A portion of the subsurface information for U-2519CB was included in the subsurface inventory for U-2519DA. Please refer to correct inventory for the section of the project you wish to view.

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2519CB	1	207

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34817.1.2	NHF-DPR-0100(001)	P.E.
		R/W & UTIL.

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

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

ROADWAY SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 34817.1.2 F.A. PROJ. NHF-DPR-0100(001)

COUNTY CUMBERLAND

PROJECT DESCRIPTION FAYETTEVILLE OUTER LOOP FROM SOUTH OF SR 1400 (CLIFFDALE RD) TO EAST OF SR 1415 (YADKIN RD)

REVISED INVENTORY

CONTENTS

LINE	STATION	PLAN	PROFILE
-L-	743+04 TO 996+87	2BD,4-22	32-43
-RPAI-	0+00 TO 19+99	5-6	44
-RPBI-	0+00 TO 23+63	4-5	45
-RPCI-	0+00 TO 20+85	4-5	46
-RPDI-	0+00 TO 20+51	5-6	47
-LPAI-	0+00 TO 13+26	5	48
-LPCI-	0+00 TO 12+31	5	49
-RPA2-	0+00 TO 22+05	18-19	50
-RPB2-	0+00 TO 24+77	17-18	51
-RPC2-	0+00 TO 19+61	17-18	52
-RPD2-	0+00 TO 16+62	18-19	53-54
-LPA2-	0+00 TO 13+08	18	55
-LPC2-	0+00 TO 12+29	18	56
-YIREV-	23+65 TO 70+75	2BA,18, 23-26	57-58
-YIREV_LT-	23+65 TO 41+23	2BA,18, 23-26	59
-YIREV_RT-	26+20 TO 41+83	2BA,18, 23-26	60
-Y2REV-	40+00 TO 49+13	25	61
-Y2REV_LT-	29+32 TO 49+13	2BC,2BD,25	62
-Y2REV_RT-	29+32 TO 49+18	2BC,2BD,25	63
-Y3REV-	17+50 TO 23+75	22	64
-Y5-	238+90 TO 261+30	5, 28-29	65
-Y23-	95+72 TO 129+08	4, 27-28	66-67
-PRI-	10+00 TO 37+24	13-15	68
-PR2A-	10+00 TO 38+54	15-17	69-70
-PR2B-	10+00 TO 38+56	15-16, 30-31	71
-TTI-	10+00 TO 64+97	6-11	72-73
-TT2-	10+00 TO 20+04	11-12	74
-TT4REV-	26+00 TO 80+75	2BA,2BB,16-18, 23-24	75-76
-TT5REV-	10+00 TO 67+59	18-22	77-79
-YIDETREV-	24+50 TO 58+36	18	80
-Y3DETREV-	20+00 TO 39+43	21,22	81-82
-PXROAD-	15+21 TO 37+47	25,2BC,2BD	

CROSS SECTIONS	STATION	SHEET
-L-	803+00 TO 816+50	83-90
-L-	836+50 TO 837+50	90A
-L-	847+50 TO 848+50	90B
-L-	860+00 TO 861+50	90C
-L-	862+00 TO 864+00	91
-L-	864+50 TO 866+00	92-93
-L-	869+00 TO 872+00	94-95
-L-	878+00 TO 882+50	96-98
-L-	891+50 TO 894+50	98A-98D
-L-	903+50	99
-L-	913+50 TO 916+00	100-101
-L-	925+50 TO 931+50	102-105
-L-	937+00 TO 952+00	106-116
-L-	965+50 TO 966+50	116A-116C
-L-	978+50 TO 996+50	117-128
-LPAI-	7+56 TO 9+80	129-130
-LPCI-	7+16 TO 10+46	131-134
-LPA2-	1+64 TO 2+16	135
-LPA2-	4+22 TO 11+00	136-140
-LPC2-	1+71 TO 9+24	141-148
-RPA2-	9+83 TO 11+36	149-150
-RPA2-	17+00 TO 21+50	151-153
-RPBI-	10+46 TO 22+99	154-158
-RPB2-	7+97 TO 22+35	159-166
-RPCI-	18+50 TO 20+00	167
-RPC2-	5+96 TO 6+93	168
-RPC2-	8+36 TO 18+50	169-176

CROSS SECTIONS	STATION	SHEET
-YIREV-	39+00 TO 40+00	176A
-YIDETREV-	44+00 TO 50+00	177-179
-Y5-	249+00 TO 255+00	180-187
-Y23-	101+00 TO 104+00	188-189
-Y23-	128+00 TO 128+50	190
-TTI-	24+00 TO 26+50	191-192
-TTI-	58+00 TO 61+00	193-194
-TT2-	10+00 TO 11+00	195
-TT2-	18+00 TO 20+00	196-197
-TT4REV-	47+50 TO 49+50	198
-TT4REV-	54+50 TO 57+50	199-200
-TT5REV-	12+00 TO 14+50	201
-TT5REV-	35+00 TO 51+00	202-204
-PR2A-	31+50 TO 35+00	205-206
-PR2B-	37+00 TO 38+50	207

CAUTION NOTICE

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

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

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THIS PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

PERSONNEL

RLE
MBO
JEB
WNC
DRP
KBQ
LWD
RES
JNJ

INVESTIGATED BY K. B. MILLER

CHECKED BY D. N. ARGENBRIGHT

SUBMITTED BY D. N. ARGENBRIGHT

DATE MAY 2014

NORTH CAROLINA PROFESSIONAL SEAL 1050 GEOLOGIST D. N. ARGENBRIGHT

5-22-14

DRAWN BY: W. D. FIELDS, K.B. MILLER, C.R. SUMNER

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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: U-2519CB

CONTRACT:

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2 OF 207

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:

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

SOIL LEGEND AND AASHTO CLASSIFICATION

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

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

CONSISTENCY OR DENSENESS

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

TEXTURE OR GRAIN SIZE

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

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE MM: 305 | 75 | 2.0 | 0.25 | 0.05 | 0.005
GRAIN SIZE IN.: 12 | 3

SOIL MOISTURE - CORRELATION OF TERMS

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

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	26 OR MORE	HIGH

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION

WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.

ANGULARITY OF GRAINS

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

MINERALOGICAL COMPOSITION

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

COMPRESSIBILITY

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

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS	OTHER MATERIAL	
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE	1 - 10%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	LITTLE	10 - 20%
MODERATELY ORGANIC	5 - 10%	12 - 20%	SOME	20 - 35%
HIGHLY ORGANIC	>10%	>20%	HIGHLY	35% AND ABOVE

GROUND WATER

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

MISCELLANEOUS SYMBOLS

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

ABBREVIATIONS

AR - AUGER REFUSAL
BT - BORING TERMINATED
CL. - CLAY
CPT - CONE PENETRATION TEST
CSE. - COARSE
DMT - DILATOMETER TEST
DPT - DYNAMIC PENETRATION TEST
e - VOID RATIO
F - FINE
FOSS. - FOSSILIFEROUS
FRAC. - FRACTURED, FRACTURES
FRAGS. - FRAGMENTS
HI. - HIGHLY
MED. - MEDIUM
MICA. - MICACEOUS
MOD. - MODERATELY
NP - NON PLASTIC
ORG. - ORGANIC
PMT - PRESSUREMETER TEST
SAP. - SAPROLITIC
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
w - MOISTURE CONTENT
V - VERY
VST - VANE SHEAR TEST
WEA. - WEATHERED
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

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

EQUIPMENT USED ON SUBJECT PROJECT

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

ADVANCING TOOLS:
- [ ] CLAY BITS
- [X] 6" CONTINUOUS FLIGHT AUGER
- [ ] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [X] TRICONE 2 15/16 " STEEL TEETH
- [ ] TRICONE ____ " TUNG.-CARB.
- [ ] CORE BIT
- [ ] _____

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

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

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

ROCK DESCRIPTION

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

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
CRYSTALLINE ROCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.
SLIGHT (SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. *IF TESTED, WOULD YIELD SPT REFUSAL*
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. *IF TESTED, YIELDS SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, YIELDS SPT N VALUES < 100 BPF*
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.

ROCK HARDNESS

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

FRACTURE SPACING

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

BEDDING

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

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.

TERMS AND DEFINITIONS

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

AQUIFER - A WATER BEARING FORMATION OR STRATA.

ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.

ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.

ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

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

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

CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.

DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.

DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.

FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANDTHER PARALLEL TO THE FRACTURE.

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

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

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

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

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

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

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

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

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

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

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

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

SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.

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

STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.

STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.

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

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

BENCH MARK:

ELEVATION: FT.

NOTES:

APPROXIMATE LIMITS OF ORGANIC SOILS

FIAD- FILLED IMMEDIATELY AFTER DRILLING

12/24/13

TIP PROJECT: U-2519CB

CONTRACT: C203398

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

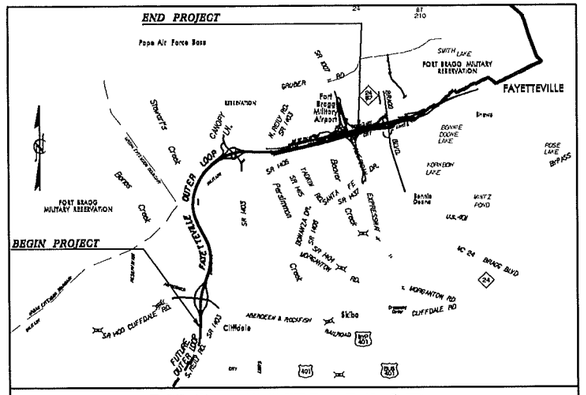
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2519CB	2A	207

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34817.1.2	NHF-DPR-0100(001)	P.E.
34817.2.8	NHF-DPR-0100(001)	R/W, UTL.
34817.3.S8	NHF-DPR-0100(001)	CONST.

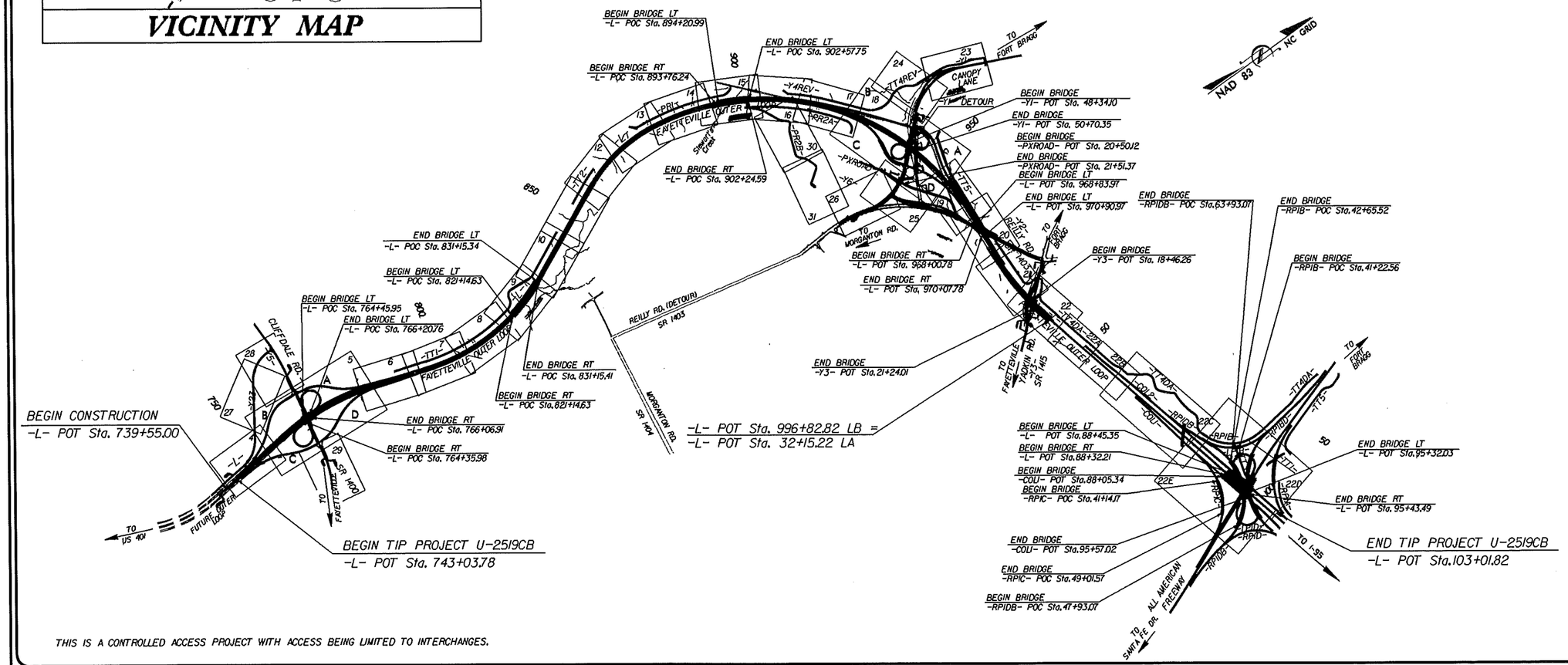
CUMBERLAND COUNTY

LOCATION: FAYETTEVILLE OUTER LOOP FROM SOUTH OF SR 1400 (CLIFFDALE ROAD) TO EAST OF ALL AMERICAN FREEWAY

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES, CULVERT, RETAINING WALLS, SIGNALS & SIGNING



VICINITY MAP



THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

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 2014 = 49,900
ADT 2034 = 70,300
DHV = 8 %
D = 55 %
T = 12 % *
V = 70 MPH
* (TTST=4 + DUAL=8)
FUNC CLASS : INTERSTATE
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-2519CB	=	5.592 MILES
LENGTH STRUCTURES TIP PROJECT U-2519CB	=	0.557 MILES
TOTAL LENGTH OF TIP PROJECT U-2519CB	=	6.149 MILES

Prepared in the Office of:
RS&H
ARCHITECTS-ENGINEERS-PLANNERS, INC.
8601 SIX FORKS RD, SUITE 260
RALEIGH, NC 27615
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 31, 2006

LETTING DATE:
AUGUST 19, 2014

KENNETH HERRING, PE
PROJECT ENGINEER

JASON TALLEY, PE
PROJECT DESIGN ENGINEER

BRENDA L. MOORE, PE
NCDOT CONTACT

HYDRAULICS ENGINEER
SEAL 15764
P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER
SEAL 029473
P.E.
SIGNATURE:

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BA
R/W SHEET NO.	

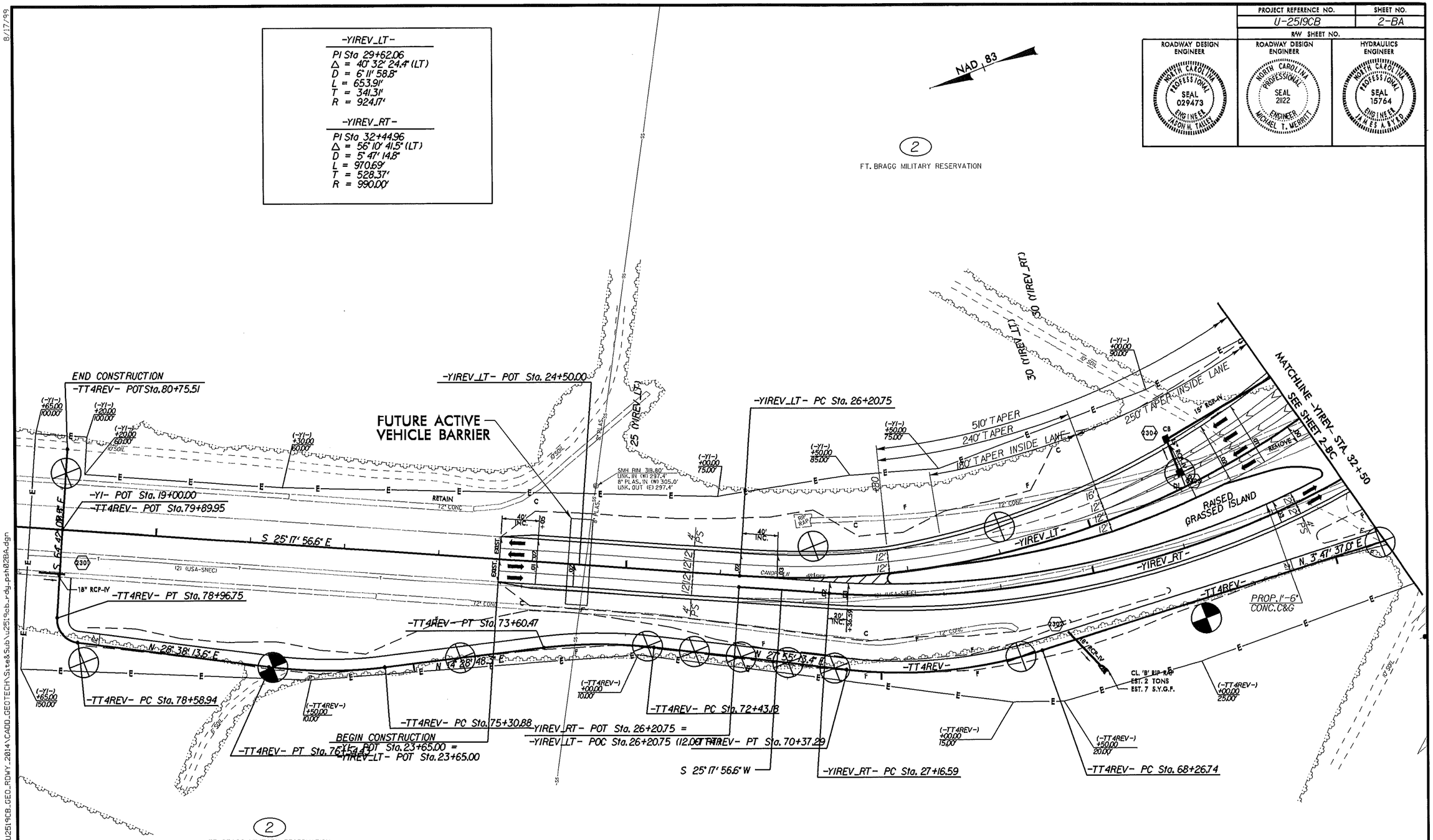
ROADWAY DESIGN ENGINEER	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TAILEY	NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. MERRITT	NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

-YIREV_LT-

PI Sta 29+62.06
Δ = 40° 32' 24.4" (LT)
D = 6° 11' 58.8"
L = 653.91'
T = 341.31'
R = 924.17'

-YIREV_RT-

PI Sta 32+44.96
Δ = 56° 10' 41.5" (LT)
D = 5° 47' 14.8"
L = 970.69'
T = 528.37'
R = 990.00'



-TT4REV-

PI Sta 78+82.53	PI Sta 75+92.97	PI Sta 73+02.10	PI Sta 69+33.60
Δ = 86° 39' 43.9" (RT)	Δ = 14° 09' 25.4" (RT)	Δ = 13° 26' 25.1" (LT)	Δ = 24° 07' 36.4" (RT)
D = 229° 10' 59.2"	D = 11° 27' 33.0"	D = 11° 27' 33.0"	D = 11° 27' 33.0"
L = 37.81'	L = 123.54'	L = 117.29'	L = 210.55'
T = 23.58'	T = 62.09'	T = 58.91'	T = 106.86'
R = 25.00'	R = 500.00'	R = 500.00'	R = 500.00'

[redacted]

SEE DETAIL SHTS. 2-B1 THRU 2-BK FOR ISLANDS AND PAVEMENT DIMENSIONING AND CONSTRUCTION DETAILS.

FOR -YIREV_LT- PROFILE SEE SHT. 2-BE

FOR -YIREV_RT- PROFILE SEE SHT. 2-BF

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
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PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BB
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21022 ENGINEER MICHAEL T. MERRITT

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY

8/17/99

NAD 83

PAVEMENT REMOVAL

2
FT. BRAGG MILITARY RESERVATION

-TT4REV- PRC Sta. 59+69.07

-TT4REV- PT Sta. 61+24.14

MATCHLINE -Y1REV LT- STA. 32+50 SEE SHEET 2-BA

N L 3 61° 37'10.E

SEE DETAIL FSM

CL. 'I' RIP RAP
EST. 4 TONS
EST. 10 S.Y.G.F.

TOE PROTECTION
SEE DETAIL RR
EST. 90 TONS
EST. 350 S.Y.G.F

CL. 'I' RIP RAP
EST. 57 TONS
EST. 104 S.Y.G.F.

CL. 'B' RIP RAP
EST. 11 S.Y.G.F.

-TT4REV- PRC Sta. 54+60.88

TOE PROTECTION
SEE DETAIL RR
EST. 123 TONS
EST. 485 S.Y.G.F

FT. BRAGG MILITARY RESERVATION

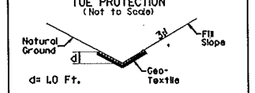
(-Y1-)
+50.00
120.00'
TIE SECURITY FENCE TO C/A FENCE

PROP. R/W
R=1592.39

MATCHLINE -Y1- STA. 41+50 SEE SHEET 18

15" RCP-IV
18" W 1 ELBOW
72" RCP-IV
72" CMP RETAIN
RIP RAP
JB W SLAB LID
DI
CB
HW
WLB
JS MHT
CANOPY LN
48' BST
(2) (USA-SHED)
GED

DETAIL RR
TOE PROTECTION
(Not To Scale)

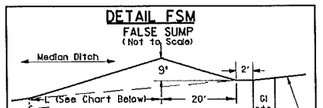


d= 1.0 Ft.

Type of Liner= CL. 'B' Rip-Rap

-Y4- 55+12 TO 58+50 (LT)
-Y4- 53+40 TO 55+98 (RT)

DETAIL FSM
FALSE SUMP
(Not To Scale)

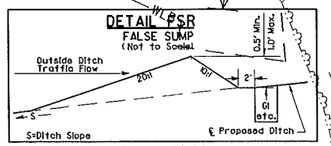


S=Ditch Slope

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

-TT4- 61+65 (LT)

DETAIL FSR
FALSE SUMP
(Not To Scale)



S=Ditch Slope

-RPD2- 9+74 (LT)

SEE DETAIL SHTS. 2-B1 THRU 2-BK FOR ISLANDS AND PAVEMENT DIMENSIONS AND CONSTRUCTION DETAILS.

FOR -Y1REV_LT- PROFILE SEE SHT. 2-BE

FOR -Y1REV_RT- PROFILE SEE SHT. 2-BF

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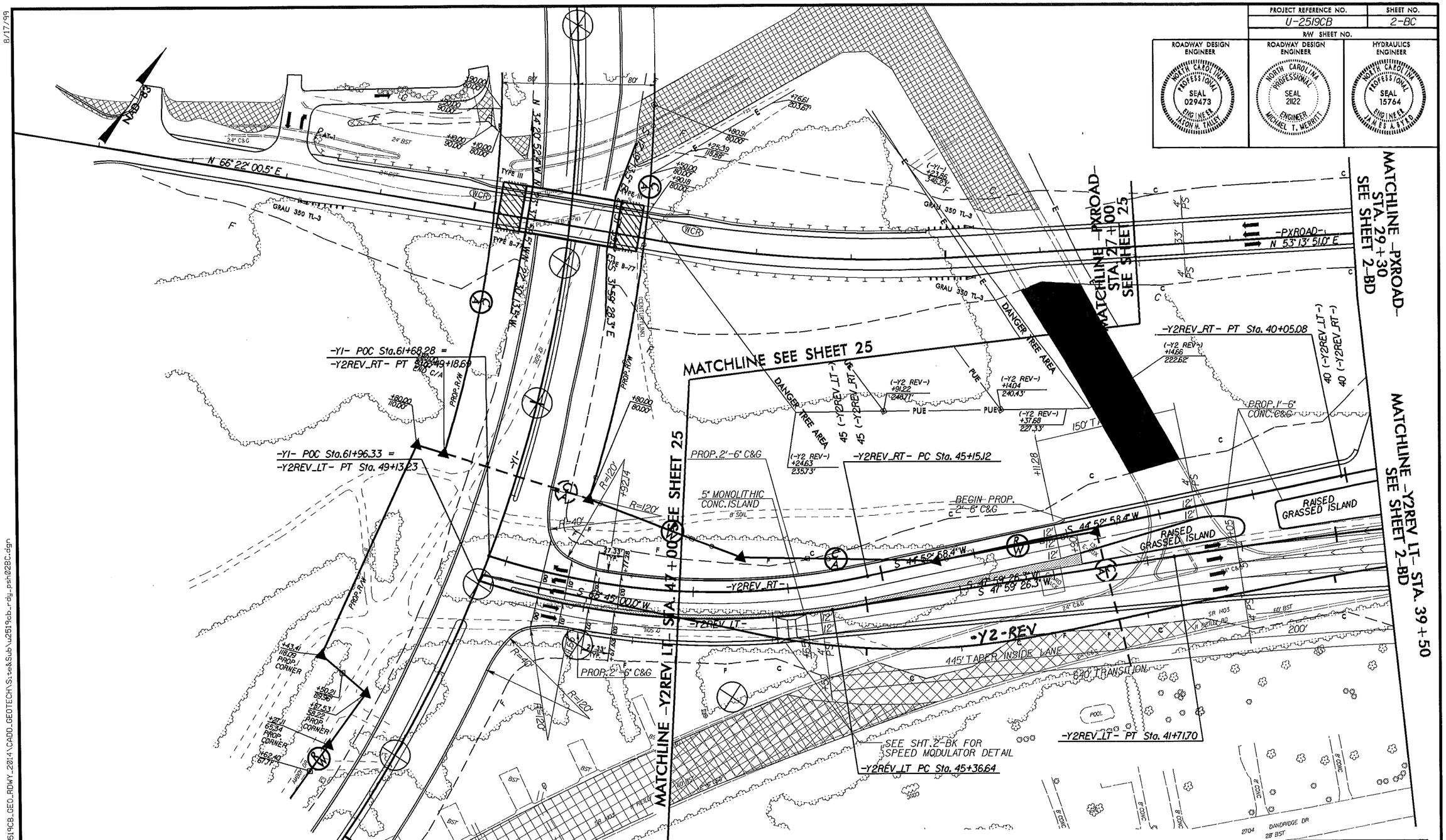
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BC
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON H. TALLEY	NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. MERRITT	NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. LEWIS



A PERMANENT SOIL REINFORCEMENT MAT SHALL BE PLACED FROM STATION 47+00 ± -Y2REV_LT- TO STATION 48+25 ± -Y2REV_LT- (RIGHT). EXTEND PERMANENT SOIL REINFORCEMENT MAT LIMITS TO 2.5:1 SLOPES.

A PERMANENT SOIL REINFORCEMENT MAT SHALL BE PLACED FROM STATION 47+75 ± -Y2REV_LT- TO STATION 48+25 ± -Y2REV_LT- (LEFT). EXTEND PERMANENT SOIL REINFORCEMENT MAT LIMITS TO 2.5:1 SLOPES.

SEE SHEET 2-AV FOR ROCK PLATING DETAILS.

USE ROCK PLATING DETAIL NO. 3 FROM STATION 37+75 ± -Y2REV_LT- TO STATION 39+75 ± -Y2REV_LT- (LEFT).

USE ROCK PLATING DETAIL NO. 4 FROM STATION 43+00 ± -Y2REV_LT- TO STATION 45+00 ± -Y2REV_LT- (RIGHT).

-Y2REV_LT-		-Y2REV_RT-	
PI Sta 40+43.86	PI Sta 47+28.49	PI Sta 35+76.70	PI Sta 47+21.63
Δ = 2° 55' 50.0" (LT)	Δ = 26° 58' 16.4" (RT)	Δ = 28° 04' 34.3" (LT)	Δ = 29° 57' 08.5" (RT)
D = 1° 08' 45.3"	D = 7° 09' 43.1"	D [redacted] 12' 35.5"	D = 7° 25' 18.2"
L = 255.74'	L = 376.59'	L [redacted]	L = 403.58'
T = 127.90'	T = 191.85'	T [redacted]	T = 206.51'
R = 5,000.00'	R = 800.00'	R = 1,785.00'	R = 772.00'

SEE SHT. 25 FOR -PXROAD- CURVE DATA

SEE DETAIL SHTS. 2-BL & 2-BM FOR ISLANDS AND PAVEMENT DIMENSIONS AND CONSTRUCTION DETAILS.

FOR -Y2REV_LT- PROFILE SEE SHT. 2-BG

FOR -Y2REV_RT- PROFILE SEE SHT. 2-BH

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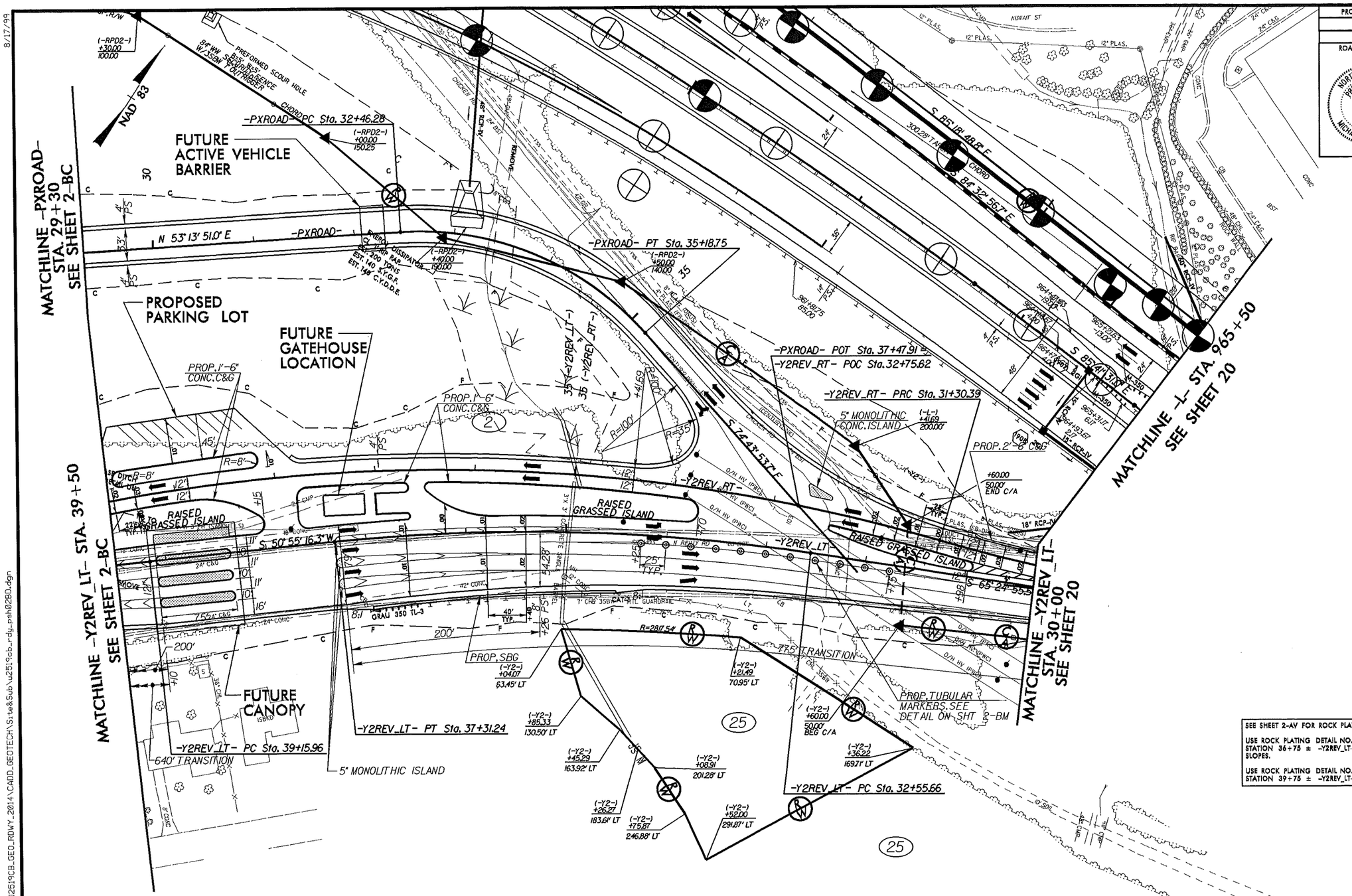
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BD
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. NERRITT

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY



SEE SHEET 2-AV FOR ROCK PLATING DETAILS.

USE ROCK PLATING DETAIL NO. 2 FROM STATION 34+75 ± -Y2REV_LT- TO STATION 36+75 ± -Y2REV_LT- (LEFT). EXTEND ROCK PLATING LIMITS TO 2.5:1 SLOPES.

USE ROCK PLATING DETAIL NO. 3 FROM STATION 37+75 ± -Y2REV_LT- TO STATION 39+75 ± -Y2REV_LT- (LEFT).

-PXROAD-

PI Sta 33+92.73
Δ = 52° 02' 15.3" (RT)
D = 19° 05' 54.9"
L = 272.47'
T = 146.44'
R = 300.00'

SEE DETAIL SHTS. 2-BL & 2-BM FOR ISLANDS AND PAVEMENT DIMENSIONS AND CONSTRUCTION DETAILS.

FOR -Y2REV_LT- PROFILE SEE SHT. 2-BG

FOR -Y2REV_RT- PROFILE SEE SHT. 2-BH

-Y2REV_LT-		-Y2REV_RT-	
PI Sta 34+94.73	PI Sta 40+43.86	PI Sta 30+31.79	PI Sta 35+76.70
Δ = 14° 29' 39.2" (LT)	Δ = 2° 55' 50.0" (LT)	Δ = 7° 32' 37.2" (RT)	Δ = 28° 04' 34.3" (LT)
D = 3° 02' 51.5"	D = 1° 08' 45.3"	D = 3° 49' 11.0"	D = 3° 12' 35.5"
L = 475.59'	L = 255.74'	L = 197.49'	L = 874.69'
T = 239.07'	T = 127.90'	T = 98.89'	T = 446.31'
R = 1,880.00'	R = 5,000.00'	R = 1,500.00'	R = 1,785.00'

PLANS PREPARED BY :
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

May 22, 2014

STATE PROJECT: 34817.1.2 (U-2519CB)
F.A. PROJECT: NHF-DPR-0100(001)
COUNTY: Cumberland
DESCRIPTION: Fayetteville Outer Loop from South of SR 1400 (Cliffdale Road) to East of SR 1415 (Yadkin Road)

SUBJECT: Geotechnical Report - Inventory

Project Description

The project consists of constructing 4.8 miles of limited access four-lane divided highway (-L-) on new location between 0.6 miles south of Cliffdale Road and 0.1 mile east of Yadkin Road. The majority of the project lies within the Fort Bragg Military Reservation. This project will tie to future projects U-2519CA and U-2519DA.

The geotechnical investigation was originally conducted in 2001 and 2002 with supplemental drilling for revised alignments being performed in 2005 utilizing NCDOT Geotechnical Engineering Unit personnel. Borings were advanced using CME-45 drill machines equipped with automatic hammers. Standard Penetration Test and continuous flight auger borings were performed at specific locations to provide subsurface information for highway design and construction. Representative soil samples were collected and submitted to the Materials and Tests Unit for laboratory analysis. Some borings from the original 2001/2002 investigation may not be shown in profile and/or cross section view because revisions to the project alignments place them outside of the construction limits.

The following alignments were investigated for this project:

Line	Station(±)
-L-	743+04 to 996+87
-RPA1-	0+00 to 19+99
-RPB1-	0+00 to 23+63
-RPC1-	0+00 to 20+85
-RPD1-	0+00 to 20+51
-LPA1-	0+00 to 13+26
-LPC1-	0+00 to 12+31
-RPA2-	0+00 to 22+05
-RPB2-	0+00 to 24+77
-RPC2-	0+00 to 19+61
-RPD2-	0+00 to 16+62
-LPA2-	0+00 to 13+08
-LPC2-	0+00 to 12+29
-Y1REV-	23+65 to 70+75
-YIREVLT-	23+65 to 41+23
-YIREVRT-	26+20 to 41+83
-Y2REV-	40+00 to 49+13
-Y2REVLT-	29+32 to 49+13
-Y2REVRT-	29+32 to 49+18
-Y3REV-	17+50 to 23+75
-Y5-	238+90 to 261+30
-Y23-	94+00 to 129+08
-PR1-	10+00 to 37+24
-PR2A-	10+00 to 38+54
-PR2B-	10+00 to 38+56
-TT1-	10+00 to 64+97
-TT2-	10+00 to 20+04
-TT4REV-	26+00 to 80+75
-TT5REV-	10+00 to 67+59
-Y1DETREV-	24+50 to 58+36
-Y3DETREV-	20+00 to 39+43
-PXROAD-	15+21 to 37+47

Areas of Special Geotechnical Interest

1) Plastic Soils- Medium to Highly plastic clays occur throughout the majority of the upland portions of the project.

2) Alluvial Soils- Relatively Recent flood plain deposits typically consisting of highly organic soils (muck), very soft clay and very loose organic sand which have the potential to cause embankment stability/settlement problems occur through the following sections:

Line	Station (±)
-L-	836+60 to 838+05
-L-	847+40 to 849+00
-L-	859+70 to 861+40
-L-	864+55 to 865+60
-L-	891+60 to 895+50
-L-	902+70 to 903+95
-L-	965+10 to 966+30
-Y1REV-	39+20 to 40+50
-Y1DET-	39+25 to 40+25
-TT4REV-	54+60 to 57+35

3) Ground Water- The following intervals were found to exhibit a high water table, seasonal high ground water or the potential for ground water related construction problems:

Line	Station(±)
-L-	821+60 to 831+50
-L-	834+00 to 844+00
-L-	847+50 to 849+50
-L-	852+50 to 862+00
-L-	864+50 to 868+00
-L-	884+00 to 912+00
-L-	925+50 to 934+00
-L-	946+00 to 950+00
-L-	956+00 to 958+00
-L-	964+75 to 967+00
-Y1REV-	38+75 to 40+50
-Y1REV-	63+00 to 66+50
-RPC1-	3+50 to 20+85
-LPA1-	0+00 to 2+00
-RPA2-	11+00 to 22+05
-RPB2-	7+50 to 11+00
-RPC2-	0+00 to 17+00
-RPD2-	3+00 to 4+50
-LPA2-	0+00 to 1+50
-TT4REV-	26+00 to 37+00
-TT4REV-	47+00 to 48+00
-TT4REV-	51+00 to 59+00
-Y1DET-	38+75 to 40+50
-PR1-	21+00 to 23+50

Line	Station(±)
-PR1-	26+00 to 37+24
-PR2A-	14+00 to 20+50
-PR2A-	32+00 to 33+50
-PR2B-	15+00 to 28+25
-PR2B-	32+00 to 38+56
-TT1-	43+50 to 47+00
-TT2-	19+00 to 20+04
-TT5REV-	10+00 to 15+00
-TT5REV-	18+00 to 21+00
-TT5REV-	30+50 to 33+50
-TT5REV-	40+50 to 43+00
-TT5REV-	47+50 to 67+59

Physiography, Geology and Surface Water

The project corridor is located in the southwestern portion of the Coastal Plain Physiographic Province near the city of Fayetteville. Topography in the area is generally gently rolling to flat. The project area is comprised of farmland, pine forest and residential/commercial development associated with the Fort Bragg Military Reservation.

Geologically the project area consists of Cretaceous age sediments of the Middendorf and Cape Fear Formations. More recent alluvial deposits, including some organic sediments, occur in and around streams and drainages across the project.

Surface water is drained from the corridor by Stewart's Creek and several smaller unnamed creeks and tributaries that generally trend southeast across the project.

Ground Water

Ground water data was collected during below average to average rainfall conditions. Water levels across the project vary due to topographic relief and soil permeability. In upland well drained soils the water table was noted to be at a depth of 20 to 30 feet or more. The presence of less permeable clayey soils may cause water levels to be much shallower. In upland areas adjacent to flood plains ground water levels occur at depths of 6 to 10 feet below natural ground. Within flood plains water levels were generally just below or at the natural ground surface. Seasonal fluctuations in the groundwater table can be expected.

Soils

Soils encountered along the project corridor are primarily derived from Upper Cretaceous age fluvial sediments and recent alluvium. Typically, these Coastal Plain soils consist of interbedded sands and clays that are laterally discontinuous and vary in thickness.

Granular soils occurring along the project typically consist of loose to dense fine to coarse sand (A-2-4, A-3, A-1-b) and clayey sand (A-2-6, A-2-7). These soils generally exhibit good to excellent engineering properties. Cohesive soils in the corridor are generally medium stiff to hard sandy to silty clay (A-6, A-7-5, A-7-6). Typically the clay soils have in excess of 50% passing the #200 sieve. However, insitu moisture contents of the upland clay soils are at or below optimum. High plasticity clay soils have the potential to cause subgrade stability problems.

Alluvial soils occur primarily in the flood plain of Stewart's Creek and its associated tributaries. The alluvium typically consists of moderately to highly organic silt (A-5), clay (A-7-5) and sand (A-2-5) with interbedded layers of organic sand (A-2-4) and clay (A-7-6). These soils generally exhibit poor engineering qualities as indicated by organic contents from 10 to 62 percent, SPT "N" values of 0 to 1 and insitu shear strengths of 90 to 500 PSF. Higher shear strengths are likely due to roots and other plant matter.

Surficial top soil and rootmat are typically less than 0.5 feet thick throughout the project area.

Prepared By:

Dean Argenbright, LG

Footnote: Some material borrowed from E. A. Witort's "Geotechnical Report-Inventory" dated August 14, 2002

3C

Earthwork Balance Sheet

Volumes in Cubic Yards

PROJECT U-2519CB COUNTY: Cumberland DATE: 4/7/2014 COMPILED BY: JMT

CHAIN	STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
			TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +25%		ROCK	SUITABLE	UNSUIT.	TOTAL
-L-	741+50.00	764+40.97 (BR)	15,289				15,289	225,937		225,937	282,421	267,132				
	(includes portions of Y23,RPC1,RPB1,LPC1)															
-Y23-	101+73.79	129+08.28	23,852		759	329	23,523	8,662		8,662	10,828			12,696	1,088	13,784
-RPB1-	4+09.53	23+27.67	33,256		1,889	15,698	17,558	13,932		13,932	17,415			143	17,587	17,730
-RPC1-	5+22.21	20+49.94	4,246		416	634	3,612	13,508		13,508	16,885	13,273			1,050	1,050
-LPC1-	1+34.69	10+46.00	5,187		528	1,693	3,494	17,557		17,557	21,946	18,452			2,221	2,221
-Y5- RT	238+95.19	257+77.18	4,938		856	708	4,230	2,334		2,334	2,918			1,313	1,564	2,877
		SUBTOTAL	86,768		4,448	19,062	67,706	281,930		281,930	352,413	298,857		14,152	23,510	37,662
		SUMMARY 1 TOTAL	**86,768**		**4,448**	**19,062**	**67,706**	**281,930**		**281,930**	**352,413**	**298,857**		**14,152**	**23,510**	**37,662**
-Y5- LT	243+87.18	261+34.69	10,584		552	286	10,298	2,040		2,040	2,550			7,748	838	8,586
-LPA1-	1+76.49	11+30.00	8,277		521	2,264	6,013	25,496		25,496	31,870	25,857			2,785	2,785
-RPA1-	4+58.46	19+67.61	8,759				8,759	28,812		28,812	36,015	27,256				
-RPD1-	4+40.31	20+18.57	17,396				17,396	3,628		3,628	4,535			12,861		12,861
Additional Grading Plan Quadrant D																
-RPD1-	11+96.37	17+49.26	10,041				10,041							10,041		10,041
-TT1-	41+23	52+62	444				444	1,234		1,234	1,543	1,099				
-L-	766+13.84 (BR)	796+50.00	8,917				8,917	212,460		212,460	265,575	256,658				
	(includes portions of RPA1, LPA1, RPD1, TT1)															
-L-	796+50.00	821+14.63 (BR)	33,940		6,528	19,970	13,970	78,607		78,607	98,259	84,289			26,498	26,498
		SUBTOTAL	98,358		7,601	22,520	75,838	352,277		352,277	440,347	395,159		30,650	30,121	60,771
		SUMMARY 2 TOTAL	**98,358**		**7,601**	**22,520**	**75,838**	**352,277**		**352,277**	**440,347**	**395,159**		**30,650**	**30,121**	**60,771**
-L-	831+15.38 (BR)	861+50.00	109,339		3,981	4,556	104,783	54,365		54,365	67,956			36,827	8,537	45,364
	(includes portions of TT1,TT2)															
-L-	861+50.00	867+50.00	2,172		2,524	2,168	4	19,737		19,737	24,671	24,667			4,692	4,692
-L-	867+50.00	896+00.00 (BR)	81,345		3,459	11,723	69,622	92,915		92,915	116,144	46,522			15,182	15,182
	(includes portions of PR1)															
-PR1-	10+50.00	12+53.20	93				93	6		6	8			86		86
-PR1-	33+69.62	37+23.84	40				40	44		44	55	15				
		SUBTOTAL	192,989		9,964	18,447	174,542	167,067		167,067	208,834	71,204		36,913	28,411	65,324
		SUMMARY 3 TOTAL	**192,989**		**9,964**	**18,447**	**174,542**	**167,067**		**167,067**	**208,834**	**71,204**		**36,913**	**28,411**	**65,324**
-L-	901+50.00 (BR)	931+50.00	127,064		3,769	11,402	115,662	48,650		48,650	60,813			54,850	15,171	70,021
	(inc. port of PR2A, TT4REV, RPB2, RPC2)															
-Y4REV-	11+00.00	11+92.00	130				130							130		130
-PR2A-	34+72.11	38+54.39	3				3	185		185	231	228				
-PR2B-	35+00.00	38+55.81	11		124		11	260		260	325	314			124	124
-RPB2-	6+99.37	14+08.17	28,578		61	5,700	22,878	2,891		2,891	3,614			19,264	5,761	25,025
	(includes portion ofTT4REV)															
		SUBTOTAL	155,786		3,954	17,102	138,684	51,986		51,986	64,983	542		74,244	21,056	95,300
		SUMMARY 4 TOTAL	**155,786**		**3,954**	**17,102**	**138,684**	**51,986**		**51,986**	**64,983**	**542**		**74,244**	**21,056**	**95,300**
		SHEET TOTAL	533,901		25,967	77,131	456,770	853,260		853,260	1,066,577	765,762		155,959	103,098	259,057

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

3D

Earthwork Balance Sheet

Volumes in Cubic Yards

PROJECT U-2519CB COUNTY: Cumberland DATE: 4/7/2014 COMPILED BY: JMT SHEET 2 OF 3 SHEETS

CHAIN	STATION	STATION	EXCAVATION TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	EMBANKMENT TOTAL	ROCK	EARTH	EMBANK. +25%	BORROW	WASTE ROCK	SUITABLE	UNSUIT.	TOTAL
-L-	931+50.00	945+00.00	341,038			49,708	291,330							291,330	49,708	341,038
-RPB2-	14+08.17	24+32.85	49,439		854	25,447	23,992	993		993	1,241			22,751	26,301	49,052
-TT4REV-	48+00.00	63+00.00	14		4,016		14	15,635		15,635	19,544	19,530			4,016	4,016
-TT4REV-	75+50.00	79+71.00	32				32	147		147	184	152				
-LPC2_REV-	1+35.75	9+37.79	64,266			19,361	44,905	17		17	21			44,884	19,361	64,245
-RPC2-	5+50.37	19+29.09	132,522		850	14,719	117,803	874		874	1,093			116,711	15,569	132,280
-Y1REV- LT	23+00.00	41+23.91	3,347		2,706		3,347	63,655		63,655	79,569	76,222			2,706	2,706
-Y1-	41+16.00	48+34.10 (BR)	3,293				3,293	11,014		11,014	13,768	10,475				
-Y1-	50+70.35 (BR)	70+75.00	4,151				4,151	8,262		8,262	10,328	6,177				
		SUBTOTAL	598,102		8,426	109,235	488,867	100,597		100,597	125,748	112,556		475,676	117,661	593,337
		SUMMARY 5 TOTAL	**598,102**		**8,426**	**109,235**	**488,867**	**100,597**		**100,597**	**125,748**	**112,556**		**475,676**	**117,661**	**593,337**
-Y1DET-	10+00.00	24+25.28	13,115				13,115	2,954		2,954	3,693			9,423		9,423
NOTE:DETOUR EXCAVATION INCLUDED IN L EXC LOG																
		SUBTOTAL	13,115				13,115	2,954		2,954	3,693			9,423		9,423
		SUMMARY 6 TOTAL	**13,115**				**13,115**	**2,954**		**2,954**	**3,693**			**9,423**		**9,423**
-L-	945+00.00	961+50.00	128,505		1,769	21,854	106,651	152,178		152,178	190,223	83,572			23,623	23,623
	(includes part of TT5,22+75 TO 27+90)															
-L-	961+50.00	968+42.38 (BR)	4		2,346		4	158,804		158,804	198,505	198,501			2,346	2,346
	(includes part of TT5,27+90 TO 36+48.68)															
-RPA2-	4+87.22	21+73.22	96,310		3,129		96,310	28,830		28,830	36,038			60,273	3,129	63,402
	(includes part of TT5,11+80 TO 22+36)															
-LPA2-	1+14.87	11+00.00	78,049		397	20,778	57,271	397		397	496			56,775	21,175	77,950
-RPD2-	5+40.80	16+17.45	19,318				19,318	10,976		10,976	13,720			5,598		5,598
-Y2-	22+00.00	25+50.00						3,700		3,700	4,625	4,625				
-Y2REV- LT	29+32.90	48+74.796	11,414				11,414	22,926		22,926	28,658	17,244				
-PXROAD-	15+21.17	20+50.12 (BR)	389				389	15,545		15,545	19,431	19,042				
-PXROAD-	21+51.37 (BR)	36+50.00	2,168				2,168	38,566		38,566	48,208	46,040				
-TT5-	10+00.00	11+80.05	122				122									
-TT5-	36+48.68	39+92.76	49				49	45		45	56	7				
		SUBTOTAL	336,328		7,641	42,632	293,696	431,967		431,967	539,960	369,031		122,646	50,273	172,919
		SUMMARY 7 TOTAL	**336,328**		**7,641**	**42,632**	**293,696**	**431,967**		**431,967**	**539,960**	**369,031**		**122,646**	**50,273**	**172,919**
-L-	970+49.38 (BR)	989+50.00	131,736		2,245	44,712	87,024	148,190		148,190	185,238	98,214			46,957	46,957
	(includes part of TT5, 41+24 TO 52+48)															
-TT5-	40+54.28	41+24.00						292		292	365	365				
-TT5-	52+48.90	56+65.28	110				110	63		63	79			31		31
		SUBTOTAL	131,846		2,245	44,712	87,134	148,545		148,545	185,682	98,579		31	46,957	46,988
		SUMMARY 8 TOTAL	**131,846**		**2,245**	**44,712**	**87,134**	**148,545**		**148,545**	**185,682**	**98,579**		**31**	**46,957**	**46,988**
-L-	989+50.00	996+82.82	117,557		547	49,947	67,610	736		736	920			66,690	50,494	117,184
-Y3-	11+00.00	18+46.26 (BR)	4,645				4,645	273		273	341			4,304		4,304
includes Y3DETREV																
-Y3-	21+24.01 (BR)	25+50.00	1,073				1,073	2,220		2,220	2,775	1,702				
includes Y3DETREV																
-TT5REV-	56+65.28	67+50.00	19				19	466		466	583	564				
-L-	32+15.22	66+27.28	216,016		19,505	81,599	134,417	98,434		98,434	123,043			11,375	101,104	112,479
-TT4DA-	33+46.45	55+60.47	2,377				2,377	2,381		2,381	2,976	599				
		SUBTOTAL	341,687		20,052	131,546	210,141	104,510		104,510	130,638	2,865		82,369	151,598	233,967
		SUMMARY 9 TOTAL	**341,687**		**20,052**	**131,546**	**210,141**	**104,510**		**104,510**	**130,638**	**2,865**		**82,369**	**151,598**	**233,967**
		SHEET TOTAL	**1,421,078**		**38,364**	**328,125**	**1,092,953**	**788,573**		**788,573**	**985,721**	**583,031**		**690,145**	**366,489**	**1,056,634**

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

3E

Earthwork Balance Sheet

Volumes in Cubic Yards

PROJECT: U-2519CB COUNTY: Cumberland DATE: 4/7/2014 COMPILED BY: JMT SHEET 3 OF 3 SHEETS

STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
		TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +25%		ROCK	SUITABLE	UNSUIT.	TOTAL
SHEET 1 TOTALS		533,901		25,967	77,131	456,770	853,260		853,260	1,066,577	765,762		155,959	103,098	259,057
SHEET 2 TOTALS		1,421,078		38,364	328,125	1,092,953	788,573		788,573	985,721	583,031		690,145	366,489	1,056,634
PROJECT SUBTOTALS		1,954,979		64,331	405,256	1,549,723	1,641,833		1,641,833	2,052,298	1,348,793		846,104	469,587	1,315,691
LOSS DUE TO CLEARING & GRUBBING		-25,000				-25,000					25,000				
WASTE TO BE USED IN LIEU OF BORROW											-846,104		-846,104		-846,104
MATERIAL FOR SHOULDER CONSTRUCTION							39,375		39,375	49,219	49,219				
ADD. UNDERCUT (CONT., GRADE POINT)				16,000			16,000		16,000	20,000	20,000			16,000	16,000
SELECT MATERIAL USED TO BACKFILL							-80,800		-80,800	-101,000	-101,000				
UNDERCUT															
	PROJECT TOTALS	1,929,979		80,331	405,256	1,524,723	1,616,408		1,616,408	2,020,517	495,908			485,587	485,587
EST. 5% TO REPL. TOP SOIL ON BORROW PIT											24,795				
	GRAND TOTALS	1,929,979		80,331	405,256	1,524,723	1,616,408		1,616,408	2,020,517	520,703			485,587	485,587
	SAY	**1,930,500**		**80,800**							**521,200**				
PAVEMENT STRUCTURE VOL ASPHALT		150,999													

SHALLOW UNDERCUT, LETTER DATED April 24, 2014 **2000 CY**

CLASS IV SUBGRADE STABILIZATION, LETTER DATED April 24, 2014 **4300 TON**

EST DRAINAGE DITCH EXCAVATION **53810 CY**

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

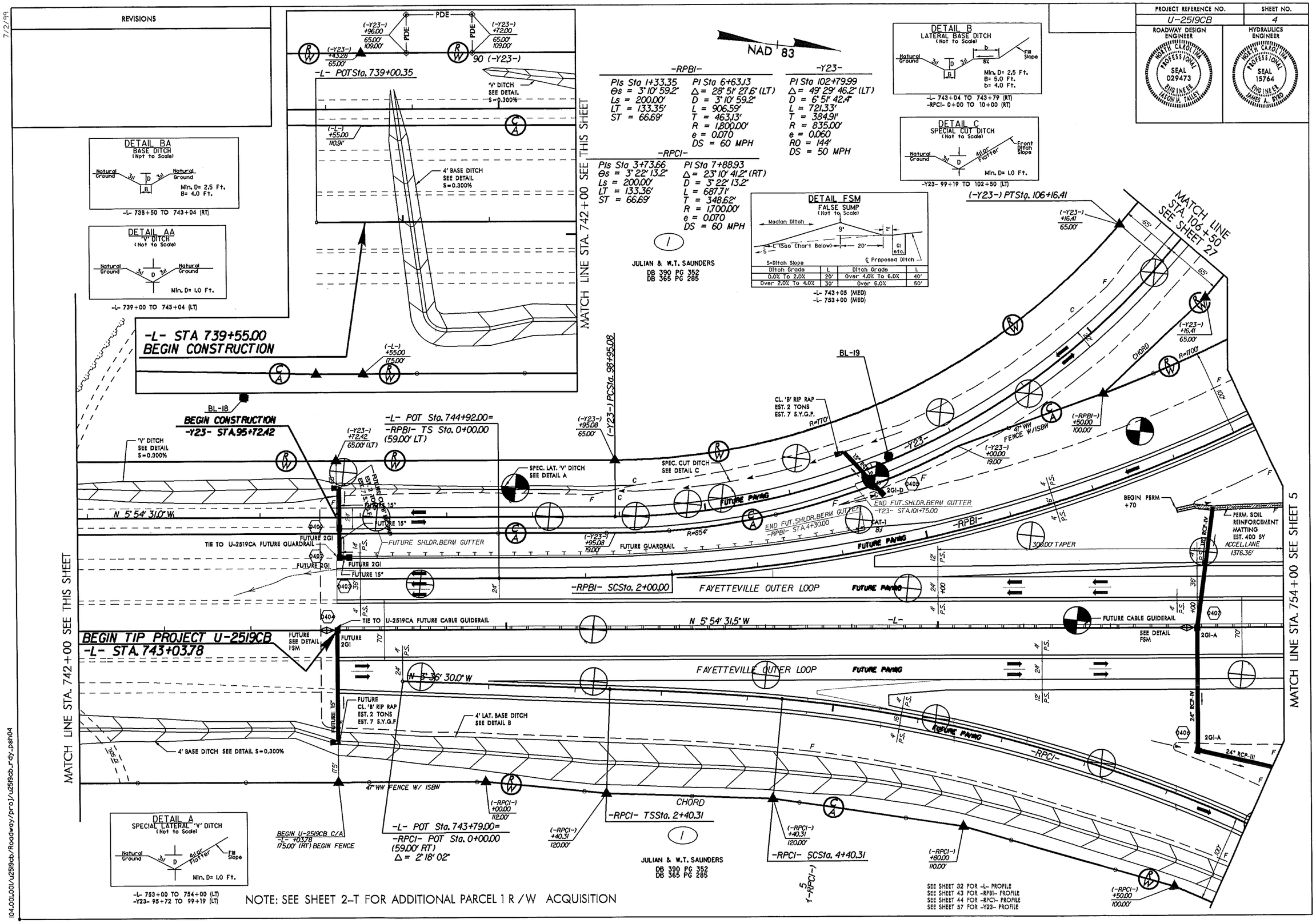
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	4

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

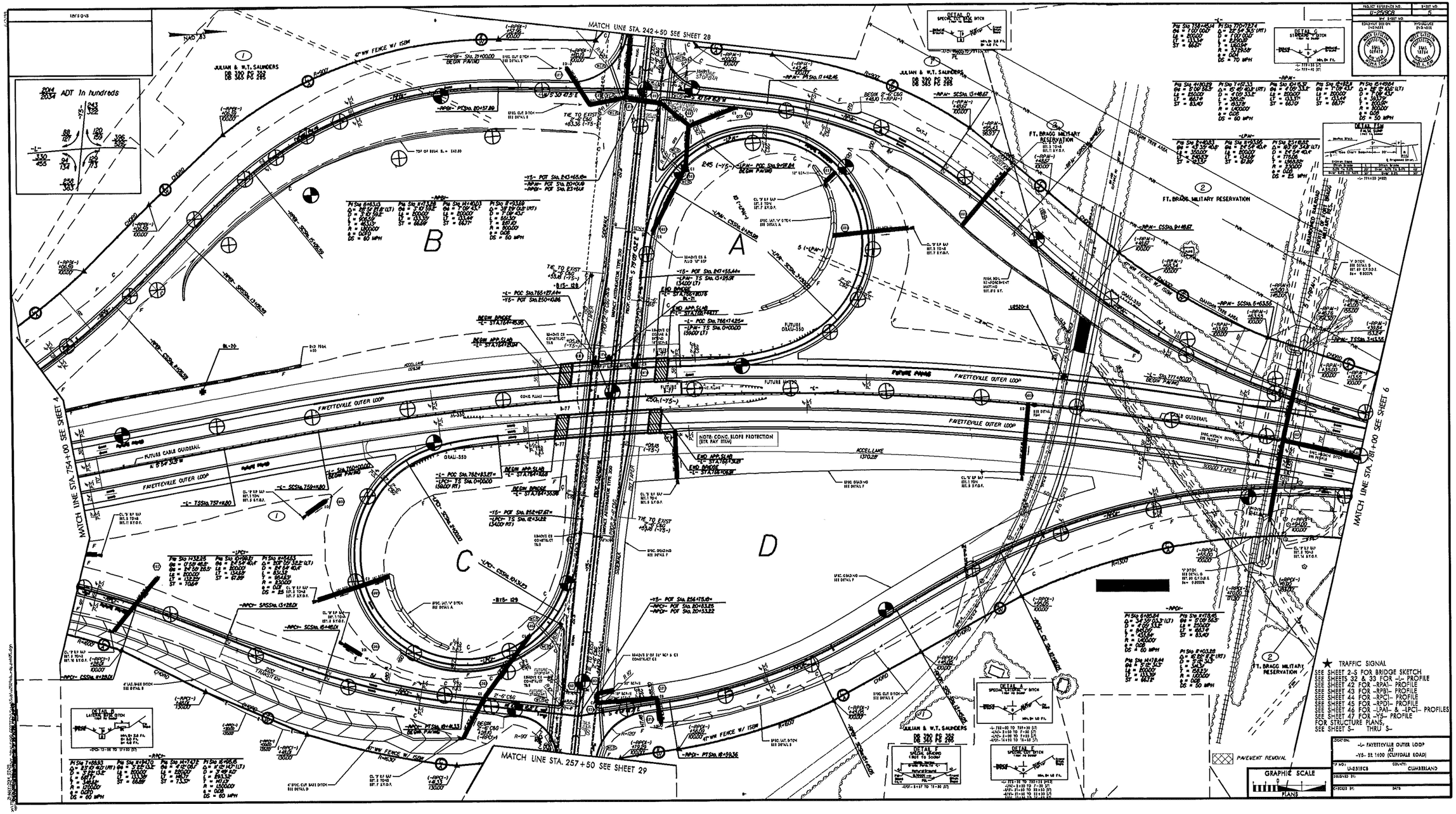
REVISIONS

7/2/99



NOTE: SEE SHEET 2-T FOR ADDITIONAL PARCEL 1 R/W ACQUISITION

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy.psh04


MATCH LINE STA. 242+50 SEE SHEET 28
MATCH LINE STA. 754+00 SEE SHEET 4
MATCH LINE STA. 761+00 SEE SHEET 6
MATCH LINE STA. 257+50 SEE SHEET 29
JULIAN & W.T. SAUNDERS
FT. BRAGG MILITARY RESERVATION
FAYETTEVILLE OUTER LOOP
FUTURE CABLE GUIDERAIL
NOTE: CONC. SLOPE PROTECTION (STK. PAY ITEM)
ADT in hundreds
DETAIL A
DETAIL B
DETAIL C
DETAIL D
DETAIL E
DETAIL F
DETAIL 13H
TRAFFIC SIGNAL
SEE SHEET 2-5 FOR BRIDGE SKETCH
SEE SHEETS 32 & 33 FOR -L- PROFILE
SEE SHEET 42 FOR -RPA1- PROFILE
SEE SHEET 43 FOR -RPB1- PROFILE
SEE SHEET 44 FOR -RPC1- PROFILE
SEE SHEET 45 FOR -RPD1- PROFILE
SEE SHEET 46 FOR -LPA1- & -LPC1- PROFILES
SEE SHEET 47 FOR -Y5- PROFILE
FOR STRUCTURE PLANS,
SEE SHEET S- THRU S-
PAVEMENT REMOVAL
GRAPHIC SCALE
PLANS
LOCATION: -L- FAYETTEVILLE OUTER LOOP AT -Y5- SR 1600 (CLIFFDALE ROAD)
TIP NO. U-2519CB
COUNTY CUMBERLAND
DESIGNED BY:
CHECKED BY:
DATE
PROJECT REFERENCE NO. U-2519CB
SHEET NO. 5
RW SHEET NO.
RIGHT OF WAY CERTIFICATION DATE: JULY 1, 1994
RIGHT OF WAY CERTIFICATION DATE: JULY 1, 1994

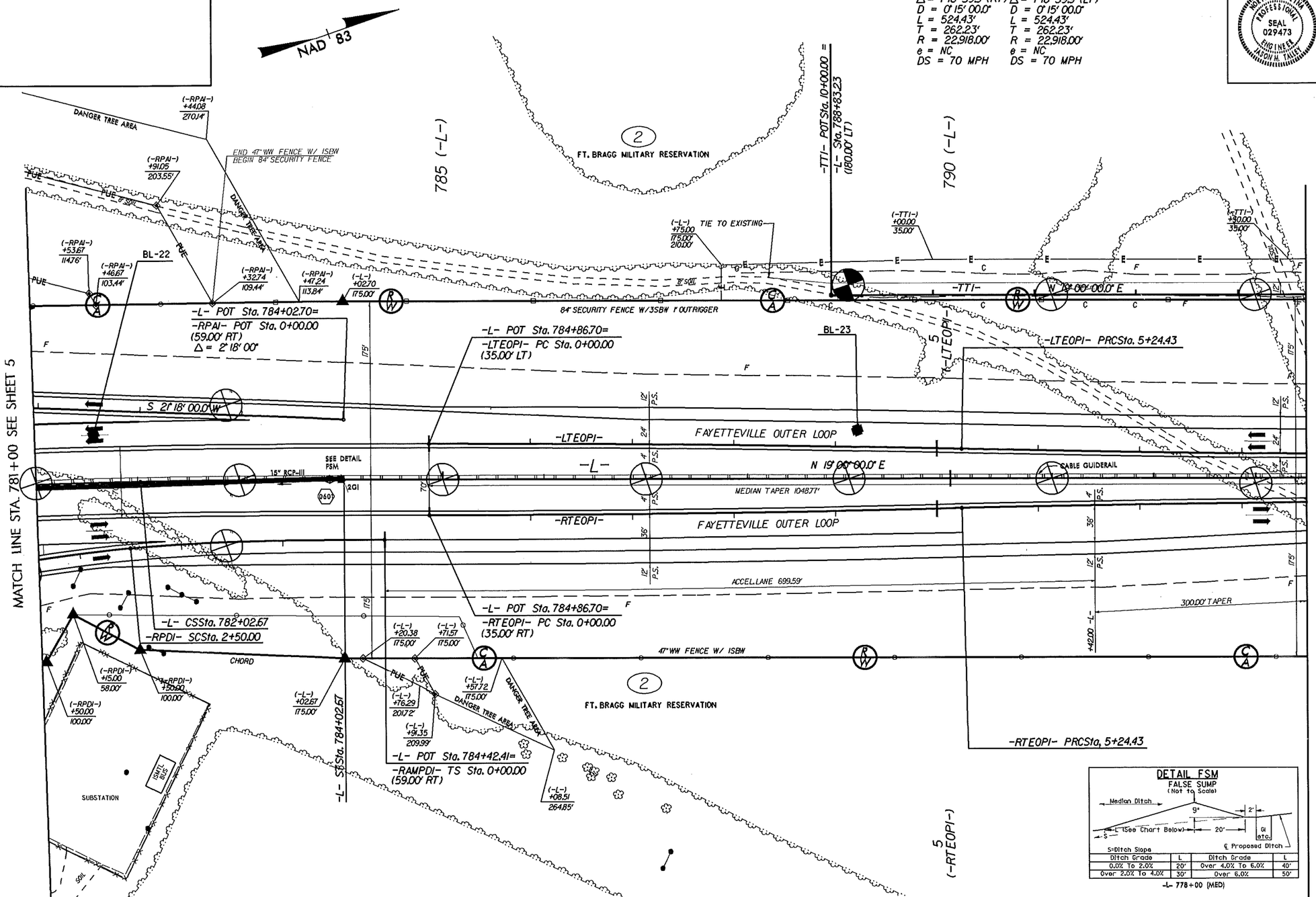
7/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON H. TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD



DETAIL FSM
FALSE SUMP
(Not to Scale)

S=Ditch Slope

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

-L- 778+00 (MED)

-RPDI-

PIs Sta 1+66.74	PI Sta 6+85.84
es = 5° 06' 56.5"	Δ = 34° 35' 03.3" (LT)
Ls = 250.00'	D = 4° 05' 33.2"
LT = 166.74'	L = 845.05'
ST = 83.40'	T = 435.84'
	R = 1,400.00'
	e = 0.08
	DS = 60 MPH

-L-

PIs Sta 758+45.14	PI Sta 770+72.74	PIs Sta 782+69.34
es = 1° 00' 00.0"	Δ = 22° 54' 31.5" (RT)	es = 1° 00' 00.0"
Ls = 200.00'	D = 1° 00' 00.0"	Ls = 200.00'
LT = 133.34'	L = 2,290.87	LT = 133.34'
ST = 66.67'	T = 1,160.94'	ST = 66.67'
	R = 5,729.58'	
	e = 0.040	
	DS = 70 MPH	

-RTEOPI-

PI Sta 2+62.23	PI Sta 7+86.66
Δ = 1° 18' 39.9" (LT)	Δ = 1° 18' 39.9" (RT)
D = 0° 15' 00.0"	D = 0° 15' 00.0"
L = 524.43'	L = 524.43'
T = 262.23'	T = 262.23'
R = 22,918.00'	R = 22,918.00'
e = NC	e = NC
DS = 70 MPH	DS = 70 MPH

-LTEOPI-

PI Sta 2+62.23	PI Sta 7+86.66
Δ = 1° 18' 39.9" (RT)	Δ = 1° 18' 39.9" (LT)
D = 0° 15' 00.0"	D = 0° 15' 00.0"
L = 524.43'	L = 524.43'
T = 262.23'	T = 262.23'
R = 22,918.00'	R = 22,918.00'
e = NC	e = NC
DS = 70 MPH	DS = 70 MPH

SEE SHEET 33 FOR -L- PROFILE
SEE SHEET 42 FOR -RPAI- PROFILE
SEE SHEET 45 FOR -RPDI- PROFILE
SEE SHEET 62 FOR -TTI- PROFILE

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy.pshb6

7/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	7
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON H. TALLEY

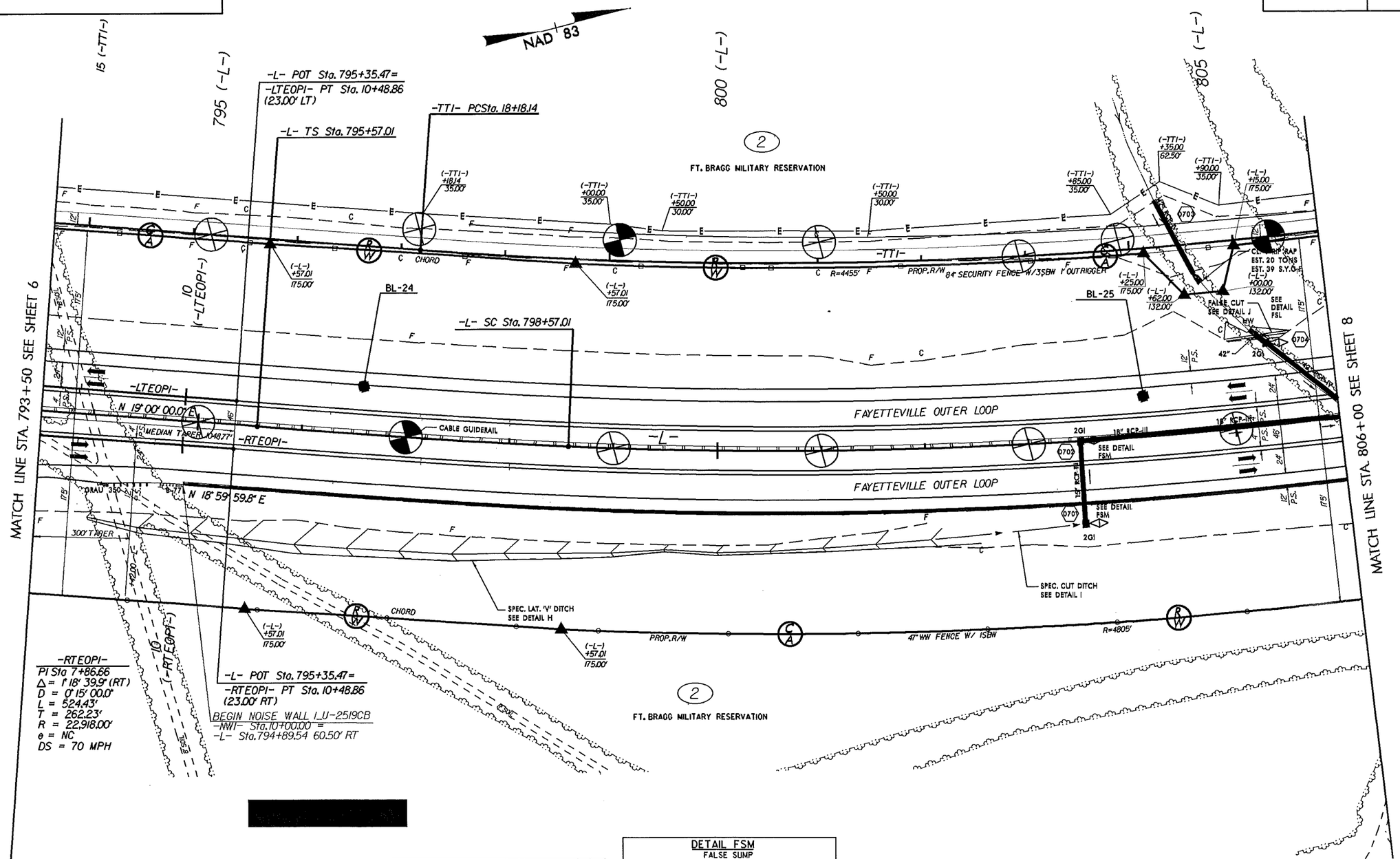
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

-LTEOPI-
PI Sta 7+86.66
Δ = 1° 18' 39.9" (LT)
D = 0° 15' 00.0"
L = 524.43'
T = 262.23'
R = 22,918.00'
e = NC
DS = 70 MPH

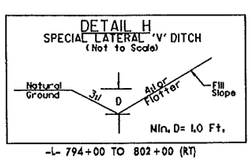
-L-
PIs Sta 797+57.02
Θs = 1° 51' 22.4"
Ls = 300.00'
LT = 200.01'
ST = 100.01'

PI Sta 815+21.68
Δ = 39° 33' 04.0" (LT)
D = 1° 14' 15.0"
L = 3,196.08
T = 1,664.67'
R = 4,630.00'
e = 0.050
DS = 70 MPH

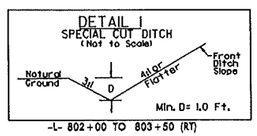
-TTI-
PI Sta 30+17.35
Δ = 30° 04' 02.0" (LT)
D = 1° 16' 59.6"
L = 2,343.11'
T = 1,199.20'
R = 4,465.00'



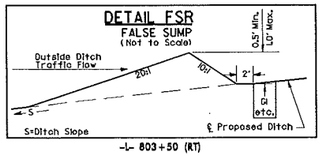
[redacted]



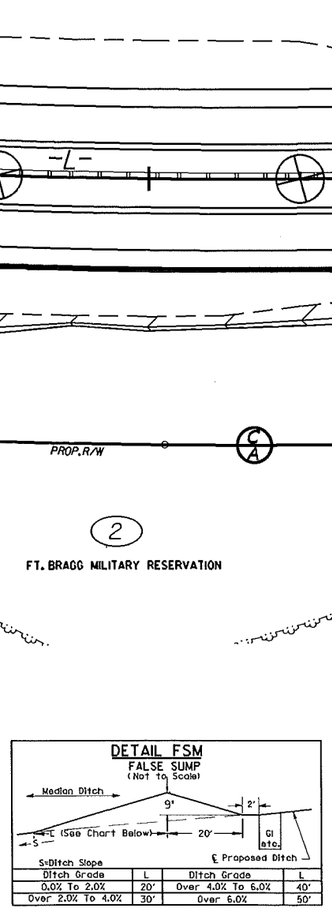
-L- 794+00 TO 802+00 (RT)



-L- 802+00 TO 803+50 (RT)

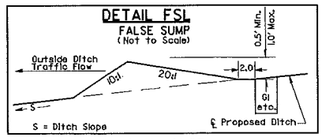


-L- 803+50 (RT)

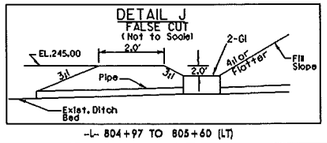


Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

-L- 803+50 (MED)



-L- 805+36 (LT)



-L- 804+97 TO 805+60 (LT)

SEE SHEETS 33 & 34 FOR -L- PROFILE
SEE SHEET 62 & 63 FOR -TTI- PROFILE

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy.psh07

7/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY

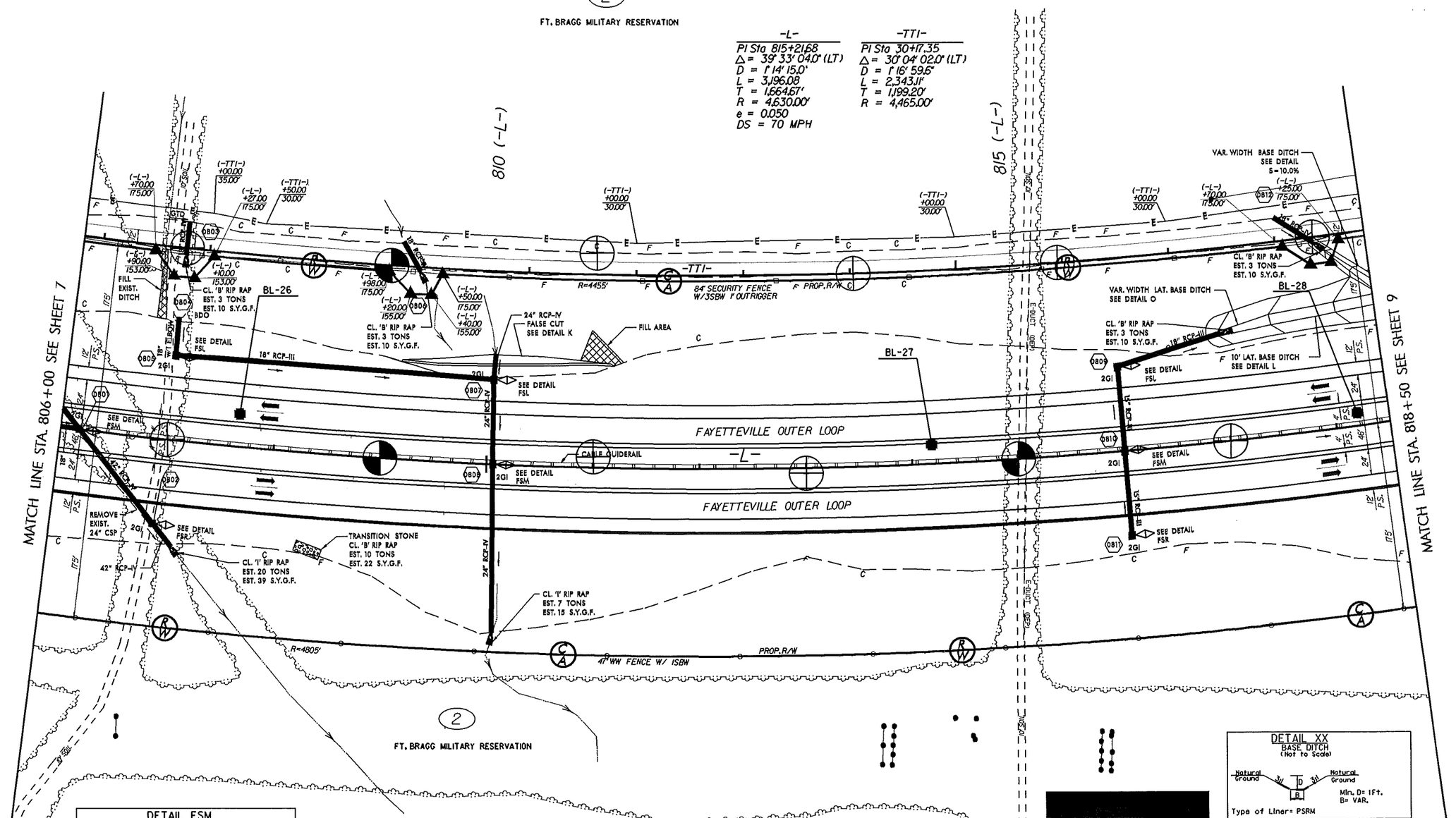
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

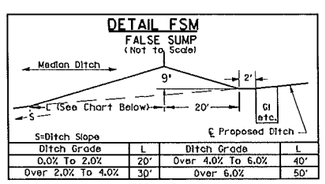
NAD 83

FT. BRAGG MILITARY RESERVATION

-L-
PI Sta 815+21.68
Δ = 39° 33' 04.0" (LT)
D = 1° 14' 15.0"
L = 3,196.08
T = 1,664.67'
R = 4,630.00'
e = 0.050
DS = 70 MPH

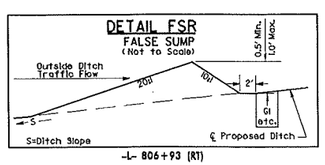
-TT1-
PI Sta 30+17.35
Δ = 30° 04' 02.0" (LT)
D = 1° 16' 59.6"
L = 2,343.11'
T = 1,199.20'
R = 4,465.00'



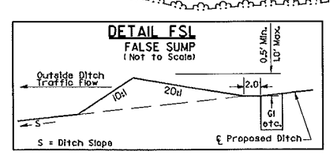


Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

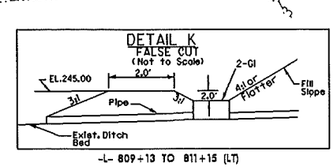
-L- 806+17 (MED)
-L- 810+06 (MED)
-L- 816+00 (MED)



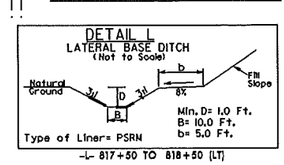
-L- 806+93 (RT)
-L- 816+00 (RT)



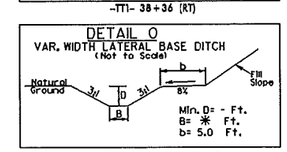
-L- 807+00 (LT)
-L- 810+04 (LT)
-L- 816+00 (LT)



-L- 809+13 TO 811+15 (LT)



-L- 817+50 TO 818+50 (LT)



-L- 817+00 to 817+50 (LT)
* B VARIES (2' TO 10')

-TT1- 38+36 (RT)

SEE SHEET 34 FOR -L- PROFILE
SEE SHEET 63 & 64 FOR -TT1- PROFILE

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_psh08

7/2/99

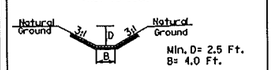
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	9
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

DETAIL ZZ
BASE DITCH
(Not to Scale)

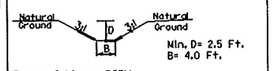


Min. D= 2.5 Ft.
B= 4.0 Ft.

Type of Liner= CL. 'I' Rip-Rap

-L- 829+86 TO 830+36 (LT)

DETAIL AB
BASE DITCH
(Not to Scale)

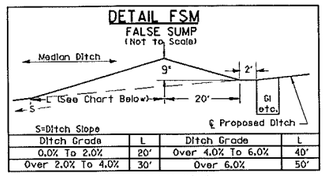


Min. D= 2.5 Ft.
B= 4.0 Ft.

Type of Liner= PSRM

-L- 830+36 TO 831+00 (LT)

DETAIL FSM
FALSE SUMP
(Not to Scale)



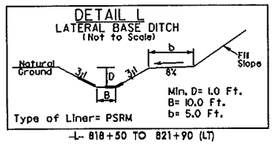
S=Ditch Slope

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

-L- 820+50 (MED)

[redacted]

DETAIL L
LATERAL BASE DITCH
(Not to Scale)

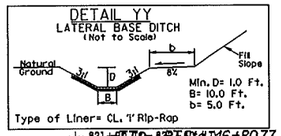


Min. D= 1.0 Ft.
B= 10.0 Ft.
b= 5.0 Ft.

Type of Liner= PSRM

-L- 818+50 TO 821+90 (LT)

DETAIL YY
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.0 Ft.
B= 10.0 Ft.
b= 5.0 Ft.

Type of Liner= CL. 'I' Rip-Rap

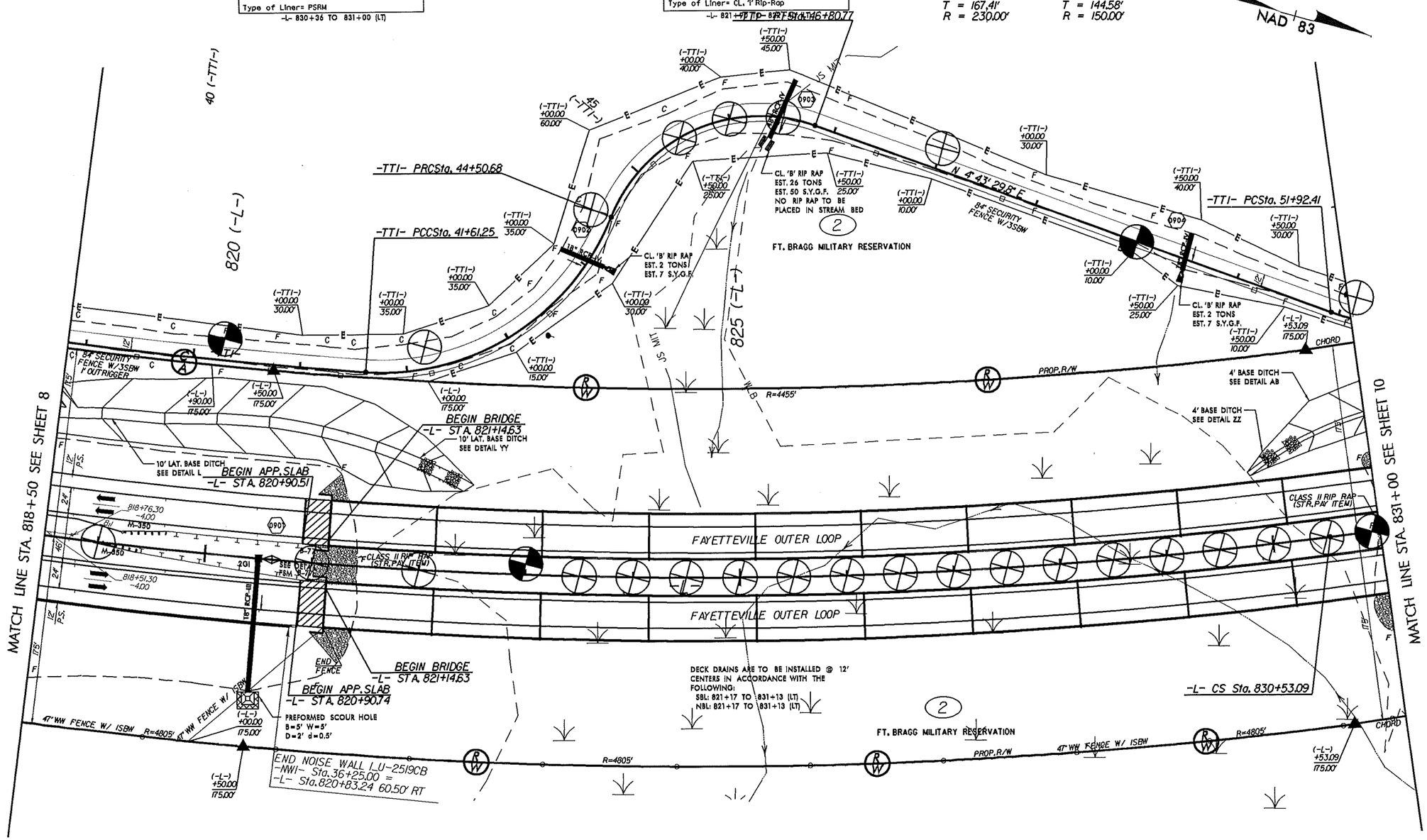
-L- 821+90 TO 822+50 (LT)

-L-

PIs Sta 831+53.10	PI Sta 815+21.68
Es = 1° 51' 22.4"	Δ = 39° 33' 04.0" (LT)
Ls = 300.00'	D = 1° 14' 15.0"
LT = 200.01'	L = 3,196.08
ST = 100.01'	T = 1,664.67'
	R = 4,630.00'
	e = 0.050
	DS = 70 MPH

-TTI-

PI Sta 43+28.66	PI Sta 45+95.25
Δ = 72° 05' 56.3" (LT)	Δ = 87° 53' 28.1" (RT)
D = 24° 54' 40.4"	D = 38° 11' 49.9"
L = 289.42'	L = 230.10'
T = 167.41'	T = 144.58'
R = 230.00'	R = 150.00'



SEE SHEETS 34 & 35 FOR -L- PROFILE
SEE SHEET 64 FOR -TTI- RPOFILE
SEE SHEET 2-5 FOR BRIDGE SKETCH
FOR STRUCTURE PLANS, SEE SHEETS S- THRU S-

104.001.001/U2519cb/Roadway/proj/U2519cb_rdy_psh09

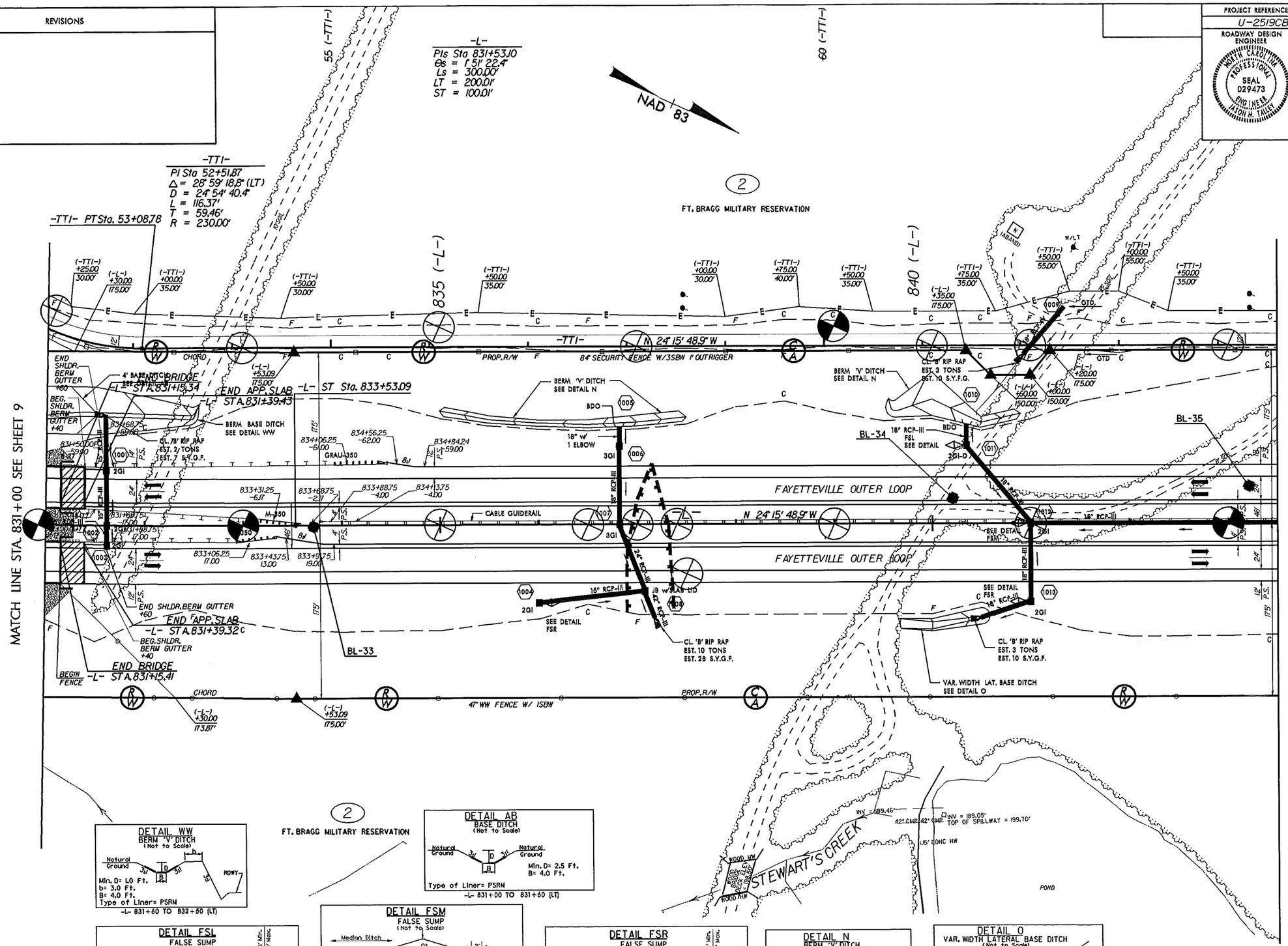
7/2/99

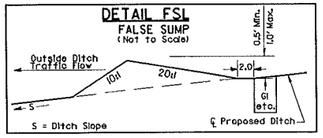
REVISIONS

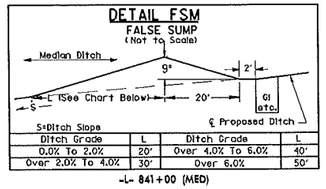
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	10

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY

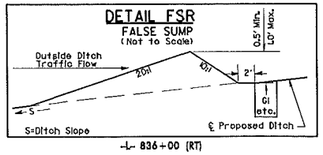
HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BIRD

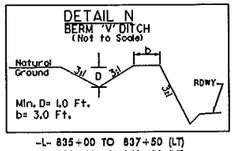


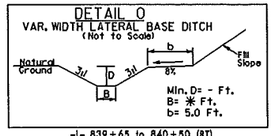




Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'







[redacted]

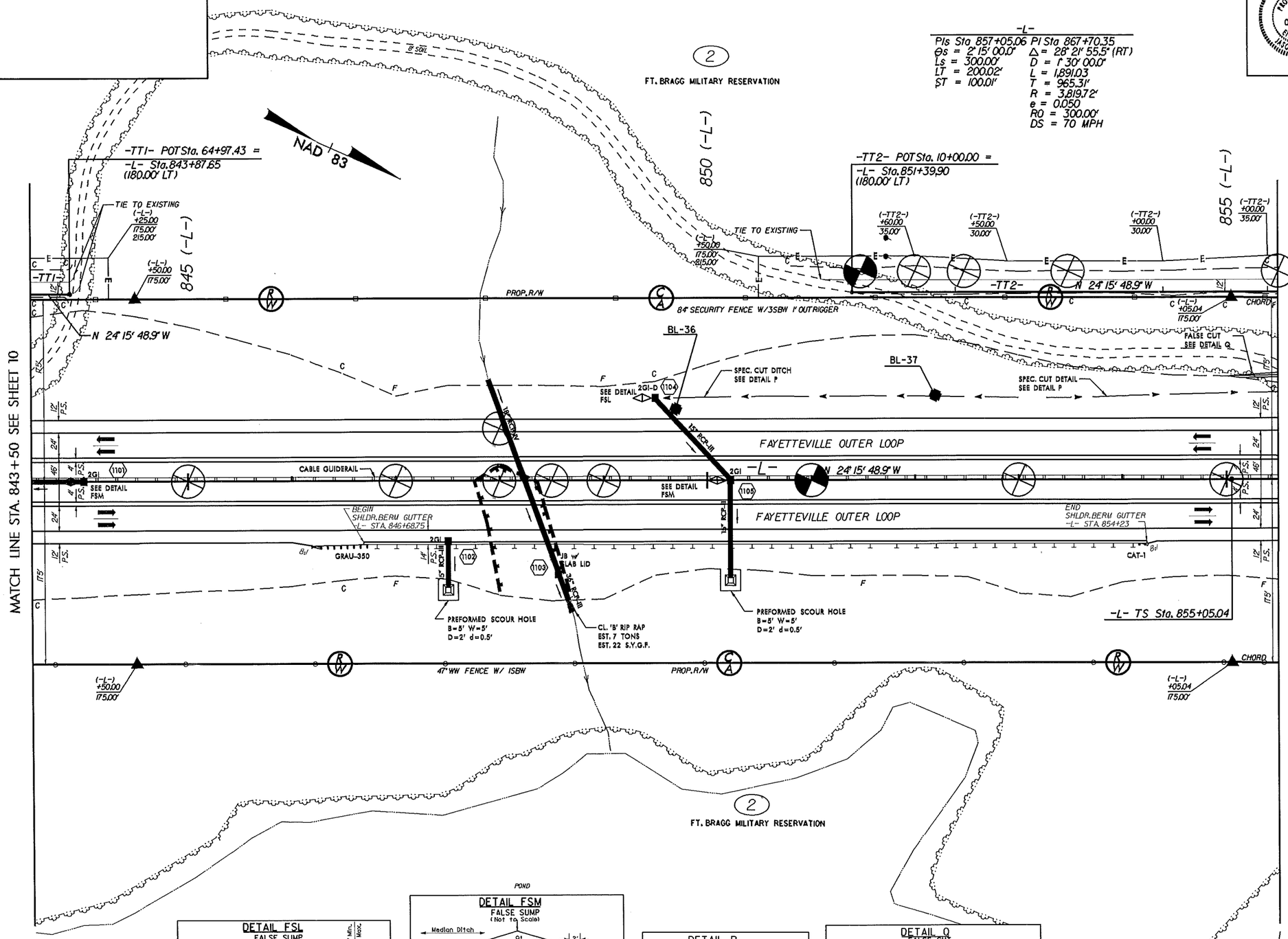
SEE SHEET 35 FOR -L- PROFILE
SEE SHEET 64 -TTI- FOR PROFILE

104.001.001/U2519cb/Roadway/proj/U2519cb_rdy.pshl0

7/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	11
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY	NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD



SEE SHEETS 35 & 36 FOR -L- PROFILE
SEE SHEET 64 FOR -TT1- PROFILE
SEE SHEET 65 FOR -TT2- PROFILE

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy.pshll

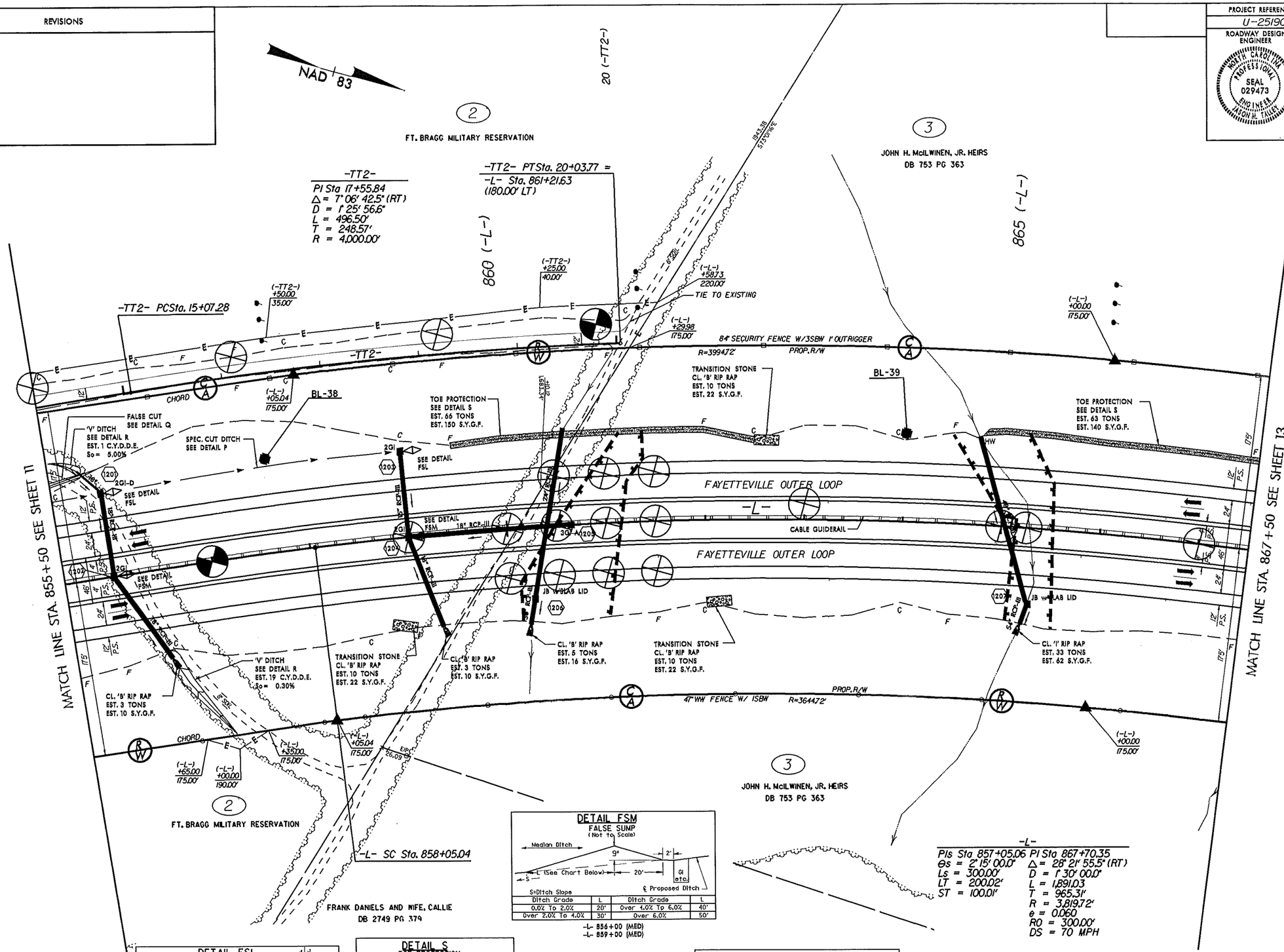
7/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TILLEY

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD



[redacted]

SEE SHEET 36 FOR -L- PROFILE
SEE SHEET 65 FOR -TT2- PROFILE

104.001.001/U2519cb/Roadway/proj/u2519cb_rdy_psht2

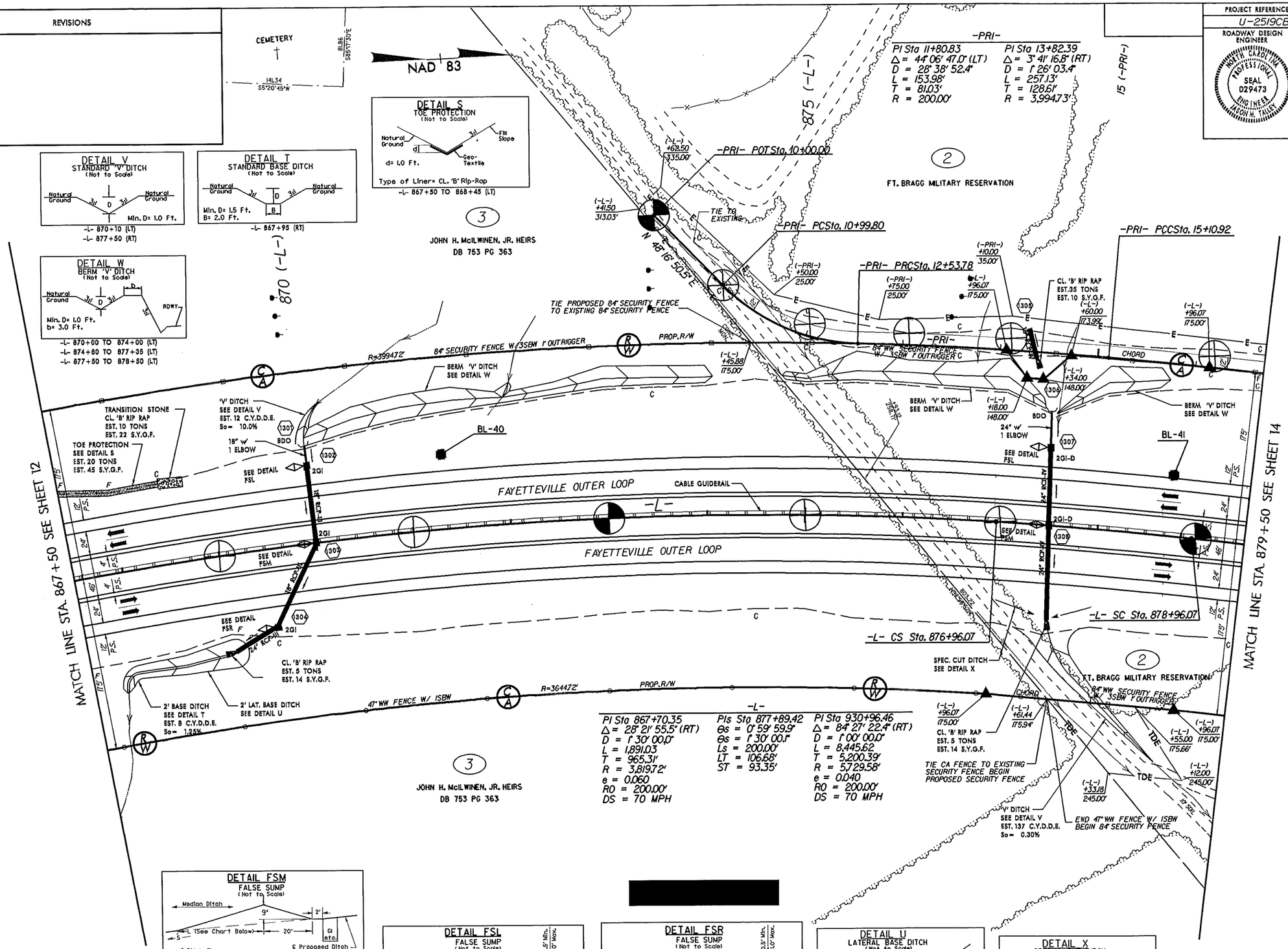
7/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	13

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD



SEE SHEETS 36 & 37 FOR -L- PROFILE
SEE SHEET 59 FOR -PRI- PROFILE

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_psh13

7/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	14

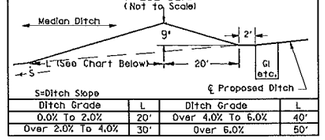
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

DETAIL FSM
FALSE SUMP
(Not To Scale)



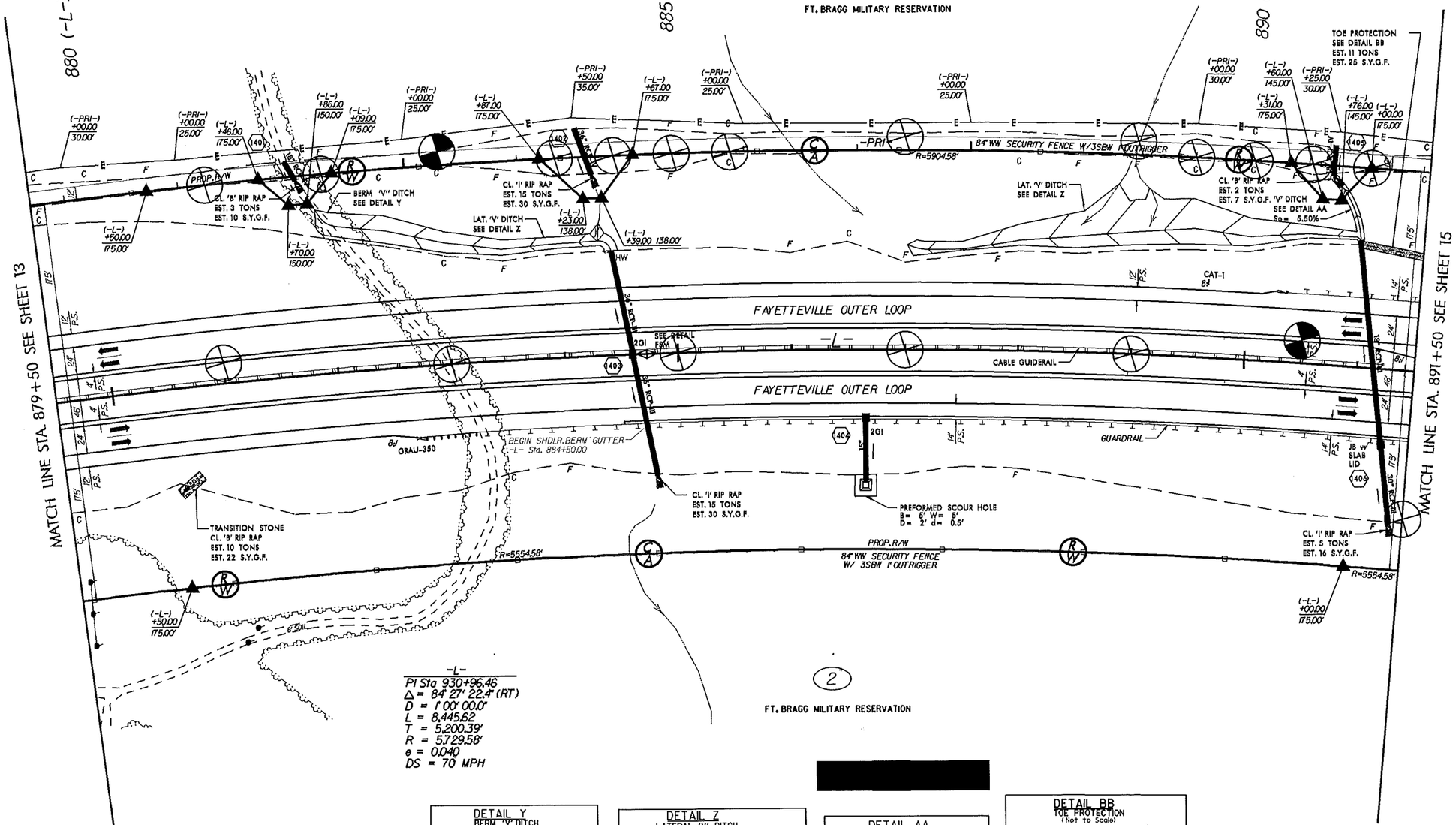
S=Ditch Slope

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

-L- 884+60 (MED)

-PRI-
PI Sta 24+54.66
Δ = 18° 09' 42.4" (RT)
D = 0° 58' 13.3"
L = 1,871.65'
T = 943.74'
R = 5,904.58'

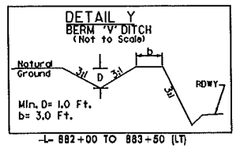
NAD 83



-L-
PI Sta 930+96.46
Δ = 84° 27' 22.4" (RT)
D = 1° 00' 00.0"
L = 8,445.62'
T = 5,200.39'
R = 5,729.58'
e = 0.040
DS = 70 MPH

[redacted]

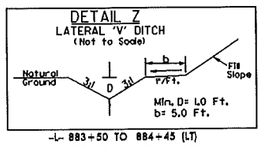
DETAIL Y
BERM 'V' DITCH
(Not to Scale)



Min. D= 1.0 Ft.
b= 3.0 Ft.

-L- 882+00 TO 883+50 (LT)

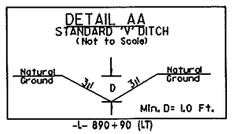
DETAIL Z
LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1.0 Ft.
b= 5.0 Ft.

-L- 883+50 TO 884+45 (LT)
-L- 887+50 TO 890+95 (LT)

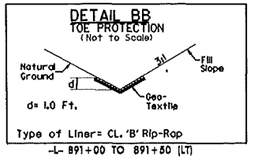
DETAIL AA
STANDARD 'V' DITCH
(Not to Scale)



Min. D= 1.0 Ft.

-L- 890+90 (LT)

DETAIL BB
TOE PROTECTION
(Not to Scale)



d= 1.0 Ft.

Type of Liner= CL. 'B' Rip-Rap

-L- 891+00 TO 891+50 (LT)

SEE SHEET 37 FOR -L- PROFILE
SEE SHEET 59 FOR -PRI- PROFILE

104.00L001/U2519cb/Roadway/proj/U2519cb_rdy_psht4

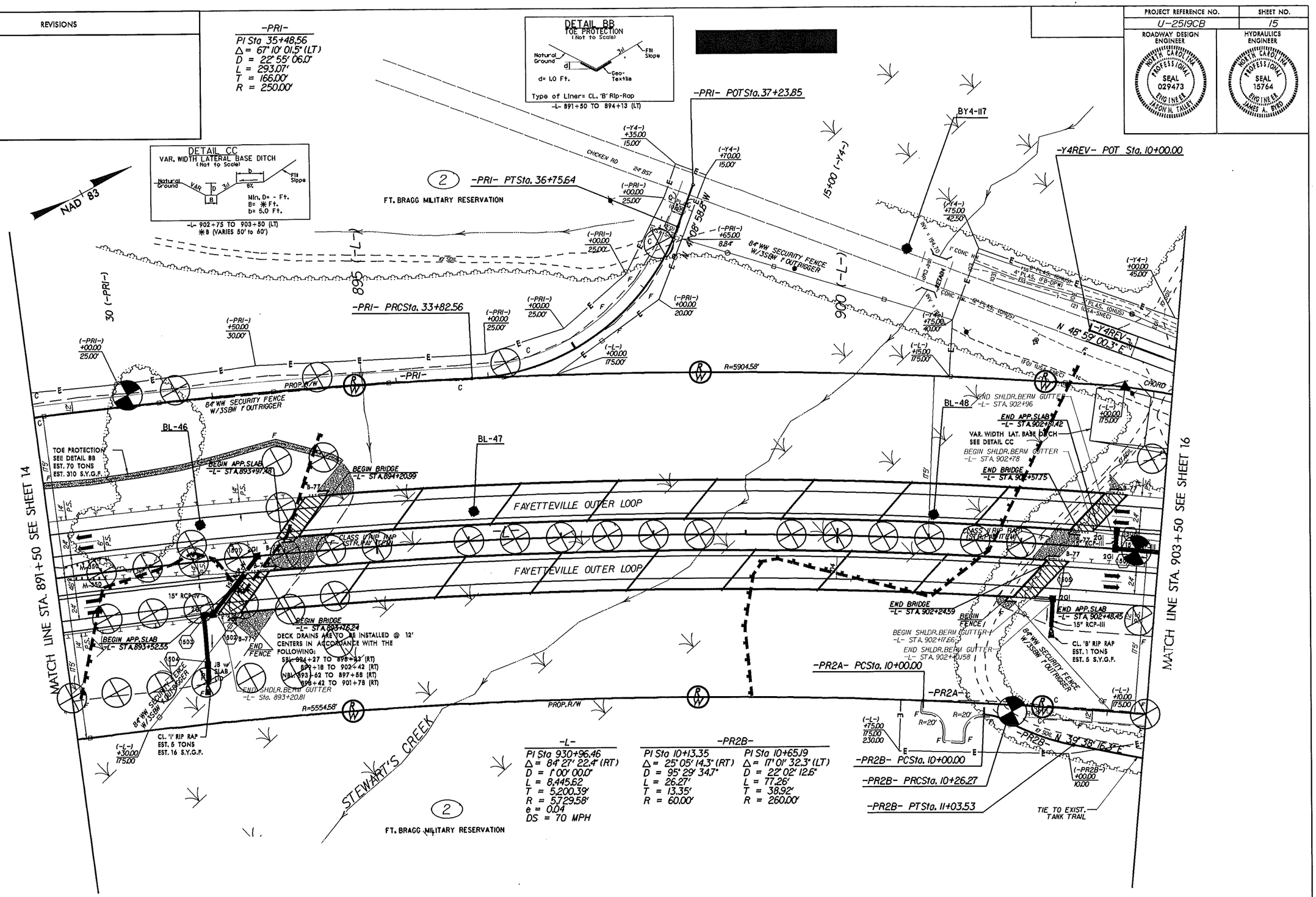
7/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	15

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD



-L-

PI Sta 930+96.46
Δ = 84° 27' 22.4" (RT)
D = 1° 00' 00.0"
L = 8,445.62
T = 5,200.39'
R = 5,729.58'
e = 0.04
DS = 70 MPH

-PR2B-

PI Sta 10+13.35	PI Sta 10+65.19
Δ = 25° 05' 14.3" (RT)	Δ = 17° 01' 32.3" (LT)
D = 95° 29' 34.7"	D = 22° 02' 12.6"
L = 26.27'	L = 77.26'
T = 13.35'	T = 38.92'
R = 60.00'	R = 260.00'

SEE SHEET 37 FOR -L- PROFILE
SEE SHEET 59 FOR -PRI- PROFILE
SEE SHEET 60 FOR -PR2A- PROFILE
SEE SHEET 2-S FOR BRIDGE SKETCH
FOR STRUCTURE PLANS, SEE SHEET S- THRU S-

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_psh15

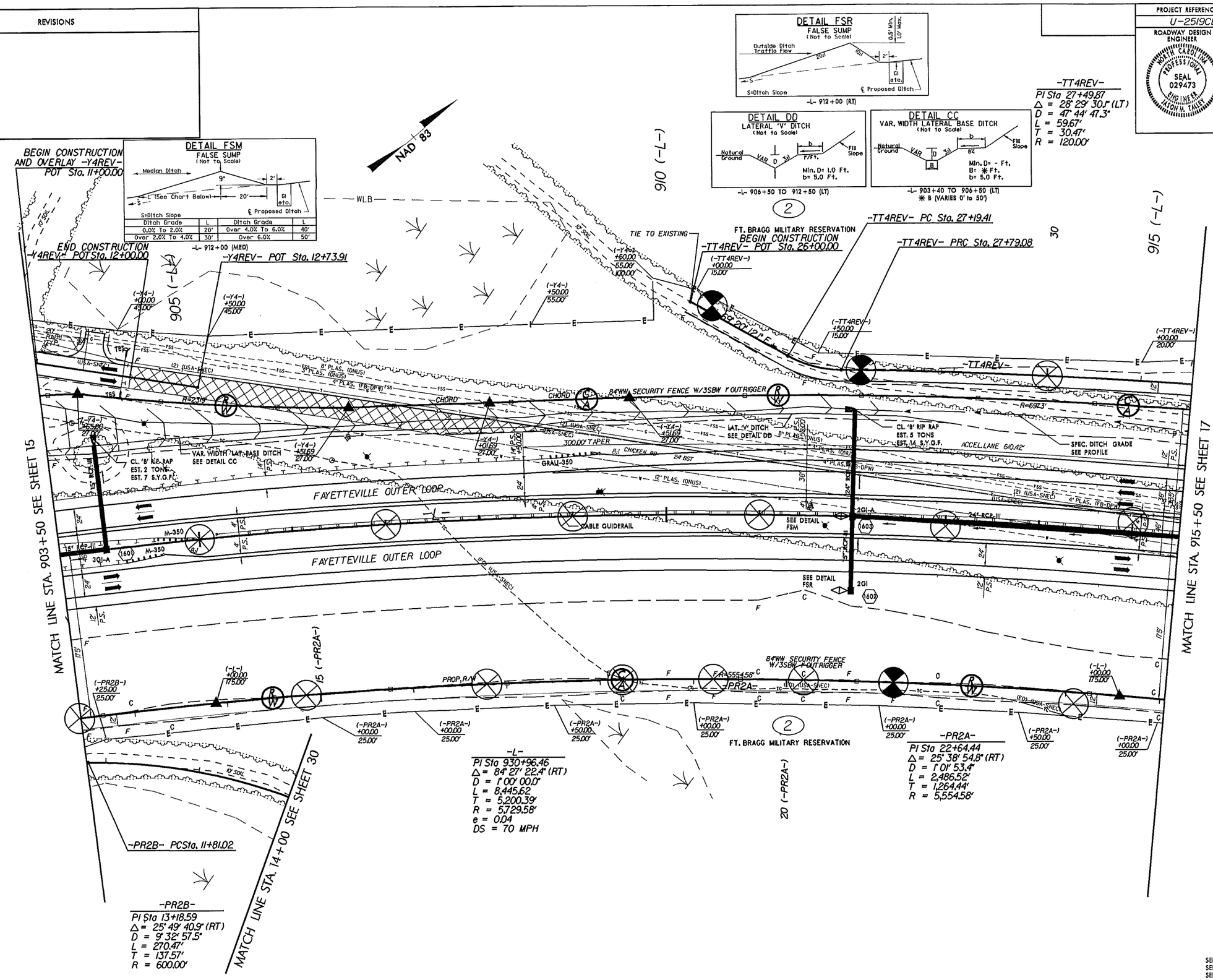
7/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	16

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD



SEE SHEET 37 & 38 FOR -L- PROFILE
SEE SHEET 60 FOR -PR2A- PROFILE
SEE SHEET 65 FOR -TT4REV- PROFILE

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy.pshl6

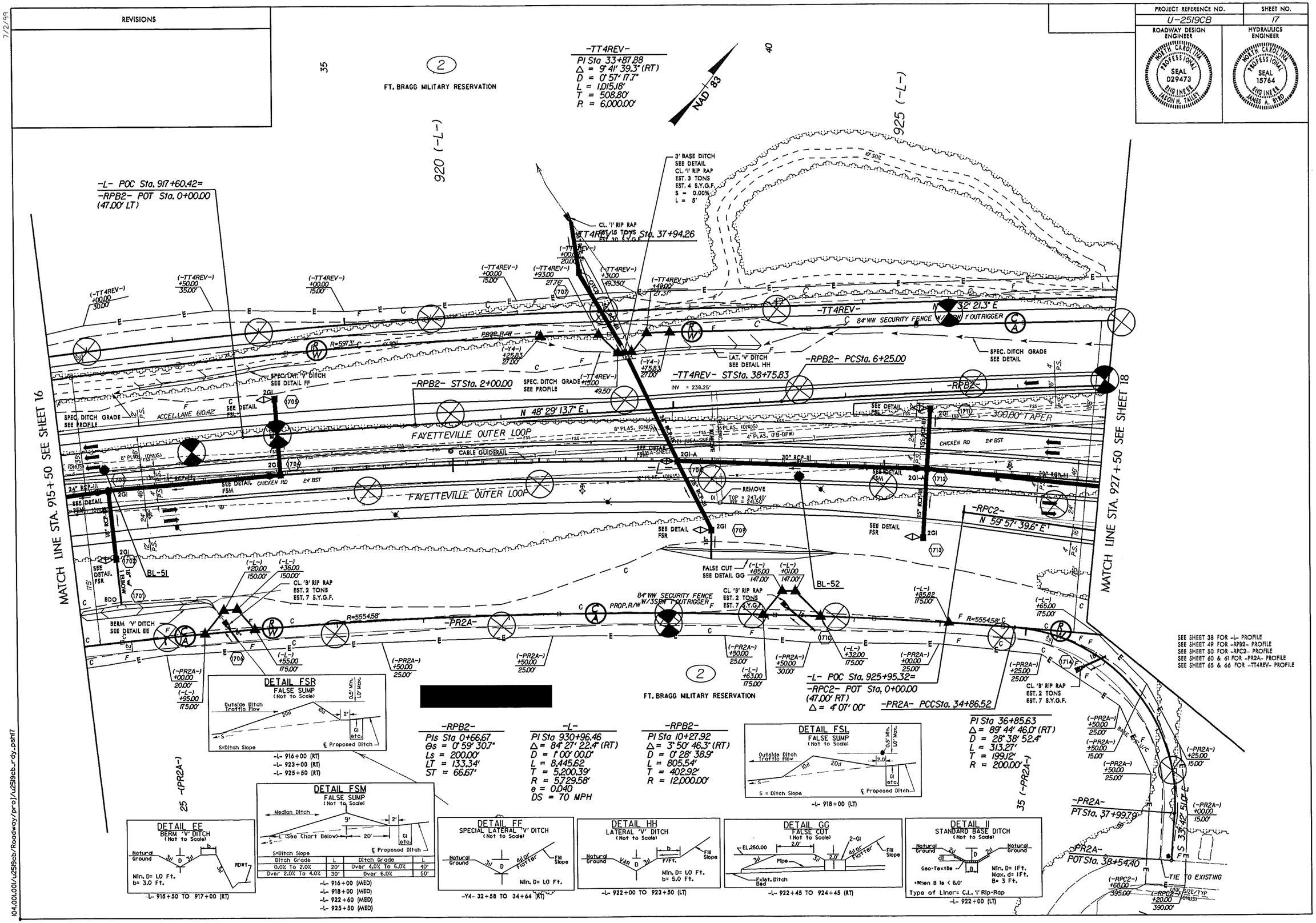
7/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	17
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BIRD



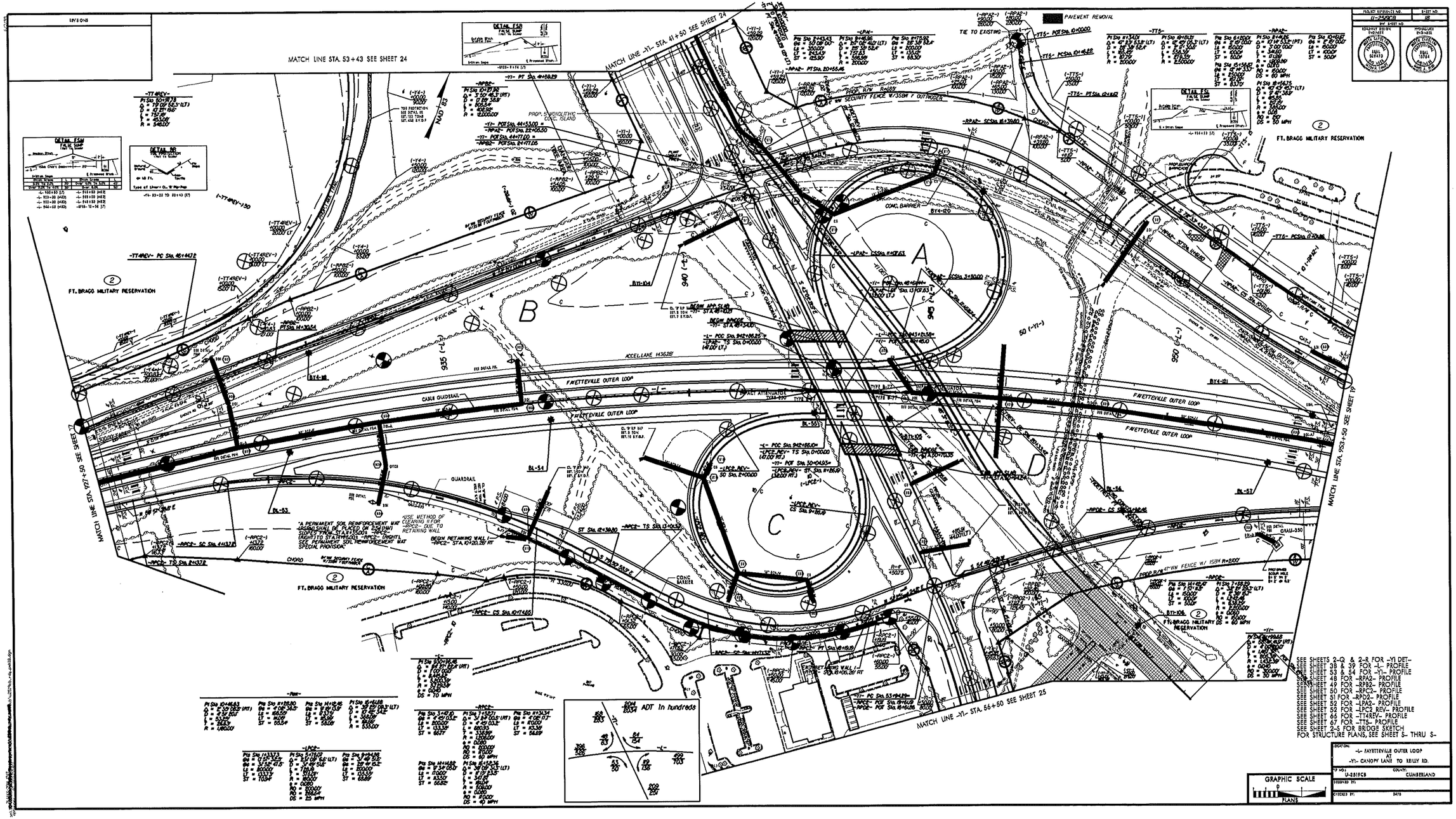
104.001.001/u2519cb/Roadway/proj/u2519cb_rdy.pshl7

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2518CB	18
R/W SHEET NO.	

RIGHT OF WAY CERTIFICATION
THIS MAP IS CERTIFIED TO BE ACCURATE AND CONTAINS ALL PARCELS REQUIRED FOR THE CONSTRUCTION OF THE PROJECT DESCRIBED HEREIN.
DATE: 11/14/2013

PROJECT CERTIFICATION
THIS MAP IS CERTIFIED TO BE ACCURATE AND CONTAINS ALL PARCELS REQUIRED FOR THE CONSTRUCTION OF THE PROJECT DESCRIBED HEREIN.
DATE: 11/14/2013



SEE SHEETS 2-Q & 2-R FOR -Y1 DET-
SEE SHEET 38 & 39 FOR -L- PROFILE
SEE SHEET 53 & 54 FOR -Y1- PROFILE
SEE SHEET 48 FOR -RPA2- PROFILE
SEE SHEET 49 FOR -RPB2- PROFILE
SEE SHEET 50 FOR -RPC2- PROFILE
SEE SHEET 51 FOR -RPD2- PROFILE
SEE SHEET 52 FOR -LPA2- PROFILE
SEE SHEET 52 FOR -LPC2 REV- PROFILE
SEE SHEET 66 FOR -TT4REV- PROFILE
SEE SHEET 67 FOR -TT5- PROFILE
SEE SHEET 2-S FOR BRIDGE SKETCH
FOR STRUCTURE PLANS, SEE SHEET S- THRU S-

GRAPHIC SCALE
0 PLANS

LOCATION: -L- FAYETTEVILLE OUTER LOOP AT -Y1- CANOPY LANE TO REILLY RD.

