This electronic collection of documents is provided for the convenience of the user and is Not a Certified Document –

The documents contained herein were originally issued and sealed by the individuals whose names and license numbers appear on each page, on the dates appearing with their signature on that page.
This file or an individual page shall not be considered a certified document.

REFERENCE: U-2579AA

PROJECT: 34839

SEE SHEET 3 FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

CONTENTS

LINE	STATION	PLAN	PROFILE
-L-	10+00-21+50	4	18
-L-	21+50-47+50	5	18-19
-L-	47+50-60+50	6	19
-L-	60+50-73+50	7	19-20
-L-	73+50-86+50	8	20
-L-	86+50-91+00	9	20
-Y1-	13+00-16+00	15	21
-Y1-	16+00-25+00	16	21
-Y1-	25+00-46+00	5	21-23
-Y1DET-	12+00-20+00	16	24
-Y1DET-	20+50-38+19	5	24-25
-Y1DRV-	10+00-13+50	16	26
-Y2SBL-	10+00-21+00	10	27
-Y2SBL-	21+50-33+00	11	27
-Y2SBL-	33+50-60+00	12	27-28
-Y2SBL-	60+50-73+00	13	28-29
-Y2SBL-	73+50-98+50	14	29-30
-Y2SBL-	98+50-98+98	5	30
-Y2FLYAB-	10+00-21+80	6	31
-Y2FLYAB-	21+80-37+31	5	31
-Y2FLYCA-	10+00-29+98	14	32-33
-Y2FLYCA-	29+99-52+60	5	33-35
-Y2FLYCA-	52+60-62+26	4	35
-Y2RPB-	10+00-19+15	4	36
-Y2RPB-	19+15-32+50	16	36
-Y2RPB-	32+50-49+07	14	36-37
-Y2RPC-	10+00-24+60	5	38
-Y2RPC-	24+60-31+02	6	38
-Y3RPB-	10+00-31+76	12	39
-Y3RPC-	10+00-11+00	11	40
-Y3RPC-	11+50-25+95	12	40
-Y3LPB-	10+00-23+28	12	41
-Y3LPC-	10+00-19+11	12	41
-Y4-	10+14-16+94	17	42
-Y4-	16+95-22+00	12	42

CROSS SECTIONS

LINE	STATION	SHEETS
-L- (LT&RT)	17+00-20+00	43-45
-L- (LT&RT)	30+00-42+50	46-58
-L- (RT)	50+00-57+00	59-62
-Y1-	33+00-35+50	63-65
-Y1DET-	11+50-16+00	66-67
-Y1DET-	35+50-36+50	68
-Y1DRV-	N/A	N/A
-Y2- (LT)	31+00-37+50	69-71
-Y2- (LT)	39+00-47+50	72-75
-Y2- (RT)	2+00-5+00	76-77
-Y2- (RT)	13+50-15+00	78
-Y2- (RT)	20+00-21+00	79
-Y2- (RT)	31+00-37+50	80-83
-Y2- (RT)	40+00-41+50	84
-Y2- (RT)	71+00-72+00	85
-Y2- (RT)	75+00-76+50	86-88
-Y2FLYAB-	31+00-35+00	89-91
-Y2FLYCA-	14+50-18+50	92-95
-Y2RPB-	17+00-20+50	96-98
-Y2RPB-	28+00-32+00	99-101
-Y2RPC-	10+50-13+00	102
-Y3RPB-	14+00-16+00	103
-Y3RPB-	28+00-32+00	104-106
-Y3LPB-	13+50-23+00	107-110
-Y3LPC-	12+50-16+50	111-112
-Y4-	N/A	N/A

TITLE	SHEETS
SOIL TEST RESULTS	113-118
PROCTOR & CBR	119-120
TRIAXIAL & CONSOLIDATION RESULTS	121-166
CPT LOGS	167-193
DILATOMETER TEST RESULTS	194-205

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *FORSYTH*

PROJECT DESCRIPTION *WINSTON-SALEM NORTHERN BELTWAY EASTERN SECTION (FUTURE I-74) FROM US 311 TO I-40*

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2579AA	1	207

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT 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 THE 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.

NOTES:
1. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
2. 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.

PERSONNEL

J. SWARTLEY	*B. BLIZZARD*
M. HAYES	*J. JONES*
M. STEPHENSON	*Z. RODRIGUEZ*
L. BUTLER	
A. MESSER	
H. HOBERT	
T. BUNCH	

INVESTIGATED BY *J.R. SWARTLEY*

DRAWN BY *J.R. SWARTLEY*

CHECKED BY *S.S. LANEY*

SUBMITTED BY *S.S. LANEY*

DATE *MARCH 2019*

3201 SPRING FOREST ROAD
RALEIGH, NC 27616
(919) 872-2660

NORTH CAROLINA LICENSED SEAL 2296 GEOLOGIST JARETT SWARTLEY

DocuSigned by:
Jarett Swartley 10/18/2019
919469487BA3471...
SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	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 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 THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR 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
MATERIAL PASSING #40 LL PI	— 6 MX		— NP	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	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 SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

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

CONSISTENCY OR DENSENESS

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

TEXTURE OR GRAIN SIZE

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

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

GRAIN SIZE	MM	305	75	2.0	0.25	0.05	0.005
	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 SL — SHRINKAGE LIMIT	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NON PLASTIC	0-5	VERY LOW
SLIGHTLY PLASTIC	6-15	SLIGHT
MODERATELY PLASTIC	16-25	MEDIUM
HIGHLY PLASTIC	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.
UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES 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 WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LL < 31
MODERATELY COMPRESSIBLE	LL = 31 - 50
HIGHLY COMPRESSIBLE	LL > 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 WITH CORE
- SPT N-VALUE

RECOMMENDATION SYMBOLS

- UNDERCUT
- SHALLOW UNDERCUT
- UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE
- UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK
- UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL

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:
- [ ] CME-45C
- [ ] CME-55
- [ ] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [X] CME-550X
- [X] D-50 (2)

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

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

CORE SIZE:
- [ ] -B _____ [ ] -H _____
- [X] -N Q

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

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. 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, WOULD YIELD SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, WOULD YIELD 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 FOOT
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 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, SUCH 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: •see note

ELEVATION: FEET

NOTES:

•elevations derived from geopak and the .tin file 'u2579aa_ls_tin.tin' dated 2/15/17

DATE: 8-15-14

DocuSign Envelope ID: F2C53E73-9DD8-4A7D-838E-563AC464E0DC

09/08

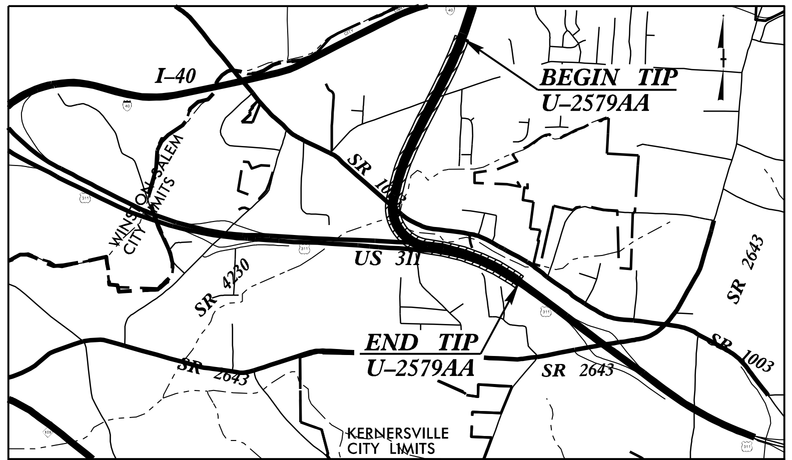
TIP PROJECT: U-2579AA

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2579AA	3	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34839.1.7		PE

FORSYTH COUNTY



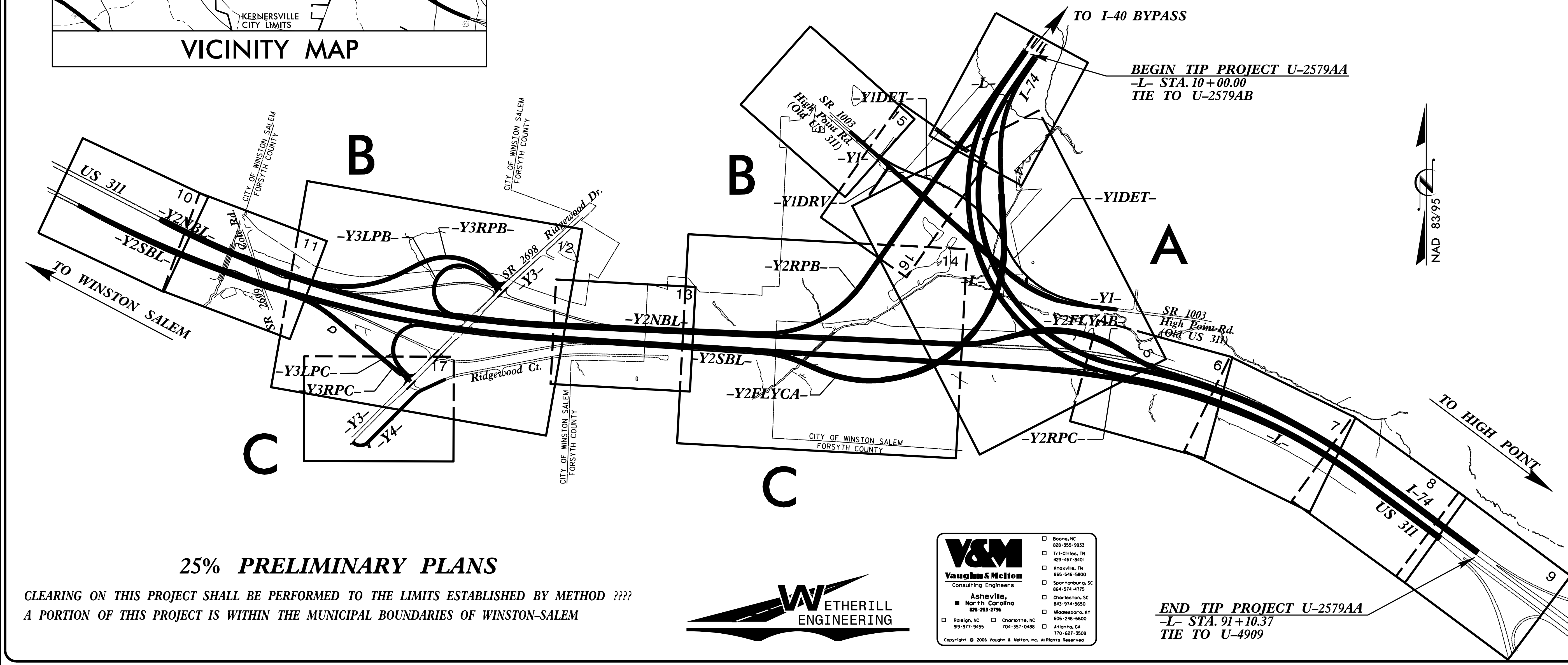
VICINITY MAP

LOCATION: WINSTON-SALEM NORTHERN BELTWAY EASTERN SECTION (FUTURE I-74) FROM US 311 TO I-40

TYPE OF WORK: GRADING, PAVING, DRAINAGE, STRUCTURES, SIGNING, AND PAVEMENT MARKING

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



25% PRELIMINARY PLANS

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD ????
A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF WINSTON-SALEM

WETHERILL ENGINEERING

V&M Vaughn & Melton Consulting Engineers
Asheville, North Carolina 828-253-2796

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2020 = 10,733
ADT 2040 = 16,400
K = 9 %
D = 60 %
T = 7 % *
V = 70 MPH
* (TTST = 4% & DUAL = 3%)
CLASS TIER = INTERSTATE

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT U-2579AA = 1.536 MILES
TOTAL LENGTH TIP PROJECT U-2579AA = 1.536 MILES

Prepared In the Office of:
VAUGHN & MELTON, INC
3509 Haworth Dr. #100, Raleigh NC, 27609 Phone (919)-977-9455

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JUNE 15, 2018

JOHN LANSFORD, PE
PROJECT ENGINEER

LETTING DATE: OCTOBER 20, 2020

VAN TRAN, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT: TATIA L. WHITE, PE, PLS

HYDRAULICS ENGINEER

SIGNATURE:

ROADWAY DESIGN ENGINEER

SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

CONTRACT:

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

March 22, 2019

STATE PROJECT: 34839.1.7 (U-2579AA)
FEDERAL PROJECT: N/A
COUNTY: Forsyth
DESCRIPTION: Winston-Salem Northern Beltway Eastern Section (Future I-74) from US 311 to I-40

SUBJECT: Geotechnical Report – Inventory

S&ME, Inc. has completed a reconnaissance and subsurface investigation for the above roadway project and presents the following inventory. Plans, profiles and cross-sections are included in this report.

Project Description

The project consists of the eastern section of the Winston-Salem Northern Beltway that ties into US 311 and extends northwards towards I-40. Most of the work is being done around the new interchange where US 311 joins with the mainline (-L-). Five bridges are proposed near this interchange. Two of the bridges are located on High Point Rd. (-Y1-). High Point Rd. will be detoured (-Y1DET-) during the construction of these bridges. Two more bridges are located at the on-ramp (-Y2FLYCA-) to the new mainline (-L-) that flies over US 311 (-Y2-) and High Point Rd (-Y1-). The last bridge is located on the northbound lane of US 311 and will diverge from existing travel lanes (-Y2FLYCA-) to fly over the mainline (-L-) before merging back with existing travel lanes. This bridge will be used to maintain northbound traffic along US 311. Each bridge was investigated minimally with one boring performed at each end bent and one boring performed at select interior bent locations. There are three retaining walls associated with these bridges that were investigated during this Roadway Investigation. The mainline starts near I-40 and ends along US 311 in advance of the Union Cross Rd. interchange at the eastern side of the project. A newly proposed off ramp (-Y2RPB-) will enable traffic coming off the mainline to merge back on to northbound US 311. In the western part of the project the Ridgewood Rd. (-Y3-) interchange will be improved with new ramps (-Y3RPB- & -Y3RPC) and loops (-Y3LPB- & -Y3LPC-). Most of the work being done along US 311 (-L-, -Y2- & -Y2RPC-) will be in the form of minor widening.

The geotechnical field investigation was conducted during the period of September through October 2017 and October of 2018. Two S&ME drill crews were used to drill, sample, and log the borings in this report. S&ME rigs used for the drilling include two track-mounted Diedrich D-50 drill machines and an ATV-mounted CME-550X. Additional CPT and DMT testing was done in October of 2018. All rigs were equipped with automatic hammers. Standard Penetration Tests were performed at selected locations and additional borings were advanced using continuous flight augers and hand augers. Representative soil samples were collected for visual classification in the field and selected samples were submitted for laboratory analysis by the S&ME soils lab. Boring ID headers are left on in the report for clarification on how some borings were used interchangeably between multiple alignments. Soil results are also referenced back to the original alignment the boring was assigned to during layout and drilling.

The following alignments, totaling 8.2 miles, were investigated. Subsurface profiles and/or cross-sections of these alignments are included in this report.

Line	Station		
-L-	10+00	to	80+00
-Y1-	13+00	to	46+00
-Y1DET-	11+99	to	38+19
-Y1DRV-	10+12	to	13+50
-Y2-	2+00	to	91+65
-Y2FLYAB-	10+00	to	37+31
-Y2FLYCA-	10+00	to	62+26
-Y2RPB-	10+00	to	49+07
-Y2RPC-	10+00	to	31+02
-Y3RPB-	10+00	to	31+76
-Y3RPC-	10+00	to	25+95
-Y3LPB-	10+00	to	23+28
-Y3LPC-	10+00	to	19+11
-Y4-	10+15	to	22+00

Areas of Special Geotechnical Interest

1) The following borehole locations encountered soft, cohesive soils which have the potential to cause embankment stability and/or long term settlement problems:

Line	Station		
-Y1-	33+50	to	37+50
-Y2-	75+50	to	76+00
-Y2FLYCA-	14+50	to	17+50
-L-	33+00	to	42+50
-Y3RPC-	17+00	to	22+00

2) Highly Plastic Clays: Highly plastic clays (PI > 35) were encountered on the project at the following borehole locations:

Line	Stations	Offsets (ft)
-Y3RPB-	30+00	20 LT
-Y3LPB-	15+50	CL

3) Artificial Fill: Two areas of artificial fill occurs at the following locations:

Line	Station		
-Y3RPB-	23+50	to	24+50
-Y2-	75+50	to	76+00

4) Ponds: Two ponds occur on or within close proximity of right of way on this project. These were noted at the following locations:

Line	Stations	Offset (ft)
-Y1-	24+00-26+75	150 RT to 250 RT
-Y1-	26+50-29+00	90 RT to 970 RT

5) Water wells: Two water wells were found within or in close proximity to the proposed right of way at the following locations:

Line	Stations and Offsets (ft)
-Y1-	39+53, 120 LT
-Y4-	15+09, 50 LT

Physiography and Geology

The project corridor is located in north-central North Carolina in the Piedmont Physiographic Province of North Carolina between the city limits of Kernersville and Winston-Salem. A mixture of houses, fields and wooded areas lie within the project corridor. The project corridor is predominately rural with single family homes and trailers. Topography along the project is flat to steeply sloping with rolling hills and long low ridges. Elevations along the project range from 800± to 910± feet above sea level.

Geologically the project area is located within the Charlotte Belt and consists of Biotite Gneiss and Granite. These are igneous plutonic bodies of rock that were formed around the Middle Proterozoic to Permian periods. Various degrees of metamorphism can be present within these bodies. The residual soils derived from these rocks can contain a high mica content in some locations. Weathered and Crystalline rock underlay these residual soils at depth. Some surface exposures of rock outcrop can be seen in some places along the project corridor.

Water Bodies

There are some major creeks that run through the project corridor. At the western side of the project, Fiddlers Creek flows to the south, crossing underneath US 311 through a four barrel culvert. South Fork Muddy Creek starts at the eastern side of the project and flows to the west along the south side of High Point Rd before it merges with Swain Creek. Swain Creek enters the project from the north and flows to the south crossing underneath High Point Rd. through a box culvert before merging with Swain Creek. When these two creeks meet they flow to the southwest underneath US 311 through a 3 barrel culvert along skew.

There are two ponds along the project off High Point Rd. Both ponds are on the property used by the Shady Oaks Dog Kennel business. One pond will be partly underneath a new fill area. The other smaller pond, is outside the proposed construction and will only be affected by siltation from the adjacent high fills areas proposed here.

Soil Properties

Soils encountered during this investigation are separated into 4 categories: Roadway Embankment, Residual, Alluvial and Artificial Fill soils.

Residual soils are derived from the weathering of underlying rock in the area. These soils consist of gray, tan, brown, pink, red, black, white and orange, soft to hard, saprolitic, micaceous, sandy silt (A-4), clayey silt (A-5), sandy clay (A-6), silty clay (A-7-5/A-7-6) and loose to dense, saprolitic, micaceous, silty sand (A-2-4), clayey sand (A-2-6) and sand (A-3).

Roadway Embankment soils are similar in nature to Residual soils and may be derived from nearby sources. These soils consist of gray, tan, brown, red and orange, soft to med. stiff, sandy silt (A-4), clayey silt (A-5), sandy clay (A-6) and silty clay (A-7-6) and loose to dense, clayey sand (A-2-6) and silty sand (A-2-4).

Alluvial soils are found in the floodplains from the nearby streams, brooks and creeks in the area. These soils consist of gray, black, tan, orange, black and brown, very soft to med. stiff, sandy clay (A-6), silty clay (A-7-6), sandy silt (A-4), clayey silt (A-5) and very loose to dense, silty sand (A-2-4), clayey sand (A-2-6), sand (A-3) and coarse sand (A-1-b).

Artificial Fill soils consist of red and brown, soft to stiff, silty clay (A-7-6) and boulders.

Rock Properties

Weathered rock and crystalline rock occur throughout the project. The weathered rock is derived from the underlying Granite Gneiss bedrock and ranges from inches to 15 feet or more in thickness. Crystalline rock occurs as surface outcrops in some locations. In most of the major road cuts weathered rock usually occurs near the ground surface. Discontinuous lenses of weathered rock at depth were seen in some locations and may occur in other areas that were not investigated.

One SPT with coring was done at a select interior bent location at the Bridge on -Y2FLYCA- over -L-. Two core runs were performed yielding strata RQD and recovery values of 94% and 99% respectively.

Ground Water

Ground water measurements were taken in September and October of 2017 during average to below average rainfall conditions. Ground water is typically between 9’ and 25’ below the ground surface. Ground water was not encountered in many of the upland borings and recorded as dry at the bottom of the boring cylinder. Ground water is not expected to cause any significant impacts for construction except where effective and total stresses are concerned with the placement of large embankments.

Undisturbed Samples

Four undisturbed thin wall Shelby tube samples were collected and submitted for testing at the following locations:

Sample No.	Line	Station & Offset	Depth	Test
ST-1	-Y1-	36+00, 55 RT	4.2-6.2	Consolidation, Triaxial CU
ST-2	-Y1-	36+00, 55 RT	11.2-13.2	Consolidation, Triaxial CU
ST-3	-Y2FLYCA-	17+00, 20 RT	4.2-5.7	Consolidation, Triaxial CU
ST-5	-Y3RPC-	20+50, CL	8.4-10.4	Consolidation

Bulk Samples

One bulk sample was collected for CBR and Proctor testing at the following location:

Sample No.	Line	Station & Offset	Depth	Test
S-250	-Y2RPB-	21+00, CL	2.0-4.0	Proctor, CBR

Respectfully Submitted,

Jarett Swartley, PG
Senior Geologist

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	4

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

Vaughn & Melton
Consulting Engineers
■ Asheville, North Carolina 828-253-2796
☐ Raleigh, NC 919-977-9455
☐ Charlotte, NC 704-357-0488
☐ Boone, NC 828-355-9933
☐ Tri-Cities, TN 423-467-8401
☐ Knoxville, TN 865-546-5800
☐ Spartanburg, SC 864-574-4775
☐ Charleston, SC 843-974-5650
☐ Middlesboro, KY 606-248-6600
☐ Atlanta, GA 770-627-3509

WETHERILL ENGINEERING

REVISIONS

8/17/99

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

PROJECT REFERENCE NO.	SHEET NO.
U–2579AA	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

V&M
Vaughn & Melton
Consulting Engineers
■ Asheville, North Carolina 828·253·2796
☐ Raleigh, NC 919·977·9455
☐ Charlotte, NC 704·357·0488
☐ Boone, NC 828·355·9933
☐ Tri-Cities, TN 423·467·8401
☐ Knoxville, TN 865·546·5800
☐ Spartanburg, SC 864·574·4775
☐ Charleston, SC 843·974·5650
☐ Middlesboro, KY 606·248·6600
☐ Atlanta, GA 770·627·3509

WETHERILL ENGINEERING

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

V&M Vaughn & Melton Consulting Engineers — Asheville, North Carolina — Raleigh, NC 919-577-9450 — Roanoke, VA 828-355-9533 — Tri-Cities, TN 423-467-8400 — Knoxville, TN 865-546-1600 — Spartanburg, SC 864-574-4775 — Charleston, SC 843-556-1600 — Charlotte, NC 704-357-0488 — Augusta, GA 770-627-3509

WETHERILL ENGINEERING

NAD 83/95

REVISIONS

8/17/99

BEGIN BRIDGE -Y2FLYAB-
STA. 20+74.00

MATCHLINE SHEET 5
-Y2FLYAB- STA. 21+80.00

MATCHLINE SHEET 5
-L- STA. 47+50.00

MATCHLINE SHEET 5
-Y2RPC- STA. 24+60.00

MATCHLINE SHEET 7
-L- STA. 60+50.00

ALLUVIAL

RESIDUAL

A

C

VAR.WIDTH EXISTING R/W

48" WW & ISBW

FIREWOOD COVER

CONC

1½ROCK D

WD DK

ISFD

S

B

HTR

REMOVE EXIST. GUARDRAIL

GRAU-350

GREU-350

-Y2FLYAB-

-Y2RPC-

-L-

ROADWAY EMBANKMENT

18" CMP

54" CMP

24" RCP

12' PS

4' PS

27.0'

45.0'

N 71° 47' 21" W

S 08°25'49" E 246.42'

S 87°48'34" W 341.89'

S 08°27'49" E 100.00'

SOIL

CONC HW W/WING WALLS

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

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U–2579AA	7

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

V&M
Vaughn & Melton
Consulting Engineers
Asheville, North Carolina 828·253·2796
☐ Boone, NC 828·355·9933
☐ Tri-Cities, TN 423·467·8401
☐ Knoxville, TN 865·546·5800
☐ Spartanburg, SC 864·574·4775
☐ Charleston, SC 843·974·5650
☐ Middlesboro, KY 606·248·6600
☐ Atlanta, GA 770·627·3509
☐ Raleigh, NC 919·977·9455
☐ Charlotte, NC 704·357·0488

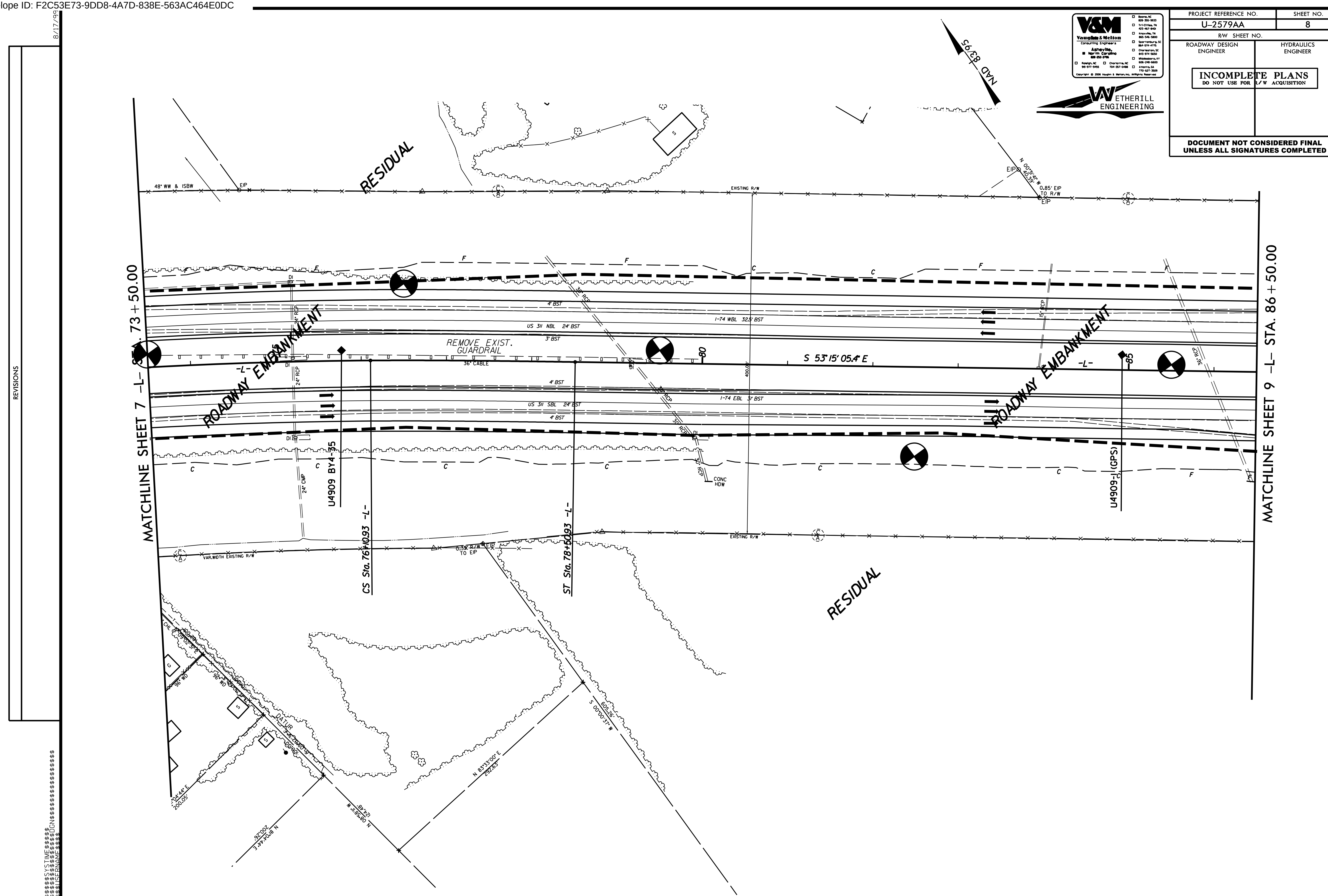
WETHERILL ENGINEERING

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

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DocuSign Envelope ID: F2C53E73-9DD8-4A7D-838E-563AC464E0DC

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

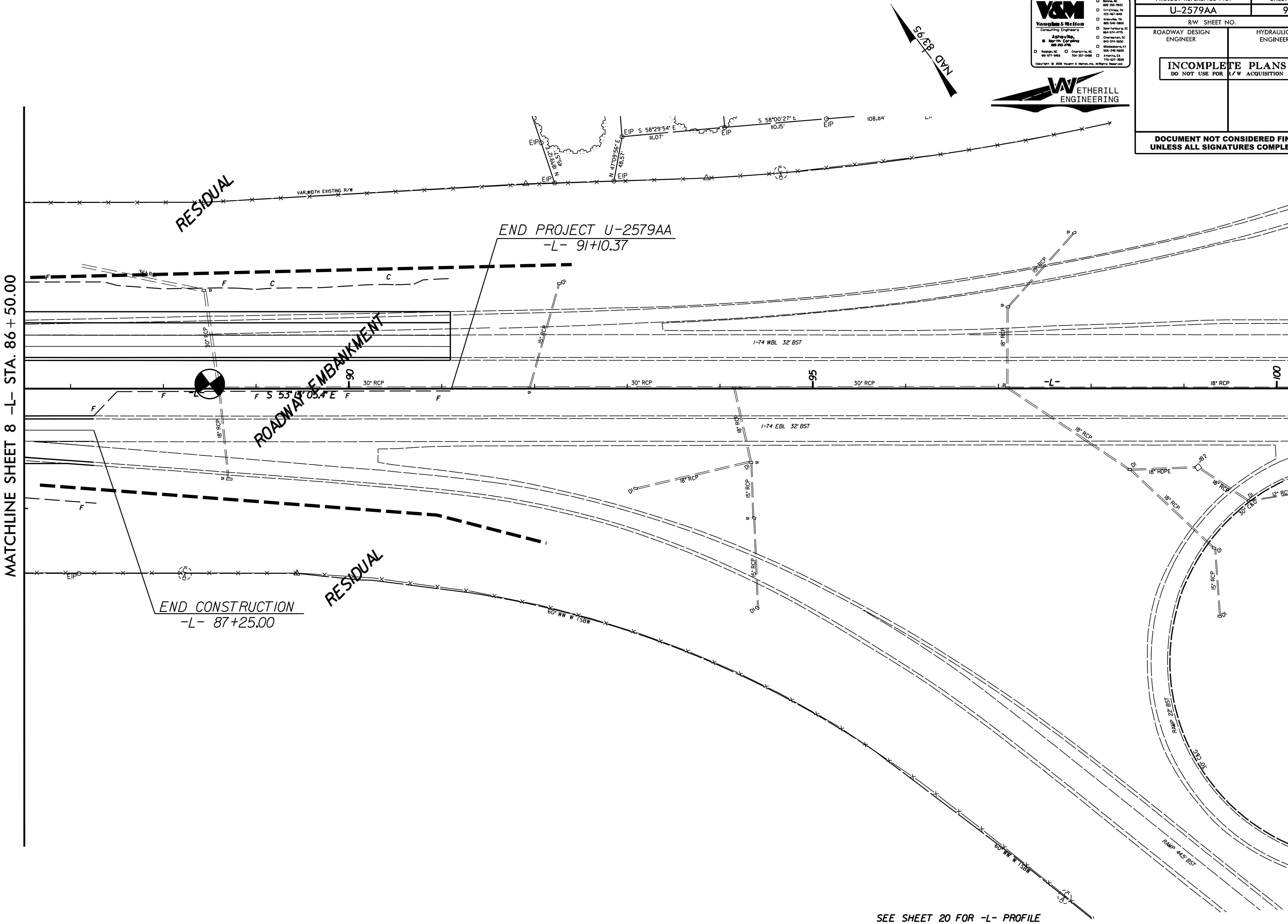
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

V&M Vaughn & Melton Consulting Engineers

WETHERILL ENGINEERING

REVISIONS



SEE SHEET 20 FOR -L- PROFILE

8/17/99

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

DocuSign Envelope ID: F2C53E73-9DD8-4A7D-838E-563AC464E0DC

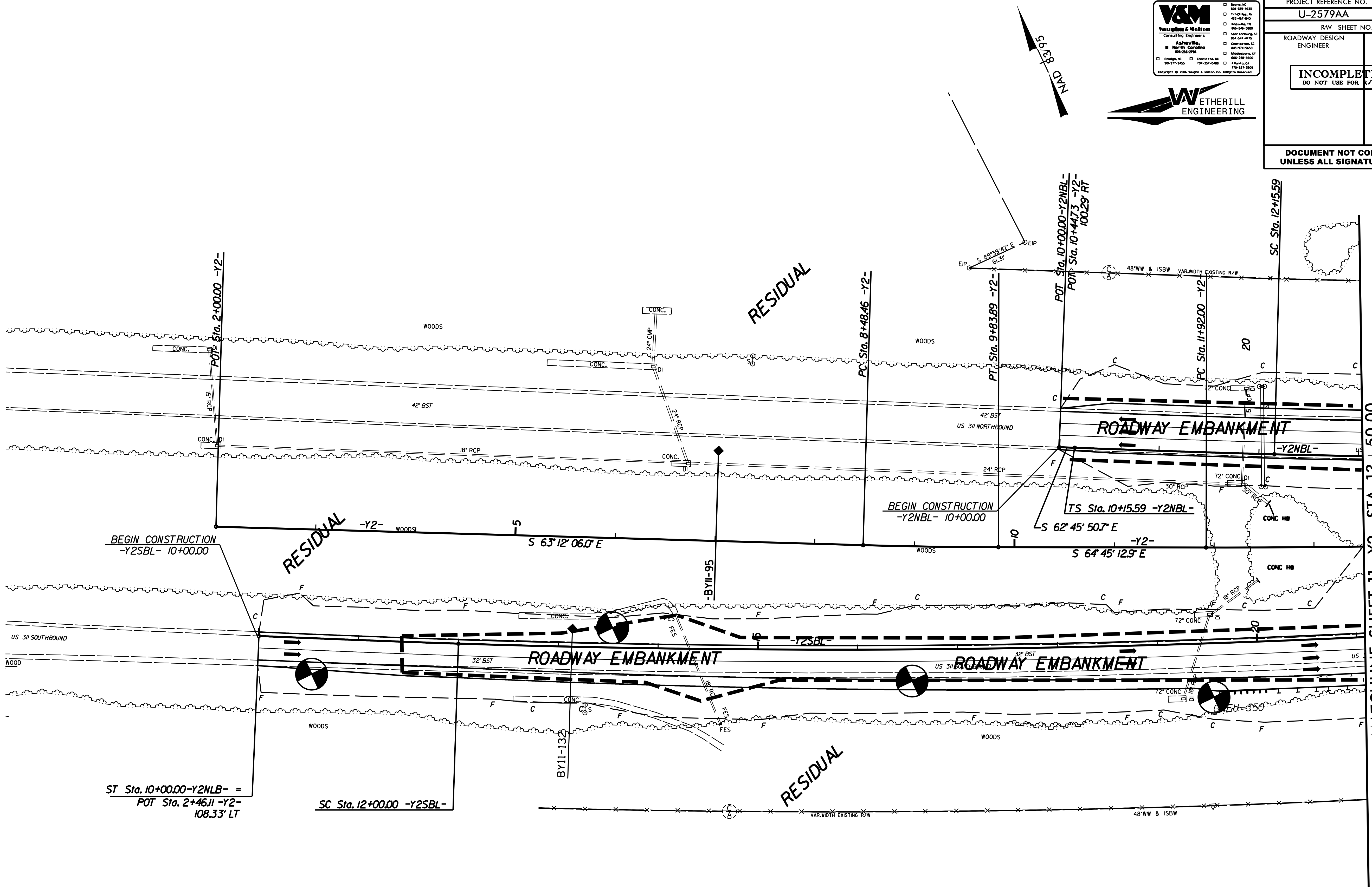
PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

V&M Vaughn & Melton Consulting Engineers

WETHERILL ENGINEERING



NAD 83/95
RESIDUAL
WOODS
CONC.
42' BST
US 311 NORTHBOUND
US 311 SOUTHBOUND
32' BST
ROADWAY EMBANKMENT
-Y2NBL-
-Y2SBL-
POT Sta. 2+00.00 -Y2-
PC Sta. 8+48.46 -Y2-
PT Sta. 9+83.89 -Y2-
POT Sta. 10+00.00-Y2NBL-
POT Sta. 10+44.73 -Y2-
100.29' RT
PC Sta. 11+92.00 -Y2-
SC Sta. 12+15.59
BEGIN CONSTRUCTION
-Y2NBL- 10+00.00
TS Sta. 10+15.59 -Y2NBL-
S 62° 45' 50.7" E
S 63° 12' 06.0" E
S 64° 45' 12.9" E
BEGIN CONSTRUCTION
-Y2SBL- 10+00.00
ST Sta. 10+00.00-Y2NLB- =
POT Sta. 2+46.11 -Y2-
108.33' LT
SC Sta. 12+00.00 -Y2SBL-
-BY11-95
BY11-132
48"WW & ISBW
VAR.WIDTH EXISTING R/W
18" RCP
24" RCP
30" RCP
15" RCP
24" CMP
72" CONC
CONC HW
FES
EIP
MATCHLINE SHEET 11 -Y2- STA. 13+50.00

REVISIONS

DocuSign Envelope ID: F2C53E73-9DD8-4A7D-838E-563AC464E0DC

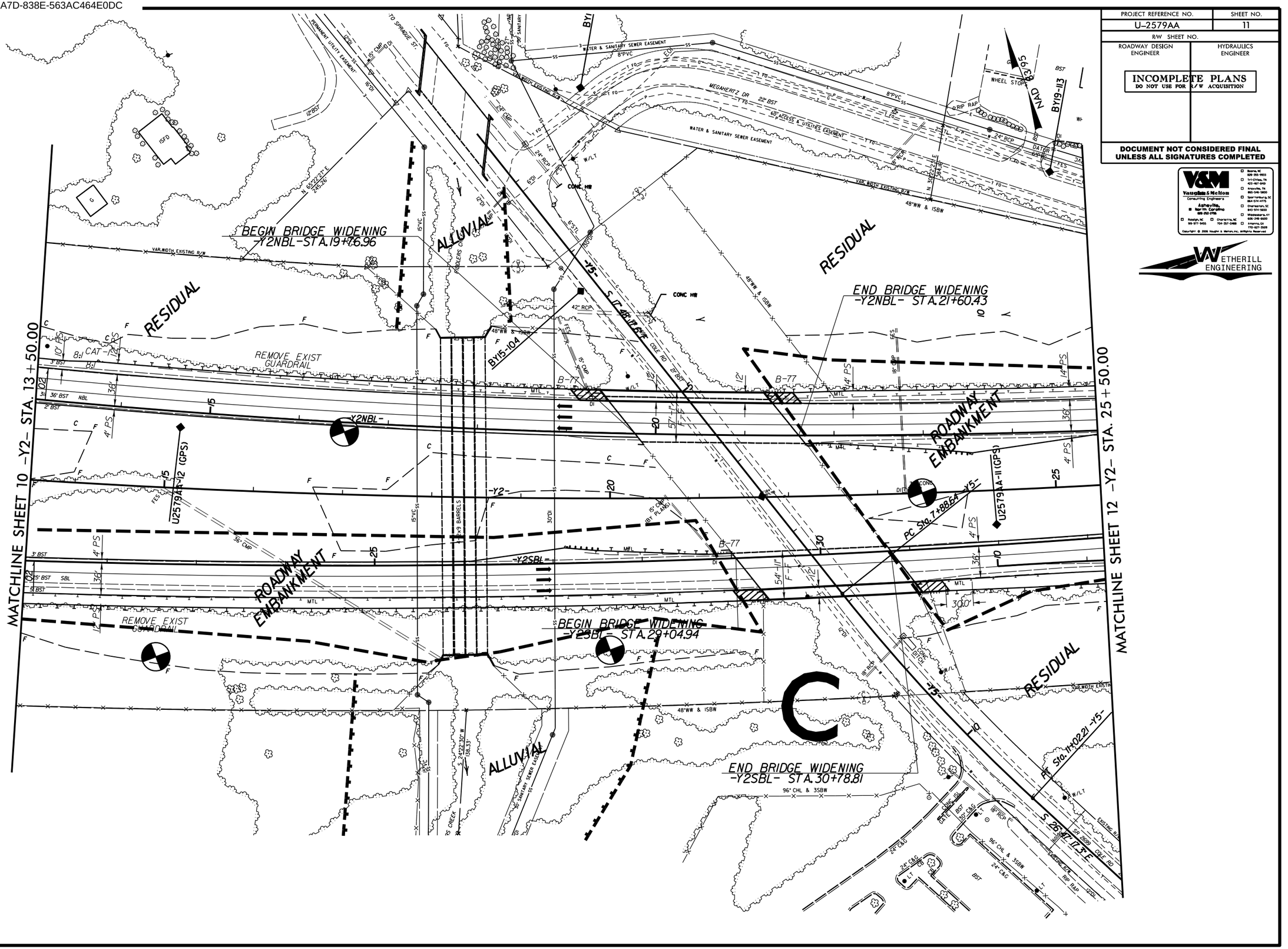
PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

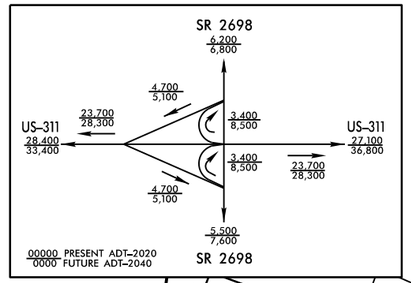
V&M Vaughn & Melton Consulting Engineers
Asheville, North Carolina

WETHERILL ENGINEERING



8/17/99
$$$$$$SYSTIME$$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

DocuSign Envelope ID: F2C53E73-9DD8-4A7D-838E-563AC464E0DC



PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	12

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

V&M
Vaughn & Melton
Consulting Engineers
Asheville, North Carolina 828-253-2796
☐ Boone, NC 828-355-9933
☐ Tri-Cities, TN 423-467-8401
☐ Knoxville, TN 865-546-5800
☐ Spartanburg, SC 864-574-4775
☐ Charleston, SC 843-974-5650
☐ Middlesboro, KY 606-248-6600
☐ Atlanta, GA 770-627-3509
☐ Raleigh, NC 919-977-9455
☐ Charlotte, NC 704-357-0488

WETHERILL ENGINEERING

DocuSign Envelope ID: F2C53E73-9DD8-4A7D-838E-563AC464E0DC

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	13

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Vaughn & Melton
Consulting Engineers
Asheville, North Carolina
828-252-2795
Raleigh, NC 919-577-9155
Boone, NC 828-355-9553
Tri-Cities, TN 423-467-9490
Wilmington, NC 910-540-1800
Spartanburg, SC 864-574-4775
Charleston, SC 843-971-5656
Wilkesboro, NC 336-818-6400
Atlanta, GA 770-671-3009
Charlotte, NC 704-357-0486

WETHERILL ENGINEERING

MATCHLINE SHEET 16 -Y2RPB- STA. 32+50.00

NAD 83/95

MATCHLINE SHEET 13 -Y2- STA. 65+50.00

MATCHLINE SHEET 5 -Y2- STA. 91+00.00 -Y2FLYCA- STA. 29+98.44

B

C

RESIDUAL

ALLUVIAL

ROADWAY EMBANKMENT

BEGIN BRIDGE -Y2FLYCA- STA 26+71.00

B720-17

B720-18

B-77

B-77A

B-77B

B-77C

B-77D

B-77E

B-77F

B-77G

B-77H

B-77I

B-77J

B-77K

B-77L

B-77M

B-77N

B-77O

B-77P

B-77Q

B-77R

B-77S

B-77T

B-77U

B-77V

B-77W

B-77X

B-77Y

B-77Z

B-77AA

B-77AB

B-77AC

B-77AD

B-77AE

B-77AF

B-77AG

B-77AH

B-77AI

B-77AJ

B-77AK

B-77AL

B-77AM

B-77AN

B-77AO

B-77AP

B-77AQ

B-77AR

B-77AS

B-77AT

B-77AU

B-77AV

B-77AW

B-77AX

B-77AY

B-77AZ

B-77BA

B-77BB

B-77BC

B-77BD

B-77BE

B-77BF

B-77BG

B-77BH

B-77BI

B-77BJ

B-77BK

B-77BL

B-77BM

B-77BN

B-77BO

B-77BP

B-77BQ

B-77BR

B-77BS

B-77BT

B-77BU

B-77BV

B-77BW

B-77BX

B-77BY

B-77BZ

B-77CA

B-77CB

B-77CC

B-77CD

B-77CE

B-77CF

B-77CG

B-77CH

B-77CI

B-77CJ

B-77CK

B-77CL

B-77CM

B-77CN

B-77CO

B-77CP

B-77CQ

B-77CR

B-77CS

B-77CT

B-77CU

B-77CV

B-77CW

B-77CX

B-77CY

B-77CZ

B-77DA

B-77DB

B-77DC

B-77DD

B-77DE

B-77DF

B-77DG

B-77DH

B-77DI

B-77DJ

B-77DK

B-77DL

B-77DM

B-77DN

B-77DO

B-77DP

B-77DQ

B-77DR

B-77DS

B-77DT

B-77DU

B-77DV

B-77DW

B-77DX

B-77DY

B-77DZ

B-77EA

B-77EB

B-77EC

B-77ED

B-77EE

B-77EF

B-77EG

B-77EH

B-77EI

B-77EJ

B-77EK

B-77EL

B-77EM

B-77EN

B-77EO

B-77EP

B-77EQ

B-77ER

B-77ES

B-77ET

B-77EU

B-77EV

B-77EW

B-77EX

B-77EY

B-77EZ

B-77FA

B-77FB

B-77FC

B-77FD

B-77FE

B-77FF

B-77FG

B-77FH

B-77FI

B-77FJ

B-77FK

B-77FL

B-77FM

B-77FN

B-77FO

B-77FP

B-77FQ

B-77FR

B-77FS

B-77FT

B-77FU

B-77FV

B-77FW

B-77FX

B-77FY

B-77FZ

B-77GA

B-77GB

B-77GC

B-77GD

B-77GE

B-77GF

B-77GG

B-77GH

B-77GI

B-77GJ

B-77GK

B-77GL

B-77GM

B-77GN

B-77GO

B-77GP

B-77GQ

B-77GR

B-77GS

B-77GT

B-77GU

B-77GV

B-77GW

B-77GX

B-77GY

B-77GZ

B-77HA

B-77HB

B-77HC

B-77HD

B-77HE

B-77HF

B-77HG

B-77HH

B-77HI

B-77HJ

B-77HK

B-77HL

B-77HM

B-77HN

B-77HO

B-77HP

B-77HQ

B-77HR

B-77HS

B-77HT

B-77HU

B-77HV

B-77HW

B-77HX

B-77HY

B-77HZ

B-77IA

B-77IB

B-77IC

B-77ID

B-77IE

B-77IF

B-77IG

B-77IH

B-77II

B-77IJ

B-77IK

B-77IL

B-77IM

B-77IN

B-77IO

B-77IP

B-77IQ

B-77IR

B-77IS

B-77IT

B-77IU

B-77IV

B-77IW

B-77IX

B-77IY

B-77IZ

B-77JA

B-77JB

B-77JC

B-77JD

B-77JE

B-77JF

B-77JG

B-77JH

B-77JI

B-77JJ

B-77JK

B-77JL

B-77JM

B-77JN

B-77JO

B-77JP

B-77JQ

B-77JR

B-77JS

B-77JT

B-77JU

B-77JV

B-77JW

B-77JX

B-77JY

B-77JZ

B-77KA

B-77KB

B-77KC

B-77KD

B-77KE

B-77KF

B-77KG

B-77KH

B-77KI

B-77KJ

B-77KK

B-77KL

B-77KM

B-77KN

B-77KO

B-77KP

B-77KQ

B-77KR

B-77KS

B-77KT

B-77KU

B-77KV

B-77KW

B-77KX

B-77KY

B-77KZ

B-77LA

B-77LB

B-77LC

B-77LD

B-77LE

B-77LF

B-77LG

B-77LH

B-77LI

B-77LJ

B-77LK

B-77LL

B-77LM

B-77LN

B-77LO

B-77LP

B-77LQ

B-77LR

B-77LS

B-77LT

B-77LU

B-77LV

B-77LW

B-77LX

B-77LY

B-77LZ

B-77MA

B-77MB

B-77MC

B-77MD

B-77ME

B-77MF

B-77MG

B-77MH

B-77MI

B-77MJ

B-77MK

B-77ML

B-77MM

B-77MN

B-77MO

B-77MP

B-77MQ

B-77MR

B-77MS

B-77MT

B-77MU

B-77MV

B-77MW

B-77MX

B-77MY

B-77MZ

B-77NA

B-77NB

B-77NC

B-77ND

B-77NE

B-77NF

B-77NG

B-77NH

B-77NI

B-77NJ

B-77NK

B-77NL

B-77NM

B-77NN

B-77NO

B-77NP

B-77NQ

B-77NR

B-77NS

B-77NT

B-77NU

B-77NV

B-77NW

B-77NX

B-77NY

B-77NZ

B-77OA

B-77OB

B-77OC

B-77OD

B-77OE

B-77OF

B-77OG

B-77OH

B-77OI

B-77OJ

B-77OK

B-77OL

B-77OM

B-77ON

B-77OO

B-77OP

B-77OQ

B-77OR

B-77OS

B-77OT

B-77OU

B-77OV

B-77OW

B-77OX

B-77OY

B-77OZ

B-77PA

B-77PB

B-77PC

B-77PD

B-77PE

B-77PF

B-77PG

B-77PH

B-77PI

B-77PJ

B-77PK

B-77PL

B-77PM

B-77PN

B-77PO

B-77PP

B-77PQ

B-77PR

B-77PS

B-77PT

B-77PU

B-77PV

B-77PW

B-77PX

B-77PY

B-77PZ

B-77QA

B-77QB

B-77QC

B-77QD

B-77QE

B-77QF

B-77QG

B-77QH

B-77QI

B-77QJ

B-77QK

B-77QL

B-77QM

B-77QN

B-77QO

B-77QP

B-77QQ

B-77QR

B-77QS

B-77QT

B-77QU

B-77QV

B-77QW

B-77QX

B-77QY

B-77QZ

B-77RA

B-77RB

B-77RC

B-77RD

B-77RE

B-77RF

B-77RG

B-77RH

B-77RI

B-77RJ

B-77RK

B-77RL

B-77RM

B-77RN

B-77RO

B-77RP

B-77RQ

B-77RR

B-77RS

B-77RT

B-77RU

B-77RV

B-77RW

B-77RX

B-77RY

B-77RZ

B-77SA

B-77SB

B-77SC

B-77SD

B-77SE

B-77SF

B-77SG

B-77SH

B-77SI

B-77SJ

B-77SK

B-77SL

B-77SM

B-77SN

B-77SO

B-77SP

B-77SQ

B-77SR

B-77SS

B-77ST

B-77SU

B-77SV

B-77SW

B-77SX

B-77SY

B-77SZ

B-77TA

B-77TB

B-77TC

B-77TD

B-77TE

B-77TF

B-77TG

B-77TH

B-77TI

B-77TJ

B-77TK

B-77TL

B-77TM

B-77TN

B-77TO

B-77TP

B-77TQ

B-77TR

B-77TS

B-77TT

B-77TU

B-77TV

B-77TW

B-77TX

B-77TY

B-77TZ

B-77UA

B-77UB

B-77UC

B-77UD

B-77UE

B-77UF

B-77UG

B-77UH

B-77UI

B-77UJ

B-77UK

B-77UL

B-77UM

B-77UN

B-77UO

B-77UP

B-77UQ

B-77UR

B-77US

B-77UT

B-77UU

B-77UV

B-77UW

B-77UX

B-77UY

B-77UZ

B-77VA

B-77VB

B-77VC

B-77VD

B-77VE

B-77VF

B-77VG

B-77VH

B-77VI

B-77VJ

B-77VK

B-77VL

B-77VM

B-77VN

B-77VO

B-77VP

B-77VQ

B-77VR

B-77VS

B-77VT

B-77VU

B-77VV

B-77VW

B-77VX

B-77VY

B-77VZ

B-77WA

B-77WB

B-77WC

B-77WD

B-77WE

B-77WF

B-77WG

B-77WH

B-77WI

B-77WJ

B-77WK

B-77WL

B-77WM

B-77WN

B-77WO

B-77WP

B-77WQ

B-77WR

B-77WS

B-77WT

B-77WU

B-77WV

B-77WW

B-77WX

B-77WY

B-77WZ

B-77XA

B-77XB

B-77XC

B-77XD

B-77XE

B-77XF

B-77XG

B-77XH

B-77XI

B-77XJ

B-77XK

B-77XL

B-77XM

B-77XN

B-77XO

B-77XP

B-77XQ

B-77XR

B-77XS

B-77XT

B-77XU

B-77XV

B-77XW

B-77XX

B-77XY

B-77XZ

B-77YA

B-77YB

B-77YC

B-77YD

B-77YE

B-77YF

B-77YG

B-77YH

B-77YI

B-77YJ

B-77YK

B-77YL

B-77YM

B-77YN

B-77YO

B-77YP

B-77YQ

B-77YR

B-77YS

B-77YT

B-77YU

B-77YV

B-77YW

B-77YX

B-77YY

B-77YZ

B-77ZA

B-77ZB

B-77ZC

B-77ZD

B-77ZE

B-77ZF

B-77ZG

B-77ZH

B-77ZI

B-77ZJ

B-77ZK

B-77ZL

B-77ZM

B-77ZN

B-77ZO

B-77ZP

B-77ZQ

B-77ZR

B-77ZS

B-77ZT

B-77ZU

B-77ZV

B-77ZW

B-77ZX

B-77ZY

B-77ZZ

100 50 0 100 200
PLANS

FORSYTH COUNTY
CITY OF WINSTON SALEM

8/17/99

REVISIONS

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

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

WETHERILL ENGINEERING

NAD 83/95

REVISIONS

8/17/99

MATCHLINE SHEET 16 -Y1- STA. 16+00.00

BEGIN CONSTRUCTION
-Y1- 13+00.00

RESIDUAL

RESIDUAL

POND

RIDING RINK

TEST STATION

TO UNION CROSS RD.

SR 2679 GLENN HI RD

24' BST

6' STL

DATUR

EXISTING R/W

60.00'

10' GR

15" RCP

48" WW & WD

483.17' S 48°37'38" E

2.54' EIP TO R/W

POT Sta. 10+00.00 -Y1-

194.42' N 4°32'51" E

99.90' N 42°10'16" W

99.45' N 4°33'05" E

CONC

WD DK

ISFD

ISBK/D

I1/2SFD

ISBK/2D/S

W/L

GR

CONDUIT

ROCK WALL

FORCE MAIN IS NOW GRAVITY LINE 12" DI

12" RCP

12" PS

-Y1-

S 48°29'09" E

50' TAPER LT & RT

BY1-55

HTR

ISBKD

BLK WALL

CAR PORT

U2579AA-5

SOUTH CAROLINA

CITY OF WINSTON SALEM

NORTH CAROLINA

S 03°28'30" W 84.58'

S 84°07'41" W 65.50'

N 86°54'54" W 13.64'

S 31°55'20" W 29.24'

S 8°35'32" W 15.92'

N 02°59'36" E 257.90'

S 80°58'20" W 300.28'

N 80°58'20" E 300.28'

S 25°59'23" W 100.00'

N 72°57'37" W 54.85'

S 32°09'23" W 124.53'

N 80°58'20" E 246.40'

48" WD

48" WW & WD

48" CMP

4XLE

12" RCP

15" RCP

18" RCP

24" RCP

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

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	16

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

V&M
Vaughn & Melton
Consulting Engineers
■ Asheville, North Carolina 828·253·2796
☐ Raleigh, NC 919·977·9455
☐ Charlotte, NC 704·357·0488
☐ Boone, NC 828·355·9933
☐ Tri-Cities, TN 423·467·8401
☐ Knoxville, TN 865·546·5800
☐ Spartanburg, SC 864·574·4775
☐ Charleston, SC 843·974·5650
☐ Middlesboro, KY 606·248·6600
☐ Atlanta, GA 770·627·3509

WETHERILL ENGINEERING

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

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

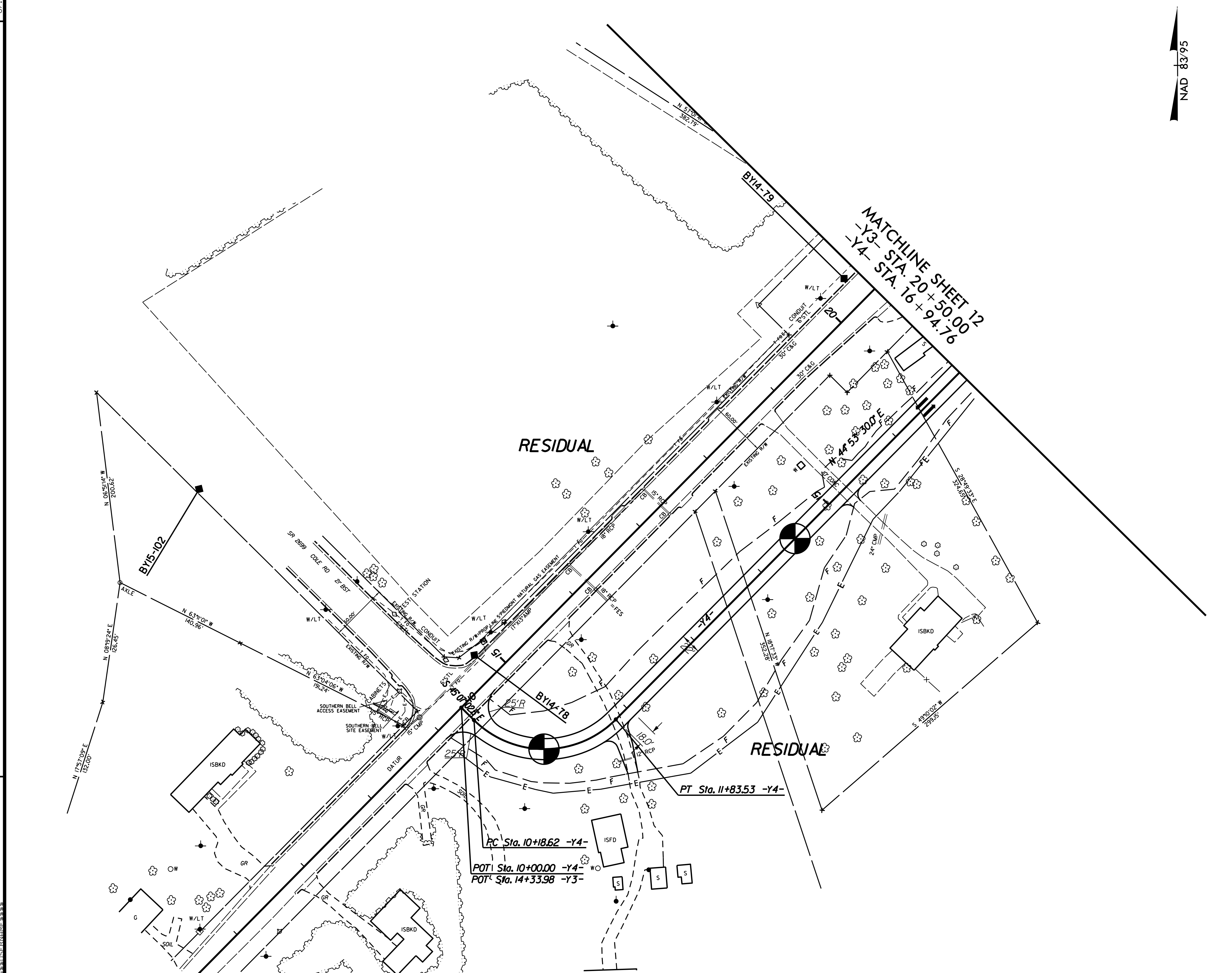
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

V&M Vaughn & Melton Consulting Engineers

WETHERILL ENGINEERING

REVISIONS



PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	18

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Vaughn & Melton
Consulting Engineers
Asheville, North Carolina 828-253-2796
Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488
Boone, NC 828-355-9933
Tri-Cities, TN 423-467-8401
Knoxville, TN 865-546-5800
Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Atlanta, GA 770-627-3509

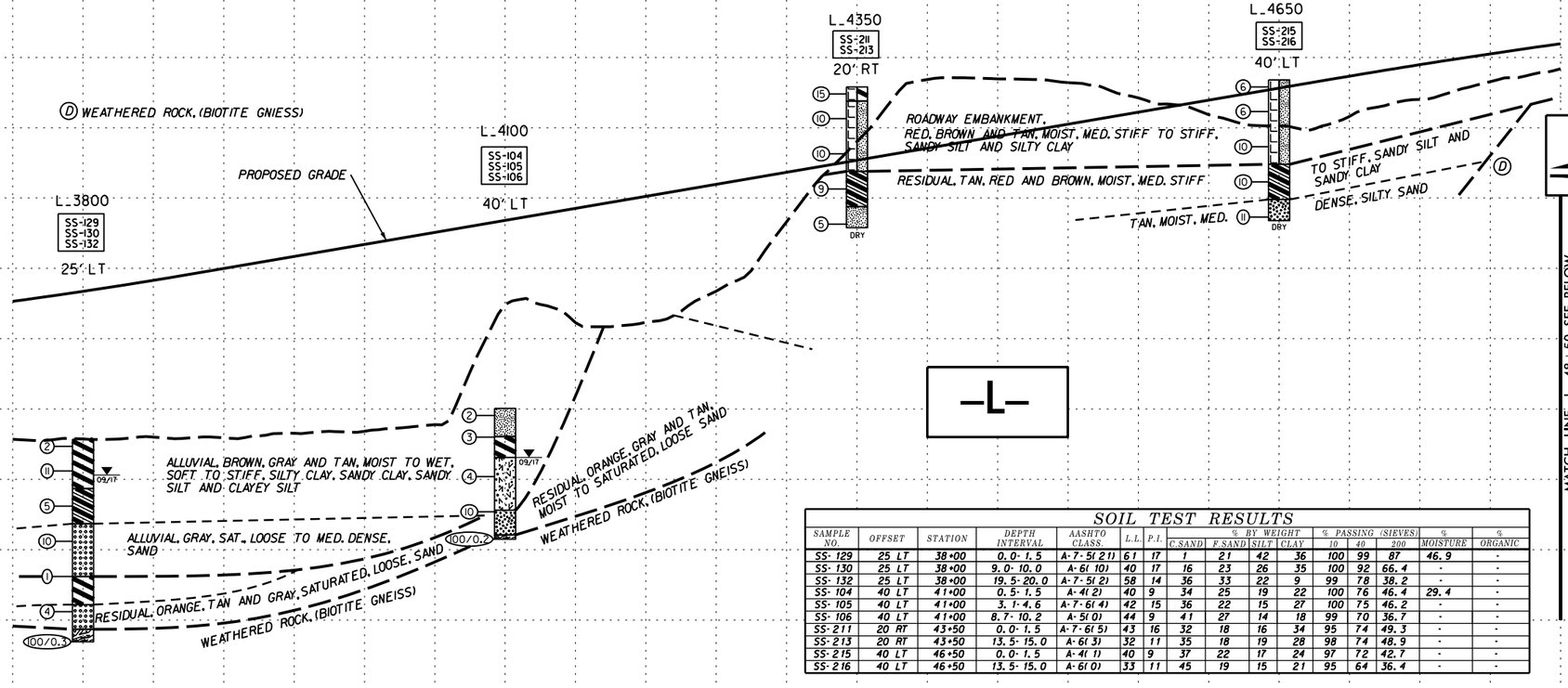
WETHERILL ENGINEERING

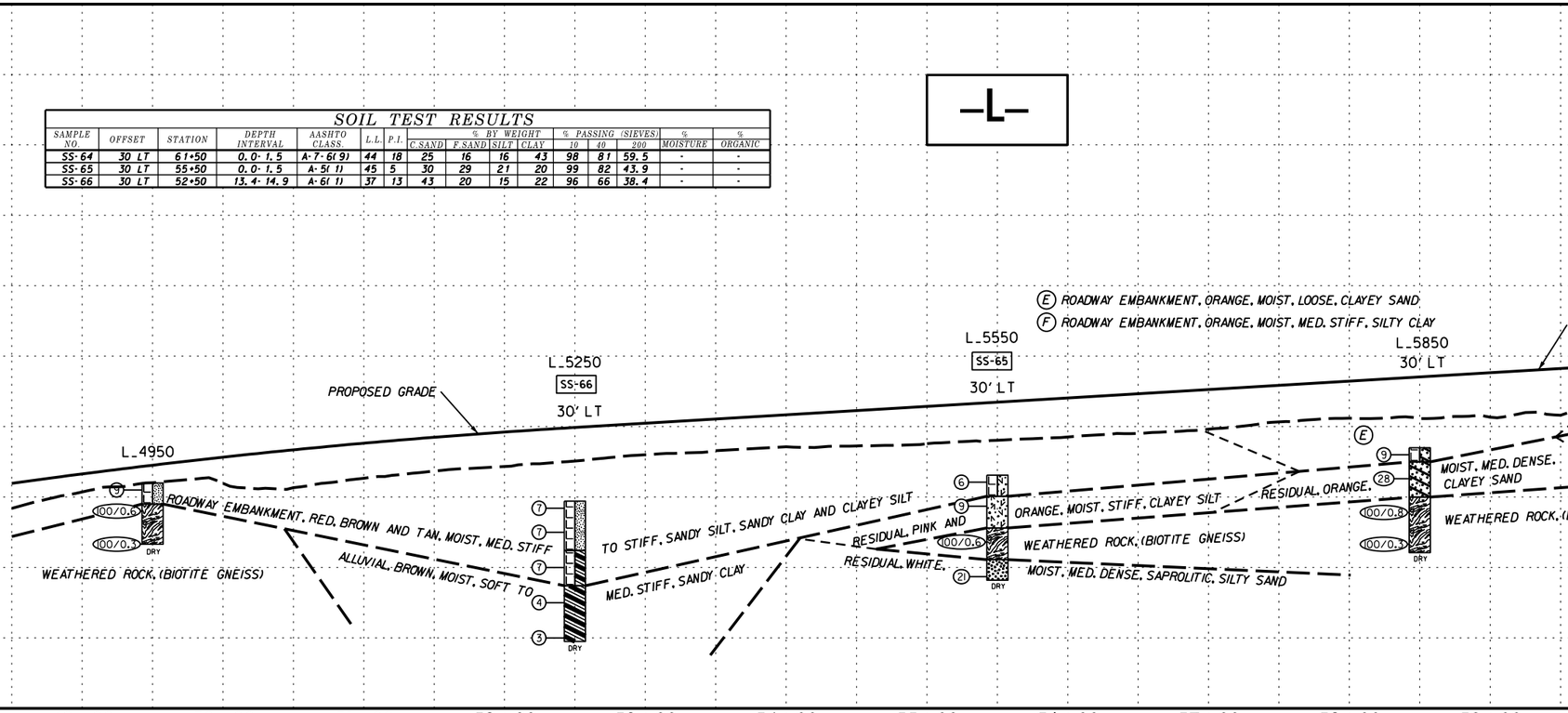
SOIL TEST RESULTS

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-184	70 LT	10+00	0.0-1.5	A-4(0)	29	8	40	19	17	24	96	70	41.4	-	-
SS-185	70 LT	10+00	4.2-5.7	A-5(0)	51	1	26	40	20	14	100	90	36.4	-	-
SS-186	70 LT	10+00	9.2-10.7	A-5(0)	42	1	37	23	18	22	99	72	42.7	-	-
SS-45	60 RT	15+50	0.0-1.5	A-7-6(12)	50	26	29	15	14	42	99	79	56.8	-	-
SS-46	60 RT	15+50	3.4-4.9	A-6(2)	37	16	42	21	14	23	98	71	38.0	15.6	-
SS-47	60 RT	15+50	8.4-9.9	A-7-6(8)	42	20	27	19	19	35	99	82	55.4	-	-
SS-36	25 RT	18+00	3.4-4.9	A-7-5(21)	65	26	17	12	20	51	100	90	72.7	-	-
SS-37	25 RT	18+00	19.4-19.9	A-7-5(16)	63	11	8	10	46	36	100	95	84.3	-	-
SS-34	CL	21+50	3.4-4.9	A-7-5(7)	54	13	25	21	24	30	99	86	56.5	24.2	-
SS-35	CL	21+50	18.4-19.9	A-2-5(0)	45	NP	47	26	18	9	99	82	28.9	-	-

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-25	CL	25+00	0.0-1.5	A-4(0)	34	8	41	21	17	21	98	74	39.5	20.6	-
SS-26	CL	25+00	8.4-9.9	A-7-6(5)	42	16	34	18	15	33	99	77	49.2	-	-
SS-81	CL	27+50	3.5-5.0	A-7-5(5)	49	14	32	20	16	32	99	79	50.2	28.3	-
SS-82	CL	27+50	13.5-15	A-5(0)	42	4	33	37	24	6	100	83	35.8	-	-
SS-21	7 RT	30+69	9.0-10.5	A-7-6(7)	41	19	29	18	19	34	98	78	53.3	39.4	-
SS-75	20 RT	39+65	0.0-1.5	A-7-5(27)	58	22	1	10	43	46	100	99	94.1	32.8	-
SS-76	20 RT	39+65	9.2-10.7	A-7-6(18)	48	21	4	22	34	40	100	98	81.5	-	-





PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	19

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

V&M
Vaughn & Melton
Consulting Engineers
Asheville, North Carolina 828·253·2796
☐ Boone, NC 828·355·9933
☐ Tri-Cities, TN 423·467·8401
☐ Knoxville, TN 865·546·5800
☐ Spartanburg, SC 864·574·4775
☐ Charleston, SC 843·974·5650
☐ Middlesboro, KY 606·248·6600
☐ Atlanta, GA 770·627·3509
☐ Raleigh, NC 919·977·9455
☐ Charlotte, NC 704·357·0488

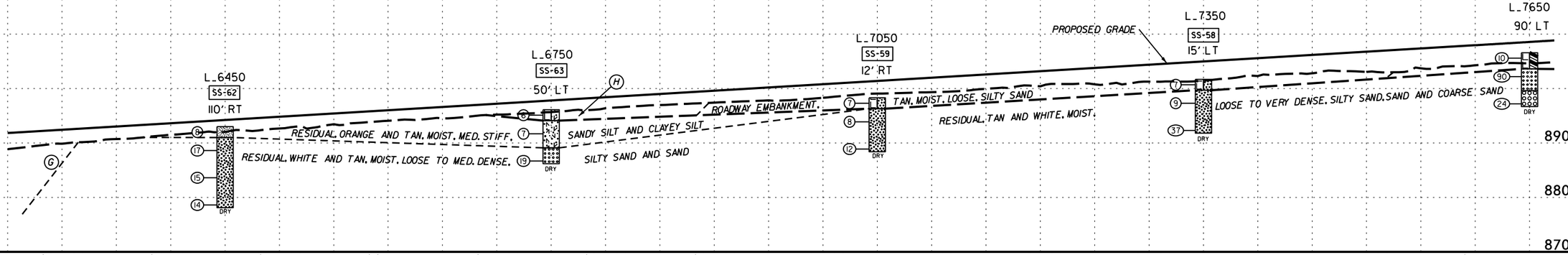
WETHERILL ENGINEERING

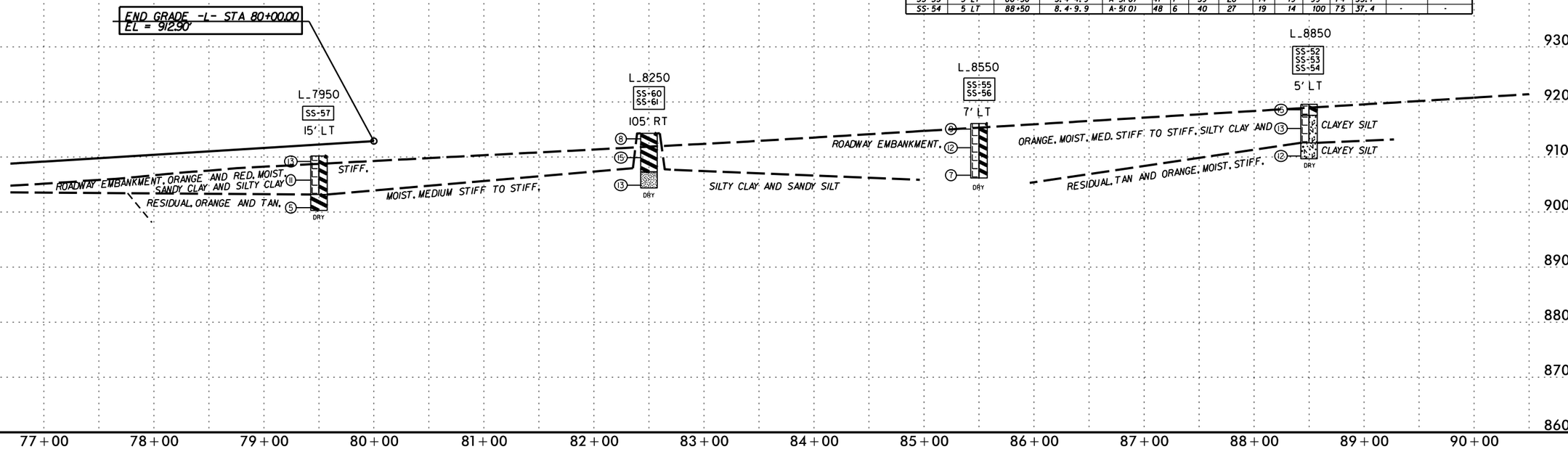
SOIL TEST RESULTS

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-129	25 LT	38+00	0.0-1.5	A-7-5(21)	61	17	1	21	42	36	100	99	87	46.9	-
SS-130	25 LT	38+00	9.0-10.0	A-6(10)	40	17	16	23	26	35	100	92	66.4	-	-
SS-132	25 LT	38+00	19.5-20.0	A-7-5(2)	58	14	36	33	22	9	99	78	38.2	-	-
SS-104	40 LT	41+00	0.5-1.5	A-4(2)	40	9	34	25	19	22	100	76	46.4	29.4	-
SS-105	40 LT	41+00	3.1-4.6	A-7-6(4)	42	15	36	22	15	27	100	75	46.2	-	-
SS-106	40 LT	41+00	8.7-10.2	A-5(0)	44	9	41	27	14	18	99	70	36.7	-	-
SS-211	20 RT	43+50	0.0-1.5	A-7-6(5)	43	16	32	18	16	34	95	74	49.3	-	-
SS-213	20 RT	43+50	13.5-15.0	A-6(3)	32	11	35	18	19	28	98	74	48.9	-	-
SS-215	40 LT	46+50	0.0-1.5	A-4(1)	40	9	37	22	17	24	97	72	42.7	-	-
SS-216	40 LT	46+50	13.5-15.0	A-6(0)	33	11	45	19	15	21	95	64	36.4	-	-

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-64	30 LT	61+50	0.0-1.5	A-7-6(9)	44	18	25	16	16	43	98	81	59.5	-	-
SS-65	30 LT	55+50	0.0-1.5	A-5(1)	45	5	30	29	21	20	99	82	43.9	-	-
SS-66	30 LT	52+50	13.4-14.9	A-6(1)	37	13	43	20	15	22	96	66	38.4	-	-





PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	20

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Vaughn & Melton Consulting Engineers

WETHERILL ENGINEERING

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-62	110 RT	64+50	0.0-1.5	A-4(0)	38	2	39	28	19	14	99	78	35.5	-	-
SS-63	50 LT	67+50	0.0-1.5	A-5(1)	46	3	19	41	26	14	100	92	47.3	-	-
SS-59	12 RT	70+50	0.0-1.5	A-2-4(0)	29	NP	43	38	15	4	100	74	24.0	-	-
SS-58	15 LT	73+50	0.0-1.5	A-2-5(0)	43	NP	44	27	16	13	94	67	29.6	22.7	-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-57	15 LT	79+50	0.0-1.5	A-7-5(13)	56	22	23	17	17	42	99	84	61.5	-	-
SS-60	105 RT	82+50	0.0-1.5	A-7-6(10)	48	19	26	17	17	40	99	81	58.9	-	-
SS-61	105 RT	82+50	3.4-4.9	A-7-5(13)	53	21	22	13	18	47	98	82	65.1	-	-
SS-55	7 LT	85+50	0.0-1.5	A-7-5(10)	49	19	23	21	16	40	99	85	58.1	-	-
SS-56	7 LT	85+50	3.4-4.9	A-7-5(10)	54	18	23	18	18	41	99	85	60.3	-	-
SS-52	5 LT	88+50	0.0-1.5	A-7-6(2)	43	14	38	22	14	26	94	69	41.1	16.5	-
SS-53	5 LT	88+50	3.4-4.9	A-5(0)	47	7	39	28	14	19	99	74	35.7	-	-
SS-54	5 LT	88+50	8.4-9.9	A-5(0)	48	6	40	27	19	14	100	75	37.4	-	-

PROJECT REFERENCE NO.	SHEET NO.
U–2579AA	21

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DocuSign Envelope ID: F2C53E73-9DD8-4A7D-838E-563AC464E0DC

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	22

ROADWAY DESIGN ENGINEER

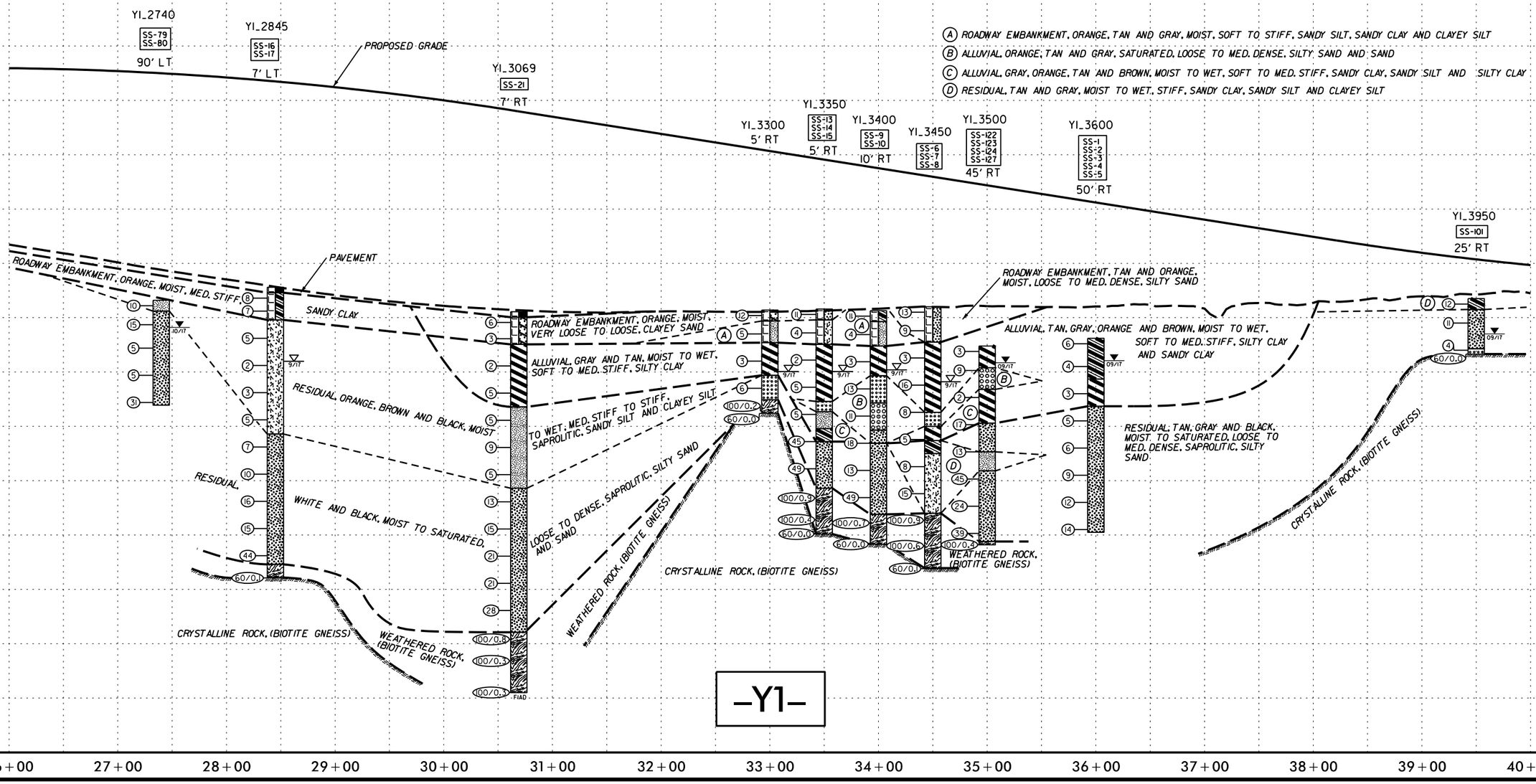
HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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-79	90 LT	27+40	0.0-1.5	A-7-5(3)	45	13	34	22	15	29	99	76	46.2	-	-
SS-80	90 LT	27+40	3.5-5.0	A-7-5(2)	45	13	33	28	17	22	100	78	41.7	-	-
SS-16	7 LT	28+45	13.4-14.9	A-5(1)	55	7	30	38	22	10	100	82	41.5	56.9	-
SS-17	7 LT	28+45	43.4-44.9	A-2-5(0)	46	5	47	35	13	5	100	71	24.5	-	-
SS-21	7 RT	30+69	9.0-10.5	A-7-6(7)	41	19	29	18	19	34	98	78	53.3	39.4	-
SS-13	5 RT	33+50	3.4-4.9	A-5(4)	46	10	28	26	16	30	100	83	51.2	-	-
SS-14	5 RT	33+50	8.4-9.9	A-7-5(30)	59	24	0	5	48	47	100	100	97.6	50.5	-
SS-15	5 RT	33+50	18.9-19.9	A-4(1)	33	7	16	40	20	24	100	95	50.3	-	-
SS-9	10 RT	34+00	0.0-1.5	A-6(1)	35	12	41	28	16	15	99	72	35.8	12.6	-
SS-10	10 RT	34+00	33.4-34.9	A-2-4(0)	23	1	40	45	10	5	100	85	20.6	-	-
SS-6	CL	34+50	8.4-9.9	A-7-5(26)	55	21	1	7	47	45	100	100	95.8	42.3	-
SS-7	CL	34+50	13.4-14.9	A-7-6(20)	48	27	17	11	30	42	100	90	74.7	-	-
SS-8	CL	34+50	28.4-29.9	A-5(1)	51	8	26	43	23	8	100	90	39.6	-	-
SS-122	45 RT	35+00	0.0-1.5	A-7-5(18)	51	19	10	12	44	34	100	94	82.6	36.3	-
SS-123	45 RT	35+00	4.0-5.0	A-1-b(0)	27	5	74	14	2	10	91	33	12.6	-	-
SS-124	45 RT	35+00	8.5-10.0	A-7-6(26)	55	30	8	17	27	48	100	96	80.8	-	-
SS-127	45 RT	35+00	29.1-30.0	A-2-4(0)	31	3	42	41	13	4	100	49	23	-	-
SS-1	50 RT	36+00	0.0-1.5	A-6(5)	39	15	26	28	21	25	100	85	51.5	-	-
SS-2	50 RT	36+00	4.2-5.7	A-6(6)	37	15	24	28	21	27	100	84	54.7	39.7	-
SS-3	50 RT	36+00	9.2-10.7	A-7-6(24)	56	34	18	13	15	54	100	88	71.8	-	-
SS-4	50 RT	36+00	14.2-15.7	A-2-4(0)	37	1	50	30	14	6	94	60	24.1	-	-
SS-5	50 RT	36+00	19.2-20.7	A-2-4(0)	38	1	41	37	17	5	100	76	27.9	-	-
SS-101	25 RT	39+50	0.0-1.5	A-6(3)	34	16	40	19	12	29	100	71	44.2	-	-



PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	23
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

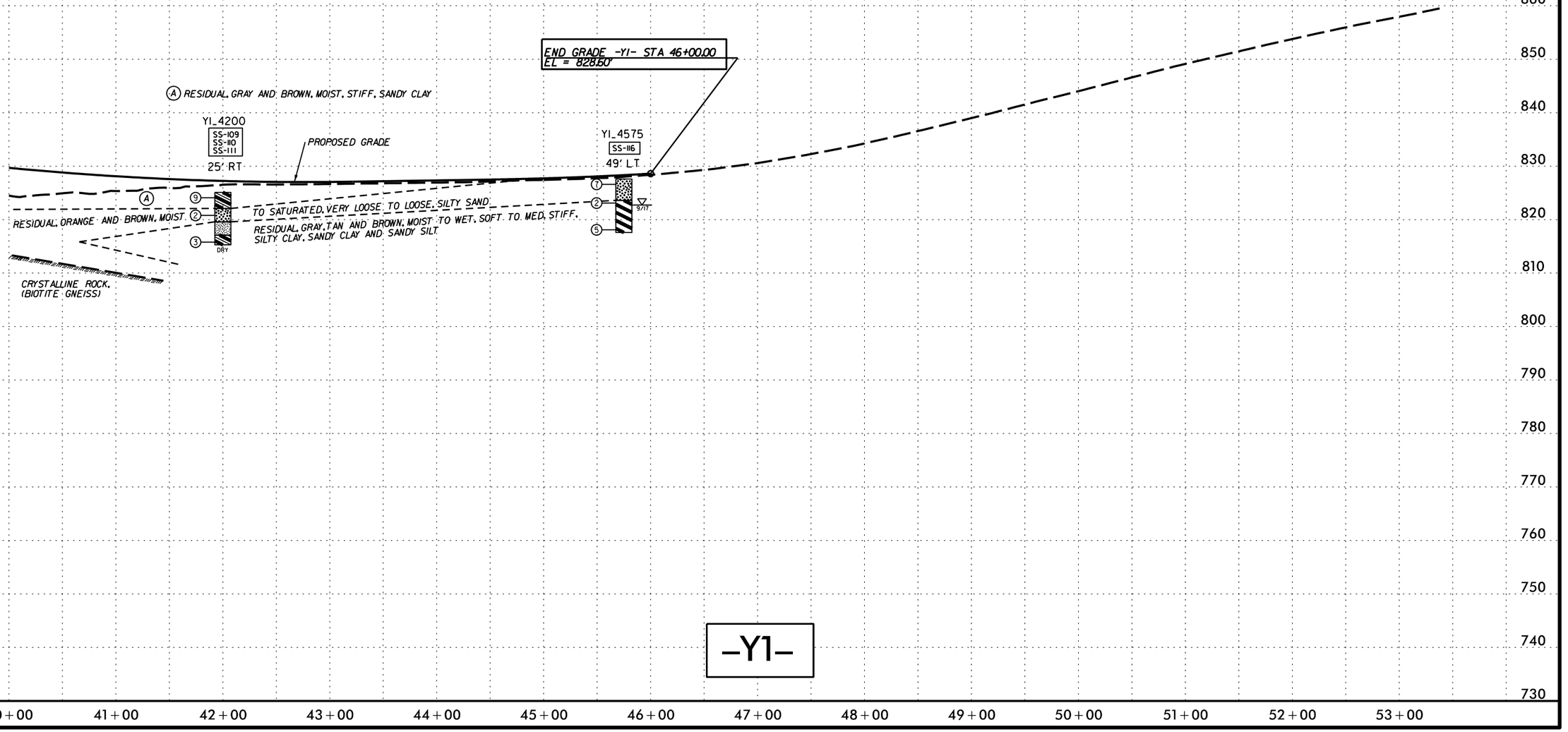
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

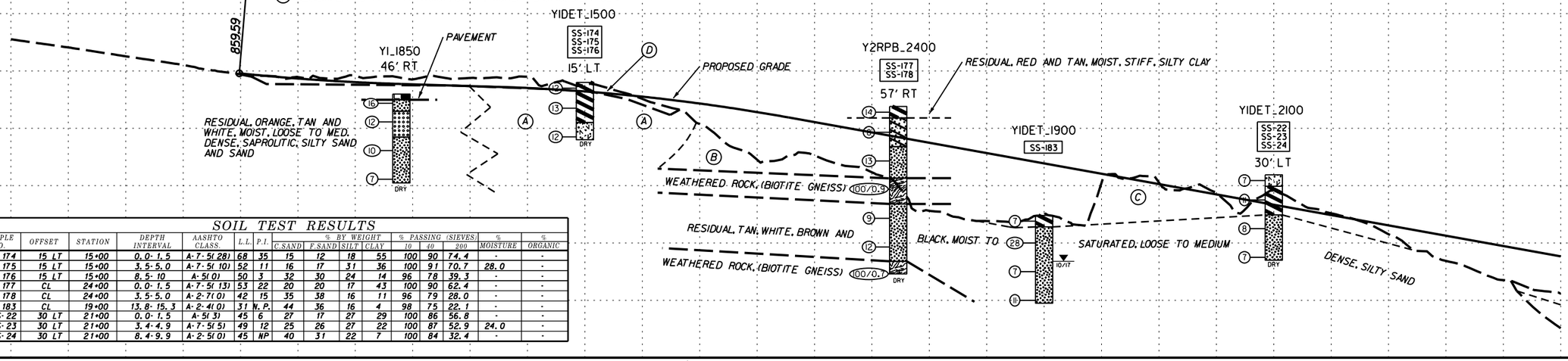
5/14/99

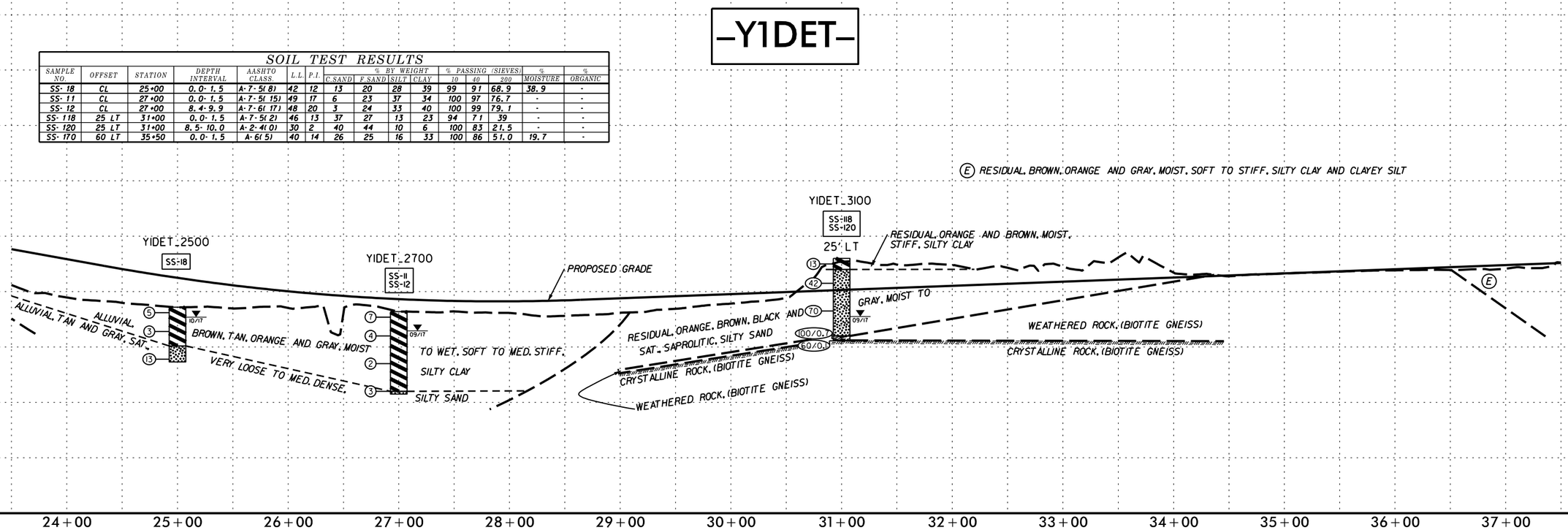
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-109	25 RT	42+00	0.0-1.5	A-6(1)	38	12	36	26	16	22	95	72	40.2	-	-
SS-110	25 RT	42+00	3.3-4.8	A-2-4(0)	32	7	50	28	7	15	100	70	26	-	-
SS-111	25 RT	42+00	8.3-9.8	A-6(2)	37	13	39	23	15	23	100	73	42.2	24.1	-
SS-116	49 LT	45+75	4.0-5.0	A-7-6(16)	44	19	5	20	33	42	100	97	80.8	40.3	-



$$$$$$$$SYSTIME$$$$$$$$
$$$$$$$$LEFNAME$$$$$$$$





V&M
Vaughn & Melton
Consulting Engineers
Asheville, North Carolina 828·253·2796
☐ Raleigh, NC 919·977·9455
☐ Charlotte, NC 704·357·0488
☐ Boone, NC 828·355·9933
☐ Tri-Cities, TN 423·467·8401
☐ Knoxville, TN 865·546·5800
☐ Spartanburg, SC 864·574·4775
☐ Charleston, SC 843·974·5650
☐ Middlesboro, KY 606·248·6600
☐ Atlanta, GA 770·627·3509

