STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2309AB	1	59

STATE PROJ.NO.	F.A. PROJ.NO.	DESCRIPTION
34418.1.4	STP-220(5)	P.E.
34418.2.3	STPNHS-0220(5)	R/W & UTIL.
34418.3.5	STPNHS-0220(25)	CONST.

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

PROJ. REFERENCE NO. 34418.1.4 (R-2309AB) F.A. PROJ. STP 220(5)

COUNTY GUILFORD

PROJECT DESCRIPTION US 220 FROM SR 2128 (HORESEPEN CREEK ROAD) TO 0.2 MILES NORTH OF SR 2313 (WINFREE ROAD)

INVENTORY

CONTENTS

LINE	STATION	PLAN	PROFILE	XSECT
-L-	21+50 TO 40+00	4-5	29	
-L-	40+50 TO 45+50	5	29	42-44
-L-	46+00 TO 124+00	6-11	29-32	
-L-	124+50 TO 129+50	12	32	45-48
-L-	130+00 TO 194+00	12-17	32-35	
-L-	194+50 TO 199+50	17	35	49-51
-L-	200+00 TO 216+50	17-19	35	
-L-	217+00 TO 219+50	19	35-36	52
-L-	220+00 TO 237+00	19-20	36	
-L-	237+50 TO 243+50	20-21	36	53-57
-L-	244+00 TO 255+50	21-22	36-37	
-L-	256+00 TO 260+50	22	37	58-59
-L-	260+50 TO 316+77	22-26	37-39	
-Y-	0+32 TO 13+60	4,27	40	
-Y7-	10+00 TO 14+40	15-16	40	
-Y8-	6+14 TO 24+60	19,28	41	
-Y13-	10+00 TO 12+66	25	41	
-Y14A-	10+00 TO 15+26	25	41	

CAUTION NOTICE

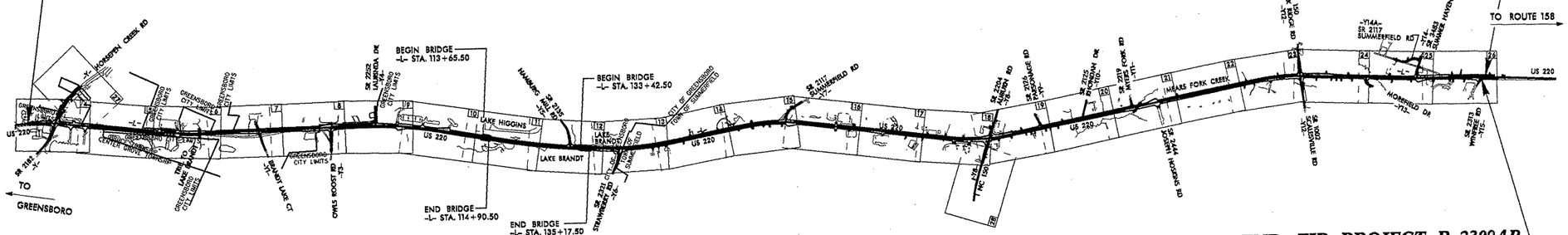
THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 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.

END CONSTRUCTION
-L- PT STA. 317+51.85
(TIE TO TIP PROJECT R-2413C)

BEGIN TIP PROJECT R-2309AB
-L- STA. 21+50.00



END TIP PROJECT R-2309AB
-L- STA. 316+76.67 =
R-2413C -LREV1- STA. 13+50.

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SUBMITTED BY N.T. ROBERSON
DATE APRIL 2008

NORTH CAROLINA LICENSED SEAL 1912 GEOLOGIST NEIL T. ROBERSON 4/4/08

DRAWN BY: CDC, NDM, TTW

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IT IS 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.

CONTRACT: C200800

ID: R-2309AB

PROJECT REFERENCE NO.	SHEET NO.
34418.1.4 (R-2309AB)	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

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:

VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6			
SYMBOL														
% PASSING # 10	50 MX											GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
# 40	30 MX	50 MX	51 MN											
# 200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN			
LIQUID LIMIT	6 MX		NP	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PLASTIC INDEX				10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	No MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH ($TONS/FT^2$)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	<4 4 TO 10 10 TO 30 30 TO 50 >50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	<2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 >30	<0.25 0.25 TO 0.50 0.5 TO 1.0 1 TO 2 2 TO 4 >4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053

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
GRAIN SIZE IN.: 12 | 3

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT		
PLASTIC RANGE (PI)	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL — PLASTIC LIMIT		
OM — OPTIMUM MOISTURE	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
SL — SHRINKAGE LIMIT		
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	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

COLOR

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.

GRADATION

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.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 31
MODERATELY COMPRESSIBLE	LIQUID LIMIT EQUAL TO 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%
MODERATELY ORGANIC	5 - 10%	12 - 20%
HIGHLY ORGANIC	>10%	>20%

OTHER MATERIAL	
TRACE	1 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
HIGHLY	35% AND ABOVE

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 DIP & DIP DIRECTION OF ROCK STRUCTURES
- SOUNDING ROD
- SPT DPT VST / CPT DMT PMT TEST BORING
- AUGER BORING
- CORE BORING
- MW MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- SPT N-VALUE
- REF SPT REFUSAL

SAMPLE DESIGNATIONS
- S - BULK SAMPLE
- SS - SPLIT SPOON SAMPLE
- ST - SHELBY TUBE SAMPLE
- RS - ROCK SAMPLE
- RT - RECOMPACTED TRIAXIAL SAMPLE
- CBR - CALIFORNIA BEARING RATIO SAMPLE

ABBREVIATIONS

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
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] MOBILE B-___
- [ ] BK-51
- [X] CME-45C
- [ ] CME-550
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 6" HOLLOW AUGERS
- [X] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE _____" STEEL TEETH
- [ ] TRICONE _____" TUNG.-CARB.
- [ ] CORE BIT
- [ ] _____

HAMMER TYPE:
- [ ] AUTOMATIC
- [X] MANUAL

CORE SIZE:
- [ ] -B_____
- [ ] -N_____
- [ ] -H_____

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] _____

ROCK DESCRIPTION

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 YEILD 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 BEDS, ETC.

WEATHERING

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.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 10 FEET
WIDE	3 TO 10 FEET
MODERATELY CLOSE	1 TO 3 FEET
CLOSE	0.16 TO 1 FEET
VERY CLOSE	LESS THAN 0.16 FEET

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	> 4 FEET
THICKLY BEDDED	1.5 - 4 FEET
THINLY BEDDED	0.16 - 1.5 FEET
VERY THINLY BEDDED	0.03 - 0.16 FEET
THICKLY LAMINATED	0.008 - 0.03 FEET
THINLY LAMINATED	< 0.008 FEET

INDURATION

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.

TERMS AND DEFINITIONS

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 DISLODGED FROM PARENT MATERIAL.

FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.

FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.

JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.

LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.

LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.

MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.

PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.

RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (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 (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.

TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

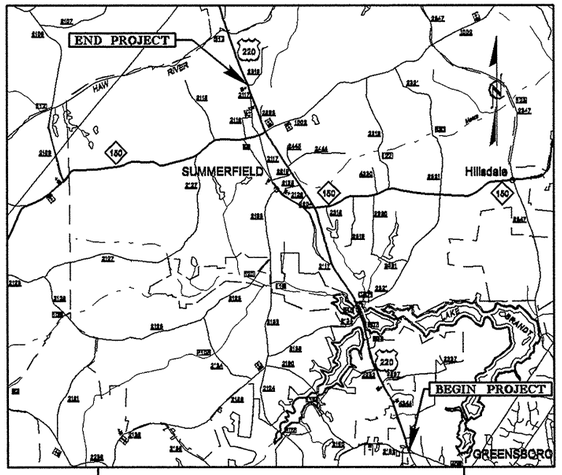
BENCH MARK:

ELEVATION: FT.

NOTES:

REVISED 02/23/06

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

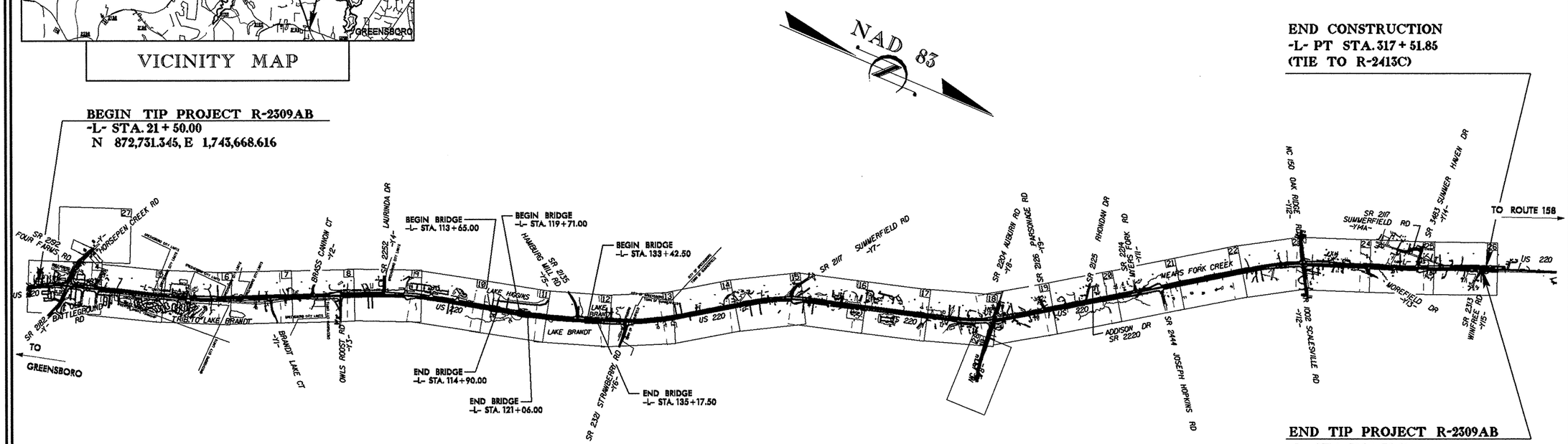
GUILFORD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2309AB	2A	59

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34418.1.4	STP-220[5]	P.E.

LOCATION: US 220 FROM SR 2182 (HORSEPEN CREEK RD.) TO 0.2 MILES NORTH OF SR 2313 (WINFREE RD.) IN GREENSBORO

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



THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF SUMMERFIELD AND THE CITY OF GREENSBORO.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD ___.
NCDOT CONTACT: CATHY HOUSER, P.E., PROJECT ENGINEER – ROADWAY DESIGN

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

TIP PROJECT: R-2309AB

CONTRACT:

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2009 = 26,300
ADT 2029 = 36,700
DHV = 10 %
D = 65 %
T = 12 % *
V = 60 MPH (SHLDR.)
V = 50 MPH (C&G)

* TTST 5% + DUAL 7%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2309AB = 5.510 MI.
LENGTH STRUCTURE TIP PROJECT R-2309AB = 0.082 MI.
TOTAL LENGTH OF TIP PROJECT R-2309AB = 5.592 MI.

Prepared In the Office of:
KCI Associates of North Carolina, P.A.
SUITE 220, LANDMARK CENTER II, 4601 SIX FORKS RD.
RALEIGH, NC 27609-5210
• ENGINEERS • PLANNERS • ECOLOGISTS
for the
DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JUNE 20, 2008

LETTING DATE:
JUNE 15, 2010

MICHELLE R. BRAME, P.E.
PROJECT ENGINEER

KEVIN SU, E.I.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

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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 Tippett
SECRETARY

April 1, 2008

STATE PROJECT: 34418.1.4 (R-2309AB)
FEDERAL PROJECT: STP-220(5)
COUNTY: Guilford

DESCRIPTION: US 220 from SR 2128 (Horesepen Creek Rd.) to 0.2 miles North of SR 2113 (Winfree Rd.) in Greensboro

SUBJECT: Geotechnical Report – Inventory

Project Description

This project consists of widening Battleground Road (-L-, US 220) to four lanes with median and turn lanes in the city of Greensboro and the town of Summerfield. The project begins just before the intersection of Horsepen Creek Road (SR 2128, -L- Sta. 21+50) and extends 5.6 miles to Winfree Road (SR 2113, -L- Sta. 316+76.61). Replacement bridges will be constructed at the Lake Higgins Spillway and the two Lake Brandt crossings. Some of the smaller intersecting streets are being re-aligned during the widening. Two culvert improvements and one new pedestrian culvert are also planned along the project

The geotechnical field investigation was conducted during November 2007. Two Trigon Engineering drill crews were contracted to assist in investigating the subsurface. NCDOT Geotechnical Engineering Unit geologists sampled and logged the borings. ATV-mounted CME-45 drill machines were used during field investigation. Standard Penetration Tests were performed in selected borings and additional borings were advanced using continuous flight augers. Representative soil samples were collected for visual classification in the field and submitted for laboratory analysis by NCDOT's Materials and Tests Unit.

The following alignments, totaling 6.4 miles, were investigated. Subsurface soil profiles, or cross-sections, of these alignments are included in this report:

Line	Station		
-L-	21+50	to	316+77
-Y-	0+32	to	13+60
-Y7-	10+00	to	14+40
-Y8-	6+14	to	24+60
-Y13-	10+00	to	12+66
-Y14A-	10+00	to	15+26

Areas of Special Geotechnical Interest

1) Highly Plastic Clay Soils: Occurrences of highly plastic clay (Plasticity Index greater than 25) are noted below:

Alignment	Station	Offset
-L-	62+00	25 RT
-L-	71+00	40 LT
-L-	79+00	95 LT
-L-	116+50	30 RT
-L-	125+00	60 LT
-L-	143+20	45 LT
-L-	168+20	50 RT
-L-	178+97	60 RT
-L-	192+00	40 RT
-L-	202+00	40 RT
-L-	211+00	50 RT
-L-	217+50	55 LT
-L-	236+00	65 RT
-L-	243+00	35 LT
-L-	258+00	30 LT
-L-	271+00	55 LT
-L-	277+50	55 RT
-L-	290+00	45 RT
-L-	296+00	45 RT
-L-	299+68	60 RT
-L-	315+00	55 LT
-Y-	2+00	45 RT
-Y8-	7+20	40 RT

2) Crystalline Rock: Crystalline rock was encountered in the following borings:

Alignment	Station	Offset
-L-	126+50	80 LT
-L-	127+40	80 LT
-L-	128+00	80 LT
-L-	220+00	45 LT

Physiography and Geology

The project is located in the moderately rolling terrain of the Piedmont area of North Carolina. A mixture of businesses, single-family homes, and churches are located along the project corridor. Small streams and wet-weather runs cross the project corridor, generally from right to left across the alignment.

Soils are derived from the weathering of the underlying bedrock composed of granite from the Charlotte Belt and meta-granite of the Carolina Slate Belt.

Soil Properties

Soils encountered at the project site include artificial fill, roadway embankment, alluvial sediments, and residual soils.

Roadway embankment is common along the -L- alignment. The embankments range up to 24 feet in height Where sampled, the embankment soil consists of moist, stiff to very stiff, silty clay (AASHTO classification of A-7-6).

Artificial fill soil occurs within a landscaped shopping center right of -L- (see Plansheet No. 18). Approximately 3 to 5 feet of artificial fill, consisting of moist, stiff to very stiff, silty clay (A-7-5) occurs at this site.

Alluvial soils were deposited along several small creeks, which flow across the alignment in several areas (-L- 56+65, -L- 246+55, -L- 269+20, and -L- 295+35). These soils are 6 to 11.5 feet in thickness and consist of moist to wet, very loose to medium dense, silty sand (A-2-4) and soft to stiff, sandy silt and clay (A-4, A-6). Alluvial soils were also encountered in the borings near Lake Brandt. These soils are 17.0 to over 22.7 feet in thickness and consist of moist to wet, soft to very stiff, sandy and silty clay (A-6, A-7-6) and wet, loose to medium dense, coarse sand (A-1-b).

The residual soils are derived from the in-place weathering of the underlying bedrock. These soils consist primarily of moist, medium stiff to hard, silty clay (A-7-5 and A-7-6) and moist to dry, loose to dense, silty sand (A-2-4 and A-2-5). Silty soils consisting of moist, medium stiff to very stiff, clayey silt (A-5) and moist, medium stiff to very stiff, sandy silt (A-4) occur within the project area as well. Areas containing highly plastic soils (plasticity indices of greater than 25) are listed above in the section "Areas of Special Geotechnical Interest".

Rock Properties

Weathered rock and crystalline rock occur in several areas of the project. The weathered rock is derived from the underlying Charlotte and Carolina Slate Belt bedrock and ranges from 0.7 to 10.4 feet or more in thickness. The crystalline bedrock consists of meta-granite from the Carolina Slate Belt and granite from the Charlotte Belt. Crystalline rock was mostly encountered in the existing cut slope adjacent to Lake Brandt.

Groundwater

Groundwater was encountered in 13 of the 91 borings completed on this project. The investigation was conducted during a period of exceptional drought. Groundwater, when encountered in residual soil or weathered rock, was variable across the project, ranging from 6.6 feet to 22.2 feet below the ground surface. Groundwater in borings located in alluvial areas ranged from 2.5 feet to 11.1 feet in depth. Based on the investigation, groundwater is not anticipated to cause problems during construction.

Prepared by,

C. Doug Czajka
Engineering Geologist

Volumes in Cubic Yards

PROJECT R-2309AB COUNTY: Guilford DATE: September 22, 2011 COMPILED BY: BAW

STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
		TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +20%		ROCK	SUITABLE	UNSUIT.	TOTAL
-L- Left 21+50.00	50+00.00	9,754				9,754	794		794	953			8,801		8,801
-Y- 1+50.00	9+49.49	544				544	1,475		1,475	1,770	1,226				
	SUBTOTAL	10,298				10,298	2,269		2,269	2,723	1,226		8,801		8,801
-L- Left 50+00.00	80+00.00	8,400				8,400	39,804		39,804	47,765	39,365				
-Y1- 8+05.00	9+54.63						560		560	672	672				
	SUBTOTAL	8,400				8,400	40,364		40,364	48,437	40,037				
-L- Left 80+00.00	113+65.50	3,887				3,887	16,254		16,254	19,505	15,618				
-Y3- 10+47.51	14+58.00	363				363	1,462		1,462	1,754	1,391				
-Y4- 10+35.51	12+75.00	2				2	801		801	961	959				
	SUBTOTAL	4,252				4,252	18,517		18,517	22,220	17,968				
-L- Left 114+90.50	133+42.50	14,756	600			14,156	12,224	600	11,624	14,549			207		207
-Y5- 10+48.02	14+00.00	105				105	165		165	198	93				
	SUBTOTAL	14,861	600			14,261	12,389	600	11,789	14,747	93		207		207
-L- Left 135+17.50	165+00.00	816				816	5,813		5,813	6,976	6,160				
	SUBTOTAL	816				816	5,813		5,813	6,976	6,160				
-L- Left 165+00.00	190+00.00	1,982				1,982	5,477		5,477	6,572	4,590				
-Y7- 10+47.50	14+40.00	327				327	863		863	1,036	709				
	SUBTOTAL	2,309				2,309	6,340		6,340	7,608	5,299				
	SHEET TOTAL	40,936	600			40,336	85,692	600	85,092	102,710	70,783		9,008		9,008

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.

Volumes in Cubic Yards

PROJECT R-2309AB COUNTY: Guilford DATE: September 22, 2011 COMPILED BY: BAW

STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
		TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +20%		ROCK	SUITABLE	UNSUIT.	TOTAL
-L- Left 190+00.00	216+53.59	14,216				14,216	1,602		1,602	1,922			12,294		12,294
-Y8- 5+20.00	9+48.07	2,881				2,881	11		11	13			2,868		2,868
	SUBTOTAL	17,097				17,097	1,613		1,613	1,936			15,161		15,161
-L- Left 216+53.59	245+00.00	39,292			408	38,884	14,514		14,514	17,417			21,467	408	21,875
-Y9- 10+36.77	12+04.00	780				780	12		12	14			766		766
	SUBTOTAL	40,072			408	39,664	14,526		14,526	17,431			22,233	408	22,641
-L- Left 245+00.00	280+40.04	13,930			602	13,328	29,287		29,287	35,144	21,816			602	602
-Y11- 10+35.50	11+60.00	710				710	4		4	5			705		705
-Y12- 6+25.00	9+52.33	787				787	239		239	287			500		500
	SUBTOTAL	15,427			602	14,825	29,530		29,530	35,436	21,816		1,205	602	1,807
-L- Left 280+40.04	316+76.67	9,461				9,461	22,670		22,670	27,204	17,743				
-Y14- 10+47.50	14+39.00	2,743				2,743	20		20	24			2,719		2,719
-Y14A- 10+12.00	15+26.50	1,051				1,051	589		589	707			344		344
	SUBTOTAL	13,255				13,255	23,279		23,279	27,935	17,743		3,063		3,063
-L- Right 21+50.00	50+00.00	13,382				13,382	1,151		1,151	1,381			12,001		12,001
	SUBTOTAL	13,382				13,382	1,151		1,151	1,381			12,001		12,001
-L- Right 50+00.00	80+00.00	1,146				1,146	10,203		10,203	12,244	11,098				
-Y1- 10+32.15	12+67.88	526				526	21		21	25			501		501
	SUBTOTAL	1,672				1,672	10,224		10,224	12,269	11,098		501		501
	SHEET TOTAL	100,905			1,010	99,895	80,323		80,323	96,388	50,657		54,164	1,010	55,174

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.

Volumes in Cubic Yards

PROJECT R-2309AB COUNTY: Guilford DATE: September 22, 2011 COMPILED BY: BAW

STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
		TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +20%		ROCK	SUITABLE	UNSUIT.	TOTAL
-L- Right 80+00.00	113+65.50	7,990				7,990	31,999		31,999	38,399	30,409				
	SUBTOTAL	7,990				7,990	31,999		31,999	38,399	30,409				
-L- Right 114+90.50	133+42.50	337				337	20,889		20,889	25,067	24,730				
	SUBTOTAL	337				337	20,889		20,889	25,067	24,730				
-L- Right 135+17.50	165+00.00	13,571				13,571	19,425		19,425	23,310	9,739				
-Y6- 10+47.51	14+60.00	122				122	2,800		2,800	3,360	3,238				
	SUBTOTAL	13,693				13,693	22,225		22,225	26,670	12,977				
-L- Right 165+00.00	190+00.00	733				733	41,008		41,008	49,210	48,477				
	SUBTOTAL	733				733	41,008		41,008	49,210	48,477				
-L- Right 190+00.00	216+53.59	11,011				11,011	20,510		20,510	24,612	13,601				
-Y8- 10+51.80	15+00.00	261				261	2,936		2,936	3,523	3,262				
	SUBTOTAL	11,272				11,272	23,446		23,446	28,135	16,863				
-L- Right 216+53.59	245+00.00	4,497				4,497	5,069		5,069	6,083	1,586				
	SUBTOTAL	4,497				4,497	5,069		5,069	6,083	1,586				
	SHEET TOTAL	38,522				38,522	144,636		144,636	173,563	135,041				

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.

Volumes in Cubic Yards

PROJECT R-2309AB COUNTY: Guilford DATE: September 22, 2011 COMPILED BY: BAW SHEET 4 OF 5 SHEETS, 3E

STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
		TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +20%		ROCK	SUITABLE	UNSUIT.	TOTAL
-L- Right 245+00.00	280+40.04	8,074			2,190	5,884	7,476		7,476	8,971	3,087			2,190	2,190
-Y12- 10+47.78	13+50.00	964				964	120		120	144			820		820
	SUBTOTAL	9,038			2,190	6,848	7,596		7,596	9,115	3,087		820	2,190	3,010
-L- Right 280+40.04	316+76.67	17,543				17,543	25,638		25,638	30,766	13,223				
-Y13- 10+35.50	12+66.00	530				530	495		495	594	64				
-Y15- 10+58.57	11+60.00						156		156	187	187				
	SUBTOTAL	18,073				18,073	26,289		26,289	31,547	13,474				
-L- Median 21+50.00	38+00.00	732				732							732		732
	SUBTOTAL	732				732							732		732
	SUBTOTAL														
	SUBTOTAL														
	SUBTOTAL														
	SHEET TOTAL	27,843			2,190	25,653	33,885		33,885	40,662	16,561		1,552	2,190	3,742

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.

Volumes in Cubic Yards

PROJECT: R-2309AB COUNTY: Guilford DATE: September 22, 2011 COMPILED BY: BAW

STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
		TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +20%		ROCK	SUITABLE	UNSUIT.	TOTAL
	TOTAL FROM SHEET 1	40,936	600			40,336	85,692	600	85,092	102,710	70,783		9,008		9,008
	TOTAL FROM SHEET 2	100,905			1,010	99,895	80,323		80,323	96,388	50,657		54,164	1,010	55,174
	TOTAL FROM SHEET 3	38,522				38,522	144,636		144,636	173,563	135,041				
	TOTAL FROM SHEET 4	27,843			2,190	25,653	33,885		33,885	40,662	16,561		1,552	2,190	3,742
TOTAL		208,206	600		3,200	204,406	344,536	600	343,936	413,323	273,042		64,725	3,200	67,925
MATERIAL FOR SHOULDER CONSTRUCTION							17,951		17,951	21,541	21,541				
LOSS DUE TO CLEARING & GRUBBING		-9,800				-9,800					9,800				
WASTE IN LIEU OF BORROW											-64,725		-64,725		-64,725
PROJECT TOTAL		198,406	600		3,200	194,606	362,487	600	361,887	434,864	239,658			3,200	3,200
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT											11,983				
GRAND TOTAL		198,406	600		3,200	194,606	362,487	600	361,887	434,864	251,641			3,200	3,200
SAY		199,000									252,000				
PAVEMENT STRUCTURE VOLUME		26,651 CY													
DRAINAGE DITCH EXCAVATION		5,534 CY													
UNDERCUT CONTINGENCY		4,950 CY													
SHALLOW UNDERCUT STATIONS		800 CY													
SHALLOW UNDERCUT CONTINGENCY		7,500 CY													
SHALLOW UNDERCUT TOTAL		8,300 CY													
SELECT GRANULAR MATERIAL		2,500 CY													
CLASS IV SUBGRADE STABILIZATION MATERIAL		16,550 TONS													

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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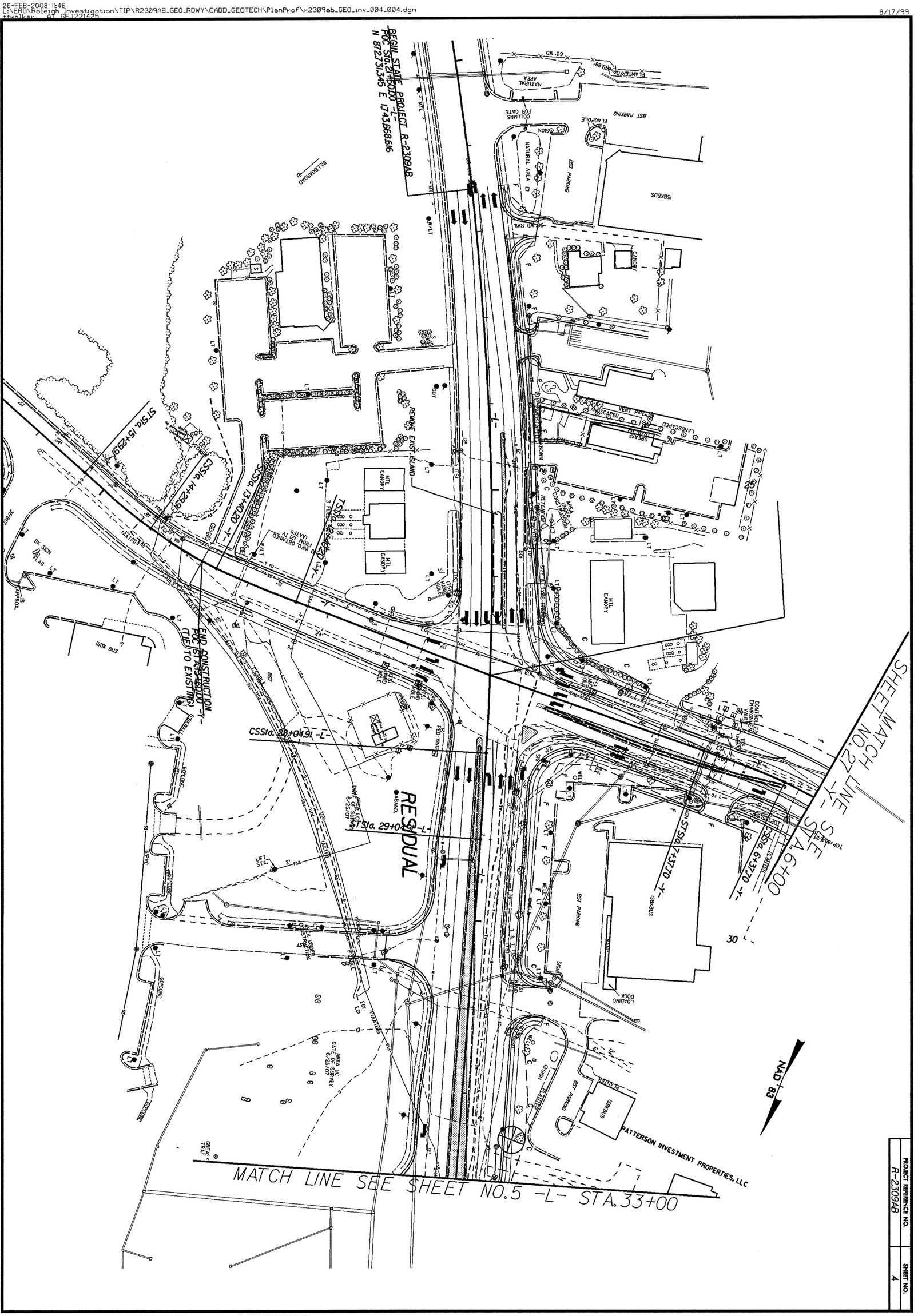
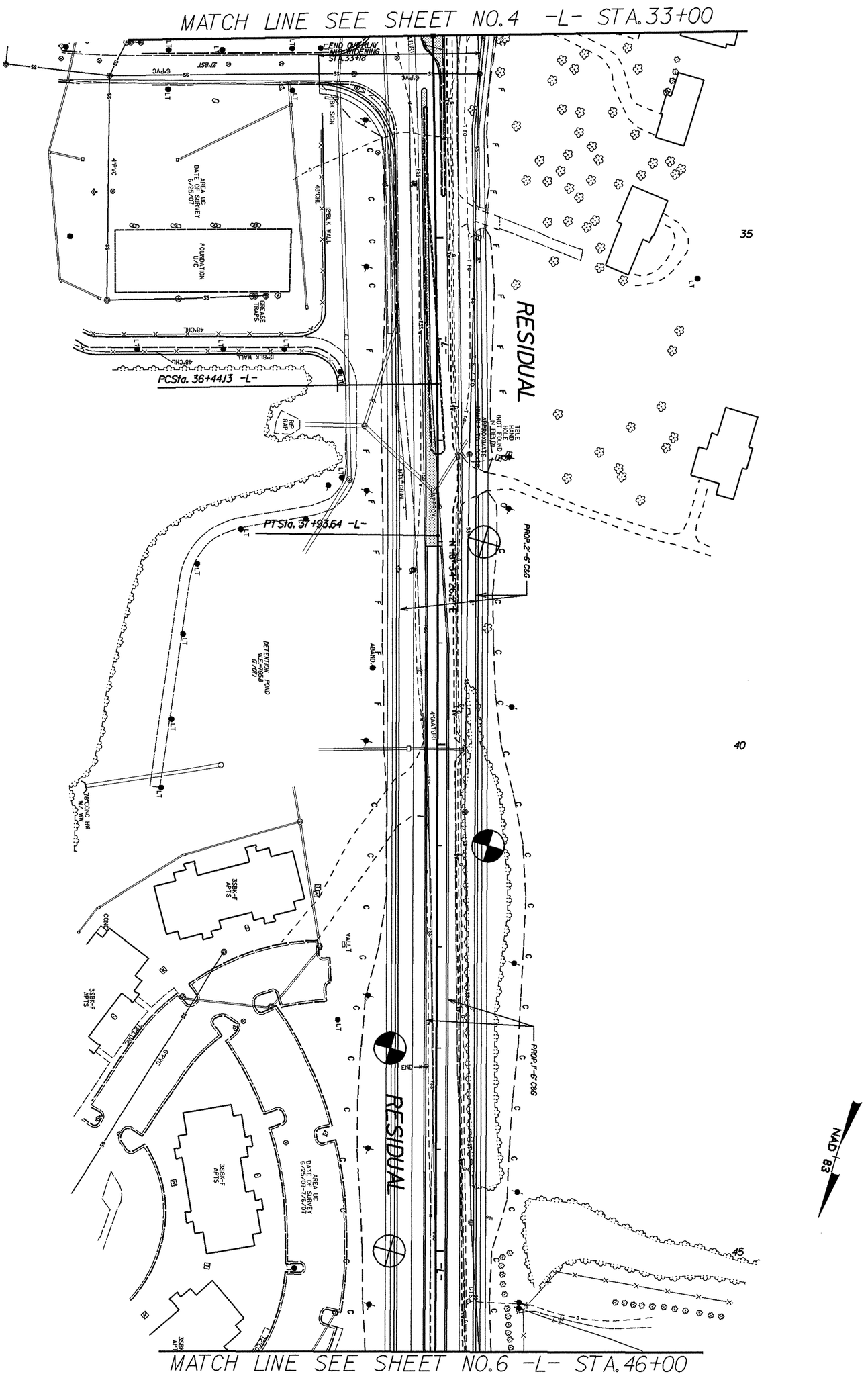


PROJECT REFERENCE NO.	SHEET NO.
R-2309AB	4



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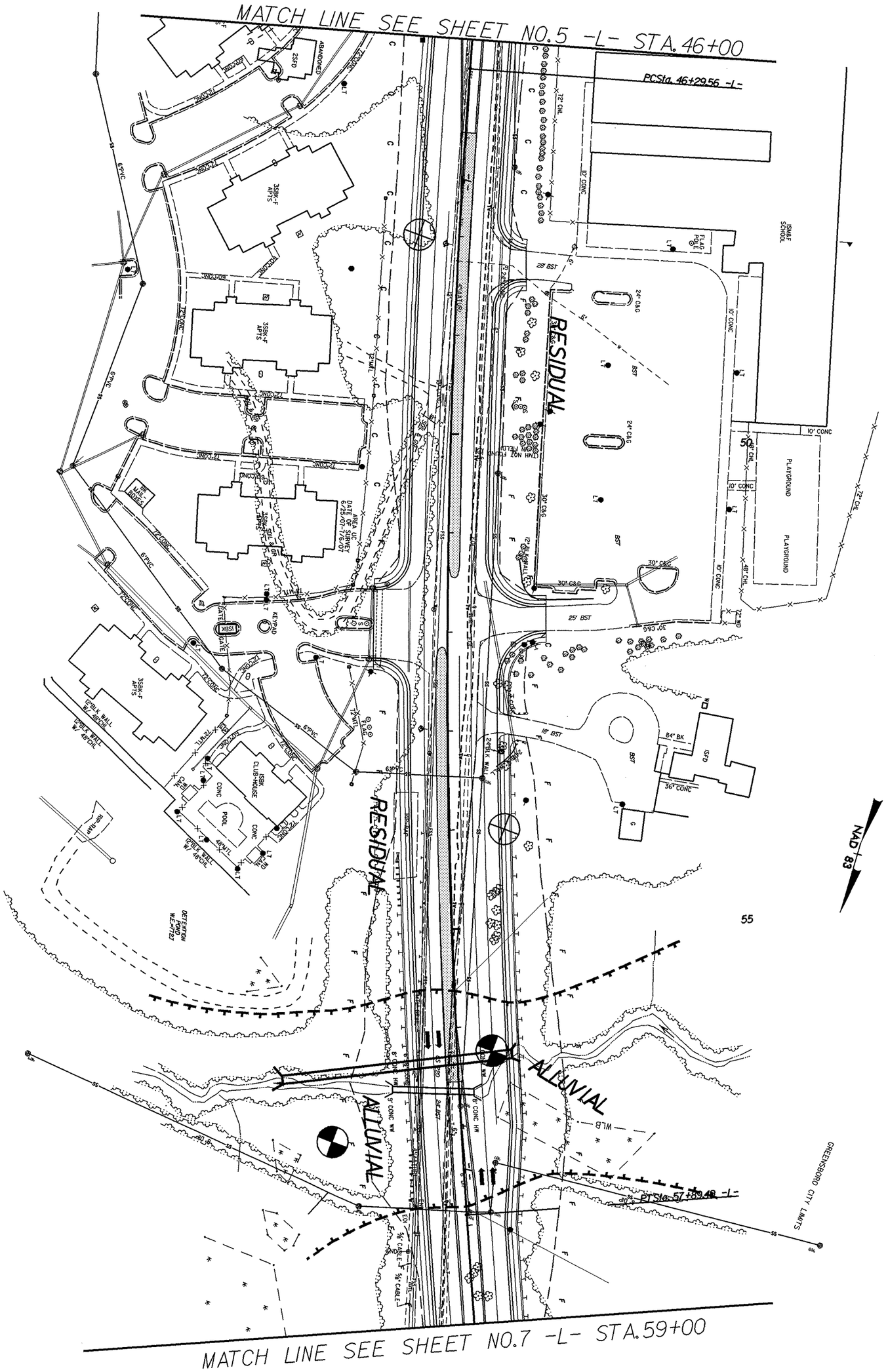
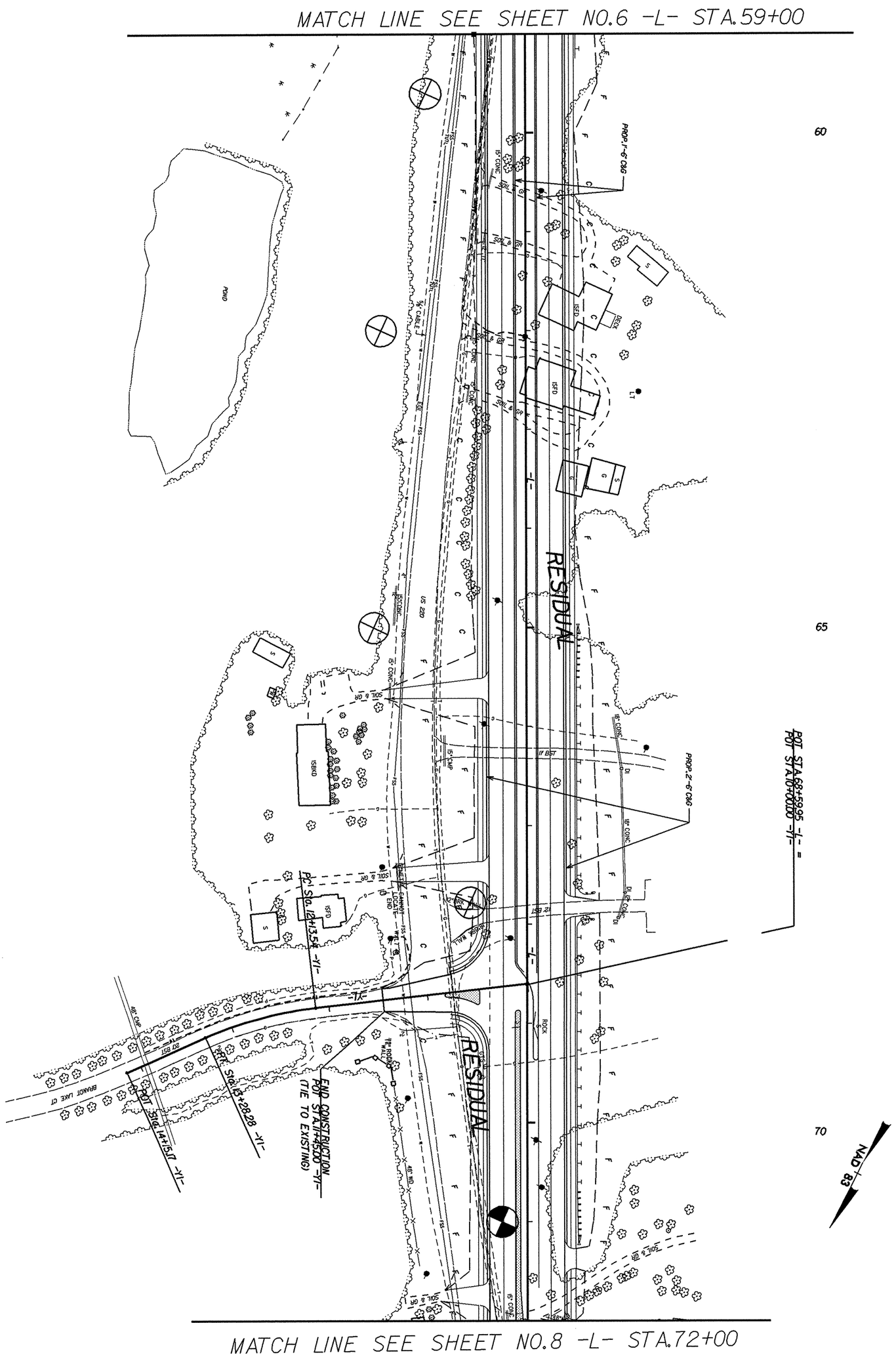
R-2309AB	5

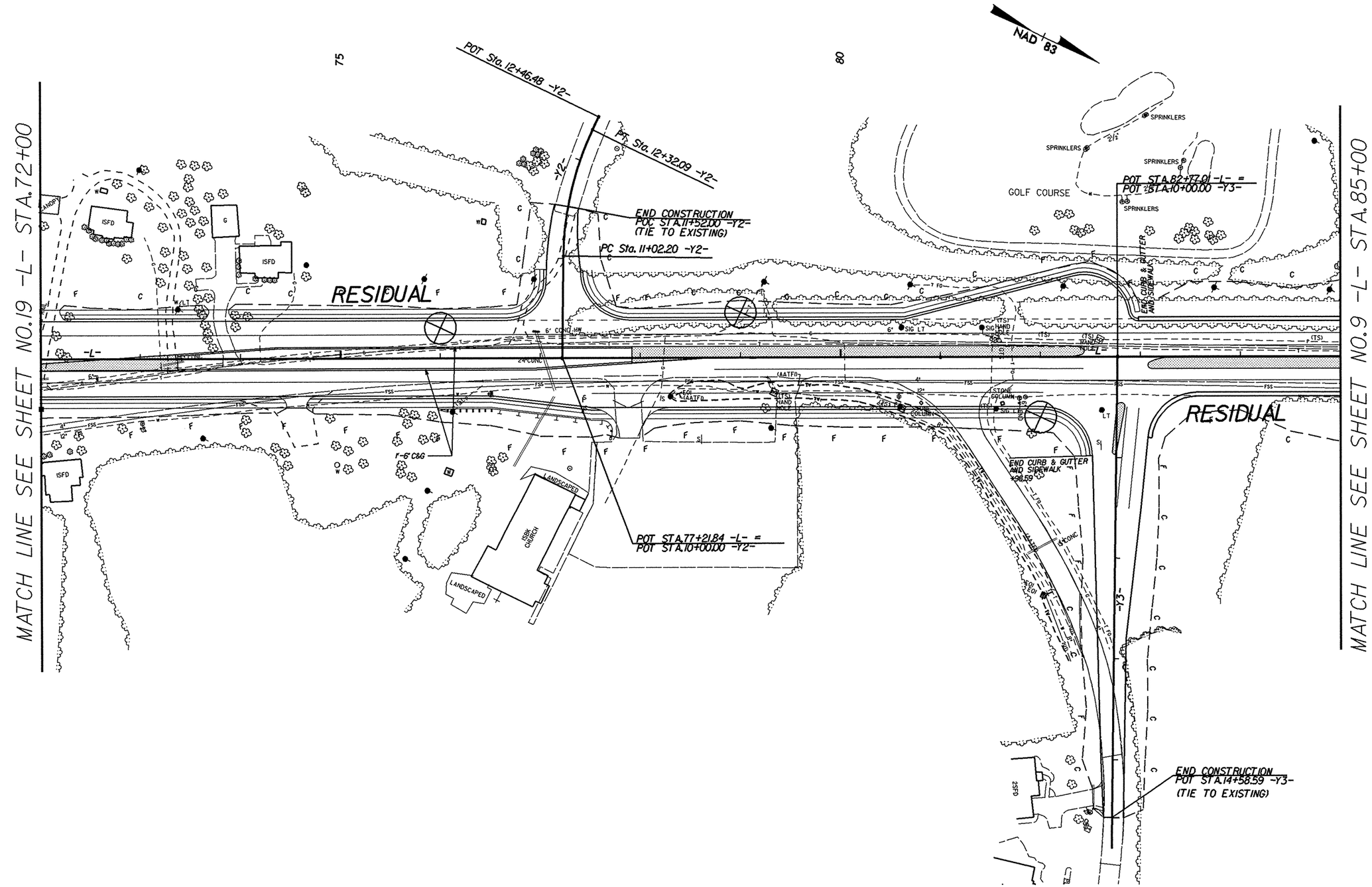


PROJECT REFERENCE NO.	SHEET NO.
R-2309AB	6



PROJECT REFERENCE NO.	SHEET NO.
R-2309AB	7

PROJECT REFERENCE NO.	SHEET NO.
R-2309AB	8



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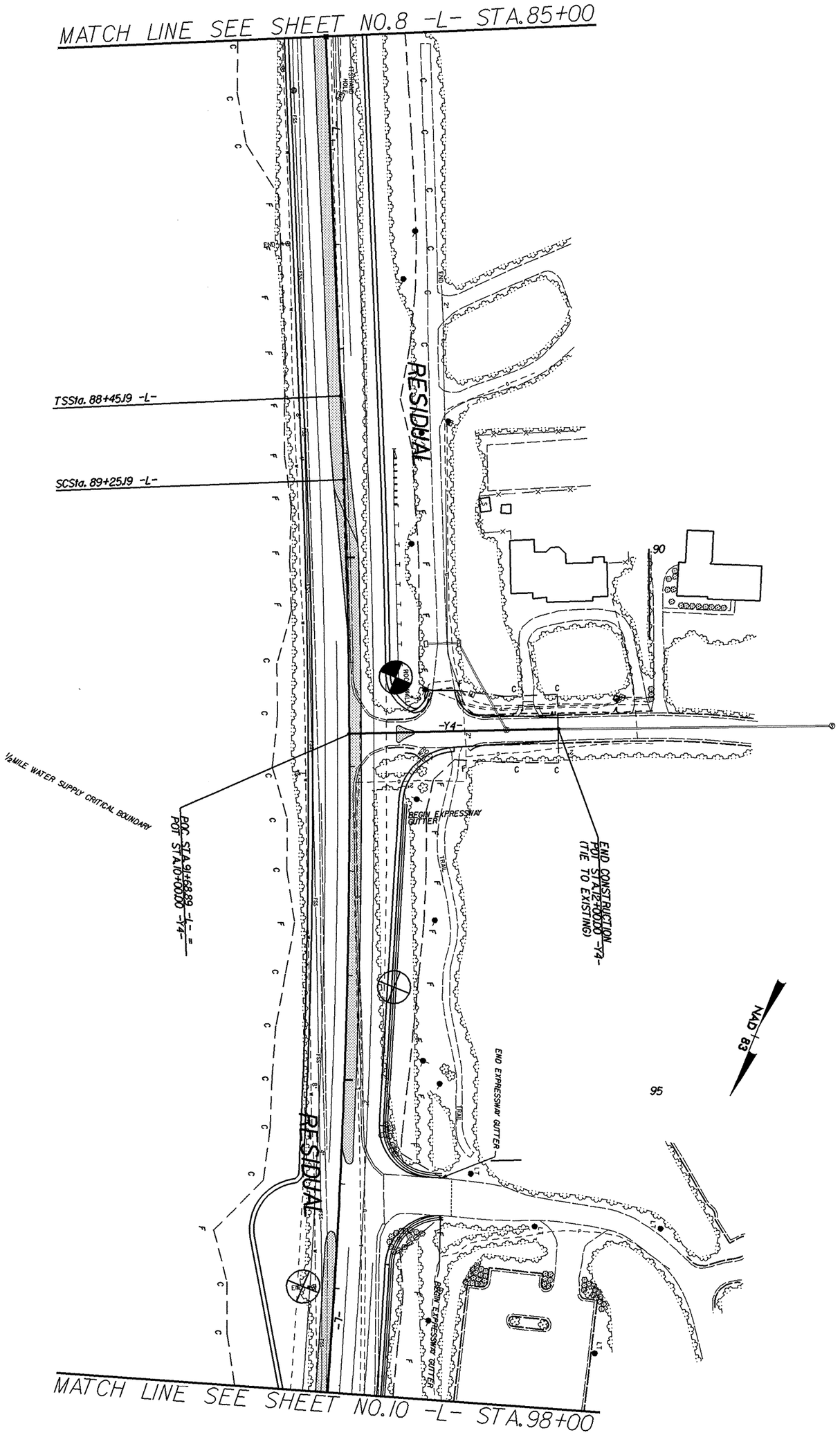

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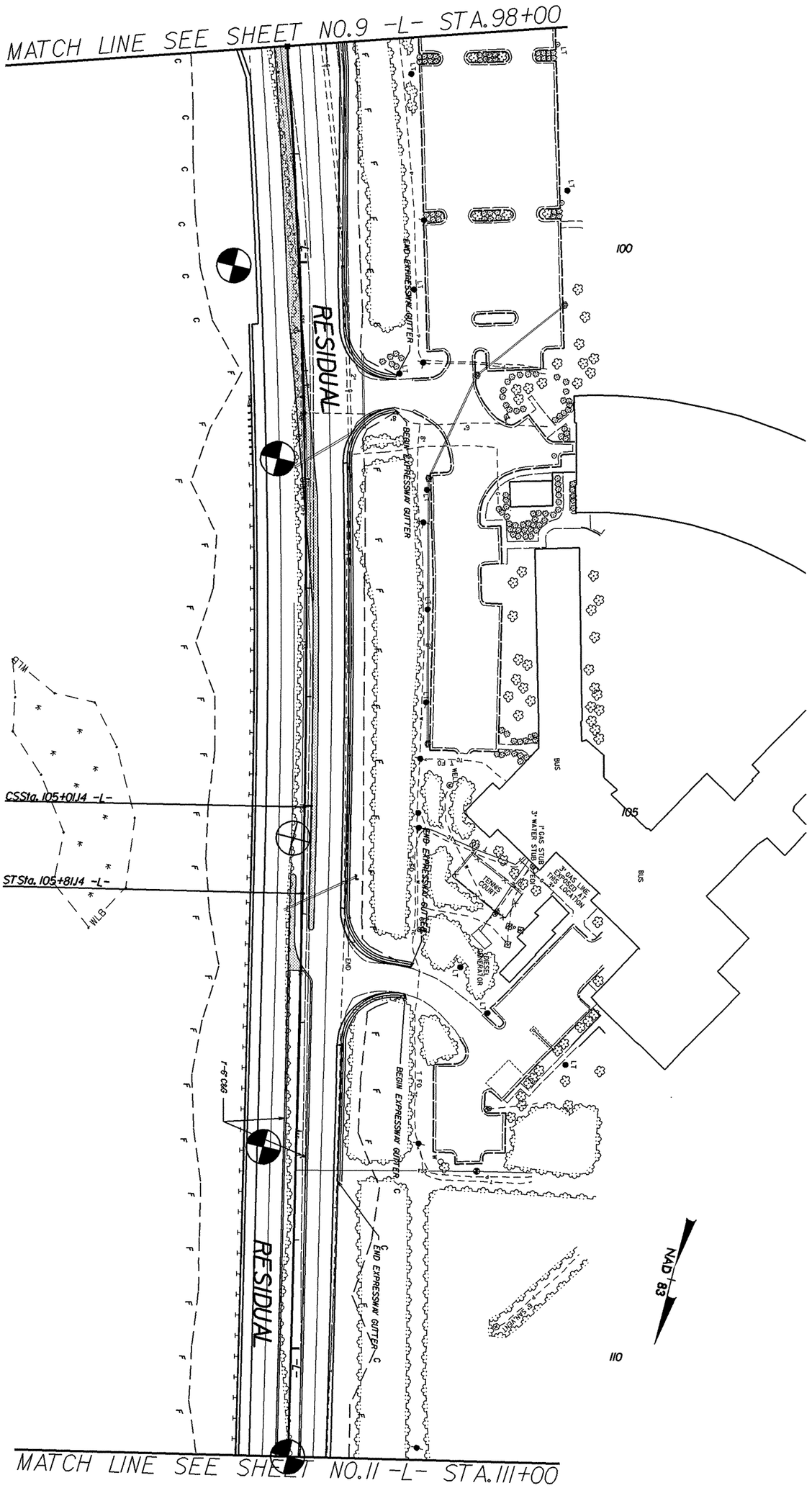

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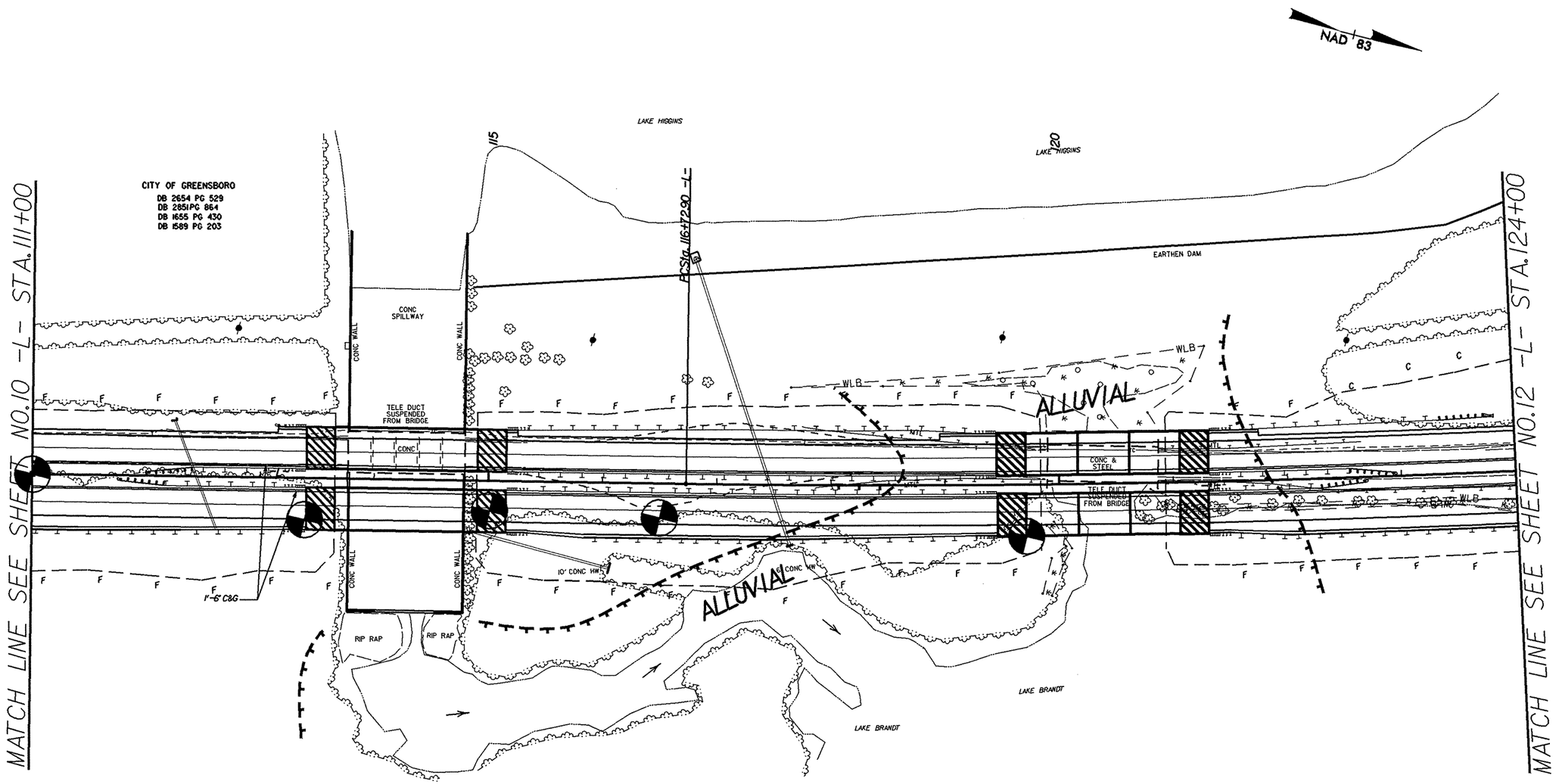
SHEET NO. 10

PROJECT REFERENCE NO.	SHEET NO.
R-2309AB	11



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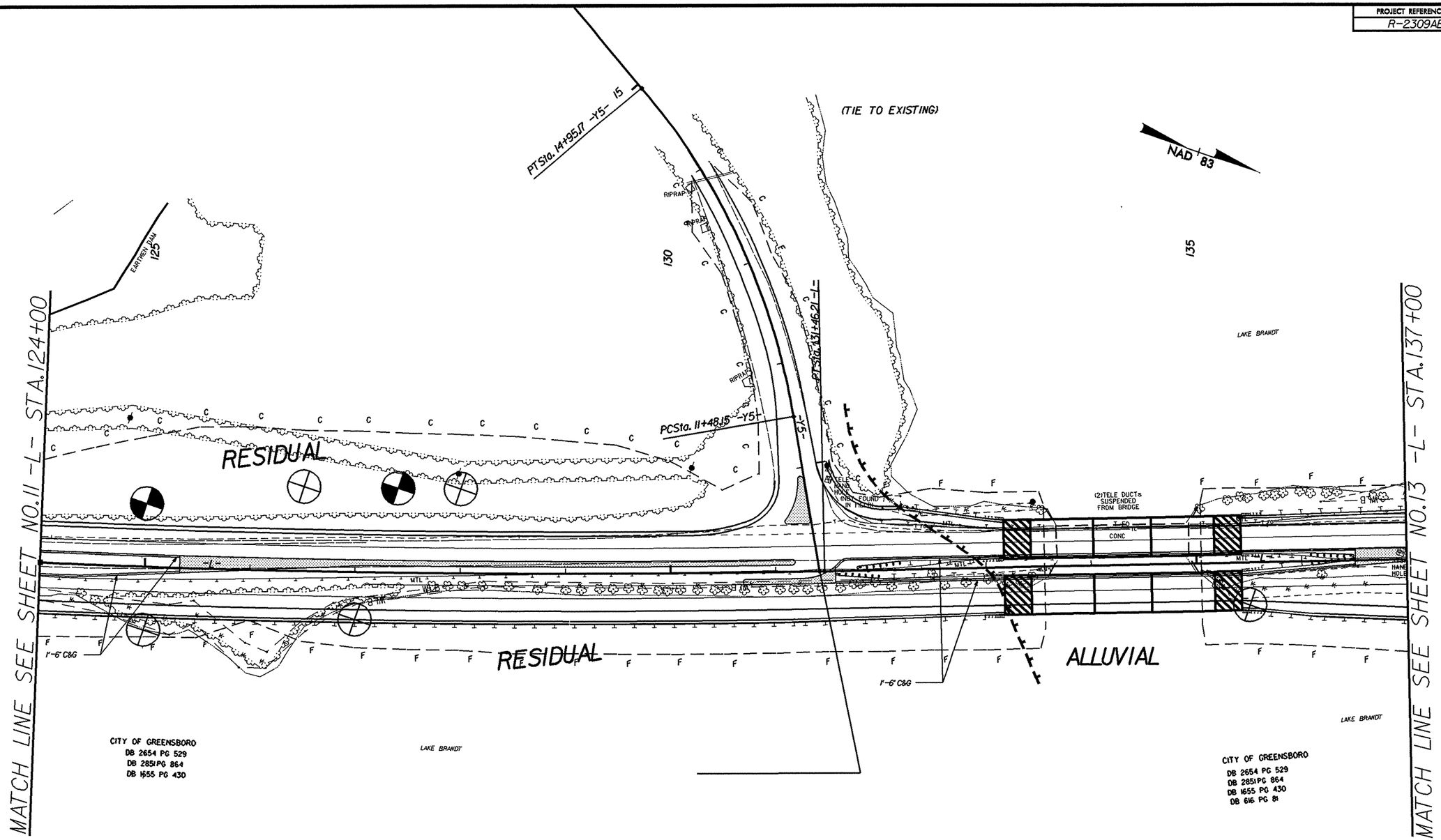

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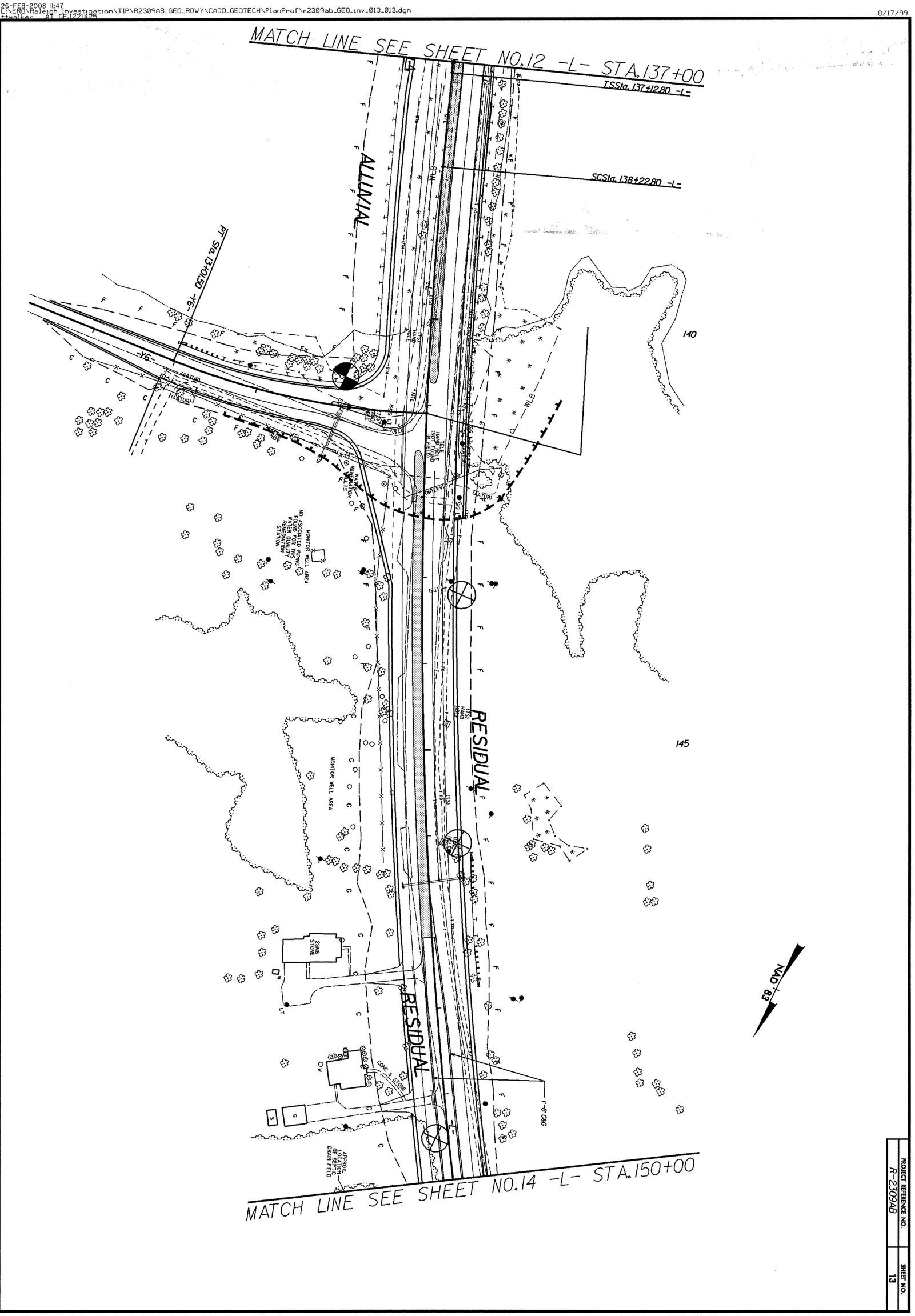

PROJECT REFERENCE NO.	SHEET NO.
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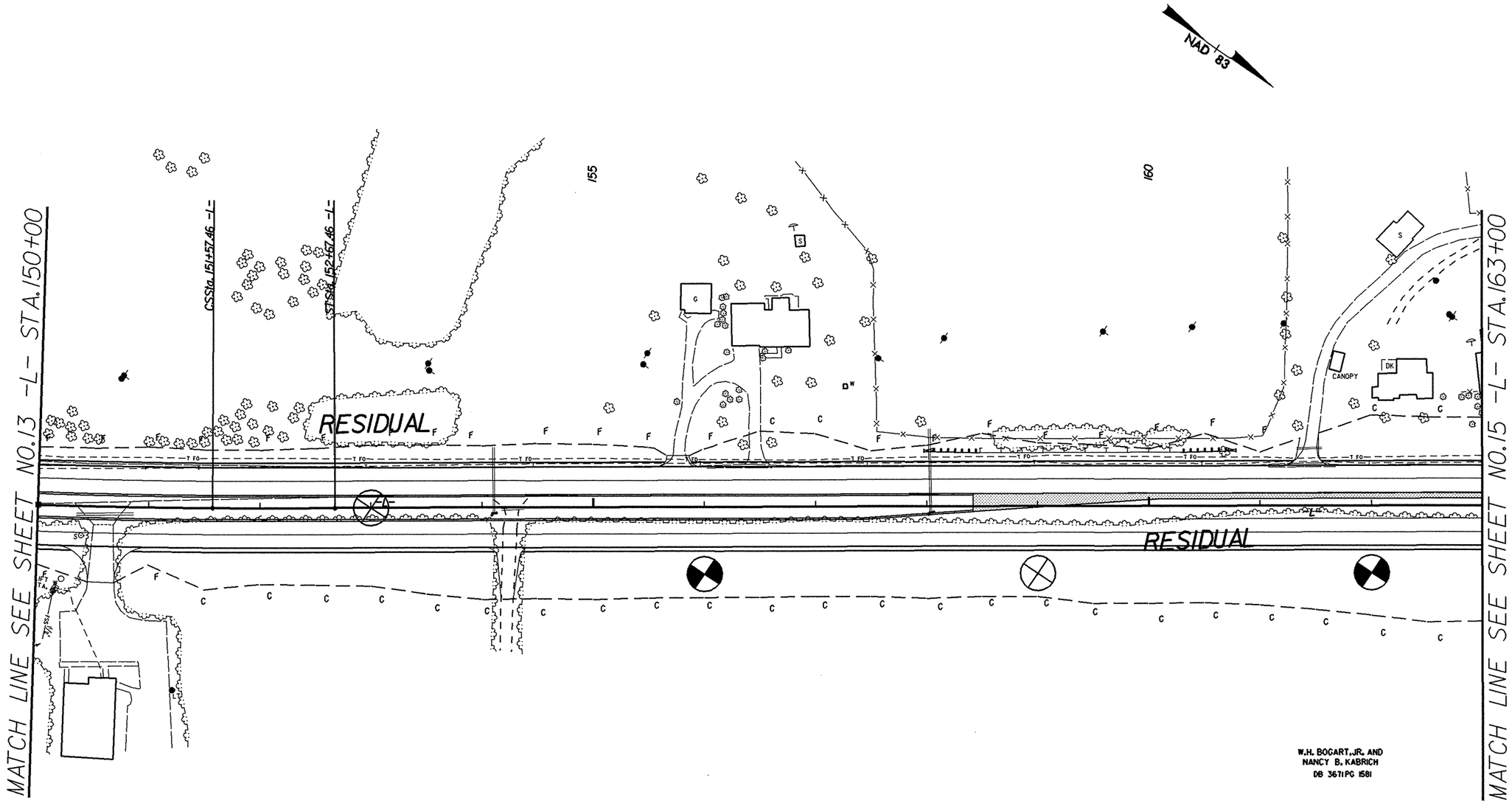

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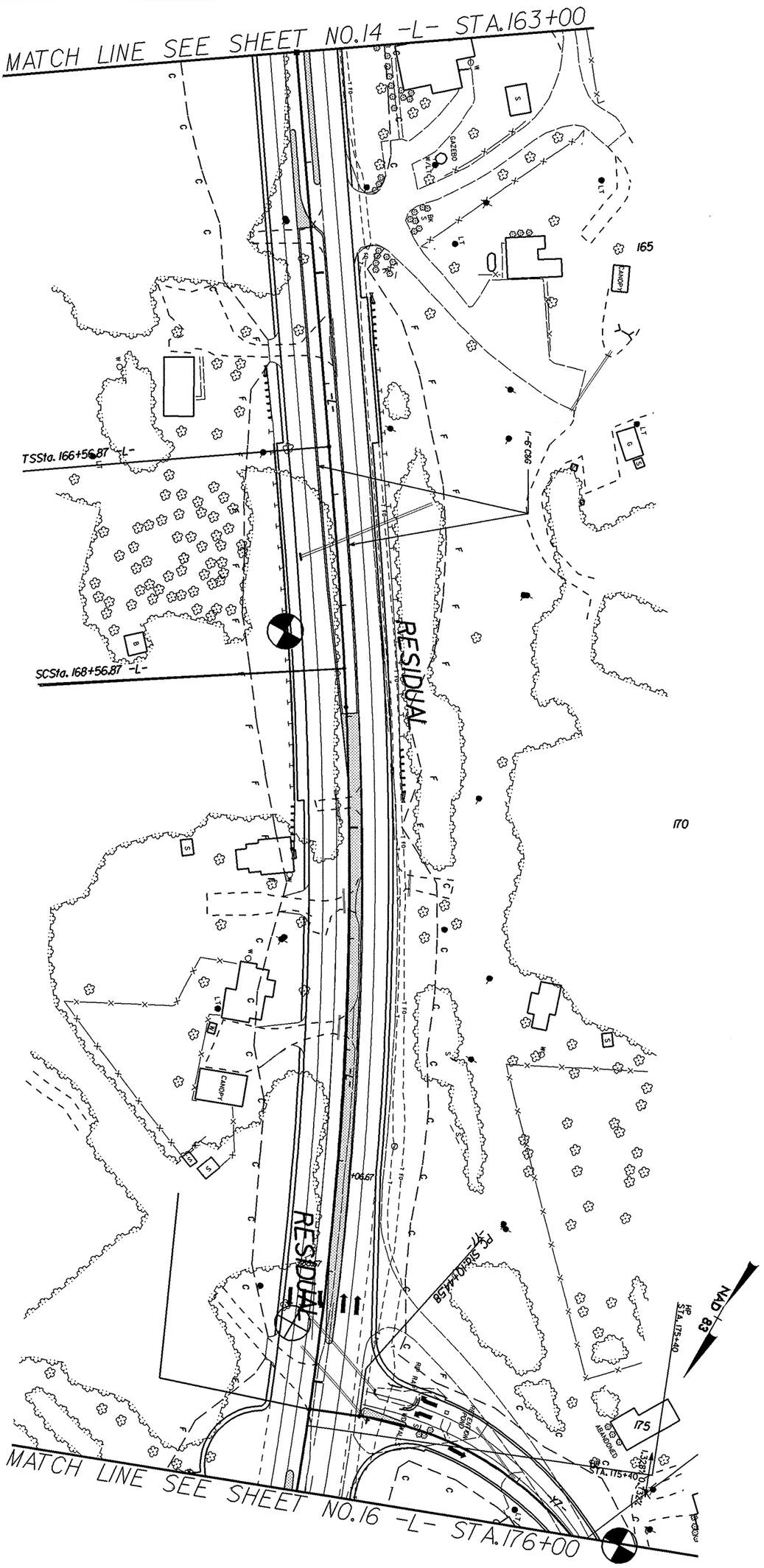

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PROJECT REFERENCE NO.	SHEET NO.
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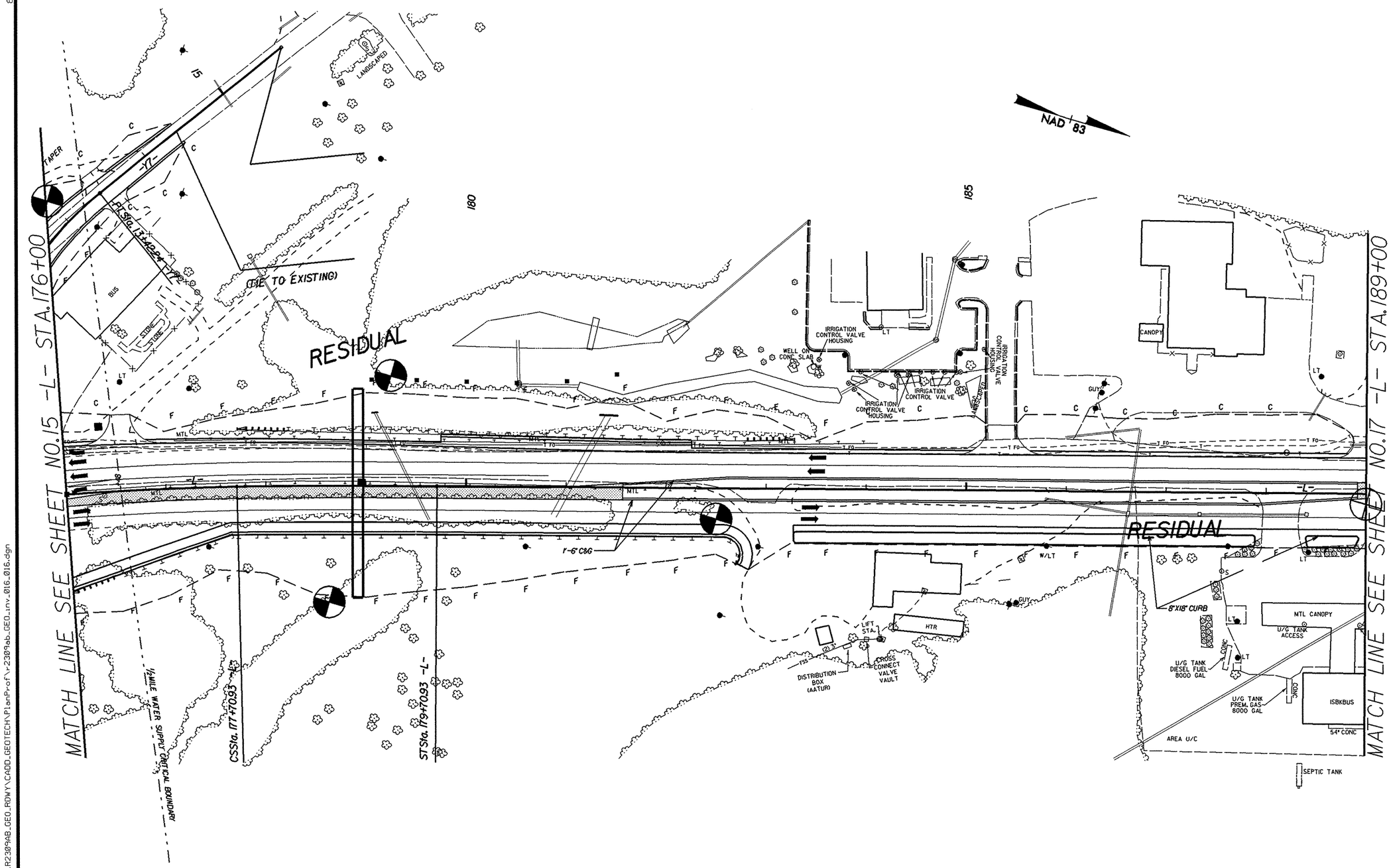

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PROJECT REFERENCE NO.	SHEET NO.
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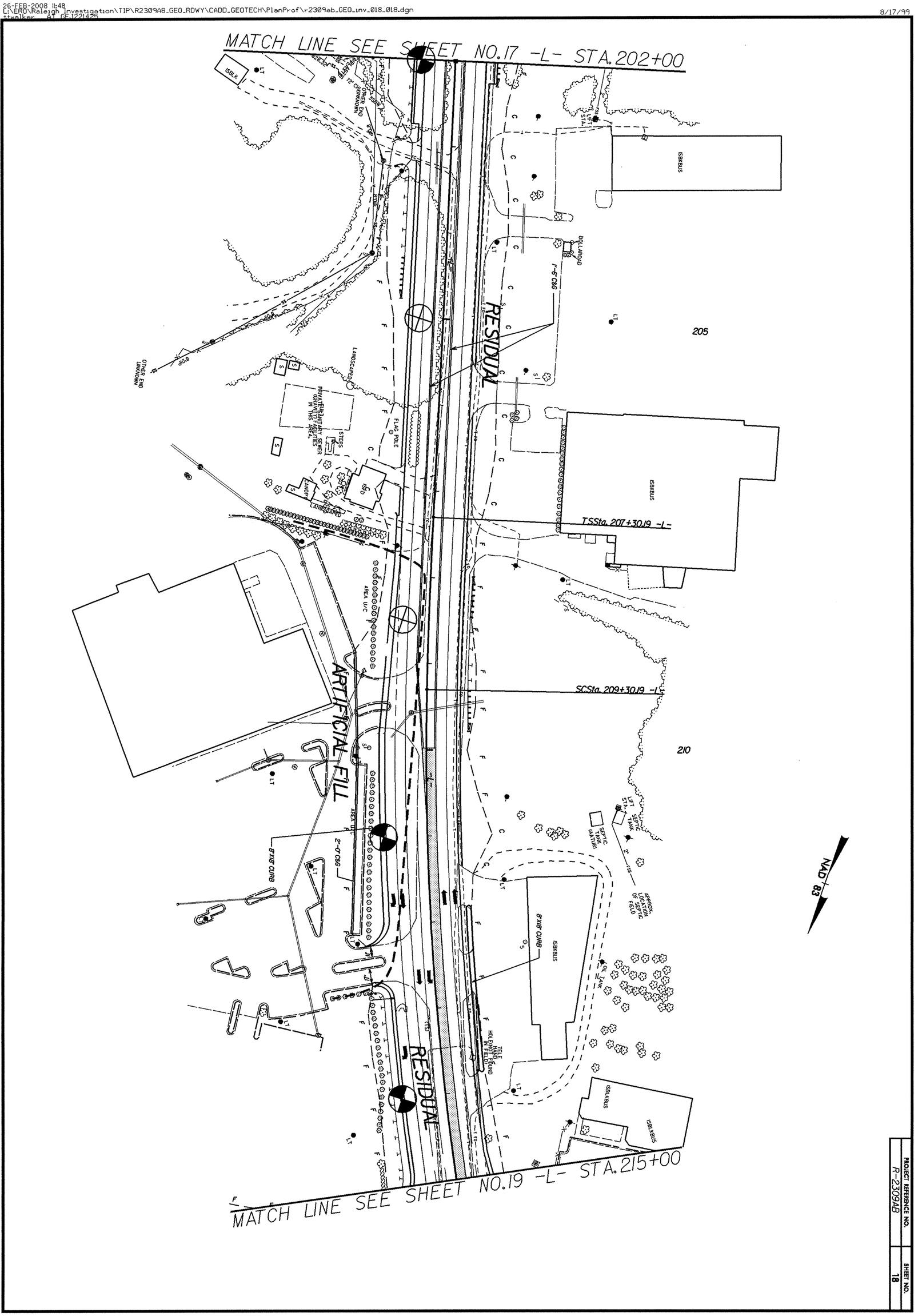

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SHEET NO. 18

PROJECT REFERENCE NO.	SHEET NO.
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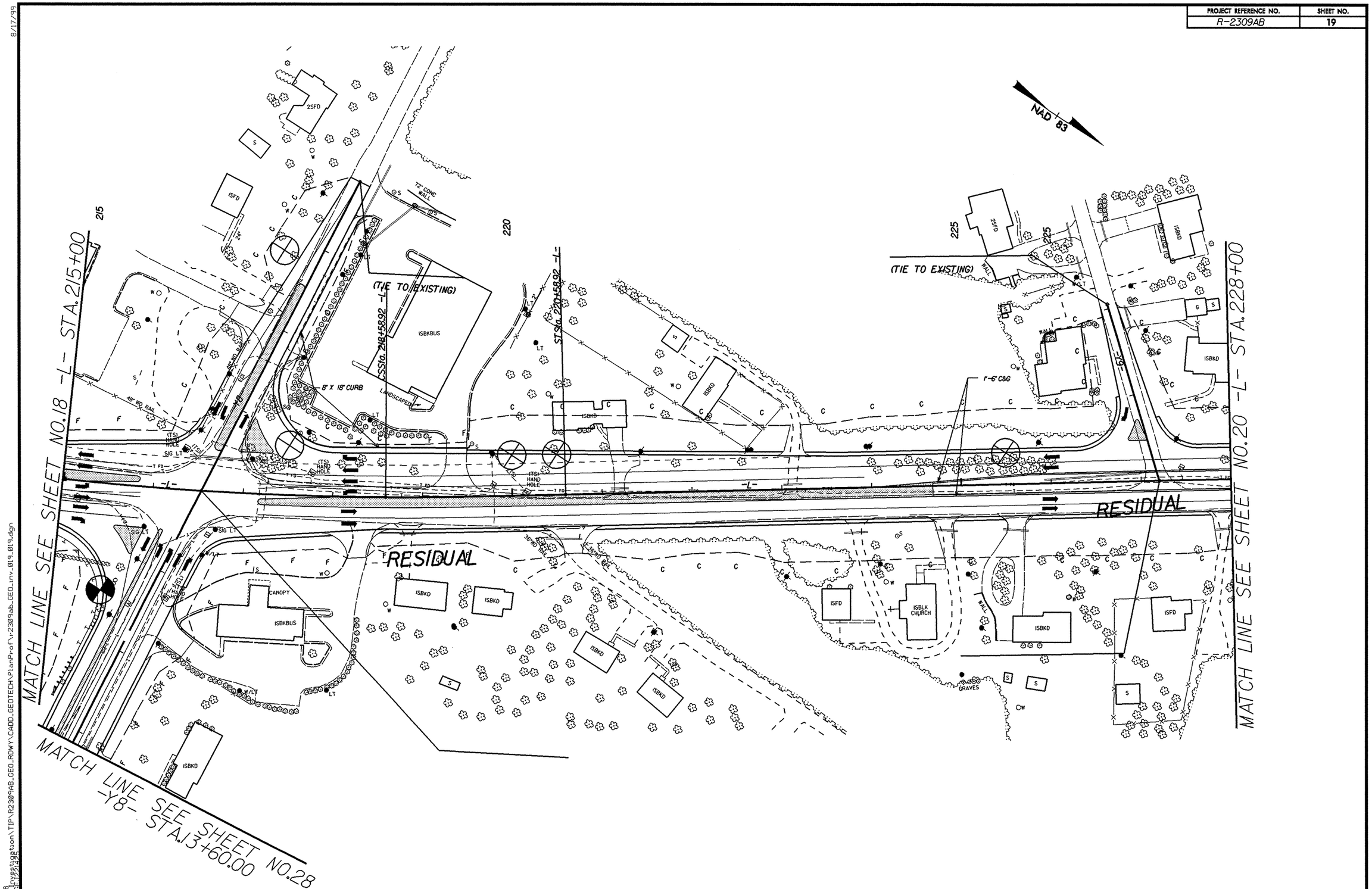

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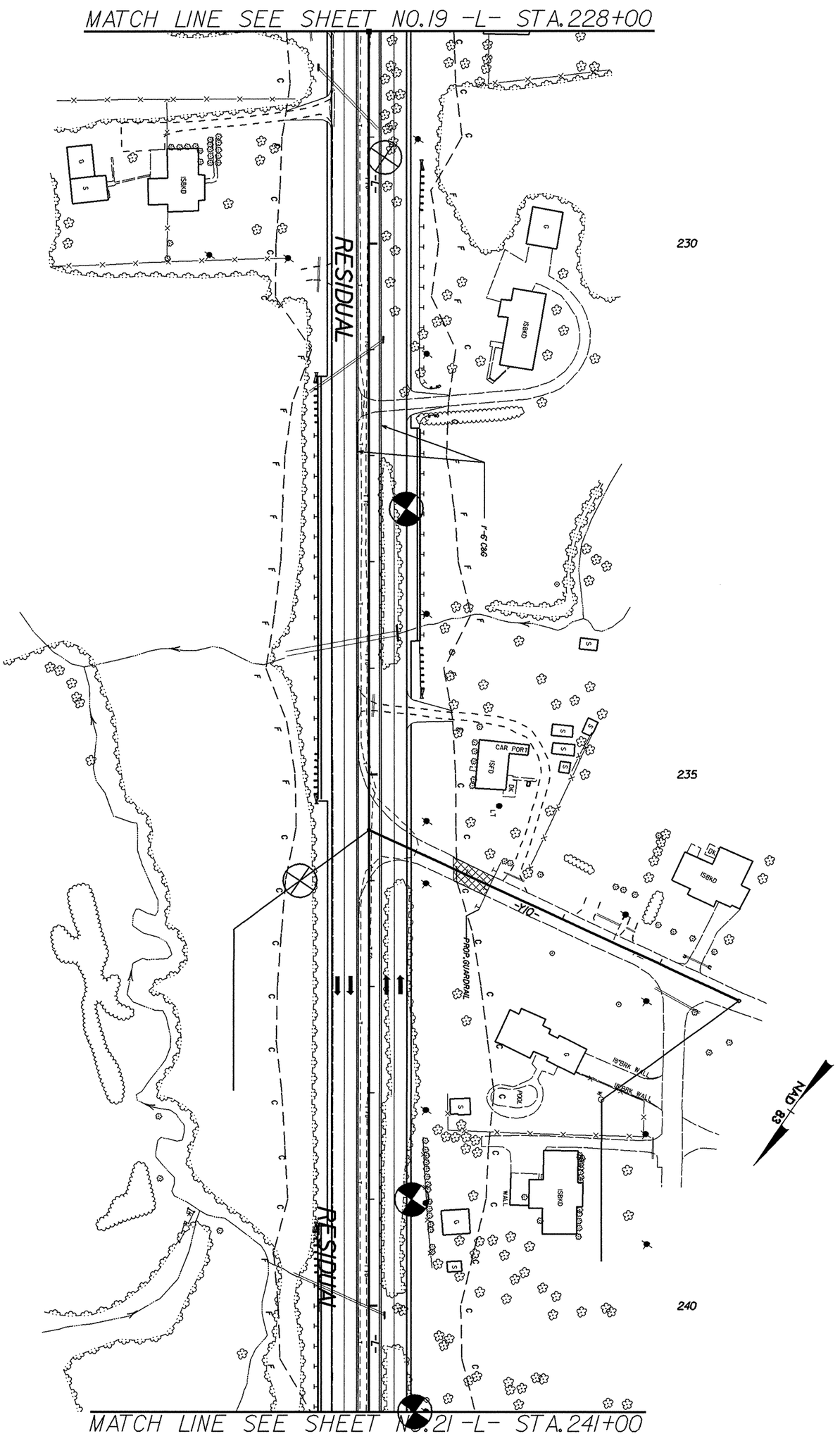
8/17/99



