ID: U-0071

CONTRACT: C203394

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

CONTENTS

LINE	STATION	PLAN	PROFILE	XSECT
-L-(-LEB-)	11+00 to 39+00	4-6	26, 27	
-L-(-LEB-)	39+50 to 42+50	6	27	83-85
-L-(-LEB-)	43+00 to 45+00	6	27	
-L-(-LEB-)	45+50 to 47+50	6	27	86, 87
-L-(-LEB-)	48+00 to 61+50	6, 7	27	
-L-(-LEB-)	62+00 to 72+50	7, 8	27, 28	114-120
-L-(-LEB-)	73+00 to 79+00	8, 9	28	
-L-(-LEB-)	79+50 to 91+00	9	28	121-128
-L-(-LEB-)	91+50 to 96+00	9	28, 29	
-L-(-LEB-)	96+50 to 108+00	9, 10	29	129-135
-L-(-LEB-)	110+00 to 112+50	10	29	
-L-(-LEB-)	113+00 to 116+50	10	29	136-138
-L-(-LEB-)	117+00 to 129+00	10, 11	29, 30	
-L-(-LWB-)	14+25 to 39+00	4-6	31	
-L-(-LWB-)	39+50 to 42+50	6	32	80-82
-L-(-LWB-)	43+00 to 53+00	6, 7	32	
-L-(-LWB-)	53+50 to 56+50	7	32	88, 89
-L-(-LWB-)	57+00 to 61+50	7	32	
-L-(-LWB-)	62+00 to 72+50	7, 8	32, 33	90-96
-L-(-LWB-)	73+00 to 79+00	8, 9	33	
-L-(-LWB-)	79+50 to 90+00	9	33	97-103
-L-(-LWB-)	90+50 to 97+50	9	33, 34	
-L-(-LWB-)	98+00 to 108+00	9, 10	34	104-110
-L-(-LWB-)	108+50 to 112+50	10	34	
-L-(-LWB-)	113+00 to 117+00	10	34	111-113
-L-(-LWB-)	117+50 to 129+00	10, 11	34, 35	
-LDFEB-	129+00 to 173+50	11-13	36-38	
-LDFEB-	174+00 to 178+00	13	38	139-141
-LDFEB-	178+50 to 183+50	13	38	
-LDFEB-	184+00 to 191+00	13, 14	38	142-146
-LDFEB-	191+50 to 210+00	14, 15	38, 39	
-LDFWB-	10+00 to 21+50	11, 12, 19	40	
-LDFWB-	22+00 to 27+55	19	40	147-150
-LDFWB-	28+00 to 29+57	19	40	
-DFLW-	8+60 to 88+43	11-15	41-44	
-DFEB-	25+04 to 38+00	18, 19	45	
-DFEB-	38+05 to 39+05	19	45	149
-DFEB-	39+50 to 68+50	19, 12	45-47	
-DFEB-	68+63 to 72+62	12, 13	47	139-141
-DFEB-	73+00 to 75+61	13	47	
-DFFLY-	10+00 to 41+86	11, 12, 19	47, 48	
-DFWB-	17+00 to 40+50	17-19	49	149, 150
-DFWB-	41+00 to 43+50	19	49	
-DFWB-	44+00 to 70+00	12, 13, 19	49, 50	
-RAMPA-	10+02 to 11+01	7	51	90
-RAMPA-	11+50 to 16+00	7	51	
-RAMPA-	16+47 to 19+44	7	51	88, 89
-RAMPA-	17+00 to 25+03	7, 6	51	
-RAMPB-	10+00 to 20+50	5, 6	52	
-RAMPB-	20+73 to 23+69	6	52	80-82
-RAMPB-	24+00 to 25+33	6	52	
-RAMPC-	7+17 to 22+50	5, 6	53	
-RAMPC-	22+53 to 25+57	6	53	83-85
-RAMPC-	26+00 to 26+28	6	53	
-RAMPD-	10+00 to 24+00	7, 6	54	
-RAMPD-	24+17 to 26+20	6	54	86, 87
-RAMPD-	26+50 to 27+70	6	54	
-SR1-	13+00 to 43+52	4-6	55, 56	
-SR2-	10+00 to 15+50	7	56	
-SR2-	15+60 to 25+95	7, 8	56, 57	90-96
-SR2-	26+00 to 32+50	8, 9	57	
-SR2-	32+84 to 37+00	9	57	97-99, 151
-SR2-	37+50 to 38+50	9	57	
-SR2-	39+00 to 40+00	9	57	137, 138
-SR2-	40+50 to 42+68	9	57	
-US70FLY-	10+00 to 17+50	10	58	
-US70FLY-	17+95 to 19+27	10	58	123A
-US70FLY-	19+50 to 52+54	10, 20	58, 59	
-EEC70E-	10+95 to 17+50	10	60	
-EEC70E-	17+98 to 27+20	10, 20	60	112, 113, 153-157, 161
-EEC70E-	27+00 to 34+31	20	60	

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

ROADWAY SUBSURFACE INVESTIGATION

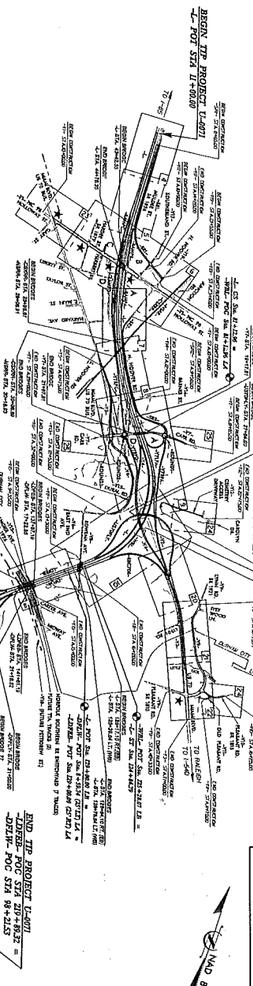
PROJ. REFERENCE NO. 34745.1.1 (U-0071) F.A. PROJ. NHF-76-1-(2)

COUNTY DURHAM

PROJECT DESCRIPTION DURHAM EAST END CONNECTOR FROM NC 147 (BUCK DEAN FREEWAY) TO NORTH OF NC 98

INVENTORY

LINE	STATION	PLAN	PROFILE	XSECT
-Y1-	13+12 to 37+75	6, 23	61, 62	
-Y2-	10+66 to 13+50	9	63	
-Y2-	13+73 to 19+54	9, 10	63	104-107
-Y2-	20+00 to 33+71	10, 20	63	
-Y2-	30+51	20	63	161
-Y3-	33+71 to 66+00	20-22	63-65	
-Y4-	10+00 to 10+42	9	65	
-Y4-	10+42 to 16+30	9	65	124-128
-Y4-	18+00 to 47+37	9, 10	65, 66	
-Y4-	41+29	9	66	161
-Y5-	13+00 to 22+50	8, 9	67	
-Y5-	23+00 to 27+27	9	67	158-160
-Y5-	27+50 to 27+28	9	67	
-Y6-	14+25 to 31+60	9, 10	68	
-Y7-	11+20 to 24+24	9, 25	69	
-Y7LPA-	10+00 to 17+35	10	70	
-Y7RPA-	12+45 to 15+09	9, 10	71	106, 107
-Y7RPC-	14+57 to 25+22	6-8	72	114-120
-Y7RPC-	25+50 to 31+00	8, 9	72, 73	
-Y7RPC-	28+30	11	73	
-Y7RPC-	31+33 to 35+83	9	73	162-164
-Y7RPC-	36+00 to 37+13	9	73	
-Y7RPD-	0+65 to 13+55	9	73	
-Y8-	13+30 to 16+20	10	74	
-Y9-	11+52 to 40+22	21, 22	74, 75	
-Y10-	10+46 to 16+02	22, 24	76	
-Y11-	10+12 to 11+70	24	76	
-Y12-	10+37 to 21+97	9, 24	76	
-Y13-	10+14 to 12+53	9	77	
-Y14-	10+12 to 11+60	9	77	
-Y15-	10+55 to 13+00	11	77	
-Y16-	10+30 to 14+15	19	77	
-Y17-	11+10 to 13+95	6	77	
-Y18-	20+00 to 27+00	11	78	
-ROUND1-	10+00 to 12+83	9	79	
-ROUND2-	10+00 to 12+83	9	79	
-ROUND3-	10+00 to 12+83	9	79	
RETAINING WALL ENVELOPES		165-167	168-170	



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-0071	1	171

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34745.1.1	NHF-76-1(2)	PE
34745.2.8	NHF-76-1(2)	R/W, UTILITIES
34745.3.S2		CONSTRUCTION

CAUTION NOTICE

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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.

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SUBMITTED BY N.T. ROBERSON

DATE JUNE 2011

NORTH CAROLINA LICENSED SEAL 2124 GEOLOGIST JONATHAN DANIEL MOHS 7/19/11

DRAWN BY: T.T. WALKER, N.D. MOHS

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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.

PROJECT REFERENCE NO.	SHEET NO.
34745.1.1 (U-0071)	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

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

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

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6			
SYMBOL														
% PASSING #10 #40 #200	50 MX 30 MX 15 MX		50 MX 25 MX	51 MN 10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
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	<4	N/A
	LOOSE	4 TO 10	
	MEDIUM DENSE	10 TO 30	
	DENSE	30 TO 50	
	VERY DENSE	>50	
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT	<2	<0.25
	SOFT	2 TO 4	0.25 TO 0.50
	MEDIUM STIFF	4 TO 8	0.5 TO 1.0
	STIFF	8 TO 15	1 TO 2
	VERY STIFF	15 TO 30	2 TO 4
	HARD	>30	>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
	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
- MW - 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
- [ ] CME-45C
- [X] CME-550
- [ ] PORTABLE HOIST
- [X] CME-55
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [X] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [X] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE _____" 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
- [ ] VANE SHEAR TEST
- [ ] _____

ROCK DESCRIPTION

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

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

WEATHERING

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

ROCK HARDNESS

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

FRACTURE SPACING

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

BEDDING

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

INDURATION

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

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

TERMS AND DEFINITIONS

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

AQUIFER - A WATER BEARING FORMATION OR STRATA.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

BENCH MARK:

ELEVATION: FT.

NOTES:

REVISED 09/23/09

09/08/99

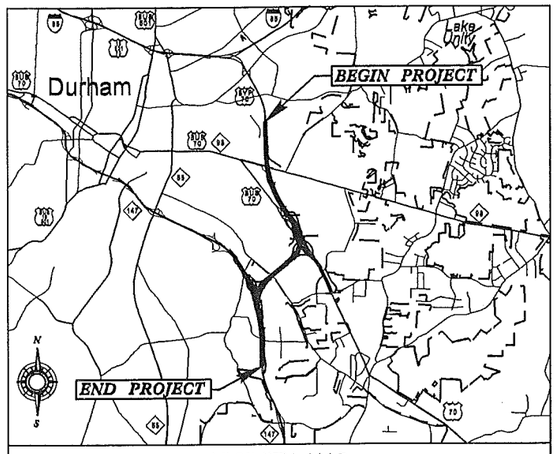
TIP PROJECT: U-0071

CONTRACT:

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-0071	2A	171

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34745.1.1	NHF-76-1(2)	PE

See Sheet 1-A For Index of Sheets



VICINITY MAP

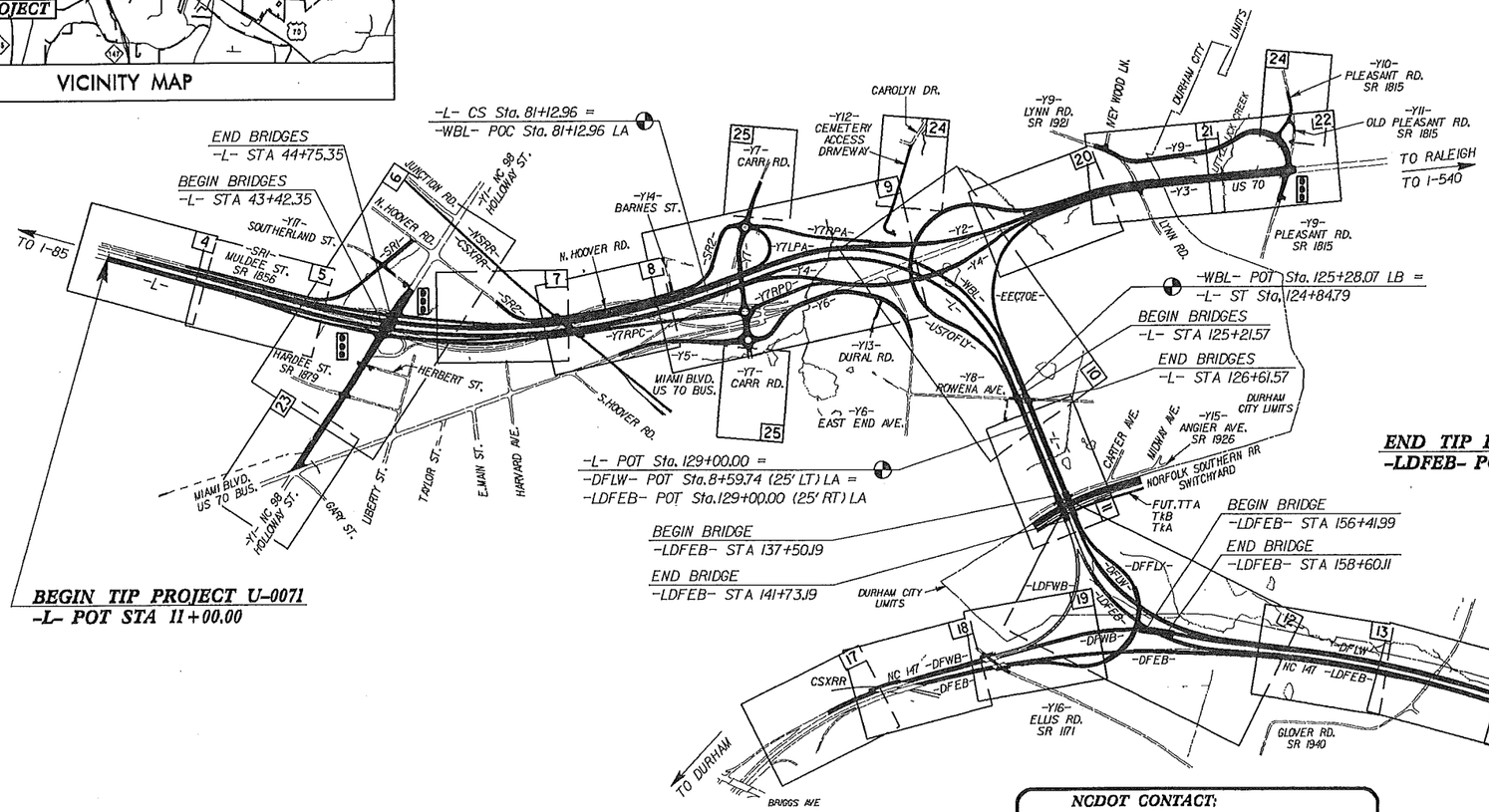
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DURHAM COUNTY

LOCATION: DURHAM EAST END CONNECTOR, FROM NC 147 (BUCK DEAN FREEWAY) TO NORTH OF NC 98

TYPE OF WORK: GRADING, DRAINAGE, PAVING, CURB & GUTTER, SIGNALS, STRUCTURES, CULVERTS, AND SIGNING

NAD 83/95



BEGIN TIP PROJECT U-0071
-L- POT STA 11+00.00

END TIP PROJECT U-0071
-LDFEB- POT STA 210+00.00

THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF DURHAM.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD ___.

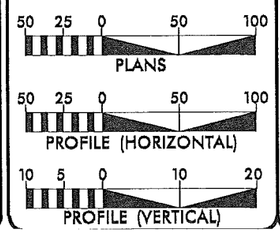
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NCDOT CONTACT:

RON E. McCOLLUM, PE
ENGINEERING COORDINATION
PROJECT ENGINEER
ROADWAY DESIGN UNIT

GRAPHIC SCALES



DESIGN DATA

ADT 2015	=	65,700
ADT 2035	=	116,100
DHV	=	10 %
D	=	55 %
T	=	14 % *
V	=	70 MPH
* TTST 8		DUAL 6
FUNCT. CLASS.	=	INTERSTATE

PROJECT LENGTH

LENGTH ROADWAY PROJECT U-0071	=	3.596 mi.
LENGTH STRUCTURE PROJECT U-0071	=	0.173 mi.
TOTAL LENGTH OF TIP PROJECT U-0071	=	3.769 mi.

LENGTH OF PROJECT BASED ON -L- AND -LDFEB-

Prepared For:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610
By:

M A Engineering Consultants, Inc.
598 East Chatham Street - Suite 137
Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 2011

LETTING DATE:
MAY 2013

BURKE EVANS, PE
PROJECT ENGINEER

KEVIN S. HUTCHENS
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

JUN-2011 12:16
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLEY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

July 26, 2011

STATE PROJECT: 34745.1.1 (U-0071)
FEDERAL PROJECT: NHF-76-1 (2)
COUNTY: Durham
DESCRIPTION: Durham East End Connector from NC 147 (Buck Dean Freeway) to North of NC 98

SUBJECT: Geotechnical Report – Inventory

Project Description

This project consists of the widening and realignment of Miami Blvd./US 70 Bypass (-L-, -Y2-, -Y3-), Durham Freeway/NC 147 (-LDFEB-, -DFWB-,-DFEB-), and a connector between Miami Blvd. and Durham Freeway in Durham. Existing roadways will be widened from four to six lanes in the vicinity of the connector. The project begins 0.6 miles north of the intersection of Miami Blvd and Holloway St./NC 98 (-Y1-) and extends 3.8 miles south past the Glover St. bridge over NC 147. Replacement bridges will be constructed at the Holloway St. crossing. A replacement structure will also be constructed on the shared Norfolk Southern and CSX Railroad bridge over Miami Blvd. New structures will be placed over Rowena Rd. (-Y8-), Angier Ave. (-Y15-), and the Norfolk Southern Railroad. New structures on Carr Rd. (-Y7-) and -Y4- will span the proposed -L- alignment. Two flyover structures are also planned. Other bridges on NC 147 will be widened to accommodate the new lanes. Some of the smaller intersecting streets will be re-aligned during the widening. Nine retaining walls are also planned along the project.

The geotechnical field investigation was conducted from June to November of 2010, and March of 2011. The subsurface investigation was conducted by the NCDOT's Geotechnical Engineering Unit. Two ATV-mounted CME-550 drill machines and a track mounted CME-55 were used during the field investigation. Standard Penetration Tests were performed in selected borings and additional borings were advanced using continuous flight augers and hand augers. Representative soil samples were collected for visual classification in the field and submitted for laboratory analysis by NCDOT's Materials and Tests Unit.

The following alignments, totaling 20.4 miles, were investigated. Subsurface soil profiles, or cross-sections, of these alignments are included in this report:

Line		Station	
-LEB-	11+00	to	129+00
-LWB-	14+25	to	129+00
-LDFEB-	129+00	to	210+00
-LDFWB-	10+00	to	29+57
-DFLW-	8+60	to	88+43
-DFEB-	25+04	to	75+61
-DFFLY-	10+00	to	41+86
-DFWB-	17+00	to	70+00
-RAMPA-	10+00	to	27+81
-RAMPB-	10+00	to	25+33
-RAMPC-	7+17	to	26+28
-RAMPD-	10+00	to	27+71
-SR1-	13+00	to	43+52
-SR2-	10+00	to	42+68
-US70FLY-	10+00	to	52+54
-EEC70E-	10+95	to	34+31
-Y1-	13+12	to	37+75
-Y2-	10+66	to	33+71
-Y3-	33+71	to	66+00
-Y4-	10+00	to	47+37
-Y5-	13+00	to	27+28
-Y6-	9+12	to	31+60
-Y7-	8+85	to	28+50
-Y7LPA-	10+00	to	17+35
-Y7RPA-	10+00	to	29+54
-Y7RPC-	0+00	to	36+93
-Y7RPD-	0+65	to	13+55
-Y8-	13+30	to	16+20
-Y9-	10+74	to	40+22
-Y10-	10+50	to	16+02
-Y11-	10+12	to	11+70
-Y12-	10+37	to	21+97
-Y13-	10+14	to	12+53
-Y14-	10+12	to	12+00
-Y15-	10+55	to	13+00
-Y16-	10+30	to	14+15
-Y17-	11+10	to	13+95
-Y18-	20+00	to	27+00
-ROUND1-	10+00	to	12+83
-ROUND2-	10+00	to	12+83
-ROUND3-	10+00	to	12+83

Areas of Special Geotechnical Interest

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

Alignment	Station	Offset
-L-	17+50	LT
-L-	36+00	RT
-L-	46+50	RT
-L-	68+50 to 72+00	RT
-L-	77+00 to 81+00	RT & LT
-L-	115+00	LT
-L-	119+00 to 122+00	CL
-L-	126+00	RT
-L-	137+74	RT
-LDFWB-	23+00	LT
-DFWB-	43+00	LT
-SR2-	35+00 to 36+00	RT & LT
-US70FLY-	25+50 to 27+46	RT
-US70FLY-	42+00	CL
-Y7RPA-	25+50 to 29+00	RT & LT
-Y3-	58+00 to 62+50	LT
-Y4-	40+00	LT
-Y7RPD-	4+12	LT
-Y6-	31+00	RT
-Y7-	16+38	LT
-Y9-	19+00	RT
-Y10-	13+00	LT
-Y12-	13+00 to 15+00	RT
-Y13-	11+50	CL
-L-	66+50	80' RT
-L-	68+50	30' RT
-L-	86+00	50' RT
-L-	88+00	CL
-L-	89+00	97' RT
-L-	95+00	100' LT
-L-	105+00	80' RT
-L-	133+00	CL
-L-	137+74	12' RT
-LDFEB-	148+00	20' LT
-LDFEB-	155+52	CL
-LDFEB-	160+50	38' LT
-LDFEB-	161+00	43' LT
-LDFEB-	162+00	49' LT
-LDFEB-	174+00	80' RT
-LDFEB-	175+50	80' RT
-LDFEB-	177+00	80' RT
-LDFEB-	180+00	80' RT
-LDFEB-	188+00	110' RT
-DFWB-	49+00	40' RT
-EEC70E-	23+00	CL
-EEC70E-	23+50	CL
-SR2-	33+35	21' RT
-SR2-	33+79	32' LT
-SR2-	33+85	68' RT
-SR2-	35+36	41' RT
-SR2-	36+29	31' RT
-US70FLY-	42+00	CL
-Y2-	20+00	60' RT
-Y3-	34+00	100' LT
-Y3-	34+50	CL
-Y3-	38+00	85' RT
-Y3-	38+50	85' RT
-Y3-	39+00	90' RT
-Y3-	39+50	85' RT
-Y7RPC-	17+68	30' RT
-Y7RPD-	1+90	87' LT
-Y7RPD-	9+07	CL

2) Non-Crystalline Rock: Non-Crystalline (Sedimentary Triassic Sandstone and Siltstone) rock was encountered in the following borings:

Alignment	Station	Offset
-L-	16+00	83' LT
-L-	18+50	80' LT
-L-	19+00	78' LT
-L-	19+50	81' LT
-L-	22+00	110' RT
-L-	42+50	76' LT
-L-	46+00	76' LT
-L-	47+00	76' LT
-L-	55+50	110' LT

3) Weathered Rock: Weathered (Sedimentary Triassic Sandstone and Siltstone) rock was encountered in the following areas:

Alignment	Station		
-L-	39+90	to	42+25
-L-	53+90	to	56+10
-L-	62+40	to	70+20
-L-	82+75	to	91+25
-L-	96+75	to	107+60
-RAMPA-	16+86	to	19+05
-RAMPC-	22+94	to	25+31
-LDFEB-	173+70	to	177+30
-LDFEB-	184+80	to	189+30
-DFEB-	68+33	to	71+92
-EEC70E-	18+80	to	26+80
-SR2-	17+90	to	22+10
-Y2-	16+70	to	17+00
-Y4-	10+00	to	16+55
-Y7RPA-	14+99	to	15+29
-Y7RPC-	14+97	to	22+87
-Y7RPC-	32+60	to	35+50

Physiography and Geology

The project is located in the gently rolling terrain of the Eastern Piedmont area of North Carolina. A mixture of businesses, single-family homes, and woods are located along the project corridor. Small creeks and ephemeral streams run across the project corridor, generally from right to left across the alignment.

Geologically the project lies within the Durham Triassic Basin which is part of a series of failed rifts stretching northward from South Carolina to New Jersey. These rift valleys formed during extensional, normal faulting in the Triassic Period some 200 million years ago. This rifting and separation of Africa from North America eventually formed the Atlantic Ocean.

The geology of the project area consists of Triassic age sedimentary rocks, primarily siltstone and sandstone, and the residual soils derived from them. The depositional nature of the Triassic sediments created alternating beds of siltstone and sandstone. Combined with the active tectonic environment at the time of deposition, the soils derived from these deposits are highly variable and often laterally discontinuous.

Soil Properties

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

Roadway embankment soil is common along US 70 and NC 147. The embankments are up to 24 feet in height. Where sampled, the embankment soil consists of dry to moist, stiff to very stiff, silty clay, sandy clay and sandy silt (AASHTO classifications of A-7-6, A-6, and A-4), with some loose to medium dense, dry to moist, silty sand (A-2-4).

Alluvial soil was encountered in one boring (-Y1- 33+87). These soils consist of moist to wet, very soft, sandy silt (A-4). Alluvial soils may be encountered elsewhere on the project where small streams cross the alignments (-L- 45+00 to 47+00, -L- 95+70, -LDFEB 133+50, -LDFEB- 147+70 to 150+50, -DFLW- 35+70, -SR1- 35+00 to 38+00, -Y2- 11+70, -Y4- 19+00, -Y7- 29+30, -Y7RPA- 20+50, -Y7RPD- 8+25, -Y9- 27+20, -EEC70E- 31+00, -US70FLY- 46+50). These soils can include wet, loose, silty sand and coarse sand (A-2-4 and A-1-b), moist to wet, soft, silty clay (A-7-5 and A-7-6).

The Triassic Residual soils are derived from the in-place weathering of the underlying sedimentary bedrock. These soils consist primarily of moist, medium stiff to hard, sandy clay (A-6), and silty clay (A-7-5 and A-7-6). Soils consisting of moist, medium stiff to very stiff, sandy silt (A-4), and moist to wet, loose to dense, silty sand and coarse sand (A-2-4 and A-1-b) occur within the project area as well. Areas containing highly plastic soils (plasticity indices of greater than 25) are listed above in the section "Areas of Special Geotechnical Interest".

Rock Properties

Weathered rock and non-crystalline rock occur in several areas of the project. The weathered rock is derived from the underlying sedimentary rock of the Durham Triassic Basin, and consists of sandstone and siltstone. Weathered and non-crystalline siltstone in this area is known to be highly degradable when exposed to air and water. Areas containing Weathered and Non-Crystalline Rock are listed above in the section "Areas of Special Geotechnical Interest".

Groundwater

Groundwater was encountered in several borings at varying depths across this project. The bore data show groundwater at or above the proposed grade in several cut areas, and may cause problems during construction.

Prepared by,

Nathan Mohs, LG
Project Engineering Geologist

Project: U-0071 34745.3.S2 County: Durham Date: JUNE 30, 2014 Computed by: RWP Sheet : 1 of 5

3C

EARTHWORK BALANCE SHEET

Volumes in Cubic Yards

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.

STATION to STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
	TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUITABLE UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +20%		ROCK	SUITABLE	UNSUITABLE	TOTAL
AREA 1 (EAST END CONNECTOR, BEGIN PROJECT TO BRIDGES OVER -Y8- (ROWENA RD.), INCLUDING US 70 CORRIDOR)														
PHASE 1														
-SR1- 12+55.00 TO 29+83.57 LT	2,185				2,185	1,226		1,226	1,471			714		714
-SR1- 29+83.57 TO 38+93.08	26,104				26,104	4,317		4,317	5,180			20,924		20,924
-SR1- 38+93.08 TO 43+50.00	1,429				1,429	1,611		1,611	1,933	504				
-Y17- 10+90.00 TO 12+25.65	23				23	108		108	130	107				
-Y17- 12+58.42 TO 14+20.00	9				9	197		197	236	227				
-L- (EB) 11+00.00 TO 28+00 RT (INCL. -RAMPC- 7+16.79 TO 10+95.29)	7,944				7,944	953		953	1,144			6,800		6,800
-RAMPC- 10+95.29 TO 26+28.00 (RT SIDE ONLY FROM 22+00 +/- TO 26+28.00)	6,600	916			5,684	34,494	916	33,578	41,210	34,610				
-L- (WB) 42+50.00 TO 43+84.00 (END RETAINING WALL FOR STRUCTURE)						6,283		6,283	7,540	7,540				
-L- (WB) 44+68 (BEG. RET. WALL FOR STUCTURE) TO 62+00.00.00 INCL. -RAMPA- 11+01.39 TO 27+80.69	37,089	683			36,406	37,962	683	37,279	45,418	8,329				
-Y1- 12+46.00 TO 16+00.00	831				831	42		42	50			781		781
-Y1- 16+00.00 TO 23+00.00 LT	237				237	229		229	275	38				
-Y1- 23+00.00 TO 27+50.00 LT	448				448	71		71	85			363		363
-DRIVE5- 10+35.43 TO 12+28.74	327				327	94		94	113			214		214
-Y1- 27+50.00 TO 31+50.00 LT	374				374	848		848	1,018	644				
-Y1- 16+00.00 TO 23+50.00 RT	469				469	243		243	292			177		177
-Y1- 23+50.00 TO 28+50.00 RT	1,821				1,821	61		61	73			1,748		1,748
-Y1- 33+00.00 TO 37+75.00 RT	151				151	246		246	295	144				
-SR2- 9+50.00 TO 16+08.98	11,378				11,378	14		14	17			11,361		11,361
-SR2- 31+36.09 TO 40+00.00	9,446		438	4,236	5,210	2,668		2,668	3,202			2,008	4,674	6,682
-SR2- 40+00..00 TO 42+68.24	163				163	884		884	1,061	898				
-NSRR- 16+50.00 TO 26+22.57 (BEGIN RAILROAD DETOUR BRIDGE)	550				550	626		626	751	201				
-NSRR- 30+62.58 (END RAILROAD DETOUR BRIDGE) TO 33+58.72 (BEGIN EXISTING RAILROAD BRIDGE)	316				316	26		26	31			285		285
-NSRR- 34+69.20 (END EXISTING RAILROAD BRIDGE) TO 40+50.00						36		36	43	43				
-DET1EB- 157+00.00 TO 176+86.61 -DET1WB- 166+00.00 TO 171+55.00	96,395			659	95,736	142		142	170			95,566	659	96,225
-DET1WB- 157+00.00 TO 166+00.00	2,130				2,130	83		83	100			2,030		2,030
-DET1WB- 171+55.00 TO 181+00.00	689				689	4,890		4,890	5,868	5,179				
-CARRDET- 10+29.06 TO 22+08.60	7,380				7,380	94		94	113			7,267		7,267
-CARRDET- 31+25.34 TO 33+34.36	347				347	42		42	50			297		297
-CARRDET- 33+34.36 TO 38+01.27	1,024				1,024	5		5	6			1,018		1,018
-Y14DET- 10+39.48 TO 11+59.81	859				859	4		4	5			854		854
-Y14DET- 11+79.81 TO 15+27.58	454				454	572		572	686	232				
-Y5- 23+00.00 TO 27+27.73	6,892		980	6,090	802	6,985		6,985	8,382	7,580			7,070	7,070
-Y6- 9+04.44 TO 13+35.00	3				3	17,996		17,996	21,595	21,592				
-Y7- 26+50.00 TO 29+00.00						12,889		12,889	15,467	15,467				
-Y6- 22+76.19 TO 28+50.00	4,252				4,252	2,517		2,517	3,020			1,232		1,232
-Y6- 28+50.00 TO 31+60.00 RT	202				202	337		337	404	202				
-Y13- 10+16.04 TO 12+53.00	1,349				1,349							1,349		1,349
-WBL- (WB) 85+00.00 TO 102+14.70 (INCL. -Y7LPA- GORE 10+00.00 TO 12+40.00) -L- (EB) 85+00.00 TO 102+00.00 (INCL. -Y4- GORE 10+42.60 TO 14+37.65 AND GRASS SWALE BETWEEN -L- FILL SLOPES AND SHEAR POINTS / TEMP. SLOPES)	199,570	90,377			109,193	71,163	51,163	20,000	75,163		39,214	85,193		124,407
-Y4- 14+37.65 TO 21+50.00 (INCL. UNCLASS. EXC. FOR GRASS SWALE BETWEEN SHEAR POINTS AND -Y4- FILL SLOPES)	14,440				14,440	21,031		21,031	25,237	10,797				
-Y7RPD- 6+07.00 TO 11+05.66	72				72	15,398		15,398	18,478	18,406				
-Y7LPA- 12+40.00 TO 17+34.64	61				61	11,570		11,570	13,884	13,823				
-Y2- 10+65.63 TO 30+00.00	26,895	15			26,880	23,153	15	23,138	27,781	886				
-Y7RPA- 10+00.00 TO 29+65.68	31,064	38			31,026	26,045	38	26,007	31,246	182				
-US70FLY- 33+01.00 (END BRIDGE) TO 45+00.00						104,722		104,722	125,666	125,666				
-Y12- 10+21.00 TO 22+49.00	1,644				1,644	407		407	488			1,156		1,156
-DET2- 10+79.00 TO 18+47.72	194				194	1,246		1,246	1,495	1,301				
-DET2- 18+47.72 TO 25+97.36	6,388				6,388	16,021		16,021	19,225	12,837				
-Y4- 29+00.00 TO 30+92.43 (BEG. BRIDGE)						4,898		4,898	5,878	5,878				
-Y4- 33+62.43 (END BRIDGE) TO 40+78.00	4,766				4,766	44,092		44,092	52,910	48,144				
-EEC70E- 32+95.57 TO 34+30.51	915				915	7		7	8			907		907
-Y3- 38+05.00 TO 64+50.00 RT	8,071				8,071	6,231		6,231	7,477			594		594
-Y3- 65+50.00 TO 71+00.00 RT	192				192							192		192
-Y9- 37+00.06 TO 40+33.00 RT	234				234	1		1	1			233		233
-Y9- 37+00.06 TO 40+33.00 LT	569				569	9		9	11			558		558

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STATION to STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
	TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUITABLE UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +20%		ROCK	SUITABLE	UNSUITABLE	TOTAL
-Y9- 10+73.77 TO 14+50.00 LT	299				299	35		35	42			257		257
-Y9- 14+50.00 TO 34+50.00	11,276				11,276	8,129		8,129	9,755			1,521		1,521
-Y9- 34+50.00 TO 36+07.98 RT	377				377	11		11	13			364		364
-Y9- 10+73.77 TO 14+50.00 RT	39				39	361		361	433	394				
-Y10- 10+34.00 TO 16+02.03 CL & LT	2,137				2,137	23		23	28			2,109		2,109
-Y10- 12+50.00 TO 16+02.03 RT	615				615	16		16	19			596		596
PHASE 1 SUBTOTAL	539,688	92,029	1,418	10,985	436,674	494,364	52,815	441,549	582,672	341,851	39,214	248,668	12,403	300,285
ROCK WASTE TO REPLACE BORROW							39,214	-39,214		-39,214	-39,214			-39,214
ADJUST FOR ROCK WASTE									-7,843	-7,843				
WASTE TO REPLACE BORROW										-248,668		-248,668		-248,668
PHASE 1 TOTAL	**539,688**	**92,029**	**1,418**	**10,985**	**436,674**	**494,364**	**92,029**	**402,335**	**574,829**	**46,126**	**0**	**0**	**12,403**	**12,403**
PHASE 2														
-L- (WB) 13+75.00 TO 29+00.00 LT (INCL. -SR1- 8+65.00 TO 23+88.17 RT)	3,597				3,597	701		701	841			2,756		2,756
-RAMPB- 10+00.00 TO 21+22.16 (INCL. -SR1- 23+88.17 TO 29+36.03 RT)	2,482				2,482	11,403		11,403	13,684	11,202				
-L- (WB) 62+00.00 TO 77+00.00	74,543	6,510		1,824	66,209						6,510	66,209	1,824	74,543
-L- (WB) 80+00.00 TO 85+00.00	51,226	6,628	359	3,093	41,505	359		359	431		6,628	41,074	3,452	51,154
-SR2- 16+08.98 TO 31+36.09	63,576	1,268		1,314	60,994						1,268	60,994	1,314	63,576
-Y7- 12+00.00 TO 19+17.61 (BEG. BRIDGE)	592				592	33,258		33,258	39,910	39,318				
-Y14- 10+12.02 TO 12+00.00	1,035				1,035	3		3	4			1,031		1,031
-RAMPADET- 98+38.72 TO 104+36.03 (INCL. -DET1WB- 164+45.23 TO 165+73.69 LT)	2,870				2,870	1,039		1,039	1,247			1,623		1,623
-NSRR- 16+50.00 TO 26+08.91 (BEGIN RAILROAD MAINLINE BRIDGES)	54				54	115		115	138	84				
-NSRR- 30+18.93 (END RAILROAD MAINLINE BRIDGES) TO 33+58.72 (BEGIN EXISTING RAILROAD BRIDGE)	1				1							1		1
-NSRR- 34+69.20 (END EXISTING RAILROAD BRIDGE) TO 40+50.00						18		18	22	22				
PHASE 2 SUBTOTAL	199,976	14,406	359	6,231	179,339	46,896		46,896	56,277	50,626	14,406	173,688	6,590	194,684
ROCK WASTE TO REPLACE BORROW							14,406	-14,406		-14,406	-14,406			-14,406
ADJUST FOR ROCK WASTE									-2,881	-2,881				
WASTE TO REPLACE BORROW										-33,339		-33,339		-33,339
PHASE 2 TOTAL	**199,976**	**14,406**	**359**	**6,231**	**179,339**	**46,896**	**14,406**	**32,490**	**53,396**	**0**	**0**	**140,349**	**6,590**	**146,939**
PHASE 3														
-L- (WB) 36+00.00 TO 42+50.00 LT						5,307		5,307	6,368	6,368				
-RAMPB- 21+22.16 TO 25+32.51 RT	3,296				3,296	80		80	96			3,200		3,200
-Y1- 33+00.00 TO 38+36.00 LT	1,289				1,289	69		69	83			1,206		1,206
-L- (WB) 77+00.00 TO 80+00.00	12,415				12,415							12,415		12,415
-SR2- 18+55.48 TO 31+36.09 LT CUT SLOPES (INCL. CARRDET REMOVAL 10+29.06 TO 22+08 +/-)	6,295				6,295	1,650		1,650	1,980			4,315		4,315
-Y14DET- 12+50 +/- TO 14+69 +/- (-Y14DET- DETOUR REMOVAL)	681				681	74		74	89			592		592
-DET2- 25+97.36 TO 33+51.05	6,727				6,727	1,388		1,388	1,666			5,061		5,061
-Y3- 38+05.00 TO 64+70.00 LT	1,940				1,940	4,119		4,119	4,943	3,003				
-Y3- 65+40.00 TO 70+50.00 LT	427				427	53		53	64			363		363
-Y9- 34+50.00 TO 36+07.98 LT	1				1	46		46	55	54				
-Y11- 10+12.00 TO 11+70.00	222				222	14		14	17			205		205
RAILROAD DETOUR REMOVAL:														
-NSRR- 15+00.00 TO 26+22.57 (BEGIN RAILROAD DETOUR BRIDGE)	515				515							515		515
-NSRR- 30+62.58 (END RAILROAD DETOUR BRIDGE) TO 33+58.72 (BEGIN EXISTING RAILROAD BRIDGE)	179				179							179		179
PHASE 3 SUBTOTAL	33,987				33,987	12,800		12,800	15,361	9,425		28,051		28,051
WASTE TO REPLACE BORROW										-9,425		-9,425		-9,425
PHASE 3 TOTAL	**33,987**				**33,987**	**12,800**		**12,800**	**15,361**	**0**		**18,626**		**18,626**
PHASE 4														
-CROSS1- 13+00.00 TO 29+50.00	326				326	252		252	302			24		24
-L- (WB) 14+50.00 TO 43+50.00 (CL & RT)	750				750	6,778		6,778	8,134	7,384				
-RAMPB- 21+22.16 TO 25+32.51 LT	4,305				4,305							4,305		4,305
-L- (EB) 47+50.00 TO 65+00.00 (INCL. -RAMPD- 10+00.00 TO 22+65 +/-) (INCL. -DET1WB- REMOVAL)	8,100	1,805			6,295	41,500	1,805	39,695	49,439	41,339				
-L- (EB) 65+00.00 TO 85+00.00	85,077	9,873		4,641	70,563	31		31	37		9,873	70,526	4,641	85,040
-Y7- 9+00.00 TO 12+00.00	1,217				1,217	7		7	8			1,209		1,209
-SR2- 40+36.00 TO 41+91.00 LT (INCL. -CARRDET- REMOVAL 32+15 +/- TO 38+01 +/-)	319				319	686		686	823	504				
-RAMPDDET- 268+90.00 TO 271+35.73						246		246	295	295				
-RAMPADET- 98+38.72 TO 104+36.03 (DETOUR REMOVAL)	1,039				1,039							1,039		1,039
-RAMPADET- 98+38.72 TO 104+36.03 (REDUCTION OF UNCLASS. EXC. DUE TO DETOUR CONST.)	-2,870				-2,870							-2,870		-2,870
PHASE 4 SUBTOTAL	98,263	11,678		4,641	81,944	49,500	1,805	47,695	59,038	49,522	9,873	74,233	4,641	88,747
ROCK WASTE TO REPLACE BORROW							9,873	-9,873		-9,873	-9,873			-9,873
ADJUST FOR ROCK WASTE									-1,975	-1,975				
WASTE TO REPLACE BORROW										-37,674		-37,674		-37,674
PHASE 4 TOTAL	**98,263**	**11,678**		**4,641**	**81,944**	**49,500**	**11,678**	**37,822**	**57,063**	**0**	**0**	**36,559**	**4,641**	**41,200**

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STATION to STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
	TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUITABLE UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +20%		ROCK	SUITABLE	UNSUITABLE	TOTAL
PHASE 5														
-Y5- 12+00.00 TO 21+00.00 RT -Y5- 21+00.00 TO 23+00.00 LT & RT	3,196				3,196	2,266		2,266	2,719			477		477
-Y5- 12+00.00 TO 21+00.00 LT	1,490				1,490	19		19	23			1,467		1,467
-Y5- 22+04 LT DRY DETENTION BASIN (PLANSHEET 9 - SEE SHEET 2-BB FOR DETAIL)	7,680				7,680	173		173	208			7,472		7,472
-Y6- 13+35.00 TO 22+76.19	506				506	6,374		6,374	7,649	7,143				
-Y6- 28+50.00 TO 31+60.00 LT	128				128	208		208	250	122				
-L- (EB) 28+00.00 TO 43+50.00 (END RETAINING WALL FOR STRUCTURE) (INCL. -RAMPC- 22+00 +/- TO 26+28.00 LT)	4,687	724			3,963	17,678	724	16,954	21,069	16,382				
-Y1- 31+50.00 TO 33+00.00 LT	1,715				1,715	49		49	59			1,656		1,656
-L- (EB) 44+33.00 (BEGIN RETAINING WALL FOR STRUCTURE) TO 47+50.00 (INCL. -RAMPD- 24+17 +/- TO 27+70.72)	15,997		252	402	15,595	11,693		11,693	14,032			1,563	654	2,217
-Y1- 28+50.00 TO 33+00.00 RT	377				377	237		237	284			93		93
-Y7RPC- 0+00.00 TO 21+65.87 (INCL. -RAMPD- 22+65 +/- TO 24+17 +/-) (INCL. -DET1EB- & -DET1WB- REMOVAL)	12,269	6,429			5,840	16,427		16,427	19,712	13,872	6,429			6,429
-L- 56+00 RT (-Y7RPC- 8+40 RT) DRY DETENTION BASIN (PLANSHEET 7 - SEE SHEET 2-AZ FOR DETAIL)	20,450				20,450	2,977		2,977	3,572			16,878		16,878
-WBL- (WB) 102+14.70 TO 106+23.13 -L- (EB) 102+00.00 TO 106+00.00	75,188	13,137			62,051						13,137	62,051		75,188
-L- (EB) 100+50.00 TO 102+50.00 RT (INCL. ADDITIONAL GRASS SWALE UNCLASS. EXC. NOT POSSIBLE DURING PHASE 1, ADJACENT TO -Y4- 25+20 +/- TO 27+15 +/-)	6,502				6,502							6,502		6,502
-Y4- 21+50.00 TO 29+00.00 (INCL. UNCLASS. EXC. FOR GRASS SWALE AND/OR -L- EB RT SLOPES BETWEEN SHEAR POINT AND -Y4- FILL OR RET. WALL FROM -Y4- 21+50.00 TO 31+00.00	35,735	5,961			29,774	27,659		27,659	33,191	3,417	5,961			5,961
-Y7RPC- 21+65.87 TO 36+92.95	54,063	7,402			46,661	443		443	532		7,402	46,129		53,531
-Y7- 21+87.61 (END BRIDGE) TO 26+50.00	1,534				1,534	4,696		4,696	5,635	4,101				
-Y7RPD- 0+65.00 TO 6+07.00	14,554				14,554	4,262		4,262	5,114			9,440		9,440
-Y7RPD- 11+05.66 TO 13+54.66						3,997		3,997	4,796	4,796				
-Y3- 33+71.33 TO 38+05.00 LT	32				32	1,337		1,337	1,604	1,572				
-Y4- 40+78.00 TO 47+37.00	2,548				2,548	4,956		4,956	5,947	3,399				
-EEC70E- 30+12.00 TO 32+95.57	10				10	6,671		6,671	8,005	7,995				
-Y2- 25+00.00 TO 33+71.33 (REMAINDER OUTSIDE OF -DET2- LIMITS)	5,394				5,394	3,094		3,094	3,713			1,681		1,681
PHASE 5 SUBTOTAL	264,055	33,653	252	402	230,000	115,216	724	114,492	138,114	62,799	32,929	155,409	654	188,992
ROCK WASTE TO REPLACE BORROW							32,929	-32,929		-32,929	-32,929			-32,929
ADJUST FOR ROCK WASTE									-6,586	-6,586				
WASTE TO REPLACE BORROW										-23,284		-23,284		-23,284
PHASE 5 TOTAL	**264,055**	**33,653**	**252**	**402**	**230,000**	**115,216**	**33,653**	**81,563**	**131,528**	**0**	**0**	**132,125**	**654**	**132,779**
PHASE 6														
-CROSS1- 13+00.00 TO 29+50.00 (DETOUR REMOVAL)	252				252							252		252
-RAMPDDET- 268+90.00 TO 271+35.73 (DETOUR REMOVAL)	258				258							258		258
-L- 13+00.00 TO 29+50.00 (-L- EB & WB MEDIAN)	1,551				1,551	12		12	14			1,537		1,537
-Y2- 22+30.00 TO 33+71.33 LT (INCL. USE OF OR REMOVAL OF -DET2- EARTHWORK)	3,309				3,309	780		780	936			2,373		2,373
-Y3- 33+71.33 TO 35+50.00 LT (INCL. USE OF OR REMOVAL OF -DET2- EARTHWORK)	21				21	64		64	77	56				
-US70FLY- 45+00.00 TO 52+53.77 (INCL. USE OF OR REMOVAL OF -DET2- EARTHWORK)	6,132				6,132	6,960		6,960	8,352	2,220				
-Y3- 40+50.00 TO 45+00.00 LT (INCL. USE OF OR REMOVAL OF -DET2- EARTHWORK)	517				517							517		517
PHASE 6 SUBTOTAL	12,040				12,040	7,816		7,816	9,379	2,276		4,937		4,937
WASTE TO REPLACE BORROW										-2,276		-2,276		-2,276
PHASE 6 TOTAL	**12,040**				**12,040**	**7,816**		**7,816**	**9,379**	**0**		**2,661**		**2,661**
PHASES 1 THRU 6 (CONSTRUCTION IN THESE LOCATIONS CAN OCCUR DURING PHASES 1 THRU 6)														
-WBL- (WB) 106+23.13 TO -L- (WB) 125+39.54 (BEG. BRIDGE) -L- (EB) 106+00.00 TO 125+17.10 (BEG. BRIDGE)	62,371	1,391		8,430	52,550	71,594		71,594	85,913	33,363	1,391		8,430	9,821
-US70FLY- 10+00.00 TO 27+54.00 (BEG. BRIDGE)	5,672				5,672	116,512		116,512	139,814	134,142				
-EEC70E- 10+95.17 TO 30+12.00	95,501	15,780			79,721	29,924		29,924	35,909		15,780	43,812		59,592
-L- 121+98 LT DRY DETENTION BASIN (PLANSHEET 10 - SEE SHEET 2-BD FOR DETAIL)	5,965				5,965	188		188	225			5,740		5,740
-L- 128+40 LT DRY DETENTION BASIN (PLANSHEET 11 - SEE SHEET 2-BF FOR DETAIL)	4,085				4,085	758		758	910			3,175		3,175
PHASES 1 THRU 6 SUBTOTAL	173,594	17,171		8,430	147,993	218,976		218,976	262,771	167,505	17,171	52,727	8,430	78,328
ROCK WASTE TO REPLACE BORROW							17,171	-17,171		-17,171	-17,171			-17,171
ADJUST FOR ROCK WASTE									-3,434	-3,434				
WASTE TO REPLACE BORROW										-52,727		-52,727		-52,727
PHASES 1 THRU 6 TOTAL	**173,594**	**17,171**		**8,430**	**147,993**	**218,976**	**17,171**	**201,805**	**259,337**	**94,173**	**0**	**0**	**8,430**	**8,430**
AREA 1 SUBTOTAL (PHASE 1 + PHASE 2 + PHASE 3 + PHASE 4 + PHASE 5 + PHASE 6 + PHASES 1 THRU 6)	**1,321,603**	**168,937**	**2,029**	**30,689**	**1,121,977**	**945,568**	**168,937**	**776,631**	**1,100,893**	**140,299**		**330,320**	**32,718**	**363,038**
WASTE TO REPLACE BORROW										-140,299		-140,299		-140,299
AREA 1 TOTAL	**1,321,603**	**168,937**	**2,029**	**30,689**	**1,121,977**	**945,568**	**168,937**	**776,631**	**1,100,893**	**0**		**190,021**	**32,718**	**222,739**

Project: U-0071 34745.3.S2 County: Durham Date: JUNE 30, 2014 Computed by: RWP Sheet : 4 of 5

3F

STATION to STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
	TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUITABLE UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +20%		ROCK	SUITABLE	UNSUITABLE	TOTAL
AREA 2 (EAST END CONNECTOR, FROM BRIDGES OVER -Y8- (ROWENA RD.) TO BRIDGES OVER -Y15- (ANGIER AVE.) AND NORFOLK SOUTHERN RAILROAD SWITCHYARD)														
CONSTRUCTION IN THIS AREA CAN OCCUR DURING PHASES 1 THRU 6														
-L- (WB) 126+76.54 (END BRIDGE) TO -DFLW- 17+22.55 (BEG. BRIDGE)						575,443		575,443	690,532	690,532				
-L- (EB) 126+54.10 (END BRIDGE) TO -LDFEB- 137+67.19 (BEG. BRIDGE)														
AREA 2 SUBTOTAL						**575,443**		**575,443**	**690,532**	**690,532**				
AREA 2 TOTAL						**575,443**		**575,443**	**690,532**	**690,532**				
AREA 3 (EAST END CONNECTOR, FROM BRIDGES OVER -Y15- (ANGIER AVE.) AND NORFOLK SOUTHERN RAILROAD SWITCHYARD TO END PROJECT, INCLUDING NC 147 CORRIDOR)														
NOTE: AREA 3 PHASING IS INDEPENDENT OF AREAS 1 AND 2														
PHASE 1														
-DETOUR3- 24+55.34 TO 33+19.36 (BEG. TEMP. BRIDGE)	369				369	530		530	636	267				
-DETOUR3- 35+18.77 (END TEMP. BRIDGE) TO 50+64.82	1,868				1,868	3,007		3,007	3,608	1,740				
-DETOUR3- 50+64.82 TO 82+42.39	626				626	9,265		9,265	11,118	10,492				
-DETOUR3- 82+42.39 TO 114+43.22	1,158				1,158	4,018		4,018	4,822	3,664				
PHASE 1 SUBTOTAL	4,021				4,021	16,820		16,820	20,184	16,163				
PHASE 1 TOTAL	**4,021**				**4,021**	**16,820**		**16,820**	**20,184**	**16,163**		**0**		**0**
PHASE 2														
-DFEB- 25+05.05 (END EXISTING BRIDGE) TO 33+75.57 (BEG. BRIDGE WIDENING)	2,614				2,614	193		193	232			2,382		2,382
-DFEB- 35+49.45 (END BRIDGE WIDENING) TO 61+65.61 (INCL. -DFFLY- 36+92.43 TO 41+89.35)	7,705				7,705	65,636		65,636	78,763	71,058				
-DFFLY- 30+16.00 TO 36+92.43	8,894				8,894	15,571		15,571	18,685	9,791				
-LDFEB- 167+00.00 TO 190+00.00 RT (INCL. -DFEB- 61+65.61 TO 75+61.18)	21,828	925			20,903	8,464	925	7,539	9,972			11,856		11,856
-LDFEB- 190+00.00 TO 210+00.00 RT	8,775				8,775	1,294		1,294	1,553			7,222		7,222
PHASE 2 SUBTOTAL	49,816	925			48,891	91,158	925	90,233	109,205	80,849		21,460		21,460
WASTE TO REPLACE BORROW										-21,460		-21,460		-21,460
PHASE 2 TOTAL	**49,816**	**925**			**48,891**	**91,158**	**925**	**90,233**	**109,205**	**59,389**		**0**		**0**
PHASE 3														
-DETOUR3WB1- 25+34.47 TO 33+16.79	439				439	46		46	55			384		384
-DETOUR3WB2- 104+53.63 TO 114+73.23	161				161	600		600	720	559				
-DFWB- 17+00.00 TO 22+28.13 LT (BEG. BRIDGE WIDENING)	332				332	729		729	875	543				
-DFWB- 17+00.00 TO 22+28.13 RT (BEG. BRIDGE WIDENING)	603				603							603		603
-DFWB- 25+66.37 (END BRIDGE WIDENING) TO 35+93.53 (BEG. BRIDGE WIDENING) (INCL. -LDFWB- 26+53.24 TO 29+56.52)	2,319				2,319	8,539		8,539	10,247	7,928				
-DFWB- 37+45.85 (END BRIDGE WIDENING) TO 58+03.23	29,655				29,655	264		264	317			29,338		29,338
-DFLW- 38+16.10 TO 67+92.98 LT (INCL. -DFWB- 58+03.23 TO 70+00.00)	18,235				18,235	3,213		3,213	3,856			14,379		14,379
-DFLW- 67+92.98 TO 88+42.53 LT	6,154				6,154	2,077		2,077	2,492			3,662		3,662
PHASE 3 SUBTOTAL	57,898				57,898	15,468		15,468	18,562	9,030		48,366		48,366
WASTE TO REPLACE BORROW										-9,030		-9,030		-9,030
PHASE 3 TOTAL	**57,898**				**57,898**	**15,468**		**15,468**	**18,562**	**0**		**39,336**		**39,336**
PHASE 4														
-DFWB- 27+16.00 TO 36+50.00 (-DFWB-/-DFEB- MEDIAN BETWEEN BRIDGES OVER CSX RR AND ELLIS RD., INCL. -DETOUR3WB1- REMOVAL)	1,847				1,847	8		8	10			1,837		1,837
-DFEB- 35+10.52 TO 53+00.00 (-DFWB-/-DFEB- MEDIAN AND -DFEB- LT BETWEEN ELLIS RD. BRIDGES AND -LDFEB- CONST. STARTING AT 157+50.00, INCL. -DETOUR3- REMOVAL.)	18,909				18,909	2,695		2,695	3,234			15,675		15,675
-LDFEB- 157+50.00 TO 187+00 MED (-LDFEB- MEDIAN CONSTRUCTION, INCL. -DFEB- GORE, -DFWB- LT, -LDFEB-/-DFLW- MEDIAN, AND -DETOUR3- REMOVAL.)	8,979				8,979	43,479		43,479	52,175	43,196				
-LDFEB- 187+00.00 TO 210+00.00 MED (-LDFEB-/-DFLW- MEDIAN, INCL. -DETOUR3- REMOVAL)	7,931				7,931	68		68	82			7,849		7,849
-LDFEB- 210+00.00 TO 219+80.00 MED (-LDFEB-/-DFLW- MEDIAN, INCL. -DETOUR3WB2- REMOVAL)	3,322				3,322	48		48	58			3,264		3,264
PHASE 4 SUBTOTAL	40,988				40,988	46,298		46,298	55,559	43,196		28,625		28,625
WASTE TO REPLACE BORROW										-28,625		-28,625		-28,625
PHASE 4 TOTAL	**40,988**				**40,988**	**46,298**		**46,298**	**55,559**	**14,571**		**0**		**0**

Project: U-0071 34745.3.S2 County: Durham Date: JUNE 30, 2014 Computed by: RWP Sheet : 5 of 5

3G

STATION to STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
	TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUITABLE UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +20%		ROCK	SUITABLE	UNSUITABLE	TOTAL
PHASES 1 THRU 4 (CONSTRUCTION IN THESE LOCATIONS CAN OCCUR DURING PHASES 1 THRU 4)														
-LDFEB- (EB) 141+61.19 (END BRIDGE) TO 156+53.82 (BEGIN BRIDGE) (INCL. -LDFWB- 11+23.04 TO 14+58.00)	23				23	169,261		169,261	203,113	203,090				
-LDFWB- 14+58.00 TO 26+53.24	13,163		118	6,935	6,228	32,906		32,906	39,487	33,259			7,053	7,053
-DFLW- (WB) 21+16.55 (END BRIDGE) TO 38+16.10 (INCL. -DFFLY- 11+12.36 TO 14+52.18)	8,183				8,183	74,699		74,699	89,639	81,456				
-DFFLY- 14+52.18 TO 21+00.00 (BEG. BRIDGE)						30,529		30,529	36,635	36,635				
PHASES 1 THRU 4 SUBTOTAL	21,369		118	6,935	14,434	307,395		307,395	368,874	354,440			7,053	7,053
WASTE TO REPLACE BORROW														
PHASES 1 THRU 4 TOTAL	**21,369**		**118**	**6,935**	**14,434**	**307,395**		**307,395**	**368,874**	**354,440**		**0**	**7,053**	**7,053**
AREA 3 SUBTOTAL (PHASE 1 + PHASE 2 + PHASE 3 + PHASE 4 + PHASE 1 THRU 4)	**174,092**	**925**	**118**	**6,935**	**166,232**	**477,139**	**925**	**476,214**	**572,384**	**444,563**		**39,336**	**7,053**	**46,389**
WASTE TO REPLACE BORROW										-39,336		-39,336		-39,336
AREA 3 TOTAL	**174,092**	**925**	**118**	**6,935**	**166,232**	**477,139**	**925**	**476,214**	**572,384**	**405,227**		**0**	**7,053**	**7,053**
PROJECT SUBTOTAL (AREA 1 + AREA 2 + AREA 3)	**1,495,695**	**169,862**	**2,147**	**37,624**	**1,288,209**	**1,998,150**	**169,862**	**1,828,288**	**2,363,809**	**1,095,759**		**190,021**	**39,771**	**229,792**
ESTIMATED LOSS DUE TO CLEARING & GRUBBING	-22,350				-22,350					22,350				
UNDERCUT (CONTINGENCY UNDERCUT FOR EMBANKMENT STABILITY, GRADE POINT UNDERCUT, AND DISCRETIONARY USE BY THE ENGINEER.)			5,020			5,020		5,020	6,024	6,024			5,020	5,020
ESTIMATED SHOULDER MATERIAL						73,370		73,370	88,044	88,044				
PROJECT TOTAL (AREA 1 + AREA 2 + AREA 3)	**1,473,345**	**169,862**	**7,167**	**37,624**	**1,265,859**	**2,076,540**	**169,862**	**1,906,678**	**2,457,877**	**1,212,177**		**190,021**	**44,791**	**234,812**
ESTIMATED 5% FOR REPLACING TOPSOIL ON BORROW PIT										60,609				
GRAND TOTAL (CUBIC YARDS)	**1,473,345**	**169,862**	**7,167**	**37,624**	**1,265,859**	**2,076,540**	**169,862**	**1,906,678**	**2,457,877**	**1,272,786**		**190,021**	**44,791**	**234,812**
SAY (CUBIC YARDS)	**1,473,400**		**7,200**							**1,272,800**				

ESTIMATED DRAINAGE DITCH EXCAVATION = 61,100 CY

ESTIMATED PAVEMENT STRUCTURE VOLUME = 157,225 CY

ESTIMATED EMBANKMENT CONSTRUCTION - CLAY CORE = 2,100 CY (USE TO CONSTRUCT DRY-DETENTION BASIN EMBANKMENTS - SEE DETAIL SHEETS 2-AZ & 2-CA AND "BMP BASIN EMBANKMENT CONSTRUCTION" SPECIAL PROVISION)

THE FOLLOWING QUANTITIES ARE PER THE "GEOTECHNICAL REPORT - DESIGN AND CONSTRUCTION RECOMMENDATIONS" LETTER DATED JULY 26, 2011 OR THE "GEOTECHNICAL RECOMMENDATIONS FOR PAVEMENT DESIGN" LETTER DATED AUGUST 16, 2010)

ESTIMATED SHALLOW UNDERCUT= 4,500 CY (CONTINGENCY, AS DIRECTED BY THE ENGINEER.)

ESTIMATED CLASS IV SUBGRADE STABILIZATION = 9,000 TONS (CONTINGENCY, FOR SHALLOW UNDERCUT AREAS, AS DIRECTED BY THE ENGINEER.)

ESTIMATED SELECT GRANULAR MATERIAL = 6,000 CY (CONTINGENCY, TO BE USED IN THE UNDERCUT FOR EMBANKMENT STABILITY OR UNDERCUT FOR SUBGRADE STABILITY LOCATIONS, AS DIRECTED BY THE ENGINEER.)

EARTHWORK TOTALS FOR ALTERNATE PAVEMENT DESIGN (16" DEPTH, ALL ASPHALT PAVEMENT)

PROJECT SUBTOTAL (AREA 1 + AREA 2 + AREA 3)	**1,495,695**	**169,862**	**2,147**	**37,624**	**1,288,209**	**1,998,150**	**169,862**	**1,828,288**	**2,363,809**	**1,095,759**		**190,021**	**39,771**	**229,792**
ADJUSTMENT FOR ALTERNATE PAVEMENT DESIGN	**-15,988**				**-15,988**	**20,348**		**20,348**	**24,418**	**24,418**		**-15,988**		**-15,988**
ESTIMATED LOSS DUE TO CLEARING & GRUBBING	-22,350				-22,350					22,350				
UNDERCUT (CONTINGENCY UNDERCUT FOR EMBANKMENT STABILITY, GRADE POINT UNDERCUT, AND DISCRETIONARY USE BY THE ENGINEER.)			5,020			5,020		5,020	6,024	6,024			5,020	5,020
ESTIMATED SHOULDER MATERIAL						65,460		65,460	78,552	78,552				
PROJECT TOTAL (AREA 1 + AREA 2 + AREA 3)	**1,457,357**	**169,862**	**7,167**	**37,624**	**1,249,871**	**2,088,978**	**169,862**	**1,919,116**	**2,472,803**	**1,227,103**		**174,033**	**44,791**	**218,824**
ESTIMATED 5% FOR REPLACING TOPSOIL ON BORROW PIT										61,355				
GRAND TOTAL (CUBIC YARDS)	**1,457,357**	**169,862**	**7,167**	**37,624**	**1,249,871**	**2,088,978**	**169,862**	**1,919,116**	**2,472,803**	**1,288,458**		**174,033**	**44,791**	**218,824**
SAY (CUBIC YARDS)	**1,457,400**		**7,200**							**1,288,500**				

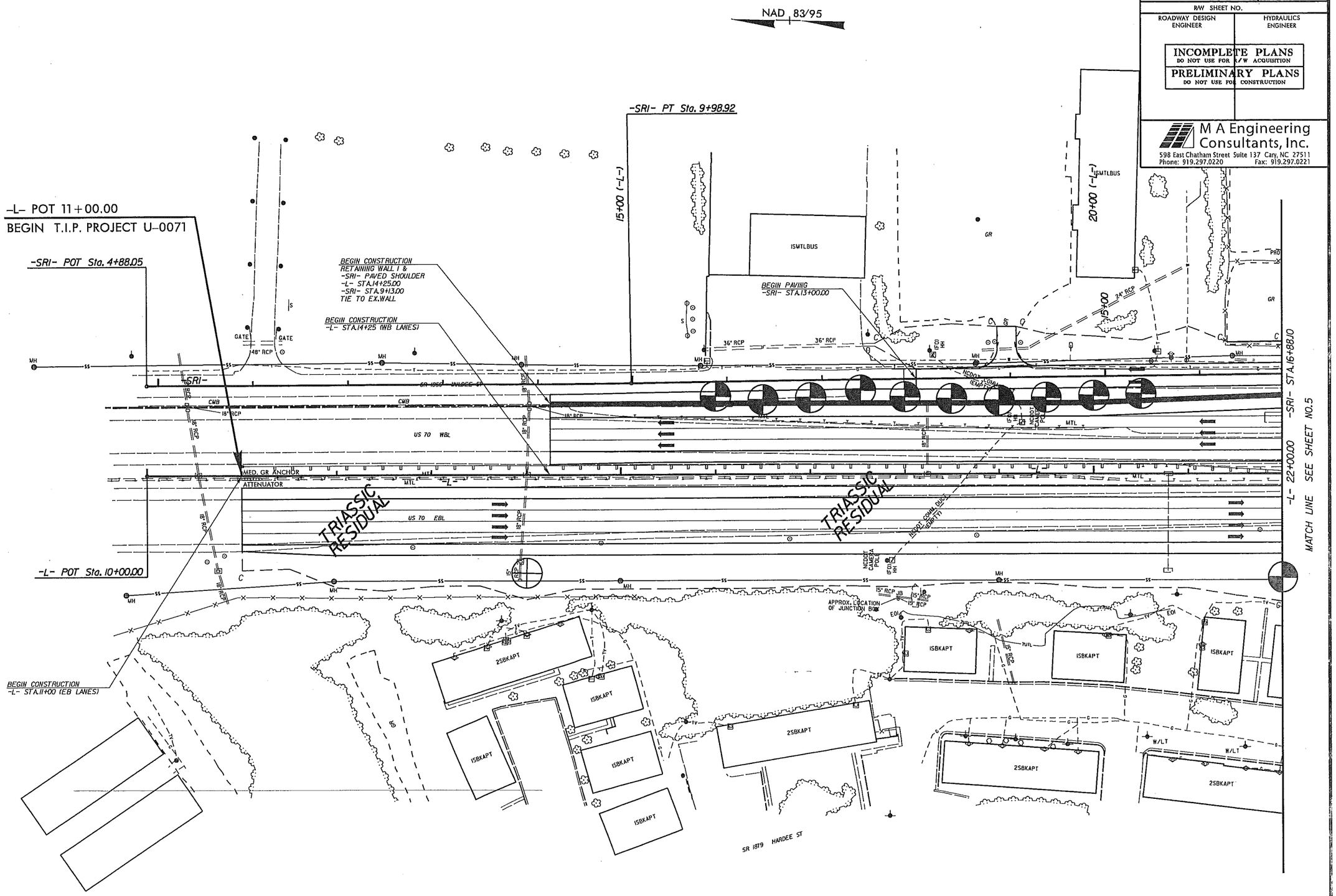
ESTIMATED PAVEMENT STRUCTURE VOLUME = 141,237 CY

PROJECT REFERENCE NO.	SHEET NO.
U-0071	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

M A Engineering Consultants, Inc.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221



REVISIONS

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PROJECT REFERENCE NO. U-0071
SHEET NO. 5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
M A Engineering Consultants, Inc.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221
NAD 83/95
-RAMPB- ST Sta. 10+00.00 =
-L- POT Sta. 28+72.14 (61.00' LT)
-RAMPC- ST Sta. 7+16.79 =
-L- POT Sta. 24+21.58 (61.00' RT)
MATCH LINE SEE SHEET NO.4
-L- 22+00.00
-SRI- STA.16+88.10
MATCH LINE SEE SHEET NO.6
-L- 36+00.00
-RAMPB- 17+26.57
-SRI- 30+88.53
-RAMPC- 19+07.98
-L- SC Sta. 35+25.00
-RAMPC- TS Sta. 15+00.00
BEGIN SBG -RAMPC- STA. 11+95
END SBG -RAMPC- STA. 15+80
GRAU 350
ATTENUATOR
US 70 WBL
US 70 EBL
TRIASSIC RESIDUAL
TRIASSIC RESIDUAL
NCDOT VARIABLE MESSAGE SIGN
MED GR ANCHOR MED GR ANCHOR
25+00 (-L-)
30+00 (-L-)
35+00 (-L-)
20+00
25+00
30+00
15+00
15+00
ISMTLBUS
IS STUCCO BUS
2SBKBUS
SBKAPT
CONC WALL
GR
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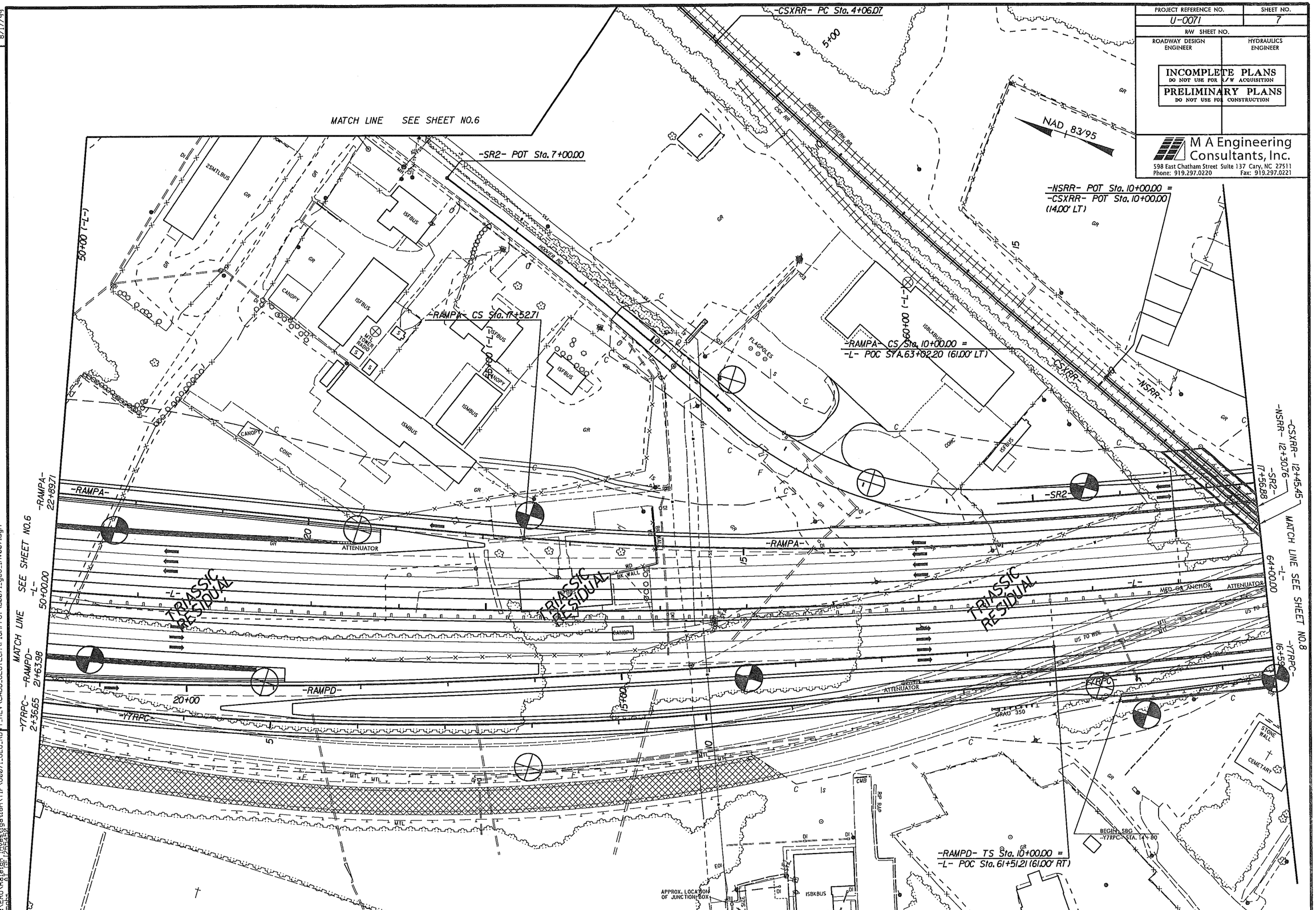
PROJECT REFERENCE NO. U-0071
SHEET NO. 6
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
PRELIMINARY PLANS
M A Engineering Consultants, Inc.
NAD 83/95
REVISIONS
MATCH LINE SEE SHEET NO.5
MATCH LINE SEE SHEET NO.7
MATCH LINE SEE SHEET NO.23
-RAMPB- CS Sta. 18+85.43
-RAMPB- ST Sta. 20+85.43
-RAMPC- CS Sta. 21+98.11
-SR1- POT Sta. 43+52.18
-Y1- POT Sta. 43+00.00
-CSXRR- POT Sta. 0+00.00
-Y7RPC- PC Sta. 1+50.00
TRIASSIC RESIDUAL
ARTIFICIAL FILL
ROADWAY EMBANKMENT
A
B
C
D
GRAPHIC SCALE
50 25 0 50 100
PLANS

PROJECT REFERENCE NO.	SHEET NO.
U-0071	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

M A Engineering Consultants, Inc.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221



REVISIONS

8/17/99

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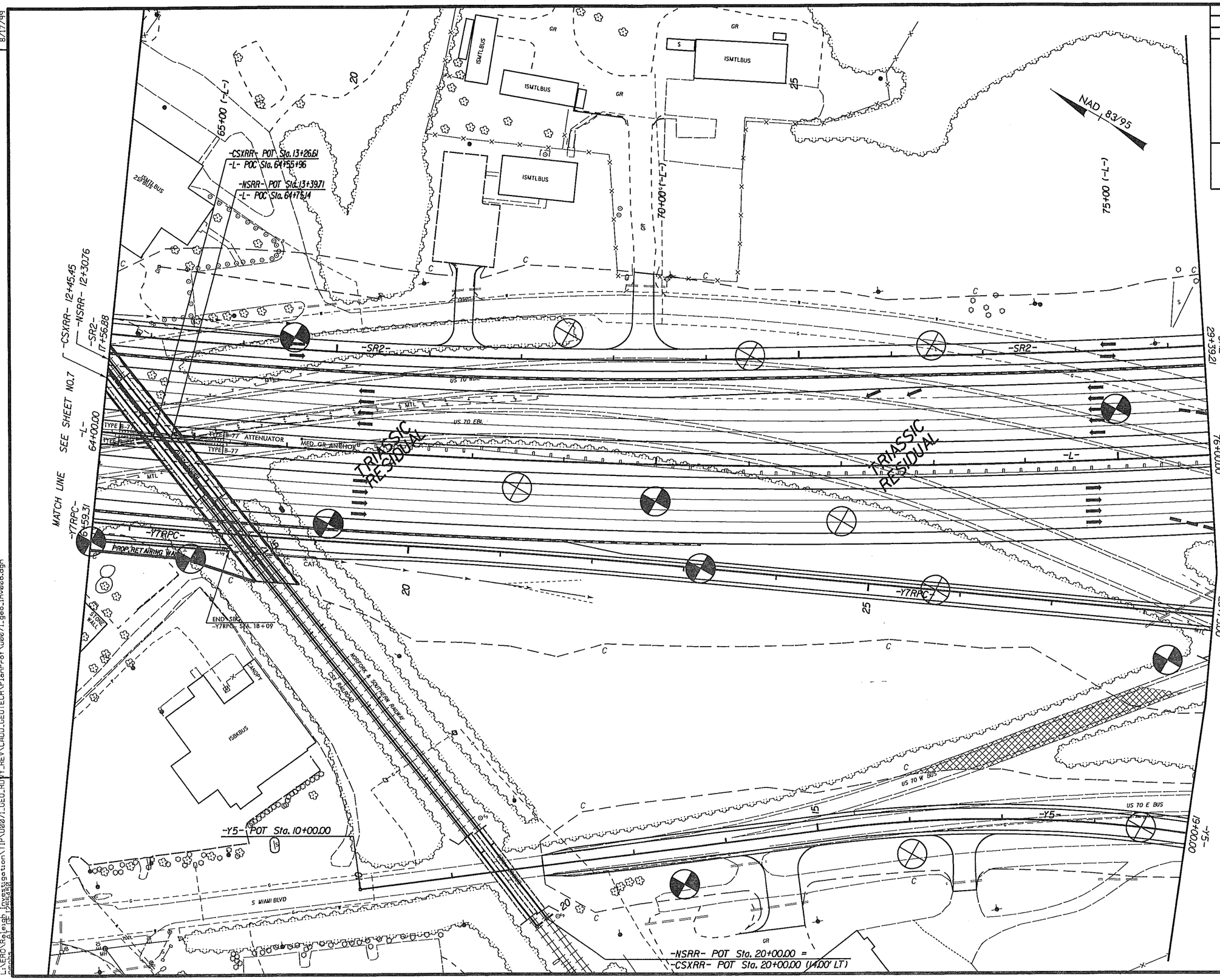
PROJECT REFERENCE NO.	SHEET NO.
U-0071	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

M A Engineering Consultants, Inc.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221



REVISIONS

8/17/99

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REVISIONS

PROJECT REFERENCE NO. 0-000
SHEET NO. 9
TOTAL SHEETS IN SET

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

M A Engineering Consultants, Inc.

ARTIFICIAL FILL
TRIASSIC RESIDUAL
ROADWAY EMBANKMENT
CEMETARY
NAD 83/98
MATCH LINE SEE SHEET NO.25
MATCH LINE SEE SHEET NO.8
MATCH LINE SEE SHEET NO.10
MATCH LINE SEE SHEET NO.25

GRAPHIC SCALE
50 25 0 50 100
FEET

PROJECT REFERENCE NO. U-0081
SHEET NO. 10
TOTAL SHEETS

ROADWAY DESIGN ENGINEER

STRUCTURES ENGINEER

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

M A Engineering Consultants, Inc.

REVISIONS

GRAPHIC SCALE
20 20 0 50 100
PLANS

M A Engineering Consultants, Inc.	PROJECT REFERENCE NO.	SHEET NO.
598 East Chatham Street Suite 137 Cary, NC 27511	U-0071	11
Phone: 919.297.0220 Fax: 919.297.0221	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

REVISIONS

8/17/99

NAD 83/95

MATCH LINE SEE SHEET NO.10

MATCH LINE SEE SHEET NO.12

-L- POT Sta. 129+00.00 =
-DFLW- POT Sta. 8+59.74 (25' LT) LA =
-LDFEB- POT Sta. 129+00.00 (25' RT) LA

-DFLW- POT Sta. 11+97.57
-Y15- POT Sta. 12+03.11

-LDFEB- POT Sta. 138+40.45
-Y15- POC Sta. 11+53.04

-LDFEB- POT Sta. 140+40.35 =
-LDFWB- TS Sta. 10+00.00
(36' RT) LA

-Y15- PC
Sta. 10+00.00

-DFLW- TS Sta. 20+00.00 =
-DFFLY- TS Sta. 10+00.00
(36' LT) LA

-Y18- POC Sta. 24+05.56

-Y18- PC
Sta. 20+06.91

BEGIN SBG
-DFFLY- STA. 11+48.14

BEGIN SBG
-DFWB- STA. 11+62.87

END SBG
-L- STA. 137+16.43

END SBG
-L- STA. 137+31.57

Sta. 140+40.26

TRIASSIC RESIDUAL

WOODS

POND WE 372'

POND WE 360'

POND WE 360'

ISBLKBUS

E-MULTI METER

SR 1925 ANGIER AVE

NORFOLK SOUTHERN RR

36" CMP

RIP RAP

GR

GRAVEL

GEO DUCT

AATFI

SODDM

ISBKD

2SBKD

HTR

ISBLKD

MTL

MH

TYPE B-77

-DFLW-

-L-

-LDFEB-

-LDFWB-

-Y15-

-Y18-

-DFFLY-

S 50°15'40" E

130+00 (-L-)

135+00 (-L-)

140+00 (-L-)

128+00.00

130+00

135+00

140+00

10+00

15+00

20+00

-DFLW- -DFFLY- -LDFEB- -DFLW-
11+84.67 142+25.00 21+84.75 11+84.82

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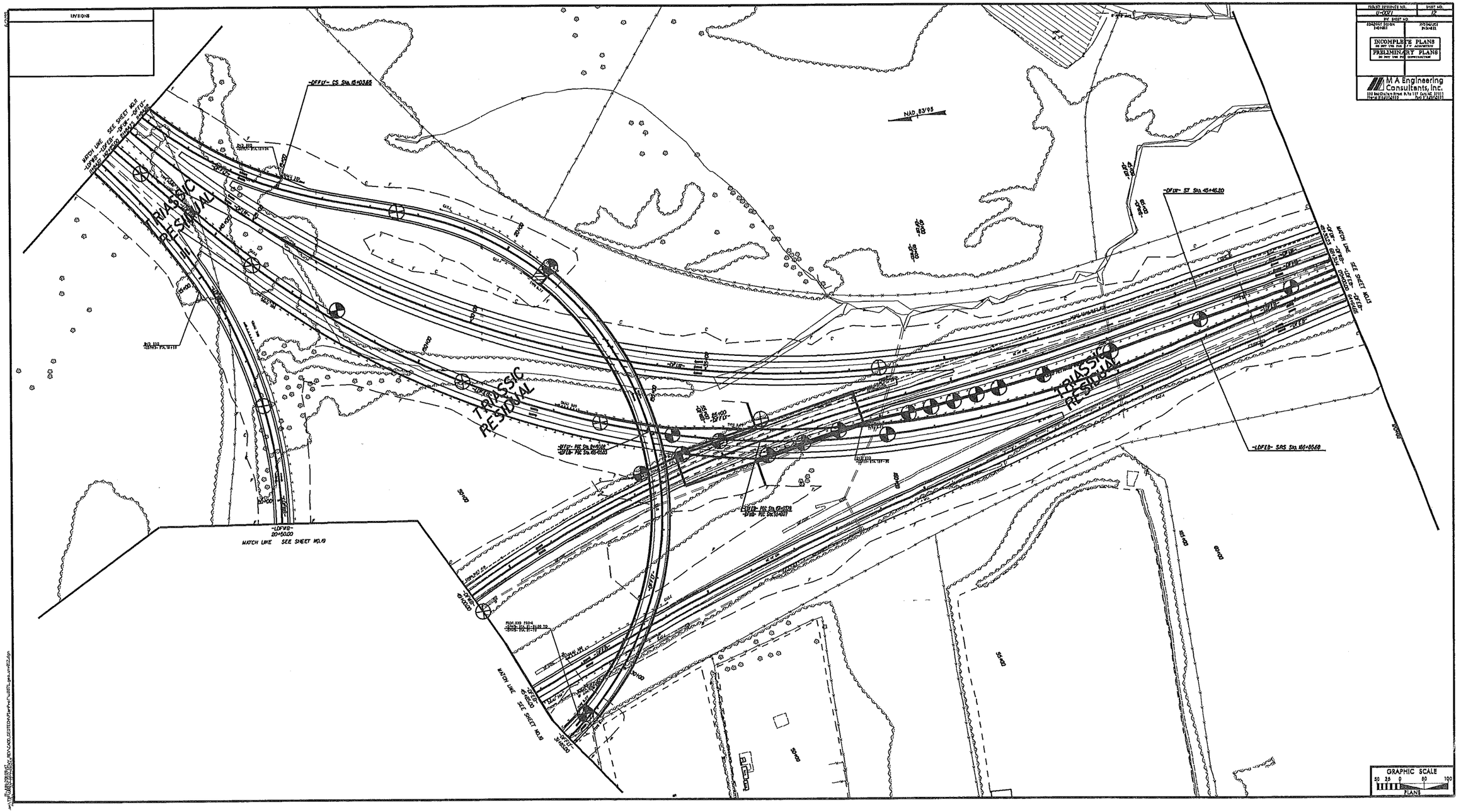

FEDERAL REFERENCE NO.
U-0071
SHEET NO.
12
INCOMPLETE PLANS
PRELIMINARY PLANS
M A Engineering Consultants, Inc.
NAD 83/95
TRIASSIC RESIDUAL
TRIASSIC RESIDUAL
TRIASSIC RESIDUAL
MATCH LINE SEE SHEET NO.19
MATCH LINE SEE SHEET NO.13
MATCH LINE SEE SHEET NO.19
GRAPHIC SCALE
PLANS

PROJECT REFERENCE NO.	SHEET NO.
U-0071	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

M A Engineering Consultants, Inc.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

REVISIONS 8/17/99

NAD 83/95

50+00 -DFLW-

70+00 -DFWB-

55+00

60+00

-DFWB- POT Sta.70+00.00 =
-DFLW- POT Sta.50+00.00 (24' RT)

-DFLW- PC Sta. 52+52.31

WOODS

NCDOT COMM. DUCT (FO)

CABLE

CONC DI

-DFLW-

-DFWB-

NC 147 NBL

GRAU 350

APPROX. LOCATION OF JUNCTION BOX TYPE M350

-LDFEB-

NC 147 SBL

-DFEB-

TRIASSIC RESIDUAL

MATCH LINE SEE SHEET NO.12 -DFLW- 48+30.23 -DFWB- 68+31.14 -LDFEB- 170+00.00 -DFEB- 64+64.56

MATCH LINE SEE SHEET NO.14 -DFLW- 62+39.56 -LDFEB- 184+00.00

END PROPOSED RETAINING WALL 9
-LDFEB- STA.171+35.00

-DFEB- PT Sta. 75+61.18 =
-LDFEB- POC Sta.181+00.00 (36' RT)

POND WS= 374'

ARBOR

170+00

65+00

175+00

70+00

180+00

75+00

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PROJECT REFERENCE NO.	SHEET NO.
U-0071	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

M A Engineering Consultants, Inc.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

REVISIONS 8/17/99

NAD 83/95

65+00 70+00 75+00 180+00 185+00 190+00 195+00

SEE SHEET NO.13 -DFLW- 62+39.56

MATCH LINE -LDFEB- 184+00.00

MATCH LINE -DFLW- 76+47.78

SEE SHEET NO.15 -LDFEB- 198+00.00

WOODS

3' CONC WALL

NCDOT BORING STATION

2.5 x 2.5 CONC BRIDGE COLUMNS

ESTIMATED LOCATION OF BLIND JB

CB (MACHINE PILE STRUCTURE) TOP=257.66'

NCDOT COMM. DUCT (FO)

GRAU 350

MTL

CABLE

ELEC/TELE

CONC

TRIASSIC RESIDUAL

ISBKD

ISFD

ISFGR

CLINTON RD

SR 1940 GLOVER RD

-DFLW-

-LDFEB-

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PROJECT REFERENCE NO.	SHEET NO.
U-0071	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

M A Engineering Consultants, Inc.
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REVISIONS

8/17/99

NAD 83/95

END T.I.P. PROJECT U-0071
-LDFEB- POC 210+00.00
-DFLW- POC 88+42.53

MATCH LINE -LDFEB- 198+00.00 -DFLW- 76+47.78 SEE SHEET NO.14

MATCH LINE -DFLW- 90+40.44 -LDFEB- 212+00.00 SEE SHEET NO.16

80+00 85+00 90+00 200+00 205+00 210+00

WOODS

48" CONC

NCDOT COMM. DUCT (FO)

GRAU 350

CONC

CABLE

-DFLW-

-LDFEB-

TRIASSIC RESIDUAL

NC 147 NBL

NC 147 SBL

MTL

NCDOT DYNAMIC HIGHWAY SIGN

CAT-1

NCDOT CONTROL BOX

ELEC. PANEL BOX

E-METER

ELECTRIC METER

DUKE POWER

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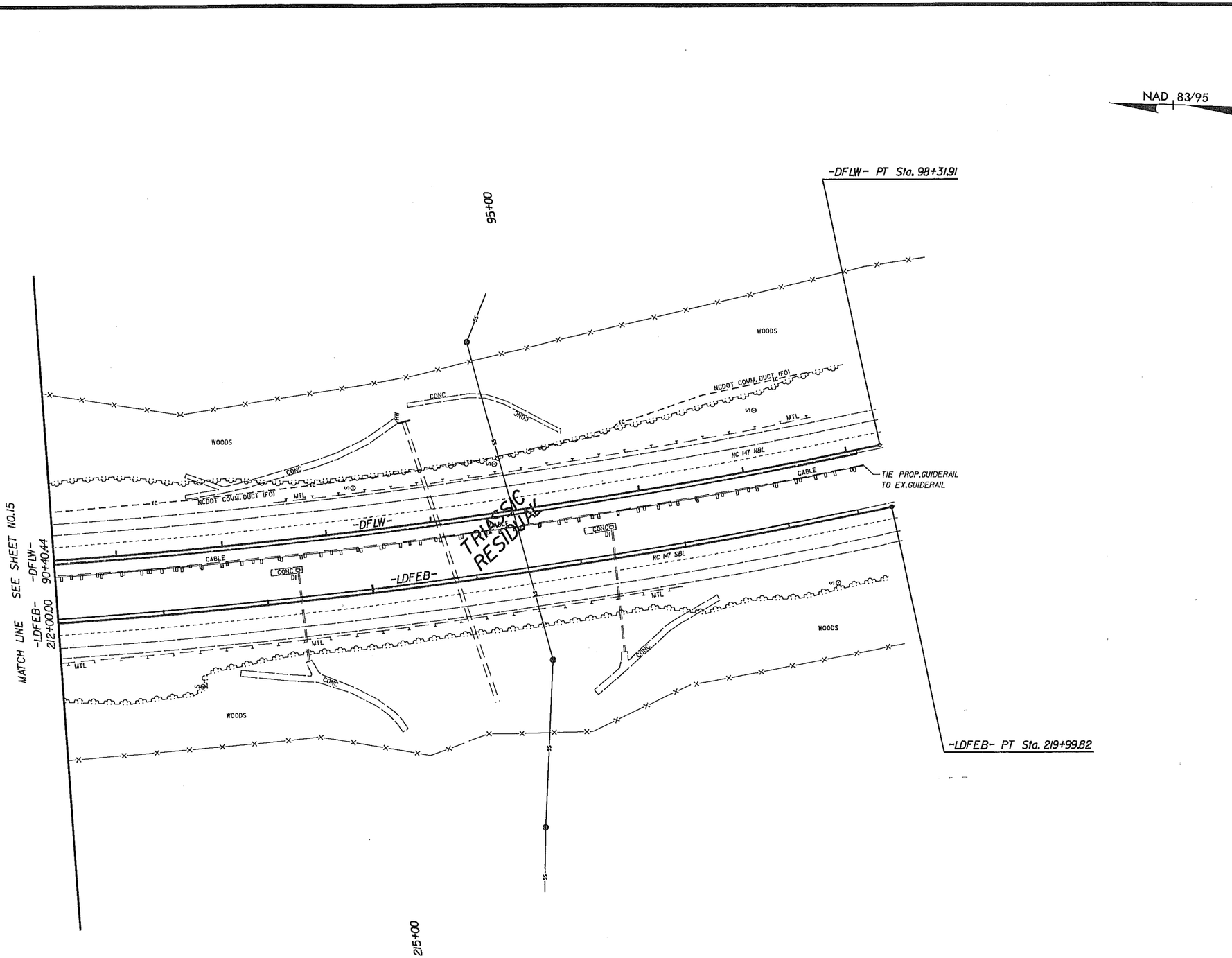
PROJECT REFERENCE NO.	SHEET NO.
U-0071	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

M A Engineering Consultants, Inc.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221



REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
U-0071	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

M A Engineering Consultants, Inc.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

REVISIONS 8/17/99

NAD 83/95

15+00

20+00

-DFWB- PC Sta. 12+90.82

-CSX- PC Sta. 10+00.00

-DFEB- PC Sta. 10+22.00

TRIASSIC RESIDUAL

-CSX-

R/R SIGNAL BOX

NEDOT COMMDUCT (TYP.)

