ID: R-3403AA*

PROJECT: C201877

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-3403AA*	1	112

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34538.1.1	STPNHF-17(24)	PE
34538.2.2	STPNHF-17(47)	R/W, UTIL
34538.3.5	STPNHF-17(74)	CONST.

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

STATE PROJECT 34538.1.1 I.D. NO. R-3403A*

F.A. PROJECT STPNHF-17(24)

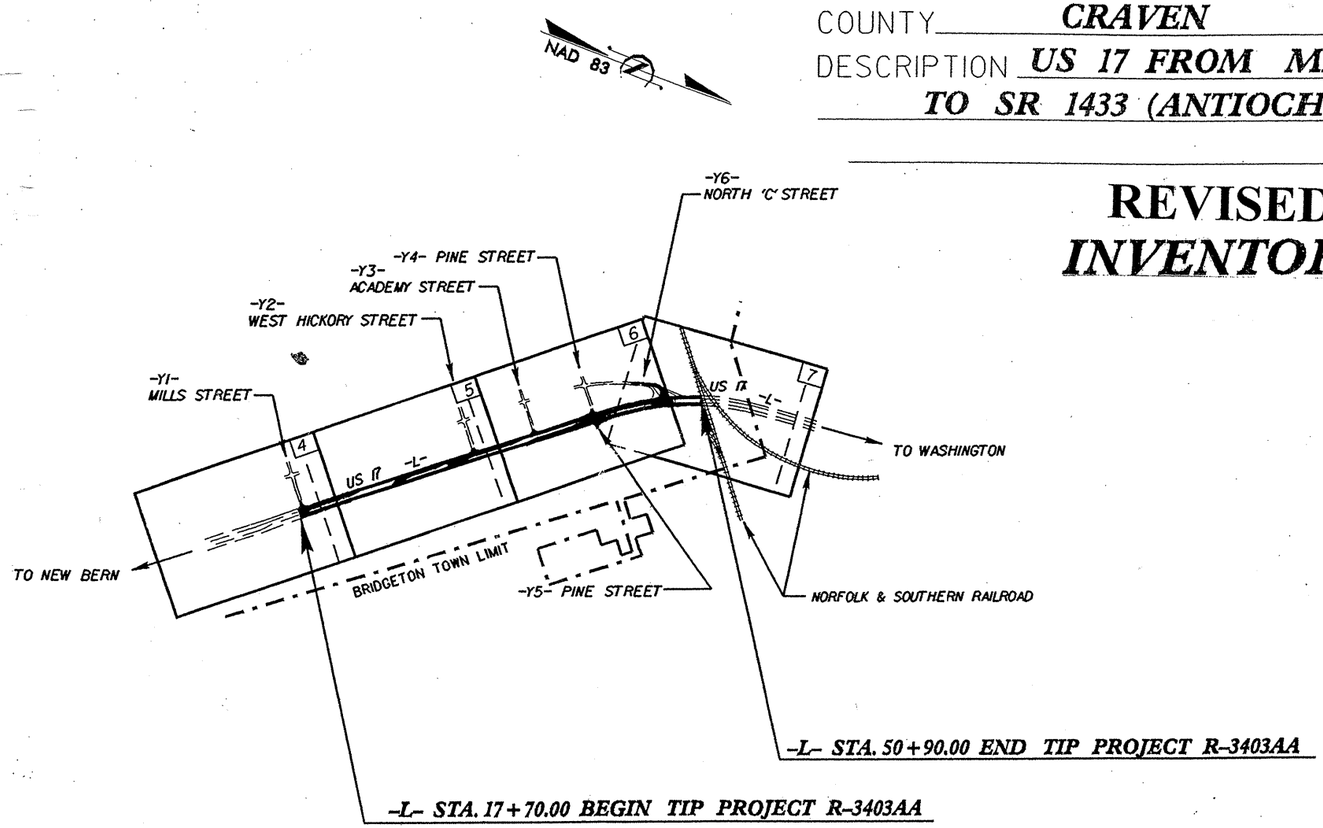
COUNTY CRAVEN

DESCRIPTION US 17 FROM MILLS STREET TO SR 1433 (ANTIOCH ROAD)

REVISED INVENTORY

CONTENTS:

LINE	STATION	PLAN	PROFILE	XSECTS
-L-	17+70 TO 160+00	8 - 18	20 - 25	28 - 100
-L LT-	160+00 TO 170+00	19	26	101 - 107
-L RT-	160+00 TO 170+00	19	26	101 - 107
-Y12-	10+00 TO 16+14	17, 18	27	108, 109
-Y13-	12+00 TO 17+88	18	27	110 - 112



CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WAS MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL UNIT @ (919) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA IS PART OF THE CONTRACT.

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*** This inventory is for R-3403A, which includes R-3403AA and R-3403AB sections. Please refer to the respective portions for your needs. The Earthwork Balance Sheet is for R-3403AA only.**

INVESTIGATED BY J. B. BARFIELD PERSONNEL L. B. MADISON

CHECKED BY J. B. BARFIELD J. W. BAYLES

SUBMITTED BY N. W. WAINAINA W. T. DUGGINS

DATE 12/07 A. N. KARPA

L. T. PACKER

NORTH CAROLINA LICENSED SEAL 1961 GEOLOGIST JEFFREY BRIAN BARFIELD 12/21/07

DRAWN BY: W. D. FIELDS

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.

ID	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
R-3403A	34538.1.1	2	112

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL 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 WHICH CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND WHICH YIELDS LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM AND BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:

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		N.P.	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

P.I. OF A-7-5 ≤ L.L. - 30 : P.I. OF A-7-6 > L.L. - 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 0.5 0.5 TO 1 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	2.0	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) PL — PLASTIC LIMIT	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
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 (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, YEL-BRN, 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 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

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 SEEPAGE

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL OTHER THAN ROADWAY EMBANKMENTS
- INFERRED SOIL BOUNDARIES
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 DIP/DIP DIRECTION OF ROCK STRUCTURES
- SOUNDING ROD
- SPT CPT DPT DMT VST 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 - CBR 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
FRAGS. - FRAGMENTS
MED. - MEDIUM
PMT - PRESSUREMETER TEST
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT
W - MOISTURE CONTENT
V. - VERY
VST - VANE SHEAR TEST

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [x] MOBILE B-47___
- [ ] BK-51
- [ ] CME-45
- [ ] CME-550
- [ ] PORTABLE HOIST
- [ ] OTHER _____
- [ ] OTHER _____

ADVANCING TOOLS:
- [x] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [x] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE _____" STEEL TEETH
- [ ] TRICONE _____" TUNG.-CARB.
- [ ] CORE BIT
- [x] OTHER 4" CONTINUOUS FLIGHT AUGER

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

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

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

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WHEN TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.
ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLOWS:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT YIELDS SPT N VALUES > 100 BLOWS PER FOOT.
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 ROCKS 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 GEOLOGISTS 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 GEOLOGISTS 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 GEOLOGISTS 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 WHICH 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 IS IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

CALCAREOUS (CALC.) - SOILS WHICH 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 (F.P.) - 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 SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (R.Q.D.) - 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 WHICH 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, WHICH 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 B.P.F.) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS LESS THAN 0.1 FOOT PENETRATION WITH 60 BLOWS.

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 (S.R.Q.D.) - 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 (T.S.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK:

ELEVATION:

NOTES:

Geonor H-60: 0.79" Vane
Geonor H-60: 1.00" Vane

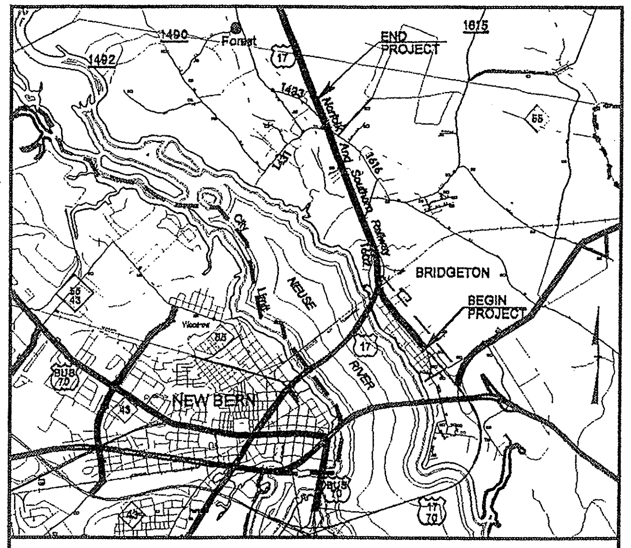
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-3404A	3	112

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34538.1.1	STPNHF-17(24)	PE

R-3403A

PROJECT: 34538.1.1

See Sheet 1-A For Index of Sheets



VICINITY MAP

This Project is partially within the Municipal Boundaries of Bridgeton

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

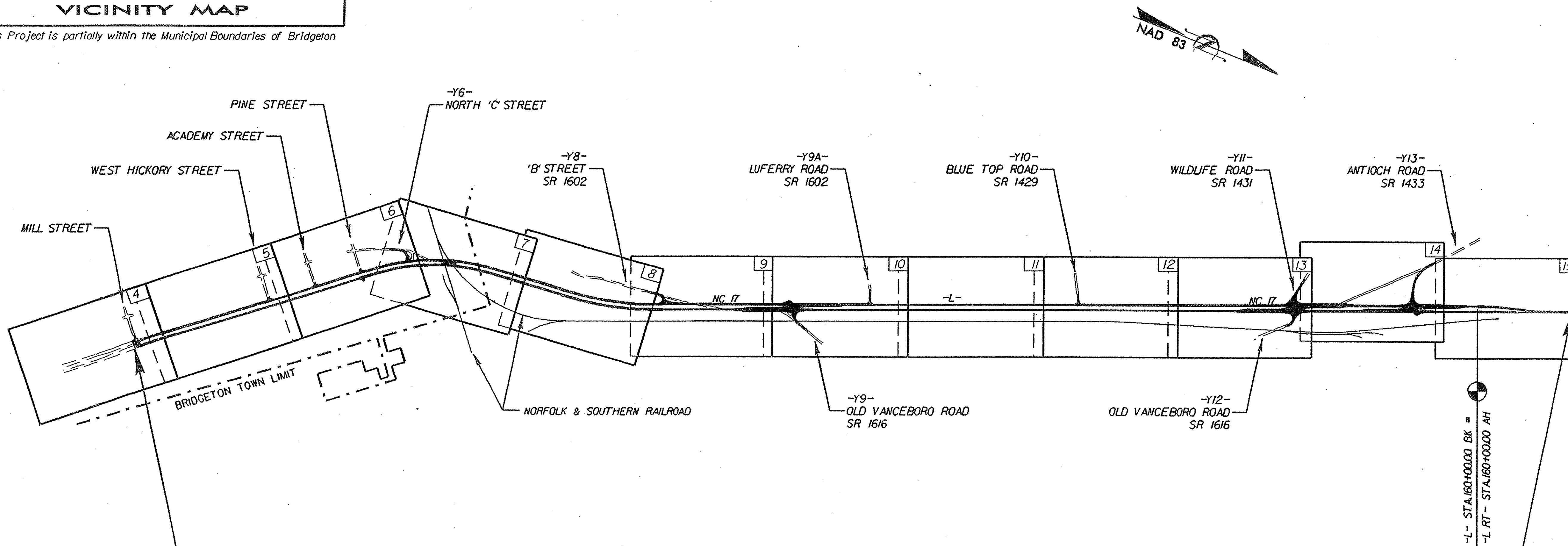
CRAVEN COUNTY

LOCATION: US 17 FROM MILLS STREET TO SR 1433 (ANTIOCH ROAD)

TYPE OF WORK: GRADING, PAVING AND DRAINAGE

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-L- STA. 17+70.00 BEGIN STATE PROJECT 8.1171601
-L- STA. 17+70.00 BEGIN F.A. PROJECT STPNHF-17(24)

-L RT- STA. 170+00.00 END STATE PROJECT 8.1171601
-L RT- STA. 170+00.00 END F.A. PROJECT STPNHF-17(24)

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 2002 = 13,430
ADT 2022 = 22,730
DHV = 10 %
D ≐ 60 %
T = 10 % *
V = 60 MPH

* TTST 5% DUAL 5%

PROJECT LENGTH

LENGTH OF ROADWAY F. .A. PROJECT STPNHF-17(24) = 2.705 MILES

TOTAL LENGTH OF STATE PROJECT 8.1171601 = 2.705 MILES

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

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 20, 2002

LETTING DATE:
SEPTEMBER 21, 2004

G. E. BREW, PE
PROJECT ENGINEER

D. WILLIAMS
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

09/08/99
$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

1501 MAIL SERVICE CENTER, RALEIGH, N.C. 27699-1501

LYNDO TIPPETT
SECRETARY

December 28, 2007

STATE PROJECT: 34538.1.1 (R-3403A)
FEDERAL PROJECT: STPNHF-17 (24)
COUNTY: Craven
DESCRIPTION: US 17 from Mills Street to SR 1433 (Antioch Road)

SUBJECT: Geotechnical Report – Revised Inventory

Project Description

The project is located in central Craven County east of New Bern. It begins at Mill Street within the Bridgeton Town Limits and proceeds 2.705 miles northward to approximately 2,500 feet north of SR 1433. The proposed work consists of constructing two additional lanes on new location and widening the existing roadway, (US 17) to construct a four-lane divided facility with a 30 ft median. Intersections for -Y12- and -Y13- are going to be relocated on a new alignment.

A geotechnical investigation was conducted during April through August of 2002. The investigation was conducted using a Mobile B-47 truck mounted drill machine with a manual hammer. Standard Penetration Tests were performed at selected locations and additional borings were advanced using continuous flight augers and hand tools. Representative soil samples were collected for visual classification in the field and for laboratory analysis by the Materials and Tests Unit. Bulk samples are itemized in Appendix A.

The following survey lines were investigated:

Line	Approximately Station
-L-	17+70 to 160+00
-L LT-	160+00 to 170+00
-L RT-	160+00 to 170+00
-Y 12-	10+00 to 16+00
-Y 13-	12+00 to 17+88

Areas of Special Geotechnical Interest

1) The following areas contained moderately to highly organic soils:

Line	Approximately Station
-L-	18+50 to 56+00 (RT)
-L-	18+50 to 26+00 (LT)
-L-	34+50 to 41+00 (LT)
-L-	66+00 to 67+50 (LT)
-L-	74+50 to 76+00 (RT)
-L-	108+00 to 109+50 (LT)
-L-	108+00 to 110+50 (RT)
-L-	141+50 to 142+50 (RT)
-L-	154+50 to 156+00 (RT)
-L-	159+00 to 161+00 (RT)

2) The following areas contain alluvial sands and silts with a trace to moderate organic material.

Line	Approximate Stations
-L-	52+50 to 53+70 (LT)
-L-	66+00 to 67+70 (LT & RT)
-L-	80+00 to 81+80 (LT)
-L-	99+70 to 101+30 (LT)
-L-	108+50 to 109+70 (LT & RT)
-L-	126+00 to 129+25 (LT & RT)
-L-	141+00 to 143+75 (LT)
-L-	161+50 to 164+00 (LT)

3) The following areas contain silt-clay soils within six feet of subgrade. These soils typically have low to medium plasticity indices, 40% or more passing the # 200 sieve and/or high moisture contents.

Line	Approximate Stations
-L-	100+50 to 101+50 (RT)
-L-	106+00 to 108+00 (RT)
-L-	112+00 to 125+50 (LT & RT)
-L-	129+50 to 130+50 (RT)
-L-	135+00 to 148+50 (LT & RT)

4) Ground water: A high water table, seasonal high ground water or the potential for ground water related construction problems occur along the majority of the project.

5) The Geotechnical Environmental Unit has been notified that the following two areas may contain underground storage tanks.

Line	Approximate Stations
-L-	85+10
-L-	110+50

6) Monitoring Wells: Four monitoring wells were located between the following stations:

Line	Approximate Stations
-L-	30+25 to 33+50

7) Wells: No wells were observed in the right of way during this investigation.

Physiography and Geology

The project is located in Central Craven County just east of New Bern and adjacent to the Neuse River. The project corridor lies within the Coastal Plain Physiographic Province. Topography is typical of the Coastal Plain and is generally flat. Elevations for natural ground range from 8 feet to 18.5 feet for the upland areas and 2 feet to 8 feet for the lowland sections. Drainage for the project corridor is generally poor and is provided by the Neuse River and its tributaries.

The geology for the project consists of Quaternary age fluvial, marine and eolian type deposits, overlying two separate geologic formations. Both formations were deposited during the Teriary. Limestone from the River Bend Formation underlies the southern end of the project and soil and sedimentary rock of the Yorktown Formation underlies the northern end.

GroundWater

Groundwater data was collected from March 2002 to April 2002 during average rainfall conditions. Typically groundwater depths ranged from 2.0 to 6.0 ft. in the upland areas and were at or near the surface in the lowland sections.

Soils

Soils encountered along the project are separated into six categories. The categories are rootmat/topsoil, Coastal Plain soils, alluvial soils, organic soils, roadway embankment soils, and artificial fill.

Rootmat and a thin layer of topsoil (0.5 to 1.0 ft) overlay much of the Coastal Plain age soils. The rootmat encountered was commonly found among wooded areas and mainly consisted of decomposed plant material. The topsoil generally is comprised of slightly organic sands (A-3), silty sands (A-2-4) and sandy silts (A-4). The organic content for these soils generally range from 1.5 to 5 percent. Moisture contents observed in the field ranged from dry to moist. Much of this material will be removed during clearing and grubbing, the remainder should not pose any construction related problems.

Coastal Plain soils were the majority of the soils discovered on the project. The Coastal Plain soils consist of very loose to dense, fine to coarse sands (A-3), and silty sands (A-2-4). These soils generally exhibited engineering properties that range from good to excellent. The cohesive soils were very soft to stiff, sandy silts (A-4) and sandy clays (A-6). Plasticity indices for the cohesive soils ranged from NP to 13. Moisture contents observed in the field generally ranged from wet to saturated approximately two feet below the natural ground surface. Engineering properties for the cohesive soils are expected to be poor to fair due to the high moisture content.

Alluvial soils were found in lowland areas and along several unnamed creeks. The alluvium consisted of very loose to loose, coarse to fine sands (A-3) and silty sands (A-2-4). These soils typically had a trace to moderate amounts of organic material. The alluvial soils were nonplastic and typically wet to saturated. Engineering properties for the alluvial soils are fair to good.

The majority of the organic soils encountered were organic, silty sands (A-2-4) and muck (A-2-5), (A-5). These soils were typically nonplastic and had organic contents that ranged from 5.1 to 77.4 percent. The organic soils generally ranged in thickness from 1 to 8 feet. Vane Shear Tests were performed and values ranged from125 to 2,714 PSF.

Undisturbed samples (Shelby Tube) were also taken and are listed in appendix A. Engineering properties for the organic soils are generally poor.

Roadway embankment soils were encountered along the shoulder of existing US 17. They typically overlaid most of the soils previously mentioned. Roadway embankment soils were ordinarily composed of; mixed fine to coarse, nonplastic, sands (A-3) and silty sands (A-2-4). Moisture contents as observed in the field generally ranged from dry to wet. The engineering properties for these soils are good to excellent.

Artificial fill was found near the beginning of the project in some of the commercial parking lots. The fill material was comprised of fine to coarse sands, (A-3), silty sands (A-2-4) and gravel size fossiliferous limestone. The thickness of the fill material was approximately (0.5 ft to 2.0 ft) thick. The engineering properties for the artificial fill should be good to excellent.

Culverts

Culvert at -L- Sta. 66+10 ±

Hand auger borings and probings were done in the vicinity of the existing culvert. The following soils types were encountered. Approximately 4.5 feet of very loose, coarse, sandy muck, underlain by loose, coarse sand.

Culvert at -L- Sta. 109+00 ±

Hand auger borings and probings done in the vicinity of the existing culvert. The following soil types were encountered. Approximately 5.5 feet of very soft, highly organic, clayey, silt, underlain by medium stiff, sandy, silty clay.

Culvert at -L- Sta. 155+40 ±

Hand auger borings and probings were done in the vicinity of the existing culvert. The following soil types were encountered. Approximately 3.5 feet of very soft, sandy silt and silty clay with little to moderate organics underlain by medium dense, coarse sand.

Respectfully submitted,

J. B. Barfield
Geological Engineer

NWW/JBB

APPENDIX

Undisturbed Samples

Undisturbed (Shelby Tube) samples were taken at the following locations and submitted for testing:

Sample	Approximately Station	Depth	Test
ST-1	-L- 109+20	1.1-3.1 ft	Triaxial CU & Consolidation
ST-2 (alt)	-L- 109+20	1.1-3.1 ft	Consolidation
ST-3	-L- 109+20	1.0-3.0 ft	Triaxial CU & Consolidation
ST-4	-L- 109+20	1.5-3.3 ft	Triaxial CU & Consolidation

BULK SAMPLES

The following bulk samples were taken for tests to determine the engineering properties of the soil.

Sample	Approximately Station	Depth	Test
S-1R	-L- 134+50	SG	CBR
S-2R	-L- 140+00	SG	CBR

EARTHWORK BALANCE SHEET

Volumes in Cubic Yards

PROJECT **TIP #R-3403AA** COUNTY Craven DATE **7/12/2010** SHEET 7 OF 12

LINE	STATION	STATION	TOTAL EXCAV. (UNCL.)	ROCK EXCAV.	UNDERCUT EXCAV.	UNSUIT. EXCAV.	SUITABLE EXCAV.	TOTAL EMB.	ROCK EMB.	UNDERCUT EMB.	EARTH EMB.	EMBANK. 25%	BORROW	SUITABLE WASTE	UNSUIT. WASTE	TOTAL WASTE
Summary No. 1																
L (Lt.)	18+00.00	37+00.00	1,282		2,089	495	788	2,963		2,089	874	3,704	2,917		2,584	2,584
Summary No. 1 TOTAL			1,282		2,089	495	788	2,963		2,089	874	3,704	2,917		2,584	2,584
Summary No. 2																
L (Lt.)	37+00.00	50+90.00	3,489		879	414	3,075	1,217		879	338	1,521		1,554	1,293	2,847
Y4	11+00.00	12+40.00	153			15	138	55			55	69		69	15	84
Y6	10+50.00	17+50.00	792			79	713	123			123	154		559	79	638
Summary No. 2 TOTAL			4,434		879	508	3,926	1,395		879	516	1,744		2,182	1,387	3,569
Summary No. 3																
L (Rt.)	18+00.00	37+00	2,152		12,815	824	1,328	14,573		12,815	1,758	18,216	16,888		13,639	13,639
Summary No. 3 TOTAL			2,152		12,815	824	1,328	14,573		12,815	1,758	18,216	16,888		13,639	13,639
Summary No. 4																
L (Rt.)	37+00	50+90	1,278		5,995	211	1,067	8,564		5,995	2,569	10,705	9,638		6,206	6,206
Summary No. 4 TOTAL			1,278		5,995	211	1,067	8,564		5,995	2,569	10,705	9,638		6,206	6,206
PROJECT SUBTOTAL			9,146		21,778	2,037	7,109	27,495		21,778	5,717	34,369	29,442	2,182	23,815	25,997
ADDITIONAL UNDERCUT (GRADE POINTS)					100			100		100		125	125		100	100
ADDITIONAL UNDERCUT (CONTINGENCY)					2,500			2,500		2,500		3,125	3,125		2,500	2,500
WASTE IN LIEU OF BORROW													-2,182	-2,182		-2,182
SELECT GRANULAR MATERIAL IN LIEU OF BORROW												-24,300	-24,300			
LOSS DUE TO CLEARING & GRUBBING			-500				-500						500			
PROJECT TOTAL			8,646		24,378	2,037	6,609	30,095		24,378	5,717	13,319	6,710		26,415	26,415
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT													335			
GRAND TOTAL			8,646										7,045			
SAY			**9,000**		**24,400**								**7,300**			
ESTIMATED DDE = 10 Cu. Yds.																
Estimated Contingency Shallow Undercut = 250 Cu. Yds.																
Estimated Class IV Subgrade Stabilization = 500 Tons																
Estimated Select Granular Material Class III = 24,300 Cu. Yds.																

*** 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.**

8/17/99

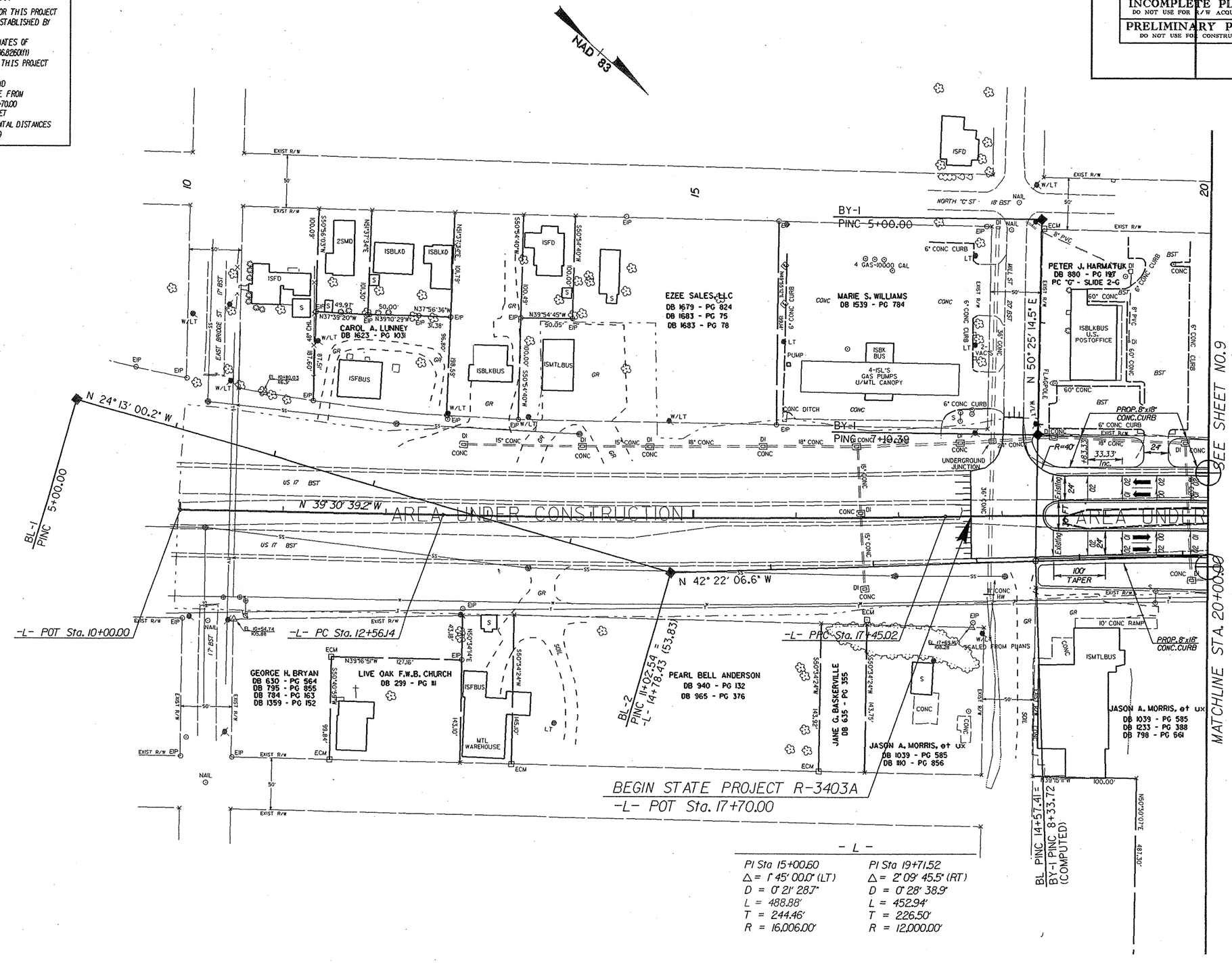
PROJECT REFERENCE NO.	SHEET NO.
R-3403A	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DATUM DESCRIPTION

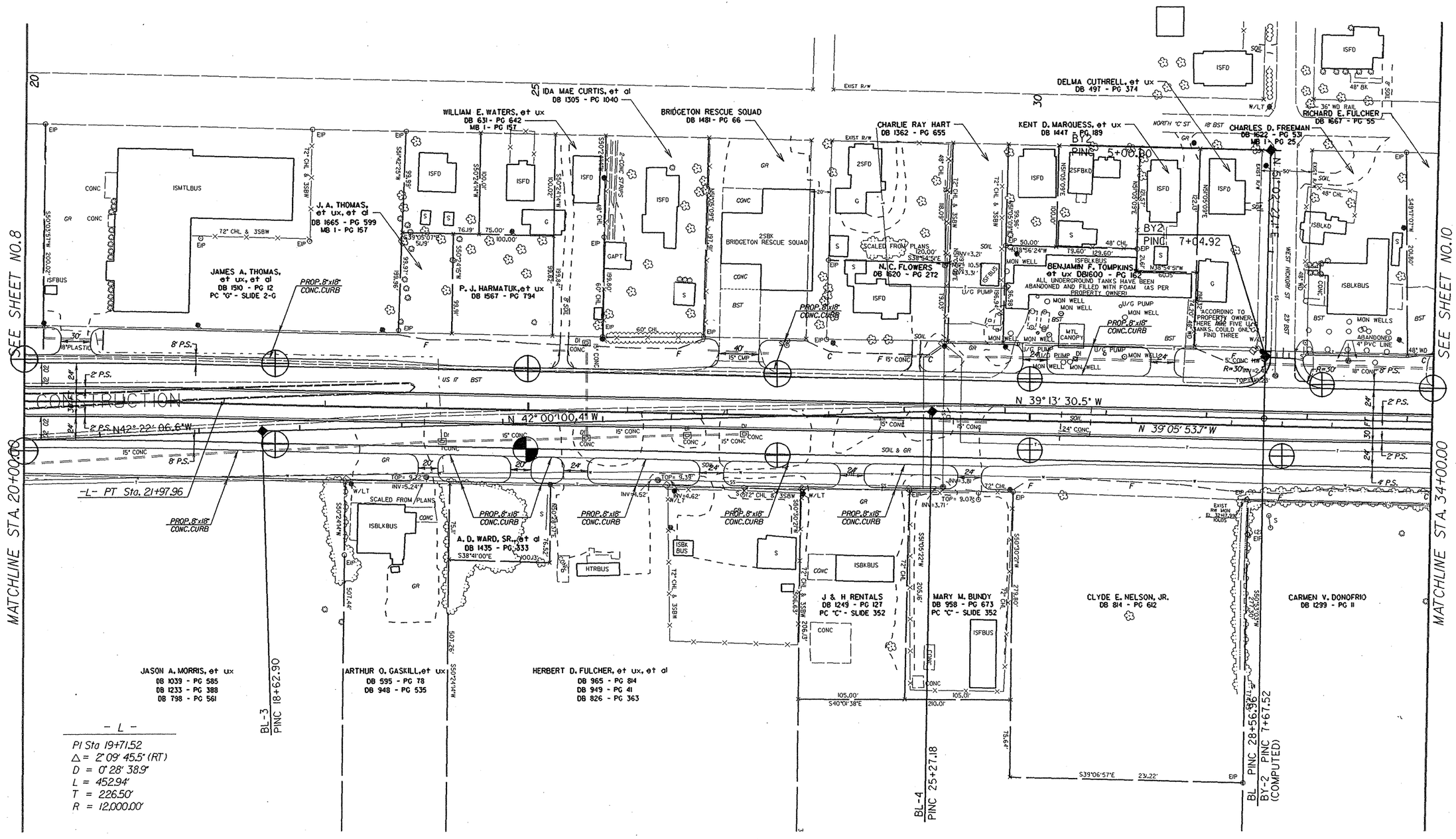
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R3403-4"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 532123.2763(ft) EASTING: 2581086.8260(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999887844
THE NC LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R3403-4" TO -L- STATION IS 17+70.00
S 22° 28' 24.93" E 28,997.09 FEET
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29



PROJECT REFERENCE NO.	SHEET NO.
R-3403A	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



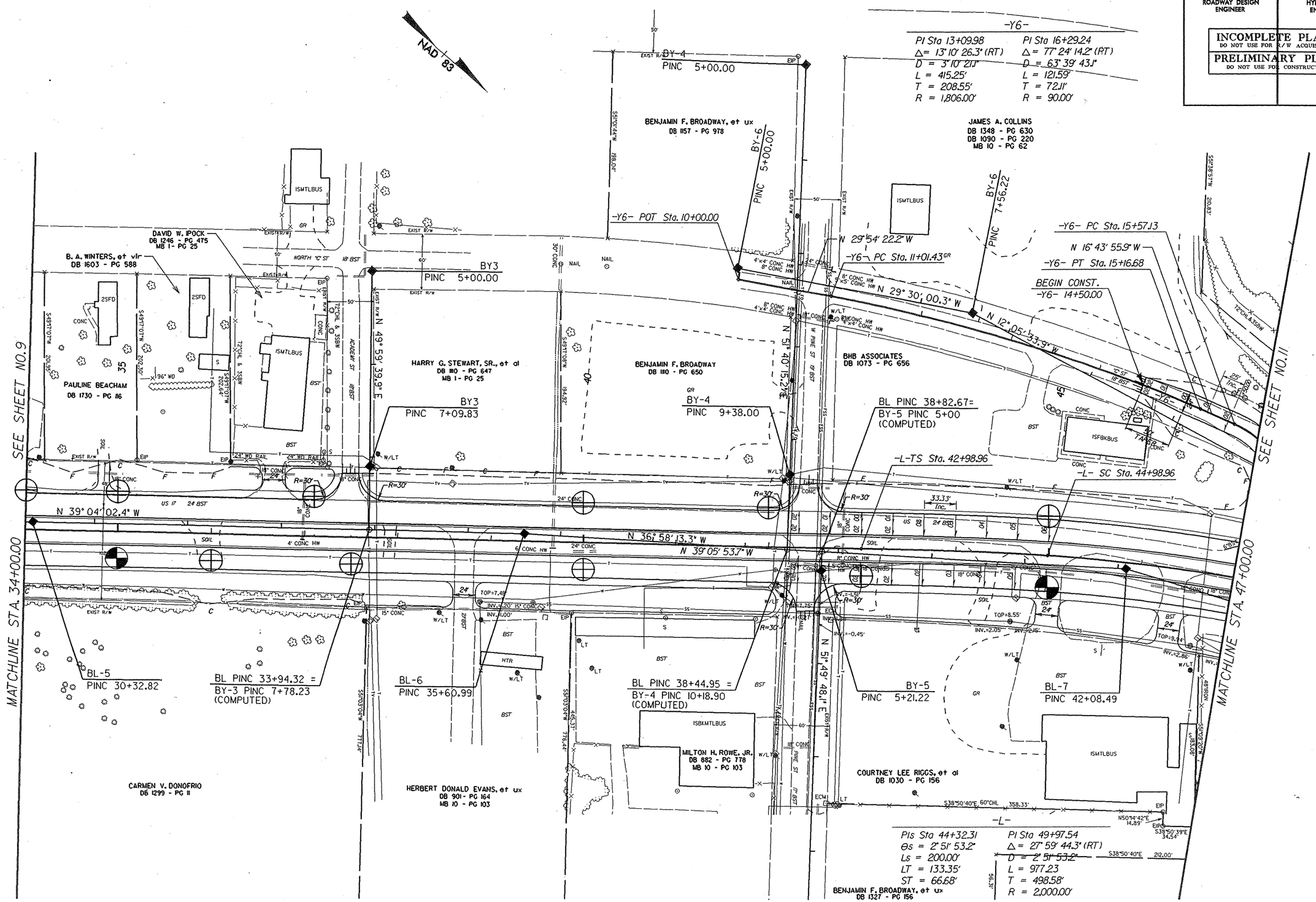
8/17/95

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3403A	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PROJECT REFERENCE NO.	SHEET NO.
R-3403A	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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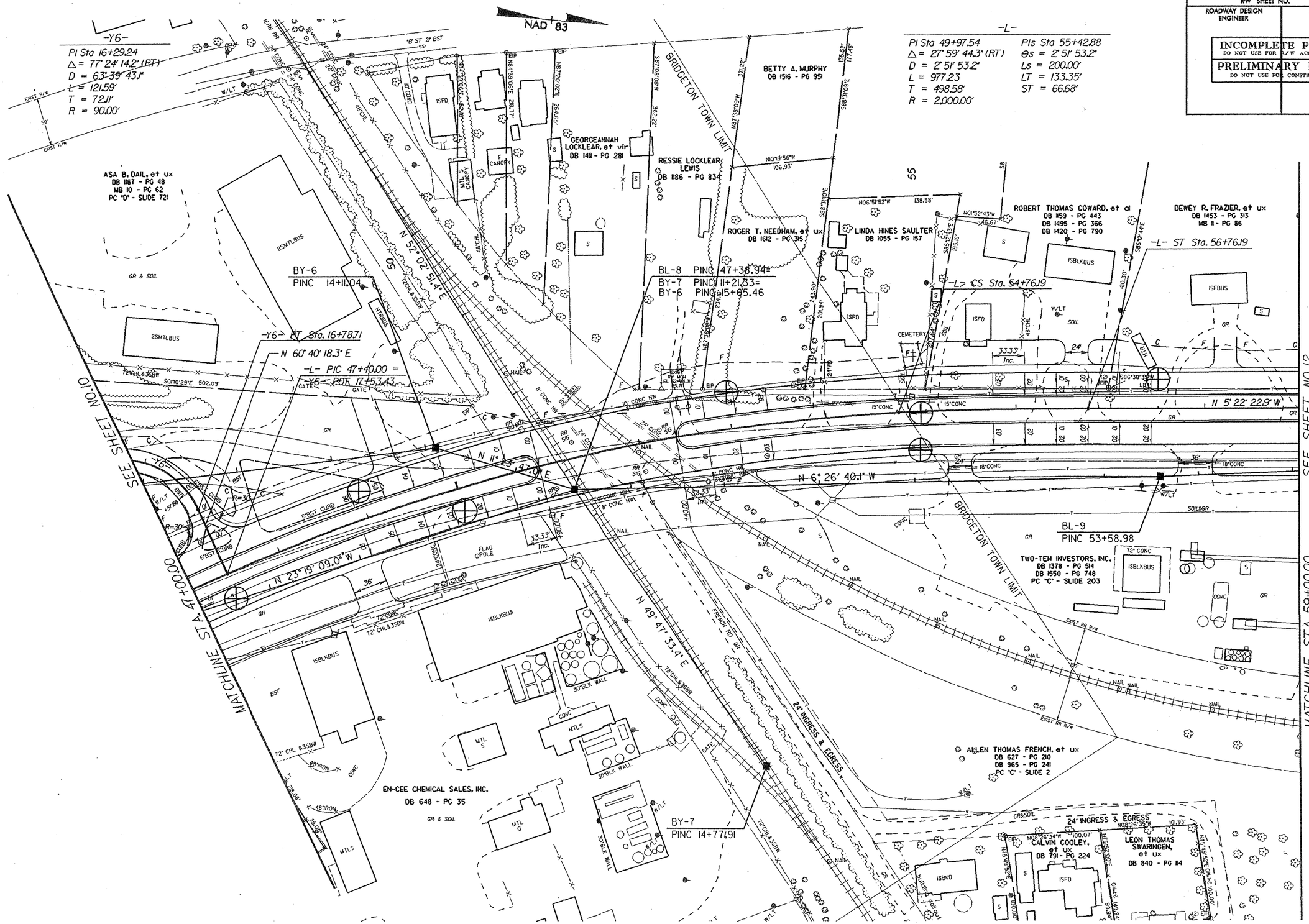
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

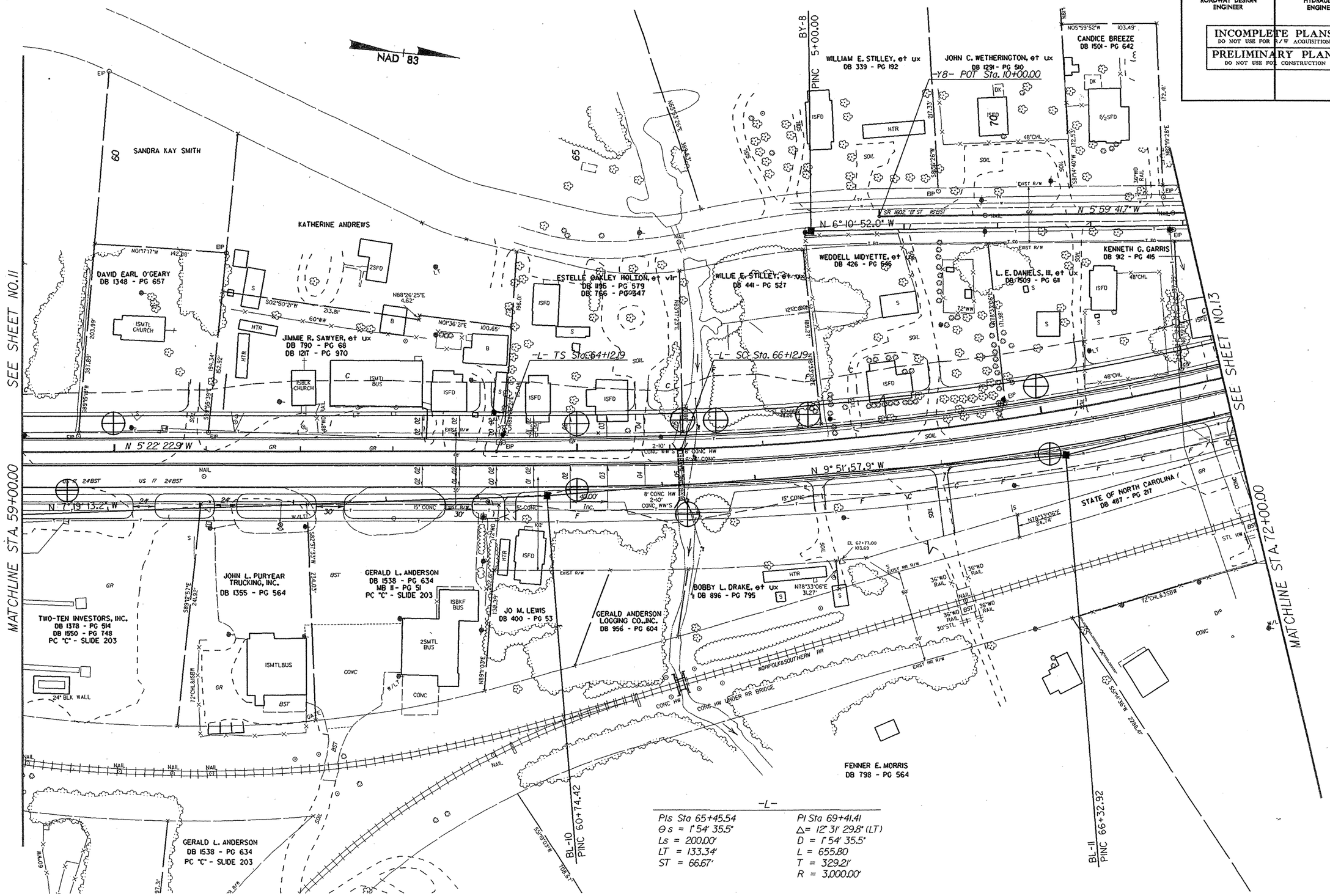


8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3403A	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



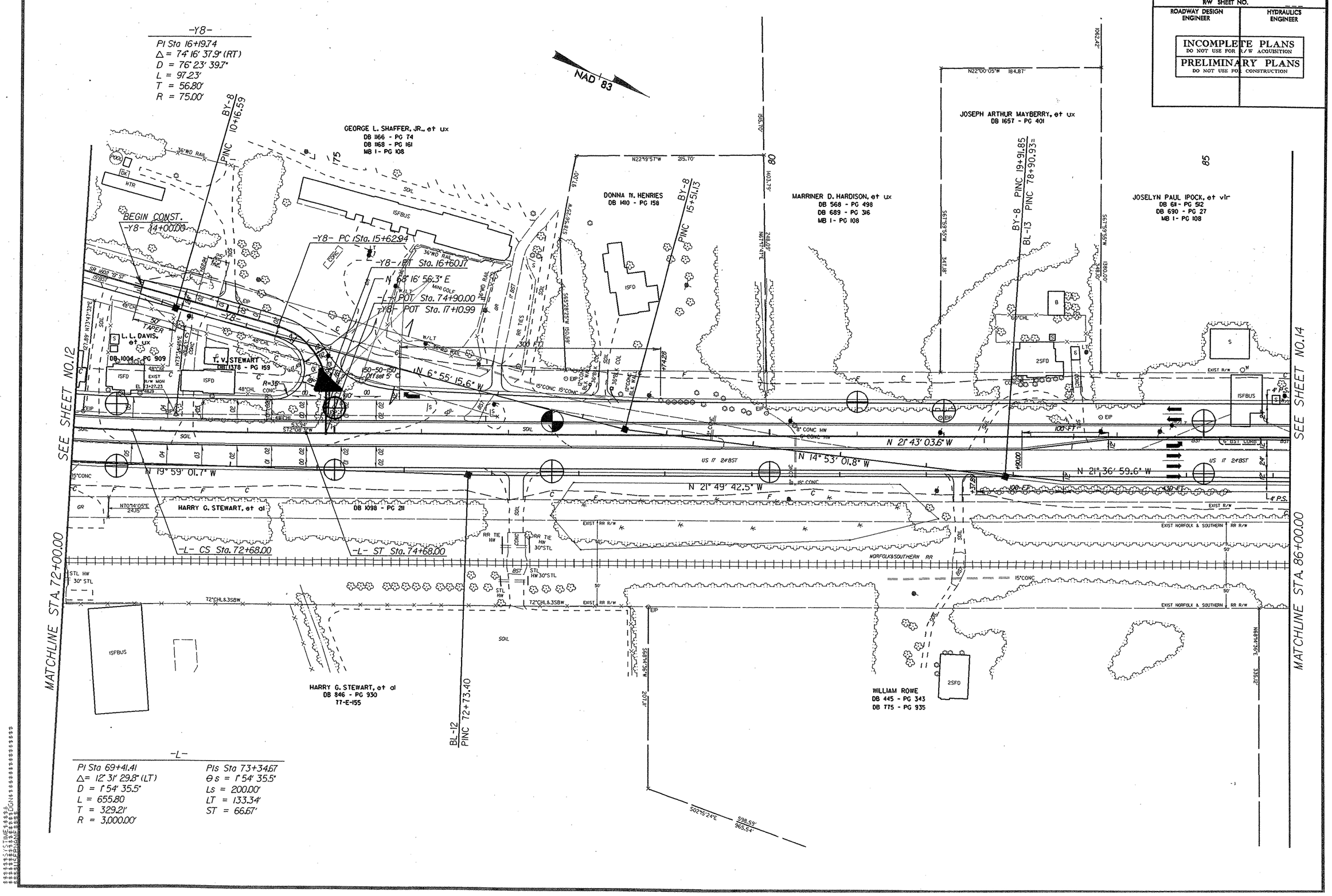
-L-

PIs Sta 65+45.54	PI Sta 69+41.41
Θs = 1° 54' 35.5"	Δ = 12° 31' 29.8" (LT)
Ls = 200.00'	D = 1° 54' 35.5"
LT = 133.34'	L = 655.80
ST = 66.67'	T = 329.21'
	R = 3,000.00'

PROJECT REFERENCE NO.	SHEET NO.
R-3403A	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PROJECT REFERENCE NO.	SHEET NO.
R-3403A	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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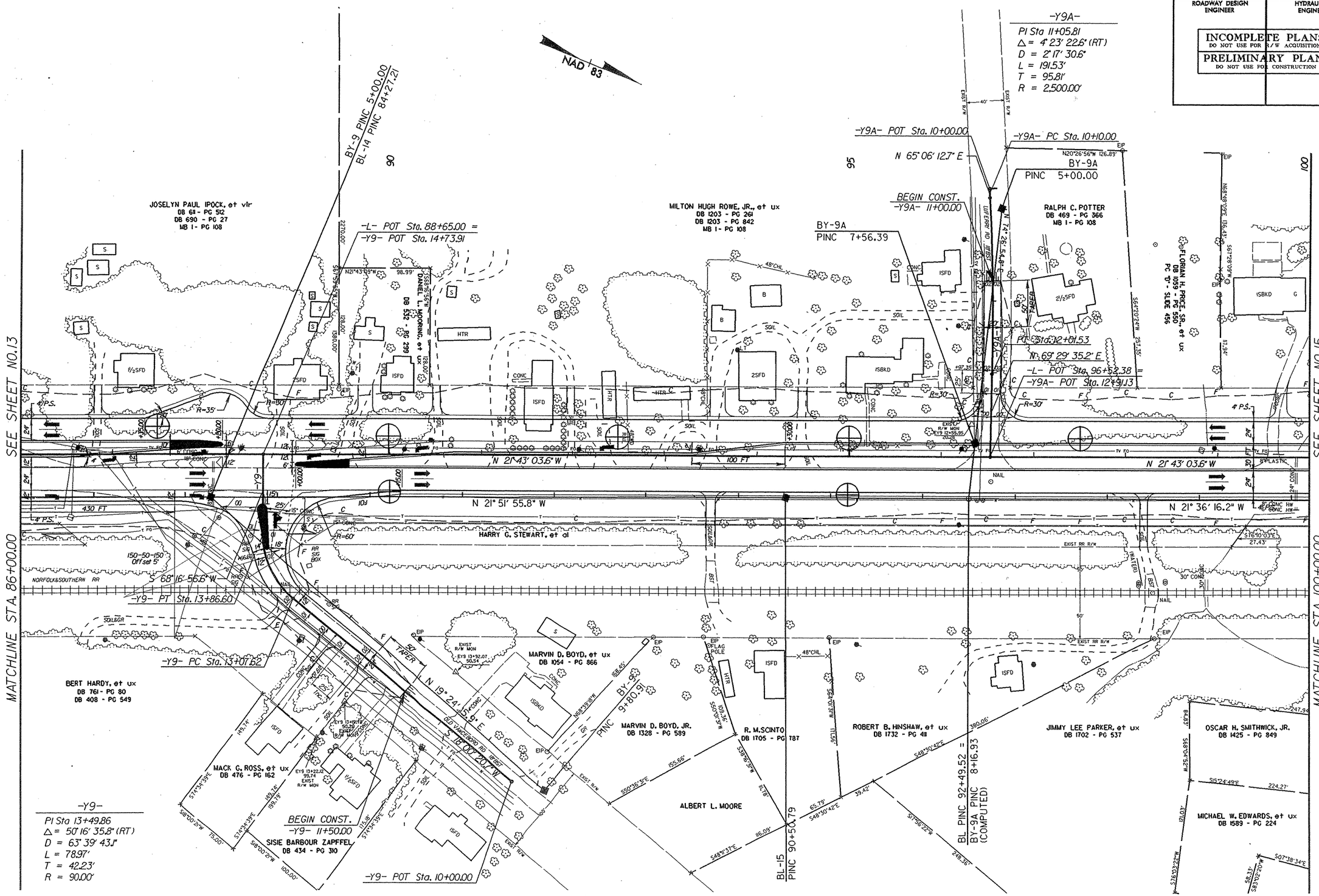
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

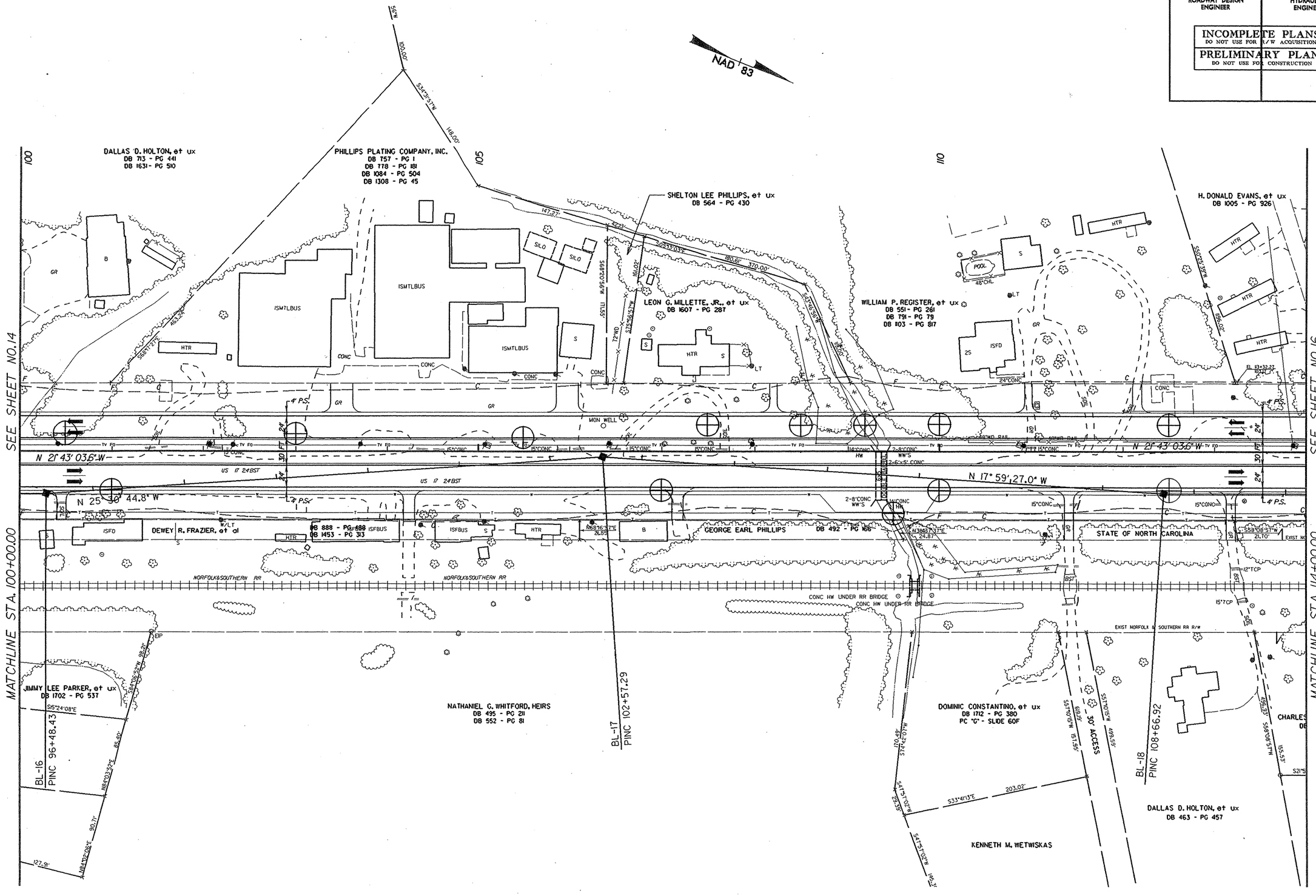


8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3403A	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

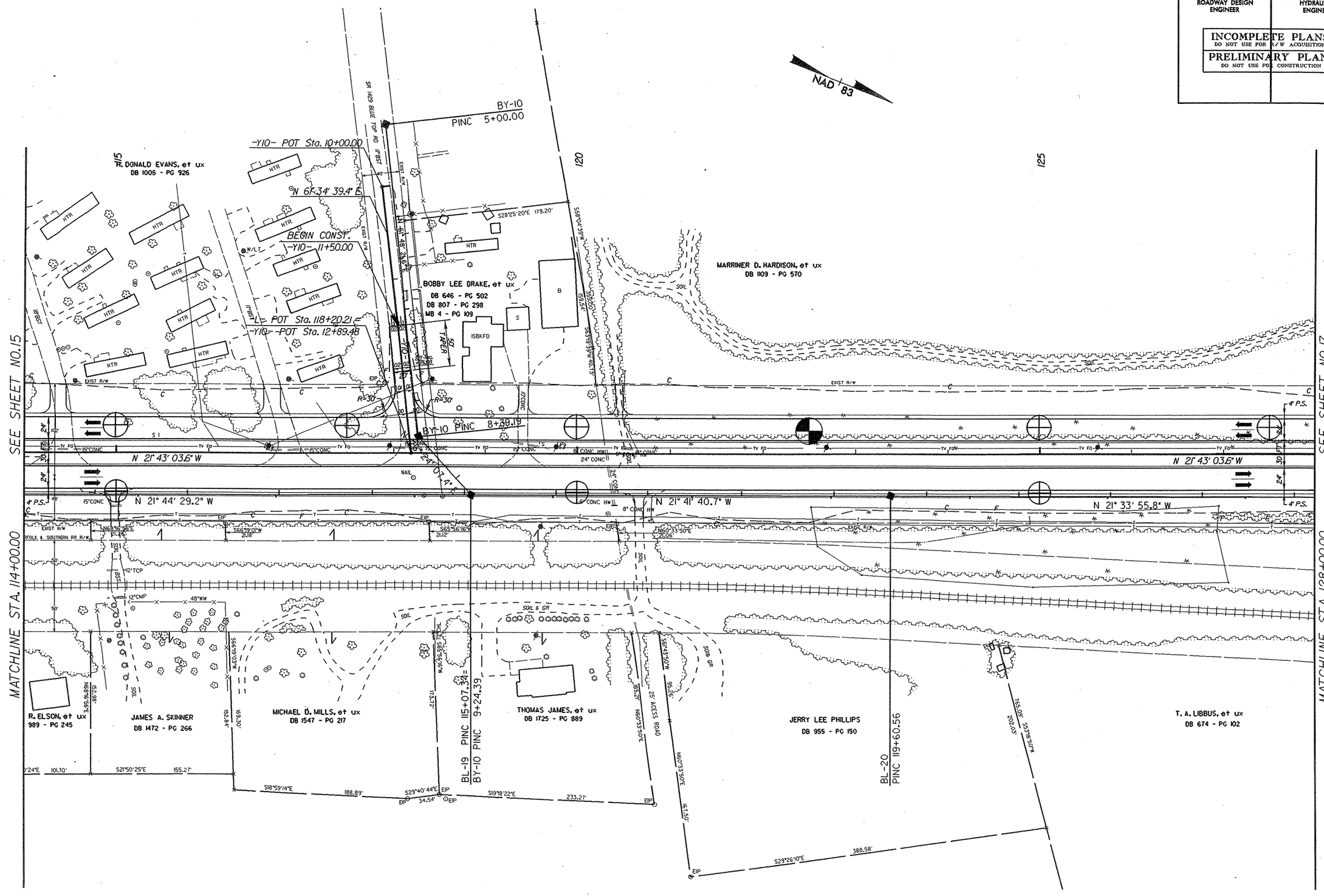
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PROJECT REFERENCE NO.	SHEET NO.
R-3403A	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