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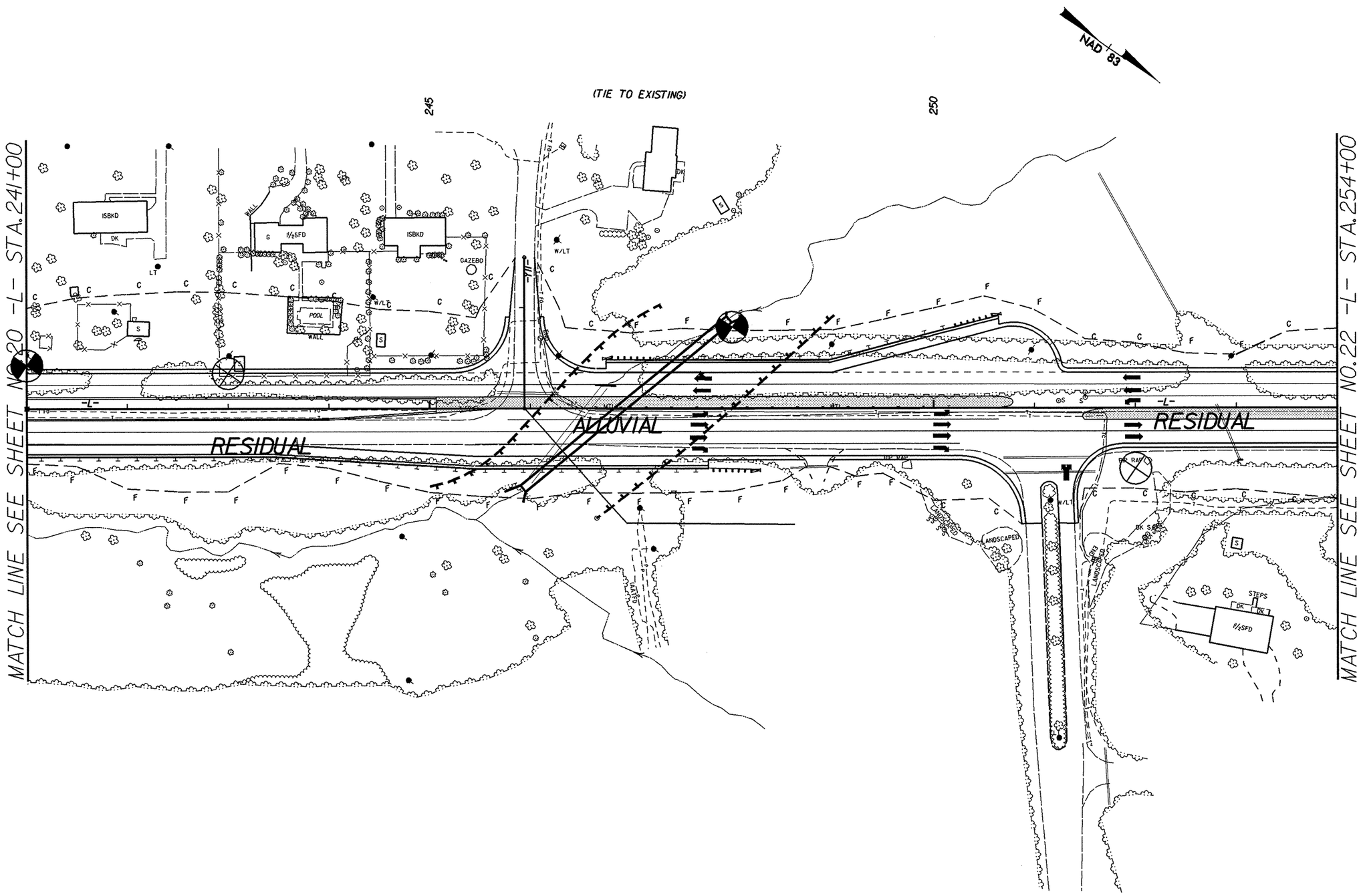

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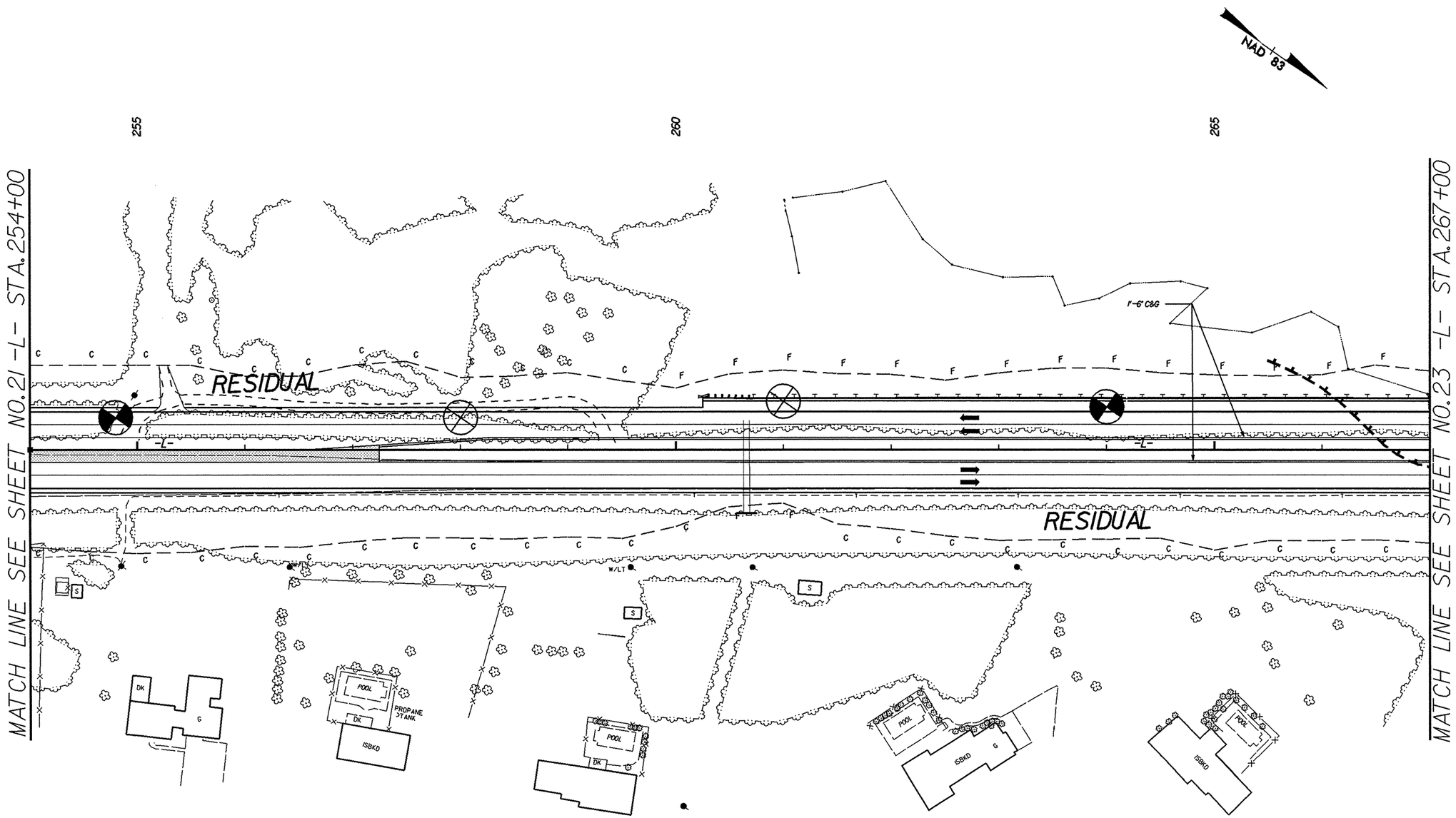

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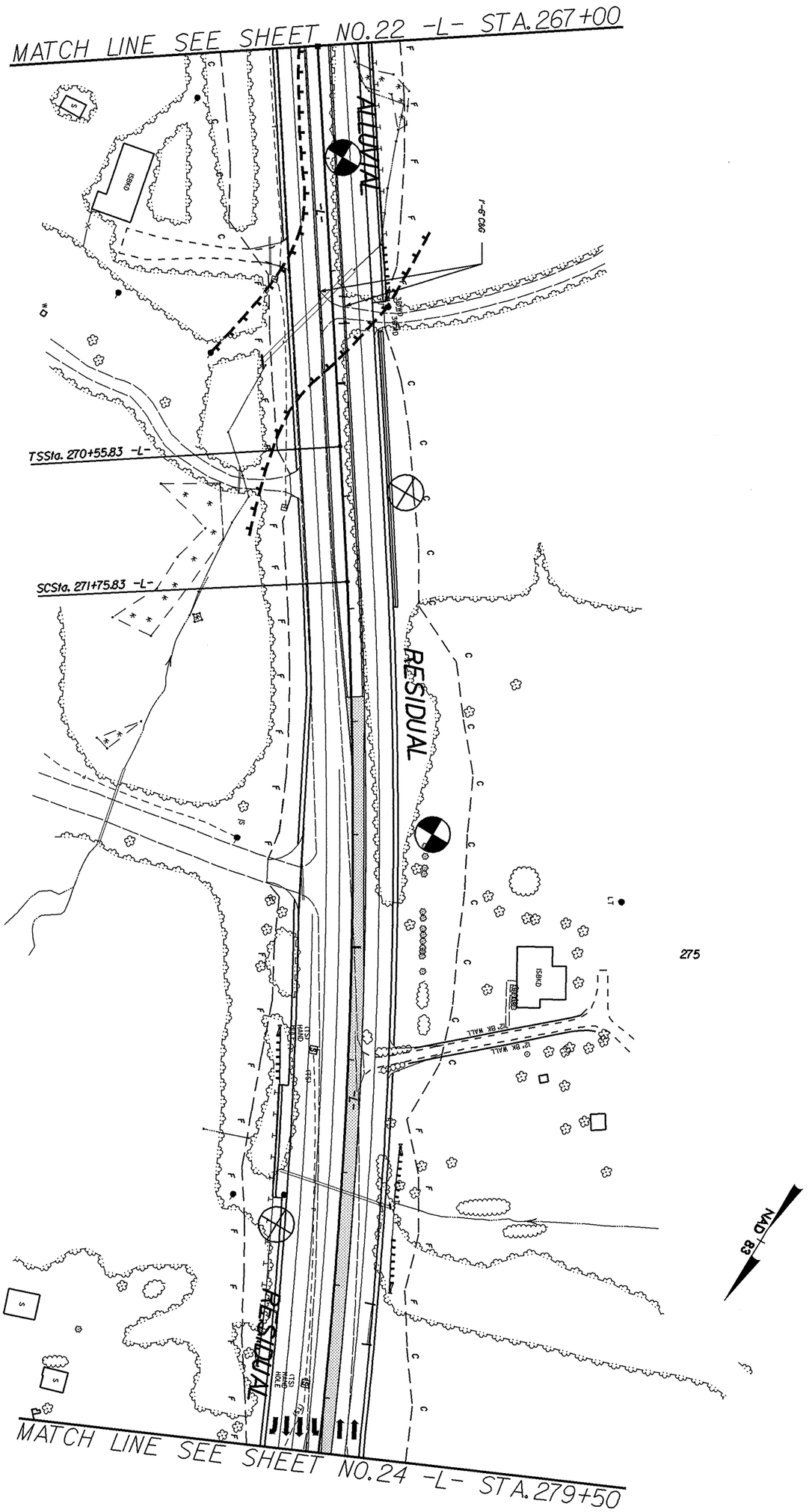

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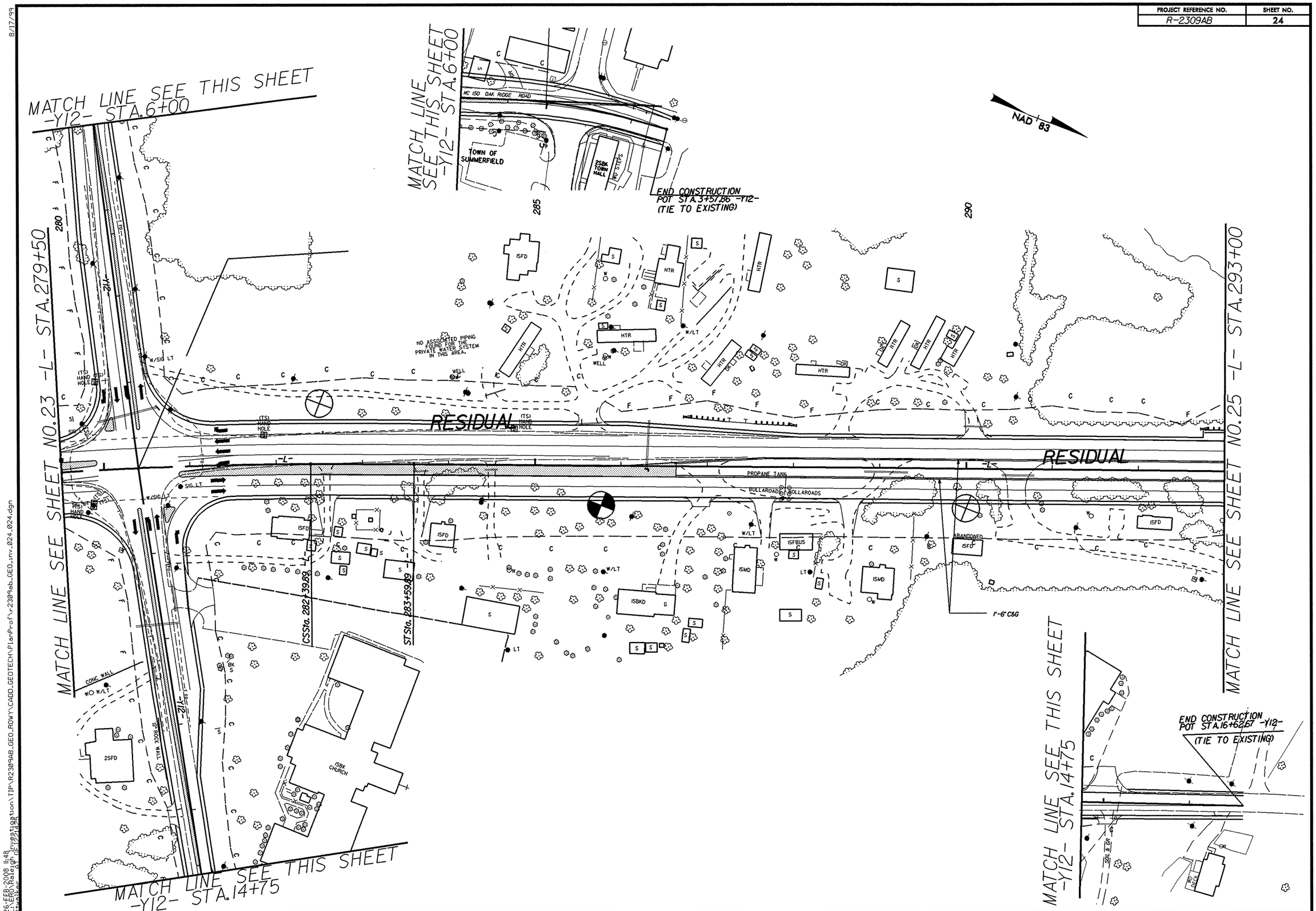

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PROJECT REFERENCE NO.	SHEET NO.
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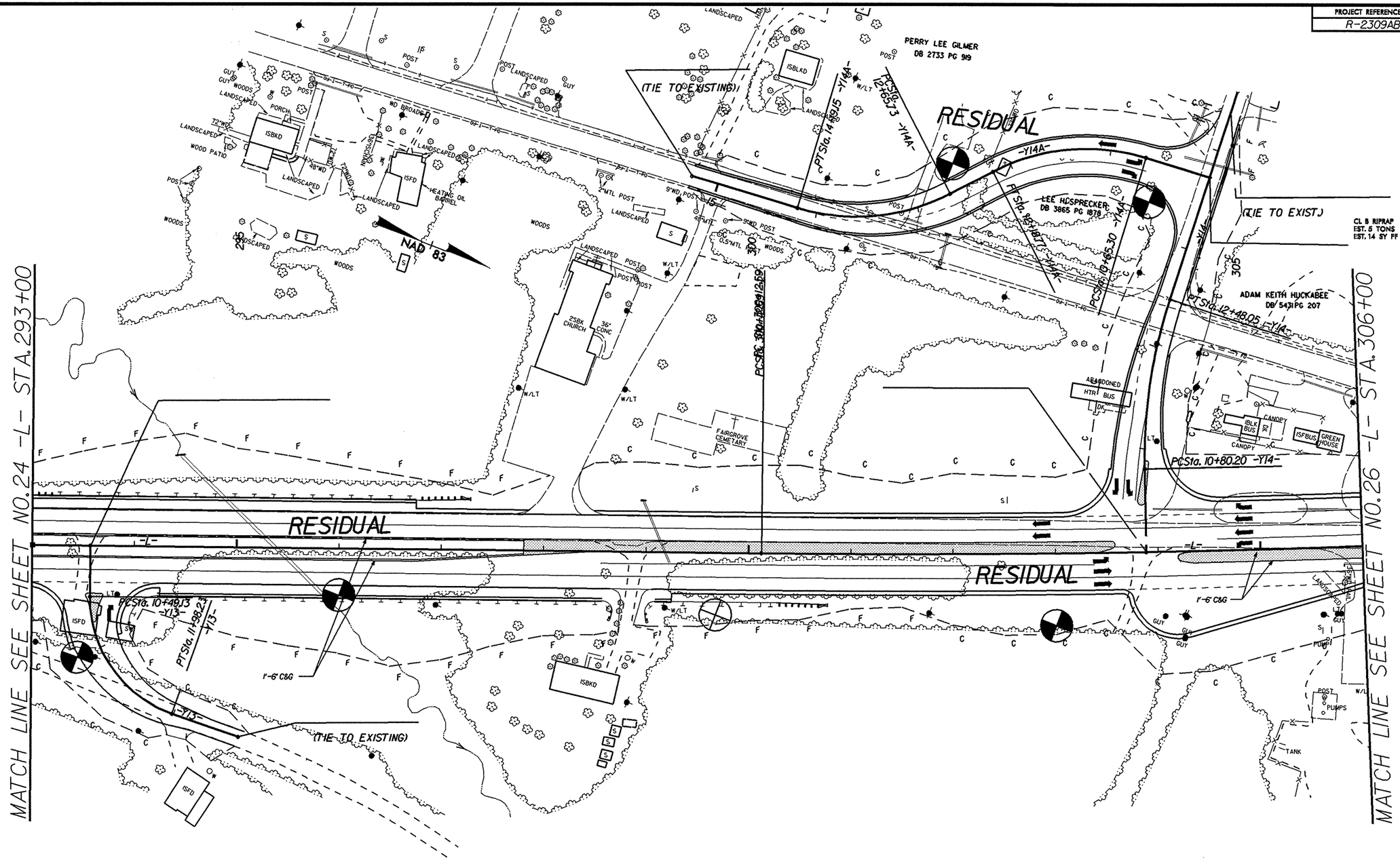

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PROJECT REFERENCE NO.	SHEET NO.
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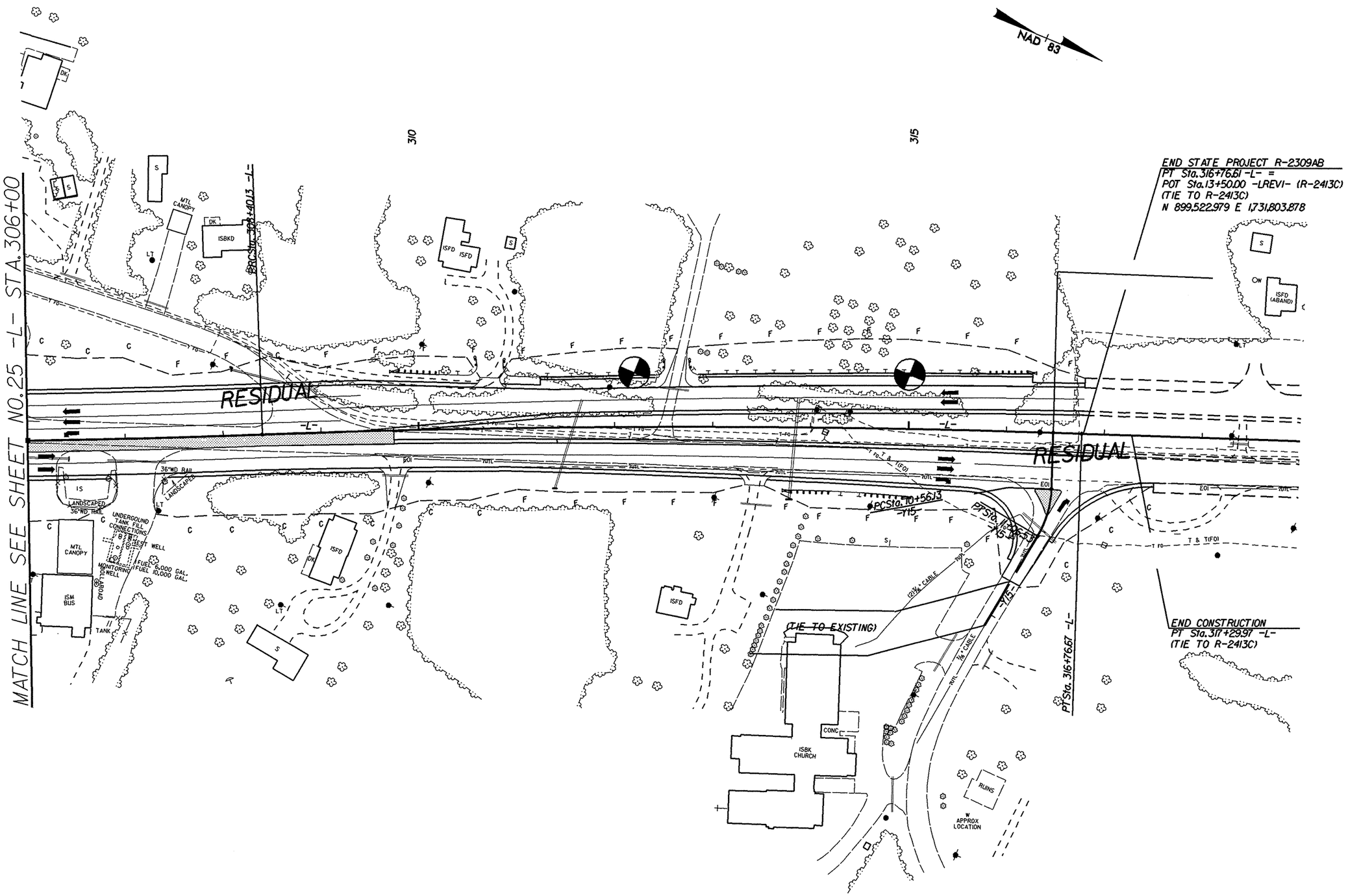

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PROJECT REFERENCE NO.	SHEET NO.
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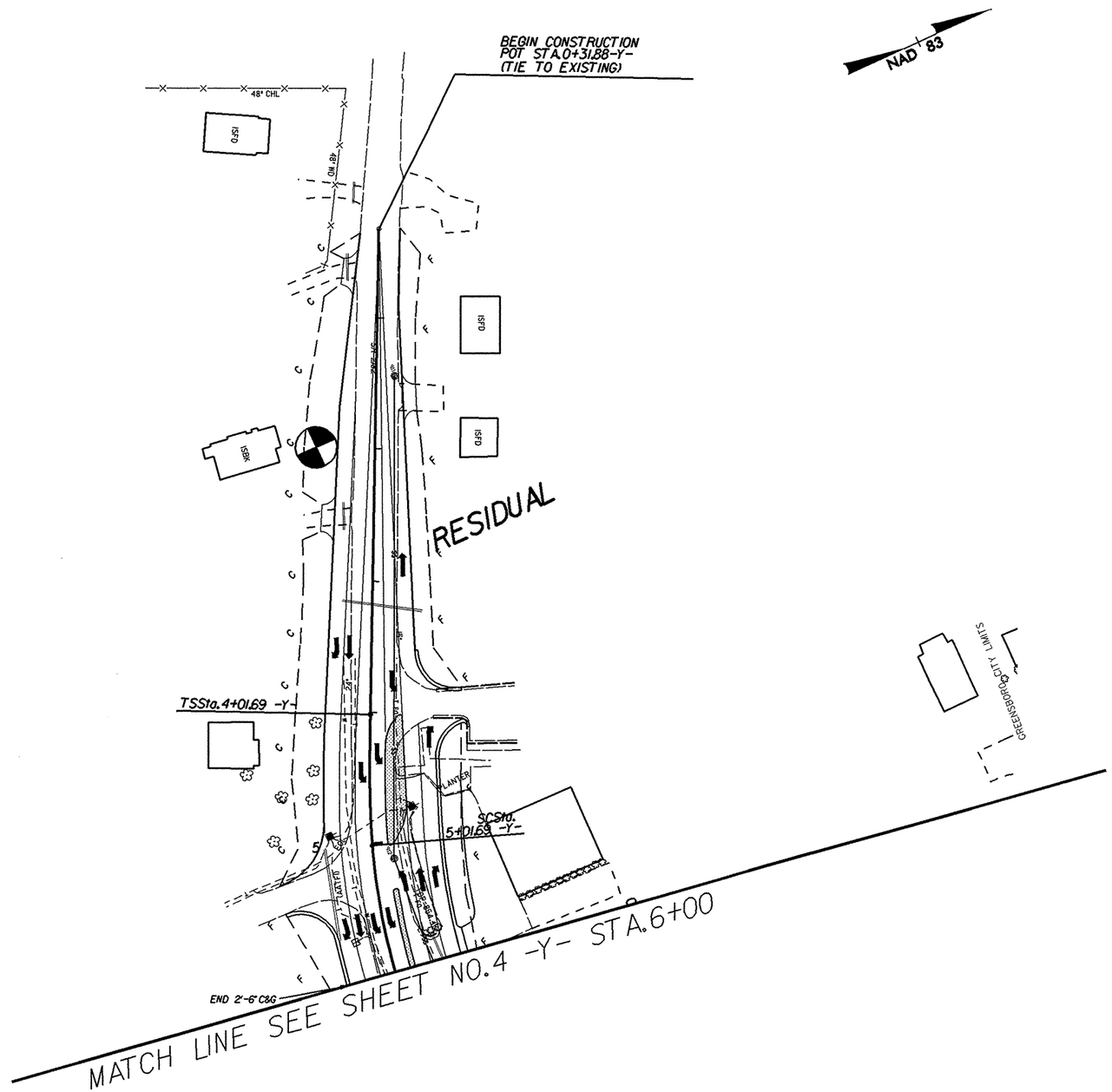

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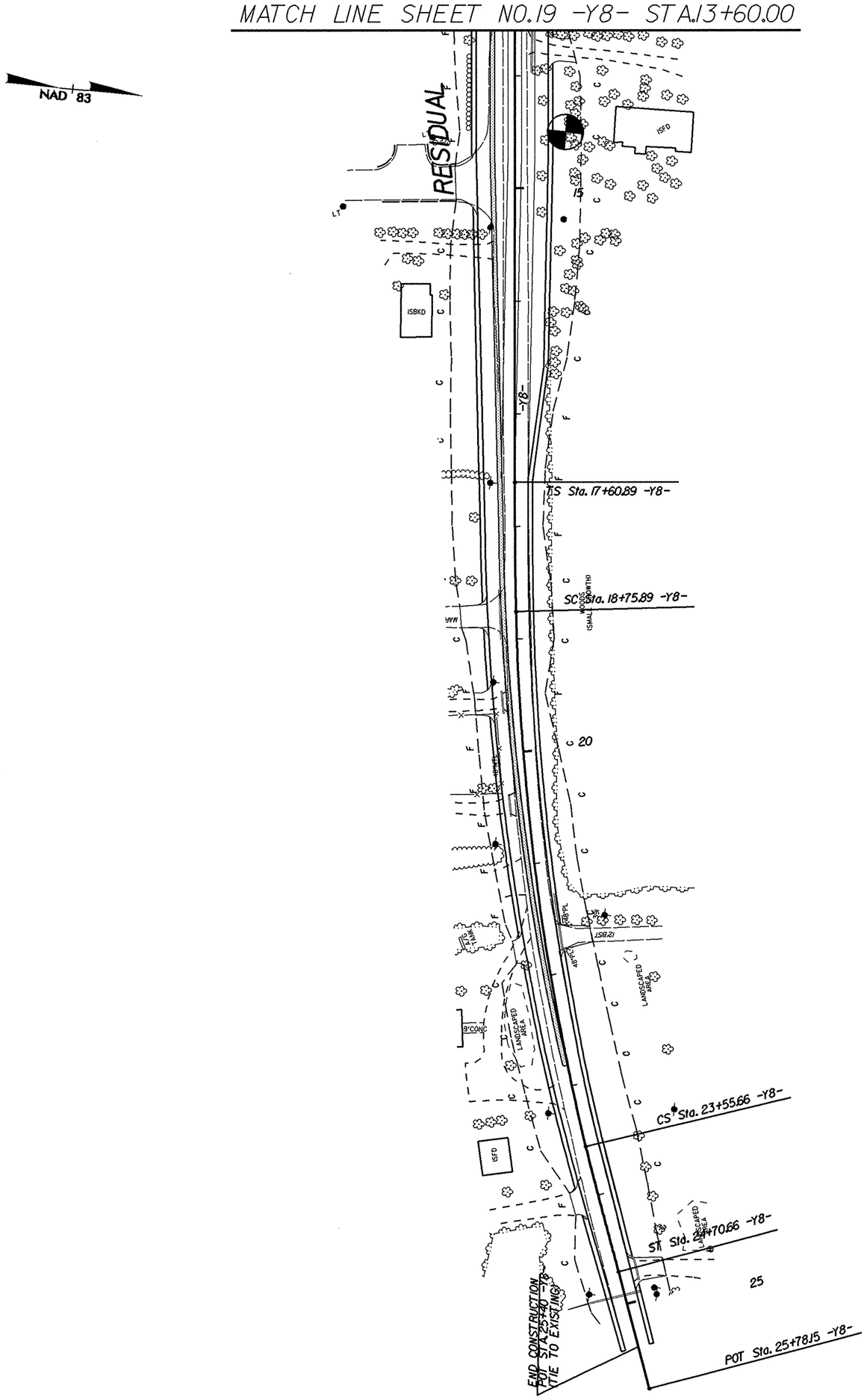
PROJECT REFERENCE NO. R-2309AB

SHEET NO. 28



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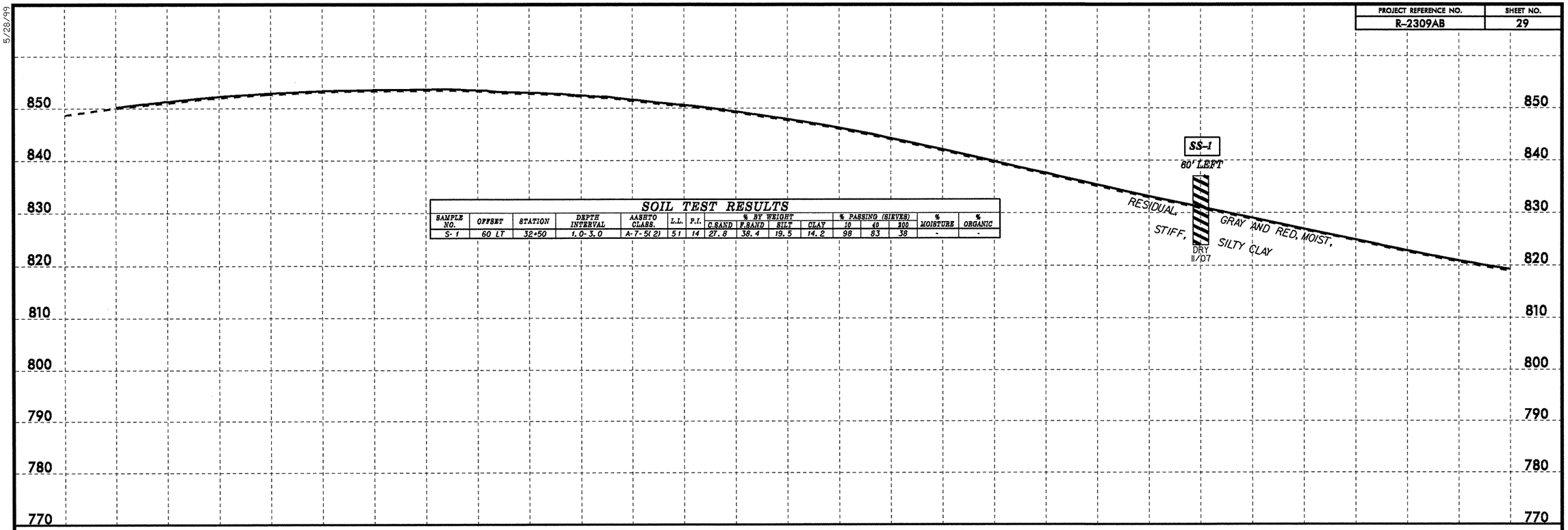
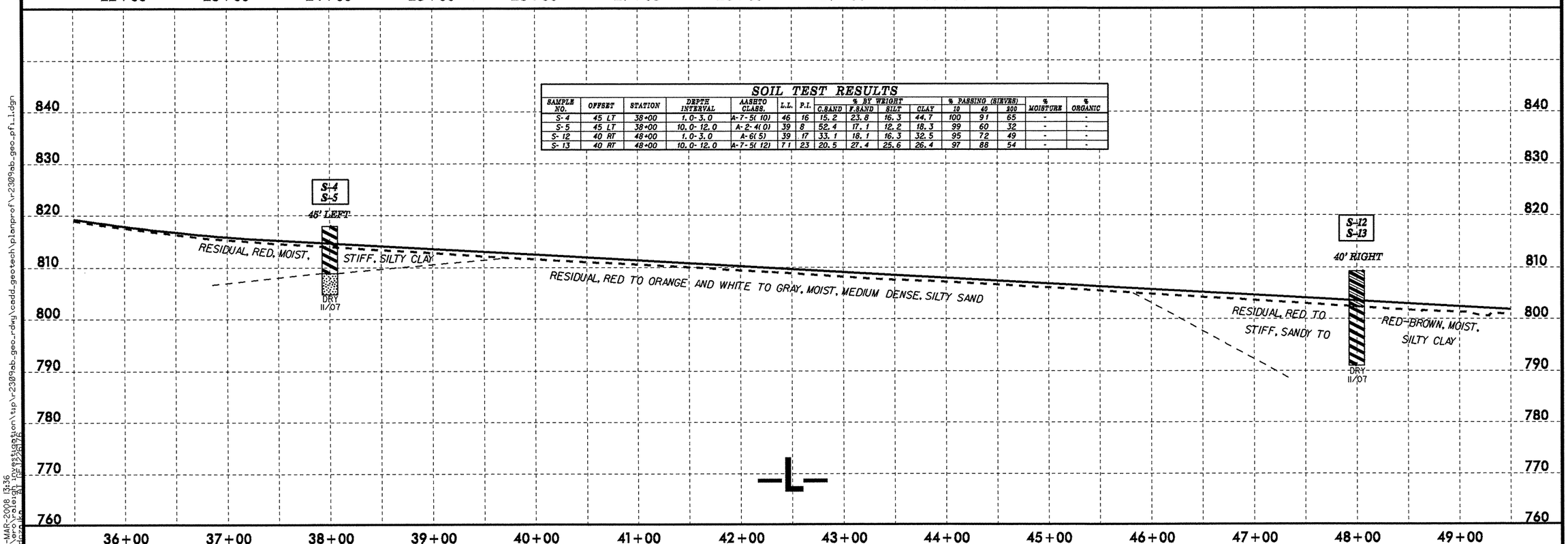
PROJECT REFERENCE NO.	SHEET NO.
R-2309AB	29



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-1	60 LT	32+50	1.0-3.0	A-7-5(2)	51	14	27.8	38.4	19.5	14.2	98	83	38	-	-



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-4	45 LT	38+00	1.0-3.0	A-7-5(10)	46	16	15.2	23.8	16.3	44.7	100	91	65	-	-
S-5	45 LT	38+00	10.0-12.0	A-2-4(0)	39	8	52.4	17.1	12.2	18.3	99	60	32	-	-
S-12	40 RT	48+00	1.0-3.0	A-6(5)	39	17	33.1	18.1	16.3	32.5	95	72	49	-	-
S-13	40 RT	48+00	10.0-12.0	A-7-5(12)	71	23	20.5	27.4	25.6	26.4	97	88	54	-	-

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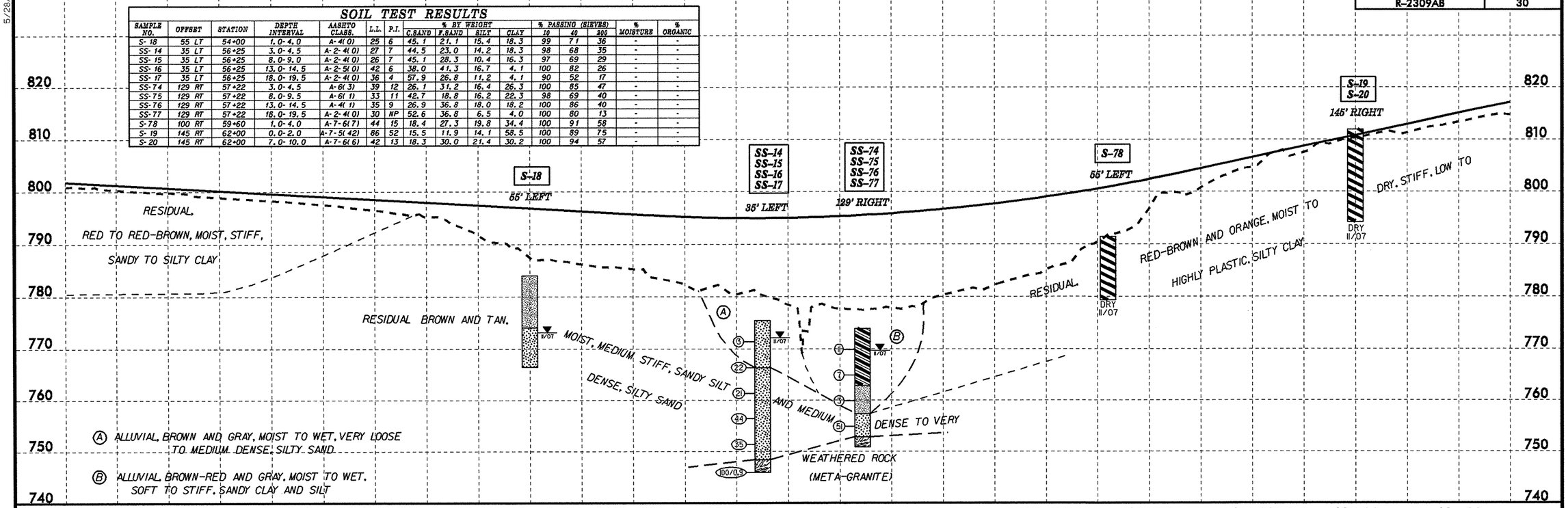
PROJECT REFERENCE NO.	SHEET NO.
R-2309AB	30

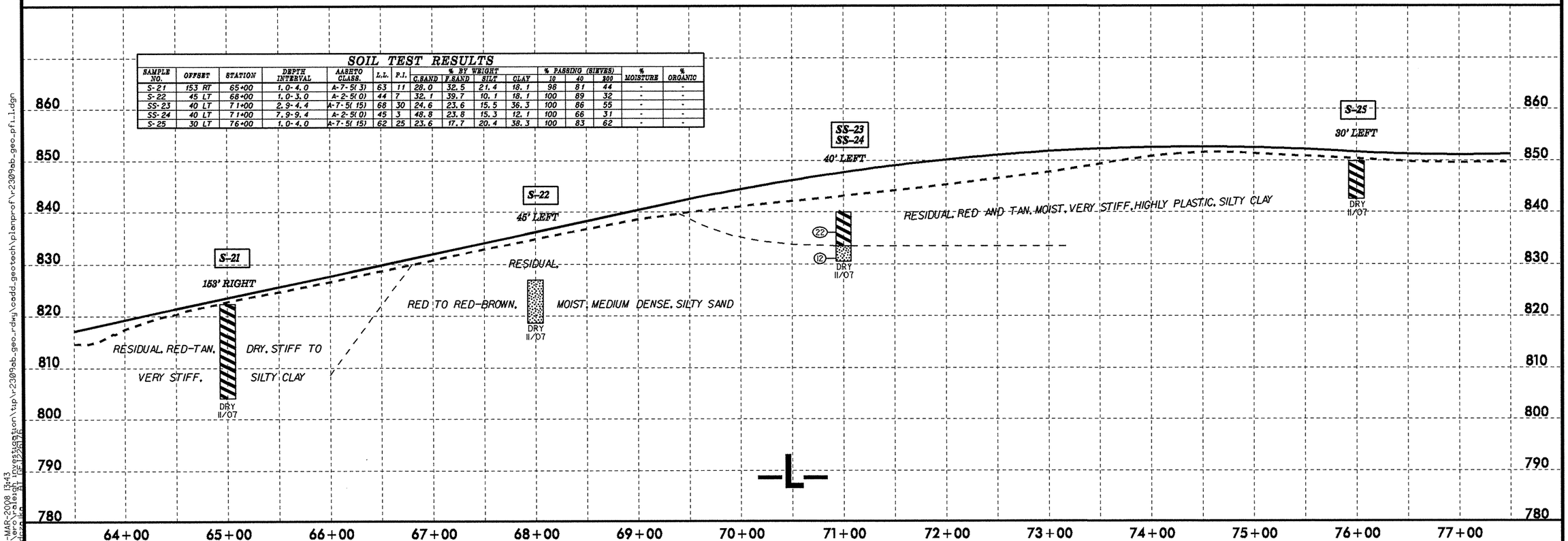
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-18	55 LT	54+00	1.0-4.0	A-4(0)	25	6	45.1	21.1	15.4	18.3	99	71	36	-	-
SS-14	35 LT	56+25	3.0-4.5	A-2-4(0)	27	7	44.5	23.0	14.2	18.3	98	68	35	-	-
SS-15	35 LT	56+25	8.0-9.0	A-2-4(0)	26	7	45.1	28.3	10.4	16.3	97	69	29	-	-
SS-16	35 LT	56+25	13.0-14.5	A-2-5(0)	42	6	38.0	41.3	16.7	4.1	100	82	26	-	-
SS-17	35 LT	56+25	18.0-19.5	A-2-4(0)	36	4	57.9	26.8	11.2	4.1	90	52	17	-	-
SS-74	129 RT	57+22	3.0-4.5	A-6(3)	39	12	26.1	31.2	16.4	26.3	100	85	47	-	-
SS-75	129 RT	57+22	8.0-9.5	A-6(1)	33	11	42.7	18.8	16.2	22.3	98	69	40	-	-
SS-76	129 RT	57+22	13.0-14.5	A-4(1)	35	9	26.9	36.8	18.0	18.2	100	86	40	-	-
SS-77	129 RT	57+22	18.0-19.5	A-2-4(0)	30	NP	52.6	36.8	6.5	4.0	100	80	13	-	-
S-78	100 RT	59+60	1.0-4.0	A-7-6(7)	44	15	18.4	27.3	19.8	34.4	100	91	58	-	-
S-19	145 RT	62+00	0.0-2.0	A-7-5(42)	86	52	15.5	11.9	14.1	58.5	100	89	75	-	-
S-20	145 RT	62+00	7.0-10.0	A-7-6(6)	42	13	18.3	30.0	21.4	30.2	100	94	57	-	-



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-21	153 RT	65+00	1.0-4.0	A-7-5(3)	63	11	28.0	32.5	21.4	18.1	98	81	44	-	-
S-22	45 LT	68+00	1.0-3.0	A-2-5(0)	44	7	32.1	39.7	10.1	18.1	100	89	32	-	-
SS-23	40 LT	71+00	2.9-4.4	A-7-5(15)	68	30	24.6	23.6	15.5	36.3	100	86	55	-	-
SS-24	40 LT	71+00	7.9-9.4	A-2-5(0)	45	3	48.8	23.8	15.3	12.1	100	66	31	-	-
S-25	30 LT	76+00	1.0-4.0	A-7-5(15)	62	25	23.6	17.7	20.4	38.3	100	83	62	-	-



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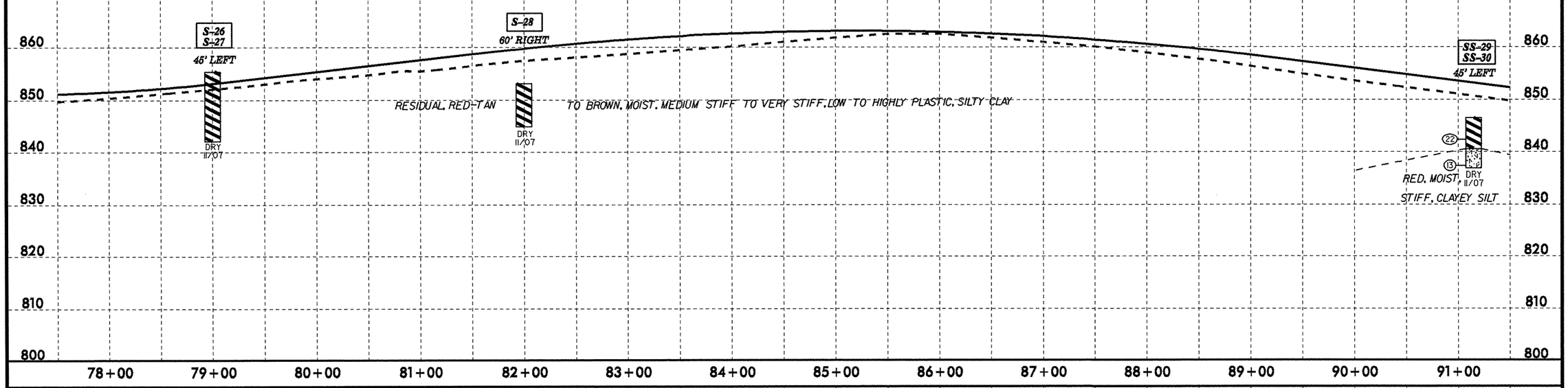
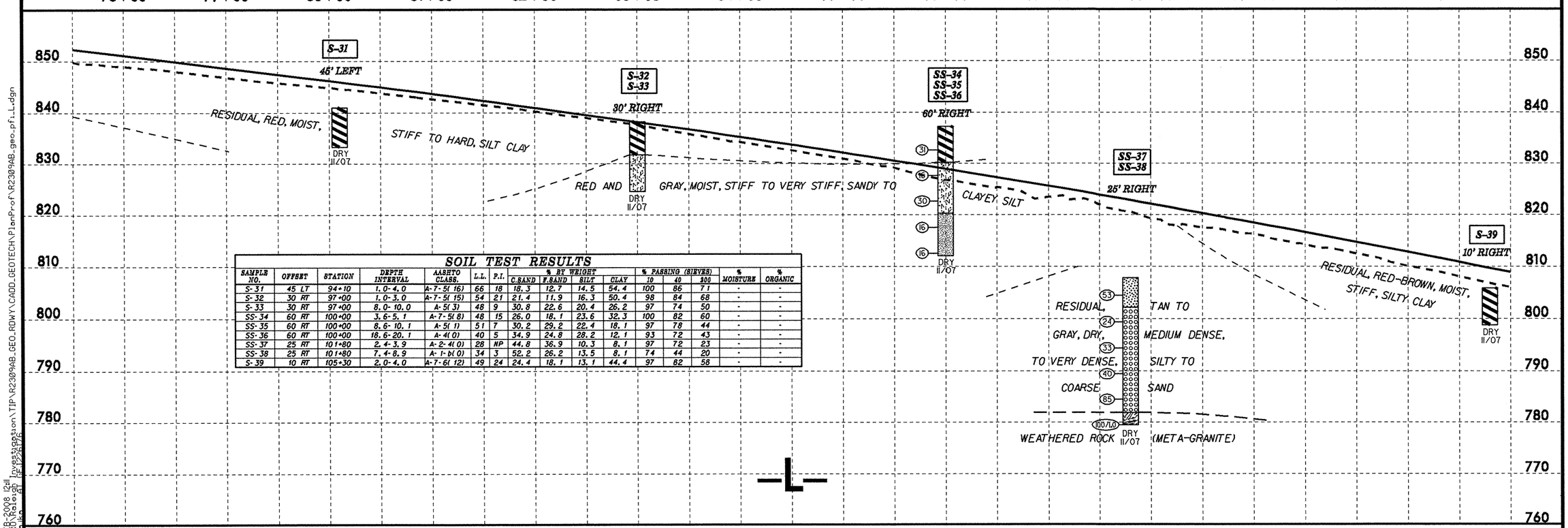
PROJECT REFERENCE NO.	SHEET NO.
R-2309AB	31

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-26	95 LT	79+00	1.0-4.0	A-7-5(30)	70	34	14.3	10.7	16.5	58.5	100	90	77	-	-
S-27	45 LT	79+00	8.0-10.0	A-7-5(8)	52	18	30.4	18.8	24.6	26.2	99	76	53	-	-
S-28	60 RT	82+00	1.0-3.0	A-7-5(16)	57	25	24.0	12.9	12.7	50.4	100	83	66	-	-
SS-29	45 LT	91+15	3.2-4.7	A-7-5(2)	61	12	28.0	36.1	11.7	24.2	100	90	40	-	-
SS-30	45 LT	91+15	8.2-9.7	A-5(0)	49	3	32.3	34.7	19.0	14.1	100	86	36	-	-





SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-31	45 LT	94+10	1.0-4.0	A-7-5(16)	66	18	18.3	12.7	14.5	54.4	100	86	71	-	-
S-32	30 RT	97+00	1.0-3.0	A-7-5(15)	54	21	21.4	11.9	16.3	50.4	98	84	68	-	-
S-33	30 RT	97+00	8.0-10.0	A-5(3)	48	9	30.8	22.6	20.4	26.2	97	74	50	-	-
SS-34	60 RT	100+00	3.6-5.1	A-7-5(8)	48	15	26.0	18.1	23.6	32.3	100	82	60	-	-
SS-35	60 RT	100+00	8.6-10.1	A-5(1)	51	7	30.2	29.2	22.4	18.1	97	78	44	-	-
SS-36	60 RT	100+00	18.6-20.1	A-4(0)	40	5	34.9	24.8	28.2	12.1	93	72	43	-	-
SS-37	25 RT	101+80	2.4-3.9	A-2-4(0)	28	NP	44.8	36.9	10.3	8.1	97	72	23	-	-
SS-38	25 RT	101+80	7.4-8.9	A-1-b(0)	34	3	52.2	26.2	13.5	8.1	74	44	20	-	-
S-39	10 RT	105+30	2.0-4.0	A-7-6(12)	49	24	24.4	18.1	13.1	44.4	97	82	58	-	-

5/28/99

27-FEB-2008 12:11
cacon1 kelley
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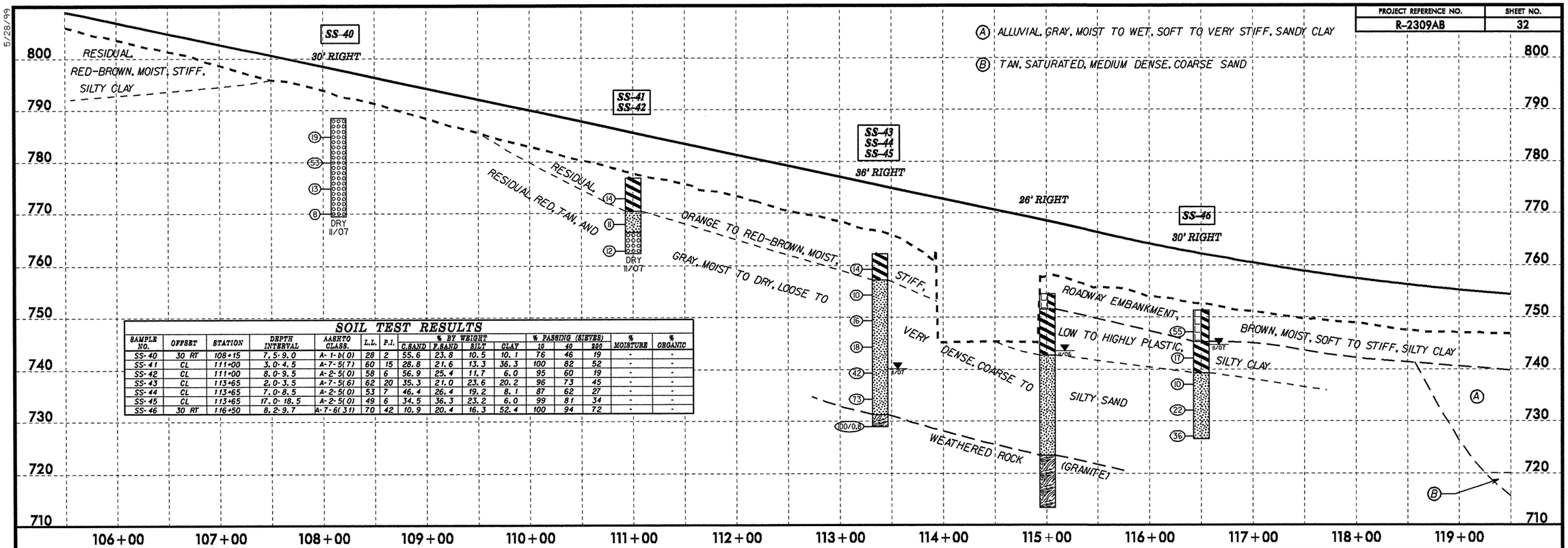
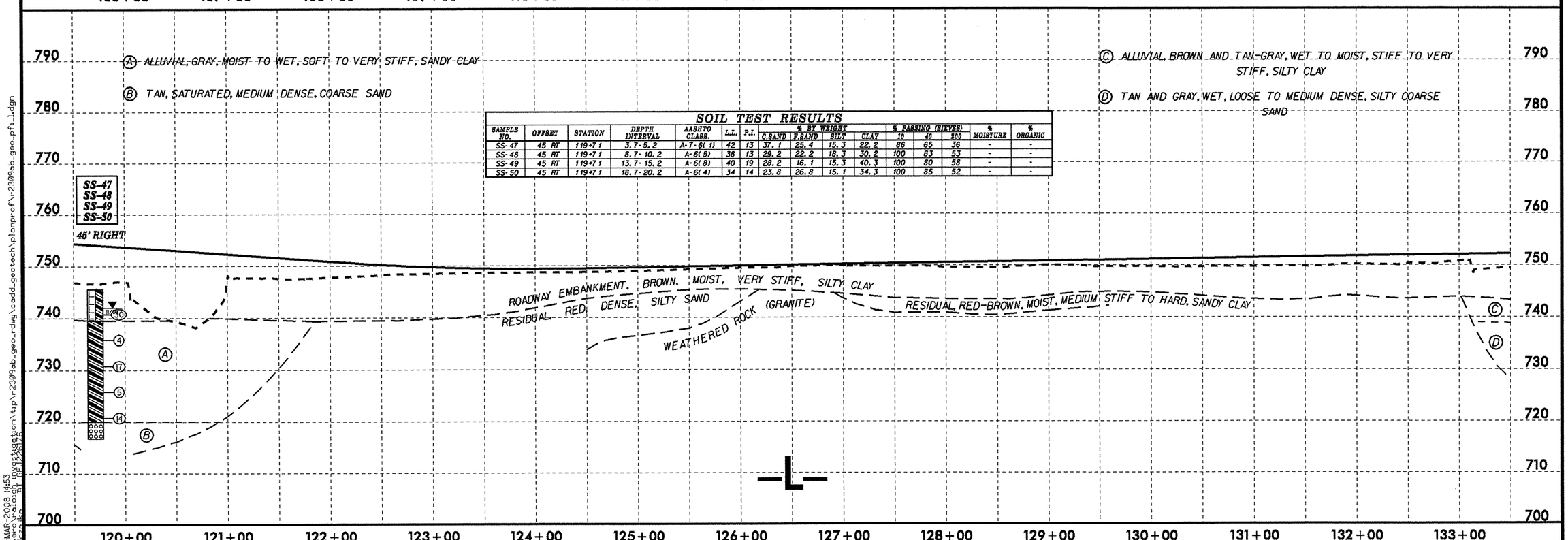
PROJECT REFERENCE NO.	SHEET NO.
R-2309AB	32



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-40	30 RT	108+15	7.5-9.0	A-1-b(0)	28	2	55.6	23.8	10.5	10.1	76	46	19	-	-
SS-41	CL	111+00	3.0-4.5	A-7-5(7)	60	15	28.8	21.6	13.3	36.3	100	82	52	-	-
SS-42	CL	111+00	8.0-9.5	A-2-5(0)	58	6	56.9	25.4	11.7	6.0	95	60	19	-	-
SS-43	CL	113+65	2.0-3.5	A-7-5(6)	62	20	35.3	21.0	23.6	20.2	96	73	45	-	-
SS-44	CL	113+65	7.0-8.5	A-2-5(0)	53	7	46.4	26.4	19.2	8.1	87	62	27	-	-
SS-45	CL	113+65	17.0-18.5	A-2-5(0)	49	6	34.5	36.3	23.2	6.0	99	81	34	-	-
SS-46	30 RT	116+50	8.2-9.7	A-7-6(31)	70	42	10.9	20.4	16.3	52.4	100	94	72	-	-



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-47	45 RT	119+71	3.7-5.2	A-7-6(11)	42	13	37.1	25.4	15.3	22.2	86	65	36	-	-
SS-48	45 RT	119+71	8.7-10.2	A-6(5)	38	13	29.2	22.2	18.3	30.2	100	83	53	-	-
SS-49	45 RT	119+71	13.7-15.2	A-6(8)	40	19	28.2	16.1	15.3	40.3	100	80	58	-	-
SS-50	45 RT	119+71	18.7-20.2	A-6(4)	34	14	23.8	26.8	15.1	34.3	100	85	52	-	-

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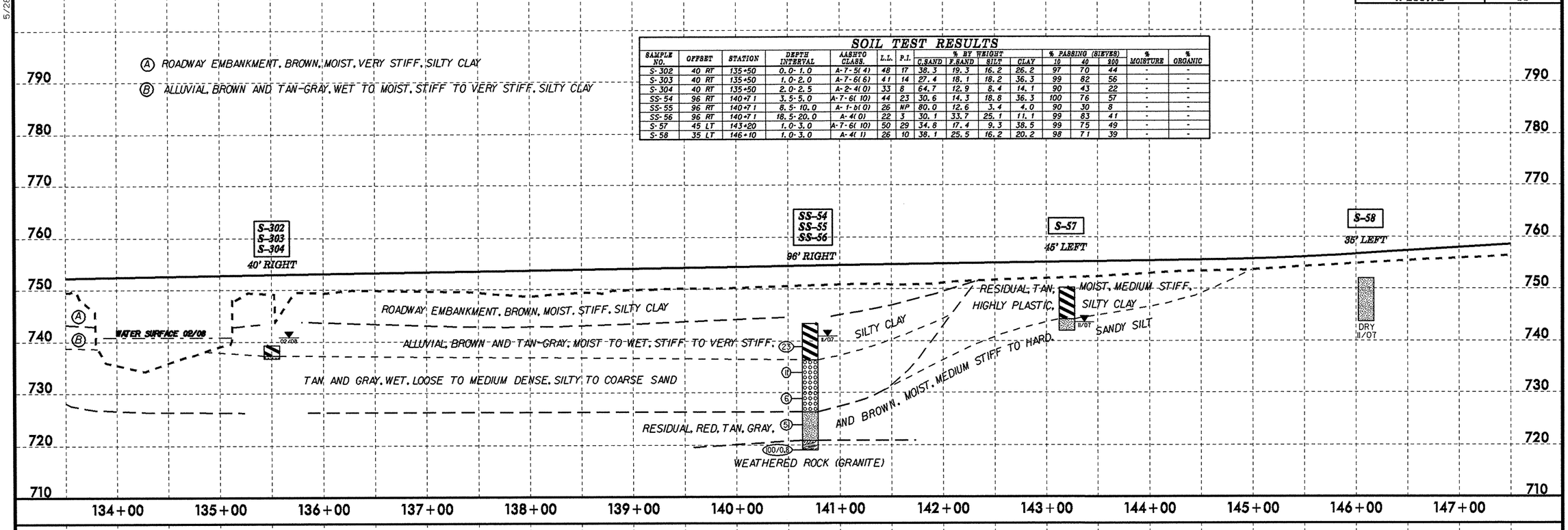
PROJECT REFERENCE NO.	SHEET NO.
R-2309AB	33

Ⓐ ROADWAY EMBANKMENT, BROWN, MOIST, VERY STIFF, SILTY CLAY

Ⓑ ALLUVIAL, BROWN AND TAN-GRAY, WET TO MOIST, STIFF TO VERY STIFF, SILTY CLAY

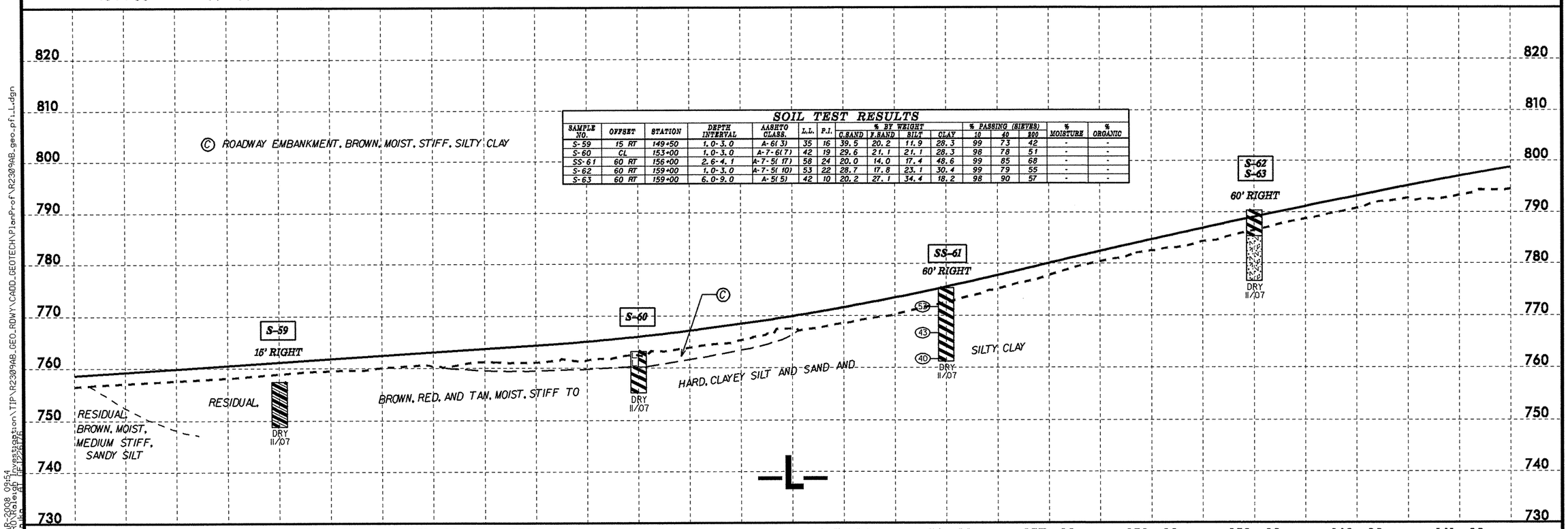
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-302	40 RT	135+50	0.0-1.0	A-7-5(4)	48	17	38.3	19.3	16.2	26.2	97	70	44	-	-
S-303	40 RT	135+50	1.0-2.0	A-7-6(6)	41	14	27.4	18.1	18.2	36.3	99	82	56	-	-
S-304	40 RT	135+50	2.0-2.5	A-2-4(0)	33	8	64.7	12.9	8.4	14.1	90	43	22	-	-
SS-54	96 RT	140+71	3.5-5.0	A-7-6(10)	44	23	30.6	14.3	18.8	36.3	100	76	57	-	-
SS-55	96 RT	140+71	8.5-10.0	A-1-b(0)	26	NP	80.0	12.6	3.4	4.0	90	30	8	-	-
SS-56	96 RT	140+71	18.5-20.0	A-4(0)	22	3	30.1	33.7	25.1	11.1	99	83	41	-	-
S-57	45 LT	143+20	1.0-3.0	A-7-6(10)	50	29	34.8	17.4	9.3	38.5	99	75	49	-	-
S-58	35 LT	146+10	1.0-3.0	A-4(1)	26	10	38.1	25.5	16.2	20.2	98	71	39	-	-



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-59	15 RT	149+50	1.0-3.0	A-6(3)	35	16	39.5	20.2	11.9	28.3	99	73	42	-	-
S-60	CL	153+00	1.0-3.0	A-7-6(7)	42	19	29.6	21.1	21.1	28.3	98	78	51	-	-
SS-61	60 RT	156+00	2.6-4.1	A-7-5(17)	58	24	20.0	14.0	17.4	48.6	99	85	68	-	-
S-62	60 RT	159+00	1.0-3.0	A-7-5(10)	53	22	28.7	17.8	23.1	30.4	99	79	55	-	-
S-63	60 RT	159+00	6.0-9.0	A-5(5)	42	10	20.2	27.1	34.4	18.2	98	90	57	-	-



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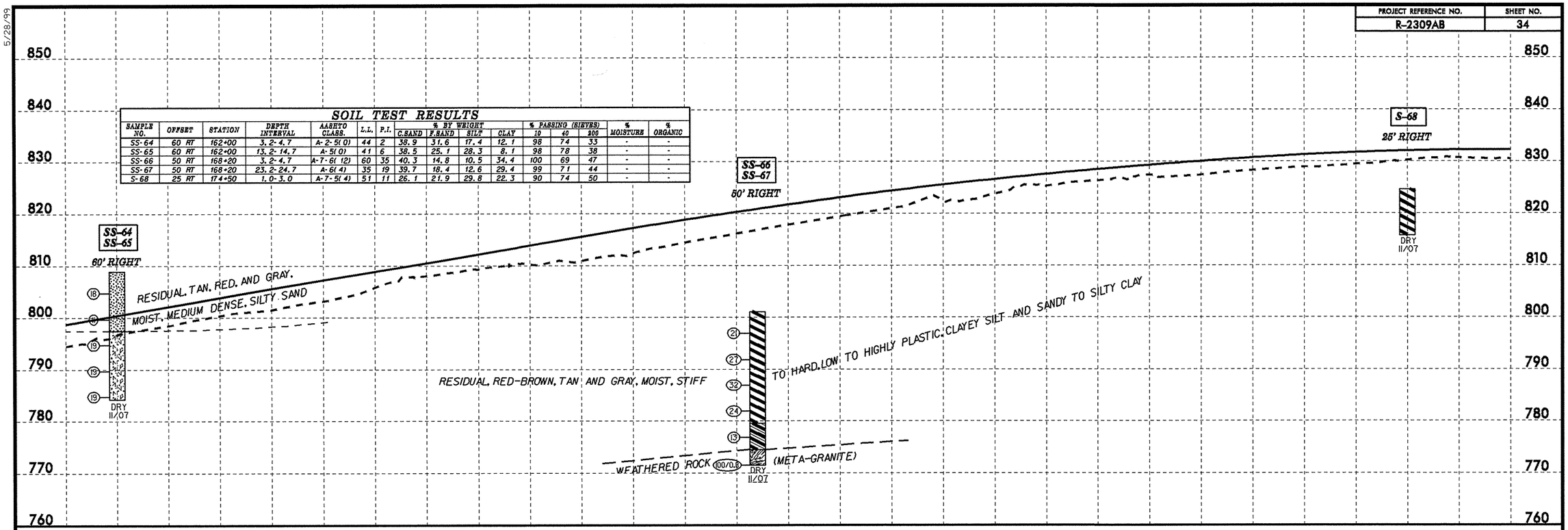
PROJECT REFERENCE NO.	SHEET NO.
R-2309AB	34

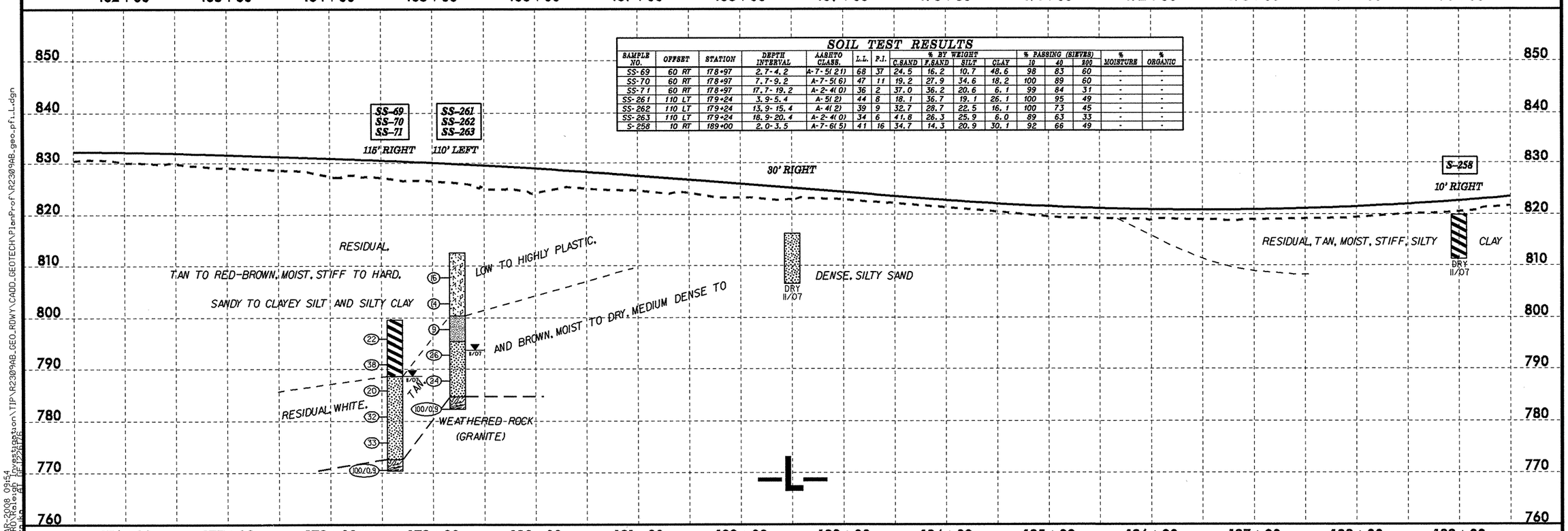
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-64	60 RT	162+00	3.2-4.7	A-2-5(0)	44	2	38.9	31.6	17.4	12.1	98	74	33	-	-
SS-65	60 RT	162+00	13.2-14.7	A-5(0)	41	6	38.5	25.1	28.3	8.1	98	78	38	-	-
SS-66	50 RT	168+20	3.2-4.7	A-7-6(12)	60	35	40.3	14.8	10.5	34.4	100	69	47	-	-
SS-67	50 RT	168+20	23.2-24.7	A-6(4)	35	19	39.7	18.4	12.6	29.4	99	71	44	-	-
S-68	25 RT	174+50	1.0-3.0	A-7-5(4)	51	11	26.1	21.9	29.8	22.3	90	74	50	-	-



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-69	60 RT	178+97	2.7-4.2	A-7-5(21)	68	37	24.5	16.2	10.7	48.6	98	83	60	-	-
SS-70	60 RT	178+97	7.7-9.2	A-7-5(6)	47	11	19.2	27.9	34.6	18.2	100	89	60	-	-
SS-71	60 RT	178+97	17.7-19.2	A-2-4(0)	36	2	37.0	36.2	20.6	6.1	99	84	31	-	-
SS-261	110 LT	179+24	3.9-5.4	A-5(2)	44	8	18.1	36.7	19.1	26.1	100	95	49	-	-
SS-262	110 LT	179+24	13.9-15.4	A-4(2)	39	9	32.7	28.7	22.5	16.1	100	73	45	-	-
SS-263	110 LT	179+24	18.9-20.4	A-2-4(0)	34	6	41.8	26.3	25.9	6.0	89	63	33	-	-
S-258	10 RT	189+00	2.0-3.5	A-7-6(5)	41	16	34.7	14.3	20.9	30.1	92	66	49	-	-



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PROJECT REFERENCE NO.	SHEET NO.
R-2309AB	35

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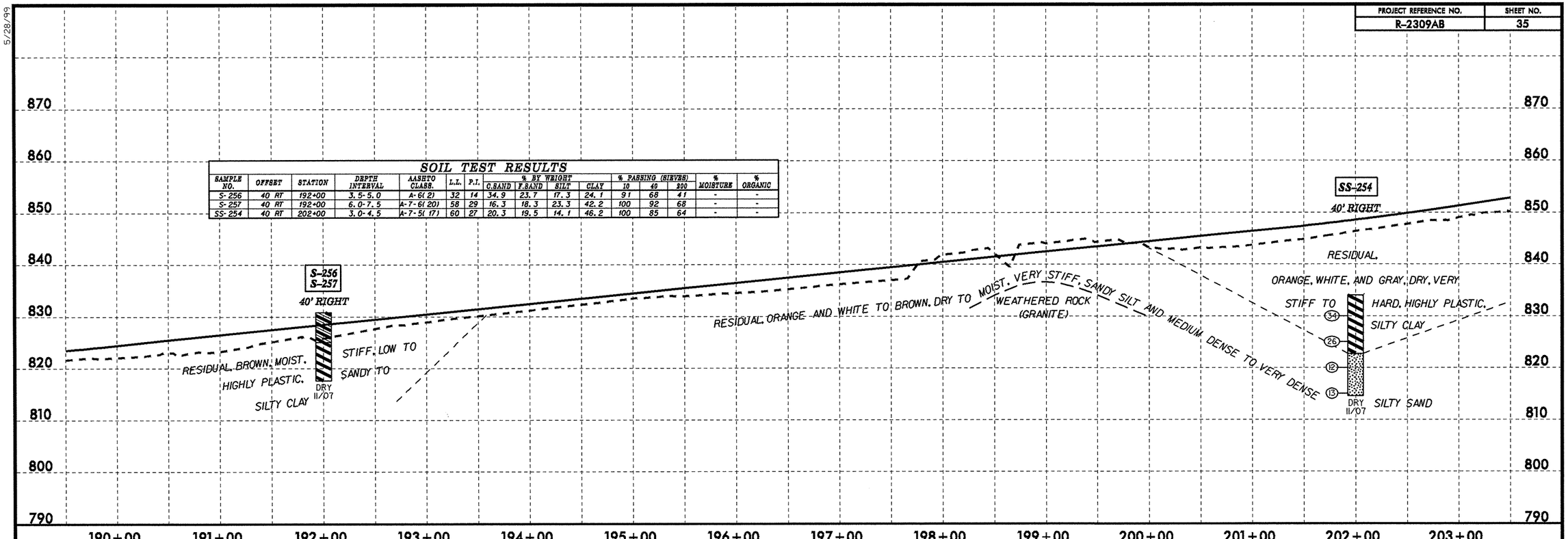
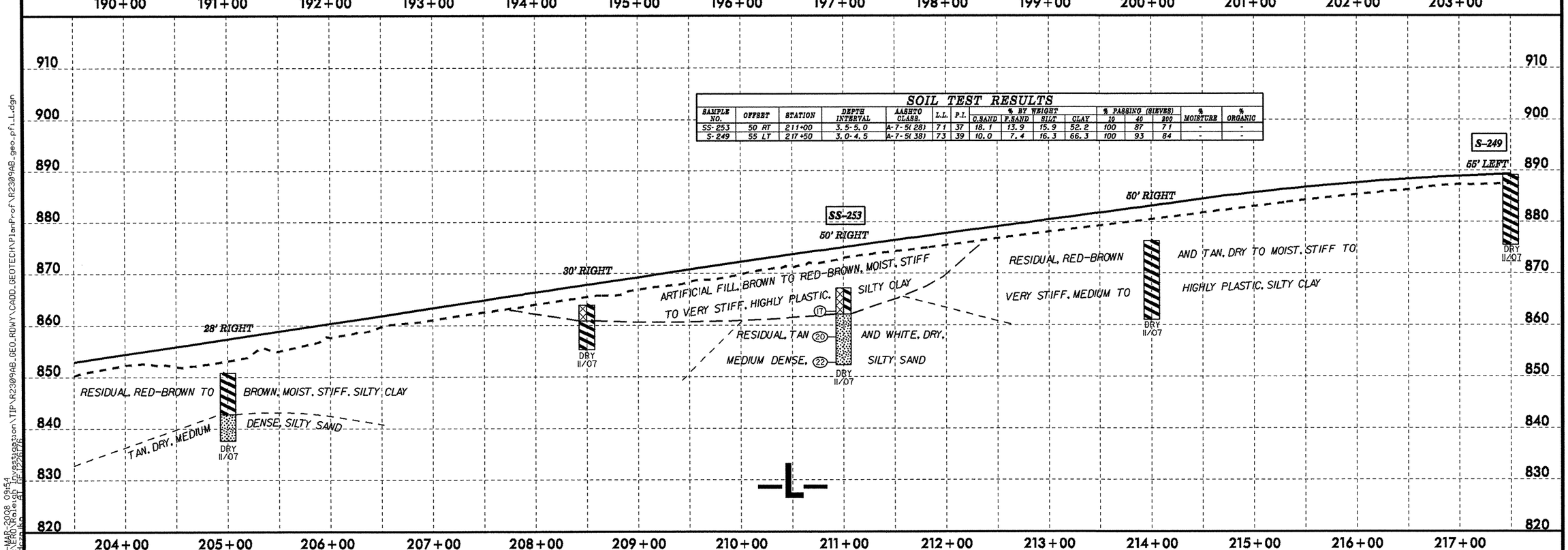
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-256	40 RT	192+00	3.5-5.0	A-6(2)	32	14	34.9	23.7	17.3	24.1	91	68	41	-	-
S-257	40 RT	192+00	6.0-7.5	A-7-6(20)	58	29	16.3	18.3	23.3	42.2	100	92	68	-	-
SS-254	40 RT	202+00	3.0-4.5	A-7-5(17)	60	27	20.3	19.5	14.1	46.2	100	85	64	-	-



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-253	50 RT	211+00	3.5-5.0	A-7-5(28)	71	37	16.1	13.9	15.9	52.2	100	87	71	-	-
S-249	55 LT	217+50	3.0-4.5	A-7-5(38)	73	39	10.0	7.4	16.3	66.3	100	93	84	-	-



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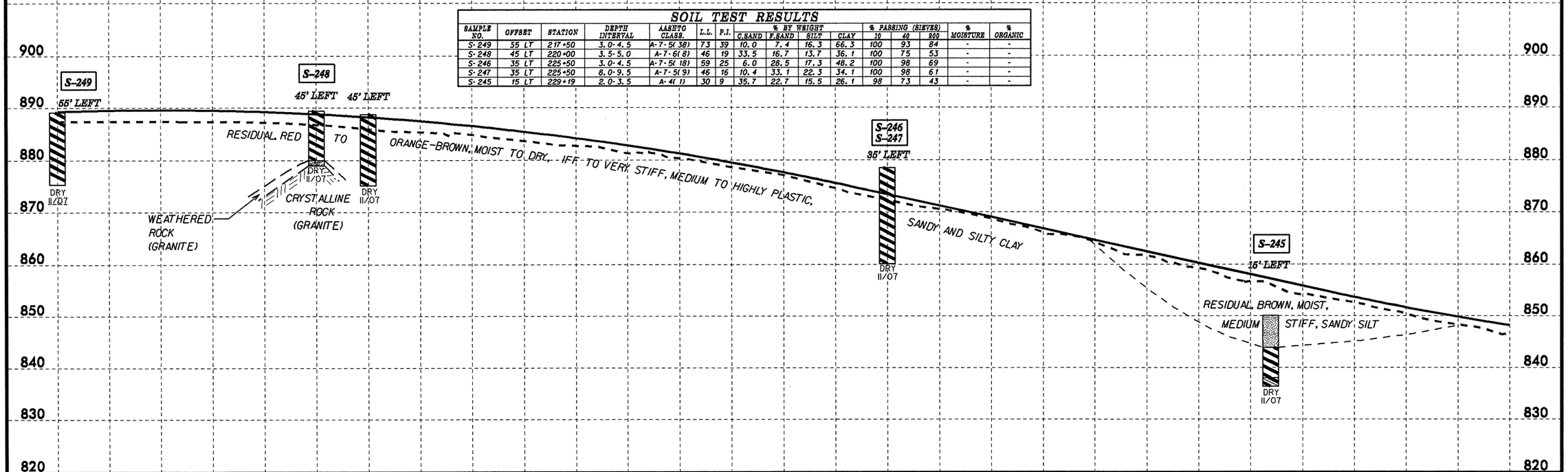
PROJECT REFERENCE NO.	SHEET NO.
R-2309AB	36

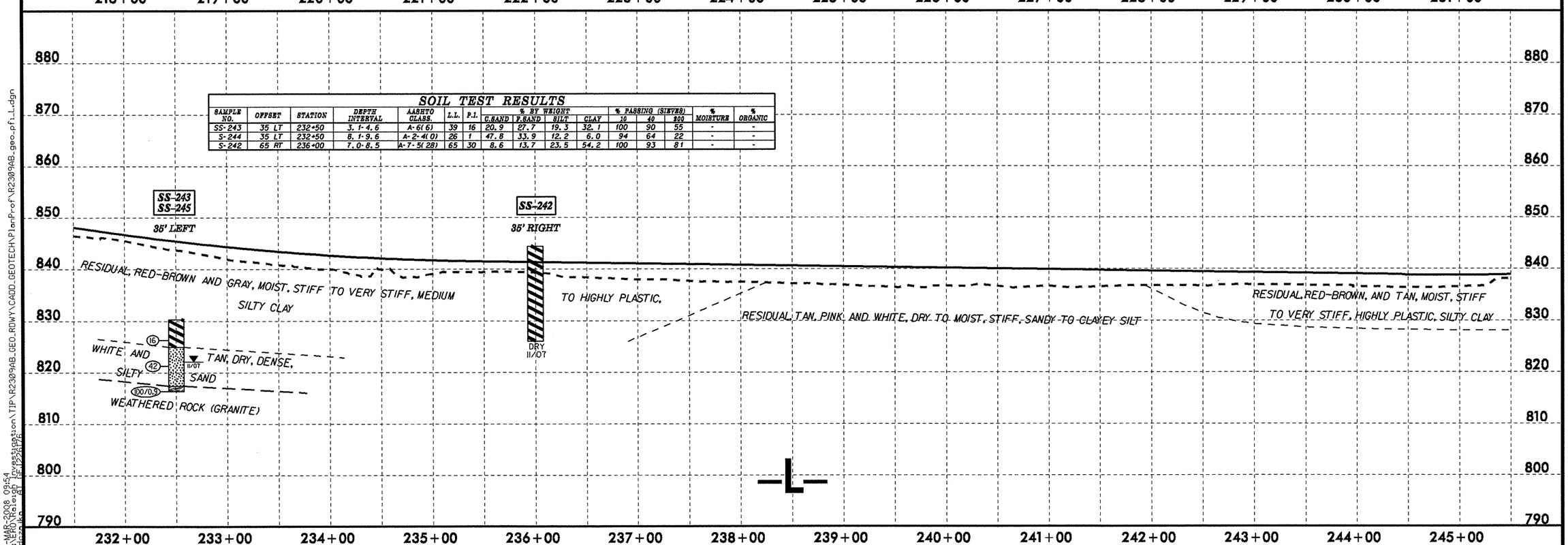
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-249	55 LT	217+50	3.0-4.5	A-7-5(38)	73	39	10.0	7.4	16.3	66.3	100	93	84	-	-
S-248	45 LT	220+00	3.5-5.0	A-7-6(8)	46	19	33.5	16.7	13.7	36.1	100	75	53	-	-
S-246	35 LT	225+50	3.0-4.5	A-7-5(18)	59	25	6.0	28.5	17.3	48.2	100	98	69	-	-
S-247	35 LT	225+50	8.0-9.5	A-7-5(9)	46	16	10.4	33.1	22.3	34.1	100	98	61	-	-
S-245	15 LT	229+19	2.0-3.5	A-4(1)	30	9	35.7	22.7	15.5	26.1	98	73	43	-	-



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-243	35 LT	232+50	3.1-4.6	A-6(6)	39	16	20.9	27.7	19.3	32.1	100	90	55	-	-
S-244	35 LT	232+50	8.1-9.6	A-2-4(0)	26	1	47.8	33.9	12.2	6.0	94	64	22	-	-
S-242	65 RT	236+00	7.0-8.5	A-7-5(28)	65	30	8.6	13.7	23.5	54.2	100	93	81	-	-



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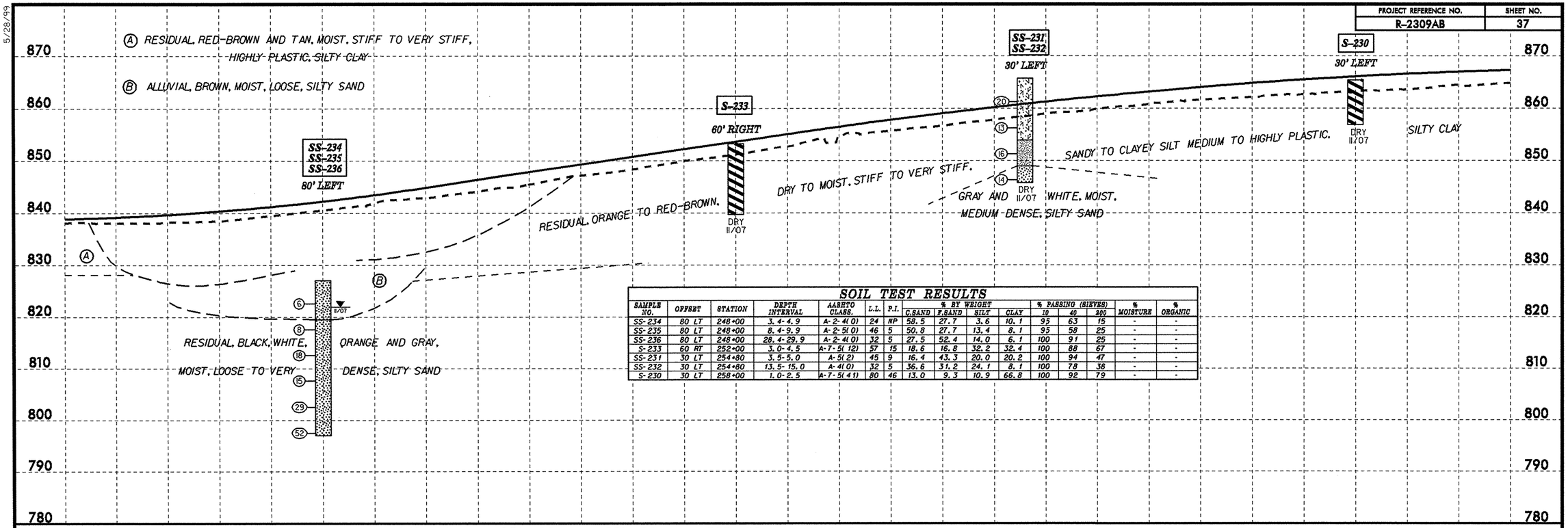
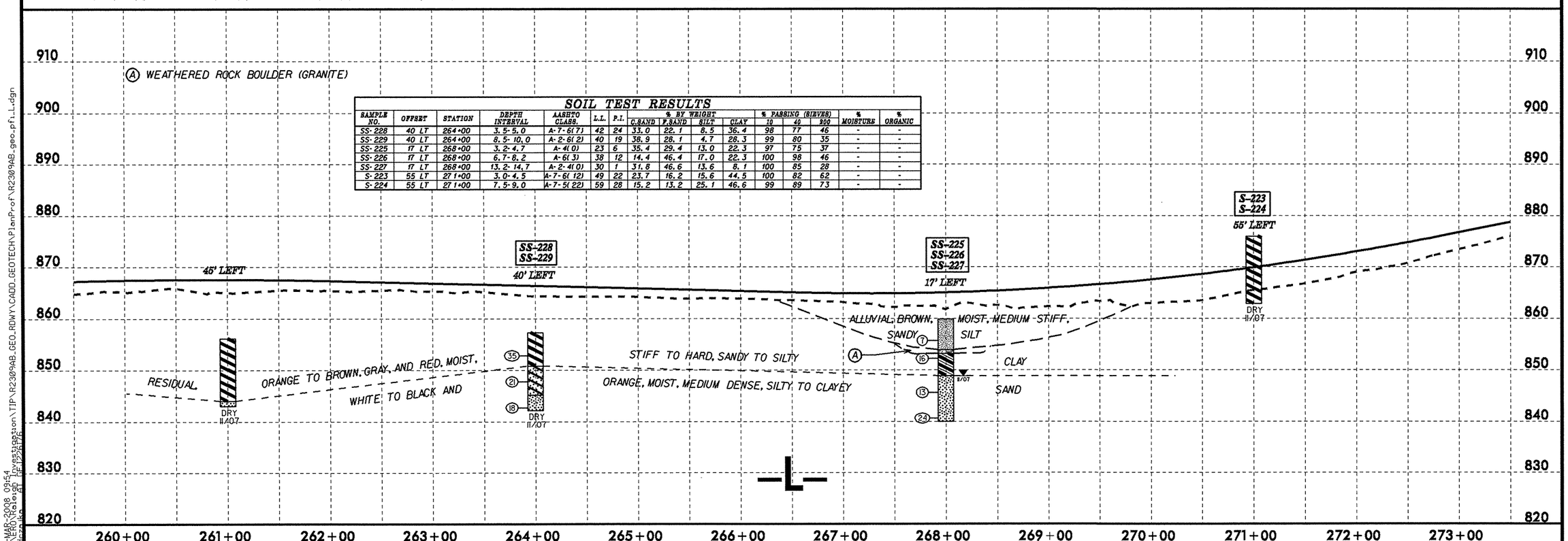
PROJECT REFERENCE NO.	SHEET NO.
R-2309AB	37