-DFWB- 21+00.00

-DFEB- 18+17.82

MATCH LINE SEE SHEET NO.18

ABANDONED RR

NC 147 NBL

NC 147 SBL

MTL

CONC

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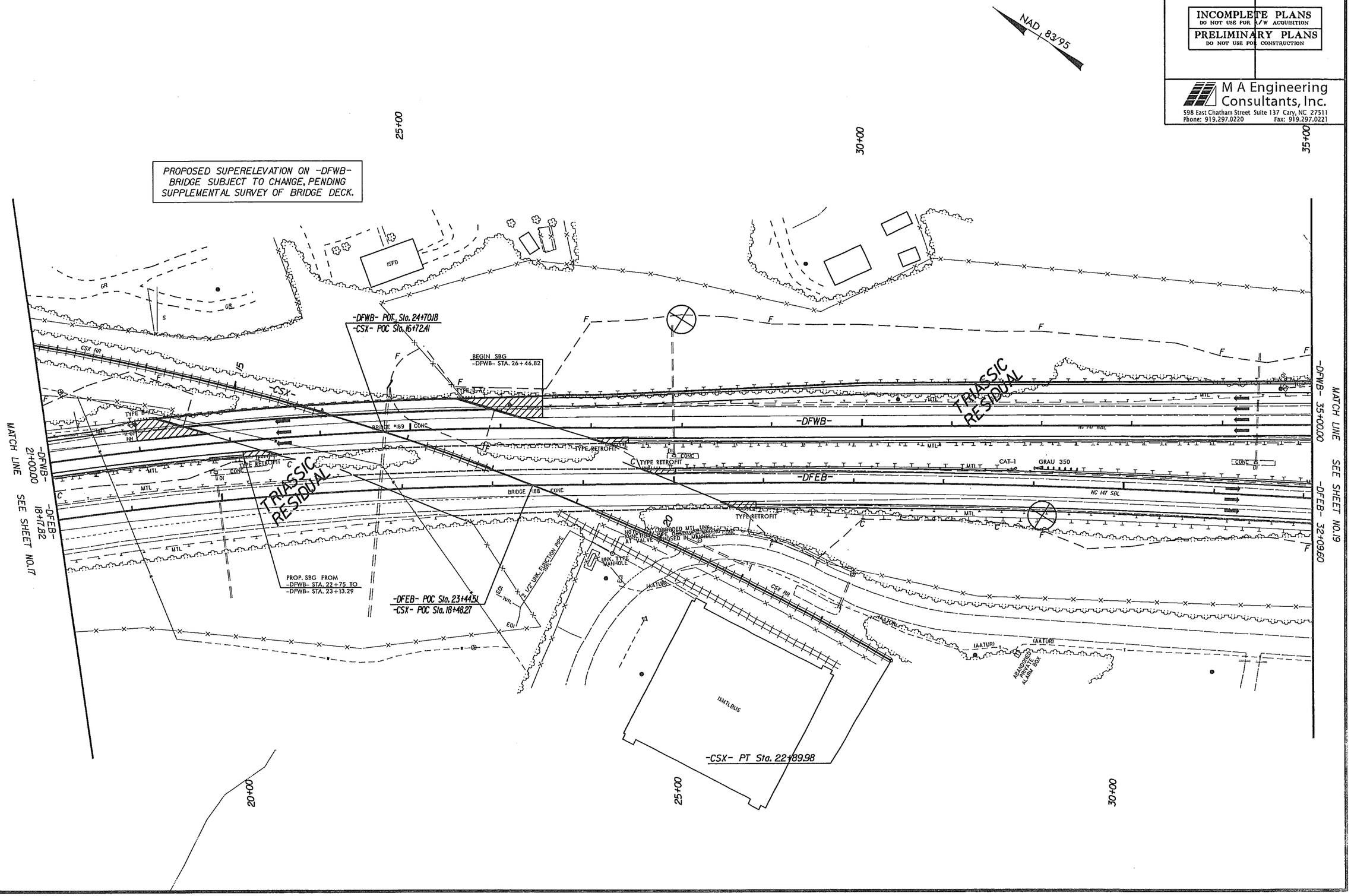
PROJECT REFERENCE NO.	SHEET NO.
U-0071	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

M A Engineering Consultants, Inc.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221



REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
U-0071	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

M A Engineering Consultants, Inc.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

8/17/99

REVISIONS

NAD 83/95

MATCH LINE SEE SHEET NO.12 -LDFWB- 20+50.00

TRIASSIC RESIDUAL

-Y16- POT Sta. 10+00.00

-LDFWB- ST Sta. 29+56.52 =
-DFWB- POT Sta. 38+98.71 (24' LT)

-DFWB- POT Sta. 36+69.26
-Y16- POC Sta. 12+12.86

END SBG
-DFWB- STA. 35+97.02

-DFWB- TS Sta. 45+07.11

-LDFWB-

-DFWB-

-DFWB- 49+00.00

NCDOT COMM. DUCT (FO)

BRIDGE #192 CONC

TYPE B-77

TYPE RETROFIT

TYPE M350

GRAU 350

60" CONC

72" CONC

MATCH LINE SEE SHEET NO.18 -DFWB- 35+00.00

-DFEB- 32+09.60

-DFEB-

-DFFLY-

-DFEB- 45+85.00

-DFFLY- 31+85.00

BRIDGE #191 CONC

-Y16-

-DFEB- POC Sta. 34+62.88
-Y16- POC Sta. 13+43.71

ABANDONED ADVANCE WARNING ALARM BOX

PROP. SBG FROM
-DFFLY- STA. 41+65 TO
-DFFLY- STA. 41+80.15

-DFFLY- POT Sta. 41+89.35 =
-DFEB- POC Sta. 36+00.00
Δ = 3°00' (12.00' RT)

SR 1654 ELLIS RD

-Y16- POT Sta. 18+96.71

WATER

ISFD

25sf BOX

MATCH LINE SEE SHEET NO.12

35+00

40+00

45+00

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PROJECT REFERENCE NO.	SHEET NO.
U-0071	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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Phone: 919.297.0220 Fax: 919.297.0221

8/17/99

REVISIONS

MATCH LINE SEE SHEET NO.10

-US70FLY- 40+70.00

-US70FLY-

BEGIN SBG
-US70FLY- STA. 43+21

BEGIN SBG
-US70FLY- STA. 43+26

NAD 83/95

TRIASSIC RESIDUAL

ROCK OUTCROP

-Y2- ST Sta. 33+71.33 =
-Y3- POT Sta. 33+71.33
(18' RT)

-US70FLY- POT Sta. 52+53.77 =
-Y3- POS Sta. 40+16.36 (30.00' LT)
Δ = 3°58'54" (RT)

END SBG
-US70FLY- STA. 47+85

GRAU 350

STAGE

ISMTL LIVING WATERS CHRISTIAN COMMUNITY CHURCH

ISBK LIVING WATERS CHRISTIAN COMMUNITY CHURCH

HTR

MTL

SOIL

CAT-1

-Y2-
-Y3-
-Y4-
-EEC70E-

-Y4- SC Sta. 42+87.03

-Y4- ST Sta. 47+37.14
-Y3- POT Sta. 36+65.51 (18' RT)

-EEC70E- ST Sta. 34+30.52 =
-Y3- POT Sta. 38+01.05 (42.00' RT)

END SBG
-Y3- STA. 42+20
TRANSITION TO EXPRESSWAY GUTTER
-Y3- STA. 42+30.00

BEGIN SBG
-EEC70E- STA. 29+20

-EEC70E- 26+00.00

MATCH LINE SEE SHEET NO.10

MATCH LINE SEE SHEET NO.10

-Y2- 30+00.00

-Y4- 40+52.64

MATCH LINE SEE SHEET NO.21

-Y3- 43+00.00

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jones at 1" = 25'

PROJECT REFERENCE NO.	SHEET NO.
U-0071	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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Phone: 919.297.0220 Fax: 919.297.0221

8/17/99

REVISIONS

NAD 83/95

MATCH LINE SEE SHEET NO.20 -Y3- 43+00.00

MATCH LINE SEE SHEET NO.22 -Y9- 24+00.00

MATCH LINE SEE SHEET NO.22 -Y3- 57+00.00

TRIASSIC RESIDUAL

TRIASSIC RESIDUAL

APPROX. LOCATION OF JUNCTION BOX

KEYWOOD LN

ISFBUS

2SFD APT

E-MULTI METER

ISFD

WOODS

-Y9-

-Y3-

BEGIN SBG -Y3- STA. 54+50

ISMBUS

2SBK CALVARY BAPTIST CHURCH

POWER OUTLET

SEALED WITH CONCRETE

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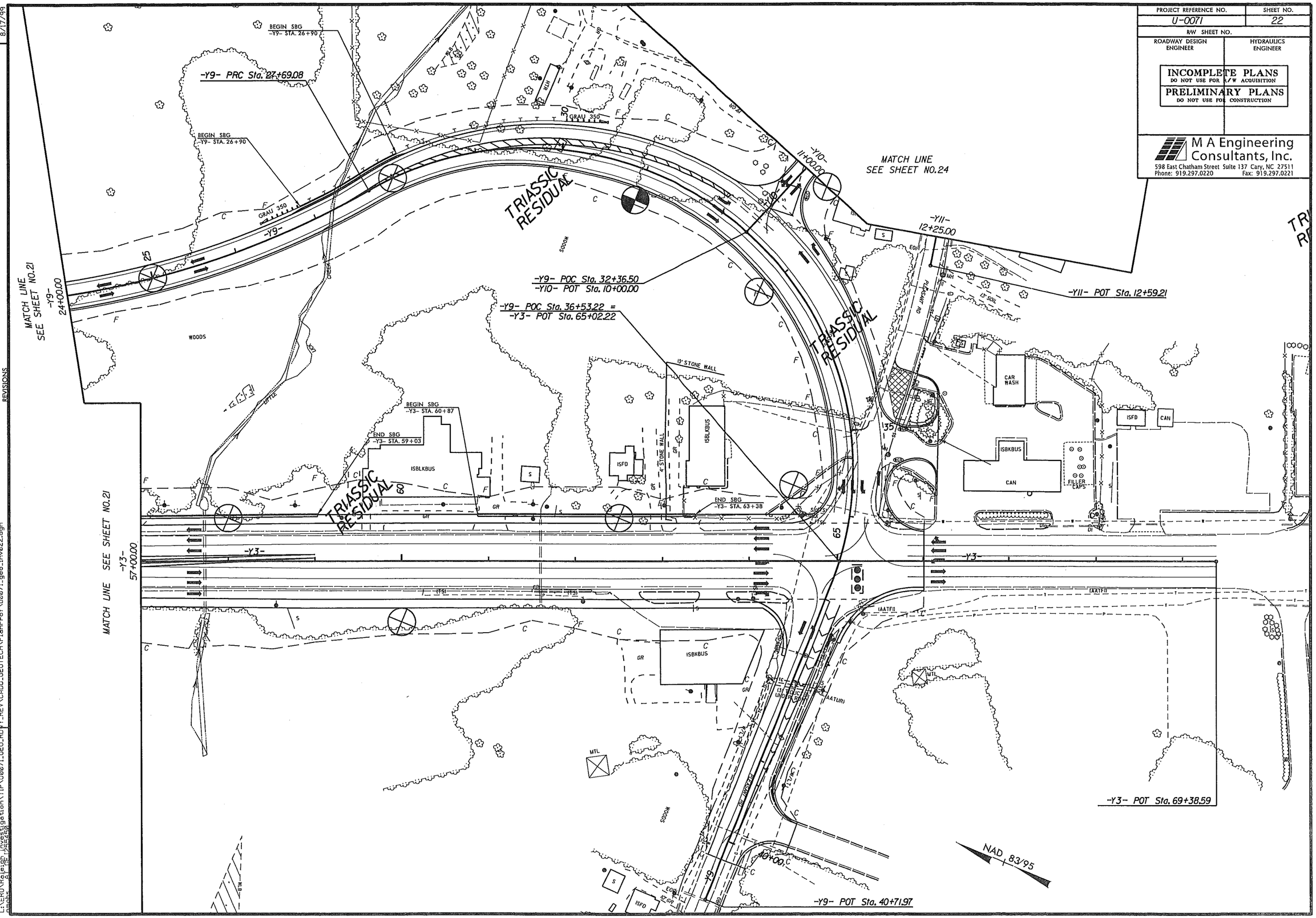
PROJECT REFERENCE NO.	SHEET NO.
U-0071	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

M A Engineering Consultants, Inc.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221



REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
U-0071	23
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

M A Engineering Consultants, Inc.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

NAD 83/95

REVISIONS 8/17/99

-Y1- POT Sta. 10+00.00

TRIASSIC RESIDUAL

HOLLOWAY ST NC 98 38' BST

15+00

-Y1-

19+50.00

MATCH LINE SEE SHEET NO.6

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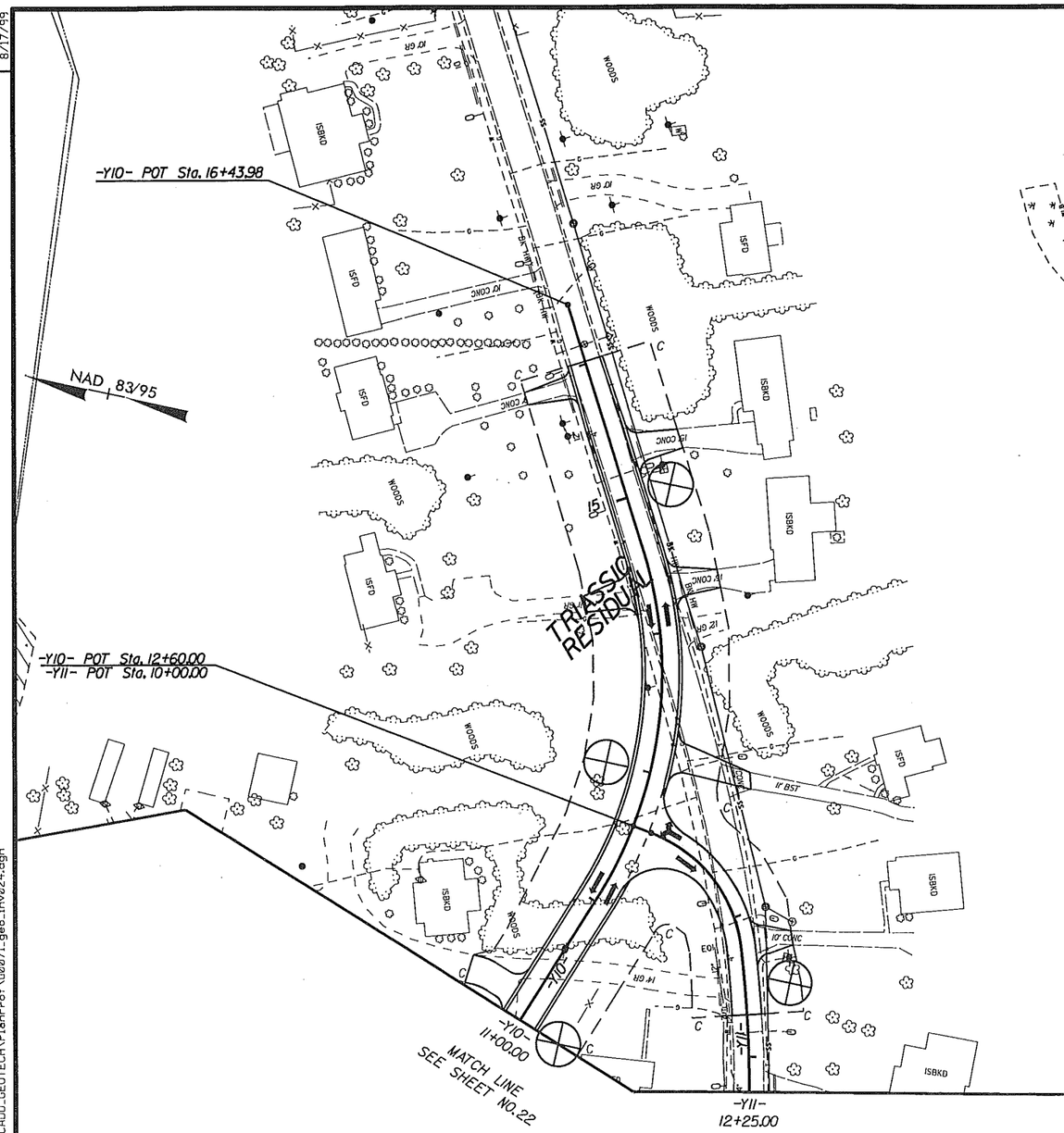
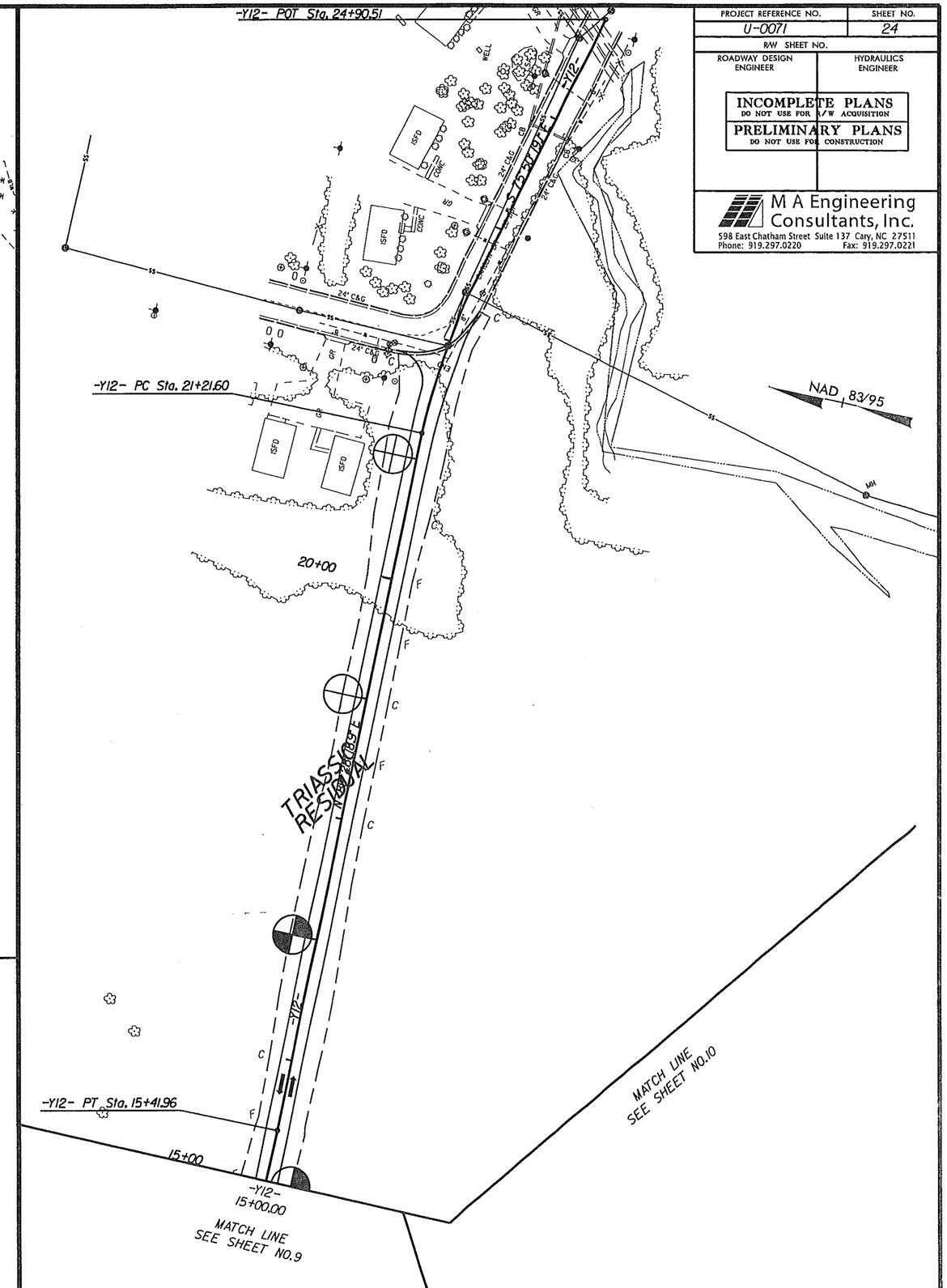
PROJECT REFERENCE NO.	SHEET NO.
U-0071	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

M A Engineering Consultants, Inc.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221





REVISIONS

8/17/99

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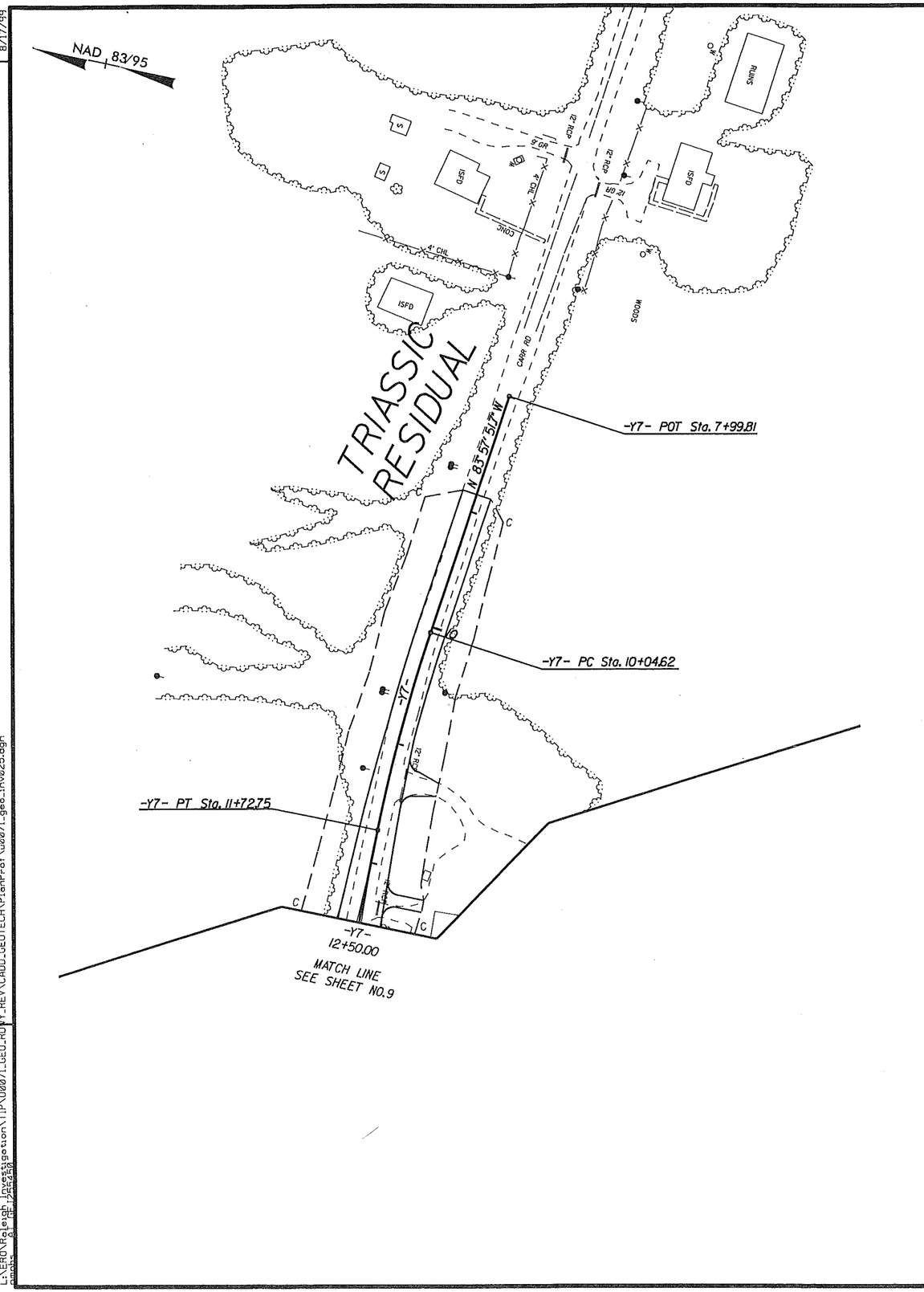
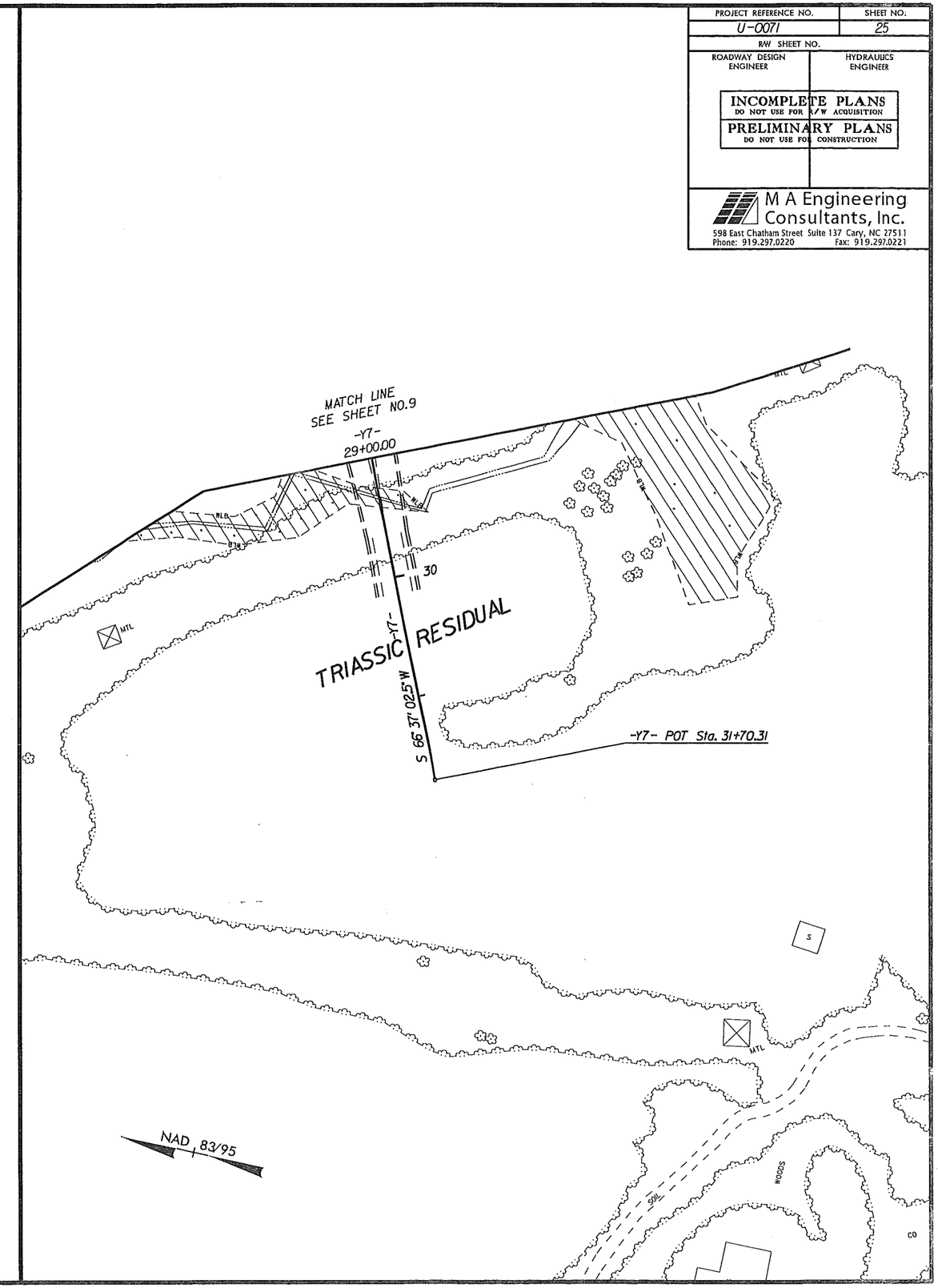
PROJECT REFERENCE NO.	SHEET NO.
U-0071	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

M A Engineering Consultants, Inc.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221





REVISIONS

8/17/99

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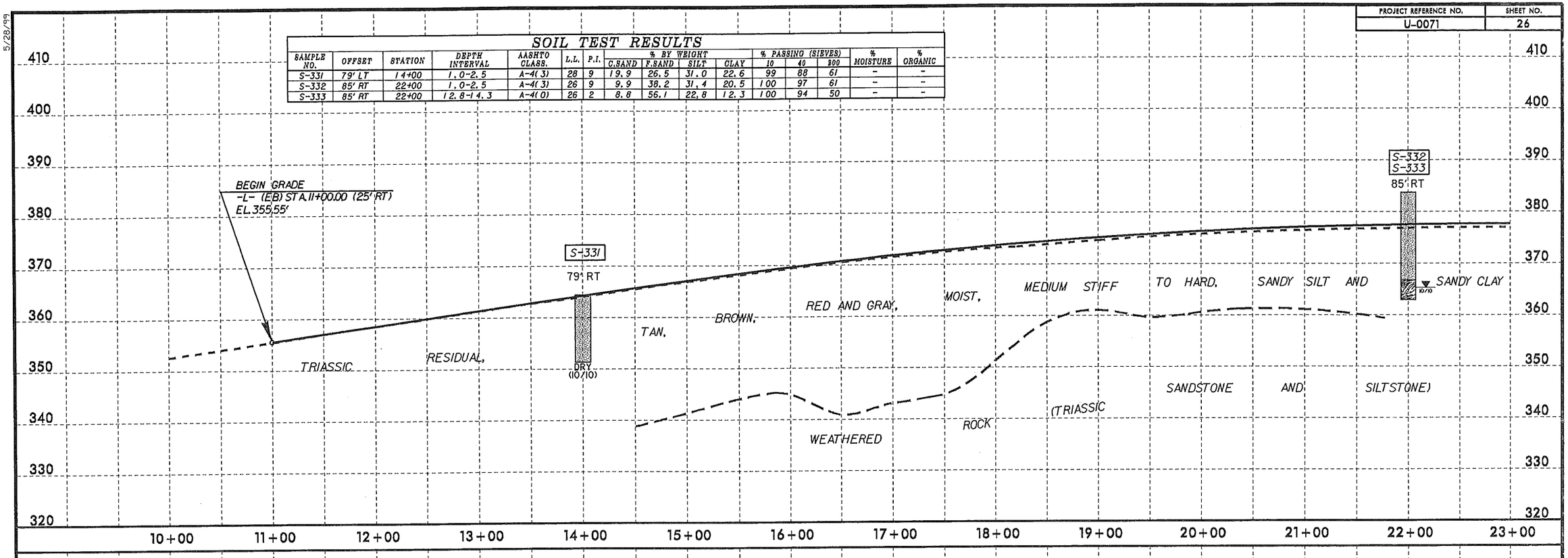
5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-0071	26

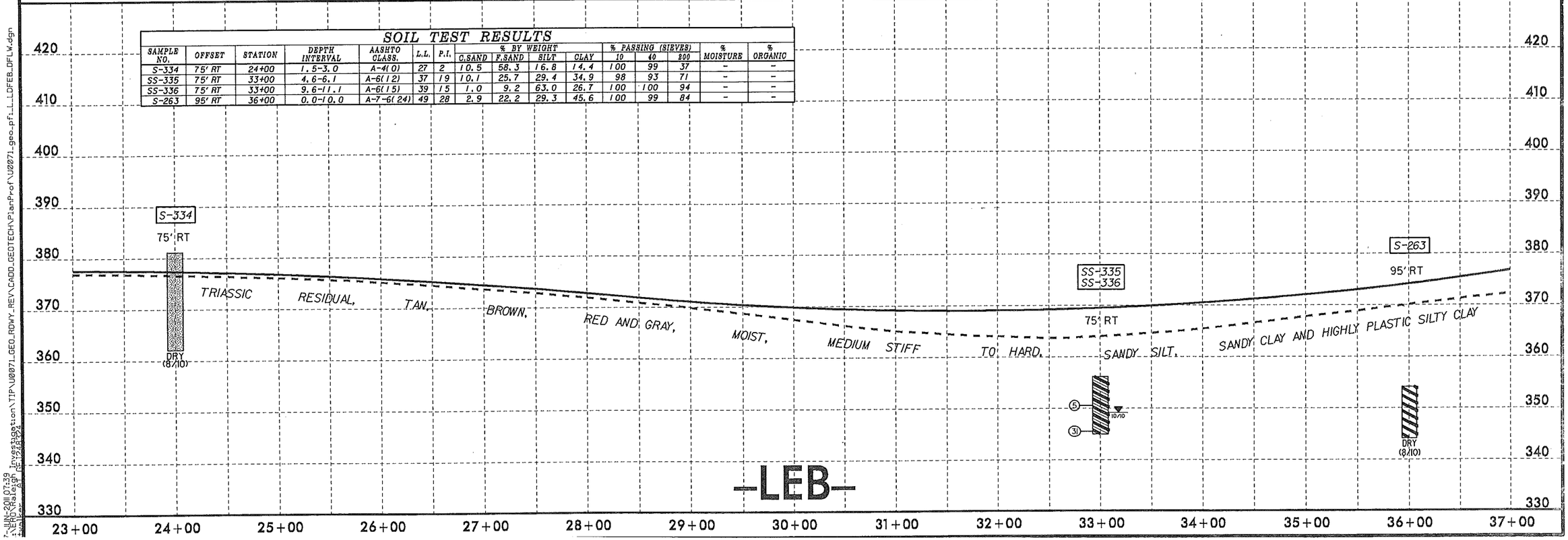
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-331	79' LT	14+00	1.0-2.5	A-4(3)	28	9	19.9	26.5	31.0	22.6	99	88	61	-	-
S-332	85' RT	22+00	1.0-2.5	A-4(3)	26	9	9.9	38.2	31.4	20.5	100	97	61	-	-
S-333	85' RT	22+00	12.8-14.3	A-4(0)	26	2	8.8	56.1	22.8	12.3	100	94	50	-	-



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-334	75' RT	24+00	1.5-3.0	A-4(0)	27	2	10.5	58.3	16.8	14.4	100	99	37	-	-
SS-335	75' RT	33+00	4.6-6.1	A-6(12)	37	19	10.1	25.7	29.4	34.9	98	93	71	-	-
SS-336	75' RT	33+00	9.6-11.1	A-6(15)	39	15	1.0	9.2	63.0	26.7	100	100	94	-	-
S-263	95' RT	36+00	0.0-10.0	A-7-6(24)	49	28	2.9	22.2	29.3	45.6	100	99	84	-	-



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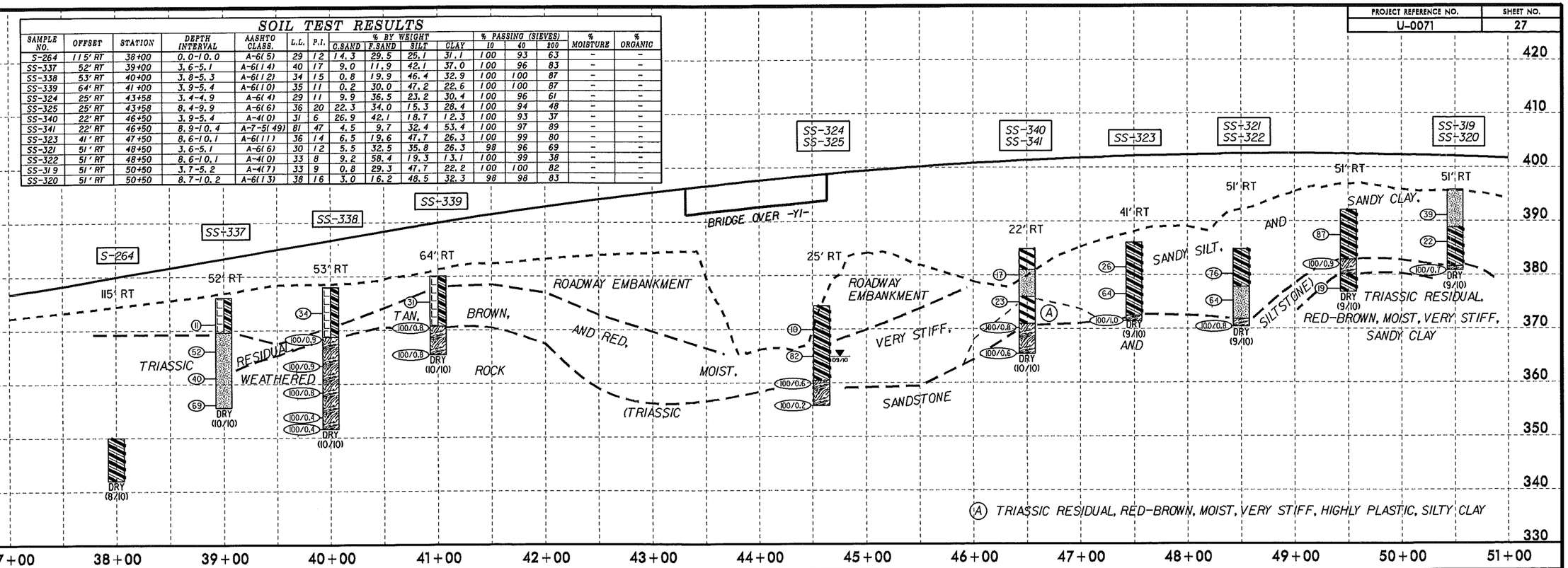
PROJECT REFERENCE NO.	SHEET NO.
U-0071	27

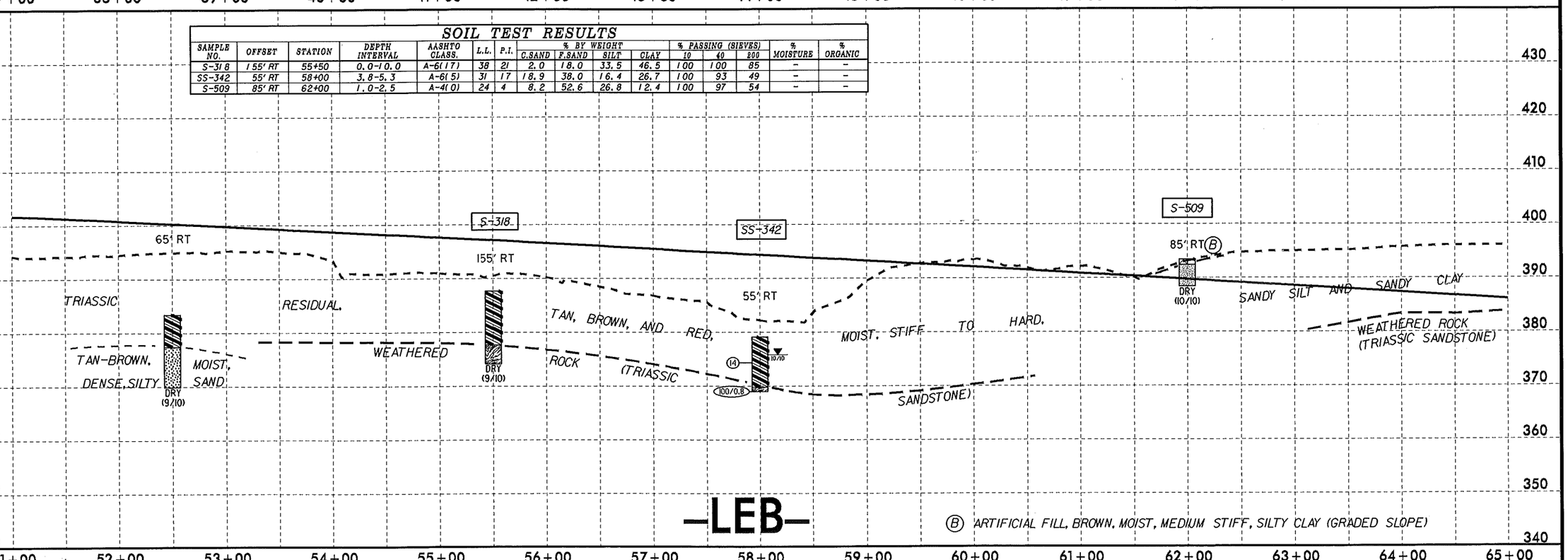
SOIL TEST RESULTS

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-264	115' RT	38+00	0.0-10.0	A-6(5)	29	12	14.3	29.5	25.1	31.1	100	93	63	-	-
SS-337	52' RT	39+00	3.6-5.1	A-6(14)	40	17	9.0	11.9	42.1	37.0	100	96	83	-	-
SS-338	53' RT	40+00	3.8-5.3	A-6(12)	34	15	0.8	19.9	46.4	32.9	100	100	87	-	-
SS-339	64' RT	41+00	3.9-5.4	A-6(10)	35	11	0.2	30.0	47.2	22.6	100	100	87	-	-
SS-324	25' RT	43+58	3.4-4.9	A-6(4)	29	11	9.9	36.5	23.2	30.4	100	96	61	-	-
SS-325	25' RT	43+58	8.4-9.9	A-6(6)	36	20	22.3	34.0	15.3	28.4	100	94	48	-	-
SS-340	22' RT	46+50	3.9-5.4	A-4(0)	31	6	26.9	42.1	18.7	12.3	100	93	37	-	-
SS-341	22' RT	46+50	8.9-10.4	A-7-5(49)	81	47	4.5	9.7	32.4	53.4	100	97	89	-	-
SS-323	41' RT	47+50	8.6-10.1	A-6(11)	36	14	6.5	19.6	47.7	26.3	100	99	80	-	-
SS-321	51' RT	48+50	3.6-5.1	A-6(6)	30	12	5.5	32.5	35.8	26.3	98	96	69	-	-
SS-322	51' RT	48+50	8.6-10.1	A-4(0)	33	8	9.2	58.4	19.3	13.1	100	99	38	-	-
SS-319	51' RT	50+50	3.7-5.2	A-4(7)	33	9	0.8	29.3	47.7	22.2	100	100	82	-	-
SS-320	51' RT	50+50	8.7-10.2	A-6(13)	38	16	3.0	16.2	48.5	32.3	98	98	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	200	% MOISTURE	% ORGANIC
S-318	155' RT	55+50	0.0-10.0	A-6(17)	38	21	2.0	18.0	33.5	46.5	100	100	85	-	-
SS-342	55' RT	58+00	3.8-5.3	A-6(5)	31	17	18.9	38.0	16.4	26.7	100	93	49	-	-
S-509	85' RT	62+00	1.0-2.5	A-4(0)	24	4	8.2	52.6	26.8	12.4	100	97	54	-	-



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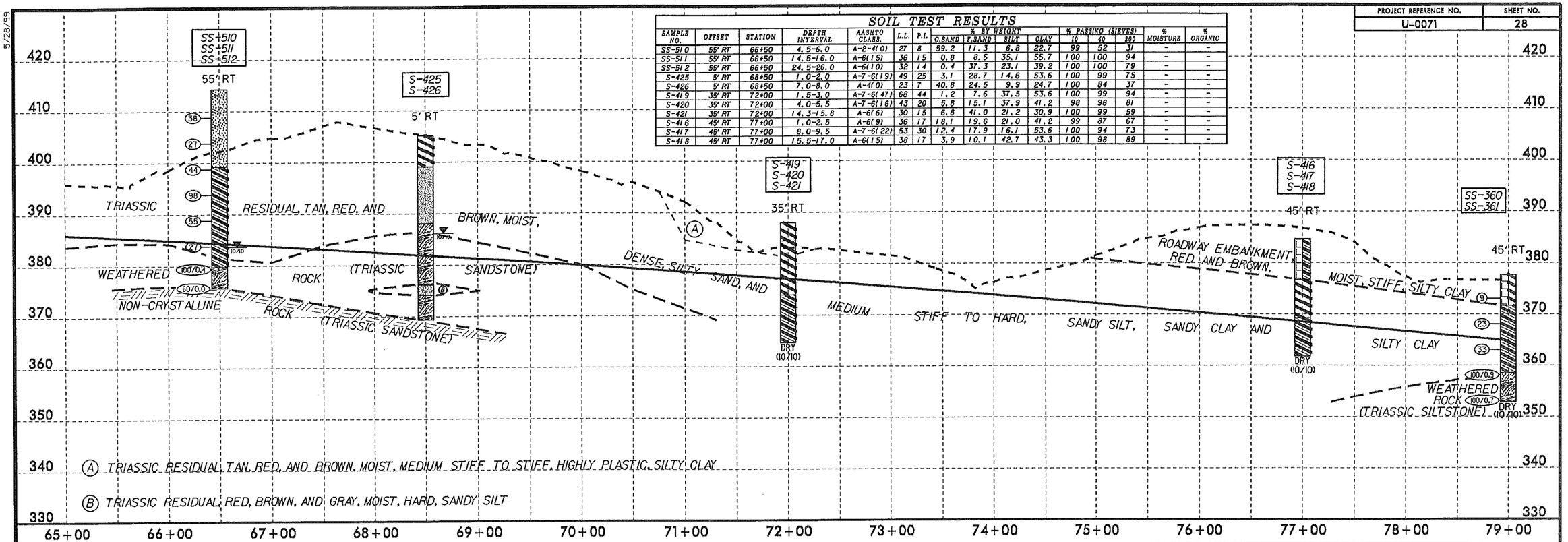
5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-0071	28

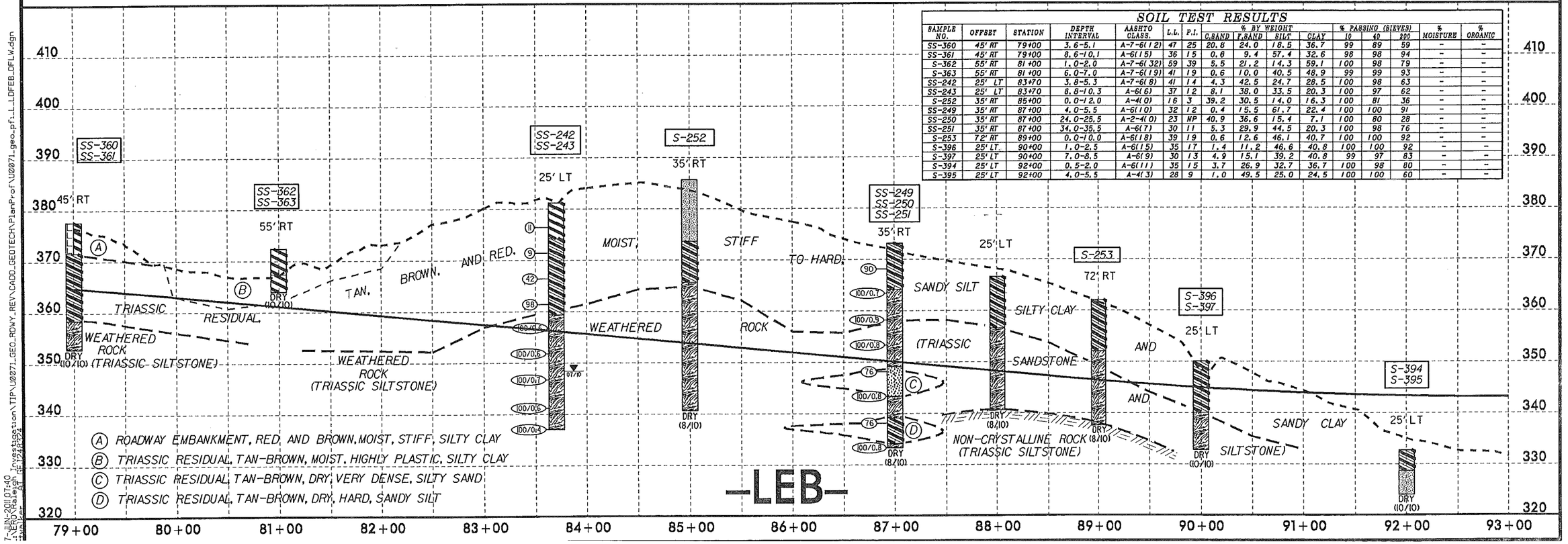
SOIL TEST RESULTS

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-510	55' RT	66+50	4.5-6.0	A-2-4(0)	27	8	59.2	11.3	6.8	22.7	99	52	31	-	-
SS-511	55' RT	66+50	14.5-16.0	A-6(15)	36	15	0.8	8.5	35.1	55.7	100	100	94	-	-
SS-512	55' RT	66+50	24.5-26.0	A-6(10)	32	14	0.4	37.3	23.1	39.2	100	100	79	-	-
S-425	5' RT	68+50	1.0-2.0	A-7-6(19)	49	25	3.1	28.7	14.6	53.6	100	99	75	-	-
S-426	5' RT	68+50	7.0-8.0	A-4(0)	23	7	40.8	24.5	9.9	24.7	100	84	37	-	-
S-419	35' RT	72+00	1.5-3.0	A-7-6(47)	68	44	1.2	7.6	37.5	53.6	100	99	94	-	-
S-420	35' RT	72+00	4.0-5.5	A-7-6(16)	43	20	5.8	15.1	37.9	41.2	98	96	81	-	-
S-421	35' RT	72+00	14.3-15.8	A-6(6)	30	15	6.8	41.0	21.2	30.9	100	99	59	-	-
S-416	45' RT	77+00	1.0-2.5	A-6(9)	36	17	18.1	19.6	21.0	41.2	99	87	67	-	-
S-417	45' RT	77+00	8.0-9.5	A-7-6(22)	53	30	12.4	17.9	16.1	53.6	100	94	73	-	-
S-418	45' RT	77+00	15.5-17.0	A-6(15)	38	17	3.9	10.1	42.7	43.3	100	98	89	-	-



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-360	45' RT	79+00	3.6-5.1	A-7-6(12)	47	25	20.8	24.0	18.5	36.7	99	89	59	-	-
SS-361	45' RT	79+00	8.6-10.1	A-6(15)	36	15	0.6	9.4	57.4	32.6	98	98	94	-	-
S-362	55' RT	81+00	1.0-2.0	A-7-6(32)	59	39	5.5	21.2	14.3	59.1	100	98	79	-	-
S-363	55' RT	81+00	6.0-7.0	A-7-6(19)	41	19	0.6	10.0	40.5	48.9	99	99	93	-	-
SS-242	25' LT	83+70	3.8-5.3	A-7-6(8)	41	14	4.3	42.5	24.7	28.5	100	98	63	-	-
SS-243	25' LT	83+70	8.8-10.3	A-6(6)	37	12	8.1	38.0	33.5	20.3	100	97	62	-	-
S-252	35' RT	85+00	0.0-12.0	A-4(0)	16	3	39.2	30.5	14.0	16.3	100	81	36	-	-
SS-249	35' RT	87+00	4.0-5.5	A-6(10)	32	12	0.4	15.5	61.7	22.4	100	100	91	-	-
SS-250	35' RT	87+00	24.0-25.5	A-2-4(0)	23	NP	40.9	36.6	15.4	7.1	100	80	28	-	-
SS-251	35' RT	87+00	34.0-35.5	A-6(7)	30	11	5.3	29.9	44.5	20.3	100	98	76	-	-
S-253	72' RT	89+00	0.0-10.0	A-6(18)	39	19	0.6	12.6	46.1	40.7	100	100	92	-	-
S-396	25' LT	90+00	1.0-2.5	A-6(15)	35	17	1.4	11.2	46.6	40.8	100	100	92	-	-
S-397	25' LT	90+00	7.0-8.5	A-6(9)	30	13	4.9	15.1	39.2	40.8	99	97	83	-	-
S-394	25' LT	92+00	0.5-2.0	A-6(11)	35	15	3.7	26.9	32.7	36.7	100	98	80	-	-
S-395	25' LT	92+00	4.0-5.5	A-4(3)	28	9	1.0	49.5	25.0	24.5	100	100	60	-	-



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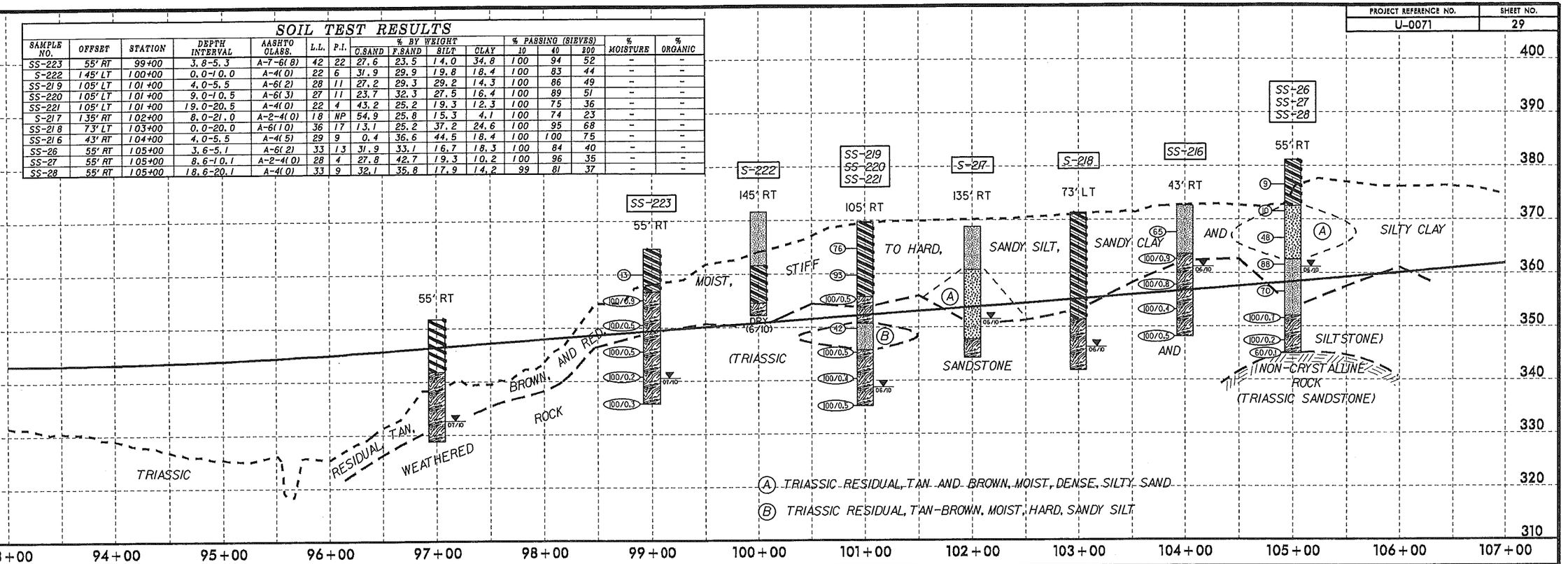
PROJECT REFERENCE NO.	SHEET NO.
U-0071	29

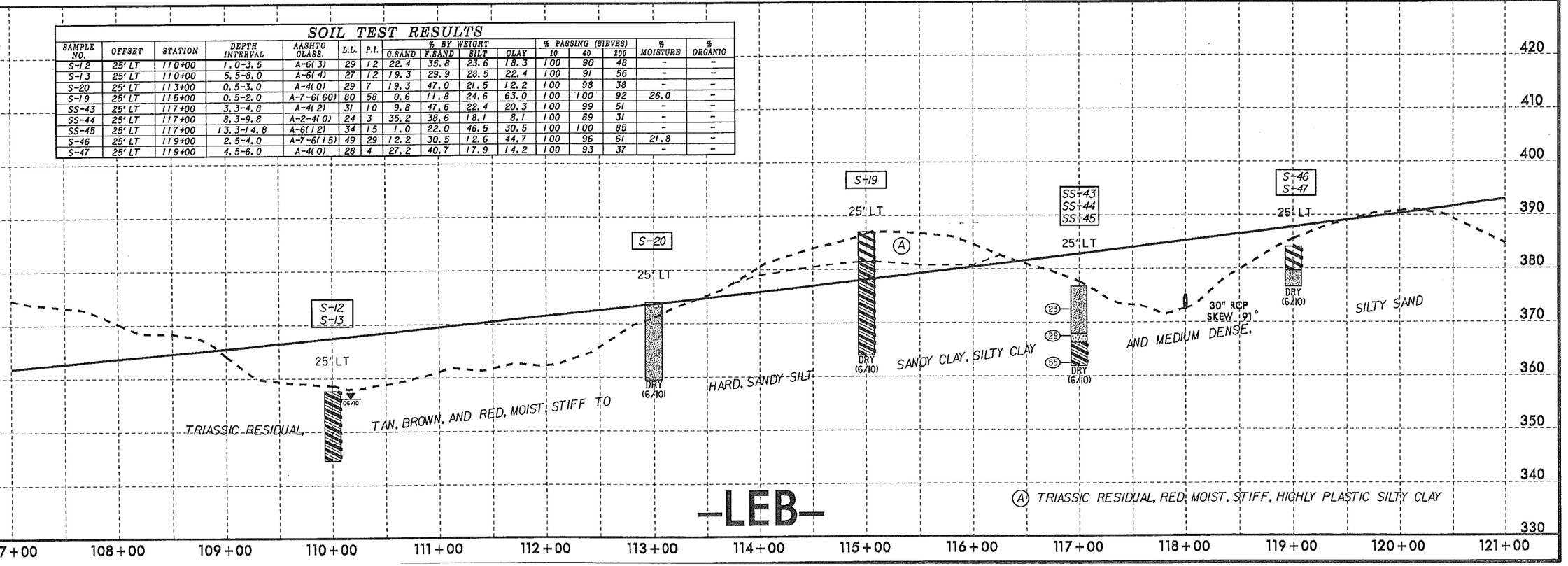
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-223	55' RT	99+00	3.8-5.3	A-7-6(8)	42	22	27.6	23.5	14.0	34.8	100	94	52	-	-
S-222	145' LT	100+00	0.0-10.0	A-4(0)	22	6	31.9	29.9	19.8	18.4	100	83	44	-	-
SS-219	105' LT	101+00	4.0-5.5	A-6(2)	28	11	27.2	29.3	29.2	14.3	100	86	49	-	-
SS-220	105' LT	101+00	9.0-10.5	A-6(3)	27	11	23.7	32.3	27.5	16.4	100	89	51	-	-
SS-221	105' LT	101+00	19.0-20.5	A-4(0)	22	4	43.2	25.2	19.3	12.3	100	75	36	-	-
S-217	135' RT	102+00	8.0-21.0	A-2-4(0)	18	NP	54.9	25.8	15.3	4.1	100	74	23	-	-
SS-218	73' LT	103+00	0.0-20.0	A-6(10)	36	17	13.1	25.2	37.2	24.6	100	95	68	-	-
SS-216	43' RT	104+00	4.0-5.5	A-4(5)	29	9	0.4	36.6	44.5	18.4	100	100	75	-	-
SS-26	55' RT	105+00	3.6-5.1	A-6(2)	33	13	31.9	33.1	16.7	18.3	100	84	40	-	-
SS-27	55' RT	105+00	8.6-10.1	A-2-4(0)	28	4	27.8	42.7	19.3	10.2	100	96	35	-	-
SS-28	55' RT	105+00	18.6-20.1	A-4(0)	33	9	32.1	35.8	17.9	14.2	99	81	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-12	25' LT	110+00	1.0-3.5	A-6(3)	29	12	22.4	35.8	23.6	18.3	100	90	48	-	-
S-13	25' LT	110+00	5.5-8.0	A-6(4)	27	12	19.3	29.9	28.5	22.4	100	91	56	-	-
S-20	25' LT	113+00	0.5-3.0	A-4(0)	29	7	19.3	47.0	21.5	12.2	100	98	38	-	-
S-19	25' LT	115+00	0.5-2.0	A-7-6(60)	80	58	0.6	11.8	24.6	63.0	100	100	92	26.0	-
SS-43	25' LT	117+00	3.3-4.8	A-4(2)	31	10	9.8	47.6	22.4	20.3	100	99	51	-	-
SS-44	25' LT	117+00	8.3-9.8	A-2-4(0)	24	3	35.2	38.6	18.1	8.1	100	89	31	-	-
SS-45	25' LT	117+00	13.3-14.8	A-6(12)	34	15	1.0	22.0	46.5	30.5	100	100	85	-	-
S-46	25' LT	119+00	2.5-4.0	A-7-6(15)	49	29	12.2	30.5	12.6	44.7	100	96	61	21.8	-
S-47	25' LT	119+00	4.5-6.0	A-4(0)	28	4	27.2	40.7	17.9	14.2	100	93	37	-	-



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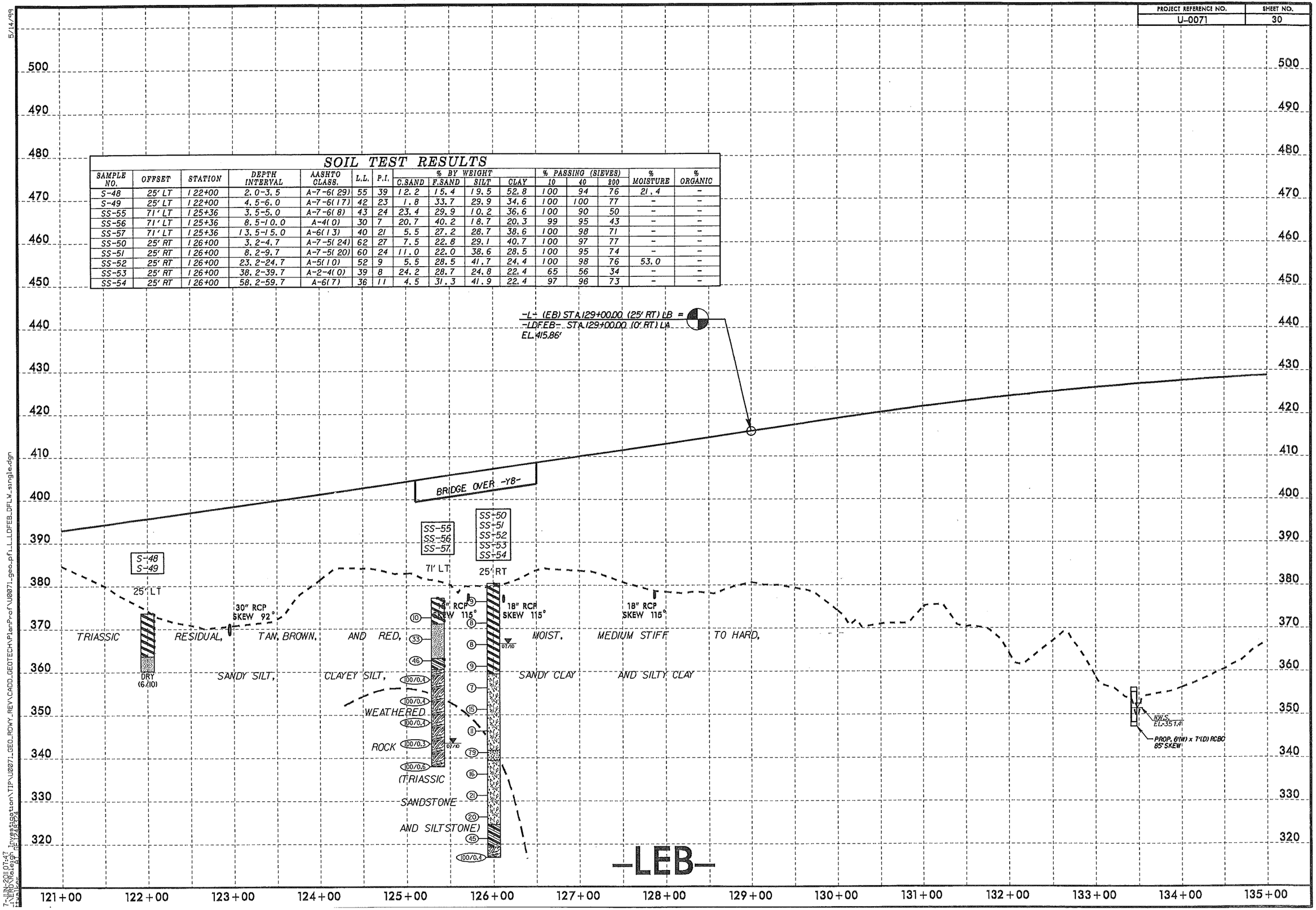
PROJECT REFERENCE NO.	SHEET NO.
U-0071	30

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-48	25' LT	122+00	2.0-3.5	A-7-6(29)	55	39	12.2	15.4	19.5	52.8	100	94	76	21.4	-
S-49	25' LT	122+00	4.5-6.0	A-7-6(17)	42	23	1.8	33.7	29.9	34.6	100	100	77	-	-
SS-55	71' LT	125+36	3.5-5.0	A-7-6(8)	43	24	23.4	29.9	10.2	36.6	100	90	50	-	-
SS-56	71' LT	125+36	8.5-10.0	A-4(0)	30	7	20.7	40.2	18.7	20.3	99	95	43	-	-
SS-57	71' LT	125+36	13.5-15.0	A-6(13)	40	21	5.5	27.2	28.7	38.6	100	98	71	-	-
SS-50	25' RT	126+00	3.2-4.7	A-7-5(24)	62	27	7.5	22.8	29.1	40.7	100	97	77	-	-
SS-51	25' RT	126+00	8.2-9.7	A-7-5(20)	60	24	11.0	22.0	38.6	28.5	100	95	74	-	-
SS-52	25' RT	126+00	23.2-24.7	A-5(10)	52	9	5.5	28.5	41.7	24.4	100	98	76	53.0	-
SS-53	25' RT	126+00	38.2-39.7	A-2-4(0)	39	8	24.2	28.7	24.8	22.4	65	56	34	-	-
SS-54	25' RT	126+00	58.2-59.7	A-6(7)	36	11	4.5	31.3	41.9	22.4	97	96	73	-	-



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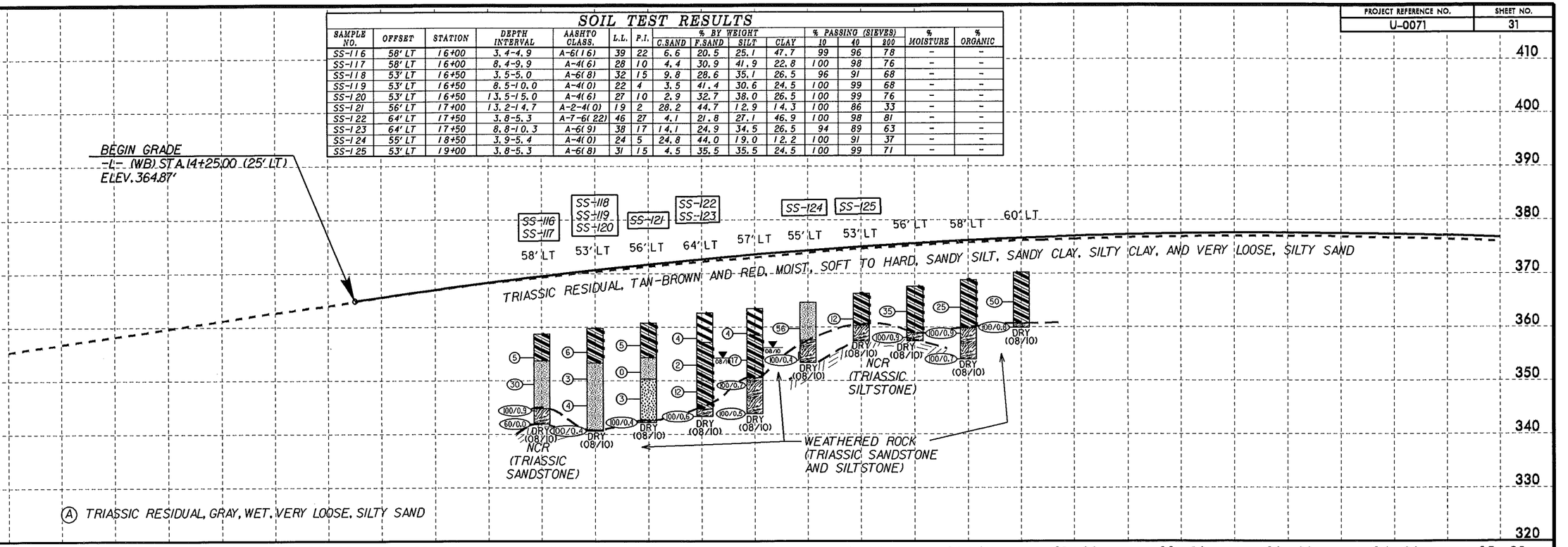
PROJECT REFERENCE NO.	SHEET NO.
U-0071	31

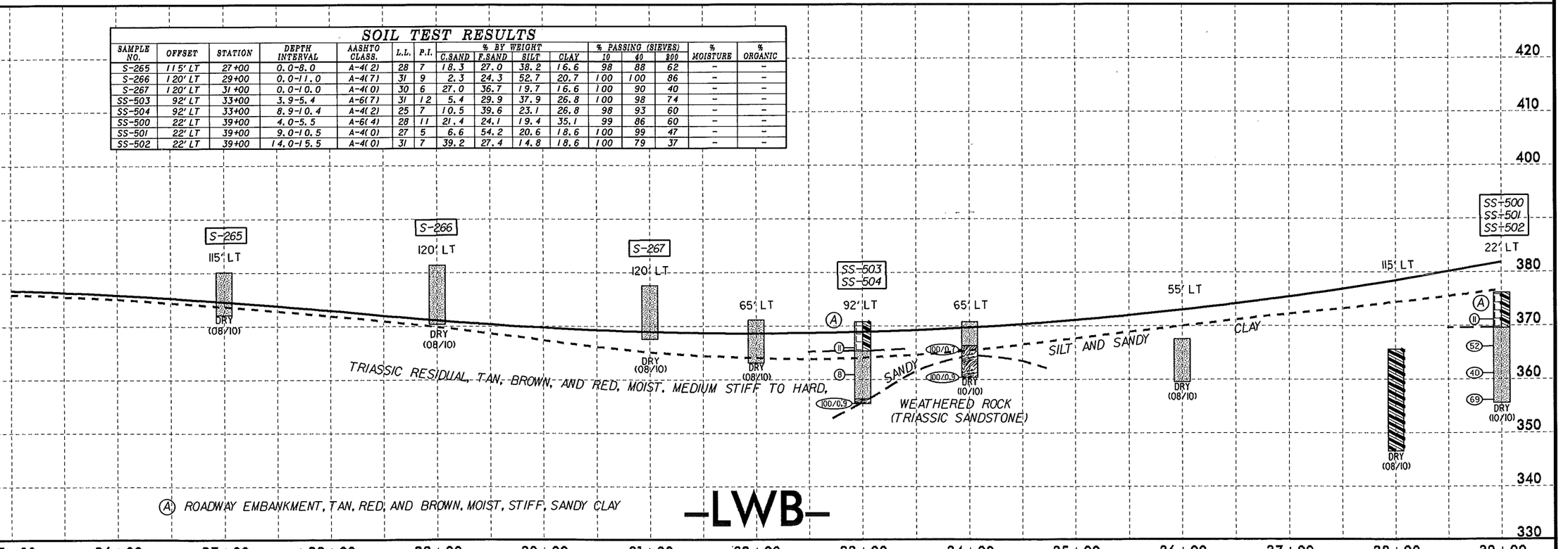
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-116	58' LT	16+00	3.4-4.9	A-6(16)	39	22	6.6	20.5	25.1	47.7	99	96	78	-	-
SS-117	58' LT	16+00	8.4-9.9	A-4(6)	28	10	4.4	30.9	41.9	22.8	100	98	76	-	-
SS-118	53' LT	16+50	3.5-5.0	A-6(8)	32	15	9.8	28.6	35.1	26.5	96	91	68	-	-
SS-119	53' LT	16+50	8.5-10.0	A-4(0)	22	4	3.5	41.4	30.6	24.5	100	99	68	-	-
SS-120	53' LT	16+50	13.5-15.0	A-4(6)	27	10	2.9	32.7	38.0	26.5	100	99	76	-	-
SS-121	56' LT	17+00	13.2-14.7	A-2-4(0)	19	2	28.2	44.7	12.9	14.3	100	86	33	-	-
SS-122	64' LT	17+50	3.8-5.3	A-7-6(22)	46	27	4.1	21.8	27.1	46.9	100	98	81	-	-
SS-123	64' LT	17+50	8.8-10.3	A-6(9)	38	17	14.1	24.9	34.5	26.5	94	89	63	-	-
SS-124	55' LT	18+50	3.9-5.4	A-4(0)	24	5	24.8	44.0	19.0	12.2	100	91	37	-	-
SS-125	53' LT	19+00	3.8-5.3	A-6(8)	31	15	4.5	35.5	35.5	24.5	100	99	71	-	-



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-265	115' LT	27+00	0.0-8.0	A-4(2)	28	7	18.3	27.0	38.2	16.6	98	88	62	-	-
S-266	120' LT	29+00	0.0-11.0	A-4(7)	31	9	2.3	24.3	52.7	20.7	100	100	86	-	-
S-267	120' LT	31+00	0.0-10.0	A-4(0)	30	6	27.0	36.7	19.7	16.6	100	90	40	-	-
SS-503	92' LT	33+00	3.9-5.4	A-6(7)	31	12	5.4	29.9	37.9	26.8	100	98	74	-	-
SS-504	92' LT	33+00	8.9-10.4	A-4(2)	25	7	10.5	39.6	23.1	26.8	98	93	60	-	-
SS-500	22' LT	39+00	4.0-5.5	A-6(4)	28	11	21.4	24.1	19.4	35.1	99	86	60	-	-
SS-501	22' LT	39+00	9.0-10.5	A-4(0)	27	5	6.6	54.2	20.6	18.6	100	99	47	-	-
SS-502	22' LT	39+00	14.0-15.5	A-4(0)	31	7	39.2	27.4	14.8	18.6	100	79	37	-	-



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PROJECT REFERENCE NO.	SHEET NO.
U-0071	32

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-126	53' LT	40+85	3.9-5.4	A-6(9)	36	13	3.7	31.4	40.4	24.5	100	99	75	-	-
SS-127	53' LT	40+85	8.9-10.4	A-6(8)	32	11	1.8	30.8	49.0	18.4	100	99	79	-	-
SS-303	52' LT	41+50	3.5-5.0	A-6(6)	32	13	10.1	31.2	32.4	26.3	100	96	65	-	-
SS-304	52' LT	41+50	8.5-10.0	A-6(8)	30	13	4.3	29.1	42.3	24.3	100	99	74	-	-
SS-305	51' LT	42+50	3.6-5.1	A-2-4(0)	33	9	53.5	17.7	12.6	16.2	98	60	31	-	-
SS-306	51' LT	42+50	9.0-10.0	A-4(3)	26	6	1.8	34.6	47.4	16.2	100	99	78	-	-
SS-329	51' LT	46+00	3.3-4.8	A-6(8)	32	13	3.4	29.0	37.2	30.4	98	97	74	-	-
SS-330	51' LT	48+00	3.5-5.0	A-6(13)	36	15	3.5	17.7	48.0	30.8	100	98	89	-	-
SS-315	50' LT	50+58	3.4-4.9	A-4(0)	26	8	41.7	23.3	13.7	21.2	100	82	38	-	-
SS-316	50' LT	50+58	8.4-9.9	A-6(17)	40	18	2.2	11.9	55.6	30.3	100	99	91	-	-

Ⓐ ROADWAY EMBANKMENT, TAN, RED, AND BROWN, MOIST, STIFF, SANDY CLAY

Ⓑ TRIASSIC RESIDUAL, TAN, BROWN, AND RED, MOIST, VERY DENSE, SILTY SAND AND STIFF TO HARD, SILTY CLAY AND SANDY CLAY

SS-500, SS-501, SS-502 — 22' LT — DRY (10/10)

SS-126, SS-127 — 53' LT — DRY (08/10), DRY (08/10)

SS-303, SS-304 — 52' LT — DRY (09/10)

SS-305, SS-306 — 51' LT

BRIDGE OVER -YI-

WEATHERED ROCK (TRIASSIC SANDSTONE AND SILTSTONE)

NON-CRYSTALLINE ROCK (TRIASSIC SANDSTONE)

SS-329 — 51' LT — TRIASSIC WEATHERED RESIDUAL ROCK

TAN, BROWN, (TRIASSIC SANDSTONE)

NON-CRYSTALLINE ROCK (TRIASSIC SANDSTONE)

SS-330 — 51' LT

SS-315, SS-316 — 50' LT

MOIST, VERY STIFF AND RED, SANDY SILT AND SANDY CLAY

SILTSTONE)

DRY (09/10)

39+00 40+00 41+00 42+00 43+00 44+00 45+00 46+00 47+00 48+00 49+00 50+00 51+00 52+00 53+00

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-313	65' LT	53+50	1.0-2.0	A-6(5)	28	13	15.6	31.3	18.8	34.3	97	90	59	-	-
S-314	65' LT	53+50	6.0-7.0	A-7-6(22)	46	22	3.0	4.0	46.5	46.5	96	94	91	-	-
SS-317	85' LT	55+50	3.5-5.0	A-2-4(0)	28	5	39.5	29.5	14.8	16.2	100	87	34	-	-
S-309	115' LT	59+50	0.0-10.0	A-6(11)	32	15	30.9	25.5	21.4	22.2	76	60	37	-	-
S-310	115' LT	59+50	10.0-17.0	A-6(11)	30	11	29.5	34.5	13.7	22.2	98	90	38	-	-
SS-311	95' LT	62+00	4.5-6.0	A-7-6(19)	42	24	4.4	22.0	33.1	40.4	100	98	82	-	-
SS-312	95' LT	62+00	9.5-11.0	A-6(13)	35	13	0.6	13.9	61.2	24.2	100	100	94	-	-
SS-343	95' LT	66+00	3.7-5.2	A-4(0)	25	6	41.9	25.5	14.2	18.5	100	77	37	-	-
SS-344	95' LT	66+00	8.7-10.2	A-2-4(0)	27	7	62.8	12.3	12.5	12.3	99	51	26	-	-
SS-348	95' LT	66+00	13.7-15.2	A-2-4(0)	26	6	61.7	11.6	8.4	18.3	99	50	28	-	-
SS-349	95' LT	66+00	18.7-20.2	A-4(11)	26	8	24.6	31.2	21.8	22.4	96	85	47	-	-

S-313, S-314 — 65' LT — WEATHERED ROCK (TRIASSIC SILTSTONE)

SS-317 — 85' LT — DRY (09/10)

TRIASSIC RESIDUAL, TAN, BROWN, AND RED, MOIST, MEDIUM STIFF TO HARD, SILTY CLAY AND SANDY CLAY

S-309, S-310 — 115' LT

SS-311, SS-312 — 95' LT

WEATHERED ROCK (TRIASSIC SANDSTONE)

SS-343, SS-344, SS-348, SS-349 — 95' LT — SILTY CLAY

Ⓒ TRIASSIC RESIDUAL, RED-BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY AND SILTY CLAY

Ⓓ TRIASSIC RESIDUAL, TAN AND BROWN, MOIST, MEDIUM DENSE TO VERY DENSE, SILTY SAND

Ⓔ ROADWAY EMBANKMENT, DARK BROWN, MOIST, MEDIUM STIFF, SANDY CLAY

Ⓕ ARTIFICIAL FILL, RED-BROWN, MOIST, STIFF, SANDY CLAY

53+00 54+00 55+00 56+00 57+00 58+00 59+00 60+00 61+00 62+00 63+00 64+00 65+00 66+00 67+00

-LWB-

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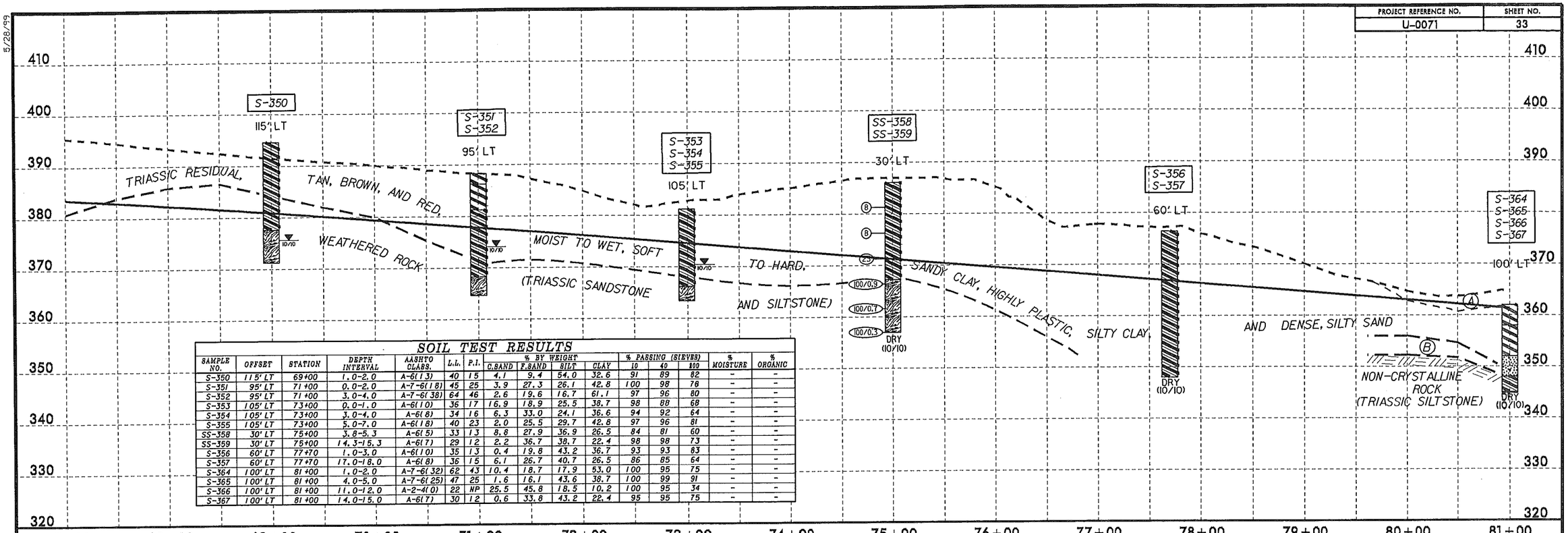
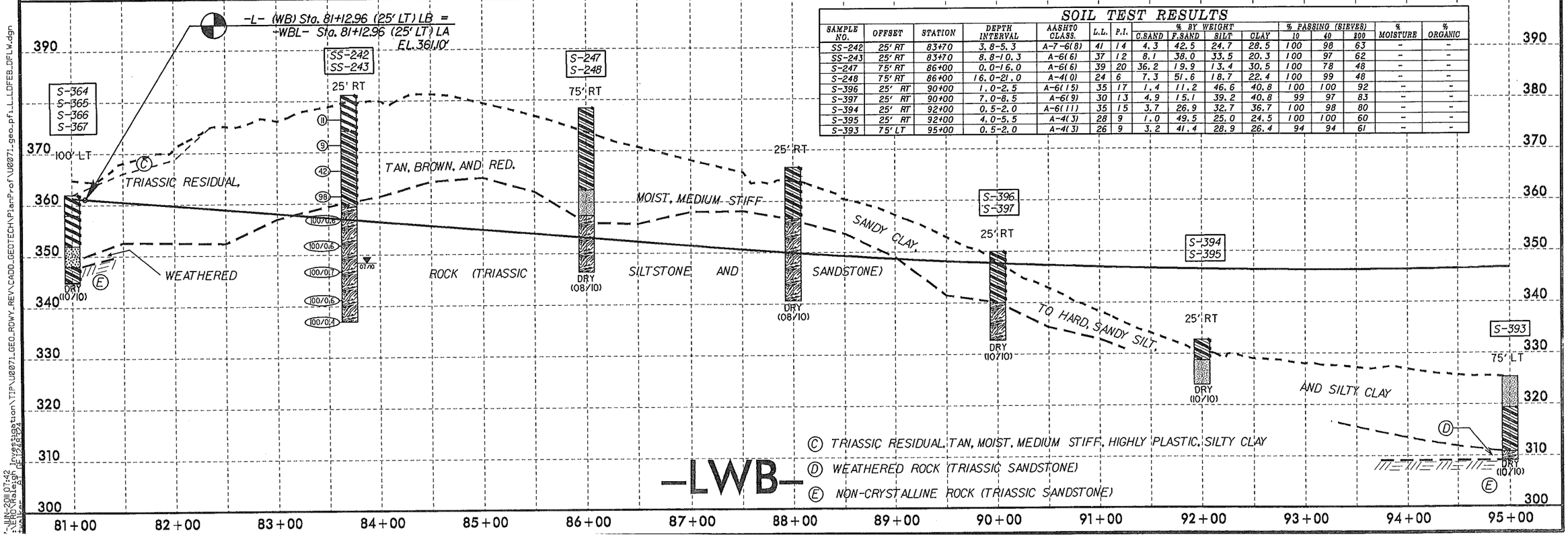
PROJECT REFERENCE NO.	SHEET NO.
U-0071	33

5/28/99



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
S-350	115' LT	69+00	1.0-2.0	A-6(13)	40	15	4.1	9.4	54.0	32.6	91	89	82	-	-
S-351	95' LT	71+00	0.0-2.0	A-7-6(18)	45	25	3.9	27.3	26.1	42.8	100	98	76	-	-
S-352	95' LT	71+00	3.0-4.0	A-7-6(38)	64	46	2.6	19.6	16.7	61.1	97	96	80	-	-
S-353	105' LT	73+00	0.0-1.0	A-6(10)	36	17	16.9	18.9	25.5	38.7	98	88	68	-	-
S-354	105' LT	73+00	3.0-4.0	A-6(8)	34	16	6.3	33.0	24.1	36.6	94	92	64	-	-
S-355	105' LT	73+00	5.0-7.0	A-6(18)	40	23	2.0	25.5	29.7	42.8	97	96	81	-	-
SS-358	30' LT	75+00	3.8-5.3	A-6(5)	33	13	8.8	27.9	36.9	26.5	84	81	60	-	-
SS-359	30' LT	75+00	14.3-15.3	A-6(7)	29	12	2.2	36.7	38.7	22.4	98	98	73	-	-
S-356	60' LT	77+70	1.0-3.0	A-6(10)	35	13	0.4	19.8	43.2	36.7	93	93	83	-	-
S-357	60' LT	77+70	17.0-18.0	A-6(8)	36	15	6.1	26.7	40.7	26.5	86	85	64	-	-
S-364	100' LT	81+00	1.0-2.0	A-7-6(32)	62	43	10.4	18.7	17.9	53.0	100	95	75	-	-
S-365	100' LT	81+00	4.0-5.0	A-7-6(25)	47	25	1.6	16.1	43.6	38.7	100	99	91	-	-
S-366	100' LT	81+00	11.0-12.0	A-2-4(0)	22	NP	25.5	45.8	18.5	10.2	100	95	34	-	-
S-367	100' LT	81+00	14.0-15.0	A-6(7)	30	12	0.6	33.8	43.2	22.4	95	95	75	-	-



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-242	25' RT	83+70	3.8-5.3	A-7-6(8)	41	14	4.3	42.5	24.7	28.5	100	98	63	-	-
SS-243	25' RT	83+70	8.8-10.3	A-6(6)	37	12	8.1	38.0	33.5	20.3	100	97	62	-	-
S-247	75' RT	86+00	0.0-16.0	A-6(6)	39	20	36.2	19.9	13.4	30.5	100	78	48	-	-
S-248	75' RT	86+00	16.0-21.0	A-4(0)	24	6	7.3	51.6	18.7	22.4	100	99	48	-	-
S-396	25' RT	90+00	1.0-2.5	A-6(15)	35	17	1.4	11.2	46.6	40.8	100	100	92	-	-
S-397	25' RT	90+00	7.0-8.5	A-6(9)	30	13	4.9	15.1	39.2	40.8	99	97	83	-	-
S-394	25' RT	92+00	0.5-2.0	A-6(11)	35	15	3.7	26.9	32.7	36.7	100	98	80	-	-
S-395	25' RT	92+00	4.0-5.5	A-4(3)	28	9	1.0	49.5	25.0	24.5	100	100	60	-	-
S-393	75' LT	95+00	0.5-2.0	A-4(3)	26	9	3.2	41.4	28.9	26.4	94	94	61	-	-

Ⓒ TRIASSIC RESIDUAL, TAN, MOIST, MEDIUM STIFF, HIGHLY PLASTIC, SILTY CLAY

Ⓓ WEATHERED ROCK (TRIASSIC SANDSTONE)

Ⓔ NON-CRYSTALLINE ROCK (TRIASSIC SANDSTONE)

-LWB-

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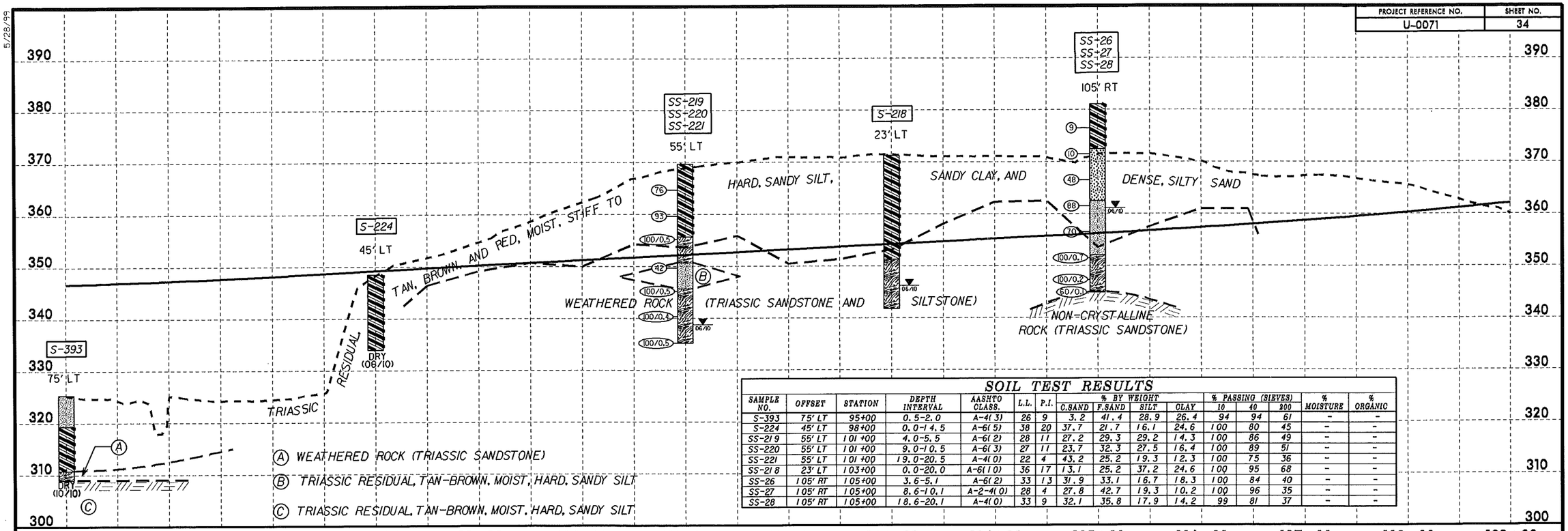
PROJECT REFERENCE NO.	SHEET NO.
U-0071	34

5/28/99

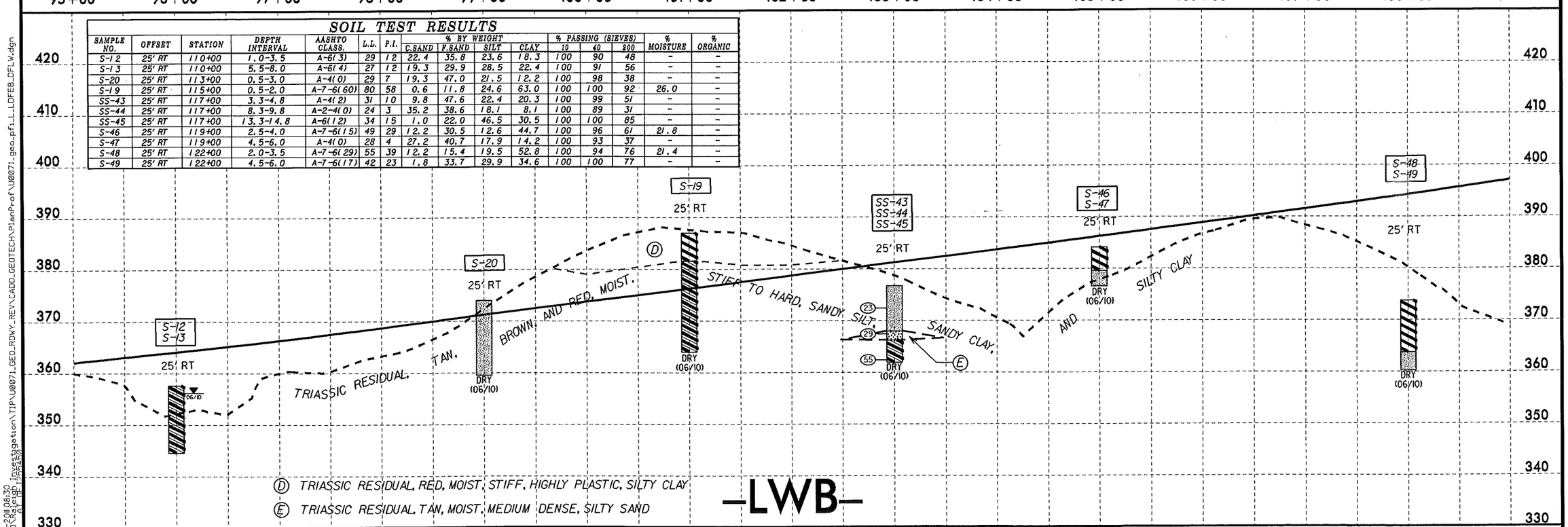


SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
S-393	75' LT	95+00	0.5-2.0	A-4(3)	26	9	3.2	41.4	28.9	26.4	94	94	61	-	-
S-224	45' LT	98+00	0.0-14.5	A-6(5)	38	20	37.7	21.7	16.1	24.6	100	80	45	-	-
SS-219	55' LT	101+00	4.0-5.5	A-6(2)	28	11	27.2	29.3	29.2	14.3	100	86	49	-	-
SS-220	55' LT	101+00	9.0-10.5	A-6(3)	27	11	23.7	32.3	27.5	16.4	100	89	51	-	-
SS-221	55' LT	101+00	19.0-20.5	A-4(0)	22	4	43.2	25.2	19.3	12.3	100	75	36	-	-
SS-218	23' LT	103+00	0.0-20.0	A-6(10)	36	17	13.1	25.2	37.2	24.6	100	95	68	-	-
SS-26	105' RT	105+00	3.6-5.1	A-6(2)	33	13	31.9	33.1	16.7	18.3	100	84	40	-	-
SS-27	105' RT	105+00	8.6-10.1	A-2-4(0)	28	4	27.8	42.7	19.3	10.2	100	96	35	-	-
SS-28	105' RT	105+00	18.6-20.1	A-4(0)	33	9	32.1	35.8	17.9	14.2	99	81	37	-	-

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-12	25' RT	110+00	1.0-3.5	A-6(3)	29	12	22.4	35.8	23.6	18.3	100	90	48	-	-
S-13	25' RT	110+00	5.5-8.0	A-6(4)	27	12	19.3	29.9	28.5	22.4	100	91	56	-	-
S-20	25' RT	113+00	0.5-3.0	A-4(0)	29	7	19.3	47.0	21.5	12.2	100	98	38	-	-
S-19	25' RT	115+00	0.5-2.0	A-7-6(60)	80	58	0.6	11.8	24.6	63.0	100	100	92	26.0	-
SS-43	25' RT	117+00	3.3-4.8	A-4(2)	31	10	9.8	47.6	22.4	20.3	100	99	51	-	-
SS-44	25' RT	117+00	8.3-9.8	A-2-4(0)	24	3	35.2	38.6	18.1	8.1	100	89	31	-	-
SS-45	25' RT	117+00	13.3-14.8	A-6(12)	34	15	1.0	22.0	46.5	30.5	100	100	85	-	-
S-46	25' RT	119+00	2.5-4.0	A-7-6(15)	49	29	12.2	30.5	12.6	44.7	100	96	61	21.8	-
S-47	25' RT	119+00	4.5-6.0	A-4(0)	28	4	27.2	40.7	17.9	14.2	100	93	37	-	-
S-48	25' RT	122+00	2.0-3.5	A-7-6(29)	55	39	12.2	15.4	19.5	52.8	100	94	76	21.4	-
S-49	25' RT	122+00	4.5-6.0	A-7-6(17)	42	23	1.8	33.7	29.9	34.6	100	100	77	-	-



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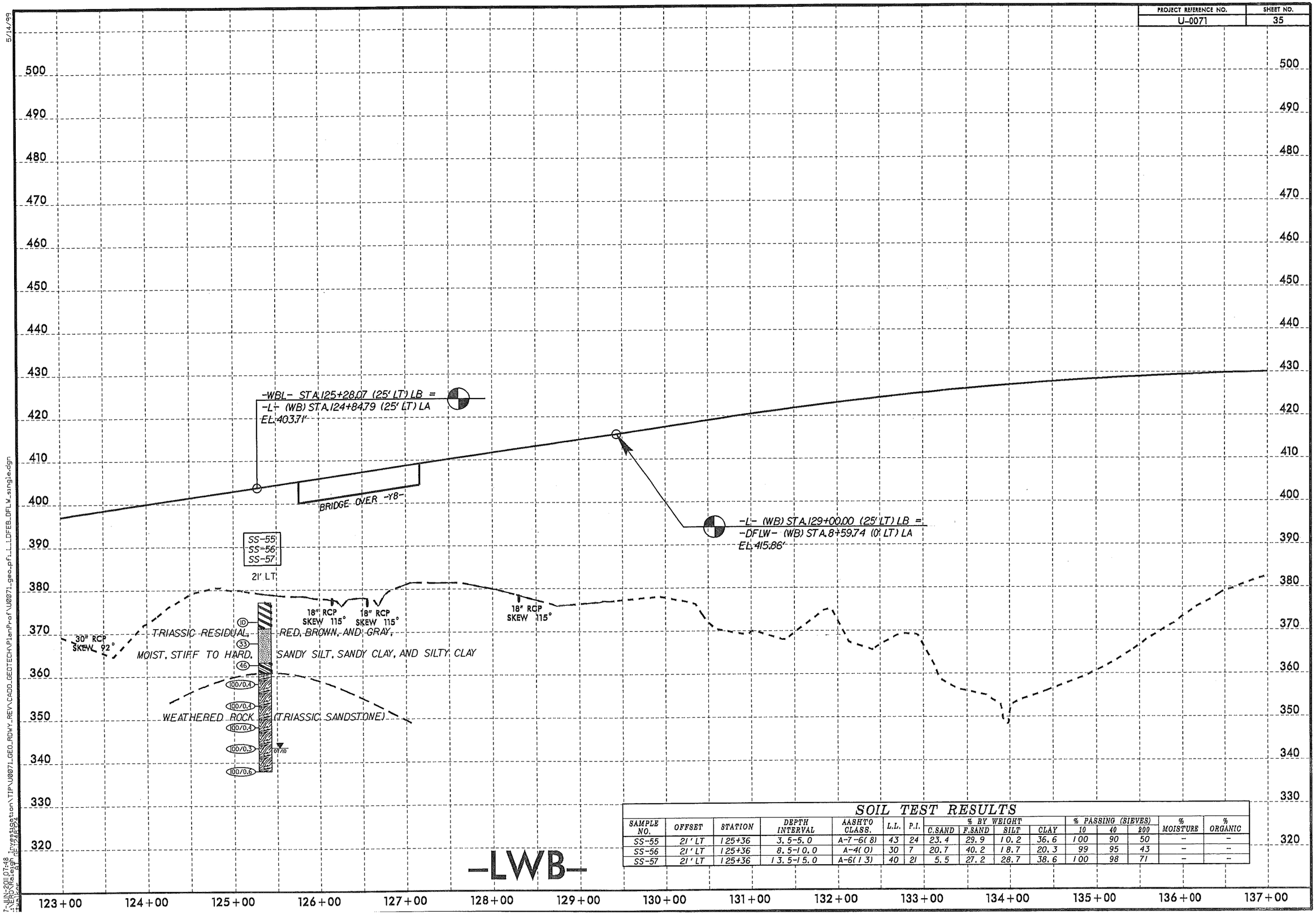
PROJECT REFERENCE NO.	SHEET NO.
U-0071	35



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SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-55	21' LT	125+36	3.5-5.0	A-7-6(8)	43	24	23.4	29.9	10.2	36.6	100	90	50	-	-
SS-56	21' LT	125+36	8.5-10.0	A-4(0)	30	7	20.7	40.2	18.7	20.3	99	95	43	-	-
SS-57	21' LT	125+36	13.5-15.0	A-6(13)	40	21	5.5	27.2	28.7	38.6	100	98	71	-	-

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PROJECT REFERENCE NO.	SHEET NO.
U-0071	36

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-58	25' LT	130+00	0.5-2.0	A-6(4)	36	12	7.9	46.9	23.0	22.2	100	97	55	-	-
S-59	25' LT	130+00	5.5-7.0	A-2-4(0)	24	6	48.9	20.0	17.0	14.1	97	60	34	-	-
S-60	25' LT	133+00	6.0-7.0	A-6(4)	27	14	10.3	44.6	20.8	24.2	100	97	53	13.9	-
S-61	25' LT	133+00	7.5-9.0	A-6(6)	30	12	14.5	22.4	44.8	18.2	99	91	70	-	-
SS-62	13' LT	137+74	3.5-5.0	A-7-6(20)	49	25	6.3	19.8	27.5	46.5	100	99	77	-	-
SS-63	12' LT	140+83	2.4-3.9	A-7-6(20)	47	20	3.0	12.7	41.8	42.4	100	99	89	-	-
SS-64	12' LT	140+83	32.4-33.9	A-7-6(6)	41	22	11.9	43.2	14.5	30.3	100	98	47	-	-

-L- (EB) STA 129+00.00 (25' RT) LB =
-LDFEB- STA 129+00.00 (0' RT) LA
EL. 415.86'

SS-58
SS-59
25' LT
BROWN, MEDIUM DENSE, MOIST, SILTY SAND
TRIASSIC RESIDUAL
07/10

SS-60
SS-61
25' LT
TAN, BROWN, RED, AND GRAY, MOIST,
WEATHERED ROCK (TRIASSIC SANDSTONE)
NON-CRYSTALLINE ROCK (TRIASSIC SANDSTONE)
07/10

25' LT
MEDIUM STIFF TO HARD, SANDY CLAY
07/10

SS-62
13' LT
14
60/0.1
DRY (7/10)
NON-CRYSTALLINE ROCK (TRIASSIC SANDSTONE)

SS-63
SS-64
12' LT
16
28
100/0.1
AND SILTY CLAY
WEATHERED ROCK (TRIASSIC SANDSTONE)
TRIASSIC RESIDUAL, MOIST, HARD,
40
TAN-GRAY, SILTY CLAY
WEATHERED ROCK (TRIASSIC SANDSTONE)

-LDFEB-

490 480 470 460 450 440 430 420 410 400 390 380 370 360 350 340 330 340 350

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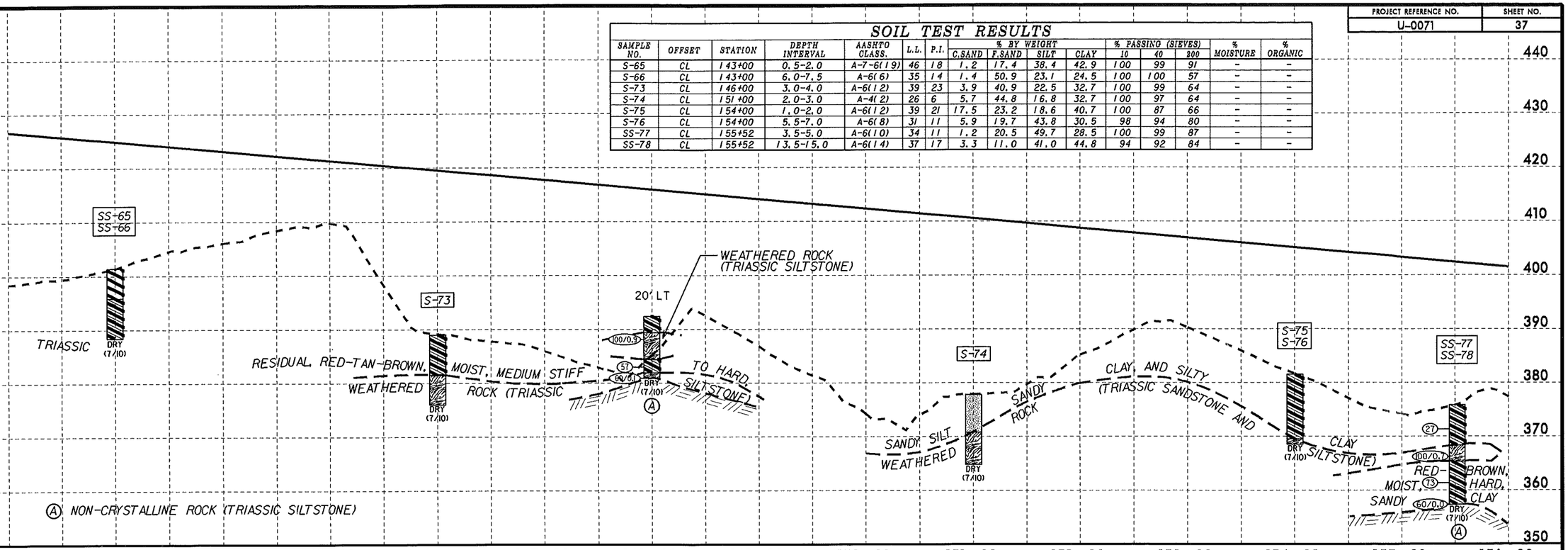
5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-0071	37

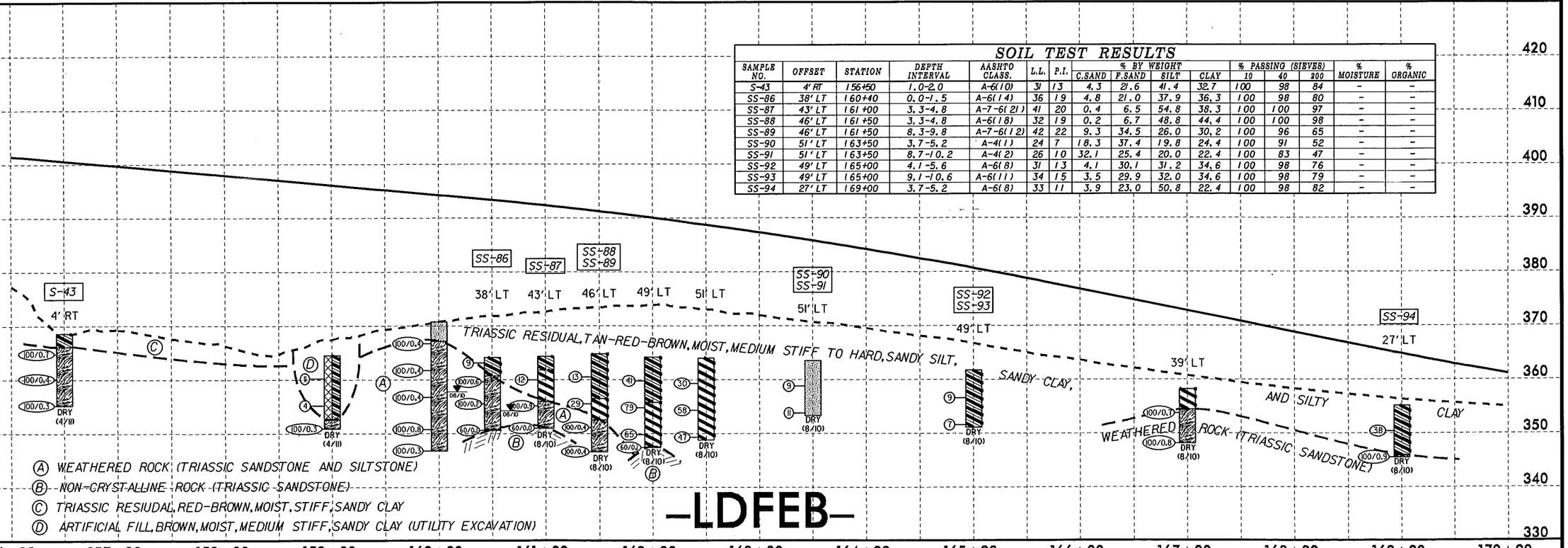
SOIL TEST RESULTS

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-65	CL	143+00	0.5-2.0	A-7-6(19)	46	18	1.2	17.4	38.4	42.9	100	99	91	-	-
S-66	CL	143+00	6.0-7.5	A-6(6)	35	14	1.4	50.9	23.1	24.5	100	100	57	-	-
S-73	CL	146+00	3.0-4.0	A-6(12)	39	23	3.9	40.9	22.5	32.7	100	99	64	-	-
S-74	CL	151+00	2.0-3.0	A-4(2)	26	6	5.7	44.8	16.8	32.7	100	97	64	-	-
S-75	CL	154+00	1.0-2.0	A-6(12)	39	21	17.5	23.2	18.6	40.7	100	87	66	-	-
S-76	CL	154+00	5.5-7.0	A-6(8)	31	11	5.9	19.7	43.8	30.5	98	94	80	-	-
SS-77	CL	155+52	3.5-5.0	A-6(10)	34	11	1.2	20.5	49.7	28.5	100	99	87	-	-
SS-78	CL	155+52	13.5-15.0	A-6(14)	37	17	3.3	11.0	41.0	44.8	94	92	84	-	-