WETHERILL ENGINEERING

PROJECT REFERENCE NO.	SHEET NO.
U–2579AA	24

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–Y1DET–

Ⓐ RESIDUAL, RED AND TAN, MOIST, STIFF, SILTY CLAY AND CLAYEY SILT
Ⓑ RESIDUAL, TAN, RED AND WHITE, MOIST, LOOSE TO MEDIUM DENSE, CLAYEY SAND AND SILTY SAND
Ⓒ RESIDUAL, RED, TAN, BROWN AND ORANGE, MOIST, MEDIUM STIFF TO STIFF, SILTY CLAY AND CLAYEY SILT
Ⓓ RESIDUAL, RED AND TAN, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C.SAND	F.SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
SS- 174	15 LT	15+00	0.0- 1.5	A-7-5(28)	68	35	15	12	18	55	100	90	74.4	-	-
SS- 175	15 LT	15+00	3.5- 5.0	A-7-5(10)	52	11	16	17	31	36	100	91	70.7	28.0	-
SS- 176	15 LT	15+00	8.5- 10	A-5(0)	50	3	32	30	24	14	96	78	39.3	-	-
SS- 177	CL	24+00	0.0- 1.5	A-7-5(13)	53	22	20	20	17	43	100	90	62.4	-	-
SS- 178	CL	24+00	3.5- 5.0	A-2-7(0)	42	15	35	38	16	11	96	79	28.0	-	-
SS- 183	CL	19+00	13.8- 15.3	A-2-4(0)	31	N.P.	44	36	16	4	98	75	22.1	-	-
SS- 22	30 LT	21+00	0.0- 1.5	A-5(3)	45	6	27	17	27	29	100	86	56.8	-	-
SS- 23	30 LT	21+00	3.4- 4.9	A-7-5(5)	49	12	25	26	27	22	100	87	52.9	24.0	-
SS- 24	30 LT	21+00	8.4- 9.9	A-2-5(0)	45	NP	40	31	22	7	100	84	32.4	-	-

–Y1DET–

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C.SAND	F.SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
SS- 18	CL	25+00	0.0- 1.5	A-7-5(8)	42	12	13	20	28	39	99	91	68.9	38.9	-
SS- 11	CL	27+00	0.0- 1.5	A-7-5(15)	49	17	6	23	37	34	100	97	76.7	-	-
SS- 12	CL	27+00	8.4- 9.9	A-7-6(17)	48	20	3	24	33	40	100	99	79.1	-	-
SS- 118	25 LT	31+00	0.0- 1.5	A-7-5(2)	46	13	37	27	13	23	94	71	39	-	-
SS- 120	25 LT	31+00	8.5- 10.0	A-2-4(0)	30	2	40	44	10	6	100	83	21.5	-	-
SS- 170	60 LT	35+50	0.0- 1.5	A-6(5)	40	14	26	25	16	33	100	86	51.0	19.7	-

Ⓔ RESIDUAL, BROWN, ORANGE AND GRAY, MOIST, SOFT TO STIFF, SILTY CLAY AND CLAYEY SILT

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

V&M
Vaughn & Melton
Consulting Engineers
Asheville, North Carolina 828-253-2796
☐ Boone, NC 828-355-9933
☐ Tri-Cities, TN 423-467-8401
☐ Knoxville, TN 865-546-5800
☐ Spartanburg, SC 864-574-4775
☐ Charleston, SC 843-974-5650
☐ Middlesboro, KY 606-248-6600
☐ Atlanta, GA 770-627-3509
☐ Raleigh, NC 919-977-9455
☐ Charlotte, NC 704-357-0488

WETHERILL ENGINEERING

-Y1DET-

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-112	35 LT	38+82	0.0-1.5	A-7-6(10)	50	22	28	19	19	34	99	80	56	-	-
SS-113	35 LT	38+82	8.5-10.0	A-5(4)	65	9	24	37	20	19	100	88	47.2	-	-
SS-114	35 LT	38+82	13.5-15.0	A-7-5(6)	63	16	24	39	28	9	100	86	46.9	-	-

DocuSign Envelope ID: F2C53E73-9DD8-4A7D-838E-563AC464E0DC

5/28/9

Vaughn & Melton
Consulting Engineers
Asheville, North Carolina 828·253·2796
☐ Boone, NC 828·355·9933
☐ Tri-Cities, TN 423·467·8401
☐ Knoxville, TN 865·546·5800
☐ Spartanburg, SC 864·574·4775
☐ Charleston, SC 843·974·5650
☐ Middlesboro, KY 606·248·6600
☐ Atlanta, GA 770·627·3509
☐ Raleigh, NC 919·977·9455
☐ Charlotte, NC 704·357·0488
Copyright © 2006 Vaughn & Melton, Inc. All Rights Reserved

WETHERILL ENGINEERING

PROJECT REFERENCE NO.	SHEET NO.
U–2579AA	26

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–Y1DRV–

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

PROJECT REFERENCE NO.	SHEET NO.
U–2579AA	27

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Vaughn & Melton
Consulting Engineers
Asheville, North Carolina 828·253·2796
☐ Boone, NC 828·355·9933
☐ Tri-Cities, TN 423·467·8401
☐ Knoxville, TN 865·546·5800
☐ Spartanburg, SC 864·574·4775
☐ Charleston, SC 843·974·5650
☐ Middlesboro, KY 606·248·6600
☐ Atlanta, GA 770·627·3509
☐ Raleigh, NC 919·977·9455
☐ Charlotte, NC 704·357·0488

WETHERILL ENGINEERING

–Y2SBL–

Ⓐ RESIDUAL, TAN AND RED, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY
Ⓑ ROADWAY EMBANKMENT, MOIST, STIFF, SILTY CLAY
Ⓒ RESIDUAL, RED AND TAN, MOIST, MEDIUM STIFF, SANDY CLAY

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C.SAND	F.SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
SS-235	145 RT	3+00	0.0-1.5	A-7-5(23)	61	26	9	18	27	46	99	93	78.5	-	-
SS-234	90 RT	6+00	0.0-1.5	A-7-6(8)	48	23	31	24	12	33	99	77	50	-	-

–Y2SBL–

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C.SAND	F.SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
SS-230	CL	23+50	0.0-1.5	A-7-6(8)	44	21	32	19	18	31	99	76	53.1	19.0	-

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

PROJECT REFERENCE NO.	SHEET NO.
U–2579AA	28

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

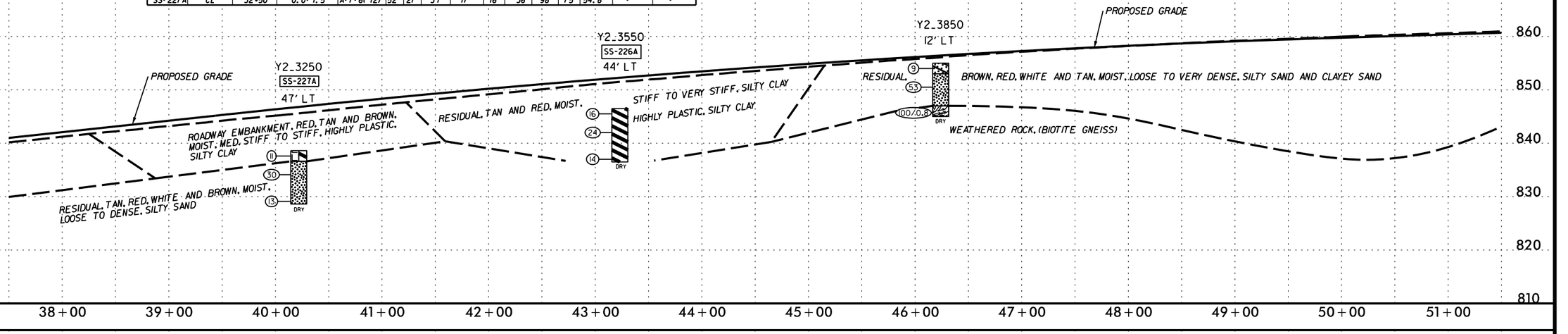
V&M
Vaughn & Melton
Consulting Engineers
■ Asheville, North Carolina 828·253·2796
☐ Raleigh, NC 919·977·9455
☐ Charlotte, NC 704·357·0488
☐ Boone, NC 828·355·9933
☐ Tri-Cities, TN 423·467·8401
☐ Knoxville, TN 865·546·5800
☐ Spartanburg, SC 864·574·4775
☐ Charleston, SC 843·974·5650
☐ Middlesboro, KY 606·248·6600
☐ Atlanta, GA 770·627·3509

WETHERILL ENGINEERING

–Y2SBL–

SOIL TEST RESULTS

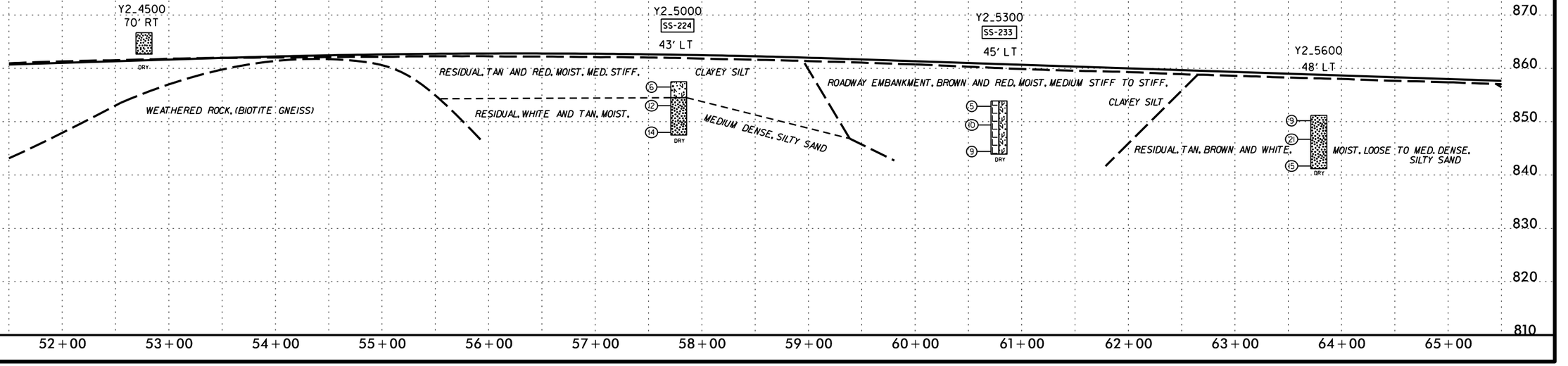
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-226A	CL	35+50	0.0-1.5	A-7-6(17)	64	35	33	15	10	42	100	76	55.2	-	-
SS-227A	CL	32+50	0.0-1.5	A-7-6(12)	52	27	31	17	16	36	98	75	54.8	-	-



–Y2SBL–

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	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-224	CL	50+00	0.0-1.5	A-5(2)	44	4	18	38	29	15	100	90	55.5	33.4	-
SS-233	CL	53+00	0.0-1.5	A-5(0)	46	2	32	33	20	15	98	78	40.8	-	-



DocuSign Envelope ID: F2C53E73-9DD8-4A7D-838E-563AC464E0DC

PROJECT REFERENCE NO.	SHEET NO.
U–2579AA	29

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

V&M
Vaughn & Melton
Consulting Engineers
Asheville, North Carolina 828·253·2796
☐ Boone, NC 828·355·9933
☐ Tri-Cities, TN 423·467·8401
☐ Knoxville, TN 865·546·5800
☐ Spartanburg, SC 864·574·4775
☐ Charleston, SC 843·974·5650
☐ Middlesboro, KY 606·248·6600
☐ Atlanta, GA 770·627·3509
☐ Raleigh, NC 919·977·9455
☐ Charlotte, NC 704·357·0488

WETHERILL ENGINEERING

–Y2SBL–

Ⓓ ROADWAY EMBANKMENT, BROWN AND RED, MOIST, MEDIUM DENSE, SILTY SAND
Ⓔ RESIDUAL, RED, BROWN, TAN AND ORANGE, MOIST, MED. STIFF, SANDY SILT
Ⓕ ROADWAY EMBANKMENT, BROWN AND RED, MOIST, STIFF, SANDY CLAY

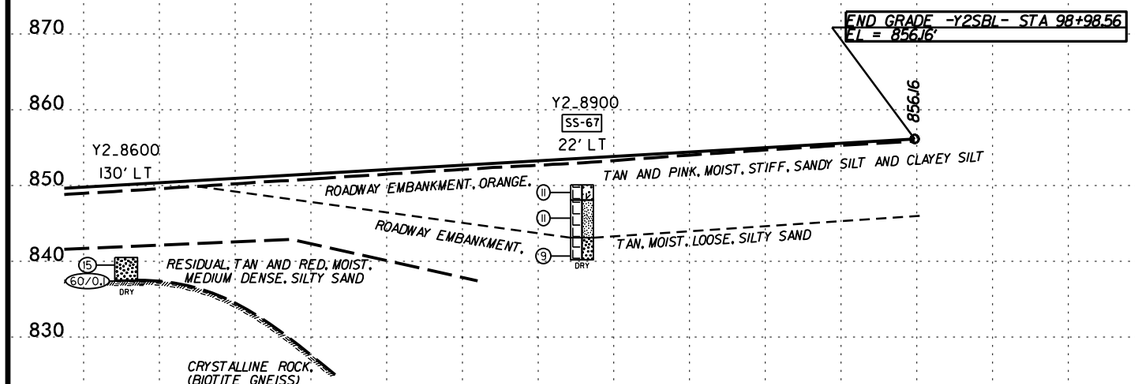
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C.SAND	F.SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
SS-232	CL	59+00	3.5-5.0	A-6(7)	36	25	42	12	17	29	99	66	47.5	-	-

–Y2SBL–

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C.SAND	F.SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
SS-227	CL	74+00	0.0-1.5	A-2-4(0)	38	NP	44	30	18	8	96	69	28.2	-	-
SS-228	CL	74+00	3.4-4.9	A-5(1)	43	9	35	24	19	22	97	76	43.2	-	-
SS-226	CL	80+00	0.0-1.5	A-7-5(4)	47	11	28	24	21	27	99	82	50.5	24.4	-



ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Vaughn & Melton
Consulting Engineers
Asheville, North Carolina 828-253-2796
☐ Raleigh, NC 919-977-9455
☐ Charlotte, NC 704-357-0488
☐ Boone, NC 828-355-9933
☐ Tri-Cities, TN 423-467-8401
☐ Knoxville, TN 865-546-5800
☐ Spartanburg, SC 864-574-4775
☐ Charleston, SC 843-974-5650
☐ Middlesboro, KY 606-248-6600
☐ Atlanta, GA 770-627-3509

WETHERILL ENGINEERING

-Y2SBL-

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-67	55 RT	89+00	0.0-1.5	A-5(2)	42	9	32	22	21	25	98	77	48.3	15.9	-

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	31

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

V&M
Vaughn & Melton
Consulting Engineers
Asheville, North Carolina 828-253-2796
☐ Raleigh, NC 919-977-9455
☐ Charlotte, NC 704-357-0488
☐ Boone, NC 828-355-9933
☐ Tri-Cities, TN 423-467-8401
☐ Knoxville, TN 865-546-5800
☐ Spartanburg, SC 864-574-4775
☐ Charleston, SC 843-974-5650
☐ Middlesboro, KY 606-248-6600
☐ Atlanta, GA 770-627-3509

-Y2FLYAB-

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-65	30 LT	55+50	0.0-1.5	A-5(1)	45	5	30	29	21	20	99	82	43.9	-	-
SS-162	CL	19+00	0.0-1.5	A-2-4(0)	30	6	48	20	15	17	93	60	32.1	9.3	-
SS-165	20 LT	20+74	3.5-5.0	A-7-5(36)	75	26	1	4	29	66	100	100	95.9	-	-
SS-167	20 LT	20+74	18.5-20	A-7-5(39)	79	28	1	4	39	56	100	100	95.8	-	-
SS-168	20 LT	20+74	23.5-25.0	A-7-5(18)	61	12	1	17	45	37	100	100	88.2	-	-
SS-169	20 LT	20+74	43.5-45.0	A-7-5(9)	59	14	19	24	33	24	100	92	59.6	-	-

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-104	40 LT	41+00	0.5-1.5	A-4(2)	40	9	34	25	19	22	100	76	46.4	29.4	-
SS-105	40 LT	41+00	3.1-4.6	A-7-6(4)	42	15	36	22	15	27	100	75	46.2	-	-
SS-106	40 LT	41+00	8.7-10.2	A-5(0)	44	9	41	27	14	18	99	70	36.7	-	-
SS-134	80 RT	29+50	0.0-1.5	A-7-5(6)	51	15	31	22	25	22	100	84	51.2	-	-
SS-135	80 RT	29+50	3.5-5.0	A-7-5(1)	42	11	38	28	15	19	99	73	38.4	25.9	-
SS-136	80 RT	29+50	14.0-15.0	A-2-4(0)	30	NP	51	38	7	4	100	71	16.3	-	-
SS-137	19 RT	30+30	0.5-1.5	A-7-6(11)	56	31	34	21	20	25	100	78	48.4	-	-
SS-138	19 RT	30+30	4.5-5.0	A-7-5(2)	50	15	32	33	8	27	100	87	38.1	17.5	-
SS-139	19 RT	30+30	9.0-10.0	A-2-4(0)	24	NP	41	40	11	8	100	79	24.5	-	-
SS-141	50 RT	33+00	0.5-1.5	A-7-6(16)	59	33	30	17	12	41	100	79	56	17.3	-
SS-143	50 RT	33+00	9.0-10.0	A-2-4(0)	32	1	49	28	14	9	99	64	27.4	-	-
SS-225	30 RT	36+00	8.5-10.0	A-5(0)	43	NP	28	40	26	6	100	88	38.0	-	-

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	32

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

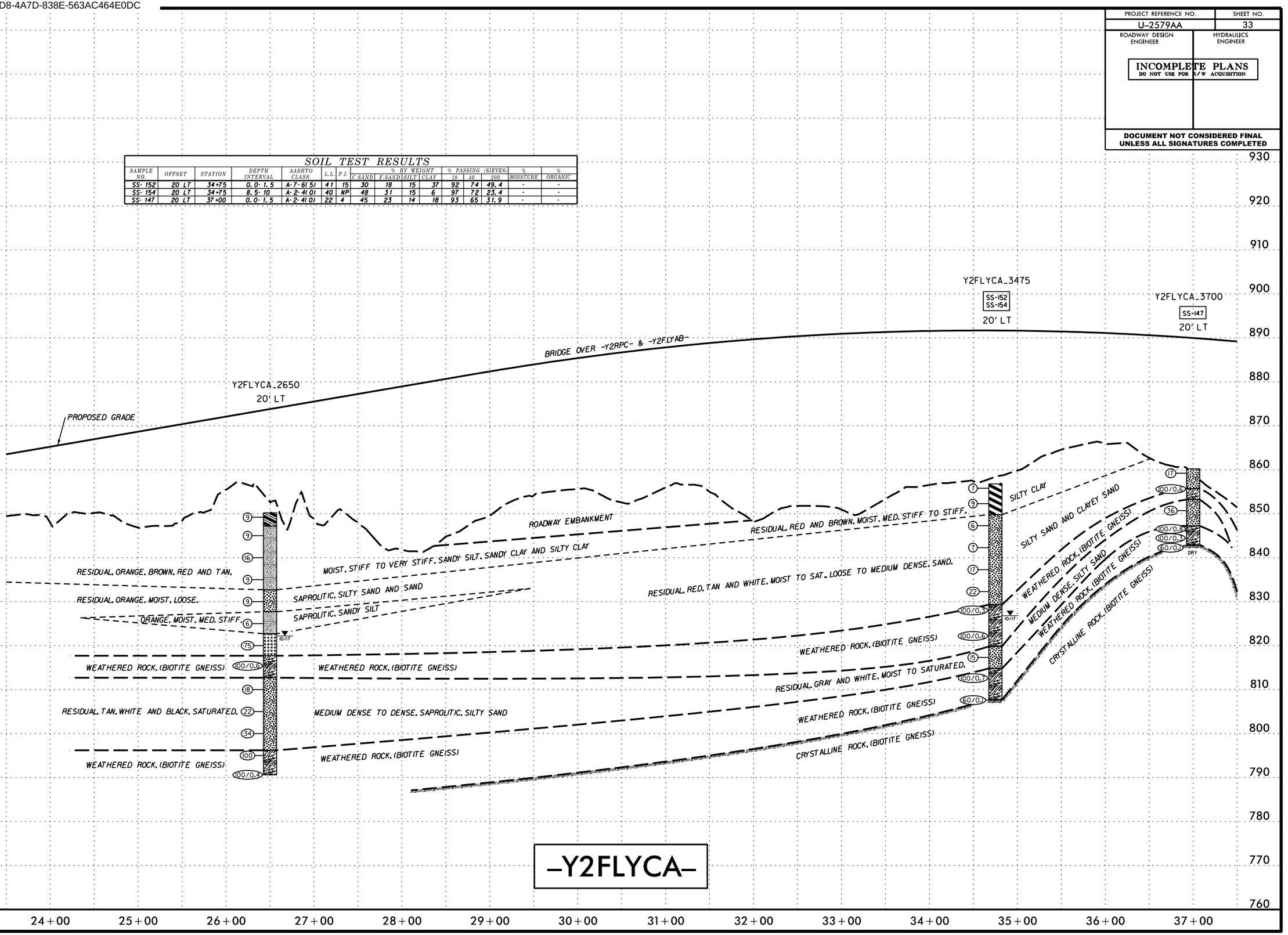
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	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	180 RT	76+00	4.2-5.7	A-7-5(17)	47	15	5	7	44	44	100	97	89.9	40.3	-
SS-78	180 RT	76+00	14.2-15.7	A-2-4(0)	30	NP	42	38	17	3	100	77	25.3	-	-
SS-73	15 RT	17+00	0.0-1.5	A-7-5(17)	54	11	3	5	41	51	100	98	94.1	-	-
SS-72	70 LT	20+00	0.0-1.5	A-7-5(14)	61	30	23	25	19	33	98	85	54.4	-	-
SS-70	60 LT	23+00	0.0-1.5	A-4(0)	40	5	36	26	20	18	98	74	42.0	-	-
SS-71	60 LT	23+00	4.2-5.7	A-5(0)	47	3	18	49	21	12	100	94	37.6		-

-Y2FLYCA-

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



PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	33

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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-152	20 LT	34+75	0.0-1.5	A-7-6(5)	41	15	30	18	15	37	92	74	49.4	-	-
SS-154	20 LT	34+75	8.5-10	A-2-4(0)	40	NP	48	31	15	6	97	72	23.4	-	-
SS-147	20 LT	37+00	0.0-1.5	A-2-4(0)	22	4	45	23	14	18	93	65	31.9	-	-

–Y2FLYCA–

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	34
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

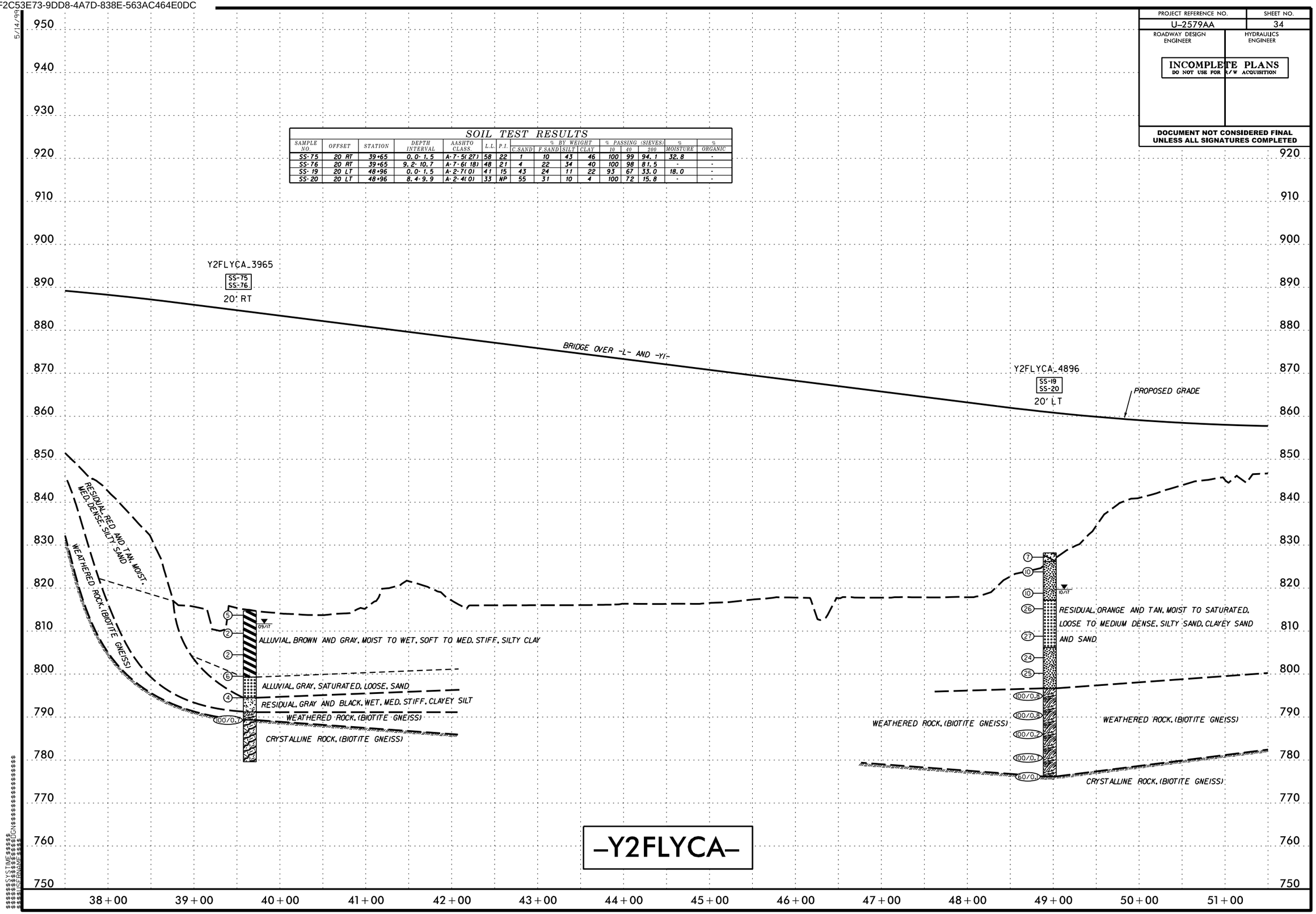
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/14/99

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-75	20 RT	39+65	0.0-1.5	A-7-5(27)	58	22	1	10	43	46	100	99	94.1	32.8	-
SS-76	20 RT	39+65	9.2-10.7	A-7-6(18)	48	21	4	22	34	40	100	98	81.5	-	-
SS-19	20 LT	48+96	0.0-1.5	A-2-7(0)	41	15	43	24	11	22	93	67	33.0	18.0	-
SS-20	20 LT	48+96	8.4-9.9	A-2-4(0)	33	NP	55	31	10	4	100	72	15.8	-	-



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

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/14/99

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-40	30 LT	55+50	3.4-4.9	A-7-5(6)	55	12	26	22	21	31	100	89	54.4	-	-
SS-41	30 LT	55+50	8.4-9.9	A-5(3)	51	7	25	30	25	20	100	89	49.7	-	-
SS-42	30 LT	55+50	18.4-19.9	A-2-5(0)	43	NP	38	39	16	7	100	82	27.5	-	-
SS-43	CL	58+00	3.4-4.9	A-7-5(9)	50	19	25	22	15	38	98	84	54.9	20.2	-
SS-44	CL	58+00	8.4-9.9	A-5(3)	58	8	22	34	18	26	100	92	46.6	-	-

END GRADE -Y2FLYCA- STA 62+26.81
EL = 885.73'
-L- STA 11+23.96
59' LT

885.73

L_J300
64' LT

PROPOSED GRADE

Y2FLYCA_5200

Y2FLYCA_5500
SS-40
SS-41
SS-42
30' LT

Y2FLYCA_5550
30' LT

Y2FLYCA_5800
SS-43
SS-44

(A) ALLUVIAL, ORANGE, TAN AND GRAY, MOIST TO WET, STIFF TO VERY STIFF, SILTY CLAY, SANDY CLAY AND VERY LOOSE, CLAYEY SAND

ARTIFICIAL FILL, ORANGE, MOIST, STIFF, SILTY CLAY AND BOULDERS

RESIDUAL, RED, BROWN AND ORANGE, MOIST, SOFT TO STIFF, SILTY CLAY.

RESIDUAL, ORANGE, TAN, WHITE AND BLACK, MOIST, LOOSE TO

SANDY CLAY AND CLAYEY SILT

MED. DENSE, SILTY SAND

RESIDUAL, RED AND TAN, MOIST, LOOSE, SILTY SAND

RESIDUAL, RED AND TAN, MOIST, LOOSE, SILTY SAND

RESIDUAL, BROWN, TAN AND GRAY, MOIST TO

WET, MED. STIFF TO STIFF, SILTY CLAY, SANDY SILT AND CLAYEY SILT

LOOSE TO MEDIUM DENSE, SILTY SAND

RESIDUAL, TAN AND GRAY, MOIST TO SATURATED.

WEATHERED ROCK, (BIOTITE GNEISS)

CRYSTALLINE ROCK, (BIOTITE GNEISS)

100/0.9
100/0.7
100/0.7
50/0.0

DRY

960 950 940 930 920 910 900 890 880 870 860 850 840 830 820 810 800 790 780 770 760

52+00 53+00 54+00 55+00 56+00 57+00 58+00 59+00 60+00 61+00 62+00

-Y2FLYCA-

$$$$$$SYSTIME$$$$$$
$$$$$$FILENAME$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	36
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

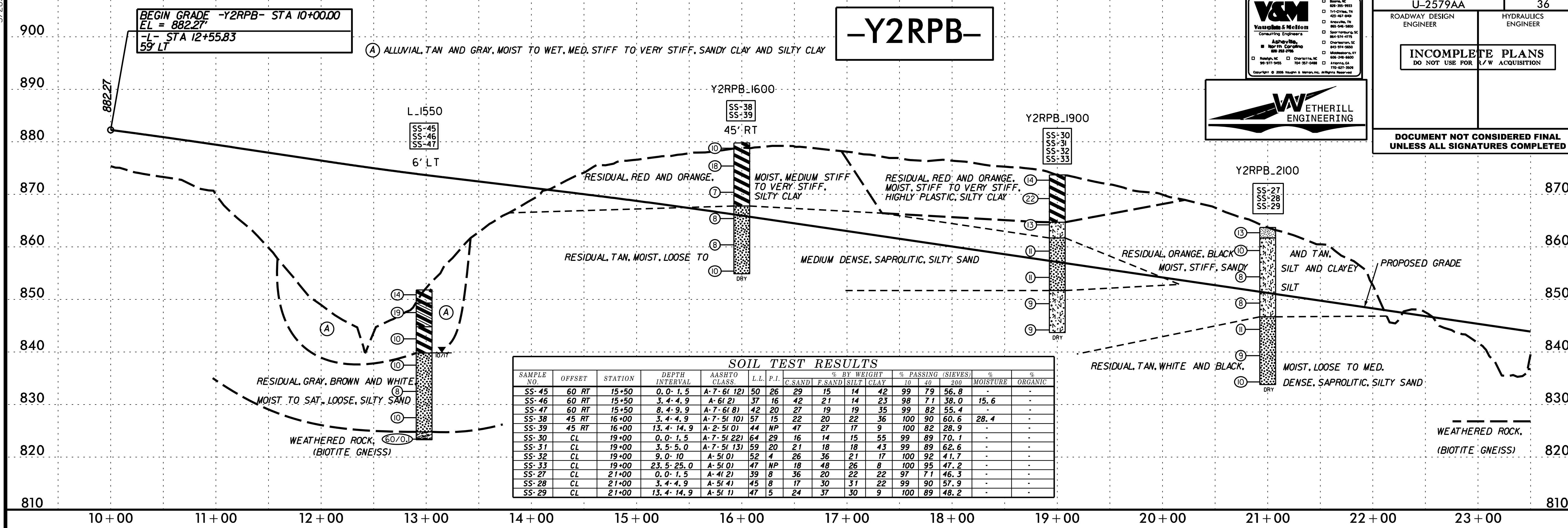
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Vaughn & Melton Consulting Engineers

WETHERILL ENGINEERING

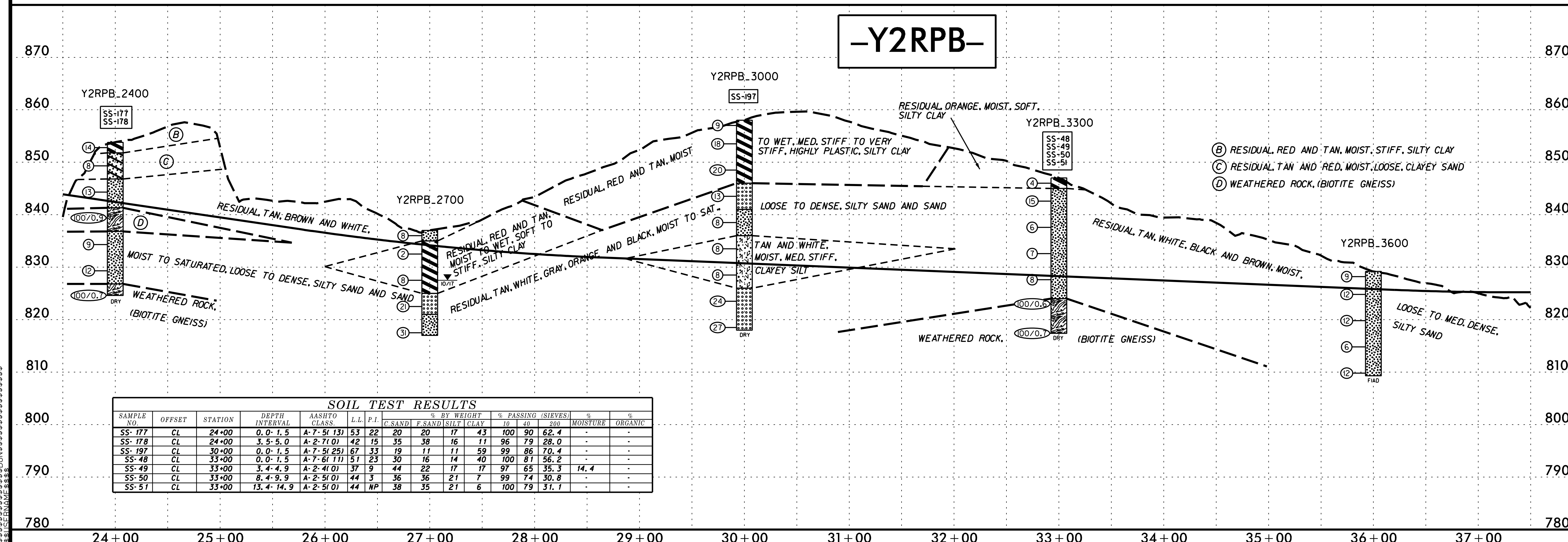
-Y2RPB-



BEGIN GRADE -Y2RPB- STA 10+00.00
EL = 882.27'
-L- STA 12+55.83
59' LT
882.27
(A) ALLUVIAL, TAN AND GRAY, MOIST TO WET, MED. STIFF TO VERY STIFF, SANDY CLAY AND SILTY CLAY
L_1550
SS-45
SS-46
SS-47
6' LT
Y2RPB_1600
SS-38
SS-39
45' RT
Y2RPB_1900
SS-30
SS-31
SS-32
SS-33
Y2RPB_2100
SS-27
SS-28
SS-29
RESIDUAL, RED AND ORANGE,
MOIST, MEDIUM STIFF TO VERY STIFF, SILTY CLAY
RESIDUAL, RED AND ORANGE, MOIST, STIFF TO VERY STIFF, HIGHLY PLASTIC, SILTY CLAY
RESIDUAL, TAN, MOIST, LOOSE TO
MEDIUM DENSE, SAPROLITIC, SILTY SAND
RESIDUAL, ORANGE, BLACK AND TAN, MOIST, STIFF, SANDY SILT AND CLAYEY SILT
PROPOSED GRADE
RESIDUAL, GRAY, BROWN AND WHITE, MOIST TO SAT., LOOSE, SILTY SAND
WEATHERED ROCK, (BIOTITE GNEISS)
RESIDUAL, TAN, WHITE AND BLACK, MOIST, LOOSE TO MED. DENSE, SAPROLITIC, SILTY SAND
WEATHERED ROCK, (BIOTITE GNEISS)
60/0.1
DRY

SAMPLE NO.	OFFSET	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-45	60 RT	15+50	0.0-1.5	A-7-6(12)	50	26	29	15	14	42	99	79	56.8	-	-
SS-46	60 RT	15+50	3.4-4.9	A-6(2)	37	16	42	21	14	23	98	71	38.0	15.6	-
SS-47	60 RT	15+50	8.4-9.9	A-7-6(8)	42	20	27	19	19	35	99	82	55.4	-	-
SS-38	45 RT	16+00	3.4-4.9	A-7-5(10)	57	15	22	20	22	36	100	90	60.6	28.4	-
SS-39	45 RT	16+00	13.4-14.9	A-2-5(0)	44	NP	47	27	17	9	100	82	28.9	-	-
SS-30	CL	19+00	0.0-1.5	A-7-5(22)	64	29	16	14	15	55	99	89	70.1	-	-
SS-31	CL	19+00	3.5-5.0	A-7-5(13)	59	20	21	18	18	43	99	89	62.6	-	-
SS-32	CL	19+00	9.0-10	A-5(0)	52	4	26	36	21	17	100	92	41.7	-	-
SS-33	CL	19+00	23.5-25.0	A-5(0)	47	NP	18	48	26	8	100	95	47.2	-	-
SS-27	CL	21+00	0.0-1.5	A-4(2)	39	8	36	20	22	22	97	71	46.3	-	-
SS-28	CL	21+00	3.4-4.9	A-5(4)	45	8	17	30	31	22	99	90	57.9	-	-
SS-29	CL	21+00	13.4-14.9	A-5(1)	47	5	24	37	30	9	100	89	48.2	-	-

-Y2RPB-



Y2RPB_2400
SS-177
SS-178
Y2RPB_2700
Y2RPB_3000
SS-197
Y2RPB_3300
SS-48
SS-49
SS-50
SS-51
Y2RPB_3600
RESIDUAL, ORANGE, MOIST, SOFT, SILTY CLAY
TO WET, MED. STIFF TO VERY STIFF, HIGHLY PLASTIC, SILTY CLAY
RESIDUAL, RED AND TAN, MOIST
RESIDUAL, TAN, BROWN AND WHITE, MOIST TO SATURATED, LOOSE TO DENSE, SILTY SAND AND SAND
RESIDUAL, RED AND TAN, MOIST TO WET, SOFT TO STIFF, SILTY CLAY
RESIDUAL, TAN, WHITE, GRAY, ORANGE AND BLACK, MOIST TO SAT.
LOOSE TO DENSE, SILTY SAND AND SAND
TAN AND WHITE, MOIST, MED. STIFF, CLAYEY SILT
RESIDUAL, TAN, WHITE, BLACK AND BROWN, MOIST,
LOOSE TO MED. DENSE, SILTY SAND
WEATHERED ROCK, (BIOTITE GNEISS)
(B) RESIDUAL, RED AND TAN, MOIST, STIFF, SILTY CLAY
(C) RESIDUAL, TAN AND RED, MOIST, LOOSE, CLAYEY SAND
(D) WEATHERED ROCK, (BIOTITE GNEISS)
100/0.9
100/0.7
100/0.6
DRY
FIAD

SAMPLE NO.	OFFSET	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-177	CL	24+00	0.0-1.5	A-7-5(13)	53	22	20	20	17	43	100	90	62.4	-	-
SS-178	CL	24+00	3.5-5.0	A-2-7(0)	42	15	35	38	16	11	96	79	28.0	-	-
SS-197	CL	30+00	0.0-1.5	A-7-5(25)	67	33	19	11	11	59	99	86	70.4	-	-
SS-48	CL	33+00	0.0-1.5	A-7-6(11)	51	23	30	16	14	40	100	81	56.2	-	-
SS-49	CL	33+00	3.4-4.9	A-2-4(0)	37	9	44	22	17	17	97	65	35.3	14.4	-
SS-50	CL	33+00	8.4-9.9	A-2-5(0)	44	3	36	36	21	7	99	74	30.8	-	-
SS-51	CL	33+00	13.4-14.9	A-2-5(0)	44	NP	38	35	21	6	100	79	31.1	-	-

PROJECT REFERENCE NO.	SHEET NO.
U–2579AA	37

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

V&M
Vaughn & Melton
Consulting Engineers
■ Asheville, North Carolina 828·253·2796
☐ Raleigh, NC 919·977·9455
☐ Charlotte, NC 704·357·0488
☐ Boone, NC 828·355·9933
☐ Tri-Cities, TN 423·467·8401
☐ Knoxville, TN 865·546·5800
☐ Spartanburg, SC 864·574·4775
☐ Charleston, SC 843·974·5650
☐ Middlesboro, KY 606·248·6600
☐ Atlanta, GA 770·627·3509

WETHERILL ENGINEERING

–Y2RPB–

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-202	CL	39+00	0.0-1.5	A-7-6(9)	50	21	29	18	12	41	99	80	55.2	22.9	-
SS-203	CL	39+00	8.5-10.0	A-6(6)	37	14	31	13	20	36	99	76	57.6	-	-
SS-209	34 LT	42+00	13.5-15.0	A-2-4(0)	30	9	44	22	15	19	92	63	33.6	-	-

PROJECT REFERENCE NO.	SHEET NO.
U–2579AA	38

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

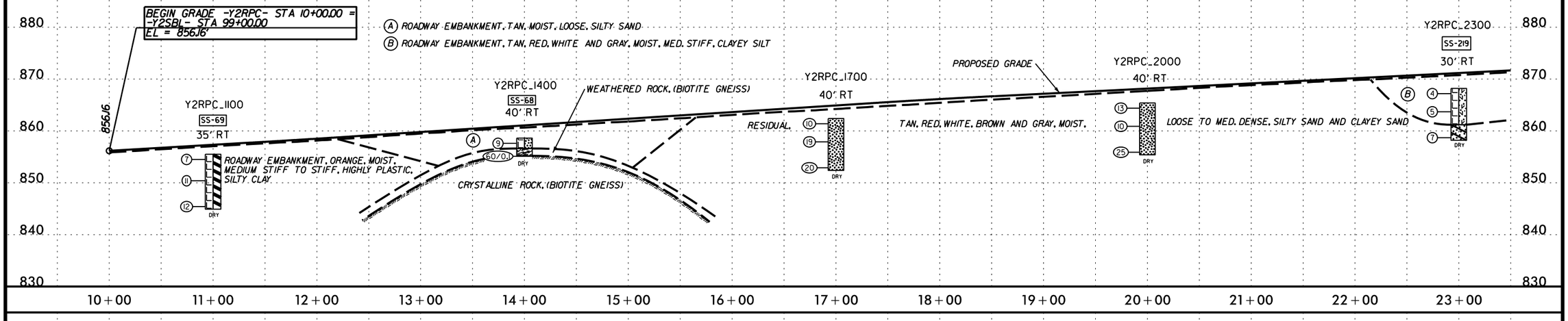
Vaughn & Melton
Consulting Engineers
■ Asheville, North Carolina 828·253·2796
□ Boone, NC 828·355·9933
□ Tri-Cities, TN 423·467·8401
□ Knoxville, TN 865·546·5800
□ Spartanburg, SC 864·574·4775
□ Charleston, SC 843·974·5650
□ Middlesboro, KY 606·248·6600
□ Raleigh, NC 919·977·9455
□ Charlotte, NC 704·357·0488
□ Atlanta, GA 770·627·3509

WETHERILL ENGINEERING

–Y2RPC–

SOIL TEST RESULTS

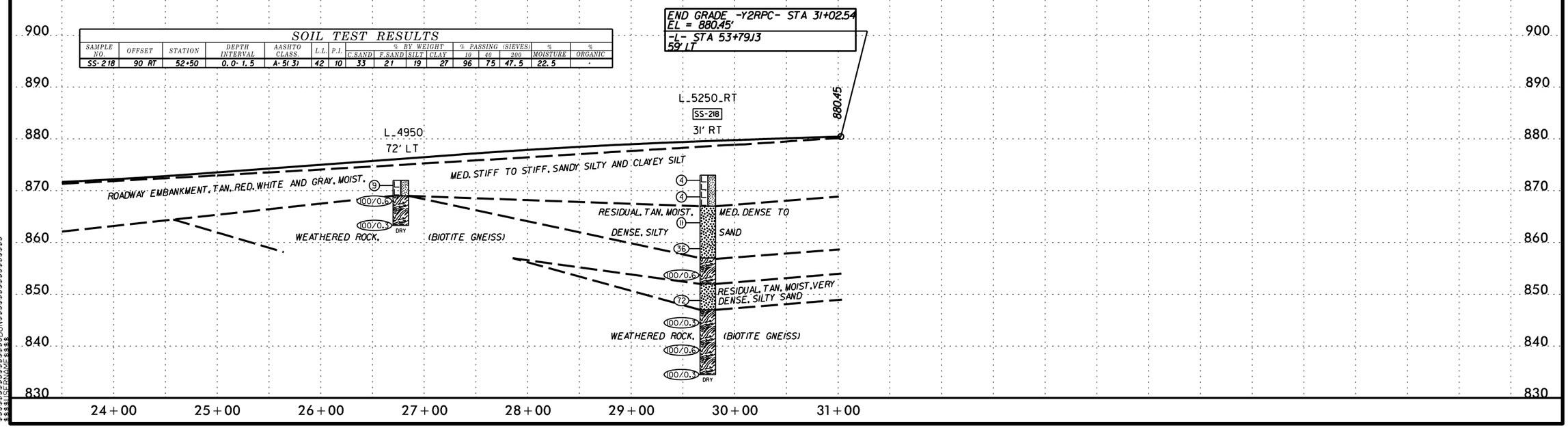
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-68	40 RT	14+00	0.0-1.5	A-2-4(0)	33	NP	45	31	16	8	97	68	27.1	-	-
SS-69	35 RT	11+00	0.0-1.5	A-7-6(17)	55	27	21	16	18	45	99	85	64.6	-	-
SS-219	30 RT	23+00	0.0-1.5	A-5(1)	49	5	32	27	18	23	99	79	43.6	-	-



–Y2RPC–

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	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-218	90 RT	52+50	0.0-1.5	A-5(3)	42	10	33	21	19	27	96	75	47.5	22.5	-



5/28/9

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	39

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Vaughn & Melton
Consulting Engineers
Asheville, North Carolina 828·253·2796
☐ Raleigh, NC 919·977·9455
☐ Charlotte, NC 704·357·0488
☐ Boone, NC 828·355·9933
☐ Tri-Cities, TN 423·467·8401
☐ Knoxville, TN 865·546·5800
☐ Spartanburg, SC 864·574·4775
☐ Charleston, SC 843·974·5650
☐ Middlesboro, KY 606·248·6600
☐ Atlanta, GA 770·627·3509

WETHERILL ENGINEERING

-Y3RPB-

-Y3RPB-

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-82A	CL	24+00	4.2-5.7	A-6(5)	38	18	34	21	13	32	98	75	47.2	-	-
SS-83	CL	24+00	14.2-15.7	A-5(1)	53	3	17	42	14	27	100	97	46.6	-	-
SS-85	20 LT	30+00	4.2-5.7	A-7-5(25)	68	38	21	15	11	53	99	85	65.9	22.9	-

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

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	40

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

V&M
Vaughn & Melton
Consulting Engineers
Asheville, North Carolina 828·253·2796
☐ Boone, NC 828·355·9933
☐ Tri-Cities, TN 423·467·8401
☐ Knoxville, TN 865·546·5800
☐ Spartanburg, SC 864·574·4775
☐ Charleston, SC 843·974·5650
☐ Middlesboro, KY 606·248·6600
☐ Atlanta, GA 770·627·3509
☐ Raleigh, NC 919·977·9455
☐ Charlotte, NC 704·357·0488

WETHERILL ENGINEERING

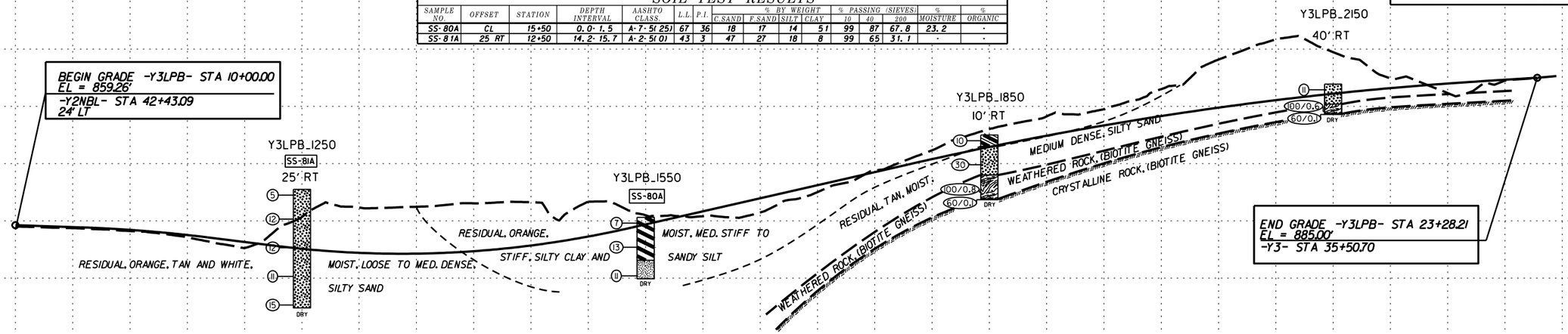
-Y3RPC-

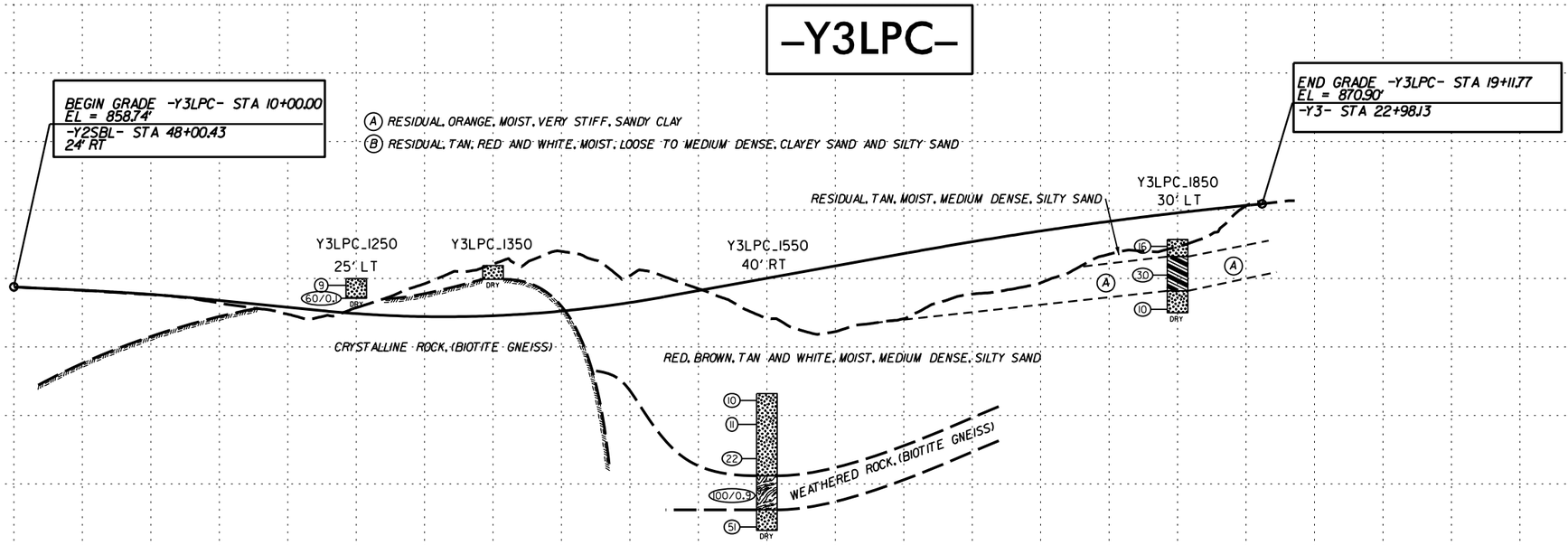
-Y3RPC-

Ⓑ ARTIFICIAL FILL, ORANGE AND RED, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY

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-244	20 RT	15+00	3.5-5.0	A-7-5(12)	60	20	25	20	18	37	100	83	59.7	-	-
SS-246	CL	18+00	8.5-10.0	A-7-5(15)	57	25	15	40	18	27	100	90	63.6	47.8	-
SS-86	85 RT	24+00	0.0-1.5	A-7-6(12)	50	28	32	17	11	40	100	77	53.4	-	-





5/28/9c

PROJECT REFERENCE NO.	SHEET NO.
U–2579AA	41

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

V&M
Vaughn & Melton
Consulting Engineers
■ Asheville, North Carolina 828·253·2796
☐ Boone, NC 828·355·9933
☐ Tri-Cities, TN 423·467·8401
☐ Knoxville, TN 865·546·5800
☐ Spartanburg, SC 864·574·4775
☐ Charleston, SC 843·974·5650
☐ Middlesboro, KY 606·248·6600
☐ Atlanta, GA 770·627·3509
☐ Raleigh, NC 919·977·9455
☐ Charlotte, NC 704·357·0488

WETHERILL ENGINEERING

–Y3LPB–

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-80A	CL	15+50	0.0-1.5	A-7-5(25)	67	36	18	17	14	51	99	87	67.8	23.2	-
SS-81A	25 RT	12+50	14.2-15.7	A-2-5(0)	43	3	47	27	18	8	99	65	31.1	-	-

–Y3LPC–

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	42

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Vaughn & Melton
Consulting Engineers
Asheville, North Carolina 828·253·2796
☐ Raleigh, NC 919·977·9455
☐ Charlotte, NC 704·357·0488
☐ Boone, NC 828·355·9933
☐ Tri-Cities, TN 423·467·8401
☐ Knoxville, TN 865·546·5800
☐ Spartanburg, SC 864·574·4775
☐ Charleston, SC 843·974·5650
☐ Middlesboro, KY 606·248·6600
☐ Atlanta, GA 770·627·3509

WETHERILL ENGINEERING

-Y4-

BEGIN GRADE -Y4- STA 10+14.27
EL = 870.52'
-Y3- STA 14+33.97

END GRADE -Y4- STA 22+00.00
EL = 869.43'

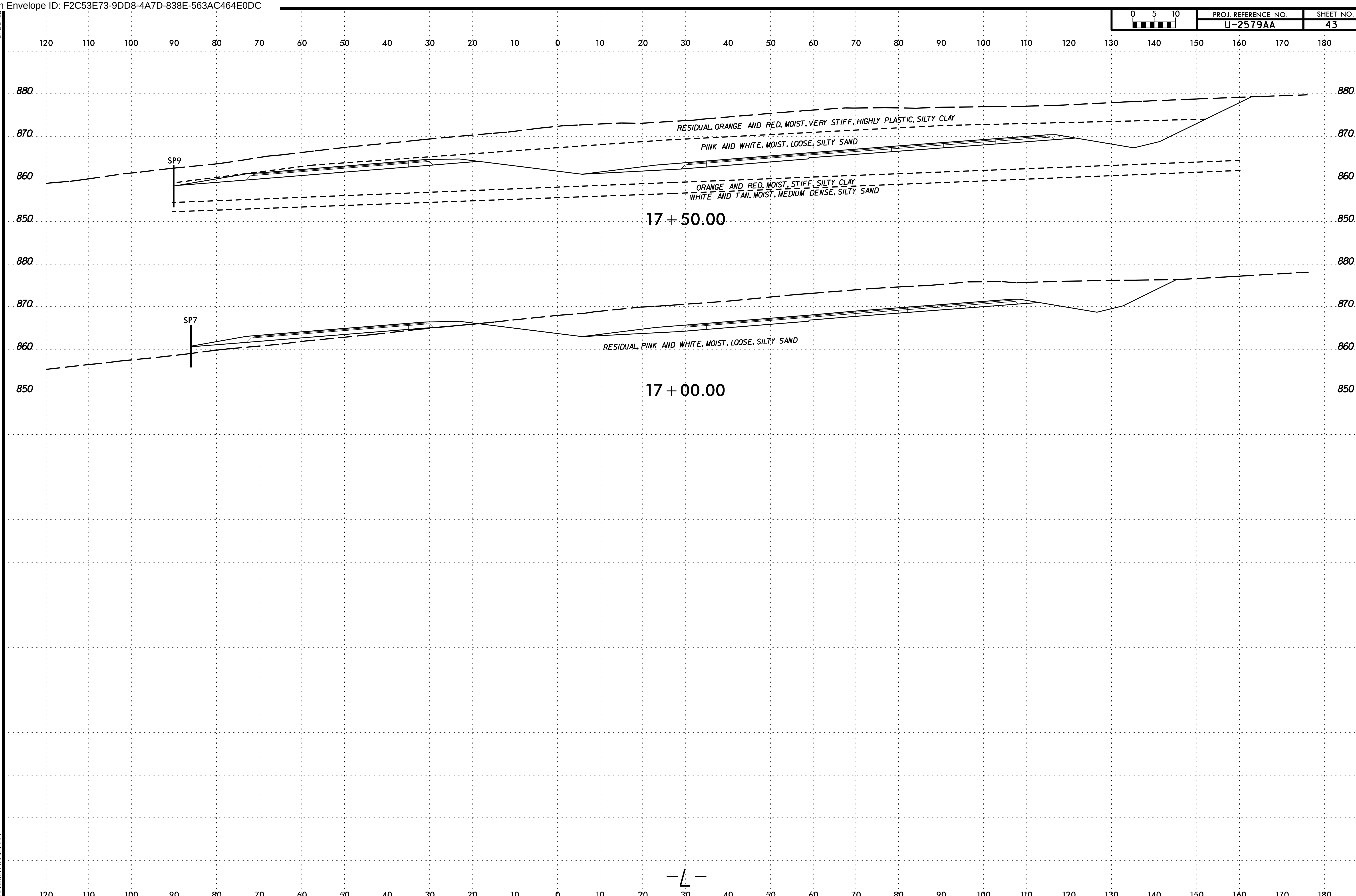
SOIL TEST RESULTS

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-87	20 LT	21+00	4.2-5.7	A-7-6(7)	53	24	38	20	10	32	99	74	44.9	-	-
SS-88	CL	14+50	4.2-5.7	A-7-6(12)	56	27	32	17	16	35	100	78	55	-	-

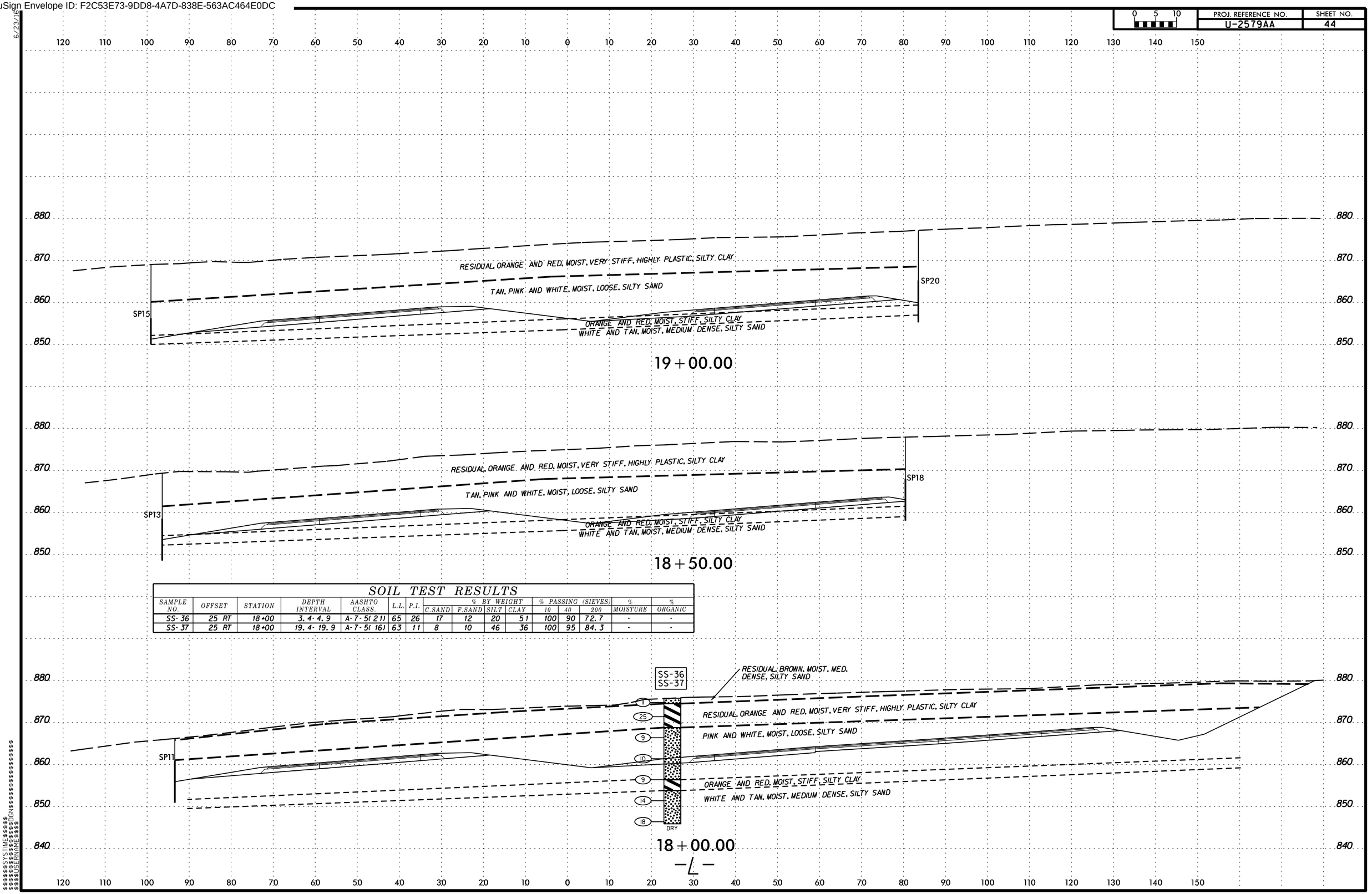
DocuSign Envelope ID: F2C53E73-9DD8-4A7D-838E-563AC464E0DC

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	43



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



PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	44

19 + 00.00

18 + 50.00

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	200		
SS-36	25 RT	18+00	3.4-4.9	A-7-5(21)	65	26	17	12	20	51	100	90	72.7	-	-
SS-37	25 RT	18+00	19.4-19.9	A-7-5(16)	63	11	8	10	46	36	100	95	84.3	-	-

18 + 00.00

-L-

6/23/16

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	45

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

880
870
860
850

RESIDUAL. RED. ORANGE. TAN AND BLACK. MOIST. STIFF. SILTY CLAY AND CLAYEY SILT

SP24

GRAY. TAN AND BLACK. MOIST. LOOSE. SILTY SAND

GRAY. TAN AND BLACK. MOIST. MED. STIFF. CLAYEY SILT

20+00.00

880
870
860
850
840

RESIDUAL. ORANGE AND RED. MOIST. VERY STIFF. HIGHLY PLASTIC. SILTY CLAY

TAN. PINK AND WHITE. MOIST. LOOSE. SILTY SAND

SP22

ORANGE AND RED. MOIST. STIFF. SILTY CLAY

WHITE AND TAN. MOIST. MEDIUM DENSE. SILTY SAND

19+50.00

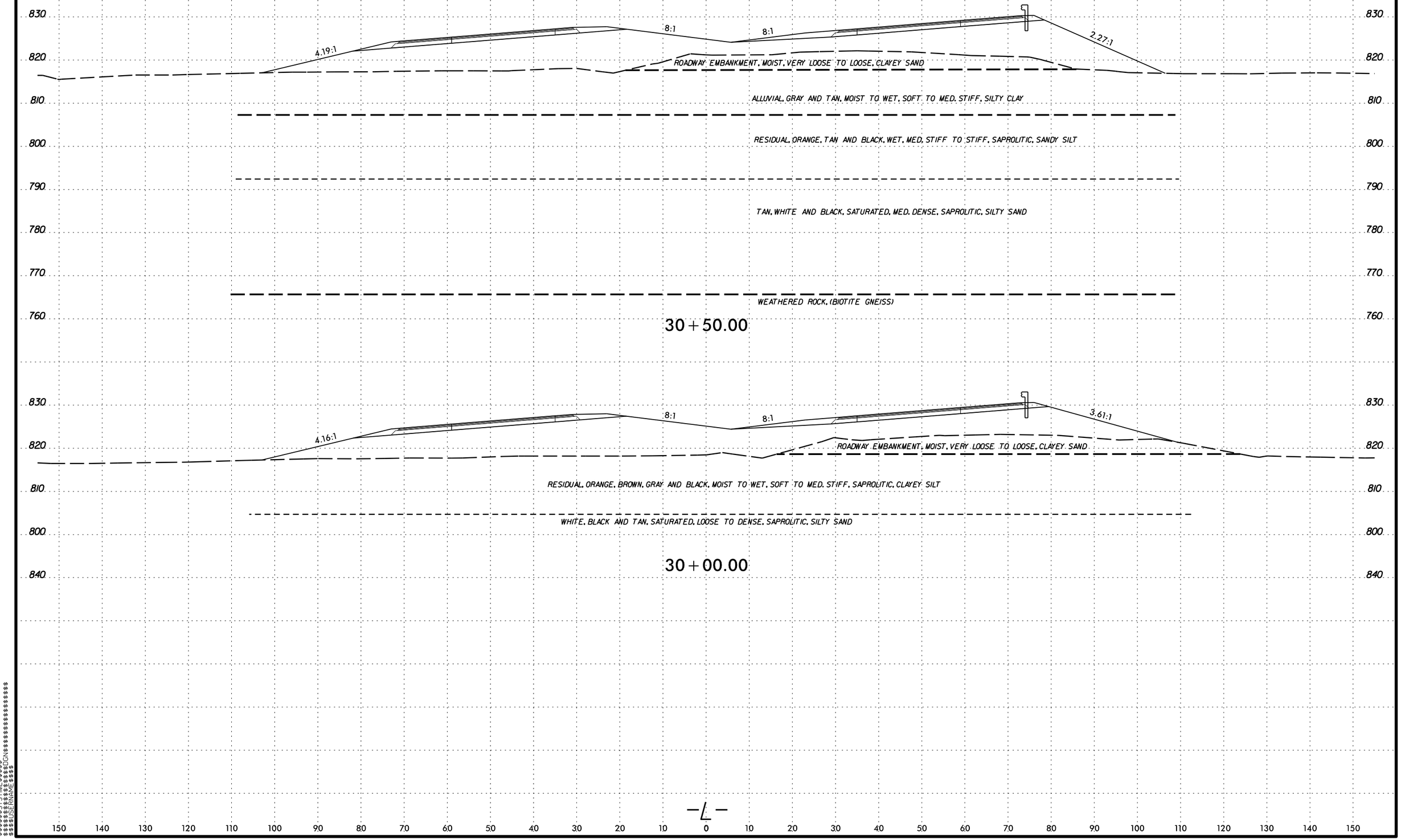
-L-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579AA	46

6/23/16



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

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579AA	47

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

840 830 820 810 800 790

3.69:1 8:1 8:1 2.05:1

SWAIM CREEK

ROADWAY EMBANKMENT, MOIST, VERY LOOSE TO LOOSE, CLAYEY SAND

ALLUVIAL, GRAY AND TAN, MOIST TO WET, SOFT TO MED. STIFF, SILTY CLAY

RESIDUAL, ORANGE, TAN AND BLACK, WET, MED. STIFF TO STIFF, SAPROLITIC, SANDY SILT

31+50.00

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-21	7 RT	30+69	9.0-10.5	A-7-6(7)	41	19	29	18	19	34	98	78	53.3	39.4	-

Ⓐ ROADWAY EMBANKMENT, MOIST, VERY LOOSE TO LOOSE, CLAYEY SAND

YI_3069
SS-21
31+10

4.20:1 8:1 8:1 2.15:1

6 3 2 5 5 9 5 13 15 21 21 28 100/0.8 100/0.3 100/0.3

F.A.D.

ALLUVIAL, GRAY AND TAN, MOIST TO WET, SOFT TO MED. STIFF, SILTY CLAY

RESIDUAL, ORANGE, TAN AND BLACK, WET, MED. STIFF TO STIFF, SAPROLITIC, SANDY SILT

TAN, WHITE AND BLACK, SATURATED, MED. DENSE, SAPROLITIC, SILTY SAND

WEATHERED ROCK, (BIOTITE GNEISS)

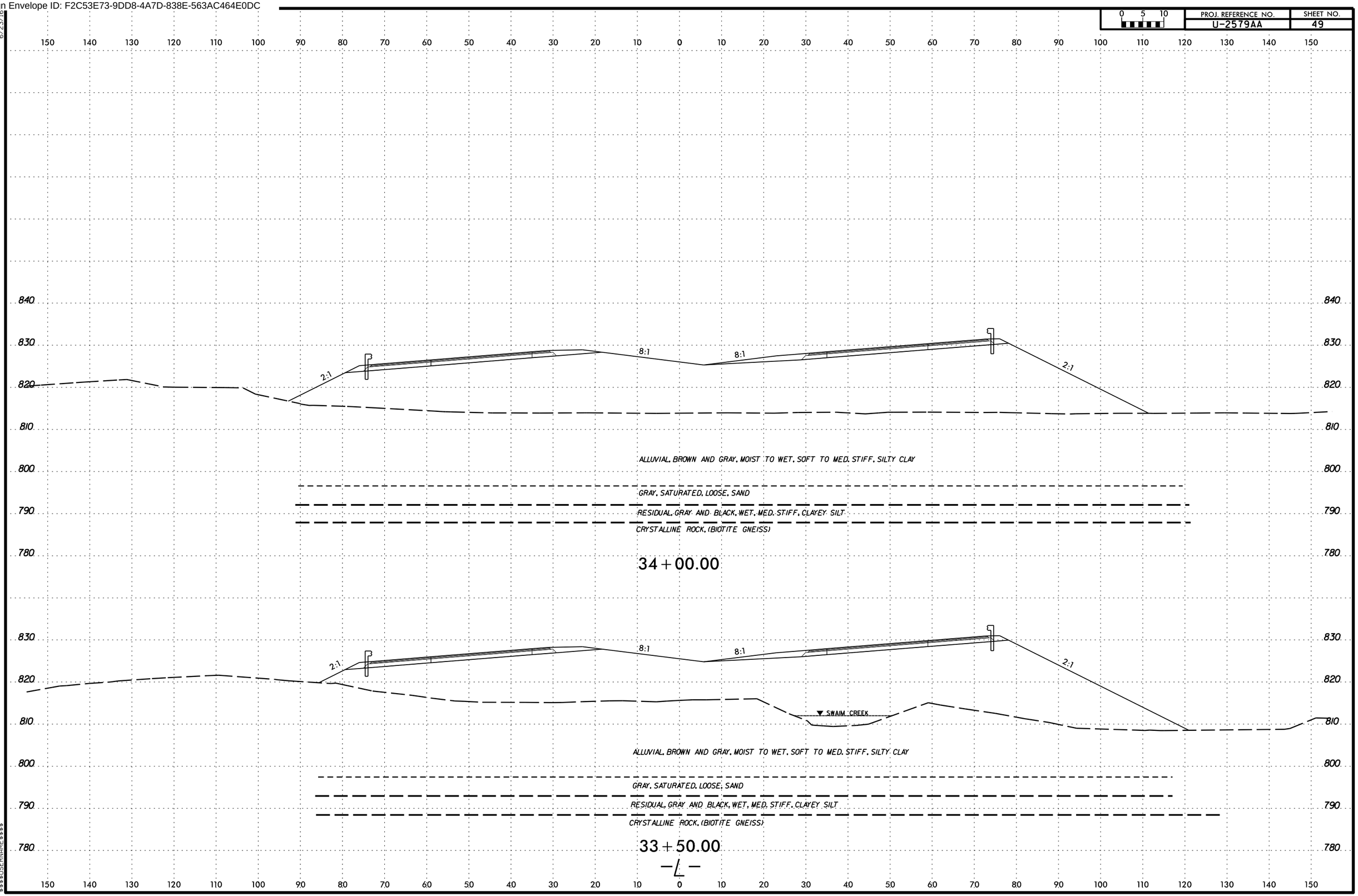
31+00.00

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

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579AA	48

6/23/16

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



0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579AA	49

34+00.00

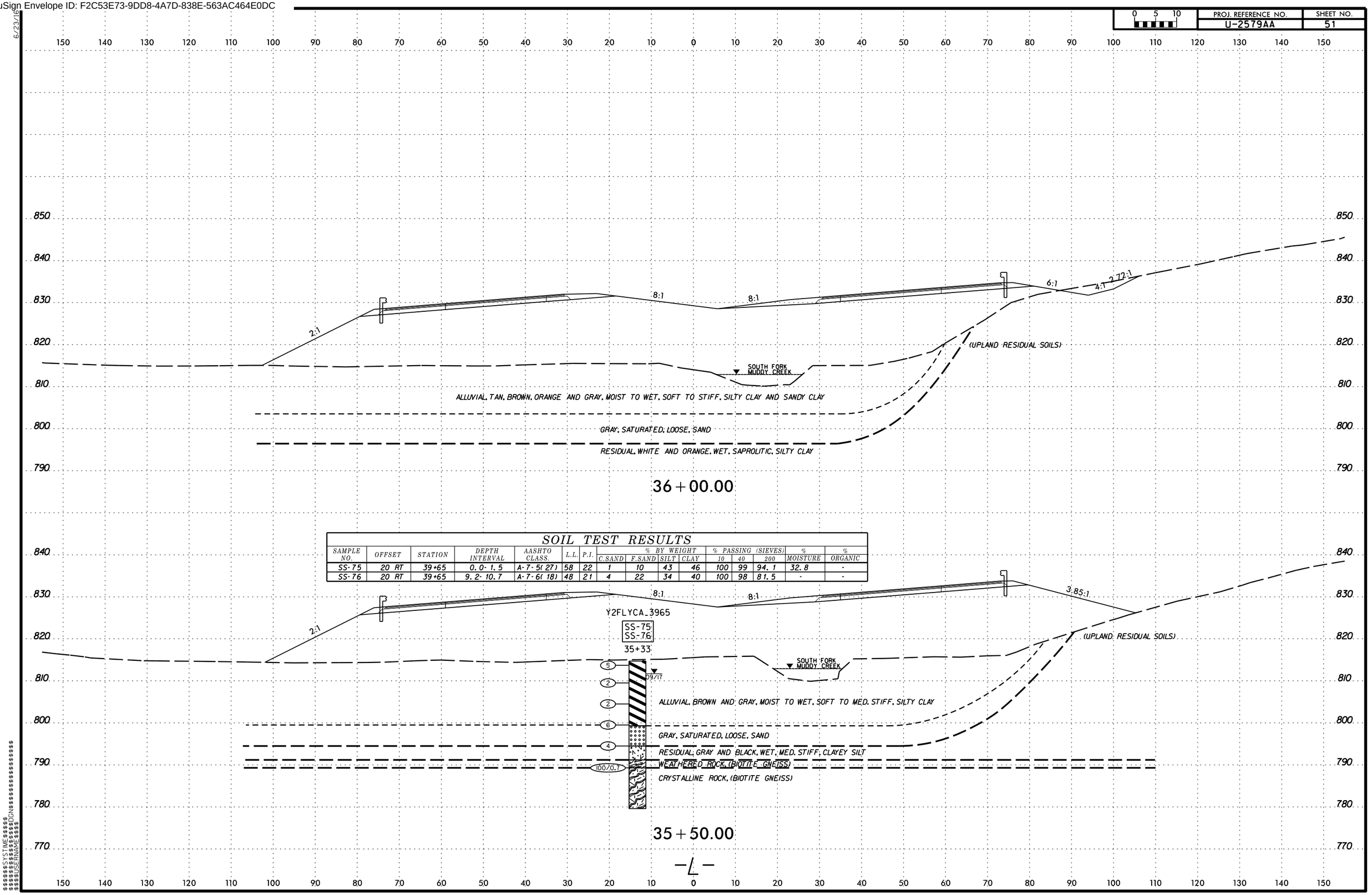
33+50.00

-L-

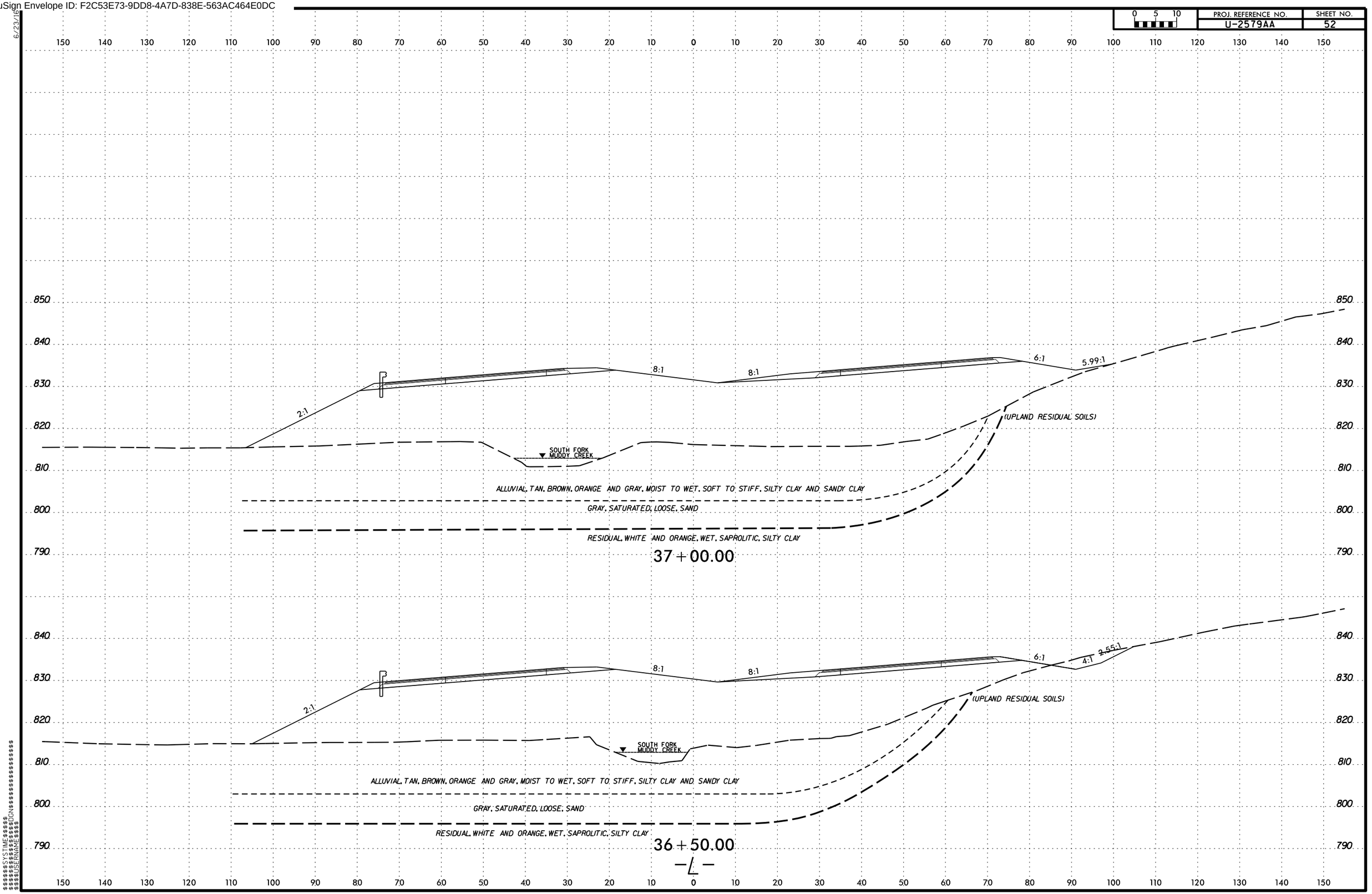
PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	50

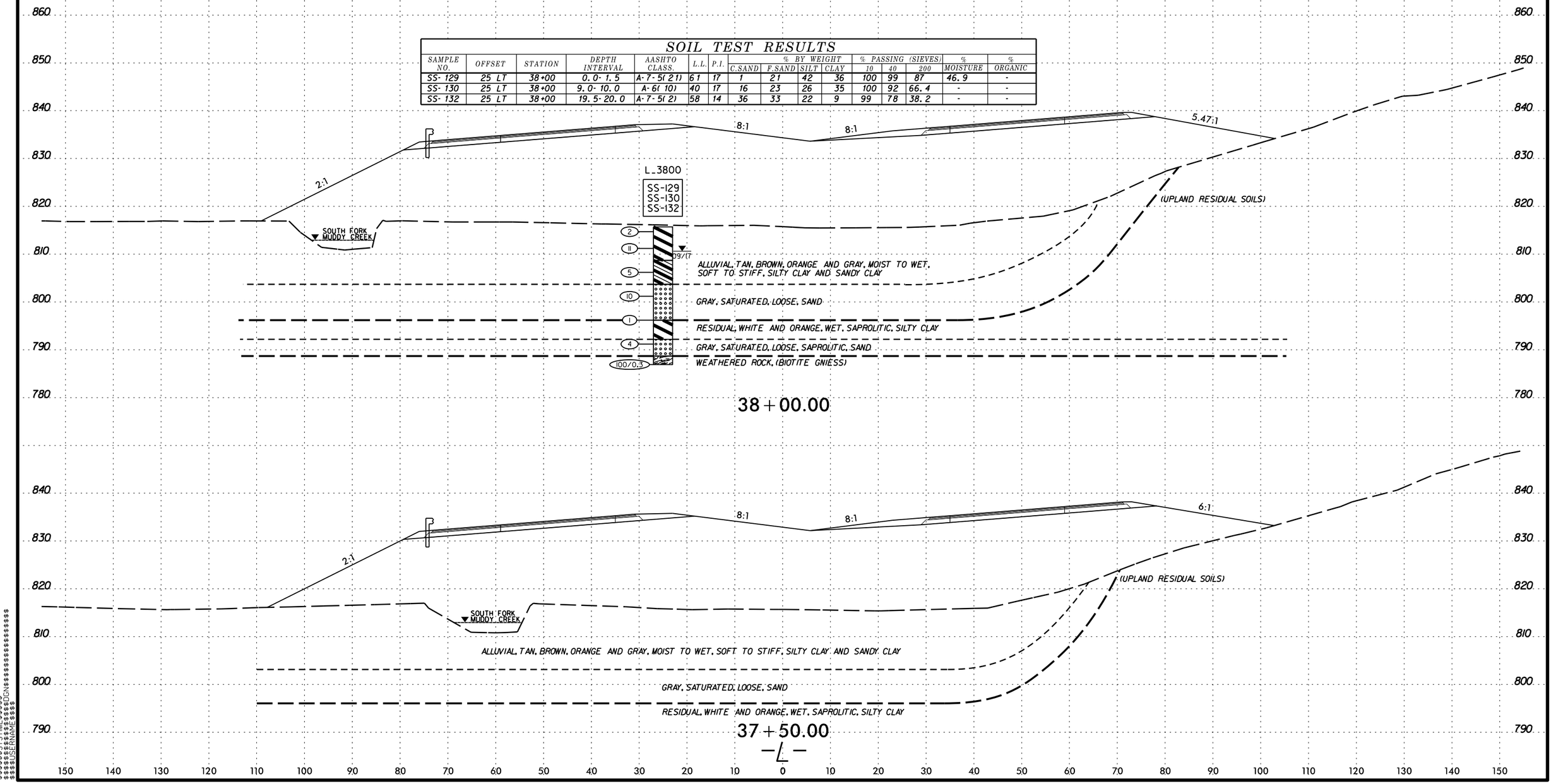
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579AA	51



PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	52





6/23/16

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	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- 129	25 LT	38+00	0.0- 1.5	A-7-5(21)	61	17	1	21	42	36	100	99	87	46.9	-
SS- 130	25 LT	38+00	9.0- 10.0	A-6(10)	40	17	16	23	26	35	100	92	66.4	-	-
SS- 132	25 LT	38+00	19.5- 20.0	A-7-5(2)	58	14	36	33	22	9	99	78	38.2	-	-

38+00.00

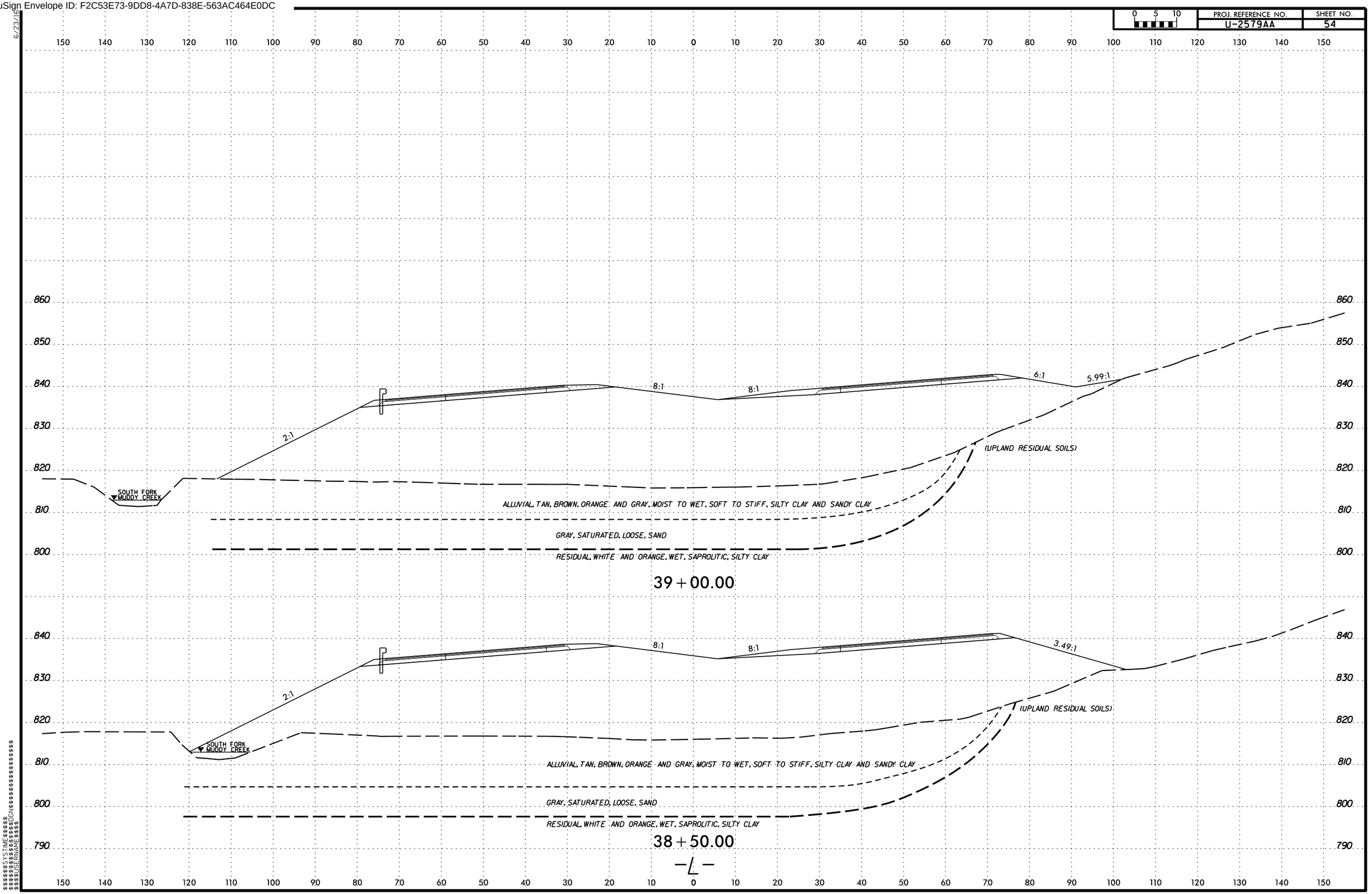
37+50.00

-L-

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

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	54



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

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579AA	55

40+00.00

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	200		
SS-134	80 RT	29+50	0.0-1.5	A-7-5(6)	51	15	31	22	25	22	100	84	51.2	-	-
SS-135	80 RT	29+50	3.5-5.0	A-7-5(1)	42	11	38	28	15	19	99	73	38.4	25.9	-
SS-136	80 RT	29+50	14.0-15.0	A-2-4(0)	30	NP	51	38	7	4	100	71	16.3	-	-

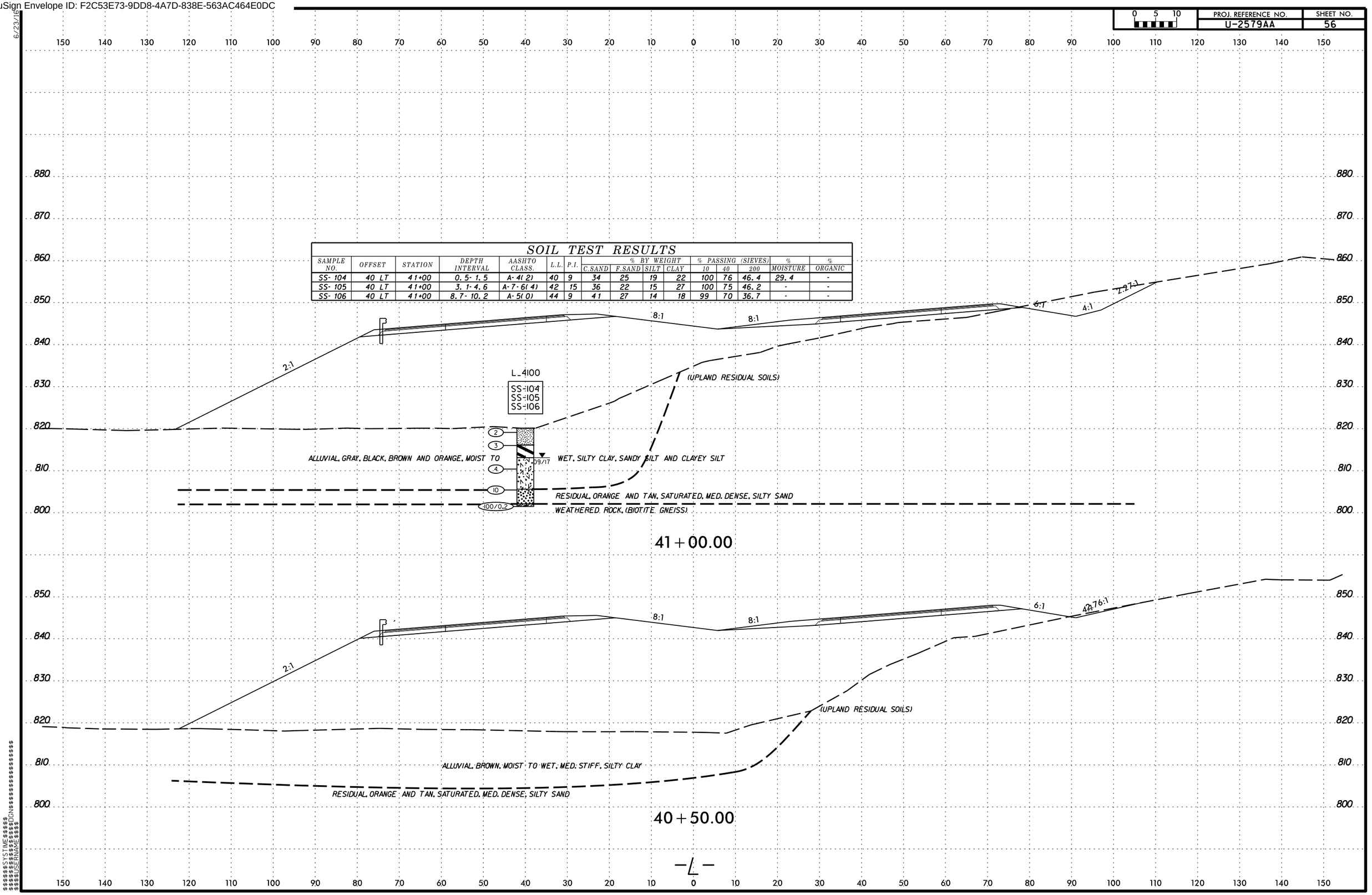
39+50.00

-L-

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

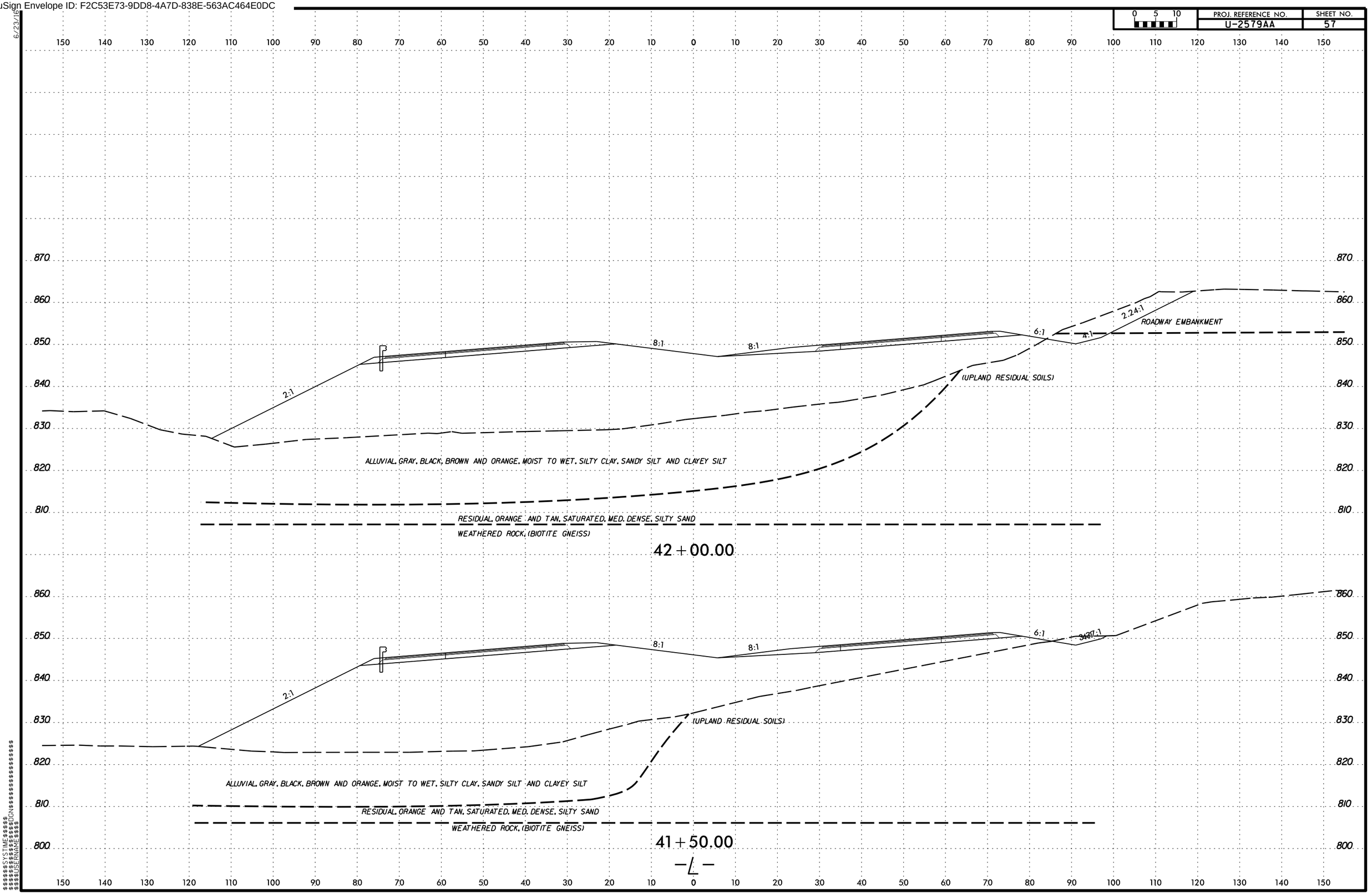
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	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-104	40 LT	41+00	0.5-1.5	A-4(2)	40	9	34	25	19	22	100	76	46.4	29.4	-
SS-105	40 LT	41+00	3.1-4.6	A-7-6(4)	42	15	36	22	15	27	100	75	46.2	-	-
SS-106	40 LT	41+00	8.7-10.2	A-5(0)	44	9	41	27	14	18	99	70	36.7	-	-