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-234	80 LT	248+00	3.4-4.9	A-2-4(0)	24	NP	58.5	27.7	3.6	10.1	95	63	15	-	-
SS-235	80 LT	248+00	8.4-9.9	A-2-5(0)	46	5	50.8	27.7	13.4	8.1	95	58	25	-	-
SS-236	80 LT	248+00	28.4-29.9	A-2-4(0)	32	5	27.5	52.4	14.0	6.1	100	91	25	-	-
S-233	60 RT	252+00	3.0-4.5	A-7-5(12)	57	15	18.6	16.8	32.2	32.4	100	88	67	-	-
SS-231	30 LT	254+80	3.5-5.0	A-5(2)	45	9	16.4	43.3	20.0	20.2	100	94	47	-	-
SS-232	30 LT	254+80	13.5-15.0	A-4(0)	32	5	36.6	31.2	24.1	8.1	100	78	38	-	-
S-230	30 LT	258+00	1.0-2.5	A-7-5(41)	80	46	13.0	9.3	10.9	66.8	100	92	79	-	-



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-228	40 LT	264+00	3.5-5.0	A-7-6(7)	42	24	33.0	22.1	8.5	36.4	98	77	46	-	-
SS-229	40 LT	264+00	8.5-10.0	A-2-6(2)	40	19	38.9	28.1	4.7	28.3	99	80	35	-	-
SS-225	17 LT	268+00	3.2-4.7	A-4(0)	23	6	35.4	29.4	13.0	22.3	97	75	37	-	-
SS-226	17 LT	268+00	6.7-8.2	A-6(3)	38	12	14.4	46.4	17.0	22.3	100	98	46	-	-
SS-227	17 LT	268+00	13.2-14.7	A-2-4(0)	30	1	31.8	46.6	13.6	8.1	100	85	28	-	-
S-223	55 LT	271+00	3.0-4.5	A-7-6(12)	49	22	23.7	16.2	15.6	44.5	100	82	62	-	-
S-224	55 LT	271+00	7.5-9.0	A-7-5(22)	59	28	15.2	13.2	25.1	46.6	99	89	73	-	-

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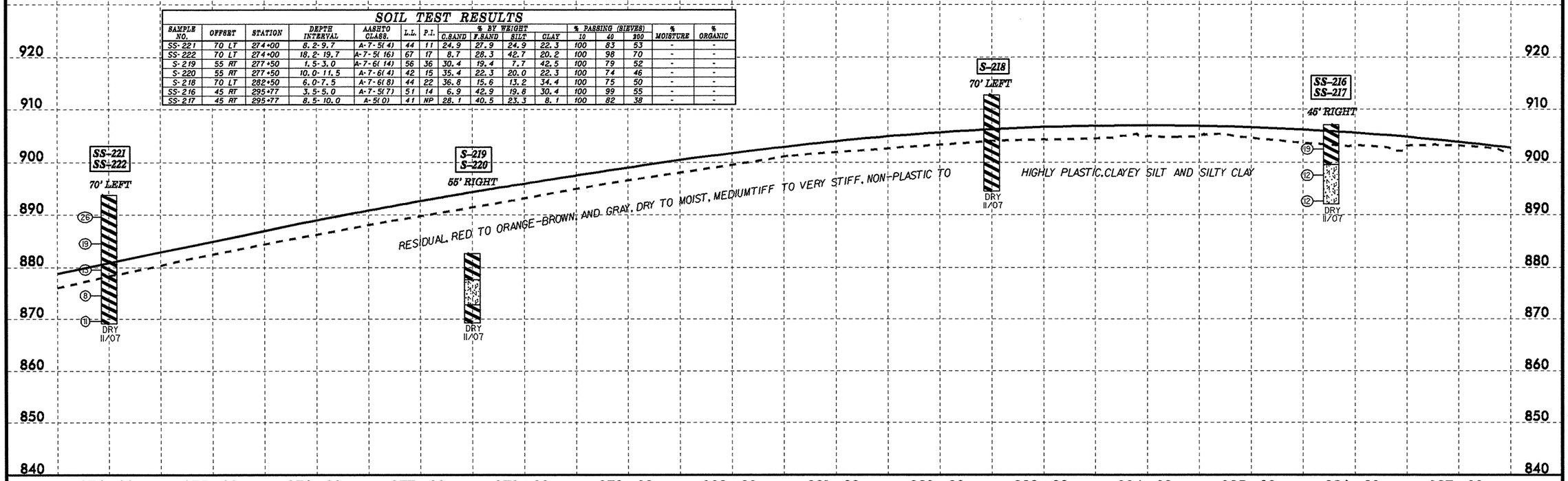
PROJECT REFERENCE NO.	SHEET NO.
R-2309AB	38

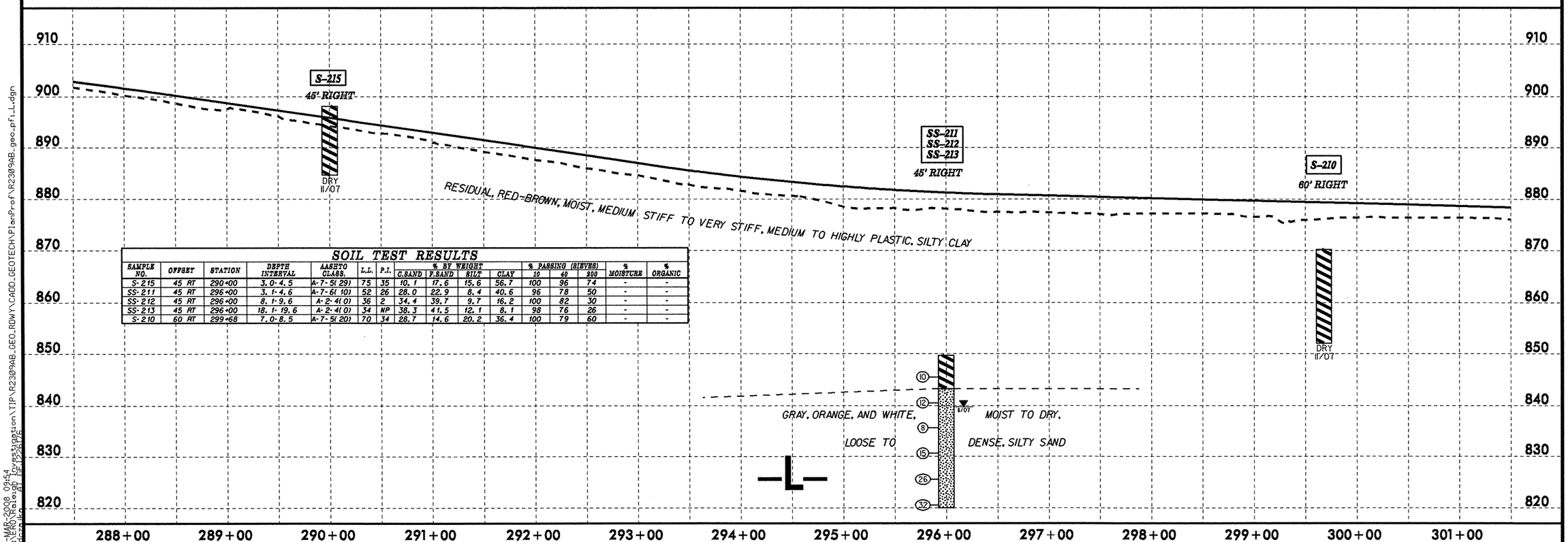
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-221	70 LT	274+00	8.2-9.7	A-7-5(4)	44	11	24.9	27.9	24.9	22.3	100	83	53	-	-
SS-222	70 LT	274+00	18.2-19.7	A-7-5(16)	67	17	8.7	28.3	42.7	20.2	100	98	70	-	-
S-219	55 RT	277+50	1.5-3.0	A-7-6(14)	56	36	30.4	19.4	7.7	42.5	100	79	52	-	-
S-220	55 RT	277+50	10.0-11.5	A-7-6(4)	42	15	35.4	22.3	20.0	22.3	100	74	46	-	-
S-218	70 LT	282+50	6.0-7.5	A-7-6(8)	44	22	36.8	15.6	13.2	34.4	100	75	50	-	-
SS-216	45 RT	295+77	3.5-5.0	A-7-5(7)	51	14	6.9	42.9	19.8	30.4	100	99	55	-	-
SS-217	45 RT	295+77	8.5-10.0	A-5(0)	41	NP	28.1	40.5	23.3	8.1	100	82	38	-	-



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-215	45 RT	290+00	3.0-4.5	A-7-5(29)	75	35	10.1	17.6	15.6	56.7	100	96	74	-	-
SS-211	45 RT	296+00	3.1-4.6	A-7-6(10)	52	26	28.0	22.9	8.4	40.6	96	78	50	-	-
SS-212	45 RT	296+00	8.1-9.6	A-2-4(0)	36	2	34.4	39.7	9.7	16.2	100	82	30	-	-
SS-213	45 RT	296+00	18.1-19.6	A-2-4(0)	34	NP	38.3	41.5	12.1	8.1	98	76	26	-	-
S-210	60 RT	299+68	7.0-8.5	A-7-5(20)	70	34	28.7	14.6	20.2	36.4	100	79	60	-	-



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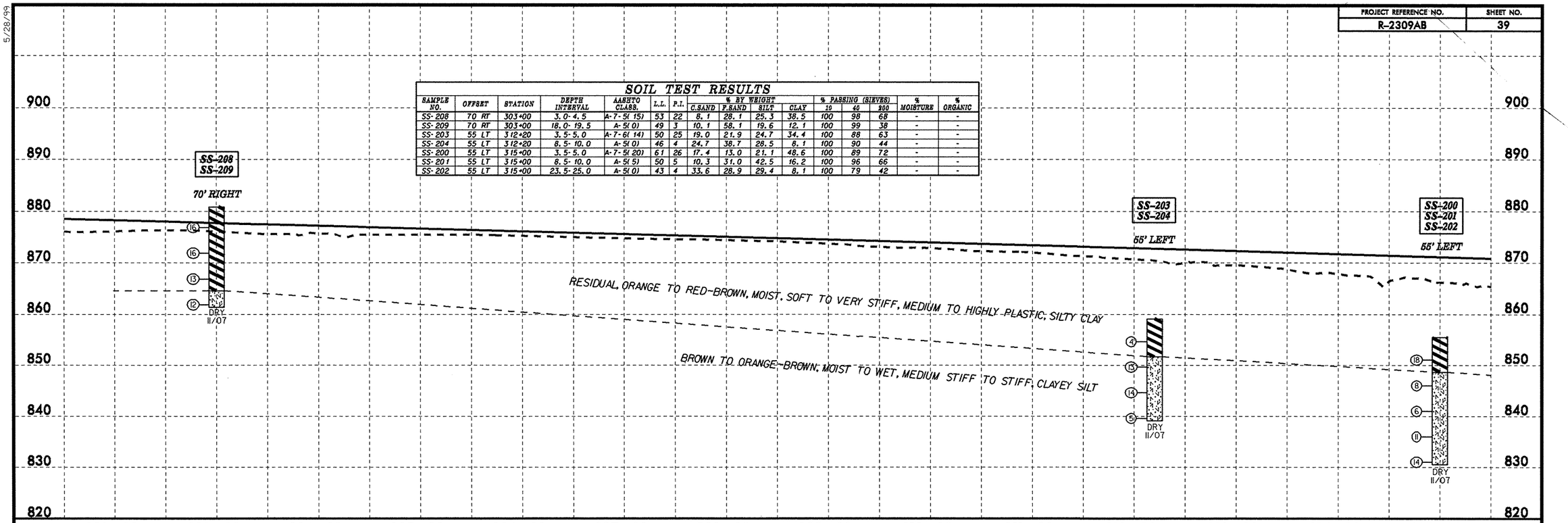
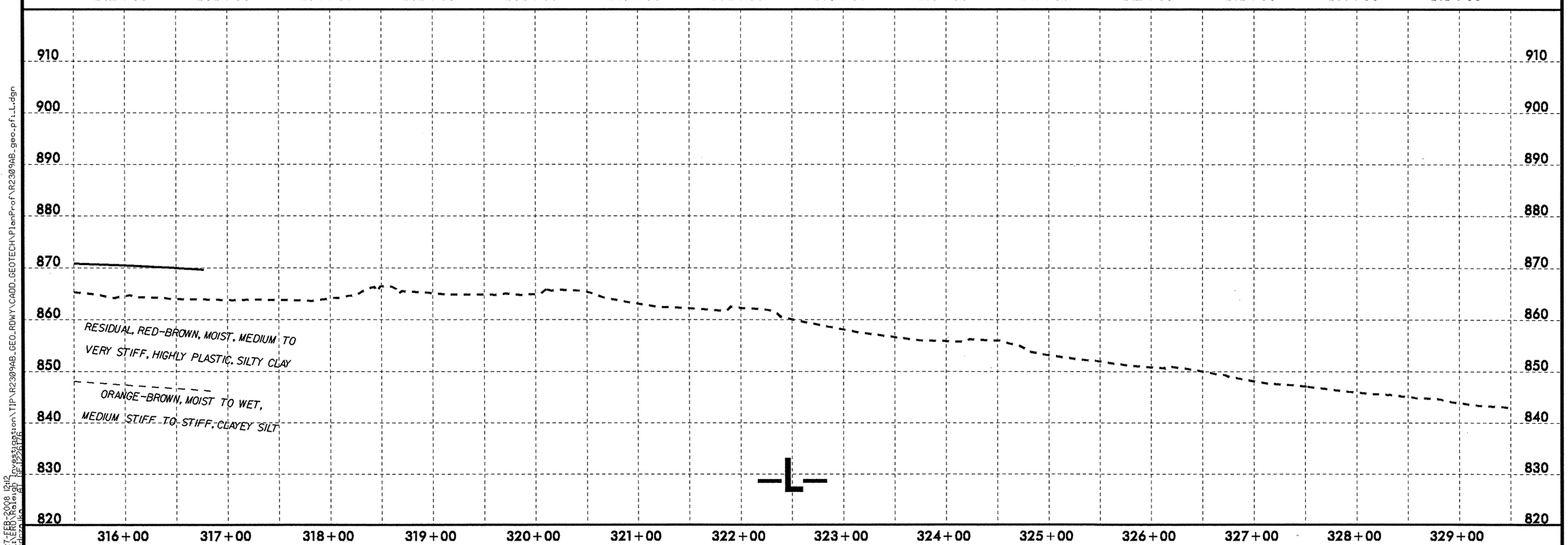
PROJECT REFERENCE NO.	SHEET NO.
R-2309AB	39

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-208	70 RT	303+00	3.0-4.5	A-7-5(15)	53	22	8.1	28.1	25.3	38.5	100	98	68	-	-
SS-209	70 RT	303+00	18.0-19.5	A-5(0)	49	3	10.1	58.1	19.6	12.1	100	99	38	-	-
SS-203	55 LT	312+20	3.5-5.0	A-7-6(14)	50	25	19.0	21.9	24.7	34.4	100	88	63	-	-
SS-204	55 LT	312+20	8.5-10.0	A-5(0)	46	4	24.7	38.7	28.5	8.1	100	90	44	-	-
SS-200	55 LT	315+00	3.5-5.0	A-7-5(20)	61	26	17.4	13.0	21.1	48.6	100	89	72	-	-
SS-201	55 LT	315+00	8.5-10.0	A-5(5)	50	5	10.3	31.0	42.5	16.2	100	96	66	-	-
SS-202	55 LT	315+00	23.5-25.0	A-5(0)	43	4	33.6	28.9	29.4	8.1	100	79	42	-	-





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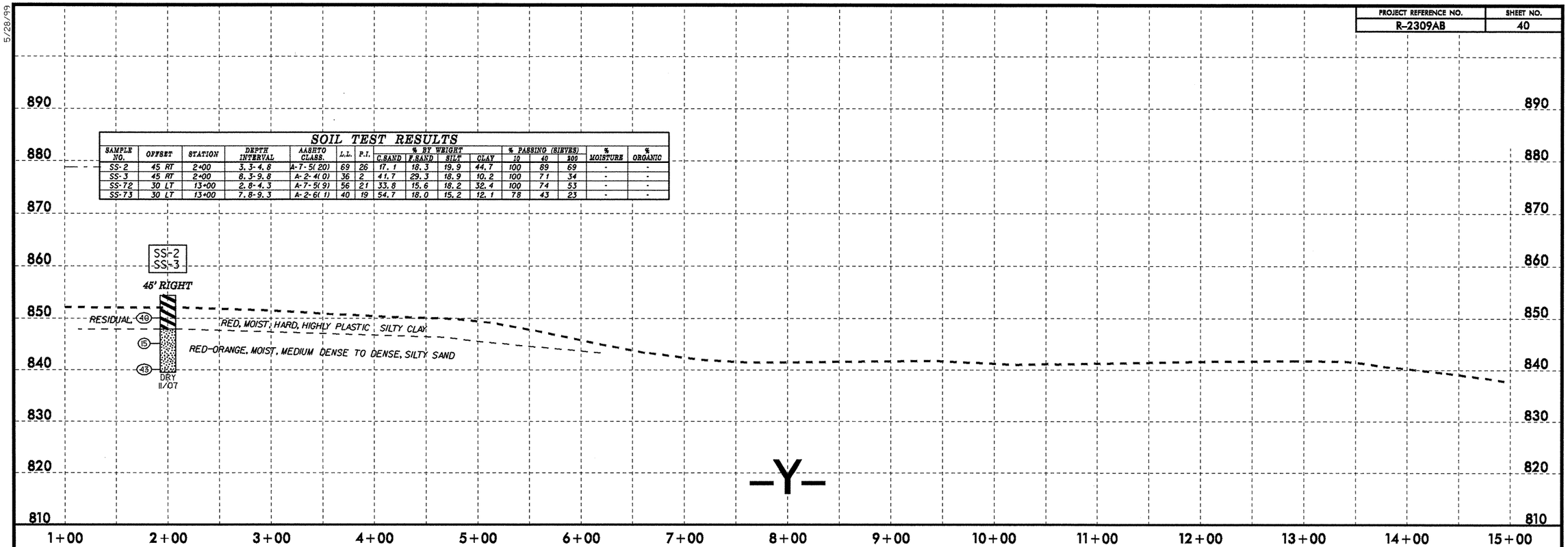
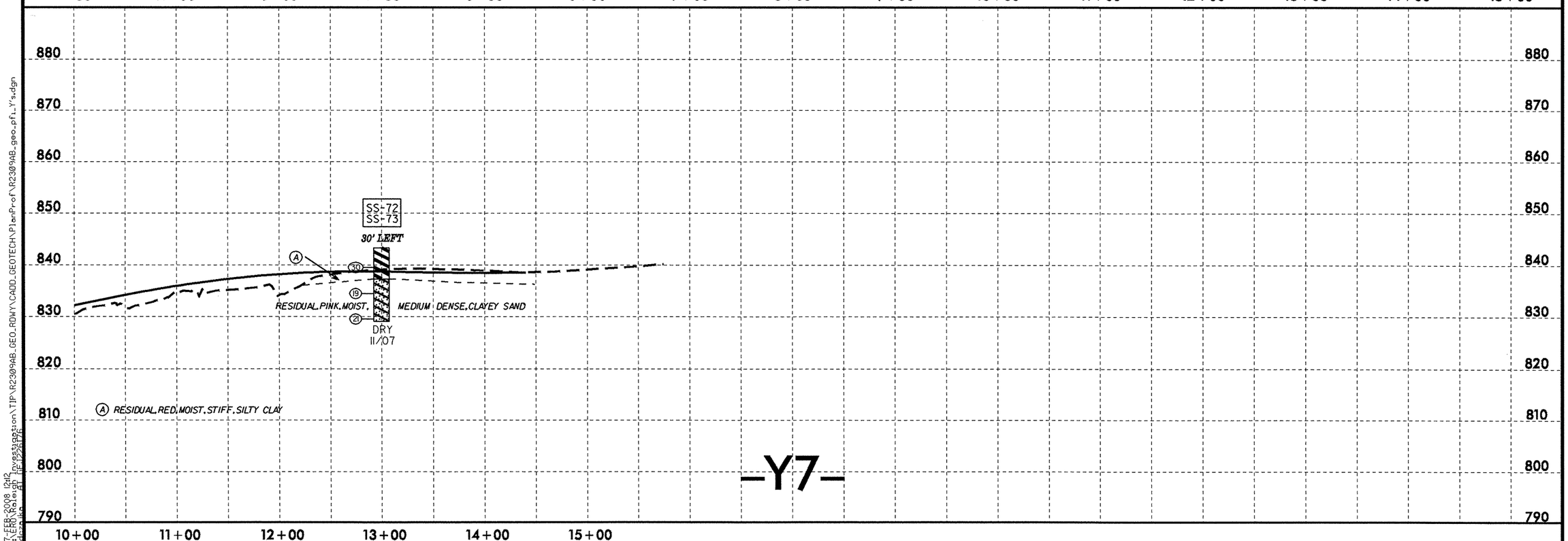
PROJECT REFERENCE NO.	SHEET NO.
R-2309AB	40

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-2	45 RT	2+00	3.3-4.8	A-7-5(20)	69	26	17.1	18.3	19.9	44.7	100	89	69	-	-
SS-3	45 RT	2+00	8.3-9.8	A-2-4(0)	36	2	41.7	29.3	18.9	10.2	100	71	34	-	-
SS-72	30 LT	13+00	2.8-4.3	A-7-5(9)	56	21	33.8	15.6	18.2	32.4	100	74	53	-	-
SS-73	30 LT	13+00	7.8-9.3	A-2-6(1)	40	19	54.7	18.0	15.2	12.1	78	43	23	-	-





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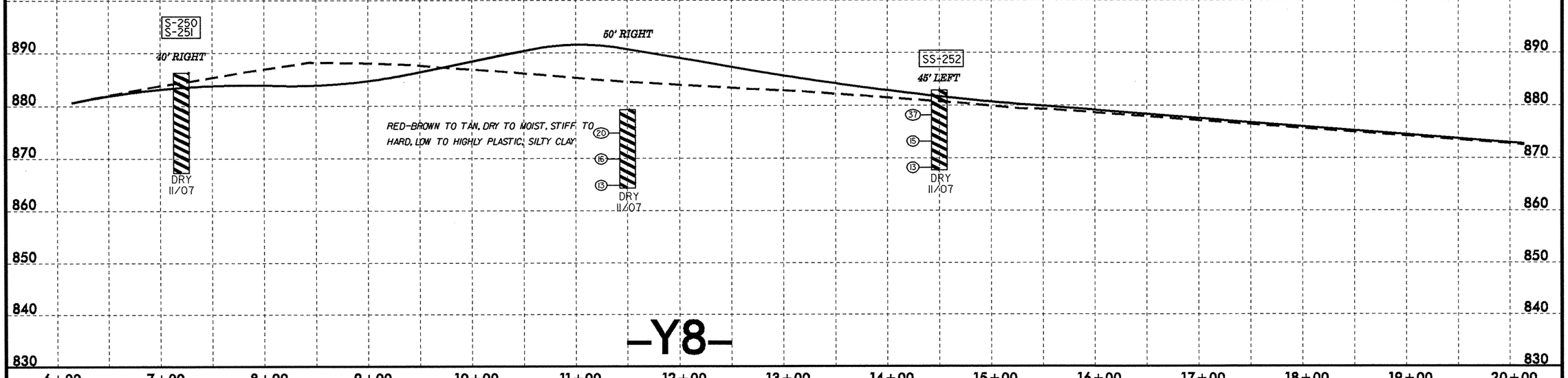
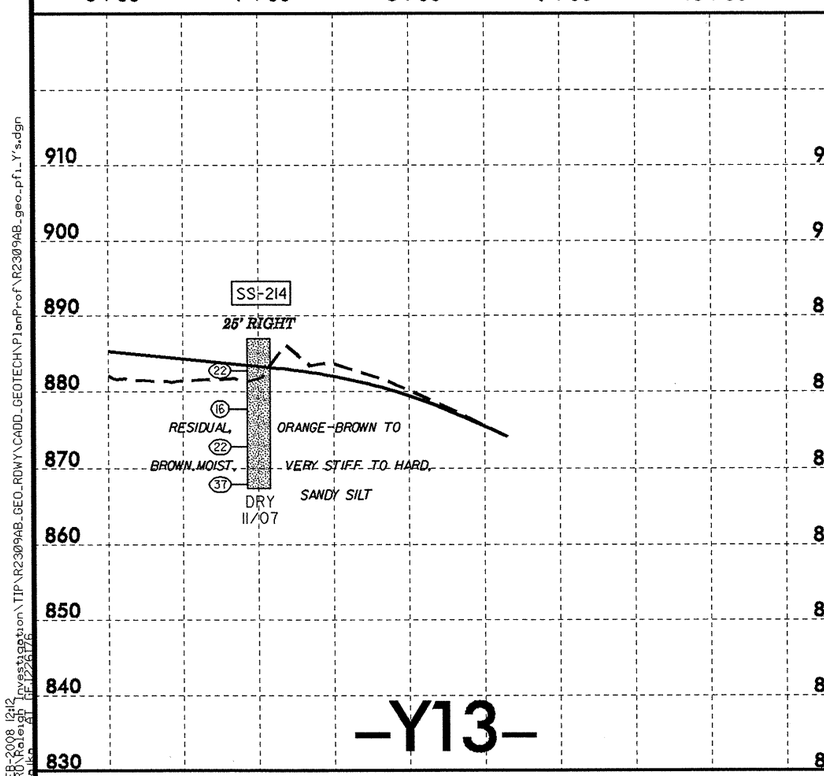
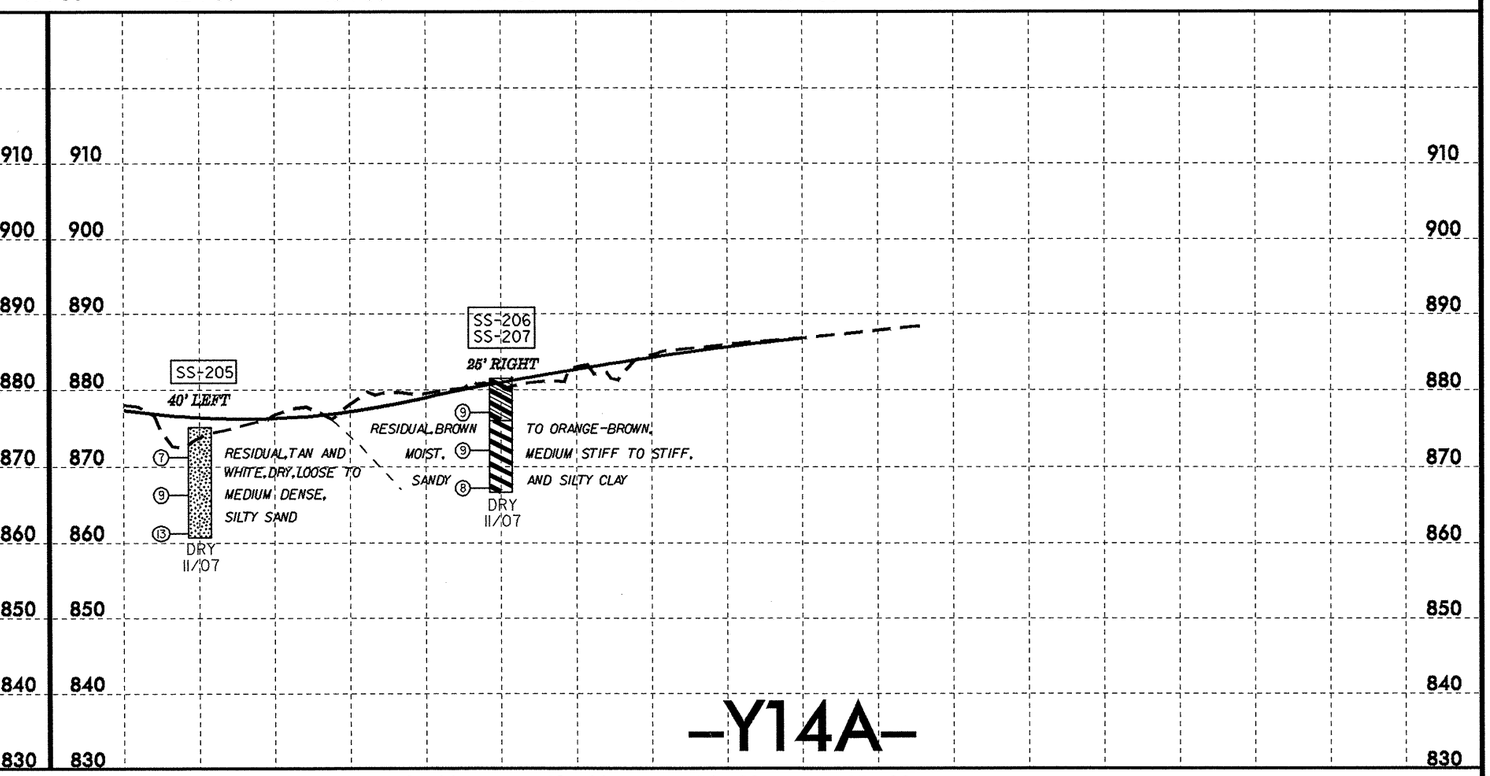
PROJECT REFERENCE NO.	SHEET NO.
R-2309AB	41

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-250	40 RT	7+20	2.0-3.5	A-7-5(29)	70	32	6.6	17.5	11.6	64.3	100	96	78	-	-
S-251	40 RT	7+20	8.0-9.5	A-7-5(9)	52	17	17.7	28.3	19.9	34.1	99	90	58	-	-
SS-252	45 LT	14+50	3.6-5.1	A-7-5(8)	54	13	17.5	24.7	19.7	38.2	100	93	61	-	-
SS-214	25 RT	11+00	3.2-4.7	A-4(0)	40	6	27.1	40.9	17.8	14.2	100	89	38	-	-
SS-205	40 LT	10+50	3.0-4.4	A-2-5(0)	45	NP	31.8	45.7	16.4	6.1	100	83	29	-	-
SS-206	25 RT	12+50	3.4-4.9	A-6(5)	36	14	26.4	24.0	17.2	32.5	100	85	53	-	-
SS-207	25 RT	12+50	8.4-9.9	A-7-5(17)	55	15	2.4	20.3	40.7	36.5	100	99	84	-	-







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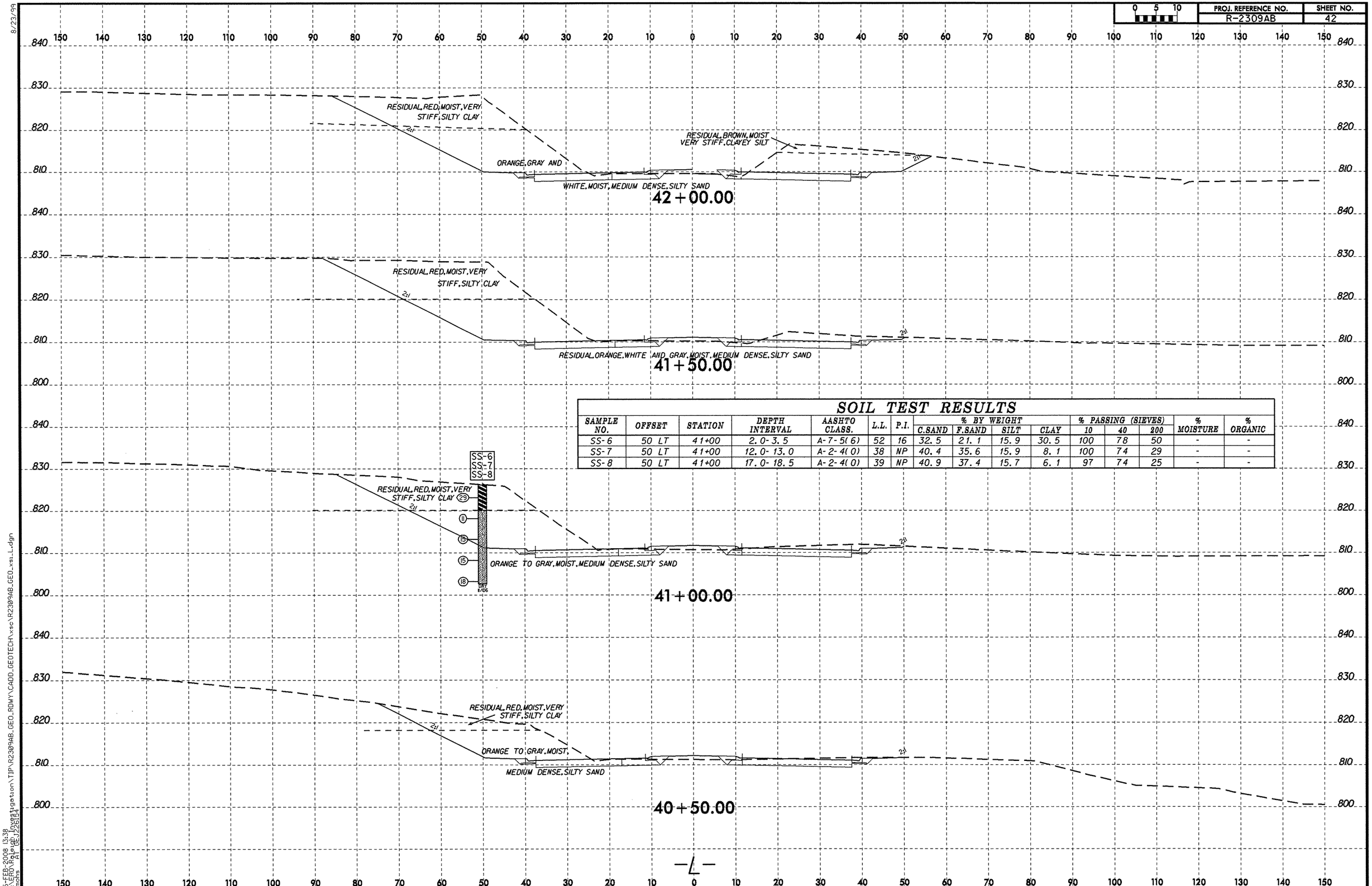
PROJ. REFERENCE NO.	SHEET NO.
R-2309AB	42



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-6	50 LT	41+00	2.0-3.5	A-7-5(6)	52	16	32.5	21.1	15.9	30.5	100	78	50	-	-
SS-7	50 LT	41+00	12.0-13.0	A-2-4(0)	38	NP	40.4	35.6	15.9	8.1	100	74	29	-	-
SS-8	50 LT	41+00	17.0-18.5	A-2-4(0)	39	NP	40.9	37.4	15.7	6.1	97	74	25	-	-

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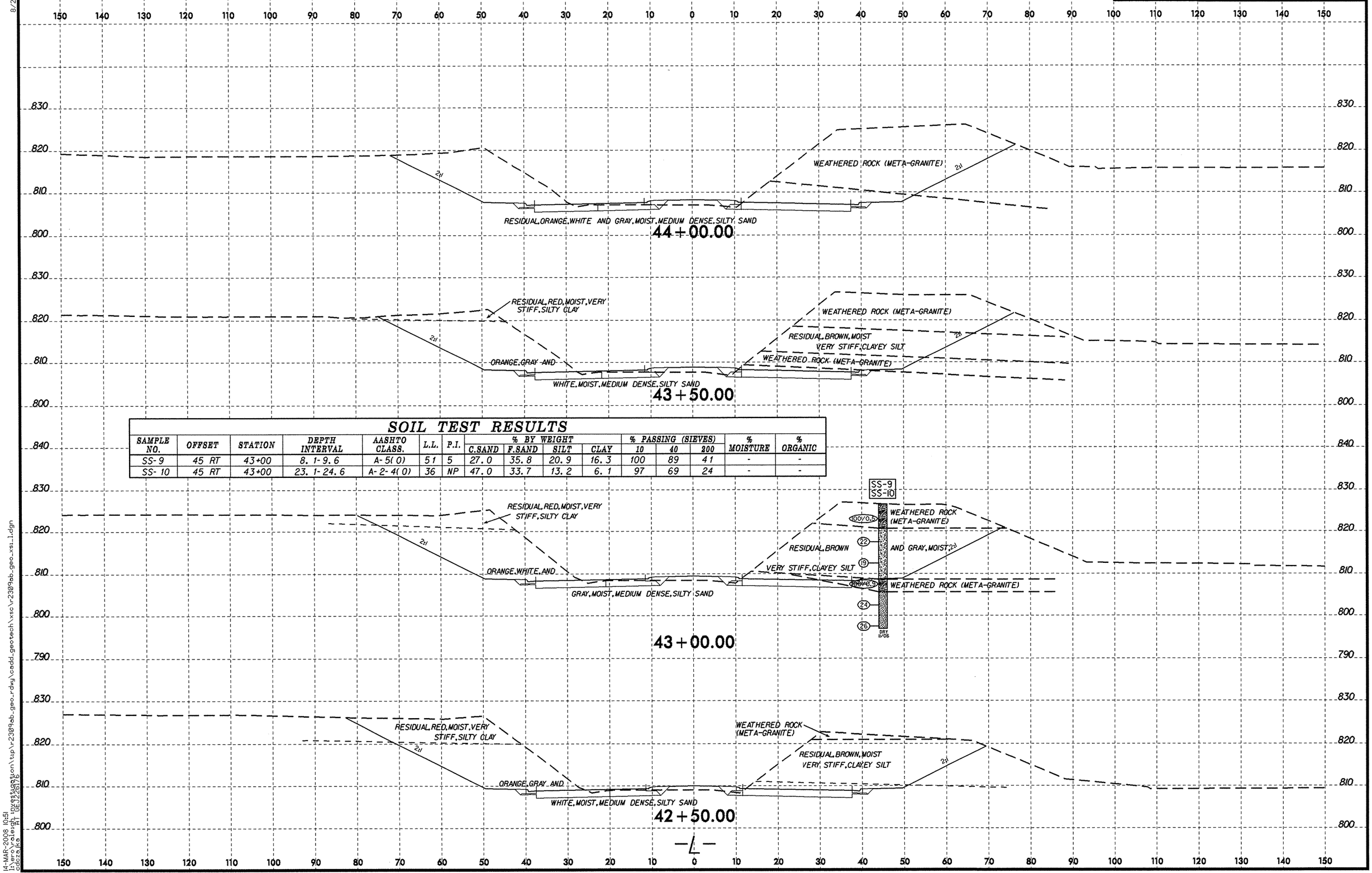
PROJ. REFERENCE NO.	SHEET NO.
R-2309AB	43



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-9	45 RT	43+00	8.1-9.6	A-5(0)	51	5	27.0	35.8	20.9	16.3	100	89	41	-	-
SS-10	45 RT	43+00	23.1-24.6	A-2-4(0)	36	NP	47.0	33.7	13.2	6.1	97	69	24	-	-

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PROJ. REFERENCE NO.	SHEET NO.
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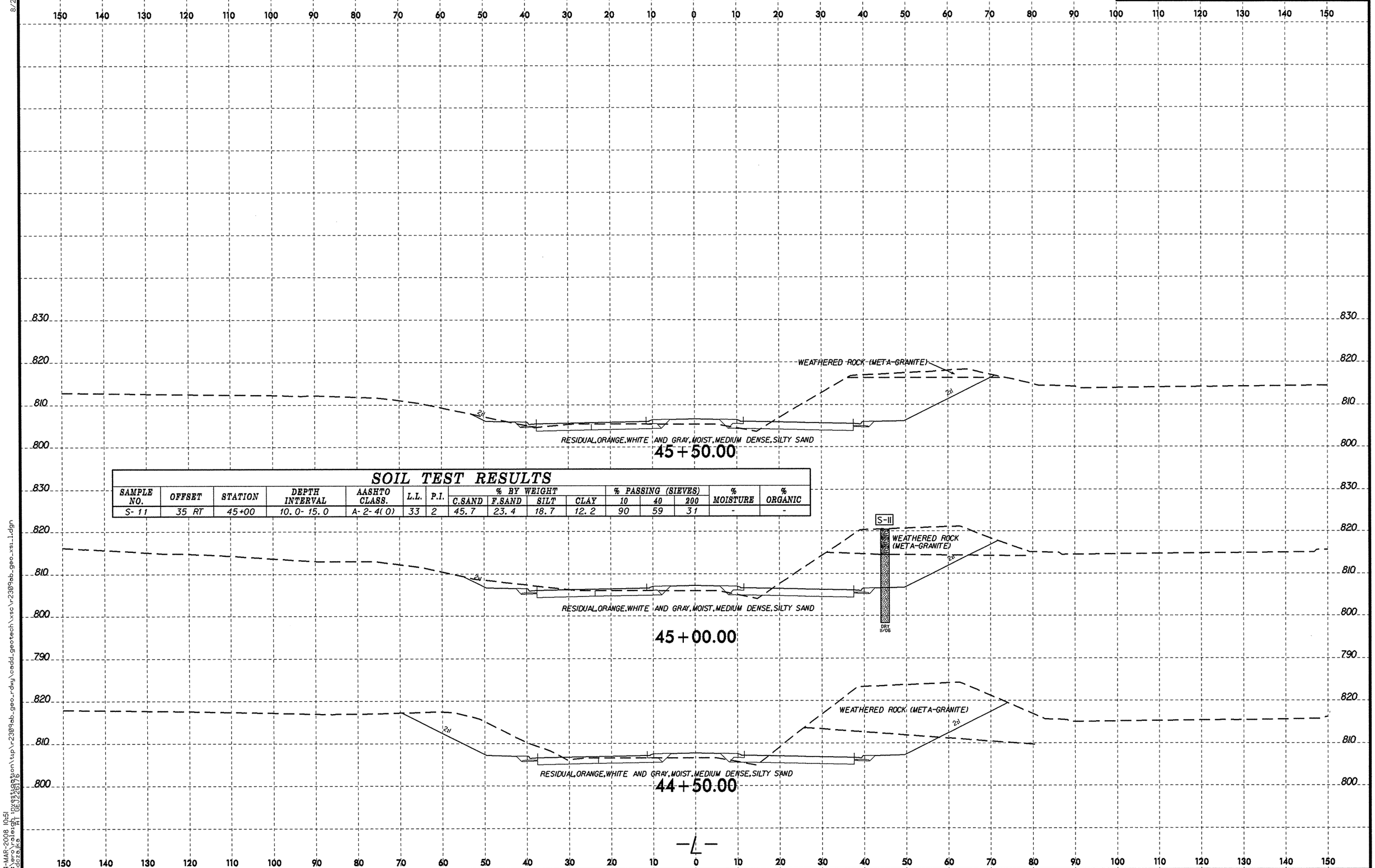

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
S-11	35 RT	45+00	10.0-15.0	A-2-4(0)	33	2	45.7	23.4	18.7	12.2	90	59	31	-	-

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PROJ. REFERENCE NO.	SHEET NO.
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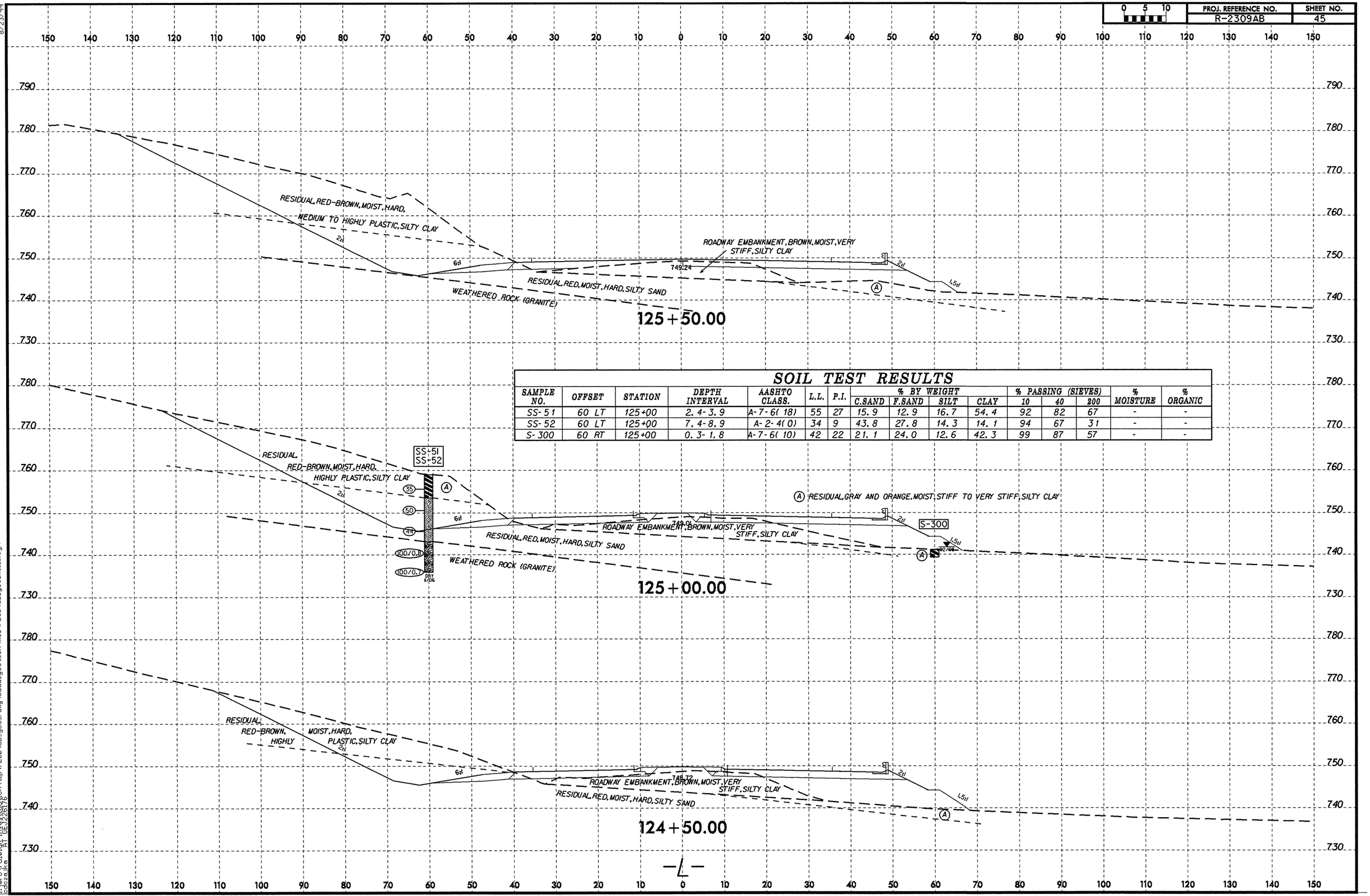

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-51	60 LT	125+00	2.4-3.9	A-7-6(18)	55	27	15.9	12.9	16.7	54.4	92	82	67	-	-
SS-52	60 LT	125+00	7.4-8.9	A-2-4(0)	34	9	43.8	27.8	14.3	14.1	94	67	31	-	-
S-300	60 RT	125+00	0.3-1.8	A-7-6(10)	42	22	21.1	24.0	12.6	42.3	99	87	57	-	-

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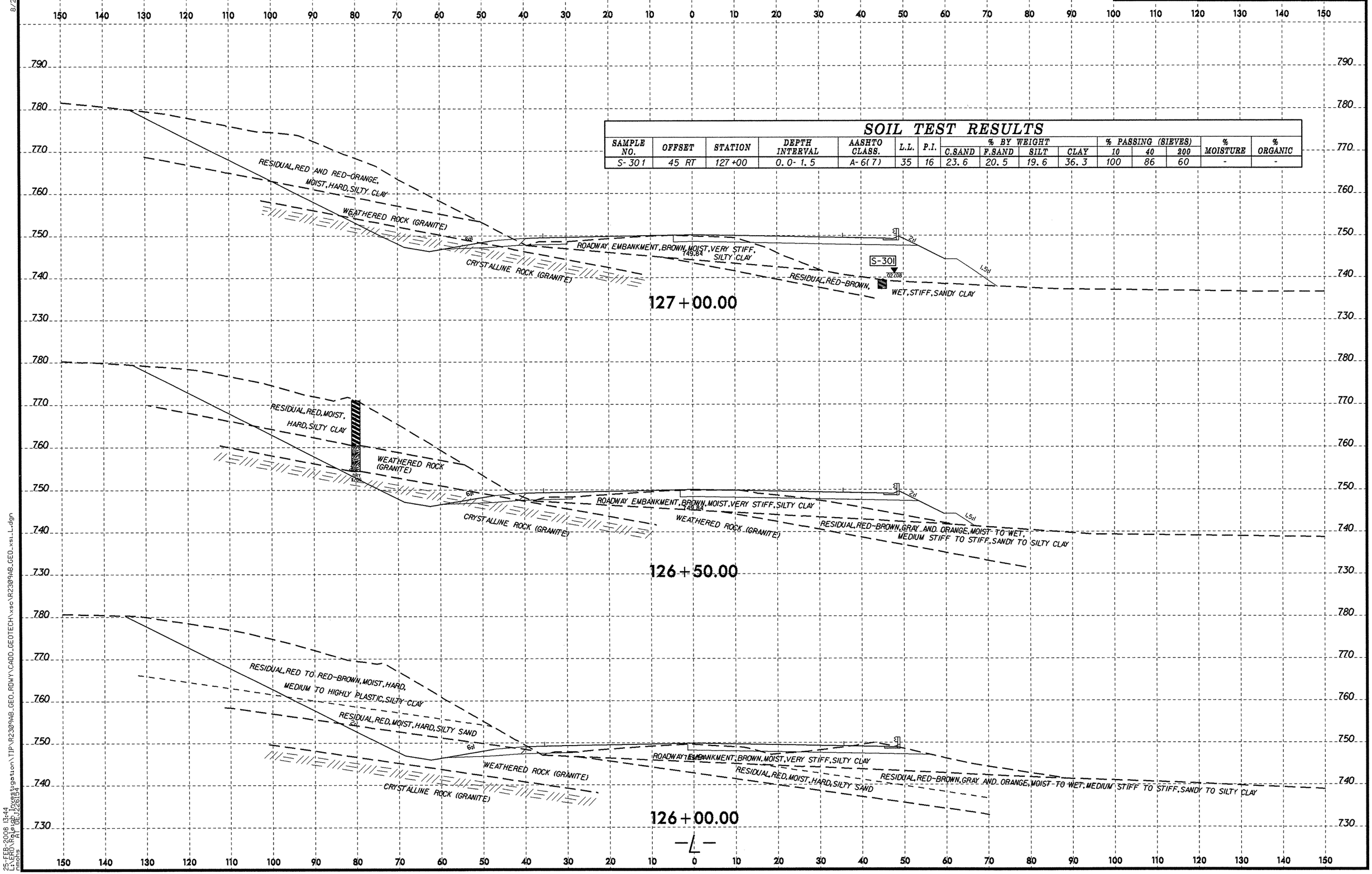
PROJ. REFERENCE NO.	SHEET NO.
R-2309AB	46



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
S-301	45 RT	127+00	0.0-1.5	A-6(7)	35	16	23.6	20.5	19.6	36.3	100	86	60	-	-

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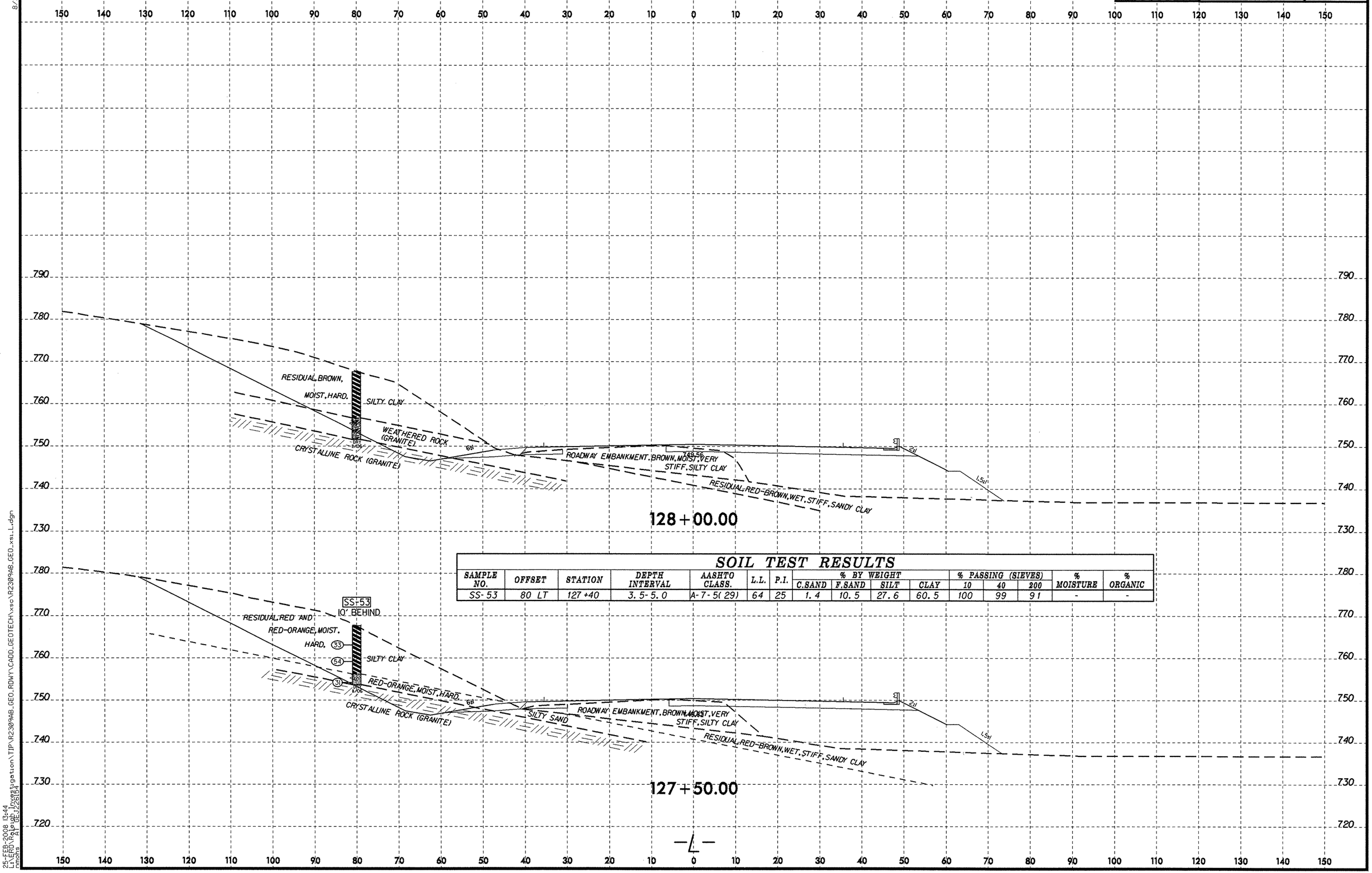
SHEET NO. 47



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-53	80 LT	127+40	3.5-5.0	A-7-5(29)	64	25	1.4	10.5	27.6	60.5	100	99	91	-	-

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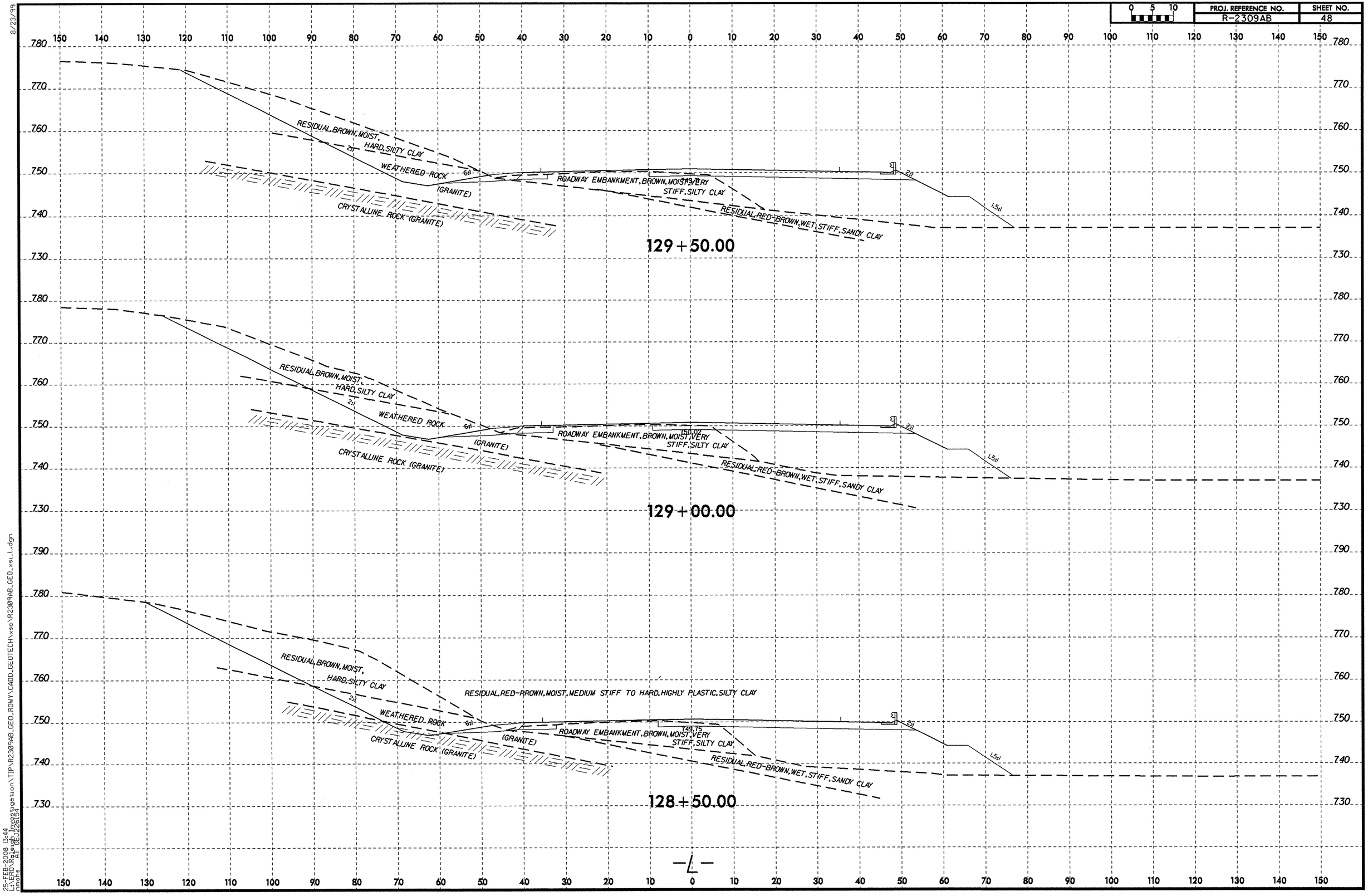

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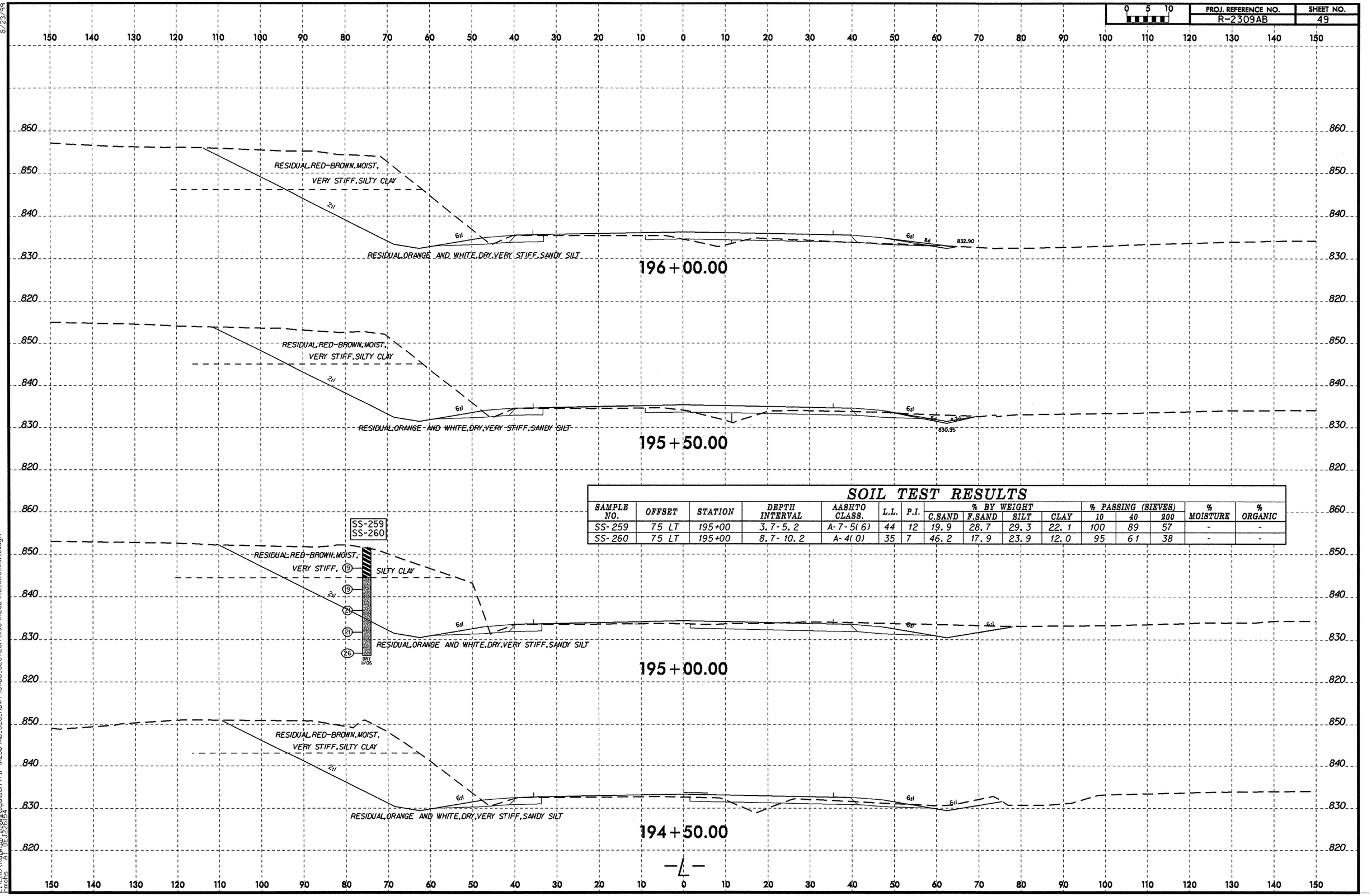
PROJ. REFERENCE NO.	SHEET NO.
R-2309AB	49



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-259	75 LT	195+00	3.7-5.2	A-7-5(6)	44	12	19.9	28.7	29.3	22.1	100	89	57	-	-
SS-260	75 LT	195+00	8.7-10.2	A-4(0)	35	7	46.2	17.9	23.9	12.0	95	61	38	-	-

8/23/99

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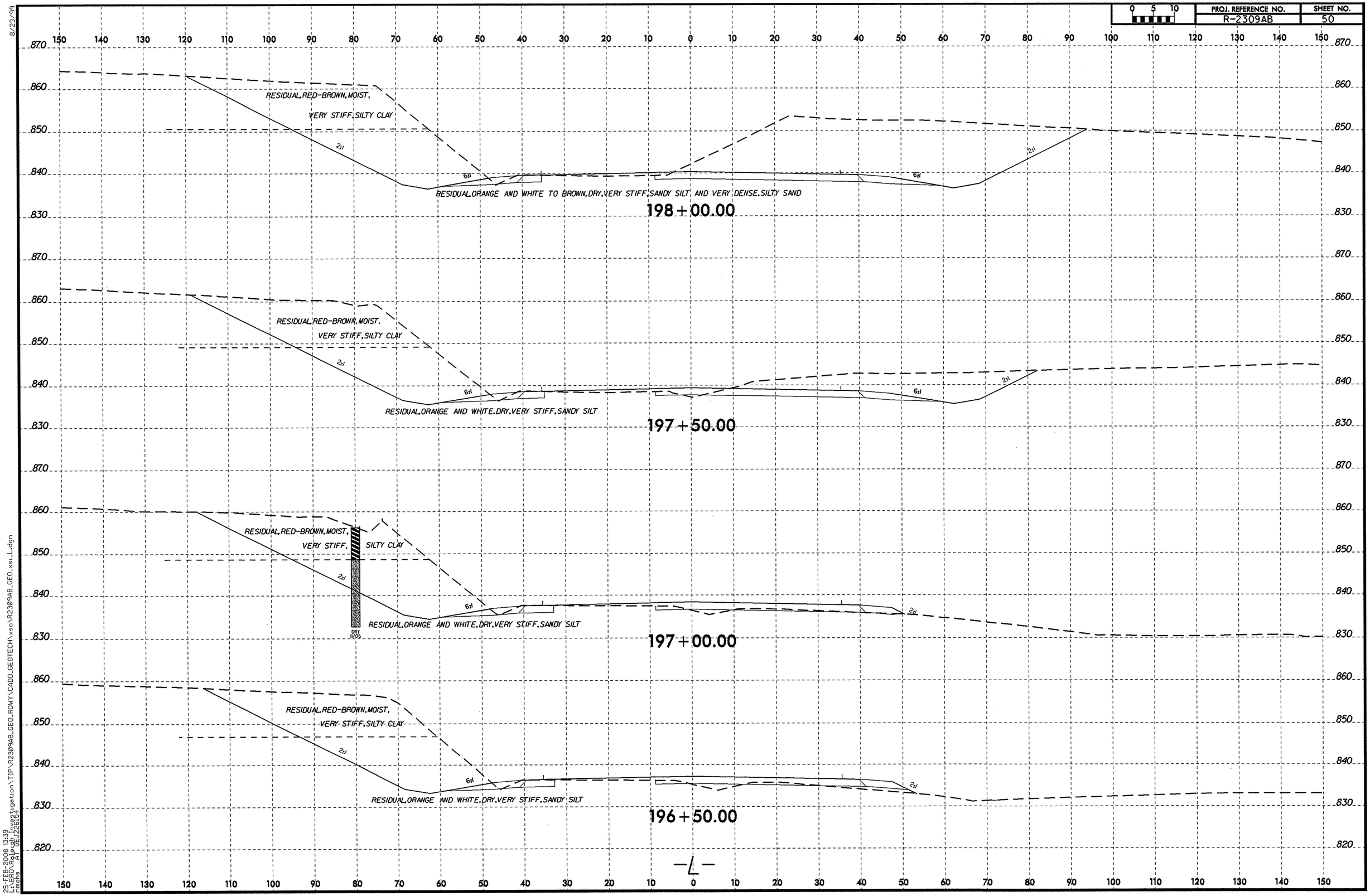

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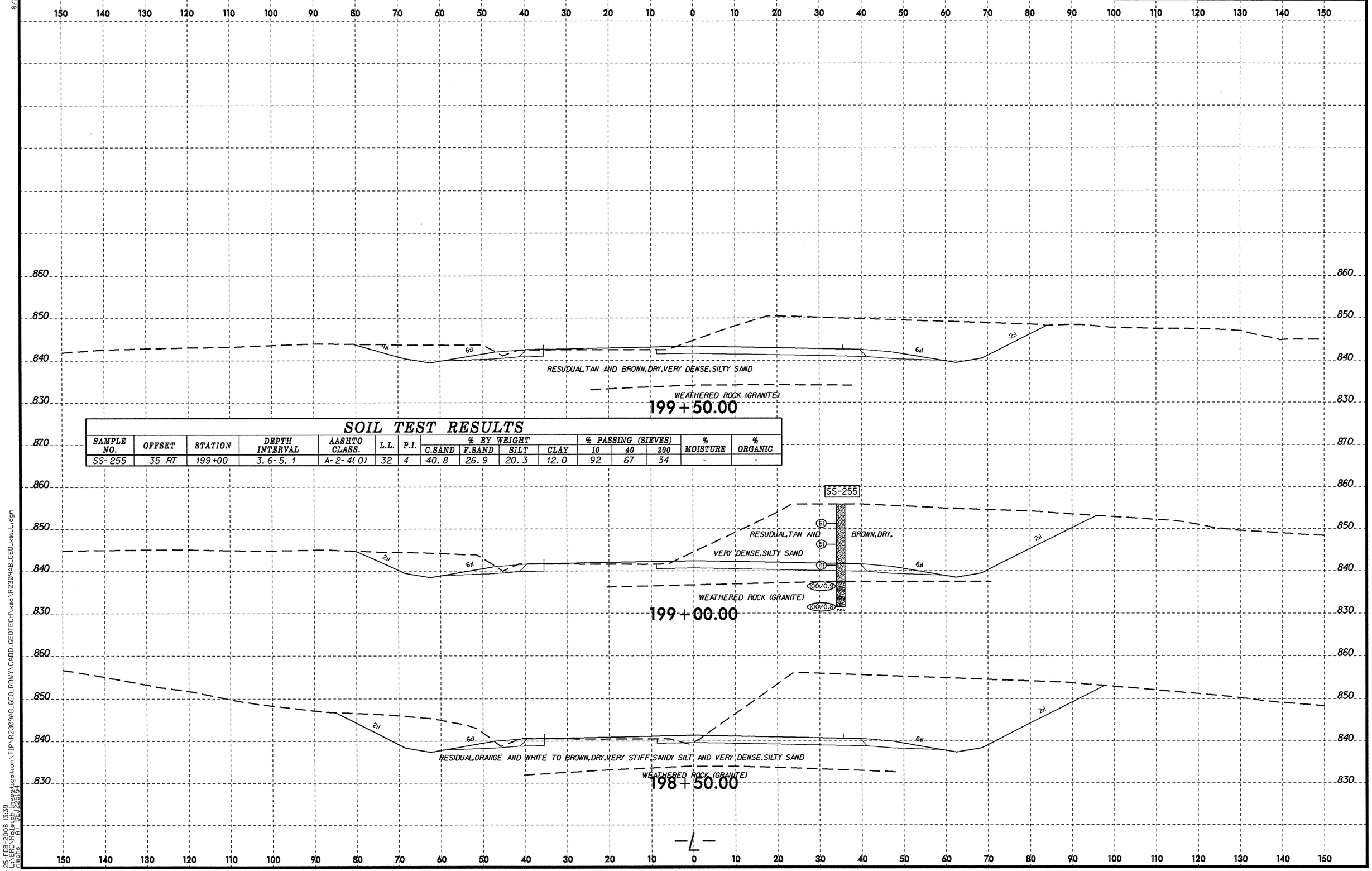
PROJ. REFERENCE NO.	SHEET NO.
R-2309AB	51



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-255	35 RT	199+00	3.6-5.1	A-2-4(0)	32	4	40.8	26.9	20.3	12.0	92	67	34	-	-

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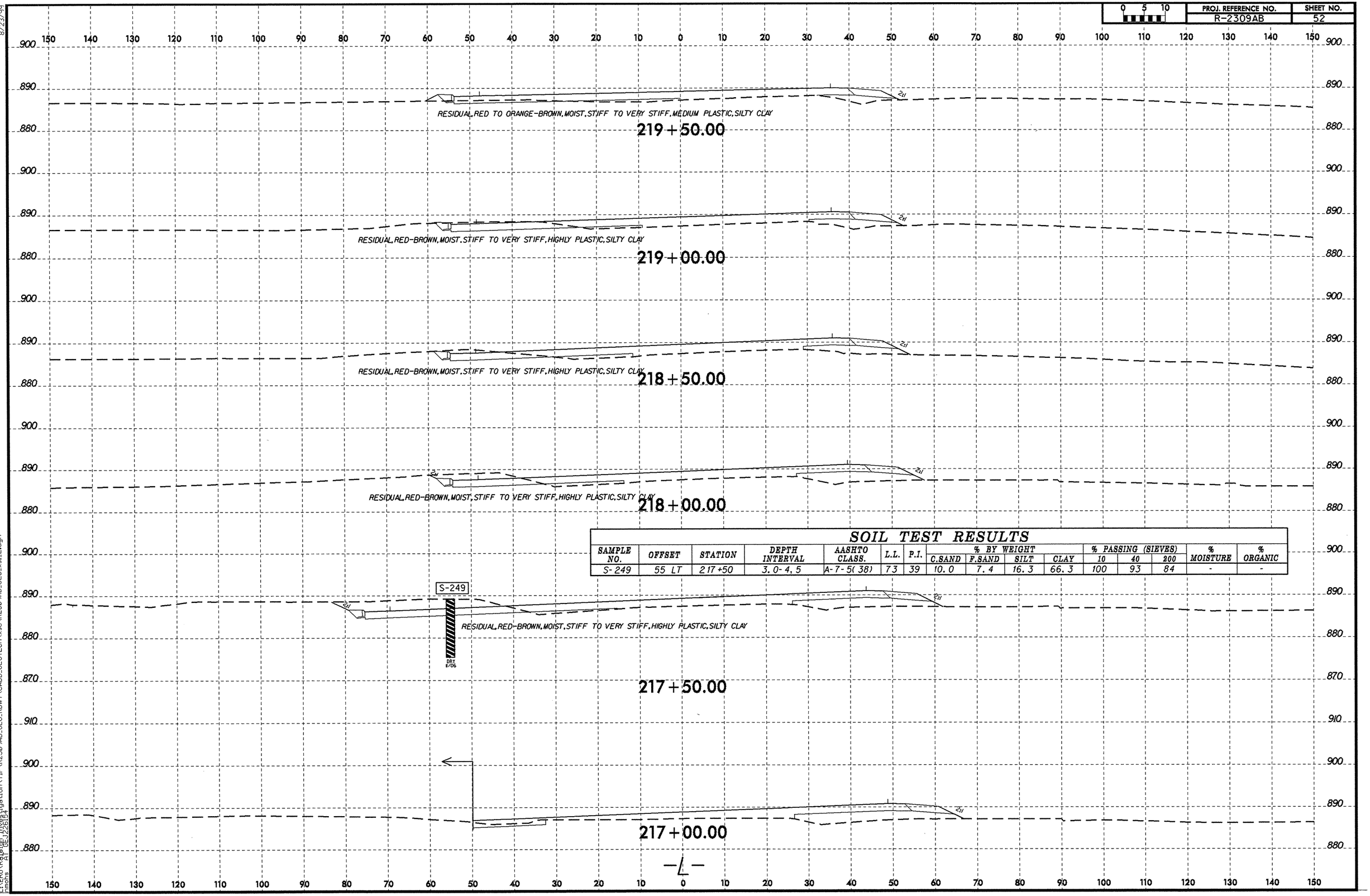

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-249	55 LT	217+50	3.0-4.5	A-7-5(38)	73	39	10.0	7.4	16.3	66.3	100	93	84	-	-

8/23/99

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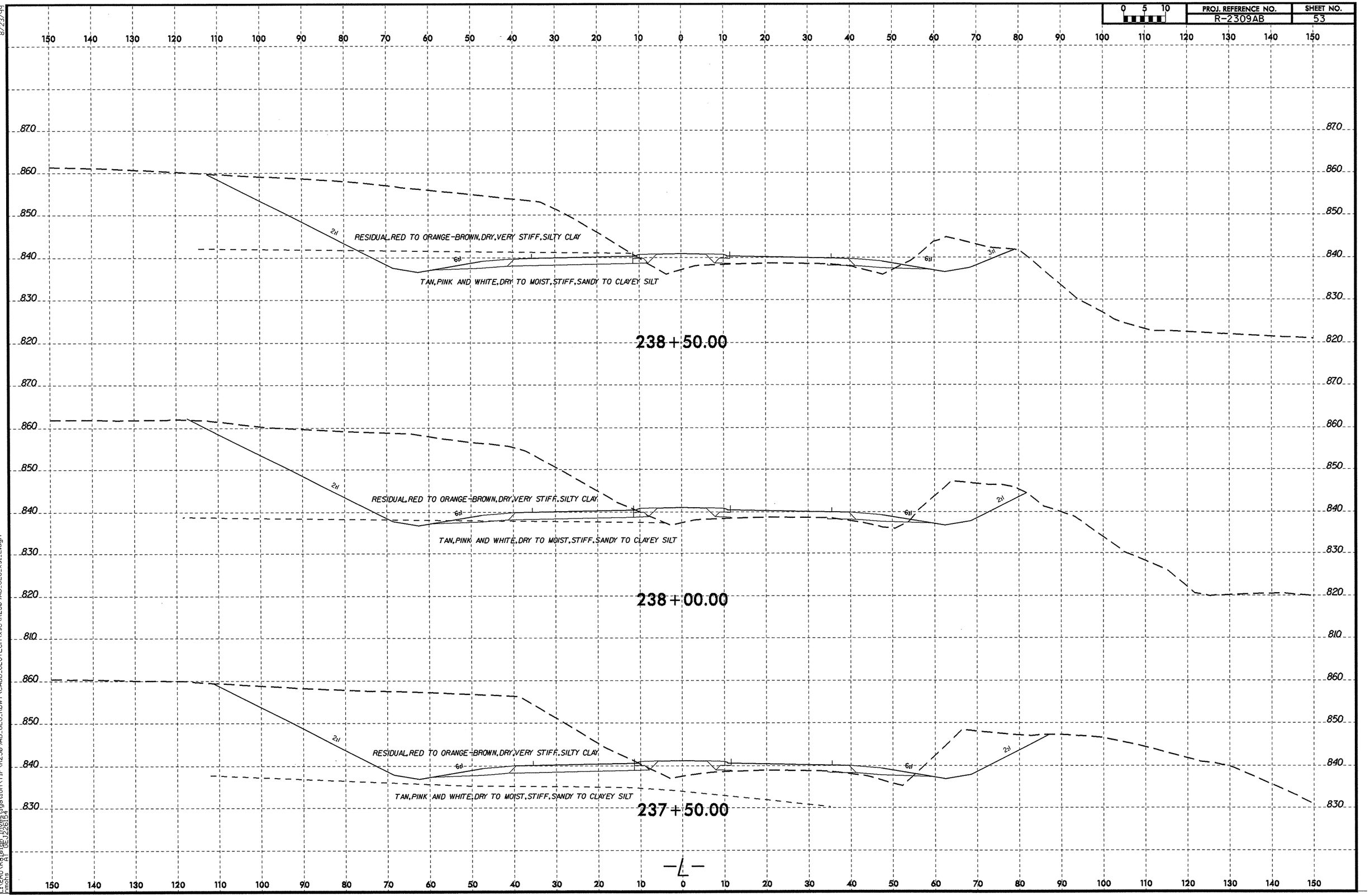

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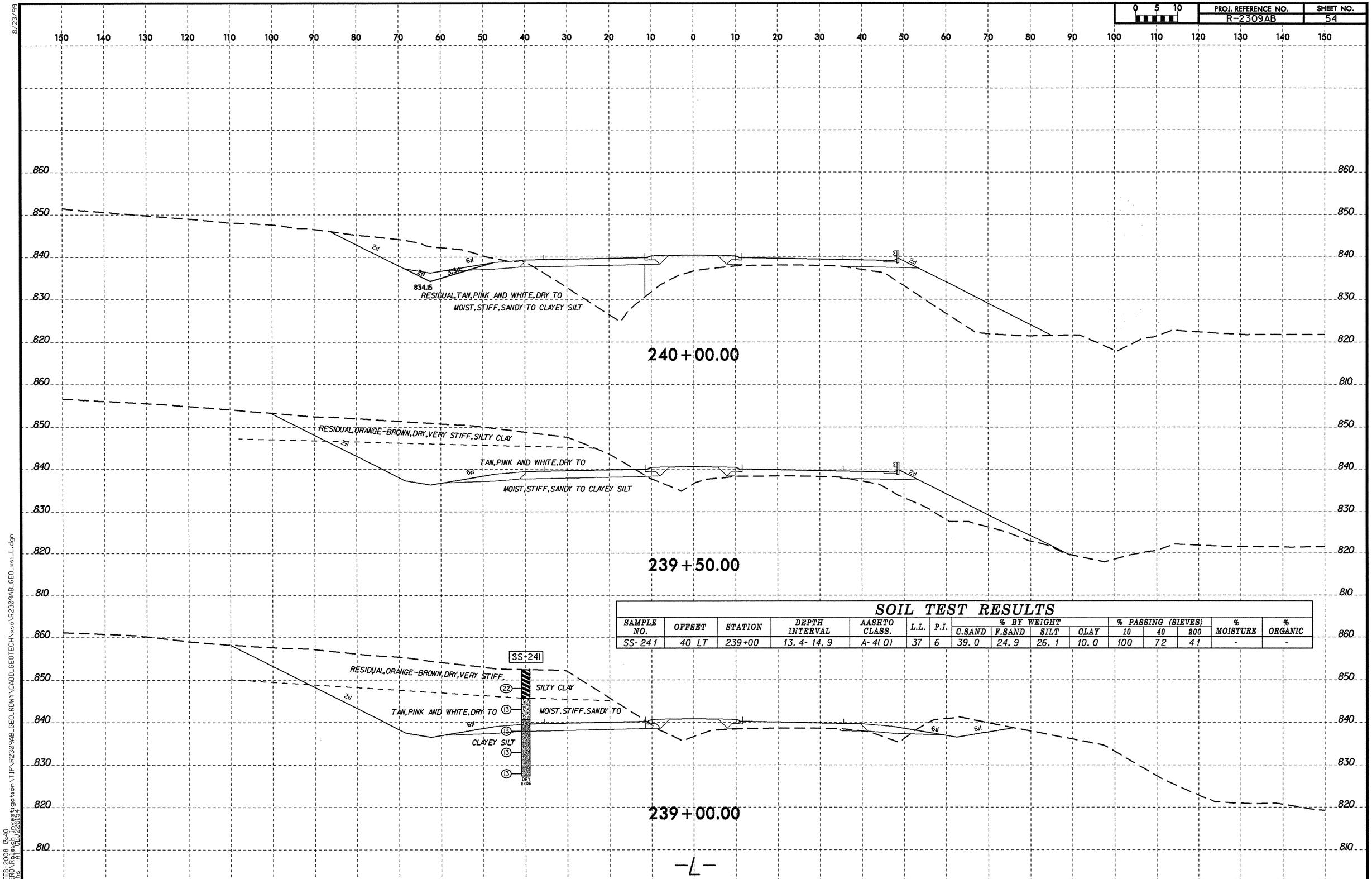
PROJ. REFERENCE NO. R-2309AB | SHEET NO. 54



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-241	40 LT	239+00	13.4-14.9	A-4(0)	37	6	39.0	24.9	26.1	10.0	100	72	41	-	-

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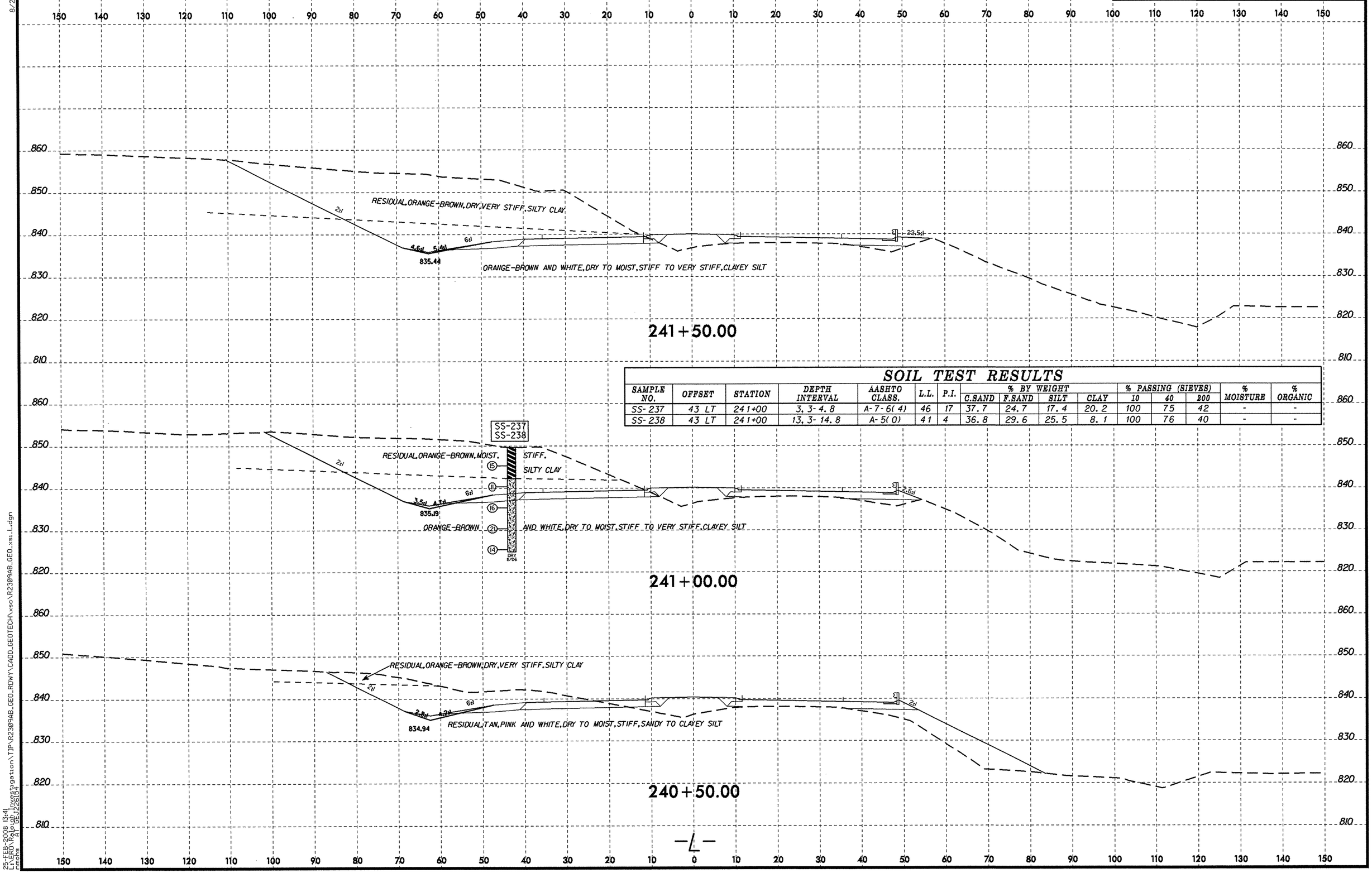
nmohs AT GEJ226154

PROJ. REFERENCE NO.	SHEET NO.
R-2309AB	55



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-237	43 LT	241+00	3.3-4.8	A-7-6(4)	46	17	37.7	24.7	17.4	20.2	100	75	42	-	-
SS-238	43 LT	241+00	13.3-14.8	A-5(0)	41	4	36.8	29.6	25.5	8.1	100	76	40	-	-