TIP NO.: U-2518CB COUNTY: CUMBERLAND

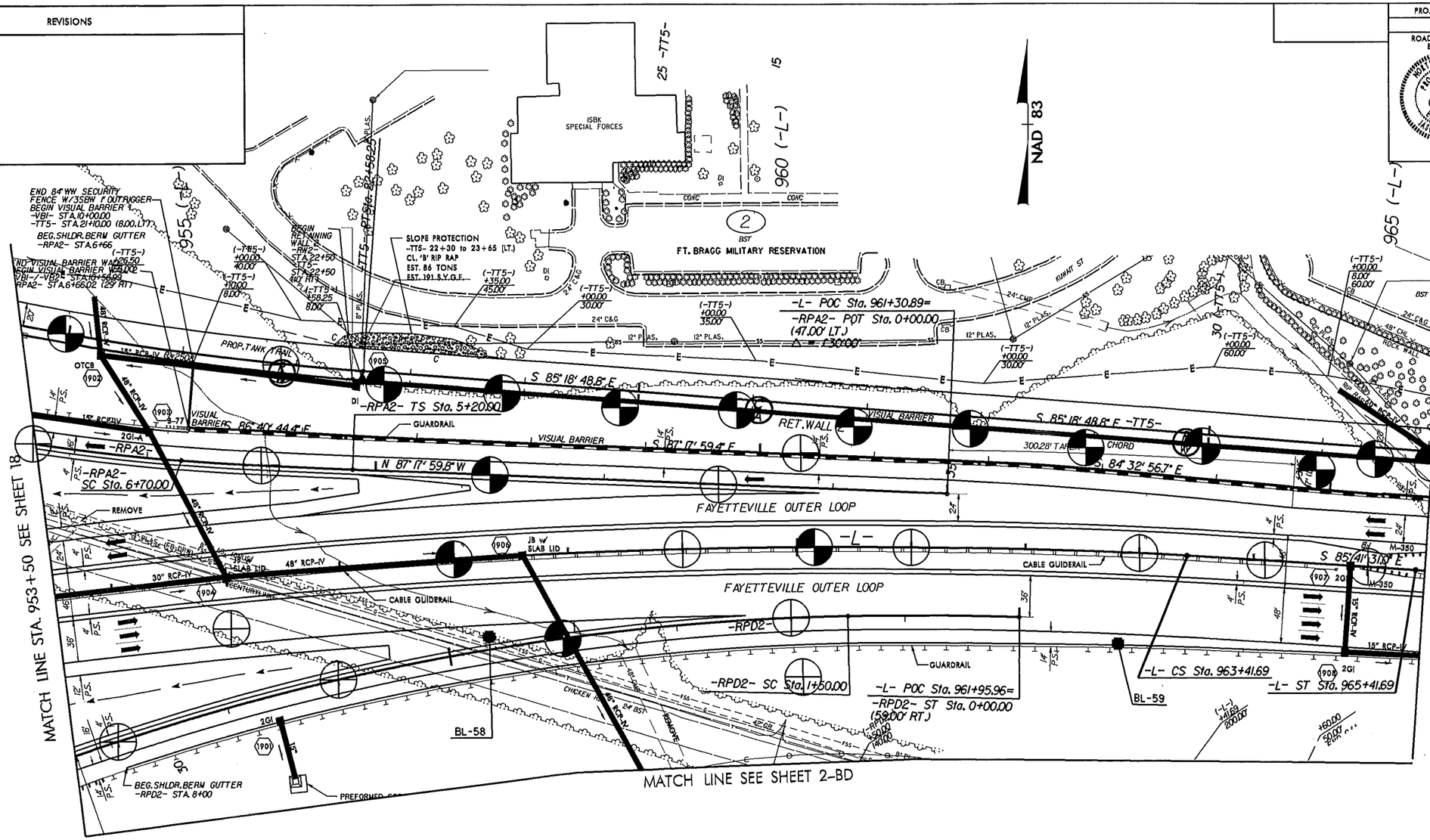
DESIGNED BY:

CHECKED BY: DATE

7/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	19
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY	NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. WYND



-RPA2-

PI Sta 8+41.29	PIs Sta 6+20.01
Δ = 10° 14' 53.2" (RT)	θs = 2° 15' 00.0"
D = 3° 00' 00.0"	Ls = 150.00'
L = 341.60	LT = 100.01'
T = 171.29'	ST = 50.01'
R = 1,909.86'	
e = 0.070	
R0 = 150.00'	
DS = 60 MPH	

-RPD2-

PI Sta 7+88.29	PIs Sta 0+86.04
Δ = 32° 21' 29.3" (LT)	θs = 0° 45' 27.8"
D = 2° 36' 15.7"	θs = 1° 57' 12.0"
L = 1,242.46	Ls = 150.00'
T = 638.29'	LT = 86.04'
R = 2,200.00'	ST = 63.99'
e = 0.060	
R0 = 150.00'	
DS = 60 MPH	

-L-

PI Sta 930+96.46	PIs Sta 964+08.36
Δ = 84° 27' 22.4" (RT)	θs = 1° 00' 00.0"
D = 1° 00' 00.0"	Ls = 200.00'
L = 8,445.62	LT = 133.34'
T = 5,200.39'	ST = 66.67'
R = 5,729.58'	
e = 0.040	
R0 = 200.00'	
DS = 70 MPH	

SEE SHEETS 39 & 40 FOR -L- PROFILE
SEE SHEET 48 FOR -RPA2- PROFILE
SEE SHEET 51 FOR -RPD2- PROFILE
SEE SHEET 67 & 68 FOR -TT5- PROFILE

104.00.001/u2519cb/Roadway/proj/u2519cb_rdy_psh19

7/2/99

REVISIONS

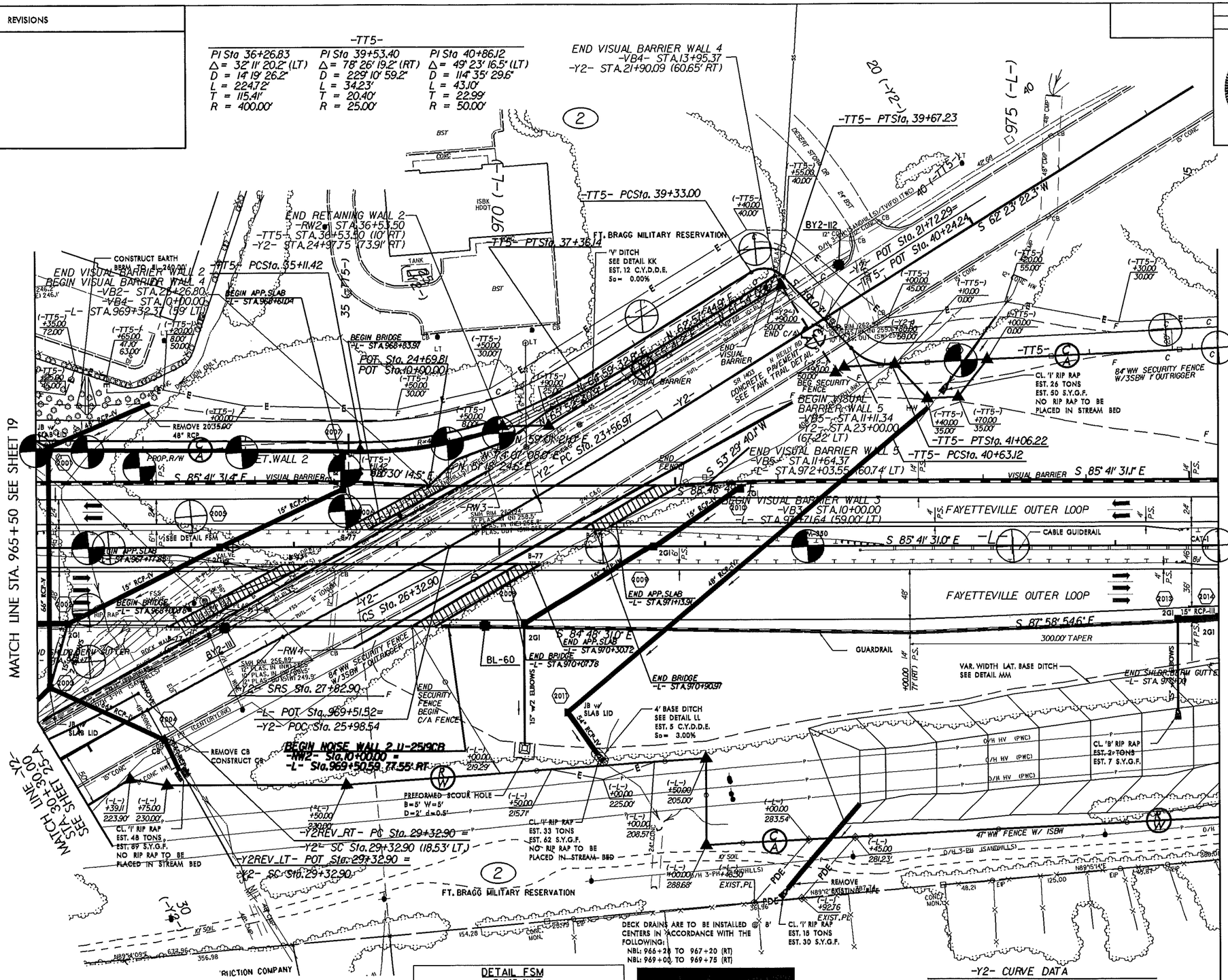
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	20
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BIRD

-TT5-

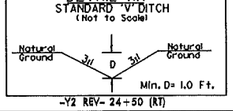
PI Sta 36+26.83	PI Sta 39+53.40	PI Sta 40+86.12
Δ = 32° 11' 20.2" (LT)	Δ = 78° 26' 19.2" (RT)	Δ = 49° 23' 16.5" (LT)
D = 14° 19' 26.2"	D = 229° 10' 59.2"	D = 114° 35' 29.6"
L = 224.72'	L = 34.23'	L = 43.10'
T = 115.41'	T = 20.40'	T = 22.99'
R = 400.00'	R = 25.00'	R = 50.00'



PI Sta 24+94.98	PIs Sta 26+82.90	PIs Sta 28+82.91
Δ = 3° 24' 00.0" (RT)	Θs = 0° 55' 26.9"	Θs = 1° 17' 53.7"
D = 1° 13' 55.8"	Ls = 150.00'	Ls = 150.00'
L = 275.94'	LT = 100.00'	LT = 100.00'
T = 138.01'	ST = 50.00'	ST = 50.00'
R = 4,650.00'		

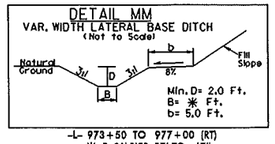
SEE SHEET 40 FOR -L- PROFILE
SEE SHEET 68 FOR -TT5- PROFILE
FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-

DETAIL KK
STANDARD 'V' DITCH
(Not to Scale)



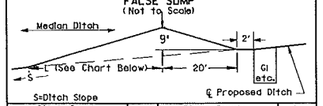
-Y2 REV- 24+50 (RT)

DETAIL MM
VAR. WIDTH LATERAL BASE DITCH
(Not to Scale)



-L- 973+50 TO 977+00 (RT)
✱ B (VARIES 57' TO 47')

DETAIL FSM
FALSE SUMP
(Not to Scale)

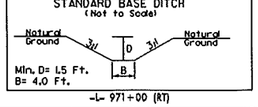


S=Ditch Slope			
Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

-L- 870+00 (MED)

[redacted]

DETAIL LL
STANDARD BASE DITCH
(Not to Scale)



-L- 971+00 (RT)

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy.psh20

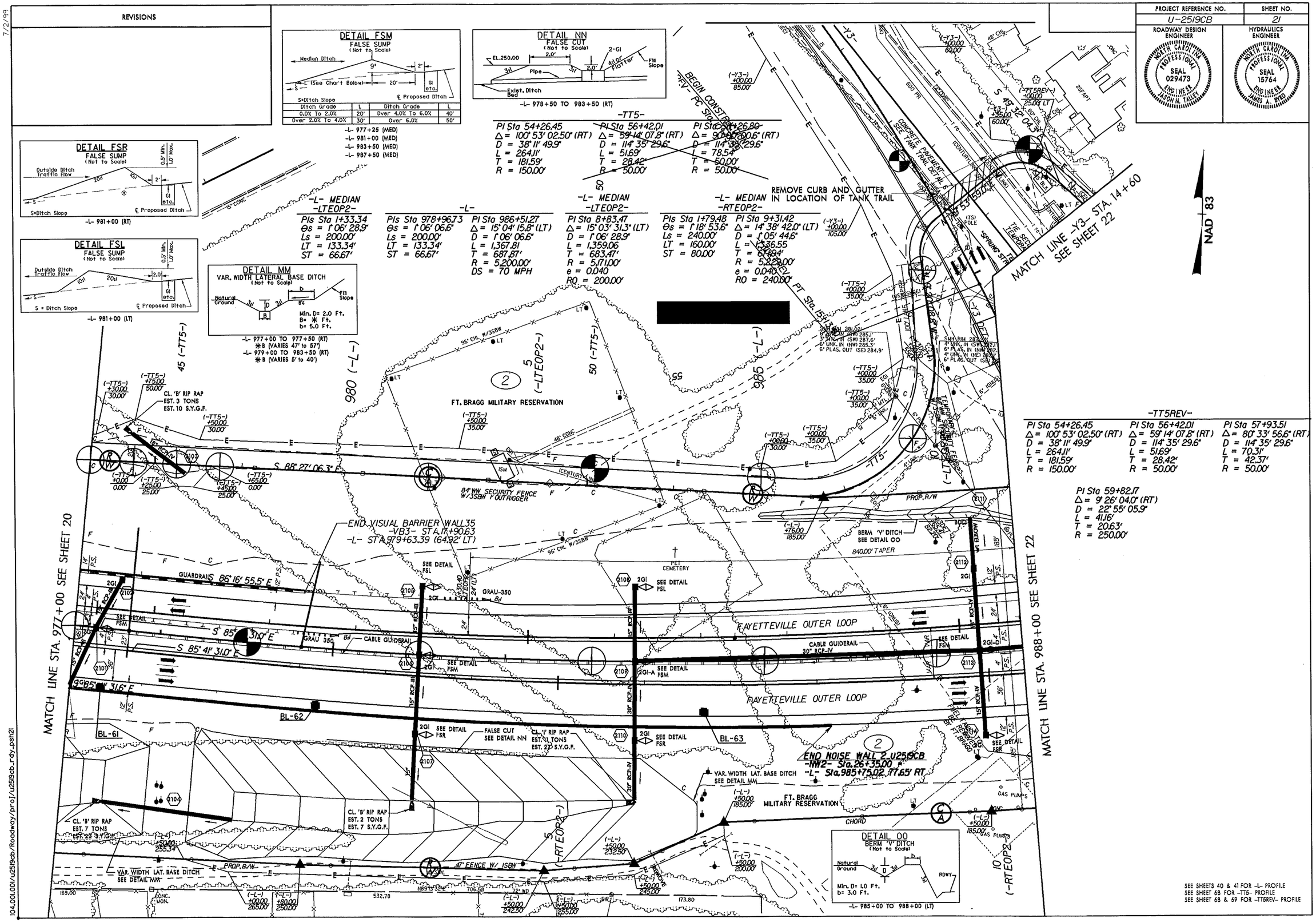
7/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	21

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BIRD



104.001.001/u2519cb/Roadway/proj/u2519cb_rdy.psh21

7/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	22

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

-TT5REV-
PI Sta 62+60.41
Δ = 62° 51' 59.7" (LT)
D = 28° 38' 52.4"
L = 219.45'
T = 122.24'
R = 200.00'

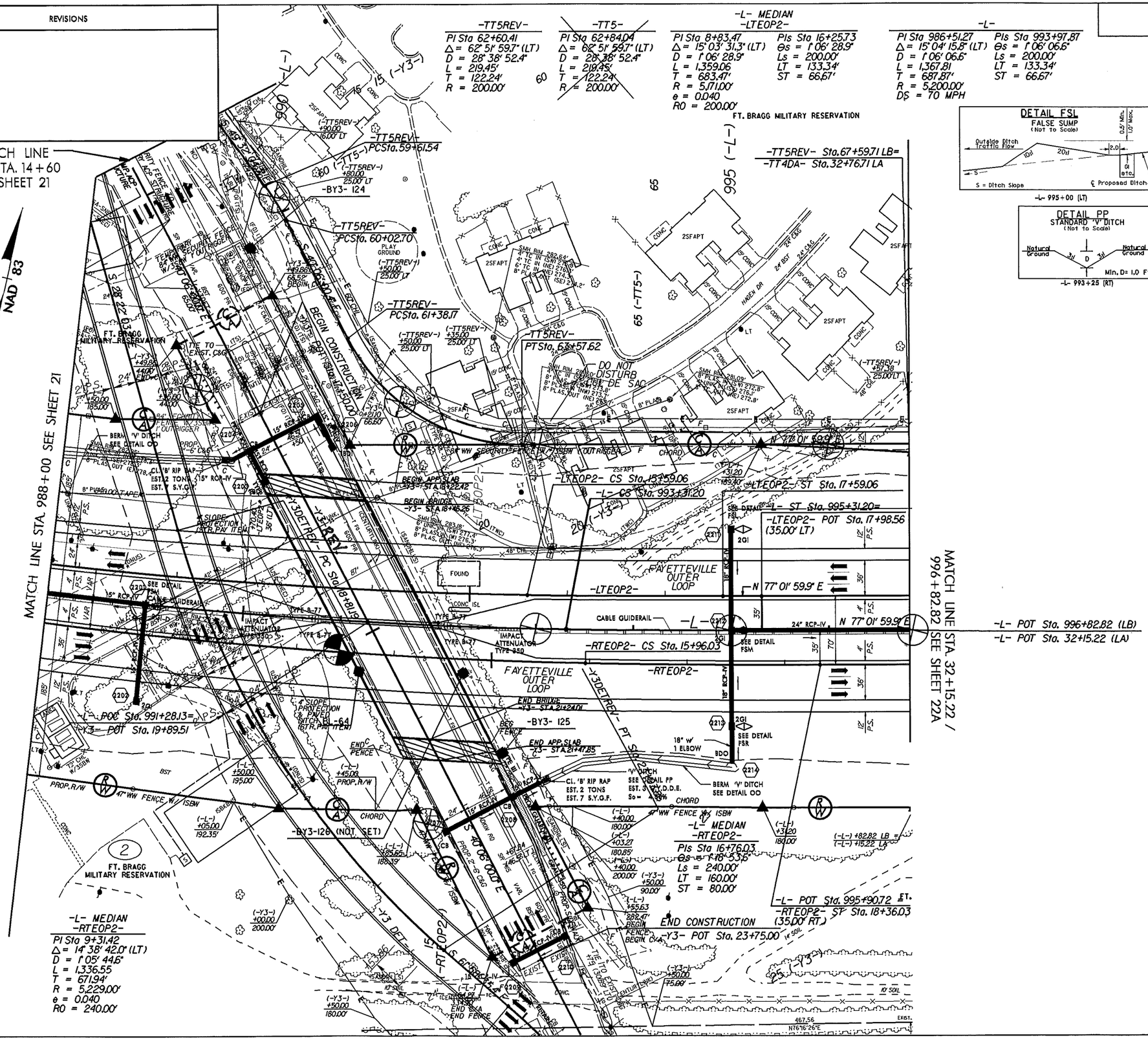
~~-TT5-~~
~~PI Sta 62+84.04~~
~~Δ = 62° 51' 59.7" (LT)~~
~~D = 28° 38' 52.4"~~
~~L = 219.45'~~
~~T = 122.24'~~
~~R = 200.00'~~

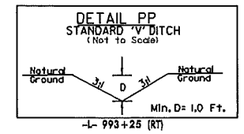
-L- MEDIAN
-LTEOP2-
PI Sta 8+83.47
Δ = 15° 03' 31.3" (LT)
D = 1° 06' 28.9"
L = 1,359.06
T = 683.47'
R = 5,171.00'
e = 0.040
RO = 200.00'

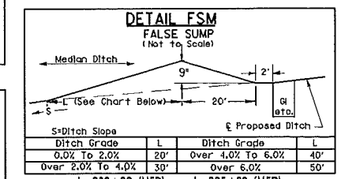
PIs Sta 16+25.73
Θs = 1° 06' 28.9"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

-L-
PI Sta 986+51.27
Δ = 15° 04' 15.8" (LT)
D = 1° 06' 06.6"
L = 1,367.81
T = 687.87'
R = 5,200.00'
DS = 70 MPH

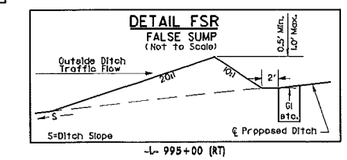
PIs Sta 993+97.87
Θs = 1° 06' 06.6"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

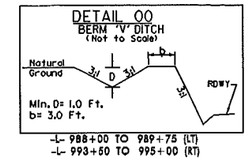






S=Ditch Slope			
Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'





SEE SHEET 41 FOR -L- PROFILE
SEE SHEET 55 FOR -Y3- PROFILE
SEE SHEET 69 FOR -TT5REV- PROFILE
SEE SHEET 2-T FOR BRIDGE SKETCH
FOR STRUCTURE PLANS, SEE SHEETS S-1 THRU S-

104.001.001/U2519cb/Roadway/proj/u2519cb_rdy.psh22

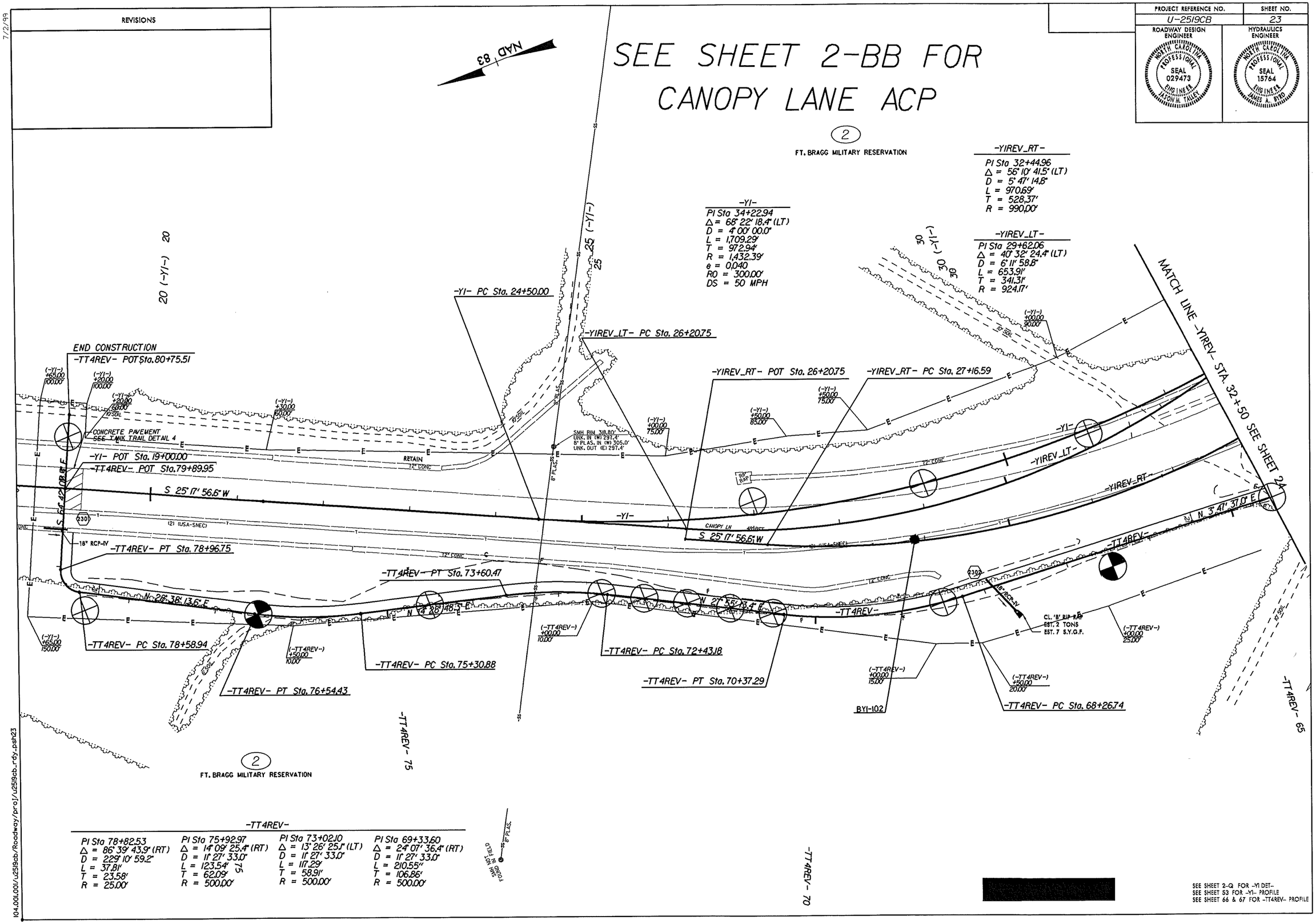
7/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	23
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TULLER

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD



-TT4REV-

PI Sta 78+82.53	PI Sta 75+92.97	PI Sta 73+02.10	PI Sta 69+33.60
Δ = 86° 39' 43.9" (RT)	Δ = 14° 09' 25.4" (RT)	Δ = 13° 26' 25.1" (LT)	Δ = 24° 07' 36.4" (RT)
D = 229° 10' 59.2"	D = 11° 27' 33.0"	D = 11° 27' 33.0"	D = 11° 27' 33.0"
L = 37.81'	L = 123.54'	L = 117.29'	L = 210.55"
T = 23.58'	T = 62.09'	T = 58.91'	T = 106.86'
R = 25.00'	R = 500.00'	R = 500.00'	R = 500.00'

[redacted]

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy.psh23

7/2/99

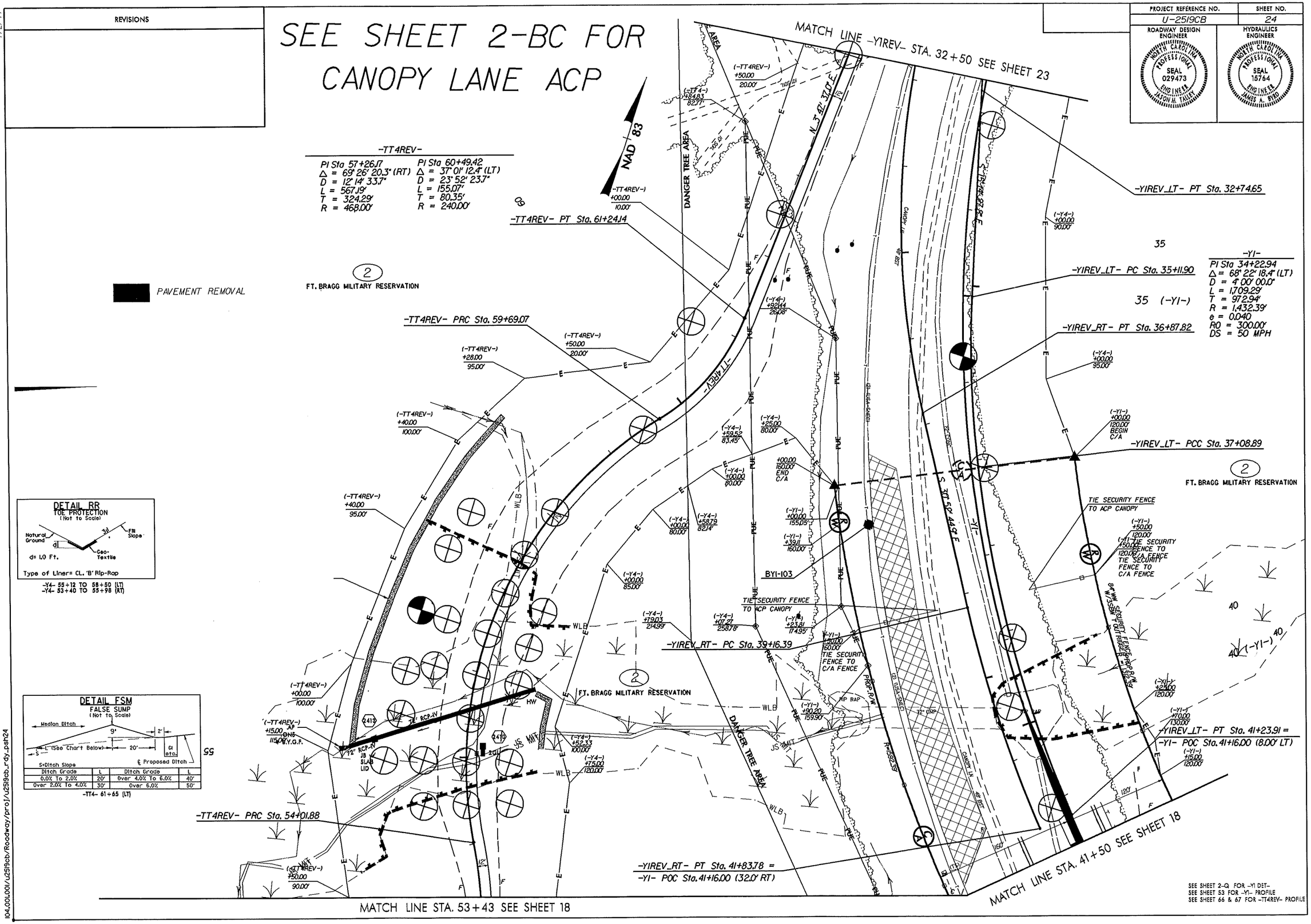
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	24

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

SEE SHEET 2-BC FOR CANOPY LANE ACP



104.001.001/U2519cb/Roadway/proj/U2519cb_rdy.pst24

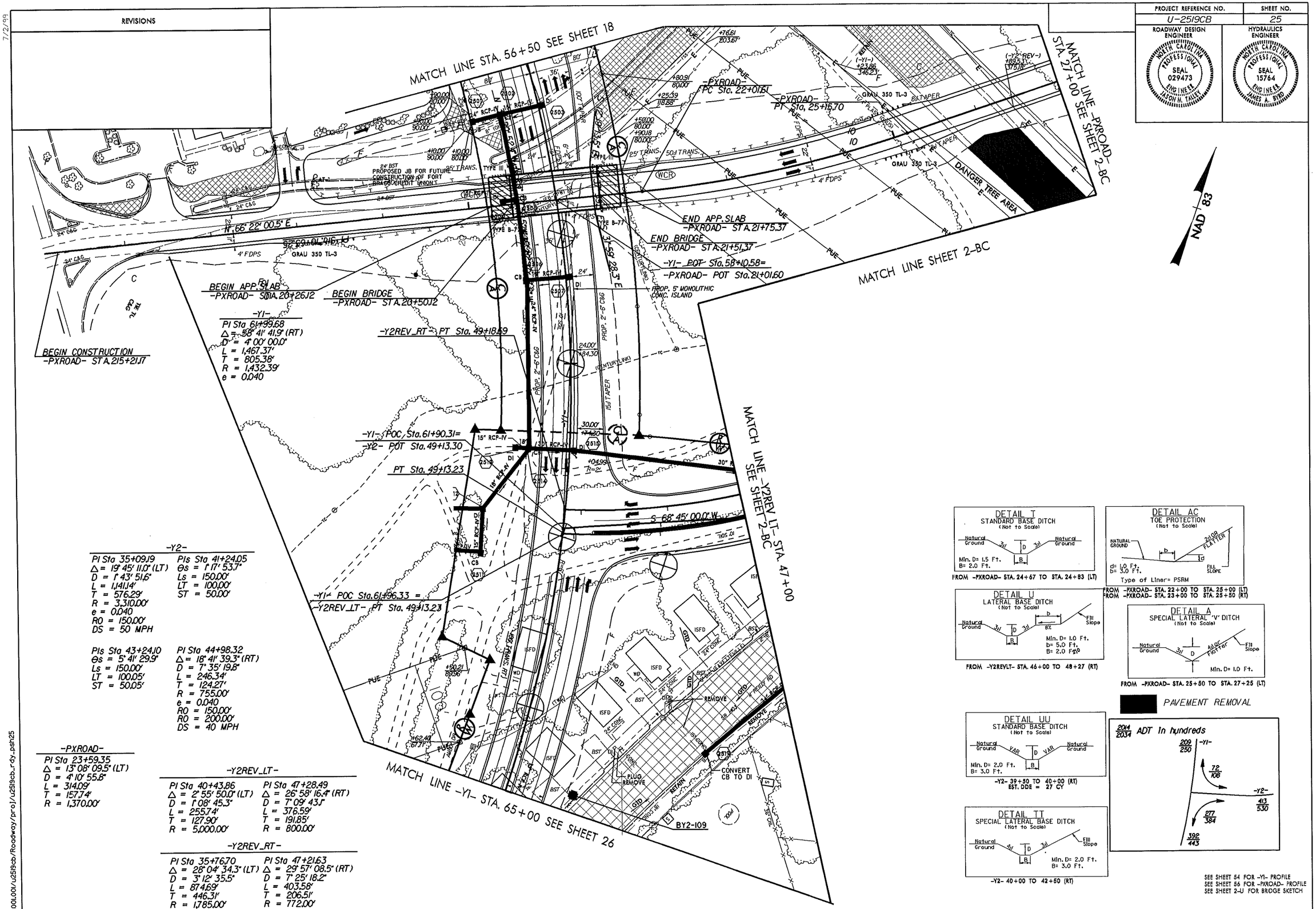
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	25
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON H. TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BIRD

REVISIONS

7/2/99



-Y2-

PI Sta 35+09.19	PIs Sta 41+24.05
Δ = 19° 45' 11.0" (LT)	Θs = 1° 17' 53.7"
D = 1° 43' 51.6"	Ls = 150.00'
L = 1,141.14'	LT = 100.00'
T = 576.29'	ST = 50.00'
R = 3,310.00'	
e = 0.040	
RO = 150.00'	
DS = 50 MPH	

PIs Sta 43+24.10	PI Sta 44+98.32
Θs = 5° 41' 29.9"	Δ = 18° 41' 39.3" (RT)
Ls = 150.00'	D = 7° 35' 19.8"
LT = 100.05'	L = 246.34'
ST = 50.05'	T = 124.27'
	R = 755.00'
	e = 0.040
	RO = 150.00'
	RO = 200.00'
	DS = 40 MPH

-PXROAD-

PI Sta 23+59.35
Δ = 13° 08' 09.5" (LT)
D = 4° 10' 55.8"
L = 314.09'
T = 157.74'
R = 1,370.00'

-Y2REV_LT-

PI Sta 40+43.86	PI Sta 47+28.49
Δ = 2° 55' 50.0" (LT)	Δ = 26° 58' 16.4" (RT)
D = 1° 08' 45.3"	D = 7° 09' 43.1"
L = 255.74'	L = 376.59'
T = 127.90'	T = 191.85'
R = 5,000.00'	R = 800.00'

-Y2REV_RT-

PI Sta 35+76.70	PI Sta 47+21.63
Δ = 28° 04' 34.3" (LT)	Δ = 29° 57' 08.5" (RT)
D = 3° 12' 35.5"	D = 7° 25' 18.2"
L = 874.69'	L = 403.58'
T = 446.31'	T = 206.51'
R = 1,785.00'	R = 772.00'

DETAIL T
STANDARD BASE DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Natural Ground, B
Min. D= 1.5 Ft.
B= 2.0 Ft.
FROM -PXROAD- STA. 24+67 TO STA. 24+83 (LT)

DETAIL AC
TOE PROTECTION
(Not to Scale)
NATURAL GROUND, b, 2:1 OR FLATTER, d, FILL SLOPE
d= 1.0 Ft.
b= 3.0 Ft.
Type of Liner= PSRM
FROM -PXROAD- STA. 22+00 TO STA. 25+00 (LT)
FROM -PXROAD- STA. 23+00 TO STA. 25+50 (RT)

DETAIL U
LATERAL BASE DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, B, b, 8X, Fill Slope
Min. D= 1.0 Ft.
b= 5.0 Ft.
B= 2.0 Ft.
FROM -Y2REVLT- STA. 46+00 TO 48+27 (RT)

DETAIL A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 3:1, D, 4:1 or Flatter, Fill Slope
Min. D= 1.0 Ft.
FROM -PXROAD- STA. 25+50 TO STA. 27+25 (LT)

PAVEMENT REMOVAL

DETAIL UU
STANDARD BASE DITCH
(Not to Scale)
Natural Ground, VAR, D, VAR, Natural Ground, B
Min. D= 2.0 Ft.
B= 3.0 Ft.
-Y2- 39+50 TO 40+00 (RT)
EST. DDE = 27 CY

DETAIL TT
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, B, Fill Slope
Min. D= 2.0 Ft.
B= 3.0 Ft.
-Y2- 40+00 TO 42+50 (RT)

2014 / 2034 ADT in hundreds

SEE SHEET 54 FOR -Y1- PROFILE
SEE SHEET 56 FOR -PXROAD- PROFILE
SEE SHEET 2-U FOR BRIDGE SKETCH

104.001.001/U2519cb/Roadway/pr01/U2519cb_rdy_psh25

7/2/99

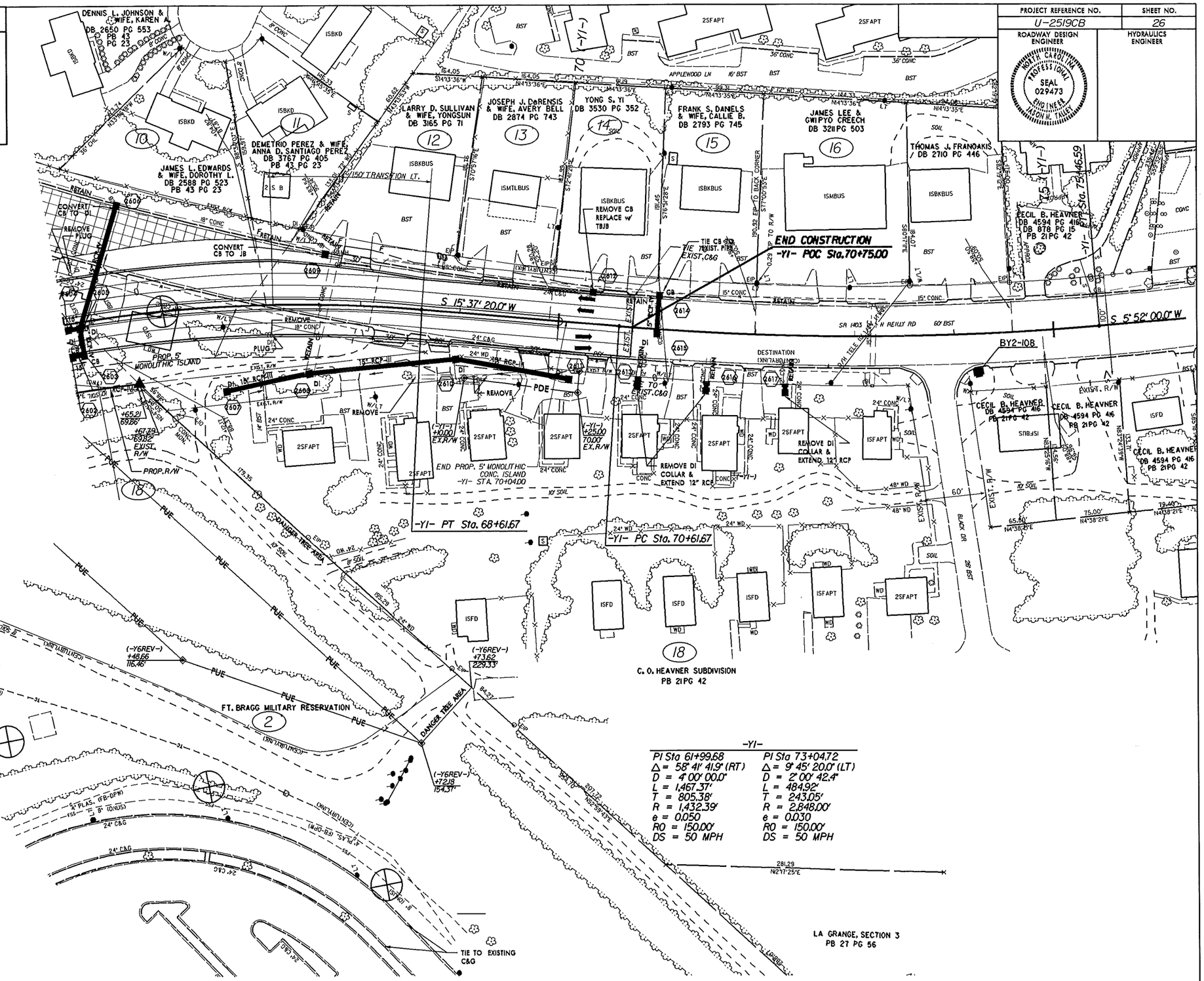
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	25-A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	26
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY



7/2/99

104.001.001/U2519cb/Roadway/proj/U2519cb_rdy.pst26

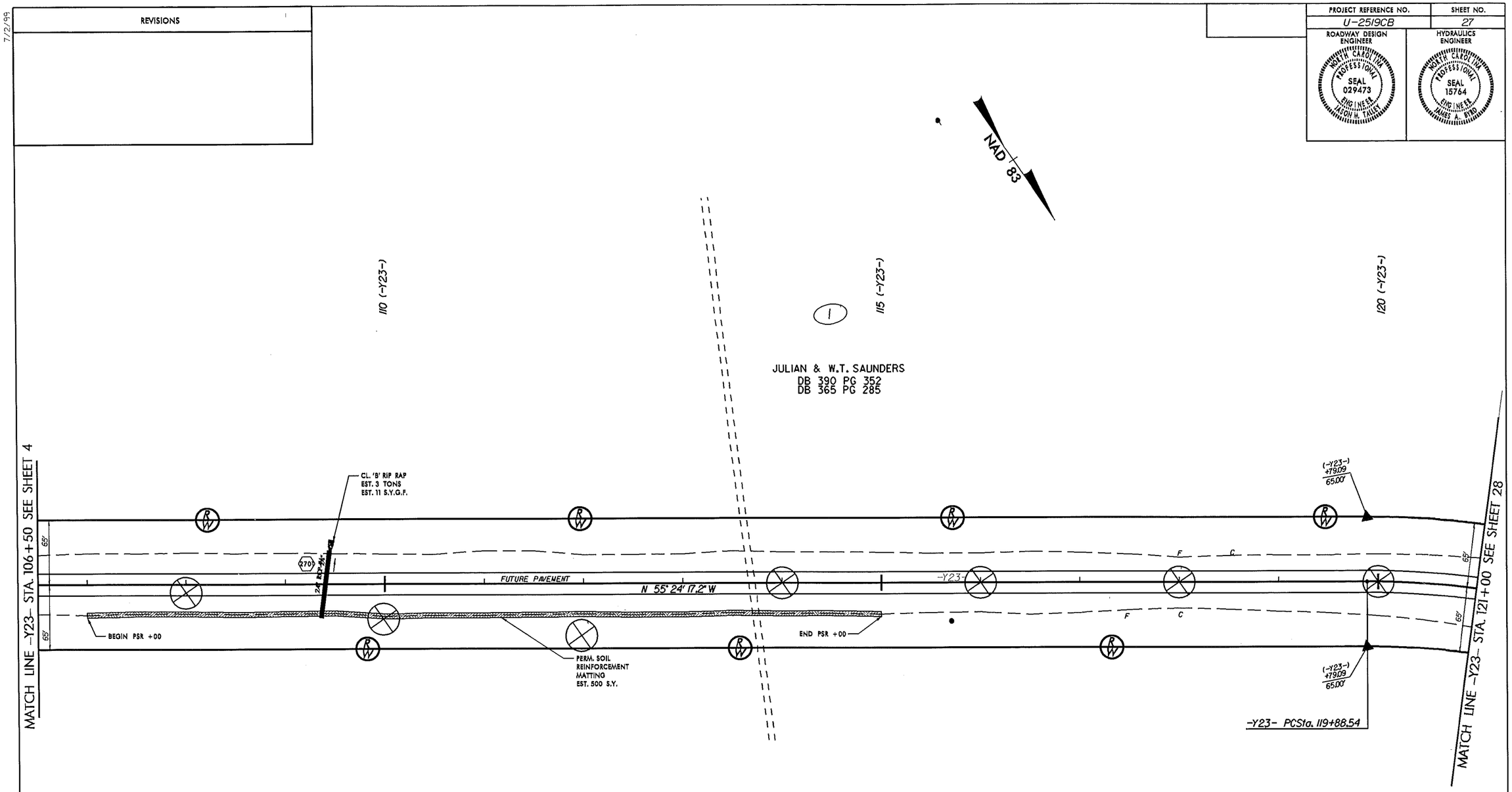
7/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	27

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. THILES

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BIRD



1
JULIAN & W.T. SAUNDERS
DB 390 PG 352
DB 365 PG 285

SEE SHEET 57 & 58 FOR -Y23- PROFILE

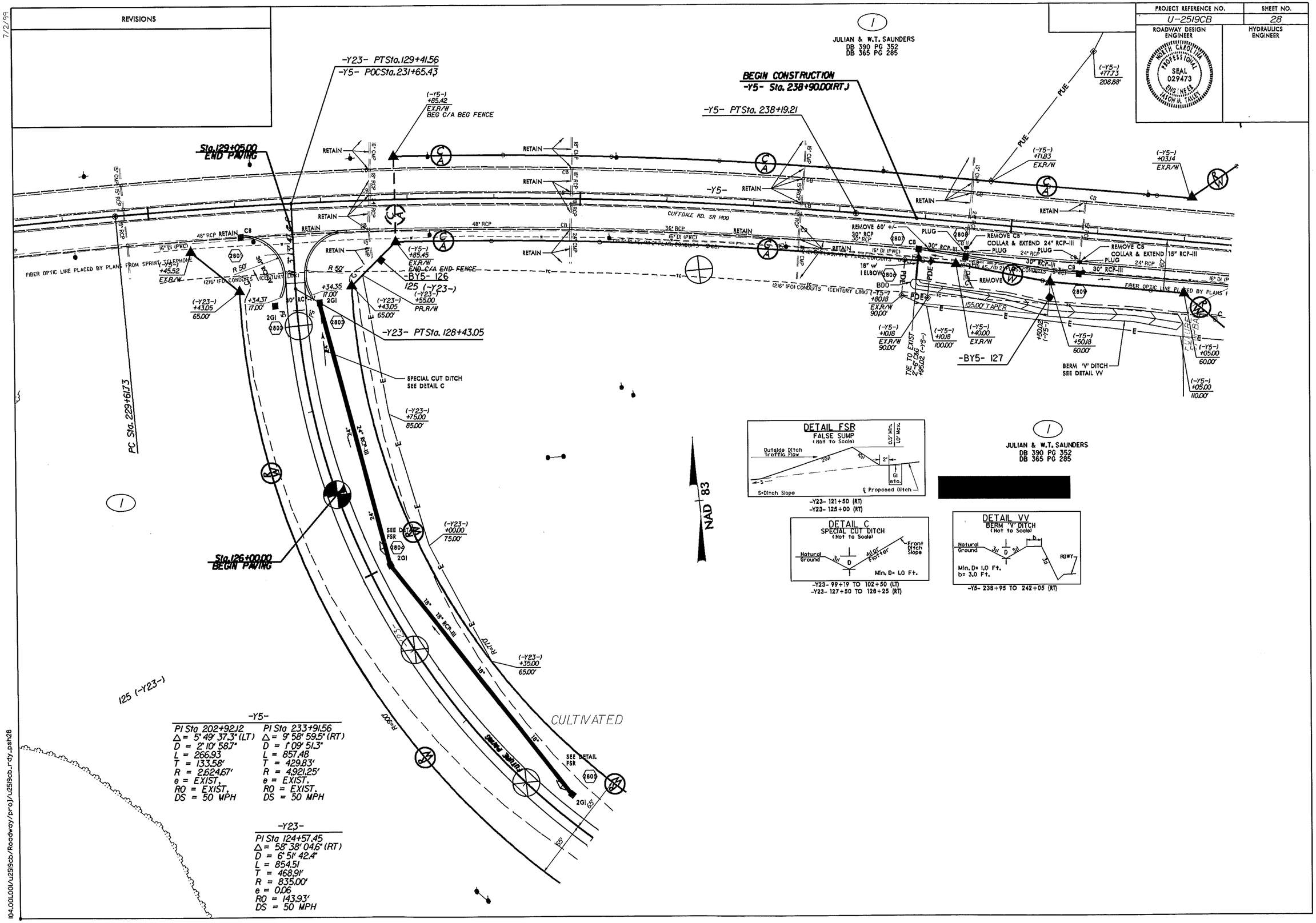
104.001.001/U2519cb/Roadway/proj/U2519cb rdy pshs27

7/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	28
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY



-Y5-

PI Sta 202+92.12	PI Sta 233+91.56
Δ = 5° 49' 37.3" (LT)	Δ = 9° 58' 59.5" (RT)
D = 2° 10' 58.7"	D = 1° 09' 51.3"
L = 266.93'	L = 857.48'
T = 133.58'	T = 429.83'
R = 2,624.67'	R = 4,921.25'
e = EXIST.	e = EXIST.
RO = EXIST.	RO = EXIST.
DS = 50 MPH	DS = 50 MPH

-Y23-

PI Sta 124+57.45
Δ = 58° 38' 04.6" (RT)
D = 6° 51' 42.4"
L = 854.51'
T = 468.91'
R = 835.00'
e = 0.06
RO = 143.93'
DS = 50 MPH

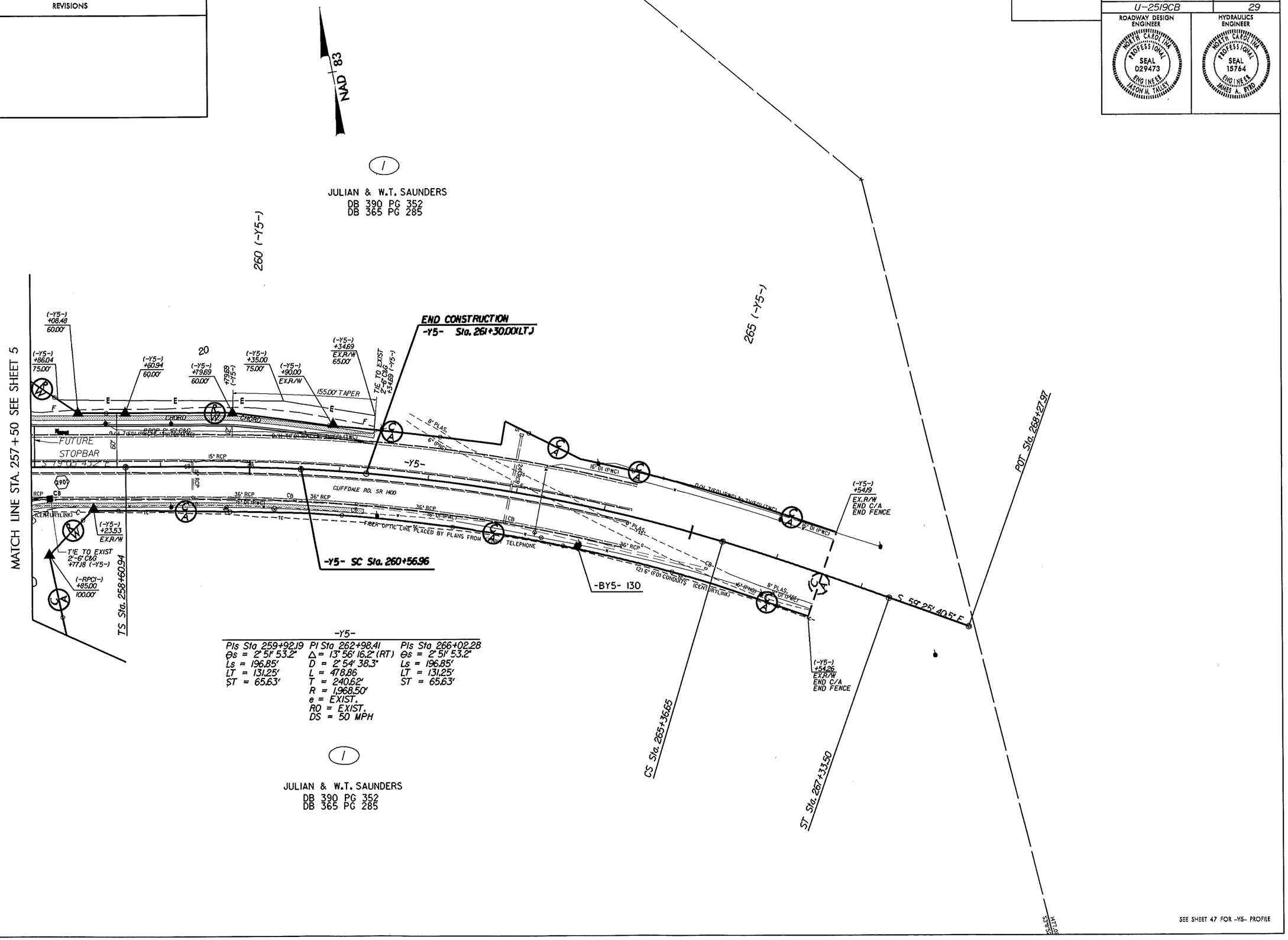
104.001.001/u2519cb/Roadway/proj/u2519cb_rdy.psh28

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	29
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON H. TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD



-Y5-

Pls Sta 259+92.19	Pi Sta 262+98.41	Pls Sta 266+02.28
θs = 2° 51' 53.2"	Δ = 13° 56' 16.2" (RT)	θs = 2° 51' 53.2"
Ls = 196.85'	D = 2° 54' 38.3"	Ls = 196.85'
LT = 131.25'	L = 478.86	LT = 131.25'
ST = 65.63'	T = 240.62'	ST = 65.63'
	R = 1,968.50'	
	e = EXIST.	
	RO = EXIST.	
	DS = 50 MPH	

1

JULIAN & W.T. SAUNDERS
DB 390 PG 352
DB 365 PG 285

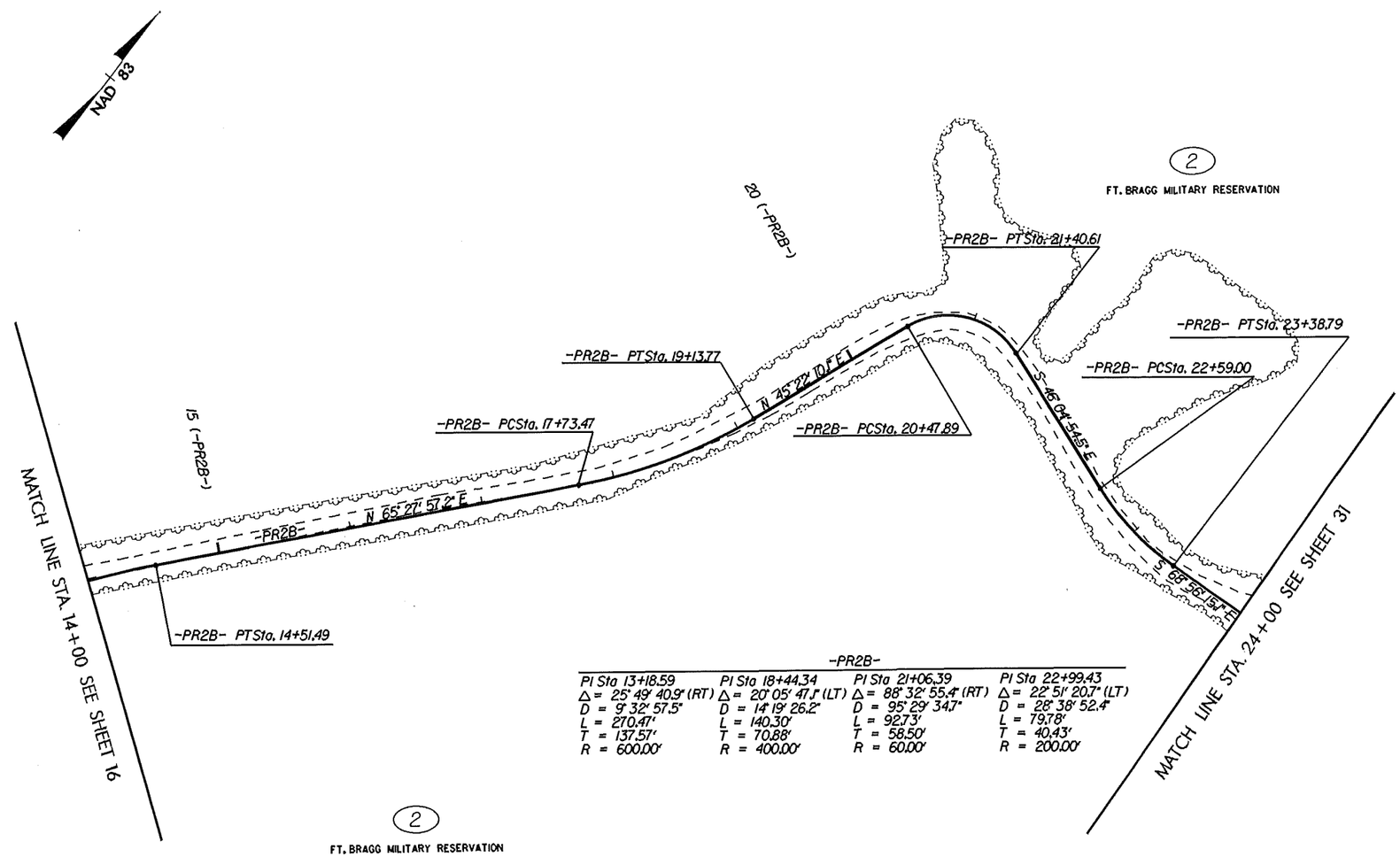
SEE SHEET 47 FOR -Y5- PROFILE

7/2/99
104.001.001/U2519cb/Roadway/proj/u2519cb_rdy_psh29

7/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	30
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY	NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BIRD



-PR2B-

PI Sta 13+18.59	PI Sta 18+44.34	PI Sta 21+06.39	PI Sta 22+99.43
Δ = 25° 49' 40.9" (RT)	Δ = 20° 05' 47.1" (LT)	Δ = 88° 32' 55.4" (RT)	Δ = 22° 51' 20.7" (LT)
D = 9° 32' 57.5"	D = 14° 19' 26.2"	D = 95° 29' 34.7"	D = 28° 38' 52.4"
L = 270.47'	L = 140.30'	L = 92.73'	L = 79.78'
T = 137.57'	T = 70.88'	T = 58.50'	T = 40.43'
R = 600.00'	R = 400.00'	R = 60.00'	R = 200.00'

THIS PAGE IS FOR INFORMATIONAL PURPOSES ONLY

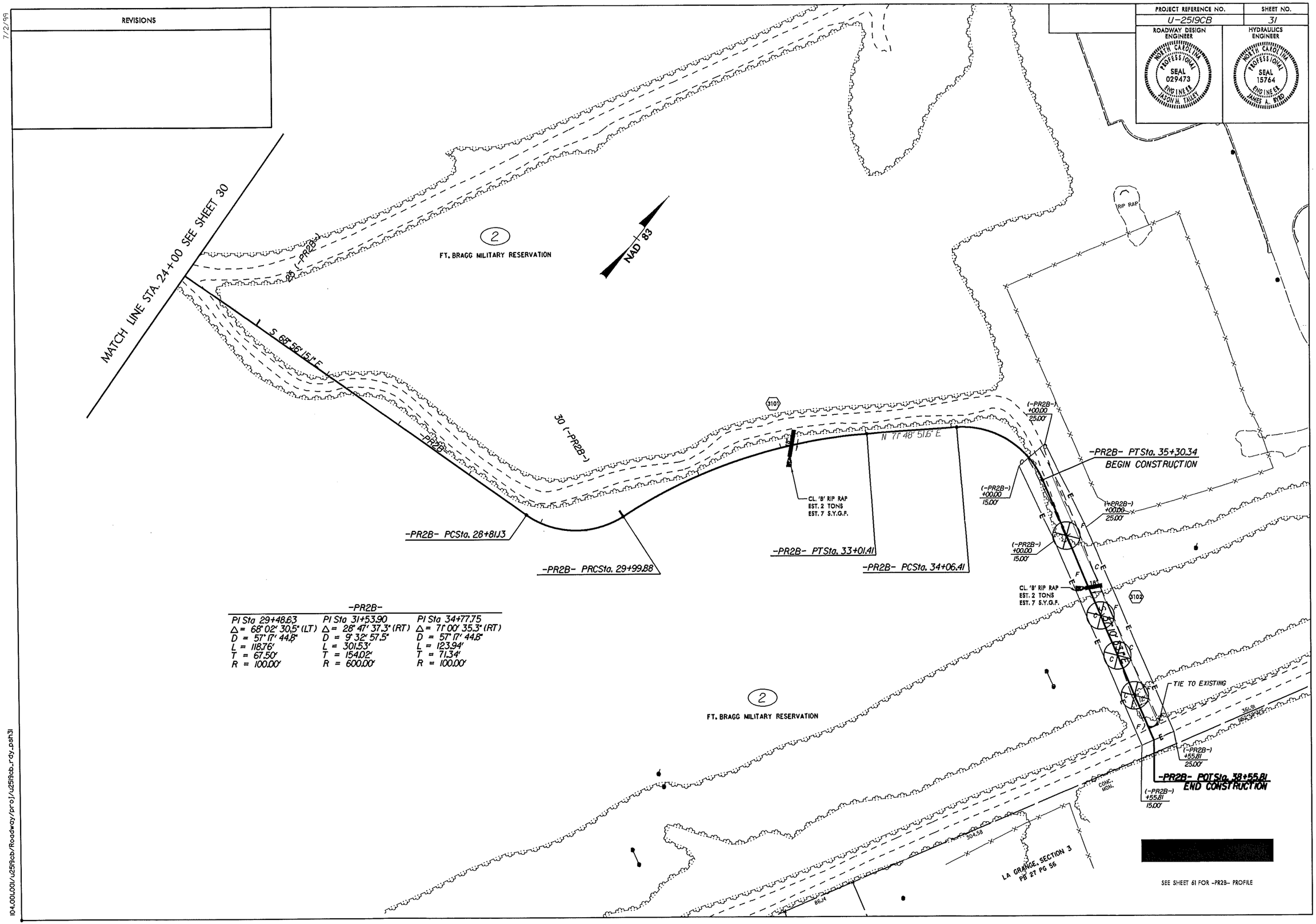
104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_psh30

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	31
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD



-PR2B-

PI Sta 29+48.63	PI Sta 31+53.90	PI Sta 34+77.75
Δ = 68° 02' 30.5" (LT)	Δ = 28° 47' 37.3" (RT)	Δ = 71° 00' 35.3" (RT)
D = 57° 17' 44.8"	D = 9° 32' 57.5"	D = 57° 17' 44.8"
L = 118.76'	L = 301.53'	L = 123.94'
T = 67.50'	T = 154.02'	T = 71.34'
R = 100.00'	R = 600.00'	R = 100.00'

7/2/99

104,001,001/u2519cb/Roadway/proj/u2519cb_rdy_psh31

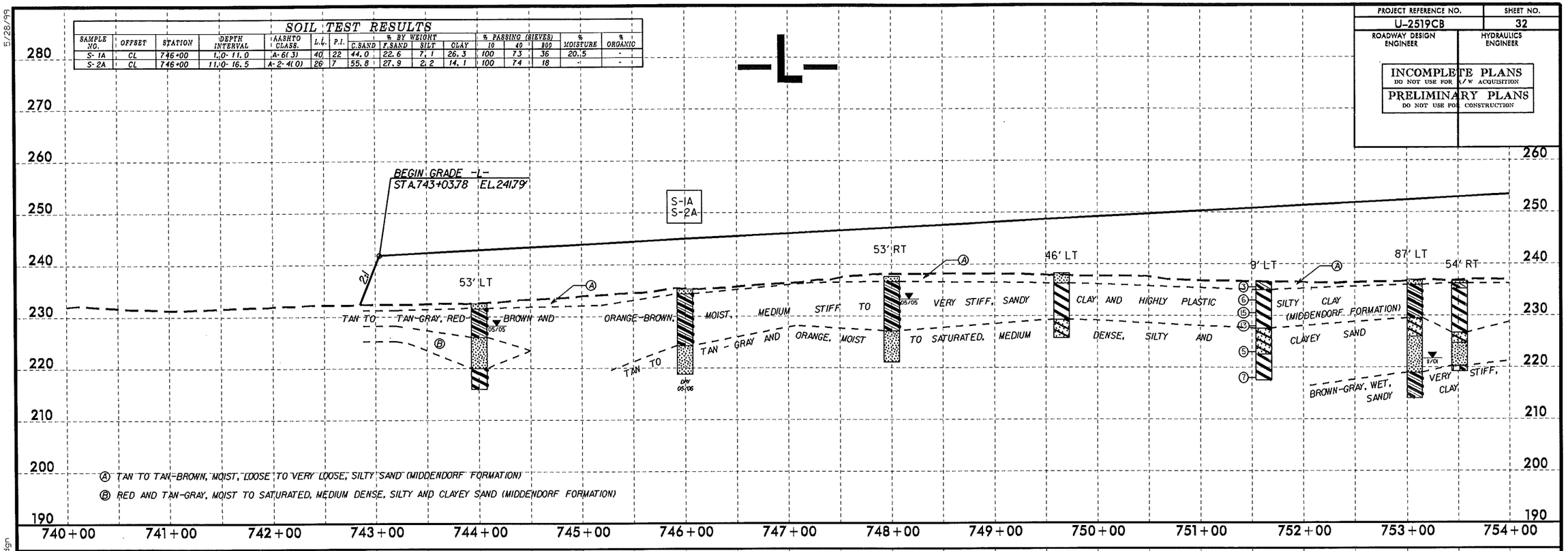
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	32
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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-1A	CL	746+00	1.0- 11.0	A-6(3)	40	22	44.0	22.6	7.1	26.3	100	73	36	20.5	-
S-2A	CL	746+00	11.0- 16.5	A-2-4(0)	26	7	55.8	27.9	2.2	14.1	100	74	18	-	-



Ⓐ TAN TO TAN-BROWN, MOIST, LOOSE TO VERY LOOSE, SILTY SAND (MIDDENDORF FORMATION)

Ⓑ RED AND TAN-GRAY, MOIST TO SATURATED, MEDIUM DENSE, SILTY AND CLAYEY SAND (MIDDENDORF FORMATION)

5/28/99

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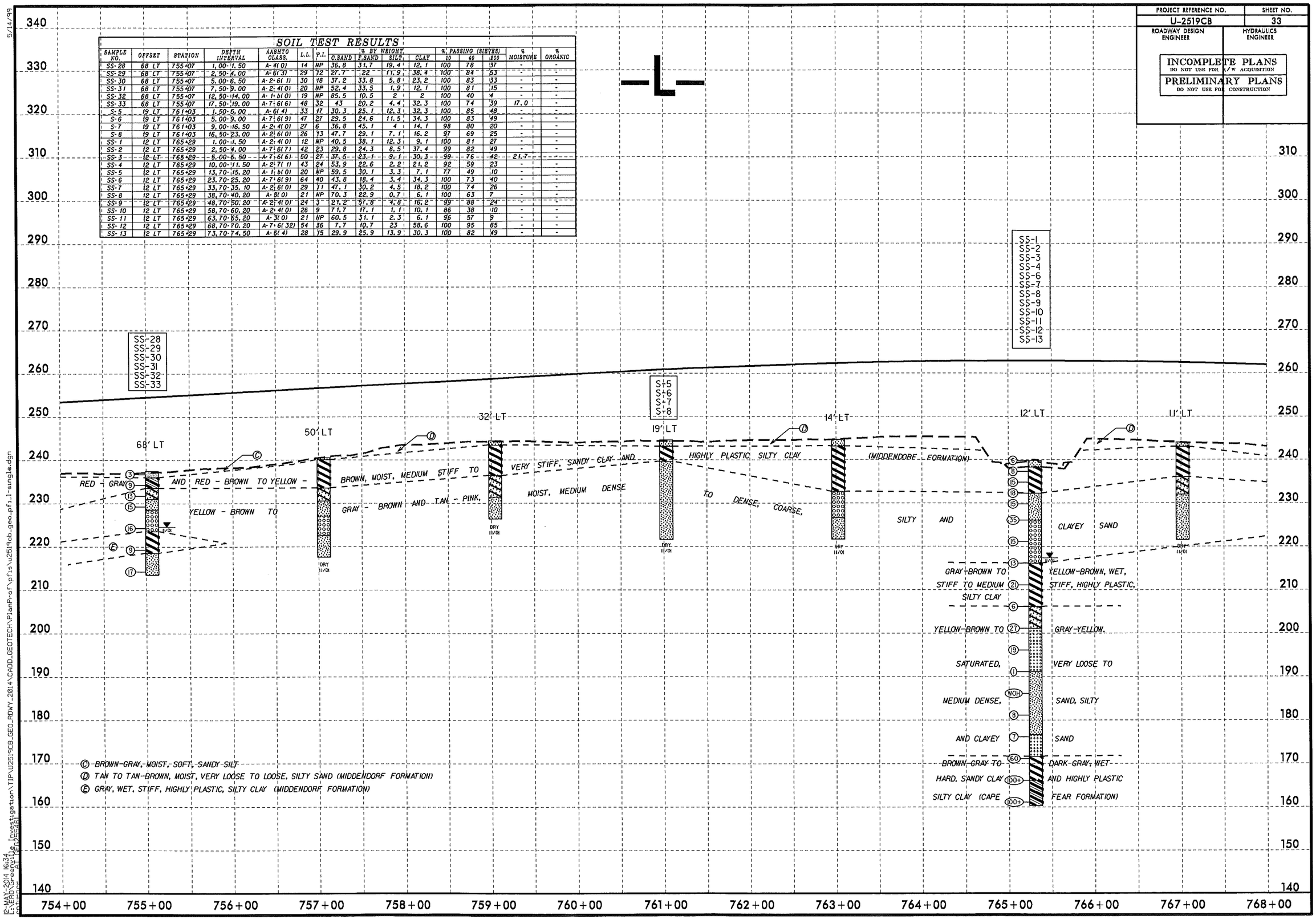
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	33
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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-28	68 LT	755+07	1.00-1.50	A-4(0)	14	NP	36.8	31.7	19.4	12.1	100	78	37	-	-
SS-29	68 LT	755+07	2.50-4.00	A-6(3)	29	12	27.7	22	11.9	38.4	100	84	53	-	-
SS-30	68 LT	755+07	5.00-6.50	A-2-6(1)	30	18	37.2	33.8	5.8	23.2	100	83	33	-	-
SS-31	68 LT	755+07	7.50-9.00	A-2-4(0)	20	NP	52.4	33.5	1.9	12.1	100	81	15	-	-
SS-32	68 LT	755+07	12.50-14.00	A-1-b(0)	19	NP	85.5	10.5	2	2	100	40	4	-	-
SS-33	68 LT	755+07	17.50-19.00	A-7-6(6)	48	32	43	20.2	4.4	32.3	100	74	39	17.0	-
S-5	19 LT	761+03	1.50-5.00	A-6(4)	33	17	30.3	25.1	12.3	32.3	100	85	48	-	-
S-6	19 LT	761+03	5.00-9.00	A-7-6(9)	47	27	29.5	24.6	11.5	34.3	100	83	49	-	-
S-7	19 LT	761+03	9.00-16.50	A-2-4(0)	27	6	36.8	45.1	4	14.1	98	80	20	-	-
S-8	19 LT	761+03	16.50-23.00	A-2-6(0)	26	13	47.7	29.1	7.1	16.2	97	69	25	-	-
SS-1	12 LT	765+29	1.00-1.50	A-2-4(0)	12	NP	40.5	38.1	12.3	9.1	100	81	27	-	-
SS-2	12 LT	765+29	2.50-4.00	A-7-6(7)	42	23	29.8	24.3	8.5	37.4	99	82	49	-	-
SS-3	12 LT	765+29	5.00-6.50	A-7-6(6)	50	27	37.5	23.1	9.1	30.3	99	76	42	21.7	-
SS-4	12 LT	765+29	10.00-11.50	A-2-7(1)	43	24	53.9	22.6	2.2	21.2	92	59	23	-	-
SS-5	12 LT	765+29	13.70-15.20	A-1-b(0)	20	NP	59.5	30.1	3.3	7.1	77	49	10	-	-
SS-6	12 LT	765+29	23.70-25.20	A-7-6(9)	64	40	43.8	18.4	3.4	34.3	100	73	40	-	-
SS-7	12 LT	765+29	33.70-35.10	A-2-6(0)	29	11	47.1	30.2	4.5	18.2	100	74	26	-	-
SS-8	12 LT	765+29	38.70-40.20	A-3(0)	21	NP	70.3	22.9	0.7	6.1	100	63	7	-	-
SS-9	12 LT	765+29	48.70-50.20	A-2-4(0)	24	3	21.2	57.8	4.8	16.2	99	88	24	-	-
SS-10	12 LT	765+29	58.70-60.20	A-2-4(0)	26	9	71.7	17.1	1.1	10.1	86	38	10	-	-
SS-11	12 LT	765+29	63.70-65.20	A-3(0)	21	NP	60.5	31.1	2.3	6.1	96	57	9	-	-
SS-12	12 LT	765+29	68.70-70.20	A-7-6(32)	54	36	7.7	10.7	23	58.6	100	95	65	-	-
SS-13	12 LT	765+29	73.70-74.50	A-6(4)	28	15	29.9	25.9	13.9	30.3	100	82	49	-	-



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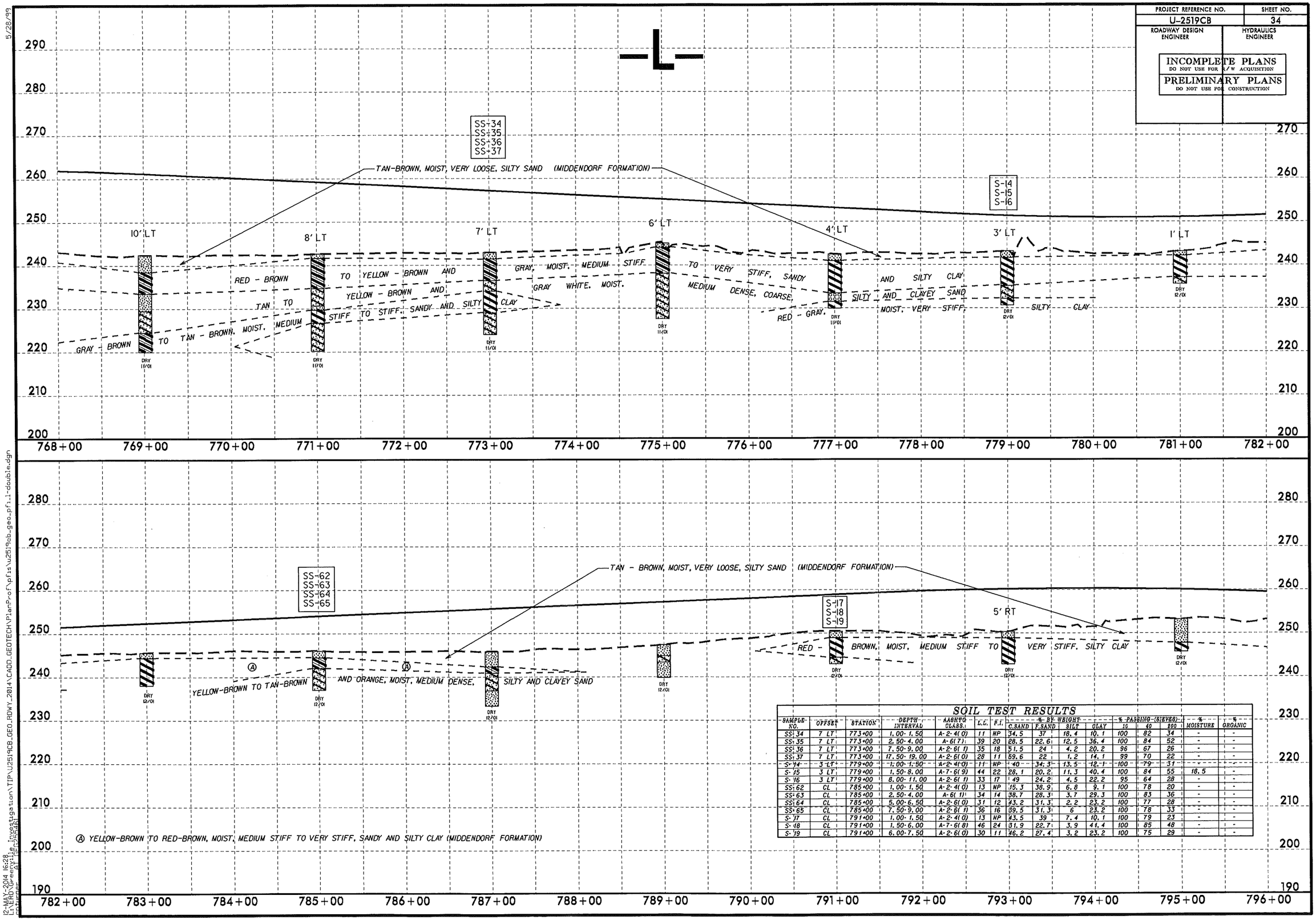
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	34
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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-34	7 LT	773+00	1.00-1.50	A-2-4(0)	11	NP	34.5	37	18.4	10.1	100	82	34	-	-
SS-35	7 LT	773+00	2.50-4.00	A-6(7)	39	20	28.5	22.6	12.5	36.4	100	84	52	-	-
SS-36	7 LT	773+00	7.50-9.00	A-2-6(1)	35	18	51.5	24	4.2	20.2	96	67	26	-	-
SS-37	7 LT	773+00	17.50-19.00	A-2-6(0)	28	11	59.6	22	1.2	14.1	99	70	22	-	-
S-14	3 LT	779+00	1.00-1.50	A-2-4(0)	11	NP	40	34.3	13.5	12.1	100	79	31	-	-
S-15	3 LT	779+00	1.50-8.00	A-7-6(9)	44	22	28.1	20.2	11.3	40.4	100	84	55	18.5	-
S-16	3 LT	779+00	8.00-11.00	A-2-6(1)	33	17	49	24.2	4.5	22.2	95	64	28	-	-
SS-62	CL	785+00	1.00-1.50	A-2-4(0)	13	NP	15.3	38.9	6.8	9.1	100	78	20	-	-
SS-63	CL	785+00	2.50-4.00	A-6(1)	34	14	38.7	28.3	3.7	29.3	100	83	36	-	-
SS-64	CL	785+00	5.00-6.50	A-2-6(0)	31	12	43.2	31.3	2.2	23.2	100	77	28	-	-
SS-65	CL	785+00	7.50-9.00	A-2-6(1)	36	16	39.5	31.3	6	23.2	100	78	33	-	-
S-17	CL	791+00	1.00-1.50	A-2-4(0)	13	NP	43.5	39	7.4	10.1	100	79	23	-	-
S-18	CL	791+00	1.50-6.00	A-7-6(8)	46	24	31.9	22.7	3.9	41.4	100	85	48	-	-
S-19	CL	791+00	6.00-7.50	A-2-6(0)	30	11	46.2	27.4	3.2	23.2	100	75	29	-	-

5/28/99

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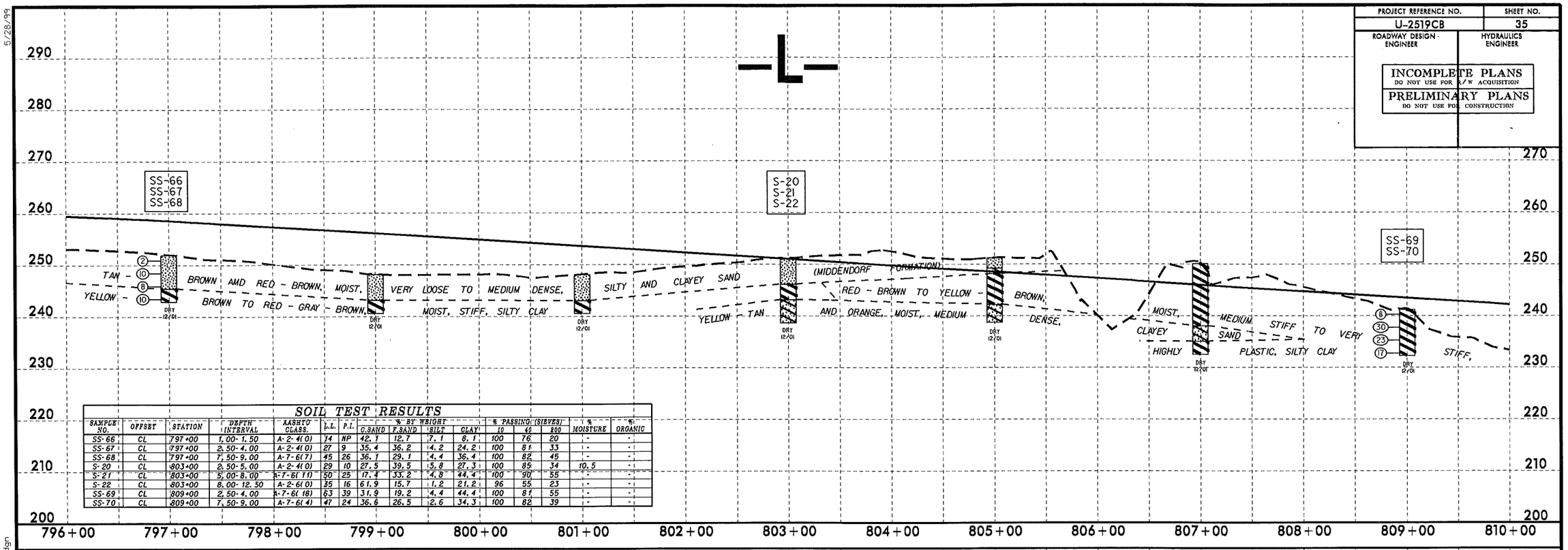
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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-66	CL	797+00	1.00-1.50	A-2-4(0)	14	NP	42.1	12.7	7.1	8.1	100	76	20	-	-
SS-67	CL	797+00	2.50-4.00	A-2-4(0)	27	9	35.4	36.2	4.2	24.2	100	81	33	-	-
SS-68	CL	797+00	7.50-9.00	A-7-6(7)	45	26	36.1	29.1	4.4	36.4	100	82	45	-	-
S-20	CL	803+00	2.50-5.00	A-2-4(0)	29	10	27.5	39.5	5.8	27.3	100	85	34	10.5	-
S-21	CL	803+00	5.00-8.00	A-7-6(11)	50	25	17.4	33.2	4.8	44.4	100	90	55	-	-
S-22	CL	803+00	8.00-12.50	A-2-6(0)	35	16	61.9	15.7	1.2	21.2	96	55	23	-	-
SS-69	CL	809+00	2.50-4.00	A-7-6(18)	63	39	31.9	19.2	4.4	44.4	100	81	55	-	-
SS-70	CL	809+00	7.50-9.00	A-7-6(4)	47	24	36.6	26.5	2.6	34.3	100	82	39	-	-

5/28/99
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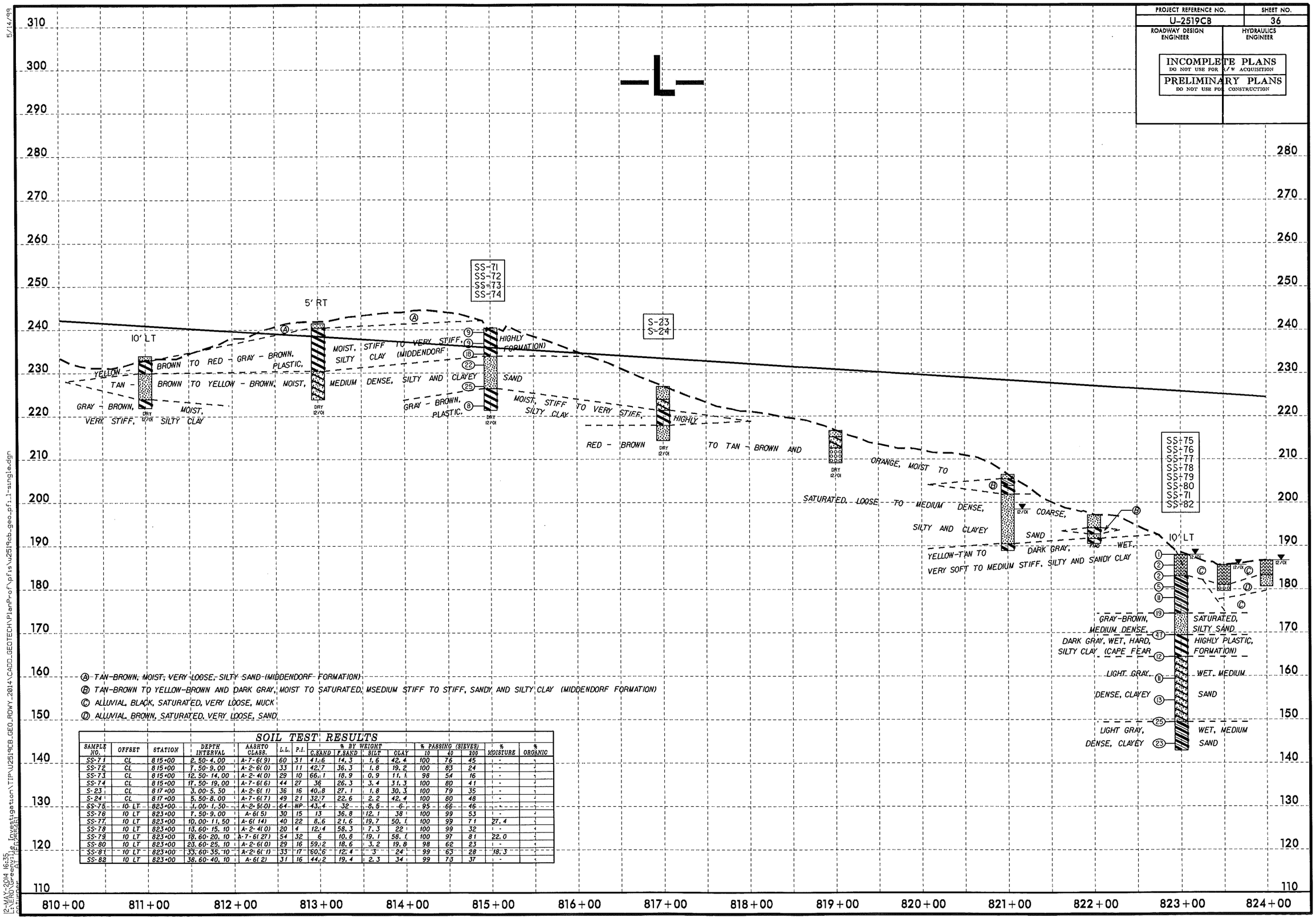
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	36
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



Ⓐ TAN-BROWN, MOIST, VERY LOOSE, SILTY SAND (MIDDENDORF FORMATION)
Ⓑ TAN-BROWN TO YELLOW-BROWN AND DARK GRAY, MOIST TO SATURATED, MSEDIUM STIFF TO STIFF, SANDY AND SILTY CLAY (MIDDENDORF FORMATION)
Ⓒ ALLUVIAL, BLACK, SATURATED, VERY LOOSE, MUCK
Ⓓ ALLUVIAL, BROWN, SATURATED, VERY LOOSE, SAND

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-71	CL	815+00	2.50-4.00	A-7-6(9)	60	31	41.6	14.3	1.6	42.4	100	76	45	-	-
SS-72	CL	815+00	7.50-9.00	A-2-6(0)	33	11	42.7	36.3	1.8	19.2	100	83	24	-	-
SS-73	CL	815+00	12.50-14.00	A-2-4(0)	29	10	66.1	18.9	0.9	11.1	98	54	16	-	-
SS-74	CL	815+00	17.50-19.00	A-7-6(6)	44	27	36	26.3	3.4	31.3	100	80	41	-	-
S-23	CL	817+00	3.00-5.50	A-2-6(1)	36	16	40.8	27.1	1.8	30.3	100	79	35	-	-
S-24	CL	817+00	5.50-8.00	A-7-6(7)	49	21	32.7	22.6	2.2	42.4	100	80	48	-	-
SS-75	10 LT	823+00	1.00-1.50	A-2-5(0)	64	NP	43.4	32	8.5	6	95	66	46	-	-
SS-76	10 LT	823+00	7.50-9.00	A-6(5)	30	15	13	36.8	12.1	38	100	99	53	-	-
SS-77	10 LT	823+00	10.00-11.50	A-6(14)	40	22	8.6	21.6	19.7	50.1	100	99	71	27.4	-
SS-78	10 LT	823+00	13.60-15.10	A-2-4(0)	20	4	12.4	58.3	7.3	22	100	99	32	-	-
SS-79	10 LT	823+00	18.60-20.10	A-7-6(27)	54	32	6	10.8	19.1	58.1	100	97	81	22.0	-
SS-80	10 LT	823+00	23.60-25.10	A-2-6(0)	29	16	59.2	18.6	3.2	19.8	98	62	23	-	-
SS-81	10 LT	823+00	33.60-35.10	A-2-6(1)	33	17	60.6	12.4	3	24	99	63	28	18.3	-
SS-82	10 LT	823+00	38.60-40.10	A-6(2)	31	16	44.2	19.4	2.3	34	99	70	37	-	-

5/14/99
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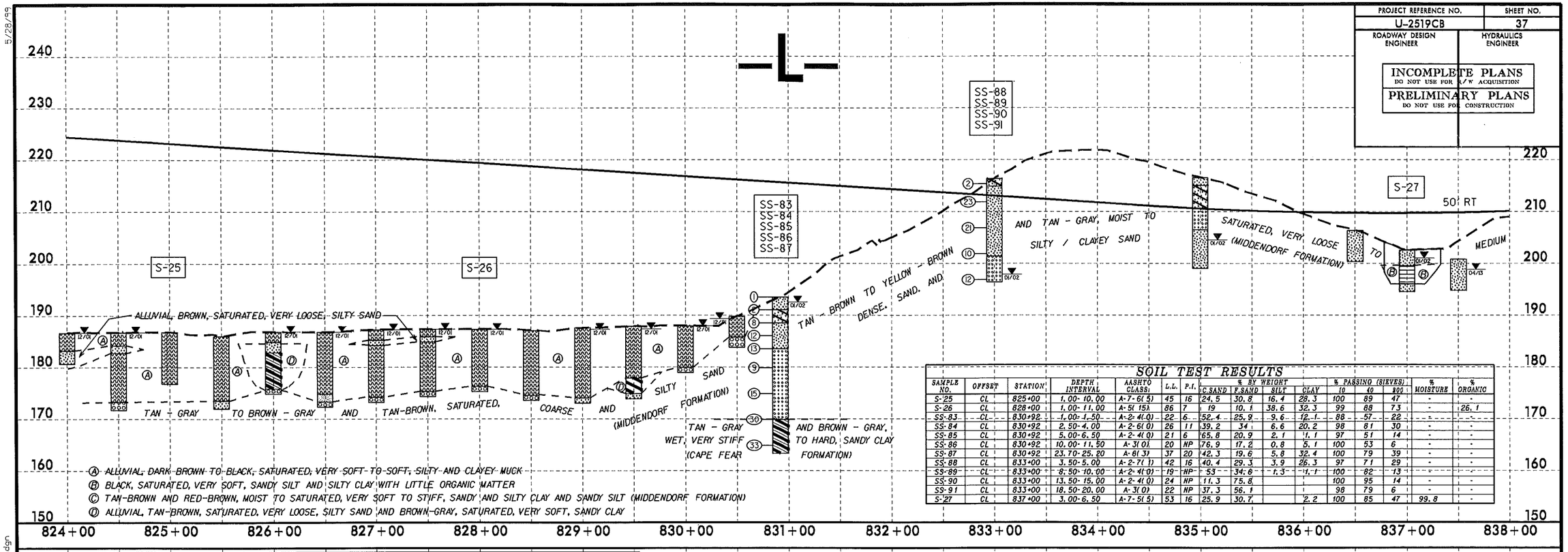
cottingham AT REF:U2561

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	37
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

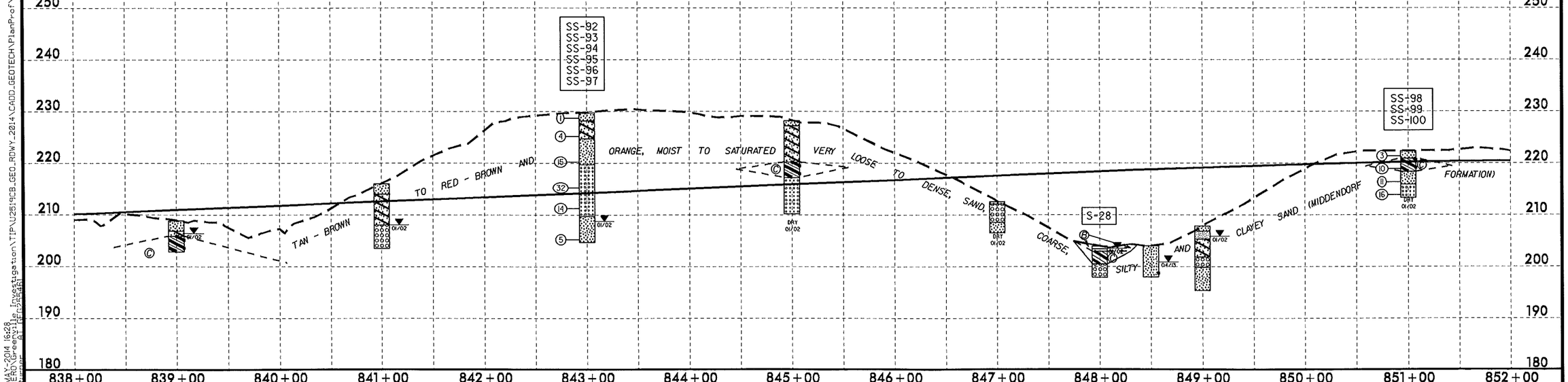


SOIL TEST RESULTS

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-25	CL	825+00	1.00- 10.00	A-7-6(5)	45	16	24.5	30.8	16.4	28.3	100	89	47	-	-
S-26	CL	828+00	1.00- 11.00	A-5(15)	86	7	19	10.1	38.6	32.3	99	88	73	-	26.1
SS-83	CL	830+92	1.00- 1.50	A-2-4(0)	22	6	52.4	25.9	9.6	12.1	88	57	22	-	-
SS-84	CL	830+92	2.50- 4.00	A-2-6(0)	26	11	39.2	34	6.6	20.2	98	81	30	-	-
SS-85	CL	830+92	5.00- 6.50	A-2-4(0)	21	6	65.8	20.9	2.1	11.1	97	51	14	-	-
SS-86	CL	830+92	10.00- 11.50	A-3(0)	20	NP	76.9	17.2	0.8	5.1	100	53	6	-	-
SS-87	CL	830+92	23.70- 25.20	A-6(3)	37	20	42.3	19.6	5.8	32.4	100	79	39	-	-
SS-88	CL	833+00	3.50- 5.00	A-2-7(1)	42	16	40.4	29.3	3.9	26.3	97	71	29	-	-
SS-89	CL	833+00	8.50- 10.00	A-2-4(0)	19	NP	53	34.6	1.3	11.1	100	82	13	-	-
SS-90	CL	833+00	13.50- 15.00	A-2-4(0)	24	NP	11.3	75.8			100	95	14	-	-
SS-91	CL	833+00	18.50- 20.00	A-3(0)	22	NP	37.3	56.1			98	79	6	-	-
S-27	CL	837+00	3.00- 6.50	A-7-5(5)	53	16	25.9	30.7		2.2	100	85	47	99.8	-

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-92	CL	843+00	1.00- 1.50	A-2-4(0)	16	NP	37.3	47.4	8.2	7.1	99	63	21	-	-
SS-93	CL	843+00	3.50- 5.00	A-2-6(0)	29	12	35.8	35.6	6.4	22.2	100	82	33	-	-
SS-94	CL	843+00	9.50- 10.00	A-2-4(0)	21	4	63.5	20.6	3.7	12.1	97	52	18	-	-
SS-95	CL	843+00	13.50- 15.00	A-3(0)	21	NP	62	30.1	0.8	7.1	92	61	8	-	-
SS-96	CL	843+00	18.50- 20.00	A-3(0)	15	NP	59.4	33.2	0.4	7.4	95	61	8	-	-
SS-97	CL	843+00	23.50- 25.00	A-2-4(0)	30	8	39.4	37.4	7.0	16.2	98	70	27	-	-
S-28	CL	848+00	1.00- 3.50	A-6(5)	29	12	5.9	45.2	28.7	20.3	100	98	61	-	-
SS-98	CL	851+00	1.00- 1.50	A-2-4(0)	17	NP	48.0	43.1	4.9	4.0	99	72	12	-	-
SS-99	CL	851+00	2.50- 4.00	A-6(1)	32	13	19.2	51	5.6	24.3	100	92	37	-	-
SS-100	CL	851+00	5.00- 6.50	A-2-4(0)	21	2	35.1	47.8	2.9	14.2	100	87	19	-	-



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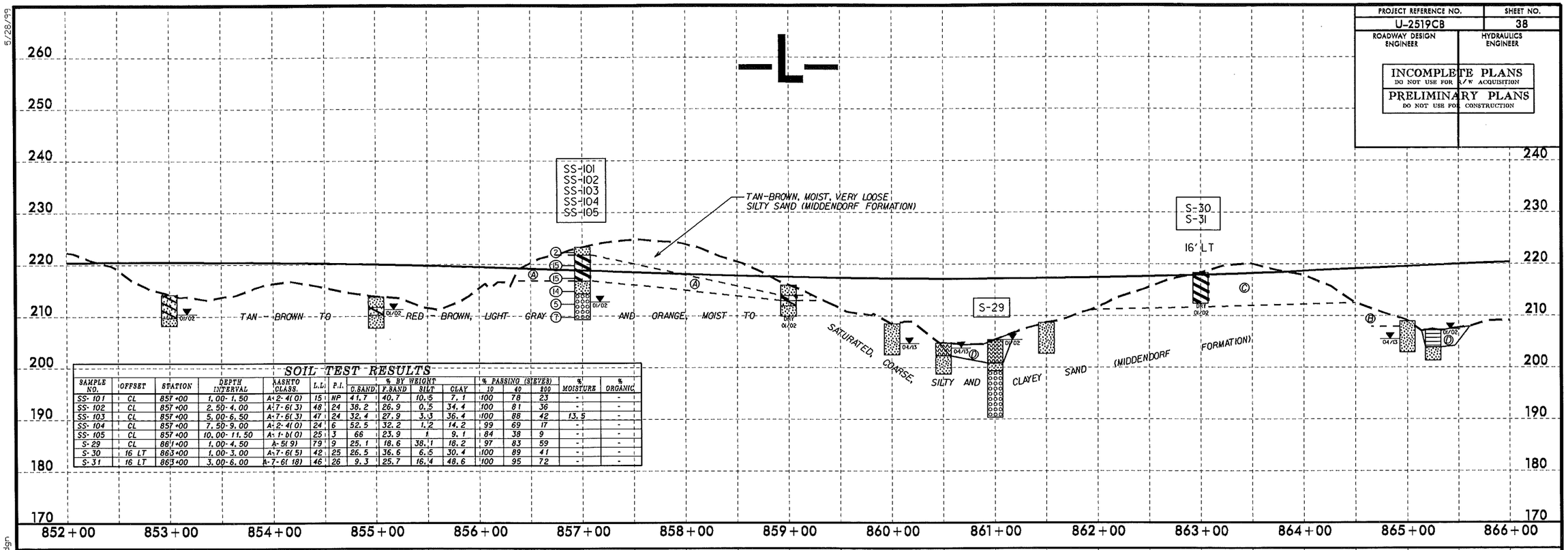
ptbarnes AT (GEOPAK)

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	38
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

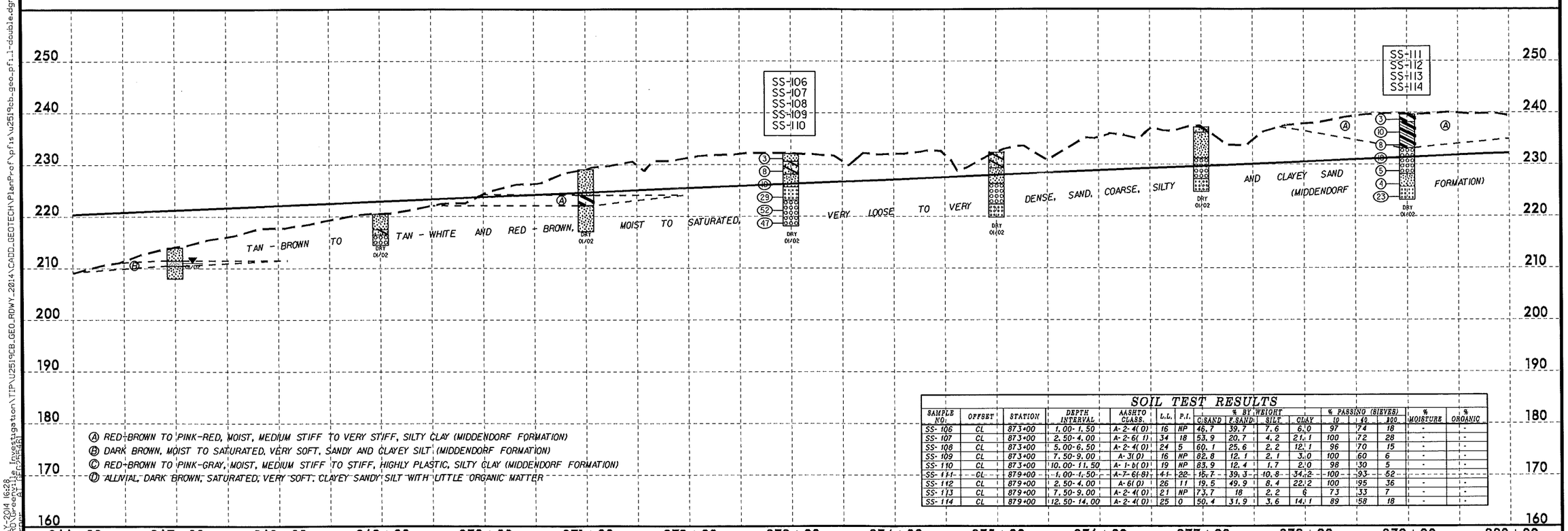
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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-101	CL	857+00	1.00-1.50	A-2-4(0)	15	NP	41.7	40.7	10.5	7.1	100	78	23	-	-
SS-102	CL	857+00	2.50-4.00	A-7-6(3)	48	24	36.2	26.9	0.5	34.4	100	81	36	-	-
SS-103	CL	857+00	5.00-6.50	A-7-6(3)	47	24	32.4	27.9	3.3	36.4	100	88	42	13.5	-
SS-104	CL	857+00	7.50-9.00	A-2-4(0)	24	6	52.5	32.2	1.2	14.2	99	69	17	-	-
SS-105	CL	857+00	10.00-11.50	A-1-b(0)	25	3	66	23.9	1	9.1	84	38	9	-	-
S-29	CL	861+00	1.00-4.50	A-5(9)	79	9	25.1	18.6	38.1	18.2	97	83	59	-	-
S-30	16 LT	863+00	1.00-3.00	A-7-6(5)	42	25	26.5	36.6	6.5	30.4	100	89	41	-	-
S-31	16 LT	863+00	3.00-6.00	A-7-6(18)	46	26	9.3	25.7	16.4	48.6	100	95	72	-	-



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-106	CL	873+00	1.00-1.50	A-2-4(0)	16	NP	46.7	39.7	7.6	6.0	97	74	18	-	-
SS-107	CL	873+00	2.50-4.00	A-2-6(1)	34	18	53.9	20.7	4.2	21.1	100	72	28	-	-
SS-108	CL	873+00	5.00-6.50	A-2-4(0)	24	5	60.1	25.6	2.2	12.1	96	70	15	-	-
SS-109	CL	873+00	7.50-9.00	A-3(0)	16	NP	82.8	12.1	2.1	3.0	100	60	6	-	-
SS-110	CL	873+00	10.00-11.50	A-1-b(0)	19	NP	83.9	12.4	1.7	2.0	98	30	5	-	-
SS-111	CL	879+00	1.00-1.50	A-7-6(8)	44	22	15.7	39.3	10.8	34.2	100	93	52	-	-
SS-112	CL	879+00	2.50-4.00	A-6(0)	26	11	19.5	49.9	8.4	22.2	100	95	36	-	-
SS-113	CL	879+00	7.50-9.00	A-2-4(0)	21	NP	73.7	18	2.2	6	73	33	7	-	-
SS-114	CL	879+00	12.50-14.00	A-2-4(0)	25	0	50.4	31.9	3.6	14.1	89	58	18	-	-

(A) RED-BROWN TO PINK-RED, MOIST, MEDIUM STIFF TO VERY STIFF, SILTY CLAY (MIDDENDORF FORMATION)
(B) DARK BROWN, MOIST TO SATURATED, VERY SOFT, SANDY AND CLAYEY SILT (MIDDENDORF FORMATION)
(C) RED-BROWN TO PINK-GRAY, MOIST, MEDIUM STIFF TO STIFF, HIGHLY PLASTIC, SILTY CLAY (MIDDENDORF FORMATION)
(D) ALLUVIAL, DARK BROWN, SATURATED, VERY SOFT, CLAYEY SANDY SILT WITH LITTLE ORGANIC MATTER

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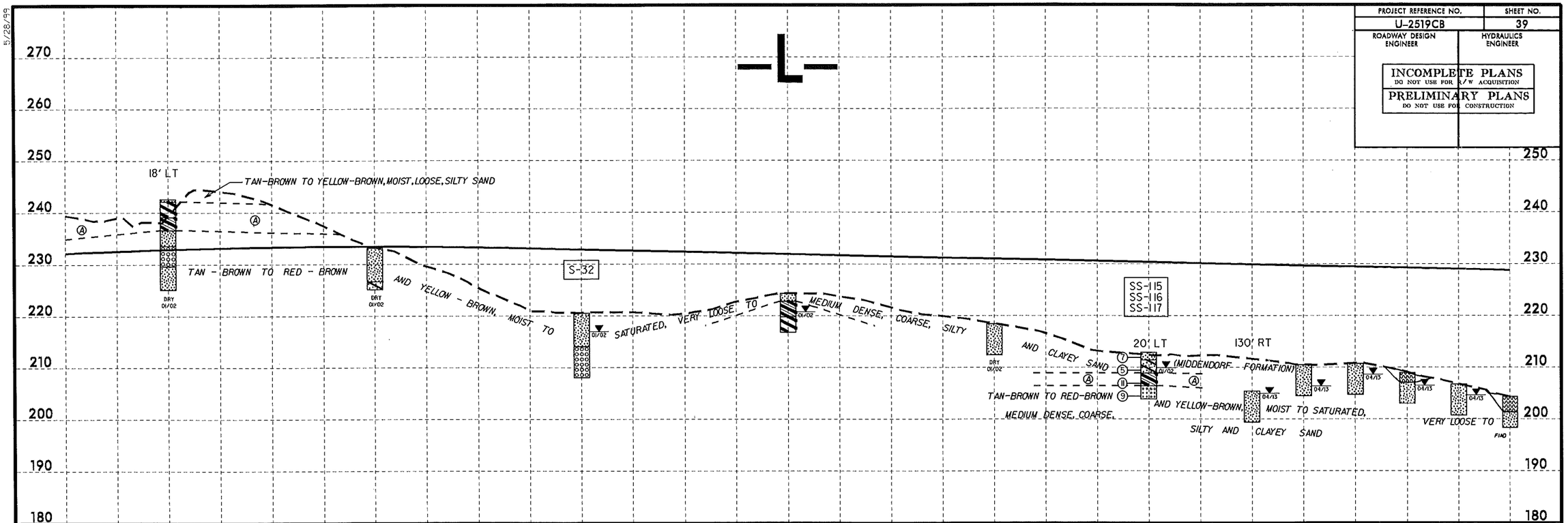
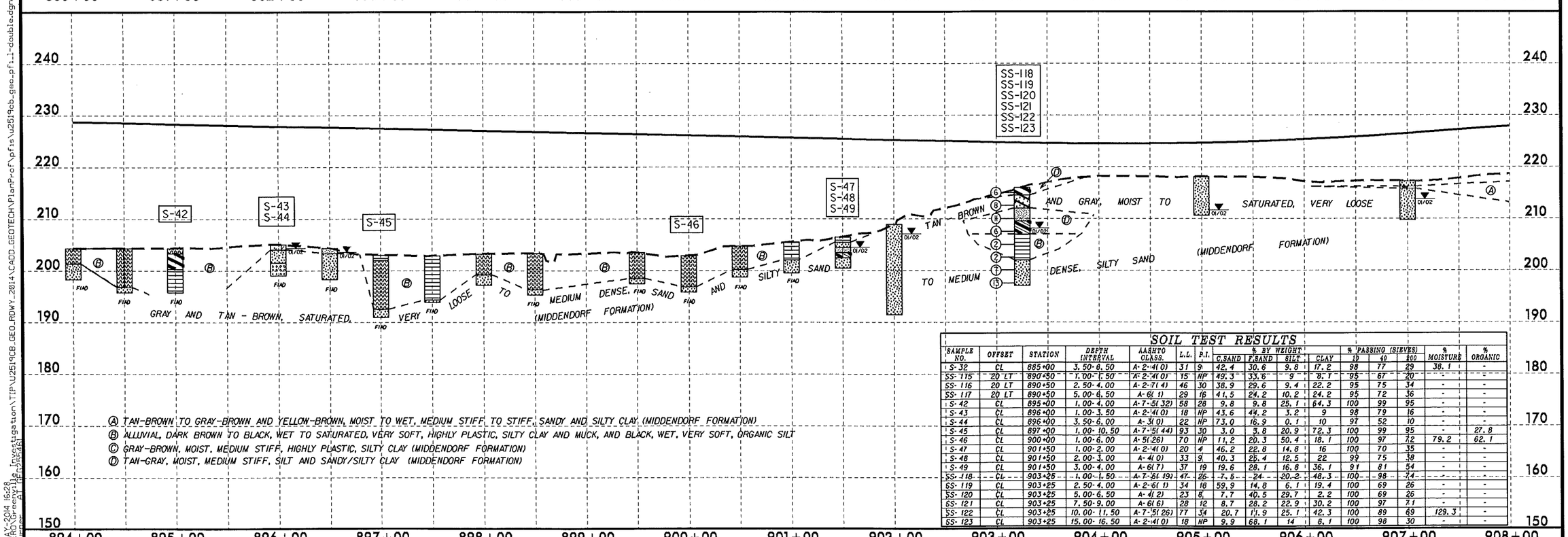
pcrisper AT (REDACTED)

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	39
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION





Ⓐ TAN-BROWN TO GRAY-BROWN AND YELLOW-BROWN, MOIST TO WET, MEDIUM STIFF, TO STIFF, SANDY AND SILTY CLAY (MIDDENDORF FORMATION)
Ⓑ ALLUVIAL, DARK BROWN TO BLACK, WET TO SATURATED, VERY SOFT, HIGHLY PLASTIC, SILTY CLAY AND MUCK, AND BLACK, WET, VERY SOFT, ORGANIC SILT
Ⓒ GRAY-BROWN, MOIST, MEDIUM STIFF, HIGHLY PLASTIC, SILTY CLAY (MIDDENDORF FORMATION)
Ⓓ TAN-GRAY, MOIST, MEDIUM STIFF, SILT AND SANDY/SILTY CLAY (MIDDENDORF FORMATION)

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	100	% MOISTURE	% ORGANIC
S-32	CL	885+00	3.50-6.50	A-2-4(0)	31	9	42.4	30.6	9.8	17.2	98	77	29	38.1	-
SS-115	20 LT	890+50	1.00-1.50	A-2-4(0)	15	NP	49.3	33.6	9	8.1	95	67	20	-	-
SS-116	20 LT	890+50	2.50-4.00	A-2-7(4)	46	30	38.9	29.6	9.4	22.2	95	75	34	-	-
SS-117	20 LT	890+50	5.00-6.50	A-6(1)	29	16	41.5	24.2	10.2	24.2	95	72	36	-	-
S-42	CL	895+00	1.00-4.00	A-7-5(32)	58	28	9.8	9.8	25.1	64.3	100	99	95	-	-
S-43	CL	896+00	1.00-3.50	A-2-4(0)	18	NP	43.6	44.2	3.2	9	98	79	16	-	-
S-44	CL	896+00	3.50-6.00	A-3(0)	22	NP	73.0	16.9	0.1	10	97	52	10	-	-
S-45	CL	897+00	1.00-10.50	A-7-5(44)	93	30	3.0	3.8	20.9	72.3	100	99	95	-	27.8
S-46	CL	900+00	1.00-6.00	A-5(26)	70	NP	11.2	20.3	50.4	18.1	100	97	72	79.2	62.1
S-47	CL	901+50	1.00-2.00	A-2-4(0)	20	4	46.2	22.8	14.8	16	100	70	35	-	-
S-48	CL	901+50	2.00-3.00	A-4(0)	33	9	40.3	25.4	12.5	22	99	75	38	-	-
S-49	CL	901+50	3.00-4.00	A-6(7)	37	19	19.6	28.1	16.8	36.1	91	81	54	-	-
SS-118	CL	903+25	1.00-1.50	A-7-6(19)	47	26	7.5	24	20.2	48.3	100	98	74	-	-
SS-119	CL	903+25	2.50-4.00	A-2-6(1)	34	18	59.9	14.8	6.1	19.4	100	69	26	-	-
SS-120	CL	903+25	5.00-6.50	A-4(2)	23	8	7.7	40.5	29.7	2.2	100	69	26	-	-
SS-121	CL	903+25	7.50-9.00	A-6(6)	28	12	8.7	28.2	22.9	30.2	100	97	71	-	-
SS-122	CL	903+25	10.00-11.50	A-7-5(26)	77	34	20.7	11.9	25.1	42.3	100	89	69	129.3	-
SS-123	CL	903+25	15.00-16.50	A-2-4(0)	18	NP	9.9	68.1	14	8.1	100	98	30	-	-

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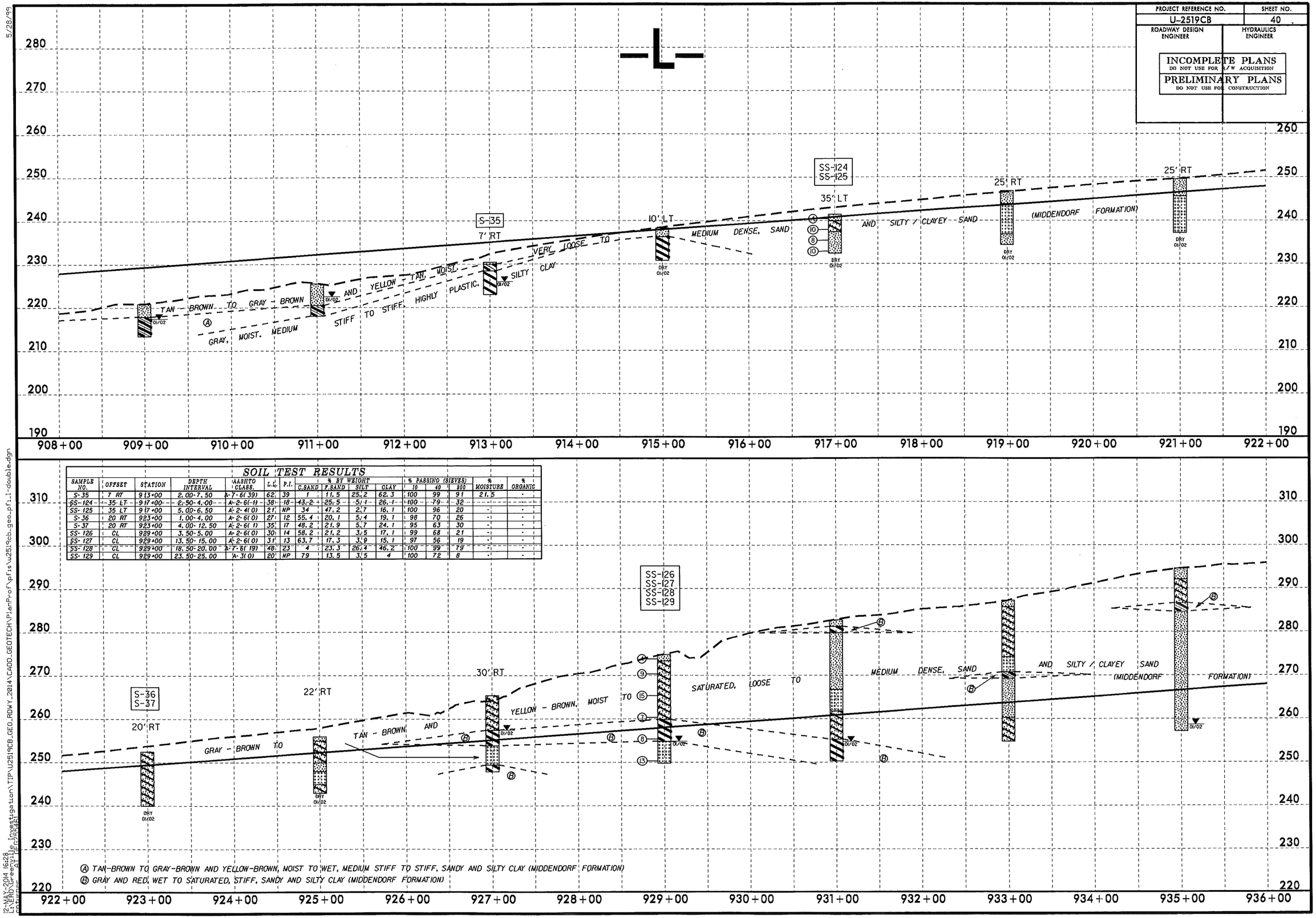
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	40
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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-35	7 RT	913+00	2.00-7.50	A-7-6(39)	62	39	1	11.5	25.2	62.3	100	99	91	21.5	-
SS-124	35 LT	917+00	2.50-4.00	A-2-6(1)	38	18	43.2	25.5	5.1	26.1	100	79	32	-	-
SS-125	35 LT	917+00	5.00-6.50	A-2-4(0)	21	NP	34	47.2	2.7	16.1	100	96	20	-	-
S-36	20 RT	923+00	1.00-4.00	A-2-6(0)	27	12	55.4	20.1	5.4	19.1	98	70	26	-	-
S-37	20 RT	923+00	4.00-12.50	A-2-6(1)	35	17	48.2	21.9	5.7	24.1	95	63	30	-	-
SS-126	CL	929+00	3.50-5.00	A-2-6(0)	30	14	58.2	21.2	3.5	17.1	99	68	21	-	-
SS-127	CL	929+00	13.50-15.00	A-2-6(0)	31	13	63.7	17.3	3.9	15.1	97	56	19	-	-
SS-128	CL	929+00	18.50-20.00	A-7-6(19)	48	23	4	23.3	26.4	46.2	100	99	79	-	-
SS-129	CL	929+00	23.50-25.00	A-3(0)	20	NP	79	13.5	3.5	4	100	72	8	-	-

Ⓐ TAN-BROWN TO GRAY-BROWN AND YELLOW-BROWN, MOIST TO WET, MEDIUM STIFF TO STIFF, SANDY AND SILTY CLAY (MIDDENDORF FORMATION)

Ⓑ GRAY AND RED, WET TO SATURATED, STIFF, SANDY AND SILTY CLAY (MIDDENDORF FORMATION)

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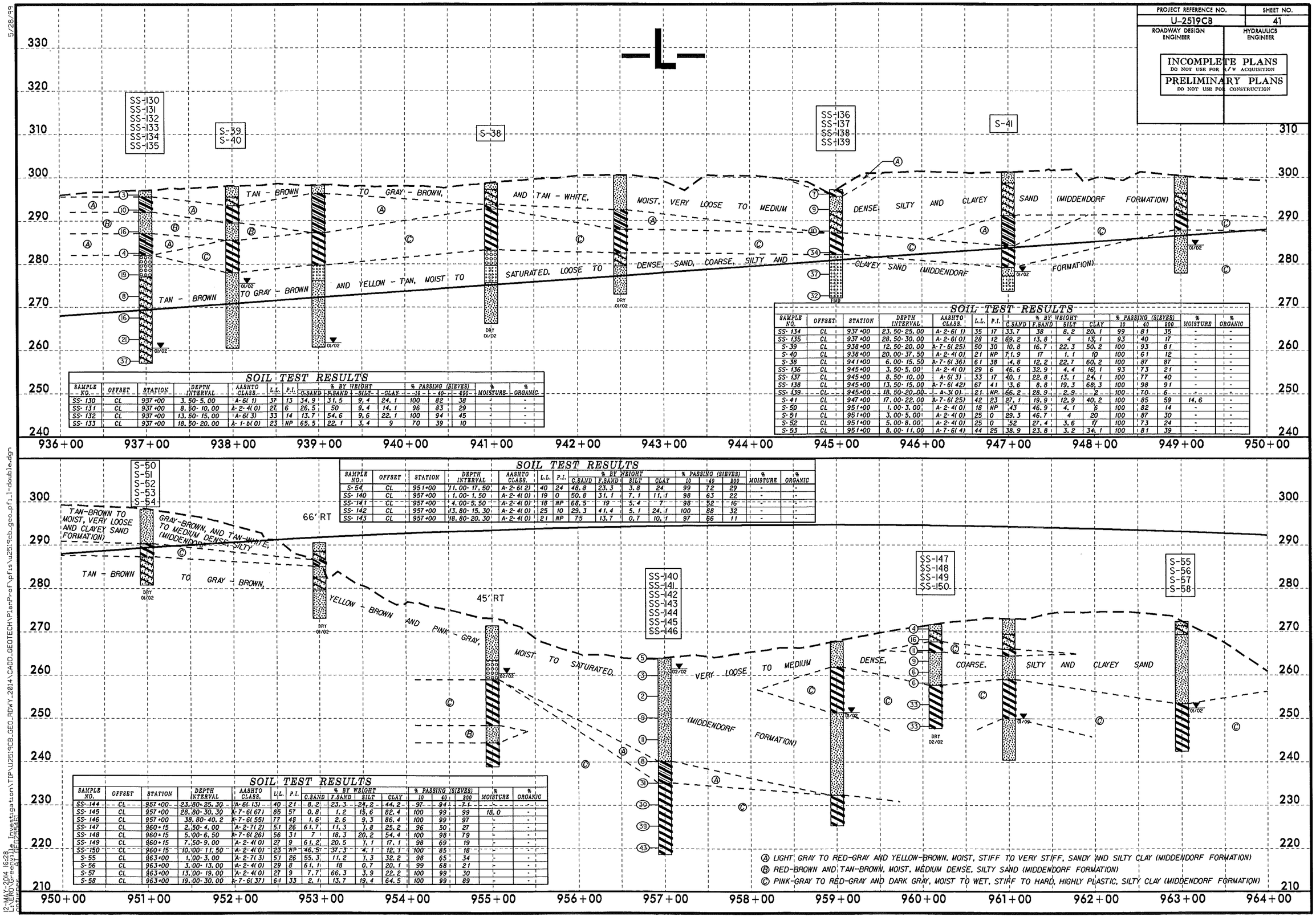
pchurch AT HERSEAD

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	41
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



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-130	CL	937+00	3.50-5.00	A-6(1)	37	13	34.9	31.5	9.4	24.1	100	82	38	-	-
SS-131	CL	937+00	8.50-10.00	A-2-4(0)	27	6	26.5	50	9.4	14.1	96	83	29	-	-
SS-132	CL	937+00	13.50-15.00	A-6(3)	33	14	13.7	54.6	9.6	22.1	100	94	45	-	-
SS-133	CL	937+00	18.50-20.00	A-1-b(0)	23	NP	65.5	22.1	3.4	9	70	39	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
SS-134	CL	937+00	23.50-25.00	A-2-6(1)	35	17	33.7	38	8.2	20.1	99	81	35	-	-
SS-135	CL	937+00	28.50-30.00	A-2-6(0)	28	12	69.2	13.8	4	13.1	93	40	17	-	-
S-39	CL	938+00	12.50-20.00	A-7-6(25)	50	30	10.8	16.7	22.3	50.2	100	93	81	-	-
S-40	CL	938+00	20.00-37.50	A-2-4(0)	21	NP	71.9	17	1.1	10	100	61	12	-	-
S-38	CL	941+00	6.00-15.50	A-7-6(36)	61	38	14.8	12.2	22.7	60.2	100	87	87	-	-
SS-136	CL	945+00	3.50-5.00	A-2-4(0)	29	6	46.6	32.9	4.4	16.1	93	73	21	-	-
SS-137	CL	945+00	8.50-10.00	A-6(3)	33	17	40.1	22.8	13.1	24.1	100	77	40	-	-
SS-138	CL	945+00	13.50-15.00	A-7-6(42)	67	41	13.6	8.8	19.3	68.3	100	98	91	-	-
SS-139	CL	945+00	18.50-20.00	A-3(0)	21	NP	66.2	28.9	2.9	2	100	70	6	-	-
S-41	CL	947+00	17.00-22.00	A-7-6(25)	42	23	27.1	19.9	12.9	40.2	100	85	59	14.6	-
S-50	CL	951+00	1.00-3.00	A-2-4(0)	18	NP	43	46.9	4.1	6	100	82	14	-	-
S-51	CL	951+00	3.00-5.00	A-2-4(0)	25	0	29.3	46.7	4	20	100	87	30	-	-
S-52	CL	951+00	5.00-8.00	A-2-4(0)	25	0	52	27.4	3.6	17	100	73	24	-	-
S-53	CL	951+00	8.00-11.00	A-7-6(4)	44	25	38.9	23.8	3.2	34.1	100	81	39	-	-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-54	CL	951+00	11.00-17.50	A-2-6(2)	40	24	48.8	23.3	3.8	24	99	72	29	-	-
SS-140	CL	957+00	1.00-1.50	A-2-4(0)	19	0	50.8	31.1	7.1	11.1	98	63	22	-	-
SS-141	CL	957+00	4.00-5.50	A-2-4(0)	18	NP	68.5	19	5.4	7	98	52	16	-	-
SS-142	CL	957+00	13.80-15.30	A-2-4(0)	25	10	29.3	41.4	5.1	24.1	100	88	32	-	-
SS-143	CL	957+00	18.80-20.30	A-2-4(0)	21	NP	75	13.7	0.7	10.1	97	66	11	-	-

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-144	CL	957+00	23.80-25.30	A-6(13)	40	21	8.2	23.3	24.2	44.2	97	94	71	-	-
SS-145	CL	957+00	28.80-30.30	A-7-6(57)	85	57	0.8	1.2	15.6	82.4	100	99	99	18.0	-
SS-146	CL	957+00	38.80-40.2	A-7-6(55)	77	48	1.6	2.6	9.3	86.4	100	99	97	-	-
SS-147	CL	960+15	2.50-4.00	A-2-7(2)	51	26	61.7	11.3	1.8	25.2	96	50	27	-	-
SS-148	CL	960+15	5.00-6.50	A-7-6(26)	56	31	7	18.3	20.2	54.4	100	98	79	-	-
SS-149	CL	960+15	7.50-9.00	A-2-4(0)	27	9	61.2	20.5	1.1	17.1	98	69	19	-	-
SS-150	CL	960+15	10.00-11.50	A-2-4(0)	25	NP	46.5	37.3	4.1	12.1	100	85	18	-	-
S-55	CL	963+00	1.00-3.00	A-2-7(3)	51	26	55.3	11.2	1.3	32.2	98	65	34	-	-
S-56	CL	963+00	3.00-13.00	A-2-4(0)	29	8	61.1	18	0.7	20.1	99	68	21	-	-
S-57	CL	963+00	13.00-19.00	A-2-4(0)	27	9	7.7	66.3	3.9	22.2	100	99	30	-	-
S-58	CL	963+00	19.00-30.00	A-7-6(37)	61	33	2.1	13.7	19.4	64.5	100	99	89	-	-

(A) LIGHT GRAY TO RED-GRAY AND YELLOW-BROWN, MOIST, STIFF TO VERY STIFF, SANDY AND SILTY CLAY (MIDDENDORF FORMATION)
(B) RED-BROWN AND TAN-BROWN, MOIST, MEDIUM DENSE, SILTY SAND (MIDDENDORF FORMATION)
(C) PINK-GRAY TO RED-GRAY AND DARK GRAY, MOIST TO WET, STIFF TO HARD, HIGHLY PLASTIC, SILTY CLAY (MIDDENDORF FORMATION)

5/28/99

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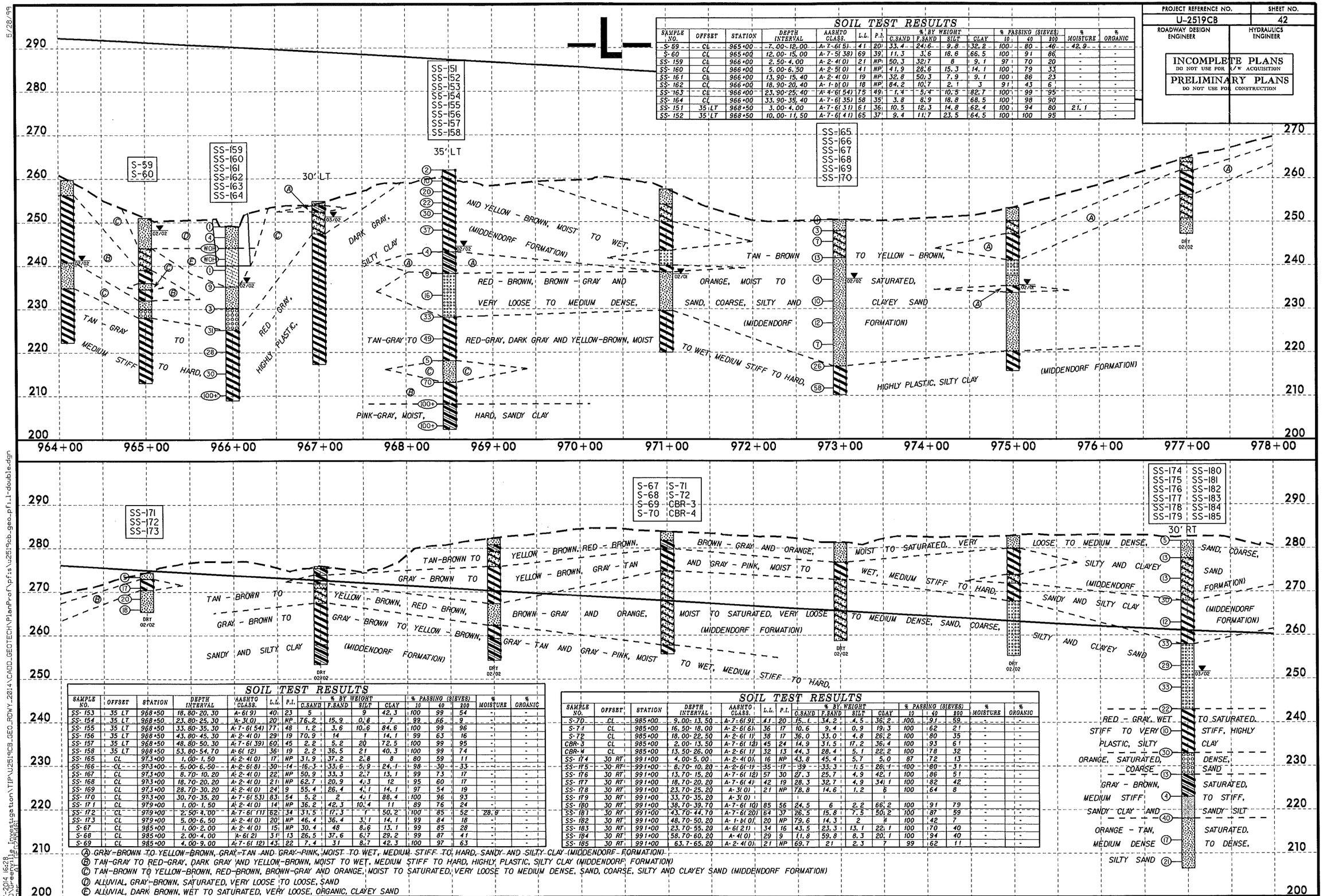
ashburner

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	42
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-59	CL	965+00	7.00-12.00	A-7-6(5)	41	20	33.4	24.6	9.8	32.2	100	80	46	42.9	-
S-60	CL	965+00	12.00-15.00	A-7-5(38)	69	39	11.3	3.6	18.6	66.5	100	91	86	-	-
SS-159	CL	966+00	2.50-4.00	A-2-4(0)	21	NP	50.3	32.7	8	9.1	97	70	20	-	-
SS-160	CL	966+00	5.00-6.50	A-2-5(0)	41	NP	41.9	28.6	15.3	14.1	100	79	33	-	-
SS-161	CL	966+00	13.90-15.40	A-2-4(0)	19	NP	32.8	50.3	7.9	9.1	100	86	23	-	-
SS-162	CL	966+00	18.90-20.40	A-1-b(0)	18	NP	84.2	10.7	2.1	3	91	43	6	-	-
SS-163	CL	966+00	23.90-25.40	A-4-6(54)	75	49	1.4	5.4	10.5	82.7	100	99	95	-	-
SS-164	CL	966+00	33.90-35.40	A-7-6(35)	58	35	3.8	8.9	18.8	68.5	100	98	90	-	-
SS-151	35' LT	968+50	3.00-4.00	A-7-6(31)	61	36	10.5	12.3	14.8	62.4	100	94	80	21.1	-
SS-152	35' LT	968+50	10.00-11.50	A-7-6(41)	65	37	9.4	11.7	23.5	64.5	100	100	95	-	-

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-153	35 LT	968+50	18.80-20.30	A-6(9)	40	23	5		9	42.3	100	99	54	-	-
SS-154	35 LT	968+50	23.80-25.30	A-3(0)	20	NP	76.2	15.9	0.8	7	99	66	9	-	-
SS-155	35 LT	968+50	33.80-35.30	A-7-6(54)	77	48	1.2	3.6	10.6	84.6	100	99	96	-	-
SS-156	35 LT	968+50	43.80-45.30	A-2-4(0)	29	19	70.9	14	1	14.1	99	63	16	-	-
SS-157	35 LT	968+50	48.80-50.30	A-7-6(39)	60	45	2.2	5.2	20	72.5	100	99	95	-	-
SS-158	35 LT	968+50	53.80-54.70	A-6(12)	36	19	2.2	36.5	21	40.3	100	99	74	-	-
SS-165	CL	973+00	1.00-1.50	A-2-4(0)	17	NP	31.9	37.2	2.8	8	80	59	11	-	-
SS-166	CL	973+00	5.00-6.50	A-2-6(8)	30	14	16.3	33.6	5.9	24.1	98	30	33	-	-
SS-167	CL	973+00	8.70-10.20	A-2-4(0)	22	NP	50.9	33.3	2.7	13.1	99	73	17	-	-
SS-168	CL	973+00	18.70-20.20	A-2-4(0)	21	NP	62.7	20.9	4.3	12	95	60	17	-	-
SS-169	CL	973+00	28.70-30.20	A-2-4(0)	24	9	55.4	26.4	4.1	14.1	97	54	19	-	-
SS-170	CL	973+00	30.70-35.20	A-7-6(53)	83	54	5.2	2	4.1	88.4	100	96	93	-	-
SS-171	CL	979+00	1.00-1.50	A-2-4(0)	14	NP	36.2	42.3	10.4	11	89	76	24	-	-
SS-172	CL	979+00	2.50-4.00	A-7-6(11)	62	34	31.5	17.3	7	50.2	100	85	52	28.9	-
SS-173	CL	979+00	5.00-6.50	A-2-4(0)	20	NP	46.4	36.4	3.1	14.1	99	84	18	-	-
S-67	CL	985+00	1.00-2.00	A-2-4(0)	15	NP	30.4	48	8.6	13.1	99	85	28	-	-
S-68	CL	985+00	2.00-4.00	A-6(2)	31	13	26.5	37.6	6.7	29.2	99	87	41	-	-
S-69	CL	985+00	4.00-9.00	A-7-6(12)	43	22	7.4	31	8.7	42.3	100	97	63	-	-