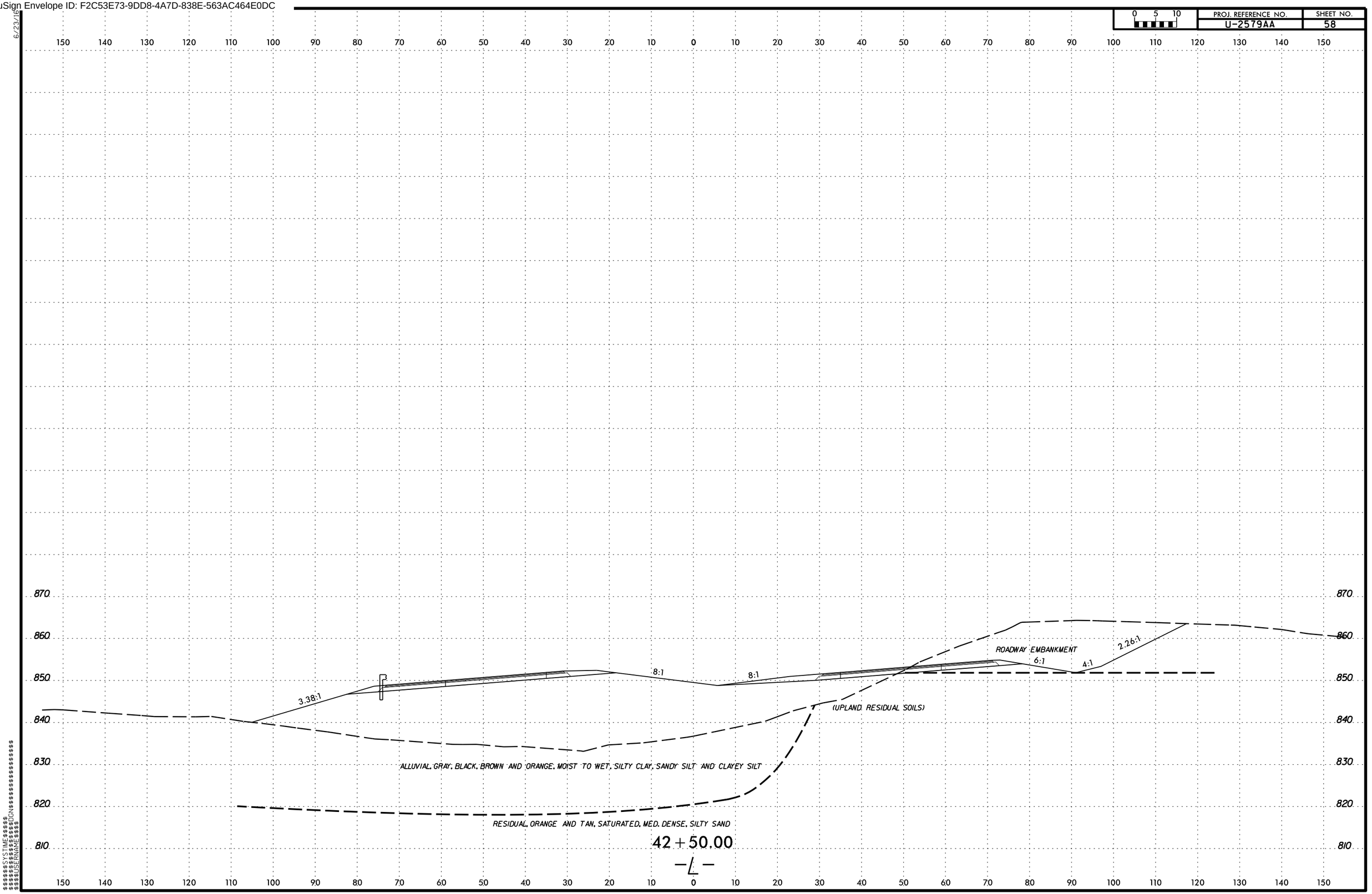


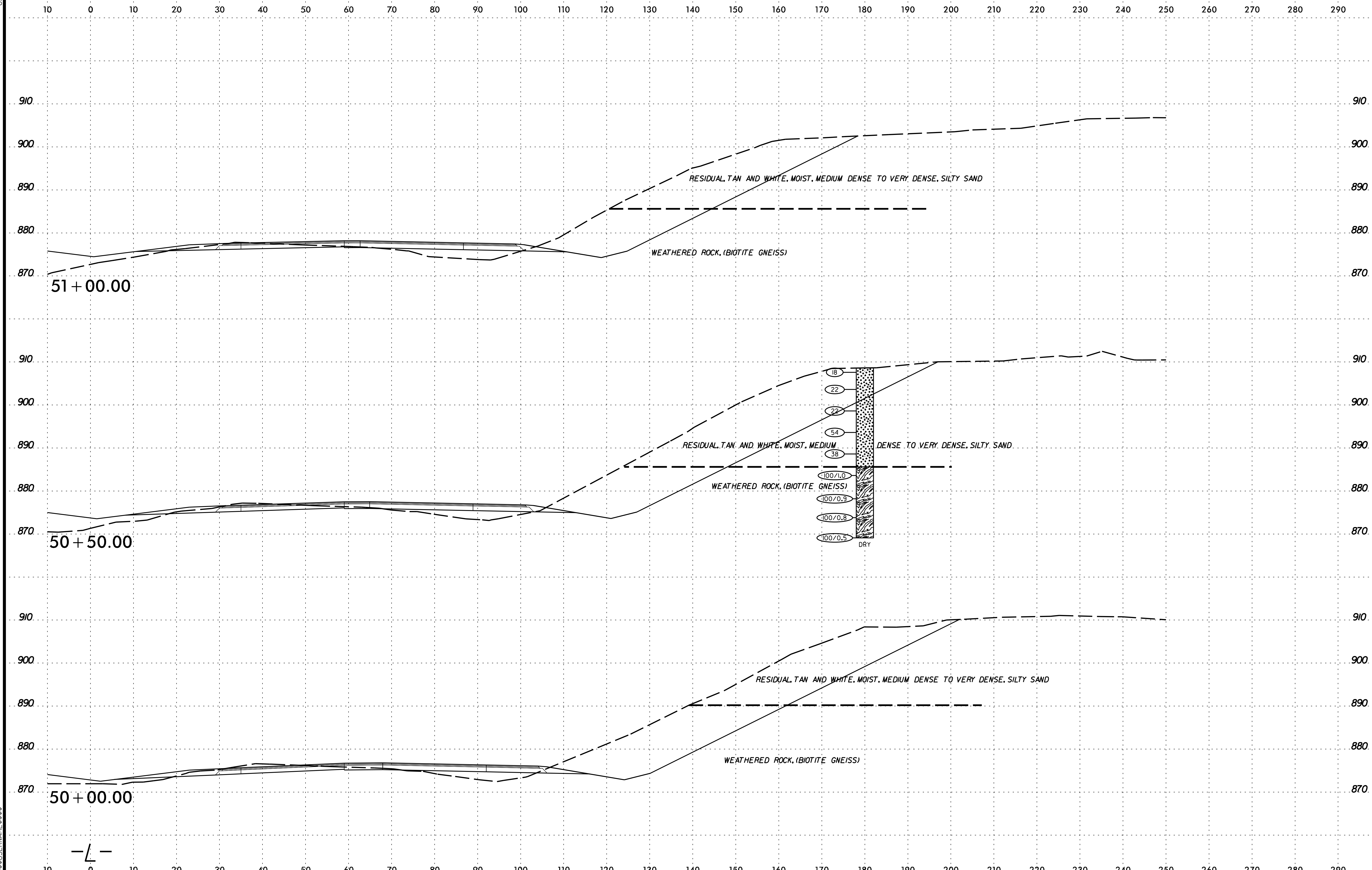
DocuSign Envelope ID: F2C53E73-9DD8-4A7D-838E-563AC464E0DC

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	57



PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	58




51+00.00
RESIDUAL, TAN AND WHITE, MOIST, MEDIUM DENSE TO VERY DENSE, SILTY SAND
WEATHERED ROCK, (BIOTITE GNEISS)
50+50.00
RESIDUAL, TAN AND WHITE, MOIST, MEDIUM DENSE TO VERY DENSE, SILTY SAND
WEATHERED ROCK, (BIOTITE GNEISS)
18
22
22
54
38
100/1.0
100/0.9
100/0.8
100/0.5
DRY
50+00.00
RESIDUAL, TAN AND WHITE, MOIST, MEDIUM DENSE TO VERY DENSE, SILTY SAND
WEATHERED ROCK, (BIOTITE GNEISS)
910
900
890
880
870
-L-

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	60

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C.SAND	F.SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
SS-218	90 RT	52+50	0.0-1.5	A-5(3)	42	10	33	21	19	27	96	75	47.5	22.5	-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579AA	61

10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290

890 880 870 860 850

ROADWAY EMBANKMENT, RED AND TAN, MOIST, MED. STIFF, CLAYEY SILT, SANDY SILT AND SANDY CLAY

RESIDUAL, TAN, ORANGE AND WHITE, MOIST, LOOSE TO MED. DENSE, SILTY SAND

54 + 50.00

880 870 860 850 840

ROADWAY EMBANKMENT, RED AND TAN, MOIST, MED. STIFF, CLAYEY SILT, SANDY SILT AND SANDY CLAY

RESIDUAL, TAN, ORANGE AND WHITE, MOIST, LOOSE TO MED. DENSE, SILTY SAND

54 + 00.00

880 870 860 850

ROADWAY EMBANKMENT, RED AND TAN, MOIST, MED. STIFF, CLAYEY SILT, SANDY SILT AND SANDY CLAY

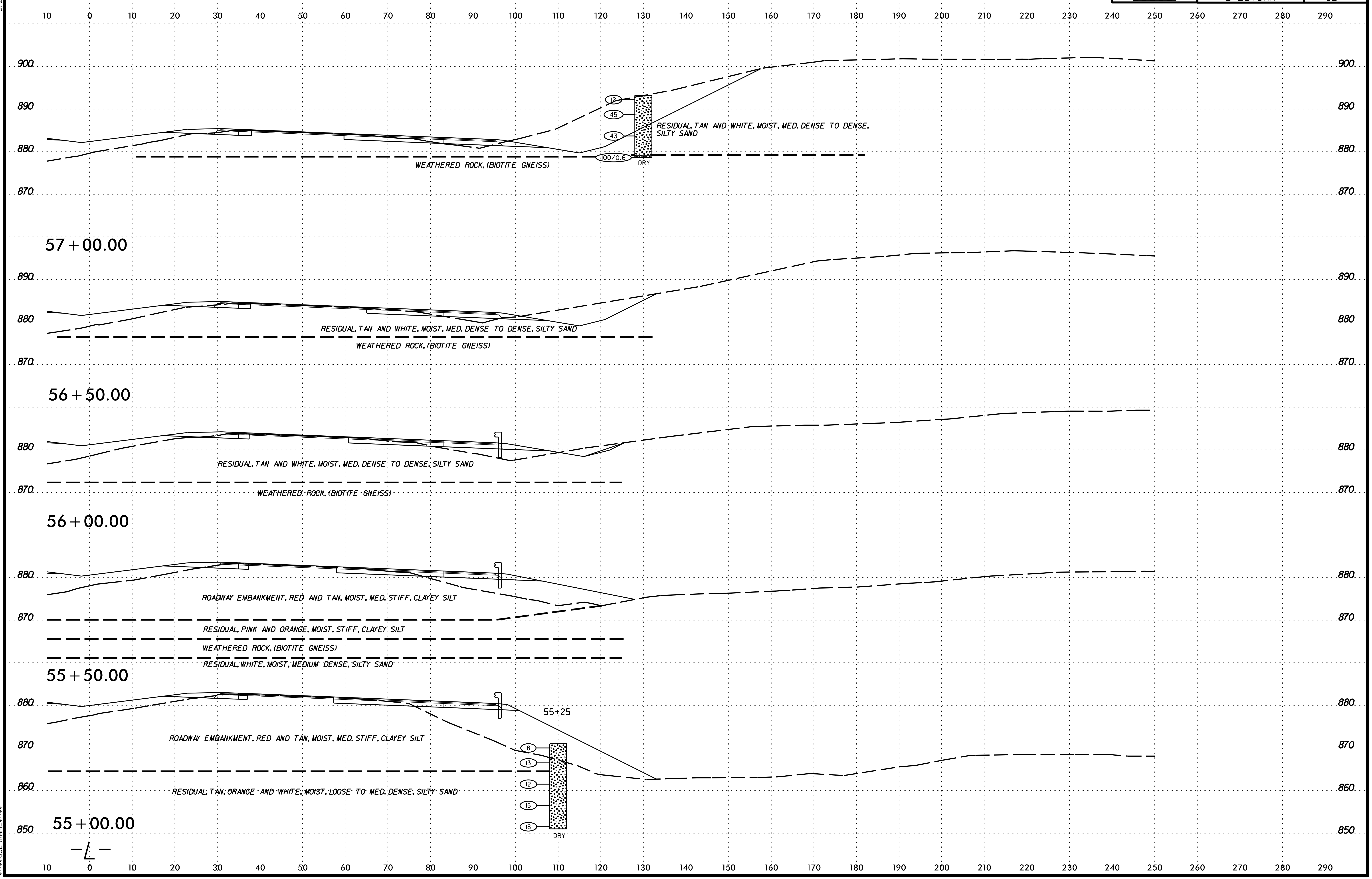
RESIDUAL, TAN, ORANGE AND WHITE, MOIST, LOOSE TO MED. DENSE, SILTY SAND

53 + 50.00

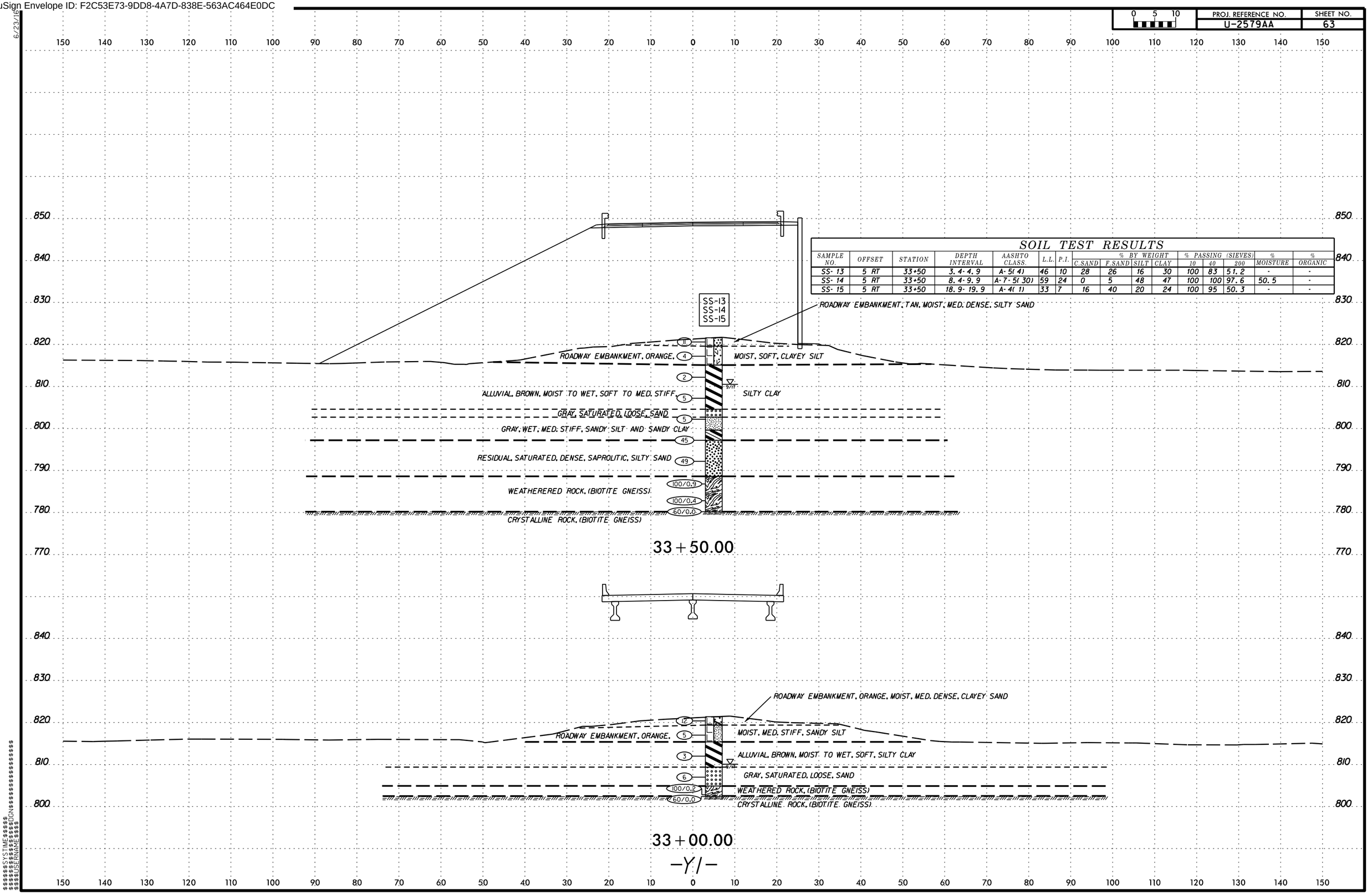
$$$$$$$$SYSTIME$$$$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	62



57+00.00
RESIDUAL, TAN AND WHITE, MOIST, MED. DENSE TO DENSE, SILTY SAND
WEATHERED ROCK, (BIOTITE GNEISS)
DRY
100/0.6
56+50.00
RESIDUAL, TAN AND WHITE, MOIST, MED. DENSE TO DENSE, SILTY SAND
WEATHERED ROCK, (BIOTITE GNEISS)
56+00.00
RESIDUAL, TAN AND WHITE, MOIST, MED. DENSE TO DENSE, SILTY SAND
WEATHERED ROCK, (BIOTITE GNEISS)
55+50.00
ROADWAY EMBANKMENT, RED AND TAN, MOIST, MED. STIFF, CLAYEY SILT
RESIDUAL, PINK AND ORANGE, MOIST, STIFF, CLAYEY SILT
WEATHERED ROCK, (BIOTITE GNEISS)
RESIDUAL, WHITE, MOIST, MEDIUM DENSE, SILTY SAND
55+00.00
55+25
ROADWAY EMBANKMENT, RED AND TAN, MOIST, MED. STIFF, CLAYEY SILT
RESIDUAL, TAN, ORANGE AND WHITE, MOIST, LOOSE TO MED. DENSE, SILTY SAND
DRY
-L-



6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579AA	63

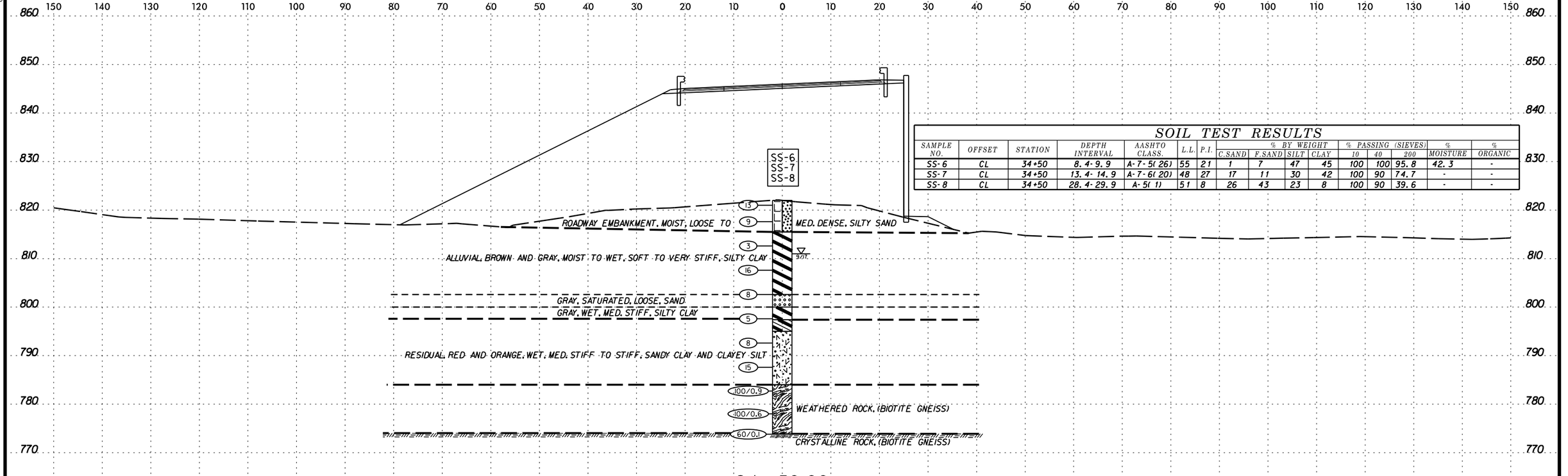
SOIL TEST RESULTS

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- 13	5 RT	33+50	3. 4- 4. 9	A- 5(4)	46	10	28	26	16	30	100	83	51. 2	-	-
SS- 14	5 RT	33+50	8. 4- 9. 9	A- 7- 5(30)	59	24	0	5	48	47	100	100	97. 6	50. 5	-
SS- 15	5 RT	33+50	18. 9- 19. 9	A- 4(1)	33	7	16	40	20	24	100	95	50. 3	-	-

33 + 50.00

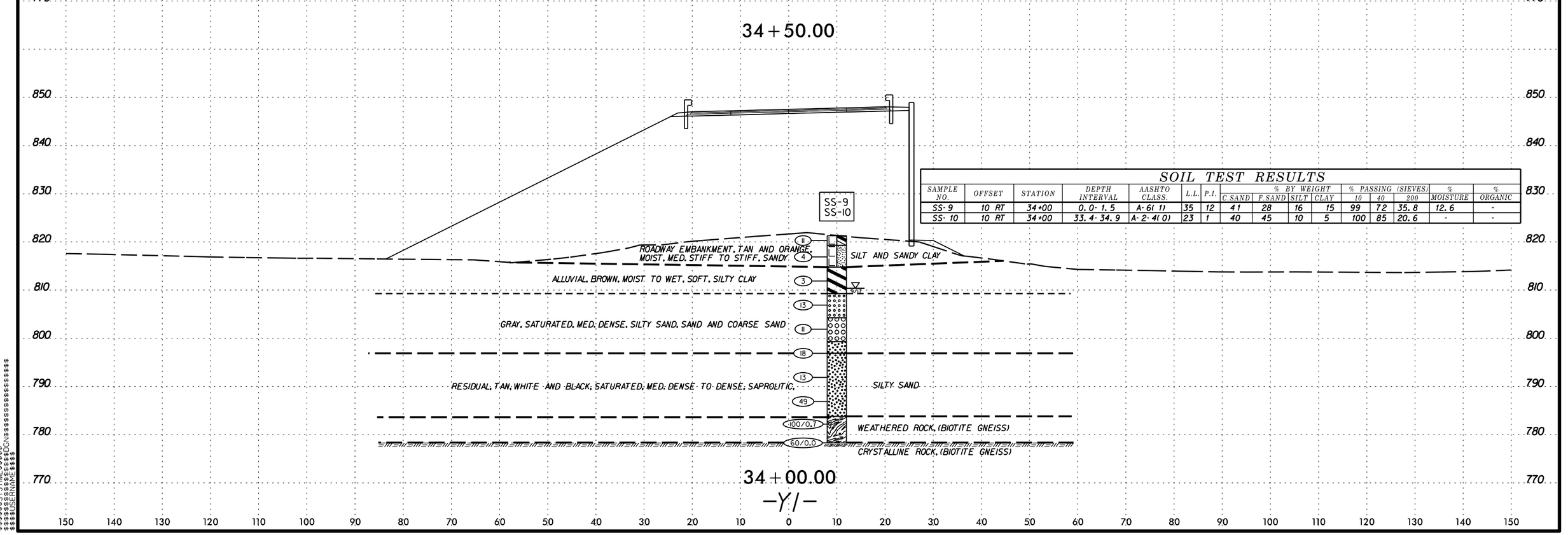
33 + 00.00

-Y1-



34+50.00

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	200		
SS-6	CL	34+50	8.4-9.9	A-7-5(26)	55	21	1	7	47	45	100	100	95.8	42.3	-
SS-7	CL	34+50	13.4-14.9	A-7-6(20)	48	27	17	11	30	42	100	90	74.7	-	-
SS-8	CL	34+50	28.4-29.9	A-5(1)	51	8	26	43	23	8	100	90	39.6	-	-



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-9	10 RT	34+00	0.0-1.5	A-6(1)	35	12	41	28	16	15	99	72	35.8	12.6	-
SS-10	10 RT	34+00	33.4-34.9	A-2-4(0)	23	1	40	45	10	5	100	85	20.6	-	-

34+00.00

-Y1-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579AA	65

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

850 840 830 820 810 800 790 780 770

ROADWAY EMBANKMENT, MOIST, LOOSE TO MED. DENSE, SILTY SAND

ALLUVIAL, TAN, ORANGE AND GRAY, MOIST TO WET, MED. STIFF, SILTY CLAY

RESIDUAL, TAN, GRAY AND BLACK, SATURATED, SAPROLITIC, SILTY SAND

35+50.00

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-122	45 RT	35+00	0.0-1.5	A-7-5(18)	51	19	10	12	44	34	100	94	82.6	36.3	-
SS-123	45 RT	35+00	4.0-5.0	A-1-b(0)	27	5	74	14	2	10	91	33	12.6	-	-
SS-124	45 RT	35+00	8.5-10.0	A-7-6(26)	55	30	8	17	27	48	100	96	80.8	-	-
SS-127	45 RT	35+00	29.1-30.0	A-2-4(0)	31	3	42	41	13	4	100	49	23	-	-

SS-122
SS-123
SS-124
SS-127

ROADWAY EMBANKMENT, MOIST, LOOSE TO MED. DENSE, SILTY SAND

ALLUVIAL, GRAY, MOIST TO WET, SOFT, SILTY CLAY

GRAY, SATURATED, LOOSE, COARSE SAND

GRAY, WET, SOFT, SILTY CLAY

RESIDUAL, GRAY AND ORANGE, SATURATED, MED. DENSE, SILTY SAND

TAN AND BLACK, WET, STIFF, SAPROLITIC, SANDY SILT

GRAY AND ORANGE, SATURATED, MED. DENSE TO DENSE, SAPROLITIC, SILTY SAND

WEATHERED ROCK, (BIOTITE GNEISS)

3 9 2 17 13 45 24 39 100/0.4

9/17

35+00.00

-Y1-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

860
850

RESIDUAL, RED AND TAN, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY AND SILTY CLAY
RESIDUAL, RED AND TAN, MOIST, STIFF, CLAYEY SILT

14 + 00.00

860
850

RESIDUAL, RED AND TAN, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY AND SILTY CLAY
RESIDUAL, RED AND TAN, MOIST, STIFF, CLAYEY SILT

13 + 50.00

860
850

RESIDUAL, RED AND TAN, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY AND SILTY CLAY
RESIDUAL, RED AND TAN, MOIST, STIFF, CLAYEY SILT

13 + 00.00

860
850

RESIDUAL, RED AND TAN, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY AND SILTY CLAY
RESIDUAL, RED AND TAN, MOIST, STIFF, CLAYEY SILT

12 + 50.00

870
860
850

RESIDUAL, RED AND TAN, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY AND SILTY CLAY
RESIDUAL, RED AND TAN, MOIST, STIFF, CLAYEY SILT

12 + 00.00

860

11 + 50.00

–YIDET–

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	67

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- 174	15 LT	15+00	0.0- 1.5	A-7-5(28)	68	35	15	12	18	55	100	90	74.4	-	-
SS- 175	15 LT	15+00	3.5- 5.0	A-7-5(10)	52	11	16	17	31	36	100	91	70.7	28.0	-
SS- 176	15 LT	15+00	8.5- 10	A-5(0)	50	3	32	30	24	14	96	78	39.3	-	-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

860 850 840 830 820

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

TAN AND WHITE, MOIST, MED. DENSE, SILTY SAND

WEATHERED ROCK, (BIOTITE GNEISS)

36+50.00

860 850 840 830 820

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

TAN AND WHITE, MOIST, MED. DENSE, SILTY SAND

WEATHERED ROCK, (BIOTITE GNEISS)

36+00.00

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C.SAND	F.SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
SS-170	60 LT	35+50	0.0-1.5	A-6(5)	40	14	26	25	16	33	100	86	51.0	19.7	-

860 850 840 830 820

SS-170

13 16 17 32 100/0.9 100/0.9 100/1.0

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

TAN AND WHITE, MOIST, MED. DENSE, SILTY SAND

WEATHERED ROCK, (BIOTITE GNEISS)

35+50.00

-YIDET-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579AA	69

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-227A	CL	32+50	0.0-1.5	A-7-6(12)	52	27	31	17	16	36	98	75	54.8	-	-

-Y2-

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

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-226A	CL	35+50	0.0-1.5	A-7-6(17)	64	35	33	15	10	42	100	76	55.2	-	-

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	71

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

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	72

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-81A	25 RT	12+50	14.2-15.7	A-2-5(0)	43	3	47	27	18	8	99	65	31.1	-	-

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	73

290 280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10

880 870 860 850

RESIDUAL, BROWN AND TAN, MOIST, MED. DENSE, SILTY SAND AND CLAYEY SAND

WEATHERED ROCK, (BIOTITE GNEISS)

RESIDUAL, TAN, MOIST, MED. DENSE TO DENSE, SILTY SAND

43 + 50.00

RESIDUAL, TAN, MOIST, MED. DENSE, SILTY SAND

43 + 00.00

RESIDUAL, TAN, MOIST, MED. DENSE, SILTY SAND

42 + 50.00

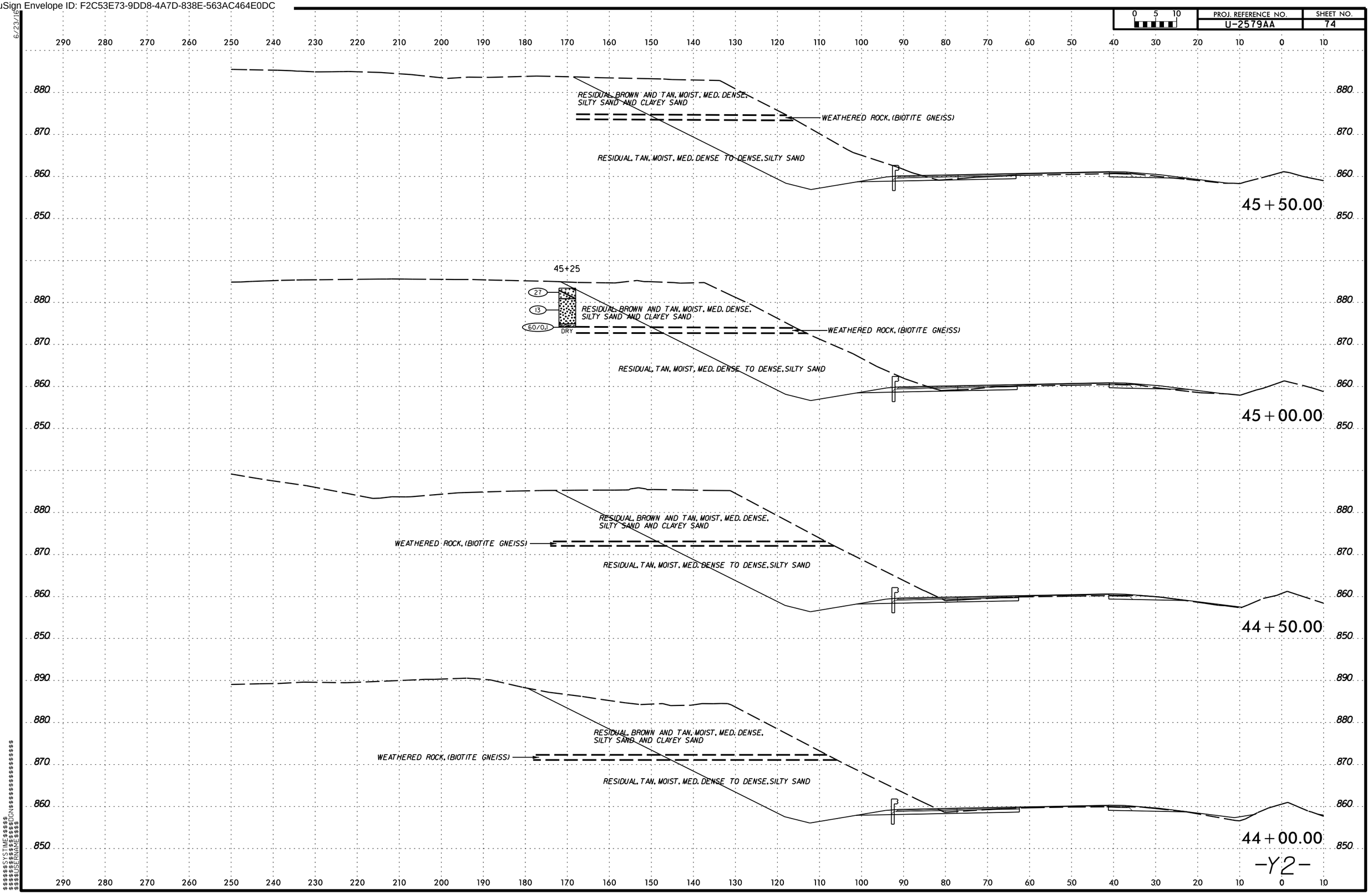
RESIDUAL, TAN, MOIST, MED. DENSE, SILTY SAND

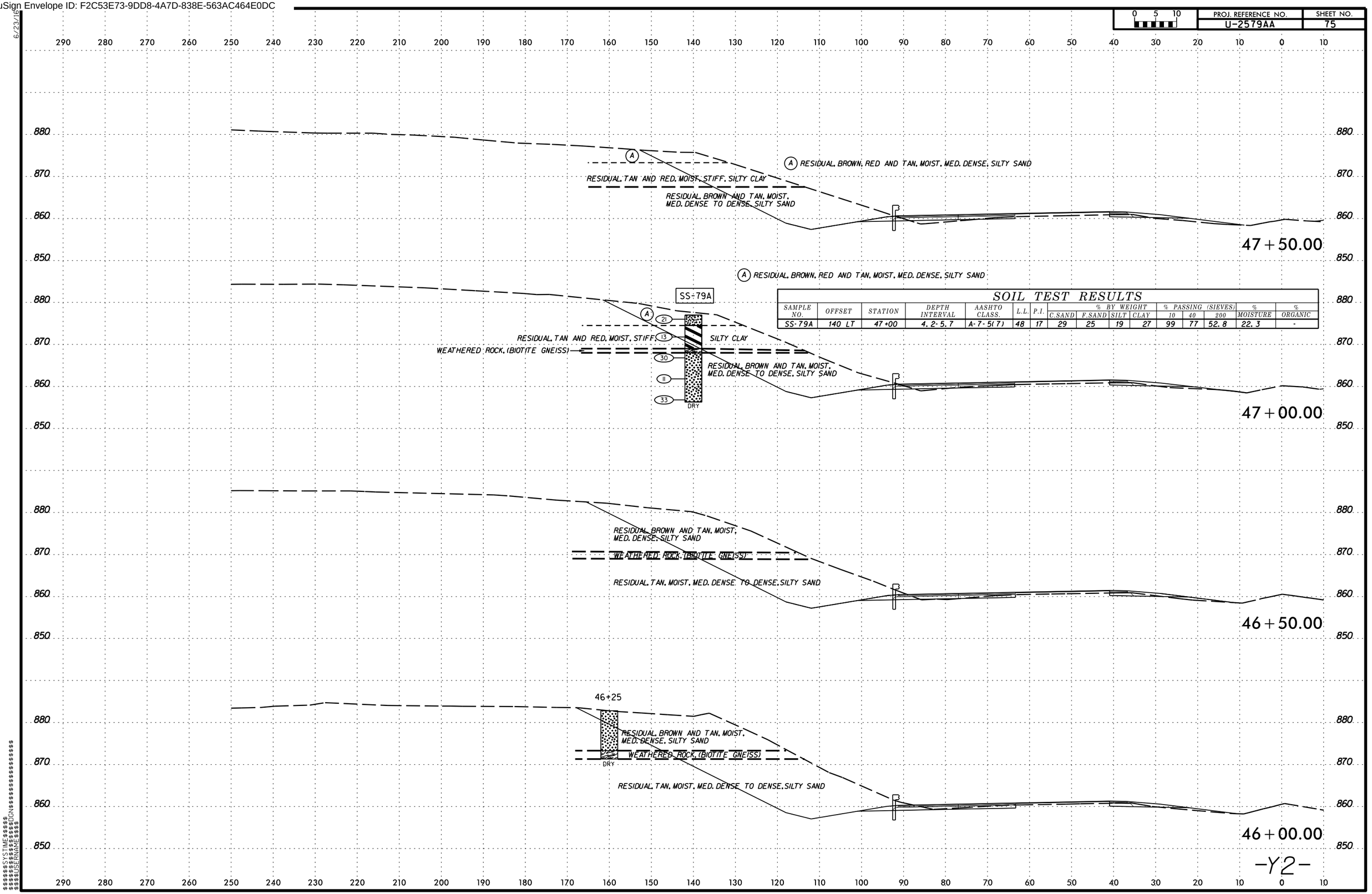
42 + 00.00

-Y2-

DocuSign Envelope ID: F2C53E73-9DD8-4A7D-838E-563AC464E0DC

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	74





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-79A	140 LT	47+00	4.2-5.7	A-7-5(7)	48	17	29	25	19	27	99	77	52.8	22.3	-

10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290

840 / 830

4+50.00

RESIDUAL, TAN AND RED, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY
RESIDUAL, TAN, WHITE, RED AND BROWN, MOIST, LOOSE TO MED. DENSE, SILTY SAND

4+00.00

RESIDUAL, TAN AND RED, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY
RESIDUAL, TAN, WHITE, RED AND BROWN, MOIST, LOOSE TO MED. DENSE, SILTY SAND

3+50.00

RESIDUAL, TAN AND RED, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY
RESIDUAL, TAN, WHITE, RED AND BROWN, MOIST, LOOSE TO MED. DENSE, SILTY SAND

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-235	145 RT	3+00	0.0-1.5	A-7-5(23)	61	26	9	18	27	46	99	93	78.5	-	-

3+00.00

SS-235

RESIDUAL, TAN AND RED, MOIST, STIFF, HIGHLY PLASTIC SILTY CLAY (12)
RESIDUAL, TAN, WHITE, RED AND BROWN, MOIST, LOOSE TO MED. DENSE, SILTY SAND (10)
(10)
DRY

2+50.00

RESIDUAL, TAN AND RED, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY
RESIDUAL, TAN, WHITE, RED AND BROWN, MOIST, LOOSE TO MED. DENSE, SILTY SAND

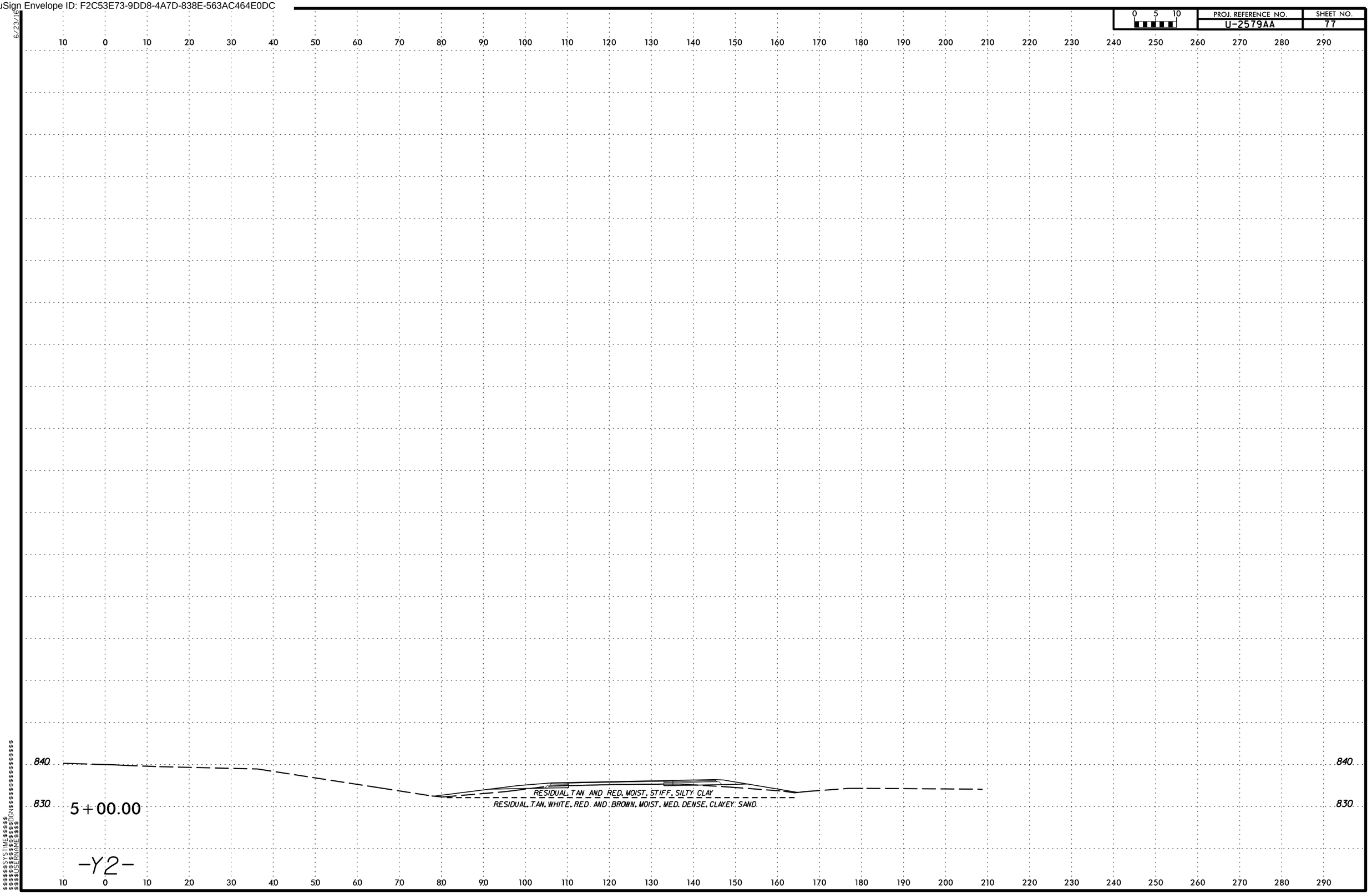
2+00.00

-Y2-

6/23/16

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	77



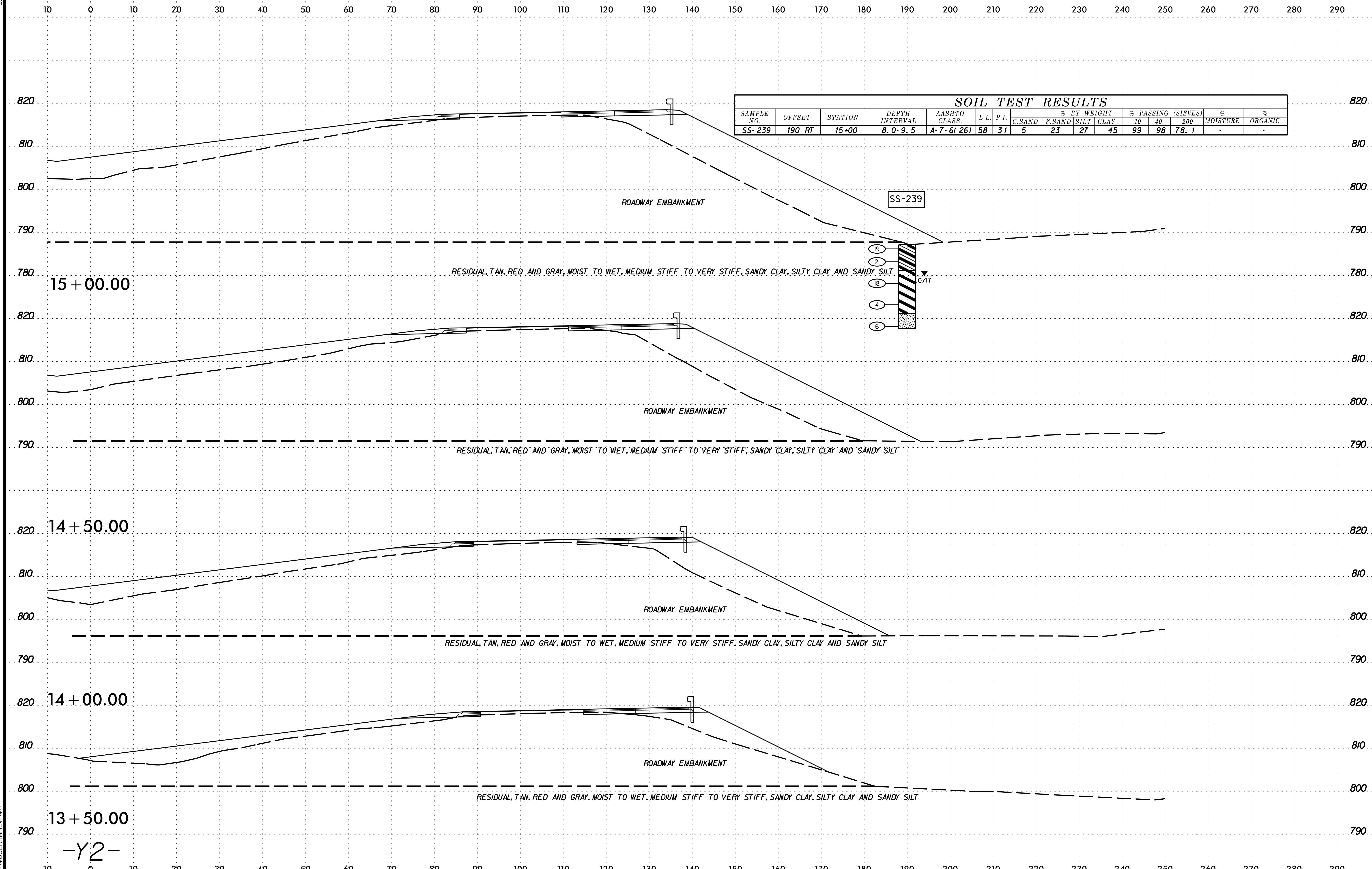
$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

DocuSign Envelope ID: F2C53E73-9DD8-4A7D-838E-563AC464E0DC

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	78

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-239	190 RT	15+00	8.0-9.5	A-7-6(26)	58	31	5	23	27	45	99	98	78.1	-	-



6/23/16

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

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	79

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C.SAND	F.SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
SS-241	170 RT	20+00	3.5-5.0	A-7-5(9)	52	18	29	20	27	24	100	79	56.0	-	-

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	80

10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290

850 840 830 820

ROADWAY EMBANKMENT, RED, TAN AND BROWN, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY

RESIDUAL, RED AND TAN, MOIST, MEDIUM DENSE, SILTY SAND

32+00.00

850 840 830 820 810

ROADWAY EMBANKMENT, RED, TAN AND BROWN, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY

RESIDUAL, RED AND TAN, MOIST, MEDIUM DENSE, SILTY SAND

31+50.00

840 830 820 810

ROADWAY EMBANKMENT, RED, TAN AND BROWN, MOIST, MED. STIFF TO STIFF, SILTY CLAY

31+00.00

-Y2-

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	81

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-227A	CL	32+50	0.0-1.5	A-7-6(12)	52	27	31	17	16	36	98	75	54.8	-	-

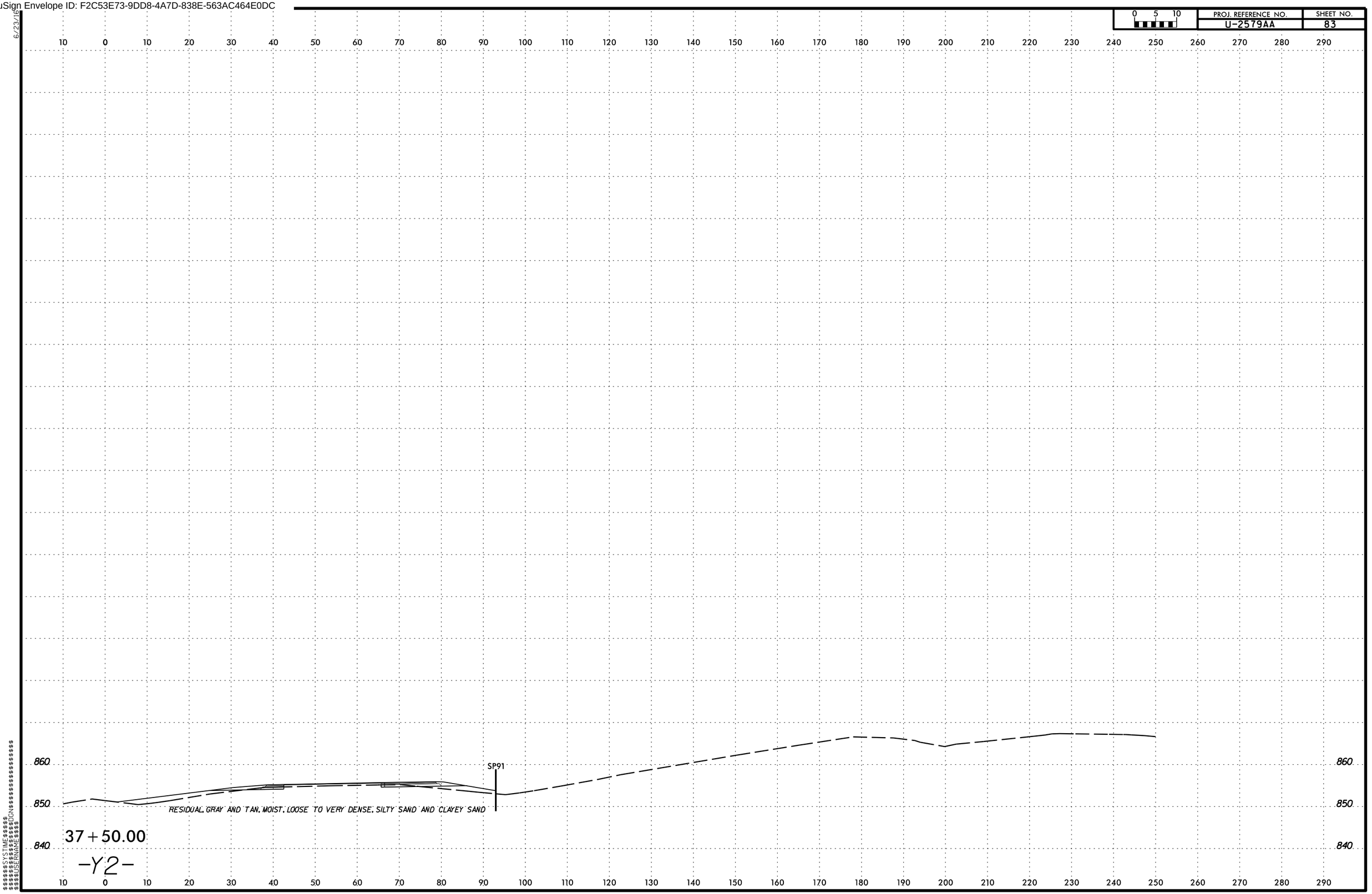
$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$USERNAME$$$$

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-226A	CL	35+50	0.0-1.5	A-7-6(17)	64	35	33	15	10	42	100	76	55.2	-	-

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	83



0 5 10

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	84

10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290

880 870 860 850

41+75

10
11
17
13
63
61
73

RESIDUAL, TAN, MOIST, MED. DENSE, SILTY SAND AND CLAYEY SAND

41+50.00

RESIDUAL, TAN, MOIST, MED. DENSE, SILTY SAND

41+00.00

CRYSTALLINE ROCK, (BIOTITE GNEISS)

DRY

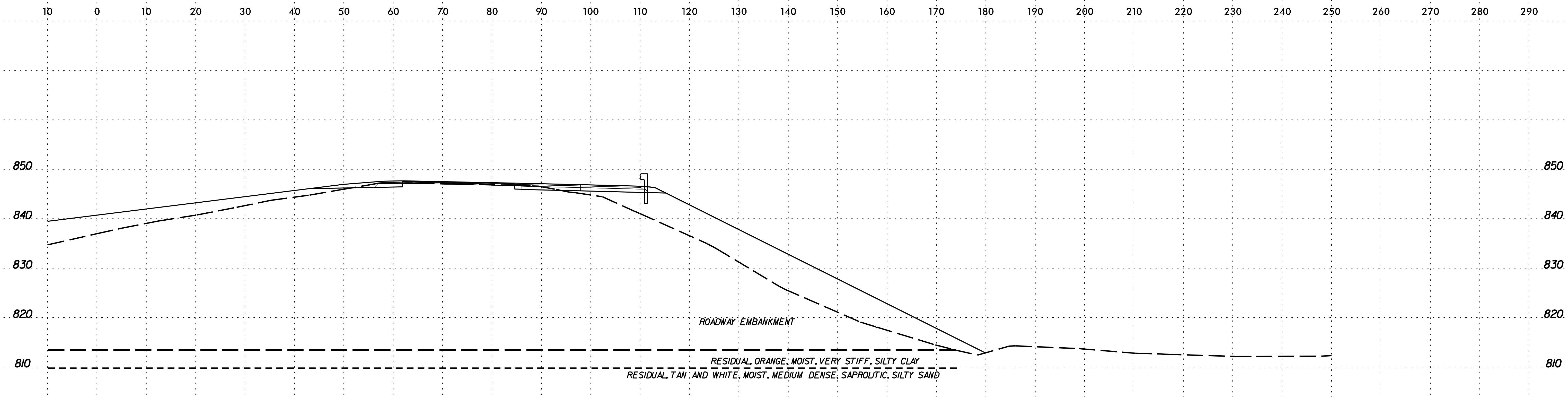
RESIDUAL, TAN, MOIST, MED. DENSE, SILTY SAND

40+50.00

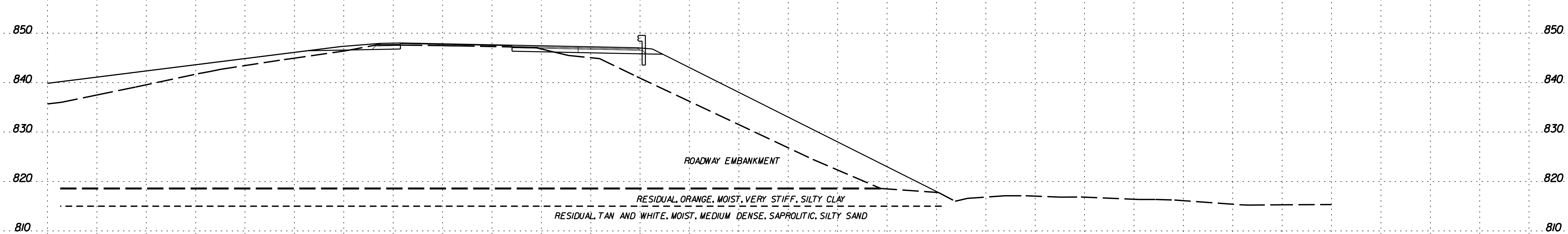
RESIDUAL, TAN, MOIST, MED. DENSE, SILTY SAND

40+00.00

-Y2-



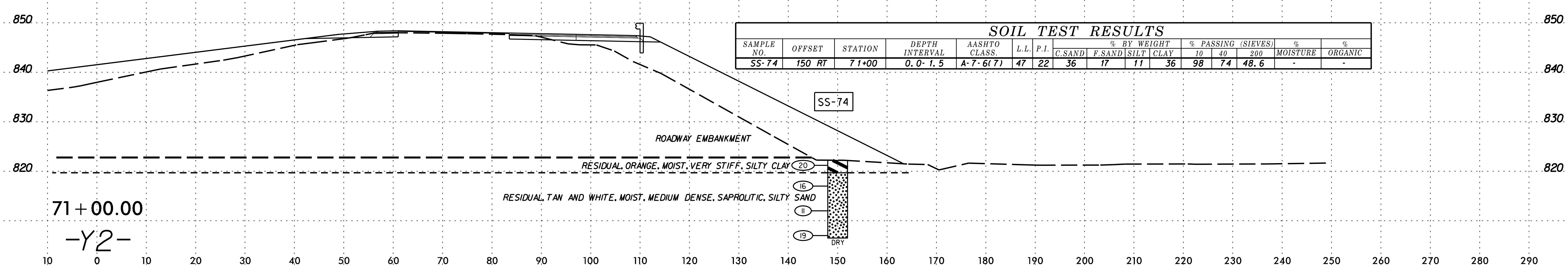
72+00.00



71+50.00

SOIL TEST RESULTS

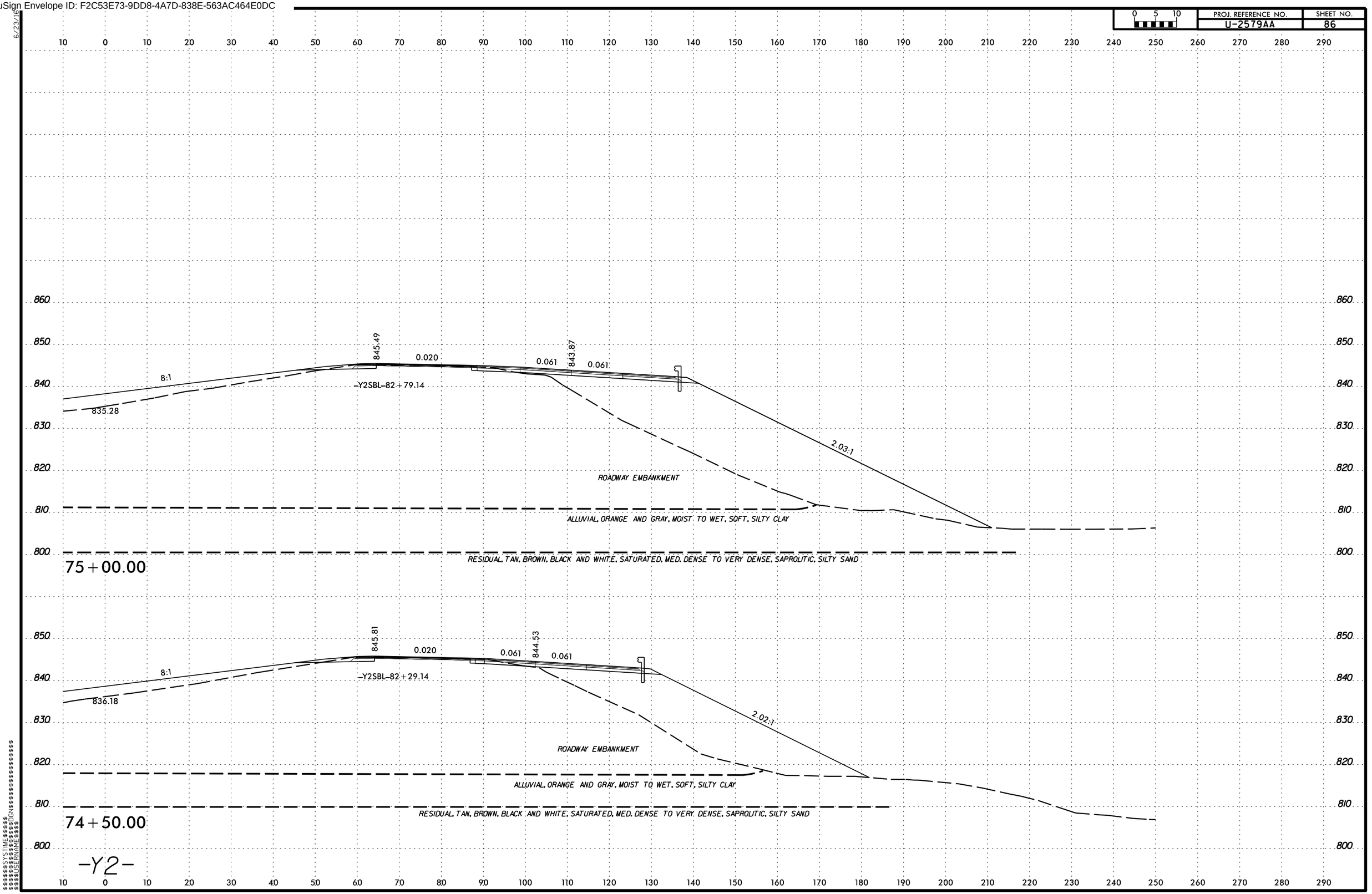
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-74	150 RT	71+00	0.0-1.5	A-7-6(7)	47	22	36	17	11	36	98	74	48.6	-	-

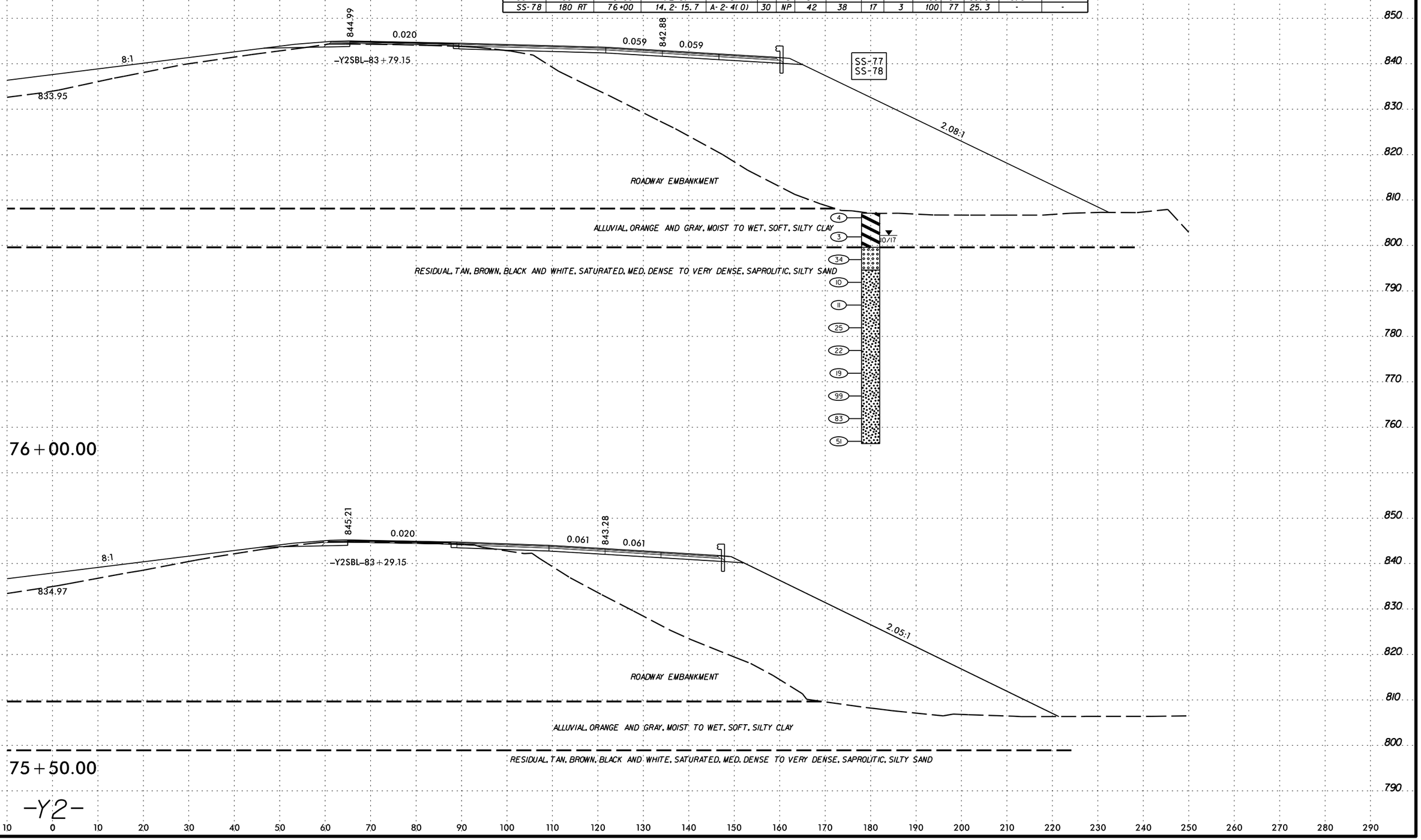


71+00.00

-Y2-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579AA	86





6/23/16

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	87

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		
SS-77	180 RT	76+00	4.2-5.7	A-7-5(17)	47	15	5	7	44	44	100	97	89.9	40.3	-
SS-78	180 RT	76+00	14.2-15.7	A-2-4(0)	30	NP	42	38	17	3	100	77	25.3	-	-

76+00.00

75+50.00

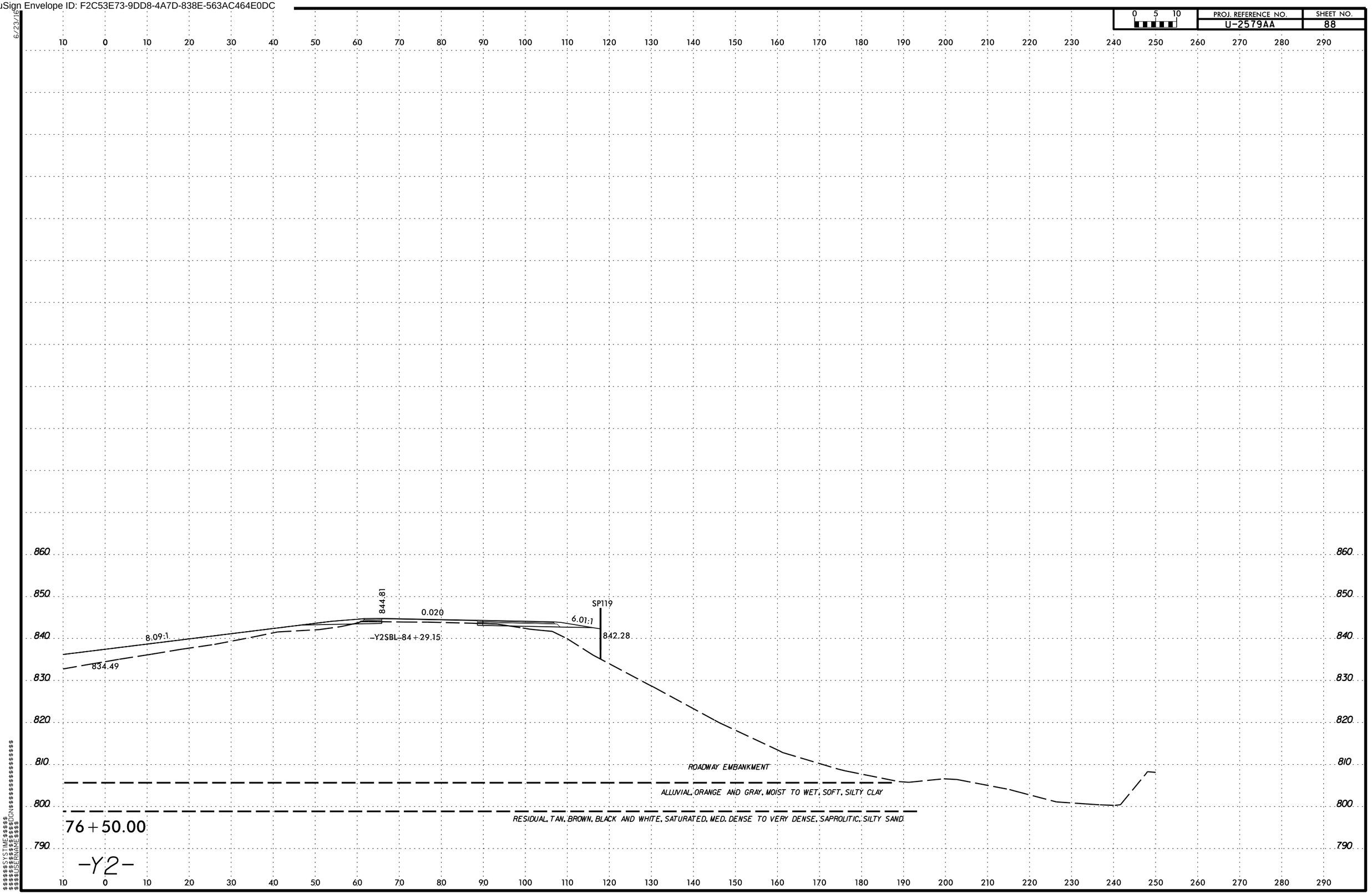
-Y2-

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

6/23/16

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	88

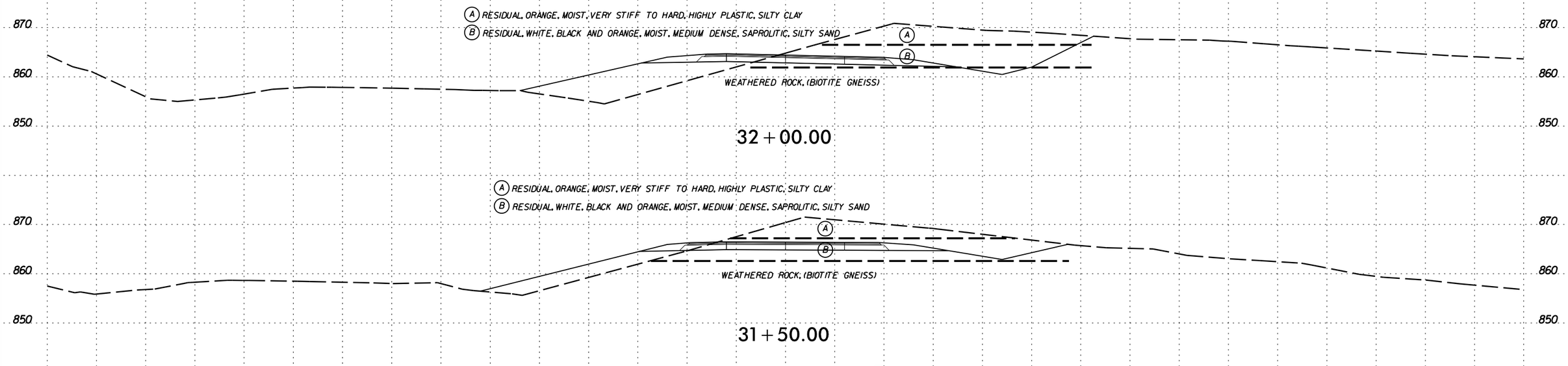


$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$

6/23/16

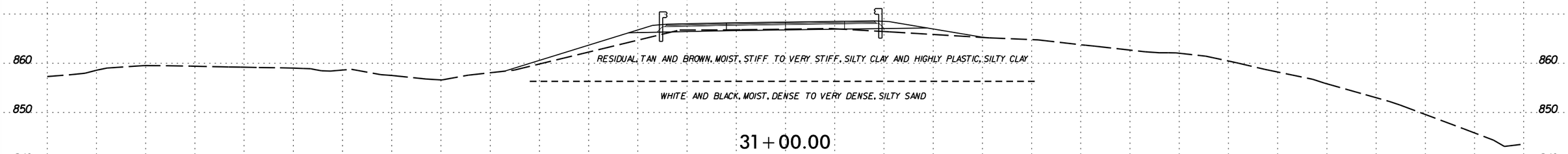
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579AA	89

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



32 + 00.00

31 + 50.00



31 + 00.00

-Y2FLYAB-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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

34 + 50.00

34 + 00.00

33 + 50.00

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	200		
SS- 141	50 RT	33+00	0. 5- 1. 5	A- 7- 6(16)	59	33	30	17	12	41	100	79	56	17. 3	-
SS- 143	50 RT	33+00	9. 0- 10. 0	A- 2- 4(0)	32	1	49	28	14	9	99	64	27. 4	-	-

33 + 00.00

32 + 50.00

-Y2FLYAB-

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

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

860

850

840

RESIDUAL. TAN AND WHITE, MOIST, LOOSE, SILTY SAND

TAN AND ORANGE, MOIST, MED. STIFF, CLAYEY SILT

35+00.00

-Y2FLYAB-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

860

850

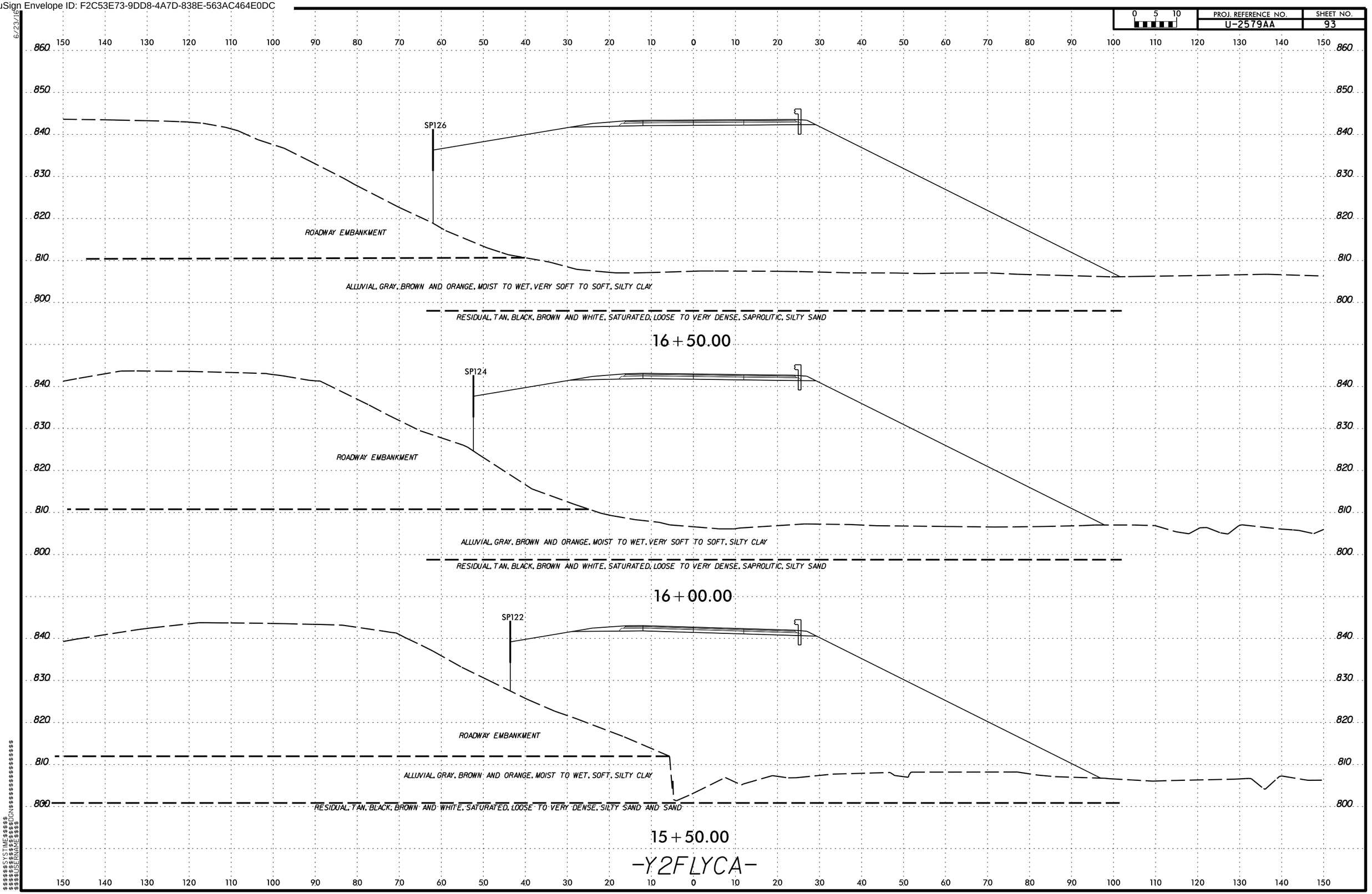
840

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

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	92

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C.SAND	F.SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
SS-77	180 RT	76+00	4.2-5.7	A-7-5(17)	47	15	5	7	44	44	100	97	89.9	40.3	-
SS-78	180 RT	76+00	14.2-15.7	A-2-4(0)	30	NP	42	38	17	3	100	77	25.3	-	-



PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	94

17+50.00

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	200		
SS-73	15 RT	17+00	0.0-1.5	A-7-5(17)	54	11	3	5	41	51	100	98	94.1	-	-

17+00.00

-Y2FLYCA-

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579AA	95

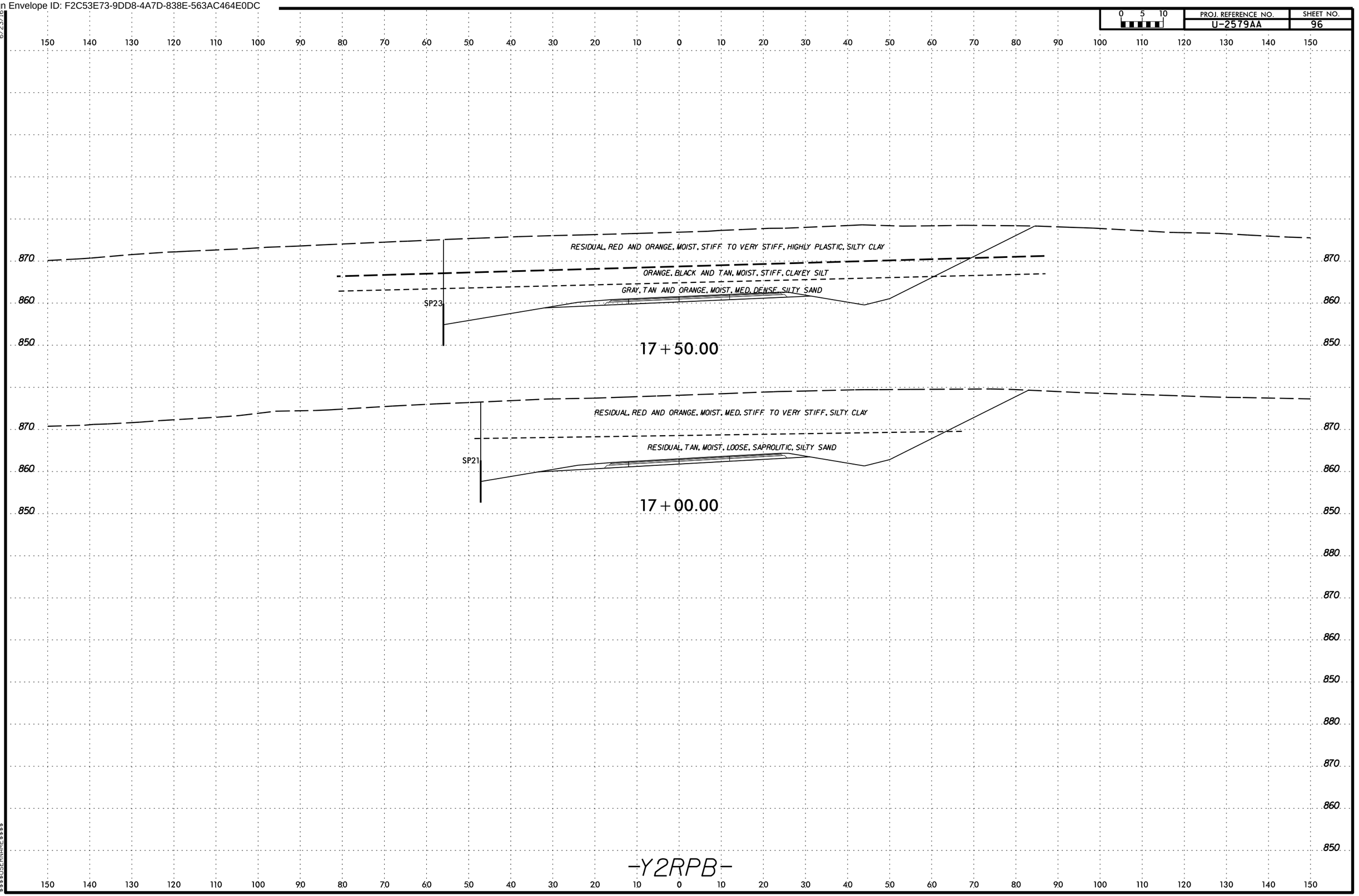
18+50.00

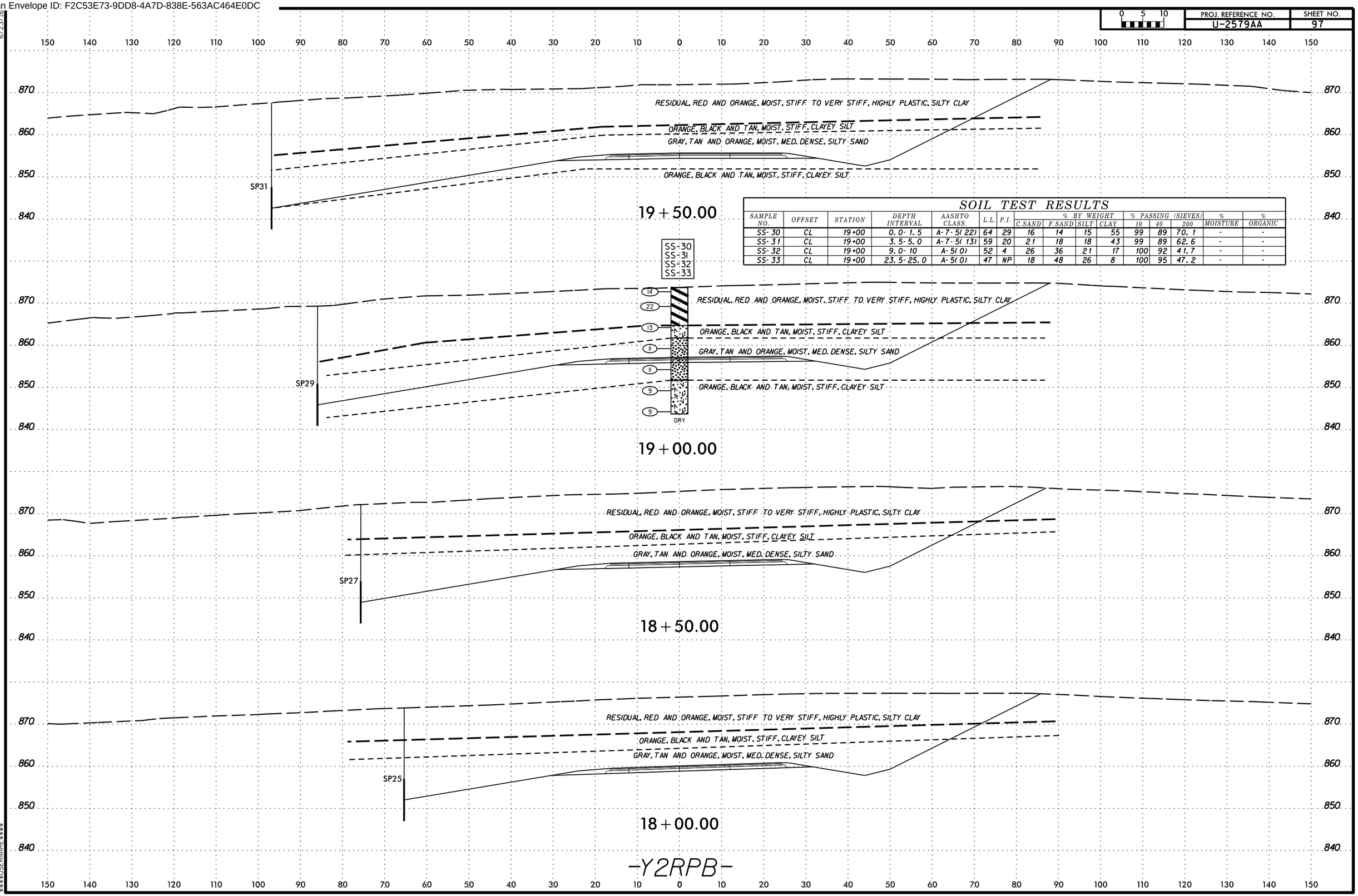
18+00.00

-Y2FLYCA-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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


150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150
870
860
850
RESIDUAL, RED AND ORANGE, MOIST, STIFF TO VERY STIFF, HIGHLY PLASTIC, SILTY CLAY
ORANGE, BLACK AND TAN, MOIST, STIFF, CLAYEY SILT
GRAY, TAN AND ORANGE, MOIST, MED. DENSE, SILTY SAND
SP23
17+50.00
870
860
850
RESIDUAL, RED AND ORANGE, MOIST, MED. STIFF TO VERY STIFF, SILTY CLAY
RESIDUAL, TAN, MOIST, LOOSE, SAPROLITIC, SILTY SAND
SP21
17+00.00
880
870
860
850
880
870
860
850
-Y2RPB-
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579AA	97

19 + 50.00

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	200		
SS-30	CL	19+00	0.0-1.5	A-7-5(22)	64	29	16	14	15	55	99	89	70.1	-	-
SS-31	CL	19+00	3.5-5.0	A-7-5(13)	59	20	21	18	18	43	99	89	62.6	-	-
SS-32	CL	19+00	9.0-10	A-5(0)	52	4	26	36	21	17	100	92	41.7	-	-
SS-33	CL	19+00	23.5-25.0	A-5(0)	47	NP	18	48	26	8	100	95	47.2	-	-

19 + 00.00

18 + 50.00

18 + 00.00

-Y2RPB-

DocuSign Envelope ID: F2C53E73-9DD8-4A7D-838E-563AC464E0DC

6/23/16

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	98

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

DocuSign Envelope ID: F2C53E73-9DD8-4A7D-838E-563AC464E0DC

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579AA	99

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

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579AA	100

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

860 850 840 830 820

RESIDUAL, RED AND TAN, MOIST, STIFF TO VERY STIFF, HIGHLY PLASTIC, SILTY CLAY

TAN, WHITE, GRAY, ORANGE AND BLACK, MOIST, LOOSE TO MED. DENSE, SAND AND SILTY SAND

31+00.00

RESIDUAL, RED AND TAN, MOIST, STIFF TO VERY STIFF, HIGHLY PLASTIC, SILTY CLAY

TAN, WHITE, GRAY, ORANGE AND BLACK, MOIST, LOOSE TO MED. DENSE, SAND AND SILTY SAND

30+50.00

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-197	CL	30+00	0.0-1.5	A-7-5(25)	67	33	19	11	11	59	99	86	70.4	-	-

SS-197

9 18 20 13 8 8 8 24 27

DRY

RESIDUAL, RED AND TAN, MOIST, STIFF TO VERY STIFF, HIGHLY PLASTIC, SILTY CLAY

TAN, WHITE, GRAY, ORANGE AND BLACK, MOIST, LOOSE TO MED. DENSE, SAND AND SILTY SAND

TAN AND WHITE, MOIST, MED. STIFF, CLAYEY SILT

TAN, WHITE, GRAY, ORANGE AND BLACK, MOIST, MED. DENSE, SAND

30+00.00

-Y2RPB-

6/23/16

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	101

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

RESIDUAL, RED AND TAN, MOIST, SOFT, SILTY CLAY

RESIDUAL, TAN, WHITE AND BLACK, MOIST, LOOSE TO MED. DENSE, SILTY SAND

850
840
830
820

32+00.00

RESIDUAL, RED AND TAN, MOIST, STIFF TO VERY STIFF, HIGHLY PLASTIC, SILTY CLAY

TAN, WHITE, GRAY, ORANGE AND BLACK, MOIST, LOOSE TO MED. DENSE, SAND AND SILTY SAND

850
840
830
820

31+50.00

-Y2RPB-

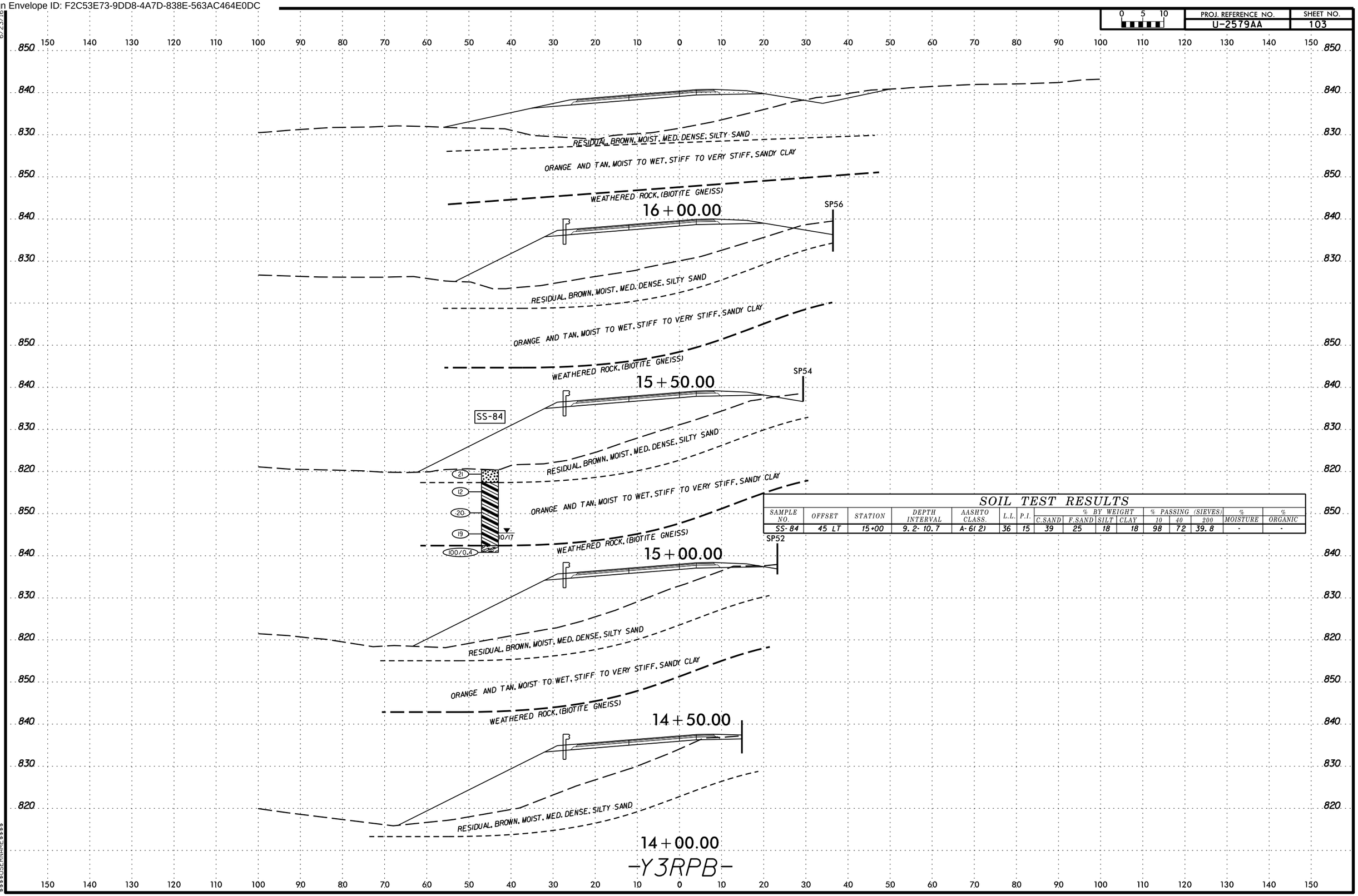
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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

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-69	35 RT	11+00	0.0-1.5	A-7-6(17)	55	27	21	16	18	45	99	85	64.6	-	-

6/23/16

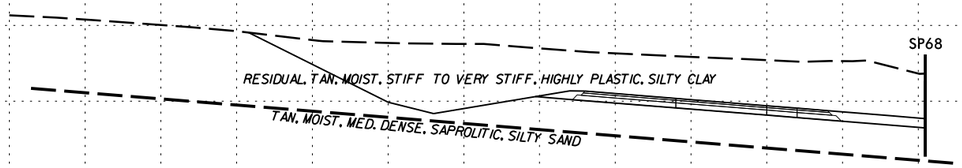


SOIL TEST RESULTS

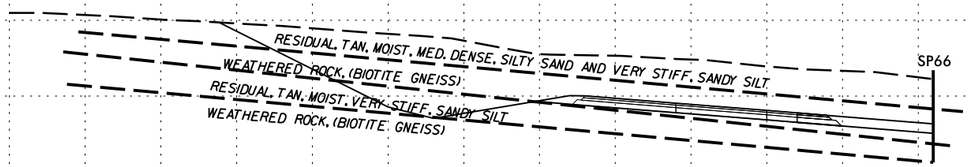
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-84	45 LT	15+00	9.2-10.7	A-6(2)	36	15	39	25	18	18	98	72	39.8	-	-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