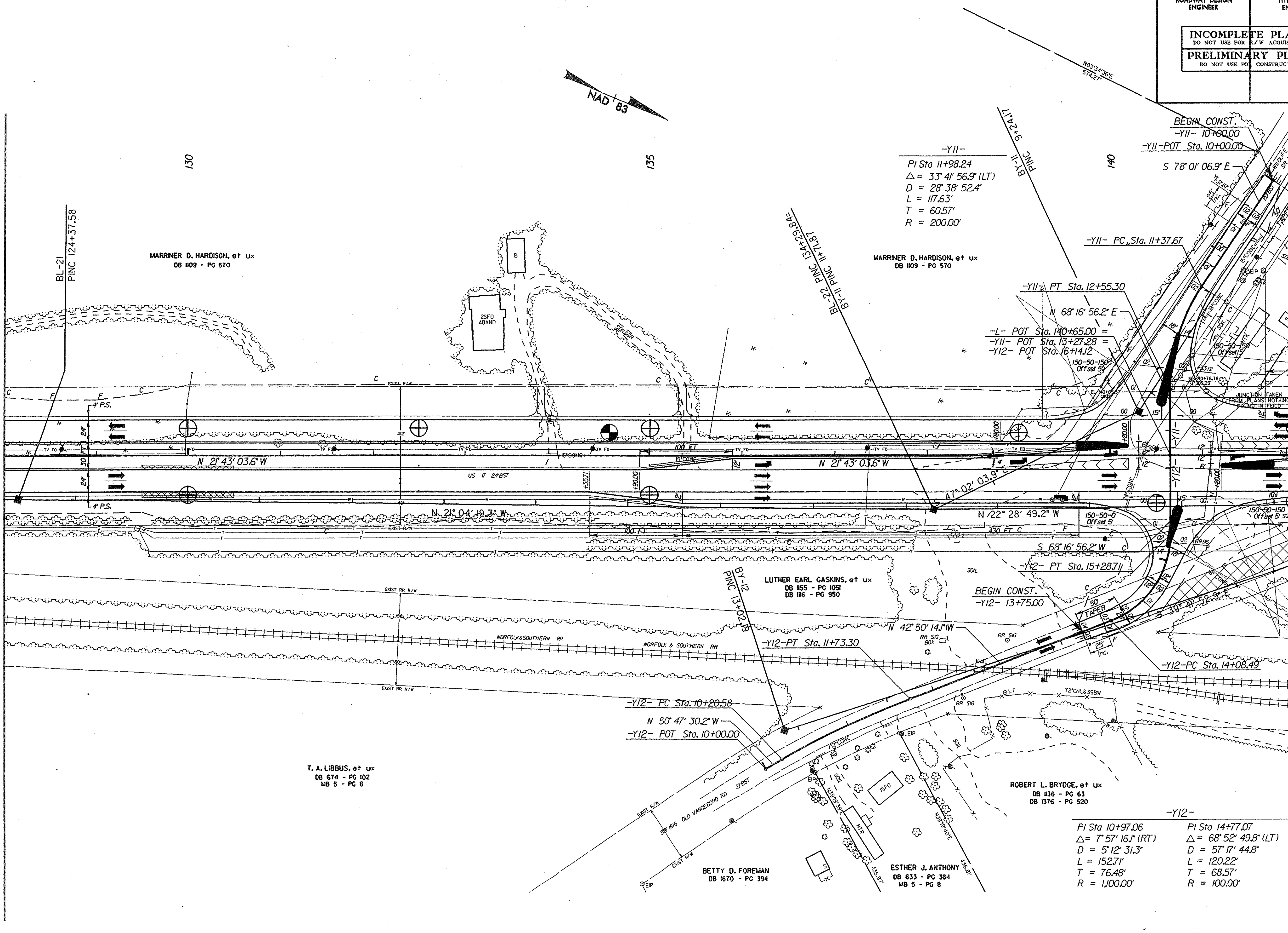


8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3403A	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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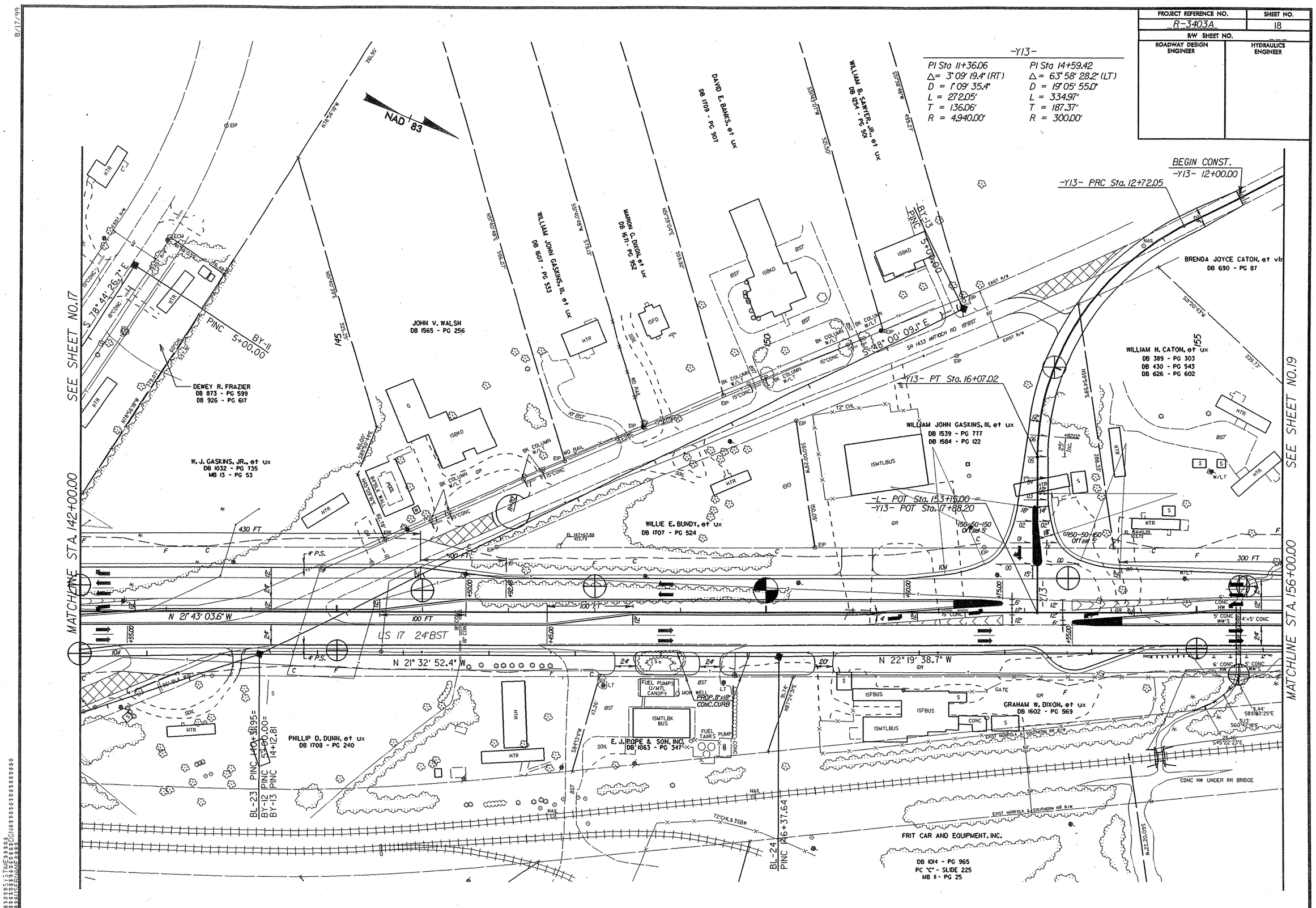
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



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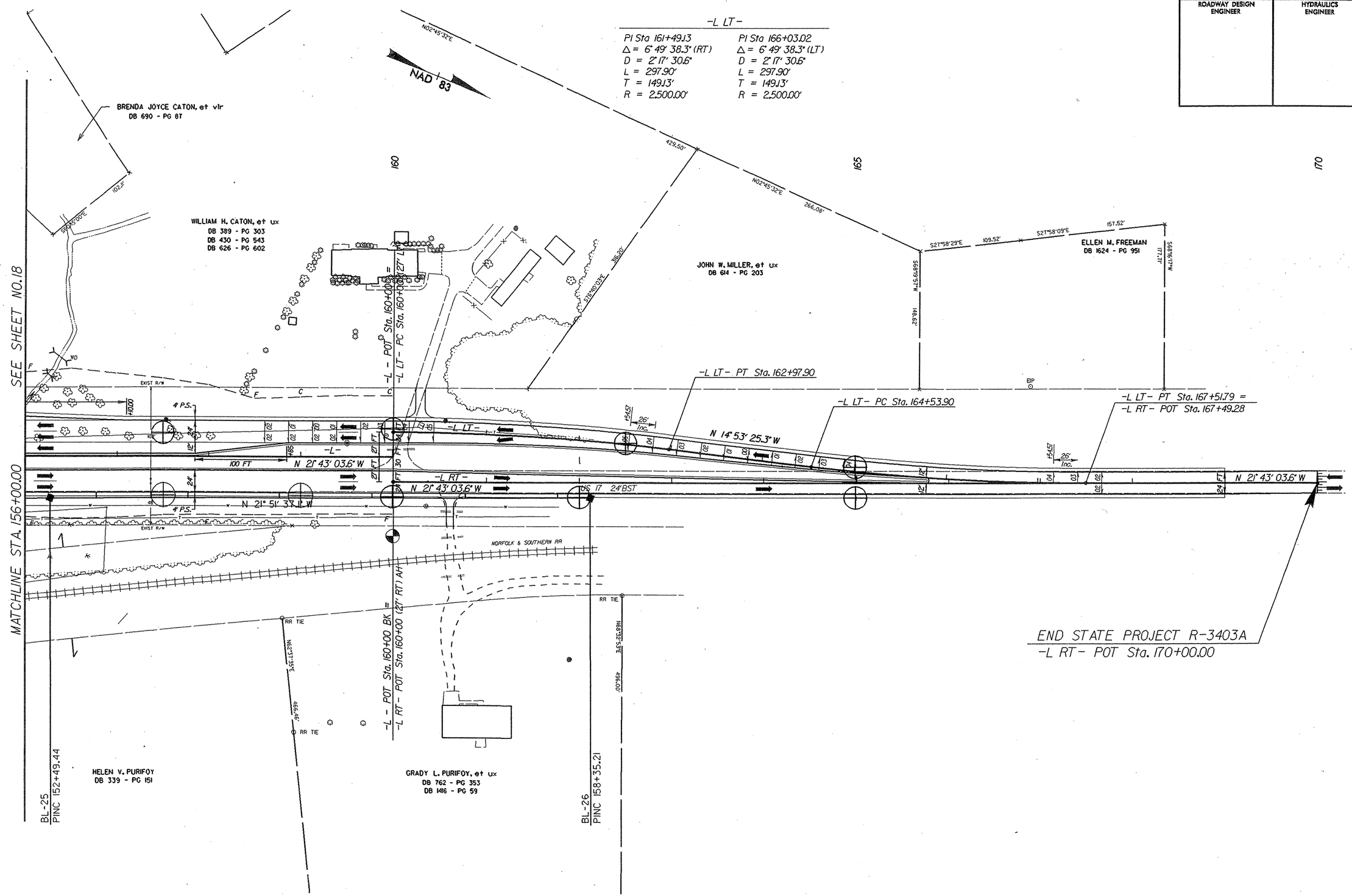
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



8/17/99

5/28/99

R-3403A	20

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

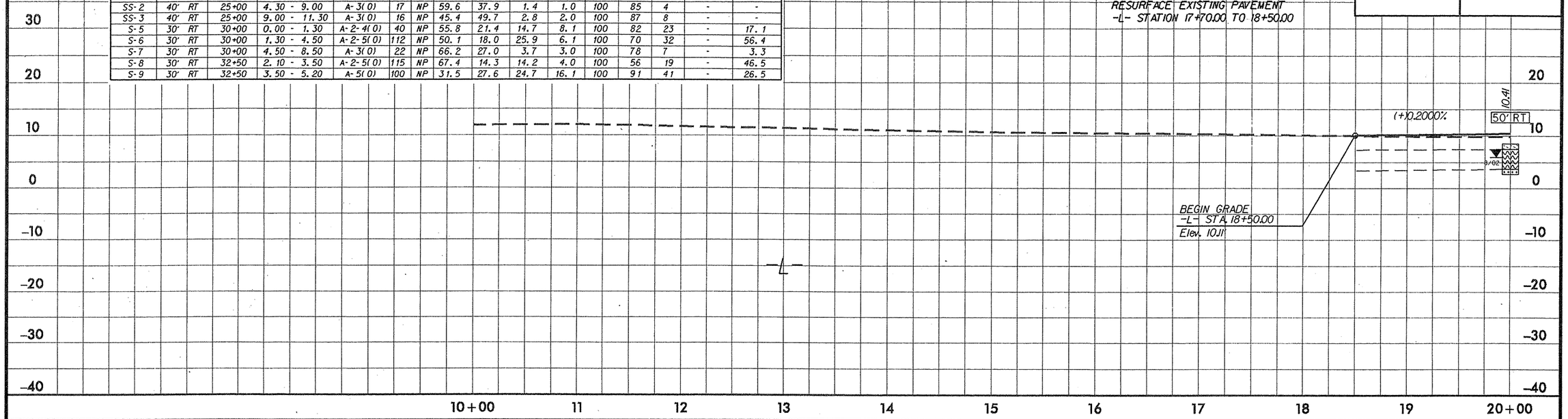
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

BM NO.1 - RR SPIKE SET IN BASE OF POWER POLE
-BL- STA. 6+98.00 302.4' RIGHT ELEV. 10.56'

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-1	40' RT	25+00	1.50 - 4.30	A-2-5(0)	79	NP	48.2	23.2	22.5	6.1	100	77	29	-	50.0
SS-2	40' RT	25+00	4.30 - 9.00	A-3(0)	17	NP	59.6	37.9	1.4	1.0	100	85	4	-	-
SS-3	40' RT	25+00	9.00 - 11.30	A-3(0)	16	NP	45.4	49.7	2.8	2.0	100	87	8	-	-
S-5	30' RT	30+00	0.00 - 1.30	A-2-4(0)	40	NP	55.8	21.4	14.7	8.1	100	82	23	-	17.1
S-6	30' RT	30+00	1.30 - 4.50	A-2-5(0)	112	NP	50.1	18.0	25.9	6.1	100	70	32	-	56.4
S-7	30' RT	30+00	4.50 - 8.50	A-3(0)	22	NP	66.2	27.0	3.7	3.0	100	78	7	-	3.3
S-8	30' RT	32+50	2.10 - 3.50	A-2-5(0)	115	NP	67.4	14.3	14.2	4.0	100	56	19	-	46.5
S-9	30' RT	32+50	3.50 - 5.20	A-5(0)	100	NP	31.5	27.6	24.7	16.1	100	91	41	-	26.5

NOTE:
RESURFACE EXISTING PAVEMENT
-L- STATION 17+70.00 TO 18+50.00



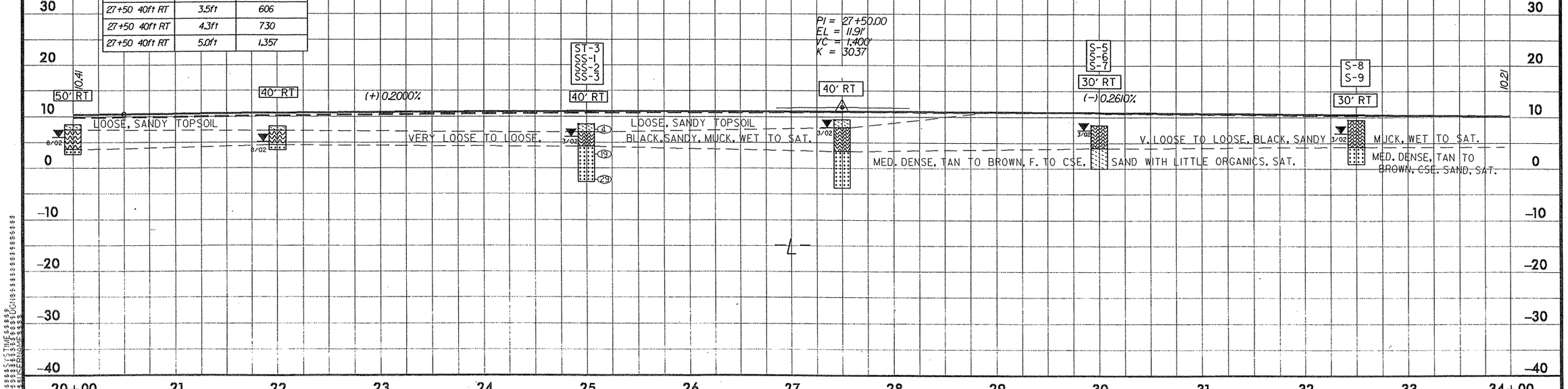
VANE SHEAR TESTS

STATION	DEPTH	S(PSF)
25+00 40ft RT	1.5ft	1,003
25+00 40ft RT	2.5ft	1,023
25+00 40ft RT	3.5ft	1,148
25+00 40ft RT	4.0ft	710
27+50 40ft RT	2.5ft	793
27+50 40ft RT	3.5ft	606
27+50 40ft RT	4.3ft	730
27+50 40ft RT	5.0ft	1,357

VANE SHEAR TESTS

STATION	DEPTH	S(PSF)
30+00 30ft RT	2.5ft	804
30+00 30ft RT	3.0ft	1,148
30+00 30ft RT	3.5ft	1,618

BM NO.2 - RR SPIKE SET IN BASE OF 20" GUM TREE
-BL- STA. 27+65.90 273.3' RIGHT ELEV. 9.75'



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

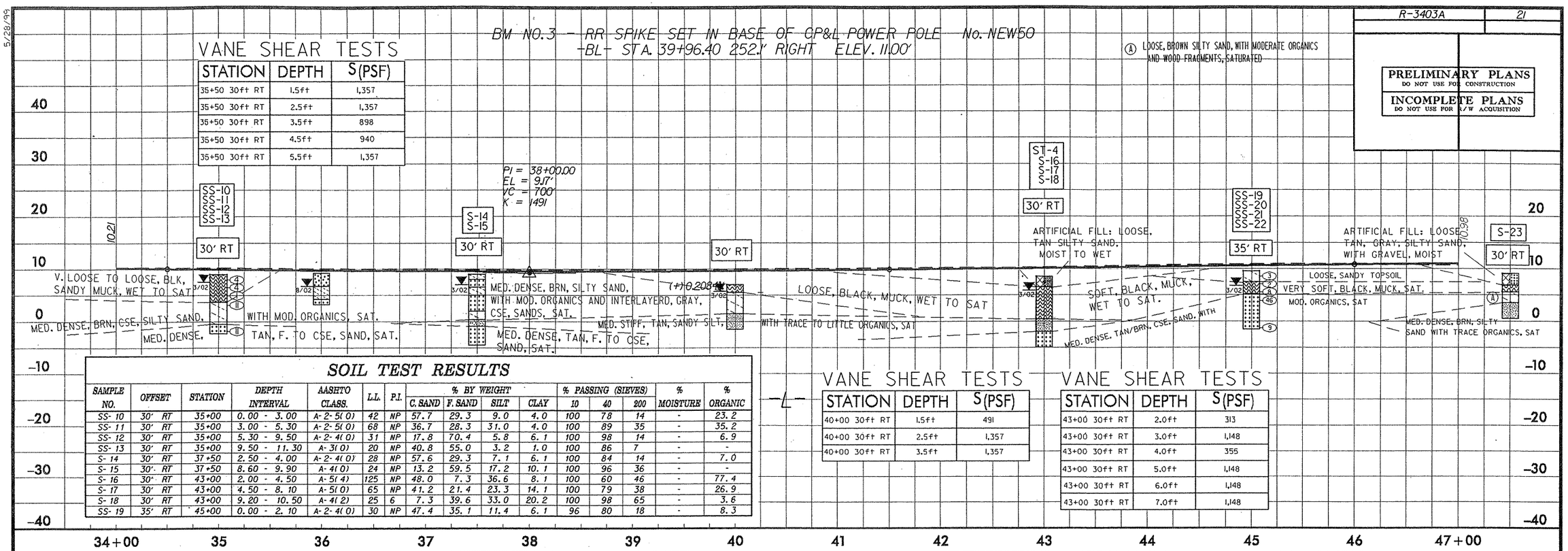
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

BM NO.3 - RR SPIKE SET IN BASE OF CP&L POWER POLE No. NEW50
-BL- STA. 39+96.40 252.1' RIGHT ELEV. 11.00'

Ⓐ LOOSE, BROWN SILTY SAND, WITH MODERATE ORGANICS AND WOOD FRAGMENTS, SATURATED

VANE SHEAR TESTS

STATION	DEPTH	S(PSF)
35+50 30ft RT	1.5ft	1,357
35+50 30ft RT	2.5ft	1,357
35+50 30ft RT	3.5ft	898
35+50 30ft RT	4.5ft	940
35+50 30ft RT	5.5ft	1,357



SOIL TEST RESULTS

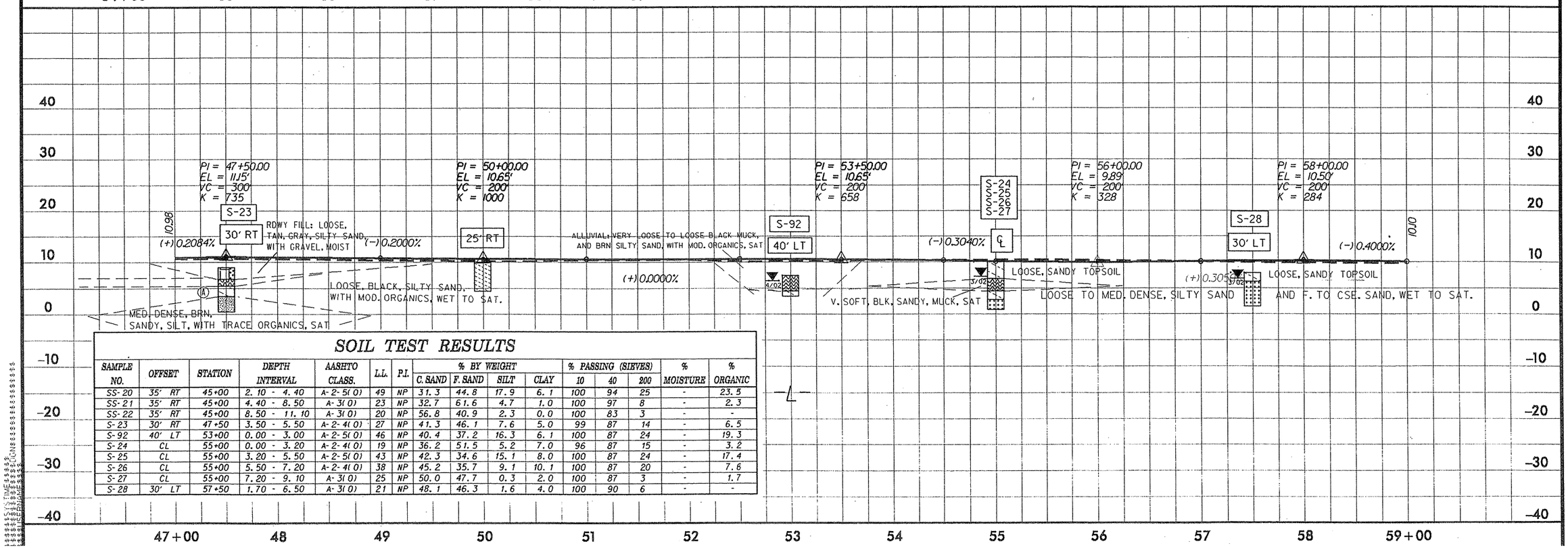
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-10	30' RT	35+00	0.00 - 3.00	A-2-5(0)	42	NP	57.7	29.3	9.0	4.0	100	78	14	-	23.2
SS-11	30' RT	35+00	3.00 - 5.30	A-2-5(0)	68	NP	36.7	28.3	31.0	4.0	100	89	35	-	35.2
SS-12	30' RT	35+00	5.30 - 9.50	A-2-4(0)	31	NP	17.8	70.4	5.8	6.1	100	98	14	-	6.9
SS-13	30' RT	35+00	9.50 - 11.30	A-3(0)	20	NP	40.8	55.0	3.2	1.0	100	86	7	-	-
S-14	30' RT	37+50	2.50 - 4.00	A-2-4(0)	28	NP	57.6	29.3	7.1	6.1	100	84	14	-	7.0
S-15	30' RT	37+50	8.60 - 9.90	A-4(0)	24	NP	13.2	59.5	17.2	10.1	100	96	36	-	-
S-16	30' RT	43+00	2.00 - 4.50	A-5(4)	125	NP	48.0	7.3	36.6	8.1	100	60	46	-	77.4
S-17	30' RT	43+00	4.50 - 8.10	A-5(0)	65	NP	41.2	21.4	23.3	14.1	100	79	38	-	26.9
S-18	30' RT	43+00	9.20 - 10.50	A-4(2)	25	6	7.3	39.6	33.0	20.2	100	98	65	-	3.6
SS-19	35' RT	45+00	0.00 - 2.10	A-2-4(0)	30	NP	47.4	35.1	11.4	6.1	96	80	18	-	8.3

VANE SHEAR TESTS

STATION	DEPTH	S(PSF)
40+00 30ft RT	1.5ft	491
40+00 30ft RT	2.5ft	1,357
40+00 30ft RT	3.5ft	1,357

VANE SHEAR TESTS

STATION	DEPTH	S(PSF)
43+00 30ft RT	2.0ft	313
43+00 30ft RT	3.0ft	1,148
43+00 30ft RT	4.0ft	355
43+00 30ft RT	5.0ft	1,148
43+00 30ft RT	6.0ft	1,148
43+00 30ft RT	7.0ft	1,148



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-20	35' RT	45+00	2.10 - 4.40	A-2-5(0)	49	NP	31.3	44.8	17.9	6.1	100	94	25	-	23.5
SS-21	35' RT	45+00	4.40 - 8.50	A-3(0)	23	NP	32.7	61.6	4.7	1.0	100	97	8	-	2.3
SS-22	35' RT	45+00	8.50 - 11.10	A-3(0)	20	NP	56.8	40.9	2.3	0.0	100	83	3	-	-
S-23	30' RT	47+50	3.50 - 5.50	A-2-4(0)	27	NP	41.3	46.1	7.6	5.0	99	87	14	-	6.5
S-92	40' LT	53+00	0.00 - 3.00	A-2-5(0)	46	NP	40.4	37.2	16.3	6.1	100	87	24	-	19.3
S-24	CL	55+00	0.00 - 3.20	A-2-4(0)	19	NP	36.2	51.5	7.0	96	87	15	-	3.2	
S-25	CL	55+00	3.20 - 5.50	A-2-5(0)	43	NP	42.3	34.6	15.1	8.0	100	87	24	-	17.4
S-26	CL	55+00	5.50 - 7.20	A-2-4(0)	38	NP	45.2	35.7	9.1	10.1	100	87	20	-	7.6
S-27	CL	55+00	7.20 - 9.10	A-3(0)	25	NP	50.0	47.7	0.3	2.0	100	87	3	-	1.7
S-28	30' LT	57+50	1.70 - 6.50	A-3(0)	21	NP	48.1	46.3	1.6	4.0	100	90	6	-	-

5/28/99

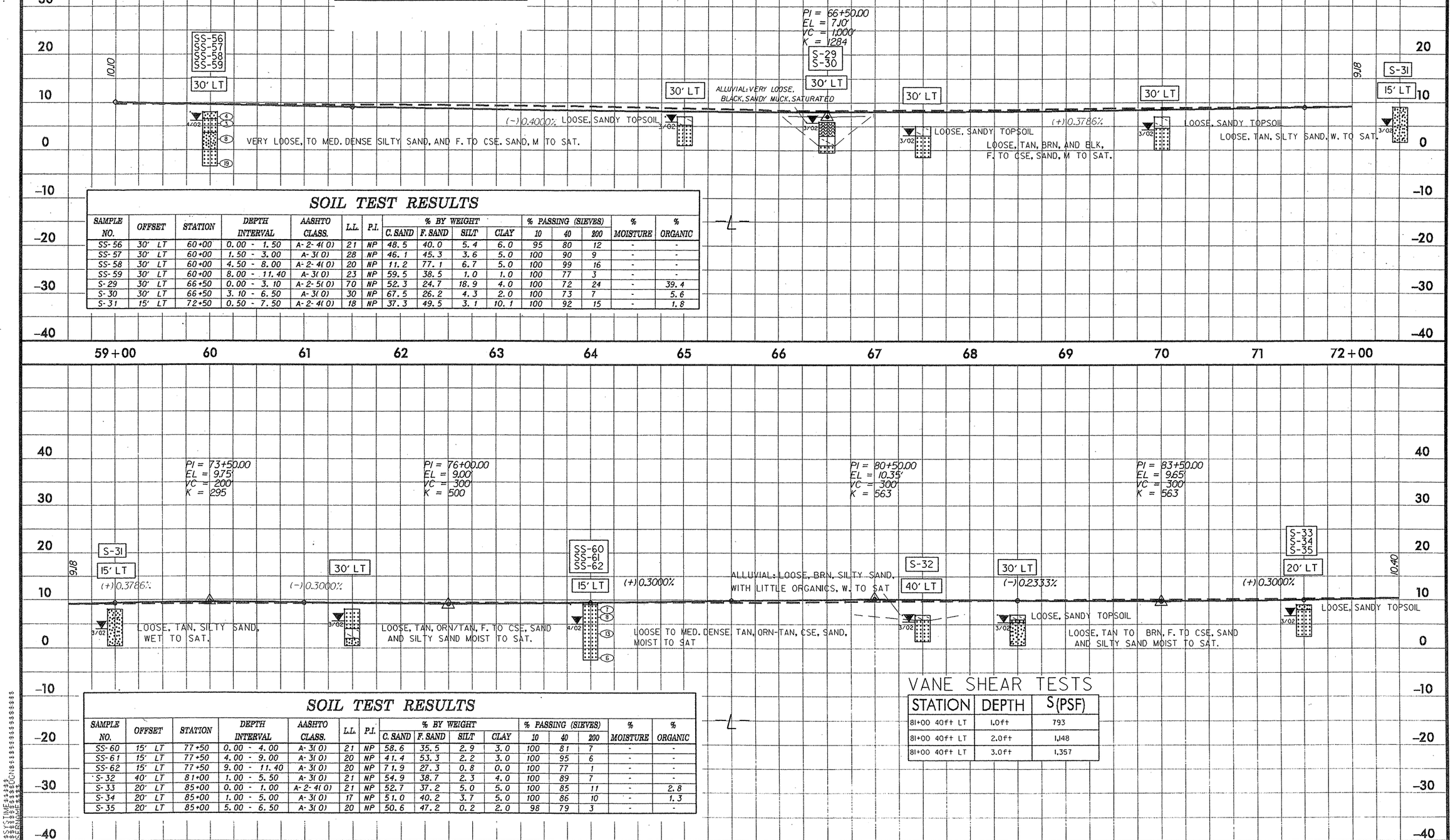
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

BM NO.4 - RR SPIKE SET IN BASE OF 28" GUM TREE
-BL- STA. 65+04.40 208.3' RIGHT ELEV. 9.44'

VANE SHEAR TESTS

STATION	DEPTH	S(PSF)
66+50 30ft LT	1.0ft	313
66+50 30ft LT	2.0ft	334
66+50 30ft LT	3.0ft	125



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-56	30' LT	60+00	0.00 - 1.50	A-2-4(0)	21	NP	48.5	40.0	5.4	6.0	95	80	12	-	-
SS-57	30' LT	60+00	1.50 - 3.00	A-3(0)	28	NP	46.1	45.3	3.6	5.0	100	90	9	-	-
SS-58	30' LT	60+00	4.50 - 8.00	A-2-4(0)	20	NP	11.2	77.1	6.7	5.0	100	99	16	-	-
SS-59	30' LT	60+00	8.00 - 11.40	A-3(0)	23	NP	59.5	38.5	1.0	1.0	100	77	3	-	-
S-29	30' LT	66+50	0.00 - 3.10	A-2-5(0)	70	NP	52.3	24.7	18.9	4.0	100	72	24	-	39.4
S-30	30' LT	66+50	3.10 - 6.50	A-3(0)	30	NP	67.5	26.2	4.3	2.0	100	73	7	-	5.6
S-31	15' LT	72+50	0.50 - 7.50	A-2-4(0)	18	NP	37.3	49.5	3.1	10.1	100	92	15	-	1.8

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-60	15' LT	77+50	0.00 - 4.00	A-3(0)	21	NP	58.6	35.5	2.9	3.0	100	81	7	-	-
SS-61	15' LT	77+50	4.00 - 9.00	A-3(0)	20	NP	41.4	53.3	2.2	3.0	100	95	6	-	-
SS-62	15' LT	77+50	9.00 - 11.40	A-3(0)	20	NP	71.9	27.3	0.8	0.0	100	77	1	-	-
S-32	40' LT	81+00	1.00 - 5.50	A-3(0)	21	NP	54.9	38.7	2.3	4.0	100	89	7	-	-
S-33	20' LT	85+00	0.00 - 1.00	A-2-4(0)	21	NP	52.7	37.2	5.0	5.0	100	85	11	-	2.8
S-34	20' LT	85+00	1.00 - 5.00	A-3(0)	17	NP	51.0	40.2	3.7	5.0	100	86	10	-	1.3
S-35	20' LT	85+00	5.00 - 6.50	A-3(0)	20	NP	50.6	47.2	0.2	2.0	98	79	3	-	-

VANE SHEAR TESTS

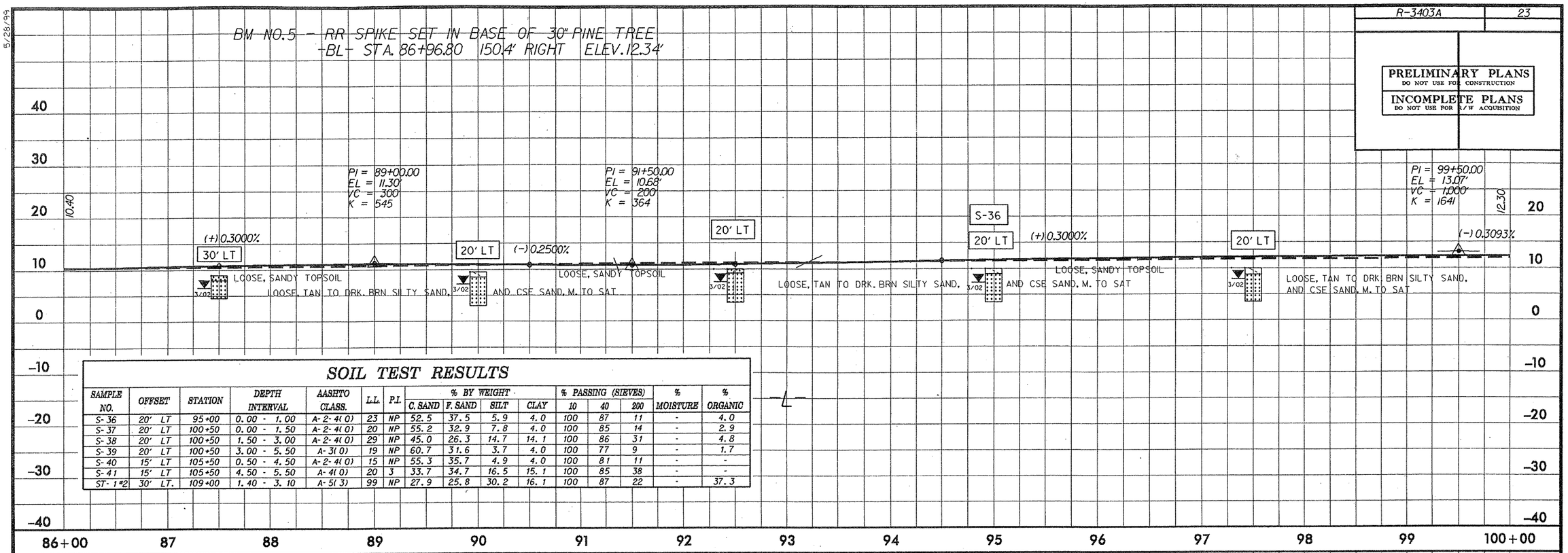
STATION	DEPTH	S(PSF)
81+00 40ft LT	1.0ft	793
81+00 40ft LT	2.0ft	1,148
81+00 40ft LT	3.0ft	1,357

5/28/99

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

BM NO.5 - RR SPIKE SET IN BASE OF 30" PINE TREE
-BL- STA. 86+96.80 150.4' RIGHT ELEV. 12.34'



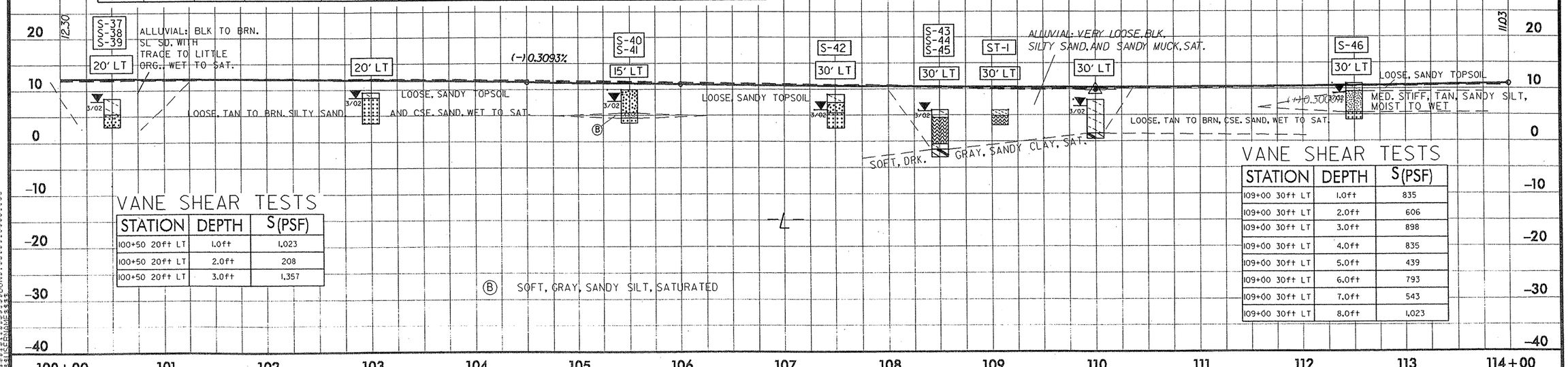
SOIL TEST RESULTS

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
S-36	20' LT	95+00	0.00 - 1.00	A-2-4(0)	23	NP	52.5	37.5	5.9	4.0	100	87	11	-	4.0
S-37	20' LT	100+50	0.00 - 1.50	A-2-4(0)	20	NP	55.2	32.9	7.8	4.0	100	85	14	-	2.9
S-38	20' LT	100+50	1.50 - 3.00	A-2-4(0)	29	NP	45.0	26.3	14.7	14.1	100	86	31	-	4.8
S-39	20' LT	100+50	3.00 - 5.50	A-3(0)	19	NP	60.7	31.6	3.7	4.0	100	77	9	-	1.7
S-40	15' LT	105+50	0.50 - 4.50	A-2-4(0)	15	NP	55.3	35.7	4.9	4.0	100	81	11	-	-
S-41	15' LT	105+50	4.50 - 5.50	A-4(0)	20	3	33.7	34.7	16.5	15.1	100	85	38	-	-
ST-1 #2	30' LT.	109+00	1.40 - 3.10	A-5(3)	99	NP	27.9	25.8	30.2	16.1	100	87	22	-	37.3

BM NO.6 CHISLED SQUARE IN NE CORNER OF SOUTH R/R BRIDGE HEADWALL
-BL- STA. 105+98.40 126.8' RIGHT ELEV. 11.42'

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-42	30' LT.	107+50	1.50 - 3.50	A-2-4(0)	16	NP	32.3	46.1	10.6	11.1	100	87	26	-	-
S-43	30' LT.	108+50	0.00 - 1.50	A-2-4(0)	34	NP	27.6	43.9	18.5	10.1	98	89	32	-	6.5
S-44	30' LT.	108+50	1.50 - 6.50	A-5(0)	84	NP	36.6	28.6	26.8	8.0	100	77	39	-	30.4
S-45	30' LT.	108+50	7.50 - 9.00	A-6(1)	35	13	16.9	51.5	13.5	18.1	100	88	36	-	-
S-46	30' LT.	112+50	1.50 - 5.50	A-4(0)	22	8	20.7	41.3	15.8	22.1	100	91	44	-	-



VANE SHEAR TESTS

STATION	DEPTH	S(PSF)
100+50 20ft LT	1.0ft	1,023
100+50 20ft LT	2.0ft	208
100+50 20ft LT	3.0ft	1,357

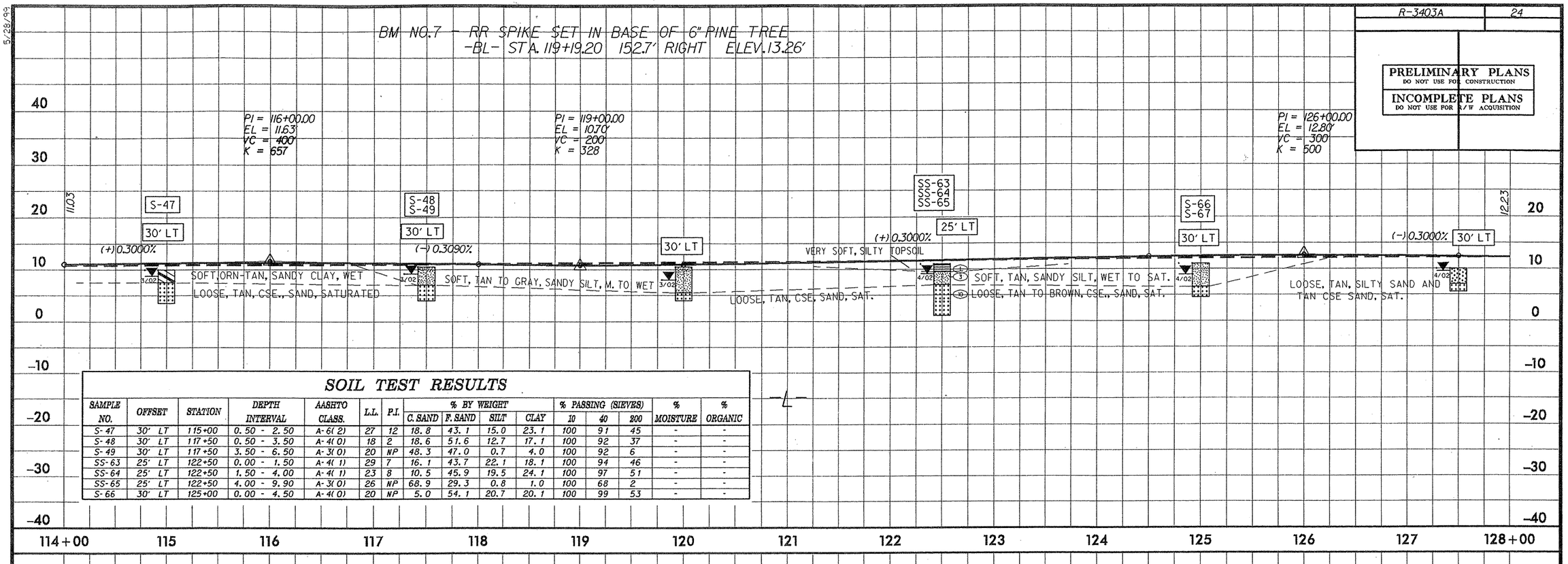
Ⓑ SOFT, GRAY, SANDY SILT, SATURATED

VANE SHEAR TESTS

STATION	DEPTH	S(PSF)
109+00 30ft LT	1.0ft	835
109+00 30ft LT	2.0ft	606
109+00 30ft LT	3.0ft	898
109+00 30ft LT	4.0ft	835
109+00 30ft LT	5.0ft	439
109+00 30ft LT	6.0ft	793
109+00 30ft LT	7.0ft	543
109+00 30ft LT	8.0ft	1,023

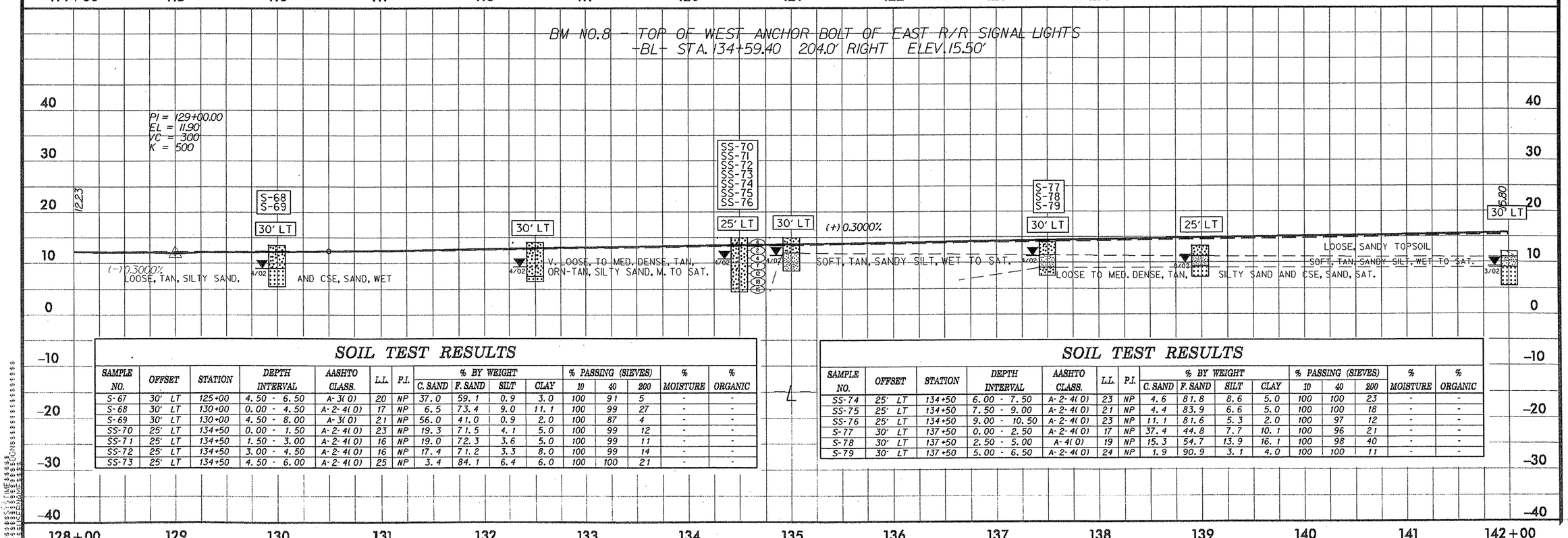
5/28/99

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



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-47	30' LT	115+00	0.50 - 2.50	A-6(2)	27	12	18.8	43.1	15.0	23.1	100	91	45	-	-
S-48	30' LT	117+50	0.50 - 3.50	A-4(0)	18	2	18.6	51.6	12.7	17.1	100	92	37	-	-
S-49	30' LT	117+50	3.50 - 6.50	A-3(0)	20	NP	48.3	47.0	0.7	4.0	100	92	6	-	-
SS-63	25' LT	122+50	0.00 - 1.50	A-4(1)	29	7	16.1	43.7	22.1	18.1	100	94	46	-	-
SS-64	25' LT	122+50	1.50 - 4.00	A-4(1)	23	8	10.5	45.9	19.5	24.1	100	97	51	-	-
SS-65	25' LT	122+50	4.00 - 9.90	A-3(0)	26	NP	68.9	29.3	0.8	1.0	100	68	2	-	-
S-66	30' LT	125+00	0.00 - 4.50	A-4(0)	20	NP	5.0	54.1	20.7	20.1	100	99	53	-	-



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-67	30' LT	125+00	4.50 - 6.50	A-3(0)	20	NP	37.0	59.1	0.9	3.0	100	91	5	-	-
S-68	30' LT	130+00	0.00 - 4.50	A-2-4(0)	17	NP	6.5	73.4	9.0	11.1	100	99	27	-	-
S-69	30' LT	130+00	4.50 - 8.00	A-3(0)	21	NP	56.0	41.0	0.9	2.0	100	87	4	-	-
SS-70	25' LT	134+50	0.00 - 1.50	A-2-4(0)	23	NP	19.3	71.5	4.1	5.0	100	99	12	-	-
SS-71	25' LT	134+50	1.50 - 3.00	A-2-4(0)	16	NP	19.0	72.3	3.6	5.0	100	99	11	-	-
SS-72	25' LT	134+50	3.00 - 4.50	A-2-4(0)	16	NP	17.4	71.2	3.3	8.0	100	99	14	-	-
SS-73	25' LT	134+50	4.50 - 6.00	A-2-4(0)	25	NP	3.4	84.1	6.4	6.0	100	100	21	-	-

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-74	25' LT	134+50	6.00 - 7.50	A-2-4(0)	23	NP	4.6	81.8	8.6	5.0	100	100	23	-	-
SS-75	25' LT	134+50	7.50 - 9.00	A-2-4(0)	21	NP	4.4	83.9	6.6	5.0	100	100	18	-	-
SS-76	25' LT	134+50	9.00 - 10.50	A-2-4(0)	23	NP	11.1	81.6	5.3	2.0	100	97	12	-	-
S-77	30' LT	137+50	0.00 - 2.50	A-2-4(0)	17	NP	37.4	44.8	7.7	10.1	100	96	21	-	-
S-78	30' LT	137+50	2.50 - 5.00	A-4(0)	19	NP	15.3	54.7	13.9	16.1	100	98	40	-	-
S-79	30' LT	137+50	5.00 - 6.50	A-2-4(0)	24	NP	1.9	90.9	3.1	4.0	100	100	11	-	-

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

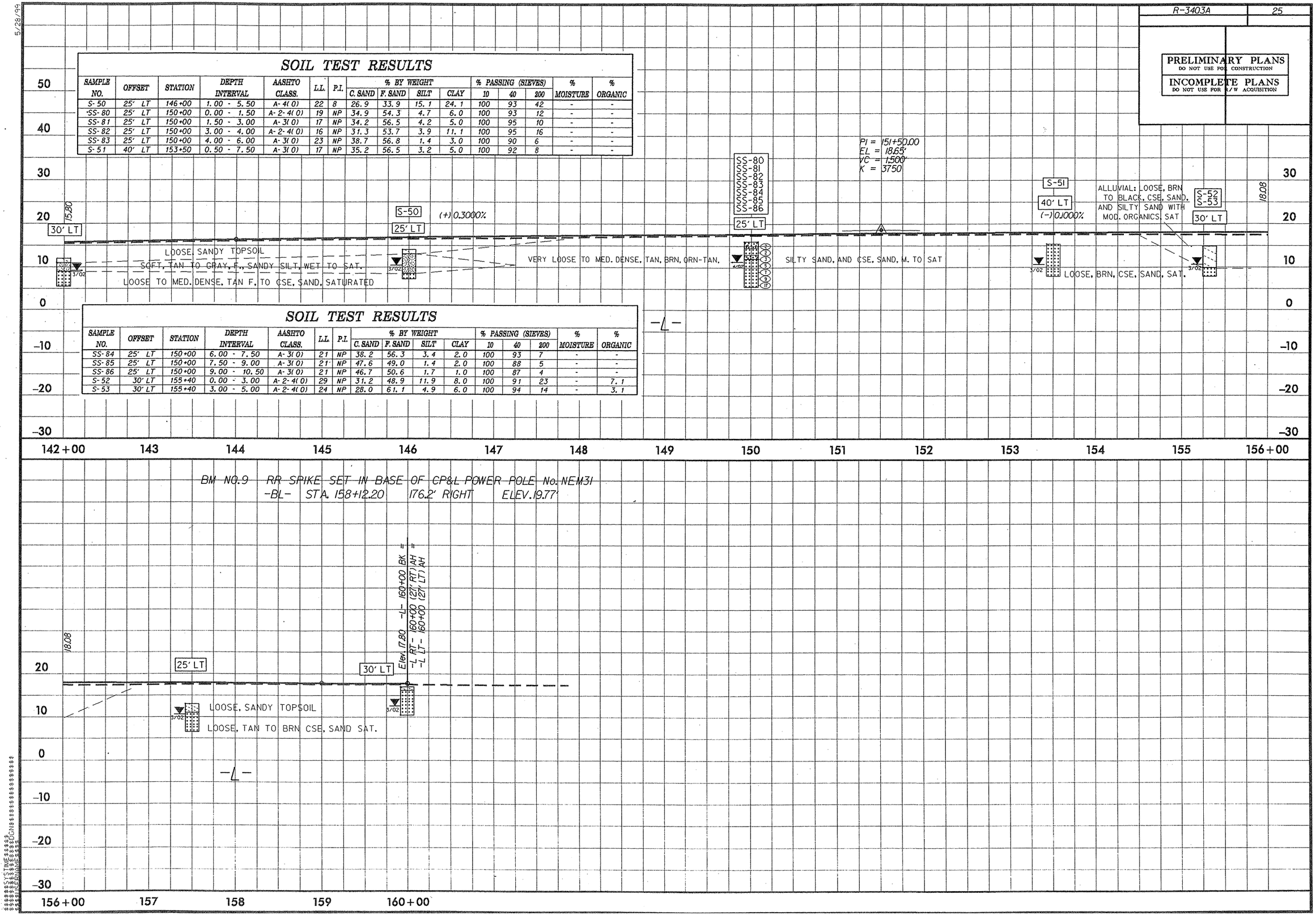
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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-50	25' LT	146+00	1.00 - 5.50	A-4(0)	22	8	26.9	33.9	15.1	24.1	100	93	42	-	-
SS-80	25' LT	150+00	0.00 - 1.50	A-2-4(0)	19	NP	34.9	54.3	4.7	6.0	100	93	12	-	-
SS-81	25' LT	150+00	1.50 - 3.00	A-3(0)	17	NP	34.2	56.5	4.2	5.0	100	95	10	-	-
SS-82	25' LT	150+00	3.00 - 4.00	A-2-4(0)	16	NP	31.3	53.7	3.9	11.1	100	95	16	-	-
SS-83	25' LT	150+00	4.00 - 6.00	A-3(0)	23	NP	38.7	56.8	1.4	3.0	100	90	6	-	-
S-51	40' LT	153+50	0.50 - 7.50	A-3(0)	17	NP	35.2	56.5	3.2	5.0	100	92	8	-	-

SOIL TEST RESULTS

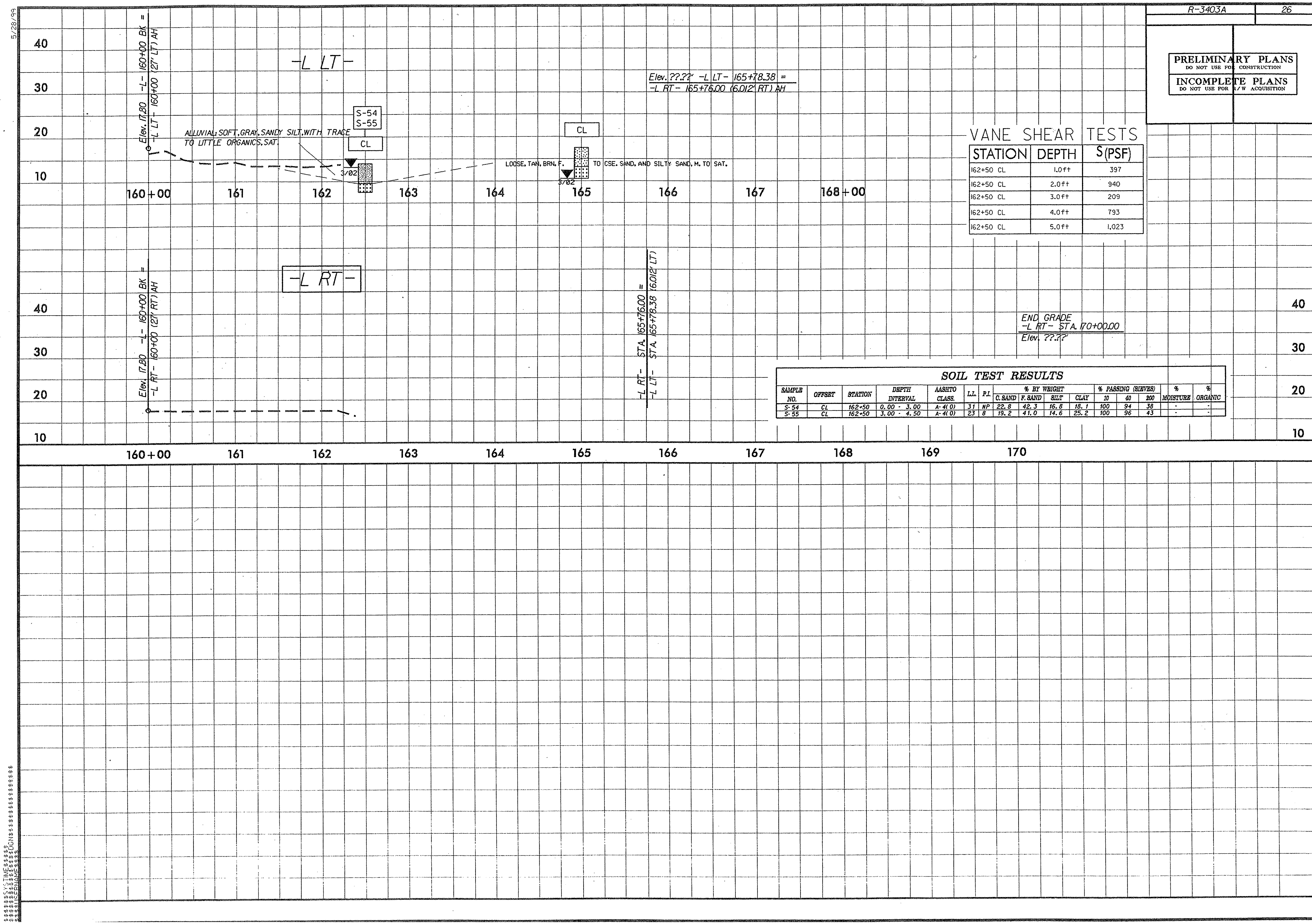
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-84	25' LT	150+00	6.00 - 7.50	A-3(0)	21	NP	38.2	56.3	3.4	2.0	100	93	7	-	-
SS-85	25' LT	150+00	7.50 - 9.00	A-3(0)	21	NP	47.6	49.0	1.4	2.0	100	88	5	-	-
SS-86	25' LT	150+00	9.00 - 10.50	A-3(0)	21	NP	46.7	50.6	1.7	1.0	100	87	4	-	-
S-52	30' LT	155+40	0.00 - 3.00	A-2-4(0)	29	NP	31.2	48.9	11.9	8.0	100	91	23	-	7.1
S-53	30' LT	155+40	3.00 - 5.00	A-2-4(0)	24	NP	28.0	61.1	4.9	6.0	100	94	14	-	3.1