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	4' RT	156+50	1.0-2.0	A-6(10)	31	13	4.3	21.6	41.4	32.7	100	98	84	-	-
SS-86	38' LT	160+40	0.0-1.5	A-6(14)	36	19	4.8	21.0	37.9	36.3	100	98	80	-	-
SS-87	43' LT	161+00	3.3-4.8	A-7-6(21)	41	20	0.4	6.5	54.8	38.3	100	100	97	-	-
SS-88	46' LT	161+50	3.3-4.8	A-6(18)	32	19	0.2	6.7	48.8	44.4	100	100	98	-	-
SS-89	46' LT	161+50	8.3-9.8	A-7-6(12)	42	22	9.3	34.5	26.0	30.2	100	96	65	-	-
SS-90	51' LT	163+50	3.7-5.2	A-4(1)	24	7	18.3	37.4	19.8	24.4	100	91	52	-	-
SS-91	51' LT	163+50	8.7-10.2	A-4(2)	26	10	32.1	25.4	20.0	22.4	100	83	47	-	-
SS-92	49' LT	165+00	4.1-5.6	A-6(8)	31	13	4.1	30.1	31.2	34.6	100	98	76	-	-
SS-93	49' LT	165+00	9.1-10.6	A-6(11)	34	15	3.5	29.9	32.0	34.6	100	98	79	-	-
SS-94	27' LT	169+00	3.7-5.2	A-6(8)	33	11	3.9	23.0	50.8	22.4	100	98	82	-	-



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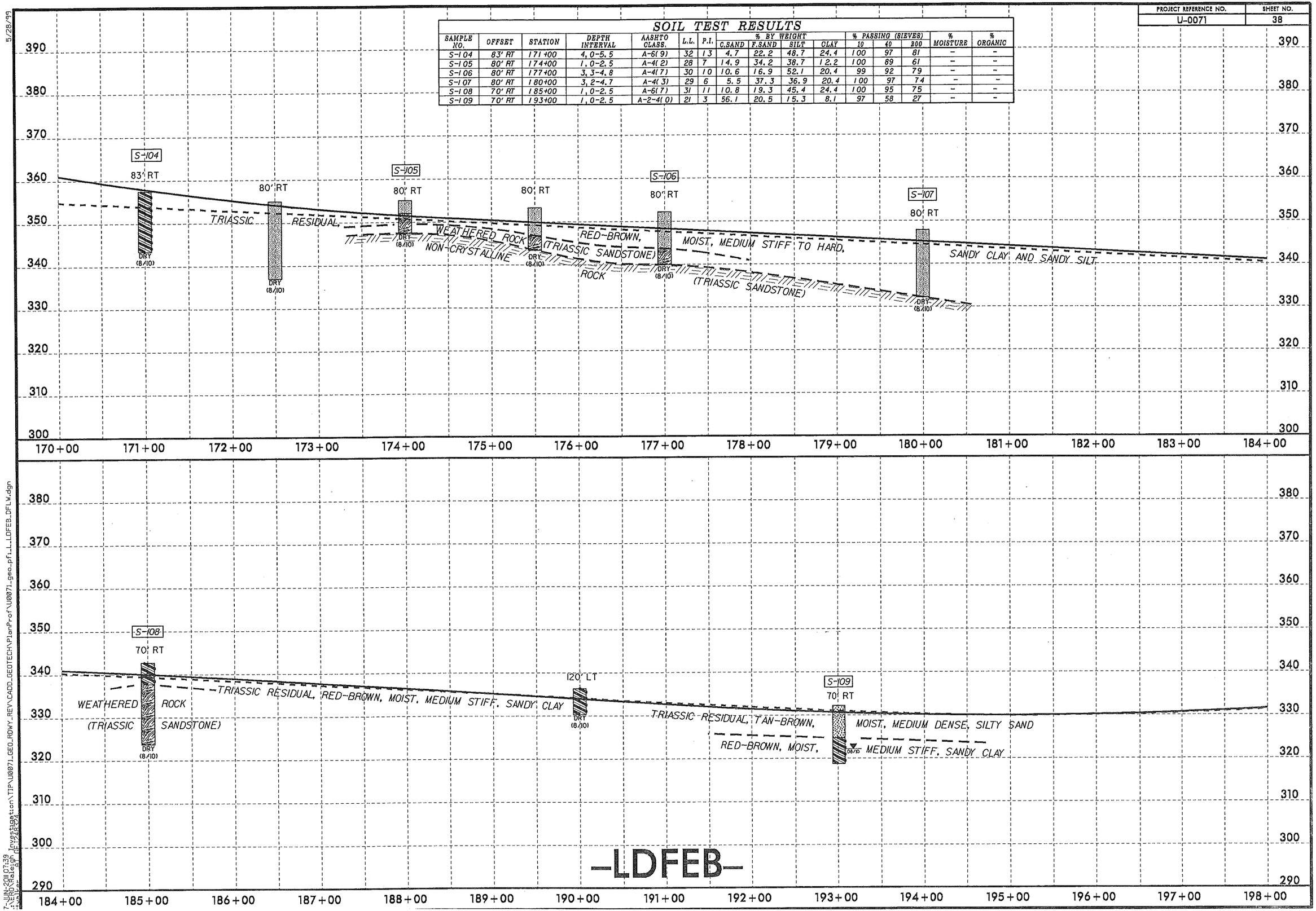
5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-0071	38

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-104	83' RT	171+00	4.0-5.5	A-6(9)	32	13	4.7	22.2	48.7	24.4	100	97	81	-	-
S-105	80' RT	174+00	1.0-2.5	A-4(2)	28	7	14.9	34.2	38.7	12.2	100	89	61	-	-
S-106	80' RT	177+00	3.3-4.8	A-4(7)	30	10	10.6	16.9	52.1	20.4	99	92	79	-	-
S-107	80' RT	180+00	3.2-4.7	A-4(3)	29	6	5.5	37.3	36.9	20.4	100	97	74	-	-
S-108	70' RT	185+00	1.0-2.5	A-6(7)	31	11	10.8	19.3	45.4	24.4	100	95	75	-	-
S-109	70' RT	193+00	1.0-2.5	A-2-4(0)	21	3	56.1	20.5	15.3	8.1	97	58	27	-	-



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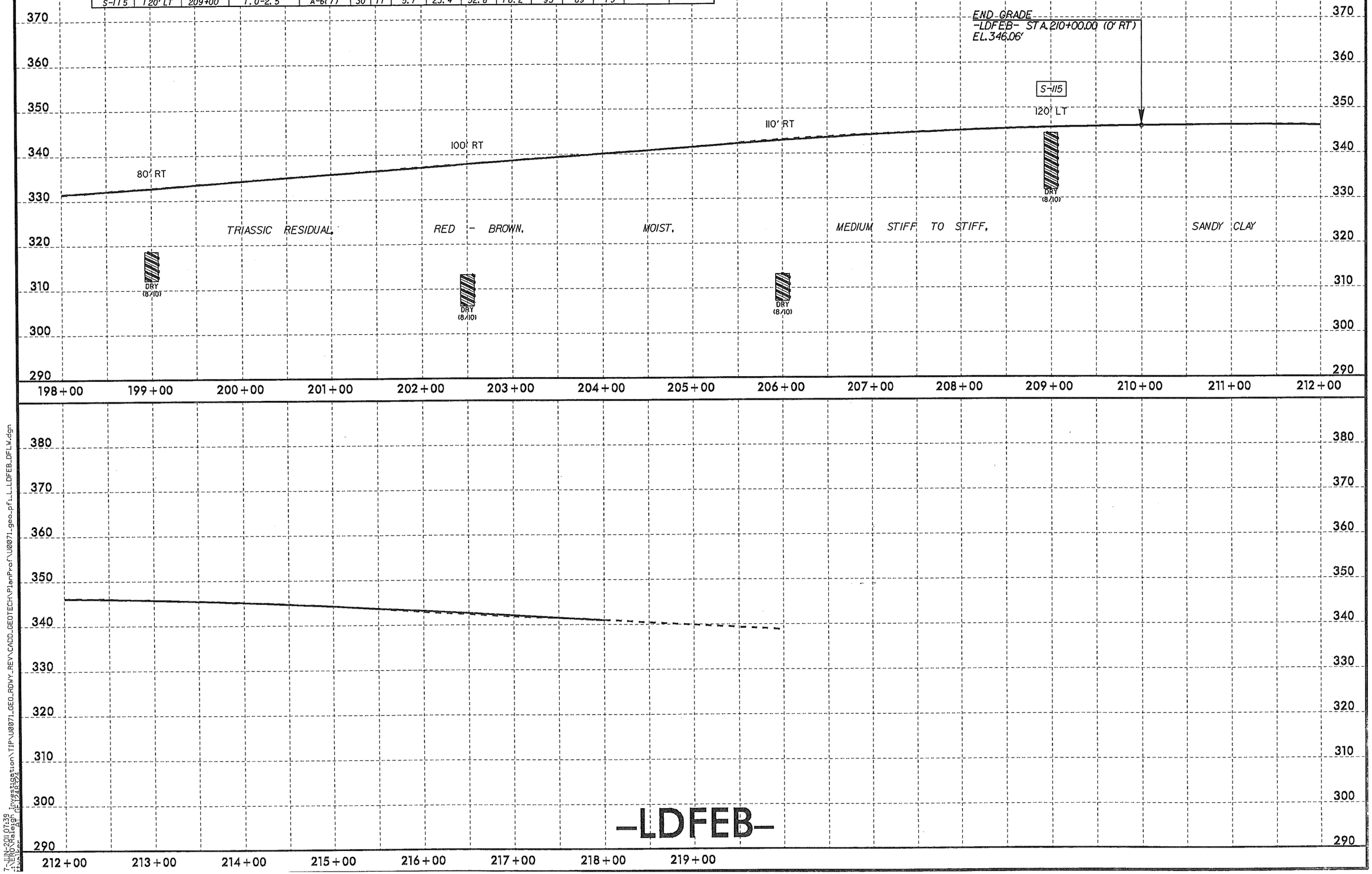
PROJECT REFERENCE NO.	SHEET NO.
U-0071	39

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-115	120' LT	209+00	1.0-2.5	A-6(7)	30	11	5.7	23.4	52.8	18.2	93	89	75	-	-



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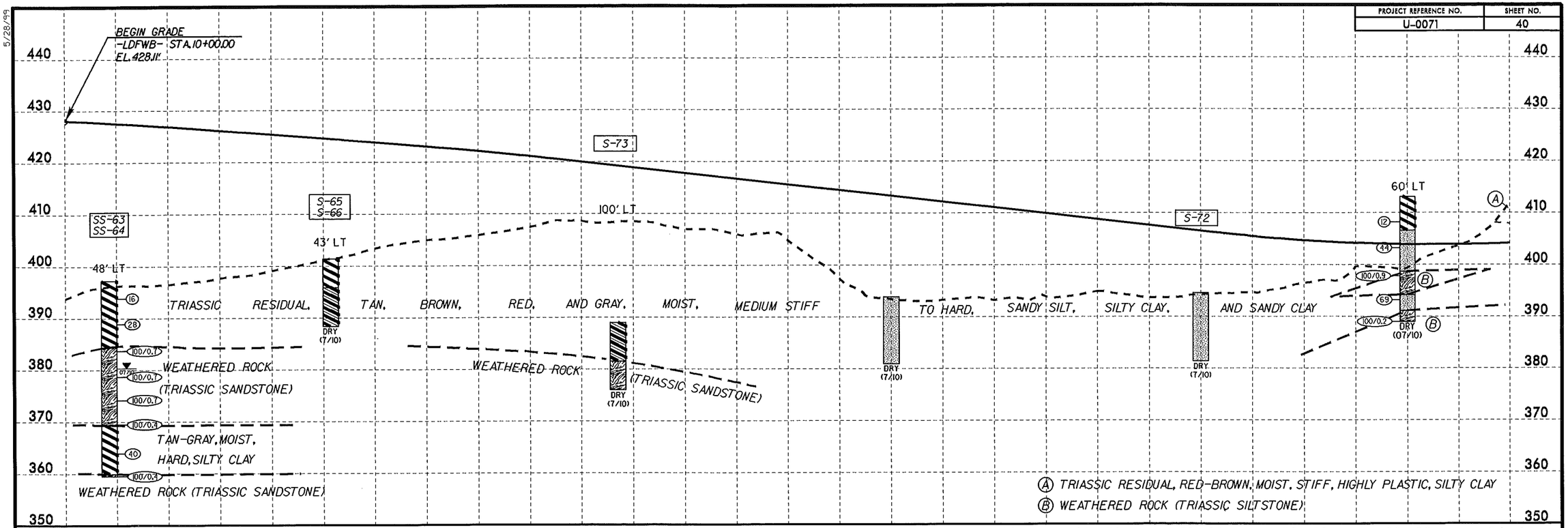
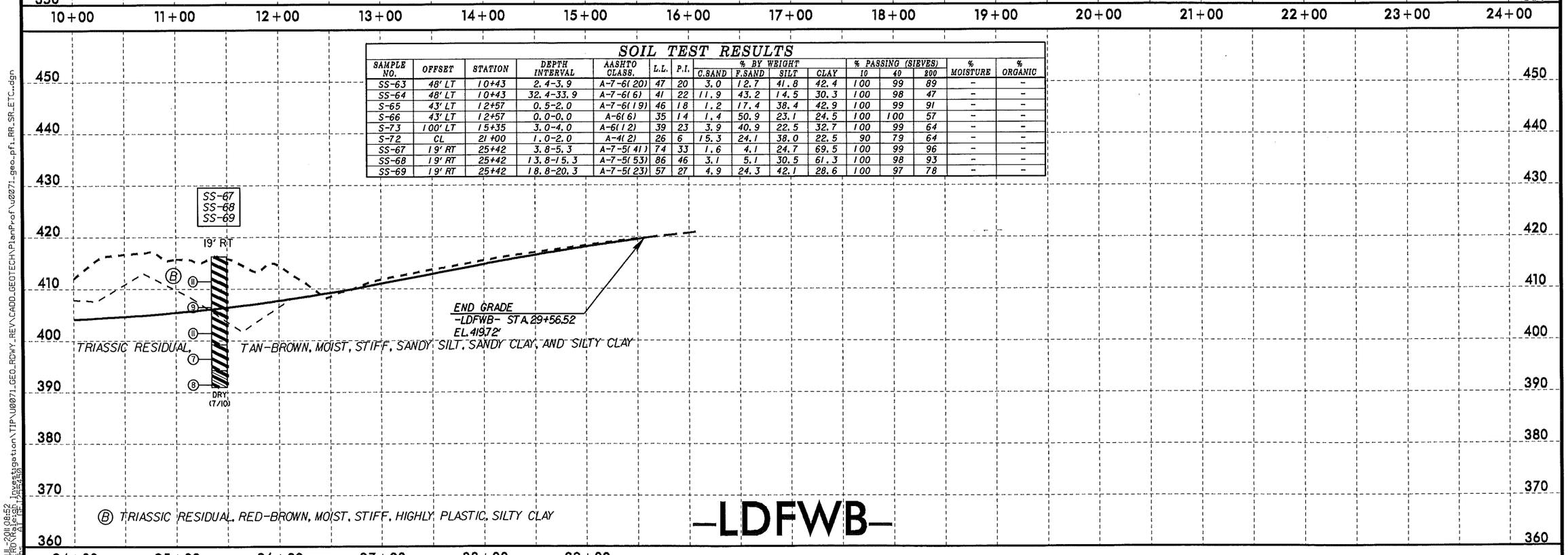
PROJECT REFERENCE NO.	SHEET NO.
U-0071	40

5/28/99



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-63	48' LT	10+43	2.4-3.9	A-7-6(20)	47	20	3.0	12.7	41.8	42.4	100	99	89	-	-
SS-64	48' LT	10+43	32.4-33.9	A-7-6(6)	41	22	11.9	43.2	14.5	30.3	100	98	47	-	-
S-65	43' LT	12+57	0.5-2.0	A-7-6(19)	46	18	1.2	17.4	38.4	42.9	100	99	91	-	-
S-66	43' LT	12+57	0.0-0.0	A-6(6)	35	14	1.4	50.9	23.1	24.5	100	100	57	-	-
S-73	100' LT	15+35	3.0-4.0	A-6(12)	39	23	3.9	40.9	22.5	32.7	100	99	64	-	-
S-72	CL	21+00	1.0-2.0	A-4(2)	26	6	15.3	24.1	38.0	22.5	90	79	64	-	-
SS-67	19' RT	25+42	3.8-5.3	A-7-5(41)	74	33	1.6	4.1	24.7	69.5	100	99	96	-	-
SS-68	19' RT	25+42	13.8-15.3	A-7-5(53)	86	46	3.1	5.1	30.5	61.3	100	98	93	-	-
SS-69	19' RT	25+42	18.8-20.3	A-7-5(23)	57	27	4.9	24.3	42.1	28.6	100	97	78	-	-



-LDFWB-

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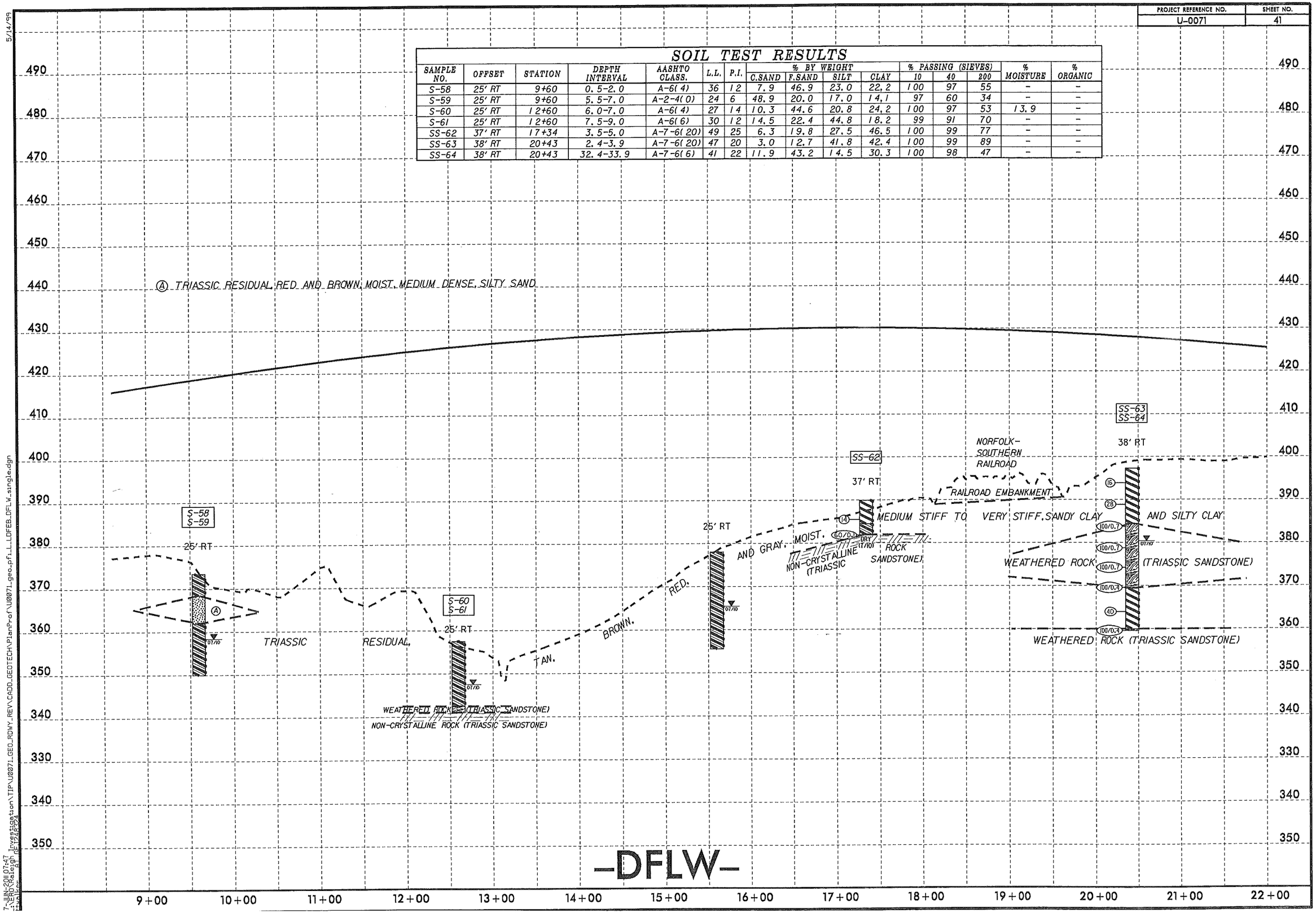
Arnold, Al HE 252-430

PROJECT REFERENCE NO.	SHEET NO.
U-0071	41

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-58	25' RT	9+60	0.5-2.0	A-6(4)	36	12	7.9	46.9	23.0	22.2	100	97	55	-	-
S-59	25' RT	9+60	5.5-7.0	A-2-4(0)	24	6	48.9	20.0	17.0	14.1	97	60	34	-	-
S-60	25' RT	12+60	6.0-7.0	A-6(4)	27	14	10.3	44.6	20.8	24.2	100	97	53	13.9	-
S-61	25' RT	12+60	7.5-9.0	A-6(6)	30	12	14.5	22.4	44.8	18.2	99	91	70	-	-
SS-62	37' RT	17+34	3.5-5.0	A-7-6(20)	49	25	6.3	19.8	27.5	46.5	100	99	77	-	-
SS-63	38' RT	20+43	2.4-3.9	A-7-6(20)	47	20	3.0	12.7	41.8	42.4	100	99	89	-	-
SS-64	38' RT	20+43	32.4-33.9	A-7-6(6)	41	22	11.9	43.2	14.5	30.3	100	98	47	-	-



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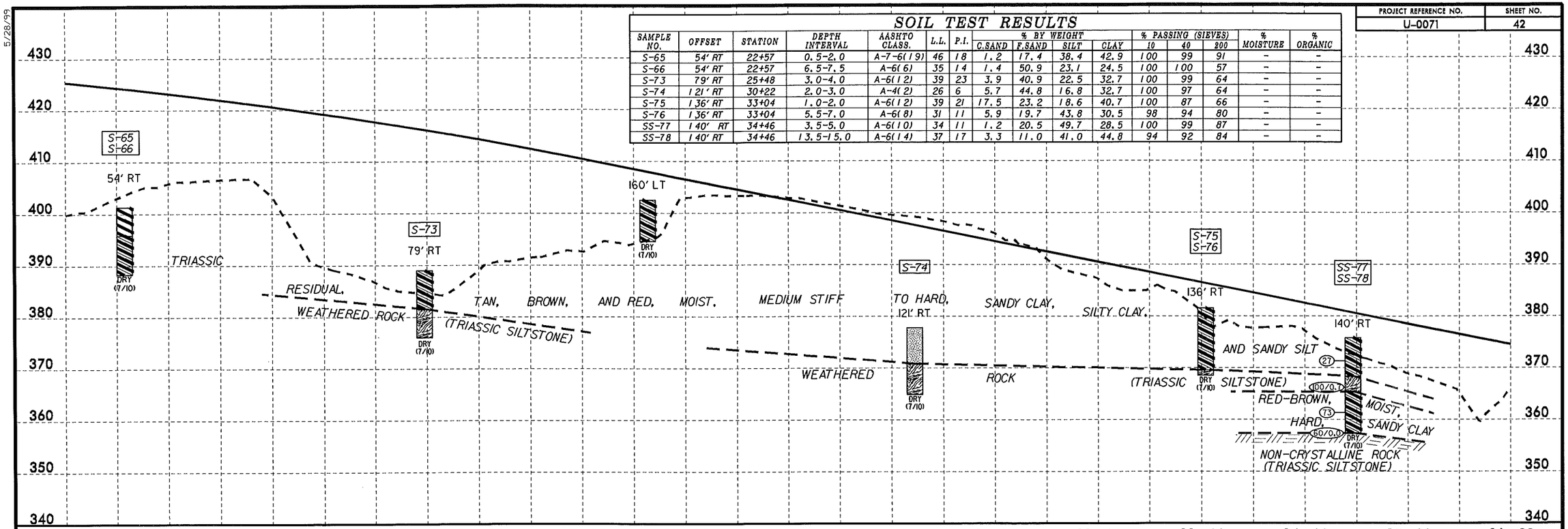
PROJECT REFERENCE NO.	SHEET NO.
U-0071	42

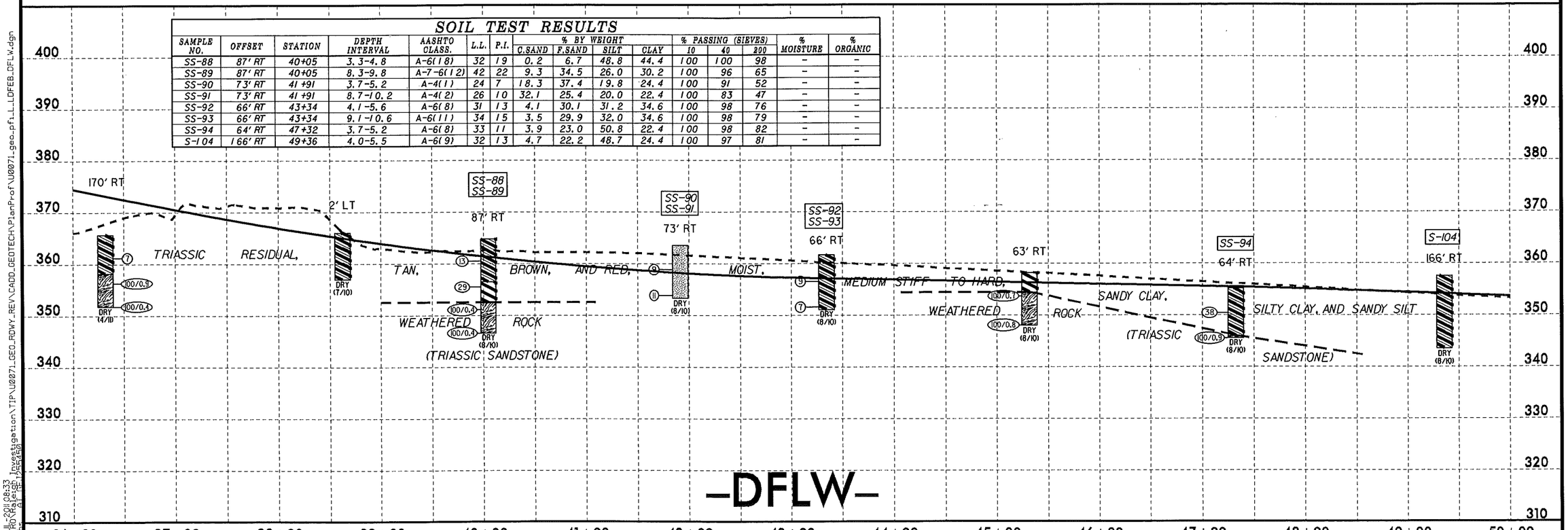
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-65	54' RT	22+57	0.5-2.0	A-7-6(19)	46	18	1.2	17.4	38.4	42.9	100	99	91	-	-
S-66	54' RT	22+57	6.5-7.5	A-6(6)	35	14	1.4	50.9	23.1	24.5	100	100	57	-	-
S-73	79' RT	25+48	3.0-4.0	A-6(12)	39	23	3.9	40.9	22.5	32.7	100	99	64	-	-
S-74	121' RT	30+22	2.0-3.0	A-4(2)	26	6	5.7	44.8	16.8	32.7	100	97	64	-	-
S-75	136' RT	33+04	1.0-2.0	A-6(12)	39	21	17.5	23.2	18.6	40.7	100	87	66	-	-
S-76	136' RT	33+04	5.5-7.0	A-6(8)	31	11	5.9	19.7	43.8	30.5	98	94	80	-	-
SS-77	140' RT	34+46	3.5-5.0	A-6(10)	34	11	1.2	20.5	49.7	28.5	100	99	87	-	-
SS-78	140' RT	34+46	13.5-15.0	A-6(14)	37	17	3.3	11.0	41.0	44.8	94	92	84	-	-



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	87' RT	40+05	3.3-4.8	A-6(18)	32	19	0.2	6.7	48.8	44.4	100	100	98	-	-
SS-89	87' RT	40+05	8.3-9.8	A-7-6(12)	42	22	9.3	34.5	26.0	30.2	100	96	65	-	-
SS-90	73' RT	41+91	3.7-5.2	A-4(1)	24	7	18.3	37.4	19.8	24.4	100	91	52	-	-
SS-91	73' RT	41+91	8.7-10.2	A-4(2)	26	10	32.1	25.4	20.0	22.4	100	83	47	-	-
SS-92	66' RT	43+34	4.1-5.6	A-6(8)	31	13	4.1	30.1	31.2	34.6	100	98	76	-	-
SS-93	66' RT	43+34	9.1-10.6	A-6(11)	34	15	3.5	29.9	32.0	34.6	100	98	79	-	-
SS-94	64' RT	47+32	3.7-5.2	A-6(8)	33	11	3.9	23.0	50.8	22.4	100	98	82	-	-
S-104	166' RT	49+36	4.0-5.5	A-6(9)	32	13	4.7	22.2	48.7	24.4	100	97	81	-	-



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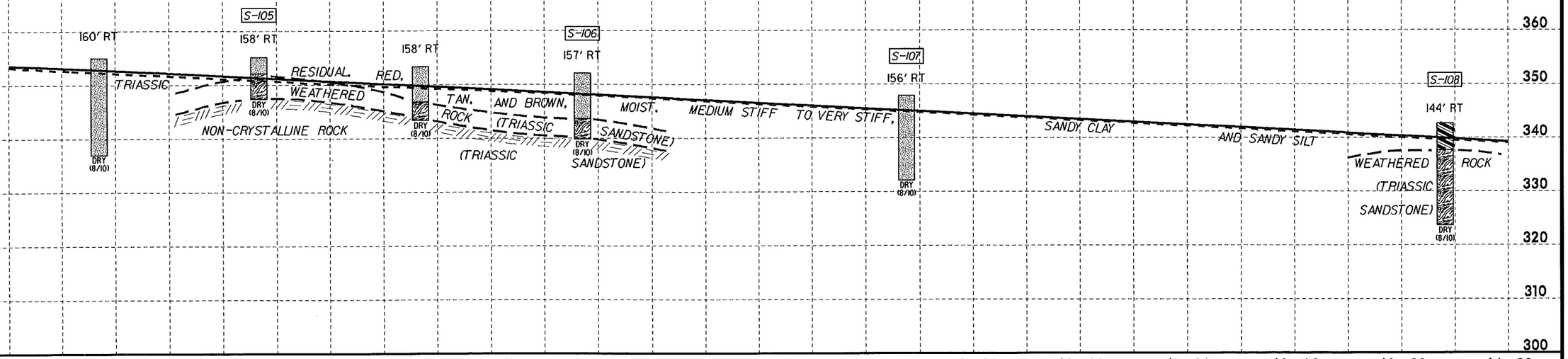
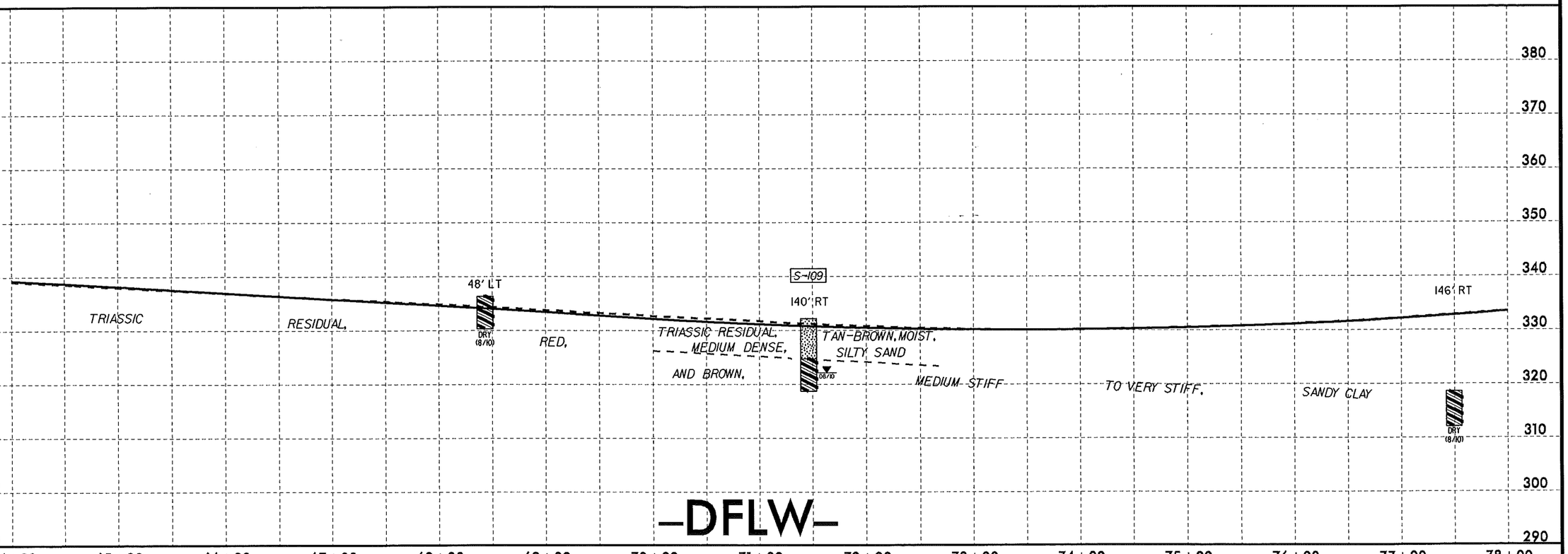
PROJECT REFERENCE NO.	SHEET NO.
U-0071	43

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-105	158' RT	52+34	1.0-2.5	A-4(2)	28	7	14.9	34.2	38.7	12.2	100	89	61	-	-
S-106	157' RT	55+36	3.3-4.8	A-4(7)	30	10	10.6	16.9	52.1	20.4	99	92	79	-	-
S-107	156' RT	58+38	3.2-4.7	A-4(3)	29	6	5.5	37.3	36.9	20.4	100	97	74	-	-
S-108	144' RT	63+41	1.0-2.5	A-6(7)	31	11	10.8	19.3	45.4	24.4	100	95	75	-	-
S-109	140' RT	71+46	1.0-2.5	A-2-4(0)	21	3	56.1	20.5	15.3	8.1	97	58	27	-	-





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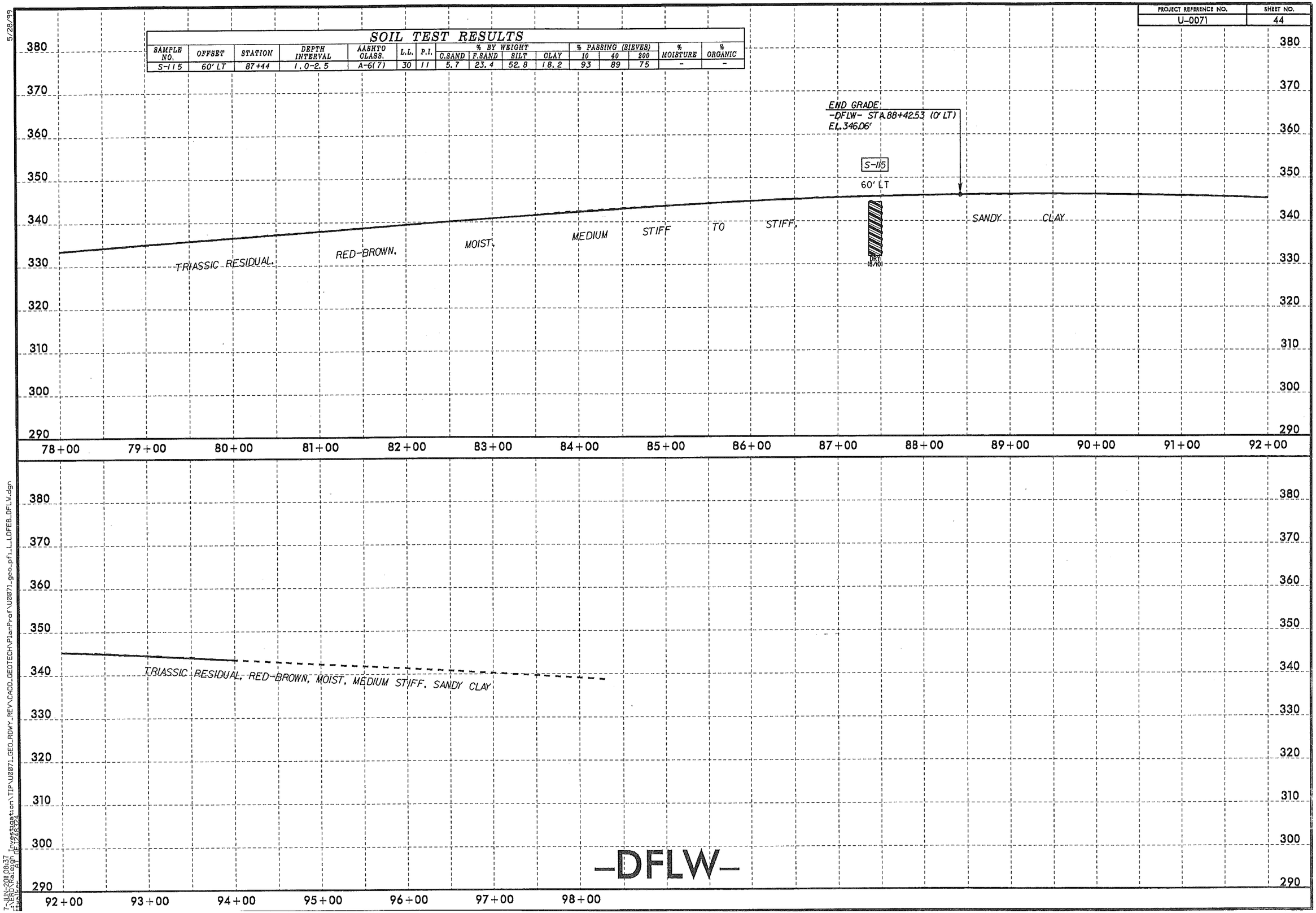
mmoss

PROJECT REFERENCE NO.	SHEET NO.
U-0071	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-115	60' LT	87+44	1.0-2.5	A-6(7)	30	11	5.7	23.4	52.8	18.2	93	89	75	-	-



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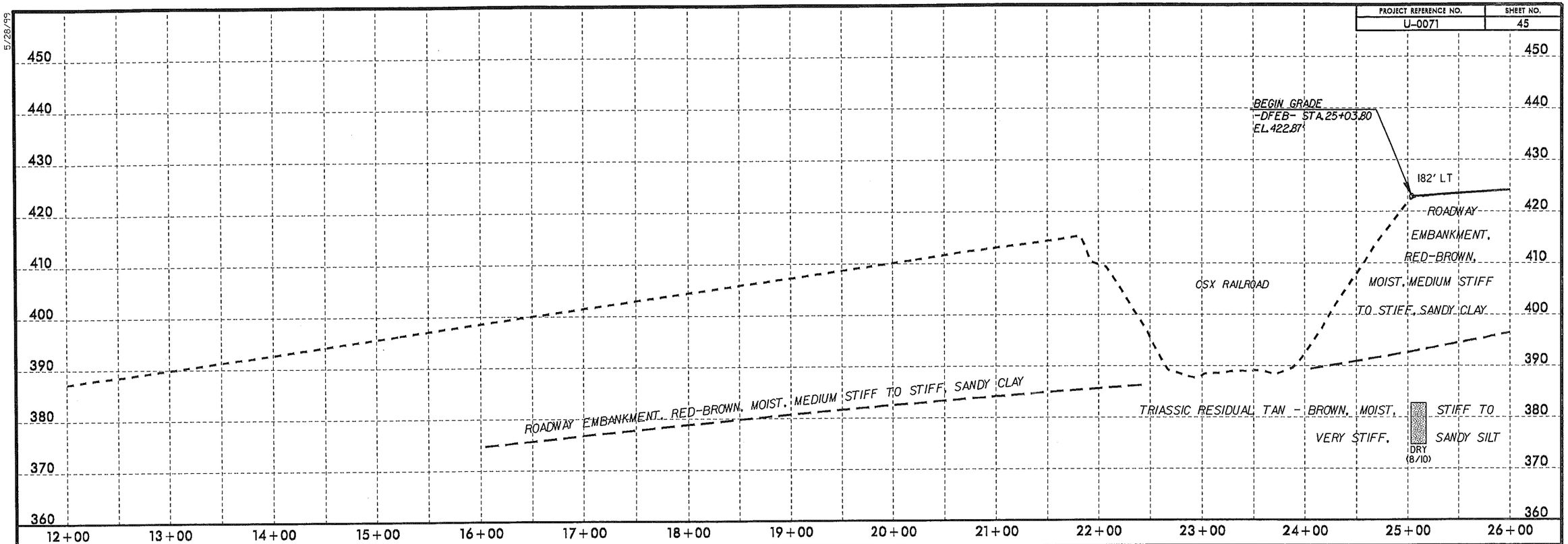
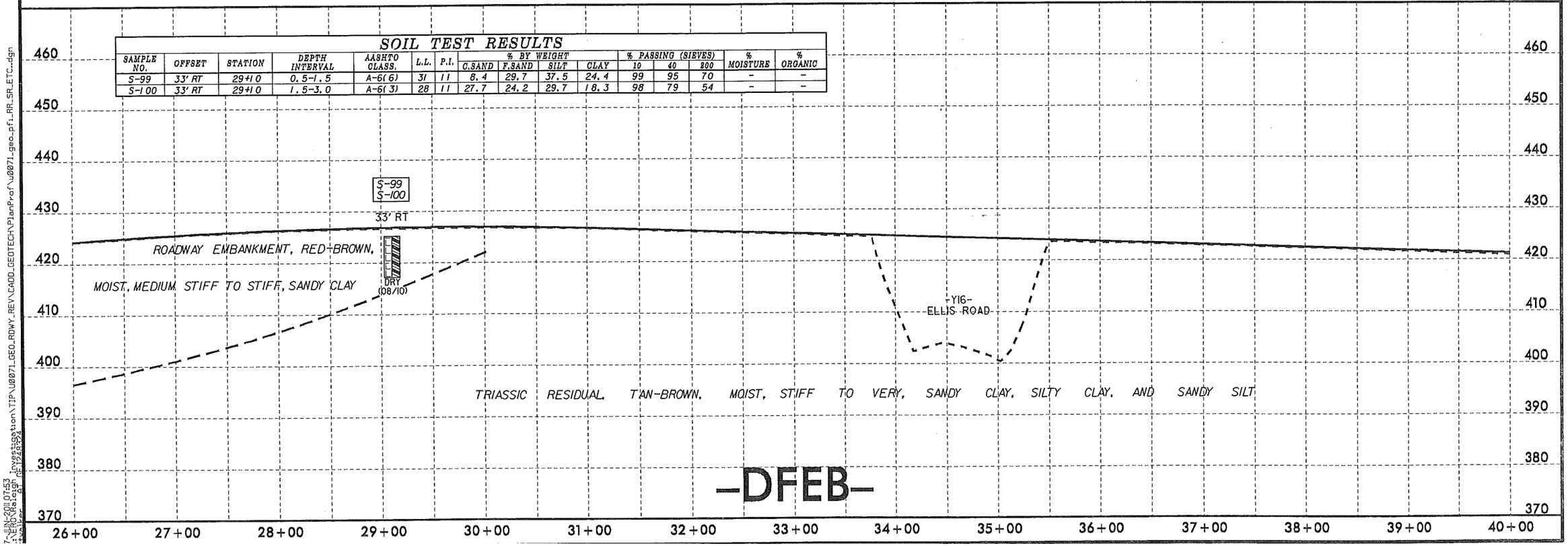
PROJECT REFERENCE NO.	SHEET NO.
U-0071	45



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-99	33' RT	29+10	0.5-1.5	A-6(6)	31	11	8.4	29.7	37.5	24.4	99	95	70	-	-
S-100	33' RT	29+10	1.5-3.0	A-6(3)	28	11	27.7	24.2	29.7	18.3	98	79	54	-	-



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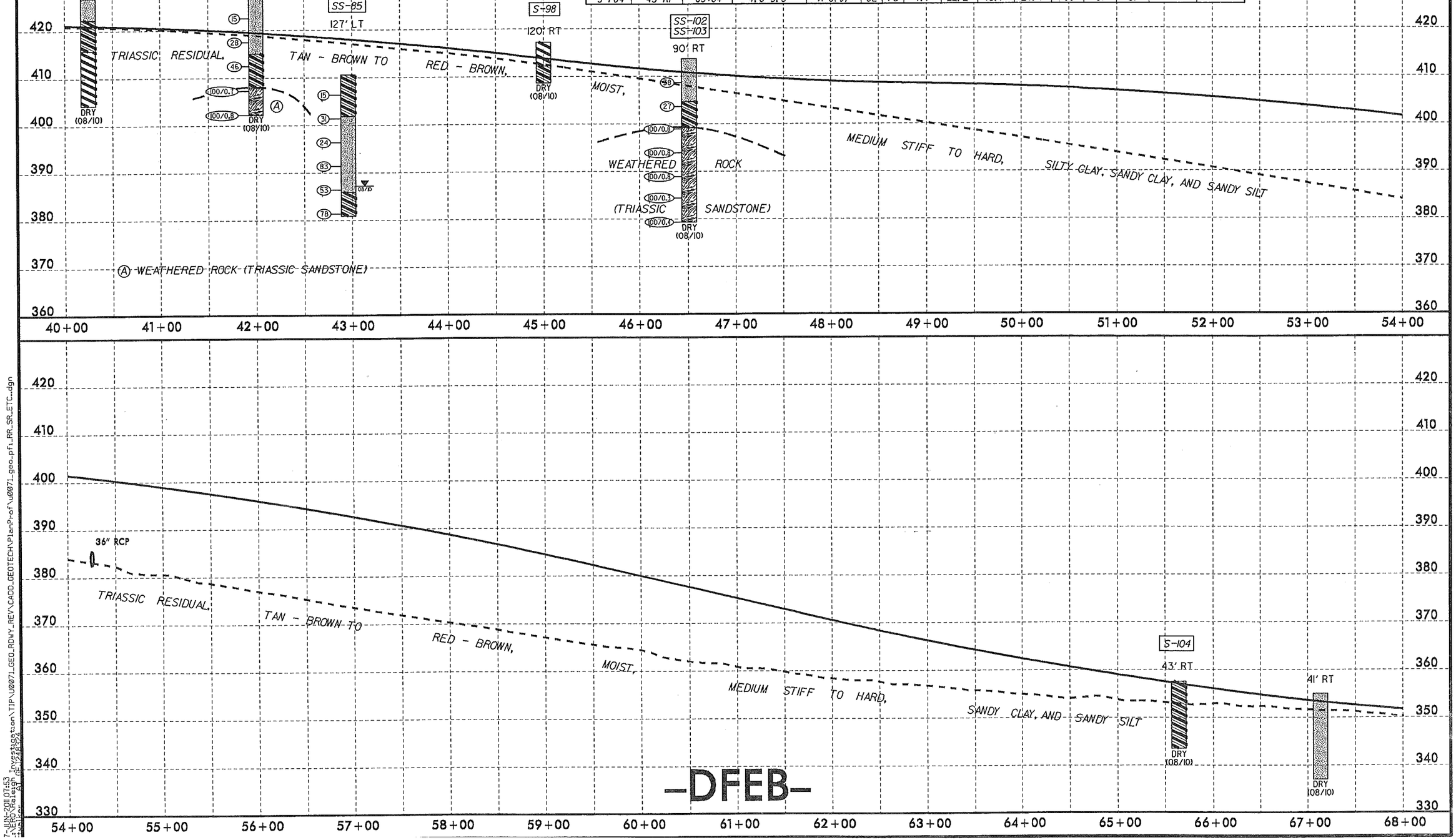
PROJECT REFERENCE NO.	SHEET NO.
U-0071	46

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
S-101	77' RT	40+25	13.0-14.5	A-7-6(20)	41	22	1.4	11.4	40.3	46.8	100	99	90	-	-
SS-95	100' RT	42+00	3.6-5.1	A-4(0)	27	4	33.6	33.8	16.3	16.3	100	95	37	-	-
SS-96	100' RT	42+00	8.6-10.1	A-4(2)	31	9	5.5	51.7	24.4	18.3	100	99	49	-	-
SS-97	100' RT	42+00	13.6-15.1	A-6(5)	31	13	15.5	34.0	28.1	22.4	100	95	57	-	-
SS-82	127' LT	42+96	3.2-4.7	A-6(7)	38	20	5.0	46.4	16.3	32.3	100	100	52	-	-
SS-83	127' LT	42+96	8.2-9.7	A-4(0)	28	3	8.9	50.4	26.6	14.1	100	99	51	-	-
SS-84	127' LT	42+96	18.2-19.7	A-4(0)	23	5	35.5	31.7	18.8	14.1	100	89	37	-	-
SS-85	127' LT	42+96	28.2-29.7	A-6(7)	28	13	3.6	35.1	33.1	28.2	100	100	70	-	-
S-98	120' RT	45+00	0.5-2.0	A-7-6(10)	42	21	19.3	26.7	17.3	36.7	100	91	59	-	-
SS-102	90' RT	46+51	4.0-5.5	A-4(0)	24	5	34.8	28.7	22.2	14.3	100	84	41	-	-
SS-103	90' RT	46+51	9.0-10.5	A-6(15)	40	17	1.0	20.2	46.2	32.6	100	100	87	-	-
S-104	43' RT	65+64	4.0-5.5	A-6(9)	32	13	4.7	22.2	48.7	24.4	100	97	81	-	-



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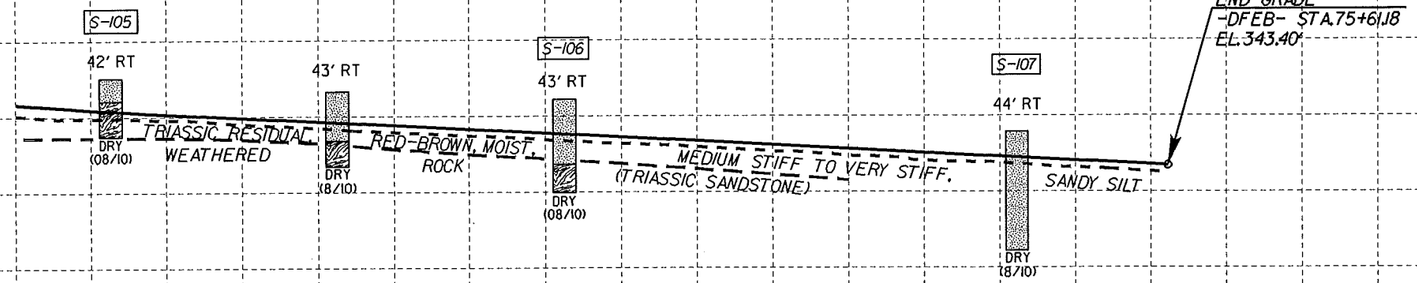
PROJECT REFERENCE NO.	SHEET NO.
U-0071	47

5/28/99

SOIL TEST RESULTS

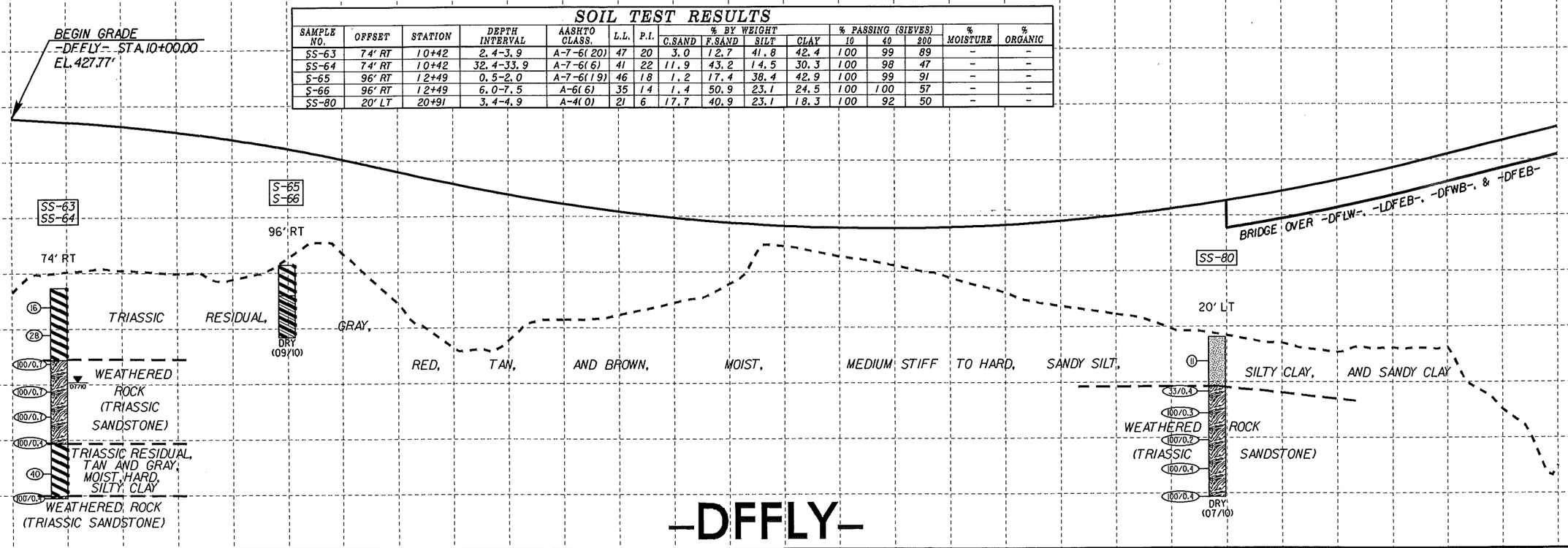
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-105	42' RT	68+63	1.0-2.5	A-4(2)	28	7	14.9	34.2	38.7	12.2	100	89	61	-	-
S-106	43' RT	71+62	3.3-4.8	A-4(7)	30	10	10.6	16.9	52.1	20.4	99	92	79	-	-
S-107	44' RT	74+61	3.2-4.7	A-4(3)	29	6	5.5	37.3	36.9	20.4	100	97	74	-	-



-DFEB-

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-63	74' RT	10+42	2.4-3.9	A-7-6(20)	47	20	3.0	12.7	41.8	42.4	100	99	89	-	-
SS-64	74' RT	10+42	32.4-33.9	A-7-6(6)	41	22	11.9	43.2	14.5	30.3	100	98	47	-	-
S-65	96' RT	12+49	0.5-2.0	A-7-6(19)	46	18	1.2	17.4	38.4	42.9	100	99	91	-	-
S-66	96' RT	12+49	6.0-7.5	A-6(6)	35	14	1.4	50.9	23.1	24.5	100	100	57	-	-
SS-80	20' LT	20+91	3.4-4.9	A-4(0)	21	6	17.7	40.9	23.1	18.3	100	92	50	-	-



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PROJECT REFERENCE NO.	SHEET NO.
U-0071	48

5/28/99

BRIDGE OVER -DLFW-, -LDFEB-, -DFWB-, & -DFEB-

SS-77
SS-78
43' LT
27
73
60/0.0
DRY (07/10)
WEATHERED ROCK
TRIASSIC (TRIASSIC SANDSTONE)
100/0.7
NON-CRYSTALLINE ROCK (TRIASSIC SANDSTONE)
RESIDUAL, TAN, RED, AND BROWN, MOIST, WEATHERED ROCK (TRIASSIC SANDSTONE)

SS-102
SS-103
10' RT
58
27
100/0.8
100/0.8
100/0.8
100/0.3
100/0.4
DRY (08/10)
SANDY SILT,

S-98
10' RT
DRY (08/10)
SILTY CLAY,

SS-95
SS-96
SS-97
15' LT
15
28
46
100/0.7
100/0.8
DRY
WEATHERED ROCK (TRIASSIC SANDSTONE)
AND SANDY CLAY

S-101
37' LT
DRY (08/10)

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-77	43' LT	25+11	3.5-5.0	A-6(10)	34	11	1.2	20.5	49.7	28.5	100	99	87	-	-
SS-78	43' LT	25+11	13.5-15.0	A-6(14)	37	17	3.3	11.0	41.0	44.8	94	92	84	-	-
SS-102	10' RT	31+26	4.0-5.5	A-4(0)	24	5	34.8	28.7	22.2	14.3	100	84	41	-	-
SS-103	10' RT	31+26	9.0-10.5	A-6(15)	40	17	1.0	20.2	46.2	32.6	100	100	87	-	-
S-98	10' RT	32+81	0.5-2.0	A-7-6(10)	42	21	19.3	26.7	17.3	36.7	100	91	59	-	-
SS-95	15' LT	35+80	3.6-5.1	A-4(0)	27	4	33.6	33.8	16.3	16.3	100	95	37	-	-
SS-96	15' LT	35+80	8.6-10.1	A-4(2)	31	9	5.5	51.7	24.4	18.3	100	99	49	-	-
SS-97	15' LT	35+80	13.6-15.1	A-6(5)	31	13	15.5	34.0	28.1	22.4	100	95	57	-	-
S-101	37' LT	37+57	13.0-14.5	A-7-6(20)	41	22	1.4	11.4	40.3	46.8	100	99	90	-	-

440 430 420 410 400 390 380 370 350

24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00 38+00

END GRADE
-DFFLY- STA. 41+86.75
EL. 423.34'

TRAISSIC RESIDUAL, TAN-BROWN AND RED, MOIST, VERY STIFF, SANDY SILT, SANDY CLAY, AND SILTY CLAY

460 450 440 430 420 410 400 390 380 370

38+00 39+00 40+00 41+00

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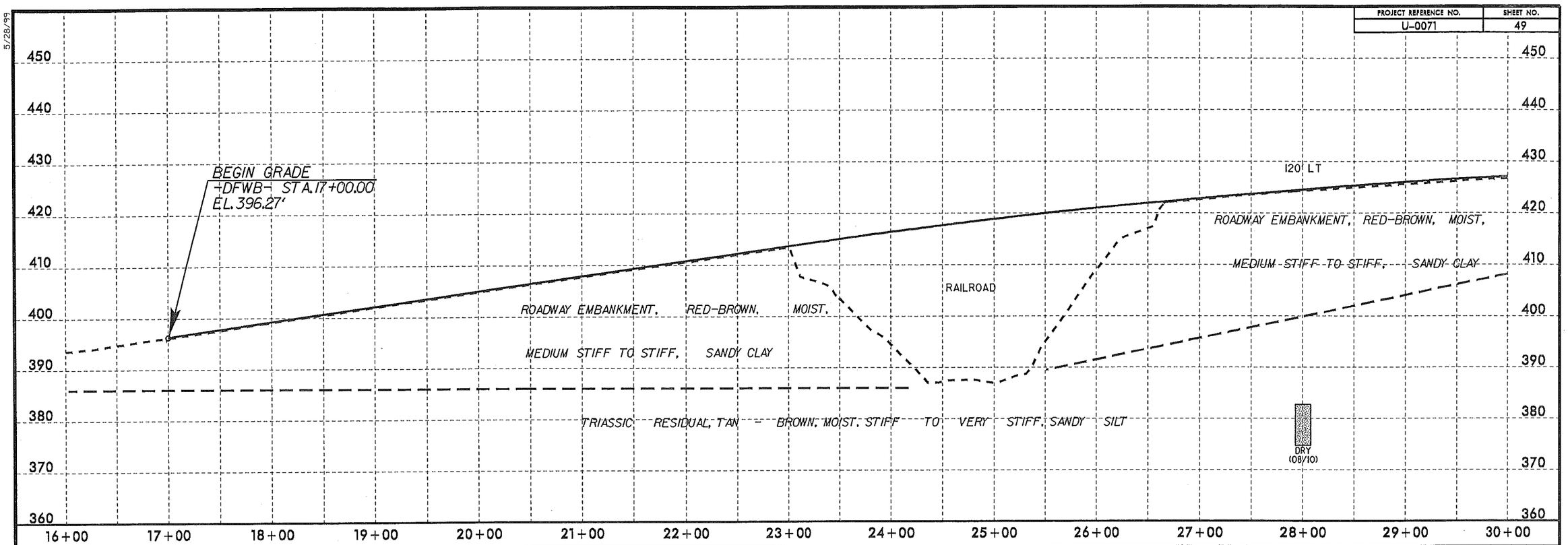
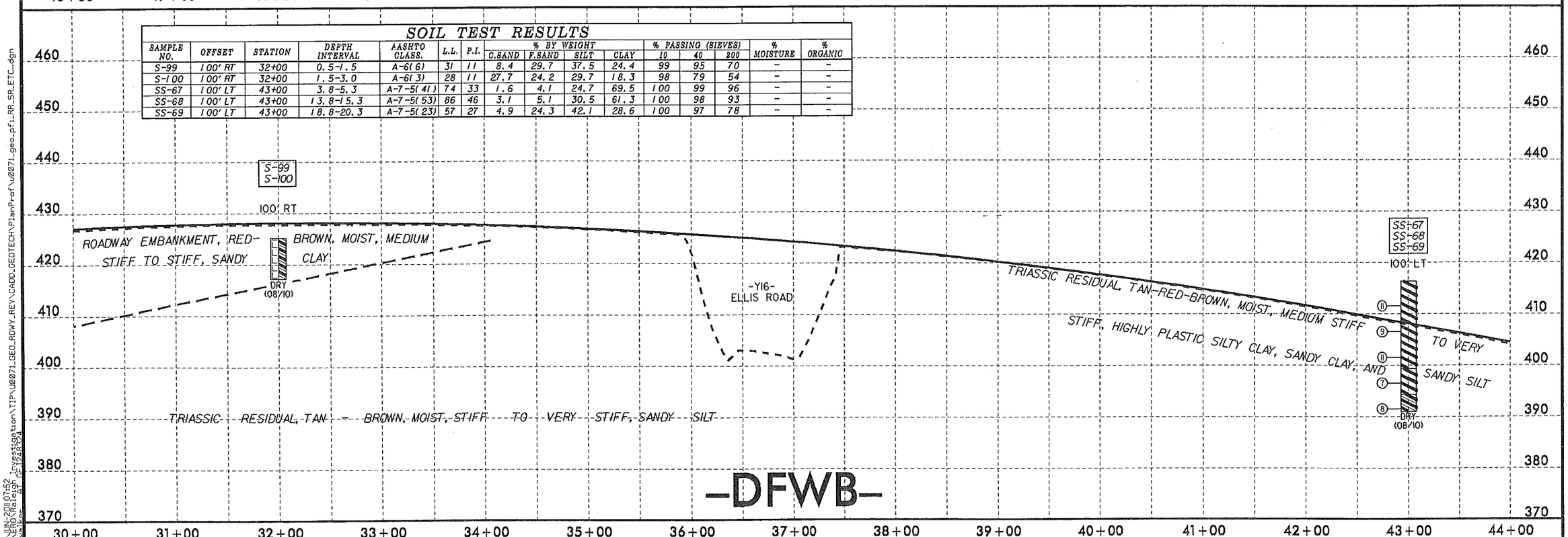
PROJECT REFERENCE NO.	SHEET NO.
U-0071	49



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-99	100' RT	32+00	0.5-1.5	A-6(6)	31	11	8.4	29.7	37.5	24.4	99	95	70	-	-
S-100	100' RT	32+00	1.5-3.0	A-6(3)	28	11	27.7	24.2	29.7	18.3	98	79	54	-	-
SS-67	100' LT	43+00	3.8-5.3	A-7-5(41)	74	33	1.6	4.1	24.7	69.5	100	99	96	-	-
SS-68	100' LT	43+00	13.8-15.3	A-7-5(53)	86	46	3.1	5.1	30.5	61.3	100	98	93	-	-
SS-69	100' LT	43+00	18.8-20.3	A-7-5(23)	57	27	4.9	24.3	42.1	28.6	100	97	78	-	-



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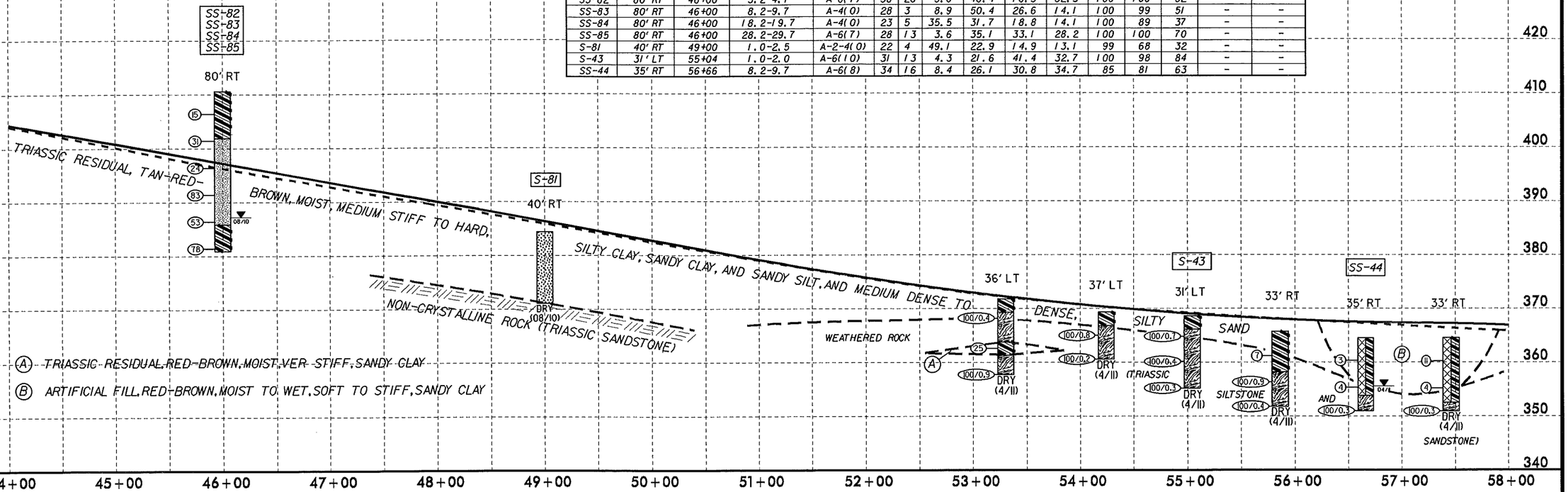
Walker, A.F. DF 1248924

PROJECT REFERENCE NO.	SHEET NO.
U-0071	50

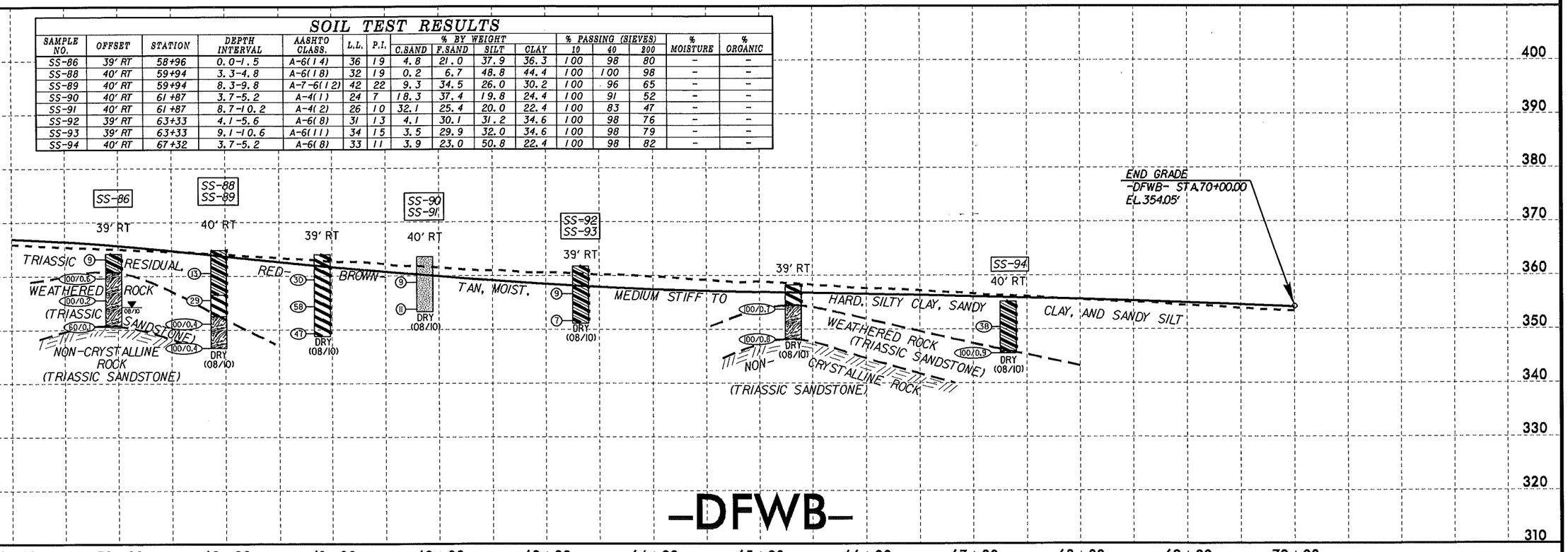
SOIL TEST RESULTS

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-82	80' RT	46+00	3.2-4.7	A-6(7)	38	20	5.0	46.4	16.3	32.3	100	100	52	-	-
SS-83	80' RT	46+00	8.2-9.7	A-4(0)	28	3	8.9	50.4	26.6	14.1	100	99	51	-	-
SS-84	80' RT	46+00	18.2-19.7	A-4(0)	23	5	36.5	31.7	18.8	14.1	100	89	37	-	-
SS-85	80' RT	46+00	28.2-29.7	A-6(7)	28	13	3.6	35.1	33.1	28.2	100	100	70	-	-
S-81	40' RT	49+00	1.0-2.5	A-2-4(0)	22	4	49.1	22.9	14.9	13.1	99	68	32	-	-
S-43	31' LT	55+04	1.0-2.0	A-6(10)	31	13	4.3	21.6	41.4	32.7	100	98	84	-	-
SS-44	35' RT	56+66	8.2-9.7	A-6(8)	34	16	8.4	26.1	30.8	34.7	85	81	63	-	-



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-86	39' RT	58+96	0.0-1.5	A-6(14)	36	19	4.8	21.0	37.9	36.3	100	98	80	-	-
SS-88	40' RT	59+94	3.3-4.8	A-6(18)	32	19	0.2	6.7	48.8	44.4	100	100	98	-	-
SS-89	40' RT	59+94	8.3-9.8	A-7-6(12)	42	22	9.3	34.5	26.0	30.2	100	96	65	-	-
SS-90	40' RT	61+87	3.7-5.2	A-4(1)	24	7	18.3	37.4	19.8	24.4	100	91	52	-	-
SS-91	40' RT	61+87	8.7-10.2	A-4(2)	26	10	32.1	25.4	20.0	22.4	100	83	47	-	-
SS-92	39' RT	63+33	4.1-5.6	A-6(8)	31	13	4.1	30.1	31.2	34.6	100	98	76	-	-
SS-93	39' RT	63+33	9.1-10.6	A-6(11)	34	15	3.5	29.9	32.0	34.6	100	98	79	-	-
SS-94	40' RT	67+32	3.7-5.2	A-6(8)	33	11	3.9	23.0	50.8	22.4	100	98	82	-	-



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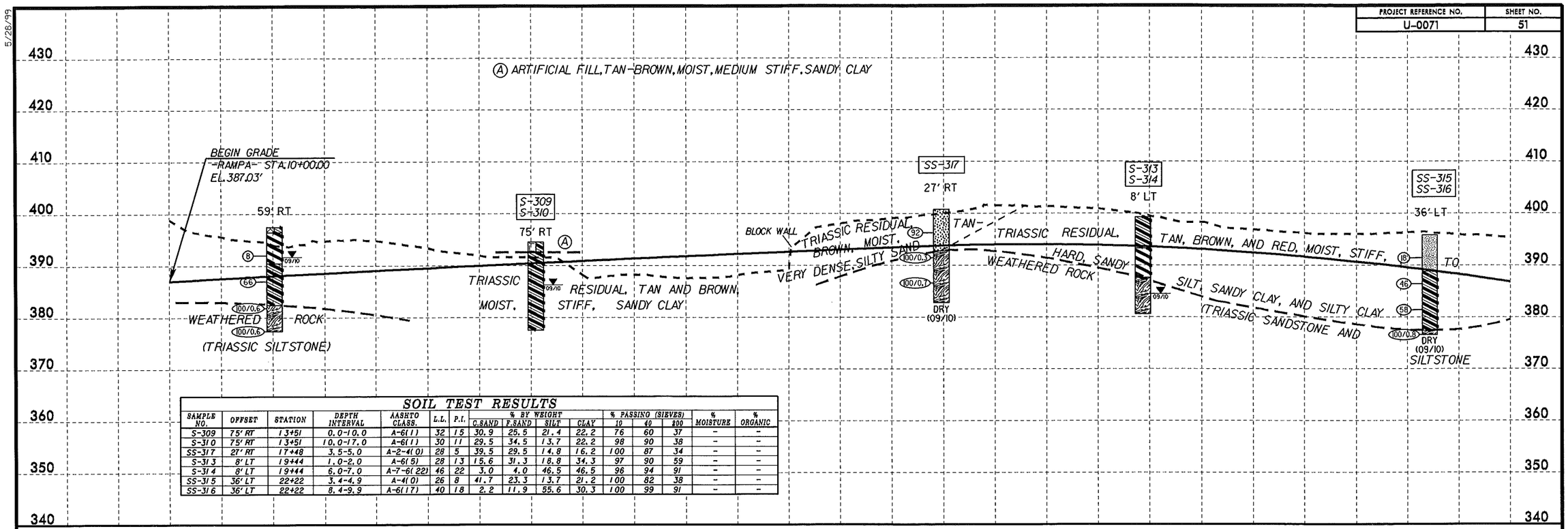
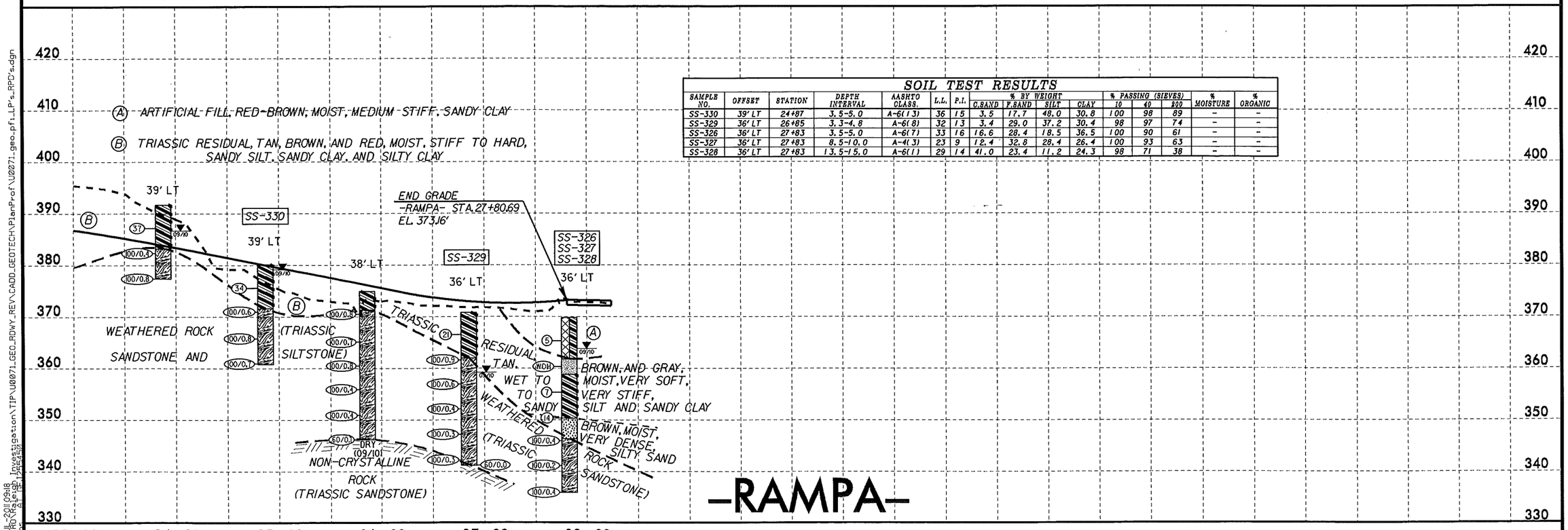
PROJECT REFERENCE NO.	SHEET NO.
U-0071	51



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-309	75' RT	13+51	0.0-10.0	A-6(11)	32	15	30.9	25.5	21.4	22.2	76	60	37	-	-
S-310	75' RT	13+51	10.0-17.0	A-6(11)	30	11	29.5	34.5	13.7	22.2	98	90	38	-	-
SS-317	27' RT	17+48	3.5-5.0	A-2-4(0)	28	5	39.5	29.5	14.8	16.2	100	87	34	-	-
S-313	8' LT	19+44	1.0-2.0	A-6(5)	28	13	15.6	31.3	18.8	34.3	97	90	59	-	-
S-314	8' LT	19+44	6.0-7.0	A-7-6(22)	46	22	3.0	4.0	46.5	46.5	96	94	91	-	-
SS-315	36' LT	22+22	3.4-4.9	A-4(0)	26	8	41.7	23.3	13.7	21.2	100	82	38	-	-
SS-316	36' LT	22+22	8.4-9.9	A-6(17)	40	18	2.2	11.9	55.6	30.3	100	99	91	-	-



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-330	39' LT	24+87	3.5-5.0	A-6(13)	36	15	3.5	17.7	48.0	30.8	100	98	89	-	-
SS-329	36' LT	26+85	3.3-4.8	A-6(8)	32	13	3.4	29.0	37.2	30.4	98	97	74	-	-
SS-326	36' LT	27+83	3.5-5.0	A-6(7)	33	16	16.6	28.4	18.5	36.5	100	90	61	-	-
SS-327	36' LT	27+83	8.5-10.0	A-4(3)	23	9	12.4	32.8	28.4	26.4	100	93	63	-	-
SS-328	36' LT	27+83	13.5-15.0	A-6(1)	29	14	41.0	23.4	11.2	24.3	98	71	38	-	-

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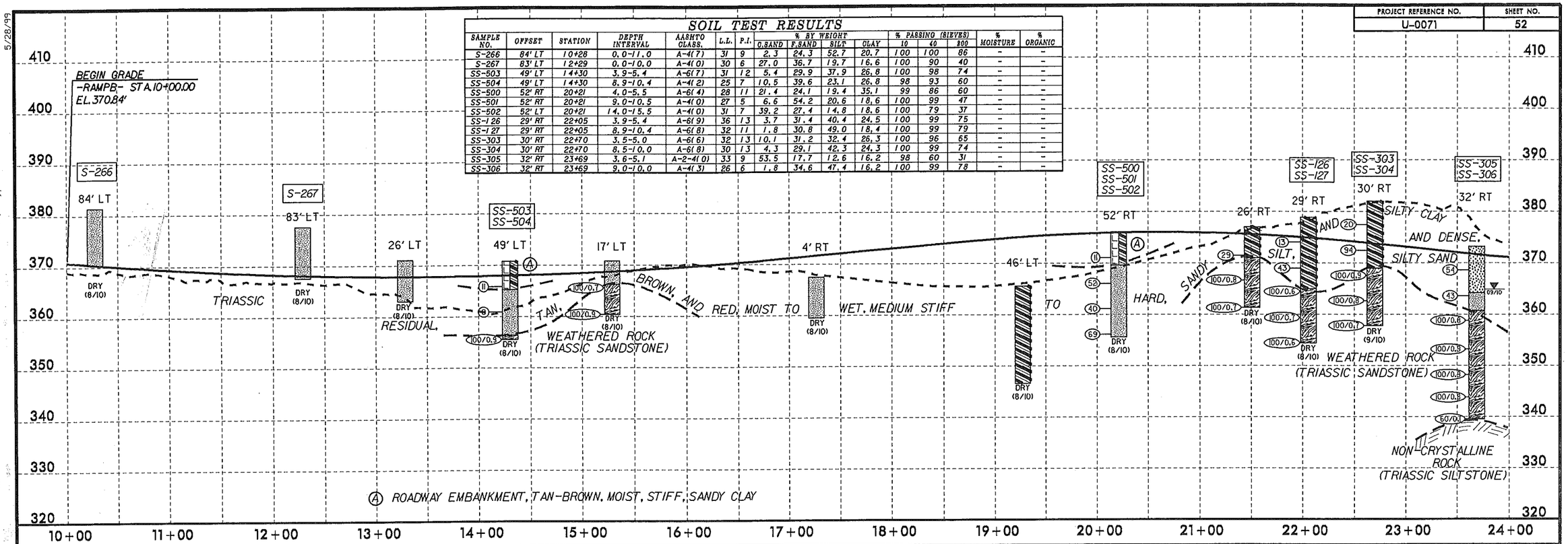
PROJECT REFERENCE NO.	SHEET NO.
U-0071	52

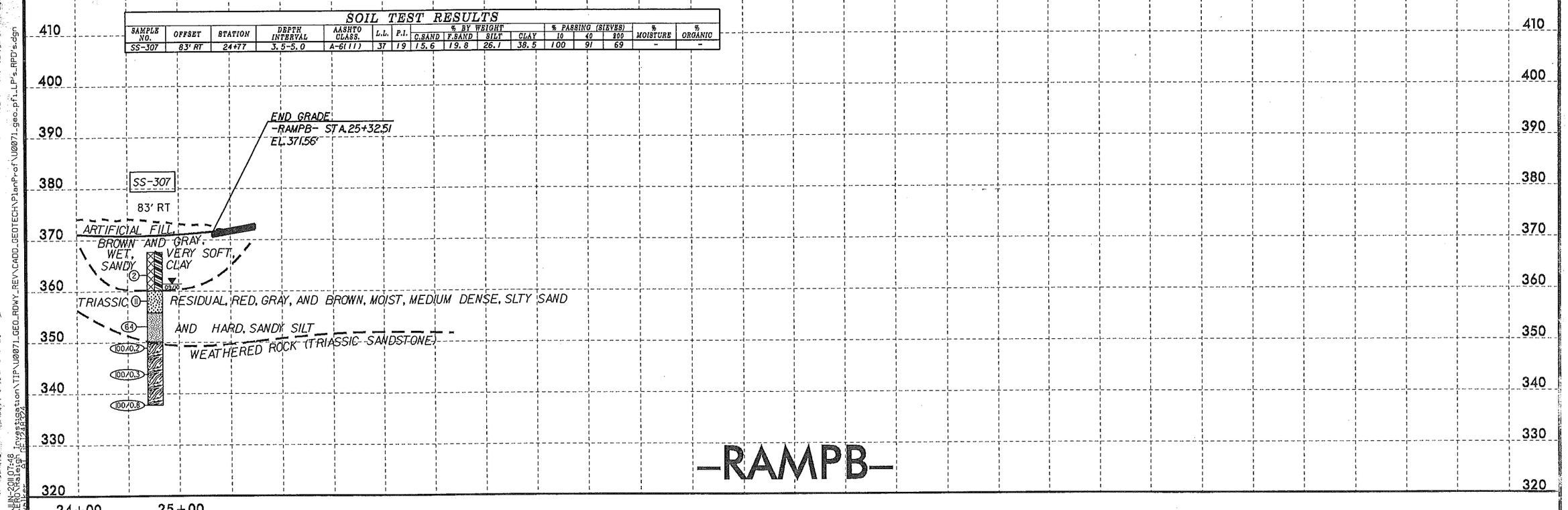
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-266	84' LT	10+28	0.0-11.0	A-4(7)	31	9	2.3	24.3	52.7	20.7	100	100	86	-	-
S-267	83' LT	12+29	0.0-10.0	A-4(0)	30	6	27.0	36.7	19.7	16.6	100	90	40	-	-
SS-503	49' LT	14+30	3.9-5.4	A-6(7)	31	12	5.4	29.9	37.9	26.8	100	98	74	-	-
SS-504	49' LT	14+30	8.9-10.4	A-4(2)	25	7	10.5	39.6	23.1	26.8	98	93	60	-	-
SS-500	52' RT	20+21	4.0-5.5	A-6(4)	28	11	21.4	24.1	19.4	35.1	99	86	60	-	-
SS-501	52' RT	20+21	9.0-10.5	A-4(0)	27	5	6.6	54.2	20.6	18.6	100	99	47	-	-
SS-502	52' LT	20+21	14.0-15.5	A-4(0)	31	7	39.2	27.4	14.8	18.6	100	79	37	-	-
SS-126	29' RT	22+05	3.9-5.4	A-6(9)	36	13	3.7	31.4	40.4	24.5	100	99	75	-	-
SS-127	29' RT	22+05	8.9-10.4	A-6(8)	32	11	1.8	30.8	49.0	18.4	100	99	79	-	-
SS-303	30' RT	22+70	3.5-5.0	A-6(6)	32	13	10.1	31.2	32.4	26.3	100	96	65	-	-
SS-304	30' RT	22+70	8.5-10.0	A-6(8)	30	13	4.3	29.1	42.3	24.3	100	99	74	-	-
SS-305	32' RT	23+69	3.6-5.1	A-2-4(0)	33	9	53.5	17.7	12.6	16.2	98	60	31	-	-
SS-306	32' RT	23+69	9.0-10.0	A-4(3)	26	6	1.8	34.6	47.4	16.2	100	99	78	-	-



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-307	83' RT	24+77	3.5-5.0	A-6(11)	37	19	15.6	19.8	26.1	38.5	100	91	69	-	-



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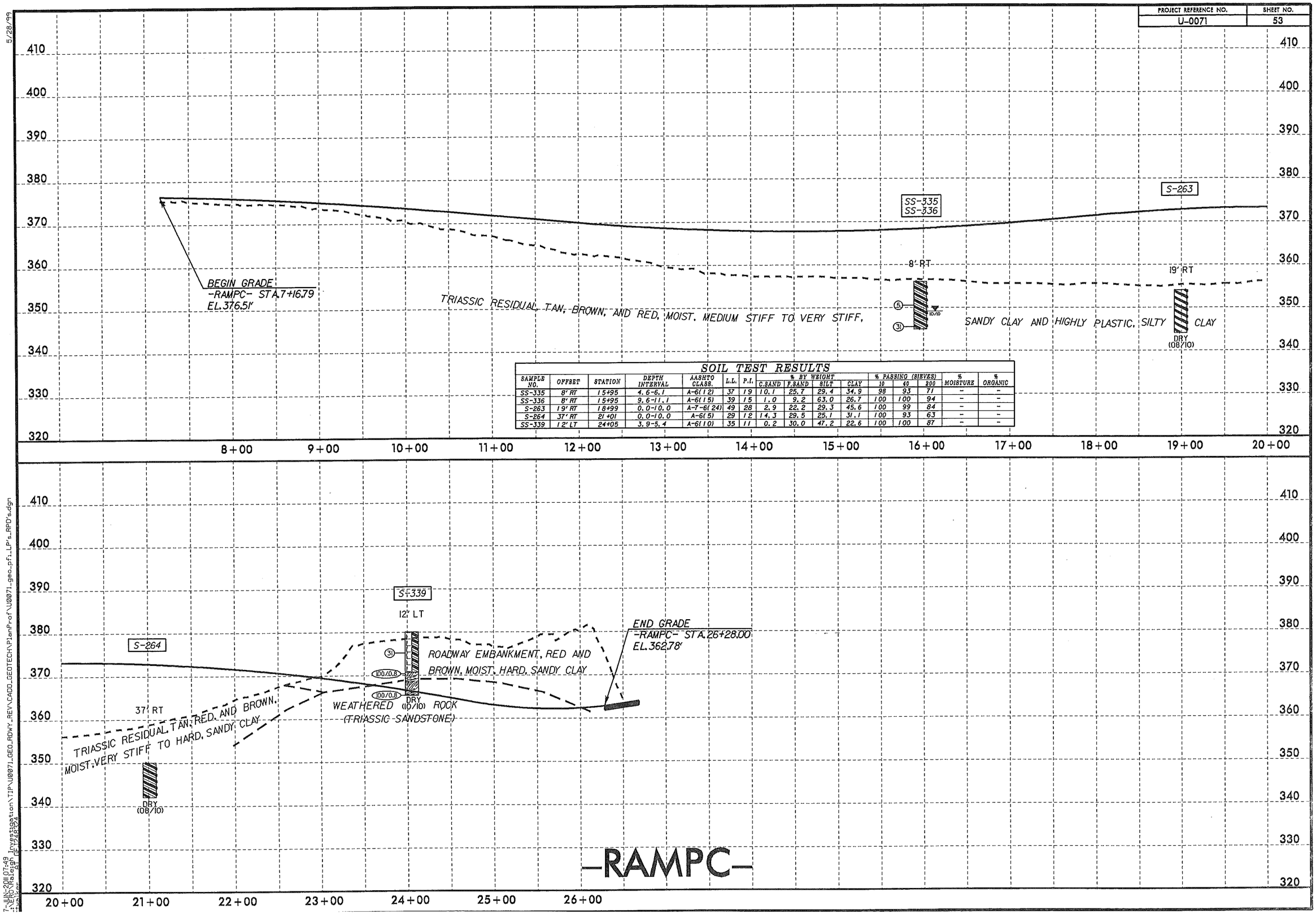
PROJECT REFERENCE NO.	SHEET NO.
U-0071	53



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-335	8' RT	15+95	4.6-6.1	A-6(12)	37	19	10.1	25.7	29.4	34.9	98	93	71	-	-
SS-336	8' RT	15+95	9.6-11.1	A-6(15)	39	15	1.0	9.2	63.0	26.7	100	100	94	-	-
S-263	19' RT	18+99	0.0-10.0	A-7-6(24)	49	28	2.9	22.2	29.3	45.6	100	99	84	-	-
S-264	37' RT	21+01	0.0-10.0	A-6(5)	29	12	14.3	29.5	25.1	31.1	100	93	63	-	-
SS-339	12' LT	24+05	3.9-5.4	A-6(10)	35	11	0.2	30.0	47.2	22.6	100	100	87	-	-

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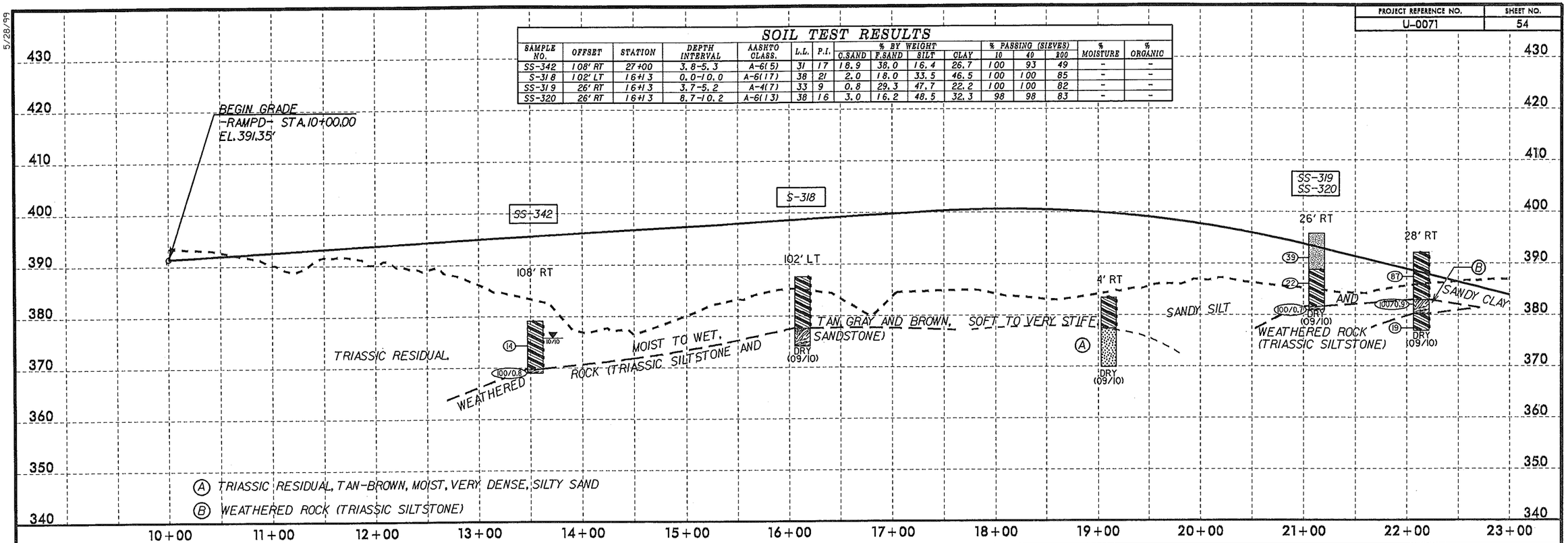
PROJECT REFERENCE NO.	SHEET NO.
U-0071	54

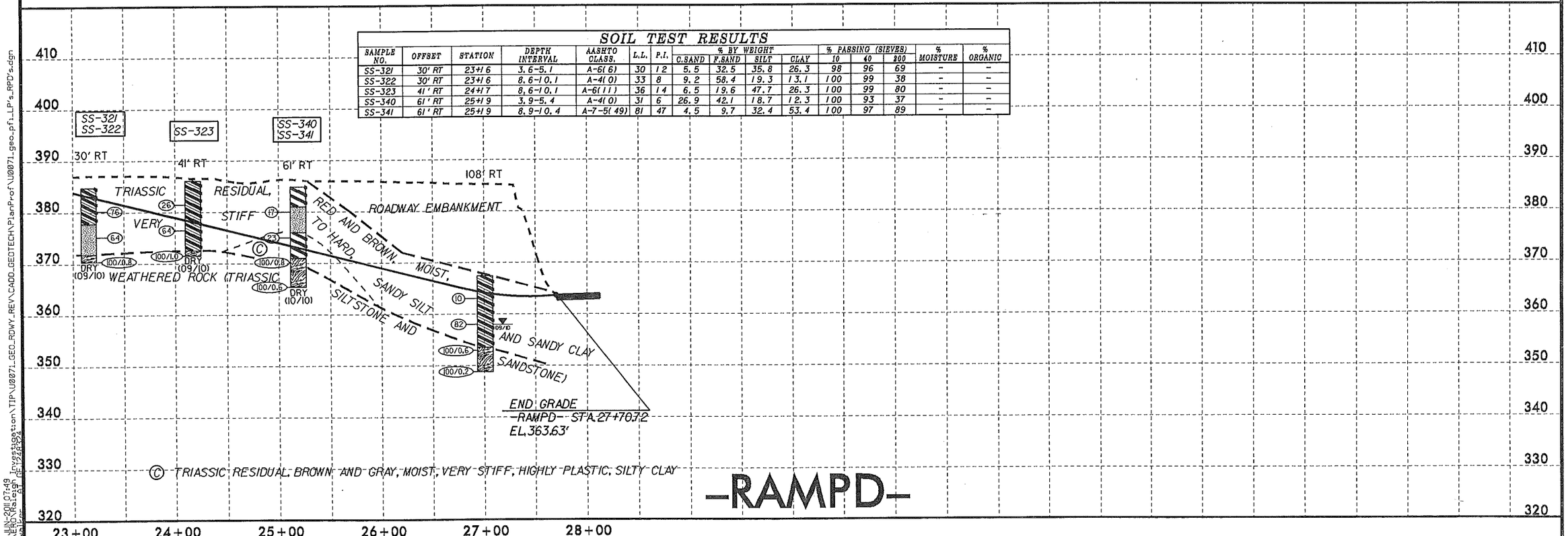
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-342	108' RT	27+00	3.8-5.3	A-6(5)	31	17	18.9	38.0	16.4	26.7	100	93	49	-	-
S-318	102' LT	16+13	0.0-10.0	A-6(17)	38	21	2.0	18.0	33.5	46.5	100	100	85	-	-
SS-319	26' RT	16+13	3.7-5.2	A-4(7)	33	9	0.8	29.3	47.7	22.2	100	100	82	-	-
SS-320	26' RT	16+13	8.7-10.2	A-6(13)	38	16	3.0	16.2	48.5	32.3	98	98	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	200	% MOISTURE	% ORGANIC
SS-321	30' RT	23+16	3.6-5.1	A-6(6)	30	12	5.5	32.5	35.8	26.3	98	96	69	-	-
SS-322	30' RT	23+16	8.6-10.1	A-4(0)	33	8	9.2	58.4	19.3	13.1	100	99	38	-	-
SS-323	41' RT	24+17	8.6-10.1	A-6(11)	36	14	6.5	19.6	47.7	26.3	100	99	80	-	-
SS-340	61' RT	25+19	3.9-5.4	A-4(0)	31	6	26.9	42.1	18.7	12.3	100	93	37	-	-
SS-341	61' RT	25+19	8.9-10.4	A-7-5(49)	81	47	4.5	9.7	32.4	53.4	100	97	89	-	-