SOIL TEST RESULTS

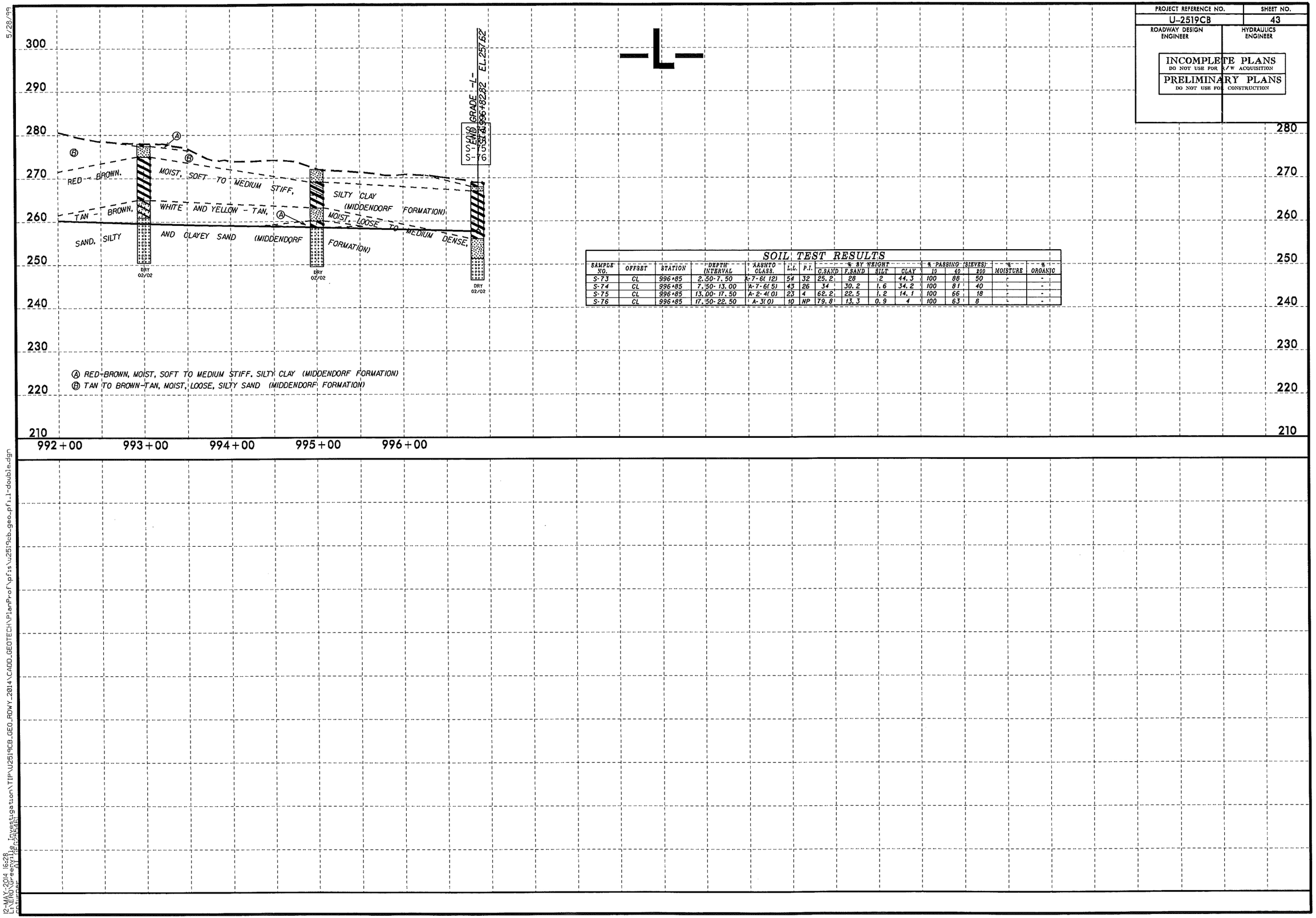
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-70	CL	985+00	9.00-13.50	A-7-6(9)	41	20	15.1	34.2	4.5	36.2	100	91	59	-	-
S-71	CL	985+00	16.50-18.00	A-2-6(6)	36	17	10.6	9.4	0.9	19.3	100	62	21	-	-
S-72	CL	985+00	18.00-22.50	A-2-6(1)	38	17	36.0	33.0	4.8	26.2	100	80	35	-	-
CBR-3	CL	985+00	2.00-13.50	A-7-6(12)	45	24	14.9	31.5	17.2	36.4	100	93	61	-	-
CBR-4	CL	985+00	13.50-26.00	A-2-6(1)	32	13	44.3	28.4	5.1	22.2	100	78	32	-	-
SS-174	30 RT	991+00	4.00-5.00	A-2-4(0)	16	NP	43.8	45.4	5.7	5.0	87	72	13	-	-
SS-175	30 RT	991+00	8.70-10.20	A-2-6(13)	35	17	39	33.3	1.5	26.1	100	80	31	-	-
SS-176	30 RT	991+00	13.70-15.20	A-7-6(12)	57	30	27.3	25.7	4.9	42.1	100	86	51	-	-
SS-177	30 RT	991+00	18.70-20.20	A-7-6(4)	42	19	28.3	32.7	4.9	34.1	100	82	42	-	-
SS-178	30 RT	991+00	23.70-25.20	A-3(0)	21	NP	78.8	14.6	1.2	6	100	64	8	-	-
SS-179	30 RT	991+00	33.70-35.20	A-3(0)										-	-
SS-180	30 RT	991+00	38.70-39.70	A-7-6(10)	85	56	24.5	6	2.2	66.2	100	91	79	-	-
SS-181	30 RT	991+00	43.70-44.70	A-7-6(20)	64	37	26.5	15.8	7.5	50.2	100	87	59	-	-
SS-182	30 RT	991+00	48.70-50.20	A-1-b(0)	20	NP	79.6	14.3	2	4	100	42	7	-	-
SS-183	30 RT	991+00	53.70-55.20	A-6(21)	34	16	43.5	23.3	13.1	22.1	100	70	40	-	-
SS-184	30 RT	991+00	58.70-60.20	A-4(0)	29	9	11.8	59.8	8.3	20.1	100	94	40	-	-
SS-185	30 RT	991+00	63.70-65.20	A-2-4(0)	21	NP	69.7	21	2.3	7	99	62	11	-	-

Ⓐ GRAY-BROWN TO YELLOW-BROWN, GRAY-TAN AND GRAY-PINK, MOIST TO WET, MEDIUM STIFF TO HARD, SANDY AND SILTY CLAY (MIDDENDORF FORMATION)
Ⓑ TAN-GRAY TO RED-GRAY, DARK GRAY AND YELLOW-BROWN, MOIST TO WET, MEDIUM STIFF TO HARD, HIGHLY PLASTIC, SILTY CLAY (MIDDENDORF FORMATION)
Ⓒ TAN-BROWN TO YELLOW-BROWN, RED-BROWN, BROWN-GRAY AND ORANGE, MOIST TO SATURATED, VERY LOOSE TO MEDIUM DENSE, SAND, COARSE, SILTY AND CLAYEY SAND (MIDDENDORF FORMATION)
Ⓓ ALLUVIAL, GRAY-BROWN, SATURATED, VERY LOOSE TO LOOSE, SAND
Ⓔ ALLUVIAL, DARK BROWN, WET TO SATURATED, VERY LOOSE, ORGANIC, CLAYEY SAND

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	43
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH (INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT G.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-73	CL	996+85	2.50-7.50	A-7-6(12)	54	32	25.2	28	.2	44.3	100	88	50	-	-
S-74	CL	996+85	7.50-13.00	A-7-6(5)	43	26	.4	30.2	1.6	34.2	100	81	40	-	-
S-75	CL	996+85	13.00-17.50	A-2-4(0)	23	4	62.2	22.5	1.2	14.1	100	66	18	-	-
S-76	CL	996+85	17.50-22.50	A-3(0)	10	NP	79.8	13.3	0.9	4	100	63	8	-	-

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PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	44
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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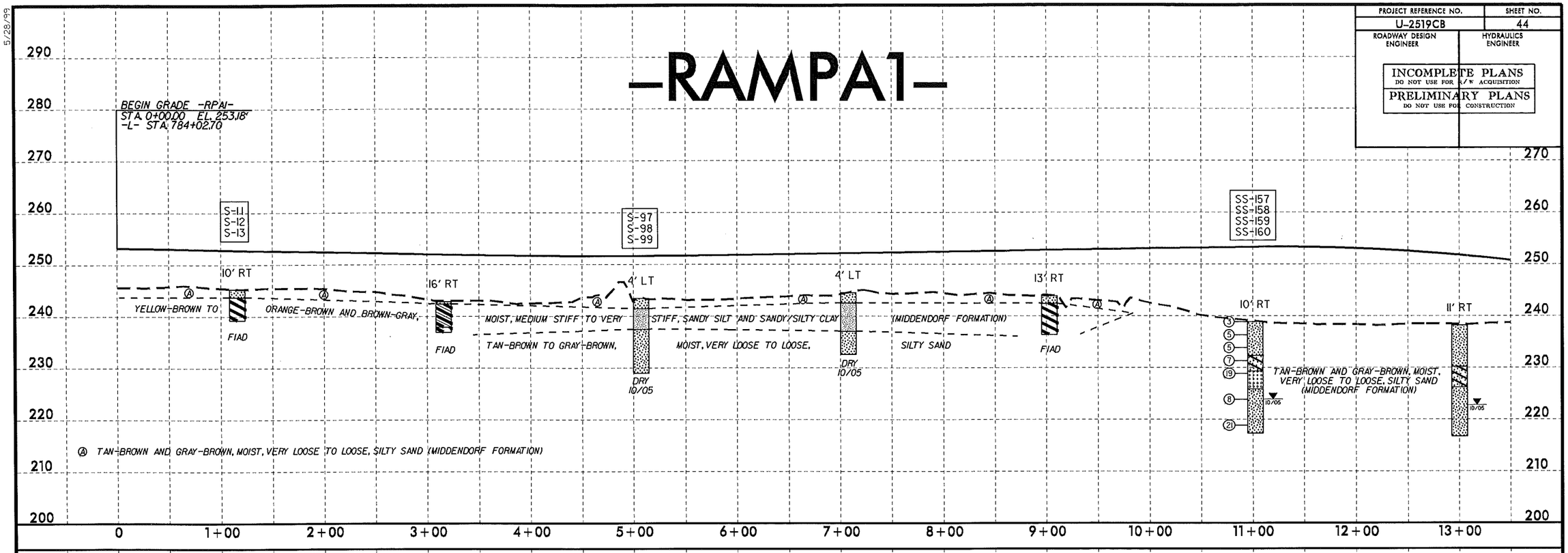

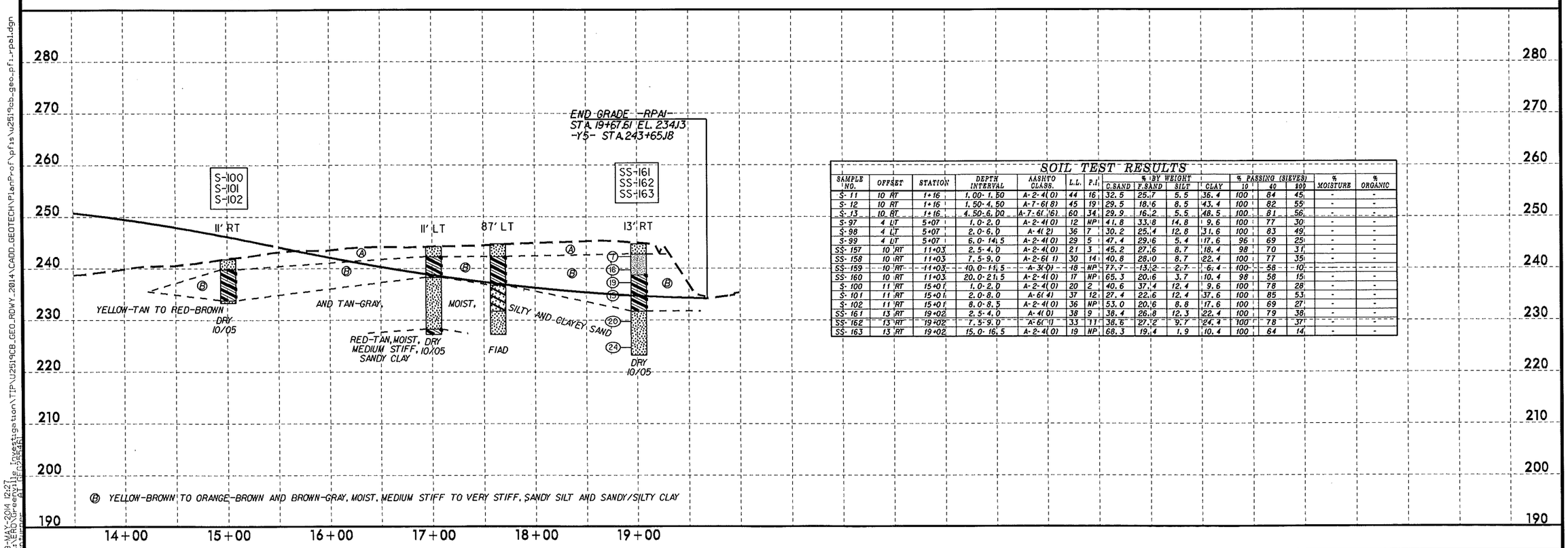

SOIL TEST RESULTS

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-11	10 RT	1+16	1.00-1.50	A-2-4(0)	44	16	32.5	25.7	5.5	36.4	100	84	45	-	-
S-12	10 RT	1+16	1.50-4.50	A-7-6(8)	45	19	29.5	18.6	8.5	43.4	100	82	55	-	-
S-13	10 RT	1+16	4.50-6.00	A-7-6(16)	60	34	29.9	16.2	5.5	48.5	100	81	56	-	-
S-97	4 LT	5+07	1.0-2.0	A-2-4(0)	12	NP	41.8	33.8	14.8	9.6	100	77	30	-	-
S-98	4 LT	5+07	2.0-6.0	A-4(2)	36	7	30.2	25.4	12.8	31.6	100	83	49	-	-
S-99	4 LT	5+07	6.0-14.5	A-2-4(0)	29	5	47.4	29.6	5.4	17.6	96	69	25	-	-
SS-157	10 RT	11+03	2.5-4.0	A-2-4(0)	21	3	45.2	27.6	8.7	18.4	98	70	31	-	-
SS-158	10 RT	11+03	7.5-9.0	A-2-6(1)	30	14	40.8	28.0	8.7	22.4	100	77	35	-	-
SS-159	10 RT	11+03	10.0-11.5	A-3(0)	18	NP	77.7	13.2	2.7	6.4	100	58	10	-	-
SS-160	10 RT	11+03	20.0-21.5	A-2-4(0)	17	NP	65.3	20.6	3.7	10.4	98	58	15	-	-
S-100	11 RT	15+01	1.0-2.0	A-2-4(0)	20	2	40.6	37.4	12.4	9.6	100	78	28	-	-
S-101	11 RT	15+01	2.0-8.0	A-6(4)	37	12	27.4	22.6	12.4	37.6	100	85	53	-	-
S-102	11 RT	15+01	8.0-8.5	A-2-4(0)	36	NP	53.0	20.6	8.8	17.6	100	69	27	-	-
SS-161	13 RT	19+02	2.5-4.0	A-4(0)	38	9	38.4	26.8	12.3	22.4	100	79	36	-	-
SS-162	13 RT	19+02	7.5-9.0	A-6(1)	33	11	38.6	27.2	9.7	24.4	100	78	37	-	-
SS-163	13 RT	19+02	15.0-16.5	A-2-4(0)	19	NP	68.3	19.4	1.9	10.4	100	64	14	-	-

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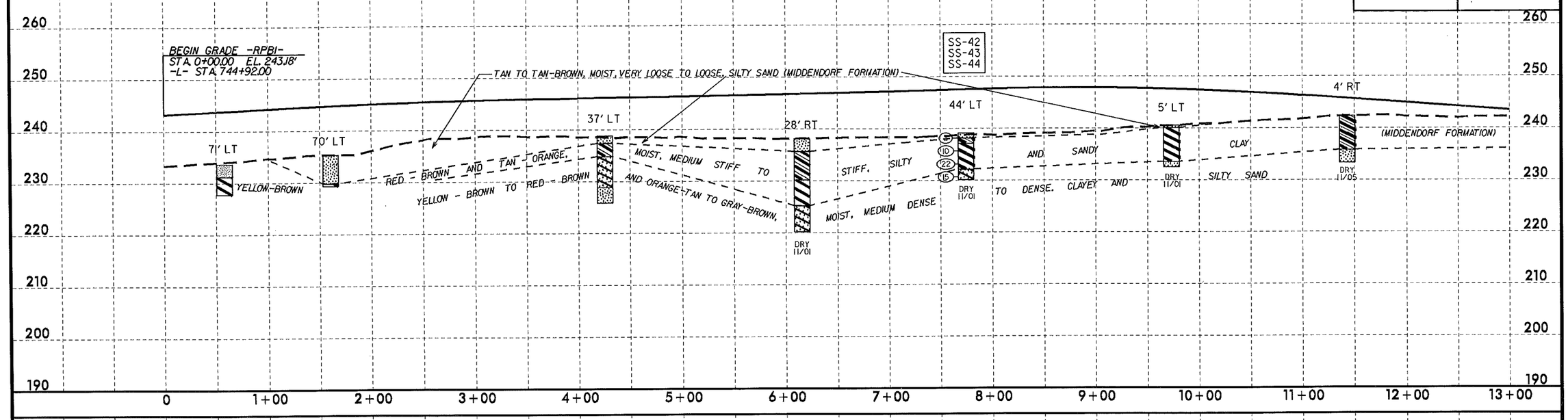
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	45
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

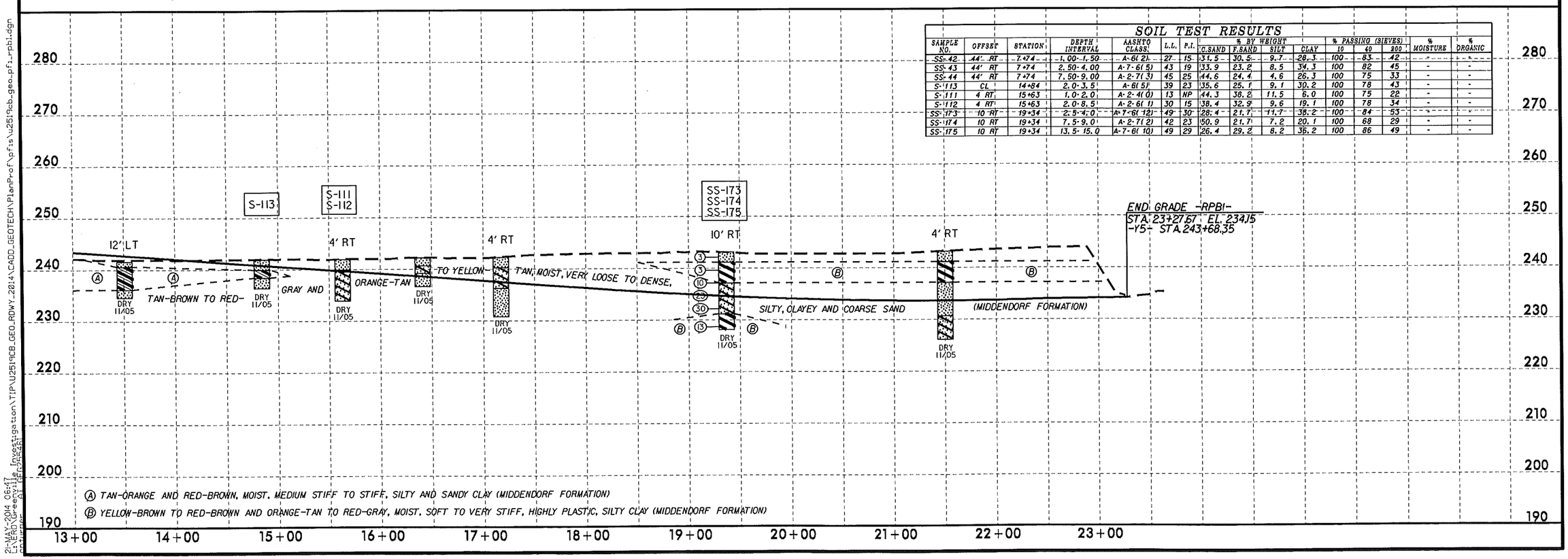
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-RAMPB1-



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-42	44' RT	7+74	1.00-1.50	A-6(2)	27	15	31.5	30.5	9.7	28.3	100	83	42	-	-
SS-43	44' RT	7+74	2.50-4.00	A-7-6(5)	43	19	33.9	23.2	8.5	34.3	100	82	45	-	-
SS-44	44' RT	7+74	7.50-9.00	A-2-7(3)	45	25	44.6	24.4	4.6	26.3	100	75	33	-	-
S-113	CL	14+84	2.0-3.5'	A-6(5)	39	23	35.6	25.1	9.1	30.2	100	78	43	-	-
S-111	4 RT	15+63	1.0-2.0	A-2-4(0)	13	NP	44.3	38.2	11.5	6.0	100	75	22	-	-
S-112	4 RT	15+63	2.0-8.5'	A-2-6(1)	30	15	38.4	32.9	9.6	19.1	100	78	34	-	-
SS-173	10 RT	19+34	2.5-4.0	A-7-6(12)	49	30	26.4	21.7	11.7	38.2	100	84	53	-	-
SS-174	10 RT	19+34	7.5-9.0	A-2-7(2)	42	23	50.9	21.7	7.2	20.1	100	68	29	-	-
SS-175	10 RT	19+34	13.5-15.0	A-7-6(10)	49	29	26.4	29.2	8.2	36.2	100	86	49	-	-



Ⓐ TAN-ORANGE AND RED-BROWN, MOIST, MEDIUM STIFF TO STIFF, SILTY AND SANDY CLAY (MIDDENDORF FORMATION)

Ⓑ YELLOW-BROWN TO RED-BROWN AND ORANGE-TAN TO RED-GRAY, MOIST, SOFT TO VERY STIFF, HIGHLY PLASTIC, SILTY CLAY (MIDDENDORF FORMATION)

5/28/99

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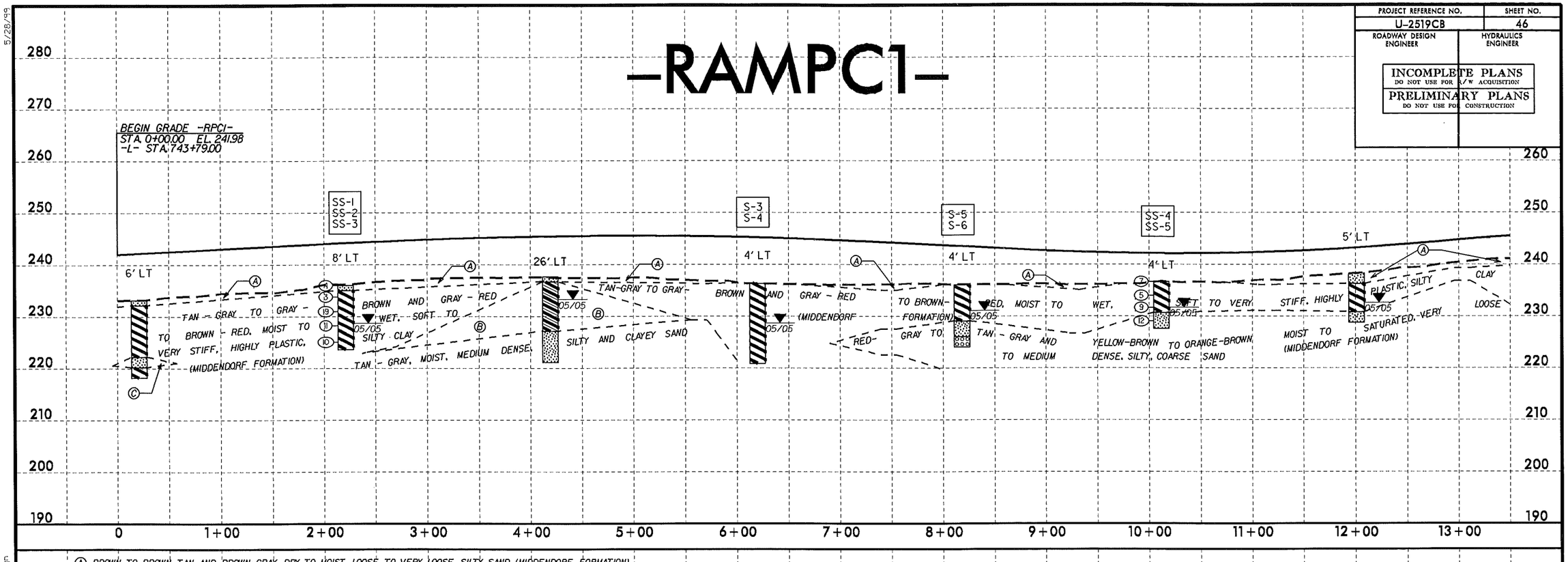
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	46
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

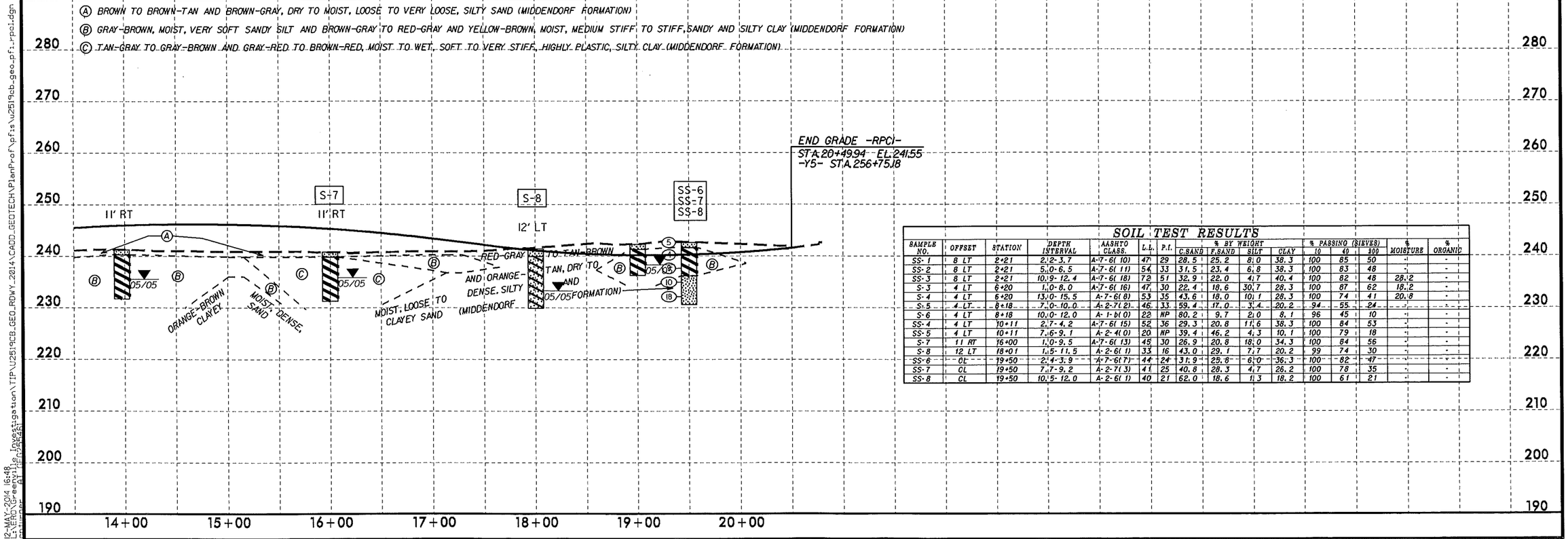
-RAMPC1-



Ⓐ BROWN TO BROWN-TAN AND BROWN-GRAY, DRY TO MOIST, LOOSE TO VERY LOOSE, SILTY SAND (MIDDENDORF FORMATION)

Ⓑ GRAY-BROWN, MOIST, VERY SOFT SANDY SILT AND BROWN-GRAY TO RED-GRAY AND YELLOW-BROWN, MOIST, MEDIUM STIFF TO STIFF, SANDY AND SILTY CLAY (MIDDENDORF FORMATION)

Ⓒ TAN-GRAY TO GRAY-BROWN AND GRAY-RED TO BROWN-RED, MOIST TO WET, SOFT TO VERY STIFF, HIGHLY PLASTIC, SILTY CLAY (MIDDENDORF FORMATION)



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	8 LT	2+21	2.2-3.7	A-7-6(10)	47	29	28.5	25.2	8.0	38.3	100	85	50	-	-
SS-2	8 LT	2+21	5.0-6.5	A-7-6(11)	54	33	31.5	23.4	6.8	38.3	100	83	48	-	-
SS-3	8 LT	2+21	10.9-12.4	A-7-6(18)	72	51	32.9	22.0	4.7	40.4	100	82	48	28.2	-
S-3	4 LT	6+20	1.0-8.0	A-7-6(16)	47	30	22.4	18.6	30.7	28.3	100	87	62	18.2	-
S-4	4 LT	6+20	13.0-15.5	A-7-6(8)	53	35	43.6	18.0	10.1	28.3	100	74	41	20.8	-
S-5	4 LT	8+18	7.0-10.0	A-2-7(2)	46	33	59.4	17.0	3.4	20.2	94	55	24	-	-
S-6	4 LT	8+18	10.0-12.0	A-1-b(0)	23	NP	80.2	9.7	2.0	8.1	96	45	10	-	-
SS-4	4 LT	10+11	2.7-4.2	A-7-6(15)	52	36	29.3	20.8	11.6	38.3	100	84	53	-	-
SS-5	4 LT	10+11	7.6-9.1	A-2-4(0)	20	NP	39.4	46.2	4.3	10.1	100	79	18	-	-
S-7	11 RT	16+00	1.0-9.5	A-7-6(13)	45	30	26.9	20.8	18.0	34.3	100	84	56	-	-
S-8	12 LT	18+01	1.5-11.5	A-2-6(1)	33	16	43.0	29.1	7.7	20.2	99	74	30	-	-
SS-6	OL	19+50	2.4-3.9	A-7-6(7)	44	24	31.9	25.8	6.0	36.3	100	82	47	-	-
SS-7	OL	19+50	7.7-9.2	A-2-7(3)	41	25	40.8	28.3	4.7	26.2	100	78	35	-	-
SS-8	OL	19+50	10.5-12.0	A-2-6(1)	40	21	62.0	18.6	1.3	18.2	100	61	21	-	-

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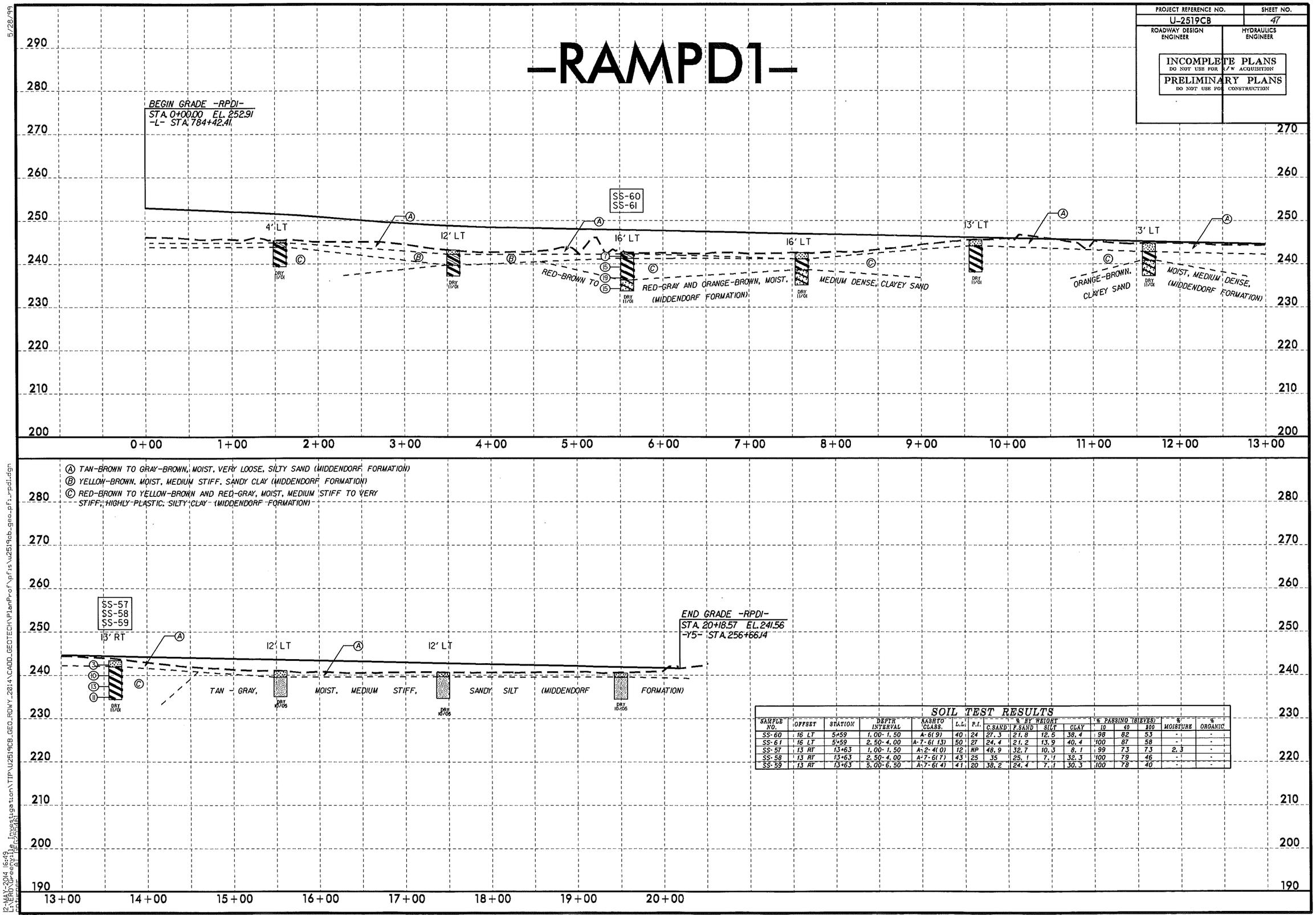
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	47
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-RAMPD1-



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	16 LT	5+59	1.00-1.50	A-6(9)	40	24	27.3	21.8	12.5	38.4	98	82	53	-	-
SS-61	16 LT	5+59	2.50-4.00	A-7-6(13)	50	27	24.4	21.2	13.9	40.4	100	87	58	-	-
SS-57	13 RT	13+63	1.00-1.50	A-2-4(0)	12	NP	48.9	32.7	10.3	8.1	99	73	73	2.3	-
SS-58	13 RT	13+63	2.50-4.00	A-7-6(7)	43	25	35	25.1	7.1	32.3	100	79	46	-	-
SS-59	13 RT	13+63	5.00-6.50	A-7-6(4)	41	20	38.2	24.4	7.1	30.3	100	78	40	-	-

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Engineer: BT (EFD2-4161)

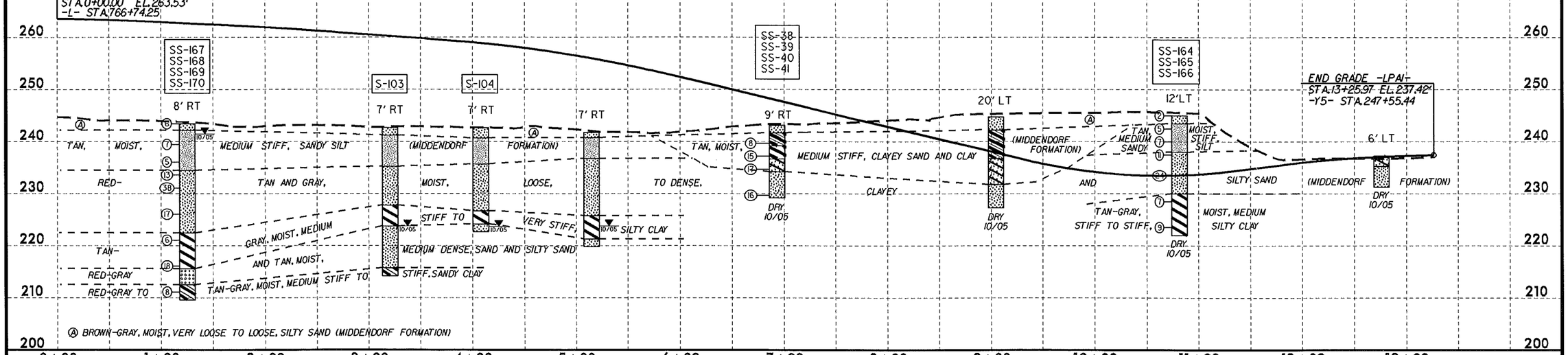
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	4B
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

-LOOPA1-

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-167	8 RT	7+25	4.0-5.5	A-4(0)	32	7	35.2	28.0	10.3	26.4	98	79	40	-	-
SS-168	8 RT	7+25	9.9-11.4	A-2-4(0)	39	NP	71.5	12.6	5.5	10.4	97	55	16	-	-
SS-169	8 RT	7+25	27.9-28.9	A-3(0)	18	NP	74.5	16.8	0.3	8.4	100	58	10	-	-
SS-170	8 RT	7+25	32.4-33.9	A-6(1)	37	14	50.3	14.8	6.5	28.4	100	67	36	-	-
S-103	7 RT	3+20	15.0-16.5	A-7-5(17)	67	13	7.6	18.8	16.0	57.6	100	96	79	21.7	-
S-104	7 RT	4+07	16.0-18.5	A-7-6(11)	42	14	41.6	25.2	11.6	21.6	100	75	37	11.3	-
SS-38	9 RT	6+93	2.50-4.00	A-6(7)	40	20	26.1	27.3	14.3	32.3	100	86	52	-	-
SS-39	9 RT	6+93	5.00-6.50	A-2-6(10)	52	25	29.9	20.6	9.1	40.4	100	84	52	20.5	-
SS-40	9 RT	6+93	7.50-9.00	A-2-7(2)	43	23	45.9	24.4	3.4	26.3	98	72	31	-	-
SS-41	9 RT	6+93	12.50-14.00	A-2-4(0)	17	NP	48.5	43.2	1.2	8.1	97	74	12	-	-
SS-164	12 LT	10+81	2.5-4.0	A-4(1)	33	8	28.4	27.8	9.3	34.4	100	85	48	-	-
SS-165	12 LT	10+81	7.5-9.0	A-2-4(0)	31	6	39.2	28.6	5.7	26.4	100	79	35	-	-
SS-166	12 LT	10+81	16.5-18.0	A-7-6(3)	42	13	23.2	35.6	10.7	30.4	100	89	46	16.7	-



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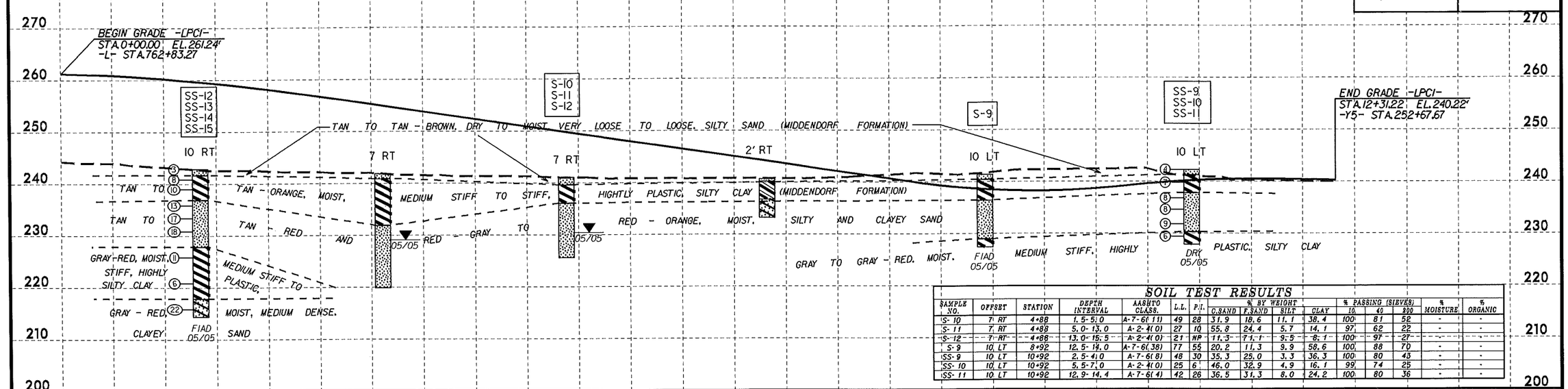
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	49
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-LOOPC1-



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-12	10 RT	1+34	2.0- 3.5	A-7-6(10)	50	29	29.1	25.2	5.3	40.4	100	83	49	-	-
SS-13	10 RT	1+34	9.5- 11.0	A-2-4(0)	24	5	54.5	28.9	4.5	12.1	95	66	18	-	-
SS-14	10 RT	1+34	22.0- 23.5	A-7-6(7)	52	36	43.2	21.6	7.0	28.3	100	75	38	-	-
SS-15	10 RT	1+34	28.0- 28.5	A-2-6(0)	30	14	52.3	27.6	3.9	16.1	100	72	24	-	-

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-10	7 RT	4+88	1.5- 5.0	A-7-6(11)	49	28	31.9	18.6	11.1	38.4	100	81	52	-	-
S-11	7 RT	4+88	5.0- 13.0	A-2-4(0)	27	10	55.8	24.4	5.7	14.1	97	62	22	-	-
S-12	7 RT	4+88	13.0- 15.5	A-2-4(0)	21	NP	11.3	71.1	9.5	8.1	100	97	27	-	-
S-9	10 LT	8+92	12.5- 14.0	A-7-6(38)	77	55	20.2	11.3	9.9	58.6	100	88	70	-	-
SS-9	10 LT	10+92	2.5- 4.0	A-7-6(8)	48	30	35.3	25.0	3.3	36.3	100	80	43	-	-
SS-10	10 LT	10+92	5.5- 7.0	A-2-4(0)	25	6	46.0	32.9	4.9	16.1	99	74	25	-	-
SS-11	10 LT	10+92	12.9- 14.4	A-7-6(4)	42	26	36.5	31.3	8.0	24.2	100	80	36	-	-

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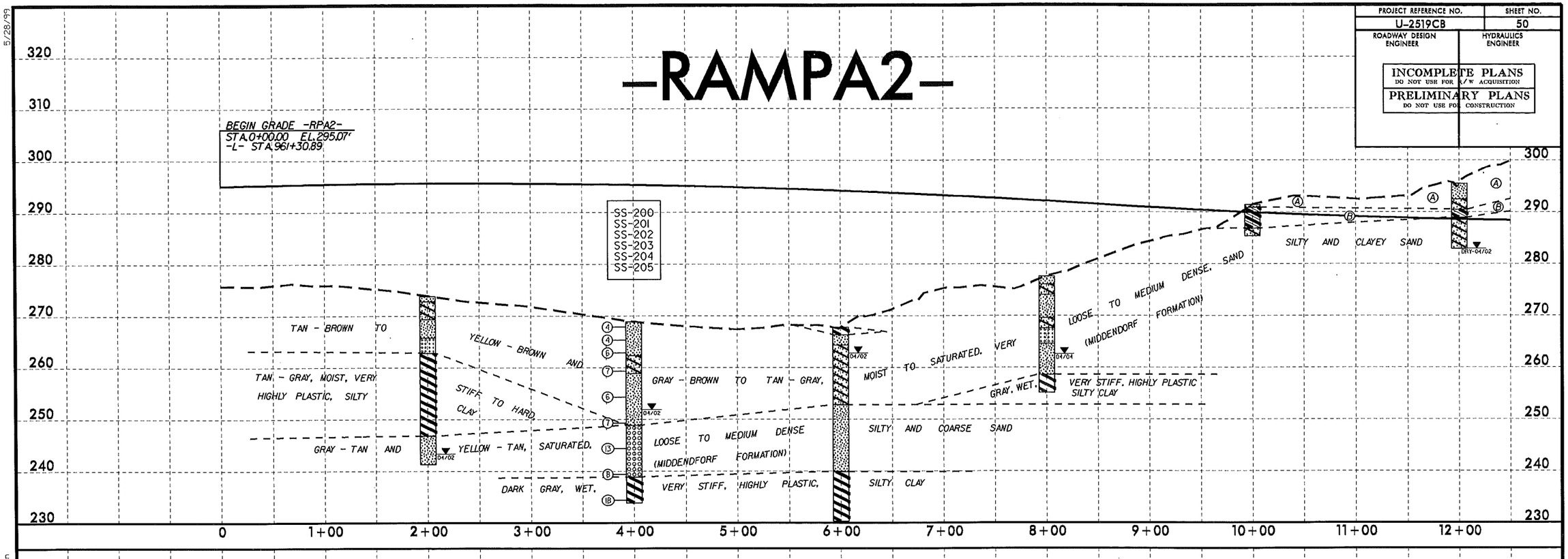
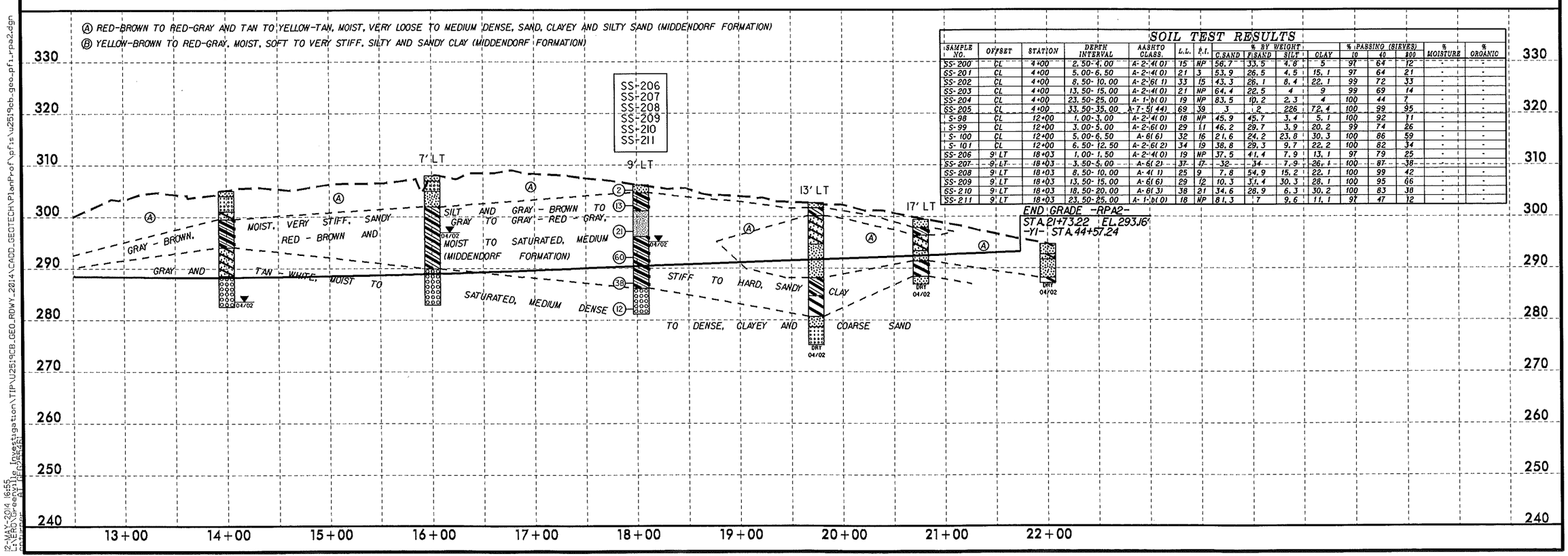
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	50
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-RAMPA2-





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-200	CL	4+00	2.50-4.00	A-2-4(0)	15	NP	56.7	33.5	4.8	5	97	64	12	-	-
SS-201	CL	4+00	5.00-6.50	A-2-4(0)	21	3	53.9	26.5	4.5	15.1	97	64	21	-	-
SS-202	CL	4+00	8.50-10.00	A-2-6(1)	33	15	43.3	26.1	8.4	22.1	99	72	33	-	-
SS-203	CL	4+00	13.50-15.00	A-2-4(0)	21	NP	64.4	22.5	4	9	99	69	14	-	-
SS-204	CL	4+00	23.50-25.00	A-1-b(0)	19	NP	83.5	10.2	2.3	4	100	44	7	-	-
SS-205	CL	4+00	33.50-35.00	A-7-5(44)	69	39	3	2	22.6	72.4	100	99	95	-	-
S-98	CL	12+00	1.00-3.00	A-2-4(0)	18	NP	45.9	45.7	3.4	5.1	100	92	11	-	-
S-99	CL	12+00	3.00-5.00	A-2-6(0)	29	11	46.2	28.7	3.9	20.2	99	74	26	-	-
S-100	CL	12+00	5.00-6.50	A-6(6)	32	16	21.6	24.2	23.8	30.3	100	86	59	-	-
S-101	CL	12+00	6.50-12.50	A-2-6(2)	34	19	38.8	29.3	9.7	22.2	100	82	34	-	-
SS-206	9' LT	18+03	1.00-1.50	A-2-4(0)	19	NP	37.5	41.4	7.9	13.1	97	79	25	-	-
SS-207	9' LT	18+03	3.50-5.00	A-6(2)	37	17	32	34	7.9	26.1	100	87	38	-	-
SS-208	9' LT	18+03	8.50-10.00	A-4(1)	25	9	7.8	54.9	15.2	22.1	100	99	42	-	-
SS-209	9' LT	18+03	13.50-15.00	A-6(6)	29	12	10.3	31.4	30.3	28.1	100	95	66	-	-
SS-210	9' LT	18+03	18.50-20.00	A-6(3)	38	21	34.6	28.9	6.3	30.2	100	83	38	-	-
SS-211	9' LT	18+03	23.50-25.00	A-1-b(0)	18	NP	81.3	7	9.6	11.1	97	47	12	-	-

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PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	51
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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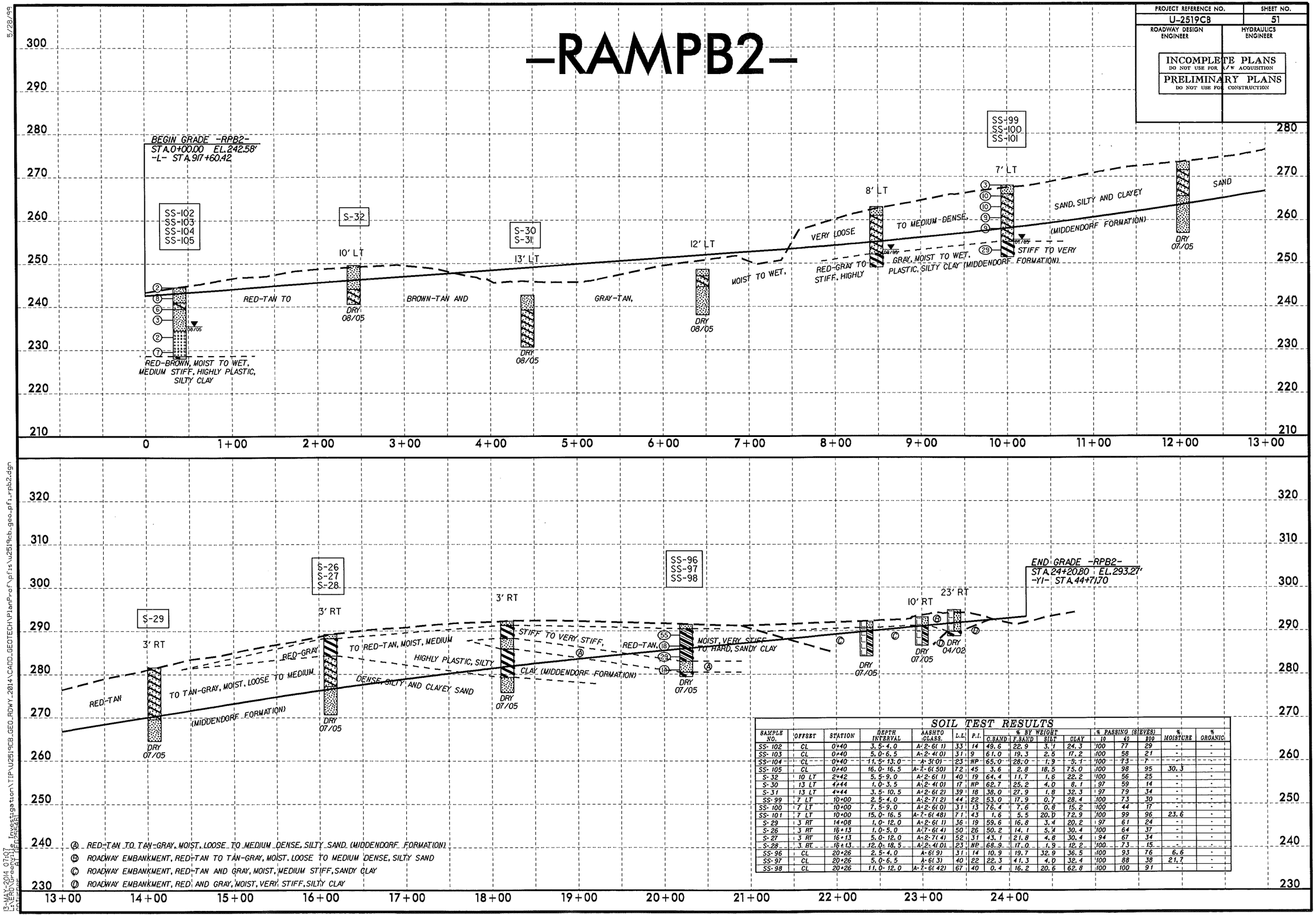

SOIL TEST RESULTS

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-102	CL	0+40	3.5-4.0	A-2-6(1)	33	14	49.6	22.9	3.1	24.3	100	77	29	-	-
SS-103	CL	0+40	5.0-6.5	A-2-4(0)	31	9	61.0	19.3	2.5	17.2	100	58	21	-	-
SS-104	CL	0+40	11.5-13.0	A-3(0)	23	NP	65.0	28.0	1.9	5.1	100	73	7	-	-
SS-105	CL	0+40	16.0-16.5	A-7-6(50)	72	45	3.6	2.8	18.5	75.0	100	98	95	30.3	-
S-32	10 LT	2+42	5.5-9.0	A-2-6(1)	40	19	64.4	11.7	1.6	22.2	100	56	25	-	-
S-30	13 LT	4+44	1.0-3.5	A-2-4(0)	17	NP	62.7	25.2	4.0	8.1	97	59	14	-	-
S-31	13 LT	4+44	3.5-10.5	A-2-6(2)	39	18	38.0	27.9	1.8	32.3	97	79	34	-	-
SS-99	7 LT	10+00	2.5-4.0	A-2-7(2)	44	22	53.0	17.9	0.7	28.4	100	73	30	-	-
SS-100	7 LT	10+00	7.5-9.0	A-2-6(0)	31	13	76.4	7.6	0.8	15.2	100	44	17	-	-
SS-101	7 LT	10+00	15.0-16.5	A-7-6(48)	71	43	1.6	5.5	20.0	72.9	100	99	96	23.6	-
S-29	3 RT	14+08	1.0-12.0	A-2-6(1)	36	19	59.6	16.8	3.4	20.2	97	61	24	-	-
S-26	3 RT	16+13	1.0-5.0	A-7-6(4)	50	26	50.2	14.1	5.4	30.4	100	64	37	-	-
S-27	3 RT	16+13	5.0-12.0	A-2-7(4)	52	31	43.1	21.8	4.8	30.4	94	67	34	-	-
S-28	3 RT	16+13	12.0-18.5	A-2-4(0)	23	NP	68.9	17.0	1.9	12.2	100	73	15	-	-
SS-96	CL	20+26	2.5-4.0	A-6(9)	31	14	10.9	19.7	32.9	36.5	100	93	76	6.6	-
SS-97	CL	20+26	5.0-6.5	A-6(3)	40	22	22.3	41.3	4.0	32.4	100	88	38	21.7	-
SS-98	CL	20+26	11.0-12.0	A-7-6(42)	67	40	0.4	16.2	20.6	62.8	100	100	91	-	-

5/28/99

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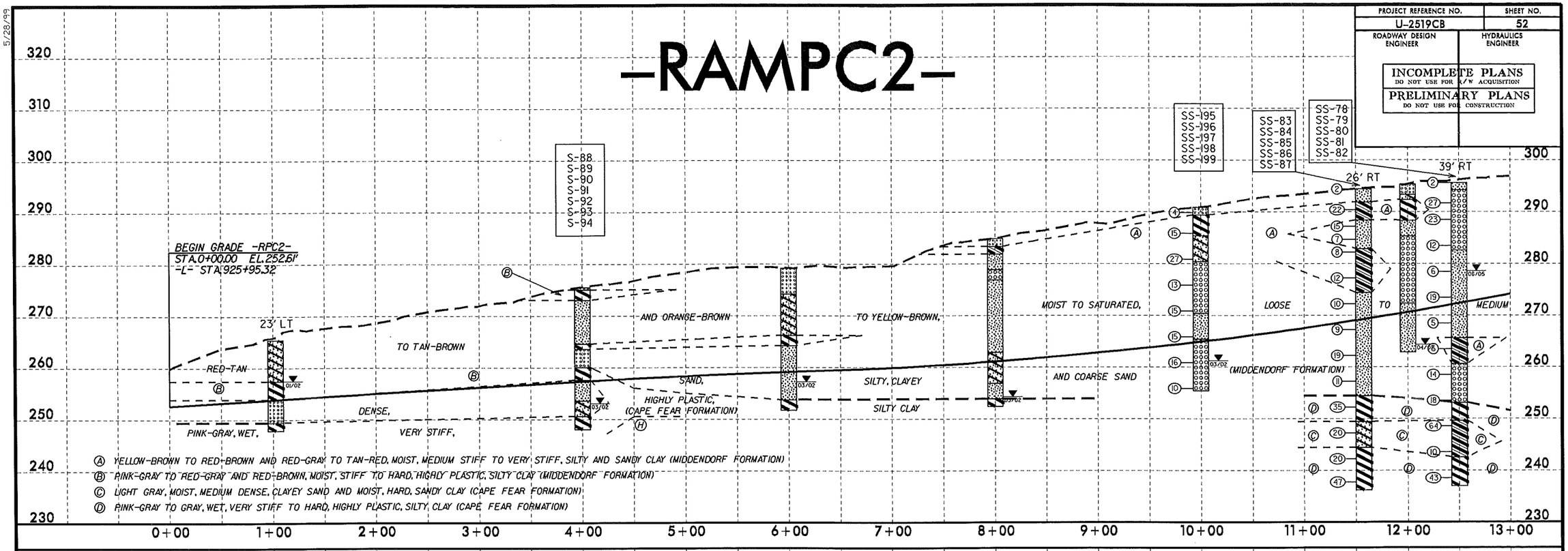
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	52
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

-RAMPC2-



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-88	CL	4+00	0.50-2.50	A-7-6(9)	65	42	48.9	12.5	4.3	34.2	98	68	39	-	-
S-89	CL	4+00	2.50-11.00	A-2-4(0)	26	5	56.2	25.2	1.5	17.1	98	73	19	-	-
S-90	CL	4+00	12.00-15.50	A-3(0)	15	NP	71.7	19.7	2.5	6	98	66	10	-	-
S-91	CL	4+00	15.50-18.00	A-7-6(15)	45	23	5.6	32.8	21.2	49.3	100	98	69	-	-
S-92	CL	4+00	18.00-22.00	A-2-4(0)	16	NP	64.2	24	2.7	9.1	100	36	13	-	-
S-93	CL	4+00	22.00-25.00	A-2-6(0)	28	11	64	17	5.9	13.1	98	48	21	-	-
S-94	CL	4+00	25.00-27.50	A-7-6(45)	74	48	9.9	7.9	13.8	68.5	99	92	85	-	-
SS-195	CL	10+00	4.00-5.50	A-7-6(9)	44	18	5.8	41.2	16.8	36.2	100	97	59	-	-
SS-196	CL	10+00	9.00-10.50	A-2-6(1)	38	21	57.2	20.3	0.4	22.1	96	62	22	-	-
SS-197	CL	10+00	14.00-15.50	A-1-b(0)	27	4	69.4	16.3	1.2	13.1	97	49	15	-	-
SS-198	CL	10+00	24.50-25.50	A-2-4(0)	20	NP	60.5	22.8	5.6	11.1	100	72	18	-	-
SS-199	CL	10+00	29.00-30.50	A-1-b(0)	22	NP	82.4	7.7	0.8	9	95	28	10	-	-
SS-83	26' RT	11+57	12.2-13.7	A-6(2)	35	16	33.5	34.3	8.1	24.2	100	82	39	-	-
SS-84	26' RT	11+57	27.2-28.7	A-2-4(0)	22	NP	57.6	30.4	2.9	9.1	90	58	13	-	-
SS-85	26' RT	11+57	42.2-43.7	A-7-6(33)	61	39	4.8	17.3	17.3	60.5	100	98	81	-	-
SS-86	26' RT	11+57	47.2-48.7	A-2-6(0)	30	14	57.6	21.5	4.8	16.1	100	67	23	-	-
SS-87	26' RT	11+57	56.7-58.2	A-7-6(30)	51	28	2.8	3.4	33.3	60.5	100	98	96	-	-
SS-78	39' RT	12+50	7.1-8.6	A-1-b(0)	27	NP	62.3	21.8	2.8	13.1	84	50	15	-	-
SS-79	39' RT	12+50	17.1-18.6	A-2-4(0)	25	3	14.4	61.4	7.1	17.1	100	97	35	-	-
SS-80	39' RT	12+50	32.1-33.6	A-6(2)	35	18	32.9	31.7	10.3	25.2	93	75	37	20.3	-
SS-81	39' RT	12+50	37.1-38.6	A-1-b(0)	22	NP	65.8	22.4	1.7	10.1	89	42	12	-	-
SS-82	39' RT	12+50	47.1-48.6	A-6(11)	40	22	17.5	27.8	20.4	34.3	100	90	63	18.4	-
SS-75	26' RT	13+50	9.6-11.1	A-7-6(5)	45	21	34.7	6.9	51.4	7.1	71	48	42	-	-
SS-76	26' RT	13+50	27.0-28.6	A-2-4(0)	28	10	50.3	28.1	4.4	17.1	100	71	23	-	-
SS-77	26' RT	13+50	37.1-38.6	A-1-b(0)	23	NP	73.6	13.3	3.0	10.1	83	39	12	-	-
SS-71	42' RT	14+50	9.6-11.1	A-4(4)	26	10	8.3	42.1	25.4	24.2	100	96	63	18.0	-
SS-72	42' RT	14+50	17.1-18.6	A-7-6(39)	61	39	3.4	8.9	23.2	64.5	100	98	91	23.0	-
SS-73	42' RT	14+50	47.1-48.6	A-7-6(54)	77	49	2.2	5.0	14.1	78.6	100	99	95	28.6	-
SS-74	42' RT	14+50	52.1-53.6	A-2-4(0)	23	NP	66.7	21.9	1.3	10.1	100	75	12	-	-
SS-67	26' RT	15+50	3.9-5.4	A-7-6(3)	44	23	38.5	29.6	5.6	26.2	100	76	36	-	-
SS-68	26' RT	15+50	12.3-13.8	A-1-b(0)	24	NP	73.9	16.5	0.5	9.1	93	42	10	-	-
SS-69	26' RT	15+50	22.3-23.8	A-1-b(0)	22	NP	77.9	16.4	0.6	5.0	96	50	6	-	-
SS-70	26' RT	15+50	37.3-38.8	A-1-b(0)	26	NP	76.5	13.3	3.1	8.1	82	30	10	-	-
S-83	CL	16+00	1.00-3.00	A-2-6(0)	26	11	39	31	7.8	22.2	99	78	83	-	-
S-84	CL	16+00	3.00-5.00	A-7-5(5)	48	24	39	22.2	7.8	30.2	98	74	40	-	-
S-85	CL	16+00	5.00-13.00	A-7-5(23)	63	25	14.5	9.7	17.4	58.4	100	89	79	-	-
S-86	CL	16+00	13.00-16.00	A-7-6(27)	56	34	4	26.4	13.2	56.4	100	98	78	-	-
S-87	CL	16+00	16.00-22.00	A-2-4(0)	21	NP	63.2	21.6	2.1	13.1	100	71	16	-	-
SS-64	26' RT	17+50	2.5-4.0	A-7-6(13)	52	28	16.9	32.1	6.7	44.4	100	92	57	-	-
SS-65	26' RT	17+50	7.5-9.0	A-6(3)	35	16	22.8	41.7	9.3	26.2	100	90	42	-	-
SS-66	26' RT	17+50	13.5-15.0	A-2-6(0)	27	12	38.1	38.3	3.4	20.2	100	85	26	-	-

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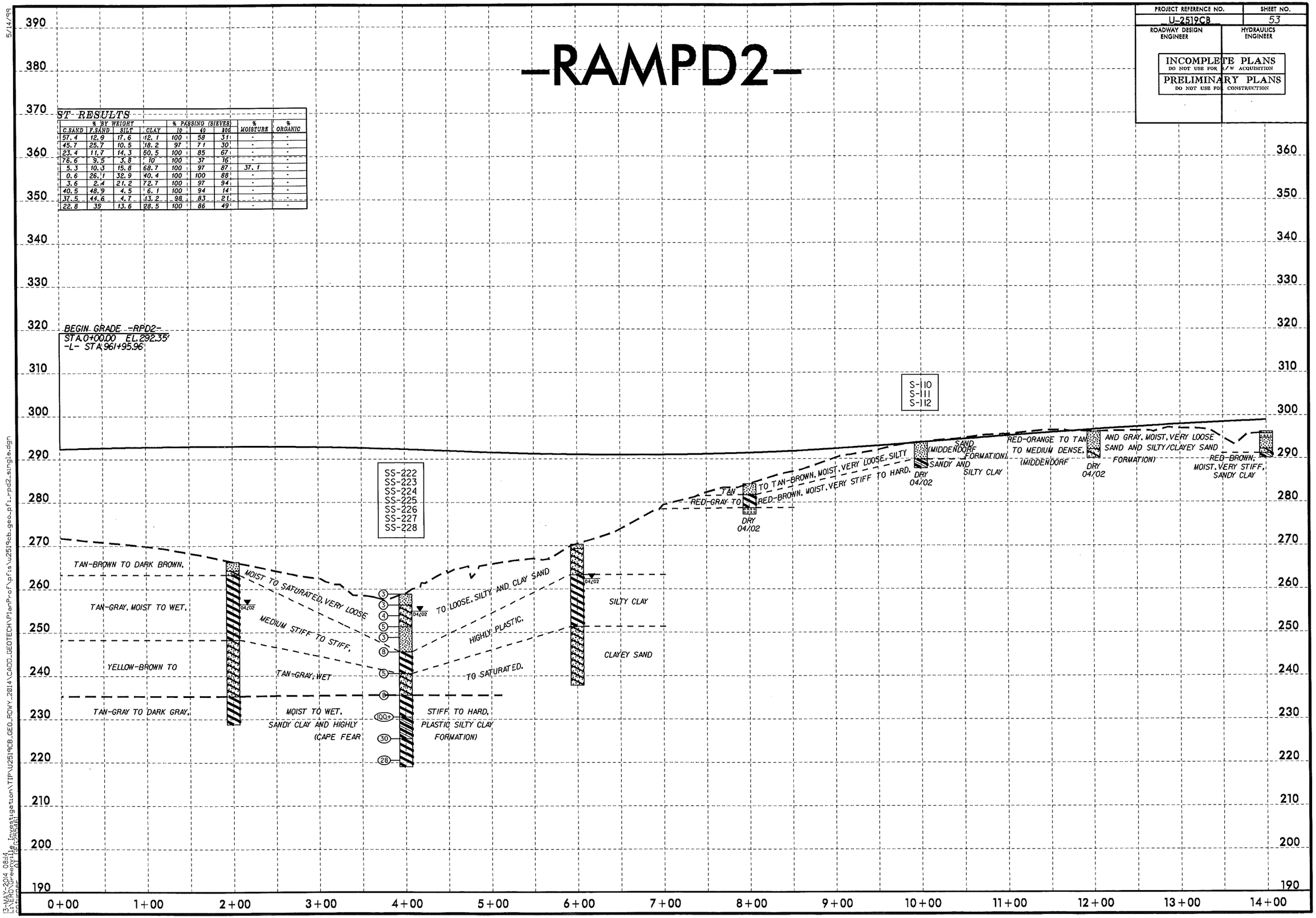
pdunlap AT REDSQUARE

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	53
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-RAMPD2-



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PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	54
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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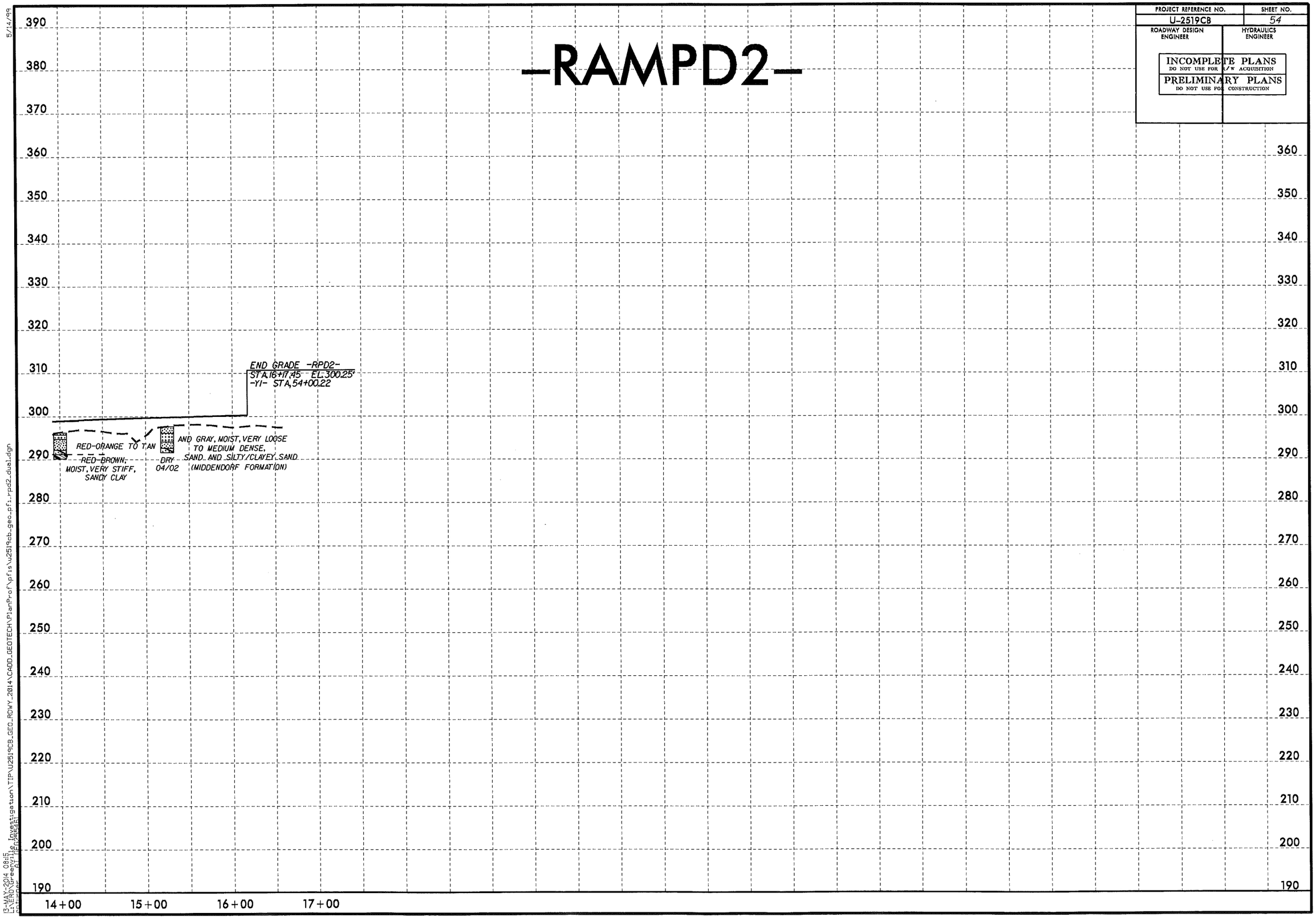

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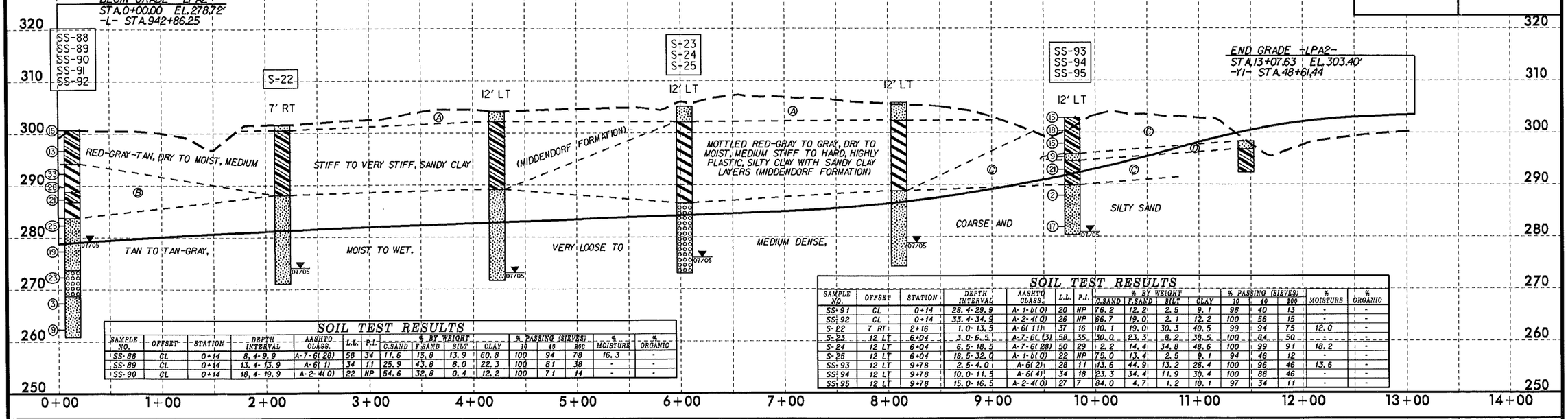
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	55
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Ⓐ LIGHT TAN TO GRAY-TAN, DRY TO MOIST, LOOSE, SITLY SAND (MIDDENDORF FORMATION)
Ⓑ MOTTLED RED-GRAY TO GRAY, DRY TO MOIST, MEDIUM STIFF TO HARD, HIGHLY PLASTIC, SILTY CLAY WITH SANDY CLAY LAYERS (MIDDENDORF FORMATION)
Ⓒ RED-GRAY-TAN, DRY TO MOIST, MEDIUM STIFF TO VERY STIFF, SANDY CLAY (MIDDENDORE FORMATION)
Ⓓ RED-TAN, MOIST, LOOSE, SILTY SAND (MIDDENDORF FORMATION)

-LOOPA2-



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-88	CL	0+14	8.4-9.9	A-7-6(28)	58	34	11.6	13.8	13.9	60.8	100	94	78	16.3	-
SS-89	CL	0+14	13.4-13.9	A-6(11)	34	11	25.9	43.8	8.0	22.3	100	81	38	-	-
SS-90	CL	0+14	18.4-19.9	A-2-4(0)	22	NP	54.6	32.8	0.4	12.2	100	71	14	-	-

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-91	CL	0+14	28.4-29.9	A-1-b(0)	20	NP	76.2	12.2	2.5	9.1	98	40	13	-	-
SS-92	CL	0+14	33.4-34.9	A-2-4(0)	26	NP	66.7	19.0	2.1	12.2	100	56	15	-	-
S-22	7' RT	2+16	1.0-13.5	A-6(11)	37	16	10.1	19.0	30.3	40.5	99	94	75	12.0	-
S-23	12' LT	6+04	3.0-6.5	A-7-6(13)	58	35	30.0	23.3	8.2	38.5	100	84	50	-	-
S-24	12' LT	6+04	6.5-18.5	A-7-6(28)	50	29	2.2	14.4	34.8	48.6	100	99	91	18.2	-
S-25	12' LT	6+04	18.5-32.0	A-1-b(0)	22	NP	75.0	13.4	2.5	9.1	94	46	12	-	-
SS-93	12' LT	9+78	2.5-4.0	A-6(2)	28	11	13.6	44.9	13.2	28.4	100	96	46	13.6	-
SS-94	12' LT	9+78	10.0-11.5	A-6(4)	34	18	23.3	34.4	11.9	30.4	100	88	46	-	-
SS-95	12' LT	9+78	15.0-16.5	A-2-4(0)	27	7	84.0	4.7	1.2	10.1	97	34	11	-	-

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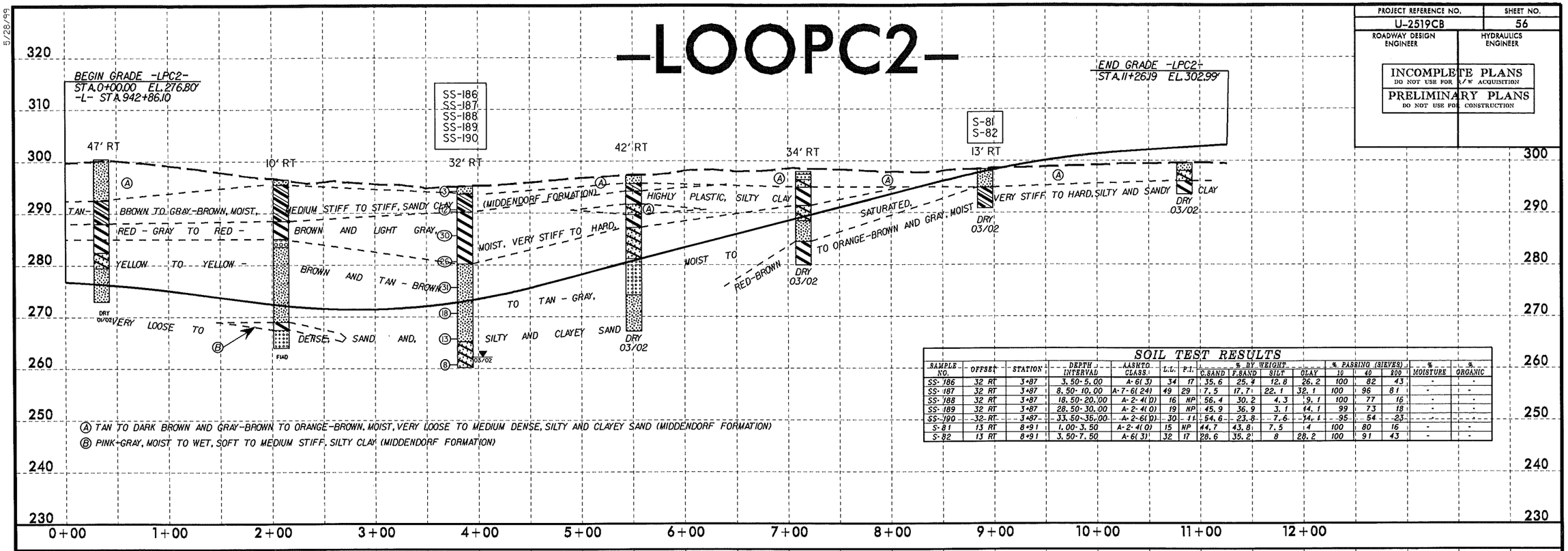
pathman AT REPORTER

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	56
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-LOOPC2-



Ⓐ TAN TO DARK BROWN AND GRAY-BROWN TO ORANGE-BROWN, MOIST, VERY LOOSE TO MEDIUM DENSE, SILTY AND CLAYEY SAND (MIDDENDORF FORMATION)

Ⓑ PINK-GRAY, MOIST TO WET, SOFT TO MEDIUM STIFF, SILTY CLAY (MIDDENDORF FORMATION)

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-186	32 RT	3+87	3.50-5.00	A-6(3)	34	17	35.6	25.4	12.8	26.2	100	82	43	-	-
SS-187	32 RT	3+87	8.50-10.00	A-7-6(24)	49	29	7.5	17.7	22.1	32.1	100	96	81	-	-
SS-188	32 RT	3+87	18.50-20.00	A-2-4(0)	16	NP	56.4	30.2	4.3	9.1	100	77	16	-	-
SS-189	32 RT	3+87	28.50-30.00	A-2-4(0)	19	NP	45.9	36.9	3.1	14.1	99	73	18	-	-
SS-190	32 RT	3+87	33.50-35.00	A-2-6(0)	30	11	54.6	23.8	7.6	14.1	95	54	23	-	-
S-81	13 RT	8+91	1.00-3.50	A-2-4(0)	15	NP	44.7	43.8	7.5	4	100	80	16	-	-
S-82	13 RT	8+91	3.50-7.50	A-6(3)	32	17	28.6	35.2	8	28.2	100	91	43	-	-

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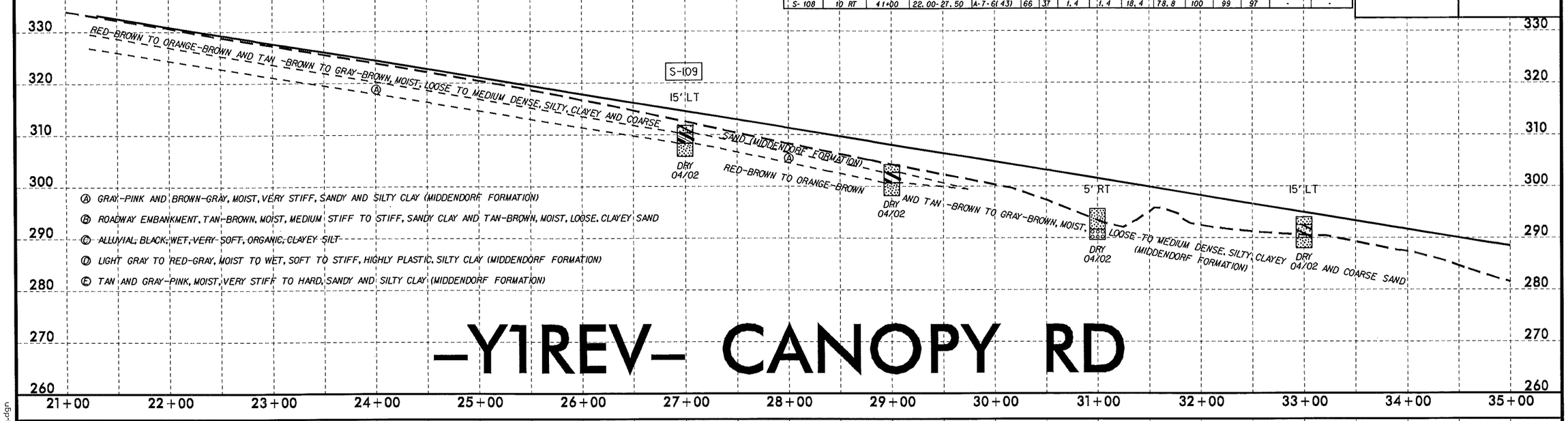
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	57
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

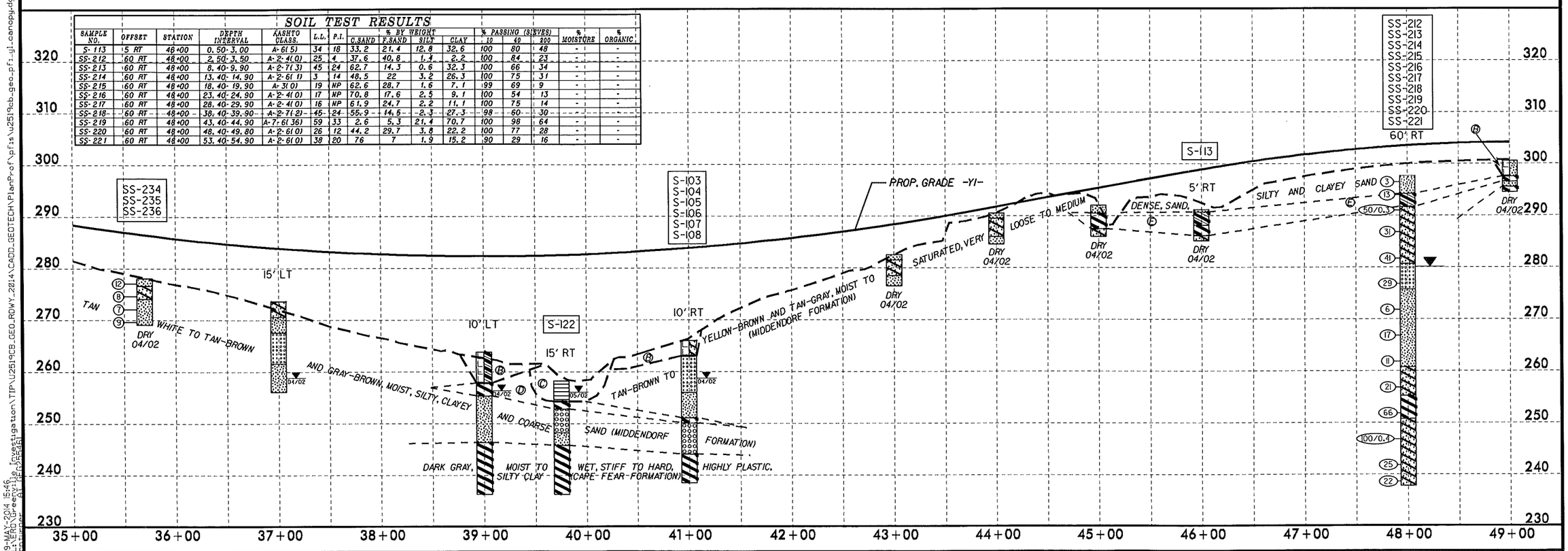
SOIL TEST RESULTS

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-109	15 LT	27+00	1.50-3.50	A-6(13)	38	20	4.2	28.9	24.4	42.4	99	97	73	-	-
SS-234	CL	35+70	1.00-1.50	A-2-4(0)	14	NP	62.1	26	7.8	4.1	99	59	14	-	-
SS-235	CL	35+70	2.50-4.00	A-2-6(0)	26	16	62.8	15.7	1.1	20.4	94	47	21	-	-
SS-236	CL	35+70	7.50-9.00	A-2-4(0)	28	10	52.7	26.4	2.5	18.3	99	68	22	-	-
S-122	15 RT	39+85	1.00-4.00	A-5(0)	42	NP	39.5	25.2	21.1	14.2	98	73	37	-	9.8
S-103	10 RT	41+00	1.00-3.00	A-2-6(0)	29	11	24.2	44.8	8.7	22.2	100	91	35	-	-
S-104	10 RT	41+00	3.00-10.00	A-3(0)	17	NP	60.6	33.4	2.9	4	97	62	9	-	-
S-105	10 RT	41+00	10.00-15.00	A-2-4(0)	25	8	81.5	7	2.4	9.1	99	29	12	-	-
S-106	10 RT	41+00	15.00-16.00	A-7-6(9)	50	3	42.4	11.7	13.5	32.3	97	63	47	-	-
S-107	10 RT	41+00	16.00-22.00	A-1-b(0)	24	4	75.9	11.7	2.3	10.1	99	47	13	-	-
S-108	10 RT	41+00	22.00-27.50	A-7-6(43)	66	37	1.4	1.4	18.4	78.8	100	99	97	-	-



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-113	5 RT	46+00	0.50-3.00	A-6(5)	34	18	33.2	21.4	12.8	32.6	100	80	48	-	-
SS-212	60 RT	48+00	2.50-3.50	A-2-4(0)	25	4	37.6	40.8	1.4	2.2	100	84	23	-	-
SS-213	60 RT	48+00	8.40-9.90	A-2-7(3)	45	24	62.7	14.3	0.6	32.3	100	66	34	-	-
SS-214	60 RT	48+00	13.40-14.90	A-2-6(1)	3	14	48.5	22	3.2	26.3	100	75	31	-	-
SS-215	60 RT	48+00	18.40-19.90	A-3(0)	19	NP	62.6	28.7	1.6	7.1	99	69	9	-	-
SS-216	60 RT	48+00	23.40-24.90	A-2-4(0)	17	NP	70.8	17.6	2.5	9.1	100	54	13	-	-
SS-217	60 RT	48+00	28.40-29.90	A-2-4(0)	16	NP	61.9	24.7	2.2	11.1	100	75	14	-	-
SS-218	60 RT	48+00	38.40-39.90	A-2-7(2)	45	24	55.9	14.5	2.3	27.3	98	60	30	-	-
SS-219	60 RT	48+00	43.40-44.90	A-7-6(36)	59	33	2.6	5.3	21.4	70.7	100	98	64	-	-
SS-220	60 RT	48+00	48.40-49.80	A-2-6(0)	26	12	44.2	29.7	3.8	22.2	100	77	28	-	-
SS-221	60 RT	48+00	53.40-54.90	A-2-6(0)	38	20	76	7	1.9	15.2	90	29	16	-	-



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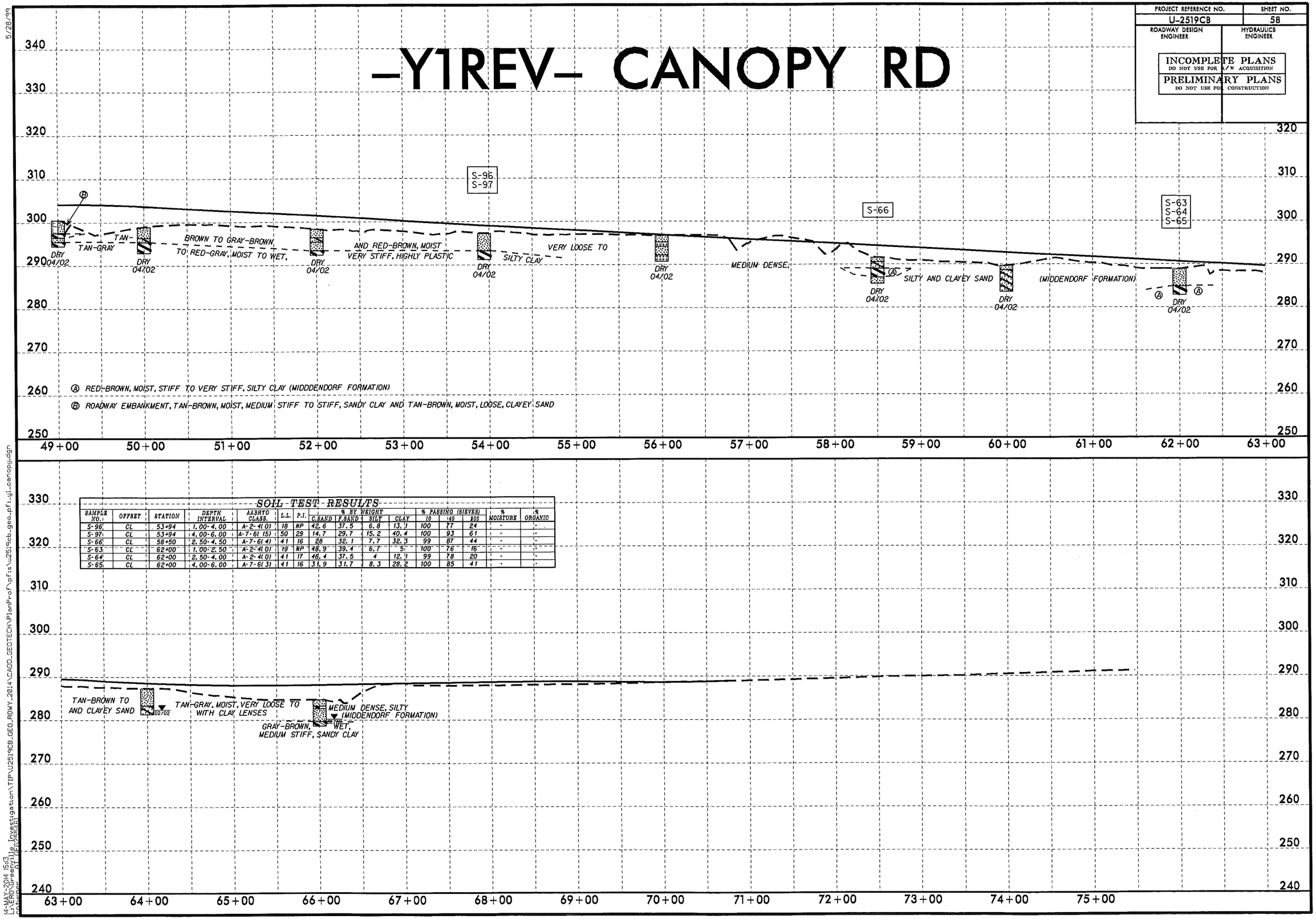
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	58
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

-Y1REV- CANOPY RD



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	CL	53+94	1.00-4.00	A-2-4(0)	18	NP	42.6	37.5	6.8	13.1	100	77	24	-	-
S-97	CL	53+94	4.00-6.00	A-7-6(15)	50	29	14.7	29.7	15.2	40.4	100	93	61	-	-
S-66	CL	58+50	2.50-4.50	A-7-6(4)	41	16	28	32.1	7.7	32.3	99	87	44	-	-
S-63	CL	62+00	1.00-2.50	A-2-4(0)	19	NP	48.9	39.4	6.7	5	100	76	16	-	-
S-64	CL	62+00	2.50-4.00	A-2-4(0)	41	17	46.4	37.5	4	12.1	99	78	20	-	-
S-65	CL	62+00	4.00-6.00	A-7-6(3)	41	16	31.9	31.7	8.3	28.2	100	85	41	-	-

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-Y1REV_LT-

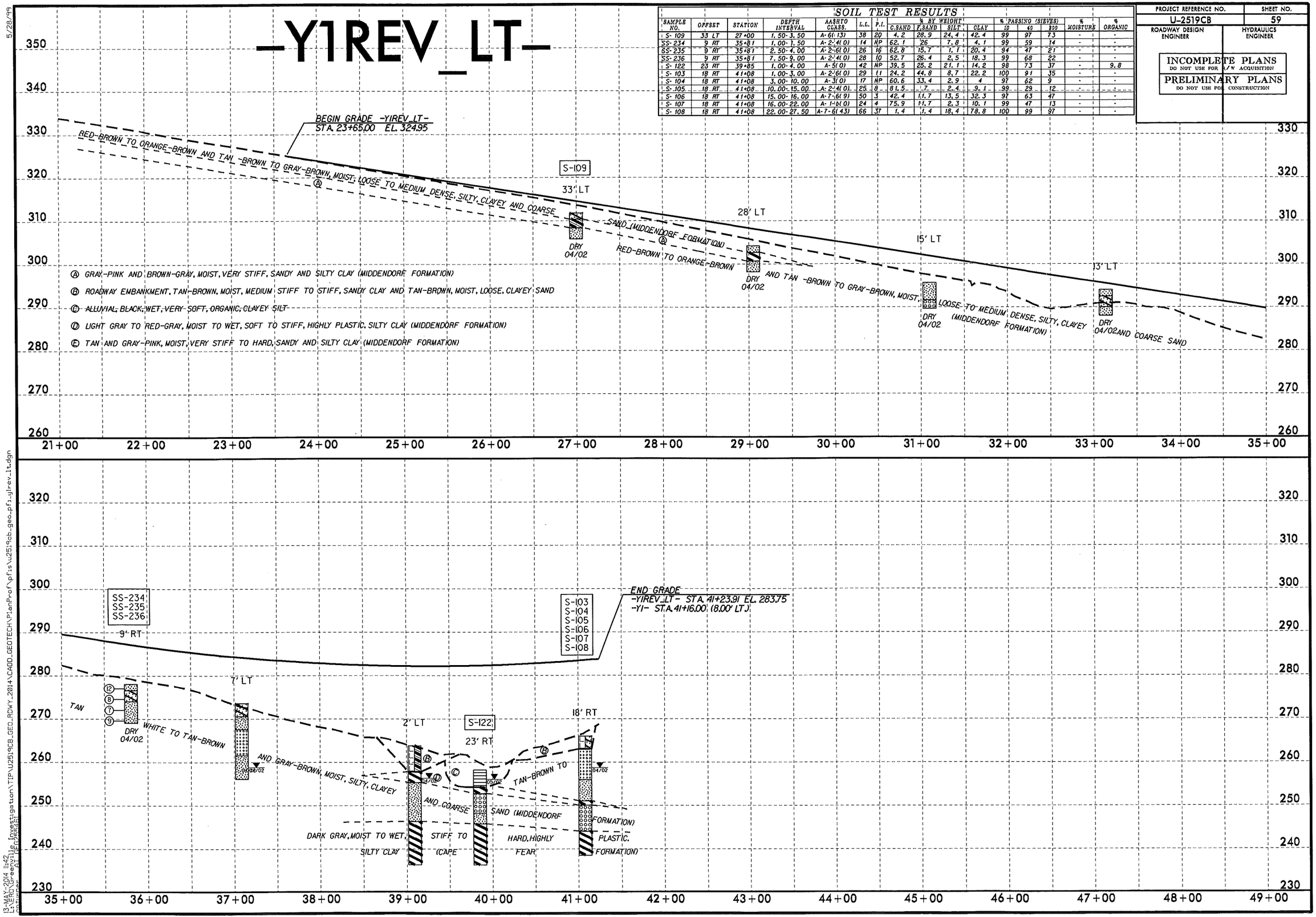
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	59
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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-109	33 LT	27+00	1.50-3.50	A-6(13)	38	20	4.2	28.9	24.4	42.4	99	97	73	-	-
SS-234	9 RT	35+81	1.00-1.50	A-2-4(0)	14	NP	62.1	26	7.8	4.1	99	59	14	-	-
SS-235	9 RT	35+81	2.50-4.00	A-2-6(0)	26	16	62.8	15.7	1.1	20.4	94	47	21	-	-
SS-236	9 RT	35+81	7.50-9.00	A-2-4(0)	28	10	52.7	26.4	2.5	18.3	99	68	22	-	-
S-122	23 RT	39+85	1.00-4.00	A-5(0)	42	NP	39.5	25.2	21.1	14.2	98	73	37	-	9.8
S-103	18 RT	41+08	1.00-3.00	A-2-6(0)	29	11	24.2	44.8	8.7	22.2	100	91	35	-	-
S-104	18 RT	41+08	3.00-10.00	A-3(0)	17	NP	60.6	33.4	2.9	4	97	62	9	-	-
S-105	18 RT	41+08	10.00-15.00	A-2-4(0)	25	8	81.5	7	2.4	9.1	99	29	12	-	-
S-106	18 RT	41+08	15.00-16.00	A-7-6(9)	50	3	42.4	11.7	13.5	32.3	97	63	47	-	-
S-107	18 RT	41+08	16.00-22.00	A-1-b(0)	24	4	75.9	11.7	2.3	10.1	99	47	13	-	-
S-108	18 RT	41+08	22.00-27.50	A-7-6(43)	66	37	1.4	1.4	18.4	78.8	100	99	97	-	-



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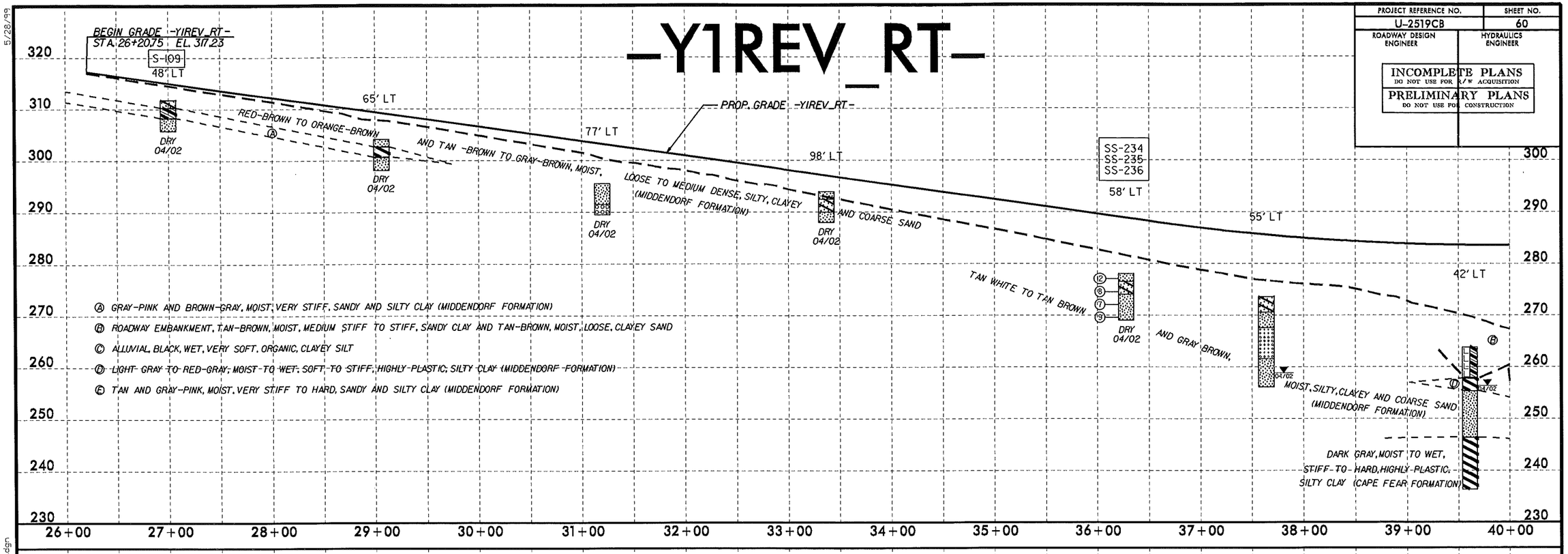
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	60
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

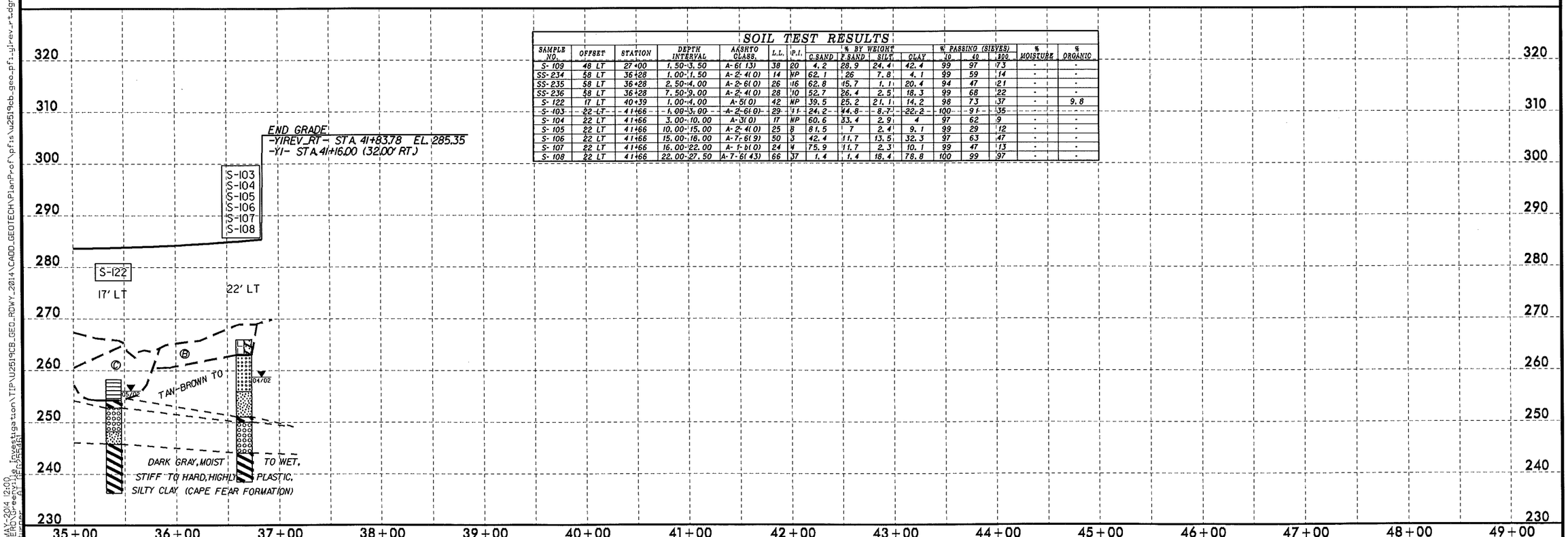
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y1REV_RT-



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-109	48 LT	27+00	1.50-3.50	A-6(13)	38	20	4.2	28.9	24.4	42.4	99	97	73	-	-
SS-234	58 LT	36+28	1.00-1.50	A-2-4(0)	14	NP	62.1	26	7.8	4.1	99	59	14	-	-
SS-235	58 LT	36+28	2.50-4.00	A-2-6(0)	26	16	62.8	15.7	1.1	20.4	94	47	21	-	-
SS-236	58 LT	36+28	7.50-9.00	A-2-4(0)	28	10	52.7	26.4	2.5	18.3	99	68	22	-	-
S-122	17 LT	40+39	1.00-4.00	A-5(0)	42	NP	39.5	25.2	21.1	14.2	98	73	37	-	9.8
S-103	22 LT	41+66	1.00-3.00	A-2-6(0)	29	11	24.2	44.8	8.7	22.2	100	91	35	-	-
S-104	22 LT	41+66	3.00-10.00	A-3(0)	17	NP	60.6	33.4	2.9	4	97	62	9	-	-
S-105	22 LT	41+66	10.00-15.00	A-2-4(0)	25	8	81.5	7	2.4	9.1	99	29	12	-	-
S-106	22 LT	41+66	15.00-18.00	A-7-6(9)	50	3	42.4	11.7	13.5	32.3	97	63	47	-	-
S-107	22 LT	41+66	16.00-22.00	A-7-6(0)	24	4	75.9	11.7	2.3	10.1	99	47	13	-	-
S-108	22 LT	41+66	22.00-27.50	A-7-6(43)	66	37	1.4	1.4	18.4	78.8	100	99	97	-	-



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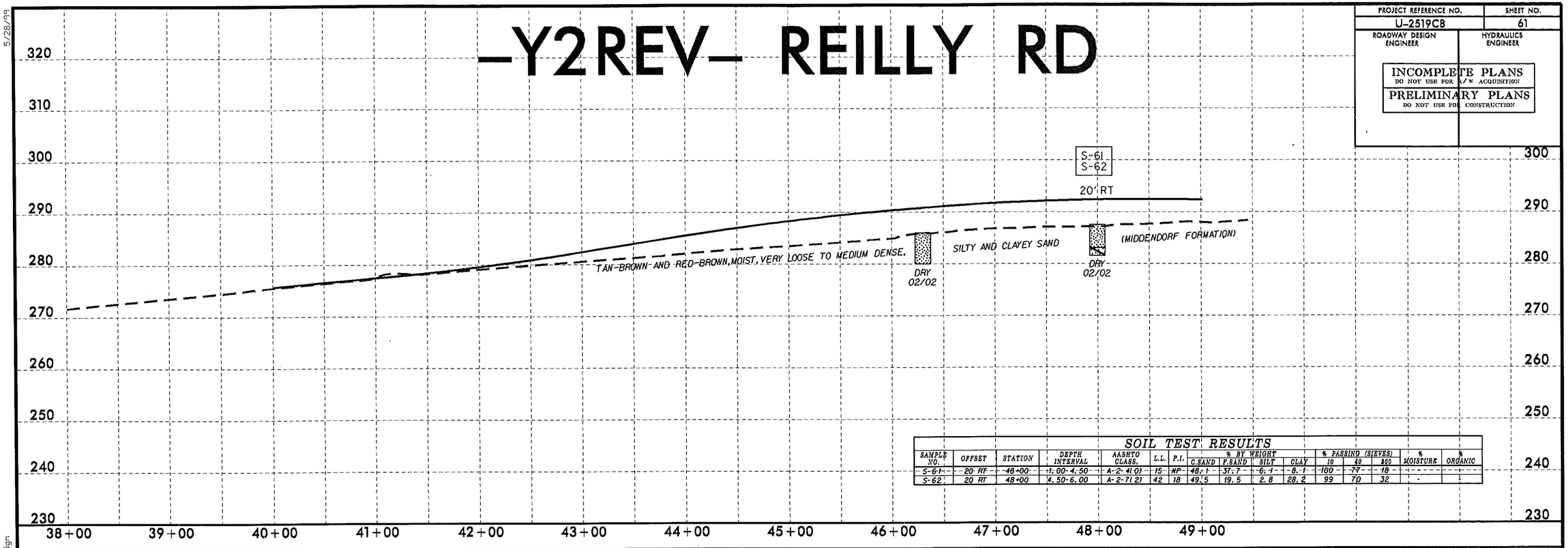
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	61
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

-Y2REV- REILLY RD



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-61	20 RT	48+00	1.00-4.50	A-2-4(0)	15	NP	48.1	37.7	6.1	8.1	100	77	18	-	-
S-62	20 RT	48+00	4.50-6.00	A-2-7(2)	42	18	49.5	19.5	2.8	28.2	99	70	32	-	-

5/28/99

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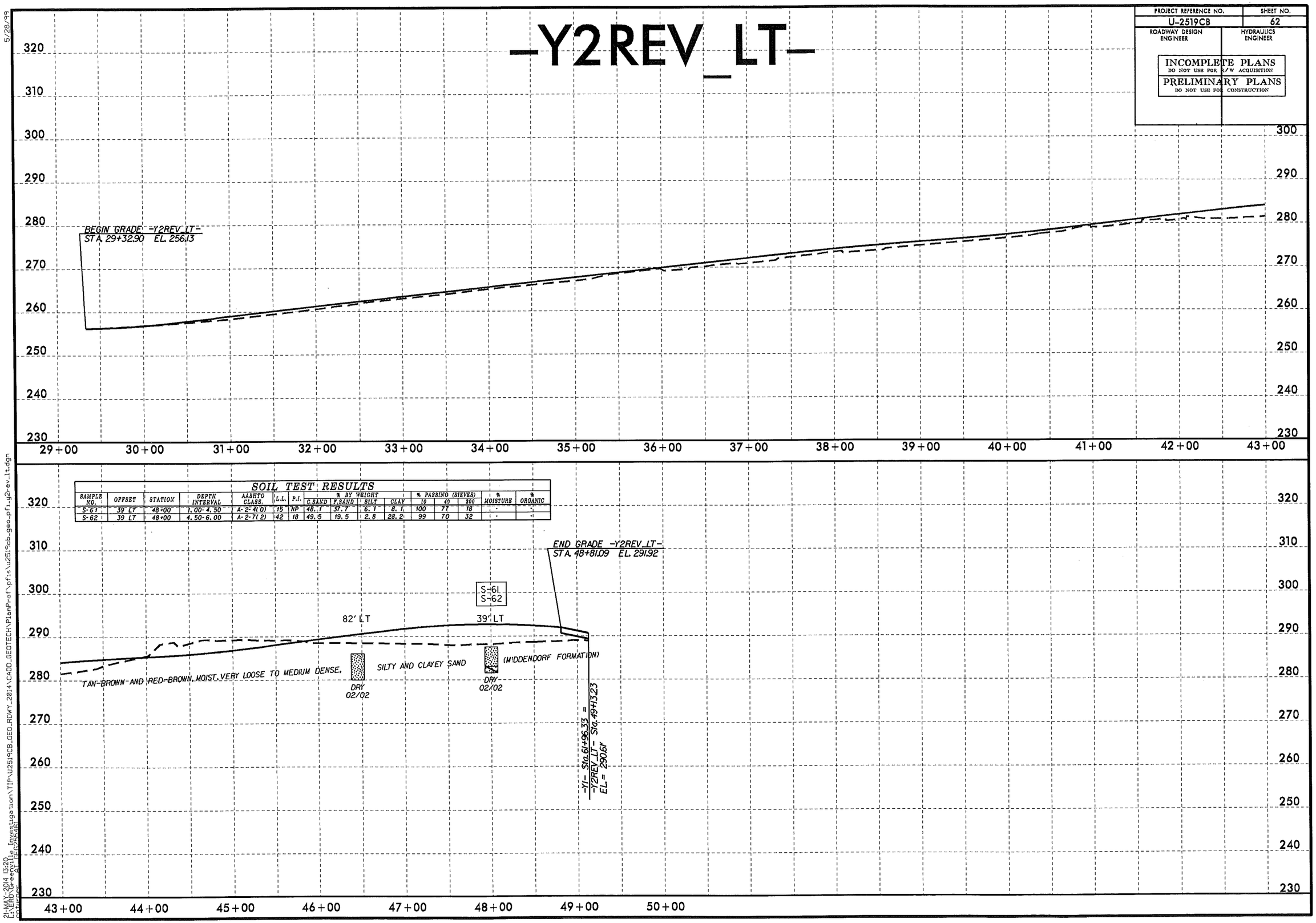
pattinger AT REN9E4261

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	62
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y2REV_LT-



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-61	39 LT	48+00	1.00-4.50	A-2-4(0)	15	NP	48.1	37.7	6.1	8.1	100	77	18	-	-
S-62	39 LT	48+00	4.50-6.00	A-2-7(2)	42	18	49.5	19.5	2.8	28.2	99	70	32	-	-

5/28/99

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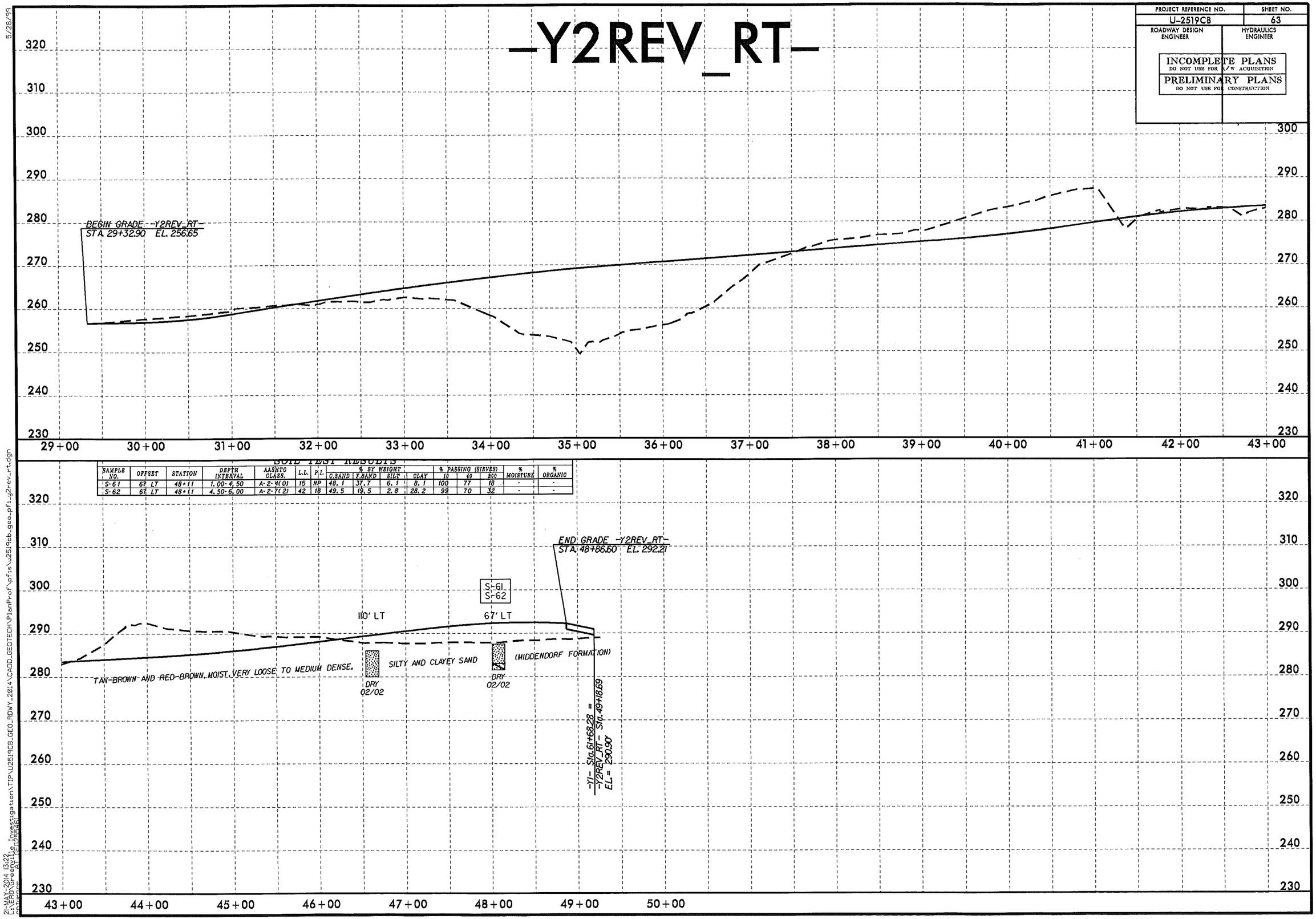
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	63
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y2REV_RT-



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-61	67' LT	48+11	1.00-4.50	A-2-4(0)	15	NP	48.1	37.7	6.1	8.1	100	77	18	-	-
S-62	67' LT	48+11	4.50-6.00	A-2-7(2)	42	18	49.5	19.5	2.8	28.2	99	70	32	-	-

5/28/99

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pchipman AT REN25436

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	64
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

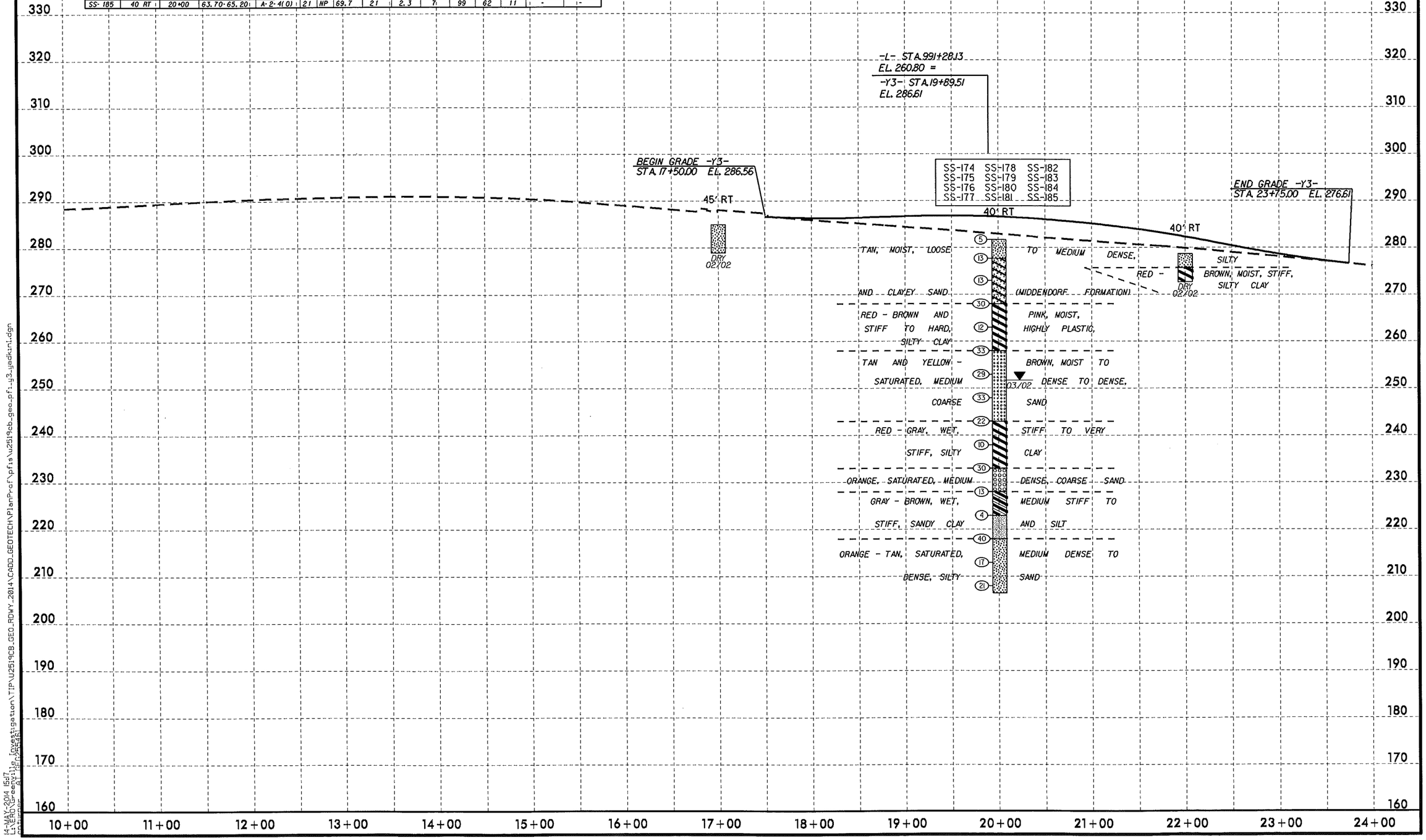
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y3REV-

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-174	-40-RT-	20+00	4.00-5.00	A-2-4(0)	16	NP	43.8	15.4	5.7	5	97	72	13	-	-
SS-175	40 RT	20+00	8.70-10.20	A-2-6(1)	39	17	39.1	33.3	1.5	26.1	100	80	31	-	-
SS-176	40 RT	20+00	13.70-15.20	A-7-6(12)	57	30	27.3	25.7	4.9	42.1	100	86	51	-	-
SS-177	40 RT	20+00	18.70-20.20	A-7-6(4)	43	19	28.3	32.7	4.9	34.1	100	87	42	-	-
SS-178	40 RT	20+00	23.70-25.20	A-3(0)	21	NP	78.8	14.9	1.2	5	100	64	8	-	-
SS-180	40 RT	20+00	38.70-39.70	A-4-6(40)	85	56	24.5	6	3.3	66.2	100	91	79	-	-
SS-181	40 RT	20+00	43.70-44.70	A-7-6(20)	64	37	25.5	15.6	7.5	50.2	100	87	59	-	-
SS-182	40 RT	20+00	48.70-50.20	A-1-b(0)	20	NP	79.6	14.3	2	4	100	42	7	-	-
SS-183	40 RT	20+00	53.70-55.20	A-6(2)	34	16	43.5	23.3	11.1	22.1	100	79	40	-	-
SS-184	40 RT	20+00	58.70-60.20	A-4(0)	29	9	11.8	59.8	8.3	20.1	100	94	40	-	-
SS-185	40 RT	20+00	63.70-65.20	A-2-4(0)	21	NP	69.7	21	2.3	7	99	62	11	-	-



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ctthomas

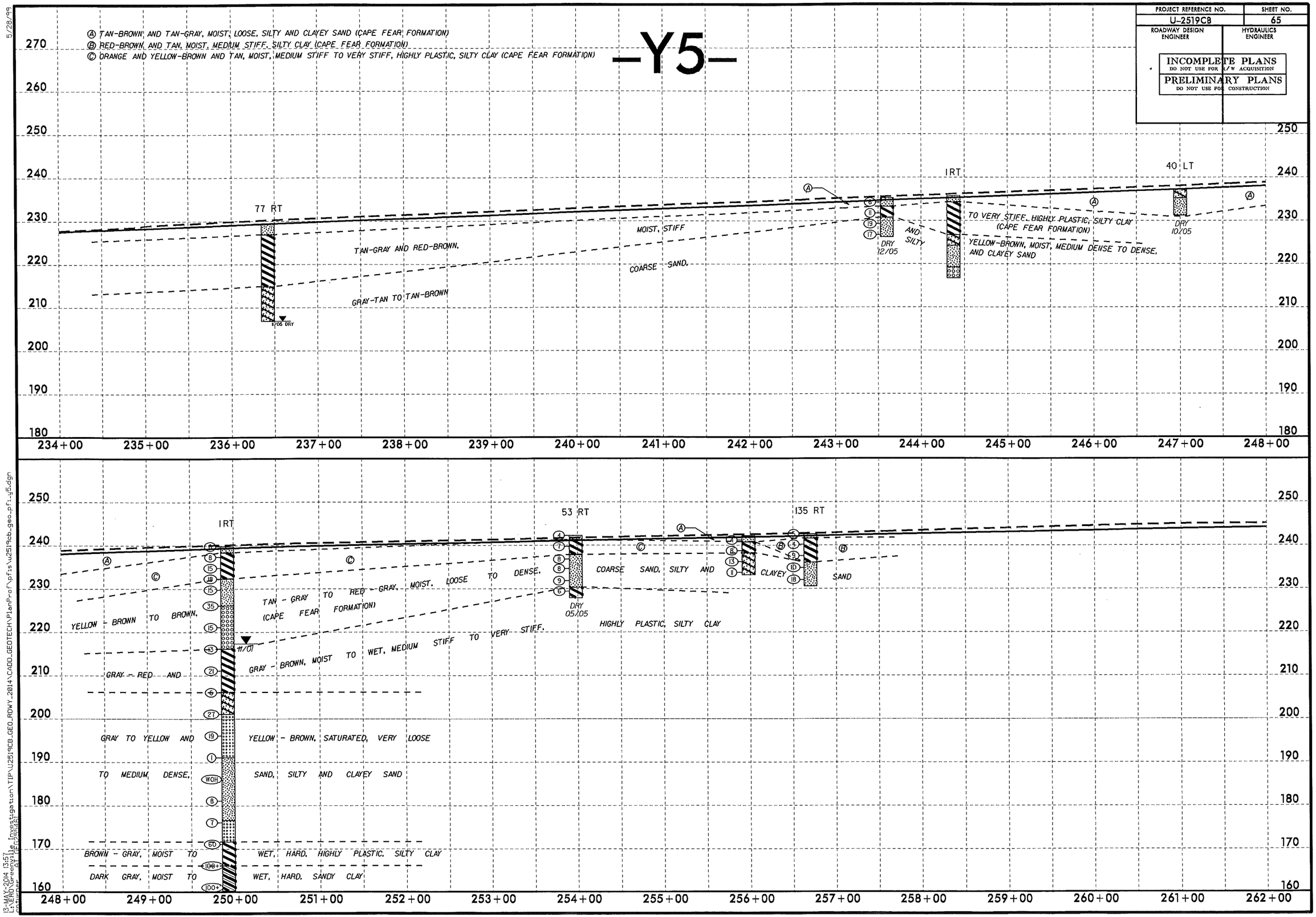
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	65
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y5-

Ⓐ TAN-BROWN AND TAN-GRAY, MOIST, LOOSE, SILTY AND CLAYEY SAND (CAPE FEAR FORMATION)
Ⓑ RED-BROWN AND TAN, MOIST, MEDIUM STIFF, SILTY CLAY (CAPE FEAR FORMATION)
Ⓒ ORANGE AND YELLOW-BROWN AND TAN, MOIST, MEDIUM STIFF TO VERY STIFF, HIGHLY PLASTIC, SILTY CLAY (CAPE FEAR FORMATION)



5/28/99

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pnlunger AT REPS(ABS)

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	66
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

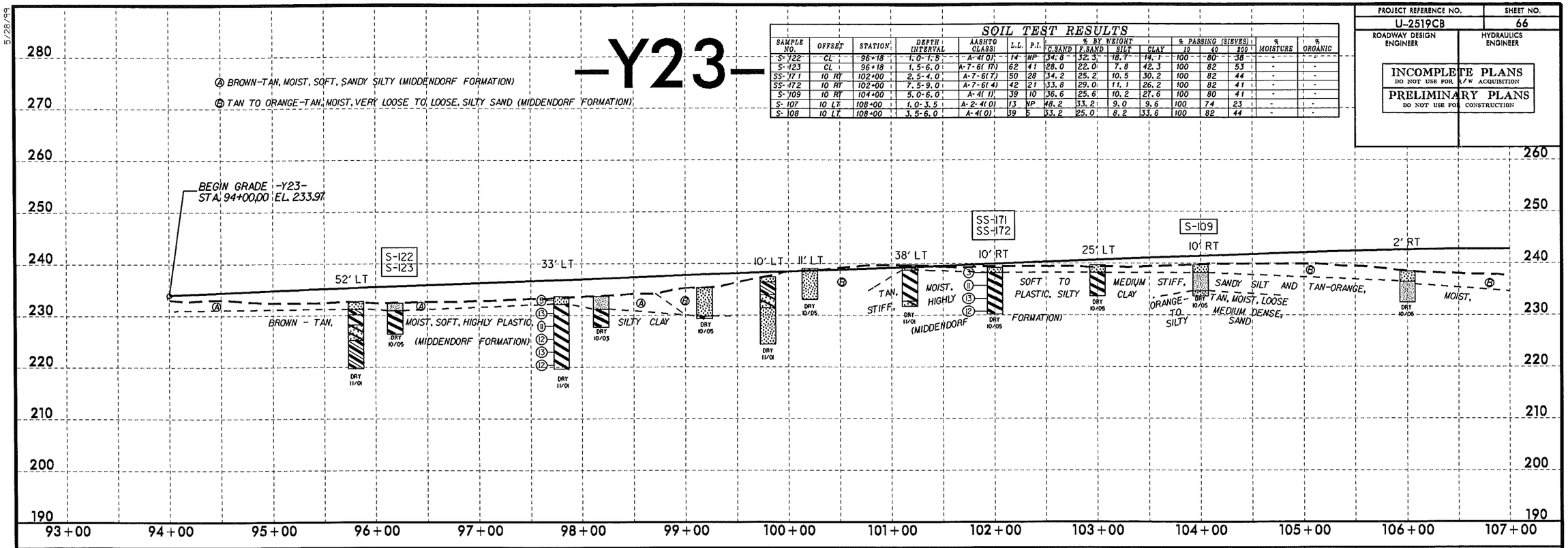
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y23-

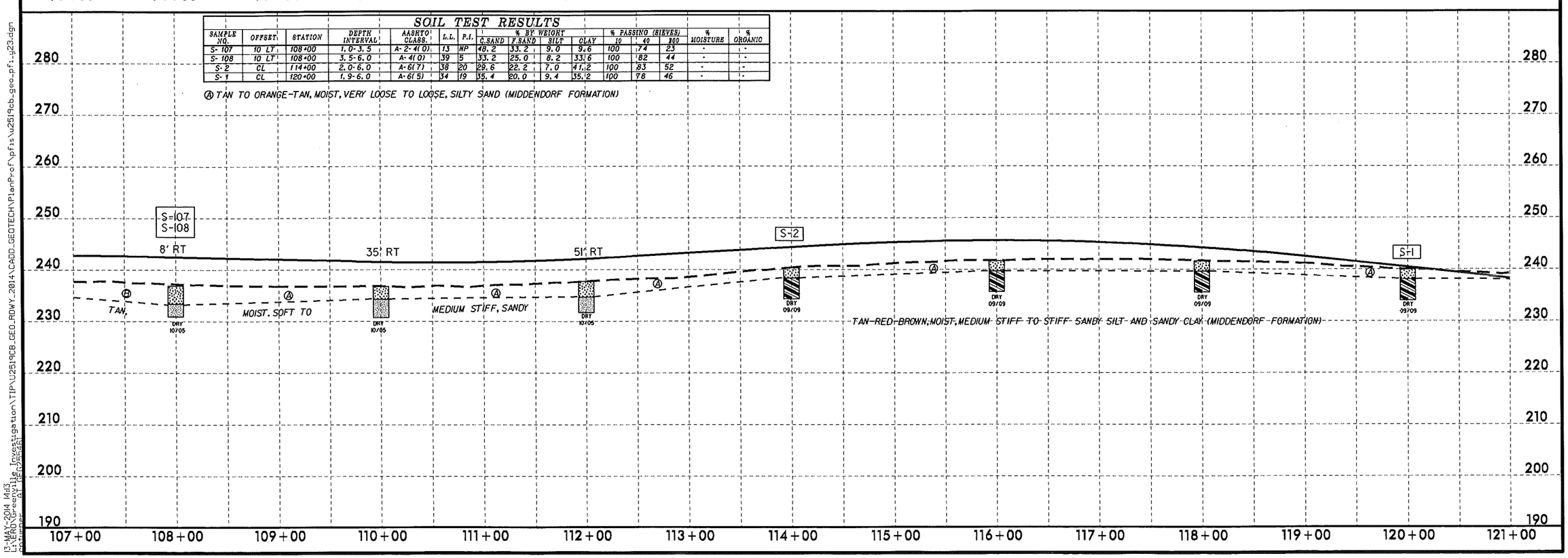
SOIL TEST RESULTS

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-122	CL	96+18	1.0-1.5	A-4(0)	14	NP	34.8	32.3	18.7	14.1	100	80	38	-	-
S-123	CL	96+18	1.5-6.0	A-7-6(10)	62	41	28.0	22.0	7.8	42.3	100	82	53	-	-
SS-171	10 RT	102+00	2.5-4.0	A-7-6(7)	50	28	34.2	25.2	10.5	30.2	100	82	44	-	-
SS-172	10 RT	102+00	7.5-9.0	A-7-6(4)	42	21	33.8	29.0	11.1	26.2	100	82	41	-	-
S-109	10 RT	104+00	5.0-6.0	A-4(1)	39	10	36.6	25.6	10.2	27.6	100	80	41	-	-
S-107	10 LT	108+00	1.0-3.5	A-2-4(0)	13	NP	48.2	33.2	9.0	9.6	100	74	23	-	-
S-108	10 LT	108+00	3.5-6.0	A-4(0)	39	5	33.2	25.0	8.2	33.6	100	82	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-107	10 LT	108+00	1.0-3.5	A-2-4(0)	13	NP	48.2	33.2	9.0	9.6	100	74	23	-	-
S-108	10 LT	108+00	3.5-6.0	A-4(0)	39	5	33.2	25.0	8.2	33.6	100	82	44	-	-
S-2	CL	114+00	2.0-6.0	A-6(7)	38	20	29.6	22.2	7.0	41.2	100	83	52	-	-
S-1	CL	120+00	1.9-6.0	A-6(5)	34	19	35.4	20.0	9.4	35.2	100	78	46	-	-