5/28/99

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION



VANE SHEAR TESTS

STATION	DEPTH	S(PSF)
162+50 CL	1.0ft	397
162+50 CL	2.0ft	940
162+50 CL	3.0ft	209
162+50 CL	4.0ft	793
162+50 CL	5.0ft	1,023

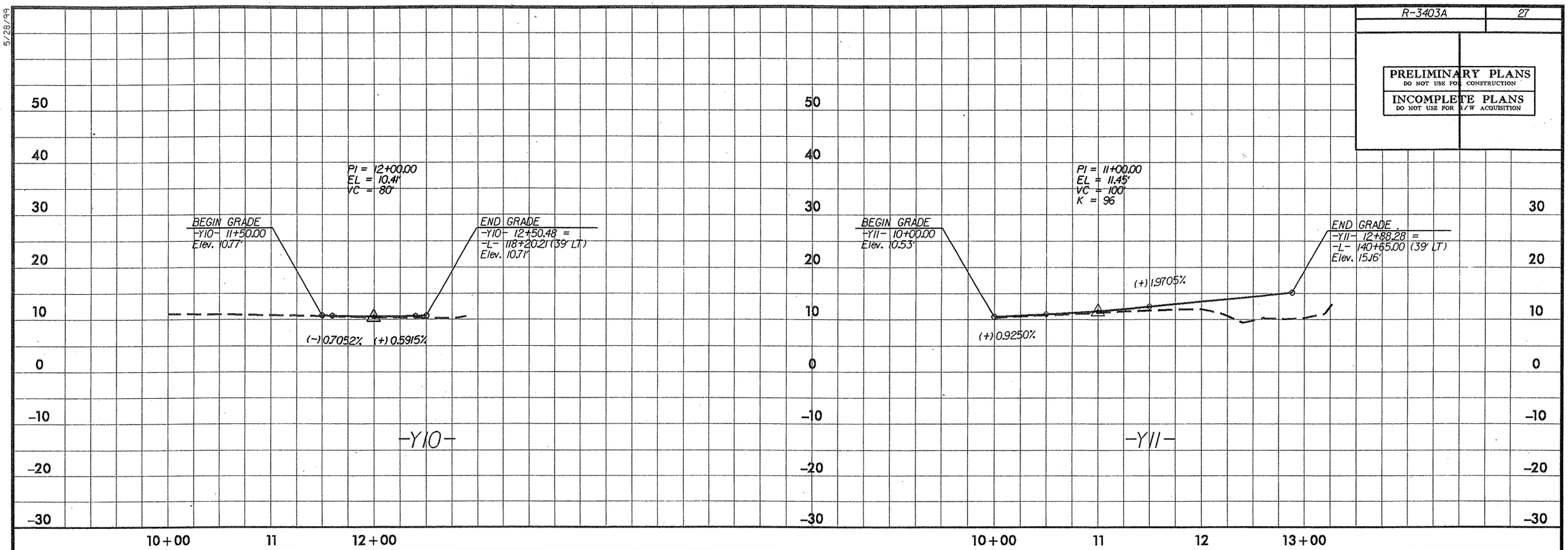
SOIL TEST RESULTS

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-54	CL	162+50	0.00 - 3.00	A-4(0)	31	NP	22.8	42.3	16.8	18.1	100	94	38	-	-
S-55	CL	162+50	3.00 - 4.50	A-4(0)	23	8	19.2	41.0	14.6	25.2	100	96	43	-	-

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

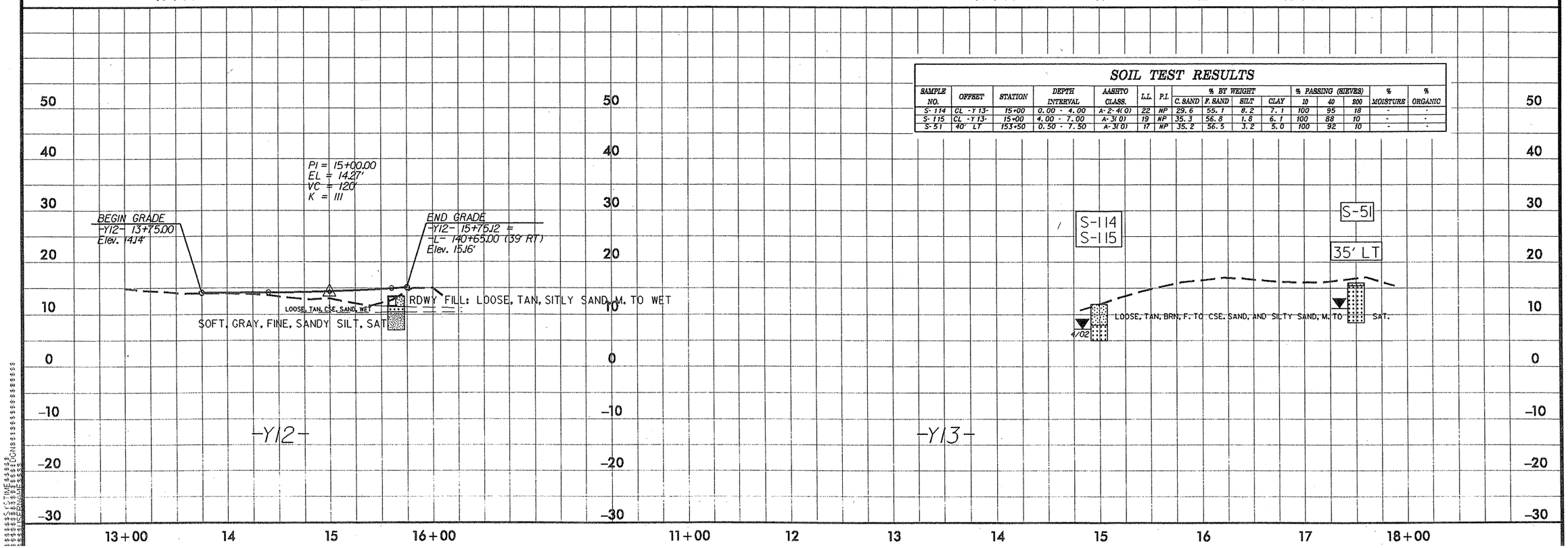
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

5/28/99

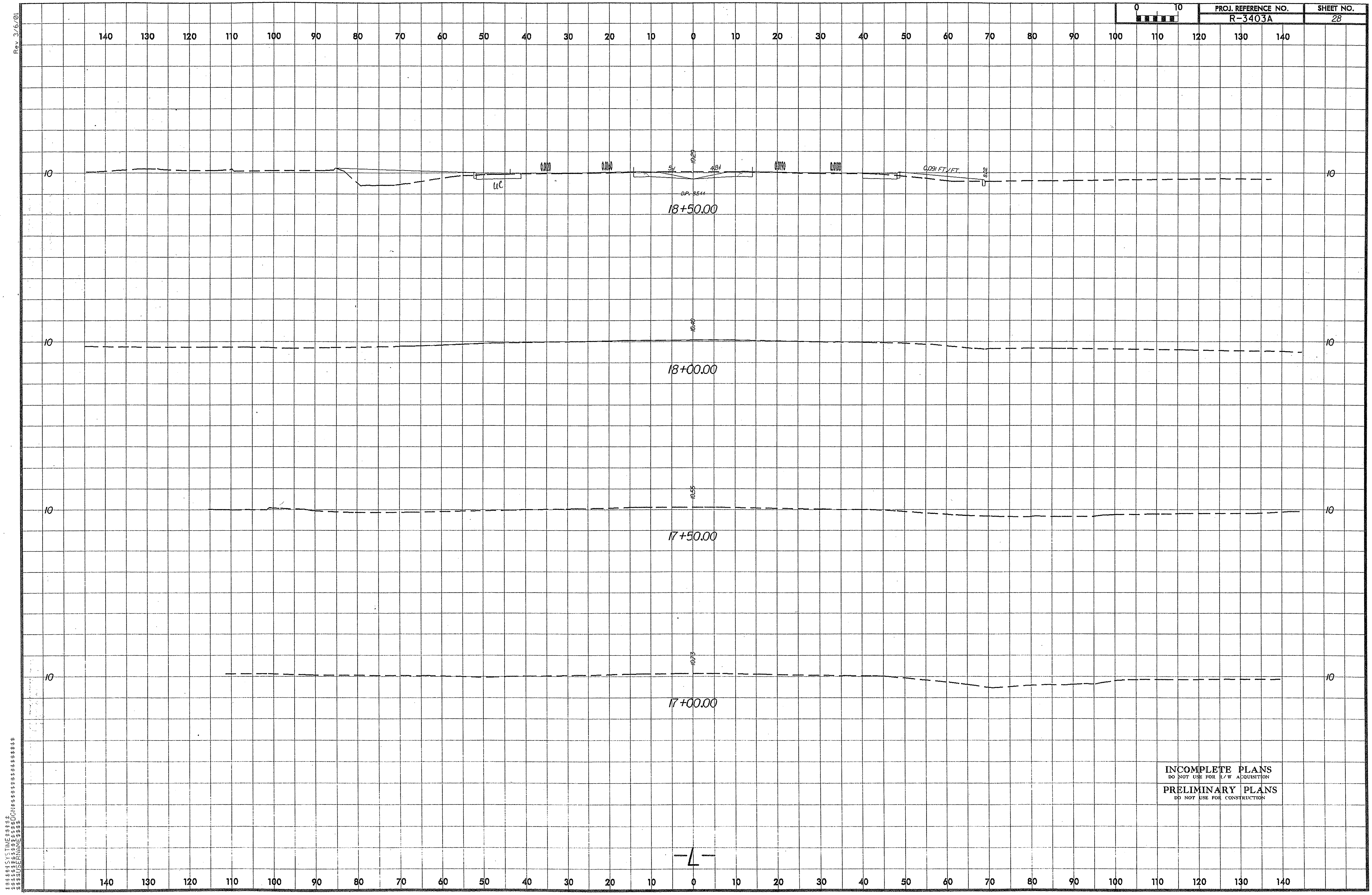


SOIL TEST RESULTS

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-114	CL -Y13-	15+00	0.00 - 4.00	A-2-4(0)	22	NP	29.6	55.1	8.2	7.1	100	95	18	-	-
S-115	CL -Y13-	15+00	4.00 - 7.00	A-3(0)	19	NP	35.3	56.8	1.8	6.1	100	88	10	-	-
S-51	40' LT	153+50	0.50 - 7.50	A-3(0)	17	NP	35.2	56.5	3.2	5.0	100	92	10	-	-

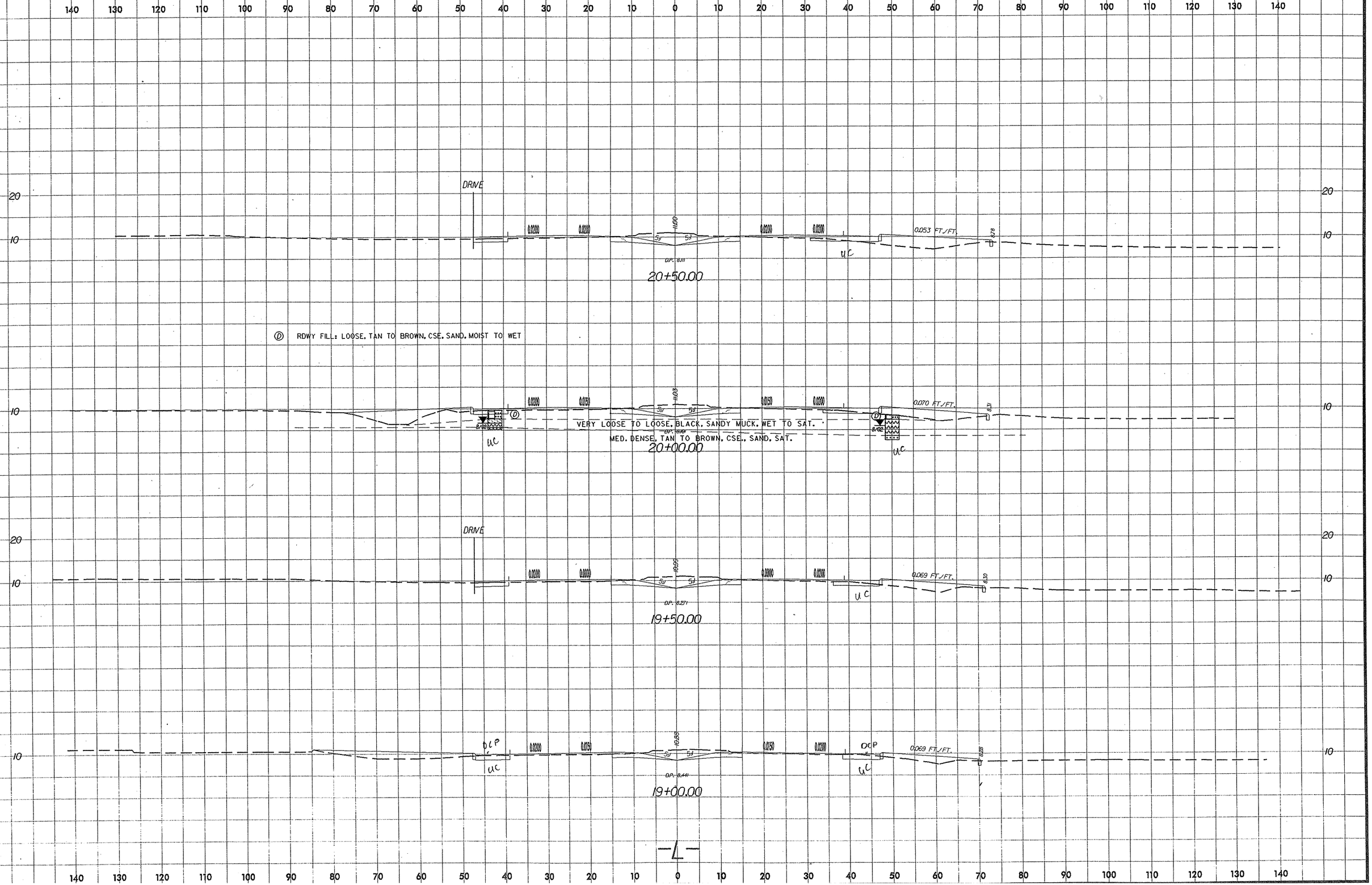


PROJ. REFERENCE NO.	SHEET NO.
R-3403A	28



INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PROJ. REFERENCE NO.
R-3403A
SHEET NO.
29
Rev 3/6/01
DRIVE
0.0200
0.0150
0.053 FT./FT.
0.070 FT./FT.
0.069 FT./FT.
20+50.00
20+00.00
19+50.00
19+00.00
RDWY FILL: LOOSE, TAN TO BROWN, CSE, SAND, MOIST TO WET
VERY LOOSE TO LOOSE, BLACK, SANDY MUCK, WET TO SAT.
MED. DENSE, TAN TO BROWN, CSE., SAND, SAT.
-L-

PROJ. REFERENCE NO.	SHEET NO.
R-3403A	30

0 10

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

Ⓓ RDWY FILL: LOOSE, TAN TO BROWN, CSE. SAND, MOIST TO WET

10 — 0.084 FT./FT. — 8.39 — 0.0200 — 0.0200 — 5:1 — 16.44 — 5:1 — 0.0200 — 0.0200 — 0.085 FT./FT. — 8.20 — 10

8.02 — LOOSE, BLACK, SANDY MUCK, WET TO SAT — LOOSE, SANDY TOPSOIL — 8.00

O.P. 9.445 — MED. DENSE, TAN TO BROWN, CSE., SAND, SAT.

22+50.00

10 — 0.066 FT./FT. — 8.75 — 0.0200 — 0.0200 — 5:1 — 16.49 — 5:1 — 0.0200 — 0.0200 — 0.079 FT./FT. — 8.37 — 10

O.P. 9.374

22+00.00

VANE SHEAR TESTS

STATION	DEPTH	S (PSF)
22+50 42ft LT	2.5ft	418
22+50 42ft LT	3.5ft	710
22+50 42ft LT	4.0ft	1,670

10 — 0.068 FT./FT. — 8.63 — 0.0200 — 0.0200 — 5:1 — 16.54 — 5:1 — 0.0200 — 0.0200 — 0.078 FT./FT. — 8.27 — 10

O.P. 9.295

21+50.00

10 — 0.069 FT./FT. — 8.49 — 0.0200 — 0.0200 — 5:1 — 16.94 — 5:1 — 0.0200 — 0.0200 — 0.070 FT./FT. — 8.42 — 10

O.P. 9.207

21+00.00

—L—

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

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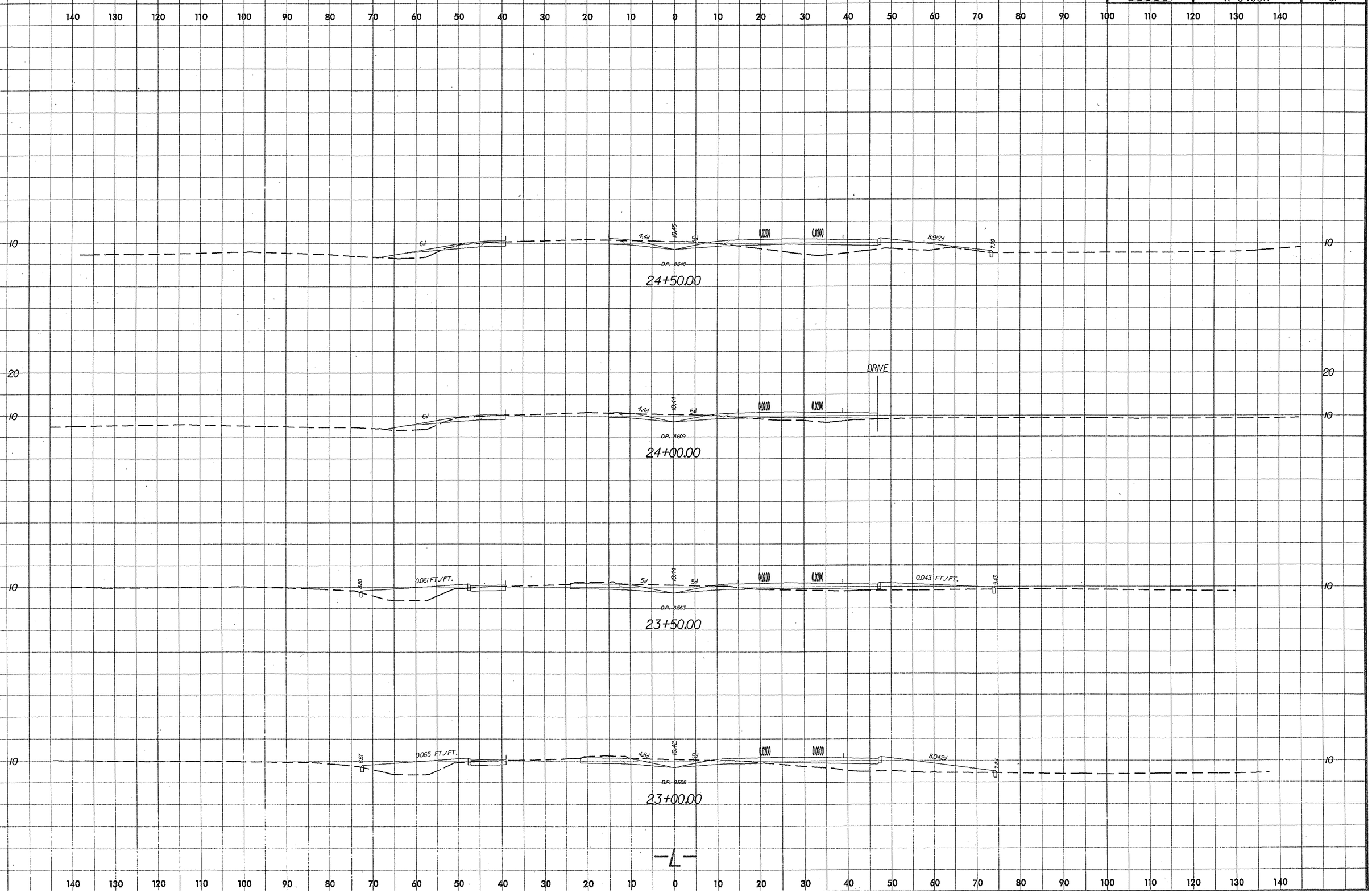
PROJ. REFERENCE NO.	SHEET NO.
R-3403A	31

0 10



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PROJ. REFERENCE NO. R-3403A | SHEET NO. 32

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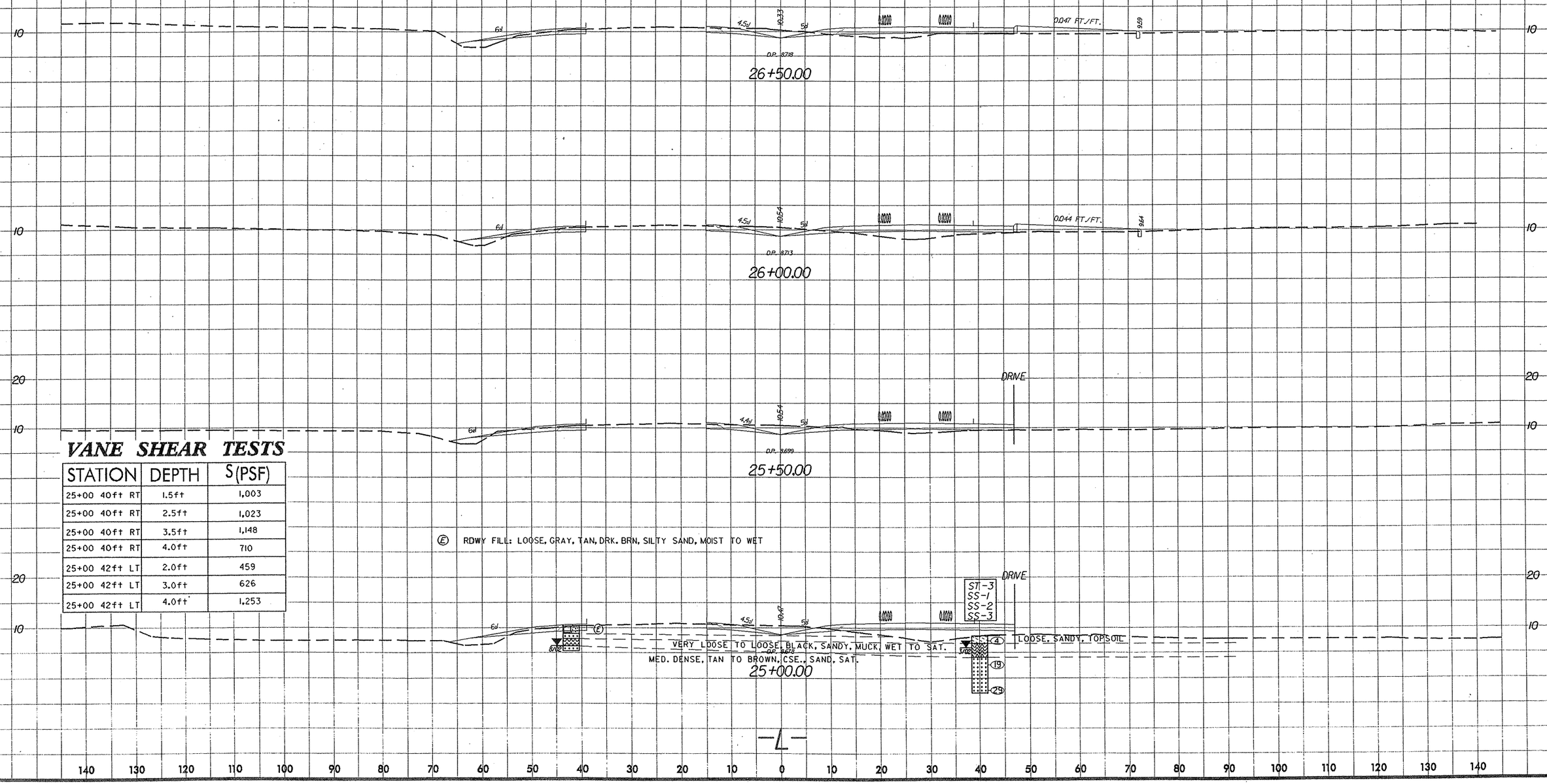
SOIL TEST RESULTS

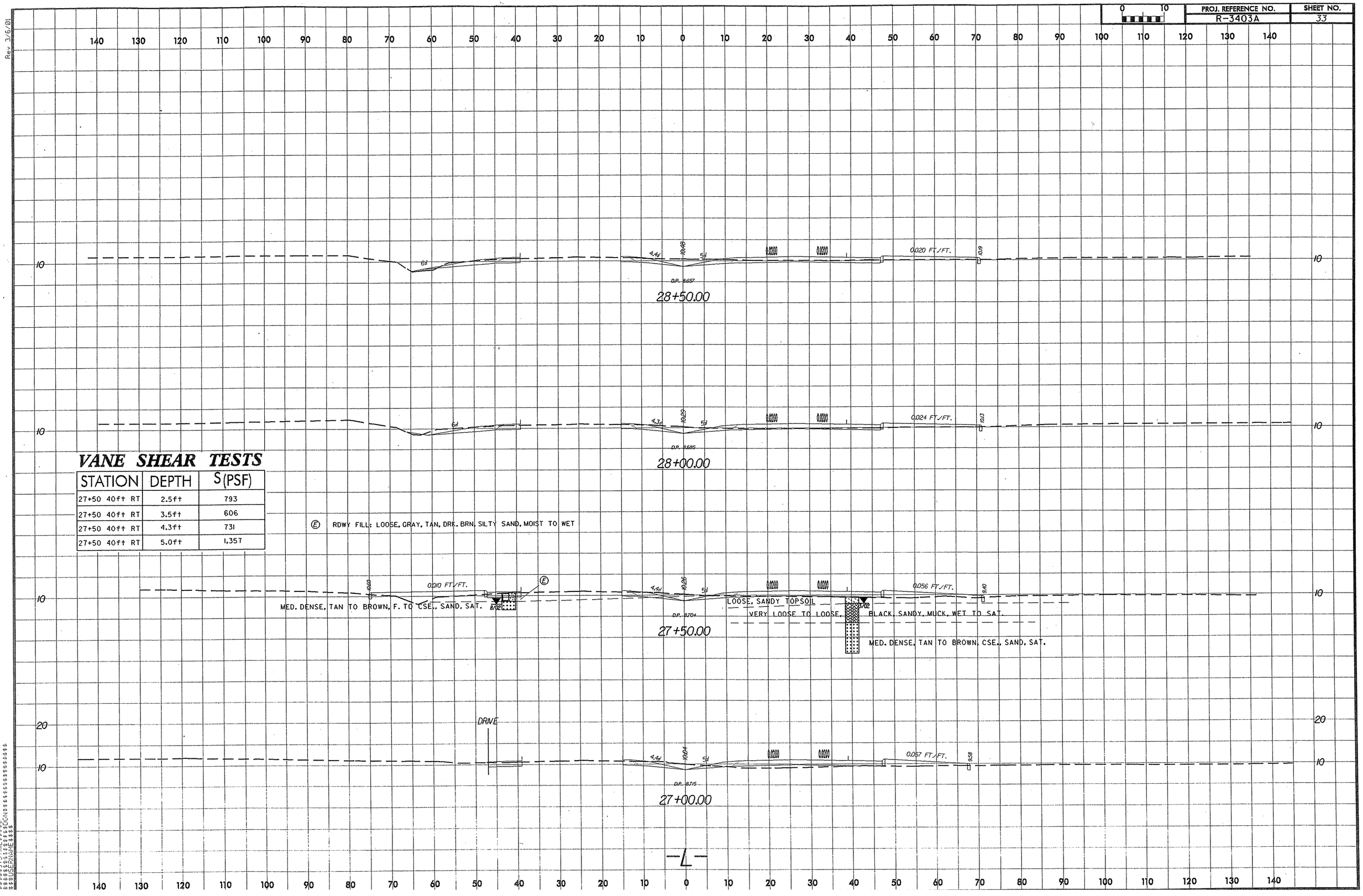
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-1	40' RT	25+00	1.50 - 4.30	A-2-5(0)	79	NP	48.2	23.2	22.5	6.1	100	77	29	-	50.0
SS-2	40' RT	25+00	4.30 - 9.00	A-3(0)	17	NP	59.6	37.9	1.4	1.0	100	85	4	-	-
SS-3	40' RT	25+00	9.00 - 11.30	A-3(0)	16	NP	45.4	49.7	2.8	2.0	100	87	8	-	-



VANE SHEAR TESTS

STATION	DEPTH	S(PSF)
25+00 40ft RT	1.5ft	1,003
25+00 40ft RT	2.5ft	1,023
25+00 40ft RT	3.5ft	1,148
25+00 40ft RT	4.0ft	710
25+00 42ft LT	2.0ft	459
25+00 42ft LT	3.0ft	626
25+00 42ft LT	4.0ft	1,253

Rev 3/6/01

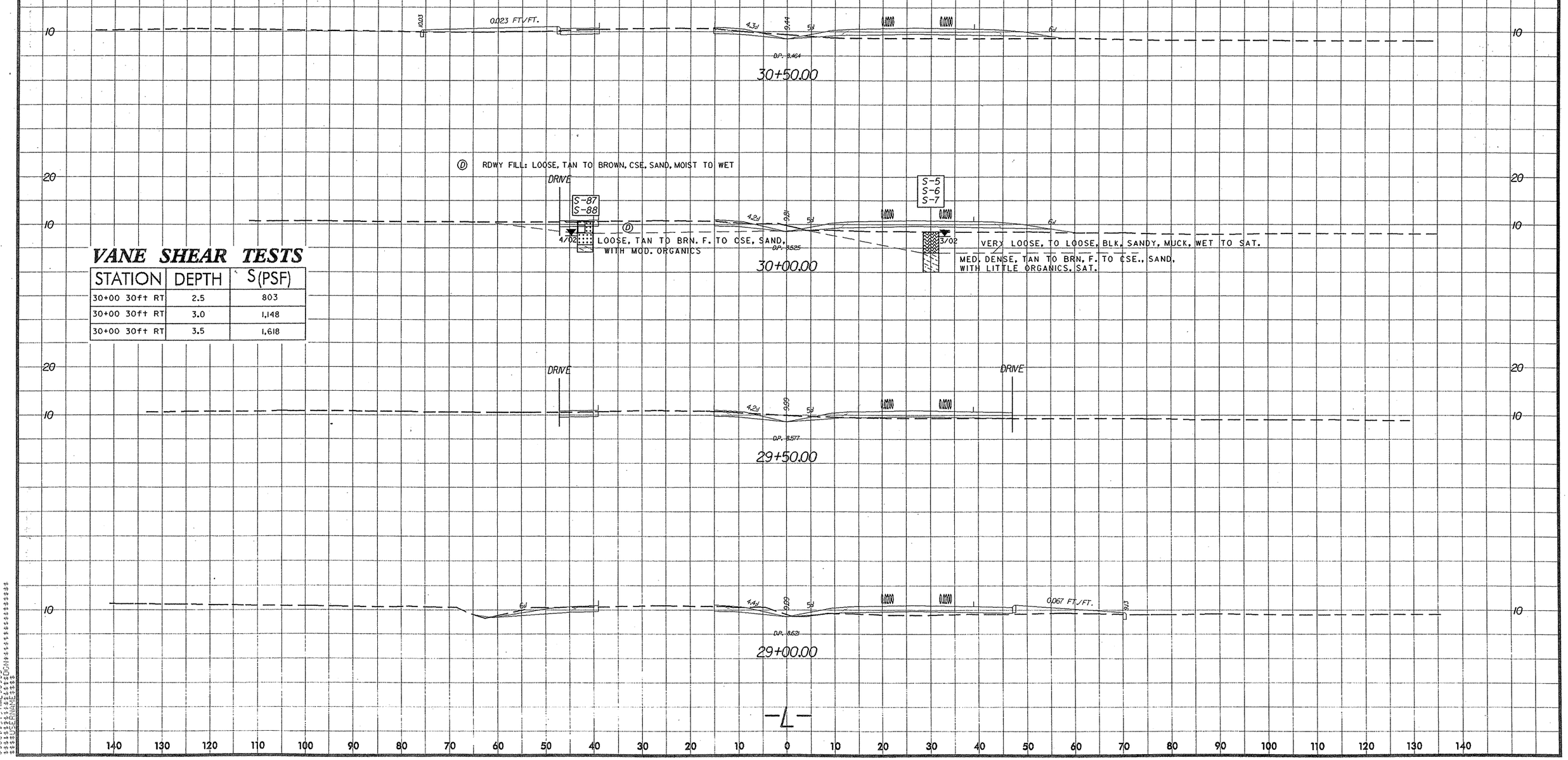


VANE SHEAR TESTS

STATION	DEPTH	S(PSF)
27+50 40ft RT	2.5ft	793
27+50 40ft RT	3.5ft	606
27+50 40ft RT	4.3ft	731
27+50 40ft RT	5.0ft	1,357

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-5	30' RT	30+00	0.00 - 1.30	A-2-4(0)	40	NP	55.8	21.4	14.7	8.1	100	82	23	-	17.1
S-6	30' RT	30+00	1.30 - 4.50	A-2-5(0)	112	NP	50.1	18.0	25.9	6.1	100	70	32	-	56.4
S-7	30' RT	30+00	4.50 - 8.50	A-3(0)	22	NP	66.2	27.0	3.7	3.0	100	78	7	-	3.3
S-87	42' LT	30+00	0.00 - 2.50	A-3(0)	17	NP	65.9	30.9	1.2	2.0	100	77	4	-	-
S-88	42' LT	30+00	5.00 - 6.50	A-3(0)	28	NP	64.0	28.8	3.2	4.0	100	87	8	-	5.3



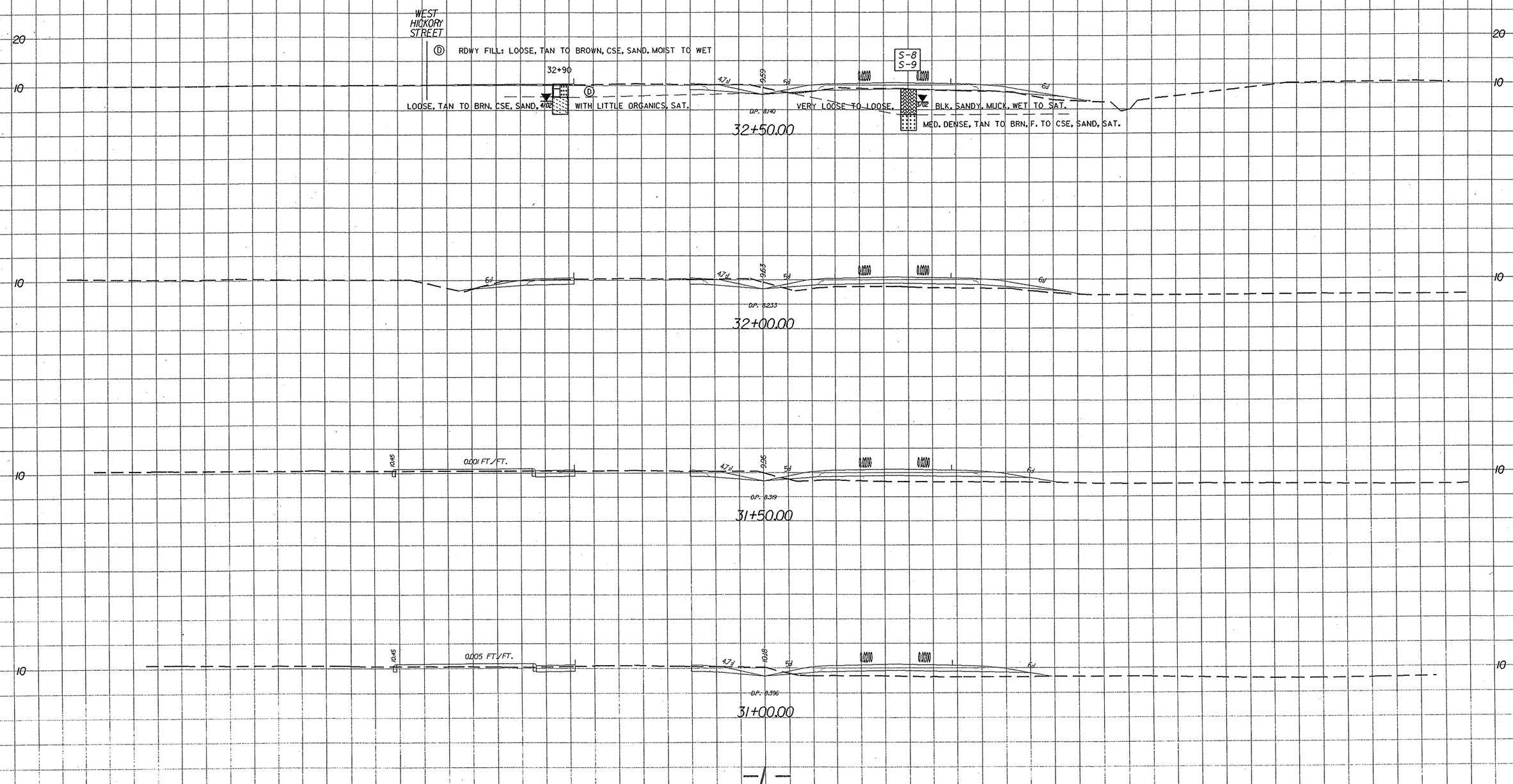
VANE SHEAR TESTS

STATION	DEPTH	S(PSF)
30+00 30ft RT	2.5	803
30+00 30ft RT	3.0	1,148
30+00 30ft RT	3.5	1,618

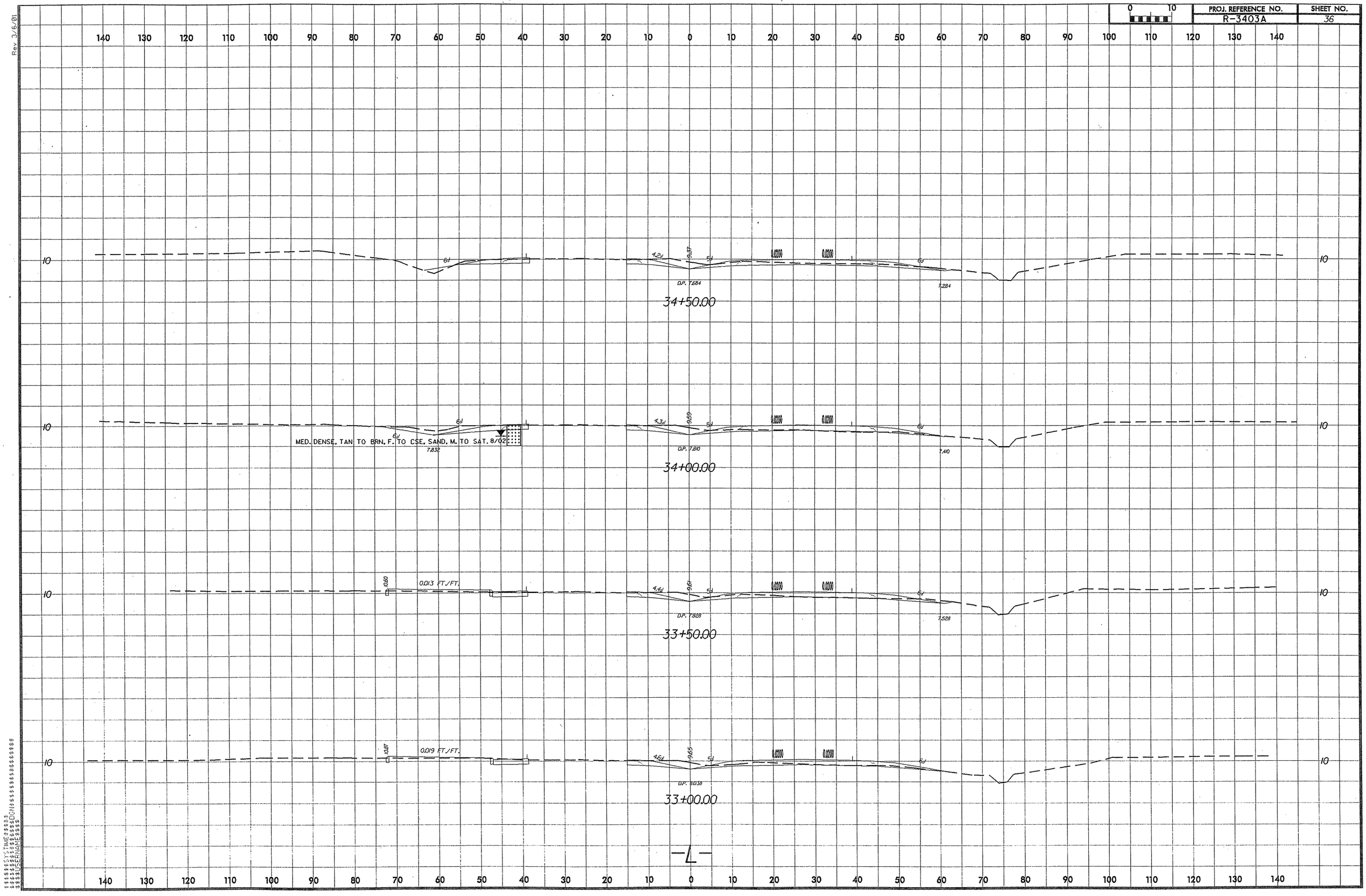
Rev 3/6/01

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-8	30' RT	32+50	2.10 - 3.50	A-2-5(0)	115	NP	67.4	14.3	14.2	4.0	100	56	19	-	46.5
S-9	30' RT	32+50	3.50 - 5.20	A-5(0)	100	NP	31.5	27.6	24.7	16.1	100	91	41	-	26.5



PROJ. REFERENCE NO.	SHEET NO.
R-3403A	36



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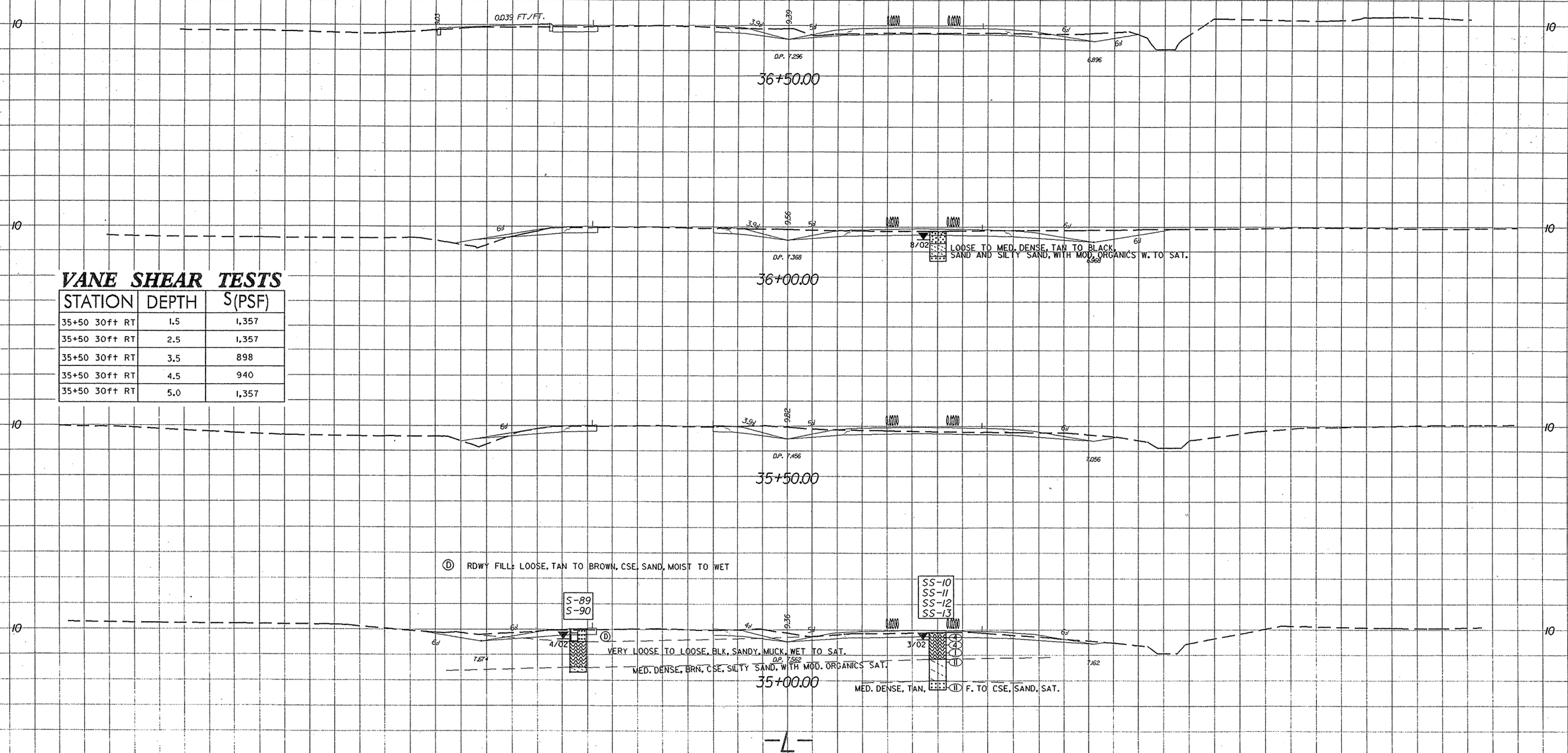
SOIL TEST RESULTS

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-89	42 ' LT	35+00	2.50 - 6.00	A-2-4(0)	38	NP	53.1	28.8	10.1	8.0	100	86	19	-	10.6
S-90	42 ' LT	35+00	6.00 - 7.50	A-2-4(0)	38	NP	40.4	37.0	12.5	10.1	100	91	24	-	10.4
SS-10	30' RT	35+00	0.00 - 3.00	A-2-5(0)	42	NP	57.7	29.3	9.0	4.0	100	78	14	-	23.2
SS-11	30' RT	35+00	3.00 - 5.30	A-2-5(0)	68	NP	36.7	28.3	31.0	4.0	100	89	35	-	35.2
SS-12	30' RT	35+00	5.30 - 9.50	A-2-4(0)	31	NP	17.8	70.4	5.8	6.1	100	98	14	-	6.9
SS-13	30' RT	35+00	9.50 - 11.30	A-3(0)	20	NP	40.8	55.0	3.2	1.0	100	86	7	-	-



VANE SHEAR TESTS

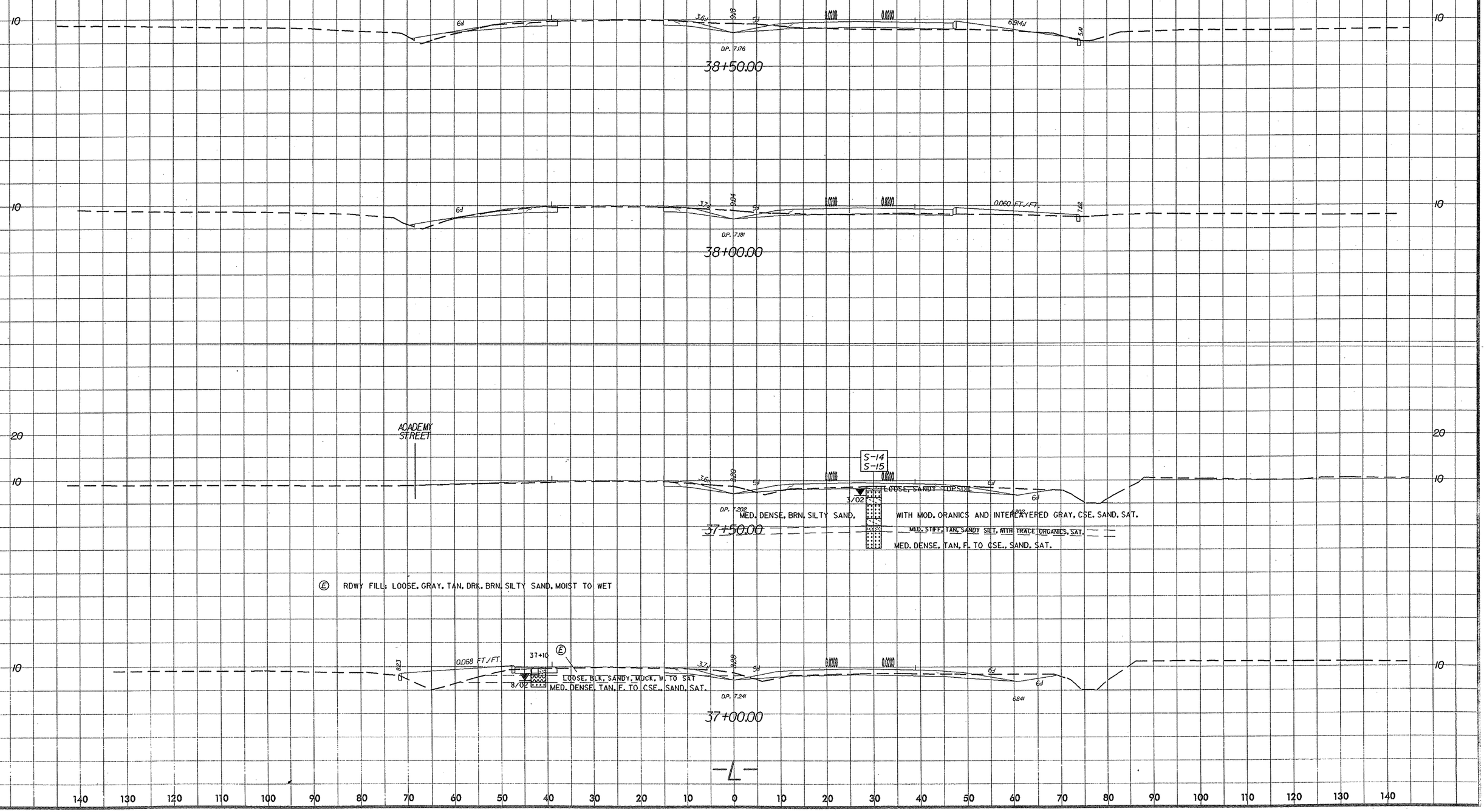
STATION	DEPTH	S(PSF)
35+50 30ft RT	1.5	1,357
35+50 30ft RT	2.5	1,357
35+50 30ft RT	3.5	898
35+50 30ft RT	4.5	940
35+50 30ft RT	5.0	1,357

USERNAME=SDOI18 SYS TIME=18:33

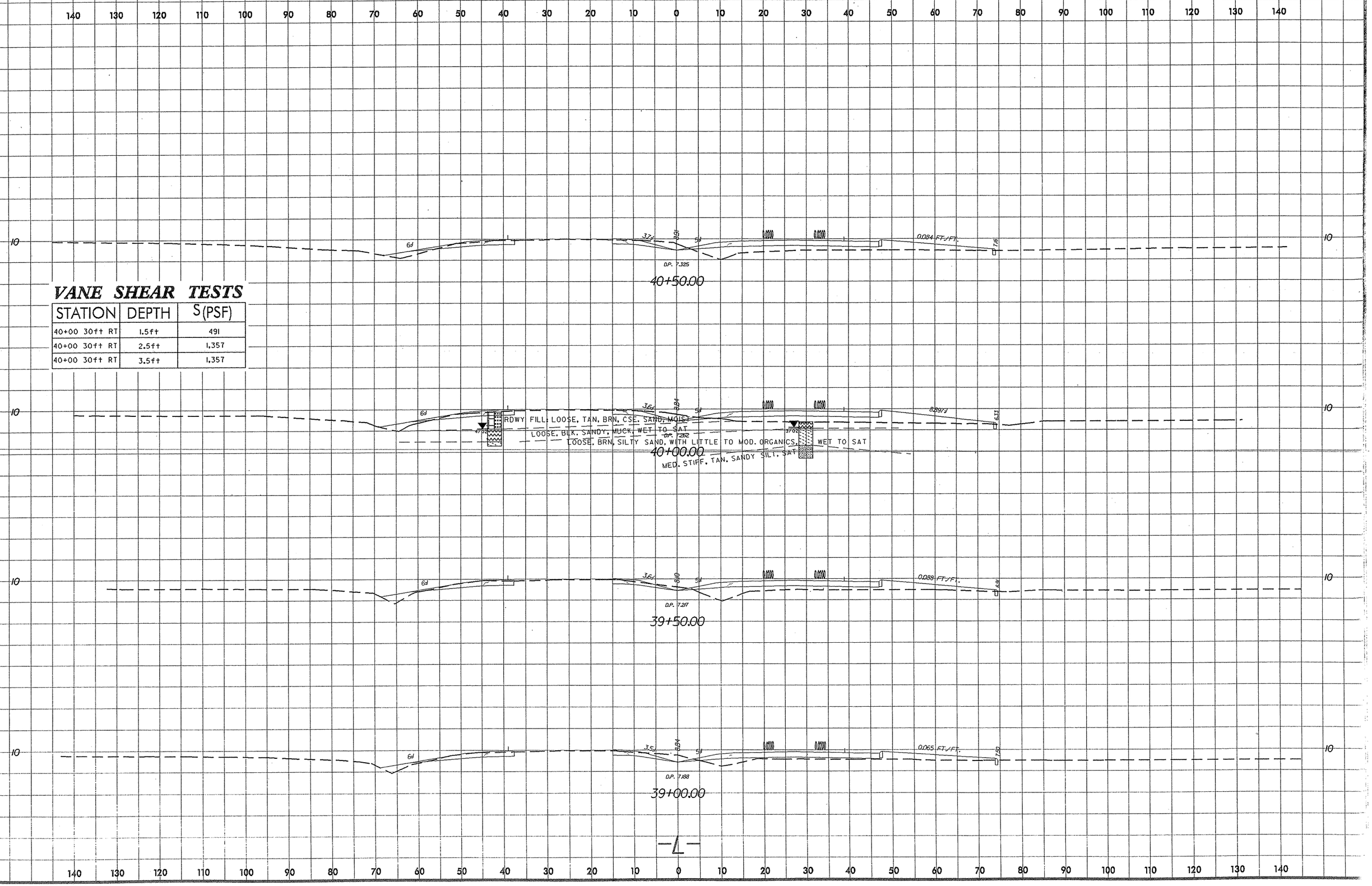
Rev 3/6/01

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-14	30' RT	37+50	2.50 - 4.00	A-2-4(0)	28	NP	57.6	29.3	7.1	6.1	100	84	14	-	7.0
S-15	30' RT	37+50	8.60 - 9.90	A-4(0)	24	NP	13.2	59.5	17.2	10.1	100	96	36	-	-



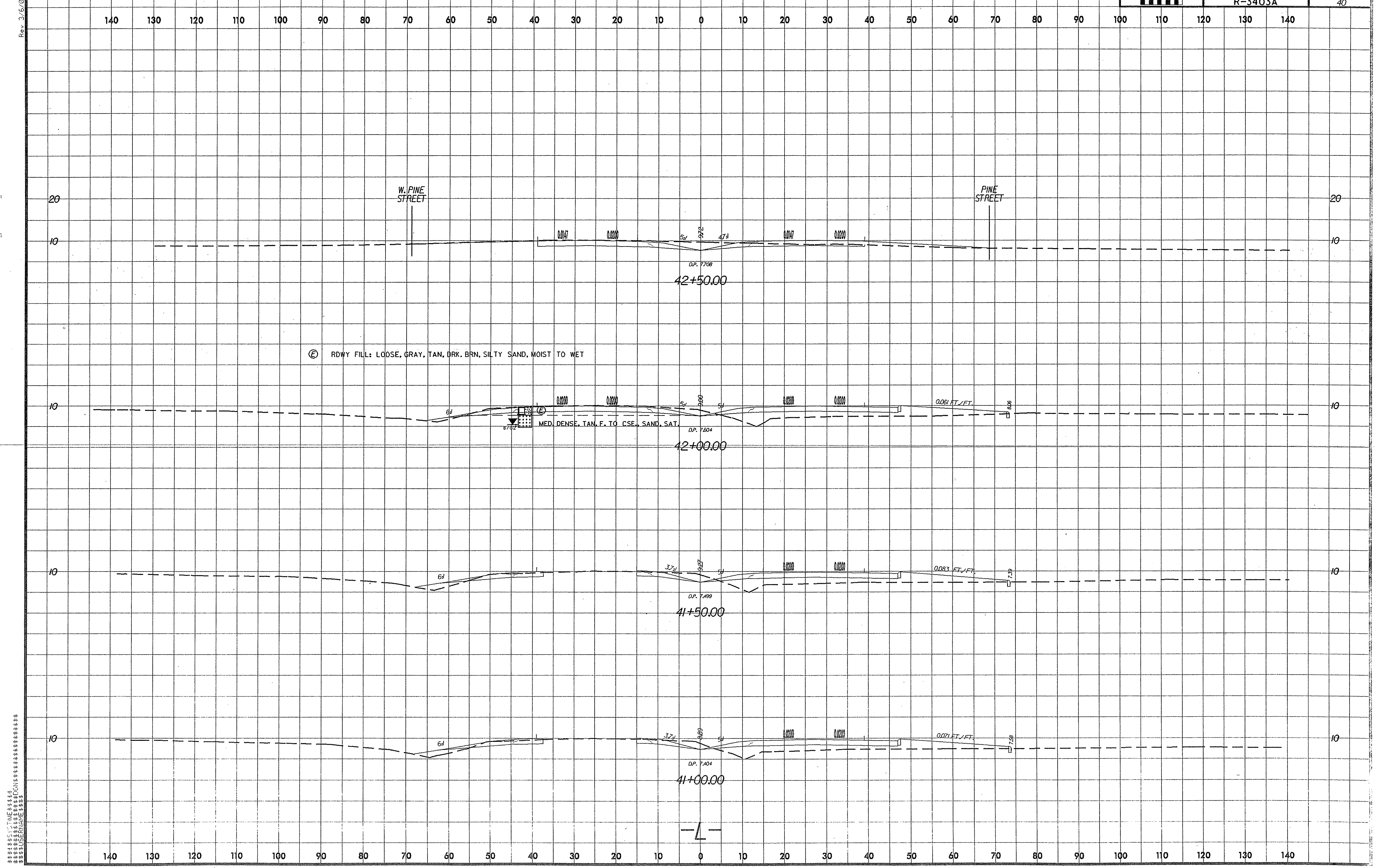
PROJ. REFERENCE NO. R-3403A
SHEET NO. 39