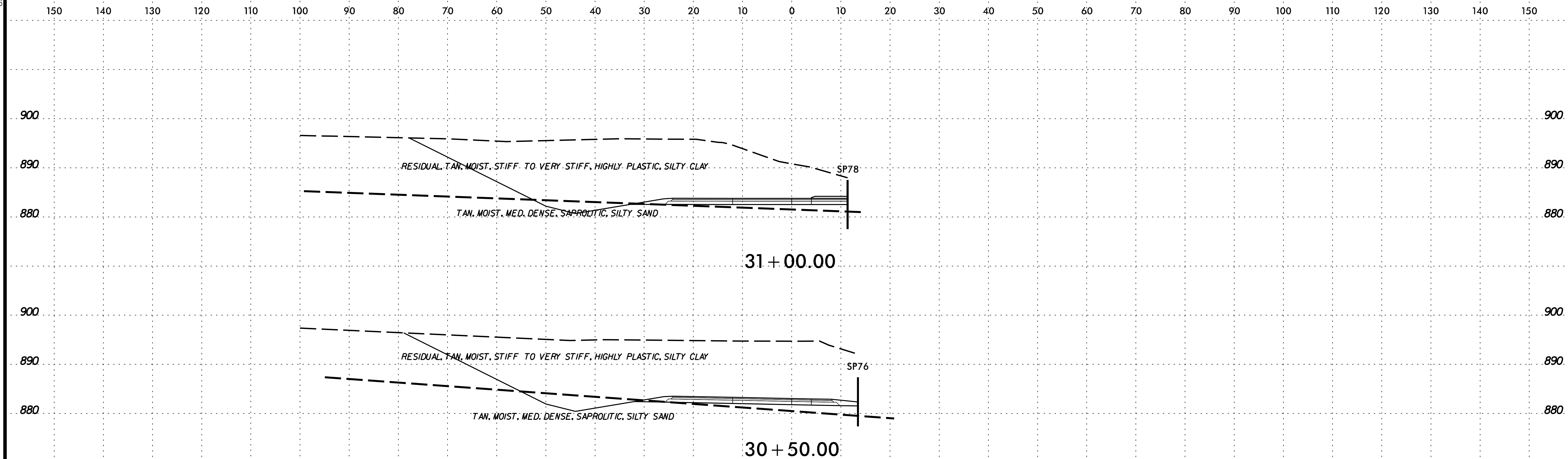
900
890
880



28+50.00

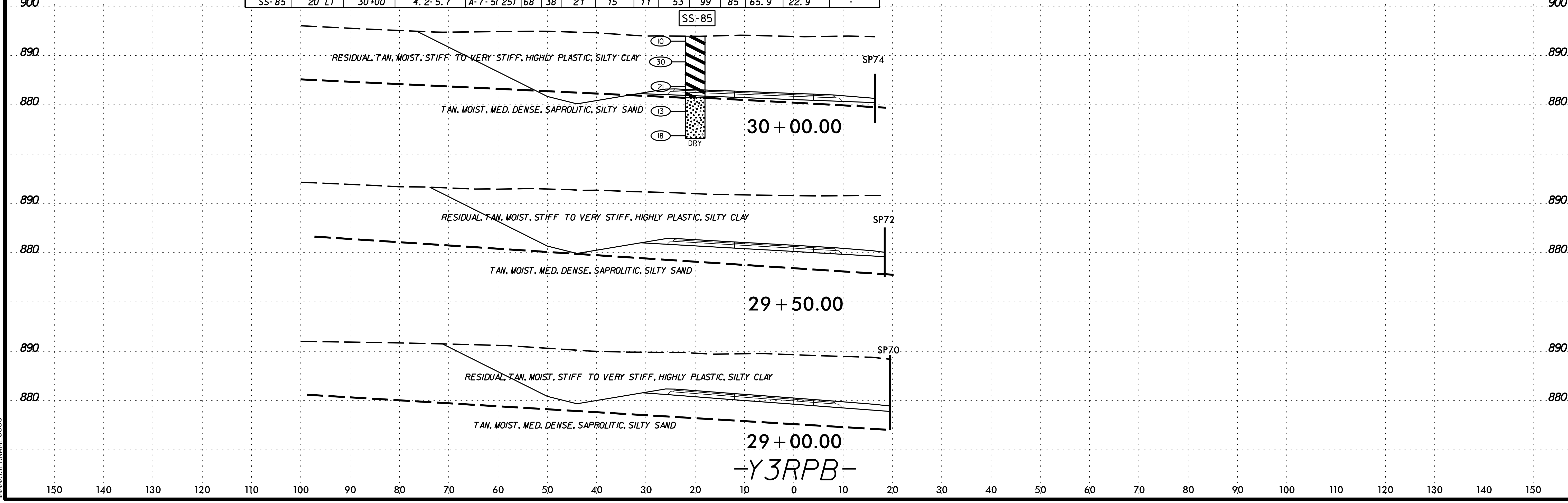


28+00.00



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			%	%
							C.SAND	F.SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
SS-85	20 LT	30+00	4.2-5.7	A-7-5(25)	68	38	21	15	11	53	99	85	65.9	22.9	-



6/23/16

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

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

880
870
860
850

RESIDUAL, ORANGE, MOIST, MED. STIFF TO STIFF, HIGHLY PLASTIC, SILTY CLAY

ORANGE, MOIST, STIFF, SANDY SILT

14 + 00.00

870
860
850

RESIDUAL, ORANGE, TAN AND WHITE, MOIST, LOOSE TO MED. DENSE, SILTY SAND

13 + 50.00

880
870
860
850

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

-Y3LPB-

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

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579AA	108

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

880 870 860 850

RESIDUAL, ORANGE, MOIST, MED. STIFF TO STIFF, HIGHLY PLASTIC, SILTY CLAY
ORANGE, MOIST, STIFF, SANDY SILT

17+00.00

RESIDUAL, ORANGE, MOIST, MED. STIFF TO STIFF, HIGHLY PLASTIC, SILTY CLAY
ORANGE, MOIST, STIFF, SANDY SILT

16+50.00

RESIDUAL, ORANGE, MOIST, MED. STIFF TO STIFF, HIGHLY PLASTIC, SILTY CLAY
ORANGE, MOIST, STIFF, SANDY SILT

16+00.00

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-80A	CL	15+50	0.0-1.5	A-7-5(25)	67	36	18	17	14	51	99	87	67.8	23.2	-

SS-80A
13
11
DRY
RESIDUAL, ORANGE, MOIST, MED. STIFF TO STIFF, HIGHLY PLASTIC, SILTY CLAY
ORANGE, MOIST, STIFF, SANDY SILT

15+50.00

RESIDUAL, ORANGE, MOIST, MED. STIFF TO STIFF, HIGHLY PLASTIC, SILTY CLAY
ORANGE, MOIST, STIFF, SANDY SILT

15+00.00

RESIDUAL, ORANGE, MOIST, MED. STIFF TO STIFF, HIGHLY PLASTIC, SILTY CLAY
ORANGE, MOIST, STIFF, SANDY SILT

14+50.00

-Y3LPB-

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

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579AA	109

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

890
880

SP79

RESIDUAL, TAN, MOIST, MED. DENSE, SILTY SAND

WEATHERED ROCK (BIOTITE GNEISS)

CRYSTALLINE ROCK (BIOTITE GNEISS)

23+00.00

SP77

RESIDUAL, TAN, MOIST, MED. DENSE, SILTY SAND

WEATHERED ROCK (BIOTITE GNEISS)

CRYSTALLINE ROCK (BIOTITE GNEISS)

22+50.00

SP75

RESIDUAL, TAN, MOIST, MED. DENSE, SILTY SAND

WEATHERED ROCK (BIOTITE GNEISS)

CRYSTALLINE ROCK (BIOTITE GNEISS)

22+00.00

SP73

RESIDUAL, TAN, MOIST, MED. DENSE, SILTY SAND

WEATHERED ROCK (BIOTITE GNEISS)

CRYSTALLINE ROCK (BIOTITE GNEISS)

II

100/0.6

60/0.1

DRY

21+50.00

SP71

RESIDUAL, TAN, MOIST, MED. DENSE, SILTY SAND

WEATHERED ROCK (BIOTITE GNEISS)

CRYSTALLINE ROCK (BIOTITE GNEISS)

21+00.00

SP69

RESIDUAL, TAN, MOIST, MED. DENSE, SILTY SAND

WEATHERED ROCK (BIOTITE GNEISS)

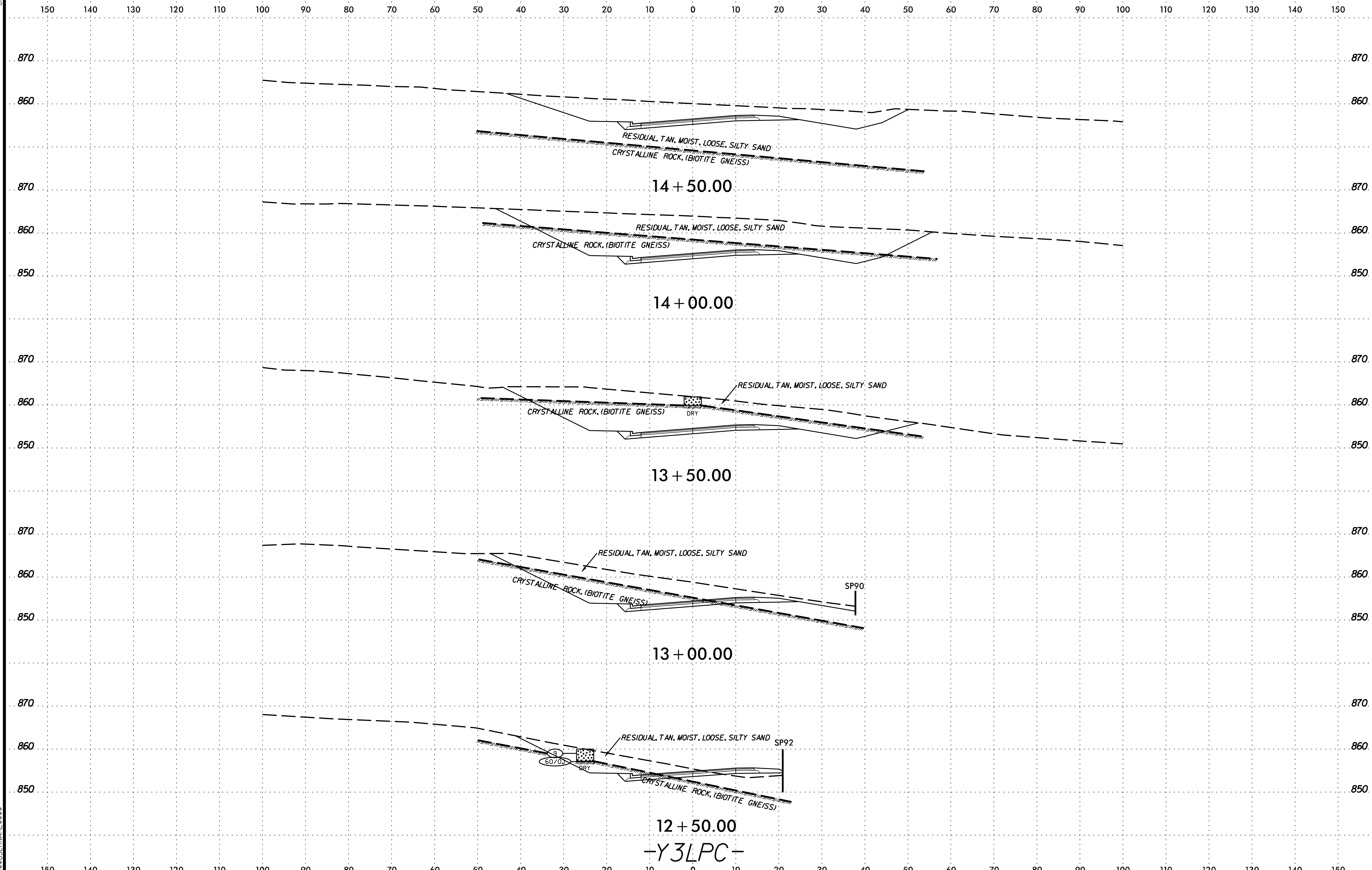
CRYSTALLINE ROCK (BIOTITE GNEISS)

20+50.00

-Y3LPB-

DocuSign Envelope ID: F2C53E73-9DD8-4A7D-838E-563AC464E0DC

PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	111



-Y3LPC-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

880 870 860 850

SP96

RESIDUAL, RED, BROWN, TAN AND WHITE, MOIST, MEDIUM DENSE, SILTY SAND

WEATHERED ROCK, (BIOTITE GNEISS)

RESIDUAL, RED, BROWN, TAN AND WHITE, MOIST, VERY DENSE, SILTY SAND

16 + 50.00

SP94

RESIDUAL, RED, BROWN, TAN AND WHITE, MOIST, MEDIUM DENSE, SILTY SAND

WEATHERED ROCK, (BIOTITE GNEISS)

RESIDUAL, RED, BROWN, TAN AND WHITE, MOIST, VERY DENSE, SILTY SAND

16 + 00.00

RESIDUAL, RED, BROWN, TAN AND WHITE, MOIST, MEDIUM DENSE, SILTY SAND

WEATHERED ROCK, (BIOTITE GNEISS)

RESIDUAL, RED, BROWN, TAN AND WHITE, MOIST, VERY DENSE, SILTY SAND

10
11
22
100/0.9
51
DRY

WEATHERED ROCK, (BIOTITE GNEISS)

15 + 50.00

RESIDUAL, RED, BROWN, TAN AND WHITE, MOIST, MEDIUM DENSE, SILTY SAND

WEATHERED ROCK, (BIOTITE GNEISS)

RESIDUAL, RED, BROWN, TAN AND WHITE, MOIST, VERY DENSE, SILTY SAND

15 + 00.00

-Y3LPC-

SUMMARY OF LABORATORY TEST DATA

Soil Classification and Gradation

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616

S&ME Project #:	6235-17-038			Date Report	11/30/2017
State Project No.:	34839.1.7	County:	Forsyth	Date Tested	11/1/2017-11/30/17
Federal ID No.:	N/A	TIP No.:	U-2579AA		
Project Name:	Winston-Salem Northern Beltway Eastern Section from I-40 to US 311				
Client Name:	NCDOT GEU	Client Address:	Raleigh, NC		

Sample No.	Station #:	Offset	Alignment	Sample Depth (ft)	AASHTO Classification		Total % Passing Sieve #					Total Mortar Fraction (%)				LL	PL	PI	Moist. %
							10	40	60	200	270	Coarse Sand	Fine Sand	Silt	Clay				
SS-1	36+00	50 RT	Y1	0.0-1.5	A-6	(5)	100	85	74	51.5	46.1	26	28	21	25	39	24	15	-
SS-2	36+00	50 RT	Y1	4.2-5.7	A-6	(6)	100	84	76	54.7	48.4	24	28	21	27	37	22	15	39.7
SS-3	36+00	50 RT	Y1	9.2-10.7	A-7-6	(24)	100	88	82	71.8	69.0	18	13	15	54	56	22	34	-
SS-4	36+00	50 RT	Y1	14.2-15.7	A-2-4	(0)	94	60	47	24.1	19.2	50	30	14	6	37	36	1	-
SS-5	36+00	50 RT	Y1	19.2-20.7	A-2-4	(0)	100	76	59	27.9	21.8	41	37	17	5	38	37	1	-
SS-6	34+50	CL	Y1	8.4-9.9	A-7-5	(26)	100	100	99	95.8	92.4	1	7	47	45	55	34	21	42.3
SS-7	34+50	CL	Y1	13.4-14.9	A-7-6	(20)	100	90	83.0	74.7	71.8	17	11	30	42	48	21	27	-
SS-8	34+50	CL	Y1	28.4-29.9	A-5	(1)	100	90	74.0	39.6	30.7	26	43	23	8	51	43	8	-
SS-9	34+00	10 RT	Y1	0.0-1.5	A-6	(1)	99	72	58.0	35.8	30.6	41	28	16	15	35	23	12	12.6
SS-10	34+00	10 RT	Y1	33.4-34.9	A-2-4	(0)	100	85	60.0	20.6	15.5	40	45	10	5	23	22	1	-
SS-11	27+00	CL	Y1DET	0.0-1.5	A-7-5	(15)	100	97	94.0	76.7	71.2	6	23	37	34	49	32	17	-
SS-12	27+00	CL	Y1DET	8.4-9.9	A-7-6	(17)	100	99	97.0	79.1	73.0	3	24	33	40	48	28	20	-
SS-13	33+50	5 RT	Y1	3.4-4.9	A-5	(4)	100	83	72.0	51.2	46.1	28	26	16	30	46	36	10	-
SS-14	33+50	5 RT	Y1	8.4-9.9	A-7-5	(30)	100	100	100.0	97.6	95.5	0	5	48	47	59	35	24	50.5
SS-15	33+50	5 RT	Y1	18.9-19.9	A-4	(1)	100	95	84.0	50.3	44.4	16	40	20	24	33	26	7	-
SS-16	28+45	7 LT	Y1	13.4-14.9	A-5	(1)	100	82	70.0	41.5	31.9	30	38	22	10	55	48	7	56.9
SS-17	28+45	7 LT	Y1	43.4-44.9	A-2-5	(0)	100	71	53.0	24.5	17.9	47	35	13	5	46	41	5	-
SS-18	25+00	CL	Y1DET	0.0-1.5	A-7-5	(8)	99	91	86.0	68.9	66.2	13	20	28	39	42	30	12	38.9
SS-19	48+96	20 LT	Y2FLYCA	0.0-1.5	A-2-7	(0)	93	67	53.0	33	31.1	43	24	11	22	41	26	15	18
SS-20	48+96	20 LT	Y2FLYCA	8.4-9.9	A-2-4	(0)	100	72	45.0	15.8	13.7	55	31	10	4	33	0	N.P.	-
SS-21	30+69	7 RT	Y1	9.0-10.5	A-7-6	(7)	98	78	70.0	53.3	51.7	29	18	19	34	41	22	19	39.4
SS-22	21+00	30 LT	Y1DET	0.0-1.5	A-5	(3)	100	86	73.0	56.8	55.6	27	17	27	29	45	39	6	-
SS-23	21+00	30 LT	Y1DET	3.4-4.9	A-7-5	(5)	100	87	75.0	52.9	49.0	25	26	27	22	49	37	12	24
SS-24	21+00	30 LT	Y1DET	8.4-9.9	A-2-5	(0)	100	84	60.0	32.4	29.2	40	31	22	7	45	0	N.P.	-
SS-25	25+00	CL	L	0.0-1.5	A-4	(0)	98	74	58	39.5	37.6	41	21	17	21	34	26	8	20.6
SS-26	25+00	CL	L	8.4-9.9	A-7-6	(5)	99	77	65	49.2	47.1	34	18	15	33	42	26	16	-
SS-27	21+00	CL	Y2RPB	0.0-1.5	A-4	(2)	97	71	62	46.3	43.1	36	20	22	22	39	31	8	-
SS-28	21+00	CL	Y2RPB	3.4-4.9	A-5	(4)	99	90	82	57.9	52.2	17	30	31	22	45	37	8	-
SS-29	21+00	CL	Y2RPB	13.4-14.9	A-5	(1)	100	89	76	48.2	38.7	24	37	30	9	47	42	5	-
SS-30	19+00	CL	Y2RPB	0.0-1.5	A-7-5	(22)	99	89	83	70.1	68.9	16	14	15	55	64	35	29	-
SS-31	19+00	CL	Y2RPB	3.5-5.0	A-7-5	(13)	99	89	78	62.6	60.3	21	18	18	43	59	39	20	-
SS-32	19+00	CL	Y2RPB	9.0-10.0	A-5	(0)	100	92	74	41.7	38.4	26	36	21	17	52	48	4	-
SS-33	19+00	CL	Y2RPB	23.5-25.0	A-5	(0)	100	95	82	47.2	34.1	18	48	26	8	47	0	N.P.	-
SS-34	21+50	CL	L	3.4-4.9	A-7-5	(7)	99	86	74	56.5	54.0	25	21	24	30	54	41	13	24.2

SUMMARY OF LABORATORY TEST DATA

Soil Classification and Gradation

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616

S&ME Project #:	6235-17-038			Date Report	11/30/2017
State Project No.:	34839.1.7	County:	Forsyth	Date Tested	11/1/2017-11/30/17
Federal ID No.:	N/A	TIP No.:	U-2579AA		
Project Name:	Winston-Salem Northern Beltway Eastern Section from I-40 to US 311				
Client Name:	NCDOT GEU	Client Address:	Raleigh, NC		

Sample No.	Station #:	Offset	Alignment	Sample Depth (ft)	AASHTO Classification		Total % Passing Sieve #					Total Mortar Fraction (%)				LL	PL	PI	Moist. %
							10	40	60	200	270	Coarse Sand	Fine Sand	Silt	Clay				
SS-35	21+50	CL	L	18.4-19.9	A-2-5	(0)	99	82	52	28.9	26.5	47	26	18	9	45	0	N.P.	-
SS-36	18+00	25 RT	L	3.4-4.9	A-7-5	(21)	100	90	83	72.7	71.0	17	12	20	51	65	39	26	-
SS-37	18+00	25 RT	L	19.4-19.9	A-7-5	(16)	100	95	92	84.3	82.0	8	10	46	36	63	52	11	-
SS-38	16+00	45 RT	Y2RPB	3.4-4.9	A-7-5	(10)	100	90	78	60.6	58.1	22	20	22	36	57	42	15	28.4
SS-39	16+00	45 RT	Y2RPB	13.4-14.9	A-2-5	(0)	100	82	53	28.9	26.2	47	27	17	9	44	0	N.P.	-
SS-40	55+50	30 LT	Y2FLYCA	3.4-4.9	A-7-5	(6)	100	89	74	54.4	51.7	26	22	21	31	55	43	12	-
SS-41	55+50	30 LT	Y2FLYCA	8.4-9.9	A-5	(3)	100	89	75	49.7	45.3	25	30	25	20	51	44	7	-
SS-42	55+50	30 LT	Y2FLYCA	18.4-19.9	A-2-5	(0)	100	82	62	27.5	23.1	38	39	16	7	43	0	N.P.	-
SS-43	58+00	CL	Y2FLYCA	3.4-4.9	A-7-5	(9)	98	84	74	54.9	52.1	25	22	15	38	50	31	19	20.2
SS-44	58+00	CL	Y2FLYCA	8.4-9.9	A-5	(3)	100	92	78	46.6	43.6	22	34	18	26	58	50	8	-
SS-45	15+50	60 RT	L	0.0-1.5	A-7-6	(12)	99	79	70	56.8	55.4	29	15	14	42	50	24	26	-
SS-46	15+50	60 RT	L	3.4-4.9	A-6	(2)	98	71	57	38	36.3	42	21	14	23	37	21	16	15.6
SS-47	15+50	60 RT	L	8.4-9.9	A-7-6	(8)	99	82	72	55.4	53.4	27	19	19	35	42	22	20	-
SS-48	33+00	CL	Y2RPB	0.0-1.5	A-7-6	(11)	100	81	70	56.2	54.4	30	16	14	40	51	28	23	-
SS-49	33+00	CL	Y2RPB	3.4-4.9	A-2-4	(0)	97	65	54	35.3	32.7	44	22	17	17	37	28	9	14.4
SS-50	33+00	CL	Y2RPB	8.4-9.9	A-2-5	(0)	99	74	63	30.8	27.9	36	36	21	7	44	41	3	-
SS-51	33+00	CL	Y2RPB	13.4-14.9	A-2-5	(0)	100	79	62	31.1	27.4	38	35	21	6	44	0	N.P.	-
SS-52	88+50	5 LT	L	0.0-1.5	A-7-6	(2)	94	69	58	41.1	37.8	38	22	14	26	43	29	14	16.5
SS-53	88+50	5 LT	L	3.4-4.9	A-5	(0)	99	74	60	35.7	33.1	39	28	14	19	47	40	7	-
SS-54	88+50	5 LT	L	8.4-9.9	A-5	(0)	100	75	60	37.4	33.5	40	27	19	14	48	42	6	-
SS-55	85+50	7 LT	L	0.0-1.5	A-7-5	(10)	99	85	76	58.1	55.9	23	21	16	40	49	30	19	-
SS-56	85+50	7 LT	L	3.4-4.9	A-7-5	(10)	99	85	76	60.3	58.0	23	18	18	41	54	36	18	-
SS-57	79+50	15 LT	L	0.0-1.5	A-7-5	(13)	99	84	76	61.5	59.2	23	17	17	42	56	34	22	-
SS-58	73+50	15 LT	L	0.0-1.5	A-2-5	(0)	94	67	53	29.6	27.0	44	27	16	13	43	0	N.P.	22.7
SS-59	70+50	12 RT	L	0.0-1.5	A-2-4	(0)	100	74	57	24	18.6	43	38	15	4	29	0	N.P.	-
SS-60	82+50	105 RT	L	0.0-1.5	A-7-6	(10)	99	81	73	58.9	56.4	26	17	17	40	48	29	19	-
SS-61	82+50	105 RT	L	3.4-4.9	A-7-5	(13)	98	82	76	65.1	63.3	22	13	18	47	53	32	21	-
SS-62	64+50	110 RT	L	0.0-1.5	A-4	(0)	99	78	60	35.5	33.0	39	28	19	14	38	36	2	-
SS-63	67+50	50 LT	L	0.0-1.5	A-5	(1)	100	92	81	47.3	40.5	19	41	26	14	46	43	3	-
SS-64	61+50	30 LT	L	0.0-1.5	A-7-6	(9)	98	81	74	59.5	57.4	25	16	16	43	44	26	18	-
SS-65	55+50	30 LT	L	0.0-1.5	A-5	(1)	99	82	69	43.9	40.7	30	29	21	20	45	40	5	-
SS-66	52+50	30 LT	L	13.4-14.9	A-6	(1)	96	66	55	38.4	35.3	43	20	15	22	37	24	13	-
SS-67	89+00	55 RT	Y2	0.0-1.5	A-5	(2)	98	77	67	48.3	45.5	32	22	21	25	42	33	9	15.9
SS-68	14+00	40 RT	Y2RPC	0.0-1.5	A-2-4	(0)	97	68	53	27.1	23.1	45	31	16	8	33	0	N.P.	-

SUMMARY OF LABORATORY TEST DATA

Soil Classification and Gradation

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616

S&ME Project #:	6235-17-038			Date Report	11/30/2017
State Project No.:	34839.1.7	County:	Forsyth	Date Tested	11/1/2017-11/30/17
Federal ID No.:	N/A	TIP No.:	U-2579AA		
Project Name:	Winston-Salem Northern Beltway Eastern Section from I-40 to US 311				
Client Name:	NCDOT GEU	Client Address:	Raleigh, NC		

Sample No.	Station #:	Offset	Alignment	Sample Depth (ft)	AASHTO Classification		Total % Passing Sieve #					Total Mortar Fraction (%)				LL	PL	PI	Moist. %
							10	40	60	200	270	Coarse Sand	Fine Sand	Silt	Clay				
SS-69	11+00	35 RT	Y2RPC	0.0-1.5	A-7-6	(17)	99	85	78	64.6	62.5	21	16	18	45	55	28	27	-
SS-70	23+00	60 LT	Y2FLYCA	0.0-1.5	A-4	(0)	98	74	63	42	37.7	36	26	20	18	40	35	5	-
SS-71	23+00	60 LT	Y2FLYCA	4.2-5.7	A-5	(0)	100	94	82	37.6	33.3	18	49	21	12	47	44	3	
SS-72	20+00	70 LT	Y2FLYCA	0.0-1.5	A-7-5	(14)	98	85	75	54.4	50.9	23	25	19	33	61	31	30	-
SS-73	17+00	15 RT	Y2FLYCA	0.0-1.5	A-7-5	(17)	100	98	97	94.1	92.4	3	5	41	51	54	43	11	-
SS-74	71+00	150 RT	Y2	0.0-1.5	A-7-6	(7)	98	74	63	48.6	46.5	36	17	11	36	47	25	22	-
SS-75	39+65	20 RT	Y2FLYCA	0.0-1.5	A-7-5	(27)	100	99	99	94.1	89.4	1	10	43	46	58	36	22	32.8
SS-76	39+65	20 RT	Y2FLYCA	9.2-10.7	A-7-6	(18)	100	98	96	81.5	74.1	4	22	34	40	48	27	21	-
SS-77	76+00	180 RT	Y2	4.2-5.7	A-7-5	(17)	100	97	95	89.9	87.6	5	7	44	44	47	32	15	40.3
SS-78	76+00	180RT	Y2	14.2-15.7	A-2-4	(0)	100	77	58	25.3	20.4	42	38	17	3	30	0	N.P.	-
SS-79	27+40	90 LT	Y1	0.0-1.5	A-7-5	(3)	99	76	65	46.2	44.1	34	22	15	29	45	32	13	-
SS-79A	47+00	140 LT	Y2	4.2-5.7	A-7-5	(7)	99	77	70	52.8	45.3	29	25	19	27	48	31	17	22.3
SS-80	27+40	90 LT	Y1	3.5-5.0	A-7-5	(2)	100	78	66	41.7	38.6	33	28	17	22	45	32	13	-
SS-80A	15+50	CL	Y3LPB	0.0-1.5	A-7-5	(25)	99	87	81	67.8	64.8	18	17	14	51	67	31	36	23.2
SS-81	27+50	CL	L	3.5-5.0	A-7-5	(5)	99	79	67	50.2	47.1	32	20	16	32	49	35	14	28.3
SS- 81A	12+50	25 RT	Y3LPB	14.2-15.7	A-2-5	(0)	99	65	52	31.1	25.5	47	27	18	8	43	40	3	-
SS-82	27+50	CL	L	13.5-15	A-5	(0)	100	83	67	35.8	30.2	33	37	24	6	42	38	4	-
SS-82A	24+00	CL	Y3LPB	4.2-5.7	A-6	(5)	98	75	65	47.2	43.9	34	21	13	32	38	20	18	-
SS-83	24+00	CL	Y3LPB	14.2-15.7	A-5	(1)	100	97	83	46.6	41.1	17	42	14	27	53	50	3	-
SS-84	15+00	45 LT	Y3LPB	9.2-10.7	A-6	(2)	98	72	60	39.8	35.3	39	25	18	18	36	21	15	-
SS-85	30+00	20 LT	Y3LPB	4.2-5.7	A-7-5	(25)	99	85	78	65.9	63.1	21	15	11	53	68	30	38	22.9
SS-86	24+00	85 RT	Y3LPC	0.0-1.5	A-7-6	(12)	100	77	68	53.4	50.6	32	17	11	40	50	22	28	-
SS-87	21+00	20 LT	Y4	4.2-5.7	A-7-6	(7)	99	74	61	44.9	41.4	38	20	10	32	53	29	24	-
SS-88	14+50	CL	Y4	4.2-5.7	A-7-6	(12)	100	78	68	55	50.8	32	17	16	35	56	29	27	-
SS-101	39+50	25 RT	Y1	0.0-1.5	A-6	(3)	100	71	60	44.2	40.9	40	19	12	29	34	18	16	-
SS-104	41+00	40 LT	L	0.5-1.5	A-4	(2)	100	76	66	46.4	41.5	34	25	19	22	40	31	9	29.4
SS-105	41+00	40 LT	L	3.1-4.6	A-7-6	(4)	100	75	64	46.2	42.0	36	22	15	27	42	27	15	-
SS-106	41+00	40 LT	L	8.7-10.2	A-5	(0)	99	70	58	36.7	32.2	41	27	14	18	44	35	9	-
SS-109	42+00	25 RT	Y1	0.0-1.5	A-6	(1)	95	72	61	40.2	36.3	36	26	16	22	38	26	12	-
SS-110	42+00	25 RT	Y1	3.3-4.8	A-2-4	(0)	100	70	50	26	22.1	50	28	7	15	32	25	7	-
SS-111	42+00	25 RT	Y1	8.3-9.8	A-6	(2)	100	73	61	42.2	38.3	39	23	15	23	37	24	13	24.1
SS-112	38+82	35 LT	Y1DET	0.0-1.5	A-7-6	(10)	99	80	71	56	52.4	28	19	19	34	50	28	22	-
SS-113	38+82	35 LT	Y1DET	8.5-10.0	A-5	(4)	100	88	76	47.2	38.6	24	37	20	19	65	56	9	-
SS-114	38+82	35 LT	Y1DET	13.5-15.0	A-7-5	(6)	100	86	76	46.9	37.5	24	39	28	9	63	47	16	-

SUMMARY OF LABORATORY TEST DATA

Soil Classification and Gradation

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616

S&ME Project #:	6235-17-038			Date Report	11/30/2017
State Project No.:	34839.1.7	County:	Forsyth	Date Tested	11/1/2017-11/30/17
Federal ID No.:	N/A	TIP No.:	U-2579AA		
Project Name:	Winston-Salem Northern Beltway Eastern Section from I-40 to US 311				
Client Name:	NCDOT GEU	Client Address:	Raleigh, NC		

Sample No.	Station #:	Offset	Alignment	Sample Depth (ft)	AASHTO Classification		Total % Passing Sieve #					Total Mortar Fraction (%)				LL	PL	PI	Moist. %
							10	40	60	200	270	Coarse Sand	Fine Sand	Silt	Clay				
SS-116	45+75	49 LT	Y1	4.0-5.0	A-7-6	(16)	100	97	95	80.8	75.3	5	20	33	42	44	25	19	40.3
SS-118	31+00	25 LT	Y1DET	0.0-1.5	A-7-5	(2)	94	71	59	39	34.0	37	27	13	23	46	33	13	-
SS-120	31+00	25 LT	Y1DET	8.5-10.0	A-2-4	(0)	100	83	60	21.5	16.0	40	44	10	6	30	28	2	-
SS-122	35+00	45 RT	Y1	0.0-1.5	A-7-5	(18)	100	94	90	82.6	78.3	10	12	44	34	51	32	19	36.3
SS-123	35+00	45 RT	Y1	4.0-5.0	A-1-b	(0)	91	33	24	12.6	11.3	74	14	2	10	27	22	5	-
SS-124	35+00	45 RT	Y1	8.5-10.0	A-7-6	(26)	100	96	92	80.8	75.5	8	17	27	48	55	25	30	-
SS-127	35+00	45 RT	Y1	29.1-30.0	A-1-b	(0)	100	49	58	23	16.8	42	41	13	4	31	28	3	-
SS-129	38+00	25 LT	L	0.0-1.5	A-7-5	(21)	100	99	99	87	78.0	1	21	42	36	61	44	17	46.9
SS-130	38+00	25 LT	L	9.0-10.0	A-6	(10)	100	92	84	66.4	61.5	16	23	26	35	40	23	17	-
SS-132	38+00	25 LT	L	19.5-20.0	A-7-5	(2)	99	78	63	38.2	30.7	36	33	22	9	58	44	14	-
SS-134	29+50	80 RT	Y2FLYAB	0.0-1.5	A-7-5	(6)	100	84	69	51.2	46.9	31	22	25	22	51	36	15	-
SS-135	29+50	80 RT	Y2FLYAB	3.5-5.0	A-7-5	(1)	99	73	61	38.4	33.5	38	28	15	19	42	31	11	25.9
SS-136	29+50	80 RT	Y2FLYAB	14.0-15.0	A-2-4	(0)	100	71	49	16.3	11.2	51	38	7	4	30	0	N.P.	-
SS-137	30+30	19 RT	Y2FLYAB	0.5-1.5	A-7-6	(11)	100	78	66	48.4	44.6	34	21	20	25	56	25	31	-
SS-138	30+30	19 RT	Y2FLYAB	4.5-5.0	A-7-5	(2)	100	87	68	38.1	34.6	32	33	8	27	50	35	15	17.5
SS-139	30+30	19 RT	Y2FLYAB	9.0-10.0	A-2-4	(0)	100	79	59	24.5	18.8	41	40	11	8	24	0	N.P.	-
SS-141	33+00	50 RT	Y2FLYAB	0.5-1.5	A-7-6	(16)	100	79	70	56	53.1	30	17	12	41	59	26	33	17.3
SS-143	33+00	50 RT	Y2FLYAB	9.0-10.0	A-2-4	(0)	99	64	50	27.4	22.8	49	28	14	9	32	31	1	-
SS-147	37+00	20 LT	Y2FLYCA	0.0-1.5	A-2-4	(0)	93	65	51	31.9	29.9	45	23	14	18	22	18	4	-
SS-152	34+75	20 LT	Y2FLYCA	0.0-1.5	A-7-6	(5)	92	74	64	49.4	47.6	30	18	15	37	41	26	15	-
SS-154	34+75	20 LT	Y2FLYCA	8.5-10	A-2-4	(0)	97	72	50	23.4	20.5	48	31	15	6	40	0	N.P.	-
SS-162	19+00	CL	Y2FLYAB	0.0-1.5	A-2-4	(0)	93	60	48	32.1	30.0	48	20	15	17	30	24	6	9.3
SS-165	20+74	20 LT	Y2FLYAB	3.5-5.0	A-7-5	(36)	100	100	99	95.9	94.8	1	4	29	66	75	49	26	-
SS-167	20+74	20 LT	Y2FLYAB	18.5-20.0	A-7-5	(39)	100	100	99	95.8	95.1	1	4	39	56	79	51	28	-
SS-168	20+74	20 LT	Y2FLYAB	23.5-25.0	A-7-5	(18)	100	100	99	88.2	81.9	1	17	45	37	61	49	12	-
SS-169	20+74	20 LT	Y2FLYAB	43.5-45.0	A-7-5	(9)	100	92	81	59.6	56.6	19	24	33	24	59	45	14	-
SS-170	35+50	60 LT	Y1DET	0.0-1.5	A-6	(5)	100	86	74	51	48.6	26	25	16	33	40	26	14	19.7
SS-174	15+00	15 LT	Y1DET	0.0-1.5	A-7-5	(28)	100	90	85	74.4	72.6	15	12	18	55	68	33	35	-
SS-175	15+00	15 LT	Y1DET	3.5-5.0	A-7-5	(10)	100	91	84	70.7	66.8	16	17	31	36	52	41	11	28
SS-176	15+00	15 LT	Y1DET	8.5-10	A-5	(0)	96	78	65	39.3	36.2	32	30	24	14	50	47	3	-
SS-177	24+00	CL	Y2RPB	0.0-1.5	A-7-5	(13)	100	90	80	62.4	59.6	20	20	17	43	53	31	22	-
SS-178	24+00	CL	Y2RPB	3.5-5.0	A-2-7	(0)	96	79	62	28	25.5	35	38	16	11	42	27	15	-
SS-183	19+00	CL	Y1DET	13.8-15.3	A-2-4	(0)	98	75	55	22.1	19.6	44	36	16	4	31	0	N.P.	-
SS-184	10+00	70 LT	L	0.0-1.5	A-4	(0)	96	70	58	41.4	39.7	40	19	17	24	29	21	8	-

SUMMARY OF LABORATORY TEST DATA

Soil Classification and Gradation

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616

S&ME Project #:	6235-17-038			Date Report	11/30/2017
State Project No.:	34839.1.7	County:	Forsyth	Date Tested	11/1/2017-11/30/17
Federal ID No.:	N/A	TIP No.:	U-2579AA		
Project Name:	Winston-Salem Northern Beltway Eastern Section from I-40 to US 311				
Client Name:	NCDOT GEU		Client Address: Raleigh, NC		

Sample No.	Station #:	Offset	Alignment	Sample Depth (ft)	AASHTO Classification		Total % Passing Sieve #					Total Mortar Fraction (%)				LL	PL	PI	Moist. %
							10	40	60	200	270	Coarse Sand	Fine Sand	Silt	Clay				
SS-185	10+00	70 LT	L	4.2-5.7	A-5	(0)	100	90	74	36.4	33.9	26	40	20	14	51	50	1	-
SS-186	10+00	70 LT	L	9.2-10.7	A-5	(0)	99	72	62	42.7	39.3	37	23	18	22	42	41	1	-
SS-188	13+00	CL	L	0.0-1.5	A-2-4	(0)	97	73	57	34.8	32.5	41	26	13	20	28	20	8	-
SS-189	13+00	CL	L	3.5-5.0	A-4	(0)	100	73	60	36.2	32.3	40	28	14	18	37	27	10	-
SS-192	27+00	CL	Y2RPB	3.5-5.0	A-7-5	(15)	100	98	97	90.6	88.0	3	9	35	53	46	33	13	40.7
SS-197	30+00	CL	Y2RPB	0.0-1.5	A-7-5	(25)	99	86	80	70.4	69.0	19	11	11	59	67	34	33	-
SS-200	30+00	CL	Y2RPB	23.5-25.0	A-5	(0)	100	89	77	42.8	35.9	23	41	28	8	51	47	4	-
SS-202	39+00	CL	Y2RPB	0.0-1.5	A-7-6	(9)	99	80	70	55.2	52.8	29	18	12	41	50	29	21	22.9
SS-203	39+00	CL	Y2RPB	8.5-10.0	A-6	(6)	99	76	68	57.6	55.8	31	13	20	36	37	23	14	-
SS-209	42+00	34 LT	Y2RPB	13.5-15.0	A-2-4	(0)	92	63	52	33.6	30.9	44	22	15	19	30	21	9	-
SS-211	43+50	20 RT	L	0.0-1.5	A-7-6	(5)	95	74	65	49.3	47.1	32	18	16	34	43	27	16	-
SS-213	43+50	20 RT	L	13.5-15.0	A-6	(3)	98	74	64	48.9	46.6	35	18	19	28	32	21	11	-
SS-215	46+50	40 RT	L	0.0-1.5	A-4	(1)	97	72	61	42.7	40.3	37	22	17	24	40	31	9	-
SS-216	46+50	40 RT	L	13.5-15.0	A-6	(0)	95	64	52	36.4	34.0	45	19	15	21	33	22	11	-
SS-218	52+50	90 RT	L	0.0-1.5	A-5	(3)	96	75	64	47.5	44.5	33	21	19	27	42	32	10	22.5
SS-219	23+00	30 RT	Y2RPC	0.0-1.5	A-5	(1)	99	79	67	43.6	40.8	32	27	18	23	49	44	5	-
SS-224	50+00	CL	Y2	0.0-1.5	A-5	(2)	100	90	82	55.5	44.5	18	38	29	15	44	40	4	33.4
SS-225	36+00	30 RT	Y2FLYAB	8.5-10.0	A-5	(0)	100	88	72	38	32.4	28	40	26	6	43	0	N.P.	-
SS-226	80+00	CL	Y2	0.0-1.5	A-7-5	(4)	99	82	71	50.5	47.4	28	24	21	27	47	36	11	24.4
SS-226A	35+50	CL	Y2	0.0-1.5	A-7-6	(17)	100	76	67	55.2	52.3	33	15	10	42	64	29	35	-
SS-227	74+00	CL	Y2	0.0-1.5	A-2-4	(0)	96	69	54	28.2	25.0	44	30	18	8	38	0	N.P.	-
SS-227A	32+50	CL	Y2	0.0-1.5	A-7-6	(12)	98	75	68	54.8	51.0	31	17	16	36	52	25	27	-
SS-228	74+00	CL	Y2	3.4-4.9	A-5	(1)	97	76	63	43.2	40.2	35	24	19	22	43	34	9	-
SS-230	23+50	CL	Y2	0.0-1.5	A-7-6	(8)	99	76	67	53.1	48.9	32	19	18	31	44	23	21	19
SS-232	59+00	CL	Y2	3.5-5.0	A-6	(7)	99	66	57	47.5	45.4	42	12	17	29	36	11	25	-
SS-233	53+00	CL	Y2	0.0-1.5	A-5	(0)	98	78	67	40.8	34.4	32	33	20	15	46	44	2	-
SS-234	6+00	90 RT	Y2	0.0-1.5	A-7-6	(8)	99	77	68	50	44.4	31	24	12	33	48	25	23	-
SS-235	3+00	145 RT	Y2	0.0-1.5	A-7-5	(23)	99	93	90	78.5	72.2	9	18	27	46	61	35	26	-
SS-239	15+00	190 RT	Y2	8.0-9.5	A-7-6	(26)	99	98	95	78.1	71.8	5	23	27	45	58	27	31	-
SS-241	20+00	170 RT	Y2	3.5-5.0	A-7-5	(9)	100	79	71	56	50.6	29	20	27	24	52	34	18	-
SS-244	15+00	20 RT	Y3RPC	3.5-5.0	A-7-5	(12)	100	83	75	59.7	54.8	25	20	18	37	60	40	20	-
SS-246	18+00	CL	Y3RPC	8.5-10.0	A-7-5	(15)	100	90	85	63.6	44.9	15	40	18	27	57	32	25	47.8
S-250	21+00	CL	Y2RPB	2.0-4.0	A-4	(4)	99	78	71	55.4	48.8	28	23	26	23	40	30	10	

SUMMARY OF LABORATORY TEST DATA

Soil Classification and Gradation

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616

S&ME Project #:	6235-17-038			Date Report	11/30/2017
State Project No.:	34839.1.7	County:	Forsyth	Date Tested	11/1/2017-11/30/17
Federal ID No.:	N/A	TIP No.:	U-2579AA		
Project Name:	Winston-Salem Northern Beltway Eastern Section from I-40 to US 311				
Client Name:	NCDOT GEU		Client Address: Raleigh, NC		

Sample No.	Station #:	Offset	Alignment	Sample Depth (ft)	AASHTO Classification		Total % Passing Sieve # 10	40	60	200	270	Total Mortar Fraction (%) Coarse Sand	Fine Sand	Silt	Clay	LL	PL	PI	Moist. %
ST-1	36+00	55 RT	Y1	4.2-6.2	A-6											37	21	16	26.3
ST-2	36+00	55 RT	Y1	11.2-13.2	A-2-7											43	25	18	23.9
ST-3	17+00	20 RT	Y2FLYCA	4.2-5.7	A-5											44	35	9	46.6
ST-5	20+50	CL	Y3RPC	8.4-10.4	A-6											29	18	11	17.0

References / Comments / Deviations: ND=Not Detemined.

AASHTO T88: Particle Size Analysis of Soils as Modified by the NCDOT

AASHTO T89: Determining the Liquid Limit of Soils

AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils

AASHTO T265: Laboratory Determination of Moisture Content of Soils

AASHTO M145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes

Mal Krajan, ET		104-01-0703	Stewart Laney, PE	Project Manager
Technician Name:	Signature	Certification #	Technical Responsibility:	Position

Form No. TR-D698-2
Revision No. : 1
Revision Date: 07/25/17

MOISTURE - DENSITY REPORT

Quality Assurance

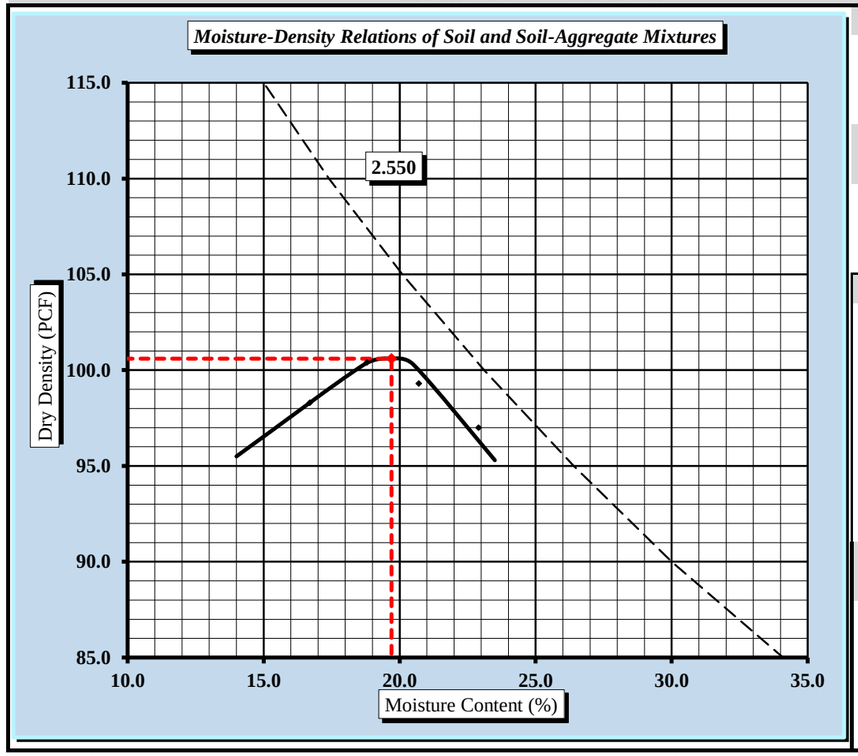
S&ME, Inc. Raleigh: 3201 Spring Forest Road, Raleigh, NC 27616

S&ME Project #:	6235-17-038	Report Date:	11/21/17
Project Name:	Wnston-Salem Northern Beltway E. Section	Test Date(s):	11/17 - 11/21/17
Client Name:	NCDOT		
Client Address:	Raleigh, NC		

Boring #:	Y2RPB	Sample #:	S-250	Sample Date:	11/14/2017
Station #:	21+00	Offset:	CL	Depth:	2 - 4 ft.
Sample Description:	Tan-Brown Fine to Coarse Sandy Clayey SILT (A-4) (4)				

Maximum Dry Density 100.6 PCF. Optimum Moisture Content 19.7%

AASHTO T99 - - Method A



Soil Properties	
Natural Moisture Content	
Assumed Specific Gravity	2.550
Liquid Limit	40
Plastic Limit	18
Plastic Index	22
% Passing	
3/4"	100.0%
3/8"	100.0%
#4	100.0%
#10	100.0%
#40	89.0%
#60	77.0%
#200	40.9%
Oversize Fraction	
Bulk Gravity	
% Moisture	
% Oversize	
MDD	
Opt. MC	

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐

Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐

Mechanical Rammer ☐ Manual Rammer ☒ Moist Preparation ☐ Dry Preparation ☒

References / Comments / Deviations:

AASHTO T265: Laboratory Determination of Moisture Content of Soils

AASHTO T 99: Moisture-Density Relations of Soil Using a 5.5 Lb. Rammer and a 12" Drop

Mal Krajan, ET		Laboratory Manager	11/21/2017
Technical Responsibility	*Signature*	*Position*	*Date*

Form No. TR-D1883-T193-3
Revision No. 2
Revision Date: 08/11/17

CBR (CALIFORNIA BEARING RATIO) OF LABORATORY COMPACTED SOIL

AASHTO T 193

S&ME, Inc. Raleigh: 3201 Spring Forest Road, Raleigh, NC 27616

Project #:	6235-17-038	Report Date:	11/27/2016
Project Name:	Winston-Salem Northern Beltway E. Section	Test Date(s)	11/17 - 11/27/17
Client Name:	NCDOT		
Client Address:	Raleigh, NC		

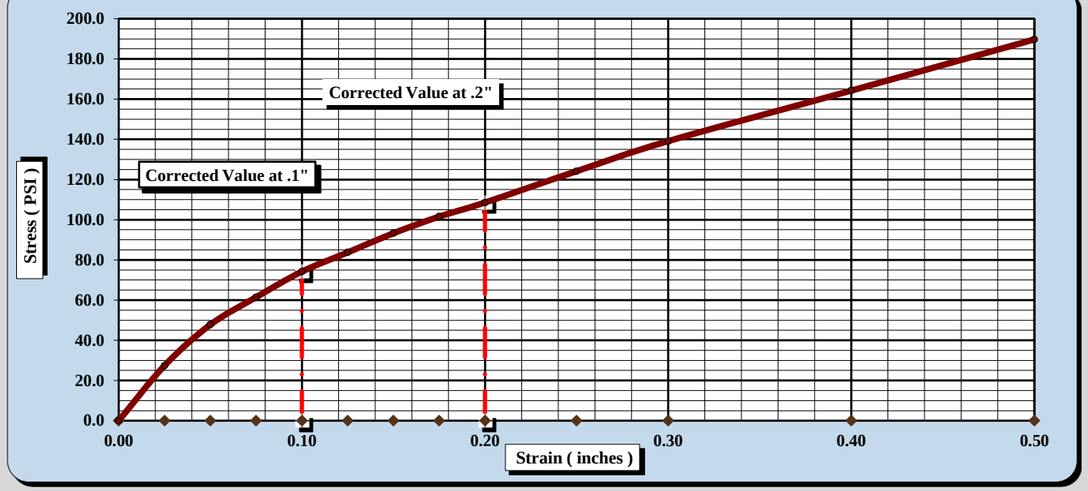
Boring #:	Y2RPB	Sample #:	S-250	Sample Date:	11/14/17
Station #:	21+00	Offset:	CL	Depth	2 - 4 ft.

Sample Description: Tan-Brown Fine to Coarse Sandy Clayey SILT (A-4) (4)

AASHTO T99 *Method A* Maximum Dry Density: 100.6 PCF Optimum Moisture Content: 19.7%

Compaction Test performed on grading complying with CBR spec. % Retained on the 3/4" sieve: 0.0%

Uncorrected CBR Values		Corrected CBR Values	
CBR at 0.1 in. 7.4	CBR at 0.2 in. 7.2	CBR at 0.1 in. 7.4	CBR at 0.2 in. 7.2



CBR Sample Preparation:

The entire gradation was used and compacted in a 6" CBR mold in accordance with AASHTO T 193, Section 5.1.1

Before Soaking		*After Soaking*	
Compactive Effort (Blows per Layer)	56		
Initial Dry Density (PCF)	100.4	Final Dry Density (PCF)	100.0
Moisture Content of the Compacted Specimen	19.9%	Moisture Content (top 1" after soaking)	26.9%
Percent Compaction	99.8%	Percent Swell	0.6%

Soak Time:	96 hrs.	Surcharge Weight	10.0	Surcharge Wt. per sq. Ft.	50.9
Liquid Limit	40	Plastic Index	10		

Notes/Deviations/References:

Test specimen compacted to 100% at optimum moisture.

Mal Krajan, ET		Laboratory Manager	11/27/2017
Technical Responsibility	*Signature*	*Position*	*Date*

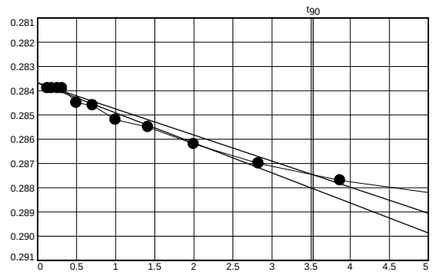
Pressure: 0.05 tsf — **TEST READINGS** — **Load No. 1**

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	+0 00:00:00	0.27340	11	+0 00:08:00	0.27750
2	+0 00:00:01	0.27340	12	+0 00:15:00	0.27750
3	+0 00:00:02	0.27430	13	+0 00:30:00	0.27750
4	+0 00:00:04	0.27720	14	+0 00:60:00	0.27750
5	+0 00:00:06	0.27750	15	+0 00:63:00	0.27750
6	+0 00:00:15	0.27750			
7	+0 00:00:30	0.27750			
8	+0 00:00:60	0.27750			
9	+0 00:02:00	0.27750			
10	+0 00:04:00	0.27750			

Void Ratio = 0.803 **Compression =** 0.4%

Pressure: 0.25 tsf — **TEST READINGS** — **Load No. 2**

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.27750	11	+0 00:08:00	0.28700
2	+0 00:00:01	0.28390	12	+0 00:15:00	0.28770
3	+0 00:00:02	0.28390	13	+0 00:30:00	0.28840
4	+0 00:00:04	0.28390	14	+0 00:60:00	0.28870
5	+0 00:00:06	0.28390	15	+0 00:84:00	0.28900
6	+0 00:00:15	0.28450			
7	+0 00:00:30	0.28460			
8	+0 00:00:60	0.28520			
9	+0 00:02:00	0.28550			
10	+0 00:04:00	0.28620			

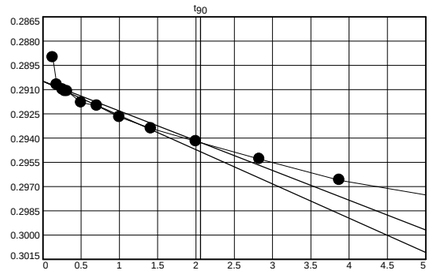


Void Ratio = 0.782 **Compression =** 1.5%

D_0 = 0.2837 **D_{90} =** 0.2875 **D_{100} =** 0.2879 **C_v at 12.44 min. =** 0.172 ft.^{2}/day

Pressure: 0.50 tsf — **TEST READINGS** — **Load No. 3**

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.28900	11	+0 00:04:00	0.29420
2	+0 00:00:01	0.28900	12	+0 00:08:00	0.29530
3	+0 00:00:02	0.29070	13	+0 00:15:00	0.29660
4	+0 00:00:04	0.29100	14	+0 00:30:00	0.29790
5	+0 00:00:05	0.29110	15	+0 00:60:00	0.29890
6	+0 00:00:06	0.29110	16	+0 02:00:00	0.29950
7	+0 00:00:15	0.29180	17	+0 04:00:00	0.29980
8	+0 00:00:30	0.29200	18	+0 04:24:00	0.29980
9	+0 00:00:60	0.29270			
10	+0 00:02:00	0.29340			



Void Ratio = 0.763 **Compression =** 2.6%

D_0 = 0.2905 **D_{90} =** 0.2943 **D_{100} =** 0.2947 **C_v at 4.23 min. =** 0.493 ft.^{2}/day

S & ME, INC.

CONSOLIDATION TEST DATA

1/19/2018

Client: NCDOT GEU
Project: Winston-Salem N. Beltway E. Section
Project Number: 6235-17-038
Depth: 4.2-6.2' **Sample Number:** ST-1
Material Description: A-6
Liquid Limit: 37 **Plasticity Index:** 16
AASHTO: A-6
Figure No.: ST-1
Testing Remarks: Sample was saturated.
Tested by: Karen Warner **Checked by:** Jason Reeves

Test Specimen Data

NATURAL MOISTURE

Wet w+t	= 217.92	g.
Dry w+t	= 187.62	g.
Tare Wt.	= 83.69	g.
Moisture	= 29.2	%

VOID RATIO

Spec. Gr.	= 2.75	
Est. Ht. Solids	= 0.560	in.
Init. V.R.	= 0.810	
Init. Sat.	= 98.9	%

AFTER TEST

Wet w+t	= 261.71	g.
Dry w+t	= 229.34	g.
Tare Wt.	= 106.19	g.
Moisture	= 26.3	%

UNIT WEIGHT

Height	= 1.002	in.
Diameter	= 2.494	in.
Weight	= 156.93	g.
Dry Dens.	= 94.6	pcf

TEST START

Height	= 1.013	in.
Diameter	= 2.494	in.

Dry Wt. =123.15* g.

End-Of-Load Summary

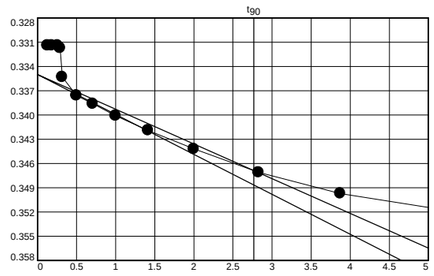
Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C_v (ft.^{2}/day)	C_α	Void Ratio	% Strain
start	0.27340	0.00000			0.810	
0.05	0.27750	0.00410			0.803	0.4 Comprs.
0.25	0.28900	0.01560	0.172		0.782	1.5 Comprs.
0.50	0.29980	0.02640	0.493		0.763	2.6 Comprs.
1.00	0.31430	0.04090	0.673		0.737	4.0 Comprs.
2.00	0.33140	0.05800	0.299		0.707	5.7 Comprs.
4.00	0.35430	0.08090	0.247		0.666	8.0 Comprs.
2.00	0.35190	0.07850	0.664		0.670	7.7 Comprs.
1.00	0.34650	0.07310	0.652		0.680	7.2 Comprs.
0.50	0.33850	0.06510	0.204		0.694	6.4 Comprs.
0.25	0.33020	0.05680	0.067		0.709	5.6 Comprs.

Compression index (C_C), tsf = 0.13 **Preconsolidation pressure (P_p), tsf =** 0.7 **Void ratio at P_p (e_m) =** 0.752

S & ME, INC.

Pressure: 4.00 tsf — **TEST READINGS** — **Load No. 6**

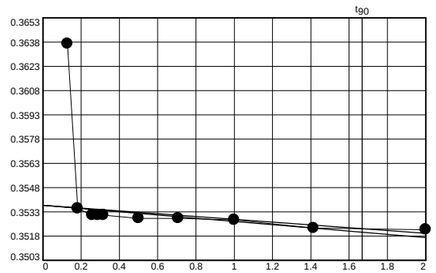
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.33140	11	+0 00:04:00	0.34420
2	+0 00:00:01	0.33140	12	+0 00:08:00	0.34710
3	+0 00:00:02	0.33140	13	+0 00:15:00	0.34970
4	+0 00:00:04	0.33140	14	+0 00:30:00	0.35220
5	+0 00:00:05	0.33170	15	+0 01:00:00	0.35360
6	+0 00:00:06	0.33530	16	+0 02:00:00	0.35430
7	+0 00:00:15	0.33760	17	+0 02:12:00	0.35430
8	+0 00:00:30	0.33860			
9	+0 00:00:60	0.34010			
10	+0 00:02:00	0.34190			



Void Ratio = 0.666 **Compression =** 8.0%
D_0 = 0.3350 **D_{90} =** 0.3469 **D_{100} =** 0.3482 **C_v at 7.66 min. =** 0.247 ft.^{2}/day

Pressure: 2.00 tsf — **TEST READINGS** — **Load No. 7**

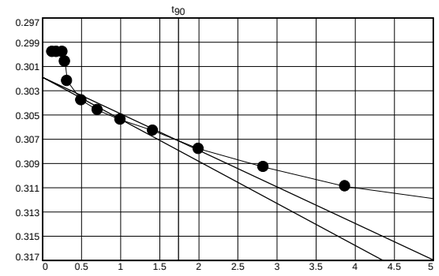
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.35430	11	+0 00:04:00	0.35220
2	+0 00:00:01	0.36370	12	+0 00:08:00	0.35210
3	+0 00:00:02	0.35350	13	+0 00:15:00	0.35200
4	+0 00:00:04	0.35310	14	+0 00:30:00	0.35200
5	+0 00:00:05	0.35310	15	+0 00:60:00	0.35190
6	+0 00:00:06	0.35310	16	+0 02:00:00	0.35190
7	+0 00:00:15	0.35290	17	+0 02:17:00	0.35190
8	+0 00:00:30	0.35290			
9	+0 00:00:60	0.35280			
10	+0 00:02:00	0.35230			



Void Ratio = 0.670 **Compression =** 7.7%
D_0 = 0.3537 **D_{90} =** 0.3523 **D_{100} =** 0.3521 **C_v at 2.78 min. =** 0.664 ft.^{2}/day

Pressure: 1.00 tsf — **TEST READINGS** — **Load No. 4**

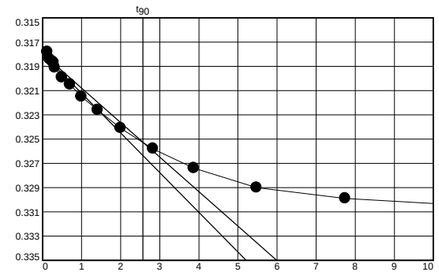
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.29980	11	+0 00:04:00	0.30780
2	+0 00:00:01	0.29980	12	+0 00:08:00	0.30930
3	+0 00:00:02	0.29980	13	+0 00:15:00	0.31090
4	+0 00:00:04	0.29980	14	+0 00:30:00	0.31230
5	+0 00:00:05	0.30060	15	+0 00:60:00	0.31330
6	+0 00:00:06	0.30220	16	+0 02:00:00	0.31380
7	+0 00:00:15	0.30380	17	+0 04:00:00	0.31420
8	+0 00:00:30	0.30460	18	+0 08:00:00	0.31430
9	+0 00:00:60	0.30540	19	+0 13:00:00	0.31430
10	+0 00:02:00	0.30630			



Void Ratio = 0.737 **Compression =** 4.0%
D_0 = 0.3019 **D_{90} =** 0.3071 **D_{100} =** 0.3077 **C_v at 3.02 min. =** 0.673 ft.^{2}/day

Pressure: 2.00 tsf — **TEST READINGS** — **Load No. 5**

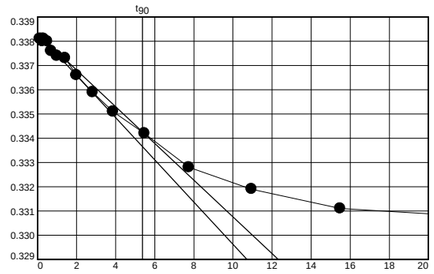
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.31430	11	+0 00:04:00	0.32410
2	+0 00:00:01	0.31780	12	+0 00:08:00	0.32580
3	+0 00:00:02	0.31840	13	+0 00:15:00	0.32740
4	+0 00:00:04	0.31860	14	+0 00:30:00	0.32900
5	+0 00:00:05	0.31870	15	+0 00:60:00	0.32990
6	+0 00:00:06	0.31910	16	+0 02:00:00	0.33050
7	+0 00:00:15	0.31990	17	+0 04:00:00	0.33070
8	+0 00:00:30	0.32050	18	+0 08:00:00	0.33120
9	+0 00:00:60	0.32150	19	+0 15:00:00	0.33130
10	+0 00:02:00	0.32260	20	+0 17:60:00	0.33140



Void Ratio = 0.707 **Compression =** 5.7%
D_0 = 0.3180 **D_{90} =** 0.3253 **D_{100} =** 0.3261 **C_v at 6.59 min. =** 0.299 ft.^{2}/day

Pressure: 0.25 tsf | **TEST READINGS** | **Load No. 10**

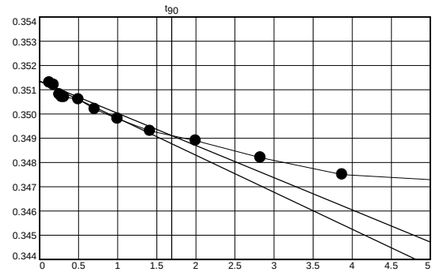
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.33850	12	+0 00:08:00	0.33590
2	+0 00:00:01	0.33810	13	+0 00:15:00	0.33510
3	+0 00:00:02	0.33810	14	+0 00:30:00	0.33420
4	+0 00:00:04	0.33800	15	+0 00:60:00	0.33280
5	+0 00:00:05	0.33810	16	+0 02:00:00	0.33190
6	+0 00:00:06	0.33810	17	+0 04:00:00	0.33110
7	+0 00:00:15	0.33800	18	+0 08:00:00	0.33080
8	+0 00:00:30	0.33760	19	+0 15:00:00	0.33030
9	+0 00:00:60	0.33740	20	+0 24:00:00	0.33020
10	+0 00:02:00	0.33730	21	+0 26:03:00	0.33020
11	+0 00:04:00	0.33660			



Void Ratio = 0.709 **Compression =** 5.6%
D_0 = 0.3383 **D_{90} =** 0.3343 **D_{100} =** 0.3338 **C_v at 28.76 min. =** 0.067 ft.^{2}/day

Pressure: 1.00 tsf | **TEST READINGS** | **Load No. 8**

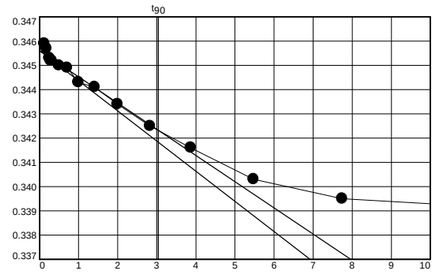
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.35190	11	+0 00:04:00	0.34890
2	+0 00:00:01	0.35130	12	+0 00:08:00	0.34820
3	+0 00:00:02	0.35120	13	+0 00:15:00	0.34750
4	+0 00:00:04	0.35080	14	+0 00:30:00	0.34720
5	+0 00:00:05	0.35070	15	+0 00:60:00	0.34670
6	+0 00:00:06	0.35070	16	+0 02:00:00	0.34660
7	+0 00:00:15	0.35060	17	+0 04:00:00	0.34650
8	+0 00:00:30	0.35020	18	+0 04:01:00	0.34650
9	+0 00:00:60	0.34980			
10	+0 00:02:00	0.34930			



Void Ratio = 0.680 **Compression =** 7.2%
D_0 = 0.3514 **D_{90} =** 0.3491 **D_{100} =** 0.3489 **C_v at 2.85 min. =** 0.652 ft.^{2}/day

Pressure: 0.50 tsf | **TEST READINGS** | **Load No. 9**

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.34650	11	+0 00:04:00	0.34340
2	+0 00:00:01	0.34590	12	+0 00:08:00	0.34250
3	+0 00:00:02	0.34570	13	+0 00:15:00	0.34160
4	+0 00:00:04	0.34530	14	+0 00:30:00	0.34030
5	+0 00:00:05	0.34520	15	+0 00:60:00	0.33950
6	+0 00:00:06	0.34520	16	+0 02:00:00	0.33920
7	+0 00:00:15	0.34500	17	+0 04:00:00	0.33870
8	+0 00:00:30	0.34490	18	+0 08:00:00	0.33860
9	+0 00:00:60	0.34430	19	+0 15:00:00	0.33860
10	+0 00:02:00	0.34410	20	+0 18:04:00	0.33850

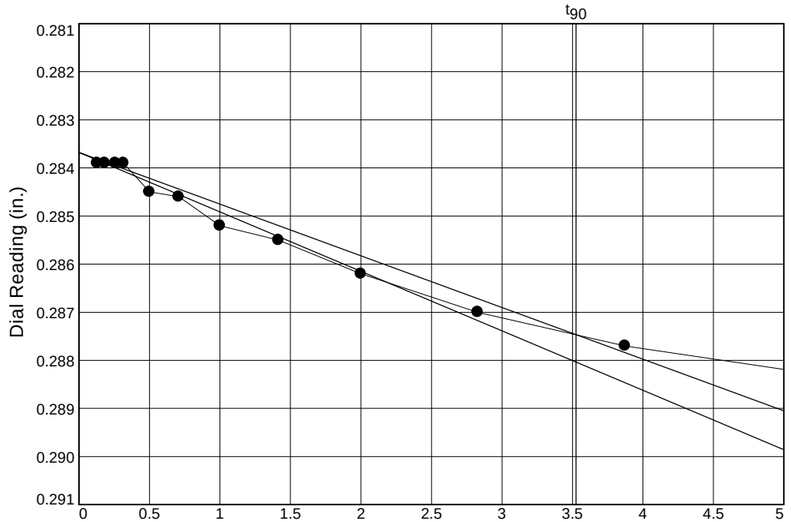


Void Ratio = 0.694 **Compression =** 6.4%
D_0 = 0.3456 **D_{90} =** 0.3423 **D_{100} =** 0.3420 **C_v at 9.25 min. =** 0.204 ft.^{2}/day

Dial Reading vs. Time

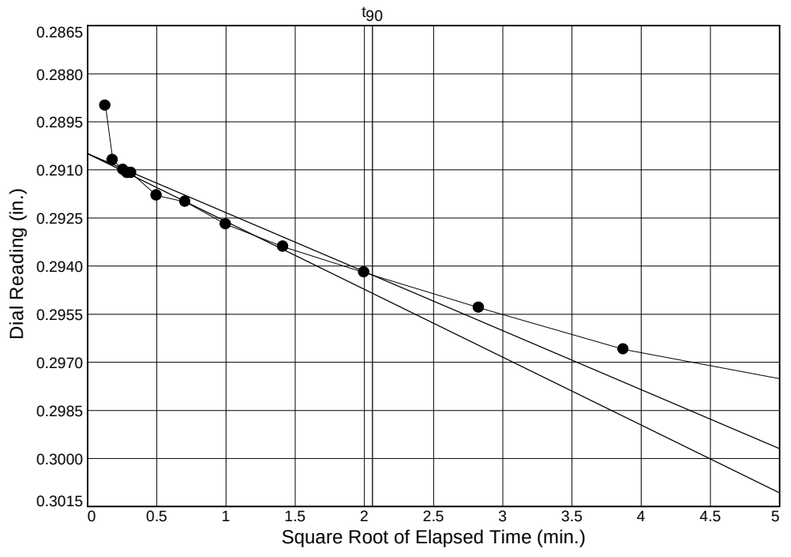
Project No.: 6235-17-038
Project: Winston-Salem N. Beltway E. Section

Depth: 4.2-6.2' Sample Number: ST-1



Load No.= 2
Load= 0.25 tsf
D_0 = 0.2837
D_{90} = 0.2875
D_{100} = 0.2879
T_{90} = 12.44 min.

C_v @ T_{90}
0.172 ft.^{2}/day



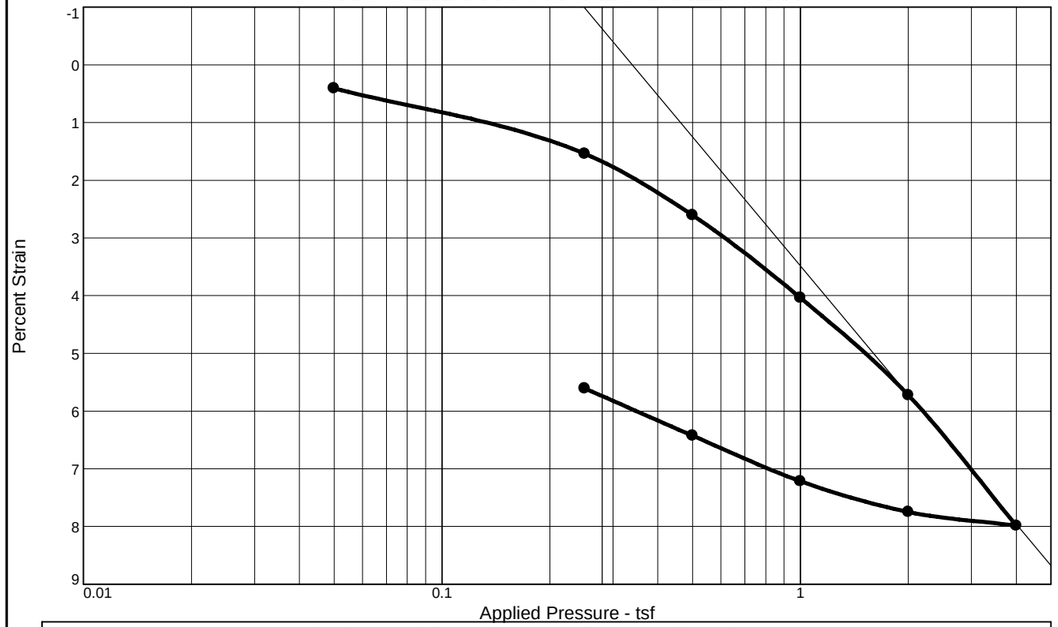
Load No.= 3
Load= 0.50 tsf
D_0 = 0.2905
D_{90} = 0.2943
D_{100} = 0.2947
T_{90} = 4.23 min.

C_v @ T_{90}
0.493 ft.^{2}/day

Figure ST-2

S & ME, INC.

CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
2	0.25	0.172		9	0.50	0.204					
3	0.50	0.493		10	0.25	0.067					
4	1.00	0.673									
5	2.00	0.299									
6	4.00	0.247									
7	2.00	0.664									
8	1.00	0.652									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	C_c	C_r	Initial Void Ratio
98.9 %	29.2 %	94.6	37	16	2.75		0.7	0.13		0.810

MATERIAL DESCRIPTION	USCS	AASHTO
A-6		A-6

Project No. 6235-17-038 **Client:** NCDOT GEU
Project: Winston-Salem N. Beltway E. Section

Depth: 4.2-6.2' **Sample Number:** ST-1

S & ME, INC.

Charlotte, North Carolina

Remarks:
Sample was saturated.

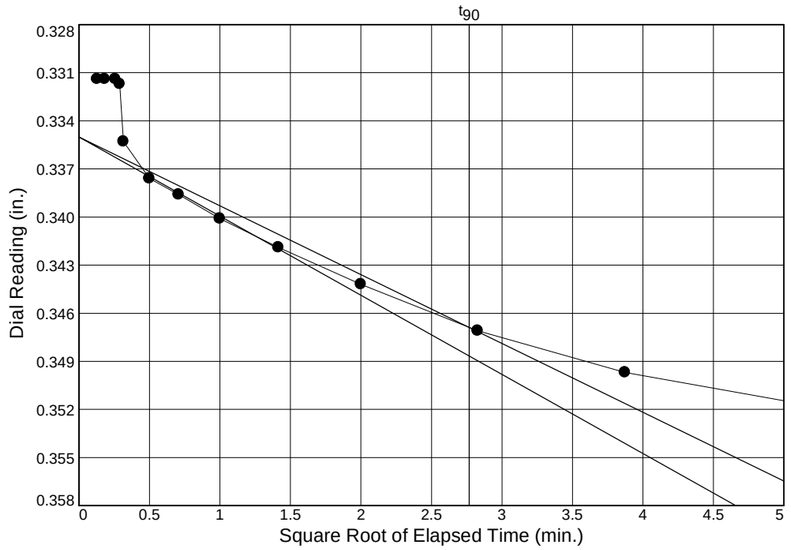
Figure ST-1

Tested By: Karen Warner **Checked By:** Jason Reeves

Dial Reading vs. Time

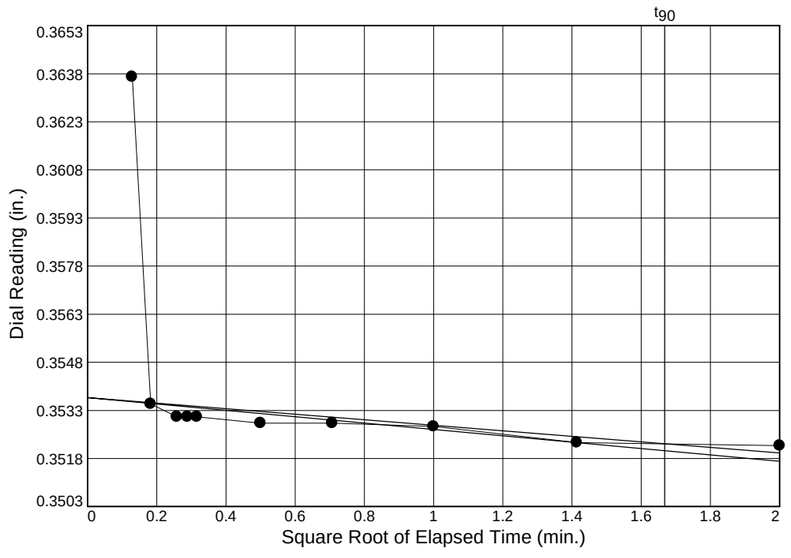
Project No.: 6235-17-038
Project: Winston-Salem N. Beltway E. Section

Depth: 4.2-6.2' Sample Number: ST-1



Load No.= 6
Load= 4.00 tsf
D_0 = 0.3350
D_{90} = 0.3469
D_{100} = 0.3482
T_{90} = 7.66 min.

C_v @ T_{90}
0.247 ft.^{2}/day



Load No.= 7
Load= 2.00 tsf
D_0 = 0.3537
D_{90} = 0.3523
D_{100} = 0.3521
T_{90} = 2.78 min.

C_v @ T_{90}
0.664 ft.^{2}/day

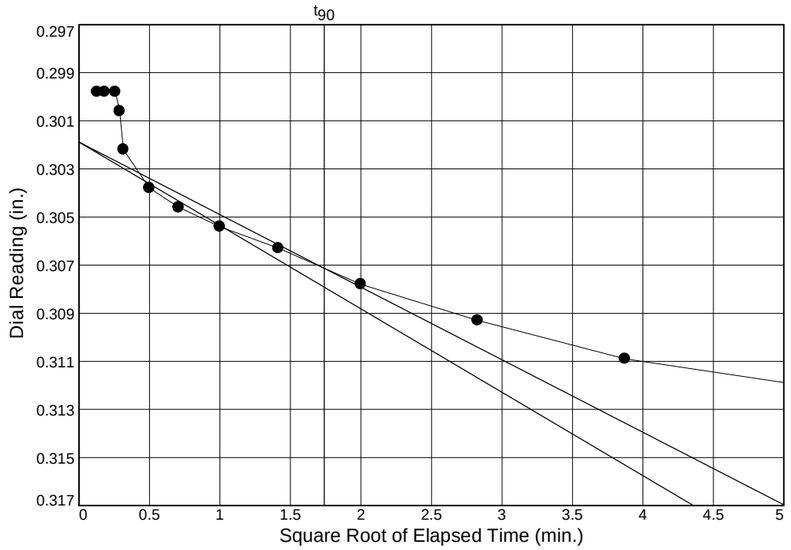
Figure ST-4

S & ME, INC.

Dial Reading vs. Time

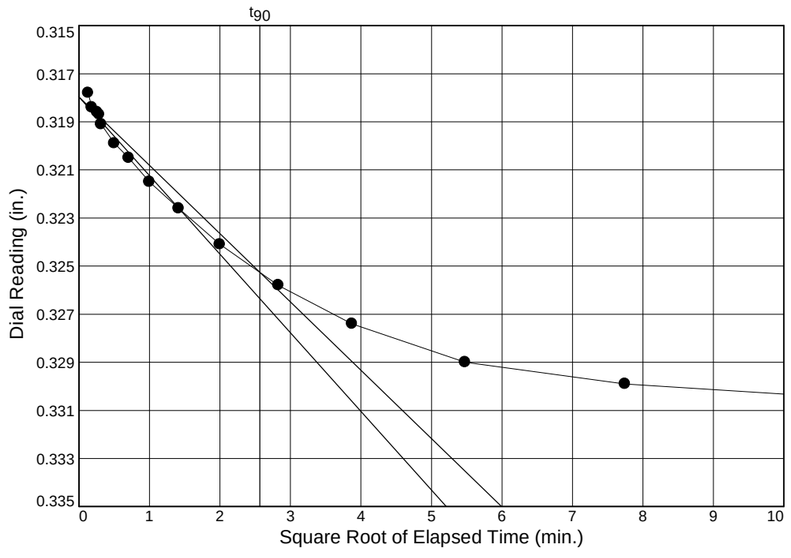
Project No.: 6235-17-038
Project: Winston-Salem N. Beltway E. Section

Depth: 4.2-6.2' Sample Number: ST-1



Load No.= 4
Load= 1.00 tsf
D_0 = 0.3019
D_{90} = 0.3071
D_{100} = 0.3077
T_{90} = 3.02 min.

C_v @ T_{90}
0.673 ft.^{2}/day



Load No.= 5
Load= 2.00 tsf
D_0 = 0.3180
D_{90} = 0.3253
D_{100} = 0.3261
T_{90} = 6.59 min.

C_v @ T_{90}
0.299 ft.^{2}/day

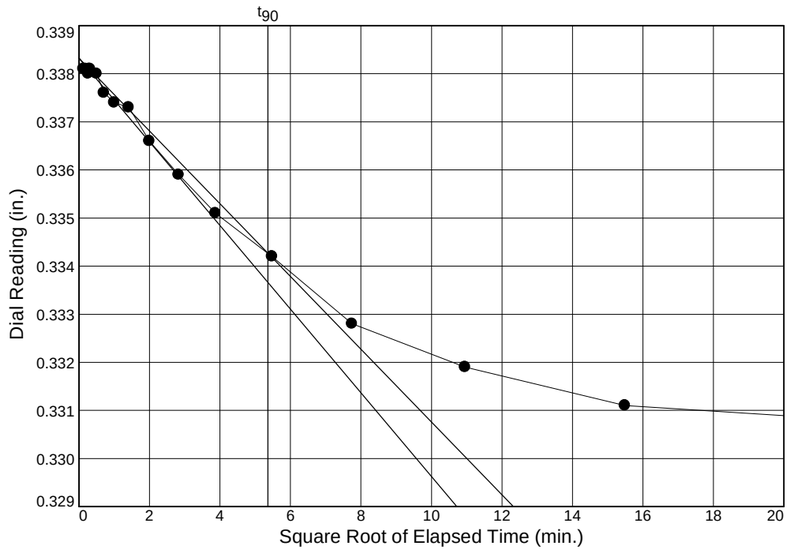
Figure ST-3

S & ME, INC.

Dial Reading vs. Time

Project No.: 6235-17-038
Project: Winston-Salem N. Beltway E. Section

Depth: 4.2-6.2' Sample Number: ST-1



Load No.= 10
Load= 0.25 tsf
D_0 = 0.3383
D_{90} = 0.3343
D_{100} = 0.3338
T_{90} = 28.76 min.

C_v @ T_{90}
0.067 ft.^{2}/day

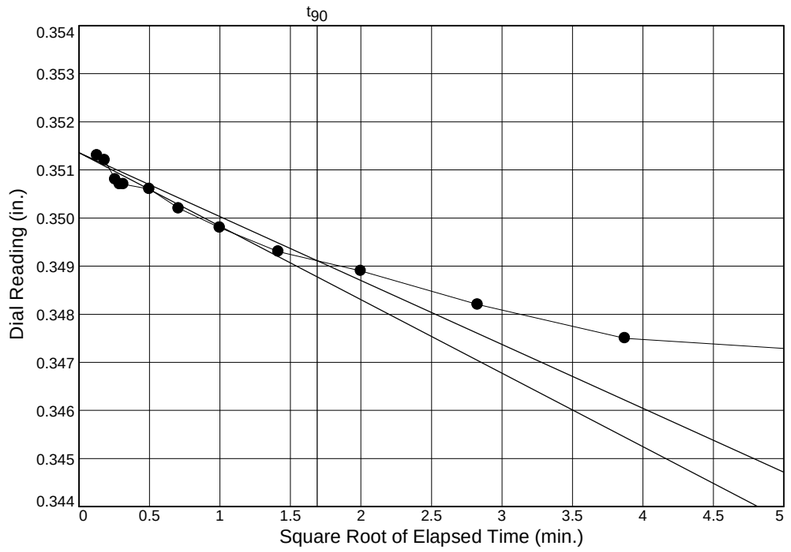
Figure ST-6

S & ME, INC.

Dial Reading vs. Time

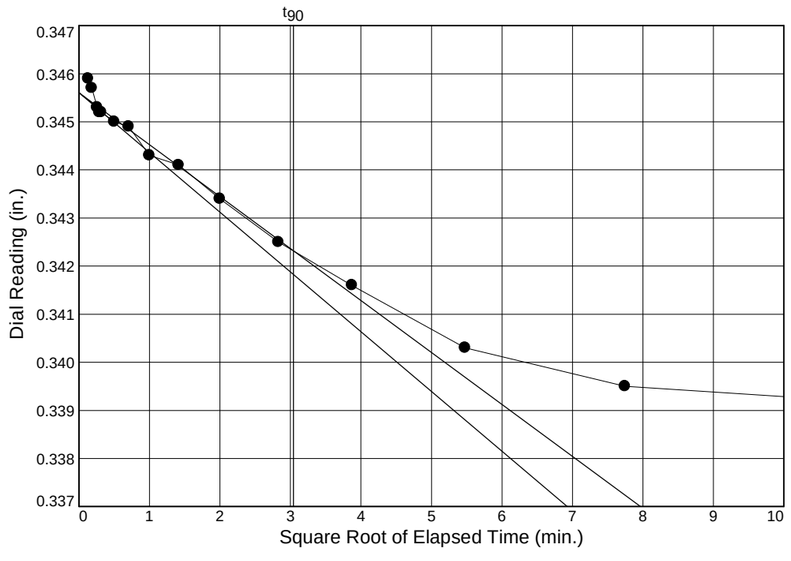
Project No.: 6235-17-038
Project: Winston-Salem N. Beltway E. Section

Depth: 4.2-6.2' Sample Number: ST-1



Load No.= 8
Load= 1.00 tsf
D_0 = 0.3514
D_{90} = 0.3491
D_{100} = 0.3489
T_{90} = 2.85 min.

C_v @ T_{90}
0.652 ft.^{2}/day



Load No.= 9
Load= 0.50 tsf
D_0 = 0.3456
D_{90} = 0.3423
D_{100} = 0.3420
T_{90} = 9.25 min.

C_v @ T_{90}
0.204 ft.^{2}/day

Figure ST-5

S & ME, INC.