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PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	67
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

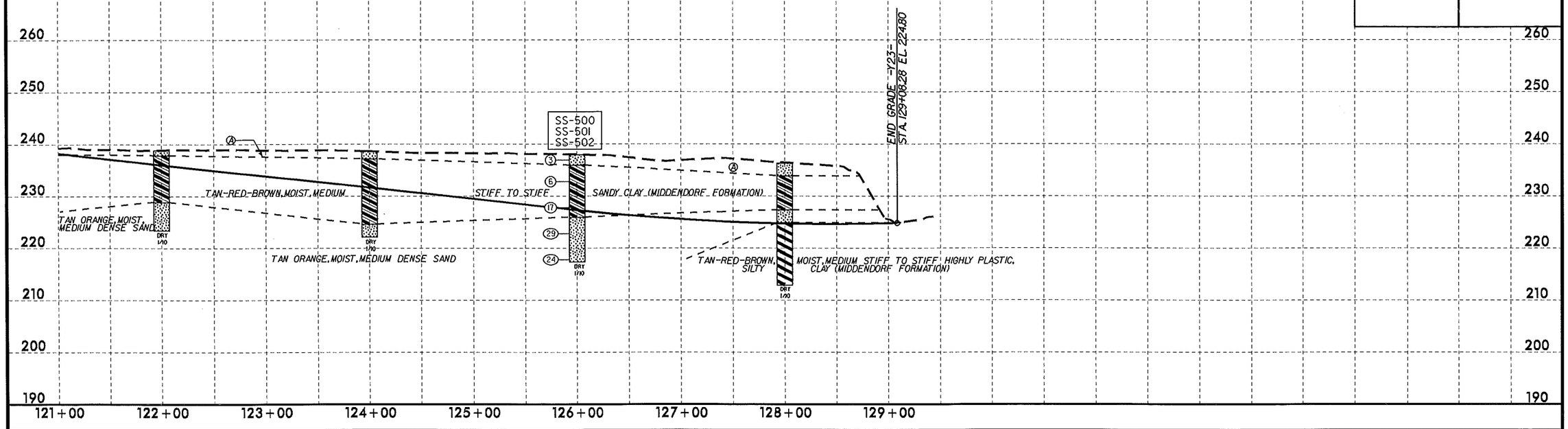
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y23-

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-500	CL	126+00	1.0-1.5	A-2-4(0)	17	NP	52.0	34.0	9.9	4.1	100	72	18	-	-
SS-501	CL	126+00	4.1-5.6	A-6(1)	28	11	38.1	28.6	7.7	25.5	100	79	37	-	-
SS-502	CL	126+00	14.1-15.6	A-2-4(0)	27	7	59.9	21.4	1.3	17.3	89	54	18	-	-

Ⓐ TAN TO ORANGE-TAN, MOIST, VERY LOOSE TO LOOSE, SILTY SAND (MIDDENDORF FORMATION)



5/28/99

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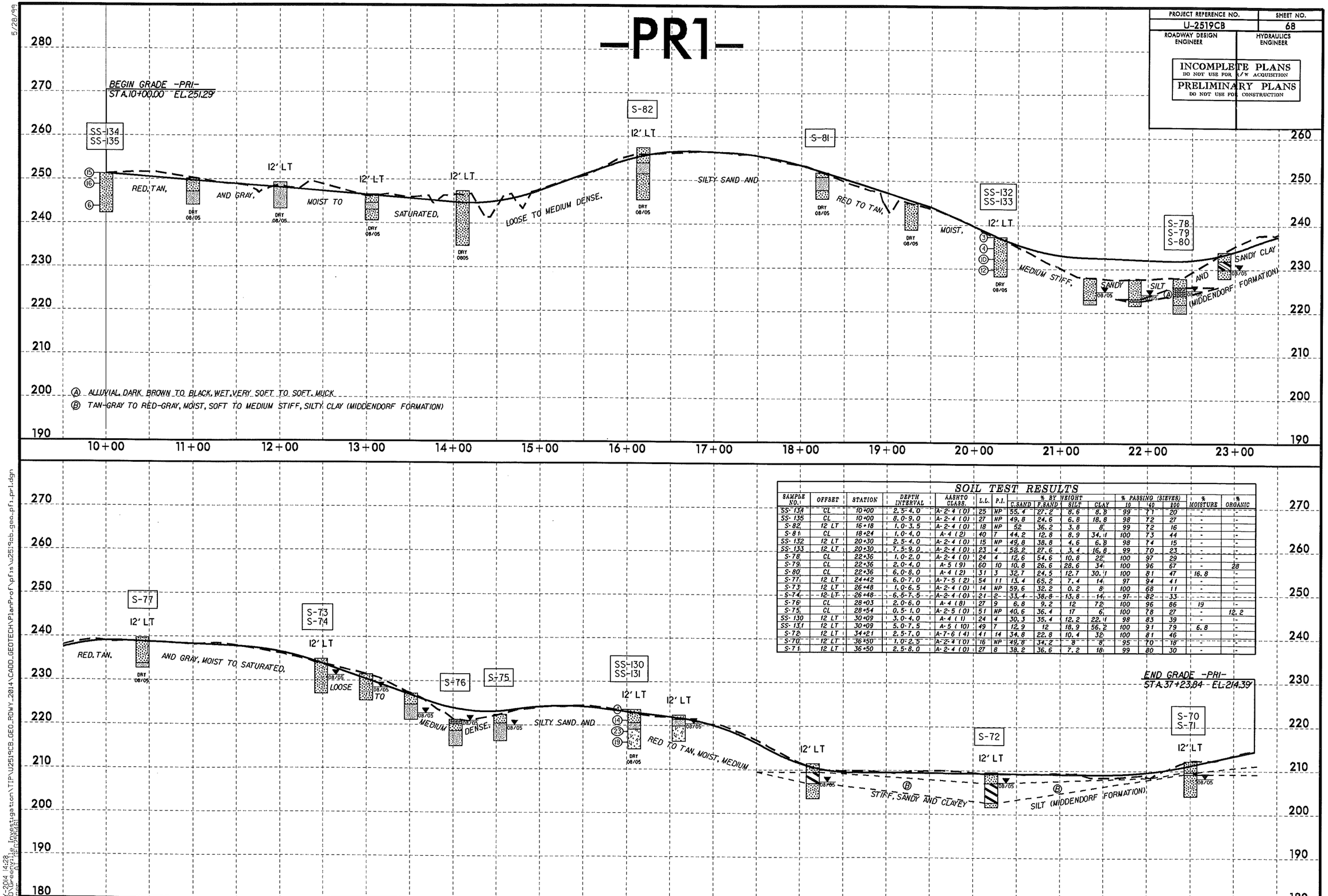
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	68
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

-PR1-



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-134	CL	10+00	2.5-4.0	A-2-4 (0)	25	NP	55.4	27.2	8.6	8.8	99	71	20	-	-
SS-135	CL	10+00	8.0-9.0	A-2-4 (0)	27	NP	49.8	24.6	6.8	18.8	98	72	27	-	-
S-82	12 LT	16+18	1.0-3.5	A-2-4 (0)	18	NP	52	36.2	3.8	8	99	72	16	-	-
S-81	CL	18+24	1.0-4.0	A-4 (2)	40	7	44.2	12.8	8.9	34.1	100	73	44	-	-
SS-132	12 LT	20+30	2.5-4.0	A-2-4 (0)	15	NP	49.8	38.8	4.6	6.8	98	74	15	-	-
SS-133	12 LT	20+30	7.5-9.0	A-2-4 (0)	23	4	58.2	27.6	3.4	16.8	99	70	23	-	-
S-78	CL	22+36	1.0-2.0	A-2-4 (0)	24	4	12.6	54.6	10.8	22	100	97	29	-	-
S-79	CL	22+36	2.0-4.0	A-5 (9)	60	10	10.8	26.6	28.6	34	100	96	67	-	28
S-80	CL	22+36	6.0-8.0	A-4 (2)	31	3	32.7	24.5	12.7	30.1	100	81	47	16.8	-
S-77	12 LT	24+42	6.0-7.0	A-7-5 (2)	54	11	13.4	65.2	7.4	14	97	94	41	-	-
S-73	12 LT	26+48	1.0-6.5	A-2-4 (0)	14	NP	59.6	32.2	0.2	8	100	68	11	-	-
S-74	12 LT	26+48	6.5-7.5	A-2-4 (0)	21	2	33.4	38.8	13.8	14	97	82	33	-	-
S-76	CL	28+03	2.0-6.0	A-4 (8)	27	9	6.8	9.2	12	72	100	96	86	19	-
S-75	CL	28+54	0.5-1.0	A-2-5 (0)	51	NP	40.6	36.4	17	6	100	78	27	-	12.2
SS-130	12 LT	30+09	3.0-4.0	A-4 (1)	24	4	30.3	35.4	12.2	22.1	98	83	39	-	-
SS-131	12 LT	30+09	5.0-7.5	A-5 (10)	49	7	12.9	12	18.9	56.2	100	91	79	6.8	-
S-72	12 LT	34+21	2.5-7.0	A-7-6 (4)	41	14	34.8	22.8	10.4	32	100	81	46	-	-
S-70	12 LT	36+50	1.0-2.5	A-2-4 (0)	16	NP	49.8	34.2	8	8	95	70	18	-	-
S-71	12 LT	36+50	2.5-8.0	A-2-4 (0)	27	8	38.2	36.6	7.2	18	99	80	30	-	-

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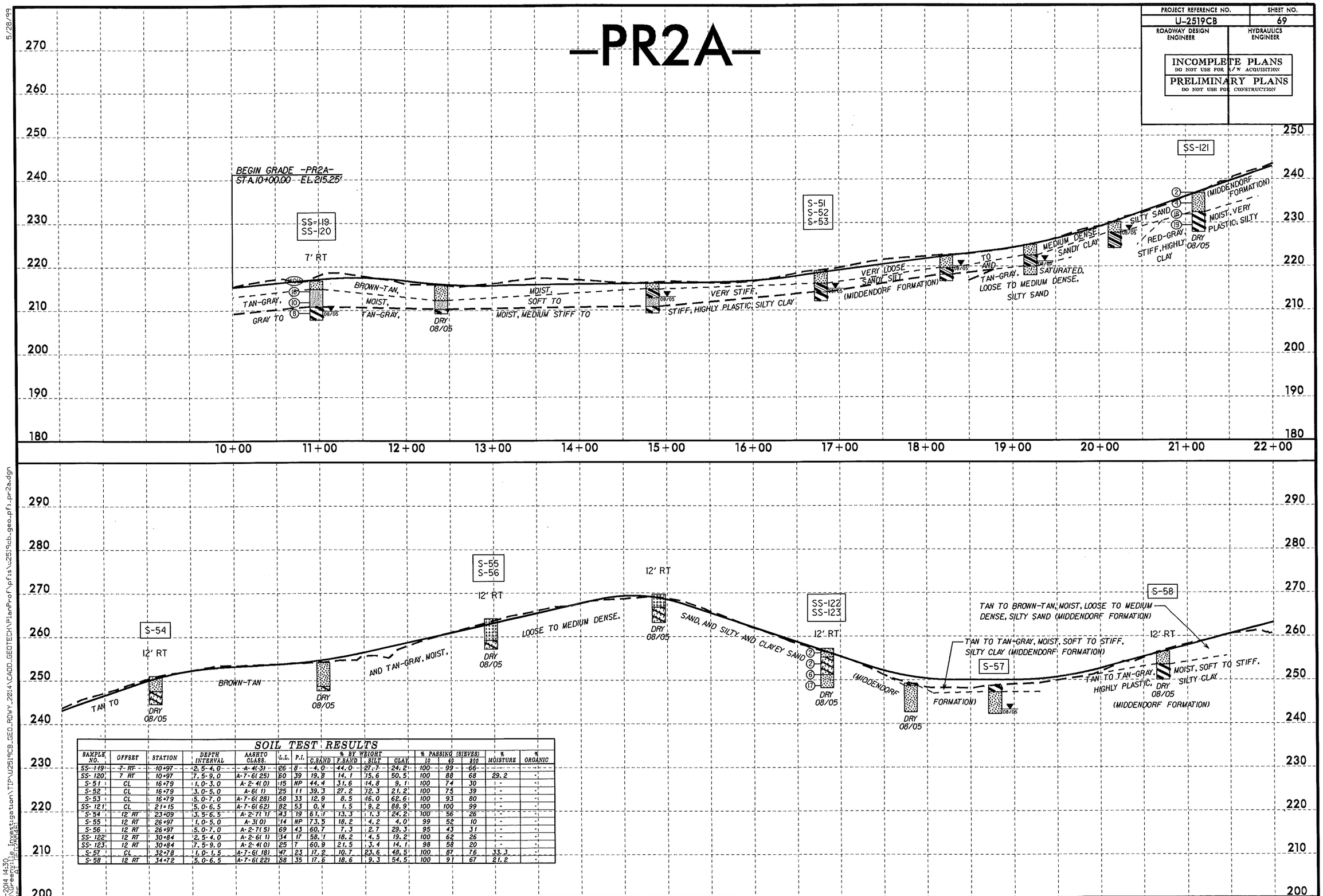
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	69
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

-PR2A-



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-119	7' RT	10+97	2.5-4.0	A-4(3)	26	8	4.0	44.0	27.7	24.2	100	99	66	-	-
SS-120	7' RT	10+97	7.5-9.0	A-7-6(25)	60	39	19.8	14.1	15.6	50.5	100	88	68	29.2	-
S-51	CL	16+79	1.0-3.0	A-2-4(0)	15	NP	44.4	31.6	14.8	9.1	100	74	30	-	-
S-52	CL	16+79	3.0-5.0	A-6(1)	25	11	39.3	27.2	12.3	21.2	100	75	39	-	-
S-53	CL	16+79	5.0-7.0	A-7-6(28)	58	33	12.9	8.5	16.0	62.6	100	93	80	-	-
SS-121	CL	21+15	5.0-6.5	A-7-6(62)	82	53	0.4	1.5	9.2	88.9	100	100	99	-	-
S-54	12' RT	23+09	3.5-6.5	A-2-7(1)	43	19	61.1	13.3	1.3	24.2	100	56	26	-	-
S-55	12' RT	26+97	1.0-5.0	A-3(0)	14	NP	73.5	18.2	4.2	4.0	99	52	10	-	-
S-56	12' RT	26+97	5.0-7.0	A-2-7(1)	69	43	60.7	7.3	2.7	29.3	95	43	31	-	-
SS-122	12' RT	30+84	2.5-4.0	A-2-6(1)	14	17	58.1	18.2	14.5	19.2	100	62	26	-	-
SS-123	12' RT	30+84	7.5-9.0	A-2-4(0)	25	7	60.9	21.5	3.4	14.1	98	58	20	-	-
S-57	CL	32+78	1.0-1.5	A-7-6(18)	47	23	17.2	10.7	23.6	48.5	100	87	76	33.3	-
S-58	12' RT	34+72	5.0-6.5	A-7-6(22)	58	35	17.6	18.6	9.3	54.5	100	91	67	21.2	-

5/28/99

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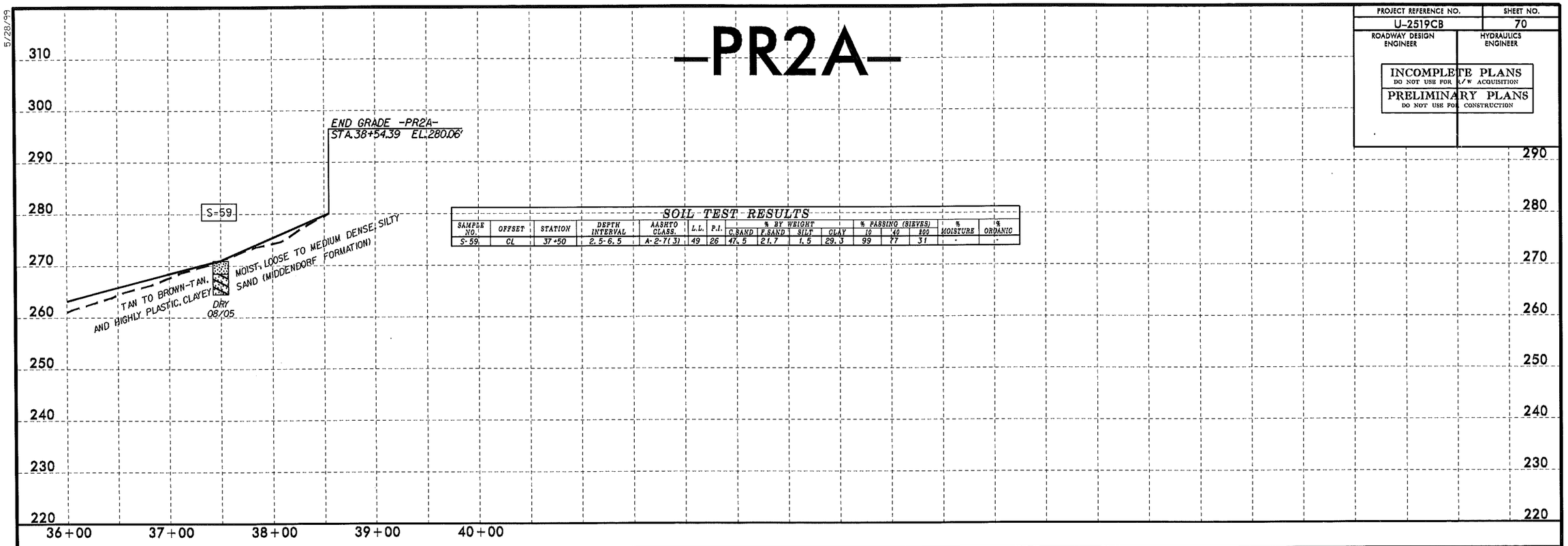
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	70
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-PR2A-



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-59.	CL	37+50	2.5-6.5	A-2-7(3)	49	26	47.5	21.7	1.5	29.3	99	77	31	-	-

5/28/99

13-MAY-2014 14:31
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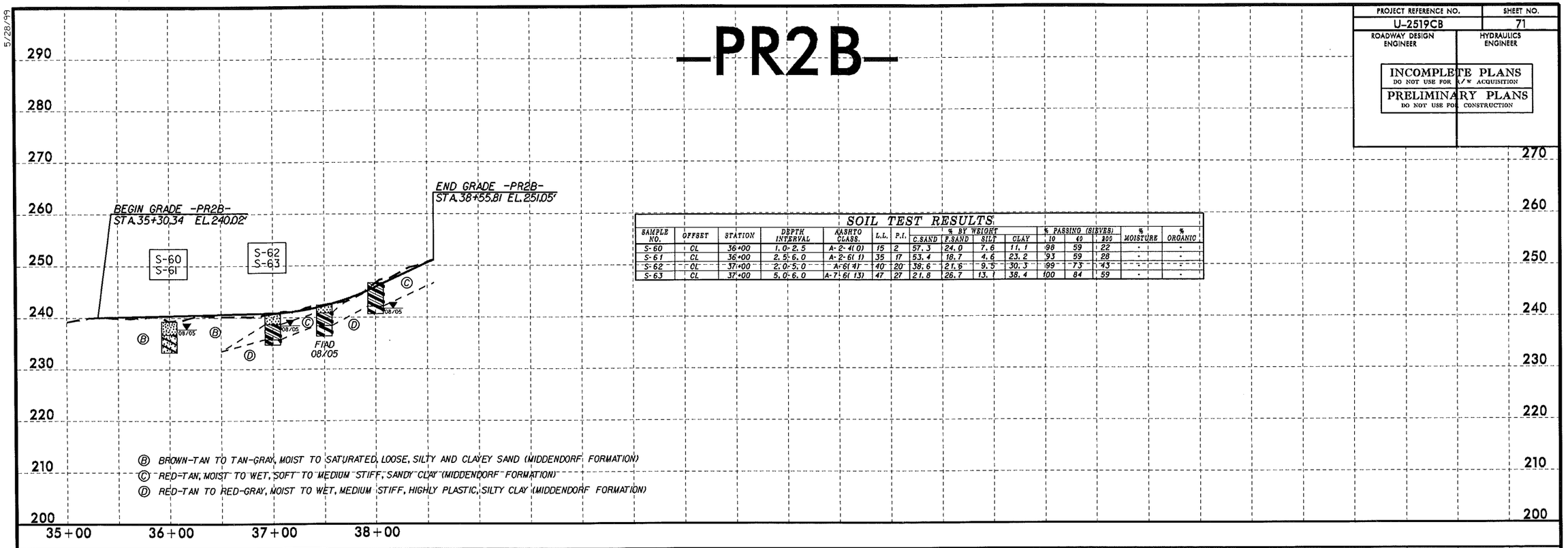
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	71
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-PR2B-



Ⓑ BROWN-TAN TO TAN-GRAY, MOIST TO SATURATED, LOOSE, SILTY AND CLAYEY SAND (MIDDENDORF FORMATION)
Ⓒ RED-TAN, MOIST TO WET, SOFT TO MEDIUM STIFF, SANDY CLAY (MIDDENDORF FORMATION)
Ⓓ RED-TAN TO RED-GRAY, MOIST TO WET, MEDIUM STIFF, HIGHLY PLASTIC, SILTY CLAY (MIDDENDORF FORMATION)

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-60	CL	36+00	1.0-2.5	A-2-4(0)	15	2	57.3	24.0	7.6	11.1	98	59	22	-	-
S-61	CL	36+00	2.5-6.0	A-2-6(1)	35	17	53.4	18.7	4.6	23.2	93	59	28	-	-
S-62	CL	37+00	2.0-5.0	A-6(4)	40	20	38.6	21.6	9.5	30.3	99	73	43	-	-
S-63	CL	37+00	5.0-6.0	A-7-6(13)	47	27	21.8	26.7	13.1	38.4	100	84	59	-	-

5/28/99
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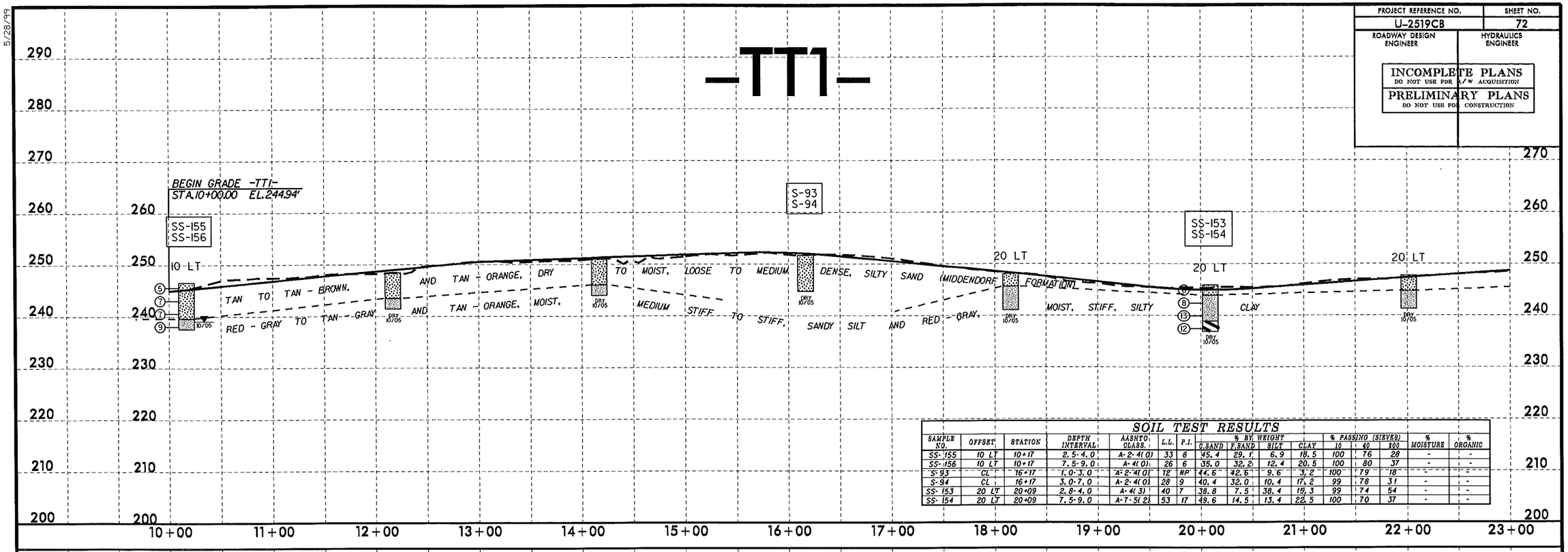
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	72
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

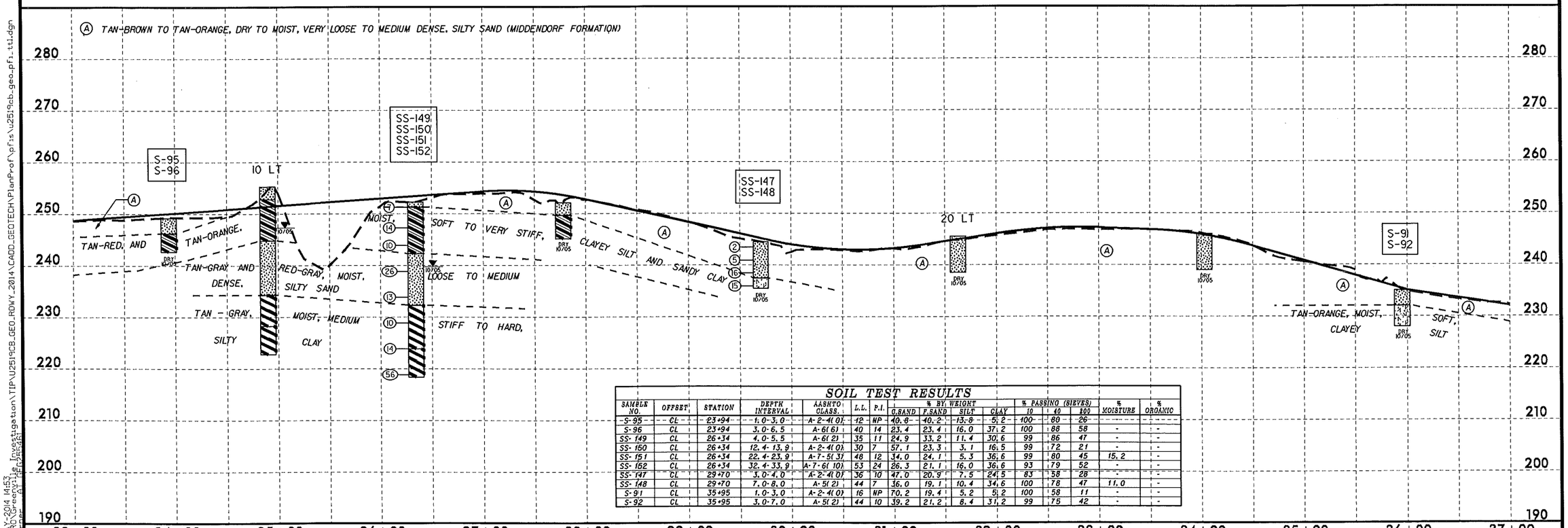
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-TT1-



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-155	10 LT	10+17	2.5-4.0	A-2-4(0)	33	8	45.4	29.1	6.9	18.5	100	76	28	-	-
SS-156	10 LT	10+17	7.5-9.0	A-4(0)	26	6	35.0	32.2	12.4	20.5	100	80	37	-	-
S-93	CL	16+17	1.0-3.0	A-2-4(0)	12	NP	44.6	42.6	9.6	3.2	100	79	18	-	-
S-94	CL	16+17	3.0-7.0	A-2-4(0)	28	9	40.4	32.0	10.4	17.2	99	78	31	-	-
SS-153	20 LT	20+09	2.8-4.0	A-4(3)	40	7	38.8	7.5	38.4	15.3	99	74	54	-	-
SS-154	20 LT	20+09	7.5-9.0	A-7-5(2)	53	17	49.6	14.5	13.4	22.5	100	70	37	-	-



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-95	CL	23+94	1.0-3.0	A-2-4(0)	12	NP	40.8	40.2	13.8	5.2	100	80	26	-	-
S-96	CL	23+94	3.0-6.5	A-6(6)	40	14	23.4	23.4	16.0	37.2	100	88	58	-	-
SS-149	CL	26+34	4.0-5.5	A-6(2)	35	11	24.9	33.2	11.4	30.6	99	86	47	-	-
SS-150	CL	26+34	12.4-13.9	A-2-4(0)	30	7	57.1	23.3	3.1	16.5	99	72	21	-	-
SS-151	CL	26+34	22.4-23.9	A-7-5(3)	48	12	34.0	24.1	5.3	36.6	99	80	45	15.2	-
SS-152	CL	26+34	32.4-33.9	A-7-6(10)	53	24	26.3	21.1	16.0	36.6	93	79	52	-	-
SS-147	CL	29+70	3.0-4.0	A-2-4(0)	36	10	47.0	20.9	7.5	24.5	83	58	28	-	-
SS-148	CL	29+70	7.0-8.0	A-5(2)	44	7	36.0	19.1	10.4	34.6	100	78	47	11.0	-
S-91	CL	35+95	1.0-3.0	A-2-4(0)	16	NP	70.2	19.4	5.2	5.2	100	58	11	-	-
S-92	CL	35+95	3.0-7.0	A-5(2)	44	10	39.2	21.2	8.4	31.2	99	75	42	-	-

5/28/99

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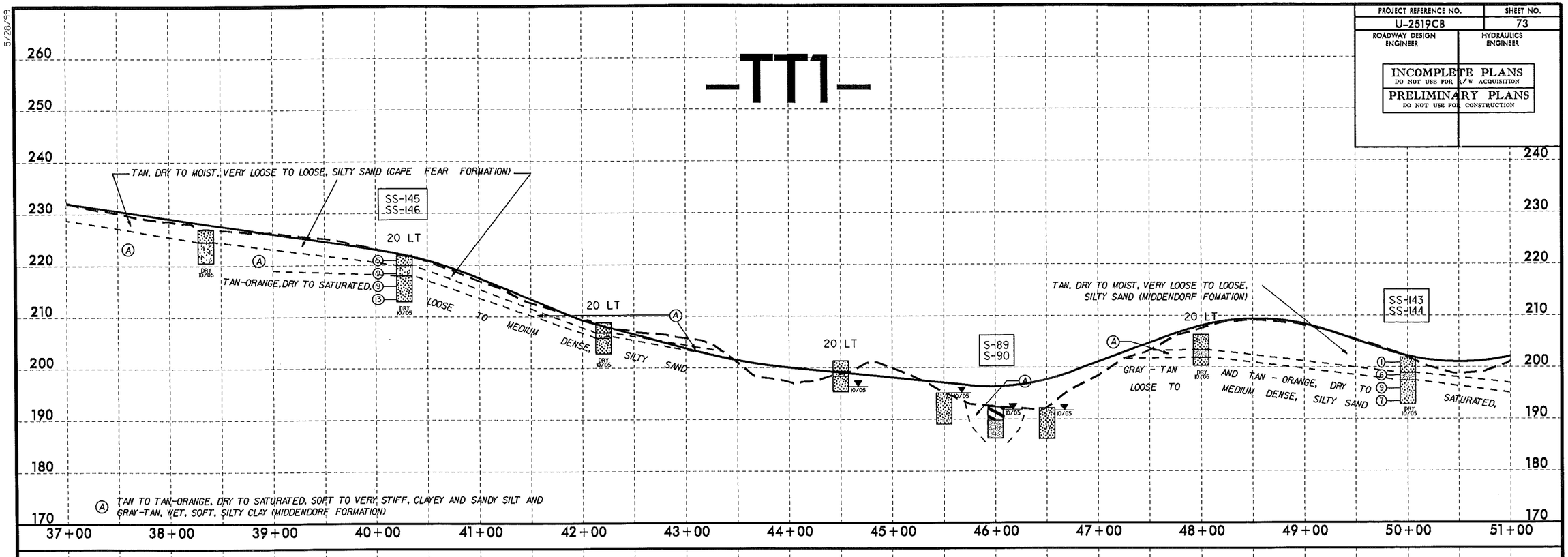
cathmer

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	73
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

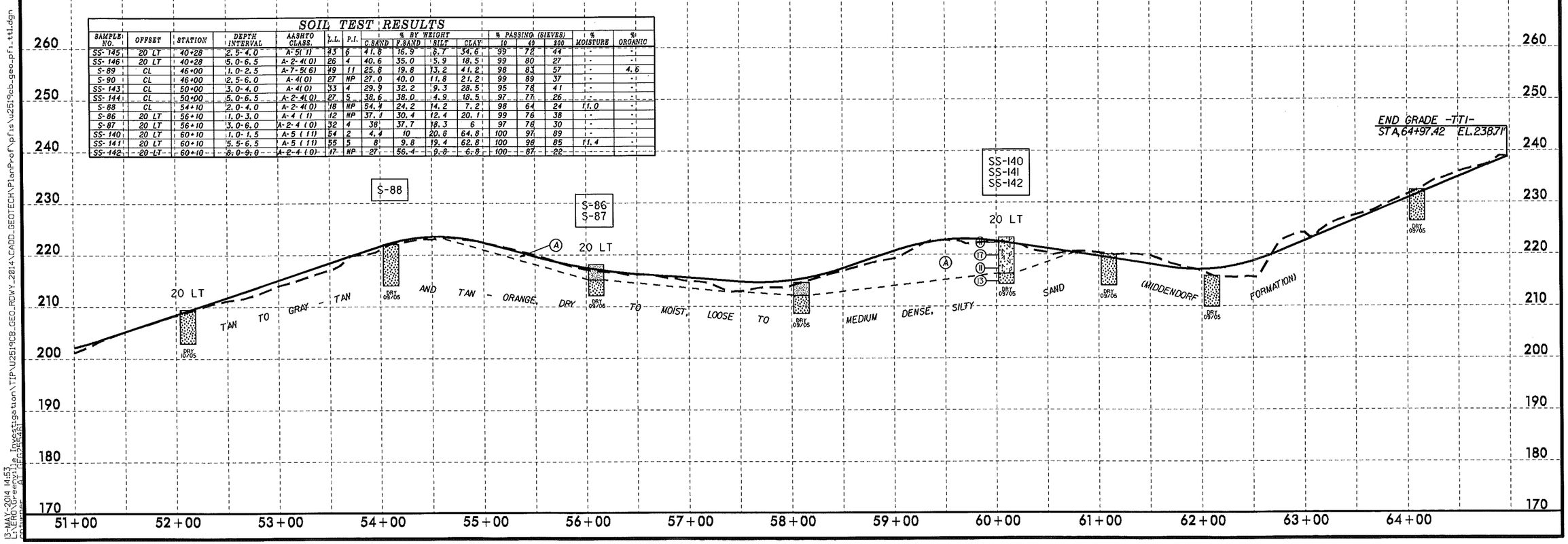
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-TT1-



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-145	20 LT	40+28	2.5-4.0	A-5(1)	43	6	41.8	16.9	8.7	34.6	99	72	44	-	-
SS-146	20 LT	40+28	5.0-6.5	A-2-4(0)	26	4	40.6	35.0	5.9	18.5	99	80	27	-	-
S-89	CL	46+00	1.0-2.5	A-7-5(6)	49	11	25.8	19.8	13.2	41.2	98	83	57	-	4.6
S-90	CL	46+00	2.5-6.0	A-4(0)	27	NP	27.0	40.0	11.8	21.2	99	89	37	-	-
SS-143	CL	50+00	3.0-4.0	A-4(0)	33	4	29.9	32.2	9.3	28.5	95	78	41	-	-
SS-144	CL	50+00	5.0-6.5	A-2-4(0)	27	5	38.6	38.0	4.9	18.5	97	77	26	-	-
S-88	CL	54+10	2.0-4.0	A-2-4(0)	18	NP	54.4	24.2	14.2	7.2	98	64	24	11.0	-
S-86	20 LT	56+10	1.0-3.0	A-4(1)	12	NP	37.1	30.4	12.4	20.1	99	76	38	-	-
S-87	20 LT	56+10	3.0-6.0	A-2-4(0)	32	4	38	37.7	18.3	6	97	76	30	-	-
SS-140	20 LT	60+10	1.0-1.5	A-5(11)	54	2	4.4	10	20.8	64.8	100	97	89	-	-
SS-141	20 LT	60+10	5.5-6.5	A-5(11)	55	5	8	9.8	19.4	62.8	100	96	85	11.4	-
SS-142	20 LT	60+10	8.0-9.0	A-2-4(0)	17	NP	27	56.4	9.8	6.8	100	87	22	-	-



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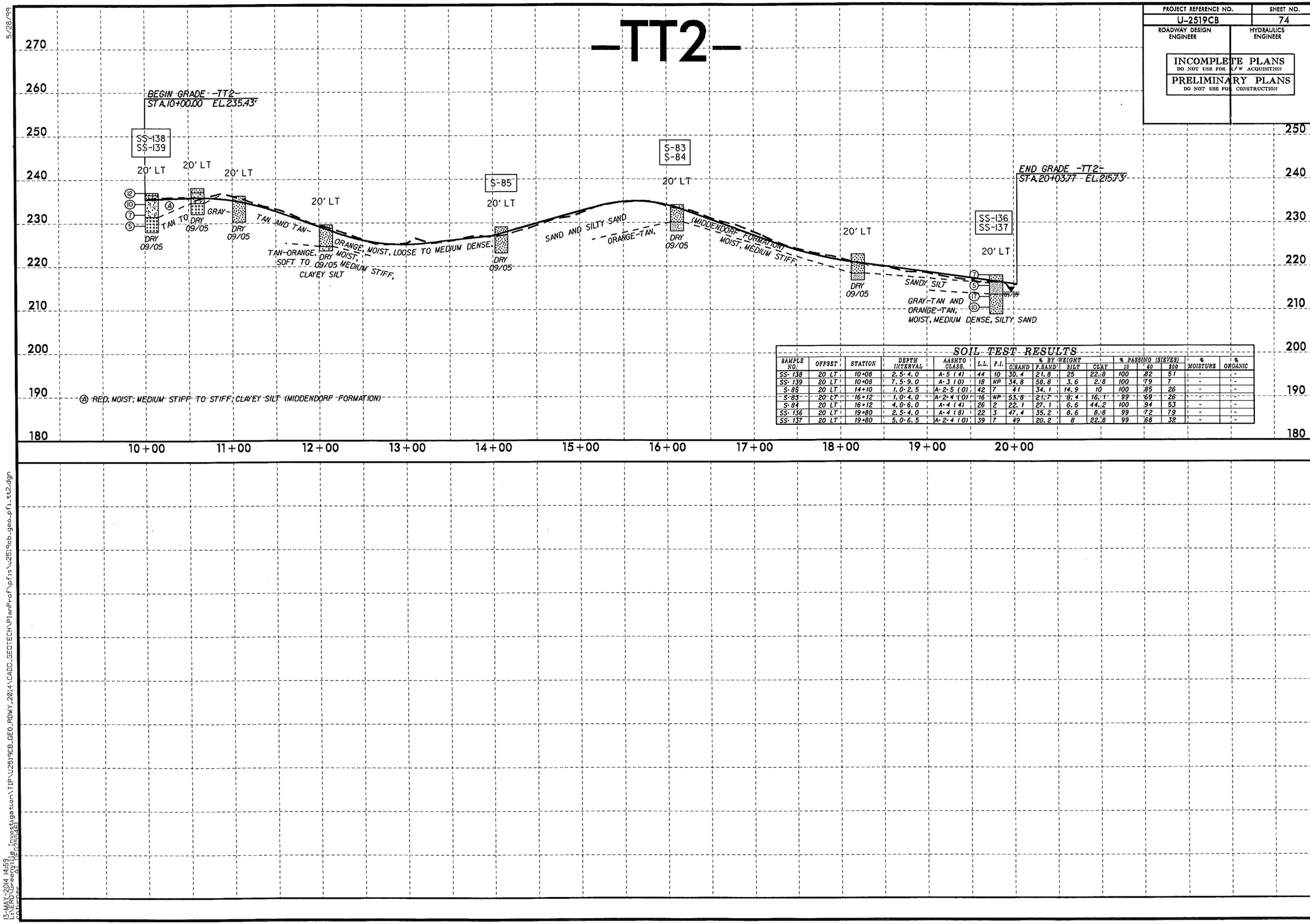
pcluper

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	74
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-TT2-



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-138	20 LT	10+08	2.5-4.0	A-5 (4)	44	10	30.4	21.8	25	22.8	100	82	51	-	-
SS-139	20 LT	10+08	7.5-9.0	A-3 (0)	18	NP	34.8	58.8	3.6	2.8	100	79	7	-	-
S-85	20 LT	14+10	1.0-2.5	A-2-5 (0)	42	7	41	34.1	14.9	10	100	85	26	-	-
S-83	20 LT	16+12	1.0-4.0	A-2-4 (0)	16	NP	53.8	21.7	8.4	16.1	99	69	26	-	-
S-84	20 LT	16+12	4.0-6.0	A-4 (4)	26	2	22.1	27.1	6.6	44.2	100	94	53	-	-
SS-136	20 LT	19+80	2.5-4.0	A-4 (8)	22	3	47.4	35.2	8.6	8.8	99	72	79	-	-
SS-137	20 LT	19+80	5.0-6.5	A-2-4 (0)	39	7	49	20.2	8	22.8	99	68	32	-	-

5/28/99
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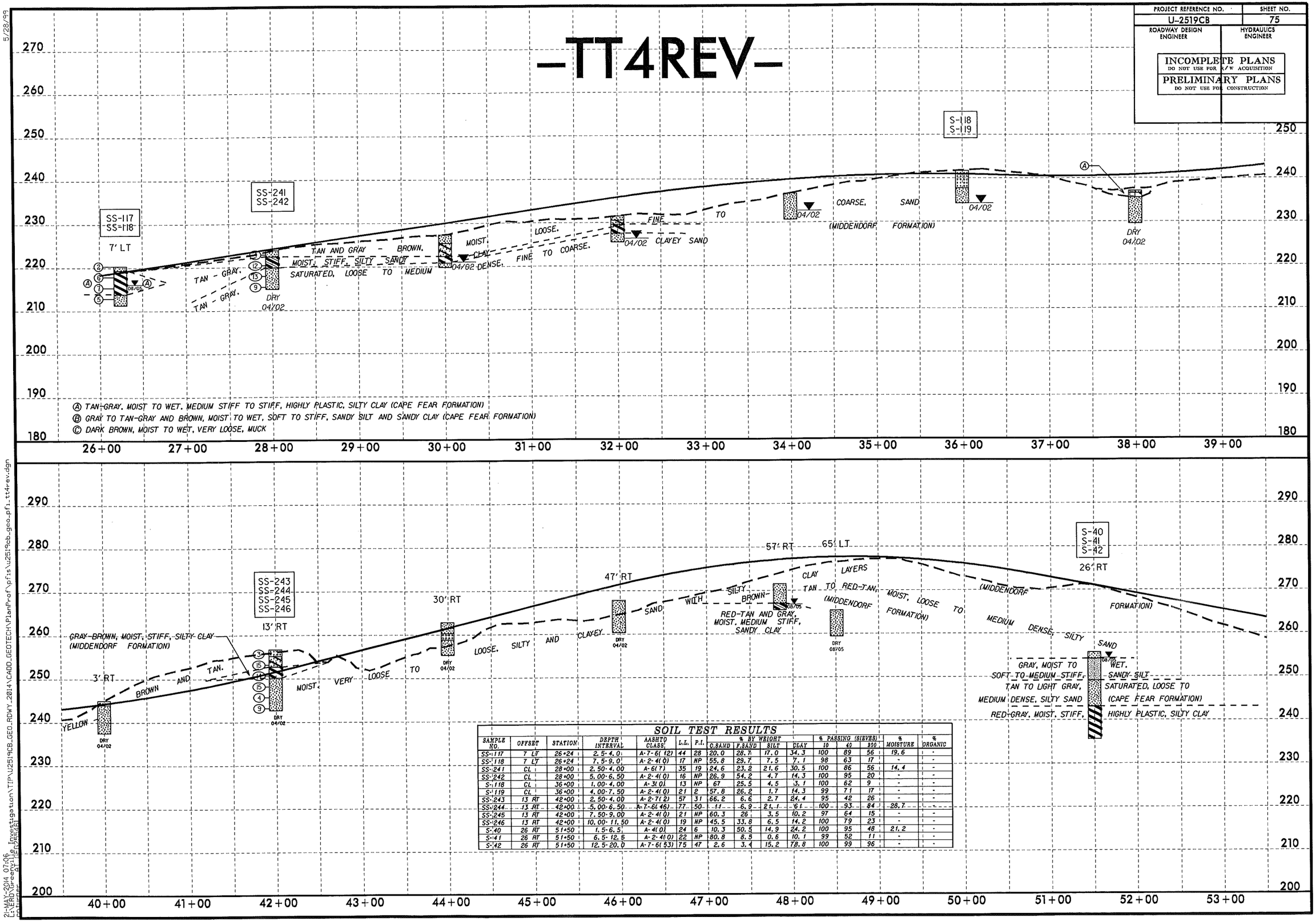
pattinger AT REPORSRAD

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	75
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-TT4REV-



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-117	7 LT	26+24	2.5-4.0	A-7-6(12)	44	28	20.0	28.7	17.0	34.3	100	89	56	19.6	-
SS-118	7 LT	26+24	7.5-9.0	A-2-4(0)	17	NP	55.8	29.7	7.5	7.1	98	63	17	-	-
SS-241	CL	28+00	2.50-4.00	A-6(7)	35	19	24.6	23.2	21.6	30.5	100	86	56	14.4	-
SS-242	CL	28+00	5.00-6.50	A-2-4(0)	16	NP	26.9	54.2	4.7	14.3	100	95	20	-	-
S-118	CL	36+00	1.00-4.00	A-3(0)	13	NP	67	25.5	4.5	3.1	100	62	9	-	-
S-119	CL	36+00	4.00-7.50	A-2-4(0)	21	2	57.8	26.2	1.7	14.3	99	71	17	-	-
SS-243	13 RT	42+00	2.50-4.00	A-2-7(2)	57	31	66.2	6.6	2.7	24.4	95	42	26	-	-
SS-244	13 RT	42+00	5.00-6.50	A-7-6(46)	77	50	11	6.9	21.1	61	100	93	84	28.7	-
SS-245	13 RT	42+00	7.50-9.00	A-2-4(0)	21	NP	60.3	26	3.5	10.2	97	64	15	-	-
SS-246	13 RT	42+00	10.00-11.50	A-2-4(0)	19	NP	45.5	33.8	6.5	14.2	100	79	23	-	-
S-40	26 RT	51+50	1.5-6.5	A-4(0)	24	6	10.3	50.5	14.9	24.2	100	95	48	21.2	-
S-41	26 RT	51+50	6.5-12.5	A-2-4(0)	22	NP	80.8	8.5	0.6	10.1	99	52	11	-	-
S-42	26 RT	51+50	12.5-20.0	A-7-6(53)	75	47	2.6	3.4	15.2	78.8	100	99	96	-	-

5/28/99

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Author: SDEZARN

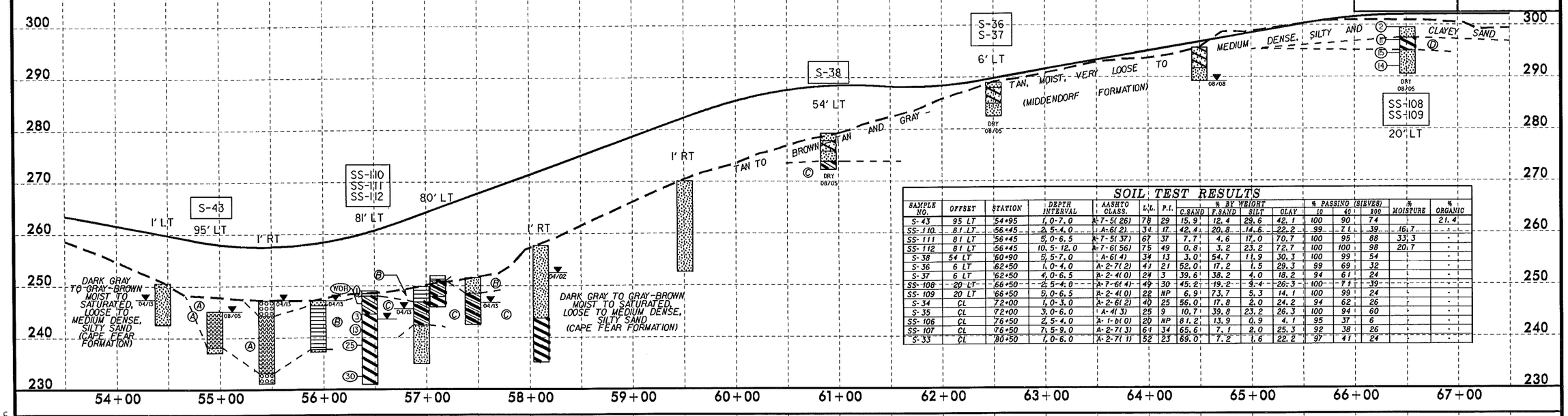
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	76
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

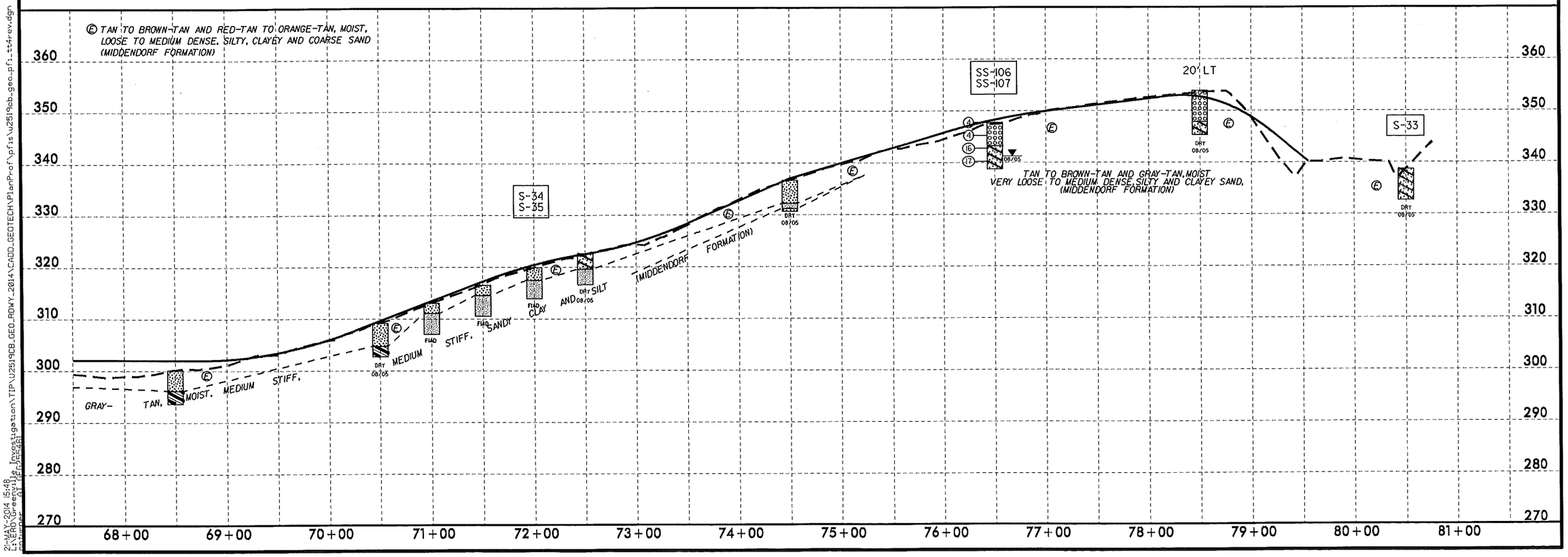
-TT4REV-

Ⓐ ALLUVIAL, GRAY-BROWN, MOIST TO WET, VERY SOFT, MUCK
Ⓑ ALLUVIAL, BROWN, MOIST, SOFT, ORGANIC SILT
Ⓒ TAN-GRAY TO BROWN-TAN, MOIST, VERY SOFT TO MEDIUM STIFF, SANDY CLAY (CAPE FEAR FORMATION)
Ⓓ TAN, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY (MIDDENDORF FORMATION)



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	95 LT	54+95	1.0-7.0	A-7-5(26)	78	29	15.9	12.4	28.6	42.1	100	90	74	-	21.4
SS-110	81 LT	56+45	2.5-4.0	A-6(2)	34	17	42.4	20.8	14.6	22.2	99	71	39	16.7	-
SS-111	81 LT	56+45	5.0-6.5	A-7-5(37)	67	37	7.7	4.6	17.0	70.7	100	95	88	33.3	-
SS-112	81 LT	56+45	10.5-12.0	A-7-6(56)	75	49	0.8	3.2	23.2	72.7	100	100	98	20.7	-
S-38	54 LT	60+90	5.5-7.0	A-6(4)	34	13	3.0	54.7	11.9	30.3	100	99	54	-	-
S-36	6 LT	62+50	1.0-4.0	A-2-7(2)	41	21	52.0	17.2	1.5	29.3	99	69	32	-	-
S-37	6 LT	62+50	4.0-6.5	A-2-4(0)	24	3	39.6	38.2	4.0	18.2	94	61	24	-	-
SS-108	20 LT	66+50	2.5-4.0	A-7-6(4)	49	30	45.2	19.2	9.4	26.3	100	71	39	-	-
SS-109	20 LT	66+50	5.0-6.5	A-2-4(0)	22	NP	6.9	73.7	5.3	14.1	100	99	24	-	-
S-34	CL	72+00	1.0-3.0	A-2-6(2)	40	25	56.0	17.8	2.0	24.2	94	62	26	-	-
S-35	CL	72+00	3.0-6.0	A-4(3)	25	9	10.7	39.8	23.2	26.3	100	94	60	-	-
SS-106	CL	76+50	2.5-4.0	A-1-b(0)	20	NP	81.2	13.9	0.9	4.1	95	37	6	-	-
SS-107	CL	76+50	7.5-9.0	A-2-7(3)	61	34	65.6	7.1	2.0	25.3	92	38	26	-	-
S-33	CL	80+50	1.0-6.0	A-2-7(1)	52	23	69.0	7.2	1.6	22.2	97	41	24	-	-



5/28/99

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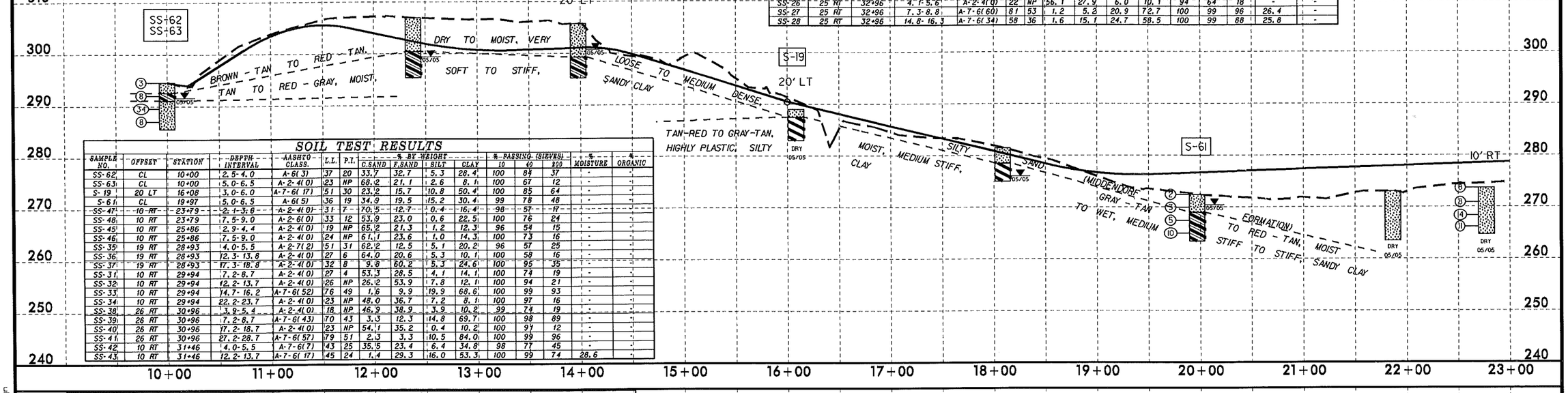
pchipper

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	77
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-TT5REV-



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-44	10 RT	31+46	17.2-18.2	A-2-4(0)	25	NP	18.0	59.8	5.7	16.4	100	97	27	-	-
SS-16	10 RT	31+96	2.5-4.0	A-7-6(21)	57	35	25.2	13.3	13.0	48.4	100	83	65	-	-
SS-17	10 RT	31+96	4.4-5.9	A-2-4(0)	20	NP	54.9	27.4	5.5	12.1	99	67	20	-	-
SS-18	10 RT	31+96	6.9-8.4	A-7-6(49)	73	47	1.4	12.9	17.1	68.6	100	99	91	26.4	-
SS-19	10 RT	31+96	11.9-13.4	A-7-6(36)	56	34	0.8	12.3	28.4	58.5	100	100	95	-	-
SS-20	10 RT	31+96	16.9-18.4	A-7-6(51)	71	46	1.8	3.0	16.4	78.7	100	98	96	-	-
SS-21	10 RT	31+96	19.4-20.9	A-6(6)	31	12	0.6	45.2	23.9	30.3	100	100	69	-	-
SS-22	10 RT	32+46	3.5-5.0	A-6(2)	34	13	39.7	25.4	15.6	20.2	99	77	40	60.9	6.2
SS-23	10 RT	32+46	7.0-8.5	A-7-6(4)	41	21	39.2	22.0	12.6	26.2	98	75	41	-	5.9
SS-24	10 RT	32+46	12.0-13.5	A-7-6(31)	54	32	2.6	10.3	28.6	58.5	100	99	90	36.8	-
SS-25	10 RT	32+46	17.0-18.5	A-7-6(60)	80	51	0.6	1.4	23.3	74.7	100	100	99	-	-
SS-26	25 RT	32+96	4.1-5.6	A-2-4(0)	22	NP	56.1	27.9	6.0	10.1	94	64	18	-	-
SS-27	25 RT	32+96	7.3-8.8	A-7-6(60)	81	53	1.2	5.2	20.9	72.7	100	99	96	26.4	-
SS-28	25 RT	32+96	14.8-16.3	A-7-6(34)	58	36	1.6	15.1	24.7	58.5	100	99	88	25.8	-

SOIL TEST RESULTS

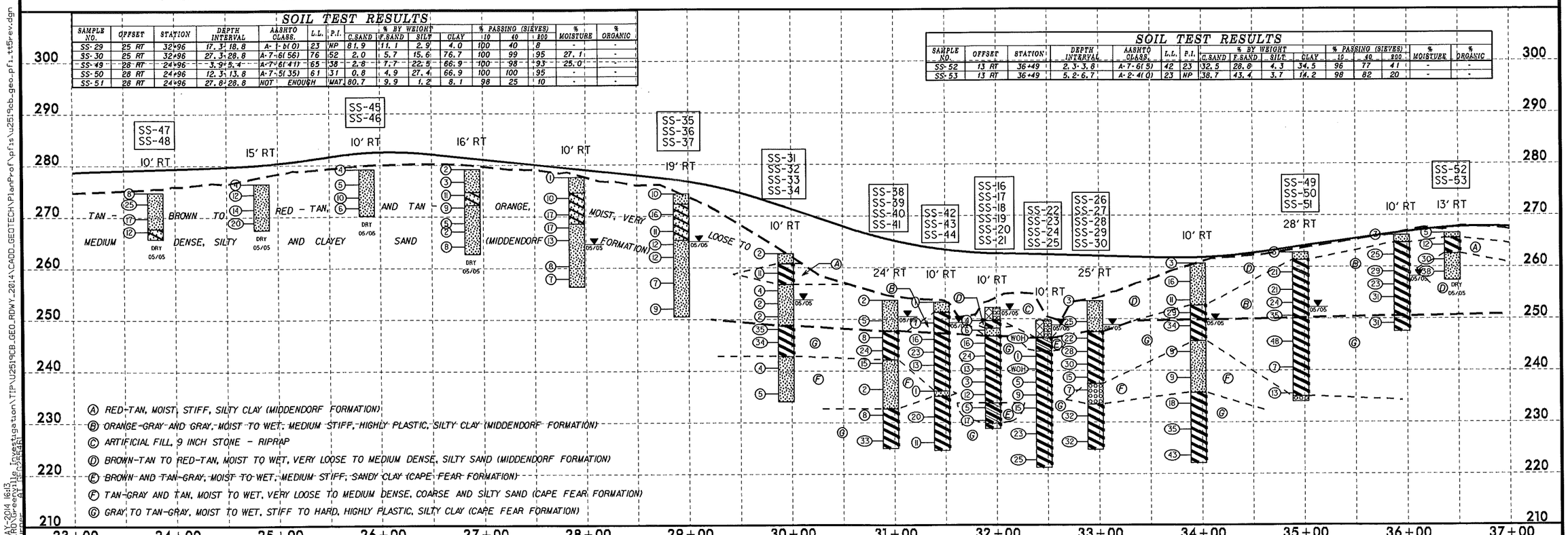
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-62	CL	10+00	2.5-4.0	A-6(3)	37	20	33.7	32.7	5.3	28.4	100	84	37	-	-
SS-63	CL	10+00	5.0-6.5	A-2-4(0)	23	NP	68.2	21.1	2.6	8.1	100	67	12	-	-
S-19	20 LT	16+08	3.0-6.0	A-7-6(17)	51	30	23.2	15.7	10.8	50.4	100	85	64	-	-
S-61	CL	19+97	5.0-6.5	A-6(5)	36	19	34.9	19.5	15.2	30.4	99	78	48	-	-
SS-47	10 RT	23+79	2.1-3.6	A-2-4(0)	31	7	70.5	12.7	0.4	16.4	98	57	17	-	-
SS-48	10 RT	23+79	7.5-9.0	A-2-6(0)	33	12	53.9	23.0	0.6	22.5	100	76	24	-	-
SS-45	10 RT	25+86	2.9-4.4	A-2-4(0)	19	NP	65.2	21.3	1.2	12.3	96	54	15	-	-
SS-46	10 RT	25+86	7.5-9.0	A-2-4(0)	24	NP	61.1	23.6	1.0	14.3	100	73	16	-	-
SS-35	19 RT	28+93	4.0-5.5	A-2-7(2)	51	31	62.2	12.5	5.1	20.2	96	57	25	-	-
SS-36	19 RT	28+93	12.3-13.8	A-2-4(0)	27	6	64.0	20.6	5.3	10.1	100	58	16	-	-
SS-37	19 RT	28+93	17.3-18.8	A-2-4(0)	32	8	9.8	60.2	5.3	24.6	100	95	35	-	-
SS-31	10 RT	29+94	7.2-8.7	A-2-4(0)	27	4	53.3	28.5	4.1	14.1	100	74	19	-	-
SS-32	10 RT	29+94	12.2-13.7	A-2-4(0)	26	NP	26.2	53.9	7.8	12.1	100	94	21	-	-
SS-33	10 RT	29+94	14.7-16.2	A-7-6(52)	76	49	1.6	9.9	19.9	68.6	100	99	93	-	-
SS-34	10 RT	29+94	22.2-23.7	A-2-4(0)	23	NP	48.0	36.7	7.2	8.1	100	97	16	-	-
SS-38	26 RT	30+96	3.9-5.4	A-2-4(0)	18	NP	46.9	38.9	3.9	10.2	99	74	19	-	-
SS-39	26 RT	30+96	7.2-8.7	A-7-6(43)	70	43	3.3	12.3	14.8	69.7	100	98	89	-	-
SS-40	26 RT	30+96	17.2-18.7	A-2-4(0)	23	NP	54.1	35.2	0.4	10.2	100	97	12	-	-
SS-41	26 RT	30+96	27.2-28.7	A-7-6(57)	79	51	2.3	3.3	10.5	84.0	100	99	96	-	-
SS-42	10 RT	31+46	4.0-5.5	A-7-6(7)	43	25	35.5	23.4	6.4	34.8	98	77	45	-	-
SS-43	10 RT	31+46	12.2-13.7	A-7-6(17)	45	24	1.4	29.3	16.0	53.3	100	99	74	28.6	-

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-29	25 RT	32+96	17.3-18.8	A-1-b(0)	23	NP	81.9	11.1	2.9	4.0	100	40	8	-	-
SS-30	25 RT	32+96	27.3-28.8	A-7-6(56)	76	52	2.0	5.7	15.6	76.7	100	99	95	27.1	-
SS-49	28 RT	24+96	3.9-5.4	A-7-6(41)	65	38	2.8	7.7	22.5	66.9	100	98	93	25.0	-
SS-50	28 RT	24+96	12.3-13.8	A-7-5(35)	61	31	0.8	4.9	27.4	66.9	100	100	95	-	-
SS-51	28 RT	24+96	27.8-28.8	NOT ENOUGH MAT.			80.7	9.9	1.2	8.1	98	25	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
SS-52	13 RT	36+49	2.3-3.8	A-7-6(5)	42	23	32.5	28.8	4.3	34.5	96	77	41	-	-
SS-53	13 RT	36+49	5.2-6.7	A-2-4(0)	23	NP	38.7	43.4	3.7	14.2	98	82	20	-	-



Ⓐ RED-TAN, MOIST, STIFF, SILTY CLAY (MIDDENDORF FORMATION)
Ⓑ ORANGE-GRAY AND GRAY, MOIST TO WET, MEDIUM STIFF, HIGHLY PLASTIC, SILTY CLAY (MIDDENDORF FORMATION)
Ⓒ ARTIFICIAL FILL, 9 INCH STONE - RIPRAP
Ⓓ BROWN-TAN TO RED-TAN, MOIST TO WET, VERY LOOSE TO MEDIUM DENSE, SILTY SAND (MIDDENDORF FORMATION)
Ⓔ BROWN AND TAN-GRAY, MOIST TO WET, MEDIUM STIFF, SANDY CLAY (CAPE FEAR FORMATION)
Ⓕ TAN-GRAY AND TAN, MOIST TO WET, VERY LOOSE TO MEDIUM DENSE, COARSE AND SILTY SAND (CAPE FEAR FORMATION)
Ⓖ GRAY TO TAN-GRAY, MOIST TO WET, STIFF TO HARD, HIGHLY PLASTIC, SILTY CLAY (CAPE FEAR FORMATION)

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PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	78
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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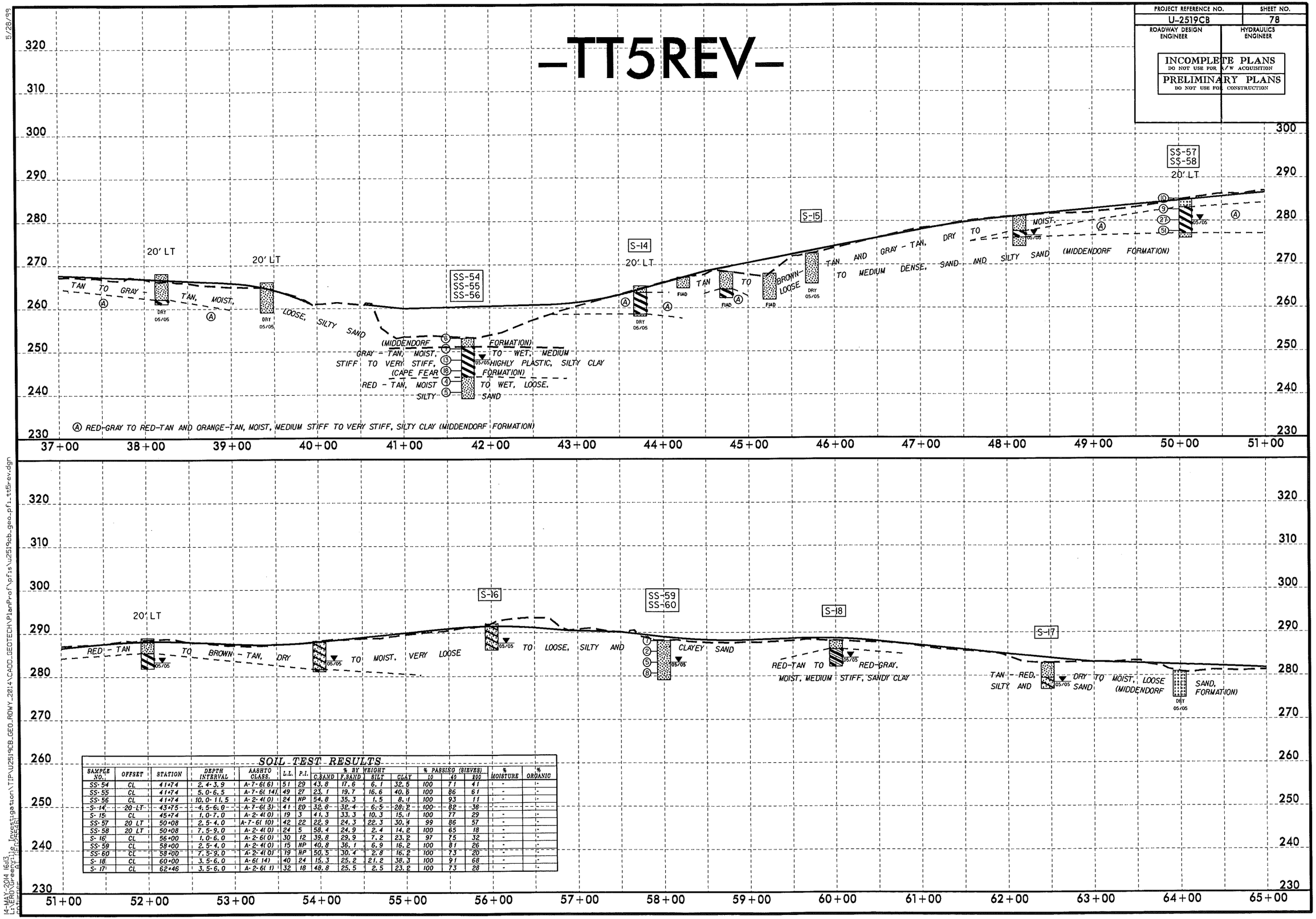

SOIL TEST RESULTS

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-54	CL	41+74	2.4-3.9	A-7-6(6)	51	29	43.8	17.6	6.1	32.5	100	71	41	-	-
SS-55	CL	41+74	5.0-6.5	A-7-6(14)	49	27	23.1	19.7	16.6	40.6	100	86	61	-	-
SS-56	CL	41+74	10.0-11.5	A-2-4(0)	24	NP	54.8	35.3	1.5	8.1	100	93	11	-	-
S-14	20 LT	43+75	4.5-6.0	A-7-6(3)	41	20	32.8	32.4	6.5	28.2	100	82	36	-	-
S-15	CL	45+74	1.0-7.0	A-2-4(0)	19	3	41.3	33.3	10.3	15.1	100	77	29	-	-
SS-57	20 LT	50+08	2.5-4.0	A-7-6(10)	42	22	22.9	24.3	22.3	30.4	99	86	57	-	-
SS-58	20 LT	50+08	7.5-9.0	A-2-4(0)	24	5	58.4	24.9	2.4	14.2	100	65	18	-	-
S-16	CL	56+00	1.0-6.0	A-2-6(0)	30	12	39.8	29.9	7.2	23.2	97	75	32	-	-
SS-59	CL	58+00	2.5-4.0	A-2-4(0)	15	NP	40.8	36.1	6.9	16.2	100	81	26	-	-
SS-60	CL	58+00	7.5-9.0	A-2-4(0)	19	NP	50.5	30.4	2.8	16.2	100	73	20	-	-
S-18	CL	60+00	3.5-6.0	A-6(14)	40	24	15.3	25.2	21.2	38.3	100	91	68	-	-
S-17	CL	62+46	3.5-6.0	A-2-6(1)	32	18	48.8	25.5	2.5	23.2	100	73	28	-	-

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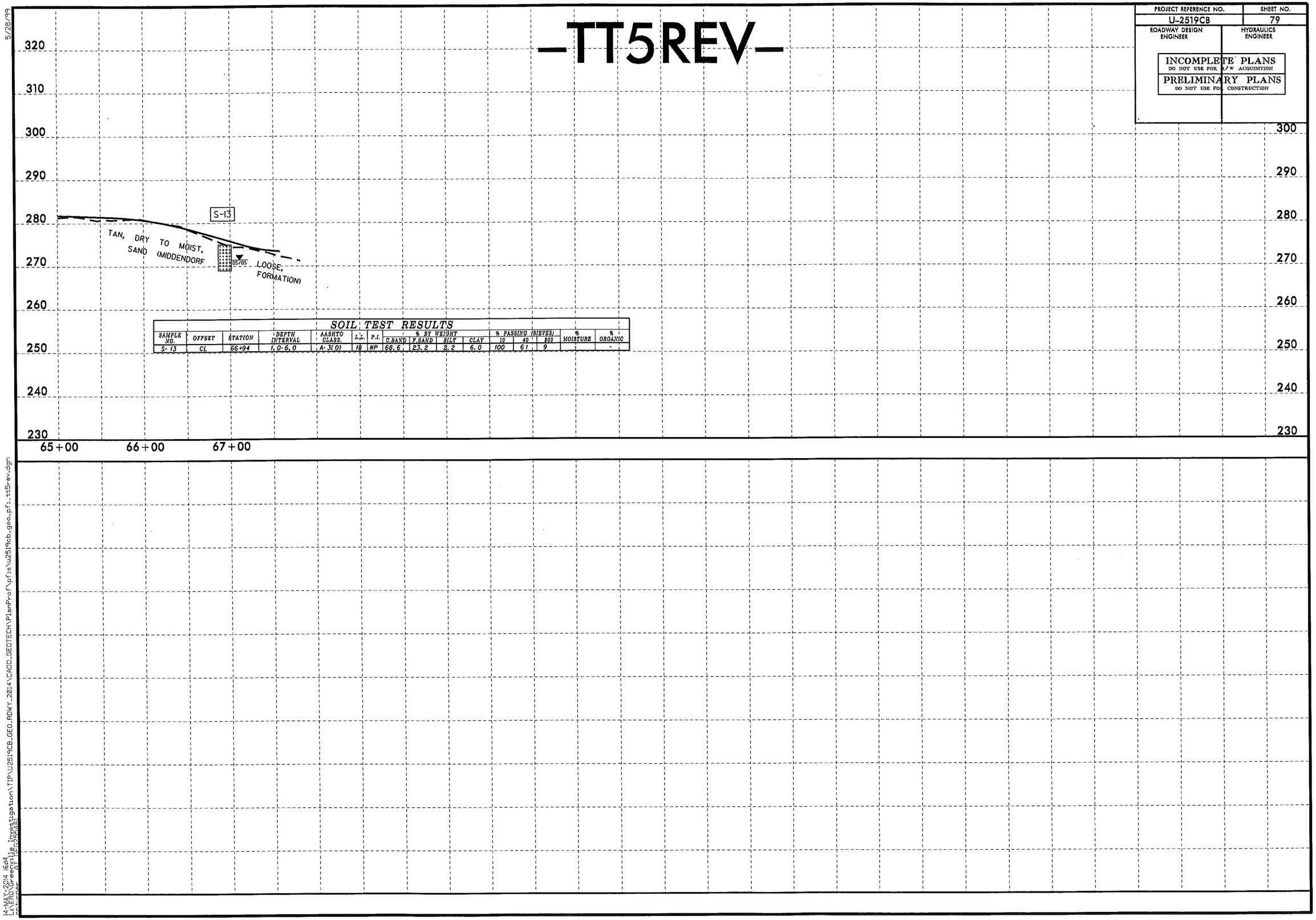
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	79
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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-13	CL	66+94	1.0-6.0	A-3(0)	18	NP	68.6	23.2	2.2	6.0	100	61	9		-

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PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	80
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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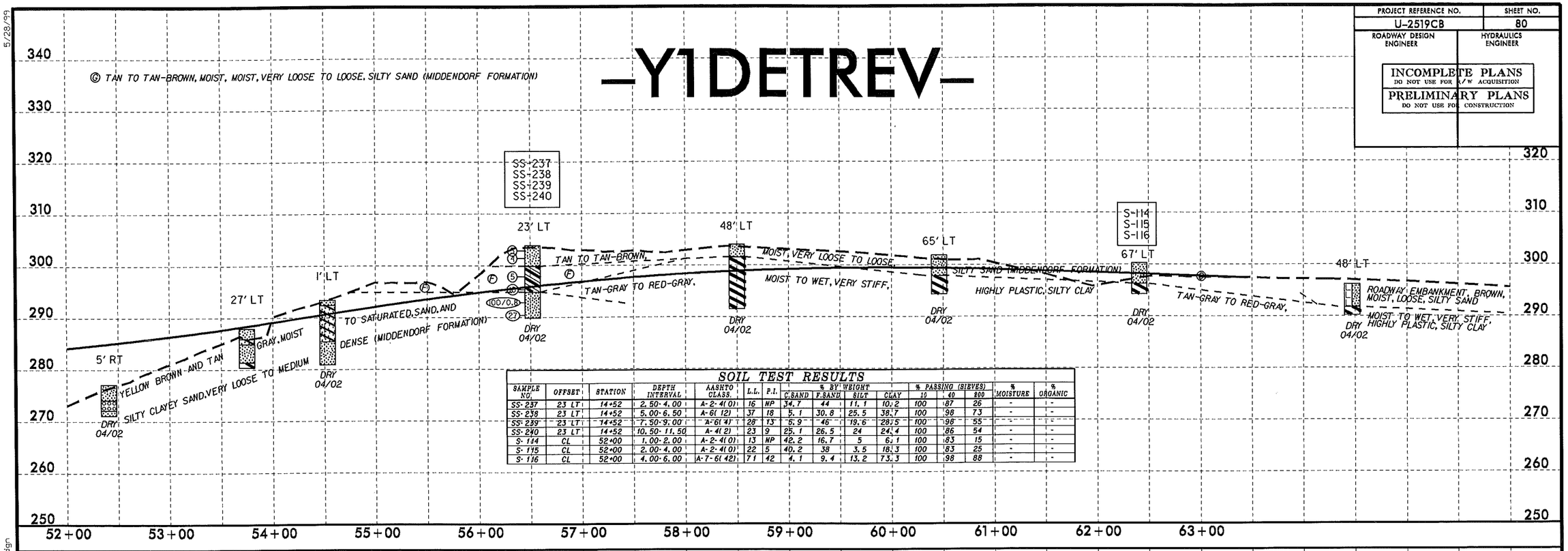

SOIL TEST RESULTS

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-237	23 LT	14+52	2.50-4.00	A-2-4(0)	16	NP	34.7	44	11.1	10.2	100	87	26	-	-
SS-238	23 LT	14+52	5.00-6.50	A-6(12)	37	18	5.1	30.8	25.5	38.7	100	98	73	-	-
SS-239	23 LT	14+52	7.50-9.00	A-6(4)	28	13	5.9	46	19.6	28.5	100	98	55	-	-
SS-240	23 LT	14+52	10.50-11.50	A-4(2)	23	9	25.1	26.5	24	24.4	100	86	54	-	-
S-114	CL	52+00	1.00-2.00	A-2-4(0)	13	NP	42.2	16.7	5	6.1	100	83	15	-	-
S-115	CL	52+00	2.00-4.00	A-2-4(0)	22	5	40.2	38	3.5	18.3	100	83	25	-	-
S-116	CL	52+00	4.00-6.00	A-7-6(42)	71	42	4.1	9.4	13.2	73.3	100	98	88	-	-

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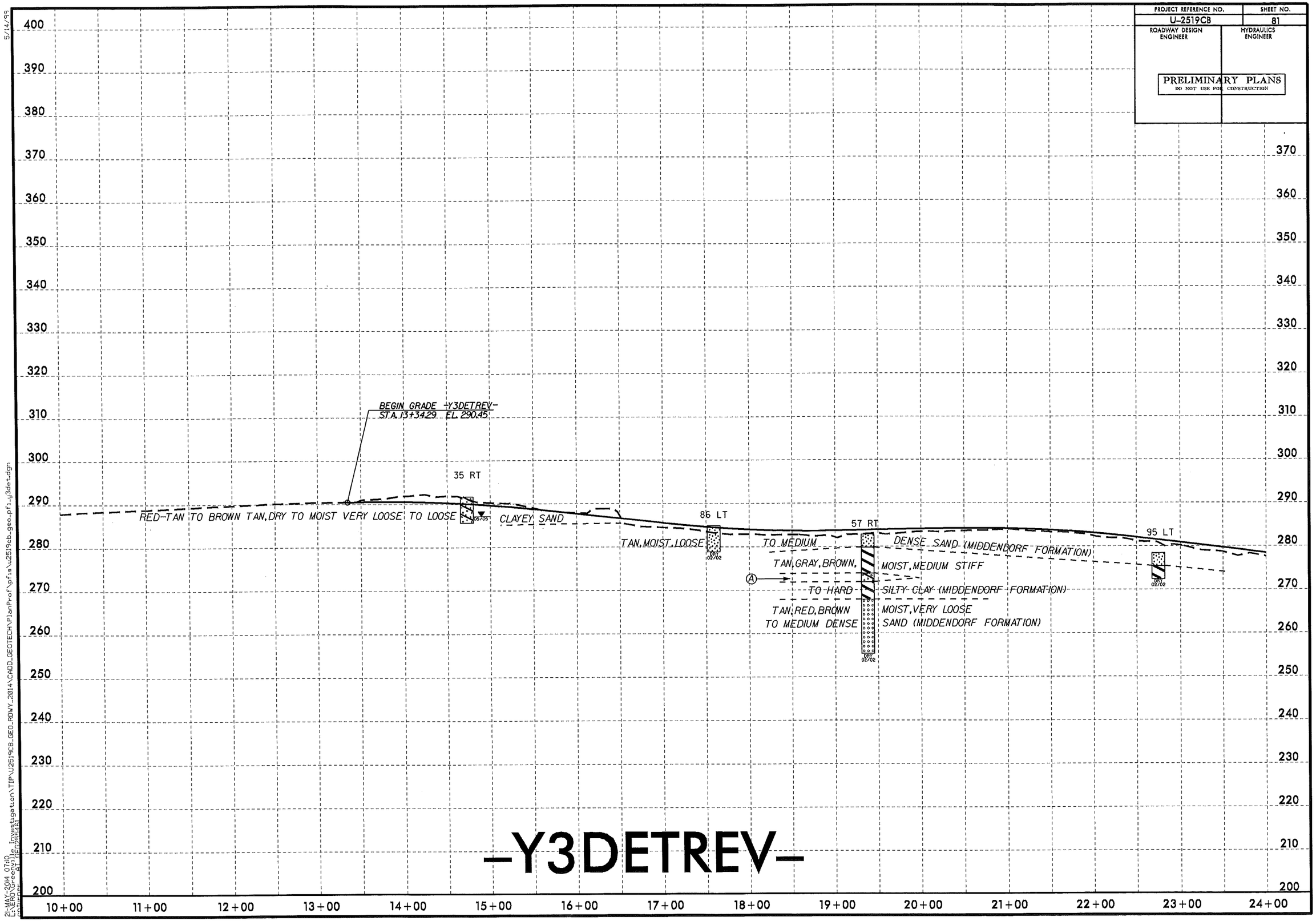
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	81
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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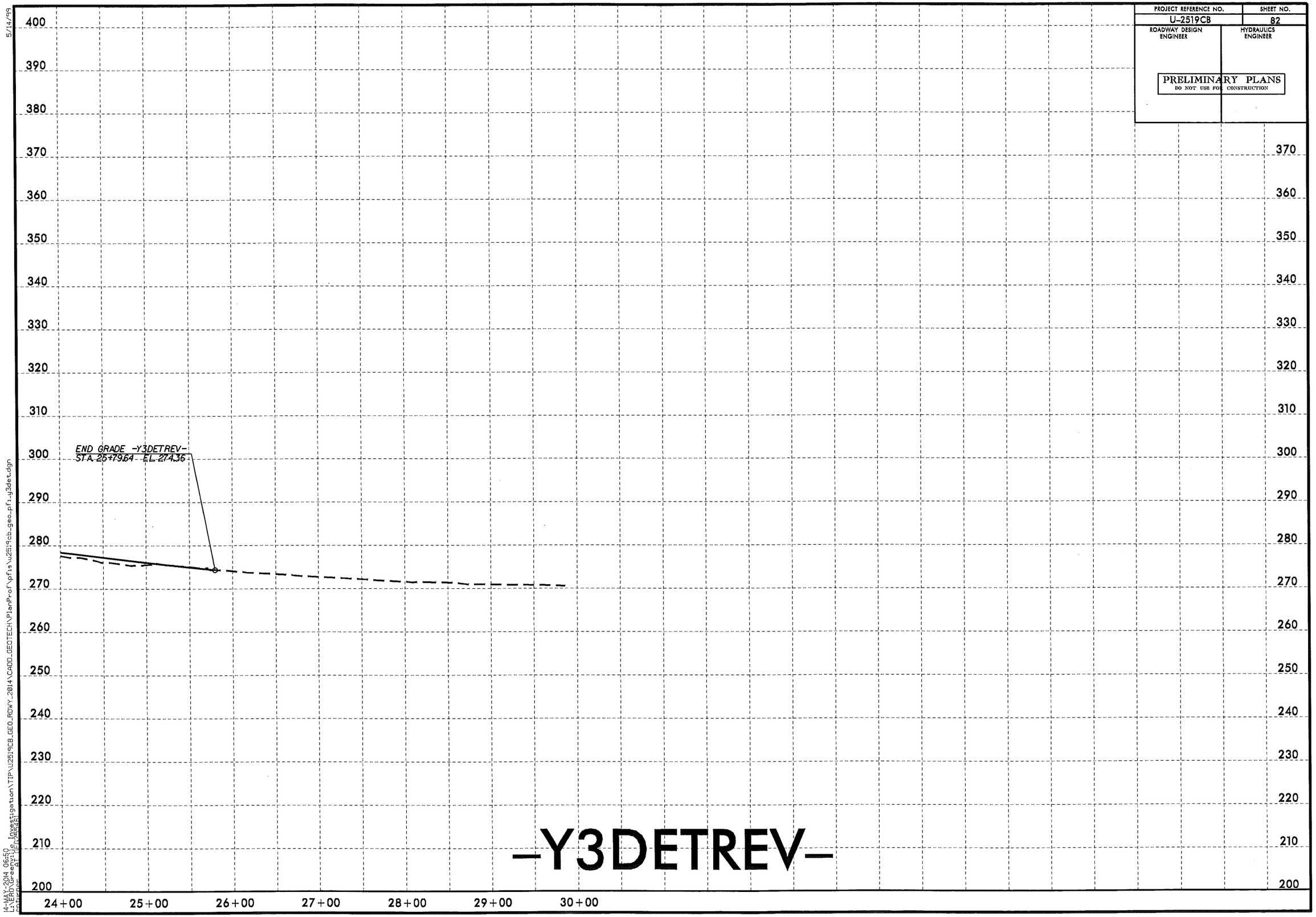
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	82
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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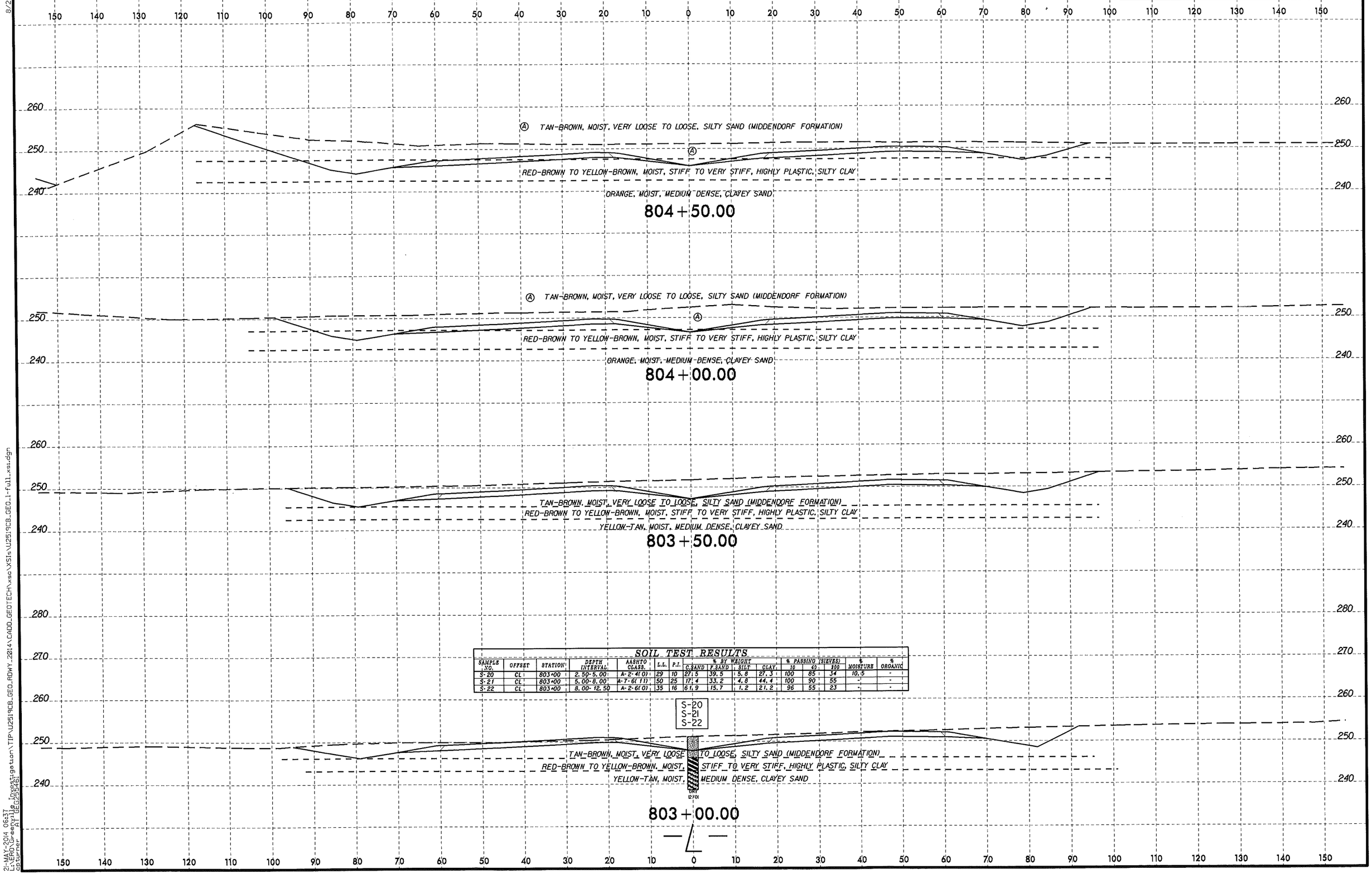
	U-2519CB	83



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	100	% MOISTURE	% ORGANIC
S-20	CL	803+00	2.50-5.00	A-2-4(0)	29	10	27.5	39.5	5.8	27.3	100	85	34	10.5	-
S-21	CL	803+00	5.00-8.00	A-7-6(11)	50	25	17.4	33.2	4.8	44.4	100	90	55	-	-
S-22	CL	803+00	8.00-12.50	A-2-6(0)	35	16	61.9	15.7	1.2	21.2	96	55	23	-	-

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PROJ. REFERENCE NO.	SHEET NO.
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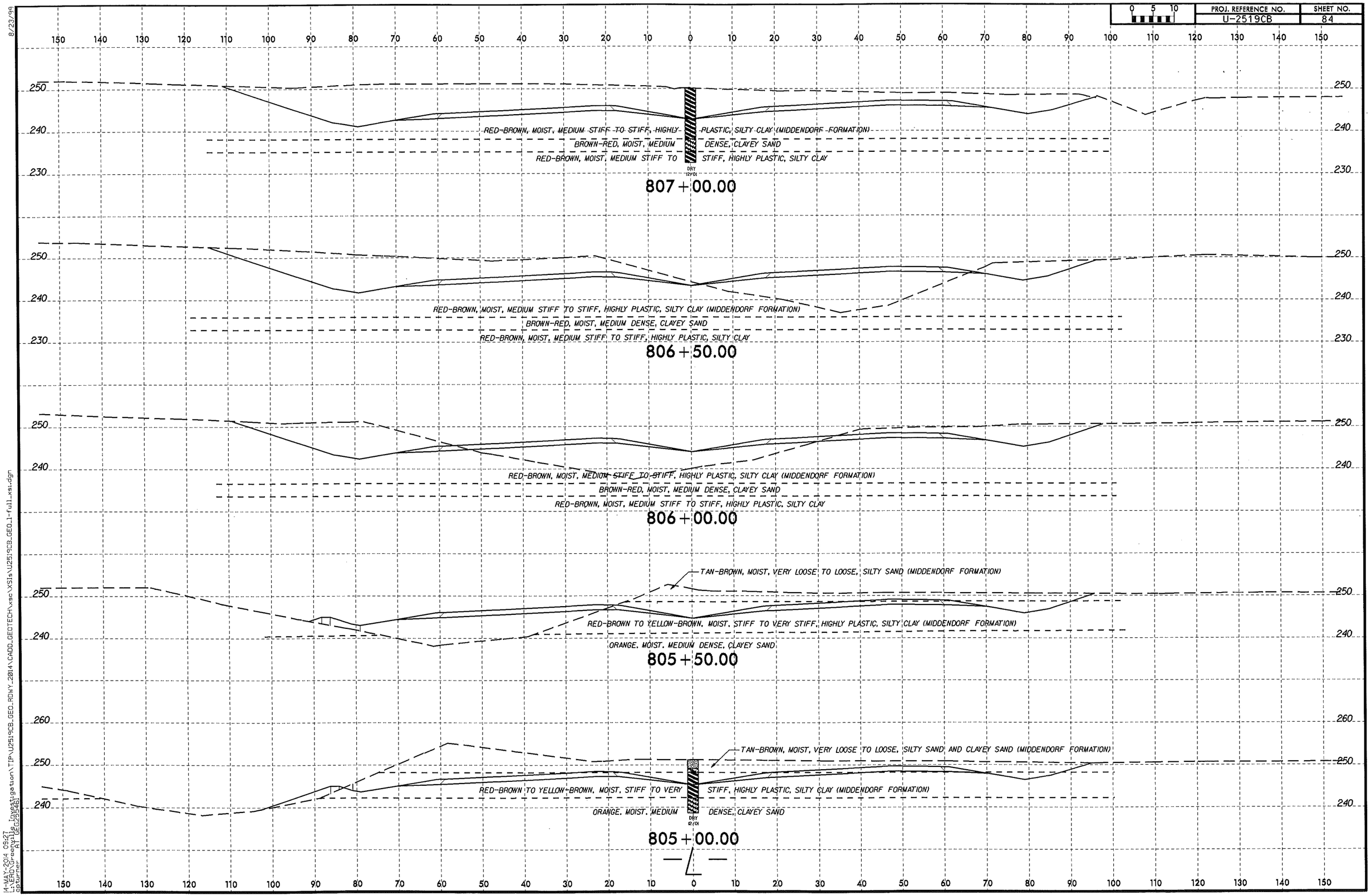

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PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	85

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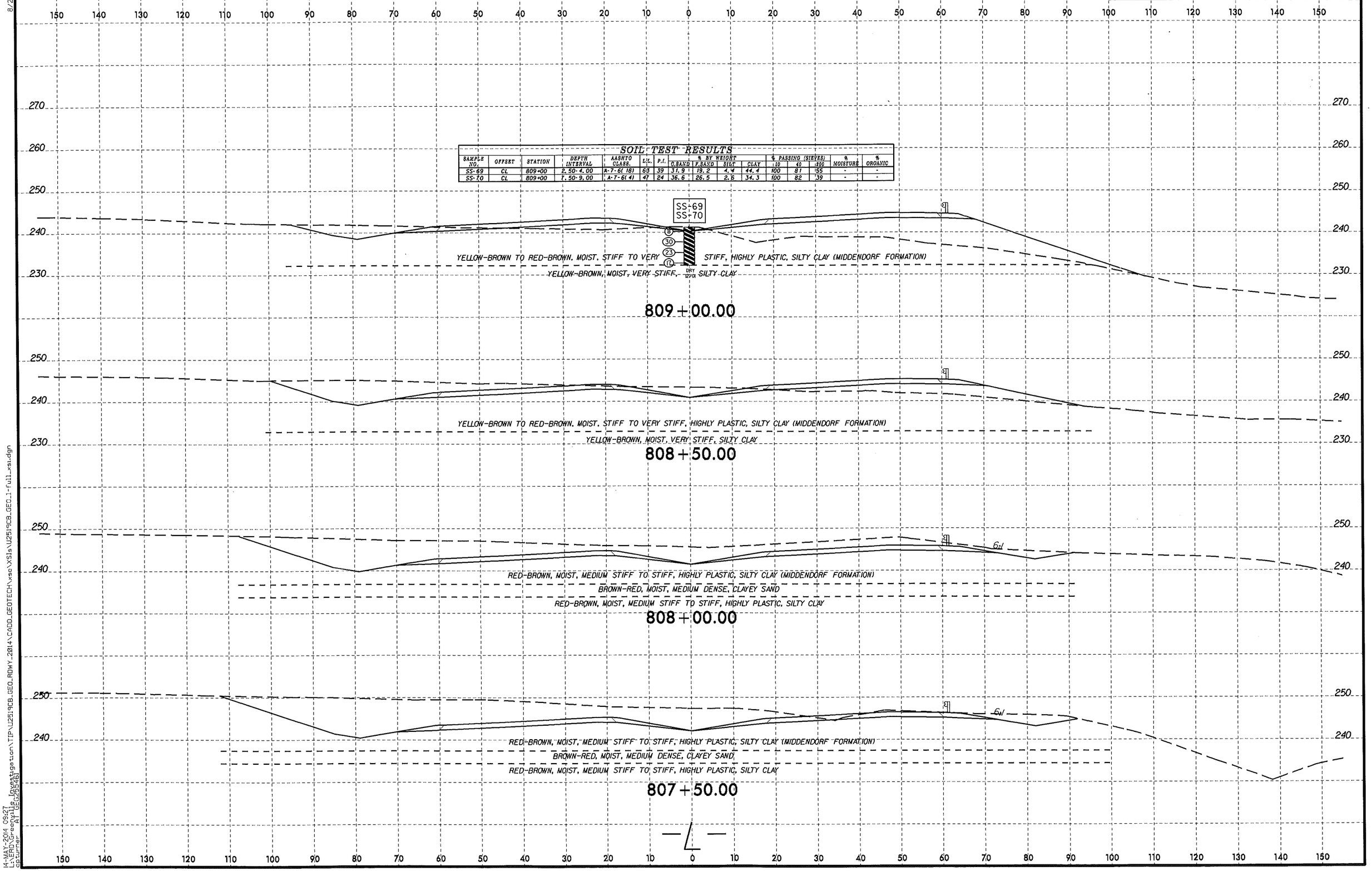
SOIL TEST RESULTS

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-69	CL	809+00	2.50-4.00	A-7-6(18)	63	39	31.9	19.2	4.4	44.4	100	81	55	-	-
SS-70	CL	809+00	7.50-9.00	A-7-6(4)	47	24	36.6	26.5	2.6	34.3	100	82	39	-	-



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PROJ. REFERENCE NO.	SHEET NO.
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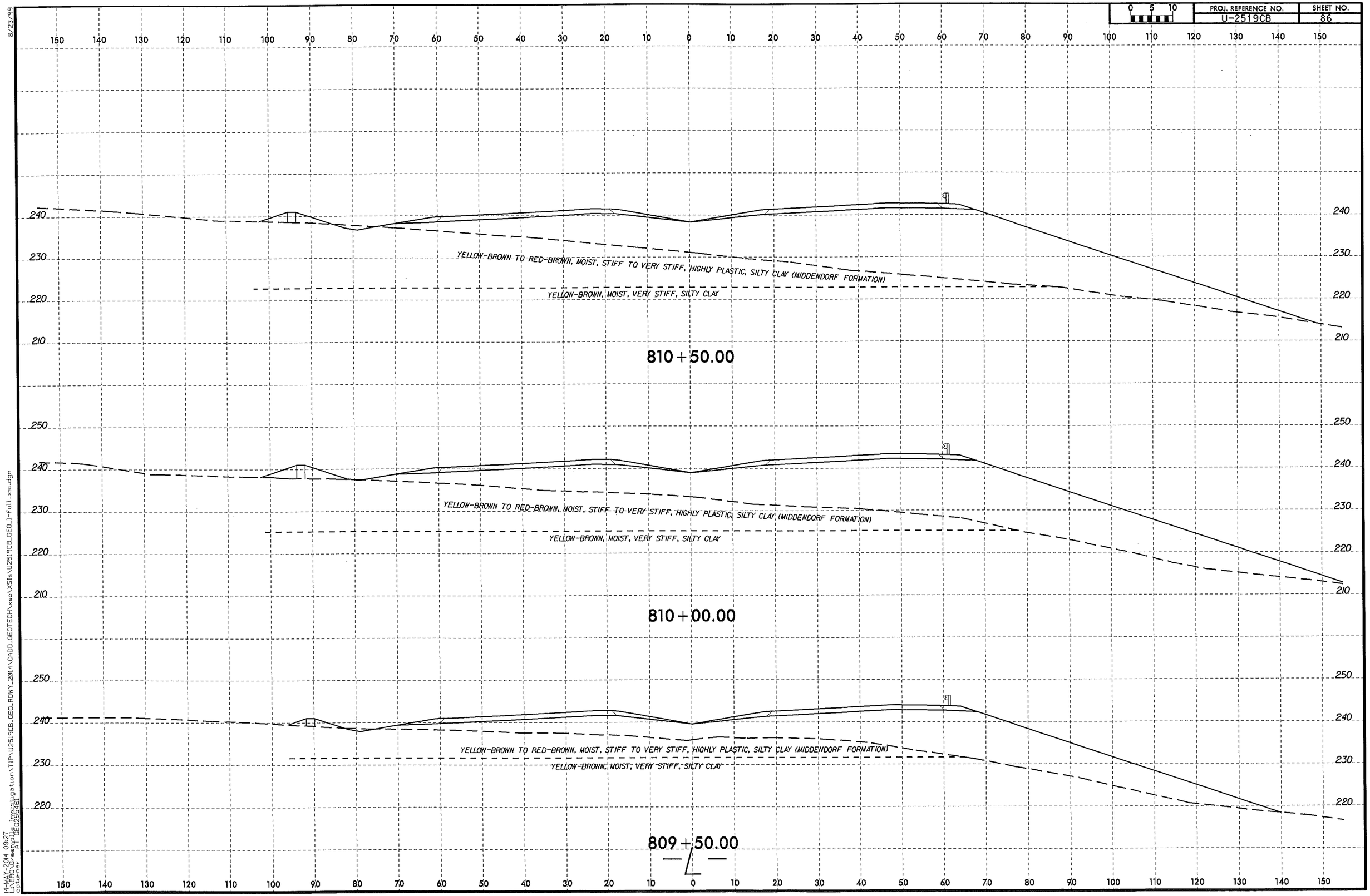

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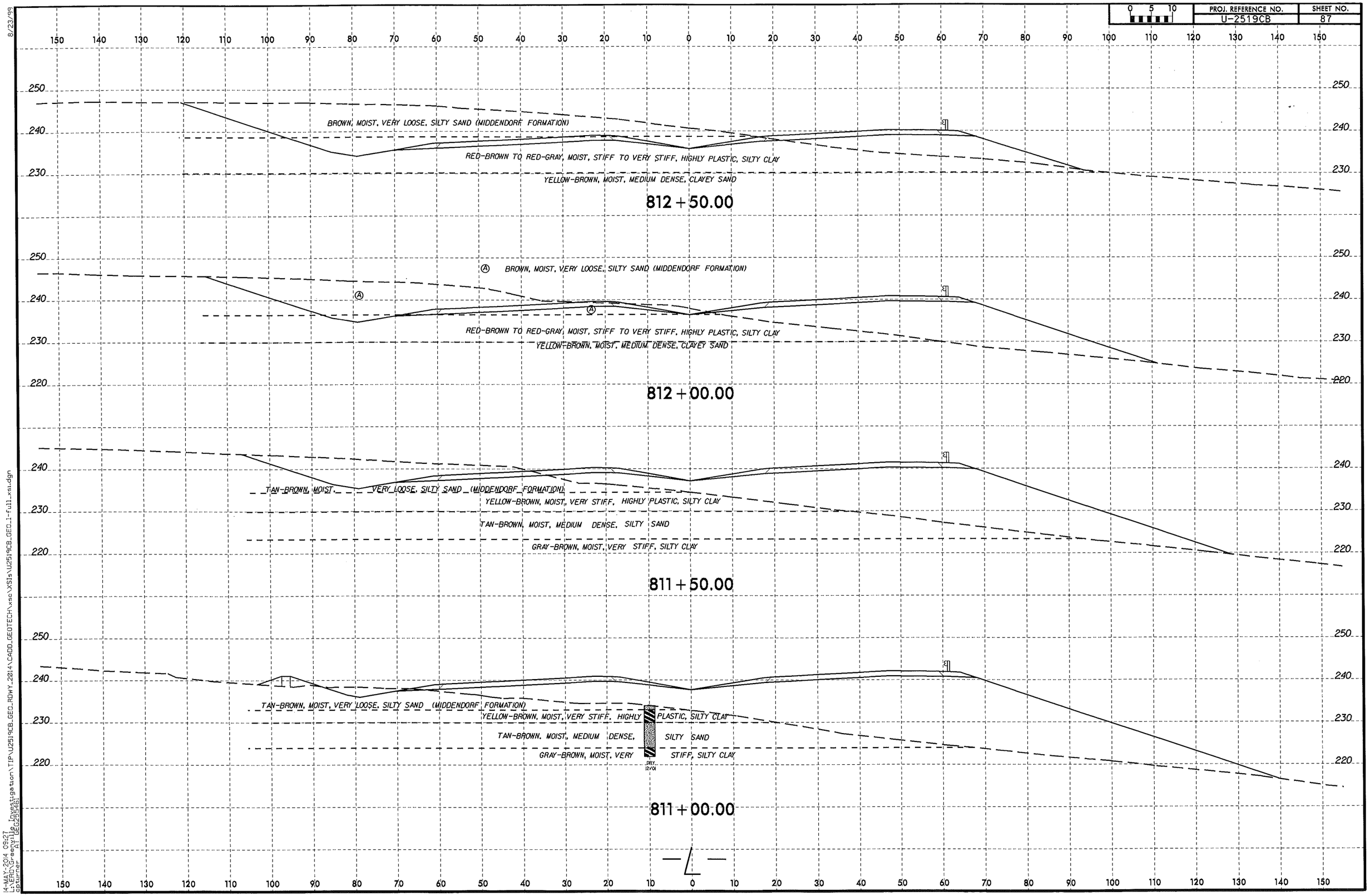

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U-2519CB	88

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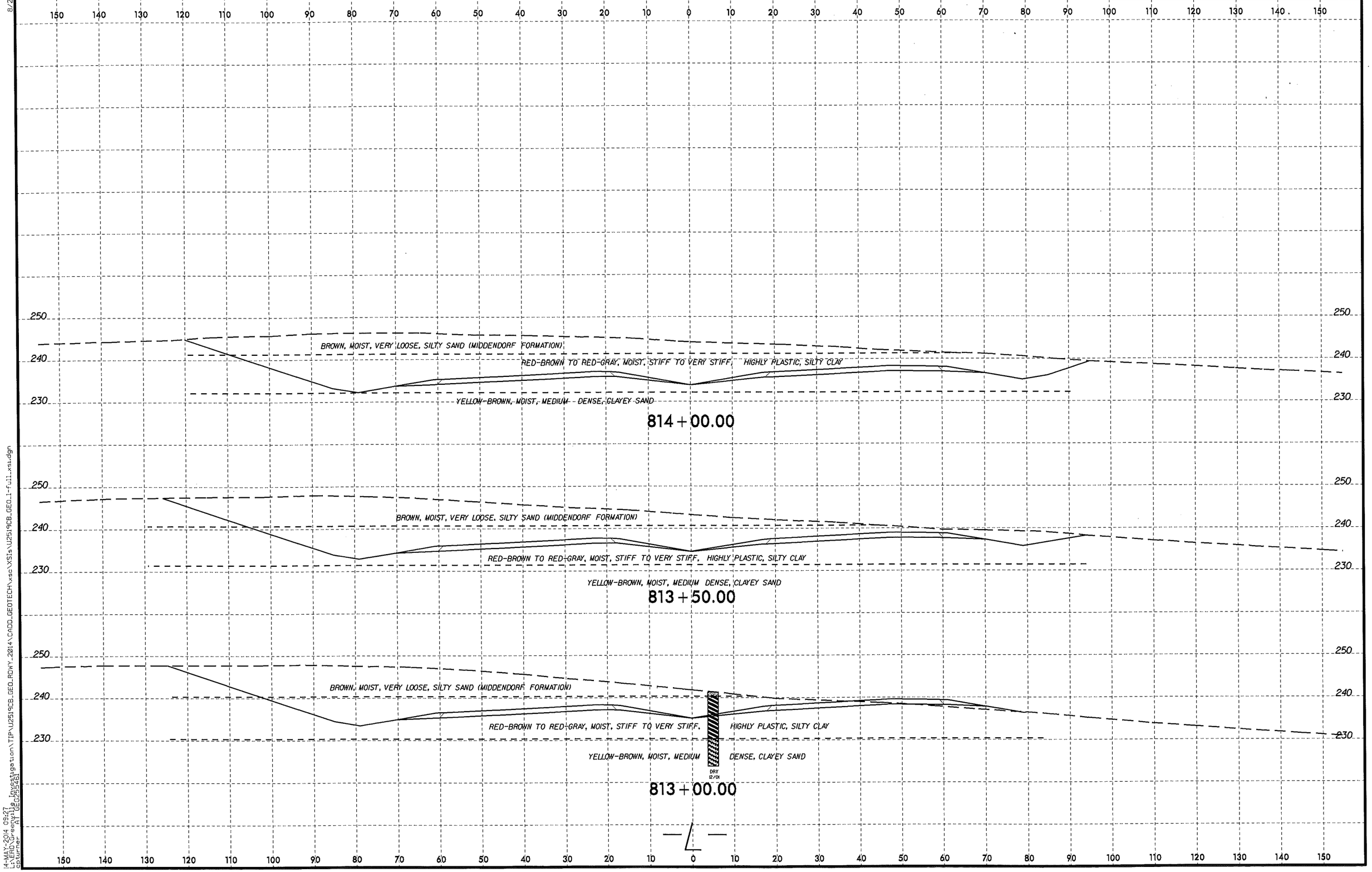

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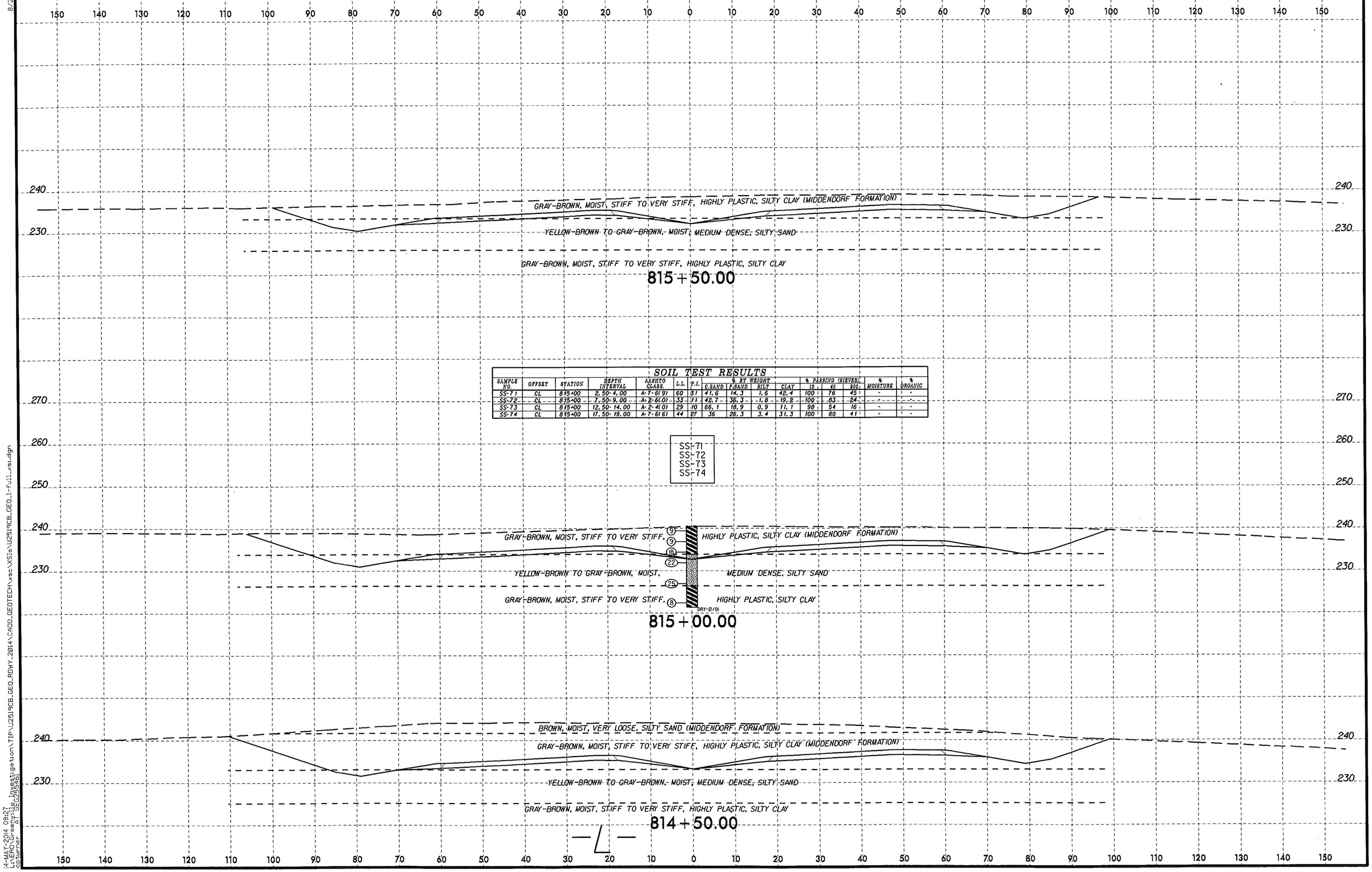
PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	89

0 5 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
SS-71	CL	815+00	2.50-4.00	A-7-6(9)	60	31	41.6	14.3	1.6	42.4	100	76	45	-	-
SS-72	CL	815+00	7.50-9.00	A-2-6(0)	33	11	42.7	36.3	1.8	19.2	100	83	24	-	-
SS-73	CL	815+00	12.50-14.00	A-2-4(0)	29	10	66.1	18.9	0.9	11.1	98	54	16	-	-
SS-74	CL	815+00	17.50-19.00	A-7-6(6)	44	27	36	26.3	3.4	31.3	100	80	41	-	-

8/23/99
14-MAY-2014 09:27
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AT GEO2(5546)

PROJ. REFERENCE NO.	SHEET NO.
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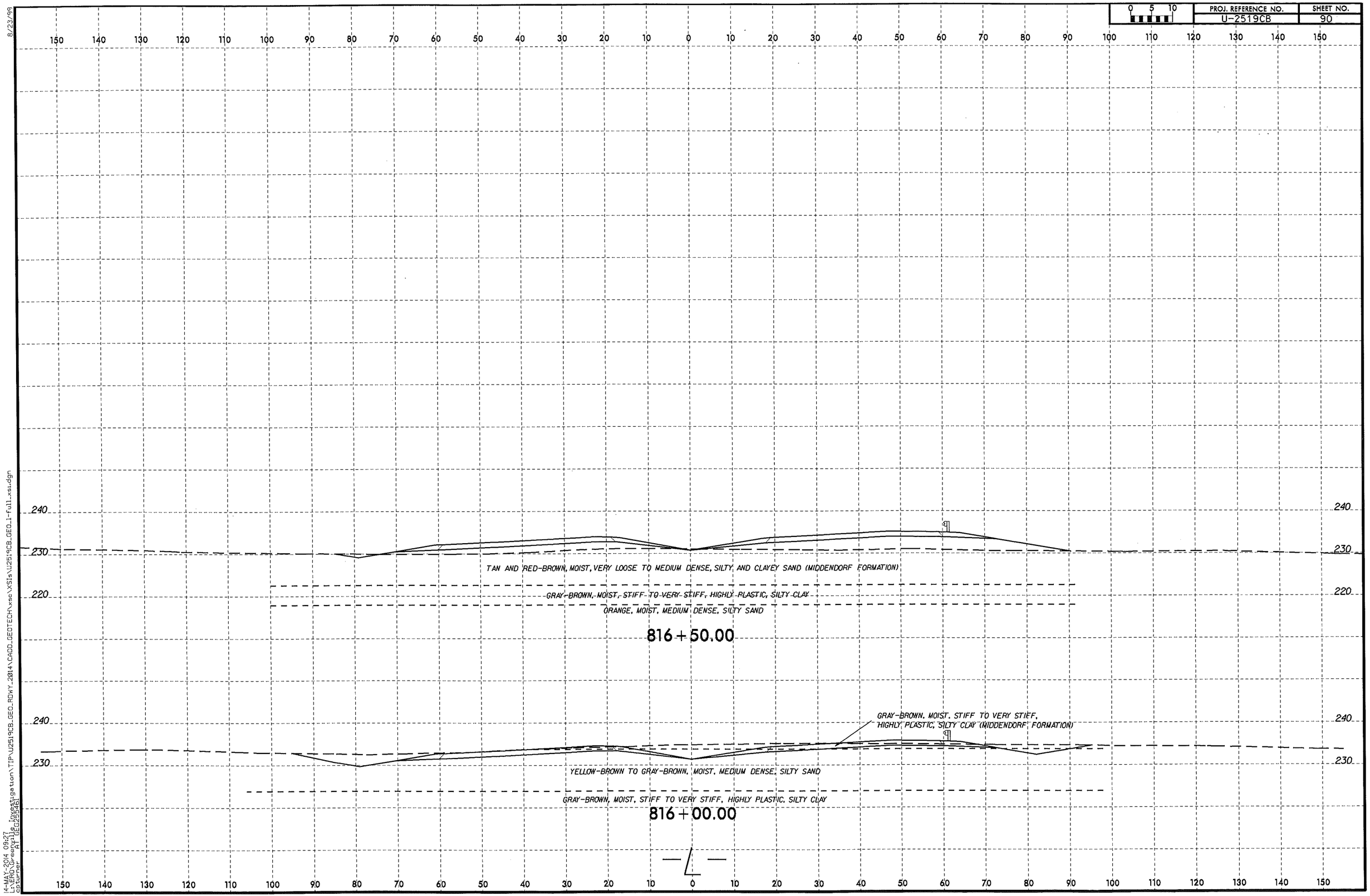

8/23/99

14-MAY-2014 09:27
MDOT Geopak
cpturner
A1-GEC255461

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PROJ. REFERENCE NO.	SHEET NO.
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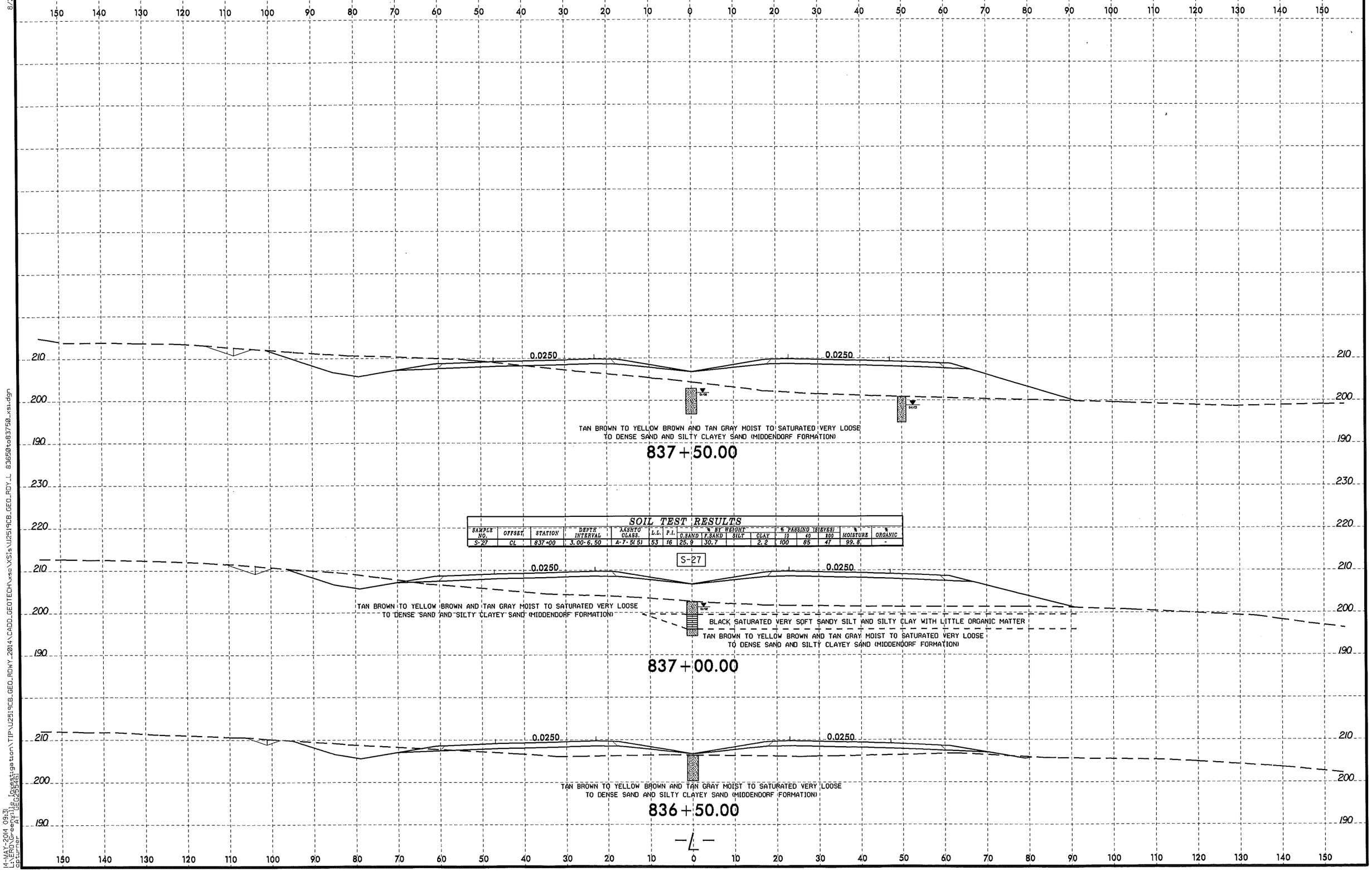

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-27	CL	837+00	3.00-6.50	A-7-5(5)	53	16	25.9	30.7		2.2	100	85	47	99.8	-

8/23/99

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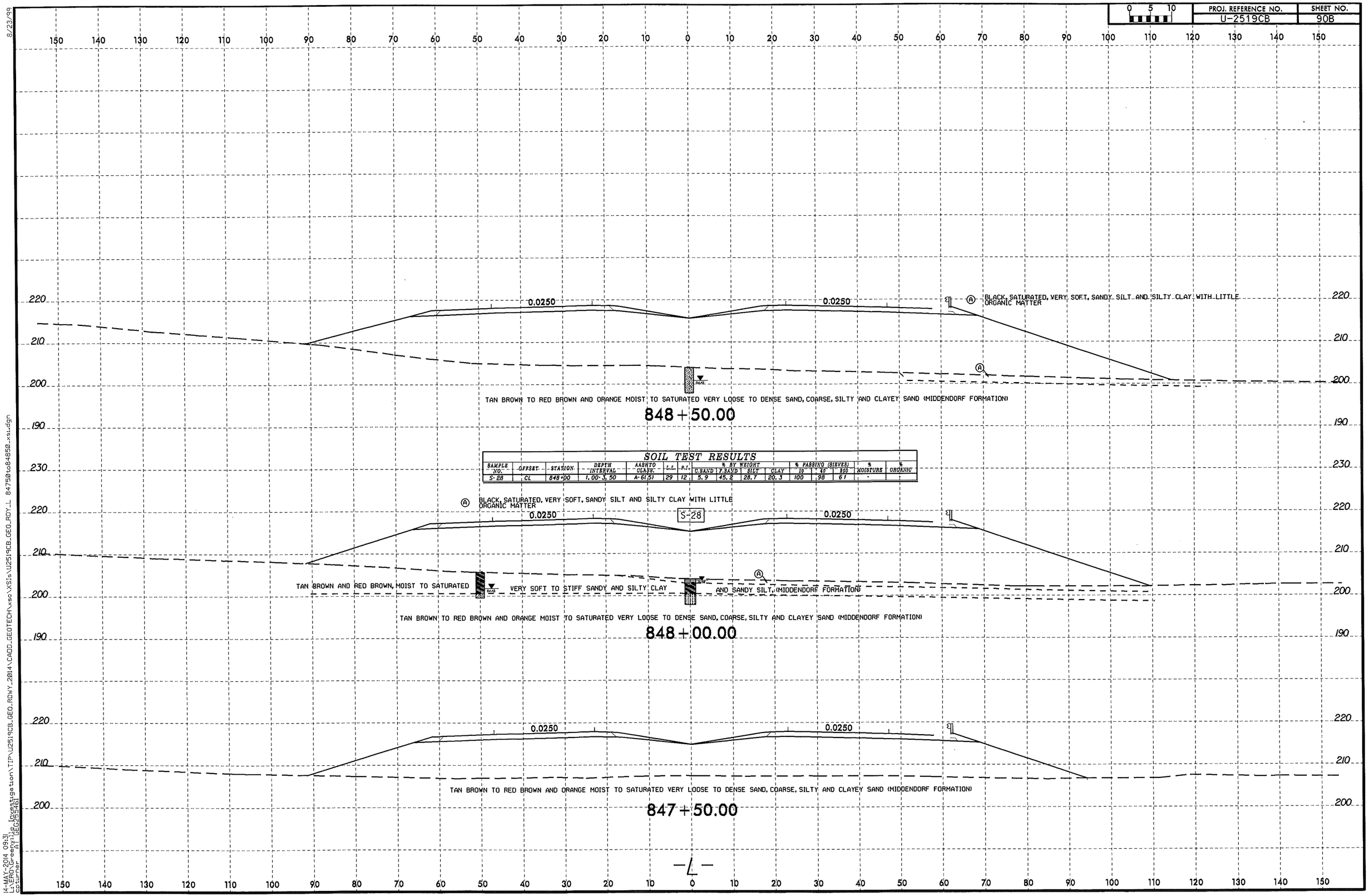
PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	90B



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	CL	848+00	1.00-3.50	A-6(5)	29	12	5.9	45.2	28.7	20.3	100	98	61	-	-

8/23/99

14-MAY-2014 09:31
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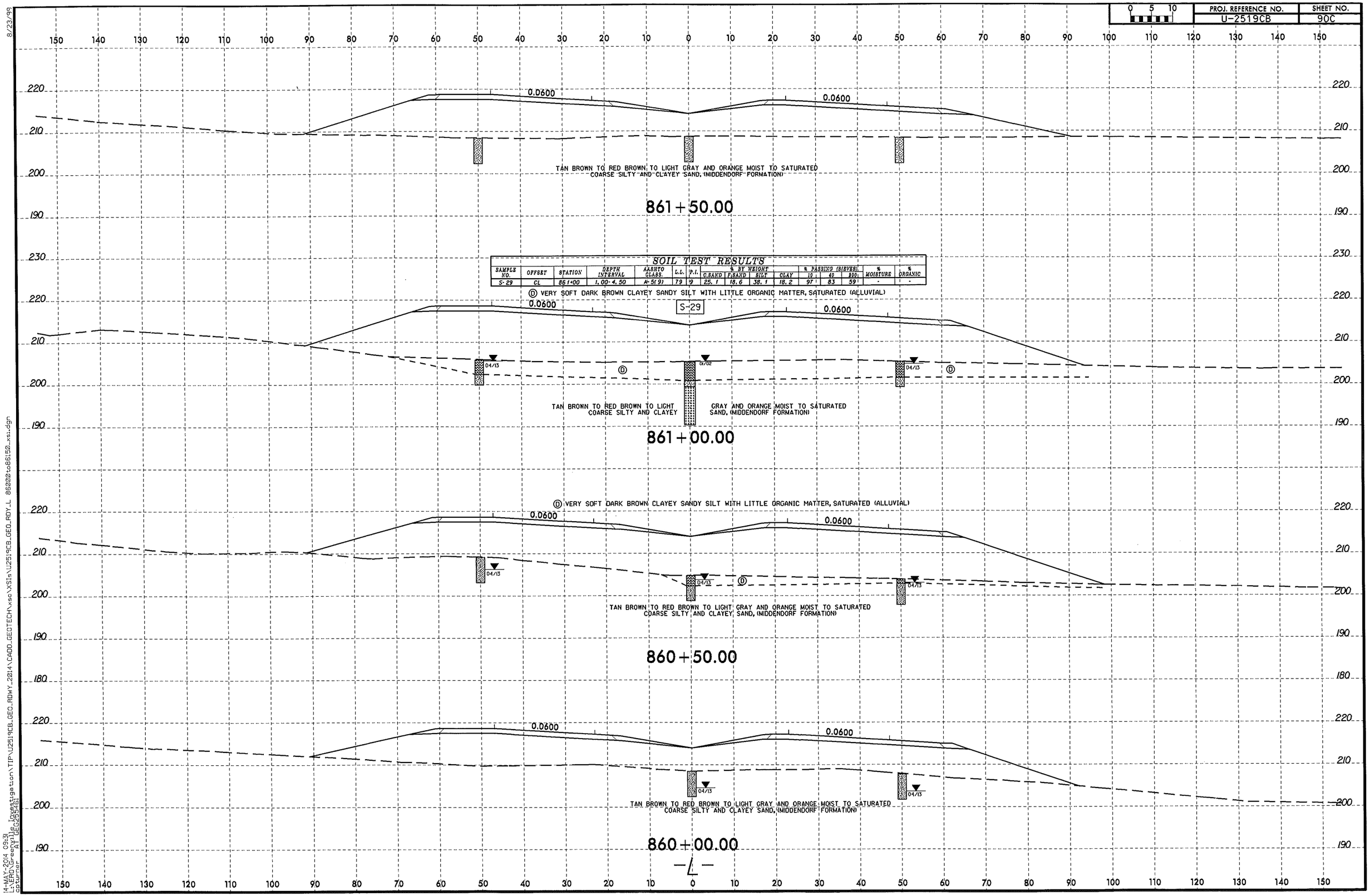
cpturner AT GEO255461

PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	90C

0 5 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-29	CL	861+00	1.00-4.50	A-5(9)	79	9	25.1	18.6	38.1	18.2	97	83	59	-	-