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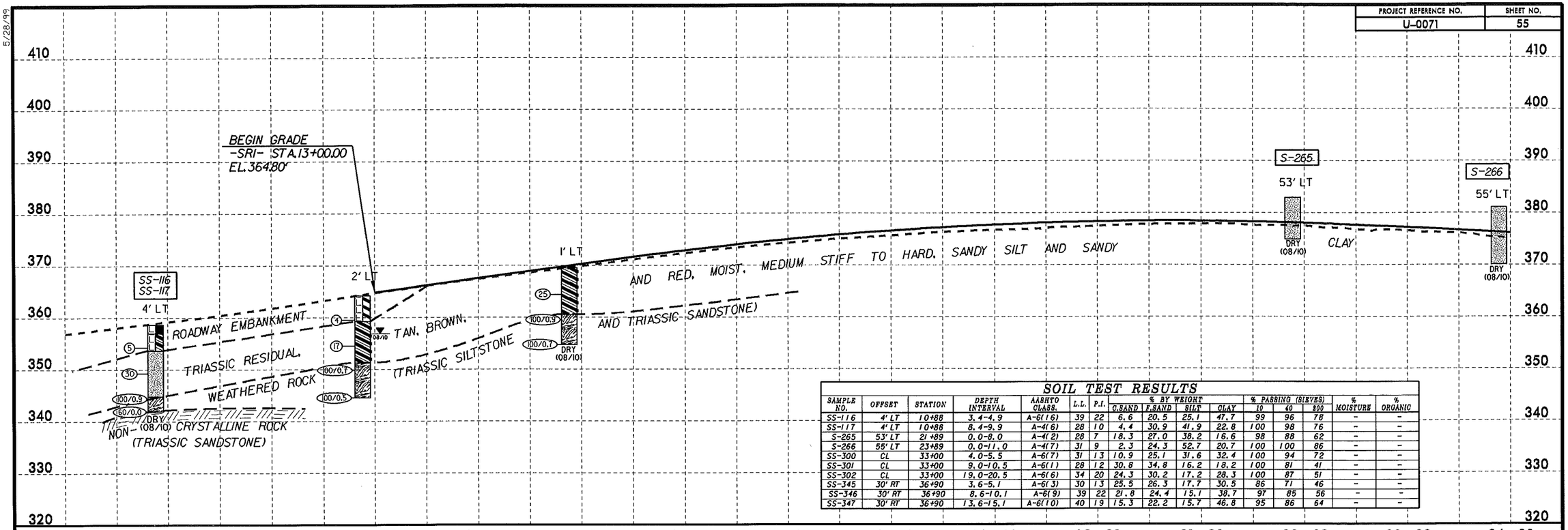
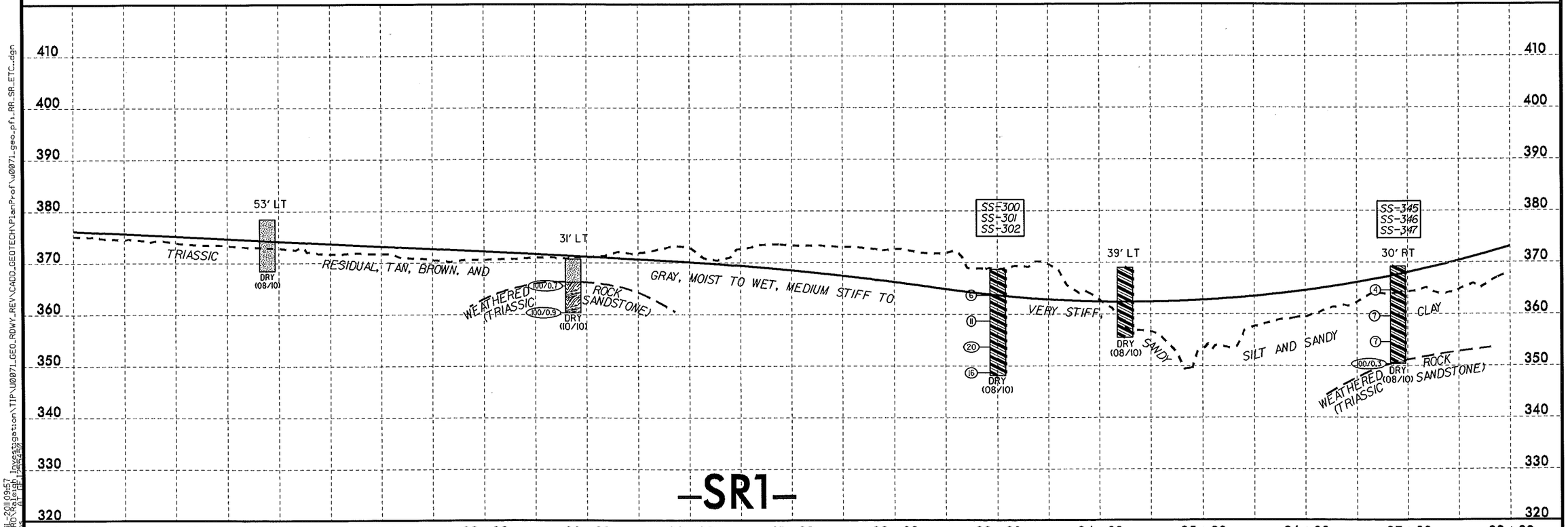
PROJECT REFERENCE NO.	SHEET NO.
U-0071	55



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-116	4' LT	10+88	3.4-4.9	A-6(16)	39	22	6.6	20.5	25.1	47.7	99	96	78	-	-
SS-117	4' LT	10+88	8.4-9.9	A-4(6)	28	10	4.4	30.9	41.9	22.8	100	98	76	-	-
S-265	53' LT	21+89	0.0-8.0	A-4(2)	28	7	18.3	27.0	38.2	16.6	98	88	62	-	-
S-266	55' LT	23+89	0.0-11.0	A-4(7)	31	9	2.3	24.3	52.7	20.7	100	100	86	-	-
SS-300	CL	33+00	4.0-5.5	A-6(7)	31	13	10.9	25.1	31.6	32.4	100	94	72	-	-
SS-301	CL	33+00	9.0-10.5	A-6(1)	28	12	30.8	34.8	16.2	18.2	100	81	41	-	-
SS-302	CL	33+00	19.0-20.5	A-6(6)	34	20	24.3	30.2	17.2	28.3	100	87	51	-	-
SS-345	30' RT	36+90	3.6-5.1	A-6(3)	30	13	25.5	26.3	17.7	30.5	86	71	46	-	-
SS-346	30' RT	36+90	8.6-10.1	A-6(9)	39	22	21.8	24.4	15.1	38.7	97	85	56	-	-
SS-347	30' RT	36+90	13.6-15.1	A-6(10)	40	19	15.3	22.2	15.7	46.8	95	86	64	-	-



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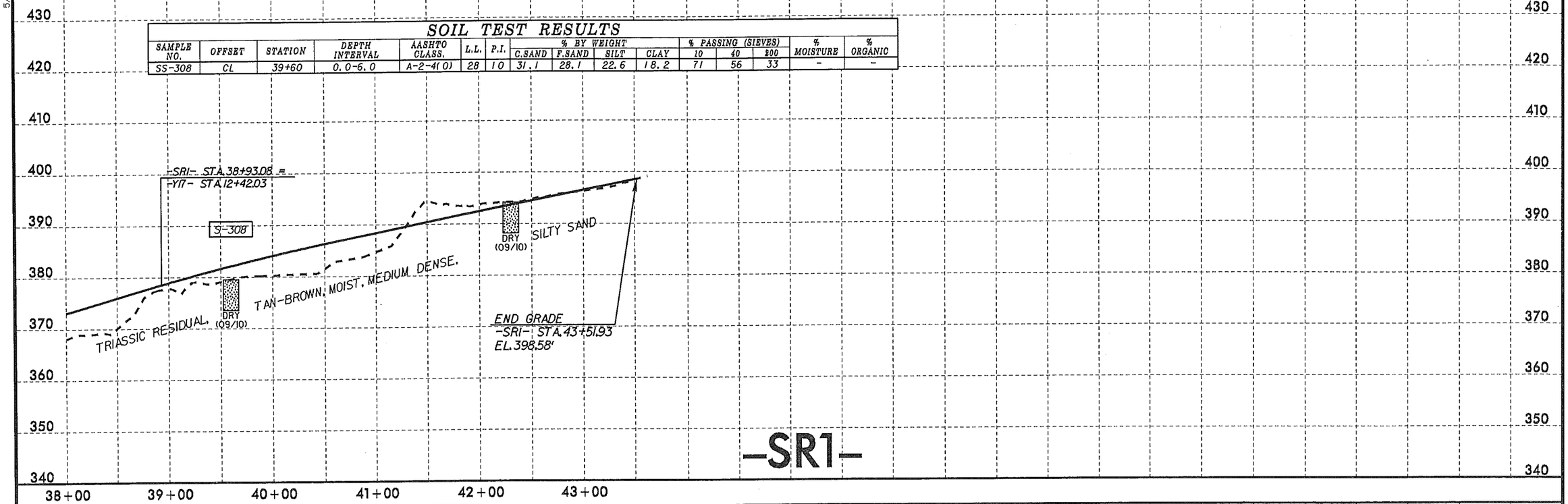
PROJECT REFERENCE NO.	SHEET NO.
U-0071	56

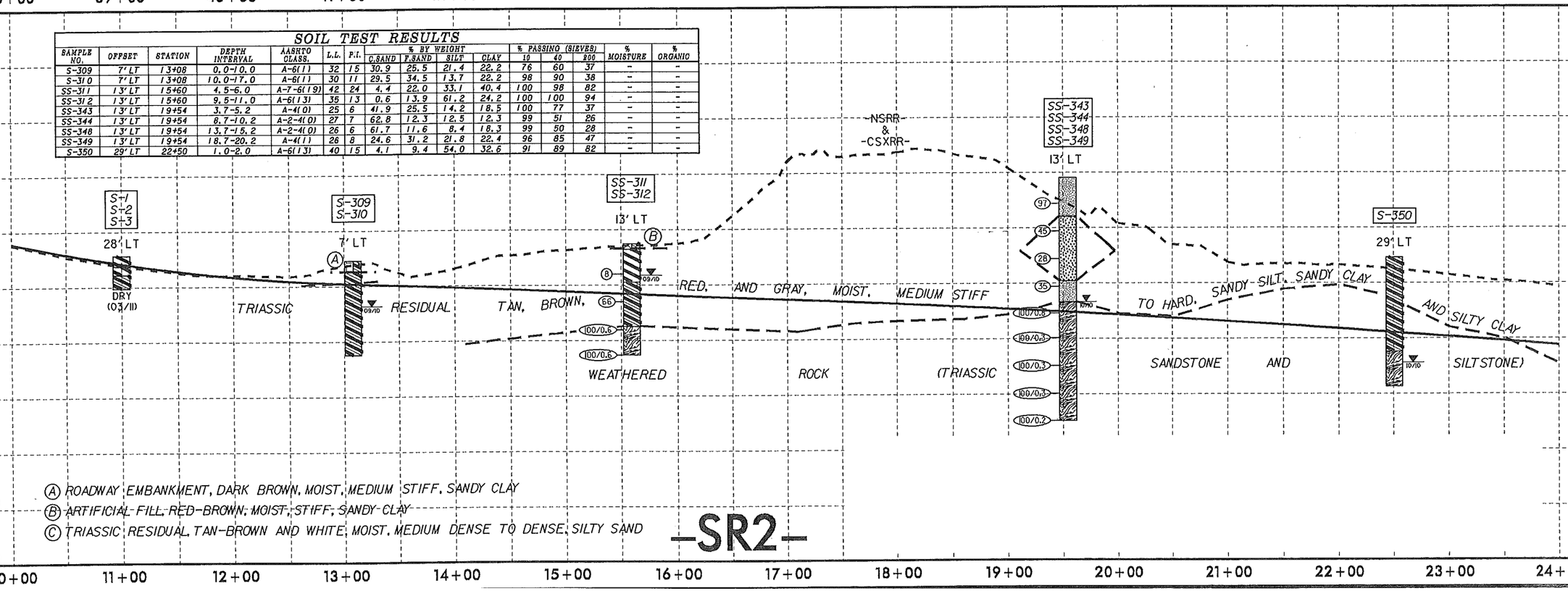
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-308	CL	39+60	0.0-6.0	A-2-4(0)	28	10	31.1	28.1	22.6	18.2	71	56	33	-	-



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-309	7' LT	13+08	0.0-10.0	A-6(1)	32	15	30.9	25.5	21.4	22.2	76	60	37	-	-
S-310	7' LT	13+08	10.0-17.0	A-6(1)	30	11	29.5	34.5	13.7	22.2	98	90	38	-	-
SS-311	13' LT	15+60	4.5-6.0	A-7-6(19)	42	24	4.4	22.0	33.1	40.4	100	98	82	-	-
SS-312	13' LT	15+60	9.5-11.0	A-6(13)	35	13	0.6	13.9	61.2	24.2	100	100	94	-	-
SS-343	13' LT	19+54	3.7-5.2	A-4(0)	25	6	41.9	25.5	14.2	18.5	100	77	37	-	-
SS-344	13' LT	19+54	8.7-10.2	A-2-4(0)	27	7	62.8	12.3	12.5	12.3	99	51	26	-	-
SS-348	13' LT	19+54	13.7-15.2	A-2-4(0)	26	6	61.7	11.6	8.4	18.3	99	50	28	-	-
SS-349	13' LT	19+54	18.7-20.2	A-4(1)	26	8	24.6	31.2	21.8	22.4	96	85	47	-	-
S-350	29' LT	22+50	1.0-2.0	A-6(13)	40	15	4.1	9.4	54.0	32.6	91	89	82	-	-



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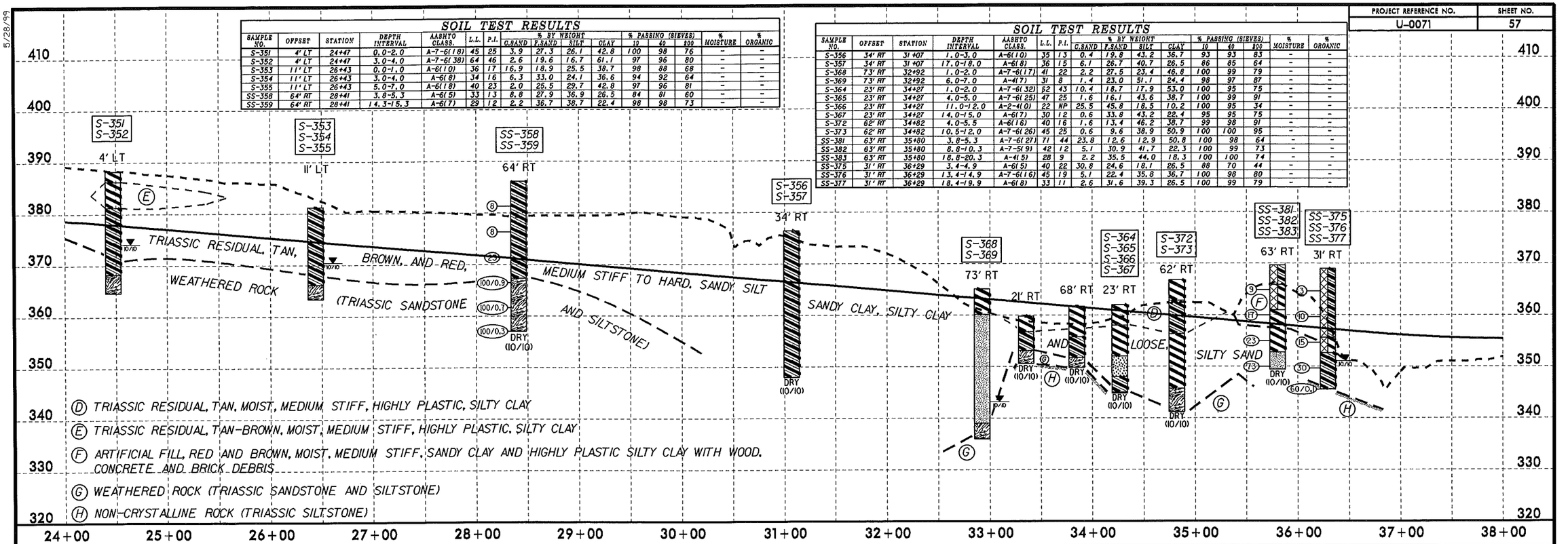
PROJECT REFERENCE NO.	SHEET NO.
U-0071	57

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-351	4' LT	24+47	0.0-2.0	A-7-6(18)	45	25	3.9	27.3	26.1	42.8	100	98	76	-	-
S-352	4' LT	24+47	3.0-4.0	A-7-6(38)	64	46	2.6	19.6	16.7	61.1	97	96	80	-	-
S-353	11' LT	26+43	0.0-1.0	A-6(10)	36	17	16.9	18.9	25.5	38.7	98	88	68	-	-
S-354	11' LT	26+43	3.0-4.0	A-6(8)	34	16	6.3	33.0	24.1	36.6	94	92	64	-	-
S-355	11' LT	26+43	5.0-7.0	A-6(18)	40	23	2.0	26.5	29.7	42.8	97	96	81	-	-
SS-358	64' RT	28+41	3.8-5.3	A-6(5)	33	13	8.8	27.9	36.9	26.5	84	81	60	-	-
SS-359	64' RT	28+41	14.3-15.3	A-6(7)	29	12	2.2	36.7	38.7	22.4	98	98	73	-	-

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-356	34' RT	31+07	1.0-3.0	A-6(10)	35	13	0.4	19.8	43.2	36.7	93	93	83	-	-
S-357	34' RT	31+07	17.0-18.0	A-6(8)	36	15	6.1	26.7	40.7	26.5	86	85	64	-	-
S-368	73' RT	32+92	1.0-2.0	A-7-6(17)	41	22	2.2	27.5	23.4	46.8	100	99	79	-	-
S-369	73' RT	32+92	6.0-7.0	A-4(7)	31	8	1.4	23.0	51.1	24.4	98	97	87	-	-
S-364	23' RT	34+27	1.0-2.0	A-7-6(32)	52	43	10.4	18.7	17.9	53.0	100	95	75	-	-
S-365	23' RT	34+27	4.0-5.0	A-7-6(25)	47	25	1.6	16.1	43.6	38.7	100	99	91	-	-
S-366	23' RT	34+27	11.0-12.0	A-2-4(0)	22	NP	25.5	45.8	18.5	10.2	100	95	34	-	-
S-367	23' RT	34+27	14.0-15.0	A-6(7)	30	12	0.6	33.8	43.2	22.4	95	95	75	-	-
S-372	62' RT	34+82	4.0-5.5	A-6(16)	40	16	1.6	13.4	46.2	38.7	99	98	91	-	-
S-373	62' RT	34+82	10.5-12.0	A-7-6(26)	45	25	0.6	9.6	38.9	50.9	100	100	95	-	-
SS-381	63' RT	35+80	3.8-5.3	A-7-6(27)	71	44	23.8	12.6	12.9	50.8	100	98	64	-	-
SS-382	63' RT	35+80	8.8-10.3	A-7-5(91)	42	12	5.1	30.9	41.7	22.3	100	99	73	-	-
SS-383	63' RT	35+80	18.8-20.3	A-4(5)	28	9	2.2	35.5	44.0	18.3	100	100	74	-	-
SS-375	31' RT	36+29	3.4-4.9	A-6(5)	40	22	30.8	24.6	18.1	26.5	88	70	44	-	-
SS-376	31' RT	36+29	13.4-14.9	A-7-6(16)	45	19	5.1	22.4	35.8	36.7	100	98	80	-	-
SS-377	31' RT	36+29	18.4-19.9	A-6(8)	33	11	2.6	31.6	39.3	26.5	100	99	79	-	-



Ⓓ TRIASSIC RESIDUAL, TAN, MOIST, MEDIUM STIFF, HIGHLY PLASTIC, SILTY CLAY

Ⓔ TRIASSIC RESIDUAL, TAN-BROWN, MOIST, MEDIUM STIFF, HIGHLY PLASTIC, SILTY CLAY

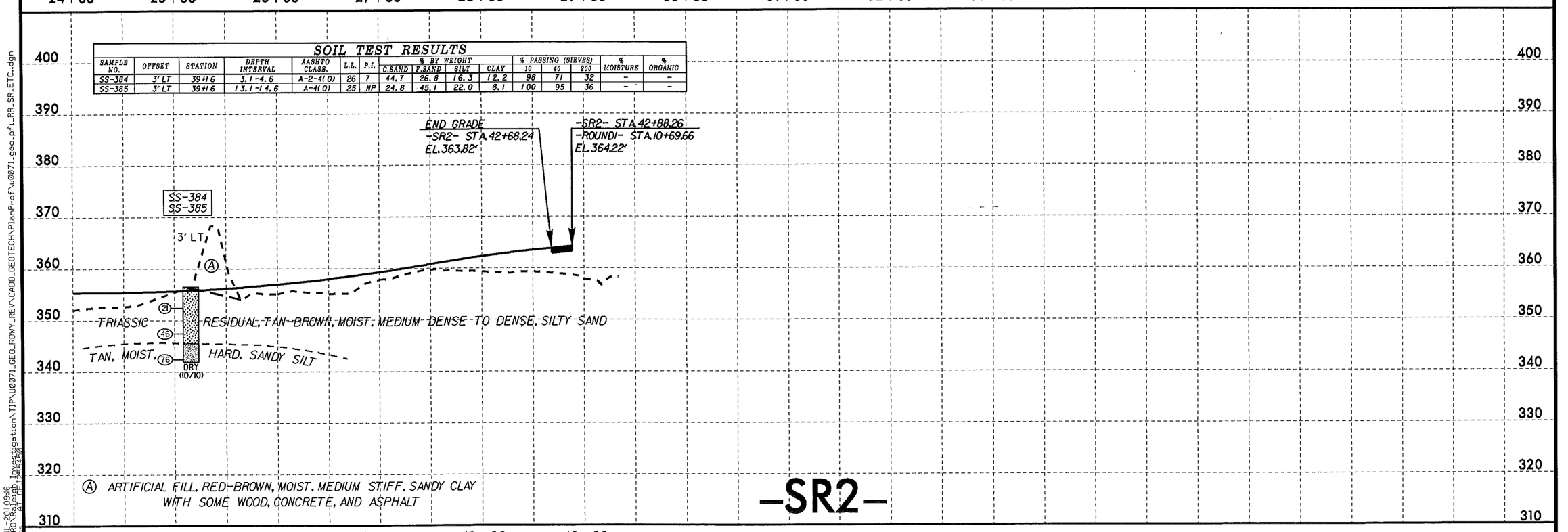
Ⓕ ARTIFICIAL FILL, RED AND BROWN, MOIST, MEDIUM STIFF, SANDY CLAY AND HIGHLY PLASTIC SILTY CLAY WITH WOOD, CONCRETE, AND BRICK DEBRIS

Ⓖ WEATHERED ROCK (TRIASSIC SANDSTONE AND SILTSTONE)

Ⓗ NON-CRYSTALLINE ROCK (TRIASSIC SILTSTONE)

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-384	3' LT	39+16	3.1-4.6	A-2-4(0)	26	7	44.7	26.8	16.3	12.2	98	71	32	-	-
SS-385	3' LT	39+16	13.1-14.6	A-4(0)	25	NP	24.8	45.1	22.0	8.1	100	95	36	-	-



Ⓐ ARTIFICIAL FILL, RED-BROWN, MOIST, MEDIUM STIFF, SANDY CLAY WITH SOME WOOD, CONCRETE, AND ASPHALT

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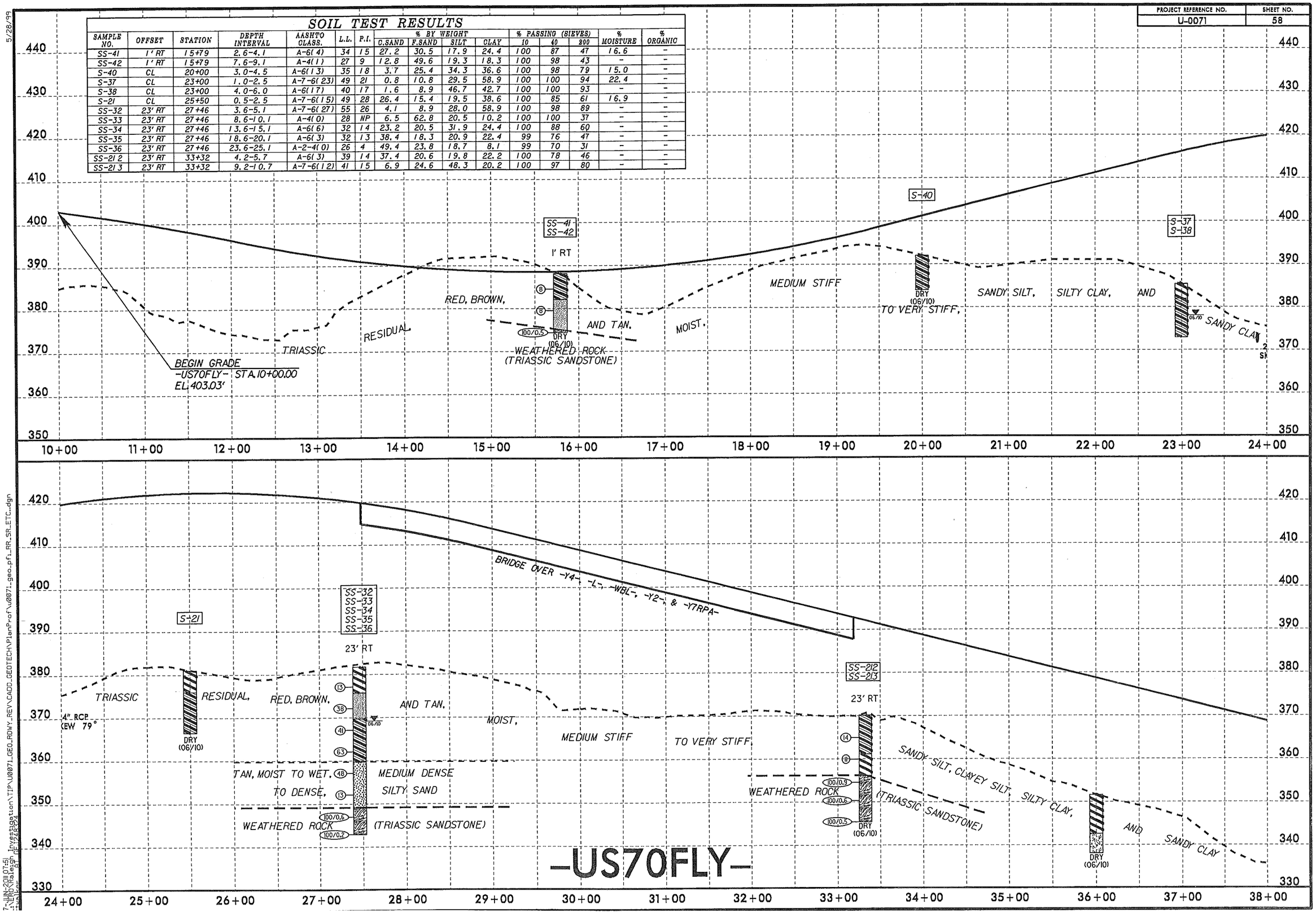
Jones AT RE 12E4502

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-0071	58

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-41	1' RT	15+79	2.6-4.1	A-6(4)	34	15	27.2	30.5	17.9	24.4	100	87	47	16.6	-
SS-42	1' RT	15+79	7.6-9.1	A-4(1)	27	9	12.8	49.6	19.3	18.3	100	98	43	-	-
S-40	CL	20+00	3.0-4.5	A-6(13)	35	18	3.7	25.4	34.3	36.6	100	98	79	15.0	-
S-37	CL	23+00	1.0-2.5	A-7-6(23)	49	21	0.8	10.8	29.5	58.9	100	100	94	22.4	-
S-38	CL	23+00	4.0-6.0	A-6(17)	40	17	1.6	8.9	46.7	42.7	100	100	93	-	-
S-21	CL	25+50	0.5-2.5	A-7-6(15)	49	28	26.4	15.4	19.5	38.6	100	85	61	16.9	-
SS-32	23' RT	27+46	3.6-5.1	A-7-6(27)	55	26	4.1	8.9	28.0	58.9	100	98	89	-	-
SS-33	23' RT	27+46	8.6-10.1	A-4(0)	28	NP	6.5	62.8	20.5	10.2	100	100	37	-	-
SS-34	23' RT	27+46	13.6-15.1	A-6(6)	32	14	23.2	20.5	31.9	24.4	100	88	60	-	-
SS-35	23' RT	27+46	18.6-20.1	A-6(3)	32	13	38.4	18.3	20.9	22.4	99	76	47	-	-
SS-36	23' RT	27+46	23.6-25.1	A-2-4(0)	26	4	49.4	23.8	18.7	8.1	99	70	31	-	-
SS-212	23' RT	33+32	4.2-5.7	A-6(3)	39	14	37.4	20.6	19.8	22.2	100	78	46	-	-
SS-213	23' RT	33+32	9.2-10.7	A-7-6(12)	41	15	6.9	24.6	48.3	20.2	100	97	80	-	-



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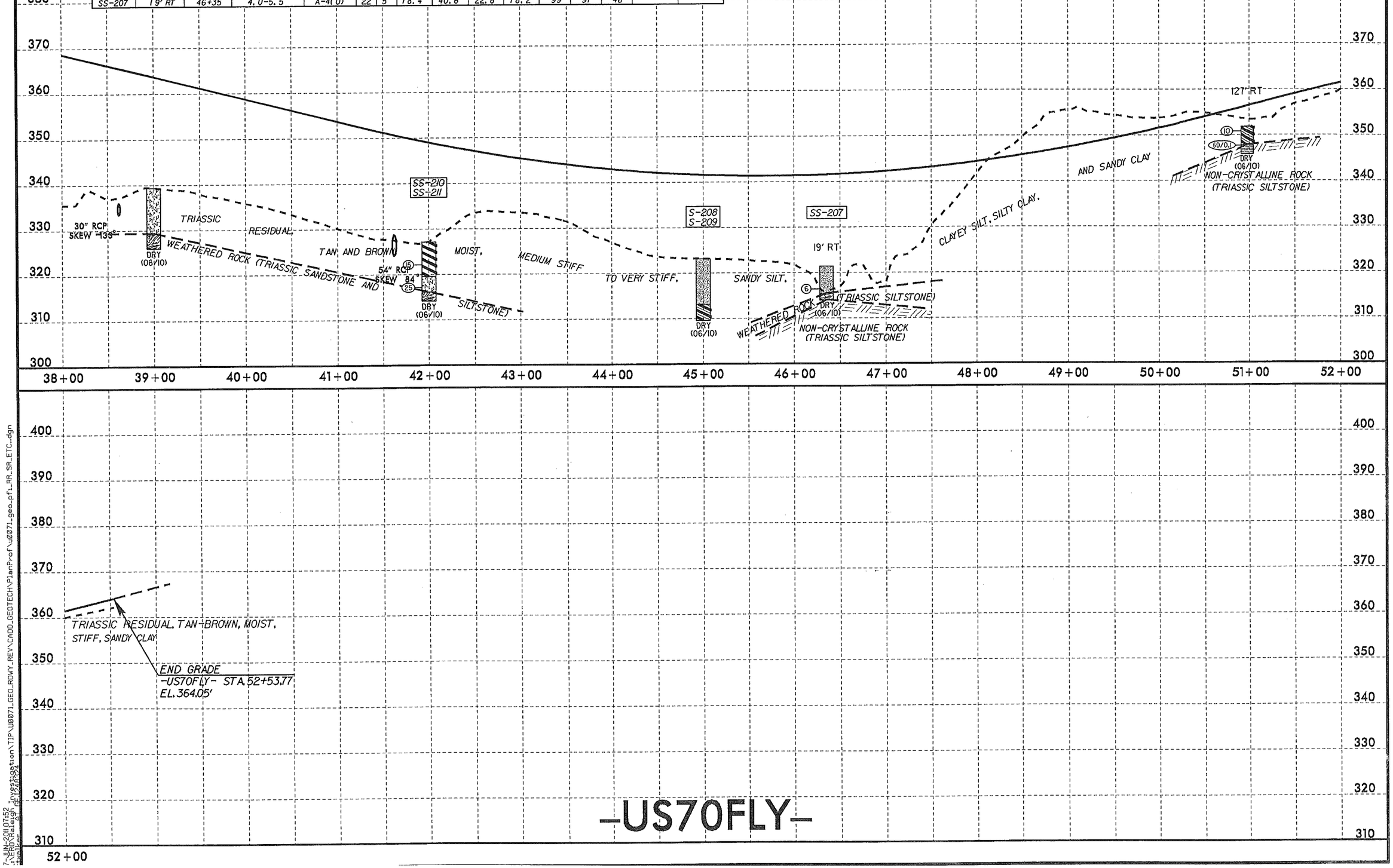
PROJECT REFERENCE NO.	SHEET NO.
U-0071	59

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-210	CL	42+00	4.0-5.5	A-7-5(17)	57	27	15.2	22.2	28.3	34.3	99	94	65	-	-
SS-211	CL	42+00	9.0-10.5	A-5(4)	44	9	15.6	35.2	37.2	12.1	100	94	57	-	-
S-208	CL	45+00	0.0-10.0	A-4(0)	20	4	29.9	38.8	17.2	14.1	99	86	36	-	-
S-209	CL	45+00	10.0-13.5	A-6(9)	32	12	5.3	22.8	43.6	28.3	99	97	81	-	-
SS-207	19' RT	46+35	4.0-5.5	A-4(0)	22	5	18.4	40.6	22.8	18.2	99	91	48	-	-



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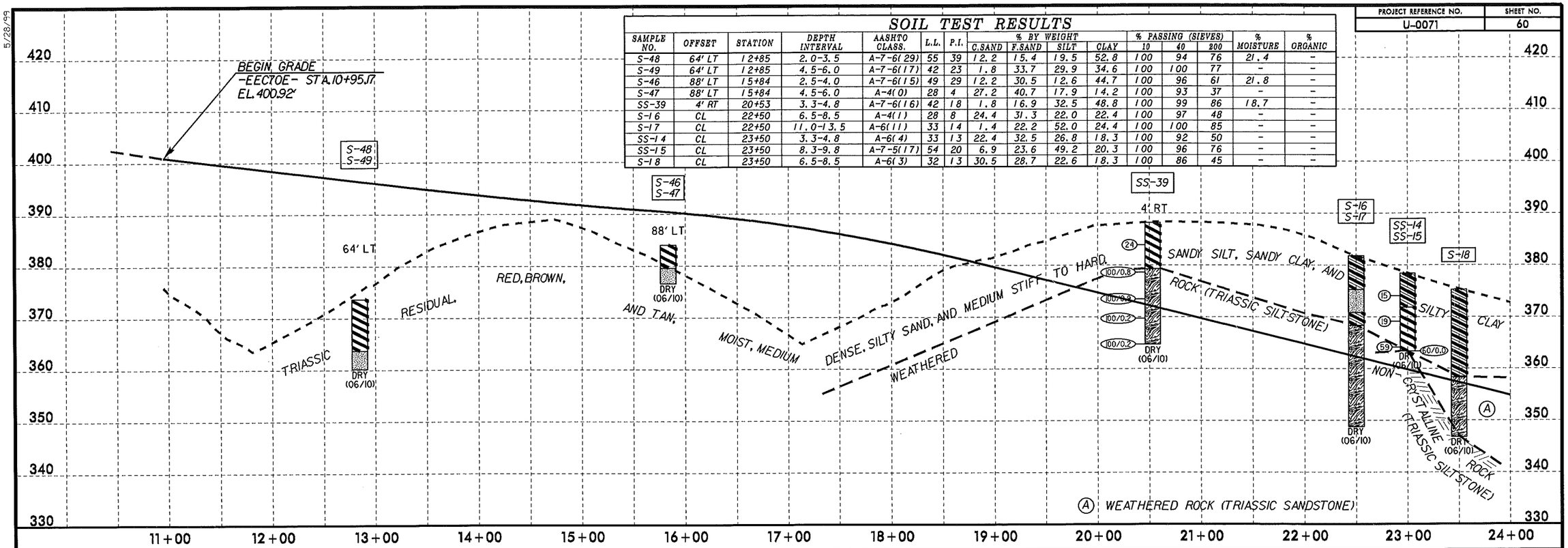
PROJECT REFERENCE NO.	SHEET NO.
U-0071	60

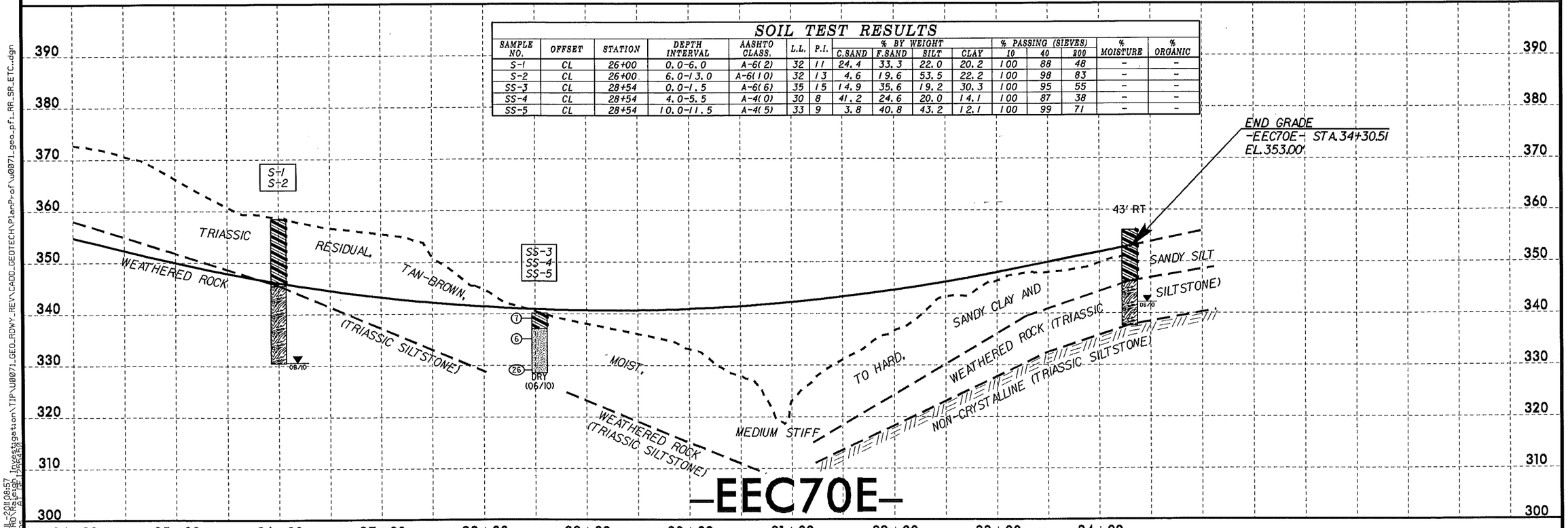
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-48	64' LT	12+85	2.0-3.5	A-7-6(29)	55	39	12.2	15.4	19.5	52.8	100	94	76	21.4	-
S-49	64' LT	12+85	4.5-6.0	A-7-6(17)	42	23	1.8	33.7	29.9	34.6	100	100	77	-	-
S-46	88' LT	15+84	2.5-4.0	A-7-6(15)	49	29	12.2	30.5	12.6	44.7	100	96	61	21.8	-
S-47	88' LT	15+84	4.5-6.0	A-4(0)	28	4	27.2	40.7	17.9	14.2	100	93	37	-	-
SS-39	4' RT	20+53	3.3-4.8	A-7-6(16)	42	18	1.8	16.9	32.5	48.8	100	99	86	18.7	-
S-16	CL	22+50	6.5-8.5	A-4(1)	28	8	24.4	31.3	22.0	22.4	100	97	48	-	-
S-17	CL	22+50	11.0-13.5	A-6(11)	33	14	1.4	22.2	52.0	24.4	100	100	85	-	-
SS-14	CL	23+50	3.3-4.8	A-6(4)	33	13	22.4	32.5	26.8	18.3	100	92	50	-	-
SS-15	CL	23+50	8.3-9.8	A-7-5(17)	54	20	6.9	23.6	49.2	20.3	100	96	76	-	-
S-18	CL	23+50	6.5-8.5	A-6(3)	32	13	30.5	28.7	22.6	18.3	100	86	45	-	-



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-1	CL	26+00	0.0-6.0	A-6(2)	32	11	24.4	33.3	22.0	20.2	100	88	48	-	-
S-2	CL	26+00	6.0-13.0	A-6(10)	32	13	4.6	19.6	53.5	22.2	100	98	83	-	-
SS-3	CL	28+54	0.0-1.5	A-6(6)	35	15	14.9	35.6	19.2	30.3	100	95	55	-	-
SS-4	CL	28+54	4.0-5.5	A-4(0)	30	8	41.2	24.6	20.0	14.1	100	87	38	-	-
SS-5	CL	28+54	10.0-11.5	A-4(5)	33	9	3.8	40.8	43.2	12.1	100	99	71	-	-



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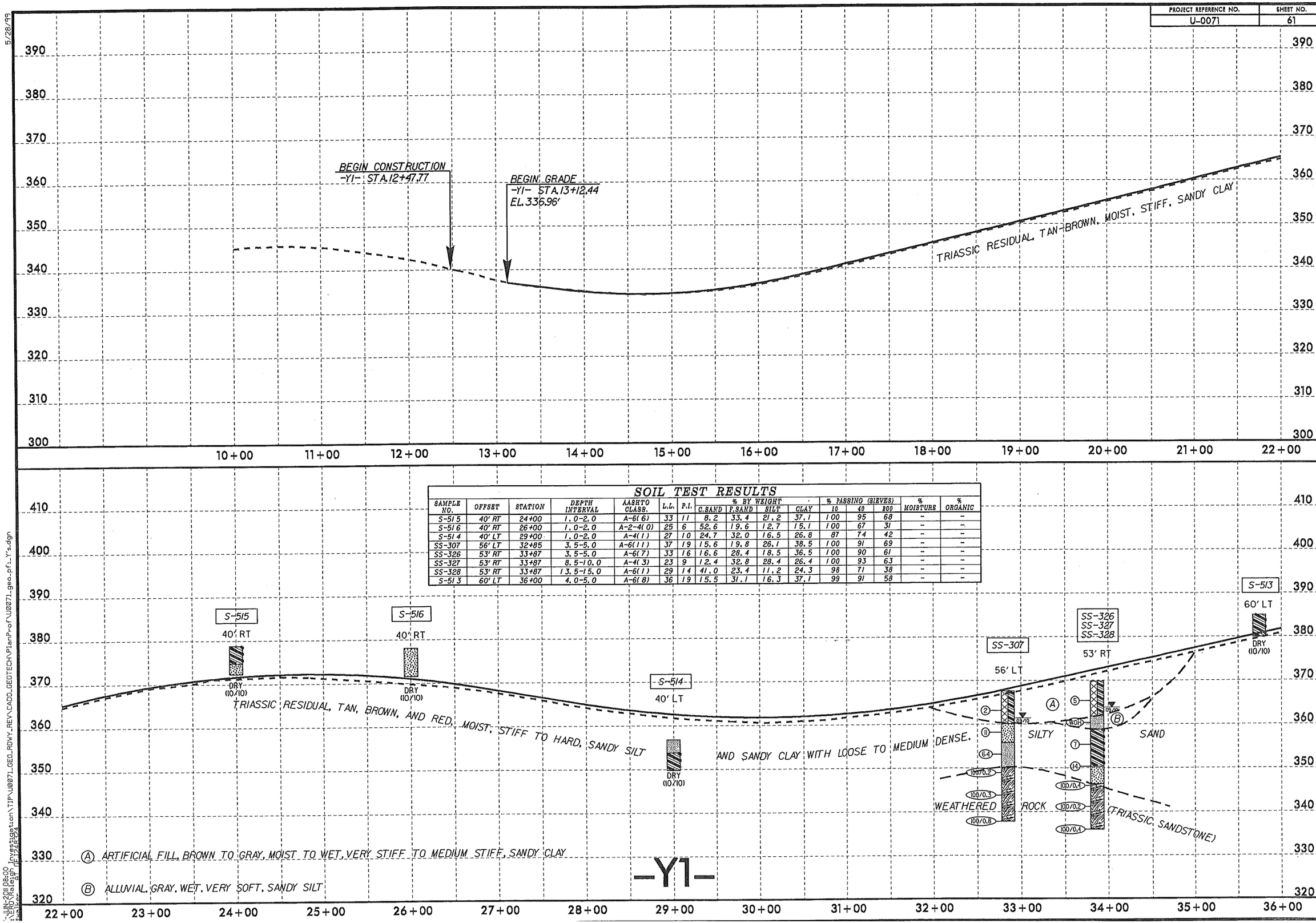
PROJECT REFERENCE NO.	SHEET NO.
U-0071	61



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-515	40' RT	24+00	1.0-2.0	A-6(6)	33	11	8.2	33.4	21.2	37.1	100	95	68	-	-
S-516	40' RT	26+00	1.0-2.0	A-2-4(0)	25	6	52.6	19.6	12.7	15.1	100	67	31	-	-
S-514	40' LT	29+00	1.0-2.0	A-4(1)	27	10	24.7	32.0	16.5	26.8	87	74	42	-	-
SS-307	56' LT	32+85	3.5-5.0	A-6(11)	37	19	15.6	19.8	26.1	38.5	100	91	69	-	-
SS-326	53' RT	33+87	3.5-5.0	A-6(7)	33	16	16.6	28.4	18.5	36.5	100	90	61	-	-
SS-327	53' RT	33+87	8.5-10.0	A-4(3)	23	9	12.4	32.8	28.4	26.4	100	93	63	-	-
SS-328	53' RT	33+87	13.5-15.0	A-6(1)	29	14	41.0	23.4	11.2	24.3	98	71	38	-	-
S-513	60' LT	36+00	4.0-5.0	A-6(8)	36	19	15.5	31.1	16.3	37.1	99	91	58	-	-

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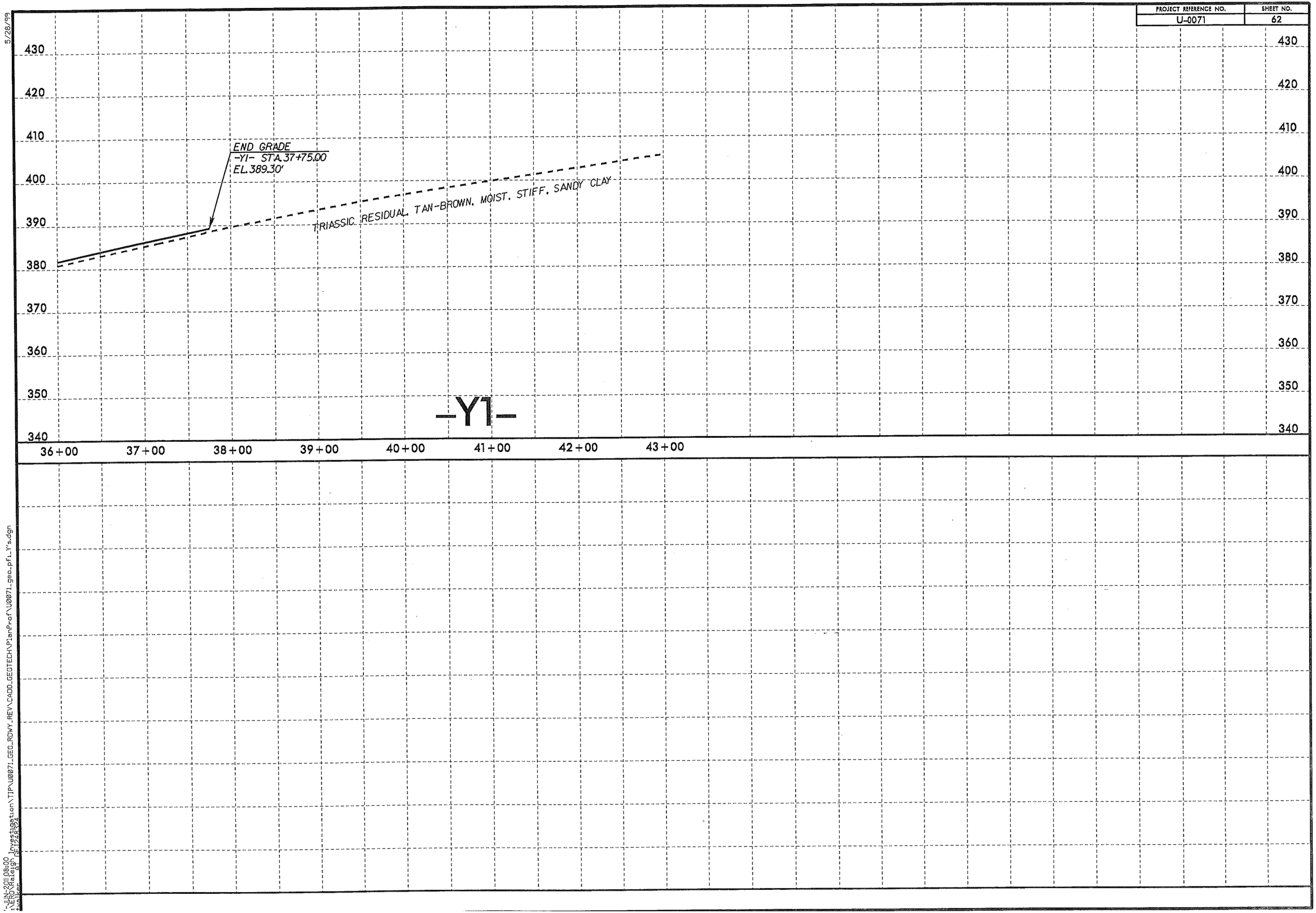
PROJECT REFERENCE NO.	SHEET NO.
U-0071	62



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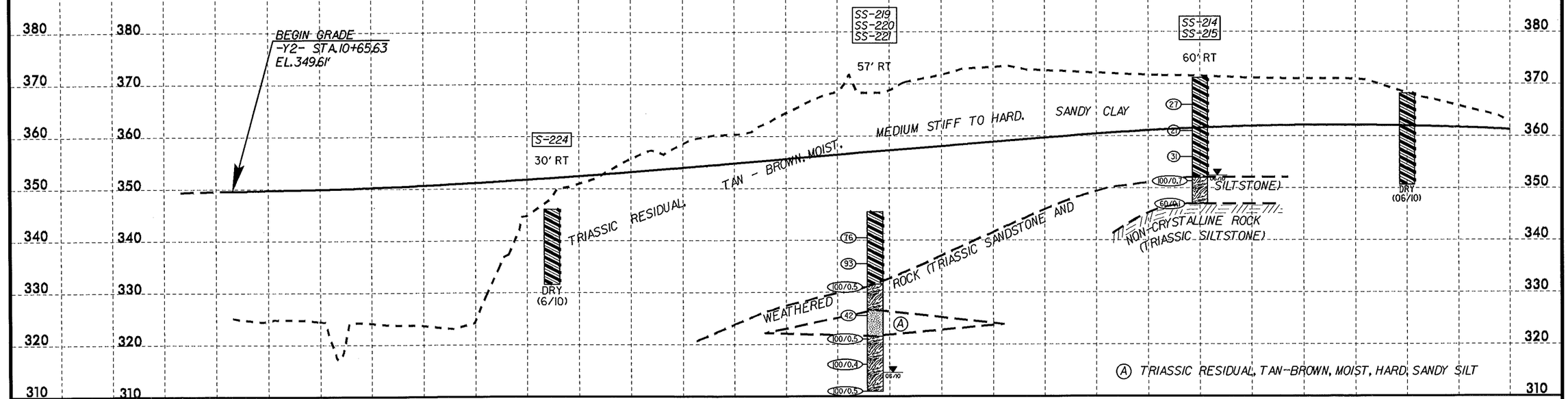
PROJECT REFERENCE NO.	SHEET NO.
U-0071	63

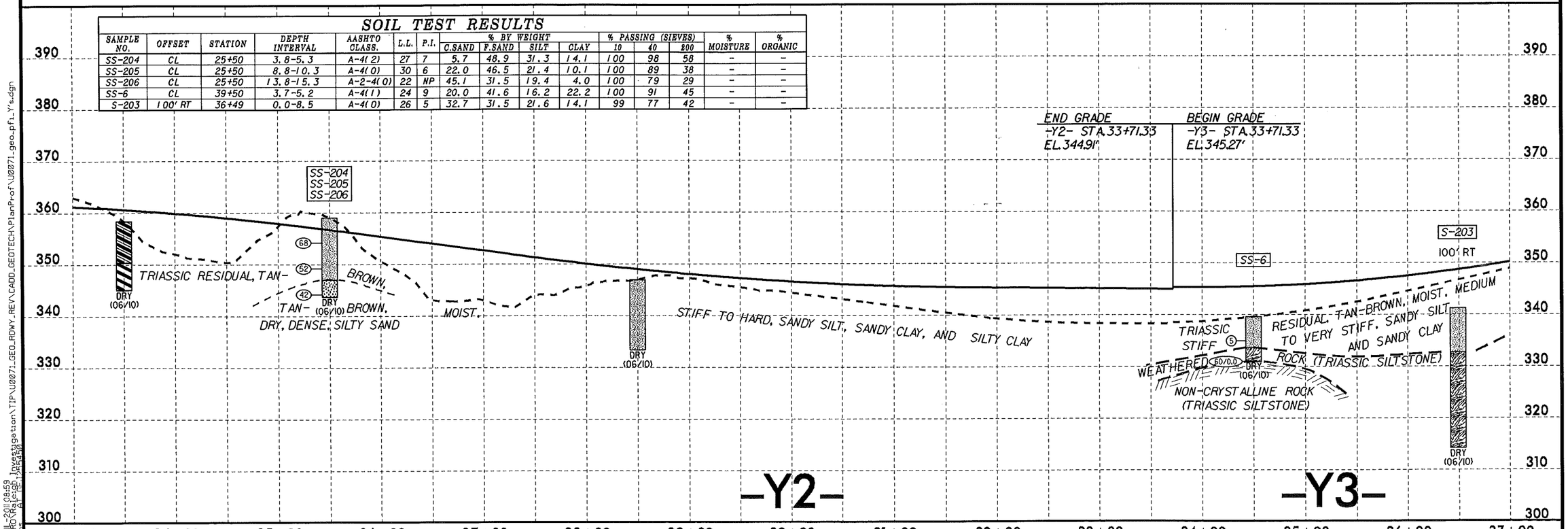
SOIL TEST RESULTS

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-224	30' RT	13+74	0.0-14.5	A-6(5)	38	20	37.7	21.7	16.1	24.6	100	80	45	-	-
SS-219	57' RT	16+86	4.0-5.5	A-6(2)	28	11	27.2	29.3	29.2	14.3	100	86	49	-	-
SS-220	57' RT	16+86	9.0-10.5	A-6(3)	27	11	23.7	32.3	27.5	16.4	100	89	51	-	-
SS-221	57' RT	16+86	19.0-20.5	A-4(0)	22	4	43.2	25.2	19.3	12.3	100	75	36	-	-
SS-214	60' RT	20+00	4.2-5.7	A-6(11)	37	14	6.3	18.8	46.7	28.3	100	99	80	-	-
SS-215	60' RT	20+00	14.2-15.7	A-6(10)	34	13	1.6	25.0	50.9	22.5	100	100	82	-	-



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-204	CL	25+50	3.8-5.3	A-4(2)	27	7	5.7	48.9	31.3	14.1	100	98	58	-	-
SS-205	CL	25+50	8.8-10.3	A-4(0)	30	6	22.0	46.5	21.4	10.1	100	89	38	-	-
SS-206	CL	25+50	13.8-15.3	A-2-4(0)	22	NP	45.1	31.5	19.4	4.0	100	79	29	-	-
SS-6	CL	39+50	3.7-5.2	A-4(1)	24	9	20.0	41.6	16.2	22.2	100	91	45	-	-
S-203	100' RT	36+49	0.0-8.5	A-4(0)	26	5	32.7	31.5	21.6	14.1	99	77	42	-	-



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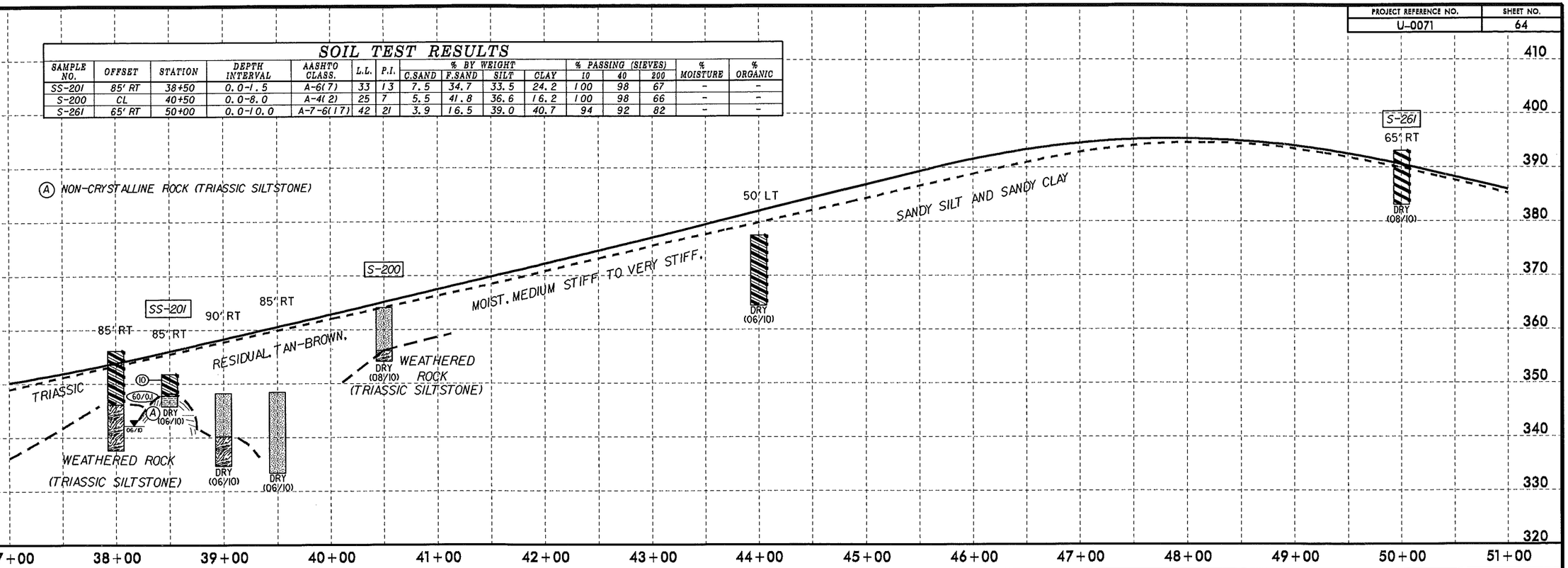
PROJECT REFERENCE NO.	SHEET NO.
U-0071	64

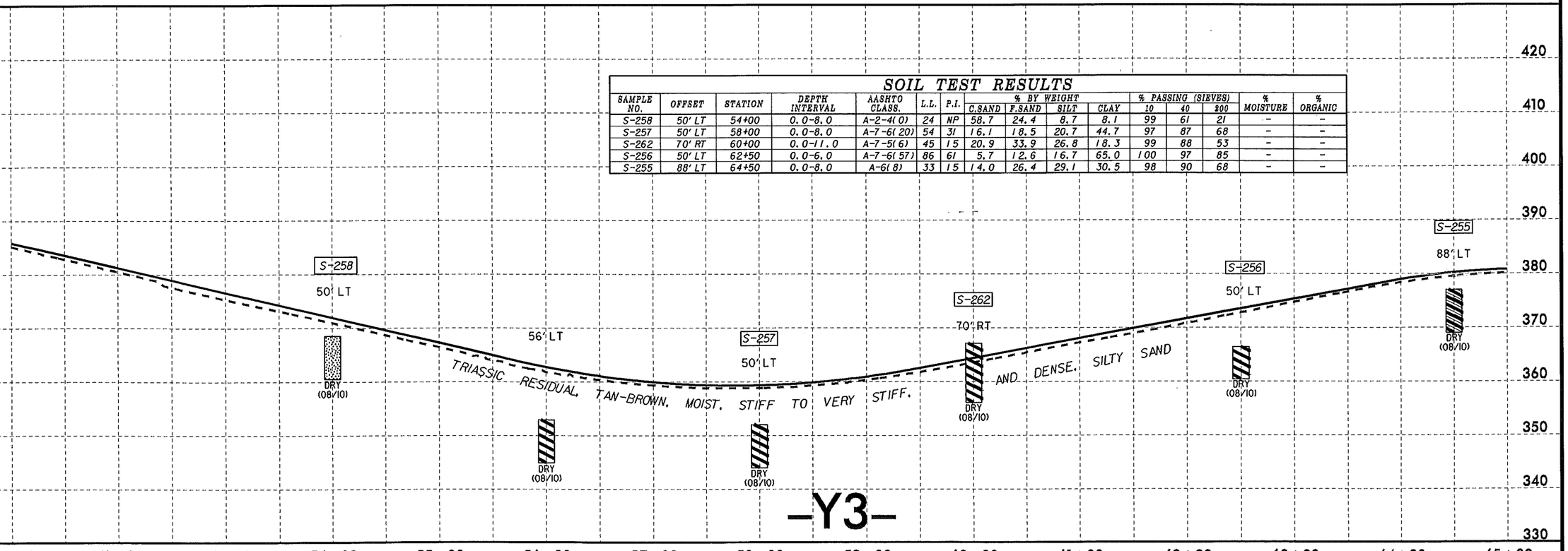
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-201	85' RT	38+50	0.0-1.5	A-6(7)	33	13	7.5	34.7	33.5	24.2	100	98	67	-	-
S-200	CL	40+50	0.0-8.0	A-4(2)	25	7	5.5	41.8	36.6	16.2	100	98	66	-	-
S-261	65' RT	50+00	0.0-10.0	A-7-6(17)	42	21	3.9	16.5	39.0	40.7	94	92	82	-	-



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-258	50' LT	54+00	0.0-8.0	A-2-4(0)	24	NP	58.7	24.4	8.7	8.1	99	61	21	-	-
S-257	50' LT	58+00	0.0-8.0	A-7-6(20)	54	31	16.1	18.5	20.7	44.7	97	87	68	-	-
S-262	70' RT	60+00	0.0-11.0	A-7-5(6)	45	15	20.9	33.9	26.8	18.3	99	88	53	-	-
S-256	50' LT	62+50	0.0-6.0	A-7-6(57)	86	61	5.7	12.6	16.7	65.0	100	97	85	-	-
S-255	88' LT	64+50	0.0-8.0	A-6(8)	33	15	14.0	26.4	29.1	30.5	98	90	68	-	-



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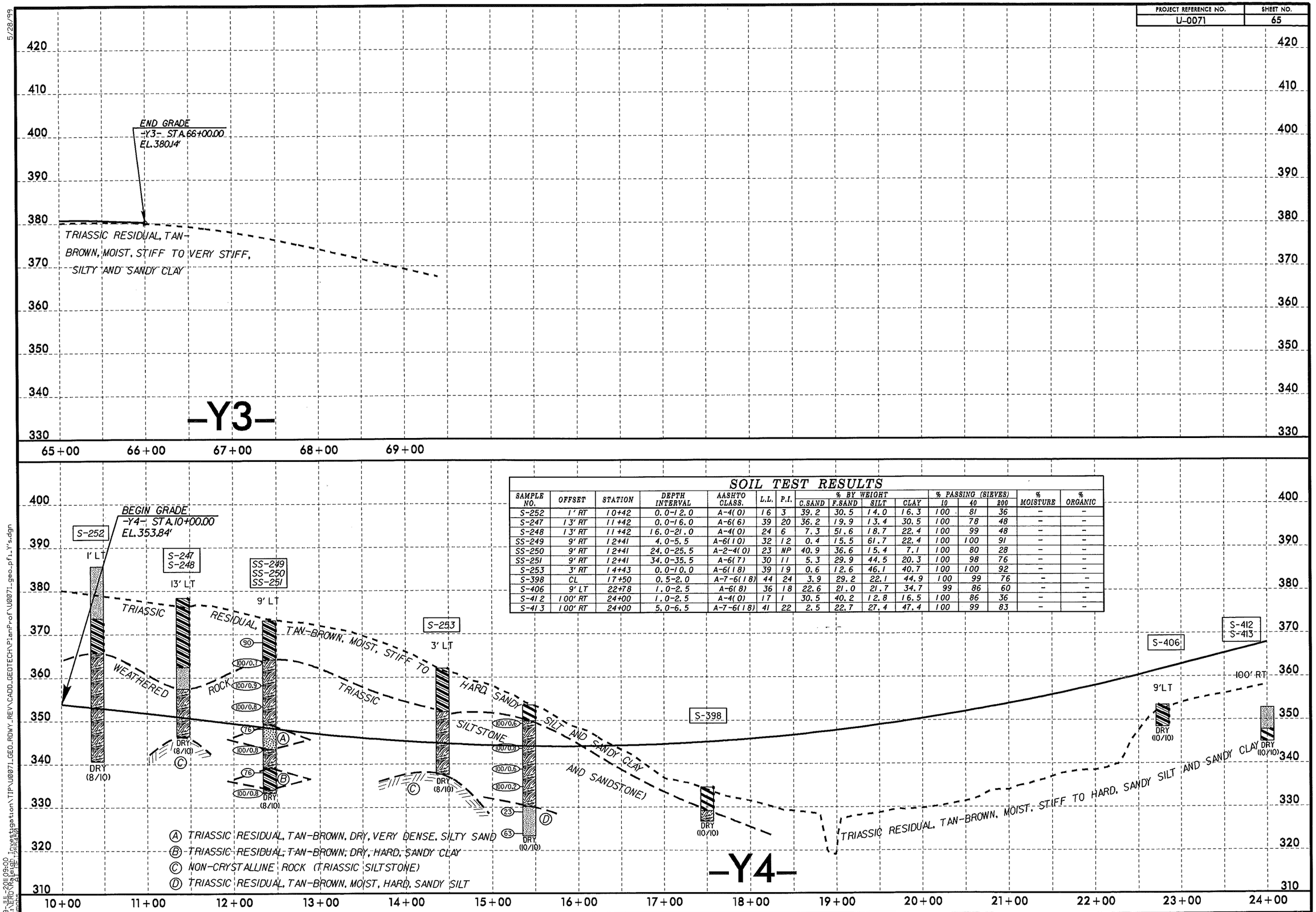
PROJECT REFERENCE NO.	SHEET NO.
U-0071	65



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-252	1' RT	10+42	0.0-12.0	A-4(0)	16	3	39.2	30.5	14.0	16.3	100	81	36	-	-
S-247	13' RT	11+42	0.0-16.0	A-6(6)	39	20	36.2	19.9	13.4	30.5	100	78	48	-	-
S-248	13' RT	11+42	16.0-21.0	A-4(0)	24	6	7.3	51.6	18.7	22.4	100	99	48	-	-
SS-249	9' RT	12+41	4.0-5.5	A-6(10)	32	12	0.4	15.5	61.7	22.4	100	100	91	-	-
SS-250	9' RT	12+41	24.0-25.5	A-2-4(0)	23	NP	40.9	36.6	15.4	7.1	100	80	28	-	-
SS-251	9' RT	12+41	34.0-35.5	A-6(7)	30	11	5.3	29.9	44.5	20.3	100	98	76	-	-
S-253	3' RT	14+43	0.0-10.0	A-6(18)	39	19	0.6	12.6	46.1	40.7	100	100	92	-	-
S-398	CL	17+50	0.5-2.0	A-7-6(18)	44	24	3.9	29.2	22.1	44.9	100	99	76	-	-
S-406	9' LT	22+78	1.0-2.5	A-6(8)	36	18	22.6	21.0	21.7	34.7	99	86	60	-	-
S-412	100' RT	24+00	1.0-2.5	A-4(0)	17	1	30.5	40.2	12.8	16.5	100	86	36	-	-
S-413	100' RT	24+00	5.0-6.5	A-7-6(18)	41	22	2.5	22.7	27.4	47.4	100	99	83	-	-

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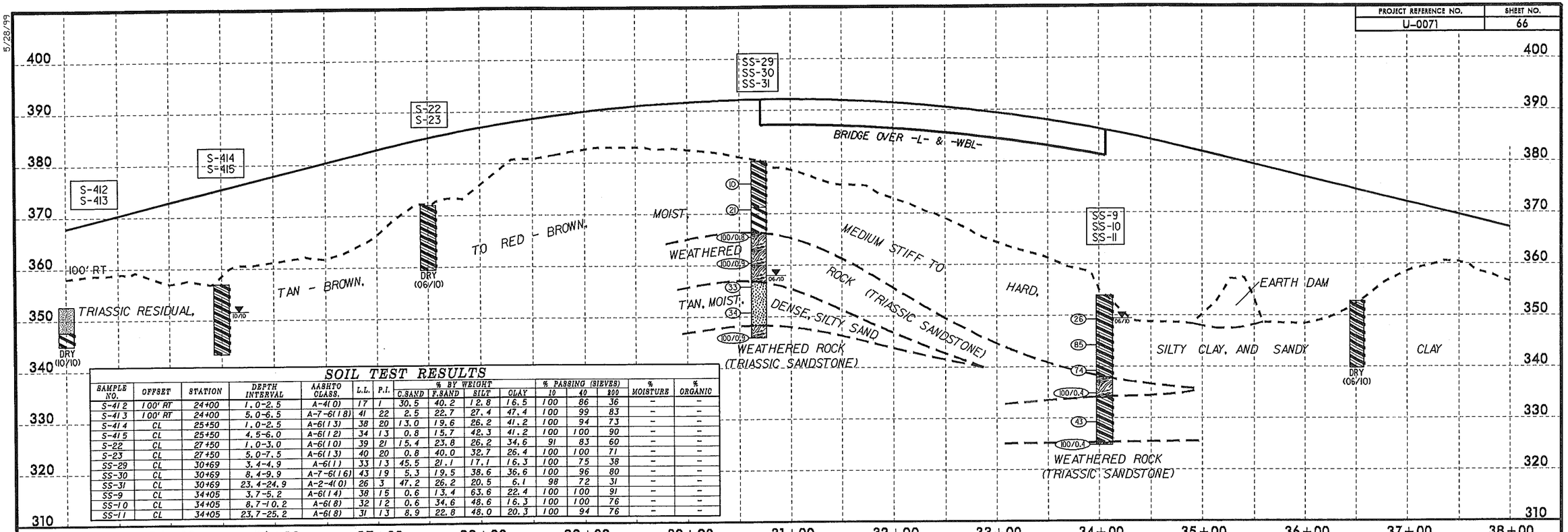
PROJECT REFERENCE NO.	SHEET NO.
U-0071	66

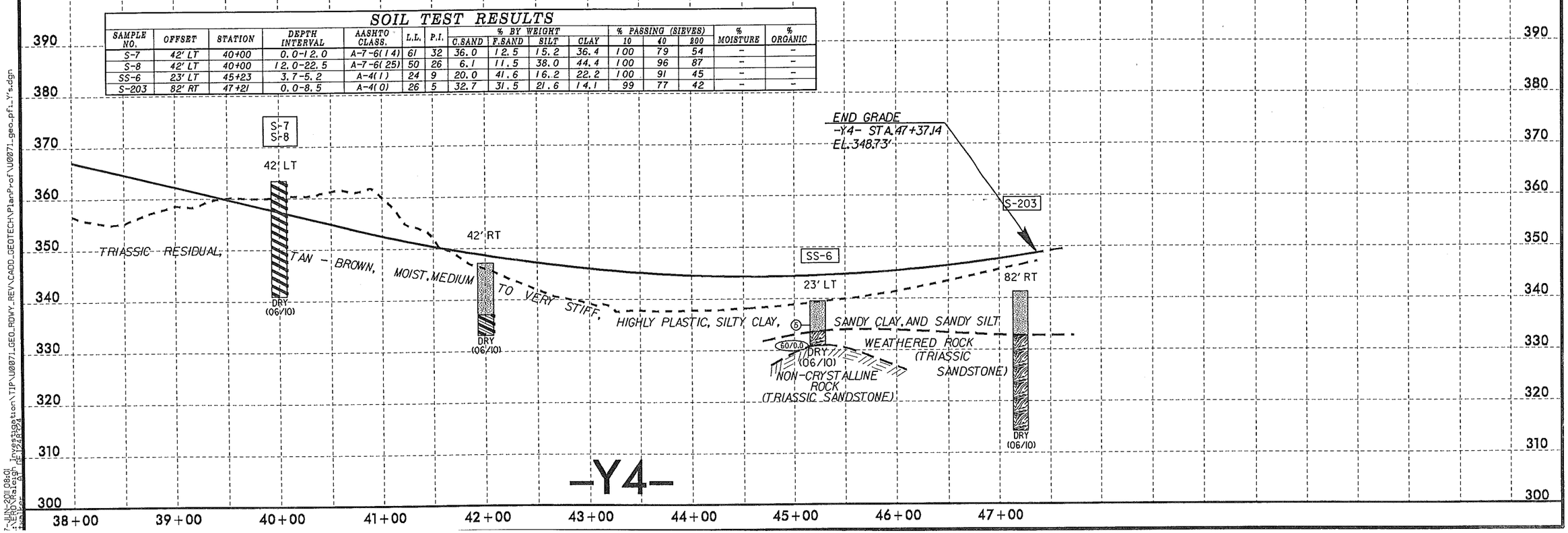


SOIL TEST RESULTS

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 2	100' RT	24+00	1.0-2.5	A-4(0)	17	1	30.5	40.2	12.8	16.5	100	86	36	-	-
S-41 3	100' RT	24+00	5.0-6.5	A-7-6(18)	41	22	2.5	22.7	27.4	47.4	100	99	83	-	-
S-41 4	CL	25+50	1.0-2.5	A-6(13)	38	20	13.0	19.6	26.2	41.2	100	94	73	-	-
S-41 5	CL	25+50	4.5-6.0	A-6(12)	34	13	0.8	15.7	42.3	41.2	100	100	90	-	-
S-22	CL	27+50	1.0-3.0	A-6(10)	39	21	15.4	23.8	26.2	34.6	91	83	60	-	-
S-23	CL	27+50	5.0-7.5	A-6(13)	40	20	0.8	40.0	32.7	26.4	100	100	71	-	-
SS-29	CL	30+69	3.4-4.9	A-6(11)	33	13	45.5	21.1	17.1	16.3	100	75	38	-	-
SS-30	CL	30+69	8.4-9.9	A-7-6(16)	43	19	5.3	19.5	38.6	36.6	100	96	80	-	-
SS-31	CL	30+69	23.4-24.9	A-2-4(0)	26	3	47.2	26.2	20.5	6.1	98	72	31	-	-
SS-9	CL	34+05	3.7-5.2	A-6(14)	38	15	0.6	13.4	63.6	22.4	100	100	91	-	-
SS-10	CL	34+05	8.7-10.2	A-6(8)	32	12	0.6	34.6	48.6	16.3	100	100	76	-	-
SS-11	CL	34+05	23.7-25.2	A-6(8)	31	13	8.9	22.8	48.0	20.3	100	94	76	-	-

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-7	42' LT	40+00	0.0-12.0	A-7-6(14)	61	32	36.0	12.5	15.2	36.4	100	79	54	-	-
S-8	42' LT	40+00	12.0-22.5	A-7-6(25)	50	26	6.1	11.5	38.0	44.4	100	96	87	-	-
SS-6	23' LT	45+23	3.7-5.2	A-4(1)	24	9	20.0	41.6	16.2	22.2	100	91	45	-	-
S-203	82' RT	47+21	0.0-8.5	A-4(0)	26	5	32.7	31.5	21.6	14.1	99	77	42	-	-



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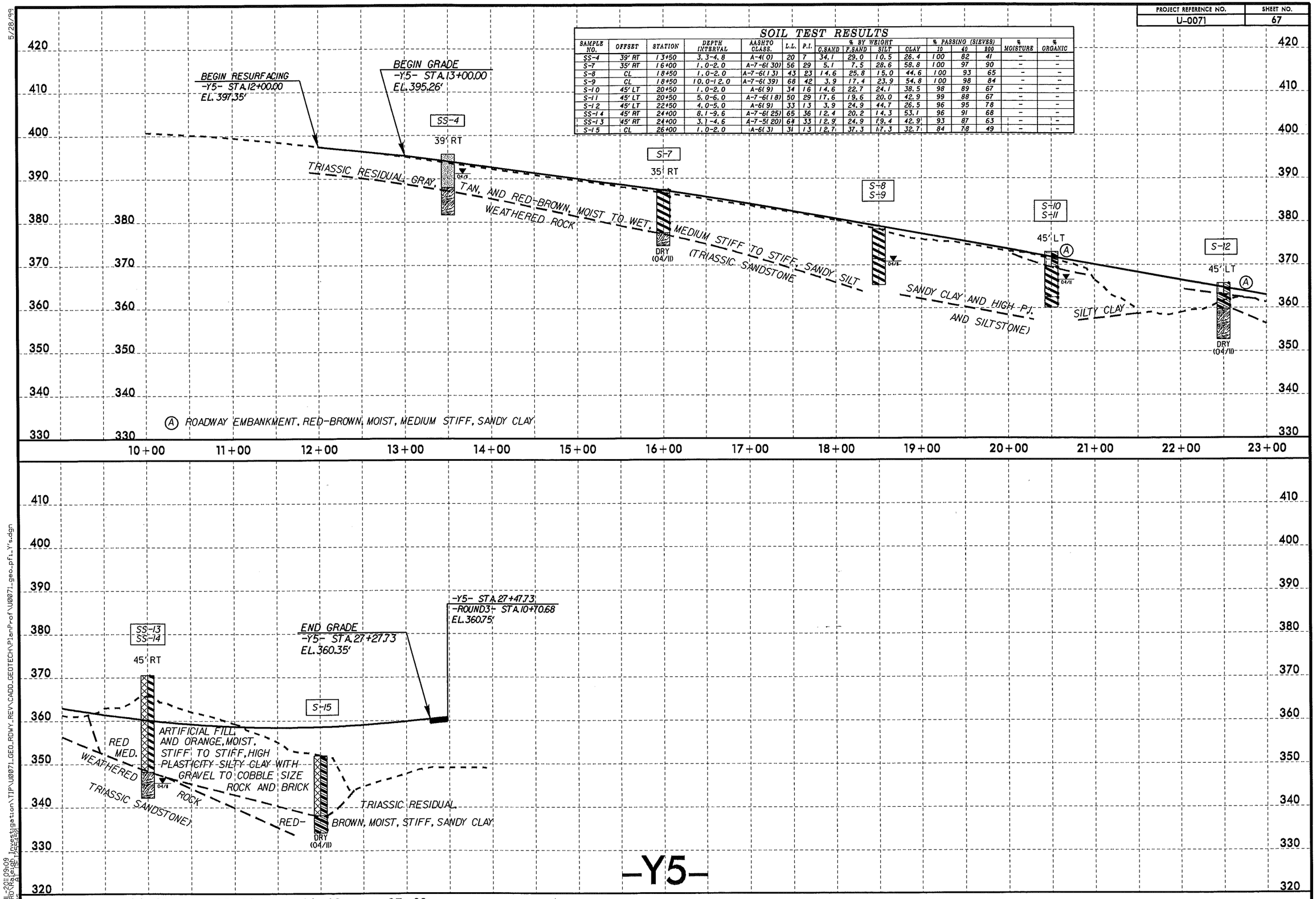
PROJECT REFERENCE NO.	SHEET NO.
U-0071	67

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							G.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-4	39' RT	13+50	3.3-4.8	A-4(0)	20	7	34.1	29.0	10.5	26.4	100	82	41	-	-
S-7	35' RT	16+00	1.0-2.0	A-7-6(30)	56	29	5.1	7.5	28.6	58.8	100	97	90	-	-
S-8	CL	18+50	1.0-2.0	A-7-6(13)	43	23	14.6	25.8	15.0	44.6	100	93	65	-	-
S-9	CL	18+50	10.0-12.0	A-7-6(39)	68	42	3.9	17.4	23.9	54.8	100	98	84	-	-
S-10	45' LT	20+50	1.0-2.0	A-6(9)	34	16	14.6	22.7	24.1	38.5	98	89	67	-	-
S-11	45' LT	20+50	5.0-6.0	A-7-6(18)	50	29	17.6	19.6	20.0	42.9	99	88	67	-	-
S-12	45' LT	22+50	4.0-5.0	A-6(9)	33	13	3.9	24.9	44.7	26.5	96	95	78	-	-
SS-14	45' RT	24+00	8.1-9.6	A-7-6(25)	65	36	12.4	20.2	14.3	53.1	96	91	68	-	-
SS-13	45' RT	24+00	3.1-4.6	A-7-5(20)	64	33	12.9	24.9	19.4	42.9	93	87	63	-	-
S-15	CL	26+00	1.0-2.0	A-6(3)	31	13	12.7	37.3	17.3	32.7	84	78	49	-	-



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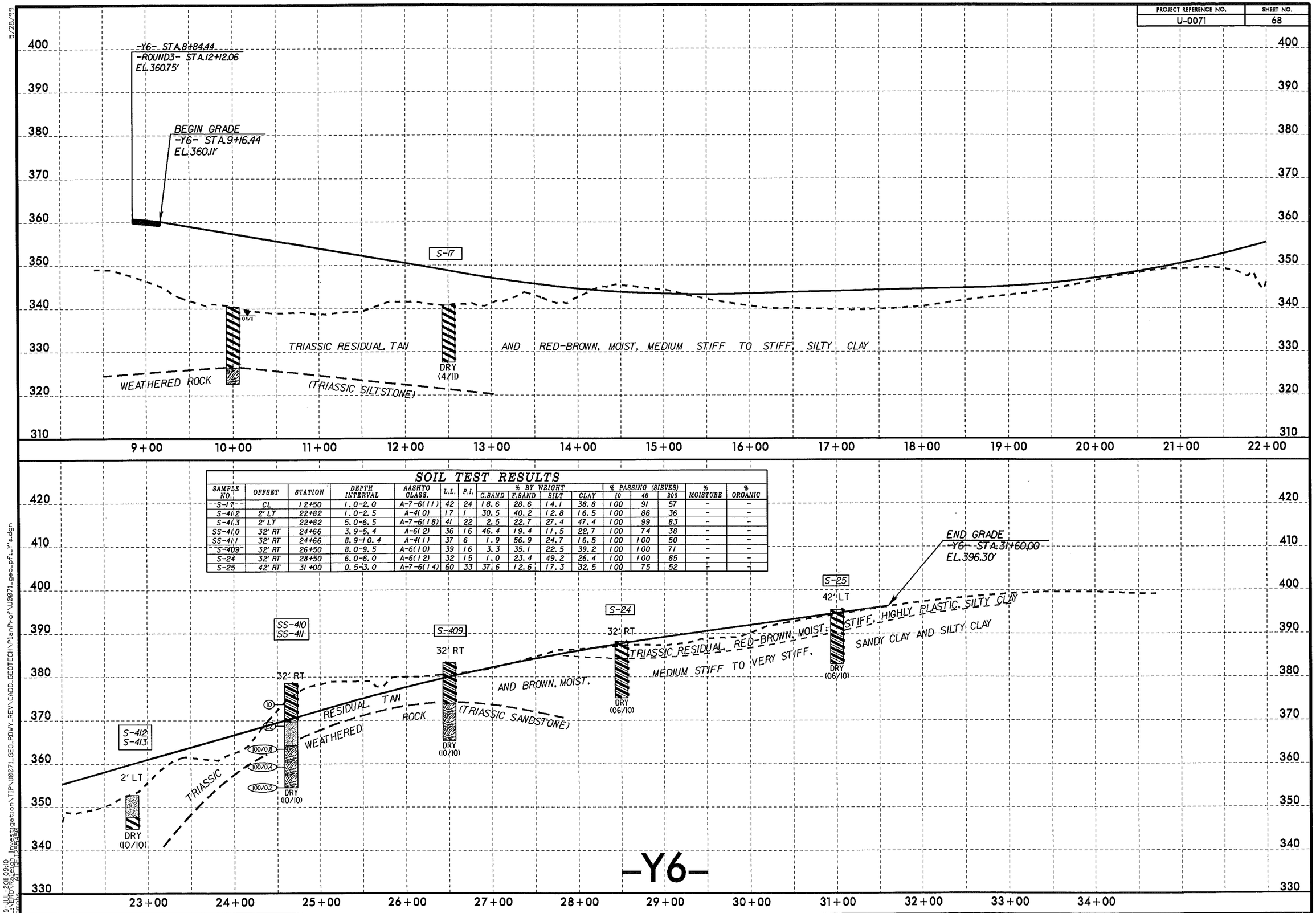
PROJECT REFERENCE NO.	SHEET NO.
U-0071	68



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-17	CL	12+50	1.0-2.0	A-7-6(11)	42	24	18.6	28.6	14.1	38.8	100	91	57	-	-
S-412	2' LT	22+82	1.0-2.5	A-4(0)	17	1	30.5	40.2	12.8	16.5	100	86	36	-	-
S-413	2' LT	22+82	5.0-6.5	A-7-6(18)	41	22	2.5	22.7	27.4	47.4	100	99	83	-	-
SS-410	32' RT	24+66	3.9-5.4	A-6(2)	36	16	46.4	19.4	11.5	22.7	100	74	38	-	-
SS-411	32' RT	24+66	8.9-10.4	A-4(1)	37	6	1.9	56.9	24.7	16.5	100	100	50	-	-
S-409	32' RT	26+50	8.0-9.5	A-6(10)	39	16	3.3	35.1	22.5	39.2	100	100	71	-	-
S-24	32' RT	28+50	6.0-8.0	A-6(12)	32	15	1.0	23.4	49.2	26.4	100	100	85	-	-
S-25	42' RT	31+00	0.5-3.0	A-7-6(14)	60	33	37.6	12.6	17.3	32.5	100	75	52	-	-

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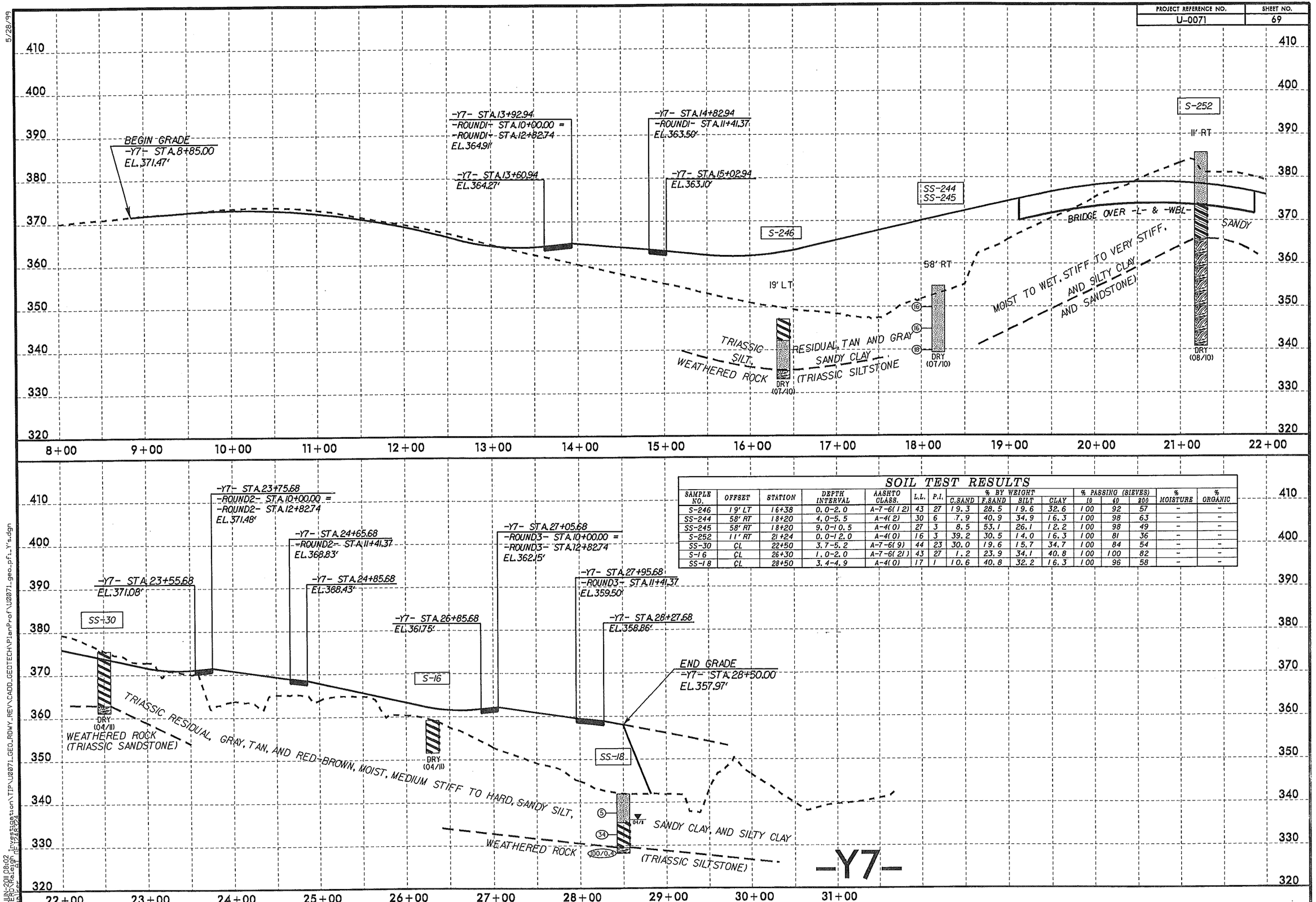


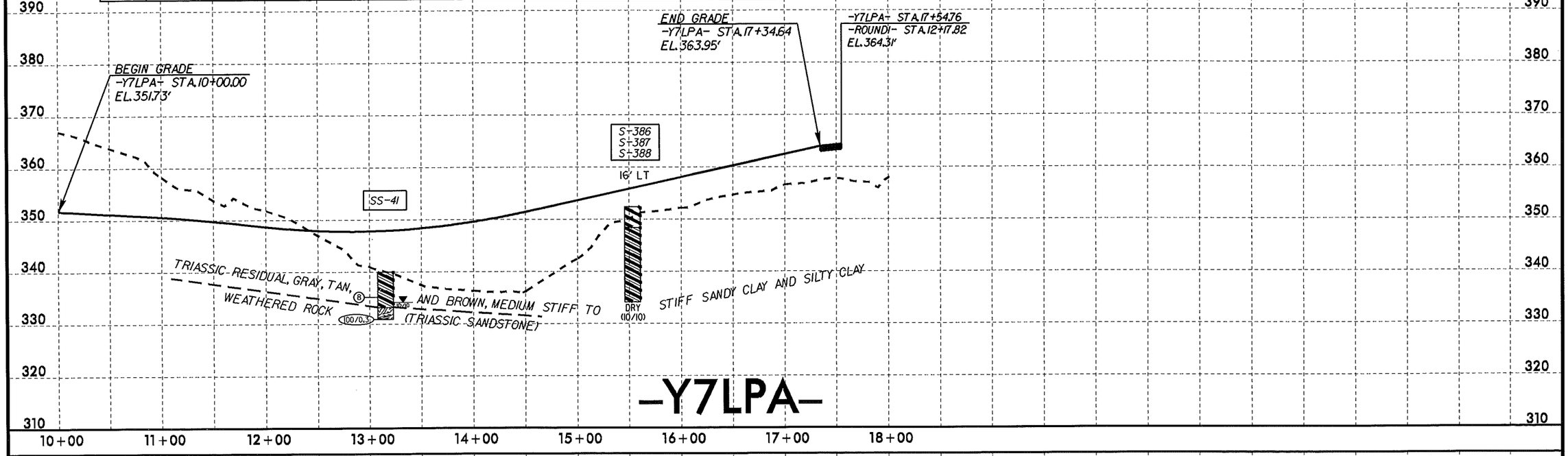
SOIL TEST RESULTS

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-246	19' LT	16+38	0.0-2.0	A-7-6(12)	43	27	19.3	28.5	19.6	32.6	100	92	57	-	-
SS-244	58' RT	18+20	4.0-5.5	A-4(2)	30	6	7.9	40.9	34.9	16.3	100	98	63	-	-
SS-245	58' RT	18+20	9.0-10.5	A-4(0)	27	3	8.5	53.1	26.1	12.2	100	98	49	-	-
S-252	11' RT	21+24	0.0-12.0	A-4(0)	16	3	39.2	30.5	14.0	16.3	100	81	36	-	-
SS-30	CL	22+50	3.7-5.2	A-7-6(9)	44	23	30.0	19.6	15.7	34.7	100	84	54	-	-
S-16	CL	26+30	1.0-2.0	A-7-6(21)	43	27	1.2	23.9	34.1	40.8	100	100	82	-	-
SS-18	CL	28+50	3.4-4.9	A-4(0)	17	1	10.6	40.8	32.2	16.3	100	96	58	-	-

PROJECT REFERENCE NO.	SHEET NO.
U-0071	70

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-41	CL	13+15	3.8-5.3	A-6(9)	35	21	16.7	31.2	19.4	32.7	100	92	58	-	-
S-386	94' LT	28+11	0.5-2.0	A-7-6(27)	57	34	12.8	13.4	25.1	48.7	100	93	77	-	-
S-387	94' RT	28+11	9.0-10.5	A-6(19)	39	20	1.6	9.7	46.0	42.6	100	99	93	-	-
S-388	94' LT	28+11	15.0-16.5	A-6(11)	33	17	1.2	31.7	38.7	28.4	100	100	76	-	-



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PROJECT REFERENCE NO.	SHEET NO.
U-0071	71

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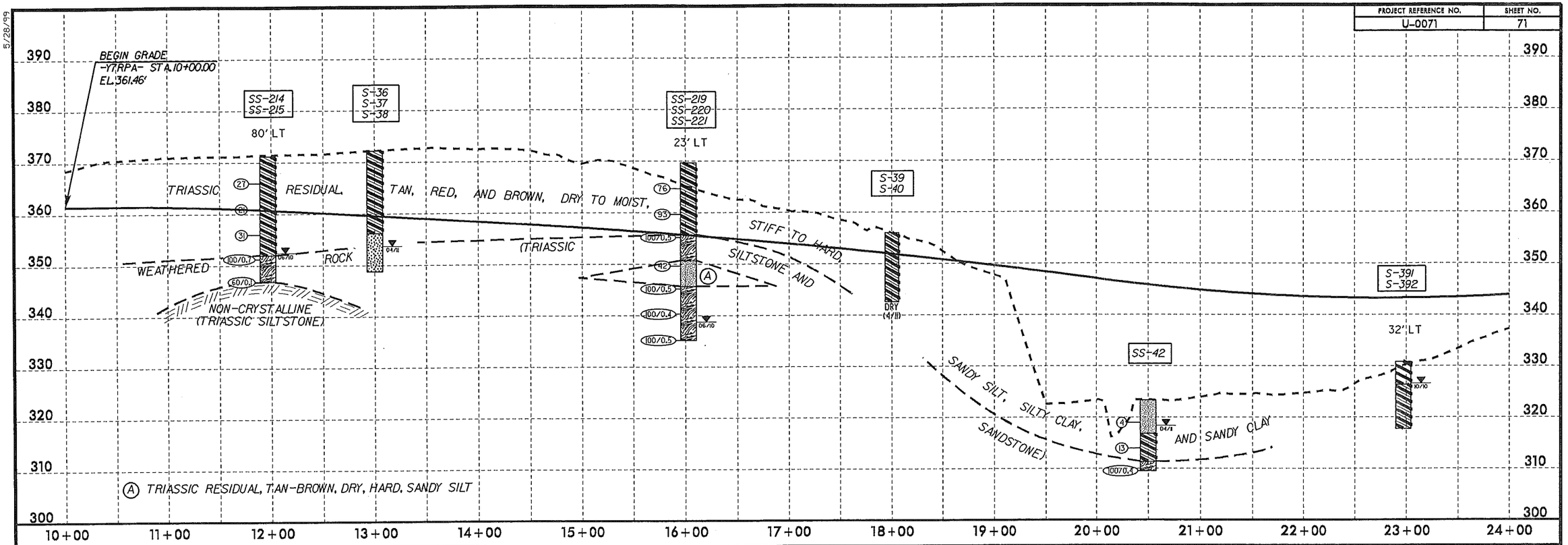

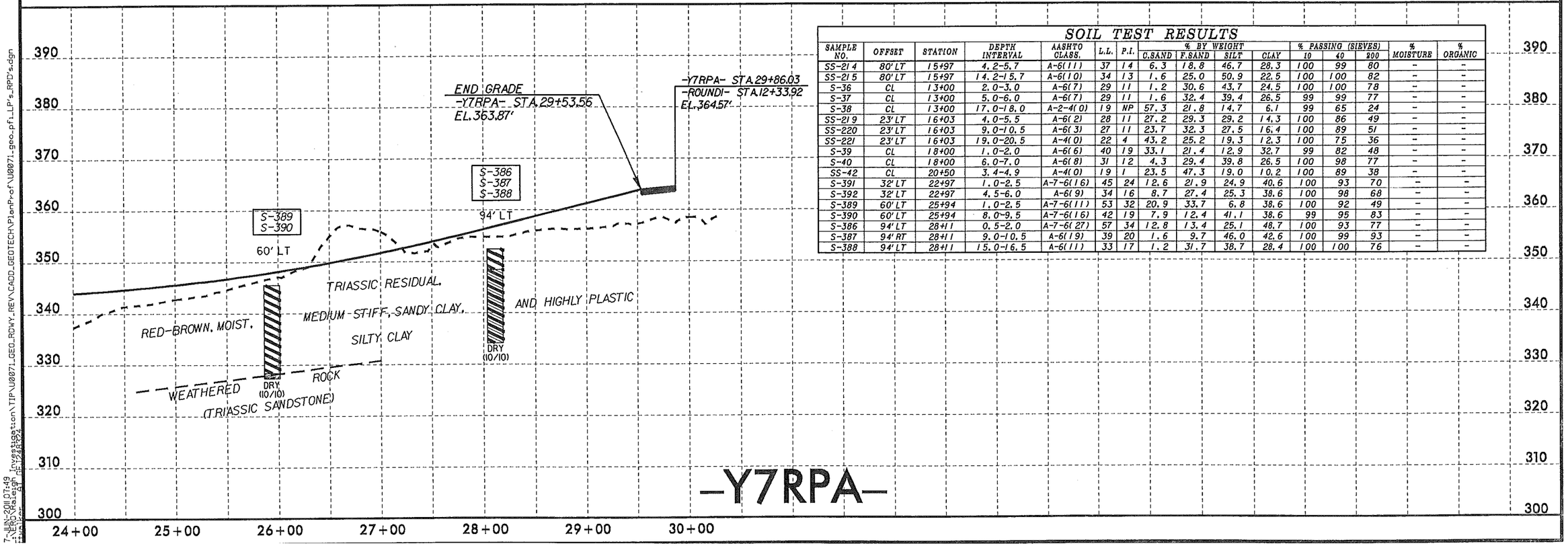

SOIL TEST RESULTS

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
SS-214	80' LT	15+97	4.2-5.7	A-6(11)	37	14	6.3	18.8	46.7	28.3	100	99	80	-	-
SS-215	80' LT	15+97	14.2-15.7	A-6(10)	34	13	1.6	25.0	50.9	22.5	100	100	82	-	-
S-36	CL	13+00	2.0-3.0	A-6(7)	29	11	1.2	30.6	43.7	24.5	100	100	78	-	-
S-37	CL	13+00	5.0-6.0	A-6(7)	29	11	1.6	32.4	39.4	26.5	99	99	77	-	-
S-38	CL	13+00	17.0-18.0	A-2-4(0)	19	NP	57.3	21.8	14.7	6.1	99	65	24	-	-
SS-219	23' LT	16+03	4.0-5.5	A-6(2)	28	11	27.2	29.3	29.2	14.3	100	86	49	-	-
SS-220	23' LT	16+03	9.0-10.5	A-6(3)	27	11	23.7	32.3	27.5	16.4	100	89	51	-	-
SS-221	23' LT	16+03	19.0-20.5	A-4(0)	22	4	43.2	25.2	19.3	12.3	100	75	36	-	-
S-39	CL	18+00	1.0-2.0	A-6(6)	40	19	33.1	21.4	12.9	32.7	99	82	48	-	-
S-40	CL	18+00	6.0-7.0	A-6(8)	31	12	4.3	29.4	39.8	26.5	100	98	77	-	-
SS-42	CL	20+50	3.4-4.9	A-4(0)	19	1	23.5	47.3	19.0	10.2	100	89	38	-	-
S-391	32' LT	22+97	1.0-2.5	A-7-6(16)	45	24	12.6	21.9	24.9	40.6	100	93	70	-	-
S-392	32' LT	22+97	4.5-6.0	A-6(9)	34	16	8.7	27.4	25.3	38.6	100	98	68	-	-
S-389	60' LT	25+94	1.0-2.5	A-7-6(11)	53	32	20.9	33.7	6.8	38.6	100	92	49	-	-
S-390	60' LT	25+94	8.0-9.5	A-7-6(16)	42	19	7.9	12.4	41.1	38.6	99	95	83	-	-
S-386	94' LT	28+11	0.5-2.0	A-7-6(27)	57	34	12.8	13.4	25.1	48.7	100	93	77	-	-
S-387	94' RT	28+11	9.0-10.5	A-6(19)	39	20	1.6	9.7	46.0	42.6	100	99	93	-	-
S-388	94' LT	28+11	15.0-16.5	A-6(11)	33	17	1.2	31.7	38.7	28.4	100	100	76	-	-