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0030	27.000	0.0	0.0	0.00	1.44	1.44	1.00	70.00	1.44	0.00
1	0.0060	41.400	14.4	0.0	0.34	1.09	1.43	1.31	72.40	1.26	0.17
2	0.0110	48.000	21.0	0.1	0.50	1.02	1.52	1.48	72.90	1.27	0.25
3	0.0150	51.400	24.4	0.2	0.58	0.98	1.55	1.59	73.20	1.27	0.29
4	0.0190	53.500	26.5	0.3	0.62	0.95	1.57	1.66	73.40	1.26	0.31
5	0.0220	54.800	27.8	0.3	0.65	0.94	1.59	1.70	73.50	1.26	0.33
6	0.0260	56.800	29.8	0.4	0.70	0.92	1.62	1.76	73.60	1.27	0.35
7	0.0300	57.700	30.7	0.4	0.72	0.91	1.63	1.80	73.70	1.27	0.36
8	0.0330	59.100	32.1	0.5	0.75	0.89	1.65	1.84	73.80	1.27	0.38
9	0.0380	60.200	33.2	0.6	0.78	0.86	1.64	1.90	74.00	1.25	0.39
10	0.0410	61.500	34.5	0.6	0.81	0.86	1.67	1.94	74.00	1.27	0.40
11	0.0450	62.500	35.5	0.7	0.83	0.85	1.68	1.98	74.10	1.27	0.42
12	0.0490	63.500	36.5	0.8	0.86	0.84	1.69	2.02	74.20	1.26	0.43
13	0.0520	64.700	37.7	0.8	0.88	0.82	1.70	2.08	74.30	1.26	0.44
14	0.0560	65.500	38.5	0.9	0.90	0.81	1.71	2.12	74.40	1.26	0.45
15	0.0600	66.500	39.5	0.9	0.92	0.81	1.73	2.15	74.40	1.27	0.46
16	0.0640	67.700	40.7	1.0	0.95	0.79	1.74	2.20	74.50	1.27	0.48
17	0.0680	68.600	41.6	1.1	0.97	0.79	1.76	2.23	74.50	1.28	0.49
18	0.0720	69.600	42.6	1.1	0.99	0.78	1.77	2.28	74.60	1.27	0.50
19	0.0760	70.600	43.6	1.2	1.02	0.78	1.79	2.31	74.60	1.29	0.51
20	0.0800	71.500	44.5	1.3	1.04	0.78	1.81	2.33	74.60	1.30	0.52
21	0.0840	72.300	45.3	1.3	1.06	0.82	1.88	2.29	74.30	1.35	0.53
22	0.0890	73.200	46.2	1.4	1.08	0.76	1.84	2.41	74.70	1.30	0.54
23	0.0930	73.800	46.8	1.5	1.09	0.75	1.84	2.45	74.80	1.29	0.54
24	0.0970	74.800	47.8	1.6	1.11	0.75	1.86	2.48	74.80	1.30	0.56
25	0.1000	75.400	48.4	1.6	1.12	0.75	1.87	2.50	74.80	1.31	0.56
26	0.1040	76.300	49.3	1.7	1.14	0.75	1.89	2.53	74.80	1.32	0.57
27	0.1080	76.900	49.9	1.7	1.16	0.75	1.91	2.55	74.80	1.33	0.58
28	0.1130	77.700	50.7	1.8	1.18	0.73	1.91	2.60	74.90	1.32	0.59
29	0.1170	78.400	51.4	1.9	1.19	0.73	1.93	2.62	74.90	1.33	0.60
30	0.1210	79.300	52.3	2.0	1.21	0.73	1.95	2.65	74.90	1.34	0.61
31	0.1250	79.600	52.6	2.0	1.22	0.73	1.95	2.66	74.90	1.34	0.61
32	0.1290	80.600	53.6	2.1	1.24	0.72	1.96	2.72	75.00	1.34	0.62
33	0.1330	81.200	54.2	2.2	1.25	0.72	1.97	2.74	75.00	1.35	0.63
34	0.1370	81.800	54.8	2.2	1.27	0.72	1.99	2.76	75.00	1.35	0.63
35	0.1410	82.100	55.1	2.3	1.27	0.72	1.99	2.77	75.00	1.36	0.64
36	0.1450	82.700	55.7	2.4	1.28	0.72	2.00	2.78	75.00	1.36	0.64
37	0.1500	83.300	56.3	2.4	1.30	0.72	2.02	2.80	75.00	1.37	0.65
38	0.1530	84.100	57.1	2.5	1.31	0.72	2.03	2.83	75.00	1.38	0.66
39	0.1570	84.500	57.5	2.6	1.32	0.72	2.04	2.84	75.00	1.38	0.66
40	0.1620	85.300	58.3	2.6	1.34	0.72	2.06	2.86	75.00	1.39	0.67
41	0.1660	85.800	58.8	2.7	1.35	0.72	2.07	2.88	75.00	1.40	0.68
42	0.1700	86.400	59.4	2.8	1.36	0.72	2.08	2.89	75.00	1.40	0.68
43	0.1740	87.000	60.0	2.8	1.38	0.72	2.10	2.91	75.00	1.41	0.69
44	0.1780	87.500	60.5	2.9	1.39	0.72	2.11	2.93	75.00	1.41	0.69
45	0.1820	88.200	61.2	3.0	1.40	0.72	2.12	2.95	75.00	1.42	0.70
46	0.1860	88.500	61.5	3.0	1.41	0.72	2.13	2.96	75.00	1.42	0.70

TRIAXIAL COMPRESSION TEST

CU with Pore Pressures

1/19/2018
9:47 AM

Date: October 2017
Client: NCDOT GEU
Project: Winston-Salem N. Beltway E. Section
Project No.: 6235-17-038
Depth: 4.2-6.2' **Sample Number:** ST-1
Description: A-6
Remarks: All 3 specimens failed in shear (AASHTO T297).
Type of Sample: Undisturbed
Assumed Specific Gravity=2.75 **LL=**37 **PL=**21 **PI=**16
Test Method: COE uniform strain

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	217.920			1312.010
Moisture content: Dry soil+tare, gms.	187.620			1045.070
Moisture content: Tare, gms.	83.690			109.540
Moisture, %	29.2	30.5	27.8	28.5
Moist specimen weight, gms.	1210.39			
Diameter, in.	2.828	2.824	2.786	
Area, in.²	6.281	6.265	6.098	
Height, in.	6.108	6.100	6.019	
Net decrease in height, in.		0.008	0.081	
Wet density, pcf	120.2	121.9	124.3	
Dry density, pcf	93.1	93.4	97.3	
Void ratio	0.8449	0.8376	0.7650	
Saturation, %	94.9	100.0	100.0	

Test Readings for Specimen No. 1

Consolidation cell pressure = 80.00 psi (11.52 ksf)
Consolidation back pressure = 70.00 psi (10.08 ksf)
Consolidation effective confining stress = 1.44 ksf
Strain rate, in./min. = 0.004
Fail. Stress = 1.73 ksf **at reading no.** 82
Ult. Stress = 2.22 ksf **at reading no.** 226

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
94	0.3790	108.400	81.4	6.2	1.80	0.78	2.58	3.32	74.60	1.68	0.90
95	0.3830	108.600	81.6	6.3	1.81	0.79	2.60	3.28	74.50	1.69	0.90
96	0.3870	108.800	81.8	6.4	1.81	0.79	2.60	3.28	74.50	1.70	0.90
97	0.3910	109.000	82.0	6.4	1.81	0.79	2.60	3.29	74.50	1.70	0.91
98	0.3940	109.300	82.3	6.5	1.82	0.79	2.61	3.29	74.50	1.70	0.91
99	0.3980	109.800	82.8	6.6	1.83	0.79	2.62	3.31	74.50	1.71	0.91
100	0.4020	110.200	83.2	6.6	1.83	0.79	2.63	3.32	74.50	1.71	0.92
101	0.4060	110.300	83.3	6.7	1.84	0.81	2.64	3.28	74.40	1.72	0.92
102	0.4100	110.700	83.7	6.8	1.84	0.81	2.65	3.29	74.40	1.73	0.92
103	0.4140	110.900	83.9	6.8	1.85	0.81	2.65	3.29	74.40	1.73	0.92
104	0.4180	111.200	84.2	6.9	1.85	0.81	2.66	3.30	74.40	1.73	0.93
105	0.4220	111.500	84.5	7.0	1.86	0.81	2.66	3.30	74.40	1.73	0.93
106	0.4260	111.700	84.7	7.0	1.86	0.81	2.67	3.31	74.40	1.74	0.93
107	0.4290	111.400	84.4	7.1	1.85	0.81	2.66	3.30	74.40	1.73	0.93
108	0.4330	111.800	84.8	7.1	1.86	0.81	2.67	3.31	74.40	1.74	0.93
109	0.4370	112.400	85.4	7.2	1.87	0.81	2.68	3.32	74.40	1.74	0.94
110	0.4410	112.400	85.4	7.3	1.87	0.81	2.68	3.32	74.40	1.74	0.93
111	0.4450	112.800	85.8	7.3	1.88	0.81	2.68	3.33	74.40	1.75	0.94
112	0.4490	113.200	86.2	7.4	1.88	0.82	2.71	3.30	74.30	1.76	0.94
113	0.4530	113.600	86.6	7.5	1.89	0.82	2.71	3.31	74.30	1.77	0.95
114	0.4580	113.600	86.6	7.6	1.89	0.82	2.71	3.30	74.30	1.77	0.95
115	0.4620	113.900	86.9	7.6	1.90	0.82	2.72	3.31	74.30	1.77	0.95
116	0.4660	114.200	87.2	7.7	1.90	0.82	2.72	3.32	74.30	1.77	0.95
117	0.4700	114.200	87.2	7.8	1.90	0.82	2.72	3.31	74.30	1.77	0.95
118	0.4740	114.500	87.5	7.8	1.90	0.84	2.74	3.28	74.20	1.79	0.95
119	0.4780	114.900	87.9	7.9	1.91	0.84	2.75	3.29	74.20	1.79	0.96
120	0.4820	115.300	88.3	8.0	1.92	0.84	2.75	3.30	74.20	1.79	0.96
121	0.4860	115.300	88.3	8.0	1.92	0.84	2.75	3.30	74.20	1.79	0.96
122	0.4900	115.700	88.7	8.1	1.93	0.84	2.76	3.30	74.20	1.80	0.96
123	0.4950	116.200	89.2	8.2	1.93	0.84	2.77	3.32	74.20	1.80	0.97
124	0.4990	116.500	89.5	8.2	1.94	0.84	2.77	3.32	74.20	1.80	0.97
125	0.5030	116.800	89.8	8.3	1.94	0.84	2.78	3.33	74.20	1.81	0.97
126	0.5070	117.200	90.2	8.4	1.95	0.84	2.79	3.34	74.20	1.81	0.98
127	0.5110	117.100	90.1	8.4	1.95	0.84	2.78	3.33	74.20	1.81	0.97
128	0.5150	117.500	90.5	8.5	1.96	0.84	2.79	3.34	74.20	1.81	0.98
129	0.5190	117.800	90.8	8.6	1.96	0.85	2.81	3.31	74.10	1.83	0.98
130	0.5230	118.000	91.0	8.6	1.96	0.85	2.81	3.31	74.10	1.83	0.98
131	0.5280	118.300	91.3	8.7	1.97	0.85	2.82	3.32	74.10	1.83	0.98
132	0.5320	118.400	91.4	8.8	1.97	0.85	2.82	3.32	74.10	1.83	0.98
133	0.5360	118.300	91.3	8.9	1.96	0.85	2.81	3.31	74.10	1.83	0.98
134	0.5400	118.600	91.6	8.9	1.97	0.85	2.82	3.32	74.10	1.83	0.99
135	0.5430	119.300	92.3	9.0	1.98	0.85	2.83	3.34	74.10	1.84	0.99
136	0.5470	119.600	92.6	9.0	1.99	0.85	2.84	3.34	74.10	1.84	0.99
137	0.5510	119.900	92.9	9.1	1.99	0.85	2.84	3.35	74.10	1.85	1.00
138	0.5550	120.100	93.1	9.2	2.00	0.86	2.86	3.31	74.00	1.86	1.00
139	0.5590	120.300	93.3	9.2	2.00	0.86	2.86	3.31	74.00	1.86	1.00
140	0.5630	120.400	93.4	9.3	2.00	0.86	2.86	3.32	74.00	1.86	1.00

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
47	0.1900	89.100	62.1	3.1	1.42	0.72	2.14	2.97	75.00	1.43	0.71
48	0.1940	89.500	62.5	3.2	1.43	0.72	2.15	2.98	75.00	1.43	0.71
49	0.1980	89.800	62.8	3.2	1.43	0.72	2.15	2.99	75.00	1.44	0.72
50	0.2020	90.200	63.2	3.3	1.44	0.72	2.16	3.00	75.00	1.44	0.72
51	0.2060	90.900	63.9	3.4	1.46	0.72	2.18	3.03	75.00	1.45	0.73
52	0.2100	91.400	64.4	3.4	1.47	0.72	2.19	3.04	75.00	1.45	0.73
53	0.2140	91.900	64.9	3.5	1.48	0.72	2.20	3.05	75.00	1.46	0.74
54	0.2180	92.300	65.3	3.6	1.49	0.72	2.21	3.07	75.00	1.46	0.74
55	0.2220	92.900	65.9	3.6	1.50	0.72	2.22	3.08	75.00	1.47	0.75
56	0.2260	93.300	66.3	3.7	1.51	0.72	2.23	3.09	75.00	1.47	0.75
57	0.2300	93.700	66.7	3.8	1.52	0.73	2.25	3.06	74.90	1.49	0.76
58	0.2340	94.100	67.1	3.8	1.52	0.73	2.26	3.07	74.90	1.50	0.76
59	0.2370	94.500	67.5	3.9	1.53	0.73	2.27	3.09	74.90	1.50	0.77
60	0.2410	94.900	67.9	4.0	1.54	0.73	2.27	3.10	74.90	1.50	0.77
61	0.2450	95.500	68.5	4.0	1.55	0.73	2.29	3.11	74.90	1.51	0.78
62	0.2490	95.900	68.9	4.1	1.56	0.73	2.29	3.12	74.90	1.51	0.78
63	0.2520	96.500	69.5	4.1	1.57	0.73	2.31	3.14	74.90	1.52	0.79
64	0.2560	96.900	69.9	4.2	1.58	0.73	2.32	3.15	74.90	1.52	0.79
65	0.2610	97.500	70.5	4.3	1.59	0.73	2.33	3.17	74.90	1.53	0.80
66	0.2650	98.000	71.0	4.4	1.60	0.75	2.35	3.14	74.80	1.55	0.80
67	0.2690	98.300	71.3	4.4	1.61	0.75	2.36	3.15	74.80	1.55	0.80
68	0.2730	98.800	71.8	4.5	1.62	0.75	2.37	3.16	74.80	1.56	0.81
69	0.2770	99.200	72.2	4.6	1.63	0.75	2.38	3.17	74.80	1.56	0.81
70	0.2800	99.600	72.6	4.6	1.64	0.75	2.38	3.18	74.80	1.57	0.82
71	0.2840	100.100	73.1	4.7	1.65	0.75	2.39	3.20	74.80	1.57	0.82
72	0.2890	100.300	73.3	4.8	1.65	0.75	2.40	3.20	74.80	1.57	0.82
73	0.2930	100.900	73.9	4.8	1.66	0.75	2.41	3.22	74.80	1.58	0.83
74	0.2970	101.500	74.5	4.9	1.67	0.75	2.42	3.23	74.80	1.59	0.84
75	0.3010	101.500	74.5	5.0	1.67	0.76	2.44	3.19	74.70	1.60	0.84
76	0.3050	102.100	75.1	5.0	1.68	0.76	2.45	3.21	74.70	1.61	0.84
77	0.3090	102.800	75.8	5.1	1.70	0.76	2.46	3.23	74.70	1.61	0.85
78	0.3130	103.200	76.2	5.2	1.71	0.76	2.47	3.24	74.70	1.62	0.85
79	0.3180	103.400	76.4	5.2	1.71	0.76	2.47	3.24	74.70	1.62	0.85
80	0.3220	103.800	76.8	5.3	1.72	0.76	2.48	3.25	74.70	1.62	0.86
81	0.3260	104.000	77.0	5.4	1.72	0.76	2.48	3.25	74.70	1.62	0.86
82	0.3300	104.500	77.5	5.4	1.73	0.76	2.49	3.27	74.70	1.63	0.87
83	0.3340	104.800	77.8	5.5	1.74	0.76	2.50	3.27	74.70	1.63	0.87
84	0.3380	105.200	78.2	5.6	1.74	0.78	2.52	3.24	74.60	1.65	0.87
85	0.3430	105.400	78.4	5.6	1.75	0.78	2.52	3.25	74.60	1.65	0.87
86	0.3470	105.700	78.7	5.7	1.75	0.78	2.53	3.25	74.60	1.65	0.88
87	0.3510	106.100	79.1	5.8	1.76	0.78	2.54	3.26	74.60	1.66	0.88
88	0.3550	106.400	79.4	5.8	1.77	0.78	2.54	3.27	74.60	1.66	0.88
89	0.3590	106.800	79.8	5.9	1.77	0.78	2.55	3.28	74.60	1.66	0.89
90	0.3630	107.100	80.1	6.0	1.78	0.78	2.56	3.29	74.60	1.67	0.89
91	0.3670	107.500	80.5	6.0	1.79	0.78	2.56	3.30	74.60	1.67	0.89
92	0.3710	107.600	80.6	6.1	1.79	0.78	2.56	3.30	74.60	1.67	0.89
93	0.3750	108.000	81.0	6.2	1.79	0.78	2.57	3.31	74.60	1.67	0.90

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
188	0.7560	130.600	103.6	12.5	2.14	0.94	3.08	3.29	73.50	2.01	1.07
189	0.7600	130.700	103.7	12.6	2.14	0.94	3.08	3.29	73.50	2.01	1.07
190	0.7640	130.800	103.8	12.6	2.14	0.94	3.08	3.29	73.50	2.01	1.07
191	0.7680	130.900	103.9	12.7	2.14	0.94	3.08	3.29	73.50	2.01	1.07
192	0.7730	131.000	104.0	12.8	2.14	0.95	3.09	3.25	73.40	2.02	1.07
193	0.7760	131.100	104.1	12.8	2.14	0.95	3.09	3.25	73.40	2.02	1.07
194	0.7800	131.500	104.5	12.9	2.15	0.95	3.10	3.26	73.40	2.02	1.07
195	0.7840	131.700	104.7	13.0	2.15	0.95	3.10	3.26	73.40	2.03	1.08
196	0.7880	131.700	104.7	13.0	2.15	0.95	3.10	3.26	73.40	2.03	1.07
197	0.7920	132.000	105.0	13.1	2.15	0.95	3.10	3.27	73.40	2.03	1.08
198	0.7960	132.000	105.0	13.2	2.15	0.95	3.10	3.27	73.40	2.03	1.08
199	0.8000	132.100	105.1	13.2	2.15	0.95	3.10	3.27	73.40	2.03	1.08
200	0.8040	132.200	105.2	13.3	2.15	0.95	3.10	3.27	73.40	2.03	1.08
201	0.8080	132.300	105.3	13.4	2.15	0.95	3.10	3.27	73.40	2.03	1.08
202	0.8120	132.300	105.3	13.4	2.15	0.95	3.10	3.26	73.40	2.03	1.08
203	0.8150	132.300	105.3	13.5	2.15	0.96	3.12	3.23	73.30	2.04	1.08
204	0.8190	132.400	105.4	13.6	2.15	0.96	3.12	3.23	73.30	2.04	1.08
205	0.8230	132.500	105.5	13.6	2.15	0.96	3.12	3.23	73.30	2.04	1.08
206	0.8270	132.900	105.9	13.7	2.16	0.96	3.12	3.24	73.30	2.04	1.08
207	0.8330	133.400	106.4	13.8	2.17	0.96	3.13	3.25	73.30	2.05	1.08
208	0.8350	133.500	106.5	13.8	2.17	0.96	3.13	3.25	73.30	2.05	1.08
209	0.8390	133.600	106.6	13.9	2.17	0.96	3.13	3.25	73.30	2.05	1.08
210	0.8430	133.800	106.8	14.0	2.17	0.98	3.15	3.22	73.20	2.06	1.08
211	0.8470	134.000	107.0	14.0	2.17	0.98	3.15	3.22	73.20	2.07	1.09
212	0.8500	134.400	107.4	14.1	2.18	0.98	3.16	3.23	73.20	2.07	1.09
213	0.8550	134.600	107.6	14.2	2.18	0.98	3.16	3.23	73.20	2.07	1.09
214	0.8590	134.500	107.5	14.2	2.18	0.98	3.16	3.22	73.20	2.07	1.09
215	0.8630	134.500	107.5	14.3	2.18	0.98	3.15	3.22	73.20	2.07	1.09
216	0.8670	135.400	108.4	14.4	2.19	0.98	3.17	3.24	73.20	2.08	1.10
217	0.8710	135.300	108.3	14.4	2.19	0.98	3.17	3.24	73.20	2.07	1.09
218	0.8750	135.600	108.6	14.5	2.19	0.98	3.17	3.24	73.20	2.08	1.10
219	0.8750	135.600	108.6	14.5	2.19	0.98	3.17	3.24	73.20	2.08	1.10
220	0.8790	136.200	109.2	14.6	2.20	0.98	3.18	3.25	73.20	2.08	1.10
221	0.8830	136.000	109.0	14.6	2.20	0.99	3.19	3.21	73.10	2.09	1.10
222	0.8910	136.500	109.5	14.8	2.20	0.99	3.20	3.22	73.10	2.10	1.10
223	0.8960	136.800	109.8	14.8	2.21	0.99	3.20	3.22	73.10	2.10	1.10
224	0.9000	136.900	109.9	14.9	2.21	0.99	3.20	3.22	73.10	2.10	1.10
225	0.9030	137.400	110.4	15.0	2.22	0.99	3.21	3.23	73.10	2.10	1.11
226	0.9080	137.600	110.6	15.0	2.22	0.99	3.21	3.23	73.10	2.10	1.11

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
141	0.5670	120.900	93.9	9.4	2.01	0.86	2.87	3.33	74.00	1.87	1.00
142	0.5710	120.900	93.9	9.4	2.01	0.86	2.87	3.32	74.00	1.87	1.00
143	0.5750	121.200	94.2	9.5	2.01	0.86	2.88	3.33	74.00	1.87	1.01
144	0.5790	121.300	94.3	9.6	2.01	0.86	2.88	3.33	74.00	1.87	1.01
145	0.5830	121.300	94.3	9.6	2.01	0.86	2.88	3.33	74.00	1.87	1.01
146	0.5870	121.600	94.6	9.7	2.02	0.86	2.88	3.33	74.00	1.87	1.01
147	0.5910	121.700	94.7	9.8	2.02	0.86	2.88	3.34	74.00	1.87	1.01
148	0.5950	121.700	94.7	9.8	2.02	0.86	2.88	3.33	74.00	1.87	1.01
149	0.5990	121.800	94.8	9.9	2.02	0.88	2.90	3.30	73.90	1.89	1.01
150	0.6030	122.100	95.1	10.0	2.02	0.88	2.90	3.30	73.90	1.89	1.01
151	0.6070	122.200	95.2	10.0	2.02	0.88	2.90	3.30	73.90	1.89	1.01
152	0.6110	122.800	95.8	10.1	2.03	0.88	2.91	3.32	73.90	1.90	1.02
153	0.6125	122.700	95.7	10.1	2.03	0.88	2.91	3.31	73.90	1.89	1.02
154	0.6190	123.100	96.1	10.2	2.04	0.88	2.92	3.32	73.90	1.90	1.02
155	0.6220	123.000	96.0	10.3	2.03	0.88	2.91	3.32	73.90	1.90	1.02
156	0.6270	123.400	96.4	10.4	2.04	0.89	2.93	3.29	73.80	1.91	1.02
157	0.6310	123.400	96.4	10.4	2.04	0.89	2.93	3.28	73.80	1.91	1.02
158	0.6350	123.500	96.5	10.5	2.04	0.89	2.93	3.28	73.80	1.91	1.02
159	0.6390	123.800	96.8	10.6	2.04	0.89	2.94	3.29	73.80	1.91	1.02
160	0.6430	124.000	97.0	10.6	2.05	0.89	2.94	3.29	73.80	1.92	1.02
161	0.6470	124.100	97.1	10.7	2.05	0.89	2.94	3.29	73.80	1.92	1.02
162	0.6510	124.300	97.3	10.8	2.05	0.89	2.94	3.30	73.80	1.92	1.03
163	0.6550	124.600	97.6	10.8	2.06	0.89	2.95	3.30	73.80	1.92	1.03
164	0.6590	124.700	97.7	10.9	2.06	0.89	2.95	3.30	73.80	1.92	1.03
165	0.6630	125.100	98.1	11.0	2.06	0.89	2.96	3.31	73.80	1.92	1.03
166	0.6670	125.300	98.3	11.0	2.07	0.91	2.97	3.28	73.70	1.94	1.03
167	0.6710	125.700	98.7	11.1	2.07	0.91	2.98	3.28	73.70	1.94	1.04
168	0.6750	126.100	99.1	11.2	2.08	0.91	2.99	3.29	73.70	1.95	1.04
169	0.6790	126.300	99.3	11.2	2.08	0.91	2.99	3.29	73.70	1.95	1.04
170	0.6830	126.400	99.4	11.3	2.08	0.91	2.99	3.29	73.70	1.95	1.04
171	0.6870	126.900	99.9	11.4	2.09	0.91	3.00	3.30	73.70	1.95	1.05
172	0.6910	127.200	100.2	11.4	2.10	0.91	3.00	3.31	73.70	1.96	1.05
173	0.6950	127.600	100.6	11.5	2.10	0.91	3.01	3.32	73.70	1.96	1.05
174	0.6990	127.800	100.8	11.6	2.10	0.92	3.03	3.28	73.60	1.97	1.05
175	0.7030	128.300	101.3	11.6	2.11	0.92	3.04	3.29	73.60	1.98	1.06
176	0.7070	128.500	101.5	11.7	2.12	0.92	3.04	3.30	73.60	1.98	1.06
177	0.7120	128.500	101.5	11.8	2.11	0.92	3.04	3.29	73.60	1.98	1.06
178	0.7160	128.600	101.6	11.8	2.11	0.92	3.04	3.29	73.60	1.98	1.06
179	0.7200	128.500	101.5	11.9	2.11	0.92	3.03	3.29	73.60	1.98	1.06
180	0.7230	129.000	102.0	12.0	2.12	0.92	3.04	3.30	73.60	1.98	1.06
181	0.7270	129.400	102.4	12.0	2.13	0.92	3.05	3.31	73.60	1.99	1.06
182	0.7310	129.400	102.4	12.1	2.13	0.92	3.05	3.31	73.60	1.98	1.06
183	0.7360	129.600	102.6	12.2	2.13	0.92	3.05	3.31	73.60	1.99	1.06
184	0.7440	130.000	103.0	12.3	2.13	0.94	3.07	3.28	73.50	2.00	1.07
185	0.7440	130.000	103.0	12.3	2.13	0.94	3.07	3.28	73.50	2.00	1.07
186	0.7480	130.100	103.1	12.4	2.13	0.94	3.07	3.28	73.50	2.00	1.07
187	0.7520	130.300	103.3	12.4	2.14	0.94	3.07	3.28	73.50	2.00	1.07

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
26	0.1040	139.900	121.9	1.7	2.86	1.40	4.26	3.05	75.30	2.83	1.43
27	0.1070	141.100	123.1	1.8	2.89	1.37	4.25	3.11	75.50	2.81	1.44
28	0.1120	142.800	124.8	1.8	2.92	1.37	4.29	3.14	75.50	2.83	1.46
29	0.1160	144.800	126.8	1.9	2.97	1.35	4.32	3.19	75.60	2.84	1.48
30	0.1200	146.400	128.4	2.0	3.00	1.34	4.34	3.24	75.70	2.84	1.50
31	0.1240	147.800	129.8	2.0	3.03	1.32	4.36	3.29	75.80	2.84	1.52
32	0.1280	149.300	131.3	2.1	3.07	1.31	4.38	3.34	75.90	2.84	1.53
33	0.1320	150.500	132.5	2.2	3.09	1.31	4.40	3.36	75.90	2.86	1.55
34	0.1360	152.700	134.7	2.2	3.14	1.30	4.44	3.42	76.00	2.87	1.57
35	0.1400	153.900	135.9	2.3	3.17	1.28	4.45	3.47	76.10	2.87	1.58
36	0.1440	155.600	137.6	2.4	3.21	1.27	4.47	3.53	76.20	2.87	1.60
37	0.1480	156.900	138.9	2.4	3.23	1.27	4.50	3.55	76.20	2.88	1.62
38	0.1520	158.400	140.4	2.5	3.27	1.27	4.53	3.58	76.20	2.90	1.63
39	0.1560	159.700	141.7	2.6	3.29	1.25	4.55	3.63	76.30	2.90	1.65
40	0.1600	160.600	142.6	2.6	3.31	1.25	4.57	3.64	76.30	2.91	1.66
41	0.1640	162.100	144.1	2.7	3.35	1.24	4.58	3.70	76.40	2.91	1.67
42	0.1680	163.200	145.2	2.8	3.37	1.24	4.61	3.72	76.40	2.92	1.68
43	0.1720	164.700	146.7	2.8	3.40	1.24	4.64	3.75	76.40	2.94	1.70
44	0.1760	165.700	147.7	2.9	3.42	1.22	4.65	3.80	76.50	2.94	1.71
45	0.1800	166.500	148.5	3.0	3.44	1.22	4.66	3.81	76.50	2.94	1.72
46	0.1840	167.700	149.7	3.0	3.46	1.21	4.67	3.86	76.60	2.94	1.73
47	0.1880	168.600	150.6	3.1	3.48	1.21	4.69	3.88	76.60	2.95	1.74
48	0.1920	169.700	151.7	3.2	3.51	1.21	4.71	3.90	76.60	2.96	1.75
49	0.1960	170.700	152.7	3.2	3.53	1.21	4.74	3.92	76.60	2.97	1.76
50	0.2010	171.800	153.8	3.3	3.55	1.21	4.76	3.93	76.60	2.98	1.77
51	0.2040	172.600	154.6	3.4	3.57	1.20	4.76	3.98	76.70	2.98	1.78
52	0.2090	173.700	155.7	3.4	3.59	1.20	4.78	4.00	76.70	2.99	1.79
53	0.2130	174.900	156.9	3.5	3.61	1.20	4.81	4.02	76.70	3.00	1.81
54	0.2170	175.500	157.5	3.6	3.62	1.18	4.80	4.07	76.80	2.99	1.81
55	0.2210	176.300	158.3	3.6	3.64	1.18	4.82	4.08	76.80	3.00	1.82
56	0.2250	177.300	159.3	3.7	3.66	1.18	4.84	4.10	76.80	3.01	1.83
57	0.2290	178.000	160.0	3.8	3.67	1.18	4.85	4.11	76.80	3.02	1.84
58	0.2330	178.900	160.9	3.8	3.69	1.18	4.87	4.13	76.80	3.03	1.85
59	0.2370	179.600	161.6	3.9	3.71	1.18	4.89	4.14	76.80	3.03	1.85
60	0.2400	180.500	162.5	4.0	3.72	1.18	4.90	4.15	76.80	3.04	1.86
61	0.2450	181.400	163.4	4.0	3.74	1.18	4.92	4.17	76.80	3.05	1.87
62	0.2480	182.200	164.2	4.1	3.76	1.18	4.94	4.18	76.80	3.06	1.88
63	0.2520	183.100	165.1	4.1	3.78	1.18	4.96	4.20	76.80	3.07	1.89
64	0.2560	183.900	165.9	4.2	3.79	1.18	4.97	4.21	76.80	3.08	1.90
65	0.2600	184.200	166.2	4.3	3.80	1.18	4.98	4.21	76.80	3.08	1.90
66	0.2640	185.100	167.1	4.3	3.81	1.17	4.98	4.27	76.90	3.07	1.91
67	0.2680	186.000	168.0	4.4	3.83	1.17	5.00	4.28	76.90	3.08	1.92
68	0.2720	186.700	168.7	4.5	3.84	1.17	5.01	4.30	76.90	3.09	1.92
69	0.2760	187.500	169.5	4.5	3.86	1.17	5.03	4.31	76.90	3.10	1.93
70	0.2790	188.100	170.1	4.6	3.87	1.17	5.04	4.32	76.90	3.10	1.94
71	0.2840	189.000	171.0	4.7	3.89	1.18	5.07	4.29	76.80	3.13	1.94
72	0.2880	189.000	171.0	4.7	3.89	1.18	5.07	4.29	76.80	3.12	1.94

Parameters for Specimen No. 2

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	217.920			1259.150
Moisture content: Dry soil+tare, gms.	187.620			969.120
Moisture content: Tare, gms.	83.690			85.630
Moisture, %	29.2	33.8	28.4	32.8
Moist specimen weight, gms.	1193.09			
Diameter, in.	2.852	2.847	2.772	
Area, in.²	6.388	6.366	6.035	
Height, in.	6.221	6.210	6.049	
Net decrease in height, in.		0.011	0.161	
Wet density, pcf	114.4	119.1	123.8	
Dry density, pcf	88.6	89.0	96.4	
Void ratio	0.9387	0.9285	0.7809	
Saturation, %	85.4	100.0	100.0	

Test Readings for Specimen No. 2

Consolidation cell pressure = 85.00 psi (12.24 ksf)
Consolidation back pressure = 60.00 psi (8.64 ksf)
Consolidation effective confining stress = 3.60 ksf
Strain rate, in./min. = 0.004
Fail. Stress = 3.87 ksf **at reading no.** 70
Ult. Stress = 4.56 ksf **at reading no.** 229

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0010	18.000	0.0	0.0	0.00	3.60	3.60	1.00	60.00	3.60	0.00
1	0.0050	49.300	31.3	0.1	0.75	2.61	3.35	1.29	66.90	2.98	0.37
2	0.0090	62.400	44.4	0.1	1.06	2.42	3.48	1.44	68.20	2.95	0.53
3	0.0130	70.500	52.5	0.2	1.25	2.29	3.54	1.55	69.10	2.91	0.63
4	0.0170	77.200	59.2	0.3	1.41	2.19	3.60	1.64	69.80	2.89	0.70
5	0.0210	82.600	64.6	0.3	1.54	2.09	3.62	1.74	70.50	2.86	0.77
6	0.0250	87.200	69.2	0.4	1.64	2.03	3.67	1.81	70.90	2.85	0.82
7	0.0290	91.100	73.1	0.5	1.74	1.96	3.69	1.89	71.40	2.83	0.87
8	0.0330	95.000	77.0	0.5	1.83	1.90	3.73	1.96	71.80	2.81	0.91
9	0.0360	98.400	80.4	0.6	1.91	1.84	3.75	2.03	72.20	2.80	0.95
10	0.0410	102.000	84.0	0.7	1.99	1.80	3.79	2.11	72.50	2.80	1.00
11	0.0440	104.800	86.8	0.7	2.06	1.76	3.81	2.17	72.80	2.78	1.03
12	0.0490	108.000	90.0	0.8	2.13	1.73	3.86	2.23	73.00	2.79	1.07
13	0.0520	110.700	92.7	0.8	2.19	1.66	3.85	2.32	73.50	2.75	1.10
14	0.0560	113.500	95.5	0.9	2.26	1.66	3.91	2.36	73.50	2.78	1.13
15	0.0600	116.100	98.1	1.0	2.32	1.63	3.95	2.42	73.70	2.79	1.16
16	0.0640	118.700	100.7	1.0	2.38	1.60	3.98	2.49	73.90	2.79	1.19
17	0.0680	121.000	103.0	1.1	2.43	1.57	4.00	2.55	74.10	2.78	1.22
18	0.0720	123.300	105.3	1.2	2.48	1.54	4.02	2.61	74.30	2.78	1.24
19	0.0760	125.800	107.8	1.2	2.54	1.53	4.07	2.66	74.40	2.80	1.27
20	0.0800	127.800	109.8	1.3	2.59	1.50	4.08	2.73	74.60	2.79	1.29
21	0.0830	129.800	111.8	1.4	2.63	1.48	4.11	2.77	74.70	2.80	1.32
22	0.0880	131.900	113.9	1.4	2.68	1.45	4.13	2.84	74.90	2.79	1.34
23	0.0910	133.900	115.9	1.5	2.72	1.44	4.16	2.89	75.00	2.80	1.36
24	0.0960	135.800	117.8	1.6	2.77	1.43	4.19	2.94	75.10	2.81	1.38
25	0.0990	137.700	119.7	1.6	2.81	1.41	4.22	2.99	75.20	2.82	1.40

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
120	0.4780	214.200	196.2	7.9	4.31	1.25	5.57	4.44	76.30	3.41	2.16
121	0.4820	215.000	197.0	8.0	4.33	1.27	5.59	4.41	76.20	3.43	2.16
122	0.4860	215.500	197.5	8.0	4.33	1.27	5.60	4.42	76.20	3.43	2.17
123	0.4900	215.900	197.9	8.1	4.34	1.27	5.61	4.43	76.20	3.44	2.17
124	0.4940	216.200	198.2	8.2	4.34	1.27	5.61	4.43	76.20	3.44	2.17
125	0.4980	216.500	198.5	8.2	4.35	1.27	5.61	4.43	76.20	3.44	2.17
126	0.5020	217.200	199.2	8.3	4.36	1.27	5.63	4.44	76.20	3.45	2.18
127	0.5060	217.700	199.7	8.3	4.37	1.28	5.65	4.41	76.10	3.47	2.18
128	0.5110	217.800	199.8	8.4	4.37	1.28	5.65	4.41	76.10	3.46	2.18
129	0.5140	218.600	200.6	8.5	4.38	1.28	5.66	4.42	76.10	3.47	2.19
130	0.5190	219.200	201.2	8.6	4.39	1.28	5.67	4.43	76.10	3.48	2.19
131	0.5220	219.400	201.4	8.6	4.39	1.30	5.69	4.39	76.00	3.49	2.20
132	0.5260	219.800	201.8	8.7	4.40	1.30	5.69	4.39	76.00	3.49	2.20
133	0.5300	220.200	202.2	8.7	4.40	1.30	5.70	4.40	76.00	3.50	2.20
134	0.5340	220.700	202.7	8.8	4.41	1.31	5.72	4.37	75.90	3.52	2.21
135	0.5390	220.800	202.8	8.9	4.41	1.31	5.72	4.36	75.90	3.51	2.20
136	0.5420	221.400	203.4	8.9	4.42	1.31	5.73	4.37	75.90	3.52	2.21
137	0.5470	221.900	203.9	9.0	4.43	1.31	5.74	4.38	75.90	3.52	2.21
138	0.5500	222.100	204.1	9.1	4.43	1.31	5.74	4.38	75.90	3.52	2.21
139	0.5550	222.800	204.8	9.2	4.44	1.31	5.75	4.39	75.90	3.53	2.22
140	0.5580	223.100	205.1	9.2	4.44	1.31	5.75	4.39	75.90	3.53	2.22
141	0.5630	223.500	205.5	9.3	4.45	1.31	5.76	4.39	75.90	3.53	2.22
142	0.5670	223.900	205.9	9.4	4.45	1.32	5.78	4.36	75.80	3.55	2.23
143	0.5710	224.100	206.1	9.4	4.45	1.32	5.78	4.36	75.80	3.55	2.23
144	0.5750	224.700	206.7	9.5	4.46	1.32	5.79	4.37	75.80	3.56	2.23
145	0.5790	225.400	207.4	9.6	4.48	1.34	5.81	4.34	75.70	3.58	2.24
146	0.5830	225.500	207.5	9.6	4.47	1.34	5.81	4.34	75.70	3.58	2.24
147	0.5870	225.700	207.7	9.7	4.48	1.34	5.81	4.34	75.70	3.58	2.24
148	0.5910	226.200	208.2	9.8	4.48	1.34	5.82	4.35	75.70	3.58	2.24
149	0.5950	226.600	208.6	9.8	4.49	1.34	5.83	4.35	75.70	3.58	2.24
150	0.5990	226.700	208.7	9.9	4.49	1.34	5.83	4.35	75.70	3.58	2.24
151	0.6030	227.200	209.2	10.0	4.49	1.35	5.85	4.32	75.60	3.60	2.25
152	0.6070	227.500	209.5	10.0	4.50	1.35	5.85	4.32	75.60	3.60	2.25
153	0.6110	227.800	209.8	10.1	4.50	1.35	5.85	4.33	75.60	3.60	2.25
154	0.6150	228.000	210.0	10.2	4.50	1.37	5.87	4.29	75.50	3.62	2.25
155	0.6200	228.800	210.8	10.2	4.52	1.37	5.88	4.30	75.50	3.63	2.26
156	0.6240	228.700	210.7	10.3	4.51	1.37	5.88	4.30	75.50	3.62	2.25
157	0.6280	229.100	211.1	10.4	4.51	1.37	5.88	4.30	75.50	3.63	2.26
158	0.6320	229.700	211.7	10.4	4.52	1.37	5.89	4.31	75.50	3.63	2.26
159	0.6360	229.600	211.6	10.5	4.52	1.37	5.89	4.30	75.50	3.63	2.26
160	0.6400	230.000	212.0	10.6	4.52	1.38	5.91	4.27	75.40	3.64	2.26
161	0.6440	230.600	212.6	10.6	4.53	1.38	5.92	4.28	75.40	3.65	2.27
162	0.6480	231.100	213.1	10.7	4.54	1.38	5.92	4.28	75.40	3.65	2.27
163	0.6520	230.900	212.9	10.8	4.53	1.38	5.92	4.28	75.40	3.65	2.27
164	0.6550	231.700	213.7	10.8	4.55	1.40	5.94	4.26	75.30	3.67	2.27
165	0.6590	232.000	214.0	10.9	4.55	1.40	5.95	4.26	75.30	3.67	2.28
166	0.6630	232.500	214.5	10.9	4.56	1.40	5.95	4.26	75.30	3.68	2.28

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
73	0.2920	190.100	172.1	4.8	3.91	1.18	5.09	4.31	76.80	3.14	1.95
74	0.2950	190.600	172.6	4.9	3.92	1.18	5.10	4.32	76.80	3.14	1.96
75	0.3000	191.400	173.4	4.9	3.93	1.17	5.10	4.37	76.90	3.13	1.97
76	0.3030	192.200	174.2	5.0	3.95	1.17	5.12	4.39	76.90	3.14	1.97
77	0.3070	192.700	174.7	5.1	3.96	1.18	5.14	4.35	76.80	3.16	1.98
78	0.3110	193.200	175.2	5.1	3.97	1.18	5.15	4.36	76.80	3.16	1.98
79	0.3150	193.500	175.5	5.2	3.97	1.18	5.15	4.36	76.80	3.17	1.99
80	0.3190	194.500	176.5	5.3	3.99	1.18	5.17	4.38	76.80	3.18	1.99
81	0.3230	195.000	177.0	5.3	4.00	1.18	5.18	4.39	76.80	3.18	2.00
82	0.3217	195.500	177.5	5.3	4.01	1.18	5.19	4.40	76.80	3.19	2.01
83	0.3310	196.000	178.0	5.5	4.02	1.18	5.20	4.40	76.80	3.19	2.01
84	0.3350	196.400	178.4	5.5	4.02	1.18	5.20	4.41	76.80	3.19	2.01
85	0.3390	197.100	179.1	5.6	4.03	1.18	5.22	4.42	76.80	3.20	2.02
86	0.3430	198.000	180.0	5.7	4.05	1.18	5.23	4.43	76.80	3.21	2.03
87	0.3470	198.500	180.5	5.7	4.06	1.18	5.24	4.44	76.80	3.21	2.03
88	0.3510	198.900	180.9	5.8	4.07	1.18	5.25	4.44	76.80	3.21	2.03
89	0.3550	199.300	181.3	5.9	4.07	1.20	5.27	4.41	76.70	3.23	2.04
90	0.3590	199.900	181.9	5.9	4.08	1.20	5.28	4.42	76.70	3.24	2.04
91	0.3630	200.600	182.6	6.0	4.10	1.20	5.29	4.43	76.70	3.24	2.05
92	0.3670	201.000	183.0	6.1	4.10	1.20	5.30	4.43	76.70	3.25	2.05
93	0.3710	201.700	183.7	6.1	4.12	1.20	5.31	4.44	76.70	3.25	2.06
94	0.3750	202.100	184.1	6.2	4.12	1.20	5.32	4.45	76.70	3.26	2.06
95	0.3790	202.600	184.6	6.2	4.13	1.21	5.34	4.41	76.60	3.27	2.06
96	0.3830	203.100	185.1	6.3	4.14	1.21	5.35	4.42	76.60	3.28	2.07
97	0.3887	203.700	185.7	6.4	4.15	1.21	5.36	4.43	76.60	3.28	2.07
98	0.3910	204.100	186.1	6.4	4.15	1.21	5.36	4.43	76.60	3.29	2.08
99	0.3960	204.700	186.7	6.5	4.16	1.21	5.37	4.44	76.60	3.29	2.08
100	0.3990	204.700	186.7	6.6	4.16	1.21	5.37	4.44	76.60	3.29	2.08
101	0.4040	205.600	187.6	6.7	4.18	1.21	5.39	4.45	76.60	3.30	2.09
102	0.4070	205.700	187.7	6.7	4.18	1.21	5.39	4.45	76.60	3.30	2.09
103	0.4120	206.400	188.4	6.8	4.19	1.22	5.41	4.42	76.50	3.32	2.09
104	0.4160	207.000	189.0	6.9	4.20	1.22	5.42	4.43	76.50	3.32	2.10
105	0.4200	207.200	189.2	6.9	4.20	1.22	5.43	4.43	76.50	3.32	2.10
106	0.4240	207.600	189.6	7.0	4.21	1.22	5.43	4.44	76.50	3.33	2.10
107	0.4270	208.100	190.1	7.0	4.22	1.22	5.44	4.44	76.50	3.33	2.11
108	0.4320	208.700	190.7	7.1	4.23	1.22	5.45	4.45	76.50	3.34	2.11
109	0.4350	209.100	191.1	7.2	4.23	1.22	5.46	4.46	76.50	3.34	2.12
110	0.4400	209.600	191.6	7.3	4.24	1.24	5.48	4.42	76.40	3.36	2.12
111	0.4430	209.800	191.8	7.3	4.24	1.24	5.48	4.43	76.40	3.36	2.12
112	0.4480	210.200	192.2	7.4	4.25	1.24	5.49	4.43	76.40	3.36	2.12
113	0.4510	210.600	192.6	7.4	4.25	1.24	5.49	4.43	76.40	3.37	2.13
114	0.4540	211.200	193.2	7.5	4.26	1.24	5.50	4.44	76.40	3.37	2.13
115	0.4590	211.800	193.8	7.6	4.27	1.24	5.51	4.45	76.40	3.38	2.14
116	0.4630	212.700	194.7	7.6	4.29	1.25	5.54	4.42	76.30	3.40	2.15
117	0.4670	212.900	194.9	7.7	4.29	1.25	5.54	4.43	76.30	3.40	2.15
118	0.4710	213.600	195.6	7.8	4.30	1.25	5.56	4.44	76.30	3.41	2.15
119	0.4740	213.900	195.9	7.8	4.31	1.25	5.56	4.44	76.30	3.41	2.15

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
214	0.8570	242.900	224.9	14.2	4.61	1.58	6.19	3.91	74.00	3.89	2.30
215	0.8590	242.900	224.9	14.2	4.61	1.58	6.19	3.91	74.00	3.89	2.30
216	0.8630	242.800	224.8	14.3	4.60	1.58	6.18	3.90	74.00	3.88	2.30
217	0.8670	242.900	224.9	14.3	4.60	1.60	6.20	3.88	73.90	3.90	2.30
218	0.8710	243.300	225.3	14.4	4.60	1.60	6.20	3.88	73.90	3.90	2.30
219	0.8750	243.400	225.4	14.4	4.60	1.60	6.20	3.88	73.90	3.90	2.30
220	0.8790	243.300	225.3	14.5	4.60	1.61	6.21	3.85	73.80	3.91	2.30
221	0.8830	243.400	225.4	14.6	4.59	1.61	6.21	3.85	73.80	3.91	2.30
222	0.8870	243.400	225.4	14.6	4.59	1.61	6.20	3.85	73.80	3.91	2.30
223	0.8910	243.300	225.3	14.7	4.58	1.61	6.20	3.84	73.80	3.91	2.29
224	0.8950	243.000	225.0	14.8	4.58	1.63	6.20	3.81	73.70	3.91	2.29
225	0.8990	243.300	225.3	14.8	4.58	1.63	6.20	3.81	73.70	3.92	2.29
226	0.9030	243.200	225.2	14.9	4.57	1.64	6.21	3.79	73.60	3.93	2.29
227	0.9070	243.200	225.2	15.0	4.57	1.64	6.21	3.78	73.60	3.93	2.28
228	0.9110	242.900	224.9	15.0	4.56	1.64	6.20	3.78	73.60	3.92	2.28
229	0.9120	242.900	224.9	15.1	4.56	1.64	6.20	3.78	73.60	3.92	2.28

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
167	0.6670	232.700	214.7	11.0	4.56	1.40	5.96	4.26	75.30	3.68	2.28
168	0.6710	233.100	215.1	11.1	4.56	1.40	5.96	4.27	75.30	3.68	2.28
169	0.6750	233.200	215.2	11.1	4.56	1.41	5.97	4.23	75.20	3.69	2.28
170	0.6780	233.800	215.8	11.2	4.57	1.41	5.98	4.24	75.20	3.70	2.29
171	0.6830	233.800	215.8	11.3	4.57	1.41	5.98	4.24	75.20	3.70	2.28
172	0.6860	234.300	216.3	11.3	4.58	1.43	6.00	4.21	75.10	3.71	2.29
173	0.6910	234.700	216.7	11.4	4.58	1.43	6.01	4.21	75.10	3.72	2.29
174	0.6940	234.800	216.8	11.5	4.58	1.43	6.01	4.21	75.10	3.72	2.29
175	0.6980	235.200	217.2	11.5	4.59	1.43	6.01	4.22	75.10	3.72	2.29
176	0.7020	235.500	217.5	11.6	4.59	1.43	6.01	4.22	75.10	3.72	2.29
177	0.7060	236.000	218.0	11.7	4.60	1.43	6.02	4.22	75.10	3.72	2.30
178	0.7100	235.900	217.9	11.7	4.59	1.44	6.03	4.19	75.00	3.73	2.29
179	0.7140	236.000	218.0	11.8	4.59	1.44	6.03	4.19	75.00	3.73	2.29
180	0.7180	236.600	218.6	11.9	4.60	1.44	6.04	4.19	75.00	3.74	2.30
181	0.7220	236.400	218.4	11.9	4.59	1.45	6.04	4.16	74.90	3.75	2.29
182	0.7260	236.600	218.6	12.0	4.59	1.45	6.05	4.16	74.90	3.75	2.30
183	0.7300	237.000	219.0	12.1	4.60	1.45	6.05	4.16	74.90	3.75	2.30
184	0.7350	237.300	219.3	12.1	4.60	1.45	6.05	4.16	74.90	3.75	2.30
185	0.7380	237.800	219.8	12.2	4.61	1.45	6.06	4.17	74.90	3.76	2.30
186	0.7430	237.900	219.9	12.3	4.60	1.47	6.07	4.13	74.80	3.77	2.30
187	0.7460	238.100	220.1	12.3	4.60	1.47	6.07	4.14	74.80	3.77	2.30
188	0.7510	238.700	220.7	12.4	4.61	1.47	6.08	4.14	74.80	3.78	2.31
189	0.7550	238.700	220.7	12.5	4.61	1.48	6.09	4.11	74.70	3.79	2.30
190	0.7580	239.200	221.2	12.5	4.62	1.48	6.10	4.11	74.70	3.79	2.31
191	0.7630	239.300	221.3	12.6	4.62	1.48	6.10	4.11	74.70	3.79	2.31
192	0.7670	239.600	221.6	12.7	4.62	1.48	6.10	4.11	74.70	3.79	2.31
193	0.7710	239.900	221.9	12.7	4.62	1.48	6.10	4.12	74.70	3.79	2.31
194	0.7750	240.100	222.1	12.8	4.62	1.50	6.12	4.09	74.60	3.81	2.31
195	0.7790	240.400	222.4	12.9	4.62	1.50	6.12	4.09	74.60	3.81	2.31
196	0.7830	240.400	222.4	12.9	4.62	1.50	6.12	4.09	74.60	3.81	2.31
197	0.7870	240.600	222.6	13.0	4.62	1.51	6.13	4.06	74.50	3.82	2.31
198	0.7910	240.900	222.9	13.1	4.62	1.51	6.14	4.06	74.50	3.82	2.31
199	0.7950	241.000	223.0	13.1	4.62	1.51	6.13	4.06	74.50	3.82	2.31
200	0.7990	241.400	223.4	13.2	4.63	1.51	6.14	4.06	74.50	3.83	2.31
201	0.8030	241.200	223.2	13.3	4.62	1.53	6.15	4.03	74.40	3.84	2.31
202	0.8080	241.600	223.6	13.3	4.62	1.53	6.15	4.03	74.40	3.84	2.31
203	0.8110	242.000	224.0	13.4	4.63	1.53	6.16	4.03	74.40	3.84	2.31
204	0.8160	241.800	223.8	13.5	4.62	1.54	6.16	4.00	74.30	3.85	2.31
205	0.8200	242.100	224.1	13.5	4.62	1.54	6.16	4.00	74.30	3.85	2.31
206	0.8240	241.800	223.8	13.6	4.61	1.54	6.15	3.99	74.30	3.85	2.31
207	0.8280	242.000	224.0	13.7	4.61	1.54	6.15	3.99	74.30	3.85	2.31
208	0.8310	242.500	224.5	13.7	4.62	1.54	6.16	4.00	74.30	3.85	2.31
209	0.8360	242.300	224.3	13.8	4.61	1.56	6.17	3.97	74.20	3.86	2.31
210	0.8400	242.500	224.5	13.9	4.61	1.56	6.17	3.97	74.20	3.86	2.31
211	0.8440	242.600	224.6	13.9	4.61	1.57	6.18	3.94	74.10	3.88	2.31
212	0.8520	242.700	224.7	14.1	4.61	1.57	6.18	3.94	74.10	3.87	2.30
213	0.8550	242.500	224.5	14.1	4.60	1.57	6.17	3.93	74.10	3.87	2.30

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
26	0.1010	240.900	220.3	1.7	5.11	2.88	7.99	2.77	80.00	5.43	2.55
27	0.1050	243.300	222.7	1.7	5.16	2.84	8.00	2.82	80.30	5.42	2.58
28	0.1090	245.800	225.2	1.8	5.21	2.81	8.02	2.86	80.50	5.41	2.61
29	0.1130	248.000	227.4	1.9	5.26	2.78	8.04	2.89	80.70	5.41	2.63
30	0.1170	250.700	230.1	1.9	5.32	2.75	8.07	2.93	80.90	5.41	2.66
31	0.1210	252.600	232.0	2.0	5.36	2.72	8.08	2.97	81.10	5.40	2.68
32	0.1250	254.900	234.3	2.1	5.41	2.71	8.12	3.00	81.20	5.41	2.70
33	0.1280	257.200	236.6	2.1	5.46	2.68	8.14	3.04	81.40	5.41	2.73
34	0.1320	259.400	238.8	2.2	5.51	2.66	8.17	3.07	81.50	5.42	2.75
35	0.1360	261.800	241.2	2.2	5.56	2.65	8.21	3.10	81.60	5.43	2.78
36	0.1400	263.600	243.0	2.3	5.60	2.62	8.22	3.14	81.80	5.42	2.80
37	0.1440	265.600	245.0	2.4	5.64	2.61	8.24	3.16	81.90	5.43	2.82
38	0.1480	267.400	246.8	2.4	5.68	2.59	8.27	3.19	82.00	5.43	2.84
39	0.1520	269.200	248.6	2.5	5.71	2.58	8.29	3.22	82.10	5.43	2.86
40	0.1560	270.900	250.3	2.6	5.75	2.56	8.31	3.24	82.20	5.44	2.87
41	0.1600	273.000	252.4	2.6	5.79	2.53	8.33	3.29	82.40	5.43	2.90
42	0.1640	274.700	254.1	2.7	5.83	2.53	8.36	3.30	82.40	5.45	2.91
43	0.1680	276.700	256.1	2.8	5.87	2.53	8.40	3.32	82.40	5.47	2.93
44	0.1720	278.600	258.0	2.8	5.91	2.51	8.41	3.36	82.60	5.46	2.95
45	0.1760	280.400	259.8	2.9	5.95	2.49	8.44	3.39	82.70	5.46	2.97
46	0.1800	281.900	261.3	3.0	5.98	2.49	8.47	3.40	82.70	5.48	2.99
47	0.1840	283.400	262.8	3.1	6.01	2.48	8.48	3.43	82.80	5.48	3.00
48	0.1880	285.600	265.0	3.1	6.05	2.46	8.51	3.46	82.90	5.49	3.03
49	0.1920	286.700	266.1	3.2	6.07	2.45	8.52	3.48	83.00	5.48	3.04
50	0.1960	288.200	267.6	3.3	6.10	2.45	8.55	3.49	83.00	5.50	3.05
51	0.2000	289.900	269.3	3.3	6.14	2.45	8.59	3.51	83.00	5.52	3.07
52	0.2040	291.300	270.7	3.4	6.17	2.43	8.60	3.53	83.10	5.52	3.08
53	0.2080	292.900	272.3	3.5	6.20	2.43	8.63	3.55	83.10	5.53	3.10
54	0.2120	294.400	273.8	3.5	6.23	2.43	8.66	3.56	83.10	5.55	3.11
55	0.2160	295.500	274.9	3.6	6.25	2.43	8.68	3.57	83.10	5.56	3.12
56	0.2200	297.100	276.5	3.7	6.28	2.42	8.70	3.60	83.20	5.56	3.14
57	0.2240	298.200	277.6	3.7	6.30	2.42	8.72	3.60	83.20	5.57	3.15
58	0.2280	299.700	279.1	3.8	6.33	2.42	8.75	3.62	83.20	5.58	3.17
59	0.2320	300.900	280.3	3.9	6.35	2.42	8.77	3.63	83.20	5.60	3.18
60	0.2360	302.400	281.8	3.9	6.38	2.40	8.79	3.65	83.30	5.60	3.19
61	0.2400	303.500	282.9	4.0	6.40	2.40	8.81	3.66	83.30	5.61	3.20
62	0.2440	304.600	284.0	4.1	6.42	2.40	8.83	3.67	83.30	5.62	3.21
63	0.2480	306.000	285.4	4.1	6.45	2.40	8.86	3.68	83.30	5.63	3.23
64	0.2510	307.400	286.8	4.2	6.48	2.40	8.88	3.69	83.30	5.64	3.24
65	0.2550	308.400	287.8	4.2	6.50	2.40	8.90	3.70	83.30	5.65	3.25
66	0.2590	309.500	288.9	4.3	6.52	2.40	8.92	3.71	83.30	5.66	3.26
67	0.2630	310.900	290.3	4.4	6.54	2.40	8.95	3.72	83.30	5.68	3.27
68	0.2670	312.700	292.1	4.4	6.58	2.40	8.99	3.74	83.30	5.69	3.29
69	0.2710	313.600	293.0	4.5	6.60	2.40	9.00	3.74	83.30	5.70	3.30
70	0.2750	315.000	294.4	4.6	6.62	2.40	9.03	3.75	83.30	5.72	3.31
71	0.2790	316.300	295.7	4.6	6.65	2.40	9.05	3.76	83.30	5.73	3.32
72	0.2830	317.100	296.5	4.7	6.66	2.40	9.07	3.77	83.30	5.74	3.33

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	217.920			n/a
Moisture content: Dry soil+tare, gms.	187.920			n/a
Moisture content: Tare, gms.	83.690			n/a
Moisture, %	28.8	27.3	25.4	
Moist specimen weight, gms.	1244.19			
Diameter, in.	2.844	2.817	2.789	
Area, in.²	6.353	6.231	6.108	
Height, in.	6.082	6.024	5.965	
Net decrease in height, in.		0.058	0.059	
Wet density, pcf	122.7	124.8	126.7	
Dry density, pcf	95.3	98.0	101.0	
Void ratio	0.8022	0.7510	0.6995	
Saturation, %	98.7	100.0	100.0	

Test Readings for Specimen No. 3

Consolidation cell pressure = 100.00 psi (14.40 ksf)
Consolidation back pressure = 50.00 psi (7.20 ksf)
Consolidation effective confining stress = 7.20 ksf
Strain rate, in./min. = 0.004
Fail. Stress = 6.95 ksf **at reading no.** 87
Ult. Stress = 8.07 ksf **at reading no.** 230

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0020	20.600	0.0	0.0	0.00	7.07	7.07	1.00	50.90	7.07	0.00
1	0.0050	72.000	51.4	0.1	1.21	6.05	7.26	1.20	58.00	6.65	0.61
2	0.0090	97.600	77.0	0.1	1.81	5.67	7.49	1.32	60.60	6.58	0.91
3	0.0130	114.700	94.1	0.2	2.21	5.34	7.56	1.41	62.90	6.45	1.11
4	0.0160	128.300	107.7	0.2	2.53	5.05	7.59	1.50	64.90	6.32	1.27
5	0.0200	139.700	119.1	0.3	2.80	4.81	7.61	1.58	66.60	6.21	1.40
6	0.0240	149.300	128.7	0.4	3.02	4.59	7.62	1.66	68.10	6.11	1.51
7	0.0280	158.100	137.5	0.4	3.23	4.41	7.63	1.73	69.40	6.02	1.61
8	0.0310	165.800	145.2	0.5	3.41	4.25	7.65	1.80	70.50	5.95	1.70
9	0.0360	172.700	152.1	0.6	3.57	4.09	7.65	1.87	71.60	5.87	1.78
10	0.0390	178.600	158.0	0.6	3.70	3.96	7.66	1.93	72.50	5.81	1.85
11	0.0430	184.400	163.8	0.7	3.84	3.84	7.68	2.00	73.30	5.76	1.92
12	0.0470	190.000	169.4	0.8	3.96	3.73	7.69	2.06	74.10	5.71	1.98
13	0.0510	194.800	174.2	0.8	4.07	3.63	7.70	2.12	74.80	5.67	2.04
14	0.0550	199.600	179.0	0.9	4.18	3.53	7.71	2.19	75.50	5.62	2.09
15	0.0590	203.800	183.2	1.0	4.28	3.46	7.73	2.24	76.00	5.59	2.14
16	0.0630	208.300	187.7	1.0	4.38	3.37	7.75	2.30	76.60	5.56	2.19
17	0.0670	211.800	191.2	1.1	4.46	3.31	7.77	2.35	77.00	5.54	2.23
18	0.0700	215.900	195.3	1.1	4.55	3.25	7.81	2.40	77.40	5.53	2.28
19	0.0740	219.500	198.9	1.2	4.63	3.18	7.81	2.46	77.90	5.50	2.32
20	0.0760	221.200	200.6	1.2	4.67	3.17	7.84	2.47	78.00	5.50	2.34
21	0.0780	222.700	202.1	1.3	4.70	3.14	7.84	2.50	78.20	5.49	2.35
22	0.0820	226.300	205.7	1.3	4.78	3.08	7.87	2.55	78.60	5.47	2.39
23	0.0860	229.300	208.7	1.4	4.85	3.04	7.89	2.60	78.90	5.46	2.43
24	0.0900	232.500	211.9	1.5	4.92	3.00	7.92	2.64	79.20	5.46	2.46
25	0.0940	235.300	214.7	1.5	4.98	2.95	7.94	2.69	79.50	5.44	2.49

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
120	0.4720	363.700	343.1	7.9	7.45	2.62	10.07	3.84	81.80	6.35	3.73
121	0.4750	364.900	344.3	7.9	7.47	2.62	10.09	3.85	81.80	6.36	3.74
122	0.4790	365.500	344.9	8.0	7.48	2.62	10.10	3.85	81.80	6.36	3.74
123	0.4830	366.900	346.3	8.1	7.51	2.64	10.14	3.85	81.70	6.39	3.75
124	0.4870	367.400	346.8	8.1	7.51	2.64	10.15	3.85	81.70	6.39	3.76
125	0.4910	368.400	347.8	8.2	7.53	2.65	10.18	3.84	81.60	6.41	3.76
126	0.4950	369.000	348.4	8.3	7.53	2.65	10.18	3.84	81.60	6.42	3.77
127	0.4990	369.700	349.1	8.3	7.54	2.66	10.21	3.83	81.50	6.44	3.77
128	0.5030	370.800	350.2	8.4	7.56	2.66	10.23	3.84	81.50	6.45	3.78
129	0.5070	371.200	350.6	8.5	7.57	2.68	10.24	3.82	81.40	6.46	3.78
130	0.5110	372.200	351.6	8.5	7.58	2.68	10.26	3.83	81.40	6.47	3.79
131	0.5140	372.900	352.3	8.6	7.59	2.68	10.27	3.83	81.40	6.47	3.80
132	0.5190	373.500	352.9	8.7	7.60	2.69	10.29	3.82	81.30	6.49	3.80
133	0.5220	374.900	354.3	8.7	7.62	2.71	10.33	3.82	81.20	6.52	3.81
134	0.5260	375.500	354.9	8.8	7.63	2.71	10.34	3.82	81.20	6.52	3.82
135	0.5300	376.300	355.7	8.9	7.64	2.71	10.35	3.82	81.20	6.53	3.82
136	0.5340	377.100	356.5	8.9	7.65	2.72	10.38	3.81	81.10	6.55	3.83
137	0.5380	378.300	357.7	9.0	7.68	2.74	10.41	3.81	81.00	6.57	3.84
138	0.5420	379.200	358.6	9.1	7.69	2.74	10.42	3.81	81.00	6.58	3.84
139	0.5460	379.200	358.6	9.1	7.68	2.74	10.42	3.81	81.00	6.58	3.84
140	0.5500	380.200	359.6	9.2	7.70	2.75	10.45	3.80	80.90	6.60	3.85
141	0.5540	381.000	360.4	9.3	7.71	2.76	10.47	3.79	80.80	6.62	3.86
142	0.5580	381.400	360.8	9.3	7.71	2.76	10.48	3.79	80.80	6.62	3.86
143	0.5630	382.400	361.8	9.4	7.73	2.76	10.49	3.79	80.80	6.63	3.86
144	0.5660	382.600	362.0	9.5	7.73	2.78	10.51	3.78	80.70	6.64	3.86
145	0.5710	383.400	362.8	9.5	7.74	2.79	10.53	3.77	80.60	6.66	3.87
146	0.5740	383.800	363.2	9.6	7.74	2.79	10.53	3.77	80.60	6.66	3.87
147	0.5790	384.300	363.7	9.7	7.74	2.79	10.54	3.77	80.60	6.67	3.87
148	0.5830	385.400	364.8	9.7	7.76	2.79	10.56	3.78	80.60	6.67	3.88
149	0.5860	385.800	365.2	9.8	7.77	2.81	10.57	3.77	80.50	6.69	3.88
150	0.5910	386.400	365.8	9.9	7.77	2.81	10.58	3.77	80.50	6.69	3.89
151	0.5940	387.000	366.4	9.9	7.78	2.82	10.60	3.76	80.40	6.71	3.89
152	0.5990	387.300	366.7	10.0	7.78	2.82	10.60	3.76	80.40	6.71	3.89
153	0.6020	388.400	367.8	10.1	7.80	2.84	10.64	3.75	80.30	6.74	3.90
154	0.6070	388.500	367.9	10.1	7.79	2.84	10.63	3.75	80.30	6.73	3.90
155	0.6100	389.100	368.5	10.2	7.80	2.85	10.65	3.74	80.20	6.75	3.90
156	0.6150	389.700	369.1	10.3	7.81	2.85	10.66	3.74	80.20	6.75	3.90
157	0.6180	390.000	369.4	10.3	7.81	2.87	10.67	3.73	80.10	6.77	3.90
158	0.6220	390.700	370.1	10.4	7.82	2.87	10.68	3.73	80.10	6.77	3.91
159	0.6260	390.900	370.3	10.5	7.82	2.88	10.70	3.71	80.00	6.79	3.91
160	0.6300	391.500	370.9	10.5	7.82	2.89	10.72	3.70	79.90	6.81	3.91
161	0.6340	392.000	371.4	10.6	7.83	2.89	10.72	3.70	79.90	6.81	3.91
162	0.6380	392.500	371.9	10.7	7.83	2.89	10.73	3.71	79.90	6.81	3.92
163	0.6420	393.300	372.7	10.7	7.84	2.91	10.75	3.70	79.80	6.83	3.92
164	0.6460	393.800	373.2	10.8	7.85	2.92	10.77	3.68	79.70	6.85	3.92
165	0.6500	394.700	374.1	10.9	7.86	2.92	10.78	3.69	79.70	6.85	3.93
166	0.6540	394.900	374.3	10.9	7.86	2.94	10.80	3.68	79.60	6.87	3.93

Test Readings for Specimen No. 3

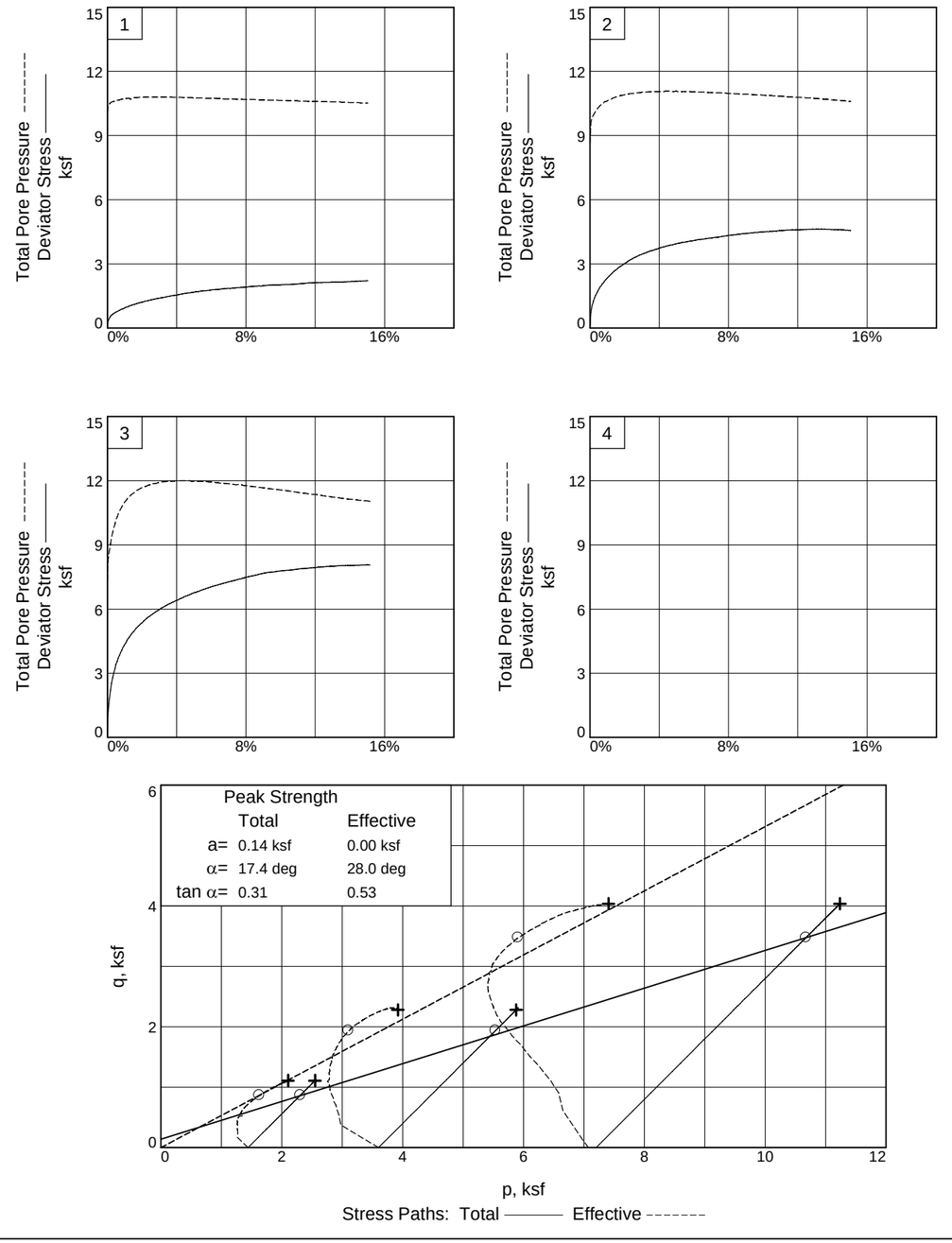
No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
73	0.2870	318.300	297.7	4.8	6.68	2.40	9.09	3.78	83.30	5.75	3.34
74	0.2910	319.600	299.0	4.8	6.71	2.42	9.13	3.77	83.20	5.77	3.35
75	0.2950	320.900	300.3	4.9	6.73	2.42	9.15	3.78	83.20	5.79	3.37
76	0.2980	322.100	301.5	5.0	6.76	2.42	9.17	3.79	83.20	5.80	3.38
77	0.3020	323.000	302.4	5.0	6.77	2.42	9.19	3.80	83.20	5.80	3.39
78	0.3060	323.800	303.2	5.1	6.78	2.43	9.22	3.79	83.10	5.83	3.39
79	0.3100	324.900	304.3	5.2	6.80	2.43	9.24	3.80	83.10	5.84	3.40
80	0.3130	325.700	305.1	5.2	6.82	2.43	9.25	3.80	83.10	5.84	3.41
81	0.3180	326.900	306.3	5.3	6.84	2.43	9.27	3.81	83.10	5.85	3.42
82	0.3210	328.000	307.4	5.3	6.86	2.42	9.28	3.84	83.20	5.85	3.43
83	0.3250	329.100	308.5	5.4	6.88	2.42	9.30	3.84	83.20	5.86	3.44
84	0.3290	330.200	309.6	5.5	6.90	2.43	9.33	3.83	83.10	5.88	3.45
85	0.3330	331.400	310.8	5.5	6.92	2.43	9.35	3.84	83.10	5.89	3.46
86	0.3370	332.200	311.6	5.6	6.93	2.43	9.37	3.85	83.10	5.90	3.47
87	0.3410	333.300	312.7	5.7	6.95	2.43	9.39	3.86	83.10	5.91	3.48
88	0.3440	334.400	313.8	5.7	6.97	2.45	9.42	3.85	83.00	5.93	3.49
89	0.3490	335.200	314.6	5.8	6.99	2.45	9.43	3.85	83.00	5.94	3.49
90	0.3520	336.400	315.8	5.9	7.01	2.46	9.47	3.85	82.90	5.97	3.50
91	0.3570	337.800	317.2	6.0	7.03	2.46	9.50	3.86	82.90	5.98	3.52
92	0.3600	338.400	317.8	6.0	7.04	2.46	9.50	3.86	82.90	5.98	3.52
93	0.3650	339.700	319.1	6.1	7.06	2.48	9.54	3.85	82.80	6.01	3.53
94	0.3680	340.600	320.0	6.1	7.08	2.48	9.56	3.86	82.80	6.02	3.54
95	0.3730	341.700	321.1	6.2	7.10	2.48	9.58	3.87	82.80	6.03	3.55
96	0.3760	342.500	321.9	6.3	7.11	2.49	9.60	3.86	82.70	6.05	3.56
97	0.3810	343.400	322.8	6.4	7.13	2.49	9.62	3.86	82.70	6.05	3.56
98	0.3840	344.200	323.6	6.4	7.14	2.49	9.63	3.87	82.70	6.06	3.57
99	0.3880	345.300	324.7	6.5	7.16	2.51	9.67	3.86	82.60	6.09	3.58
100	0.3930	346.100	325.5	6.6	7.17	2.51	9.68	3.86	82.60	6.09	3.59
101	0.3960	347.300	326.7	6.6	7.19	2.51	9.70	3.87	82.60	6.10	3.60
102	0.4010	348.200	327.6	6.7	7.21	2.52	9.73	3.86	82.50	6.12	3.60
103	0.4040	348.900	328.3	6.7	7.22	2.52	9.74	3.86	82.50	6.13	3.61
104	0.4090	349.700	329.1	6.8	7.23	2.53	9.76	3.85	82.40	6.15	3.61
105	0.4120	350.600	330.0	6.9	7.25	2.53	9.78	3.86	82.40	6.16	3.62
106	0.4170	351.800	331.2	7.0	7.26	2.53	9.80	3.87	82.40	6.17	3.63
107	0.4200	352.400	331.8	7.0	7.27	2.55	9.82	3.85	82.30	6.19	3.64
108	0.4240	353.400	332.8	7.1	7.29	2.55	9.84	3.86	82.30	6.19	3.65
109	0.4280	354.200	333.6	7.1	7.30	2.56	9.87	3.85	82.20	6.21	3.65
110	0.4320	355.100	334.5	7.2	7.32	2.56	9.88	3.85	82.20	6.22	3.66
111	0.4360	355.900	335.3	7.3	7.33	2.56	9.89	3.86	82.20	6.23	3.66
112	0.4400	356.500	335.9	7.3	7.34	2.58	9.91	3.85	82.10	6.25	3.67
113	0.4440	357.800	337.2	7.4	7.36	2.59	9.95	3.84	82.00	6.27	3.68
114	0.4480	358.400	337.8	7.5	7.37	2.58	9.95	3.86	82.10	6.26	3.68
115	0.4520	359.400	338.8	7.5	7.38	2.58	9.96	3.86	82.10	6.27	3.69
116	0.4560	360.400	339.8	7.6	7.40	2.59	9.99	3.86	82.00	6.29	3.70
117	0.4600	361.300	340.7	7.7	7.42	2.59	10.01	3.86	82.00	6.30	3.71
118	0.4640	361.800	341.2	7.7	7.42	2.59	10.01	3.86	82.00	6.30	3.71
119	0.4670	363.000	342.4	7.8	7.44	2.61	10.05	3.86	81.90	6.33	3.72

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
214	0.8440	417.300	396.7	14.1	8.03	3.27	11.30	3.46	77.30	7.28	4.02
215	0.8480	418.100	397.5	14.2	8.04	3.27	11.31	3.46	77.30	7.29	4.02
216	0.8520	418.400	397.8	14.2	8.04	3.27	11.31	3.46	77.30	7.29	4.02
217	0.8550	418.900	398.3	14.3	8.05	3.28	11.33	3.45	77.20	7.31	4.02
218	0.8600	419.400	398.8	14.4	8.05	3.30	11.35	3.44	77.10	7.32	4.02
219	0.8630	419.800	399.2	14.4	8.05	3.30	11.35	3.44	77.10	7.32	4.03
220	0.8680	420.200	399.6	14.5	8.05	3.31	11.36	3.43	77.00	7.34	4.03
221	0.8710	420.300	399.7	14.6	8.05	3.31	11.36	3.43	77.00	7.34	4.03
222	0.8760	421.300	400.7	14.7	8.06	3.31	11.37	3.43	77.00	7.34	4.03
223	0.8790	421.600	401.0	14.7	8.06	3.33	11.39	3.42	76.90	7.36	4.03
224	0.8830	421.600	401.0	14.8	8.06	3.33	11.38	3.42	76.90	7.36	4.03
225	0.8870	422.200	401.6	14.8	8.06	3.34	11.40	3.41	76.80	7.37	4.03
226	0.8910	422.700	402.1	14.9	8.07	3.34	11.41	3.41	76.80	7.37	4.03
227	0.8950	423.400	402.8	15.0	8.07	3.34	11.42	3.42	76.80	7.38	4.04
228	0.8990	423.500	402.9	15.0	8.07	3.36	11.43	3.41	76.70	7.39	4.04
229	0.9030	423.600	403.0	15.1	8.07	3.36	11.42	3.40	76.70	7.39	4.03
230	0.9070	424.300	403.7	15.2	8.07	3.37	11.44	3.40	76.60	7.41	4.04

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
167	0.6570	395.700	375.1	11.0	7.87	2.94	10.81	3.68	79.60	6.87	3.94
168	0.6620	396.300	375.7	11.1	7.88	2.95	10.83	3.67	79.50	6.89	3.94
169	0.6650	396.800	376.2	11.1	7.88	2.95	10.84	3.67	79.50	6.89	3.94
170	0.6690	397.400	376.8	11.2	7.89	2.97	10.86	3.66	79.40	6.91	3.94
171	0.6730	398.000	377.4	11.2	7.90	2.98	10.88	3.65	79.30	6.93	3.95
172	0.6770	398.400	377.8	11.3	7.90	2.98	10.88	3.65	79.30	6.93	3.95
173	0.6810	398.900	378.3	11.4	7.90	2.98	10.88	3.65	79.30	6.93	3.95
174	0.6850	399.300	378.7	11.5	7.91	3.00	10.90	3.64	79.20	6.95	3.95
175	0.6890	399.600	379.0	11.5	7.91	3.00	10.90	3.64	79.20	6.95	3.95
176	0.6930	400.300	379.7	11.6	7.91	3.01	10.92	3.63	79.10	6.97	3.96
177	0.6940	400.300	379.7	11.6	7.91	3.01	10.92	3.63	79.10	6.97	3.96
178	0.6960	400.600	380.0	11.6	7.92	3.01	10.93	3.63	79.10	6.97	3.96
179	0.7000	401.100	380.5	11.7	7.92	3.02	10.94	3.62	79.00	6.98	3.96
180	0.7040	401.600	381.0	11.8	7.93	3.04	10.96	3.61	78.90	7.00	3.96
181	0.7120	403.000	382.4	11.9	7.94	3.04	10.98	3.61	78.90	7.01	3.97
182	0.7160	403.000	382.4	12.0	7.94	3.04	10.97	3.61	78.90	7.01	3.97
183	0.7200	403.900	383.3	12.0	7.95	3.04	10.99	3.62	78.90	7.01	3.97
184	0.7240	404.400	383.8	12.1	7.95	3.05	11.01	3.61	78.80	7.03	3.98
185	0.7280	405.400	384.8	12.2	7.97	3.07	11.03	3.60	78.70	7.05	3.98
186	0.7320	405.400	384.8	12.2	7.96	3.07	11.03	3.60	78.70	7.05	3.98
187	0.7360	406.200	385.6	12.3	7.97	3.08	11.05	3.59	78.60	7.07	3.99
188	0.7400	406.600	386.0	12.4	7.97	3.08	11.06	3.59	78.60	7.07	3.99
189	0.7440	406.900	386.3	12.4	7.97	3.10	11.07	3.58	78.50	7.08	3.99
190	0.7480	407.700	387.1	12.5	7.98	3.10	11.08	3.58	78.50	7.09	3.99
191	0.7520	408.100	387.5	12.6	7.99	3.11	11.10	3.57	78.40	7.10	3.99
192	0.7560	408.800	388.2	12.6	8.00	3.12	11.12	3.56	78.30	7.12	4.00
193	0.7600	409.000	388.4	12.7	7.99	3.12	11.12	3.56	78.30	7.12	4.00
194	0.7640	409.500	388.9	12.8	8.00	3.14	11.14	3.55	78.20	7.14	4.00
195	0.7680	409.900	389.3	12.8	8.00	3.14	11.14	3.55	78.20	7.14	4.00
196	0.7720	410.800	390.2	12.9	8.01	3.15	11.17	3.54	78.10	7.16	4.01
197	0.7760	410.700	390.1	13.0	8.00	3.15	11.16	3.54	78.10	7.16	4.00
198	0.7800	411.300	390.7	13.0	8.01	3.17	11.18	3.53	78.00	7.17	4.00
199	0.7840	411.500	390.9	13.1	8.01	3.17	11.18	3.53	78.00	7.17	4.00
200	0.7880	412.200	391.6	13.2	8.02	3.18	11.20	3.52	77.90	7.19	4.01
201	0.7920	412.500	391.9	13.2	8.02	3.18	11.20	3.52	77.90	7.19	4.01
202	0.7960	413.100	392.5	13.3	8.02	3.20	11.22	3.51	77.80	7.21	4.01
203	0.8000	413.500	392.9	13.4	8.02	3.20	11.22	3.51	77.80	7.21	4.01
204	0.8040	413.700	393.1	13.4	8.02	3.21	11.23	3.50	77.70	7.22	4.01
205	0.8080	414.400	393.8	13.5	8.03	3.21	11.24	3.50	77.70	7.23	4.01
206	0.8120	414.800	394.2	13.6	8.03	3.23	11.26	3.49	77.60	7.24	4.02
207	0.8160	414.900	394.3	13.6	8.03	3.23	11.25	3.49	77.60	7.24	4.01
208	0.8200	415.200	394.6	13.7	8.03	3.23	11.25	3.49	77.60	7.24	4.01
209	0.8220	415.600	395.0	13.7	8.03	3.24	11.27	3.48	77.50	7.26	4.02
210	0.8280	416.100	395.5	13.8	8.03	3.25	11.29	3.47	77.40	7.27	4.02
211	0.8320	416.300	395.7	13.9	8.03	3.25	11.29	3.47	77.40	7.27	4.02
212	0.8360	416.700	396.1	14.0	8.03	3.27	11.30	3.46	77.30	7.29	4.02
213	0.8400	417.100	396.5	14.0	8.03	3.27	11.30	3.46	77.30	7.29	4.02



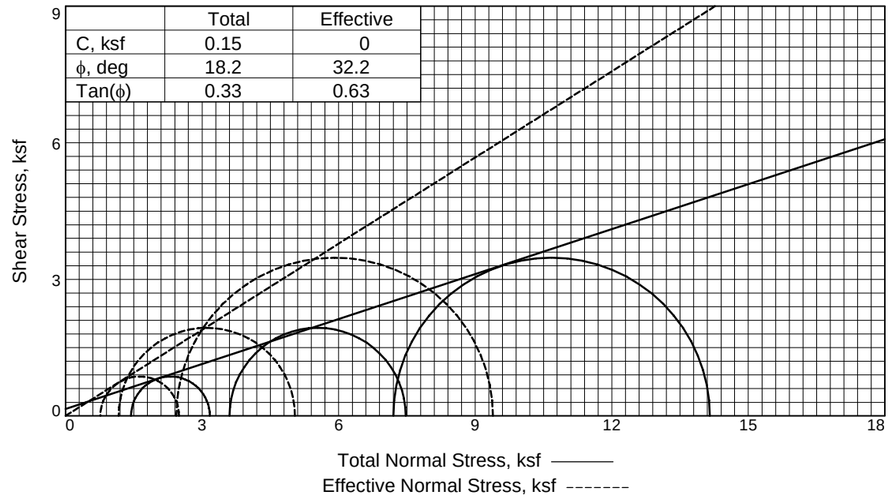
Client: NCDOT GEU
Project: Winston-Salem N. Beltway E. Section
Depth: 4.2-6.2' **Sample Number:** ST-1
Project No.: 6235-17-038

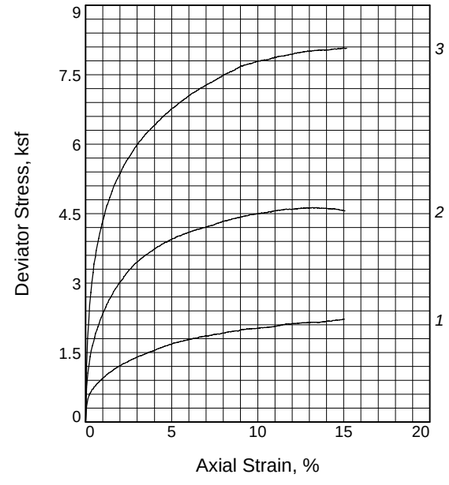
Figure ST-1

S & ME, INC.

Tested By: Karen Warner **Checked By:** Jason Reeves

C & phi are not test results but an interpretation of the test results. The designer is responsible for interpreting test data as provided by S&ME.





Sample No.		1	2	3
Initial	Water Content, %	29.2	29.2	28.8
	Dry Density, pcf	93.1	88.6	95.3
	Saturation, %	94.9	85.4	98.7
	Void Ratio	0.8449	0.9387	0.8022
	Diameter, in.	2.828	2.852	2.844
	Height, in.	6.108	6.221	6.082
At Test	Water Content, %	27.8	28.4	25.4
	Dry Density, pcf	97.3	96.4	101.0
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.7650	0.7809	0.6995
	Diameter, in.	2.786	2.772	2.789
	Height, in.	6.019	6.049	5.965
Strain rate, in./min.		0.004	0.004	0.004
Eff. Cell Pressure, ksf		1.44	3.60	7.20
Fail. Stress, ksf		1.73	3.87	6.95
Total Pore Pr., ksf		10.76	11.07	11.97
Strain, %		5.4	4.6	5.7
Ult. Stress, ksf		2.22	4.56	8.07
Total Pore Pr., ksf		10.53	10.60	11.03
Strain, %		15.0	15.1	15.2
$\bar{\sigma}_1$ Failure, ksf		2.49	5.04	9.39
$\bar{\sigma}_3$ Failure, ksf		0.76	1.17	2.43

Type of Test:
CU with Pore Pressures
Sample Type: Undisturbed
Description: A-6

LL= 37 **PL=** 21 **PI=** 16
Assumed Specific Gravity= 2.75
Remarks: All 3 specimens failed in shear (AASHTO T297).

Figure ST-1

Client: NCDOT GEU

Project: Winston-Salem N. Beltway E. Section

Sample Number: ST-1 **Depth:** 4.2-6.2'

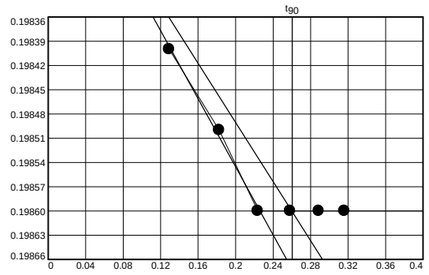
Proj. No.: 6235-17-038 **Date Sampled:** October 2017

TRIAXIAL SHEAR TEST REPORT
S & ME, INC.
Charlotte, North Carolina

Tested By: Karen Warner **Checked By:** Jason Reeves

Pressure: 0.05 tsf — **TEST READINGS** — **Load No. 1**

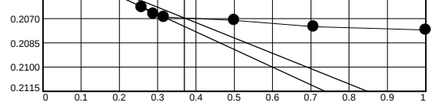
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	+0 00:00:00	0.19780	11	+0 00:02:00	0.19860
2	+0 00:00:01	0.19840	12	+0 00:04:00	0.19860
3	+0 00:00:02	0.19850	13	+0 00:04:26	0.19860
4	+0 00:00:03	0.19860			
5	+0 00:00:04	0.19860			
6	+0 00:00:05	0.19860			
7	+0 00:00:06	0.19860			
8	+0 00:00:15	0.19860			
9	+0 00:00:30	0.19860			
10	+0 00:00:60	0.19860			



Void Ratio = 0.734 **Compression =** 0.1%
D_0 = 0.1981 **D_{90} =** 0.1986 **D_{100} =** 0.1987 **C_V at 0.07 min. =** 33.511 ft.^{2}/day

Pressure: 0.25 tsf — **TEST READINGS** — **Load No. 2**

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.19860	11	+0 00:04:00	0.20790
2	+0 00:00:01	0.19900	12	+0 00:08:00	0.20810
3	+0 00:00:02	0.20220	13	+0 00:15:00	0.20840
4	+0 00:00:04	0.20630	14	+0 00:30:00	0.20850
5	+0 00:00:05	0.20670	15	+0 00:60:00	0.20860
6	+0 00:00:06	0.20690	16	+0 02:00:00	0.20870
7	+0 00:00:15	0.20710	17	+0 02:02:00	0.20870
8	+0 00:00:30	0.20750			
9	+0 00:00:60	0.20770			
10	+0 00:02:00	0.20780			



Void Ratio = 0.717 **Compression =** 1.1%
D_0 = 0.2035 **D_{90} =** 0.2070 **D_{100} =** 0.2073 **C_V at 0.14 min. =** 16.465 ft.^{2}/day

CONSOLIDATION TEST DATA

1/19/2018

Client: NCDOT GEU
Project: Winston-Salem N. Beltway E. Section
Project Number: 6235-17-038
Depth: 11.2-13.2' **Sample Number:** ST-2
Material Description: A-2-7
Liquid Limit: 43 **Plasticity Index:** 18
AASHTO: A-2-7
Figure No.: ST-2
Testing Remarks: Sample Saturated
Tested by: Karen Warner **Checked by:** Jason Reeves

Test Specimen Data

NATURAL MOISTURE

Wet w+t	= 245.03	g.
Dry w+t	= 215.37	g.
Tare Wt.	= 81.55	g.
Moisture	= 22.2	%

VOID RATIO

Spec. Gr.	= 2.65	
Est. Ht. Solids	= 0.597	in.
Init. V.R.	= 0.735	
Init. Sat.	= 79.9	%

AFTER TEST

Wet w+t	= 255.01	g.
Dry w+t	= 224.81	g.
Tare Wt.	= 98.19	g.
Moisture	= 23.9	%

UNIT WEIGHT

Height	= 0.999	in.
Diameter	= 2.494	in.
Weight	= 98.19	g.
Dry Dens.	= 62.7	pcf

TEST START

Height	= 1.036	in.
Diameter	= 2.494	in.

Dry Wt. =126.62* g.

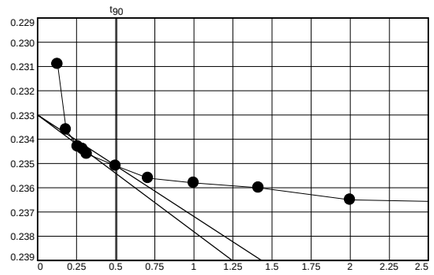
End-Of-Load Summary

Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C_V (ft.^{2}/day)	C_α	Void Ratio	% Strain
start	0.19780	0.00000			0.735	
0.05	0.19860	0.00080	33.511		0.734	0.1 Comprs.
0.25	0.20870	0.01090	16.465		0.717	1.1 Comprs.
0.50	0.21670	0.01890	6.583		0.703	1.8 Comprs.
1.00	0.22560	0.02780	6.486		0.688	2.7 Comprs.
2.00	0.23760	0.03980	8.313		0.668	3.8 Comprs.

Compression index (C_c), tsf = 0.07 **Preconsolidation pressure (P_p), tsf =** 0.4 **Void ratio at P_p (e_m) =** 0.705

Pressure: 2.00 tsf **TEST READINGS** **Load No. 5**

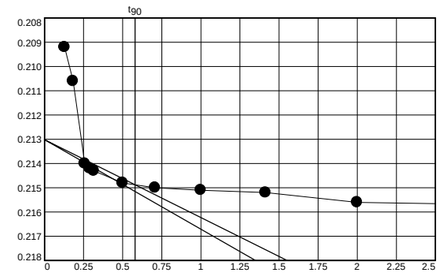
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.22560	11	+0 00:04:00	0.23650
2	+0 00:00:01	0.23090	12	+0 00:08:00	0.23660
3	+0 00:00:02	0.23360	13	+0 00:15:00	0.23680
4	+0 00:00:04	0.23430	14	+0 00:30:00	0.23720
5	+0 00:00:05	0.23440	15	+0 02:00:00	0.23750
6	+0 00:00:06	0.23460	16	+0 04:00:00	0.23760
7	+0 00:00:15	0.23510	17	+0 08:00:00	0.23760
8	+0 00:00:30	0.23560	18	+0 15:00:00	0.23760
9	+0 00:00:60	0.23580	19	+0 16:23:00	0.23760
10	+0 00:02:00	0.23600			



Void Ratio = 0.668 **Compression =** 3.8%
D_0 = 0.2330 **D_{90} =** 0.2351 **D_{100} =** 0.2353 **C_v at 0.26 min. =** 8.313 ft.^{2}/day

Pressure: 0.50 tsf **TEST READINGS** **Load No. 3**

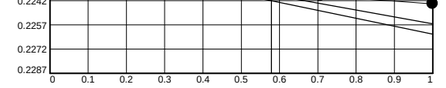
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.20870	11	+0 00:04:00	0.21560
2	+0 00:00:01	0.20920	12	+0 00:08:00	0.21570
3	+0 00:00:02	0.21060	13	+0 00:15:00	0.21580
4	+0 00:00:04	0.21400	14	+0 00:30:00	0.21590
5	+0 00:00:05	0.21420	15	+0 00:60:00	0.21610
6	+0 00:00:06	0.21430	16	+0 02:00:00	0.21640
7	+0 00:00:15	0.21480	17	+0 04:00:00	0.21650
8	+0 00:00:30	0.21500	18	+0 08:00:00	0.21660
9	+0 00:00:60	0.21510	19	+0 09:02:00	0.21670
10	+0 00:02:00	0.21520	20	+0 11:18:00	0.21670



Void Ratio = 0.703 **Compression =** 1.8%
D_0 = 0.2130 **D_{90} =** 0.2149 **D_{100} =** 0.2151 **C_v at 0.34 min. =** 6.583 ft.^{2}/day

Pressure: 1.00 tsf **TEST READINGS** **Load No. 4**

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.21670	11	+0 00:04:00	0.22470
2	+0 00:00:01	0.21680	12	+0 00:08:00	0.22500
3	+0 00:00:02	0.21680	13	+0 00:15:00	0.22530
4	+0 00:00:04	0.22210	14	+0 00:30:00	0.22540
5	+0 00:00:05	0.22290	15	+0 00:60:00	0.22560
6	+0 00:00:06	0.22300	16	+0 01:25:00	0.22560
7	+0 00:00:15	0.22380			
8	+0 00:00:30	0.22390			
9	+0 00:00:60	0.22440			
10	+0 00:02:00	0.22460			

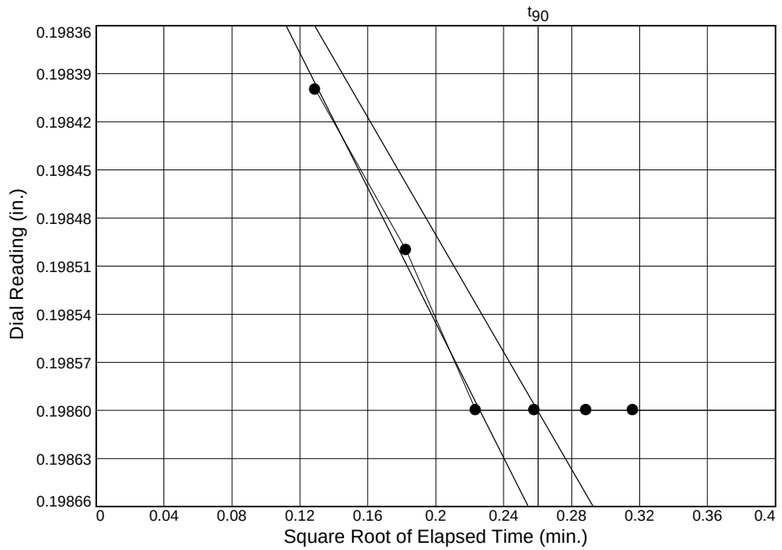


Void Ratio = 0.688 **Compression =** 2.7%
D_0 = 0.2214 **D_{90} =** 0.2238 **D_{100} =** 0.2241 **C_v at 0.33 min. =** 6.486 ft.^{2}/day

Dial Reading vs. Time

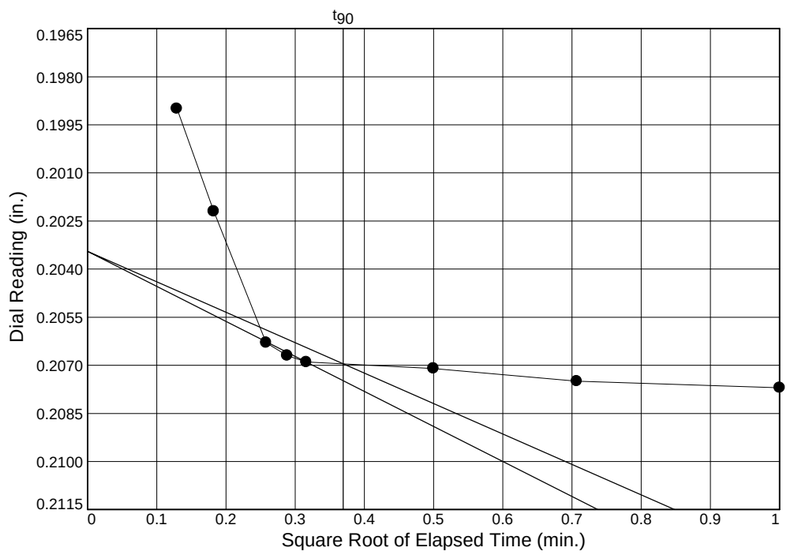
Project No.: 6235-17-038
Project: Winston-Salem N. Beltway E. Section

Depth: 11.2-13.2' Sample Number: ST-2



Load No.= 1
Load= 0.05 tsf
D_0 = 0.1981
D_{90} = 0.1986
D_{100} = 0.1987
T_{90} = 0.07 min.