VANE SHEAR TESTS

STATION	DEPTH	S(PSF)
40+00 30ft RT	1.5ft	491
40+00 30ft RT	2.5ft	1,357
40+00 30ft RT	3.5ft	1,357

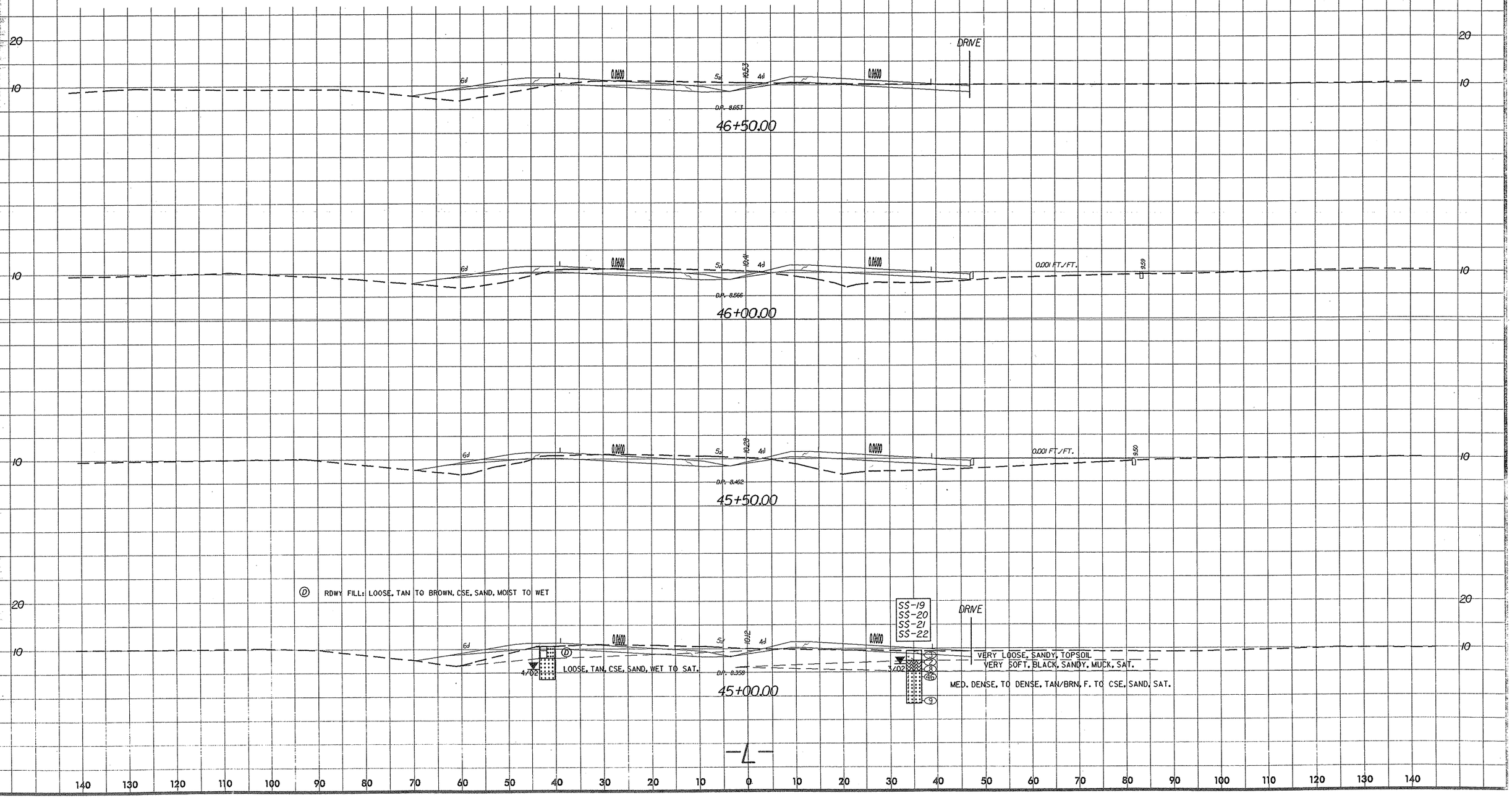
PROJ. REFERENCE NO.	SHEET NO.
R-3403A	40



Rev 3/6/01

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-19	35' RT	45+00	0.00 - 2.10	A-2-4(0)	30	NP	47.4	35.1	11.4	6.1	96	80	18	-	8.3
SS-20	35' RT	45+00	2.10 - 4.40	A-2-5(0)	49	NP	31.3	44.8	17.9	6.1	100	94	25	-	23.5
SS-21	35' RT	45+00	4.40 - 8.50	A-3(0)	23	NP	32.7	61.6	4.7	1.0	100	97	8	-	2.3
S-22	35' RT	45+00	8.50 - 11.10	A-3(0)	20	NP	56.8	40.9	2.3	0.0	100	83	3	-	-



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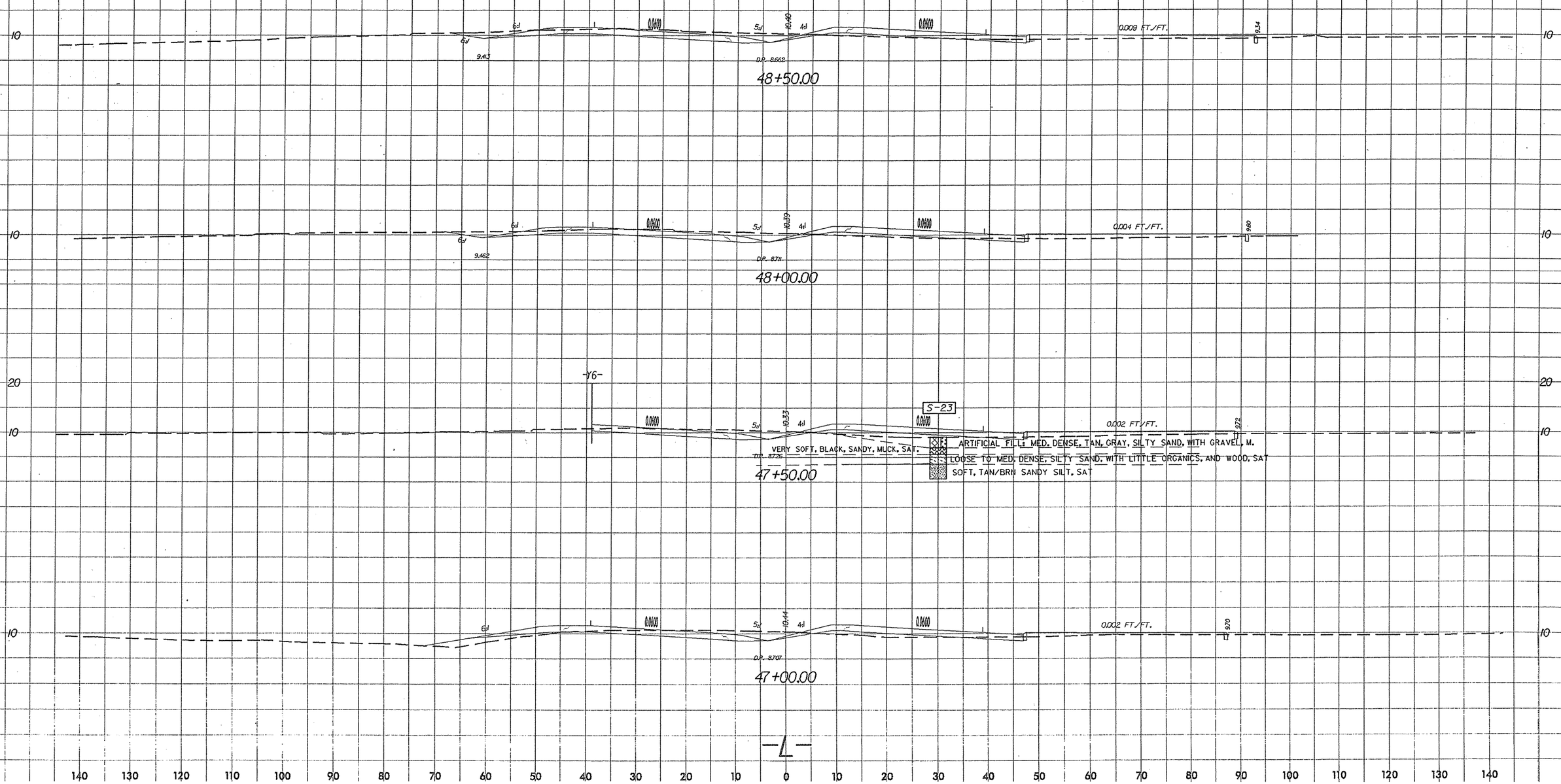
PROJ. REFERENCE NO.	SHEET NO.
R-3403A	43

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
S-23	30' RT	47+50	3.50 - 5.50	A-2-4(0)	27	NP	41.3	46.1	7.6	5.0	99	87	14	-	6.5



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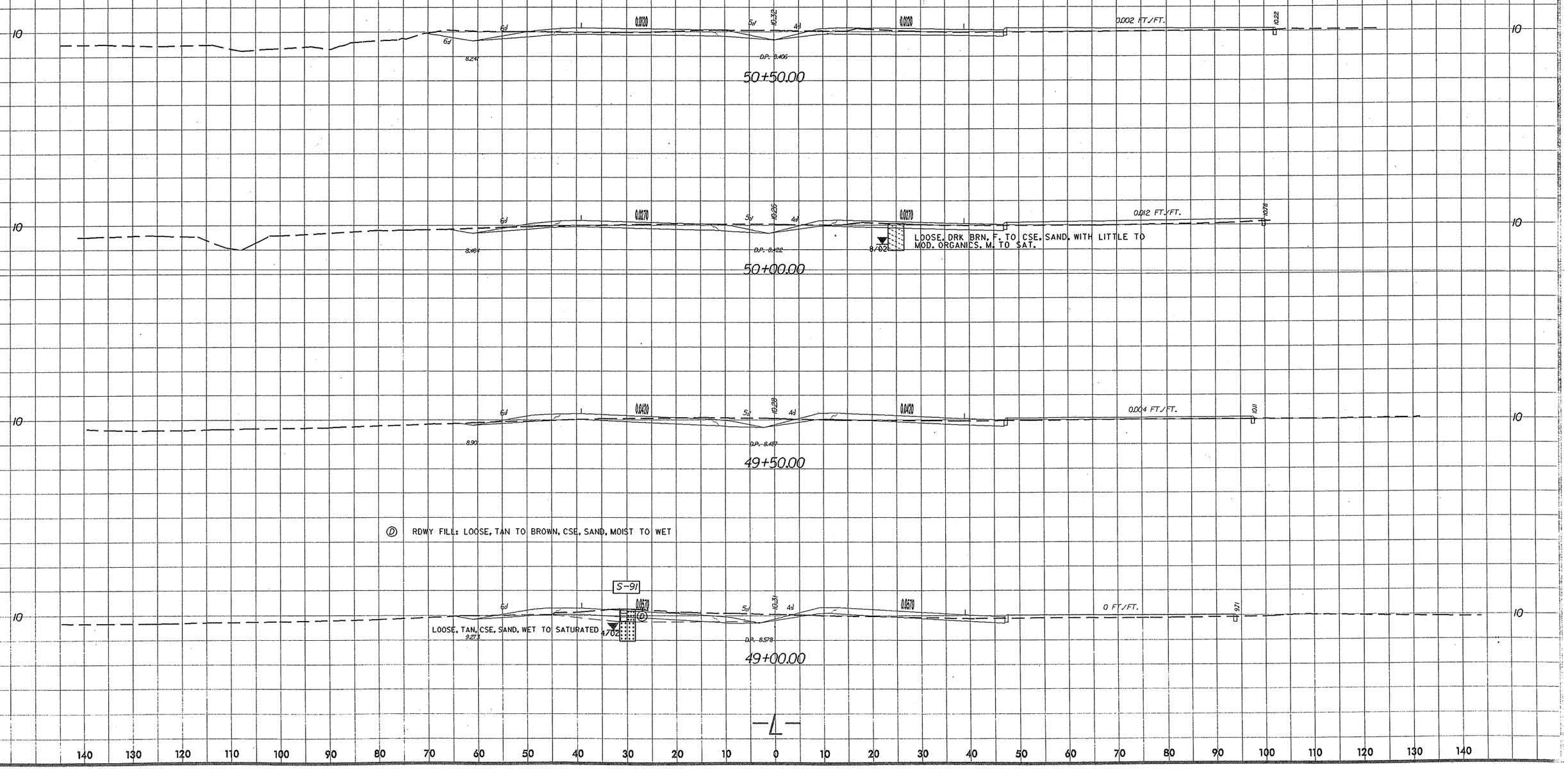
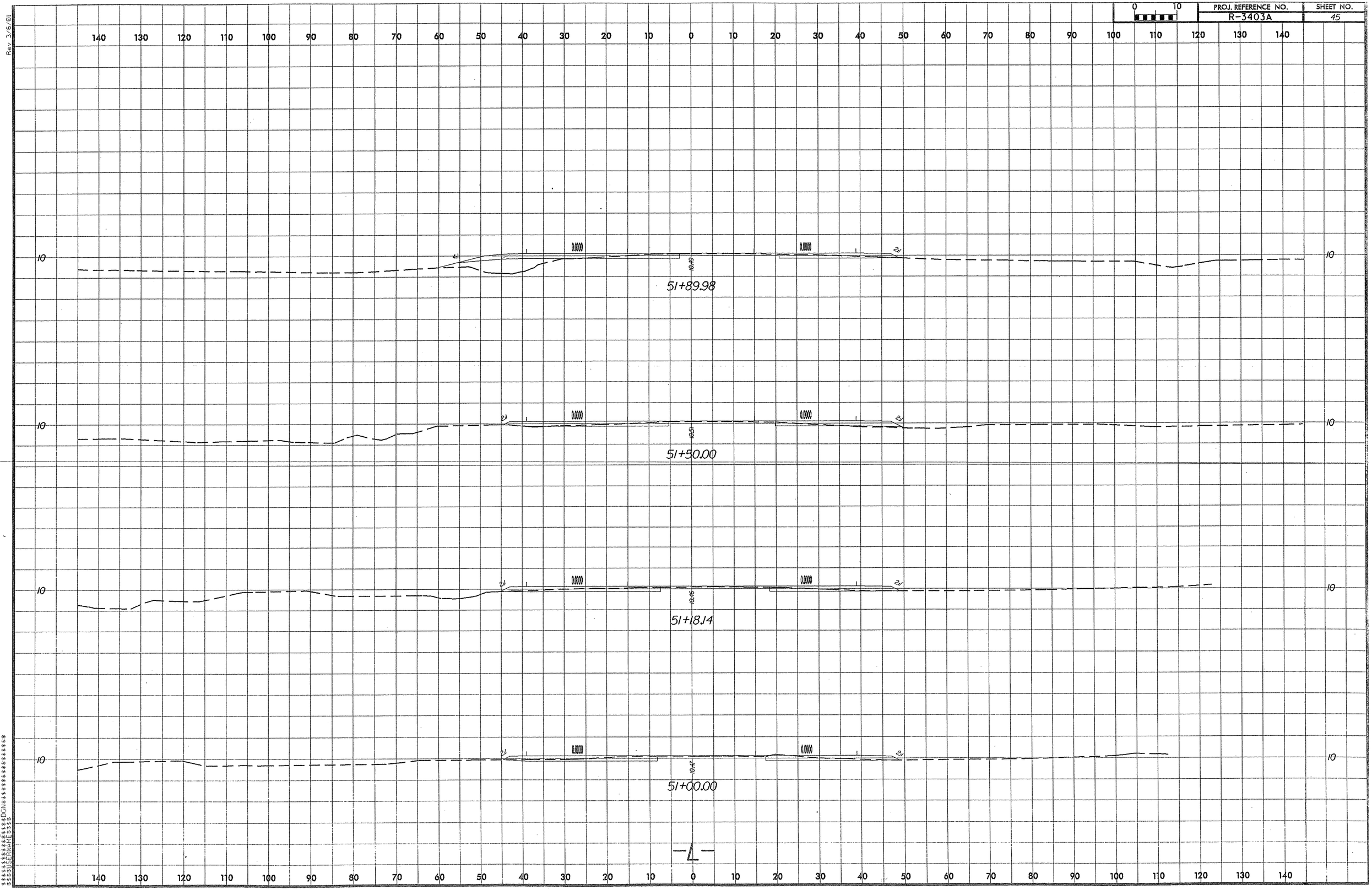
SOIL TEST RESULTS

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-91	30' LT	49+00	2.50 - 6.50	A-3(0)	16	NP	53.4	45.4	0.2	1.0	100	90	2	-	-





PROJ. REFERENCE NO.
R-3403A
SHEET NO.
45
0 10
140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
10
0.0000
10.49
51+89.98
10.51
51+50.00
10.46
51+18.14
10.47
51+00.00
-L-

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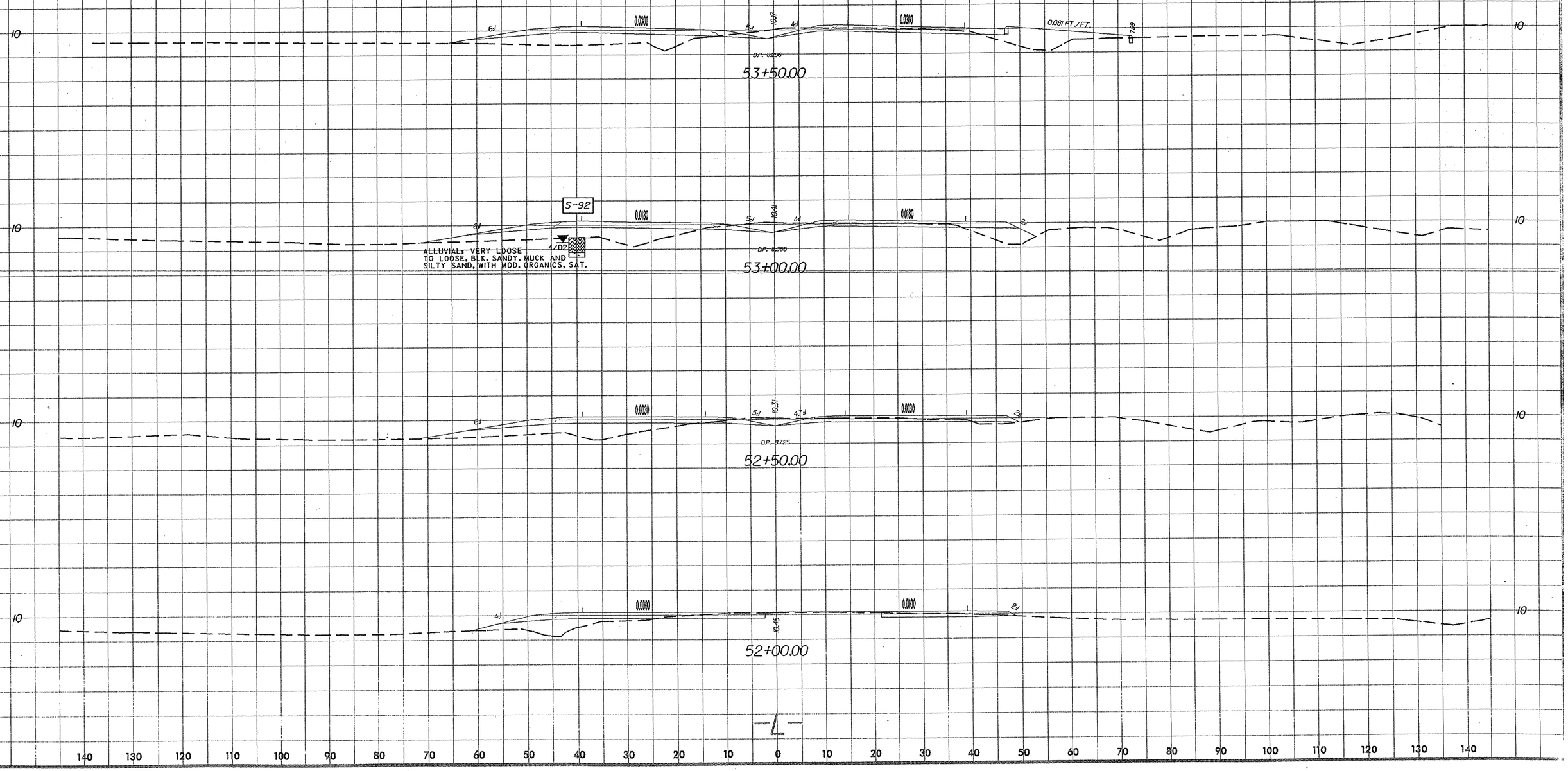
SOIL TEST RESULTS

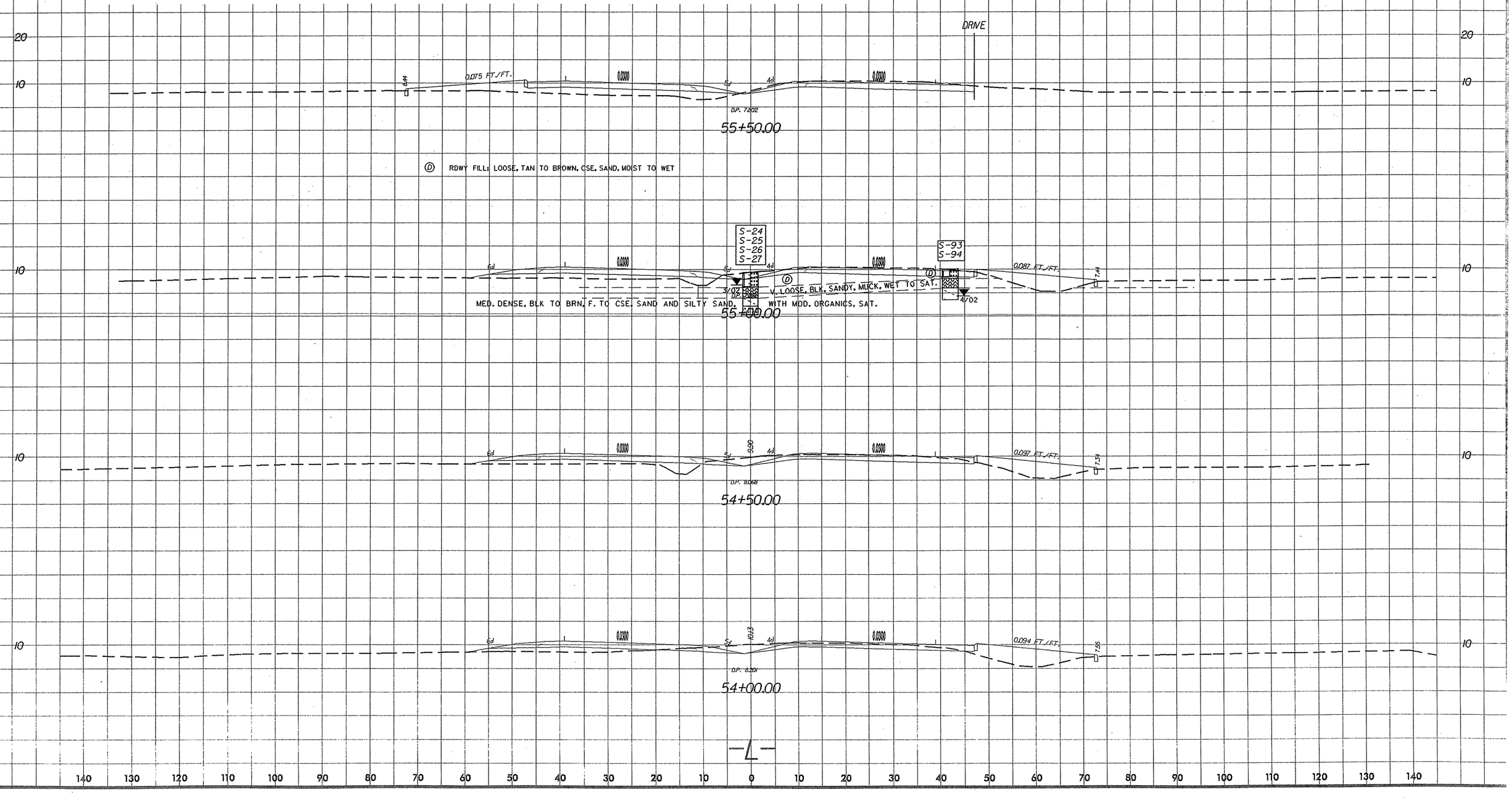
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-92	25' LT	53+00	0.00 - 3.00	A-2-5(0)	46	NP	40.4	37.2	16.3	6.1	100	87	24	-	19.2



Rev 3/6/01

SOIL TEST RESULTS

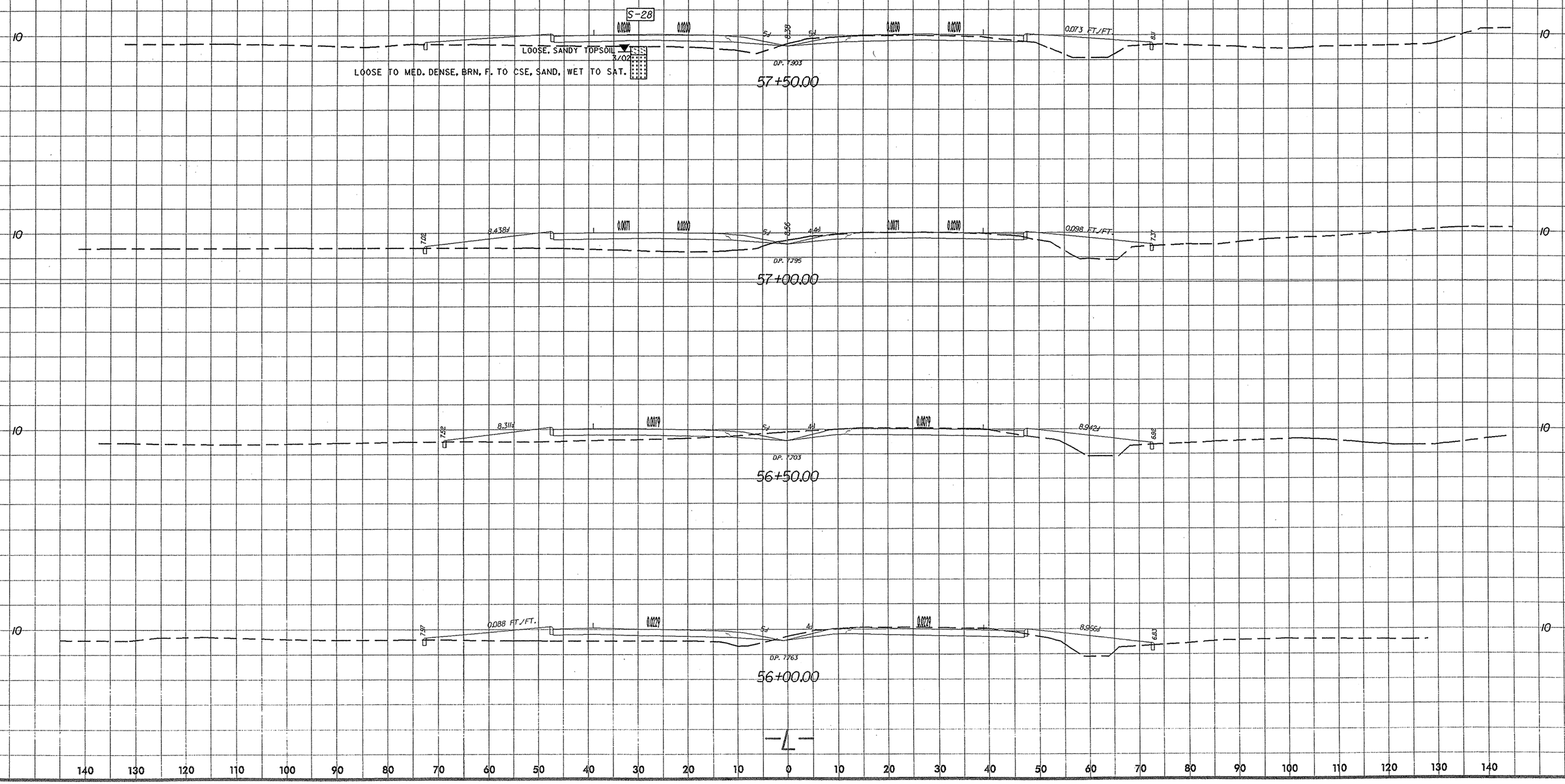
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-24	CL	55+00	0.00 - 3.20	A-2-4(0)	19	NP	36.2	51.5	5.2	7.0	96	87	15	-	3.2
S-25	CL	55+00	3.20 - 5.50	A-2-5(0)	43	NP	42.3	34.6	15.1	8.0	100	87	24	-	17.4
S-26	CL	55+00	5.50 - 7.20	A-2-4(0)	38	NP	45.2	35.7	9.1	10.1	100	87	20	-	7.6
S-27	CL	55+00	7.20 - 9.10	A-3(0)	25	NP	50.0	47.7	0.3	2.0	100	87	3	-	1.7
S-93	42' RT	55+00	2.00 - 4.00	A-2-4(0)	40	NP	37.1	42.5	12.3	8.1	100	92	22	-	12.0
S-94	42' RT	55+00	4.00 - 6.50	A-2-4(0)	24	NP	41.9	44.2	4.9	9.1	100	90	15	-	5.7

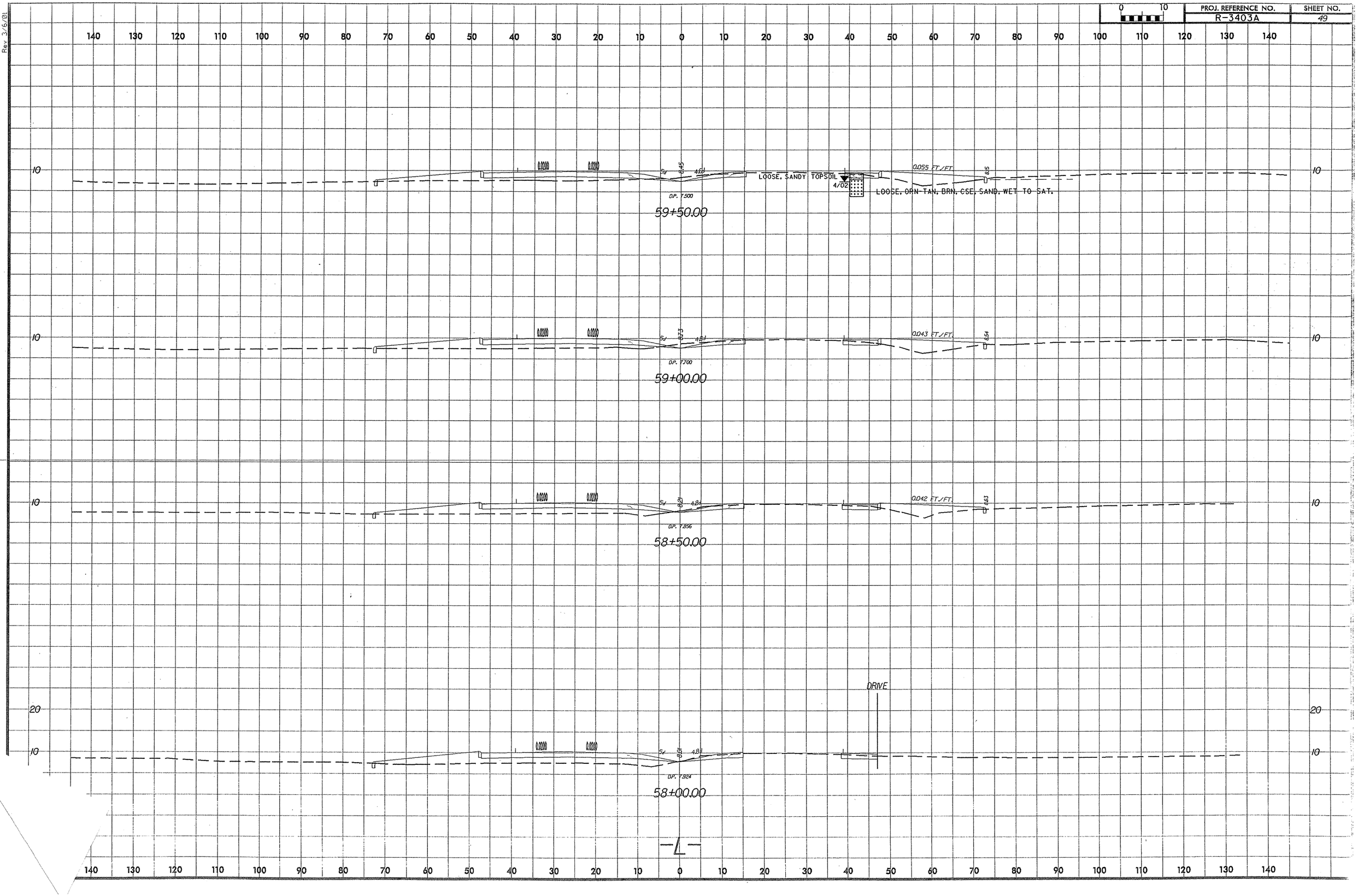


Rev 3/6/01

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-28	30' LT	57+50	1.70 - 6.50	A-3(0)	21	NP	48.1	46.3	1.6	4.0	100	90	6	-	-



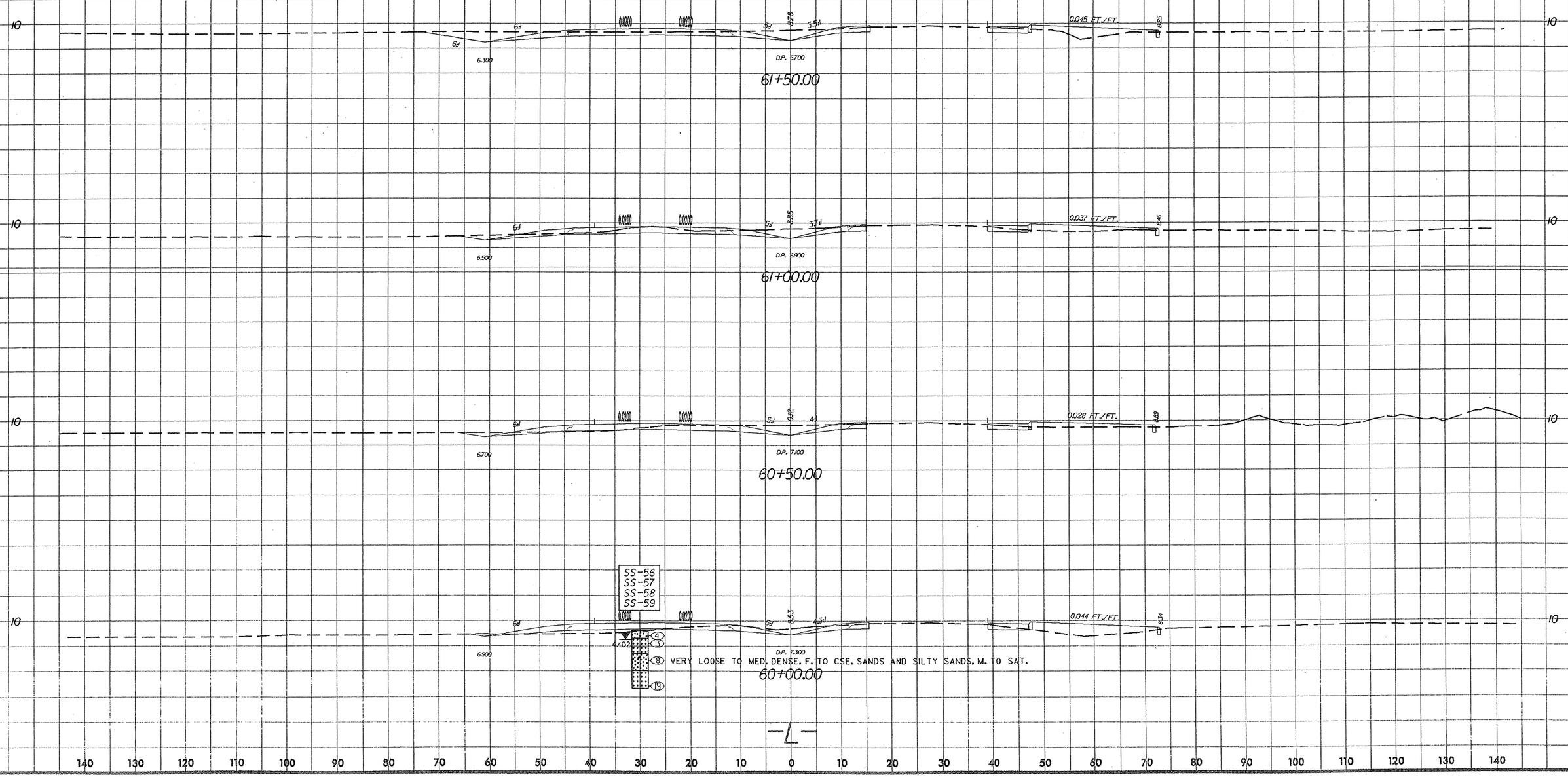

0 10
140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
10
0.0200
0.0200
5:1
8.45
4:1
LOOSE, SANDY TOPSOIL
4/02
LOOSE, ORN-TAN, BRN, CSE, SAND, WET TO SAT.
0.055 FT./FT.
8.45
DP. 7500
59+50.00
0.0200
0.0200
5:1
8.73
4:1
0.043 FT./FT.
8.54
DP. 7700
59+00.00
0.0200
0.0200
5:1
8.21
4:1
0.042 FT./FT.
8.63
DP. 7856
58+50.00
20
DRIVE
0.0200
0.0200
5:1
8.04
4:1
DP. 7924
58+00.00
-L-

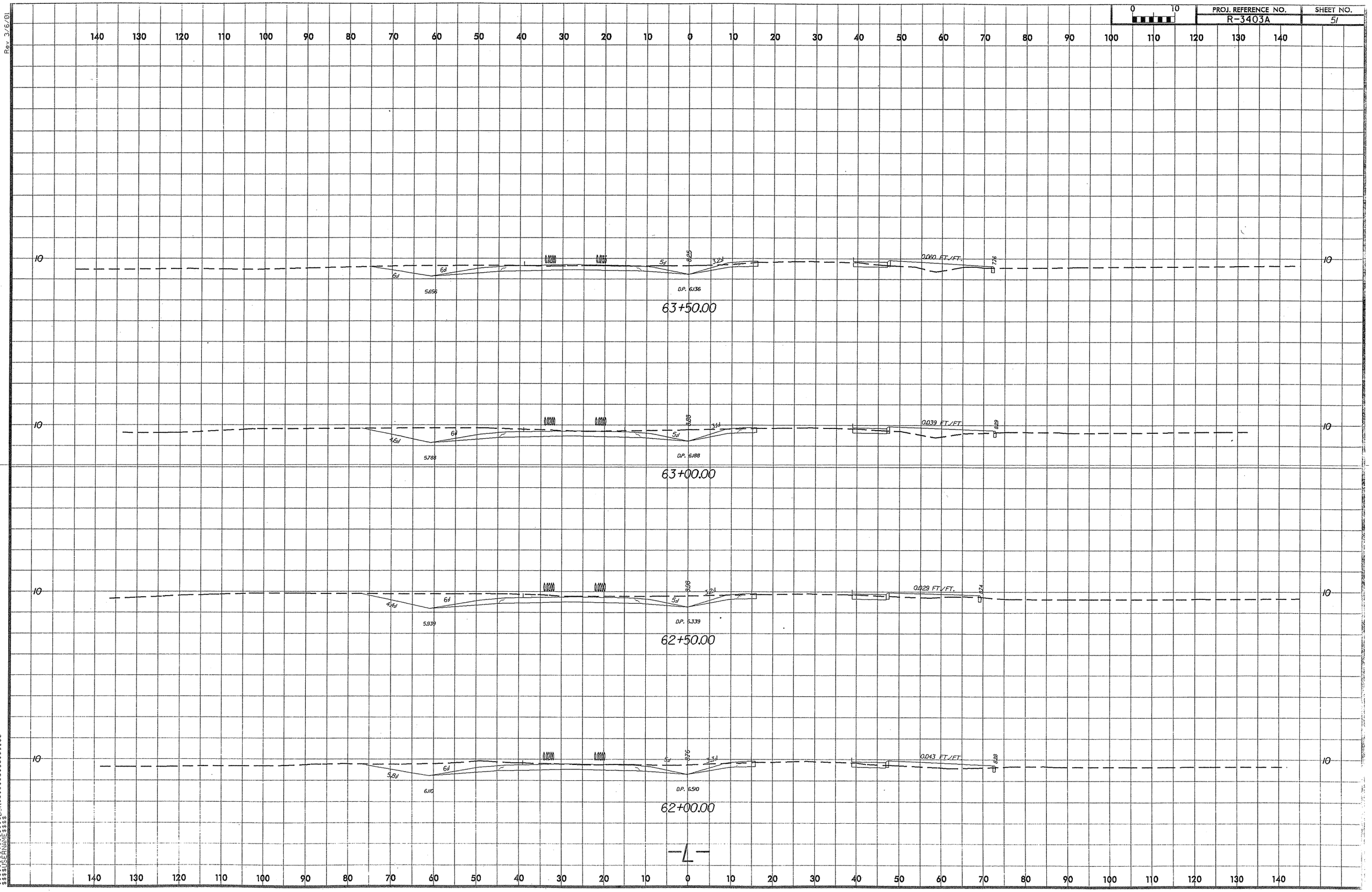
Rev 3/6/01

PROJ. REFERENCE NO. R-3403A
SHEET NO. 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-56	30' LT	60+00	0.00 - 1.50	A-2-4(0)	21	NP	48.5	40.0	5.4	6.0	95	80	12	-	-
SS-57	30' LT	60+00	1.50 - 3.00	A-3(0)	28	NP	46.1	45.3	3.6	5.0	100	90	9	-	-
SS-58	30' LT	60+00	4.50 - 8.00	A-2-4(0)	20	NP	11.2	77.1	6.7	5.0	100	99	16	-	-
SS-59	30' LT	60+00	8.00 - 11.40	A-3(0)	23	NP	59.5	38.5	1.0	1.0	100	77	3	-	-

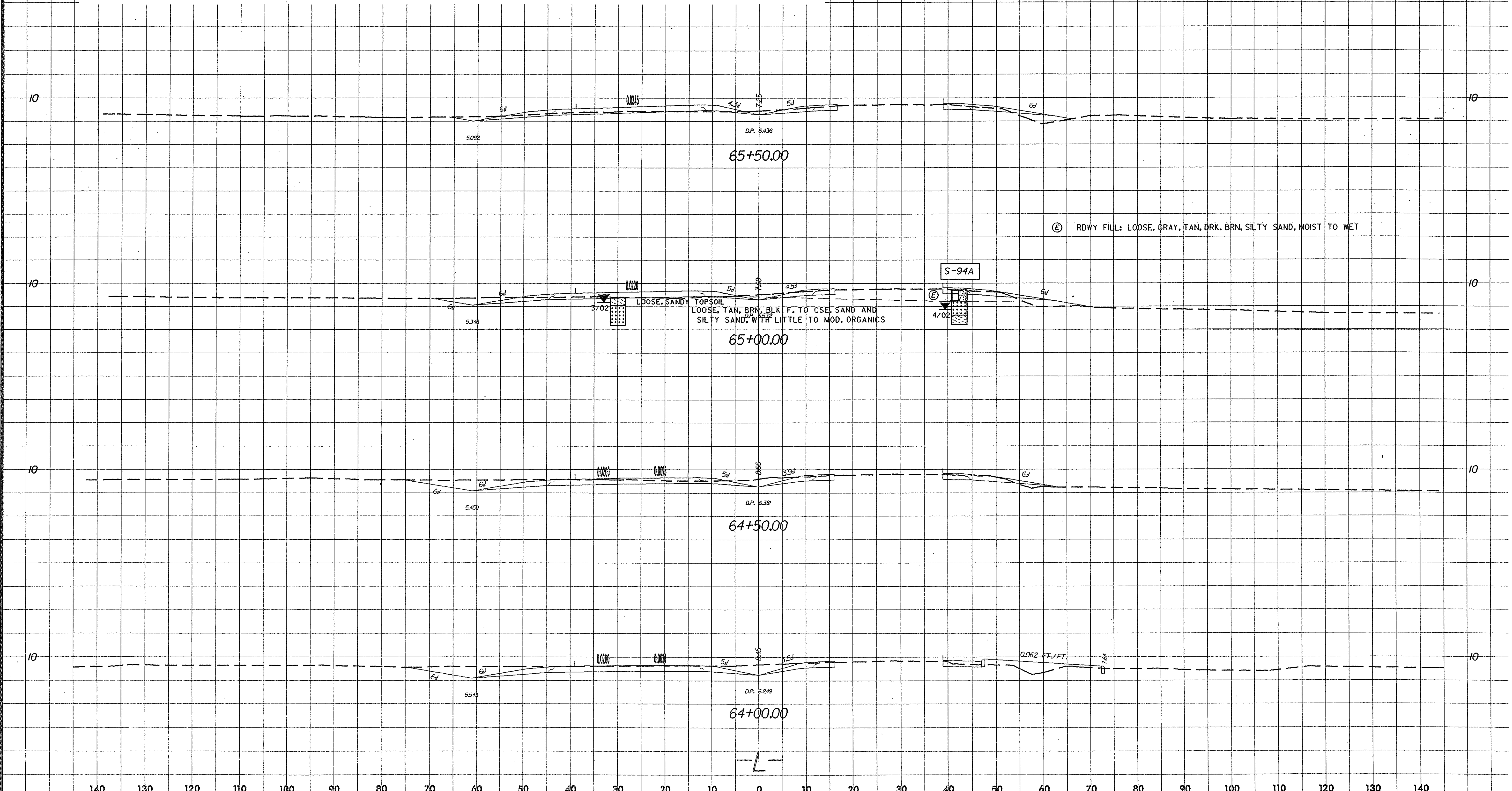




PROJ. REFERENCE NO.
R-3403A
SHEET NO.
51
Rev 3/6/01
0.0200
0.0155
0.060 FT./FT.
5.656
D.P. 6.136
63+50.00
0.0200
0.0200
0.039 FT./FT.
5.788
D.P. 6.188
63+00.00
0.0200
0.0200
0.029 FT./FT.
5.939
D.P. 6.339
62+50.00
0.0200
0.0200
0.043 FT./FT.
6.110
D.P. 6.510
62+00.00
-L-

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-94A	42' RT	65+00	0.00 - 2.50	A-3(0)	21	NP	44.7	49.4	1.8	4.0	100	92	8	-	1.7

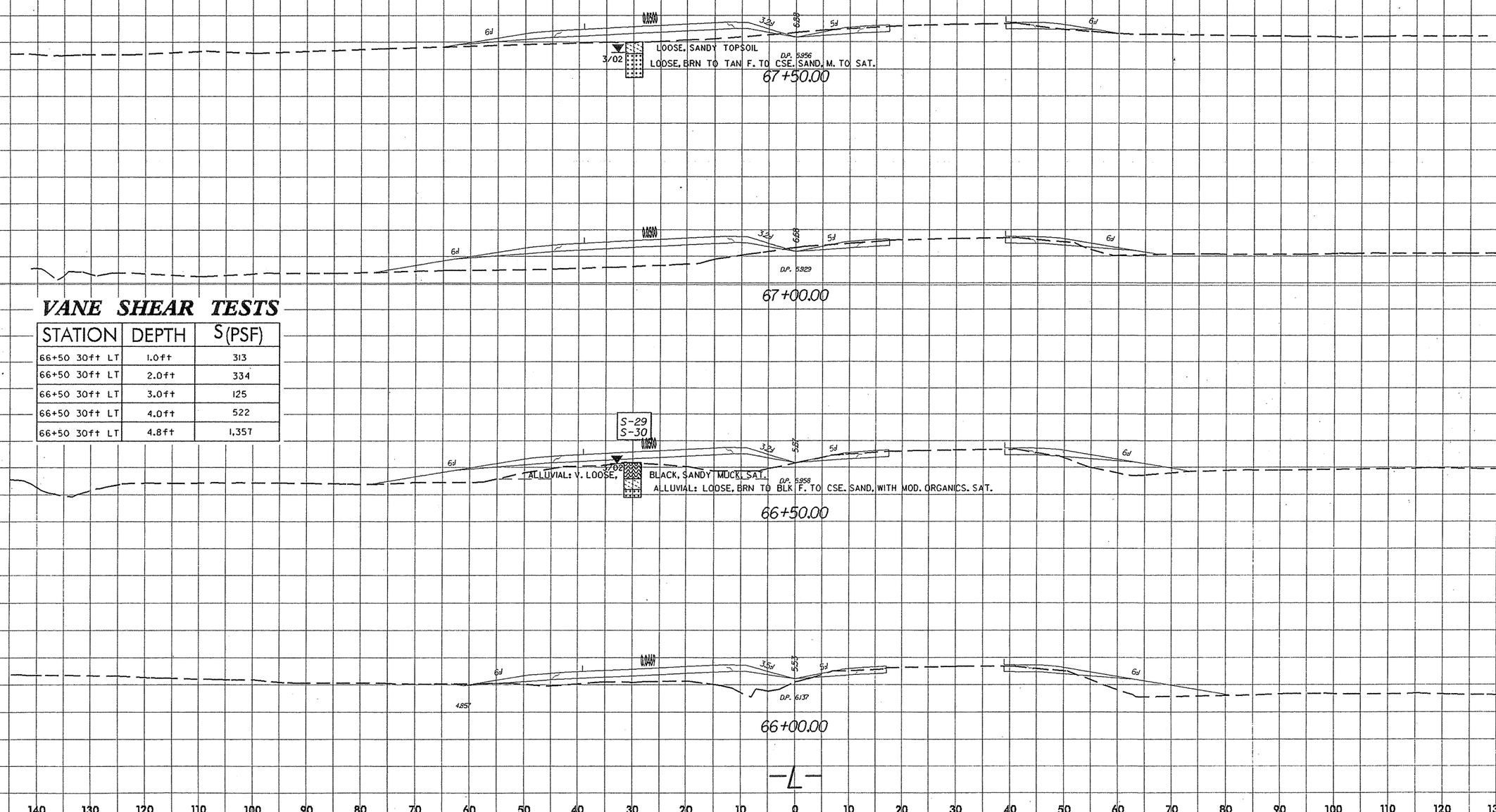


SOIL TEST RESULTS

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	% ORGANIC
S-29	30' LT	66+50	0.00 - 3.10	A-2-5(0)	70	NP	52.3	24.7	18.9	4.0	100	72	24	-	39.4
S-30	30' LT	66+50	3.10 - 6.50	A-3(0)	30	NP	67.5	26.2	4.3	2.0	100	73	7	-	5.6

VANE SHEAR TESTS

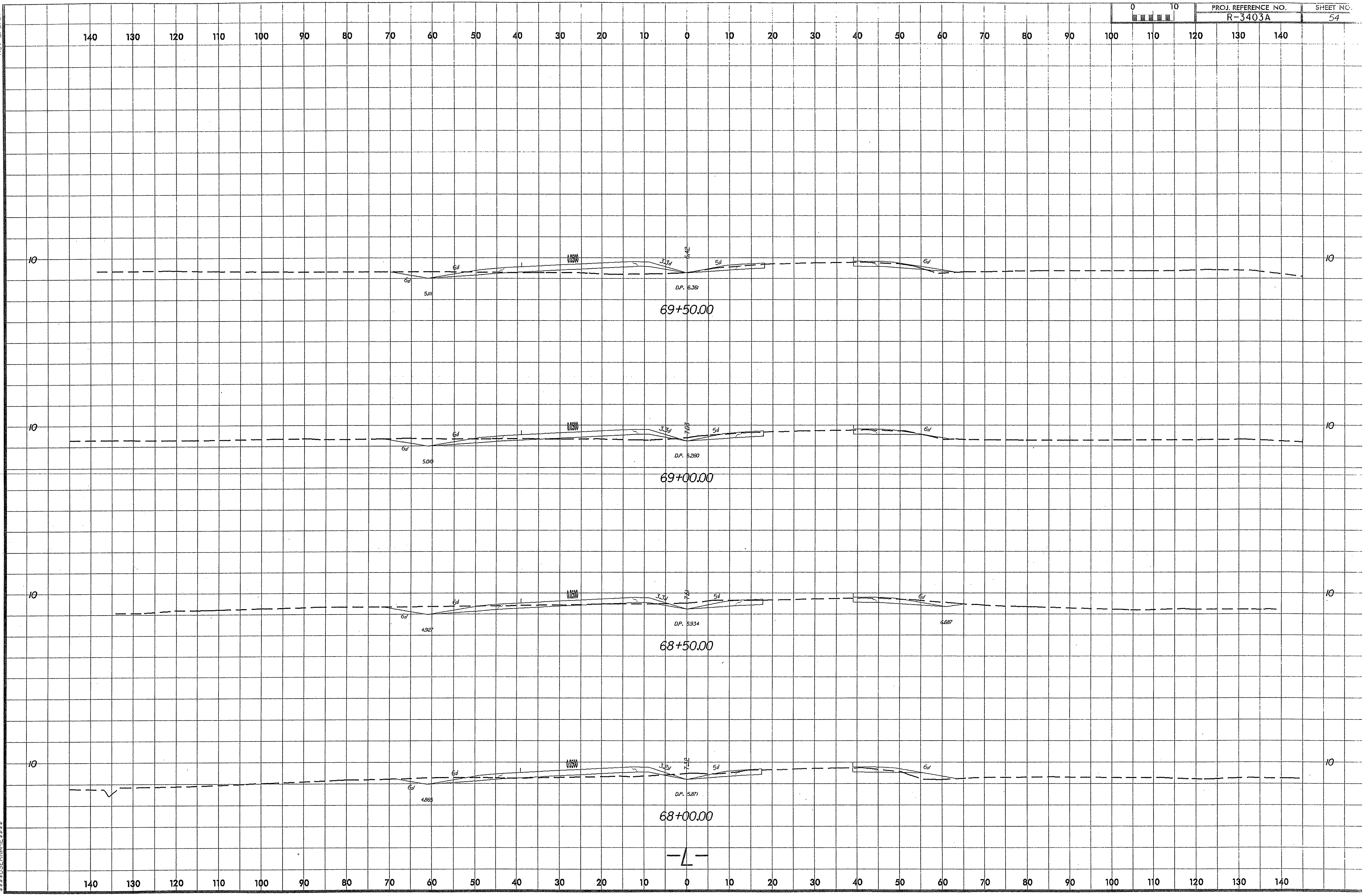
STATION	DEPTH	S(PSF)
66+50 30ft LT	1.0ft	313
66+50 30ft LT	2.0ft	334
66+50 30ft LT	3.0ft	125
66+50 30ft LT	4.0ft	522
66+50 30ft LT	4.8ft	1,357



