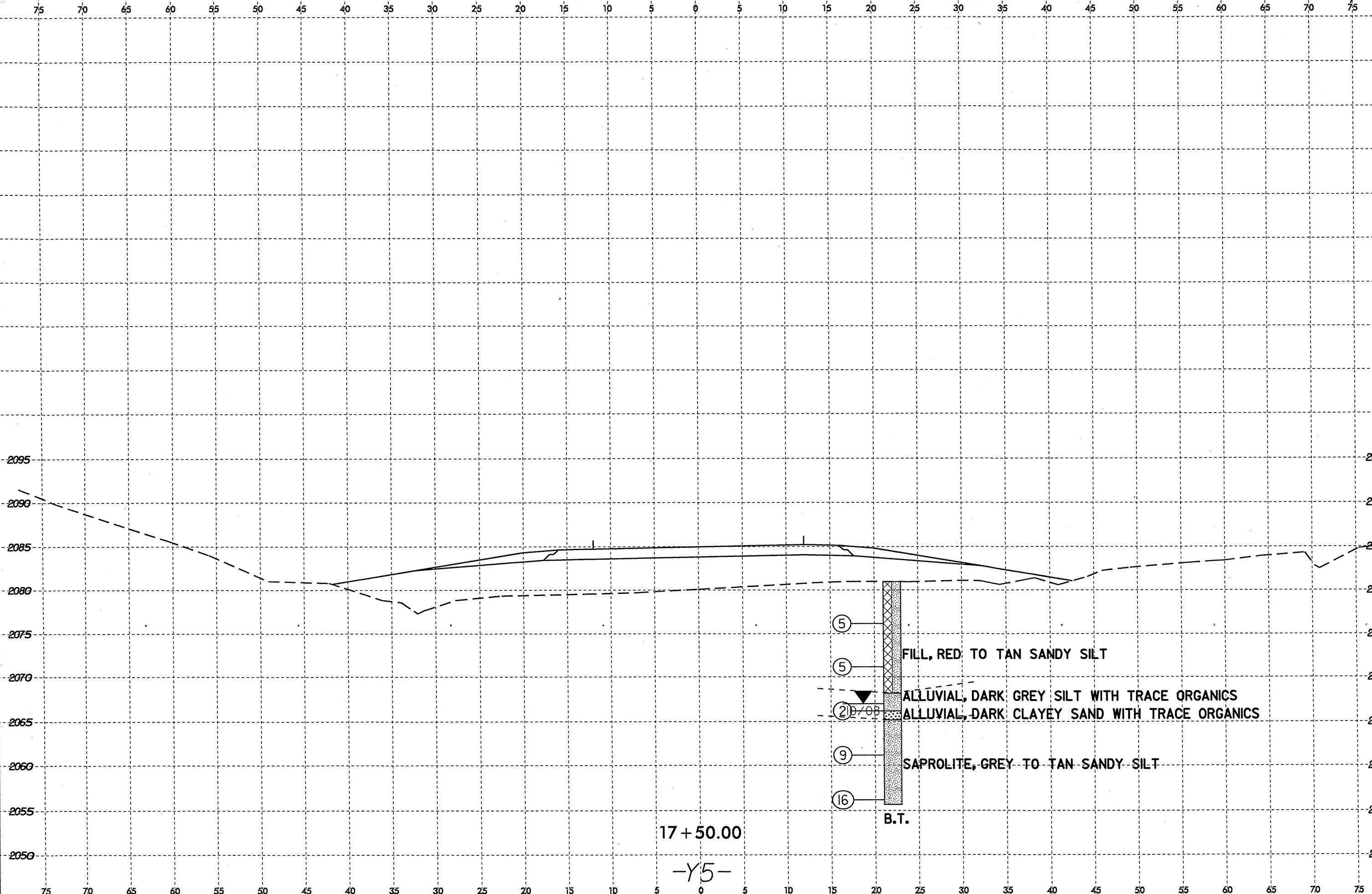
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8/23/99



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17+50.00

-Y5-

5

5

20

9

16

FILL, RED TO TAN SANDY SILT

ALLUVIAL, DARK GREY SILT WITH TRACE ORGANICS

ALLUVIAL, DARK CLAYEY SAND WITH TRACE ORGANICS

SAPROLITE, GREY TO TAN SANDY SILT

B.T.