C_v @ T_{90}
33.511 ft.^{2}/day



Load No.= 2
Load= 0.25 tsf
D_0 = 0.2035
D_{90} = 0.2070
D_{100} = 0.2073
T_{90} = 0.14 min.

C_v @ T_{90}
16.465 ft.^{2}/day

Figure ST-3

S & ME, INC.

CONSOLIDATION TEST REPORT

Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
1	0.05	33.511									
2	0.25	16.465									
3	0.50	6.583									
4	1.00	6.486									
5	2.00	8.313									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	C_c	C_r	Initial Void Ratio
79.9 %	22.2 %	62.7	43	18	2.65		0.4	0.07		0.735

MATERIAL DESCRIPTION	USCS	AASHTO
A-2-7		A-2-7

Project No. 6235-17-038 **Client:** NCDOT GEU
Project: Winston-Salem N. Beltway E. Section

Depth: 11.2-13.2' **Sample Number:** ST-2

S & ME, INC.

Charlotte, North Carolina

Remarks:
Sample Saturated

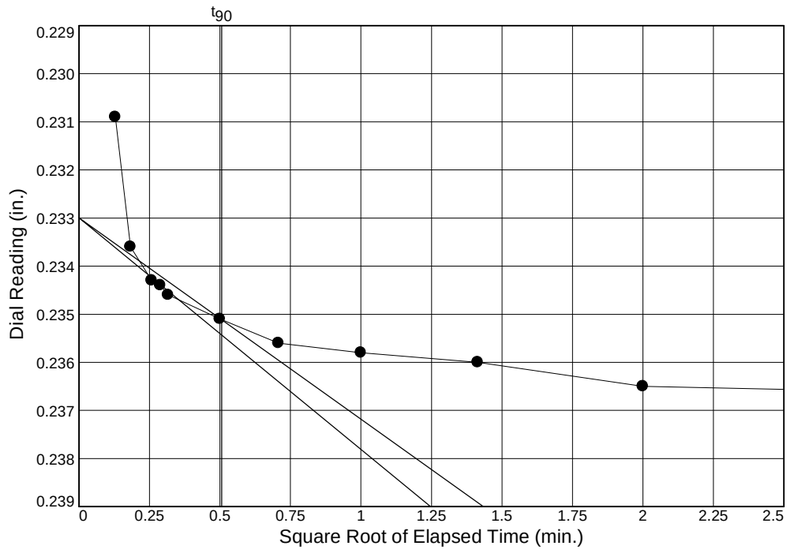
Figure ST-2

Tested By: Karen Warner **Checked By:** Jason Reeves

Dial Reading vs. Time

Project No.: 6235-17-038
Project: Winston-Salem N. Beltway E. Section

Depth: 11.2-13.2' Sample Number: ST-2



Load No.= 5
Load= 2.00 tsf
D_0 = 0.2330
D_{90} = 0.2351
D_{100} = 0.2353
T_{90} = 0.26 min.

C_v @ T_{90}
8.313 ft.^{2}/day

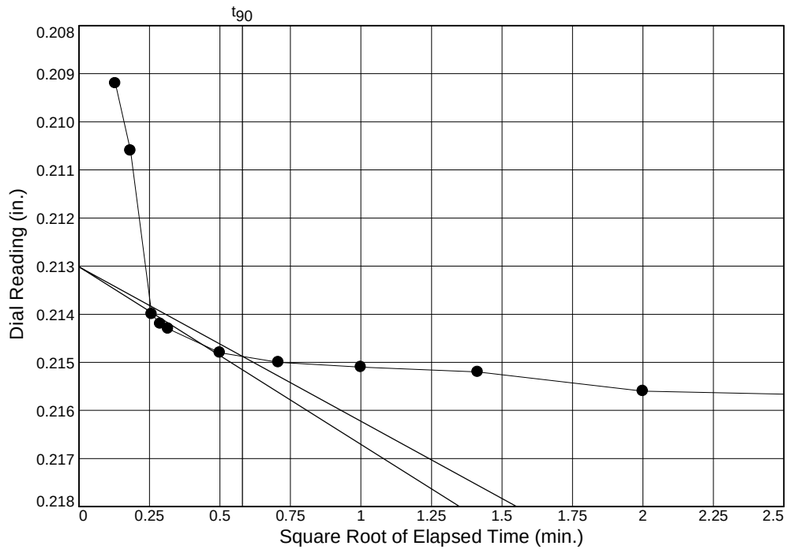
S & ME, INC.

Figure ST-5

Dial Reading vs. Time

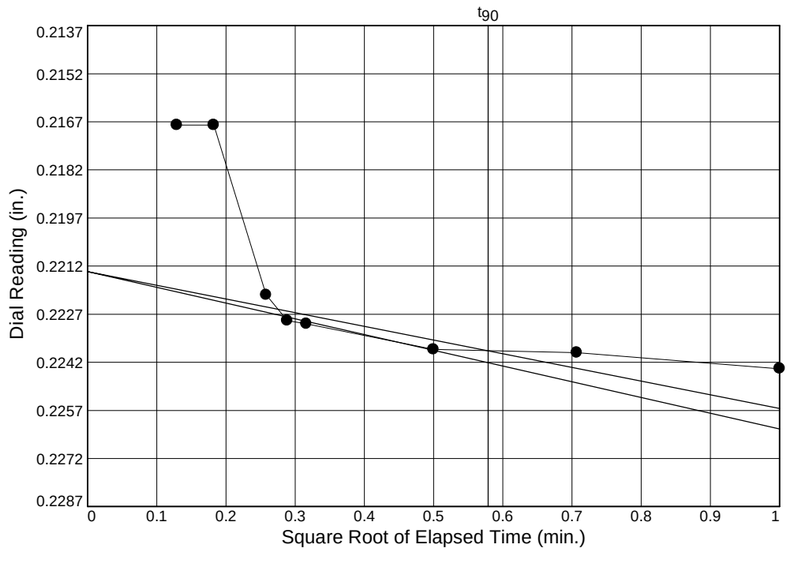
Project No.: 6235-17-038
Project: Winston-Salem N. Beltway E. Section

Depth: 11.2-13.2' Sample Number: ST-2



Load No.= 3
Load= 0.50 tsf
D_0 = 0.2130
D_{90} = 0.2149
D_{100} = 0.2151
T_{90} = 0.34 min.

C_v @ T_{90}
6.583 ft.^{2}/day



Load No.= 4
Load= 1.00 tsf
D_0 = 0.2214
D_{90} = 0.2238
D_{100} = 0.2241
T_{90} = 0.33 min.

C_v @ T_{90}
6.486 ft.^{2}/day

S & ME, INC.

Figure ST-4

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0050	29.200	0.0	0.0	0.00	0.00	0.00		70.00	0.00	0.00
1	0.0250	59.700	30.5	0.3	0.71	-0.42	0.29		72.90	-0.06	0.36
2	0.0450	71.800	42.6	0.7	0.99	-0.42	0.57		72.90	0.08	0.50
3	0.0640	83.400	54.2	1.0	1.26	-0.42	0.84		72.90	0.21	0.63
4	0.0830	95.200	66.0	1.3	1.53	-0.40	1.12		72.80	0.36	0.76
5	0.1030	106.300	77.1	1.6	1.78	-0.40	1.37		72.80	0.49	0.89
6	0.1230	116.800	87.6	2.0	2.01	-0.39	1.62		72.70	0.62	1.01
7	0.1420	127.000	97.8	2.3	2.24	-0.39	1.85		72.70	0.73	1.12
8	0.1620	136.900	107.7	2.6	2.46	-0.37	2.08		72.60	0.85	1.23
9	0.1650	125.300	96.1	2.7	2.19	-0.17	2.02		71.20	0.92	1.10
10	0.1750	142.900	113.7	2.8	2.59	-0.16	2.43		71.10	1.14	1.29
11	0.1851	148.000	118.8	3.0	2.70	-0.14	2.56		71.00	1.21	1.35
12	0.1950	152.200	123.0	3.2	2.79	-0.13	2.66		70.90	1.27	1.40
13	0.2050	156.600	127.4	3.3	2.89	-0.12	2.77		70.80	1.33	1.44
14	0.2150	160.800	131.6	3.5	2.98	-0.10	2.87		70.70	1.39	1.49
15	0.2250	165.000	135.8	3.7	3.06	-0.07	2.99		70.50	1.46	1.53
16	0.2350	169.500	140.3	3.8	3.16	-0.06	3.10		70.40	1.52	1.58
17	0.2450	173.000	143.8	4.0	3.23	-0.04	3.19		70.30	1.57	1.62
18	0.2540	176.900	147.7	4.1	3.32	-0.01	3.30		70.10	1.64	1.66
19	0.2640	180.900	151.7	4.3	3.40	0.00	3.40		70.00	1.70	1.70
20	0.2730	184.600	155.4	4.5	3.48	1.44	4.92	3.42	60.00	3.18	1.74
21	0.2830	188.700	159.5	4.6	3.56	0.04	3.61	83.50	69.70	1.83	1.78
22	0.2920	193.100	163.9	4.8	3.66	0.06	3.71	64.48	69.60	1.89	1.83
23	0.3020	196.500	167.3	4.9	3.73	0.09	3.81	44.12	69.40	1.95	1.86
24	0.3120	199.900	170.7	5.1	3.79	0.10	3.90	38.65	69.30	2.00	1.90
25	0.3210	202.900	173.7	5.3	3.86	0.12	3.97	34.47	69.20	2.04	1.93
26	0.3310	206.600	177.4	5.4	3.93	0.14	4.07	28.30	69.00	2.11	1.97
27	0.3410	210.300	181.1	5.6	4.01	0.17	4.18	24.18	68.80	2.18	2.00
28	0.3510	213.400	184.2	5.8	4.07	0.19	4.25	22.72	68.70	2.22	2.03
29	0.3610	216.500	187.3	5.9	4.13	0.20	4.33	21.48	68.60	2.27	2.06
30	0.3710	219.700	190.5	6.1	4.19	0.23	4.42	19.19	68.40	2.33	2.10
31	0.3810	222.600	193.4	6.3	4.25	0.24	4.49	18.35	68.30	2.37	2.12
32	0.3910	225.600	196.4	6.4	4.31	0.27	4.58	16.74	68.10	2.43	2.15
33	0.4010	228.200	199.0	6.6	4.35	0.30	4.66	15.40	67.90	2.48	2.18
34	0.4110	230.900	201.7	6.8	4.41	0.32	4.72	14.91	67.80	2.52	2.20
35	0.4210	233.400	204.2	6.9	4.45	0.35	4.80	13.88	67.60	2.57	2.23
36	0.4300	235.700	206.5	7.1	4.50	0.36	4.86	13.49	67.50	2.61	2.25
37	0.4400	237.800	208.6	7.2	4.53	0.39	4.92	12.66	67.30	2.66	2.27
38	0.4500	239.900	210.7	7.4	4.57	0.42	4.99	11.94	67.10	2.70	2.29
39	0.4600	242.300	213.1	7.6	4.61	0.43	5.05	11.68	67.00	2.74	2.31
40	0.4690	244.900	215.7	7.7	4.66	0.46	5.12	11.12	66.80	2.79	2.33
41	0.4790	247.900	218.7	7.9	4.72	0.48	5.19	10.93	66.70	2.83	2.36
42	0.4890	249.700	220.5	8.1	4.75	0.50	5.25	10.42	66.50	2.88	2.37
43	0.4980	251.400	222.2	8.2	4.78	0.52	5.30	10.22	66.40	2.91	2.39
44	0.5080	253.200	224.0	8.4	4.81	0.55	5.36	9.79	66.20	2.95	2.40
45	0.5180	254.900	225.7	8.5	4.84	0.56	5.40	9.61	66.10	2.98	2.42
46	0.5280	257.200	228.0	8.7	4.88	0.58	5.45	9.47	66.00	3.01	2.44

TRIAXIAL COMPRESSION TEST

CU with Pore Pressures

1/19/2018
9:53 AM

Date: 10/2017
Client: NCDOT GEU
Project: Winston-Salem N. Beltway E. Section
Project No.: 6235-17-038
Depth: 11.2-13.2' **Sample Number:** ST-2
Description: A-2-7
Remarks:
Type of Sample: Undisturbed
Assumed Specific Gravity=2.70 **LL=**43 **PL=**25 **PI=**18
Test Method: COE uniform strain

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	245.030			1352.450
Moisture content: Dry soil+tare, gms.	215.370			1095.890
Moisture content: Tare, gms.	81.550			86.440
Moisture, %	22.2	25.1	21.4	25.4
Moist specimen weight, gms.	1264.92			
Diameter, in.	2.863	2.856	2.797	
Area, in.²	6.438	6.404	6.146	
Height, in.	6.144	6.128	6.005	
Net decrease in height, in.		0.016	0.123	
Wet density, pcf	121.8	125.7	129.7	
Dry density, pcf	99.7	100.5	106.9	
Void ratio	0.6902	0.6770	0.5772	
Saturation, %	86.7	100.0	100.0	

Test Readings for Specimen No. 1

Consolidation cell pressure = 70.00 psi (10.08 ksf)
Consolidation back pressure = 60.00 psi (8.64 ksf)
Consolidation effective confining stress = 1.44 ksf
Strain rate, in./min. = 0.010
Fail. Stress = 5.30 ksf **at reading no.** 64
Ult. Stress = 5.06 ksf **at reading no.** 99

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
94	1.0170	287.000	257.8	16.9	5.02	1.11	6.13	5.53	62.30	3.62	2.51
95	1.0270	288.200	259.0	17.0	5.04	1.12	6.16	5.48	62.20	3.64	2.52
96	1.0370	289.300	260.1	17.2	5.05	1.12	6.17	5.49	62.20	3.65	2.52
97	1.0470	289.900	260.7	17.4	5.05	1.12	6.17	5.49	62.20	3.65	2.52
98	1.0560	291.400	262.2	17.5	5.07	1.12	6.19	5.51	62.20	3.66	2.53
99	1.0660	291.500	262.3	17.7	5.06	1.12	6.18	5.50	62.20	3.65	2.53

Parameters for Specimen No. 2

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	127.610			n/a
Moisture content: Dry soil+tare, gms.	117.450			n/a
Moisture content: Tare, gms.	83.140			n/a
Moisture, %	29.6	30.0	25.2	
Moist specimen weight, gms.	1220.15			
Diameter, in.	2.835	2.827	2.757	
Area, in.²	6.312	6.276	5.968	
Height, in.	6.156	6.138	5.988	
Net decrease in height, in.		0.018	0.150	
Wet density, pcf	119.6	121.0	125.6	
Dry density, pcf	92.3	93.1	100.4	
Void ratio	0.8264	0.8104	0.6796	
Saturation, %	96.8	100.0	100.0	

Test Readings for Specimen No. 2

Consolidation cell pressure = 85.00 psi (12.24 ksf)
Consolidation back pressure = 60.00 psi (8.64 ksf)
Consolidation effective confining stress = 3.60 ksf
Strain rate, in./min. = 0.004
Fail. Stress = 2.40 ksf **at reading no.** 110
Ult. Stress = 2.50 ksf **at reading no.** 217

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0060	22.000	0.0	0.0	0.00	3.60	3.60	1.00	60.00	3.60	0.00
1	0.0080	44.900	22.9	0.0	0.55	2.39	2.94	1.23	68.40	2.67	0.28
2	0.0120	54.400	32.4	0.1	0.78	2.29	3.07	1.34	69.10	2.68	0.39
3	0.0160	59.700	37.7	0.2	0.91	2.22	3.13	1.41	69.60	2.67	0.45
4	0.0200	64.100	42.1	0.2	1.01	2.16	3.17	1.47	70.00	2.67	0.51
5	0.0240	67.600	45.6	0.3	1.10	2.09	3.18	1.53	70.50	2.64	0.55
6	0.0287	70.400	48.4	0.4	1.16	2.02	3.18	1.58	71.00	2.60	0.58
7	0.0320	73.100	51.1	0.4	1.23	1.96	3.19	1.63	71.40	2.57	0.61
8	0.0370	75.900	53.9	0.5	1.29	1.90	3.19	1.68	71.80	2.55	0.65
9	0.0410	78.000	56.0	0.6	1.34	1.83	3.17	1.73	72.30	2.50	0.67
10	0.0450	79.600	57.6	0.7	1.38	1.79	3.17	1.77	72.60	2.48	0.69
11	0.0490	81.600	59.6	0.7	1.43	1.73	3.16	1.83	73.00	2.44	0.71
12	0.0530	83.400	61.4	0.8	1.47	1.68	3.15	1.87	73.30	2.42	0.73
13	0.0570	85.100	63.1	0.9	1.51	1.64	3.15	1.92	73.60	2.40	0.75
14	0.0610	86.400	64.4	0.9	1.54	1.60	3.14	1.96	73.90	2.37	0.77
15	0.0650	87.900	65.9	1.0	1.57	1.56	3.13	2.01	74.20	2.34	0.79

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
47	0.5380	258.300	229.1	8.9	4.89	0.59	5.48	9.28	65.90	3.04	2.45
48	0.5430	260.300	231.1	9.0	4.93	0.62	5.55	8.96	65.70	3.08	2.46
49	0.5530	261.700	232.5	9.1	4.95	0.63	5.58	8.81	65.60	3.11	2.47
50	0.5630	264.200	235.0	9.3	4.99	0.65	5.64	8.71	65.50	3.15	2.50
51	0.5730	266.200	237.0	9.5	5.03	0.66	5.69	8.59	65.40	3.18	2.51
52	0.5880	268.600	239.4	9.7	5.06	0.71	5.77	8.18	65.10	3.24	2.53
53	0.5980	270.100	240.9	9.9	5.09	0.72	5.81	8.06	65.00	3.26	2.54
54	0.6080	271.700	242.5	10.0	5.11	0.75	5.86	7.83	64.80	3.30	2.56
55	0.6180	272.800	243.6	10.2	5.12	0.76	5.89	7.71	64.70	3.33	2.56
56	0.6280	274.500	245.3	10.4	5.15	0.78	5.93	7.62	64.60	3.35	2.58
57	0.6380	276.100	246.9	10.5	5.17	0.79	5.97	7.53	64.50	3.38	2.59
58	0.6480	277.600	248.4	10.7	5.20	0.82	6.02	7.33	64.30	3.42	2.60
59	0.6570	279.600	250.4	10.9	5.23	0.84	6.06	7.26	64.20	3.45	2.61
60	0.6670	281.100	251.9	11.0	5.25	0.85	6.10	7.18	64.10	3.48	2.63
61	0.6760	281.800	252.6	11.2	5.26	0.88	6.14	6.98	63.90	3.51	2.63
62	0.6860	283.100	253.9	11.3	5.27	0.89	6.17	6.91	63.80	3.53	2.64
63	0.6960	284.300	255.1	11.5	5.29	0.91	6.20	6.83	63.70	3.55	2.64
64	0.7060	285.200	256.0	11.7	5.30	0.94	6.23	6.66	63.50	3.58	2.65
65	0.7160	286.700	257.5	11.8	5.32	0.95	6.27	6.60	63.40	3.61	2.66
66	0.7260	286.600	257.4	12.0	5.31	0.98	6.29	6.42	63.20	3.63	2.65
67	0.7360	286.400	257.2	12.2	5.29	1.01	6.30	6.25	63.00	3.65	2.65
68	0.7450	286.200	257.0	12.3	5.28	1.04	6.32	6.09	62.80	3.68	2.64
69	0.7560	285.200	256.0	12.5	5.25	1.07	6.31	5.92	62.60	3.69	2.62
70	0.7660	283.100	253.9	12.7	5.19	1.09	6.29	5.75	62.40	3.69	2.60
71	0.7760	282.300	253.1	12.8	5.17	1.11	6.28	5.66	62.30	3.69	2.58
72	0.7860	282.200	253.0	13.0	5.16	1.12	6.28	5.59	62.20	3.70	2.58
73	0.7970	281.300	252.1	13.2	5.13	1.12	6.25	5.56	62.20	3.69	2.56
74	0.8070	280.500	251.3	13.4	5.10	1.12	6.22	5.54	62.20	3.67	2.55
75	0.8170	280.000	250.8	13.5	5.08	1.12	6.20	5.52	62.20	3.66	2.54
76	0.8270	278.900	249.7	13.7	5.05	1.12	6.17	5.50	62.20	3.65	2.52
77	0.8370	279.400	250.2	13.9	5.05	1.12	6.17	5.50	62.20	3.65	2.52
78	0.8470	280.800	251.6	14.0	5.07	1.11	6.18	5.57	62.30	3.64	2.53
79	0.8570	280.900	251.7	14.2	5.06	1.11	6.17	5.56	62.30	3.64	2.53
80	0.8660	280.700	251.5	14.3	5.05	1.11	6.16	5.55	62.30	3.63	2.52
81	0.8760	281.300	252.1	14.5	5.05	1.11	6.16	5.55	62.30	3.63	2.52
82	0.8860	280.600	251.4	14.7	5.03	1.11	6.13	5.53	62.30	3.62	2.51
83	0.8950	280.800	251.6	14.8	5.02	1.12	6.14	5.47	62.20	3.63	2.51
84	0.9050	281.300	252.1	15.0	5.02	1.11	6.13	5.53	62.30	3.62	2.51
85	0.9150	281.400	252.2	15.2	5.01	1.11	6.12	5.52	62.30	3.62	2.51
86	0.9250	282.100	252.9	15.3	5.02	1.11	6.13	5.52	62.30	3.62	2.51
87	0.9360	283.400	254.2	15.5	5.03	1.11	6.14	5.54	62.30	3.62	2.52
88	0.9510	283.400	254.2	15.8	5.02	1.11	6.13	5.52	62.30	3.62	2.51
89	0.9610	284.800	255.6	15.9	5.03	1.11	6.14	5.54	62.30	3.63	2.52
90	0.9710	285.400	256.2	16.1	5.04	1.11	6.15	5.54	62.30	3.63	2.52
91	0.9810	286.200	257.0	16.3	5.04	1.11	6.15	5.55	62.30	3.63	2.52
92	0.9960	286.900	257.7	16.5	5.04	1.11	6.15	5.55	62.30	3.63	2.52
93	1.0070	287.300	258.1	16.7	5.04	1.11	6.15	5.54	62.30	3.63	2.52

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
63	0.2660	118.700	96.7	4.3	2.23	0.98	3.21	3.28	78.20	2.10	1.12
64	0.2700	118.900	96.9	4.4	2.24	0.96	3.20	3.32	78.30	2.08	1.12
65	0.2750	119.100	97.1	4.5	2.24	0.96	3.20	3.32	78.30	2.08	1.12
66	0.2790	119.400	97.4	4.6	2.24	0.96	3.21	3.32	78.30	2.09	1.12
67	0.2840	119.500	97.5	4.6	2.24	0.96	3.21	3.33	78.30	2.09	1.12
68	0.2880	120.000	98.0	4.7	2.25	0.96	3.22	3.34	78.30	2.09	1.13
69	0.2920	120.100	98.1	4.8	2.25	0.96	3.22	3.34	78.30	2.09	1.13
70	0.2960	120.500	98.5	4.8	2.26	0.96	3.23	3.34	78.30	2.10	1.13
71	0.3010	120.700	98.7	4.9	2.26	0.96	3.23	3.35	78.30	2.10	1.13
72	0.3050	121.300	99.3	5.0	2.28	0.96	3.24	3.36	78.30	2.10	1.14
73	0.3090	121.600	99.6	5.1	2.28	0.95	3.23	3.40	78.40	2.09	1.14
74	0.3130	121.900	99.9	5.1	2.29	0.95	3.24	3.41	78.40	2.09	1.14
75	0.3181	122.000	100.0	5.2	2.29	0.95	3.24	3.41	78.40	2.09	1.14
76	0.3220	122.300	100.3	5.3	2.29	0.95	3.24	3.41	78.40	2.10	1.15
77	0.3260	122.500	100.5	5.3	2.30	0.95	3.25	3.42	78.40	2.10	1.15
78	0.3300	122.500	100.5	5.4	2.29	0.95	3.24	3.41	78.40	2.10	1.15
79	0.3340	122.900	100.9	5.5	2.30	0.95	3.25	3.42	78.40	2.10	1.15
80	0.3390	122.900	100.9	5.6	2.30	0.95	3.25	3.42	78.40	2.10	1.15
81	0.3430	123.400	101.4	5.6	2.31	0.95	3.26	3.43	78.40	2.10	1.15
82	0.3470	123.500	101.5	5.7	2.31	0.95	3.26	3.43	78.40	2.11	1.15
83	0.3500	123.700	101.7	5.7	2.31	0.95	3.26	3.43	78.40	2.11	1.16
84	0.3540	123.900	101.9	5.8	2.32	0.95	3.27	3.44	78.40	2.11	1.16
85	0.3580	124.300	102.3	5.9	2.32	0.95	3.27	3.44	78.40	2.11	1.16
86	0.3620	124.500	102.5	5.9	2.33	0.95	3.28	3.45	78.40	2.11	1.16
87	0.3660	124.700	102.7	6.0	2.33	0.95	3.28	3.45	78.40	2.11	1.16
88	0.3700	125.100	103.1	6.1	2.34	0.95	3.29	3.46	78.40	2.12	1.17
89	0.3740	125.300	103.3	6.1	2.34	0.95	3.29	3.46	78.40	2.12	1.17
90	0.3780	125.500	103.5	6.2	2.34	0.95	3.29	3.46	78.40	2.12	1.17
91	0.3800	125.500	103.5	6.2	2.34	0.95	3.29	3.46	78.40	2.12	1.17
92	0.3840	125.700	103.7	6.3	2.34	0.95	3.29	3.47	78.40	2.12	1.17
93	0.3880	126.000	104.0	6.4	2.35	0.95	3.30	3.47	78.40	2.13	1.17
94	0.3920	126.100	104.1	6.4	2.35	0.95	3.30	3.47	78.40	2.13	1.17
95	0.3940	126.400	104.4	6.5	2.36	0.95	3.31	3.48	78.40	2.13	1.18
96	0.3980	126.600	104.6	6.5	2.36	0.95	3.31	3.48	78.40	2.13	1.18
97	0.4020	126.900	104.9	6.6	2.36	0.95	3.31	3.49	78.40	2.13	1.18
98	0.4070	127.100	105.1	6.7	2.37	0.95	3.32	3.49	78.40	2.13	1.18
99	0.4110	127.600	105.6	6.8	2.38	0.95	3.33	3.50	78.40	2.14	1.19
100	0.4150	127.600	105.6	6.8	2.37	0.95	3.32	3.50	78.40	2.14	1.19
101	0.4190	127.600	105.6	6.9	2.37	0.95	3.32	3.50	78.40	2.14	1.19
102	0.4230	128.200	106.2	7.0	2.38	0.95	3.33	3.51	78.40	2.14	1.19
103	0.4270	128.100	106.1	7.0	2.38	0.95	3.33	3.50	78.40	2.14	1.19
104	0.4310	128.200	106.2	7.1	2.38	0.95	3.33	3.50	78.40	2.14	1.19
105	0.4360	128.300	106.3	7.2	2.38	0.95	3.33	3.50	78.40	2.14	1.19
106	0.4400	128.500	106.5	7.2	2.38	0.95	3.33	3.51	78.40	2.14	1.19
107	0.4440	129.000	107.0	7.3	2.39	0.95	3.34	3.52	78.40	2.15	1.20
108	0.4480	128.900	106.9	7.4	2.39	0.94	3.33	3.55	78.50	2.13	1.19
109	0.4520	129.000	107.0	7.4	2.39	0.95	3.34	3.51	78.40	2.15	1.19

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
16	0.0690	89.500	67.5	1.1	1.61	1.53	3.14	2.06	74.40	2.33	0.81
17	0.0730	90.800	68.8	1.1	1.64	1.48	3.12	2.11	74.70	2.30	0.82
18	0.0770	92.400	70.4	1.2	1.68	1.45	3.13	2.15	74.90	2.29	0.84
19	0.0820	93.700	71.7	1.3	1.71	1.43	3.13	2.20	75.10	2.28	0.85
20	0.0860	94.800	72.8	1.3	1.73	1.40	3.13	2.24	75.30	2.26	0.87
21	0.0900	95.900	73.9	1.4	1.76	1.37	3.13	2.29	75.50	2.25	0.88
22	0.0940	97.210	75.2	1.5	1.79	1.34	3.13	2.34	75.70	2.23	0.89
23	0.0990	97.800	75.8	1.6	1.80	1.31	3.11	2.37	75.90	2.21	0.90
24	0.1010	98.700	76.7	1.6	1.82	1.30	3.12	2.41	76.00	2.21	0.91
25	0.1030	99.400	77.4	1.6	1.84	1.30	3.13	2.42	76.00	2.21	0.92
26	0.1070	100.000	78.0	1.7	1.85	1.27	3.12	2.46	76.20	2.19	0.93
27	0.1120	100.800	78.8	1.8	1.87	1.25	3.12	2.49	76.30	2.19	0.93
28	0.1160	101.600	79.6	1.8	1.89	1.24	3.12	2.52	76.40	2.18	0.94
29	0.1200	102.500	80.5	1.9	1.91	1.21	3.12	2.58	76.60	2.16	0.95
30	0.1240	103.000	81.0	2.0	1.92	1.20	3.11	2.60	76.70	2.15	0.96
31	0.1280	103.800	81.8	2.0	1.93	1.18	3.11	2.64	76.80	2.15	0.97
32	0.1330	104.400	82.4	2.1	1.95	1.17	3.11	2.67	76.90	2.14	0.97
33	0.1370	105.100	83.1	2.2	1.96	1.15	3.11	2.70	77.00	2.13	0.98
34	0.1410	105.700	83.7	2.3	1.97	1.14	3.11	2.74	77.10	2.12	0.99
35	0.1450	106.300	84.3	2.3	1.99	1.14	3.12	2.75	77.10	2.13	0.99
36	0.1490	106.900	84.9	2.4	2.00	1.12	3.12	2.78	77.20	2.12	1.00
37	0.1530	107.600	85.6	2.5	2.01	1.11	3.12	2.82	77.30	2.12	1.01
38	0.1570	108.000	86.0	2.5	2.02	1.09	3.12	2.85	77.40	2.11	1.01
39	0.1610	108.500	86.5	2.6	2.03	1.09	3.13	2.86	77.40	2.11	1.02
40	0.1650	108.900	86.9	2.7	2.04	1.08	3.12	2.89	77.50	2.10	1.02
41	0.1690	109.600	87.6	2.7	2.06	1.07	3.12	2.93	77.60	2.09	1.03
42	0.1730	110.100	88.1	2.8	2.07	1.07	3.13	2.94	77.60	2.10	1.03
43	0.1770	110.700	88.7	2.9	2.08	1.07	3.14	2.95	77.60	2.11	1.04
44	0.1810	111.100	89.1	2.9	2.09	1.05	3.14	2.99	77.70	2.09	1.04
45	0.1850	111.700	89.7	3.0	2.10	1.04	3.14	3.03	77.80	2.09	1.05
46	0.1880	112.100	90.1	3.0	2.11	1.04	3.14	3.03	77.80	2.09	1.05
47	0.1920	112.500	90.5	3.1	2.12	1.04	3.15	3.04	77.80	2.09	1.06
48	0.1960	112.900	90.9	3.2	2.12	1.02	3.15	3.08	77.90	2.08	1.06
49	0.2000	113.300	91.3	3.2	2.13	1.02	3.15	3.08	77.90	2.09	1.07
50	0.2040	113.500	91.5	3.3	2.13	1.02	3.16	3.09	77.90	2.09	1.07
51	0.2090	114.100	92.1	3.4	2.15	1.01	3.15	3.13	78.00	2.08	1.07
52	0.2130	114.500	92.5	3.5	2.15	1.01	3.16	3.14	78.00	2.09	1.08
53	0.2210	115.100	93.1	3.6	2.17	1.01	3.17	3.15	78.00	2.09	1.08
54	0.2250	115.600	93.6	3.7	2.18	0.99	3.17	3.19	78.10	2.08	1.09
55	0.2290	115.600	93.6	3.7	2.17	0.99	3.17	3.19	78.10	2.08	1.09
56	0.2350	116.100	94.1	3.8	2.18	0.99	3.18	3.20	78.10	2.09	1.09
57	0.2420	116.800	94.8	3.9	2.20	0.98	3.18	3.24	78.20	2.08	1.10
58	0.2450	117.000	95.0	4.0	2.20	0.98	3.18	3.25	78.20	2.08	1.10
59	0.2500	117.400	95.4	4.1	2.21	0.98	3.19	3.26	78.20	2.08	1.10
60	0.2540	117.800	95.8	4.1	2.22	0.98	3.20	3.26	78.20	2.09	1.11
61	0.2580	118.000	96.0	4.2	2.22	0.98	3.20	3.27	78.20	2.09	1.11
62	0.2620	118.200	96.2	4.3	2.22	0.98	3.20	3.27	78.20	2.09	1.11

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
157	0.6500	136.900	114.9	10.8	2.47	0.98	3.45	3.53	78.20	2.22	1.24
158	0.6530	137.200	115.2	10.8	2.48	0.98	3.46	3.53	78.20	2.22	1.24
159	0.6580	137.200	115.2	10.9	2.48	0.98	3.46	3.53	78.20	2.22	1.24
160	0.6630	137.300	115.3	11.0	2.48	0.98	3.46	3.53	78.20	2.22	1.24
161	0.6660	137.100	115.1	11.0	2.47	0.98	3.45	3.52	78.20	2.21	1.24
162	0.6710	137.500	115.5	11.1	2.48	0.98	3.46	3.53	78.20	2.22	1.24
163	0.6750	137.600	115.6	11.2	2.48	0.98	3.46	3.53	78.20	2.22	1.24
164	0.6790	137.800	115.8	11.2	2.48	0.99	3.47	3.50	78.10	2.23	1.24
165	0.6840	138.100	116.1	11.3	2.48	0.99	3.48	3.50	78.10	2.24	1.24
166	0.6880	138.500	116.5	11.4	2.49	0.99	3.48	3.51	78.10	2.24	1.25
167	0.6920	138.800	116.8	11.5	2.50	0.99	3.49	3.51	78.10	2.24	1.25
168	0.6970	139.000	117.0	11.5	2.50	0.99	3.49	3.51	78.10	2.24	1.25
169	0.7010	139.100	117.1	11.6	2.50	0.99	3.49	3.51	78.10	2.24	1.25
170	0.7050	139.200	117.2	11.7	2.50	0.99	3.49	3.51	78.10	2.24	1.25
171	0.7100	139.500	117.5	11.8	2.50	0.99	3.50	3.52	78.10	2.24	1.25
172	0.7140	139.400	117.4	11.8	2.50	0.99	3.49	3.51	78.10	2.24	1.25
173	0.7180	139.200	117.2	11.9	2.49	1.01	3.50	3.47	78.00	2.25	1.25
174	0.7220	139.600	117.6	12.0	2.50	1.01	3.51	3.48	78.00	2.26	1.25
175	0.7270	139.600	117.6	12.0	2.50	1.01	3.50	3.48	78.00	2.26	1.25
176	0.7310	139.600	117.6	12.1	2.49	1.01	3.50	3.47	78.00	2.26	1.25
177	0.7350	139.500	117.5	12.2	2.49	1.01	3.50	3.47	78.00	2.25	1.25
178	0.7390	139.900	117.9	12.2	2.50	1.01	3.50	3.48	78.00	2.26	1.25
179	0.7430	140.000	118.0	12.3	2.50	1.01	3.50	3.48	78.00	2.26	1.25
180	0.7470	140.200	118.2	12.4	2.50	1.01	3.51	3.48	78.00	2.26	1.25
181	0.7510	140.200	118.2	12.4	2.50	1.01	3.51	3.48	78.00	2.26	1.25
182	0.7580	140.200	118.2	12.6	2.49	1.01	3.50	3.47	78.00	2.25	1.25
183	0.7620	140.300	118.3	12.6	2.49	1.01	3.50	3.47	78.00	2.26	1.25
184	0.7700	140.300	118.3	12.8	2.49	1.01	3.50	3.47	78.00	2.25	1.25
185	0.7750	140.400	118.4	12.8	2.49	1.01	3.50	3.47	78.00	2.25	1.24
186	0.7790	140.700	118.7	12.9	2.49	1.02	3.52	3.44	77.90	2.27	1.25
187	0.7830	140.500	118.5	13.0	2.49	1.02	3.51	3.43	77.90	2.27	1.24
188	0.7870	140.600	118.6	13.0	2.49	1.02	3.51	3.43	77.90	2.27	1.24
189	0.7910	140.700	118.7	13.1	2.49	1.02	3.51	3.43	77.90	2.27	1.24
190	0.7950	140.900	118.9	13.2	2.49	1.02	3.51	3.44	77.90	2.27	1.25
191	0.7990	140.900	118.9	13.2	2.49	1.02	3.51	3.43	77.90	2.27	1.24
192	0.8020	140.900	118.9	13.3	2.49	1.02	3.51	3.43	77.90	2.27	1.24
193	0.8070	141.100	119.1	13.4	2.49	1.02	3.51	3.43	77.90	2.27	1.24
194	0.8110	141.000	119.0	13.4	2.49	1.02	3.51	3.43	77.90	2.27	1.24
195	0.8150	141.000	119.0	13.5	2.48	1.02	3.51	3.43	77.90	2.26	1.24
196	0.8190	141.100	119.1	13.6	2.48	1.02	3.51	3.43	77.90	2.26	1.24
197	0.8230	140.900	118.9	13.6	2.48	1.04	3.51	3.39	77.80	2.28	1.24
198	0.8270	141.100	119.1	13.7	2.48	1.03	3.51	3.41	77.85	2.27	1.24
199	0.8310	141.100	119.1	13.8	2.48	1.04	3.51	3.39	77.80	2.28	1.24
200	0.8360	141.100	119.1	13.9	2.48	1.04	3.51	3.39	77.80	2.27	1.24
201	0.8400	141.500	119.5	13.9	2.48	1.04	3.52	3.39	77.80	2.28	1.24
202	0.8440	141.400	119.4	14.0	2.48	1.04	3.51	3.39	77.80	2.28	1.24
203	0.8480	141.500	119.5	14.1	2.48	1.04	3.51	3.39	77.80	2.28	1.24

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
110	0.4560	129.400	107.4	7.5	2.40	0.94	3.33	3.56	78.50	2.13	1.20
111	0.4600	129.500	107.5	7.6	2.40	0.94	3.33	3.56	78.50	2.13	1.20
112	0.4640	129.800	107.8	7.6	2.40	0.95	3.35	3.53	78.40	2.15	1.20
113	0.4690	129.900	107.9	7.7	2.40	0.95	3.35	3.53	78.40	2.15	1.20
114	0.4730	130.200	108.2	7.8	2.41	0.95	3.36	3.53	78.40	2.15	1.20
115	0.4770	130.500	108.5	7.9	2.41	0.95	3.36	3.54	78.40	2.16	1.21
116	0.4820	130.800	108.8	7.9	2.42	0.95	3.37	3.54	78.40	2.16	1.21
117	0.4860	130.900	108.9	8.0	2.42	0.95	3.37	3.54	78.40	2.16	1.21
118	0.4900	131.200	109.2	8.1	2.42	0.95	3.37	3.55	78.40	2.16	1.21
119	0.4940	131.700	109.7	8.1	2.43	0.95	3.38	3.56	78.40	2.17	1.22
120	0.4990	132.300	110.3	8.2	2.44	0.95	3.39	3.57	78.40	2.17	1.22
121	0.5030	132.300	110.3	8.3	2.44	0.95	3.39	3.57	78.40	2.17	1.22
122	0.5070	132.500	110.5	8.4	2.44	0.95	3.39	3.57	78.40	2.17	1.22
123	0.5120	132.900	110.9	8.5	2.45	0.95	3.40	3.58	78.40	2.18	1.22
124	0.5160	133.200	111.2	8.5	2.45	0.95	3.41	3.58	78.40	2.18	1.23
125	0.5200	133.100	111.1	8.6	2.45	0.95	3.40	3.58	78.40	2.18	1.23
126	0.5240	133.200	111.2	8.7	2.45	0.95	3.40	3.58	78.40	2.18	1.23
127	0.5280	133.100	111.1	8.7	2.45	0.95	3.40	3.57	78.40	2.17	1.22
128	0.5330	133.400	111.4	8.8	2.45	0.95	3.40	3.58	78.40	2.18	1.23
129	0.5370	133.700	111.7	8.9	2.46	0.95	3.41	3.58	78.40	2.18	1.23
130	0.5410	134.000	112.0	8.9	2.46	0.95	3.41	3.59	78.40	2.18	1.23
131	0.5450	134.200	112.2	9.0	2.46	0.95	3.41	3.59	78.40	2.18	1.23
132	0.5490	134.000	112.0	9.1	2.46	0.95	3.41	3.59	78.40	2.18	1.23
133	0.5530	134.500	112.5	9.1	2.47	0.95	3.42	3.60	78.40	2.18	1.23
134	0.5570	134.800	112.8	9.2	2.47	0.95	3.42	3.60	78.40	2.19	1.24
135	0.5610	134.800	112.8	9.3	2.47	0.95	3.42	3.60	78.40	2.19	1.23
136	0.5650	135.000	113.0	9.3	2.47	0.95	3.42	3.60	78.40	2.19	1.24
137	0.5690	135.000	113.0	9.4	2.47	0.95	3.42	3.60	78.40	2.19	1.24
138	0.5730	135.100	113.1	9.5	2.47	0.96	3.44	3.56	78.30	2.20	1.24
139	0.5770	135.200	113.2	9.5	2.47	0.96	3.44	3.56	78.30	2.20	1.24
140	0.5810	135.000	113.0	9.6	2.46	0.96	3.43	3.55	78.30	2.20	1.23
141	0.5850	135.500	113.5	9.7	2.47	0.96	3.44	3.56	78.30	2.20	1.24
142	0.5890	135.600	113.6	9.7	2.47	0.96	3.44	3.56	78.30	2.20	1.24
143	0.5930	135.400	113.4	9.8	2.47	0.96	3.43	3.56	78.30	2.20	1.23
144	0.5970	135.500	113.5	9.9	2.47	0.96	3.43	3.56	78.30	2.20	1.23
145	0.6010	135.700	113.7	9.9	2.47	0.96	3.44	3.56	78.30	2.20	1.24
146	0.6050	135.800	113.8	10.0	2.47	0.96	3.44	3.56	78.30	2.20	1.24
147	0.6090	135.900	113.9	10.1	2.47	0.96	3.44	3.56	78.30	2.20	1.24
148	0.6130	136.000	114.0	10.1	2.47	0.96	3.44	3.56	78.30	2.20	1.24
149	0.6170	136.100	114.1	10.2	2.47	0.96	3.44	3.56	78.30	2.20	1.24
150	0.6210	136.200	114.2	10.3	2.47	0.98	3.45	3.53	78.20	2.22	1.24
151	0.6250	136.300	114.3	10.3	2.47	0.98	3.45	3.53	78.20	2.22	1.24
152	0.6290	136.500	114.5	10.4	2.48	0.98	3.45	3.53	78.20	2.22	1.24
153	0.6330	136.500	114.5	10.5	2.47	0.98	3.45	3.53	78.20	2.22	1.24
154	0.6370	136.400	114.4	10.5	2.47	0.98	3.45	3.52	78.20	2.21	1.23
155	0.6410	137.000	115.0	10.6	2.48	0.98	3.46	3.53	78.20	2.22	1.24
156	0.6460	136.800	114.8	10.7	2.47	0.98	3.45	3.53	78.20	2.22	1.24

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
8	0.0330	49.800	19.7	0.6	0.47	2.55	3.02	1.18	92.30	2.78	0.24
9	0.0370	51.100	21.0	0.6	0.50	2.49	2.99	1.20	92.70	2.74	0.25
10	0.0410	52.000	21.9	0.7	0.52	2.43	2.96	1.21	93.10	2.69	0.26
11	0.0450	53.100	23.0	0.8	0.55	2.39	2.94	1.23	93.40	2.66	0.27
12	0.0490	54.000	23.9	0.8	0.57	2.35	2.92	1.24	93.70	2.63	0.28
13	0.0530	54.900	24.8	0.9	0.59	2.30	2.89	1.26	94.00	2.60	0.29
14	0.0570	56.100	26.0	1.0	0.62	2.28	2.89	1.27	94.20	2.58	0.31
15	0.0610	57.000	26.9	1.1	0.64	2.25	2.89	1.28	94.40	2.57	0.32
16	0.0650	57.900	27.8	1.1	0.66	2.22	2.88	1.30	94.60	2.55	0.33
17	0.0690	58.800	28.7	1.2	0.68	2.19	2.87	1.31	94.80	2.53	0.34
18	0.0730	59.600	29.5	1.3	0.70	2.17	2.87	1.32	94.90	2.52	0.35
19	0.0770	60.500	30.4	1.3	0.72	2.16	2.88	1.33	95.00	2.52	0.36
20	0.0810	61.100	31.0	1.4	0.73	2.15	2.88	1.34	95.10	2.51	0.37
21	0.0850	62.400	32.3	1.5	0.76	2.00	2.77	1.38	96.10	2.38	0.38
22	0.0890	62.900	32.8	1.6	0.78	1.90	2.68	1.41	96.80	2.29	0.39
23	0.0930	63.800	33.7	1.6	0.80	1.86	2.65	1.43	97.10	2.26	0.40
24	0.0970	64.300	34.2	1.7	0.81	1.86	2.66	1.43	97.10	2.26	0.40
25	0.1010	65.000	34.9	1.8	0.82	1.86	2.68	1.44	97.10	2.27	0.41
26	0.1070	66.200	36.1	1.9	0.85	1.84	2.69	1.46	97.20	2.27	0.43
27	0.1090	66.500	36.4	1.9	0.86	1.84	2.70	1.46	97.20	2.27	0.43
28	0.1120	67.300	37.2	2.0	0.88	1.81	2.69	1.48	97.40	2.25	0.44
29	0.1160	67.800	37.7	2.0	0.89	1.81	2.70	1.49	97.40	2.26	0.44
30	0.1200	68.500	38.4	2.1	0.90	1.80	2.70	1.50	97.50	2.25	0.45
31	0.1250	69.100	39.0	2.2	0.92	1.79	2.70	1.51	97.60	2.24	0.46
32	0.1280	69.800	39.7	2.3	0.93	1.77	2.70	1.53	97.70	2.24	0.47
33	0.1320	70.500	40.4	2.3	0.95	1.76	2.70	1.54	97.80	2.23	0.47
34	0.1360	71.000	40.9	2.4	0.96	1.76	2.72	1.55	97.80	2.24	0.48
35	0.1400	72.100	42.0	2.5	0.98	1.74	2.73	1.56	97.90	2.23	0.49
36	0.1440	72.700	42.6	2.5	1.00	1.73	2.72	1.58	98.00	2.23	0.50
37	0.1490	73.300	43.2	2.6	1.01	1.76	2.77	1.57	97.80	2.26	0.50
38	0.1530	73.600	43.5	2.7	1.02	2.00	3.02	1.51	96.10	2.51	0.51
39	0.1570	74.100	44.0	2.8	1.03	2.03	3.06	1.51	95.90	2.54	0.51
40	0.1610	75.300	45.2	2.8	1.05	2.02	3.07	1.52	96.00	2.54	0.53
41	0.1650	76.100	46.0	2.9	1.07	2.02	3.09	1.53	96.00	2.55	0.54
42	0.1690	76.700	46.6	3.0	1.09	2.00	3.09	1.54	96.10	2.54	0.54
43	0.1730	77.300	47.2	3.1	1.10	2.00	3.10	1.55	96.10	2.55	0.55
44	0.1770	78.000	47.9	3.1	1.11	2.00	3.12	1.56	96.10	2.56	0.56
45	0.1810	78.900	48.8	3.2	1.13	2.02	3.15	1.56	96.00	2.58	0.57
46	0.1850	79.500	49.4	3.3	1.15	1.87	3.02	1.61	97.00	2.45	0.57
47	0.1890	80.700	50.6	3.4	1.17	1.79	2.96	1.66	97.60	2.37	0.59
48	0.1930	81.200	51.1	3.4	1.18	1.76	2.94	1.67	97.80	2.35	0.59
49	0.1970	81.900	51.8	3.5	1.20	1.77	2.97	1.68	97.70	2.37	0.60
50	0.2010	82.500	52.4	3.6	1.21	1.80	3.01	1.67	97.50	2.41	0.61
51	0.2050	83.600	53.5	3.6	1.24	1.80	3.04	1.69	97.50	2.42	0.62
52	0.2090	84.000	53.9	3.7	1.25	1.80	3.05	1.69	97.50	2.42	0.62
53	0.2130	84.600	54.5	3.8	1.26	1.80	3.06	1.70	97.50	2.43	0.63
54	0.2170	85.300	55.2	3.9	1.27	1.81	3.09	1.70	97.40	2.45	0.64

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
204	0.8520	141.600	119.6	14.1	2.48	1.04	3.51	3.39	77.80	2.28	1.24
205	0.8560	141.600	119.6	14.2	2.48	1.04	3.51	3.39	77.80	2.27	1.24
206	0.8610	141.900	119.9	14.3	2.48	1.04	3.52	3.39	77.80	2.28	1.24
207	0.8650	142.000	120.0	14.3	2.48	1.04	3.52	3.39	77.80	2.28	1.24
208	0.8690	142.100	120.1	14.4	2.48	1.04	3.52	3.39	77.80	2.28	1.24
209	0.8740	142.400	120.4	14.5	2.48	1.04	3.52	3.40	77.80	2.28	1.24
210	0.8780	142.800	120.8	14.6	2.49	1.04	3.53	3.40	77.80	2.28	1.25
211	0.8820	143.000	121.0	14.6	2.49	1.04	3.53	3.40	77.80	2.28	1.25
212	0.8860	143.100	121.1	14.7	2.49	1.03	3.52	3.43	77.87	2.27	1.25
213	0.8900	142.900	120.9	14.8	2.49	1.04	3.52	3.40	77.80	2.28	1.24
214	0.8940	143.700	121.7	14.8	2.50	1.05	3.55	3.38	77.70	2.30	1.25
215	0.8980	143.500	121.5	14.9	2.49	1.05	3.55	3.37	77.70	2.30	1.25
216	0.9030	143.400	121.4	15.0	2.49	1.05	3.54	3.37	77.70	2.30	1.25
217	0.9070	143.800	121.8	15.0	2.50	11.13	13.63	1.22	7.70	12.38	1.25

Parameters for Specimen No. 3

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	127.610			n/a
Moisture content: Dry soil+tare, gms.	117.450			n/a
Moisture content: Tare, gms.	83.140			n/a
Moisture, %	29.6	29.2	23.3	
Moist specimen weight, gms.	1178.70			
Diameter, in.	2.861	2.852	2.764	
Area, in.²	6.429	6.389	5.999	
Height, in.	5.773	5.755	5.580	
Net decrease in height, in.		0.018	0.175	
Wet density, pcf	121.0	121.8	127.6	
Dry density, pcf	93.3	94.2	103.5	
Void ratio	0.8057	0.7888	0.6286	
Saturation, %	99.2	100.0	100.0	

Test Readings for Specimen No. 3

Consolidation cell pressure = 110.00 psi (15.84 ksf)
Consolidation back pressure = 60.00 psi (8.64 ksf)
Consolidation effective confining stress = 7.20 ksf
Strain rate, in./min. = 0.004
Fail. Stress = 1.00 ksf **at reading no.** 36
Ult. Stress = 2.19 ksf **at reading no.** 212

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0020	30.100	0.0	0.0	0.00	7.20	7.20	1.00	60.00	7.20	0.00
1	0.0060	40.200	10.1	0.1	0.24	3.18	3.42	1.08	87.90	3.30	0.12
2	0.0100	42.400	12.3	0.1	0.29	3.05	3.35	1.10	88.80	3.20	0.15
3	0.0130	43.900	13.8	0.2	0.33	2.94	3.27	1.11	89.60	3.10	0.17
4	0.0180	45.100	15.0	0.3	0.36	2.85	3.21	1.13	90.20	3.03	0.18
5	0.0220	46.300	16.2	0.4	0.39	2.76	3.15	1.14	90.80	2.96	0.19
6	0.0260	47.600	17.5	0.4	0.42	2.68	3.10	1.16	91.40	2.89	0.21
7	0.0290	49.000	18.9	0.5	0.45	2.61	3.06	1.17	91.90	2.83	0.23

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
102	0.4070	111.400	81.3	7.3	1.81	1.81	3.62	2.00	97.40	2.72	0.90
103	0.4110	112.000	81.9	7.3	1.82	1.83	3.65	2.00	97.30	2.74	0.91
104	0.4150	112.300	82.2	7.4	1.83	1.84	3.67	1.99	97.20	2.76	0.91
105	0.4190	112.500	82.4	7.5	1.83	1.86	3.69	1.99	97.10	2.77	0.92
106	0.4230	113.000	82.9	7.5	1.84	1.89	3.73	1.98	96.90	2.81	0.92
107	0.4270	113.200	83.1	7.6	1.84	1.90	3.74	1.97	96.80	2.82	0.92
108	0.4310	113.800	83.7	7.7	1.85	1.89	3.74	1.98	96.90	2.81	0.93
109	0.4350	114.400	84.3	7.8	1.87	1.73	3.59	2.08	98.00	2.66	0.93
110	0.4370	114.900	84.8	7.8	1.88	1.68	3.56	2.11	98.30	2.62	0.94
111	0.4430	115.300	85.2	7.9	1.88	1.67	3.55	2.13	98.40	2.61	0.94
112	0.4470	115.600	85.5	8.0	1.89	1.73	3.62	2.09	98.00	2.67	0.94
113	0.4510	115.900	85.8	8.0	1.89	1.76	3.65	2.08	97.80	2.70	0.95
114	0.4550	116.200	86.1	8.1	1.90	1.76	3.66	2.08	97.80	2.71	0.95
115	0.4590	116.600	86.5	8.2	1.91	1.77	3.68	2.08	97.70	2.72	0.95
116	0.4630	117.100	87.0	8.3	1.92	1.79	3.70	2.07	97.60	2.74	0.96
117	0.4670	117.700	87.6	8.3	1.93	1.80	3.73	2.07	97.50	2.76	0.96
118	0.4710	117.800	87.7	8.4	1.93	1.80	3.73	2.07	97.50	2.76	0.96
119	0.4750	118.200	88.1	8.5	1.94	1.81	3.75	2.07	97.40	2.78	0.97
120	0.4790	118.500	88.4	8.5	1.94	1.83	3.77	2.06	97.30	2.80	0.97
121	0.4830	118.700	88.6	8.6	1.94	1.84	3.79	2.05	97.20	2.81	0.97
122	0.4870	118.900	88.8	8.7	1.95	1.84	3.79	2.06	97.20	2.82	0.97
123	0.4910	119.400	89.3	8.8	1.96	1.86	3.81	2.05	97.10	2.84	0.98
124	0.4950	119.800	89.7	8.8	1.96	1.87	3.83	2.05	97.00	2.85	0.98
125	0.4990	119.900	89.8	8.9	1.96	1.89	3.85	2.04	96.90	2.87	0.98
126	0.5030	120.100	90.0	9.0	1.97	1.92	3.88	2.03	96.70	2.90	0.98
127	0.5070	120.600	90.5	9.1	1.98	1.93	3.91	2.02	96.60	2.92	0.99
128	0.5110	120.700	90.6	9.1	1.98	1.96	3.93	2.01	96.40	2.95	0.99
129	0.5150	121.200	91.1	9.2	1.99	1.83	3.81	2.09	97.30	2.82	0.99
130	0.5190	121.800	91.7	9.3	2.00	1.74	3.74	2.15	97.90	2.74	1.00
131	0.5220	122.100	92.0	9.3	2.00	1.71	3.72	2.17	98.10	2.71	1.00
132	0.5260	122.400	92.3	9.4	2.01	1.73	3.74	2.16	98.00	2.73	1.00
133	0.5310	122.400	92.3	9.5	2.01	1.79	3.79	2.12	97.60	2.79	1.00
134	0.5340	122.800	92.7	9.5	2.01	1.80	3.81	2.12	97.50	2.81	1.01
135	0.5390	123.300	93.2	9.6	2.02	1.81	3.84	2.11	97.40	2.83	1.01
136	0.5420	123.100	93.0	9.7	2.02	1.81	3.83	2.11	97.40	2.82	1.01
137	0.5420	123.100	93.0	9.7	2.02	1.81	3.83	2.11	97.40	2.82	1.01
138	0.5470	123.600	93.5	9.8	2.03	1.83	3.85	2.11	97.30	2.84	1.01
139	0.5500	123.700	93.6	9.8	2.03	1.84	3.87	2.10	97.20	2.86	1.01
140	0.5550	123.900	93.8	9.9	2.03	1.84	3.87	2.10	97.20	2.86	1.01
141	0.5580	124.200	94.1	10.0	2.03	1.86	3.89	2.09	97.10	2.87	1.02
142	0.5630	124.500	94.4	10.1	2.04	1.87	3.91	2.09	97.00	2.89	1.02
143	0.5660	124.800	94.7	10.1	2.04	1.89	3.93	2.08	96.90	2.91	1.02
144	0.5700	124.800	94.7	10.2	2.04	1.90	3.94	2.07	96.80	2.92	1.02
145	0.5740	125.000	94.9	10.3	2.04	1.92	3.96	2.07	96.70	2.94	1.02
146	0.5820	125.200	95.1	10.4	2.05	1.94	3.99	2.05	96.50	2.97	1.02
147	0.5860	125.600	95.5	10.5	2.05	1.96	4.01	2.05	96.40	2.98	1.03
148	0.5900	125.900	95.8	10.5	2.06	1.97	4.03	2.04	96.30	3.00	1.03

Test Readings for Specimen No. 3

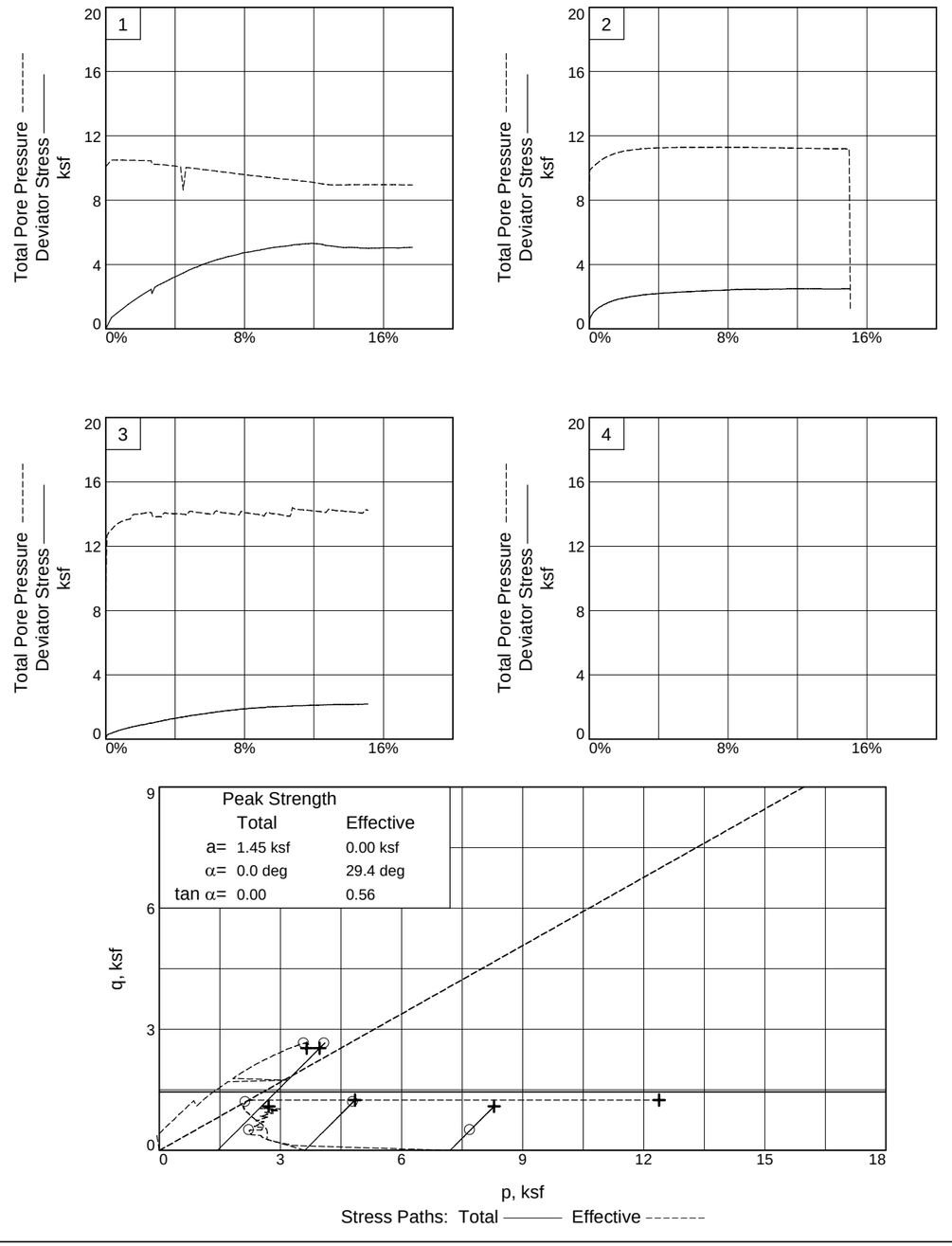
No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
55	0.2210	85.700	55.6	3.9	1.28	1.81	3.10	1.71	97.40	2.46	0.64
56	0.2250	86.400	56.3	4.0	1.30	1.81	3.11	1.72	97.40	2.46	0.65
57	0.2290	87.000	56.9	4.1	1.31	1.81	3.12	1.72	97.40	2.47	0.66
58	0.2330	87.900	57.8	4.1	1.33	1.81	3.14	1.73	97.40	2.48	0.67
59	0.2370	88.400	58.3	4.2	1.34	1.81	3.15	1.74	97.40	2.48	0.67
60	0.2410	88.900	58.8	4.3	1.35	1.83	3.18	1.74	97.30	2.50	0.68
61	0.2450	89.600	59.5	4.4	1.37	1.83	3.19	1.75	97.30	2.51	0.68
62	0.2480	90.100	60.0	4.4	1.38	1.84	3.22	1.75	97.20	2.53	0.69
63	0.2520	90.600	60.5	4.5	1.39	1.84	3.23	1.75	97.20	2.54	0.69
64	0.2560	91.300	61.2	4.6	1.40	1.86	3.26	1.75	97.10	2.56	0.70
65	0.2600	91.900	61.8	4.6	1.41	1.87	3.29	1.76	97.00	2.58	0.71
66	0.2640	92.300	62.2	4.7	1.42	1.89	3.31	1.75	96.90	2.60	0.71
67	0.2680	93.100	63.0	4.8	1.44	1.74	3.18	1.83	97.90	2.46	0.72
68	0.2720	94.000	63.9	4.8	1.46	1.67	3.13	1.87	98.40	2.40	0.73
69	0.2760	94.400	64.3	4.9	1.47	1.66	3.12	1.89	98.50	2.39	0.73
70	0.2800	95.100	65.0	5.0	1.48	1.67	3.15	1.89	98.40	2.41	0.74
71	0.2840	95.700	65.6	5.1	1.50	1.71	3.21	1.87	98.10	2.46	0.75
72	0.2880	96.000	65.9	5.1	1.50	1.71	3.21	1.88	98.10	2.46	0.75
73	0.2920	96.500	66.4	5.2	1.51	1.73	3.24	1.87	98.00	2.48	0.76
74	0.2960	96.900	66.8	5.3	1.52	1.73	3.25	1.88	98.00	2.49	0.76
75	0.3000	97.500	67.4	5.3	1.53	1.74	3.27	1.88	97.90	2.51	0.77
76	0.3040	98.100	68.0	5.4	1.54	1.74	3.29	1.89	97.90	2.51	0.77
77	0.3080	98.700	68.6	5.5	1.56	1.76	3.31	1.89	97.80	2.54	0.78
78	0.3110	99.300	69.2	5.5	1.57	1.76	3.33	1.89	97.80	2.54	0.78
79	0.3150	99.900	69.8	5.6	1.58	1.77	3.35	1.89	97.70	2.56	0.79
80	0.3190	100.000	69.9	5.7	1.58	1.79	3.37	1.89	97.60	2.58	0.79
81	0.3230	100.700	70.6	5.8	1.60	1.80	3.40	1.89	97.50	2.60	0.80
82	0.3270	101.100	71.0	5.8	1.61	1.81	3.42	1.88	97.40	2.62	0.80
83	0.3310	101.900	71.8	5.9	1.62	1.81	3.44	1.89	97.40	2.63	0.81
84	0.3350	102.400	72.3	6.0	1.63	1.83	3.46	1.89	97.30	2.64	0.82
85	0.3390	102.900	72.8	6.0	1.64	1.84	3.49	1.89	97.20	2.66	0.82
86	0.3430	103.500	73.4	6.1	1.65	1.87	3.53	1.88	97.00	2.70	0.83
87	0.3470	103.700	73.6	6.2	1.66	1.87	3.53	1.89	97.00	2.70	0.83
88	0.3520	104.500	74.4	6.3	1.67	1.73	3.40	1.97	98.00	2.56	0.84
89	0.3550	105.400	75.3	6.3	1.69	1.66	3.35	2.02	98.50	2.50	0.85
90	0.3600	105.500	75.4	6.4	1.69	1.64	3.34	2.03	98.60	2.49	0.85
91	0.3640	106.200	76.1	6.5	1.71	1.68	3.39	2.01	98.30	2.54	0.85
92	0.3680	106.500	76.4	6.6	1.71	1.71	3.43	2.00	98.10	2.57	0.86
93	0.3710	107.300	77.2	6.6	1.73	1.73	3.46	2.00	98.00	2.59	0.87
94	0.3750	107.600	77.5	6.7	1.74	1.74	3.48	2.00	97.90	2.61	0.87
95	0.3790	108.400	78.3	6.8	1.75	1.76	3.51	2.00	97.80	2.63	0.88
96	0.3830	108.600	78.5	6.8	1.76	1.76	3.51	2.00	97.80	2.63	0.88
97	0.3870	109.200	79.1	6.9	1.77	1.77	3.54	2.00	97.70	2.66	0.88
98	0.3910	109.600	79.5	7.0	1.78	1.77	3.55	2.00	97.70	2.66	0.89
99	0.3950	110.300	80.2	7.0	1.79	1.79	3.58	2.00	97.60	2.68	0.89
100	0.3990	110.600	80.5	7.1	1.79	1.80	3.59	2.00	97.50	2.70	0.90
101	0.4030	110.700	80.6	7.2	1.80	1.80	3.60	2.00	97.50	2.70	0.90

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
196	0.7820	135.000	104.9	14.0	2.17	1.68	3.85	2.29	98.30	2.77	1.08
197	0.7870	135.200	105.1	14.1	2.17	1.68	3.85	2.29	98.30	2.77	1.08
198	0.7910	135.100	105.0	14.1	2.16	1.70	3.86	2.27	98.20	2.78	1.08
199	0.7950	135.400	105.3	14.2	2.17	1.70	3.87	2.28	98.20	2.78	1.08
200	0.7990	135.500	105.4	14.3	2.17	1.71	3.88	2.27	98.10	2.80	1.08
201	0.8030	135.700	105.6	14.4	2.17	1.71	3.88	2.27	98.10	2.80	1.09
202	0.8070	135.800	105.7	14.4	2.17	1.73	3.90	2.26	98.00	2.81	1.09
203	0.8110	136.100	106.0	14.5	2.18	1.74	3.92	2.25	97.90	2.83	1.09
204	0.8140	135.700	105.6	14.6	2.17	1.74	3.91	2.24	97.90	2.83	1.08
205	0.8180	136.300	106.2	14.6	2.18	1.76	3.93	2.24	97.80	2.85	1.09
206	0.8230	136.400	106.3	14.7	2.18	1.77	3.95	2.23	97.70	2.86	1.09
207	0.8260	136.500	106.4	14.8	2.18	1.79	3.96	2.22	97.60	2.87	1.09
208	0.8300	136.500	106.4	14.8	2.18	1.76	3.93	2.24	97.80	2.84	1.09
209	0.8340	137.200	107.1	14.9	2.19	1.61	3.80	2.36	98.80	2.71	1.09
210	0.8380	137.200	107.1	15.0	2.19	1.57	3.76	2.39	99.10	2.66	1.09
211	0.8420	137.400	107.3	15.1	2.19	1.58	3.77	2.38	99.00	2.68	1.09
212	0.8450	137.400	107.3	15.1	2.19	1.61	3.80	2.36	98.80	2.71	1.09

Test Readings for Specimen No. 3

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
149	0.5940	126.100	96.0	10.6	2.06	1.97	4.03	2.04	96.30	3.00	1.03
150	0.5980	126.200	96.1	10.7	2.06	1.81	3.87	2.14	97.40	2.84	1.03
151	0.6020	127.000	96.9	10.8	2.08	1.45	3.53	2.43	99.90	2.49	1.04
152	0.6060	127.200	97.1	10.8	2.08	1.47	3.55	2.42	99.80	2.51	1.04
153	0.6100	127.200	97.1	10.9	2.08	1.51	3.59	2.37	99.50	2.55	1.04
154	0.6140	127.400	97.3	11.0	2.08	1.53	3.61	2.36	99.40	2.57	1.04
155	0.6180	127.600	97.5	11.0	2.08	1.54	3.62	2.35	99.30	2.58	1.04
156	0.6220	127.600	97.5	11.1	2.08	1.56	3.64	2.34	99.20	2.60	1.04
157	0.6260	127.800	97.7	11.2	2.08	1.57	3.65	2.33	99.10	2.61	1.04
158	0.6310	127.700	97.6	11.3	2.08	1.57	3.65	2.32	99.10	2.61	1.04
159	0.6340	128.200	98.1	11.3	2.09	1.57	3.66	2.33	99.10	2.61	1.04
160	0.6380	128.700	98.6	11.4	2.10	1.58	3.68	2.32	99.00	2.63	1.05
161	0.6420	128.300	98.2	11.5	2.09	1.60	3.69	2.31	98.90	2.64	1.04
162	0.6460	128.900	98.8	11.5	2.10	1.60	3.70	2.31	98.90	2.65	1.05
163	0.6500	128.900	98.8	11.6	2.10	1.60	3.69	2.31	98.90	2.65	1.05
164	0.6540	129.400	99.3	11.7	2.11	1.61	3.72	2.31	98.80	2.67	1.05
165	0.6580	129.600	99.5	11.8	2.11	1.61	3.72	2.31	98.80	2.67	1.05
166	0.6620	129.800	99.7	11.8	2.11	1.63	3.74	2.30	98.70	2.68	1.06
167	0.6670	130.300	100.2	11.9	2.12	1.64	3.76	2.29	98.60	2.70	1.06
168	0.6700	130.300	100.2	12.0	2.12	1.64	3.76	2.29	98.60	2.70	1.06
169	0.6750	130.600	100.5	12.1	2.12	1.66	3.78	2.28	98.50	2.72	1.06
170	0.6790	130.800	100.7	12.1	2.12	1.66	3.78	2.28	98.50	2.72	1.06
171	0.6830	130.900	100.8	12.2	2.12	1.67	3.79	2.27	98.40	2.73	1.06
172	0.6870	131.000	100.9	12.3	2.12	1.67	3.80	2.27	98.40	2.73	1.06
173	0.6910	131.400	101.3	12.3	2.13	1.68	3.82	2.27	98.30	2.75	1.07
174	0.6940	131.600	101.5	12.4	2.13	1.70	3.83	2.26	98.20	2.77	1.07
175	0.6990	131.600	101.5	12.5	2.13	1.71	3.85	2.24	98.10	2.78	1.07
176	0.7020	131.900	101.8	12.5	2.14	1.73	3.87	2.24	98.00	2.80	1.07
177	0.7060	132.200	102.1	12.6	2.14	1.73	3.87	2.24	98.00	2.80	1.07
178	0.7100	131.900	101.8	12.7	2.13	1.74	3.88	2.22	97.90	2.81	1.07
179	0.7140	132.400	102.3	12.8	2.14	1.66	3.80	2.29	98.50	2.73	1.07
180	0.7180	132.700	102.6	12.8	2.15	1.56	3.70	2.38	99.20	2.63	1.07
181	0.7220	132.900	102.8	12.9	2.15	1.53	3.68	2.41	99.40	2.60	1.07
182	0.7260	133.000	102.9	13.0	2.15	1.56	3.70	2.38	99.20	2.63	1.07
183	0.7300	132.800	102.7	13.0	2.14	1.60	3.74	2.34	98.90	2.67	1.07
184	0.7340	133.300	103.2	13.1	2.15	1.60	3.75	2.35	98.90	2.67	1.08
185	0.7380	133.500	103.4	13.2	2.15	1.61	3.77	2.34	98.80	2.69	1.08
186	0.7420	133.500	103.4	13.3	2.15	1.63	3.78	2.32	98.70	2.70	1.08
187	0.7460	133.700	103.6	13.3	2.16	1.63	3.78	2.32	98.70	2.70	1.08
188	0.7510	133.600	103.5	13.4	2.15	1.64	3.79	2.31	98.60	2.72	1.08
189	0.7550	134.000	103.9	13.5	2.16	1.64	3.80	2.31	98.60	2.72	1.08
190	0.7580	134.200	104.1	13.5	2.16	1.64	3.80	2.32	98.60	2.72	1.08
191	0.7640	134.400	104.3	13.7	2.16	1.64	3.80	2.32	98.60	2.72	1.08
192	0.7660	134.300	104.2	13.7	2.16	1.66	3.81	2.30	98.50	2.74	1.08
193	0.7710	134.600	104.5	13.8	2.16	1.67	3.83	2.29	98.40	2.75	1.08
194	0.7740	134.600	104.5	13.8	2.16	1.67	3.83	2.29	98.40	2.75	1.08
195	0.7790	134.700	104.6	13.9	2.16	1.67	3.83	2.29	98.40	2.75	1.08

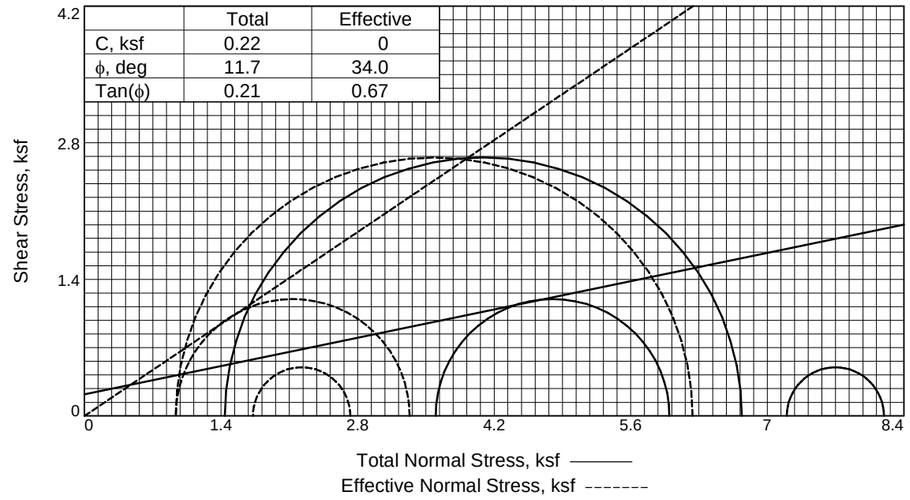


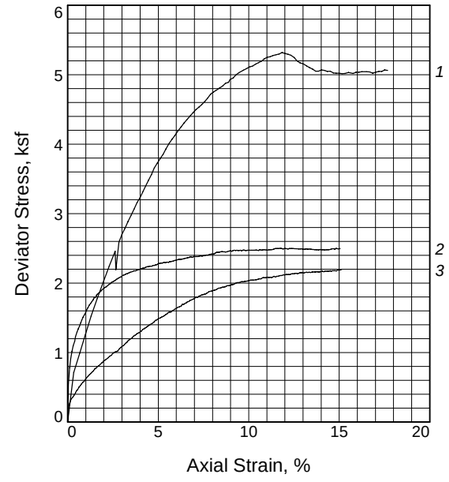
Client: NCDOT GEU
Project: Winston-Salem N. Beltway E. Section
Depth: 11.2-13.2' **Sample Number:** ST-2
Project No.: 6235-17-038 **Figure** _____

S & ME, INC.

Tested By: Karen Warner **Checked By:** Jason Reeves

C & phi are not test results but an interpretation of the test results. The designer is responsible for interpreting test data as provided by S&ME.





Sample No.		1	2	3
Initial	Water Content, %	22.2	29.6	29.6
	Dry Density, pcf	99.7	92.3	93.3
	Saturation, %	86.7	96.8	99.2
	Void Ratio	0.6902	0.8264	0.8057
	Diameter, in.	2.863	2.835	2.861
	Height, in.	6.144	6.156	5.773
At Test	Water Content, %	21.4	25.2	23.3
	Dry Density, pcf	106.9	100.4	103.5
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.5772	0.6796	0.6286
	Diameter, in.	2.797	2.757	2.764
	Height, in.	6.005	5.988	5.580
Strain rate, in./min.		0.010	0.004	0.004
Eff. Cell Pressure, ksf		1.44	3.60	7.20
Fail. Stress, ksf		5.30	2.40	1.00
Total Pore Pr., ksf		9.14	11.30	14.11
Strain, %		11.7	7.5	2.5
Ult. Stress, ksf		5.06	2.50	2.19
Total Pore Pr., ksf		8.96	1.11	14.23
Strain, %		17.7	15.0	15.1
$\bar{\sigma}_1$ Failure, ksf		6.23	3.33	2.72
$\bar{\sigma}_3$ Failure, ksf		0.94	0.94	1.73

Type of Test:
CU with Pore Pressures
Sample Type: Undisturbed
Description: A-2-7

LL= 43 **PL=** 25 **PI=** 18
Assumed Specific Gravity= 2.70
Remarks:

Figure ST-2

Client: NCDOT GEU

Project: Winston-Salem N. Beltway E. Section

Sample Number: ST-2 **Depth:** 11.2-13.2'

Proj. No.: 6235-17-038 **Date Sampled:** 10/2017

TRIAXIAL SHEAR TEST REPORT
S & ME, INC.
Charlotte, North Carolina

Tested By: Karen Warner **Checked By:** Jason Reeves

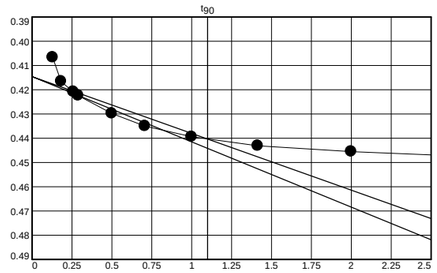
Pressure: 0.05 tsf — **TEST READINGS** — **Load No. 1**

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	+0 00:00:00	0.39450	11	+0 00:08:00	0.40180
2	+0 00:00:01	0.03970	12	+0 00:15:00	0.40240
3	+0 00:00:02	0.39770	13	+0 00:30:00	0.40310
4	+0 00:00:04	0.39850	14	+0 00:60:00	0.40380
5	+0 00:00:05	0.39860	15	+0 02:00:00	0.40430
6	+0 00:00:15	0.39920	16	+0 04:00:00	0.40490
7	+0 00:00:30	0.39980	17	+0 08:00:00	0.40560
8	+0 00:00:60	0.40010	18	+0 15:00:00	0.40650
9	+0 00:02:00	0.40080	19	+0 19:01:33	0.40670
10	+0 00:04:00	0.40140			

Void Ratio = 1.911 **Compression =** 1.1%

Pressure: 0.25 tsf — **TEST READINGS** — **Load No. 2**

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.40670	11	+0 00:08:00	0.44780
2	+0 00:00:01	0.40670	12	+0 00:15:00	0.44950
3	+0 00:00:02	0.41660	13	+0 00:30:00	0.45120
4	+0 00:00:04	0.42080	14	+0 00:60:00	0.45280
5	+0 00:00:05	0.42240	15	+0 02:00:00	0.45440
6	+0 00:00:15	0.42980	16	+0 04:00:00	0.45610
7	+0 00:00:30	0.43500	17	+0 08:00:00	0.45770
8	+0 00:00:60	0.43940	18	+0 15:00:00	0.45920
9	+0 00:02:00	0.44310	19	+0 20:46:00	0.46070
10	+0 00:04:00	0.44550			

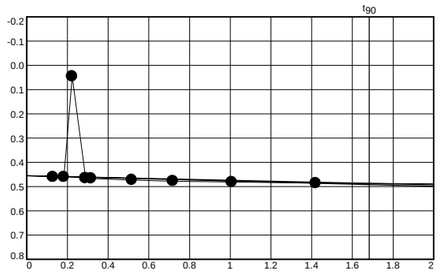


Void Ratio = 1.762 **Compression =** 6.2%

D_0 = 0.4145 **D_{90} =** 0.4403 **D_{100} =** 0.4432 **C_v at 1.21 min. =** 1.837 ft.^{2}/day

Pressure: 0.50 tsf — **TEST READINGS** — **Load No. 3**

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.46070	11	+0 00:04:01	0.48880
2	+0 00:00:01	0.46070	12	+0 00:08:01	0.49130
3	+0 00:00:02	0.46080	13	+0 00:15:01	0.49370
4	+0 00:00:03	0.04608	14	+0 00:30:00	0.49610
5	+0 00:00:05	0.46490	15	+0 00:60:00	0.49850
6	+0 00:00:06	0.46650	16	+0 02:00:00	0.50090
7	+0 00:00:16	0.47280	17	+0 04:00:00	0.50330
8	+0 00:00:31	0.47760	18	+0 08:00:00	0.50610
9	+0 00:00:61	0.48180	19	+0 15:00:00	0.50800
10	+0 00:02:01	0.48570	20	+0 24:00:00	0.50800



CONSOLIDATION TEST DATA

1/19/2018

Client: NCDOT GEU
Project: Winston-Salem N. Beltway E. Section
Project Number: 6235-17-038
Depth: 4.2-5.7' **Sample Number:** ST-3
Material Description: A-5
Liquid Limit: 44 **Plasticity Index:** 9
AASHTO: A-5
Figure No.: ST-3
Testing Remarks: Sample was saturated
Tested by: Karen Warner **Checked by:** Jason Reeves

Test Specimen Data

NATURAL MOISTURE		VOID RATIO		AFTER TEST	
Wet w+t =	200.21 g.	Spec. Gr. =	2.65	Wet w+t =	218.45 g.
Dry w+t =	157.40 g.	Est. Ht. Solids =	0.361 in.	Dry w+t =	182.76 g.
Tare Wt. =	83.74 g.	Init. V.R. =	1.945	Tare Wt. =	106.19 g.
Moisture =	58.1 %	Init. Sat. =	79.2 %	Moisture =	46.6 %
UNIT WEIGHT		**TEST START**		Dry Wt. =	76.57* g.
Height =	1.000 in.	Height =	1.063 in.		
Diameter =	2.494 in.	Diameter =	2.494 in.		
Weight =	106.19 g.				
Dry Dens. =	52.4 pcf				

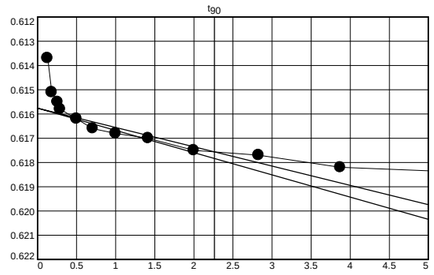
End-Of-Load Summary

Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C_v (ft.^{2}/day)	C_α	Void Ratio	% Strain
start	0.39450	0.00000			1.945	
0.05	0.40670	0.01220			1.911	1.1 Comprs.
0.25	0.46070	0.06620	1.837		1.762	6.2 Comprs.
0.50	0.50800	0.11350	0.709		1.631	10.7 Comprs.
1.00	0.56090	0.16640	0.797		1.484	15.7 Comprs.
2.00	0.61130	0.21680	1.360		1.344	20.4 Comprs.
4.00	0.62020	0.22570	0.294		1.320	21.2 Comprs.
2.00	0.61980	0.22530			1.321	21.2 Comprs.
1.00	0.61820	0.22370	2.371		1.325	21.0 Comprs.
0.50	0.61490	0.22040	2.167		1.334	20.7 Comprs.
0.25	0.61000	0.21550	0.584		1.348	20.3 Comprs.

Compression index (C_C), tsf = 0.49 **Preconsolidation pressure (P_p), tsf =** 2.0 **Void ratio at P_p (e_m) =** 1.343

Pressure: 4.00 tsf — **TEST READINGS** — **Load No. 6**

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.61130	11	+0 00:08:00	0.61770
2	+0 00:00:01	0.61370	12	+0 00:15:00	0.61820
3	+0 00:00:02	0.61510	13	+0 00:30:00	0.61840
4	+0 00:00:04	0.61550	14	+0 00:60:00	0.61840
5	+0 00:00:05	0.61580	15	+0 02:00:00	0.61920
6	+0 00:00:15	0.61620	16	+0 04:00:00	0.61940
7	+0 00:00:30	0.61660	17	+0 08:00:00	0.62000
8	+0 00:00:60	0.61680	18	+0 15:00:00	0.62020
9	+0 00:02:00	0.61700	19	+0 24:00:0	0.62020
10	+0 00:04:00	0.61750	20	+1 24:41:00	0.62020



Void Ratio = 1.320 **Compression =** 21.2%
D_0 = 0.6158 **D_{90} =** 0.6176 **D_{100} =** 0.6178 **C_v at 5.11 min. =** 0.294 ft.^{2}/day

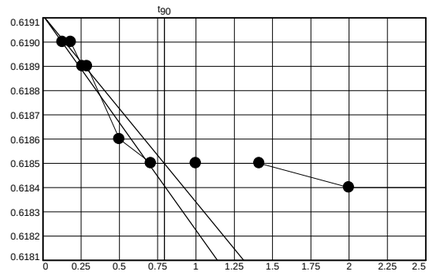
Pressure: 2.00 tsf — **TEST READINGS** — **Load No. 7**

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.62020	11	+0 00:08:00	0.61980
2	+0 00:00:01	0.61990	12	+0 00:15:00	0.61980
3	+0 00:00:02	0.61980	13	+0 00:30:00	0.61980
4	+0 00:00:04	0.61980	14	+0 00:60:00	0.61980
5	+0 00:00:05	0.61980	15	+0 02:00:00	0.61980
6	+0 00:00:15	0.61980	16	+0 04:00:00	0.61980
7	+0 00:00:30	0.61980	17	+0 08:00:00	0.61980
8	+0 00:00:60	0.61980	18	+0 14:24:00	0.61980
9	+0 00:02:00	0.61980			
10	+0 00:04:00	0.61980			

Void Ratio = 1.321 **Compression =** 21.2%

Pressure: 1.00 tsf — **TEST READINGS** — **Load No. 8**

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.61980	11	+0 00:08:00	0.61840
2	+0 00:00:01	0.61900	12	+0 00:15:00	0.61840
3	+0 00:00:02	0.61900	13	+0 00:30:00	0.61830
4	+0 00:00:04	0.61890	14	+0 00:60:00	0.61830
5	+0 00:00:05	0.61890	15	+0 02:00:00	0.61830
6	+0 00:00:15	0.61860	16	+0 04:00:00	0.61820
7	+0 00:00:30	0.61850	17	+0 04:14:00	0.61820
8	+0 00:00:60	0.61850			
9	+0 00:02:00	0.61850			
10	+0 00:04:00	0.61840			



Void Ratio = 1.325 **Compression =** 21.0%
D_0 = 0.6191 **D_{90} =** 0.6185 **D_{100} =** 0.6184 **C_v at 0.63 min. =** 2.371 ft.^{2}/day

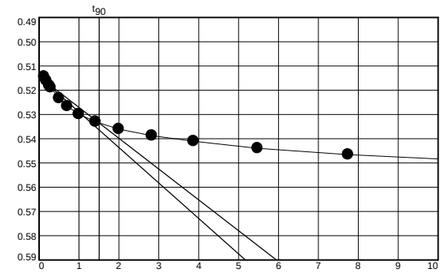
Pressure: 0.50 tsf — **TEST READINGS (continued)** — **Load No. 3**

No.	Clock Time	Dial Reading
21	+1 27:32:00	0.50800

Void Ratio = 1.631 **Compression =** 10.7%
D_0 = 0.4559 **D_{90} =** 0.4871 **D_{100} =** 0.4906 **C_v at 2.83 min. =** 0.709 ft.^{2}/day

Pressure: 1.00 tsf — **TEST READINGS** — **Load No. 4**

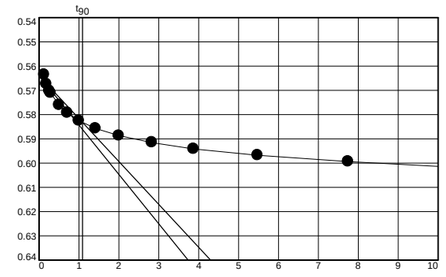
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.50800	12	+0 00:15:00	0.54100
2	+0 00:00:01	0.51430	13	+0 00:30:00	0.54390
3	+0 00:00:02	0.51600	14	+0 00:60:00	0.54650
4	+0 00:00:04	0.51810	15	+0 02:00:00	0.54900
5	+0 00:00:05	0.51880	16	+0 04:00:00	0.55180
6	+0 00:00:15	0.52330	17	+0 08:00:00	0.55430
7	+0 00:00:30	0.52660	18	+0 15:00:00	0.55640
8	+0 00:00:60	0.52990	19	+0 24:00:00	0.55780
9	+0 00:02:00	0.53300	20	+1 24:01:00	0.56090
10	+0 00:04:00	0.53600	21	+1 24:01:05	0.56090
11	+0 00:08:00	0.53870			



Void Ratio = 1.484 **Compression =** 15.7%
D_0 = 0.5143 **D_{90} =** 0.5335 **D_{100} =** 0.5356 **C_v at 2.27 min. =** 0.797 ft.^{2}/day

Pressure: 2.00 tsf — **TEST READINGS** — **Load No. 5**

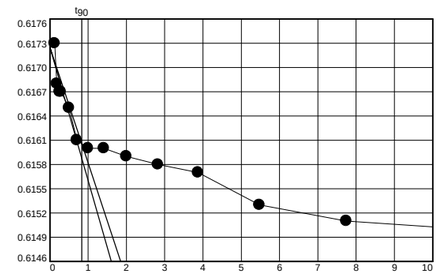
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.56090	11	+0 00:08:00	0.59150
2	+0 00:00:01	0.56350	12	+0 00:15:00	0.59420
3	+0 00:00:02	0.56730	13	+0 00:30:00	0.59680
4	+0 00:00:04	0.57020	14	+0 00:60:00	0.59940
5	+0 00:00:05	0.57110	15	+0 02:00:00	0.60220
6	+0 00:00:15	0.57600	16	+0 04:00:00	0.60480
7	+0 00:00:30	0.57920	17	+0 08:00:00	0.60730
8	+0 00:00:60	0.58250	18	+0 15:00:00	0.60960
9	+0 00:02:00	0.58570	19	+0 24:00:00	0.61120
10	+0 00:04:00	0.58870	20	+1 24:07:00	0.61130



Void Ratio = 1.344 **Compression =** 20.4%
D_0 = 0.5639 **D_{90} =** 0.5832 **D_{100} =** 0.5853 **C_v at 1.18 min. =** 1.360 ft.^{2}/day

Pressure: 0.50 tsf | **TEST READINGS** | **Load No. 9**

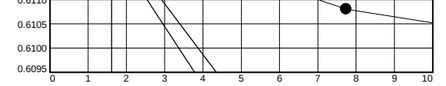
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.61820	11	+0 00:08:00	0.61580
2	+0 00:00:01	0.61730	12	+0 00:15:00	0.61570
3	+0 00:00:02	0.61680	13	+0 00:30:00	0.61530
4	+0 00:00:04	0.61670	14	+0 00:60:00	0.61510
5	+0 00:00:05	0.61670	15	+0 02:00:00	0.61500
6	+0 00:00:15	0.61650	16	+0 03:09:00	0.61490
7	+0 00:00:30	0.61610			
8	+0 00:00:60	0.61600			
9	+0 00:02:00	0.61600			
10	+0 00:04:00	0.61590			



Void Ratio = 1.334 **Compression =** 20.7%
D_0 = 0.6173 **D_{90} =** 0.6161 **D_{100} =** 0.6159 **C_v at 0.69 min. =** 2.167 ft.^{2}/day

Pressure: 0.25 tsf | **TEST READINGS** | **Load No. 10**

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.61490	11	+0 00:08:00	0.61210
2	+0 00:00:01	0.61390	12	+0 00:15:00	0.61160
3	+0 00:00:02	0.61390	13	+0 00:30:00	0.61140
4	+0 00:00:04	0.61380	14	+0 00:60:00	0.61080
5	+0 00:00:05	0.61380	15	+0 02:00:00	0.61040
6	+0 00:00:15	0.61320	16	+0 04:00:00	0.61000
7	+0 00:00:30	0.61310	17	+0 08:00:00	0.61000
8	+0 00:00:61	0.61290	18	+0 15:00:00	0.61000
9	+0 00:02:00	0.61240			
10	+0 00:04:00	0.61230			

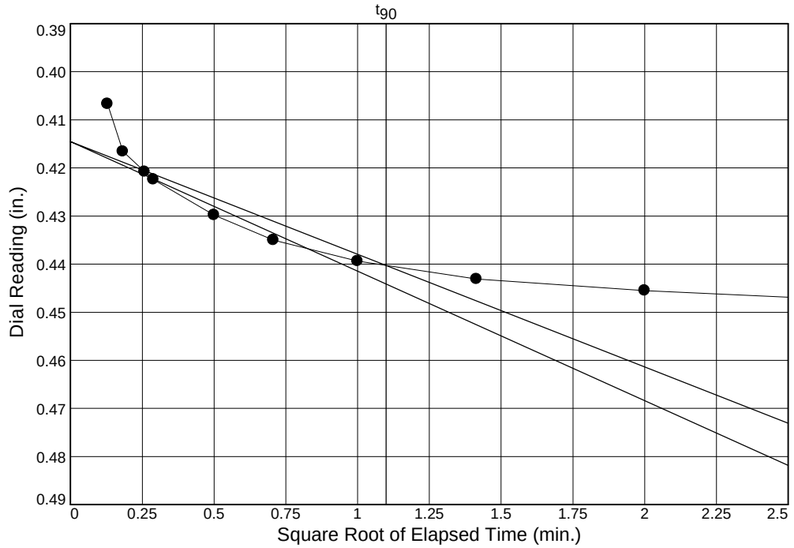


Void Ratio = 1.348 **Compression =** 20.3%
D_0 = 0.6141 **D_{90} =** 0.6124 **D_{100} =** 0.6122 **C_v at 2.59 min. =** 0.584 ft.^{2}/day

Dial Reading vs. Time

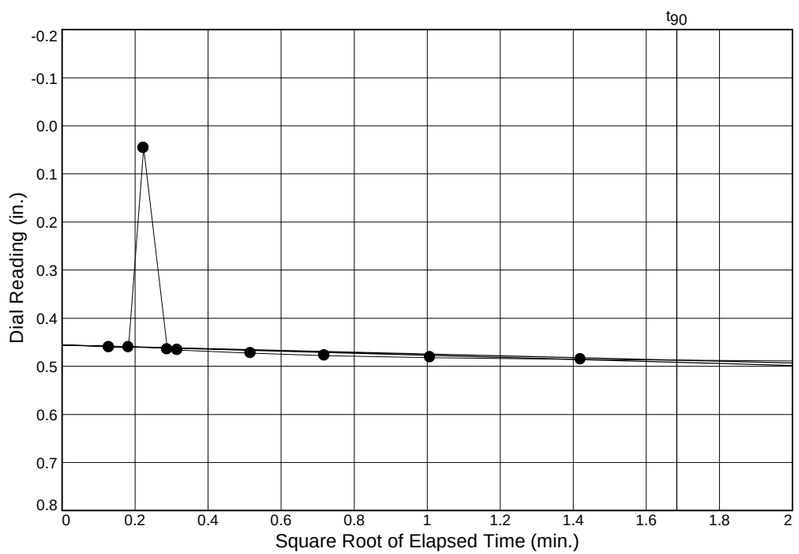
Project No.: 6235-17-038
Project: Winston-Salem N. Beltway E. Section

Depth: 4.2-5.7' Sample Number: ST-3



Load No.= 2
Load= 0.25 tsf
D_0 = 0.4145
D_{90} = 0.4403
D_{100} = 0.4432
T_{90} = 1.21 min.