-L-

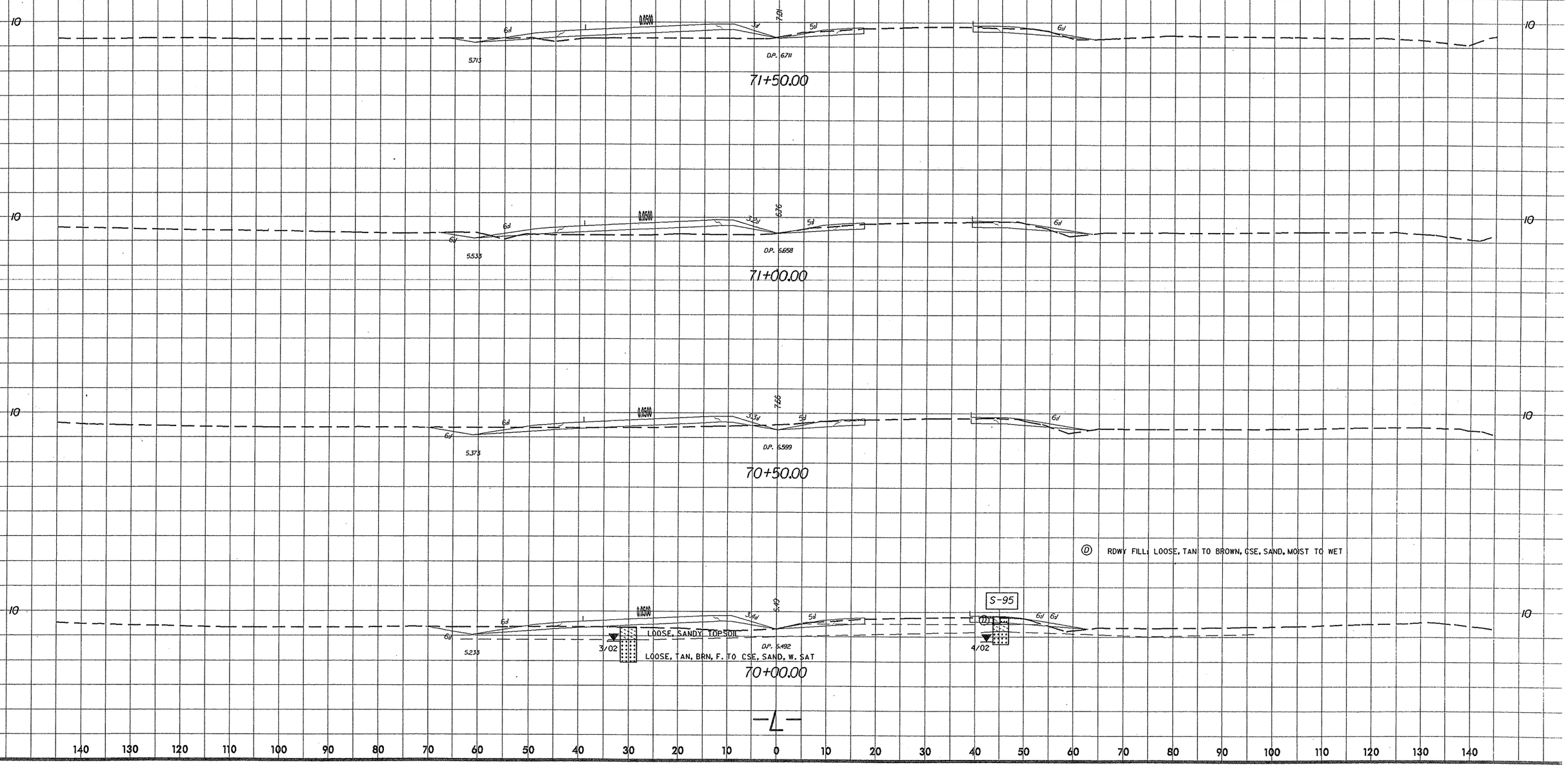
PROJ. REFERENCE NO. R-3403A

SHEET NO. 54



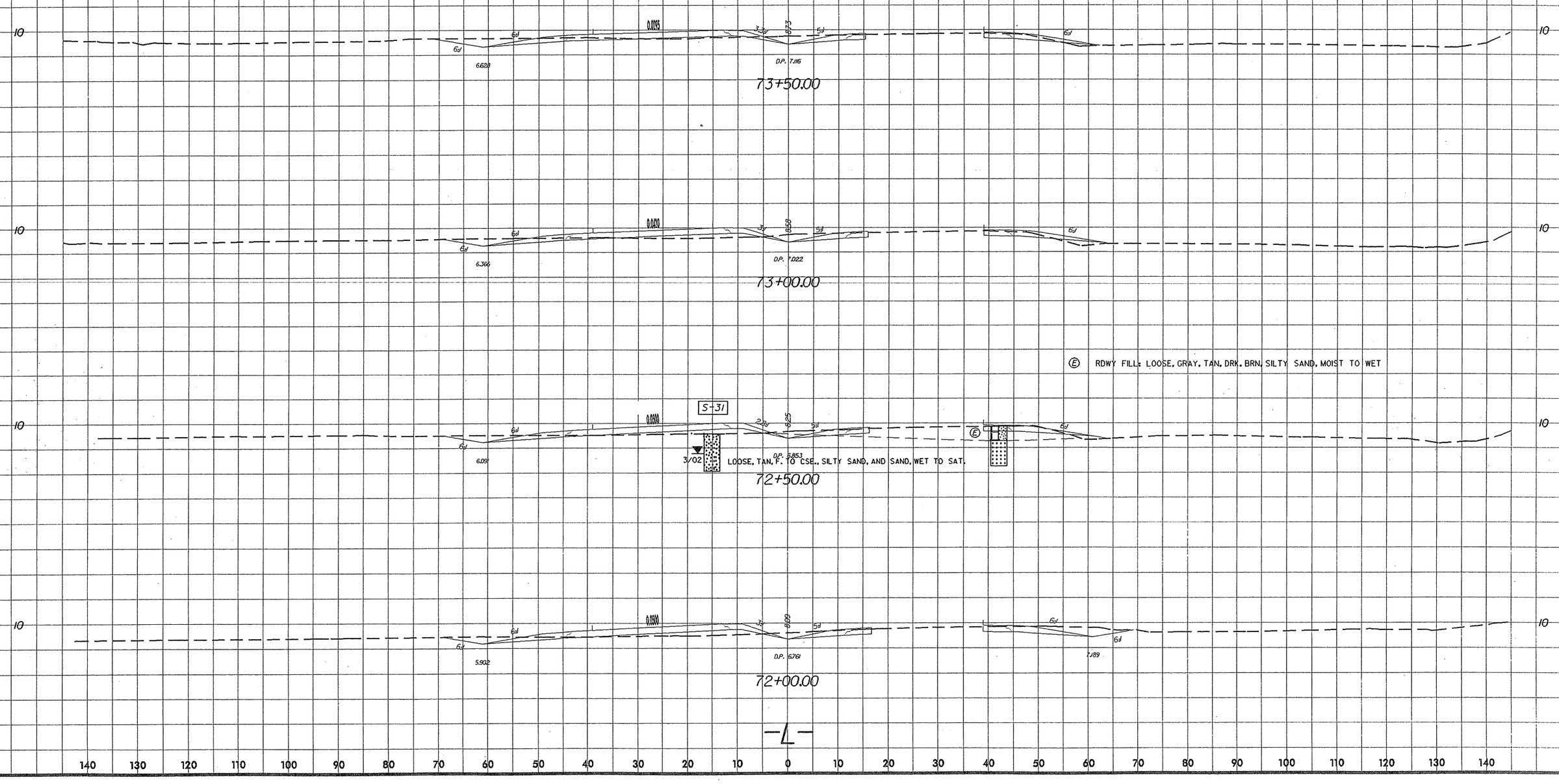
SOIL TEST RESULTS

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-95	45' RT	70+00	1.50 - 3.00	A-3(0)	23	NP	53.0	38.0	3.9	5.1	100	84	10	-	3.3



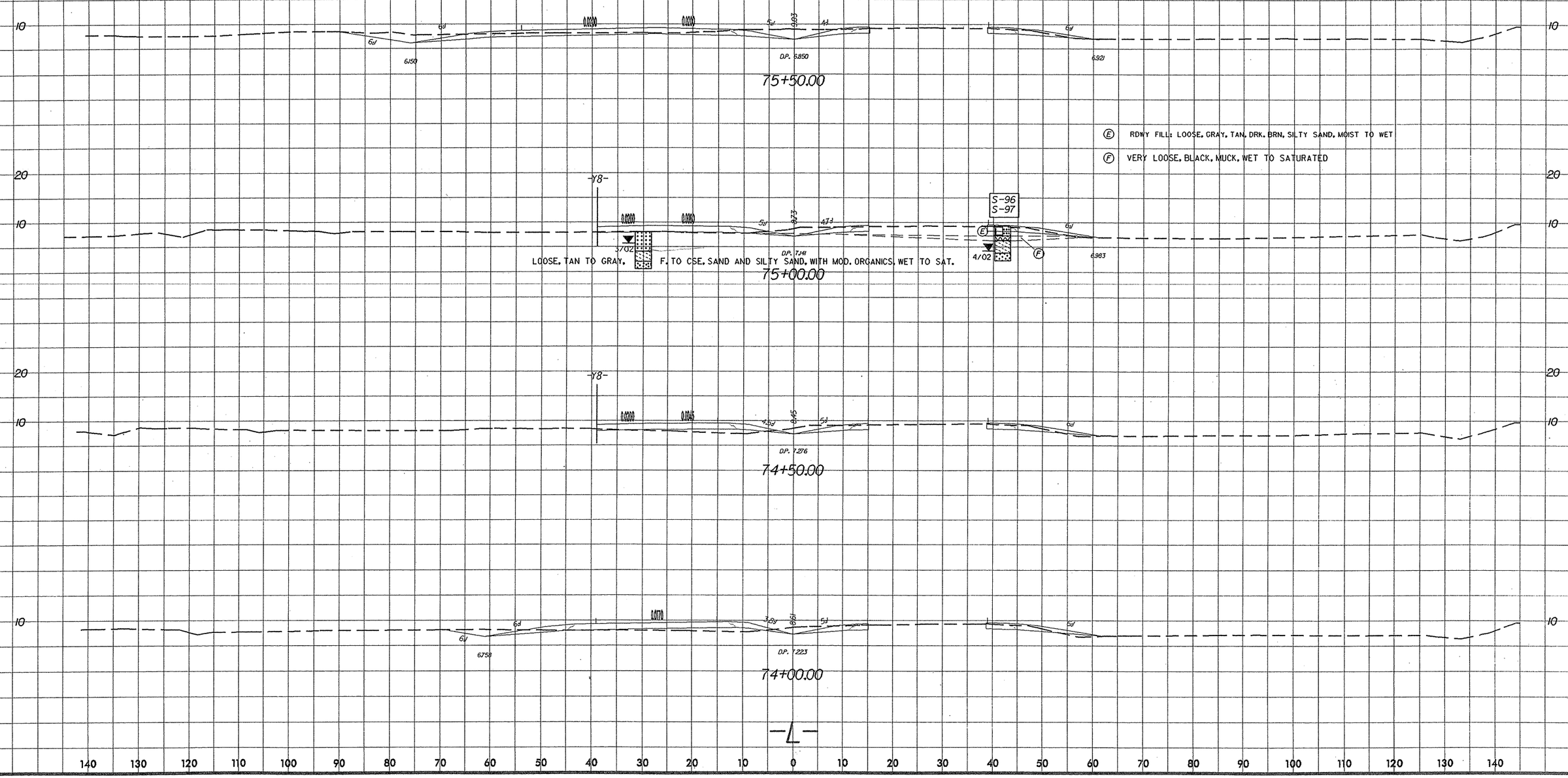
SOIL TEST RESULTS

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-31	15' LT	72+50	0.50 - 7.50	A-2-4(0)	18	NP	37.3	49.5	3.1	10.1	100	92	15	-	1.8



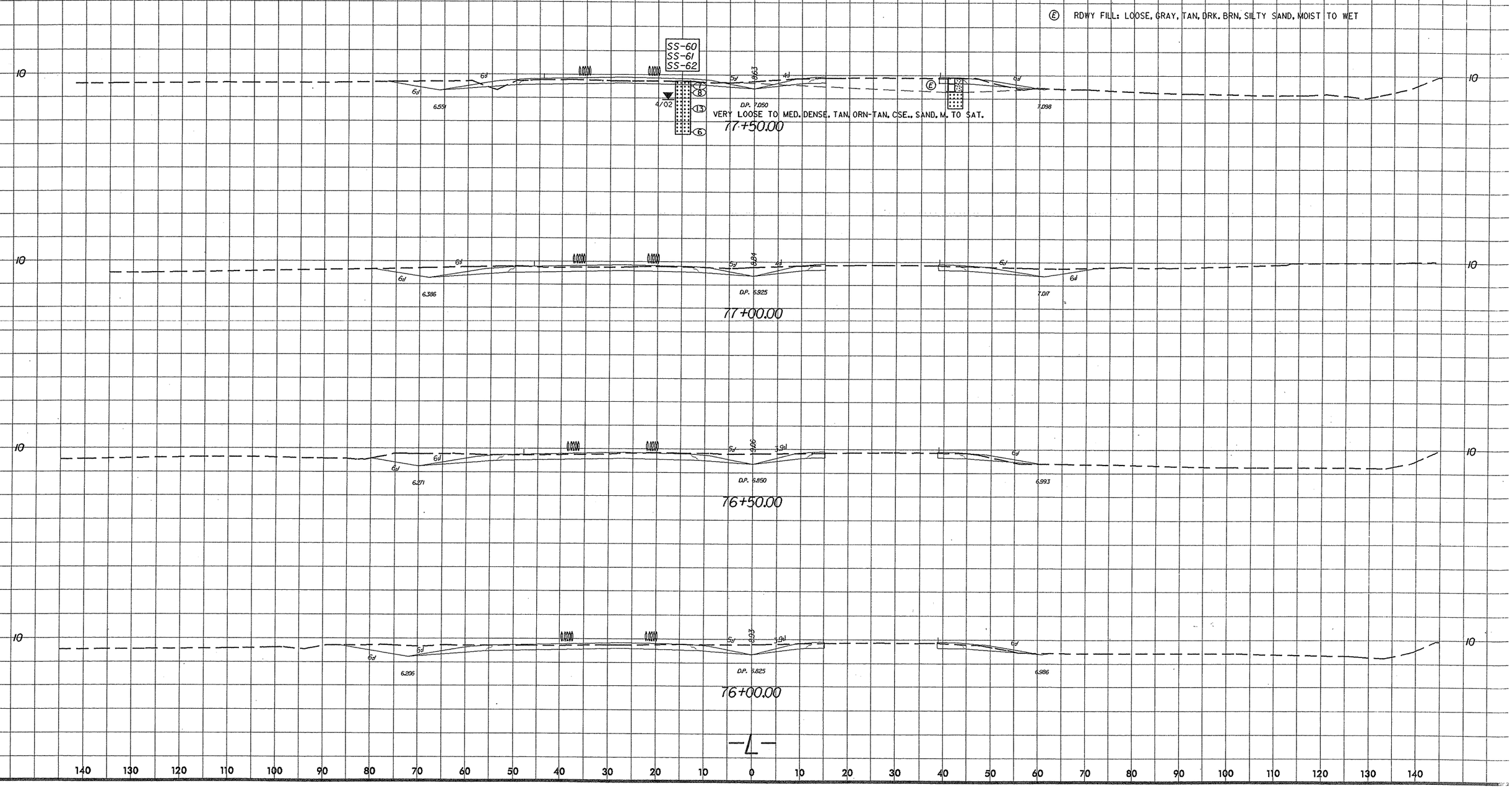
SOIL TEST RESULTS

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-96	42' RT	75+00	2.00 - 3.00	A-2-5(0)	44	NP	43.5	34.4	13.0	9.1	100	88	23	-	17.2
S-97	42' RT	75+00	3.00 - 5.50	A-2-4(0)	36	NP	48.9	31.4	7.5	12.1	100	83	21	-	7.1



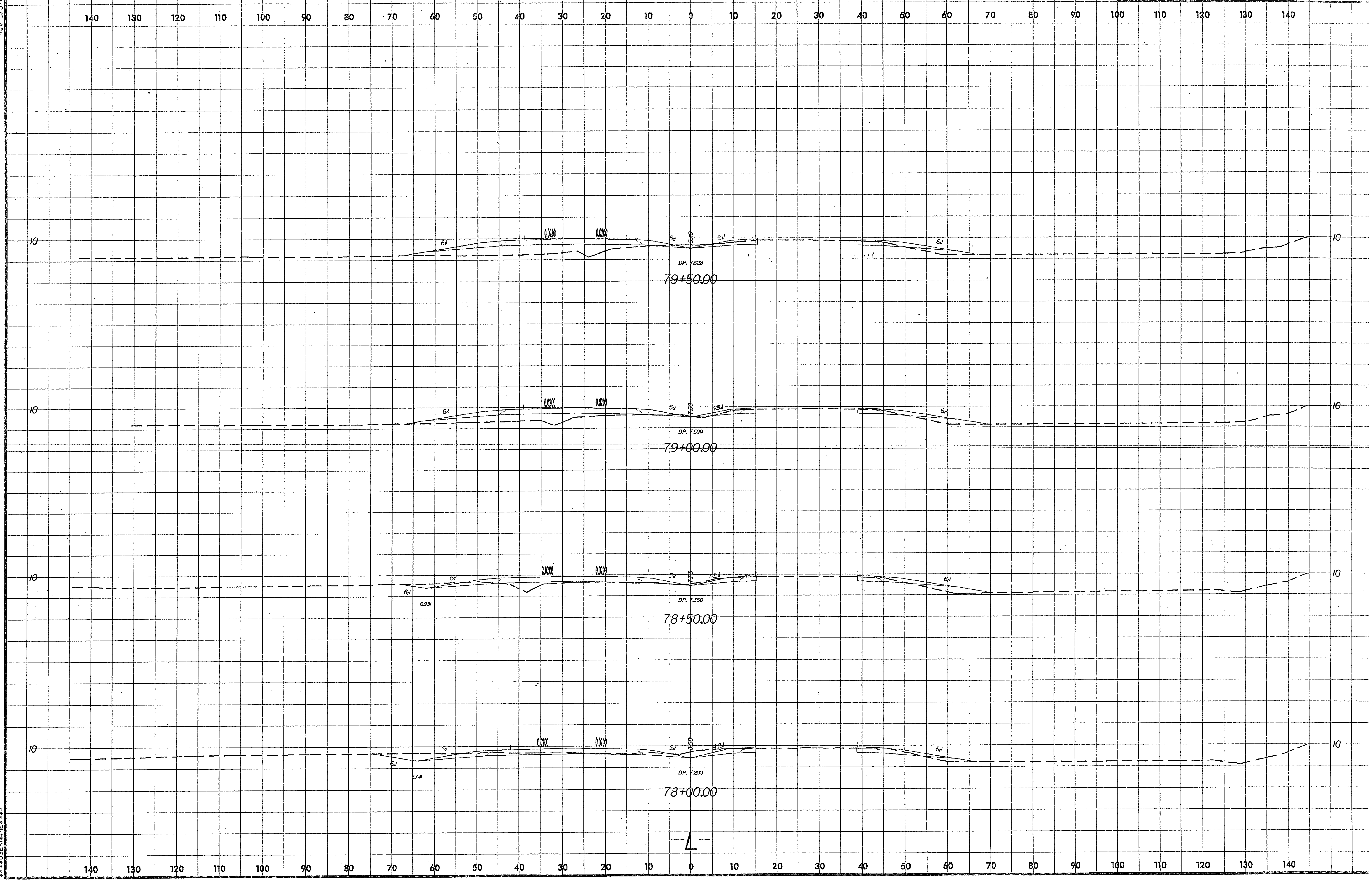
SOIL TEST RESULTS

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-60	15' LT	77+50	0.00 - 4.00	A-3(0)	21	NP	58.6	35.5	2.9	3.0	100	81	7	-	-
SS-61	15' LT	77+50	4.00 - 9.00	A-3(0)	20	NP	41.4	53.3	2.2	3.0	100	95	6	-	-
SS-62	15' LT	77+50	9.00 - 11.40	A-3(0)	20	NP	71.9	27.3	0.8	0.0	100	77	1	-	-



Rev 3/5/01

PROJ. REFERENCE NO.	SHEET NO.
R-3403A	59

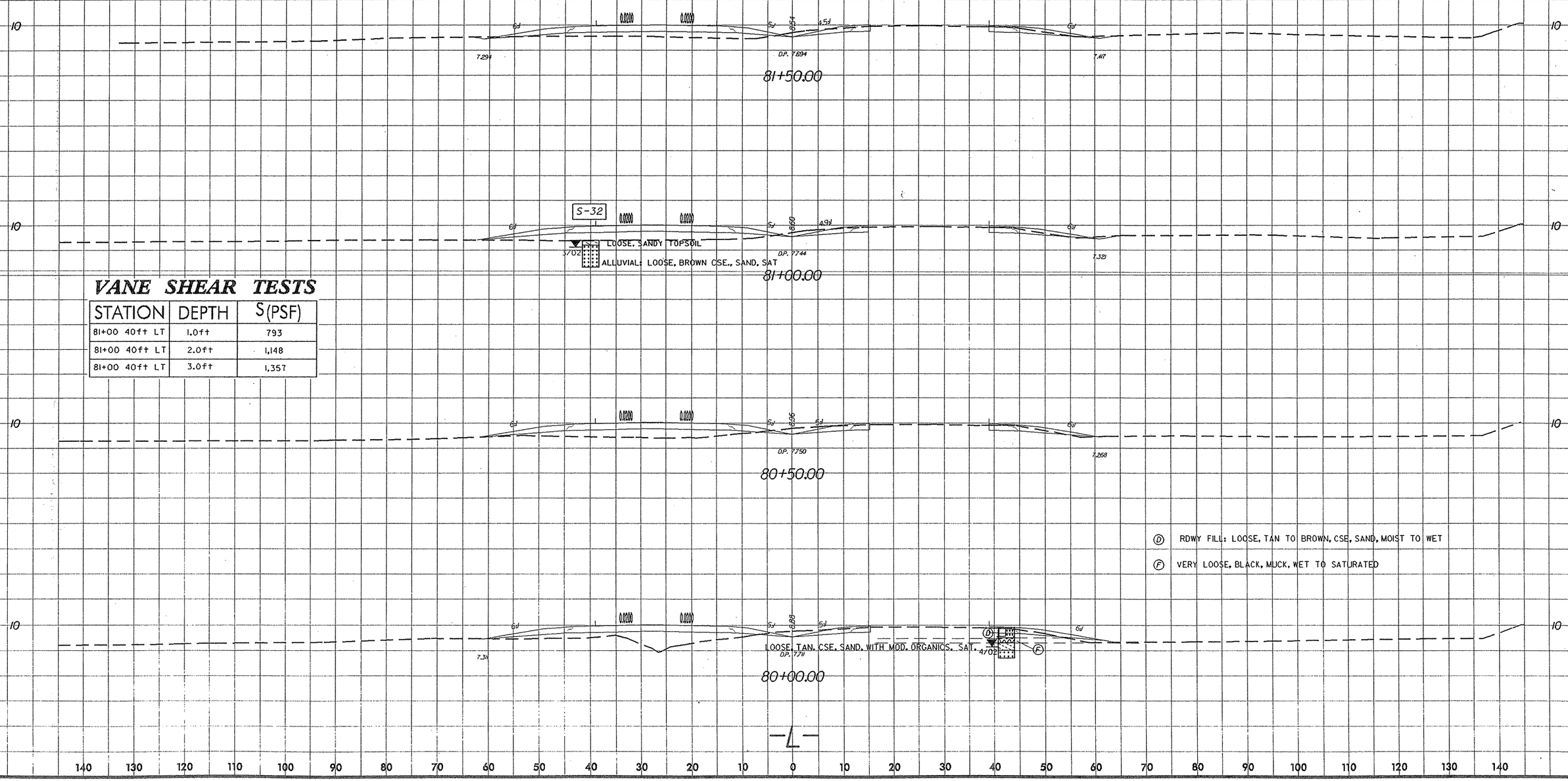


$$$$SYSTIME$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

Rev. 3/6/01

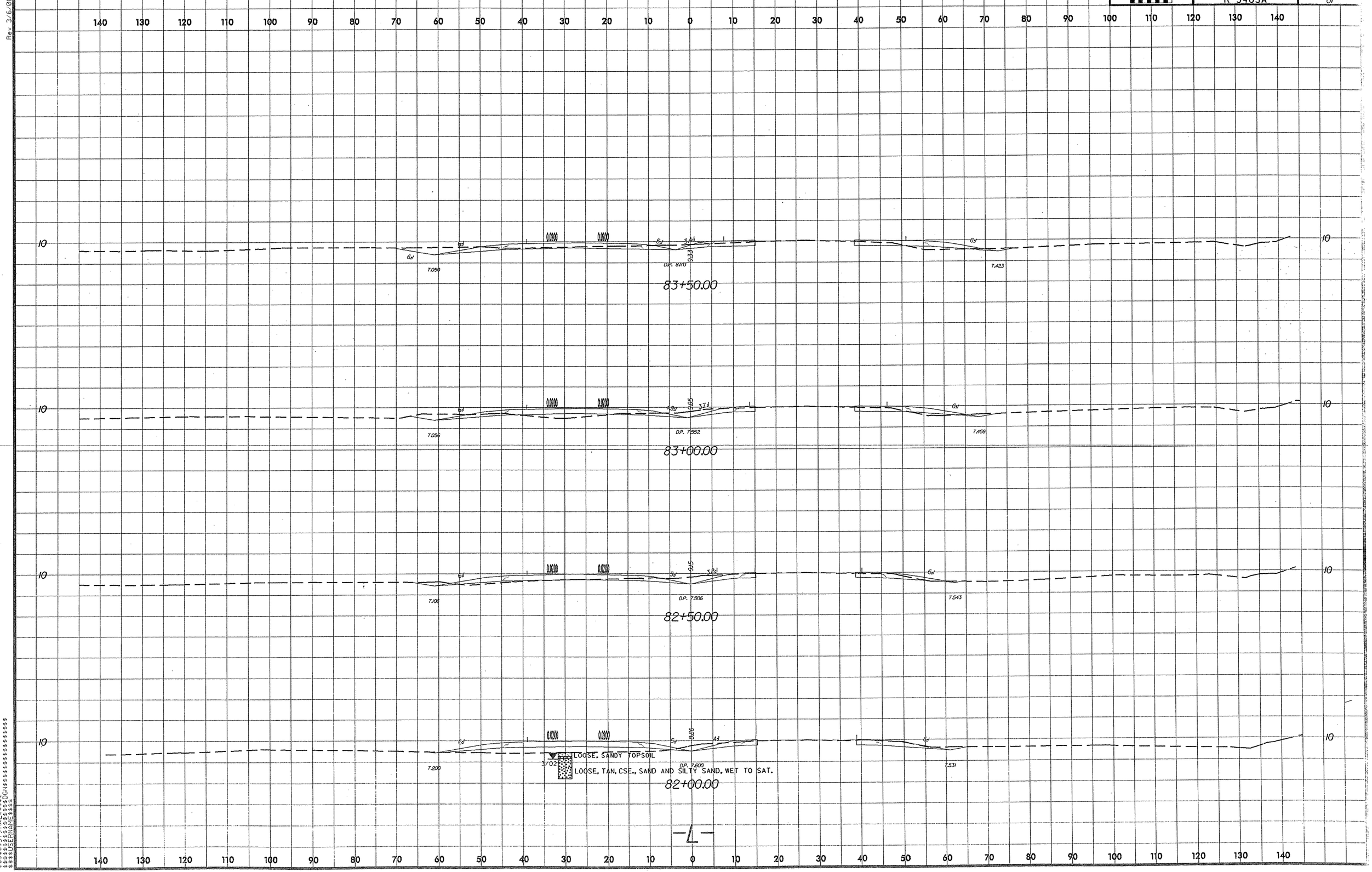
SOIL TEST RESULTS

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-32	40' LT	81+00	1.00 - 5.50	A-3(0)	21	NP	54.9	38.7	2.3	4.0	100	89	7	-	-



VANE SHEAR TESTS

STATION	DEPTH	S(PSF)
81+00 40ft LT	1.0ft	793
81+00 40ft LT	2.0ft	1,148
81+00 40ft LT	3.0ft	1,357

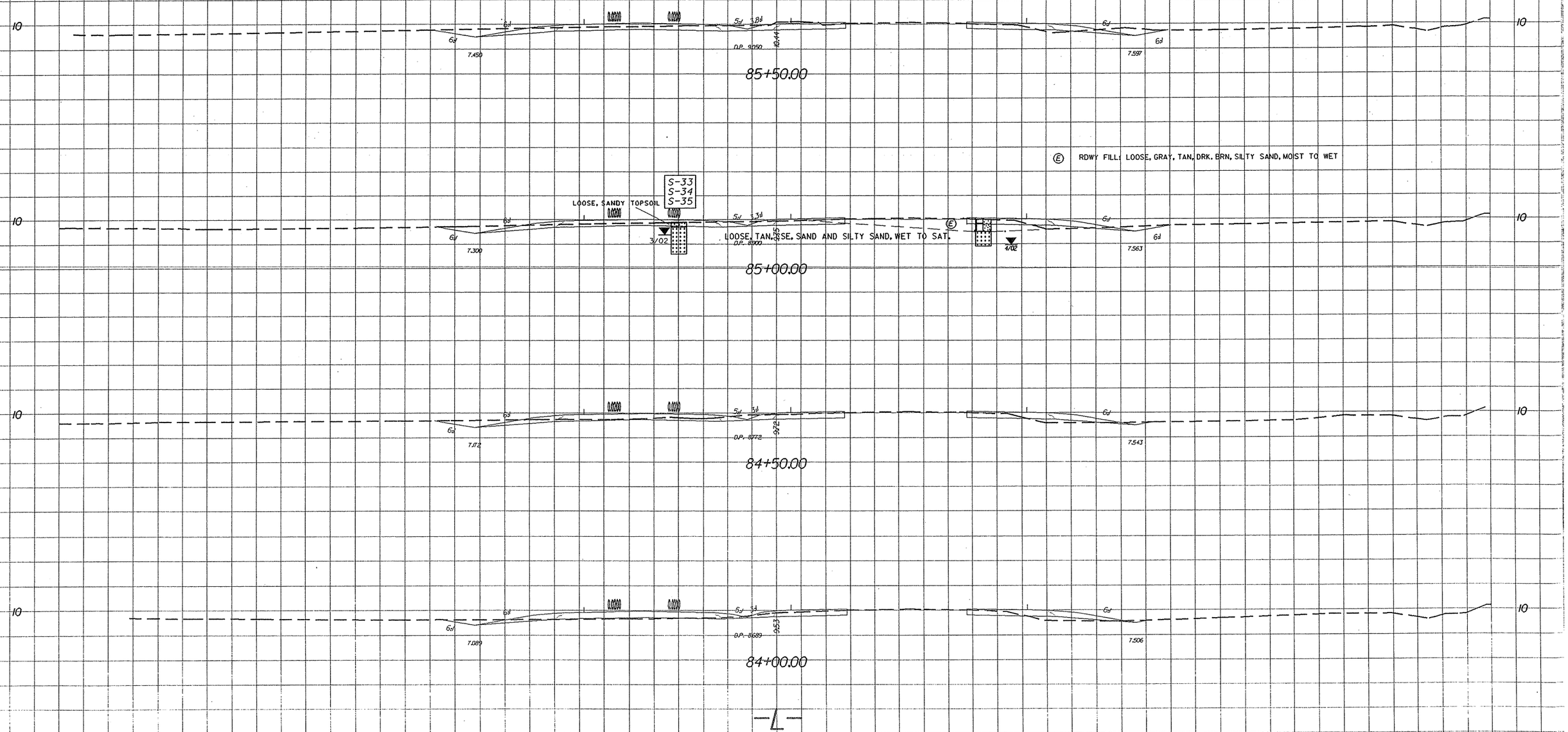


PROJ. REFERENCE NO.
R-3403A
SHEET NO.
61
Rev 3/6/01
83+50.00
83+00.00
82+50.00
82+00.00
LOOSE, SANDY TOPSOIL
LOOSE, TAN, CSE., SAND AND SILTY SAND, WET TO SAT.
-L-

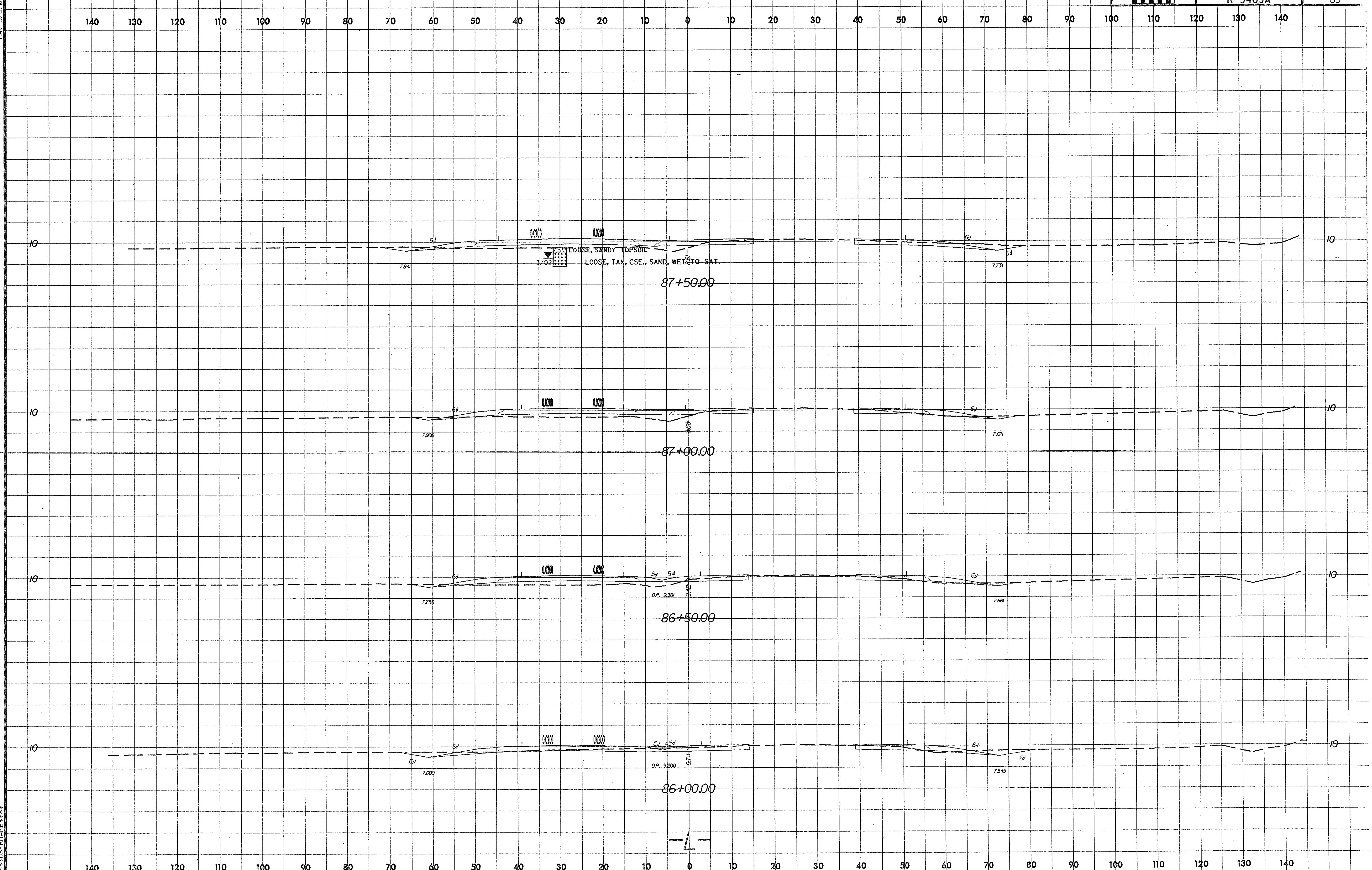
Rev 3/6/01

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-33	20' LT	85+00	0.00 - 1.00	A-2-4(0)	21	NP	52.7	37.2	5.0	5.0	100	85	11	-	2.8
S-34	20' LT	85+00	1.00 - 5.00	A-3(0)	17	NP	51.0	40.2	3.7	5.0	100	86	10	-	1.3
S-35	20' LT	85+00	5.00 - 6.50	A-3(0)	20	NP	50.6	47.2	0.2	2.0	98	79	3	-	-

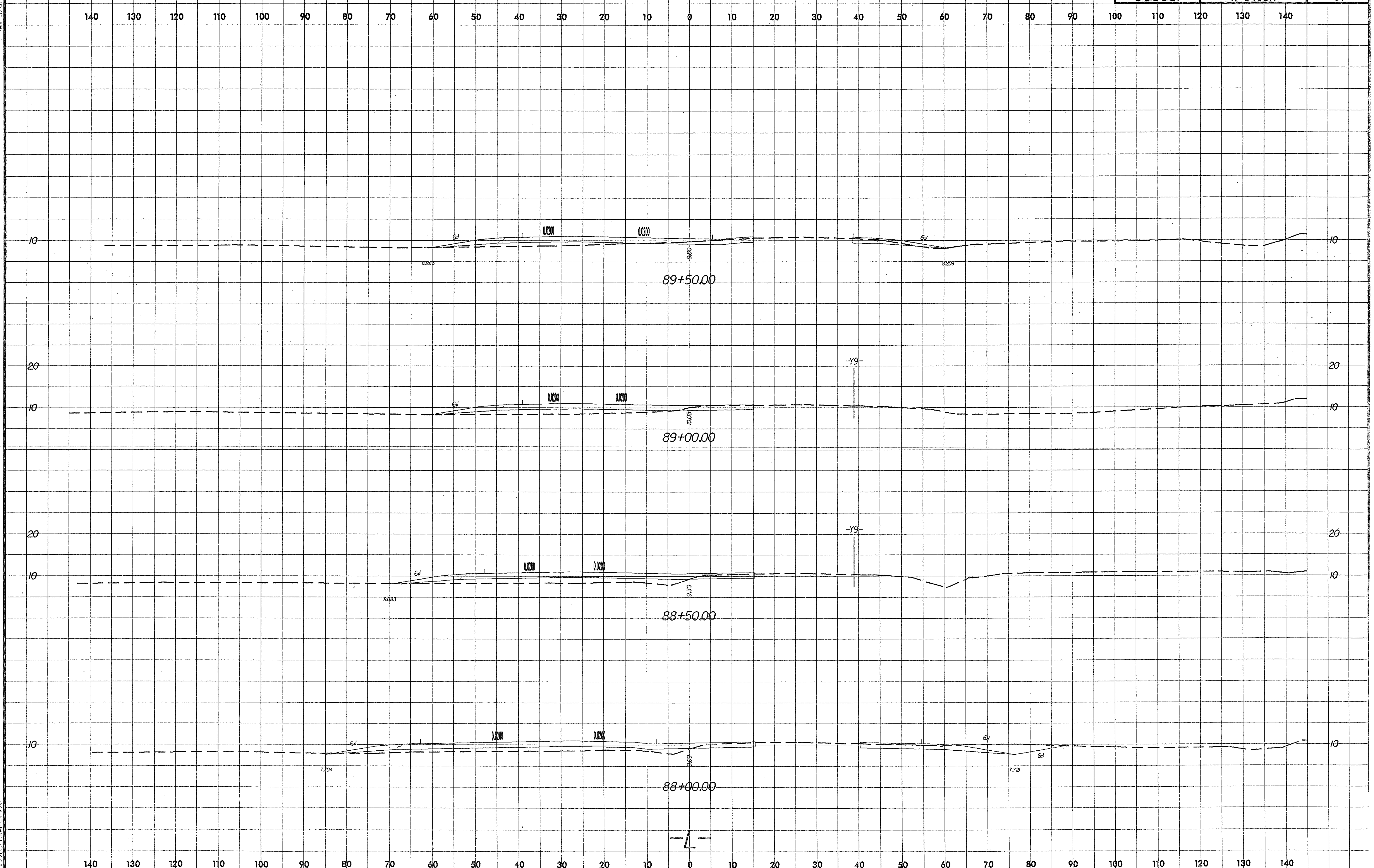


PROJ. REFERENCE NO.	SHEET NO.
R-3403A	63



Rev 3/6/01

PROJ. REFERENCE NO.	SHEET NO.
R-3403A	64



$$$$$SYSTIME$$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$$$$$$
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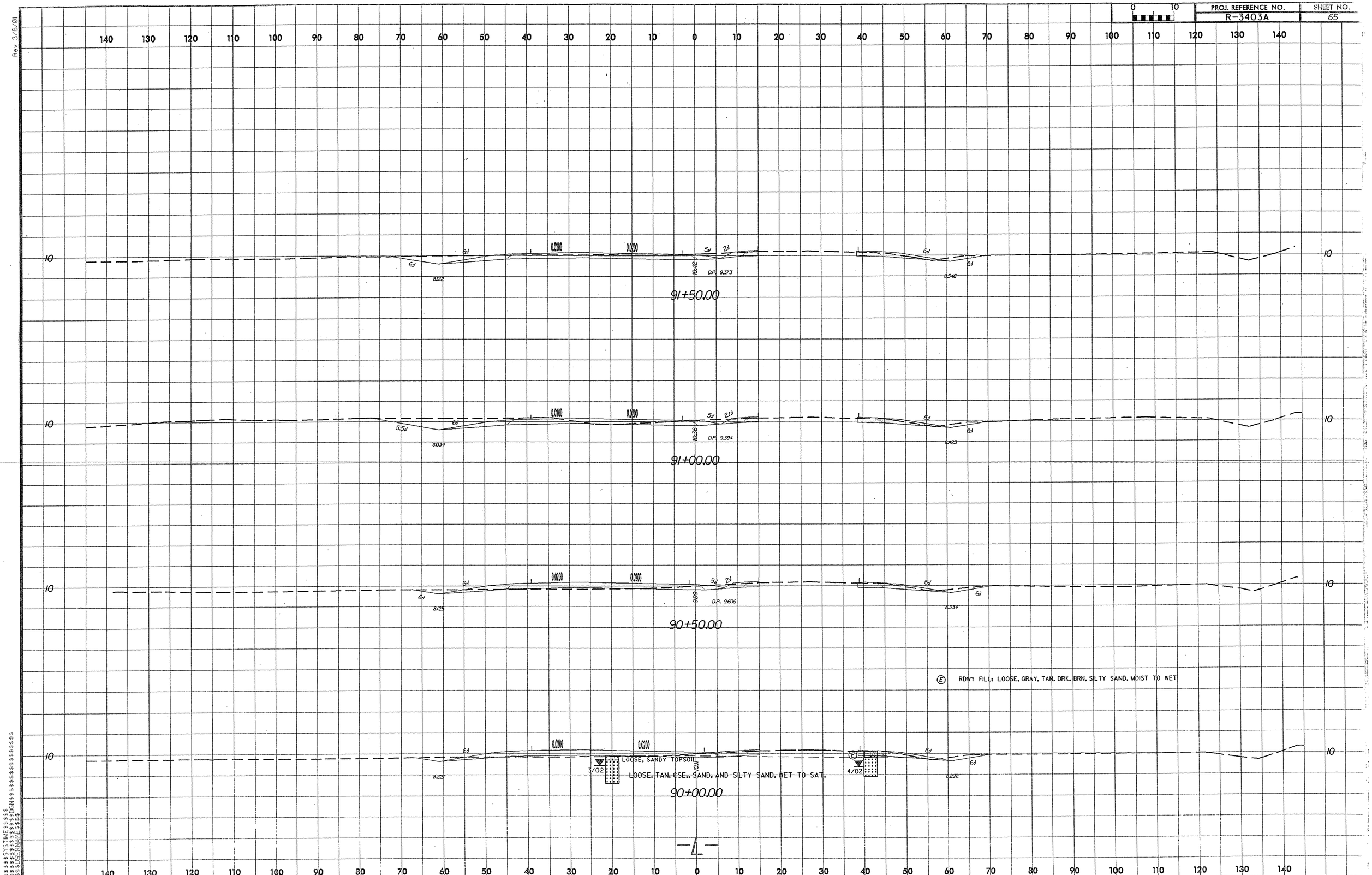
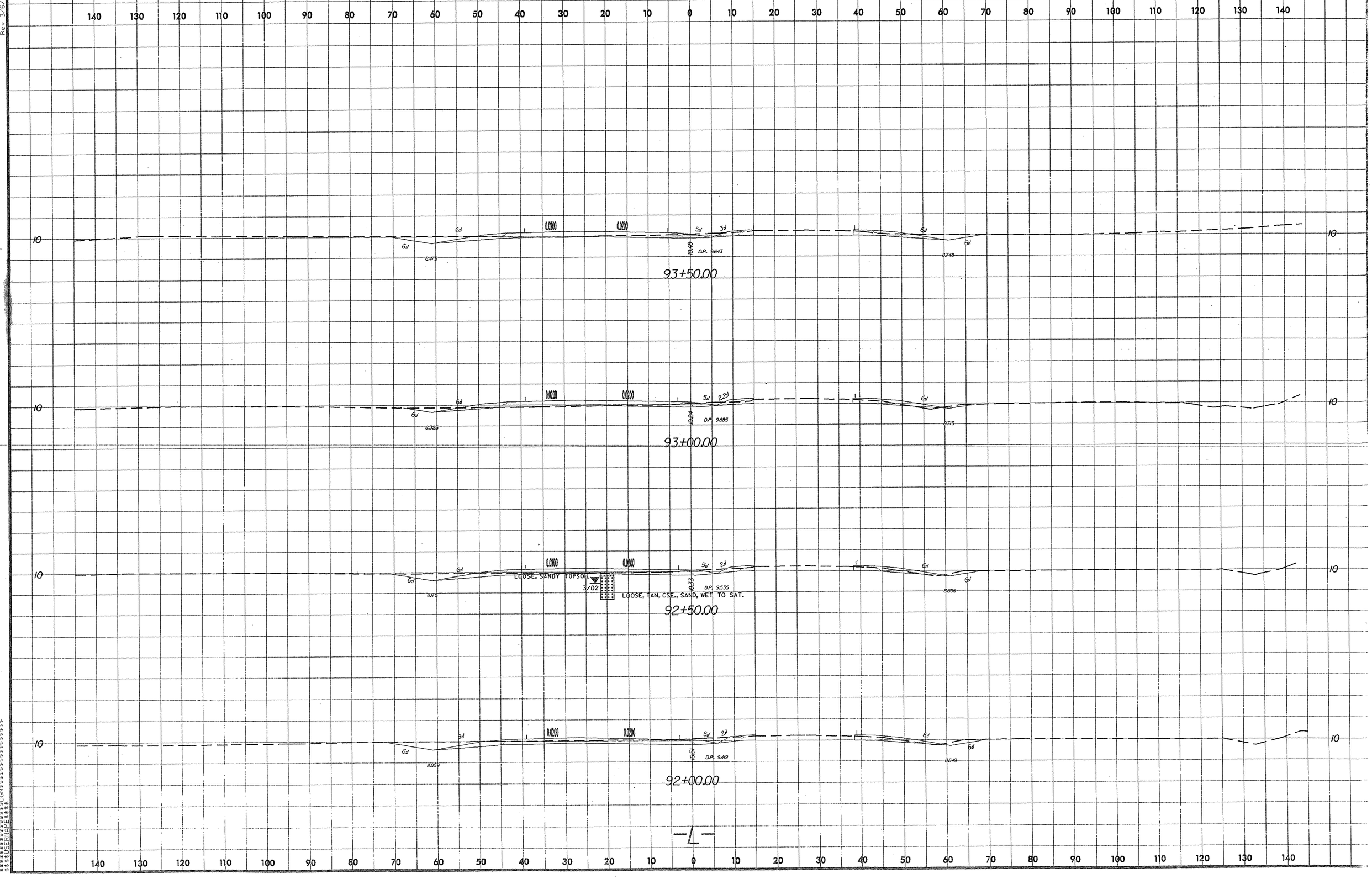


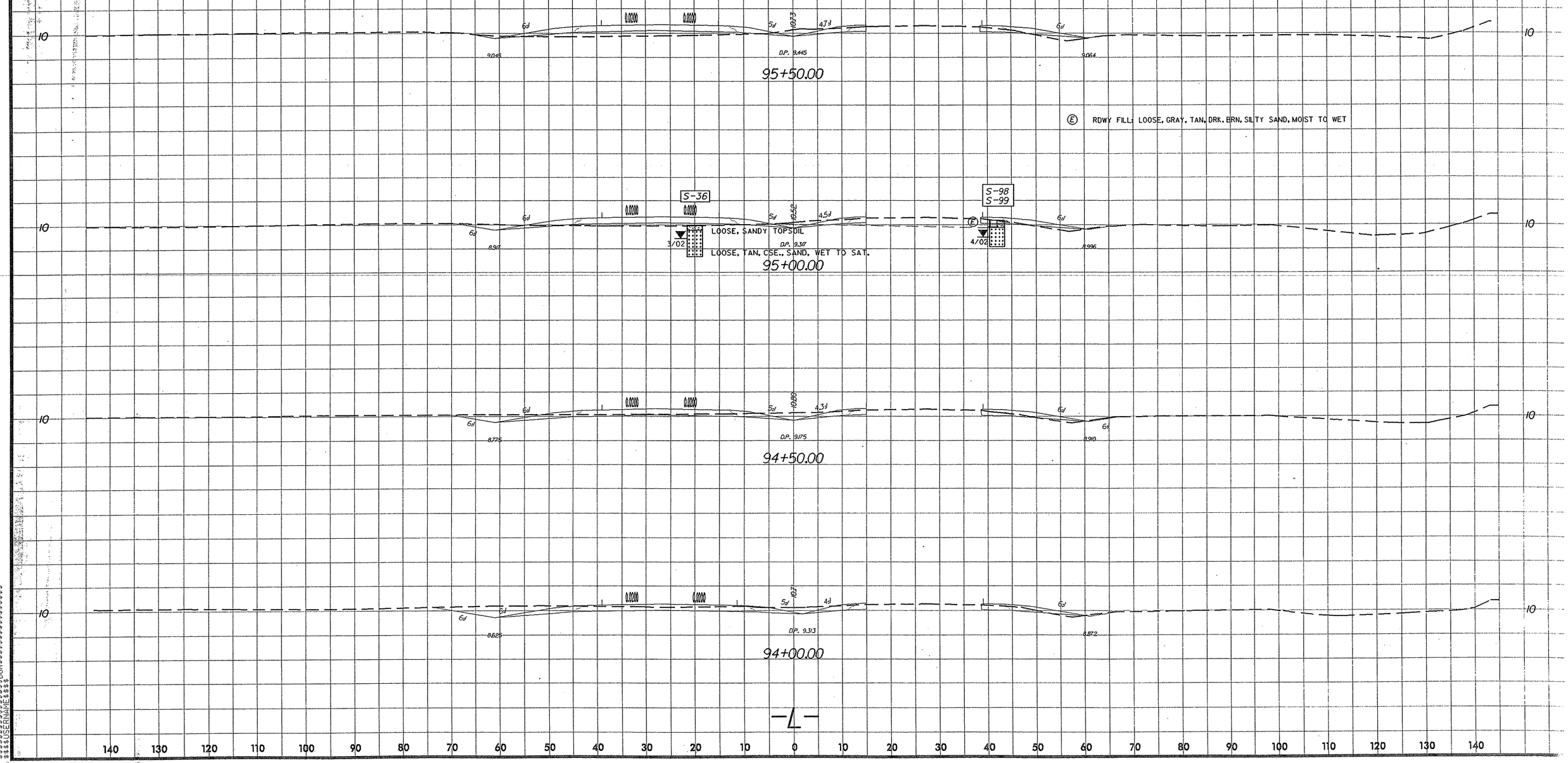
PROJ. REFERENCE NO.
R-3403A
SHEET NO.
65
0 10
Rev 3/6/01
91+50.00
91+00.00
90+50.00
90+00.00
D.P. 9.373
D.P. 9.394
D.P. 9.606
LOOSE, SANDY TOPSOIL
LOOSE, TAN, CSE., SAND, AND SILTY SAND, WET TO SAT.
3/02
4/02
RDWY FILL: LOOSE, GRAY, TAN, DRK. BRN, SILTY SAND, MOIST TO WET
-L-

Rev 3/6/01


140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
10
6d
8.475
0.0000
5d
3d
10.48
D.P. 9.643
8.748
93+50.00
5d
2.2d
10.24
D.P. 9.685
8.325
8.715
93+00.00
LOOSE, SANDY TOPSOIL
3/02
LOOSE, TAN, CSE., SAND, WET TO SAT.
10.33
D.P. 9.535
8.175
8.696
92+50.00
10.51
D.P. 9.419
8.059
8.649
92+00.00
-L-

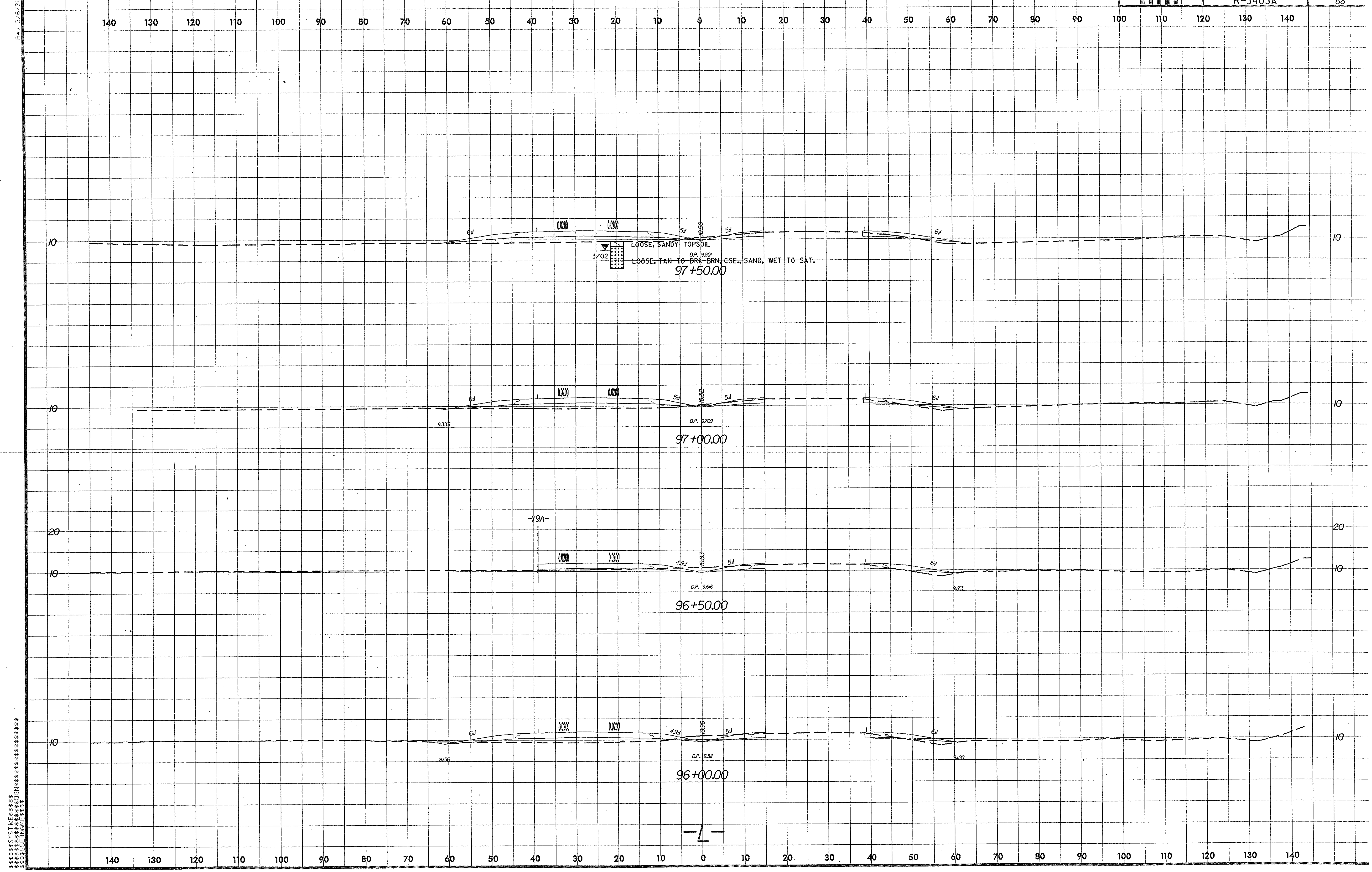
SOIL TEST RESULTS

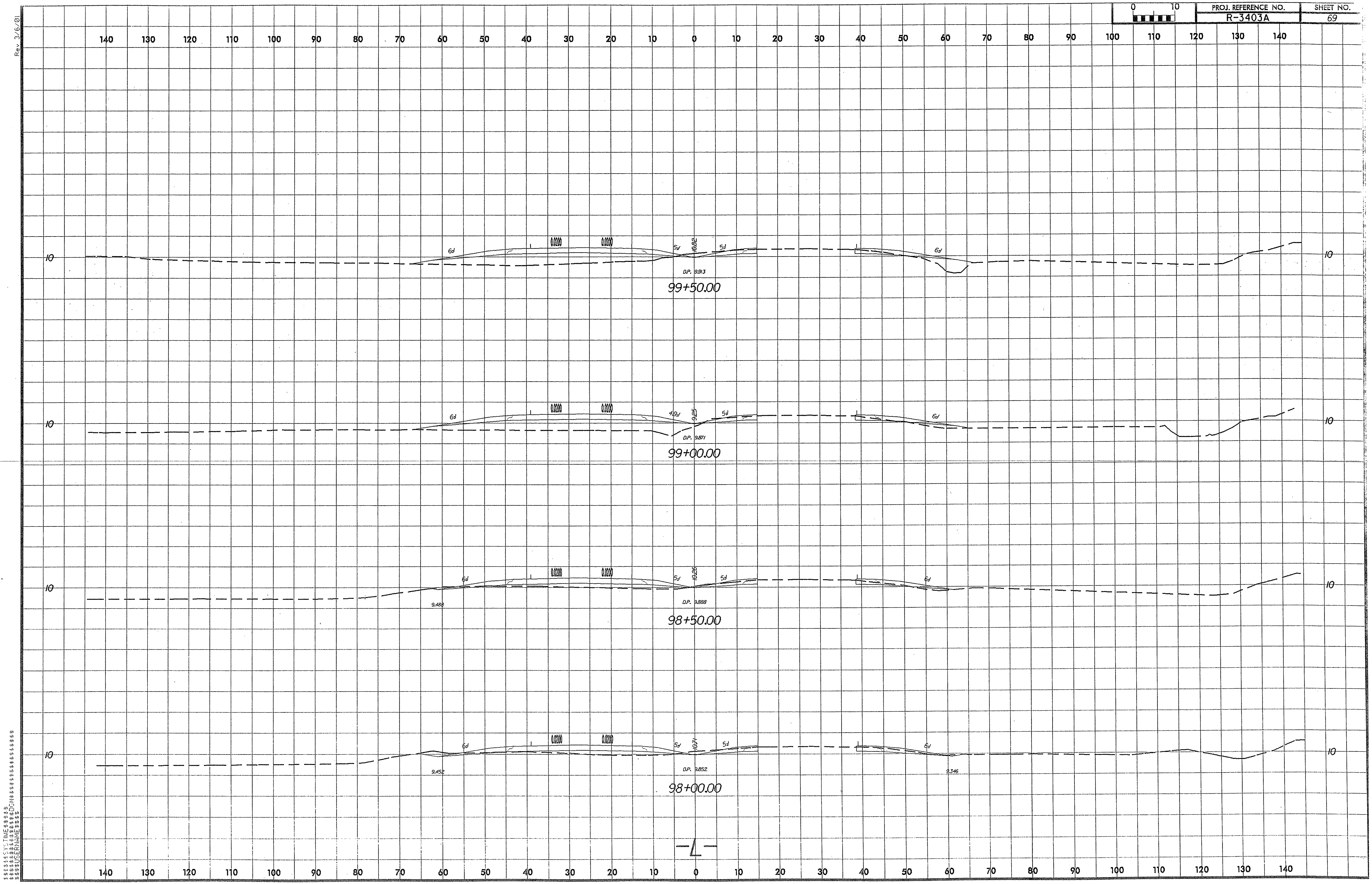
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-36	20' LT	95+00	0.00 - 1.00	A-2-4(0)	23	NP	52.5	37.5	5.9	4.0	100	87	11	-	4.0
S-98	42' RT	95+00	0.00 - 1.50	A-2-4(0)	19	NP	46.1	44.3	3.5	6.1	96	85	11	-	2.2
S-99	42' RT	95+00	1.50 - 5.50	A-3(0)	22	NP	43.3	53.7	0.0	3.0	100	90	3	-	-