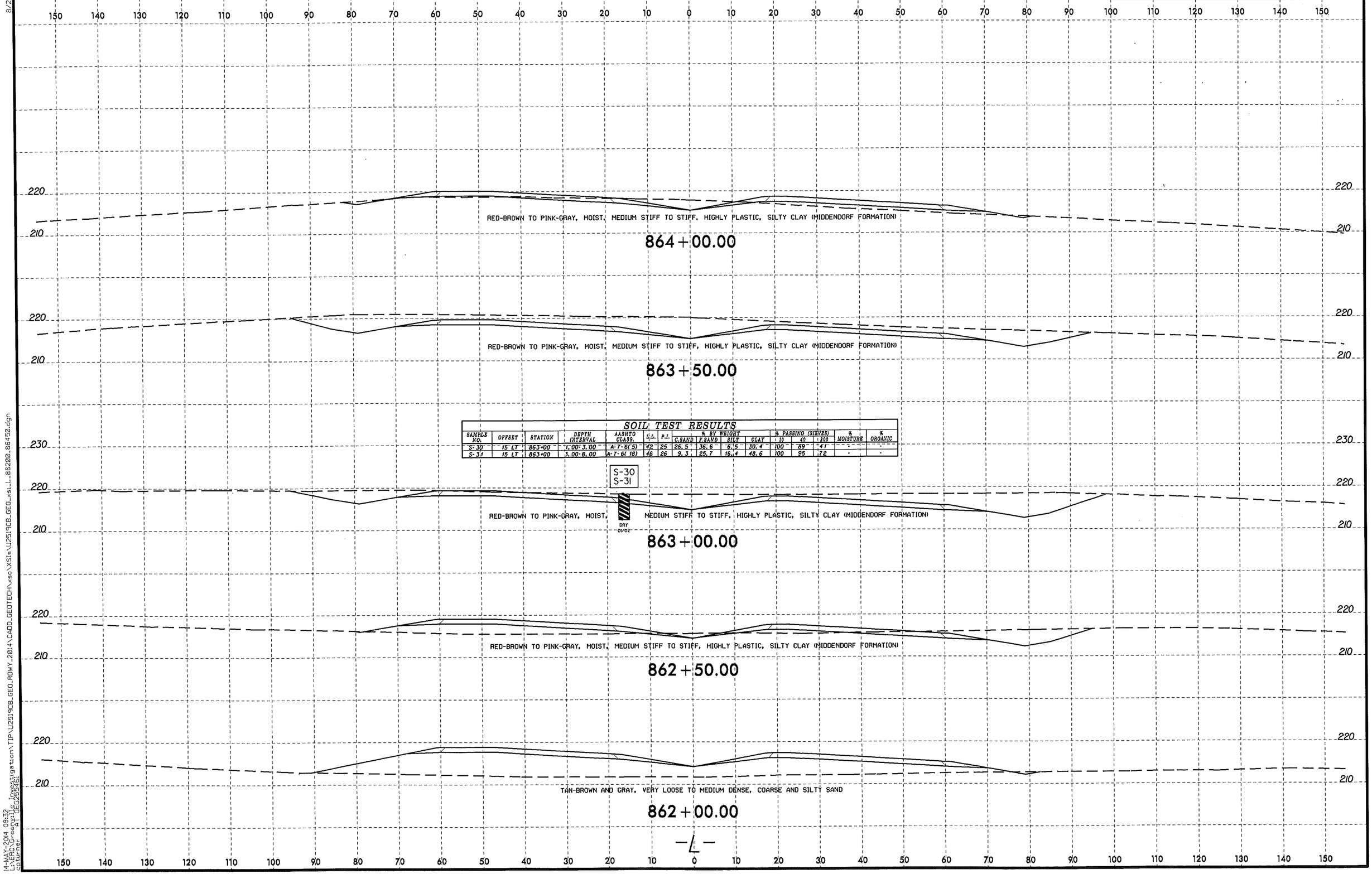
Ⓓ VERY SOFT DARK BROWN CLAYEY SANDY SILT WITH LITTLE ORGANIC MATTER, SATURATED (ALLUVIAL)

8/23/99

14-MAY-2014 09:31
LENGTH Centerline Investigation\TIP\U2519CB_GEO_RDWY_2014\CADD_GEOTECH\xsc\XS1a\U2519CB_GEO_RDY_L 86000to86150_xs1.dgn
capturer AT GEO25546

PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	91

0 5 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-30	15 LT	863+00	1.00-3.00	A-7-6(5)	42	25	26.5	36.6	6.5	30.4	100	89	41	-	-
S-31	15 LT	863+00	3.00-6.00	A-7-6(18)	46	26	9.3	25.7	16.4	48.6	100	95	72	-	-

8/23/99

14-MAY-2014 09:32
CLEMENS, PEGGY
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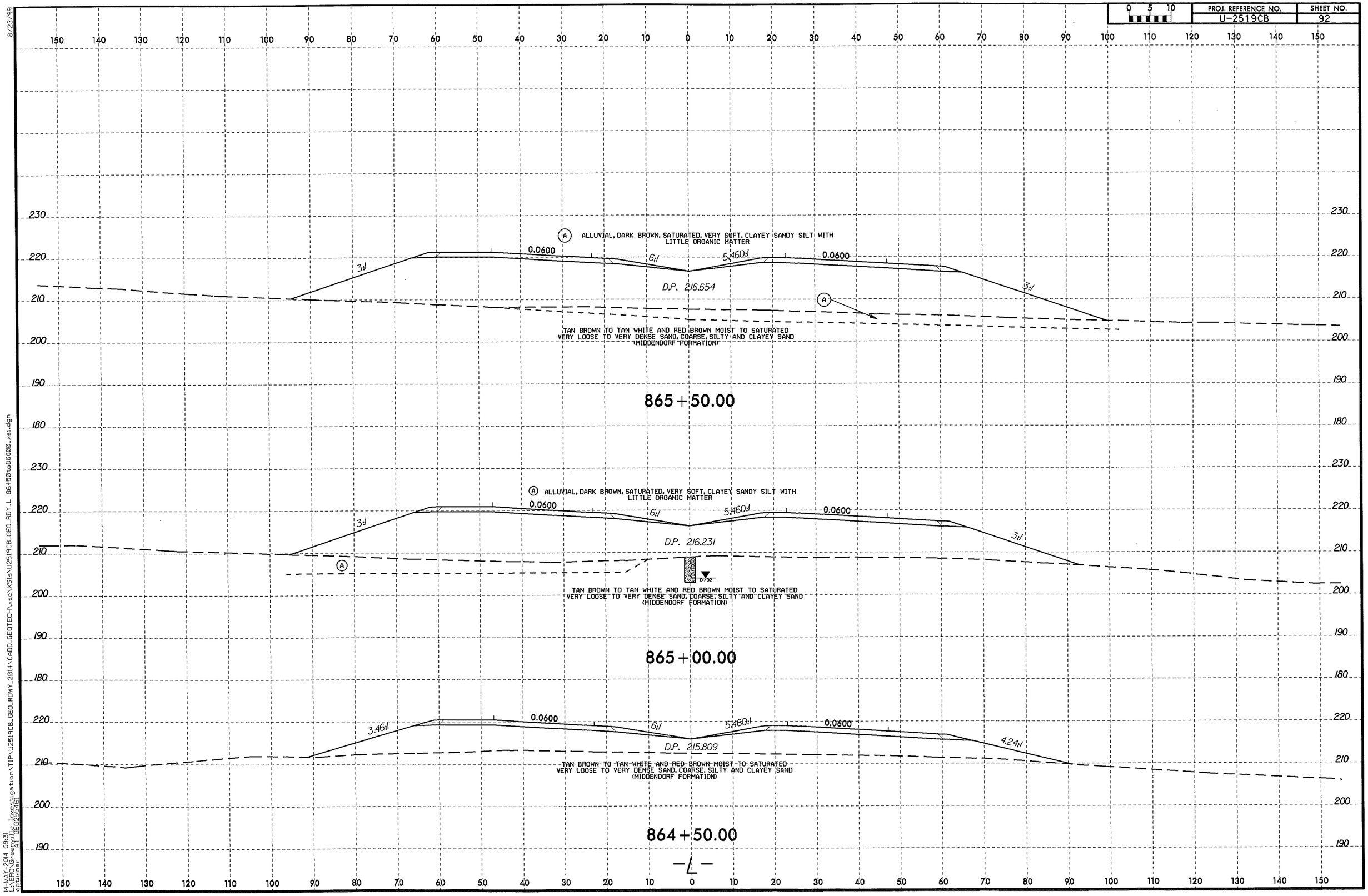

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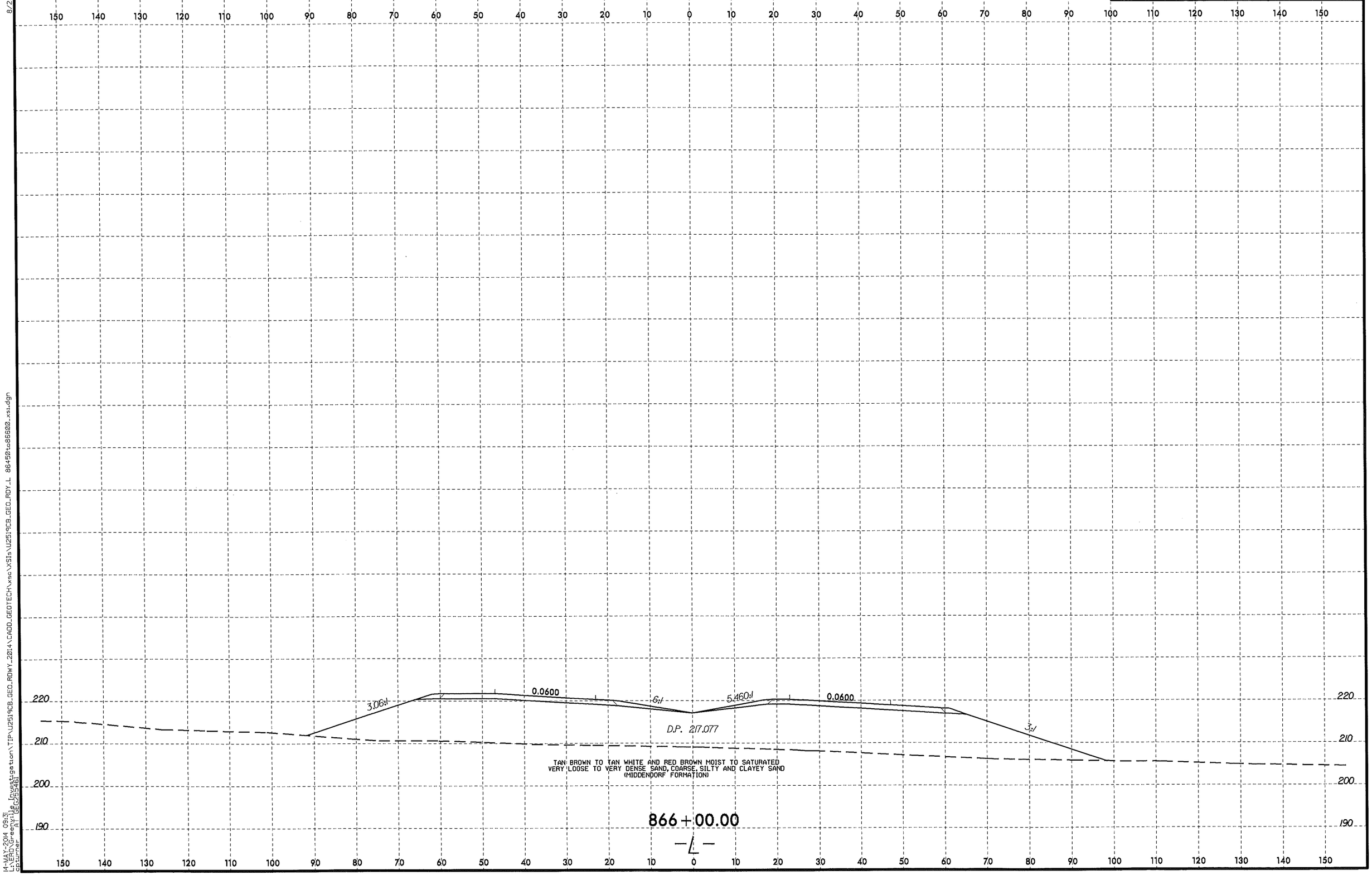
PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	93



8/23/99

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cpturner
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Investigation\TIP\U2519CB_GEO_ROWY_2014\CADD_GEOTECH\xsc\XS1s\U2519CB_GEO_RDY_L 86450to86600_xs1.dgn

PROJ. REFERENCE NO.	SHEET NO.
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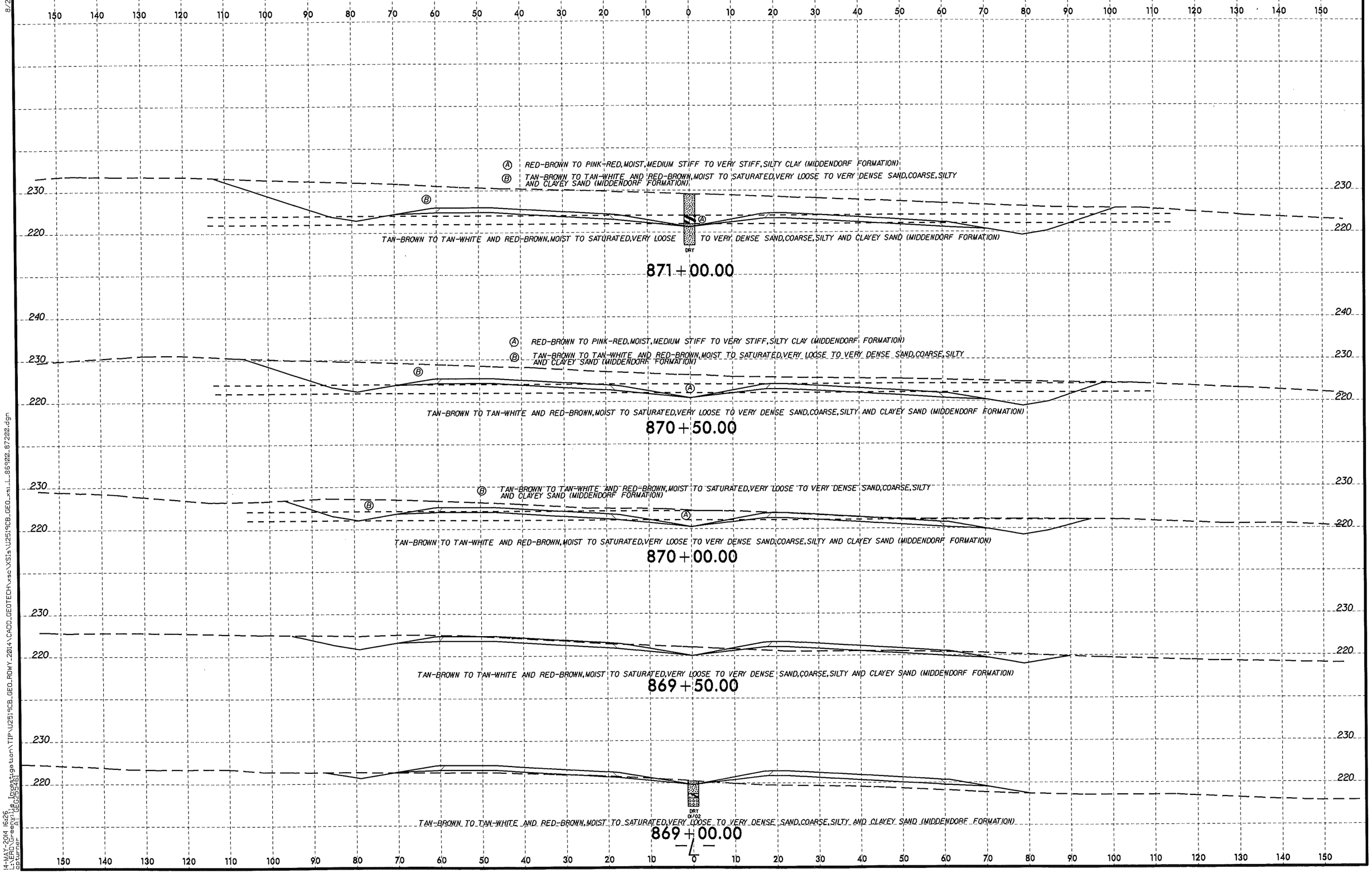

8/23/99

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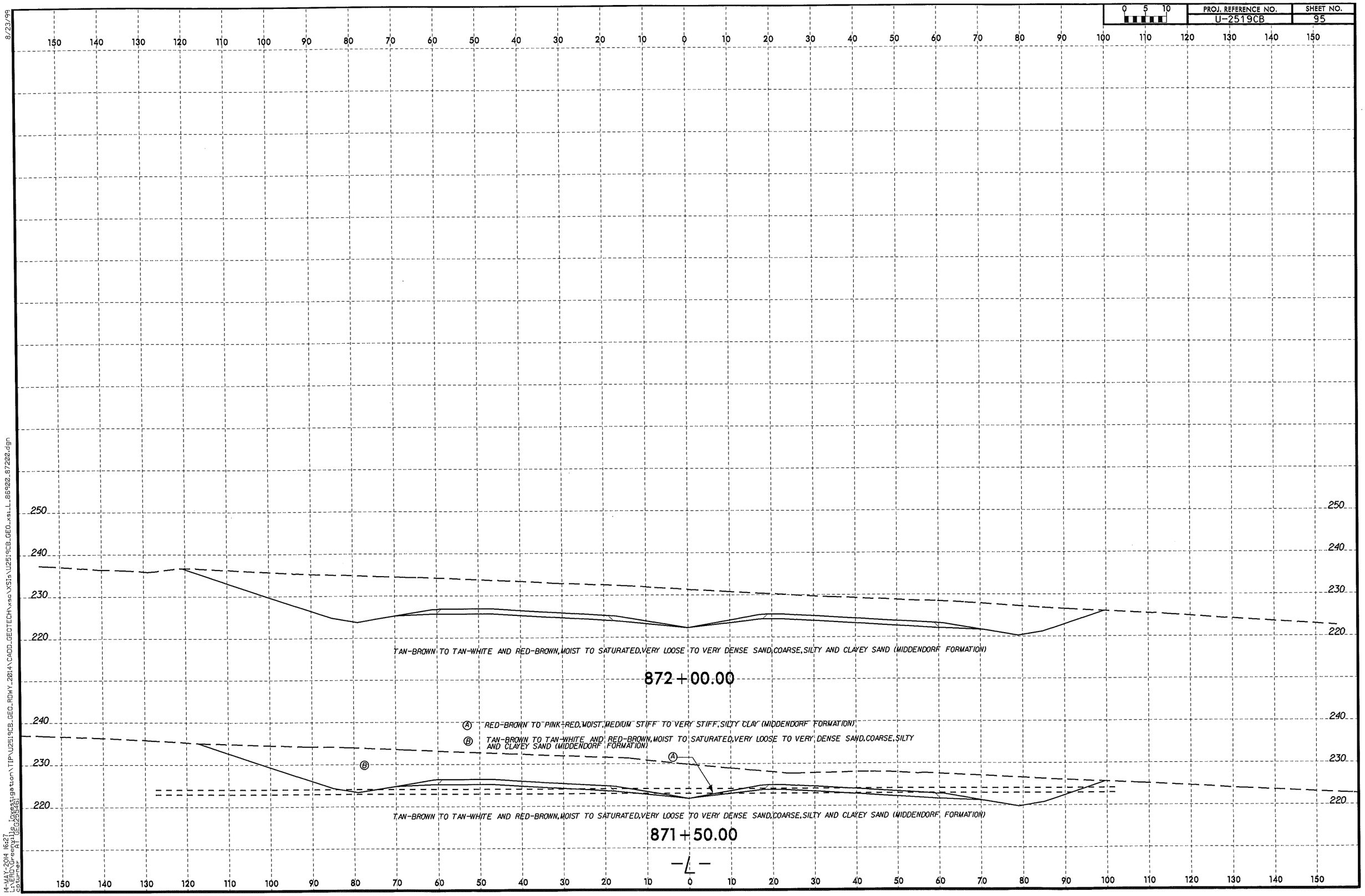
ADOT Geo Area 12 (GEO2554)
cpturner



8/23/99

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cbunner
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PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	96

0 5 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
SS-111	CL	879+00	1.00-1.50	A-7-6(8)	41	22	15.7	39.3	10.8	34.2	100	93	52	-	-
SS-112	CL	879+00	2.50-4.00	A-6(D)	26	11	19.5	49.9	8.4	22.2	100	95	36	-	-
SS-113	CL	879+00	7.50-9.00	A-2-4(0)	21	NP	73.7	18	2.2	6	73	33	7	-	-
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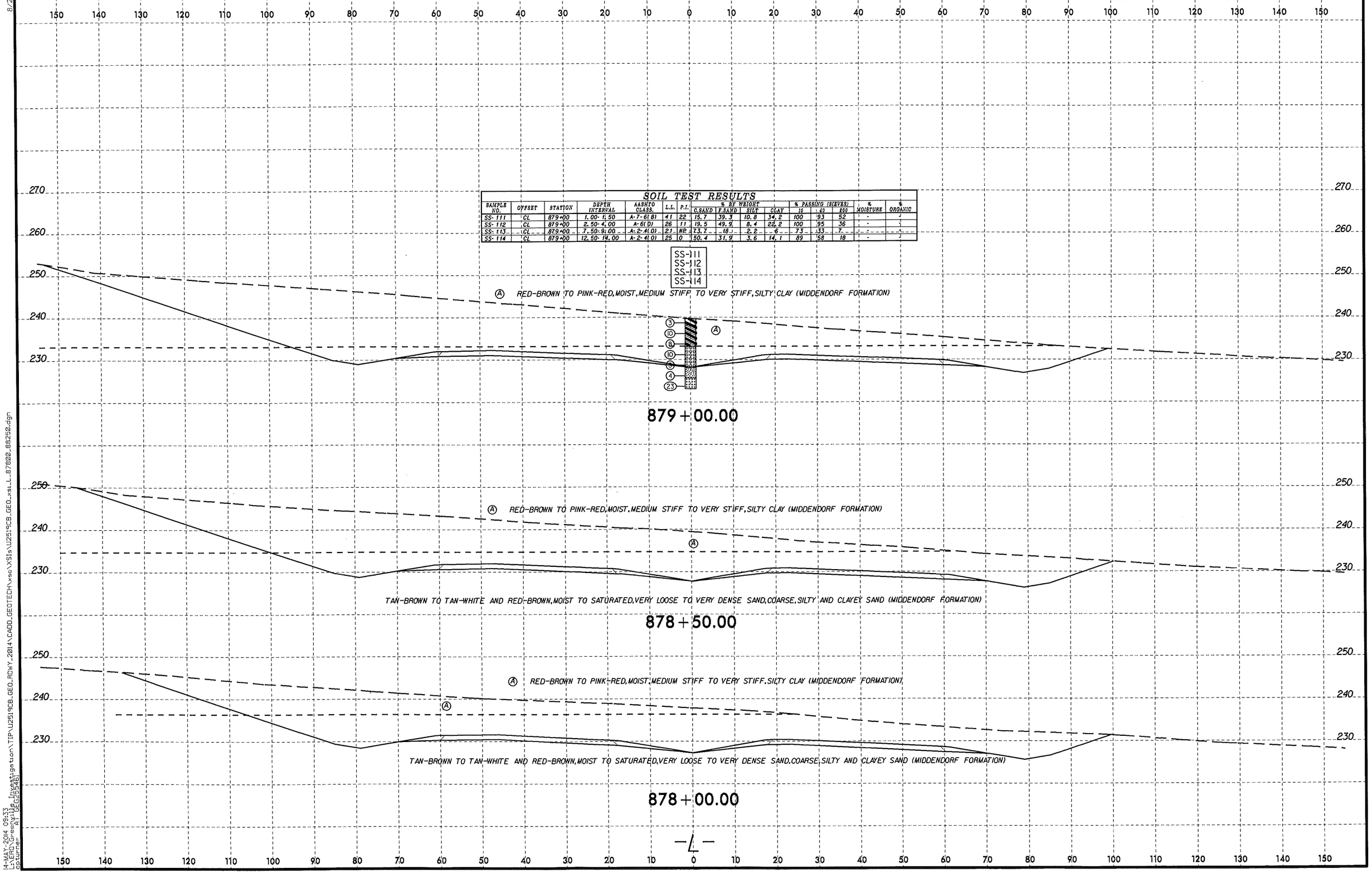

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PROJ. REFERENCE NO.	SHEET NO.
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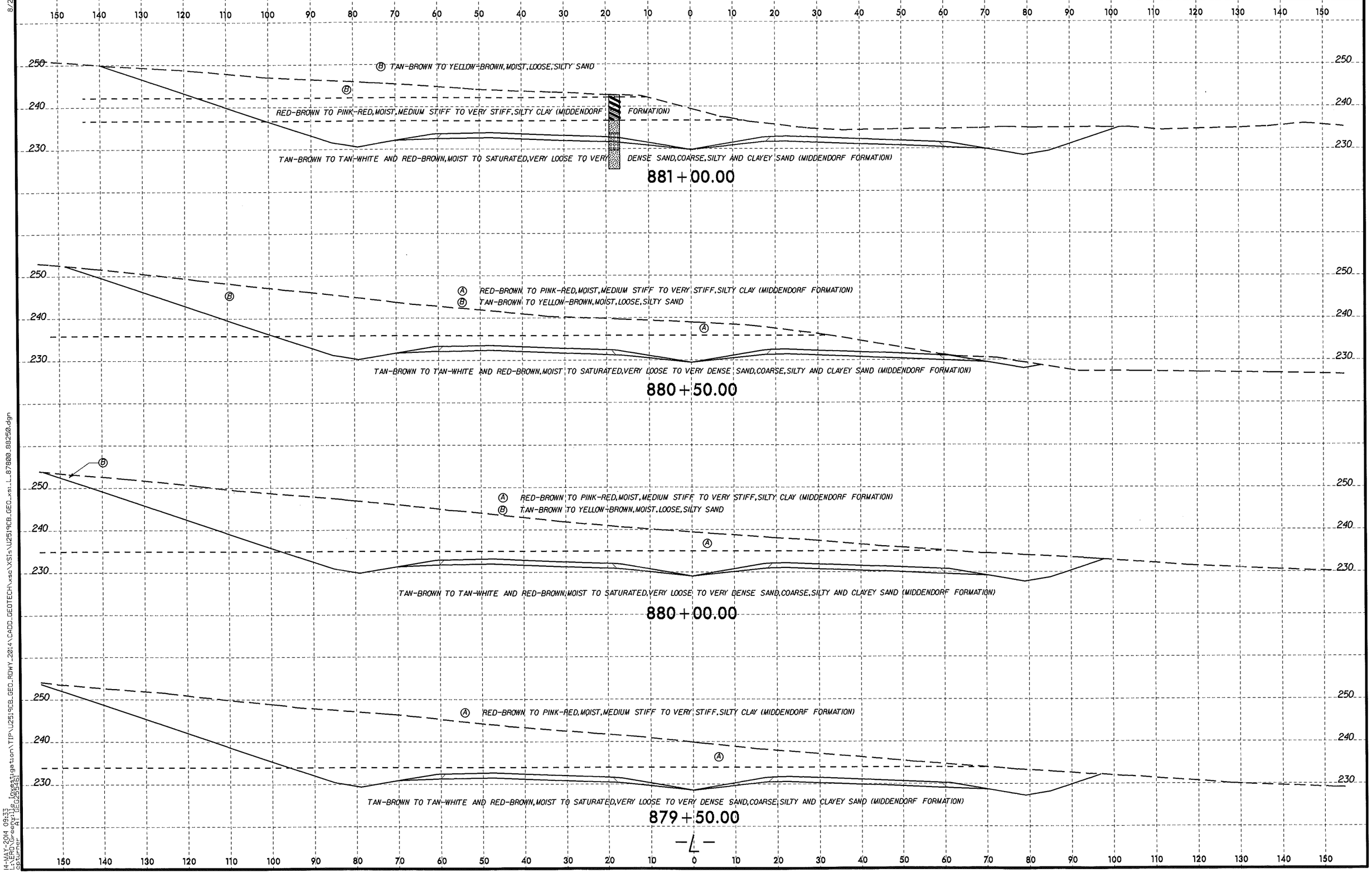

8/23/99

14-MAY-2014 09:33
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AT (GEO25526)

PROJ. REFERENCE NO.	SHEET NO.
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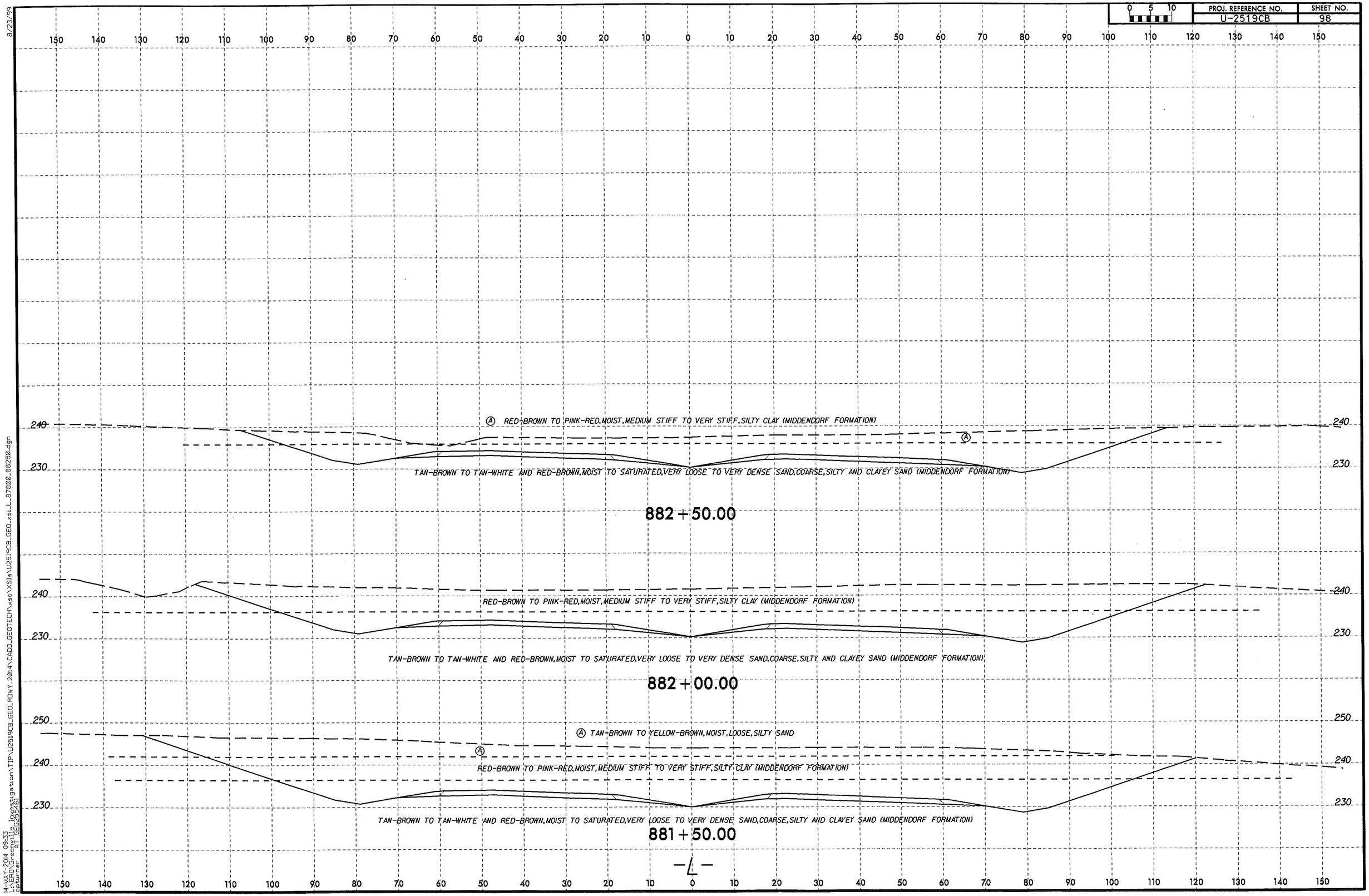

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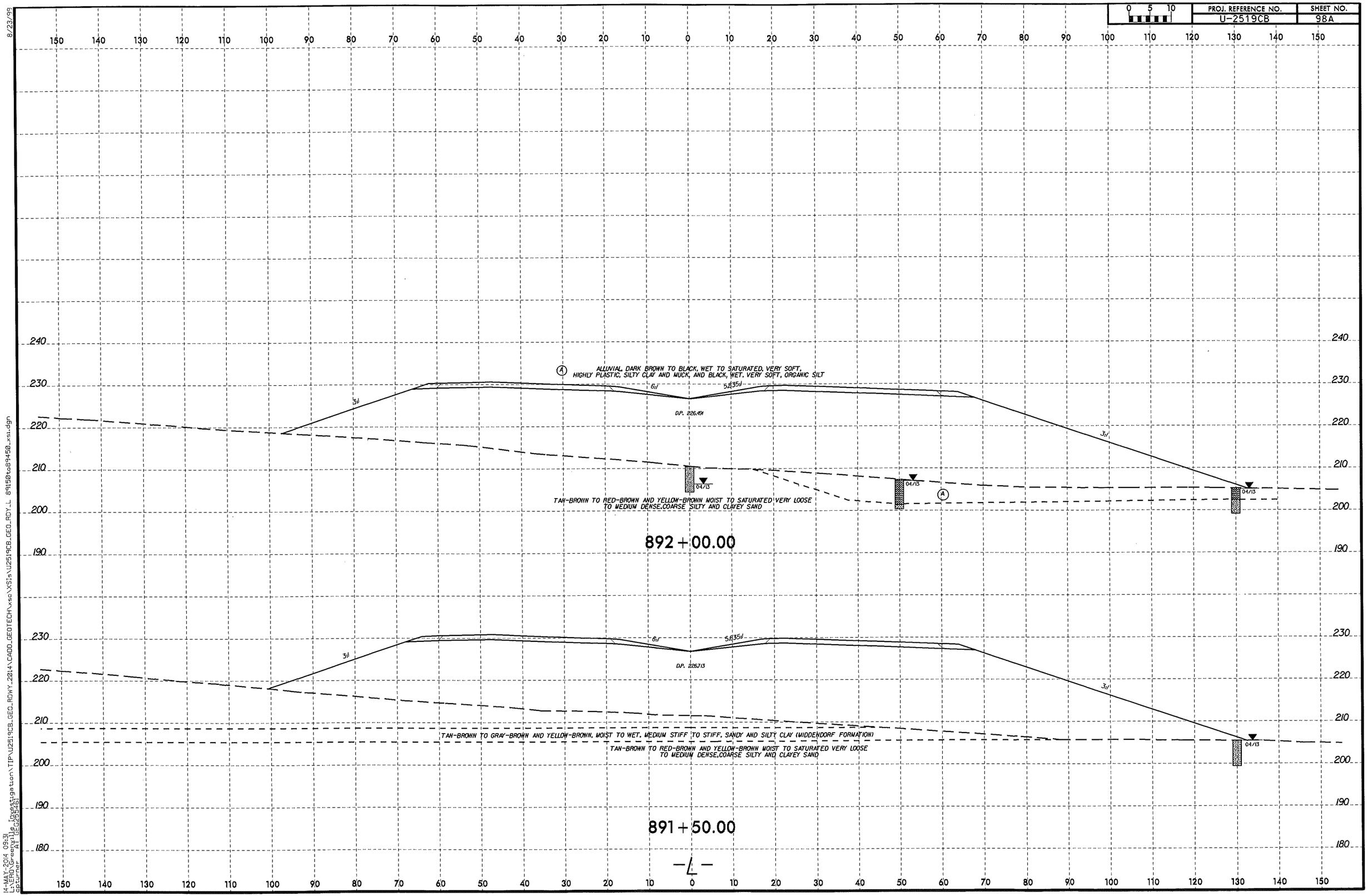
PROJ. REFERENCE NO.
U-2519CB
SHEET NO.
98A
0 5 10
A ALLUVIAL, DARK BROWN TO BLACK, WET TO SATURATED, VERY SOFT, HIGHLY PLASTIC, SILTY CLAY AND MUCK, AND BLACK, WET, VERY SOFT, ORGANIC SILT
6:1
5:1
3:1
D.P. 226.491
04/13
TAN-BROWN TO RED-BROWN AND YELLOW-BROWN MOIST TO SATURATED VERY LOOSE TO MEDIUM DENSE, COARSE SILTY AND CLAYEY SAND
892+00.00
D.P. 226.713
TAN-BROWN TO GRAY-BROWN AND YELLOW-BROWN, MOIST TO WET, MEDIUM STIFF TO STIFF, SANDY AND SILTY CLAY (WIDDENDORF FORMATION)
TAN-BROWN TO RED-BROWN AND YELLOW-BROWN MOIST TO SATURATED VERY LOOSE TO MEDIUM DENSE, COARSE SILTY AND CLAYEY SAND
891+50.00
-L-
8/23/99
14-MAY-2014 09:31
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PROJ. REFERENCE NO.	SHEET NO.
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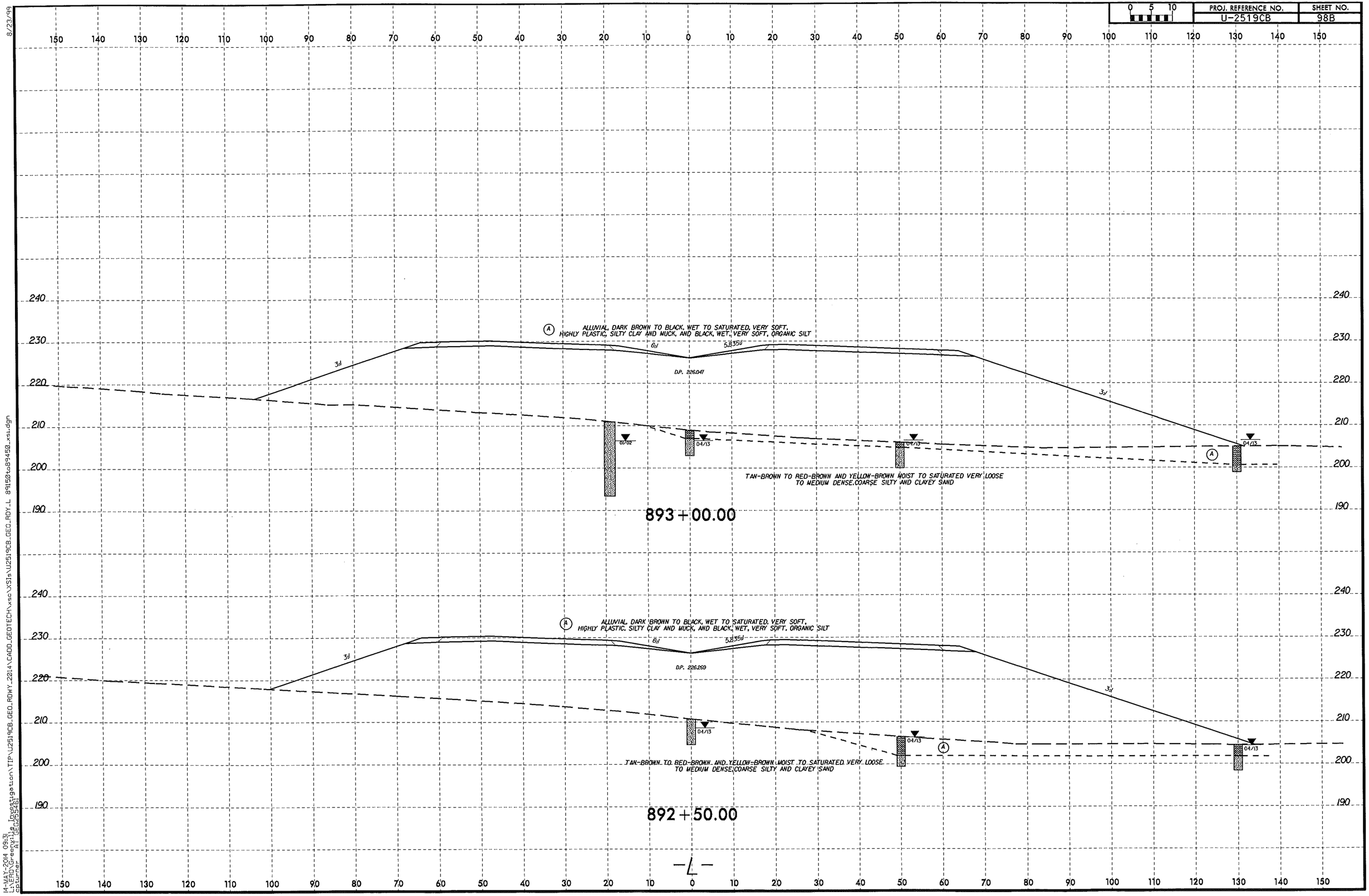

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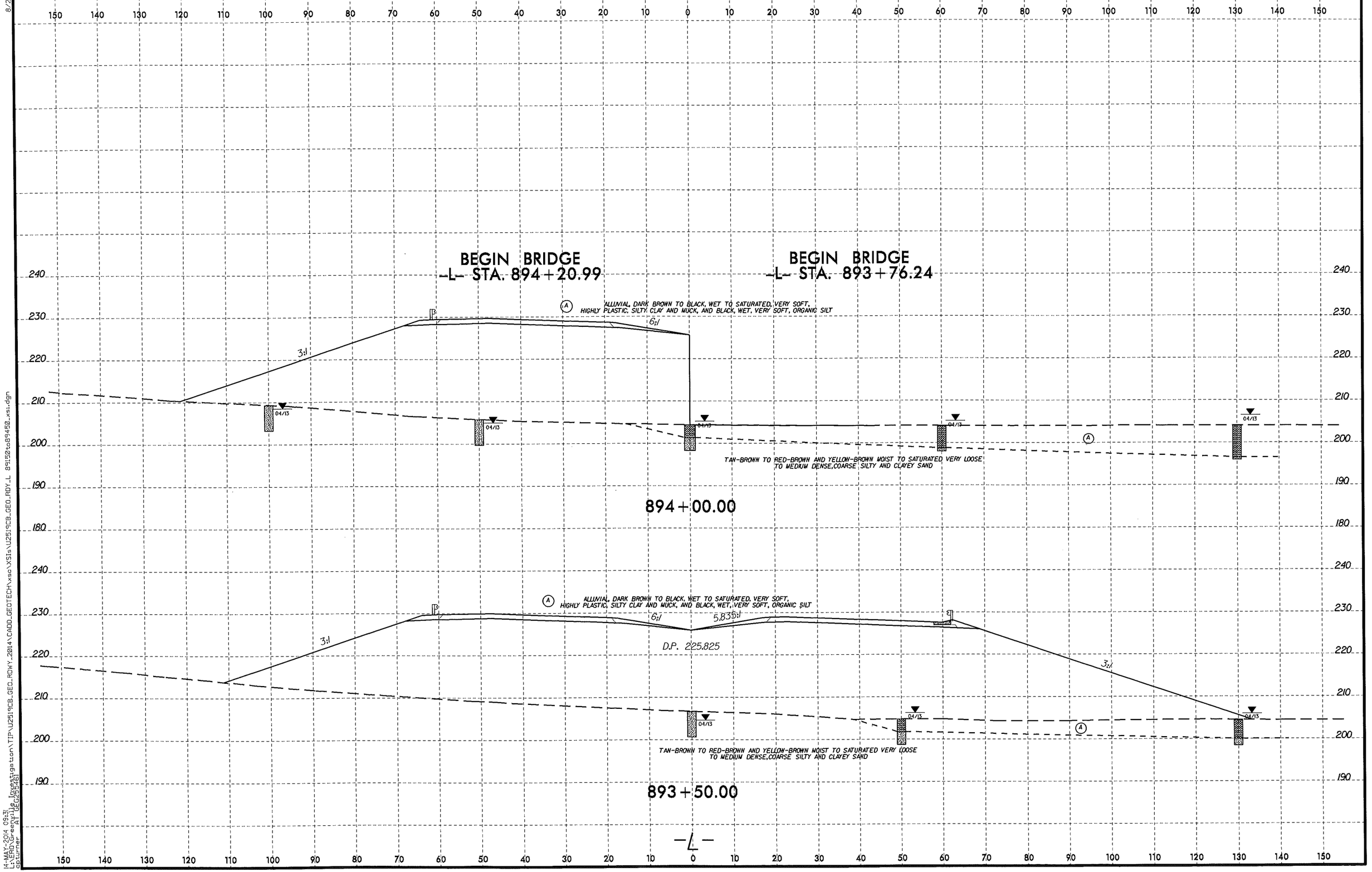

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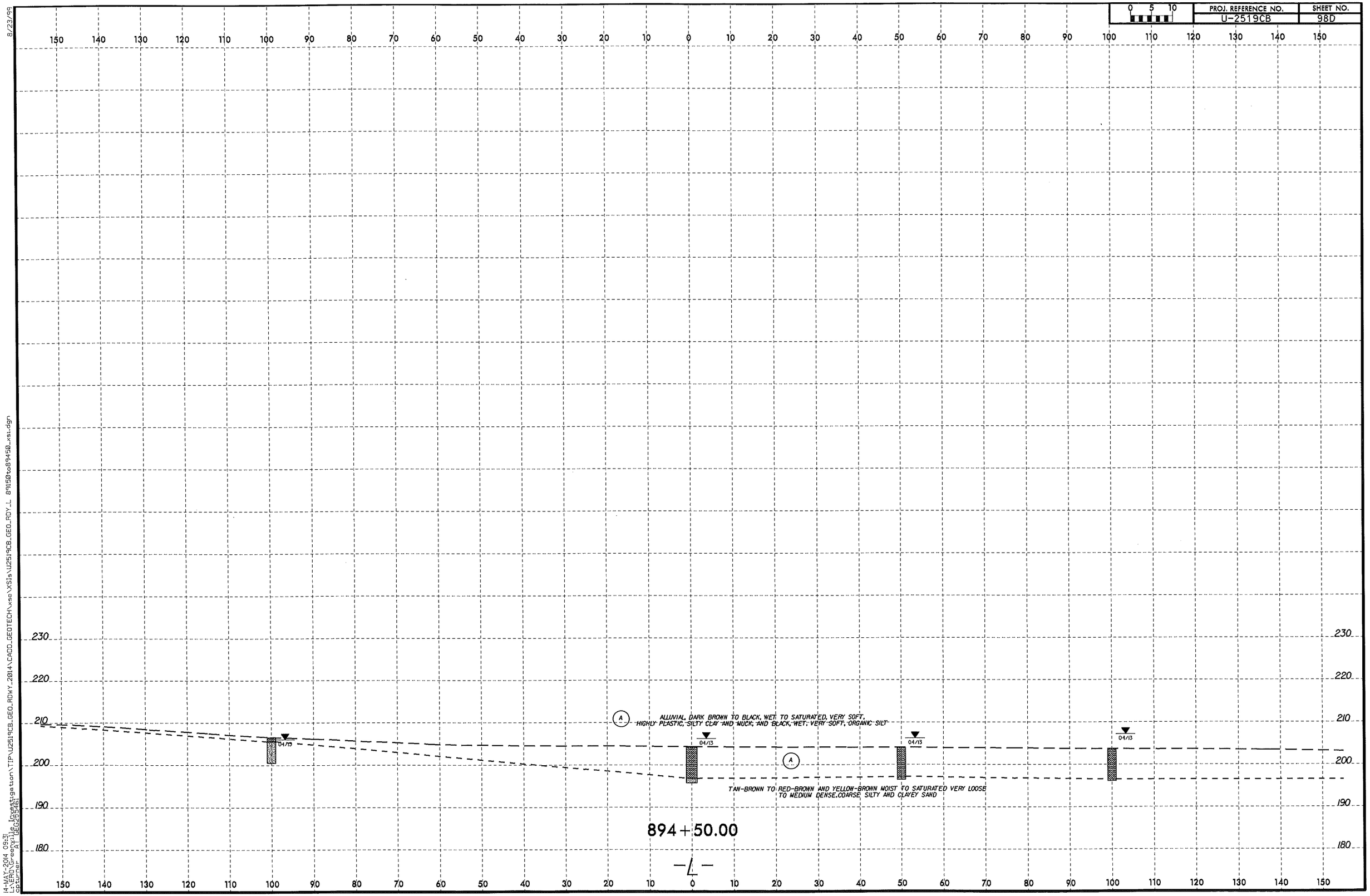

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PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	99

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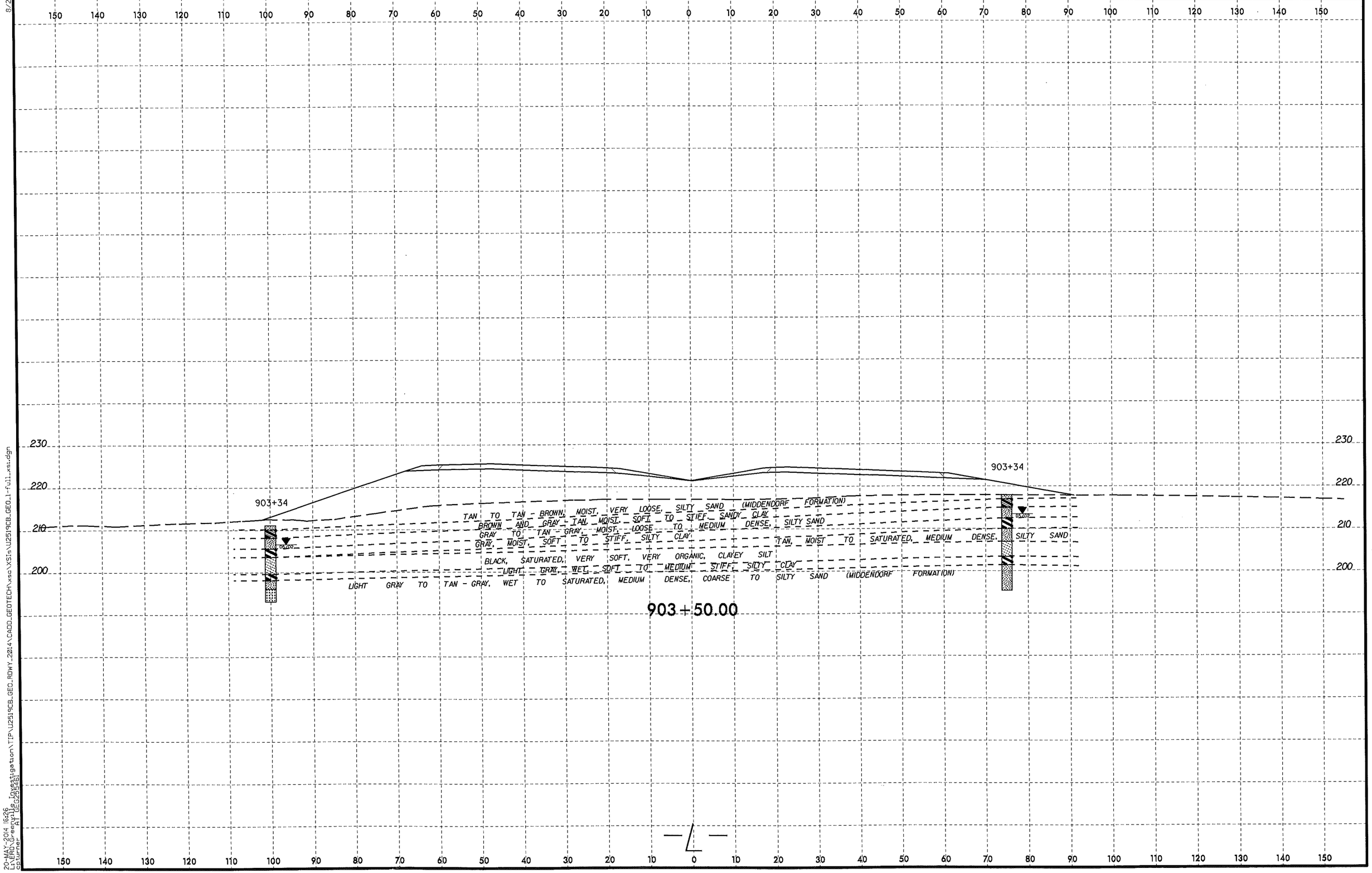

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PROJ. REFERENCE NO.	SHEET NO.
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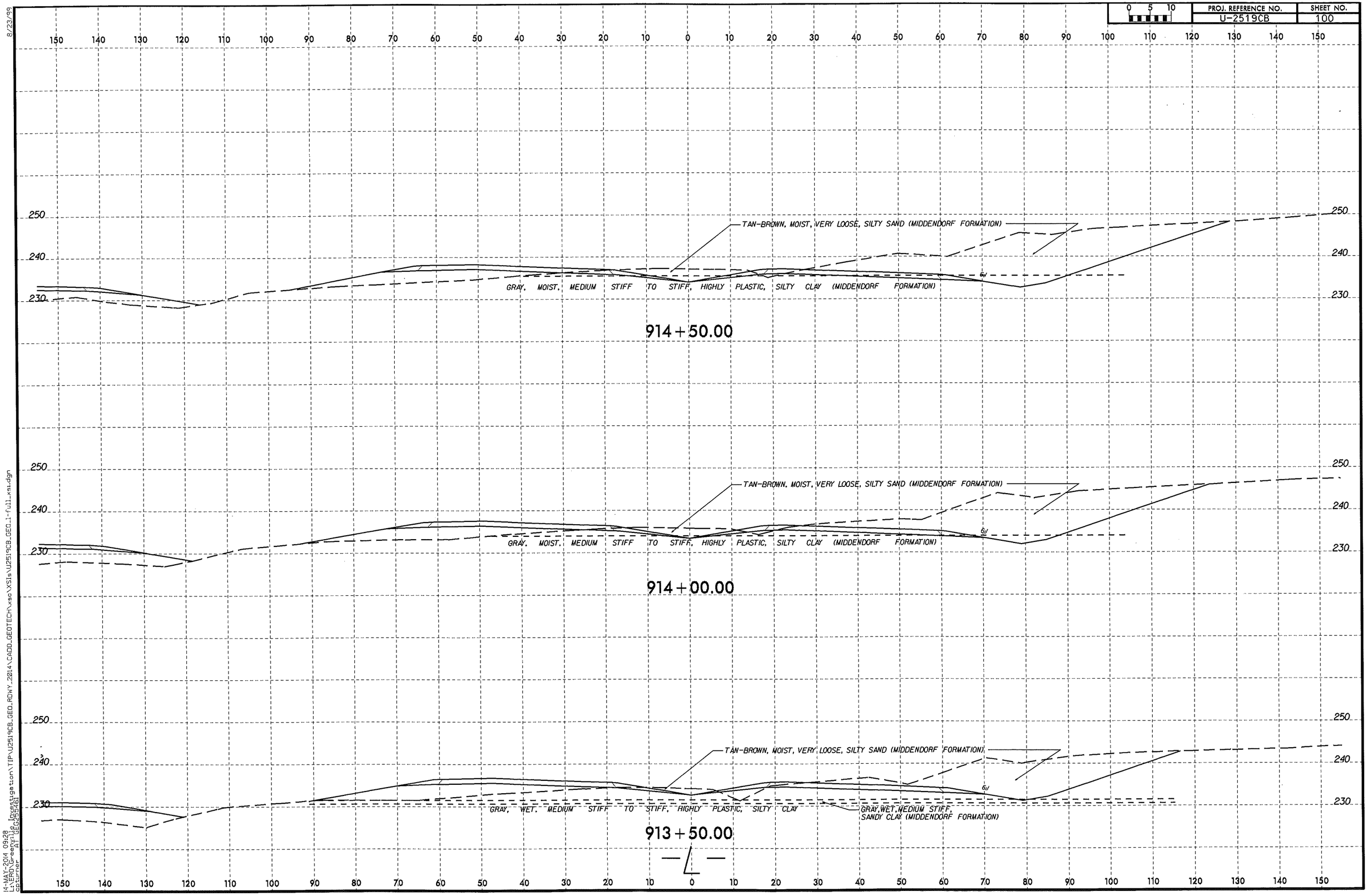

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cpturner
A1 GEO2554B1

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PROJ. REFERENCE NO.	SHEET NO.
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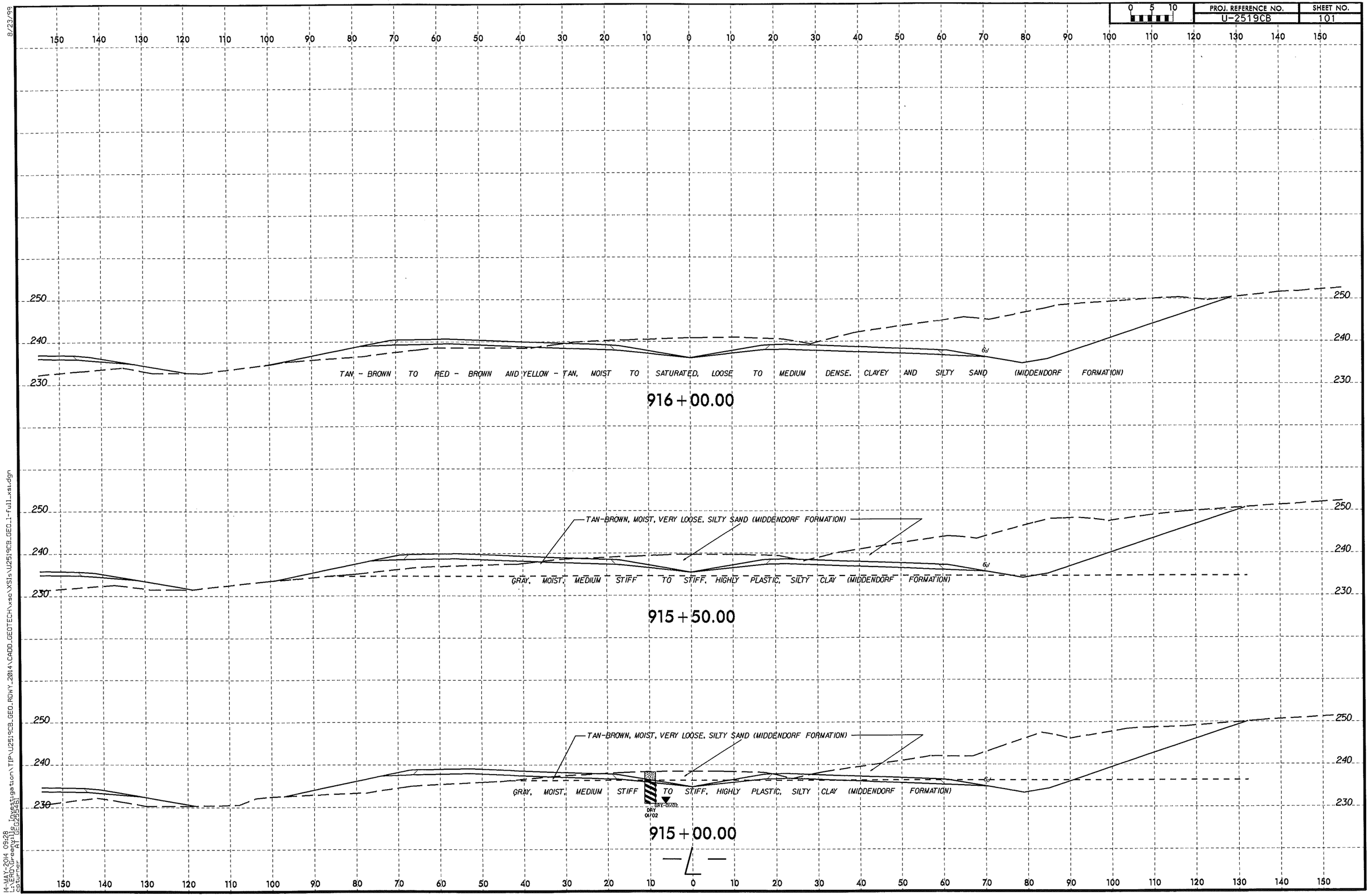

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PROJ. REFERENCE NO.	SHEET NO.
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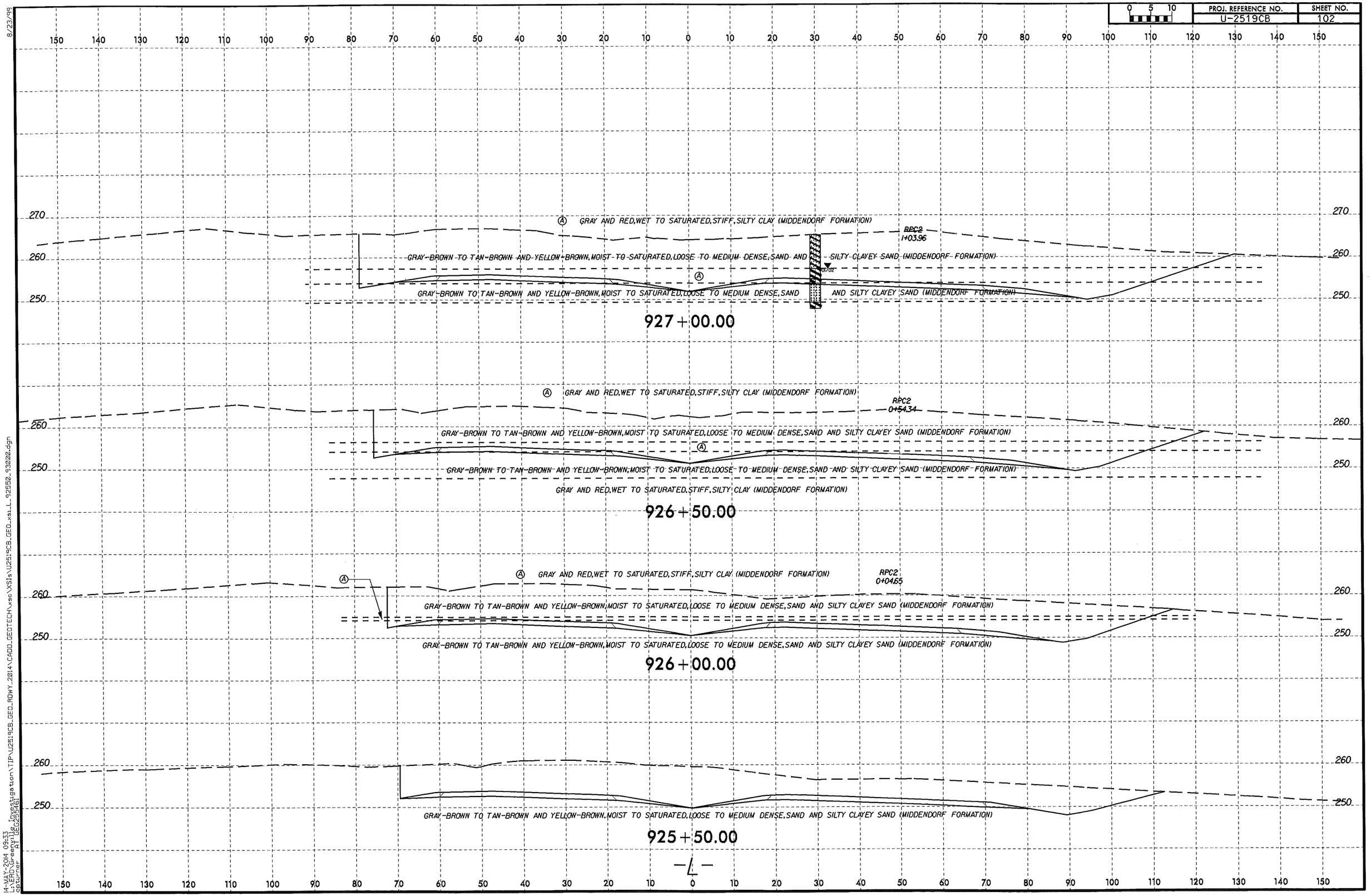

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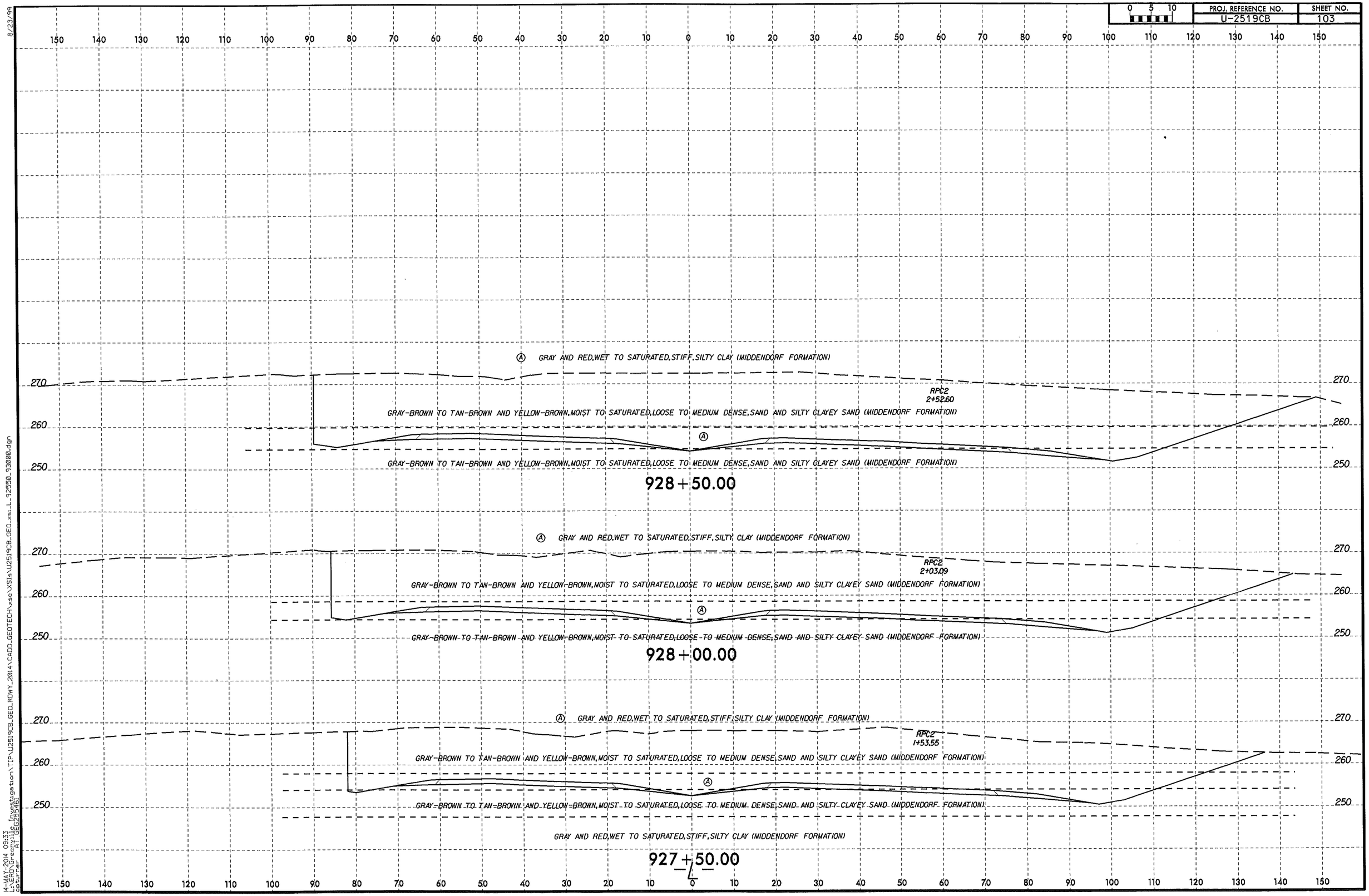
PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	103



8/23/99

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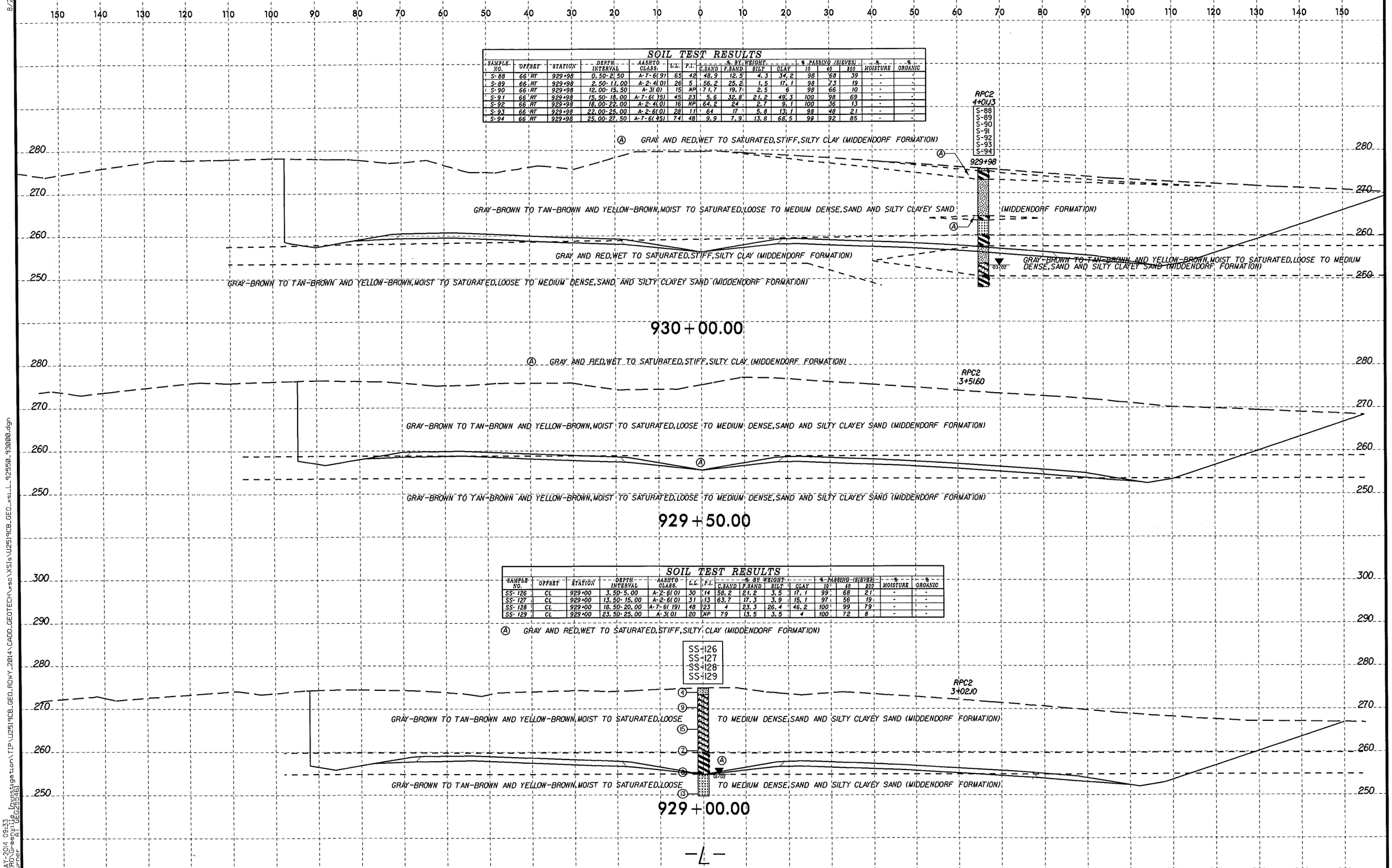
A1 GEO255461

PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	104

0 5 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-88	66' RT	929+98	0.50-2.50	A-7-6(9)	65	42	48.9	12.5	4.3	34.2	98	68	39	-	-
S-89	66' RT	929+98	2.50-11.00	A-2-4(0)	26	5	56.2	25.2	1.5	17.1	98	73	19	-	-
S-90	66' RT	929+98	12.00-15.50	A-3(0)	15	NP	71.7	19.7	2.5	6	98	66	10	-	-
S-91	66' RT	929+98	15.50-18.00	A-7-6(15)	45	23	5.6	32.8	21.2	40.3	100	98	69	-	-
S-92	66' RT	929+98	18.00-22.00	A-2-4(0)	16	NP	64.2	24	2.7	9.1	100	36	13	-	-
S-93	66' RT	929+98	22.00-25.00	A-2-6(0)	28	11	64	17	5.8	13.1	98	48	21	-	-
S-94	66' RT	929+98	25.00-27.50	A-7-6(45)	74	48	9.9	7.9	13.8	68.5	99	92	85	-	-



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-126	CL	929+00	3.50-5.00	A-2-6(0)	30	14	58.2	21.2	3.5	17.1	99	68	21	-	-
SS-127	CL	929+00	13.50-15.00	A-2-6(0)	31	13	63.7	17.3	3.9	15.1	97	56	19	-	-
SS-128	CL	929+00	18.50-20.00	A-7-6(19)	48	23	4	23.3	26.4	46.2	100	99	79	-	-
SS-129	CL	929+00	23.50-25.00	A-3(0)	20	NP	79	13.5	3.5	4	100	72	8	-	-

Ⓐ GRAY AND RED,WET TO SATURATED,STIFF,SILTY CLAY (MIDDENDORF FORMATION)

8/23/99

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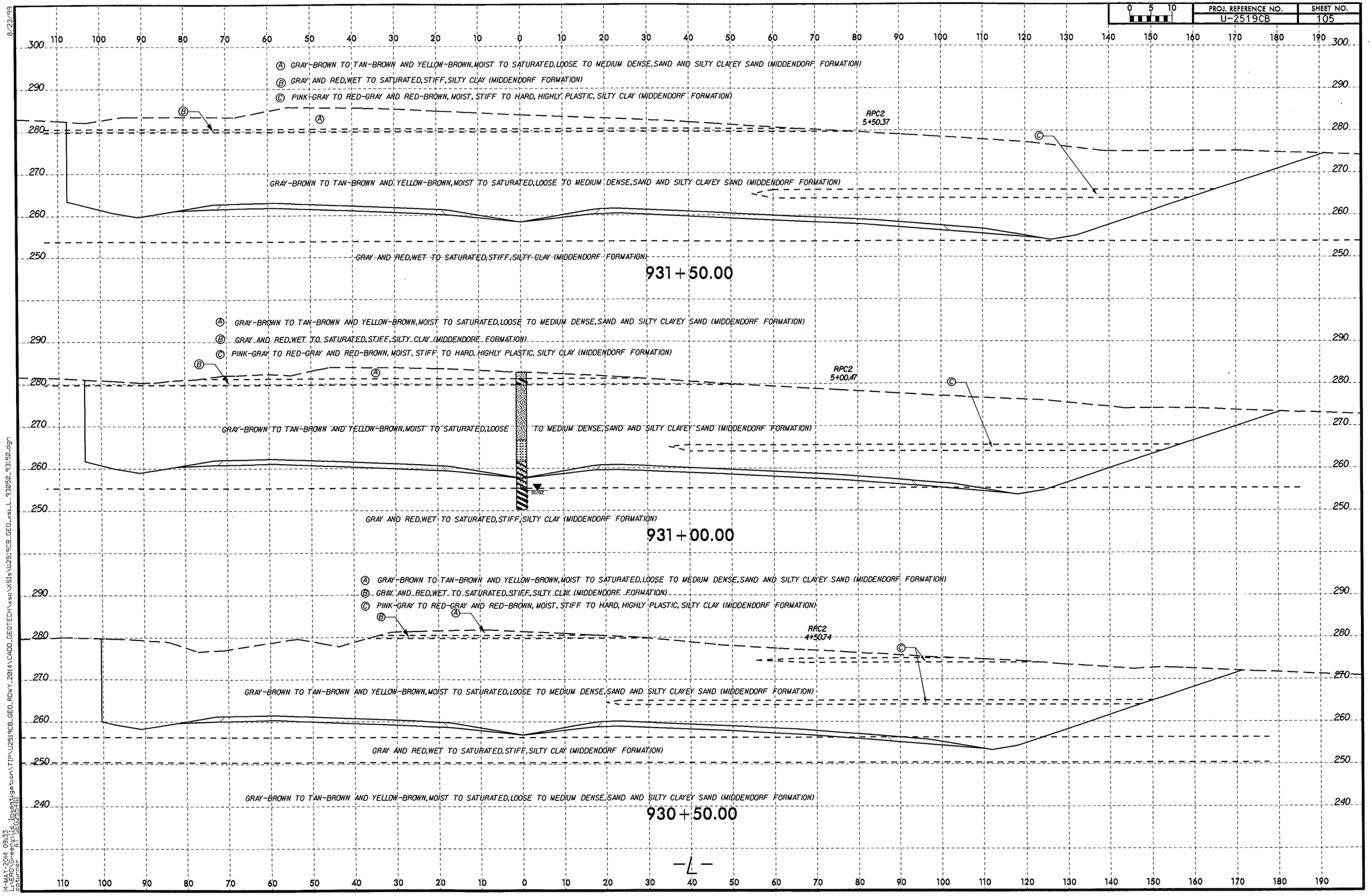

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PROJ. REFERENCE NO.	SHEET NO.
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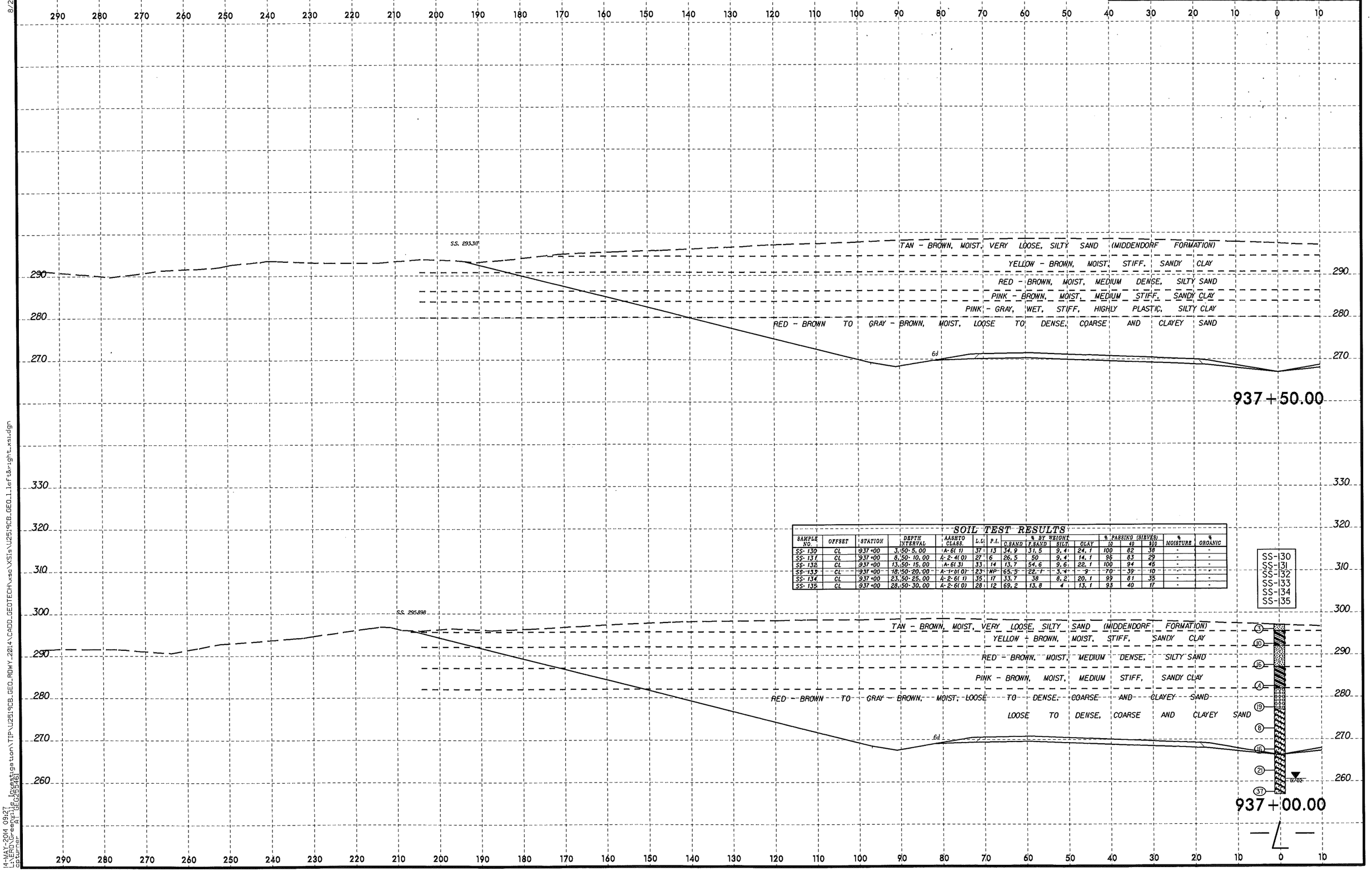

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-130	CL	937+00	3.50-5.00	A-6(1)	37	13	34.9	31.5	9.4	24.1	100	82	38	-	-
SS-131	CL	937+00	8.50-10.00	A-2-4(0)	27	6	26.5	50	9.4	14.1	96	83	29	-	-
SS-132	CL	937+00	13.50-15.00	A-6(3)	33	14	13.7	54.6	9.6	22.1	100	94	45	-	-
SS-133	CL	937+00	18.50-20.00	A-1-b(0)	23	NP	65.5	22.1	3.4	9	70	39	10	-	-
SS-134	CL	937+00	23.50-25.00	A-2-6(1)	35	17	33.7	38	8.2	20.1	99	81	35	-	-
SS-135	CL	937+00	28.50-30.00	A-2-6(0)	28	12	69.2	13.8	4	13.1	93	40	17	-	-

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PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	106A

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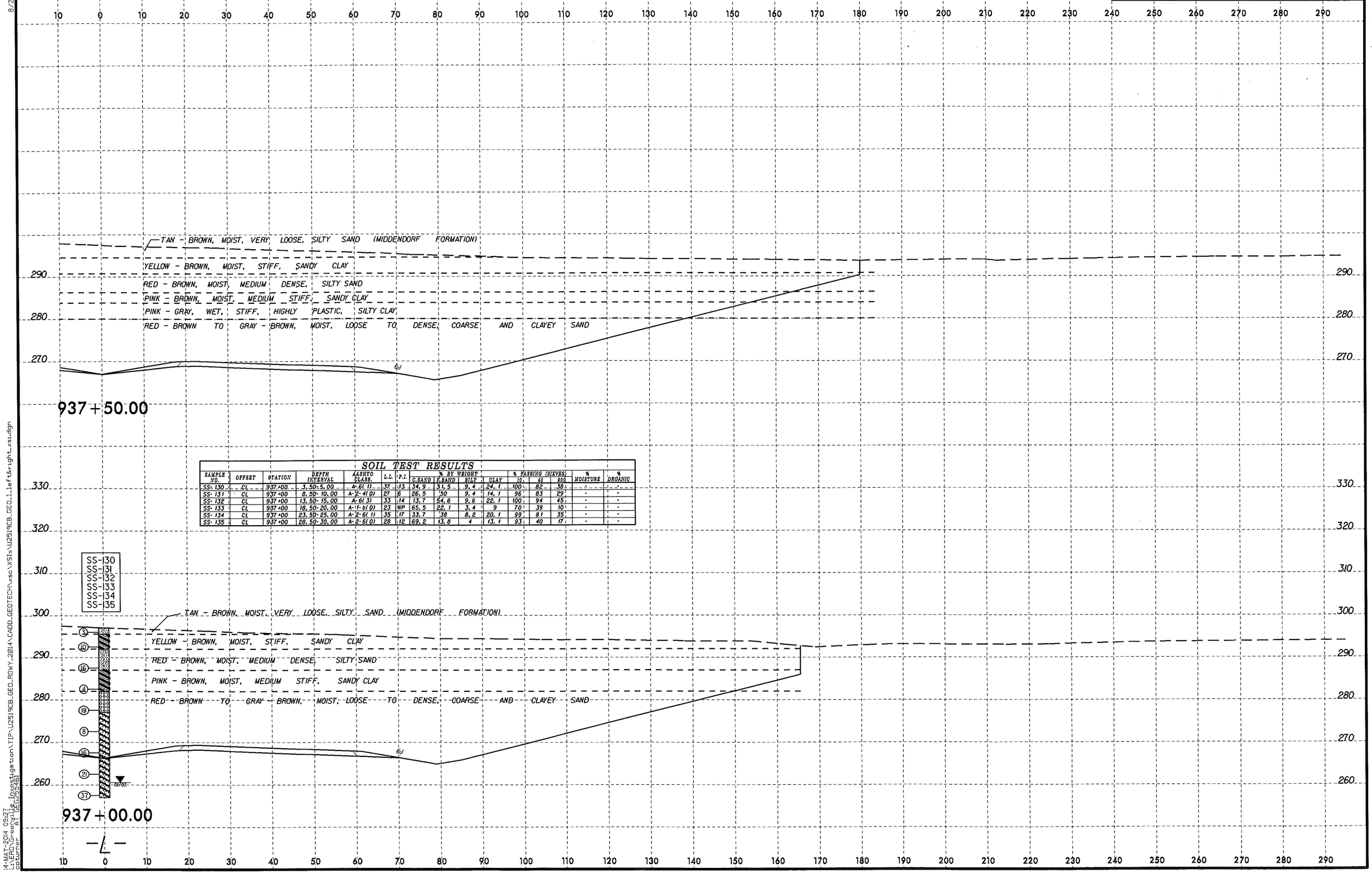

SOIL TEST RESULTS

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-130	CL	937+00	3.50-5.00	A-6(11)	37	13	34.9	31.5	9.4	24.1	100	82	38	-	-
SS-131	CL	937+00	8.50-10.00	A-2-4(0)	27	6	26.5	50	9.4	14.1	96	83	29	-	-
SS-132	CL	937+00	13.50-15.00	A-6(3)	33	14	13.7	54.6	9.6	22.1	100	94	45	-	-
SS-133	CL	937+00	18.50-20.00	A-11-8(0)	23	NP	65.5	22.1	3.4	9	70	39	10	-	-
SS-134	CL	937+00	23.50-25.00	A-2-6(1)	35	17	33.7	38	8.2	20.1	99	81	35	-	-
SS-135	CL	937+00	28.50-30.00	A-2-6(0)	28	12	69.2	13.6	4	13.1	93	40	17	-	-

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PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	107

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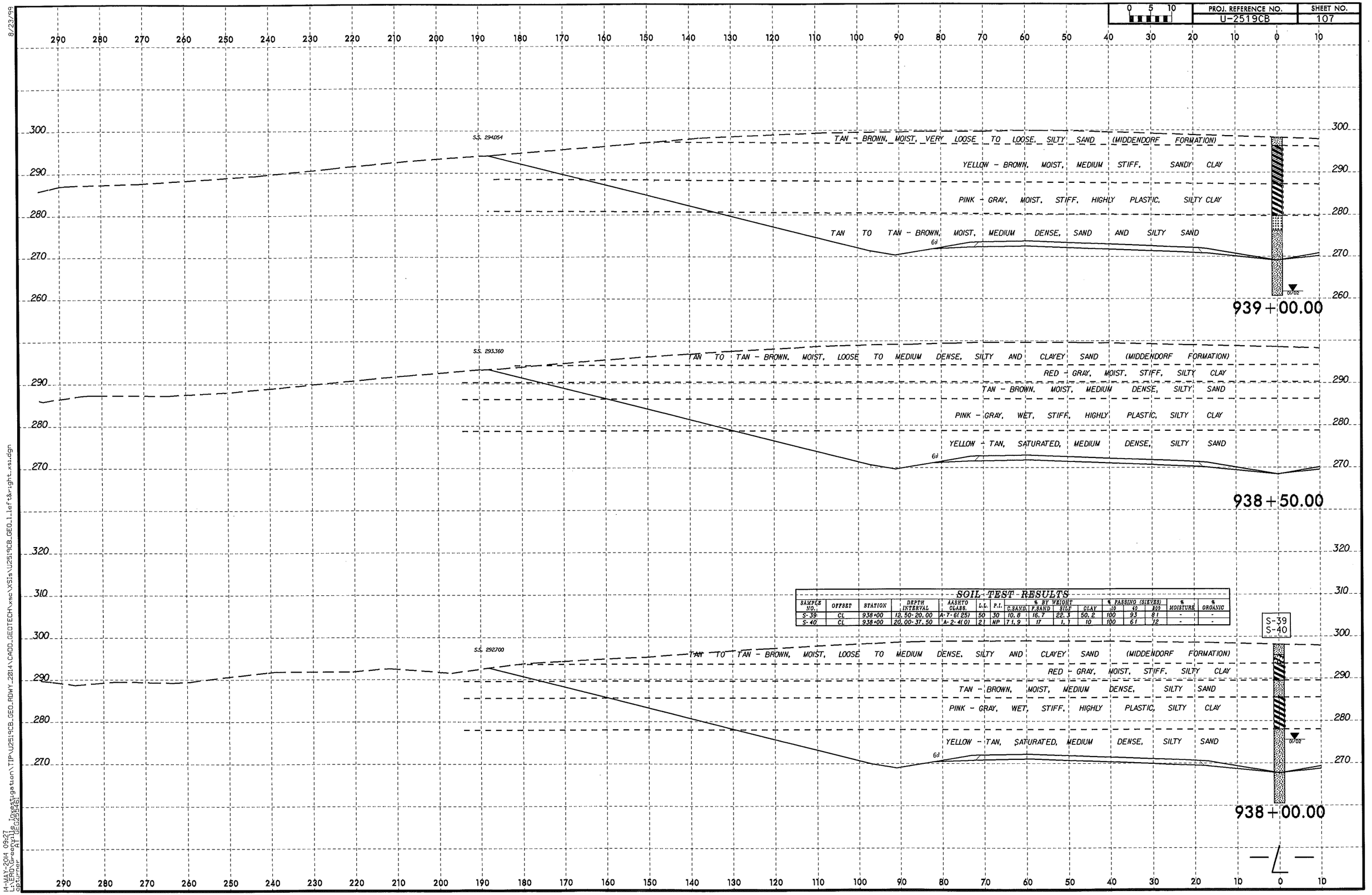

SOIL TEST RESULTS

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-39	CL	938+00	12.50-20.00	A-7-6(25)	50	30	10.8	16.7	22.3	50.2	100	93	81	-	-
S-40	CL	938+00	20.00-37.50	A-2-4(0)	21	NP	71.9	17	1.1	10	100	61	12	-	-

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PROJ. REFERENCE NO.	SHEET NO.
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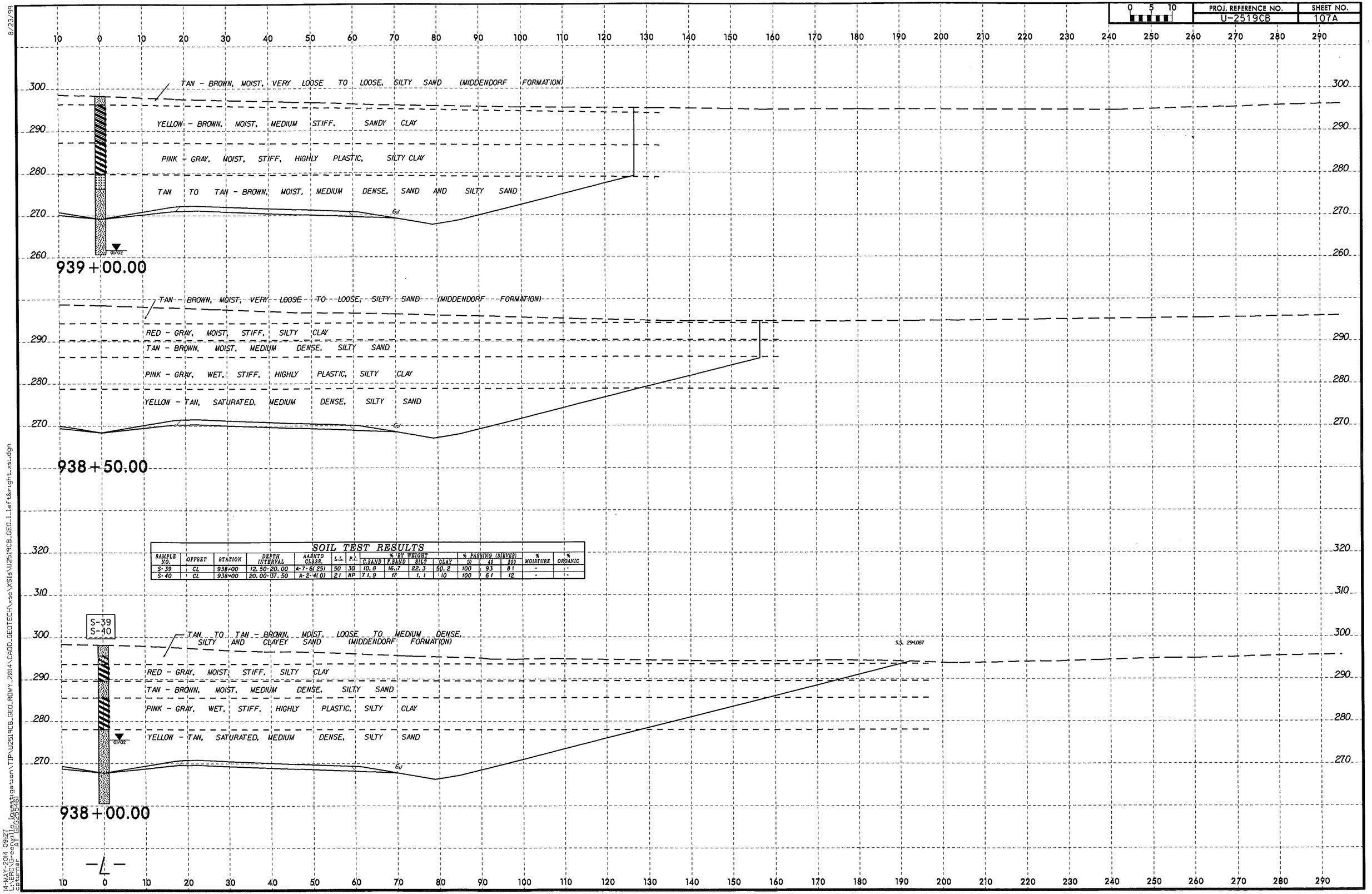

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	#200	% MOISTURE	% ORGANIC
S-39	CL	938+00	12.50-20.00	A-7-6(25)	50	30	10.8	16.7	22.3	50.2	100	93	81	-	-
S-40	CL	938+00	20.00-37.50	A-2-4(0)	21	NP	71.9	17	1.1	10	100	61	12	-	-

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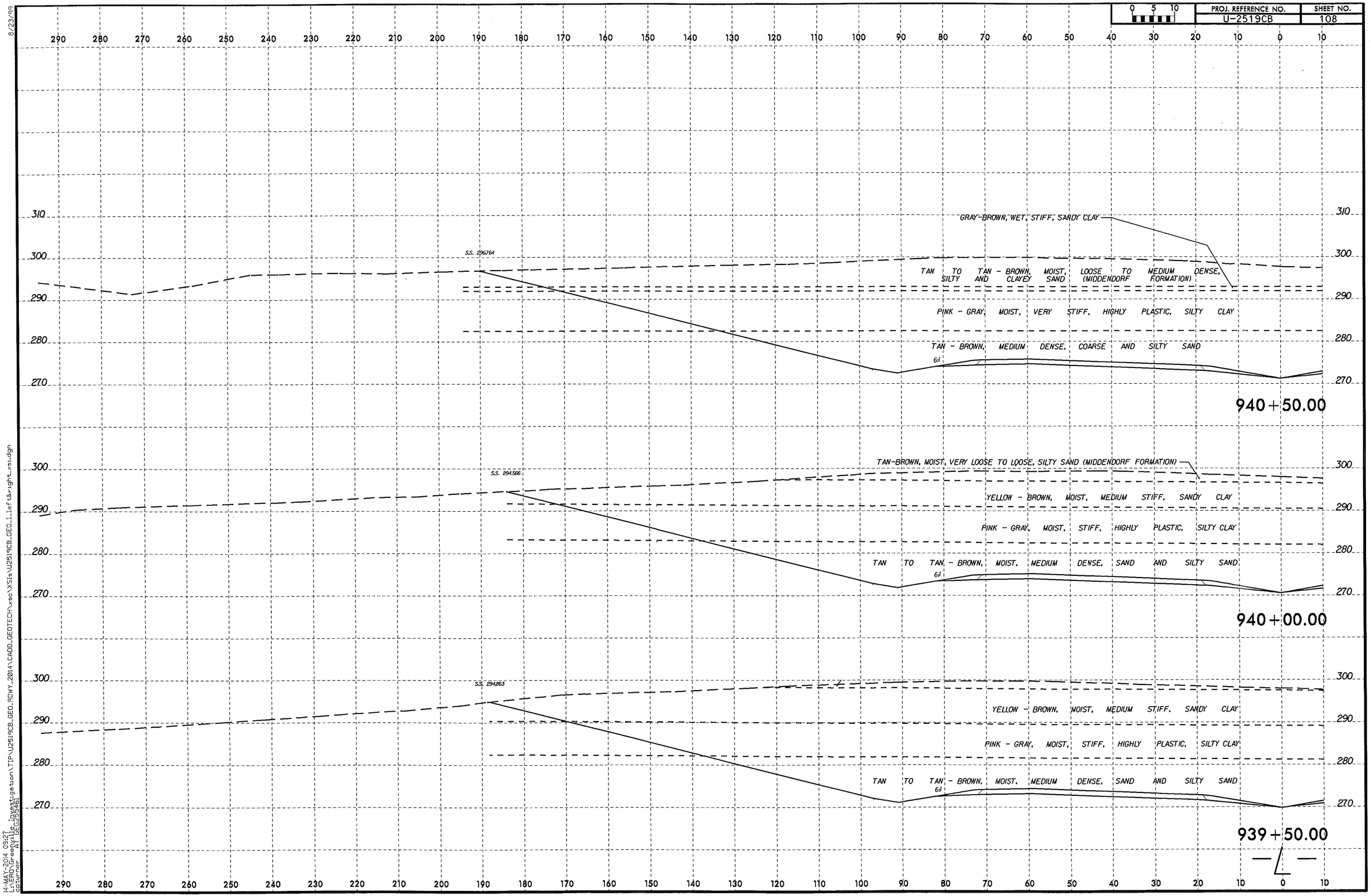
cptumer AT GEO25461



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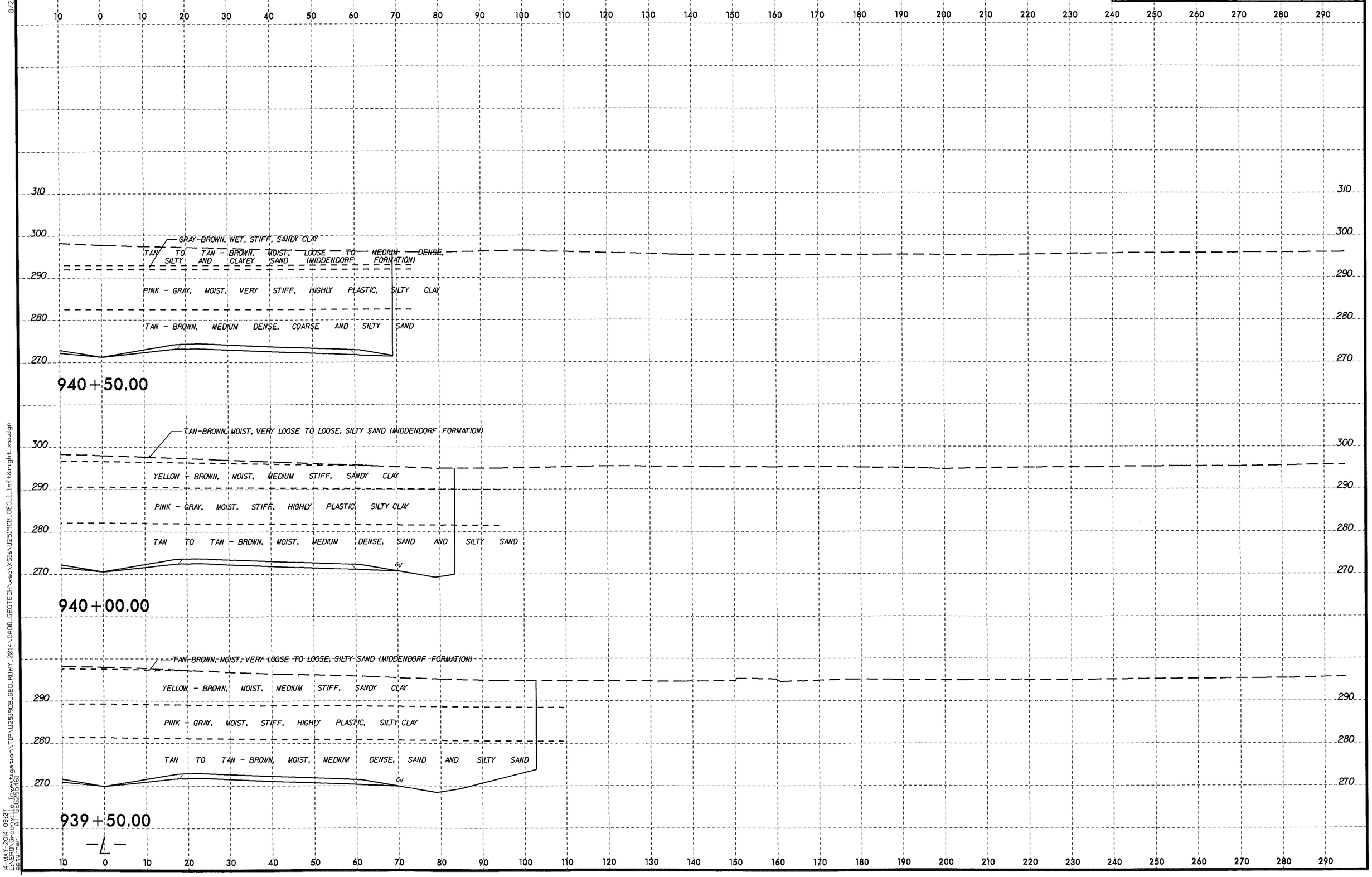
PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	108A



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PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	109

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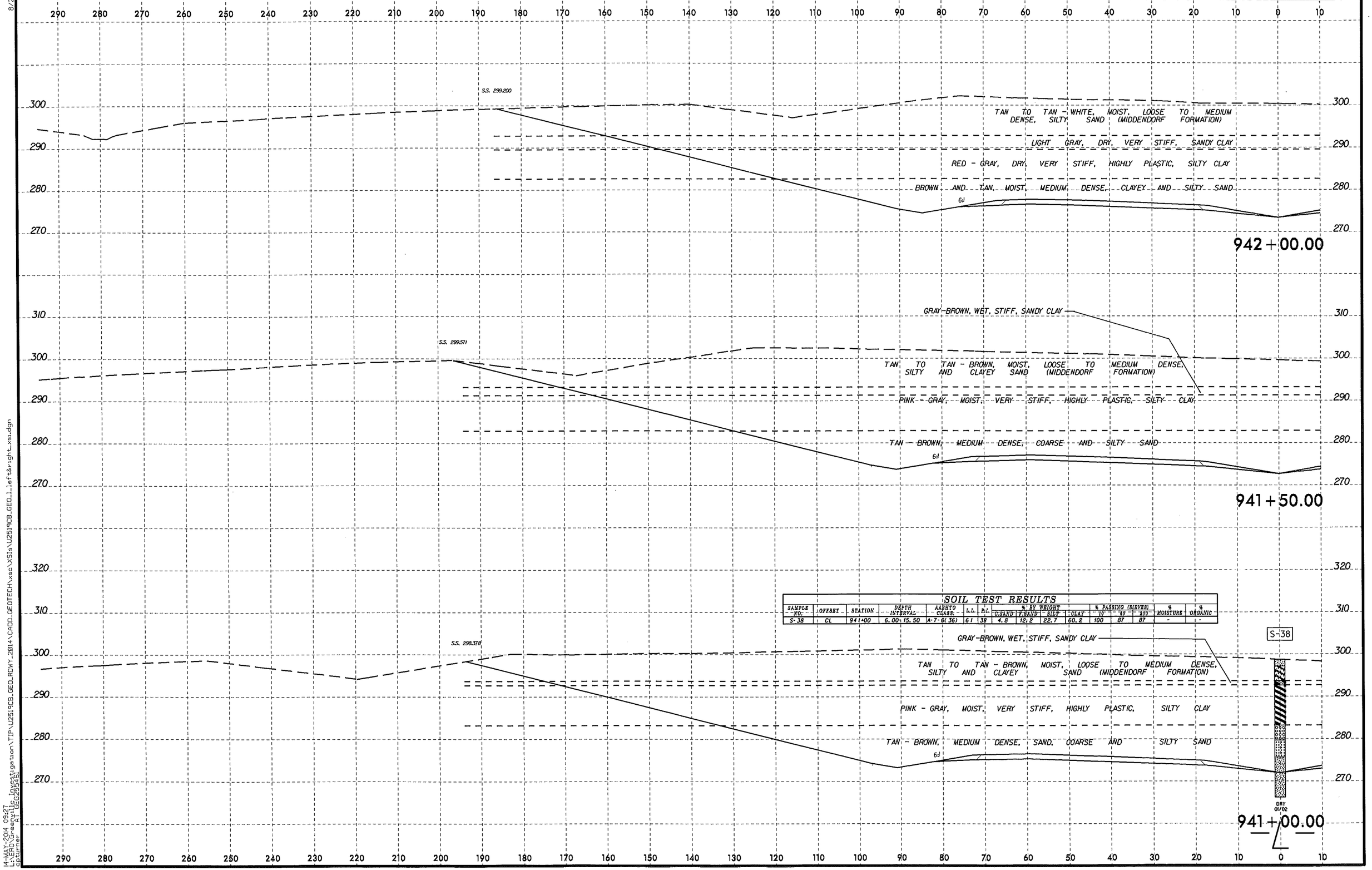

SOIL TEST RESULTS

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-38	CL	941+00	6.00-15.50	A-7-6(36)	61	38	4.8	12.2	22.7	60.2	100	87	87	-	-

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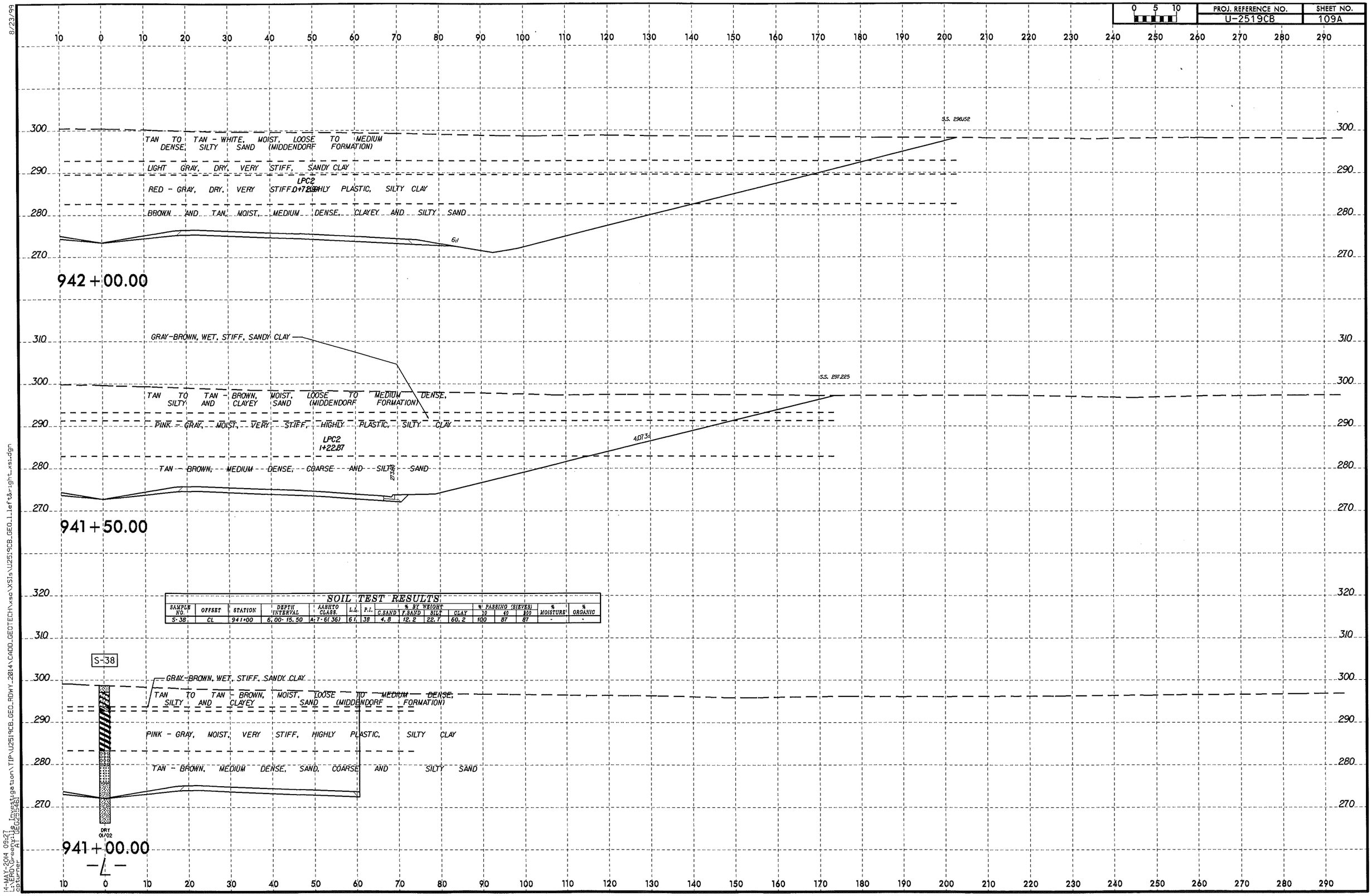
PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	109A



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-38	CL	941+00	6.00- 15.50	A-7-6(36)	61	38	4.8	12.2	22.7	60.2	100	87	87	-	-

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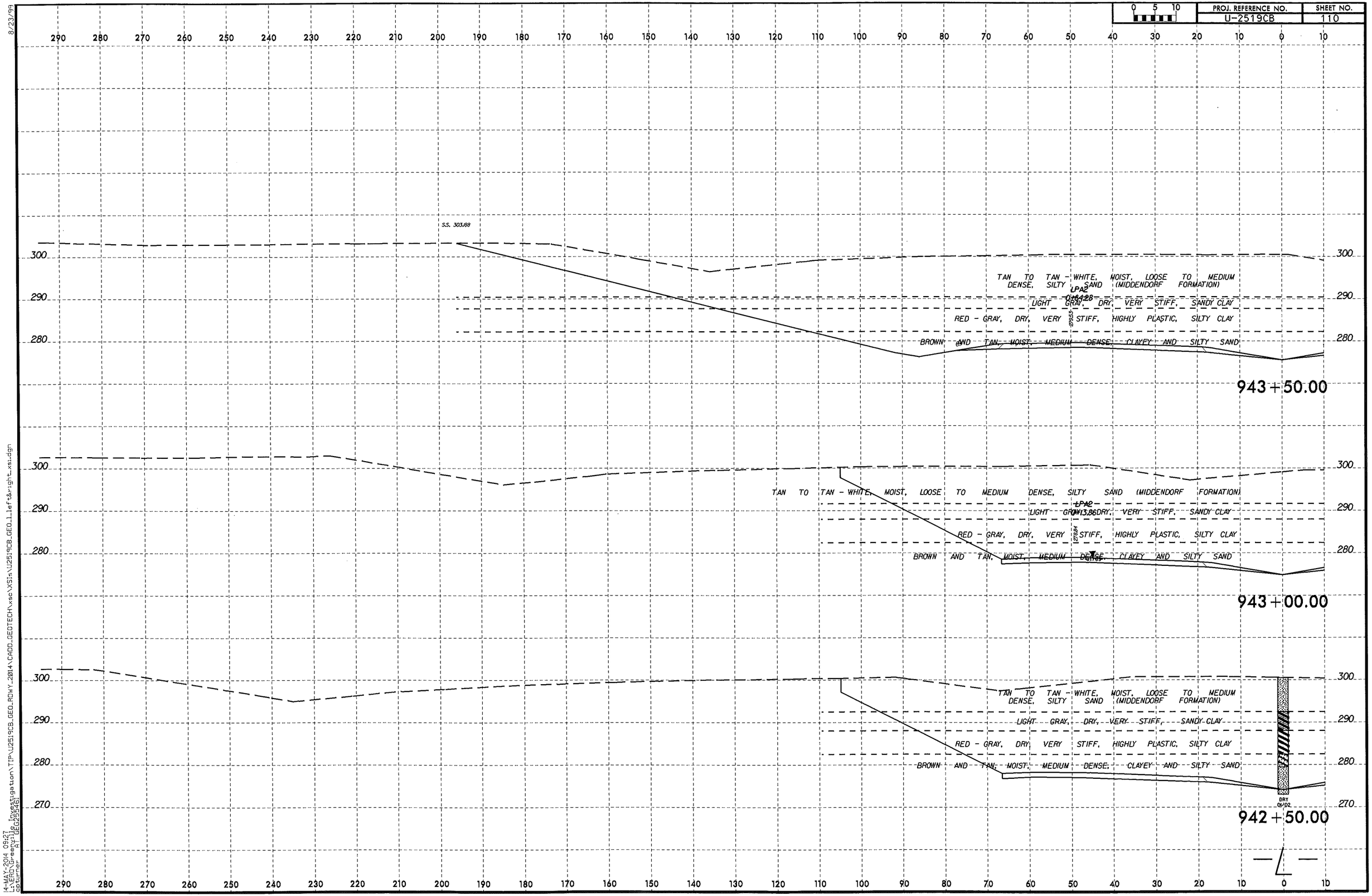

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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
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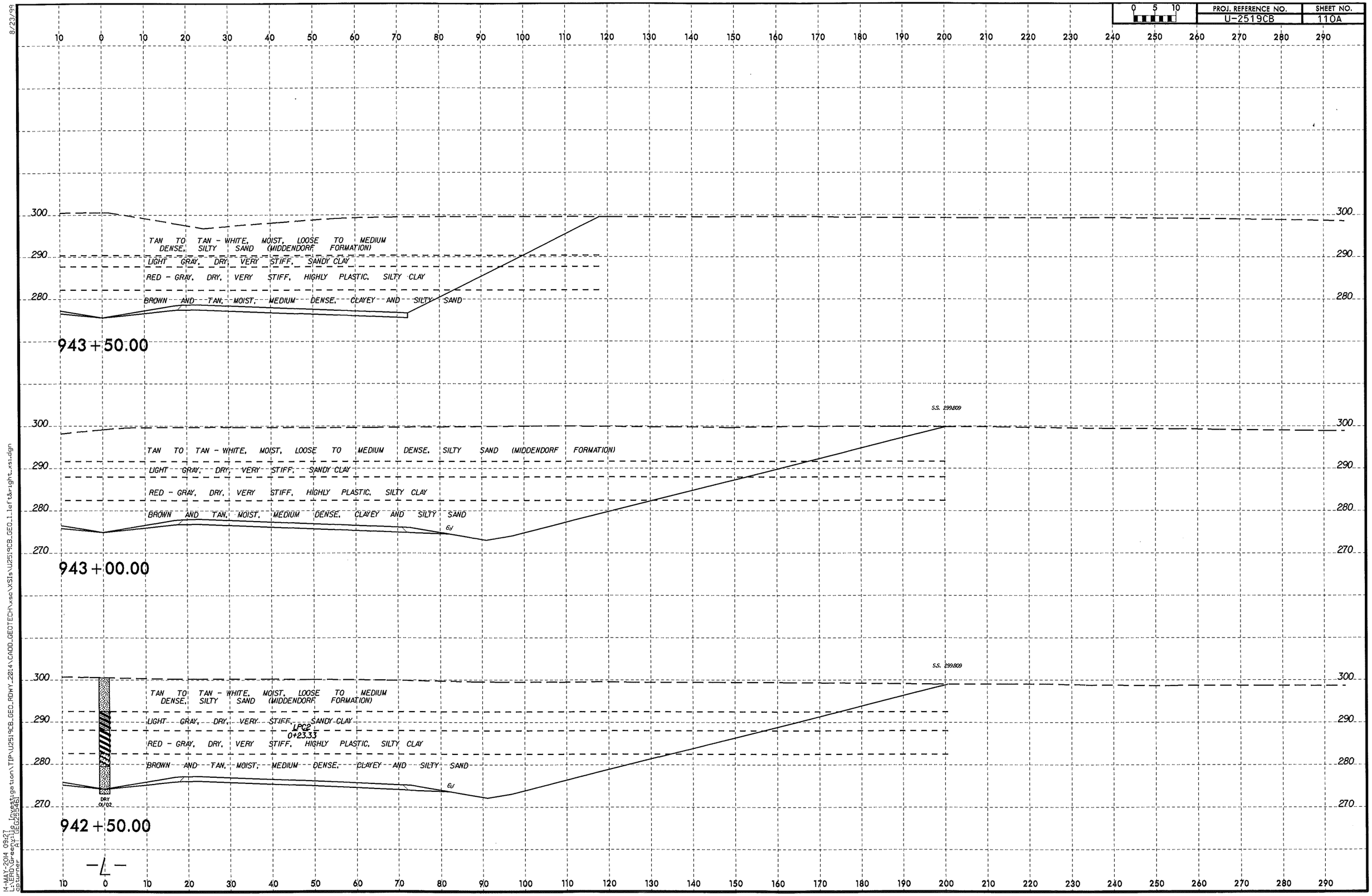

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PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	111

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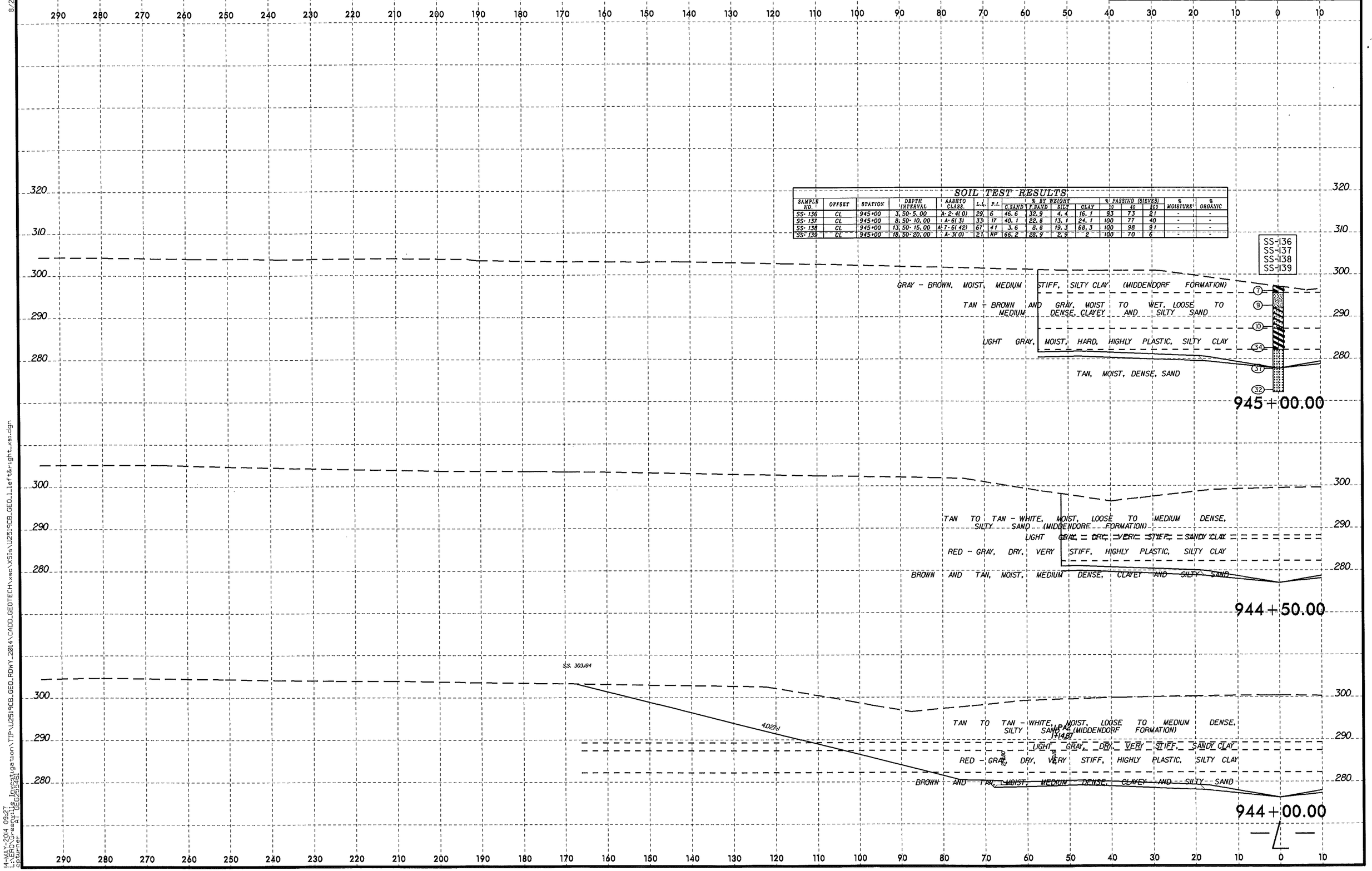
SOIL TEST RESULTS

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-136	CL	945+00	3.50-5.00	A-2-4(0)	29	6	46.6	32.9	4.4	16.1	93	73	21	-	-
SS-137	CL	945+00	8.50-10.00	A-6(3)	33	17	40.1	22.8	13.1	24.1	100	77	40	-	-
SS-138	CL	945+00	13.50-15.00	A-7-6(42)	67	41	3.6	8.8	19.3	68.3	100	98	91	-	-
SS-139	CL	945+00	18.50-20.00	A-3(0)	21	NP	66.2	28.9	2.9	2	100	70	6	-	-



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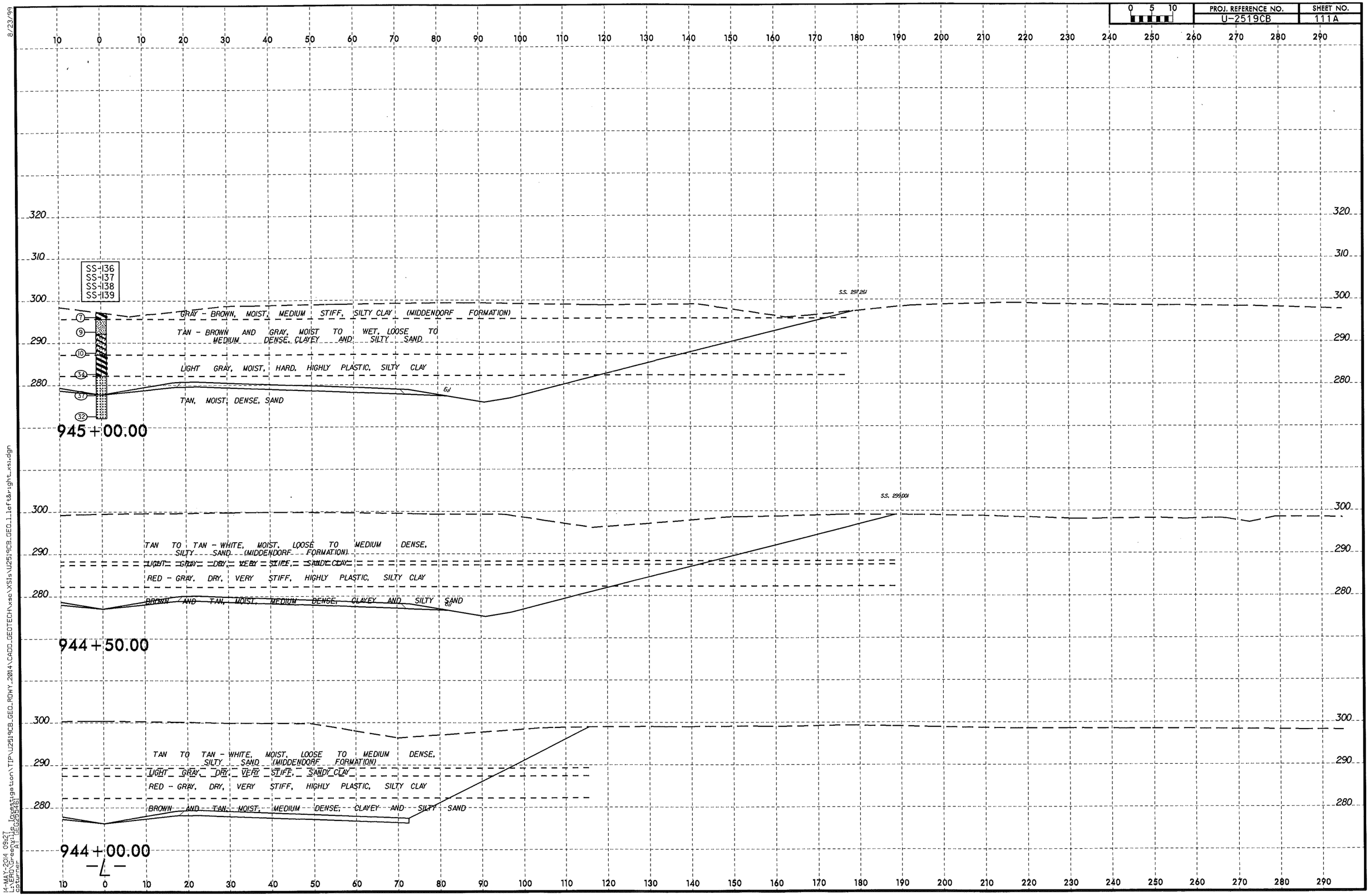

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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
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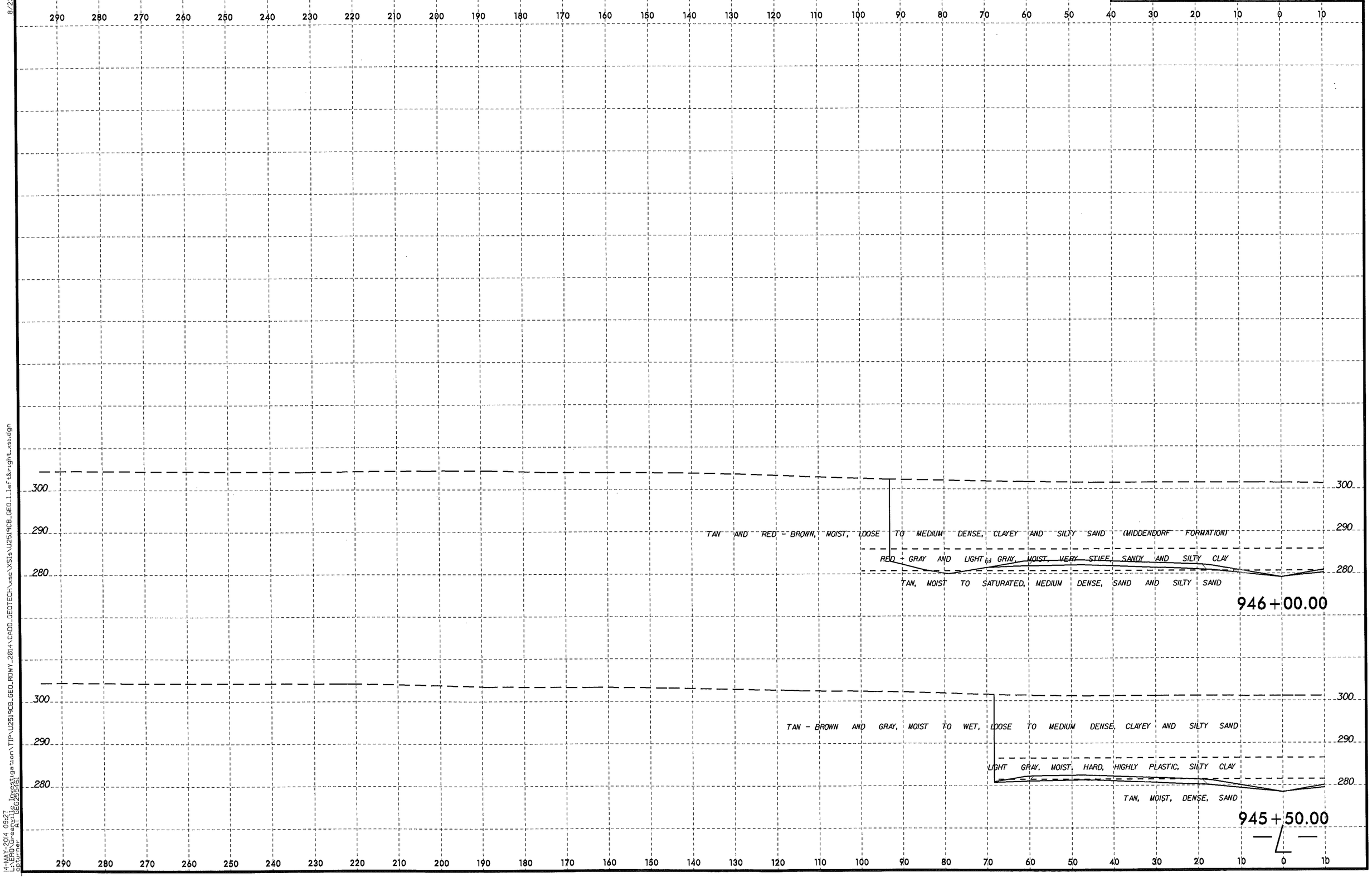

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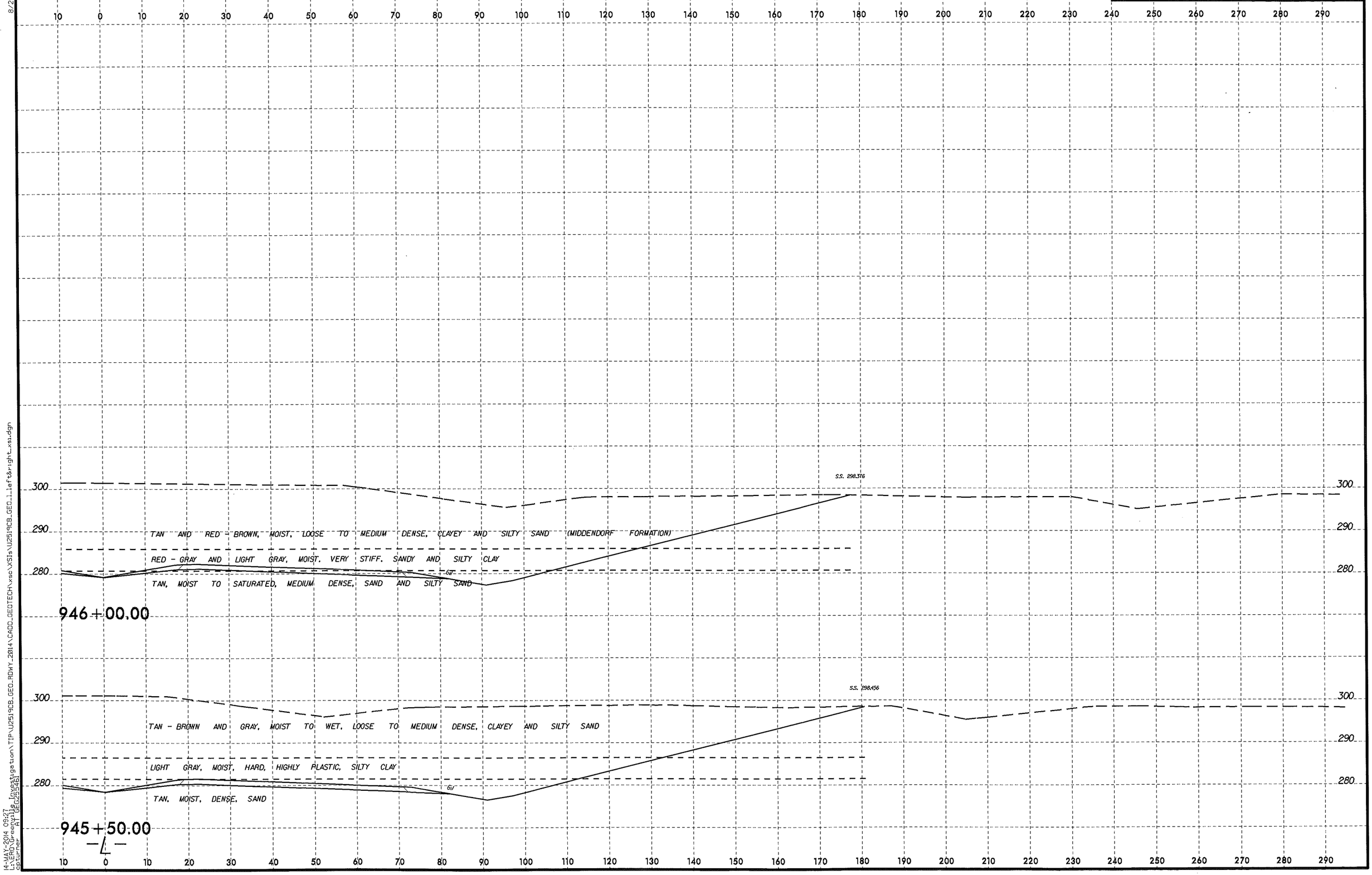