8/23/99

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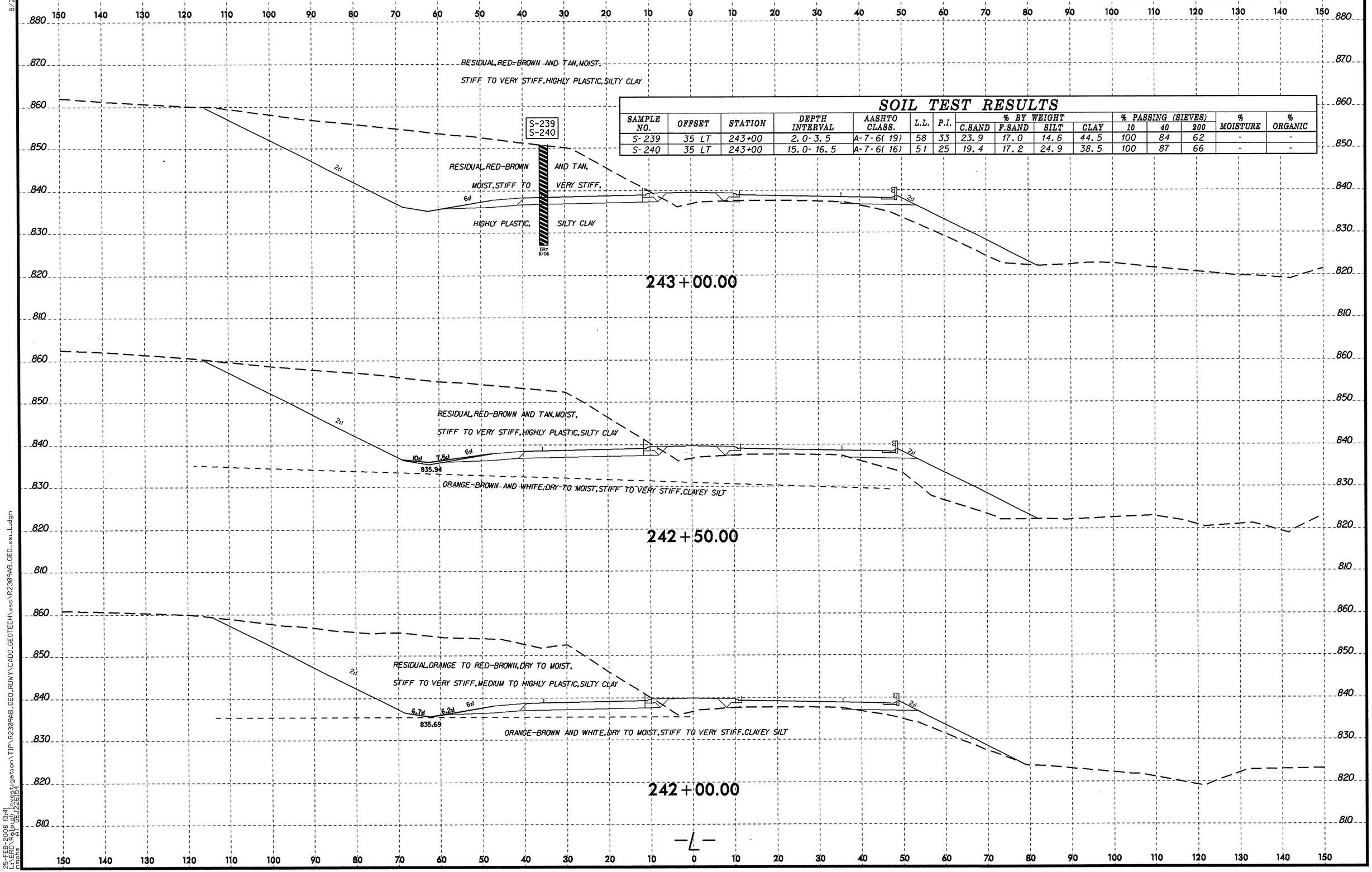
PROJ. REFERENCE NO.	SHEET NO.
R-2309AB	56



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
S-239	35 LT	243+00	2.0-3.5	A-7-6(19)	58	33	23.9	17.0	14.6	44.5	100	84	62	-	-
S-240	35 LT	243+00	15.0-16.5	A-7-6(16)	51	25	19.4	17.2	24.9	38.5	100	87	66	-	-

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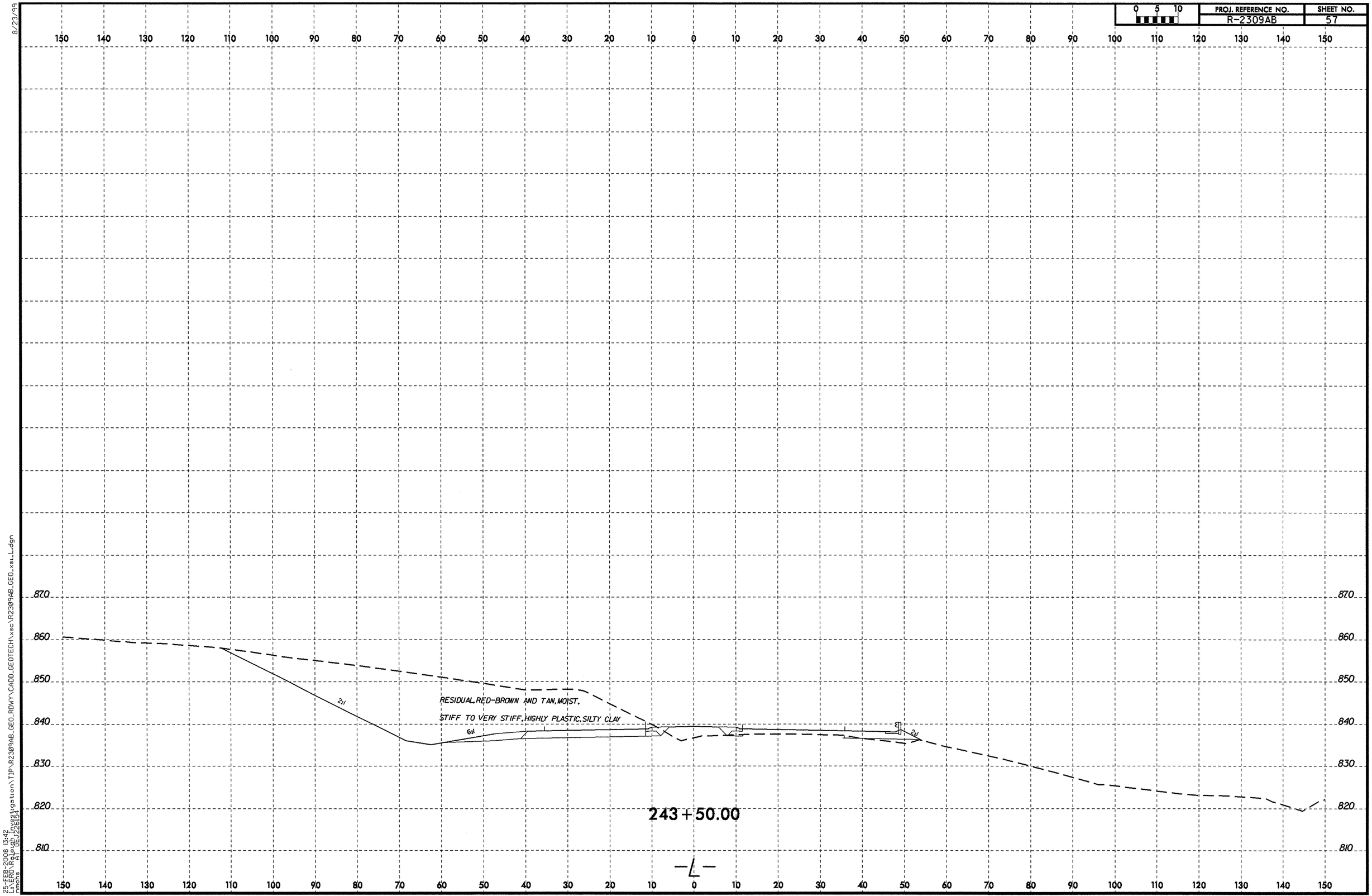
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2309AB	57



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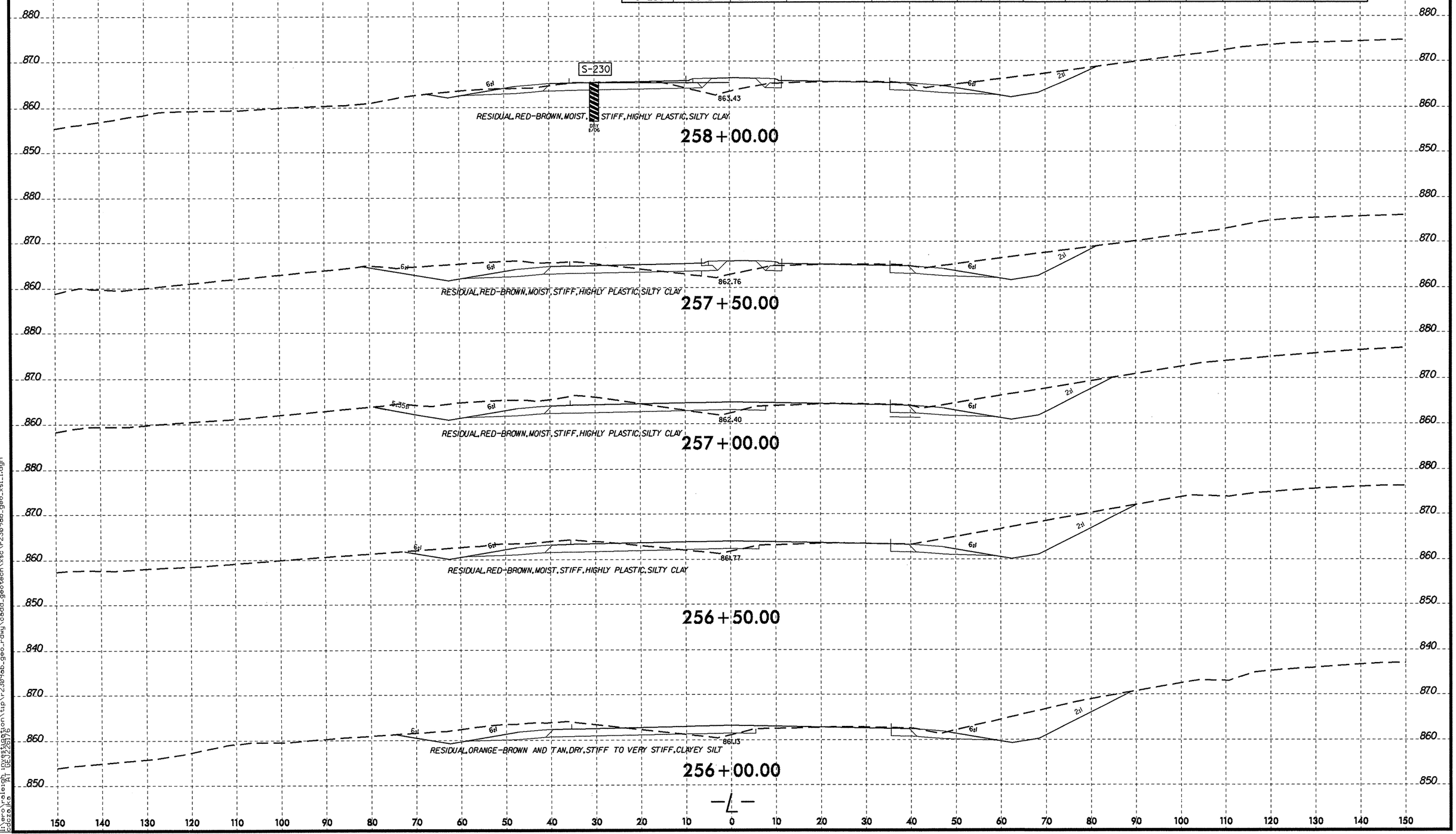
PROJ. REFERENCE NO.	SHEET NO.
R-2309AB	58

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
S-230	30 LT	258+00	1.0-2.5	A-7-5(41)	80	46	13.0	9.3	10.9	66.8	100	92	79	-	-



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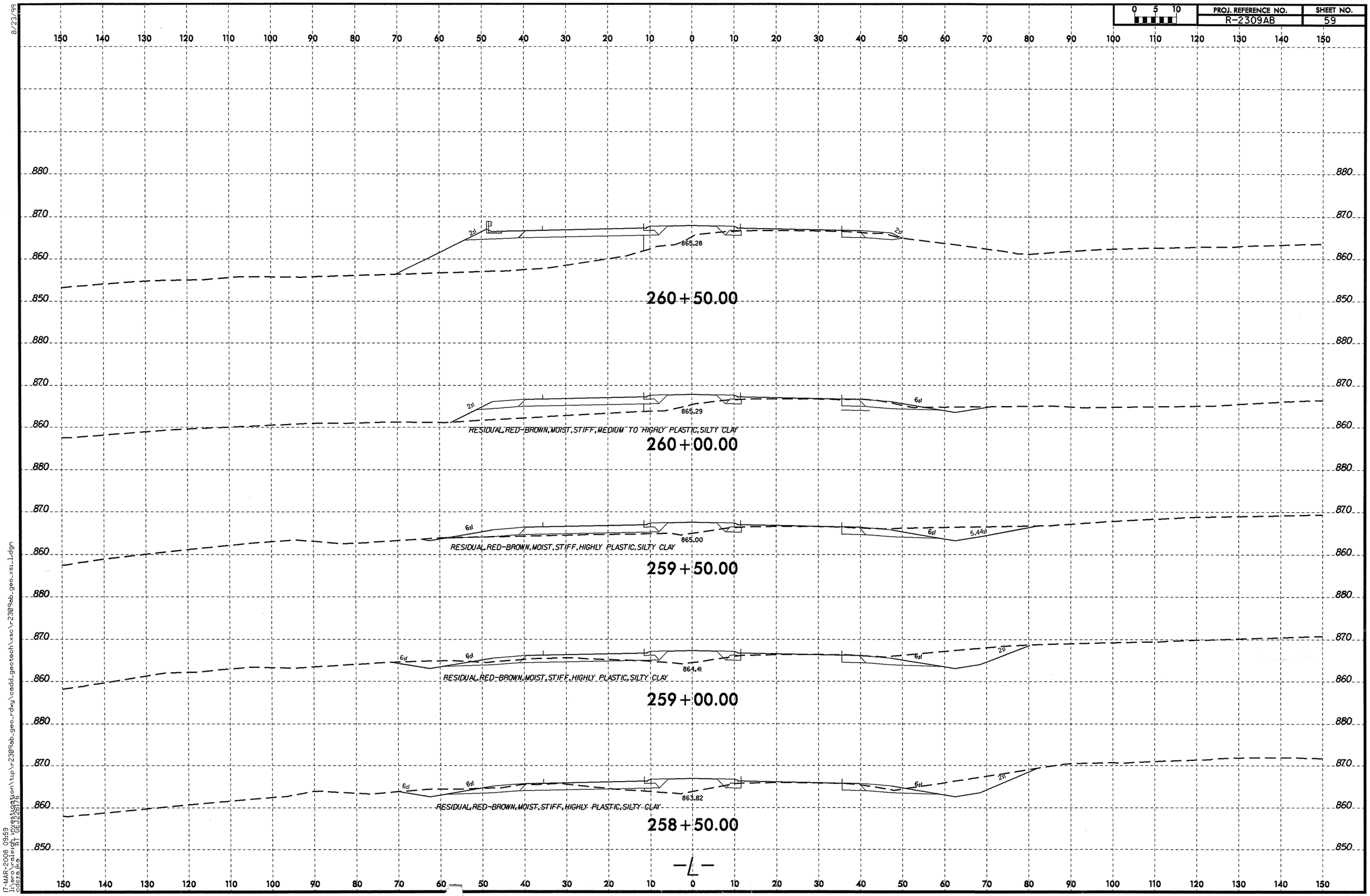

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ID.NO.R-2413C

PROJECT: C200800

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

SUBSURFACE INVESTIGATION

METRIC

ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND /OR MILLIMETERS UNLESS OTHERWISE NOTED

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.
N.C.	R-2413C	1

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34429.1.3 (6.499008T)		P.E.
34429.2.4 (6.499008T)		R/W
34429.3.7 (6.499008T)		CONST

CONTENTS:

LINE	STATION	SHEET NO.: PLAN	PROFILE	X-SECT.
-LRev1-	13+50 - 19+09	3-5	29	
-LRev-	18+20 - 97+10	3-23	30-41	62-68
-SBUS220RP-	8+99 - 19+02	5-6	42-43	69-72
-NBUS220RP-	9+95 - 15+78	5	44	
-Y20-	10+00 - 28+75	7-10, 25, 28	45-47	75-78
-Y21-	10+00 - 18+69	27	48-49	
-Y23-	8+83 - 17+67	4-5	50-51	
-RPA- @US158	10+00 - 15+36	11-12	52	
-RPB- @US158	10+00 - 14+51	11	53	73-74
-RPC- @US158	10+00 - 14+40	11	54	
-RPD- @US158	10+00 - 14+33	11-12	55	
-Y24-	10+00 - 13+42	26	60	
-Y25-	10+00 - 14+18	14	61	
-RPA- @NC65	10+00 - 14+77	17-18	56	
-RPB- @NC65	10+00 - 14+25	16-17	57	79-82
-RPC- @NC65	10+00 - 14+13	16-17	58	
-RPD- @NC65	10+00 - 14+88	17	59	

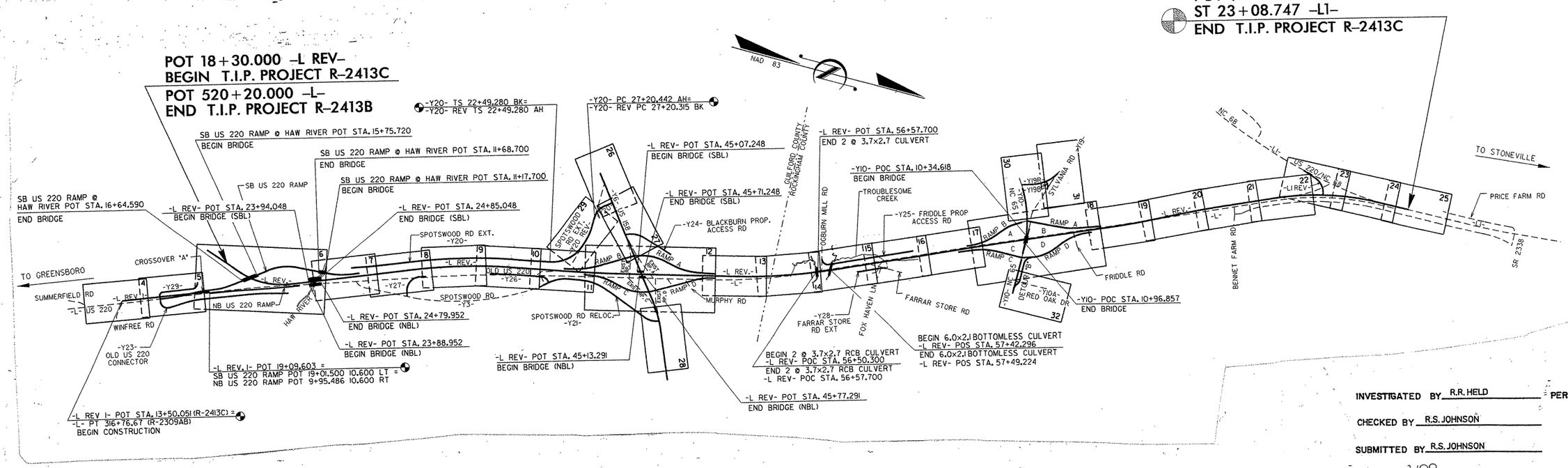
STATE PROJECT 6.499002T ID.No. R-2413C

F.A. PROJECT N/A

COUNTY GUILFORD & ROCKINGHAM

DESCRIPTION NC 68 CONNECTOR - US 220 FROM SOUTH OF HAW RIVER TO THE INTERSECTION OF US 220 AND EXISTING NC 68.

-INVENTORY-



DRAWN BY: J.K. WILKINS & J.R. MCCRAY

INVESTIGATED BY R.R. HELD

CHECKED BY R.S. JOHNSON

SUBMITTED BY R.S. JOHNSON

DATE 1/98

PERSONNEL J.K. W

J.W. BAYLES

H.R. CONLEY

L.B. MADISON

NORTH CAROLINA LICENSED SEAL 604 GEOLOGIST RICHARD S. JOHNSON

SEAL

Signature

STATE PROJECT NO. SHEET

STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
6.499002T (R-2413C)	2	82

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED OR WEATHERED EARTH MATERIALS WHICH CAN BE PENETRATED A CONTINUOUS FLIGHT POWER AUGER, AND WHICH YIELDS LESS THAN 100 BLOWS ACCORDING TO STANDARD PENETRATION (ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM AND BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: ISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION AND OTHER PERTINENT FACTORS, SUCH AS, MINERALOGICAL OSITION, ANGULARITY STRUCTURE, PLASTICITY, ETC. EXAMPLE: *VERY STIFF, GRAY SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND RS, HIGHLY PLASTIC, A-7-6.*

SOIL LEGEND AND AASHTO CLASSIFICATION

ERAL ASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
OUP	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
ASS.	A-1-A	A-1-B		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6			
MBOL														
ASSING 10	50 MX											GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
40	30 MX	50 MX	51 MN											
200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN			
D LIMIT				40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
IC INDEX	6 MX		N.P.	10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
P INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	NO MX			
L TYPES AJOR ERIALS	STONE FRAGS. GRAVEL AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
RATING AS A GRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

P.I. OF A-7-5 ≤ L.L. - 30 : P.I. OF A-7-5 > L.L. - 30

CONSISTENCY OR DENSENESS

IMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE N-VALUE	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (kN/m^2)
GENERALLY GRANULAR MATERIAL	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	<4 4 TO 10 10 TO 30 30 TO 50 >50	N/A
GENERALLY SILT-CLAY MATERIAL	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	<2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 >30	<25 25 TO 50 50 TO 100 100 TO 200 200 TO 400 >400

TEXTURE OR GRAIN SIZE

. STD. SIEVE SIZE	4	10	40	60	200	270
ENING (mm)	4.76	2.0	0.42	0.25	0.075	0.053

BOULDER	COBBLE	GRAVEL	COARSE SAND	MEDIUM SAND	FINE SAND	SILT	CLAY

RAIN mm 305 75 2 0.6 0.425 0.2 0.075 0.002
IZE IN 12 3

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	SATURATED (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUNDWATER TABLE
LL — LIQUID LIMIT		
ASTIC ANGE (PI)	WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL — PLASTIC LIMIT		
OM — OPTIMUM MOISTURE SL — SHRINKAGE LIMIT	MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
	DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX	DRY STRENGTH
ONPLASTIC	0-5	VERY LOW
	6-15	SLIGHT

GRADATION

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.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS ARE DESIGNATED BY THE TERMS; ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 30
MODERATELY COMPRESSIBLE	LIQUID LIMIT 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

ROCK DESCRIPTION

IN THE BROADEST MEANING, HARD ROCK IS CONSIDERED THAT INDURATED EARTH MATERIAL WHICH CANNOT BE SAMPLED BY CONVENTIONAL SOIL SAMPLING TOOLS OR TECHNIQUES. THE BOUNDARY BETWEEN SOIL AND ROCK IS ARBITRARY. TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF 'WEATHERED ROCK'. FOR THE PURPOSE OF THIS INVESTIGATION, THESE MATERIALS ARE DIVIDED AS FOLLOWS: NOTE: THIS IS NOT APPLICABLE TO NON-INDURATED COASTAL PLAIN SAND AND CLAY DEPOSITS.

WEATHERED ROCK (WR)		SOFT WEATHERED ROCK(SWR)	MATERIAL THAT CAN BE PENETRATED WITH SOME DIFFICULTY USING POWER AUGERS OR YIELDS SPT VALUES > 100 BLOWS BUT < SPT REFUSAL.
		HARD WEATHERED ROCK(HWR)	MATERIAL THAT CAN BE PENETRATED WITH GREAT DIFFICULTYY USING POWER AUGERS OR YIELDS SPT REFUSAL.*
HARD ROCK (HR)	CORED ROCK	INFERRED ROCK LINE**	MATERIAL, EXCEPT BOULDERS, THAT CANNOT BE PENETRATED BY POWER AUGERS, EXCEPT IN THIN LEDGES, AND REQUIRES ROCK CORING TOOLS FOR OBTAINING A SAMPLE.

*SPT REFUSAL ≤ 25 mm OF PENETRATION PER 50 BLOWS.

**AN INFERRED ROCK LINE INDICATES THE ESTIMATED BOUNDARY OF HARD ROCK AS JUDGED BY THE ENGINEERING GEOLOGIST. A FULL DESCRIPTION OF ROCK IS GIVEN INCLUDING:

CORE RECOVERY (REC.)-TOTAL LENGTH OF ROCK RECOVERED IN THE CORE BARREL DIVIDED

ROCK QUALITY DESIGNATION (RQD)-TOTAL LENGTH OF SOUND ROCK SEGMENTS RECOVERED THAT ARE LONGER THAN OR EQUAL TO 100 mm DIVIDED BY THE TOTAL LENGTH OF THE CORE RUN EXPRESSED AS A PERCENTAGE.

GROUNDWATER

WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING.

STATIC WATER LEVEL AFTER 24 HOURS.

PERCHED WATER, SATURATED ZONE OR WATER BEARING STRATA

SPRING OR SEEPAGE

MISCELLANEOUS SYMBOLS AND ABBREVIATIONS

ROADWAY EMBANKMENT WITH SOIL DESCRIPTION

SOIL SYMBOL

ARTIFICIAL FILL OTHER THAN ROADWAY EMBANKMENTS MAY BE SHOWN WITH SOIL SYMBOL

INFERRED SOIL BOUNDARIES

ALLUVIAL/RESIDUAL BOUNDARIES

25° DIP DIRECTION AND DIP OF STRUCTURE

APPARENT DIP (NORMAL TO_____)

SPT DPT VST TEST BORING

AUGER BORING

CORE BORING

MW MONITORING WELL

PIEZOMETER INSTALLATION

SLOPE INDICATOR INSTALLATION

SPT N-COUNT

SAMPLE DESIGNATIONS

S- BULK SAMPLE

SS- SPLIT SPOON SAMPLE

ST- SHELBY TUBE SAMPLE

SOUNDING ROD

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] MOBILE B
- [ ] BK-51
- [x] CME-45
- [ ] CME-550

AUGER TOOLS:
- [x] 6" (152 mm) CONTINUOUS FLIGHT
- [x] 8" (203 mm) HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [x] TUNG - CARBIDE INSERTS

CORE BORING TOOLS:
- [ ] -AX
- [ ] -BX
- [ ] -NX

HAND TOOLS:
- [ ] POST HOLE DIGGER

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS WHICH HAVE BEEN TRANSPORTED BY WATER.

APPARENT DIP - THE DIP OF ROCK STRATA NOT PERPENDICULAR TO STRIKE.

AQUIFER - A WATER BEARING FORMATION OR STRATA.

AUGER REFUSAL (A.R.) - POINT AT WHICH POWER AUGERS WILL NOT PENETRATE.

BEDDED - SOIL OR ROCK LYING IN A POSITION ESSENTIALLY PARALLEL.

BEDROCK - ROCK OF RELATIVELY GREAT THICKNESS AND EXTENT IN ITS ORIGINAL LOCATION.

CALCAREOUS (CALC.) - SOILS WHICH CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.

COHESIVE SOIL - A SOIL THAT WHEN UNCONFINED HAS CONSIDERABLE DRY STRENGTH AND SIGNIFICANT COHESION WHEN SUBMERGED.

COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.

CORE RECOVERY (% REC.) - TOTAL LENGTH OF ALL ROCK DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

COQUINA - A ROCK TYPE COMPOSED ESSENTIALLY OF MARINE SHELLS CEMENTED BY CALCIUM CARBONATE.

DIKE - IGNEOUS ROCK INTRUSION WHICH IS NARROW COMPARED WITH ITS OTHER DIMENSIONS.

DIP - THE ANGLE BETWEEN A BEDDING PLANE, JOINT PLANE OR FAULT PLANE AND THE HORIZONTAL, MEASURED PERPENDICULAR TO THE STRIKE.

DUMPS - UNCOVERED DEPOSITS OF WASTE MATERIAL SUCH AS WOOD, MASONRY DEBRIS OR GARBAGE.

FAULT - A BREAK IN THE CONTINUITY OF A BODY OF ROCK, ATTENDED BY A MOVEMENT ON EITHER OR BOTH SIDES OF THE BREAK.

FINES - PORTIONS OF A SOIL FINER THAN NO. 200 U.S. STANDARD SIEVE.

FISSILITY OR FISSILE - A PROPERTY OF SPLITTING EASILY ALONG CLOSELY SPACED PARALLEL PLANES.

FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.

FLOODPLAIN - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.

FORMATION - A MAPPABLE UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.

FRACTURE - A CRACK LARGE ENOUGH TO BE VISIBLE TO THE UNAIDED EYE.

FRIABLE - EASY TO BREAK OR CRUMBLE.

GRANULAR MATERIAL - SOIL THAT WHEN UNCONFINED HAS LITTLE OR NO DRY STRENGTH AND HAS LITTLE OR NO COHESION WHEN SUBMERGED.

GROUNDWATER (G.W.) - WATER THAT IS FREE TO MOVE THROUGH SOIL MASS UNDER THE INFLUENCE OF GRAVITY.

GROUNDWATER LEVEL - LEVEL OF WATER WITH RESPECT TO EXISTING GROUND SURFACE.

HARDPAN - A GENERAL TERM USED TO DESCRIBE A HARD CEMENTED SOIL LAYER WHICH DOES NOT SOFTEN WHEN WET.

INDURATED - EARTH MATERIAL HARDENED BY HEAT, PRESSURE OR CEMENTATION.

INTERBEDDED - ALTERNATING LENSES OR LAYERS OF SOIL AND/OR ROCK MATERIALS.

JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.

LAMINATED - VERY THIN ALTERNATING LAYERS LESS THAN 25 mm.

LAYER - SUBJECT MATERIAL GREATER THAN 25 mm IN THICKNESS.

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.

MARL - A NON-INDURATED, CALCAREOUS DEPOSIT OF CLAYS, SILTS AND SANDS, OFTEN CONTAINING SHELLS.

MICACEOUS SOIL (MIC.) - A SOIL OR ROCK TYPE CONTAINING AN APPRECIABLE AMOUNT OF MICA.

MUCK (MK.) - A HIGHLY ORGANIC SOIL OF VERY SOFT CONSISTENCY, GENERALLY FOUND ON TIDAL FLATS, LAKE OR STREAM FLOODPLAINS.

PEAT (PT) - A FIBROUS MASS OF ORGANIC MATTER IN VARIOUS STAGES OF DECOMPOSITION.

PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.

RESIDUAL SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK - SEE LEGEND

ROCK QUALITY DESIGNATION (R.Q.D.) - A MEASURE OF ROCK QUALITY DESCRIBED BY: TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 100 mm DIVIDED BY THE TOTAL LENGTH OF CORE RUN EXPRESSED AS A PERCENTAGE.

SANITARY LANDFILLS - COMPACTED AND/OR COVERED LAYERS OF SOIL AND WASTE PRODUCTS.

SAPROLITE (SAP.) - RESIDUAL SOIL WHICH RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.

SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLAIN.

SILL - AN IGNEOUS SHEET OF INTRUSIVE ROCK WHOSE THICKNESS IS SLIGHT COMPARED TO ITS LATERAL EXTENT.

SOME - PRESENCE OF 5% TO 30% OF SUBJECT MATERIAL.

STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N) OF A 140 POUND (63.5 kg) HAMMER FALLING 0.76 m REQUIRED TO PRODUCE A PENETRATION OF 300 mm INTO SOIL WITH A 51mm OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL-

ABBREVIATIONS

BLDR. - BOULDER	P.L. - PLASTIC LIMIT
CL. - CLAY	P.I. - PLASTICITY INDEX
COB. - COBBLE	n - POROSITY
CSE. - COARSE	SD. - SAND
EST. - ESTIMATED	SAT. - SATURATED
F. - FINE	SL. - SILT, SILTY
FOSS. - FOSSILIFEROUS	SLI. - SLIGHTLY
FRAC. - FRACTURED	G_s - SPECIFIC GRAVITY
GR. - GRAVEL	qu - UNCONFINED COMPRESSIVE STRENGTH
L.L. - LIQUID LIMIT	γ - UNIT WEIGHT (WET UNIT WEIGHT)
MED. - MEDIUM	γ_d - DRY UNIT WEIGHT
W - MOISTURE CONTENT	$\gamma_{SAT.}$ - SATURATED UNIT WEIGHT
MOT. - MOTTLED	e - VOID RATIO
OM - OPTIMUM MOISTURE	V. - VERY
ORG. - ORGANIC	

CAUTION NOTICE :

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WAS MADI FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES SOME DATA OBTAINED MAY BE OMITTED FROM THIS RELEASE.

ADDITIONAL INFORMATION MAY BE AVAILABLE, INCLUDING, BUT NOT LIMITED TO THE FOLLOWING:

FIELD BORING LOGS
ROCK CORES
SOIL & ROCK TEST DATA
SUBSURFACE REPORT

THIS INFORMATION MAY BE VIEWED BY APPOINTMENT BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL UNIT @ (919) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPO 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 (IN-PLACE) TEST DATA CAN 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 SO MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLU 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 BIDDIN AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DE INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIE OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE OR OPTIONS OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OI 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 ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IT IS 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.

NOTES:

DATUM DESCRIPTION

The Localized Coordinates used on this project are based on the State Plane Coordinates of traverse station "U2413-1" established by NCGS.

The NAD 83 State Plane Coordinates of "U2413-1" are:

Northing: 273,885.6884 (m) Easting: 527,983.5894 (m)

The Combined Grid Factor used on this project (ground to grid) is: 0.9999891

The bearing and ground distance from -L- POT Station 10+00.000 to U2413-1 is:

N 15-25-20 W 34.013 m

The bearing and ground distance from -L1- POT Station 34+00.000 to U2413-1 is:

S 17-25-54 E 9,545.585 m

All distances shown are in horizontal ground meters.

METRIC	PROJECT REFERENCE NO.	SHEET NO.
5 0 10	R-2413C	3
CONST. REV.	HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
R/W REV.		

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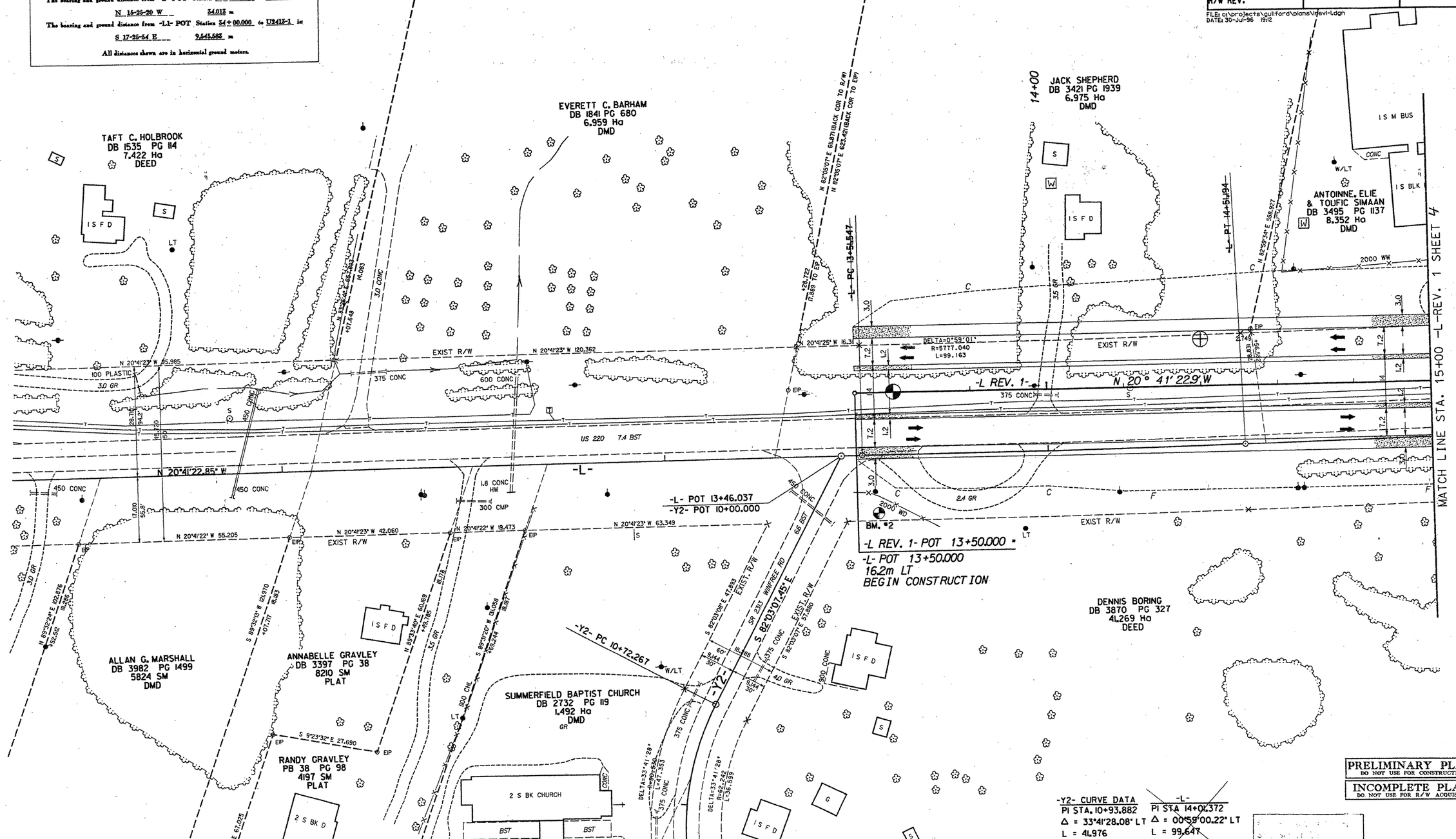
DATE: 30-Jul-96 19:12



-Y2- CURVE DATA	-L-
PI STA. 10+93.882	PI STA 14+04.372
Δ = 33°41'28.08" LT	Δ = 00°59'00.22" LT
L = 41.976	L = 99.647

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

EARTHWORK BALANCE SHEET

Project: R-2413C BY: HWB 8/4/2011 CHECKED BY: DJM 9/21/2011 County: GUILFORD

STATION	UNCLASSIFIED EXCAVATION				UNDERCUT EXCAV.	EMBANKMENT			TOTAL EMB. + 20%	BORROW	WASTE			
	TOTAL	SUITABLE EARTH	ROCK	UNSUITABLE EARTH		TOTAL	EARTH	ROCK			SUITABLE	ROCK	UNSUITABLE	TOTAL
SUMMARY #1														
-LREV- 18+30.000 TO -LREV- 23+94.048 (BRIDGE)	145,167	145,167				87,092	87,092		104,511		40,656			40,656
-LREV1- 13+50.051 TO -LREV1-19+09.603	19,986	19,986				4,221	4,221		5,065		14,921			14,921
NB US 220 9+95.486 TO NB US 220 14+06.956	23,549	23,549				3,982	3,982		4,778		18,771			18,771
SB US 220 11+68.700 (BRIDGE) TO SB US 220 15+75.720 (BRIDGE)	6,482	5,582		900		14,959	14,959		17,950	12,368			900	900
SB US 220 16+64.590 (BRIDGE) TO SB US 220 19+01.500	30,722	29,722	1,000			96	0	96	96	0	29,722	904		30,626
-Y23- 9+20.000 TO -Y23- 17+67.176	11,387	11,387				27,476	27,476		32,971	21,584				0
-Y29- 10+37.000 TO -Y29- 12+94.200	2,027	2,027				1,710	1,710		2,052	25				0
														0
SUBTOTAL: SUMMARY #1	239,320	237,420	1,000	900		139,535	139,439	96	167,423	33,977	104,070	904	900	105,874
SUMMARY #2														
-L- 24+85.048 (BRIDGE) TO -L- 35+00.000	138,780	118,580	20,200			135,210	115,010	20,200	158,212	19,432	0			0
SB US 220 10+46.500 TO SB US 220 11+18.700 (BRIDGE)	0	0				12,227	12,227		14,672	14,672	0			0
-Y20- 9+76.906 TO -Y20- 18+76.604	39,542	39,542				24,124	24,124		28,949		10,593			10,593
Y27- 10+00.000 TO -Y27- 12+03.590	2,476	2,476				6,503	6,503		7,803	5,327	0			0
														0
SUBTOTAL: SUMMARY #2	180,798	160,598	20,200			178,064	157,864	20,200	209,636	39,430	10,593	0		10,593
SUMMARY #3														
-LREV- 35+00.000 TO -LREV- 45+07.248 (BRIDGE)	14,920	14,920				221,038	221,038		265,246	250,326				0
-RPB1- 11+35.431 TO -RPB1- 14+23.747	12,403	10,353	1,600	450		23,989	22,389	1,600	28,466	16,513	0		450	450
-RPC1- 11+26.797 TO -RPC1- 14+15.037	3,984	3,984				19,101	19,101		22,921	18,937				0
-Y20- 18+76.604 TO -Y20- 28+72.000	83,832	83,132		700	1,495	47,925	47,925		57,510		25,622		2,195	27,817
-Y26- 10+00.000 TO -Y26- 13+72.815	1,086	1,086				4,814	4,814		5,777	4,691				0
-Y21- 10+00.000 TO -Y21- 18+46.925	22,924	22,924				16,266	16,266		19,519		3,405			3,405
-Y6- 10+00.000 TO -Y6- 17+50.000	10,650	10,650				1,104	1,104		1,325		9,325			9,325
														0
SUBTOTAL: SUMMARY #3	149,798	147,048	1,600	1,150	1,495	334,237	332,637	1,600	400,764	290,468	38,352	0	2,645	40,997
SUMMARY #4														
-LREV- 45+71.248 (BRIDGE) TO -LREV- 55+00.000	63,557	60,057	3,500			41,039	37,539	3,500	48,547		15,010			15,010
-RPA1- 11+59.287 TO -RPA1- 15+10.644	4,727	4,727				10,082	10,082		12,099	7,372				0
-RPD1- 11+06.505 TO -RPD1- 13+99.105	8,814	8,814				329	329		395		8,419			8,419
-Y24- 10+16.662 TO -Y24- 13+42.607	4,106	4,106				1,026	1,026		1,231		2,875			2,875
														0
SUBTOTAL: SUMMARY #4	81,204	77,704	3,500			52,477	48,977	3,500	62,272	7,372	26,304	0		26,304

EARTHWORK BALANCE SHEET

Project: R-2413C

County: GUILFORD

STATION	UNCLASSIFIED EXCAVATION				UNDERCUT EXCAV.	EMBANKMENT			TOTAL EMB. + 20%	BORROW	WASTE			
	TOTAL	SUITABLE EARTH	ROCK	UNSUITABLE EARTH		TOTAL	EARTH	ROCK			SUITABLE	ROCK	UNSUITABLE	TOTAL
SUMMARY #5														
-LREV- 55+00.000 TO -LREV- 65+00.000	24,883	24,883				34,365	34,365		41,238	16,355			0	0
-Y25- 9+74.953 TO -Y25-16+01.710	3,566	3,566				3,114	3,114		3,736	170			0	0
-Y28- 9+61.500 TO -Y28- 11+93.100	2,756	2,756				198	198		238		2,518		0	2,518
														0
SUBTOTAL: SUMMARY #5	31,205	31,205				37,677	37,677		45,212	16,525	2,518		0	2,518
SUMMARY #6														
-LREV- 65+00.000 TO -LREV- 70+00.000	21,402	21,402				9,730	9,730		11,676	0	9,726		0	9,726
-RPB2- 11+06.917 TO -RPB2- 14+02.468	2,237	1,787		450	3,105	791	791		949	0	838		3,555	4,393
-RPC2- 11+64.309 TO -RPC2- 13+81.413	752	752				8,332	8,332		9,999	9,247	0		0	0
Y10- 6+64.672 TO -Y10- 10+34.513 (BRIDGE)	1,115	1,115				15,701	15,701		18,841	17,726	0		0	0
-Y19R- 10+20.318 TO -Y19R- 12+51.867	1,742	1,742				368	368		442		1,300		0	1,300
-Y19B- 10+05.000 TO -Y19B- 10+56.406	49	49				59	59		70	21			0	0
Y10- 10+96.963 (BRIDGE) TO -Y10- 13+90.000	3,268	3,268				18,838	18,838		22,606	19,338			0	0
Y10DRV 10+12.250 TO Y10DRV 10+70.000	8	8				441	441		529	521				0
														0
SUBTOTAL: SUMMARY #6	30,574	30,124		450	3,105	54,261	54,261		65,112	46,853	11,864		3,555	15,419
SUMMARY #7														
-LREV- 70+00.000 TO -LREV- 80+00.000	153,596	153,596				11,183	11,183		13,419		140,177		0	140,177
-RPA2- 11+44.337 TO -RPA2- 14+54.493	16,708	16,708				7,158	7,158		8,589		8,119		0	8,119
-RPD2- 11+06.444 TO -RPD2- 14+66.677	71,255	71,255				2,757	2,757		3,309		67,946		0	67,946
							0							0
SUBTOTAL: SUMMARY #7	241,558	241,558				21,097	21,097		25,317		216,242		0	216,242
SUMMARY #8														
-LREV- 80+00.000 TO -LREV- 90+00.000	173,944	173,944				5,275	5,275		6,330		167,614		0	167,614
-L1REV- 16+43.309 TO -L1REV- 18+60.000	504	504				3,705	3,705		4,446	3,942	0		0	0
														0
SUBTOTAL: SUMMARY #8	174,448	174,448				8,980	8,980		10,776	3,942	167,614		0	167,614
SUMMARY #9														
														0
-LREV- 90+00.000 TO -LREV- 94+04.937	3,001	3,001				7,398	7,398		8,877	5,876			0	0
														0
SUBTOTAL: SUMMARY #9	3,001	3,001				7,398	7,398		8,877	5,876			0	0

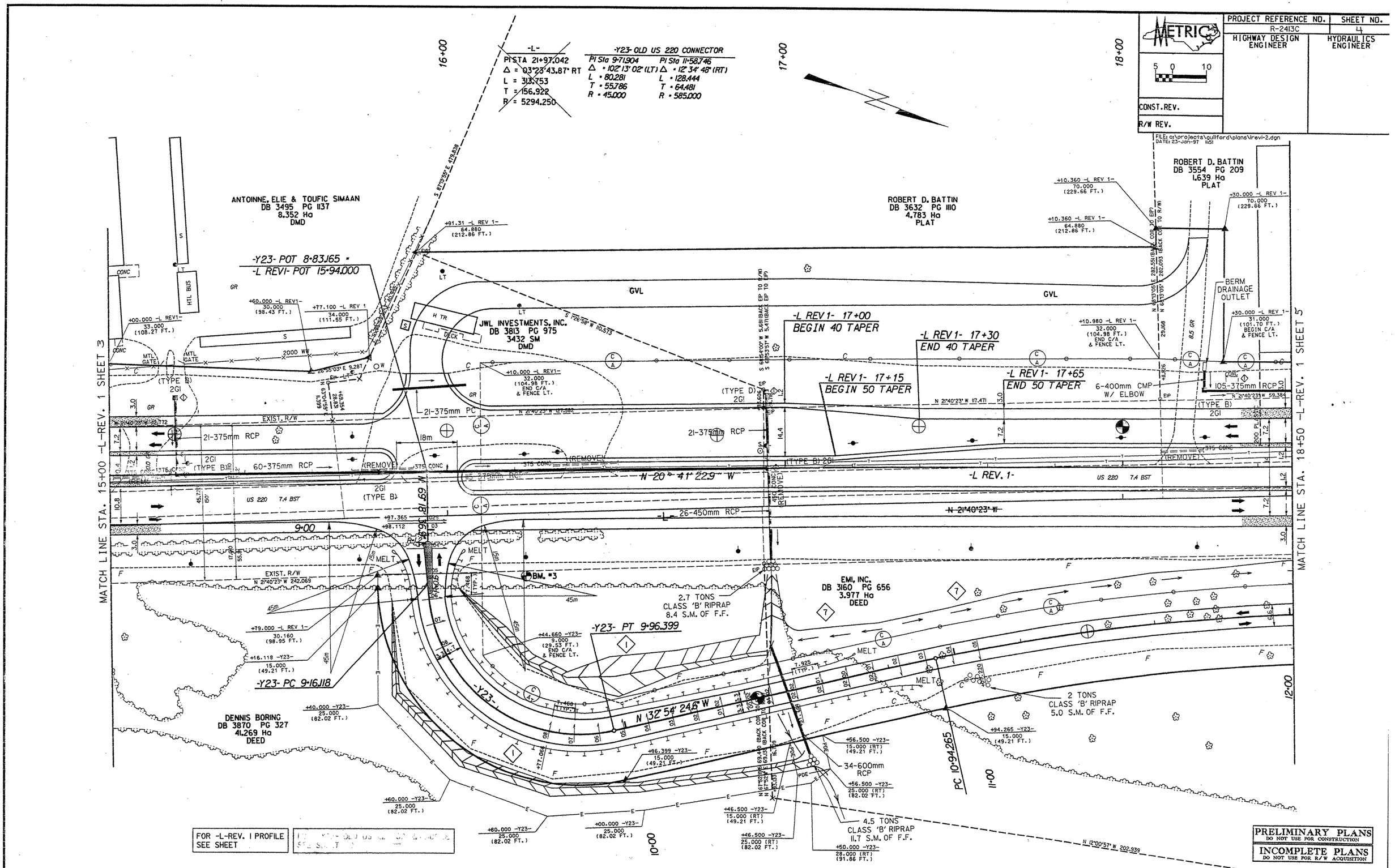
EARTHWORK BALANCE SHEET

SHEET 3, 3C

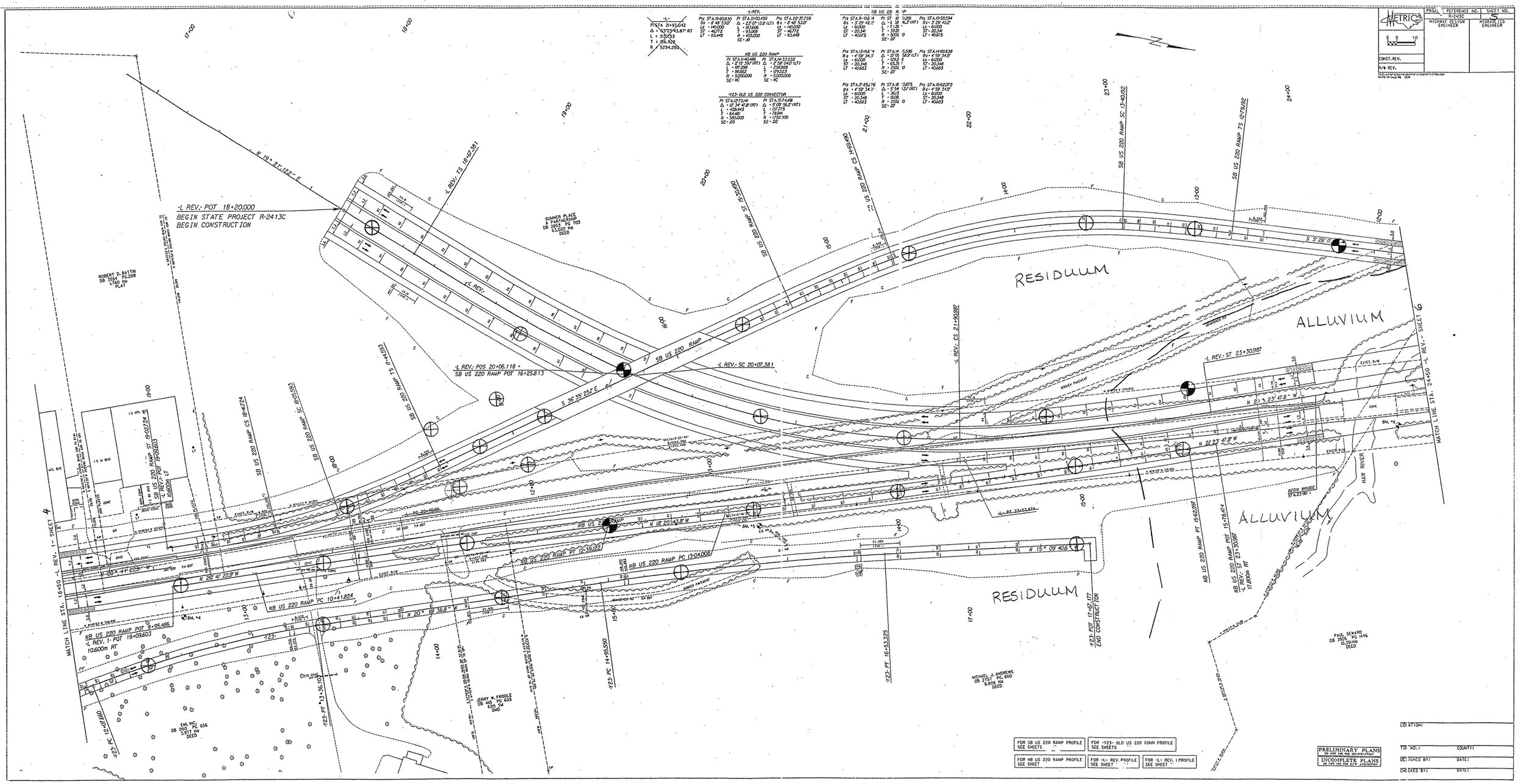
Project: R-2413C

County: GUILFORD

STATION	UNCLASSIFIED EXCAVATION				UNDERCUT EXCAV.	EMBANKMENT			TOTAL EMB. + 20%	BORROW	WASTE			
	TOTAL	SUITABLE EARTH	ROCK	UNSUITABLE EARTH		TOTAL	EARTH	ROCK			SUITABLE	ROCK	UNSUITABLE	TOTAL
SUMMARY #10 (TEMPORARY ALIGNMENTS)														
XOVRH 11+26.685 TO XOVRH 16+41.997	1,579	1,579				15,463	15,463		18,556	16,977				0
DET B 10+00.000 TO DET B 12+69.009	467	467				4,511	4,511		5,413	4,946				0
XOVRI 11+10.002 TO XOVRI 18+02.230	5,631	5,631				20,357	20,357		24,428	18,797				0
XOVRE 10+00 TO XOVRE 12+35.258	788	788				118	118		142		646			646
ADDITIONAL TEMPORARY ALIGNMENT EARTHWORK						3,258	3,258		3,909	3,909				0
														0
SUBTOTAL: SUMMARY #10	8,466	8,466				43,707	43,707		52,448	44,628	646			646
SUBTOTAL (SUMMARIES 1-10)	1,140,372	1,111,572	26,300	2,500	4,600	877,432	852,036	25,396	1,047,837	489,071	578,204	904	7,100	586,208
MATERIAL FOR SHOULDER CONSTRUCTION						35,460	35,460		42,552	42,552				0
LOSS DUE TO CLEARING & GRUBBING	-26,000	-26,000								26,000				0
ADDITIONAL UNDERCUT					17,500	17,500	17,500		21,000	21,000			17,500	17,500
ROCK WASTE TO REPLACE BORROW							-904	904		-904		-904		-904
ADJUST FOR ROCK WASTE									-181	-181				
WASTE TO BE USED IN LIEU OF BORROW										-281,233	-281,233	0		-281,233
														0
PROJECT TOTAL	1,114,372	1,085,572	26,300	2,500	22,100	930,392	904,092	26,300	1,111,208	296,305	296,971	0	24,600	321,571
ESTIMATE 5% TO REPLACE TOPSOIL IN BORROW PITS										14,815				
GRAND TOTAL (ALTERNATE 1)	1,114,372	1,085,572	26,300	2,500	22,100	930,392	904,092	26,300	1,111,208	311,121	296,971	0	24,600	321,571
SAY	1,114,400				22,100					311,200				
BERM DITCH EXCAVATION		840												
DRAINAGE DITCH EXCAVATION		9,680												
SELECT GRANULAR MATERIAL		20,500												
PAVEMENT STRUCTURE VOLUME = m^3		107,000												
GRAND TOTAL (ALTERNATE 2)	1,022,993	994,193	26,300	2,500	22,100	1,013,197	986,897	26,300	1,210,576	355,750	148,727	0	24,600	173,327
SAY	1,023,000				22,100					355,800				
BERM DITCH EXCAVATION		840												
DRAINAGE DITCH EXCAVATION		9,680												
SELECT GRANULAR MATERIAL		20,500												
PAVEMENT STRUCTURE VOLUME = m^3		84,400												



METRIC
PROJECT REFERENCE NO.
R-2413C
SHEET NO.
4
HIGHWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
CONST.REV.
R/W REV.
FILE: c:\projects\guilford\plans\lrevi-2.dgn
DATE: 23-Jan-97 11:51
-L-
PI STA 21+97.042
Δ = 03°23'43.87" RT
L = 313.753
T = 156.922
R = 5294.250
-Y23- OLD US 220 CONNECTOR
PI Sta 9+71.904
Δ = 102°13'02" (LT)
L = 80.281
T = 55.786
R = 45.000
PI Sta 11+58.746
Δ = 12°34'48" (RT)
L = 128.444
T = 64.481
R = 585.000
ANTOINNE, ELIE & TOUFIC SIMAAN
DB 3495 PG 1137
8.352 Ha
DMD
ROBERT D. BATTIN
DB 3632 PG 1110
4.783 Ha
PLAT
ROBERT D. BATTIN
DB 3554 PG 209
1.639 Ha
PLAT
JWL INVESTMENTS, INC.
DB 3813 PG 975
3432 SM
DMD
EMI, INC.
DB 3160 PG 656
3.977 Ha
DEED
DENNIS BORING
DB 3870 PG 327
41.269 Ha
DEED
-Y23- POT 8+83.165 =
-L REV1- POT 15+94.000
-Y23- PT 9+96.399
-Y23- PC 9+16.118
-L REV 1- 17+00
BEGIN 40 TAPER
-L REV 1- 17+30
END 40 TAPER
-L REV 1- 17+15
BEGIN 50 TAPER
-L REV 1- 17+65
END 50 TAPER
BERM DRAINAGE OUTLET
6-400mm CMP W/ ELBOW
105-375mm RCP
21-375mm PC
21-375mm RCP
60-375mm RCP
26-450mm RCP
N 20° 41' 22.9" W
N 21°40'23" W
N 32° 54' 24.6" W
N 12°00'57" W 202.939
2.7 TONS CLASS 'B' RIPRAP 8.4 S.M. OF F.F.
2 TONS CLASS 'B' RIPRAP 5.0 S.M. OF F.F.
4.5 TONS CLASS 'B' RIPRAP 11.7 S.M. OF F.F.
34-600mm RCP
PC 10+94.265
MATCH LINE STA. 15+00 -L-REV. 1 SHEET 3
MATCH LINE STA. 18+50 -L-REV. 1 SHEET 5
FOR -L-REV. 1 PROFILE SEE SHEET
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION


-L-
PI STA 21+93.042
Δ = 30°33'43.87" RT
L = 313.053
T = 156.929
R = 5294.250
-L-REV.
PI STA 19+60.830
θs = 0°49'53.0"
Ls = 140.000
ST = 80.772
LT = 93.449
PI STA 20+00.450
Δ = 27°07'13.9" (LT)
L = 181.606
T = 93.069
R = 450.000
SE = .10
PI STA 22+31.759
θs = 0°49'53.0"
Ls = 140.000
ST = 80.772
LT = 93.449
SB US 220 R UP
PI STA 9+06.4
θs = 2°29'48.2"
Ls = 60.000
ST = 20.341
LT = 40.875
PI ST .10 0.209
Δ = 1.38 1.63° (RT)
L = 7.126
T = 3.563
R = 500.0
SE = .07
PI STA 10+59.594
θs = 2°29'48.2"
Ls = 60.000
ST = 20.341
LT = 40.875
NB US 220 RAMP
PI STA 9+40.486
Δ = 2°01'39.7" (RT)
L = 197.398
T = 98.662
R = 5,000.000
SE = .16
PI STA 14+33.532
Δ = 2°58'04.0" (LT)
L = 258.968
T = 129.523
R = 5,000.000
SE = .16
PI STA 13+58.14
θs = 4°59'34.1"
Ls = 60.000
ST = 30.348
LT = 40.683
PI STA 14 5.586
Δ = 8°05 58.9° (LT)
L = 129.2 1
T = 65.35 1
R = 550.0
SE = .07
PI STA 14+60.838
θs = 4°59'34.1"
Ls = 60.000
ST = 30.348
LT = 40.683
-Y23- OLD US 220 CONNECTOR
PI STA 12+72.14
Δ = 12°34'41.8" (RT)
L = 128.443
T = 64.481
R = 585.000
SE = .25
PI STA 15+74.49
Δ = 5°09'56.2" (RT)
L = 151.775
T = 76.04
R = 1,250.000
SE = .22
PI STA 15+65.176
θs = 4°59'34.1"
Ls = 60.000
ST = 30.348
LT = 40.683
PI STA 16 13.675
Δ = 5.54 13.1° (RT)
L = 3.613
T = 1.808
R = 550.0
SE = .07
PI STA 16+62.072
θs = 4°59'34.1"
Ls = 60.000
ST = 30.348
LT = 40.683
-L REV.- POT 18+20.000
BEGIN STATE PROJECT R-2413C
BEGIN CONSTRUCTION
N 19° 21' 12.2" E
-L REV.- TS 18+18.381
-L REV.-
SB US 220 RAMP
SB US 220 RAMP CS 14+63.490
SB US 220 RAMP CS 15+26.620
SB US 220 RAMP CS 18+41.724
SB US 220 RAMP SC 19+05.593
SB US 220 RAMP TS 18+44.593
SB US 220 RAMP SC 13+40.192
SB US 220 RAMP TS 12+79.192
-L REV.- POS 20+06.118 =
SB US 220 RAMP POT 16+25.813
-L REV.- SC 20+07.381
-L REV.- CS 21+90.987
-L REV.- ST 23+30.987
S 36° 39' 25.7" E
S 5° 26' 11"
N 21° 23' 47.8" W
N 16° 25' 43.6" W
N 15° 09' 40.6"
N 20° 19' 36.8" W
N 20° 41' 22.9" W
N 69° 41' 22.9" W
NB US 220 RAMP PT 12+39.122
NB US 220 RAMP PC 13+04.008
NB US 220 RAMP PC 10+41.824
NB US 220 RAMP POT 9+95.486
-L REV.- 1- POT 19+09.603
10.600m RT
NB US 220 RAMP ST 19+02.724
SB US 220 RAMP ST 19+09.603
-L REV.- 1- POT 19+09.603
10.600m LT
NB US 220 RAMP PT 15+62.297
NB US 220 RAMP POT 15+75.474
-L REV.- ST 23+30.987
17.800m RT
-L-PI STA 23+53.874
-Y23- POT 17+67.177
END CONSTRUCTION
-Y23- PT 16+53.325
-Y23- PC 14+55.550
-Y23- PT 13+36.103
-Y23- PC 12+00.000
RESIDUUM
ALLUVIUM
ALLUVIUM
RESIDUUM
MATCH LINE STA. 18+50 -L REV. 1- SHEET 4
MATCH LINE STA. 24+50 -L REV. 1- SHEET 6
HAW RIVER
SUMNER PLACE A PARTNERSHIP DB 2853 PG 703 83.032 Ac DEED
ROBERT D. BATTIN DB 3054 PG 209 1.760 Ac PLAT
JERRY W. FRODGE DB 495 PG 603 6.96 SM DWD
EHL INC. DB 3401 PG 656 3.077 Ac DEED
MICHAEL J. ANDREWS DB 275 PG 600 8.806 Ac DEED
PAUL SEWARD DB 3626 PG 1446 10.52 Ac DEED
BROKEN PAVEMENT
EXIST. R/W
CONC
BM. *6
BM. *5
FOR SB US 220 RAMP PROFILE SEE SHEETS
FOR -Y23- OLD US 220 CONN PROFILE SEE SHEETS
FOR NB US 220 RAMP PROFILE SEE SHEET
FOR -L- REV. PROFILE SEE SHEET
FOR -L- REV. 1 PROFILE SEE SHEET
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
METRIC
PROJ. REFERENCE NO.
R-2413C
SHEET NO.
5
HIGHWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
CONST. REV.
R/W REV.
LOCATION:
TIP NO.:
COUNTY:
DESIGNED BY:
DATE:
CHECKED BY:
DATE:

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	6
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC 5 0 10

CONST. REV.

R/W REV.

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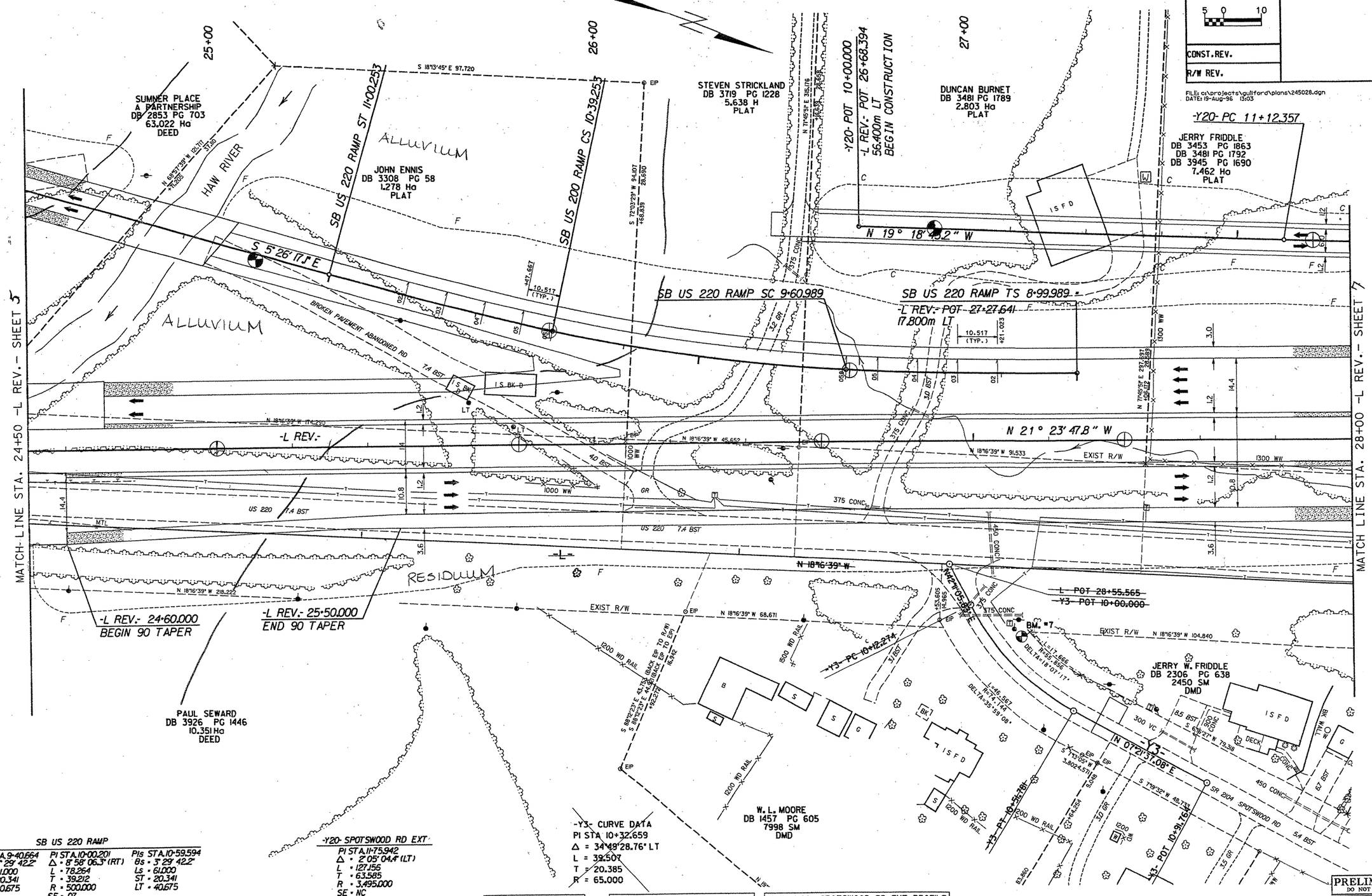
DATE: 19-Aug-96 13:03



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

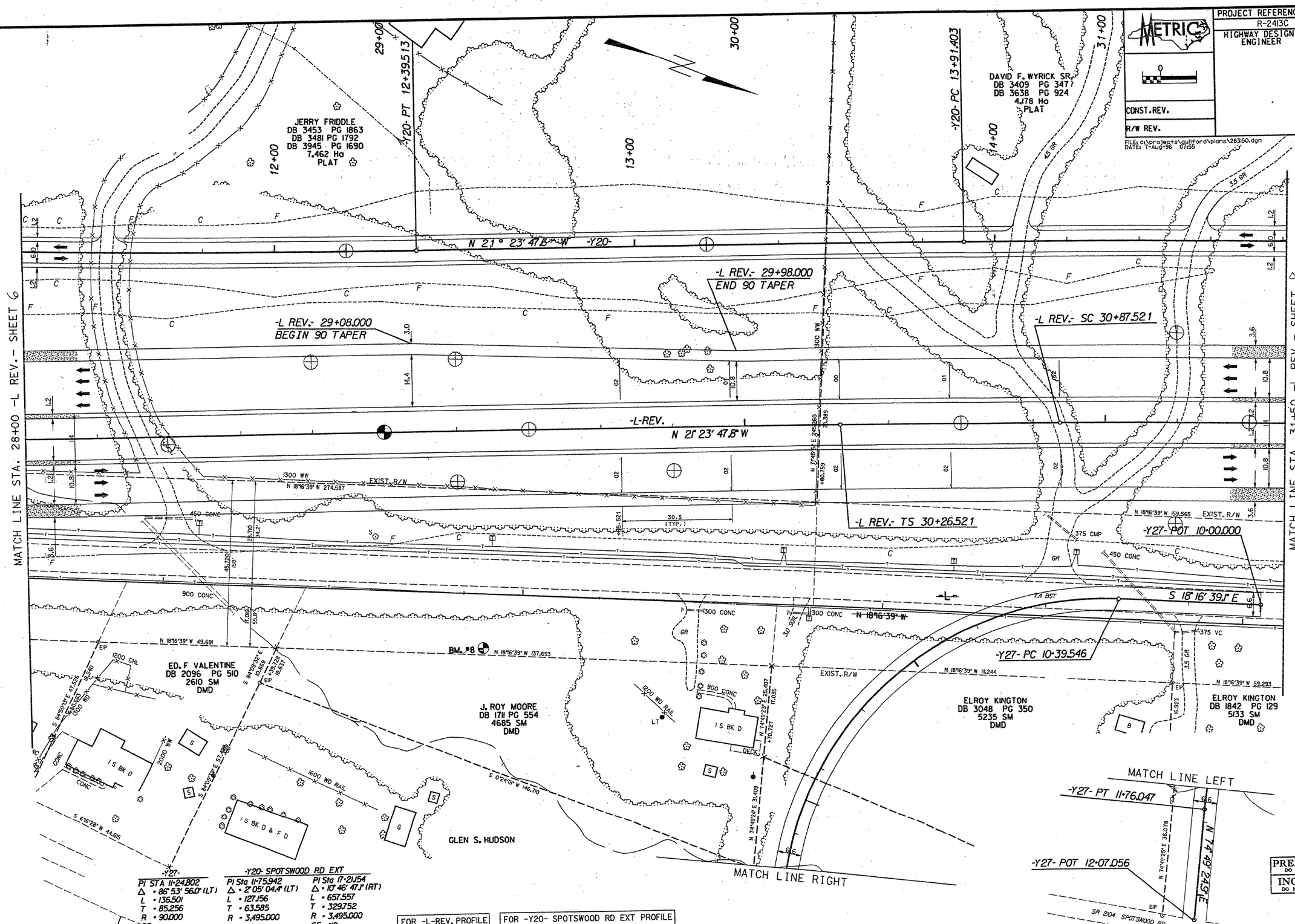
PROJECT REFERENCE NO.	SHEET NO.
R-2413C	7
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

CONST. REV.

R/W REV.

FILE: c:\projects\guilford\plans\283150.dgn
DATE: 7-Aug-96 07:55

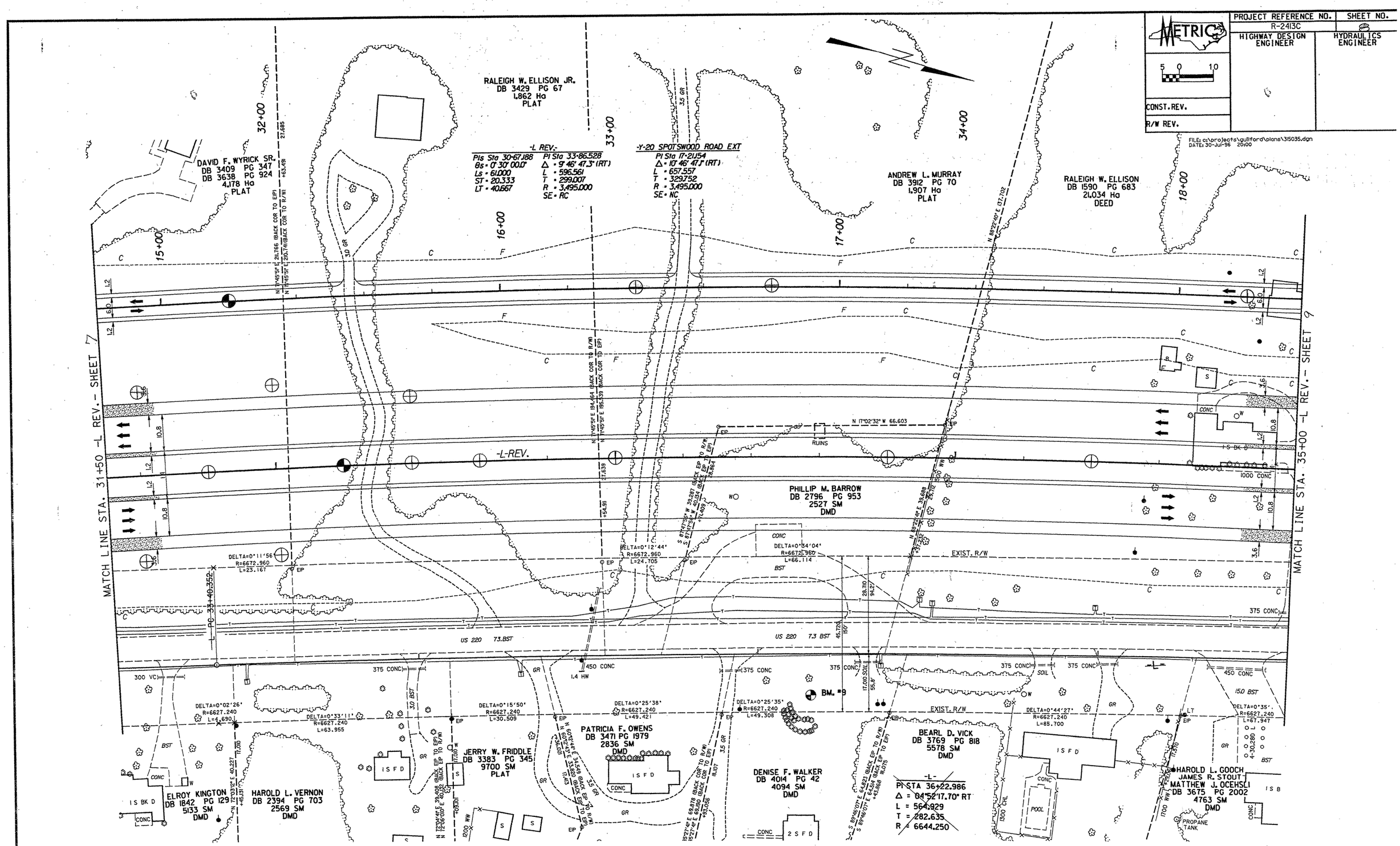


FOR -L-REV. PROFILE

FOR -Y20- SPOTSWOOD RD EXT PROFILE

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION



METRIC
PROJECT REFERENCE NO.
R-2413C
SHEET NO.
HIGHWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
CONST. REV.
R/W REV.
FILE: c:\projects\guilford\plans\315035.dgn
DATE: 30-Jul-96 20:00
RALEIGH W. ELLISON JR.
DB 3429 PG 67
1.862 Ha
PLAT
DAVID F. WYRICK SR.
DB 3409 PG 347
DB 3638 PG 924
4.178 Ha
PLAT
-L REV.-
Pls Sta 30+67.188
Bs = 0° 30' 00.0"
Ls = 61.000
ST = 20.333
LT = 40.667
Pl Sta 33+86.528
Δ = 9° 46' 47.3" (RT)
L = 596.561
T = 299.007
R = 3,495.000
SE = RC
-Y-20 SPOTSWOOD ROAD EXT
Pl Sta 17+21.154
Δ = 10° 46' 47.1" (RT)
L = 657.557
T = 329.752
R = 3,495.000
SE = NC
ANDREW L. MURRAY
DB 3912 PG 70
1.907 Ha
PLAT
RALEIGH W. ELLISON
DB 1590 PG 683
21.034 Ha
DEED
MATCH LINE STA. 31+50 -L REV.- SHEET 7
MATCH LINE STA. 35+00 -L REV.- SHEET 9
-L-REV.
PHILLIP M. BARROW
DB 2796 PG 953
2527 SM
DMD
EXIST. R/W
US 220 7.3 BST
BM. #9
PATRICIA F. OWENS
DB 3471 PG 1979
2836 SM
DMD
JERRY W. FRIDDLE
DB 3383 PG 345
9700 SM
PLAT
DENISE F. WALKER
DB 4014 PG 42
4094 SM
DMD
BEARL D. VICK
DB 3769 PG 818
5578 SM
DMD
-L-
Pl STA 36+22.986
Δ = 04°52'17.70" RT
L = 564.929
T = 282.635
R = 6644.250
ELROY KINGTON
DB 1842 PG 129
5133 SM
DMD
HAROLD L. VERNON
DB 2394 PG 703
2569 SM
DMD
HAROLD L. GOOCH
JAMES R. STOUT
MATTHEW J. OCEHSLI
DB 3675 PG 2002
4763 SM
DMD
PROPANE TANK
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	9
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

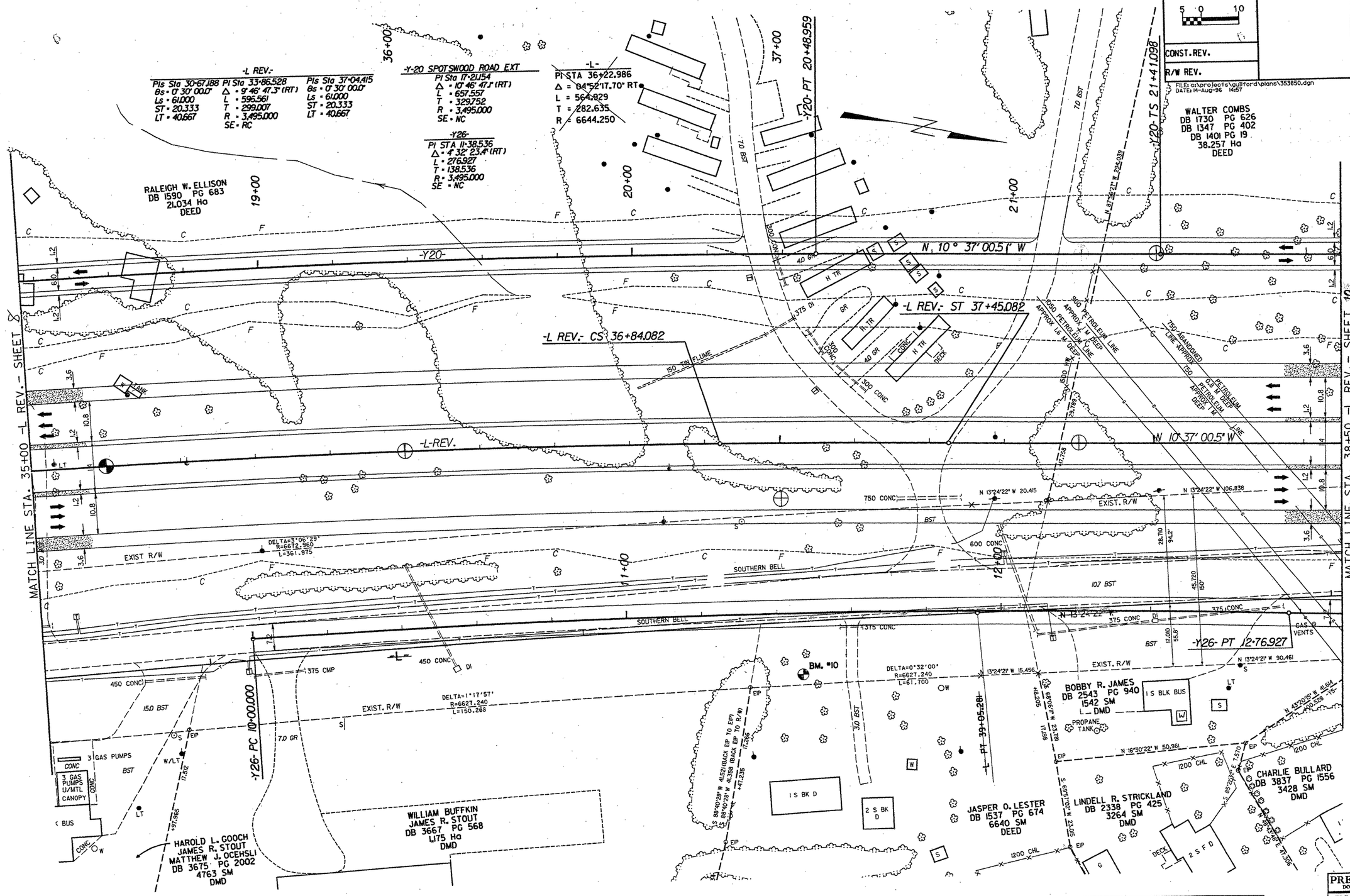
METRIC

5 0 10

CONST. REV.

R/W REV.

FILE: c:\projects\guilford\plans\353850.dgn
DATE: 14-Aug-96 14:57



FOR -L-REV. PROFILE	FOR -Y20- SPOTSWOOD RD EXT PROFILE

PRELIMINARY PLAN
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLAN
DO NOT USE FOR R/W ACQUISITION

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	10
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC 5 0 10

CONST. REV.

R/W REV.

FILE: cr\projects\guilford\plans\385042.dgn
DATE: 14-Aug-96 15:01

-Y-20 SPOTSWOOD ROAD EXT

PIs Sta 22+87.979	PI Sta 24+12.321	PIs Sta 25+23.713
θs = 7° 13' 27.3"	Δ = 49° 05' 33.0" (LT)	θs = 7° 13' 27.3"
Ls = 58.000	L = 197.070	Ls = 58.000
ST = 19.363	T = 105.041	ST = 19.363
LT = 38.699	R = 230.000	LT = 38.699
	SE = .08	
	CW = 1.1m	

RAMP B

PIs Sta 10+30.669	PI Sta 11+24.237	PIs Sta 12+16.886
θs = 2° 15' 09.6"	Δ = 15° 14' 05.4" (LT)	θs = 2° 15' 09.6"
Ls = 46.000	L = 155.550	Ls = 46.000
ST = 15.336	T = 78.237	ST = 15.336
LT = 30.669	R = 585.000	LT = 30.669
	SE = .05	

-Y21- SPOTSWOOD RD. REL.