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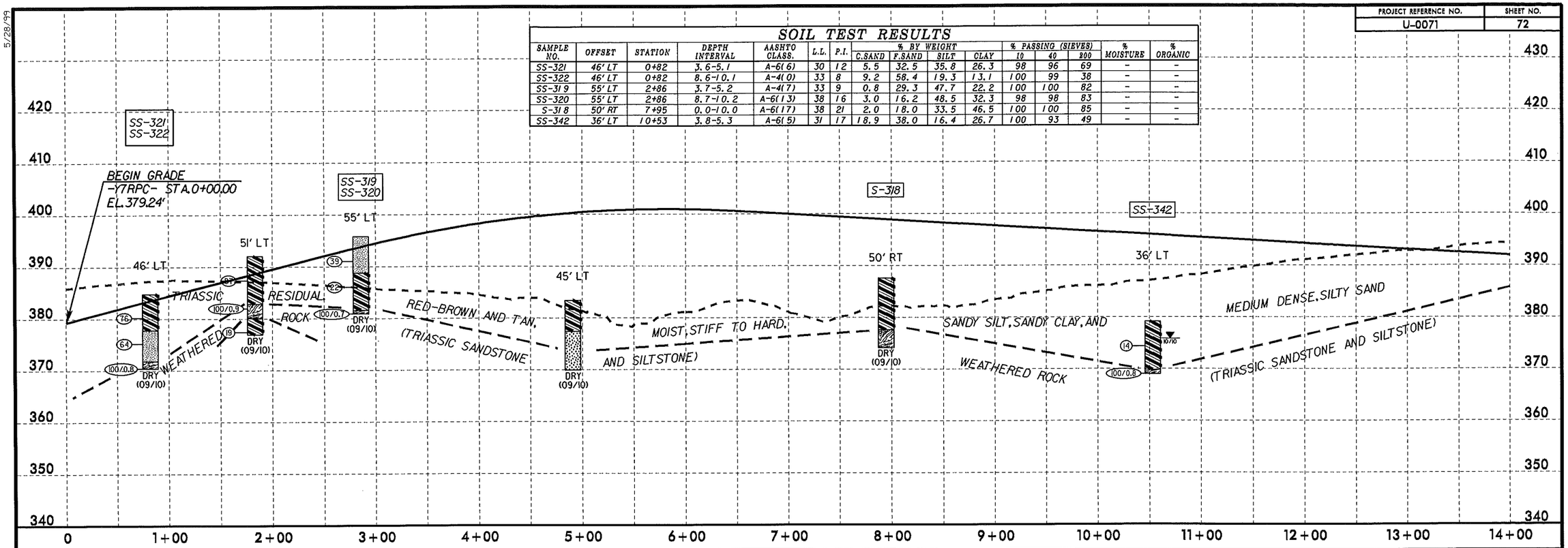
5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-0071	72

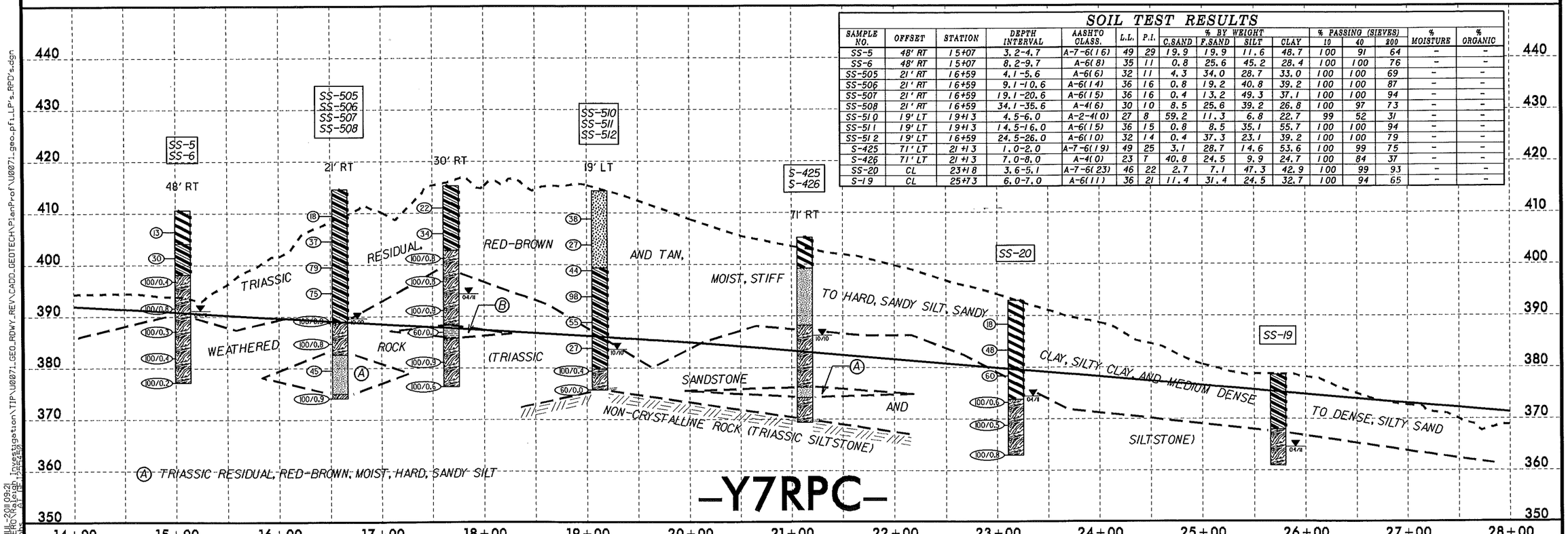
SOIL TEST RESULTS

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-321	46' LT	0+82	3.6-5.1	A-6(6)	30	12	5.5	32.5	35.8	26.3	98	96	69	-	-
SS-322	46' LT	0+82	8.6-10.1	A-4(0)	33	8	9.2	58.4	19.3	13.1	100	99	38	-	-
SS-319	55' LT	2+86	3.7-5.2	A-4(7)	33	9	0.8	29.3	47.7	22.2	100	100	82	-	-
SS-320	55' LT	2+86	8.7-10.2	A-6(13)	38	16	3.0	16.2	48.5	32.3	98	98	83	-	-
S-318	50' RT	7+95	0.0-10.0	A-6(17)	38	21	2.0	18.0	33.5	46.5	100	100	85	-	-
SS-342	36' LT	10+53	3.8-5.3	A-6(5)	31	17	18.9	38.0	16.4	26.7	100	93	49	-	-



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-5	48' RT	15+07	3.2-4.7	A-7-6(16)	49	29	19.9	19.9	11.6	48.7	100	91	64	-	-
SS-6	48' RT	15+07	8.2-9.7	A-6(8)	35	11	0.8	25.6	45.2	28.4	100	100	76	-	-
SS-505	21' RT	16+59	4.1-5.6	A-6(6)	32	11	4.3	34.0	28.7	33.0	100	100	69	-	-
SS-506	21' RT	16+59	9.1-10.6	A-6(14)	36	16	0.8	19.2	40.8	39.2	100	100	87	-	-
SS-507	21' RT	16+59	19.1-20.6	A-6(15)	36	16	0.4	13.2	49.3	37.1	100	100	94	-	-
SS-508	21' RT	16+59	34.1-35.6	A-4(6)	30	10	8.5	25.6	39.2	26.8	100	97	73	-	-
SS-510	19' LT	19+13	4.5-6.0	A-2-4(0)	27	8	59.2	11.3	6.8	22.7	99	52	31	-	-
SS-511	19' LT	19+13	14.5-16.0	A-6(15)	36	15	0.8	8.5	35.1	55.7	100	100	94	-	-
SS-512	19' LT	16+59	24.5-26.0	A-6(10)	32	14	0.4	37.3	23.1	39.2	100	100	79	-	-
S-425	71' LT	21+13	1.0-2.0	A-7-6(19)	49	25	3.1	28.7	14.6	53.6	100	99	75	-	-
S-426	71' LT	21+13	7.0-8.0	A-4(0)	23	7	40.8	24.5	9.9	24.7	100	84	37	-	-
SS-20	CL	23+18	3.6-5.1	A-7-6(23)	46	22	2.7	7.1	47.3	42.9	100	99	93	-	-
SS-19	CL	25+73	6.0-7.0	A-6(11)	36	21	11.4	31.4	24.5	32.7	100	94	65	-	-



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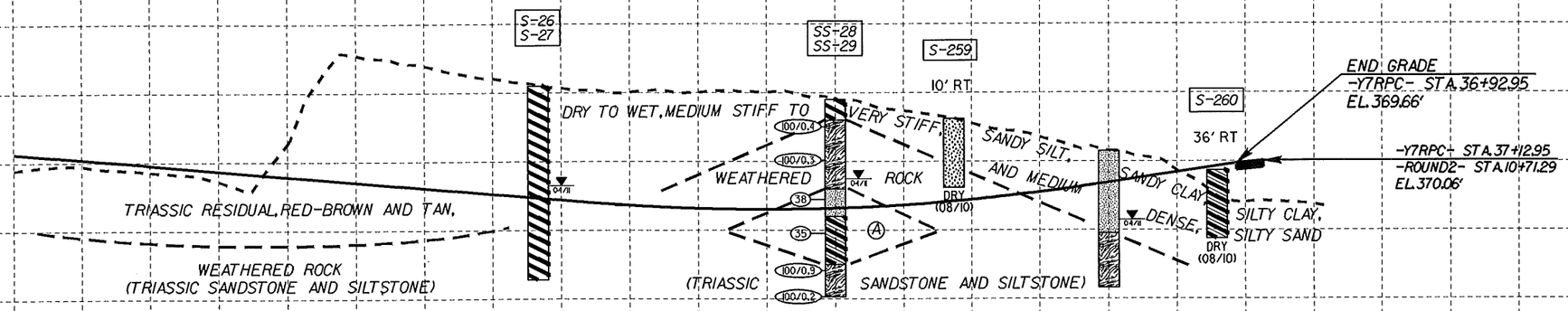
PROJECT REFERENCE NO.	SHEET NO.
U-0071	73

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	CL	31+83	3.0-4.0	A-7-6(23)	48	24	0.8	18.2	36.1	44.9	100	99	89	-	-
S-27	CL	31+83	11.0-12.0	A-7-6(26)	47	24	0.4	6.1	44.5	49.0	100	100	97	-	-
SS-28	CL	34+00	13.5-15.0	A-4(0)	24	4	30.8	36.9	20.0	12.2	100	88	37	-	-
SS-29	CL	34+00	18.5-20.0	A-6(13)	35	13	0.0	11.0	66.5	22.4	100	100	97	-	-
S-259	10' RT	34+87	0.0-10.0	A-2-4(0)	20	2	39.4	32.1	16.3	12.2	99	75	35	-	-
S-260	39' LT	36+79	0.0-10.0	A-6(12)	35	16	3.3	22.6	39.6	34.6	100	99	81	-	-



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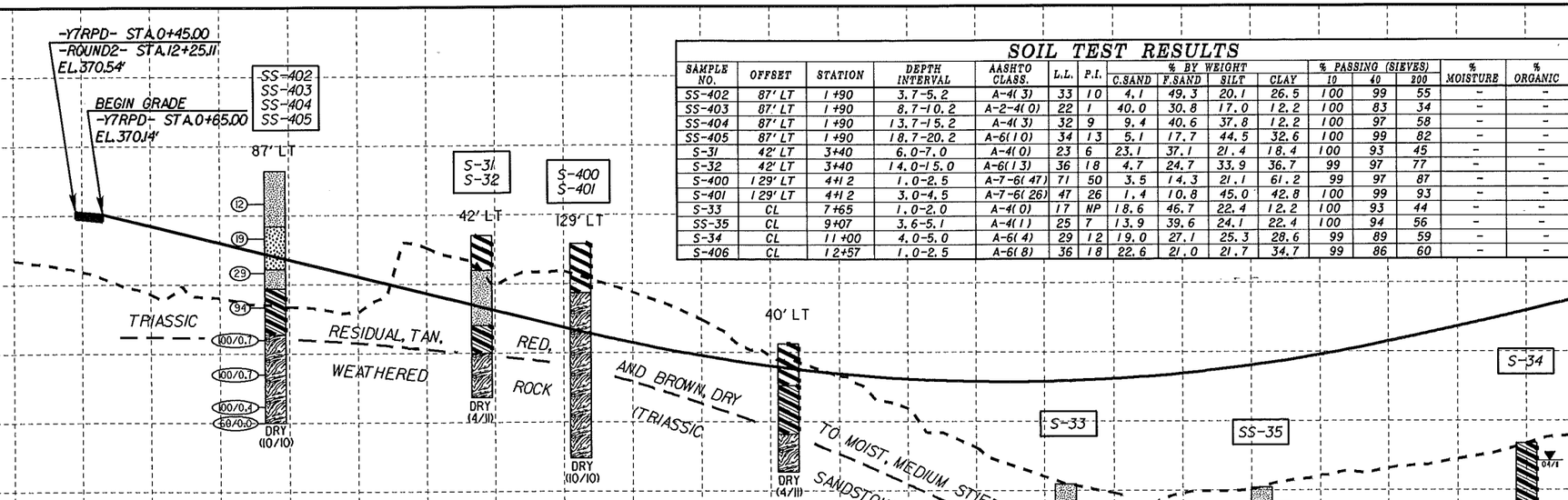
SOIL TEST RESULTS

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-402	87' LT	1+90	3.7-5.2	A-4(3)	33	10	4.1	49.3	20.1	26.5	100	99	55	-	-
SS-403	87' LT	1+90	8.7-10.2	A-2-4(0)	22	1	40.0	30.8	17.0	12.2	100	83	34	-	-
SS-404	87' LT	1+90	13.7-15.2	A-4(3)	32	9	9.4	40.6	37.8	12.2	100	97	58	-	-
SS-405	87' LT	1+90	18.7-20.2	A-6(10)	34	13	5.1	17.7	44.5	32.6	100	99	82	-	-
S-31	42' LT	3+40	6.0-7.0	A-4(0)	23	6	23.1	37.1	21.4	18.4	100	93	45	-	-
S-32	42' LT	3+40	14.0-15.0	A-6(13)	36	18	4.7	24.7	33.9	36.7	99	97	77	-	-
S-400	129' LT	4+12	1.0-2.5	A-7-6(47)	71	50	3.5	14.3	21.1	61.2	99	97	87	-	-
S-401	129' LT	4+12	3.0-4.5	A-7-6(26)	47	26	1.4	10.8	45.0	42.8	100	99	93	-	-
S-33	CL	7+65	1.0-2.0	A-4(0)	17	NP	18.6	46.7	22.4	12.2	100	93	44	-	-
SS-35	CL	9+07	3.6-5.1	A-4(11)	25	7	13.9	39.6	24.1	22.4	100	94	56	-	-
S-34	CL	11+00	4.0-5.0	A-6(4)	29	12	19.0	27.1	25.3	28.6	99	89	59	-	-
S-406	CL	12+57	1.0-2.5	A-6(8)	36	18	22.6	21.0	21.7	34.7	99	86	60	-	-



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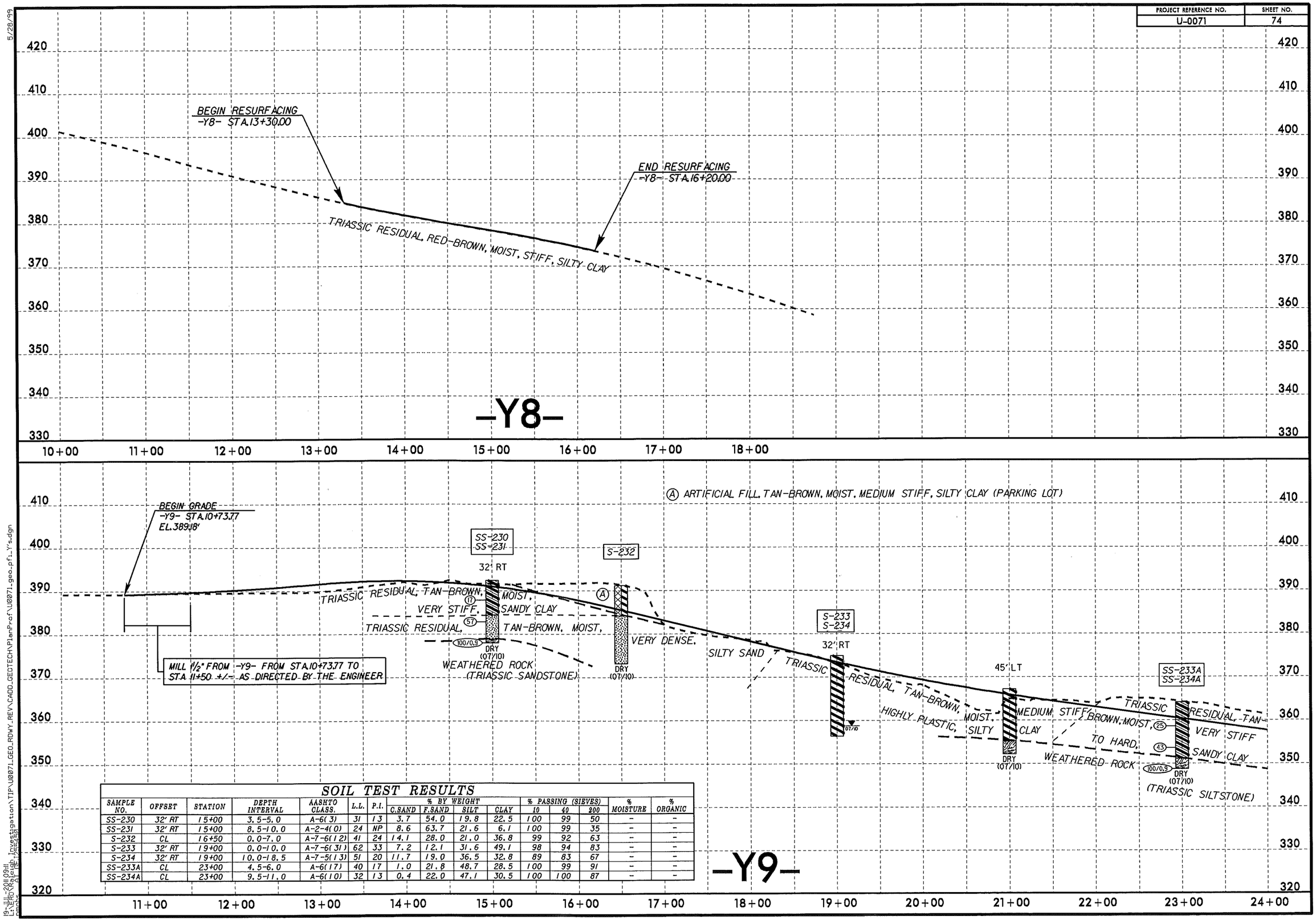
PROJECT REFERENCE NO.	SHEET NO.
U-0071	74



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-230	32' RT	15+00	3.5-5.0	A-6(3)	31	13	3.7	54.0	19.8	22.5	100	99	50	-	-
SS-231	32' RT	15+00	8.5-10.0	A-2-4(0)	24	NP	8.6	63.7	21.6	6.1	100	99	35	-	-
S-232	CL	16+50	0.0-7.0	A-7-6(12)	41	24	14.1	28.0	21.0	36.8	99	92	63	-	-
S-233	32' RT	19+00	0.0-10.0	A-7-6(31)	62	33	7.2	12.1	31.6	49.1	98	94	83	-	-
S-234	32' RT	19+00	10.0-18.5	A-7-5(13)	51	20	11.7	19.0	36.5	32.8	89	83	67	-	-
SS-233A	CL	23+00	4.5-6.0	A-6(17)	40	17	1.0	21.8	48.7	28.5	100	99	91	-	-
SS-234A	CL	23+00	9.5-11.0	A-6(10)	32	13	0.4	22.0	47.1	30.5	100	100	87	-	-

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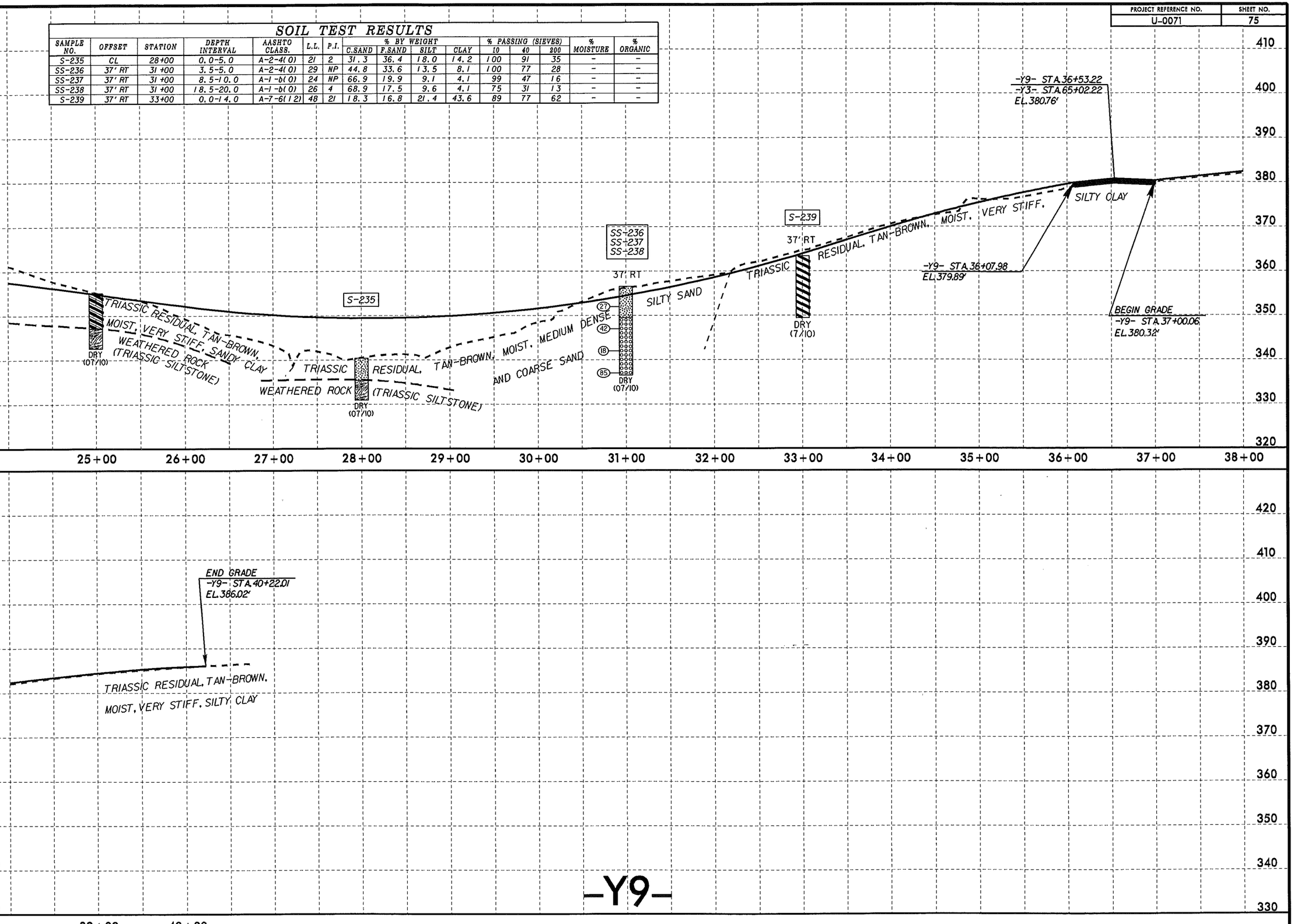
PROJECT REFERENCE NO.	SHEET NO.
U-0071	75

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-235	CL	28+00	0.0-5.0	A-2-4(0)	21	2	31.3	36.4	18.0	14.2	100	91	35	-	-
SS-236	37' RT	31+00	3.5-5.0	A-2-4(0)	29	NP	44.8	33.6	13.5	8.1	100	77	28	-	-
SS-237	37' RT	31+00	8.5-10.0	A-1-b(0)	24	NP	66.9	19.9	9.1	4.1	99	47	16	-	-
SS-238	37' RT	31+00	18.5-20.0	A-1-b(0)	26	4	68.9	17.5	9.6	4.1	75	31	13	-	-
S-239	37' RT	33+00	0.0-14.0	A-7-6(12)	48	21	18.3	16.8	21.4	43.6	89	77	62	-	-



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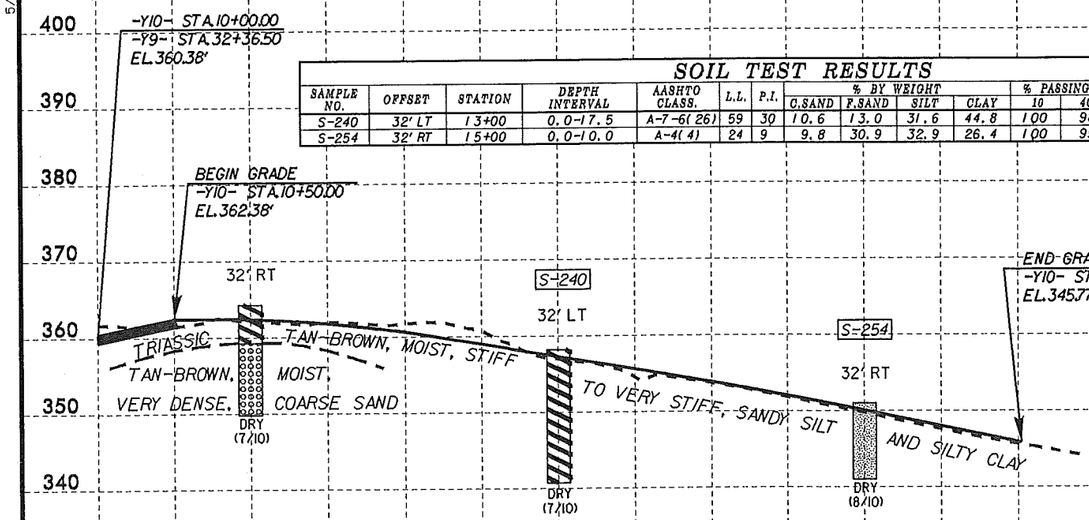
PROJECT REFERENCE NO.	SHEET NO.
U-0071	76

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-240	32' LT	13+00	0.0-17.5	A-7-6(26)	59	30	10.6	13.0	31.6	44.8	100	98	80	-	-
S-254	32' RT	15+00	0.0-10.0	A-4(4)	24	9	9.8	30.9	32.9	26.4	100	95	69	-	-



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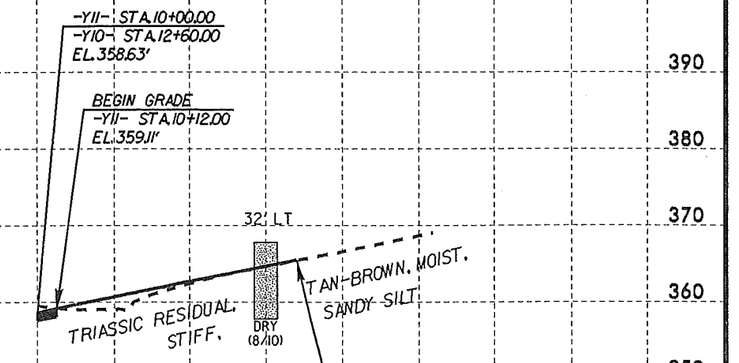
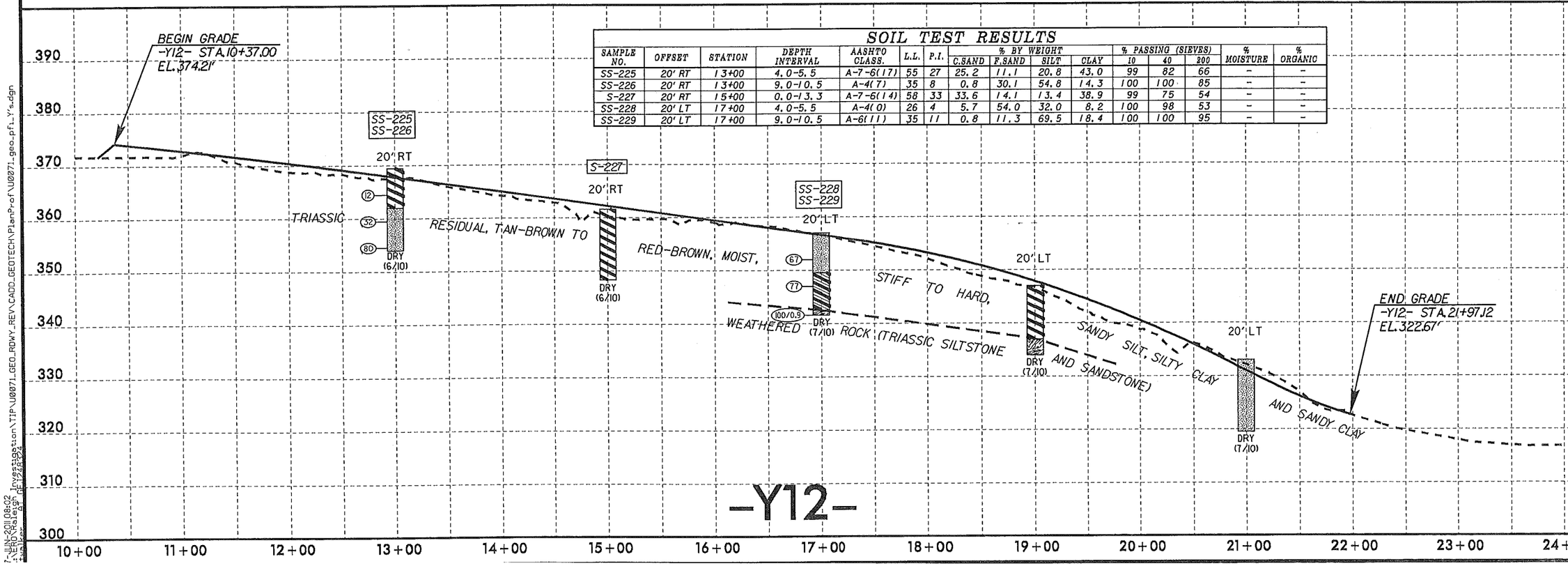


-Y11-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-225	20' RT	13+00	4.0-5.5	A-7-6(17)	55	27	25.2	11.1	20.8	43.0	99	82	66	-	-
SS-226	20' RT	13+00	9.0-10.5	A-4(7)	35	8	0.8	30.1	54.8	14.3	100	100	85	-	-
S-227	20' RT	15+00	0.0-13.3	A-7-6(14)	58	33	33.6	14.1	13.4	38.9	99	75	54	-	-
SS-228	20' LT	17+00	4.0-5.5	A-4(0)	26	4	5.7	54.0	32.0	8.2	100	98	53	-	-
SS-229	20' LT	17+00	9.0-10.5	A-6(11)	35	11	0.8	11.3	69.5	18.4	100	100	95	-	-



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PROJECT REFERENCE NO.	SHEET NO.
U-0071	77

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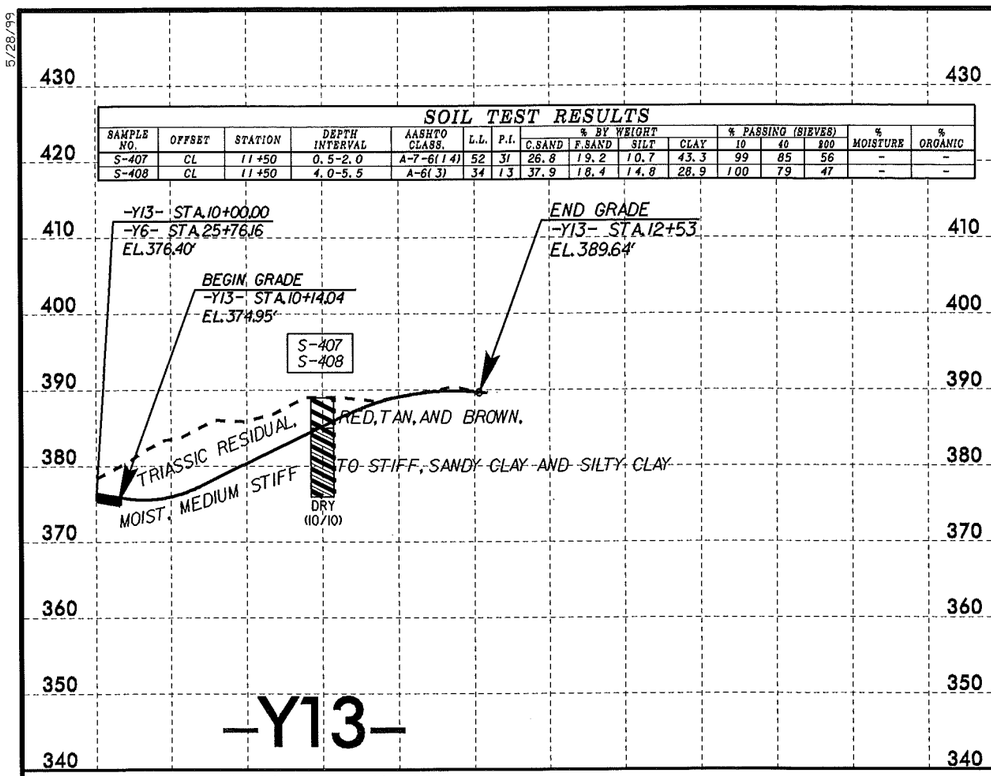
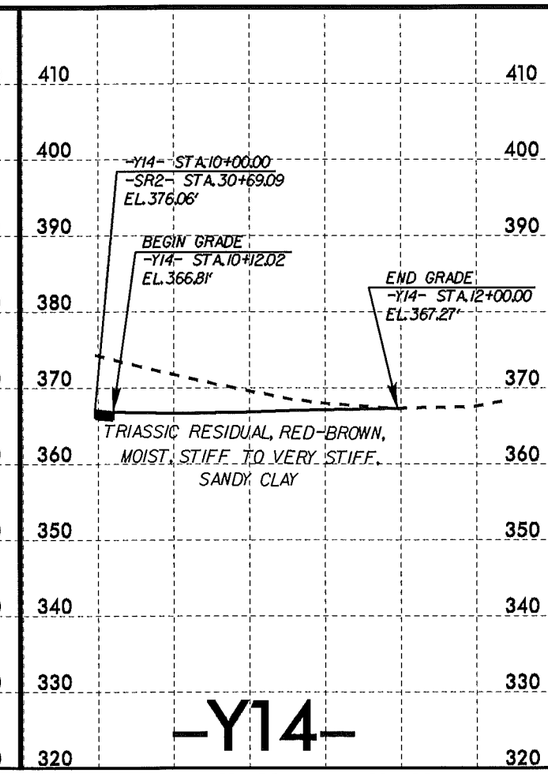
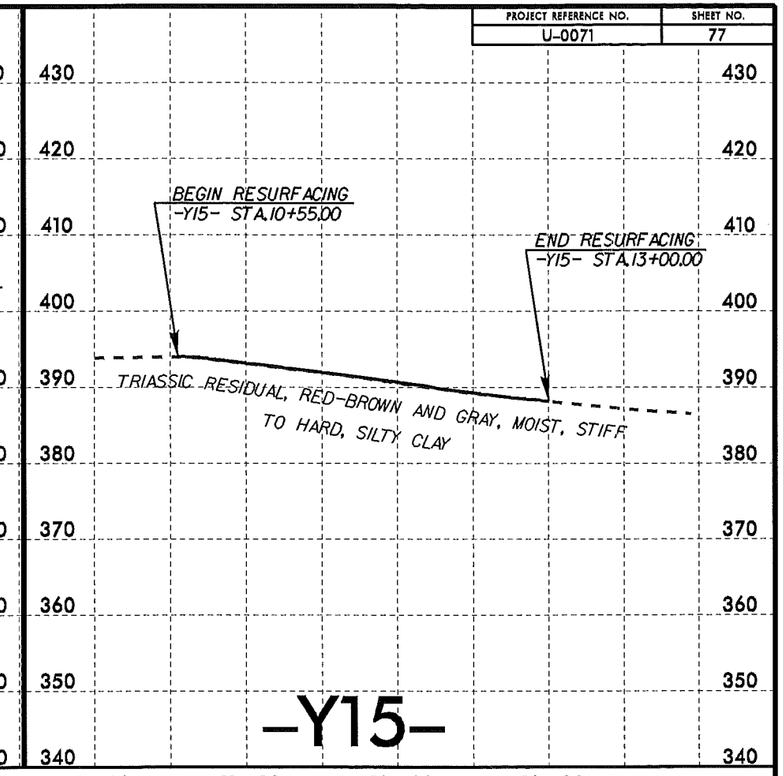
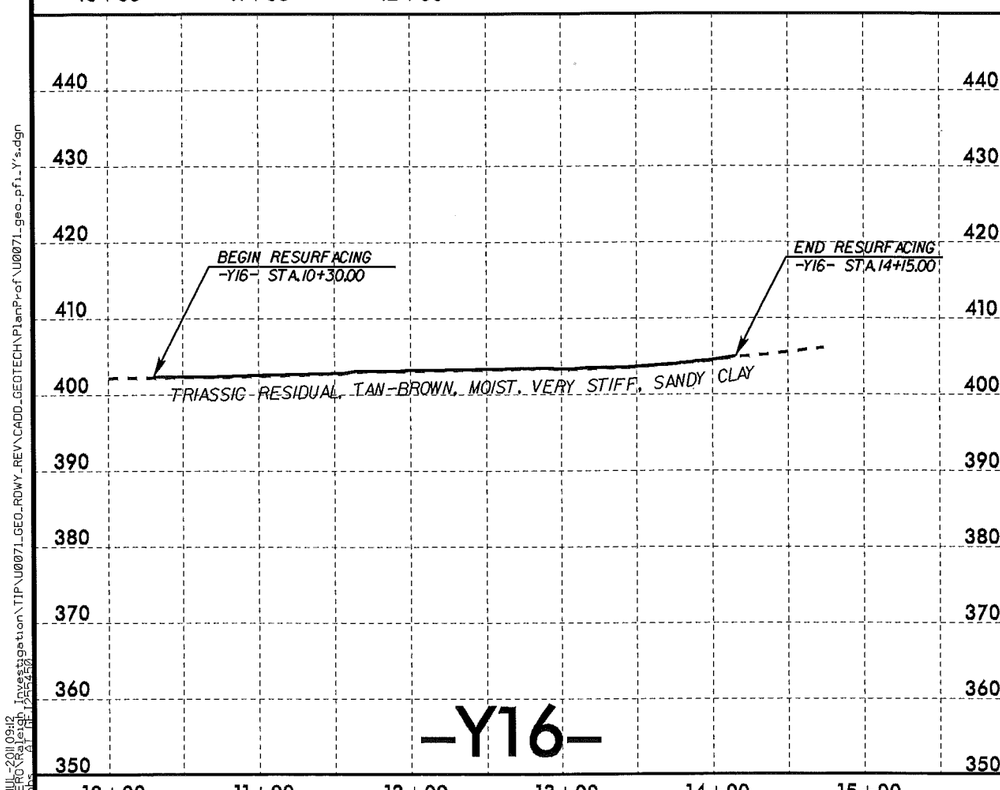


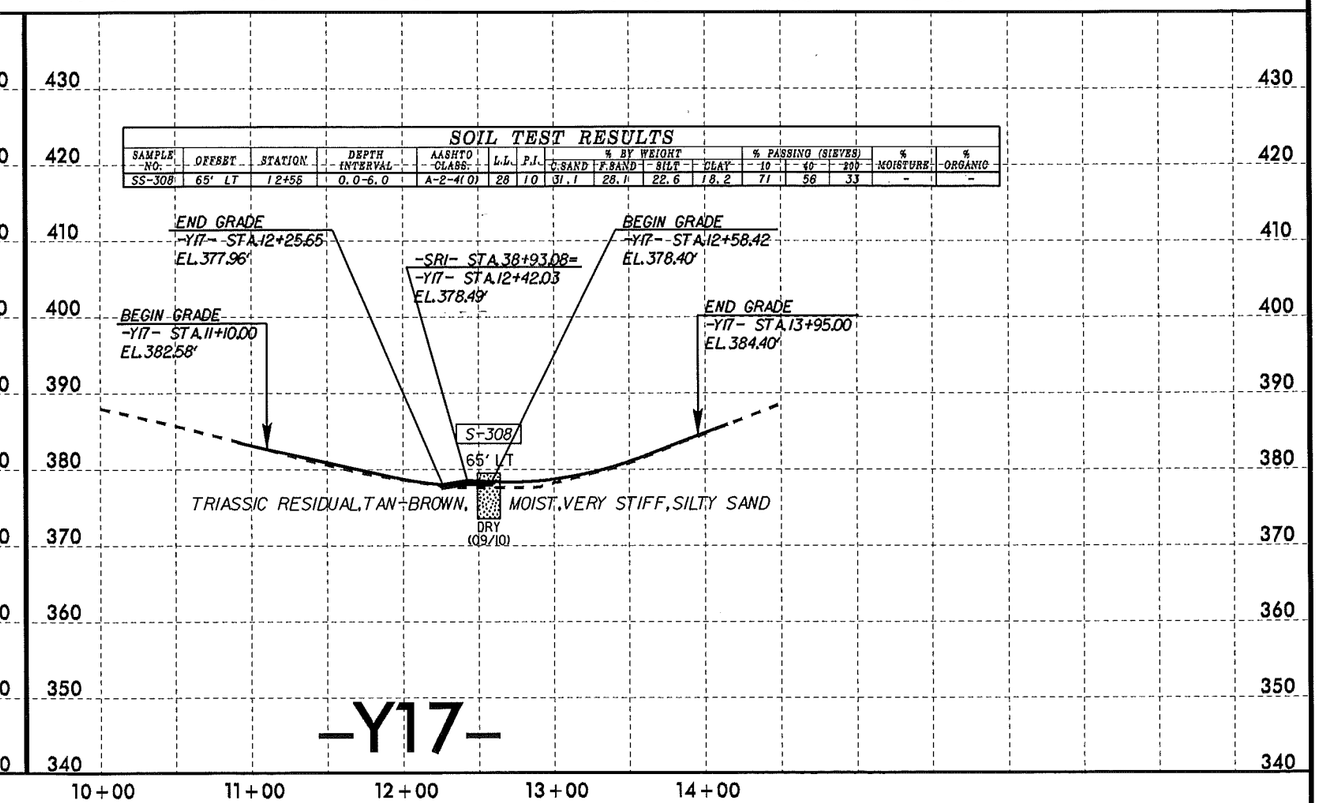




SOIL TEST RESULTS

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-407	CL	11+50	0.5-2.0	A-7-6(14)	52	31	26.8	19.2	10.7	43.3	99	85	56	-	-
S-408	CL	11+50	4.0-5.5	A-6(3)	34	13	37.9	18.4	14.8	28.9	100	79	47	-	-





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-308	65' LT	12+56	0.0-6.0	A-2-4(0)	28	10	31.1	28.1	22.6	18.2	71	56	33	-	-

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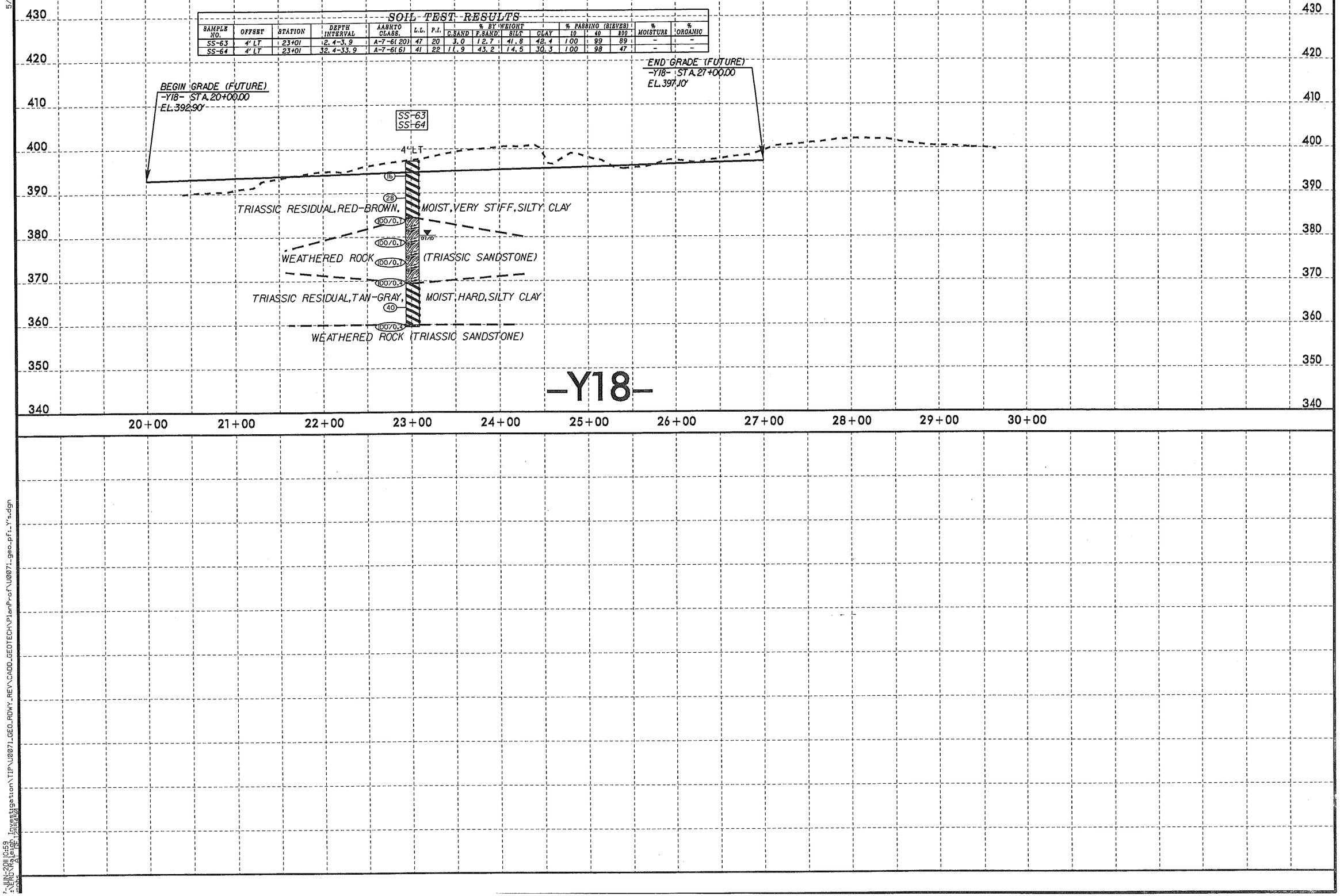
PROJECT REFERENCE NO.	SHEET NO.
U-0071	78

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-63	4' LT	23+01	2.4-3.9	A-7-6(20)	47	20	3.0	12.7	41.8	42.4	100	99	89	-	-
SS-64	4' LT	23+01	32.4-33.9	A-7-6(6)	41	22	11.9	43.2	14.5	30.3	100	98	47	-	-



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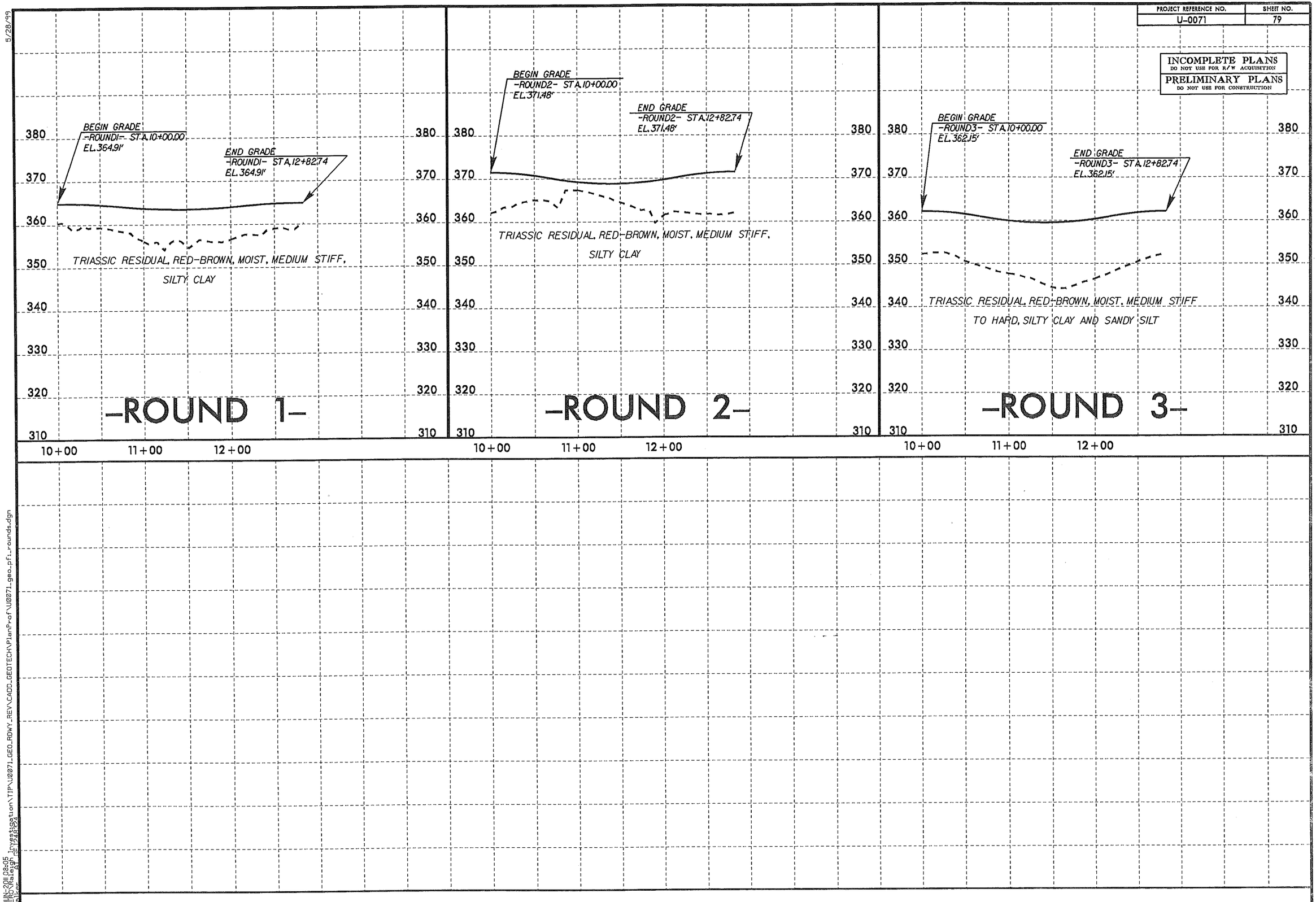
PROJECT REFERENCE NO.	SHEET NO.
U-0071	79

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



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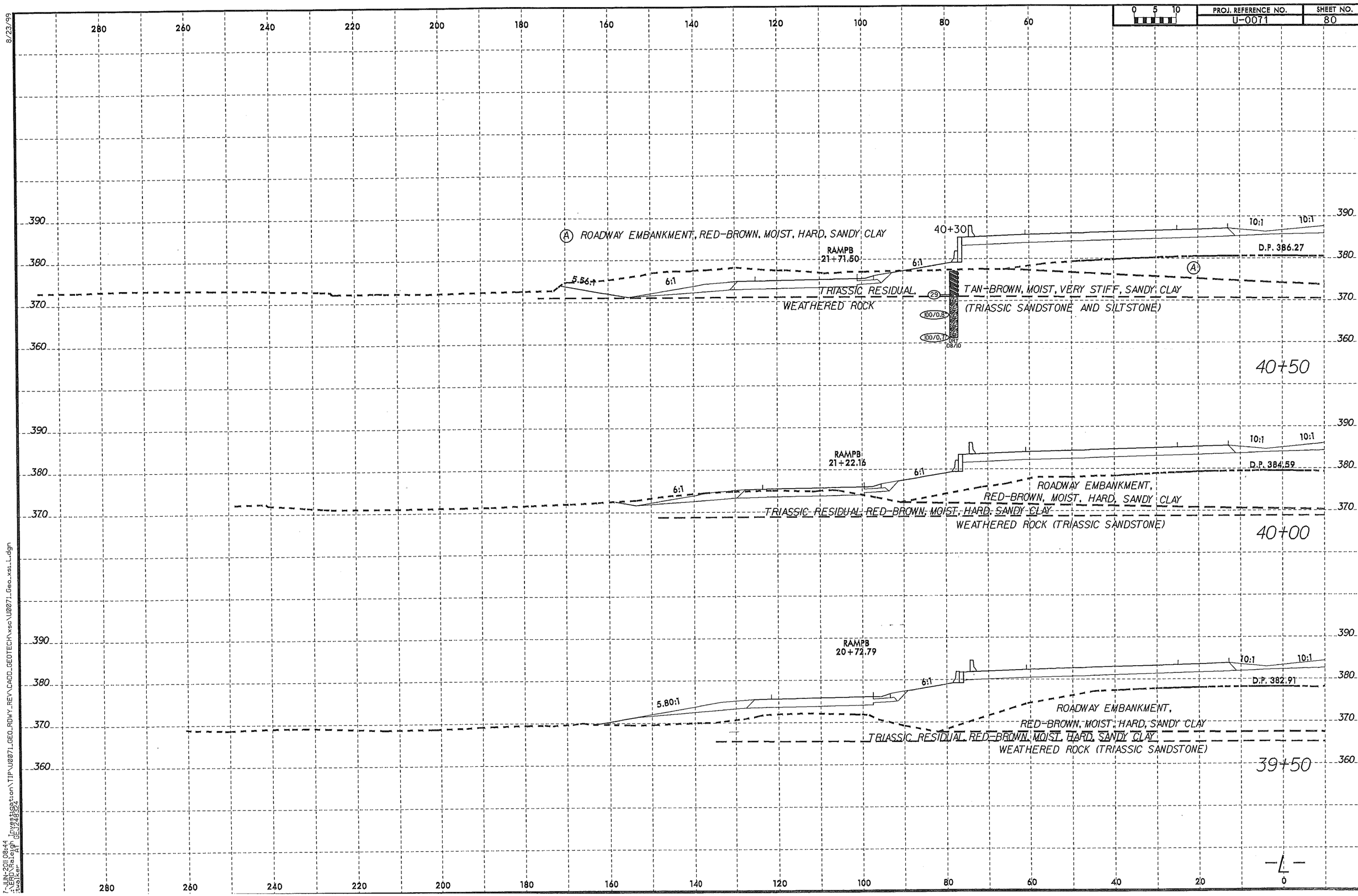

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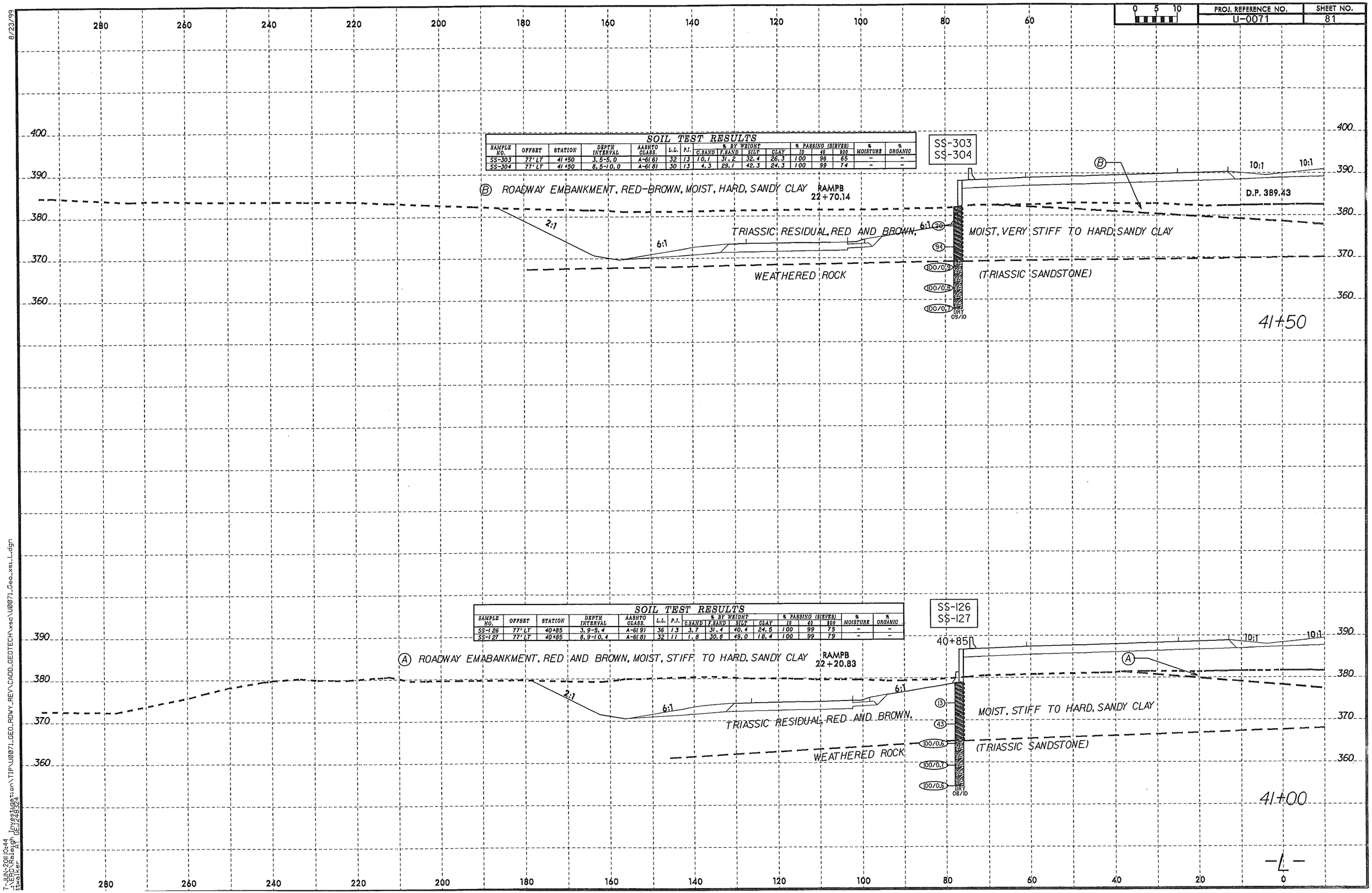
PROJ. REFERENCE NO.	SHEET NO.
U-0071	81



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-303	77' LT	41+50	3.5-5.0	A-6(6)	32	13	10.1	31.2	32.4	26.3	100	96	65	-	-
SS-304	77' LT	41+50	8.5-10.0	A-6(8)	30	13	4.3	29.1	42.3	24.3	100	99	74	-	-

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	77' LT	40+85	3.9-5.4	A-6(9)	36	13	3.7	31.4	40.4	24.5	100	99	75	-	-
SS-127	77' LT	40+85	8.9-10.4	A-6(8)	32	11	1.8	30.8	49.0	18.4	100	99	79	-	-

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PROJ. REFERENCE NO.	SHEET NO.
U-0071	82

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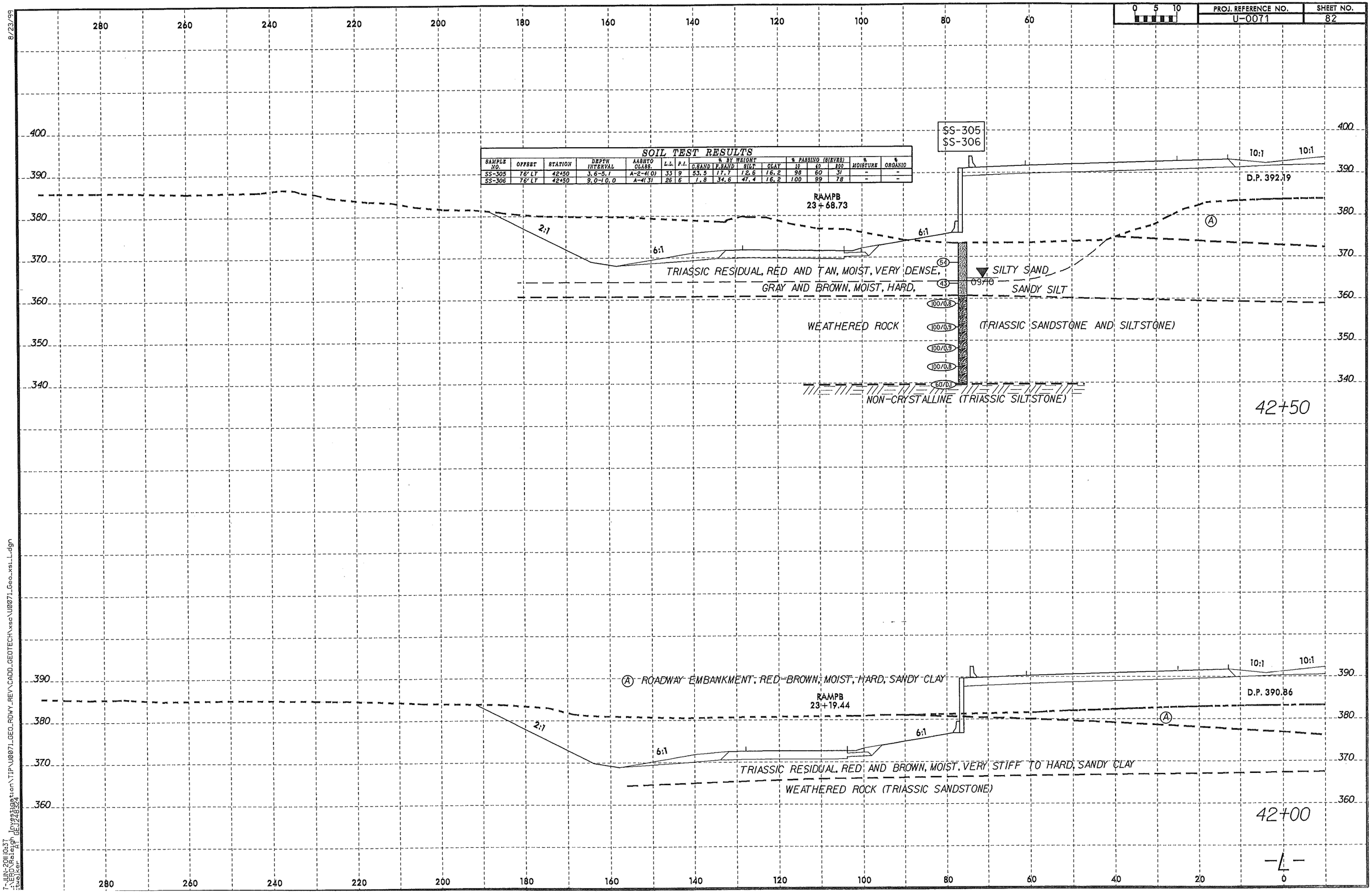
SOIL TEST RESULTS

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-305	76' LT	42+50	3.6-5.1	A-2-4(0)	33	9	53.5	17.7	12.6	16.2	98	60	31	-	-
SS-306	76' LT	42+50	9.0-10.0	A-4(3)	26	6	1.8	34.6	47.4	16.2	100	99	78	-	-



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PROJ. REFERENCE NO.	SHEET NO.
U-0071	83

0 5 10

0 20 40 60 80 100 120 140 160 180 200 220

390 380 370 360

10:1 10:1

D.P. 386.27

Ⓑ TRIASSIC RESIDUAL, TAN-BROWN, MOIST, STIFF, HARD, SANDY CLAY

RAMPC
23+54.37

ROADWAY EMBANKMENT, RED-BROWN, MOIST, HARD, SANDY CLAY

6:1 6:1

WEATHERED ROCK (TRIASSIC SANDSTONE AND SILTSTONE)

Ⓑ

40+50

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-338	78' RT	40+00	3.8-5.3	A-6(12)	34	15	0.8	19.9	46.4	32.9	100	100	87	-	-

SS-338

10:1 10:1

D.P. 384.59

Ⓐ TRIASSIC RESIDUAL, RED-BROWN, MOIST, HARD, SANDY CLAY

RAMPC
23+03.70

ROADWAY EMBANKMENT, RED-BROWN, MOIST, HARD, SANDY CLAY

34

100/0.9
100/0.9
100/0.8
100/0.4
100/0.4

DRY
10/10

6:1

WEATHERED ROCK (TRIASSIC SANDSTONE)

Ⓐ

40+00

10:1 10:1

D.P. 382.91

RAMPC
22+53.03

ROADWAY EMBANKMENT, RED-BROWN, MOIST, HARD, SANDY CLAY

6:1

TRIASSIC RESIDUAL, RED-BROWN, MOIST, HARD, SANDY CLAY

WEATHERED ROCK (TRIASSIC SANDSTONE)

39+50

0 20 40 60 80 100 120 140 160 180 200 220 240 260 280

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PROJ. REFERENCE NO.	SHEET NO.
U-0071	84

0 5 10

0 20 40 60 80 100 120 140 160 180 200 220

Ⓐ TRIASSIC RESIDUAL, RED AND BROWN, MOIST, VERY STIFF TO HARD, SANDY CLAY

390 380 370 360

10:1 10:1

D.P. 389.43

RAMPC
24+55.70

ROADWAY EMBANKMENT, RED-BROWN, MOIST, HARD, SANDY CLAY

TRIASSIC RESIDUAL, RED AND BROWN, MOIST, VERY STIFF TO HARD, SANDY CLAY

WEATHERED ROCK (TRIASSIC SANDSTONE)

4:1 4:1.5:1

41+50

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							G.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-339	89' RT	41+00	3.9-5.4	A-6(10)	35	11	0.2	30.0	47.2	22.6	100	100	87	-	-

400 390 380 370 360

10:1 10:1

SS-339

Ⓐ TRIASSIC RESIDUAL, RED AND BROWN, MOIST, STIFF TO HARD, SANDY CLAY

RAMPC
24+05.03

ROADWAY EMBANKMENT, RED AND BROWN, STIFF TO HARD, SANDY CLAY

TRIASSIC RESIDUAL, RED AND BROWN, MOIST,

WEATHERED ROCK

31

100/0.8

100/0.8

10/0

MOIST, HARD, SANDY CLAY (TRIASSIC SANDSTONE)

6:1 6:1

41+00

0 20 40 60 80 100 120 140 160 180 200 220 240 260 280

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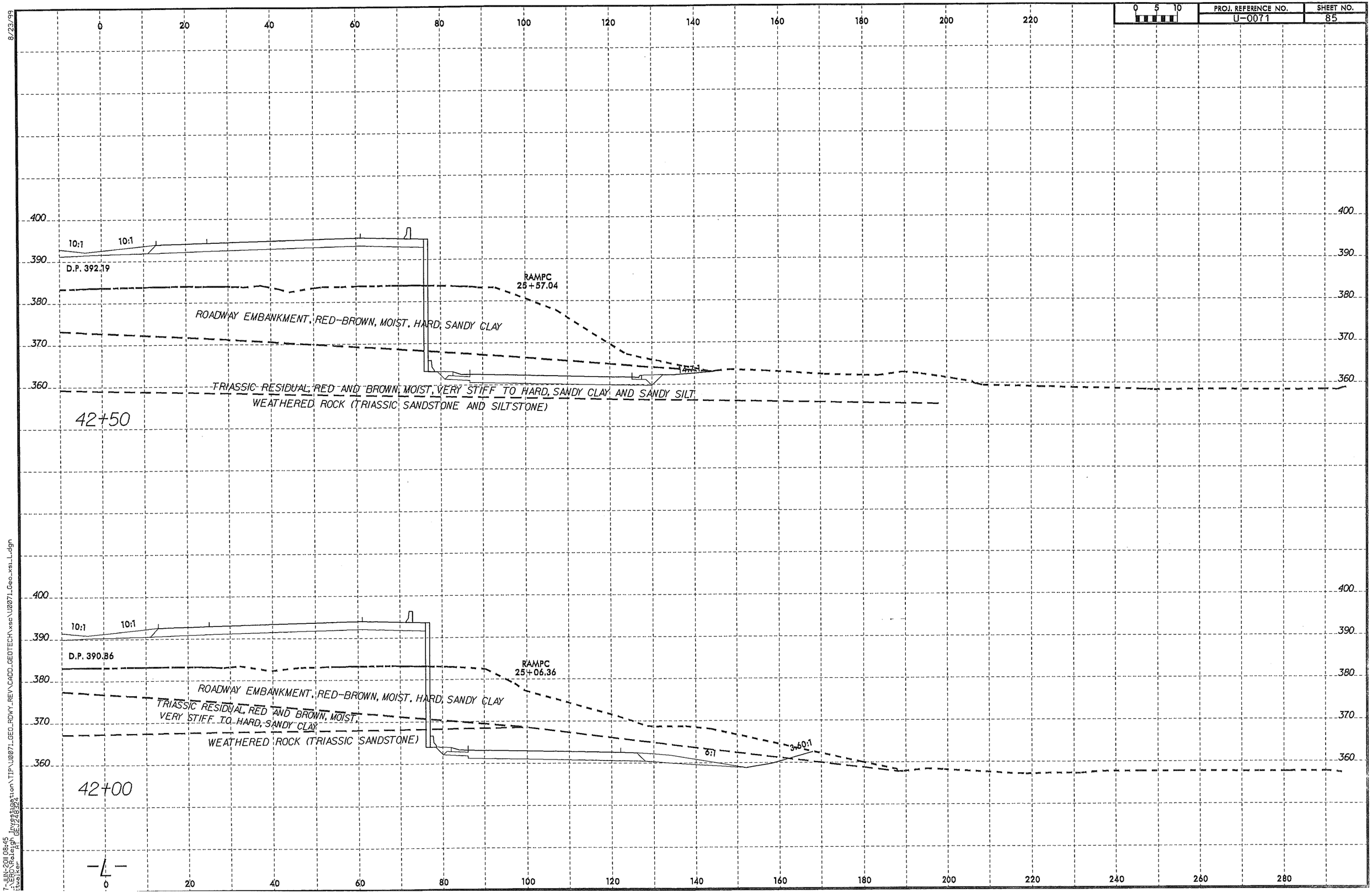

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8/23/99

PROJ. REFERENCE NO.	SHEET NO.
U-0071	86

0 5 10

0 20 40 60 80 100 120 140 160 180 200 220

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-340	76' RT	46+50	3.9-5.4	A-4(0)	31	6	26.9	42.1	18.7	12.3	100	93	37	-	-
SS-341	76' RT	46+50	8.9-10.4	A-7-5(49)	81	47	4.5	9.7	32.4	53.4	100	97	89	-	-

46+50

400 / 390 / 380 / 370

10:1 10:1

D.P. 399.28

SS-340
SS-341

RAMPD
25+18.88

TRIASSIC

RESIDUAL, RED AND BROWN, MOIST, VERY STIFF TO HARD, SILTY CLAY AND SANDY SILT

BROWN AND GRAY, MOIST, VERY STIFF, HIGHLY PLASTIC, SILTY CLAY

WEATHERED ROCK (TRIASSIC SANDSTONE)

6:1

2:1

17 / 23 / 100/0.8 / 100/0.5 DRY 10/10

46+00

400 / 390 / 380 / 370

12.5:1 10:1

D.P. 398.84

RAMPD
25+69.58

ROADWAY EMBANKMENT

8:1

6:1

2:1

TRIASSIC RESIDUAL, RED AND BROWN, MOIST, VERY STIFF TO HARD, SANDY CLAY AND SANDY SILT

BROWN AND GRAY, MOIST, VERY STIFF, HIGHLY PLASTIC, SILTY CLAY

WEATHERED ROCK (TRIASSIC SANDSTONE)

45+50

400 / 390 / 380 / 370 / 360

RAMPD
26+20.29

ROADWAY EMBANKMENT

10:1

6:1

2:1

TRIASSIC RESIDUAL, RED AND BROWN, MOIST, VERY STIFF TO HARD, SANDY CLAY AND SANDY SILT

WEATHERED ROCK (TRIASSIC SANDSTONE)

-L-

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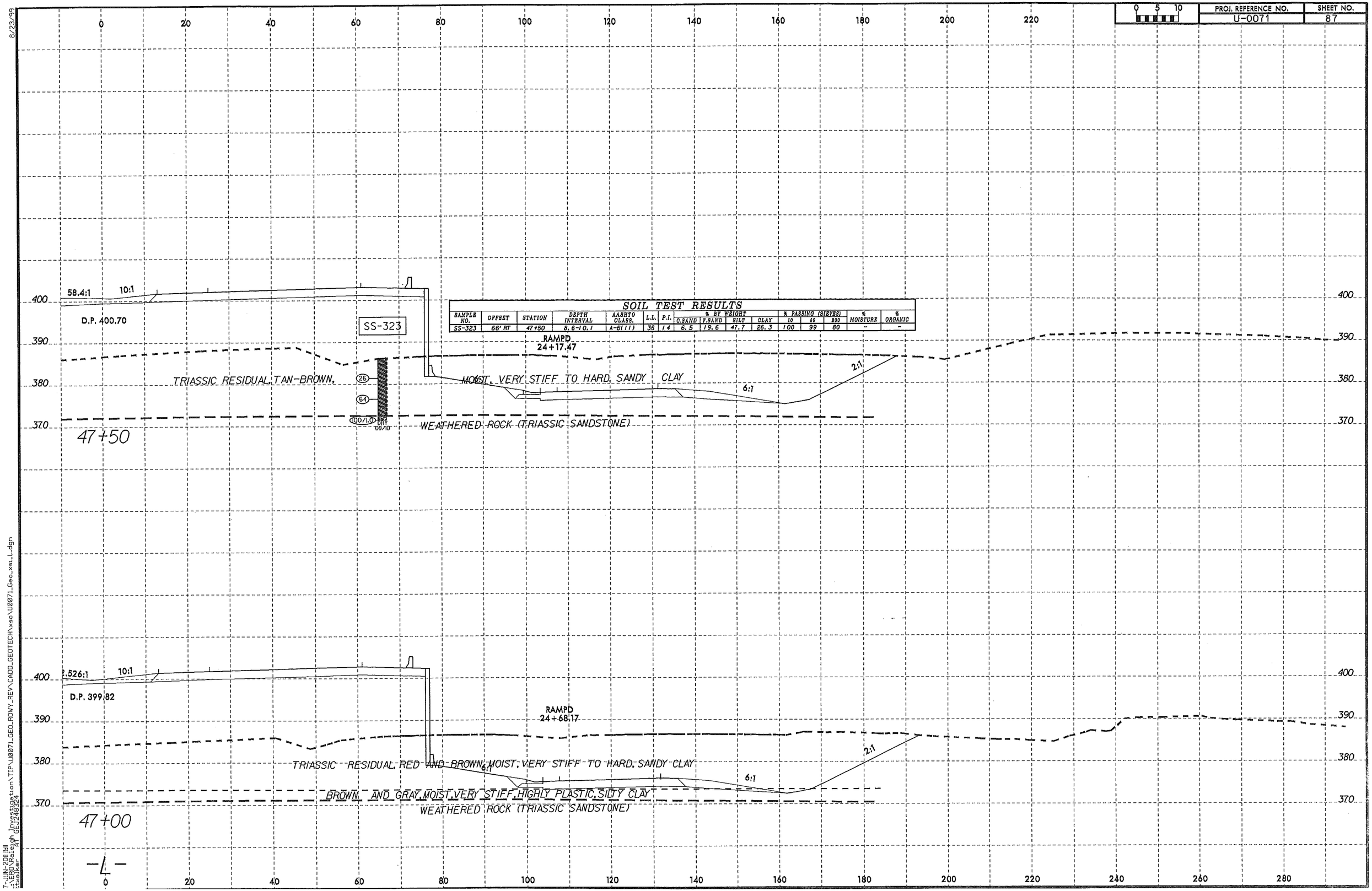
PROJ. REFERENCE NO.	SHEET NO.
U-0071	87



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-323	66' RT	47+50	8.6-10.1	A-6(11)	36	14	6.5	19.6	47.7	26.3	100	99	80	-	-

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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-0071	88

280 260 240 220 200 180 160 140 120 100 80 60

410 400 390

RAMPA
17+95.63

2.01:1

6.02:1

TRIASSIC RESIDUAL, TAN-BROWN, MOIST, VERY DENSE, SILTY SAND

WEATHERED ROCK (TRIASSIC SANDSTONE)

6:1 6:1

55+00

RAMPA
18+45.19

2.01:1

6.02:1

TRIASSIC RESIDUAL, TAN-BROWN, MOIST, VERY DENSE, SILTY SAND

WEATHERED ROCK (TRIASSIC SANDSTONE)

6:1 6:1

54+50

RAMPA
18+94.72

2.01:1

6.02:1

TRIASSIC RESIDUAL, RED AND BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY AND SILTY CLAY

WEATHERED ROCK (TRIASSIC SILTSTONE)

6:1 6:1

54+00

SOIL TEST RESULTS

S-313
S-314

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-313	90' LT	53+50	1.0-2.0	A-6(5)	28	13	15.6	31.3	18.8	34.3	97	90	59	-	-
S-314	90' LT	53+50	6.0-7.0	A-7-6(22)	46	22	3.0	4.0	46.5	46.5	96	94	91	-	-

RAMPA
19+44.21

2:1

6.01:1

TRIASSIC RESIDUAL, RED AND BROWN, MOIST, STIFF TO VERY STIFF, SANDY CLAY AND SILTY CLAY

WEATHERED ROCK 09/10 (TRIASSIC SILTSTONE)

6:1 6:1

53+50

-L-

280 260 240 220 200 180 160 140 120 100 80 60 40 20 0

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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-0071	89

280 260 240 220 200 180 160 140 120 100 80 60

RAMPA
16+46.91

400
390

2:1
6.01:1
6:1
6:1

TRIASSIC RESIDUAL, TAN-BROWN, MOIST, VERY DENSE, SILTY SAND

WEATHERED ROCK (TRIASSIC SANDSTONE)

56+50

RAMPA
16+96.49

400
390

2:1
6.01:1
6:1
6:1

TRIASSIC RESIDUAL, TAN-BROWN, MOIST, VERY DENSE, SILTY SAND

WEATHERED ROCK (TRIASSIC SANDSTONE)

56+00

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	#00		
SS-317	110' LT	55+50	3.5-5.0	A-2-4(0)	28	5	39.5	29.5	14.8	16.2	100	87	34	–	–

410
400
390
380

SS-317

RAMPA
17+46.06

2:1
6.01:1
6:1
6:1

TRIASSIC RESIDUAL, (92) TAN-BROWN, MOIST, VERY DENSE, SILTY SAND

WEATHERED ROCK (TRIASSIC SANDSTONE)

100/0.3
100/0.7
DRY
09/10

55+50

-L-

280 260 240 220 200 180 160 140 120 100 80 60 40 20 0

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8/23/99

PROJ. REFERENCE NO.	SHEET NO.
U-0071	90

0 5 10

280 260 240 220 200 180 160 140 120 100 80 60

410 400 390 380

SR2
16+58.28

RAMPA
10+02.19

1.5:1

TRIASSIC RESIDUAL, TAN, BROWN, AND RED, MOIST, VERY STIFF TO HARD, SANDY CLAY

6:1 6:1

WEATHERED ROCK (TRIASSIC SANDSTONE)

63+00

410 400 390 380

SR2
16+08.98

RAMPA
10+51.79

2:1

TRIASSIC RESIDUAL, TAN, BROWN, AND RED, MOIST, VERY STIFF TO HARD, SANDY CLAY

6:1 6:1

WEATHERED ROCK (TRIASSIC SILTSTONE)

62+50

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-311	120' LT	62+00	4.5-6.0	A-7-6(19)	42	24	4.4	22.0	33.1	40.4	100	98	82	-	-
SS-312	120' LT	62+00	9.5-11.0	A-6(13)	35	13	0.6	13.9	61.2	24.2	100	100	94	-	-

410 400 390 380

SS-311
SS-312

(A) ARTIFICIAL FILL, RED-BROWN, MOIST, STIFF, SANDY CLAY

SR2
15+59.69

RAMPA
11+01.39

3:1

TRIASSIC RESIDUAL, RED-BROWN, AND GRAY, MOIST, STIFF TO HARD, SANDY CLAY AND SILTY CLAY

6:1 6:1

WEATHERED ROCK (TRIASSIC SILTSTONE)

62+00

-L-

280 260 240 220 200 180 160 140 120 100 80 60 40 20 0

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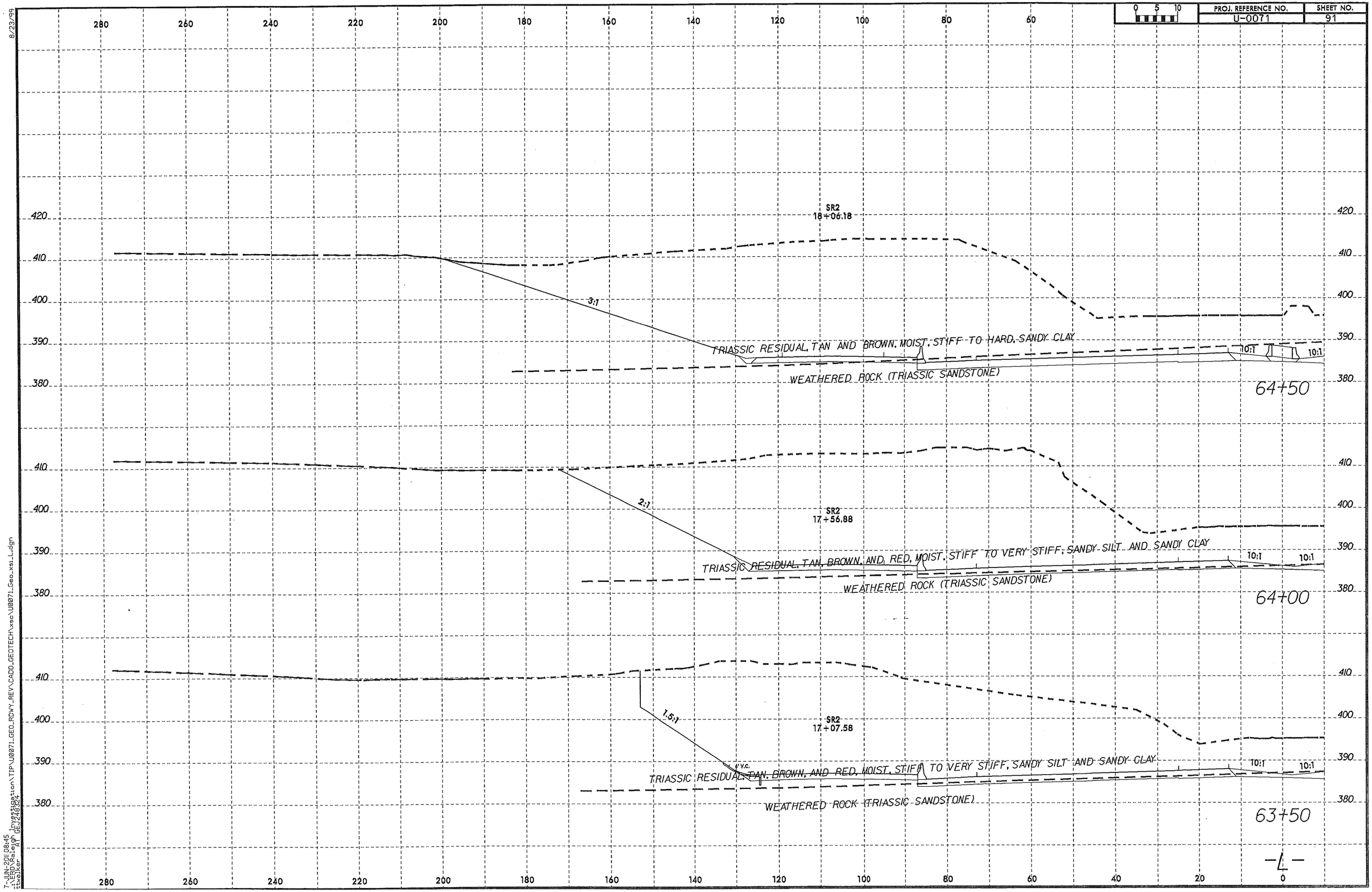

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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-0071	92

280 260 240 220 200 180 160 140 120 100 80 60

420 410 400 390 380

SR2
19+04.78

3:1

TRIASSIC RESIDUAL, TAN AND BROWN, MOIST, STIFF TO HARD, SANDY CLAY

WEATHERED ROCK (TRIASSIC SANDSTONE)

10:1 10:1

65+50

SR2
18+55.48

3:1

TRIASSIC RESIDUAL, TAN AND BROWN, MOIST, STIFF TO HARD, SANDY CLAY

WEATHERED ROCK (TRIASSIC SANDSTONE)

10:1 10:1

65+00

420 410 400 390 380

280 260 240 220 200 180 160 140 120 100 80 60 40 20 0

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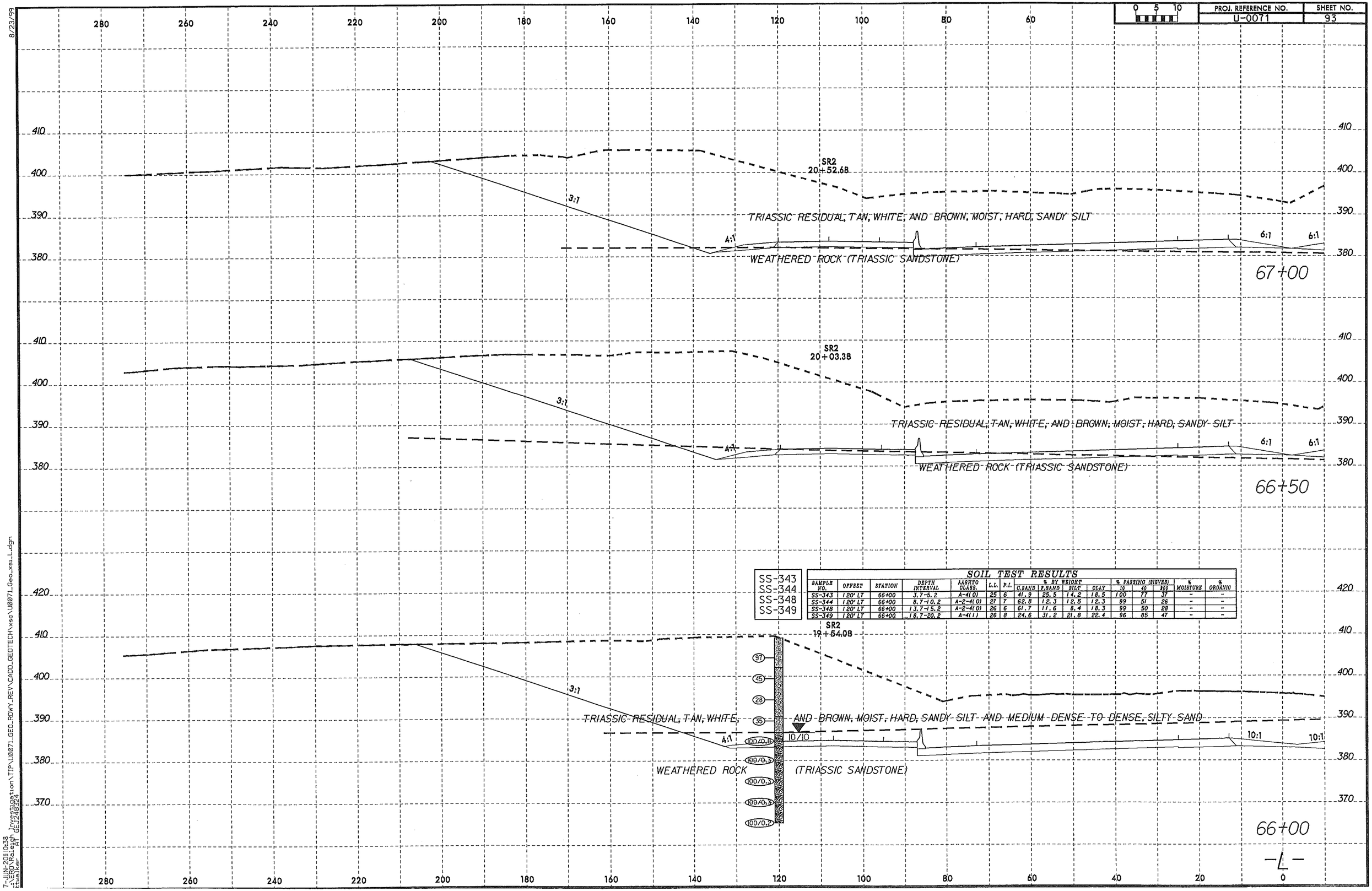
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-0071	93



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT G.SAND	% BY WEIGHT F.SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-343	120' LT	66+00	3.7-5.2	A-4(0)	25	6	41.9	25.5	14.2	18.5	100	77	37	-	-
SS-344	120' LT	66+00	8.7-10.2	A-2-4(0)	27	7	62.8	12.3	12.5	12.3	99	51	26	-	-
SS-348	120' LT	66+00	13.7-15.2	A-2-4(0)	26	6	61.7	11.6	8.4	18.3	99	50	28	-	-
SS-349	120' LT	66+00	18.7-20.2	A-4(1)	26	8	24.6	31.2	21.6	22.4	96	65	47	-	-

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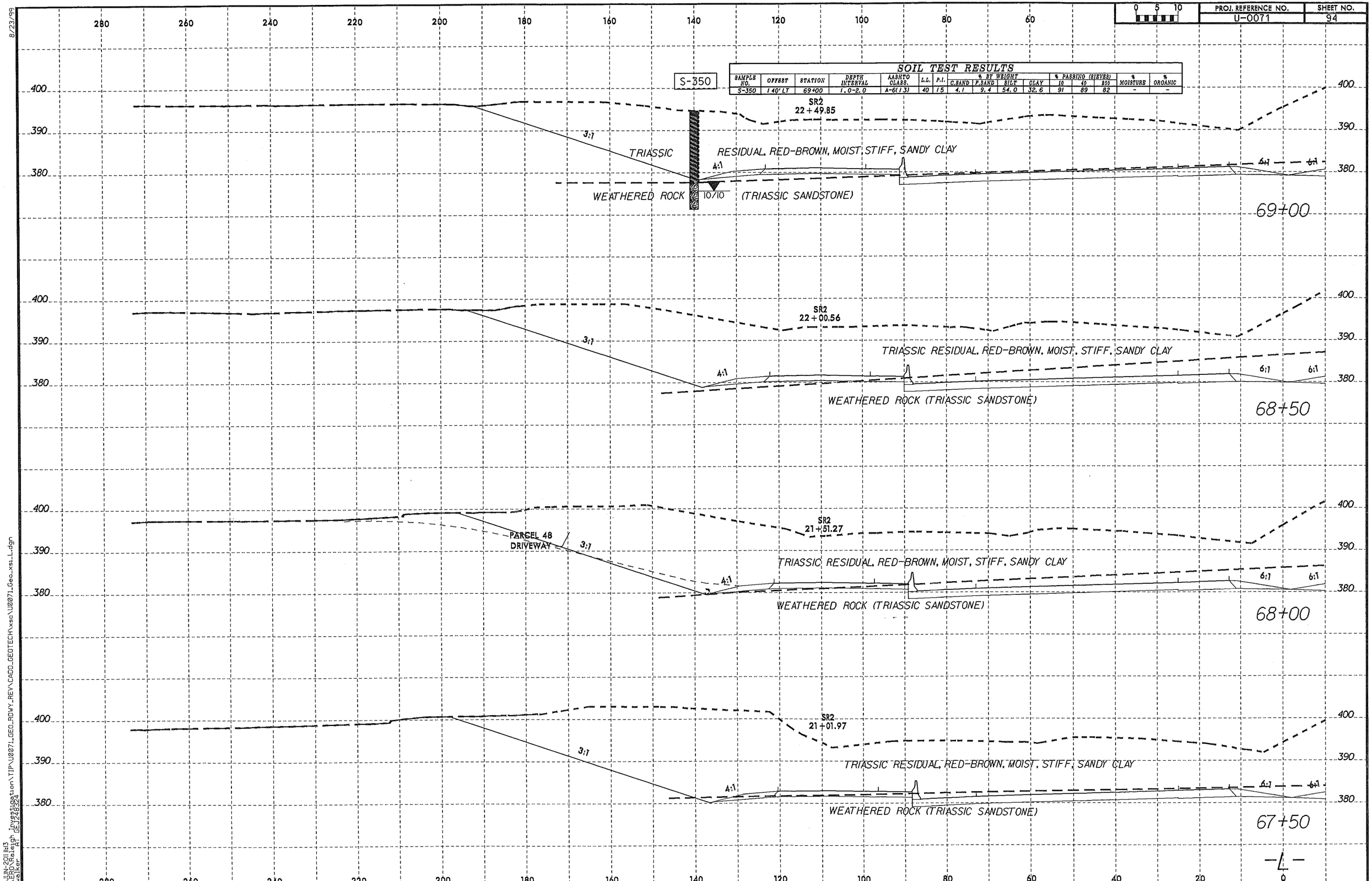

SOIL TEST RESULTS

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-350	140' LT	69+00	1.0-2.0	A-6(13)	40	15	4.1	9.4	54.0	32.6	91	89	82	-	-

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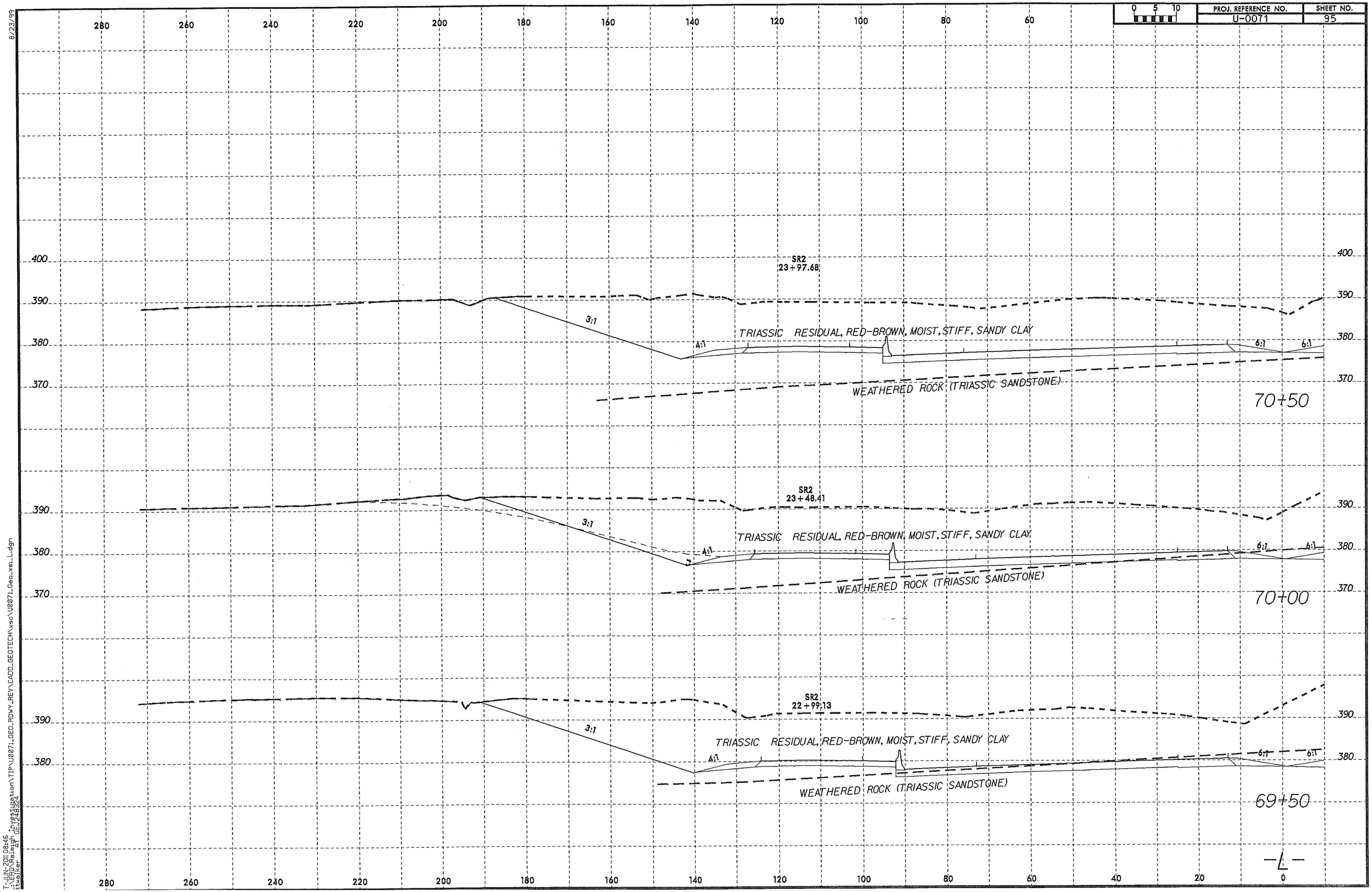

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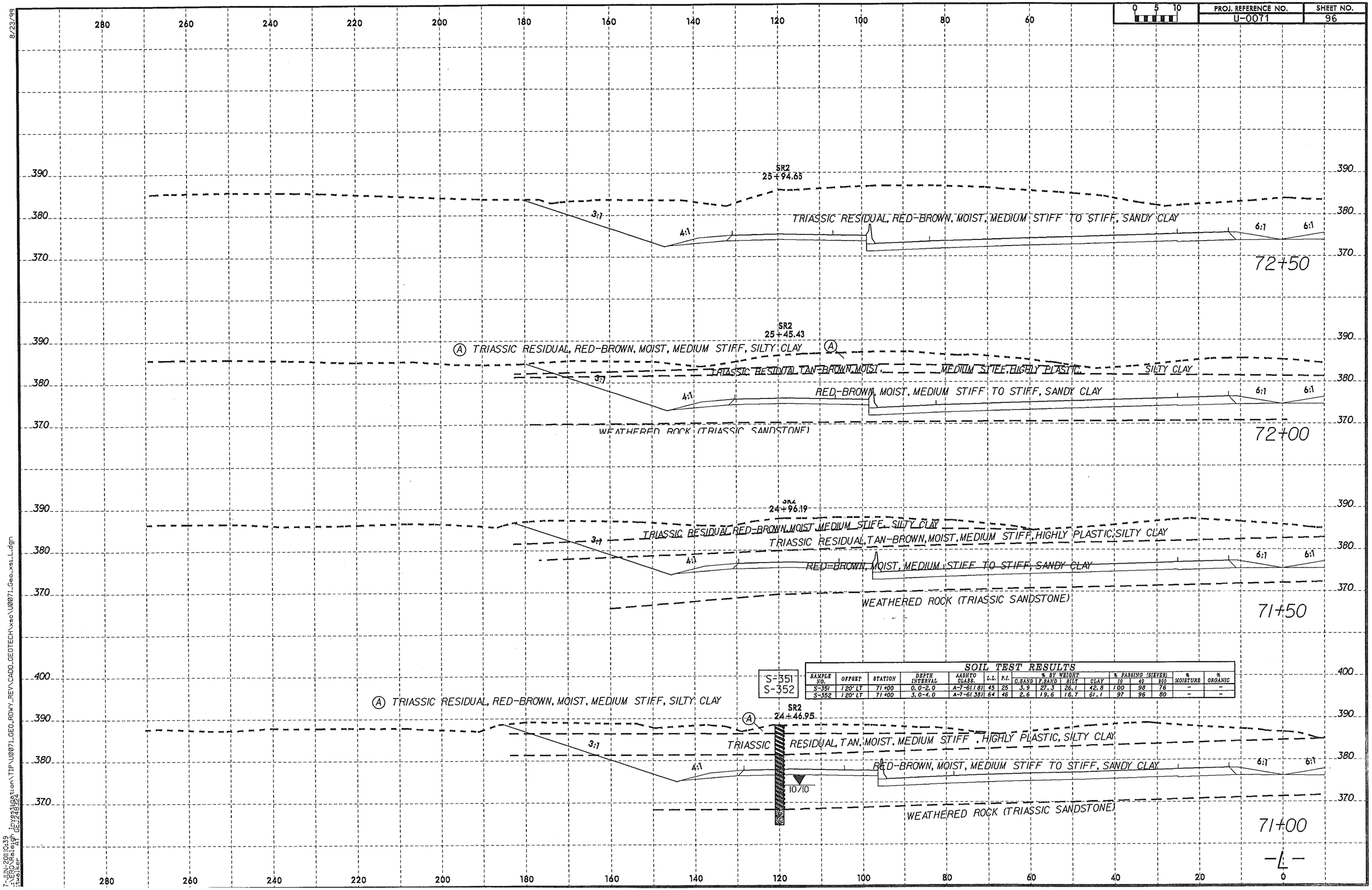

S-351
S-352

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT O.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-351	120' LT	71+00	0.0-2.0	A-7-6(18)	45	25	3.9	27.3	26.1	42.8	100	98	76	-	-
S-352	120' LT	71+00	3.0-4.0	A-7-6(38)	64	46	2.6	19.6	16.7	61.1	97	96	80	-	-

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280 260 240 220 200 180 160 140 120 100 80 60

370 360 350

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-370	140' LT	80+25	1.0-2.0	A-4(0)	23	4	6.1	49.3	24.2	20.4	100	97	59	-	-
S-371	140' LT	80+25	7.0-8.0	A-6(9)	33	16	6.1	35.2	24.0	34.6	100	97	69	-	-