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PROJ. REFERENCE NO.	SHEET NO.
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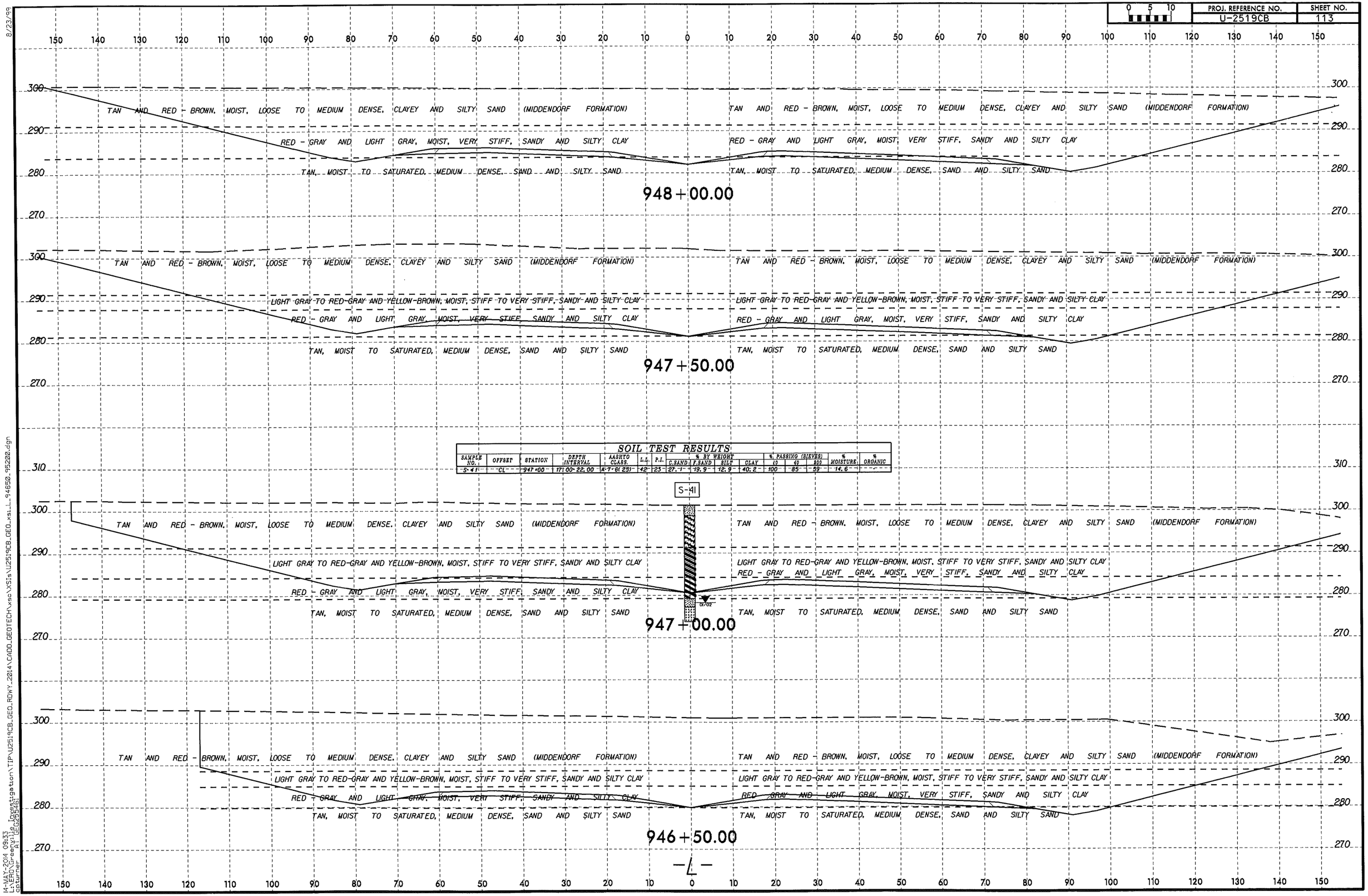

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-41	-CL-	947+00	17.00-22.00	A-7-6(25)	42	23	27.1	19.9	12.9	40.2	100	85	59	14.6	--

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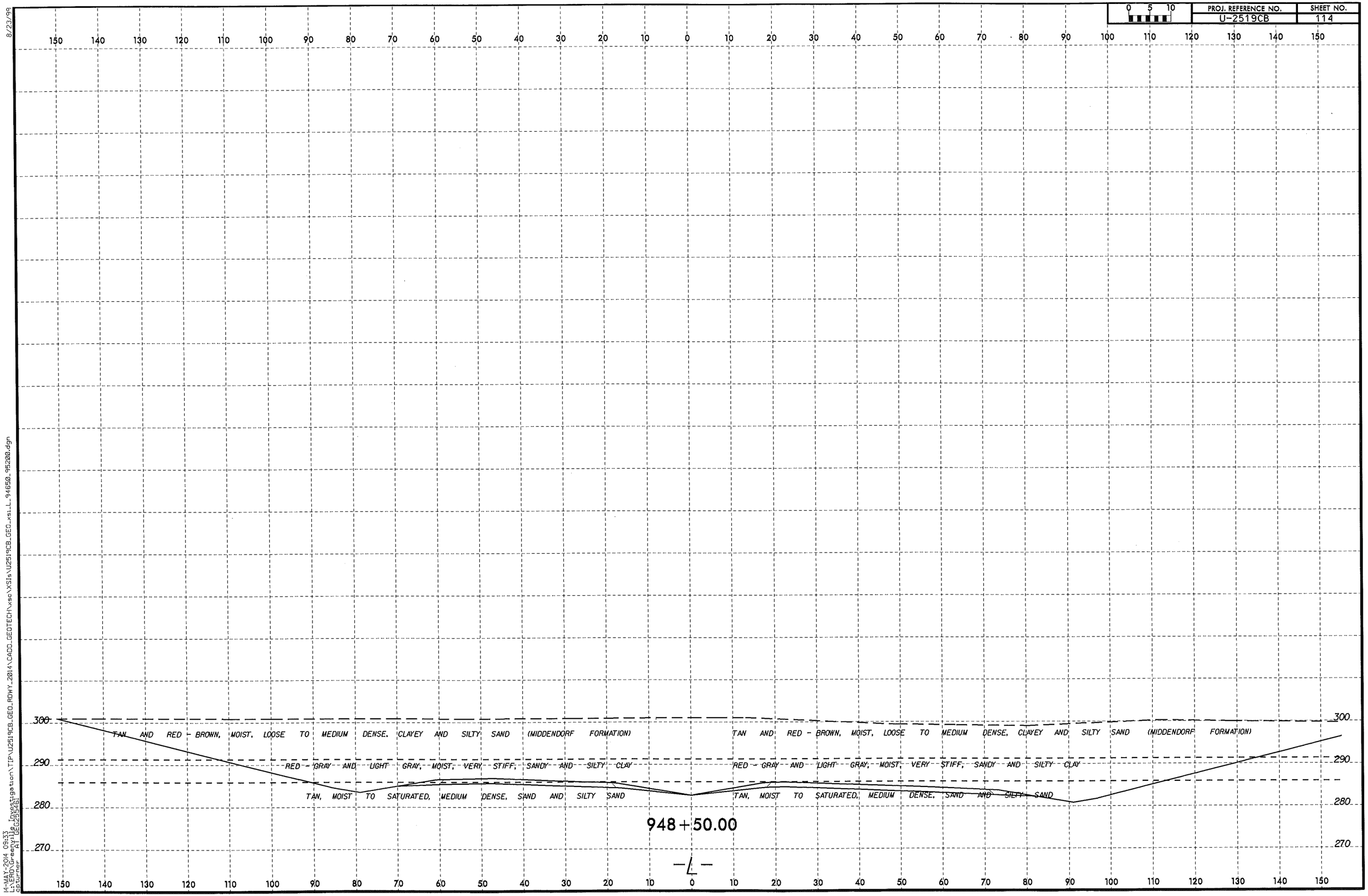

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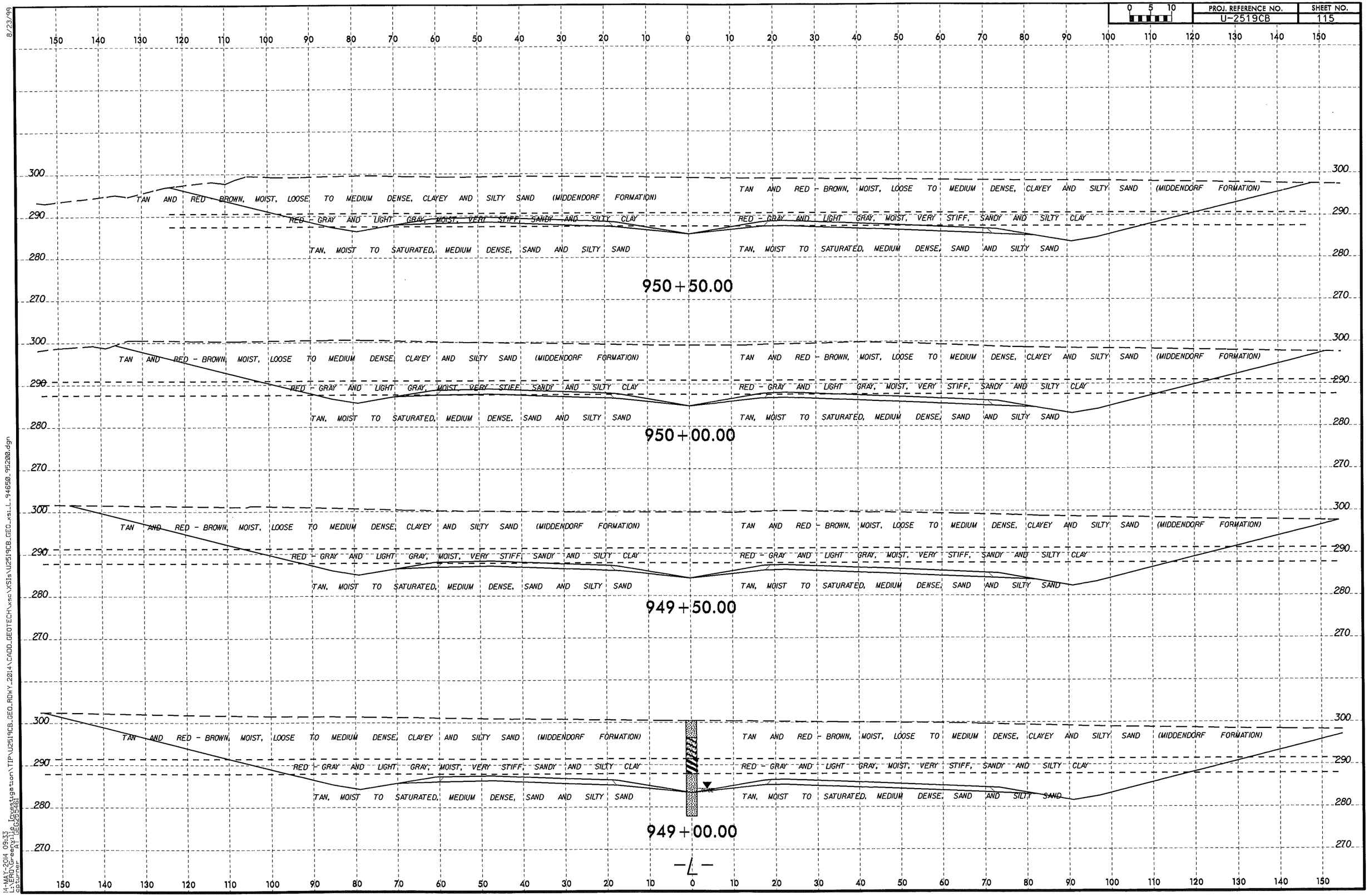

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PROJ. REFERENCE NO.	SHEET NO.
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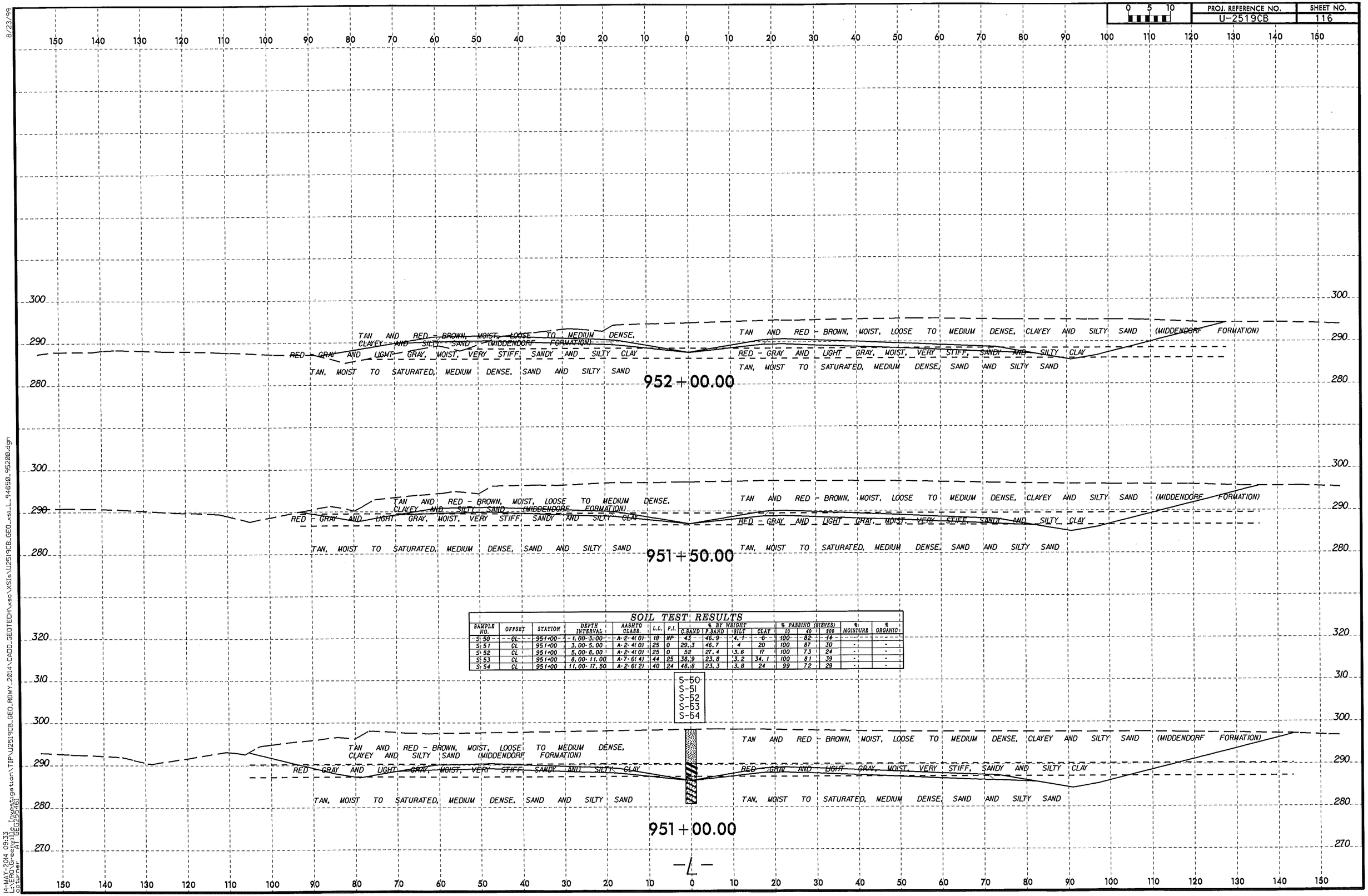

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-50	-L-	951+00	1.00-3.00	A-2-4(0)	18	NP	43	46.9	4.1	6	100	82	14	-	-
S-51	CL	951+00	3.00-5.00	A-2-4(0)	25	0	29.3	46.7	4	20	100	87	30	-	-
S-52	CL	951+00	5.00-8.00	A-2-4(0)	25	0	52	27.4	3.6	17	100	73	24	-	-
S-53	CL	951+00	8.00-11.00	A-7-6(4)	44	25	38.9	23.8	3.2	34.1	100	81	39	-	-
S-54	CL	951+00	11.00-17.50	A-2-6(2)	40	24	46.8	23.3	3.8	24	99	72	29	-	-

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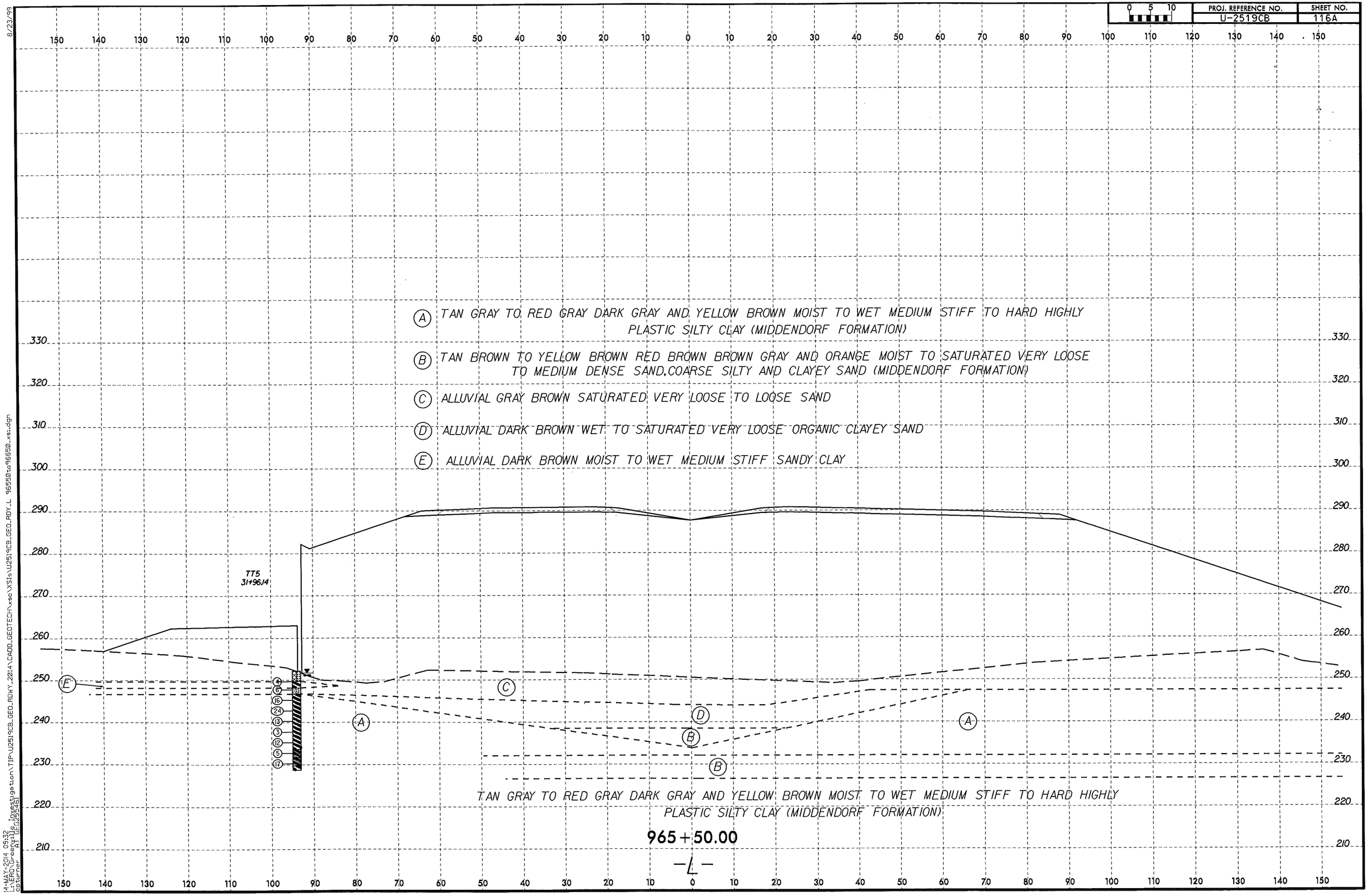
PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	116A



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AT GEO25461

PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	116B

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(A) TAN GRAY TO RED GRAY DARK GRAY AND YELLOW BROWN MOIST TO WET MEDIUM STIFF TO HARD HIGHLY PLASTIC SILTY CLAY (MIDDENDORF FORMATION)

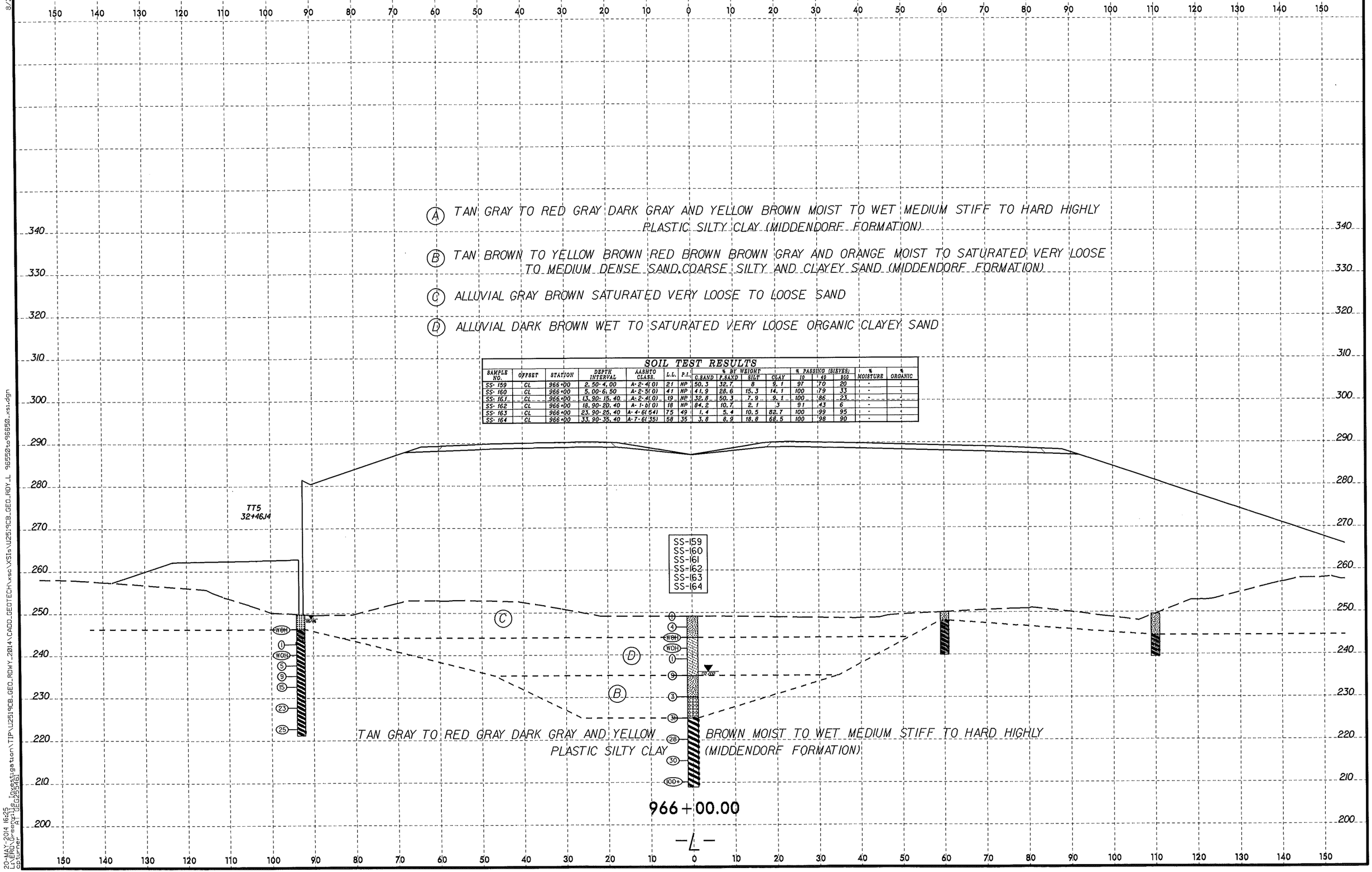
(B) TAN BROWN TO YELLOW BROWN RED BROWN BROWN GRAY AND ORANGE MOIST TO SATURATED VERY LOOSE TO MEDIUM DENSE SAND,COARSE SILTY AND CLAYEY SAND (MIDDENDORF FORMATION)

(C) ALLUVIAL GRAY BROWN SATURATED VERY LOOSE TO LOOSE SAND

(D) ALLUVIAL DARK BROWN WET TO SATURATED VERY LOOSE ORGANIC CLAYEY SAND

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-159	CL	966+00	2.50-4.00	A-2-4(0)	21	NP	50.3	32.7	8	9.1	97	70	20	-	-
SS-160	CL	966+00	5.00-6.50	A-2-5(0)	41	NP	41.9	28.6	15.3	14.1	100	79	33	-	-
SS-161	CL	966+00	13.90-15.40	A-2-4(0)	19	NP	32.8	50.3	7.9	9.1	100	86	23	-	-
SS-162	CL	966+00	18.90-20.40	A-1-b(0)	18	NP	84.2	10.7	2.1	3	91	43	6	-	-
SS-163	CL	966+00	23.90-25.40	A-4-6(54)	75	49	1.4	5.4	10.5	82.7	100	99	95	-	-
SS-164	CL	966+00	33.90-35.40	A-7-6(35)	58	35	3.8	8.9	18.8	68.5	100	98	90	-	-



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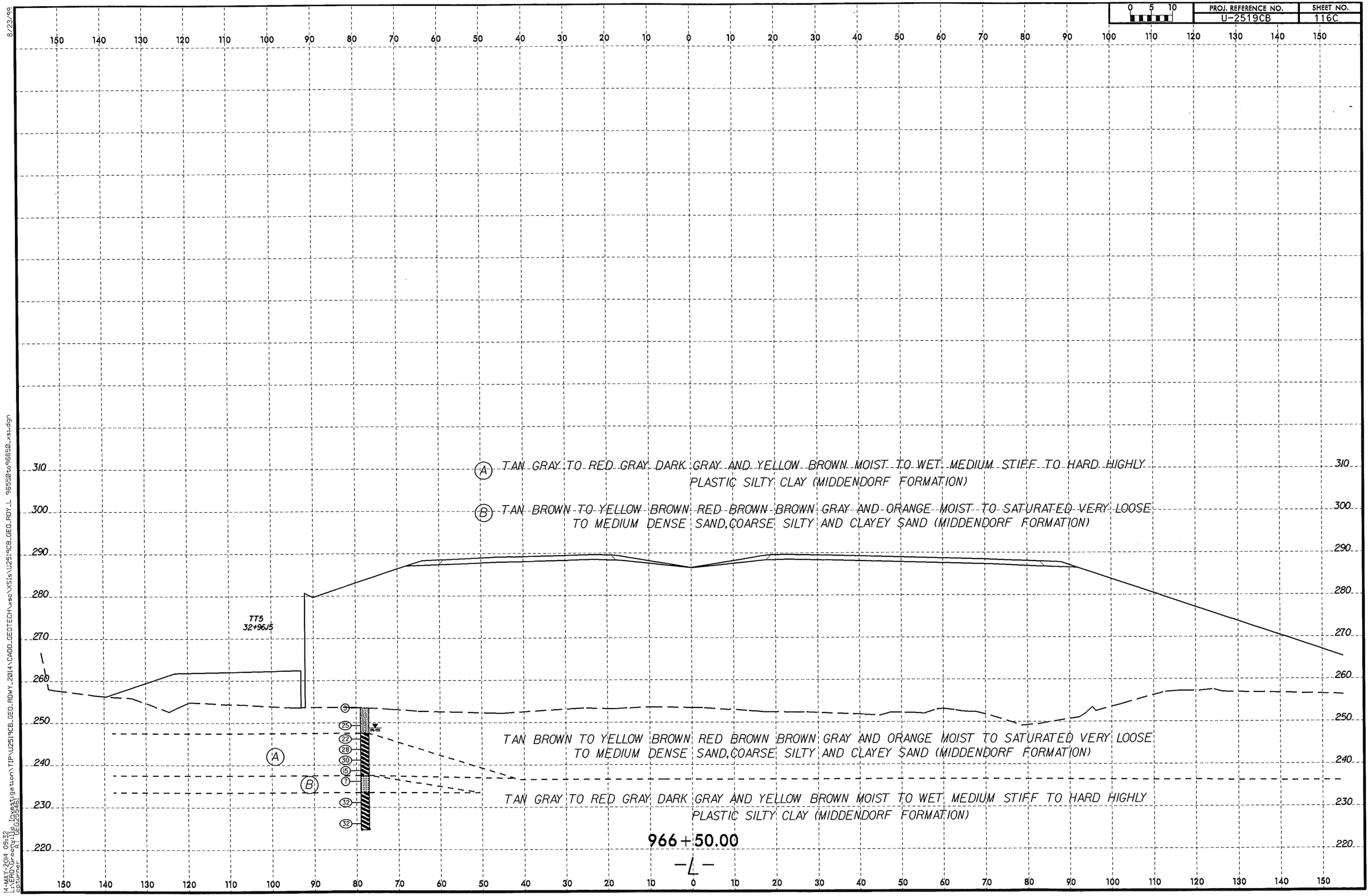
PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	116C



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PROJ. REFERENCE NO.	SHEET NO.
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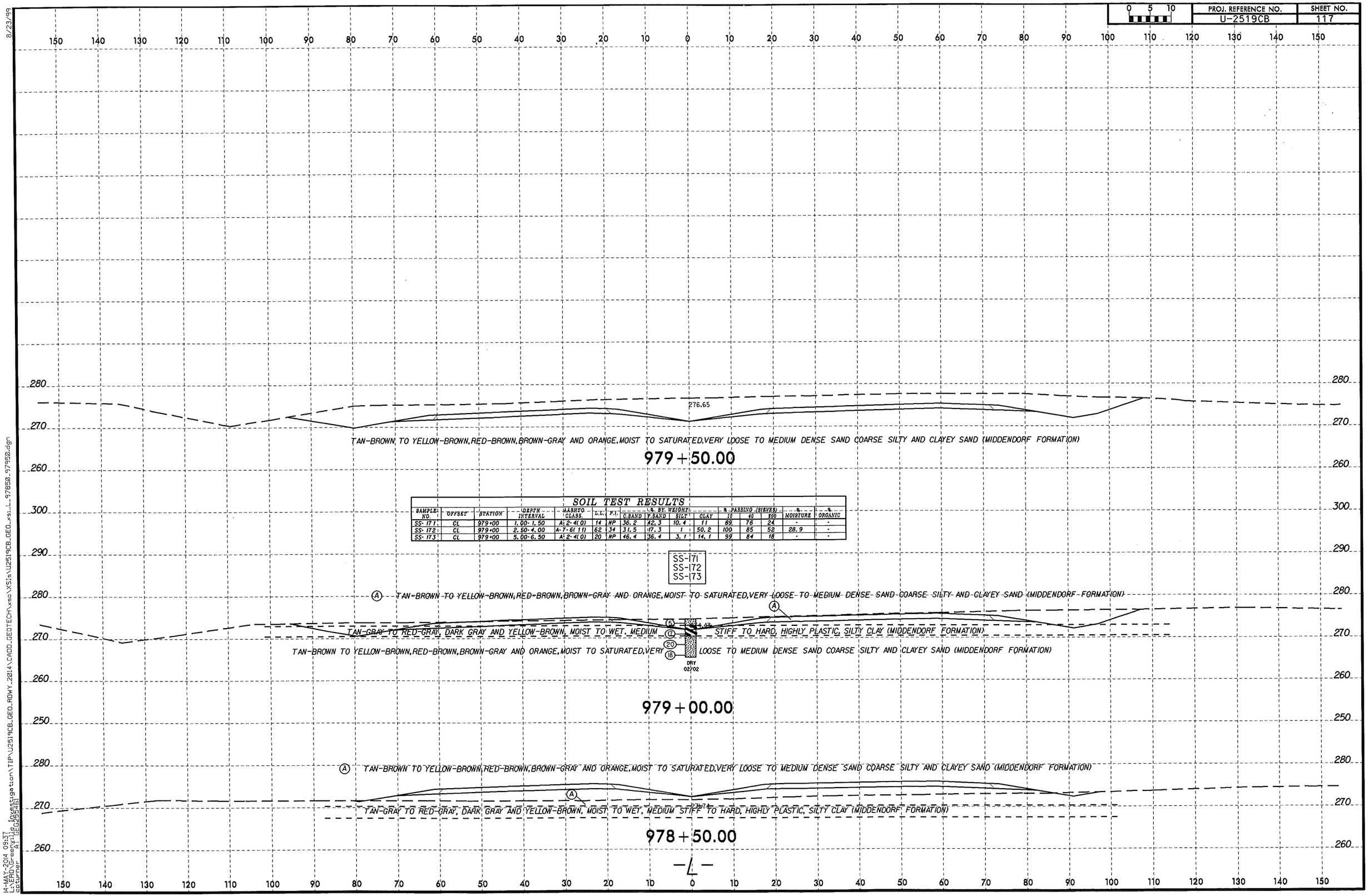

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-171	CL	979+00	1.00-1.50	A-2-4(0)	14	NP	36.2	42.3	10.4	11	89	76	24	-	-
SS-172	CL	979+00	2.50-4.00	A-7-6(11)	62	34	31.5	17.3	1	50.2	100	85	52	28.9	-
SS-173	CL	979+00	5.00-6.50	A-2-4(0)	20	NP	46.4	36.4	3.1	14.1	99	84	18	-	-

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14-MAY-2014 09:37
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cstumer AT GEO26546\

PROJ. REFERENCE NO.	SHEET NO.
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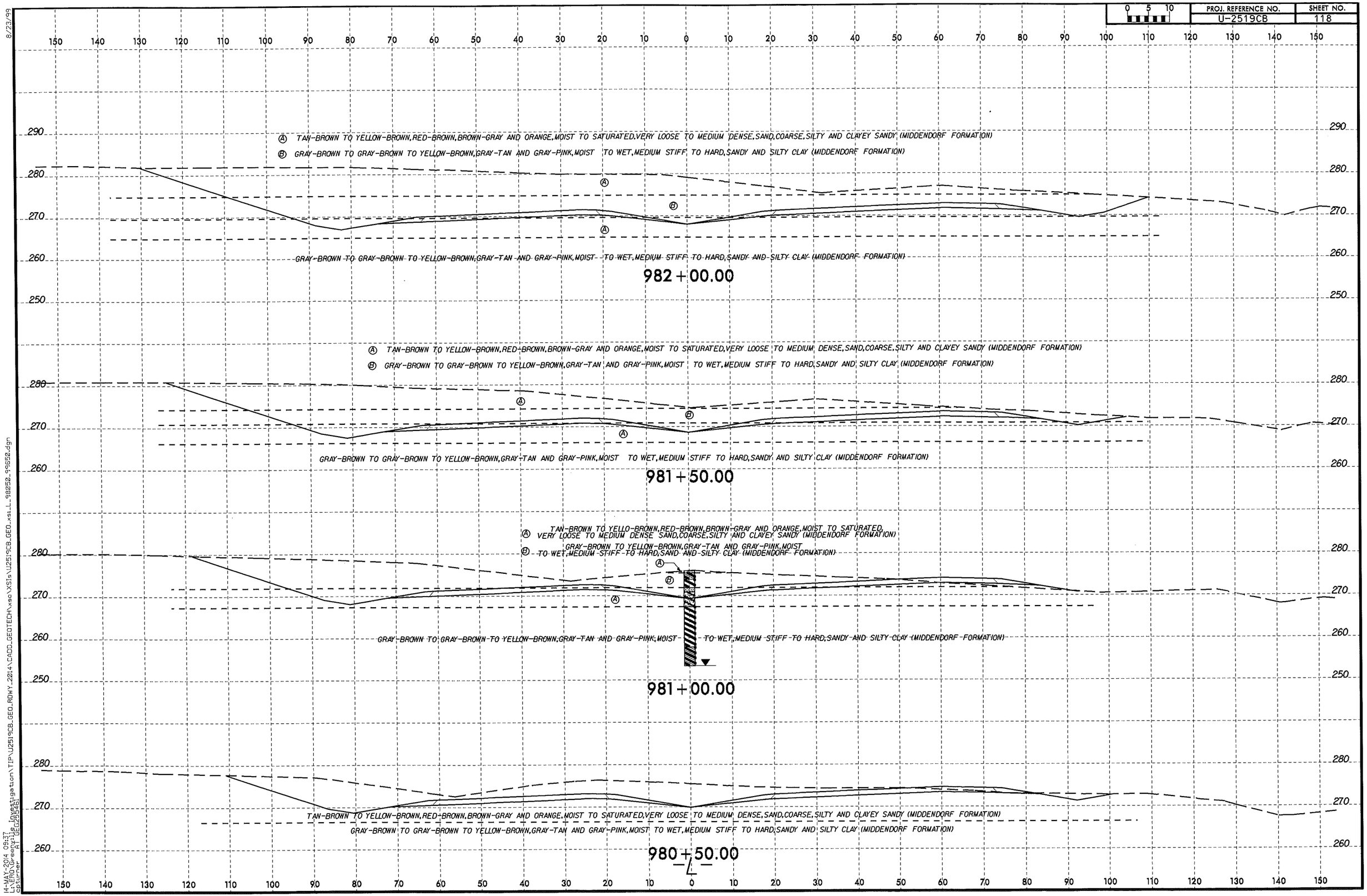

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MDOT Geotechnical
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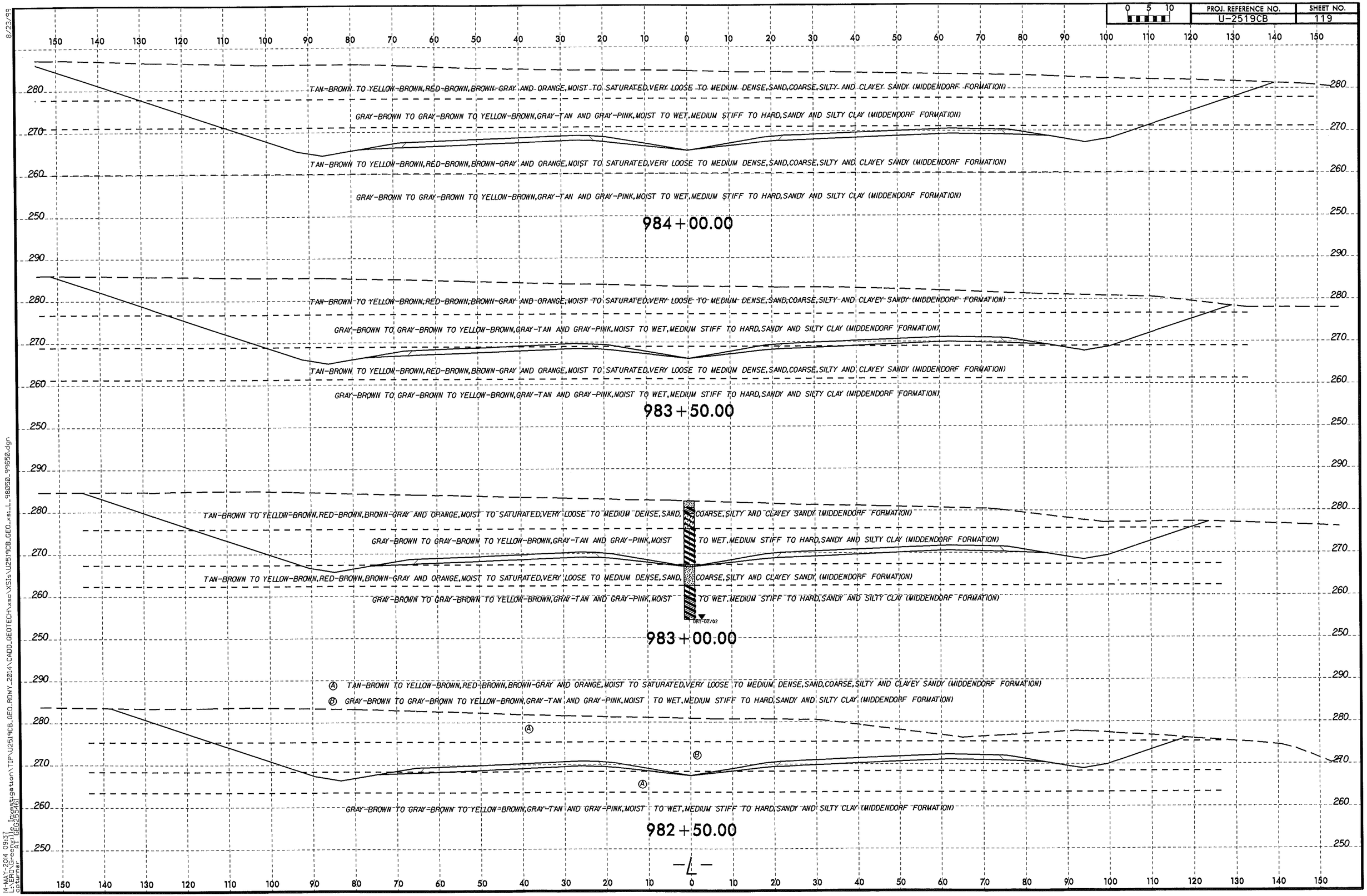

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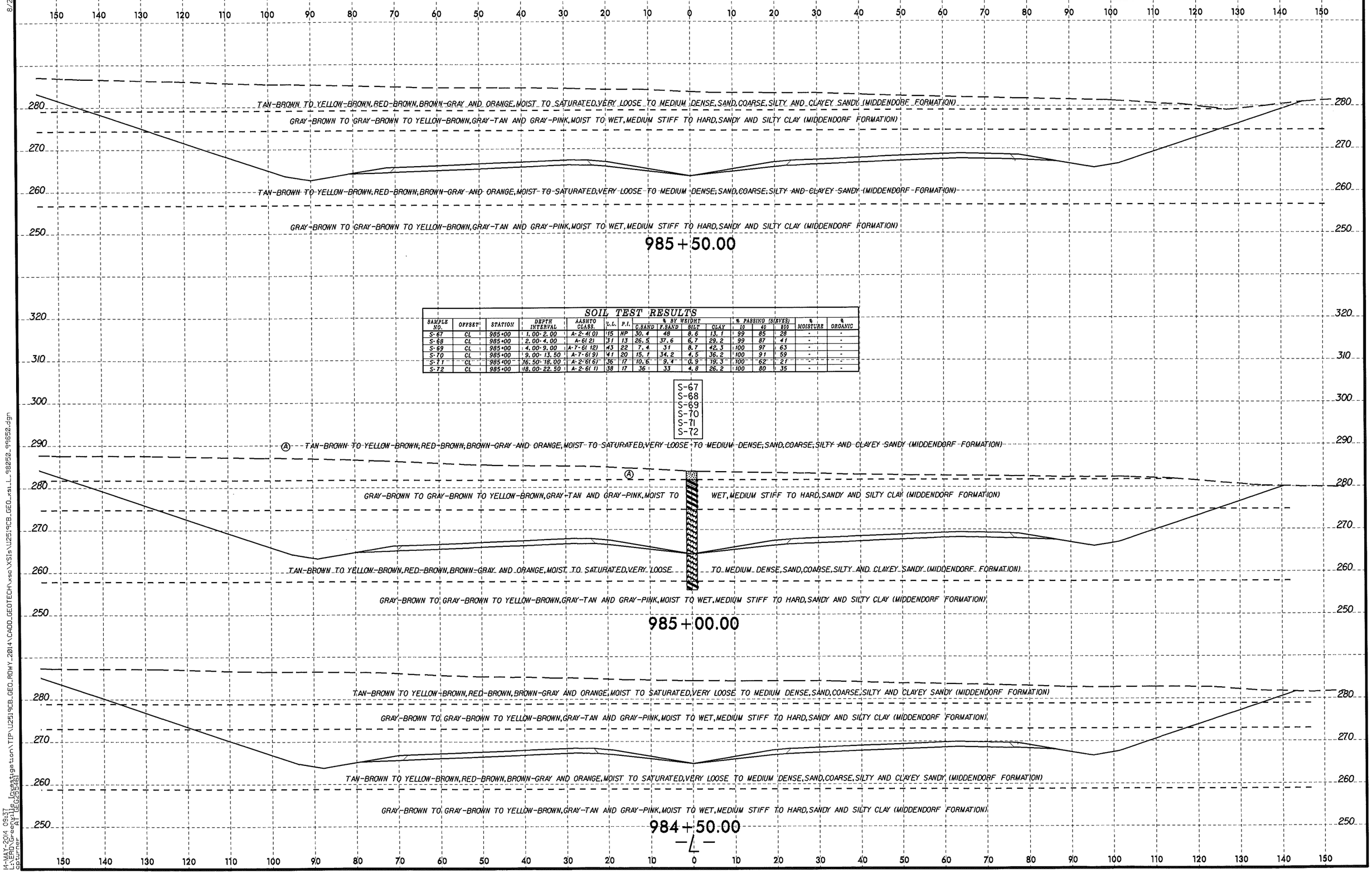

SOIL TEST RESULTS

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-67	CL	985+00	1.00-2.00	A-2-4(0)	15	NP	30.4	48	8.6	13.1	99	85	28	-	-
S-68	CL	985+00	2.00-4.00	A-6(2)	31	13	26.5	37.6	6.7	29.2	99	87	41	-	-
S-69	CL	985+00	4.00-9.00	A-7-6(12)	43	22	7.4	31	8.7	42.3	100	97	63	-	-
S-70	CL	985+00	9.00-13.50	A-7-6(9)	41	20	15.1	34.2	4.5	36.2	100	91	59	-	-
S-71	CL	985+00	16.50-18.00	A-2-6(6)	36	17	10.6	9.4	0.9	19.3	100	62	21	-	-
S-72	CL	985+00	18.00-22.50	A-2-6(1)	38	17	36	33	4.8	26.2	100	80	35	-	-

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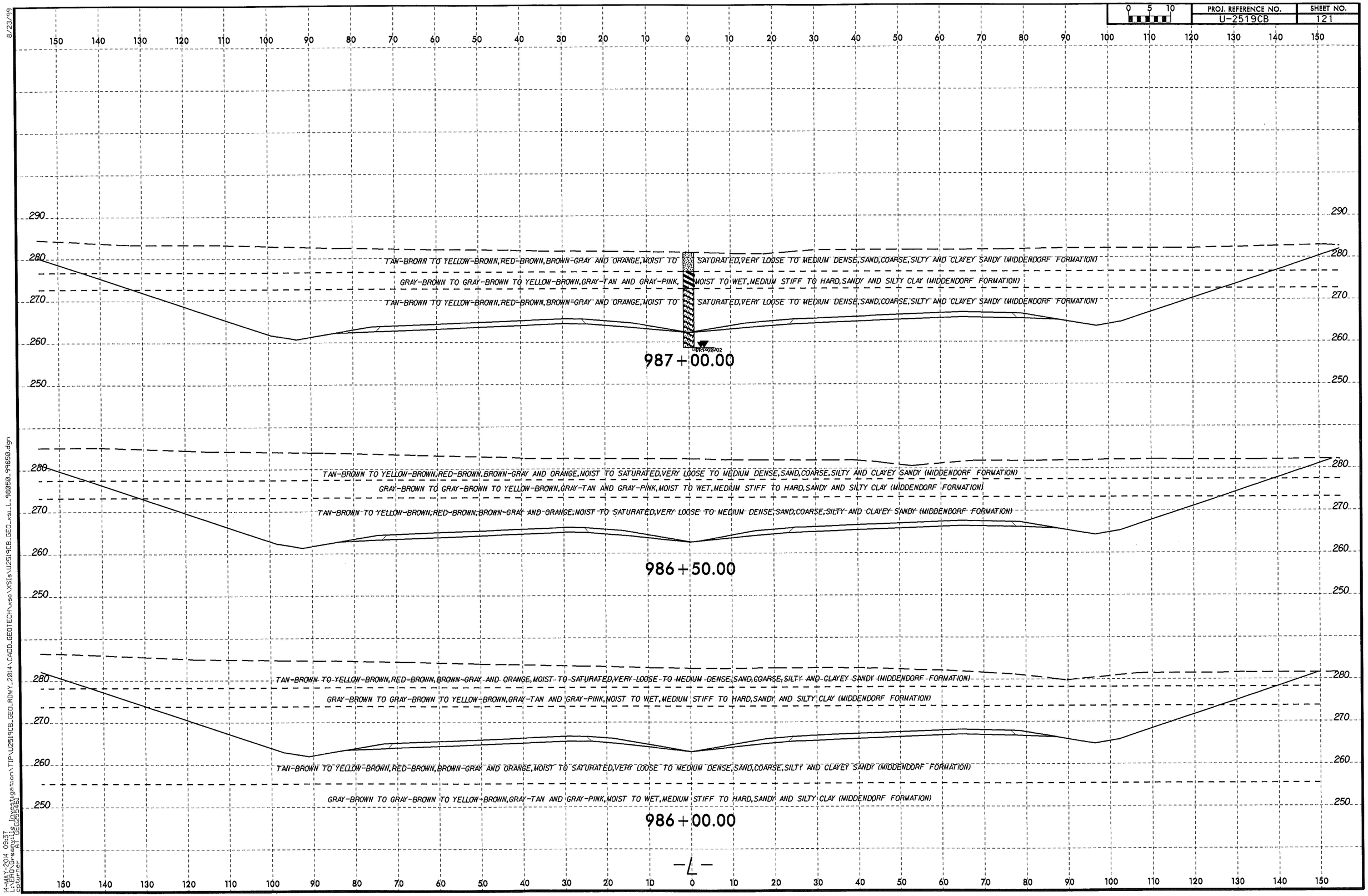
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U-2519CB
SHEET NO.
121
8/23/99
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290
280
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250
TAN-BROWN TO YELLOW-BROWN,RED-BROWN,BROWN-GRAY AND ORANGE,MOIST TO SATURATED,VERY LOOSE TO MEDIUM DENSE,SAND,COARSE,SILTY AND CLAYEY SANDY (MIDDENDORF FORMATION)
GRAY-BROWN TO GRAY-BROWN TO YELLOW-BROWN,GRAY-TAN AND GRAY-PINK, MOIST TO WET,MEDIUM STIFF TO HARD,SANDY AND SILTY CLAY (MIDDENDORF FORMATION)
TAN-BROWN TO YELLOW-BROWN,RED-BROWN,BROWN-GRAY AND ORANGE,MOIST TO SATURATED,VERY LOOSE TO MEDIUM DENSE,SAND,COARSE,SILTY AND CLAYEY SANDY (MIDDENDORF FORMATION)
987+00.00
TAN-BROWN TO YELLOW-BROWN,RED-BROWN,BROWN-GRAY AND ORANGE,MOIST TO SATURATED,VERY LOOSE TO MEDIUM DENSE,SAND,COARSE,SILTY AND CLAYEY SANDY (MIDDENDORF FORMATION)
GRAY-BROWN TO GRAY-BROWN TO YELLOW-BROWN,GRAY-TAN AND GRAY-PINK,MOIST TO WET,MEDIUM STIFF TO HARD,SANDY AND SILTY CLAY (MIDDENDORF FORMATION)
TAN-BROWN TO YELLOW-BROWN,RED-BROWN,BROWN-GRAY AND ORANGE,MOIST TO SATURATED,VERY LOOSE TO MEDIUM DENSE,SAND,COARSE,SILTY AND CLAYEY SANDY (MIDDENDORF FORMATION)
986+50.00
TAN-BROWN TO YELLOW-BROWN,RED-BROWN,BROWN-GRAY AND ORANGE,MOIST TO SATURATED,VERY LOOSE TO MEDIUM DENSE,SAND,COARSE,SILTY AND CLAYEY SANDY (MIDDENDORF FORMATION)
GRAY-BROWN TO GRAY-BROWN TO YELLOW-BROWN,GRAY-TAN AND GRAY-PINK,MOIST TO WET,MEDIUM STIFF TO HARD,SANDY AND SILTY CLAY (MIDDENDORF FORMATION)
TAN-BROWN TO YELLOW-BROWN,RED-BROWN,BROWN-GRAY AND ORANGE,MOIST TO SATURATED,VERY LOOSE TO MEDIUM DENSE,SAND,COARSE,SILTY AND CLAYEY SANDY (MIDDENDORF FORMATION)
GRAY-BROWN TO GRAY-BROWN TO YELLOW-BROWN,GRAY-TAN AND GRAY-PINK,MOIST TO WET,MEDIUM STIFF TO HARD,SANDY AND SILTY CLAY (MIDDENDORF FORMATION)
986+00.00
-L-
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PROJ. REFERENCE NO.	SHEET NO.
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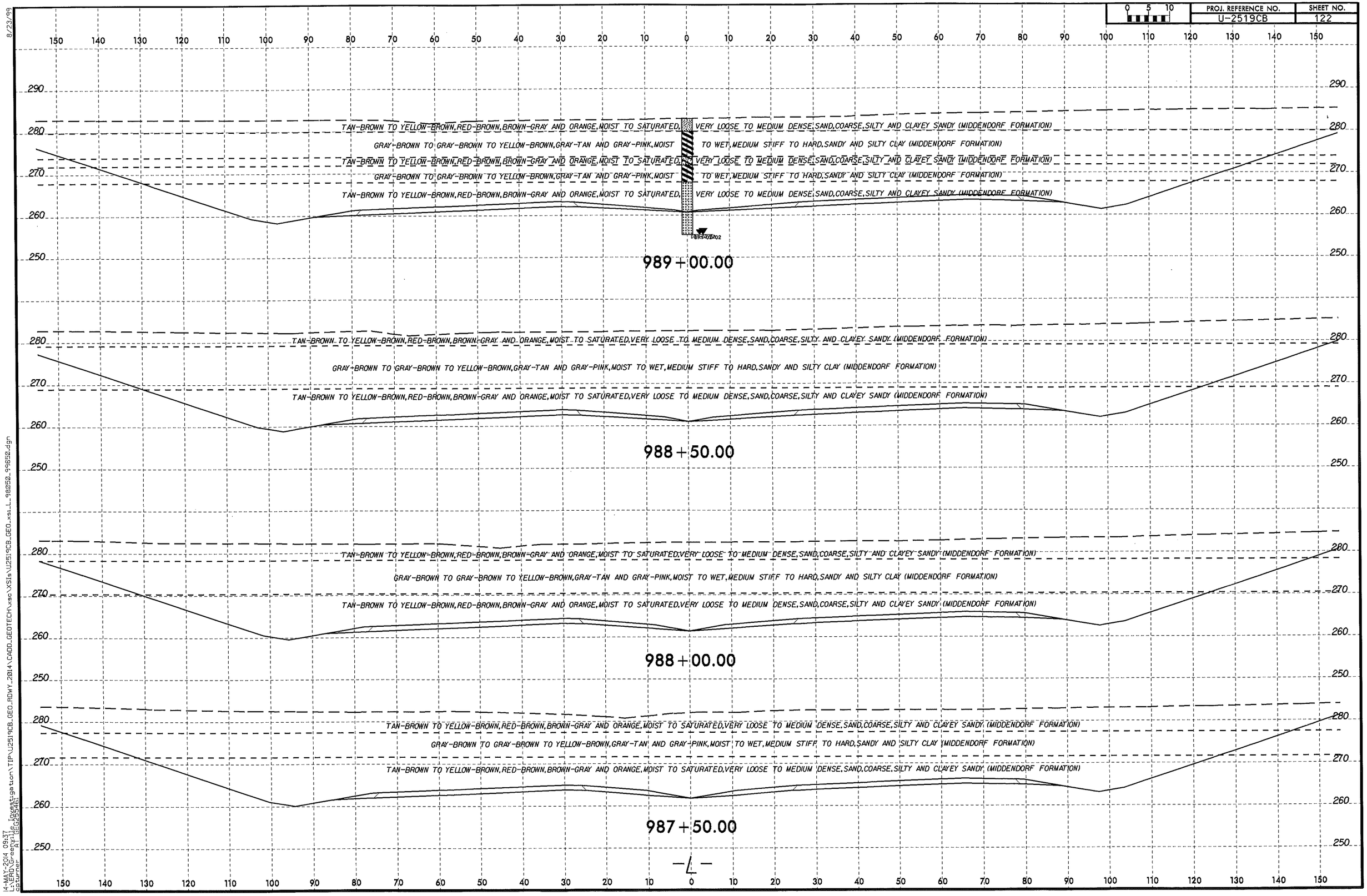

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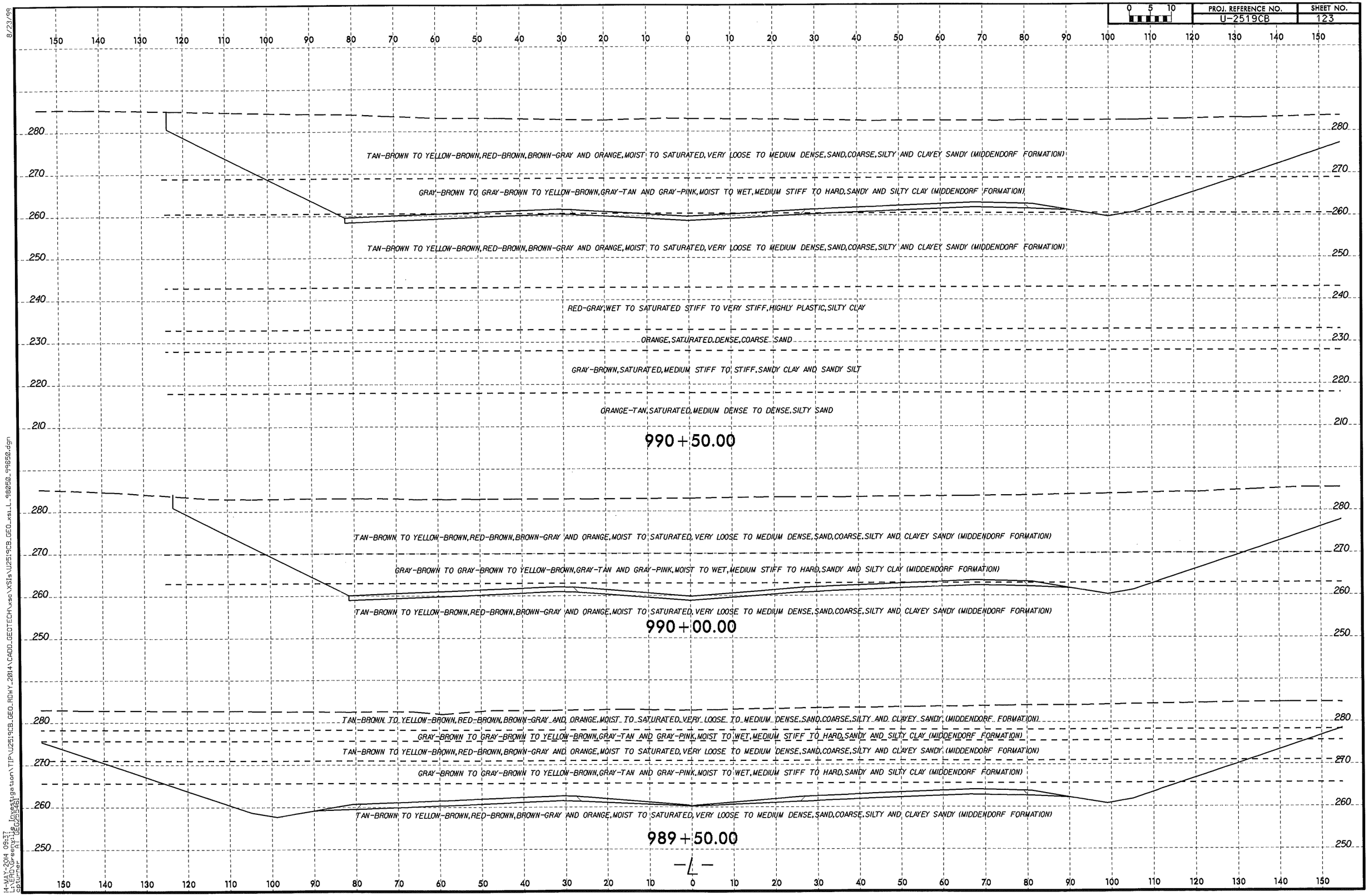
U-2519CB	123



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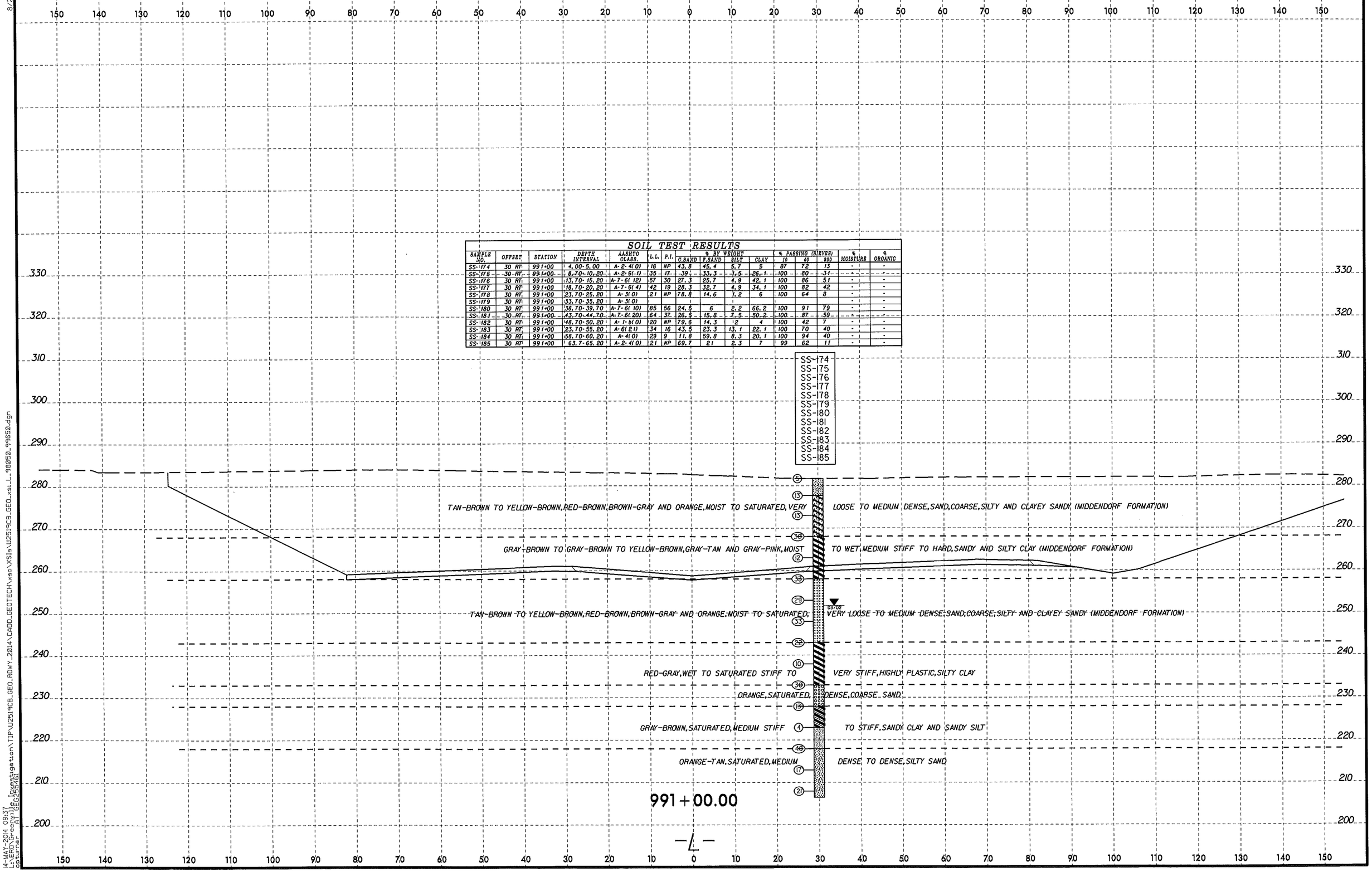
PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	124

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-174	30 RT	991+00	4.00-5.00	A-2-4(0)	16	NP	43.8	45.4	5.7	5	87	72	13	-	-
SS-175	30 RT	991+00	8.70-10.20	A-2-6(1)	35	17	39	33.3	1.5	26.1	100	80	31	-	-
SS-176	30 RT	991+00	13.70-15.20	A-7-6(12)	57	30	27.3	25.7	4.9	42.1	100	86	51	-	-
SS-177	30 RT	991+00	18.70-20.20	A-7-6(4)	42	19	28.3	32.7	4.9	34.1	100	82	42	-	-
SS-178	30 RT	991+00	23.70-25.20	A-3(0)	21	NP	78.8	14.6	1.2	6	100	64	8	-	-
SS-179	30 RT	991+00	33.70-35.20	A-3(0)										-	-
SS-180	30 RT	991+00	38.70-39.70	A-7-6(10)	85	56	24.5	6	2.2	66.2	100	91	79	-	-
SS-181	30 RT	991+00	43.70-44.70	A-7-6(20)	64	37	26.5	15.8	7.5	50.2	100	87	59	-	-
SS-182	30 RT	991+00	48.70-50.20	A-1-b(0)	20	NP	79.6	14.3	2	4	100	42	7	-	-
SS-183	30 RT	991+00	23.70-55.20	A-6(21)	34	16	43.5	23.3	13.1	22.1	100	70	40	-	-
SS-184	30 RT	991+00	58.70-60.20	A-4(0)	29	9	11.8	59.8	8.3	20.1	100	94	40	-	-
SS-185	30 RT	991+00	63.7-65.20	A-2-4(0)	21	NP	69.7	21	2.3	7	99	62	11	-	-



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PROJ. REFERENCE NO.	SHEET NO.
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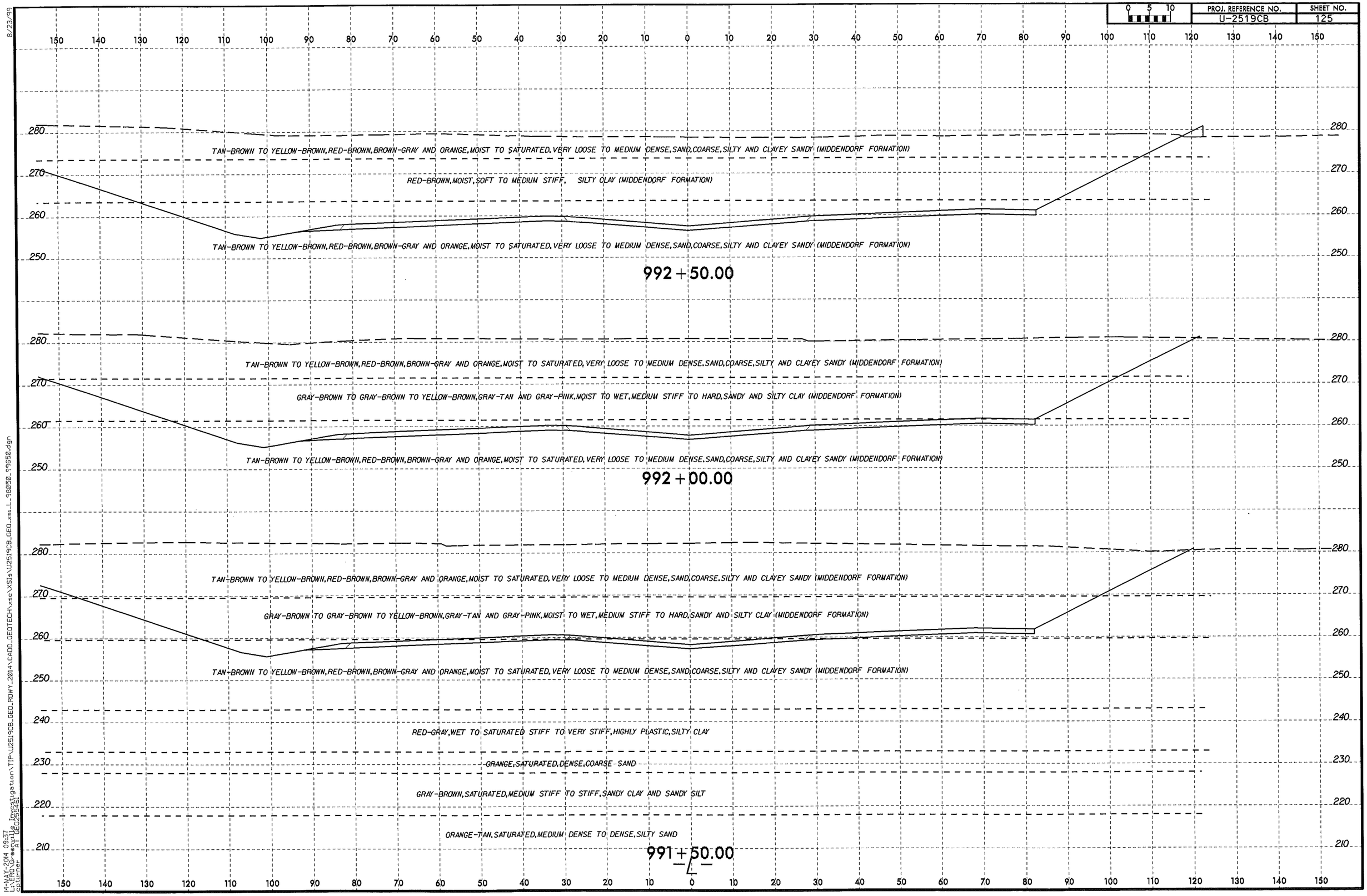

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PROJ. REFERENCE NO.	SHEET NO.
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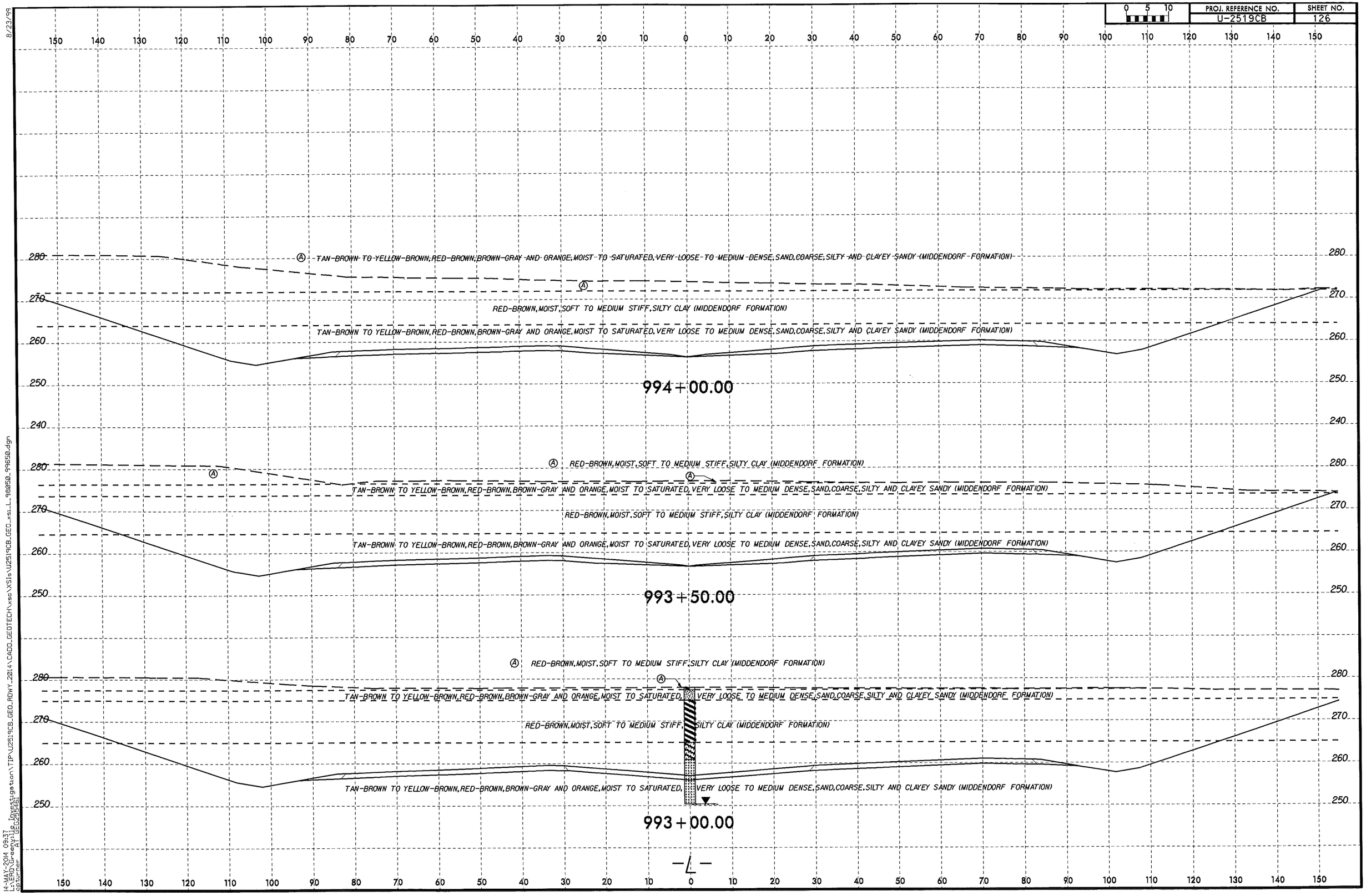

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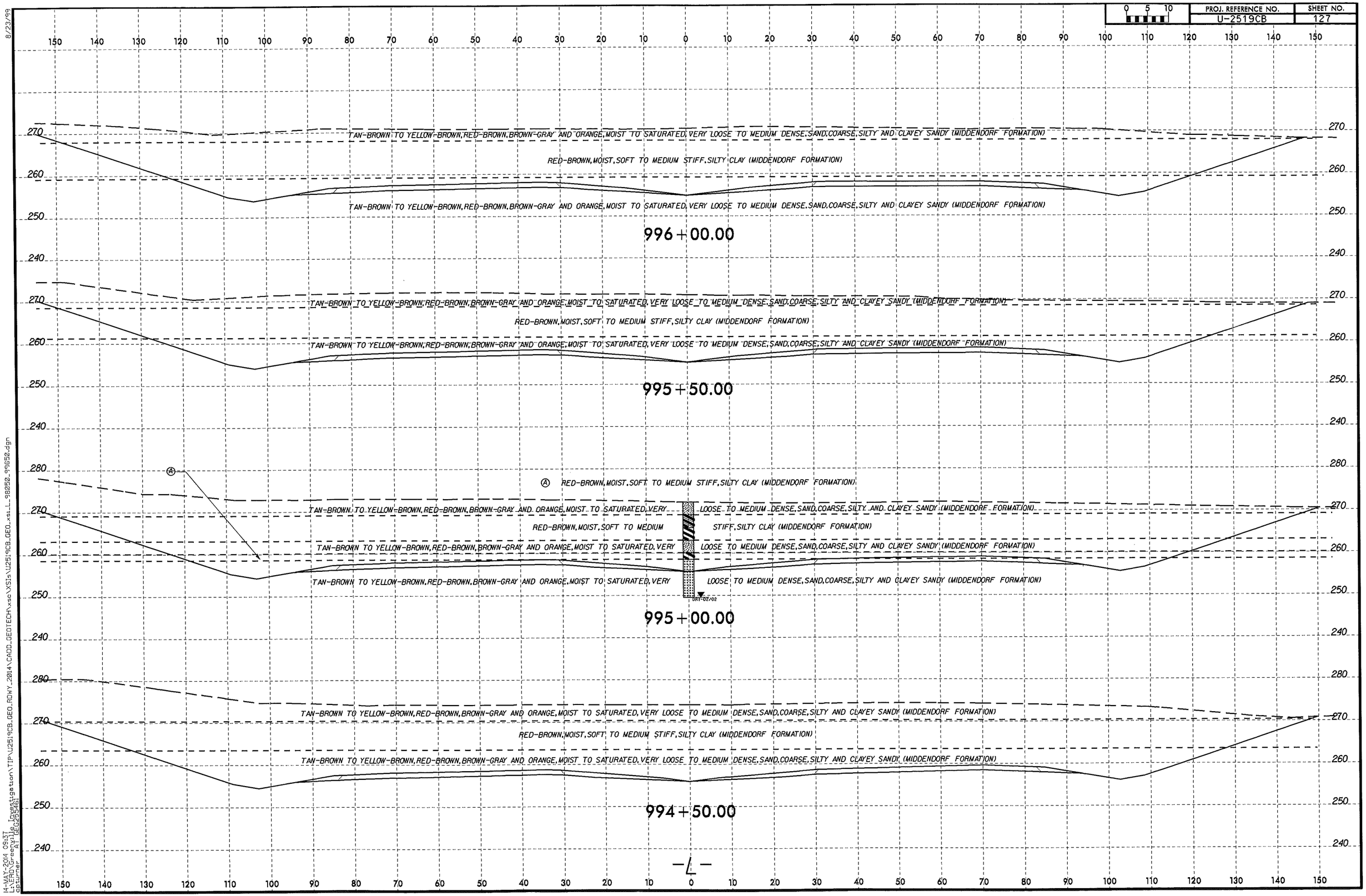

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PROJ. REFERENCE NO.	SHEET NO.
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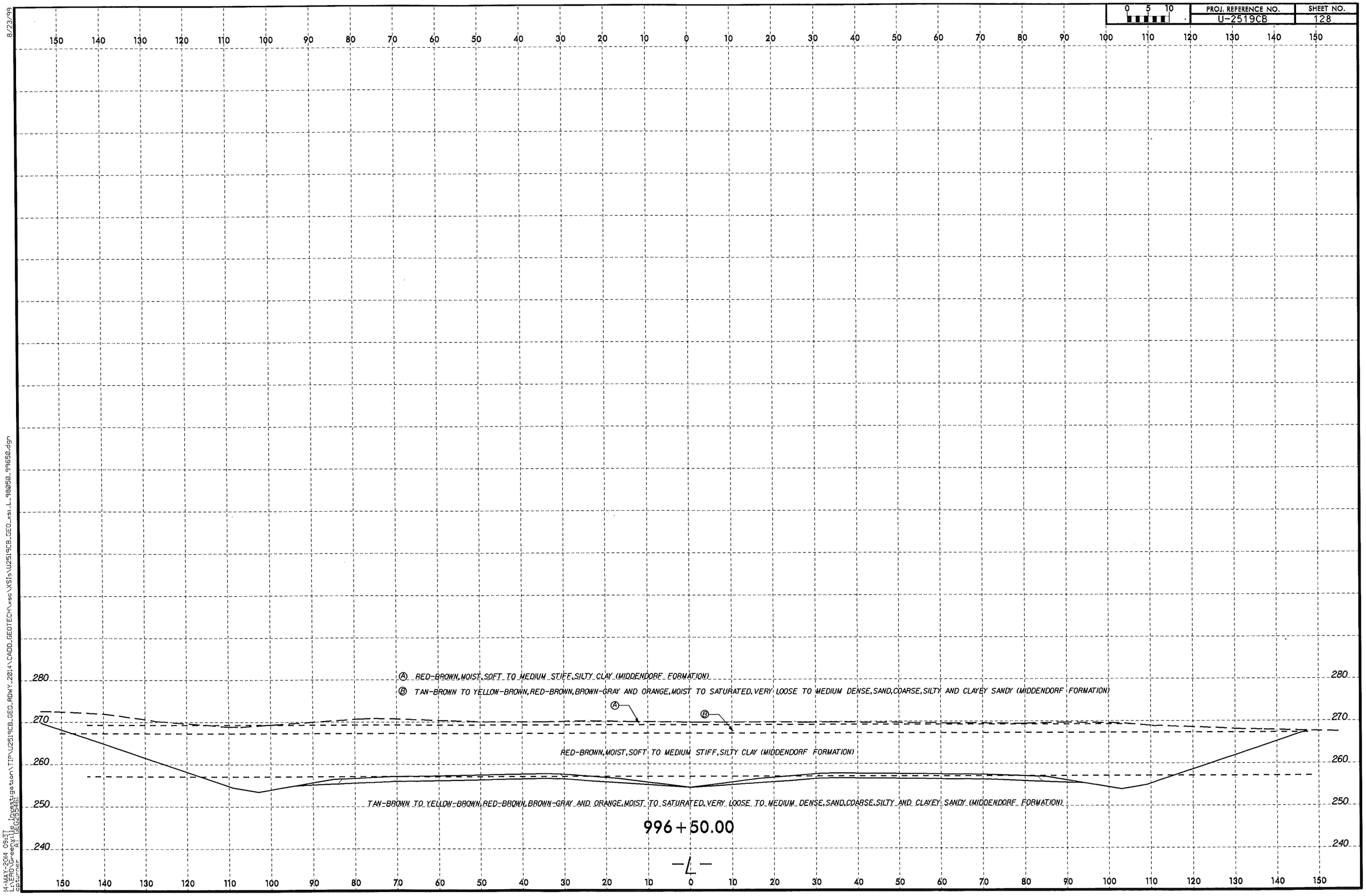

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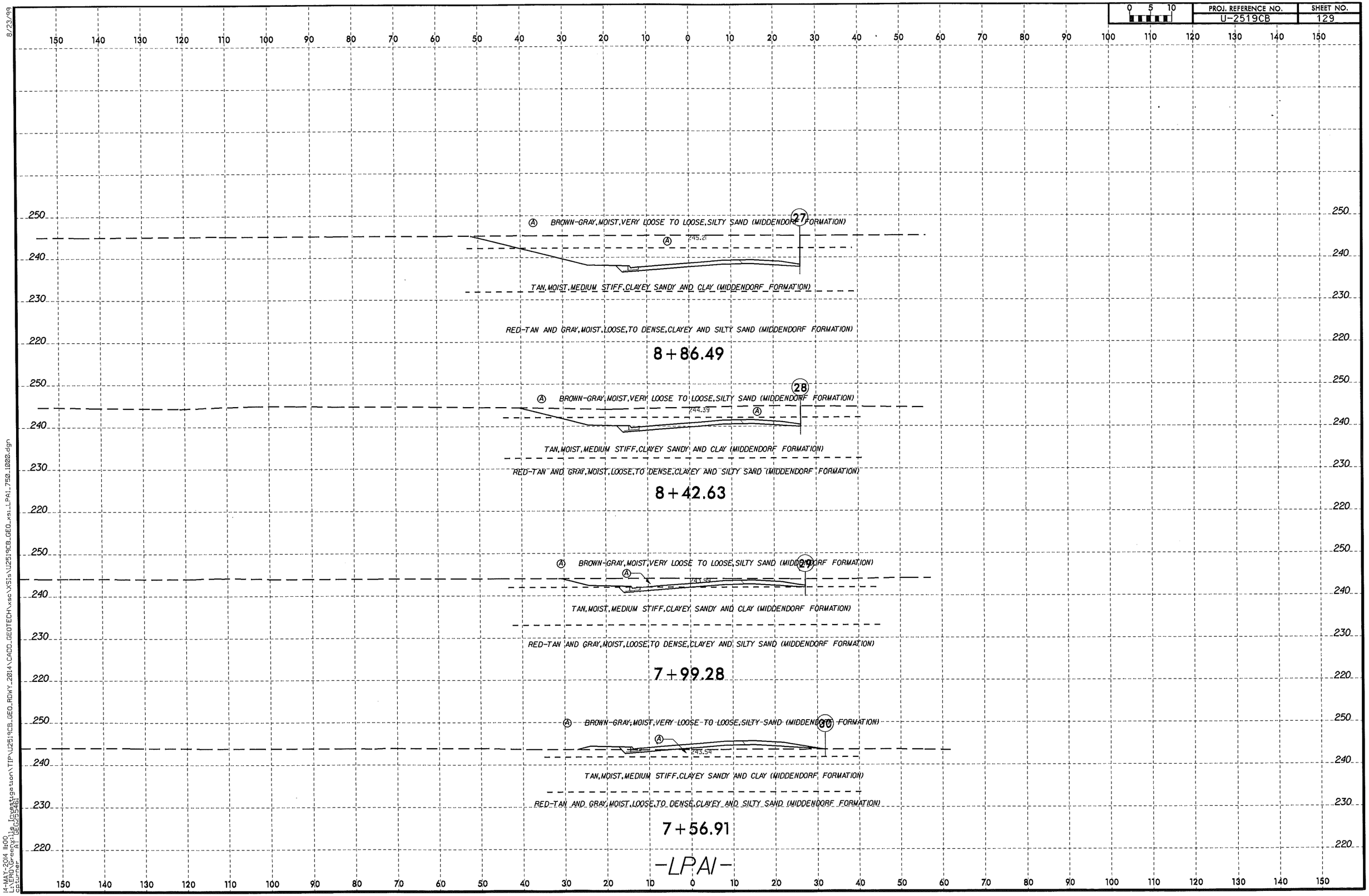

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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
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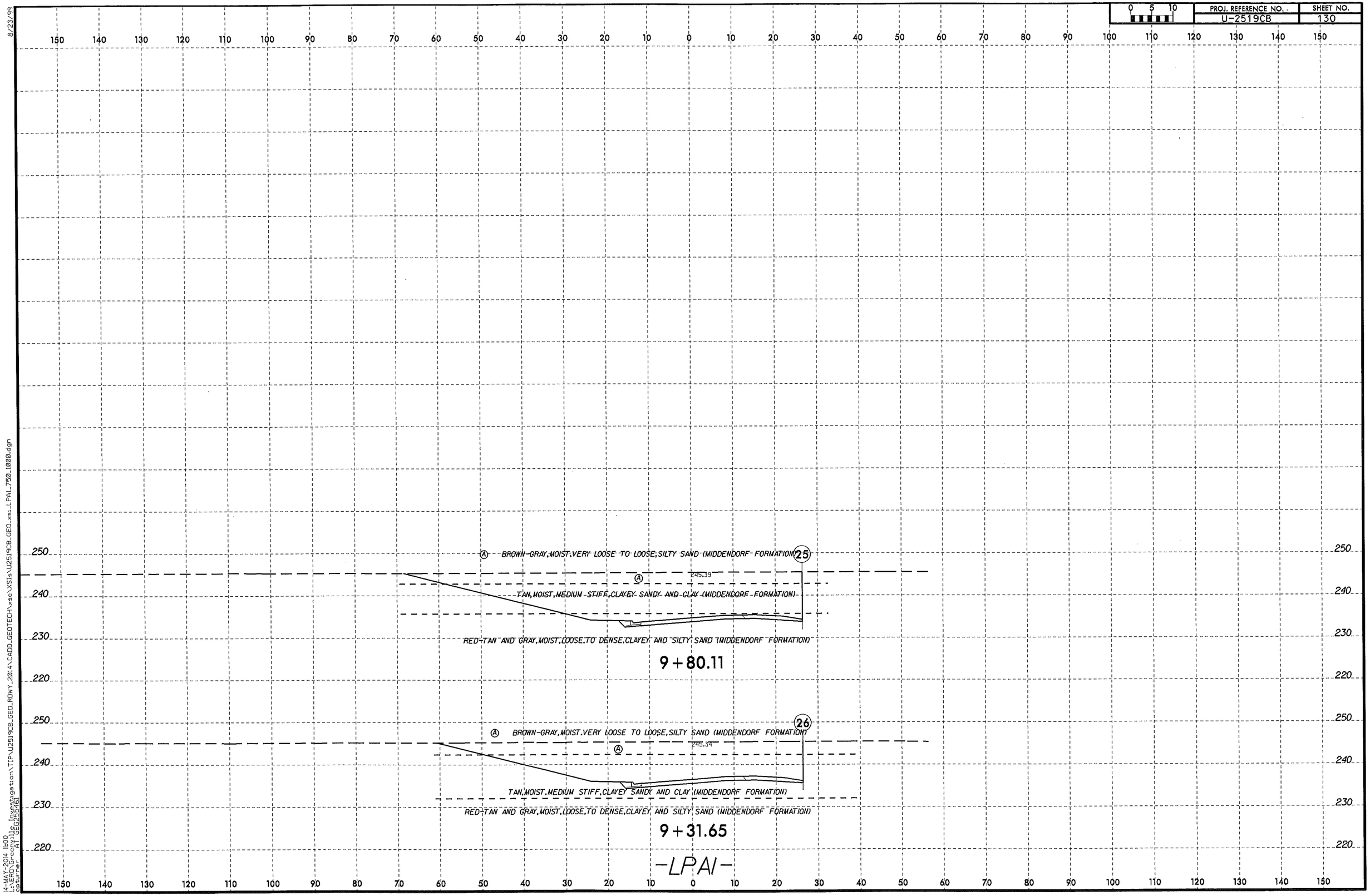

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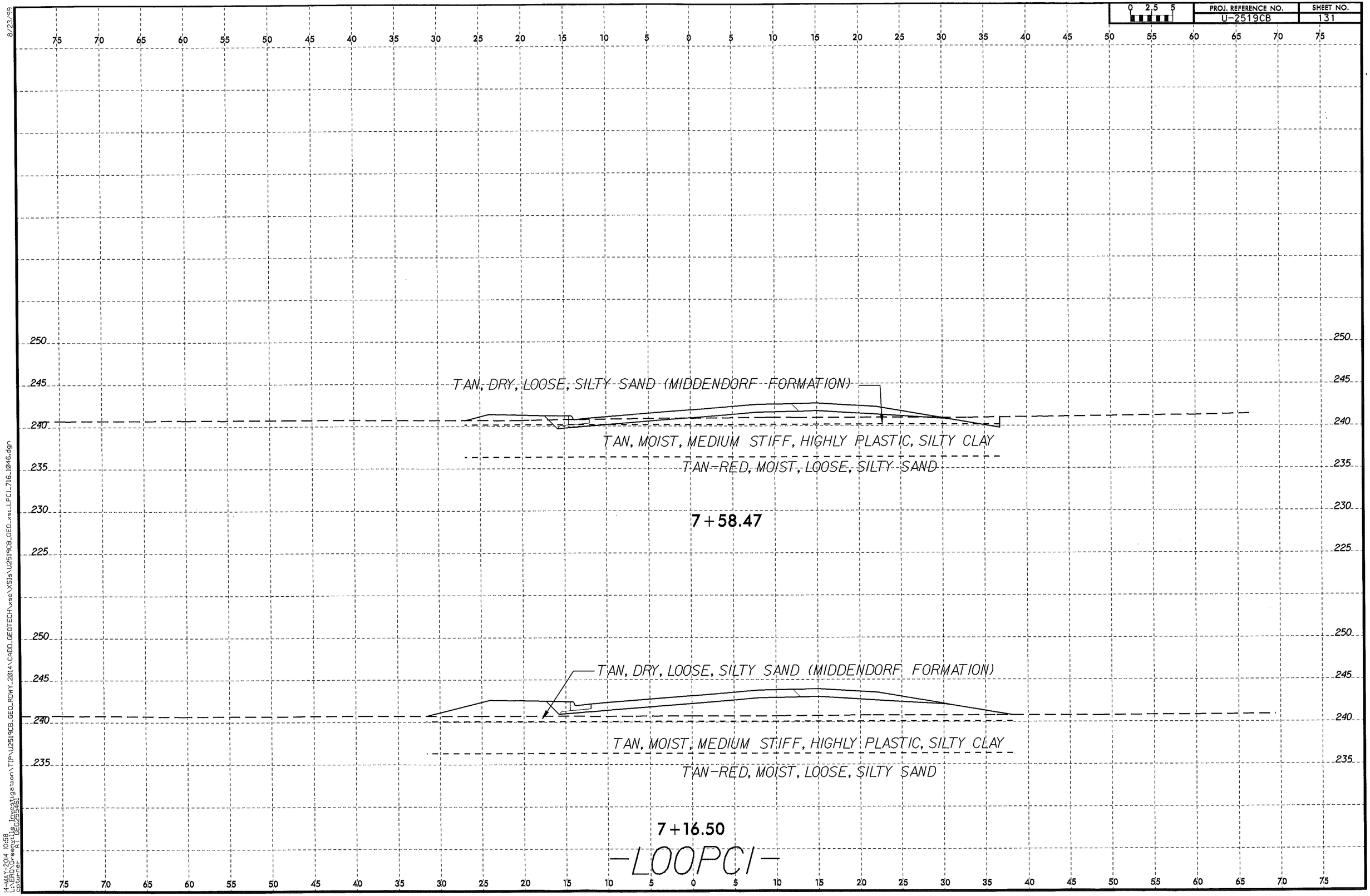

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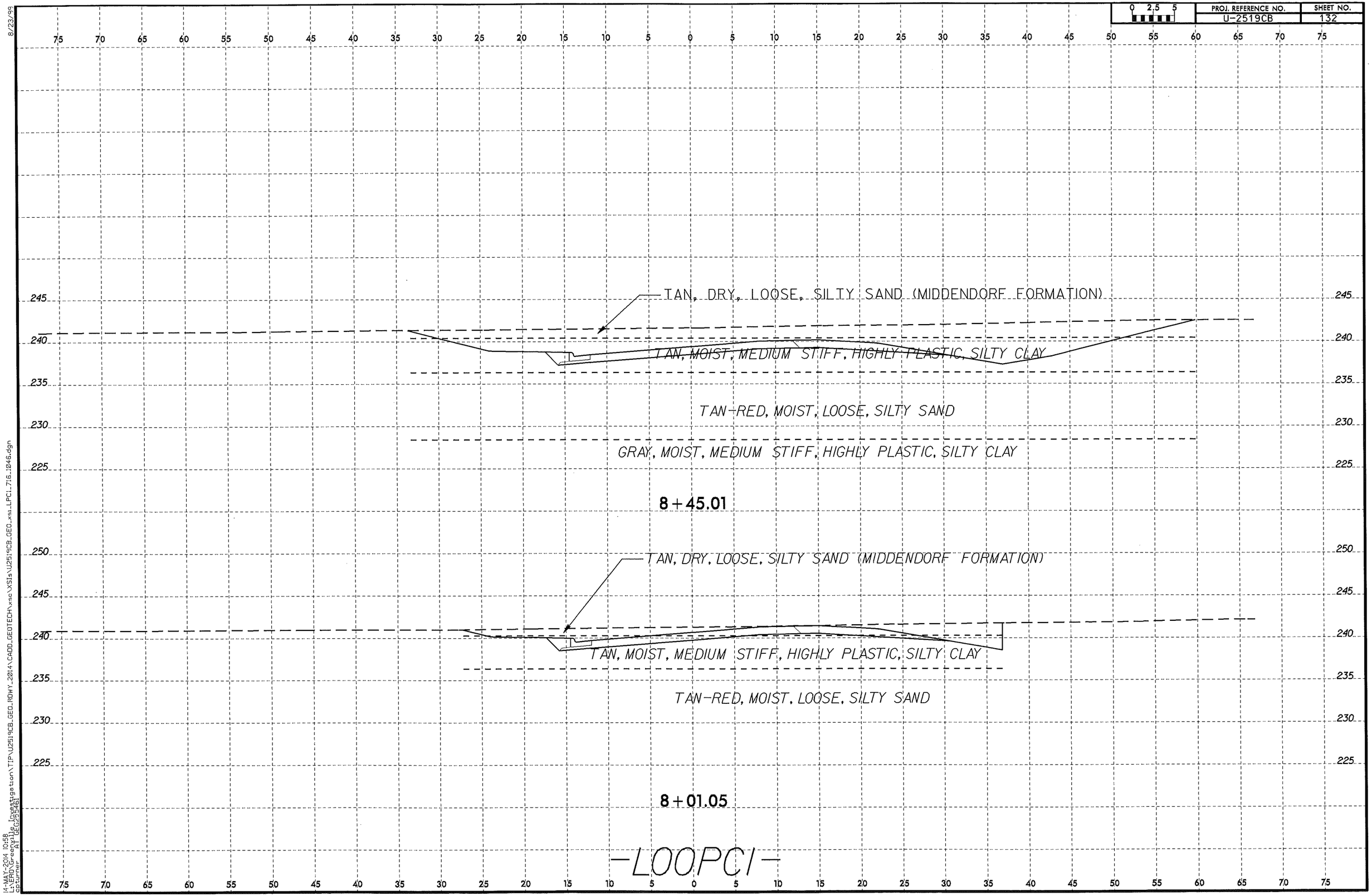
AT GEO25546



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PROJ. REFERENCE NO.	SHEET NO.
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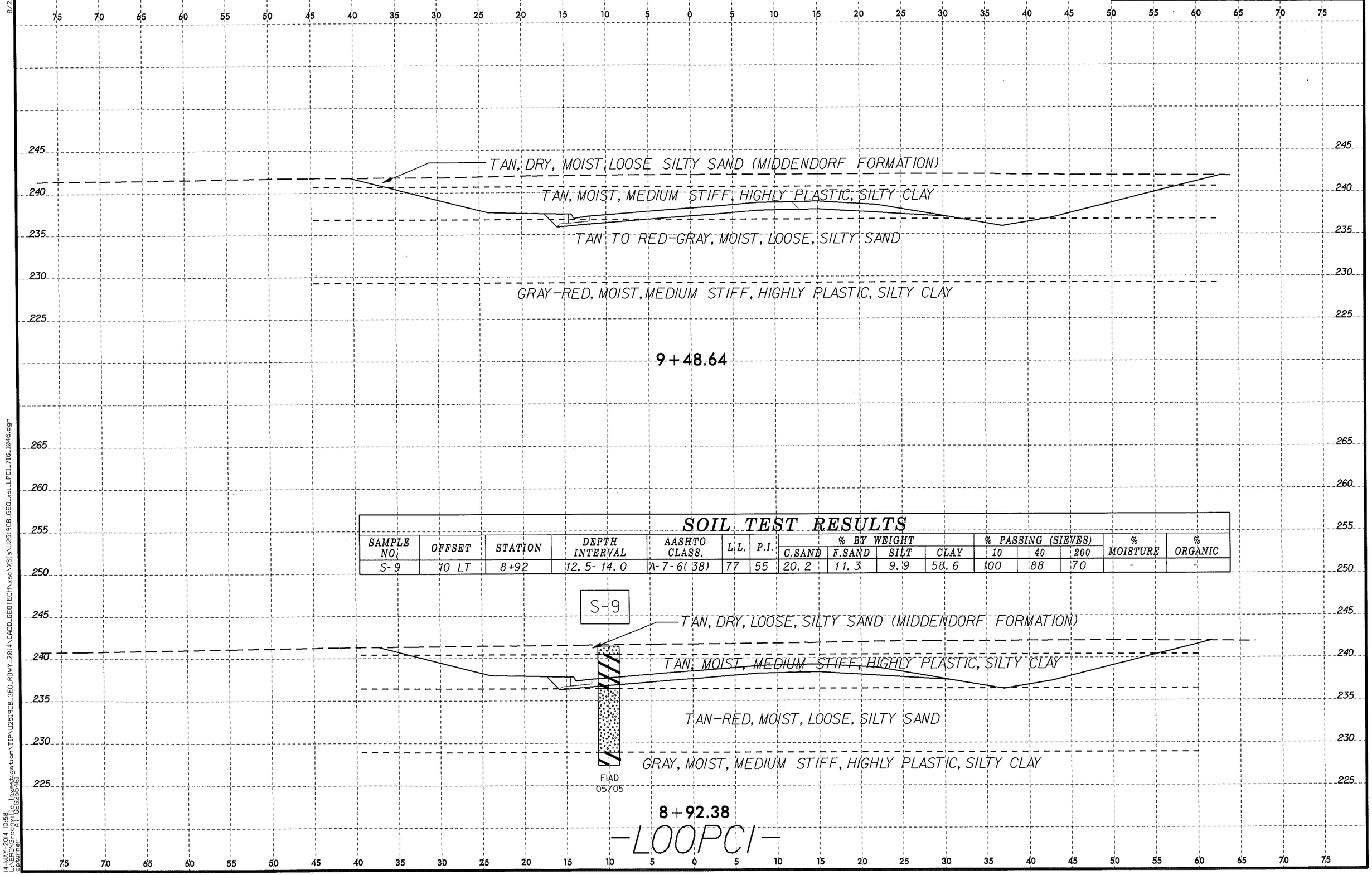

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
S-9	10 LT	8+92	12.5-14.0	A-7-6(38)	77	55	20.2	11.3	9.9	58.6	100	88	70	-	-

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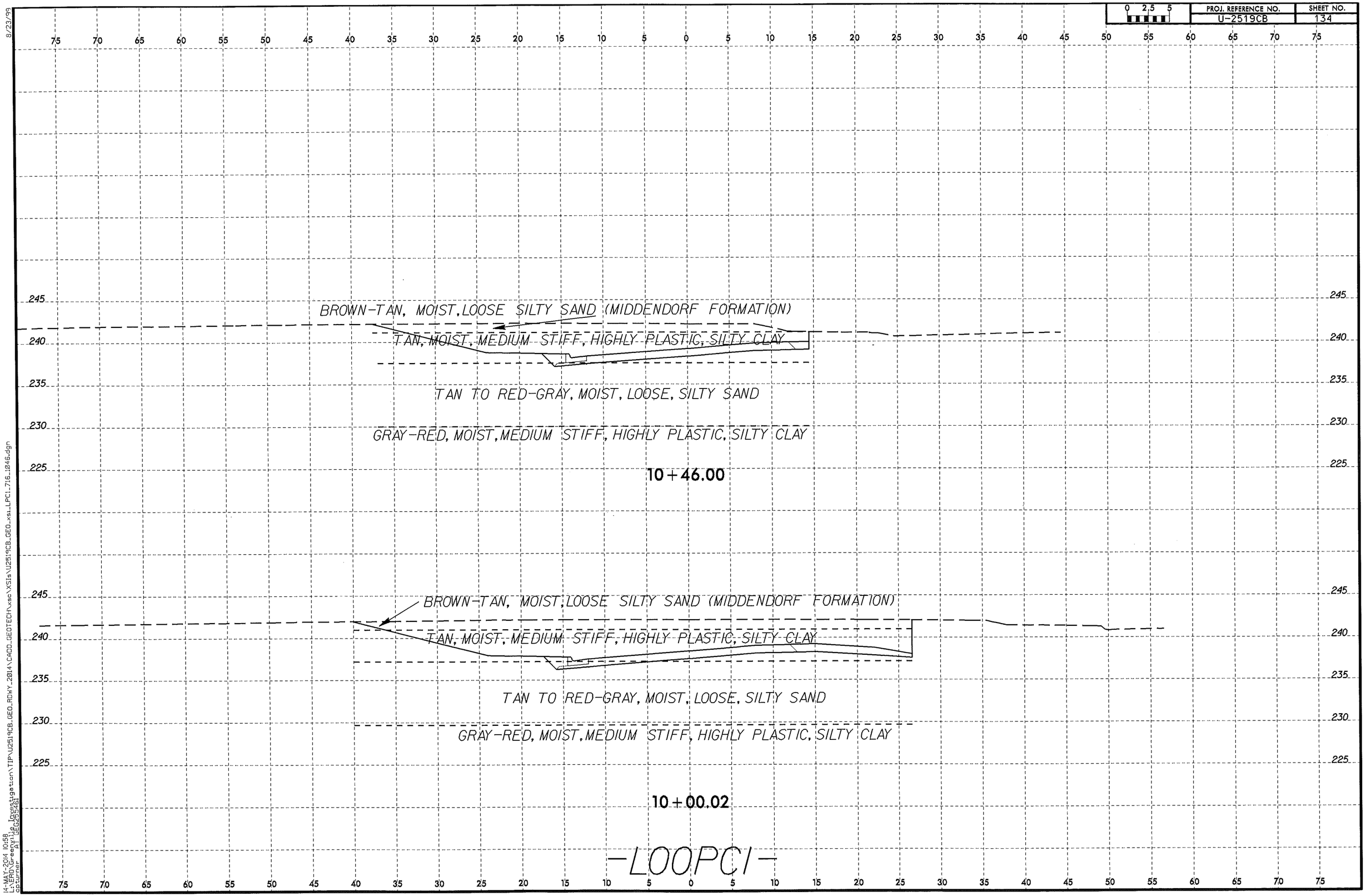
A-1 GEO25546



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PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	135

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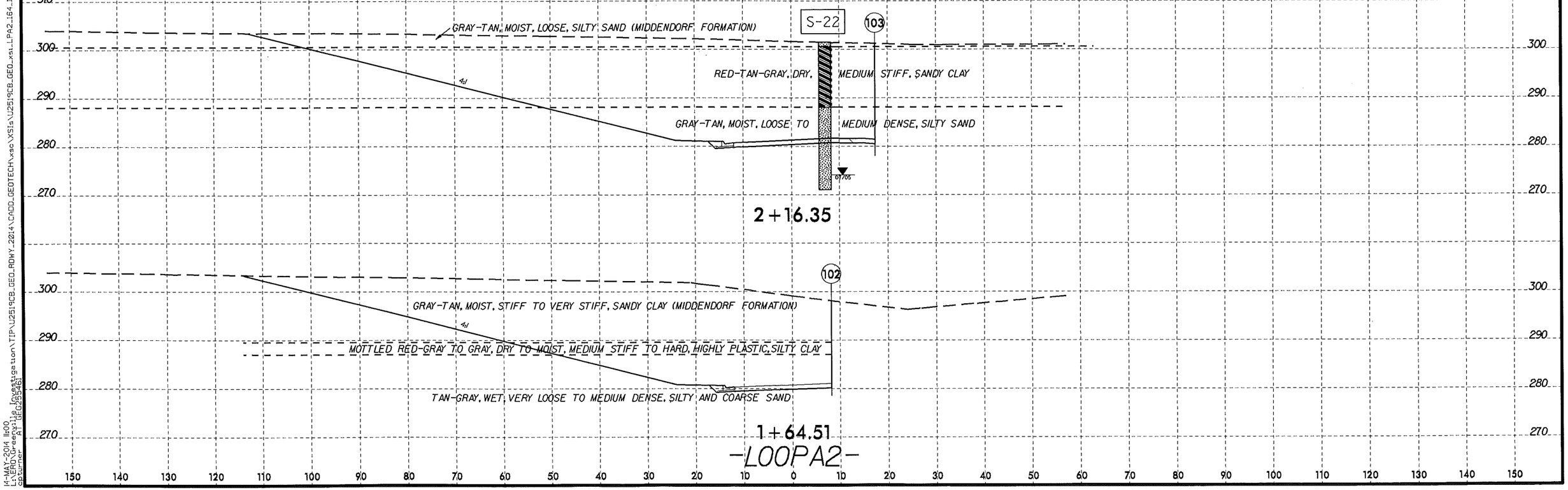
SOIL TEST RESULTS

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-22	7 RT	2+16.35	1.0-13.5	A-6(11)	37	16	10.1	19.0	30.3	40.5	99	94	75	12.0	-



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PROJ. REFERENCE NO.	SHEET NO.
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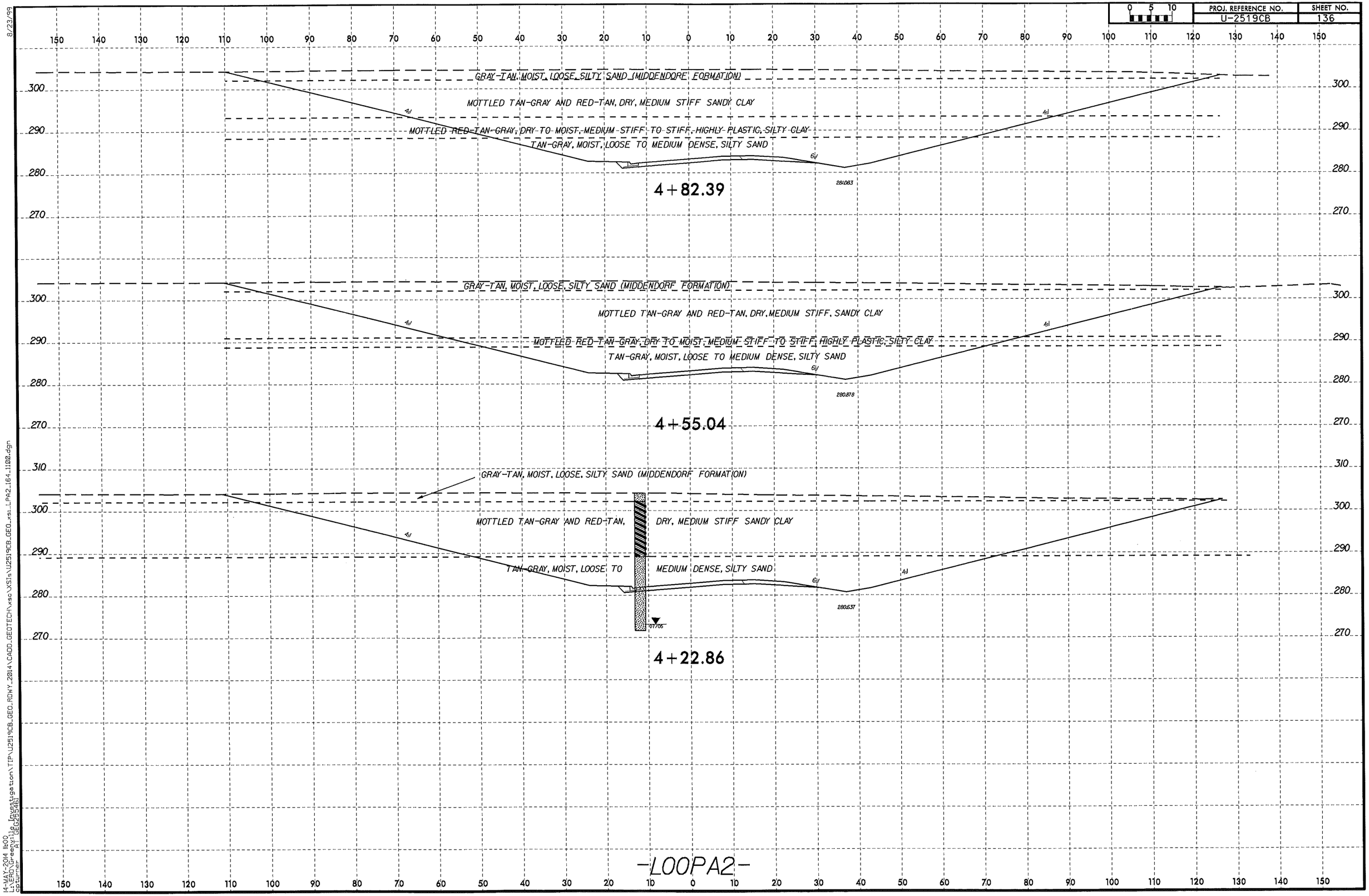

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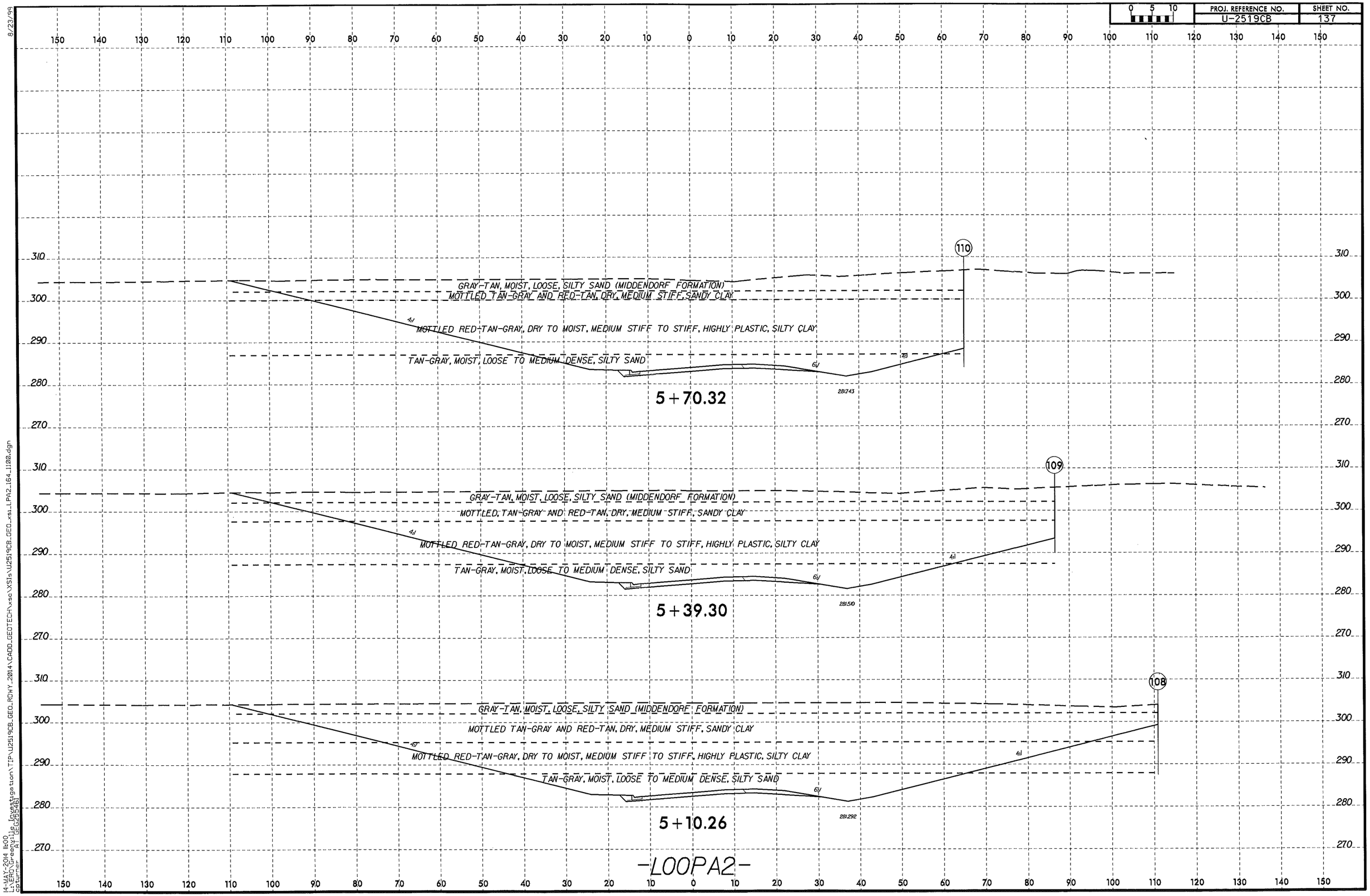

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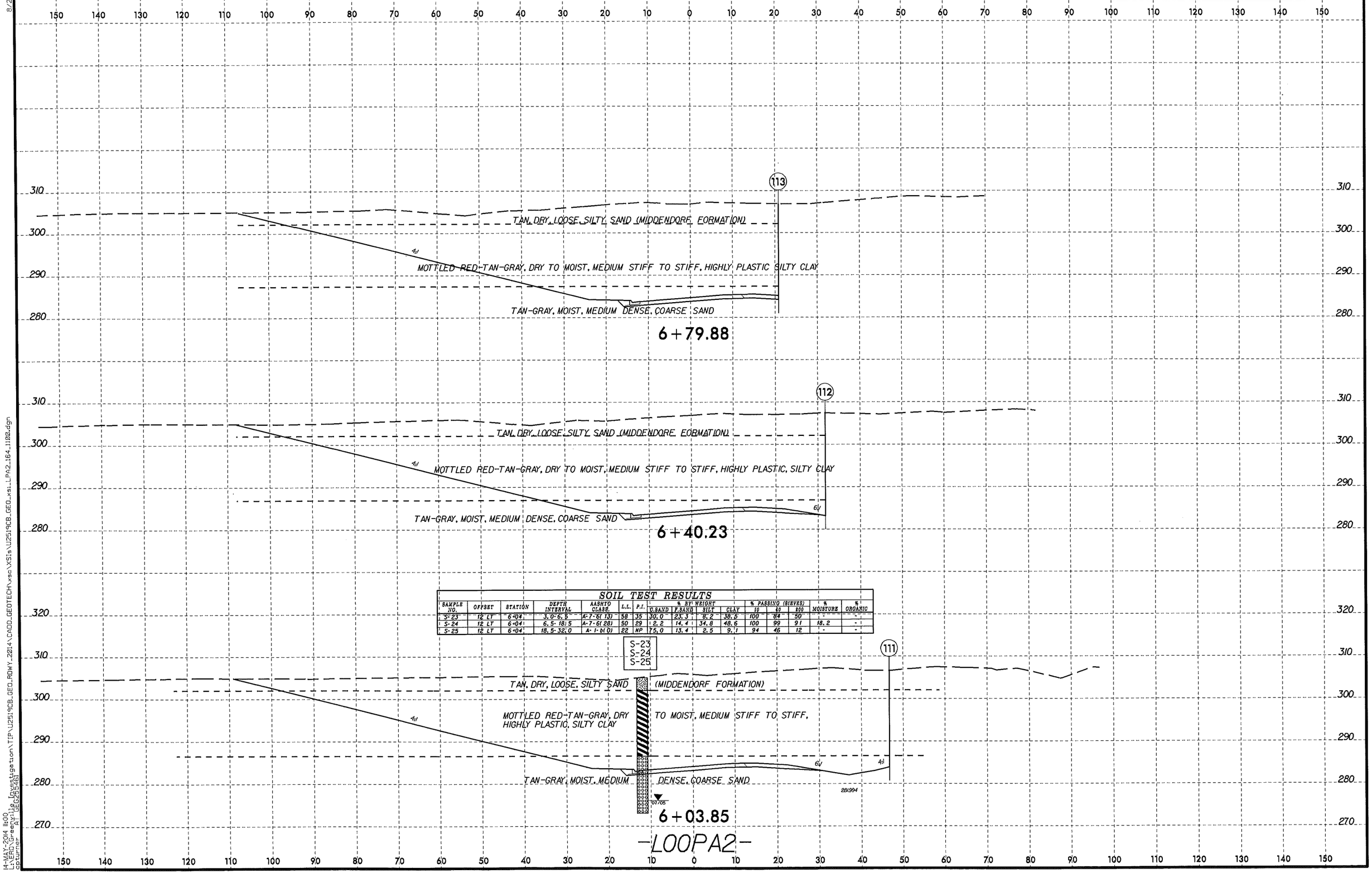
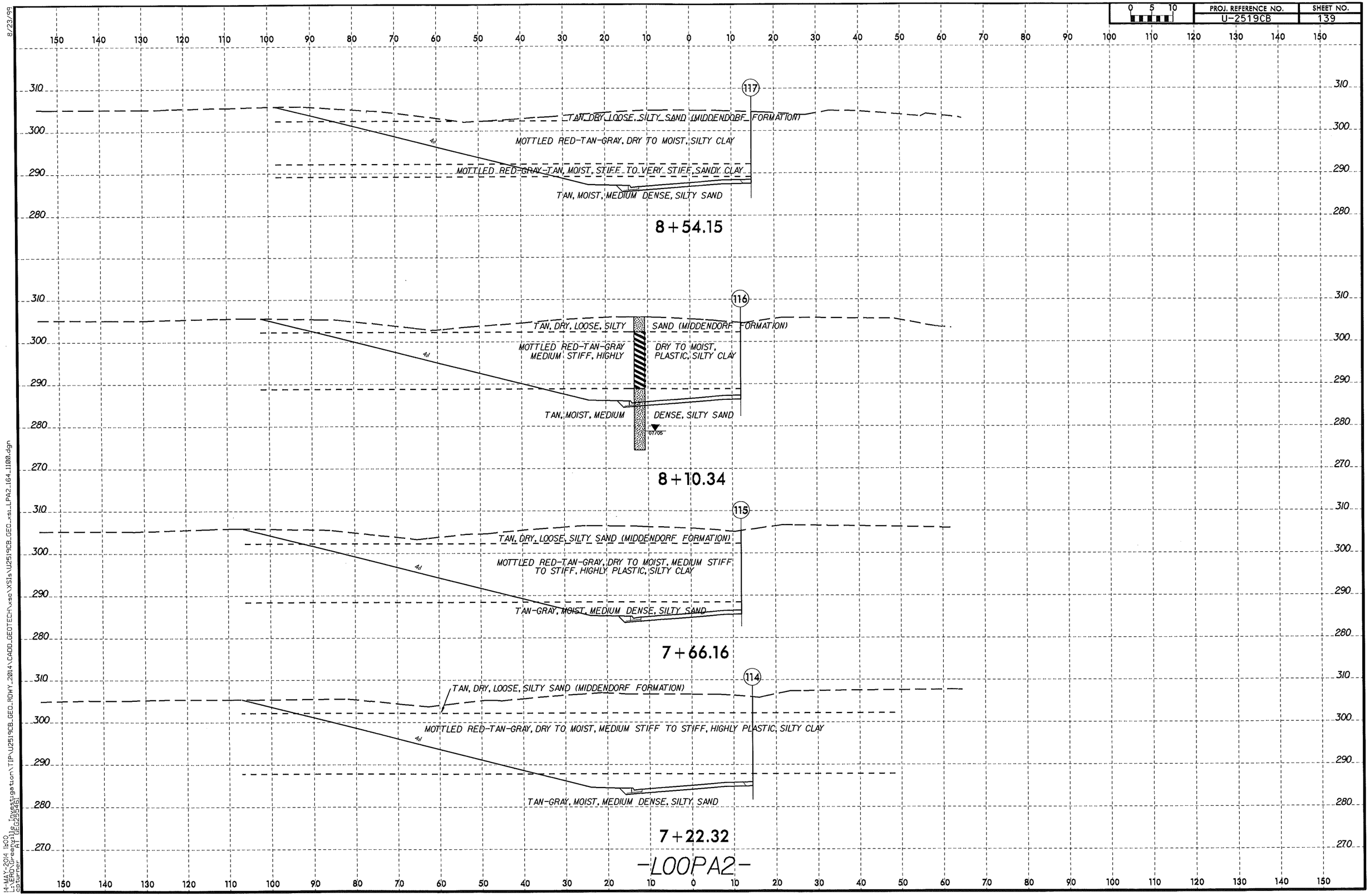


SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT G.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-23	12 LT	6+04	3.0-6.5	A-7-6(13)	58	35	30.0	23.3	8.2	38.5	100	84	50	-	-
S-24	12 LT	6+04	6.5-18.5	A-7-6(28)	50	29	2.2	14.4	34.8	48.6	100	99	91	18.2	-
S-25	12 LT	6+04	18.5-32.0	A-1-b(0)	22	NP	75.0	13.4	2.5	9.1	94	46	12	-	-

8/23/99
14-MAY-2014 11:00
U:\PROJ\Geo\U Investigation\TIP\U2519CB_GEO_ROWY_2014\CADD_GEOTECH\xsc\XS1s\U2519CB_GEO_xs1_LPA2_164_1100.dgn
cpturner AT GEO25546

PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	139



8/23/99

14-MAY-2014 11:00
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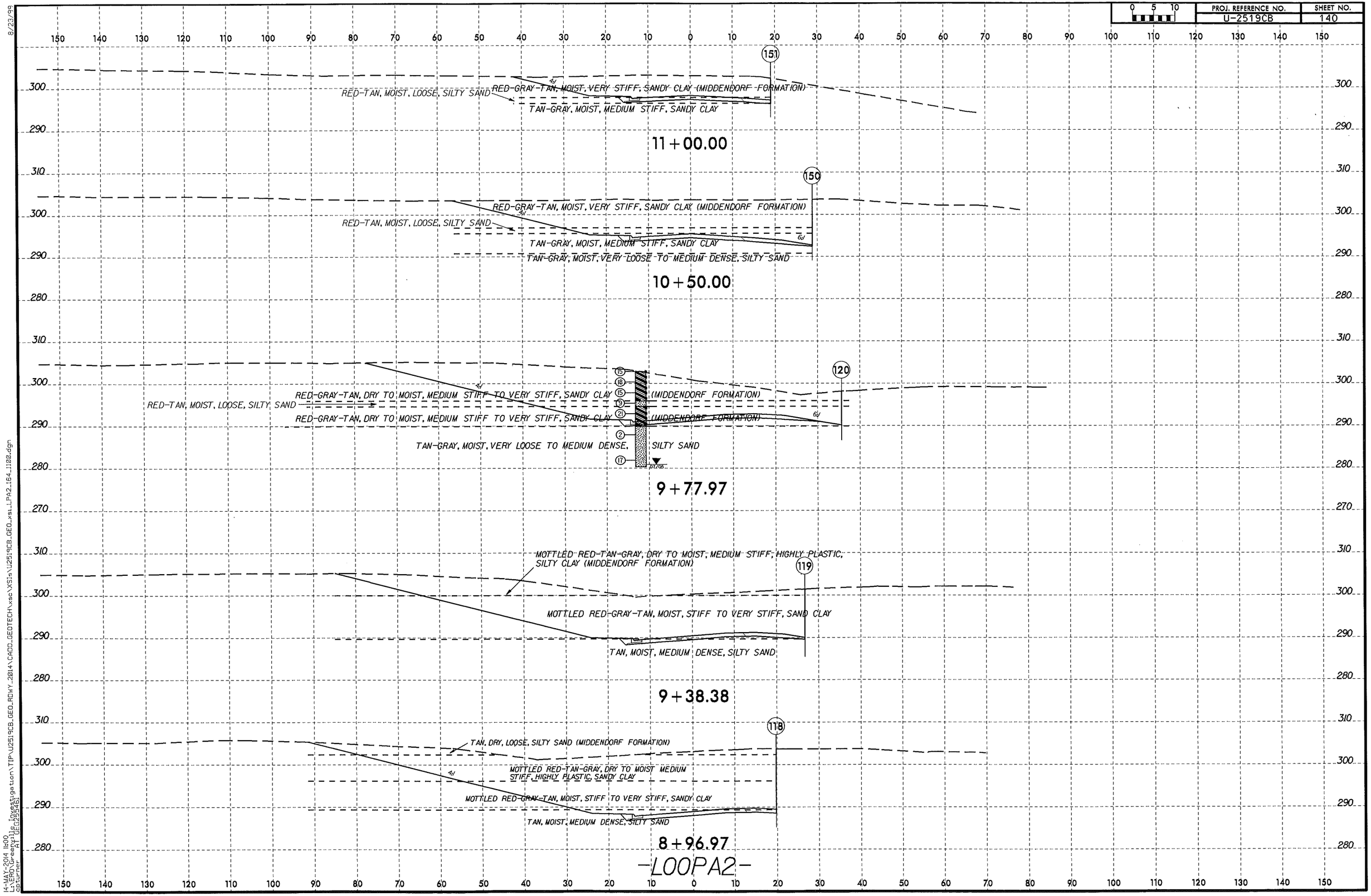
cpsumner
AT GEO25546i

PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	140



8/23/99

14-MAY-2014 11:00
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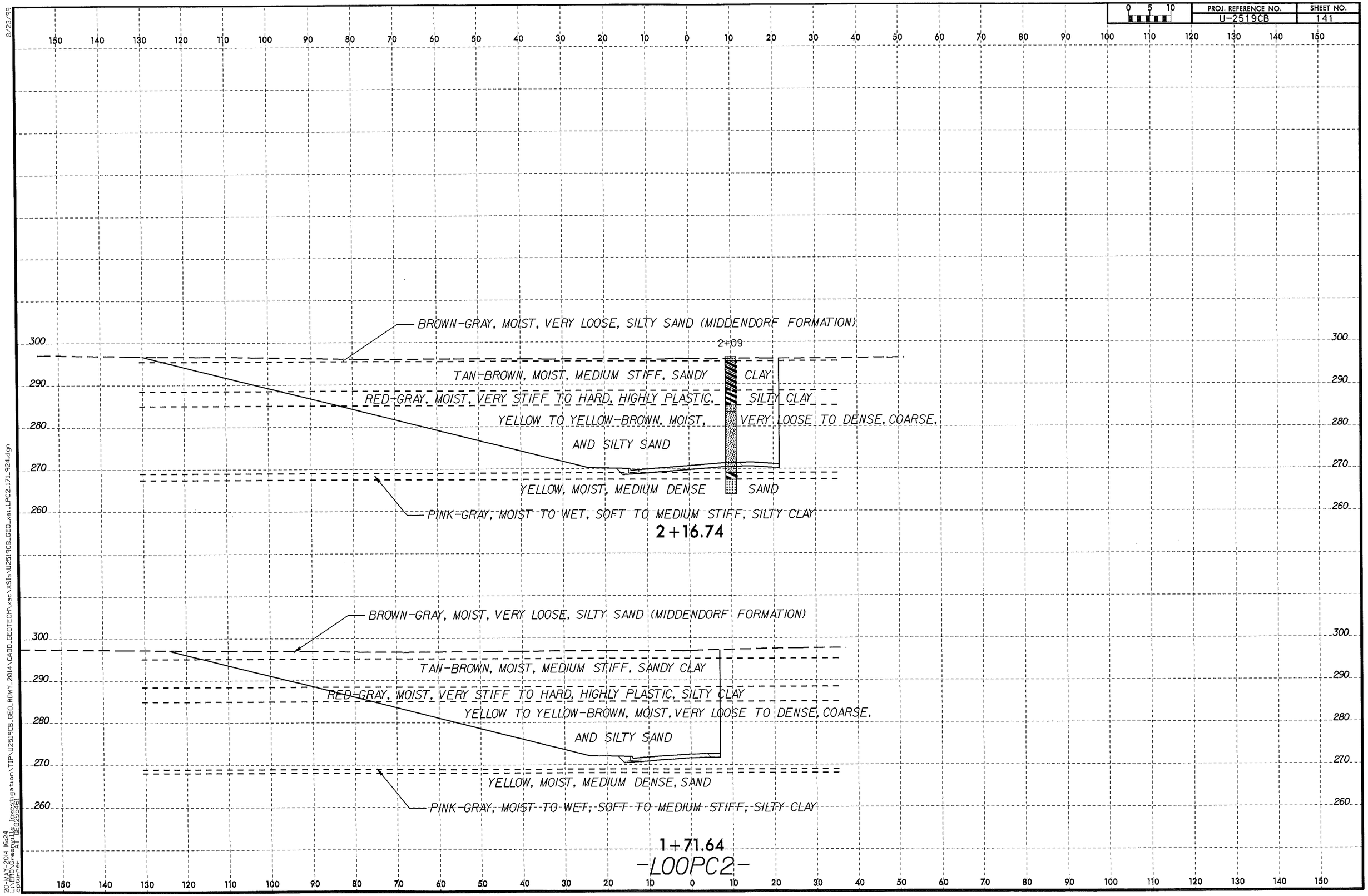
cpturner AT GEO25546



8/23/99
20-MAY-2014 16:24
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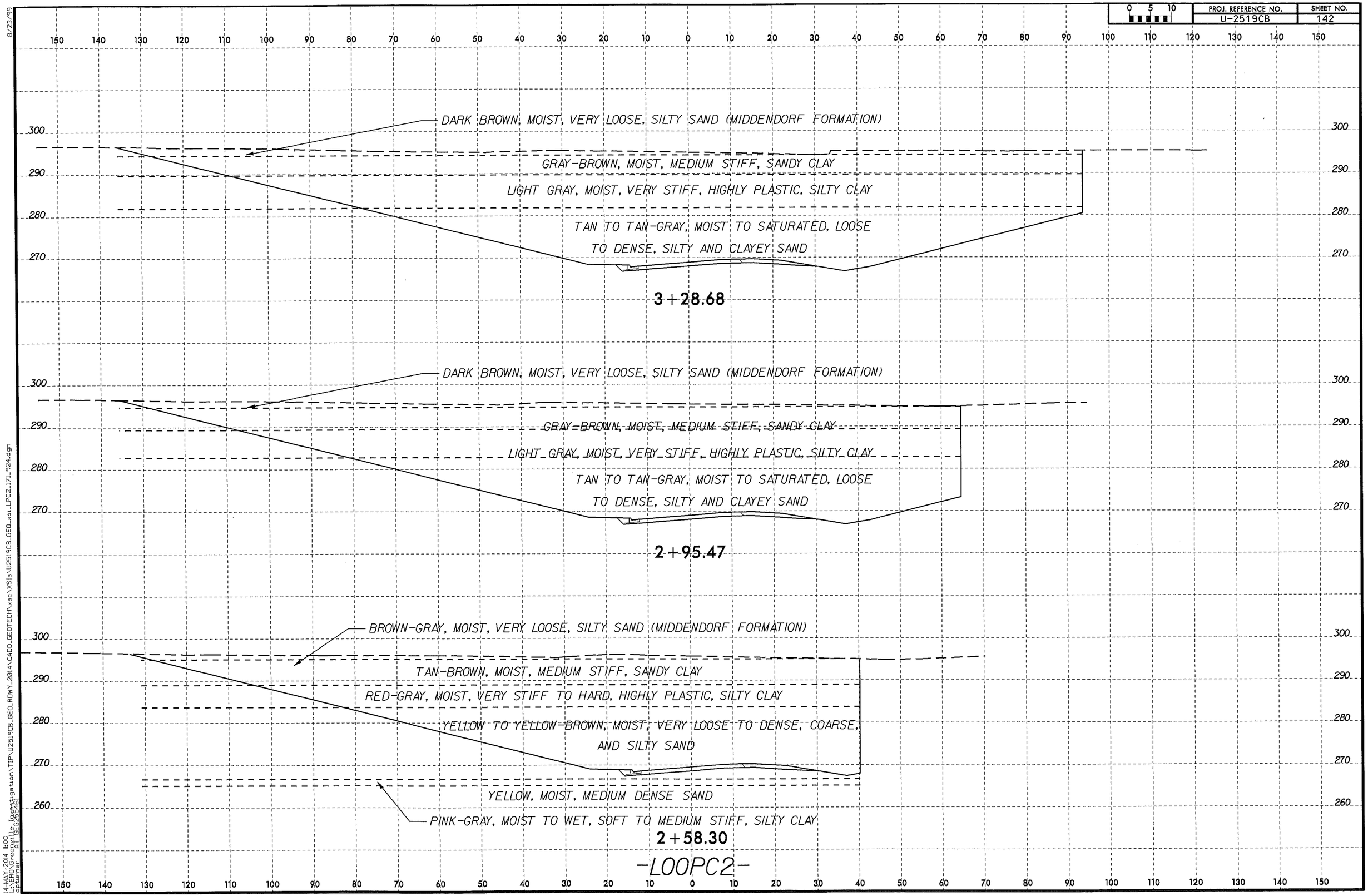
capturner GEO25546