PIs Sta 10+68.830	PI Sta 11+33.884	PIs Sta 11+97.990
θs = 6° 38' 46.7"	Δ = 20° 44' 24.4" (RT)	θs = 6° 38' 46.7"
Ls = 58.000	L = 90.496	Ls = 58.000
ST = 19.358	T = 45.749	ST = 19.358
LT = 38.694	R = 250.000	LT = 38.694
	SE = .08	
	CW = 1.1m	

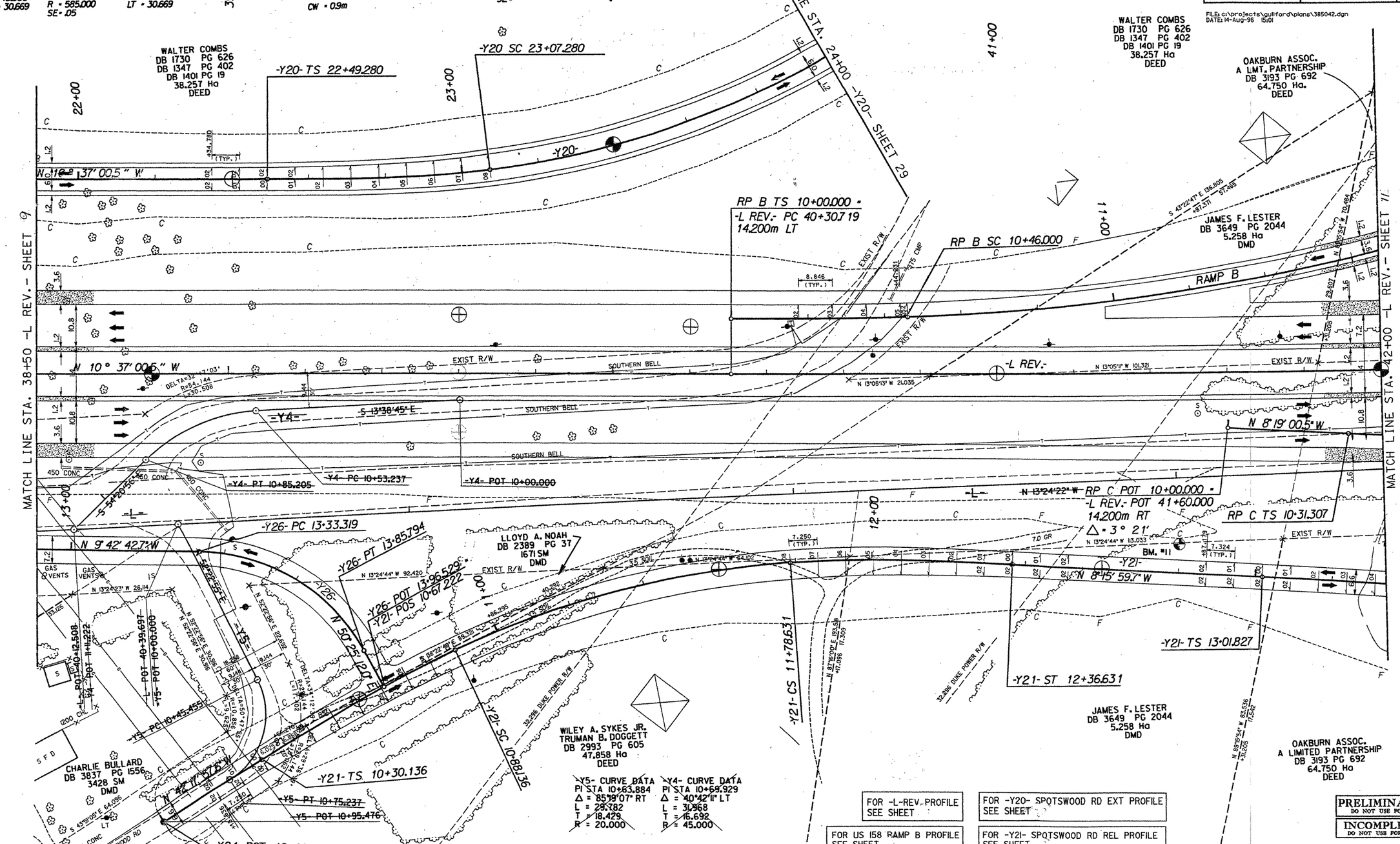
PIs Sta 13+36.504	PI Sta 14+36.057	PIs Sta 15+32.699
θs = 4° 15' 22.5"	Δ = 26° 26' 34.0" (RT)	θs = 4° 15' 22.5"
Ls = 52.000	L = 161.530	Ls = 52.000
ST = 17.342	T = 82.230	ST = 17.342
LT = 34.677	R = 350.000	LT = 34.677
	SE = .07	
	CW = 0.9m	

-L REV.-

PI Sta 42+18.604
Δ = 3° 04' 45.8" (LT)
L = 375.681
T = 187.886
R = 6,990.000
SE = NC

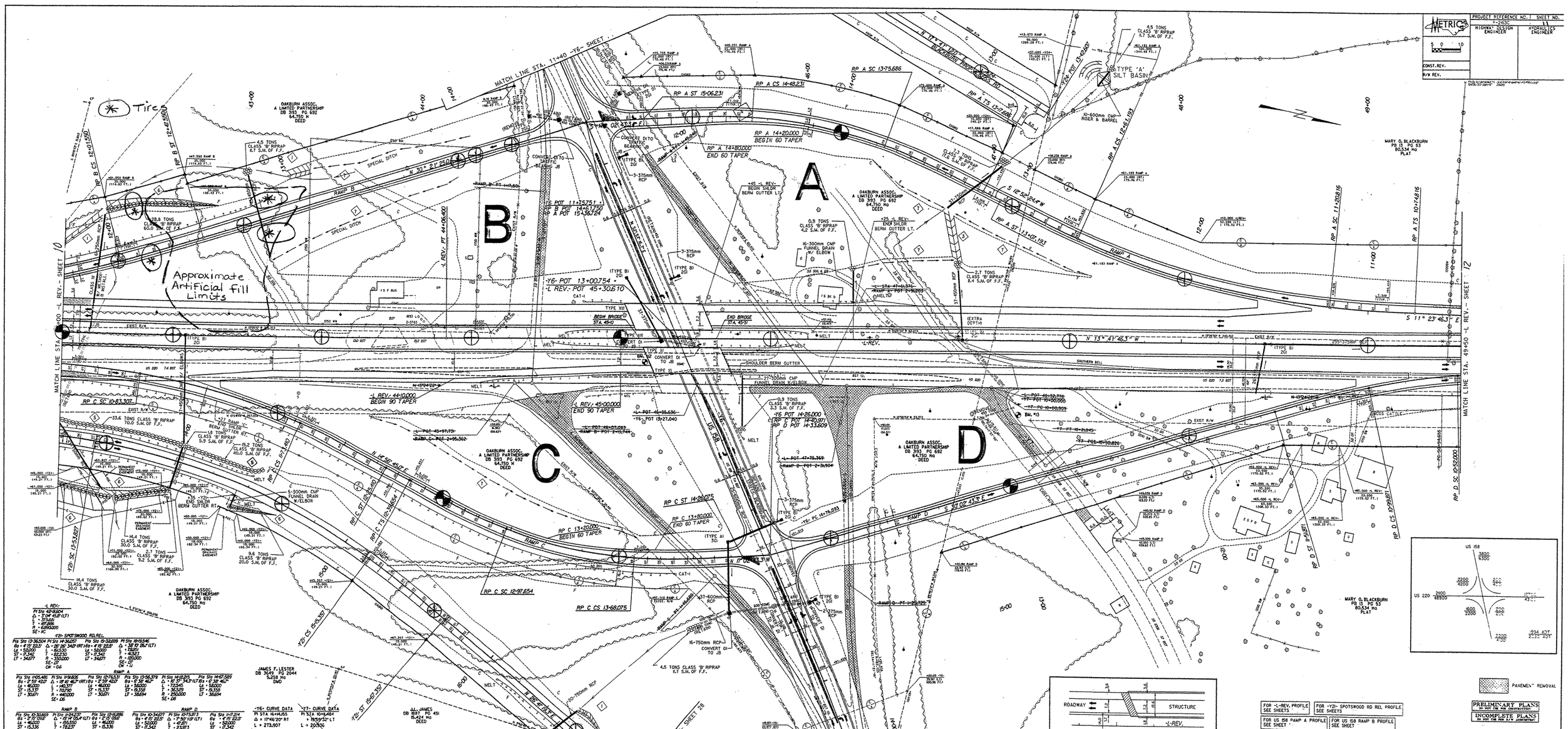
-Y26-

PI STA 13+62.264
Δ = 60° 07' 54.7" (RT)
L = 52.475
T = 28.944
R = 50.000
SE =



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION



METRIC
PROJECT REFERENCE NO. 1 SHEET NO. 11
F-2413C
HIGHWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
CONST. REV.
R/W REV.
Tire
Approximate Artificial Fill Limits
A
B
C
D
MATCH LINE STA. 11+40 -Y6- SHEET 10
MATCH LINE STA. 49+50 -L REV.- SHEET 12
OAKBURN ASSOC. A LIMITED PARTNERSHIP DB 393 PG 692 64.750 Ha DEED
MARY O. BLACKBURN PB 13 PG 53 80.534 Ha PLAT
JAMES F. LESTER DB 3649 PG 2044 5.258 Ha DEED
RAMP A
RAMP B
RAMP C
RAMP D
RP A CS 14+48.231
RP A ST 15+06.231
RP A 14+20.000 BEGIN 60 TAPER
RP A 14+80.000 END 60 TAPER
RP A SC 13+75.686
RP A TS 13+17.686
RP A CS 12+61.193
RP A ST 13+07.193
RP A SC 11+20.816
RP A TS 10+74.816
RP C SC 10+83.307
RP C ST 14+26.075
RP C 13+20.000 BEGIN 60 TAPER
RP C 13+80.000 END 60 TAPER
RP C SC 12+97.654
RP C CS 13+68.075
RP D SC 10+52.000
RP D CS 10+99.871
RP D ST 11+51.871
TYPE 'A' SILT BASIN
SPECIAL DITCH
SHOULDER BERM GUTTER
US 158
US 220
ROADWAY
STRUCTURE
-L-REV.
PAVEMENT REMOVAL
PRELIMINARY PLANS
INCOMPLETE PLANS

METRIC	PROJECT REFERENCE NO.	SHEET NO.
	R-2413C	12
5 0 10	HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
CONST.REV.		
R/W REV.		

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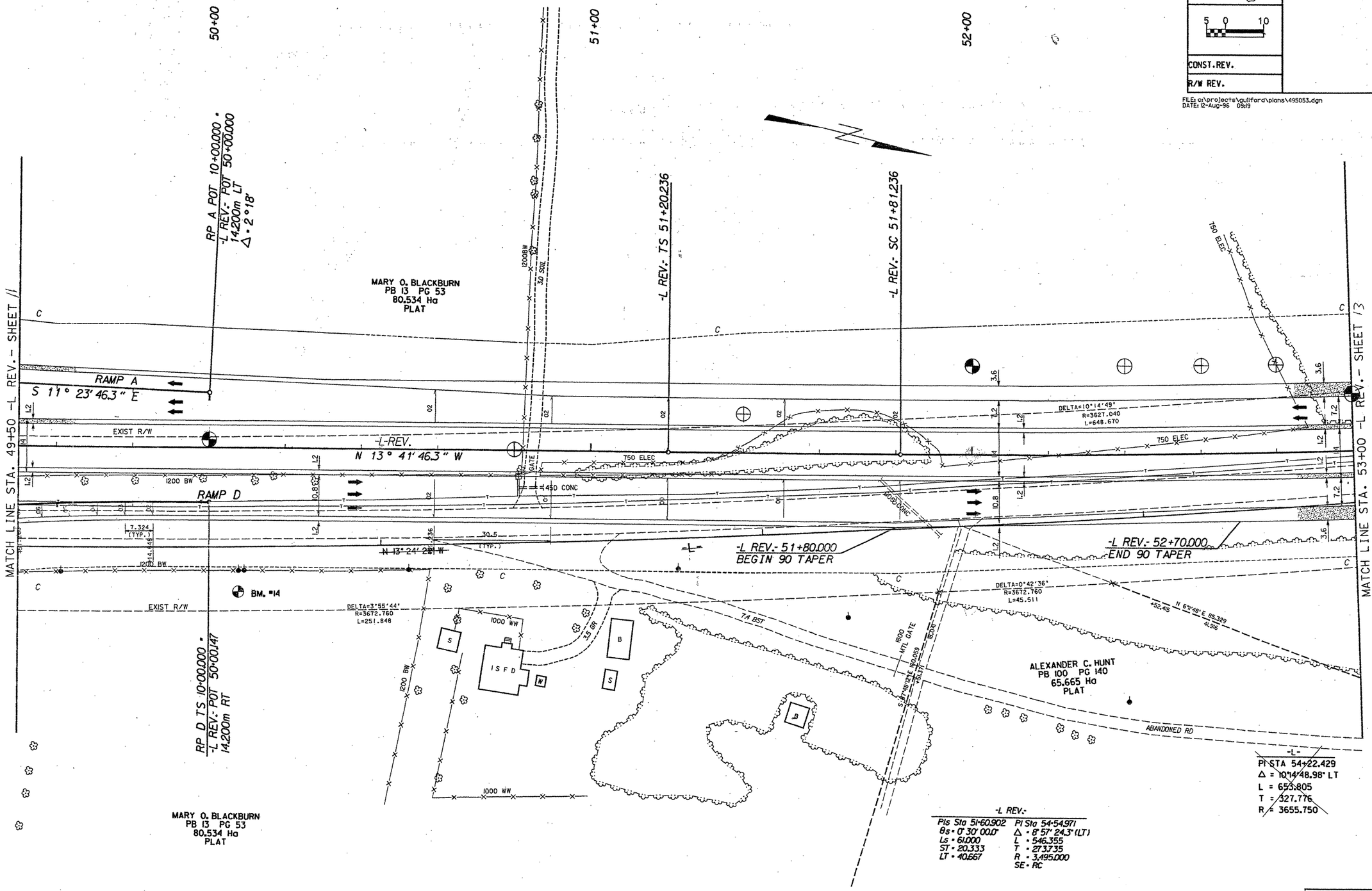
DATE: 12-Aug-96 09:19



FOR -L-REV. PROFILE SEE SHEETS 37, 38

FOR US 158 RAMP A PROFILE SEE SHEET 58

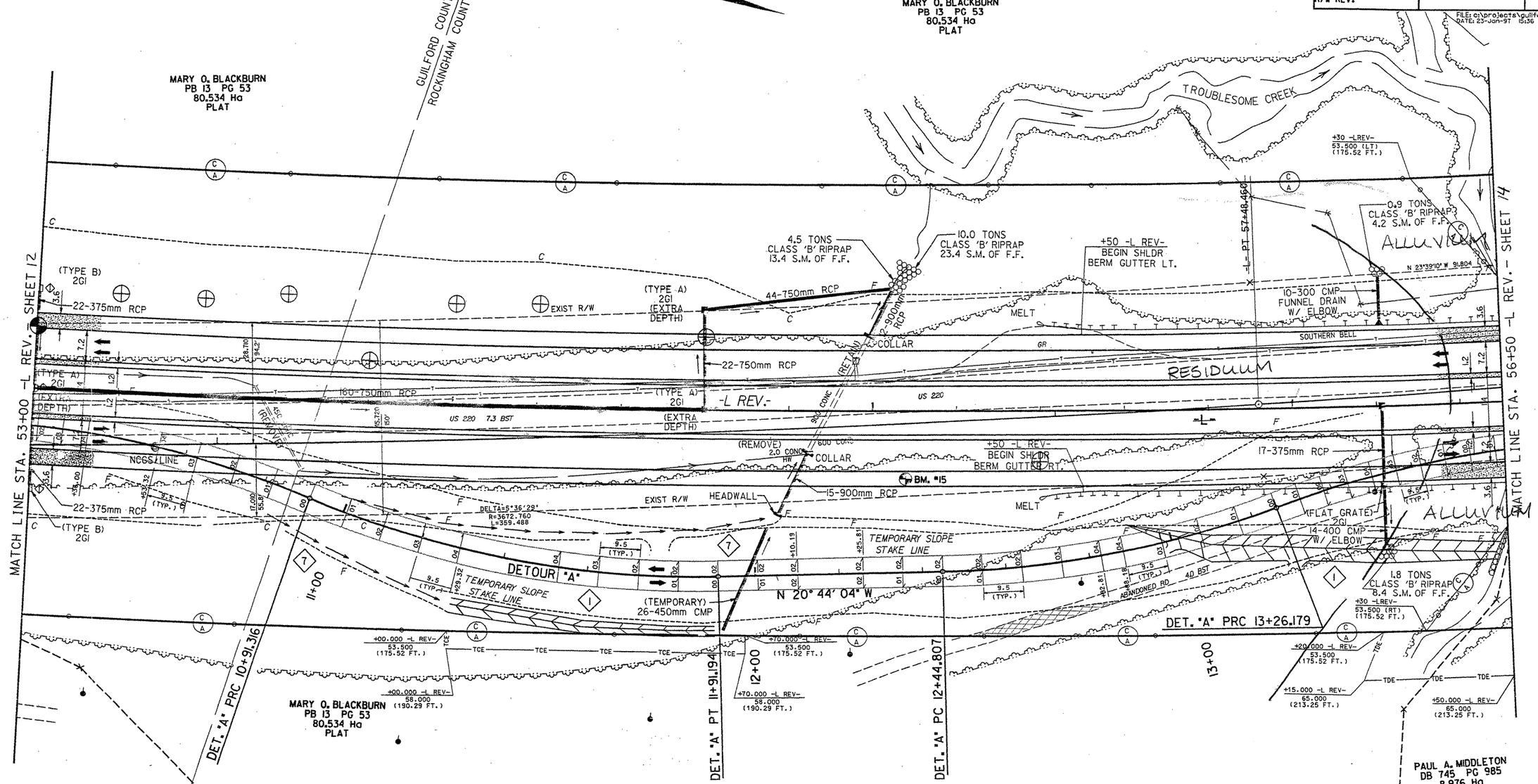
FOR US 158 RAMP D PROFILE SEE SHEET 60

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS

METRIC	PROJECT REFERENCE NO.	SHEET NO.
5 0 10	R-2413C	13
CONST.REV.	HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
R/W REV.		

FILE: c:\projects\guilford\plans\535650.dgn
DATE: 23-Jan-97 15:36



DETOUR "A"

PI Sta 10+46.241	PI Sta 11+42.020	PI Sta 12+85.904	PI Sta 13+64.196
Δ = 22° 15' 50" (RT)	Δ = 24° 21' 05" (LT)	Δ = 19° 50' 22" (LT)	Δ = 18° 22' 45" (RT)
L = 91.316	L = 99.878	L = 81.372	L = 75.382
T = 46.241	T = 50.705	T = 41.097	T = 38.018
R = 235.000	R = 235.000	R = 235.000	R = 235.000
SE = .04	SE = .04	SE = .04	SE = .04

-L-

PI STA 54+22.429
Δ = 10°14'48.98" LT
L = 653.805
T = 327.776
R = 3655.750

-L REV.-

Pls Sta 51+60.902	PI Sta 54+54.971	Pls Sta 57+47.924
θs = 0° 30' 00.0"	Δ = 8° 57' 24.3" (LT)	θs = 0° 30' 00.0"
Ls = 61.000	L = 546.355	Ls = 61.000
ST = 20.333	T = 273.735	ST = 20.333
LT = 40.667	R = 3,495.000	LT = 40.667
	SE = RC	

FOR DETOUR "A" PROFILE
SEE SHEET

FOR -L-REV. PROFILE
SEE SHEET

PAVEMENT REMOVAL

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

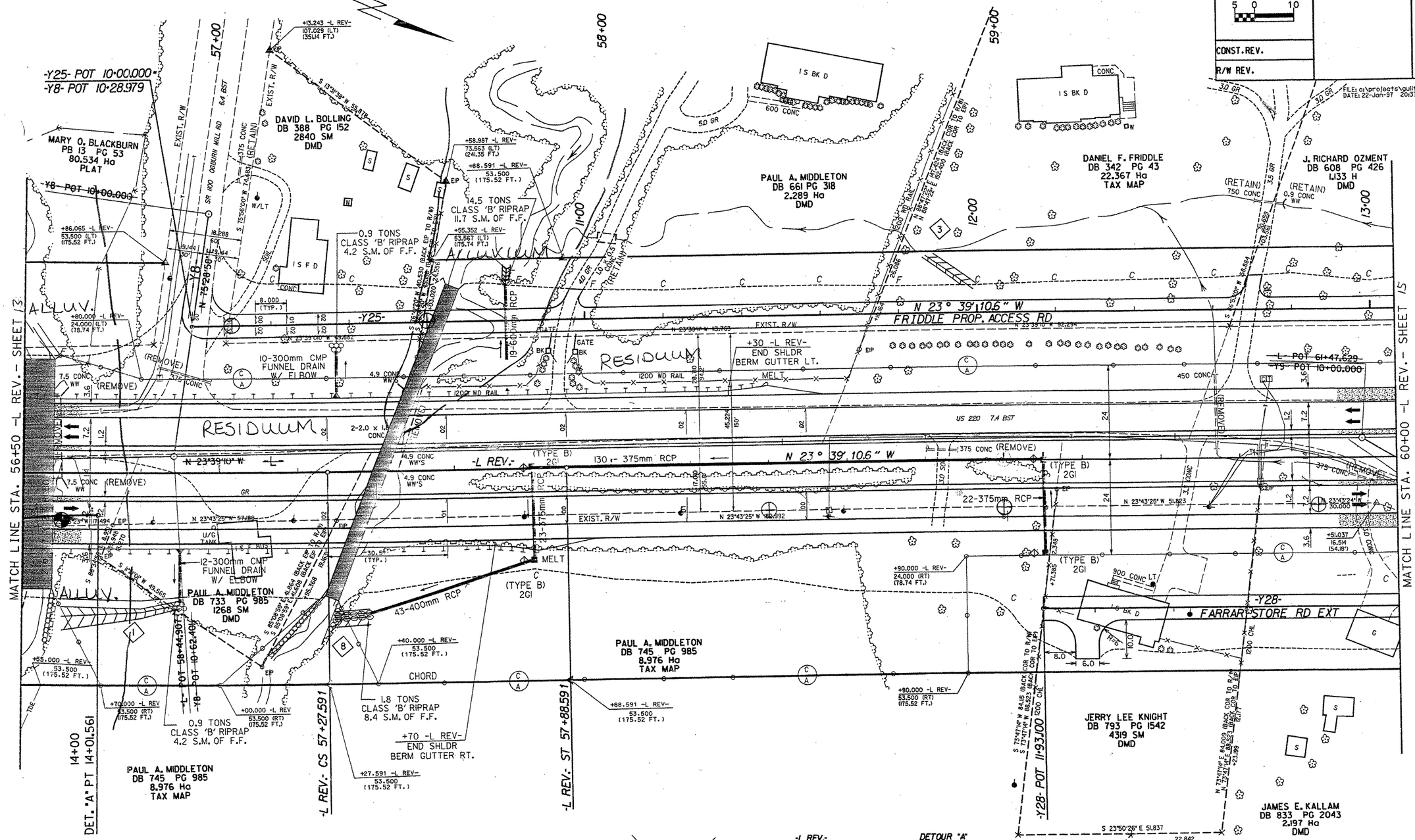
PROJECT REFERENCE NO.	SHEET NO.
R-2413C	14
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC 5 0 10

CONST. REV.

R/W REV.

FILE: o:\projects\guilford\plans\565060.dgn
DATE: 22-Jan-97 20:37



-Y9- CURVE DATA
PI STA 10=25.276
Δ = 08°41'15" LT
L = 20.469
T = 10.254
R = 135.000

-L REV.-

PI Sta 54+54.971	PIs Sta 57+47.924
Δ = 8° 57' 24.3" (LT)	θs = 0° 30' 00.0"
L = 546.355	Ls = 61.000
T = 273.735	ST = 20.333
R = 3,495.000	LT = 40.667
SE = RC	

DETOUR "A"

PI Sta 13+64.96
Δ = 18° 22' 44.8" (RT)
L = 75.382
T = 38.018
R = 235.000
SE = .07

FOR DETOUR "A" PROFILE SEE SHEET

FOR -L-REV. PROFILE SEE SHEETS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

METRIC	PROJECT REFERENCE NO.	SHEET NO.
5 0 10	R-2413C	15
CONST. REV.	HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
R/W REV.		

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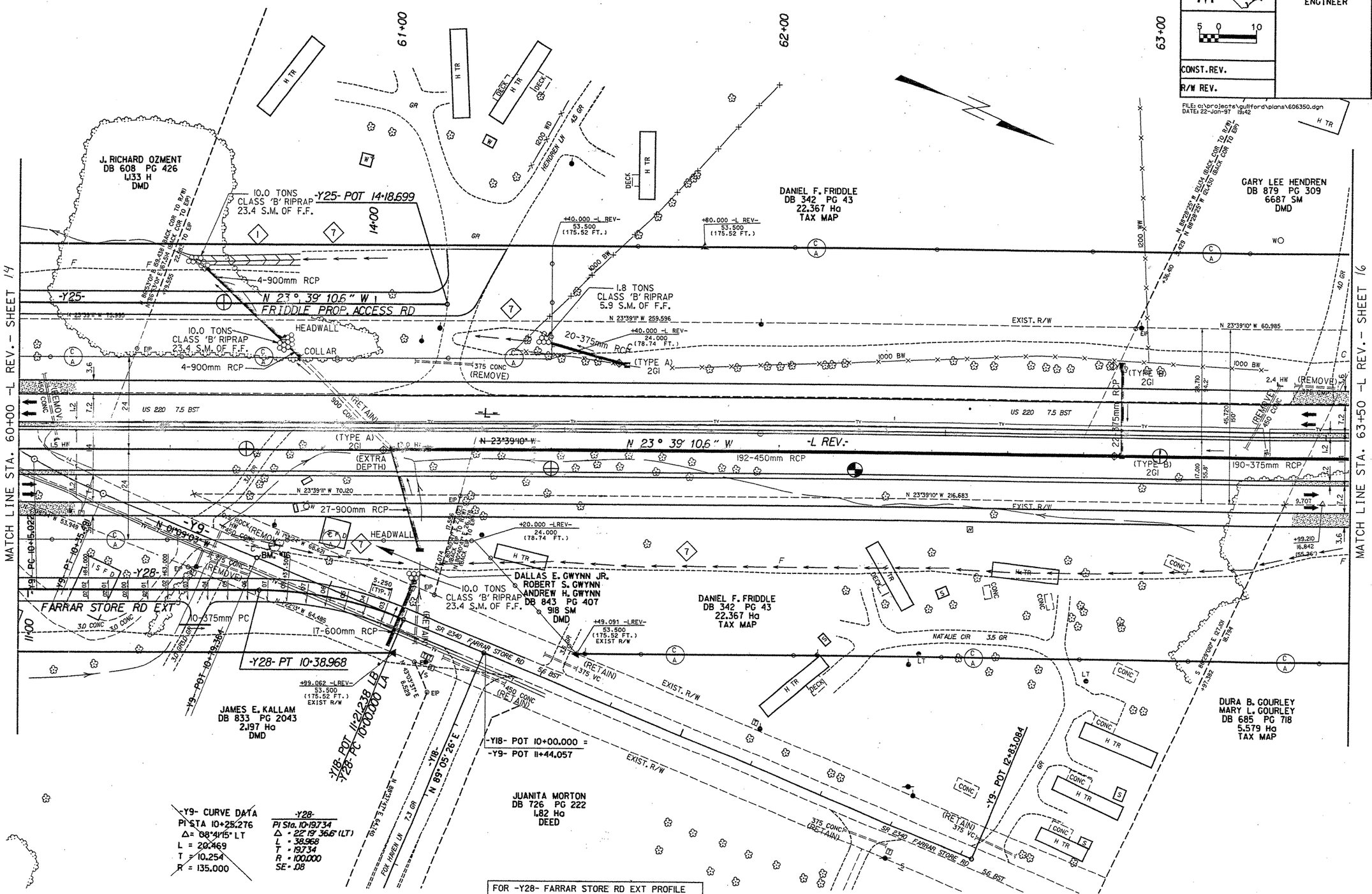


FOR -Y28- FARRAR STORE RD EXT PROFILE SEE SHEET

FOR -L-REV. PROFILE SEE SHEET

FOR -Y25- FRIDDLE PROP ACCESS RD PROFILE SEE SHEET

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	1C
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

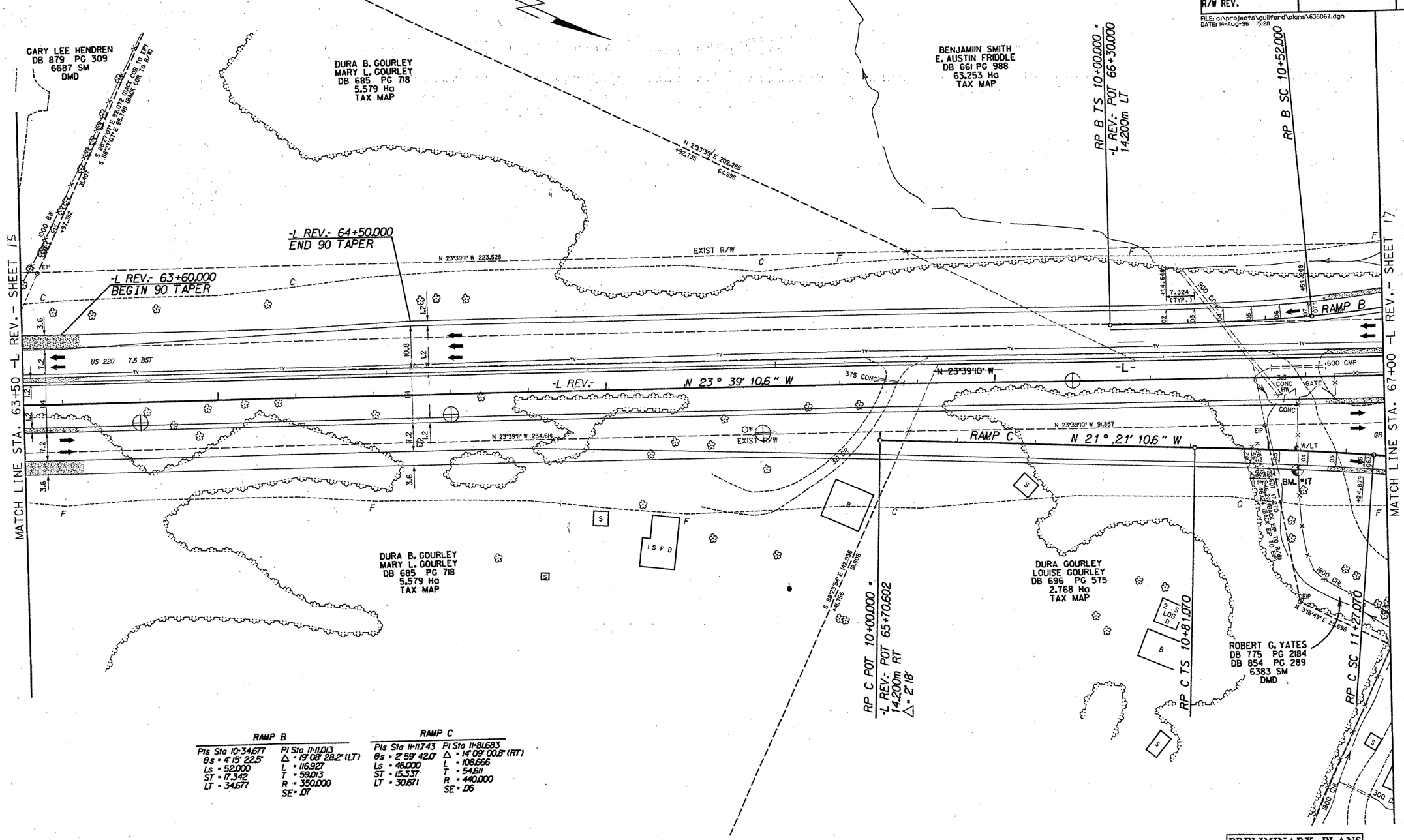
METRIC

5 0 10

CONST. REV.

R/W REV.

FILE: c:\projects\guilford\plans\635067.dgn
DATE: 14-Aug-96 15:28



RAMP B	
PIs Sta 10+34.677	PI Sta 11+11.013
θs = 4° 15' 22.5"	Δ = 19° 08' 28.2" (LT)
Ls = 52.000	L = 116.927
ST = 17.342	T = 59.013
LT = 34.677	R = 350.000
	SE = .07

RAMP C	
PIs Sta 11+11.743	PI Sta 11+81.683
θs = 2° 59' 42.0"	Δ = 14° 09' 00.8" (RT)
Ls = 46.000	L = 108.666
ST = 15.337	T = 54.611
LT = 30.671	R = 440.000
	SE = .06

FOR -L-REV. PROFILE SEE SHEET

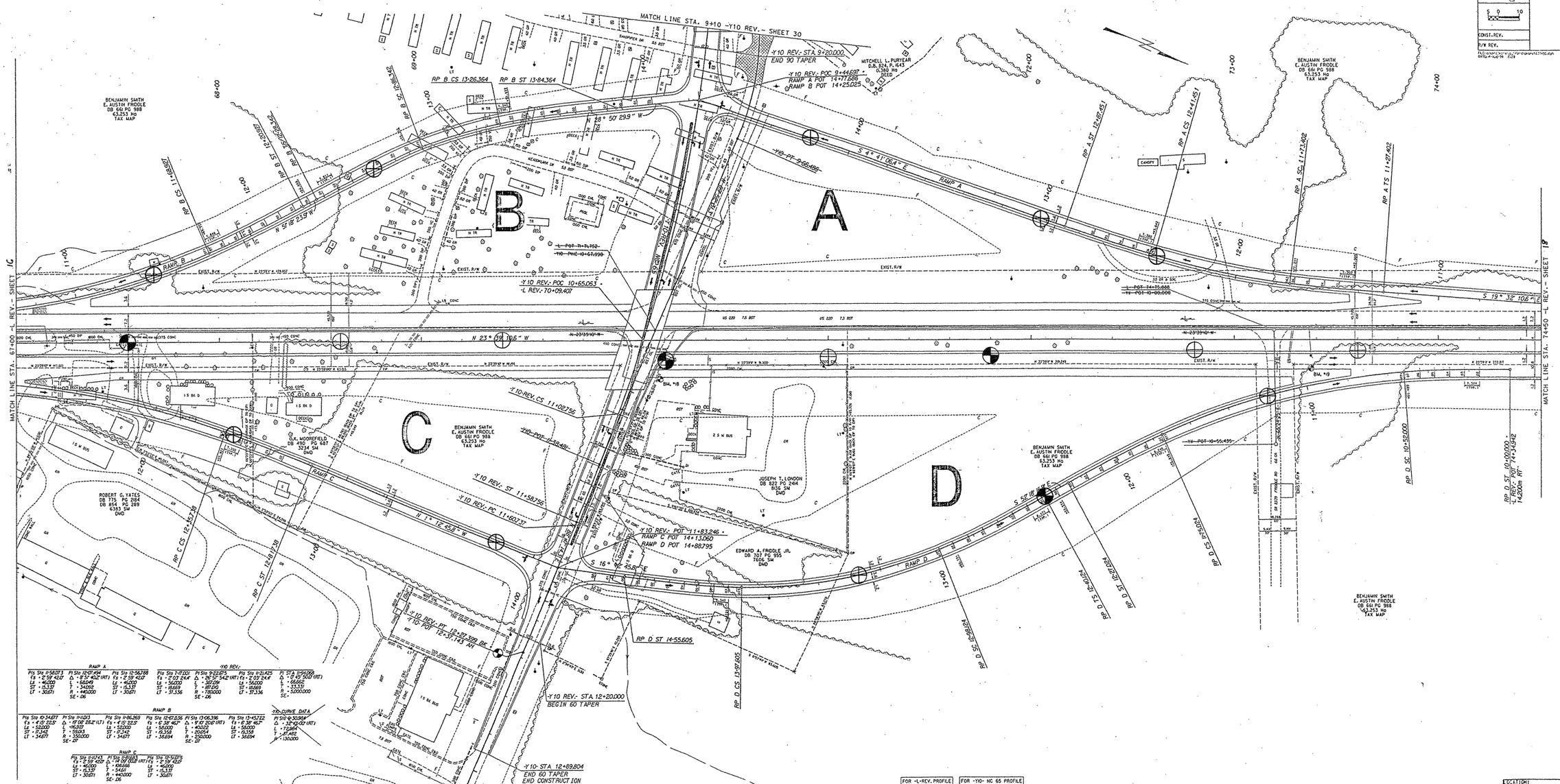
FOR NC 65 RAMP B PROFILE SEE SHEET

FOR NC 65 RAMP C PROFILE SEE SHEET

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS

METRIC	PROJECT REFERENCE NO.	SHEET NO.
0 5 10	R-2430C	1
CONST. REV.	HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
R/W REV.		



RAMP A

Pts Sta 11+58.073	Pt Sta 12+77.494	Pts Sta 13+56.788
Fa = 2° 59' 42.0"	Δ = 8° 54' 42.2" (RT)	Fa = 2° 59' 42.0"
Ls = 46.000	L = 68.049	Ls = 46.000
ST = 15.331	T = 34.092	ST = 15.331
LT = 30.671	R = 440.000	LT = 30.671
	SE = .06	

Y10 REV.-

Pts Sta 7+71.103	Pt Sta 9+23.875	Pts Sta 9+71.425
Fa = 9° 07' 24.4"	Δ = 30° 57' 54.2" (RT)	Fa = 9° 07' 24.4"
Ls = 56.000	L = 101.09	Ls = 56.000
ST = 16.669	T = 51.90	ST = 16.669
LT = 37.136	R = 180.000	LT = 37.136
	SE = .06	

Pt Sta 10+55.435	
Δ = 8° 05' 00.0" (RT)	
L = 66.662	
T = 33.331	
R = 500.000	
SE =	

RAMP B

Pts Sta 10+34.877	Pt Sta 11+10.13	Pts Sta 11+66.369
Fa = 4° 01' 33.3"	Δ = 19° 08' 08.2" (LT)	Fa = 4° 01' 33.3"
Ls = 52.000	L = 96.921	Ls = 52.000
ST = 27.342	T = 55.043	ST = 27.342
LT = 34.677	R = 330.000	LT = 34.677
	SE = .07	

Pts Sta 12+47.036	Pt Sta 13+06.396
Fa = 6° 38' 46.7"	Δ = 9° 41' 20.6" (RT)
Ls = 58.000	L = 40.012
ST = 19.358	T = 20.014
LT = 38.694	R = 250.000
	SE = .07

Pts Sta 13+43.722	
Fa = 6° 38' 46.7"	
Ls = 58.000	
ST = 19.358	
LT = 38.694	

Y10-CURVE DATA

Pt Sta 9+30.984	
Δ = 32° 40' 02" (RT)	
L = 72.844	
T = 37.481	
R = 130.000	

RAMP C

Pts Sta 11+01.43	Pt Sta 12+16.63	Pts Sta 13+10.015
Fa = 2° 59' 42.0"	Δ = 14° 09' 05.2" (RT)	Fa = 2° 59' 42.0"
Ls = 46.000	L = 108.566	Ls = 46.000
ST = 15.331	T = 54.61	ST = 15.331
LT = 30.671	R = 440.000	LT = 30.671
	SE = .06	

RAMP D

Pts Sta 10+34.877	Pt Sta 11+41.153	Pts Sta 11+92.387	Pts Sta 12+78.816	Pt Sta 13+48.512
Fa = 4° 01' 33.3"	Δ = 20° 18' 35.2" (LT)	Fa = 4° 01' 33.3"	Fa = 6° 38' 46.7"	Δ = 53° 47' 37.2" (RT)
Ls = 52.000	L = 123.054	Ls = 52.000	Ls = 58.000	L = 99.481
ST = 27.342	T = 62.013	ST = 27.342	ST = 19.358	T = 50.401
LT = 34.677	R = 350.000	LT = 34.677	LT = 38.694	R = 250.000
	SE = .07			SE = .08

Pts Sta 13+48.512	
Fa = 6° 38' 46.7"	
Ls = 58.000	
ST = 19.358	
LT = 38.694	

FOR -L- REV. PROFILE SEE SHEETS	FOR -Y10- NC 65 PROFILE SEE SHEET
FOR NC 65 RAMP A PROFILE SEE SHEET	FOR NC 65 RAMP B PROFILE SEE SHEET
FOR NC 65 RAMP C PROFILE SEE SHEET	FOR NC 65 RAMP D PROFILE SEE SHEET

PAVEMENT REMOVAL

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

LOCATION:	
TIP NO.:	COUNTY:
DESIGNED BY:	DATE:
CHECKED BY:	DATE:

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	18
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST. REV.

R/W REV.

FILE: c:\projects\guilford\plans\745078.dgn
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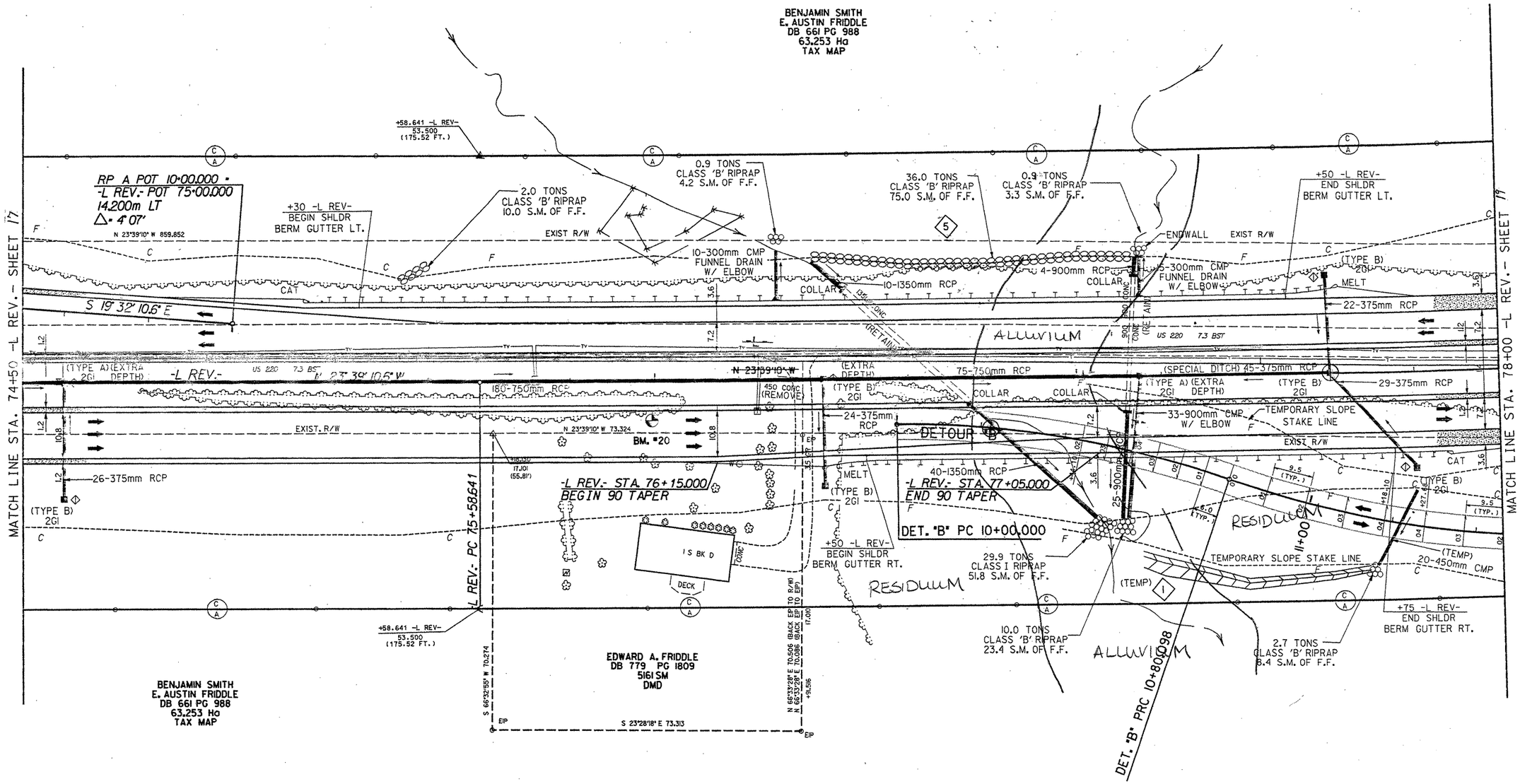

-L REV.-	DETOUR "B"	
PI Sta 77+51.191	PI Sta 10+40.441	PI Sta 11+23.367
Δ = 3° 09' 20.9" (LT)	Δ = 19° 31' 44" (RT)	Δ = 20° 51' 55" (LT)
L = 385.004	L = 80.098	L = 85.579
T = 192.550	T = 40.441	T = 43.269
R = 6,990.000	R = 235.000	R = 235.000
SE = NC	SE = .04	SE = .04

FOR -L-REV. PROFILE SEE SHEET	FOR NC 65 RAMP A PROFILE SEE SHEET	FOR DETOUR "B" PROFILE SEE SHEET

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

METRIC	PROJECT REFERENCE NO.	SHEET NO.
5 0 10	R-2413C	19
CONST. REV.	HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
R/W REV.		

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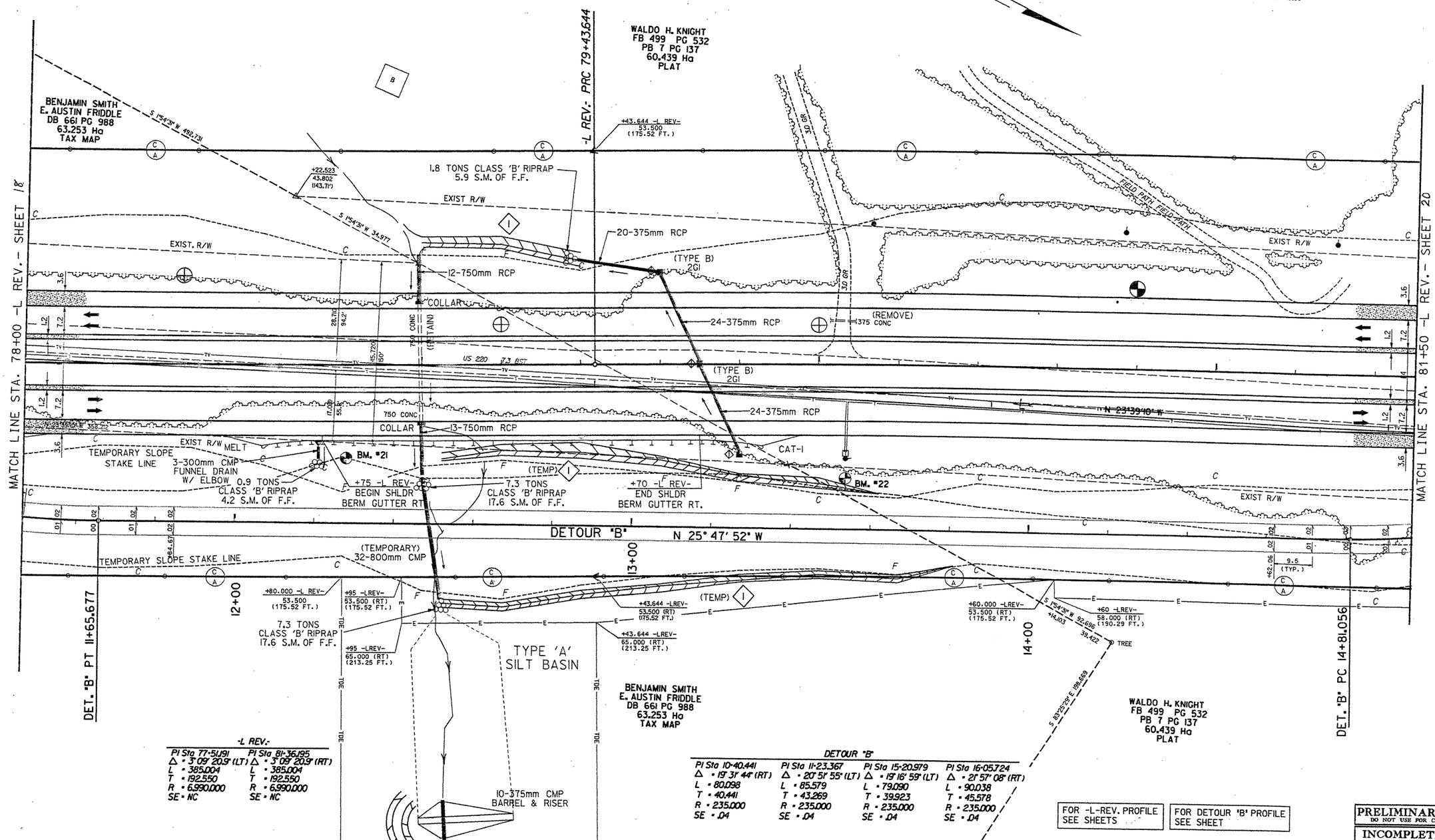
DATE: 23-Jan-97 16:03



-L REV.-

PI Sta 77+51.91	PI Sta 81+36.95
Δ = 3° 09' 20.9" (LT)	Δ = 3° 09' 20.9" (RT)
L = 385.004	L = 385.004
T = 192.550	T = 192.550
R = 6,990.000	R = 6,990.000
SE = NC	SE = NC

DETOUR "B"

PI Sta 10+40.441	PI Sta 11+23.367	PI Sta 15+20.979	PI Sta 16+05.724
Δ = 19° 31' 44" (RT)	Δ = 20° 51' 55" (LT)	Δ = 19° 16' 59" (LT)	Δ = 21° 57' 08" (RT)
L = 80.098	L = 85.579	L = 79.090	L = 90.038
T = 40.441	T = 43.269	T = 39.923	T = 45.578
R = 235.000	R = 235.000	R = 235.000	R = 235.000
SE = .04	SE = .04	SE = .04	SE = .04

FOR -L-REV. PROFILE SEE SHEETS

FOR DETOUR "B" PROFILE SEE SHEET

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

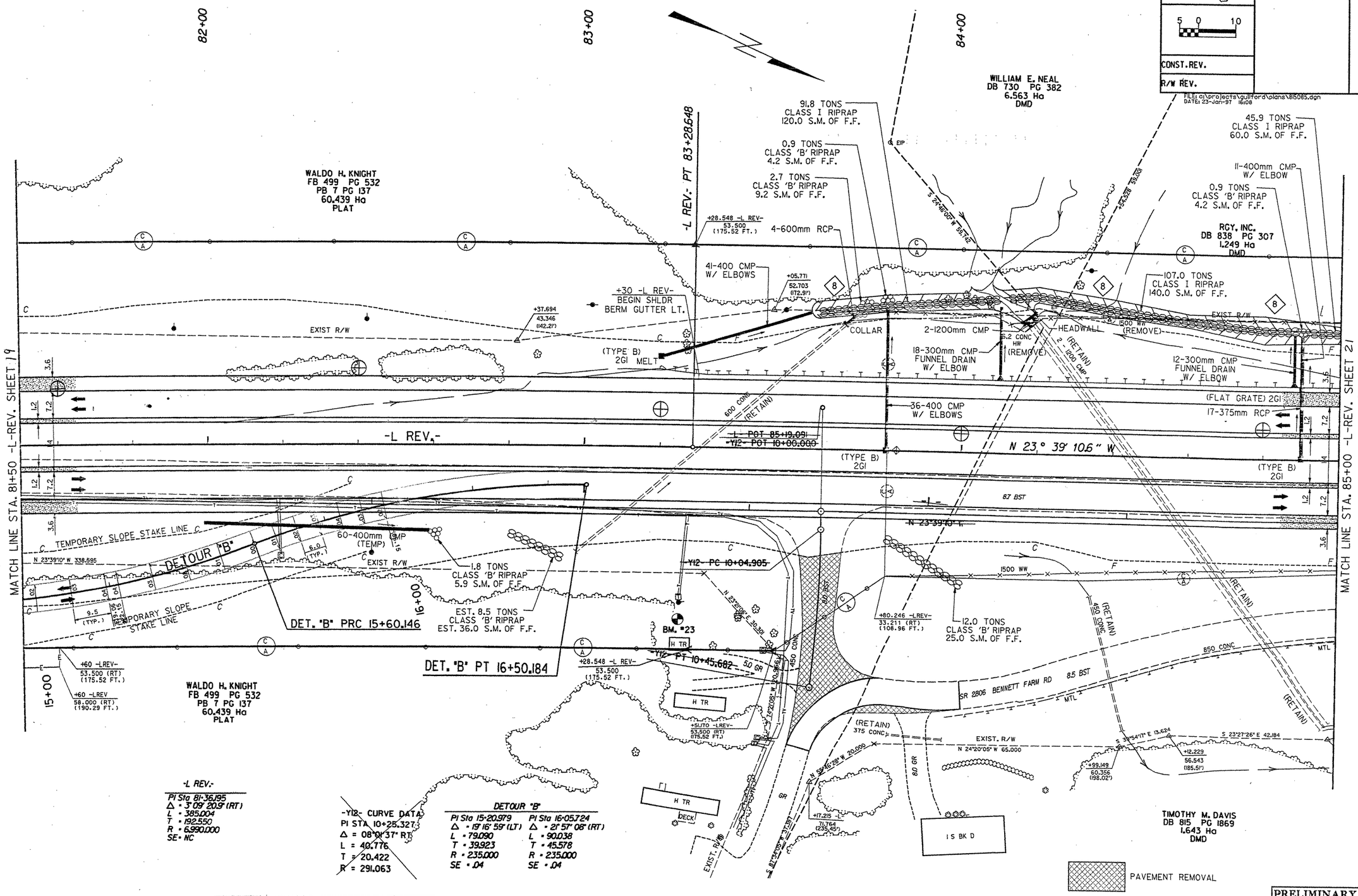
PROJECT REFERENCE NO.	SHEET NO.
R-2413C	20
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC 5 0 10

CONST. REV.

R/W REV.

FILE: c:\projects\guilford\plans\815085.dgn
DATE: 23-Jan-97 16:08



-L REV.-

PI Sta 81+36.195
Δ = 3° 09' 20.9" (RT)
L = 385.004
T = 192.550
R = 6,990.000
SE = NC

-Y12- CURVE DATA
PI STA 10+25.327
Δ = 08° 01' 37" RT
L = 40.776
T = 20.422
R = 291.063

DETOUR "B"

PI Sta 15+20.979	PI Sta 16+05.724
Δ = 19° 16' 59" (LT)	Δ = 21° 57' 08" (RT)
L = 79.090	L = 90.038
T = 39.923	T = 45.578
R = 235.000	R = 235.000
SE = .04	SE = .04

FOR -L-REV. PROFILE SEE SHEET	FOR DETOUR "B" PROFILE SEE SHEET

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	21
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST. REV.

R/W REV.

FILE: c:\projects\guilford\plans\858850.dgn
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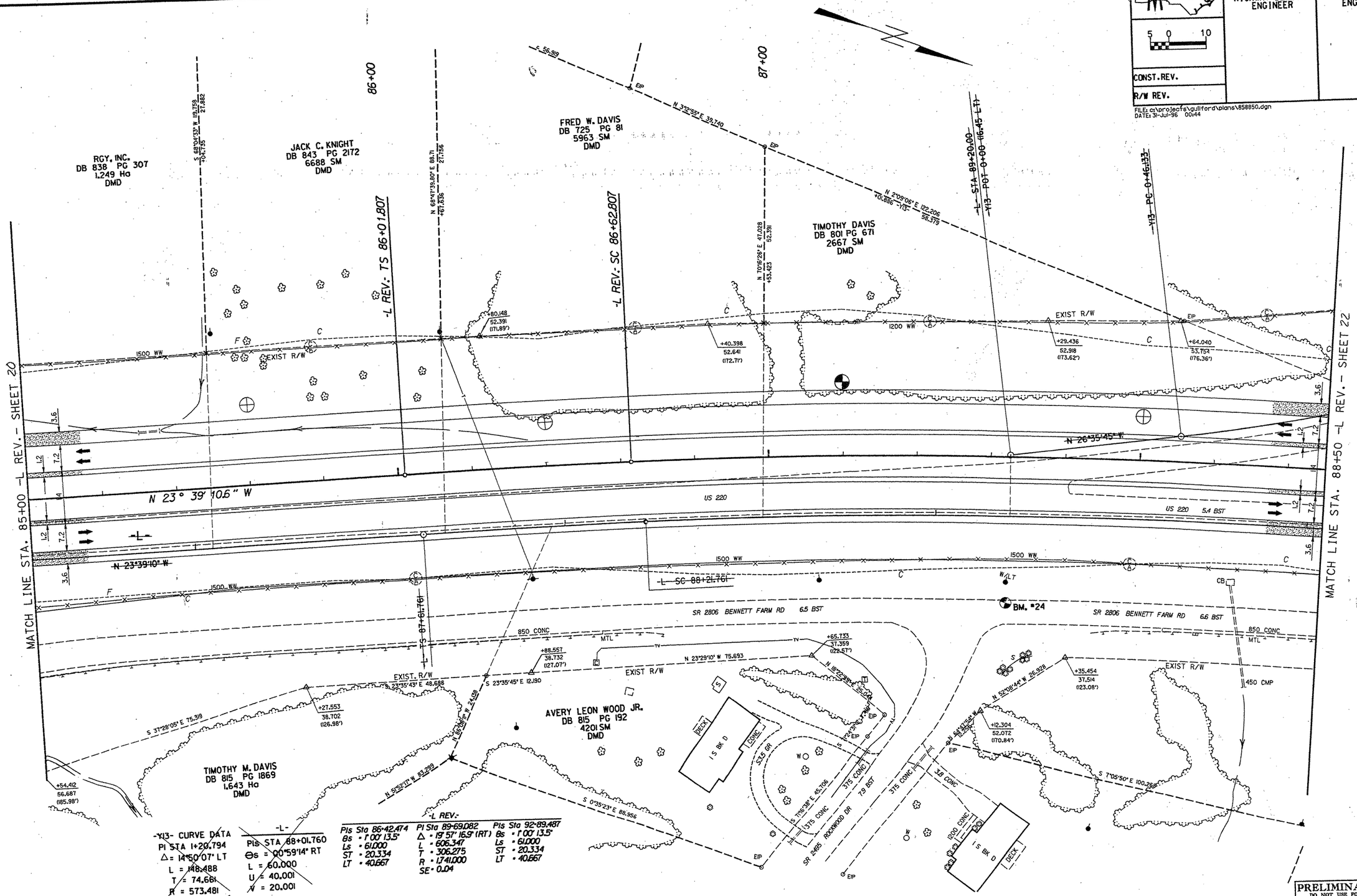
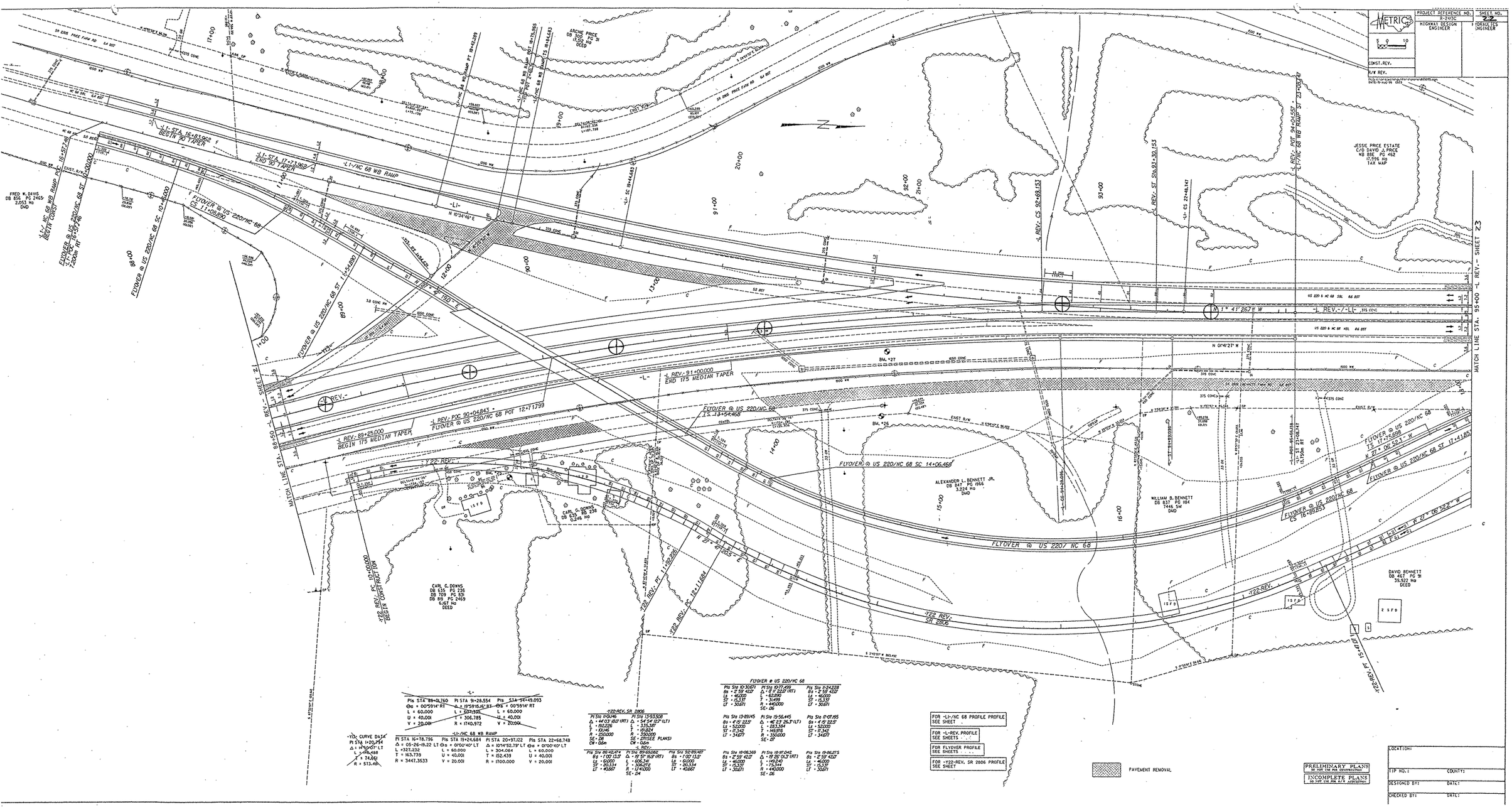


FOR -L-REV. PROFILE SEE SHEETS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION


METRIC
PROJECT REFERENCE NO.: R-2403C
SHEET NO.: 22
HIGHWAY DESIGN ENGINEER
FOUNDATIONS ENGINEER
CONST. REV.
R/W REV.
-L- REV.-/-LI- .375 CONC
-L REV.-89+25.000 BEGIN 175 MEDIAN TAPER
-L REV.-91+00.000 END 175 MEDIAN TAPER
-L REV.-POC 90+04.843 = FLYOVER @ US 220/NC 68 POT 12+71.799
FLYOVER @ US 220/NC 68 TS 13+54.468
FLYOVER @ US 220/NC 68 SC 14+06.468
FLYOVER @ US 220/NC 68 TS 17+75.698
FLYOVER @ US 220/NC 68 SC 16+89.853
FLYOVER @ US 2207 NC 68
-LI-/NC 68 WB RAMP
-LI-/NC 68 WB RAMP POT 16+57.48
-LI-/NC 68 WB RAMP POT 17+57.48
-LI-/NC 68 WB RAMP POT 18+75.305
-LI-/NC 68 WB RAMP PT 19+45.639
-LI-/NC 68 WB RAMP TS 19+44.683
-LI- CS 16+93.862 BEGIN 30 TAPER
-LI- CS 17+73.862 END 30 TAPER
-LI- SC 19+44.683
-LI- CS 92+69.152
-L REV.- CS 92+69.152
-L REV.- ST 93+30.153
-L REV.- CS 22+48.147
-L REV.- ST 94+04.157
-L REV.- CS 22+48.147
-L REV.- ST 94+04.157
-L REV.- CS 22+48.147
-L REV.- ST 94+04.157
-Y22-REV.-
-Y22-REV.- PT 11+69.226
-Y22-REV.- PC 12+11.684
-Y22-REV.- SR 2806
-Y22-REV.- PT 15+47.87
-Y22-REV.- PC 16+01.000 HIGHWAY DISC BEGIN
MATCH LINE STA. 89+00.00 -L REV.- SHEET 21
MATCH LINE STA. 93+00 -L REV.- SHEET 23
FRED W. DAVIS DB 856 PG 2465 2.053 Ac DWD
CARL G. DOWNS DB 635 PG 236 DB 709 PG 831 DB 819 PG 2469 6.87 Ac DEED
CARL G. DOWNS DB 635 PG 238 0.248 Ac
ALEXANDER L. BENNETT JR. DB 847 PG 1966 3.224 Ac DWD
WILLIAM B. BENNETT DB 837 PG 184 7.446 SM DWD
JESSIE PRICE ESTATE C/O DAVID J. PRICE WB 856 PG 462 17.096 Ac TAX MAP
DAVID BENNETT DB 467 PG 5 35.922 Ac DEED
ARCHIE PRICE DB 305 PG 31 17.00 Ac DEED
BUL. #27
BUL. #28
N 01°41'27" W
N 1° 41' 26.7" W
N 10°34'46" E
N 27° 06'52.3" W
N 27° 06'52" W
EXIST R/W
US 220 & NC 68 SBL R6 BST
US 220 & NC 68 NBL R6 BST
-L- PAVEMENT REMOVAL
-LI-/NC 68 WB RAMP
Pls STA 16+78.796
Δ = 05-26-19.22 LT
L =327.232
T = 163.739
R = 3447.3533
Pls STA 19+24.684
Θs = 0°00'40" LT
L = 60.000
U = 40.001
V = 20.001
Pls STA 20+97.122
Δ = 10°14'52.29" LT
L = 304.064
T = 152.439
R = 1700.000
Pls STA 22+68.748
Θs = 0°00'40" LT
L = 60.000
U = 40.001
V = 20.001
-LI- CURVE DATA
Pls STA 17+20.754
Δ = 14°50'07" LT
L = 106.688
T = 74.861
R = 513.48
-L-
Pls STA 88+06.760
Θs = 00°59'14" RT
L = 60.000
U = 40.001
V = 20.001
Pls STA 91+28.554
Δ = 19°59'15.15" RT
L = 320.335
T = 306.185
R = 1740.972
Pls STA 94+49.093
Θs = 00°59'14" RT
L = 60.000
U = 40.001
V = 20.001
-Y22-REV. SR 2806
Pls Sta 11+09.46
Δ = 44°03'.85" (RT)
Ls = 192.226
T = 101.46
R = 250.000
SE = .08
CW = .06e
Pls Sta 13+93.508
Δ = 54°54'.02" (LT)
L = 335.69
T = 181.82
R = 350.000
SE = .07(SEE PLANS)
CW = .06e
-L REV.-
Pls Sta 88+42.474
Θs = 1°00'13.5"
Ls = 60.000
SY = 20.334
LY = 40.667
Pls Sta 89+80.062
Δ = 19°57'16.9" (RT)
L = 606.34
T = 306.216
R = 1740.000
SE = .04
Pls Sta 92+69.467
Θs = 1°00'13.5"
Ls = 60.000
SY = 20.334
LY = 40.667
FLYOVER @ US 220/NC 68
Pls Sta 10+30.671
Θs = 2°59'42.2"
Ls = 46.000
SY = 15.331
LY = 30.671
Pls Sta 10+77.499
Δ = 8°11'22.8" (RT)
L = 62.690
T = 31.419
R = 440.000
SE = .02
Pls Sta 11+24.328
Θs = 2°59'42.2"
Ls = 46.000
SY = 15.331
LY = 30.671
Pls Sta 13+89.145
Θs = 4°15'22.5"
Ls = 52.000
SY = 17.342
LY = 34.671
Pls Sta 15+56.445
Δ = 46°23'26.7" (LT)
L = 283.564
T = 149.976
R = 350.000
SE = .07
Pls Sta 17+07.195
Θs = 4°15'22.5"
Ls = 52.000
SY = 17.342
LY = 34.671
Pls Sta 18+66.369
Θs = 2°59'42.2"
Ls = 46.000
SY = 15.331
LY = 30.671
Pls Sta 18+97.048
Δ = 15°25'01.3" (RT)
L = 192.67
T = 97.344
R = 440.000
SE = .06
Pls Sta 19+86.275
Θs = 2°59'42.2"
Ls = 46.000
SY = 15.331
LY = 30.671
FOR -LI-/NC 68 PROFILE PROFILE SEE SHEET
FOR -L-REV. PROFILE SEE SHEETS
FOR FLYOVER PROFILE SEE SHEETS
FOR -Y22-REV. SR 2806 PROFILE SEE SHEET
PAVEMENT REMOVAL
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
LOCATION:
TIP NO.:
COUNTY:
DESIGNED BY:
DATE:
CHECKED BY:
DATE:

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	23
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

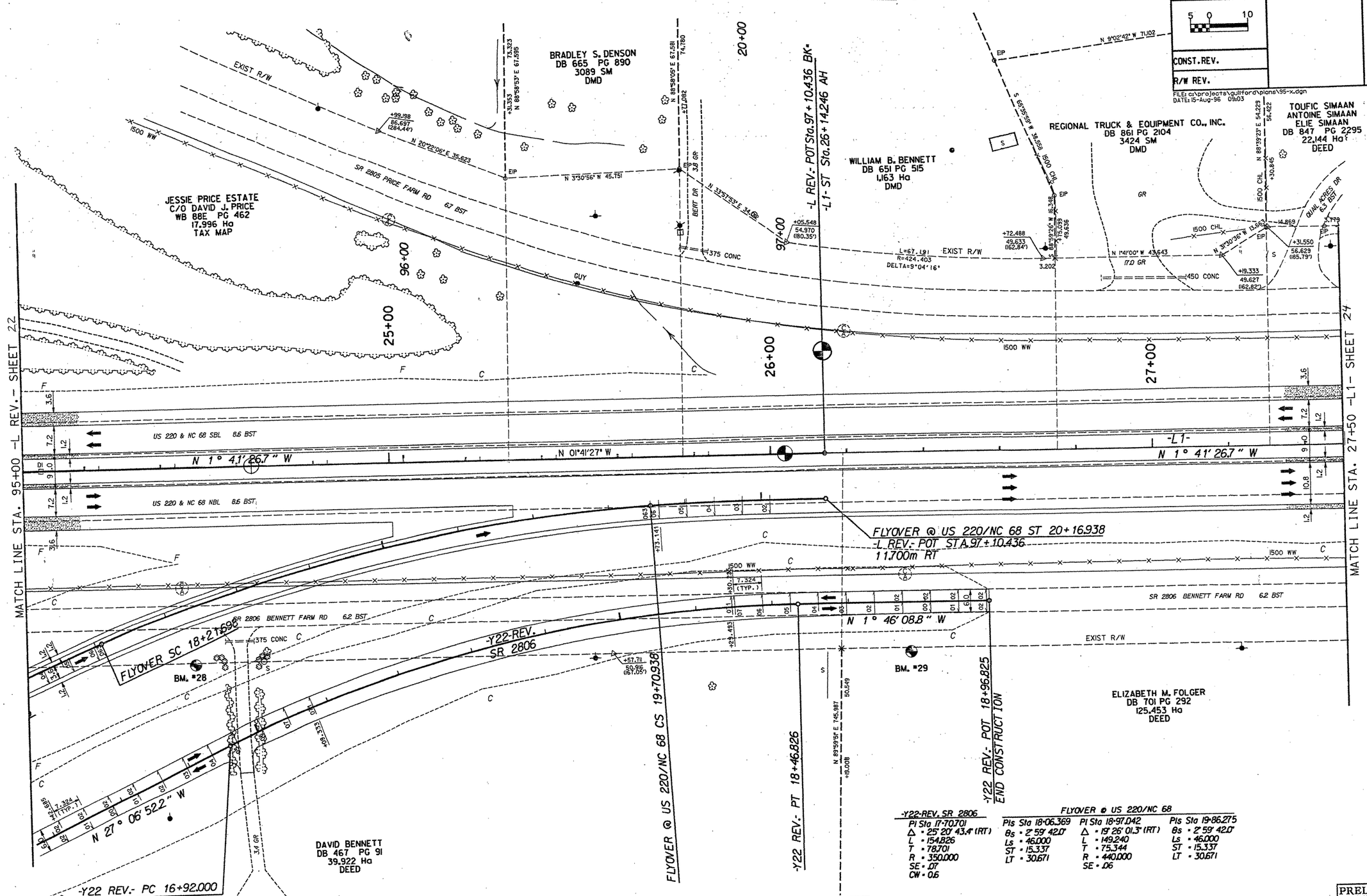
METRIC

5 0 10

CONST. REV.

R/W REV.

FILE: c:\projects\guilford\plans\95-x.dgn
DATE: 15-Aug-96 09:03



-Y22-REV. SR 2806

PI Sta 17+70.701
Δ = 25° 20' 43.4" (RT)
L = 154.826
T = 78.701
R = 350.000
SE = .07
CW = 0.6

FLYOVER @ US 220/NC 68

PIs Sta 18+06.369	PI Sta 18+97.042	PIs Sta 19+86.275
θs = 2° 59' 42.0"	Δ = 19° 26' 01.3" (RT)	θs = 2° 59' 42.0"
Ls = 46.000	L = 149.240	Ls = 46.000
ST = 15.337	T = 75.344	ST = 15.337
LT = 30.671	R = 440.000	LT = 30.671
	SE = .06	

PRELIMINARY PLA
DO NOT USE FOR CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	25
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

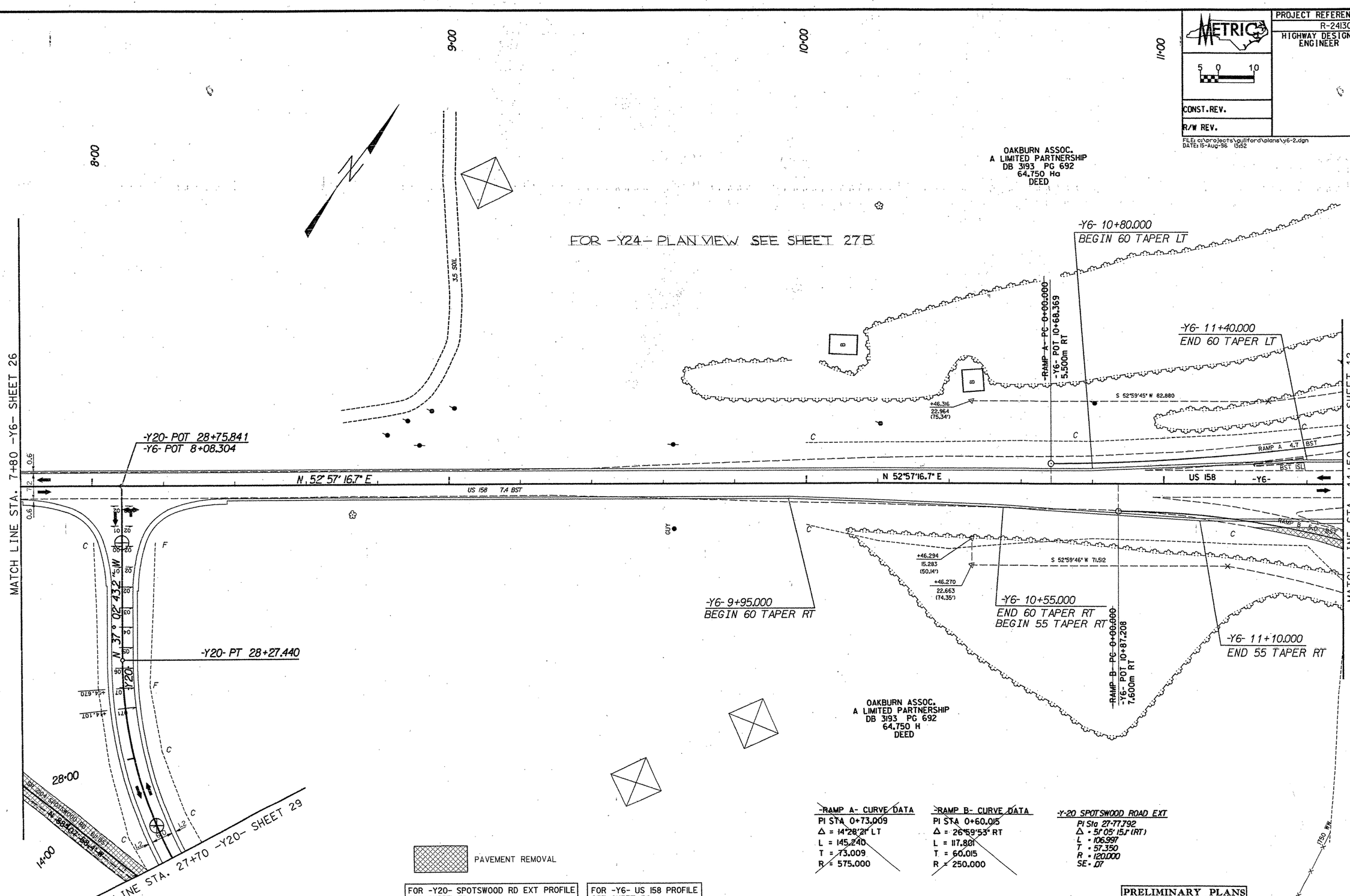
METRIC

5 0 10

CONST. REV.

R/W REV.

FILE: c:\projects\guilford\plans\y6-2.dgn
DATE: 15-Aug-96 15:52



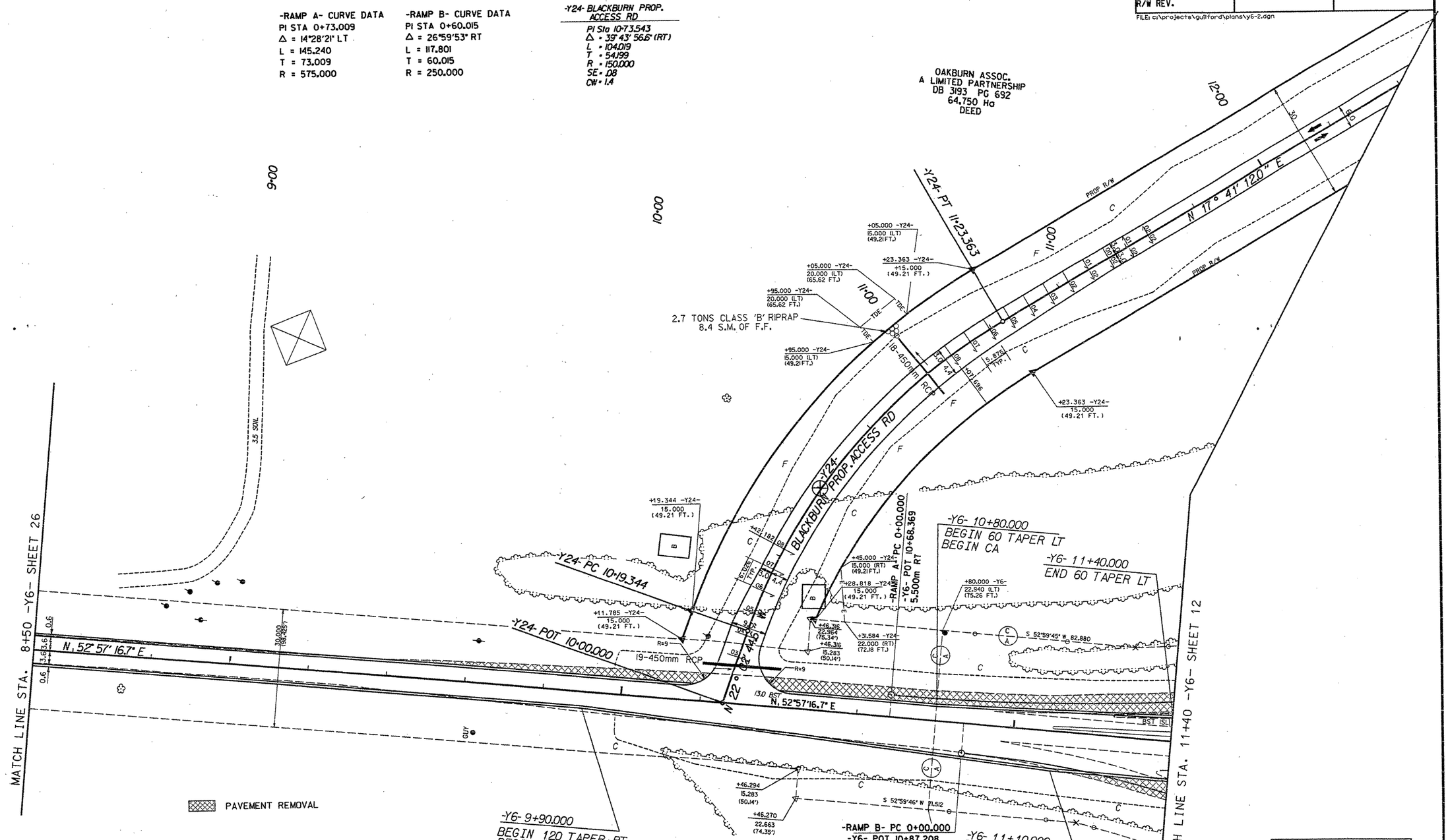
PROJECT REFERENCE NO.	SHEET NO.
R-2413C	2G
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
CONST. REV.	
R/W REV.	

FILE: c:\projects\guilford\plans\y6-2.dgn

-RAMP A- CURVE DATA
PI STA 0+73.009
Δ = 14°28'21" LT
L = 145.240
T = 73.009
R = 575.000

-RAMP B- CURVE DATA
PI STA 0+60.015
Δ = 26°59'53" RT
L = 117.801
T = 60.015
R = 250.000

-Y24- BLACKBURN PROP. ACCESS RD
PI Sta 10+73.543
Δ = 39°43'56.6" (RT)
L = 104.019
T = 54.199
R = 150.000
SE = .08
CW = 1.4



FOR -Y24- BLACKBURN PROP. ACCESS RD PROFILE SEE SHEET 74

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

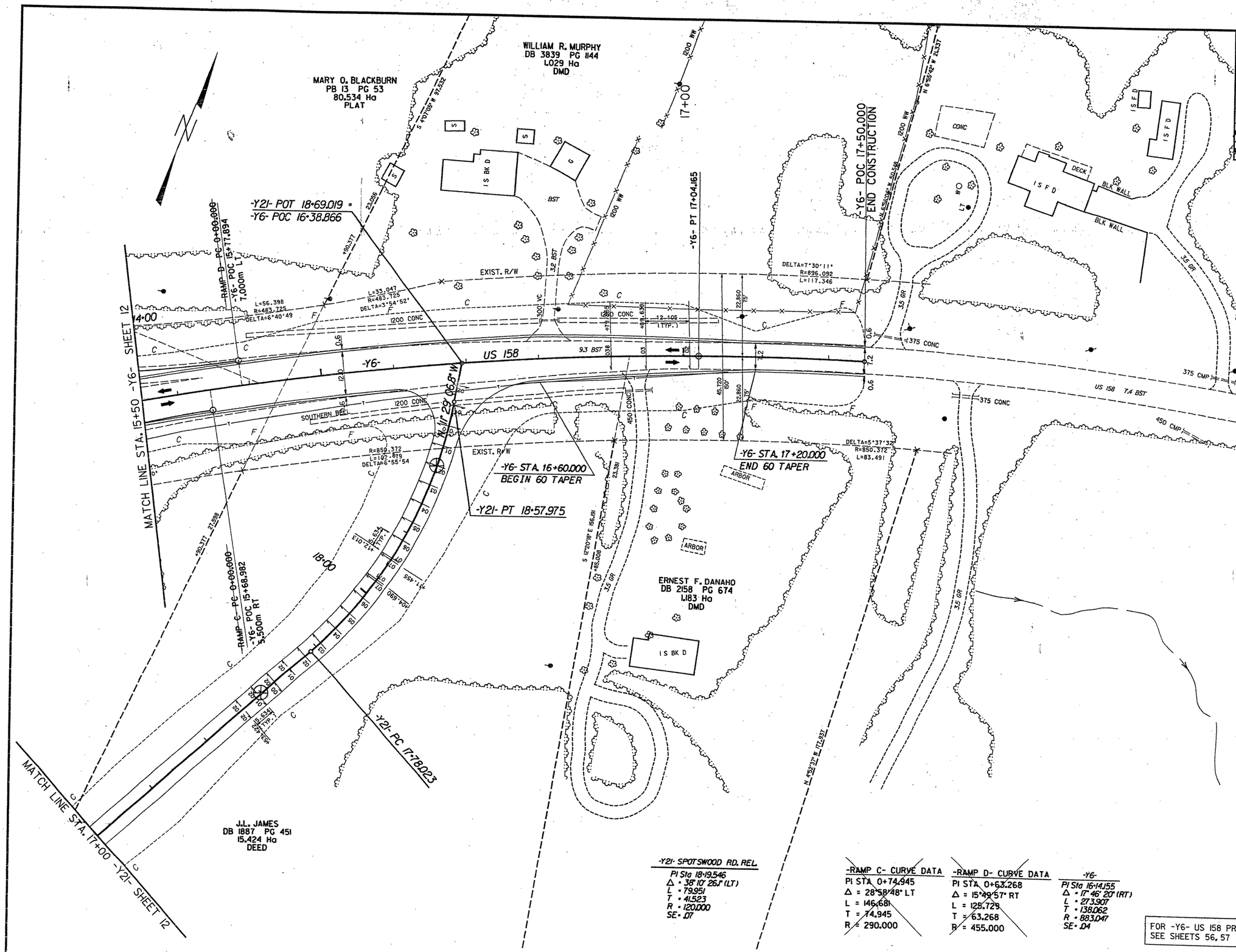
PROJECT REFERENCE NO.	SHEET NO.
R-2413C	27
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

CONST. REV.

R/W REV.

FILE: c:\projects\guilford\plans\y6-3.dgn
DATE: 15-Aug-96 13:54



FOR -Y6- US 158 PROFILE
SEE SHEETS 56, 57

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	28
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST. REV.

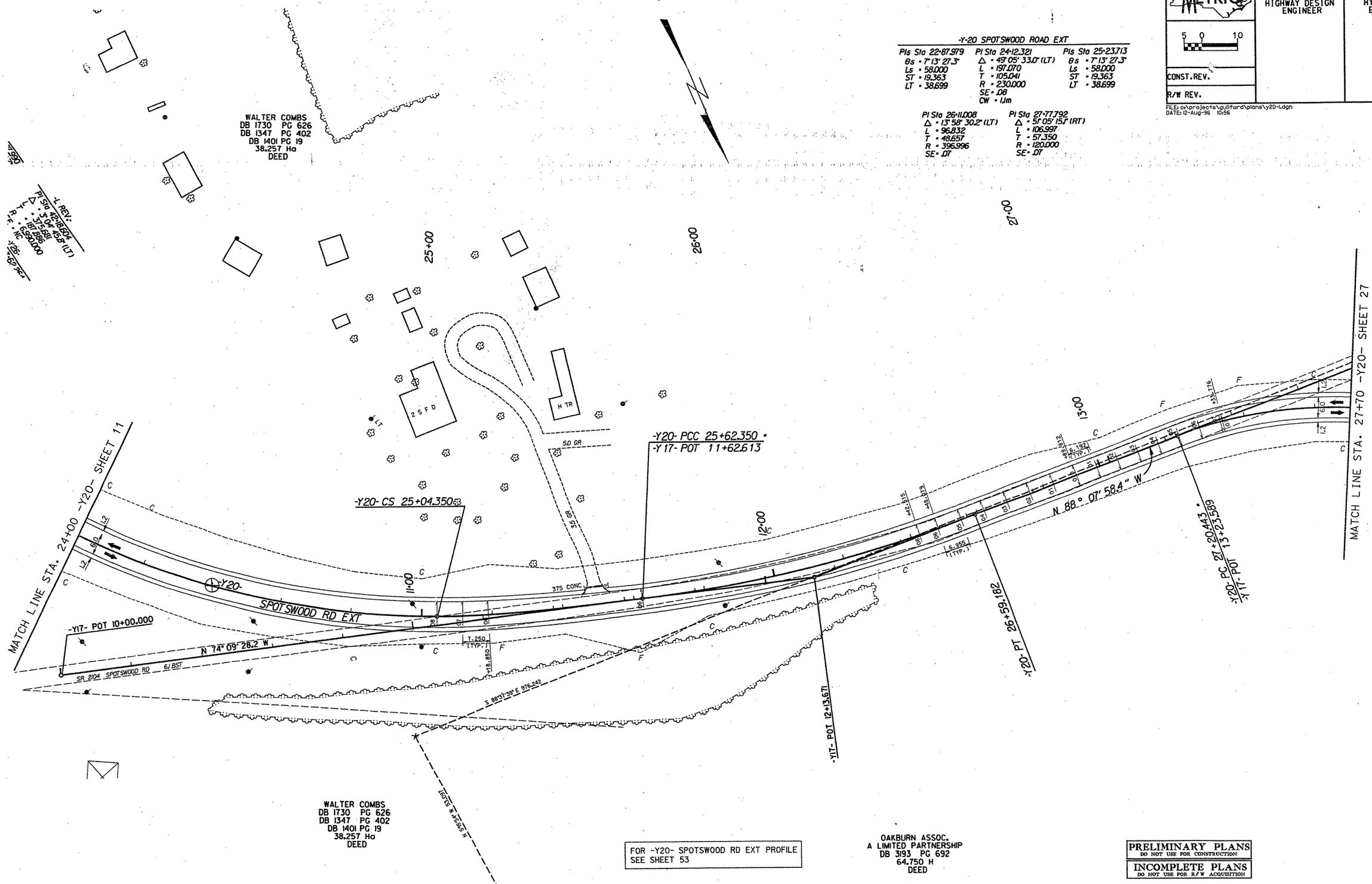
R/W REV.