Rev 3/6/01
$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
R-3403A	68

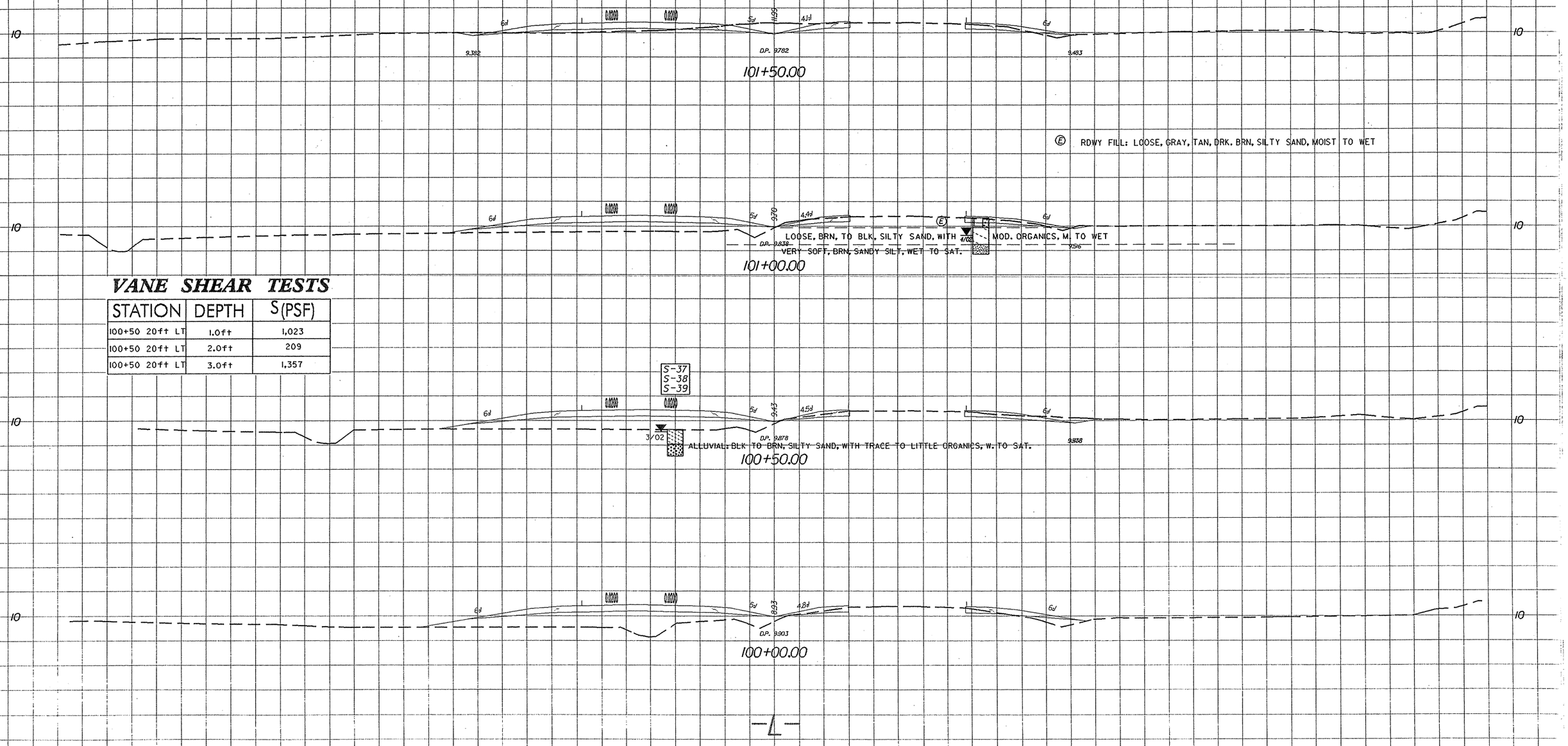



PROJ. REFERENCE NO.
R-3403A
SHEET NO.
69
0 10
Rev 3/6/01
140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
10
6:1
0.0200
0.0200
5:1
10.32
5:1
6:1
D.P. 9.913
99+50.00
10
6:1
0.0200
0.0200
4.9:1
9.25
5:1
6:1
D.P. 9.871
99+00.00
10
6:1
0.0200
0.0200
5:1
10.26
5:1
6:1
9.488
D.P. 9.888
98+50.00
10
6:1
0.0200
0.0200
5:1
10.71
5:1
6:1
9.452
D.P. 9.852
9.346
98+00.00
-L-
$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$$

Rev. 3/6/01

SOIL TEST RESULTS

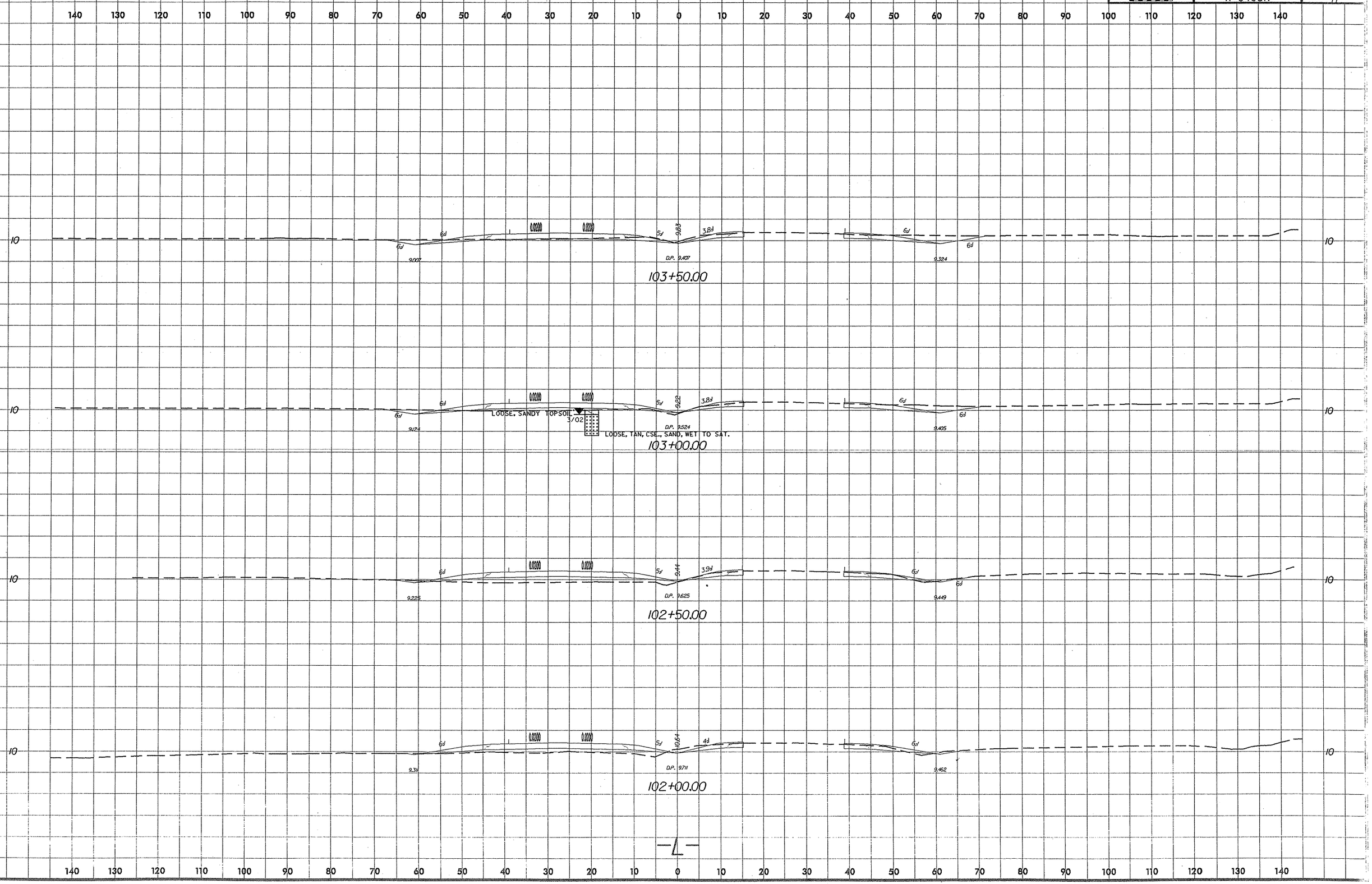
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-37	20' LT	100+50	0.00 - 1.50	A-2-4(0)	20	NP	55.2	32.9	7.8	4.0	100	85	14	-	2.9
S-38	20' LT	100+50	1.50 - 3.00	A-2-4(0)	29	NP	45.0	26.3	14.7	14.1	100	86	31	-	4.8
S-39	20' LT	100+50	3.00 - 5.50	A-3(0)	19	NP	60.7	31.6	3.7	4.0	100	77	9	-	1.9



VANE SHEAR TESTS

STATION	DEPTH	S(PSF)
100+50 20ft LT	1.0ft	1,023
100+50 20ft LT	2.0ft	209
100+50 20ft LT	3.0ft	1,357

-L-

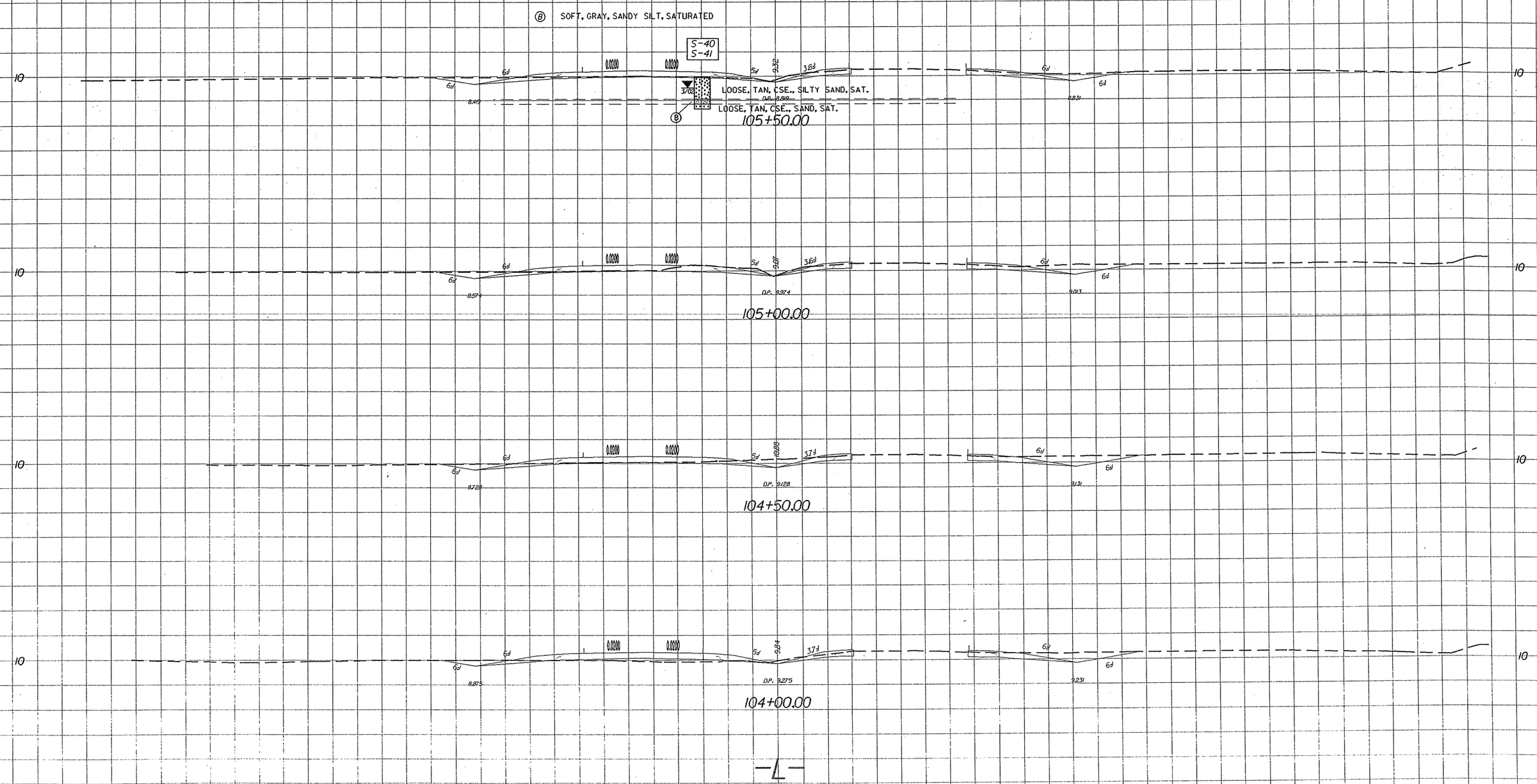


PROJ. REFERENCE NO.
R-3403A
SHEET NO.
71
0 10
Rev 3/6/01
103+50.00
D.P. 9.407
9.007
9.324
103+00.00
LOOSE, SANDY TOPSOIL
3/02
LOOSE, TAN, CSE., SAND, WET TO SAT.
D.P. 9.524
9.124
9.405
102+50.00
D.P. 9.625
9.225
9.449
102+00.00
D.P. 9.711
9.311
9.462
-L-

Rev 3/6/01

SOIL TEST RESULTS

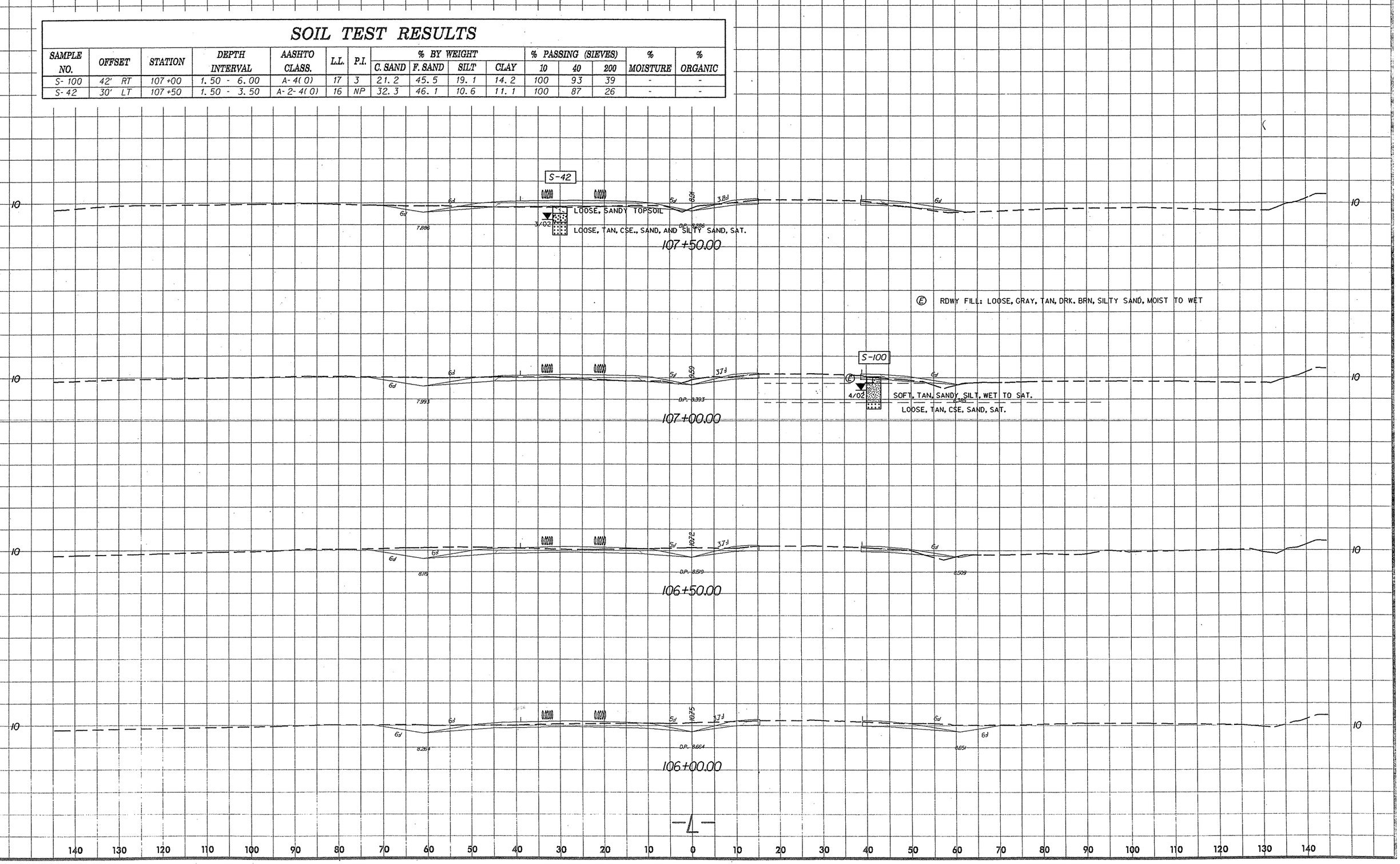
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-40	15' LT	105+50	0.50 - 4.50	A-2-4(0)	15	NP	55.3	35.7	4.9	4.0	100	81	11	-	-
S-41	15' LT	105+50	4.50 - 5.50	A-4(0)	20	3	33.7	34.7	16.5	15.1	100	85	38	-	-



Rev 3/6/01

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-100	42' RT	107+00	1.50 - 6.00	A-4(0)	17	3	21.2	45.5	19.1	14.2	100	93	39	-	-
S-42	30' LT	107+50	1.50 - 3.50	A-2-4(0)	16	NP	32.3	46.1	10.6	11.1	100	87	26	-	-



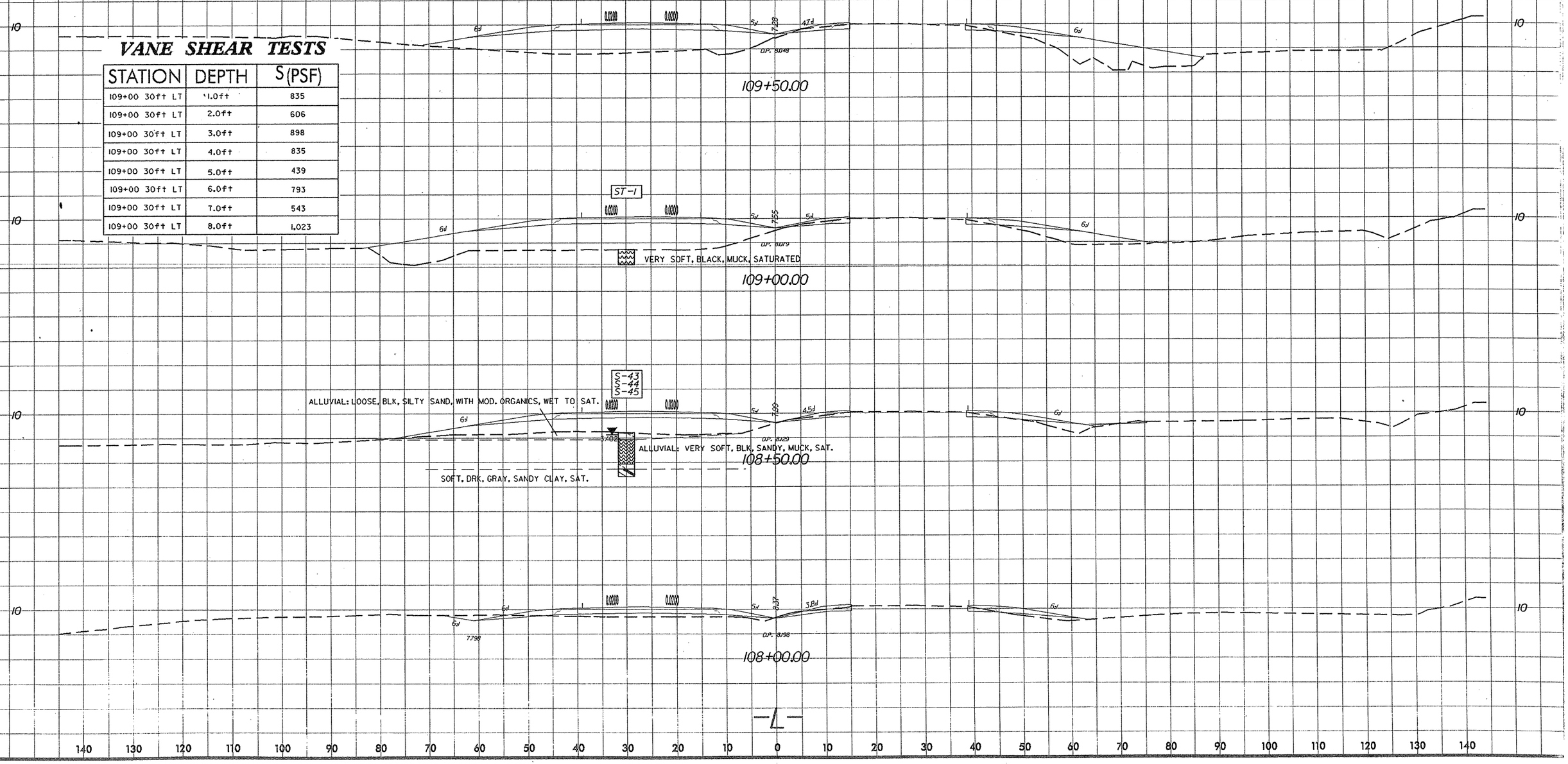
Rev 3/6/01

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-43	30' LT.	108+50	0.00 - 1.50	A-2-4(0)	34	NP	27.6	43.9	18.5	10.1	98	89	32	-	6.5
S-44	30' LT.	108+50	1.50 - 6.50	A-5(0)	84	NP	36.6	28.6	26.8	8.0	100	77	39	-	30.4
S-45	30' LT.	108+50	7.50 - 9.00	A-6(1)	35	13	16.9	51.5	13.5	18.1	100	88	36	-	-
ST-1 *2	30' LT.	109+20	1.40 - 3.10	A-5(3)	99	NP	27.9	25.8	30.2	16.1	96	79	48		37.3

VANE SHEAR TESTS

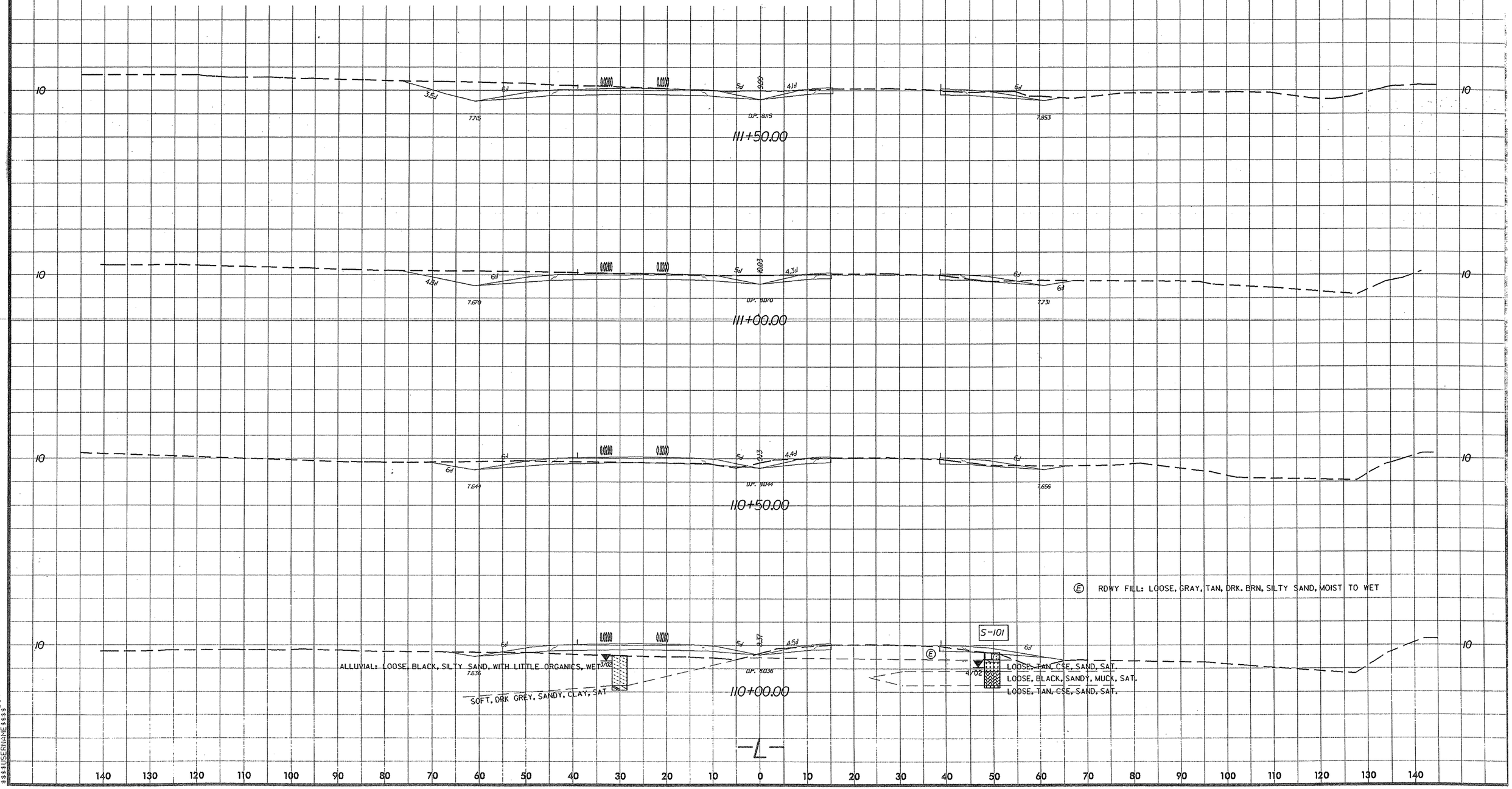
STATION	DEPTH	S(PSF)
109+00 30ft LT	1.0ft	835
109+00 30ft LT	2.0ft	606
109+00 30ft LT	3.0ft	898
109+00 30ft LT	4.0ft	835
109+00 30ft LT	5.0ft	439
109+00 30ft LT	6.0ft	793
109+00 30ft LT	7.0ft	543
109+00 30ft LT	8.0ft	1,023



Rev 3/6/01

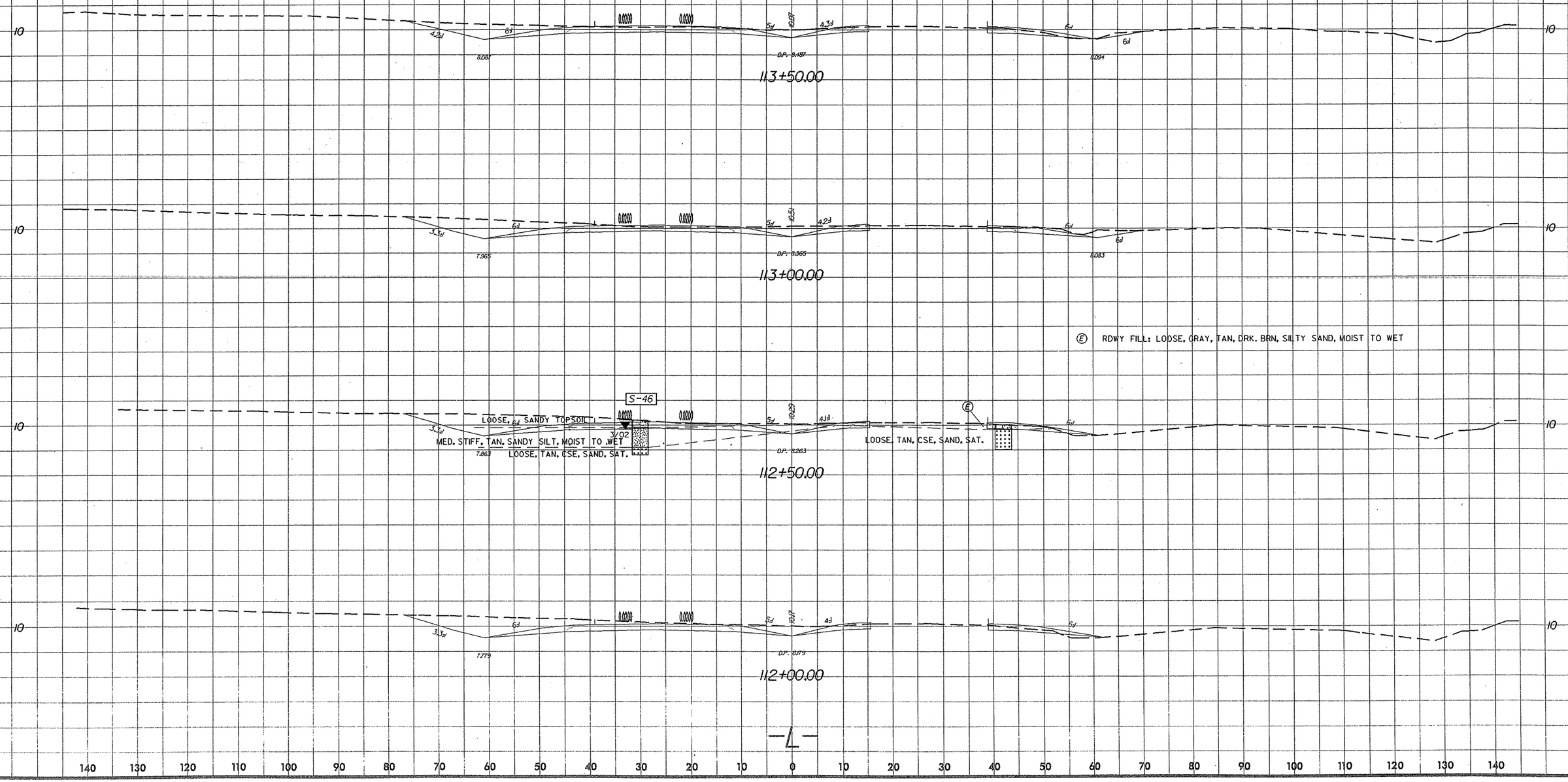
SOIL TEST RESULTS

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-101	50' RT	110+00	4.00 - 7.00	A-2-5(0)	49	NP	24.7	44.1	25.2	6.1	100	92	34	-	16.7



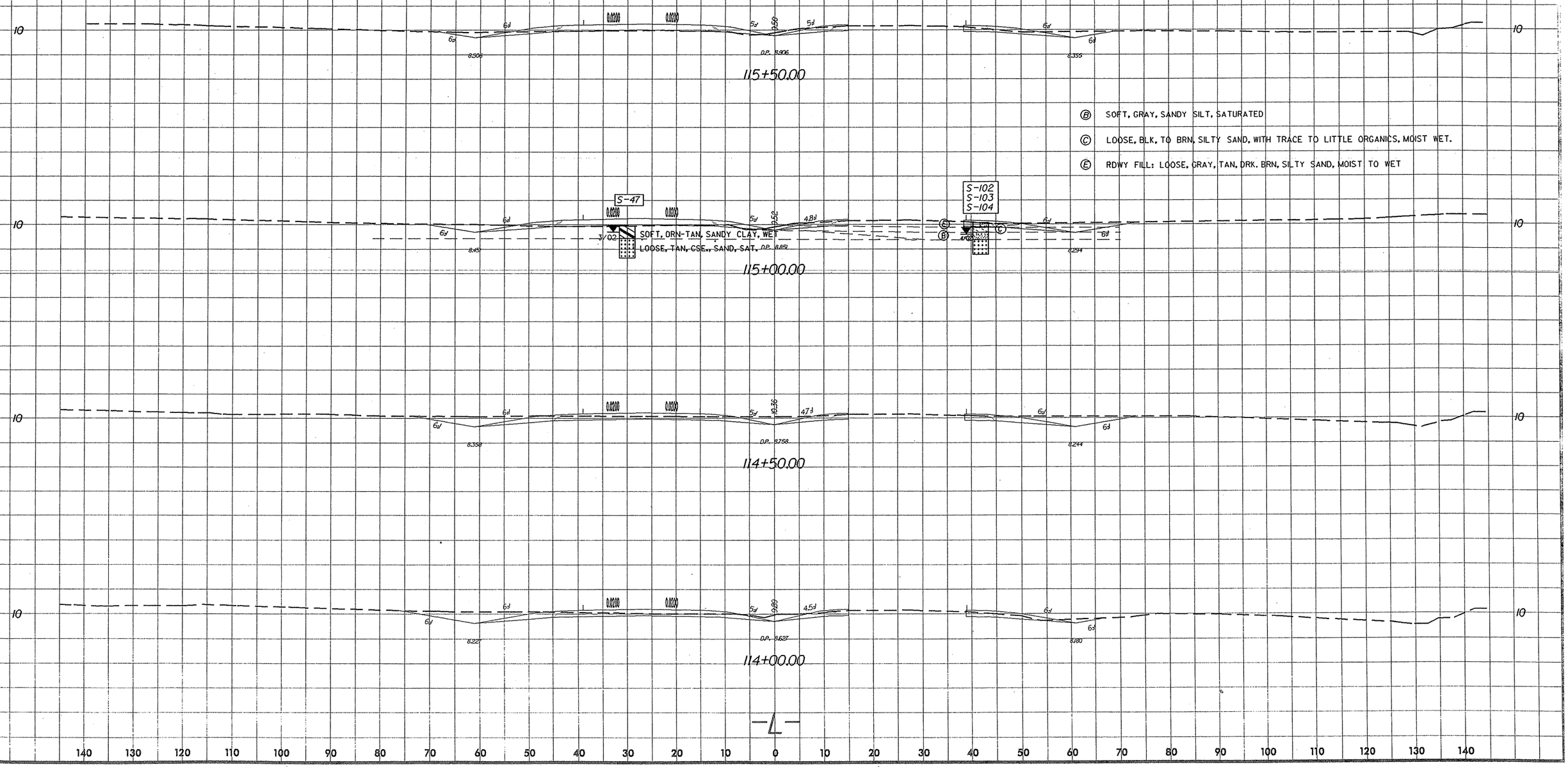
SOIL TEST RESULTS

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-46	30' LT	112+50	1.50 - 5.50	A-4(0)	22	8	20.7	41.3	15.8	22.1	100	91	44	-	-



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-102	42' RT	115+00	1.00 - 2.00	A-2-4(0)	21	NP	20.9	55.5	14.5	9.1	100	93	28	-	5.0
S-103	42' RT	115+00	2.00 - 3.50	A-4(0)	20	4	16.3	53.2	12.3	18.2	100	94	36	-	-
S-104	42' RT	115+00	3.50 - 6.50	A-3(0)	24	NP	57.1	39.5	0.3	3.0	99	75	4	-	-
S-47	30' LT	115+00	0.50 - 2.50	A-6(2)	27	12	18.8	43.1	15.0	23.1	100	91	45	-	-



Ⓑ SOFT, GRAY, SANDY SILT, SATURATED

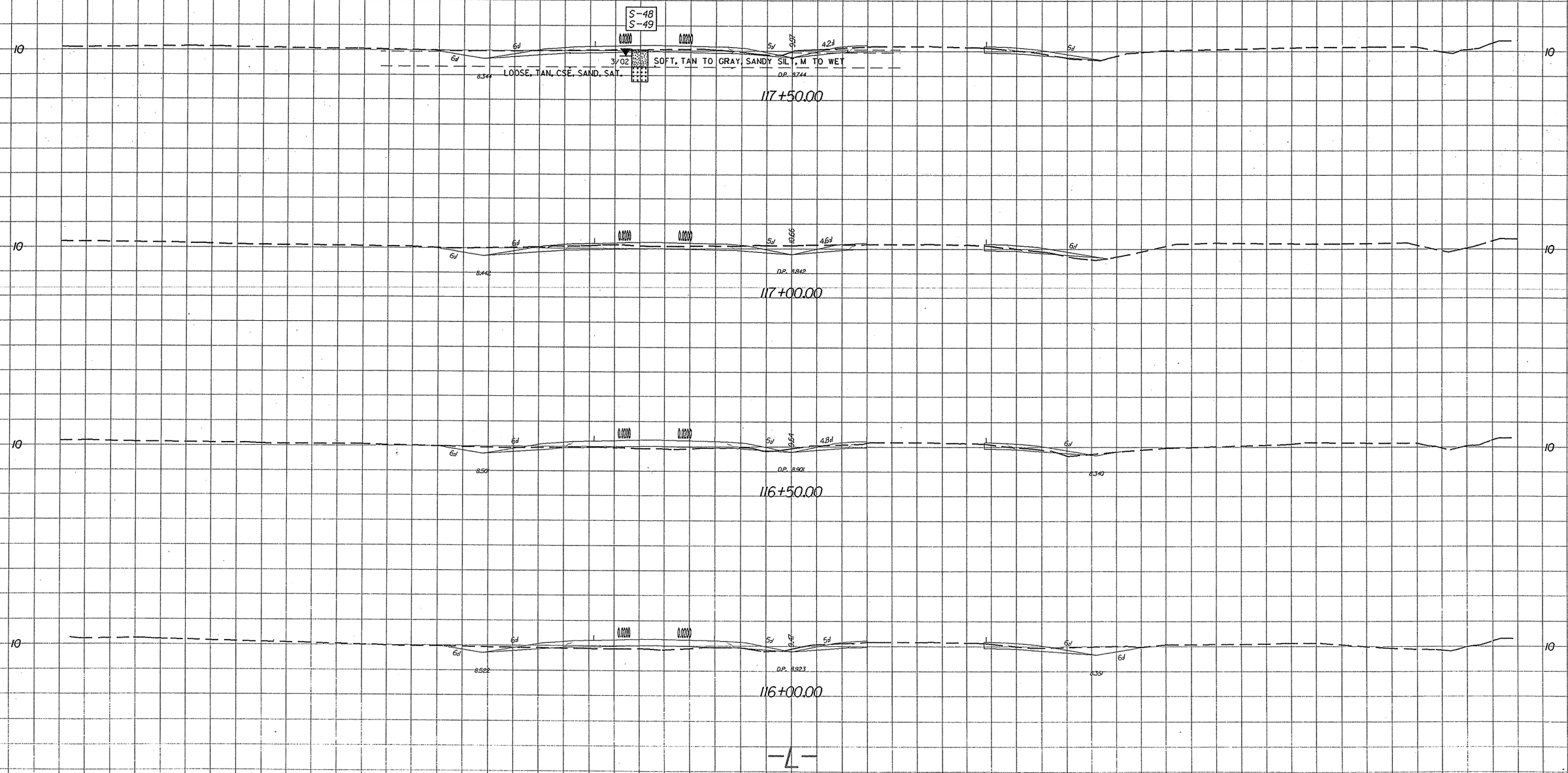
Ⓒ LOOSE, BLK, TO BRN, SILTY SAND, WITH TRACE TO LITTLE ORGANICS, MOIST WET.

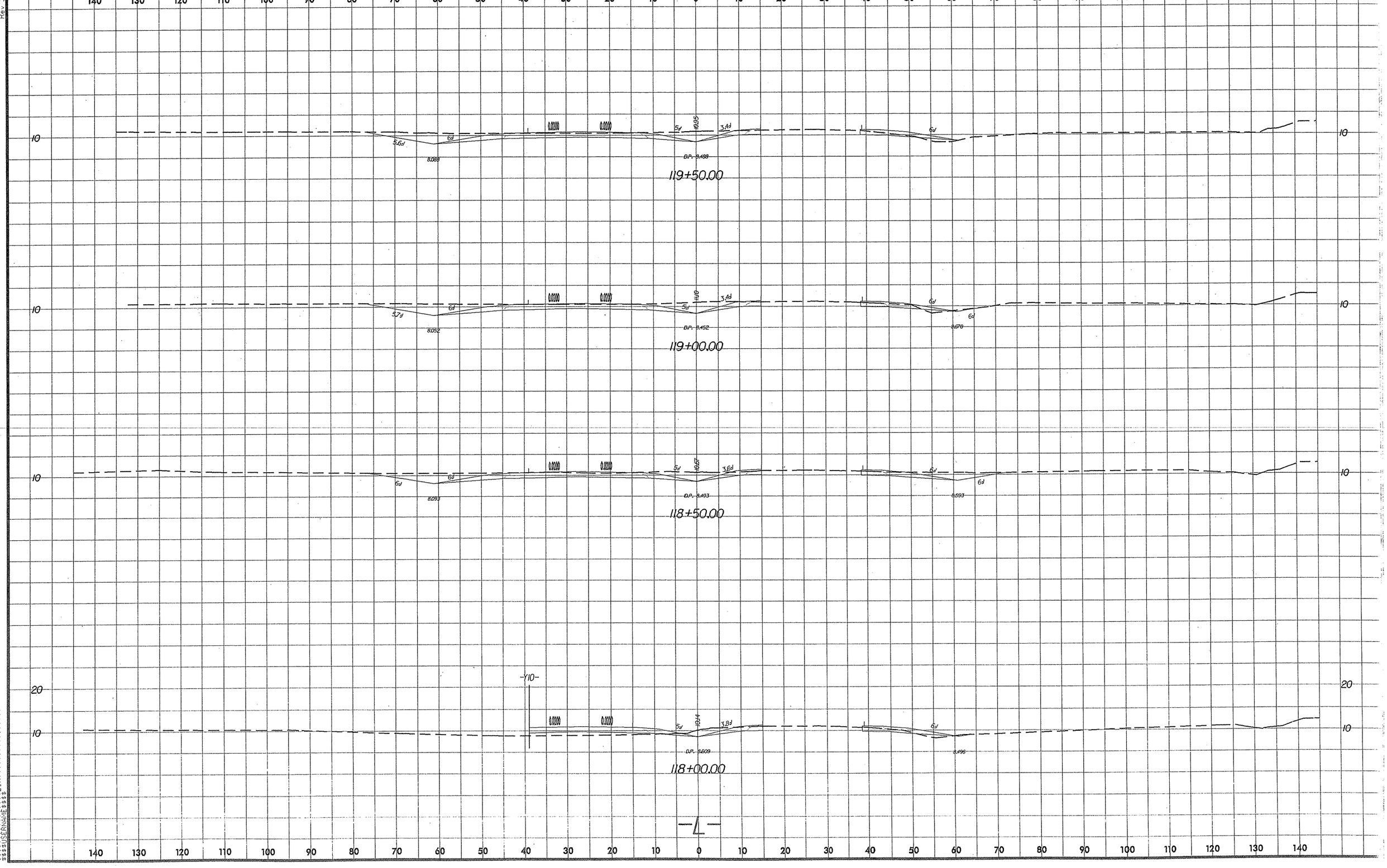
Ⓔ RDWY FILL: LOOSE, GRAY, TAN, DRK. BRN, SILTY SAND, MOIST TO WET

Rev 3/6/01

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-48	30' LT	117+50	0.50 - 3.50	A-4(0)	18	2	18.6	51.6	12.7	17.1	100	92	37	-	-
S-49	30' LT	117+50	3.50 - 6.50	A-3(0)	20	NP	48.3	47.0	0.7	4.0	100	92	6	-	-

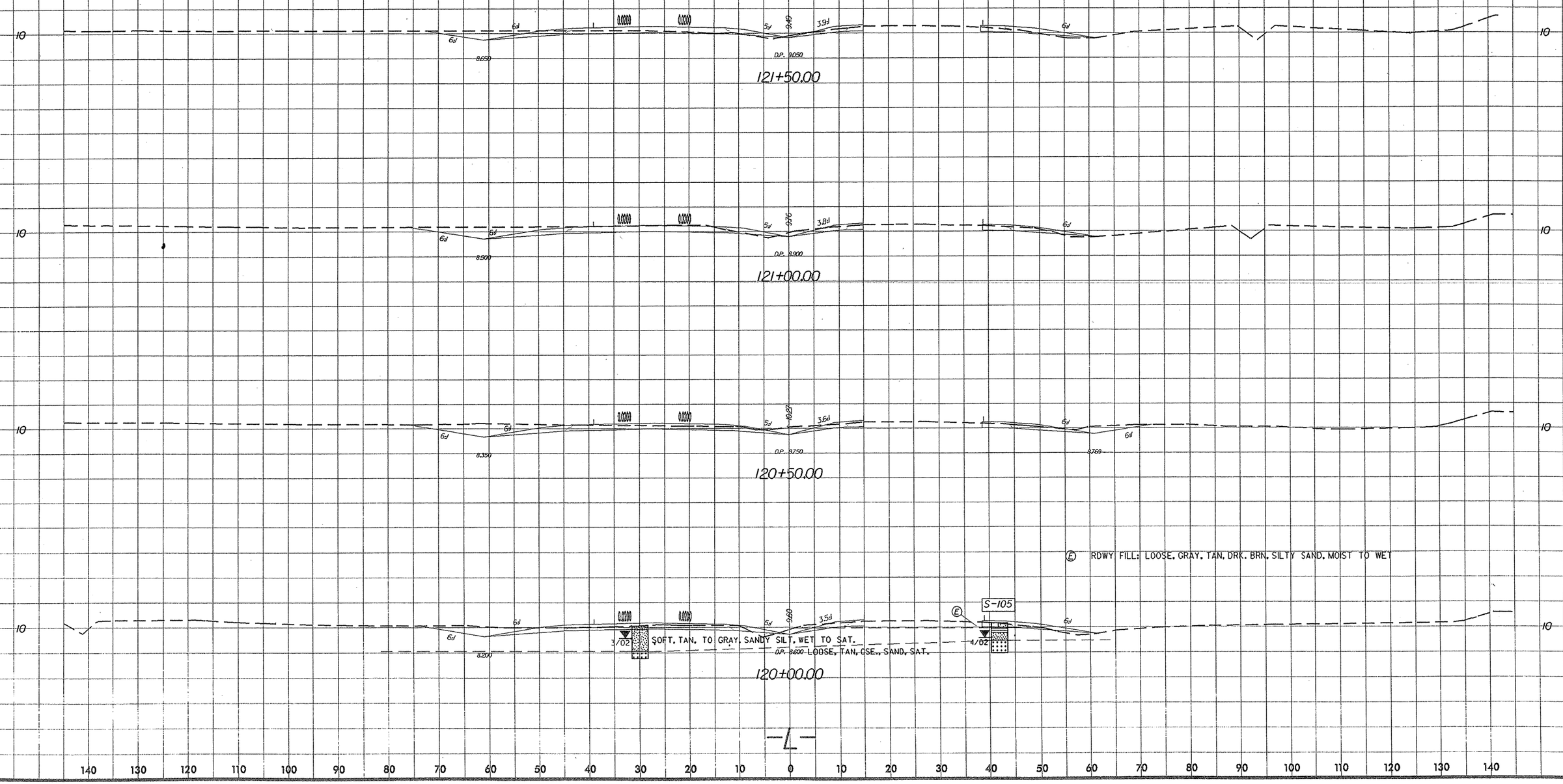



140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
10
0.0200
0.0200
5:1
10.35
3.4:1
6:1
5.6:1
8.088
D.P. 8.488
119+50.00
0.0200
0.0200
5:1
10.10
3.4:1
6:1
5.7:1
8.052
D.P. 8.452
8.578
119+00.00
0.0200
0.0200
5:1
10.67
3.6:1
6:1
8.093
D.P. 8.493
8.593
118+50.00
20
-Y10-
0.0200
0.0200
5:1
10.14
3.8:1
6:1
D.P. 8.609
8.496
118+00.00

Rev 3/6/01

SOIL TEST RESULTS

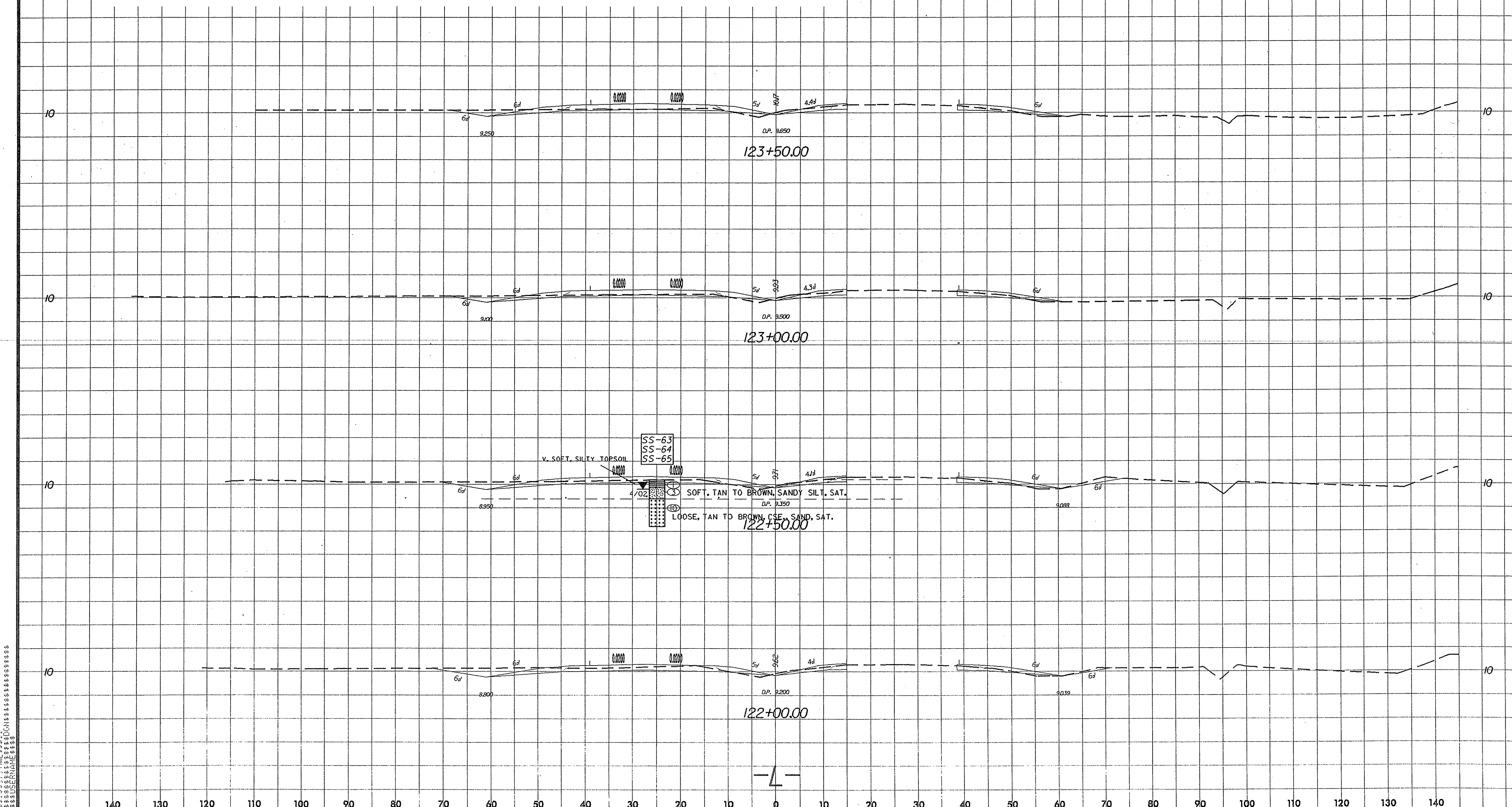
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-105	42' RT	120+00	1.00 - 2.00	A-4(0)	28	NP	20.8	39.8	23.2	16.2	100	94	46	-	5.7



$$$$USERNAME$$$$ $$$$DGN$$$$ $$$$TIME$$$$

SOIL TEST RESULTS

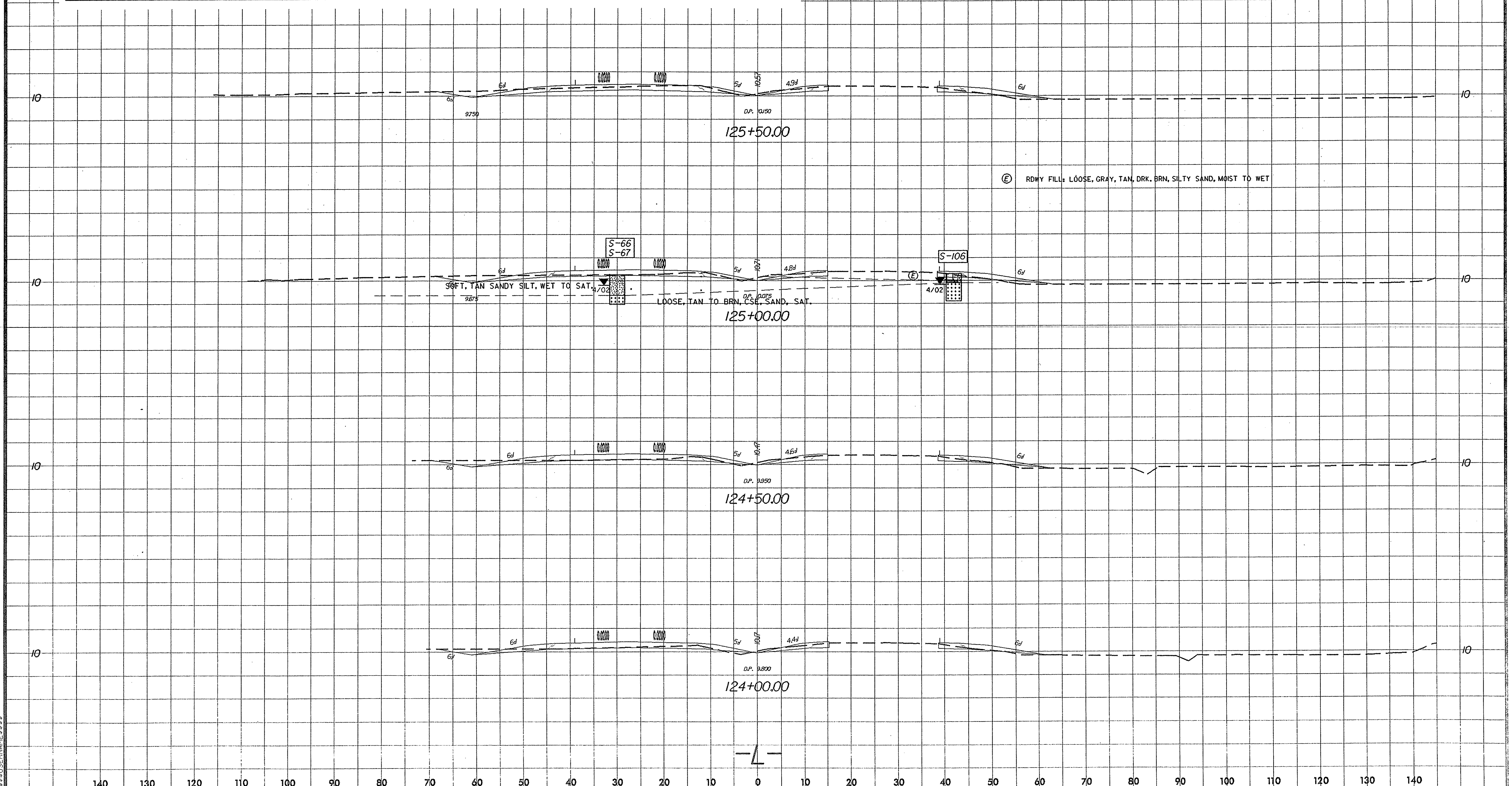
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-63	25' LT	122+50	0.00 - 1.50	A-4(1)	29	7	16.1	43.7	22.1	18.1	100	94	46	-	-
SS-64	25' LT	122+50	1.50 - 4.00	A-4(1)	23	8	10.5	45.9	19.5	24.1	100	97	51	-	-
SS-65	25' LT	122+50	4.00 - 9.90	A-3(0)	26	NP	68.9	29.3	0.8	1.0	100	68	2	-	-

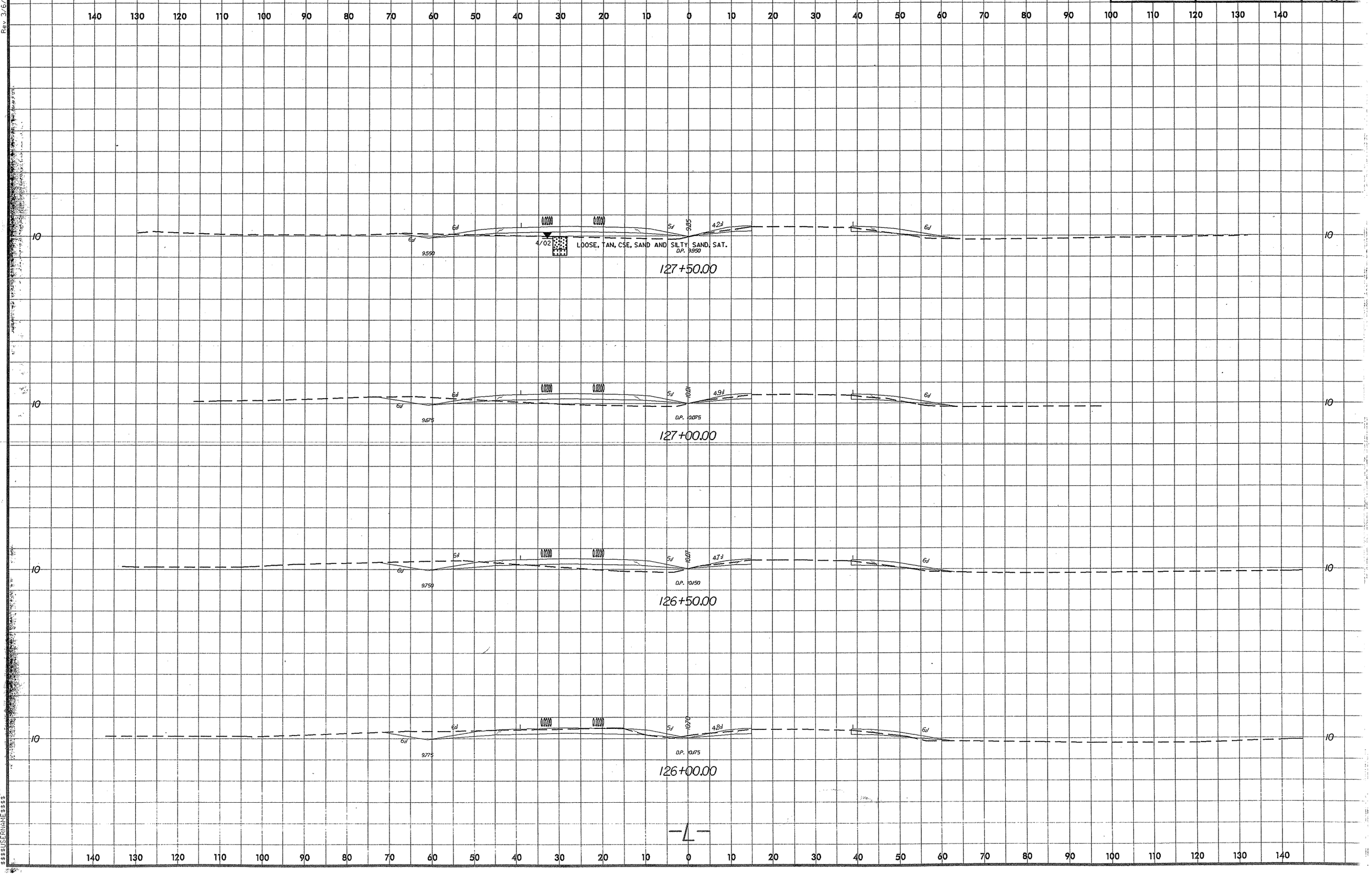


$$$$$SYSTIME$$$$
$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

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- 106	42' RT	125+00	0.00 - 1.50	A-2-4(0)	19	NP	32.3	54.9	5.8	7.1	94	86	16	-	-
S- 66	30' LT	125+00	0.00 - 4.50	A-4(0)	20	NP	5.0	54.1	20.7	20.1	100	99	53	-	-
S- 67	30' LT	125+00	4.50 - 6.50	A-3(0)	20	NP	37.0	59.1	0.9	3.0	100	91	5	-	-