8/23/99
14-MAY-2014 11:00
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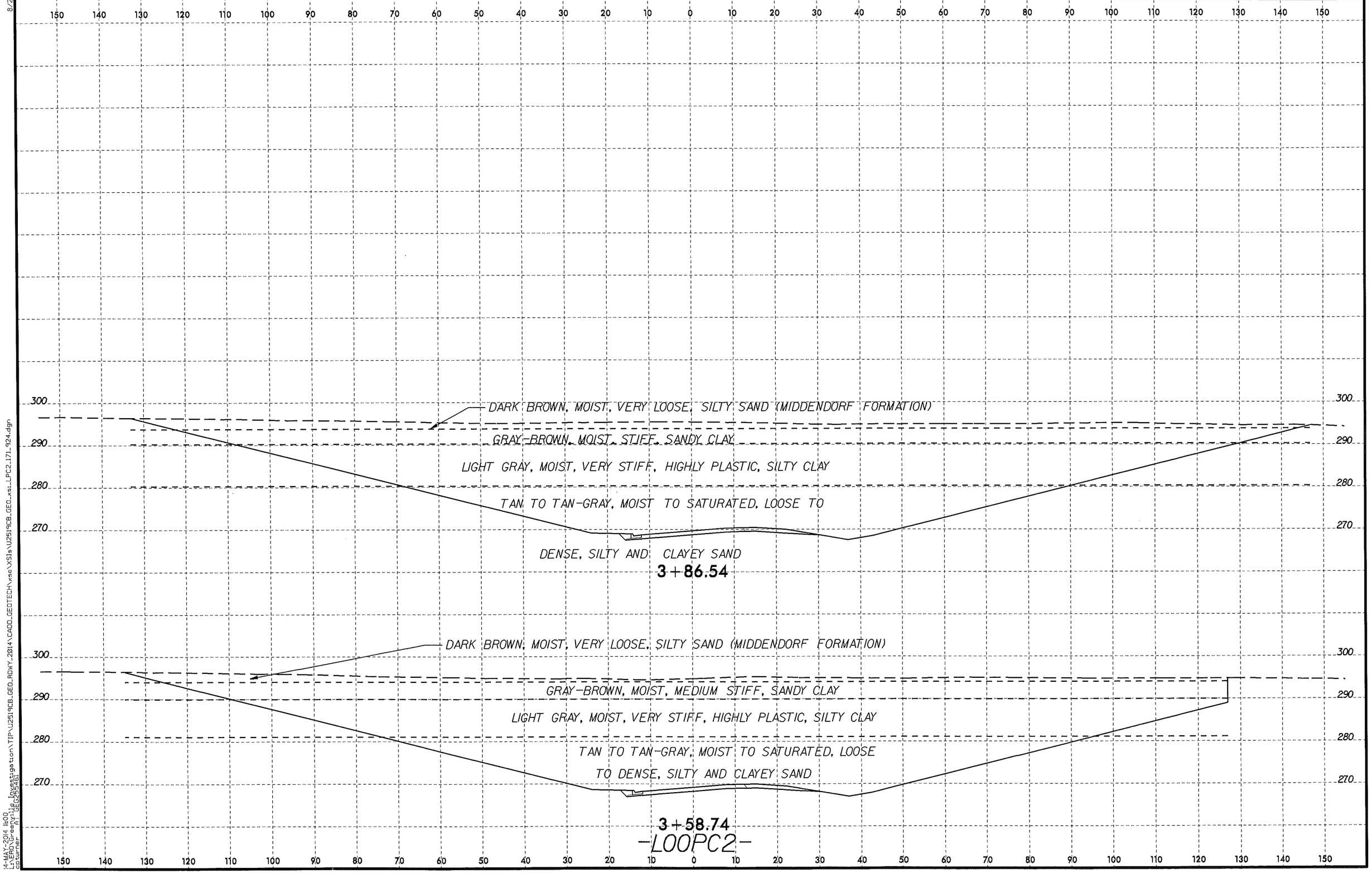
cpturner AT GEO25526

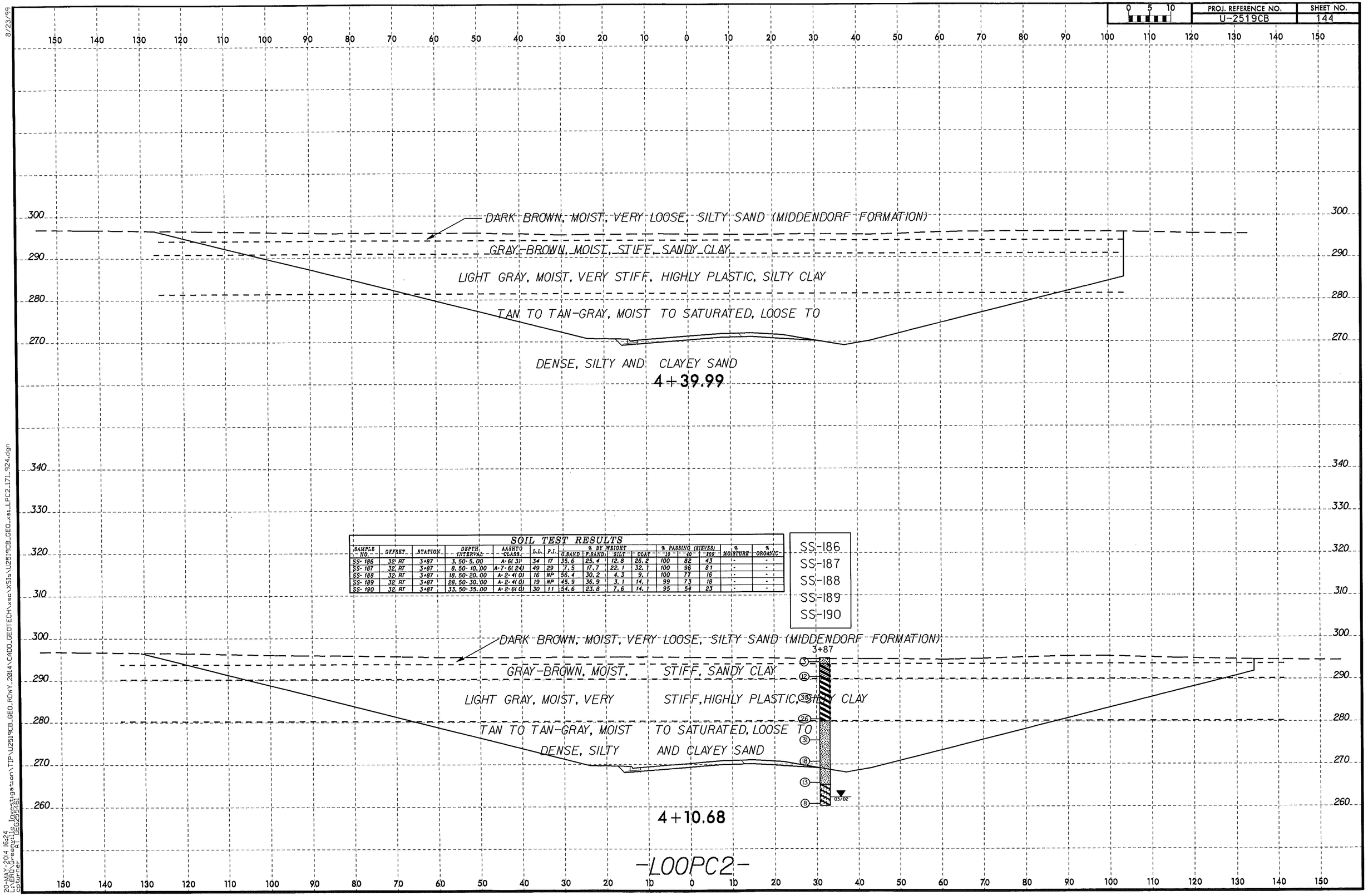
8/23/99

PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	143



14-MAY-2014 11:00
cpturner

PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	144



SS-186
SS-187
SS-188
SS-189
SS-190

SOIL TEST RESULTS

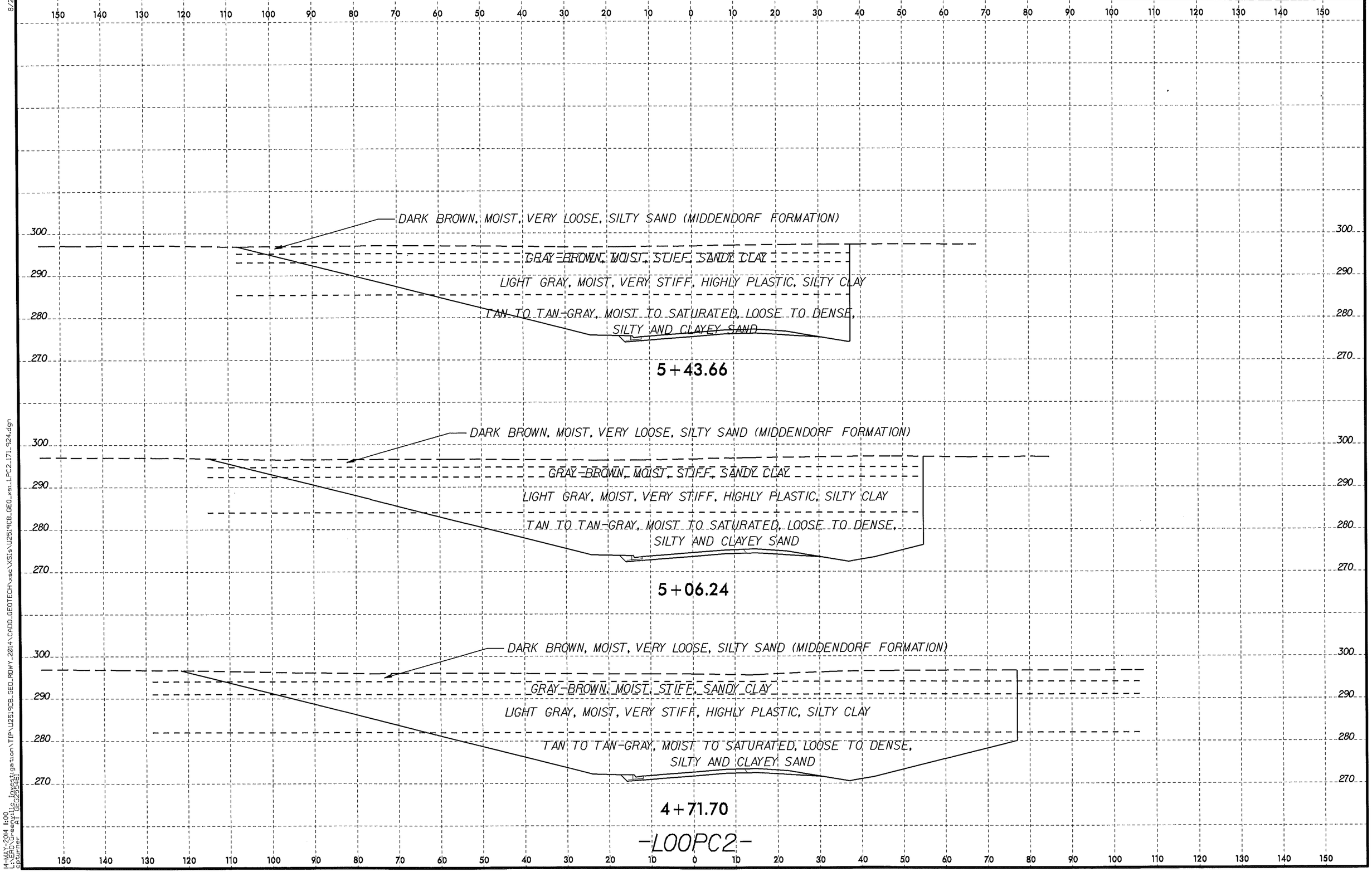
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT G.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) #10	#40	#200	% MOISTURE	% ORGANIC
SS-186	32' RT	3+87	3.50-5.00	A-6(3)	34	17	35.6	25.4	12.8	26.2	100	82	43	-	-
SS-187	32' RT	3+87	8.50-10.00	A-7-6(24)	49	29	7.5	17.7	22.1	32.1	100	96	81	-	-
SS-188	32' RT	3+87	18.50-20.00	A-2-4(0)	16	NP	56.4	30.2	4.3	9.1	100	77	16	-	-
SS-189	32' RT	3+87	28.50-30.00	A-2-4(0)	19	NP	45.9	36.9	3.1	14.1	99	73	18	-	-
SS-190	32' RT	3+87	33.50-35.00	A-2-6(0)	30	11	54.6	23.8	7.6	14.1	95	54	23	-	-

8/23/99

20-MAY-2014 16:24
LS:ERNS-Central
Corner AT LEG205X81

LEGEND: Investigation\TIP\U2519CB_GEO_RDWY_2014\CADD_GEOTECH\xsec\XS1s\U2519CB_GEO_xs1_LPC2_171_924.dgn

PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	145



8/23/99

14-MAY-2014 11:00
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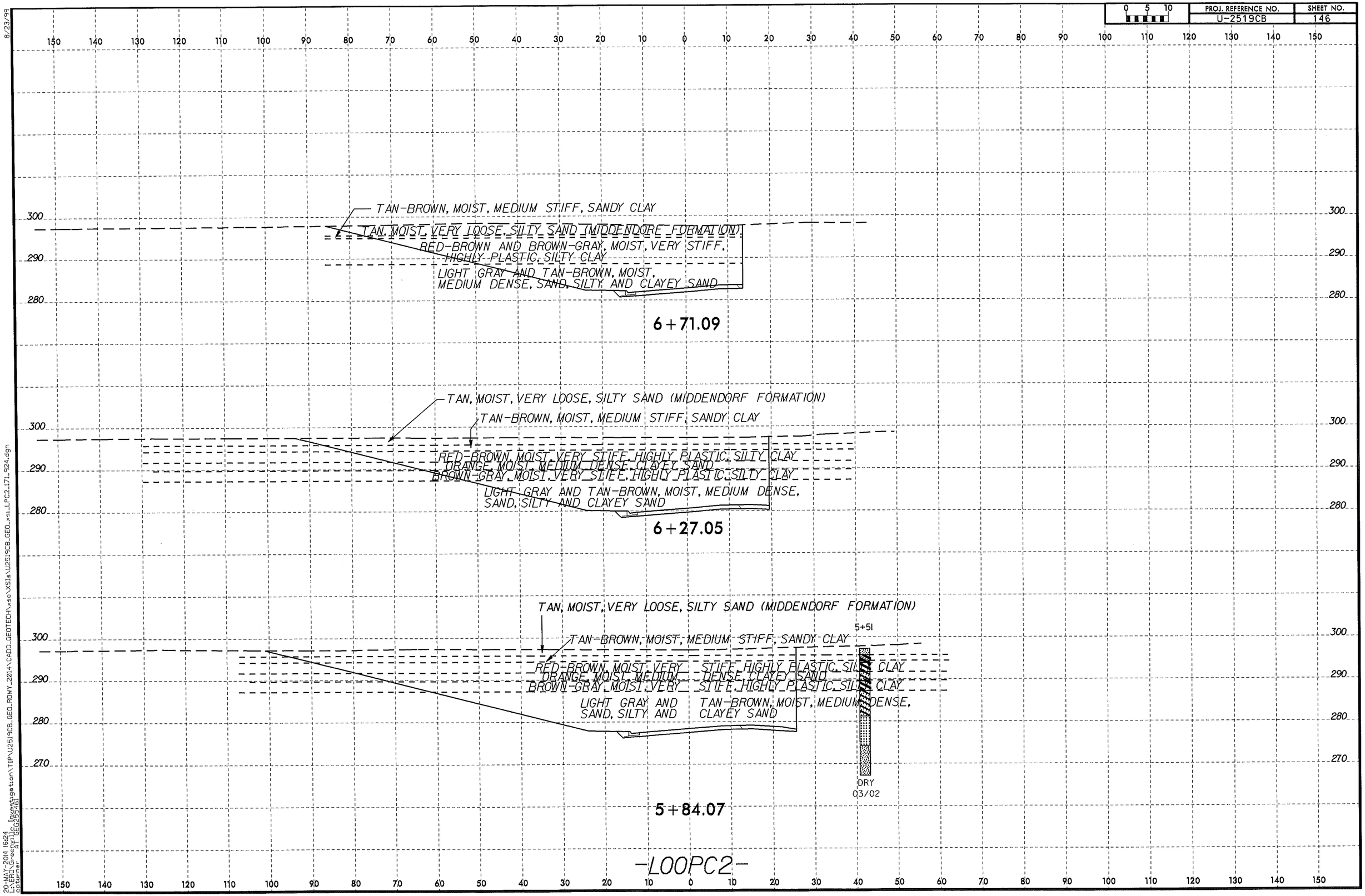
ostumer AT GEO295461

PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	146



8/23/99

20-MAY-2014 16:24
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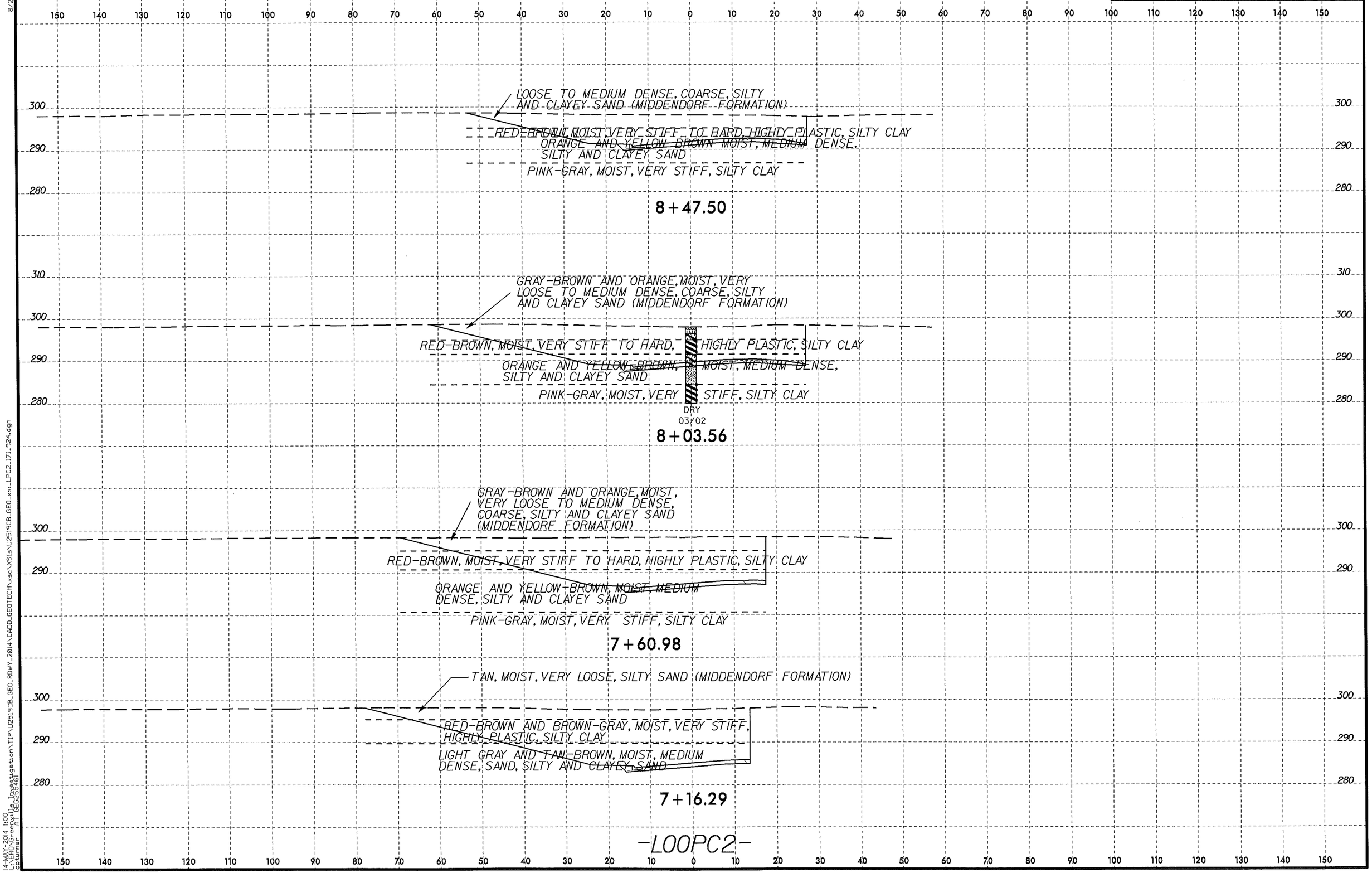
Consultant: GEOPSYCH

PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	147



8/23/99

14-MAY-2014 11:00
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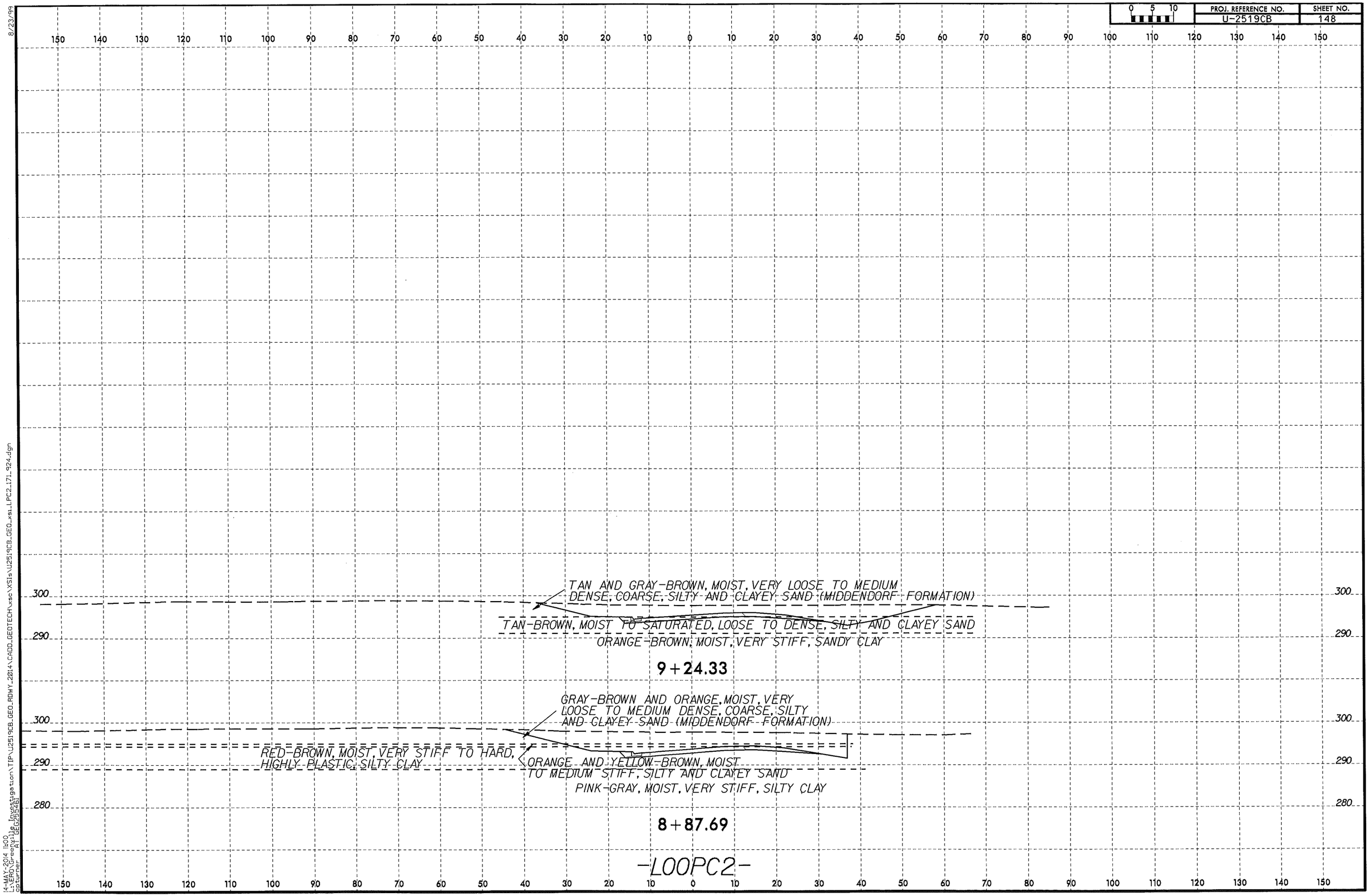
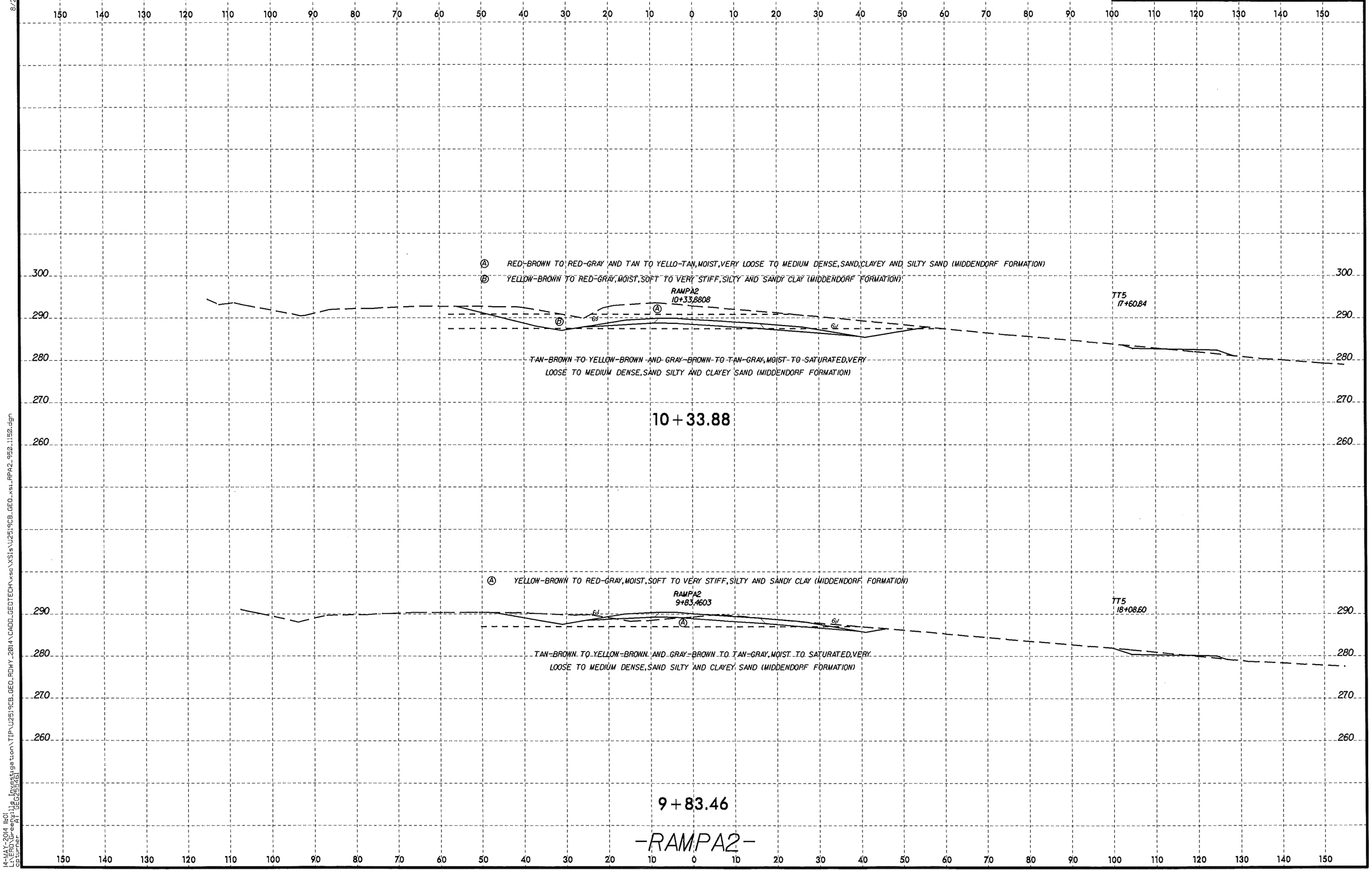
cpturner AT GEO255461


0 5 10
PROJ. REFERENCE NO.
U-2519CB
SHEET NO.
148
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150
300
290
280
TAN AND GRAY-BROWN, MOIST, VERY LOOSE TO MEDIUM DENSE, COARSE, SILTY AND CLAYEY SAND (MIDDENDORF FORMATION)
TAN-BROWN, MOIST TO SATURATED, LOOSE TO DENSE, SILTY AND CLAYEY SAND
ORANGE-BROWN, MOIST, VERY STIFF, SANDY CLAY
9+24.33
GRAY-BROWN AND ORANGE, MOIST, VERY LOOSE TO MEDIUM DENSE, COARSE, SILTY AND CLAYEY SAND (MIDDENDORF FORMATION)
RED-BROWN, MOIST, VERY STIFF TO HARD, HIGHLY PLASTIC, SILTY CLAY
ORANGE AND YELLOW-BROWN, MOIST TO MEDIUM STIFF, SILTY AND CLAYEY SAND
PINK-GRAY, MOIST, VERY STIFF, SILTY CLAY
8+87.69
-LOOPC2-
8/23/99
14-MAY-2014 11:00
L:\ERD\Greenville Investigation\TIP\U2519CB_GEO_RDWY_2014\CADD_GEOTECH\xsc\XS1a\U2519CB_GEO_xsl_LPC2_171_924.dgn
pcturner AT GEO255461

PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	149

0 5 10



8/23/99

14-MAY-2014 11:01
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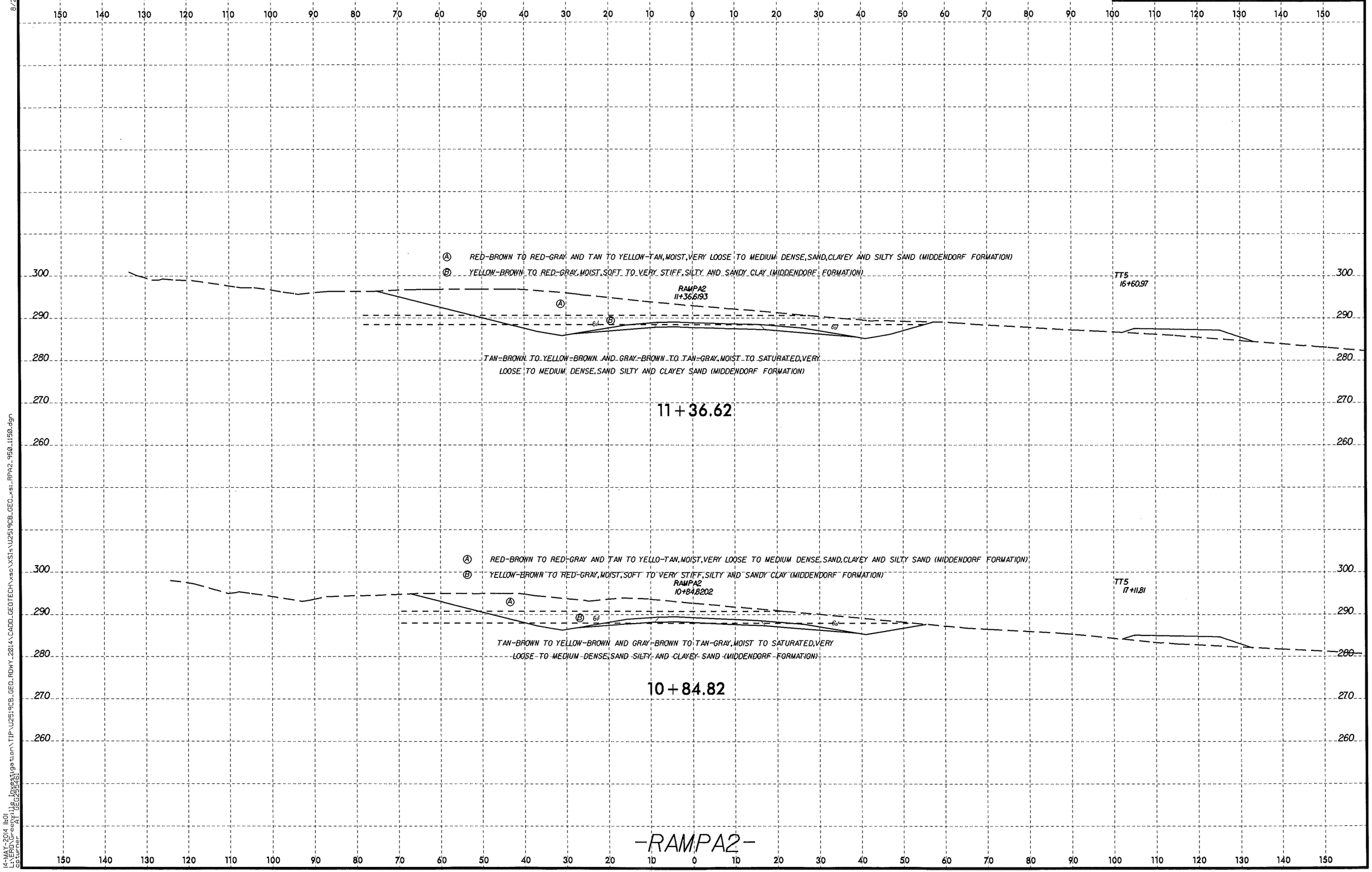
cpturner AT GEO2554G1

PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	150

0 5 10



8/23/99

14-MAY-2014 11:01
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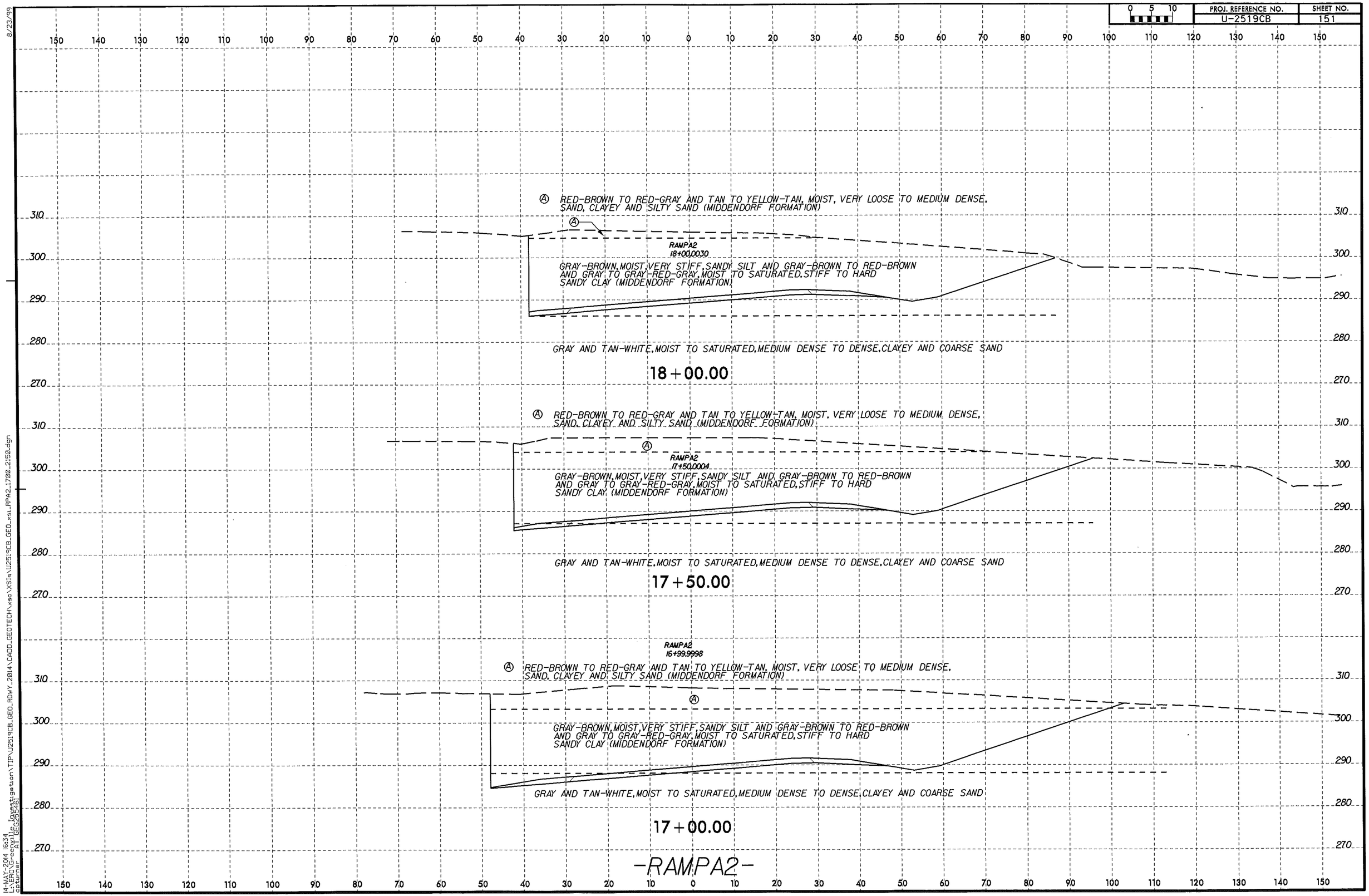
pcturner AT GEO29546



8/23/99
14-MAY-2014 16:34
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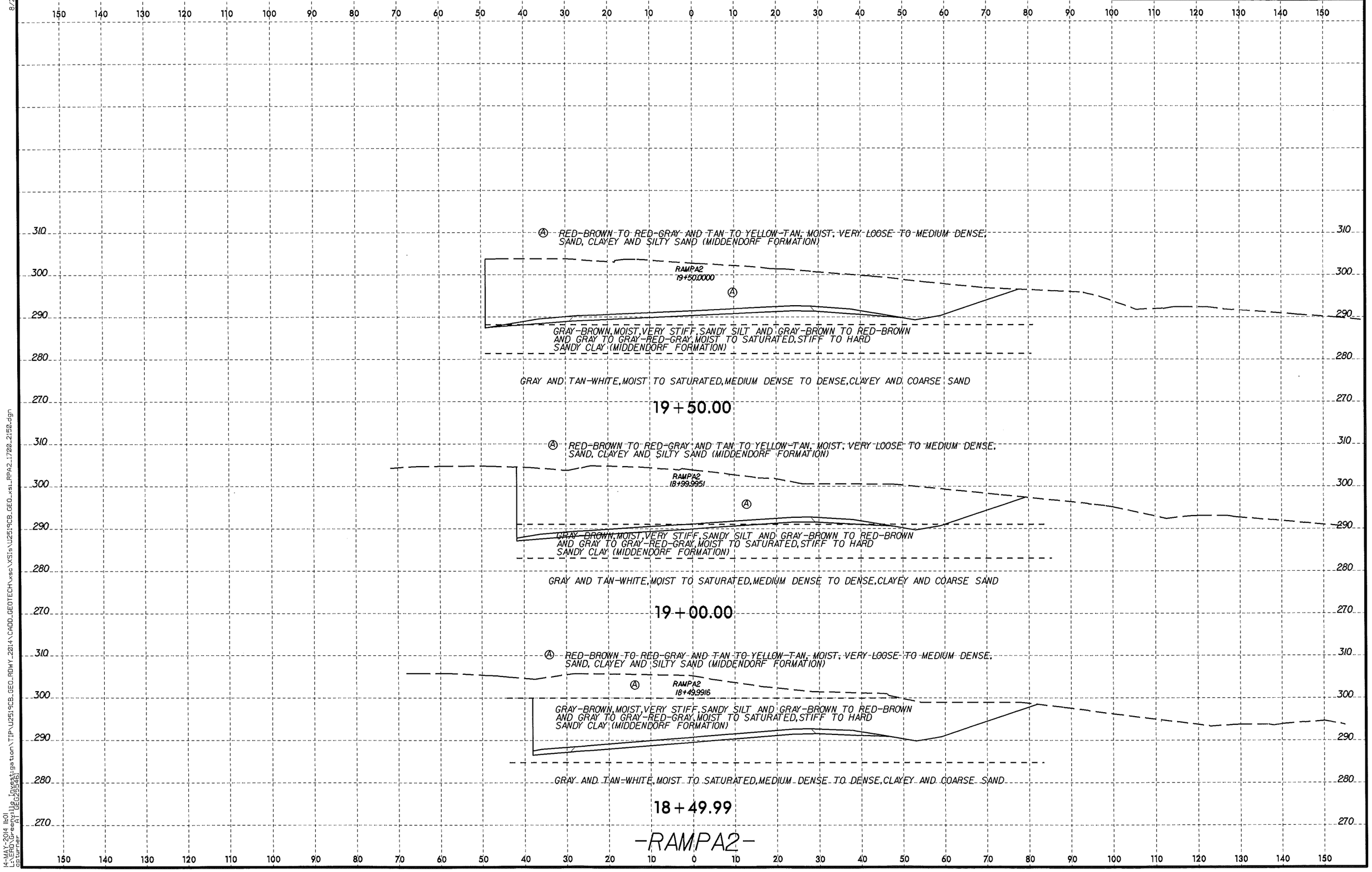
capturner AT GEG25461

PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	152



8/23/99

14-MAY-2014 11:01
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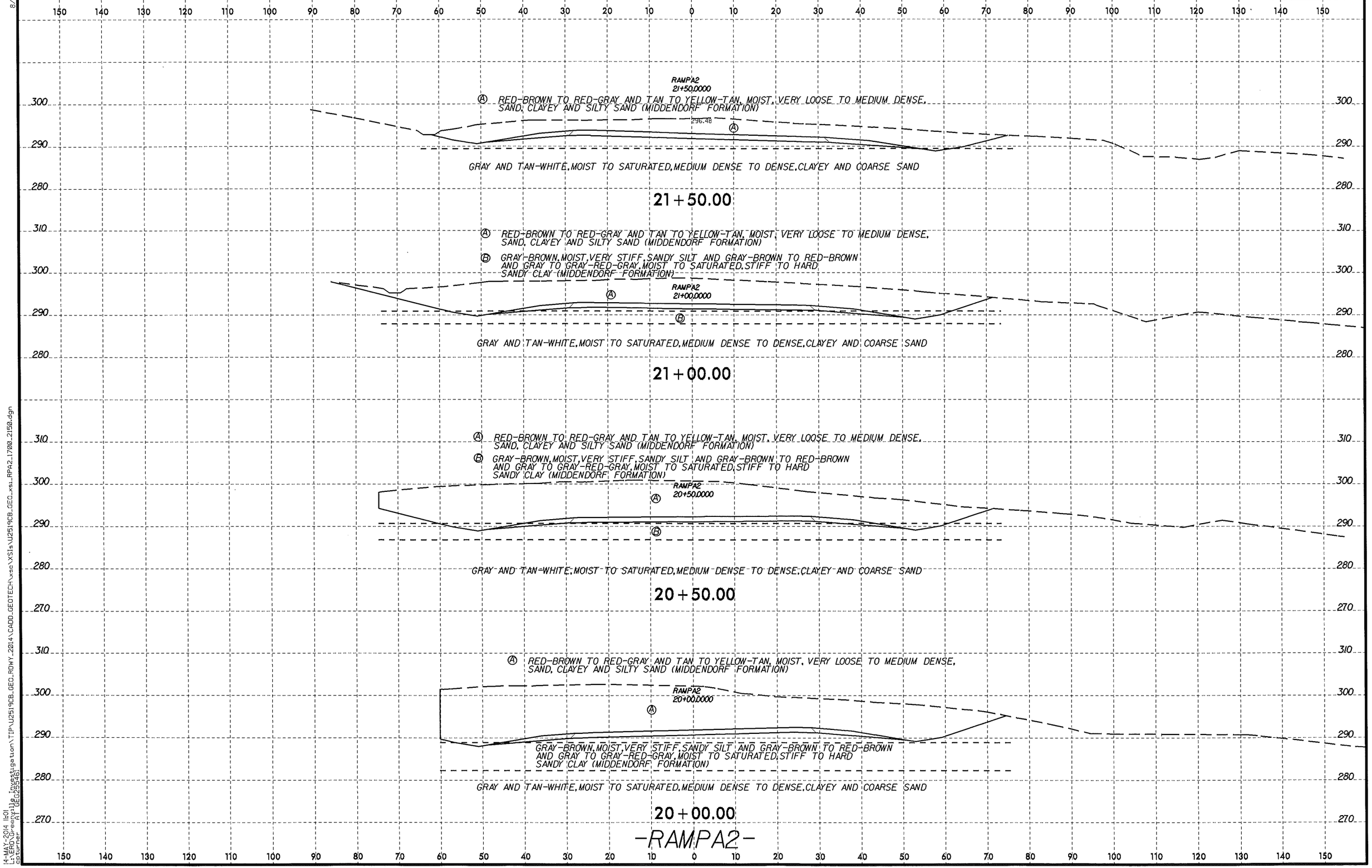
cpturner AT GEO25546i

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2519CB	153



8/23/99

14-MAY-2014 11:01
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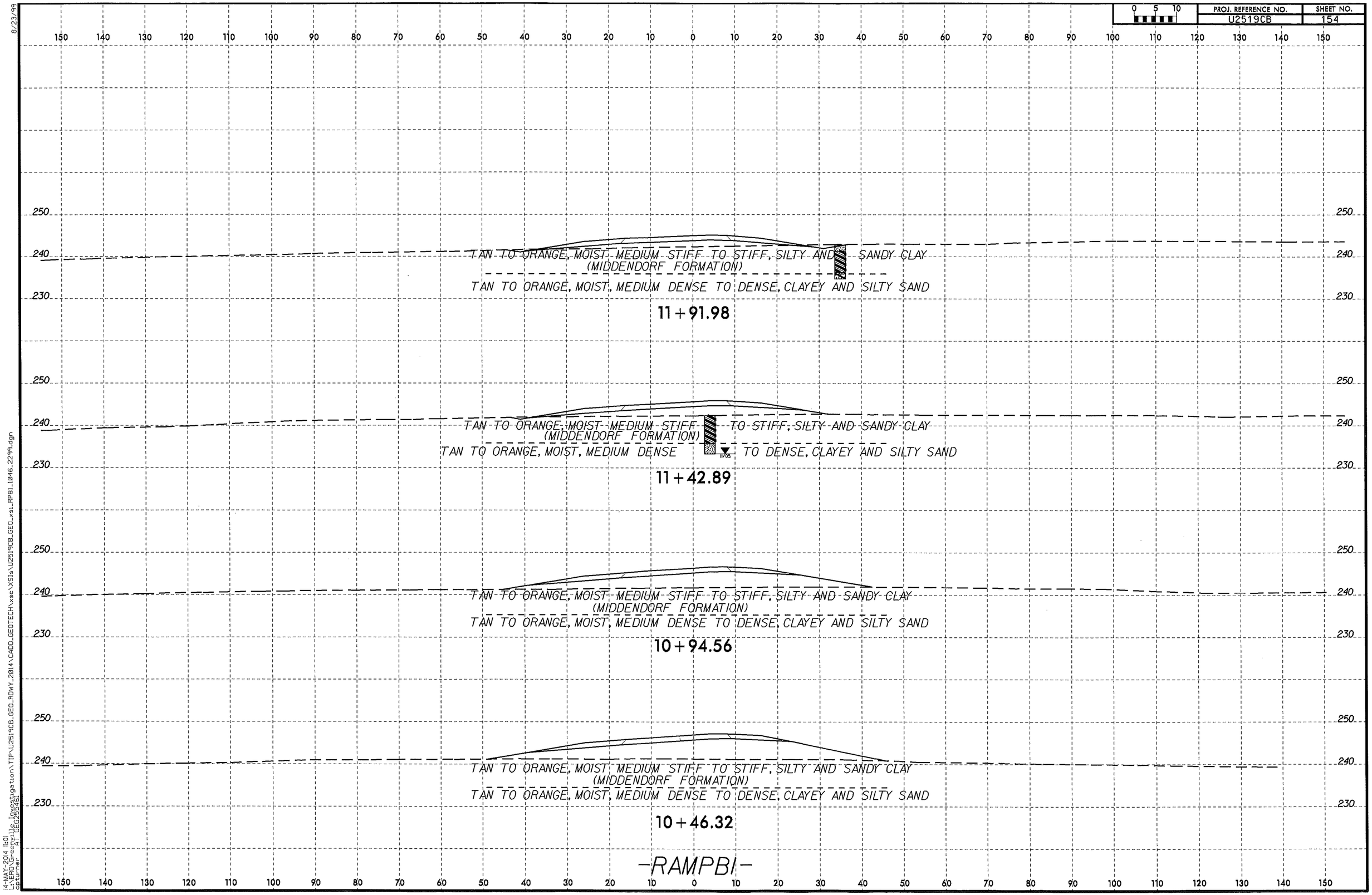
cptumer AT GED25346

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
U2519CB	154

0 5 10



14-MAY-2014 11:01
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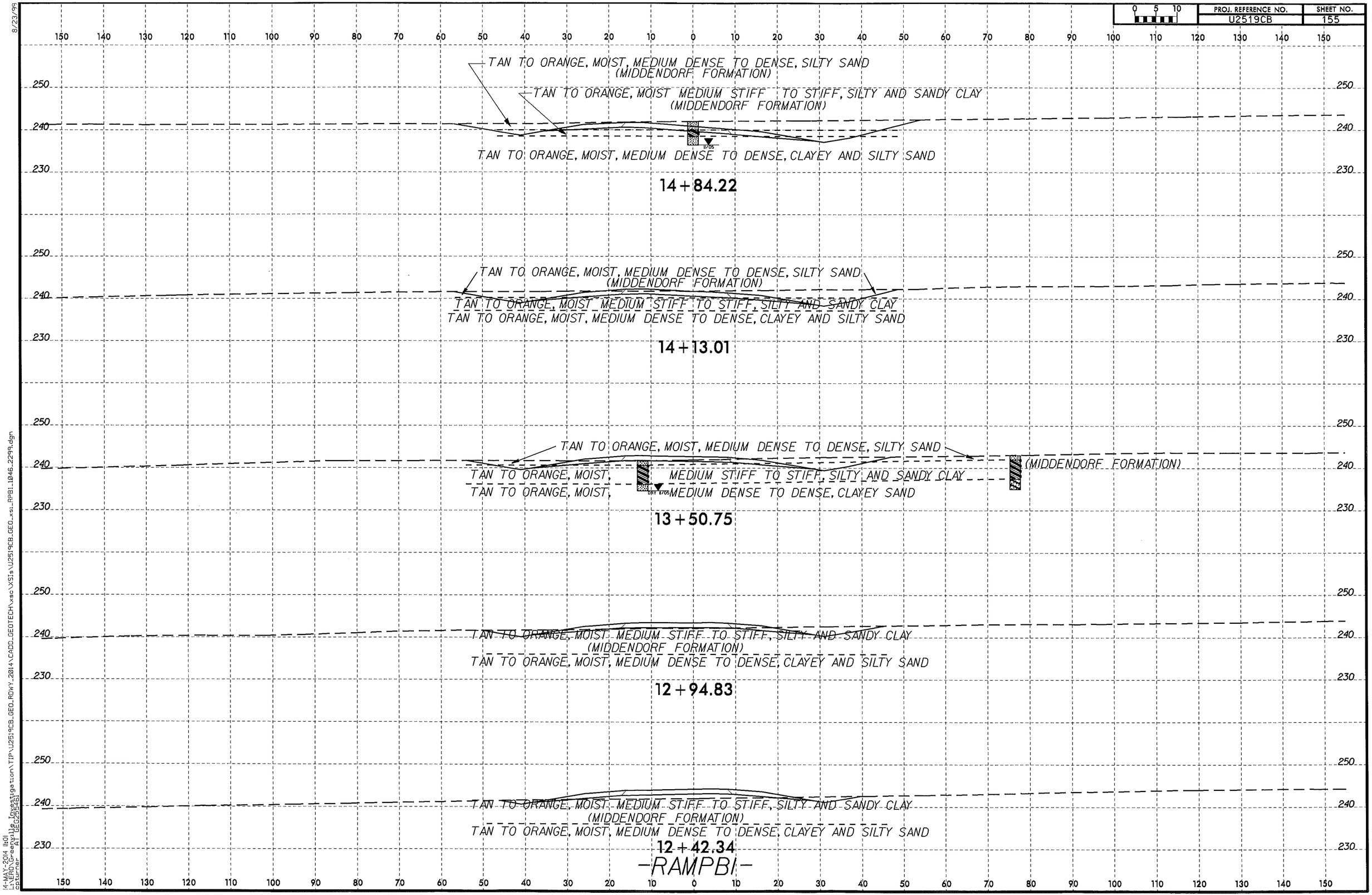
cpturner AT GEO25546

PROJ. REFERENCE NO.	SHEET NO.
U2519CB	155



8/23/99

14-MAY-2014 11:01
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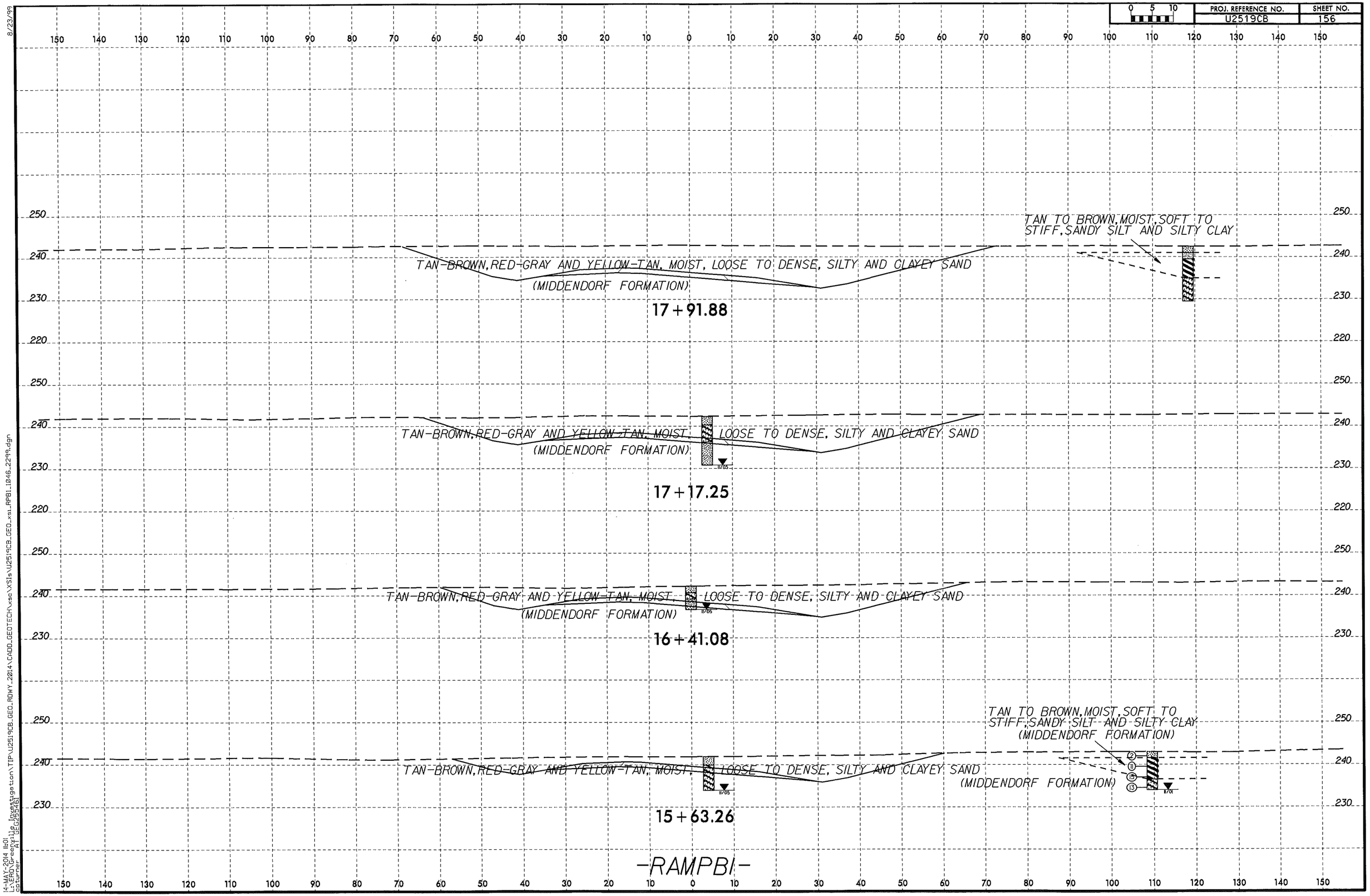
epturner A1 GEO295461



8/23/99
14-MAY-2014 11:01
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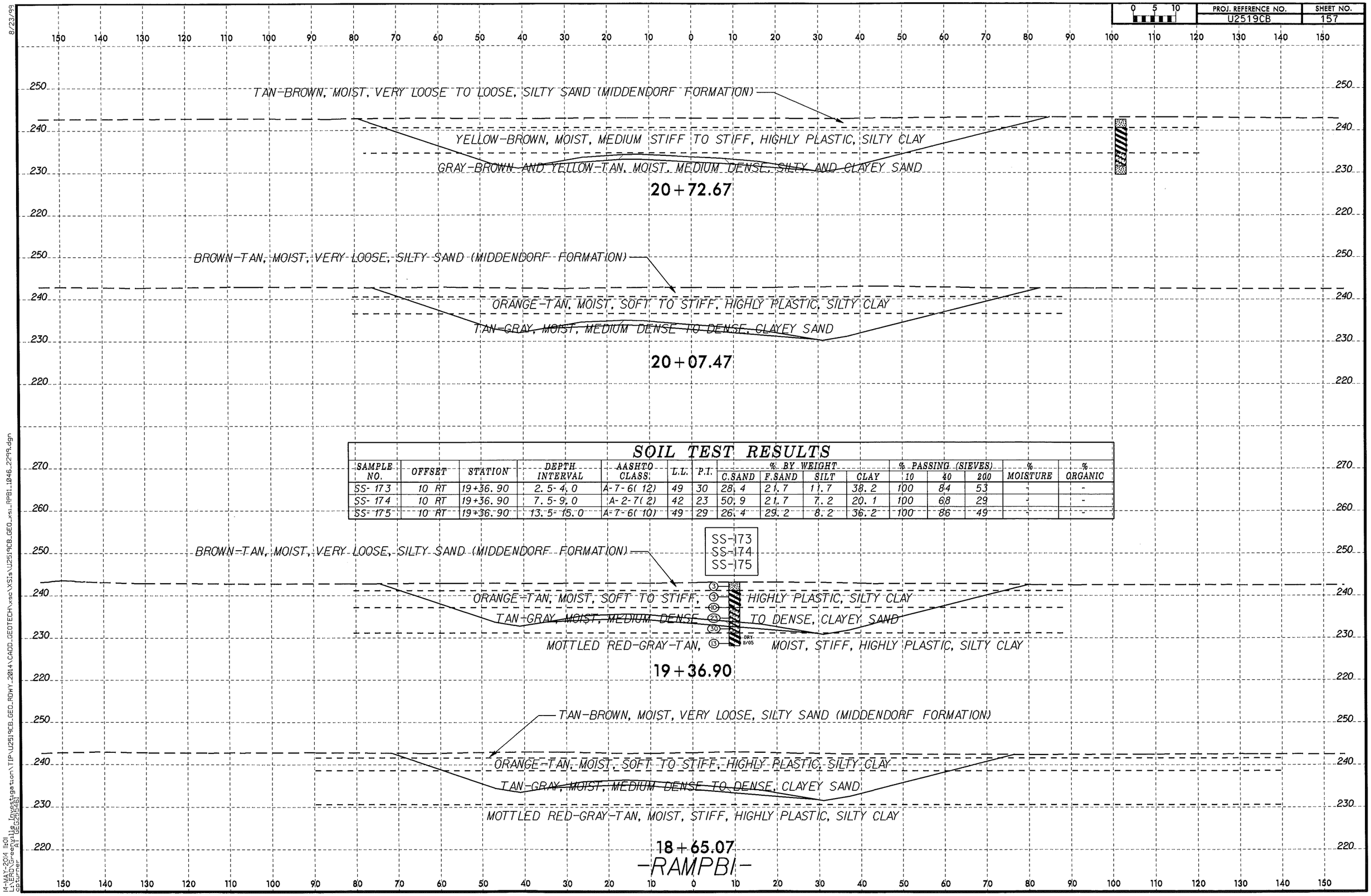
cbturner
A1 GEO25461

PROJ. REFERENCE NO.	SHEET NO.
U2519CB	157

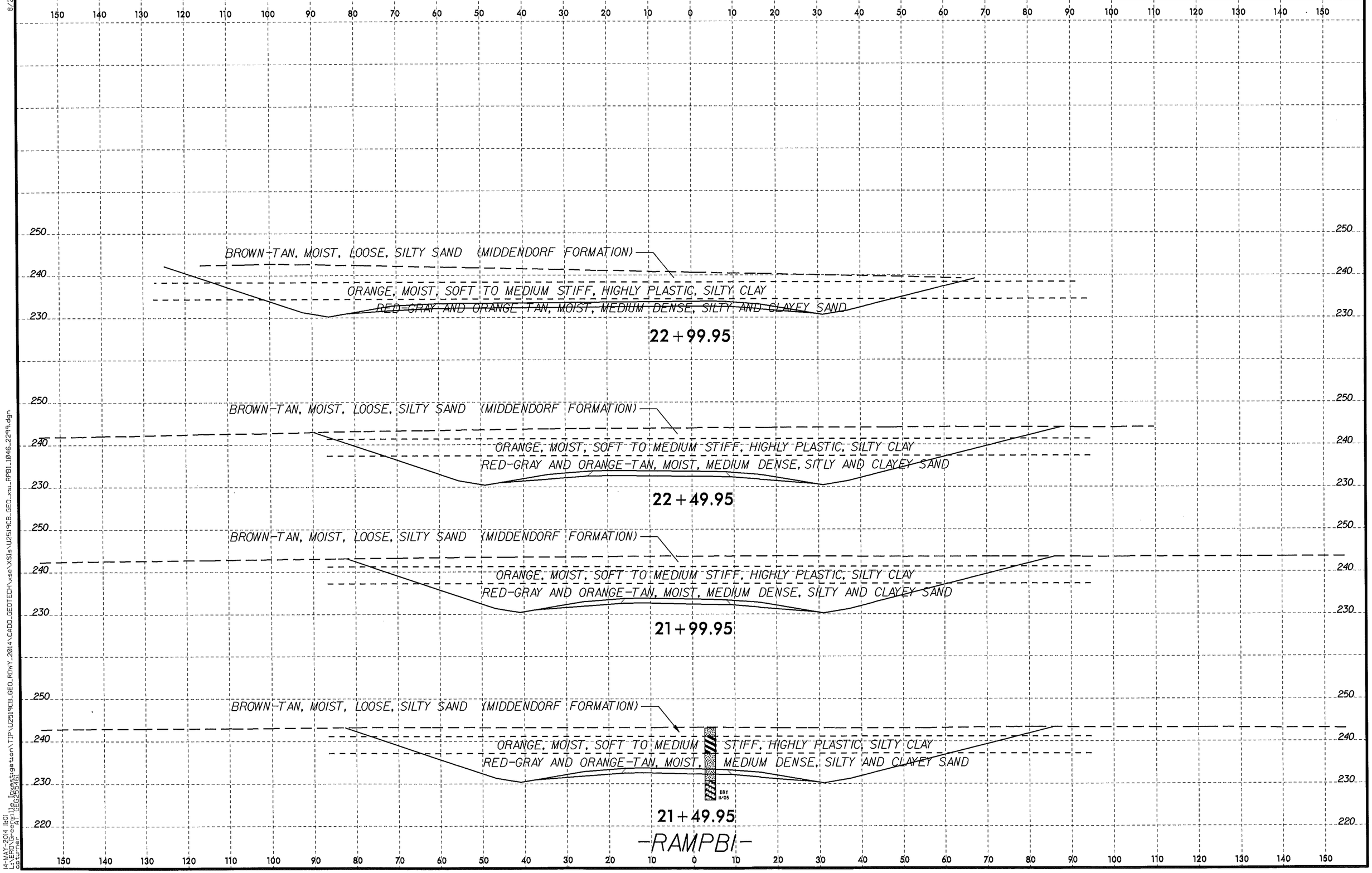


SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-173	10 RT	19+36.90	2.5-4.0	A-7-6(12)	49	30	28.4	21.7	11.7	38.2	100	84	53	-	-
SS-174	10 RT	19+36.90	7.5-9.0	A-2-7(2)	42	23	50.9	21.7	7.2	20.1	100	68	29	-	-
SS-175	10 RT	19+36.90	13.5-15.0	A-7-6(10)	49	29	26.4	29.2	8.2	36.2	100	86	49	-	-

8/23/99
14-MAY-2014 11:01
L:\ERD\Greenville Investigation\TIP\U2519CB_GEO_RDWY.2014\CADD_GEOTECH\xsec\XSis\U2519CB_GEO_xsi_RPBI.1046_2299.dgn
opowner AT GEO2554G1

PROJ. REFERENCE NO.	SHEET NO.
U2519CB	158



8/23/99

14-MAY-2014 11:01
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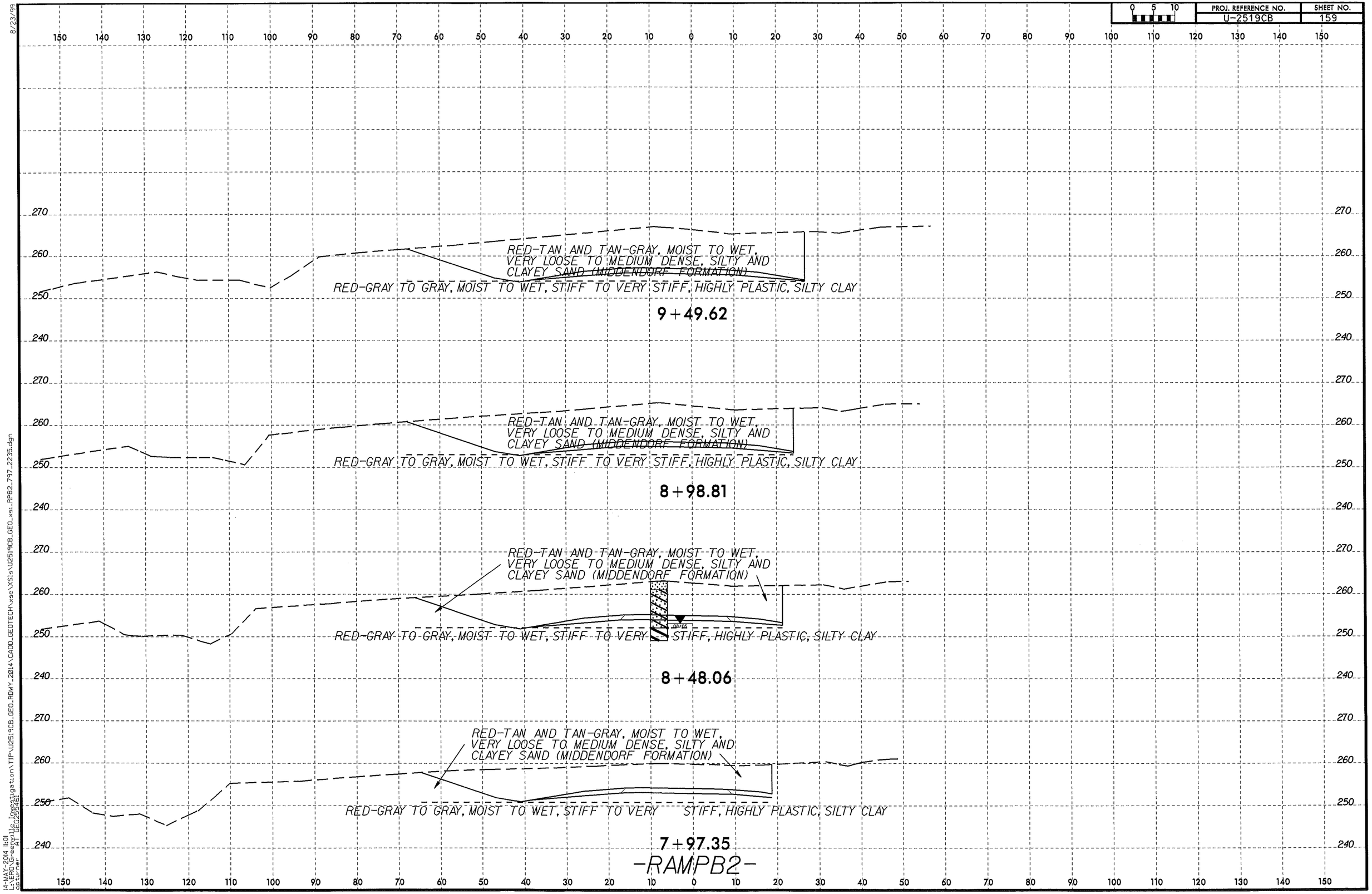
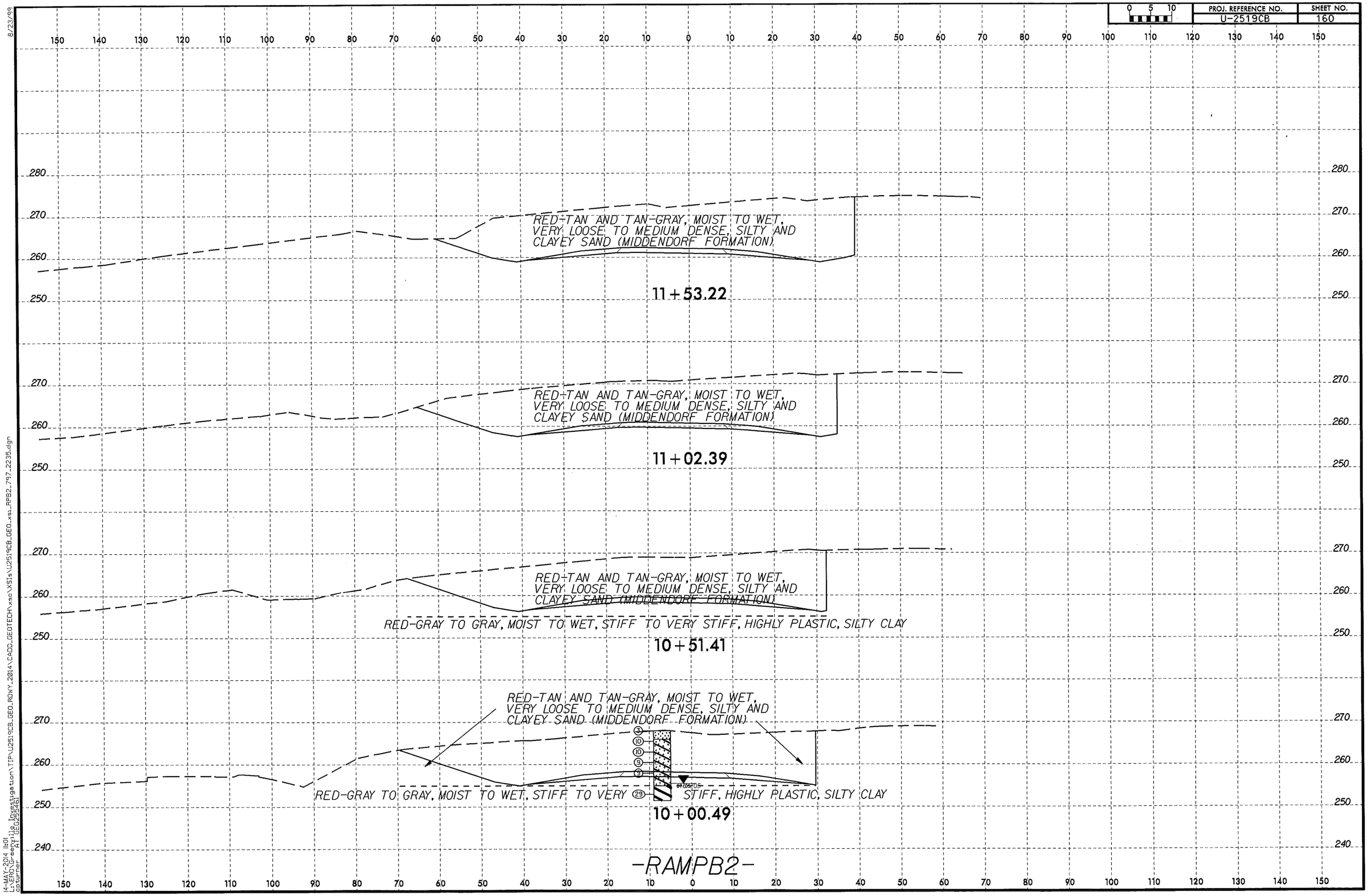
gptumer AT GEO25546

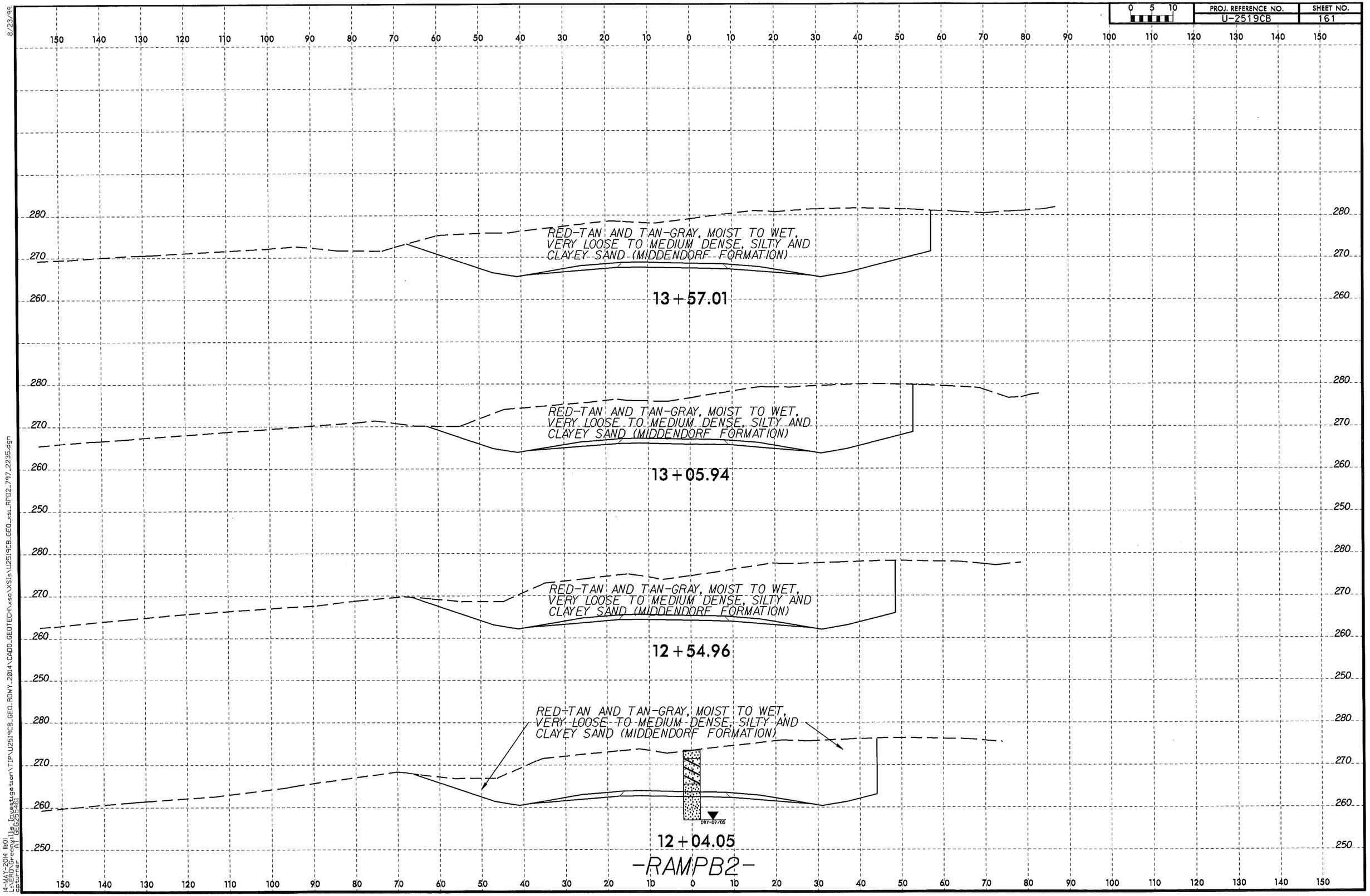
PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	159



8/23/99

14-MAY-2014 11:01
L:\VERO\Greenville_Investigation\TIP\U2519CB_GEO_RDWY_2014\CADD_GEOTECH\xsec\XSls\U2519CB_GEO_xsl_RPB2_797_2235.dgn
cpturner AT GEO259481


0 5 10
PROJ. REFERENCE NO.
U-2519CB
SHEET NO.
160
RED-TAN AND TAN-GRAY, MOIST TO WET, VERY LOOSE TO MEDIUM DENSE, SILTY AND CLAYEY SAND (MIDDENDORF FORMATION)
11+53.22
RED-TAN AND TAN-GRAY, MOIST TO WET, VERY LOOSE TO MEDIUM DENSE, SILTY AND CLAYEY SAND (MIDDENDORF FORMATION)
11+02.39
RED-TAN AND TAN-GRAY, MOIST TO WET, VERY LOOSE TO MEDIUM DENSE, SILTY AND CLAYEY SAND (MIDDENDORF FORMATION)
RED-GRAY TO GRAY, MOIST TO WET, STIFF TO VERY STIFF, HIGHLY PLASTIC, SILTY CLAY
10+51.41
RED-TAN AND TAN-GRAY, MOIST TO WET, VERY LOOSE TO MEDIUM DENSE, SILTY AND CLAYEY SAND (MIDDENDORF FORMATION)
RED-GRAY TO GRAY, MOIST TO WET, STIFF TO VERY STIFF, HIGHLY PLASTIC, SILTY CLAY
10+00.49
-RAMPB2-
8/23/99
14-MAY-2014 14:01
L:\ERO\Greenville Investigation\TIP\U2519CB_GEO_RDWY_2014\CADD_GEOTECH\xsc\XSls\U2519CB_GEO_xsl_RPB2_797_2235.dgn
cbturner AT GEO25526



8/23/99

14-MAY-2014 11:01
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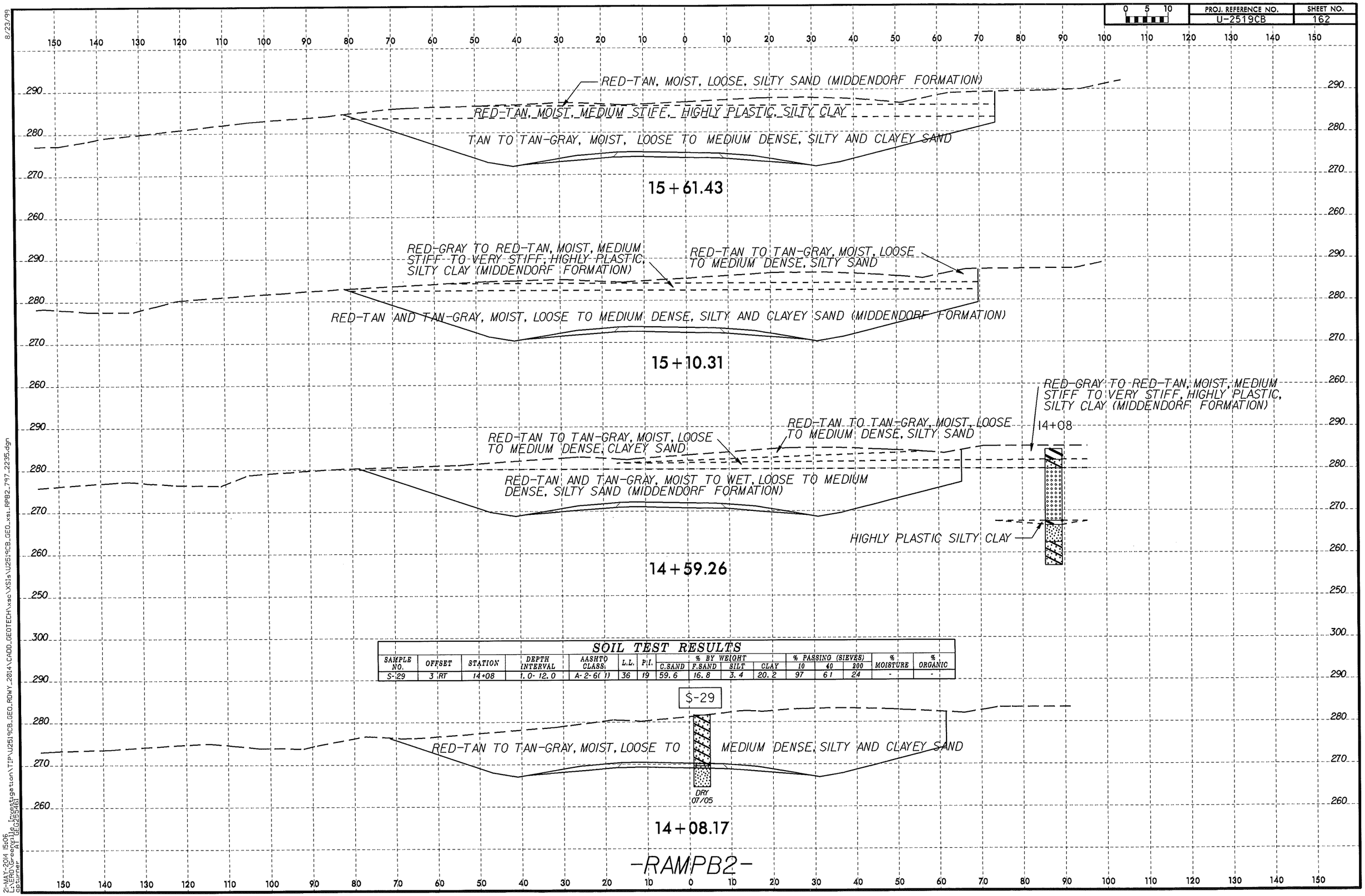
cpturner
A1 GEG2554G1

PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	162



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	3 RT	14+08	1.0- 12.0	A-2-6(1)	36	19	59.6	16.8	3.4	20.2	97	61	24	-	-

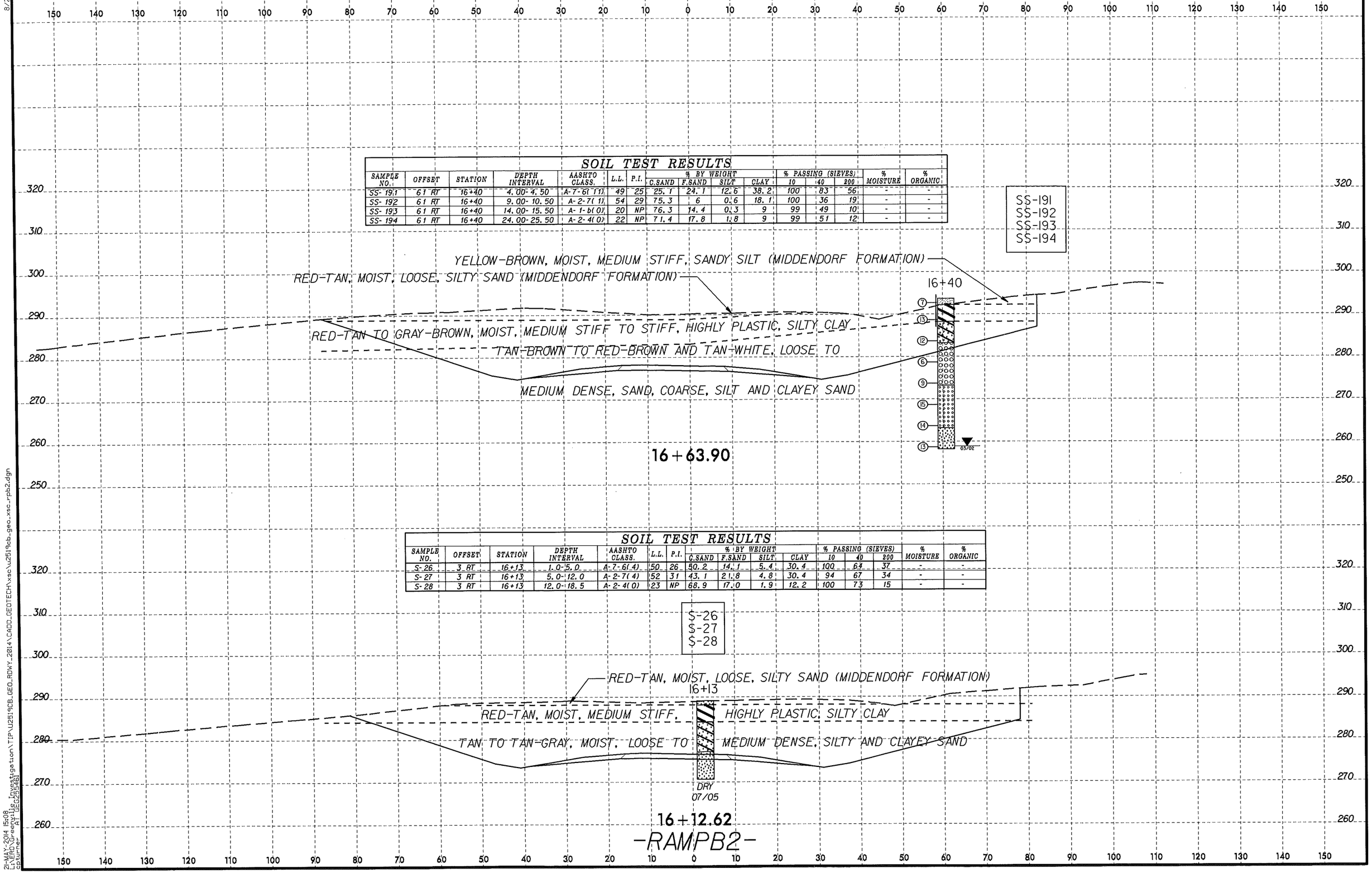
8/23/99

21-MAY-2014 15:06
Microstation Geotechnical Investigation\TIP\U2519CB_GEO_ROWY_2014\CADD_GEOTECH\xsc\XS1s\U2519CB_GEO_xsl_RPB2_797_2235.dgn
cstumer
ATT GEG25546

8/23/99

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-191	61 RT	16+40	4.00-4.50	A-7-6(11)	49	25	25.1	24.1	12.6	38.2	100	83	56	-	-
SS-192	61 RT	16+40	9.00-10.50	A-2-7(1)	54	29	75.3	6	0.6	18.1	100	36	19	-	-
SS-193	61 RT	16+40	14.00-15.50	A-1-b(0)	20	NP	76.3	14.4	0.3	9	99	49	10	-	-
SS-194	61 RT	16+40	24.00-25.50	A-2-4(0)	22	NP	71.4	17.8	1.8	9	99	51	12	-	-



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-26	3 RT	16+13	1.0-5.0	A-7-6(4)	50	26	50.2	14.1	5.4	30.4	100	64	37	-	-
S-27	3 RT	16+13	5.0-12.0	A-2-7(4)	52	31	43.1	21.8	4.8	30.4	94	67	34	-	-
S-28	3 RT	16+13	12.0-18.5	A-2-4(0)	23	NP	68.9	17.0	1.9	12.2	100	73	15	-	-

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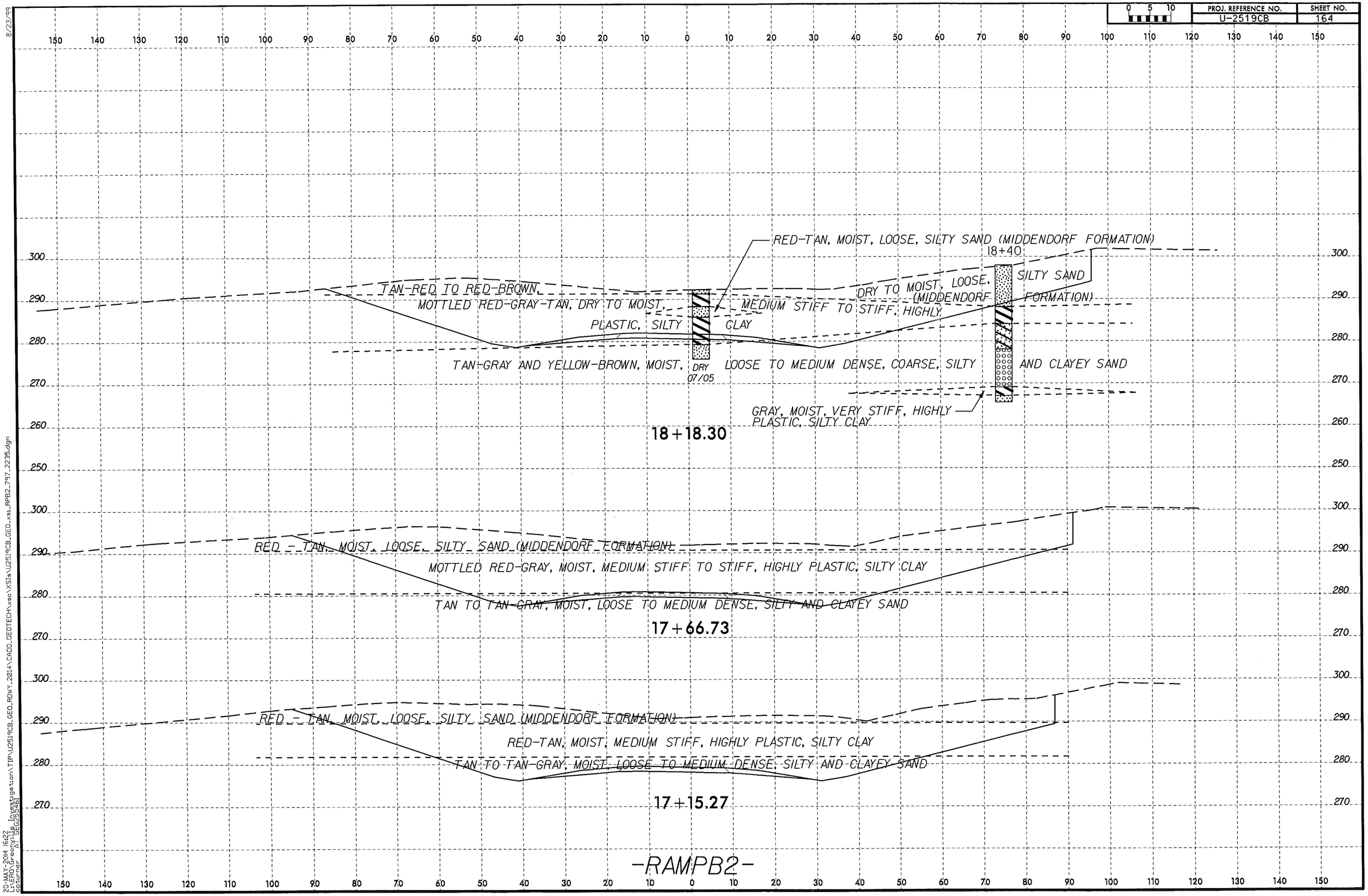
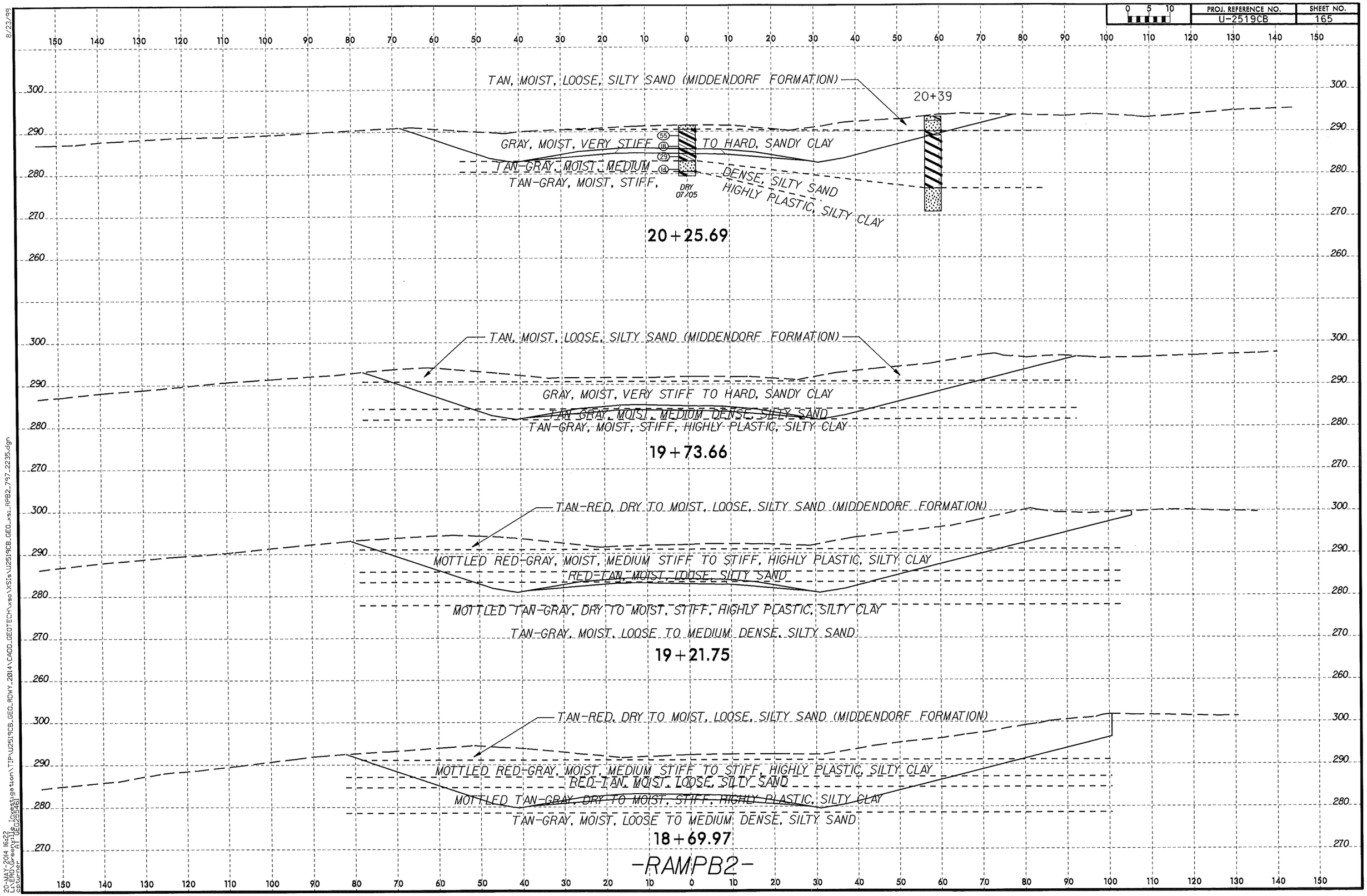

RED-TAN, MOIST, LOOSE, SILTY SAND (MIDDENDORF FORMATION)
18+40
SILTY SAND
TAN-RED TO RED-BROWN, MOTTLED RED-GRAY-TAN, DRY TO MOIST, PLASTIC, SILTY CLAY
DRY TO MOIST, LOOSE, (MIDDENDORF FORMATION)
MEDIUM STIFF TO STIFF, HIGHLY
TAN-GRAY AND YELLOW-BROWN, MOIST, DRY 07/05
LOOSE TO MEDIUM DENSE, COARSE, SILTY AND CLAYEY SAND
GRAY, MOIST, VERY STIFF, HIGHLY PLASTIC, SILTY CLAY
18+18.30
RED - TAN, MOIST, LOOSE, SILTY SAND (MIDDENDORF FORMATION)
MOTTLED RED-GRAY, MOIST, MEDIUM STIFF TO STIFF, HIGHLY PLASTIC, SILTY CLAY
TAN TO TAN-GRAY, MOIST, LOOSE TO MEDIUM DENSE, SILTY AND CLAYEY SAND
17+66.73
RED - TAN, MOIST, LOOSE, SILTY SAND (MIDDENDORF FORMATION)
RED-TAN, MOIST, MEDIUM STIFF, HIGHLY PLASTIC, SILTY CLAY
TAN TO TAN-GRAY, MOIST, LOOSE TO MEDIUM DENSE, SILTY AND CLAYEY SAND
17+15.27
-RAMPB2-



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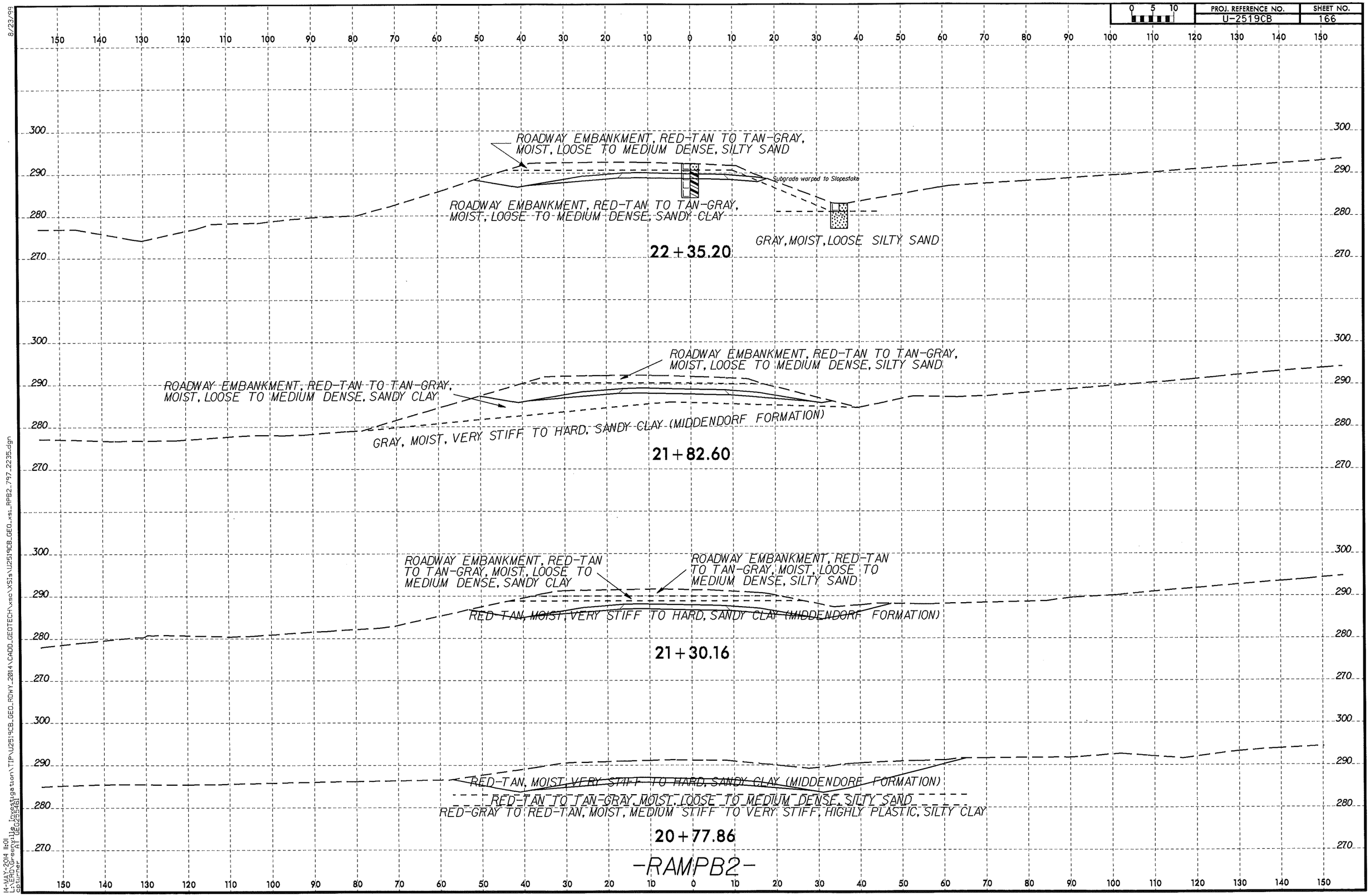
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PROJ. REFERENCE NO.
U-2519CB
SHEET NO.
166
ROADWAY EMBANKMENT, RED-TAN TO TAN-GRAY, MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND
Subgrade warped to Slopestake
ROADWAY EMBANKMENT, RED-TAN TO TAN-GRAY, MOIST, LOOSE TO MEDIUM DENSE, SANDY CLAY
GRAY, MOIST, LOOSE SILTY SAND
22+35.20
ROADWAY EMBANKMENT, RED-TAN TO TAN-GRAY, MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND
ROADWAY EMBANKMENT, RED-TAN TO TAN-GRAY, MOIST, LOOSE TO MEDIUM DENSE, SANDY CLAY
GRAY, MOIST, VERY STIFF TO HARD, SANDY CLAY (MIDDENDORF FORMATION)
21+82.60
ROADWAY EMBANKMENT, RED-TAN TO TAN-GRAY, MOIST, LOOSE TO MEDIUM DENSE, SANDY CLAY
ROADWAY EMBANKMENT, RED-TAN TO TAN-GRAY, MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND
RED-TAN, MOIST, VERY STIFF TO HARD, SANDY CLAY (MIDDENDORF FORMATION)
21+30.16
RED-TAN, MOIST, VERY STIFF TO HARD, SANDY CLAY (MIDDENDORF FORMATION)
RED-TAN TO TAN-GRAY, MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND
RED-GRAY TO RED-TAN, MOIST, MEDIUM STIFF TO VERY STIFF, HIGHLY PLASTIC, SILTY CLAY
20+77.86
-RAMPB2-
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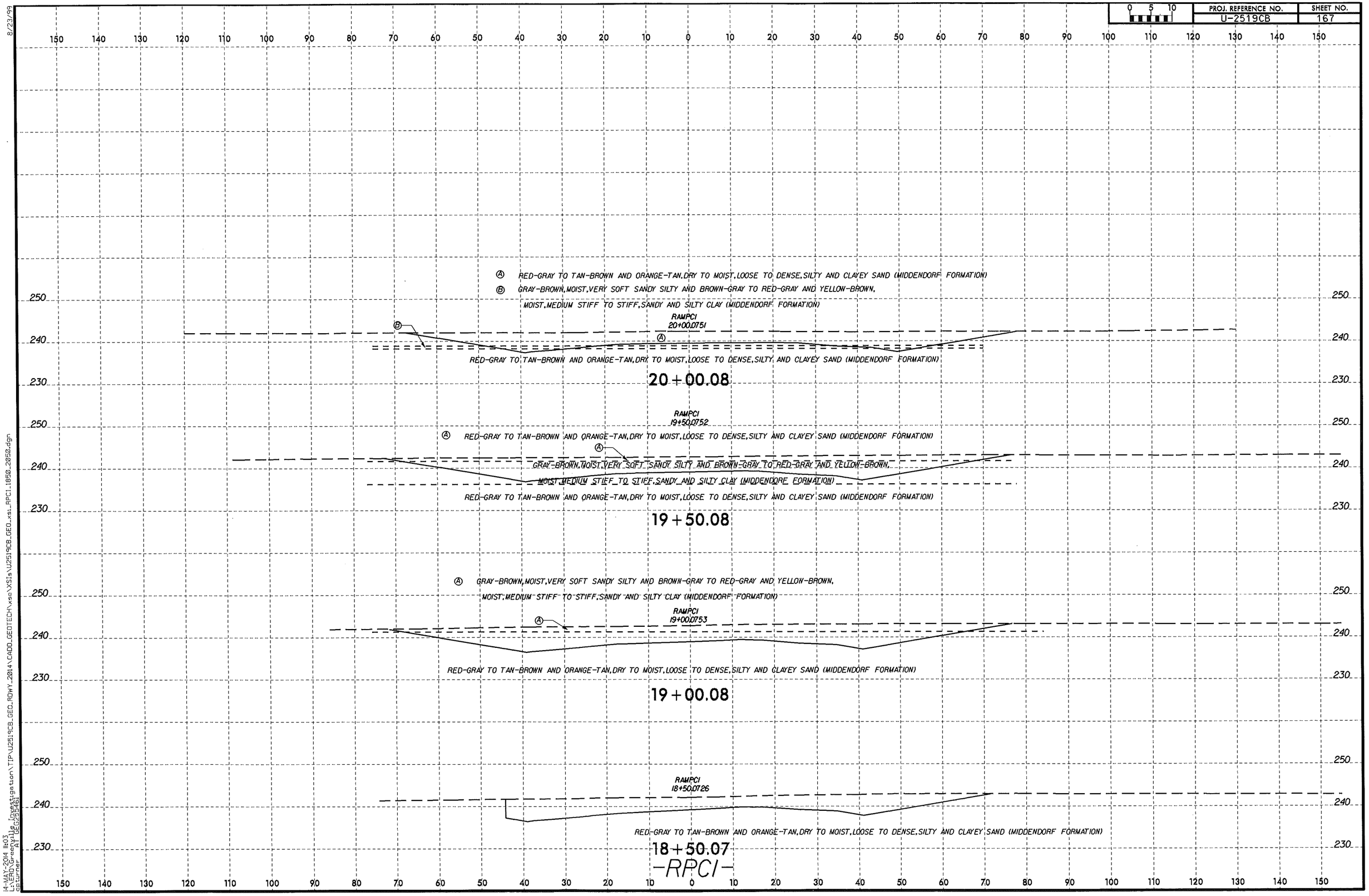

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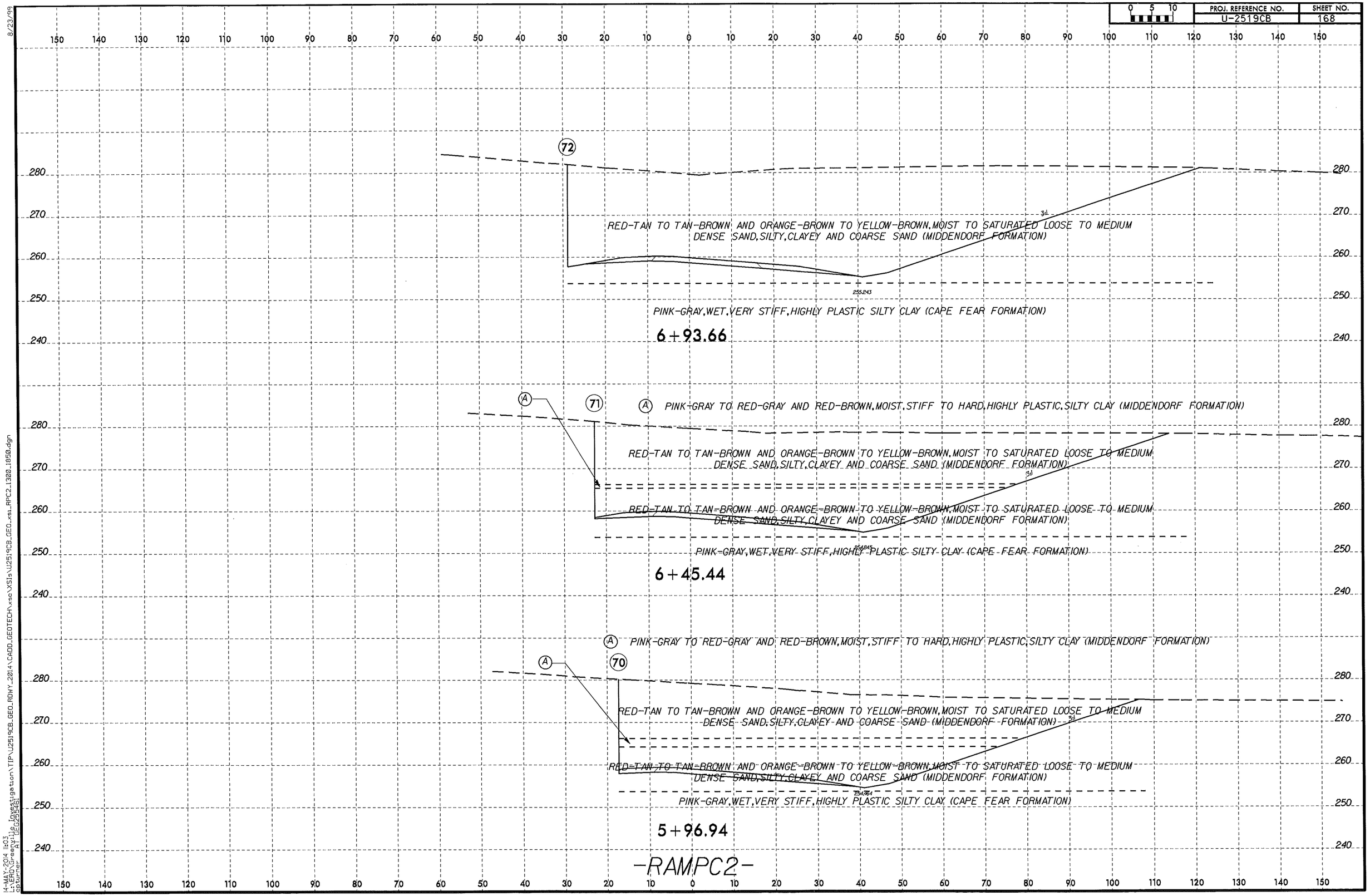

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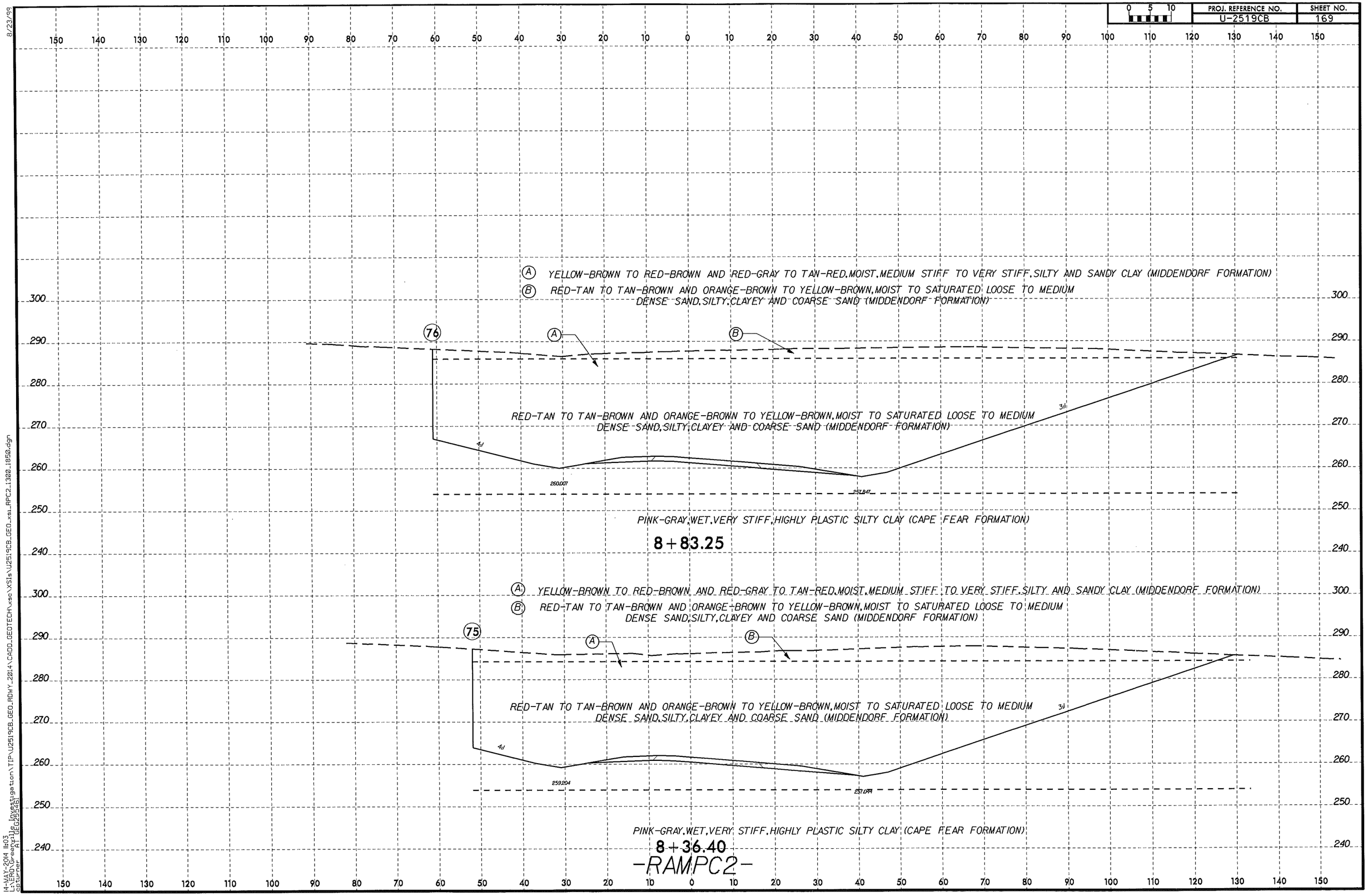

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PROJ. REFERENCE NO.	SHEET NO.
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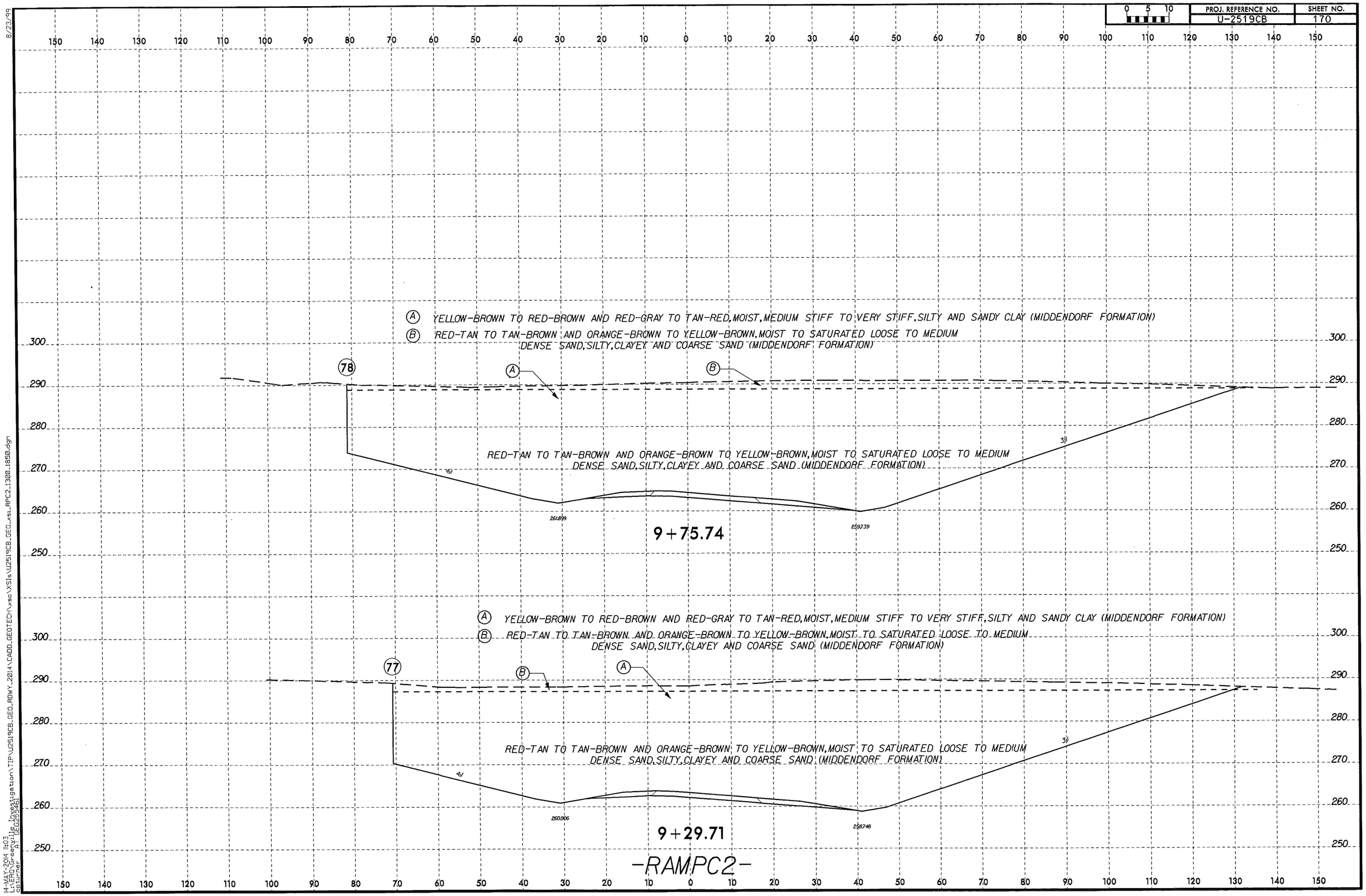

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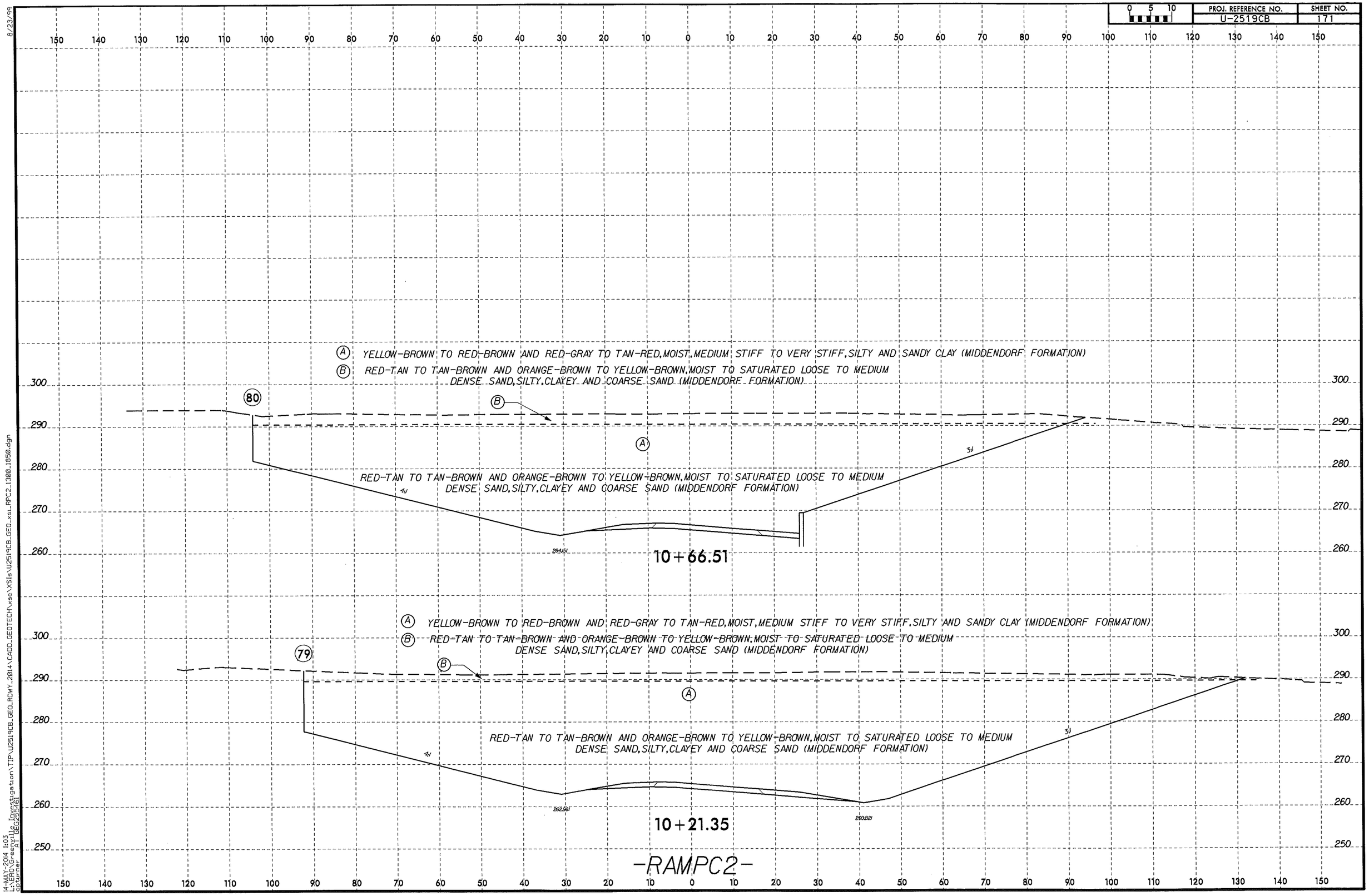

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PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	172

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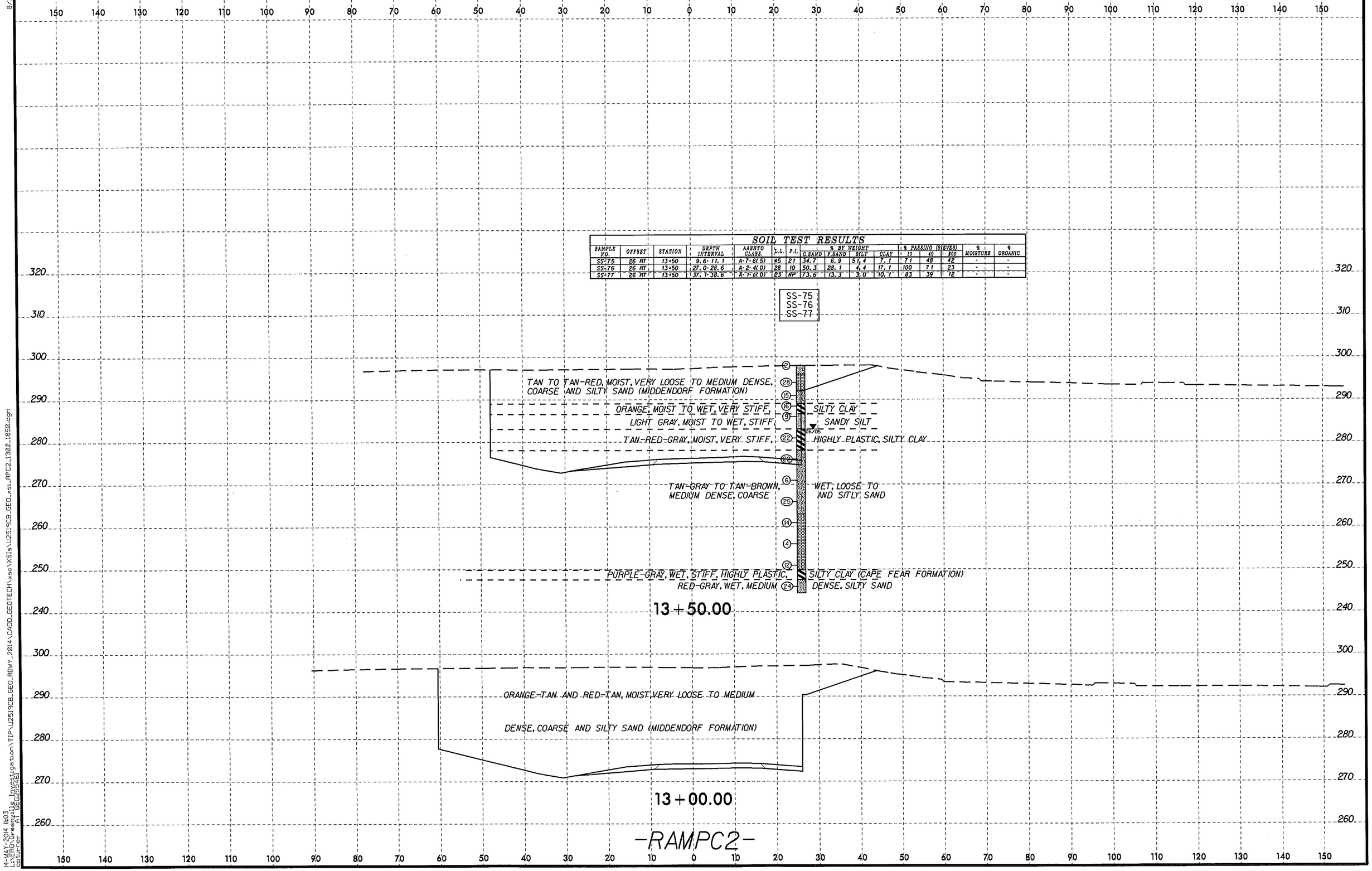
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT G.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	300	% MOISTURE	% ORGANIC
SS-75	26 RT	13+50	9.6- 11.1	A-7-6(5)	45	21	34.7	6.9	51.4	7.1	71	48	42	-	-
SS-76	26 RT	13+50	27.0- 28.6	A-2-4(0)	28	10	50.3	28.1	4.4	17.1	100	71	23	-	-
SS-77	26 RT	13+50	37.1- 38.6	A-1-b(0)	23	NP	73.6	13.3	3.0	10.1	83	39	12	-	-



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PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	173

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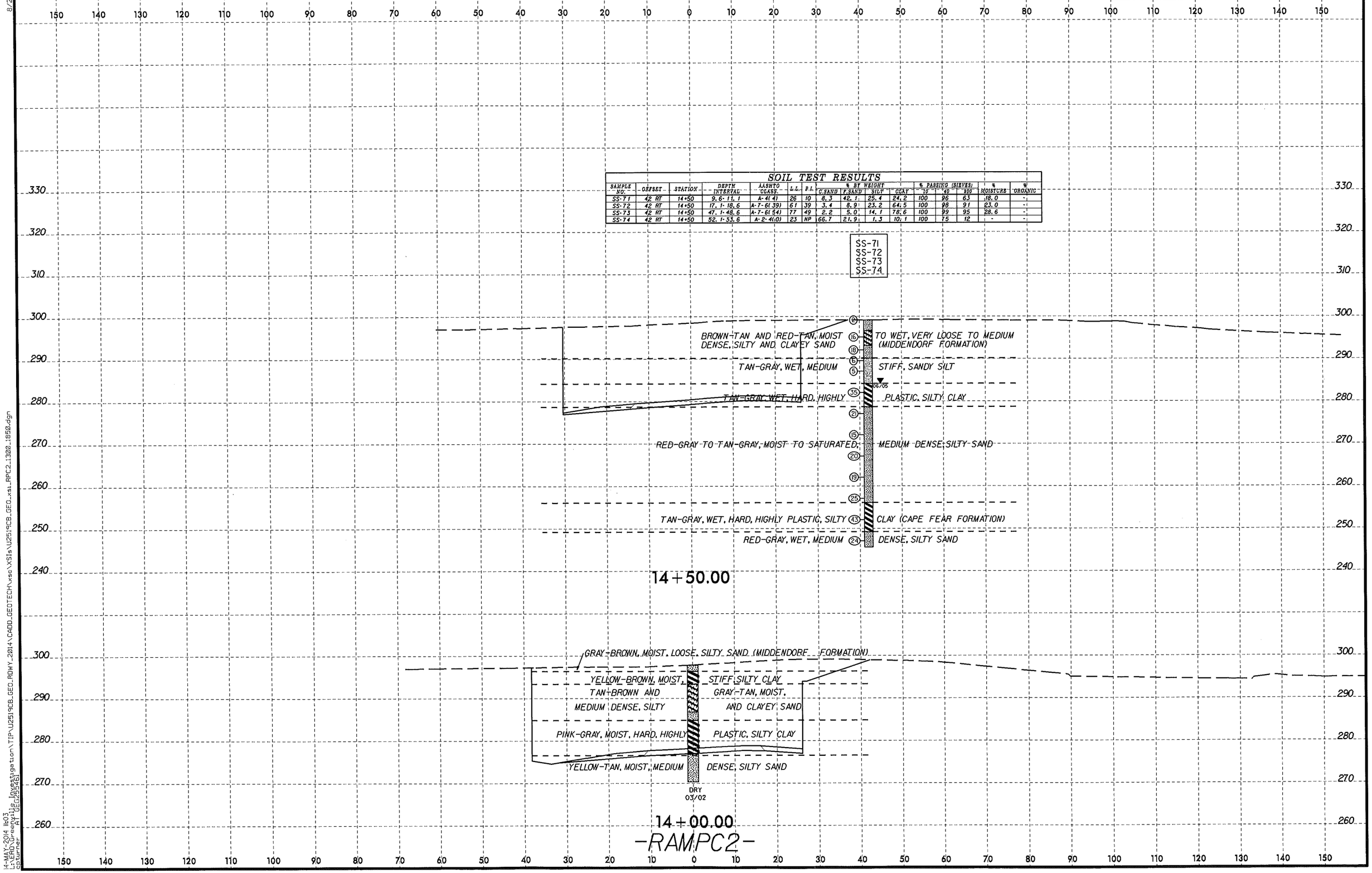
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT G.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) #10	#40	#200	% MOISTURE	% ORGANIC
SS-71	42 RT	14+50	9.6- 11.1	A-4(4)	26	10	8.3	42.1	25.4	24.2	100	96	63	18.0	-
SS-72	42 RT	14+50	17.1- 18.6	A-7-6(39)	61	39	3.4	8.9	23.2	64.5	100	98	91	23.0	-
SS-73	42 RT	14+50	47.1- 48.6	A-7-6(54)	77	49	2.2	5.0	14.1	78.6	100	99	95	28.6	-
SS-74	42 RT	14+50	52.1- 53.6	A-2-4(0)	23	NP	66.7	21.9	1.3	10.1	100	75	12	-	-



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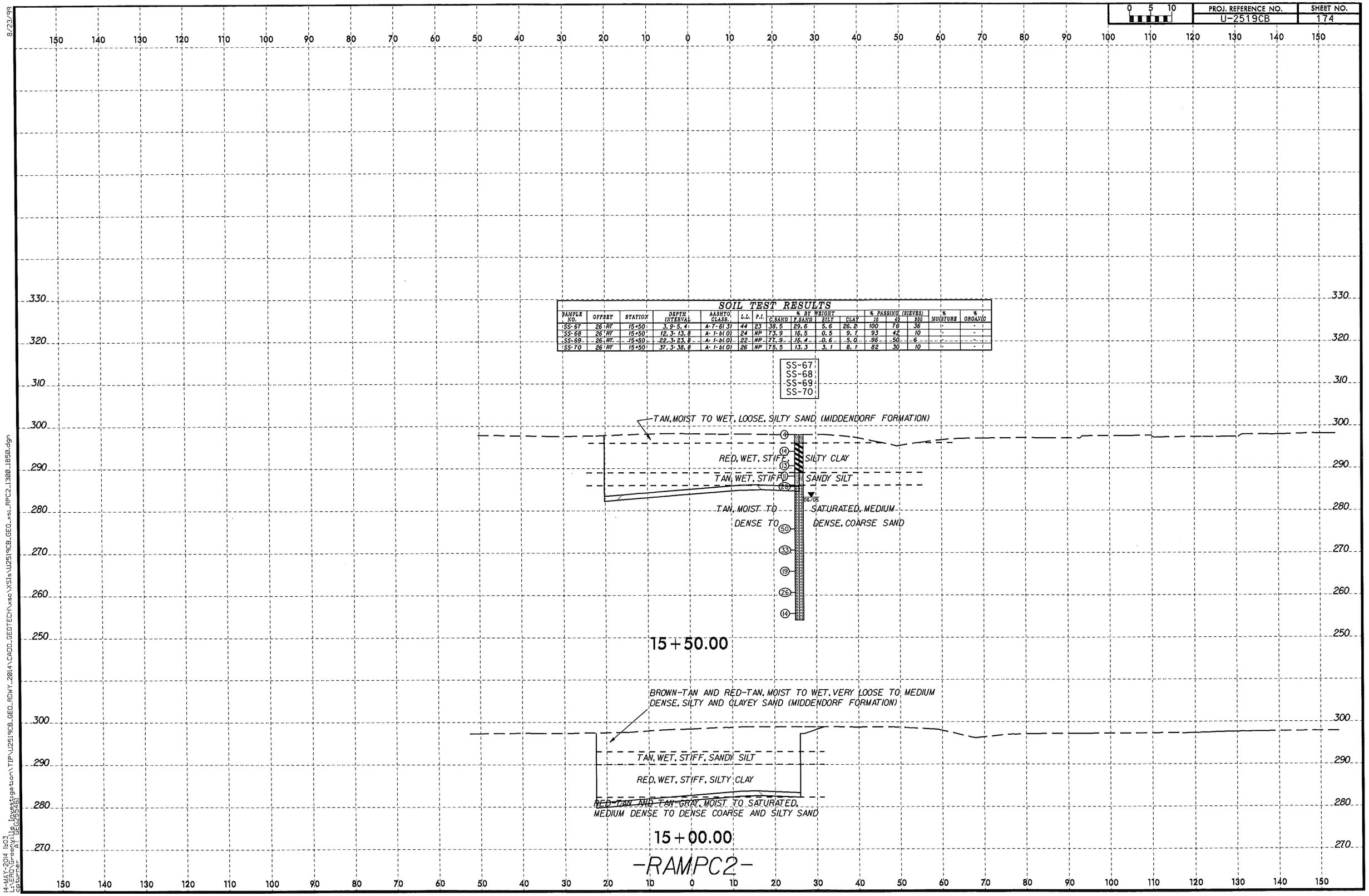
SOIL TEST RESULTS