C_v @ T_{90}
1.837 ft.^{2}/day



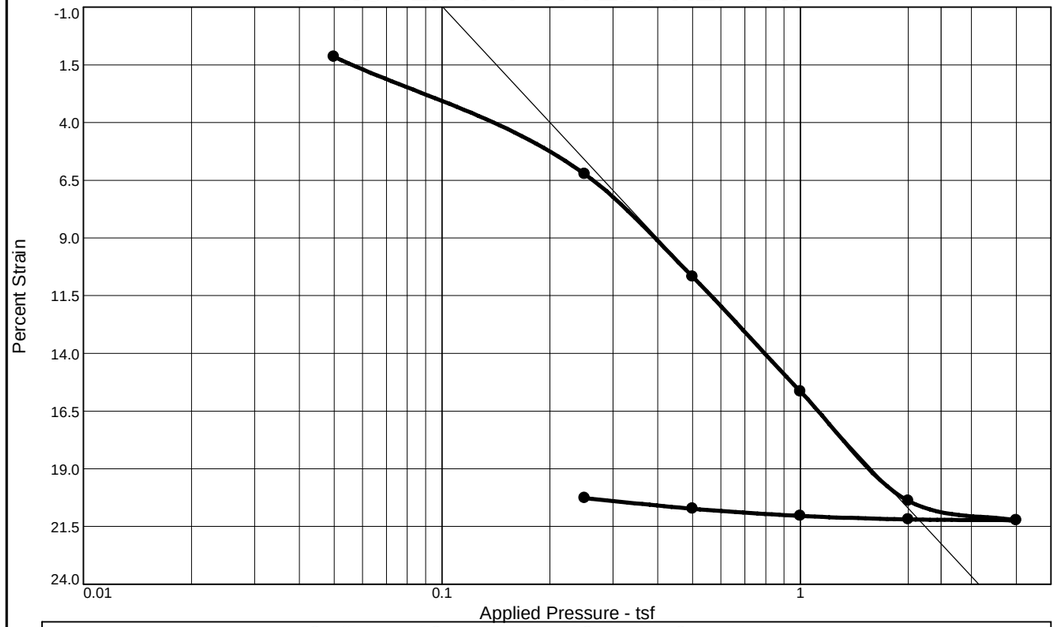
Load No.= 3
Load= 0.50 tsf
D_0 = 0.4559
D_{90} = 0.4871
D_{100} = 0.4906
T_{90} = 2.83 min.

C_v @ T_{90}
0.709 ft.^{2}/day

Figure ST-4

S & ME, INC.

CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
2	0.25	1.837		10	0.25	0.584					
3	0.50	0.709									
4	1.00	0.797									
5	2.00	1.360									
6	4.00	0.294									
8	1.00	2.371									
9	0.50	2.167									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	C_c	C_r	Initial Void Ratio
79.2 %	58.1 %	52.4	44	9	2.65		2.0	0.49		1.945

MATERIAL DESCRIPTION	USCS	AASHTO
A-5		A-5

Project No. 6235-17-038 **Client:** NCDOT GEU
Project: Winston-Salem N. Beltway E. Section

Depth: 4.2-5.7' **Sample Number:** ST-3

S & ME, INC.

Charlotte, North Carolina

Remarks:
Sample was saturated

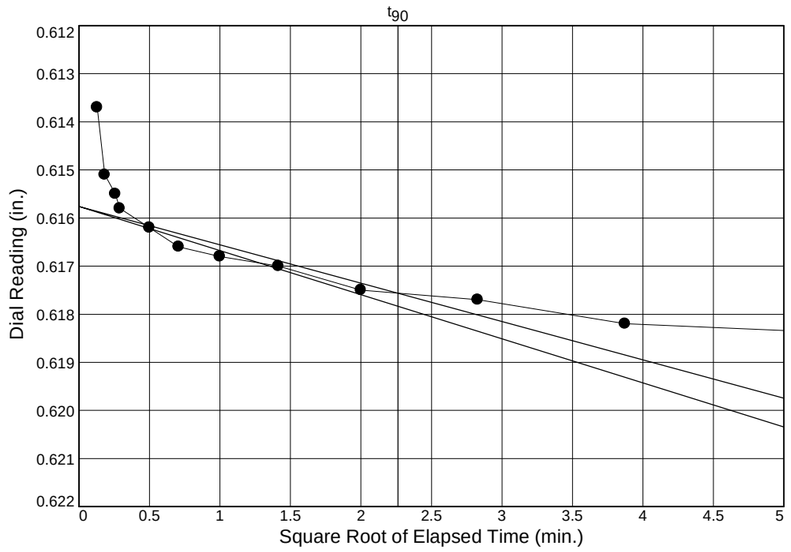
Figure ST-3

Tested By: Karen Warner **Checked By:** Jason Reeves

Dial Reading vs. Time

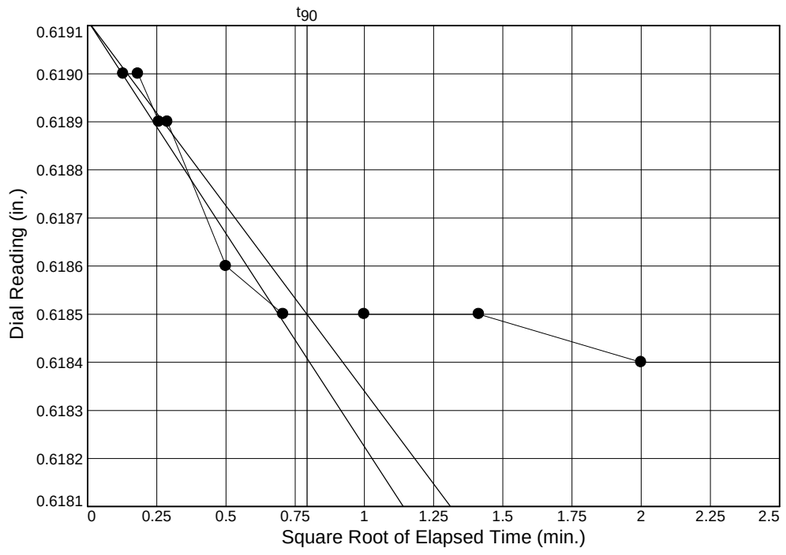
Project No.: 6235-17-038
Project: Winston-Salem N. Beltway E. Section

Depth: 4.2-5.7' Sample Number: ST-3



Load No.= 6
Load= 4.00 tsf
D_0 = 0.6158
D_{90} = 0.6176
D_{100} = 0.6178
T_{90} = 5.11 min.

C_v @ T_{90}
0.294 ft.^{2}/day



Load No.= 8
Load= 1.00 tsf
D_0 = 0.6191
D_{90} = 0.6185
D_{100} = 0.6184
T_{90} = 0.63 min.

C_v @ T_{90}
2.371 ft.^{2}/day

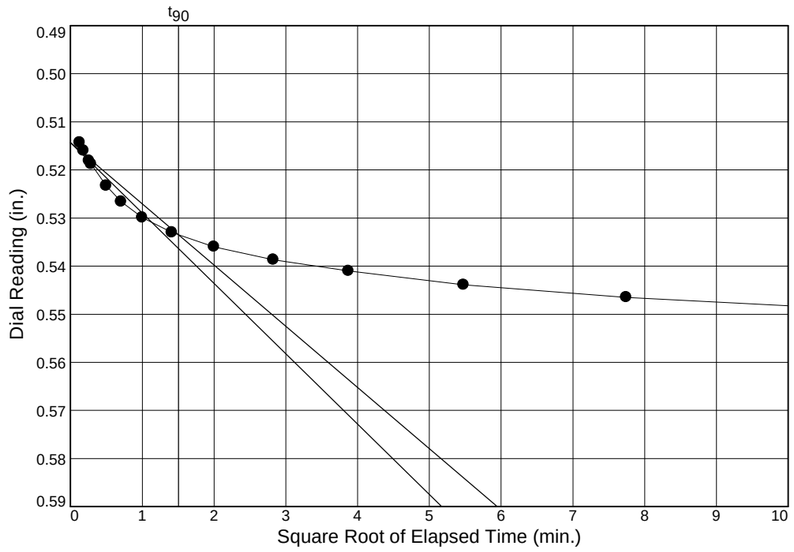
Figure ST-6

S & ME, INC.

Dial Reading vs. Time

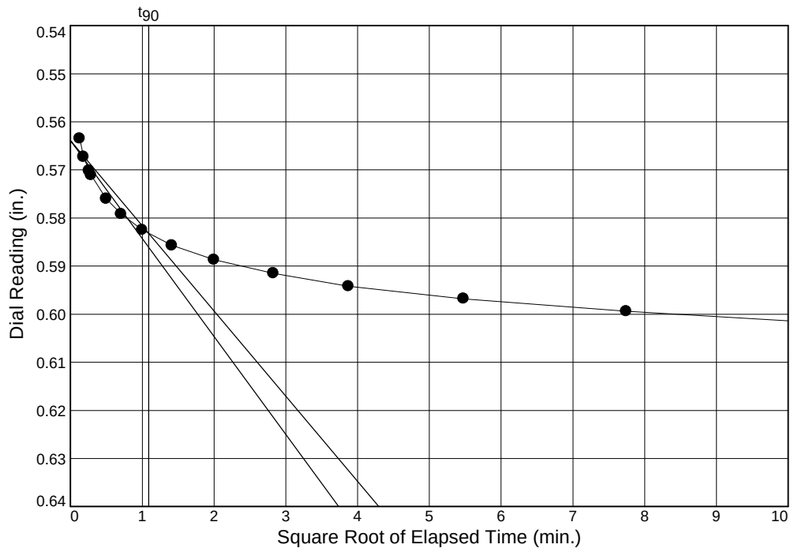
Project No.: 6235-17-038
Project: Winston-Salem N. Beltway E. Section

Depth: 4.2-5.7' Sample Number: ST-3



Load No.= 4
Load= 1.00 tsf
D_0 = 0.5143
D_{90} = 0.5335
D_{100} = 0.5356
T_{90} = 2.27 min.

C_v @ T_{90}
0.797 ft.^{2}/day



Load No.= 5
Load= 2.00 tsf
D_0 = 0.5639
D_{90} = 0.5832
D_{100} = 0.5853
T_{90} = 1.18 min.

C_v @ T_{90}
1.360 ft.^{2}/day

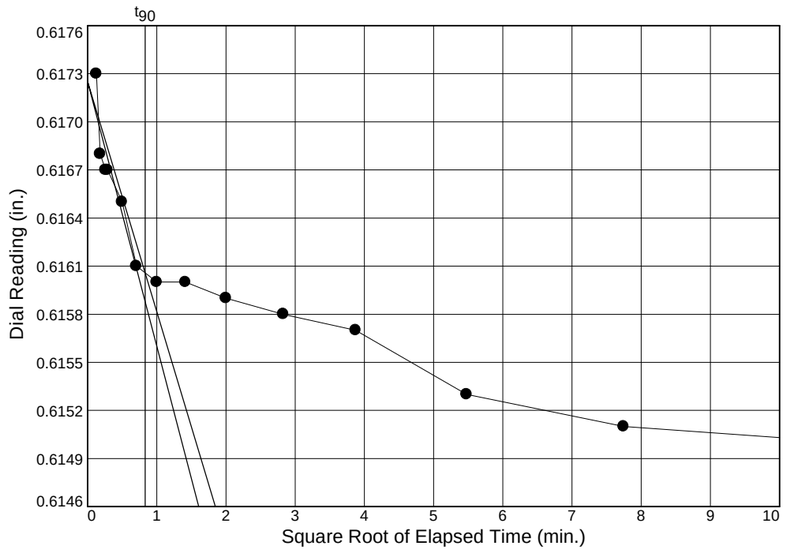
Figure ST-5

S & ME, INC.

Dial Reading vs. Time

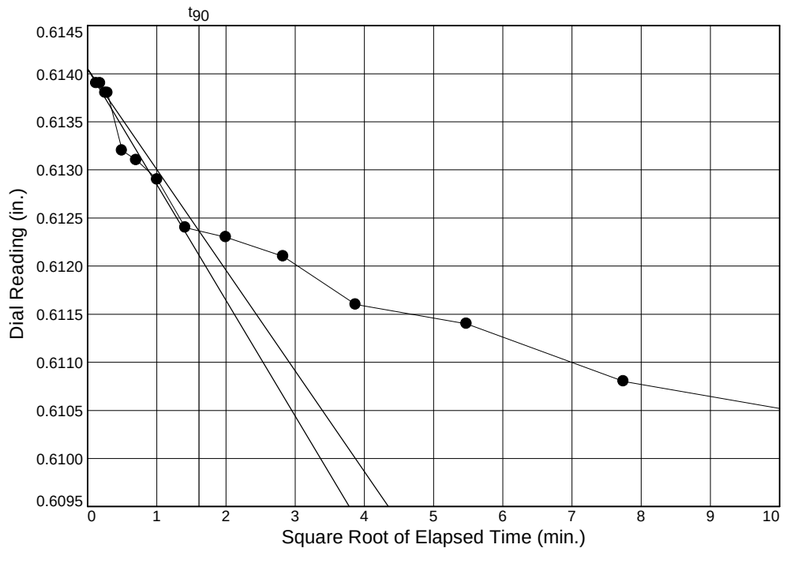
Project No.: 6235-17-038
Project: Winston-Salem N. Beltway E. Section

Depth: 4.2-5.7' Sample Number: ST-3



Load No.= 9
Load= 0.50 tsf
D_0 = 0.6173
D_{90} = 0.6161
D_{100} = 0.6159
T_{90} = 0.69 min.

C_v @ T_{90}
2.167 ft.^{2}/day



Load No.= 10
Load= 0.25 tsf
D_0 = 0.6141
D_{90} = 0.6124
D_{100} = 0.6122
T_{90} = 2.59 min.

C_v @ T_{90}
0.584 ft.^{2}/day

Figure ST-7

S & ME, INC.

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0000	23.200	0.0	0.0	0.00	2.16	2.16	1.00	60.00	2.16	0.00
1	0.0040	28.100	4.9	0.1	0.12	0.40	0.53	1.31	72.20	0.46	0.06
2	0.0080	29.700	6.5	0.1	0.16	0.35	0.51	1.47	72.60	0.43	0.08
3	0.0130	30.900	7.7	0.2	0.19	0.32	0.51	1.61	72.80	0.41	0.10
4	0.0170	31.600	8.4	0.3	0.21	0.27	0.48	1.77	73.10	0.38	0.11
5	0.0210	32.300	9.1	0.3	0.23	0.24	0.47	1.93	73.30	0.36	0.11
6	0.0250	32.700	9.5	0.4	0.24	0.22	0.45	2.10	73.50	0.33	0.12
7	0.0290	33.300	10.1	0.5	0.25	0.19	0.44	2.35	73.70	0.31	0.13
8	0.0330	33.800	10.6	0.5	0.26	0.17	0.44	2.53	73.80	0.31	0.13
9	0.0370	34.400	11.2	0.6	0.28	0.14	0.42	2.94	74.00	0.28	0.14
10	0.0410	34.800	11.6	0.7	0.29	0.13	0.42	3.23	74.10	0.27	0.14
11	0.0450	35.100	11.9	0.7	0.30	0.10	0.40	3.94	74.30	0.25	0.15
12	0.0490	35.400	12.2	0.8	0.30	0.09	0.39	4.52	74.40	0.24	0.15
13	0.0520	36.000	12.8	0.9	0.32	0.07	0.39	5.43	74.50	0.23	0.16
14	0.0570	36.000	12.8	0.9	0.32	0.06	0.38	6.53	74.60	0.22	0.16
15	0.0610	36.600	13.4	1.0	0.33	0.04	0.38	8.71	74.70	0.21	0.17
16	0.0650	37.100	13.9	1.1	0.35	0.03	0.37	13.00	74.80	0.20	0.17
17	0.0690	37.400	14.2	1.1	0.35	0.01	0.37	25.49	74.90	0.19	0.18
18	0.0730	37.700	14.5	1.2	0.36	0.00	0.36		75.00	0.18	0.18
19	0.0780	38.000	14.8	1.3	0.37	-0.01	0.35		75.10	0.17	0.18
20	0.0810	38.400	15.2	1.3	0.38	-0.03	0.35		75.20	0.16	0.19
21	0.0860	38.300	15.1	1.4	0.37	-0.03	0.35		75.20	0.16	0.19
22	0.0900	38.900	15.7	1.5	0.39	-0.04	0.35		75.30	0.15	0.19
23	0.0940	39.400	16.2	1.5	0.40	-0.06	0.34		75.40	0.14	0.20
24	0.0980	39.700	16.5	1.6	0.41	-0.06	0.35		75.40	0.15	0.20
25	0.1020	39.900	16.7	1.7	0.41	-0.07	0.34		75.50	0.13	0.21
26	0.1060	40.300	17.1	1.7	0.42	-0.09	0.34		75.60	0.12	0.21
27	0.1100	40.400	17.2	1.8	0.42	-0.10	0.32		75.70	0.11	0.21
28	0.1140	40.400	17.2	1.9	0.42	-0.10	0.32		75.70	0.11	0.21
29	0.1180	40.800	17.6	1.9	0.43	-0.12	0.32		75.80	0.10	0.22
30	0.1220	41.000	17.8	2.0	0.44	-0.12	0.32		75.80	0.10	0.22
31	0.1260	41.300	18.1	2.1	0.45	-0.13	0.32		75.90	0.09	0.22
32	0.1300	41.700	18.5	2.1	0.45	-0.13	0.33		75.90	0.10	0.23
33	0.1340	41.900	18.7	2.2	0.46	-0.14	0.32		76.00	0.09	0.23
34	0.1380	42.100	18.9	2.3	0.46	-0.14	0.32		76.00	0.09	0.23
35	0.1430	42.500	19.3	2.4	0.47	-0.14	0.33		76.00	0.09	0.24
36	0.1460	42.600	19.4	2.4	0.48	-0.16	0.32		76.10	0.08	0.24
37	0.1510	42.900	19.7	2.5	0.48	-0.16	0.32		76.10	0.08	0.24
38	0.1550	43.300	20.1	2.5	0.49	-0.17	0.32		76.20	0.07	0.25
39	0.1590	43.700	20.5	2.6	0.50	-0.17	0.33		76.20	0.08	0.25
40	0.1640	43.800	20.6	2.7	0.50	-0.17	0.33		76.20	0.08	0.25
41	0.1680	44.100	20.9	2.8	0.51	-0.17	0.34		76.20	0.08	0.26
42	0.1720	44.500	21.3	2.8	0.52	-0.19	0.33		76.30	0.07	0.26
43	0.1760	44.700	21.5	2.9	0.52	-0.19	0.34		76.30	0.08	0.26
44	0.1800	44.700	21.5	3.0	0.52	-0.20	0.32		76.40	0.06	0.26
45	0.1840	44.800	21.6	3.0	0.53	-0.20	0.32		76.40	0.06	0.26
46	0.1880	45.200	22.0	3.1	0.54	-0.20	0.33		76.40	0.07	0.27

TRIAXIAL COMPRESSION TEST

CU with Pore Pressures

1/19/2018
9:59 AM

Date: 10/2017
Client: NCDOT GEU
Project: Winston-Salem N. Beltway E. Section
Project No.: 6235-17-038
Depth: 4.2-5.7' **Sample Number:** ST-3
Description: A-5
Remarks: Quantity for only 2 specimens to be tested. Both samples were very disturbed.
Type of Sample: Undisturbed
Assumed Specific Gravity=2.60 **LL=**44 **PL=**35 **PI=**9
Test Method: COE uniform strain

Parameters for Specimen No. 1

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	200.210			893.670
Moisture content: Dry soil+tare, gms.	157.400			579.440
Moisture content: Tare, gms.	83.740			87.000
Moisture, %	58.1	73.9	66.1	63.8
Moist specimen weight, gms.	863.71			
Diameter, in.	2.779	2.767	2.701	
Area, in.²	6.066	6.015	5.732	
Height, in.	6.251	6.225	6.079	
Net decrease in height, in.		0.026	0.146	
Wet density, pcf	86.8	96.6	99.2	
Dry density, pcf	54.9	55.6	59.7	
Void ratio	1.9574	1.9206	1.7177	
Saturation, %	77.2	100.0	100.0	

Test Readings for Specimen No. 1

Consolidation cell pressure = 75.00 psi (10.80 ksf)
Consolidation back pressure = 60.00 psi (8.64 ksf)
Consolidation effective confining stress = 2.16 ksf
Strain rate, in./min. = 0.004
Fail. Stress = 0.35 ksf **at reading no.** 17
Ult. Stress = 0.52 ksf **at reading no.** 44

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
94	0.3830	50.700	27.5	6.3	0.65	-0.32	0.33		77.20	0.01	0.32
95	0.3870	51.000	27.8	6.4	0.65	-0.32	0.34		77.20	0.01	0.33
96	0.3910	51.100	27.9	6.4	0.66	-0.32	0.34		77.20	0.01	0.33
97	0.3950	51.100	27.9	6.5	0.66	-0.32	0.34		77.20	0.01	0.33
98	0.3990	51.200	28.0	6.6	0.66	-0.32	0.34		77.20	0.01	0.33
99	0.4030	51.600	28.4	6.6	0.67	-0.32	0.35		77.20	0.02	0.33
100	0.4070	51.600	28.4	6.7	0.67	-0.33	0.33		77.30	0.00	0.33
101	0.4120	51.600	28.4	6.8	0.67	-0.33	0.33		77.30	0.00	0.33
102	0.4160	51.700	28.5	6.8	0.67	-0.33	0.34		77.30	0.00	0.33
103	0.4200	51.800	28.6	6.9	0.67	-0.33	0.34		77.30	0.00	0.33
104	0.4240	51.900	28.7	7.0	0.67	-0.33	0.34		77.30	0.00	0.34
105	0.4280	52.200	29.0	7.0	0.68	-0.33	0.35		77.30	0.01	0.34
106	0.4320	52.100	28.9	7.1	0.67	-0.33	0.34		77.30	0.01	0.34
107	0.4360	52.200	29.0	7.2	0.68	-0.33	0.35		77.30	0.01	0.34
108	0.4400	52.500	29.3	7.2	0.68	-0.33	0.35		77.30	0.01	0.34
109	0.4440	52.500	29.3	7.3	0.68	-0.33	0.35		77.30	0.01	0.34
110	0.4480	52.800	29.6	7.4	0.69	-0.33	0.36		77.30	0.01	0.34
111	0.4520	52.800	29.6	7.4	0.69	-0.33	0.36		77.30	0.01	0.34
112	0.4560	52.700	29.5	7.5	0.69	-0.33	0.35		77.30	0.01	0.34
113	0.4600	53.100	29.9	7.6	0.69	-0.33	0.36		77.30	0.02	0.35
114	0.4640	53.300	30.1	7.6	0.70	-0.33	0.37		77.30	0.02	0.35
115	0.4690	53.300	30.1	7.7	0.70	-0.33	0.37		77.30	0.02	0.35
116	0.4730	53.400	30.2	7.8	0.70	-0.33	0.37		77.30	0.02	0.35
117	0.4770	53.400	30.2	7.8	0.70	-0.33	0.37		77.30	0.02	0.35
118	0.4810	53.700	30.5	7.9	0.71	-0.33	0.37		77.30	0.02	0.35
119	0.4850	53.500	30.3	8.0	0.70	-0.33	0.37		77.30	0.02	0.35
120	0.4890	53.800	30.6	8.0	0.71	-0.33	0.38		77.30	0.02	0.35
121	0.4930	53.700	30.5	8.1	0.70	-0.33	0.37		77.30	0.02	0.35
122	0.4970	53.700	30.5	8.2	0.70	-0.33	0.37		77.30	0.02	0.35
123	0.5010	53.900	30.7	8.2	0.71	-0.33	0.38		77.30	0.02	0.35
124	0.5060	54.100	30.9	8.3	0.71	-0.33	0.38		77.30	0.02	0.36
125	0.5090	54.100	30.9	8.4	0.71	-0.33	0.38		77.30	0.02	0.36
126	0.5130	53.800	30.6	8.4	0.70	-0.33	0.37		77.30	0.02	0.35
127	0.5170	54.100	30.9	8.5	0.71	-0.33	0.38		77.30	0.02	0.36
128	0.5210	54.100	30.9	8.6	0.71	-0.33	0.38		77.30	0.02	0.35
129	0.5250	54.000	30.8	8.6	0.71	-0.33	0.38		77.30	0.02	0.35
130	0.5290	54.100	30.9	8.7	0.71	-0.33	0.38		77.30	0.02	0.35
131	0.5340	54.400	31.2	8.8	0.71	-0.33	0.38		77.30	0.03	0.36
132	0.5370	54.300	31.1	8.8	0.71	-0.33	0.38		77.30	0.02	0.36
133	0.5420	54.300	31.1	8.9	0.71	-0.33	0.38		77.30	0.02	0.36
134	0.5450	54.400	31.2	9.0	0.71	-0.33	0.38		77.30	0.03	0.36
135	0.5500	54.200	31.0	9.0	0.71	-0.33	0.38		77.30	0.02	0.35
136	0.5540	54.100	30.9	9.1	0.71	-0.33	0.37		77.30	0.02	0.35
137	0.5580	54.300	31.1	9.2	0.71	-0.33	0.38		77.30	0.02	0.35
138	0.5620	54.300	31.1	9.2	0.71	-0.33	0.38		77.30	0.02	0.35
139	0.5660	54.500	31.3	9.3	0.71	-0.33	0.38		77.30	0.03	0.36
140	0.5700	54.600	31.4	9.4	0.71	-0.33	0.38		77.30	0.03	0.36

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
47	0.1920	45.400	22.2	3.2	0.54	-0.20	0.34		76.40	0.07	0.27
48	0.1960	45.700	22.5	3.2	0.55	-0.20	0.35		76.40	0.07	0.27
49	0.2000	45.800	22.6	3.3	0.55	-0.22	0.33		76.50	0.06	0.27
50	0.2040	45.700	22.5	3.4	0.55	-0.22	0.33		76.50	0.06	0.27
51	0.2090	45.900	22.7	3.4	0.55	-0.22	0.33		76.50	0.06	0.28
52	0.2130	45.900	22.7	3.5	0.55	-0.23	0.32		76.60	0.04	0.28
53	0.2160	46.000	22.8	3.6	0.55	-0.23	0.32		76.60	0.05	0.28
54	0.2210	46.300	23.1	3.6	0.56	-0.23	0.33		76.60	0.05	0.28
55	0.2250	46.300	23.1	3.7	0.56	-0.23	0.33		76.60	0.05	0.28
56	0.2290	46.200	23.0	3.8	0.56	-0.24	0.31		76.70	0.03	0.28
57	0.2330	46.600	23.4	3.8	0.57	-0.24	0.32		76.70	0.04	0.28
58	0.2370	46.600	23.4	3.9	0.56	-0.24	0.32		76.70	0.04	0.28
59	0.2400	46.300	23.1	3.9	0.56	-0.24	0.31		76.70	0.03	0.28
60	0.2450	46.800	23.6	4.0	0.57	-0.26	0.31		76.80	0.03	0.28
61	0.2480	46.800	23.6	4.1	0.57	-0.26	0.31		76.80	0.03	0.28
62	0.2530	47.100	23.9	4.2	0.58	-0.26	0.32		76.80	0.03	0.29
63	0.2560	47.400	24.2	4.2	0.58	-0.26	0.32		76.80	0.03	0.29
64	0.2610	47.500	24.3	4.3	0.58	-0.26	0.33		76.80	0.03	0.29
65	0.2640	47.900	24.7	4.3	0.59	-0.26	0.33		76.80	0.04	0.30
66	0.2690	47.800	24.6	4.4	0.59	-0.26	0.33		76.80	0.04	0.30
67	0.2730	47.800	24.6	4.5	0.59	-0.27	0.32		76.90	0.02	0.30
68	0.2770	48.100	24.9	4.6	0.60	-0.27	0.32		76.90	0.02	0.30
69	0.2810	48.400	25.2	4.6	0.60	-0.27	0.33		76.90	0.03	0.30
70	0.2850	48.300	25.1	4.7	0.60	-0.27	0.33		76.90	0.03	0.30
71	0.2890	48.500	25.3	4.8	0.61	-0.27	0.33		76.90	0.03	0.30
72	0.2930	48.400	25.2	4.8	0.60	-0.27	0.33		76.90	0.03	0.30
73	0.2970	48.800	25.6	4.9	0.61	-0.29	0.32		77.00	0.02	0.31
74	0.3020	48.700	25.5	5.0	0.61	-0.29	0.32		77.00	0.02	0.30
75	0.3060	48.700	25.5	5.0	0.61	-0.29	0.32		77.00	0.02	0.30
76	0.3100	49.000	25.8	5.1	0.62	-0.29	0.33		77.00	0.02	0.31
77	0.3130	49.000	25.8	5.1	0.61	-0.29	0.33		77.00	0.02	0.31
78	0.3180	49.100	25.9	5.2	0.62	-0.29	0.33		77.00	0.02	0.31
79	0.3210	49.000	25.8	5.3	0.61	-0.30	0.31		77.10	0.00	0.31
80	0.3260	49.200	26.0	5.4	0.62	-0.30	0.32		77.10	0.01	0.31
81	0.3300	49.200	26.0	5.4	0.62	-0.30	0.32		77.10	0.01	0.31
82	0.3340	49.300	26.1	5.5	0.62	-0.30	0.32		77.10	0.01	0.31
83	0.3380	49.300	26.1	5.6	0.62	-0.30	0.32		77.10	0.01	0.31
84	0.3420	49.900	26.7	5.6	0.63	-0.30	0.33		77.10	0.01	0.32
85	0.3460	49.800	26.6	5.7	0.63	-0.30	0.33		77.10	0.01	0.32
86	0.3500	49.700	26.5	5.8	0.63	-0.30	0.33		77.10	0.01	0.31
87	0.3540	50.000	26.8	5.8	0.63	-0.30	0.33		77.10	0.01	0.32
88	0.3580	50.300	27.1	5.9	0.64	-0.30	0.34		77.10	0.02	0.32
89	0.3620	50.300	27.1	6.0	0.64	-0.30	0.34		77.10	0.02	0.32
90	0.3660	50.200	27.0	6.0	0.64	-0.30	0.34		77.10	0.02	0.32
91	0.3700	50.700	27.5	6.1	0.65	-0.30	0.35		77.10	0.02	0.32
92	0.3740	50.600	27.4	6.2	0.65	-0.32	0.33		77.20	0.01	0.32
93	0.3780	50.800	27.6	6.2	0.65	-0.32	0.33		77.20	0.01	0.33

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
188	0.7660	56.000	32.8	12.6	0.72	-0.35	0.37		77.40	0.01	0.36
189	0.7700	55.900	32.7	12.7	0.72	-0.35	0.37		77.40	0.01	0.36
190	0.7740	55.900	32.7	12.7	0.72	-0.35	0.37		77.40	0.01	0.36
191	0.7780	55.800	32.6	12.8	0.71	-0.35	0.37		77.40	0.01	0.36
192	0.7820	55.600	32.4	12.9	0.71	-0.35	0.36		77.40	0.01	0.35
193	0.7860	55.600	32.4	12.9	0.71	-0.35	0.36		77.40	0.01	0.35
194	0.7900	55.300	32.1	13.0	0.70	-0.35	0.36		77.40	0.01	0.35
195	0.7950	55.200	32.0	13.1	0.70	-0.35	0.35		77.40	0.00	0.35
196	0.7980	55.500	32.3	13.1	0.70	-0.35	0.36		77.40	0.01	0.35
197	0.8030	55.500	32.3	13.2	0.70	-0.35	0.36		77.40	0.01	0.35
198	0.8060	55.300	32.1	13.3	0.70	-0.35	0.35		77.40	0.00	0.35
199	0.8110	55.600	32.4	13.3	0.71	-0.35	0.36		77.40	0.01	0.35
200	0.8150	55.400	32.2	13.4	0.70	-0.35	0.35		77.40	0.00	0.35
201	0.8180	55.400	32.2	13.5	0.70	-0.35	0.35		77.40	0.00	0.35
202	0.8230	55.300	32.1	13.5	0.70	-0.35	0.35		77.40	0.00	0.35
203	0.8270	55.100	31.9	13.6	0.69	-0.35	0.35		77.40	0.00	0.35
204	0.8310	55.500	32.3	13.7	0.70	-0.35	0.35		77.40	0.00	0.35
205	0.8350	55.200	32.0	13.7	0.69	-0.35	0.35		77.40	0.00	0.35
206	0.8390	55.300	32.1	13.8	0.70	-0.36	0.34		77.50	-0.01	0.35
207	0.8430	55.300	32.1	13.9	0.69	-0.36	0.33		77.50	-0.01	0.35
208	0.8470	55.300	32.1	13.9	0.69	-0.36	0.33		77.50	-0.01	0.35
209	0.8510	55.200	32.0	14.0	0.69	-0.36	0.33		77.50	-0.01	0.35
210	0.8550	55.500	32.3	14.1	0.70	-0.36	0.34		77.50	-0.01	0.35
211	0.8600	55.300	32.1	14.1	0.69	-0.36	0.33		77.50	-0.01	0.35
212	0.8640	55.200	32.0	14.2	0.69	-0.36	0.33		77.50	-0.02	0.34
213	0.8680	55.400	32.2	14.3	0.69	-0.36	0.33		77.50	-0.01	0.35
214	0.8720	55.500	32.3	14.3	0.70	-0.35	0.35		77.40	0.00	0.35
215	0.8760	55.200	32.0	14.4	0.69	-0.35	0.34		77.40	0.00	0.34
216	0.8800	55.400	32.2	14.5	0.69	-0.36	0.33		77.50	-0.01	0.35
217	0.8840	55.500	32.3	14.5	0.69	-0.35	0.35		77.40	0.00	0.35
218	0.8880	55.200	32.0	14.6	0.69	-0.35	0.34		77.40	0.00	0.34
219	0.8920	55.100	31.9	14.7	0.68	-0.35	0.34		77.40	0.00	0.34
220	0.8960	55.000	31.8	14.7	0.68	-0.35	0.34		77.40	-0.01	0.34
221	0.9000	55.300	32.1	14.8	0.69	-0.35	0.34		77.40	0.00	0.34
222	0.9040	55.200	32.0	14.9	0.68	-0.35	0.34		77.40	0.00	0.34
223	0.9080	55.400	32.2	14.9	0.69	-0.35	0.34		77.40	0.00	0.34
224	0.9120	55.200	32.0	15.0	0.68	-0.35	0.34		77.40	0.00	0.34
225	0.9136	55.100	31.9	15.0	0.68	-0.35	0.34		77.40	-0.01	0.34
226	0.9190	55.200	32.0	15.1	0.68	-0.35	0.34		77.40	0.00	0.34

Test Readings for Specimen No. 1

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
141	0.5740	54.500	31.3	9.4	0.71	-0.33	0.38		77.30	0.02	0.36
142	0.5780	54.100	30.9	9.5	0.70	-0.33	0.37		77.30	0.02	0.35
143	0.5820	54.200	31.0	9.6	0.70	-0.35	0.36		77.40	0.01	0.35
144	0.5860	54.400	31.2	9.6	0.71	-0.35	0.36		77.40	0.01	0.35
145	0.5900	54.300	31.1	9.7	0.71	-0.35	0.36		77.40	0.01	0.35
146	0.5940	54.300	31.1	9.8	0.70	-0.35	0.36		77.40	0.01	0.35
147	0.5990	54.100	30.9	9.9	0.70	-0.35	0.35		77.40	0.00	0.35
148	0.6020	54.100	30.9	9.9	0.70	-0.35	0.35		77.40	0.00	0.35
149	0.6070	54.100	30.9	10.0	0.70	-0.35	0.35		77.40	0.00	0.35
150	0.6110	54.400	31.2	10.1	0.71	-0.35	0.36		77.40	0.01	0.35
151	0.6150	54.100	30.9	10.1	0.70	-0.35	0.35		77.40	0.00	0.35
152	0.6190	54.300	31.1	10.2	0.70	-0.35	0.36		77.40	0.01	0.35
153	0.6230	54.300	31.1	10.2	0.70	-0.35	0.36		77.40	0.01	0.35
154	0.6270	54.600	31.4	10.3	0.71	-0.35	0.36		77.40	0.01	0.35
155	0.6310	54.200	31.0	10.4	0.70	-0.35	0.35		77.40	0.00	0.35
156	0.6360	54.400	31.2	10.5	0.70	-0.35	0.36		77.40	0.01	0.35
157	0.6390	54.600	31.4	10.5	0.71	-0.35	0.36		77.40	0.01	0.35
158	0.6430	54.400	31.2	10.6	0.70	-0.35	0.36		77.40	0.00	0.35
159	0.6470	54.300	31.1	10.6	0.70	-0.35	0.35		77.40	0.00	0.35
160	0.6520	54.500	31.3	10.7	0.70	-0.35	0.36		77.40	0.01	0.35
161	0.6550	54.600	31.4	10.8	0.70	-0.35	0.36		77.40	0.01	0.35
162	0.6590	54.800	31.6	10.8	0.71	-0.35	0.36		77.40	0.01	0.35
163	0.6640	54.800	31.6	10.9	0.71	-0.35	0.36		77.40	0.01	0.35
164	0.6680	55.000	31.8	11.0	0.71	-0.35	0.37		77.40	0.01	0.36
165	0.6720	54.900	31.7	11.1	0.71	-0.35	0.36		77.40	0.01	0.35
166	0.6760	55.100	31.9	11.1	0.71	-0.35	0.37		77.40	0.01	0.36
167	0.6800	54.900	31.7	11.2	0.71	-0.35	0.36		77.40	0.01	0.35
168	0.6840	55.200	32.0	11.3	0.71	-0.35	0.37		77.40	0.01	0.36
169	0.6880	54.900	31.7	11.3	0.71	-0.35	0.36		77.40	0.01	0.35
170	0.6920	55.400	32.2	11.4	0.72	-0.35	0.37		77.40	0.01	0.36
171	0.6960	55.200	32.0	11.4	0.71	-0.35	0.37		77.40	0.01	0.36
172	0.7010	55.500	32.3	11.5	0.72	-0.35	0.37		77.40	0.01	0.36
173	0.7040	55.500	32.3	11.6	0.72	-0.35	0.37		77.40	0.01	0.36
174	0.7080	55.100	31.9	11.6	0.71	-0.35	0.36		77.40	0.01	0.35
175	0.7120	55.400	32.2	11.7	0.71	-0.35	0.37		77.40	0.01	0.36
176	0.7170	55.600	32.4	11.8	0.72	-0.35	0.37		77.40	0.01	0.36
177	0.7200	55.700	32.5	11.8	0.72	-0.36	0.36		77.50	0.00	0.36
178	0.7250	55.900	32.7	11.9	0.72	-0.36	0.36		77.50	0.00	0.36
179	0.7280	55.800	32.6	12.0	0.72	-0.36	0.36		77.50	0.00	0.36
180	0.7320	55.800	32.6	12.0	0.72	-0.35	0.37		77.40	0.01	0.36
181	0.7370	55.900	32.7	12.1	0.72	-0.36	0.36		77.50	0.00	0.36
182	0.7410	55.800	32.6	12.2	0.72	-0.35	0.37		77.40	0.01	0.36
183	0.7450	56.100	32.9	12.3	0.73	-0.35	0.38		77.40	0.02	0.36
184	0.7490	56.100	32.9	12.3	0.72	-0.35	0.38		77.40	0.02	0.36
185	0.7530	56.400	33.2	12.4	0.73	-0.35	0.39		77.40	0.02	0.37
186	0.7580	56.000	32.8	12.5	0.72	-0.35	0.38		77.40	0.02	0.36
187	0.7610	56.100	32.9	12.5	0.72	-0.35	0.38		77.40	0.02	0.36

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
26	0.1870	84.300	46.3	2.9	1.12	2.84	3.96	1.40	100.30	3.40	0.56
27	0.1940	85.000	47.0	3.1	1.14	2.75	3.89	1.41	100.90	3.32	0.57
28	0.2010	85.500	47.5	3.2	1.15	2.61	3.76	1.44	101.90	3.18	0.58
29	0.2080	86.200	48.2	3.3	1.17	2.56	3.73	1.45	102.20	3.15	0.58
30	0.2150	87.000	49.0	3.4	1.18	2.56	3.75	1.46	102.20	3.16	0.59
31	0.2220	87.400	49.4	3.5	1.19	2.59	3.78	1.46	102.00	3.19	0.60
32	0.2290	88.000	50.0	3.6	1.21	2.61	3.81	1.46	101.90	3.21	0.60
33	0.2360	88.700	50.7	3.7	1.22	2.64	3.86	1.46	101.70	3.25	0.61
34	0.2430	89.200	51.2	3.9	1.23	2.53	3.77	1.49	102.40	3.15	0.62
35	0.2490	89.800	51.8	4.0	1.24	2.52	3.76	1.49	102.50	3.14	0.62
36	0.2560	90.300	52.3	4.1	1.25	2.52	3.77	1.50	102.50	3.15	0.63
37	0.2620	90.900	52.9	4.2	1.27	2.52	3.79	1.50	102.50	3.15	0.63
38	0.2690	91.200	53.2	4.3	1.27	2.52	3.79	1.51	102.50	3.16	0.64
39	0.2750	91.700	53.7	4.4	1.28	2.53	3.82	1.51	102.40	3.18	0.64
40	0.2830	92.100	54.1	4.5	1.29	2.53	3.83	1.51	102.40	3.18	0.65
41	0.2900	92.400	54.4	4.6	1.30	2.53	3.83	1.51	102.40	3.18	0.65
42	0.2980	92.900	54.9	4.8	1.31	2.53	3.84	1.52	102.40	3.19	0.65
43	0.3050	93.300	55.3	4.9	1.32	2.53	3.85	1.52	102.40	3.19	0.66
44	0.3120	93.900	55.9	5.0	1.33	2.53	3.86	1.52	102.40	3.20	0.66
45	0.3190	94.500	56.5	5.1	1.34	2.55	3.89	1.53	102.30	3.22	0.67
46	0.3270	94.600	56.6	5.2	1.34	2.55	3.89	1.53	102.30	3.22	0.67
47	0.3340	94.900	56.9	5.3	1.35	2.55	3.90	1.53	102.30	3.22	0.67
48	0.3410	95.100	57.1	5.5	1.35	2.55	3.90	1.53	102.30	3.22	0.68
49	0.3480	95.700	57.7	5.6	1.36	2.56	3.93	1.53	102.20	3.24	0.68
50	0.3540	96.000	58.0	5.7	1.37	2.56	3.93	1.53	102.20	3.25	0.68
51	0.3610	96.400	58.4	5.8	1.38	2.58	3.95	1.53	102.10	3.27	0.69
52	0.3690	96.500	58.5	5.9	1.38	2.58	3.95	1.53	102.10	3.27	0.69
53	0.3750	96.800	58.8	6.0	1.38	2.59	3.97	1.53	102.00	3.28	0.69
54	0.3820	97.100	59.1	6.1	1.39	2.59	3.98	1.54	102.00	3.29	0.69
55	0.3890	97.600	59.6	6.2	1.40	2.61	4.00	1.54	101.90	3.31	0.70
56	0.3970	98.000	60.0	6.4	1.41	2.62	4.03	1.54	101.80	3.32	0.70
57	0.4030	98.600	60.6	6.5	1.42	2.45	3.87	1.58	103.00	3.16	0.71
58	0.4110	98.900	60.9	6.6	1.42	2.38	3.80	1.60	103.50	3.09	0.71
59	0.4180	99.400	61.4	6.7	1.43	2.36	3.79	1.61	103.60	3.08	0.72
60	0.4250	99.800	61.8	6.8	1.44	2.40	3.85	1.60	103.30	3.12	0.72
61	0.4320	100.200	62.2	6.9	1.45	2.42	3.87	1.60	103.20	3.14	0.72
62	0.4380	100.400	62.4	7.0	1.45	2.43	3.88	1.60	103.10	3.16	0.73
63	0.4460	100.600	62.6	7.2	1.45	2.45	3.90	1.59	103.00	3.17	0.73
64	0.4520	100.900	62.9	7.3	1.46	2.45	3.91	1.60	103.00	3.18	0.73
65	0.4580	101.100	63.1	7.4	1.46	2.45	3.91	1.60	103.00	3.18	0.73
66	0.4650	101.300	63.3	7.5	1.46	2.45	3.91	1.60	103.00	3.18	0.73
67	0.4720	101.800	63.8	7.6	1.47	2.45	3.92	1.60	103.00	3.19	0.74
68	0.4790	102.300	64.3	7.7	1.48	2.45	3.93	1.61	103.00	3.19	0.74
69	0.4860	102.600	64.6	7.8	1.49	2.46	3.95	1.60	102.90	3.21	0.74
70	0.4940	102.900	64.9	8.0	1.49	2.46	3.96	1.61	102.90	3.21	0.75
71	0.5010	103.300	65.3	8.1	1.50	2.46	3.96	1.61	102.90	3.21	0.75
72	0.5080	103.400	65.4	8.2	1.50	2.48	3.98	1.61	102.80	3.23	0.75

Parameters for Specimen No. 2

Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	200.210			1068.430
Moisture content: Dry soil+tare, gms.	157.400			787.970
Moisture content: Tare, gms.	83.740			86.340
Moisture, %	58.1	56.4	46.0	40.0
Moist specimen weight, gms.	1083.54			
Diameter, in.	2.832	2.815	2.707	
Area, in.²	6.299	6.224	5.757	
Height, in.	6.412	6.374	6.136	
Net decrease in height, in.		0.038	0.238	
Wet density, pcf	102.2	102.9	107.9	
Dry density, pcf	64.6	65.8	73.9	
Void ratio	1.5112	1.4667	1.1962	
Saturation, %	100.0	100.0	100.0	

Test Readings for Specimen No. 2

Consolidation cell pressure = 120.00 psi (17.28 ksf)
Consolidation back pressure = 50.00 psi (7.20 ksf)
Consolidation effective confining stress = 10.08 ksf
Strain rate, in./min. = 0.007
Fail. Stress = 1.43 ksf **at reading no.** 59
Ult. Stress = 1.73 ksf **at reading no.** 134

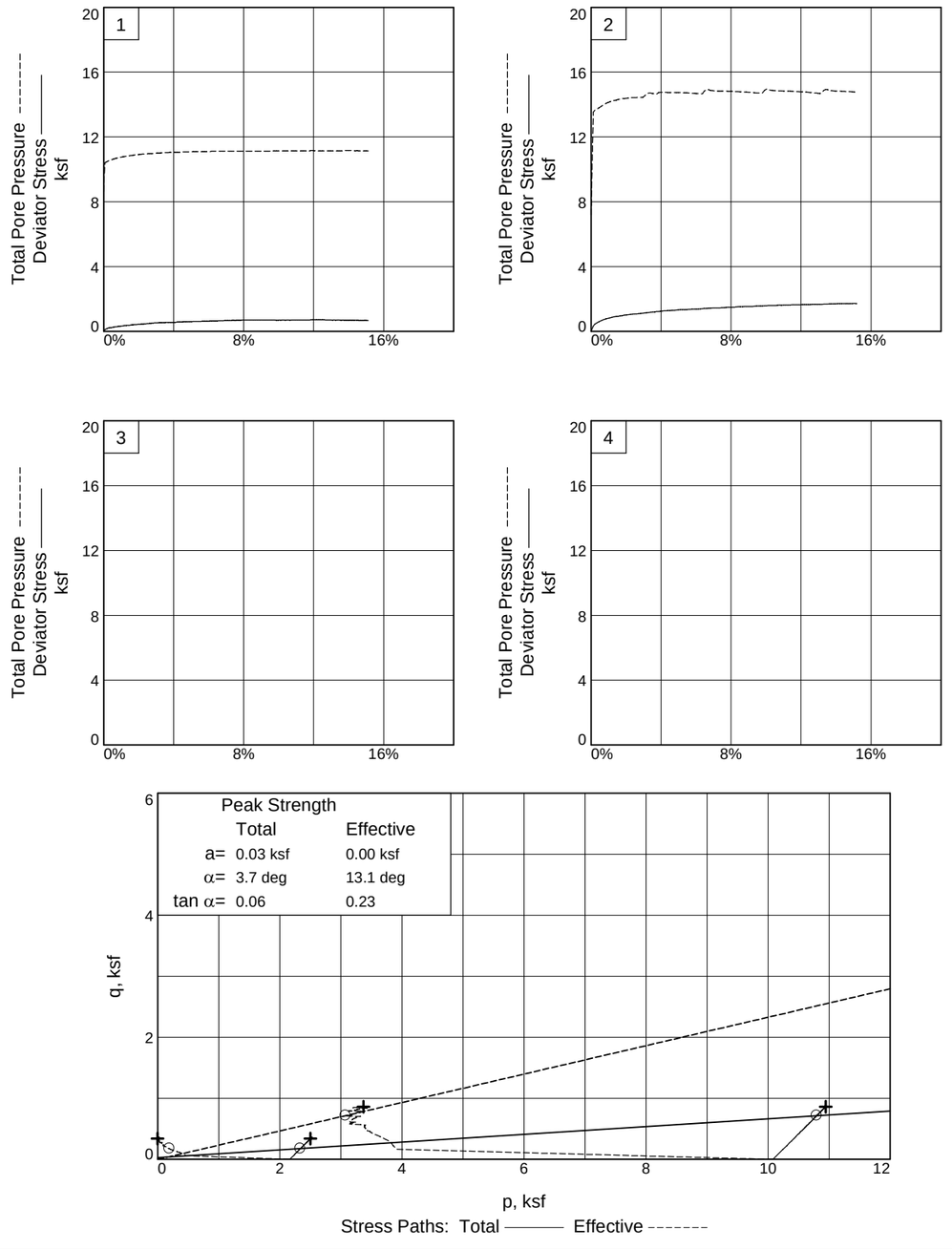
No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
0	0.0060	38.000	0.0	0.0	0.00	10.08	10.08	1.00	50.00	10.08	0.00
1	0.0140	51.300	13.3	0.1	0.33	3.74	4.08	1.09	94.00	3.91	0.17
2	0.0200	56.200	18.2	0.2	0.45	3.63	4.08	1.13	94.80	3.86	0.23
3	0.0270	59.500	21.5	0.3	0.54	3.56	4.09	1.15	95.30	3.82	0.27
4	0.0340	62.200	24.2	0.5	0.60	3.48	4.09	1.17	95.80	3.79	0.30
5	0.0410	64.600	26.6	0.6	0.66	3.40	4.06	1.19	96.40	3.73	0.33
6	0.0470	66.500	28.5	0.7	0.71	3.33	4.03	1.21	96.90	3.68	0.35
7	0.0540	68.000	30.0	0.8	0.74	3.27	4.01	1.23	97.30	3.64	0.37
8	0.0590	69.500	31.5	0.9	0.78	3.21	3.99	1.24	97.70	3.60	0.39
9	0.0660	70.800	32.8	1.0	0.81	3.15	3.97	1.26	98.10	3.56	0.41
10	0.0730	71.900	33.9	1.1	0.84	3.11	3.95	1.27	98.40	3.53	0.42
11	0.0790	73.300	35.3	1.2	0.87	3.07	3.94	1.28	98.70	3.50	0.44
12	0.0860	74.200	36.2	1.3	0.89	3.04	3.93	1.29	98.90	3.49	0.45
13	0.0940	75.500	37.5	1.4	0.92	3.01	3.93	1.31	99.10	3.47	0.46
14	0.1000	76.000	38.0	1.5	0.94	2.97	3.90	1.32	99.40	3.43	0.47
15	0.1080	77.100	39.1	1.7	0.96	2.95	3.91	1.33	99.50	3.43	0.48
16	0.1150	77.800	39.8	1.8	0.98	2.92	3.90	1.33	99.70	3.41	0.49
17	0.1220	78.700	40.7	1.9	1.00	2.91	3.91	1.34	99.80	3.41	0.50
18	0.1300	79.500	41.5	2.0	1.02	2.89	3.91	1.35	99.90	3.40	0.51
19	0.1370	80.100	42.1	2.1	1.03	2.88	3.91	1.36	100.00	3.40	0.52
20	0.1440	80.700	42.7	2.2	1.04	2.87	3.91	1.36	100.10	3.39	0.52
21	0.1510	81.500	43.5	2.4	1.06	2.85	3.91	1.37	100.20	3.38	0.53
22	0.1590	82.100	44.1	2.5	1.08	2.85	3.93	1.38	100.20	3.39	0.54
23	0.1650	82.500	44.5	2.6	1.08	2.85	3.94	1.38	100.20	3.39	0.54
24	0.1730	82.900	44.9	2.7	1.09	2.84	3.93	1.39	100.30	3.38	0.55
25	0.1800	83.600	45.6	2.8	1.11	2.84	3.95	1.39	100.30	3.39	0.55

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
120	0.8430	116.800	78.8	13.6	1.70	2.40	4.11	1.71	103.30	3.26	0.85
121	0.8490	116.900	78.9	13.7	1.70	2.42	4.12	1.70	103.20	3.27	0.85
122	0.8570	117.200	79.2	13.9	1.71	2.43	4.14	1.70	103.10	3.29	0.85
123	0.8630	117.400	79.4	14.0	1.71	2.45	4.16	1.70	103.00	3.30	0.85
124	0.8710	117.700	79.7	14.1	1.71	2.45	4.16	1.70	103.00	3.30	0.86
125	0.8780	117.800	79.8	14.2	1.71	2.45	4.16	1.70	103.00	3.30	0.86
126	0.8850	117.900	79.9	14.3	1.71	2.46	4.17	1.70	102.90	3.32	0.86
127	0.8930	118.500	80.5	14.5	1.72	2.46	4.18	1.70	102.90	3.32	0.86
128	0.9000	118.700	80.7	14.6	1.72	2.48	4.20	1.70	102.80	3.34	0.86
129	0.9070	118.900	80.9	14.7	1.73	2.48	4.20	1.70	102.80	3.34	0.86
130	0.9140	118.900	80.9	14.8	1.72	2.48	4.20	1.70	102.80	3.34	0.86
131	0.9220	119.200	81.2	14.9	1.73	2.49	4.22	1.69	102.70	3.36	0.86
132	0.9290	119.400	81.4	15.0	1.73	2.51	4.24	1.69	102.60	3.37	0.86
133	0.9360	119.300	81.3	15.2	1.73	2.51	4.23	1.69	102.60	3.37	0.86
134	0.9380	119.400	81.4	15.2	1.73	2.51	4.23	1.69	102.60	3.37	0.86

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial	Load lbs.	Strain %	Deviator Stress ksf	Minor Eff. Stress ksf	Major Eff. Stress ksf	1:3 Ratio	Pore Press. psi	P ksf	Q ksf
73	0.5150	104.100	66.1	8.3	1.52	2.48	3.99	1.61	102.80	3.23	0.76
74	0.5220	104.400	66.4	8.4	1.52	2.48	4.00	1.61	102.80	3.24	0.76
75	0.5290	104.700	66.7	8.5	1.53	2.49	4.02	1.61	102.70	3.25	0.76
76	0.5370	105.000	67.0	8.7	1.53	2.49	4.02	1.61	102.70	3.26	0.77
77	0.5430	105.400	67.4	8.8	1.54	2.51	4.04	1.61	102.60	3.27	0.77
78	0.5500	105.500	67.5	8.9	1.54	2.51	4.04	1.61	102.60	3.27	0.77
79	0.5580	105.700	67.7	9.0	1.54	2.52	4.06	1.61	102.50	3.29	0.77
80	0.5650	105.800	67.8	9.1	1.54	2.52	4.06	1.61	102.50	3.29	0.77
81	0.5720	106.100	68.1	9.2	1.55	2.53	4.08	1.61	102.40	3.31	0.77
82	0.5790	106.500	68.5	9.3	1.55	2.55	4.10	1.61	102.30	3.33	0.78
83	0.5860	107.000	69.0	9.5	1.56	2.56	4.13	1.61	102.20	3.34	0.78
84	0.5940	107.200	69.2	9.6	1.57	2.56	4.13	1.61	102.20	3.35	0.78
85	0.6000	107.500	69.5	9.7	1.57	2.58	4.15	1.61	102.10	3.36	0.79
86	0.6070	107.900	69.9	9.8	1.58	2.56	4.14	1.62	102.20	3.35	0.79
87	0.6150	108.400	70.4	9.9	1.59	2.39	3.98	1.66	103.40	3.18	0.79
88	0.6210	108.600	70.6	10.0	1.59	2.33	3.92	1.68	103.80	3.13	0.79
89	0.6280	109.100	71.1	10.1	1.60	2.35	3.95	1.68	103.70	3.15	0.80
90	0.6340	109.300	71.3	10.2	1.60	2.39	3.99	1.67	103.40	3.19	0.80
91	0.6410	109.400	71.4	10.3	1.60	2.40	4.01	1.67	103.30	3.21	0.80
92	0.6480	109.900	71.9	10.5	1.61	2.42	4.03	1.67	103.20	3.22	0.81
93	0.6540	110.000	72.0	10.6	1.61	2.42	4.03	1.67	103.20	3.22	0.81
94	0.6600	110.400	72.4	10.7	1.62	2.42	4.04	1.67	103.20	3.23	0.81
95	0.6670	110.800	72.8	10.8	1.62	2.43	4.06	1.67	103.10	3.25	0.81
96	0.6740	110.800	72.8	10.9	1.62	2.43	4.06	1.67	103.10	3.24	0.81
97	0.6820	111.100	73.1	11.0	1.63	2.45	4.08	1.66	103.00	3.26	0.81
98	0.6890	111.200	73.2	11.1	1.63	2.45	4.08	1.66	103.00	3.26	0.81
99	0.6960	111.600	73.6	11.2	1.63	2.45	4.08	1.67	103.00	3.27	0.82
100	0.7040	111.800	73.8	11.4	1.64	2.45	4.08	1.67	103.00	3.27	0.82
101	0.7110	112.300	74.3	11.5	1.64	2.46	4.11	1.67	102.90	3.28	0.82
102	0.7180	112.400	74.4	11.6	1.65	2.48	4.12	1.66	102.80	3.30	0.82
103	0.7260	112.700	74.7	11.7	1.65	2.48	4.13	1.67	102.80	3.30	0.82
104	0.7330	113.000	75.0	11.8	1.65	2.48	4.13	1.67	102.80	3.30	0.83
105	0.7400	113.100	75.1	12.0	1.65	2.49	4.15	1.66	102.70	3.32	0.83
106	0.7470	113.400	75.4	12.1	1.66	2.49	4.15	1.67	102.70	3.32	0.83
107	0.7540	113.500	75.5	12.2	1.66	2.51	4.16	1.66	102.60	3.33	0.83
108	0.7610	113.600	75.6	12.3	1.66	2.51	4.16	1.66	102.60	3.33	0.83
109	0.7680	113.600	75.6	12.4	1.66	2.52	4.18	1.66	102.50	3.35	0.83
110	0.7750	114.000	76.0	12.5	1.66	2.53	4.20	1.66	102.40	3.37	0.83
111	0.7820	114.400	76.4	12.6	1.67	2.55	4.22	1.65	102.30	3.38	0.83
112	0.7890	114.700	76.7	12.8	1.67	2.56	4.24	1.65	102.20	3.40	0.84
113	0.7960	115.000	77.0	12.9	1.68	2.56	4.24	1.65	102.20	3.40	0.84
114	0.8020	115.300	77.3	13.0	1.68	2.58	4.26	1.65	102.10	3.42	0.84
115	0.8090	115.200	77.2	13.1	1.68	2.59	4.27	1.65	102.00	3.43	0.84
116	0.8160	115.600	77.6	13.2	1.68	2.53	4.22	1.66	102.40	3.38	0.84
117	0.8230	116.100	78.1	13.3	1.69	2.39	4.08	1.71	103.40	3.24	0.85
118	0.8300	116.300	78.3	13.4	1.70	2.35	4.04	1.72	103.70	3.19	0.85
119	0.8360	116.500	78.5	13.5	1.70	2.36	4.06	1.72	103.60	3.21	0.85



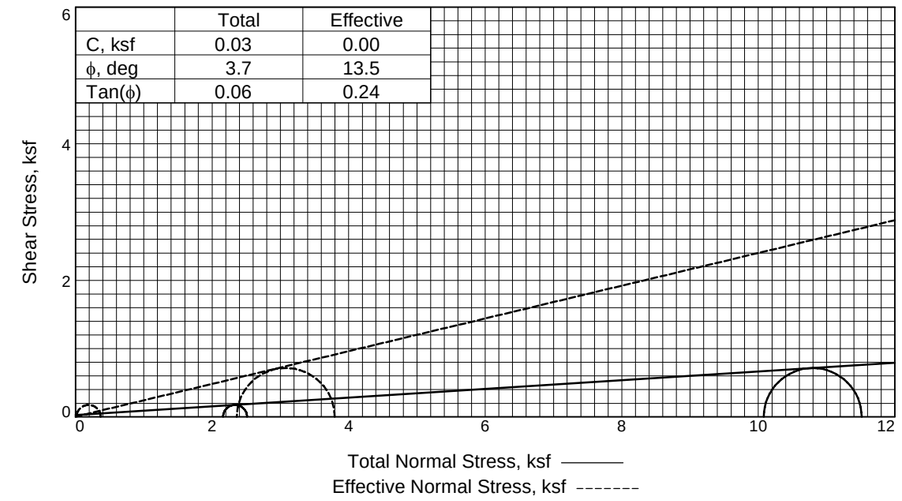
Client: NCDOT GEU
Project: Winston-Salem N. Beltway E. Section
Depth: 4.2-5.7' **Sample Number:** ST-3
Project No.: 6235-17-038

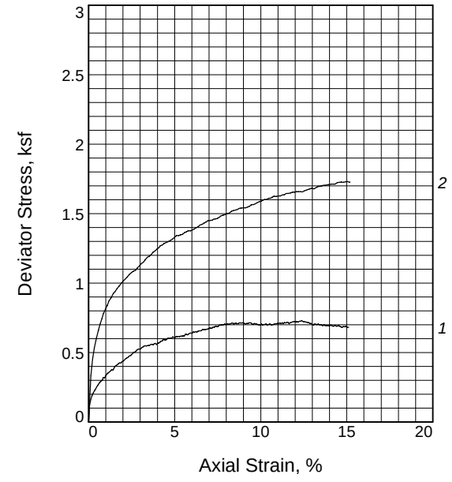
Figure ST-3

S & ME, INC.

Tested By: Karen Warner **Checked By:** Jason Reeves

C & phi are not test results but an interpretation of the test results. The designer is responsible for interpreting test data as provided by S&ME.





Sample No.		1	2
Initial	Water Content, %	58.1	58.1
	Dry Density, pcf	54.9	64.6
	Saturation, %	77.2	100.0
	Void Ratio	1.9574	1.5112
	Diameter, in.	2.779	2.832
	Height, in.	6.251	6.412
At Test	Water Content, %	66.1	46.0
	Dry Density, pcf	59.7	73.9
	Saturation, %	100.0	100.0
	Void Ratio	1.7177	1.1962
	Diameter, in.	2.701	2.707
	Height, in.	6.079	6.136
Strain rate, in./min.		0.004	0.007
Eff. Cell Pressure, ksf		2.16	10.08
Fail. Stress, ksf		0.35	1.43
Total Pore Pr., ksf		10.79	14.92
Strain, %		1.1	6.7
Ult. Stress, ksf		0.52	1.73
Total Pore Pr., ksf		11.00	14.77
Strain, %		3.0	15.2
$\bar{\sigma}_1$ Failure, ksf		0.37	3.79
$\bar{\sigma}_3$ Failure, ksf		0.01	2.36

Type of Test:
CU with Pore Pressures
Sample Type: Undisturbed
Description: A-5

LL= 44 **PL=** 35 **PI=** 9
Assumed Specific Gravity= 2.60
Remarks: Quantity for only 2 specimens to be tested. Both samples were very disturbed.

Figure ST-3

Client: NCDOT GEU

Project: Winston-Salem N. Beltway E. Section

Sample Number: ST-3 **Depth:** 4.2-5.7'

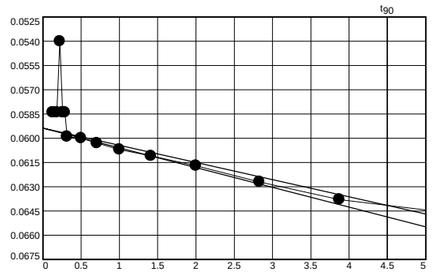
Proj. No.: 6235-17-038 **Date Sampled:** 10/2017

TRIAXIAL SHEAR TEST REPORT
S & ME, INC.
Charlotte, North Carolina

Tested By: Karen Warner **Checked By:** Jason Reeves

Pressure: 0.05 tsf — **TEST READINGS** — **Load No. 1**

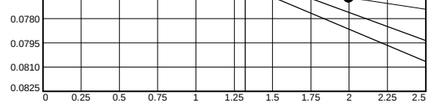
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	+0 00:00:0	0.05840	11	+0 00:02:00	0.06110
2	+0 00:00:01	0.05840	12	+0 00:04:00	0.06170
3	+0 00:00:02	0.05840	13	+0 00:08:00	0.06270
4	+0 00:00:03	0.05400	14	+0 00:15:00	0.06380
5	+0 00:00:04	0.05840	15	+0 00:30:00	0.06470
6	+0 00:00:05	0.05840	16	+0 00:60:00	0.06550
7	+0 00:00:06	0.05990	17	+0 02:00:00	0.06570
8	+0 00:00:15	0.06000	18	+0 02:22:00	0.06570
9	+0 00:00:30	0.06030			
10	+0 00:00:60	0.06070			



Void Ratio = 0.596 **Compression =** 0.7%
D_0 = 0.0594 **D_{90} =** 0.0641 **D_{100} =** 0.0647 **C_v at 20.22 min. =** 0.105 ft.^{2}/day

Pressure: 0.25 tsf — **TEST READINGS** — **Load No. 2**

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.06570	11	+0 00:02:00	0.07550
2	+ 00:00:01	0.06870	12	+0 00:04:00	0.07670
3	+0 00:00:02	0.07090	13	+0 00:08:00	0.07790
4	+0 00:00:03	0.07120	14	+0 00:15:00	0.07910
5	+0 00:00:04	0.07160	15	+0 00:30:00	0.08000
6	+0 00:00:05	0.07180	16	+0 00:60:00	0.08070
7	+0 00:00:06	0.07190	17	+0 00:81:06	0.08080
8	+0 00:00:15	0.07270			
9	+0 00:00:30	0.07360			
10	+0 00:00:60	0.07450			



Void Ratio = 0.572 **Compression =** 2.2%
D_0 = 0.0707 **D_{90} =** 0.0753 **D_{100} =** 0.0758 **C_v at 1.75 min. =** 1.192 ft.^{2}/day

CONSOLIDATION TEST DATA

1/19/2018

Client: NCDOT GEU
Project: Winston-Salem N. Beltway E. Section
Project Number: 6235-17-038
Depth: 8.4-10.4' **Sample Number:** ST-5
Material Description: A-6
Liquid Limit: 29 **Plasticity Index:** 11
AASHTO: A-6
Figure No.: ST-5
Testing Remarks: Unsaturated
Tested by: Karen Warner **Checked by:** Jason Reeves

Test Specimen Data

NATURAL MOISTURE
Wet w+t = 355.47 g.
Dry w+t = 306.42 g.
Tare Wt. = 82.75 g.
Moisture = 21.9 %

VOID RATIO
Spec. Gr. = 2.65
Est. Ht. Solids = 0.626 in.
Init. V.R. = 0.608
Init. Sat. = 95.6 %

AFTER TEST
Wet w+t = 253.62 g.
Dry w+t = 231.00 g.
Tare Wt. = 98.16 g.
Moisture = 17.0 %

UNIT WEIGHT
Height = 0.999 in.
Diameter = 2.495 in.
Weight = 98.16 g.
Dry Dens. = 62.8 pcf

TEST START
Height = 1.006 in.
Diameter = 2.495 in.

Dry Wt. =132.84* g.

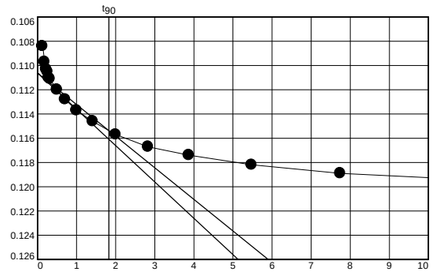
End-Of-Load Summary

Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C_v (ft.^{2}/day)	C_α	Void Ratio	% Strain
start	0.05840	0.00000			0.608	
0.05	0.06570	0.00730	0.105		0.596	0.7 Comprs.
0.25	0.08080	0.02240	1.192		0.572	2.2 Comprs.
0.50	0.09200	0.03360	0.618		0.554	3.3 Comprs.
1.00	0.10410	0.04570	3.593		0.535	4.5 Comprs.
2.00	0.12070	0.06230	0.575		0.508	6.2 Comprs.
4.00	0.13830	0.07990	1.444		0.480	7.9 Comprs.
1.00	0.13510	0.07670			0.485	7.6 Comprs.
0.25	0.13110	0.07270	0.702		0.492	7.2 Comprs.
0.05	0.12870	0.07030	0.295		0.495	7.0 Comprs.

Compression index (C_c), tsf = 0.09 **Preconsolidation pressure (P_p), tsf =** 0.5 **Void ratio at P_p (e_m) =** 0.556

Pressure: 2.00 tsf — **TEST READINGS** — **Load No. 5**

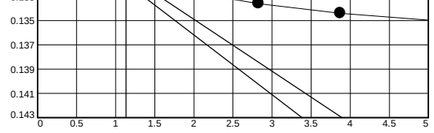
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.10410	12	+0 00:04:00	0.11570
2	+0 00:00:01	0.10840	13	+0 00:08:00	0.11670
3	+0 00:00:02	0.10970	14	+0 00:15:00	0.11740
4	+0 00:00:03	0.11030	15	+0 00:30:00	0.11820
5	+0 00:00:04	0.11050	16	+0 00:60:00	0.11890
6	+0 00:00:05	0.11100	17	+0 02:00:00	0.11940
7	+0 00:00:06	0.11110	18	+0 04:00:00	0.12000
8	+0 00:00:15	0.11200	19	+0 08:00:00	0.12060
9	+0 00:00:30	0.11280	20	+0 15:00:00	0.12070
10	+0 00:00:60	0.11370	21	+0 24:00:00	0.12070
11	+0 00:02:00	0.11460	22	+1 24:00:00	0.12070



Void Ratio = 0.508 **Compression =** 6.2%
D_0 = 0.1106 **D_{90} =** 0.1154 **D_{100} =** 0.1159 **C_v at 3.34 min. =** 0.575 ft.^{2}/day

Pressure: 4.00 tsf — **TEST READINGS** — **Load No. 6**

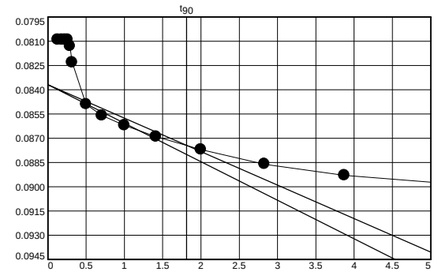
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.12070	11	+0 00:02:00	0.13180
2	+0 00:00:01	0.12550	12	+0 00:04:00	0.13270
3	+0 00:00:02	0.12650	13	+0 00:08:00	0.13360
4	+0 00:00:03	0.12710	14	+0 00:15:00	0.13440
5	+0 00:00:04	0.12750	15	+0 00:30:00	0.13520
6	+0 00:00:05	0.12780	16	+0 00:60:00	0.13600
7	+0 00:00:06	0.12790	17	+0 02:00:00	0.13670
8	+0 00:00:15	0.12900	18	+0 04:00:00	0.13730
9	+0 00:00:30	0.12990	19	+0 08:00:00	0.13780
10	+0 00:00:60	0.13090	20	+0 17:08:00	0.13830



Void Ratio = 0.480 **Compression =** 7.9%
D_0 = 0.1263 **D_{90} =** 0.1312 **D_{100} =** 0.1317 **C_v at 1.28 min. =** 1.444 ft.^{2}/day

Pressure: 0.50 tsf — **TEST READINGS** — **Load No. 3**

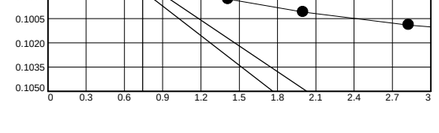
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.08080	11	+0 00:02:00	0.08690
2	+0 00:00:01	0.08090	12	+0 00:04:00	0.08770
3	+0 00:00:02	0.08090	13	+0 00:08:00	0.08860
4	+0 00:00:03	0.08090	14	+0 00:15:00	0.08930
5	+0 00:00:04	0.08090	15	+0 00:30:00	0.08990
6	+0 00:00:05	0.08130	16	+0 00:60:00	0.09040
7	+0 00:00:06	0.08230	17	+0 02:00:00	0.09100
8	+0 00:00:15	0.08490	18	+0 04:00:00	0.09140
9	+0 00:00:30	0.08560	19	+0 08:00:00	0.09190
10	+0 00:00:60	0.08620	20	+0 14:07:00	0.09200



Void Ratio = 0.554 **Compression =** 3.3%
D_0 = 0.0837 **D_{90} =** 0.0874 **D_{100} =** 0.0879 **C_v at 3.28 min. =** 0.618 ft.^{2}/day

Pressure: 1.00 tsf — **TEST READINGS** — **Load No. 4**

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.09200	11	+0 00:04:00	0.10010
2	+0 00:00:01	0.09210	12	+0 00:08:00	0.10090
3	+0 00:00:02	0.09210	13	+0 00:15:00	0.10160
4	+0 00:00:03	0.09470	14	+0 00:30:00	0.10240
5	+0 00:00:04	0.09580	15	+0 00:60:00	0.10300
6	+0 00:00:05	0.09610	16	+0 02:00:00	0.10360
7	+0 00:00:14	0.09740	17	+0 04:00:00	0.10410
8	+0 00:00:29	0.09810	18	+0 04:09:00	0.10410
9	+0 00:00:60	0.09860			
10	+0 00:02:00	0.09930			



Void Ratio = 0.535 **Compression =** 4.5%
D_0 = 0.0942 **D_{90} =** 0.0982 **D_{100} =** 0.0986 **C_v at 0.55 min. =** 3.593 ft.^{2}/day

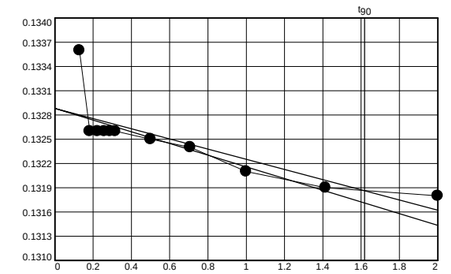
Pressure: 1.00 tsf — **TEST READINGS** — **Load No. 7**

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.13830	11	+0 00:02:00	0.13560
2	+0 00:00:01	0.13670	12	+0 00:04:00	0.13540
3	+0 00:00:02	0.13670	13	+0 00:08:00	0.13530
4	+0 00:00:03	0.13670	14	+0 00:15:00	0.13520
5	+0 00:00:04	0.13590	15	+0 00:30:00	0.13520
6	+0 00:00:05	0.13590	16	+0 00:60:00	0.13520
7	+0 00:00:06	0.13580	17	+0 02:00:00	0.13510
8	+0 00:00:15	0.13570	18	+0 02:05:00	0.13510
9	+0 00:00:30	0.13570			
10	+0 00:00:60	0.13560			

Void Ratio = 0.485 **Compression =** 7.6%

Pressure: 0.25 tsf — **TEST READINGS** — **Load No. 8**

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.13510	11	+0 00:02:00	0.13190
2	+0 00:00:01	0.13360	12	+0 00:04:00	0.13180
3	+0 00:00:02	0.13260	13	+0 00:08:00	0.13170
4	+0 00:00:03	0.13260	14	+0 00:15:00	0.13170
5	+0 00:00:04	0.13260	15	+0 00:30:00	0.13170
6	+0 00:00:05	0.13260	16	+0 00:60:00	0.13120
7	+0 00:00:06	0.13260	17	+0 02:00:00	0.13110
8	+0 00:00:15	0.13250	18	+0 02:11:00	0.13110
9	+0 00:00:30	0.13240			
10	+0 00:00:60	0.13210			

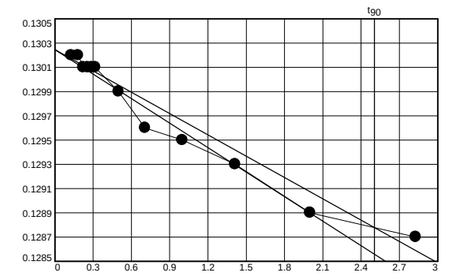


Void Ratio = 0.492 **Compression =** 7.2%

D_0 = 0.1329 **D_{90} =** 0.1319 **D_{100} =** 0.1318 **C_v at 2.62 min. =** 0.702 ft.^{2}/day

Pressure: 0.05 tsf — **TEST READINGS** — **Load No. 9**

No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.13110	11	+0 00:02:00	0.12930
2	+0 00:00:01	0.13020	12	+0 00:04:00	0.12890
3	+0 00:00:02	0.13020	13	+0 00:08:00	0.12870
4	+0 00:00:03	0.13010	14	+0 00:15:00	0.12870
5	+0 00:00:04	0.13010	15	+0 00:30:00	0.12870
6	+0 00:00:05	0.13010	16	+0 00:40:45	0.12870
7	+0 00:00:06	0.13010			
8	+0 00:00:15	0.12990			
9	+0 00:00:30	0.12960			
10	+0 00:00:60	0.12950			



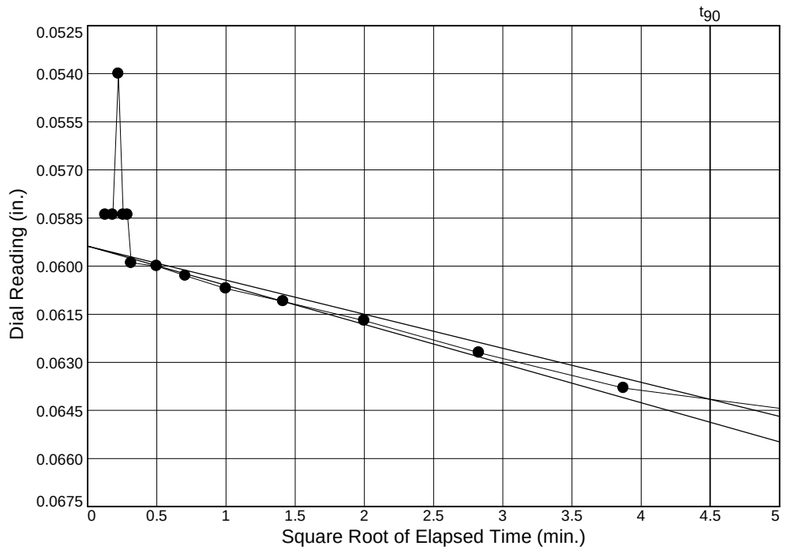
Void Ratio = 0.495 **Compression =** 7.0%

D_0 = 0.1302 **D_{90} =** 0.1288 **D_{100} =** 0.1286 **C_v at 6.27 min. =** 0.295 ft.^{2}/day

Dial Reading vs. Time

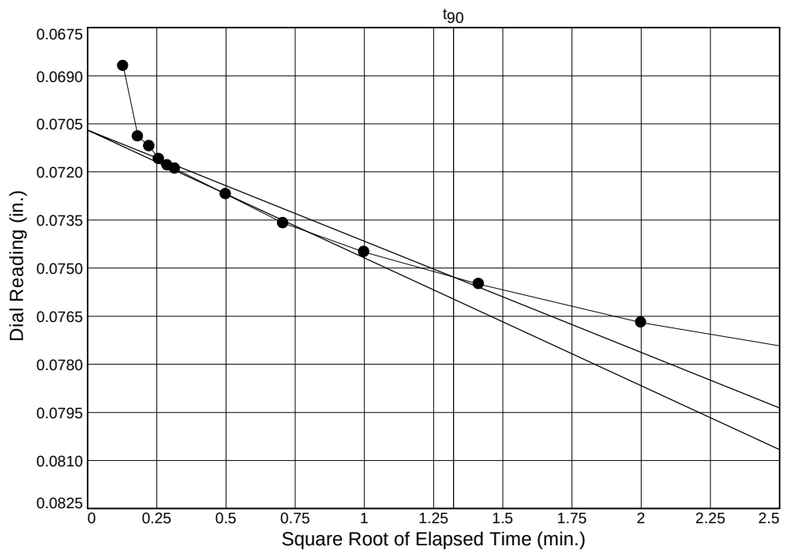
Project No.: 6235-17-038
Project: Winston-Salem N. Beltway E. Section

Depth: 8.4-10.4' Sample Number: ST-5



Load No.= 1
Load= 0.05 tsf
D_0 = 0.0594
D_{90} = 0.0641
D_{100} = 0.0647
T_{90} = 20.22 min.

C_v @ T_{90}
0.105 ft.^{2}/day



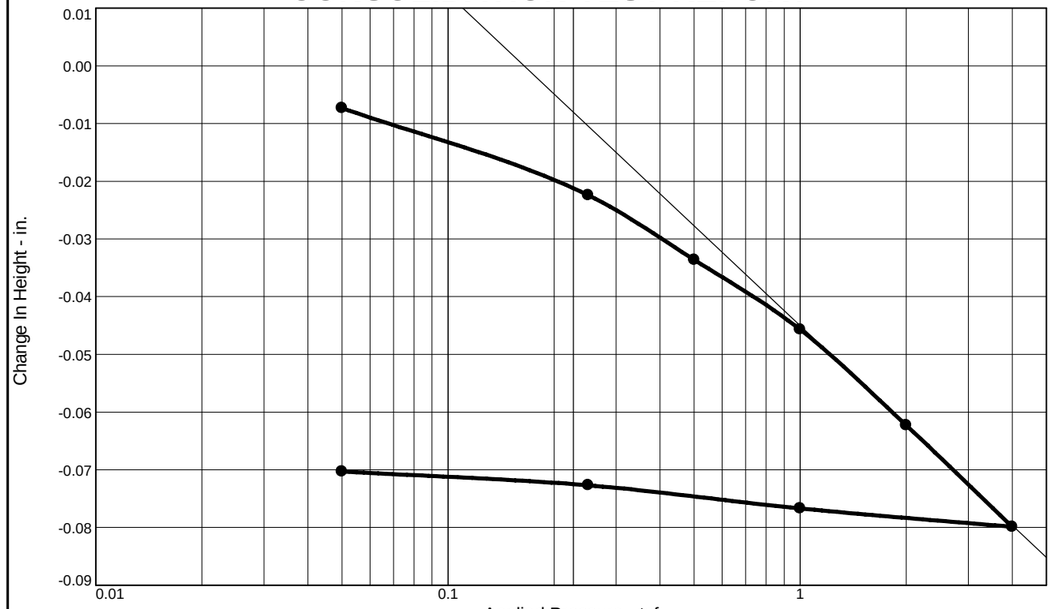
Load No.= 2
Load= 0.25 tsf
D_0 = 0.0707
D_{90} = 0.0753
D_{100} = 0.0758
T_{90} = 1.75 min.

C_v @ T_{90}
1.192 ft.^{2}/day

Figure ST-6

S & ME, INC.

CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
1	0.05	0.105		9	0.05	0.295					
2	0.25	1.192									
3	0.50	0.618									
4	1.00	3.593									
5	2.00	0.575									
6	4.00	1.444									
8	0.25	0.702									

Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	C_c	C_r	Initial Void Ratio
Saturation	Moisture									
95.6 %	21.9 %	62.8	29	11	2.65		0.5	0.09		0.608

MATERIAL DESCRIPTION	USCS	AASHTO
A-6		A-6

Project No. 6235-17-038 **Client:** NCDOT GEU
Project: Winston-Salem N. Beltway E. Section

Depth: 8.4-10.4' **Sample Number:** ST-5

S & ME, INC.

Charlotte, North Carolina

Remarks:
Unsaturated

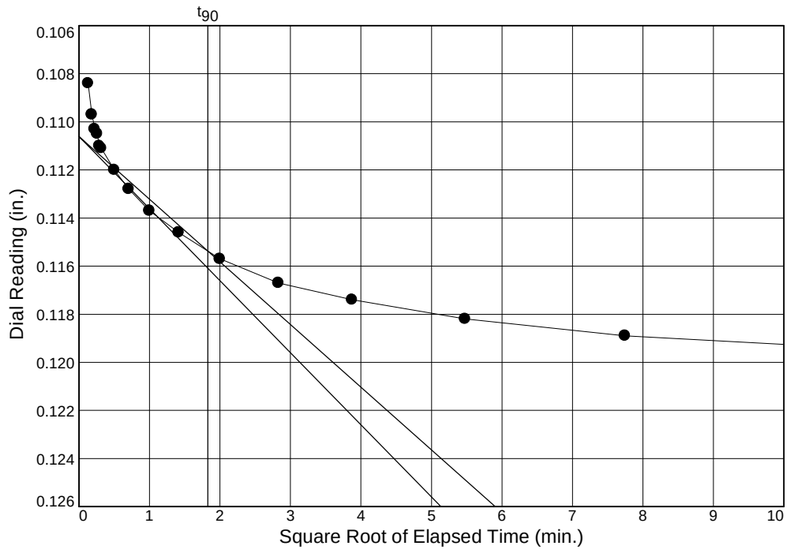
Figure ST-5

Tested By: Karen Warner **Checked By:** Jason Reeves

Dial Reading vs. Time

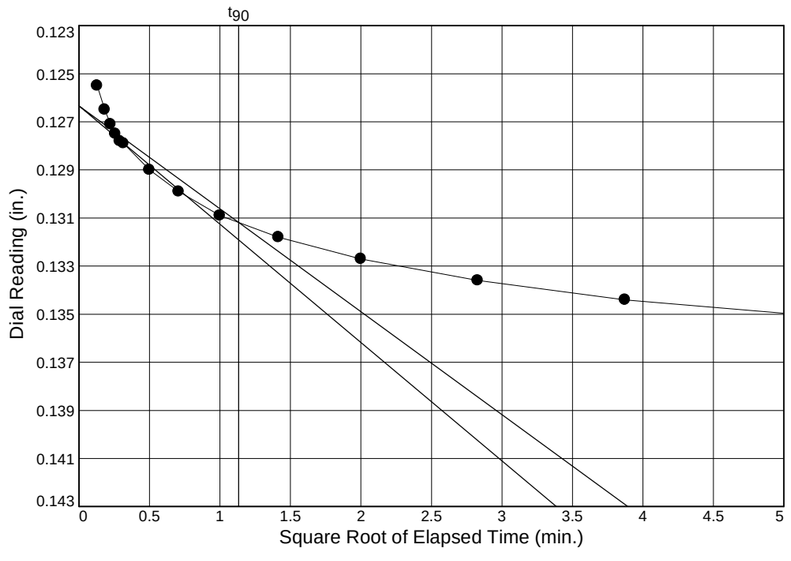
Project No.: 6235-17-038
Project: Winston-Salem N. Beltway E. Section

Depth: 8.4-10.4' Sample Number: ST-5



Load No.= 5
Load= 2.00 tsf
D_0 = 0.1106
D_{90} = 0.1154
D_{100} = 0.1159
T_{90} = 3.34 min.

C_v @ T_{90}
0.575 ft.^{2}/day



Load No.= 6
Load= 4.00 tsf
D_0 = 0.1263
D_{90} = 0.1312
D_{100} = 0.1317
T_{90} = 1.28 min.

C_v @ T_{90}
1.444 ft.^{2}/day

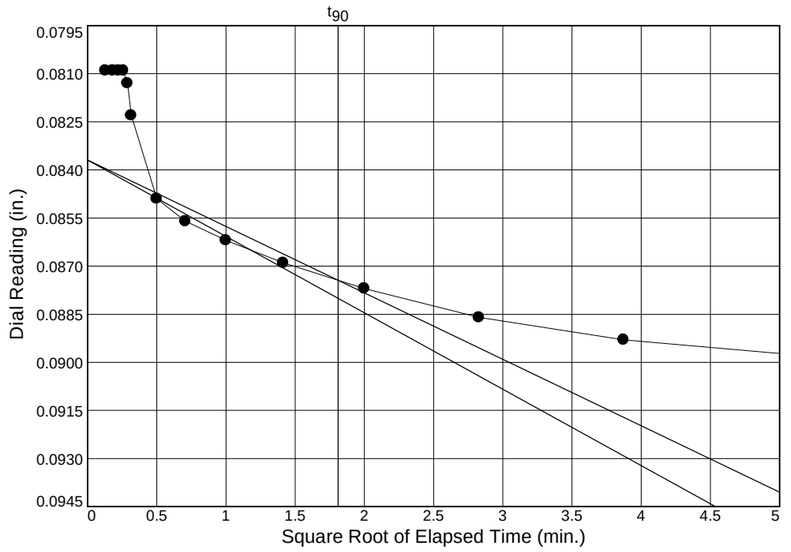
S & ME, INC.

Figure ST-8

Dial Reading vs. Time

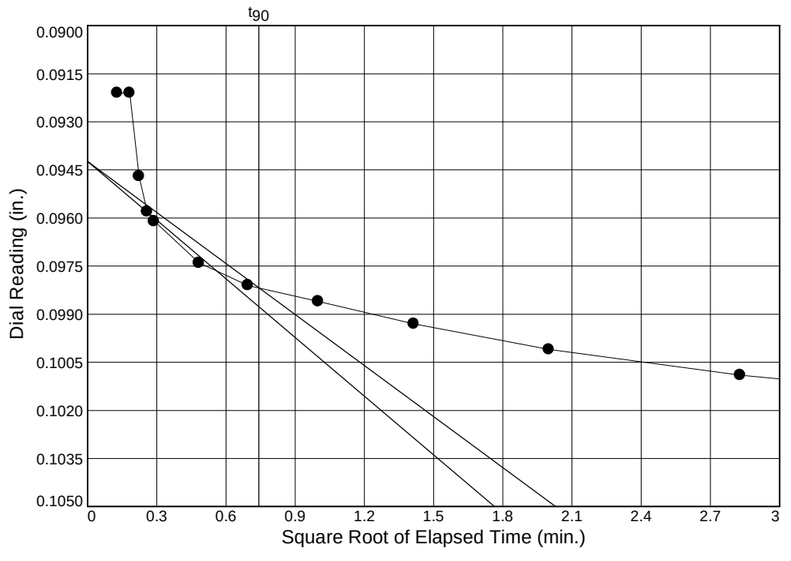
Project No.: 6235-17-038
Project: Winston-Salem N. Beltway E. Section

Depth: 8.4-10.4' Sample Number: ST-5



Load No.= 3
Load= 0.50 tsf
D_0 = 0.0837
D_{90} = 0.0874
D_{100} = 0.0879
T_{90} = 3.28 min.

C_v @ T_{90}
0.618 ft.^{2}/day



Load No.= 4
Load= 1.00 tsf
D_0 = 0.0942
D_{90} = 0.0982
D_{100} = 0.0986
T_{90} = 0.55 min.

C_v @ T_{90}
3.593 ft.^{2}/day

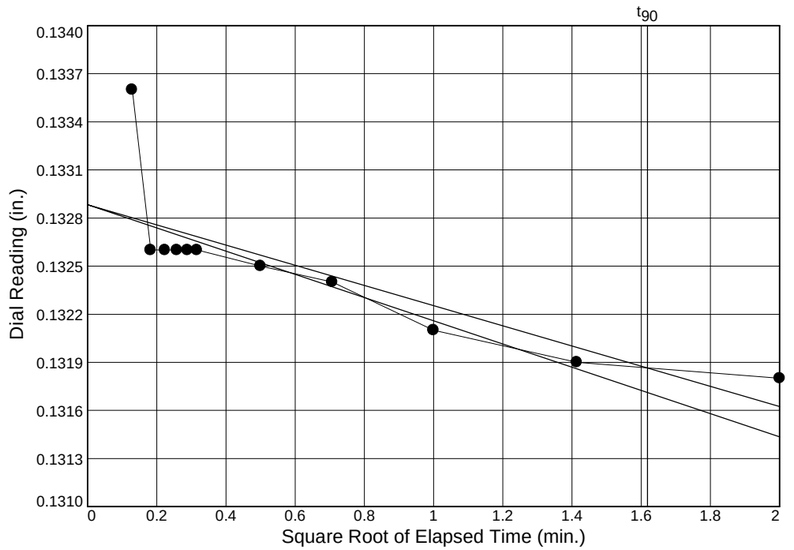
S & ME, INC.