PROJ. REFERENCE NO.
R-3403A
SHEET NO.
83
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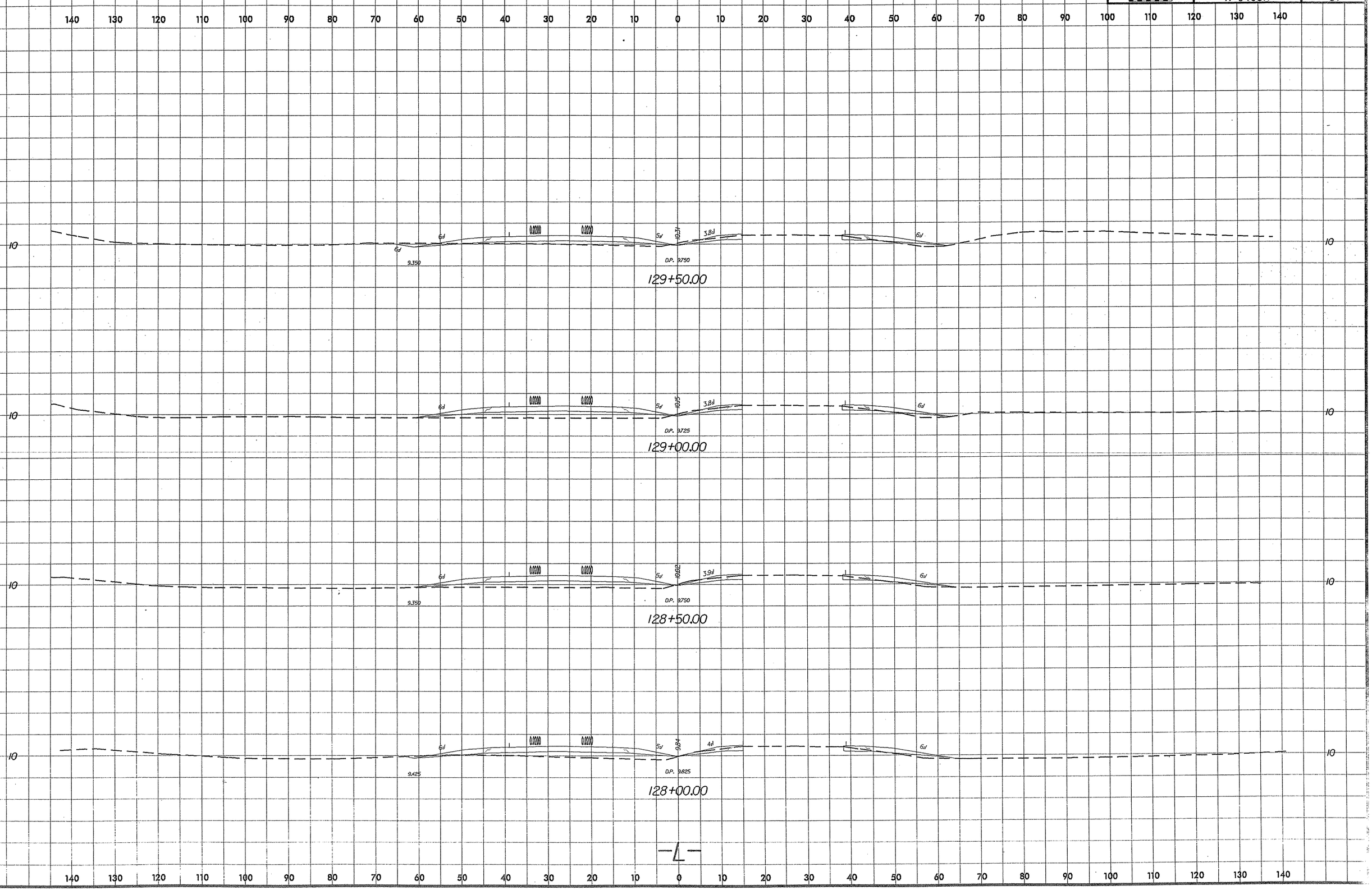
10
0.0200
0.0200
6:1
5:1
9.85
4.2:1
9.550
4/02
LOOSE, TAN, CSE, SAND AND SILTY SAND, SAT.
D.P. 9.950
127+50.00
10.01
4.9:1
9.675
D.P. 10.075
127+00.00
10.07
4.7:1
9.750
D.P. 10.150
126+50.00
10.70
4.8:1
9.775
D.P. 10.175
126+00.00
-L-

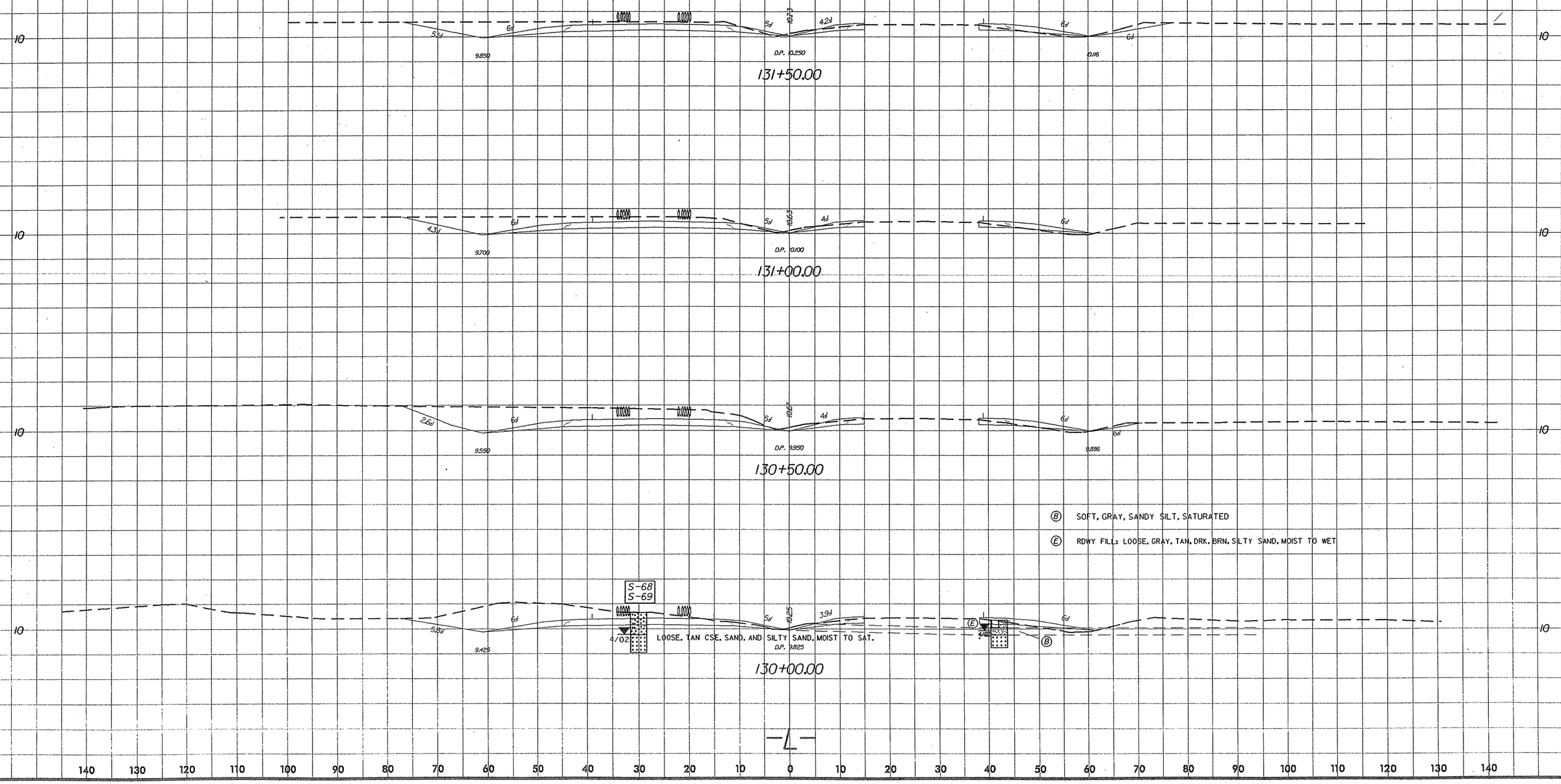


PROJ. REFERENCE NO.
R-3403A
SHEET NO.
84
Rev 3/6/01
129+50.00
D.P. 9750
9.350
129+00.00
D.P. 9725
128+50.00
D.P. 9750
9.350
128+00.00
D.P. 9825
9.425
-L-

Rev. 3/6/01

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-68	30' LT	130+00	0.00 - 4.50	A-2-4(0)	17	NP	6.5	73.4	9.0	11.1	100	99	27	-	-
S-69	30' LT	130+00	4.50 - 8.00	A-3(0)	21	NP	56.0	41.0	0.9	2.0	100	87	4	-	-



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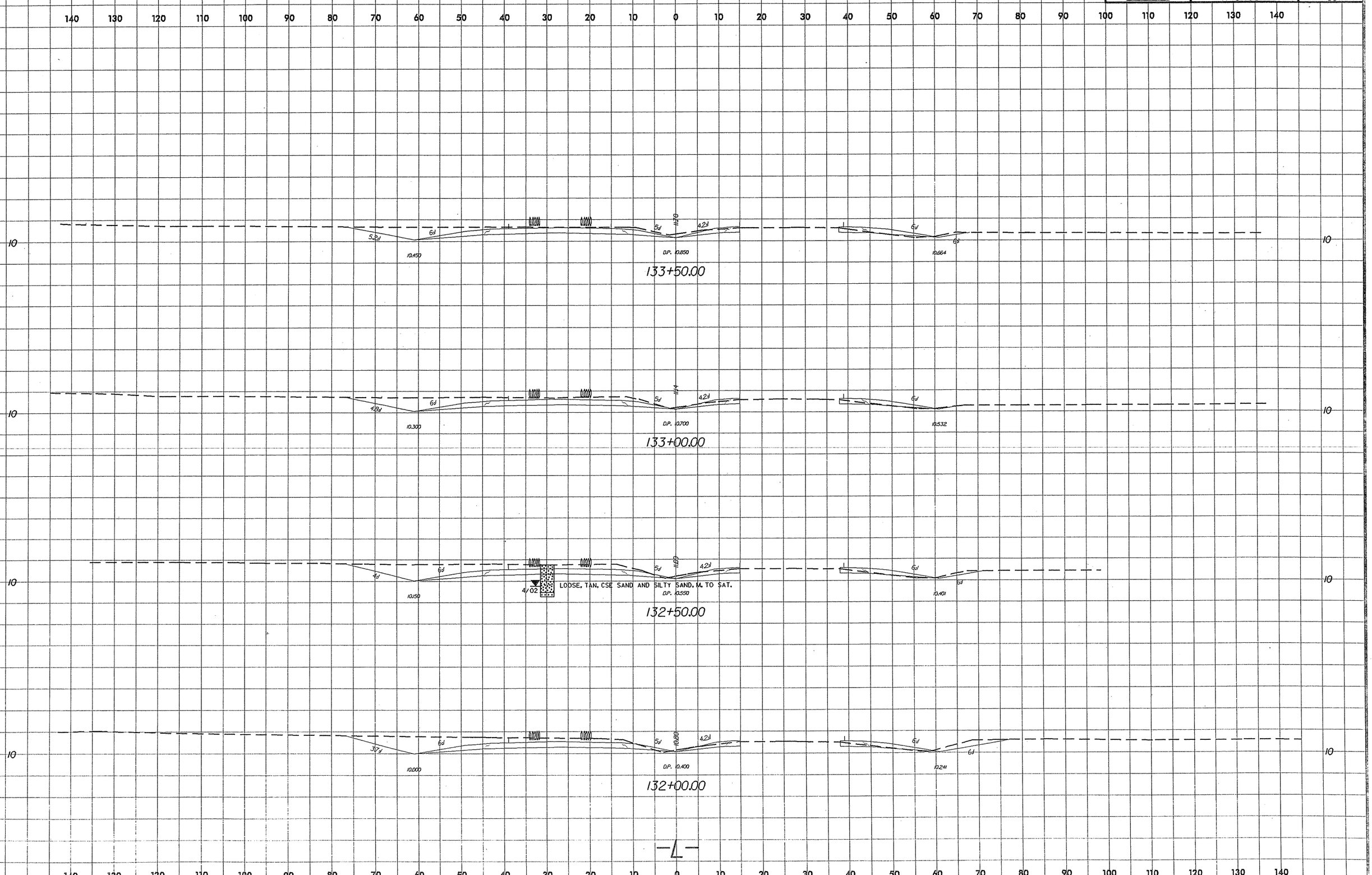
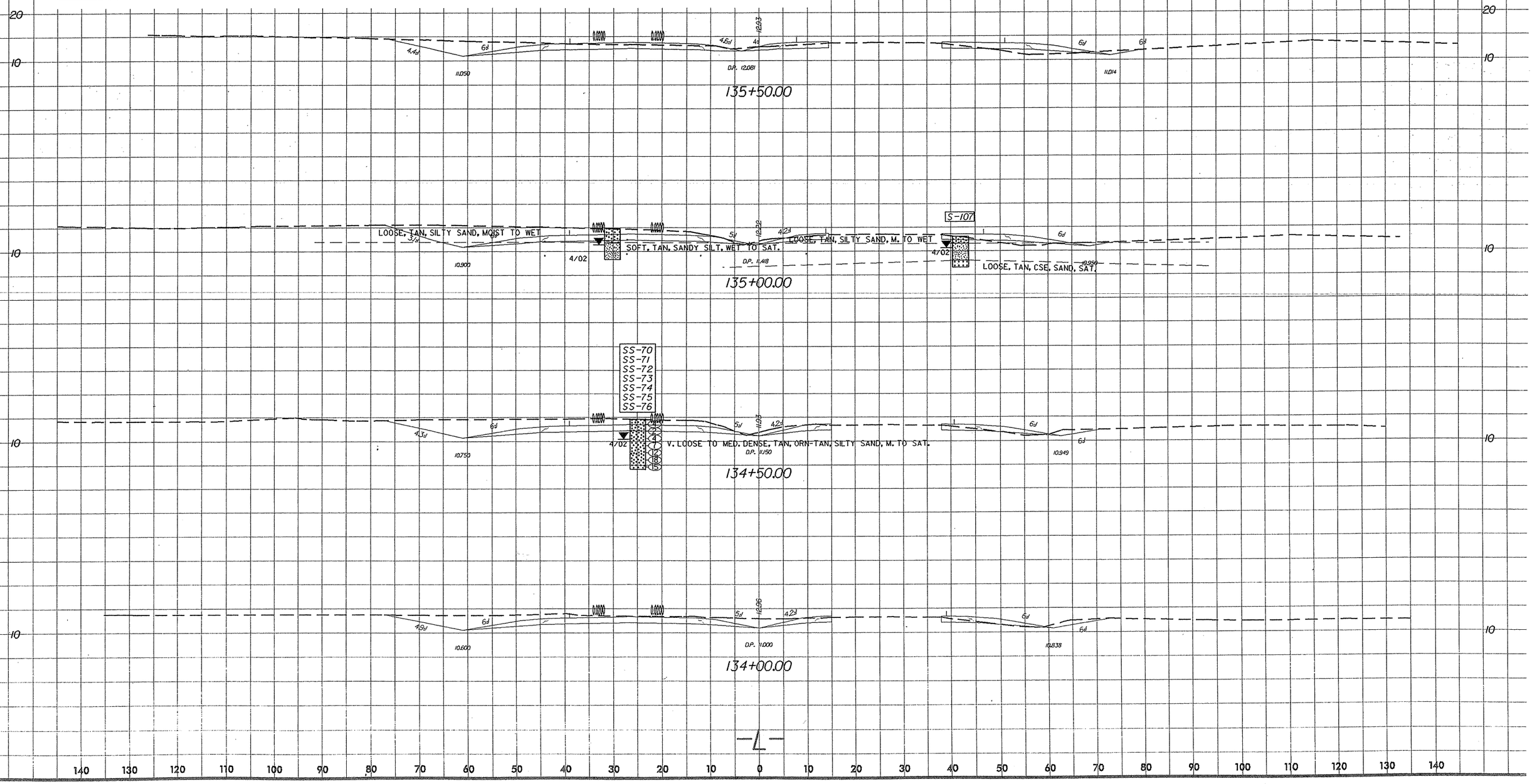
	R-3403A	86



Rev 3/6/01

SOIL TEST RESULTS

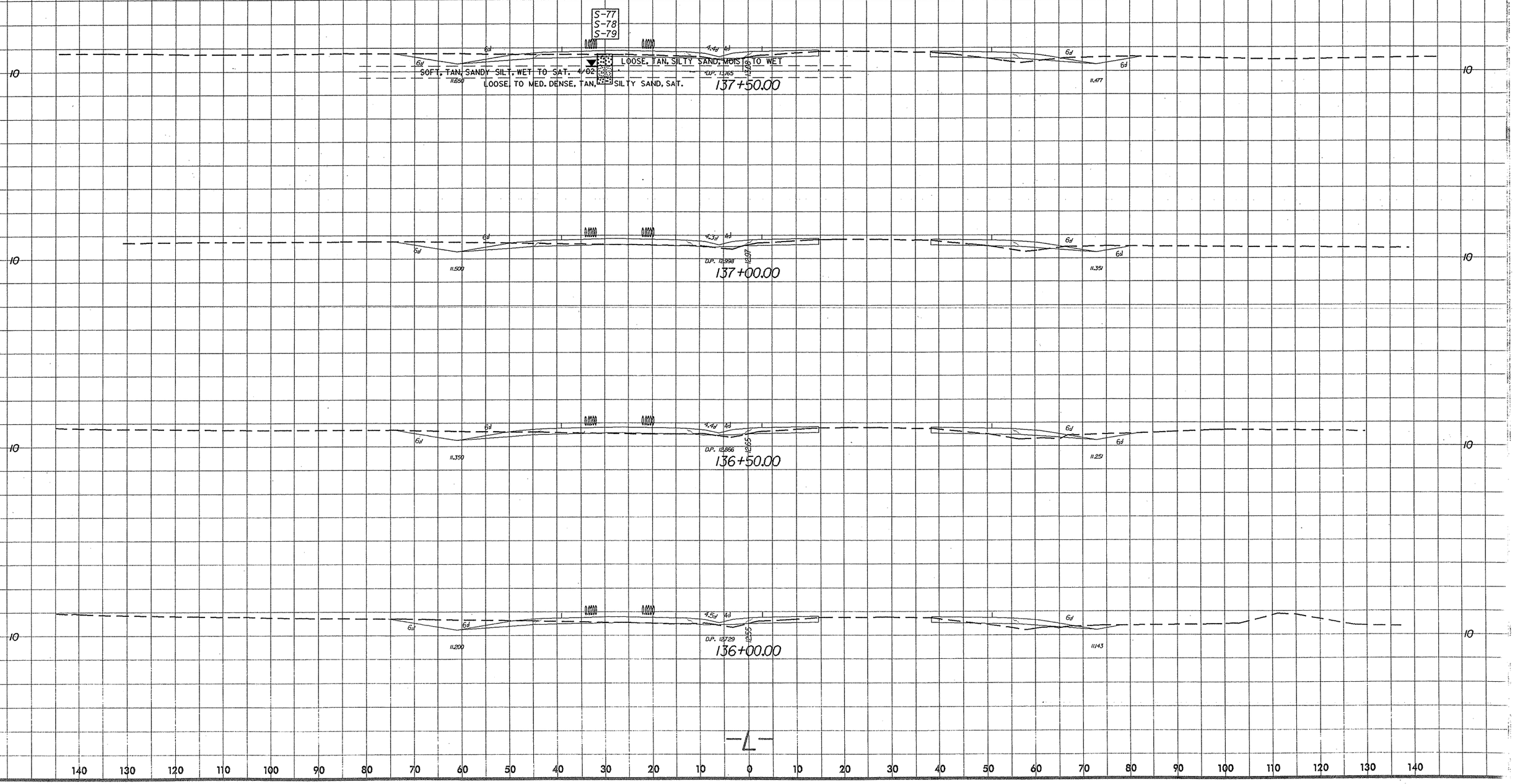
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-70	25' LT	134+50	0.00 - 1.50	A-2-4(0)	23	NP	19.3	71.5	4.1	5.0	100	99	12	-	-
SS-71	25' LT	134+50	1.50 - 3.00	A-2-4(0)	16	NP	19.0	72.3	3.6	5.0	100	99	11	-	-
SS-72	25' LT	134+50	3.00 - 4.50	A-2-4(0)	16	NP	17.4	71.2	3.3	8.0	100	99	14	-	-
SS-73	25' LT	134+50	4.50 - 6.00	A-2-4(0)	25	NP	3.4	84.1	6.4	6.0	100	100	21	-	-
SS-74	25' LT	134+50	6.00 - 7.50	A-2-4(0)	23	NP	4.6	81.8	8.6	5.0	100	100	23	-	-
SS-75	25' LT	134+50	7.50 - 9.00	A-2-4(0)	21	NP	4.4	83.9	6.6	5.0	100	100	18	-	-
SS-76	25' LT	134+50	9.00 - 10.50	A-2-4(0)	23	NP	11.1	81.6	5.3	2.0	100	97	12	-	-
S-107	42' RT	135+00	1.50 - 5.00	A-4(0)	19	2	16.4	45.7	19.7	18.2	100	96	49	-	-



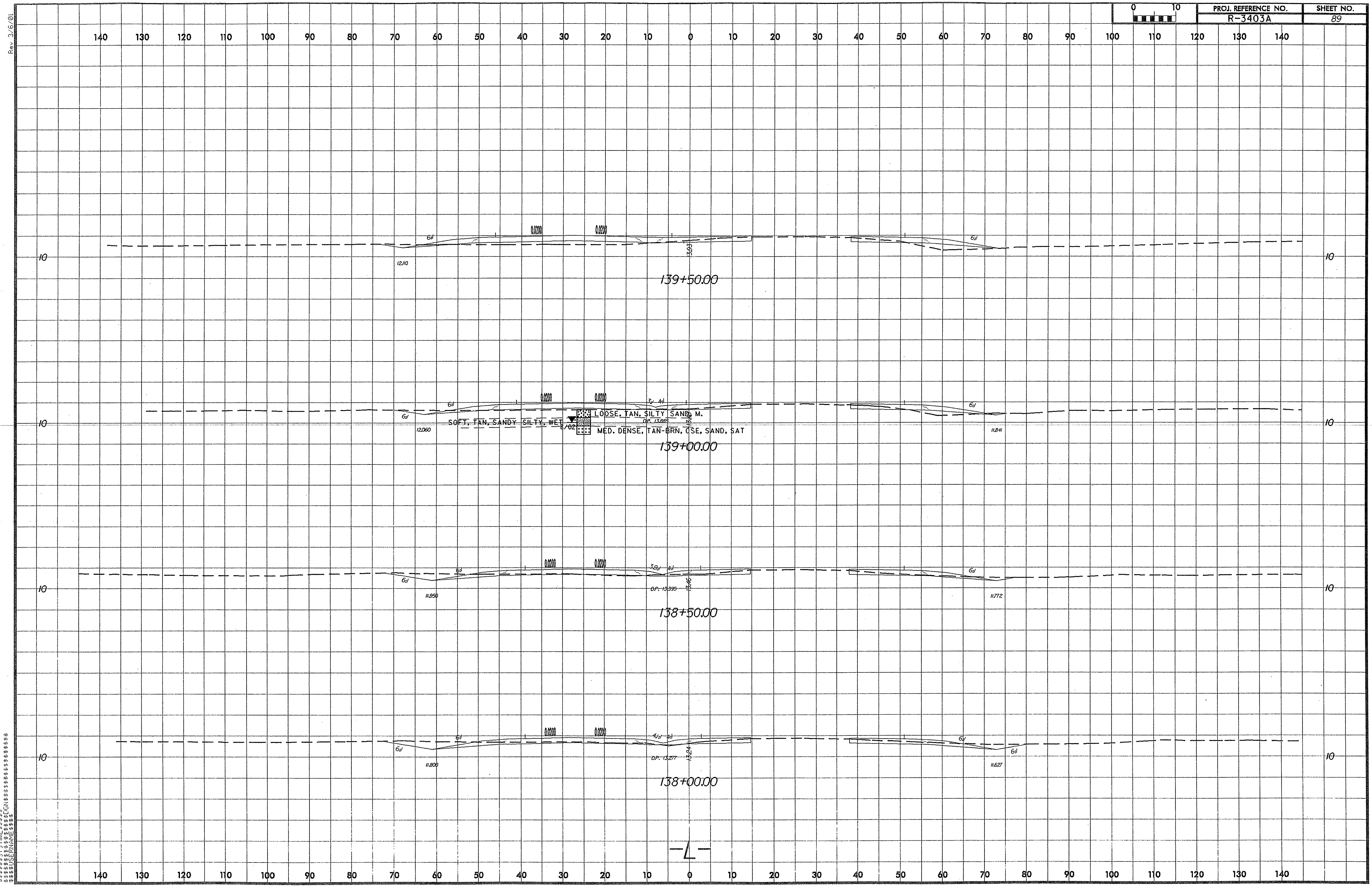
Rev 3/6/01

SOIL TEST RESULTS

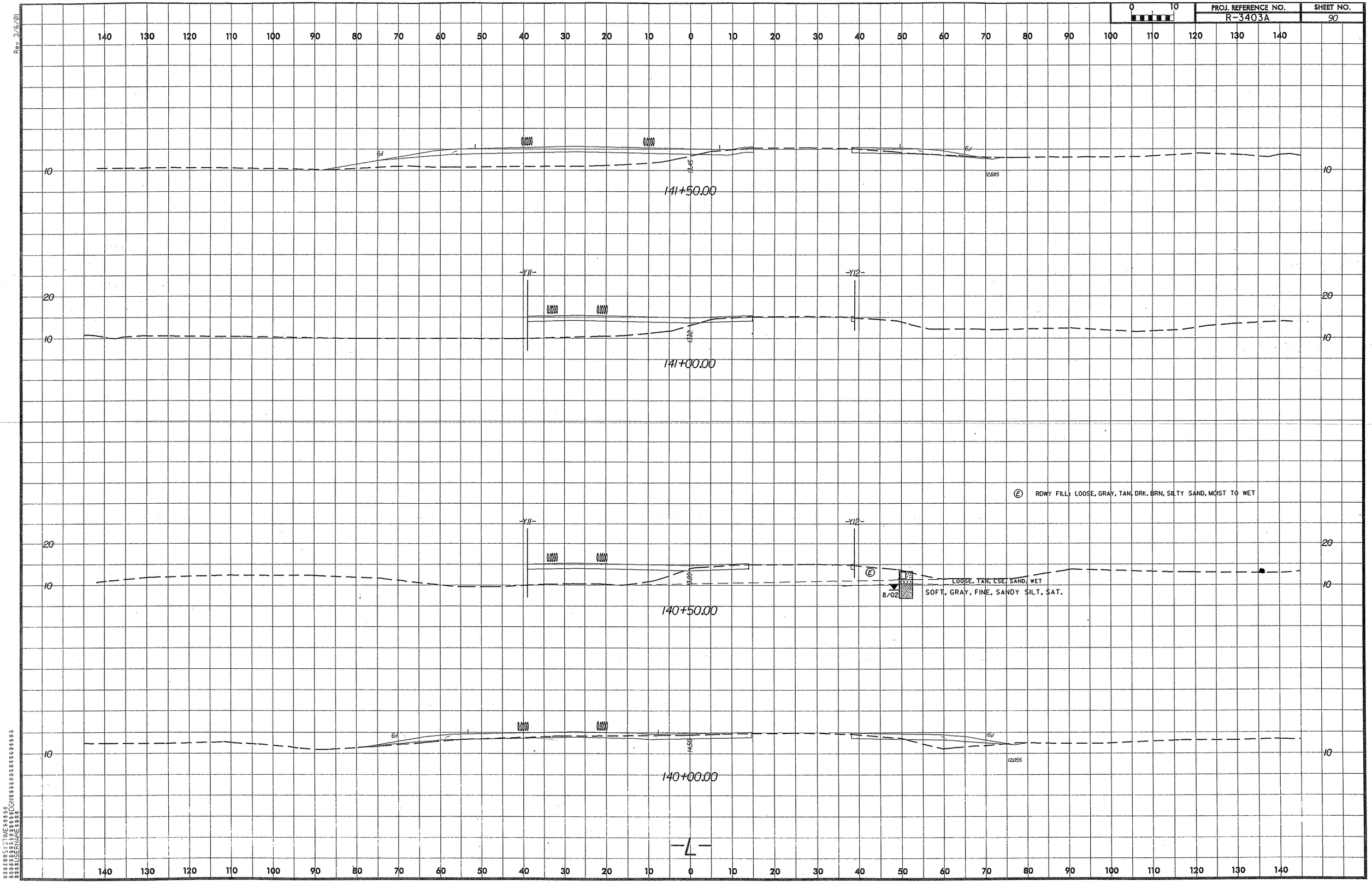
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-77	30' LT	137+50	0.00 - 2.50	A-2-4(0)	17	NP	37.4	44.8	7.7	10.1	100	96	21	-	-
S-78	30' LT	137+50	2.50 - 5.00	A-4(0)	19	NP	15.3	54.7	13.9	16.1	100	98	40	-	-
S-79	30' LT	137+50	5.00 - 6.50	A-2-4(0)	24	NP	1.9	90.9	3.1	4.0	100	100	11	-	-



PROJ. REFERENCE NO.	SHEET NO.
R-3403A	89



0 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3403A	90



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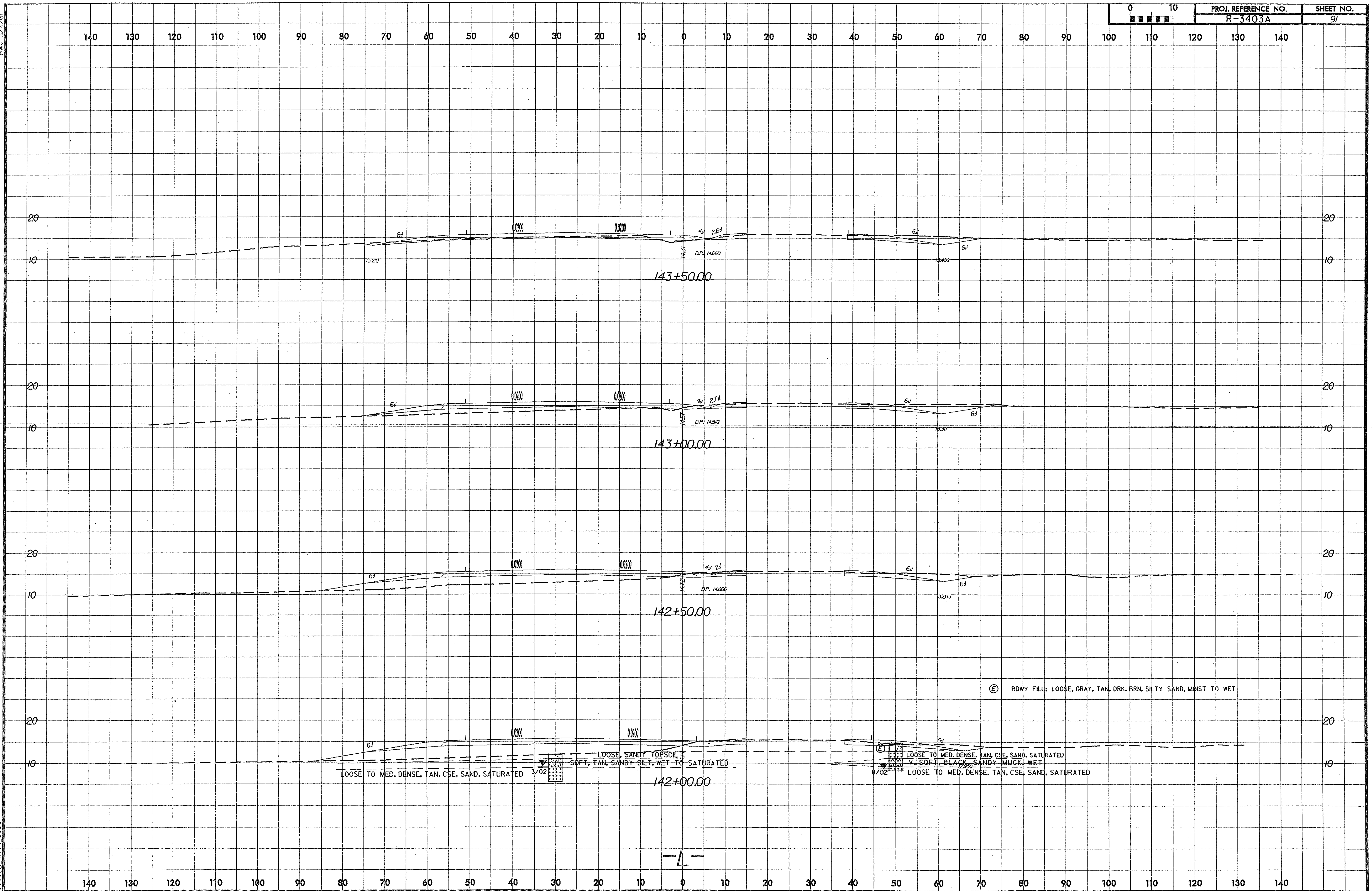
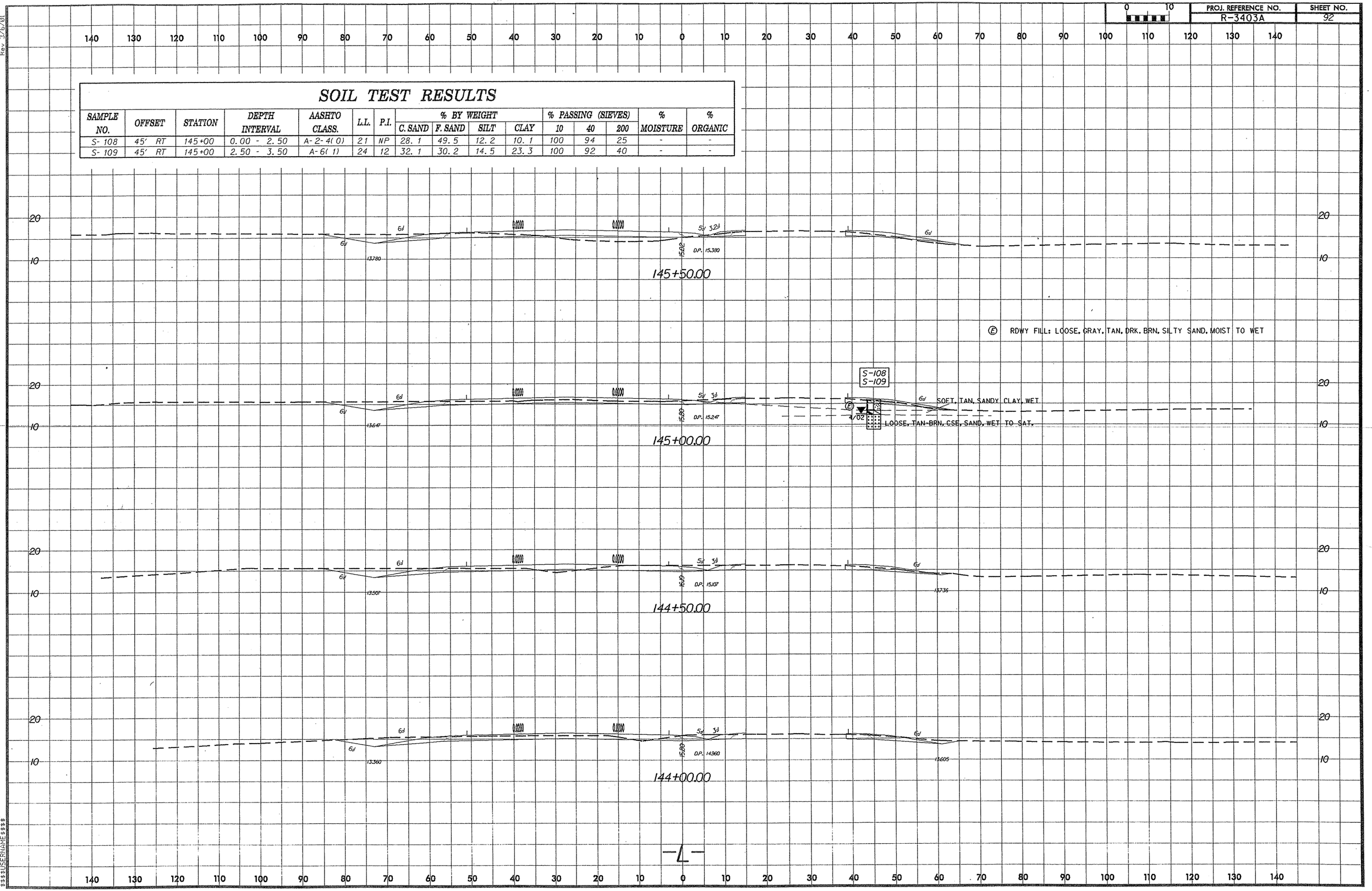
PROJ. REFERENCE NO.	SHEET NO.
R-3403A	91



Rev 3/6/01

SOIL TEST RESULTS

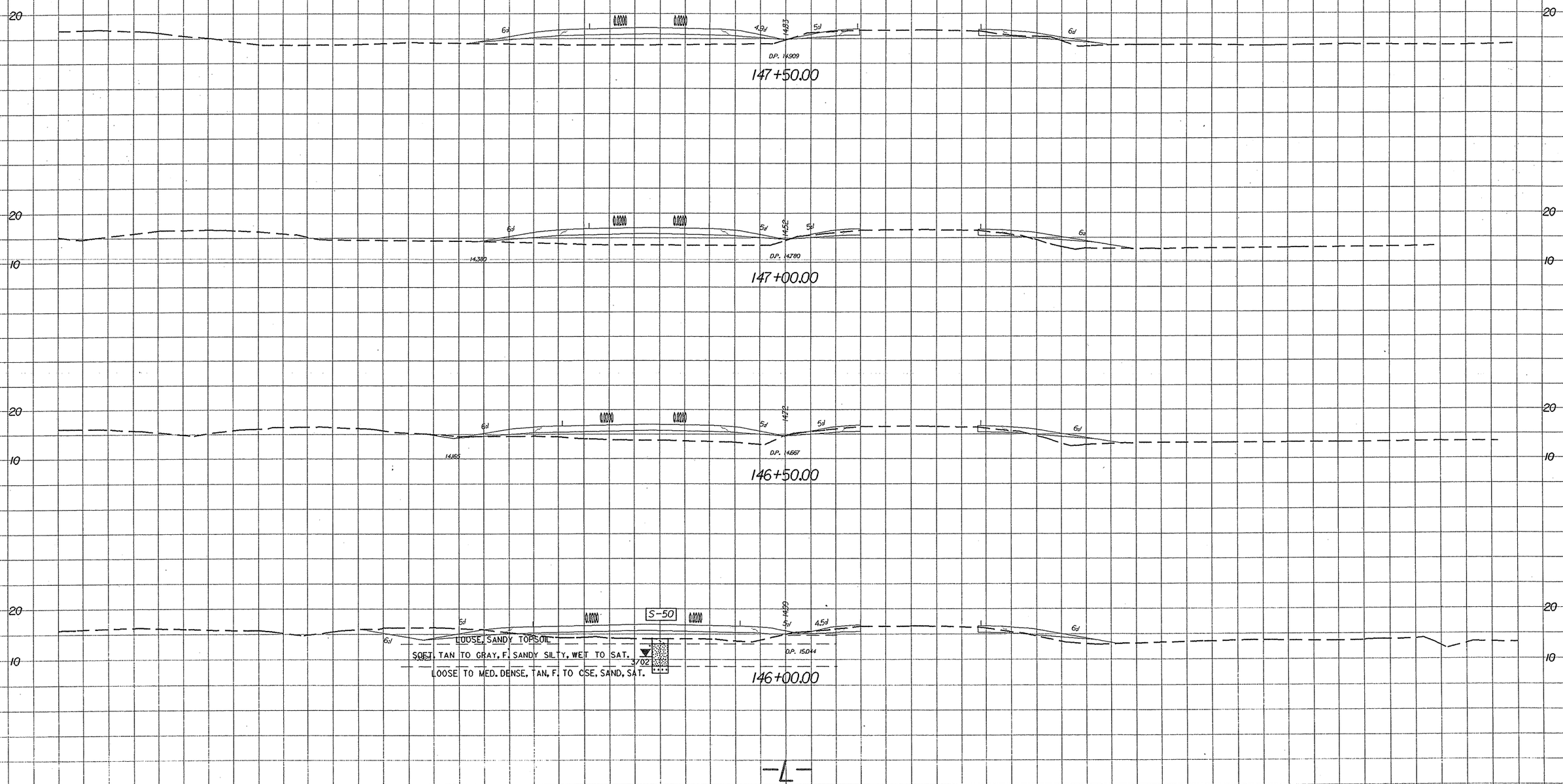
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-108	45' RT	145+00	0.00 - 2.50	A-2-4(0)	21	NP	28.1	49.5	12.2	10.1	100	94	25	-	-
S-109	45' RT	145+00	2.50 - 3.50	A-6(1)	24	12	32.1	30.2	14.5	23.3	100	92	40	-	-

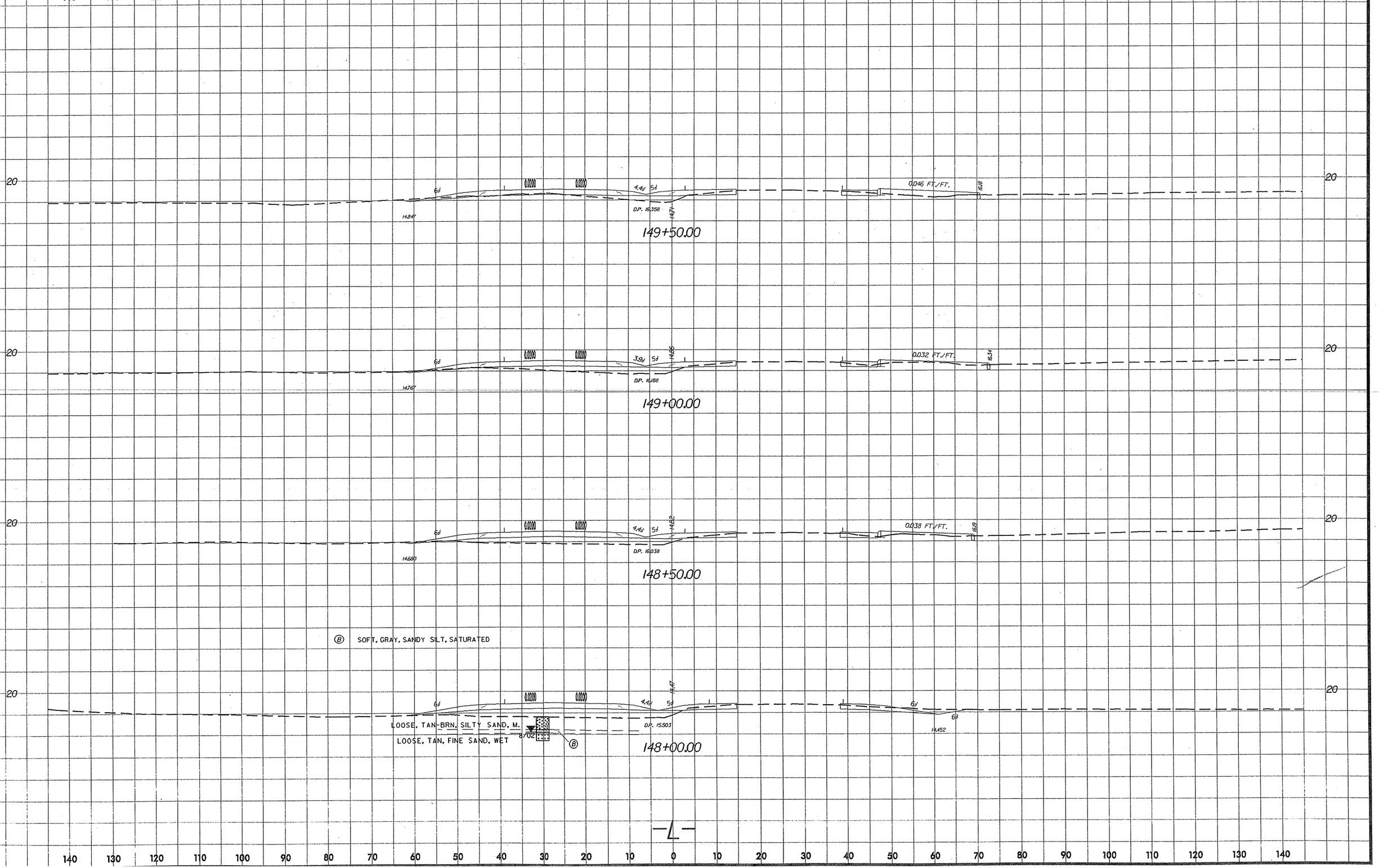


Rev 3/6/01

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-50	25' LT	146+00	1.00 - 5.50	A-4(0)	22	8	26.9	33.9	15.1	24.1	100	93	42	-	-



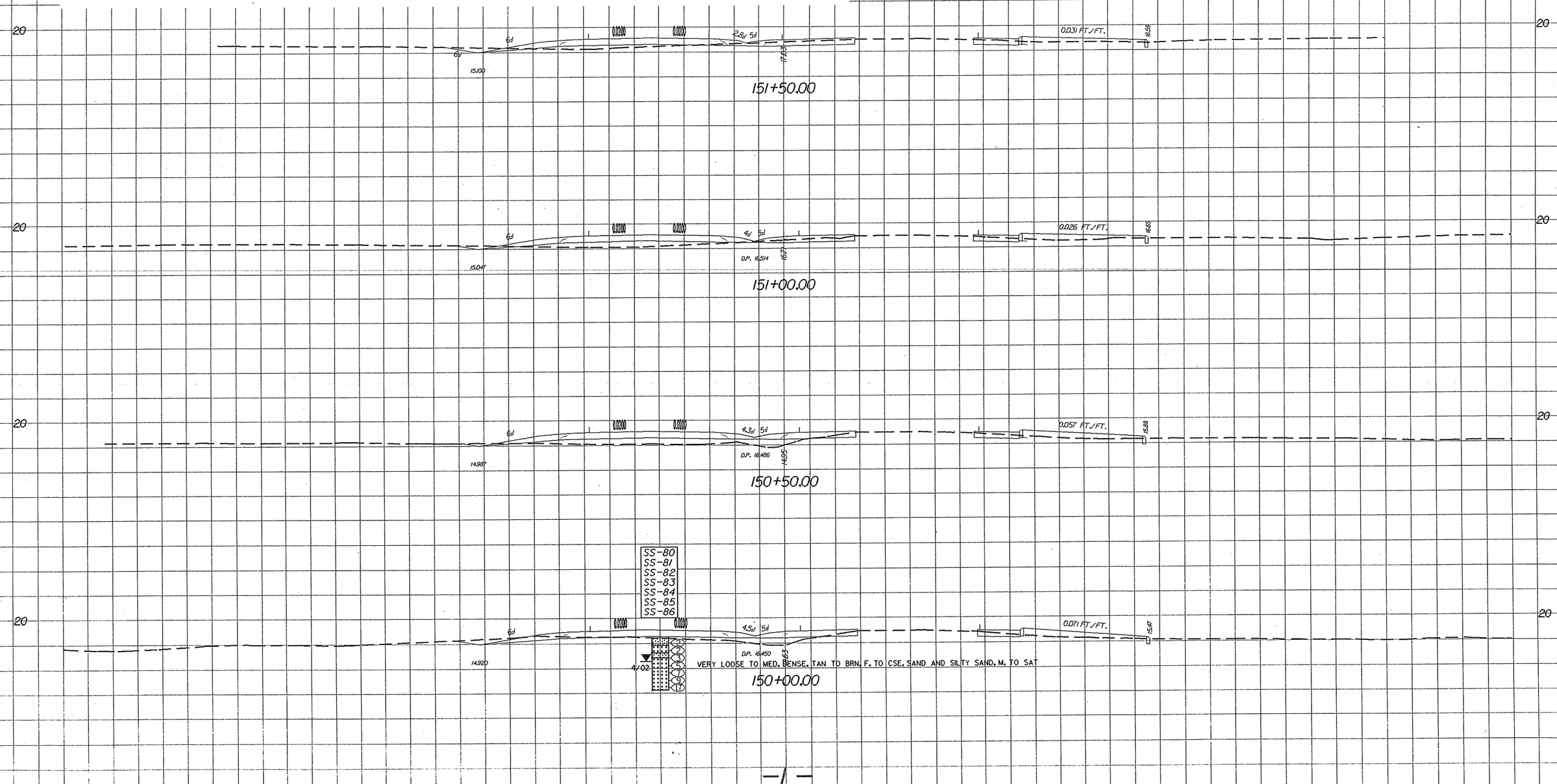


PROJ. REFERENCE NO.
R-3403A
SHEET NO.
94
0 10
Rev 3/6/01
0.046 FT./FT.
D.P. 16.358
149+50.00
0.032 FT./FT.
D.P. 16.188
149+00.00
0.038 FT./FT.
D.P. 16.038
148+50.00
SOFT, GRAY, SANDY SILT, SATURATED
LOOSE, TAN-BRN, SILTY SAND, M.
LOOSE, TAN, FINE SAND, WET
D.P. 15.503
148+00.00
-L-

Rev 3/6/01

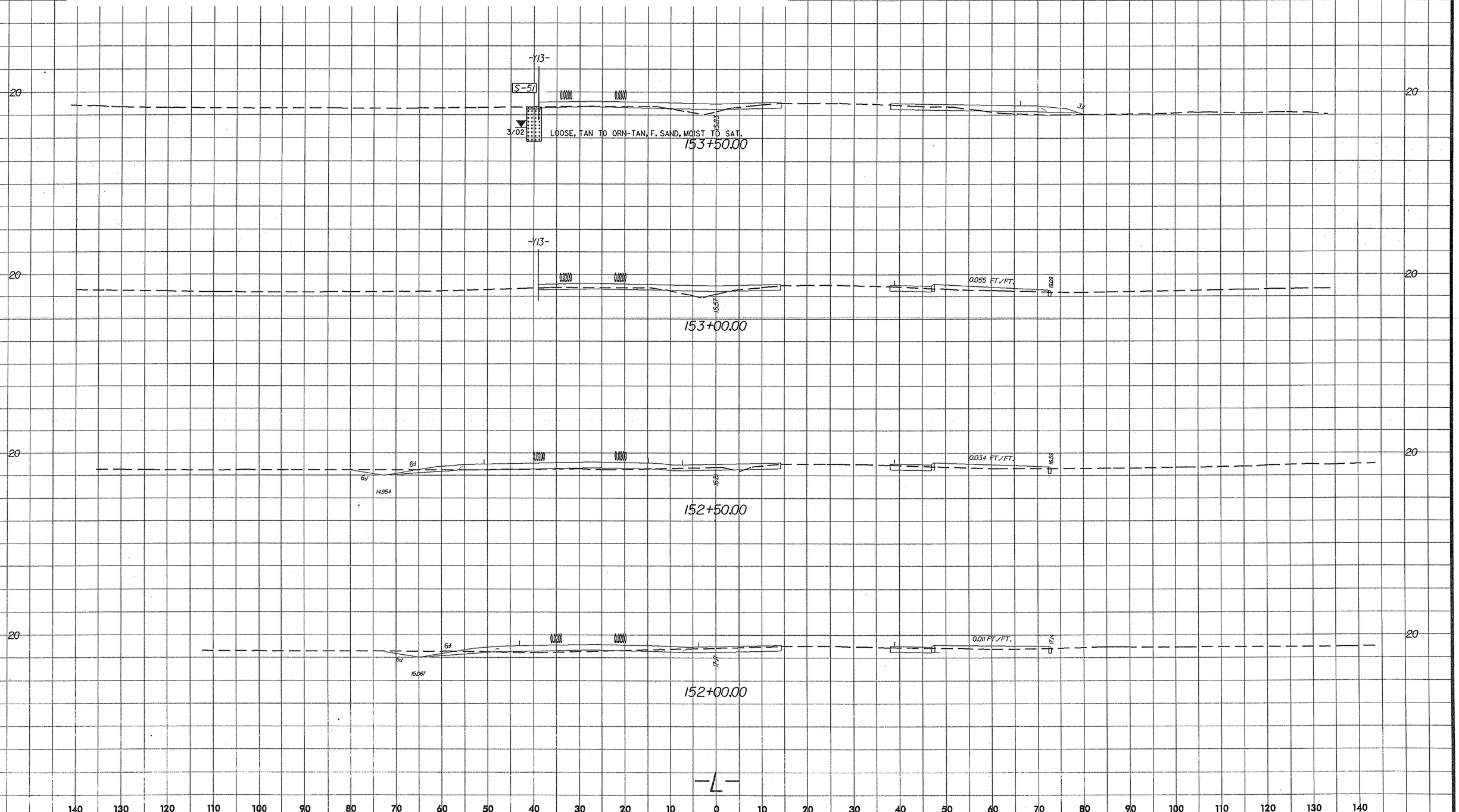
SOIL TEST RESULTS

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-80	25' LT	150+00	0.00 - 1.50	A-2-4(0)	19	NP	34.9	54.3	4.7	6.0	100	93	12	-	-
SS-81	25' LT	150+00	1.50 - 3.00	A-3(0)	17	NP	34.2	56.5	4.2	5.0	100	95	10	-	-
SS-82	25' LT	150+00	3.00 - 4.00	A-2-4(0)	16	NP	31.3	53.7	3.9	11.1	100	95	16	-	-
SS-83	25' LT	150+00	4.00 - 6.00	A-3(0)	23	NP	38.7	56.8	1.4	3.0	100	90	6	-	-
SS-84	25' LT	150+00	6.00 - 7.50	A-3(0)	21	NP	38.2	56.3	3.4	2.0	100	93	7	-	-
SS-85	25' LT	150+00	7.50 - 9.00	A-3(0)	21	NP	47.6	49.0	1.4	2.0	100	88	5	-	-
SS-86	25' LT	150+00	9.00 - 10.50	A-3(0)	21	NP	46.7	50.6	1.7	1.0	100	87	4	-	-



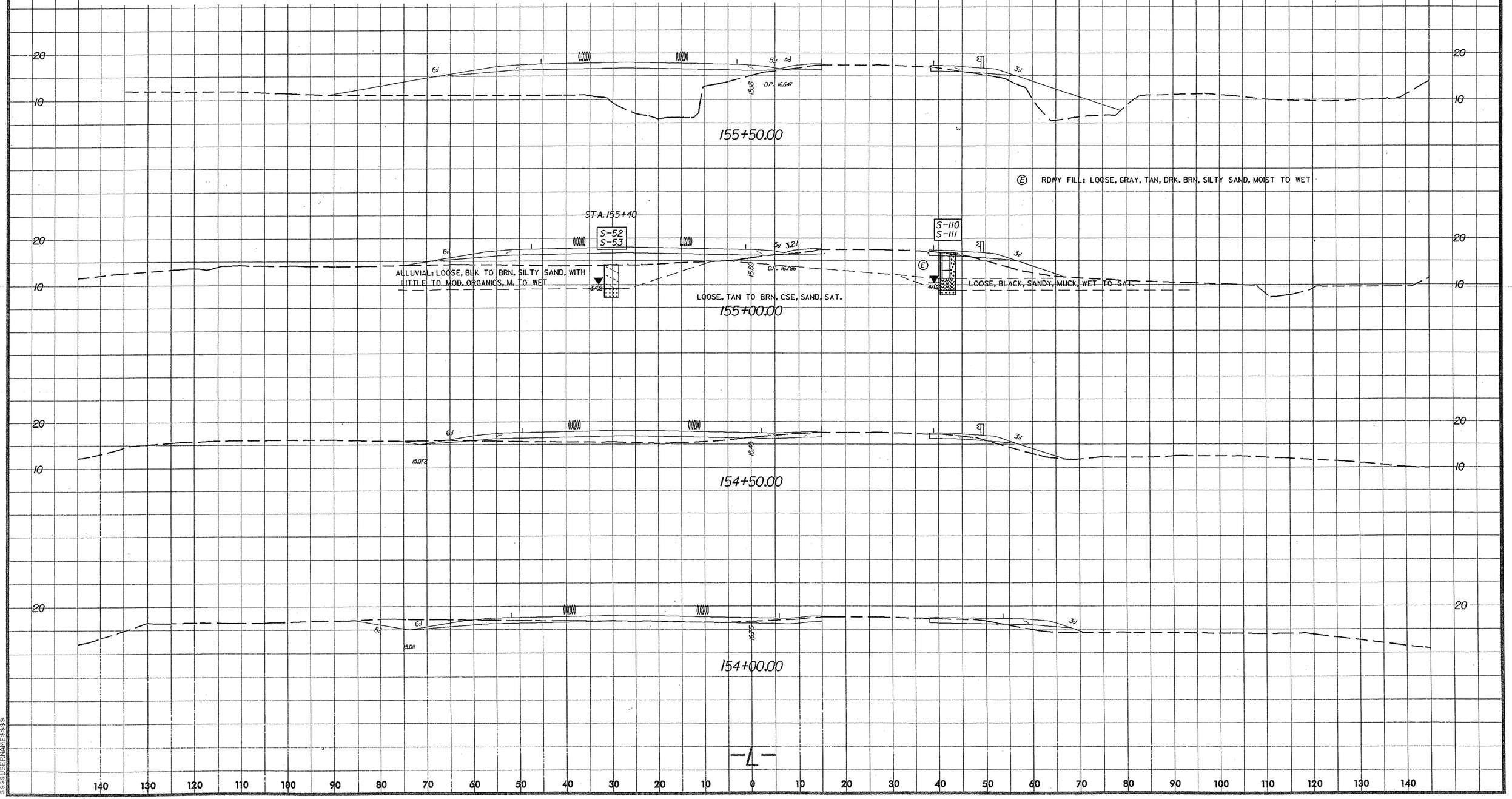
SOIL TEST RESULTS

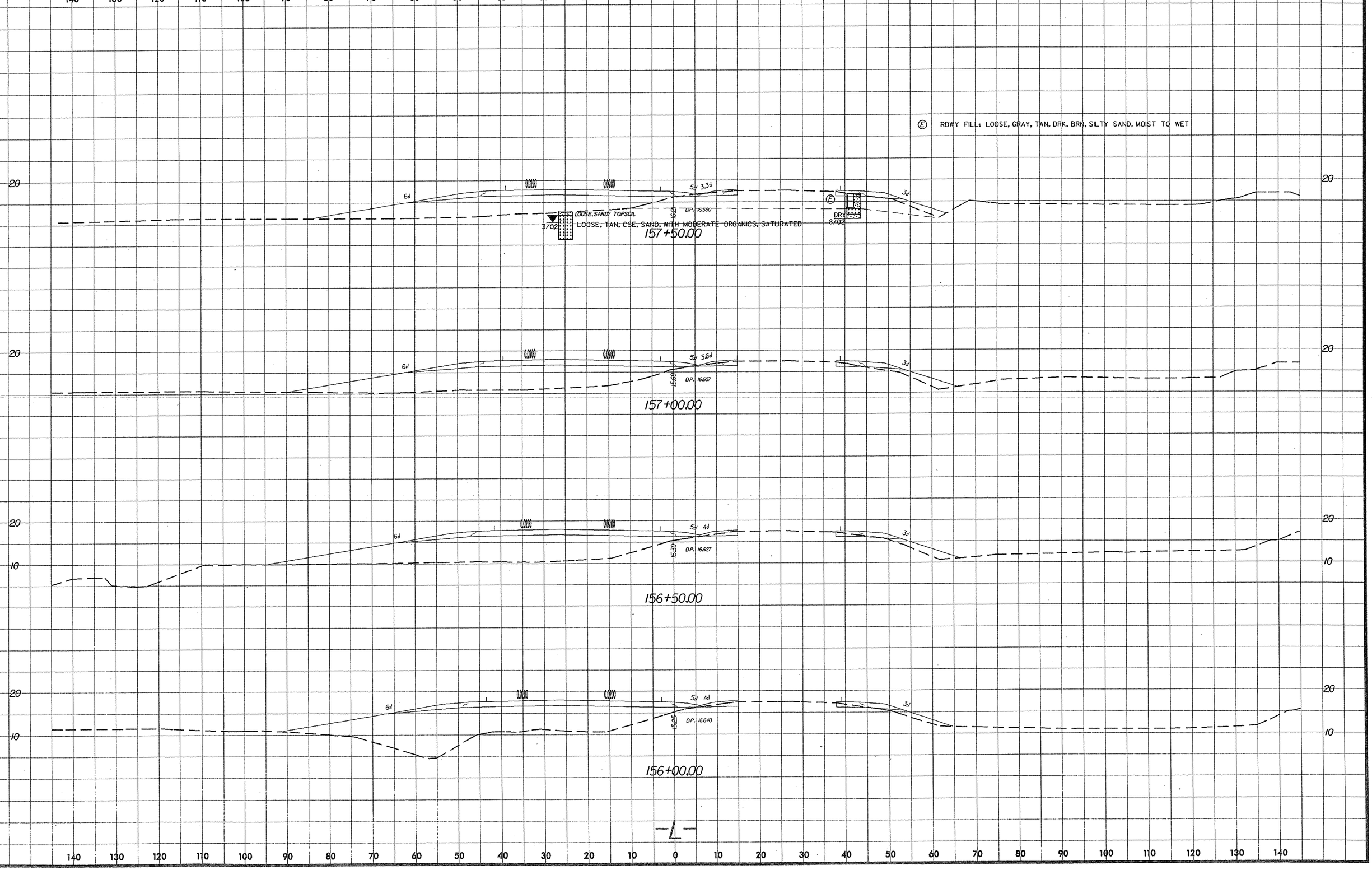
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	% BY WEIGHT F. SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
S-51	40' LT	153+50	0.50 - 7.50	A-3(0)	17	NP	35.2	56.5	3.2	5.0	100	92	10	-	-