S-370
S-371
SR2
33+75.00
BP
80+25
80+58
4:1
6:1
6:1
DRY
10/10
TRIASSIC RESIDUAL, TAN, MOIST, MEDIUM STIFF, HIGHLY PLASTIC, SILTY CLAY
SANDY SILT
TRIASSIC RESIDUAL, RED-BROWN, MOIST, VERY STIFF, SANDY CLAY AND
WEATHERED ROCK (TRIASSIC SILTSTONE)
NON-CRYSTALLINE ROCK (TRIASSIC SILTSTONE)
80+50

SR2
33+30.00
BP
79+93
4:1
3:1
6:1
6:1
TRIASSIC RESIDUAL, TAN, MOIST, MEDIUM STIFF, HIGHLY PLASTIC, SILTY CLAY
RED-BROWN, MOIST, VERY STIFF, SILTY CLAY
WEATHERED ROCK (TRIASSIC SILTSTONE)
DRY
10/10
NON-CRYSTALLINE ROCK (TRIASSIC SILTSTONE)
80+00

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-368	23' LT	79+51	1.0-2.0	A-7-6(17)	41	22	2.2	27.5	23.4	46.8	100	99	79	-	-
S-369	23' LT	79+51	6.0-7.0	A-4(7)	31	8	1.4	23.0	51.1	24.4	98	97	87	-	-

S-368
S-369
SR2
32+83.76
79+51
4:1
3:1
6:1
6:1
TRIASSIC RESIDUAL, TAN AND RED-BROWN, MOIST, STIFF, SANDY SILT AND SILTY CLAY
10/10
WEATHERED ROCK (TRIASSIC SILTSTONE)
79+50

380 370 360 350 340

280 260 240 220 200 180 160 140 120 100 80 60 40 20 0

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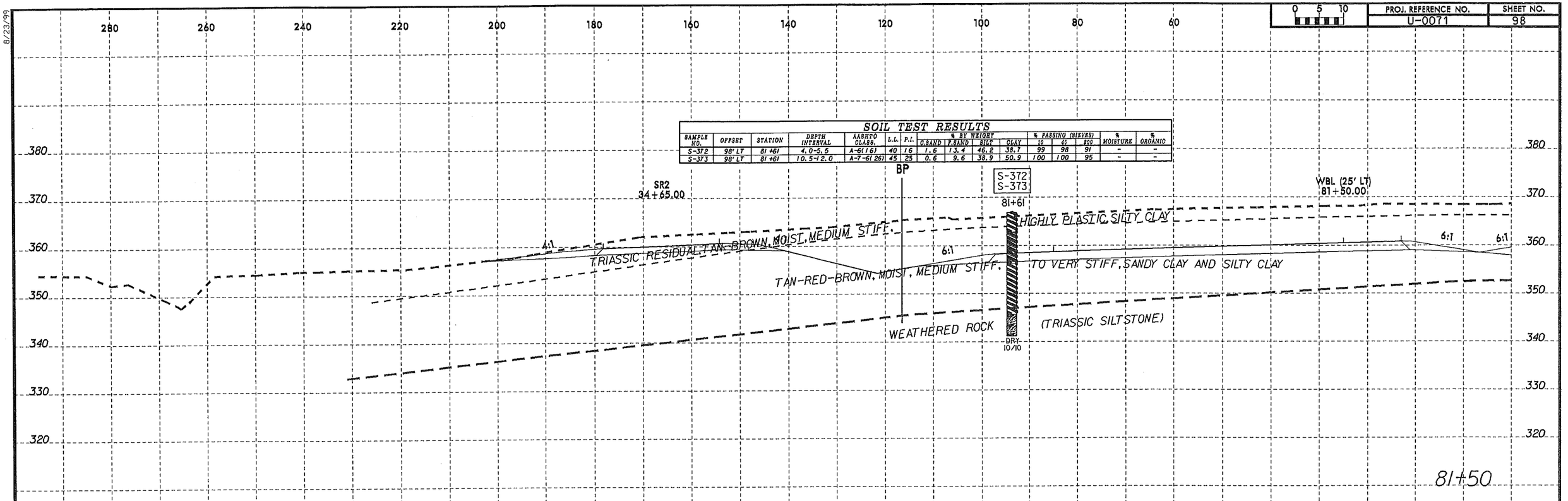
walker AT GEJ248224

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-0071	98

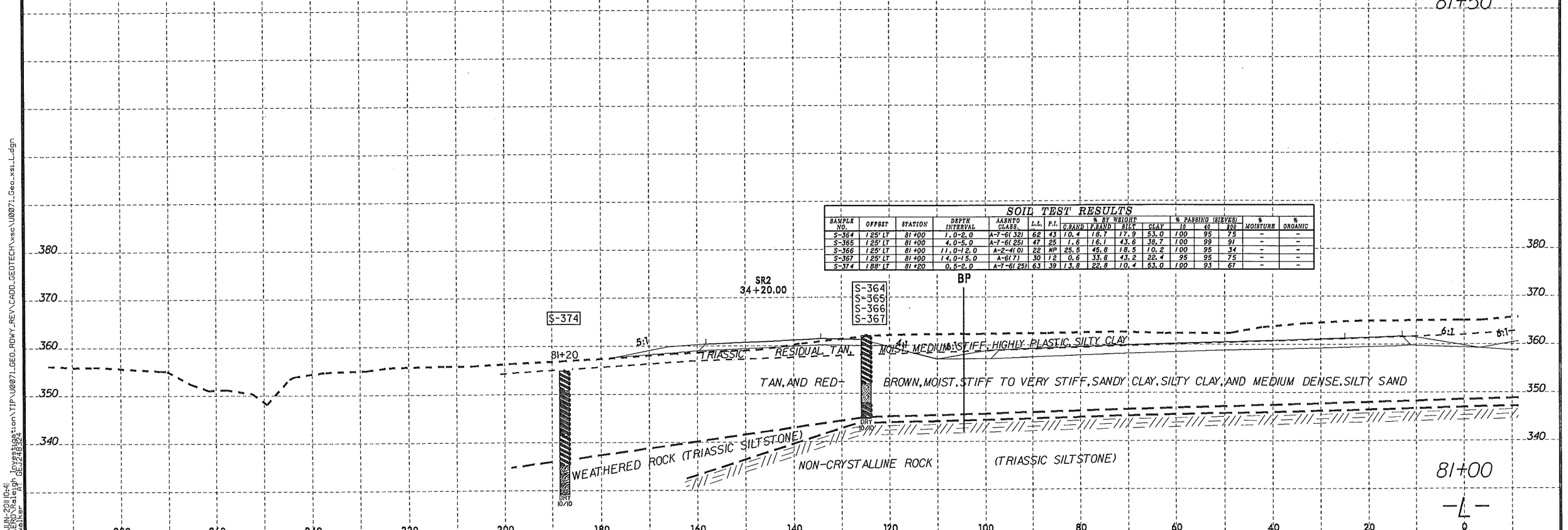
SOIL TEST RESULTS

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-372	98' LT	81+61	4.0-5.5	A-6(16)	40	16	1.6	13.4	46.2	38.7	99	98	91	-	-
S-373	98' LT	81+61	10.5-12.0	A-7-6(26)	45	25	0.6	9.6	38.9	50.9	100	100	95	-	-



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-364	125' LT	81+00	1.0-2.0	A-7-6(32)	62	43	10.4	18.7	17.9	53.0	100	95	75	-	-
S-365	125' LT	81+00	4.0-5.0	A-7-6(25)	47	25	1.6	16.1	43.6	38.7	100	99	91	-	-
S-366	125' LT	81+00	11.0-12.0	A-2-4(0)	22	NP	25.5	45.8	18.5	10.2	100	95	34	-	-
S-367	125' LT	81+00	14.0-15.0	A-6(7)	30	12	0.6	33.8	43.2	22.4	95	95	75	-	-
S-374	188' LT	81+20	0.5-2.0	A-7-6(25)	63	39	13.8	22.8	10.4	53.0	100	93	67	-	-



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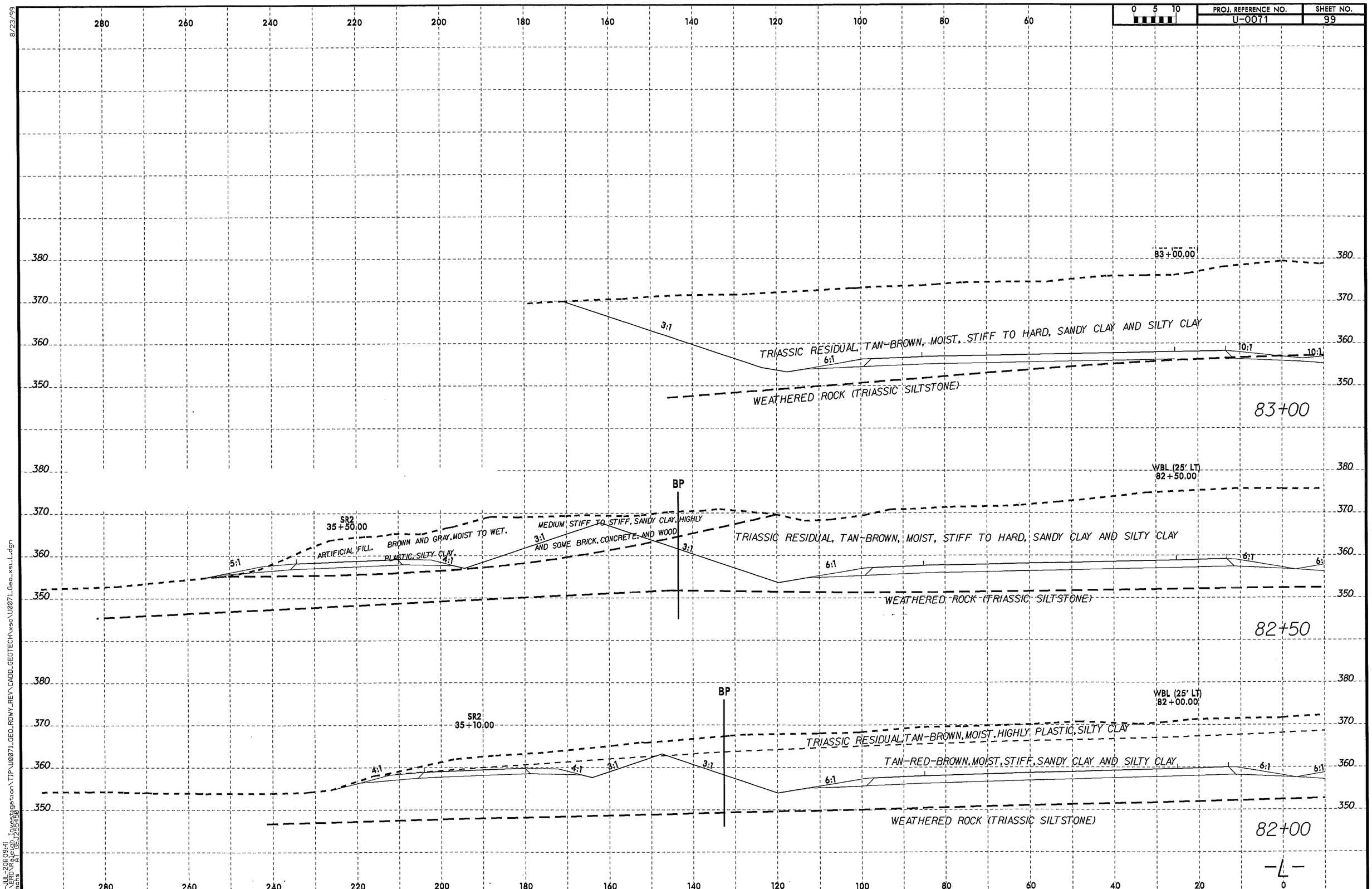
Walker AT GEJ248324



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nmohs AT GEJ255450

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-0071	100

280 260 240 220 200 180 160 140 120 100 80 60 40 20 0

380 370 360 350 340 330 390

WBL (25' LT)
84+49.99

3:1 TRIASSIC RESIDUAL, TAN-BROWN, MOIST, VERY STIFF TO HARD, SANDY SILT AND SANDY CLAY

6:1 WEATHERED ROCK (TRIASSIC SANDSTONE)

10:1 10:1

84+50

WBL (25' LT)
83+99.99

3:1 TRIASSIC RESIDUAL, TAN-BROWN, MOIST, STIFF TO HARD, SANDY CLAY AND SILTY CLAY

6:1 WEATHERED ROCK (TRIASSIC SILTSTONE)

10:1 15.5:

84+00

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-242	25' RT	83+70	3.8-5.3	A-7-6(8)	41	14	4.3	42.5	24.7	28.5	100	98	63	-	-
SS-243	25' RT	83+70	8.8-10.3	A-6(6)	37	12	8.1	38.0	33.5	20.3	100	97	62	-	-

SS-242
SS-243
83+70

WBL (25' LT)
83+49.99

3:1 TRIASSIC RESIDUAL, TAN-BROWN, MOIST, STIFF TO HARD, SANDY CLAY AND SILTY CLAY

6:1 WEATHERED ROCK (TRIASSIC SILTSTONE)

10:1 10:1

11 9 42 98 100/0.5 100/0.5 100/0.7 100/0.6 100/0.4

07/10

83+50

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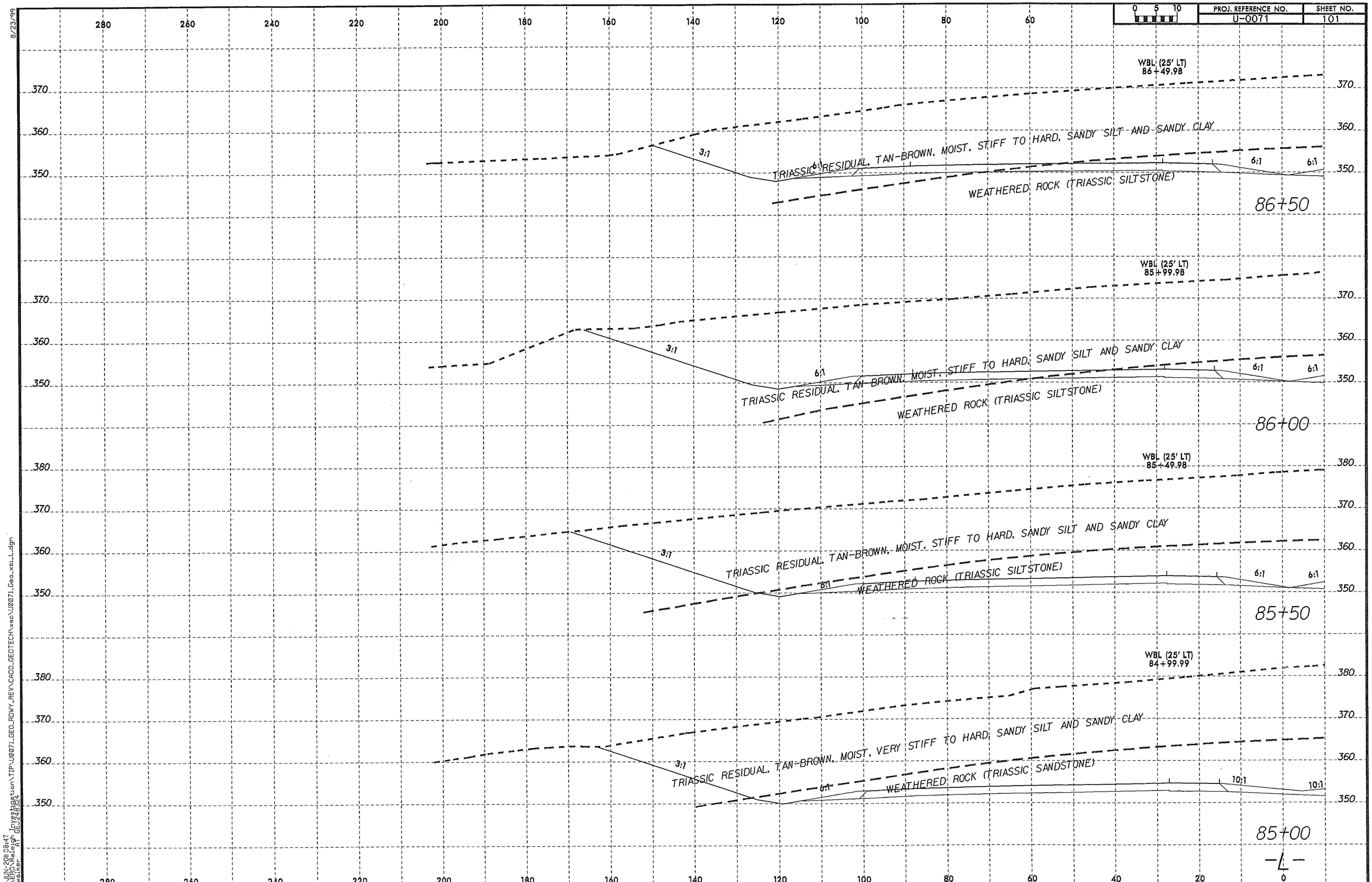
mmohs
AT GE J255450



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ttwalker AT GEJ248324

8/23/99

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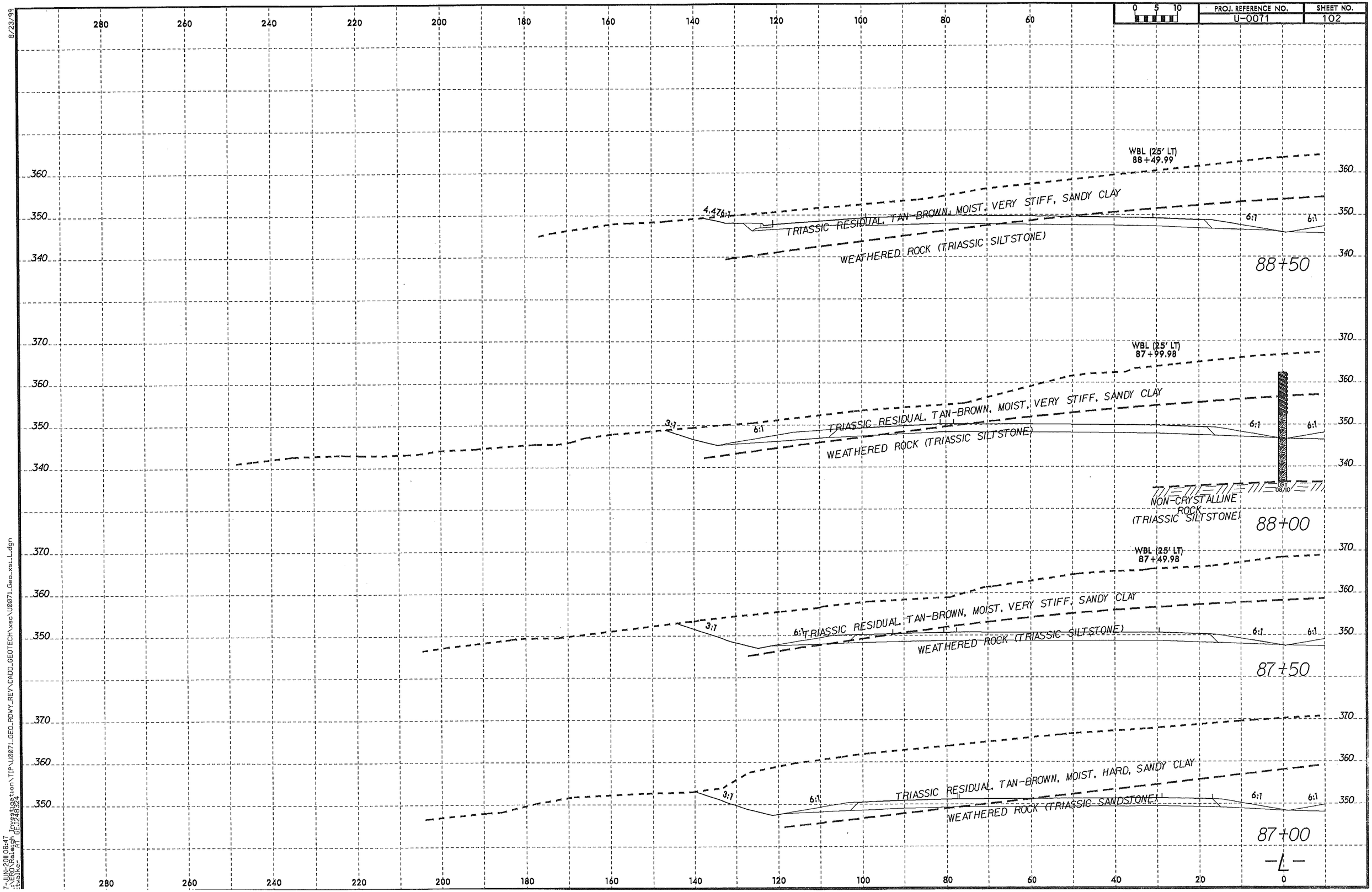
	U-0071	102



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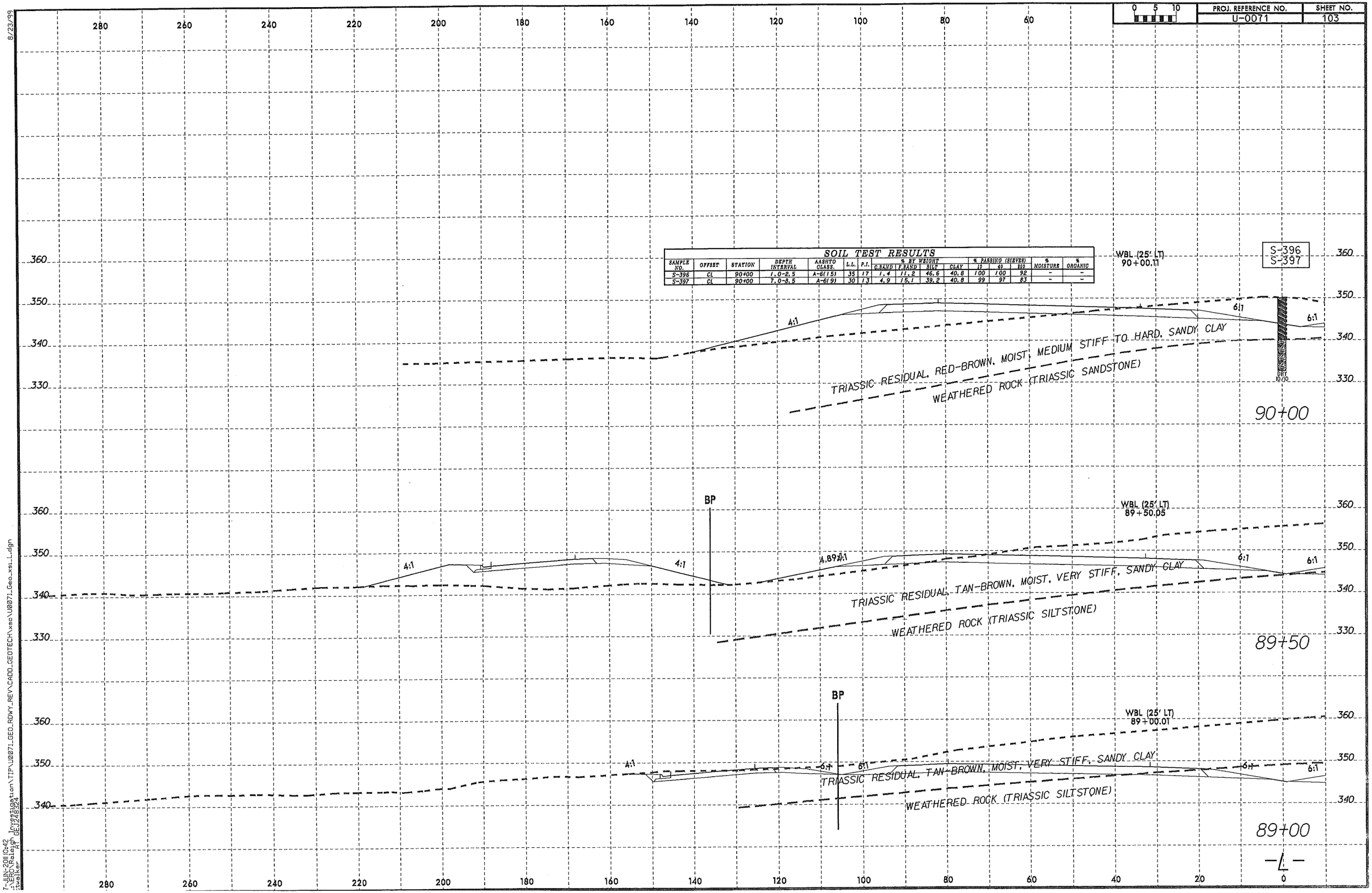
twalker AT GEO2489324

PROJ. REFERENCE NO.	SHEET NO.
U-0071	103



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-396	CL	90+00	1.0-2.5	A-6(15)	35	17	1.4	11.2	46.6	40.8	100	100	92	-	-
S-397	CL	90+00	7.0-8.5	A-6(9)	30	13	4.9	15.1	39.2	40.8	99	97	83	-	-

8/23/99

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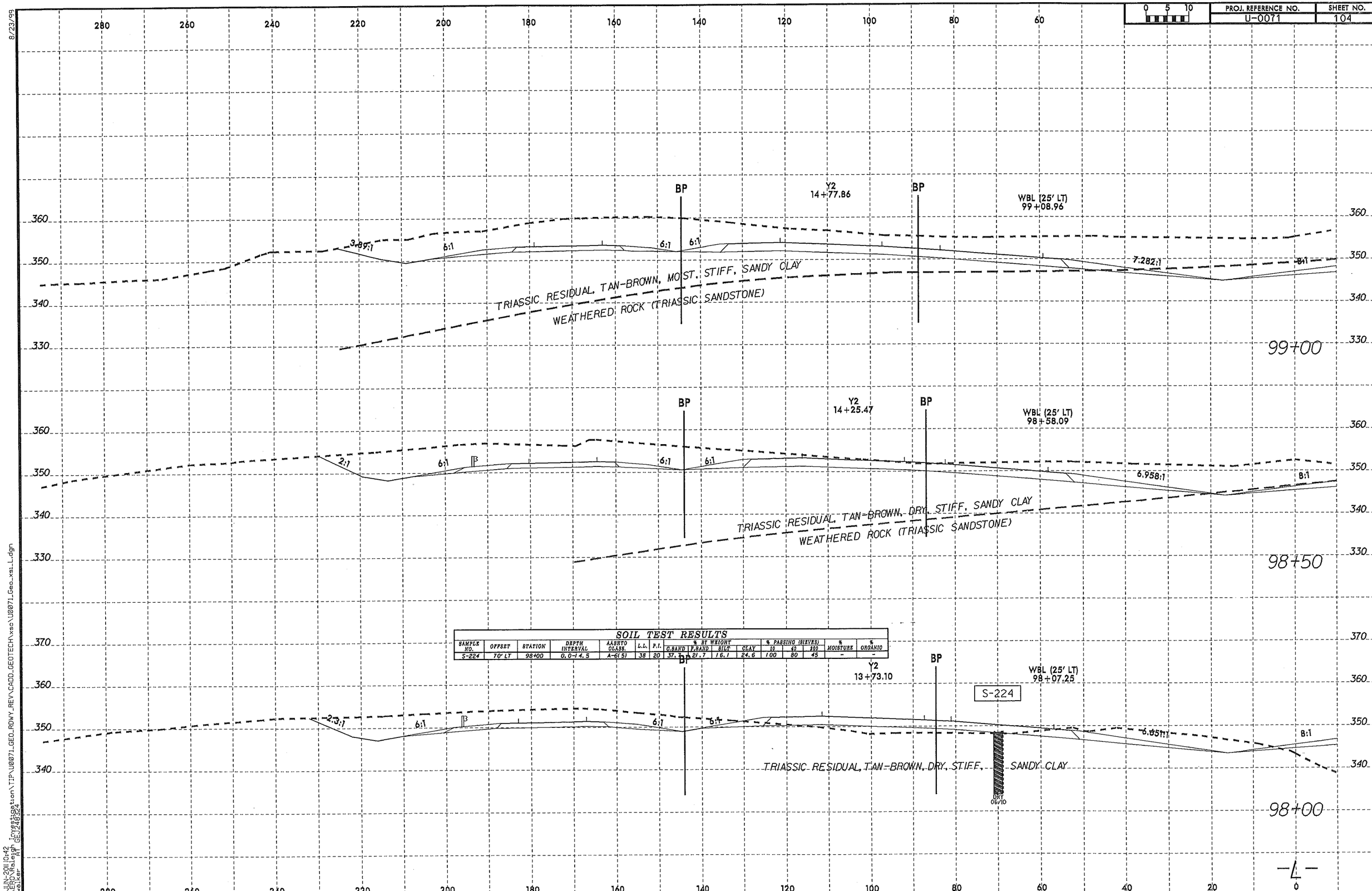

SOIL TEST RESULTS

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-224	70' LT	98+00	0.0-14.5	A-6(5)	38	20	37.7	21.7	16.1	24.6	100	80	45	-	-

8/23/99

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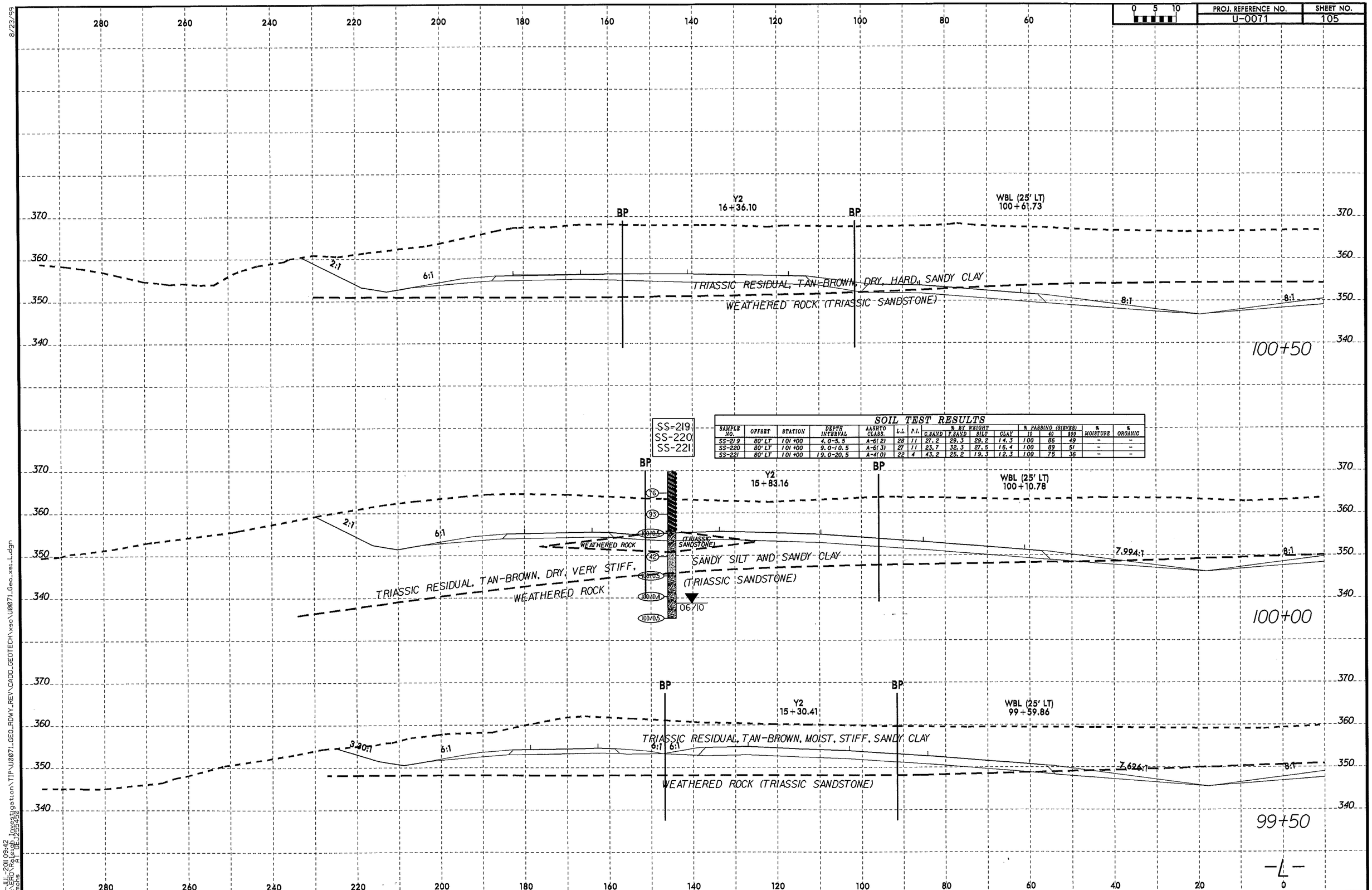

SOIL TEST RESULTS

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-219	80' LT	101+00	4.0-5.5	A-6(2)	28	11	27.2	29.3	29.2	14.3	100	86	49	-	-
SS-220	80' LT	101+00	9.0-10.5	A-6(3)	27	11	23.7	32.3	27.5	16.4	100	89	51	-	-
SS-221	80' LT	101+00	19.0-20.5	A-4(0)	22	4	43.2	25.2	19.3	12.3	100	75	36	-	-

8/23/99

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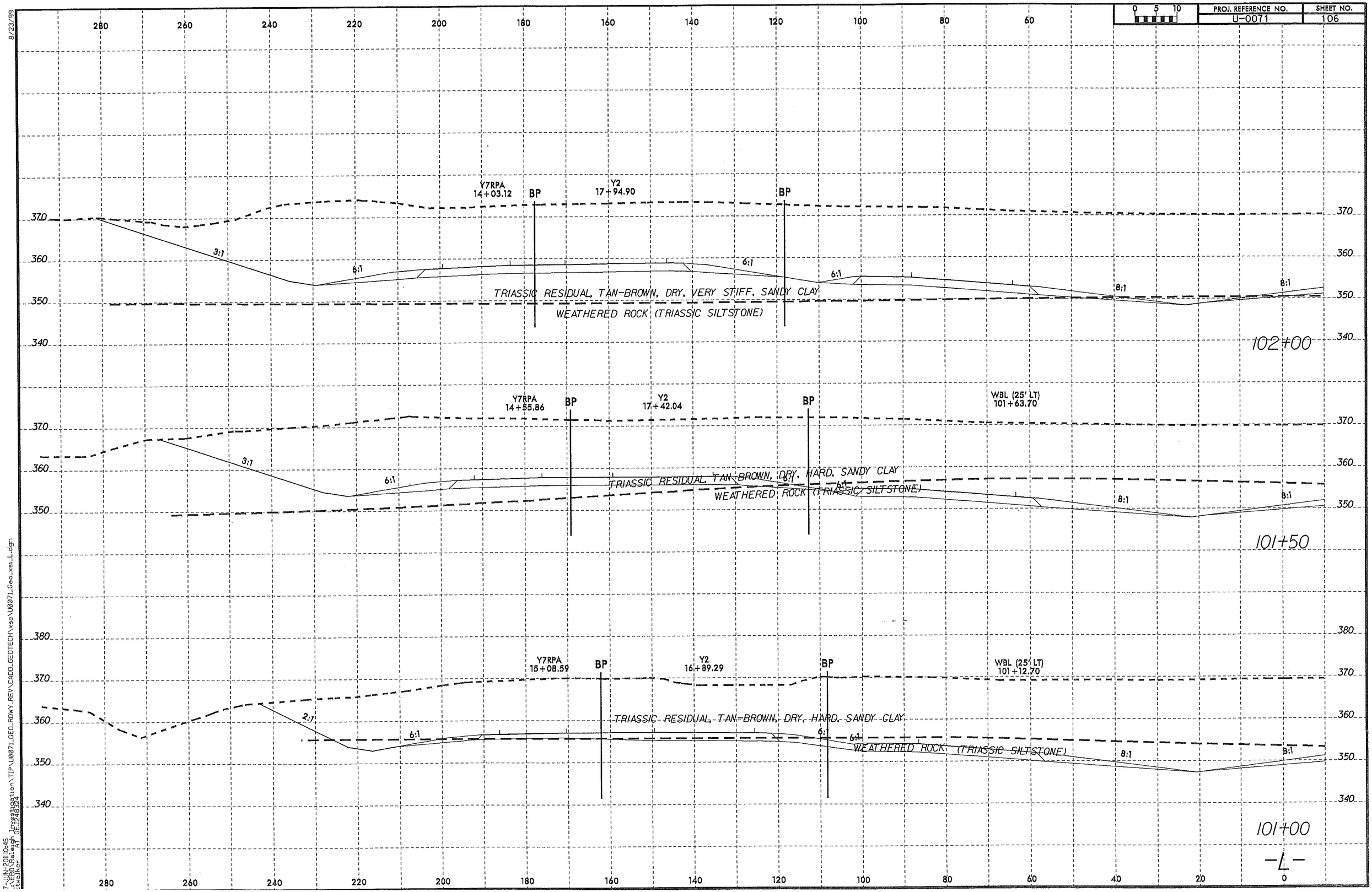
nmohs AT GEJ255450



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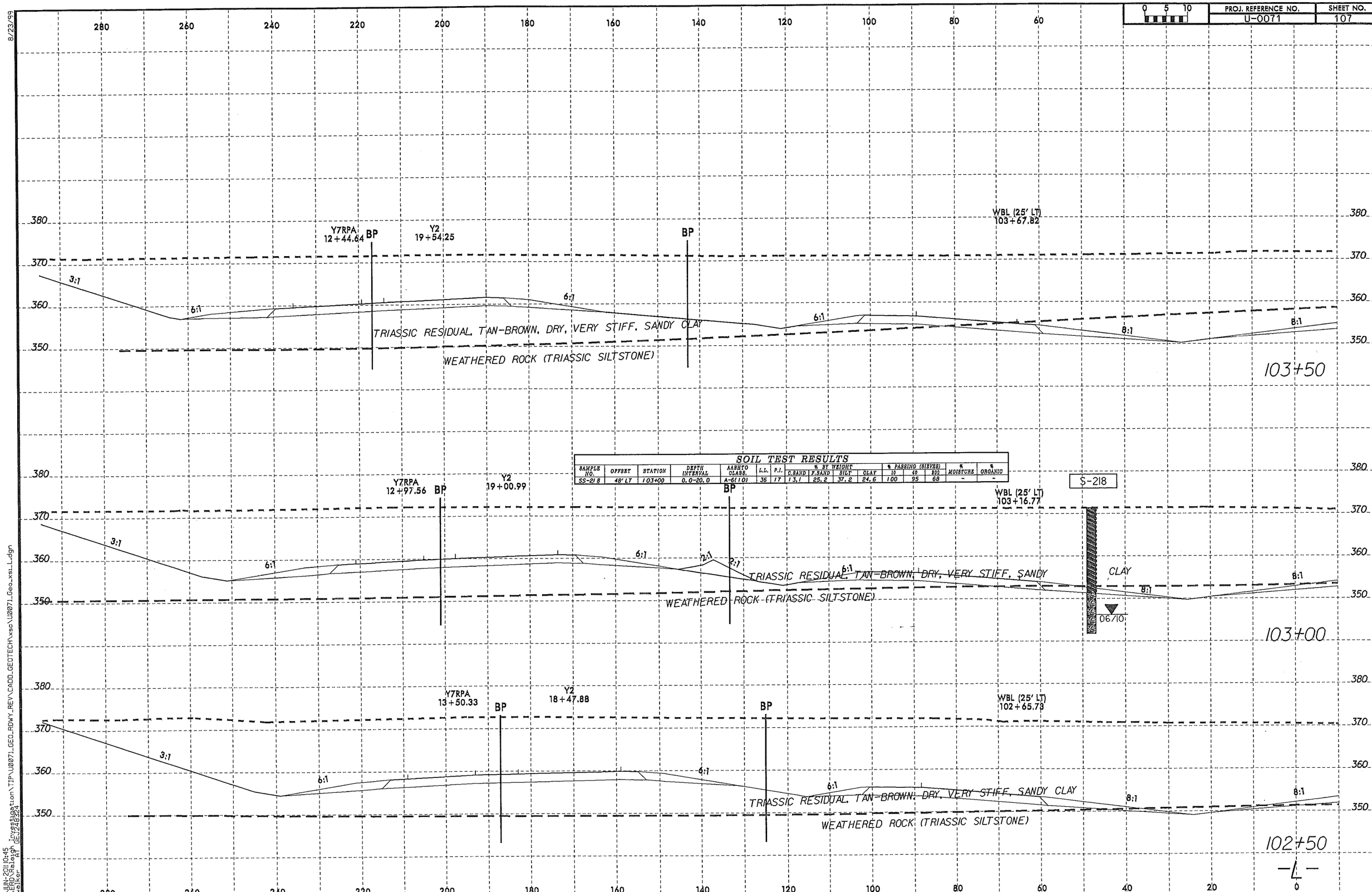
PROJ. REFERENCE NO.	SHEET NO.
U-0071	107



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-218	48' LT	103+00	0.0-20.0	A-6(10)	36	17	13.1	25.2	37.2	24.6	100	95	68	-	-

8/23/99

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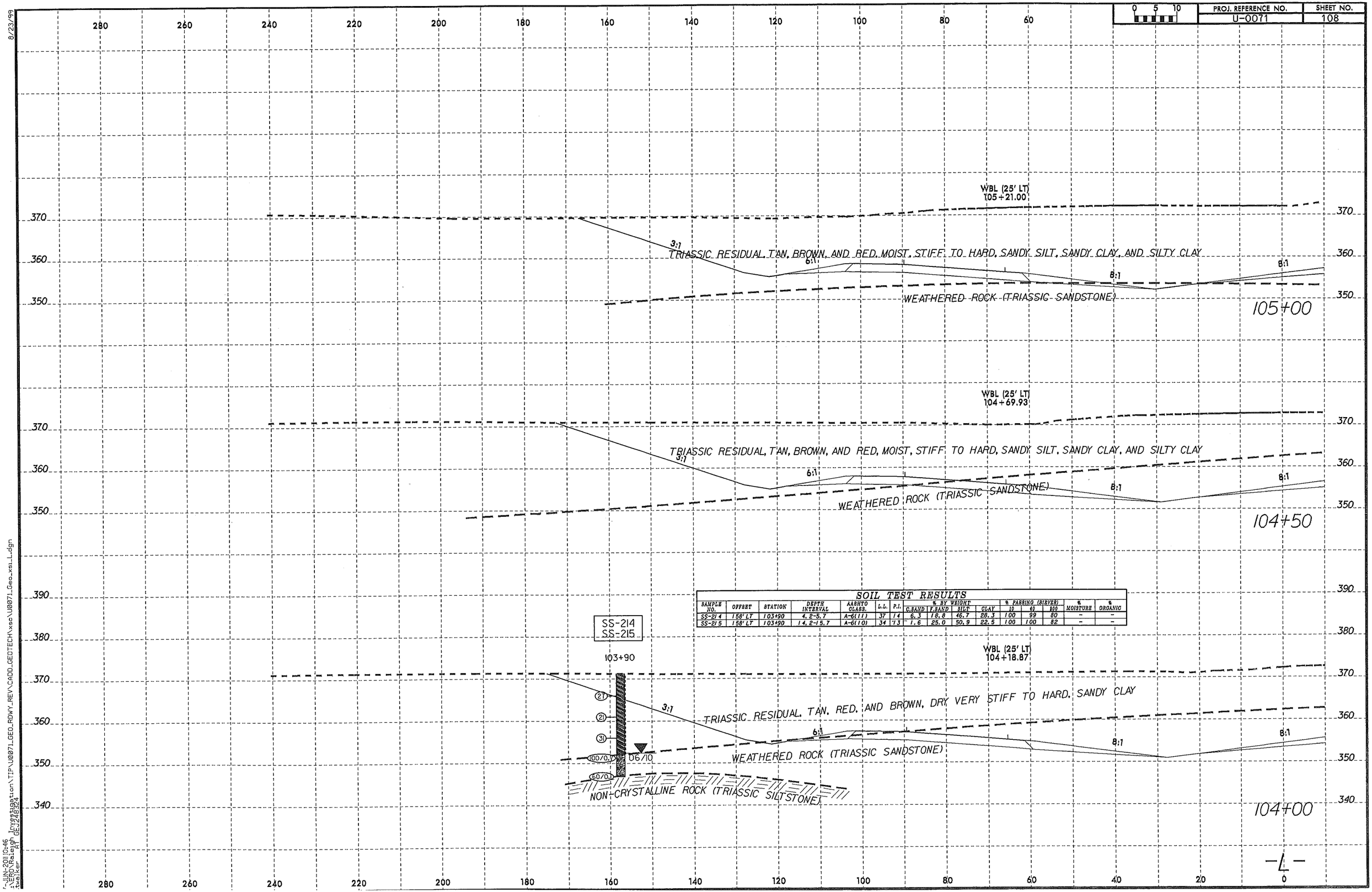

SOIL TEST RESULTS

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-214	158' LT	103+90	4.2-5.7	A-6(11)	37	14	6.3	18.8	46.7	28.3	100	99	80	-	-
SS-215	158' LT	103+90	14.2-15.7	A-6(10)	34	13	1.6	25.0	50.9	22.5	100	100	82	-	-

8/23/99

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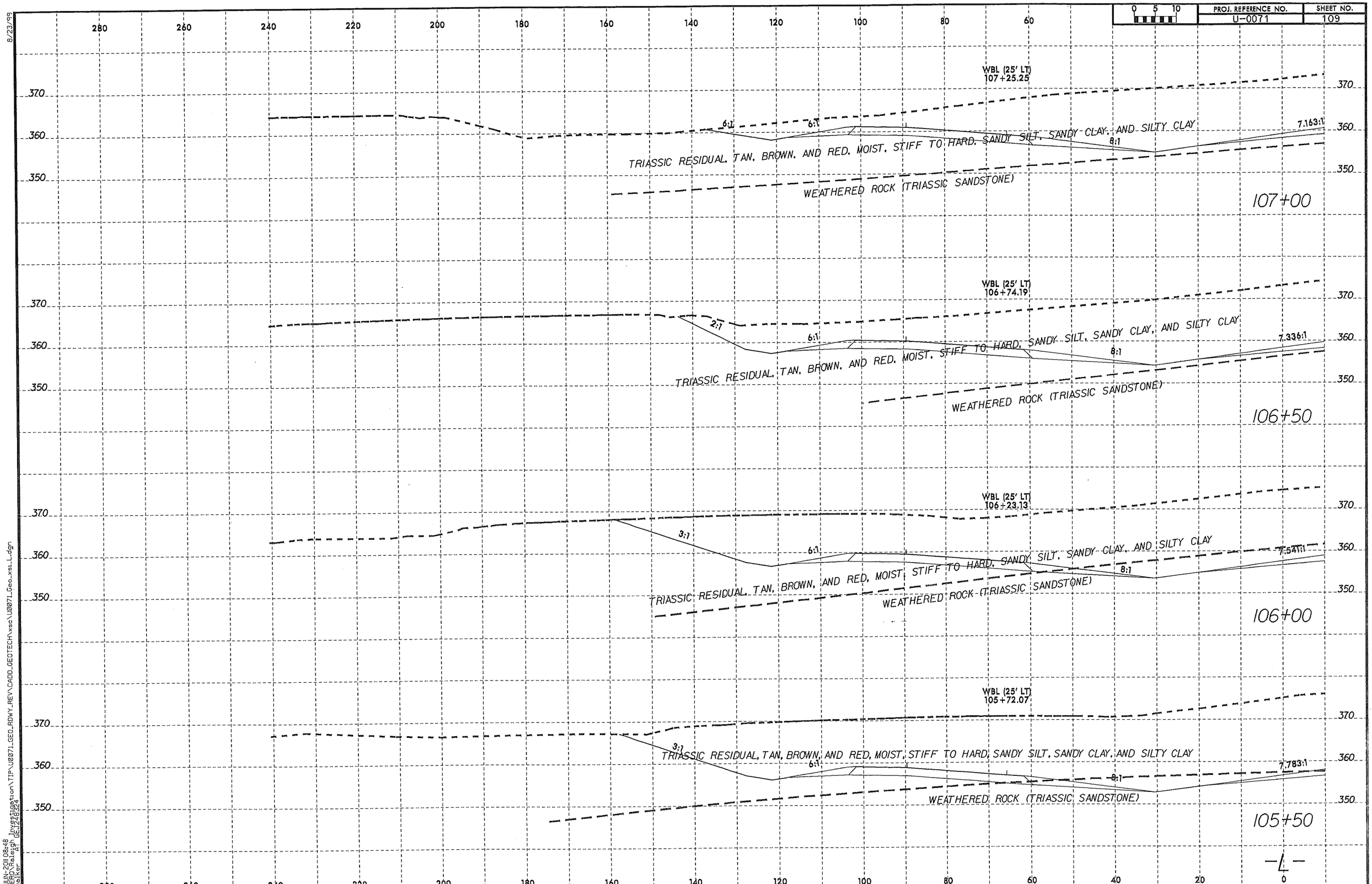
twalker AT GEJ248324



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twalker AT GEJ248324

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-0071	110

280 260 240 220 200 180 160 140 120 100 80 60

370
360
350

WBL (25' LT)
108+27.33

6:1 6:1 8:1 6.897:1

370
360
350

TRIASSIC RESIDUAL TAN, BROWN, AND RED, MOIST, VERY STIFF TO HARD, SANDY CLAY

D.P. 356.61

WEATHERED ROCK (TRIASSIC SANDSTONE)

108+00

WBL (25' LT)
107+76.30

6:1 6:1 8:1 7.018:1

370
360
350

TRIASSIC RESIDUAL, TAN, BROWN, AND RED, MOIST, STIFF TO HARD, SANDY SILT, SANDY CLAY AND SILTY CLAY

WEATHERED ROCK (TRIASSIC SANDSTONE)

107+50

280 260 240 220 200 180 160 140 120 100 80 60 40 20 0

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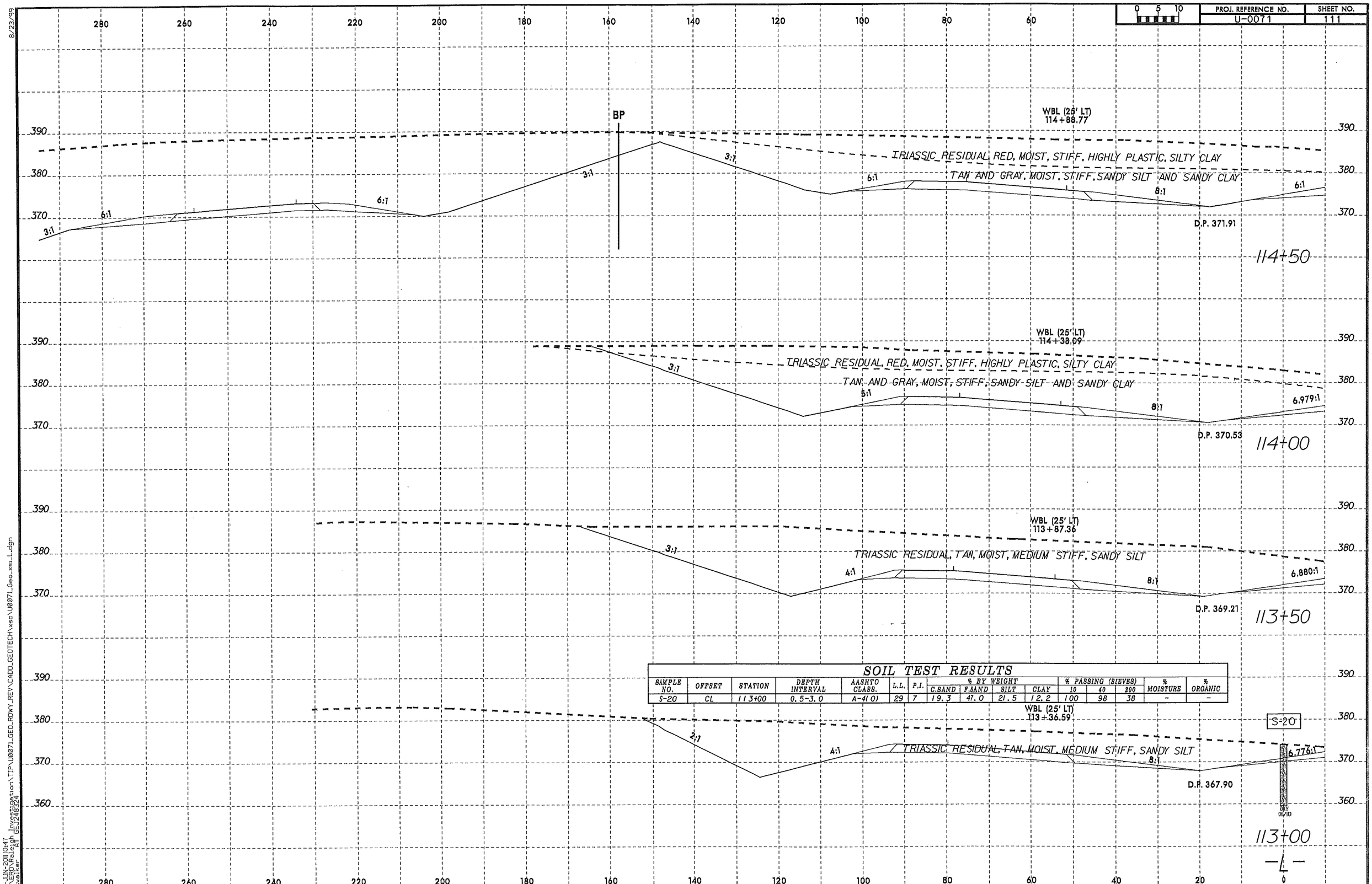
tlwalker
AT GEJ248324



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-20	CL	113+00	0.5-3.0	A-4(0)	29	7	19.3	47.0	21.5	12.2	100	98	38	-	-

8/23/99

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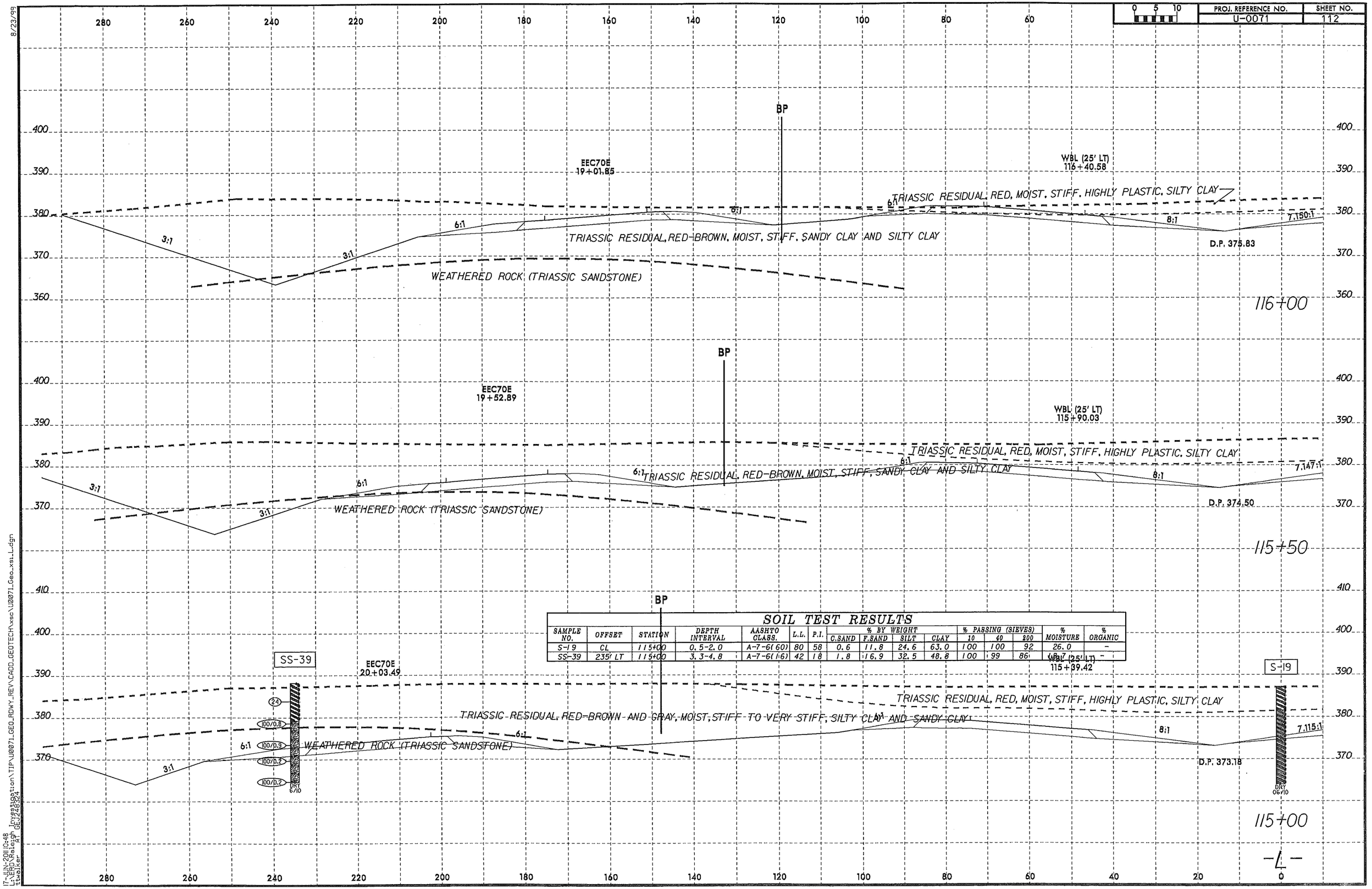
ttwalker AT GEJ248324



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-19	CL	115+00	0.5-2.0	A-7-6(60)	80	58	0.6	11.8	24.6	63.0	100	100	92	26.0	-
SS-39	235' LT	115+00	3.3-4.8	A-7-6(16)	42	18	1.8	16.9	32.5	48.8	100	99	86	18.7	-

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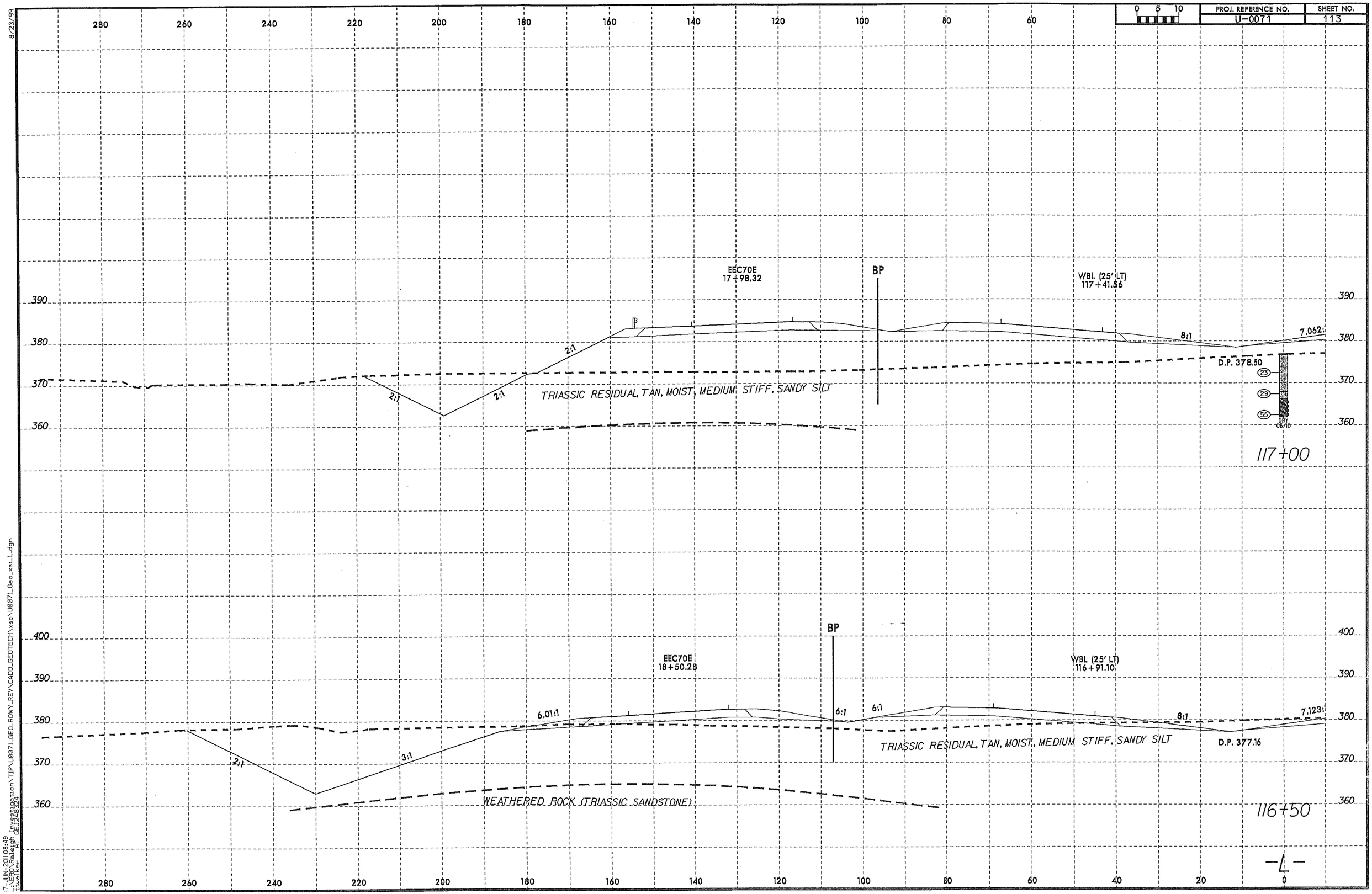
tlwalker



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ttwalker AT GEJ248324

PROJ. REFERENCE NO.	SHEET NO.
U-0071	114

0 5 10

0 20 40 60 80 100 120 140 160 180 200 220

410 400 390 420

Y7RPC
15+58.02

2:1

6:1 6:1

TRIASSIC RESIDUAL, TAN, BROWN, AND RED, MOIST, VERY STIFF TO HARD, SANDY CLAY

WEATHERED ROCK (TRIASSIC SANDSTONE)

63+00

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-5	147' RT	62+50	3.2-4.7	A-7-6(16)	49	29	19.9	19.9	11.6	48.7	100	91	64	–	–
SS-6	147' RT	62+50	6.2-9.7	A-6(8)	35	11	0.8	25.8	45.2	28.1	100	100	76	–	–

SS-5
SS-6

Y7RPC- 15+07

Y7RPC
15+07.37

SANDY CLAY AND SILTY CLAY

STIFF TO HARD.

6:1 6:1

TRIASSIC RESIDUAL, TAN AND RED-BROWN, MOIST.

04/11

WEATHERED ROCK (TRIASSIC SANDSTONE)

62+50

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	#200	% MOISTURE	% ORGANIC
S-509	110' RT	62+00	1.0-2.5	A-4(0)	24	4	8.2	52.6	26.8	12.4	100	97	54	–	–

Y7RPC
14+56.71

S-509

2:1

6:1 6:1

TRIASSIC RESIDUAL, TAN AND RED-BROWN, MOIST, STIFF TO HARD, SANDY CLAY AND SILTY CLAY

WEATHERED ROCK (TRIASSIC SANDSTONE)

DRY
10/10

62+00

-L-

0 20 40 60 80 100 120 140 160 180 200 220 240 260 280

8/23/99

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ttwalker AT GEJ248324

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-0071	115

0 20 40 60 80 100 120 140 160 180 200 220

420 410 400 390

Y7RPC
17+09.96

TRIASSIC RESIDUAL, TAN AND BROWN, MOIST, STIFF TO HARD, SANDY CLAY

10:1 10:1

WEATHERED ROCK (TRIASSIC SANDSTONE)

64+50

SS-505
SS-506
SS-507
SS-508

Ⓐ TRIASSIC RESIDUAL, RED-BROWN, MOIST, HARD, SANDY SILT

Y7RPC
16+59.31

18
37
79
75
100/0.8
10/10
100/0.8
45
100/0.9
Ⓐ

TRIASSIC RESIDUAL, TAN, BROWN, AND RED, MOIST, VERY STIFF TO STIFF, SANDY CLAY

WEATHERED ROCK (TRIASSIC SANDSTONE)

10:1 10:1

64+00

Y7RPC
16+08.66

TRIASSIC RESIDUAL, TAN, BROWN, AND RED, MOIST, VERY STIFF TO HARD, SANDY CLAY

WEATHERED ROCK (TRIASSIC SANDSTONE)

10:1 10:1

63+50

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-505	120' RT	64+00	4.1-5.6	A-6(6)	32	11	4.3	34.0	28.7	33.0	100	100	69	--	--
SS-506	120' RT	64+00	9.1-10.6	A-6(14)	36	16	0.8	19.2	40.8	39.2	100	100	87	--	--
SS-507	120' RT	64+00	19.1-20.6	A-6(15)	36	16	0.4	13.2	49.3	37.1	100	100	94	--	--
SS-508	120' RT	64+00	34.1-35.6	A-4(6)	30	10	8.5	25.6	39.2	26.8	100	97	73	--	--

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ttwalker AT GE1248324

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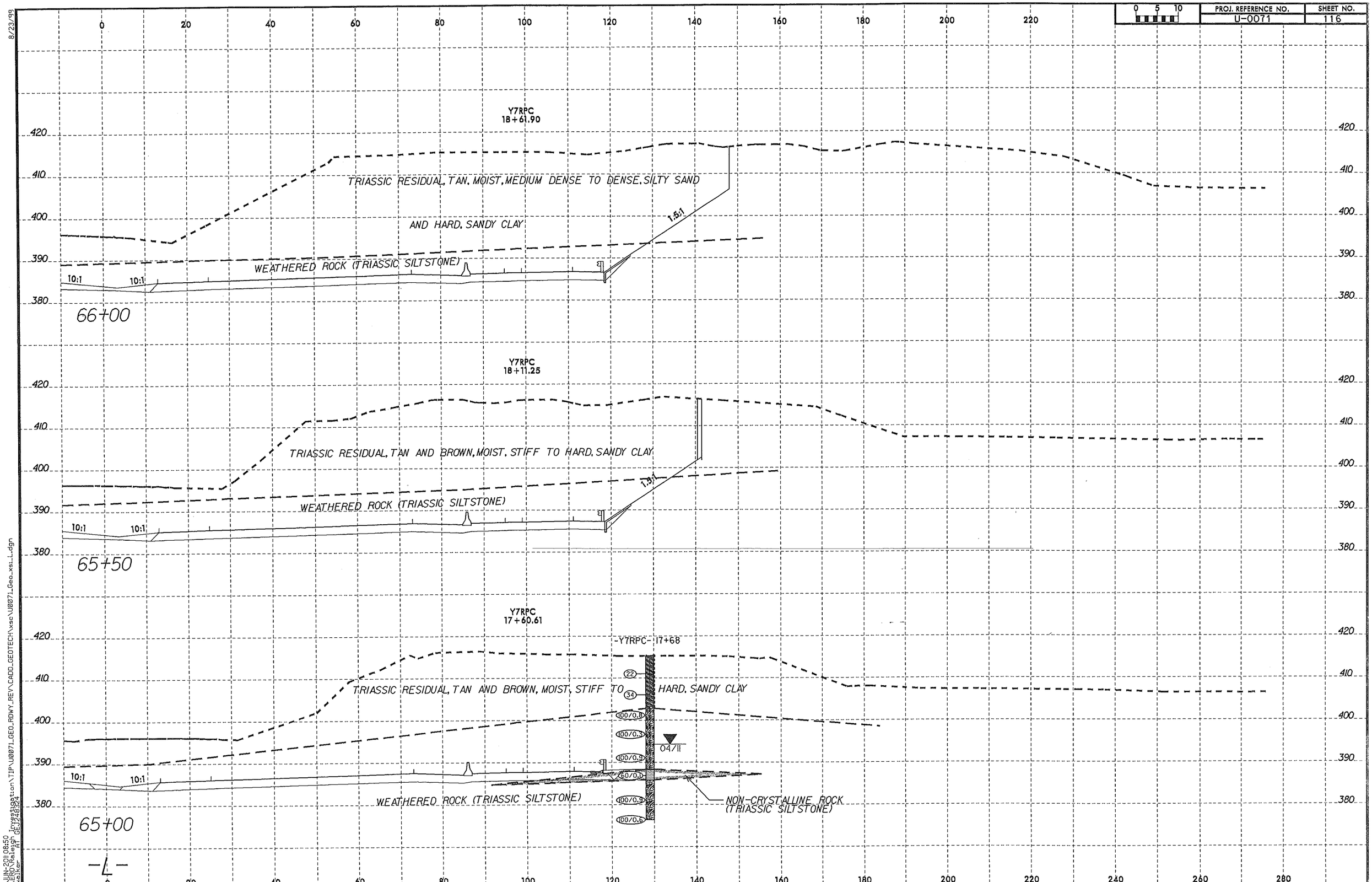

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ttwalker AT GEJ248324

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-0071	117

0 20 40 60 80 100 120 140 160 180 200 220

410 400 390 380

20+13.84

TRIASSIC RESIDUAL, RED-BROWN, MOIST, STIFF, SANDY CLAY

6:1 6:1 3:1

WEATHERED ROCK (TRIASSIC SANDSTONE)

67+50

Y7RPC
19+63.20

TRIASSIC RESIDUAL, TAN, MOIST, MEDIUM DENSE TO DENSE, SILTY SAND

AND HARD, SANDY SILT

6:1 6:1 2:1

WEATHERED ROCK (TRIASSIC SANDSTONE)

67+00

430 420 410 400 390 380 370

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-510	80' RT	66+50	4.5-6.0	A-2-4(0)	27	8	59.2	11.3	6.8	22.7	99	52	31	-	-
SS-511	80' RT	66+50	14.5-16.0	A-6(15)	36	15	0.8	8.5	35.1	55.7	100	100	94	-	-
SS-512	80' RT	66+50	24.5-26.0	A-6(10)	32	14	0.4	37.3	23.1	39.2	100	100	79	-	-

SS-510
SS-511
SS-512

Y7RPC
19+12.55

TRIASSIC RESIDUAL, TAN, MOIST, MEDIUM DENSE TO DENSE, SILTY SAND

AND RED-BROWN, MOIST, VERY STIFF TO HARD, SANDY CLAY

38 27 44 98 55 27 100/0.4 50/0.0

1:5:1

6:1 6:1 10/10

WEATHERED ROCK (TRIASSIC SANDSTONE)

NON-CRYSTALLLINE ROCK
(TRIASSIC SANDSTONE)

66+50

0 20 40 60 80 100 120 140 160 180 200 220 240 260 280

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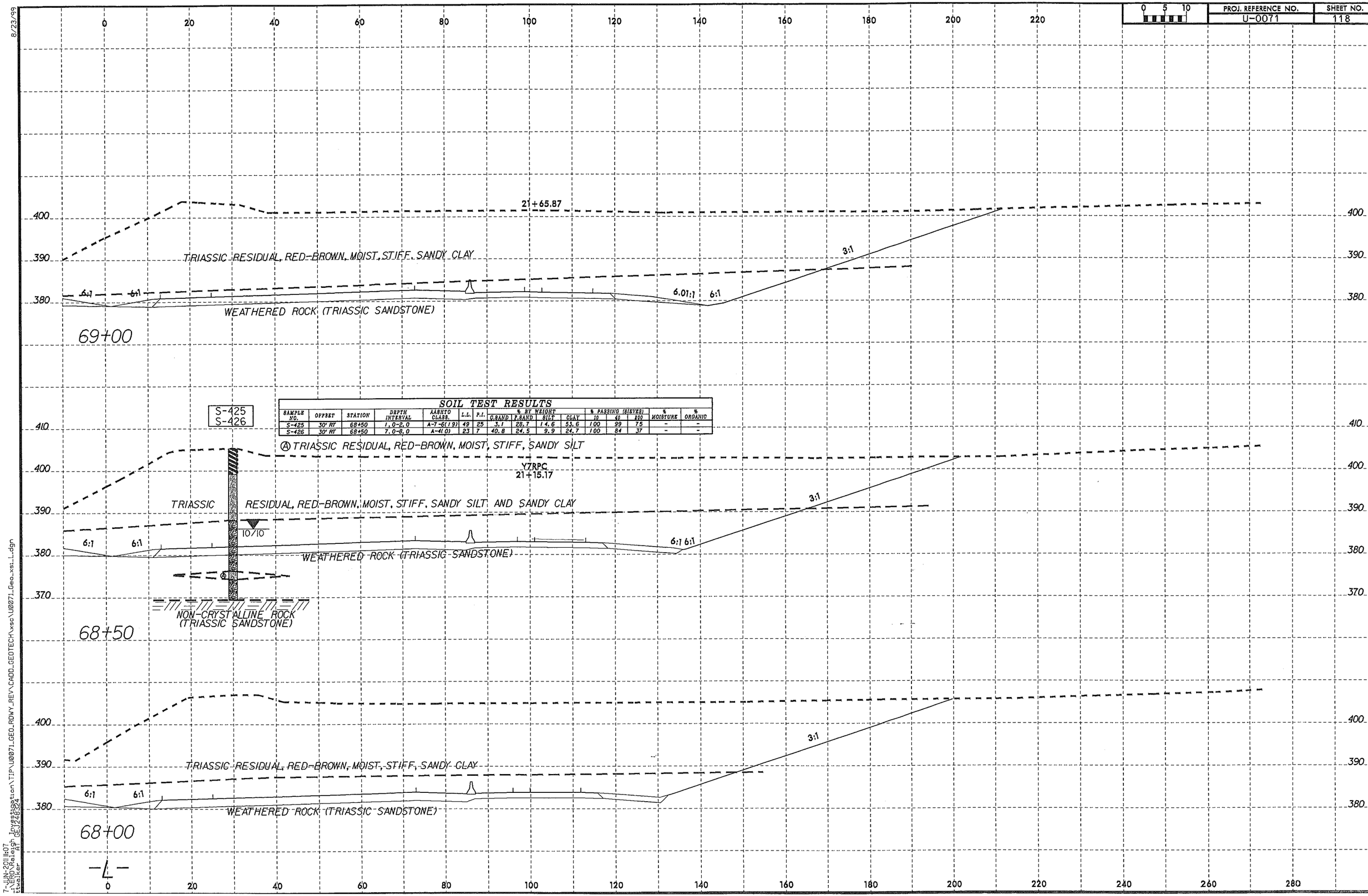
tswalker
AT GEJ248324

PROJ. REFERENCE NO. U-0071 | SHEET NO. 118



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-425	30' RT	68+50	1.0-2.0	A-7-6(19)	49	25	3.1	28.7	14.6	53.6	100	99	75	-	-
S-426	30' RT	68+50	7.0-8.0	A-4(0)	23	7	40.8	24.5	9.9	24.7	100	84	37	-	-

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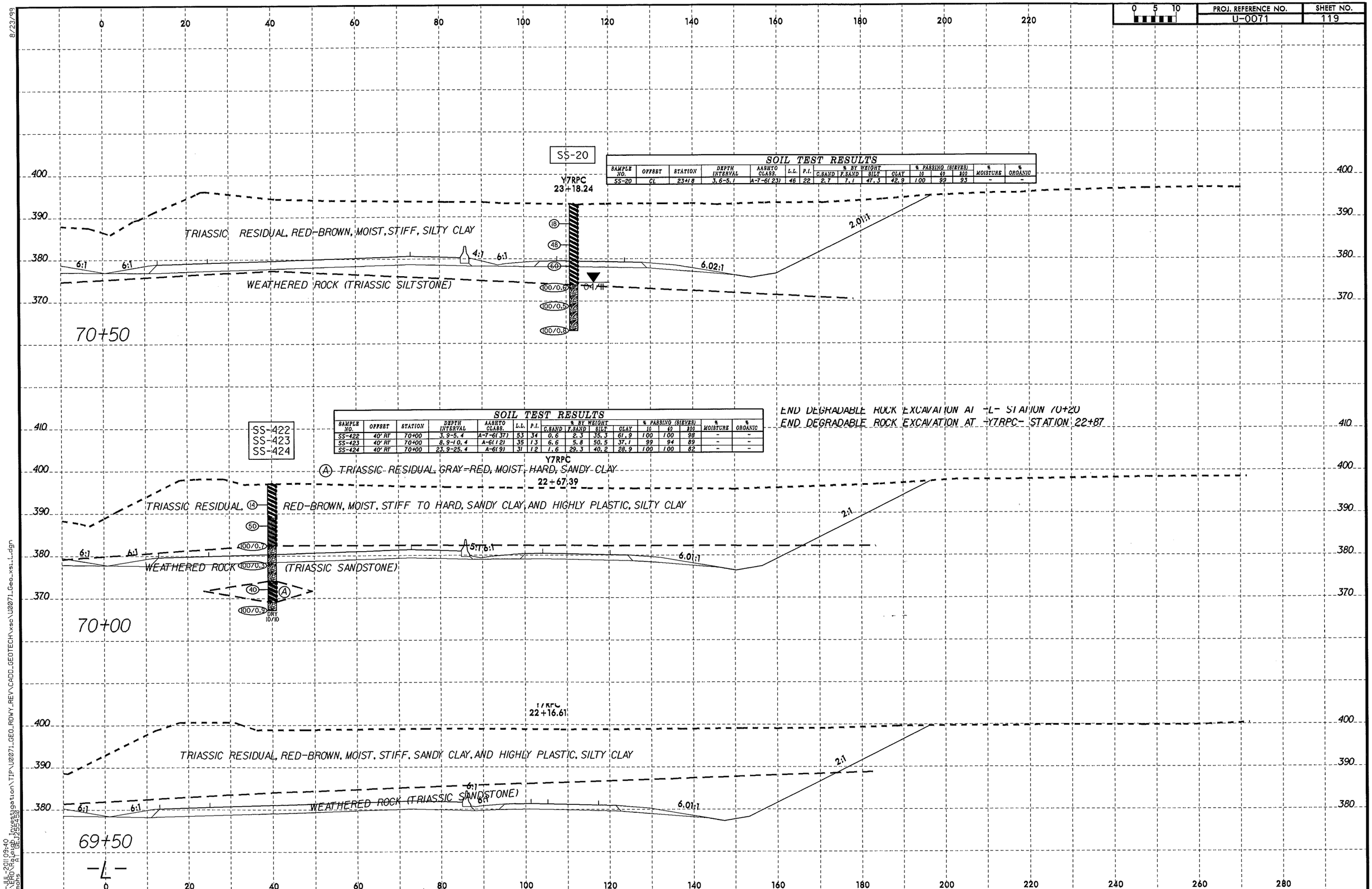
ttwalker AT GEJ248324

PROJ. REFERENCE NO. U-0071 | SHEET NO. 119



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-20	CL	23+18	3.6-5.1	A-7-6(23)	46	22	2.7	7.1	47.3	42.9	100	99	93	-	-

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-422	40' RT	70+00	3.9-5.4	A-7-6(37)	53	34	0.6	2.3	35.3	61.9	100	100	98	-	-
SS-423	40' RT	70+00	8.9-10.4	A-6(12)	35	13	6.6	5.8	50.5	37.1	99	94	89	-	-
SS-424	40' RT	70+00	23.9-25.4	A-6(9)	31	12	1.6	29.3	40.2	28.9	100	100	82	-	-

END DEGRADABLE ROCK EXCAVATION AT -L- STATION 70+20
END DEGRADABLE ROCK EXCAVATION AT -Y7RPC- STATION 22+87

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nmohs AT GEJ255450

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
U-0071	120

0 5 10

0 20 40 60 80 100 120 140 160 180 200 220

390 380 370

Y7RPC
25+22.25

6:1 6:1 6:1 6.03:1 6.03:1 2.27:1

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

72+50

S-419
S-420
S-421

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-419	60' RT	72+00	1.5-3.0	A-7-6(47)	68	44	1.2	7.6	37.5	53.6	100	99	94	-	-
S-420	60' RT	72+00	4.0-5.5	A-7-6(16)	43	20	5.8	15.1	37.9	41.2	98	96	81	-	-
S-421	60' RT	72+00	14.3-15.8	A-6(6)	30	15	6.8	41.0	21.2	30.9	100	99	59	-	-

Y7RPC
24+71.15

Ⓐ TRIASSIC RESIDUAL, RED-BROWN, MOIST, MEDIUM STIFF, HIGHLY PLASTIC, SILTY CLAY

6:1 6:1 6:1 6.03:1 6.03:1 2.01:1

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

DRY
10/10

72+00

Y7RPC
24+20.12

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

6:1 6:1 6:1 6.02:1 6.02:1 2.01:1

71+50

Y7RPC
23+69.15

TRIASSIC RESIDUAL, RED-BROWN, MOIST, MEDIUM STIFF TO STIFF, SANDY CLAY, AND HIGHLY PLASTIC, SILTY CLAY

6:1 6:1 5:1 6.02:1 6.02:1 2.01:1

WEATHERED ROCK (TRIASSIC SILTSTONE)

71+00

-L-

0 20 40 60 80 100 120 140 160 180 200 220 240 260 280

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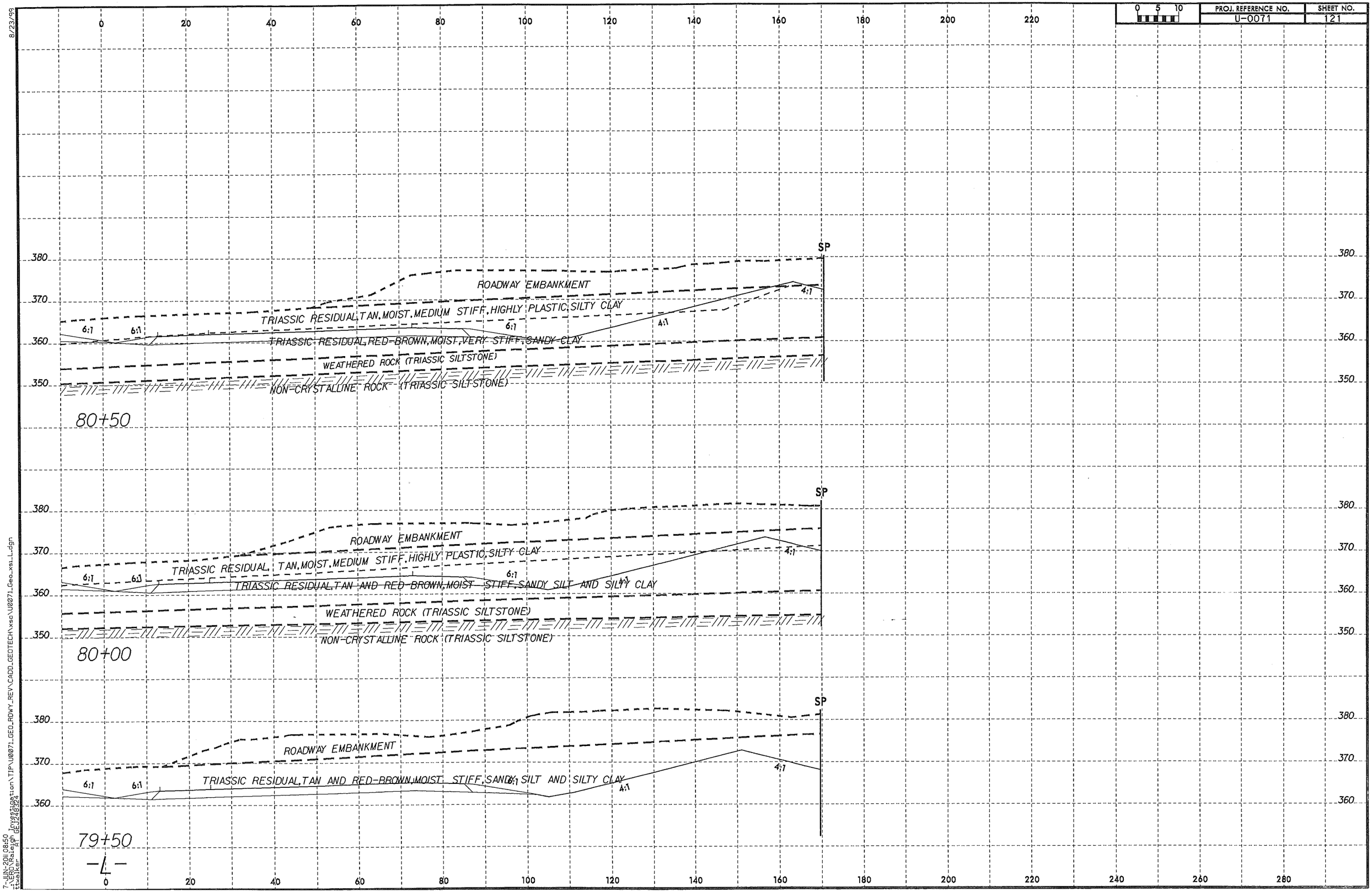

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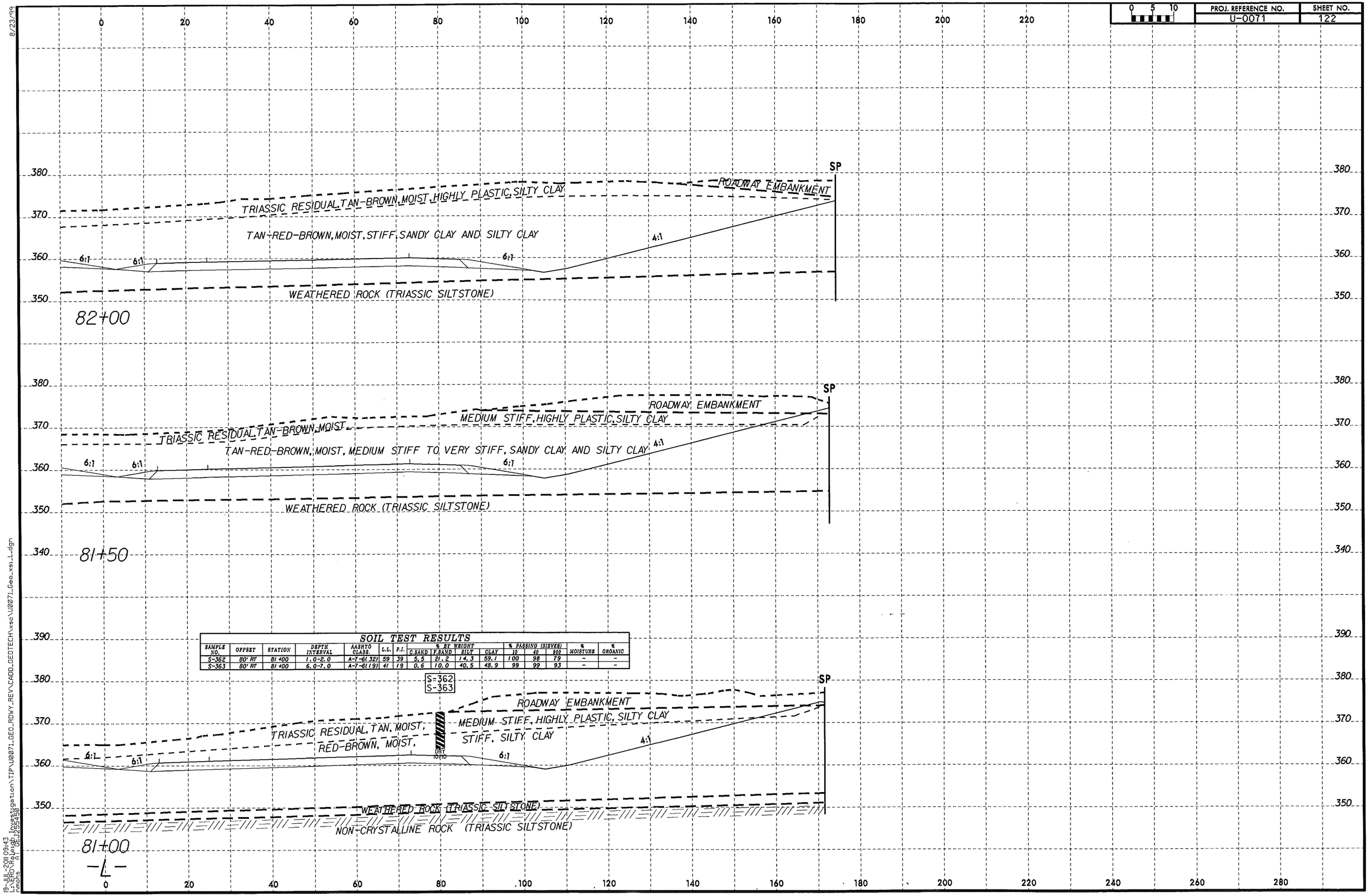
PROJ. REFERENCE NO. U-0071 | SHEET NO. 122



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-362	80' RT	81+00	1.0-2.0	A-7-6(32)	59	39	5.5	21.2	14.3	59.1	100	98	79	-	-
S-363	80' RT	81+00	6.0-7.0	A-7-6(19)	41	19	0.6	10.0	40.5	48.9	99	99	93	-	-

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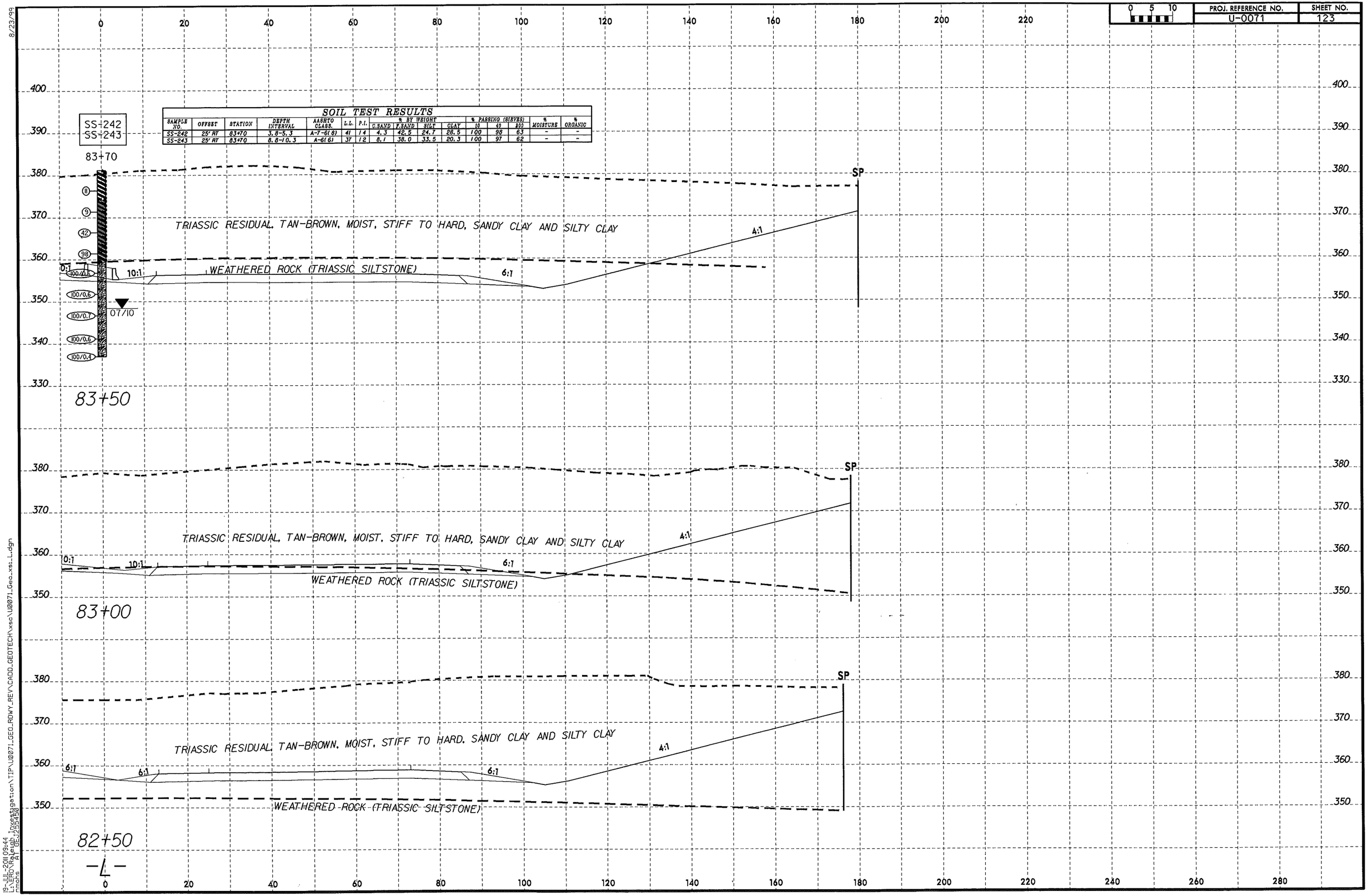
nmohs AT GEJ2554500

PROJ. REFERENCE NO.	SHEET NO.
U-0071	123



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-242	25' RT	83+70	3.8-5.3	A-7-6(8)	41	14	4.3	42.5	24.7	28.5	100	98	63	-	-
SS-243	25' RT	83+70	8.8-10.3	A-6(6)	37	12	8.1	38.0	33.5	20.3	100	97	62	-	-

8/23/99

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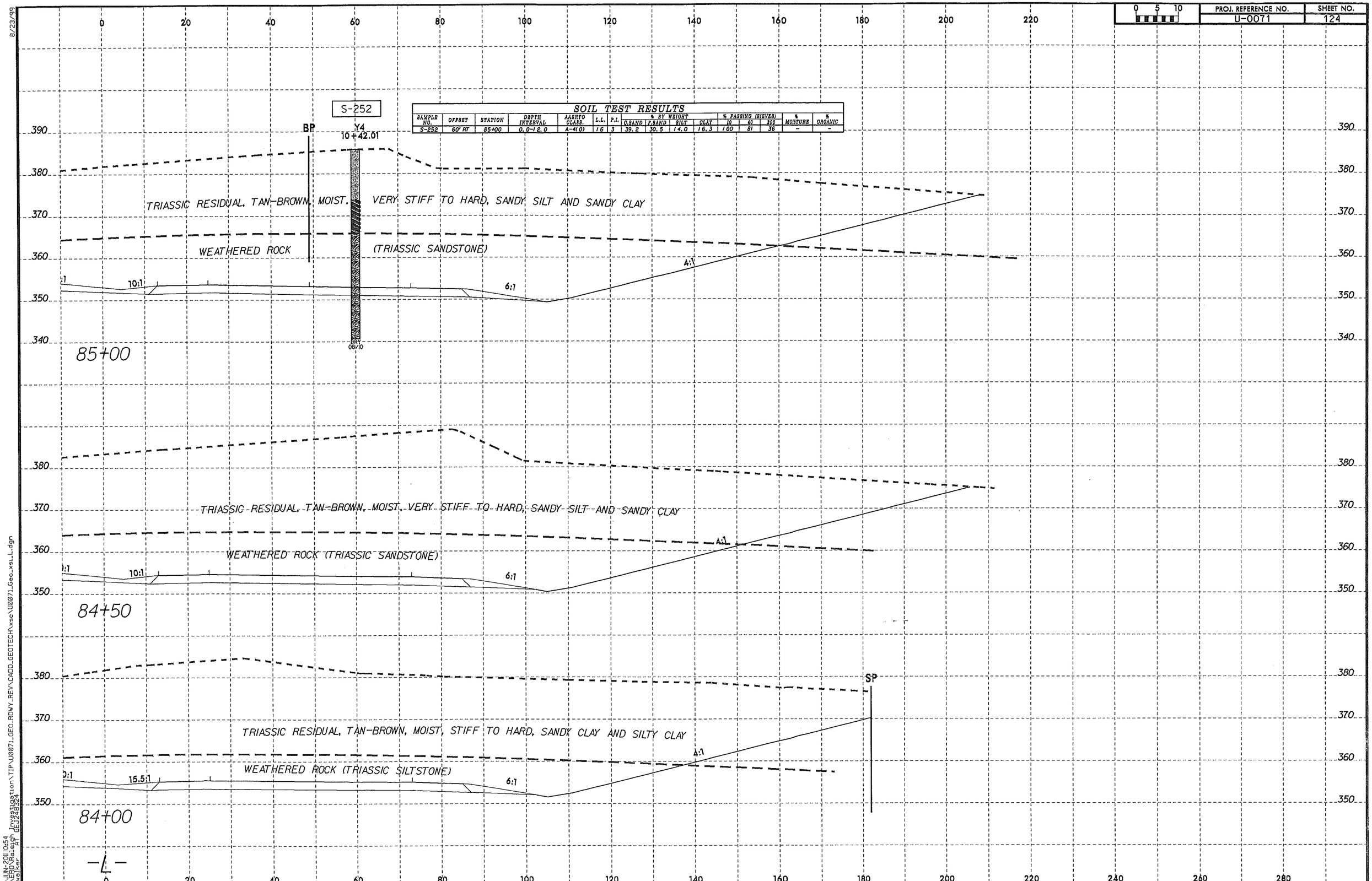
nmohs AT GEJ255450

PROJ. REFERENCE NO.	SHEET NO.
U-0071	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
S-252	60' RT	85+00	0.0-12.0	A-4(0)	16	3	39.2	30.5	14.0	16.3	100	81	36	-	-

8/23/99

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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-0071	125

0 20 40 60 80 100 120 140 160 180 200 220

380 370 360 350

BP Y4 11+91.15 SP

TRIASSIC RESIDUAL, TAN-BROWN, MOIST, STIFF TO HARD, SANDY SILT AND SANDY CLAY

WEATHERED ROCK (TRIASSIC SILTSTONE)

6:1 6:1 6:1 4:1 4:1

86+50

S-247
S-248

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-247	50' RT	86+00	0.0-16.0	A-6(6)	39	20	36.2	19.9	13.4	30.5	100	78	48	--	--
S-248	50' RT	86+00	16.0-21.0	A-4(0)	24	6	7.3	91.6	18.7	22.4	100	99	48	--	--

BP Y4 11+41.60

TRIASSIC RESIDUAL, TAN-BROWN, MOIST, STIFF TO HARD, SANDY SILT AND SANDY CLAY

WEATHERED ROCK (TRIASSIC SILTSTONE)

6:1 6:1 6:1 4:1

08/10

NON-CRYSTALLINE ROCK (TRIASSIC SILTSTONE)

86+00

BP Y4 10+91.87

TRIASSIC RESIDUAL, TAN-BROWN, MOIST, STIFF TO HARD, SANDY SILT AND SANDY CLAY

WEATHERED ROCK (TRIASSIC SILTSTONE)

6:1 6:1 6:1 4:1

85+50

-L-

0 20 40 60 80 100 120 140 160 180 200 220 240 260 280

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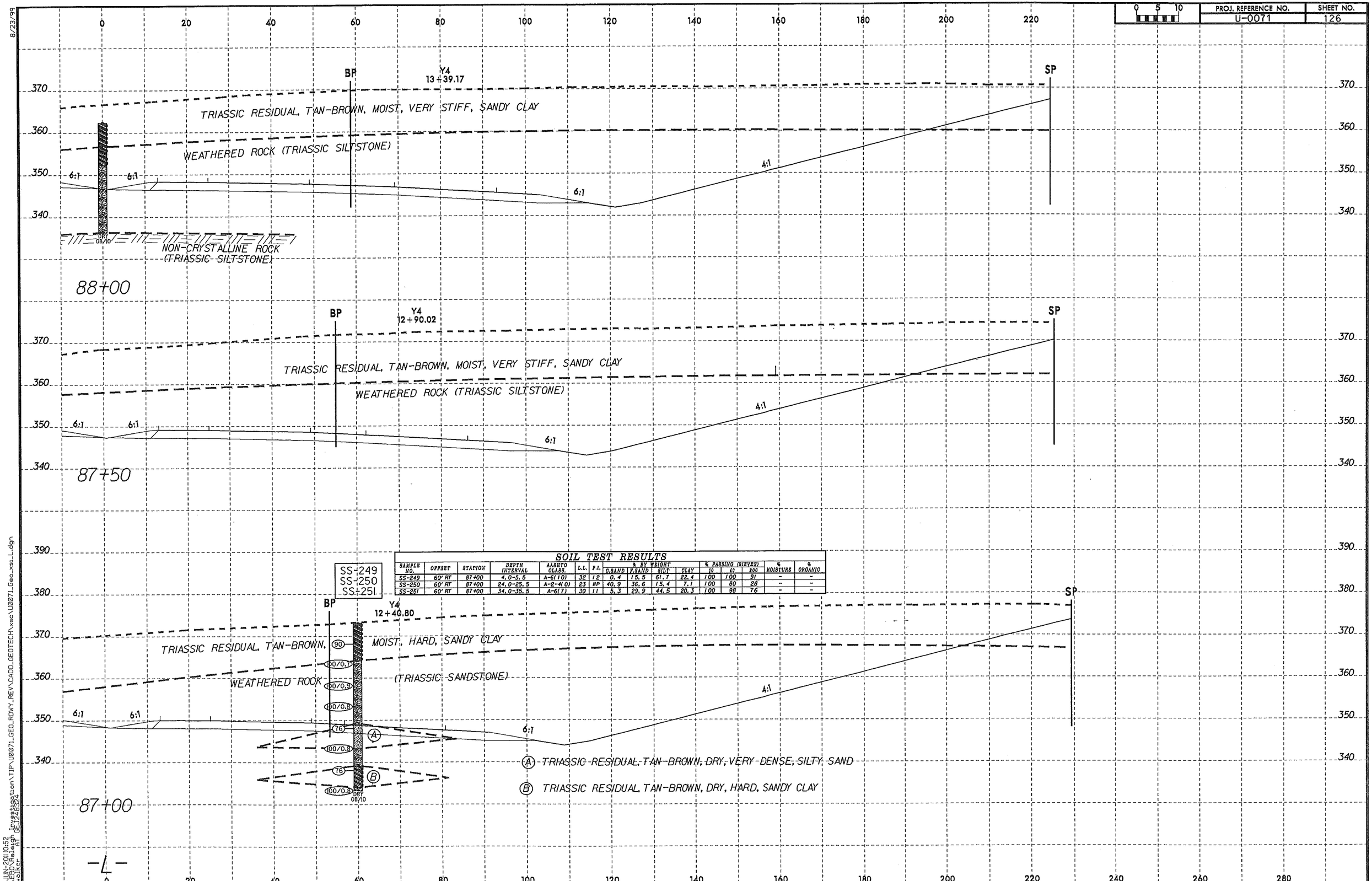
PROJ. REFERENCE NO. U-0071 | SHEET NO. 126