FILE: c:\projects\guilford\plans\y20-1.dgn
DATE: 12-Aug-96 10:56

-Y-20 SPOTSWOOD ROAD EXT

Pls Sta 22+87.979	Pl Sta 24+12.321	Pls Sta 25+23.713
θs = 7° 13' 27.3"	Δ = 49° 05' 33.0" (LT)	θs = 7° 13' 27.3"
Ls = 58.000	L = 197.070	Ls = 58.000
ST = 19.363	T = 105.041	ST = 19.363
LT = 38.699	R = 230.000	LT = 38.699
	SE = .08	
	CW = 1.1m	

Pl Sta 26+11.008	Pl Sta 27+77.792
Δ = 13° 58' 30.2" (LT)	Δ = 51° 05' 15.1" (RT)
L = 96.832	L = 106.997
T = 48.657	T = 57.350
R = 396.996	R = 120.000
SE = .07	SE = .07



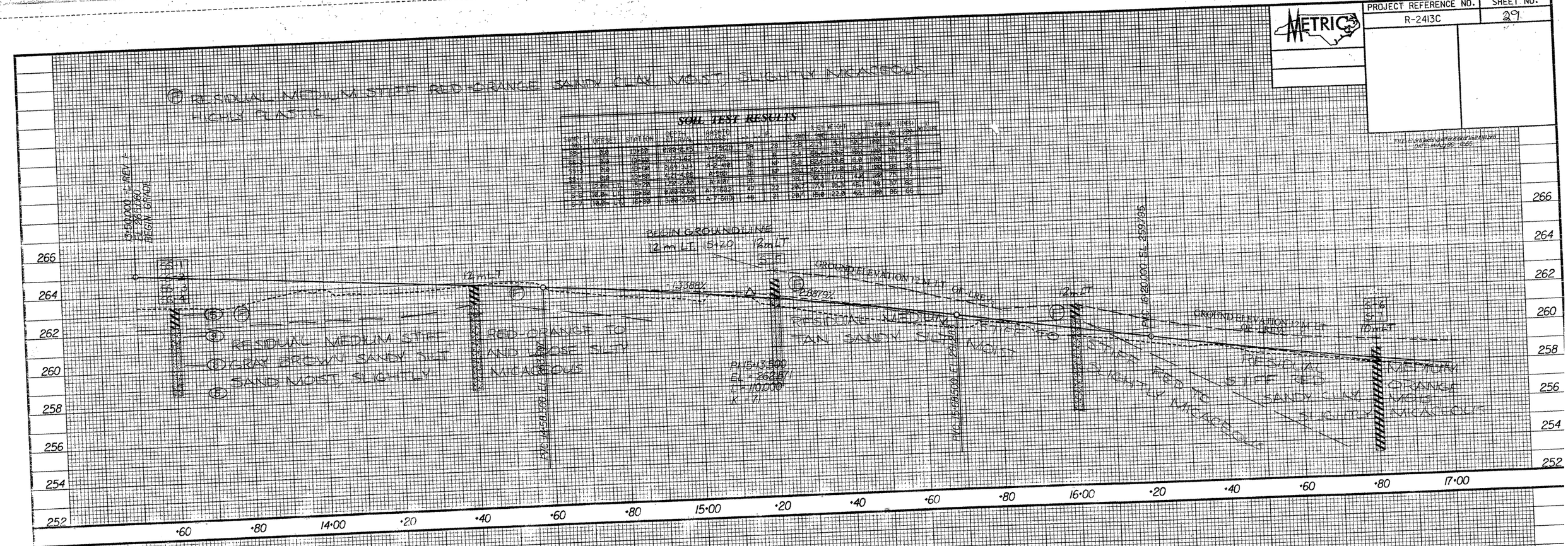
FOR -Y20- SPOTSWOOD RD EXT PROFILE
SEE SHEET 53

OAKBURN ASSOC.
A LIMITED PARTNERSHIP
DB 3193 PG 692
64.750 H
DEED

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

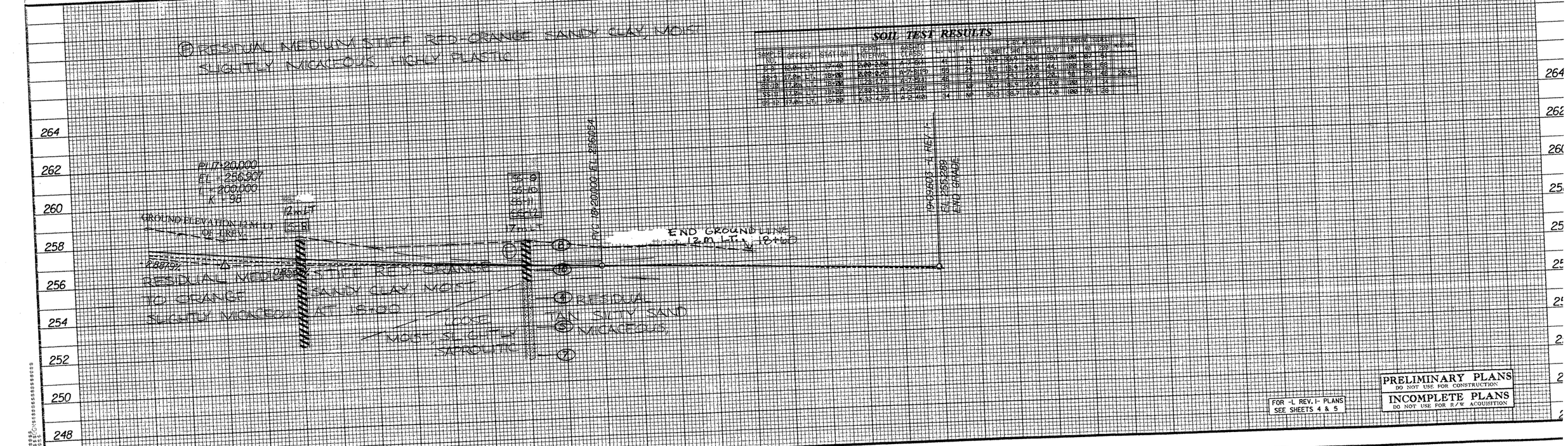
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	29



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	PI	% PASSING SIEVES 10	40	200	MOISTURE
BS-8	12.0m LT.	15+80	0.00-2.75	A-7-5(21)	55	28	28.8	21.3	51.1	52.1
BS-9	12.0m LT.	15+80	0.00-2.75	A-4(6)	30	6	6.8	85.6	98.4	100	90	63
SS-13	12.0m LT.	15+80	2.67-3.17	A-2-4(0)	35	NP	6.8	85.6	98.8	100	87	38
SS-14	12.0m LT.	15+80	4.27-4.66	A-6(9)	31	10	28.1	62.5	71.8	6.8	100	86	36
SS-15	12.0m LT.	15+80	1.22-2.00	A-4(0)	30	5	28.1	86.1	71.5	7.4	100	75	31
BS-6	10.0m LT.	16+80	0.00-0.50	A-7-6(2)	47	22	28.7	17.4	18.3	46.1	98	57	62
BS-7	10.0m LT.	16+80	0.00-3.50	A-7-6(13)	48	21	28.7	15.0	22.0	42.1	100	86	66



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	PI	% PASSING SIEVES 10	40	200	MOISTURE
BS-9	18.0m LT.	17+40	0.00-2.58	A-7-6(4)	41	13	22.9	30.9	95.6	98.1	100	87	37	
BS-10	17.0m LT.	18+00	0.00-2.45	A-7-6(19)	55	29	18.5	18.3	26.6	44.	100	88	55	
SS-13	17.0m LT.	18+00	0.00-2.25	A-7-6(17)	46	2	28.3	25.1	22.6	20.1	98	73	46	28.4
SS-18	17.0m LT.	18+00	1.25-1.75	A-2-4(0)	33	NP	34.7	38.9	20.4	8.0	100	77	34	
SS-19	17.0m LT.	18+00	0.00-1.25	A-2-4(0)	34	NP	38.3	38.7	18.0	4.8	100	76	28	
BS-10	17.0m LT.	18+00	0.32-4.77											

FOR -L- REV. 1- PLANS SEE SHEETS 4 & 5

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

PROJECT REFERENCE NO.	SHEET NO
R-2413C	30

(A) RESIDUAL MEDIUM STIFF TAN-BROWN SANDY CLAY MOIST

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT GRAVEL	COARSE SAND	FINE SAND	SILT	CLAY	% PASSING (SIEVE) #10	#40	#200	MOISTURE
S-106	0.0	18+00	0.00-0.70	A-6(7)	38	9	0.0	25.0	21.0	28.0	26.0	100	84	64	
S-107	0.0	18+00	0.70-3.00	A-1-b(0)	24	NP	56.2	26.7	11.1	6.0	1.7	66	36	16	
SS-95	0.0	20+00	0.00-0.45	A-7-5(10)	45	21	20.7	16.5	7.8	42.1	13.0	80	61		
SS-96	0.0	20+00	0.45-1.00	A-7-5(20)	50	21	9.4	18.3	19.2	34.1	19.0	97	76	57.6	
SS-97	0.0	20+00	2.57-3.42	A-5(2)	47	NP	12.2	13.7	35.0	28.1	10.8	94	64		
RT-5	0.0	20+00	2.40-10.20	A-7-5(7)	49	18	28.4	24.4	27.9	24.2	15.1	98	81	55	
SS-98	0.0	20+00	6.01-16.16	A-2-4(0)	31	NP	34.3	36.1	8.8	12.8	8.0	94	74	38	
S-108	0.0	20+00	5.77-7.17	A-2-6(0)	45	4	28.9	41.4	21.6	6.0	2.1	92	79	32	
SS-99	0.0	20+00	7.53-7.88	A-2-4(0)	36	NP	41.5	27.9	16.5	14.0	2.1	90	54	32	22.6
SS-100	0.0	20+00	9.06-9.50	A-2-4(0)	31	NP	36.3	43.9	15.3	6.0	0.5	100	79	26	
SS-101	0.0	20+00	10.57-11.02	A-2-4(0)	34	NP	38.7	42.5	16.8	6.0	0.0	98	80	28	
CBR-4	0.0	20+00	10.22-11.28	A-4(1)	37	5	37.1	38.3	17.2	20.2	3.3	90	80	42	

18+20.000 ± REV.
BEGIN CONSTRUCTION

18+40.000 ± REV.
EL = 240.000
BEGIN GRADE

SLOT 106 107

RESIDUAL MEDIUM DENSE TO DENSE TAN TO GRAY COARSE SAND WITH SOME MICA, SILTY SAND MOIST

RESIDUAL MEDIUM STIFF TO STIFF ORANGE SANDY SILT MOIST SOME MICA AT 19+40 AND BROWN TO GRAY SOFT WEATHERED ROCK (GRANITE)

8m RT

SS-95 ST-2
SS-96 SS-98
SS-97 CB-100
RT-5 SS-101
SS-98 CBR-4

BM #4 RR SPIKE IN BASE OF POWER POLE 20.6 M RT OF -L- STA 19+13 EL = 253.561

17+00 ·20 ·40 ·60 ·80 18+00 ·20 ·40 ·60 ·80 19+00 ·20 ·40 ·60 ·80 20+00 ·20

(A) RESIDUAL MEDIUM STIFF GRAY SANDY CLAY, SLIGHTLY MICACEOUS, SAPROLITIC, MOIST
(B) RESIDUAL STIFF BROWN TO ORANGE SANDY SILT, MOIST
(D) RESIDUAL LOOSE TAN AND BROWN SILTY SAND, WET
(F) RESIDUAL HARD TAN, WHITE, AND BROWN SANDY CLAY WET, HIGHLY PLASTIC
(G) ALLUVIAL VERY LOOSE GRAY SILTY FINE TO MEDIUM GRAINED SAND, WET
(G) ALLUVIAL VERY SOFT TO MED. STIFF BROWN TO GRAY SANDY SILT AND SILTY CLAY, WET

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT GRAVEL	COARSE SAND	FINE SAND	SILT	CLAY	% PASSING (SIEVE) #10	#40	#200	MOISTURE
S-93	0.0	20+00	2.00-2.50	A-2-4(0)	25	NP	44.2	30.1	19.5	6.0	0.2	94	69	31	
S-94	0.0	20+00	5.50-6.00	A-2-4(0)	20	NP	48.3	30.1	16.5	5.0	0.1	93	57	23	
S-91	0.0	21+50	0.00-1.00	A-7-6(4)	48	26	32.7	10.9	19.3	34.1	3.0	100	76	56	
S-92	0.0	21+50	1.00-1.50	A-7-6(4)	42	19	38.1	20.7	13.1	28.0	5.1	99	73	45	
S-245	10.0m LT	22+40	0.00-0.50	A-7-6(15)	56	29	9.4	18.3	19.2	34.1	19.0	97	76	57	
S-246	10.0m LT	22+40	2.00-2.20	A-1-b(0)	37	NP	12.2	13.7	35.0	28.1	10.8	94	64		
SS-252	15.0m LT	23+20	0.00-0.45	A-5(1)	42	6	28.4	24.4	27.9	24.2	15.1	98	81	55	
SS-251	15.0m LT	23+20	0.90-1.10	A-6(4)	38	15	34.3	36.1	8.8	12.8	8.0	94	74	38	
SS-253	15.0m LT	23+20	1.10-1.35	A-2-4(0)	25	NP	28.9	41.4	21.6	6.0	2.1	92	79	32	
SS-254	15.0m LT	23+20	2.75-3.20	A-1-b(0)	37	NP	41.5	27.9	16.5	14.0	2.1	90	54	32	22.6
SS-255	15.0m LT	23+20	4.50-4.95	A-2-4(0)	35	NP	36.3	43.9	15.3	6.0	0.5	100	79	26	
SS-256	15.0m LT	23+20	6.75-7.20	A-7-6(22)	64	38	9.4	21.0	15.5	44.0	10.4	100	88	67	
ST-5A	15.0m LT	23+20	2.55-3.00	A-7-6(13)	42	24	14.6	22.7	26.1	32.6	3.0	99	91	65	
ST-5B															

PI 21+50.000
EL = 239.750
-L- 150.000
K = 62

RESIDUAL MEDIUM STIFF ORANGE TO RED BROWN MOIST SANDY CLAY TO WET

RESIDUAL MEDIUM DENSE BROWN SILTY SAND, MOIST

S-91 055477
S-92 191

S-245
S-246
0.0m LT

BM #5 RR SPIKE IN BASE OF POWER POLE 21.7 M RT OF -L- STA 22+36.50 EL = 244.580

SS-250
SS-251
SS-252
ST-5A
ST-5A
SS-253
SS-254
SS-255
SS-256

ALLUVIAL VERY SOFT TO MEDIUM GRAY SILTY SAND ORANGE BROWN TO GRAY SILT AND SILTY CLAY

FOR -L REV- PLANS SEE SHEET 6

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

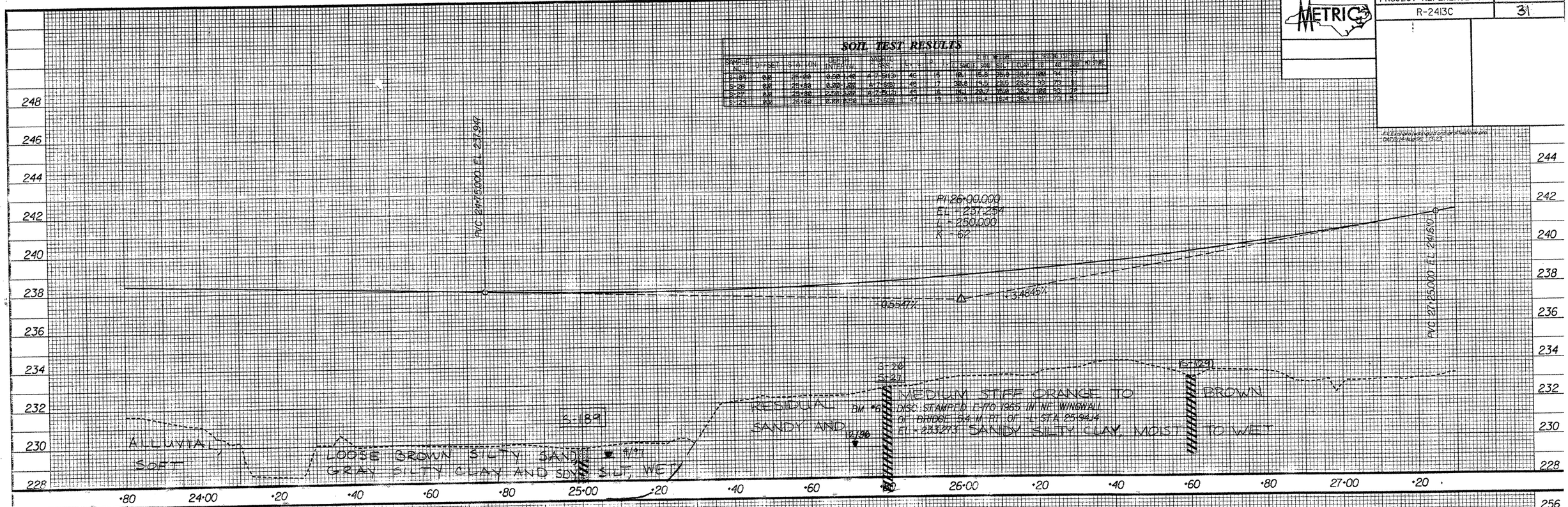
PROJECT REFERENCE NO.	SHEET NO.
R-2413C	31

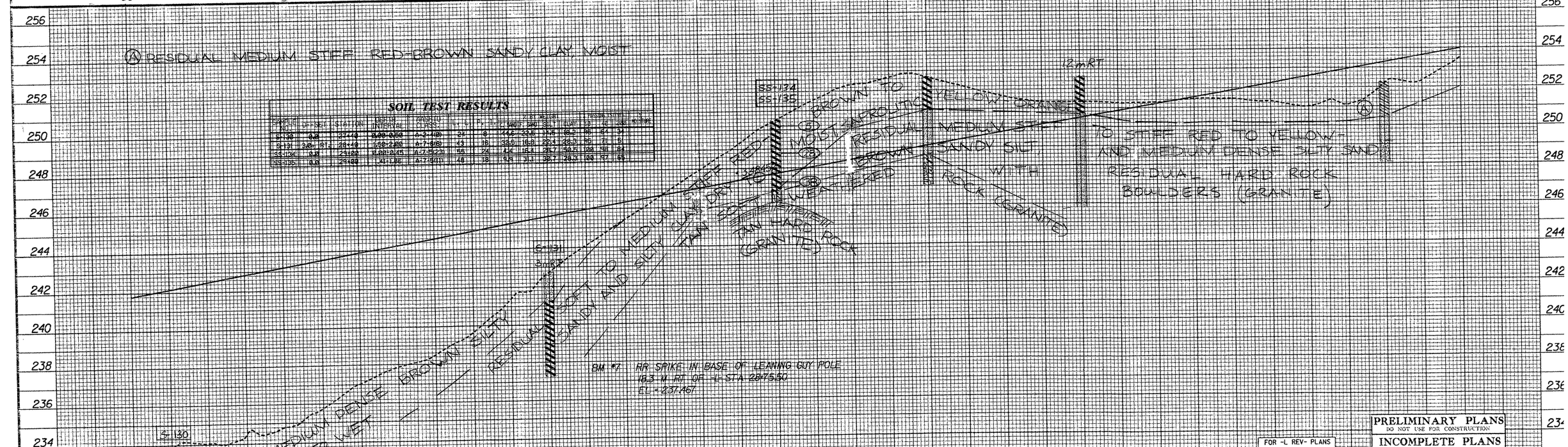
METRIC

FILE: 2413C0101.DGN USER: CONNATTHEW DATE: 14-AUG-96 15:22

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	PI	% PASSING #10	#40	#200	MOISTURE
S-26	0.0	25+00	0.00-1.40	A-7-5(3)	45	9	99.1	96.8	95.6	98.6	100	94	77	
S-28	0.0	25+50	0.00-1.00	A-7-6(8)	48	17	99.8	99.5	98.6	98.2	98	79	61	
S-27	0.0	25+50	2.50-3.00	A-7-5(12)	49	16	100.1	99.7	98.6	98.2	100	93	78	
S-29	0.0	25+00	0.00-0.50	A-7-5(8)	47	15	101.3	99.8	98.4	98.1	97	79	53	





SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	PI	% PASSING #10	#40	#200	MOISTURE
S-130	0.0	27+40	0.00-0.60	A-2-4(0)	24	8	100	99.8	91.6	98.2	95	84	13	
S-131	3.0	RT.	28+40	1.50-2.00	A-7-6(8)	43	16	99.9	99.8	98.3	98.1	95	71	5
SS-134	0.0		29+00	0.00-0.45	A-7-5(21)	55	24	101	100.5	98.7	98.5	98	98	84
SS-135	0.0		29+00	41-1.85	A-7-5(11)	49	19	100	99.7	97.4	98.2	98	97	65

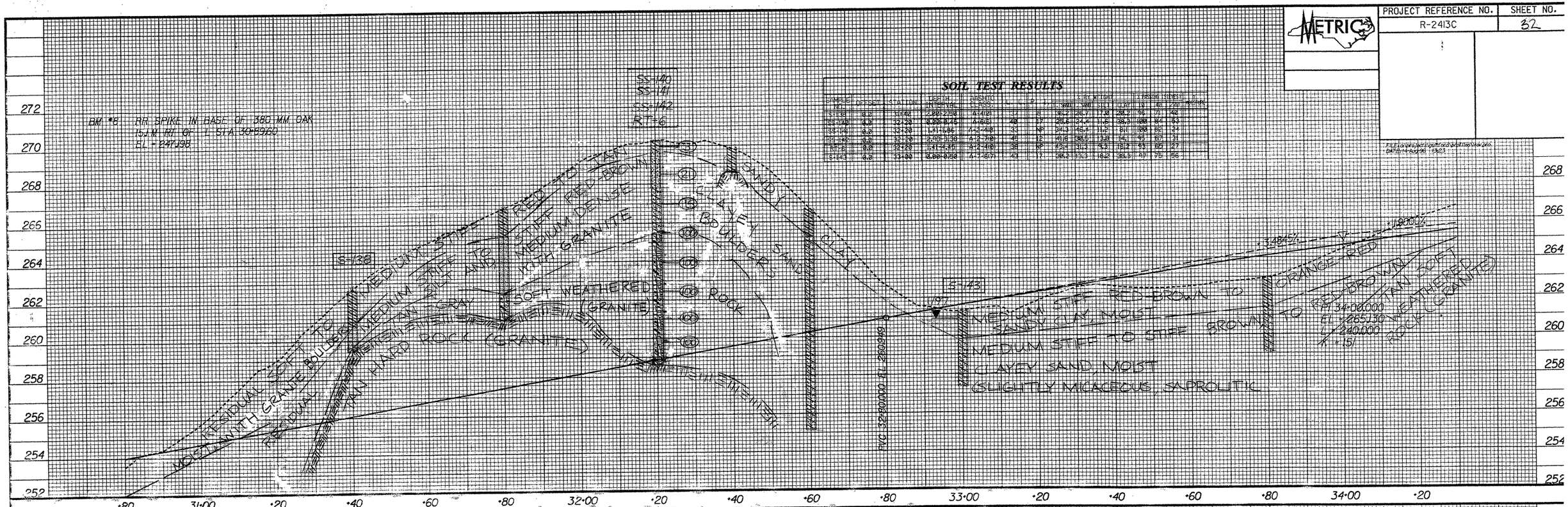
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR -L REV- PLANS

INCOMPLETE PLANS

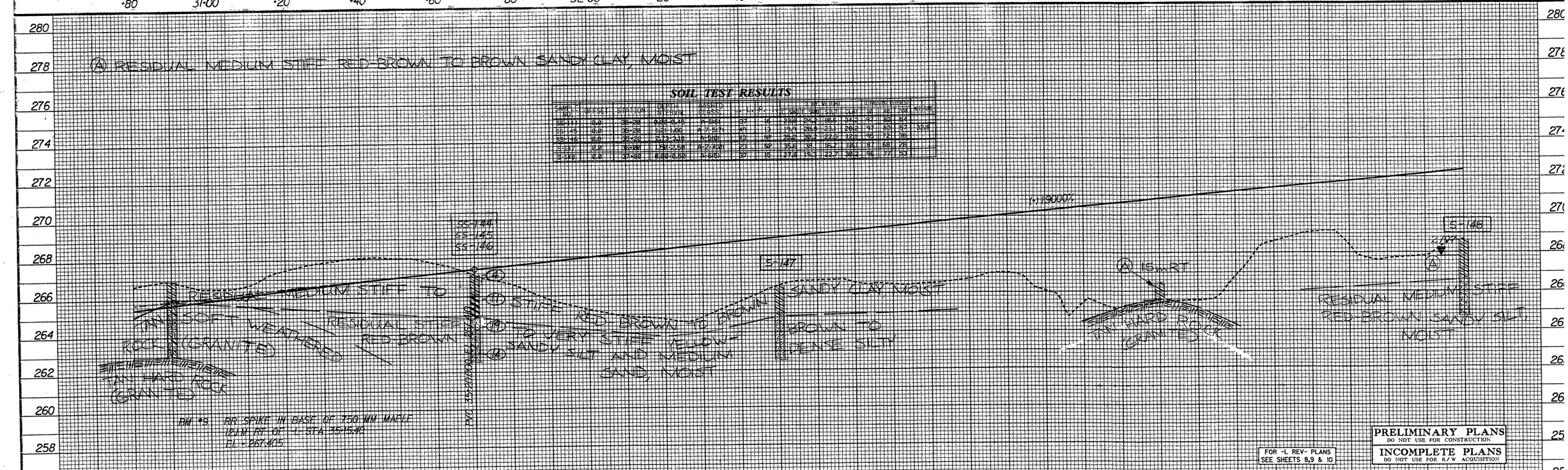
PROJECT REFERENCE NO.	SHEET NO.
R-2413C	32

METRIC



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	% BY WEIGHT SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (STEVES) 10	% PASSING (STEVES) 40	% PASSING (STEVES) 200	% MOISTURE
S-138	0.0	31+40	2.00-2.50	A-4(0)	37	8	36.2	26.7	17.0	20.2	96	71	40	
SS-140	0.0	32+20	0.00-0.45	A-6(6)	40	17	25.6	24.4	11.6	38.3	100	84	53	
SS-141	0.0	32+20	1.41-1.86	A-2-4(0)	33	NP	34.3	46.4	11.2	8.1	100	82	24	
SS-142	0.0	32+20	2.93-3.38	A-2-7(0)	45	12	41.6	30.5	13.8	14.1	95	67	31	
RT-6	0.0	32+20	1.41-4.45	A-2-4(0)	38	NP	43.4	31.3	9.3	18.2	93	65	27	
S-143	0.0	33+00	0.00-0.50	A-7-6(7)	43	17	30.2	13.3	18.2	38.3	97	75	56	



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	% BY WEIGHT SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (STEVES) 10	% PASSING (STEVES) 40	% PASSING (STEVES) 200	% MOISTURE
SS-144	0.0	35+20	0.00-0.45	A-6(6)	37	16	28.0	24.2	18.6	34.2	97	80	64	
SS-145	0.0	35+20	1.21-1.66	A-7-5(7)	49	13	19.9	28.0	23.1	28.2	97	80	57	32.8
SS-146	0.0	35+20	2.73-3.18	A-5(0)	43	NP	35.2	30.2	22.5	12.1	95	72	38	
S-147	0.0	36+00	1.50-2.50	A-2-4(0)	23	NP	35.6	38.1	16.2	10.1	87	68	28	
S-148	0.0	37+00	0.00-0.50	A-6(5)	37	15	27.8	19.3	22.7	30.2	96	77	53	

FOR -L REV- PLANS SEE SHEETS 8,9 & 10

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	33

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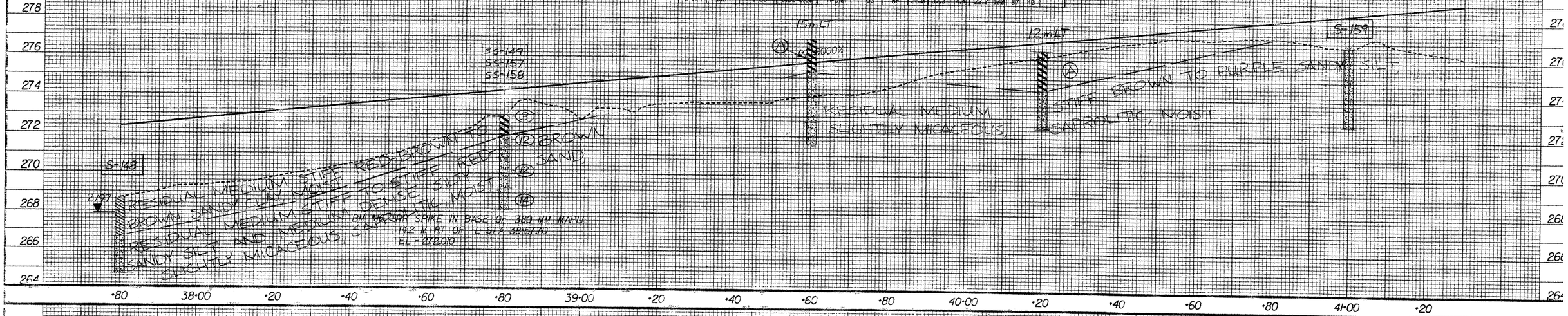
DATE: 11/13/96 15:23

Ⓐ RESIDUAL MEDIUM STIFF RED-BROWN SANDY CLAY, MOIST

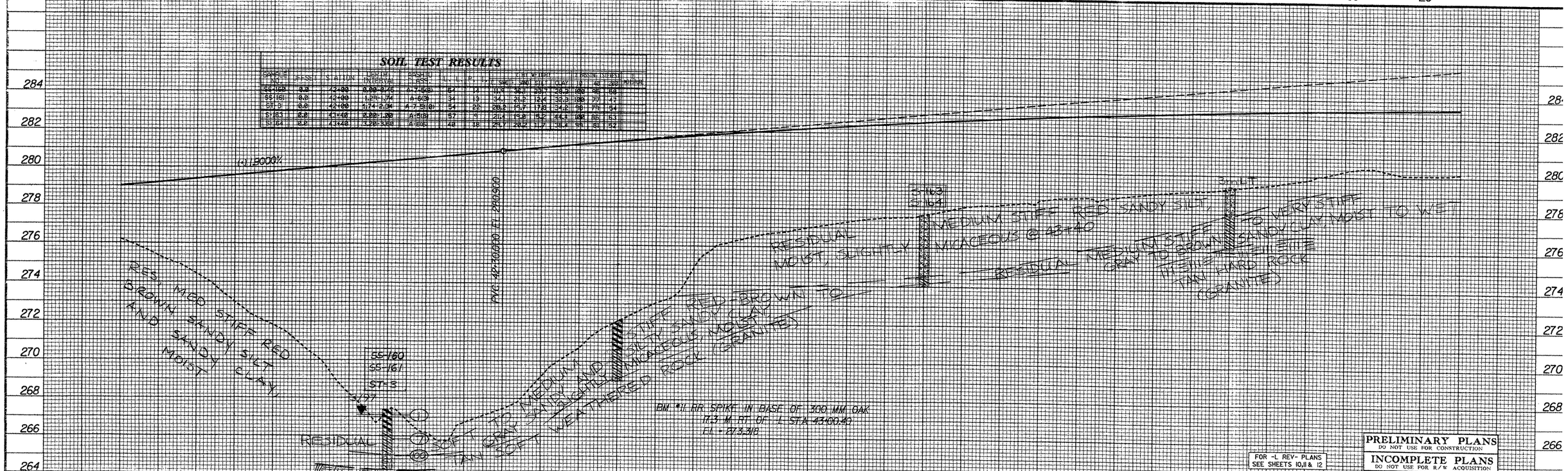
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% SOIL WGT. GRAV.	% SOIL WGT. SAND	% SOIL WGT. SILT	% SOIL WGT. CLAY	% PASSING SIEVE # 10	# 40	# 200	MISCELL.
S-148	0.0	37+80	0.00-0.50	A-6(8)	37	15	27.8	19.3	22.7	30.2	98	77	53	
SS-149	0.0	38+00	0.00-0.45	A-7-5(9)	42	17	29.8	28.7	13.2	28.3	98	77	49	
SS-157	0.0	38+00	1.15-1.61	A-5(0)	44	NP	35.7	38.7	15.4	18.2	98	72	38	
SS-158	0.0	38+00	4.30-4.76	A-2-4(0)	37	NP	42.4	32.9	14.5	12.1	97	78	31	
S-159	0.0	41+00	0.00-0.50	A-5(0)	53	NP	25.8	37.3	14.4	22.2	100	87	42	



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% SOIL WGT. GRAV.	% SOIL WGT. SAND	% SOIL WGT. SILT	% SOIL WGT. CLAY	% PASSING SIEVE # 10	# 40	# 200	MISCELL.
SS-160	0.0	42+00	0.00-0.46	A-7-5(9)	67	21	10.9	35.1	29.7	28.3	100	96	84	
SS-161	0.0	42+00	1.25-1.74	A-6(9)	34	13	34.1	21.2	12.4	33.3	100	77	47	
ST-5	0.0	42+00	4.74-5.34	A-7-5(10)	54	22	20.2	10.7	17.8	34.2	96	75	54	
SS-163	0.0	43+40	0.00-1.00	A-5(8)	57	9	21.4	15.8	15.2	44.6	100	86	53	
SS-164	0.0	43+40	1.25-1.96	A-6(6)	40	18	29.7	20.2	11.7	38.4	99	81	52	



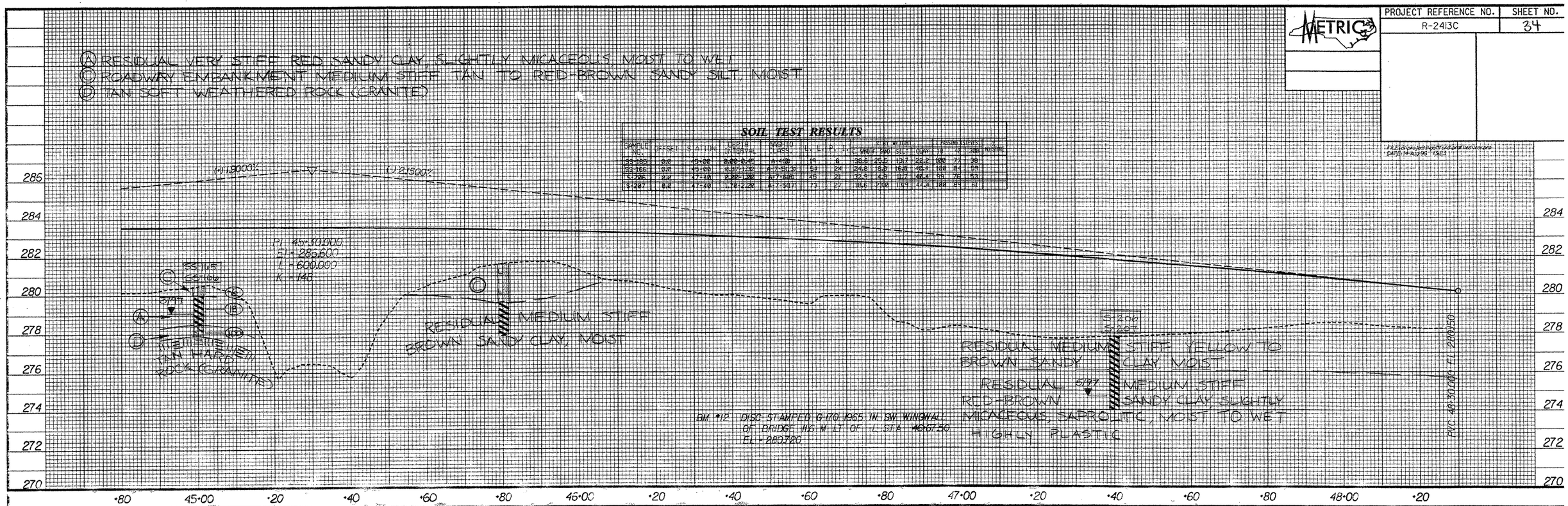
FOR -L REV- PLANS SEE SHEETS 10,11 & 12

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

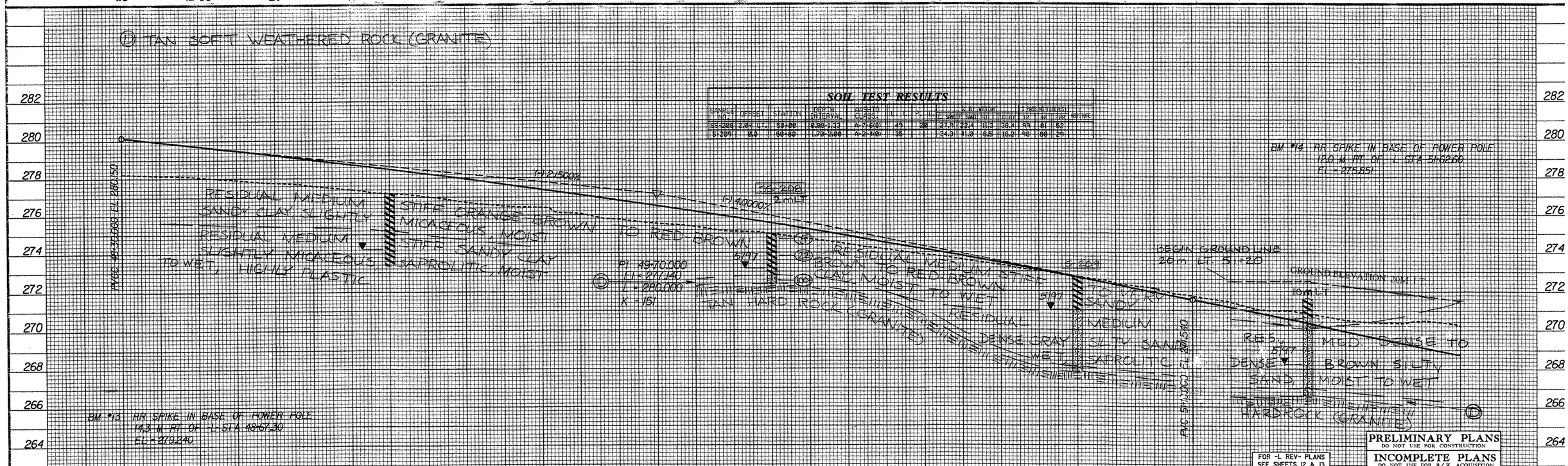
PROJECT REFERENCE NO.	SHEET NO.
R-2413C	34

METRIC



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P. I.	% BY WEIGHT: SAND	SILT	CLAY	% PASSING (STEVES): 10	40	200	% MOISTURE
SS-165	0.0	45+00	0.00-0.45	A-4(0)	19	8	36.6	25.5	19.7	22.2	100	77	30
SS-166	0.0	45+00	0.87-1.32	A-7-5(13)	54	24	24.8	18.0	16.8	40.4	100	84	59
S-206	0.0	47+40	0.00-1.00	A-7-6(8)	45	21	32.9	14.9	11.7	40.4	99	76	53
S-207	0.0	47+40	1.70-2.20	A-7-5(7)	73	27	18.6	23.0	10.9	44.4	100	89	61



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P. I.	% BY WEIGHT: SAND	SILT	CLAY	% PASSING (STEVES): 10	40	200	% MOISTURE
SS-208	2.0m LT.	50+00	0.88-1.33	A-7-6(8)	49	20	27.9	22.4	11.3	38.4	99	81	52
S-209	0.0	50+80	1.70-2.00	A-2-4(0)	35		34.3	41.0	8.5	16.2	98	80	29

FOR -L REV- PLANS SEE SHEETS 12 & 13

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	35

METRIC

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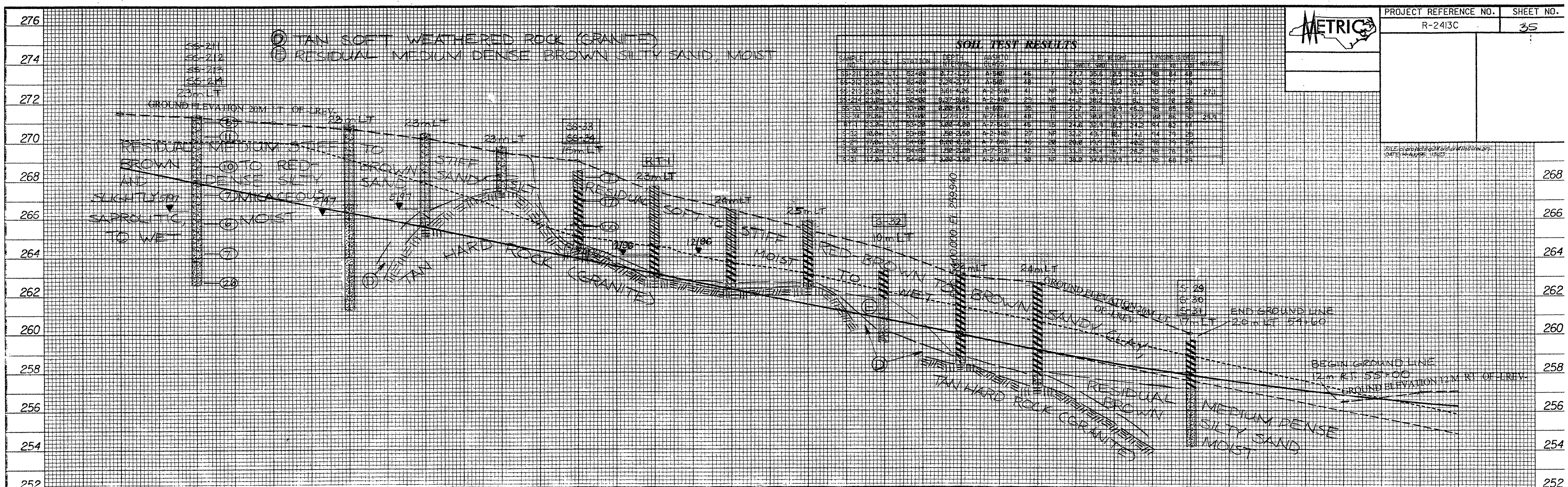
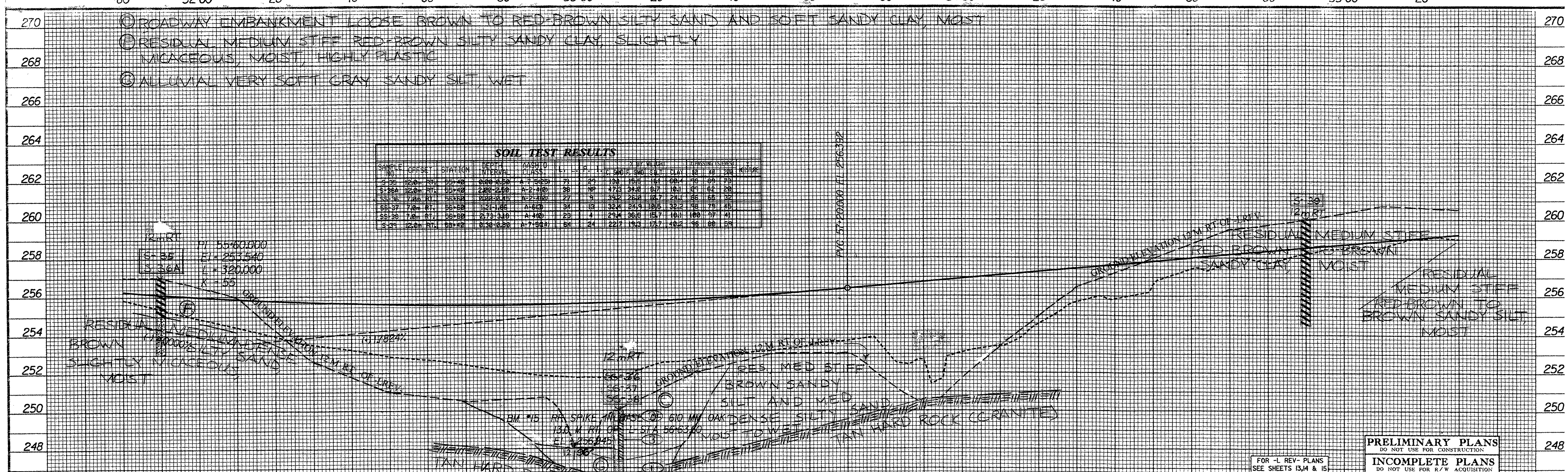
DATE: 14-Aug-96 11:3:23



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE
SS-211	23.0m LT.	52+00	0.77-1.22	A-5(0)	46	7	27.7	35.6	10.5	26.3	98	84	40	
SS-212	23.0m LT.	52+00	2.29-2.74	A-5(0)	48	1	26.3	36.2	15.4	22.2	92	77	40	
SS-213	23.0m LT.	52+00	3.81-4.26	A-2-5(0)	41	NP	33.7	39.2	21.0	6.1	98	60	31	27.1
SS-214	23.0m LT.	52+00	8.37-8.82	A-2-4(0)	29	NP	44.2	38.2	9.5	8.1	93	70	20	
SS-33	15.0m LT.	53+00	0.00-0.45	A-6(6)	35	15	21.7	21.1	10.9	46.3	98	85	58	
SS-34	15.0m LT.	53+00	1.27-1.72	A-7-5(4)	48	11	23.5	30.0	14.3	32.2	100	86	52	29.9
RT-1	23.0m LT.	53+20	3.00-4.00	A-7-5(3)	45	15	24.6	32.9	18.2	24.2	94	82	44	
S-32	10.0m LT.	53+80	1.50-2.50	A-2-4(0)	27	NP	32.2	43.7	10.	14.1	94	79	28	
S-29	17.0m LT.	54+60	0.00-0.50	A-7-6(0)	46	20	20.0	19.9	11.9	48.2	98	79	54	
S-30	17.0m LT.	54+60	1.50-2.00	A-7-5(3)	42	13	33.8	25.4	14.7	26.2	98	78	46	
S-31	17.0m LT.	54+60	2.00-3.50	A-2-4(0)	30	NP	38.0	34.0	13.9	14.1	92	68	26	



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE
S-35	12.0m RT.	55+40	0.00-0.50	A-7-5(25)	71	29	13.1	15.5	11.1	60.4	98	89	73	
S-36A	12.0m RT.	55+40	2.00-2.50	A-2-4(0)	38	NP	47.3	34.0	6.7	10.1	89	62	20	
SS-36	7.0m RT.	56+60	0.00-0.45	A-2-4(0)	27	9	39.2	26.0	10.7	24.1	86	65	32	
SS-37	7.0m RT.	56+60	1.21-1.66	A-6(3)	34	13	32.4	24.9	10.5	32.2	98	79	45	
SS-38	7.0m RT.	56+60	2.73-3.18	A-4(0)	23	4	29.4	36.8	15.7	18.1	100	97	41	
S-39	12.0m RT.	58+40	0.30-0.80	A-7-5(24)	64	24	22.7	19.3	17.7	40.2	96	80	59	

FOR -L REV- PLANS SEE SHEETS 13,14 & 15

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

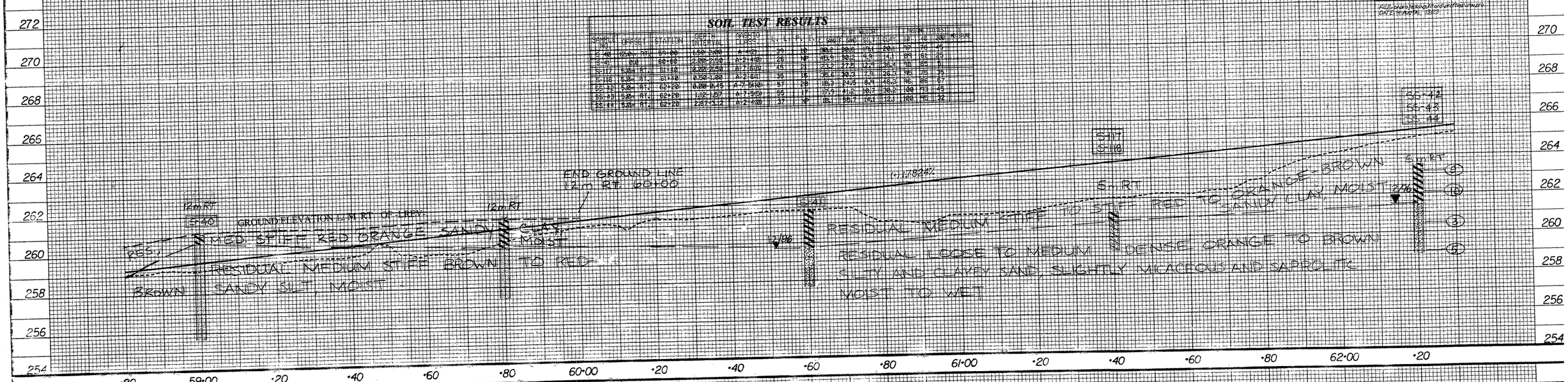
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	36

FILE: p:\proj\r2413c\plans\r2413c01.dgn
DATE: 11/20/2012 12:22:

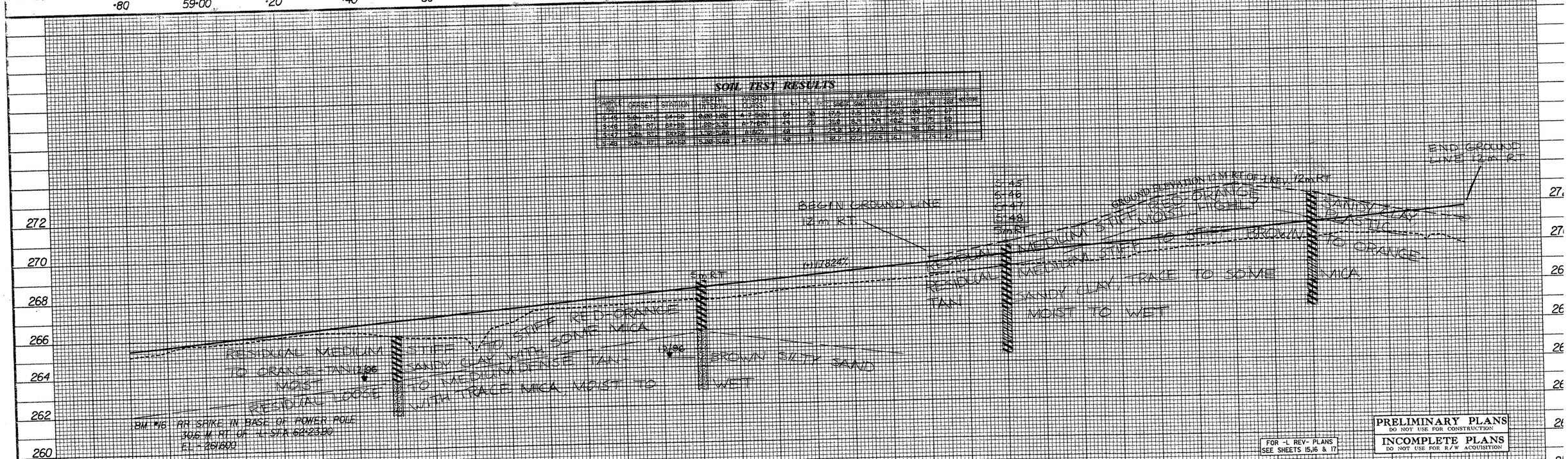
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT GRAVEL	SAND	SILT	CLAY	PASSING SIEVES 10	40	200	MOISTURE
S-40	12.0m RT	59+00	1.50-2.00	A-4(2)	33	10	30.6	20.6	19.1	29.1	87	76	45	
S-41	8.0	60+50	2.00-2.50	A-2-4(0)	26	NP	45.9	30.2	5.8	14.1	89	61	29	
S-117	5.0m RT	61+10	0.00-0.50	A-7-6(0)	45	25	23.2	17.9	12.9	36.4	98	85	61	
S-118	5.0m RT	61+10	0.50-1.00	A-2-6(0)	35	15	26.6	30.3	7.8	24.3	96	76	35	
SS-42	5.0m RT	62+20	0.00-0.45	A-7-5(10)	57	20	18.3	24.8	8.9	48.3	96	86	67	
SS-43	5.0m RT	62+20	1.05-1.50	A-7-5(0)	55	17	17.9	41.2	20.7	30.2	100	93	45	
SS-44	5.0m RT	62+20	2.67-3.12	A-2-4(0)	37	NP	16.1	55.7	14.1	23.1	100	98	32	



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT GRAVEL	SAND	SILT	CLAY	PASSING SIEVES 10	40	200	MOISTURE
S-45	5.0m RT	59+50	0.00-1.00	A-7-5(9)	64	30	27.5	7.5	9.7	56.3	99	97	87	
S-46	5.0m RT	59+50	1.00-2.30	A-7-6(15)	49	20	31.0	8.3	9.9	40.8	97	79	58	
S-47	5.0m RT	60+50	1.50-2.00	A-6(2)	40	11	25.8	27.8	22.3	24.1	97	86	53	
S-48	5.0m RT	60+50	5.00-5.48	A-7-5(3)	50	13	16.2	22.2	21.5	40.1	98	79	42	



FOR -L REV- PLANS
SEE SHEETS 15,16 & 17

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

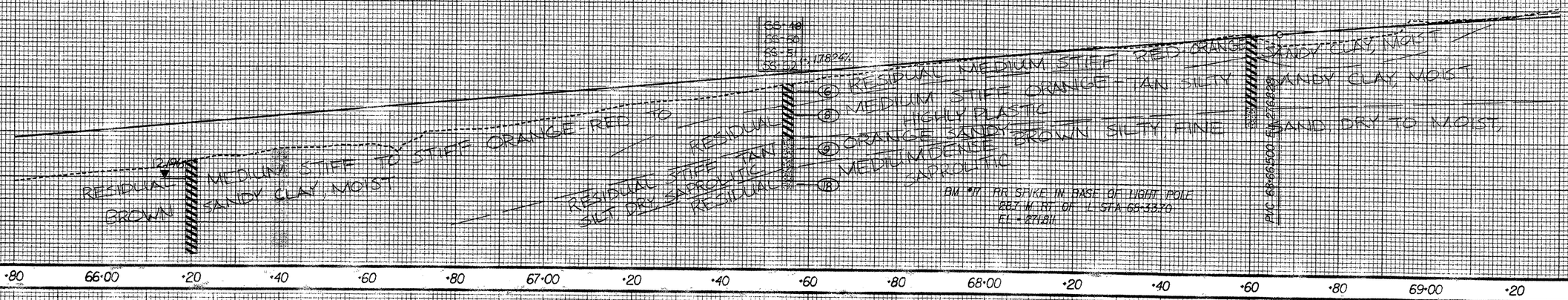
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	37

FILE: C:\projects\ctb\ctb\files\ctb.pro
DATE: 10/10/97, 13:03

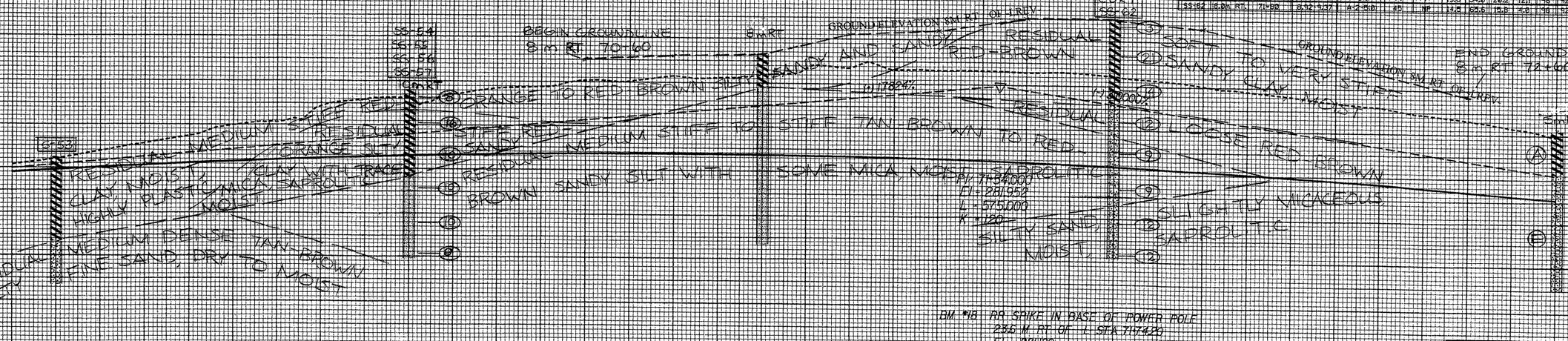
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	PI	% MOISTURE	% PASSING SIEVES #10	#40	#200	MOISTURE
SS-49	0.0	67+55	0.00-0.45	A-7-6(4)	55	21	13.3	24.3	99	94.3	36	97	82	
SS-50	0.0	67+55	1.13-1.58	A-7-5(32)	75	38	6.8	41.7	101	96.4	100	98	94	
SS-51	0.0	67+55	2.65-3.10	A-5(2)	43	7	9.5	42.2	101	96.1	100	95	54	
SS-52	0.0	67+55	4.17-4.62	A-2-4(0)	33	NP	24.8	42.3	16.3	8.8	1.6	59	22	



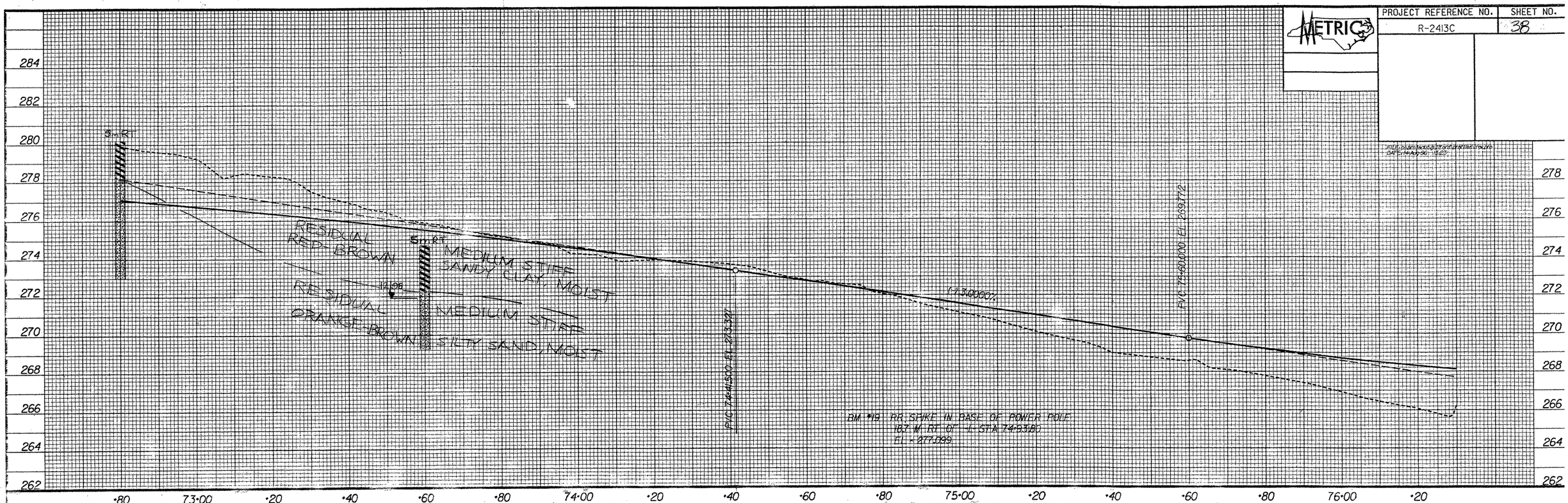
SOIL TEST RESULTS

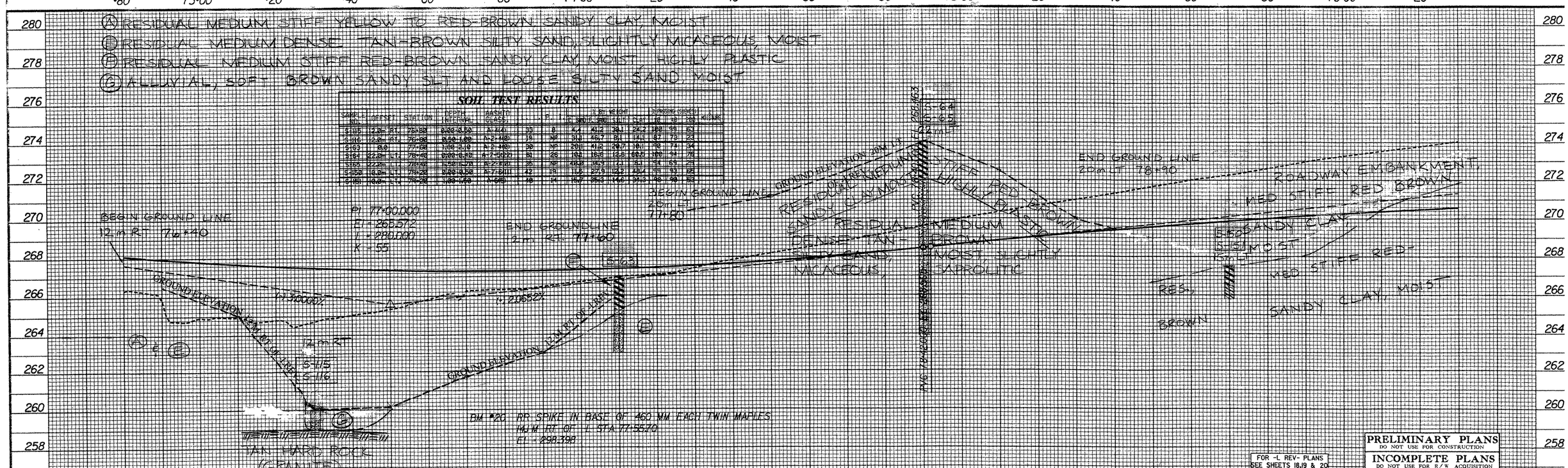
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	PI	% MOISTURE	% PASSING SIEVES #10	#40	#200	MOISTURE
SS-53	0.0	69+40	0.00-1.50	A-7-5(20)	83	29	5.2	26.5	16.9	55.4	99	96	77	
SS-54	10.0m RT.	70+20	0.00-0.45	A-7-5(20)	88	31	6.5	21.5	13.1	55.4	100	96	75	
SS-55	10.0m RT.	70+20	1.13-1.58	A-7-5(16)	83	28	2.2	45.6	22.1	30.2	100	99	61	26.2
SS-56	10.0m RT.	70+20	4.22-4.67	A-4(0)	39	NP	5.2	64.8	17.6	12.1	98	96	44	23.5
SS-57	10.0m RT.	70+20	7.26-7.71	A-4(0)	39	NP	5.4	68.6	17.7	8.0	98	96	42	
SS-58	8.0m RT.	71+60	0.00-0.45	A-7-5(11)	42	21	22.1	27.4	13.2	46.1	100	99	83	
SS-59	8.0m RT.	71+60	1.52-1.77	A-2-6(2)	36	12	20.1	40.8	13.8	30.3	99	92	56	38.7
RT-2	8.0m RT.	71+60	11.12-15.68	A-7-5(8)	86	22	11.8	47.4	16.8	22.2	100	98	49	
SS-60	8.0m RT.	71+60	4.36-4.81	A-2-5(0)	57	NP	11.1	65.3	15.6	6.1	100	96	24	
SS-61	8.0m RT.	71+60	6.00-6.33	A-3(0)	49	NP	13.7	83.0	20.3	12.1	100	96	49	8.9
CBR-1	8.0m RT.	71+60	7.40-8.40	A-3(0)	49	7	13.6	84.0	20.2	12.1	98	92	41	
SS-62	8.0m RT.	71+60	8.92-9.37	A-2-5(0)	49	NP	14.8	85.6	15.8	6.0	98	92	30	



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	38





SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.		P	% BY WEIGHT				% PASSING (SIEVES)			MOISTURE
							% SAND	% SILT	% CLAY		10	40	200	
S-115	12.0m RT.	76+80	0.00-0.50	A-4(4)	33	8	4.4	41.2	30.1	24.2	100	99	63	
S-116	12.0m RT.	76+80	0.50-1.00	A-2-4(0)	19	NP	31.1	46.7	8.1	14.1	87	78	23	
S-63	0.0	77+60	1.00-2.10	A-2-4(0)	30	NP	20.1	41.2	20.7	10.1	90	74	34	
S-64	22.0m LT.	78+40	0.00-0.40	A-7-5(22)	81	26	10.1	16.6	12.8	60.5	100	94	76	
S-65	22.0m LT.	78+40	0.50-0.70	A-2-4(0)	35	NP	40.0	34.9	17.1	8.1	94	69	29	
S-150	10.0m LT.	79+20	0.00-0.50	A-7-6(11)	42	19	11.5	27.9	12.2	48.4	99	93	65	
S-151	10.0m LT.	79+20	1.00-1.50	A-6(6)	40	14	15.7	35.3	14.6	34.3	98	90	53	

FOR -L REV- PLANS SEE SHEETS 18,19 & 20

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	39

METRIC

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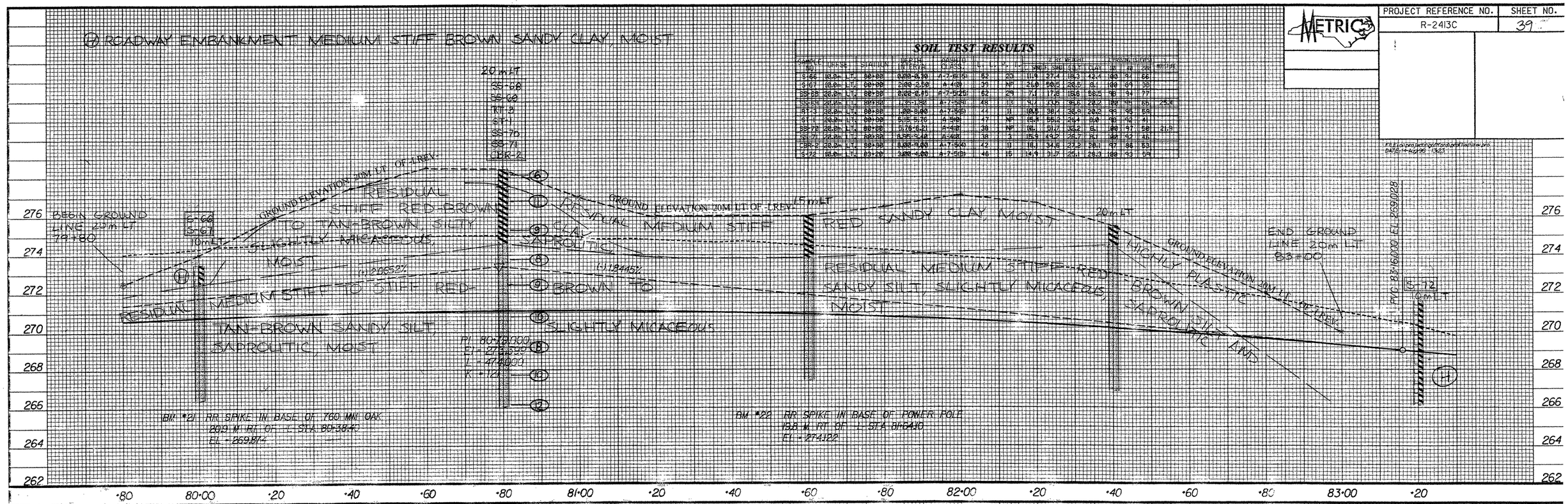
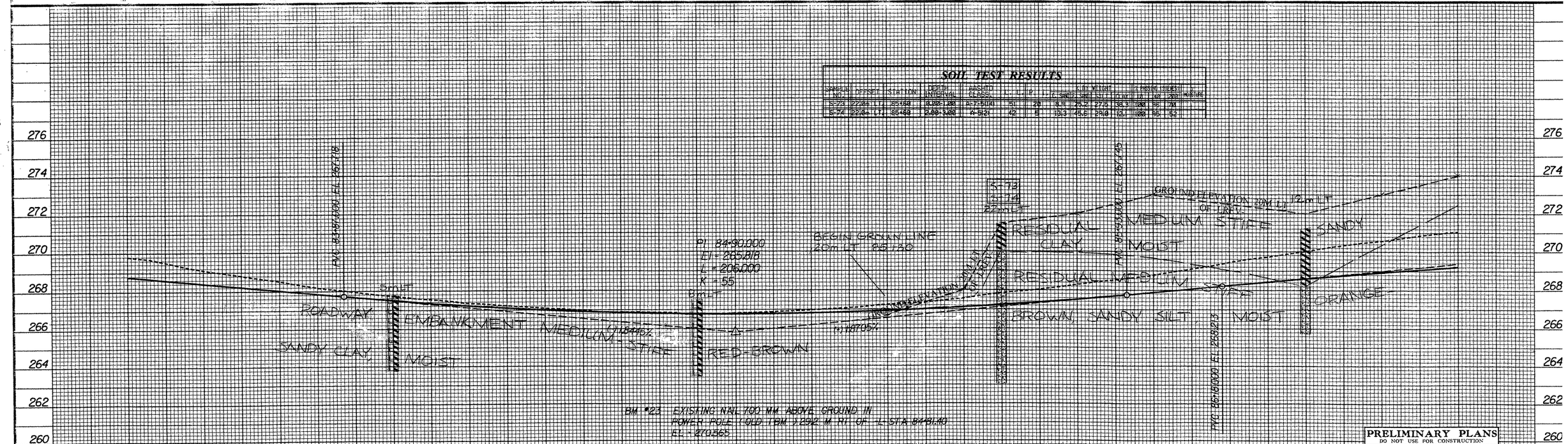


SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT GRAVEL	COARSE SAND	FINE SAND	SILT	CLAY	% PASSING SIEVES #10	#40	#200	MOISTURE
S-66	10.0m LT	80+80	0.00-0.30	A-7-6(15)	62	23	11.9	27.4	18.3	12.4	30	92	66		
S-67	10.0m LT	80+80	2.00-2.50	A-4(0)	35	NP	21.0	50.5	20.5	8.1	00	89	58		
SS-68	20.0m LT	80+80	0.00-0.45	A-7-5(25)	62	29	7.1	17.8	18.6	58.5	98	94	77		
SS-69	20.0m LT	80+80	1.35-1.80	A-7-5(9)	48	11	7.7	33.5	35.6	20.2	100	99	65	25.8	
RH-3	20.0m LT	80+80	.00-8.00	A-7-5(9)	44	11	10.5	38.4	30.9	20.2	99	98	59		
ST-1	20.0m LT	80+80	5.15-5.70	A-5(0)	47	NP	15.4	55.2	29.4	0.0	98	92	41		
SS-70	20.0m LT	80+80	5.70-6.21	A-4(0)	38	NP	18.	51.7	32.2	8.1	00	97	50	21.9	
SS-71	20.0m LT	80+80	4.55-5.40	A-4(0)	38	3	15.9	43.2	36.7	8.1	00	92	46		
CBR-2	20.0m LT	80+80	0.00-9.00	A-7(20)	42	11	18.1	34.8	27.2	20.1	97	86	53		
S-72	10.0m LT	83+20	3.00-4.00	A-7-5(9)	46	15	14.9	31.7	25.1	28.3	100	93	59		



FOR -L REV- PLANS SEE SHEETS 20,21 & 22

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	40

METRIC

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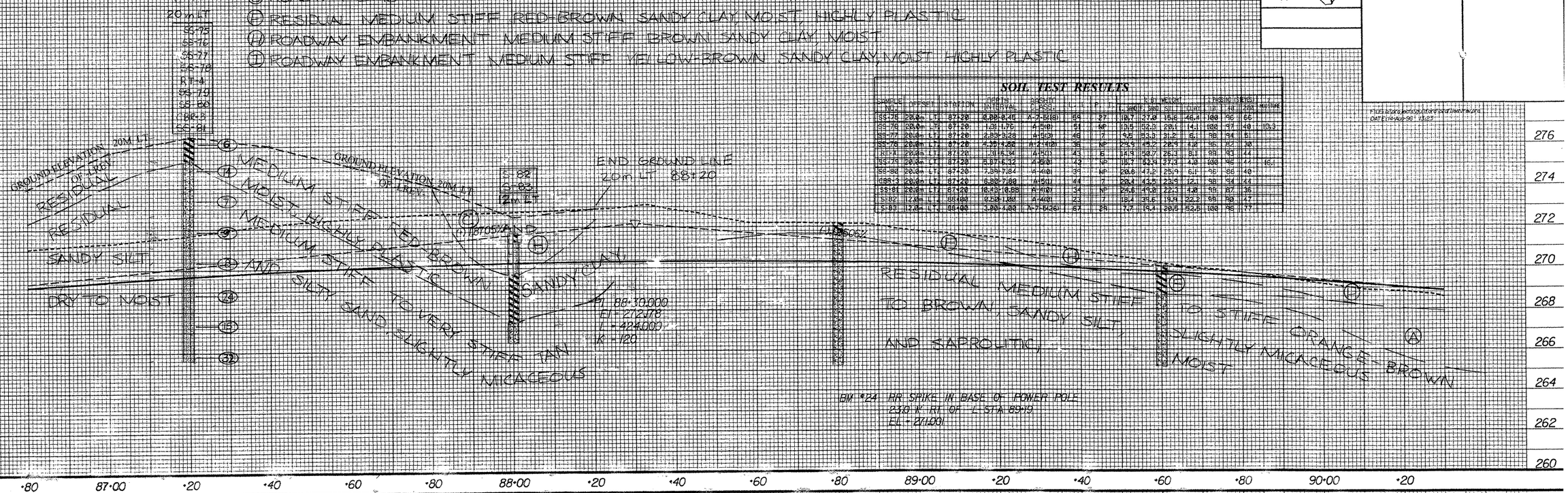
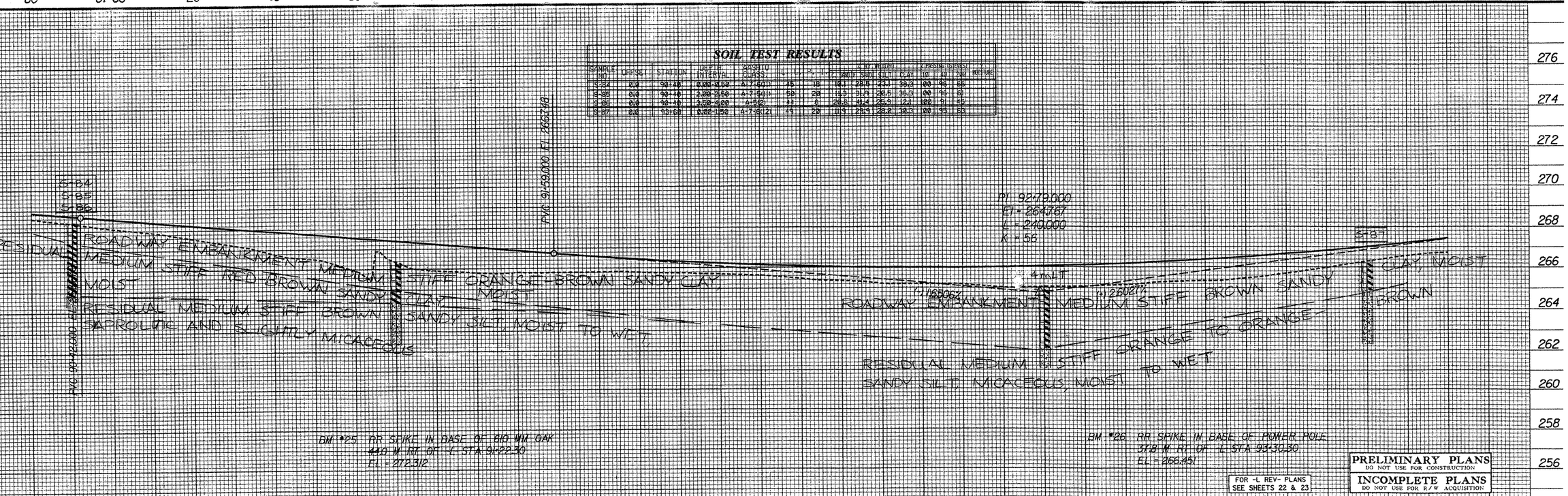
DATE: 10/20/98 11:23

Ⓐ RESIDUAL MEDIUM STIFF RED-BROWN SANDY CLAY MOIST
Ⓒ ROADWAY EMBANKMENT MEDIUM STIFF TAN SANDY SILT, MOIST
Ⓗ RESIDUAL MEDIUM STIFF RED-BROWN SANDY CLAY MOIST, HIGHLY PLASTIC
Ⓗ ROADWAY EMBANKMENT MEDIUM STIFF BROWN SANDY CLAY MOIST
Ⓘ ROADWAY EMBANKMENT MEDIUM STIFF YELLOW-BROWN SANDY CLAY, MOIST HIGHLY PLASTIC



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	PI	% MOIST	% WT. GRAV.	SAND	SILT	CLAY	PASSING SIEVE 10	40	200	% MOISTURE
SS-75	20.0m	LT	87+20	0.00-0.45	A-7-5(18)	63	27	10.7	27.0	16.8	46.4	100	96	66	
SS-76	20.0m	LT	87+20	1.31-1.76	A-5(0)	51	NP	13.5	52.8	20.1	14.1	100	97	49	15.3
SS-77	20.0m	LT	87+20	2.83-3.28	A-5(0)	46	7	9.6	53.3	31.2	6.	98	94	51	
SS-78	20.0m	LT	87+20	4.35-4.80	A-2-4(0)	36	NP	23.3	45.2	28.9	4.0	96	82	30	
RT-4	20.0m	LT	87+20	3.16-3.34	A-5(0)	43	6	14.9	50.7	26.3	8.1	99	93	44	
SS-79	20.0m	LT	87+20	5.87-6.32	A-5(0)	43	NP	15.7	52.9	27.3	4.0	100	96	47	16.1
SS-80	20.0m	LT	87+20	7.39-7.84	A-4(0)	34	NP	20.6	47.2	25.9	6.1	98	88	40	
RT-3	20.0m	LT	87+20	6.80-7.00	A-5(0)	44	7	20.4	43.5	23.9	12.1	98	94	44	
SS-81	20.0m	LT	87+20	10.43-10.88	A-4(0)	34	NP	25.6	49.0	22.3	4.0	98	87	36	
SS-82	12.0m	LT	88+00	0.50-1.00	A-4(0)	23	7	18.4	39.6	19.9	22.2	98	80	47	
SS-83	12.0m	LT	88+00	3.20-4.00	A-7-6(36)	67	28	7.7	19.4	20.5	52.5	100	98	77	



FOR -L REV- PLANS
SEE SHEETS 22 & 23

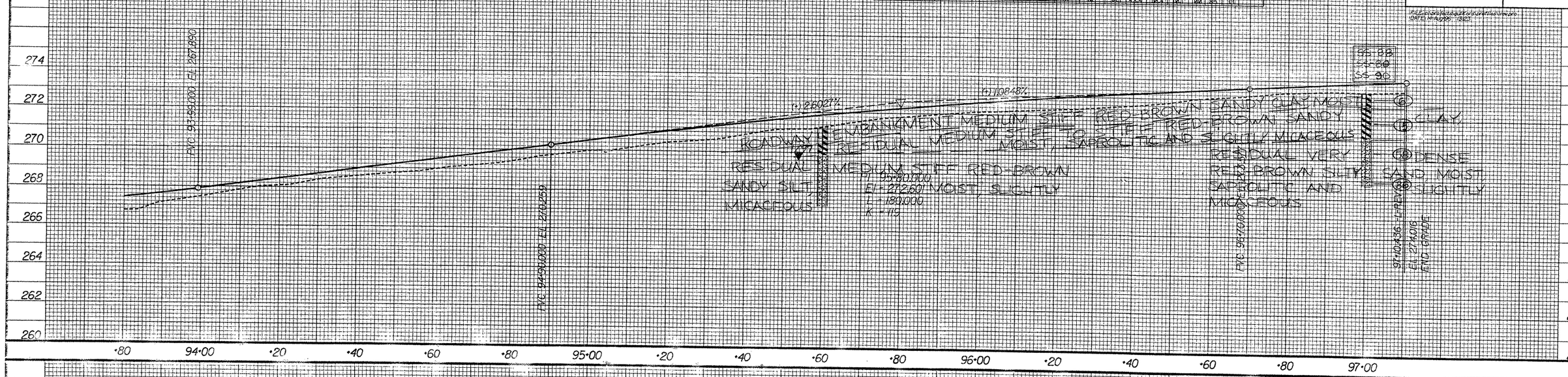
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	41

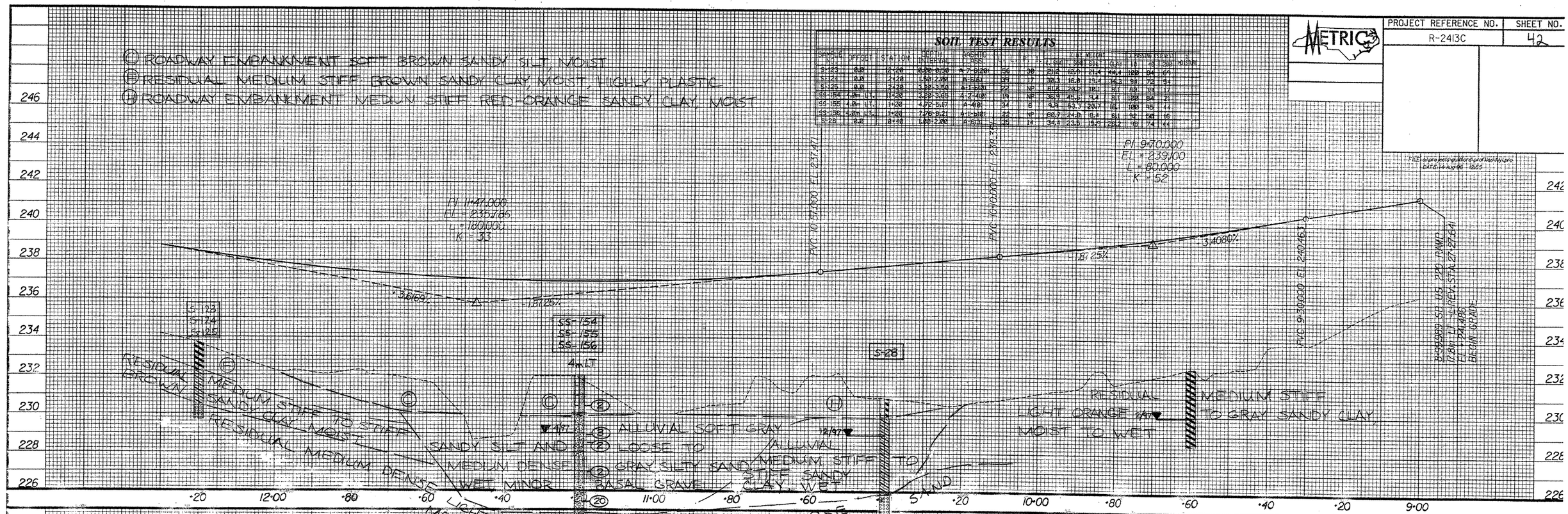
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	ASSHTO CLASS.	L. L.	P. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	MOISTURE
SS-88	0.0	97+00	0.00-0.45	A-6(4)	37	12	24.6	35.3	19.9	20.2	81	70	35	
SS-89	0.0	97+00	1.21-1.66	A-7-5(1)	48	15	30.9	35.7	11.2	22.2	100	87	36	
SS-90	0.0	97+00	2.73-3.18	A-2-4(0)	37	NP	36.1	43.4	10.4	10.1	100	85	33	



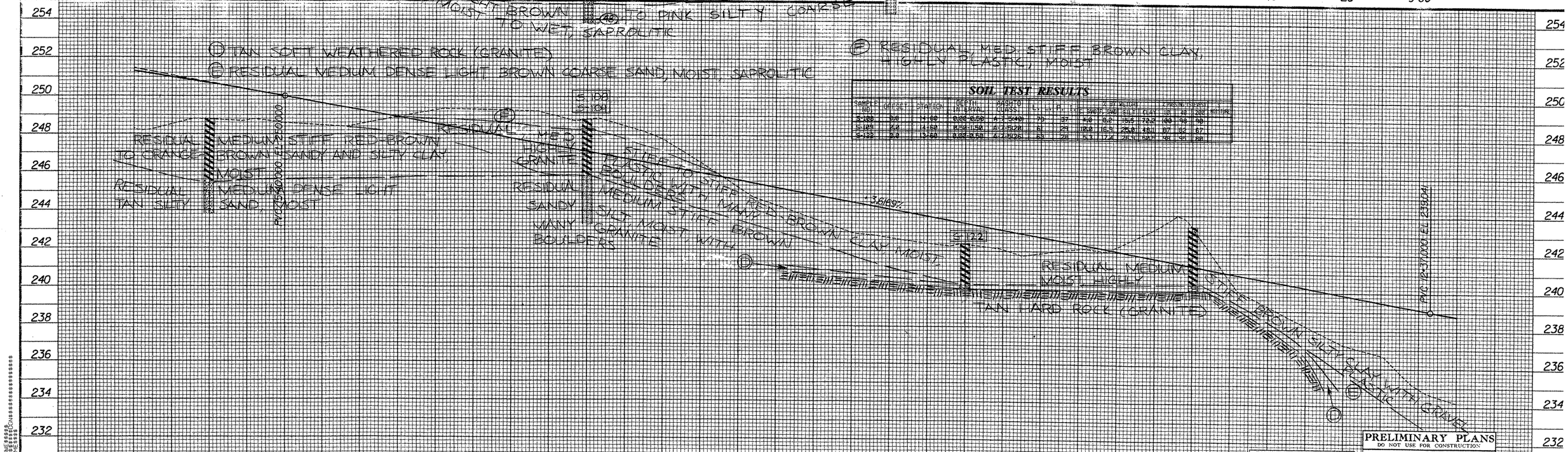
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	42



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.L.	P.I.	% BY WEIGHT L. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE
S-123	0.0	12+20	0.00-0.50	A-7-5(20)	56	30	21.2	12.8	21.4	44.4	100	84	69	
S-124	0.0	12+20	1.50-2.00	A-6(6)	39	17	30.3	16.0	19.4	34.3	94	72	54	
S-125	0.0	12+20	3.00-3.50	A-1-b(0)	22	NP	81.8	20.2	10.1	8.1	80	39	17	
SS-154	4.0m LT.	11+20	3.20-3.65	A-2-4(0)	19	NP	36.9	45.6	9.4	8.1	100	84	21	
SS-155	4.0m LT.	11+20	4.72-5.17	A-4(0)	34	6	9.9	53.3	20.7	16.1	100	95	44	
SS-156	4.0m LT.	11+20	7.76-8.21	A-1-b(0)	22	NP	60.7	24.8	8.4	6.1	92	50	16	
S-28	0.0	10+40	1.00-2.00	A-6(3)	35	14	34.4	23.5	15.9	26.2	98	74	44	



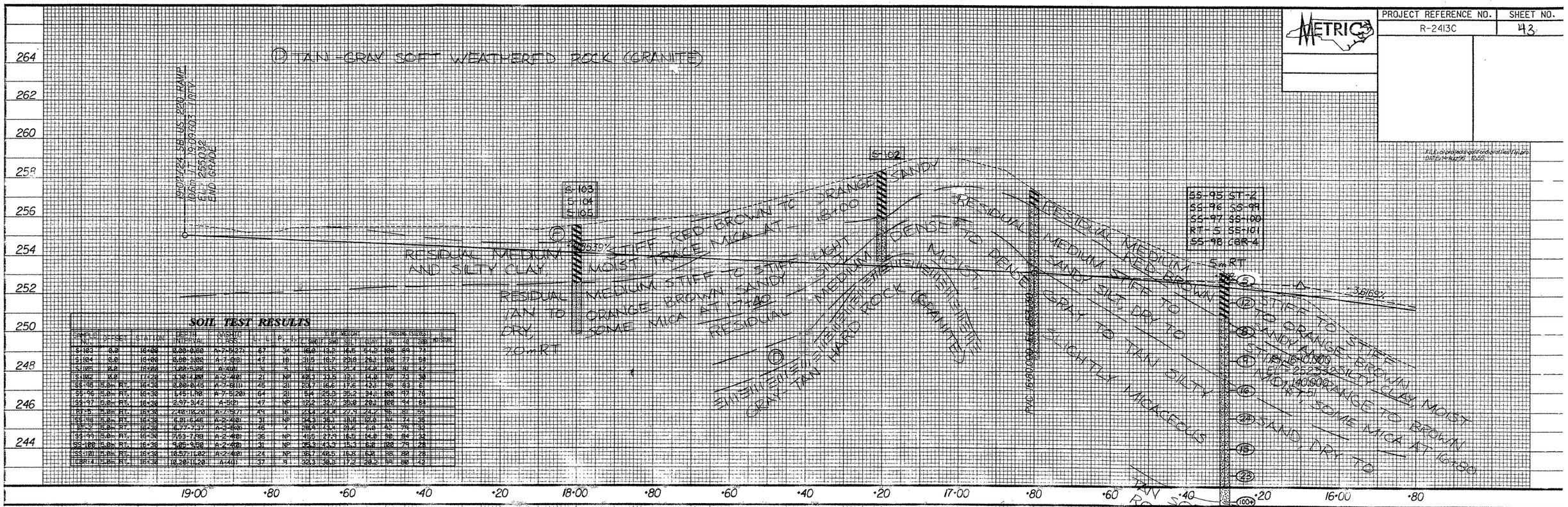
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.L.	P.I.	% BY WEIGHT L. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE
S-108	0.0	14+60	0.00-0.50	A-7-5(40)	79	37	41.0	8.2	15.5	72.2	100	98	90	
S-109	0.0	14+60	0.50-1.50	A-2-5(20)	61	29	10.0	16.9	25.0	48.1	87	82	67	
S-122	0.0	13+60	0.00-0.50	A-7-5(26)	63	28	5.3	17.4	26.9	50.5	98	95	80	