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-67	26' RT	15+50'	3.9-5.4'	A-7-6(3)	44	23	38.5	29.6	5.6	26.2	100	78	36	-	-
SS-68	26' RT	15+50'	12.3-13.8	A-1-b(0)	24	NP	73.9	16.5	0.5	9.1	93	42	10	-	-
SS-69	26' RT	15+50'	22.3-23.8	A-1-b(0)	22	NP	77.9	16.4	0.6	5.0	96	50	6	-	-
SS-70	26' RT	15+50'	37.3-38.8	A-1-b(0)	26	NP	75.5	13.3	3.1	8.1	82	30	10	-	-



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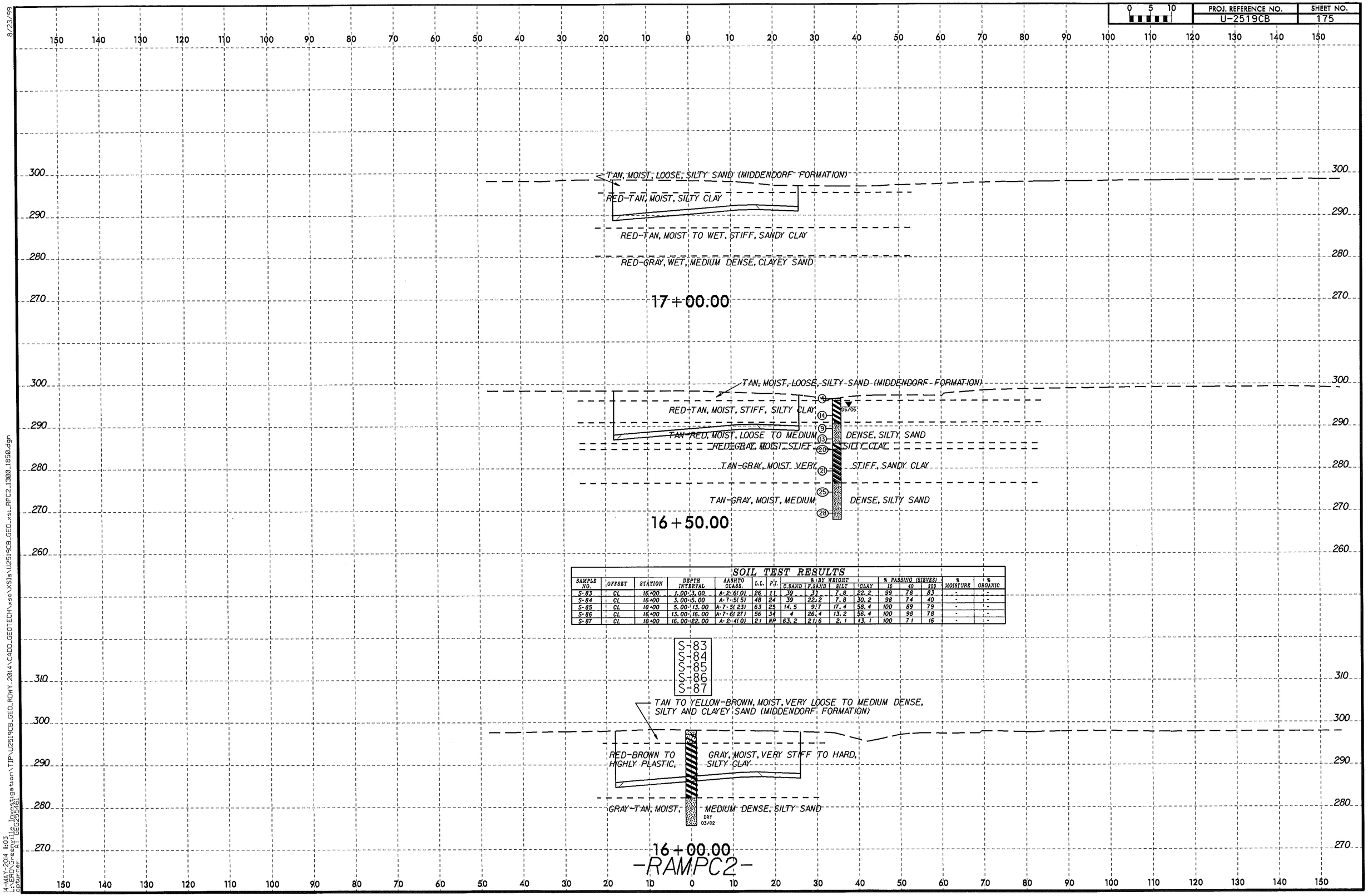

SOIL TEST RESULTS

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-83	CL	16+00	1.00-3.00	A-2-6(0)	26	11	39	31	7.8	22.2	99	78	83	-	-
S-84	CL	16+00	3.00-5.00	A-7-5(5)	48	24	39	22.2	7.8	30.2	98	74	40	-	-
S-85	CL	16+00	5.00-13.00	A-7-5(23)	63	25	14.5	9.7	17.4	58.4	100	89	79	-	-
S-86	CL	16+00	13.00-16.00	A-7-6(27)	56	34	4	26.4	13.2	56.4	100	98	78	-	-
S-87	CL	16+00	16.00-22.00	A-2-4(0)	21	NP	63.2	21.6	2.1	13.1	100	71	16	-	-

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PROJ. REFERENCE NO.	SHEET NO.
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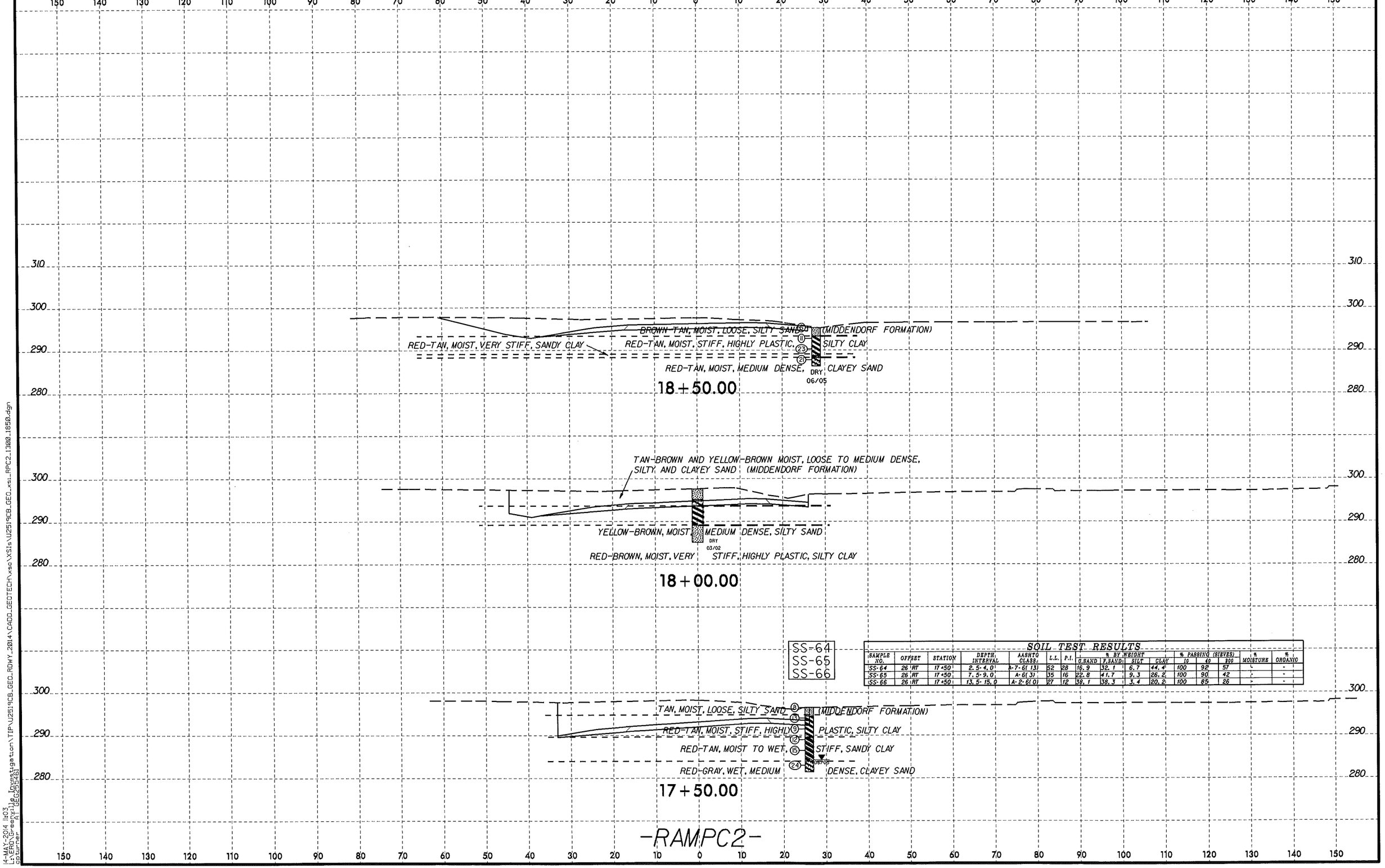

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT G.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-64	26 RT	17+50	2.5-4.0	A-7-6(13)	52	28	16.9	32.1	6.7	44.4	100	92	57	-	-
SS-65	26 RT	17+50	7.5-9.0	A-6(3)	35	16	22.8	41.7	9.3	26.2	100	90	42	-	-
SS-66	26 RT	17+50	13.5-15.0	A-2-6(0)	27	12	38.1	38.3	3.4	20.2	100	85	26	-	-

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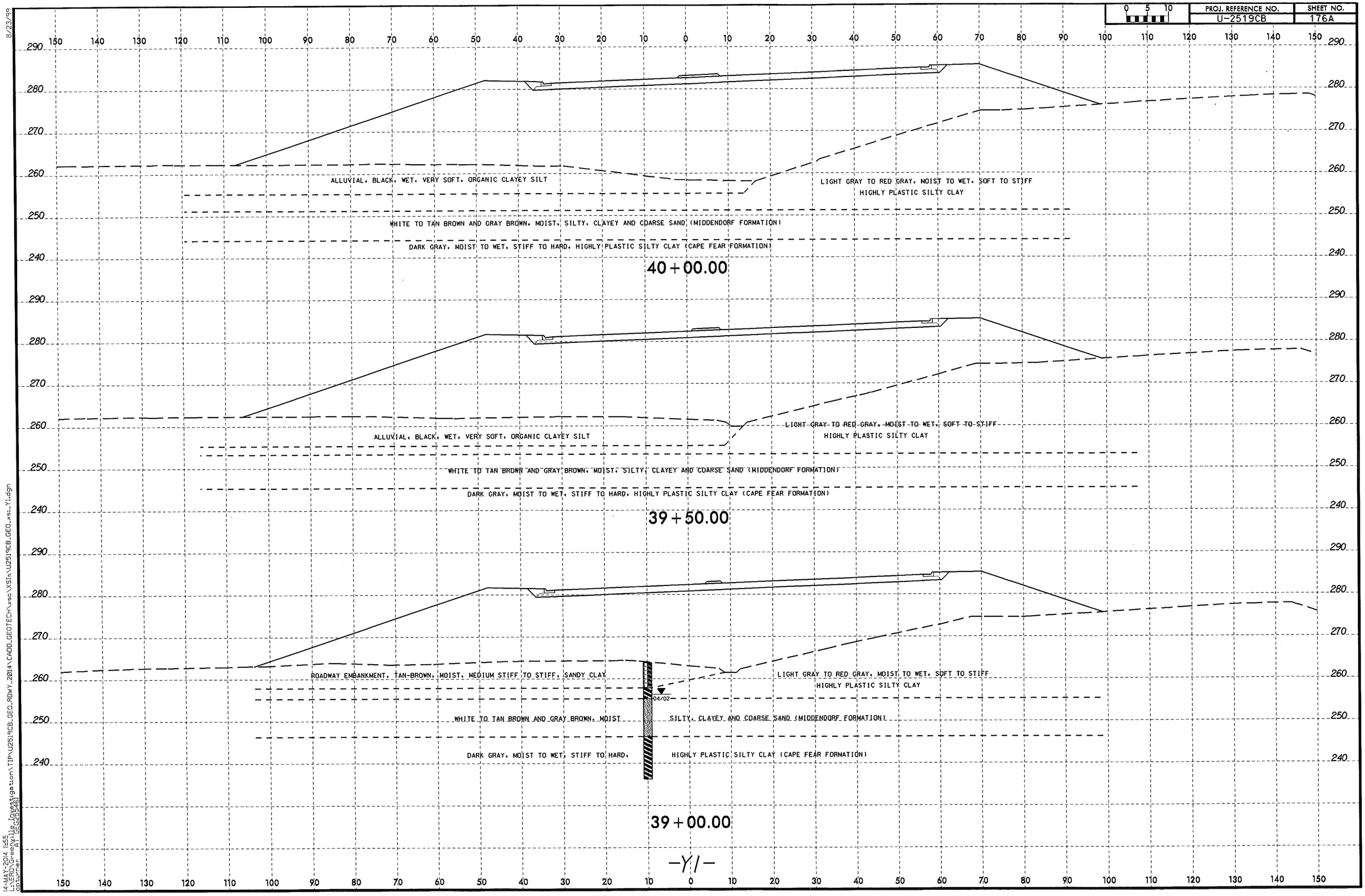

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PROJ. REFERENCE NO.	SHEET NO.
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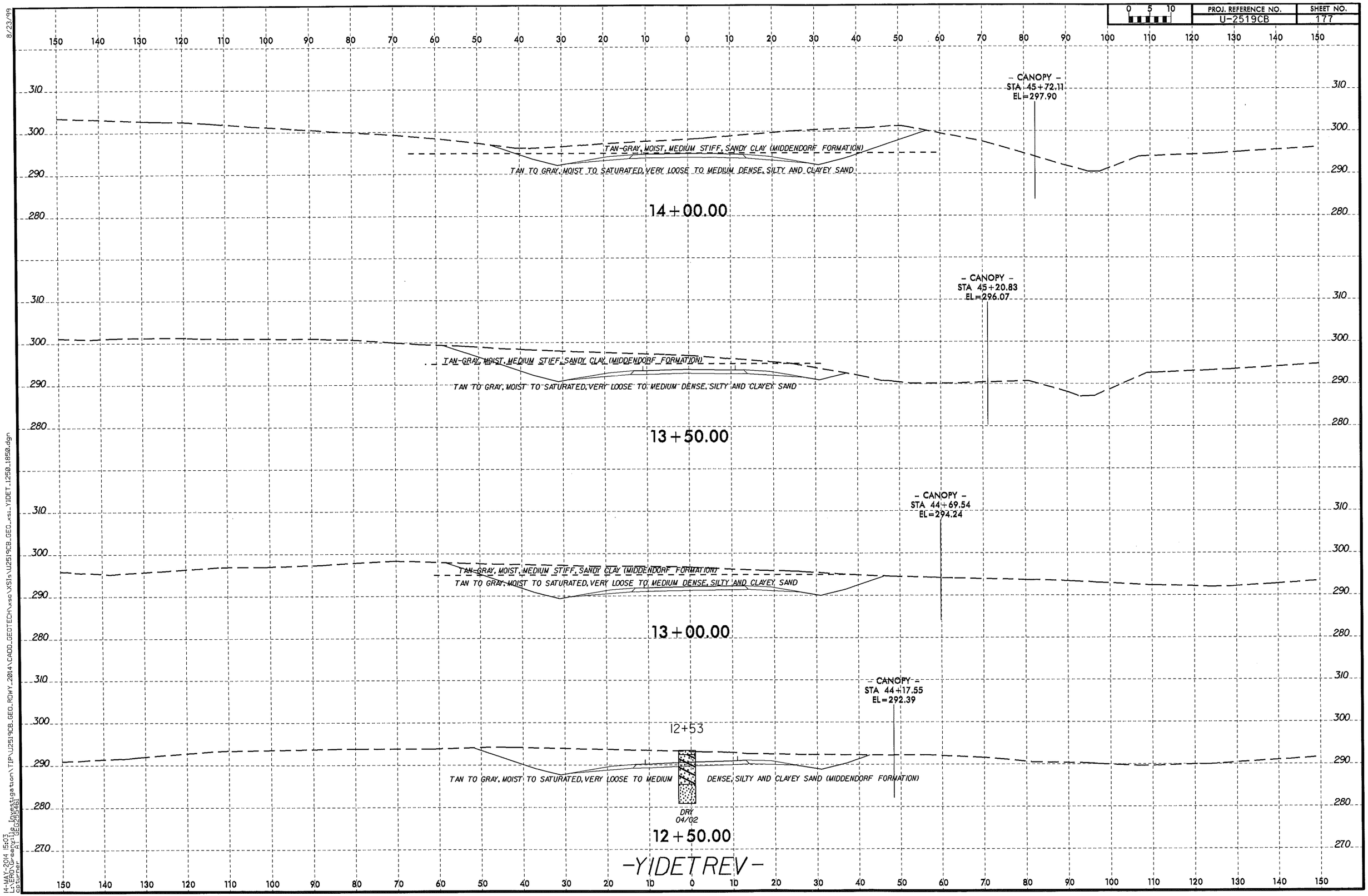

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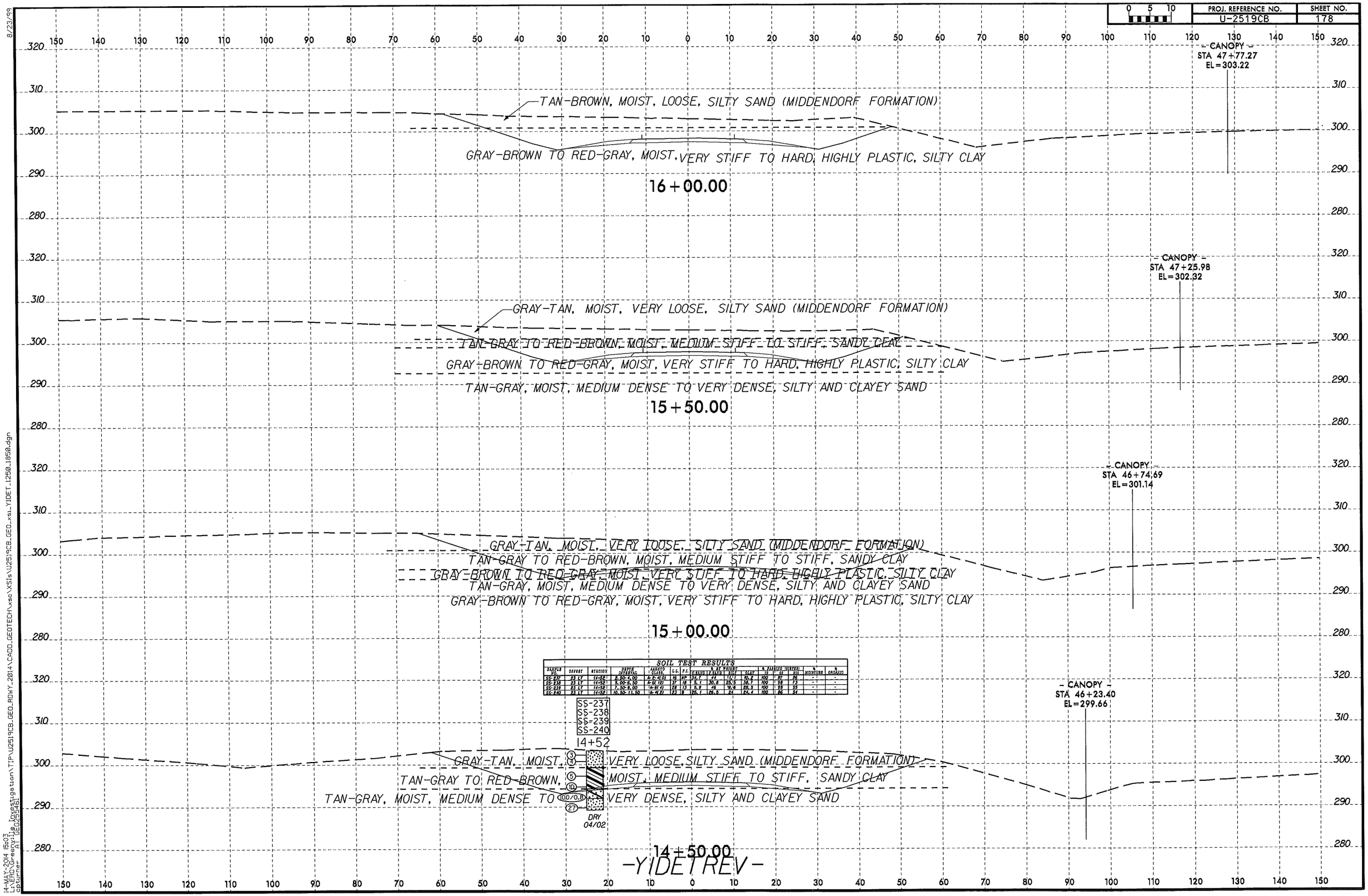

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT GRAVEL	SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-237	23 LT	14+52	2.50-4.00	A-2-4(0)	16	NP	34.1	44	11.1	10.8	100	97	56	-	-
SS-238	23 LT	14+52	5.00-6.50	A-6(10)	37	18	5.1	30.6	25.5	38.7	100	98	73	-	-
SS-239	23 LT	14+52	7.50-9.00	A-6(4)	28	13	5.9	46	19.4	28.3	100	98	55	-	-
SS-240	23 LT	14+52	10.50-11.50	A-4(0)	21	9	25.1	26.8	24	24.1	100	86	54	-	-

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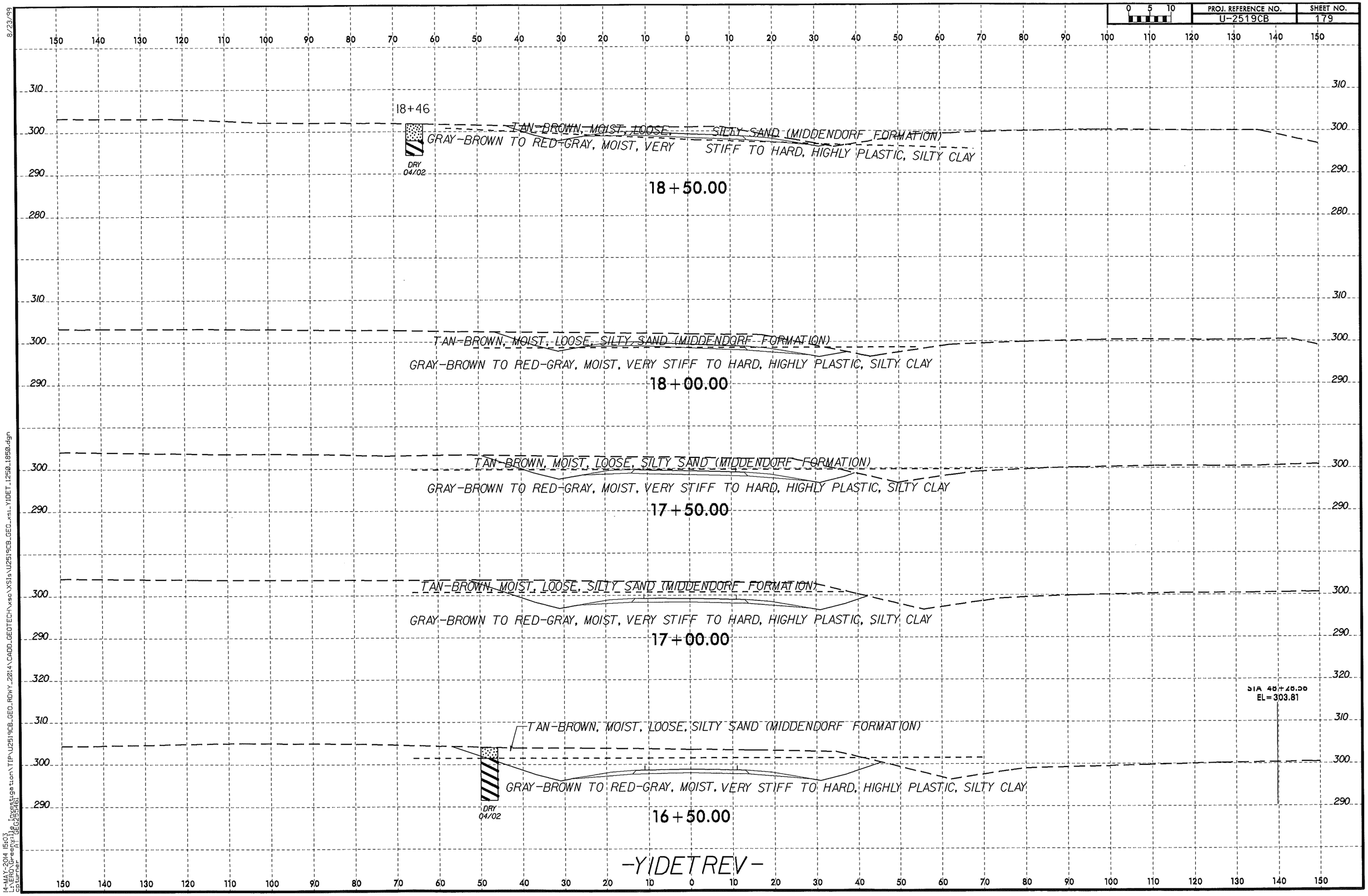

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PROJ. REFERENCE NO.	SHEET NO.
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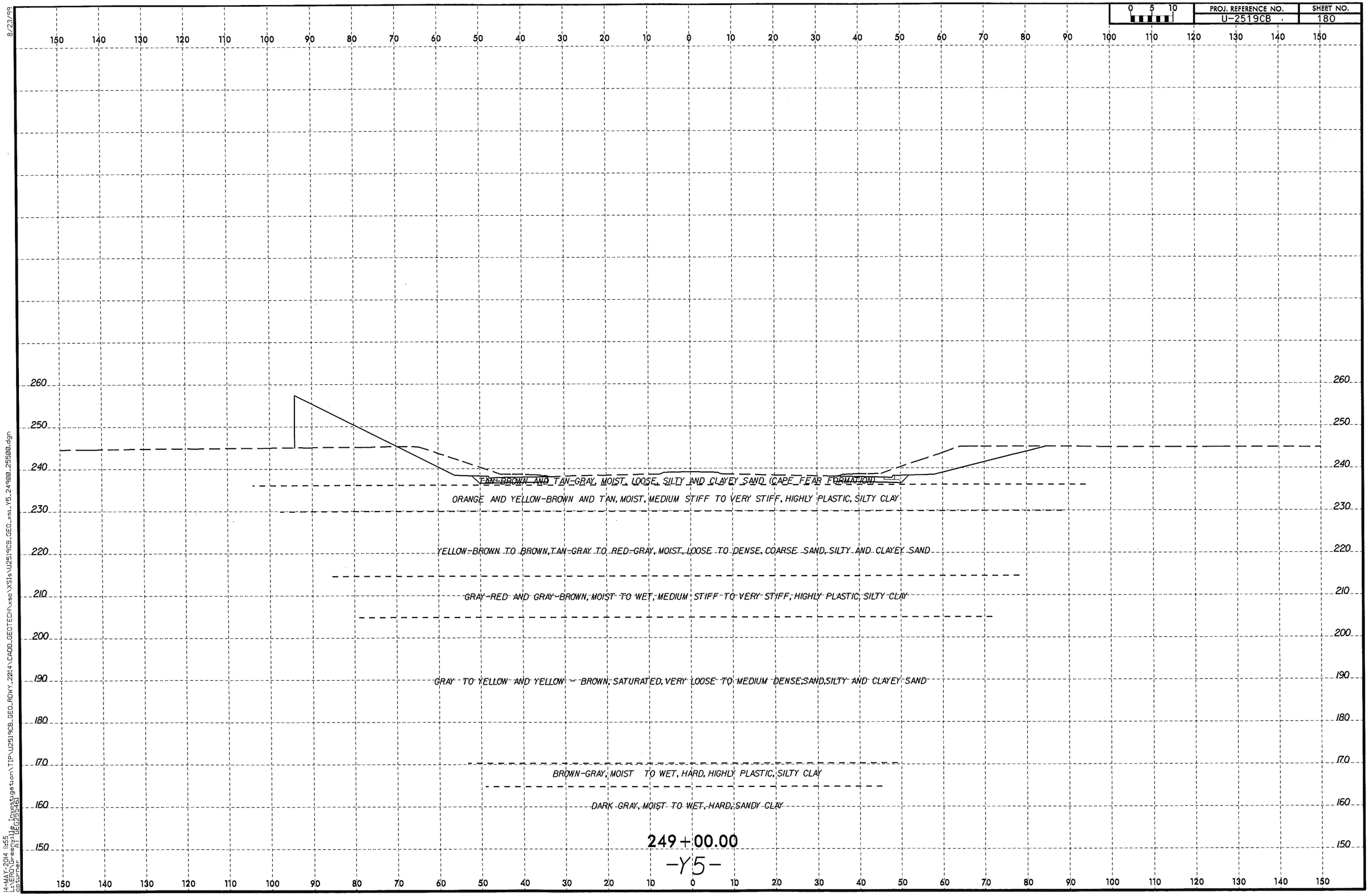

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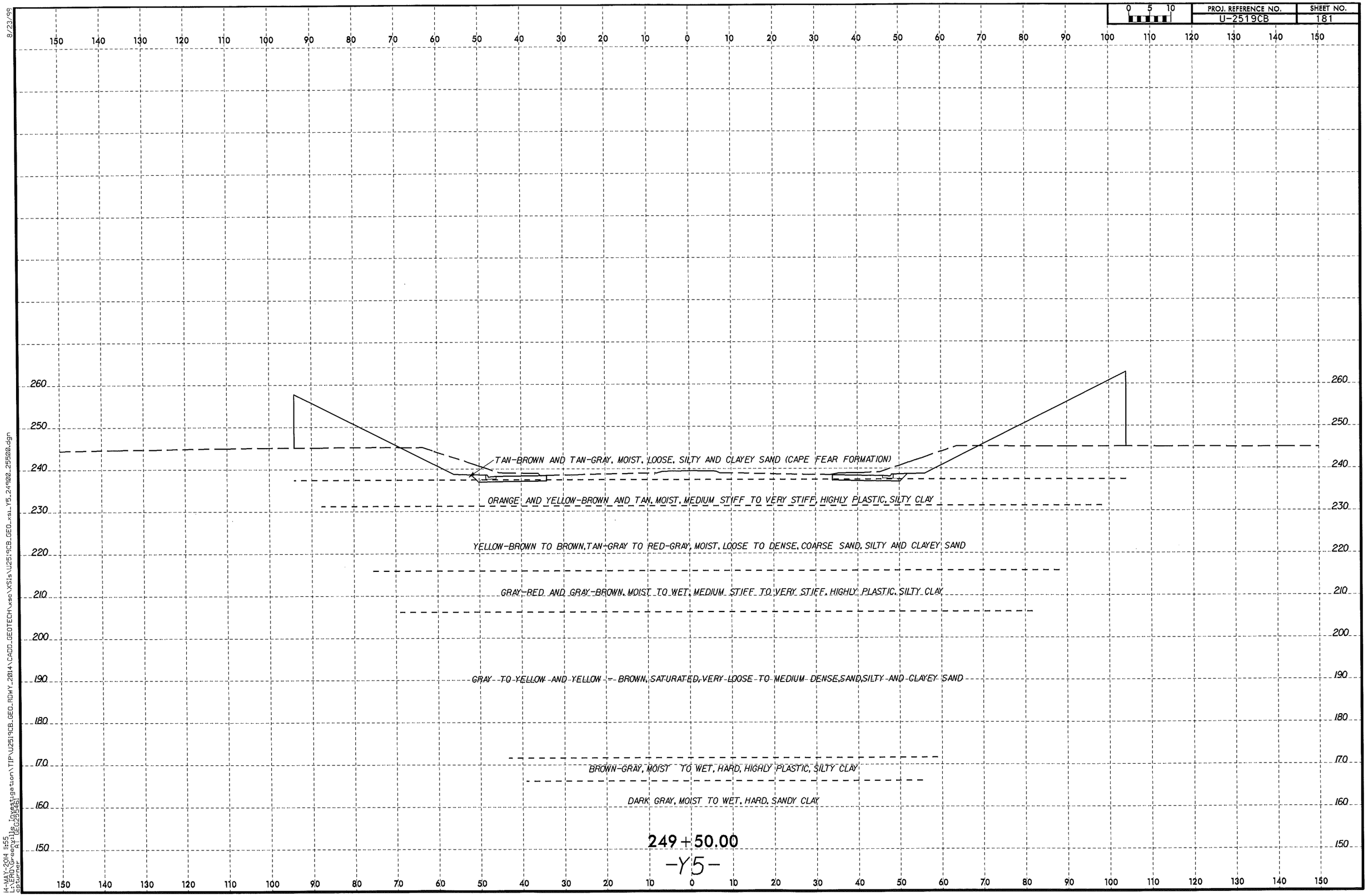

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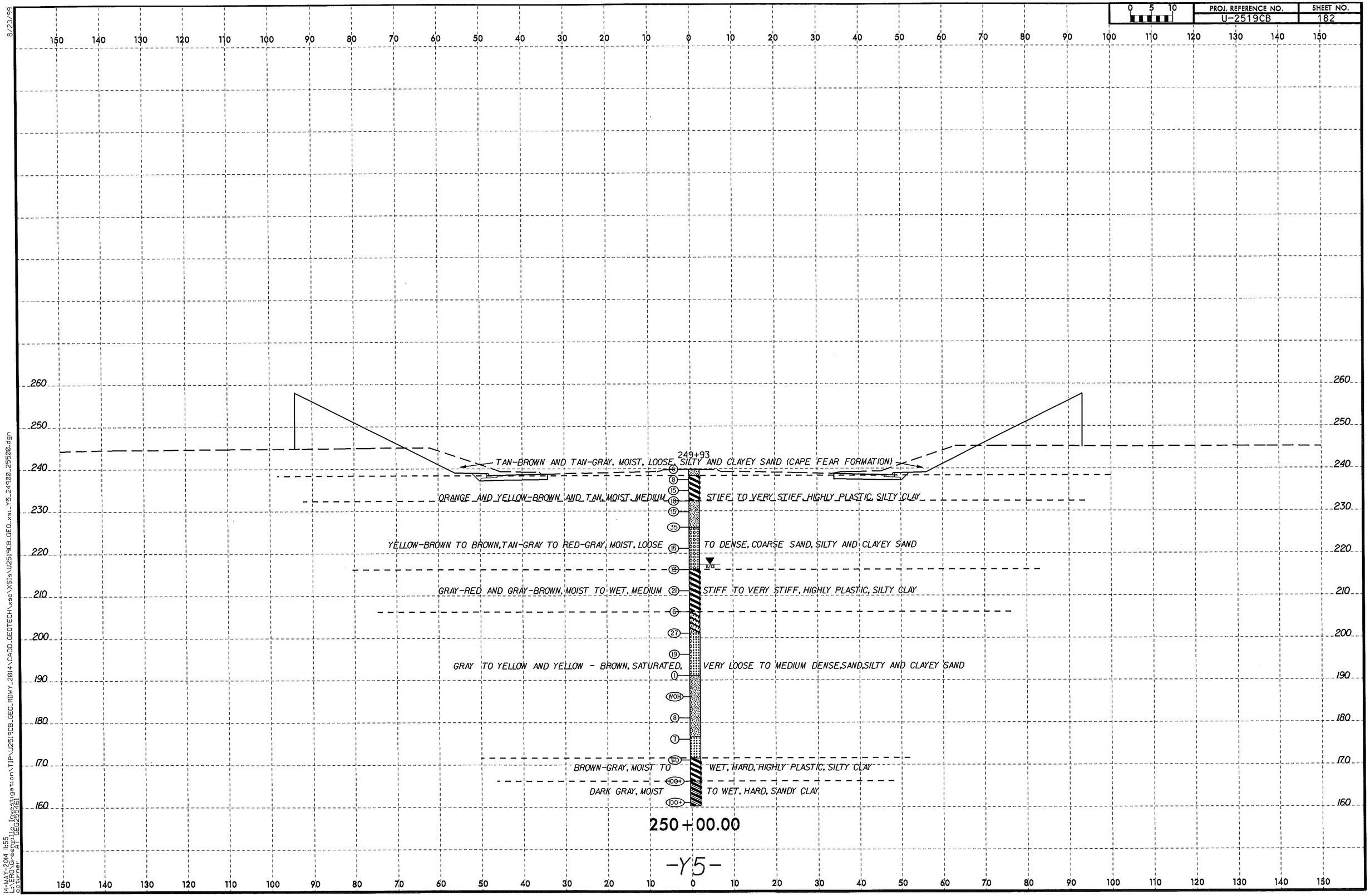

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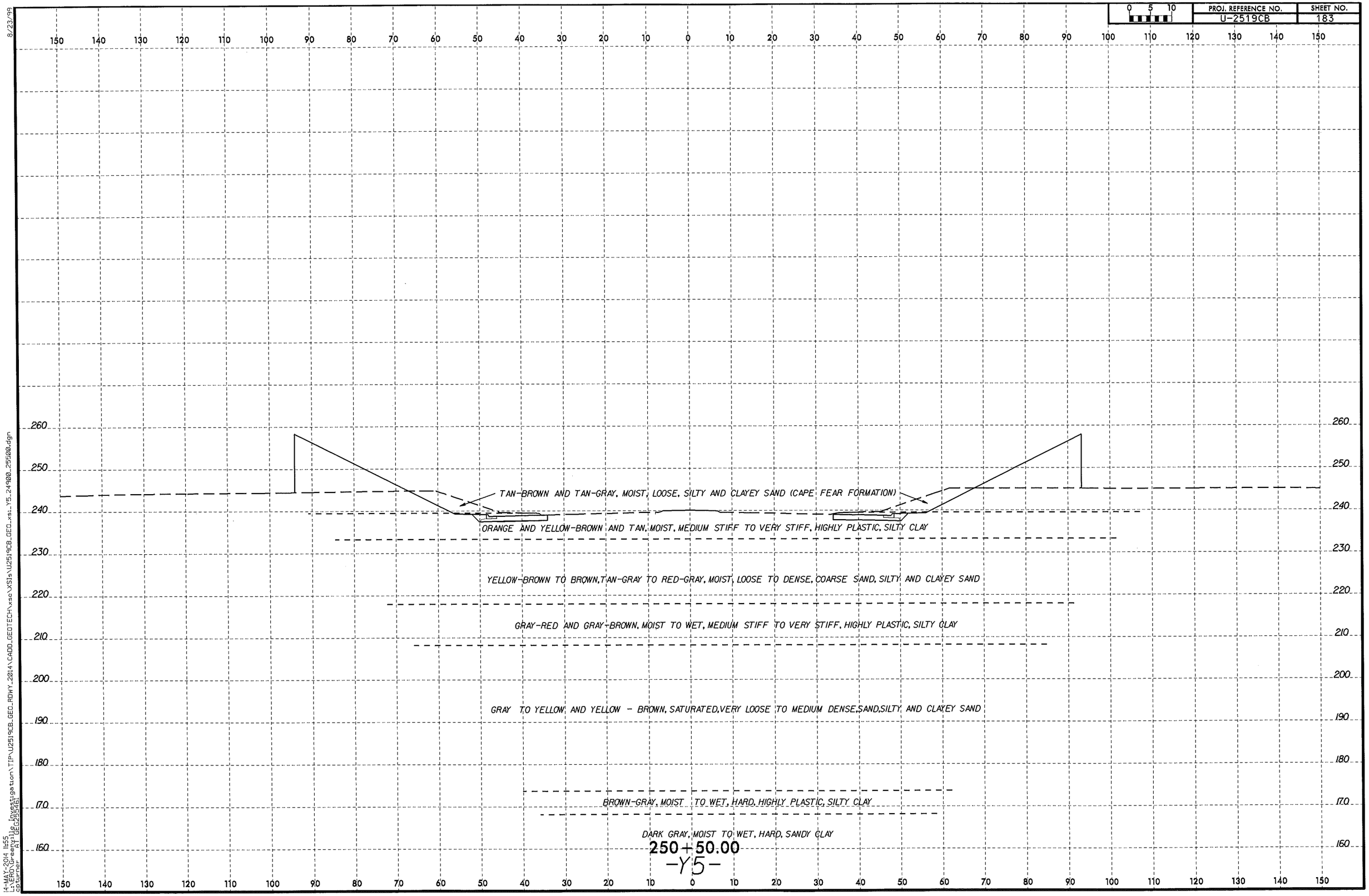

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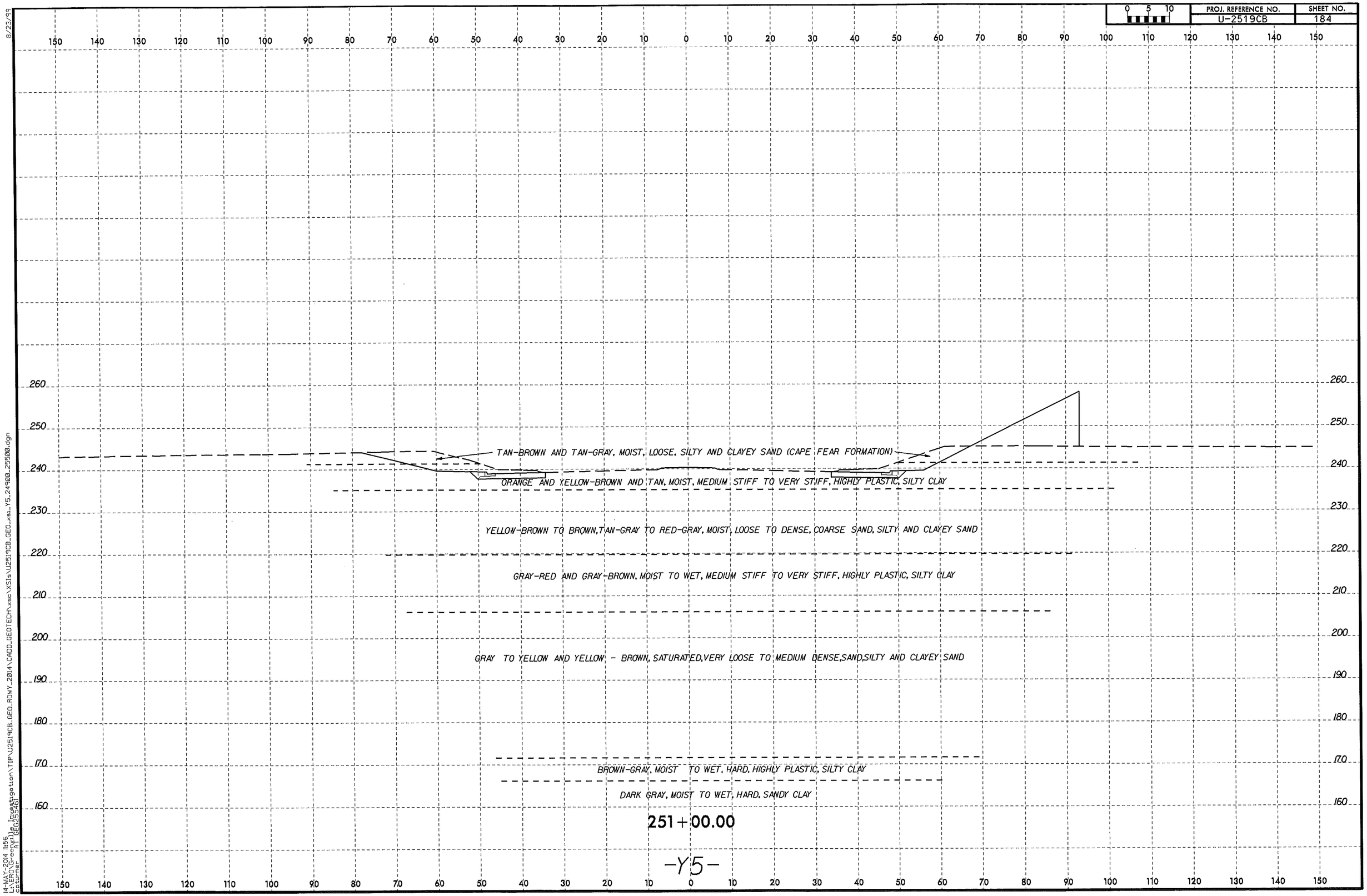

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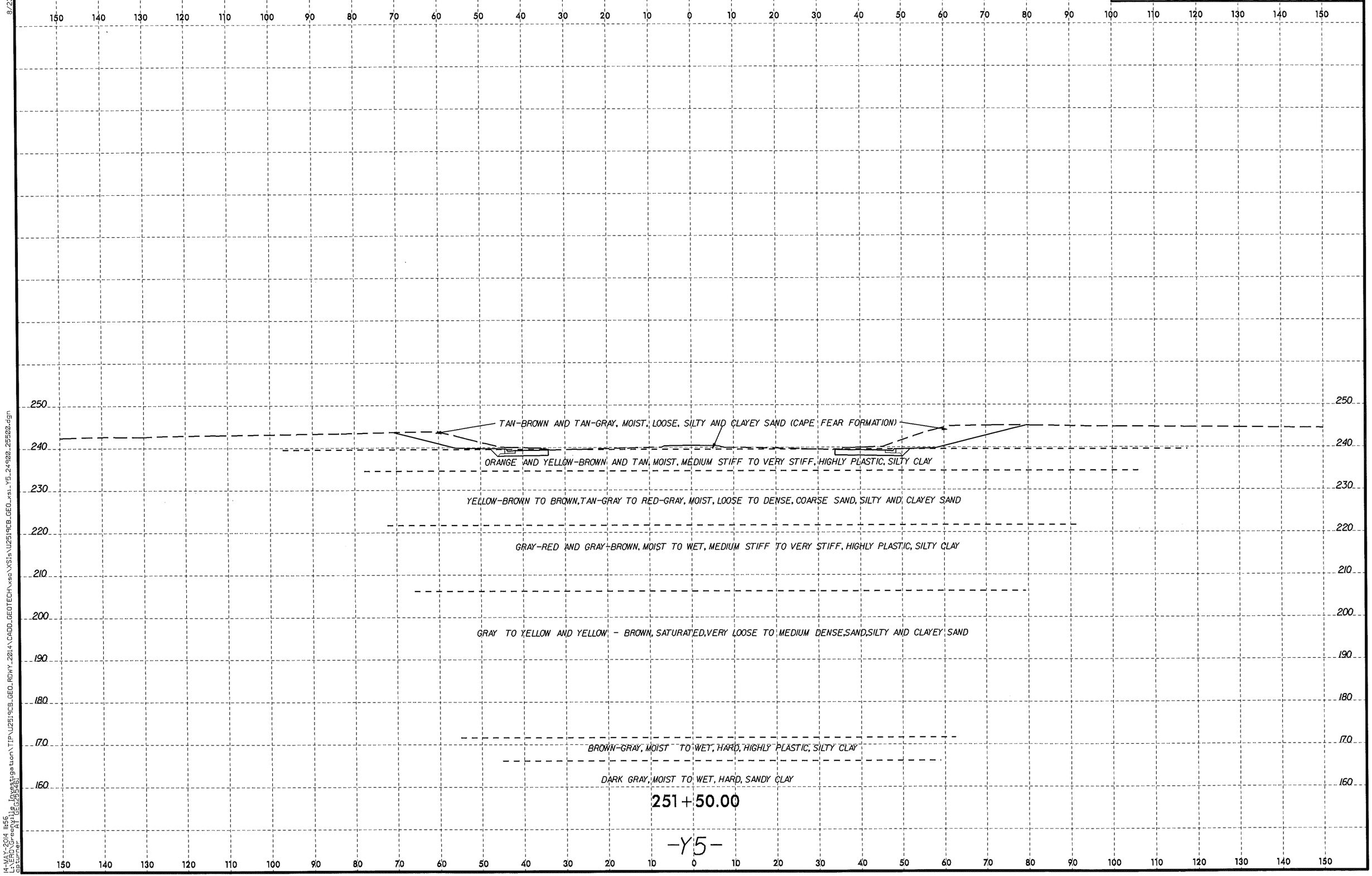

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PROJ. REFERENCE NO.	SHEET NO.
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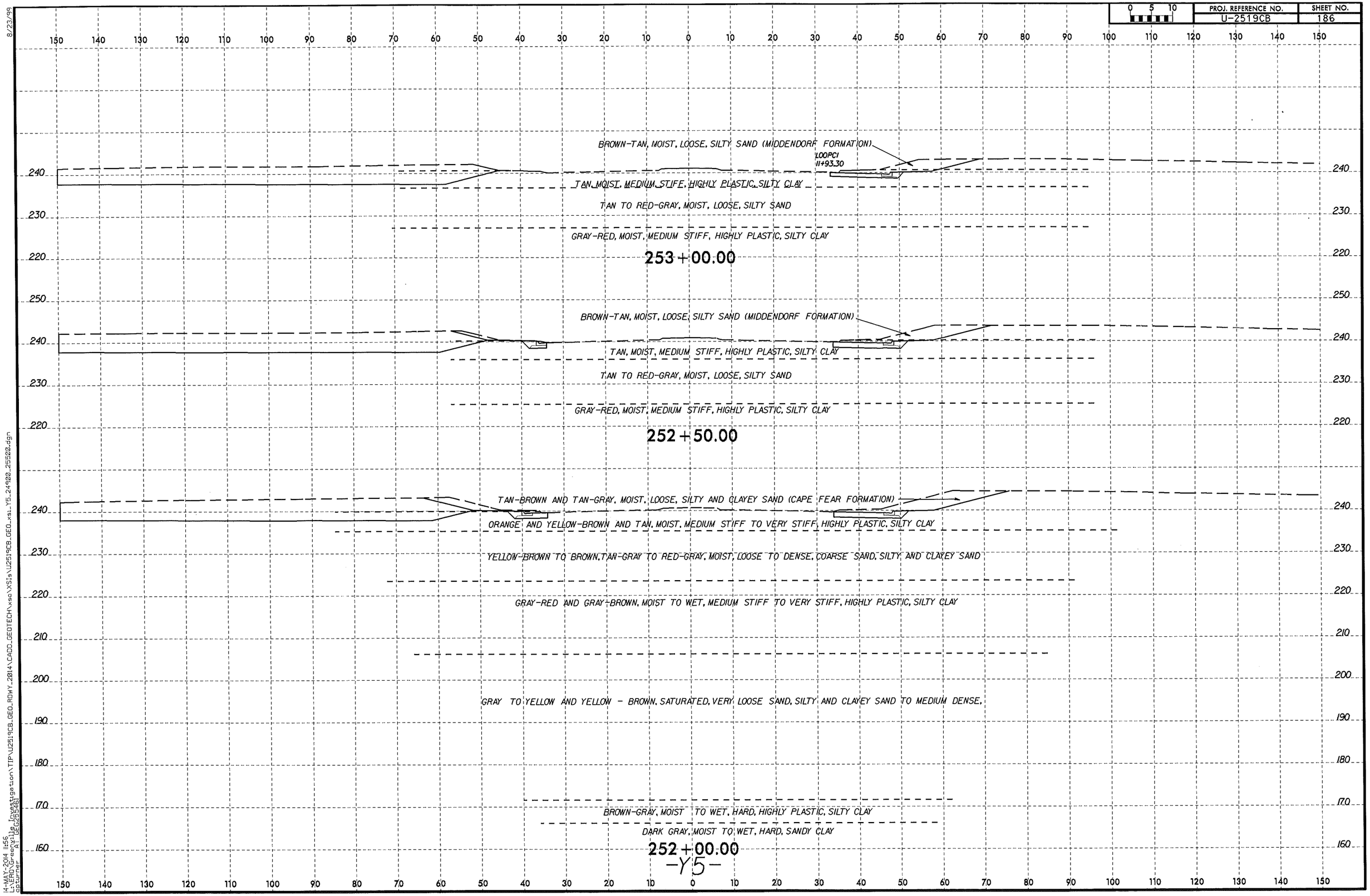

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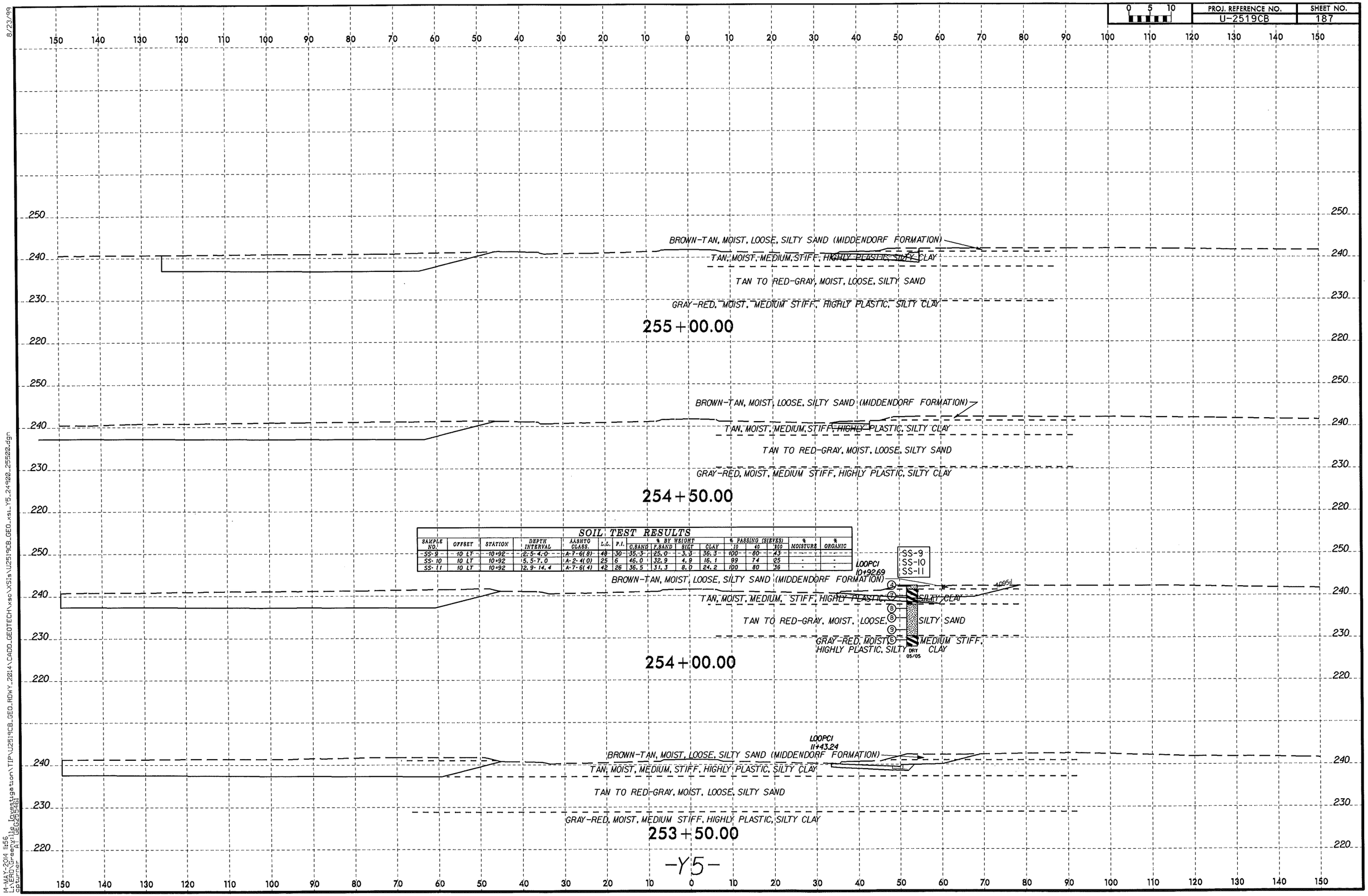
PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	187



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-9	10 LT	10+92	2.5-4.0	A-7-6(8)	48	30	35.3	25.0	3.3	36.3	100	80	43	-	-
SS-10	10 LT	10+92	5.5-7.0	A-2-4(0)	25	6	46.0	32.9	4.9	16.1	99	74	25	-	-
SS-11	10 LT	10+92	12.9-14.4	A-7-6(4)	42	26	36.5	31.3	8.0	24.2	100	80	36	-	-

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14-MAY-2014 11:56
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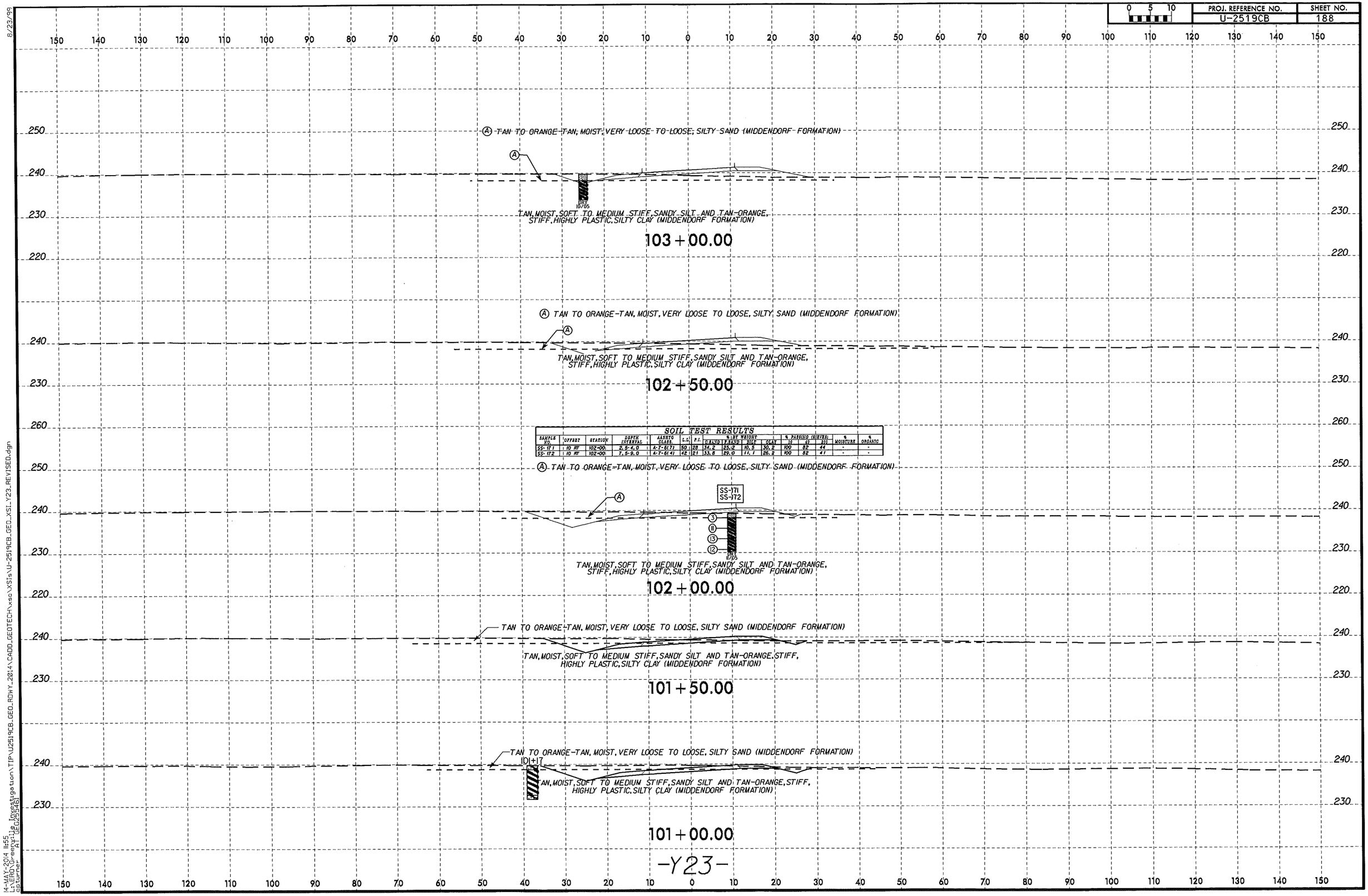

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT GRAVEL	SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-171	10 RT	102+00	2.5-4.0	A-7-6(7)	50	28	14.2	23.2	10.5	30.2	100	82	44	-	-
SS-172	10 RT	102+00	7.5-9.0	A-7-6(4)	42	21	33.8	29.0	11.1	26.2	100	82	41	-	-

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14-MAY-2014 11:55
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cturner
A1 GEO(255x36)
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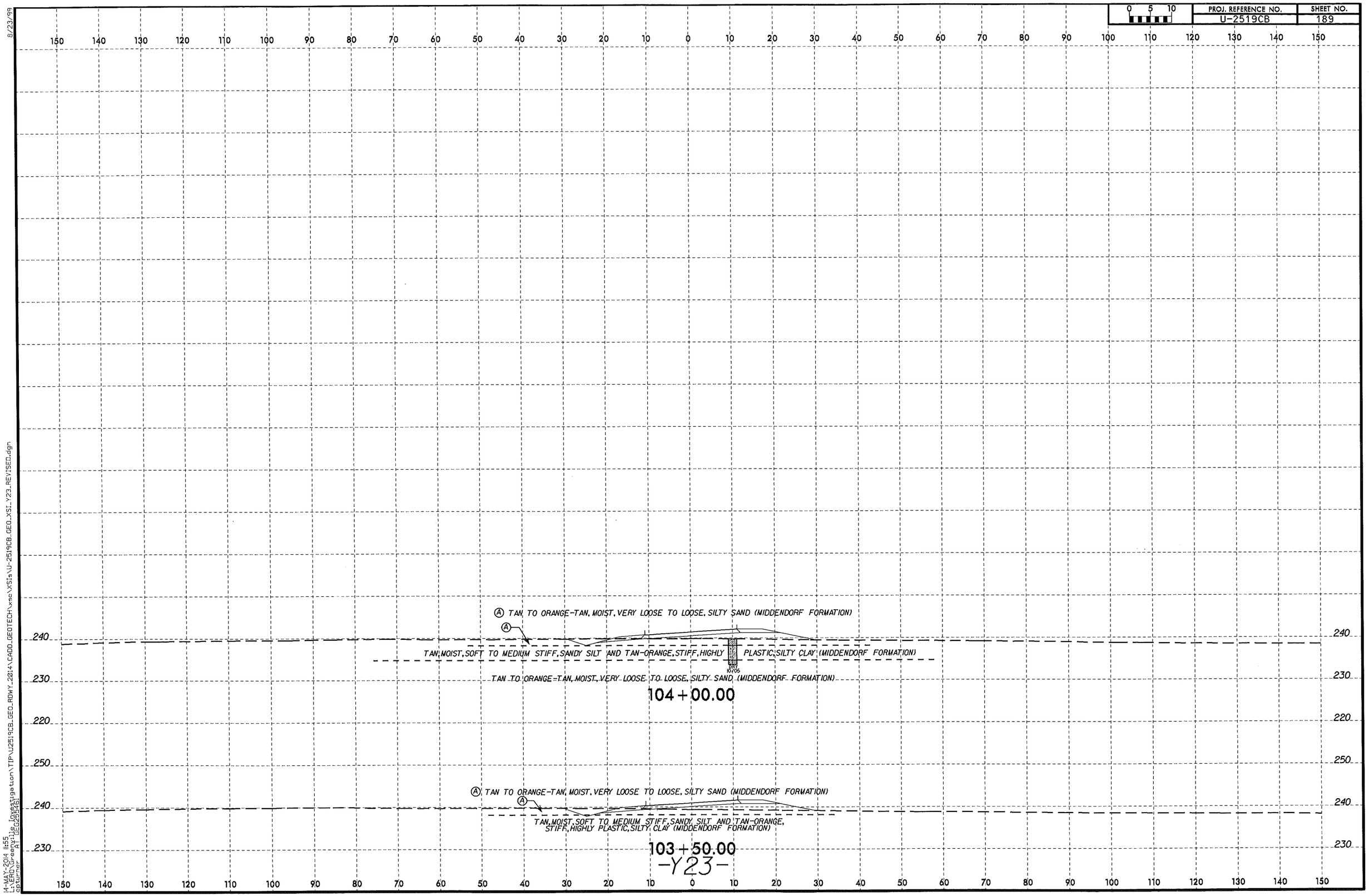
PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	189



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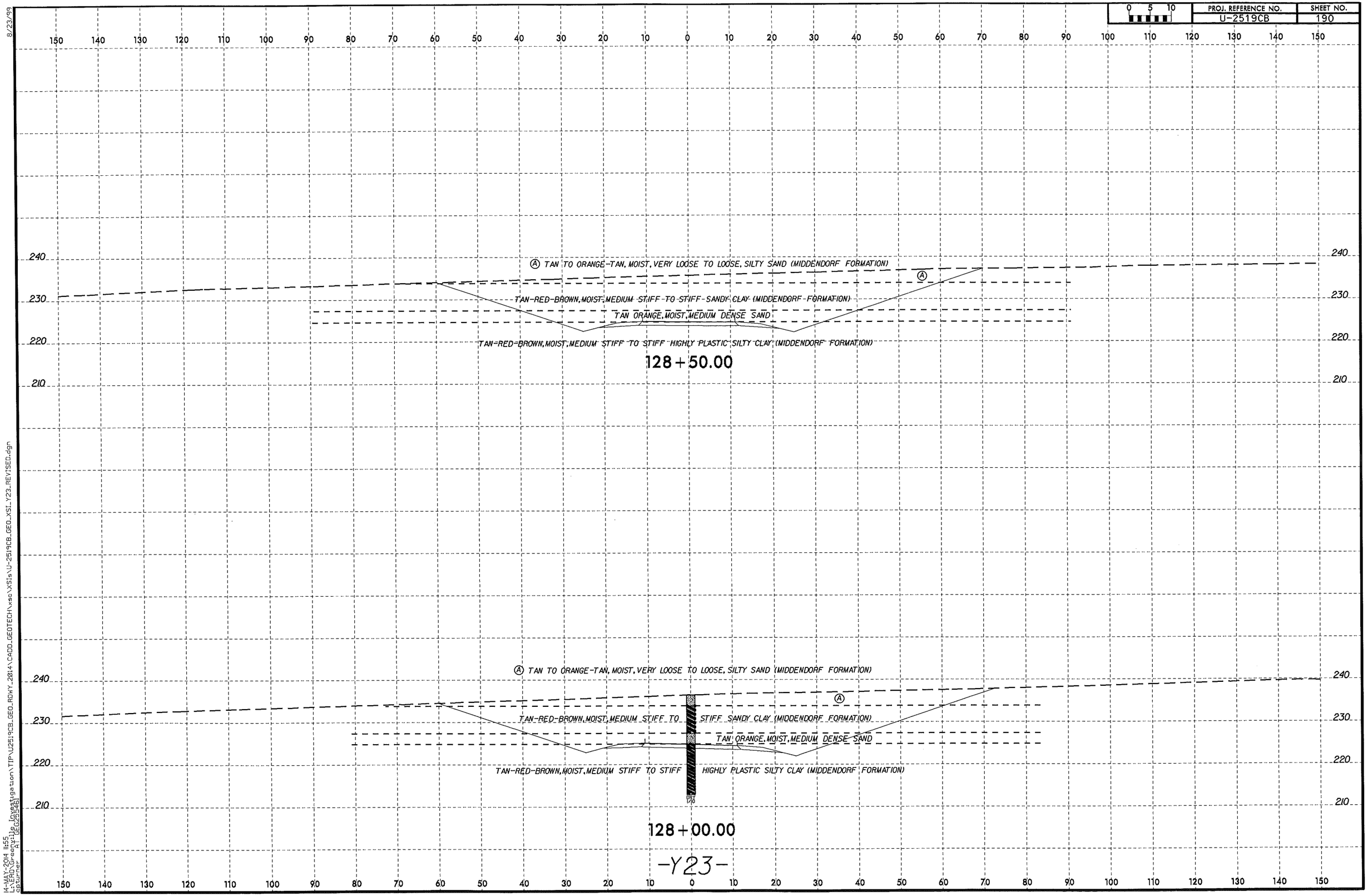
PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	190



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A1 GEO255461

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
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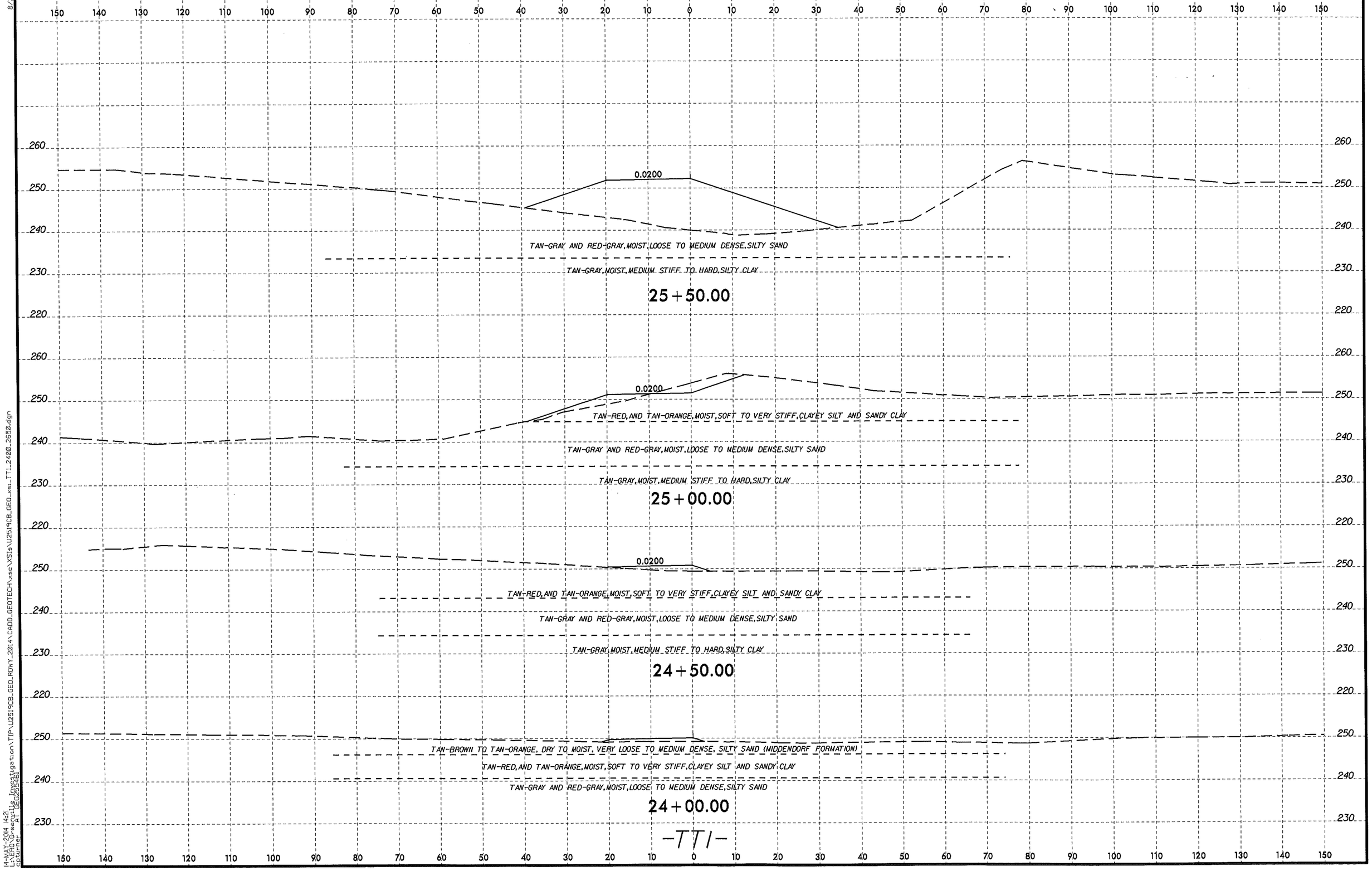

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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
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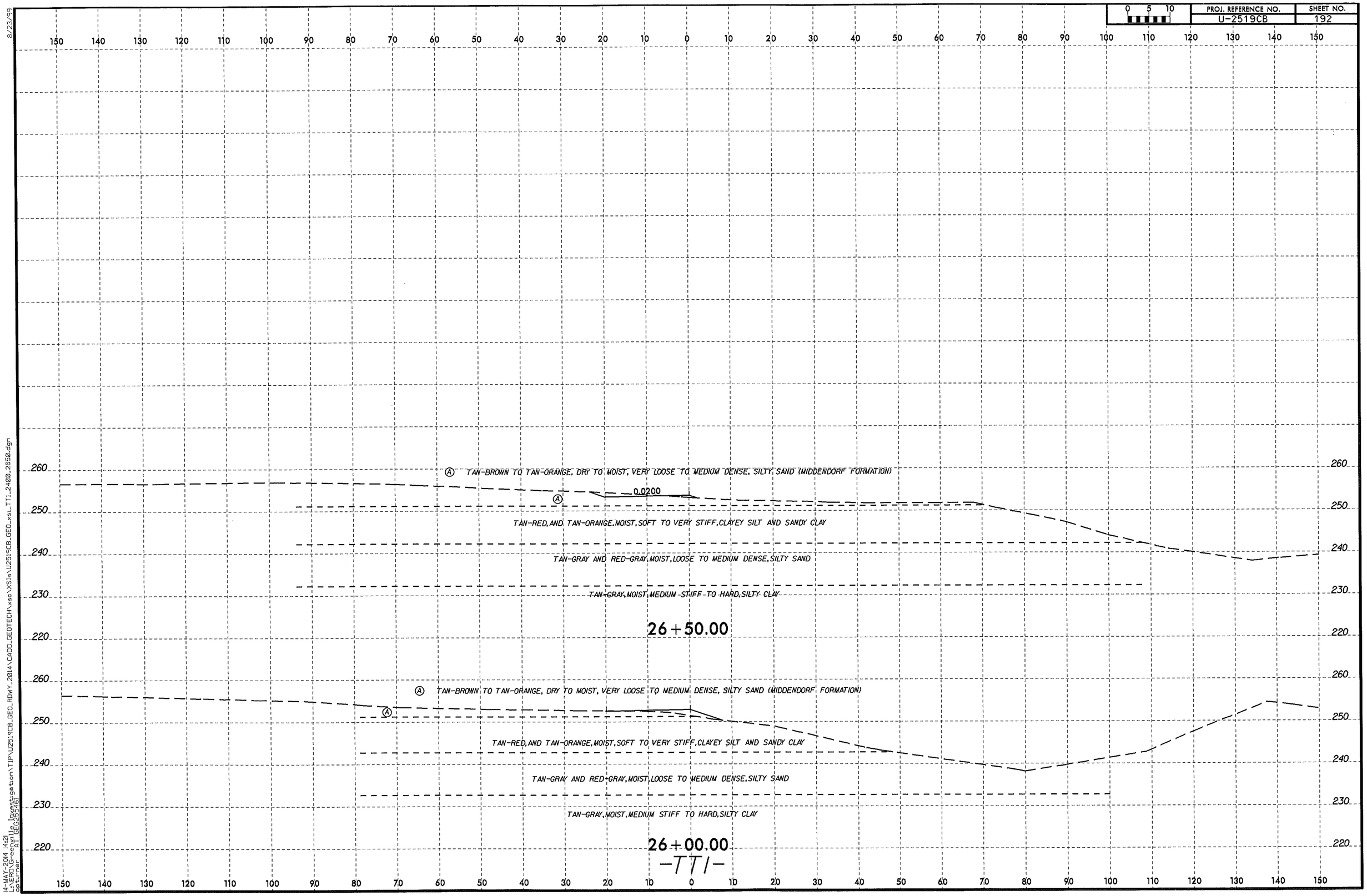

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PROJ. REFERENCE NO.	SHEET NO.
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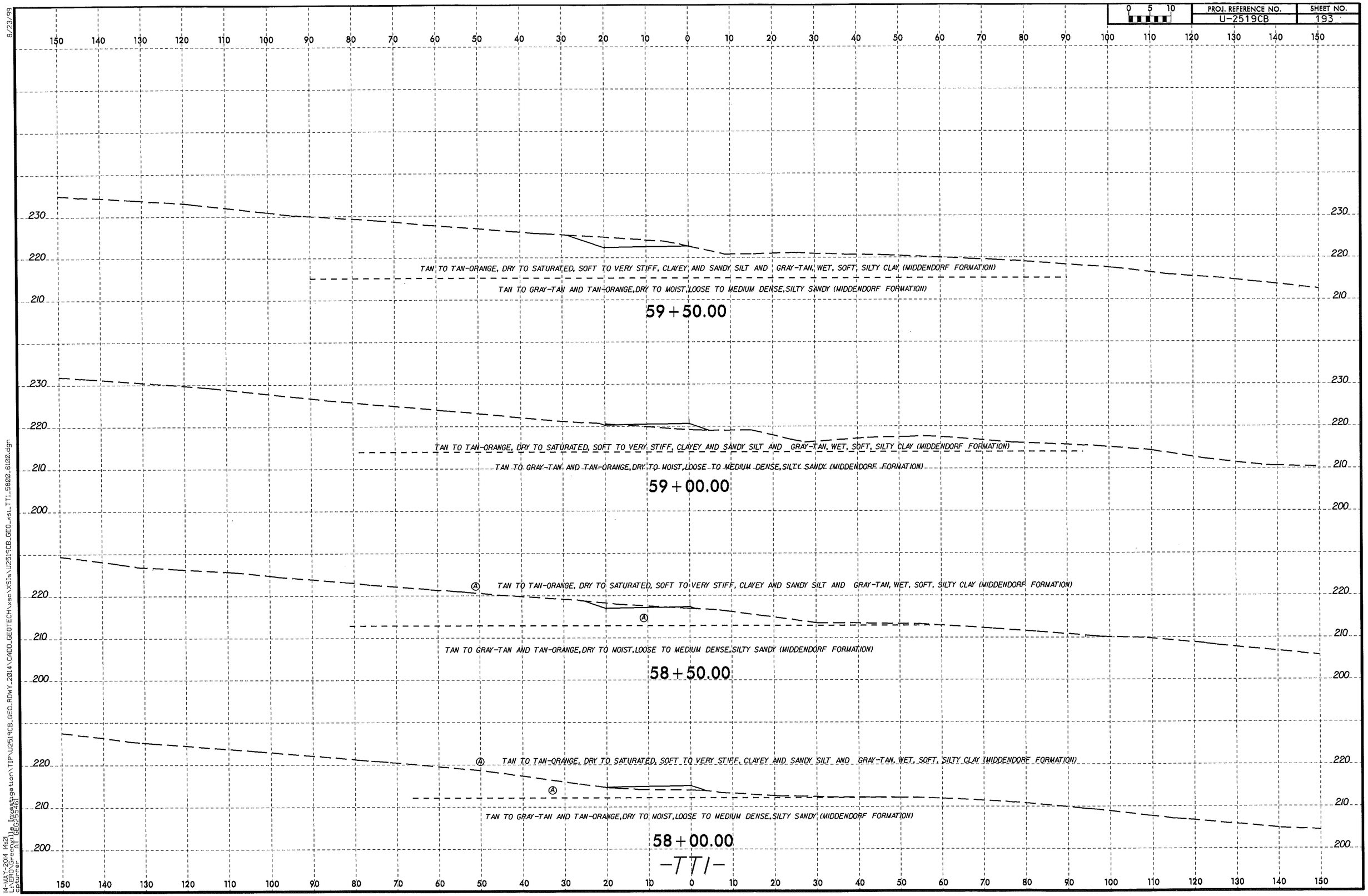

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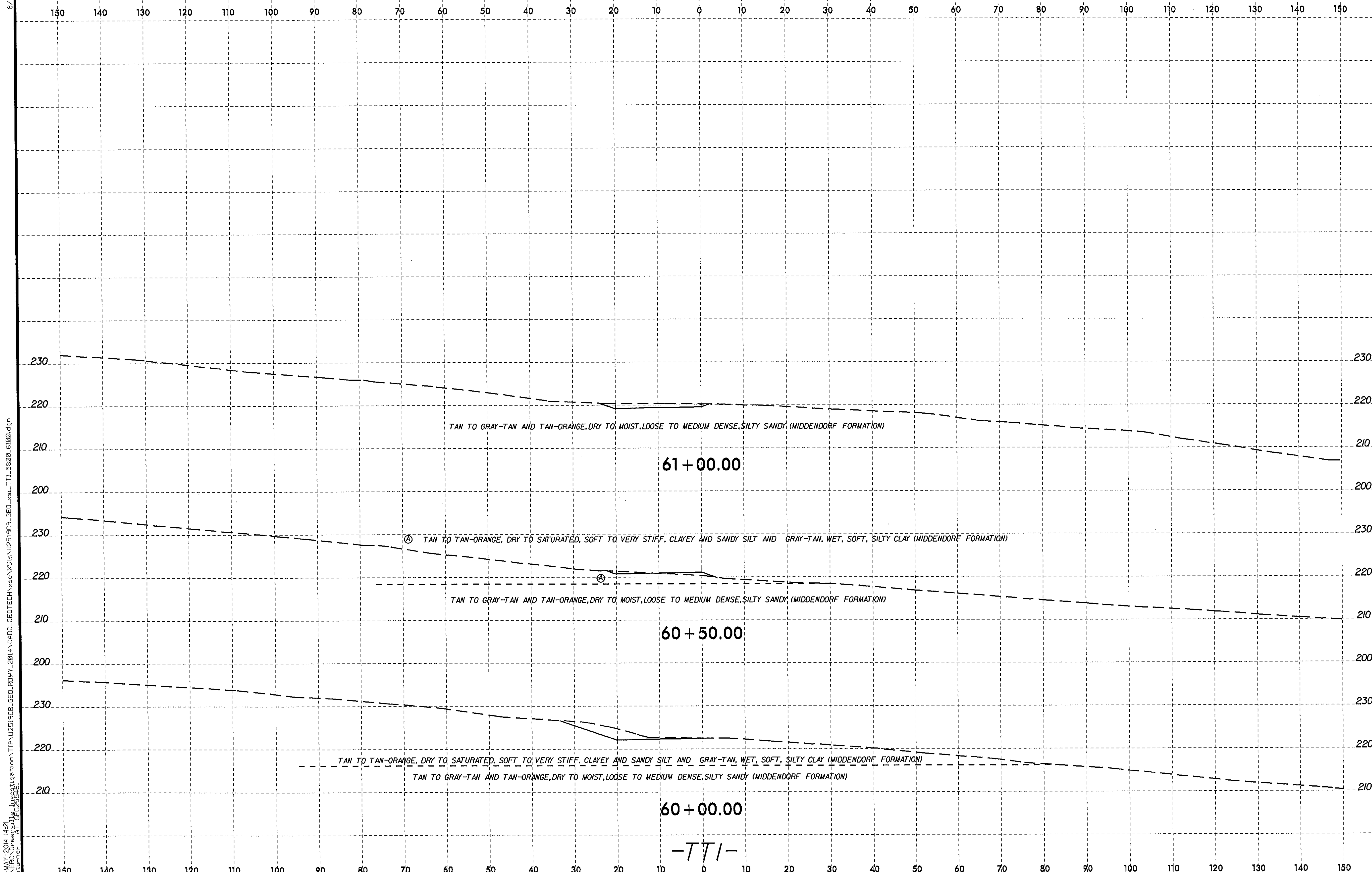
PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	194



8/23/99

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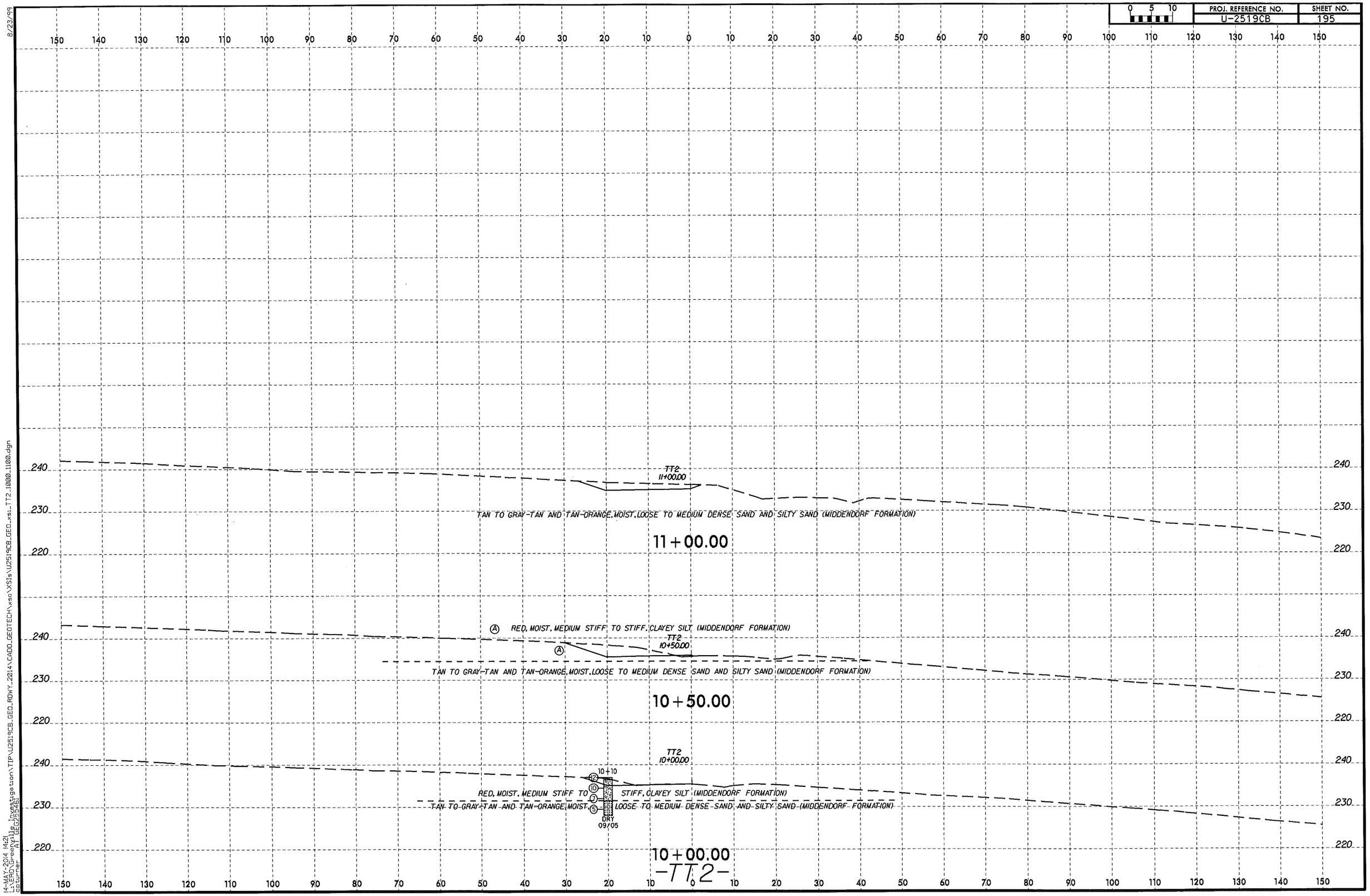

8/23/99

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PROJ. REFERENCE NO.	SHEET NO.
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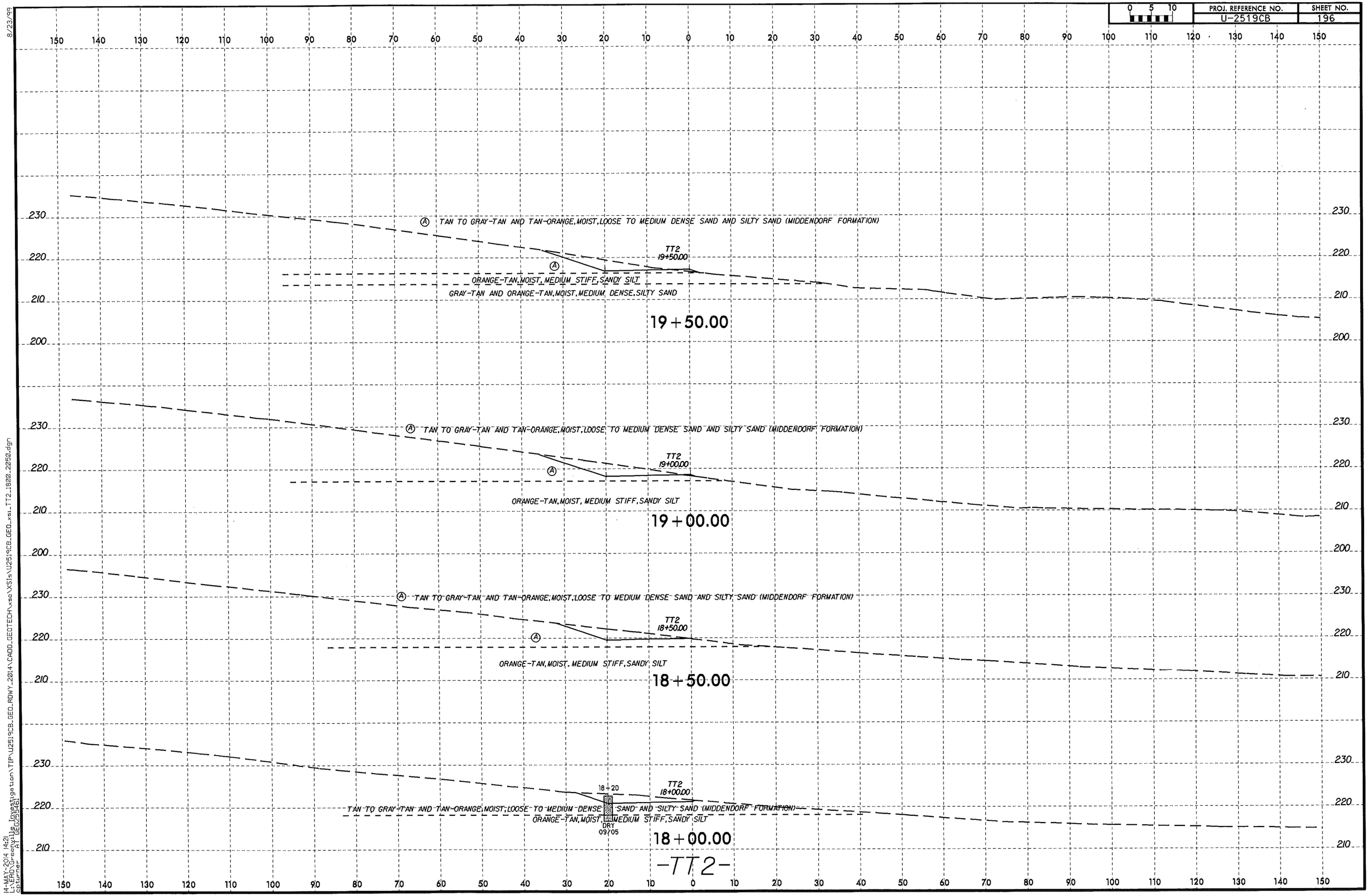

8/23/99

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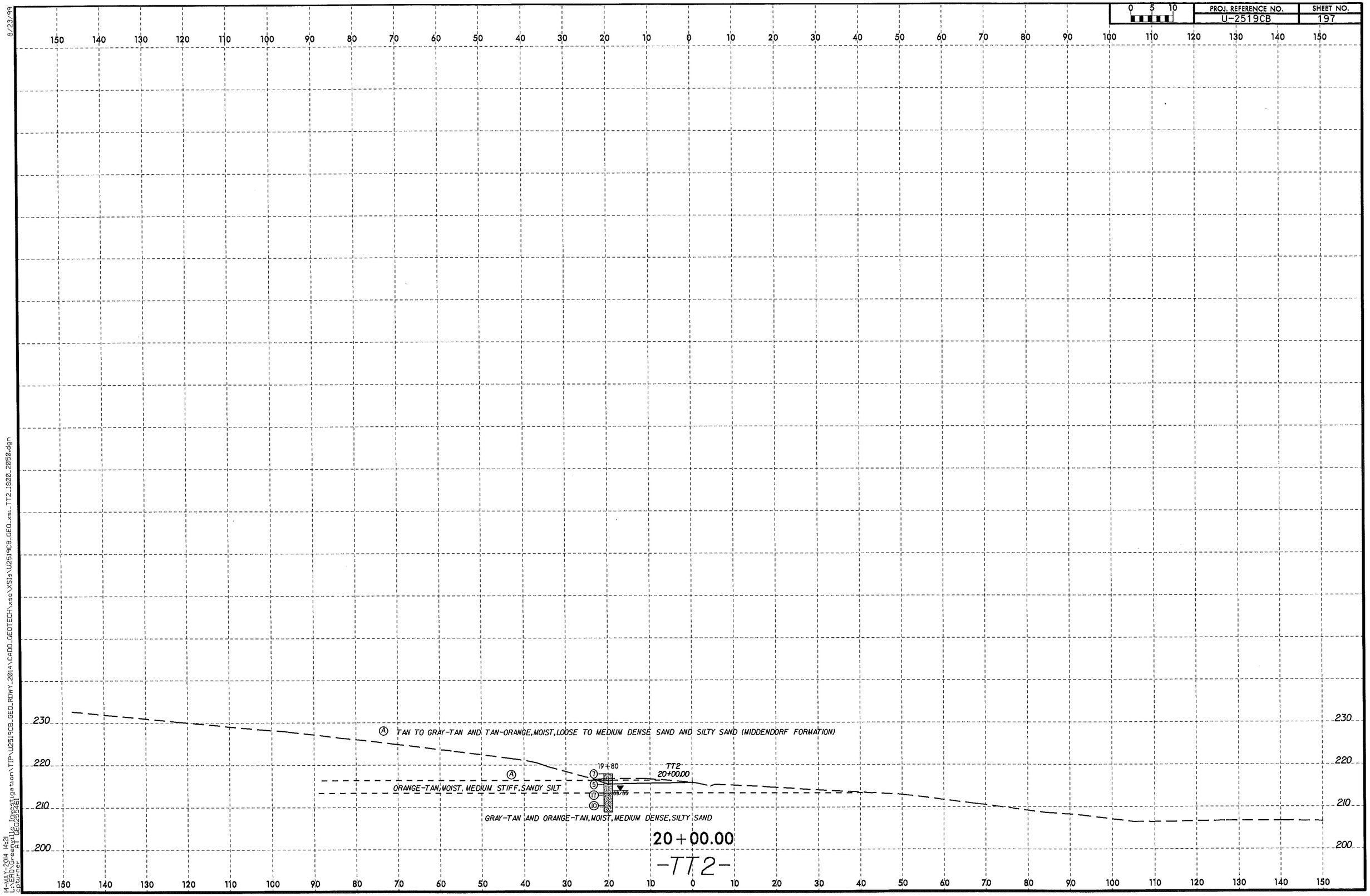

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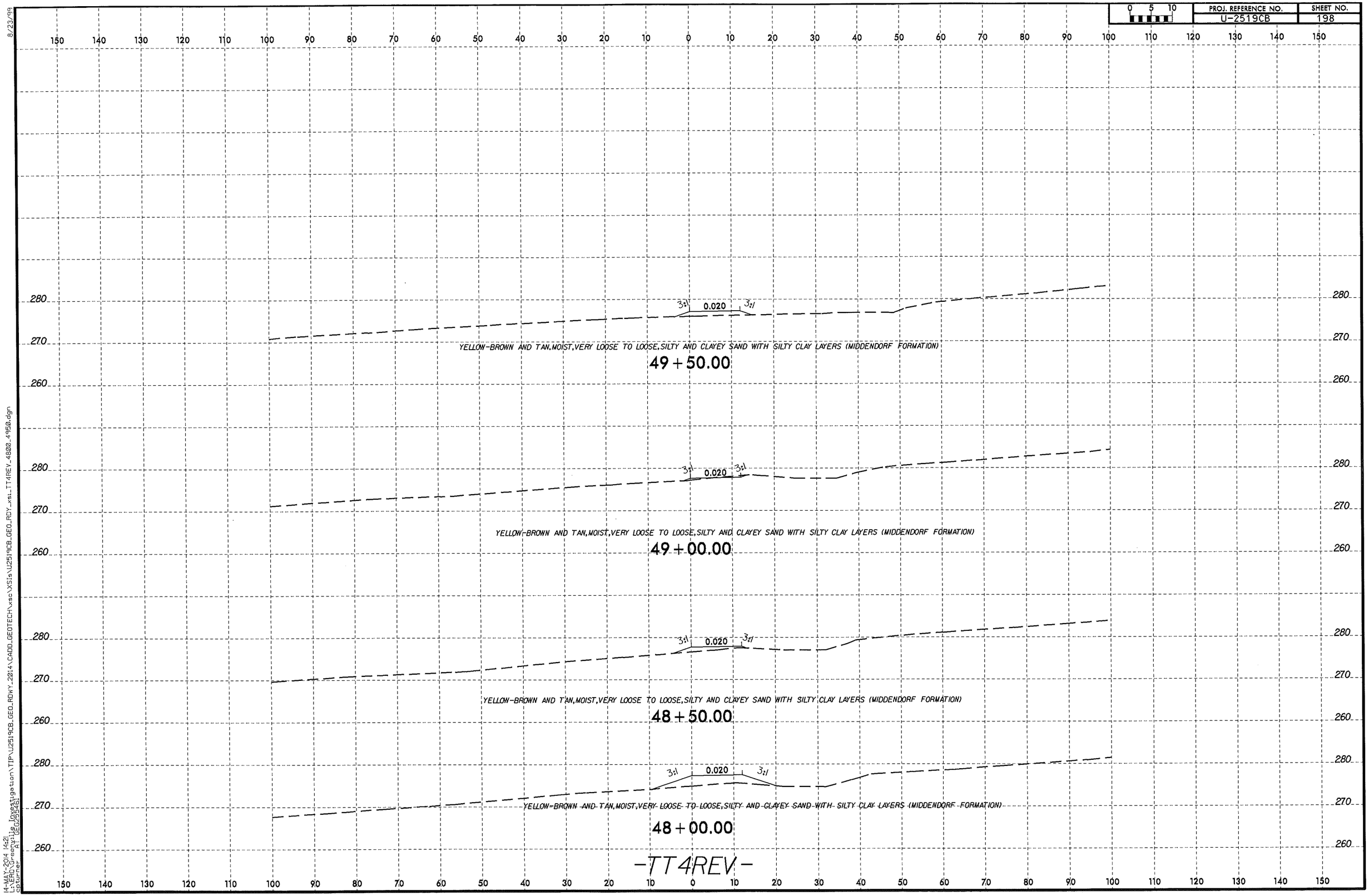

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PROJ. REFERENCE NO.	SHEET NO.
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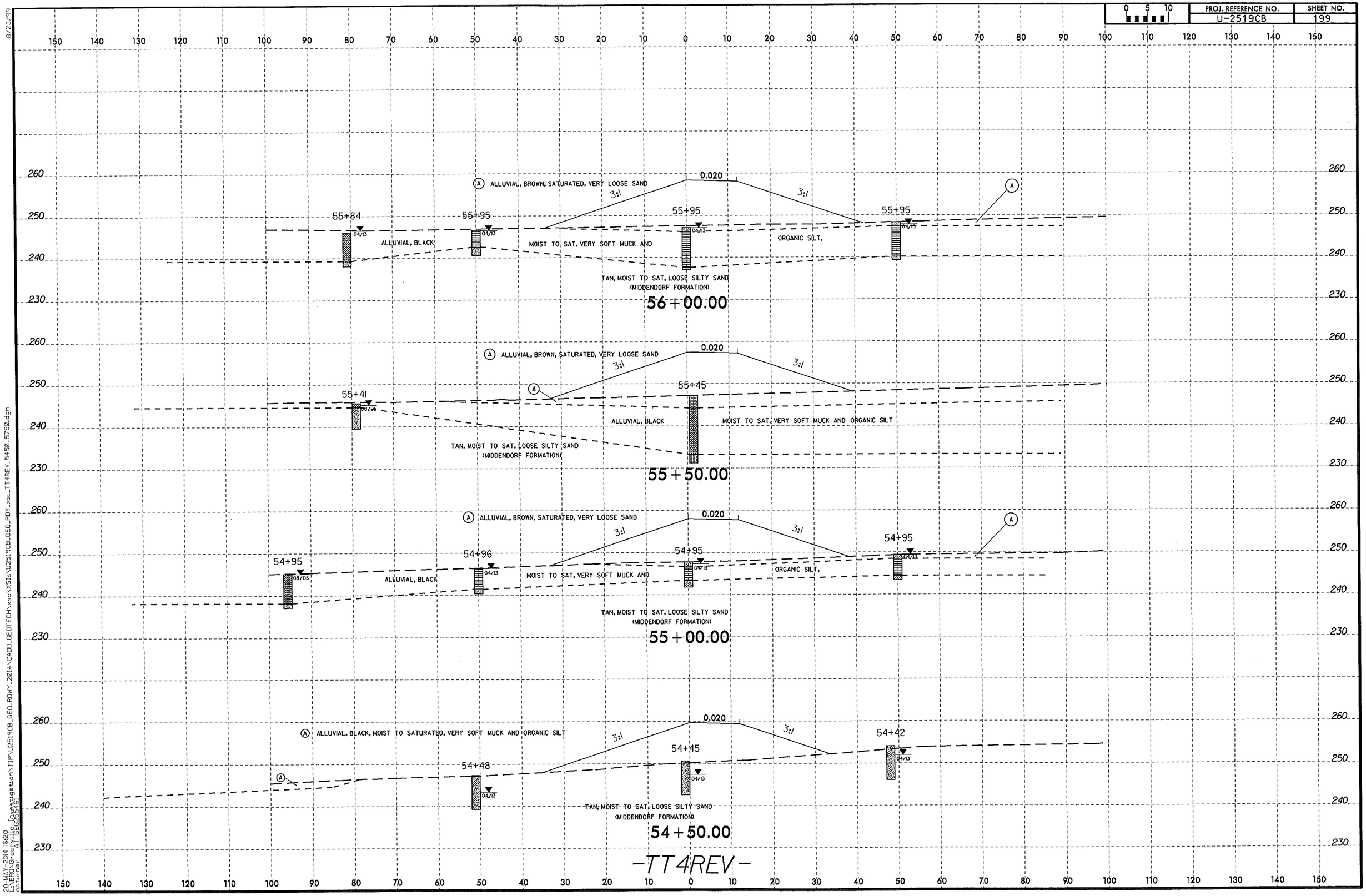

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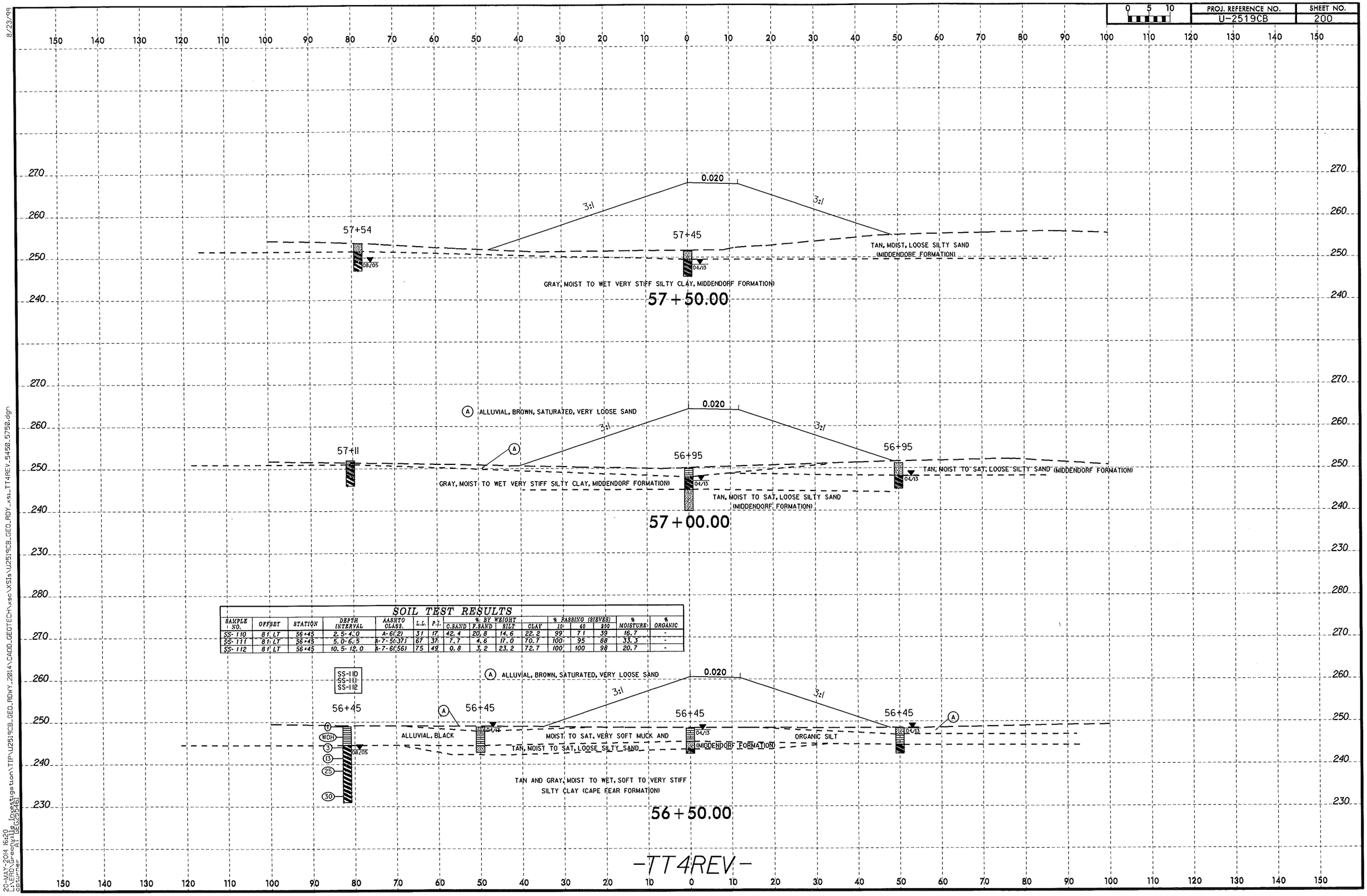

SOIL TEST RESULTS

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-110	81' LT	56+45	2.5-4.0	A-6(2)	31	17	42.4	20.8	14.6	22.2	99	71	39	16.7	-
SS-111	81' LT	56+45	5.0-6.5	A-7-5(37)	67	37	7.7	4.6	17.0	70.7	100	95	88	33.3	-
SS-112	81' LT	56+45	10.5-12.0	A-7-6(56)	75	49	0.8	3.2	23.2	72.7	100	100	98	20.7	-

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20-MAY-2014 16:20
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PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	201

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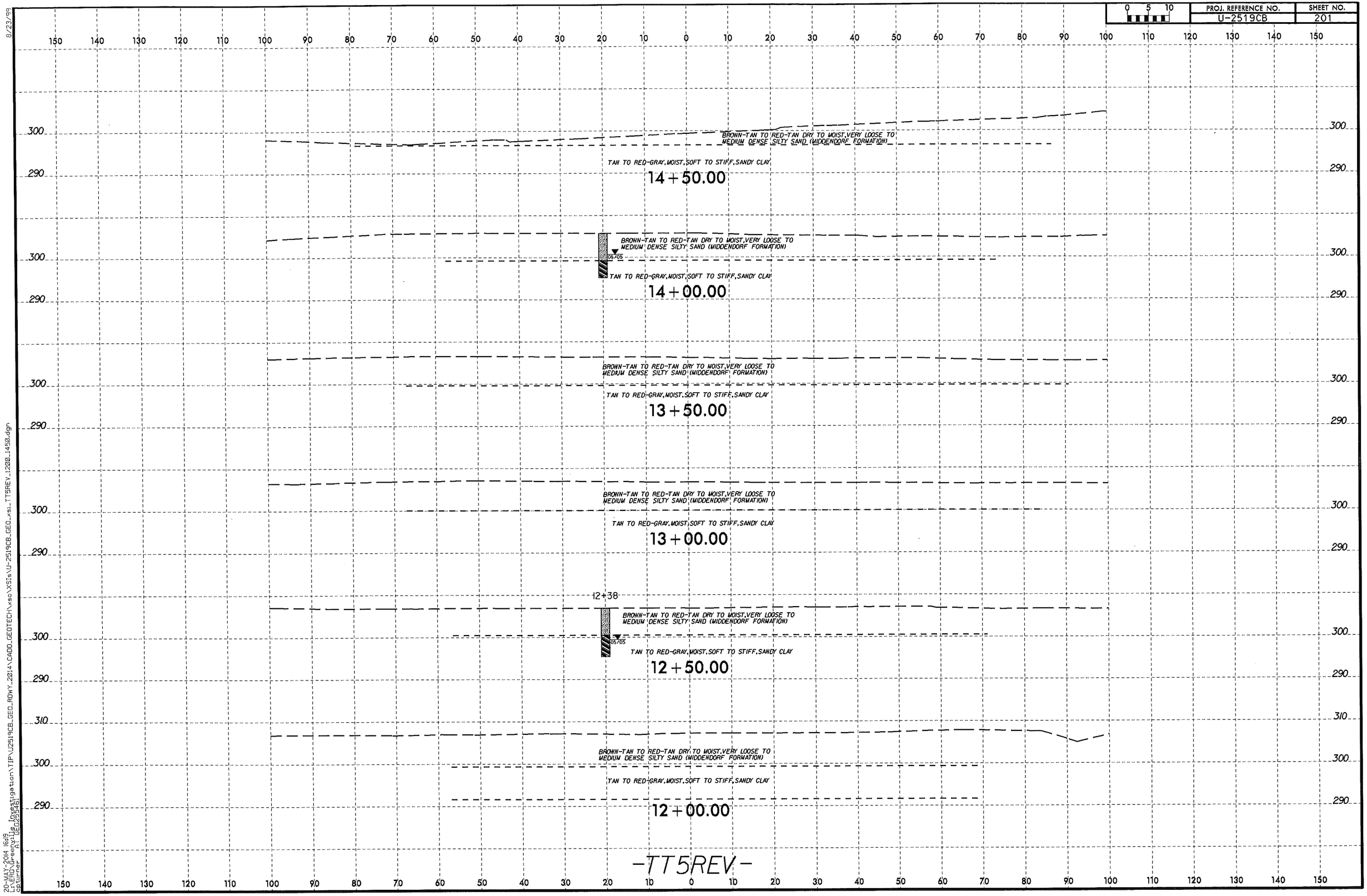

8/23/99

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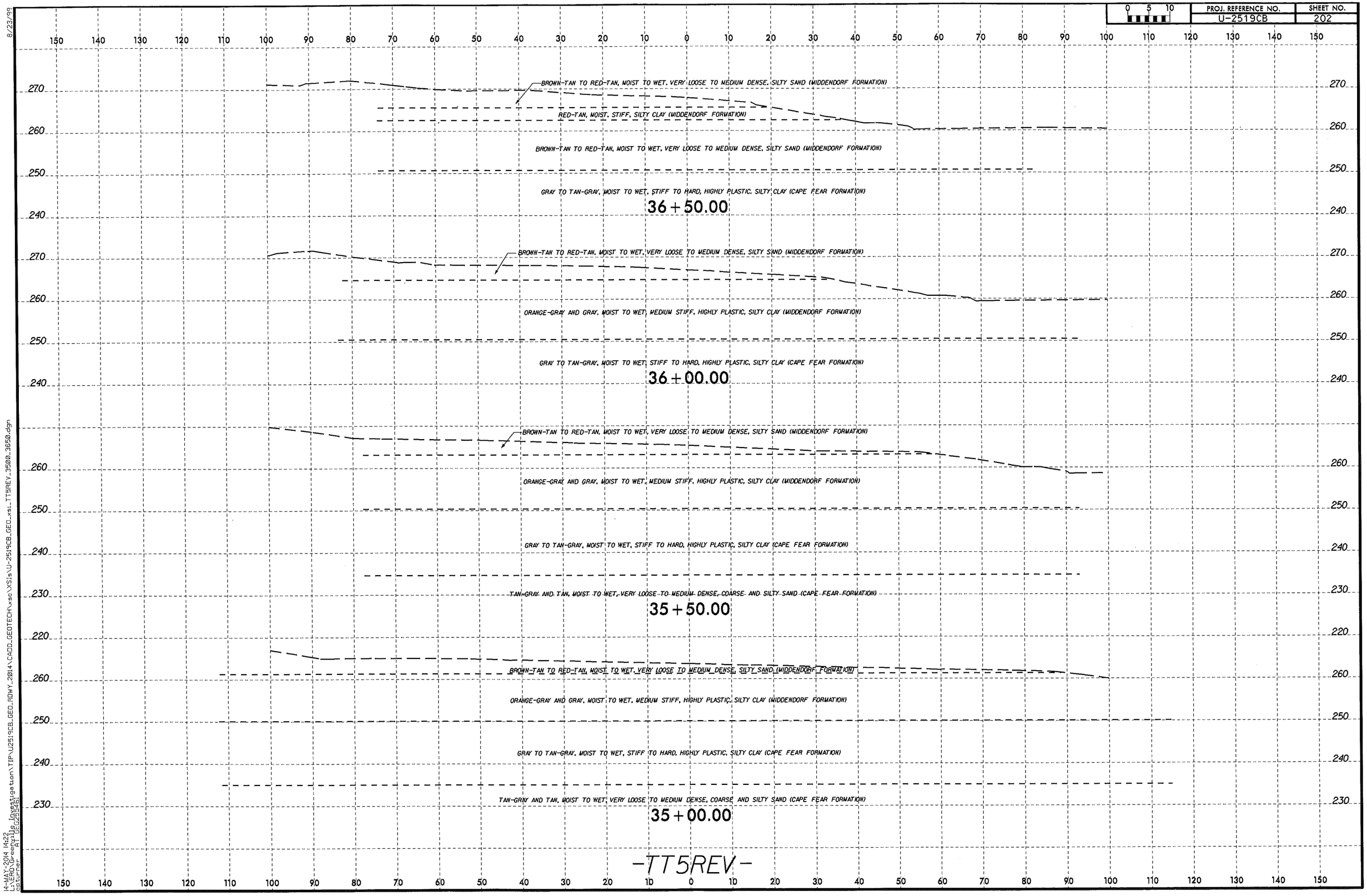

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PROJ. REFERENCE NO.	SHEET NO.
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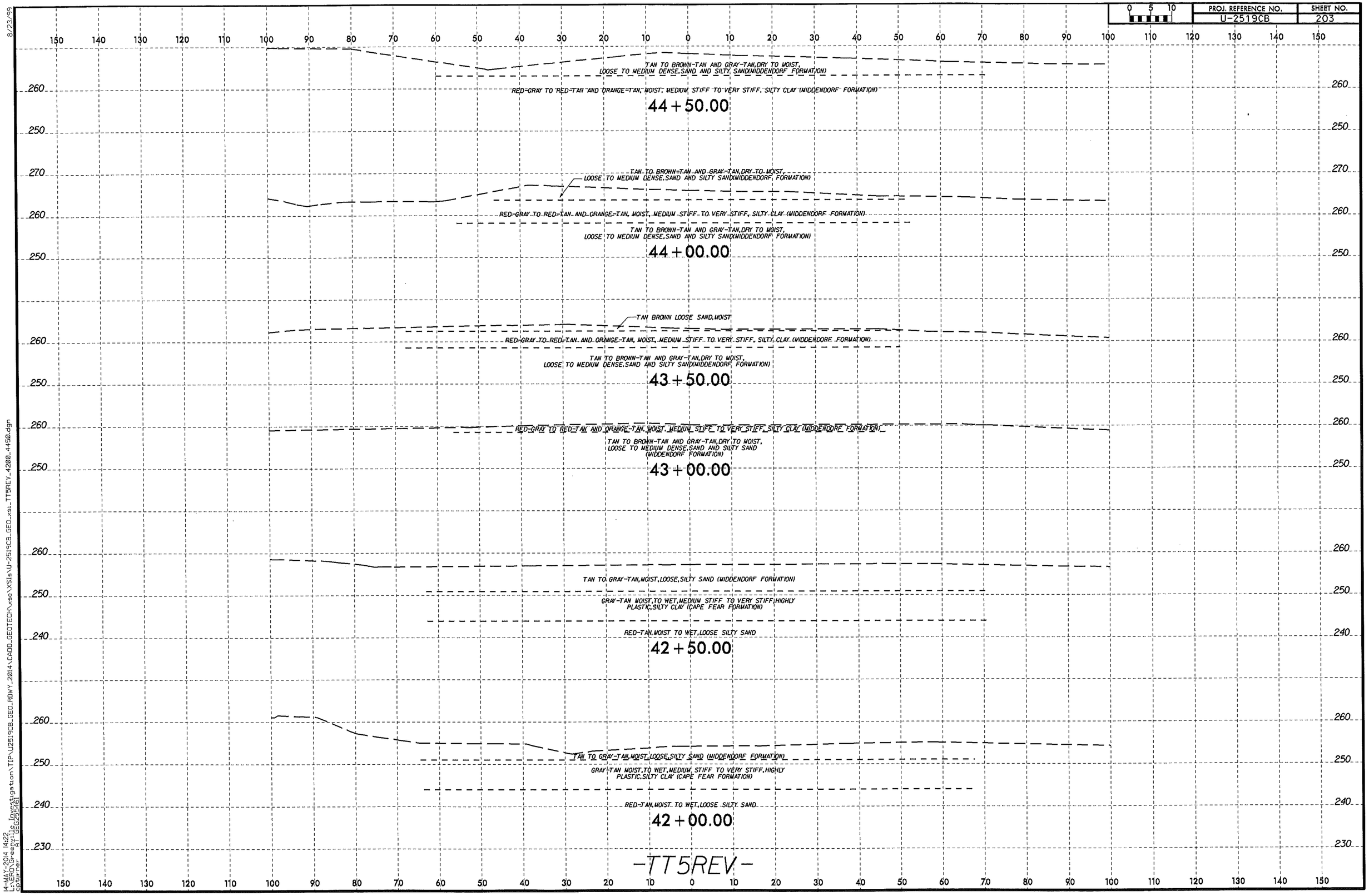

8/23/99

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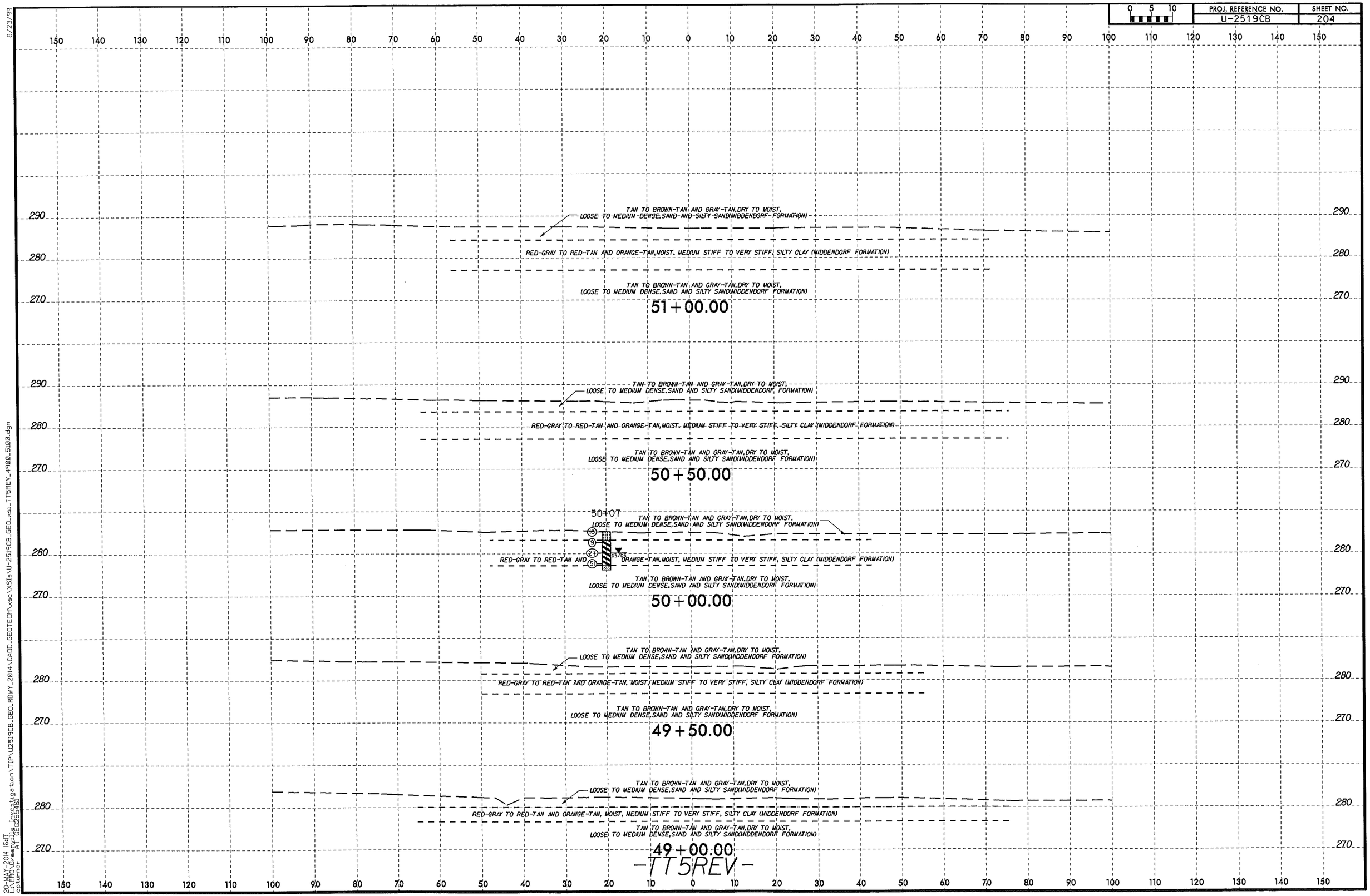

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AT GEO25516

PROJ. REFERENCE NO.	SHEET NO.
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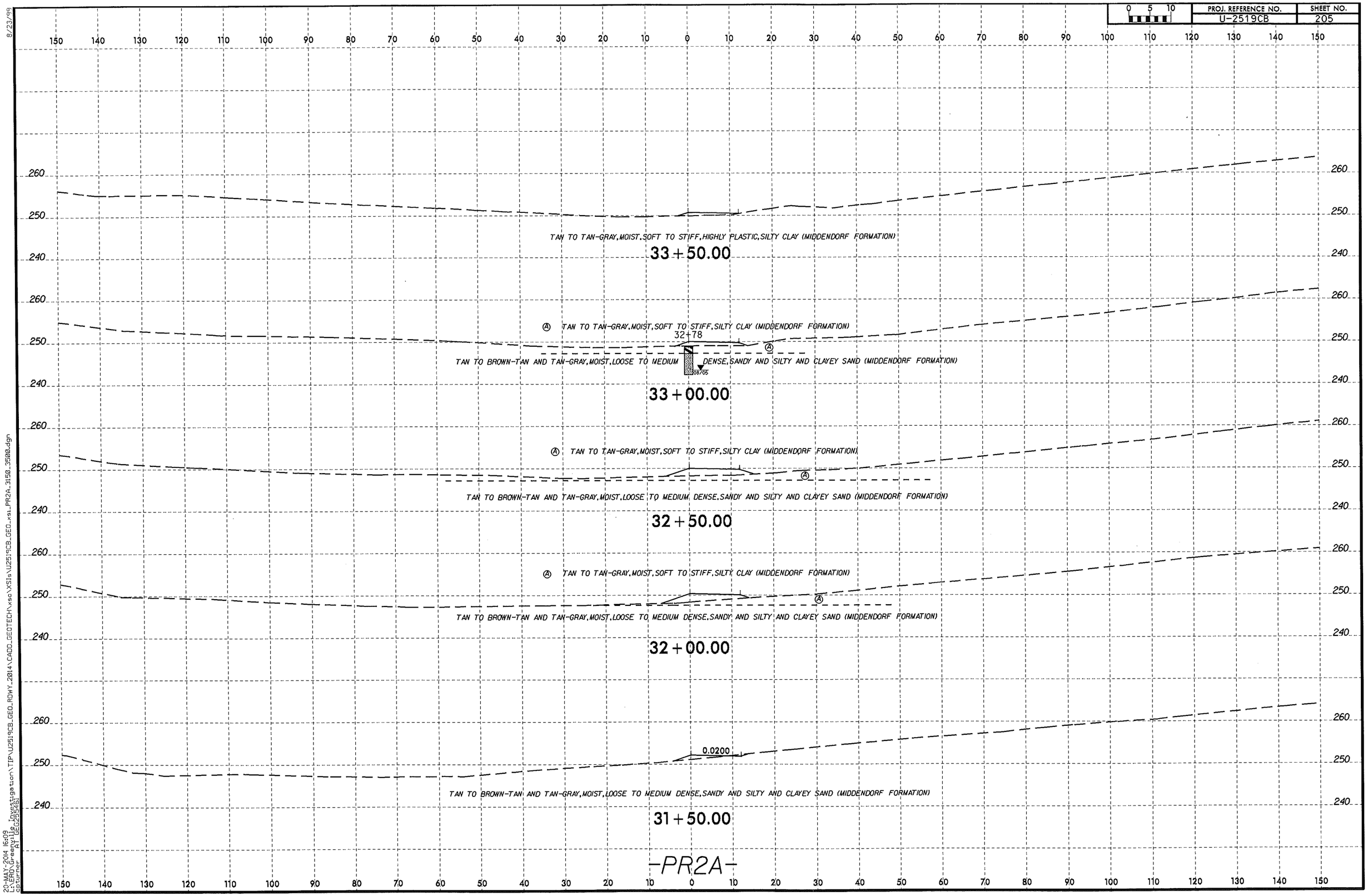

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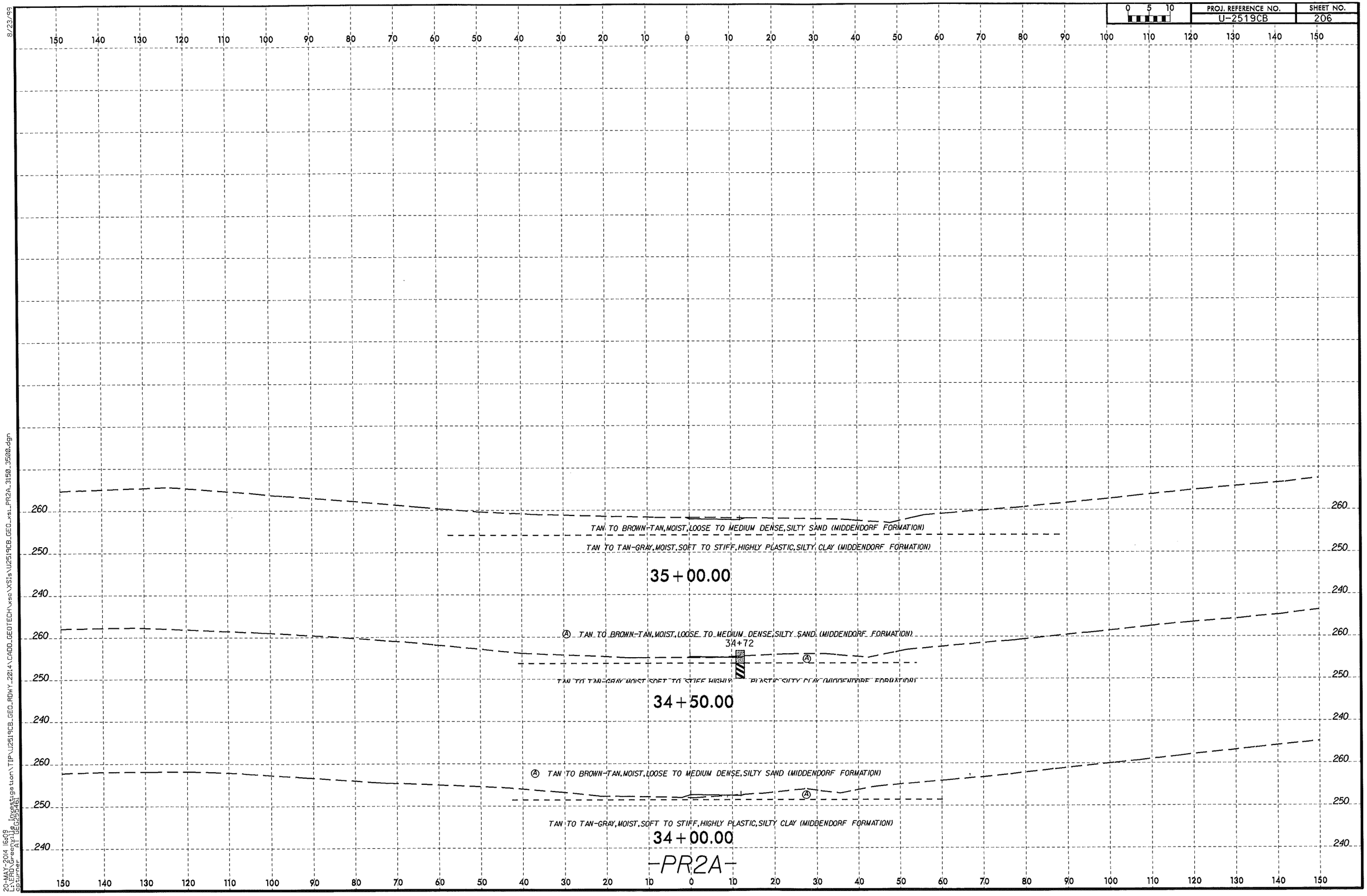

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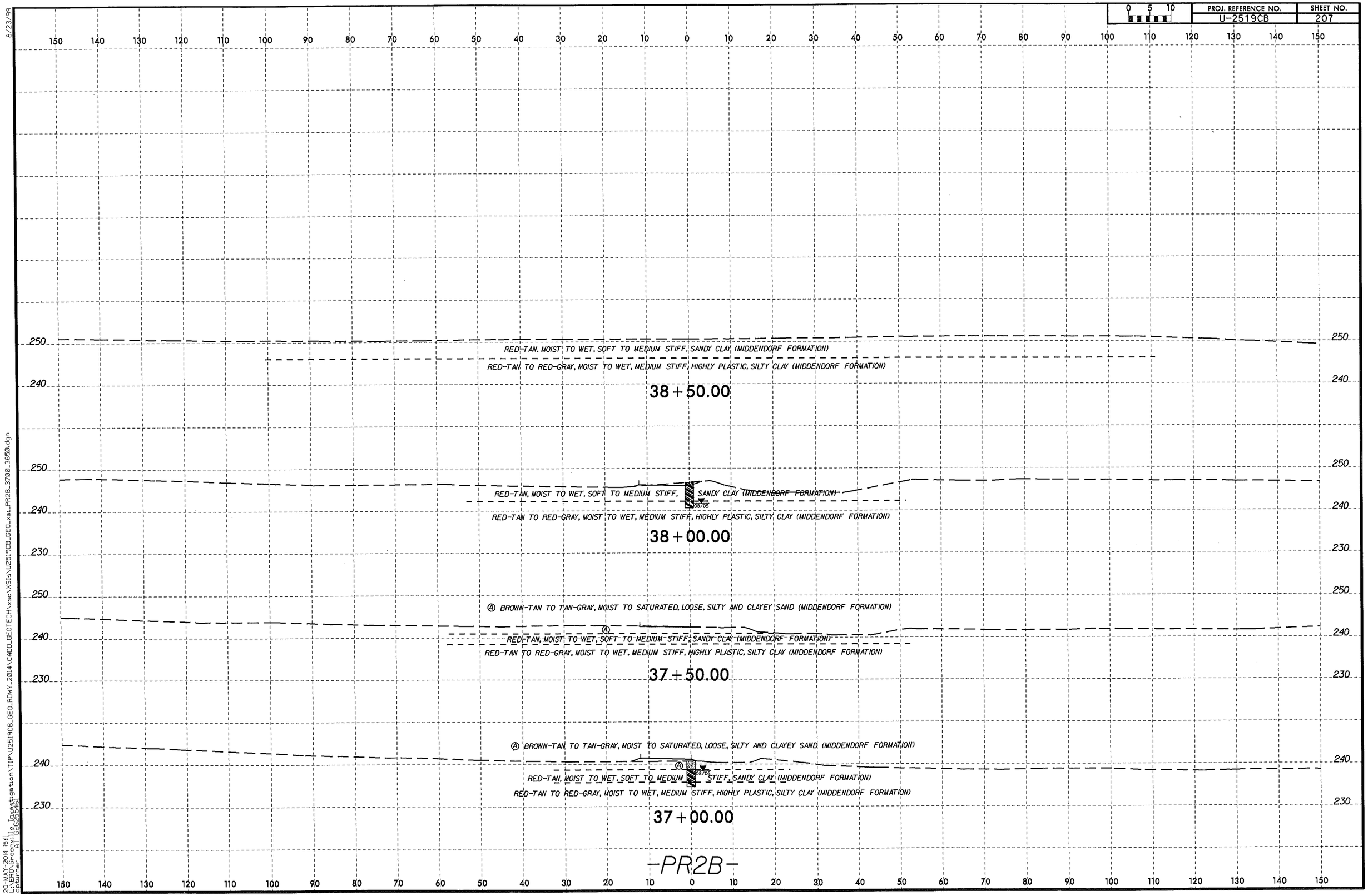

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