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-249	60' RT	87+00	4.0-5.5	A-6(10)	32	12	0.4	15.5	61.7	22.4	100	100	91	-	-
SS-250	60' RT	87+00	24.0-25.5	A-2-4(0)	23	NP	40.9	36.6	15.4	7.1	100	80	28	-	-
SS-251	60' RT	87+00	34.0-35.5	A-6(7)	30	11	5.3	29.9	44.5	20.3	100	98	76	-	-

8/23/99

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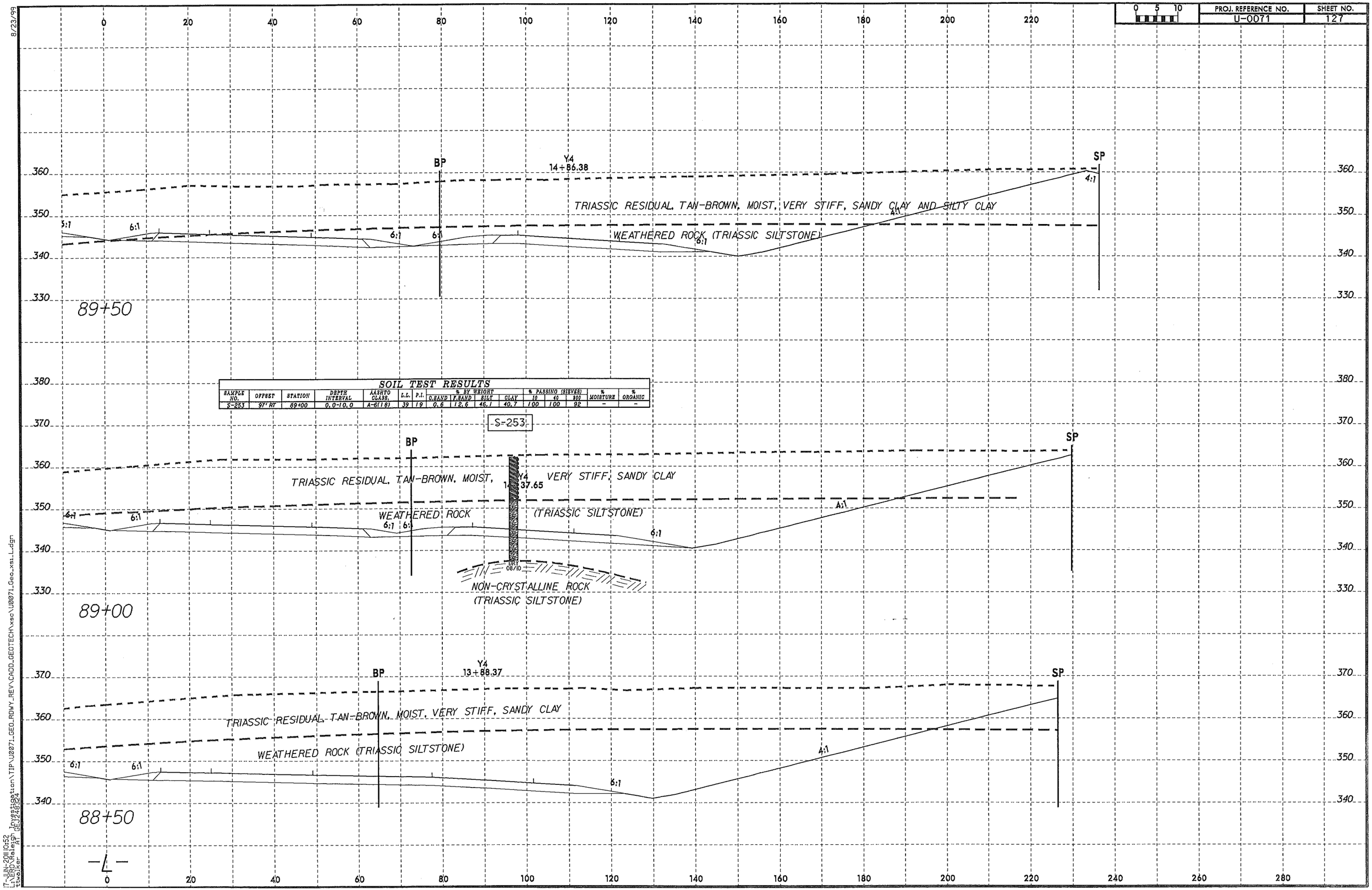

SOIL TEST RESULTS

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-253	97' RT	89+00	0.0-10.0	A-6(18)	39	19	0.6	12.6	46.1	40.7	100	100	92	-	-

8/23/99

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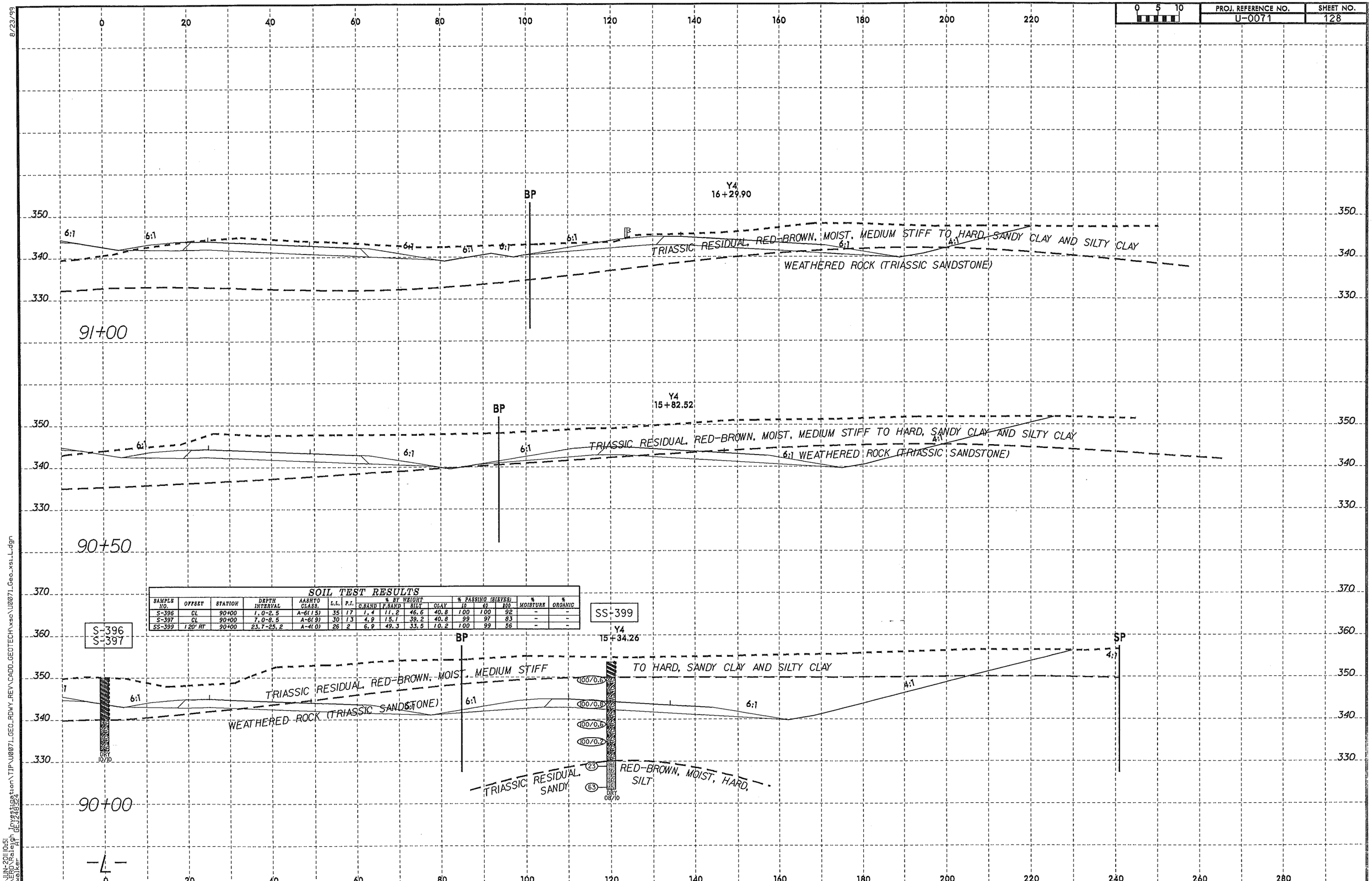
PROJ. REFERENCE NO.	SHEET NO.
U-0071	128



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-396	CL	90+00	1.0-2.5	A-6(15)	35	17	1.4	11.2	46.6	40.8	100	100	92	-	-
S-397	CL	90+00	7.0-8.5	A-6(9)	30	13	4.9	15.1	39.2	40.8	99	97	83	-	-
SS-399	120' RT	90+00	23.7-25.2	A-4(0)	26	2	6.9	49.3	33.5	10.2	100	99	56	-	-

8/23/99

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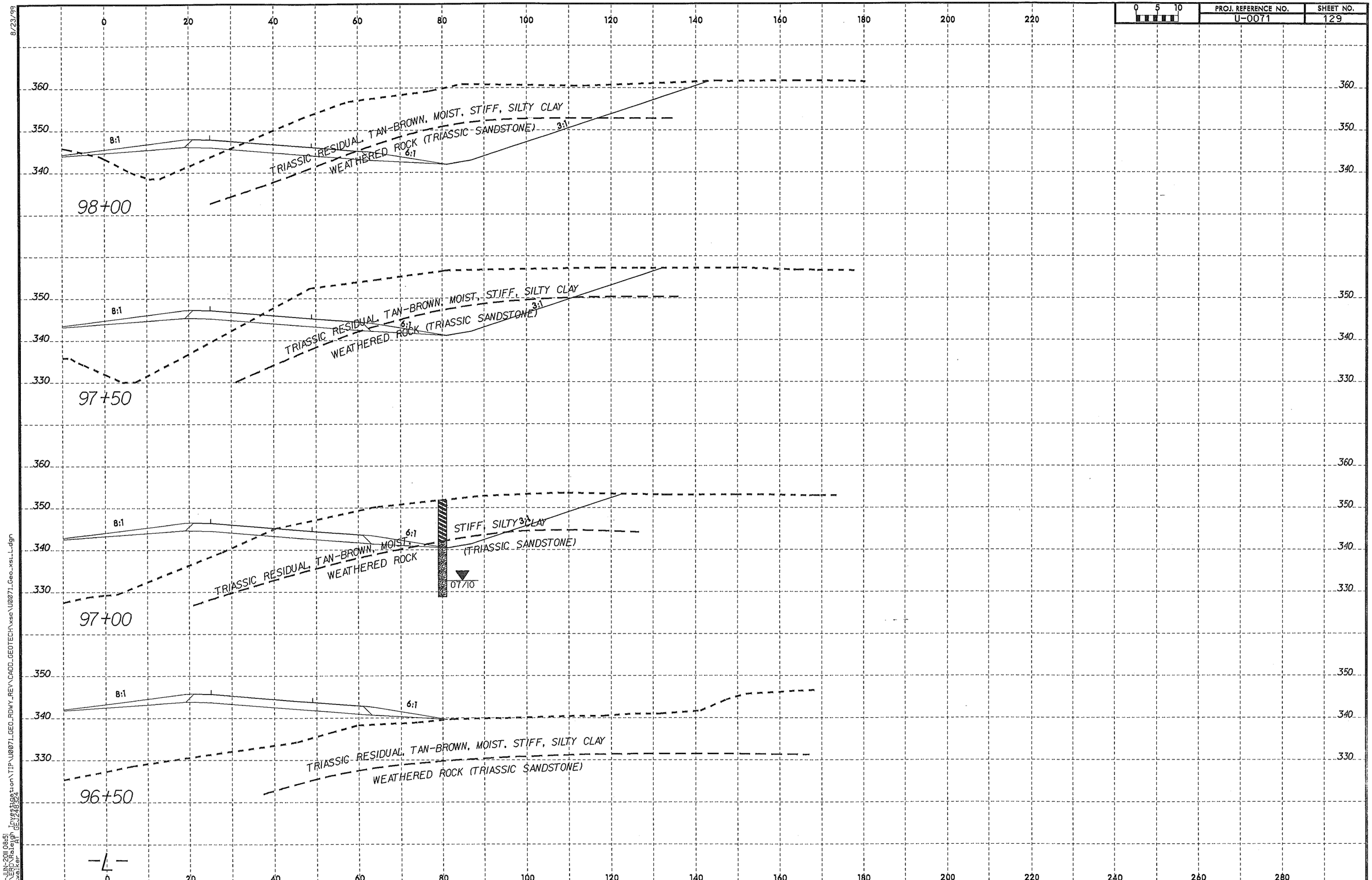

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PROJ. REFERENCE NO.	SHEET NO.
U-0071	130

0 5 10

0 20 40 60 80 100 120 140 160 180 200 220

370 360 350 340 380 370 360 350 340 330

TRIASSIC RESIDUAL, TAN-BROWN, DRY, STIFF, SANDY CLAY

WEATHERED ROCK (TRIASSIC SANDSTONE)

8:1 6:1 3:1

99+50

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-223	80' RT	99+00	3.8-5.3	A-7-6(8)	42	22	27.6	23.5	14.0	34.8	100	94	62	-	-

SS-223

13 100/0.3 100/0.5 100/0.5 100/0.2 100/0.3

STIFF, SANDY CLAY (TRIASSIC SANDSTONE)

07/10

TRIASSIC RESIDUAL, TAN-BROWN, MOIST, WEATHERED ROCK

8:1 6:1 3:1

99+00

TRIASSIC RESIDUAL, TAN-BROWN, MOIST, STIFF, SANDY CLAY

WEATHERED ROCK (TRIASSIC SANDSTONE)

8:1 6:1 3:1

98+50

-L-

0 20 40 60 80 100 120 140 160 180 200 220 240 260 280

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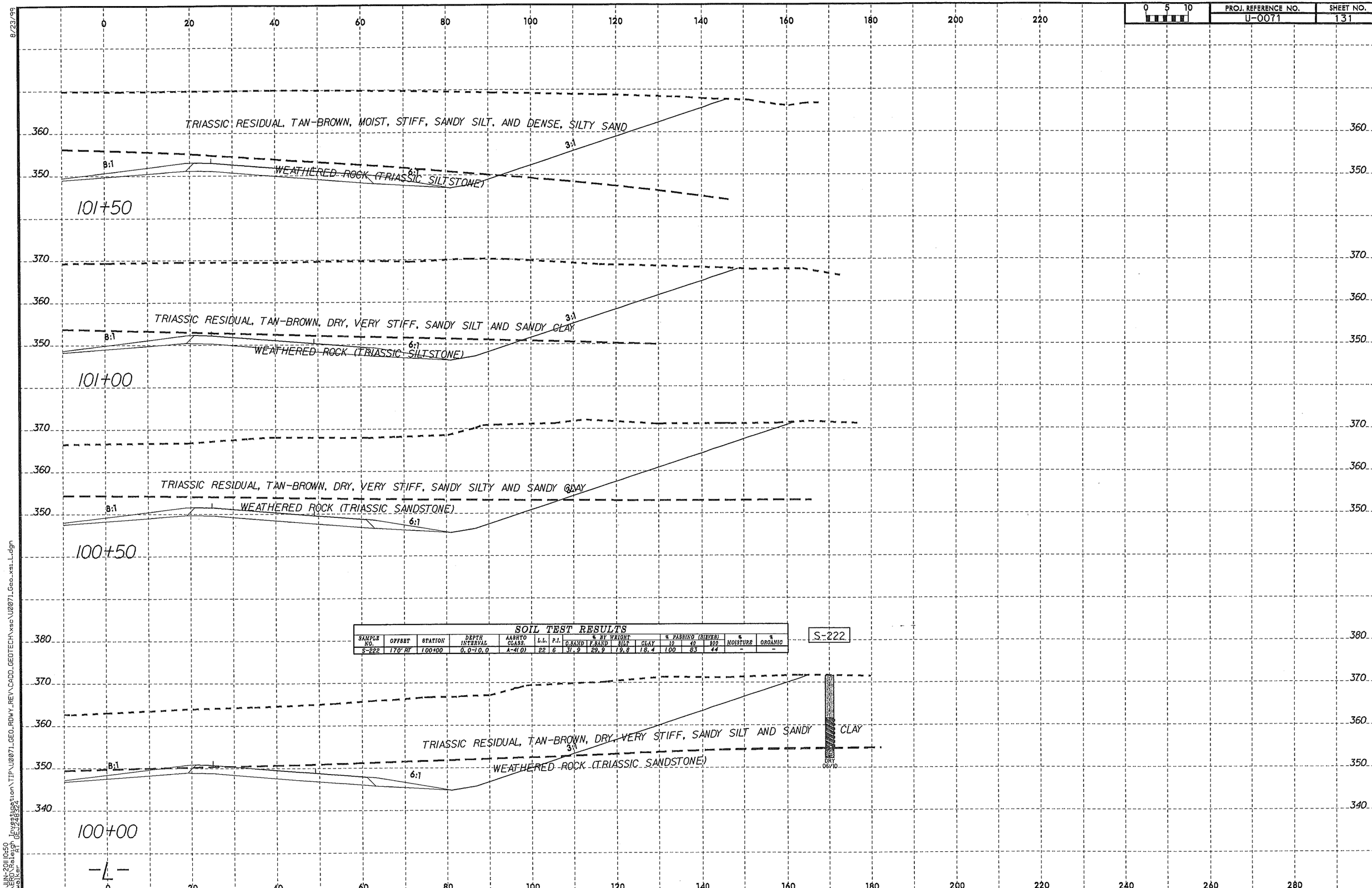
tlwalker AT GEU248224



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT O.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	100	% MOISTURE	% ORGANIC
S-222	170' RT	100+00	0.0-10.0	A-4(0)	22	6	31.9	29.9	19.8	18.4	100	83	44	-	-

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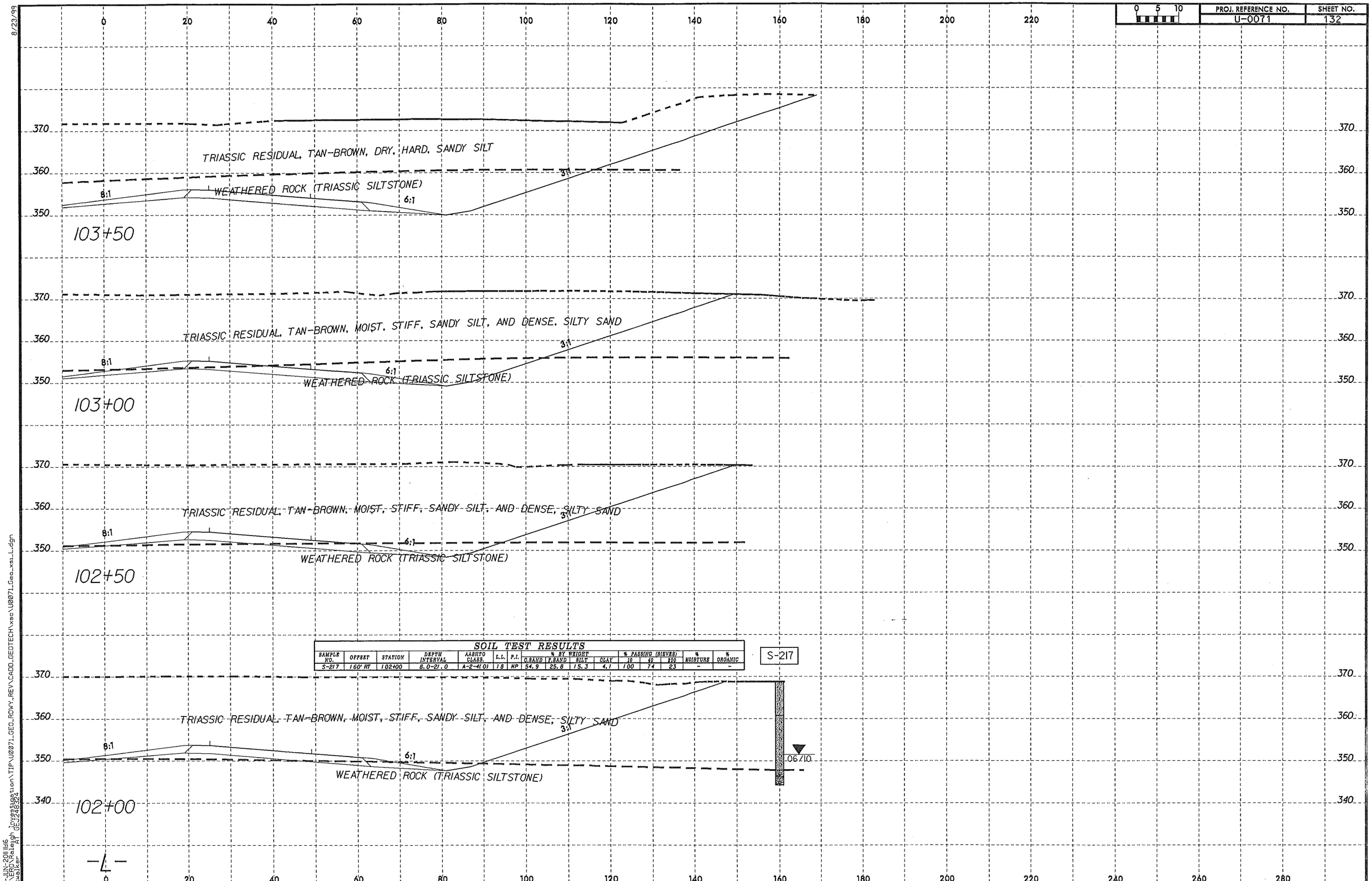
PROJ. REFERENCE NO. U-0071 | SHEET NO. 132



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-217	160' RT	102+00	8.0-21.0	A-2-4(0)	18	NP	54.9	25.8	15.3	4.1	100	74	23	-	-

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8/23/99

PROJ. REFERENCE NO.	SHEET NO.
U-0071	133

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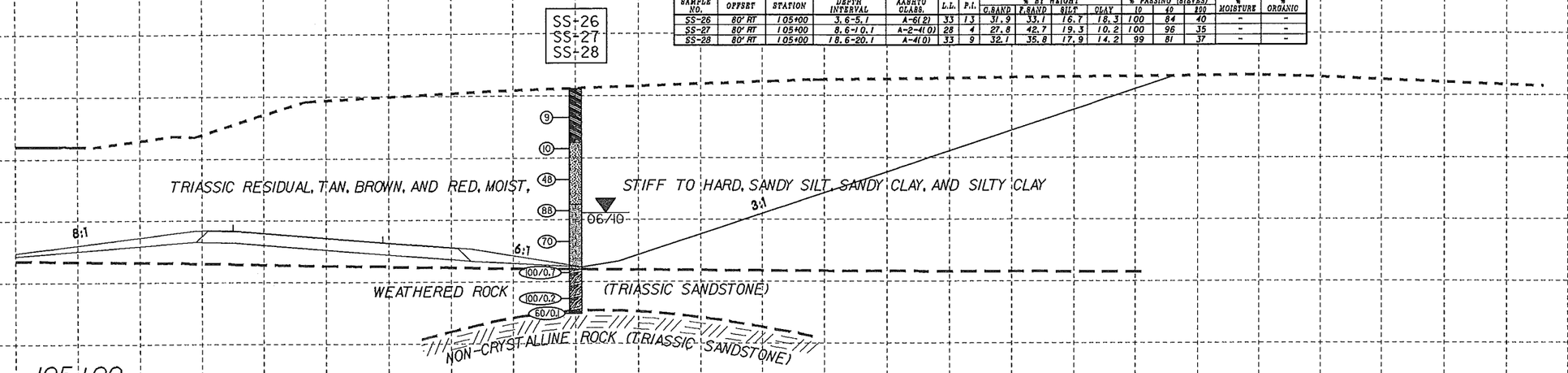
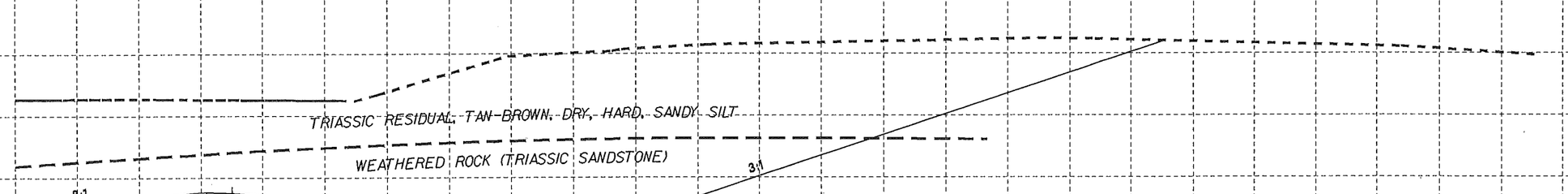
SOIL TEST RESULTS

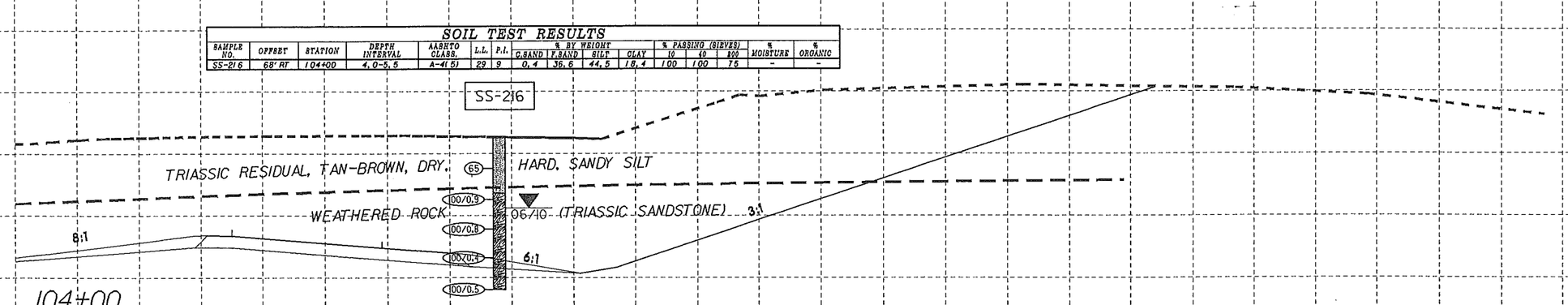
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT G.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-26	80' RT	105+00	3.6-5.1	A-6(2)	33	13	31.9	33.1	16.7	18.3	100	84	40	-	-
SS-27	80' RT	105+00	8.6-10.1	A-2-4(0)	28	4	27.8	42.7	19.3	10.2	100	96	35	-	-
SS-28	80' RT	105+00	18.6-20.1	A-4(0)	33	9	32.1	35.8	17.9	14.2	99	81	37	-	-





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-216	68' RT	104+00	4.0-5.5	A-4(5)	29	9	0.4	36.6	44.5	18.4	100	100	76	-	-



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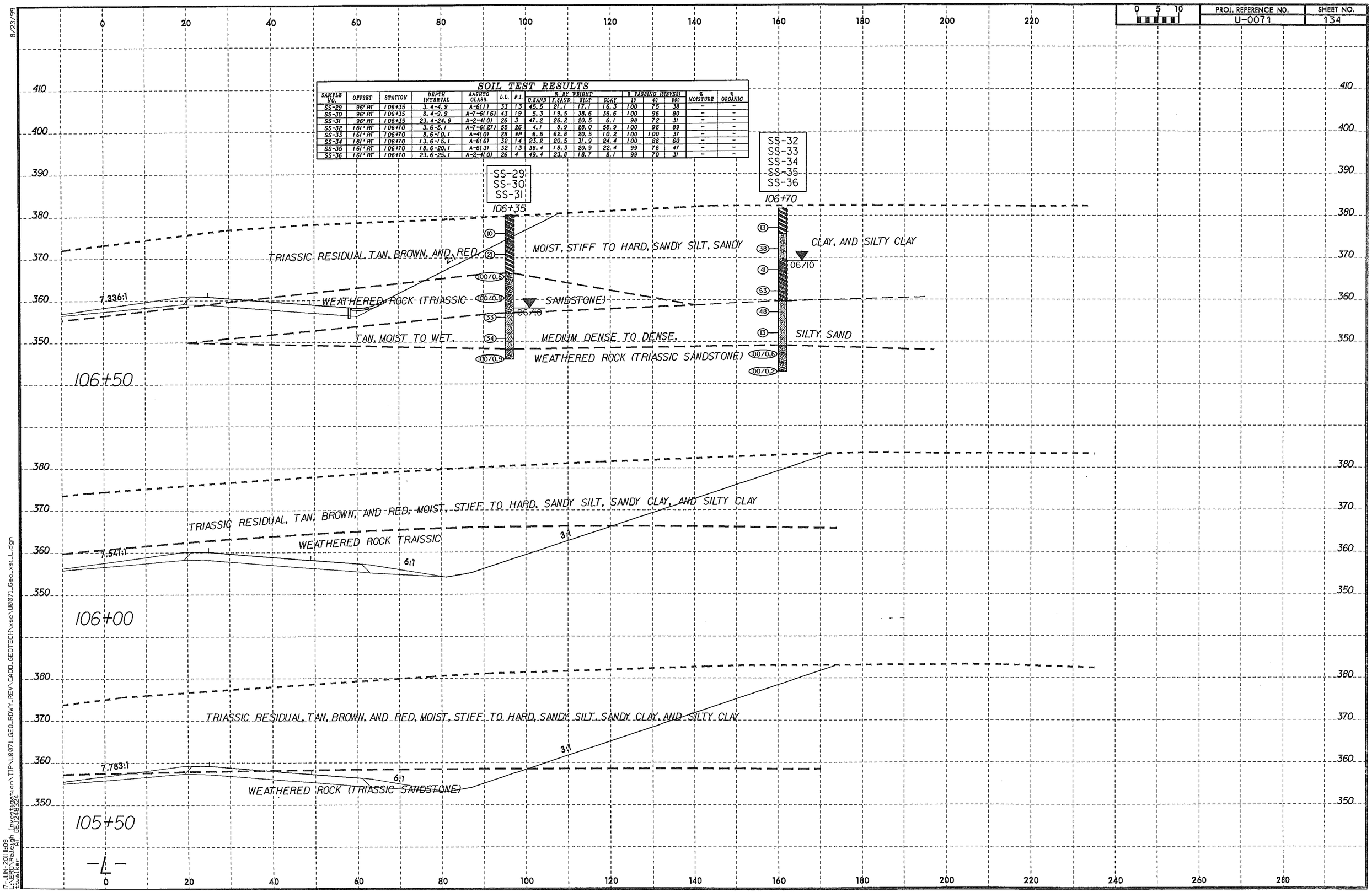
PROJ. REFERENCE NO.	SHEET NO.
U-0071	134

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	96' RT	106+35	3.4-4.9	A-6(11)	33	13	45.5	21.1	17.1	16.3	100	75	38	-	-
SS-30	96' RT	106+35	8.4-9.9	A-7-6(16)	43	19	5.3	19.5	38.6	36.6	100	96	80	-	-
SS-31	96' RT	106+35	23.4-24.9	A-2-4(0)	26	3	47.2	26.2	20.5	6.1	98	72	31	-	-
SS-32	161' RT	106+70	3.6-5.1	A-7-6(27)	55	26	4.1	8.9	28.0	58.9	100	98	89	-	-
SS-33	161' RT	106+70	8.6-10.1	A-4(0)	28	NP	6.5	62.8	20.5	10.2	100	100	37	-	-
SS-34	161' RT	106+70	13.6-15.1	A-6(6)	32	14	23.2	20.5	31.9	24.4	100	88	60	-	-
SS-35	161' RT	106+70	18.6-20.1	A-6(3)	32	13	38.4	18.3	20.9	22.4	99	76	47	-	-
SS-36	161' RT	106+70	23.6-25.1	A-2-4(0)	26	4	49.4	23.8	18.7	8.1	99	70	31	-	-



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tiwalker
GEJ2483224

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-0071	135

0 20 40 60 80 100 120 140 160 180 200 220

370
360
350

6.897:1

5.82:1

3:1

TRIASSIC RESIDUAL, TAN, BROWN, AND RED, MOIST, STIFF TO HARD, SANDY SILT, SANDY CLAY, AND SILTY CLAY

WEATHERED ROCK (TRIASSIC SANDSTONE)

108+00

370
360
350

7.018:1

5:1

3:1

TRIASSIC RESIDUAL, TAN, BROWN, AND RED, MOIST, STIFF TO HARD, SANDY SILT, SANDY CLAY, AND SILTY CLAY

WEATHERED ROCK (TRIASSIC SANDSTONE)

107+50

380
370
360
350

7.163:1

2:1

TRIASSIC RESIDUAL, TAN, BROWN, AND RED, MOIST, STIFF TO HARD, SANDY SILT, SANDY CLAY, AND SILTY CLAY

WEATHERED ROCK (TRIASSIC SANDSTONE)

107+00

0 20 40 60 80 100 120 140 160 180 200 220 240 260 280

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ttwalker AT GEJ248324

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
U-0071	136

0 5 10

0 20 40 60 80 100 120 140 160 180 200 220

380
370

TRIASSIC RESIDUAL, RED, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY

6:1

6:1

TAN AND GRAY, MOIST, STIFF, SANDY SILT AND SANDY CLAY

114+50

380
370

6.979:1

6:1

TRIASSIC RESIDUAL, RED, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY

TAN AND GRAY, MOIST, STIFF, SANDY SILT AND SANDY CLAY

114+00

380
370

6.880:1

6:1

TRIASSIC RESIDUAL, TAN, MOIST, MEDIUM STIFF, SANDY SILT

113+50

390
380

S-20

6.776:1

6:1

TRIASSIC RESIDUAL, TAN, MOIST, MEDIUM STIFF, SANDY SILT

DRY
06/10

370
360

113+00

0 20 40 60 80 100 120 140 160 180 200 220 240 260 280

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-20	CL	113+00	0.5-3.0	A-4(0)	29	7	19.3	47.0	21.5	12.2	100	98	38	-	-

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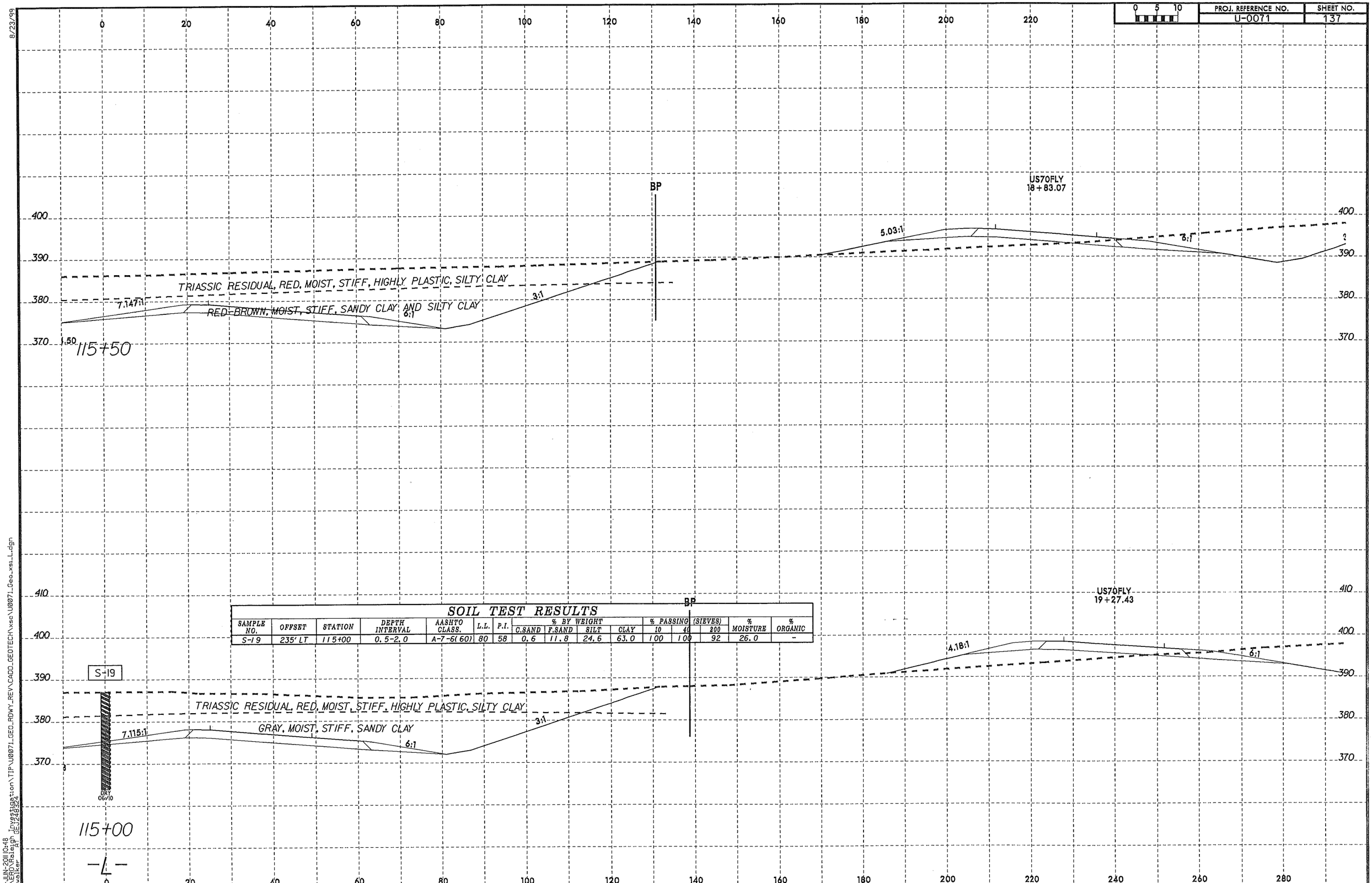
ttwalker
AT GE1248324

PROJ. REFERENCE NO.	SHEET NO.
U-0071	137



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-19	235' LT	115+00	0.5-2.0	A-7-6(60)	80	58	0.6	11.8	24.6	63.0	100	100	92	26.0	-

8/23/99

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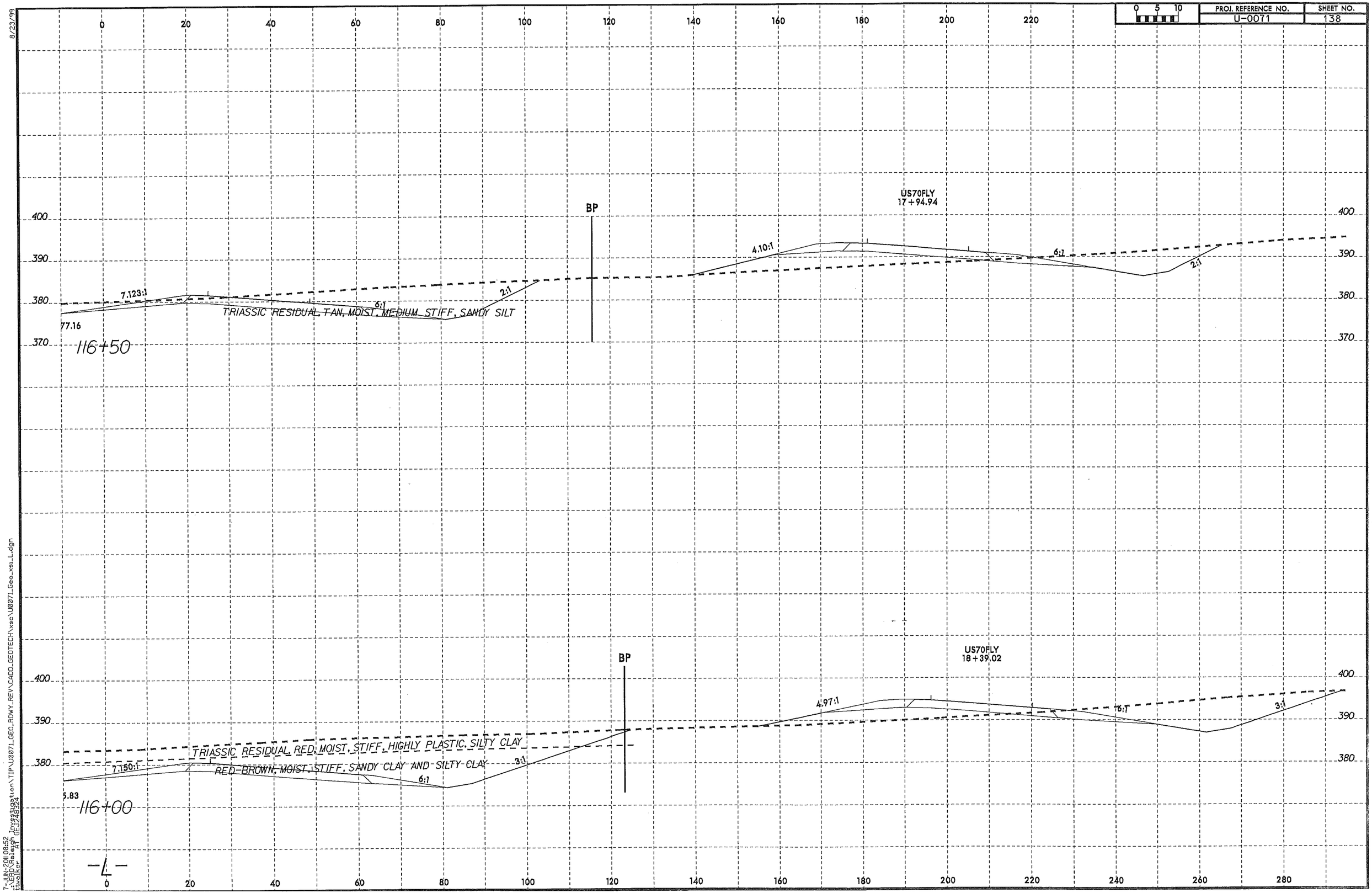
ttwalker AT GEJ248324



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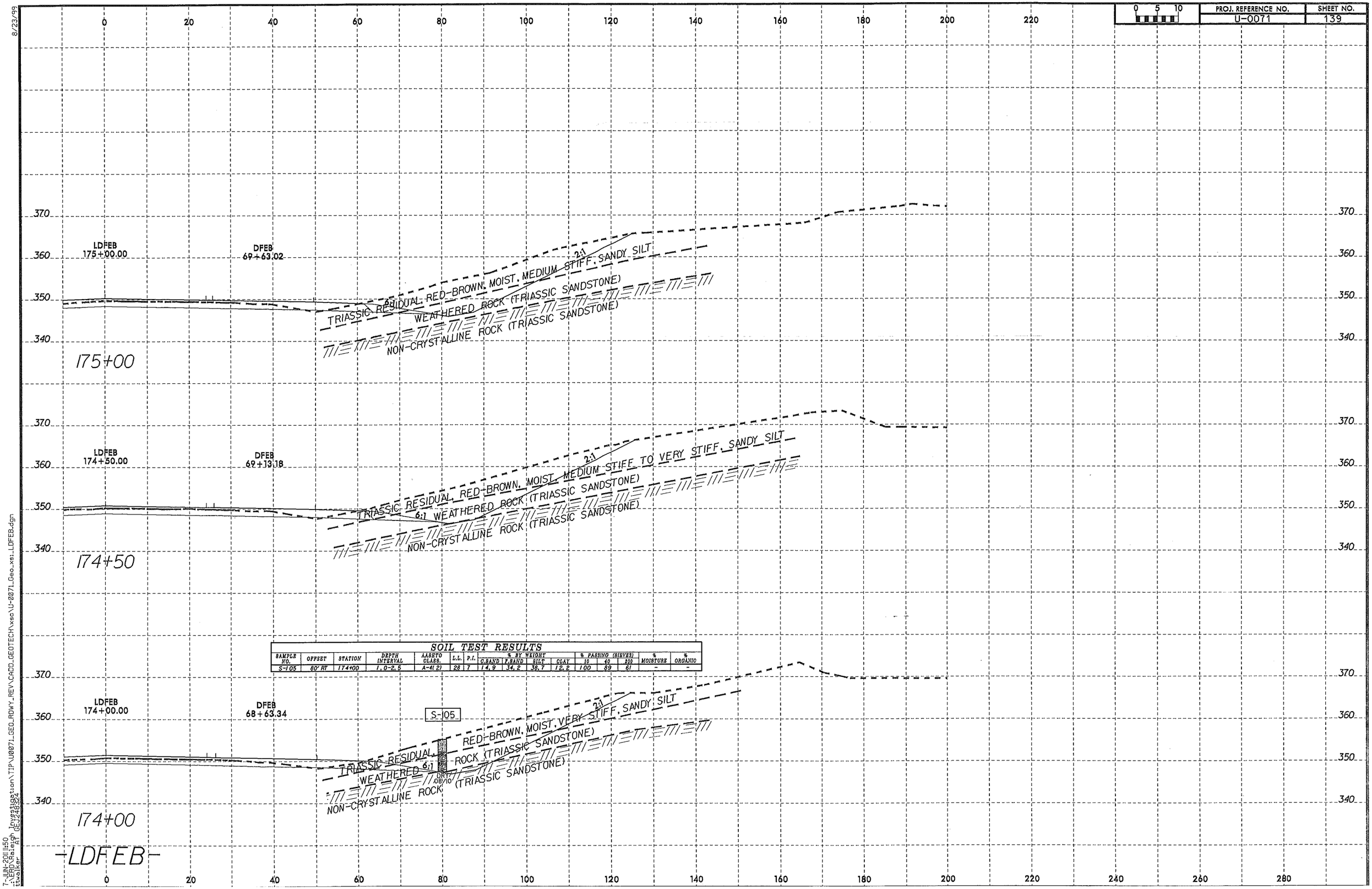

SOIL TEST RESULTS

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-105	80' RT	174+00	1.0-2.5	A-4(2)	28	7	14.9	34.2	38.7	12.2	100	89	61	-	-

8/23/99

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ttwalker AT GEJ248324

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
U-0071	140

0 5 10

0 20 40 60 80 100 120 140 160 180 200 220

LDFEB
176+50.00

DFEB
71+12.55

360
350
340

TRIASSIC RESIDUAL, RED-BROWN, MOIST, MEDIUM STIFF, SANDY SILT
6:1
2:1
WEATHERED ROCK (TRIASSIC SANDSTONE)
NON-CRYSTALLINE (TRIASSIC SANDSTONE)

176+50

LDFEB
176+00.00

DFEB
70+62.71

370
360
350
340

TRIASSIC RESIDUAL, RED-BROWN, MOIST, MEDIUM STIFF, SANDY SILT
6:1
2:1
WEATHERED ROCK (TRIASSIC SANDSTONE)
NON-CRYSTALLINE ROCK (TRIASSIC SANDSTONE)

176+00

LDFEB
175+50.00

DFEB
70+12.86

370
360
350
340

TRIASSIC RESIDUAL, RED-BROWN, MOIST, MEDIUM STIFF, SANDY SILT
6:1
2:1
WEATHERED ROCK (TRIASSIC SANDSTONE)
NON-CRYSTALLINE ROCK (TRIASSIC SANDSTONE)

175+50

-LDFEB-

0 20 40 60 80 100 120 140 160 180 200 220 240 260 280

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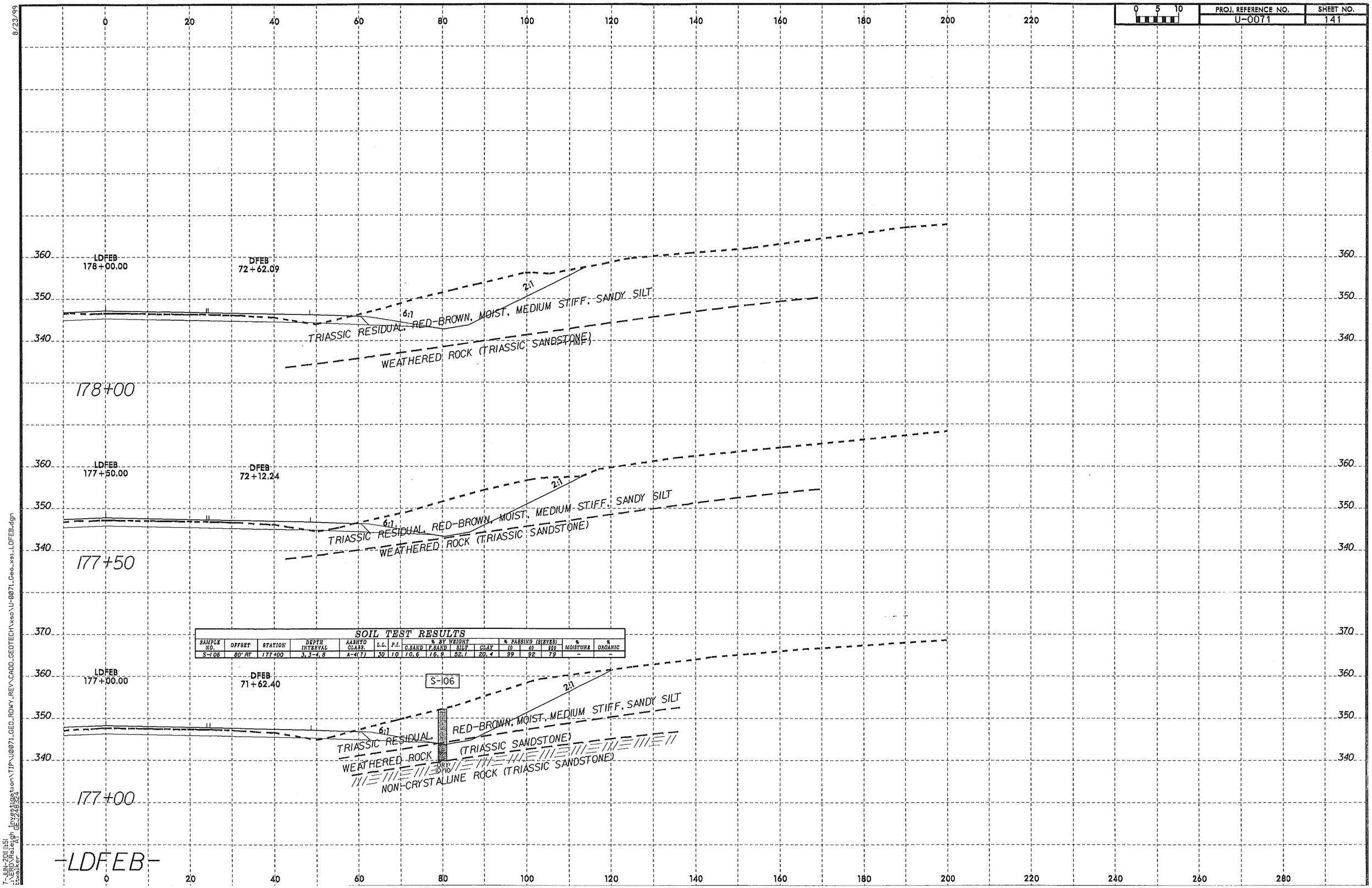
tbaker
AT GEO248324

PROJ. REFERENCE NO. U-0071 | SHEET NO. 141



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-106	80' RT	177+00	3.3-4.8	A-4(7)	30	10	10.6	16.9	52.1	20.4	99	92	79	-	-

8/23/99

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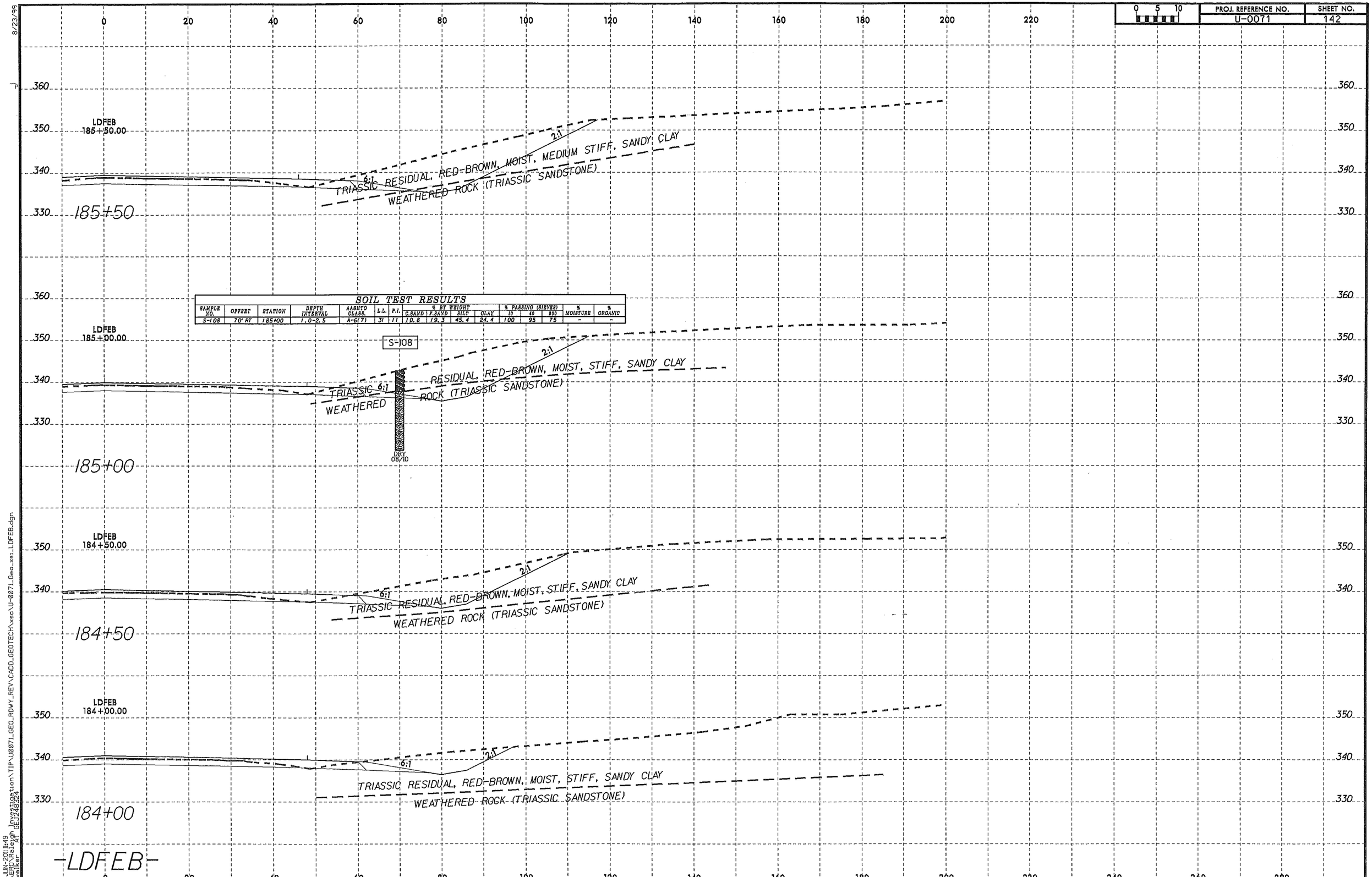
ttwalker AT GEJ248324

PROJ. REFERENCE NO.	SHEET NO.
U-0071	142



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-108	70' RT	185+00	1.0-2.5	A-6(7)	31	11	10.8	19.3	45.4	24.4	100	95	75	-	-

8/23/99

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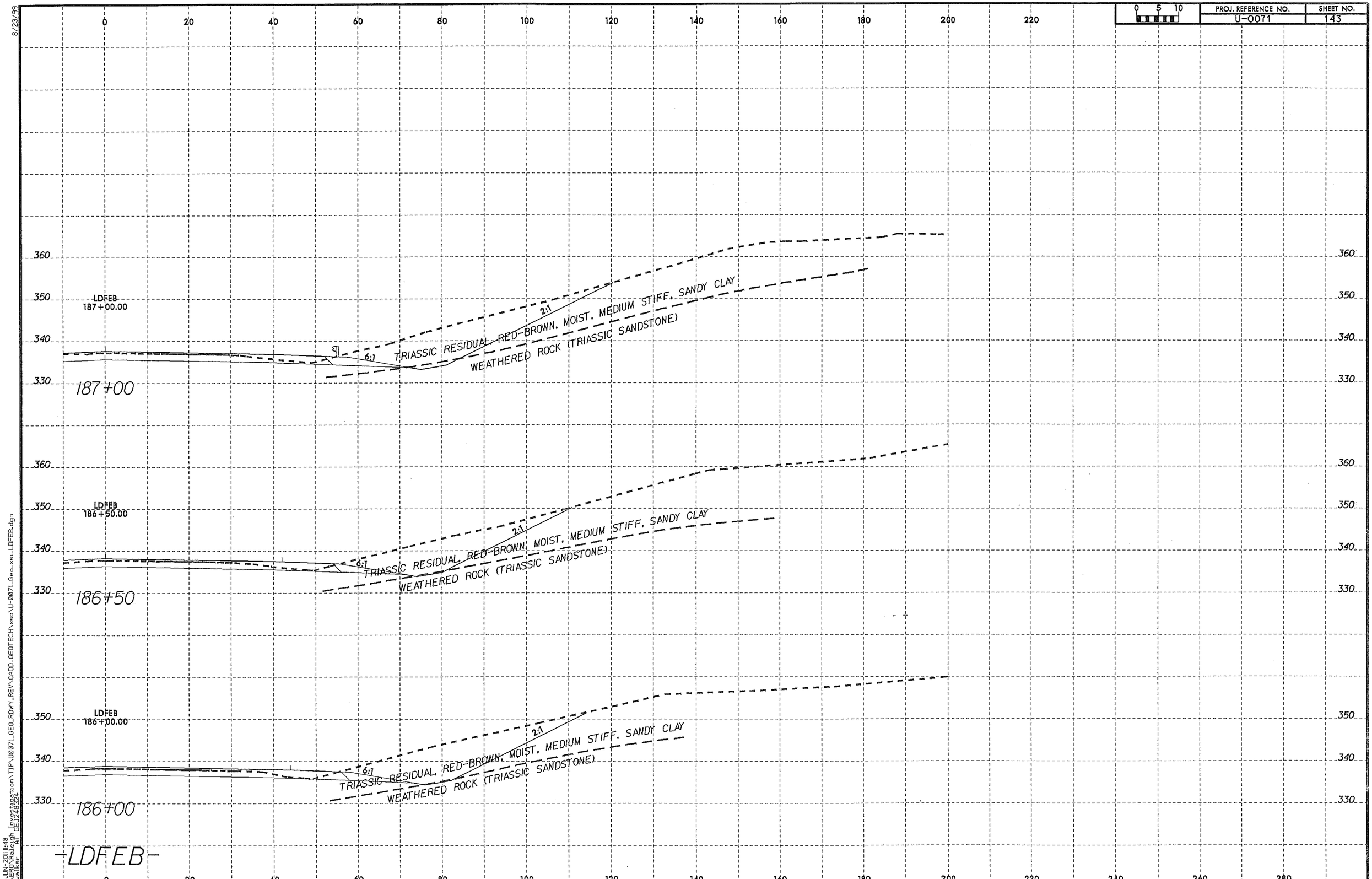

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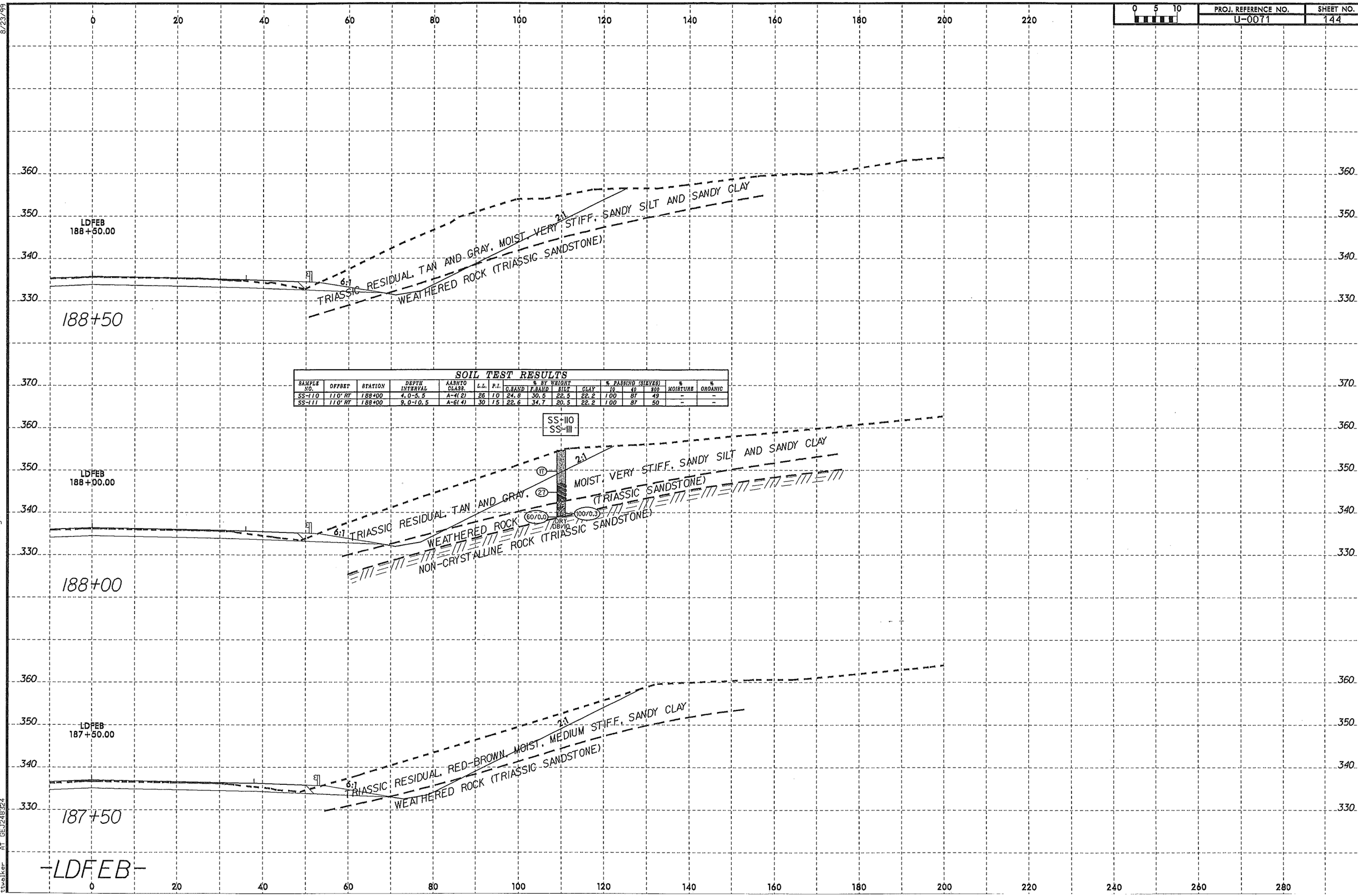
PROJ. REFERENCE NO. U-0071 | SHEET NO. 144



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	110' RT	188+00	4.0-5.5	A-4(2)	26	10	24.8	30.5	22.5	22.2	100	87	49	-	-
SS-111	110' RT	188+00	9.0-10.5	A-6(4)	30	15	22.6	34.7	20.5	22.2	100	87	50	-	-

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ttwalker AT GEJ248324

8/23/99

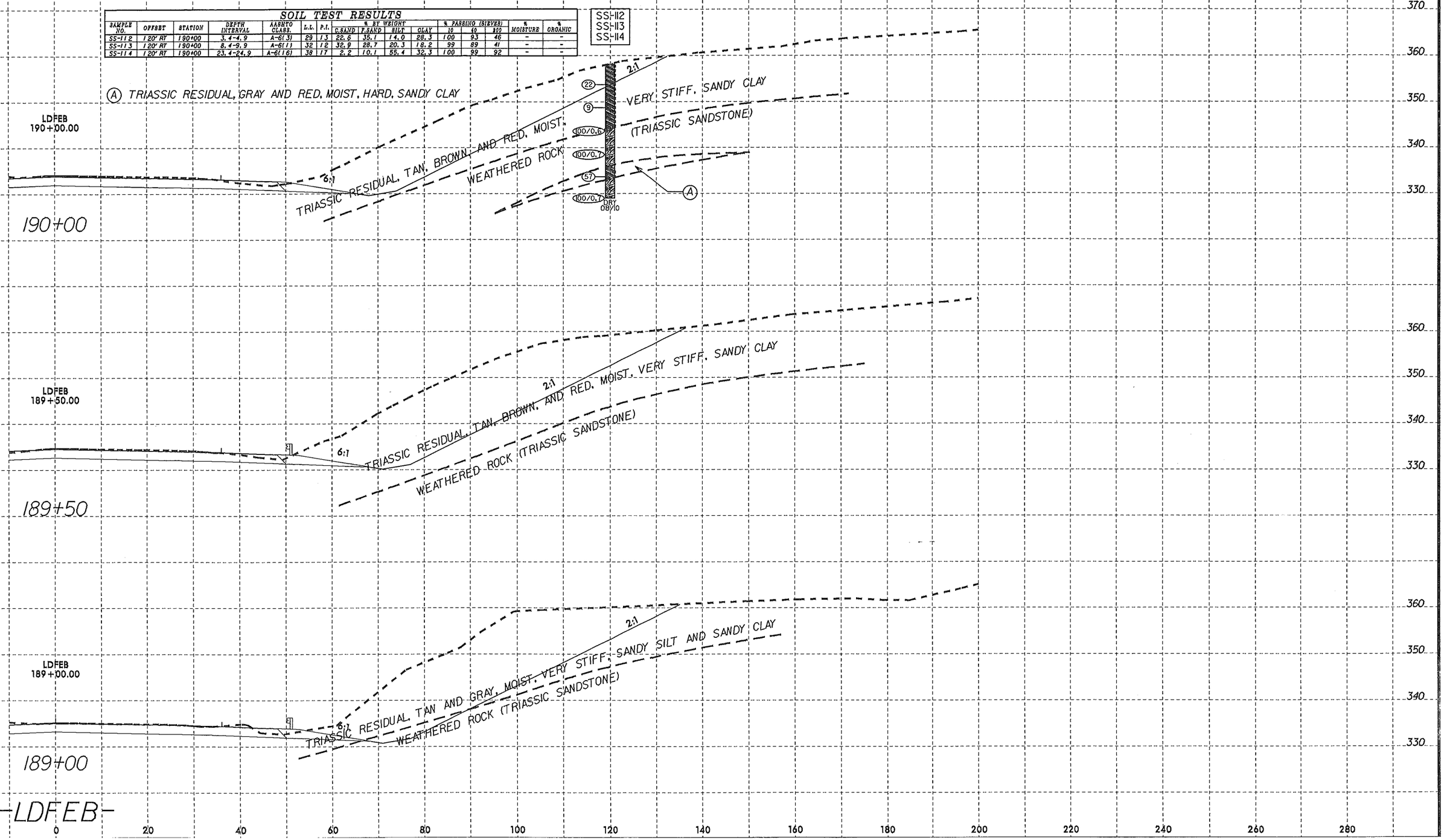
PROJ. REFERENCE NO.	SHEET NO.
U-0071	145

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-112	120' RT	190+00	3.4-4.9	A-6(3)	29	13	22.6	35.1	14.0	28.3	100	93	46	-	-
SS-113	120' RT	190+00	8.4-9.9	A-6(11)	32	12	32.9	28.7	20.3	18.2	99	89	41	-	-
SS-114	120' RT	190+00	23.4-24.9	A-6(16)	38	17	2.2	10.1	55.4	32.3	100	99	92	-	-

SS-112
SS-113
SS-114



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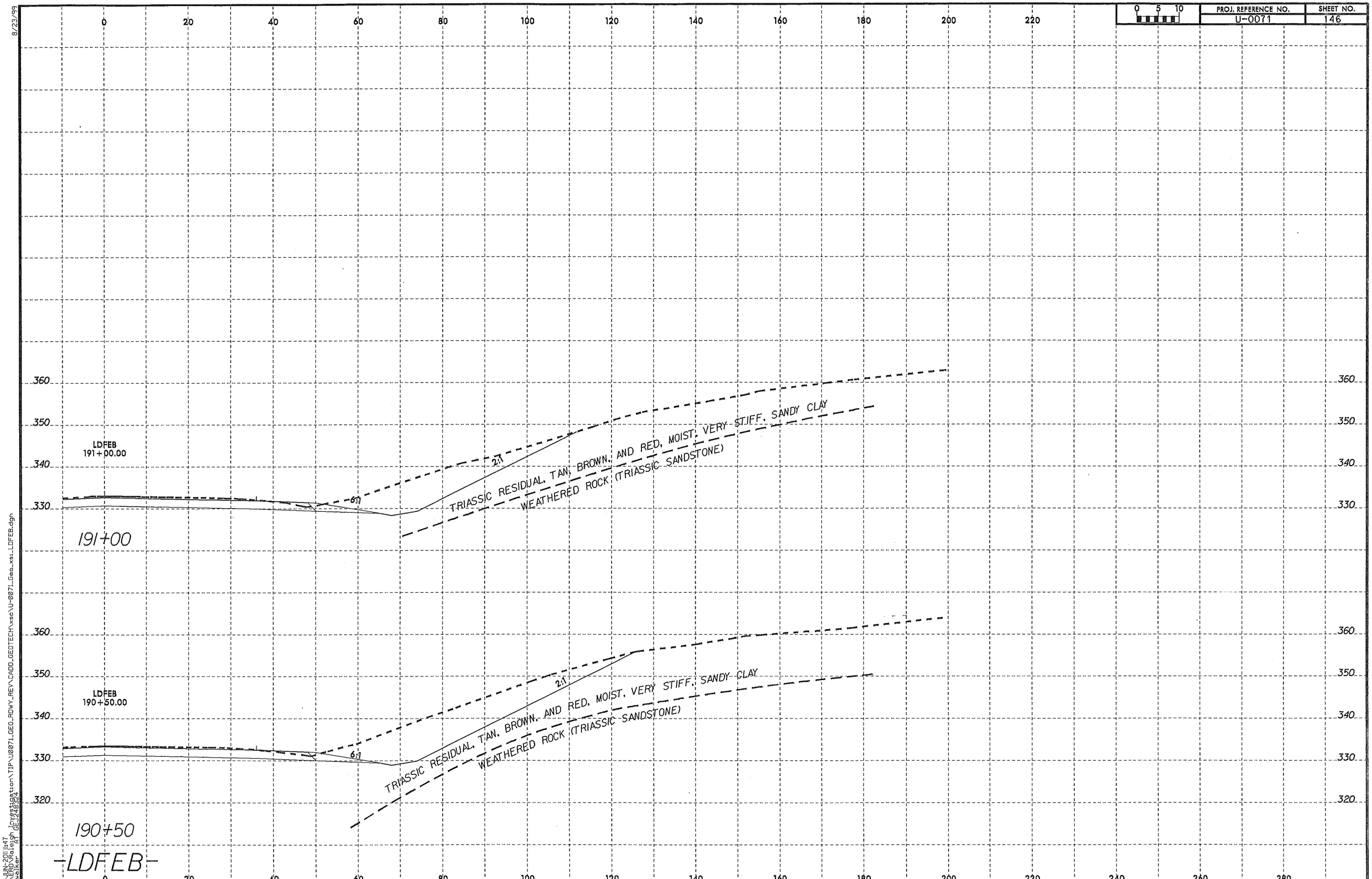

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ttwalker AT GEJ248324

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
U-0071	147

0 5 10

140 120 100 80 60 40 20 0 20 40 60 80

420 410 400

Ⓐ TRIASSIC RESIDUAL, RED-BROWN, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY

LDFWB
23+33.93

2:1

Ⓐ

TRIASSIC RESIDUAL, RED-BROWN, MOIST, HARD, SANDY SILT

6:1 6:1 4.20:1

23+33.93

SS-70
SS-71

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							G.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-70	60' LT	23+00	3.9-5.4	A-7-6(47)	73	45	1.6	14.7	24.3	59.3	100	99	91	-	-
SS-71	60' LT	23+00	8.9-10.4	A-4(3)	29	8	1.6	51.7	26.2	20.4	100	100	60	-	-

Ⓑ TRIASSIC RESIDUAL, RED-BROWN, MOIST, HARD, SANDY SILT

LDFWB
23+00.00

TRIASSIC RESIDUAL, RED-BROWN, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY

12

1:1

6:1

44

TRIASSIC RESIDUAL, RED-BROWN, MOIST, HARD, SANDY SILT

6:1 6:1

100/0.9

WEATHERED ROCK (TRIASSIC SANDSTONE)

69

100/0.2

DRY
07/10

Ⓑ

23+00

Ⓐ TRIASSIC RESIDUAL, RED-BROWN, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY

LDFWB
22+50.00

Ⓐ

TRIASSIC RESIDUAL, RED-BROWN, MOIST, HARD, SANDY SILT

6:1 6:1 6:1

22+50

Ⓐ TRIASSIC RESIDUAL, RED-BROWN, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY

LDFWB
22+00.00

Ⓐ

TRIASSIC RESIDUAL, RED-BROWN, MOIST, HARD, SANDY SILT

5.11:1 6:1

22+00

-LDFWB-

140 120 100 80 60 40 20 0 20 40 60 80 100 120 140

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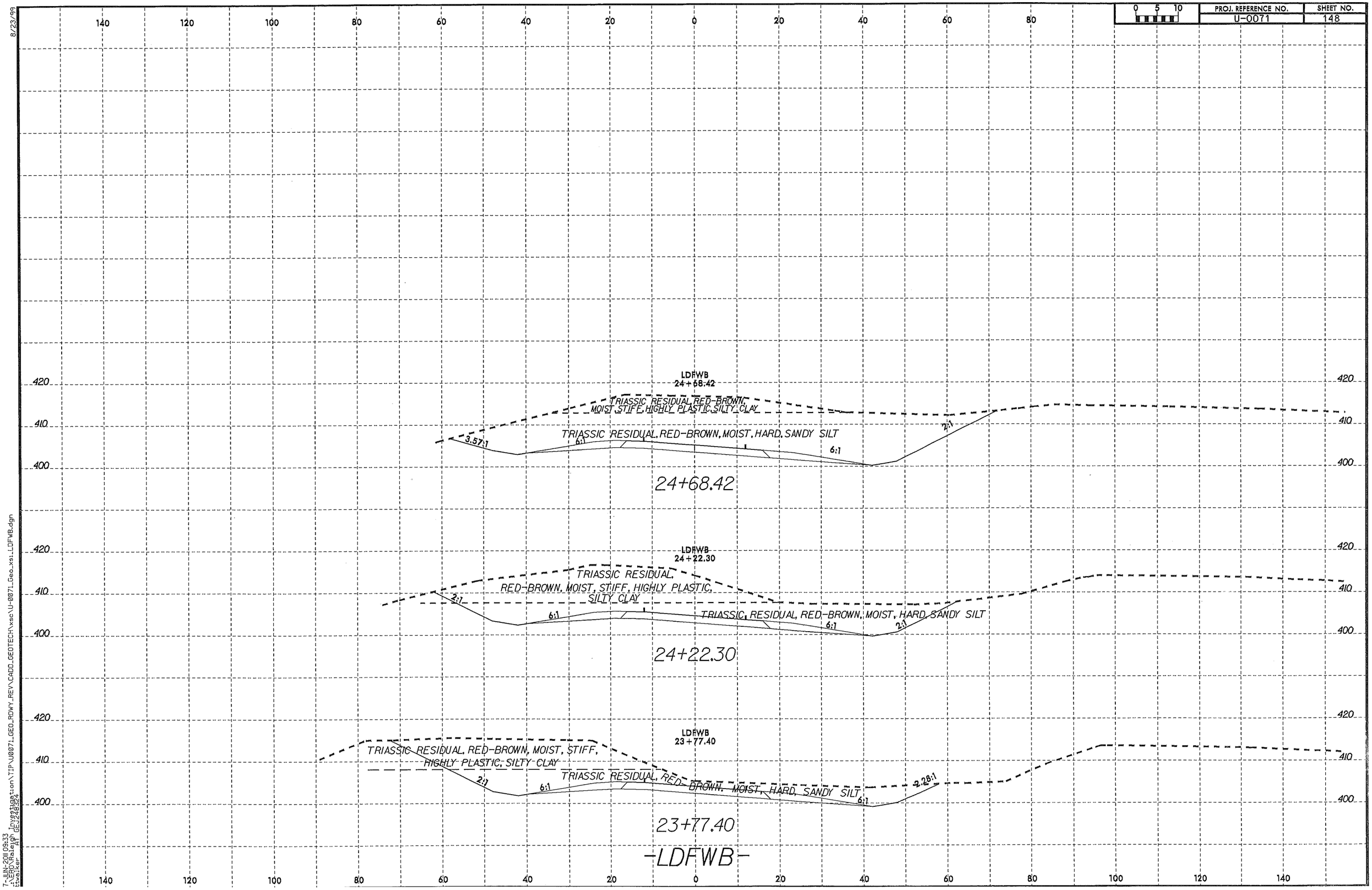

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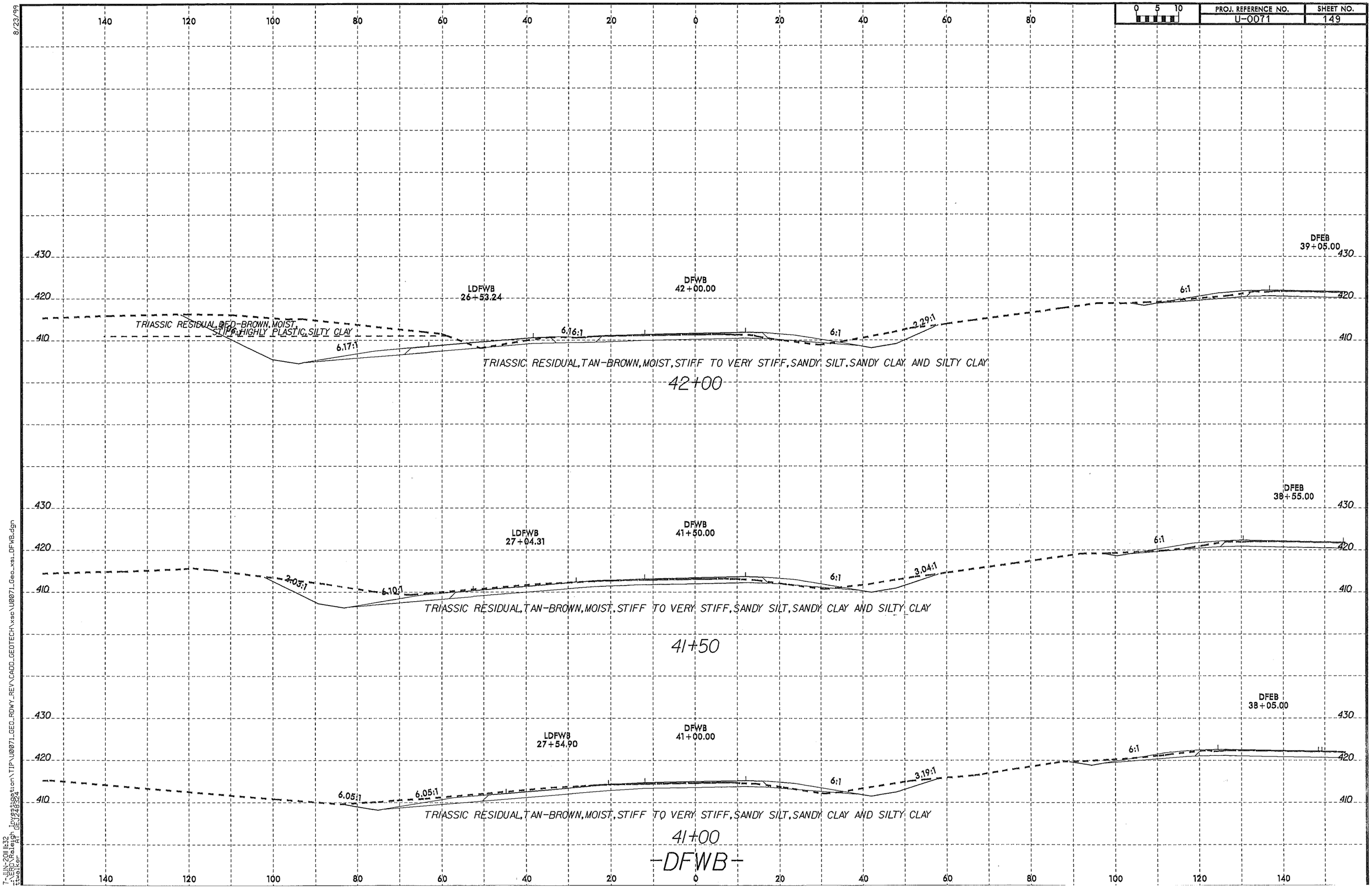

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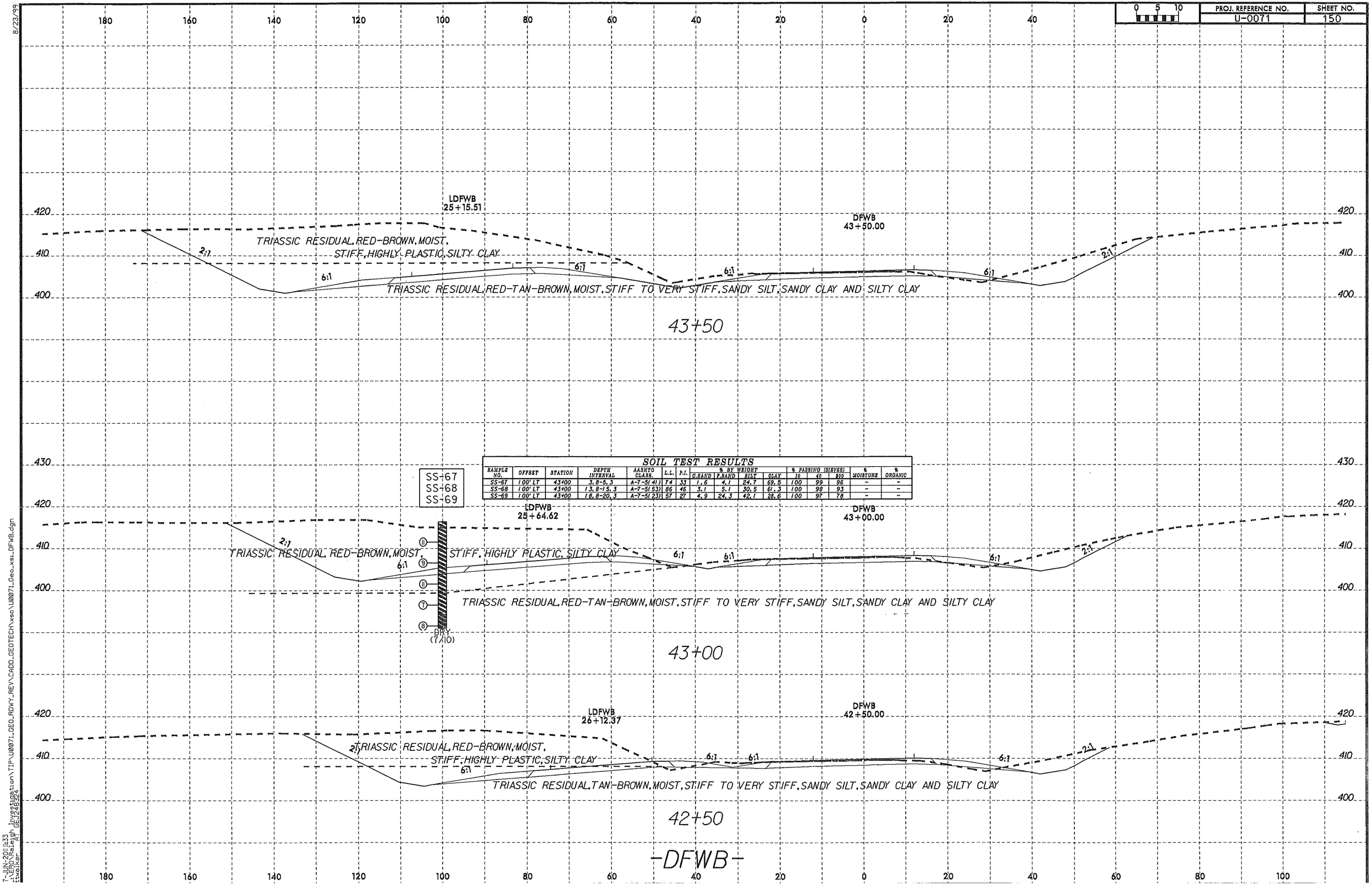
PROJ. REFERENCE NO.	SHEET NO.
U-0071	150



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-67	100' LT	43+00	3.8-5.3	A-7-5(41)	74	33	1.6	4.1	24.7	69.5	100	99	96	-	-
SS-68	100' LT	43+00	13.8-15.3	A-7-5(53)	86	46	3.1	5.1	30.5	61.3	100	98	93	-	-
SS-69	100' LT	43+00	18.8-20.3	A-7-5(23)	57	27	4.9	24.3	42.1	28.6	100	97	78	-	-

8/23/99

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ttwalker AT GEJ248324

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-0071	151

140 120 100 80 60 40 20 0 20 40 60 80

360
350

5:1
3:1

ARTIFICIAL FILL, RED-BROWN, MOIST, SOFT TO VERY STIFF, SANDY CLAY AND SILTY CLAY WITH SOME BRICK, CONCRETE, AND WOOD

TRIASSIC RESIDUAL, RED-BROWN, MOIST, VERY STIFF, SANDY CLAY

37+00

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-375	31' RT	36+29	3.4-4.9	A-6(5)	40	22	30.8	24.6	18.1	26.5	88	70	44	-	-
SS-376	31' RT	36+29	13.4-14.9	A-7-6(16)	45	19	5.1	22.4	35.8	36.7	100	98	80	-	-
SS-377	31' RT	36+29	18.4-19.9	A-6(8)	33	11	2.6	31.6	39.3	26.5	100	99	79	-	-

SS-375
SS-376
SS-377

370
360
350

36+29

3
10
15
30
10/10

ARTIFICIAL FILL, BROWN AND GRAY, MOIST, VERY SOFT TO STIFF, SANDY CLAY AND SILTY CLAY, AND SOME BRICK, CONCRETE, AND WOOD

HARD, SANDY CLAY

2:1
5:1

TRIASSIC RESIDUAL, RED-BROWN, MOIST,

60/0.0

NON-CRYSTALLINE ROCK (TRIASSIC SANDSTONE)

36+50

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) #10	#40	#200	% MOISTURE	% ORGANIC
SS-381	63' RT	35+80	3.8-5.3	A-7-6(27)	71	44	23.8	12.6	12.9	50.8	100	98	64	-	-
SS-382	63' RT	35+80	8.8-10.3	A-7-5(9)	42	12	5.1	30.9	41.7	22.3	100	99	73	-	-
SS-383	63' RT	35+80	18.8-20.3	A-4(5)	28	9	2.2	35.5	44.0	18.3	100	100	74	-	-

SS-381
SS-382
SS-383

370
360
350

35+80

9
17
23
73
DRY
10/10

ARTIFICIAL FILL, BROWN AND GRAY, MOIST TO WET, STIFF, SANDY CLAY, HIGHLY PLASTIC, SILTY CLAY, AND SOME BRICK, CONCRETE, AND WOOD

5:1

TRIASSIC RESIDUAL, RED-BROWN AND GRAY, MOIST, VERY STIFF TO HARD, SANDY CLAY AND SANDY SILT

36+00

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-378	41' RT	35+36	3.0-4.5	A-6(2)	38	18	30.5	26.0	19.2	24.4	77	62	37	-	-
SS-379	41' RT	35+36	8.0-9.5	A-7-6(38)	65	40	2.0	16.6	26.5	54.8	100	99	86	-	-
SS-380	41' RT	35+36	13.0-14.5	A-4(6)	30	10	4.3	33.7	43.8	18.3	100	99	72	-	-

SS-378
SS-379
SS-380

370
360
350

35+36

6
9
24
50/0.0
100/0.8
10/10

ARTIFICIAL FILL, BROWN AND GRAY, MOIST TO WET, MEDIUM STIFF TO STIFF, SANDY CLAY, HIGHLY PLASTIC, SILTY CLAY, AND SOME BRICK, CONCRETE, AND WOOD

4:1
5:1

TRIASSIC RESIDUAL, TAN AND RED-BROWN, MOIST, VERY STIFF, SANDY SILT

WEATHERED ROCK (TRIASSIC SANDSTONE)

35+50

-SR2-

140 120 100 80 60 40 20 0 20 40 60 80 100 120 140

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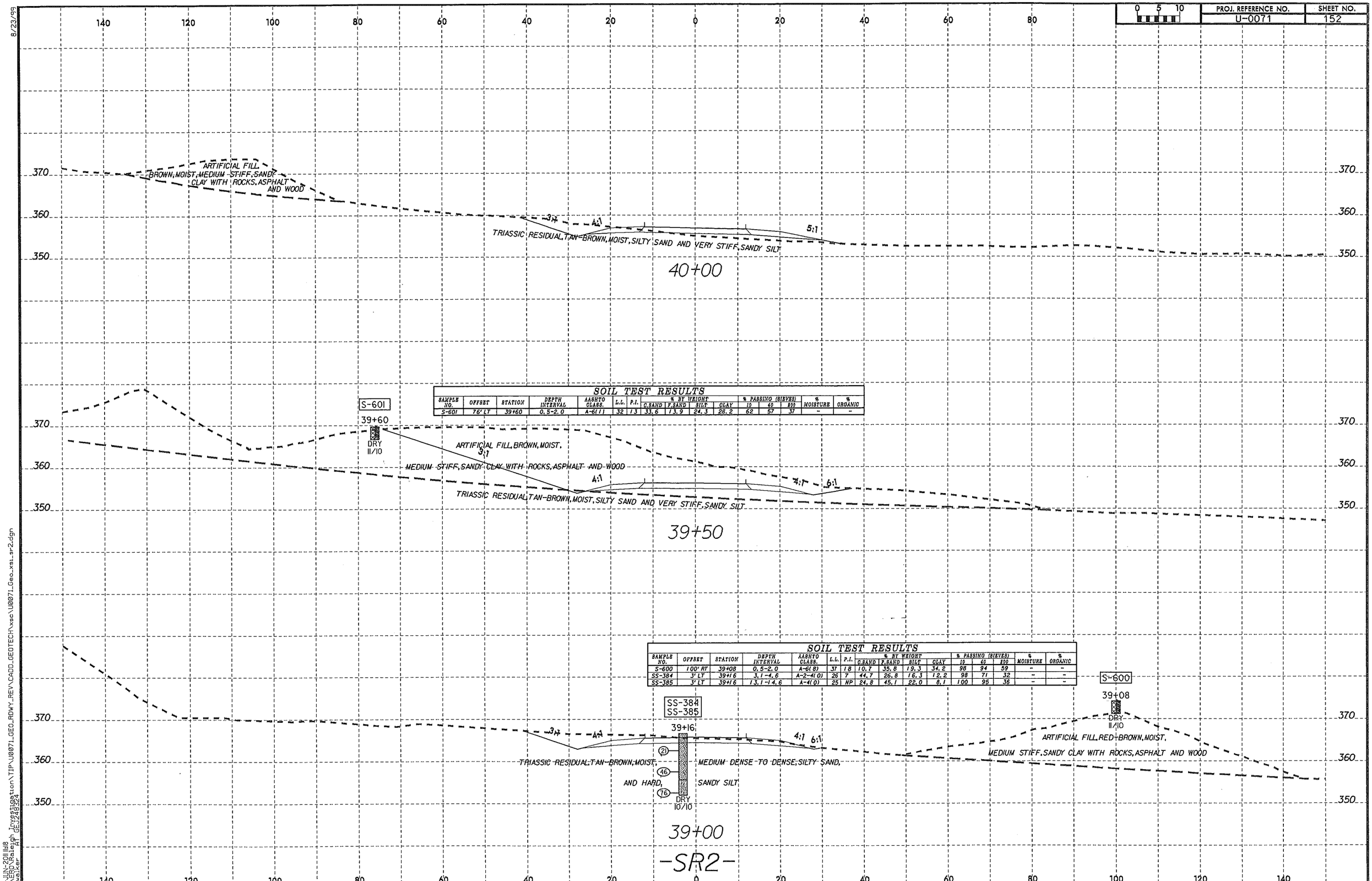
tkwalker
AT GEJ248324

PROJ. REFERENCE NO. U-0071 | SHEET NO. 152



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-601	76' LT	39+60	0.5-2.0	A-6(11	32	13	33.6	13.9	24.3	28.2	62	57	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-600	100' RT	39+08	0.5-2.0	A-6(8)	37	18	10.7	35.8	19.3	34.2	98	94	59	-	-
SS-384	3' LT	39+16	3.1-4.6	A-2-4(0)	26	7	44.7	26.8	16.3	12.2	98	71	32	-	-
SS-385	3' LT	39+16	13.1-14.6	A-4(0)	25	NP	24.8	45.1	22.0	8.1	100	95	36	-	-

8/23/99

17-JUN-2011 11:18
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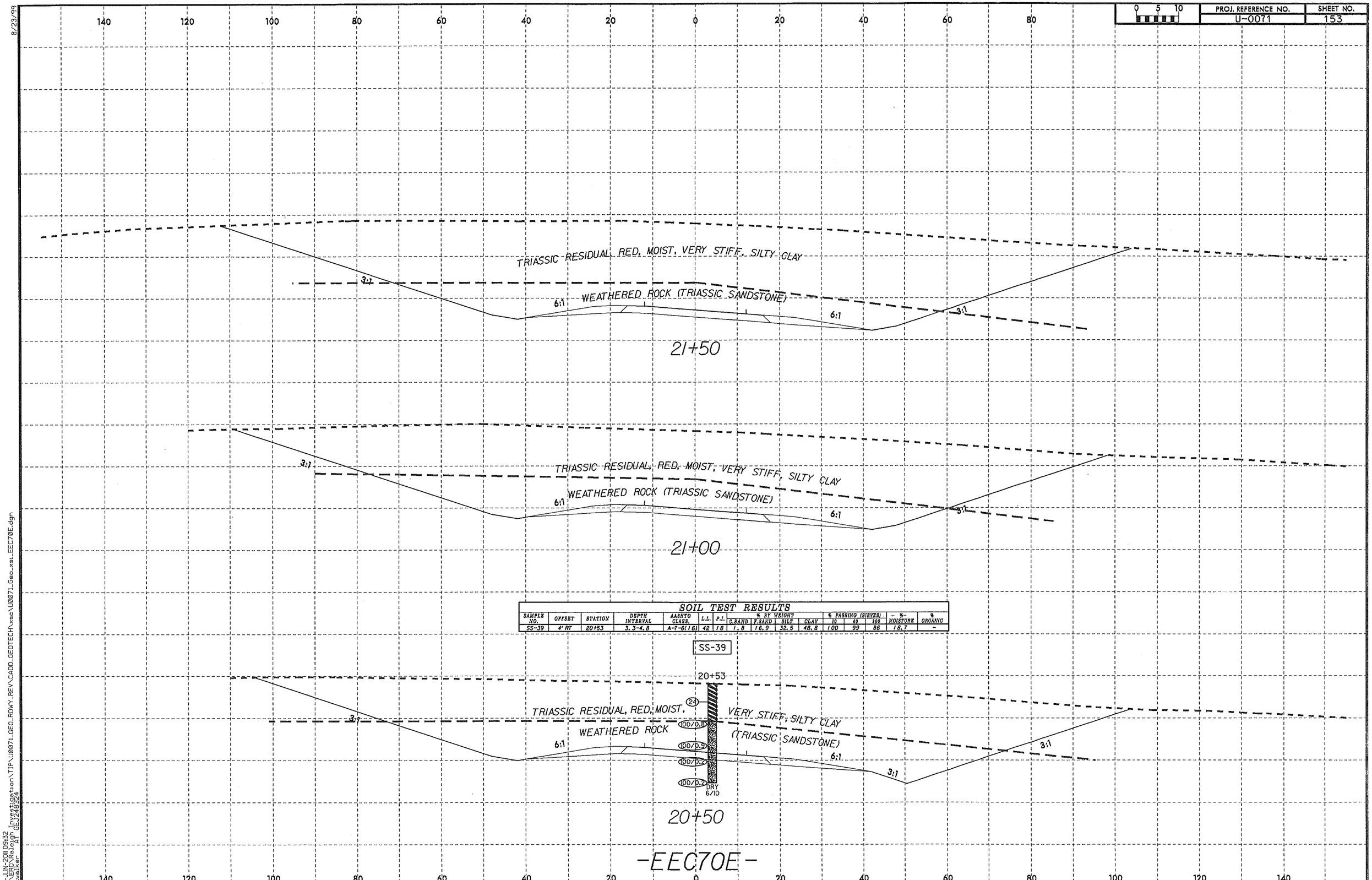
ttwalker AT GEJ248324

PROJ. REFERENCE NO.	SHEET NO.
U-0071	153



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-39	4' RT	20+53	3.3-4.8	A-7-6(16)	42	18	1.8	16.9	32.5	48.8	100	99	86	18.7	-

SS-39

8/23/99

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ttwalker AT GEJ248324

8/23/99

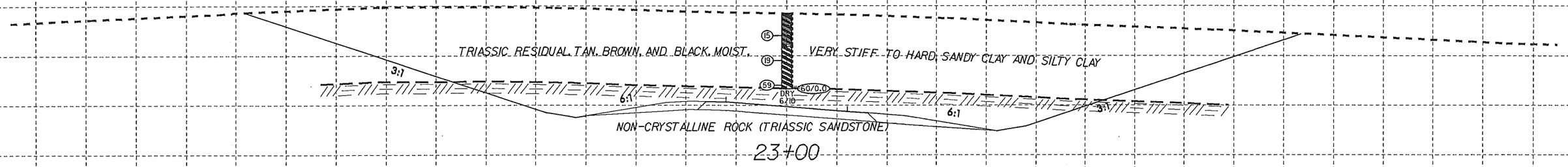
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-0071	154

140 120 100 80 60 40 20 0 20 40 60 80

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-14	CL	23+00	3.3-4.8	A-6(4)	33	13	22.4	32.6	26.8	18.3	100	92	50	-	-
SS-15	CL	23+00	8.3-9.8	A-7-5(17)	54	20	6.9	23.6	49.2	20.3	100	96	76	-	-