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS

FOR SB US 220 RAMP PLANS

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	43



SOIL TEST RESULTS

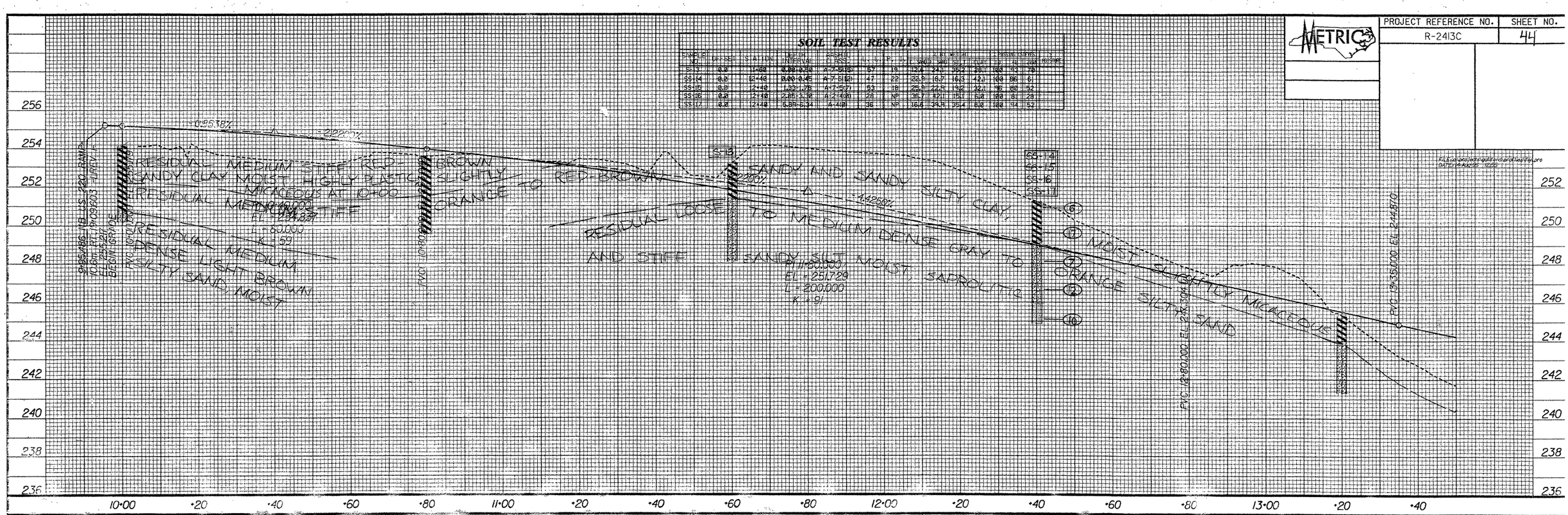
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT GRAVEL	SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	MOISTURE
S-103	0.0	16+00	0.00-0.60	A-7-5(27)	67	34	16.0	13.2	16.6	54.2	100	89	71	
S-104	0.0	16+00	0.00-3.00	A-7-6(8)	47	16	31.5	18.7	20.6	28.2	100	77	54	
S-105	0.0	16+00	3.00-5.00	A-4(0)	31	5	61	33.5	21.4	14.0	100	81	42	
S-102	0.0	17+20	3.30-4.00	A-2-4(0)	21	NP	40.1	33.5	12.1	14.0	87	23	30	
SS-95	5.0m	RT.	16+30	0.00-0.45	A-7-6(11)	45	21	23.7	16.6	17.6	42.1	98	83	6
SS-96	5.0m	RT.	16+30	1.45-1.90	A-7-5(20)	64	21	5.4	25.5	35.2	34.1	100	97	78
SS-97	5.0m	RT.	16+30	2.97-3.42	A-5(2)	47	NP	18.4	32.7	35.0	20.1	100	94	64
RT-5	5.0m	RT.	16+30	2.40-18.20	A-7-5(7)	49	15	23.4	24.4	27.9	24.2	96	81	55
SS-98	5.0m	RT.	16+30	6.01-6.45	A-2-4(0)	21	NP	34.3	36.1	18.8	10.8	94	74	38
SS-99	5.0m	RT.	16+30	6.77-7.37	A-3(0)	46	7	28.4	13.4	21.6	6.0	92	79	32
SS-99	5.0m	RT.	16+30	7.53-7.98	A-2-4(0)	36	NP	41.5	27.9	16.5	14.0	90	84	32
SS-100	5.0m	RT.	16+30	9.05-9.50	A-2-4(0)	31	NP	35.3	43.3	15.3	6.0	100	79	28
SS-101	5.0m	RT.	16+30	10.57-11.02	A-2-4(0)	24	NP	38.7	40.5	16.8	6.0	98	80	28
CBR-4	5.0m	RT.	16+30	10.28-11.28	A-1(0)	37	9	32.3	38.8	17.2	20.2	98	80	43

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	44

METRIC

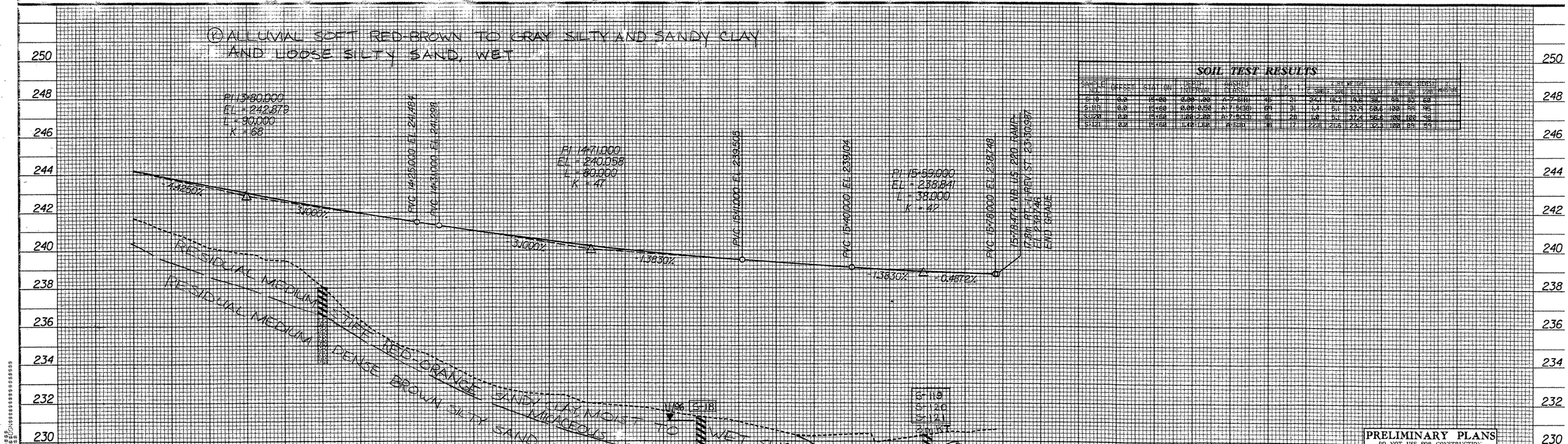
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE
S-13	0.0	11+60	0.00-0.50	A-7-5(15)	57	19	12.6	24.1	35.2	28.1	100	93	70	
SS-14	0.0	12+40	0.00-0.45	A-7-6(12)	47	22	22.9	18.7	16.3	42.1	100	86	61	
SS-15	0.0	12+40	1.33-1.76	A-7-5(7)	53	18	25.9	22.9	19.2	32.1	96	80	52	
SS-16	0.0	12+40	2.85-3.30	A-2-4(0)	28	NP	36.7	42.1	15.1	6.0	100	81	28	
SS-17	0.0	12+40	5.89-6.34	A-4(0)	36	NP	16.6	39.9	35.4	8.0	100	94	52	



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE
S-18	0.0	15+00	0.00-1.00	A-7-6(11)	45	21	24.1	16.3	19.6	38.1	99	80	60	
S-119	0.0	15+60	0.00-0.50	A-7-5(38)	69	31	1.4	5.1	32.9	60.6	100	99	95	
S-120	0.0	15+60	1.00-2.00	A-7-5(33)	61	28	1.0	5.1	37.4	56.6	100	100	98	
S-121	0.0	15+60	1.40-1.60	A-6(8)	38	17	22.8	21.6	23.2	32.3	100	89	59	

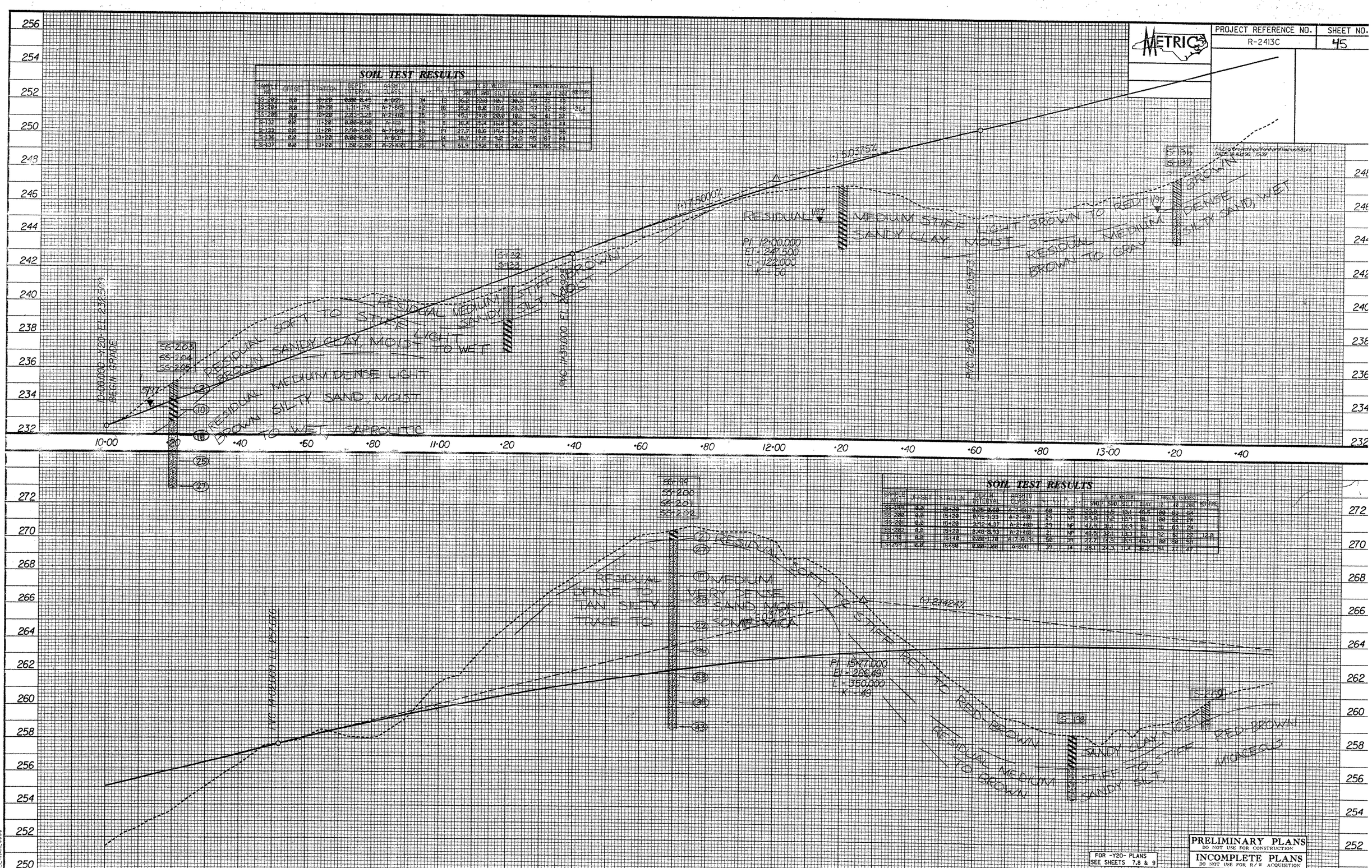


FOR NB US 220 PLANS SEE SHEET 6

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	45



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P. I.	% BY WEIGHT: L. SAND	% BY WEIGHT: F. SAND	% BY WEIGHT: SILT	% BY WEIGHT: CLAY	% PASSING (SIEVES): 10	% PASSING (SIEVES): 40	% PASSING (SIEVES): 200	% MOISTURE
SS-203	0.0	10+20	0.00-0.45	A-6(2)	34	13	36.2	22.8	10.7	30.3	97	72	43	
SS-204	0.0	10+20	1.31-1.76	A-7-6(5)	42	16	35.2	18.0	18.6	28.3	97	72	48	21.4
SS-205	0.0	10+20	2.83-3.28	A-2-4(0)	35	3	45.1	24.8	20.0	10.1	92	61	32	
S-132	0.0	11+20	0.00-0.50	A-4(1)	29	8	38.4	15.4	16.0	30.3	92	64	44	
S-133	0.0	11+20	2.50-3.00	A-7-6(8)	43	19	27.7	18.6	19.4	34.3	97	76	55	
S-136	0.0	13+20	0.00-0.50	A-6(3)	37	14	38.7	17.8	9.2	34.3	95	67	44	
S-137	0.0	13+20	1.50-2.00	A-2-4(0)	25	9	51.9	19.8	8.4	20.2	94	55	29	

SOIL TEST RESULTS

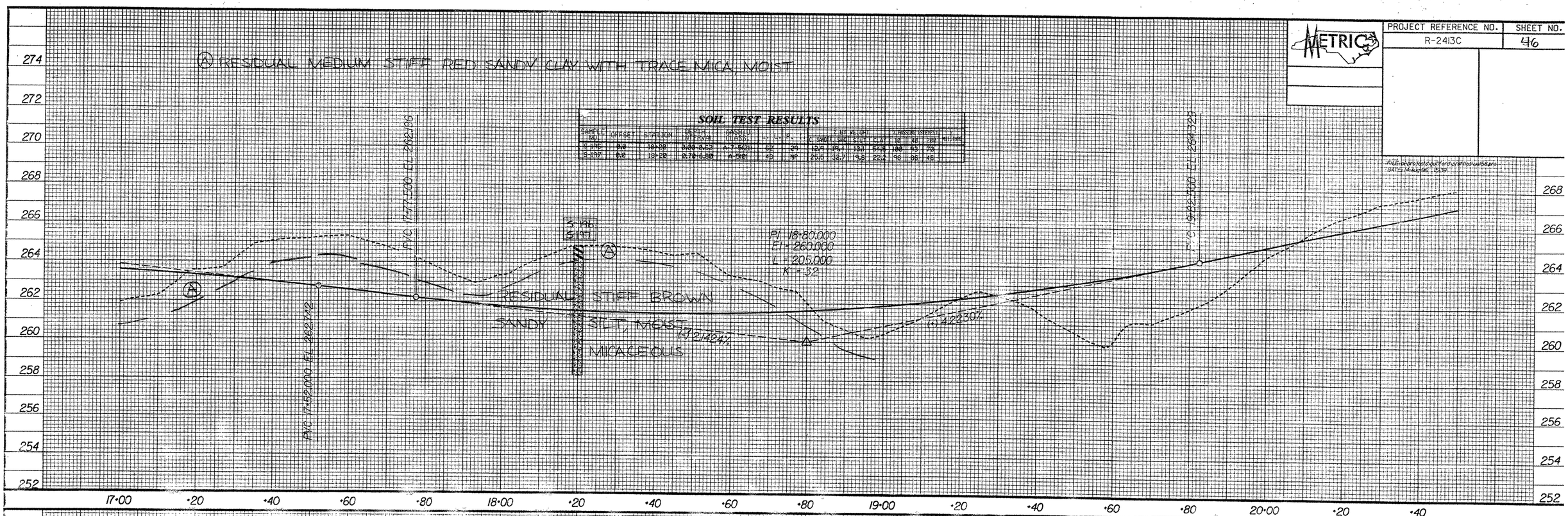
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P. I.	% BY WEIGHT: L. SAND	% BY WEIGHT: F. SAND	% BY WEIGHT: SILT	% BY WEIGHT: CLAY	% PASSING (SIEVES): 10	% PASSING (SIEVES): 40	% PASSING (SIEVES): 200	% MOISTURE
SS-199	0.0	15+20	0.25-0.60	A-7-6(7)	60	25	23.8	14.5	13.1	48.5	100	83	64	
SS-200	0.0	15+20	0.95-1.33	A-2-4(0)	29	NP	59.8	17.2	12.9	10.1	100	82	24	
SS-201	0.0	15+20	3.92-4.37	A-2-4(0)	29	NP	47.9	31.1	14.9	6.1	95	63	24	
SS-202	0.0	15+20	3.48-3.93	A-2-4(0)	21	NP	48.5	32.1	13.3	6.1	92	61	22	12.0
S-198	0.0	16+40	0.00-1.70	A-7-6(19)	50	39	27.7	14.9	10.9	46.5	100	80	59	
S-259	0.0	16+80	0.00-1.00	A-6(4)	39	14	28.1	24.3	11.4	36.2	94	77	47	

FOR -Y20- PLANS SEE SHEETS 7,8 & 9

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

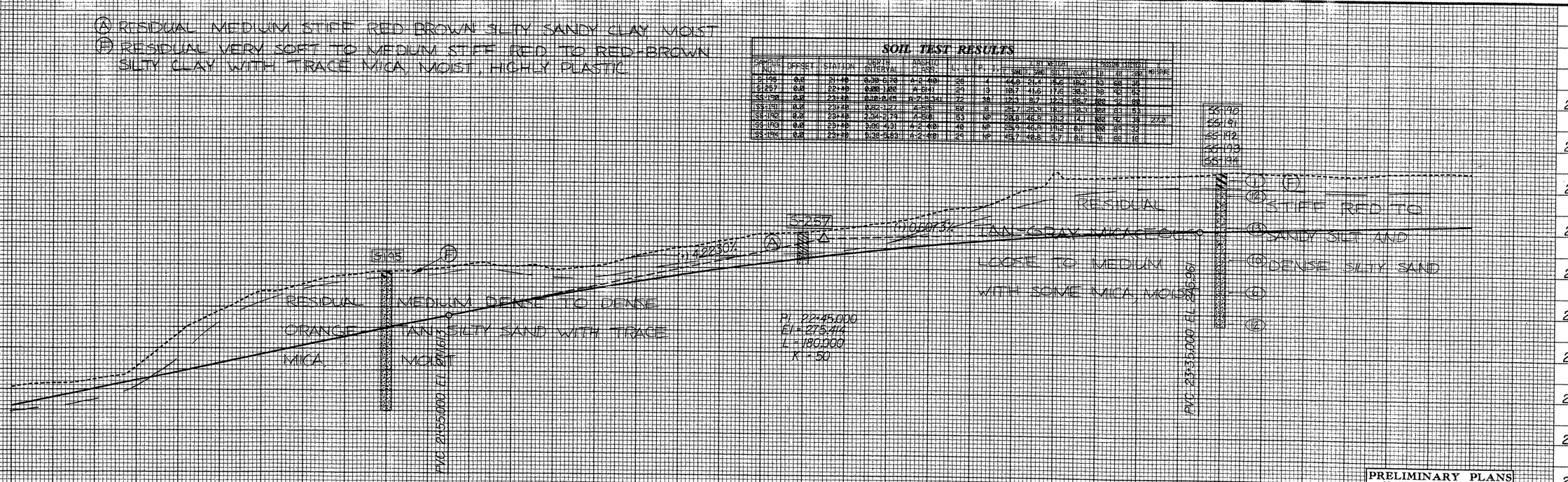
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	46



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (STRYKE) 10	40	200	% MOISTURE
S-196	0.0	18+20	0.00-0.62	A-7-5(21)	52	29	12.9	18.4	13.1	54.6	100	93	70	
S-197	0.0	18+20	0.70-6.80	A-5(0)	48	NP	25.5	32.7	9.6	22.2	96	86	46	



SOIL TEST RESULTS

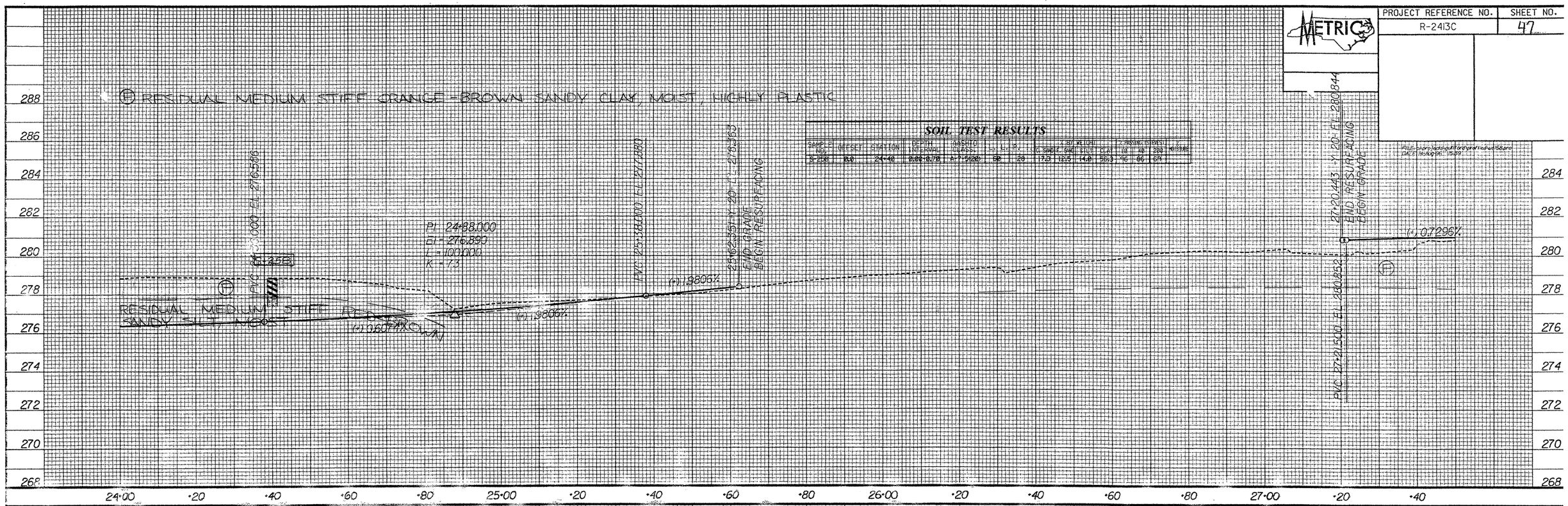
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (STRYKE) 10	40	200	% MOISTURE
S-195	0.0	21+40	0.30-6.70	A-2-4(0)	28	4	44.8	21.4	15.6	18.2	93	60	36	
S-257	0.0	22+40	0.00-1.00	A-6(4)	29	13	10.7	41.6	17.6	30.2	98	92	52	
SS-190	0.0	23+40	0.10-0.45	A-7-5(34)	72	38	12.3	8.7	12.3	66.7	100	92	80	
SS-191	0.0	23+40	0.82-1.27	A-5(5)	60	8	25.7	25.9	18.2	30.3	100	83	53	
SS-192	0.0	23+40	2.34-2.74	A-5(0)	53	NP	20.8	46.9	18.2	14.1	100	92	38	27.0
SS-193	0.0	23+40	3.86-4.31	A-2-4(0)	40	NP	25.9	46.9	19.2	8.1	100	89	32	
SS-194	0.0	23+40	5.38-5.83	A-2-4(0)	29	NP	45.7	40.8	5.7	8.1	91	88	18	

FOR -Y20- PLANS SEE SHEETS 9,10 & 11

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS

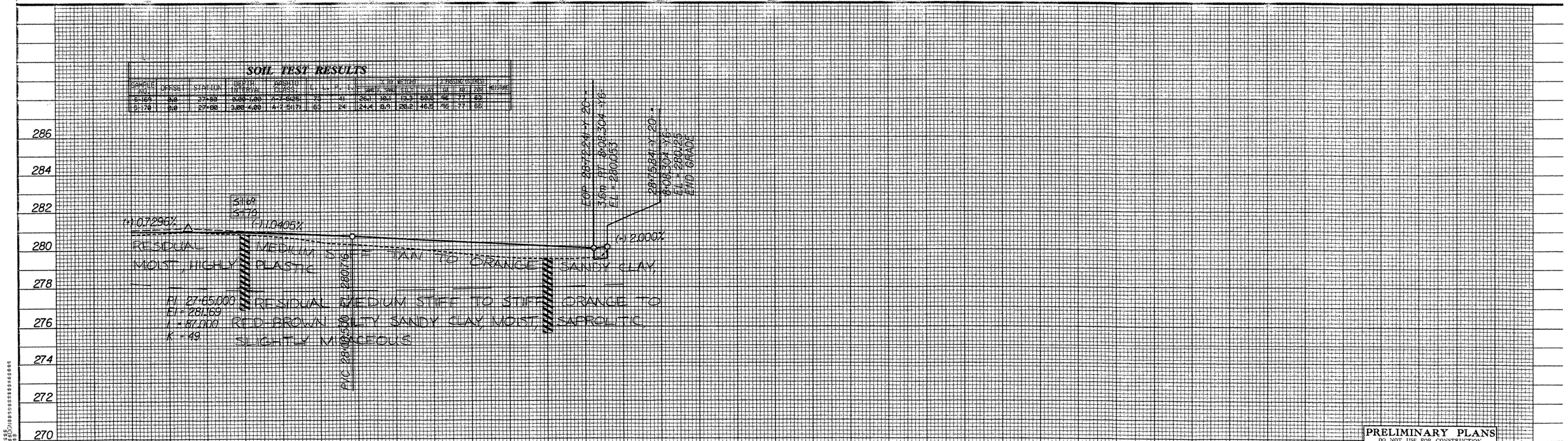
PROJECT REFERENCE NO.	SHEET NO.
R-2413C	47

METRIC



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	PI	% BY WEIGHT GRAVEL	SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	MOISTURE
S-206	0.0	24+40	0.00-0.75	A-7-5(20)	50	20	17.5	12.5	14.0	56.3	96	86	69	



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	PI	% BY WEIGHT GRAVEL	SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	MOISTURE
S-169	0.0	27+80	0.00-1.00	A-7-6(25)	73	41	26.1	18.1	9.3	50.5	96	77	60	
S-170	0.0	27+80	3.00-4.00	A-7-5(17)	63	24	24.4	8.9	20.2	46.5	96	77	55	

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS

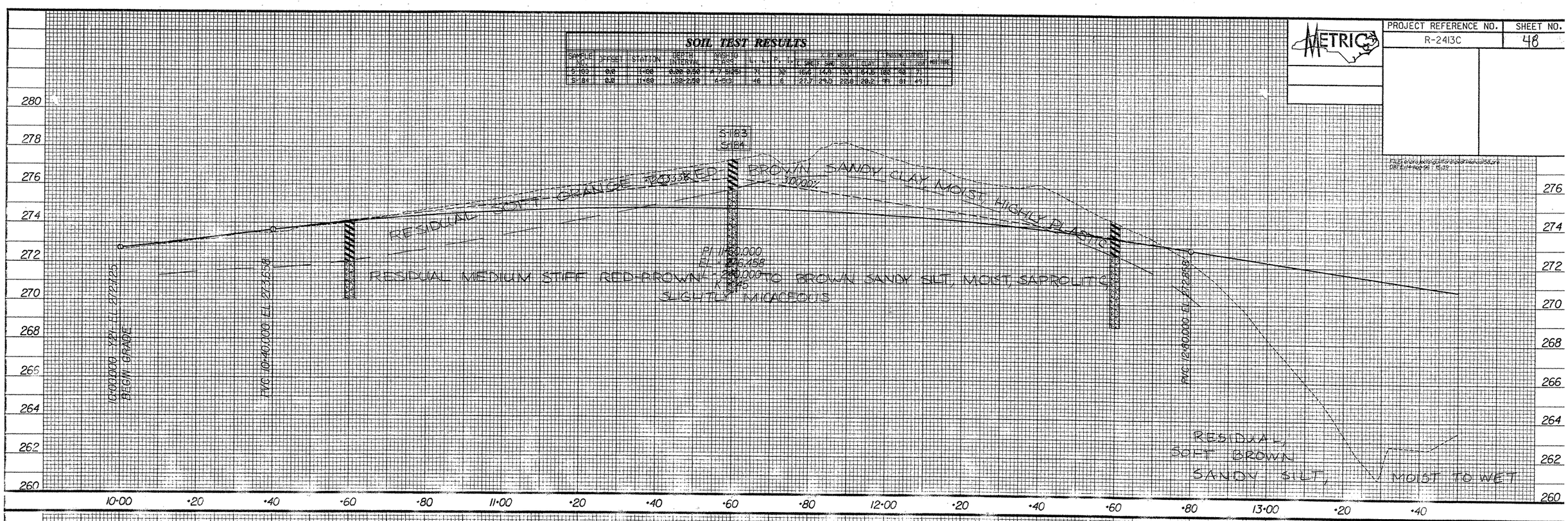
FOR -Y20- PLANS
SEE SHEETS 20 & 27

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	48

METRIC

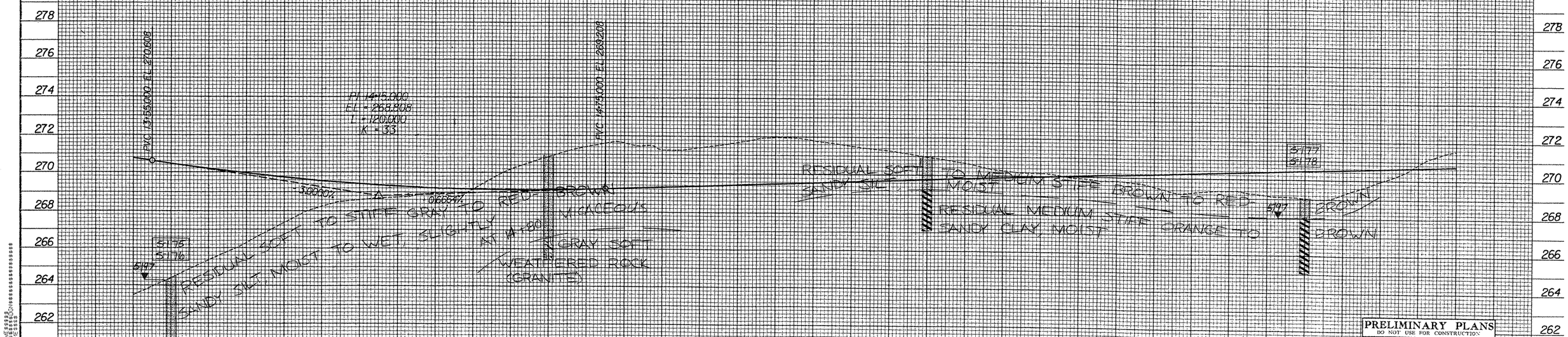
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (STEPS) 10	40	200	% MOISTURE
S-183	0.0	11+60	0.00-0.50	A-7-5(25)	71	32	16.6	14.8	13.9	64.6	100	40	71	
S-184	0.0	11+60	1.50-2.50	A-5(3)	46	8	27.7	29.3	22.8	20.2	99	81	49	



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (STEPS) 10	40	200	% MOISTURE
S-175	0.0	13+60	0.00-3.00	A-4(1)	28	10	39.8	22.0	11.9	26.3	99	73	40	
S-176	0.0	13+60	3.00-4.00	A-4(1)	40	8	37.6	21.4	24.0	16.2	98	70	44	
S-177	0.0	16+60	0.00-0.50	A-4(0)	22	6	45.3	18.5	11.9	24.2	97	66	37	
S-178	0.0	16+60	1.00-1.50	A-7-6(10)	47	20	27.5	14.1	9.9	48.5	100	82	60	



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	49

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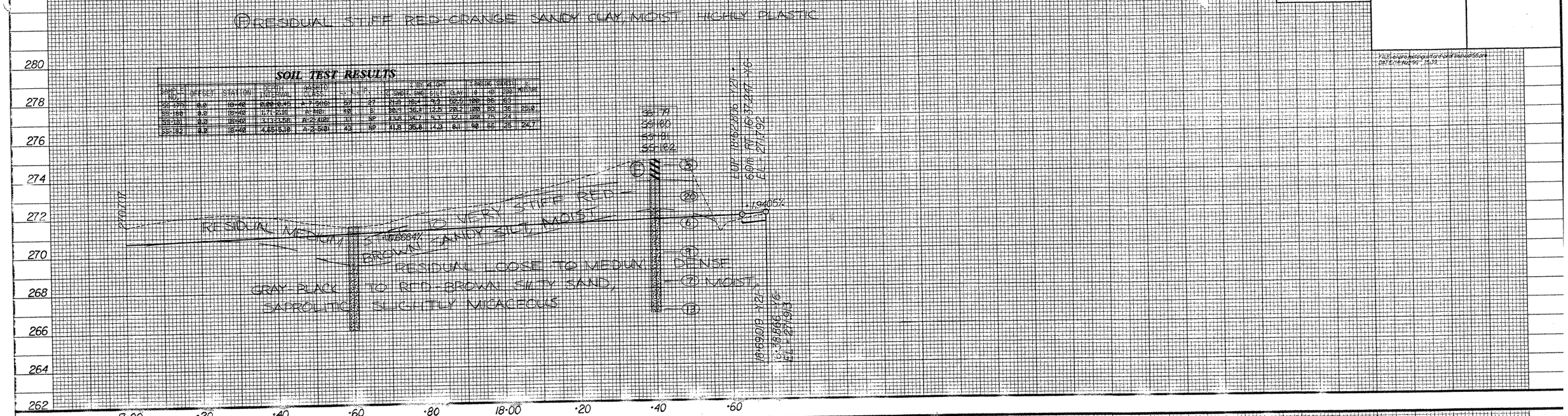

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	ASSHTO CLASS.	LL	PI	% GRAVEL	% COARSE SAND	% MEDIUM SAND	% FINE SAND	% SILT	% CLAY	% PASSING SIEVE #10	#40	#200	% MOISTURE
SS-179	0.0	18+40	0.00-0.45	A-7-5(19)	57	27	21.8	16.4	2.3	22.2	12.2	25	100	85	63	
SS-180	0.0	18+40	1.71-2.16	A-2-6(0)	46	21	20.5	25.4	2.5	22.2	12.2	19.2	100	80	36	25.0
SS-181	0.0	18+40	3.11-3.56	A-2-4(0)	19	NP	13.5	24.7	5.7	12.1	12.1	12.1	100	75	24	
SS-182	0.0	18+40	4.65-5.10	A-2-5(0)	43	NP	11.8	25.8	14.3	8.1	18.8	21.2	100	86	26	24.7

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS

FOR -Y21- PLANS

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	50

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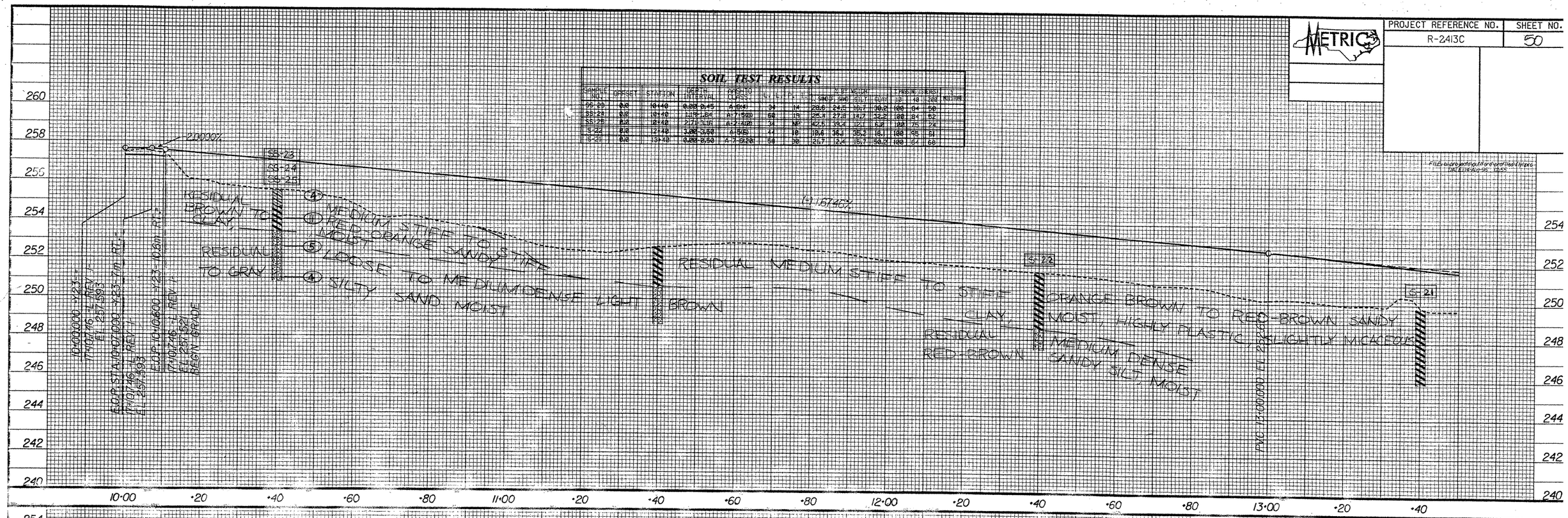
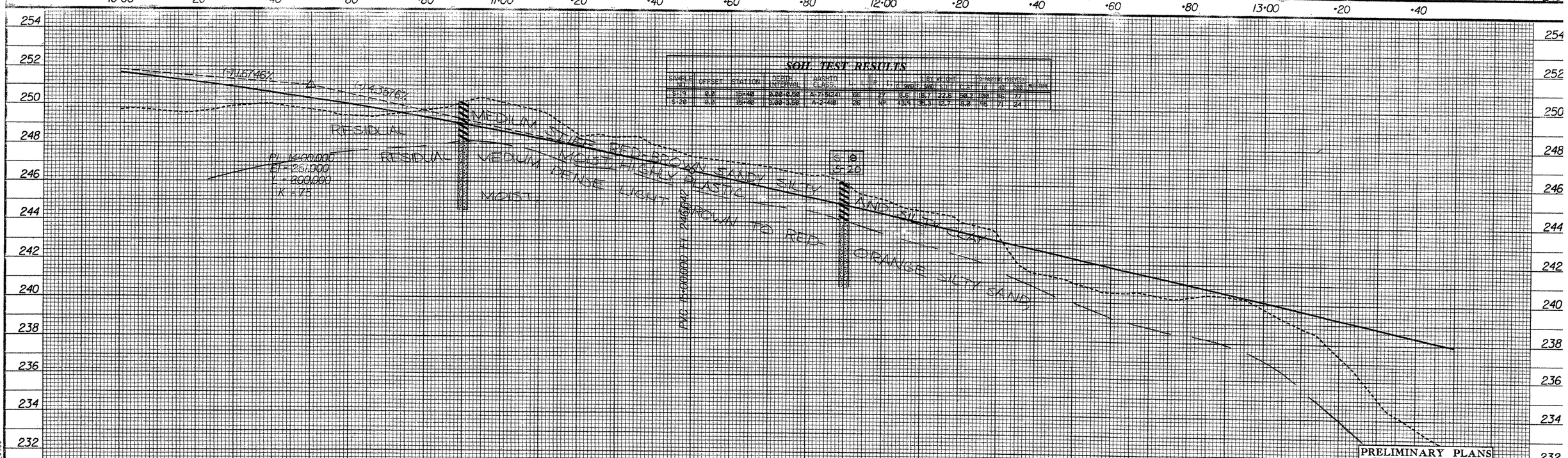


SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT G. SAND	C. SAND	FINE SAND	SILT	CLAY	% PASSING SIEVE NO. 10	40	200	MOISTURE
SS-23	0.0	10+40	0.00-0.45	A-6(4)	34	14	28.6	24.5	16.7	30.2		100	84	50	
SS-24	0.0	10+40	1.05-1.84	A-7-5(8)	60	19	25.4	27.8	16.7	32.2		100	84	52	
SS-25	0.0	10+40	2.75-3.16	A-2-4(0)	24	NP	42.5	19.4	12.1	6.0		100	75	24	
S-22	0.0	12+40	3.00-3.50	A-6(5)	44	18	19.6	14.4	25.2	16.1		100	95	51	
S-21	0.0	13+40	0.00-0.50	A-7-6(20)	58	30	21.7	12.4	15.7	30.2		100	84	66	



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT G. SAND	C. SAND	FINE SAND	SILT	CLAY	% PASSING SIEVE NO. 10	40	200	MOISTURE
S-19	0.0	15+40	0.00-0.50	A-7-5(24)	66	27	8.5	15.7	27.5	50.2		100	86	77	
S-20	0.0	15+40	3.00-3.50	A-2-4(0)	26	NP	43.9	25.3	12.7	8.0		95	71	24	

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS

FOR -Y23- PLANS
SEE SHEETS 5A-6

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	51

METRIC

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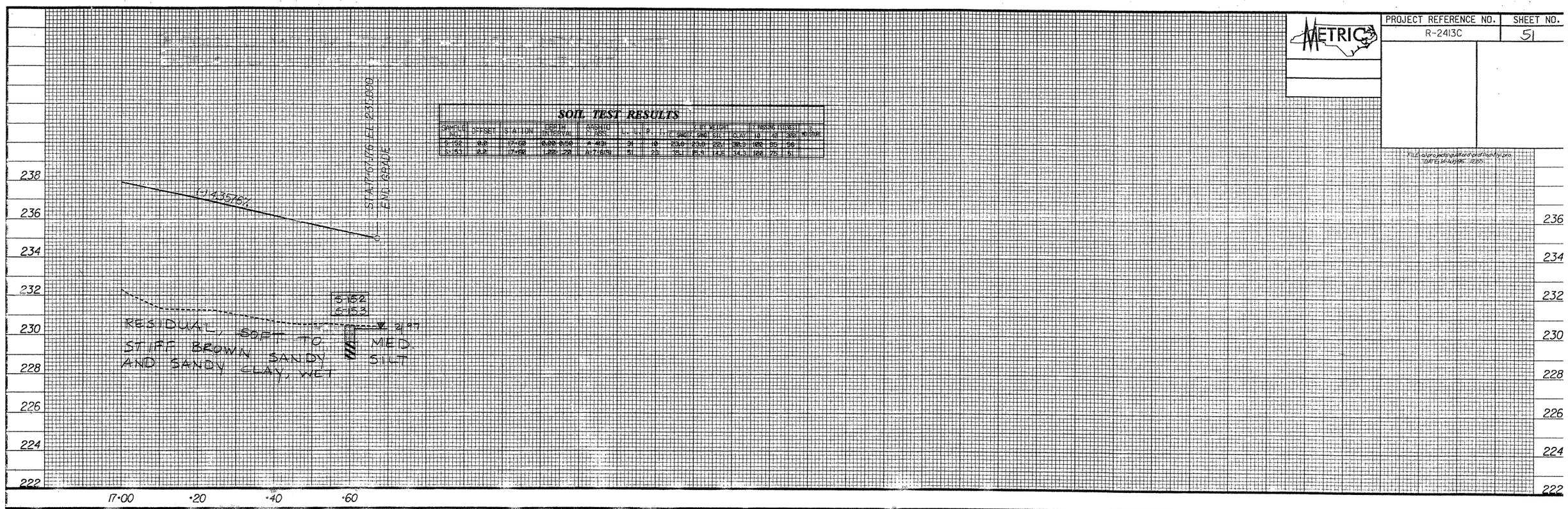

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	% BY WEIGHT F. SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE
S-152	0.0	17+60	0.00-0.50	A-4(9)	31	10	23.0	23.0	22.1	30.9	100	85	56	
S-153	0.0	17+60	1.00-1.20	A-7-6(9)	51	23	35.1	15.9	14.6	34.3	100	75	51	

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS

FOR -Y23- PLANS
SEE SHEET 6

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	S2

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE
S-228	0.0	12+00	0.00-1.00	A-7-6(18)	54	20	18.3	15.5	9.7	56.5	100	89	67	
S-229	0.0	12+00	2.00-2.50	A-5(1)	46	6	24.0	33.7	14.1	28.2	98	84	46	
SS-208	12.0m LT	10+00	0.88-1.33	A-7-6(8)	49	20	27.9	22.4	11.3	38.4	99	81	52	

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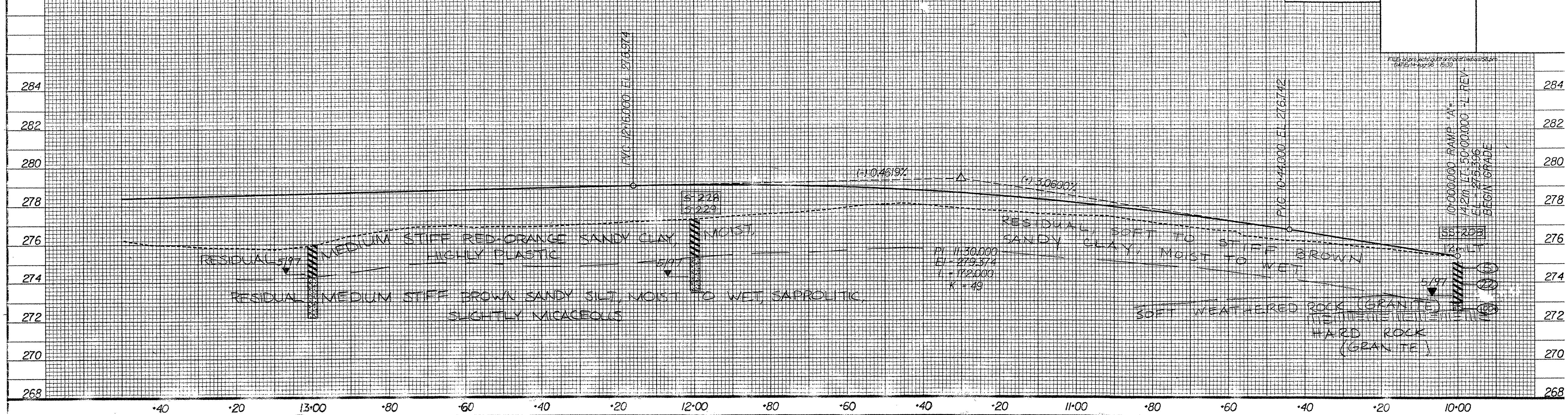

Ⓑ RESIDUAL MEDIUM STIFF LIGHT BROWN FINE SANDY SILT, MOIST
Ⓓ GRAY SOFT WEATHERED ROCK (GRANITE)

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE
SS-230	0.0	14+00	0.00-0.45	A-4(0)	23	9	43.8	20.0	14.1	22.2	100	72	41	
SS-231	0.0	14+00	0.86-1.31	A-7-5(13)	61	23	27.0	13.9	12.7	46.4	100	82	60	
SS-232	0.0	14+00	2.38-2.83	A-2-5(0)	56	9	30.4	40.3	13.1	16.1	89	79	34	

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS

FOR RAMP A PLANS

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	53

METRIC

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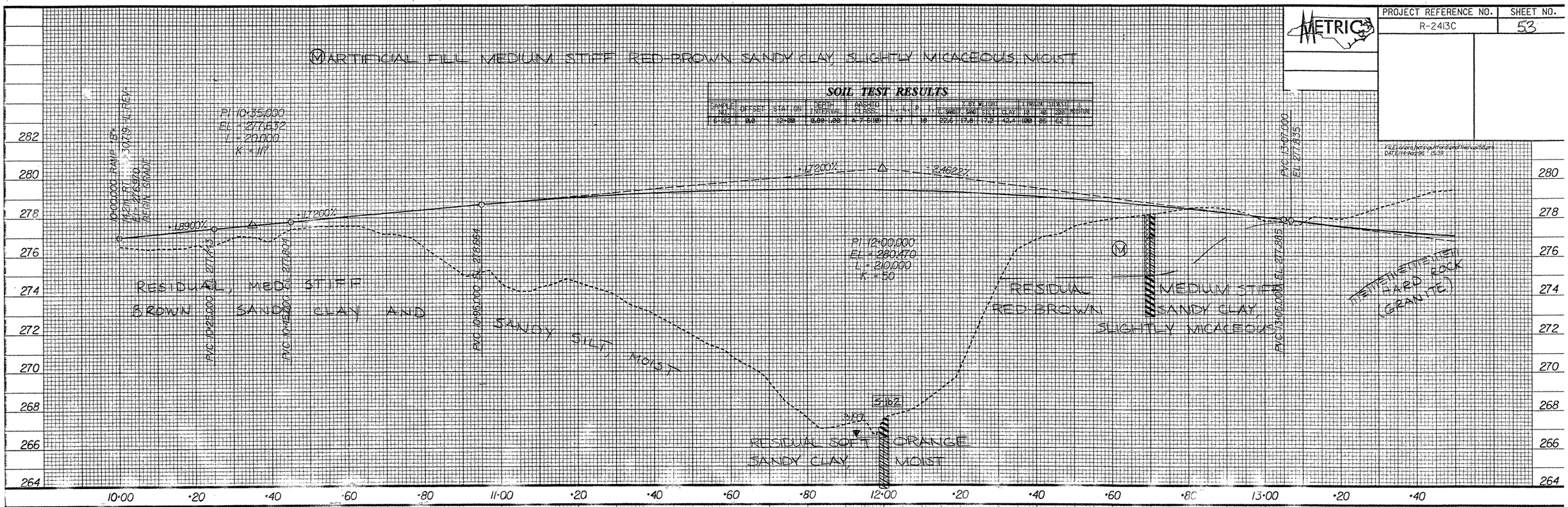
DATE: 11/16/2006 15:39

Ⓜ ARTIFICIAL FILL MEDIUM STIFF RED-BROWN SANDY CLAY SLIGHTLY MICACEOUS MOIST

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE
S-162	8.0	12+00	0.00-1.00	A-7-6(10)	47	18	22.6	17.6	17.2	42.4	100	95	62	



Ⓐ RESIDUAL MEDIUM STIFF ORANGE TO BROWN TO GRAY SANDY AND SILTY SANDY CLAY, MOIST TO WET

Ⓑ GRAY SOFT WEATHERED ROCK (GRANITE)

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE
S-167	8.0	14+00	0.00-0.50	A-7-5(18)	58	23	29.4	14.7	9.2	54.5	100	95	66	
S-168	8.0	14+00	1.70-2.30	A-6(9)	38	11	31.3	25.7	18.8	24.2	100	88	47	

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
FOR RAMP B PLANS

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	54
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CONST. REV.

R/W REV.

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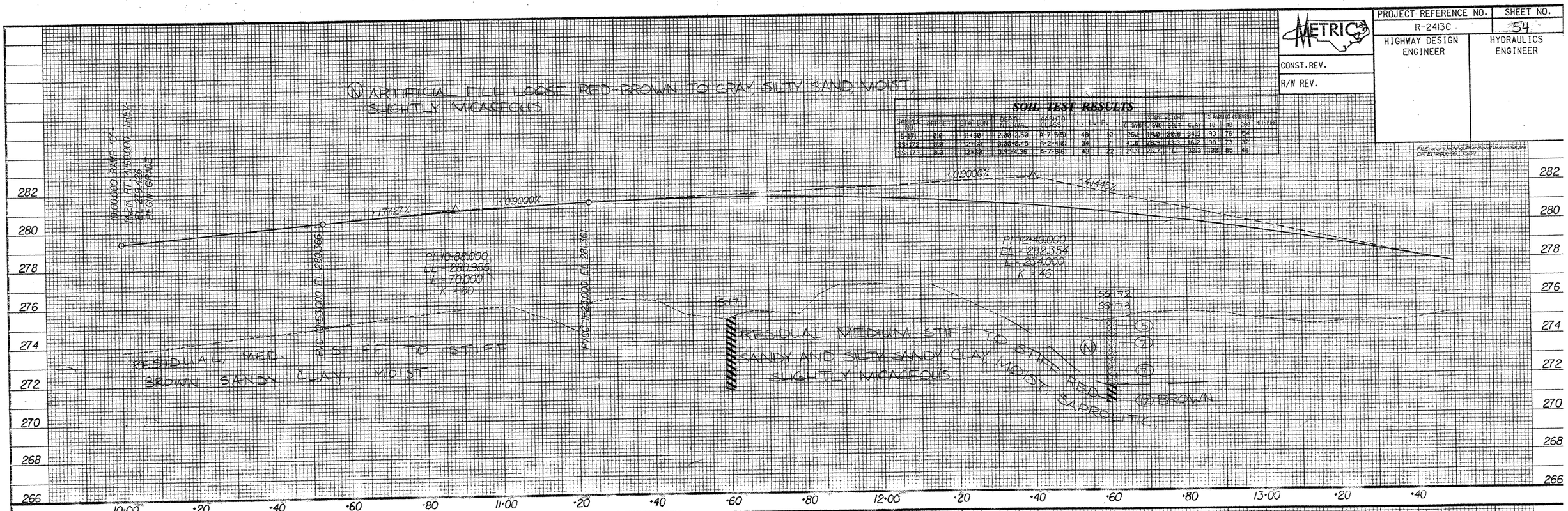
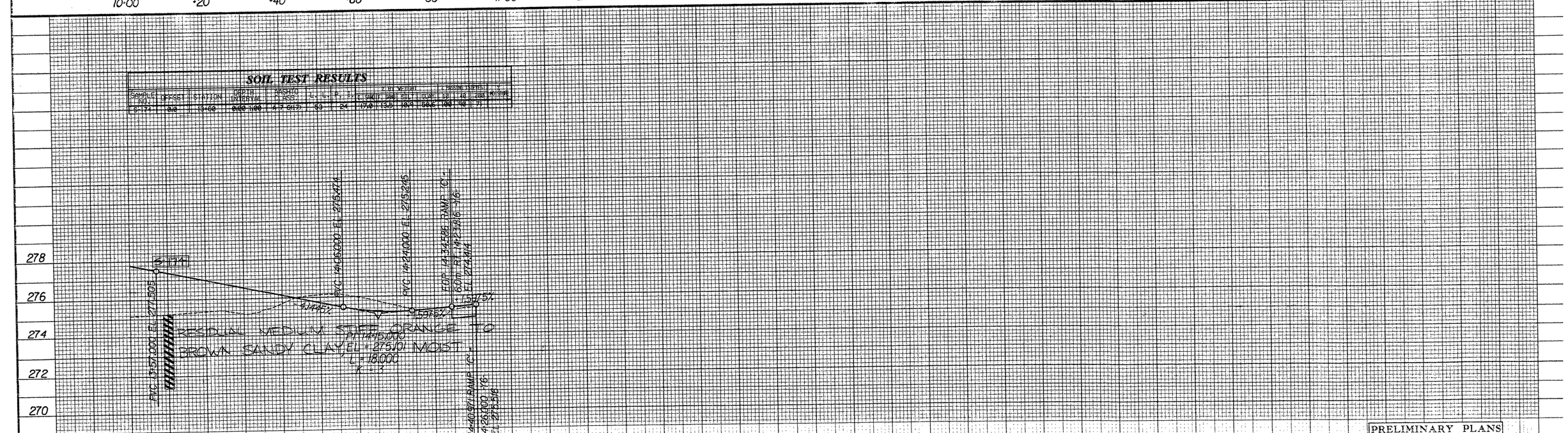


SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT GRAVEL	SAND	SILT	CLAY	% PASSING (SIEVE) 10	40	200	MOISTURE
S-171	0.0	11+60	2.00-3.50	A-7-5(5)	49	12	28.6	17.0	20.8	34.3	93	76	54	
S-172	0.0	12+50	0.00-0.45	A-2-4(0)	29	7	41.8	28.3	13.3	16.2	98	73	32	
S-173	0.0	12+50	0.50-4.35	A-7-5(6)	43	22	29.9	28.7	14.1	32.3	100	85	45	



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT GRAVEL	SAND	SILT	CLAY	% PASSING (SIEVE) 10	40	200	MOISTURE
S-174	0.0	13+60	0.00-1.00	A-7-6(17)	53	24	17.0	13.5	18.9	50.6	100	98	71	

PRELIMINARY PLANS
NOT FOR CONSTRUCTION

FOR RAND & PLANS

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	55

HIGHWAY DESIGN ENGINEER

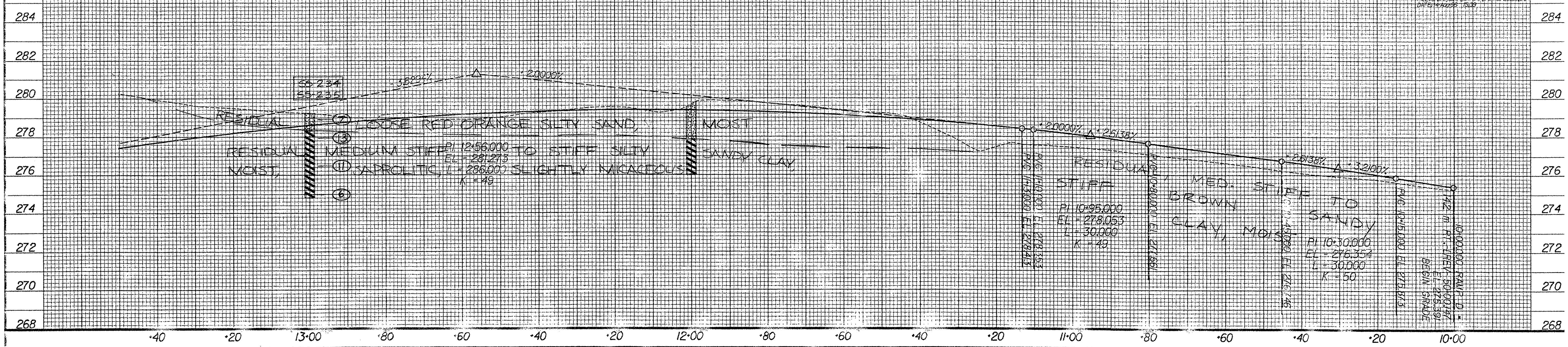
HYDRAULICS ENGINEER

CONST.REV.

R/W REV.

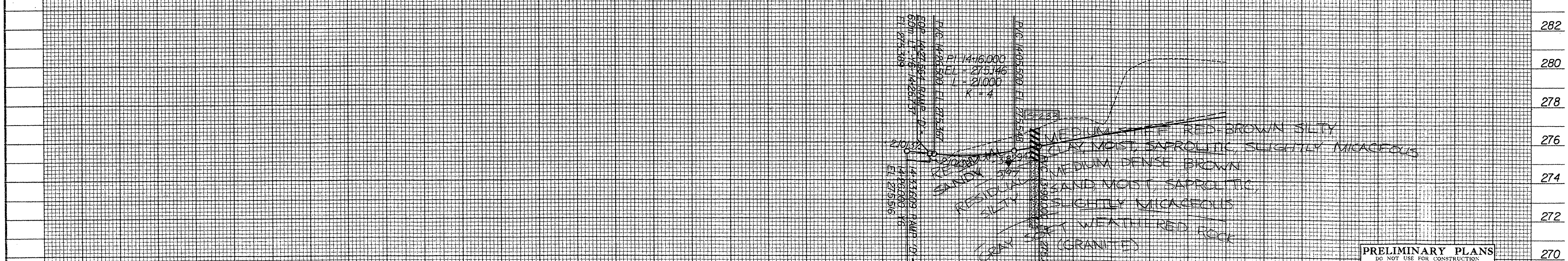
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE
SS-234	0.0	13+00	0.00-0.45	A-2-4(0)	32	1	47.2	28.2	16.5	8.1	93	61	30	
SS-235	0.0	13+00	0.98-1.43	A-7-5(9)	62	15	21.8	26.4	21.6	30.2	99	86	57	25.7



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE
S-233	0.0	14+00	1.70-2.50	A-2-4(0)	33	2	44.2	30.2	13.5	12.1	96	70	28	



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	56

METRIC

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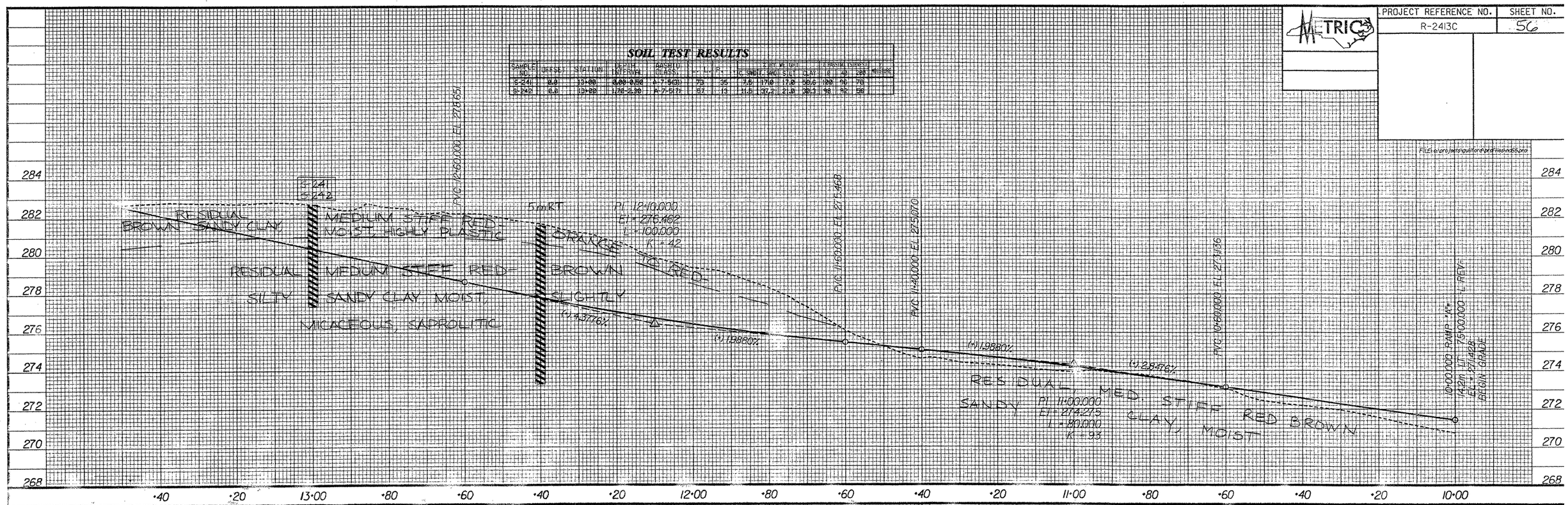
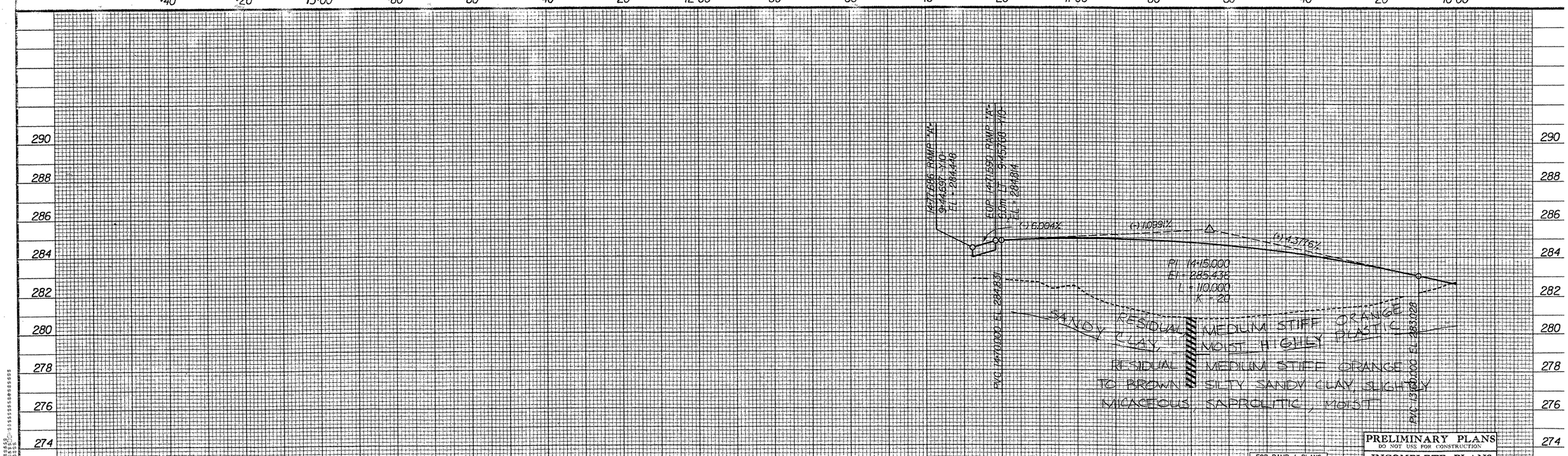
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO (TRB) CLASS.	L.L.	P.I.	% BY WEIGHT C. SND	F. SND	SILT	CLAY	U.S. SIEVE 8	40	200	MISC.
S-241	0.0	13+00	0.00-0.50	A-7-5(3)	73	35	7.5	17.0	17.0	58.6	100	96	78	
S-242	0.0	13+00	1.70-2.30	A-7-5(7)	67	13	11.5	37.2	21.0	30.3	98	92	58	





PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	57

METRIC

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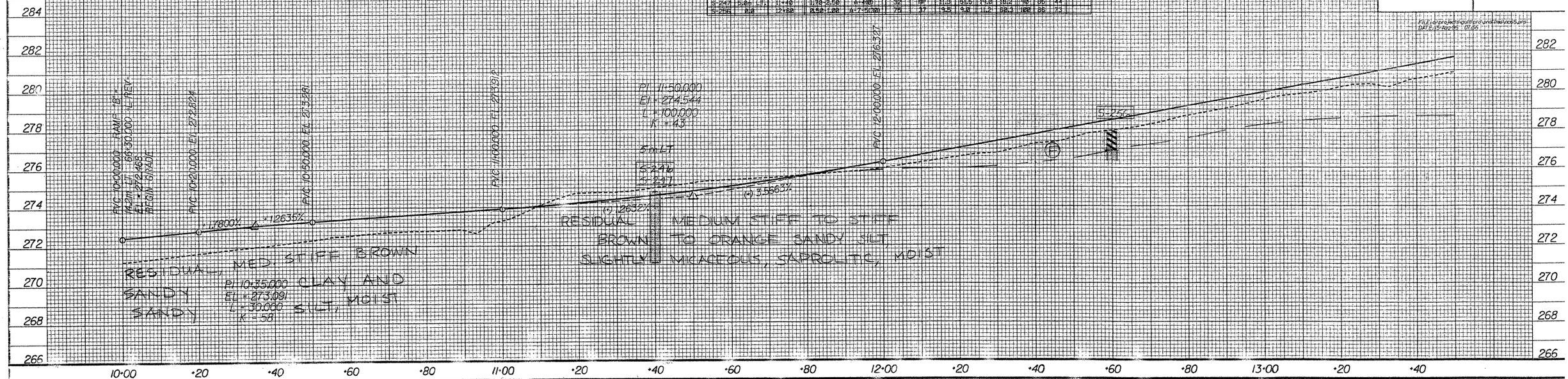
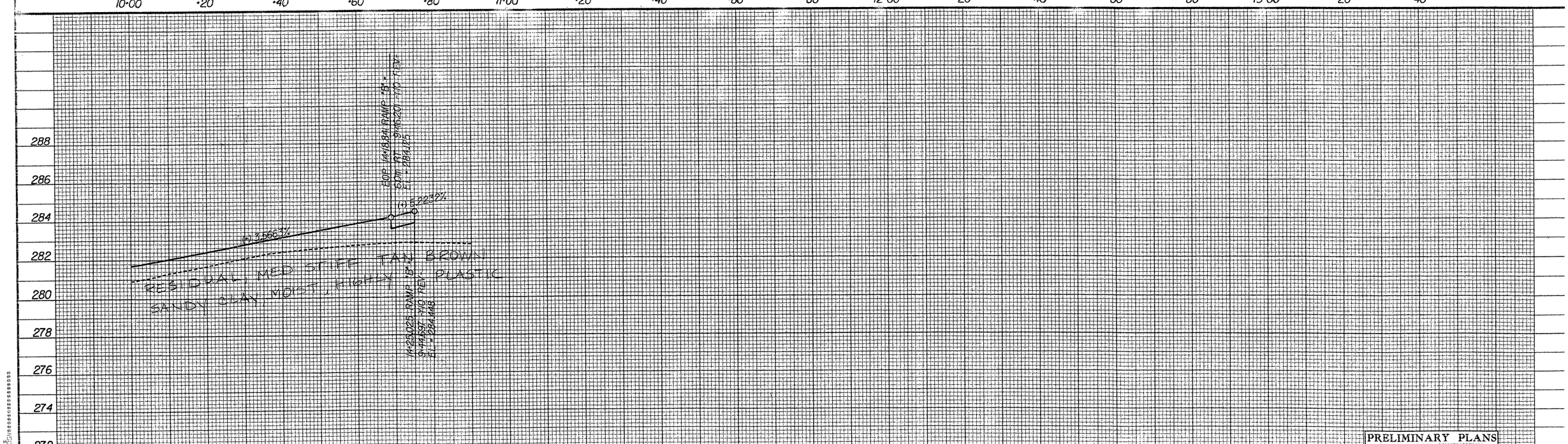
DATE: 5-20-05 07:56

(1) RESIDUAL MEDIUM STIFF TAN TO BROWN SANDY CLAY, MOIST, HIGHLY PLASTIC

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% MOISTURE	% GRAVEL	% SAND	% SILT	% CLAY	% PASSING #10	% PASSING #40	% PASSING #200	% MOISTURE
S-246	5.0m LT.	11+40	0.00-0.50	A-4(0)	29	10	10.7	31.8	19.2	30.3	95	85	53		
S-247	5.0m LT.	11+40	1.70-2.50	A-4(0)	32	NP	11.3	51.5	15.9	18.2	90	66	44		
S-256	0.0	12+50	0.50-1.00	A-7-5(20)	75	47	19.5	9.8	11.2	58.3	100	88	73		





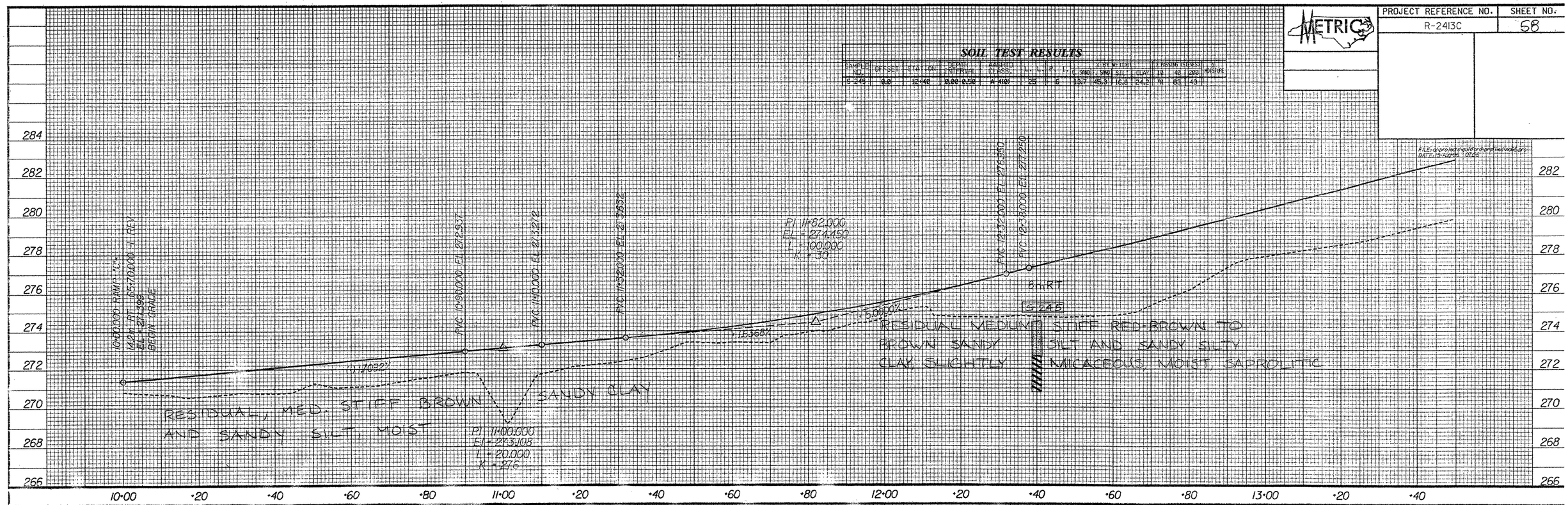
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	58

METRIC

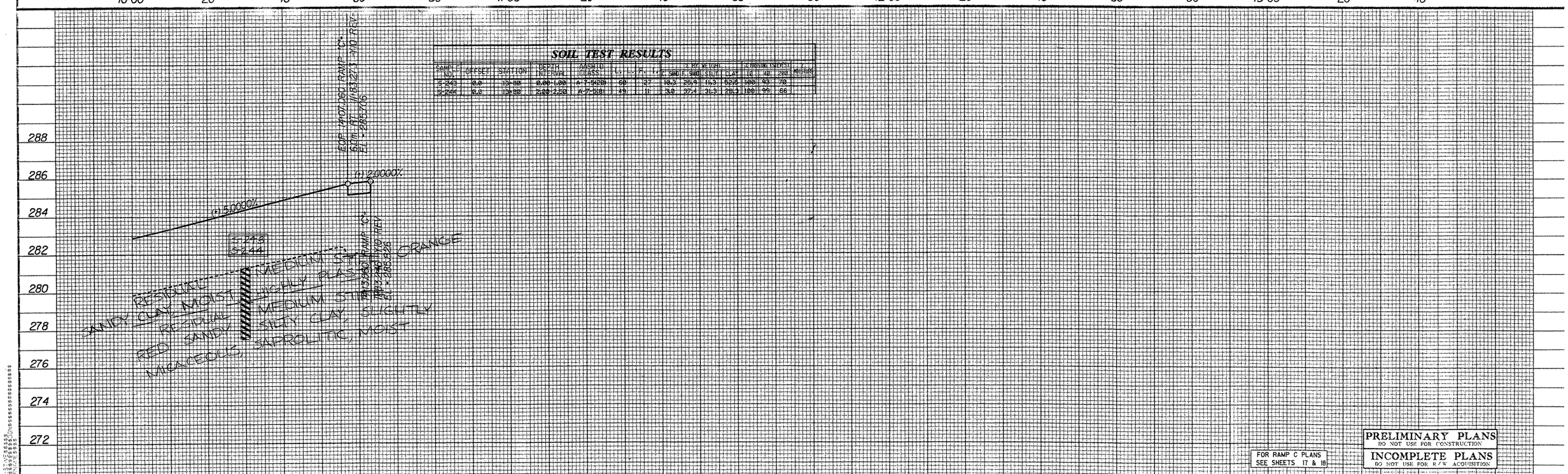
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P. I.	% RT WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	MOISTURE
S-245	0.0	12+40	0.00-0.50	A-4(0)	25	6	13.7	45.3	16.8	24.2	91	83	43	



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P. I.	% RT WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	MOISTURE
S-243	0.0	13+80	0.00-1.00	A-7-5(20)	60	27	10.3	26.9	11.3	52.5	100	93	70	
S-244	0.0	13+80	2.00-2.50	A-7-5(8)	49	11	3.0	37.4	31.3	28.3	100	99	66	



FOR RAMP C PLANS
SEE SHEETS 17 & 18

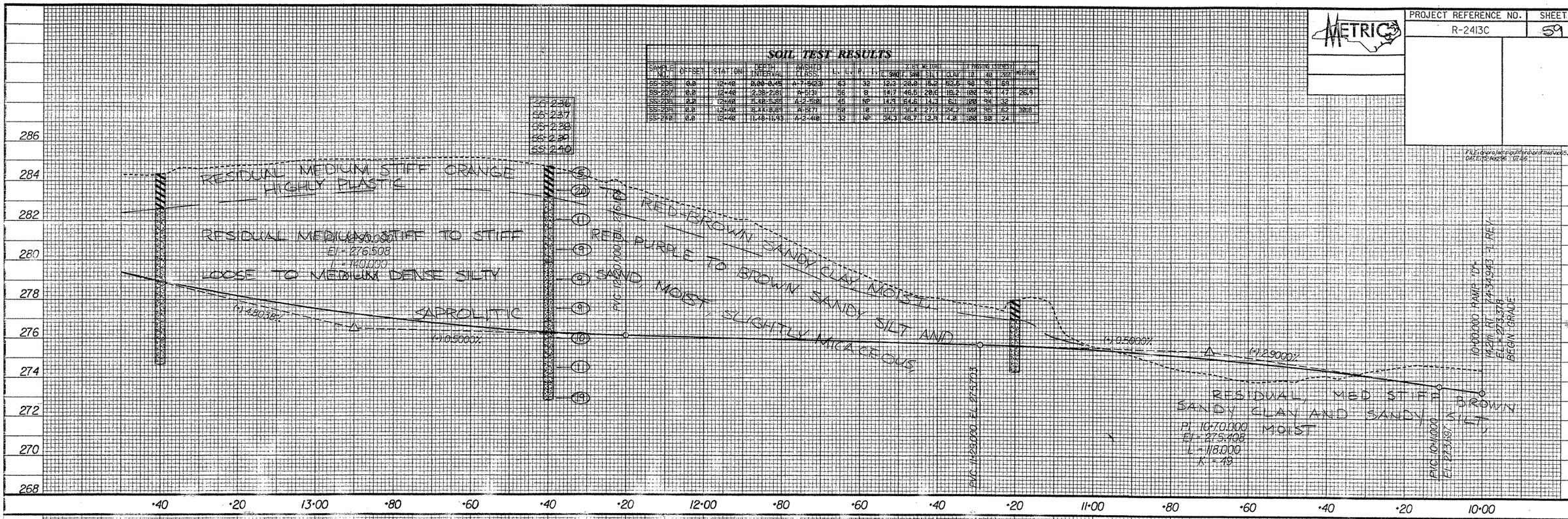
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

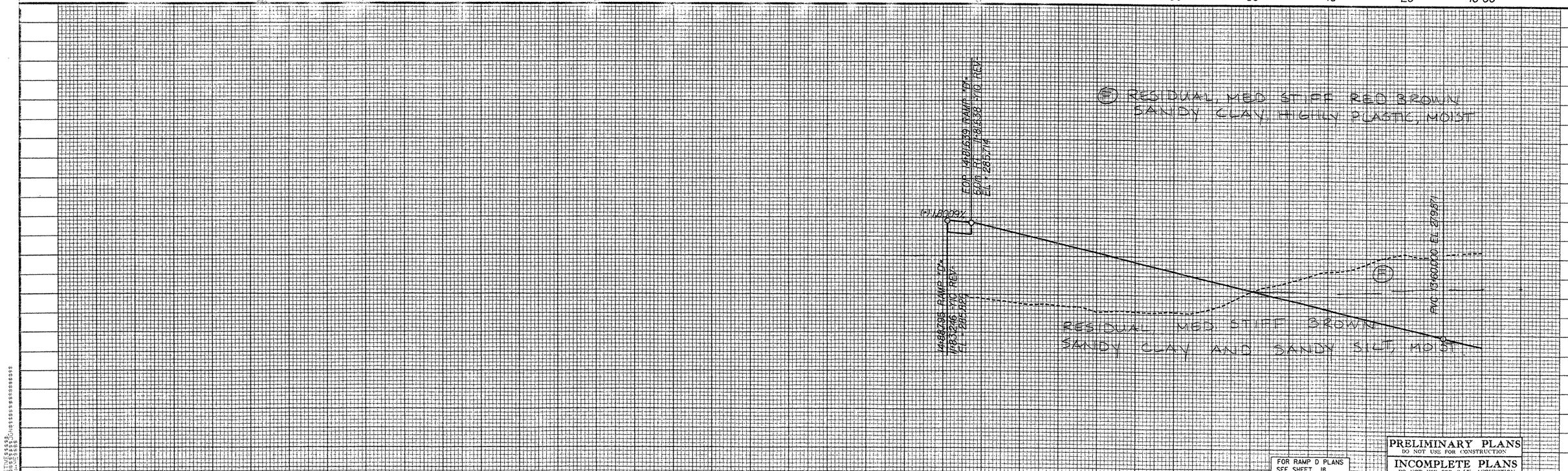
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	59

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	PI	A-7-5 SUBGR.	% PASS. SIEVE NO. 40	60	200	SILT	CLAY	AASHTO CLASS.	% PASSING SIEVE NO. 10	40	200	MODULE
SS-205	0.0	12+40	0.00-0.45	A-7-5(23)	63	32	12.3	28.0	16.2	52.6	58	31	100	63			
SS-207	0.0	12+40	2.00-2.85	A-5(3)	56	8	14.7	46.5	20.6	16.2	100	94	47				26.9
SS-208	0.0	12+40	5.40-5.85	A-2-5(0)	45	NP	14.3	54.6	14.3	6.1	100	94	32				
SS-209	0.0	12+40	8.44-8.85	A-5(7)	50	10	11.7	56.5	27.1	24.2	100	95	62				30.8
SS-210	0.0	12+40	11.48-11.93	A-2-4(0)	32	NP	24.3	48.7	12.9	4.0	100	92	24				





PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION

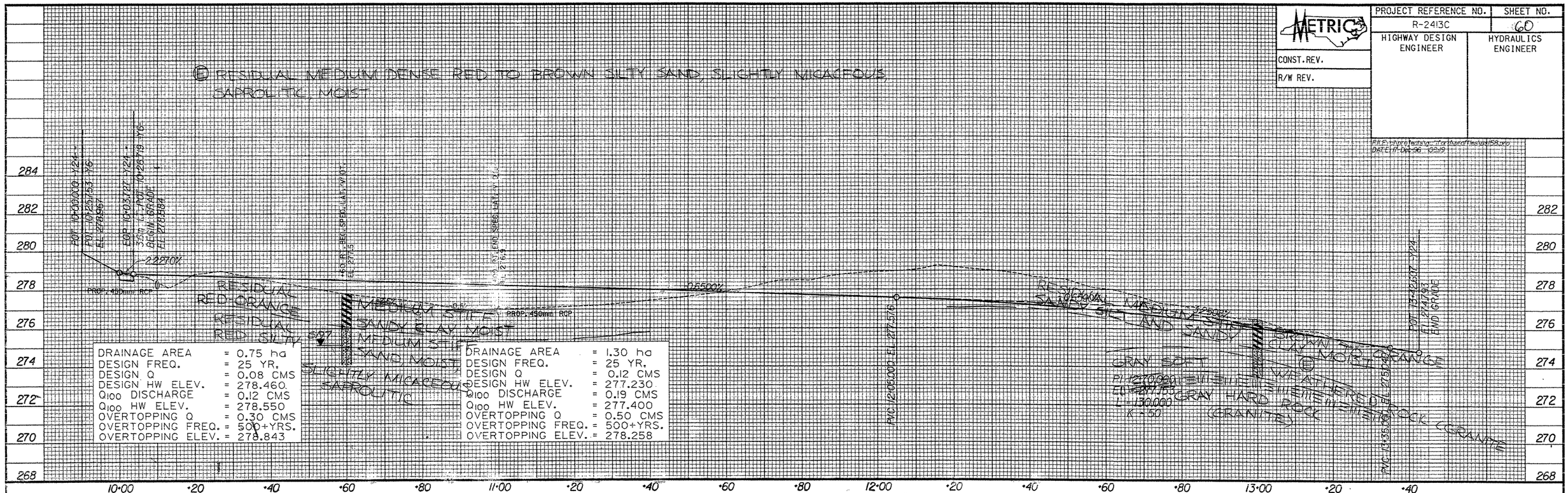
FOR RAMP D PLANS SEE SHEET 18

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	60
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

CONST. REV.

R/W REV.



DRAINAGE AREA	= 0.75 ha
DESIGN FREQ.	= 25 YR.
DESIGN Q	= 0.08 CMS
DESIGN HW ELEV.	= 278.460
Q_{100} DISCHARGE	= 0.12 CMS
Q_{100} HW ELEV.	= 278.550
OVERTOPPING Q	= 0.30 CMS
OVERTOPPING FREQ.	= 500+YRS.
OVERTOPPING ELEV.	= 278.843

DRAINAGE AREA	= 1.30 ha
DESIGN FREQ.	= 25 YR.
DESIGN Q	= 0.12 CMS
DESIGN HW ELEV.	= 277.230
Q_{100} DISCHARGE	= 0.19 CMS
Q_{100} HW ELEV.	= 277.400
OVERTOPPING Q	= 0.50 CMS
OVERTOPPING FREQ.	= 500+YRS.
OVERTOPPING ELEV.	= 278.258

FOR -Y24- PLANS SEE SHEETS 12 & 27

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

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	6
HIGHWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
CONST. REV.	
R/W REV.	

METRIC

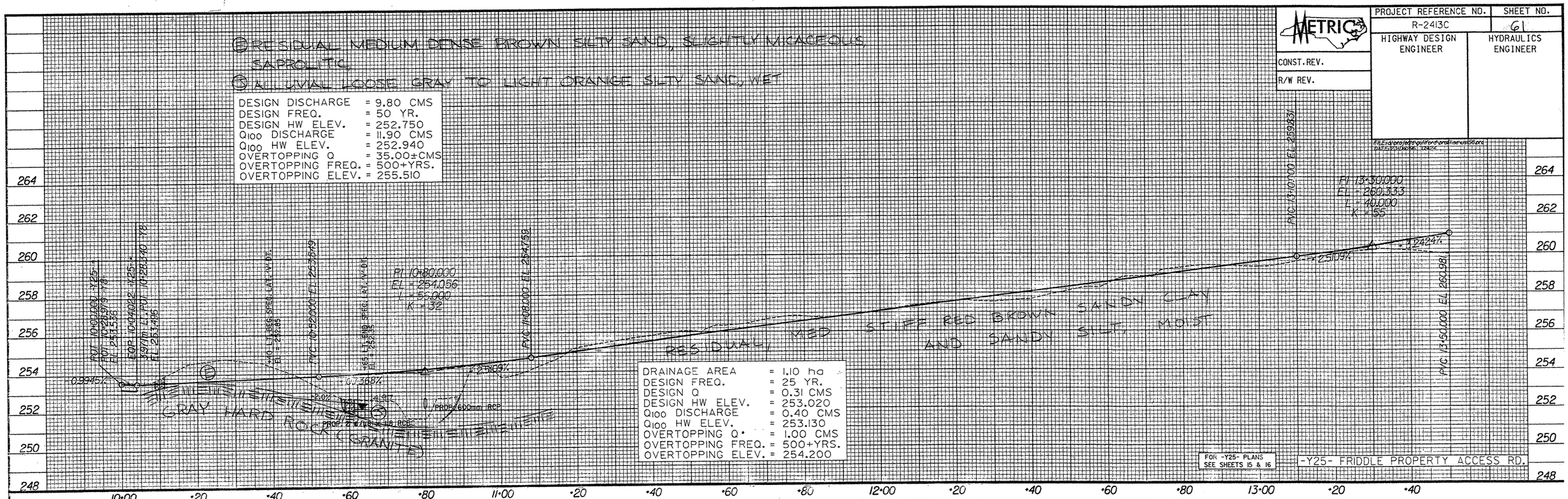
FILE: c:\pcpd\pds\guilford\ardlines\ds56.prc
DATE: 12/11/2006 10:22:22

(B) RESIDUAL MEDIUM DENSE BROWN SILTY SAND, SLIGHTLY MICACEOUS SAPROLITIC

(A) ALLUVIAL LOOSE GRAY TO LIGHT ORANGE SILTY SAND, WET

DESIGN DISCHARGE = 9.80 CMS
DESIGN FREQ. = 50 YR.
DESIGN HW ELEV. = 252.750
Q_{100} DISCHARGE = 11.90 CMS
Q_{100} HW ELEV. = 252.940
OVERTOPPING Q = 35.00±CMS
OVERTOPPING FREQ. = 500+YRS.
OVERTOPPING ELEV. = 255.510

DRAINAGE AREA = 1.10 ha
DESIGN FREQ. = 25 YR.
DESIGN Q = 0.31 CMS
DESIGN HW ELEV. = 253.020
Q_{100} DISCHARGE = 0.40 CMS
Q_{100} HW ELEV. = 253.130
OVERTOPPING Q = 1.00 CMS
OVERTOPPING FREQ. = 500+YRS.
OVERTOPPING ELEV. = 254.200



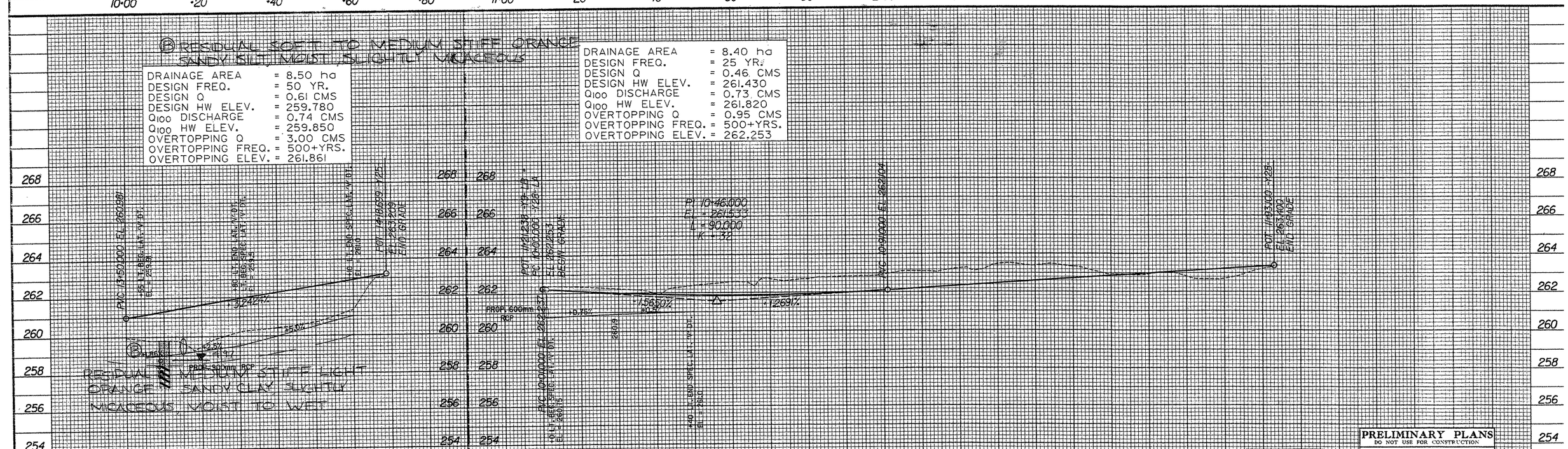
FOR -Y25- PLANS SEE SHEETS 15 & 16

-Y25- FRIDDLE PROPERTY ACCESS RD.