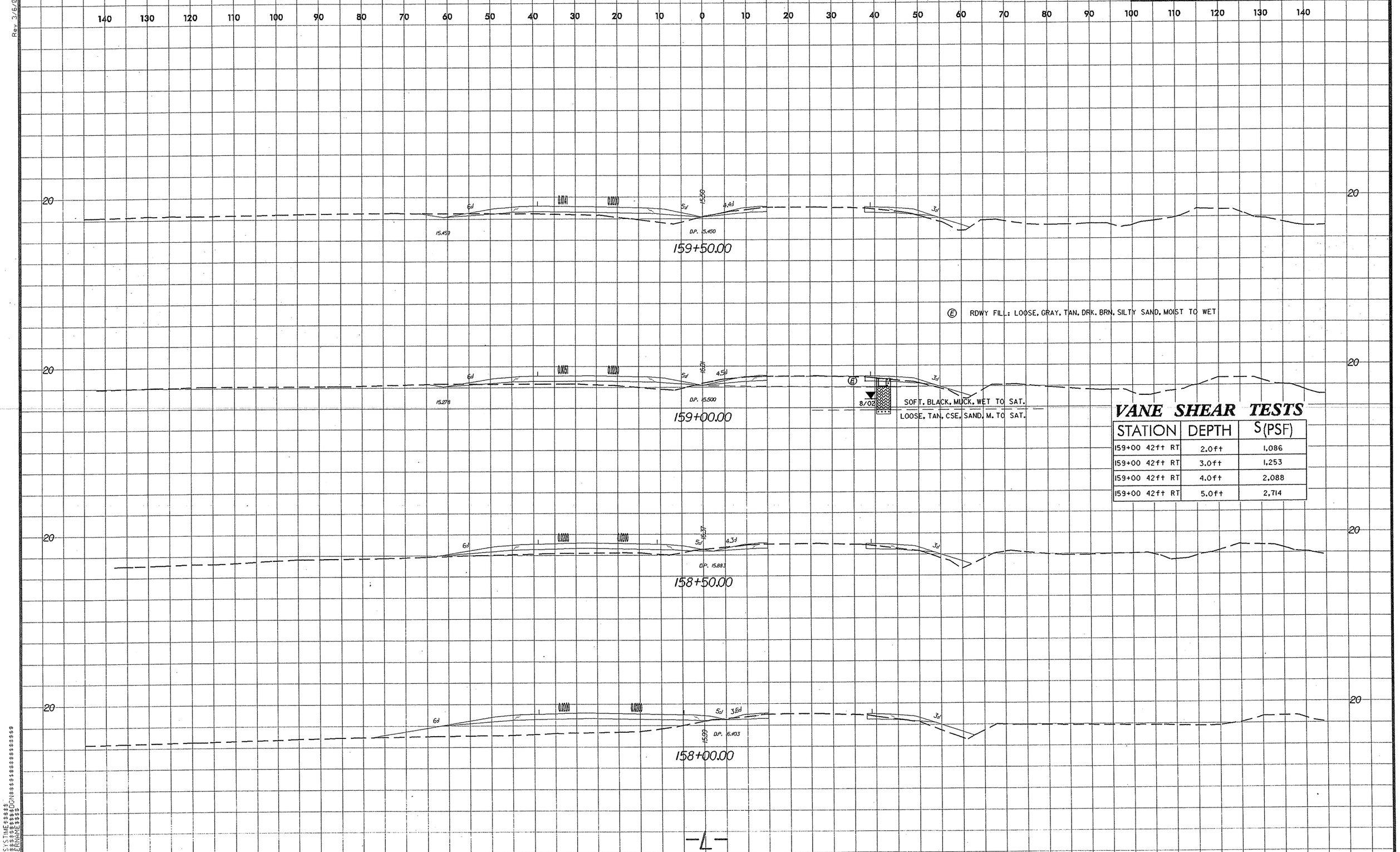
SOIL TEST RESULTS

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-110	45' RT	155+00	1.00 - 5.50	A-2-4(0)	19	NP	28.8	56.9	6.2	8.1	100	95	17	-	-
S-111	45' RT	155+00	5.50 - 8.00	A-2-5(0)	46	NP	25.2	43.7	21.0	10.1	100	93	33	-	13.4
S-52	30' LT	155+50	0.00 - 3.00	A-2-4(0)	29	NP	31.2	48.9	11.9	8.0	100	91	23	-	7.1
S-53	30' LT	155+50	3.00 - 5.00	A-2-4(0)	24	NP	28.0	61.1	4.9	6.0	100	94	14	-	3.1





PROJ. REFERENCE NO.
R-3403A
SHEET NO.
98
Rev 3/6/01
Ⓔ RDWY FILL: LOOSE, GRAY, TAN, DRK. BRN, SILTY SAND, MOIST TO WET
LOOSE, SANDY TOPSOIL
LOOSE, TAN, CSE, SAND, WITH MODERATE ORGANICS, SATURATED
3/02
DRY
8/02
D.P. 16.580
157+50.00
D.P. 16.607
157+00.00
D.P. 16.627
156+50.00
D.P. 16.640
156+00.00
-L-



VANE SHEAR TESTS

STATION	DEPTH	S(PSF)
159+00 42ft RT	2.0ft	1,086
159+00 42ft RT	3.0ft	1,253
159+00 42ft RT	4.0ft	2,088
159+00 42ft RT	5.0ft	2,714

Rev 3/6/01
$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$

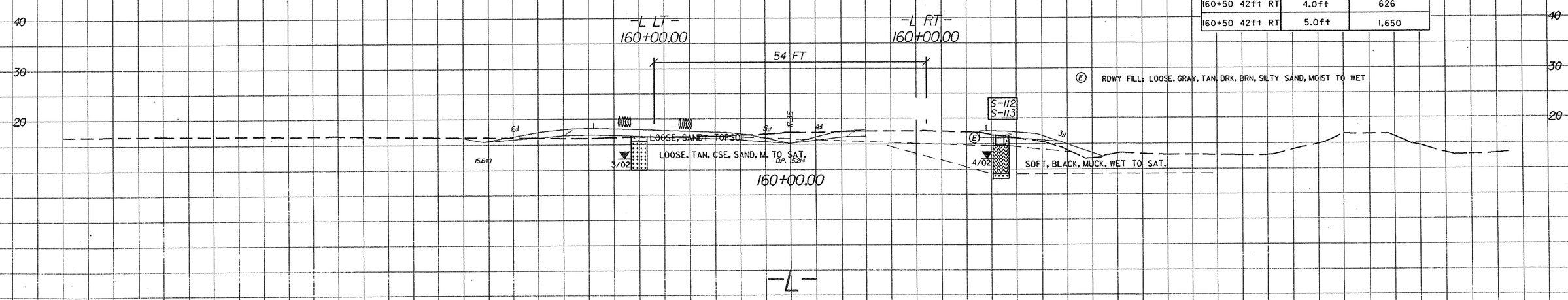
Rev 3/6/01

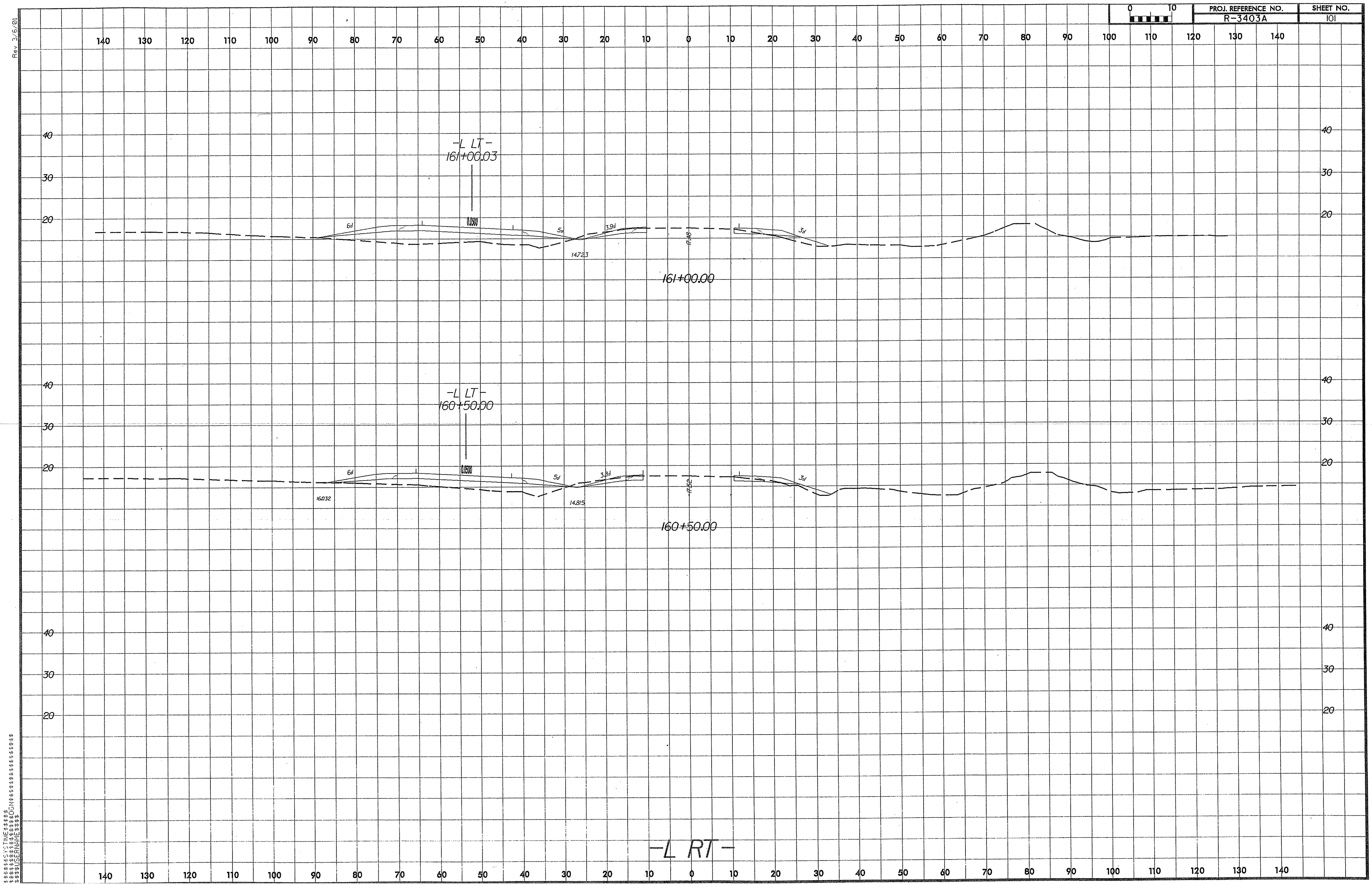
SOIL TEST RESULTS

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-112	42' RT	160+00	2.50 - 4.50	A-7-5(3)	44	14	17.3	41.9	28.7	12.1	100	96	44	-	14.5
S-113	42' RT	160+00	4.50 - 7.50	A-2-4(0)	38	NP	21.8	48.7	17.3	12.1	100	95	33	-	10.7

VANE SHEAR TESTS

STATION	DEPTH	S(PSF)
160+50 42ft RT	2.0ft	1,942
160+50 42ft RT	3.0ft	1,253
160+50 42ft RT	4.0ft	626
160+50 42ft RT	5.0ft	1,650




PROJ. REFERENCE NO.
R-3403A
SHEET NO.
101
0 10
Rev 3/6/01
-L LT-
161+00.03
0.0500
6:1
5:1
3.9:1
3:1
14.723
17.48
161+00.00
-L LT-
160+50.00
0.0500
6:1
5:1
3.8:1
3:1
16.032
14.815
17.52
160+50.00
-L RT-
$$$$$$SYSTIME$$$$
$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
R-3403A	102

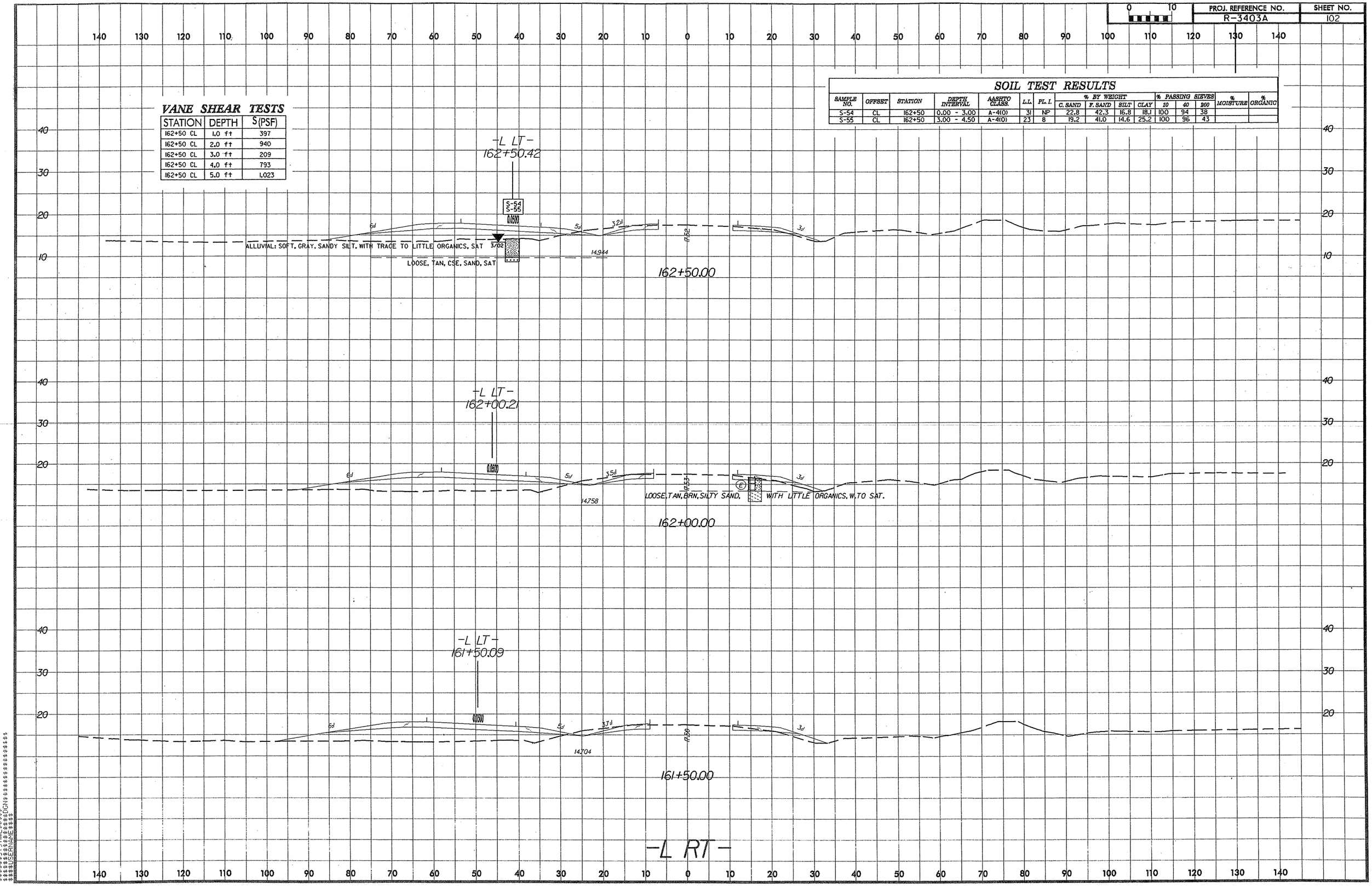
0 10

VANE SHEAR TESTS

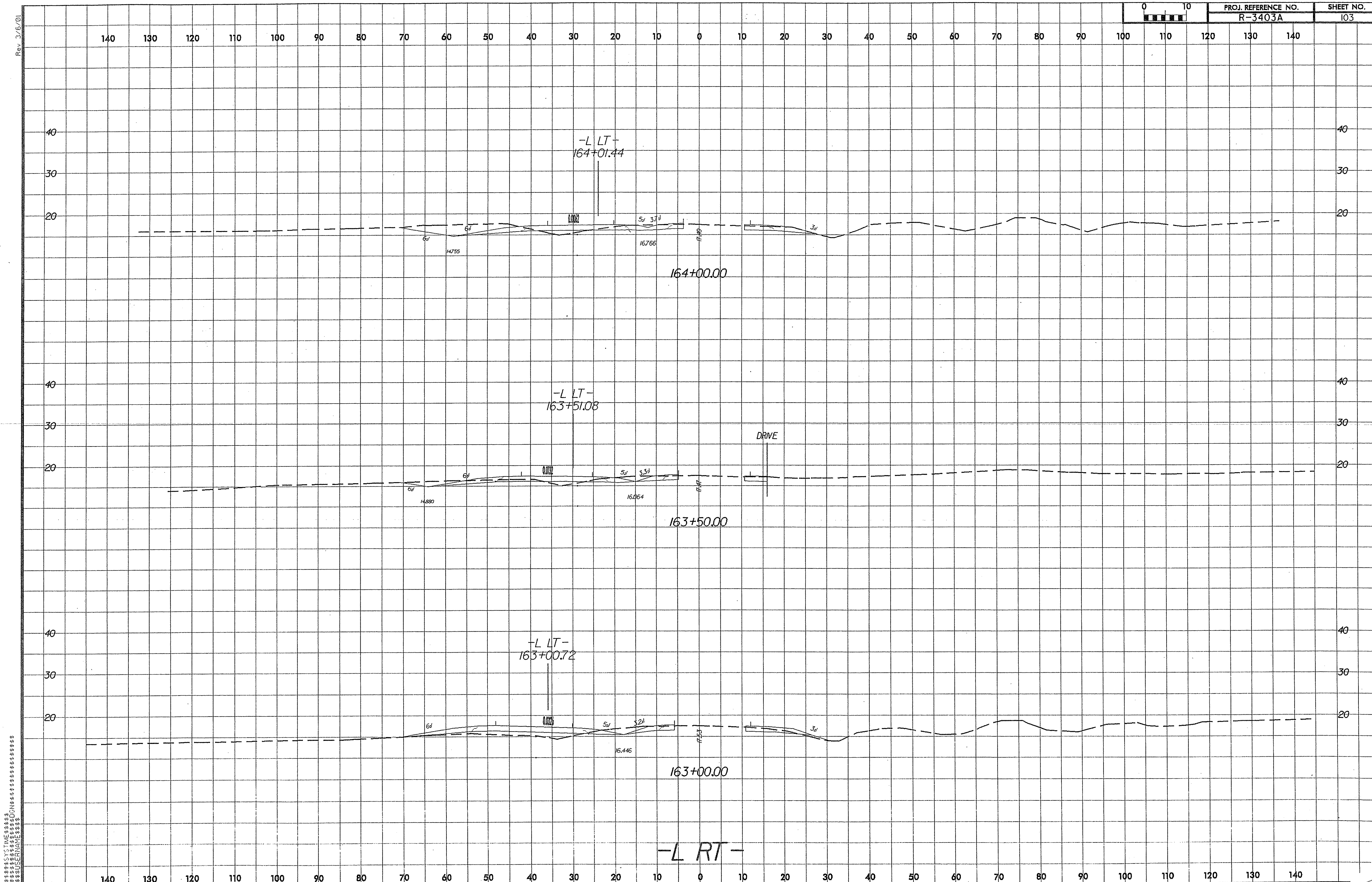
STATION	DEPTH	S (PSF)
162+50 CL	1.0 ft	397
162+50 CL	2.0 ft	940
162+50 CL	3.0 ft	209
162+50 CL	4.0 ft	793
162+50 CL	5.0 ft	1,023

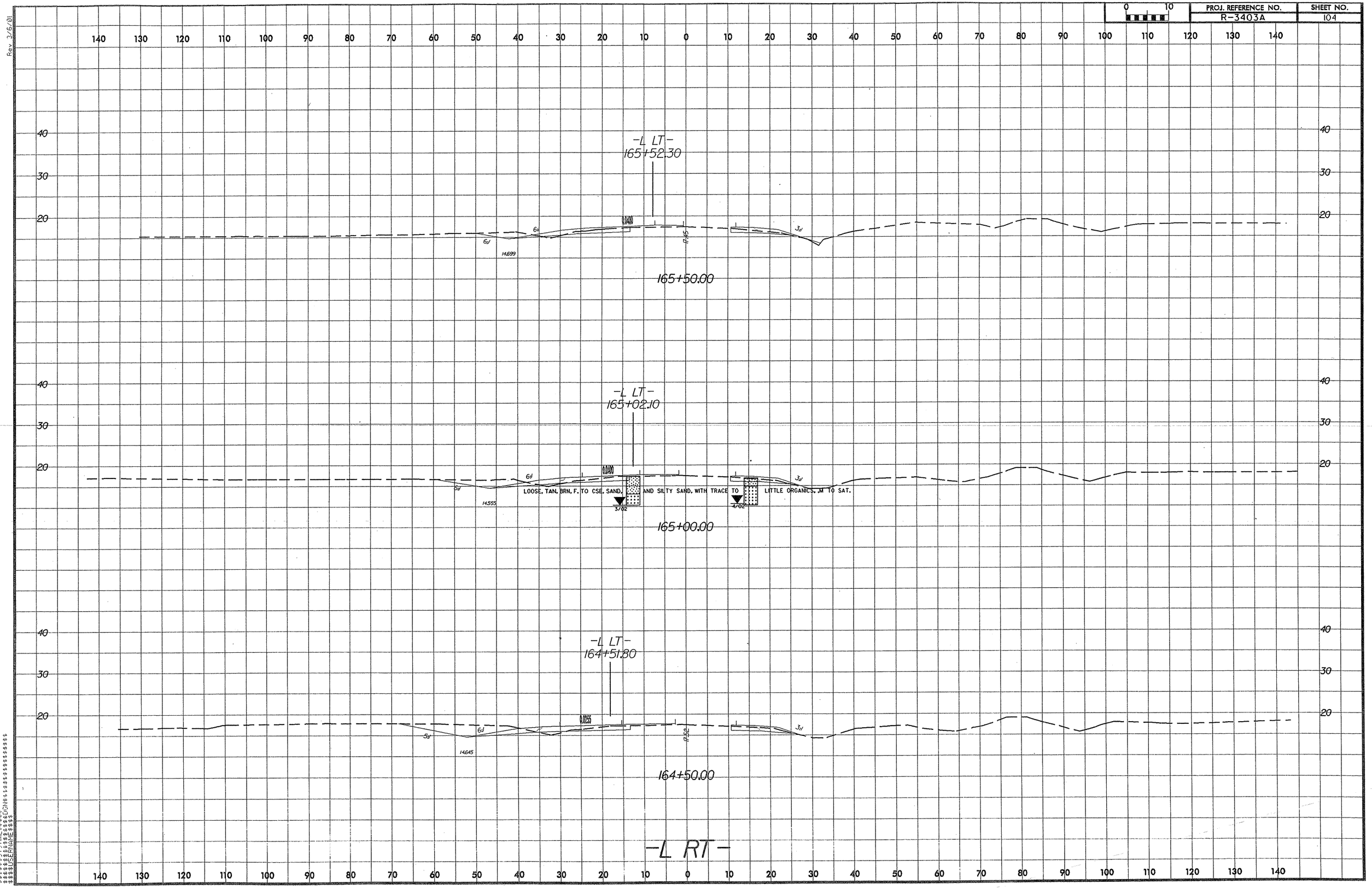
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. 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-54	CL	162+50	0.00 - 3.00	A-4(0)	31	NP	22.8	42.3	16.8	18.1	100	94	38		
S-55	CL	162+50	3.00 - 4.50	A-4(0)	23	8	19.2	41.0	14.6	25.2	100	96	43		

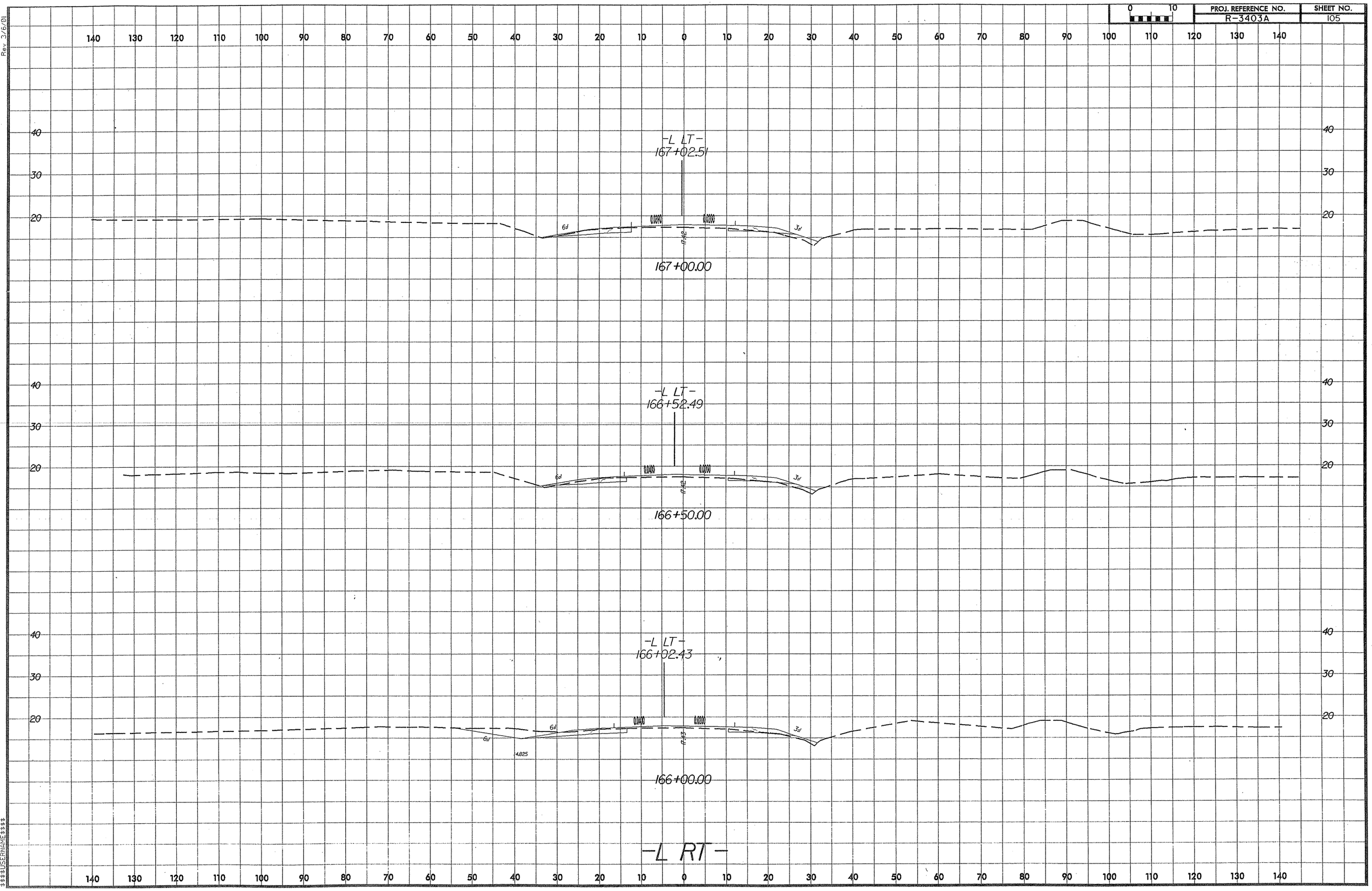


PROJ. REFERENCE NO.	SHEET NO.
R-3403A	103



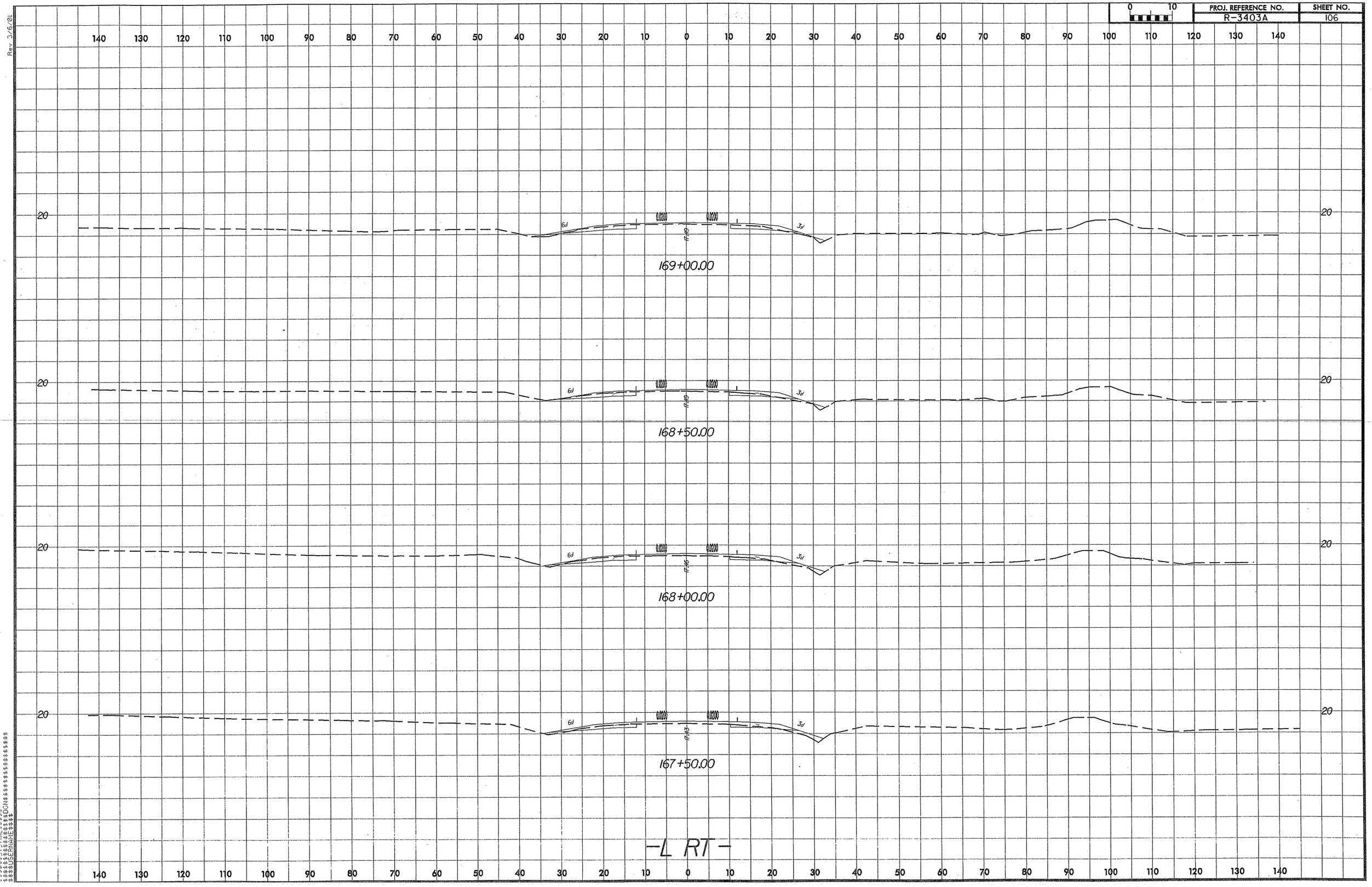


PROJ. REFERENCE NO.
R-3403A
SHEET NO.
104
Rev 3/6/01
-L LT-
165+52.30
165+50.00
-L LT-
165+02.10
LOOSE, TAN, BRN, F. TO CSE. SAND, AND SILTY SAND, WITH TRACE TO LITTLE ORGANICS, M TO SAT.
165+00.00
-L LT-
164+51.80
164+50.00
-L RT-

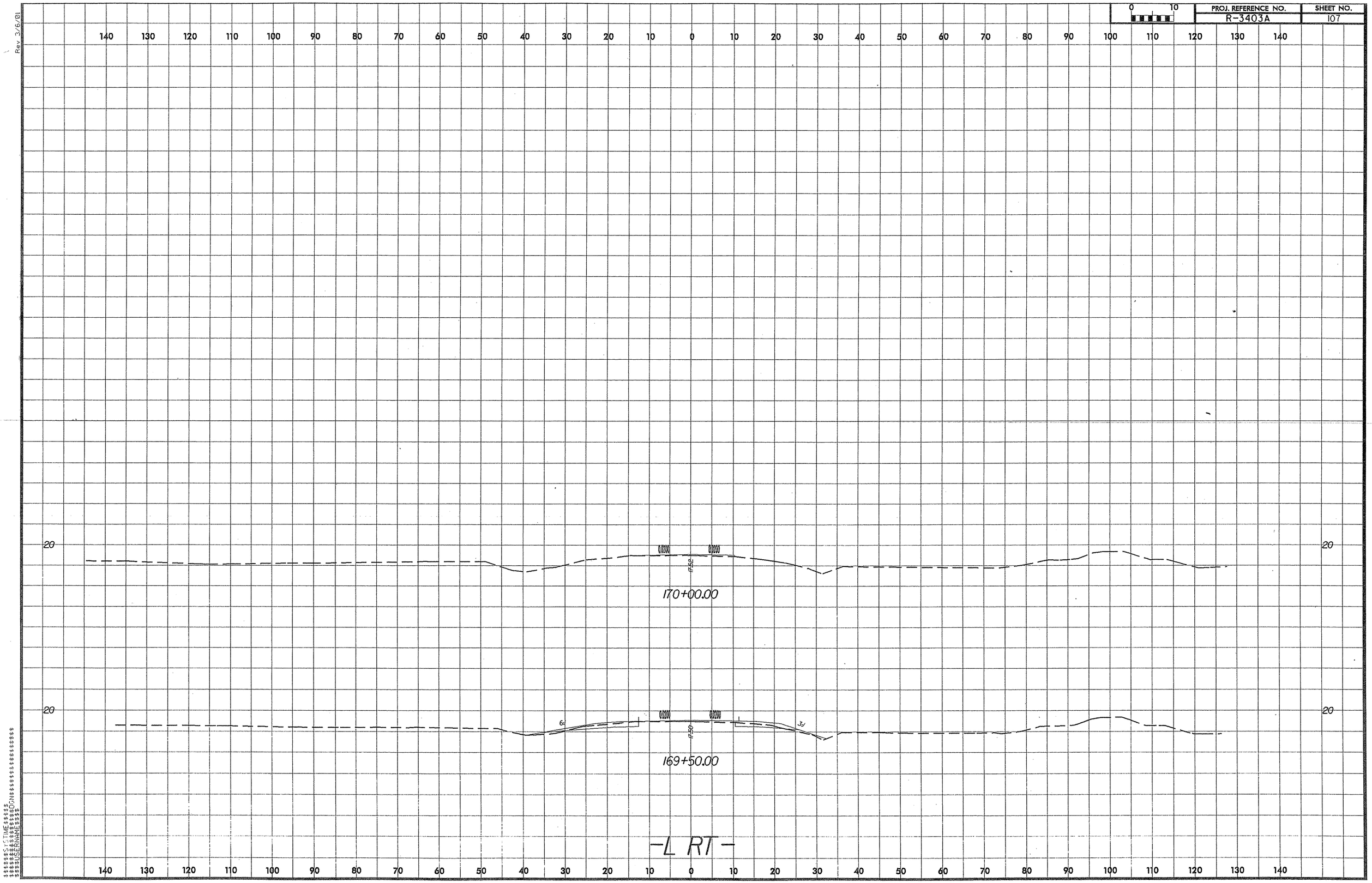


PROJ. REFERENCE NO.
R-3403A
SHEET NO.
105
-L LT-
167+02.51
167+00.00
-L LT-
166+52.49
166+50.00
-L LT-
166+02.43
166+00.00
-L RT-

PROJ. REFERENCE NO.	SHEET NO.
R-3403A	106

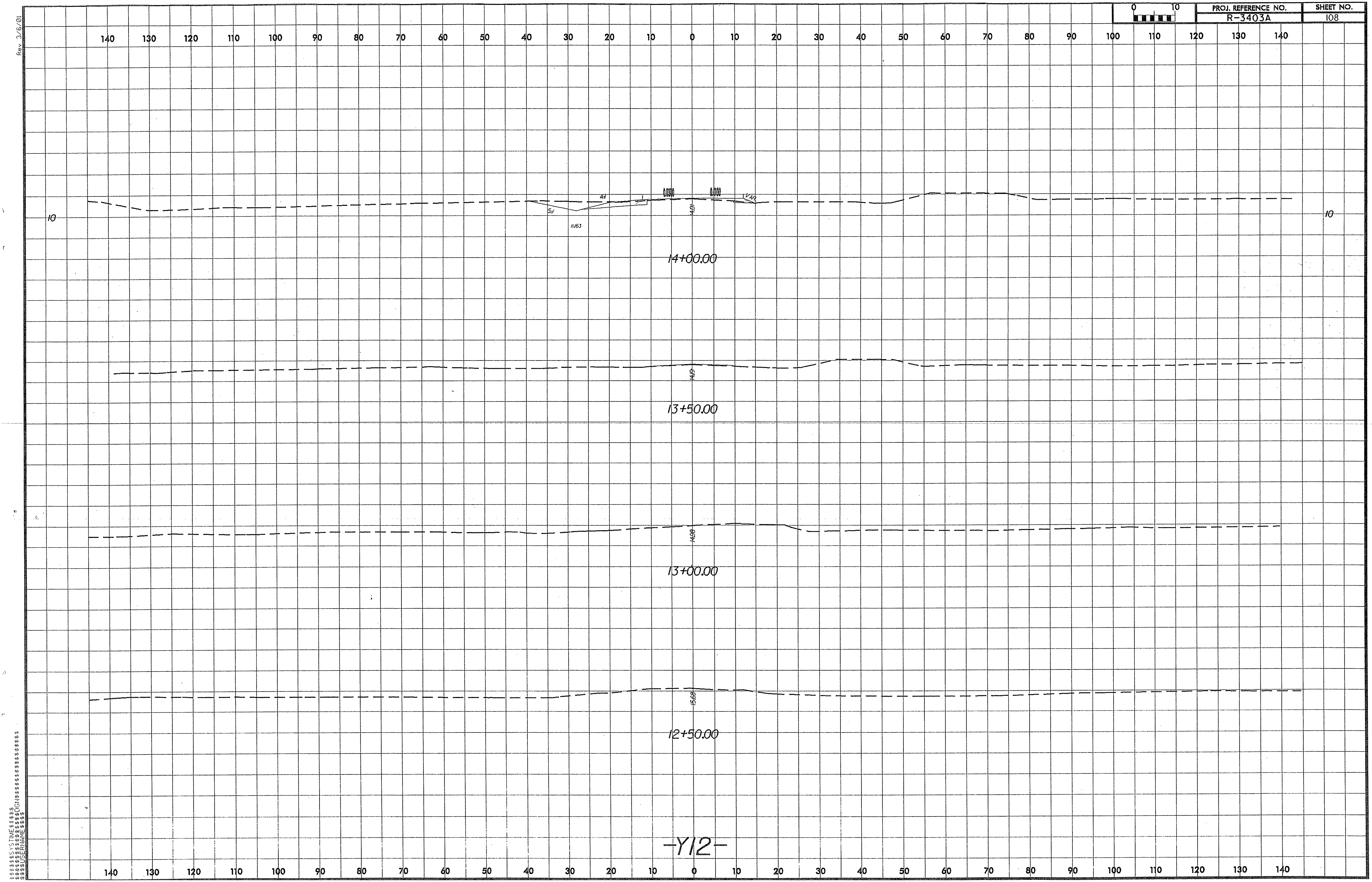


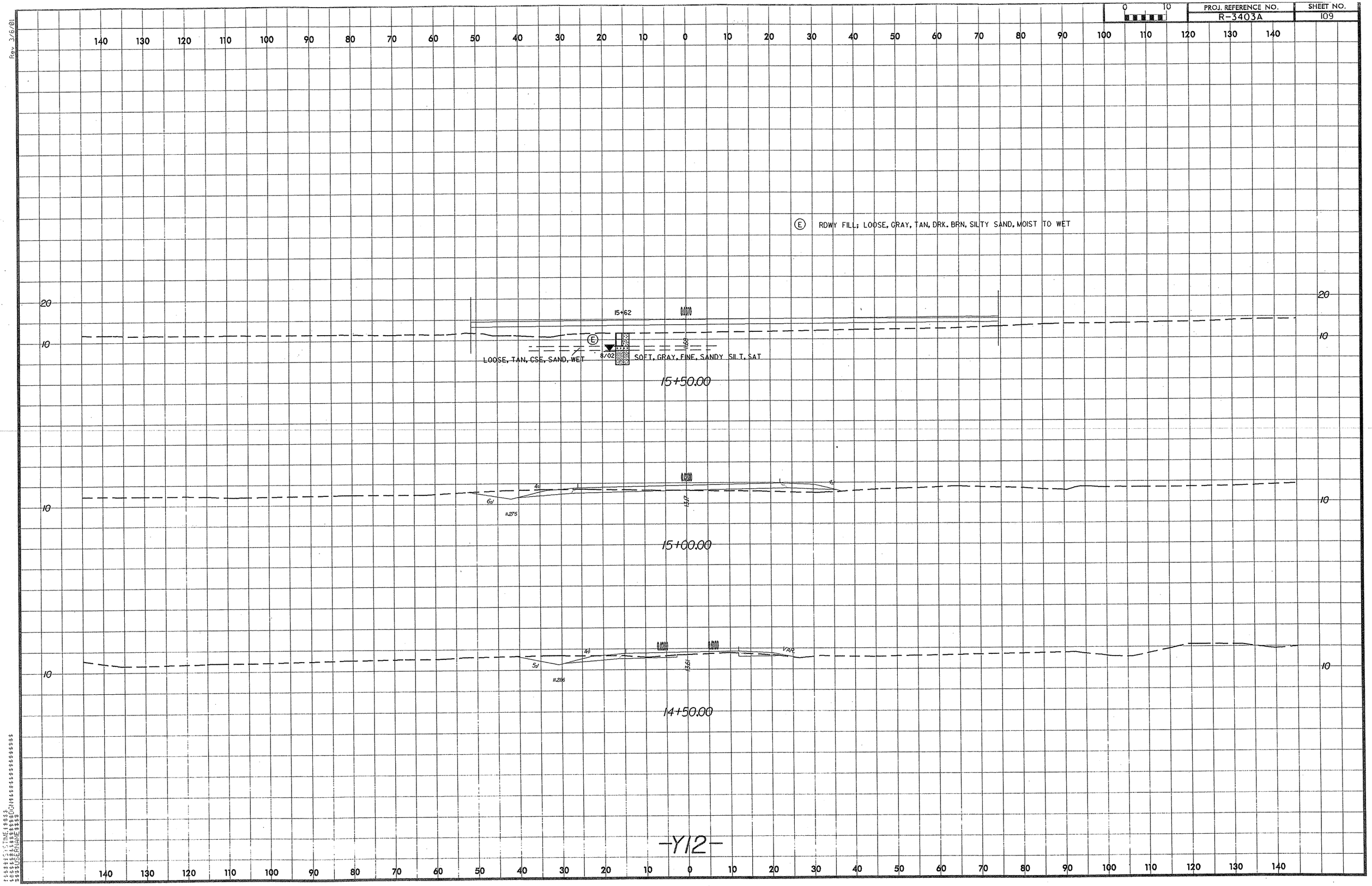
Rev 3/5/01



PROJ. REFERENCE NO.
R-3403A
SHEET NO.
107
0 10
Rev 3/6/01
140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
20
0.0200
0.0200
17.52
170+00.00
20
6:
0.0200
0.0200
17.50
3:
169+50.00
-L RT-

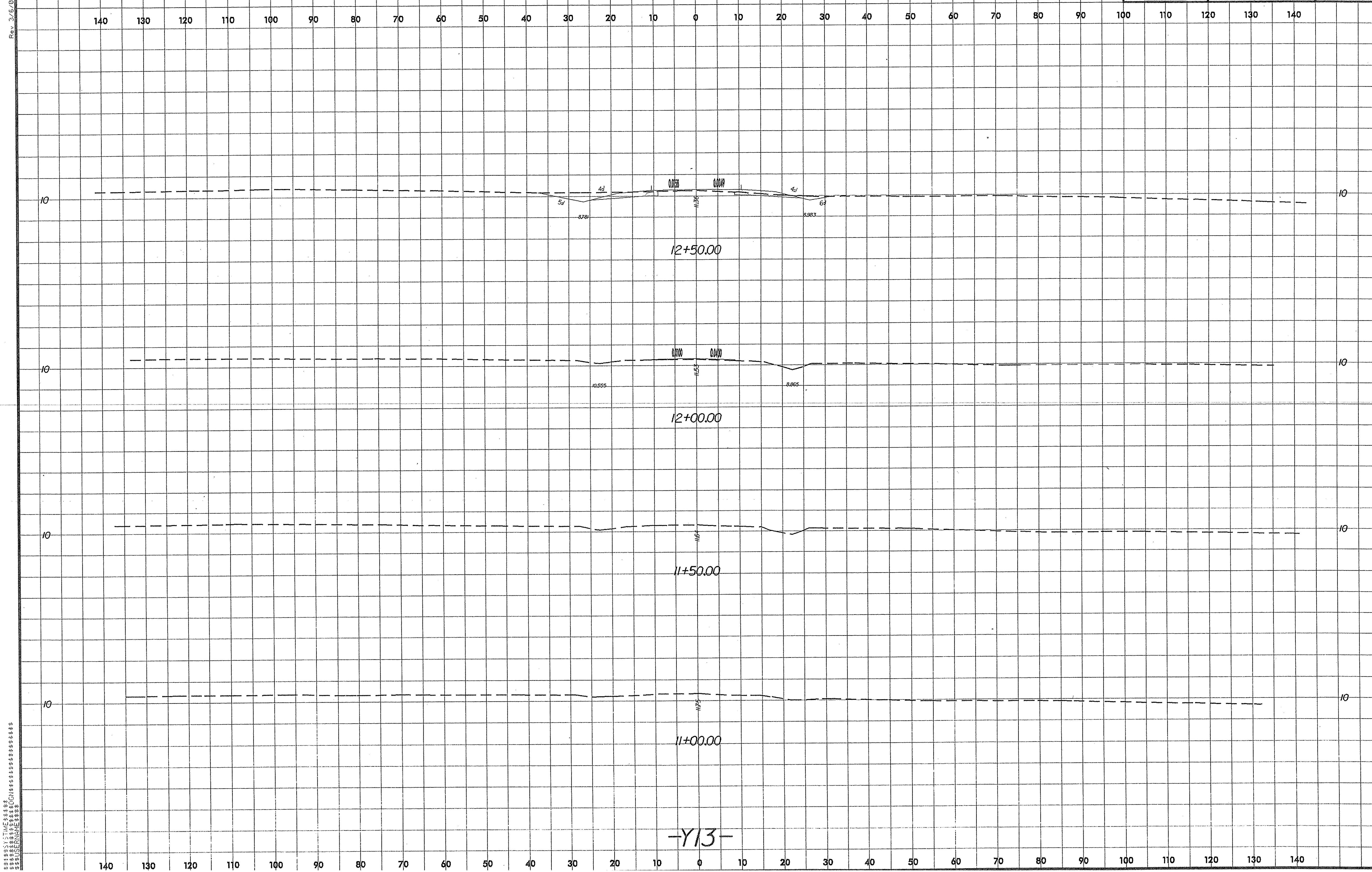
PROJ. REFERENCE NO.	SHEET NO.
R-3403A	108



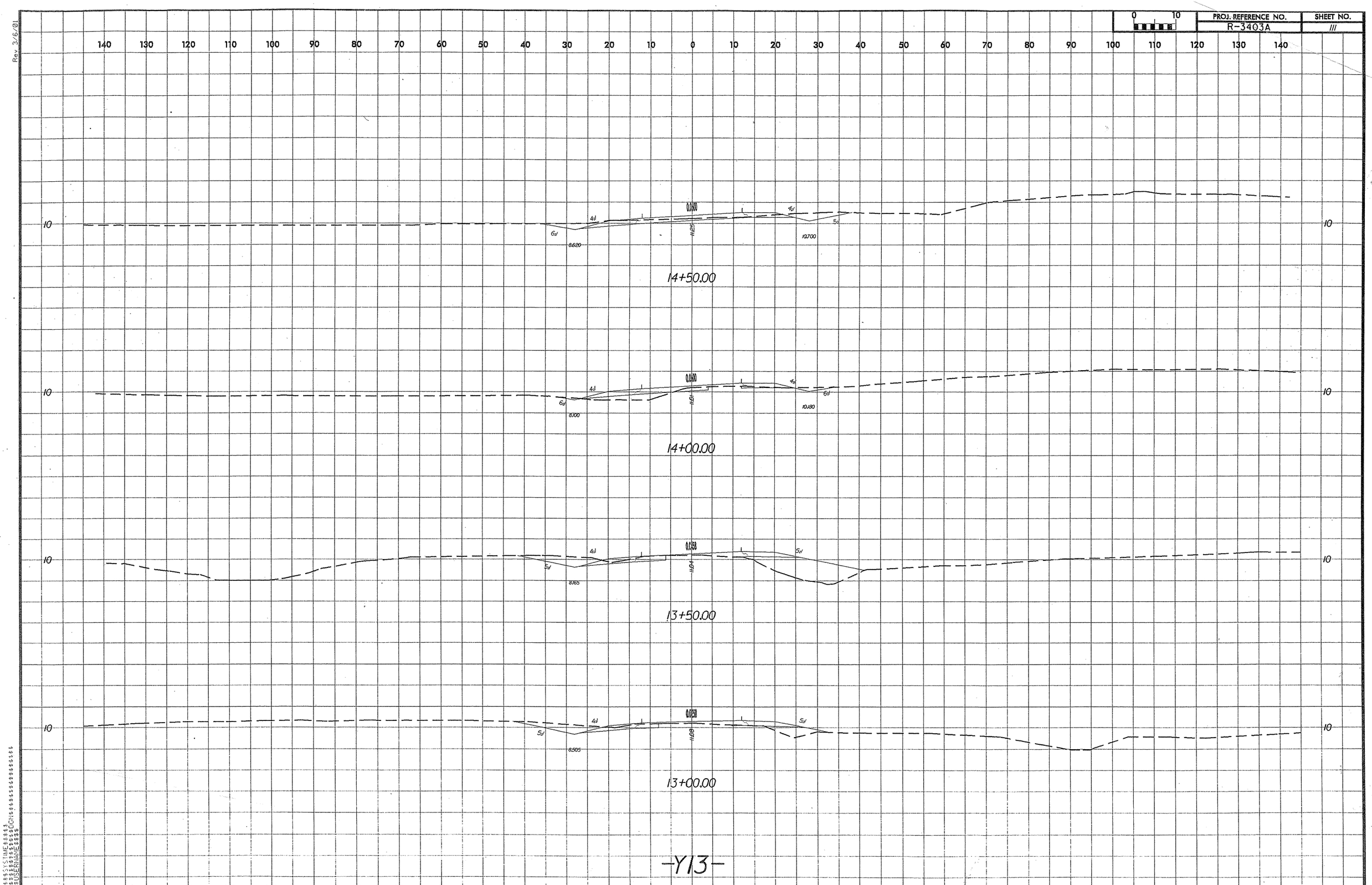


PROJ. REFERENCE NO.
R-3403A
SHEET NO.
109
Rev 3/6/01
Ⓔ RDWY FILL; LOOSE, GRAY, TAN, DRK. BRN, SILTY SAND, MOIST TO WET
15+62
LOOSE, TAN, CSE, SAND, WET
8/02
SOFT, GRAY, FINE, SANDY SILT, SAT
15+50.00
15+00.00
14+50.00
-Y12-

PROJ. REFERENCE NO.	SHEET NO.
R-3403A	110

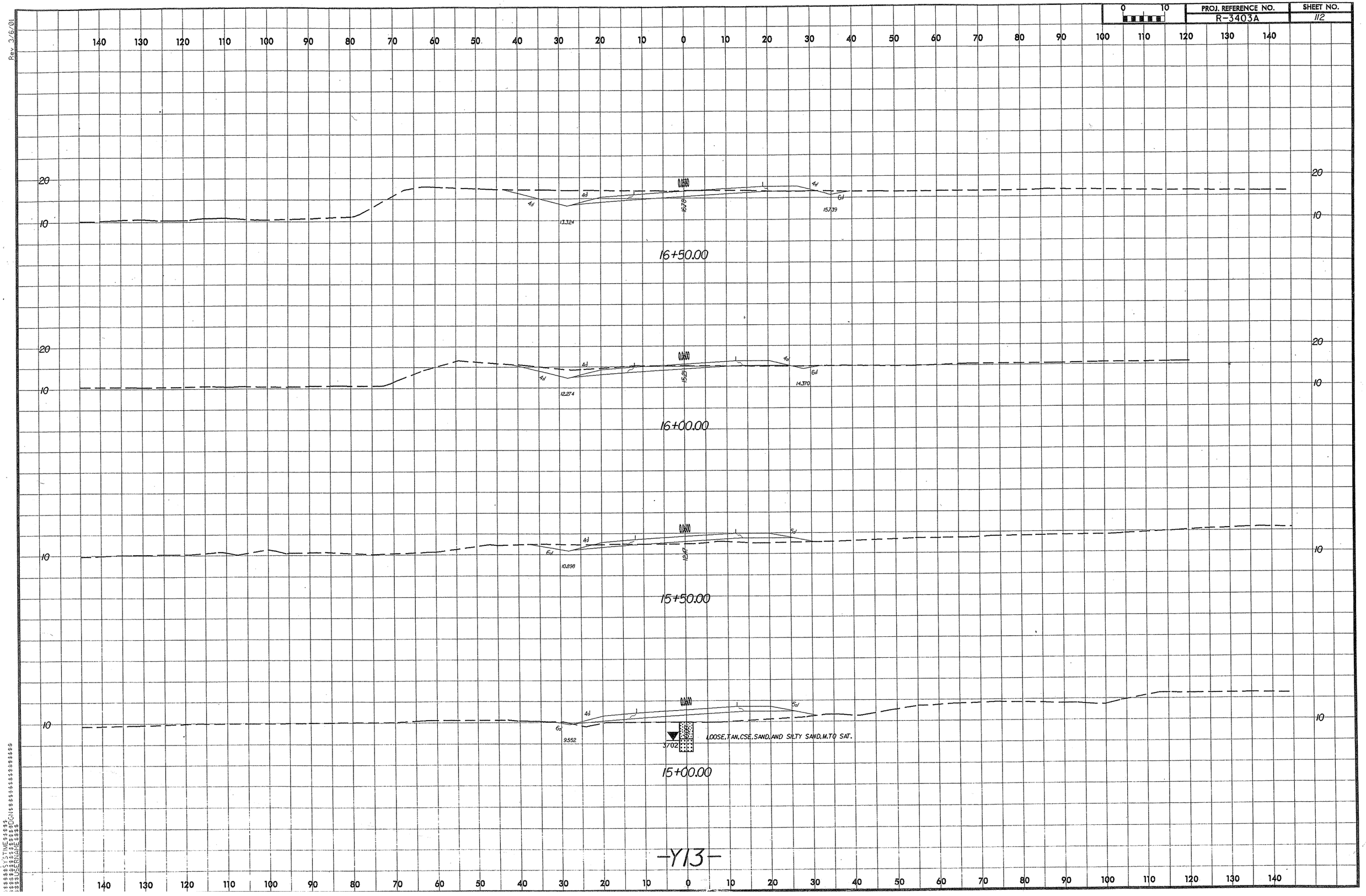


PROJ. REFERENCE NO.	SHEET NO.
R-3403A	111



-Y13-

Rev. 3/6/01



PROJ. REFERENCE NO.
R-3403A
SHEET NO.
112
Rev 3/6/01
16+50.00
13.324
16.78
15.739
16+00.00
12.274
15.21
14.370
15+50.00
10.898
12.47
15+00.00
9.552
3.702
LOOSE, TAN, CSE, SAND, AND SILTY SAND, M. TO SAT.
-Y13-