SS-14
SS-15

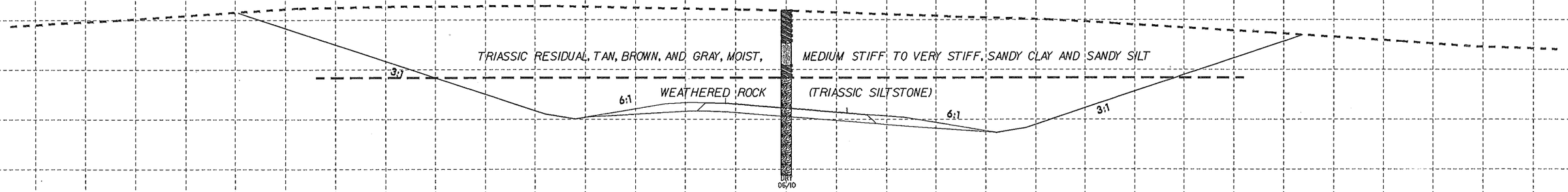


23+00

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-16	CL	22+50	6.5-8.5	A-4(1)	28	8	24.4	31.3	22.0	22.4	100	97	48	-	-
S-17	CL	22+50	11.0-13.5	A-6(11)	33	14	1.4	22.2	52.0	24.4	100	100	85	-	-

S-16
S-17



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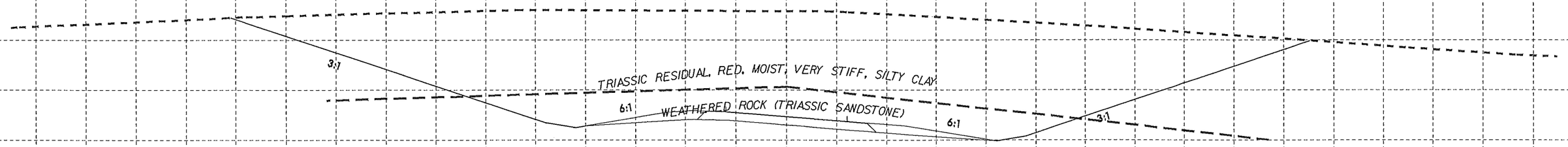

22+00

-EEC70E-

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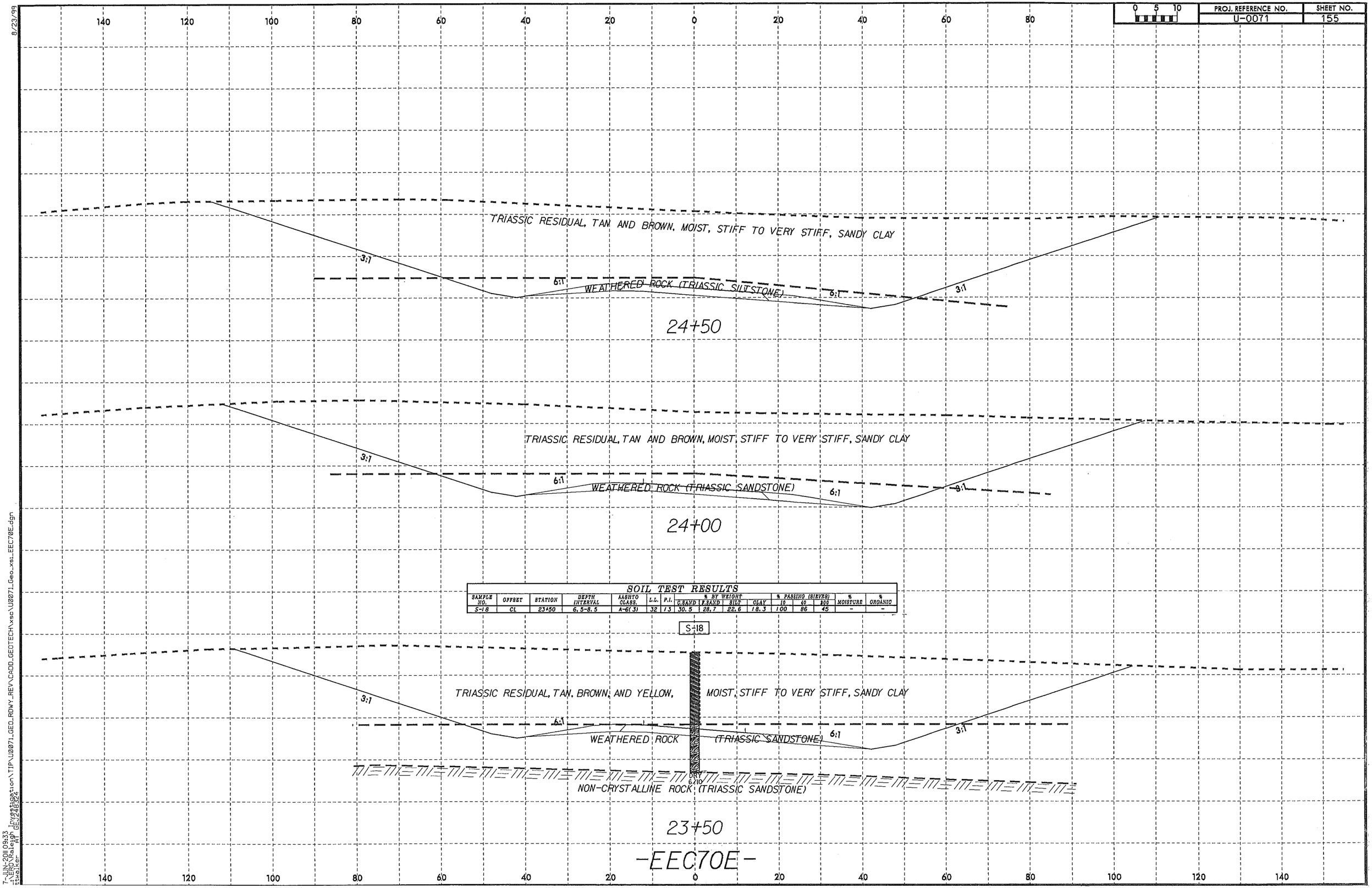
Bowker, Jill GEU28324

PROJ. REFERENCE NO. U-0071 | SHEET NO. 155



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-18	CL	23+50	6.5-8.5	A-6(3)	32	13	30.5	28.7	22.6	18.3	100	86	45	-	-

8/23/99
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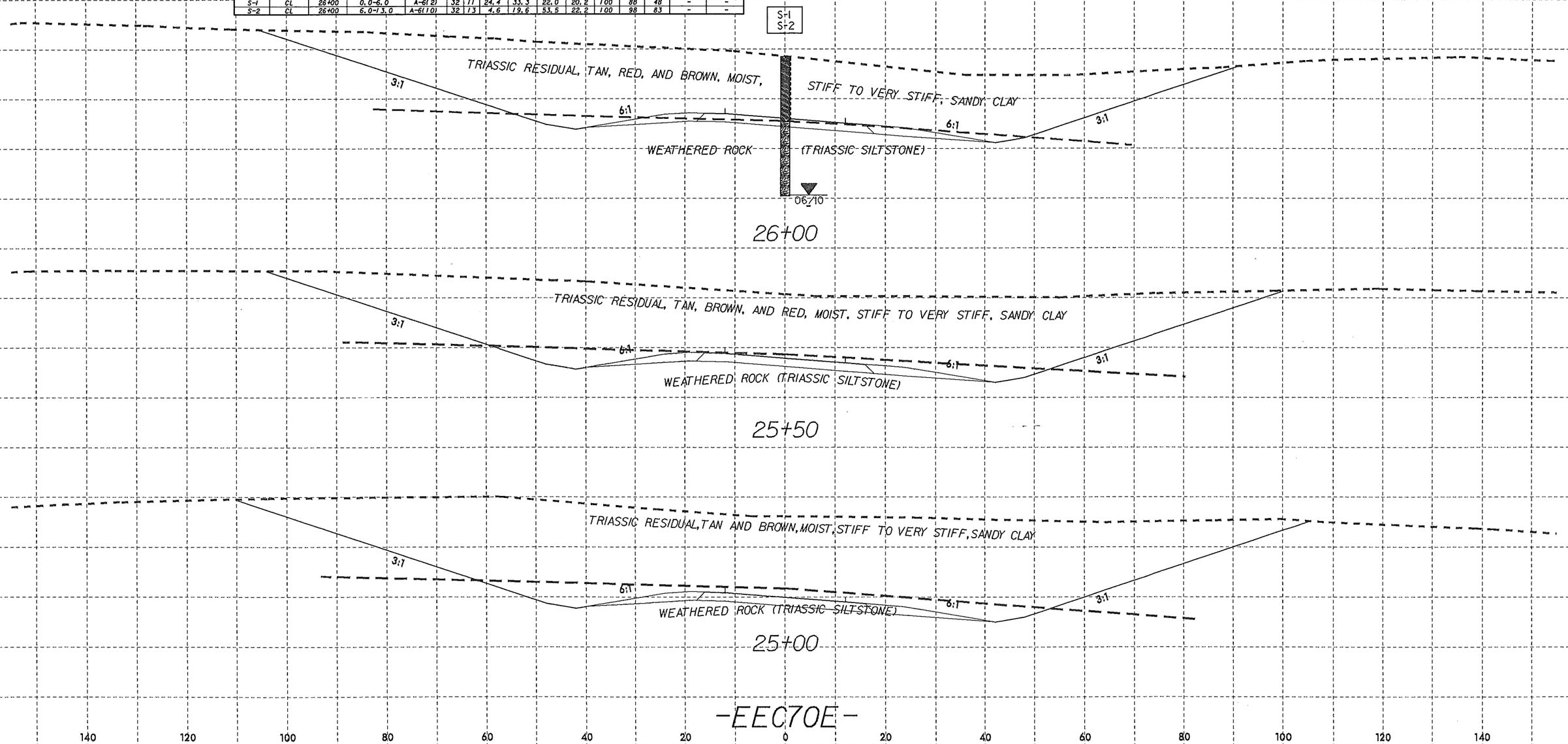
ttwalker AT GEJ248324

PROJ. REFERENCE NO.	SHEET NO.
U-0071	156

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-1	CL	26+00	0.0-6.0	A-6(2)	32	11	24.4	33.3	22.0	20.2	100	88	48	-	-
S-2	CL	26+00	6.0-13.0	A-6(10)	32	13	4.6	19.6	53.5	22.2	100	98	83	-	-



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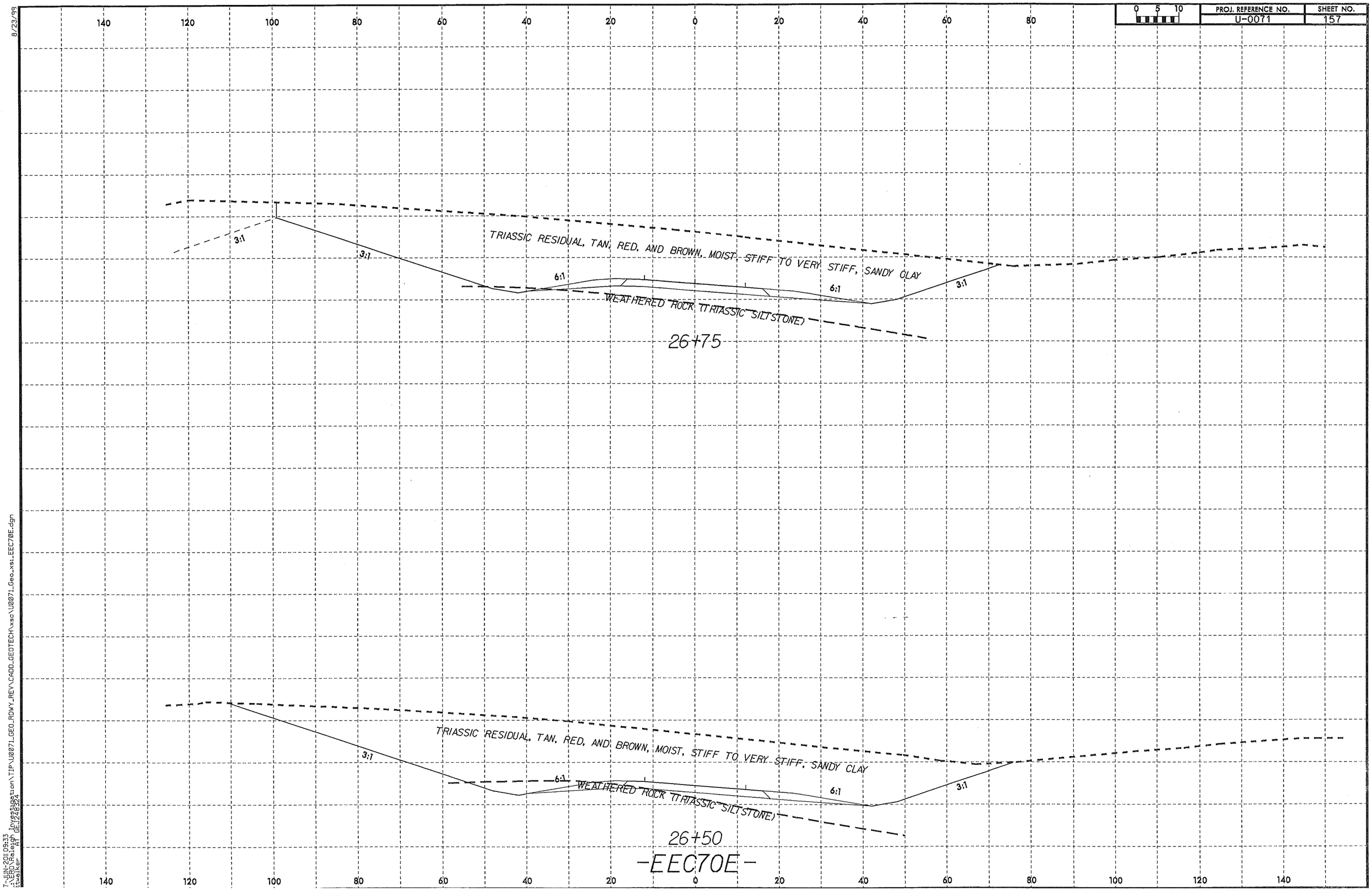
ttwalker AT GEJ248324



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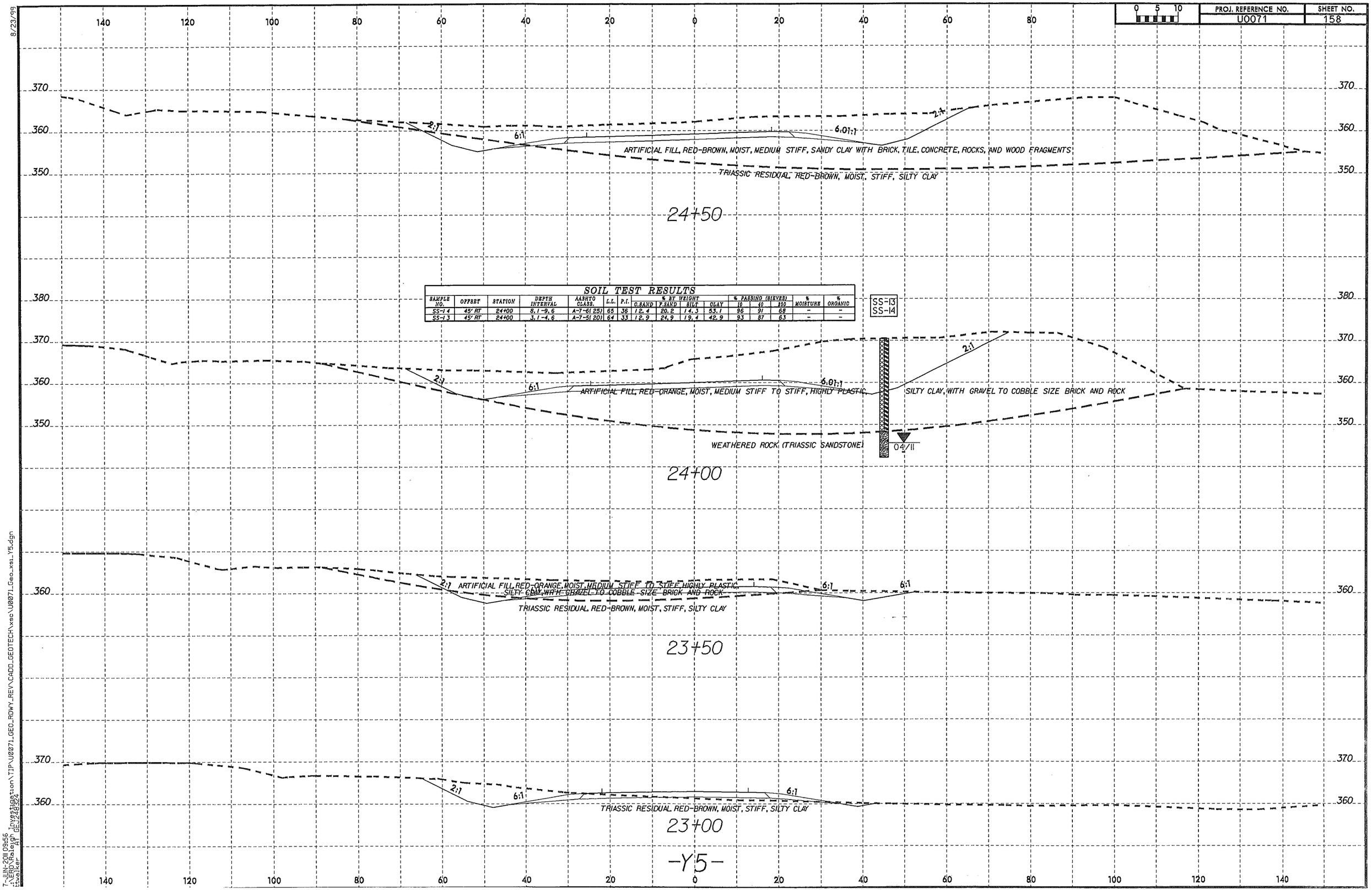

SOIL TEST RESULTS

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-14	45' RT	24+00	8.1-9.6	A-7-6(25)	65	36	12.4	20.2	14.3	53.1	96	91	68	-	-
SS-13	45' RT	24+00	3.1-4.6	A-7-5(20)	64	33	12.9	24.9	19.4	42.9	93	87	63	-	-

8/23/99

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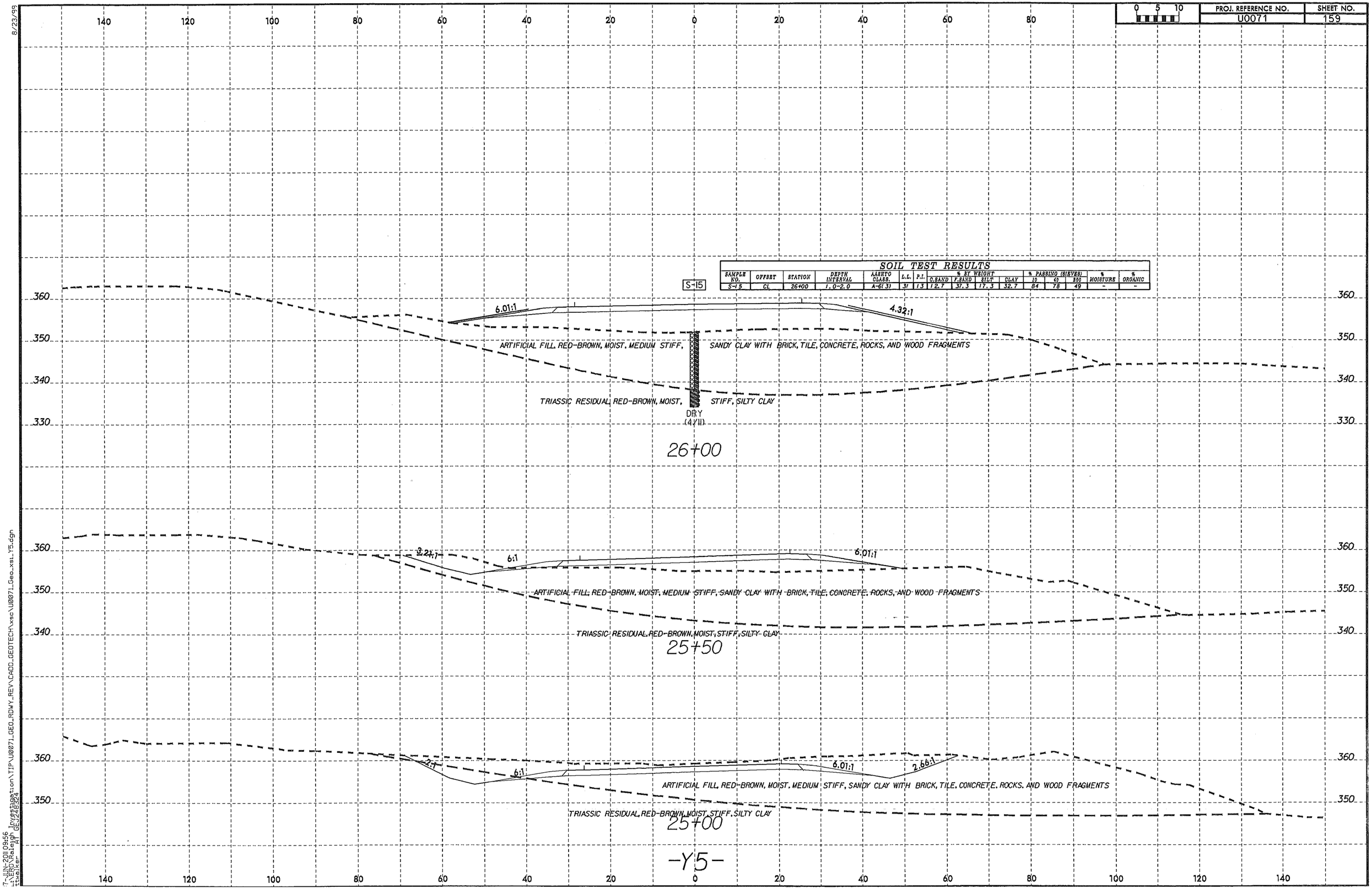
PROJ. REFERENCE NO.	SHEET NO.
U0071	159



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-15	CL	26+00	1.0-2.0	A-6(3)	31	13	12.7	37.3	17.3	32.7	84	78	49	-	-

8/23/99

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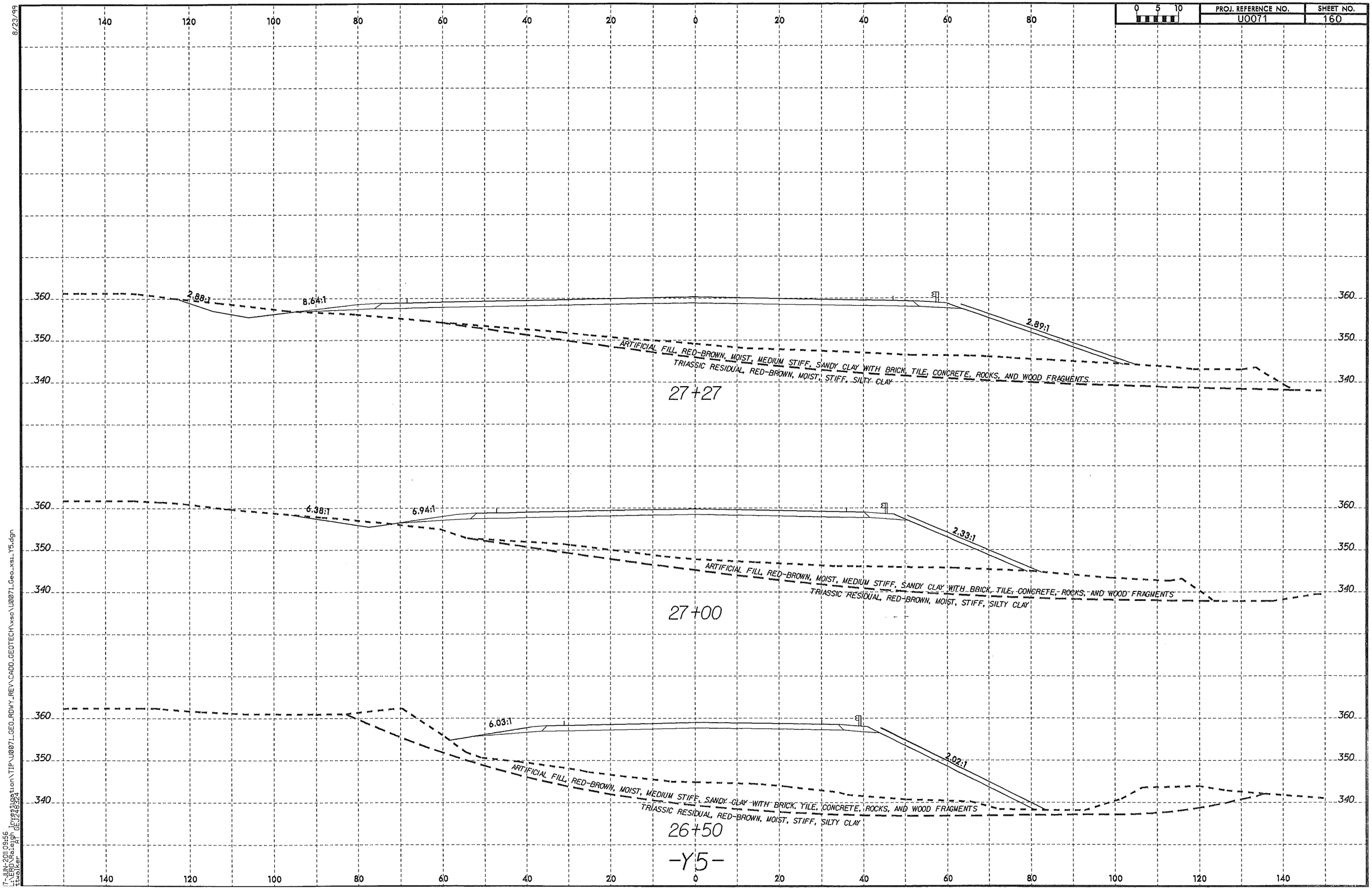

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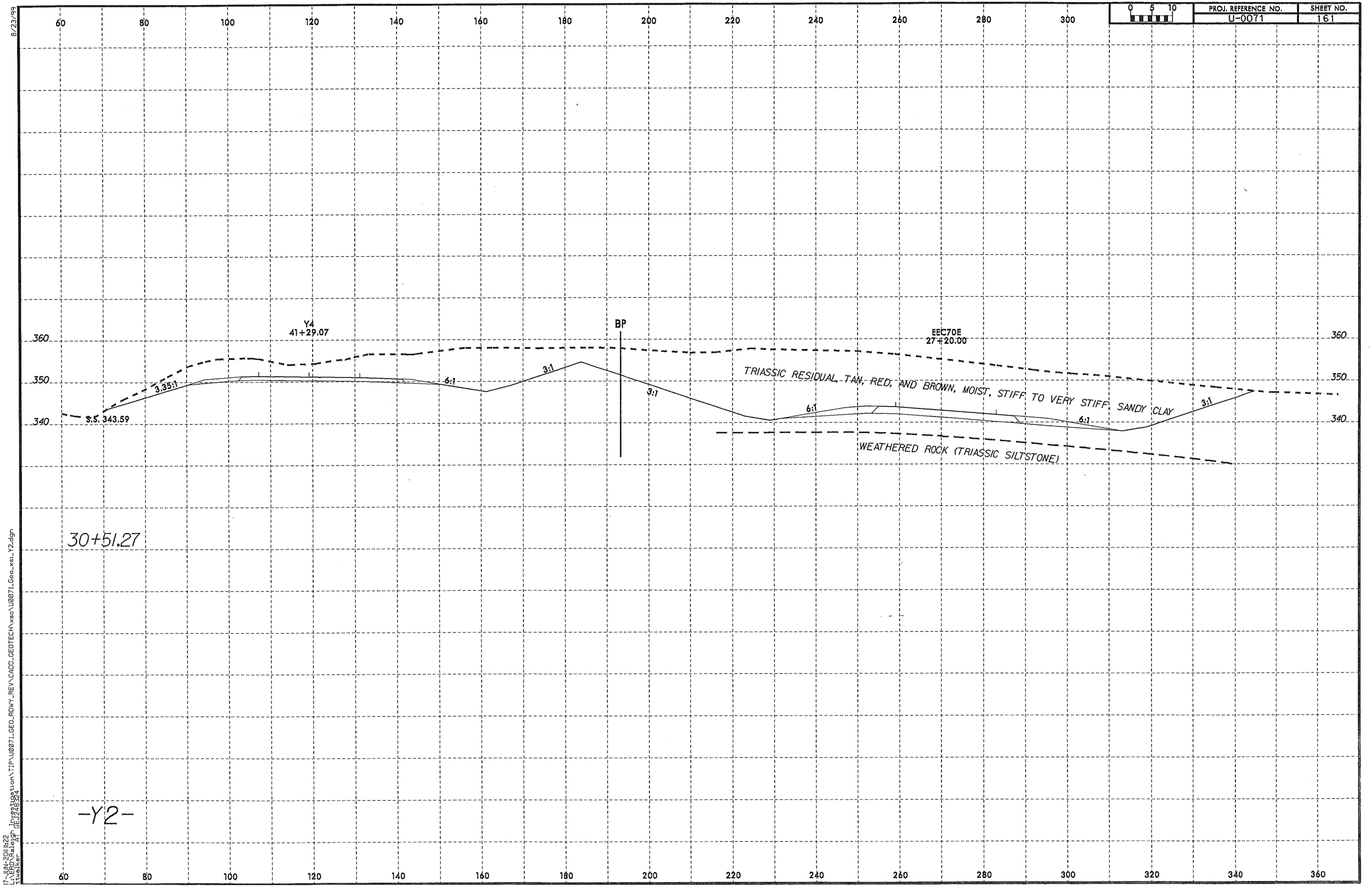

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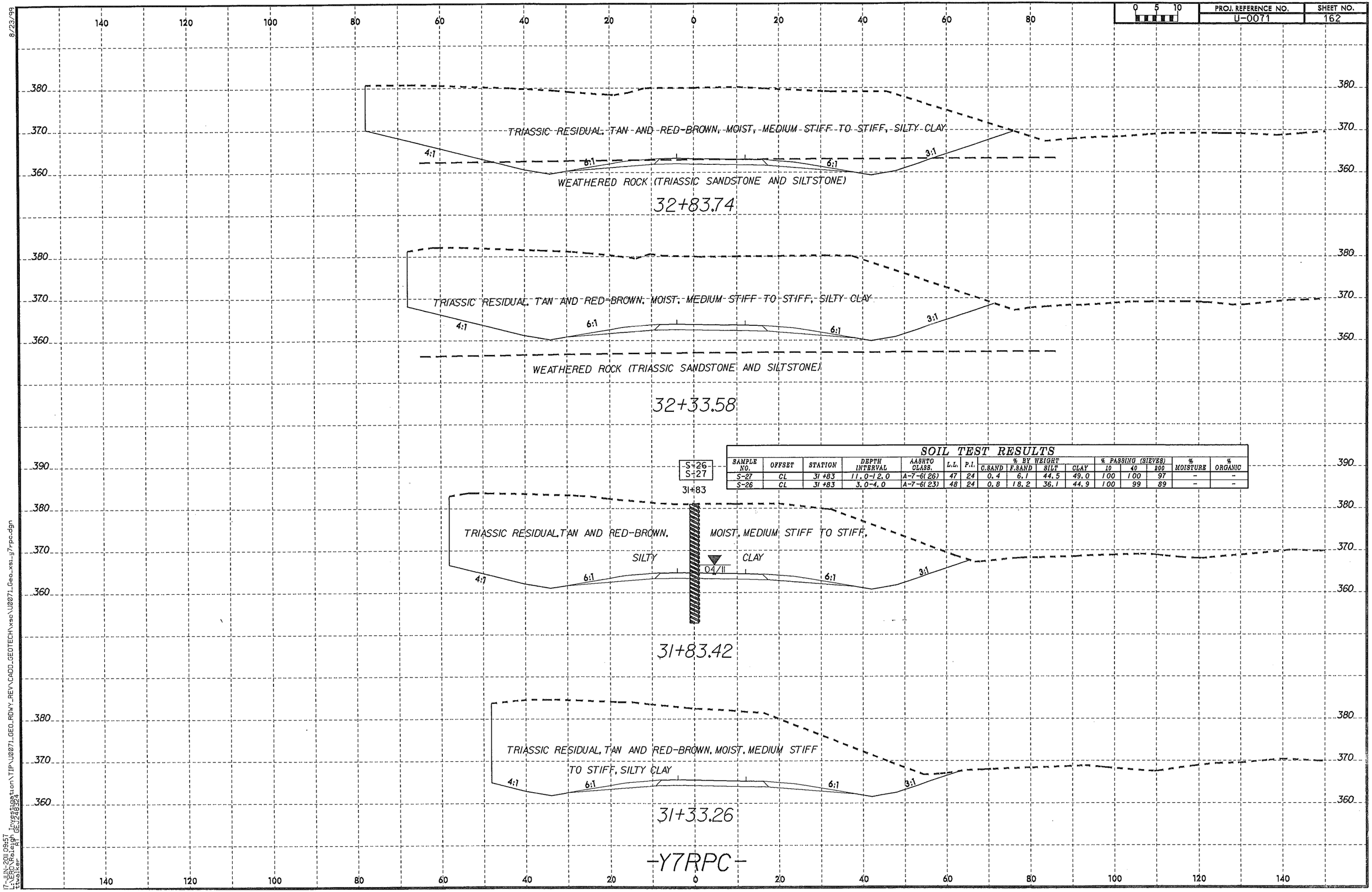
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-0071	162



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-27	CL	31+83	11.0-12.0	A-7-6(26)	47	24	0.4	6.1	44.5	49.0	100	100	97	–	–
S-26	CL	31+83	3.0-4.0	A-7-6(23)	48	24	0.8	18.2	36.1	44.9	100	99	89	–	–

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ttwalker AT GEJ248324

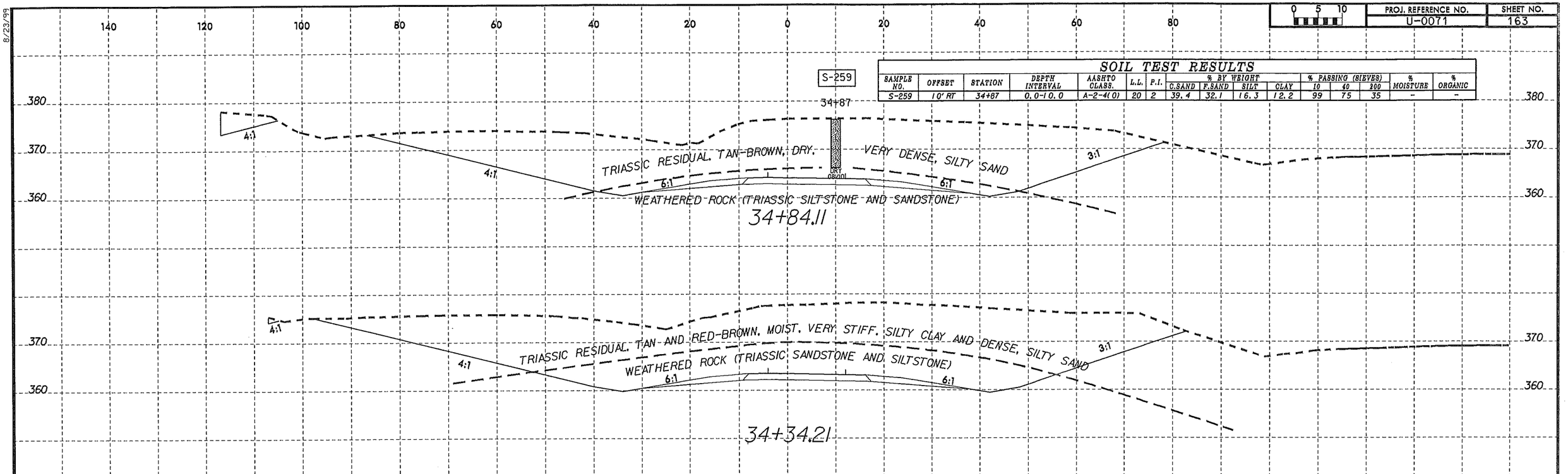
8/23/99

PROJ. REFERENCE NO.	SHEET NO.
U-0071	163

0 5 10

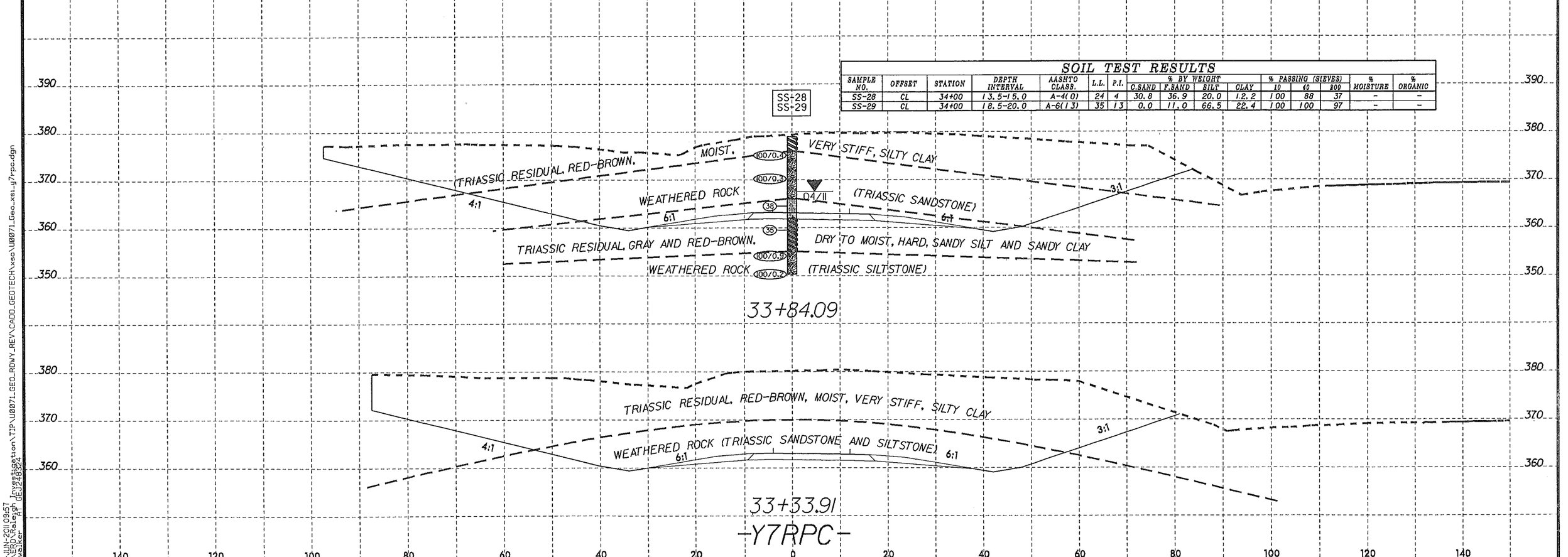
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-259	10' RT	34+87	0.0-10.0	A-2-4(0)	20	2	39.4	32.1	16.3	12.2	99	75	35	-	-



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-28	CL	34+00	13.5-15.0	A-4(0)	24	4	30.8	36.9	20.0	12.2	100	88	37	-	-
SS-29	CL	34+00	18.5-20.0	A-6(13)	35	13	0.0	11.0	66.5	22.4	100	100	97	-	-



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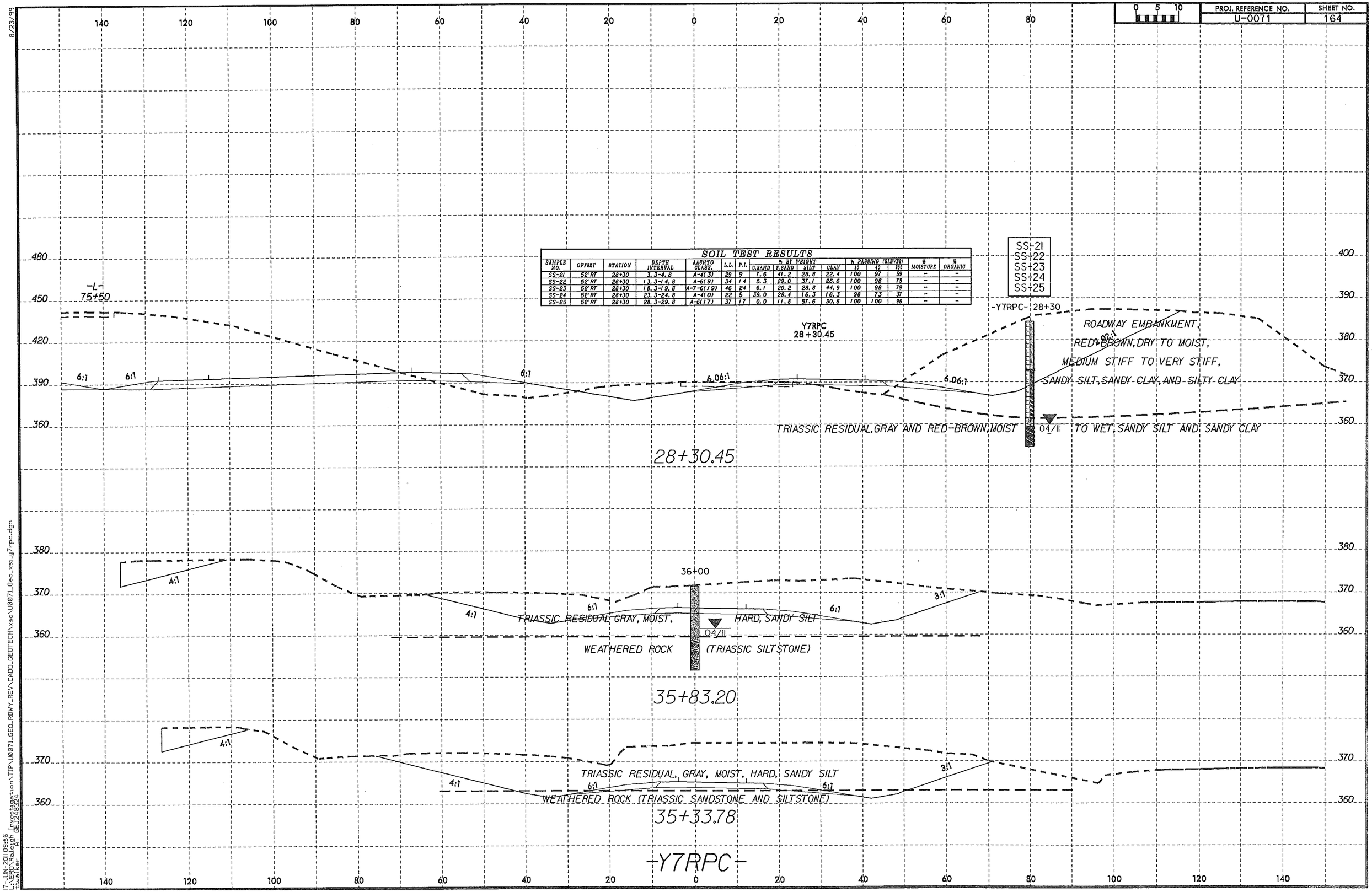
ttwalker AP GEJ248324

PROJ. REFERENCE NO.	SHEET NO.
U-0071	164



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-21	52' RT	28+30	3.3-4.8	A-4(3)	29	9	7.6	41.2	28.8	22.4	100	97	59	-	-
SS-22	52' RT	28+30	13.3-14.8	A-6(9)	34	14	5.3	29.0	37.1	28.6	100	98	75	-	-
SS-23	52' RT	28+30	18.3-19.8	A-7-6(19)	46	24	6.1	20.2	28.8	44.9	100	98	79	-	-
SS-24	52' RT	28+30	23.3-24.8	A-4(0)	22	5	39.0	28.4	16.3	16.3	98	73	37	-	-
SS-25	52' RT	28+30	28.3-29.8	A-6(17)	37	17	0.0	11.8	57.6	30.6	100	100	96	-	-

8/23/99

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ttwalker AT GEJ248324

PROJECT REFERENCE NO.	SHEET
34745.1.1_(U-0071)	165

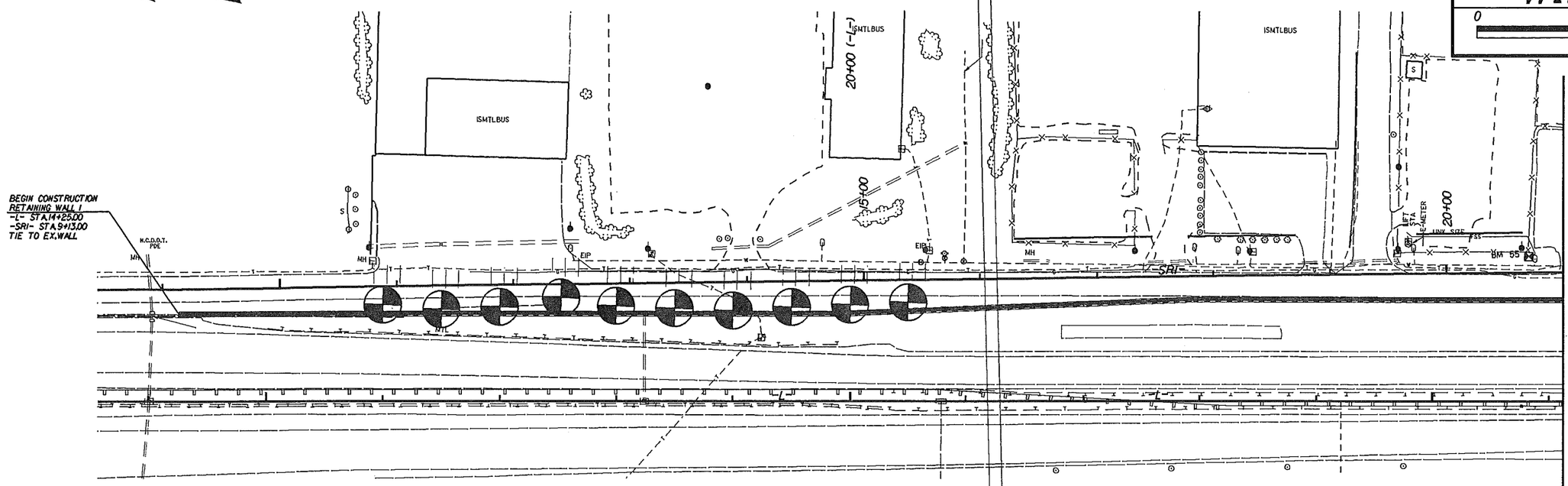
WALL 1

0 100 200

FEET

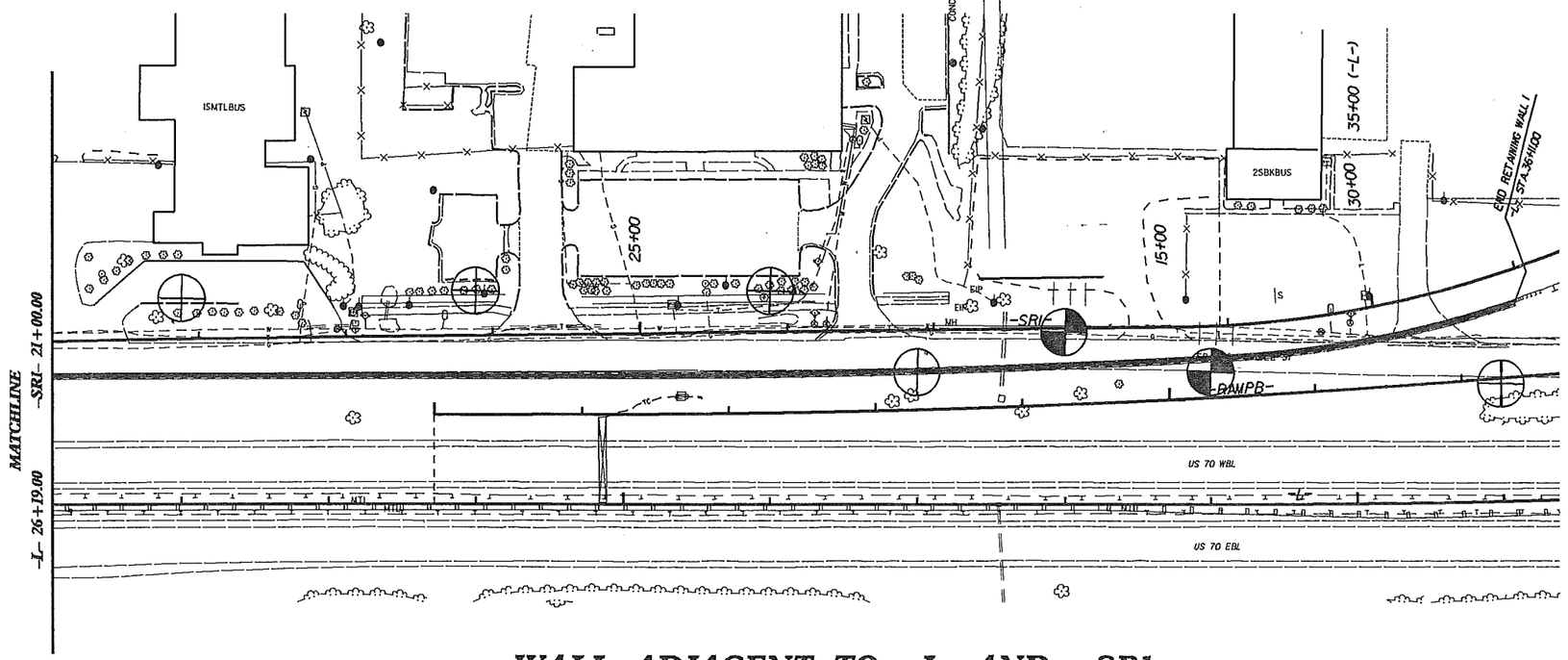
WALL 1

NAD 83/95



WALL ADJACENT TO -L- AND -SR1-

WALL 1



WALL ADJACENT TO -L- AND -SR1-

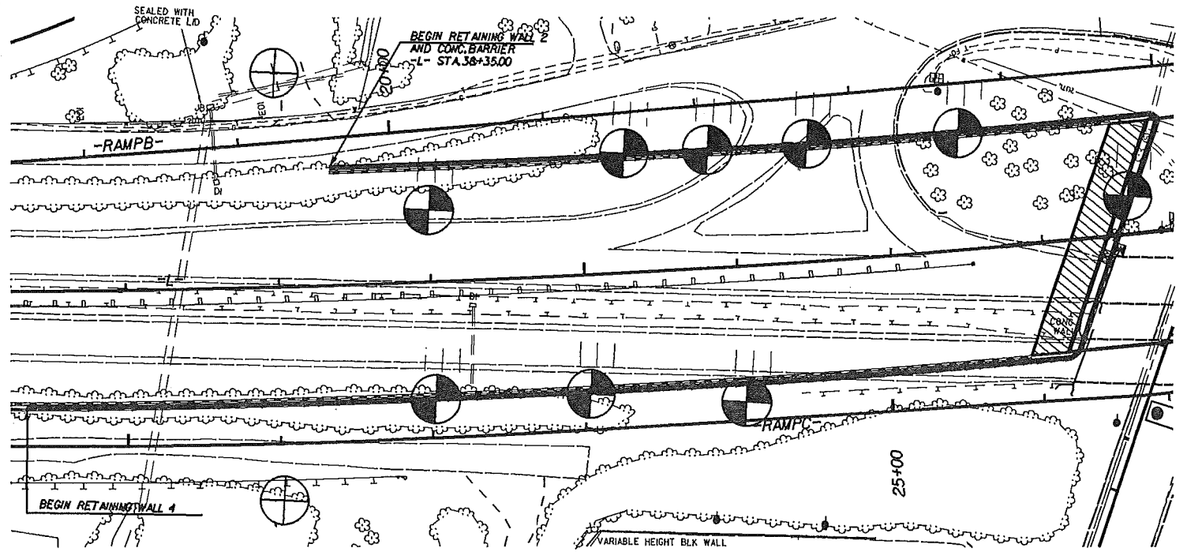
PROJECT REFERENCE NO.	SHEET
34745.1.1 (U-0071)	166

WALLS 2–7

0 100 200

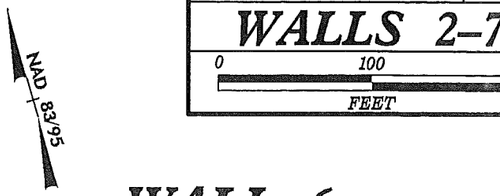
FEET

WALLS 2 & 4



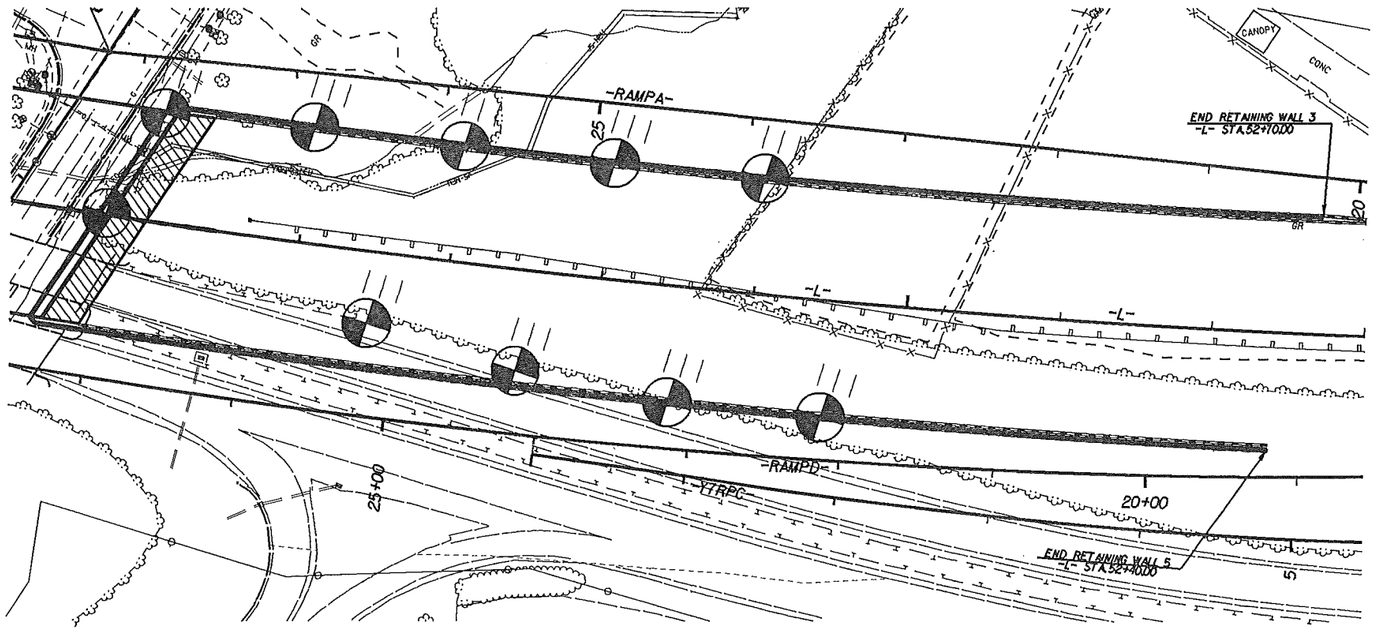
WALL 2 ADJACENT TO –RAMPB–
WALL 4 ADJACENT TO –RAMPC–

WALL 6



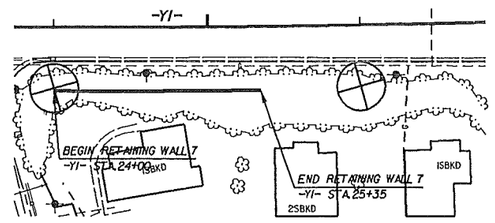
WALL 6 ADJACENT TO –YI–

WALLS 3 & 5



WALL 3 ADJACENT TO –RAMPA–
WALL 5 ADJACENT TO –RAMPD–

WALL 7



WALL 7 ADJACENT TO –YI–

PROJECT REFERENCE NO.	SHEET
34745.1.1 (U-0071)	167

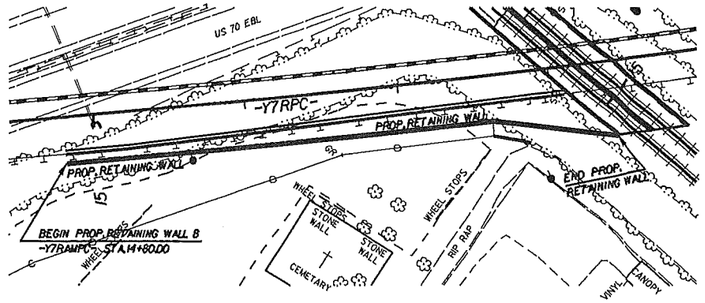
WALLS 8-9

0 100 200

FEET

WALL 8

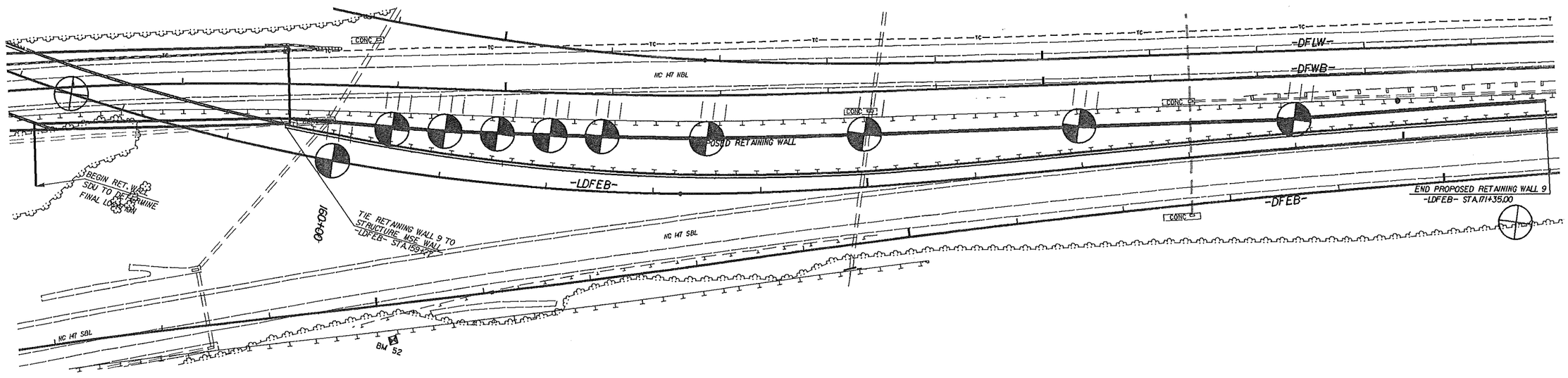
NAD 83/95



WALL 8 ADJACENT TO -Y7RPC-

WALL 9

NAD 83/95



WALL 9 ADJACENT TO -LDFEB-

5/28/99

RETAINING WALL ENVELOPES

PROJECT REFERENCE NO.	SHEET NO.
34745.11 (U-0071)	168
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

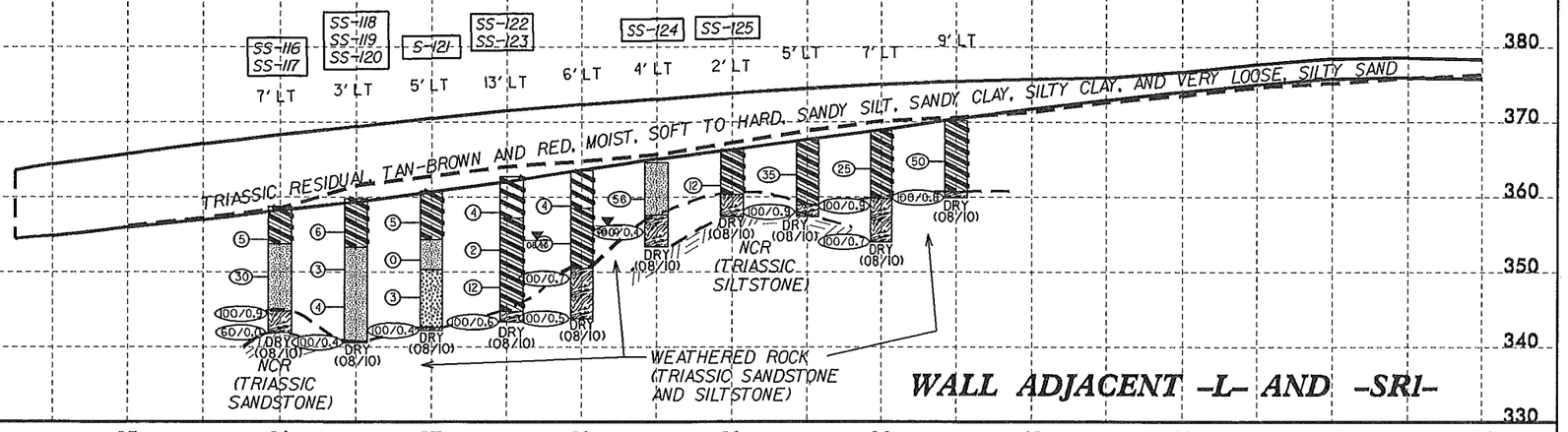
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

WALL 1

SOIL TEST RESULTS

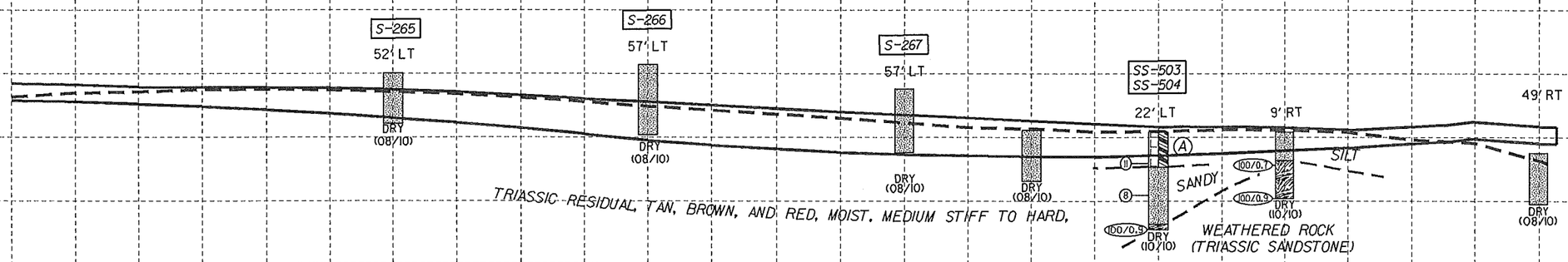
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-116	7' LT	16+00	3.4-4.9	A-6(16)	39	22	6.6	20.5	25.1	47.7	99	96	78	-	-
SS-117	7' LT	16+00	8.4-9.9	A-4(6)	28	10	4.4	30.9	41.9	22.8	100	98	76	-	-
SS-118	3' LT	16+50	3.5-5.0	A-6(8)	32	15	9.8	28.6	35.1	26.5	96	91	68	-	-
SS-119	3' LT	16+50	8.5-10.0	A-4(0)	22	4	3.5	41.4	30.6	24.5	100	99	68	-	-
SS-120	3' LT	16+50	13.5-15.0	A-4(6)	27	10	2.9	32.7	38.0	26.5	100	99	76	-	-
SS-121	5' LT	17+00	13.2-14.7	A-2-4(0)	19	2	28.2	44.7	12.9	14.3	100	86	33	-	-
SS-122	13' LT	17+50	3.8-5.3	A-7-6(22)	46	27	4.1	21.8	27.1	46.9	100	98	81	-	-
SS-123	13' LT	17+50	8.8-10.3	A-6(9)	38	17	14.1	24.9	34.5	26.5	94	89	63	-	-
SS-124	4' LT	18+50	3.9-5.4	A-4(0)	24	5	24.8	44.0	19.0	12.2	100	91	37	-	-
SS-125	2' LT	19+00	3.8-5.3	A-6(8)	31	15	4.5	35.5	35.5	24.5	100	99	71	-	-



Ⓐ TRIASSIC RESIDUAL, GRAY, WET, VERY LOOSE, SILTY SAND

WALL ADJACENT -L- AND -SRI-

WALL 1



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-265	52' LT	27+00	0.0-8.0	A-4(2)	28	7	18.3	27.0	38.2	16.6	98	88	62	-	-
S-266	57' LT	29+00	0.0-11.0	A-4(7)	31	9	2.3	24.3	52.7	20.7	100	100	86	-	-
S-267	57' LT	31+00	0.0-10.0	A-4(0)	30	6	27.0	36.7	19.7	16.6	100	90	40	-	-
SS-503	22' LT	33+00	3.9-5.4	A-6(7)	31	12	5.4	29.9	37.9	26.8	100	98	74	-	-
SS-504	22' LT	33+00	8.9-10.4	A-4(2)	25	7	10.5	39.6	23.1	26.8	98	93	60	-	-

Ⓐ ROADWAY EMBANKMENT, TAN, RED, AND BROWN, MOIST, STIFF, SANDY CLAY

WALL ADJACENT -L- AND -SRI-

*OFFSETS ARE GIVEN FROM RETAINING WALL FACE

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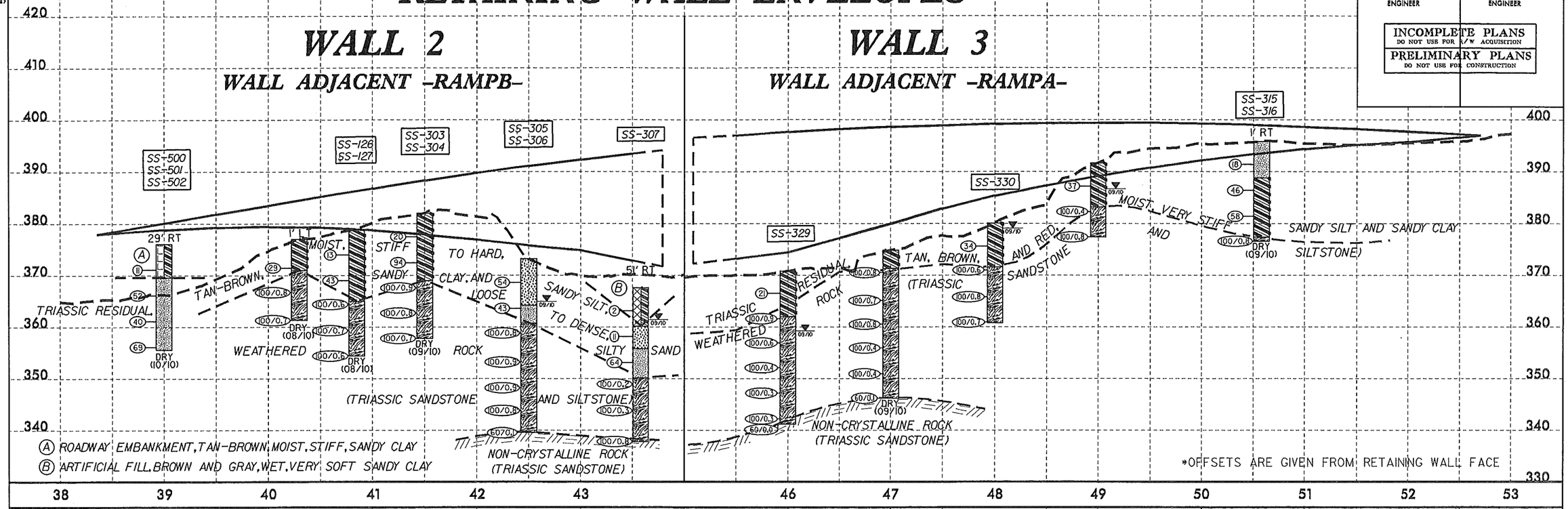
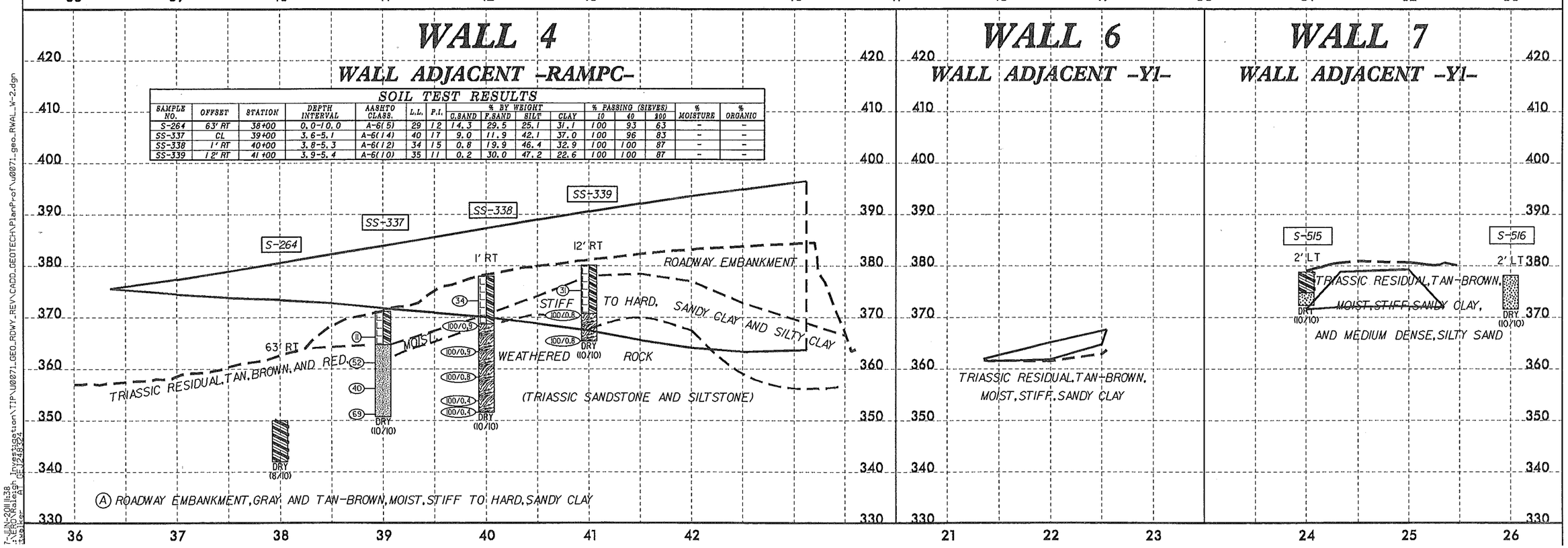
PROJECT REFERENCE NO.	SHEET NO.
34745JJ (U-0071)	169
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

RETAINING WALL ENVELOPES





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-264	63' RT	38+00	0.0-10.0	A-6(5)	29	12	14.3	29.5	25.1	31.1	100	93	63	-	-
SS-337	CL	39+00	3.6-5.1	A-6(14)	40	17	9.0	11.9	42.1	37.0	100	96	83	-	-
SS-338	1' RT	40+00	3.8-5.3	A-6(12)	34	15	0.8	19.9	46.4	32.9	100	100	87	-	-
SS-339	12' RT	41+00	3.9-5.4	A-6(10)	35	11	0.2	30.0	47.2	22.6	100	100	87	-	-

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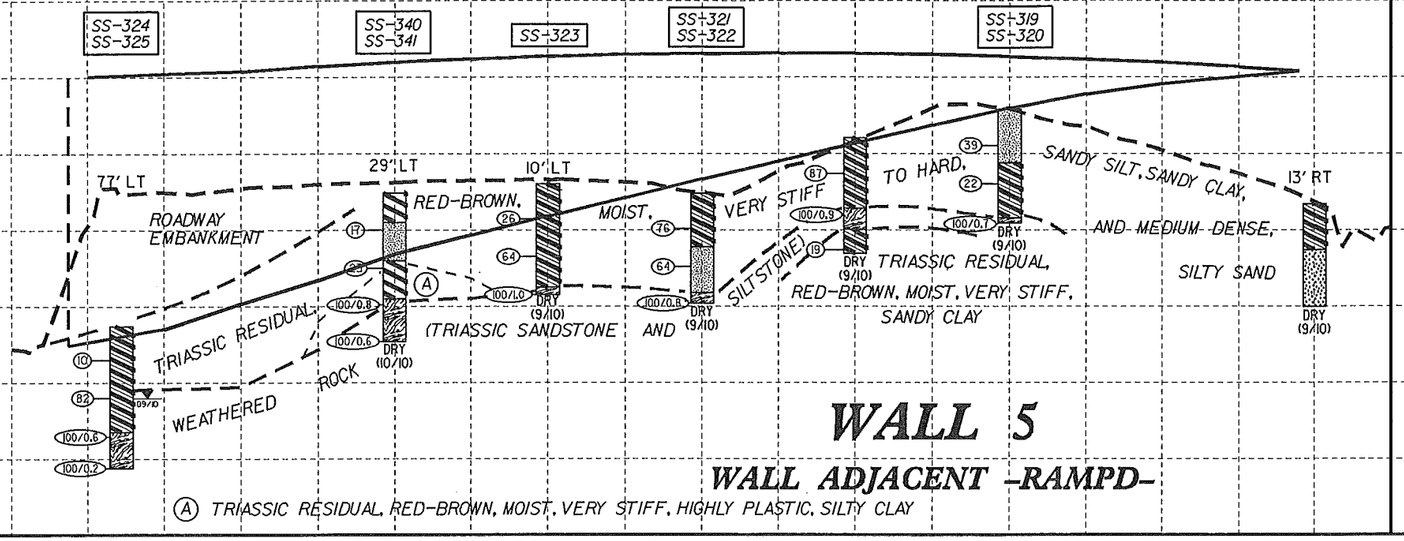
PROJECT REFERENCE NO.	SHEET NO.
34745.11 (U-0071)	170
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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-324	77' LT	44+72	3.4-4.9	A-6(4)	29	11	9.9	36.5	23.2	30.4	100	96	61	-	-
SS-325	77' LT	44+72	8.4-9.9	A-6(6)	36	20	22.3	34.0	15.3	28.4	100	94	48	-	-
SS-340	29' LT	46+50	3.9-5.4	A-4(0)	31	6	26.9	42.1	18.7	12.3	100	93	37	-	-
SS-341	29' LT	46+50	8.9-10.4	A-7-5(49)	81	47	4.5	9.7	32.4	53.4	100	97	89	-	-
SS-323	10' LT	47+50	8.6-10.1	A-6(11)	36	14	6.5	19.6	47.7	26.3	100	99	80	-	-
SS-321	CL	48+50	3.6-5.1	A-6(6)	30	12	5.5	32.5	35.8	26.3	98	96	69	-	-
SS-322	CL	48+50	8.6-10.1	A-4(0)	33	8	9.2	58.4	19.3	13.1	100	99	38	-	-
SS-319	CL	50+50	3.7-5.2	A-4(7)	33	9	0.8	29.3	47.7	22.2	100	100	82	-	-
SS-320	CL	50+50	8.7-10.2	A-6(13)	38	16	3.0	16.2	48.5	32.3	98	98	83	-	-



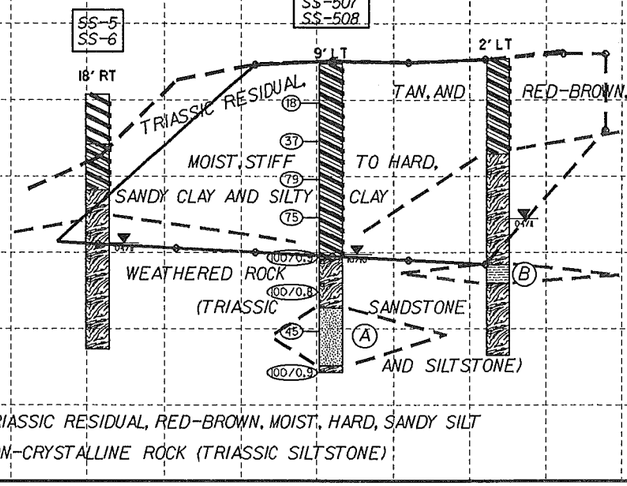
WALL 5

WALL ADJACENT -RAMPD-

Ⓐ TRIASSIC RESIDUAL, RED-BROWN, MOIST, VERY STIFF, HIGHLY PLASTIC, SILTY CLAY

WALL 8

WALL ADJACENT -Y7RAMPC-



Ⓐ TRIASSIC RESIDUAL, RED-BROWN, MOIST, HARD, SANDY SILT

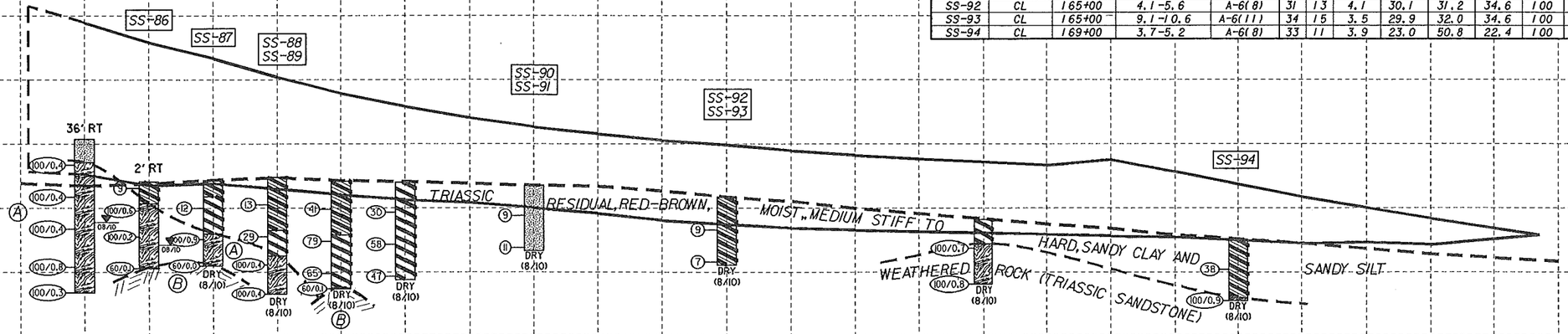
Ⓑ NON-CRYSTALLINE ROCK (TRIASSIC SILTSTONE)

WALL 9

WALL ADJACENT -LDFEB-

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-86	2' RT	160+50	0.0-1.5	A-6(14)	36	19	4.8	21.0	37.9	36.3	100	98	80	-	-
SS-87	43' LT	161+00	3.3-4.8	A-7-6(21)	41	20	0.4	6.5	54.8	38.3	100	100	97	-	-
SS-88	CL	161+50	3.3-4.8	A-6(18)	32	19	0.2	6.7	48.8	44.4	100	100	98	-	-
SS-89	CL	161+50	8.3-9.8	A-7-6(12)	42	22	9.3	34.5	26.0	30.2	100	96	65	-	-
SS-90	CL	163+50	3.7-5.2	A-4(1)	24	7	18.3	37.4	19.8	24.4	100	91	52	-	-
SS-91	CL	163+50	8.7-10.2	A-4(2)	26	10	32.1	25.4	20.0	22.4	100	83	47	-	-
SS-92	CL	165+00	4.1-5.6	A-6(8)	31	13	4.1	30.1	31.2	34.6	100	98	76	-	-
SS-93	CL	165+00	9.1-10.6	A-6(11)	34	15	3.5	29.9	32.0	34.6	100	98	79	-	-
SS-94	CL	169+00	3.7-5.2	A-6(8)	33	11	3.9	23.0	50.8	22.4	100	98	82	-	-



Ⓐ WEATHERED ROCK (TRIASSIC SANDSTONE AND SILTSTONE)

Ⓑ NON-CRYSTALLINE ROCK (TRIASSIC SANDSTONE AND SILTSTONE)

*OFFSETS ARE GIVEN FROM RETAINING WALL FACE

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PROJECT REFERENCE NO.	SHEET
34745.1.1 (U-0071)	171

WALL 2

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-500	29' RT	20+21	4.0-5.5	A-6(4)	28	11	21.4	24.1	19.4	35.1	99	86	60	-	-
SS-501	29' RT	20+21	9.0-10.5	A-4(0)	27	5	6.6	54.2	20.6	18.6	100	99	47	-	-
SS-502	29' LT	20+21	14.0-15.5	A-4(0)	31	7	39.2	27.4	14.8	18.6	100	79	37	-	-
SS-126	CL	22+05	3.9-5.4	A-6(9)	36	13	3.7	31.4	40.4	24.5	100	99	75	-	-
SS-127	CL	22+05	8.9-10.4	A-6(8)	32	11	1.8	30.8	49.0	18.4	100	99	79	-	-
SS-303	CL	22+70	3.5-5.0	A-6(6)	32	13	10.1	31.2	32.4	26.3	100	96	65	-	-
SS-304	CL	22+70	8.5-10.0	A-6(8)	30	13	4.3	29.1	42.3	24.3	100	99	74	-	-
SS-305	CL	23+69	3.6-5.1	A-2-4(0)	33	9	53.5	17.7	12.6	16.2	98	60	31	-	-
SS-306	CL	23+69	9.0-10.0	A-4(3)	26	6	1.8	34.6	47.4	16.2	100	99	78	-	-

WALL 3

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-329	CL	46+00	3.3-4.8	A-6(8)	32	13	3.4	29.0	37.2	30.4	98	97	74	-	-
SS-330	CL	48+00	3.5-5.0	A-6(13)	36	15	3.5	17.7	48.0	30.8	100	98	89	-	-
SS-315	CL	50+58	3.4-4.9	A-4(0)	26	8	41.7	23.3	13.7	21.2	100	82	38	-	-
SS-316	1' RT	50+58	8.4-9.9	A-6(17)	40	18	2.2	11.9	55.6	30.3	100	99	91	-	-

WALL 7

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-515	2' LT	24+00	1.0-2.0	A-6(6)	33	11	8.2	33.4	21.2	37.1	100	95	68	-	-
S-516	2' LT	26+00	1.0-2.0	A-2-4(0)	25	6	52.6	19.6	12.7	15.1	100	67	31	-	-

WALL 8

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-5	18' RT	15+07	3.2-4.7	A-7-6(16)	49	29	19.9	19.9	11.6	48.7	100	91	64	-	-
SS-6	18' RT	15+07	8.2-9.7	A-6(8)	35	11	0.8	25.6	45.2	28.4	100	100	76	-	-
SS-505	21' RT	16+59	4.1-5.6	A-6(6)	32	11	4.3	34.0	28.7	33.0	100	100	69	-	-
SS-506	21' RT	16+59	9.1-10.6	A-6(14)	36	16	0.8	19.2	40.8	39.2	100	100	87	-	-
SS-507	21' RT	16+59	19.1-20.6	A-6(15)	36	16	0.4	13.2	49.3	37.1	100	100	94	-	-
SS-508	21' RT	16+59	34.1-35.6	A-4(6)	30	10	8.5	25.6	39.2	26.8	100	97	73	-	-

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	34745.1.1 (U-0071)	1	6

TIP: U-0071

PROJECT: 34745.1.1

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

ROADWAY SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 34745.1.1 (U-0071) F.A. PROJ. NHF-76-1(2)

COUNTY DURHAM

PROJECT DESCRIPTION DURHAM EAST END CONNECTOR FROM NC 147 (BUCK DEAN FREEWAY) TO NORTH OF NC 98

SITE DESCRIPTION ROADWAY ADDENDUM - DRY DETENTION BASIN RIGHT OF -Y7RPC-

CONTENTS

SHEET	DESCRIPTION
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4-6	PROFILES

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) 707-6850. 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

N.D. MOHS

O.B. OTI

D.G. PINTER

J.R. MATULA

INVESTIGATED BY N.D. MOHS

CHECKED BY N.T. ROBERSON

SUBMITTED BY N.T. ROBERSON

DATE JUNE 2014

NORTH CAROLINA LICENSED SEAL 2124 GEOLOGIST NATHAN DANIEL MOHS

DocuSigned by:
Nathan D. Mohs
CB8141647D7B84AE...

DRAWN BY: T.T. WALKER

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

NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PROJECT REFERENCE NO.	SHEET NO.
34745.1.1 (U-0071)	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

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

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

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6			
SYMBOL														
% PASSING #10 #40 #200	50 MX 30 MX 15 MX		50 MX 25 MX	51 MN 10 MX	35 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
LIQUID LIMIT PLASTIC INDEX	6 MX		NP	40 MX 10 MX	41 MN 10 MX	40 MX 10 MX	41 MN 11 MN	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
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	<4	N/A
	LOOSE	4 TO 10	
	MEDIUM DENSE	10 TO 30	
	DENSE	30 TO 50	
	VERY DENSE	>50	
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT	<2	<0.25
	SOFT	2 TO 4	0.25 TO 0.50
	MEDIUM STIFF	4 TO 8	0.5 TO 1.0
	STIFF	8 TO 15	1 TO 2
	VERY STIFF	15 TO 30	2 TO 4
	HARD	>30	>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	385	75	2.0	0.25	0.05	0.005
	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		
	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
OM — OPTIMUM MOISTURE SL — SHRINKAGE LIMIT		
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

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

COLOR

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

GRADATION

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

ANGULARITY OF GRAINS

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

MINERALOGICAL COMPOSITION

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

COMPRESSIBILITY

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

PERCENTAGE OF MATERIAL

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

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

GROUND WATER

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

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 — DIP & DIP DIRECTION OF ROCK STRUCTURES
- SPT / OPT / CPT / VST / PMT — TEST BORING
- AUGER BORING
- CORE BORING
- MW — 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
- [ ] CME-45C
- [X] CME-550
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

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

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

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

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

ROCK DESCRIPTION

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

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

WEATHERING

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

ROCK HARDNESS

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

FRACTURE SPACING

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

BEDDING

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

INDURATION

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

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

TERMS AND DEFINITIONS

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

AQUIFER - A WATER BEARING FORMATION OR STRATA.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

BENCH MARK:

ELEVATION: _____ FT.

NOTES:

REVISED 09/23/09

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SITE PLAN

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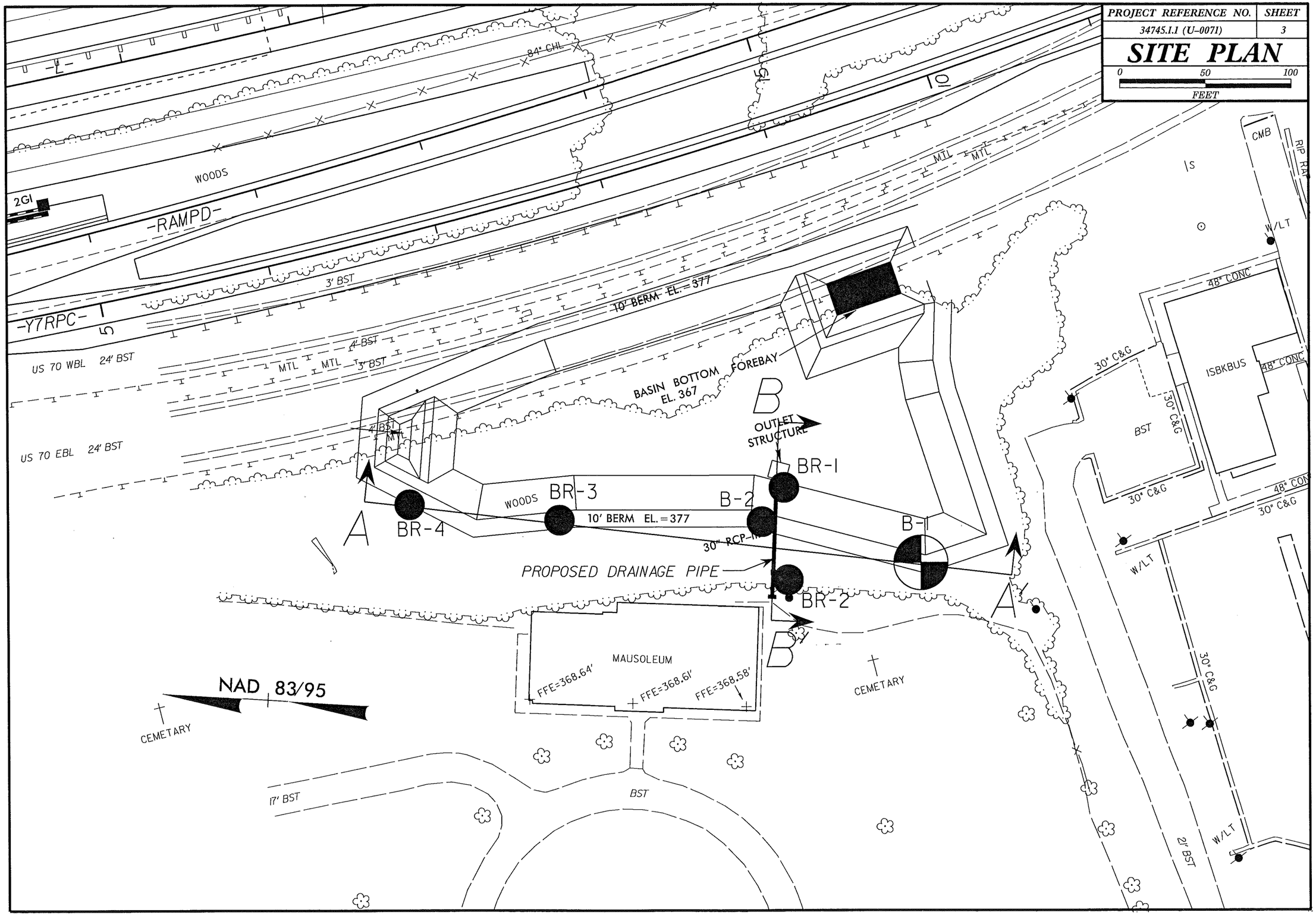

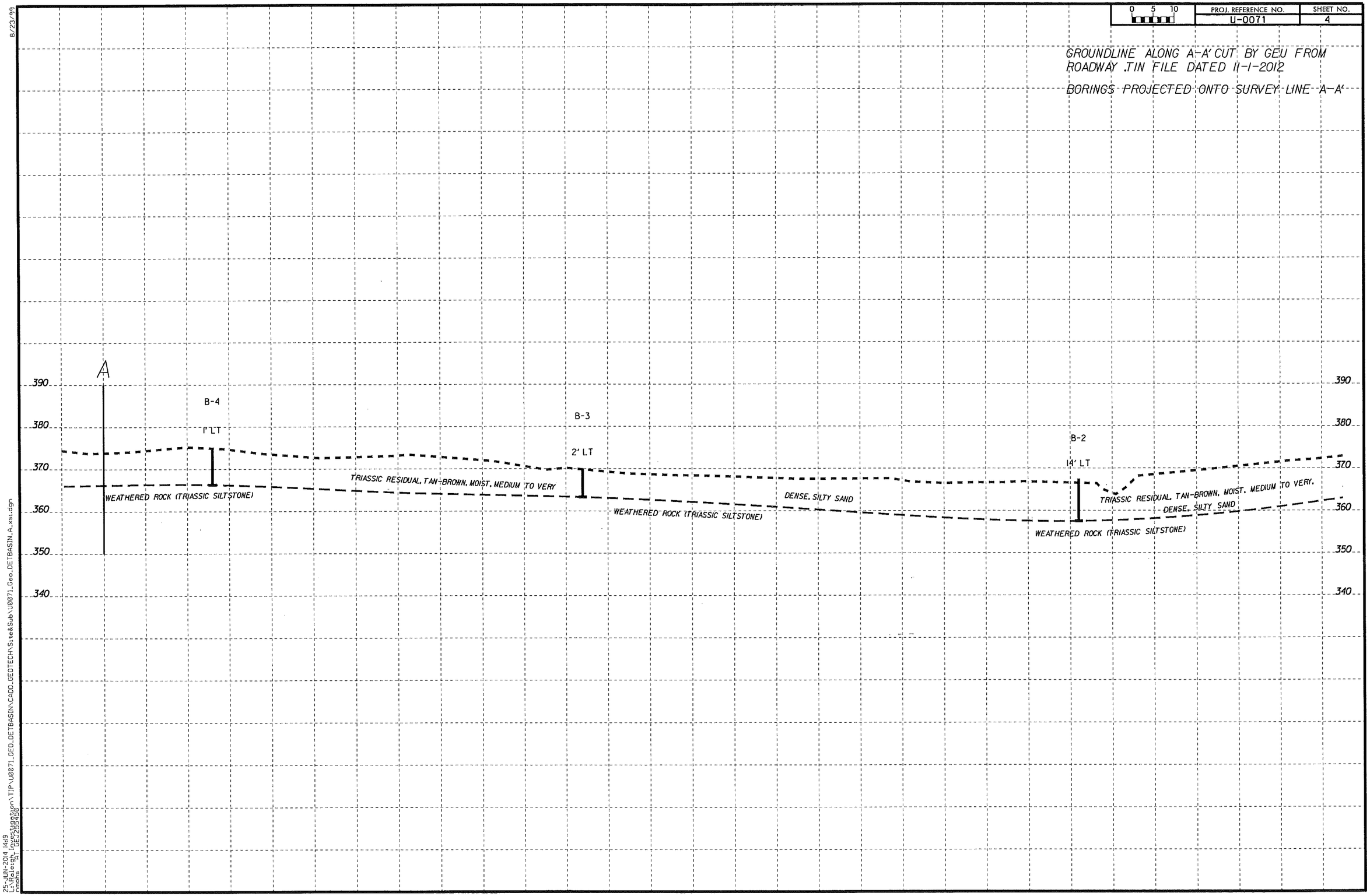

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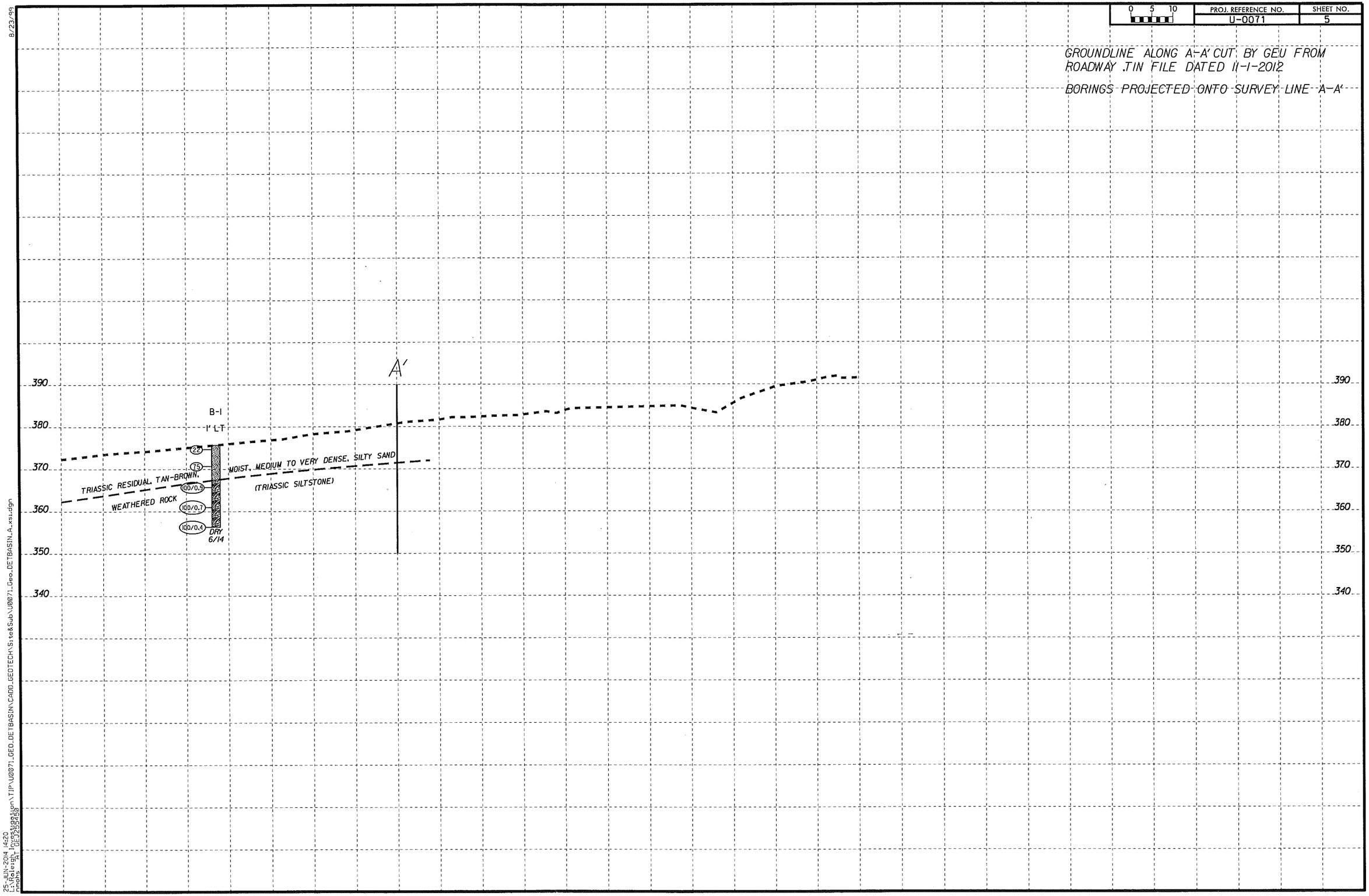

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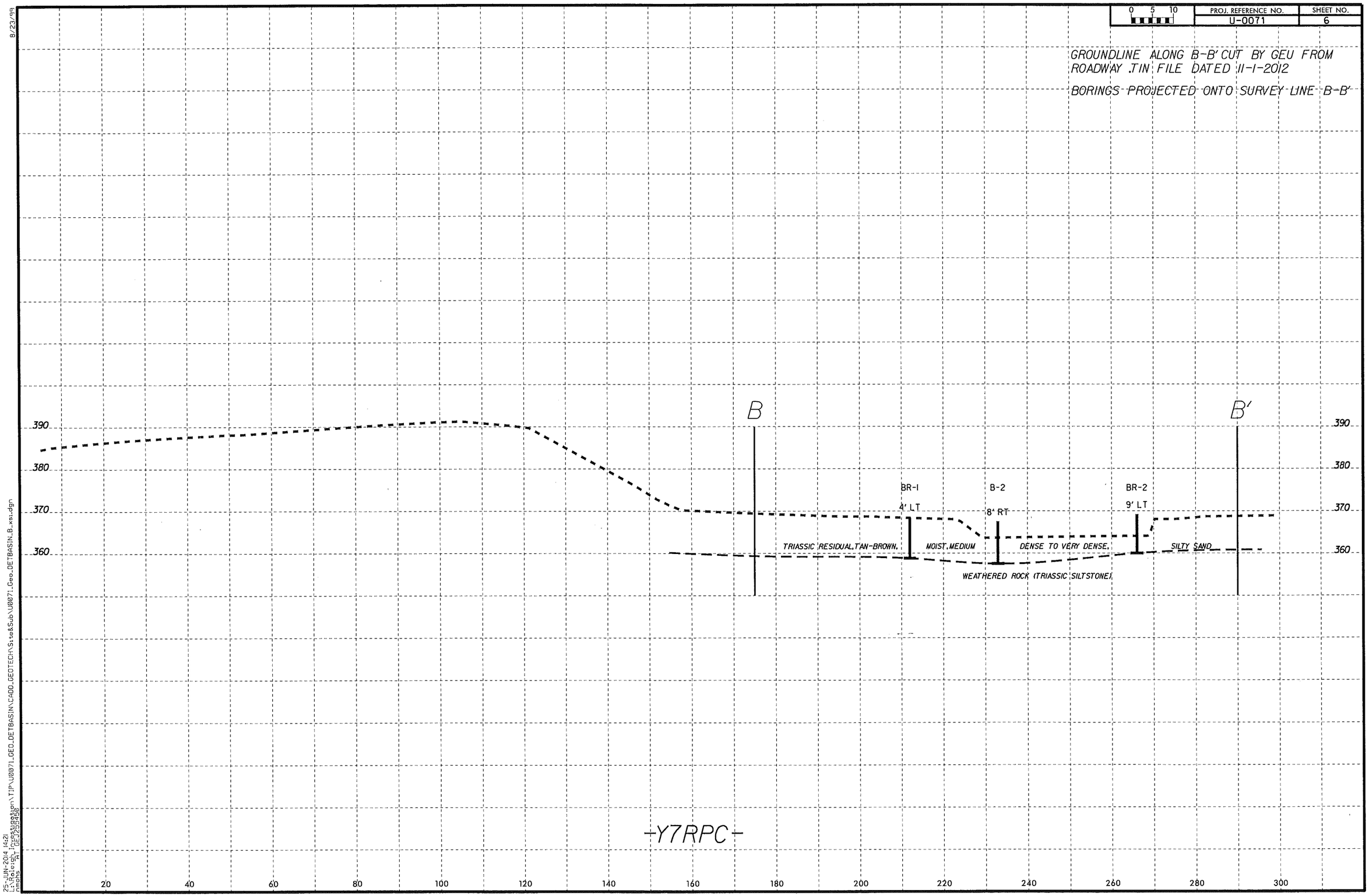

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