(B) RESIDUAL SOFT TO MEDIUM STIFF ORANGE SANDY SILT, MOIST, SLIGHTLY MICACEOUS

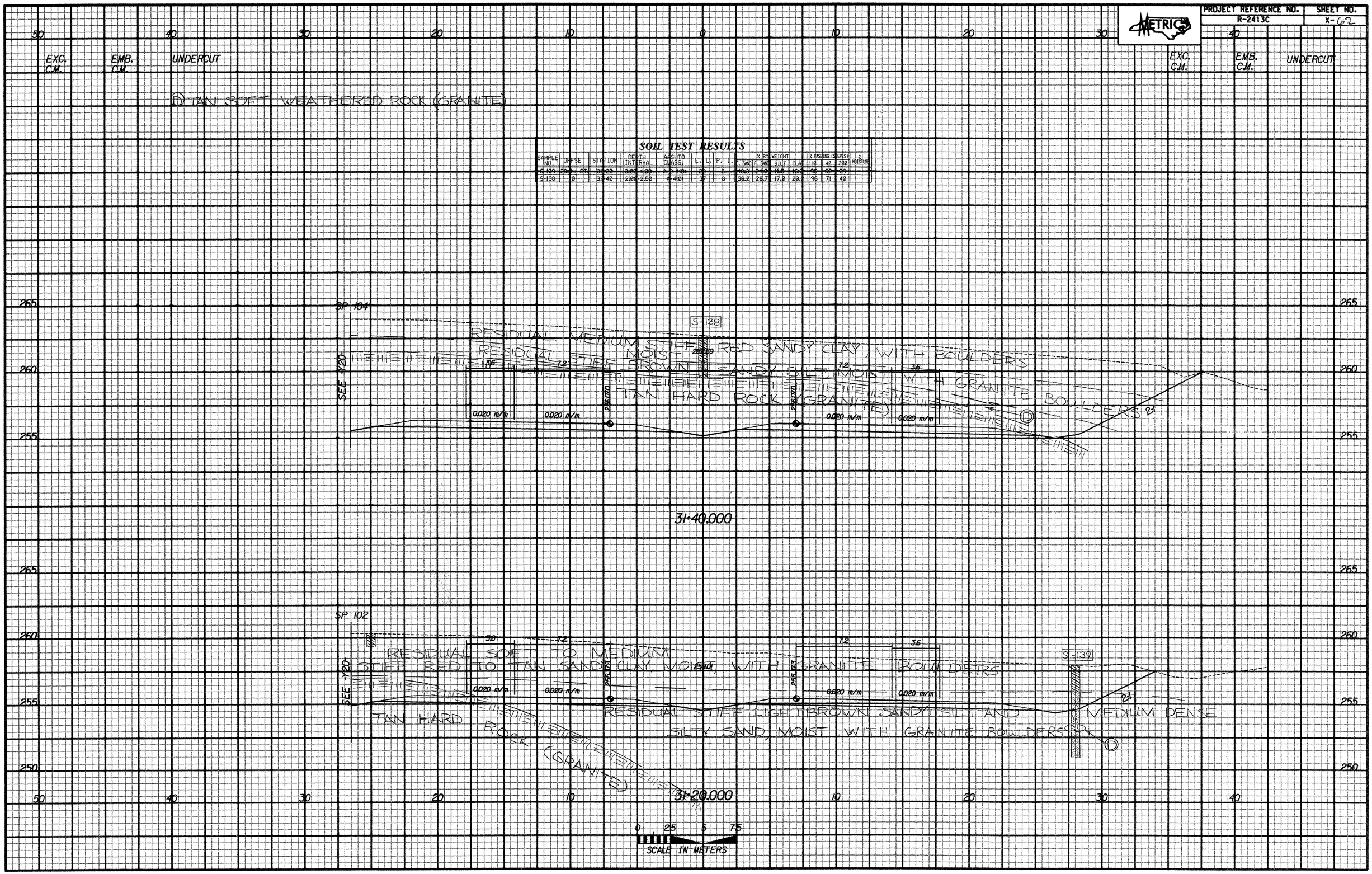
DRAINAGE AREA = 8.50 ha
DESIGN FREQ. = 50 YR.
DESIGN Q = 0.61 CMS
DESIGN HW ELEV. = 259.780
Q_{100} DISCHARGE = 0.74 CMS
Q_{100} HW ELEV. = 259.850
OVERTOPPING Q = 3.00 CMS
OVERTOPPING FREQ. = 500+YRS.
OVERTOPPING ELEV. = 261.861

DRAINAGE AREA = 8.40 ha
DESIGN FREQ. = 25 YR.
DESIGN Q = 0.46 CMS
DESIGN HW ELEV. = 261.430
Q_{100} DISCHARGE = 0.73 CMS
Q_{100} HW ELEV. = 261.820
OVERTOPPING Q = 0.95 CMS
OVERTOPPING FREQ. = 500+YRS.
OVERTOPPING ELEV. = 262.253



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	X-62

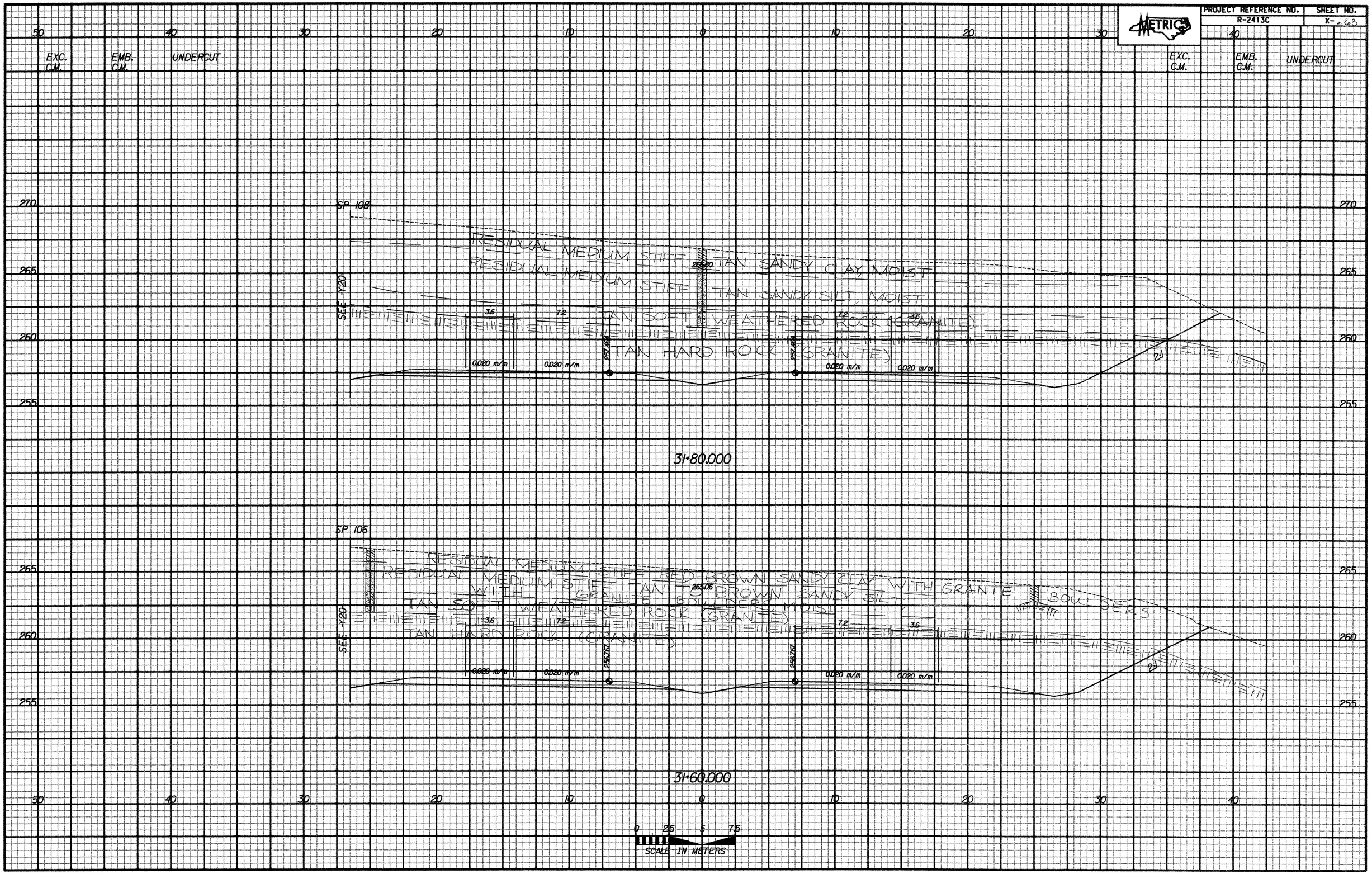


SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P. I.	% BY WEIGHT F. SAND	% BY WEIGHT F. SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE
S-139	20.0 FT.	31+20	0.00-4.00	A-2-4(0)	29	6	40.3	24.0	11.6	16.0	96	62	29	
S-138	0	31+40	2.00-2.50	A-4(0)	37	8	36.2	26.7	17.0	20.2	96	71	40	

-L-REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	X-63

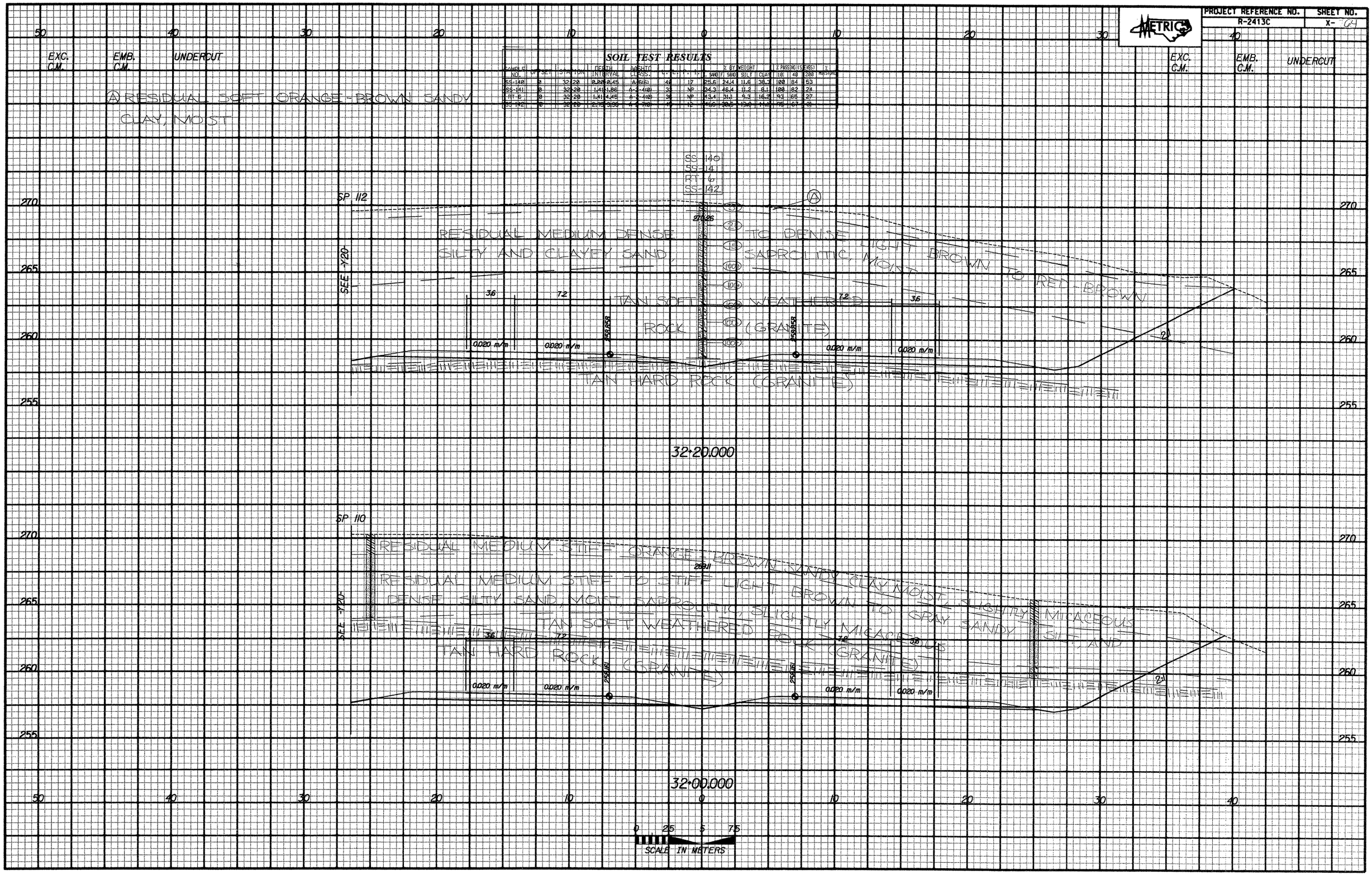


-L-REV

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	X-64

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P. I.	% BY WEIGHT L. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE
SS-140	0	32+20	0.00-0.45	A-6(6)	40	17	25.6	24.4	11.6	38.3	100	84	53	
SS-141	0	32+20	1.41-1.86	A-2-4(0)	33	NP	24.3	46.4	11.2	8.1	100	82	24	
RT-6	0	32+20	1.41-4.45	A-2-4(0)	36	NP	43.4	31.1	9.3	16.2	93	65	27	
SS-142	0	32+20	2.73-3.36	A-2-7(0)	40	12	41.6	30.5	13.0	14.1	95	67	31	



-L-REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	X-365

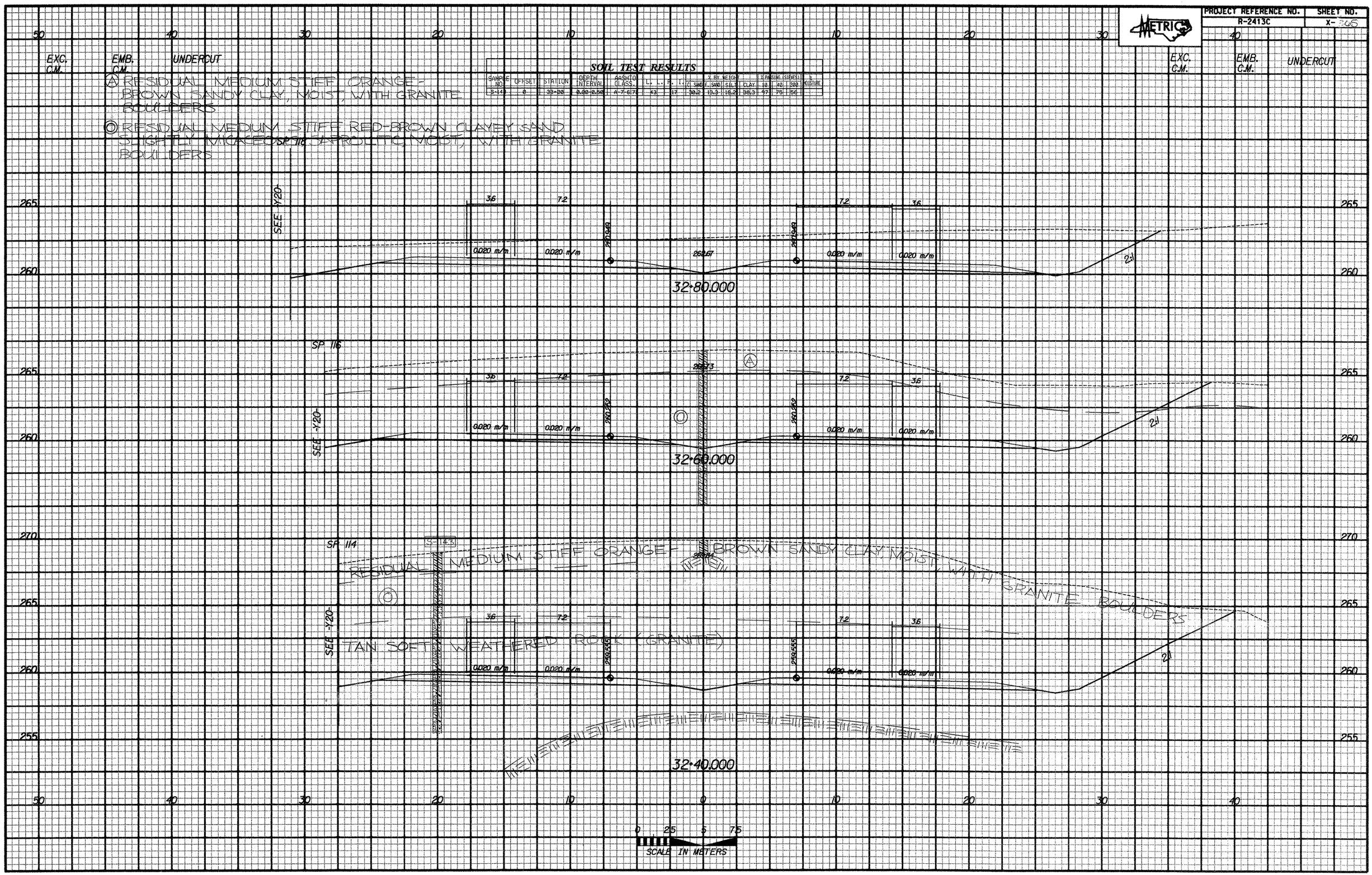
EXC. C.M. | EMB. C.M. | UNDERCUT

Ⓐ RESIDUAL MEDIUM STIFF ORANGE-BROWN SANDY CLAY, MOIST, WITH GRANITE BOULDERS

Ⓞ RESIDUAL MEDIUM STIFF RED-BROWN CLAYEY SAND SLIGHTLY MICACEOUS, SAPROLITIC, MOIST, WITH GRANITE BOULDERS

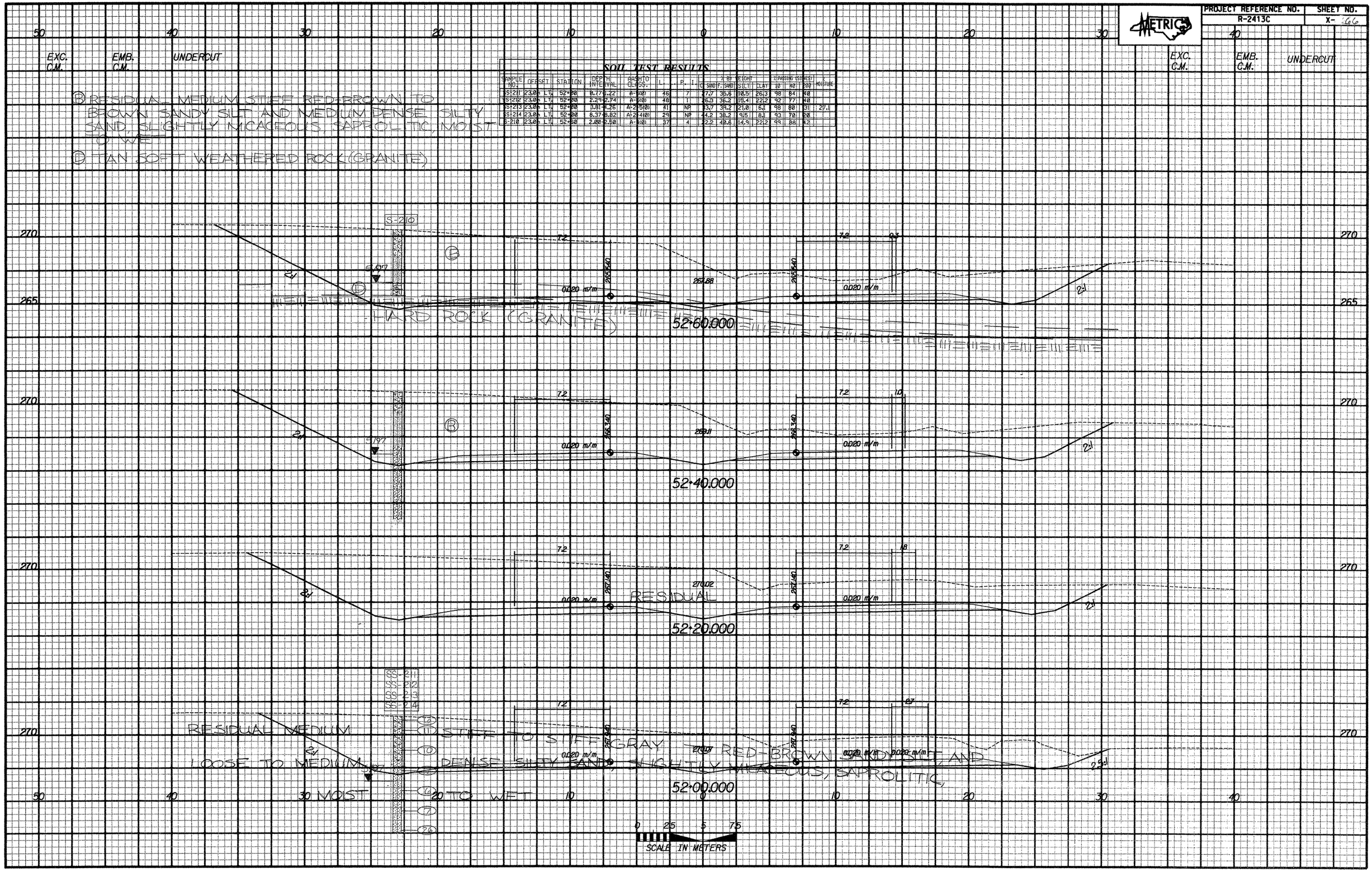
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT GRAVEL	SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE
S-143	0	32+00	0.00-0.56	A-7-6(7)	43	17	30.2	15.3	16.2	38.3	97	75	56	



-L-REV.

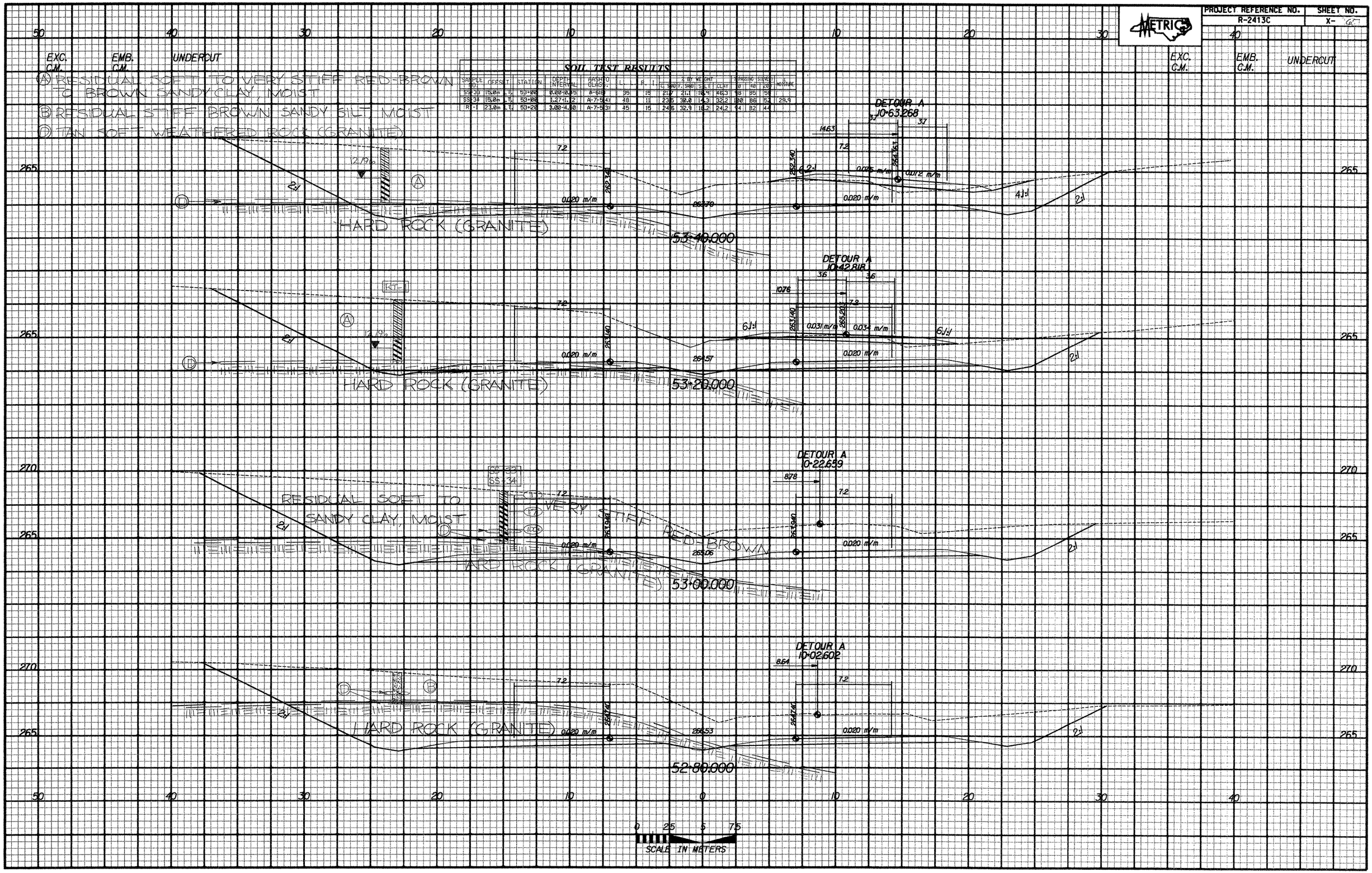
PROJECT REFERENCE NO.	SHEET NO.
R-2413C	X- 66



SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C SAND	F. SAND	SILT	CLAY	% PASSING US SIEVE 10	40	200	MOISTURE
SS-211	23.0 m LT	52+00	0.77-1.22	A-7(0)	46	7	27.7	35.6	10.5	26.3	98	84	40	
SS-212	23.0 m LT	52+00	2.24-2.74	A-7(0)	48	1	26.3	36.2	18.4	22.2	92	77	40	
SS-213	23.0 m LT	52+00	3.81-4.26	A-2-5(0)	41	NP	33.7	39.2	21.0	6.1	98	80	31	27.1
SS-214	23.0 m LT	52+00	6.37-6.82	A-2-4(0)	29	NP	41.2	38.2	9.5	8.1	93	70	20	
S-210	23.0 m LT	52+60	2.00-2.50	A-1(0)	37	4	22.2	40.6	14.9	22.2	99	88	42	

-L-REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	X- 6

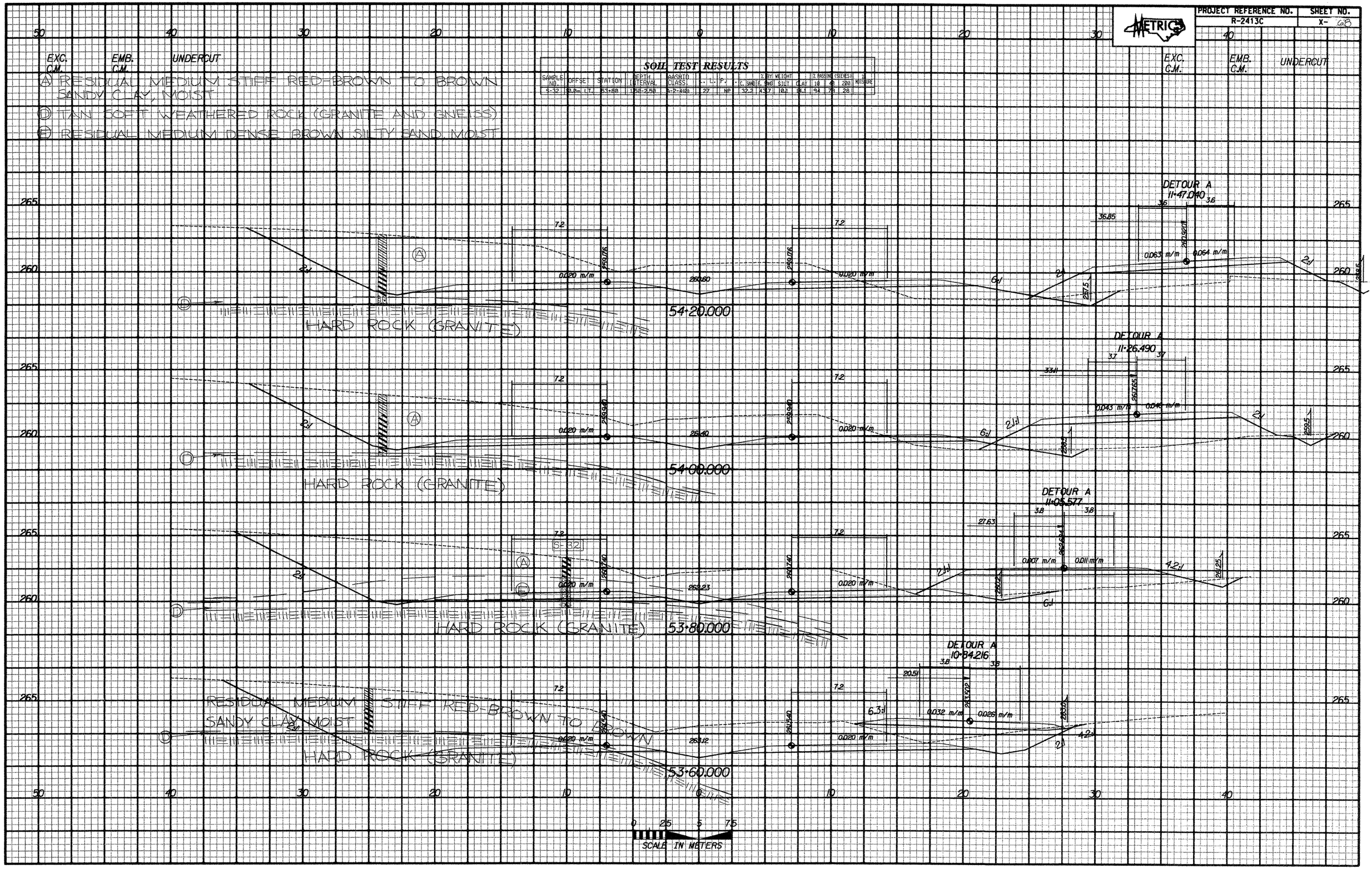


SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	PI	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVE # 10	40	200	% MOISTURE
SS-33	15.0m LT.	53+00	0.00-0.45	A-6(8)	35	16	21.7	21.1	18.9	46.3	98	95	58	
SS-34	15.0m LT.	53+00	1.27-1.72	A-7-5(4)	48	11	23.5	30.0	14.3	32.2	100	86	52	28.9
R-1	23.0m LT.	53+20	3.00-4.50	A-7-5(3)	45	15	24.5	32.9	18.2	24.2	94	82	44	

-L-REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	X- 68



SOIL TEST RESULTS

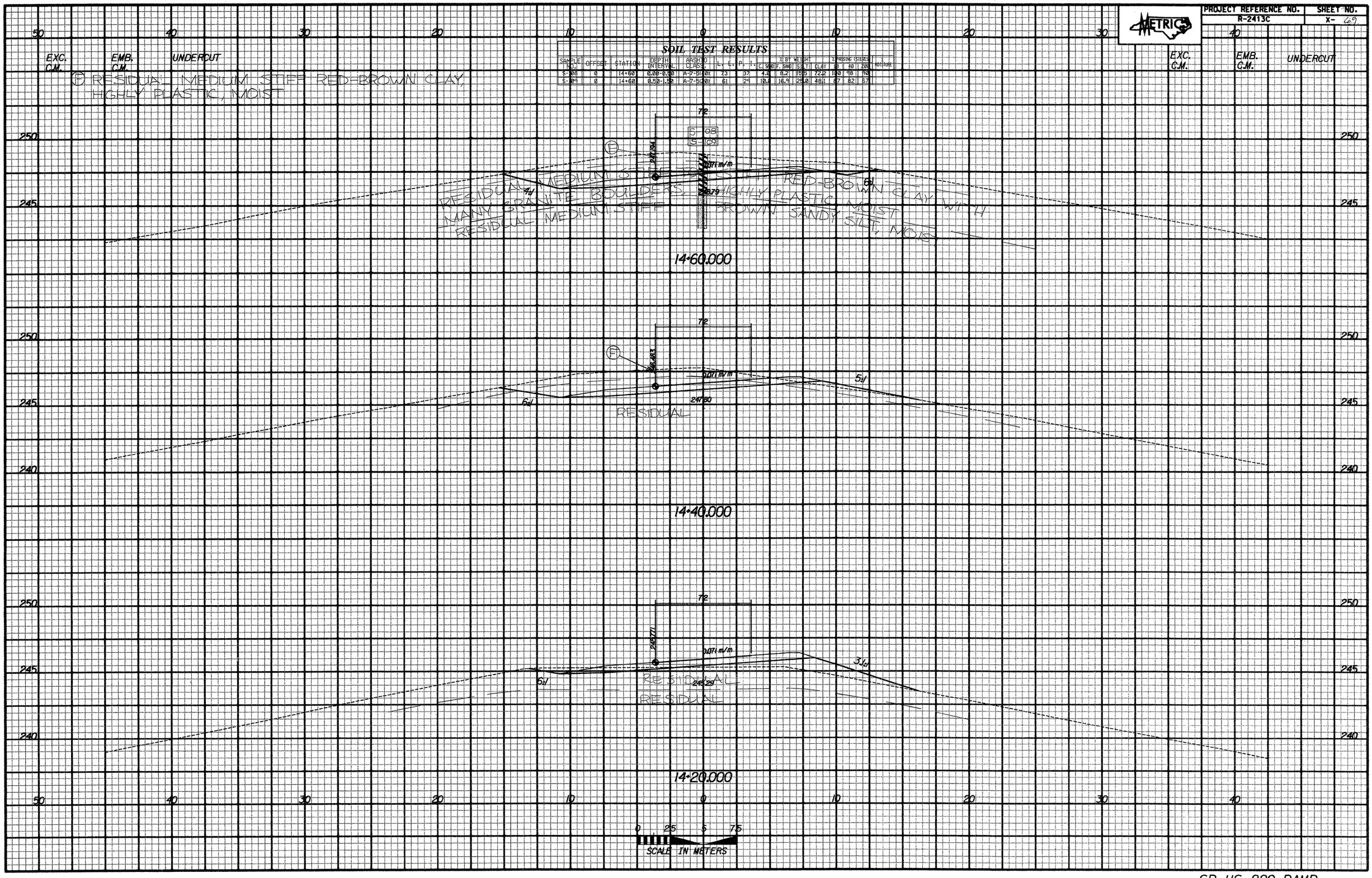
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE
S-32	9.0m LT.	53+80	1.50-2.50	A-2-4(0)	27	NP	32.2	43.7	10.1	14.1	94	78	28	

-L-REV.

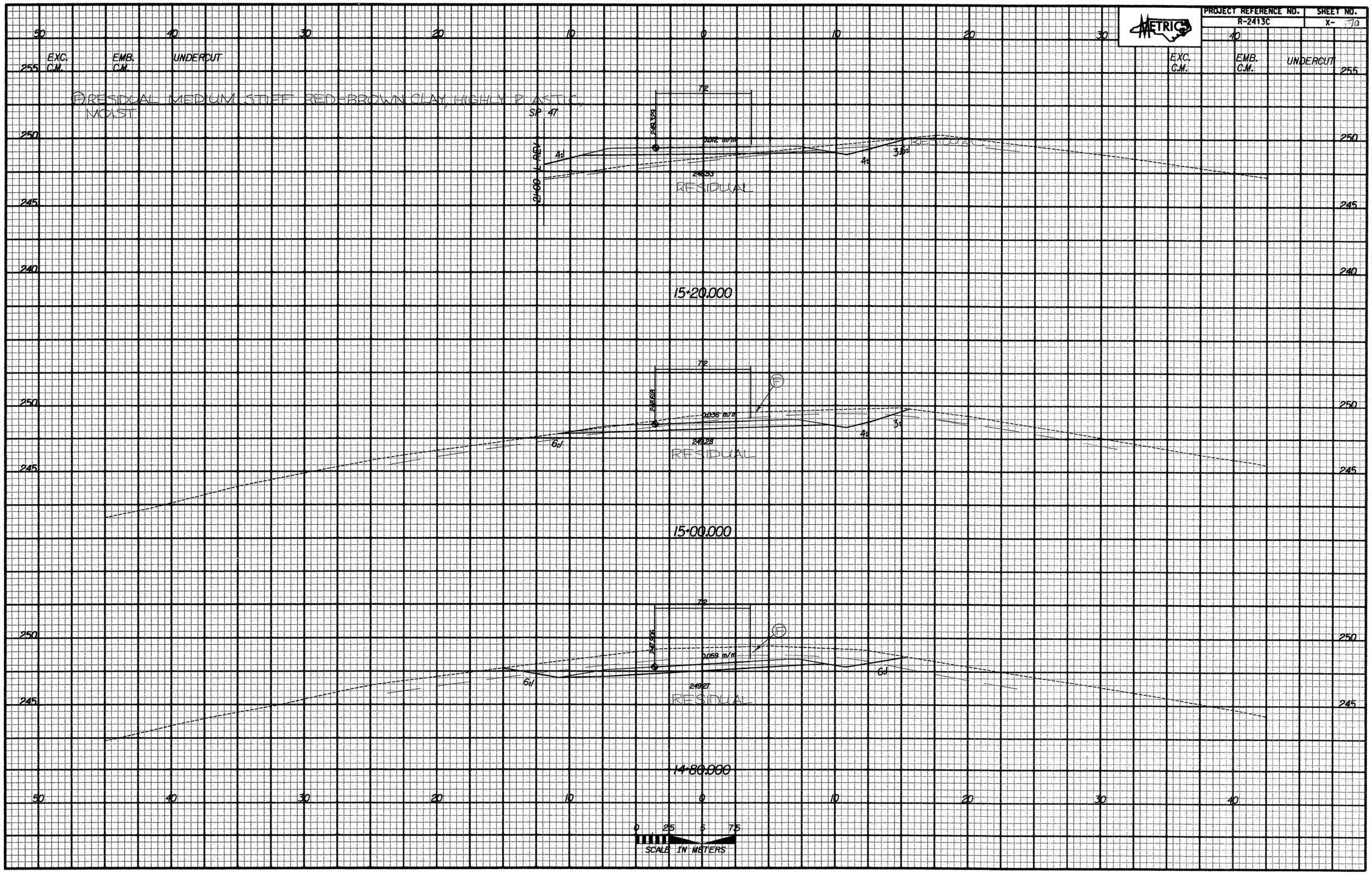
PROJECT REFERENCE NO.	SHEET NO.
R-2413C	X- 69

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE
S-108	0	14+60	0.00-0.20	A-7-5(20)	73	37	4.0	8.2	15.5	72.2	100	98	90	
S-109	0	14+60	0.50-1.50	A-7-5(20)	61	29	10.0	16.9	25.0	48.1	87	82	67	

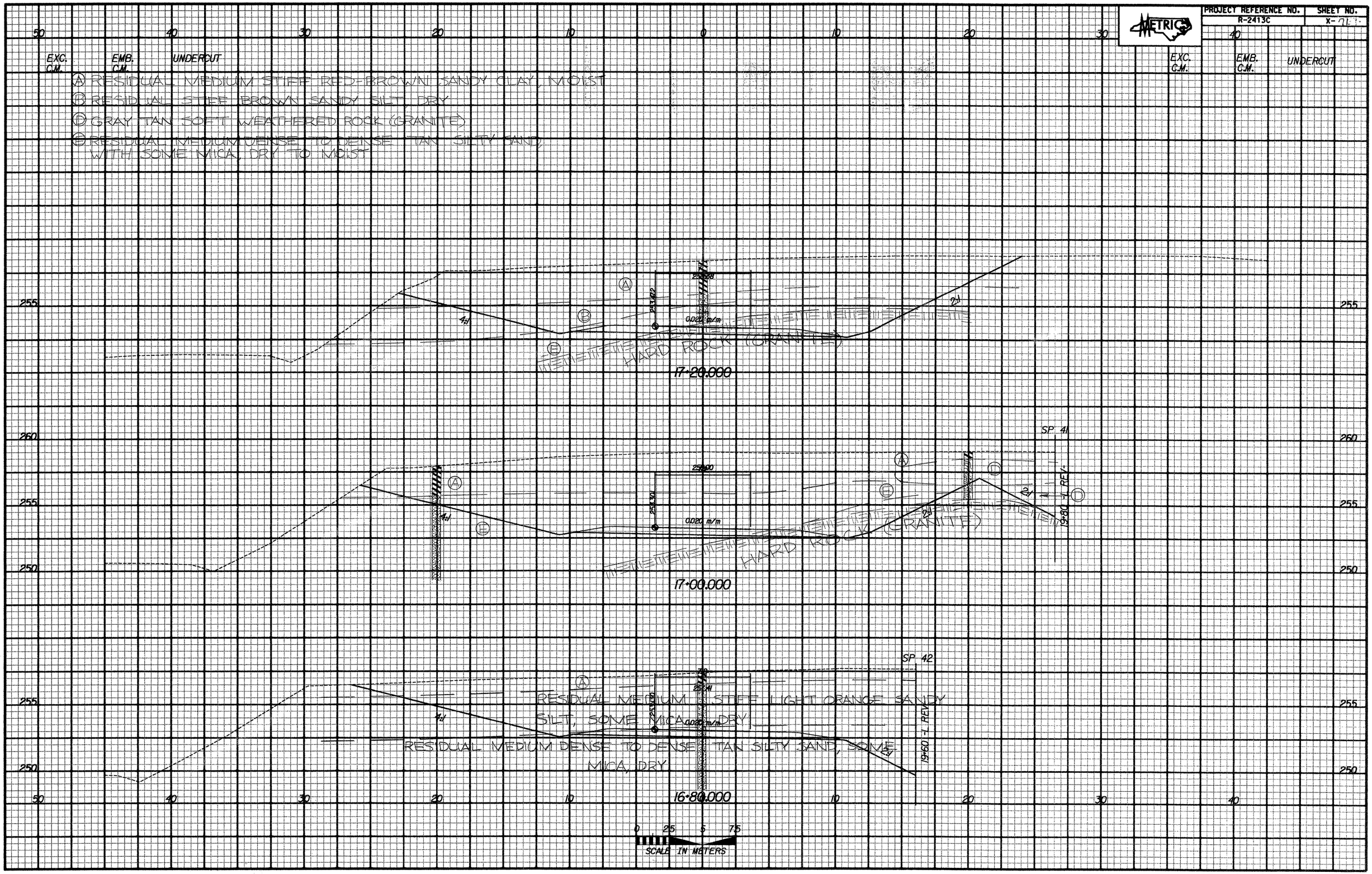


SB US 220 RAMP



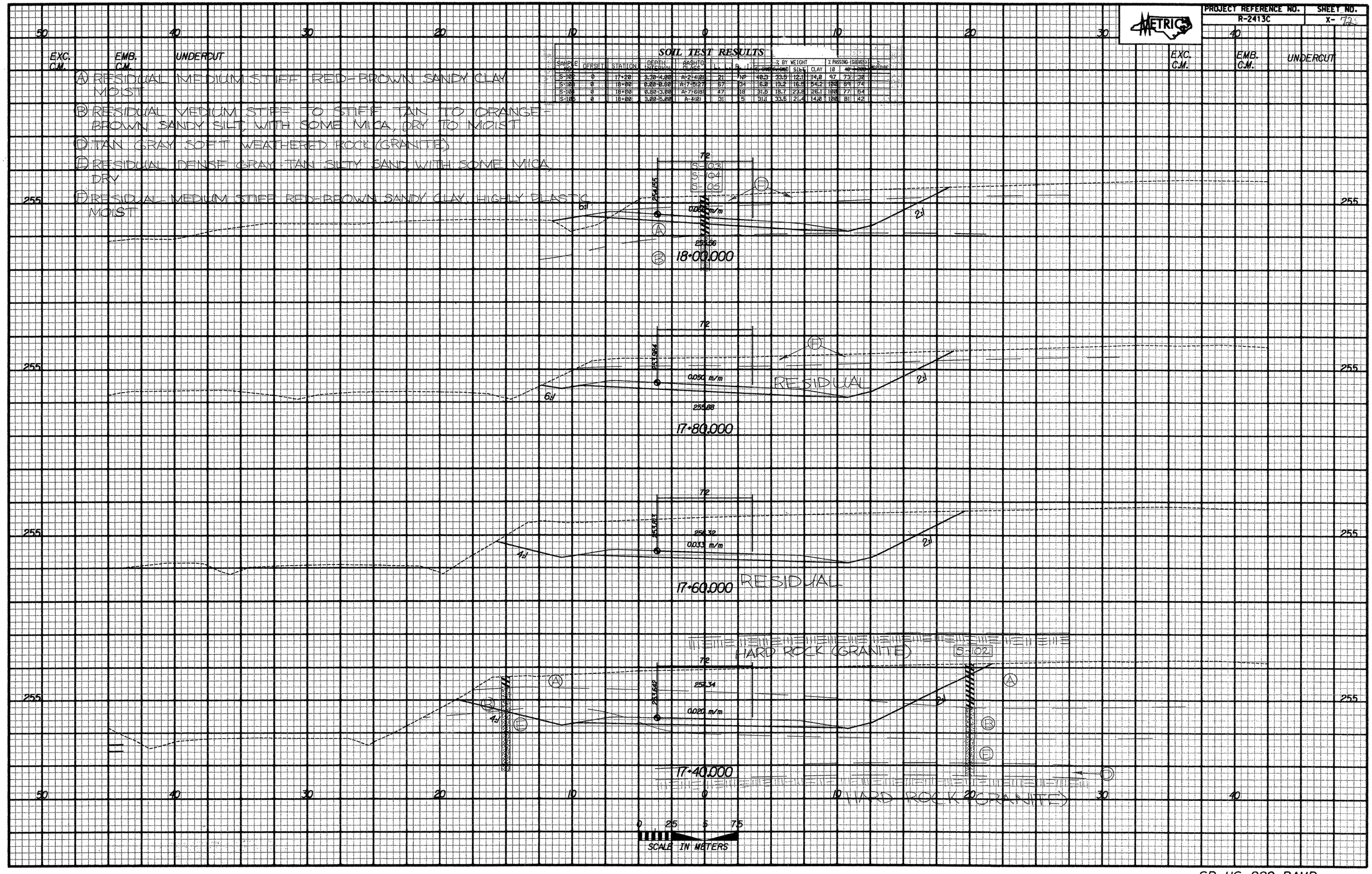
SR US 220 RAMP

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	X-7L



SB US 220 RAMP

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	X- 72



SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS	L.L.	P.L.	P.I.	% BY WEIGHT G. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE
S-102	0	17+20	3.30-4.00	A-2-4(0)	21	NP	40.3	33.5	12.1	14.0	97	73	30	
S-103	0	18+00	0.00-0.80	A-7-5(27)	67	34	16.0	13.2	16.5	54.2	100	89	74	
S-104	0	18+00	0.80-3.00	A-7-6(8)	47	18	31.5	18.7	23.8	26.1	100	77	54	
S-105	0	18+00	3.00-5.00	A-4(0)	31	5	31.1	33.5	21.4	14.0	100	81	42	

SB US 220 RAMP

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	X-173

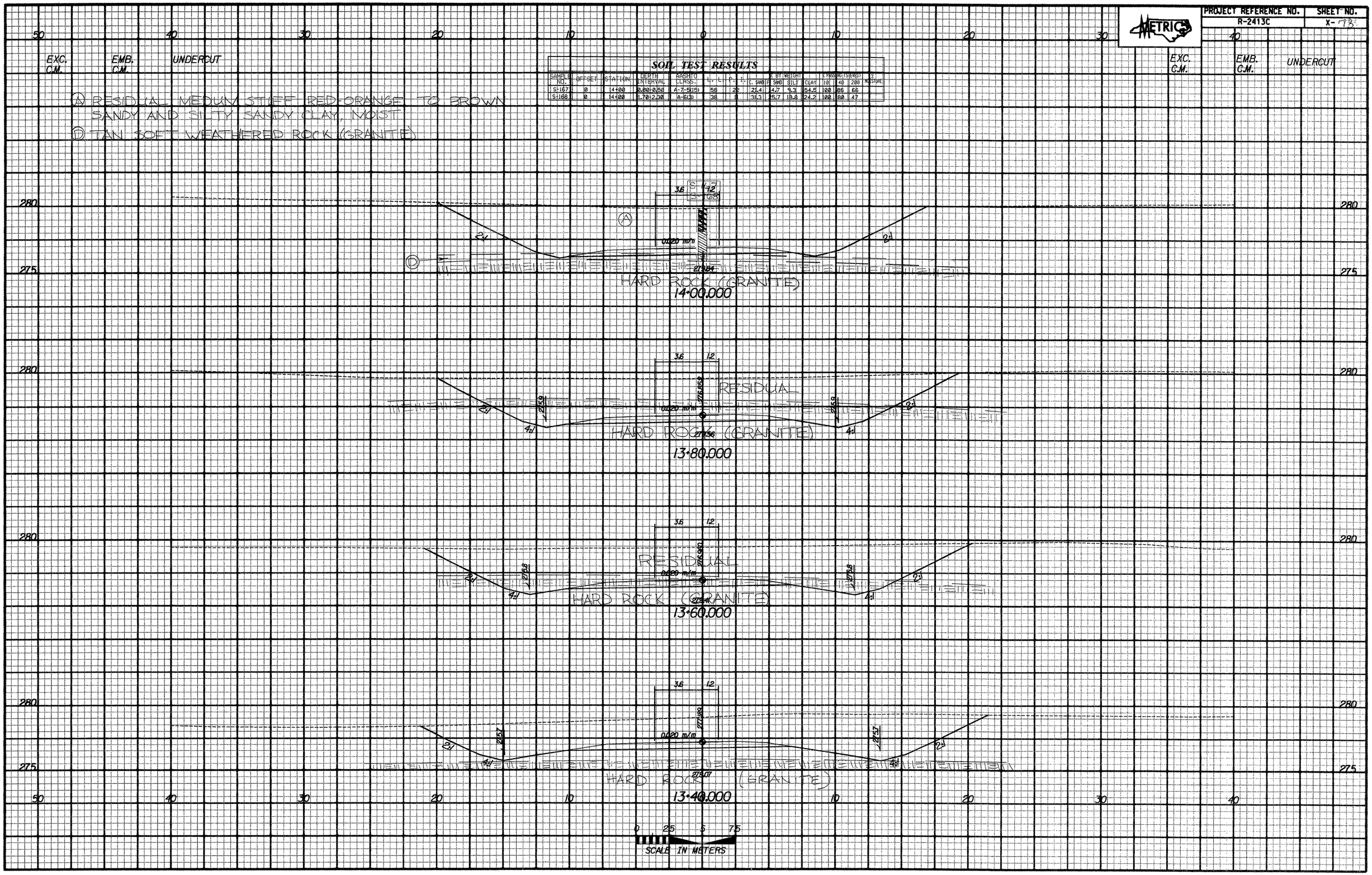
EXC. C.M. | EMB. C.M. | UNDERCUT

Ⓐ RESIDUAL MEDIUM STIFF RED-ORANGE TO BROWN SANDY AND SILTY SANDY CLAY, MOIST

Ⓓ TAN SOFT WEATHERED ROCK (GRANITE)

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P. I.	I. C.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	MOISTURE
S-167	0	14+00	0.00-0.50	A-7-5(15)	58	22	21.4	4.7	9.3	54.5	100	86	66		
S-168	0	14+00	1.70-2.30	A-6(3)	38	8	31.3	25.7	18.8	24.2	100	80	47		



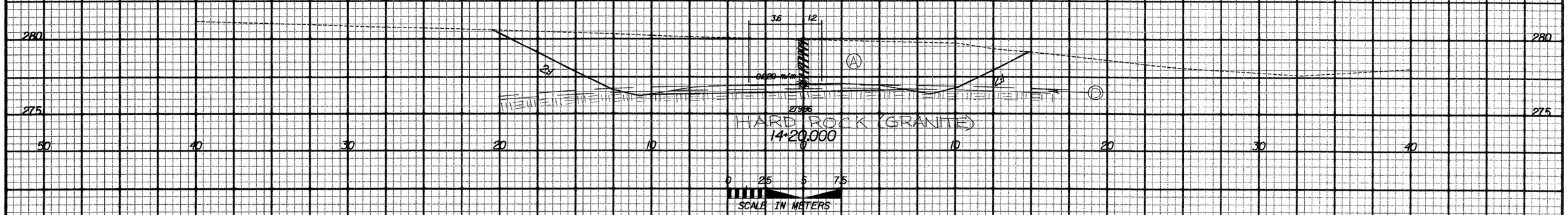
RAMP B @ US 158

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	X-174

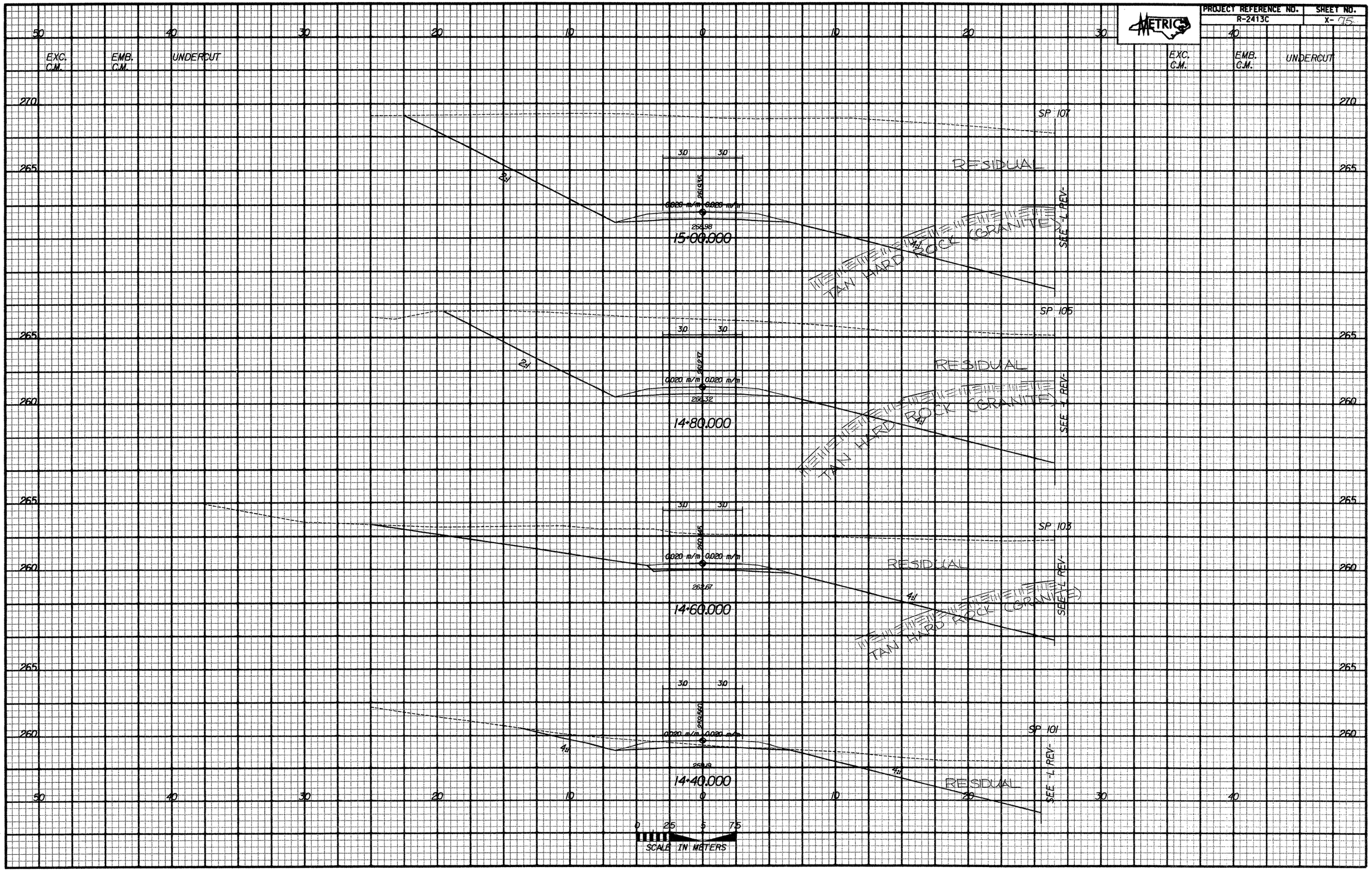
EXC. C.M. | EMB. C.M. | UNDERCUT | EXC. C.M. | EMB. C.M. | UNDERCUT

Ⓐ RESIDUAL MEDIUM STIFF RED-ORANGE TO BROWN SANDY AND SILTY SANDY CLAY, MOIST

Ⓓ TAN SOFT WEATHERED ROCK (GRANITE)

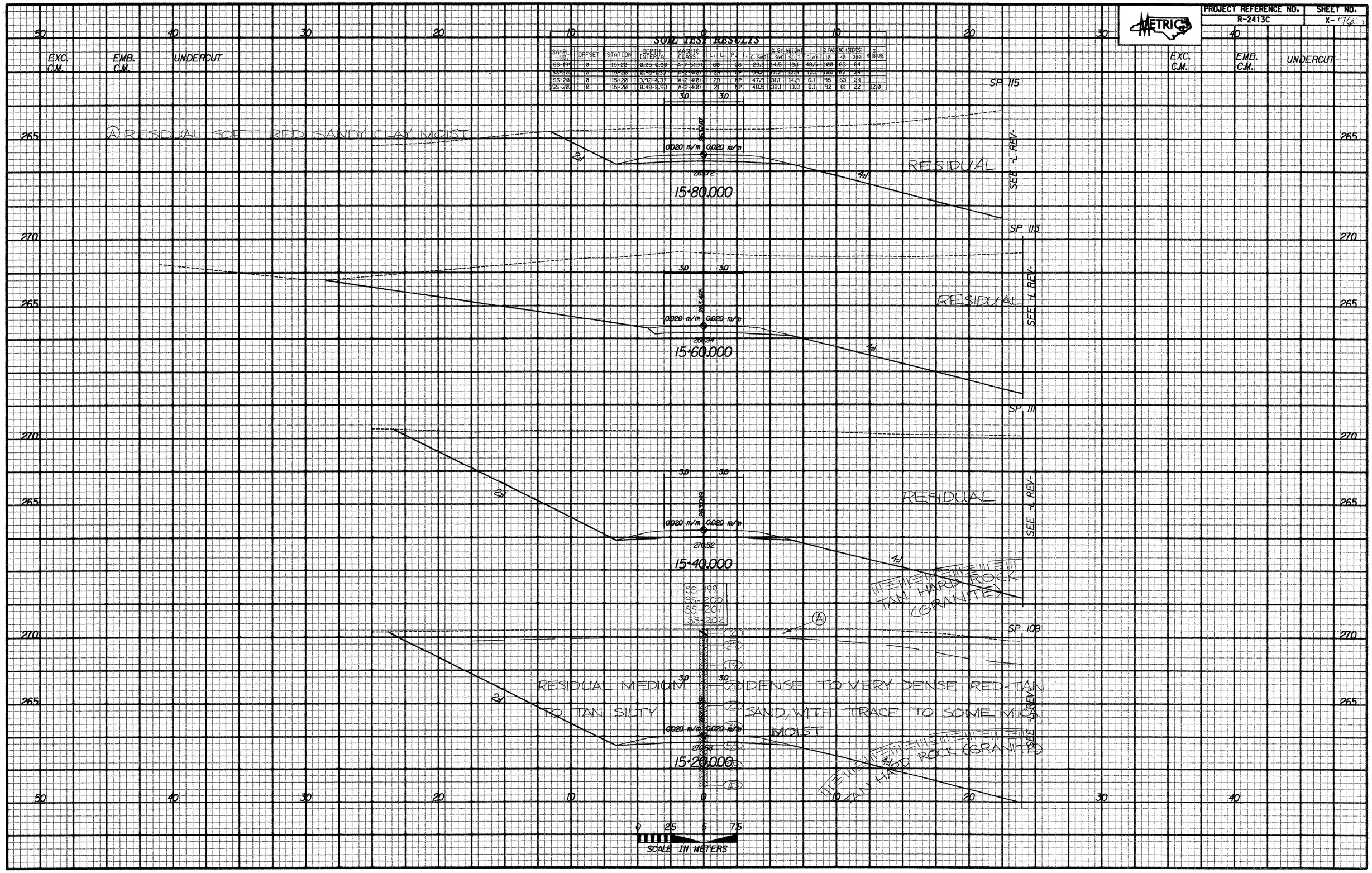


RAMP B @ US 158



-Y20- SPOTSWOOD RD.EXT.

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	X-76

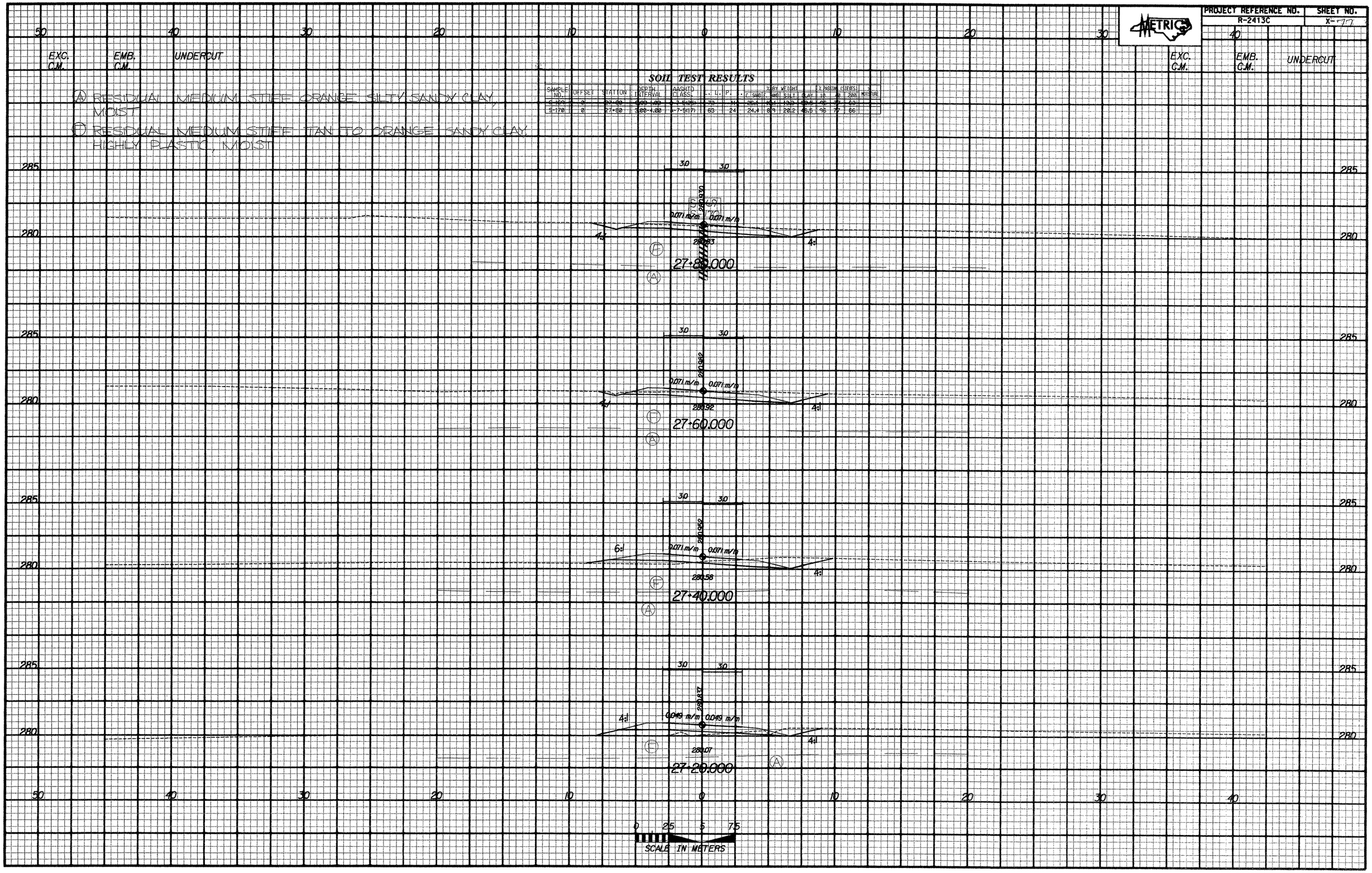


SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P. I.	C. SAND	% BY WEIGHT C. SAND	% BY WEIGHT SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE
SS-199	0	15+20	0.25-0.60	A-7-5(17)	60	26	29.8	14.5	13.1	48.5	100	83	64	
SS-200	0	15+20	0.95-1.33	A-2-4(0)	29	NP	59.8	17.2	12.5	10.1	100	62	24	
SS-201	0	15+20	3.92-4.37	A-2-4(0)	28	NP	47.9	31.1	14.9	6.1	95	63	24	
SS-202	0	15+20	8.48-8.93	A-2-4(0)	21	NP	48.5	32.1	13.3	6.1	92	81	22	12.0

X20 SPOTSWOOD RD EXT

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	X-77



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (STEVES) 10	40	200	% MOISTURE
S-169	0	27+80	0.00-1.00	A-7-5(25)	73	31	26.1	16.1	13.3	50.5	95	77	66	
S-170	0	27+80	3.00-4.00	A-7-5(17)	63	24	24.4	8.9	20.2	46.5	96	77	66	

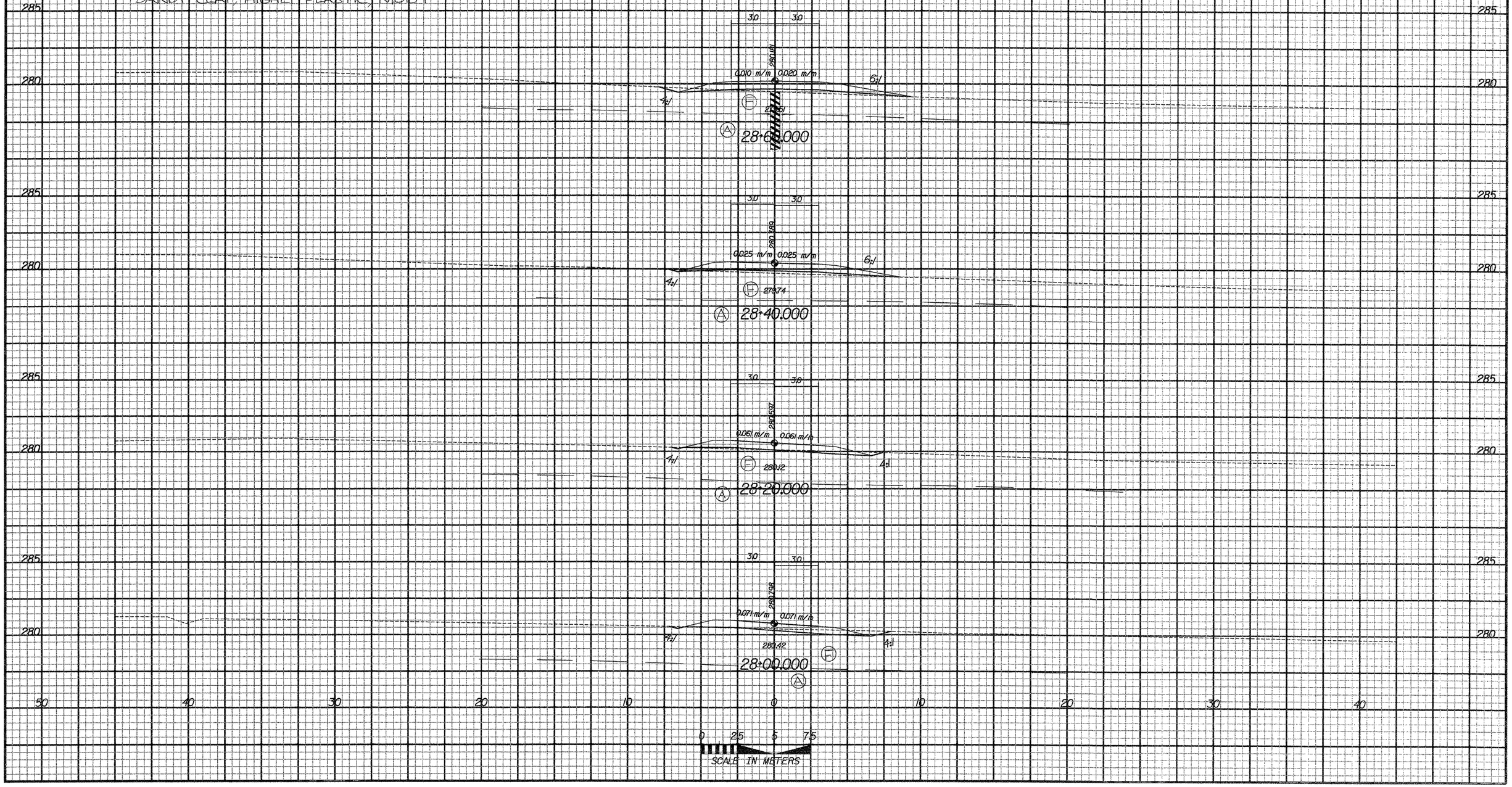
-Y20- SPOTSWOOD RD EXT

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	X-78

EXC. C.M. | EMB. C.M. | UNDERCUT

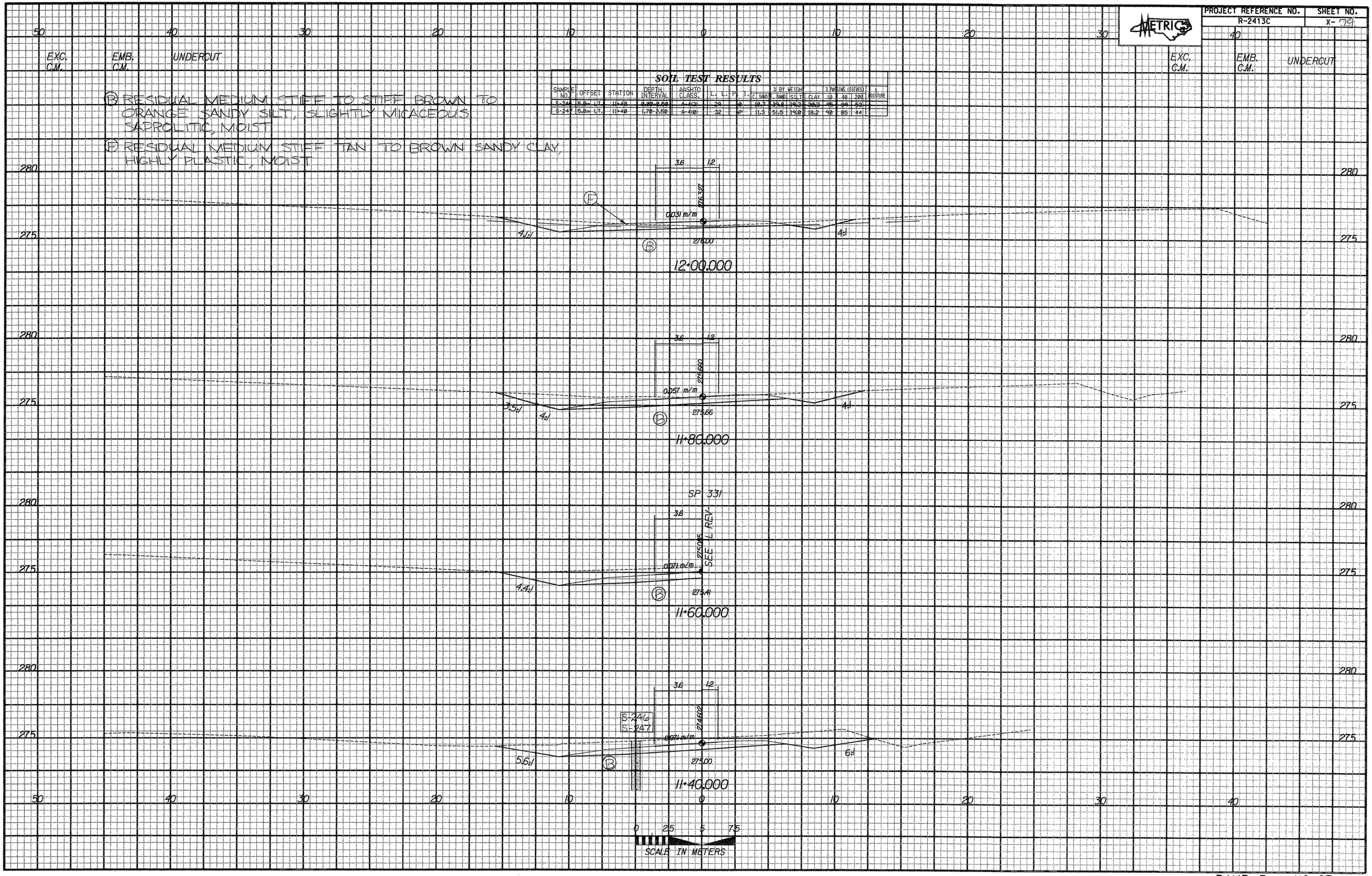
Ⓐ RESIDUAL MEDIUM STIFF TO STIFF RED-BROWN TO BROWN, SILTY SANDY CLAY, SLIGHTLY MICACEOUS, SAPROLITIC, MOIST

Ⓕ RESIDUAL MEDIUM STIFF TAN TO LIGHT ORANGE SANDY CLAY, HIGHLY PLASTIC, MOIST



PROJECT REFERENCE NO.	SHEET NO.
R-2413C	X-79

METRIC



SOIL TEST RESULTS

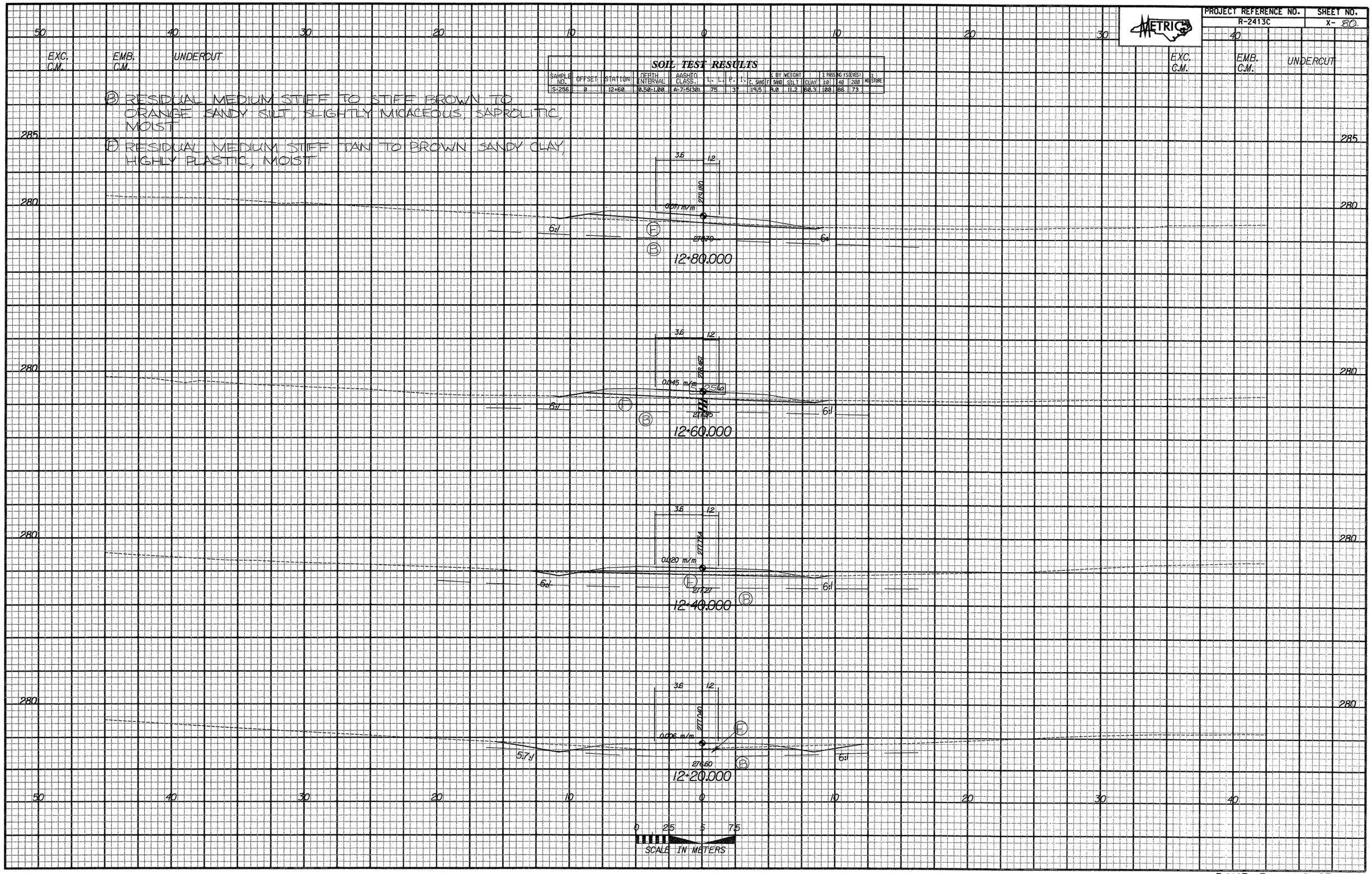
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P. I.	C. SAND	% BY WEIGH F. SAND	% BY WEIGH SILT	% BY WEIGH CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE
S-246	5.0m LT.	11+40	0.00-0.50	A-4(3)	29	NP	10.7	39.8	19.3	30.3	95	89	53	
S-247	5.0m LT.	11+40	1.70-2.50	A-4(0)	32	NP	11.3	51.5	19.0	18.2	90	85	44	

RAMP B @ NC 65

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	X- 80

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L. L.	P. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE
S-256	0	12+60	0.50-1.00	A-7-5(30)	75	37	19.5	8.0	11.2	60.3	100	86	73	



RAMP B @ NC 65

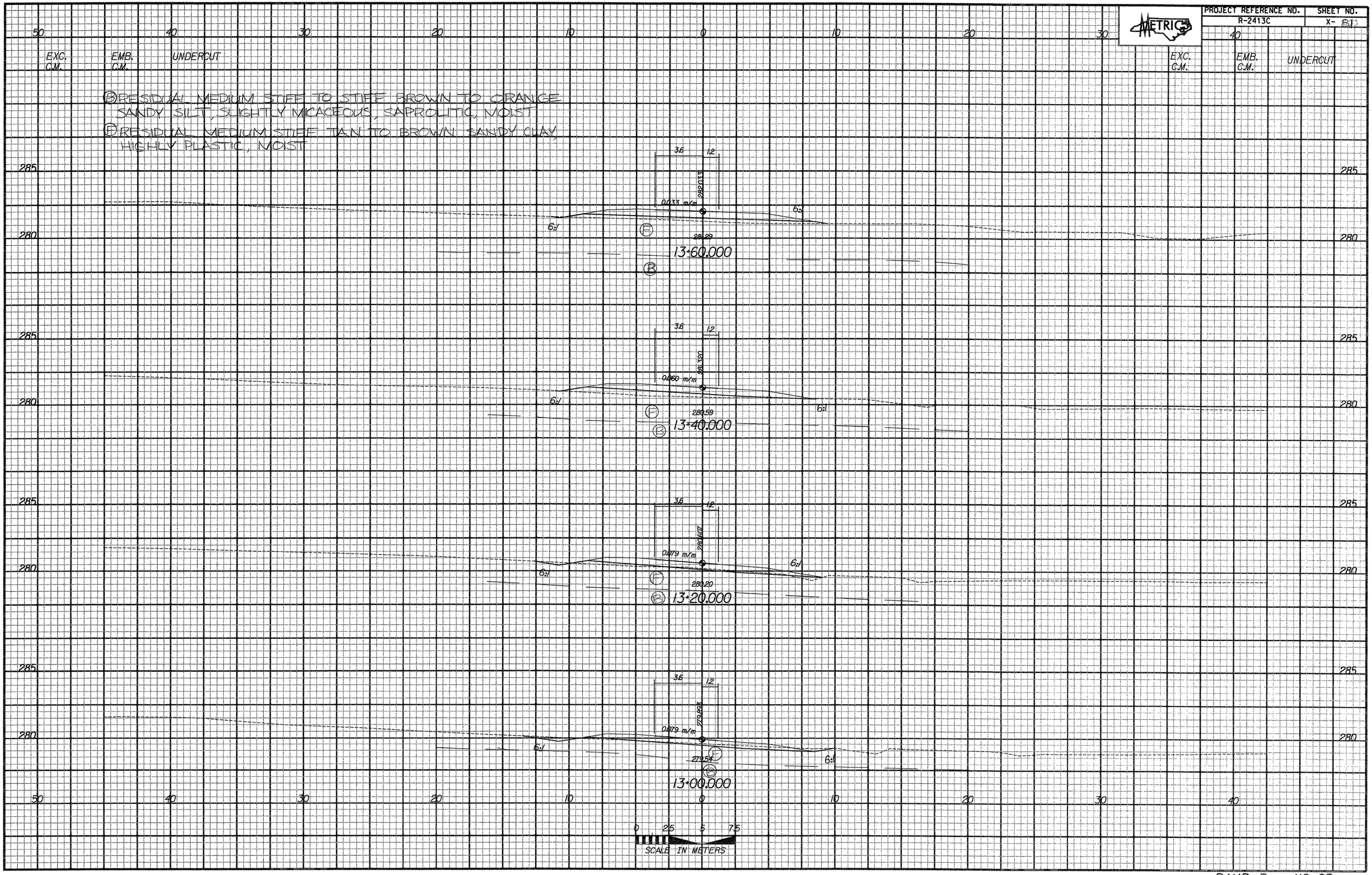
PROJECT REFERENCE NO.	SHEET NO.
R-2413C	X- 81

METRIC

EXC. C.M. | EMB. C.M. | UNDERCUT

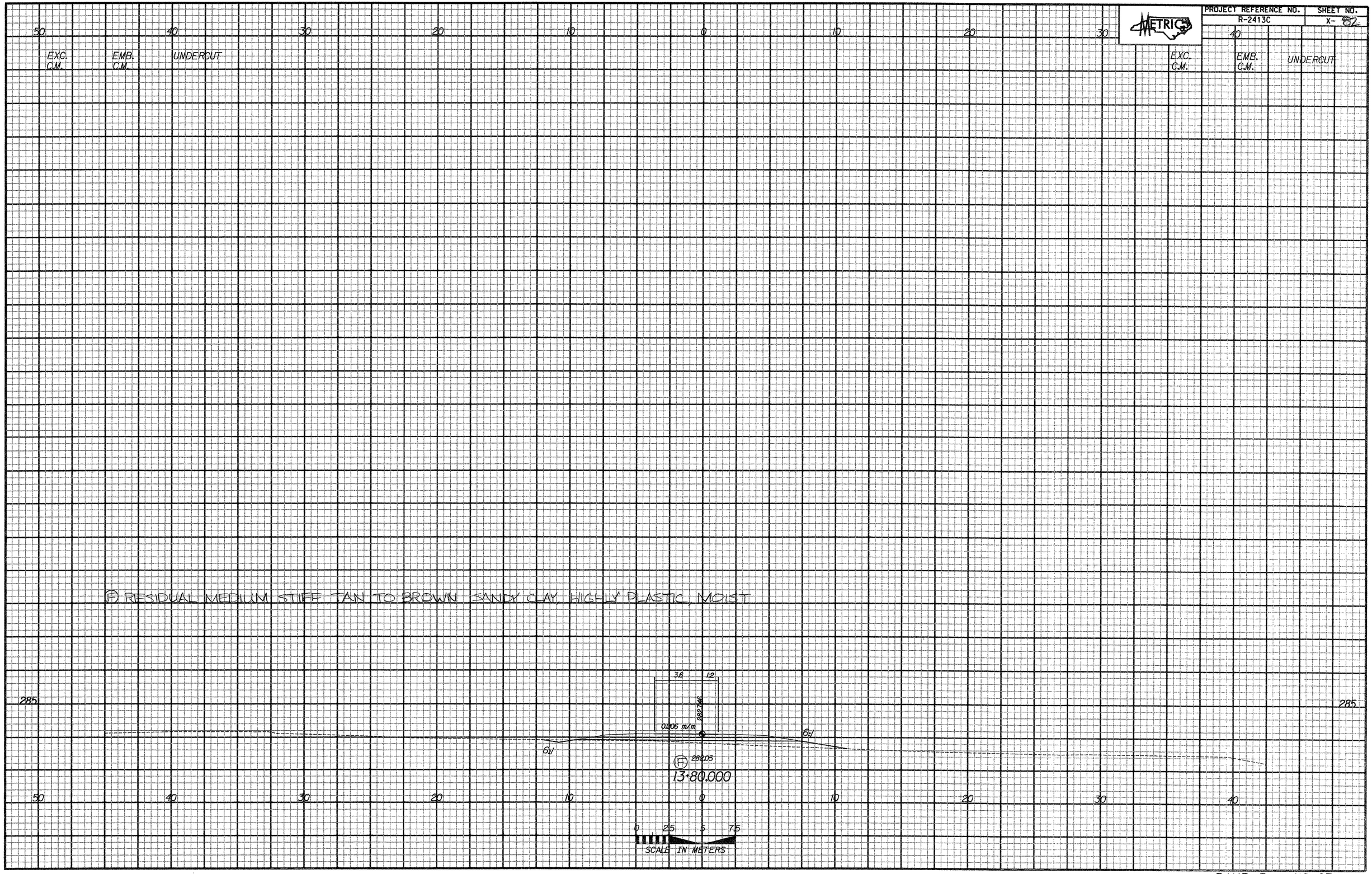
(B) RESIDUAL MEDIUM STIFF TO STIFF BROWN TO ORANGE SANDY SILT, SLIGHTLY MICACEOUS, SAPROLITIC, MOIST

(F) RESIDUAL MEDIUM STIFF TAN TO BROWN SANDY CLAY, HIGHLY PLASTIC, MOIST



RAMP B @ NC 65

PROJECT REFERENCE NO.	SHEET NO.
R-2413C	X- 82



RAMP B @ NC 65