Figure ST-7

Dial Reading vs. Time

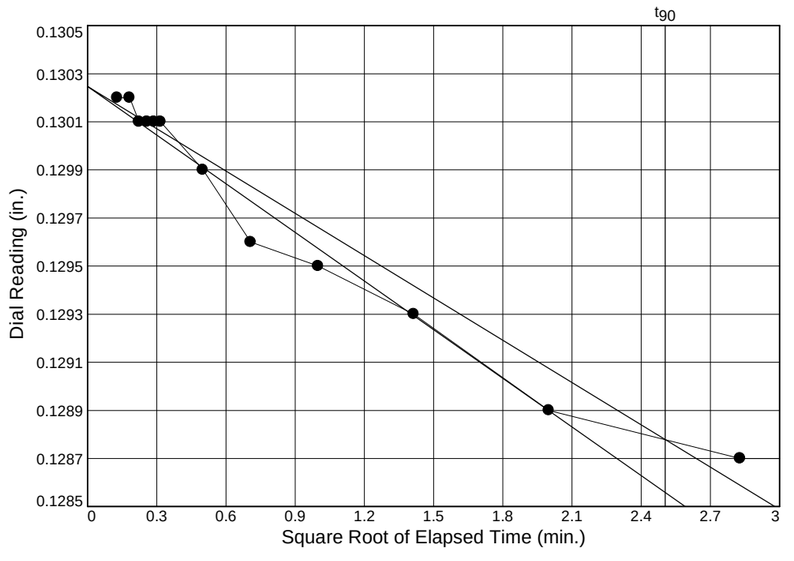
Project No.: 6235-17-038
Project: Winston-Salem N. Beltway E. Section

Depth: 8.4-10.4' Sample Number: ST-5



Load No.= 8
Load= 0.25 tsf
D_0 = 0.1329
D_{90} = 0.1319
D_{100} = 0.1318
T_{90} = 2.62 min.

C_v @ T_{90}
0.702 ft.^{2}/day



Load No.= 9
Load= 0.05 tsf
D_0 = 0.1302
D_{90} = 0.1288
D_{100} = 0.1286
T_{90} = 6.27 min.

C_v @ T_{90}
0.295 ft.^{2}/day

Figure ST-9

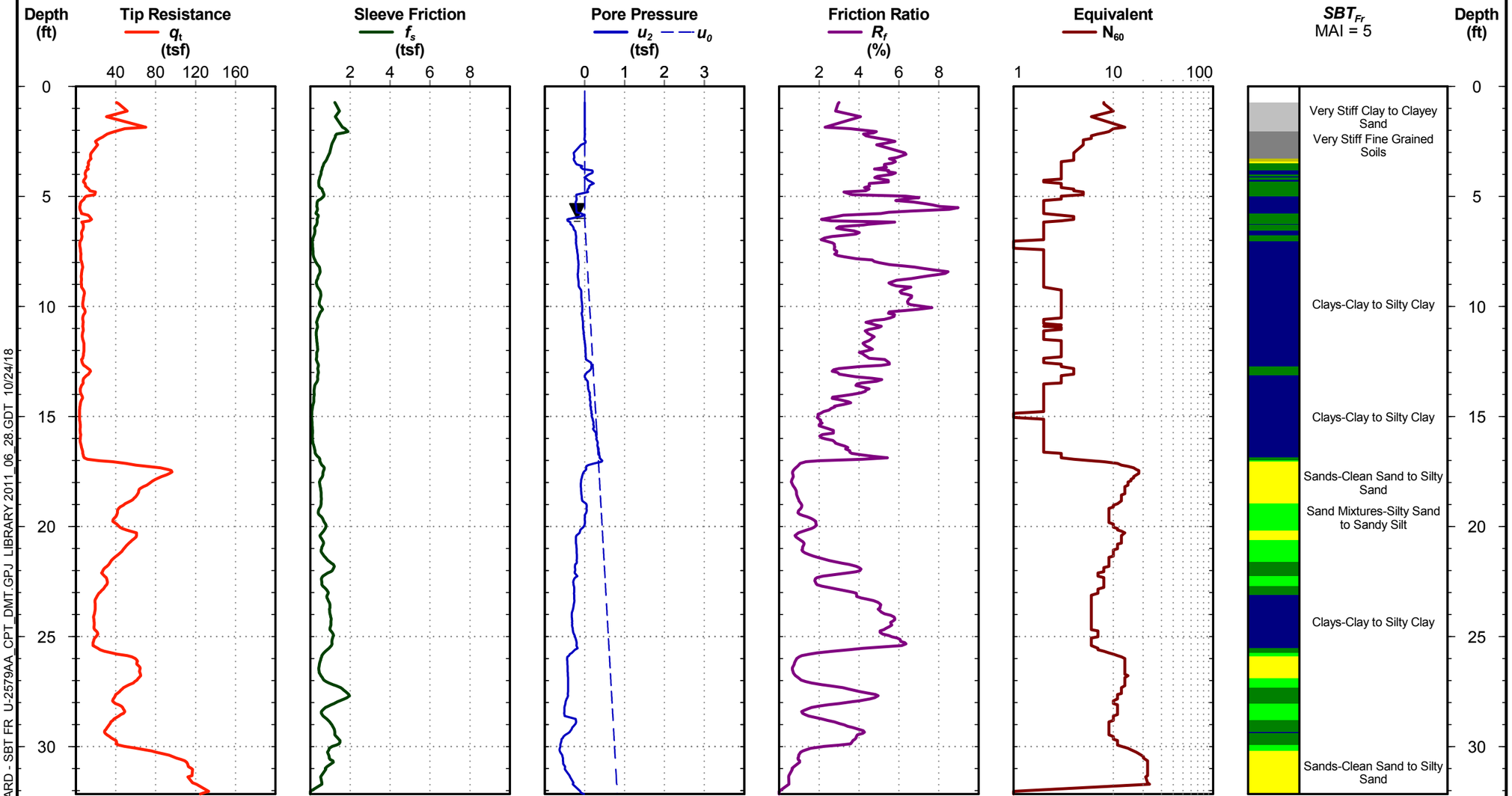
S & ME, INC.

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: L - 30+65
Offset: 50 RT
Elevation: 820.6 ft
Date: Oct. 9, 2018
Estimated Water Depth: 6 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: CPT-1

Total Depth: 32.2 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



Cone Penetration Test

CPT REPORT - STANDARD - SBT FR U-2579AA_CPT_DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

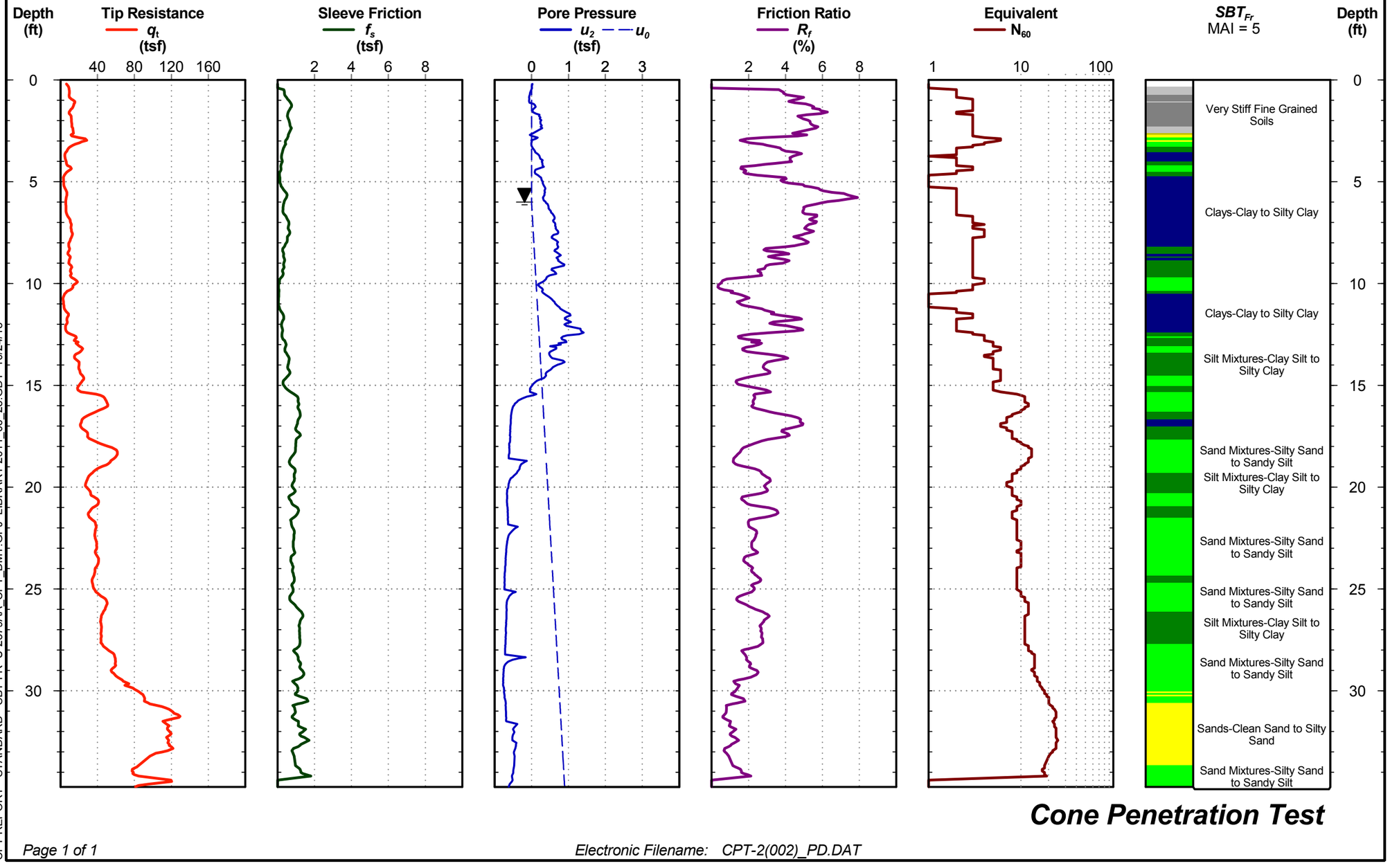
Electronic Filename: CPT-1(006)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: L - 31+50
Offset: 50 RT
Elevation: 815.5 ft
Date: Oct. 9, 2018
Estimated Water Depth: 6 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: CPT-2

Total Depth: 34.7 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



Cone Penetration Test

CPT REPORT - STANDARD - SBT FR U-2579AA_CPT_DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

Page 1 of 1

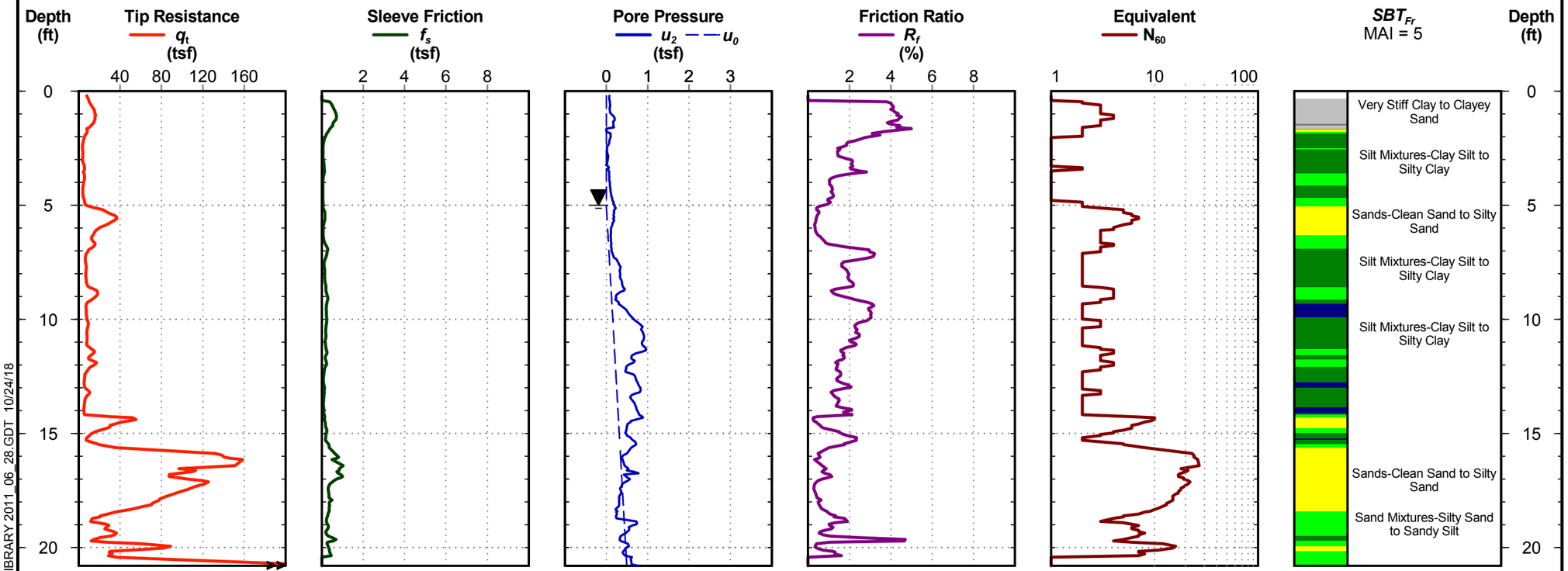
Electronic Filename: CPT-2(002)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: L - 34+50
Offset: 50 RT
Elevation: 813.8 ft
Date: Oct. 5, 2018
Estimated Water Depth: 5 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: CPT-3

Total Depth: 20.8 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



Cone Penetration Test

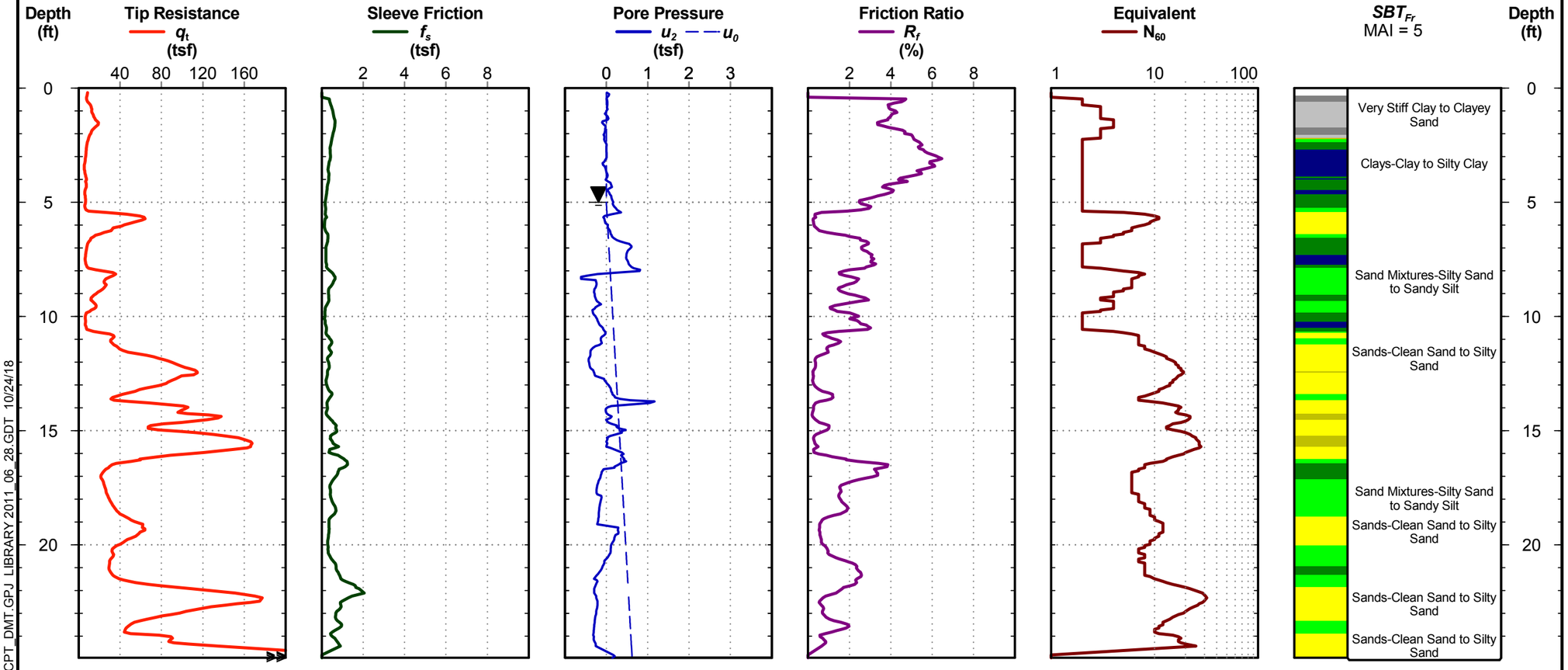
Electronic Filename: CPT-3(002)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: L - 34+50
Offset: 50 LT
Elevation: 813.8 ft
Date: Oct. 5, 2018
Estimated Water Depth: 5 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: CPT-4

Total Depth: 24.9 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR U-2579AA_CPT_DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

Cone Penetration Test

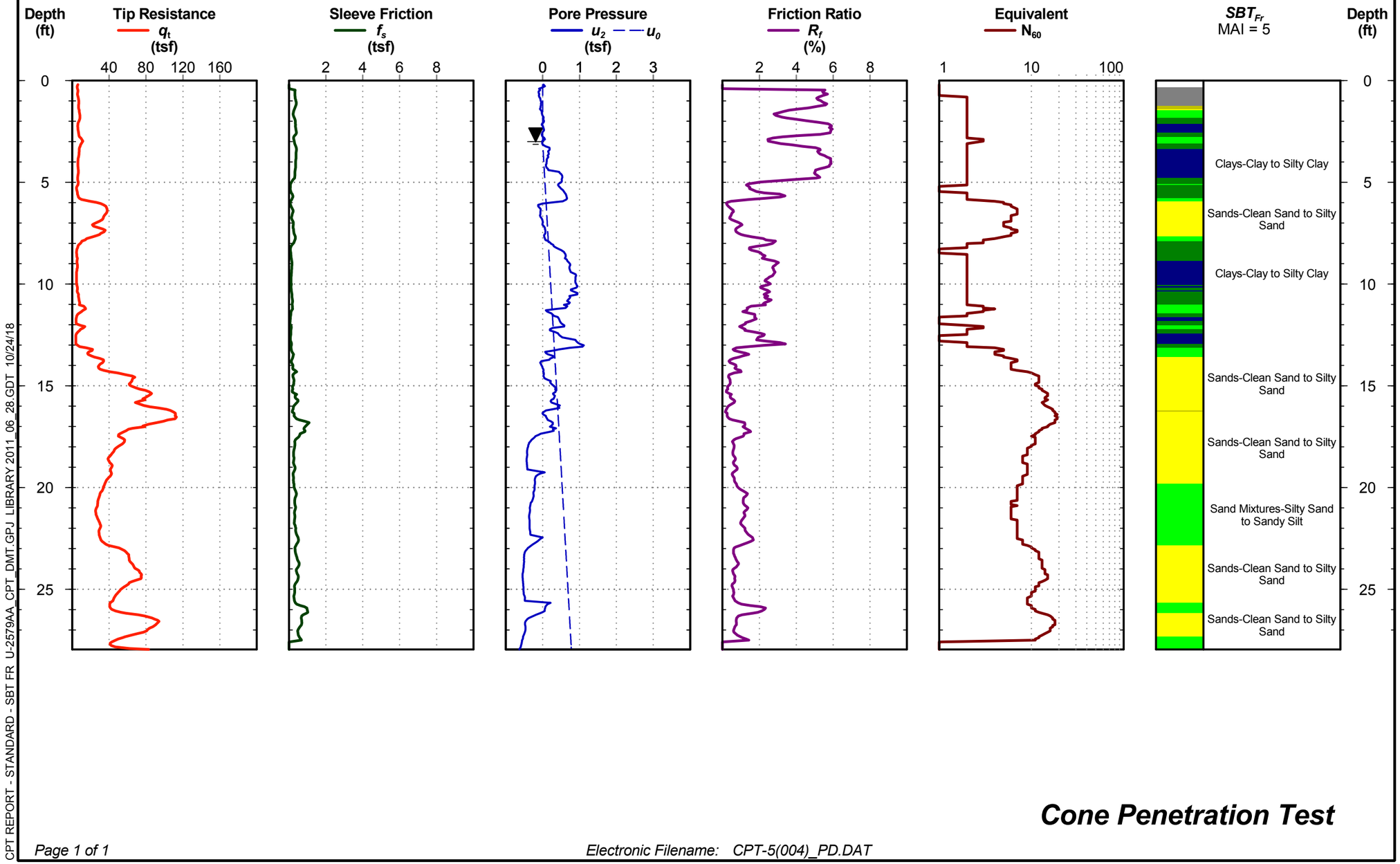
Electronic Filename: CPT-4(001)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: L - 38+00
Offset: 50 LT
Elevation: 816.6 ft
Date: Oct. 4, 2018
Estimated Water Depth: 3 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: CPT-5

Total Depth: 28.0 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR U-2579AA_CPT_DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

Cone Penetration Test

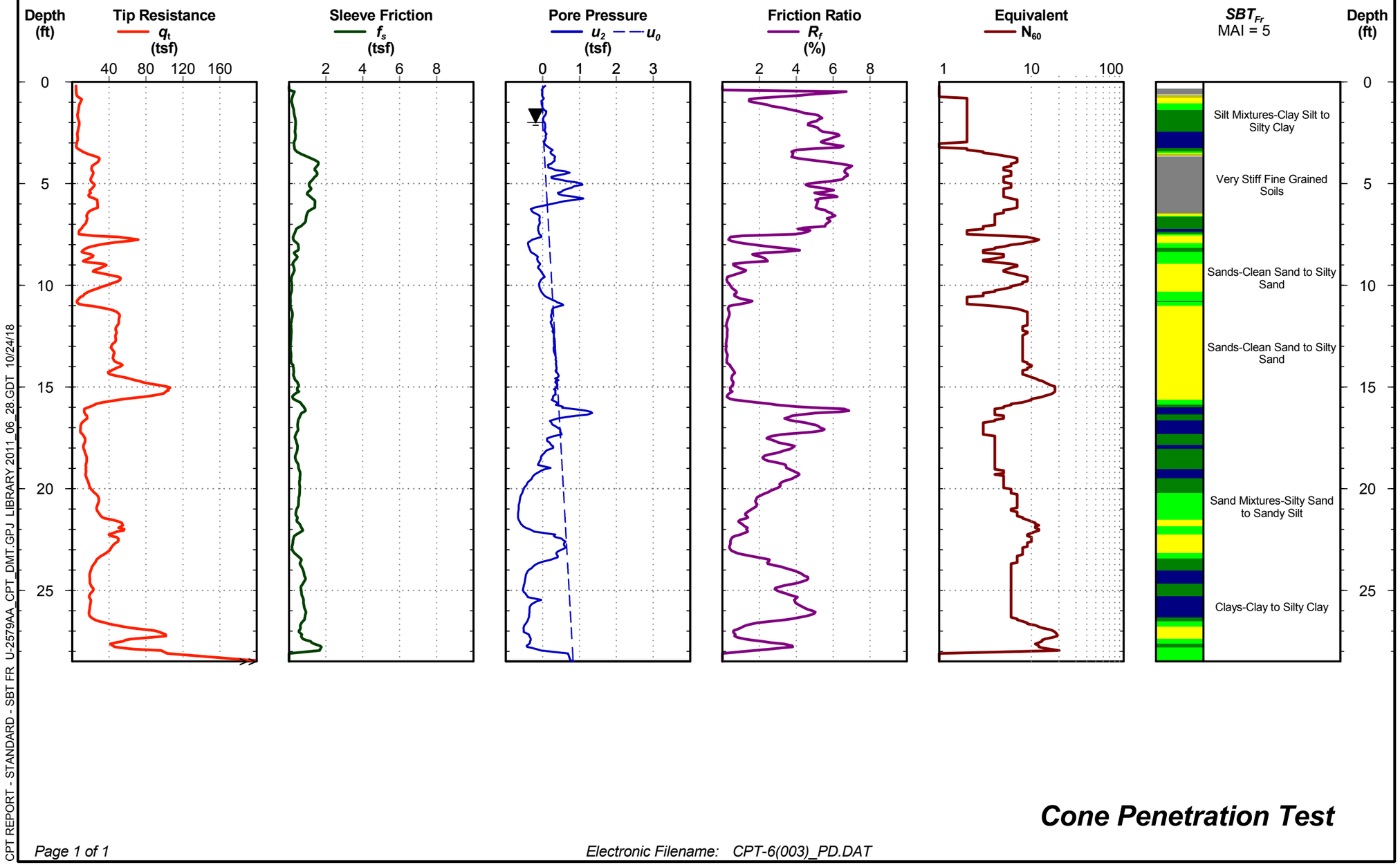
Electronic Filename: CPT-5(004)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: L - 39+50
Offset: 50 LT
Elevation: 816.8 ft
Date: Oct. 4, 2018
Estimated Water Depth: 2 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: CPT-6

Total Depth: 28.5 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR U-2579AA_CPT_DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

Cone Penetration Test

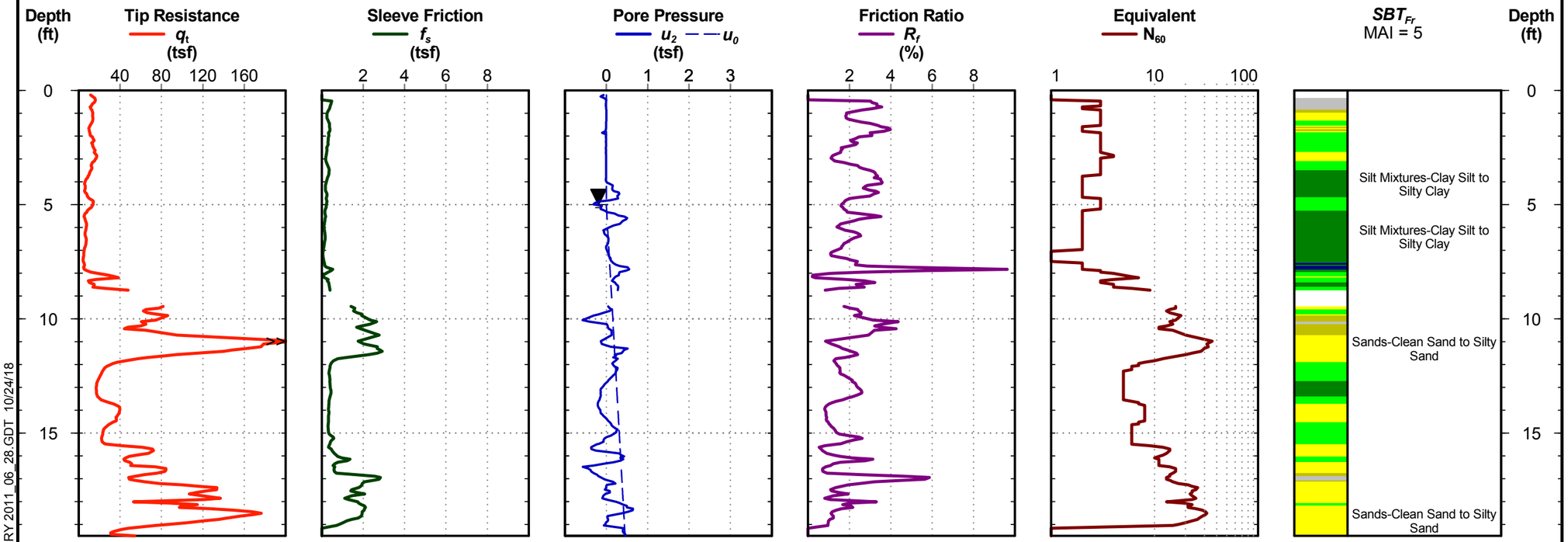
Electronic Filename: CPT-6(003)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: L - 41+00
Offset: 50 LT
Elevation: 820.4 ft
Date: Oct. 4, 2018
Estimated Water Depth: 5 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: CPT-7

Total Depth: 19.5 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



Cone Penetration Test

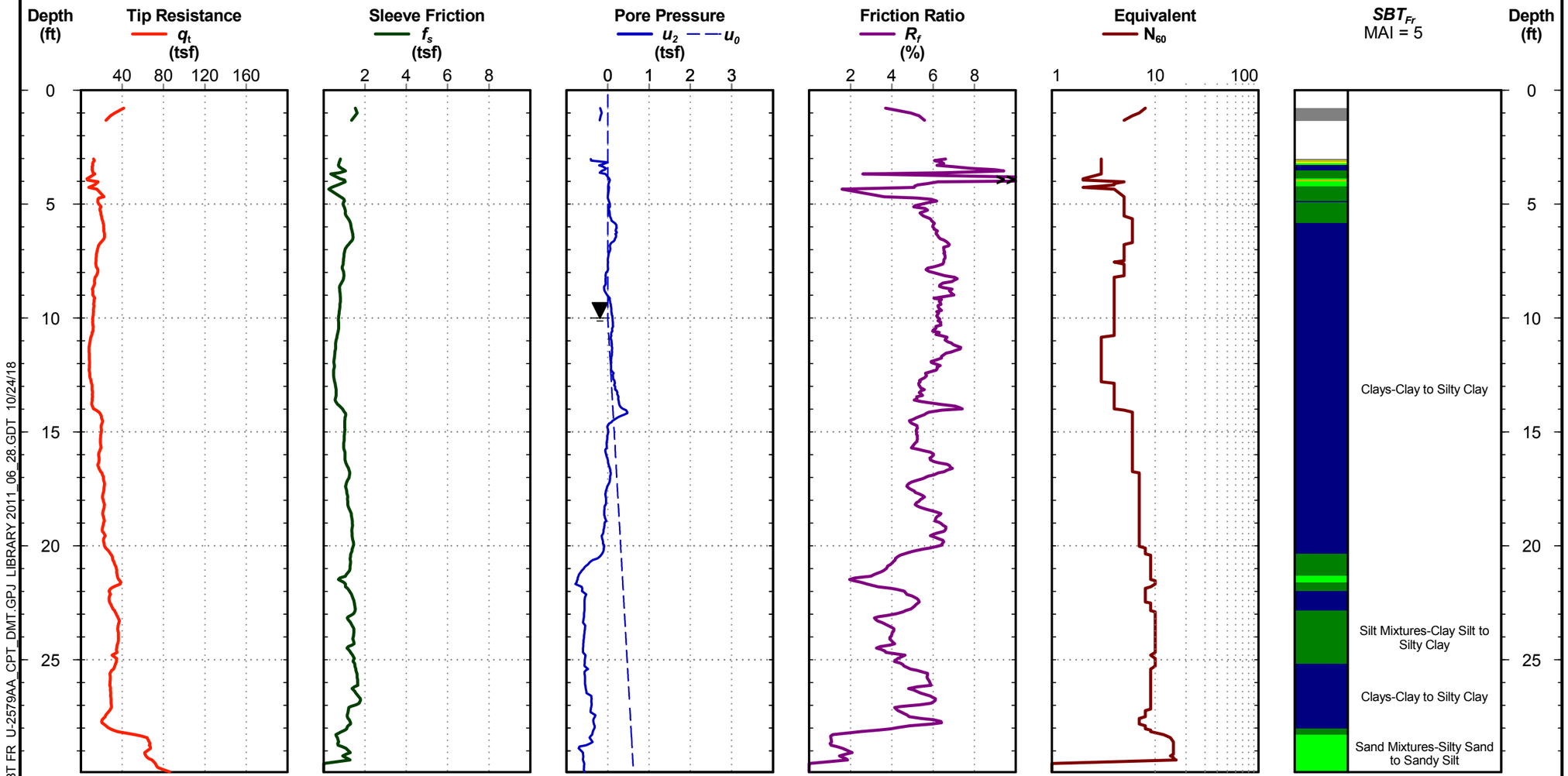
Electronic Filename: CPT-7(002)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: L - 42+00
Offset: 50 LT
Elevation: 829.0ft
Date: Oct. 4, 2018
Estimated Water Depth: 10 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: CPT-8

Total Depth: 29.9 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



Cone Penetration Test

CPT REPORT - STANDARD - SBT FR U-2579AA_CPT_DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

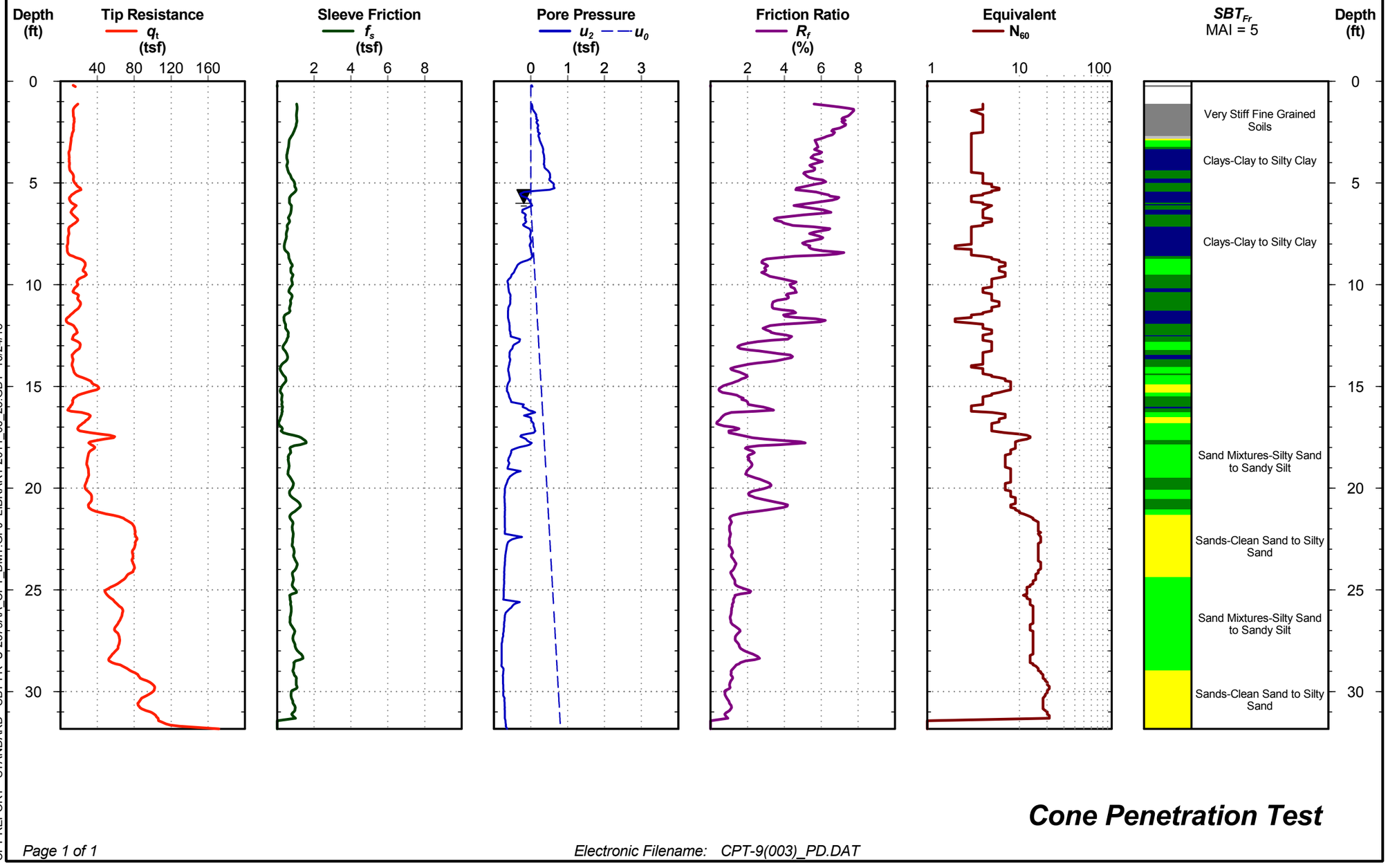
Electronic Filename: CPT-8(001)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: Y1 - 27+00
Offset: CL
Elevation: 830.2 ft
Date: Oct. 9, 2018
Estimated Water Depth: 6 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: CPT-9

Total Depth: 31.8 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR U-2579AA_CPT_DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

Cone Penetration Test

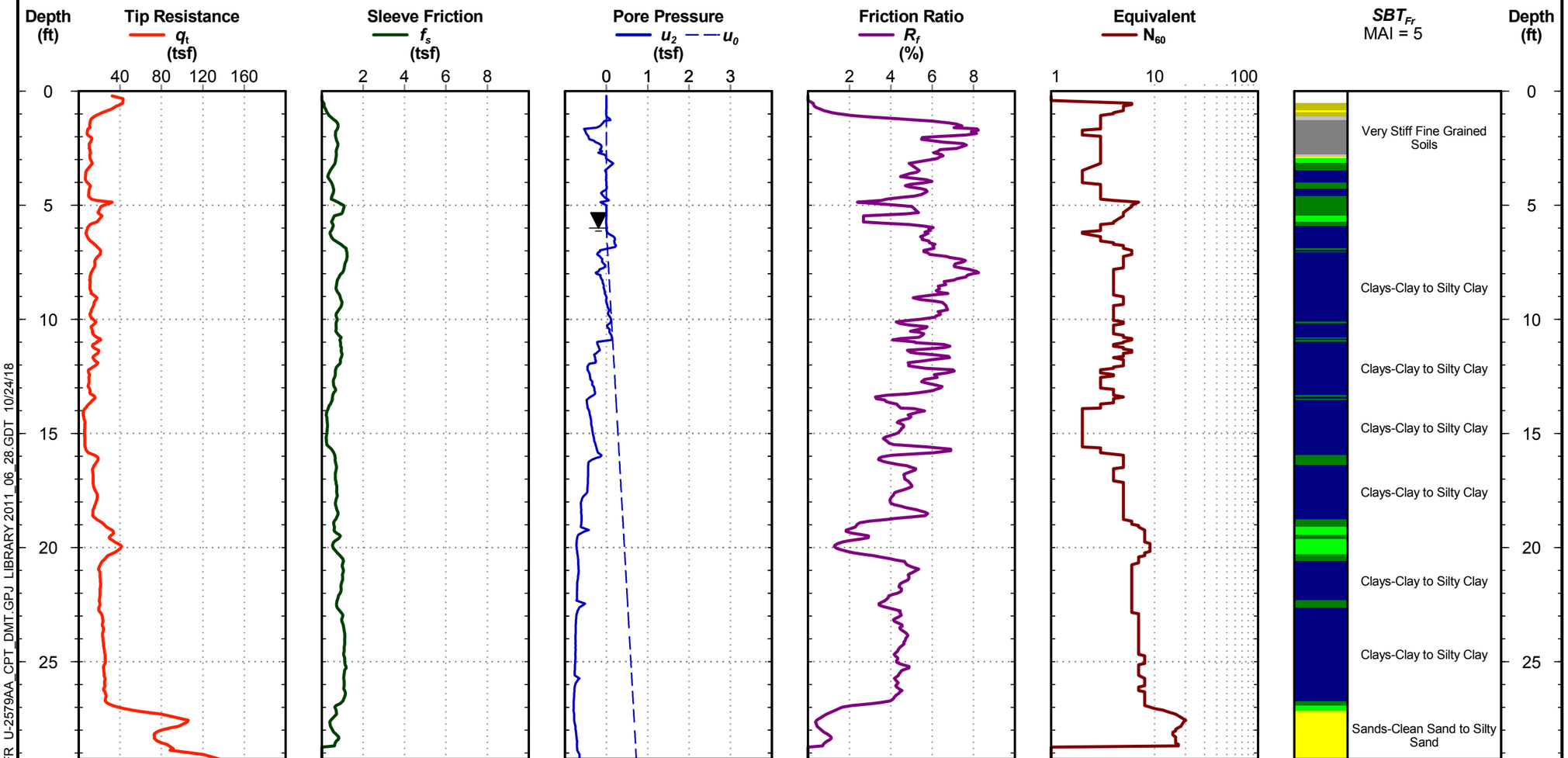
Electronic Filename: CPT-9(003)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: Y1 - 28+44
Offset: CL
Elevation: 825.7 ft
Date: Oct. 9, 2018
Estimated Water Depth: 6 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: CPT-10

Total Depth: 29.3 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR U-2579AA_CPT_DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

Cone Penetration Test

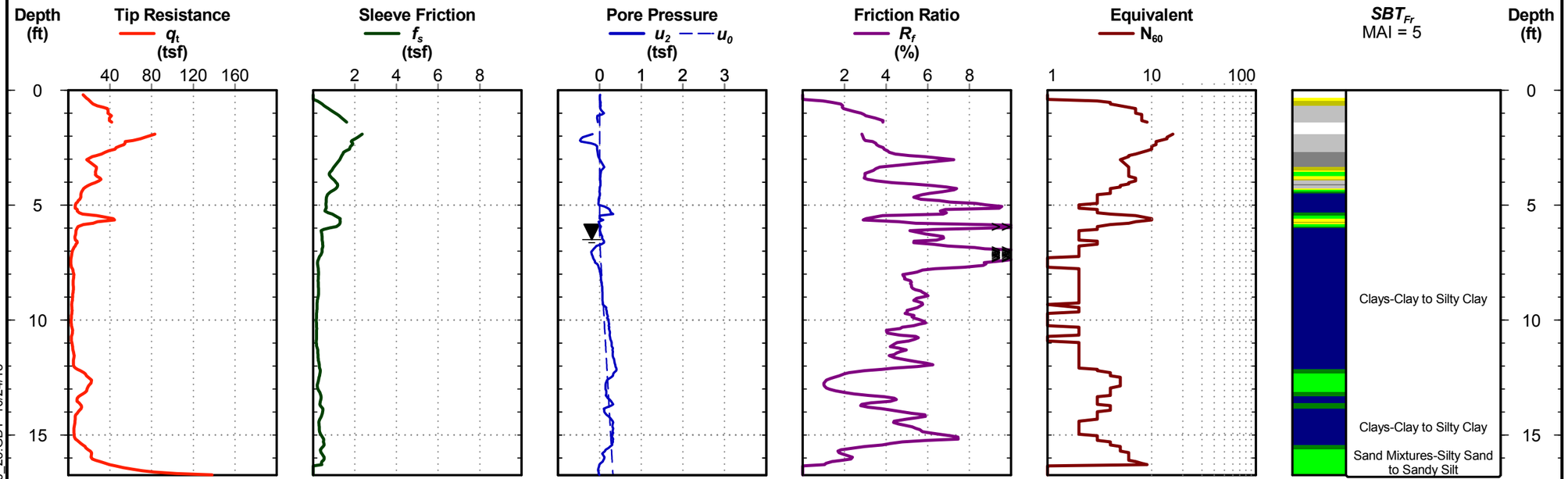
Electronic Filename: CPT-10(004)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: Y1 - 33+00
Offset: CL
Elevation: 821.1 ft
Date: Oct. 8, 2018
Estimated Water Depth: 6.5 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: CPT-11

Total Depth: 16.7 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR U-2579AA_CPT_DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

Cone Penetration Test

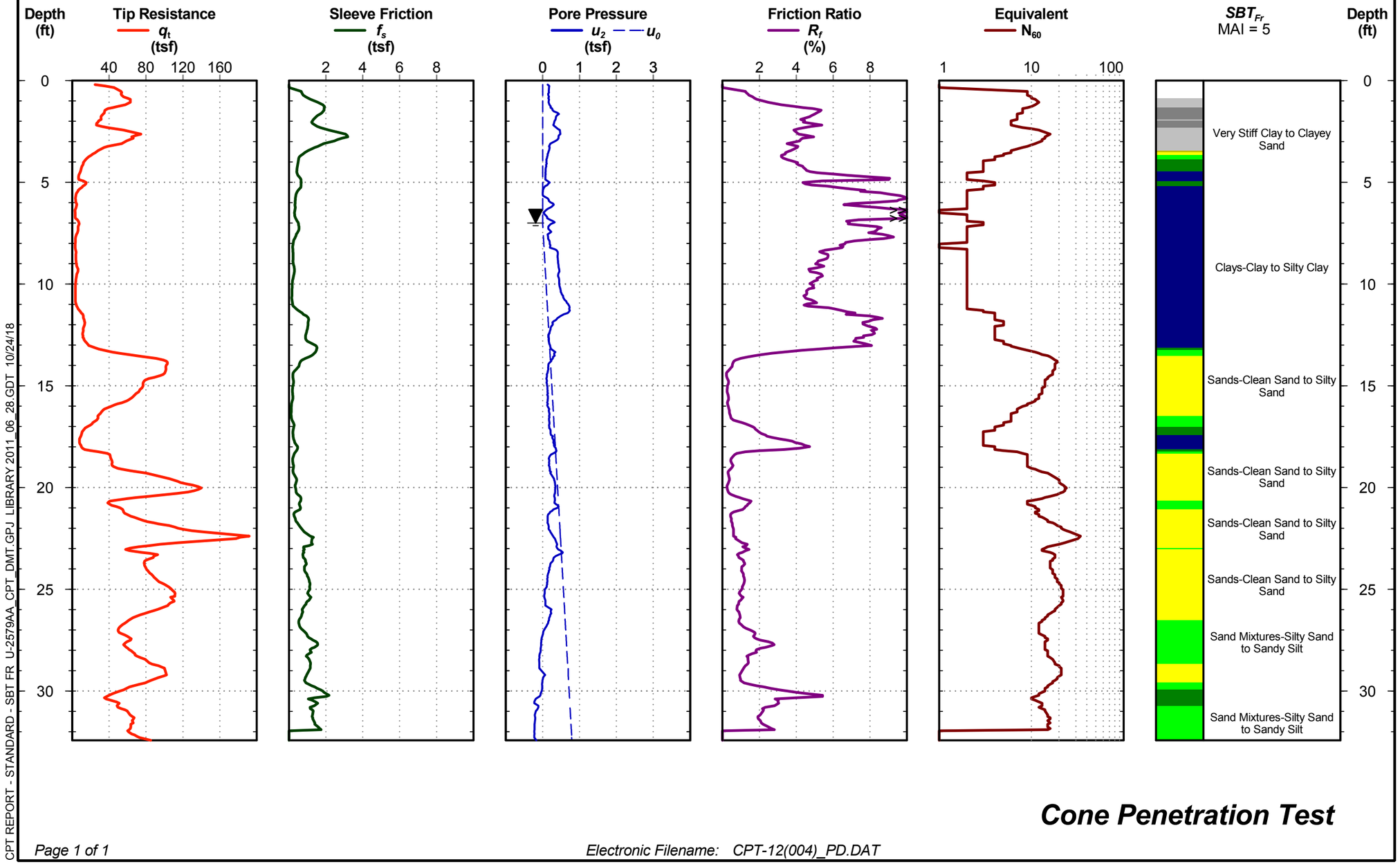
Electronic Filename: CPT-11(003)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: Y1 - 34+05
Offset: CL
Elevation: 821.7 ft
Date: Oct. 8, 2018
Estimated Water Depth: 7 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: CPT-12

Total Depth: 32.4 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



Cone Penetration Test

CPT REPORT - STANDARD - SBT FR U-2579AA_CPT_DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

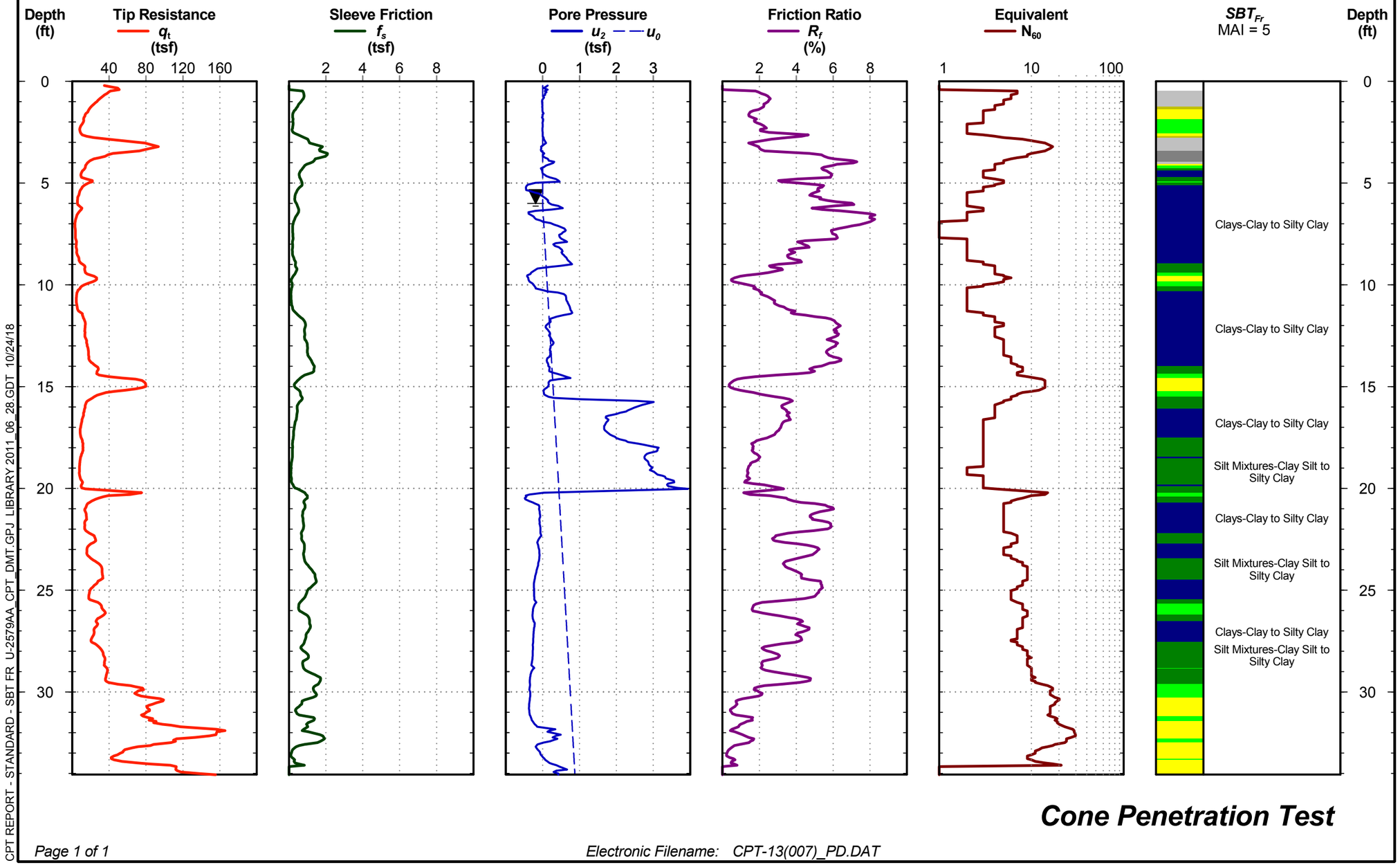
Electronic Filename: CPT-12(004)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: Y1 - 35+05
Offset: CL
Elevation: 822.1 ft
Date: Oct. 9, 2018
Estimated Water Depth: 6 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: CPT-13

Total Depth: 34.1 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR U-2579AA_CPT_DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

Cone Penetration Test

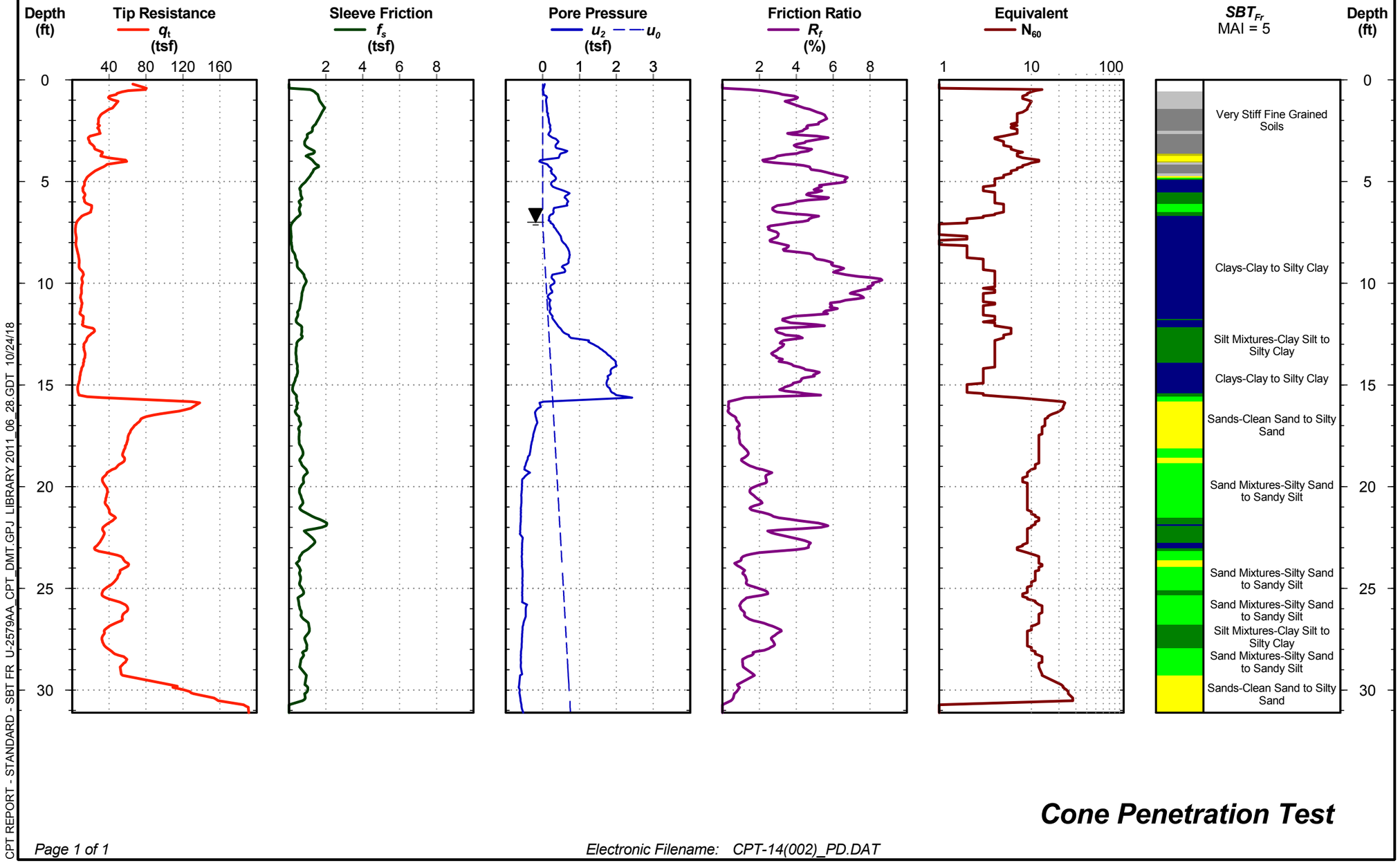
Electronic Filename: CPT-13(007)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: Y1 - 36+00
Offset: CL
Elevation: 822.1 ft
Date: Oct. 8, 2018
Estimated Water Depth: 7 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: CPT-14

Total Depth: 31.1 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR U-2579AA_CPT_DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

Cone Penetration Test

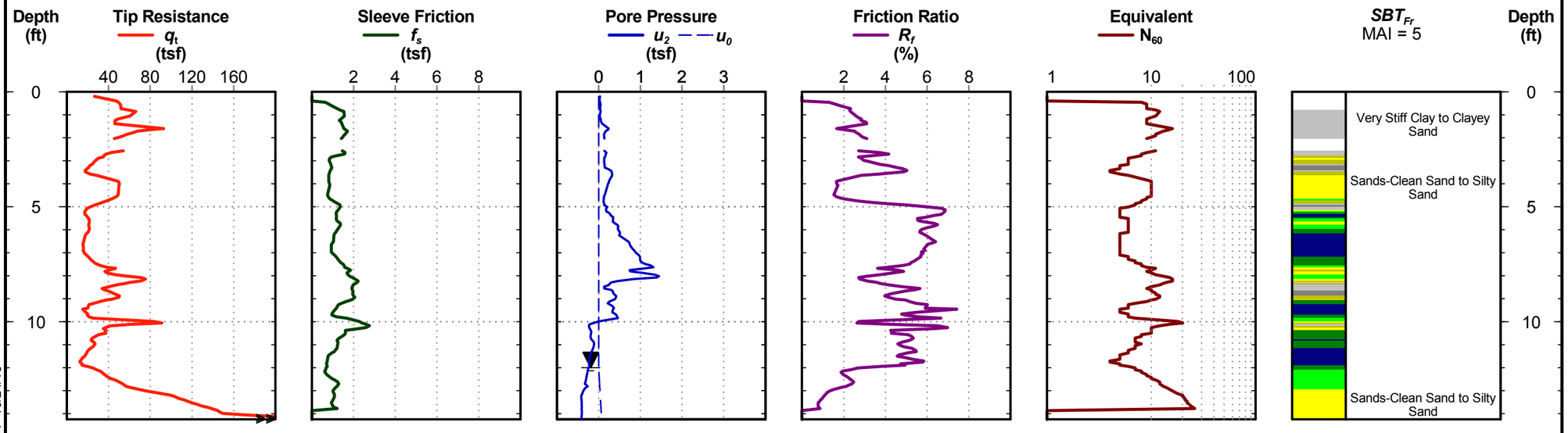
Electronic Filename: CPT-14(002)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: Y1 - 37+00
Offset: CL
Elevation: 821.7 ft
Date: Oct. 8, 2018
Estimated Water Depth: 12 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: CPT-15

Total Depth: 14.3 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



Cone Penetration Test

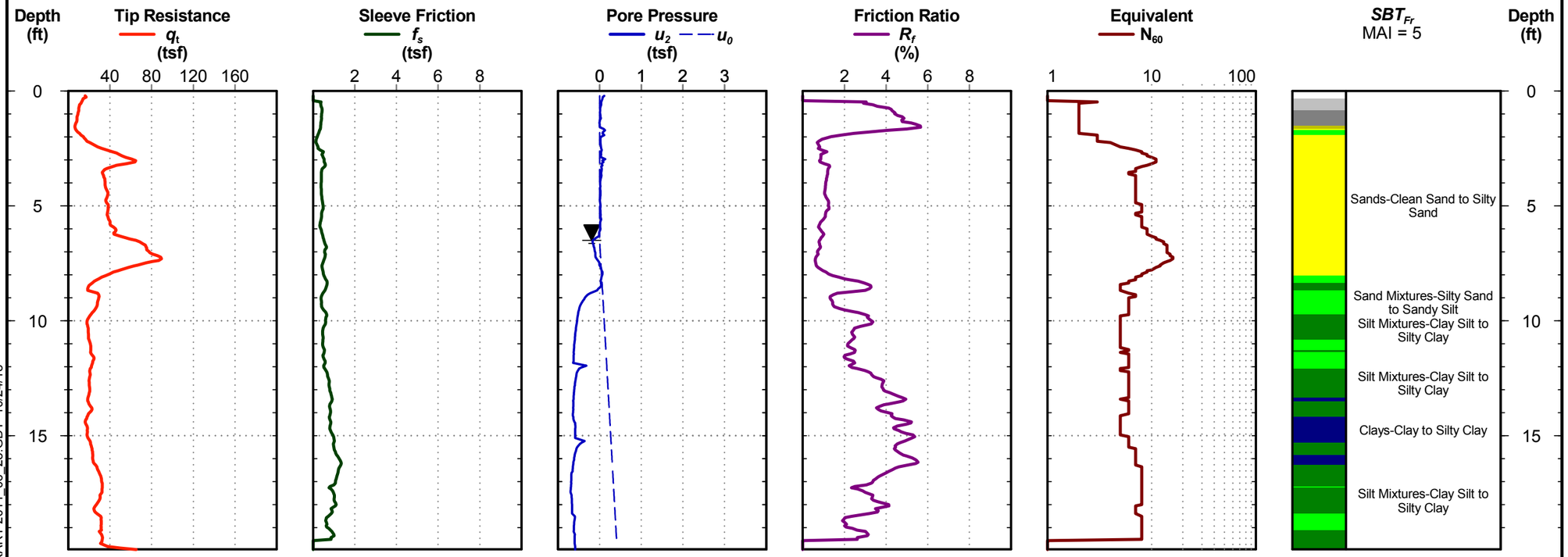
Electronic Filename: CPT-15(001)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: Y2 - 75+00
Offset: 200 RT
Elevation: 808.2 ft
Date: Oct. 23, 2018
Estimated Water Depth: 6.5 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: CPT-16

Total Depth: 20.0 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



Cone Penetration Test

CPT REPORT - STANDARD - SBT FR U-2579AA_CPT_DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

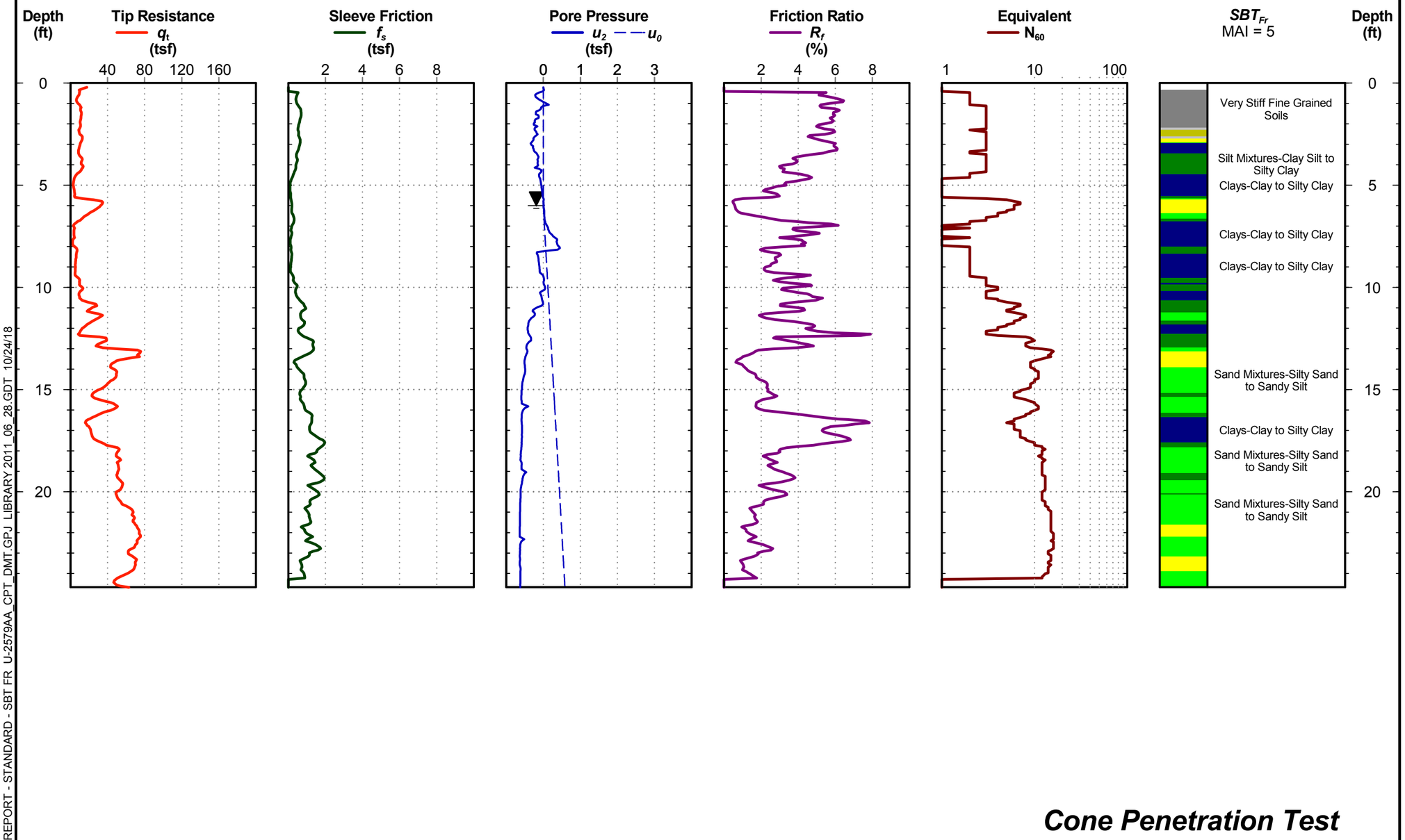
Electronic Filename: CPT-16(004)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: Y2FLYCA - 14+50
Offset: 60 RT
Elevation: 806.7 ft
Date: Oct. 23, 2018
Estimated Water Depth: 6 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: CPT-17

Total Depth: 24.7 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR U-2579AA_CPT_DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

Cone Penetration Test

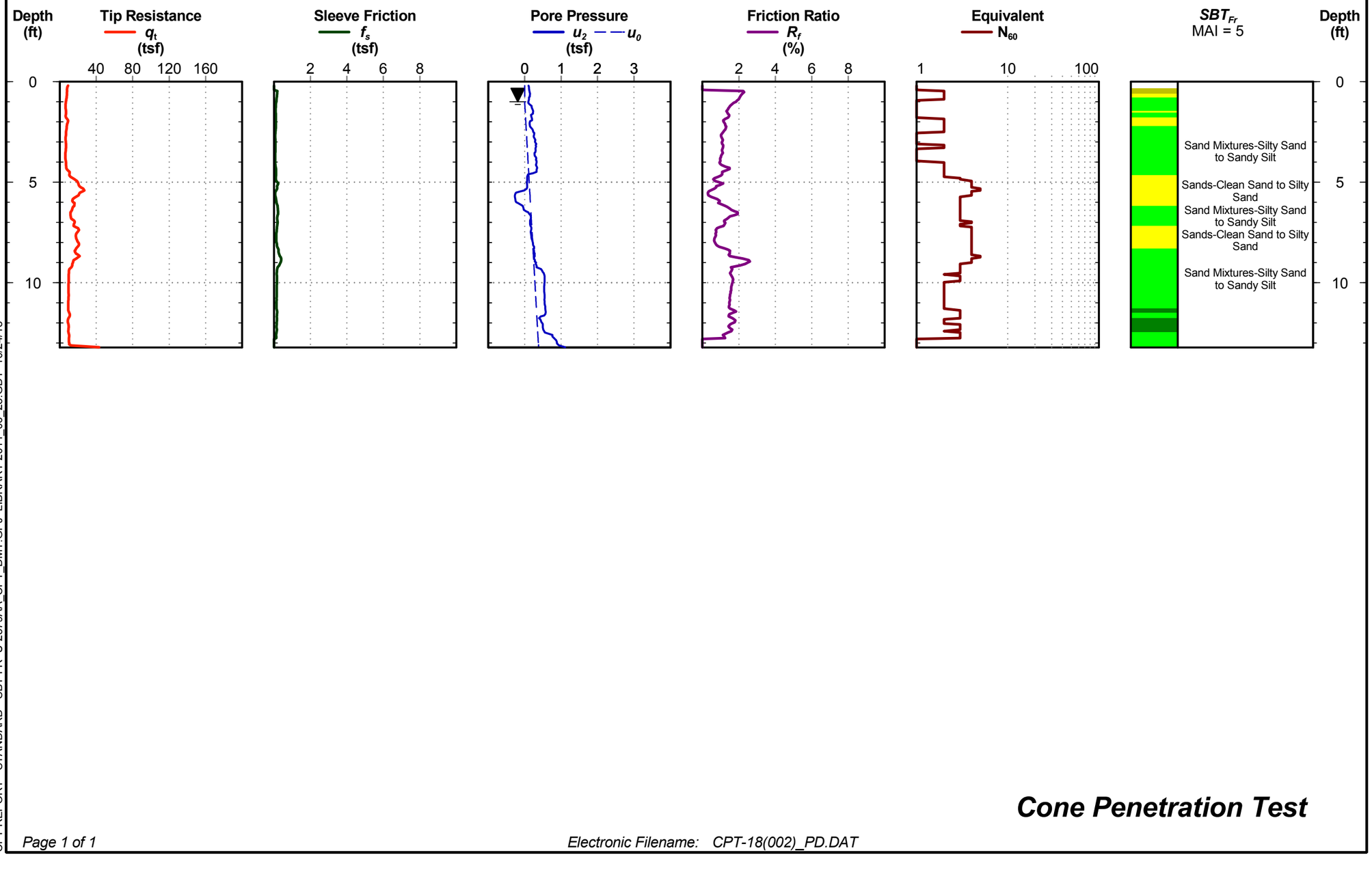
Electronic Filename: CPT-17(005)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: Y2FLYCA - 16+50
Offset: 25 RT
Elevation: 807.4
Date: Oct. 23, 2018
Estimated Water Depth: 1 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: CPT-18

Total Depth: 13.2 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



Cone Penetration Test

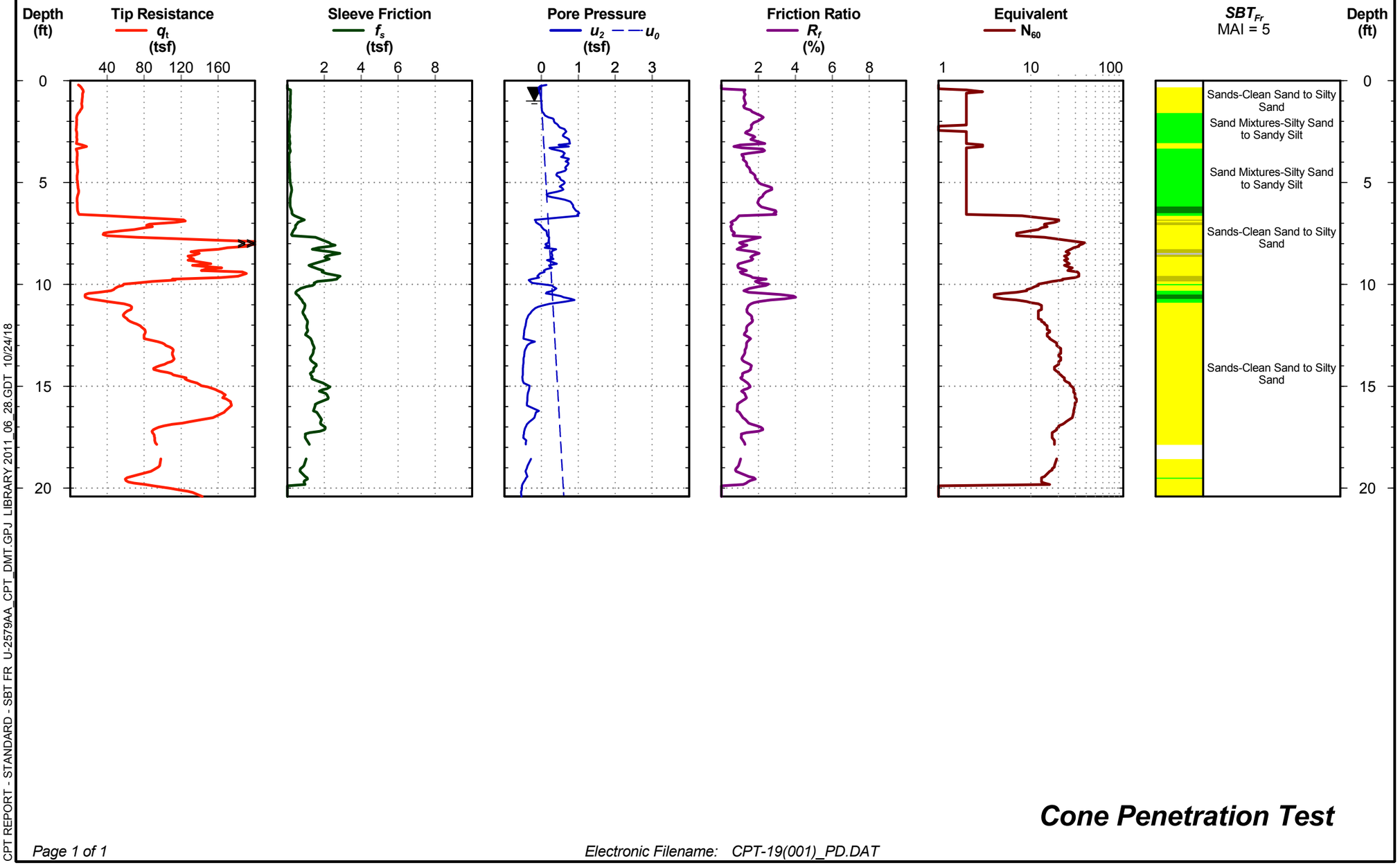
Electronic Filename: CPT-18(002)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: Y2FLYCA - 17+50
Offset: 25 RT
Elevation: 813.8 ft
Date: Oct. 23, 2018
Estimated Water Depth: 1 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: CPT-19

Total Depth: 20.4 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR U-2579AA_CPT_DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

Cone Penetration Test

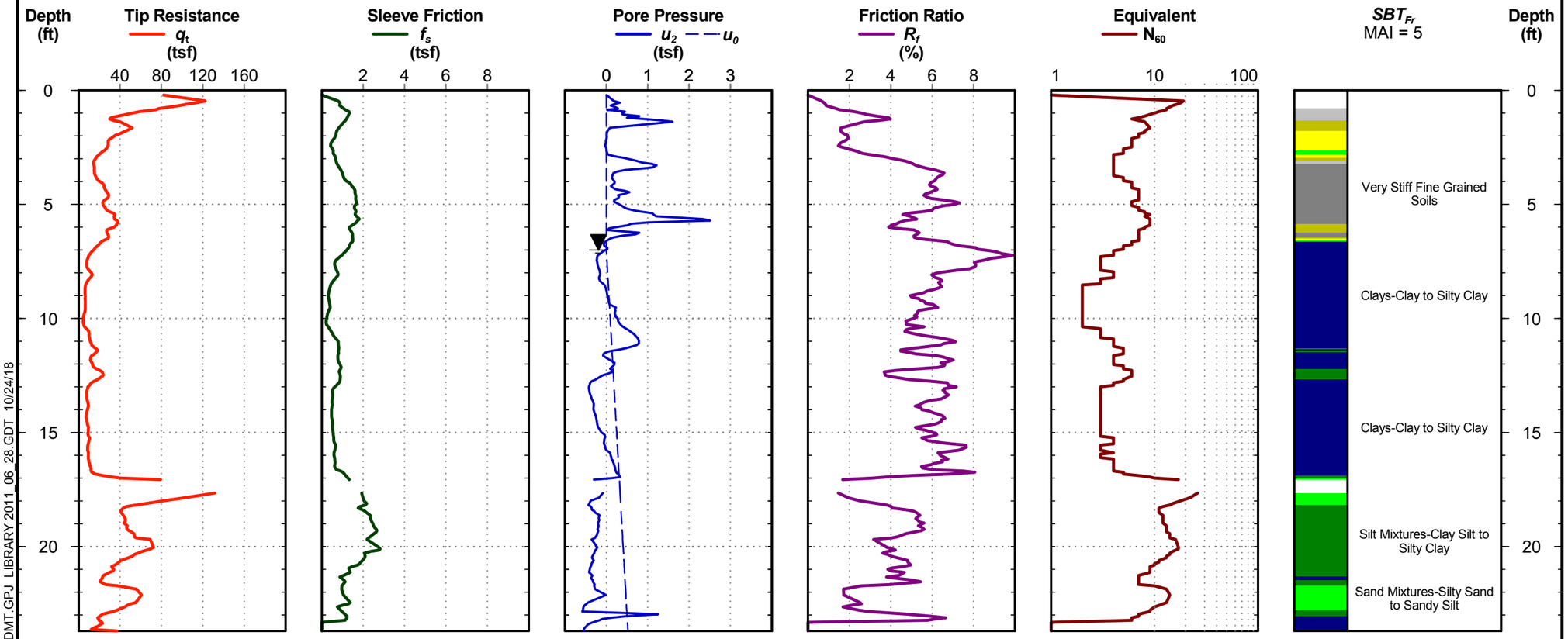
Electronic Filename: CPT-19(001)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: Y3RPC - 18+00
Offset: 1 LT
Elevation: 826.2 ft
Date: Oct. 10, 2018
Estimated Water Depth: 7 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: CPT-20

Total Depth: 23.7 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR U-2579AA_CPT_DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

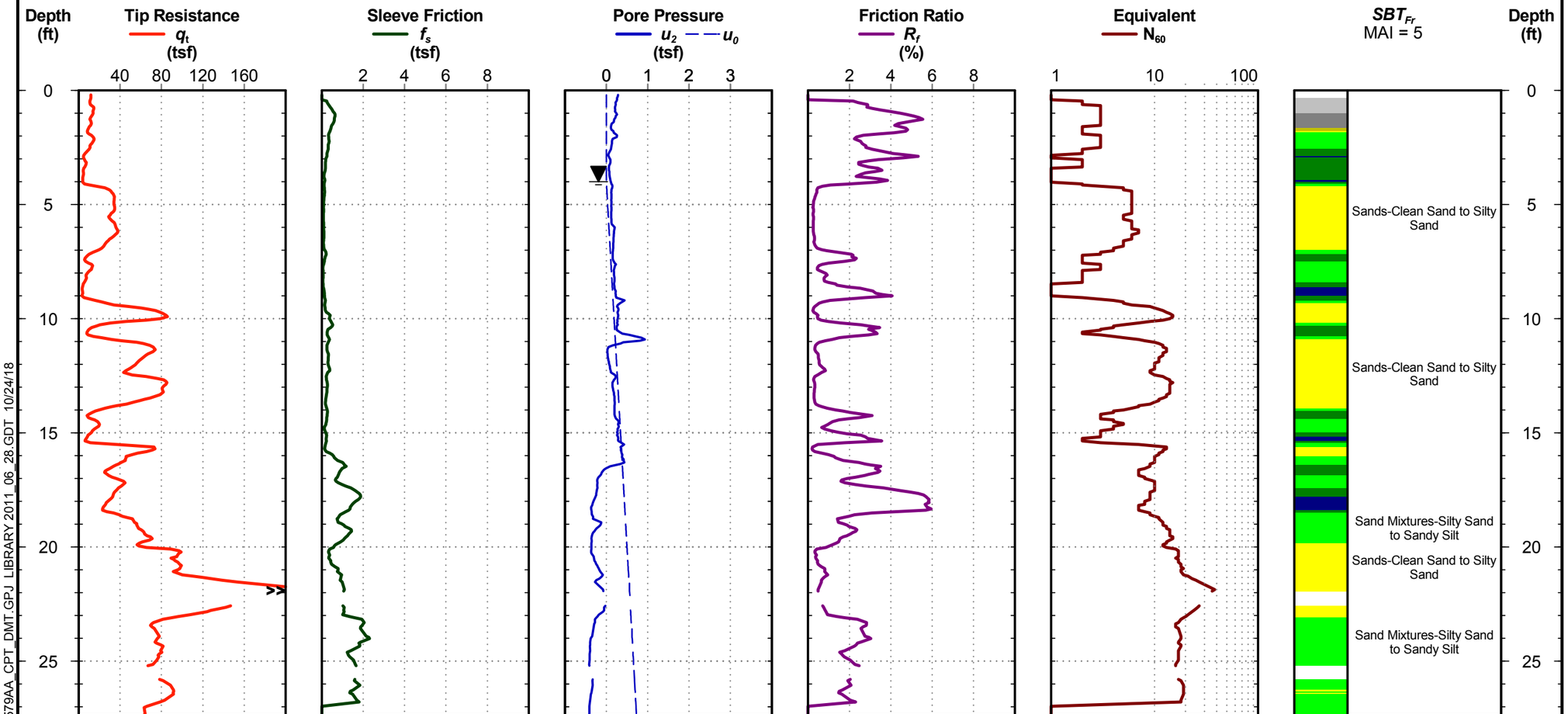
Cone Penetration Test

Electronic Filename: CPT-20(001)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Sounding ID: CUL1_7869

Station: Y2 - 76+50
Offset: 203 RT
Elevation: 806.4 ft
Date: Oct. 23, 2018
Estimated Water Depth: 4 ft
Rig/Operator: Marooka/D. Watson
Total Depth: 27.4 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR U-2579AA_CPT_DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

Cone Penetration Test

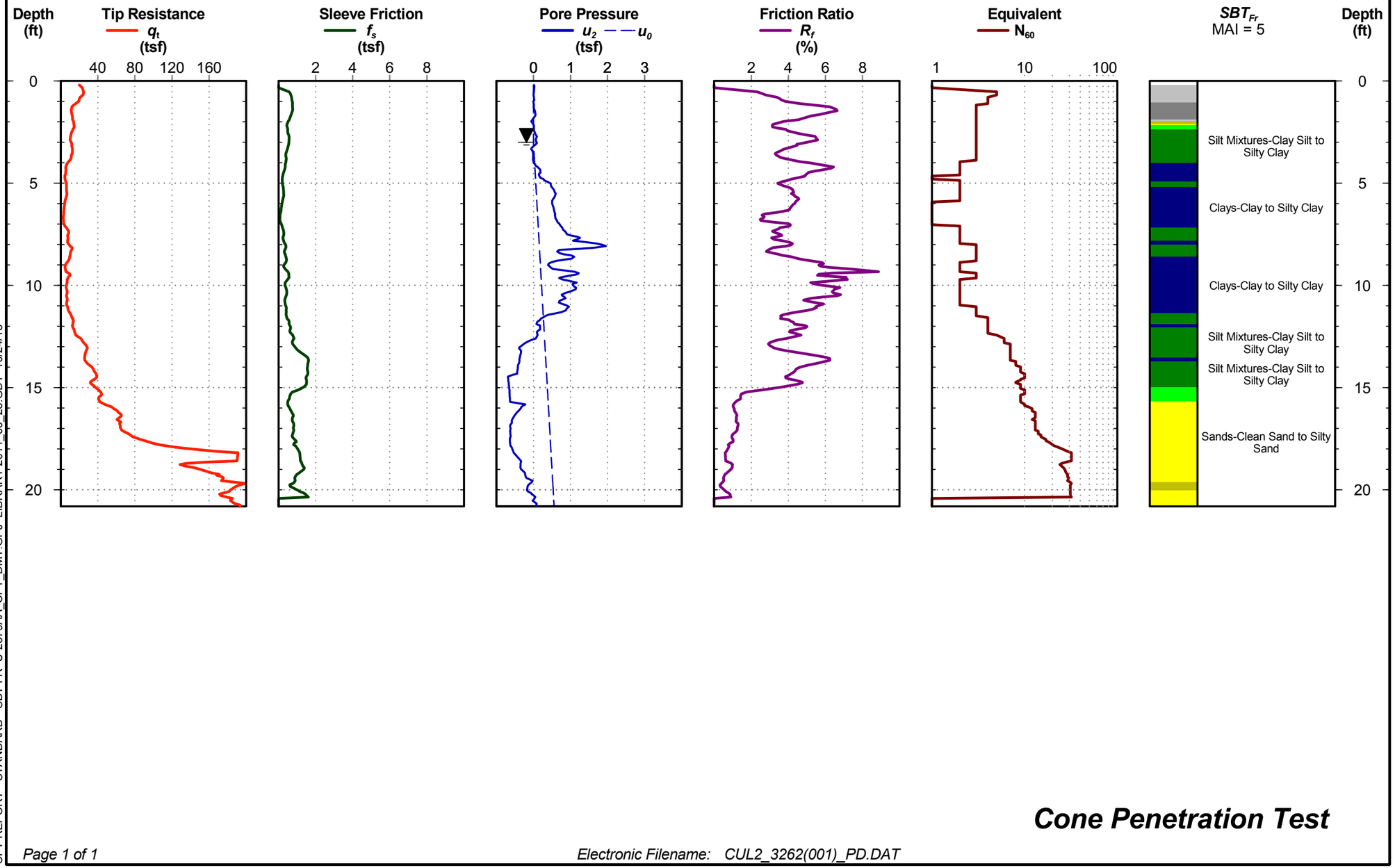
Electronic Filename: CUL1_7869(003)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Sounding ID: CUL2_3262

Station: L - 32+62
Offset: 25 LT
Elevation: 816.5 ft
Date: Oct. 9, 2018
Estimated Water Depth: 3 ft
Rig/Operator: Marooka/D. Watson

Total Depth: 20.8 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR U-2579AA_CPT_DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

Cone Penetration Test

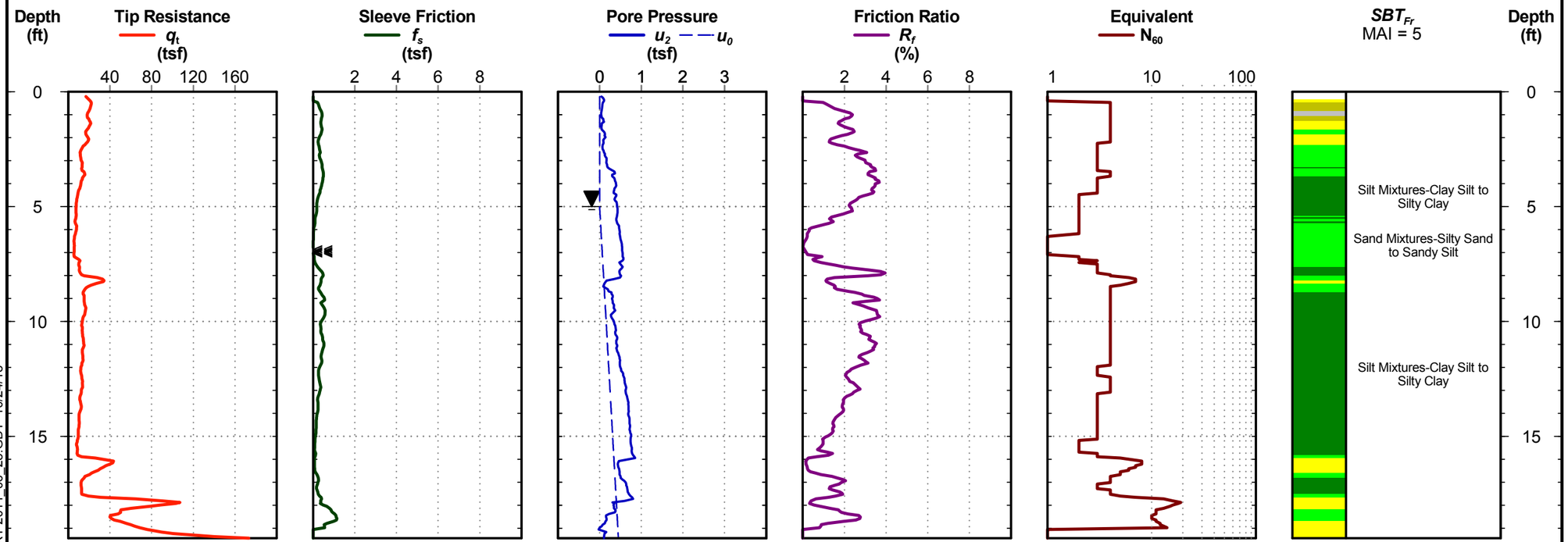
Electronic Filename: CUL2_3262(001)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Sounding ID: CUL2_3298

Station: L - 32+99
Offset: 35 RT
Elevation: 815.7 ft
Date: Oct. 5, 2018
Estimated Water Depth: 5 ft
Rig/Operator: Marooka/D. Watson

Total Depth: 19.4 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



Cone Penetration Test

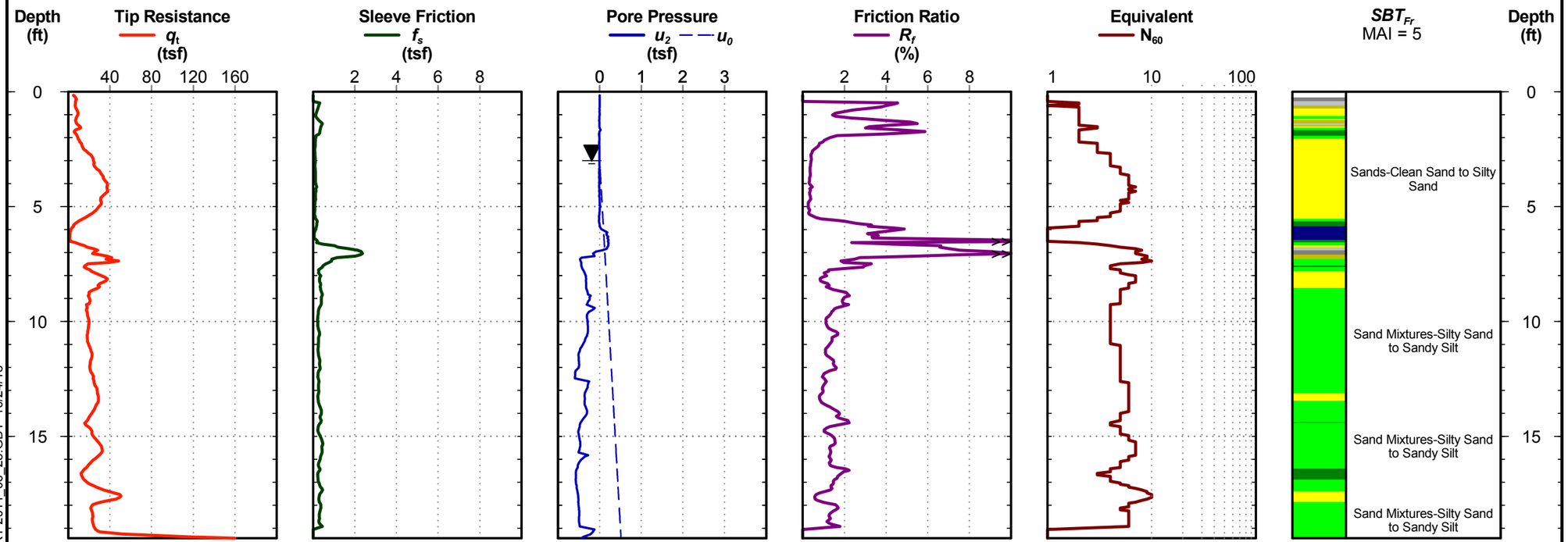
Electronic Filename: CUL2_3298(005)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Sounding ID: CUL3_3587

Station: L - 35+87
Offset: 46 RT
Elevation: 814.6 ft
Date: Oct. 4, 2018
Estimated Water Depth: 3 ft
Rig/Operator: Marooka/D. Watson

Total Depth: 19.4 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



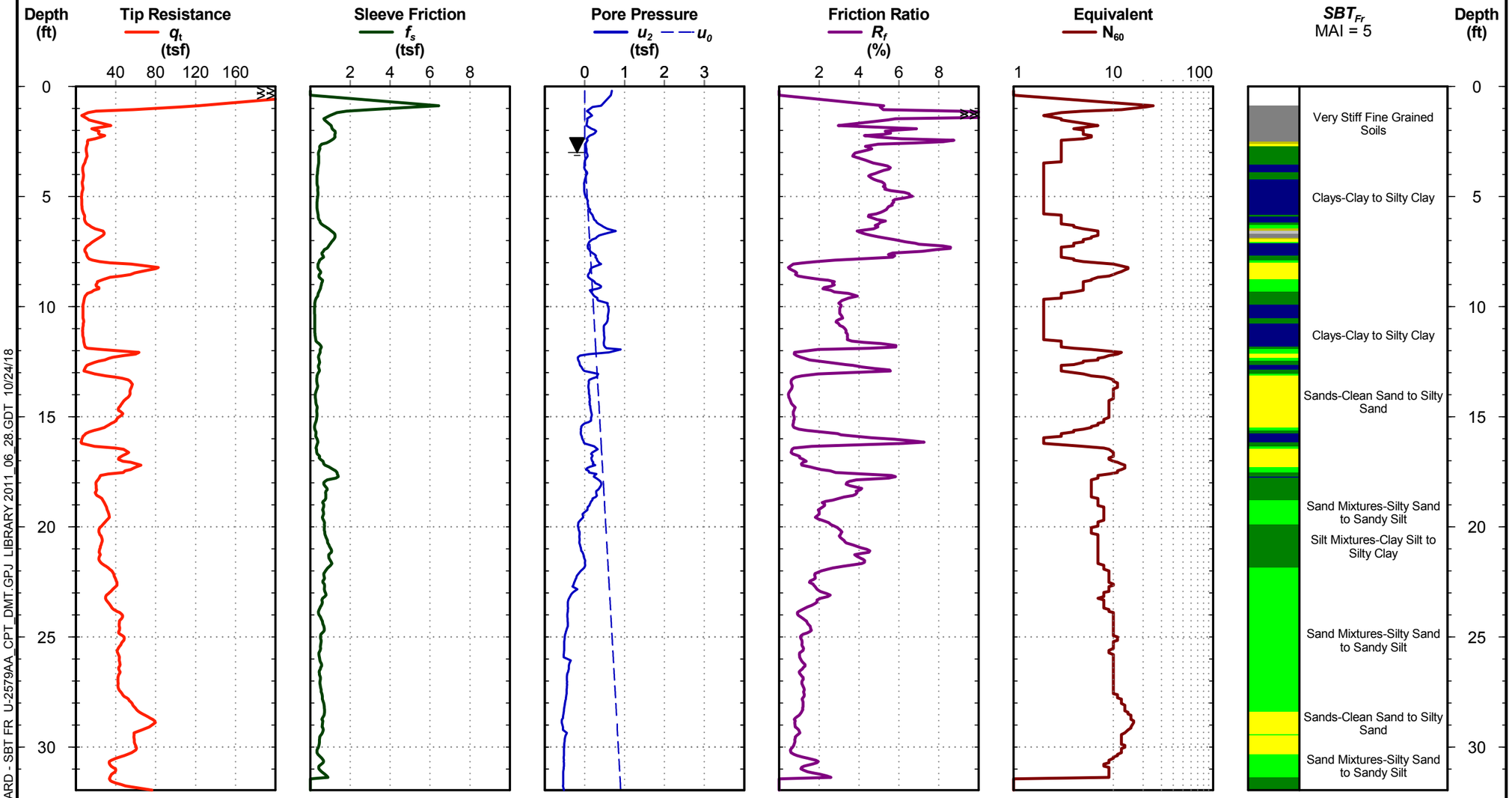
Cone Penetration Test

Electronic Filename: CUL3_3587(006)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Sounding ID: CUL3_3698

Station: L - 36+98
Offset: 51 LT
Elevation: 816.7 ft
Date: Oct. 4, 2018
Estimated Water Depth: 3 ft
Rig/Operator: Marooka/D. Watson
Total Depth: 32.0 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR U-2579AA_CPT_DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

Cone Penetration Test

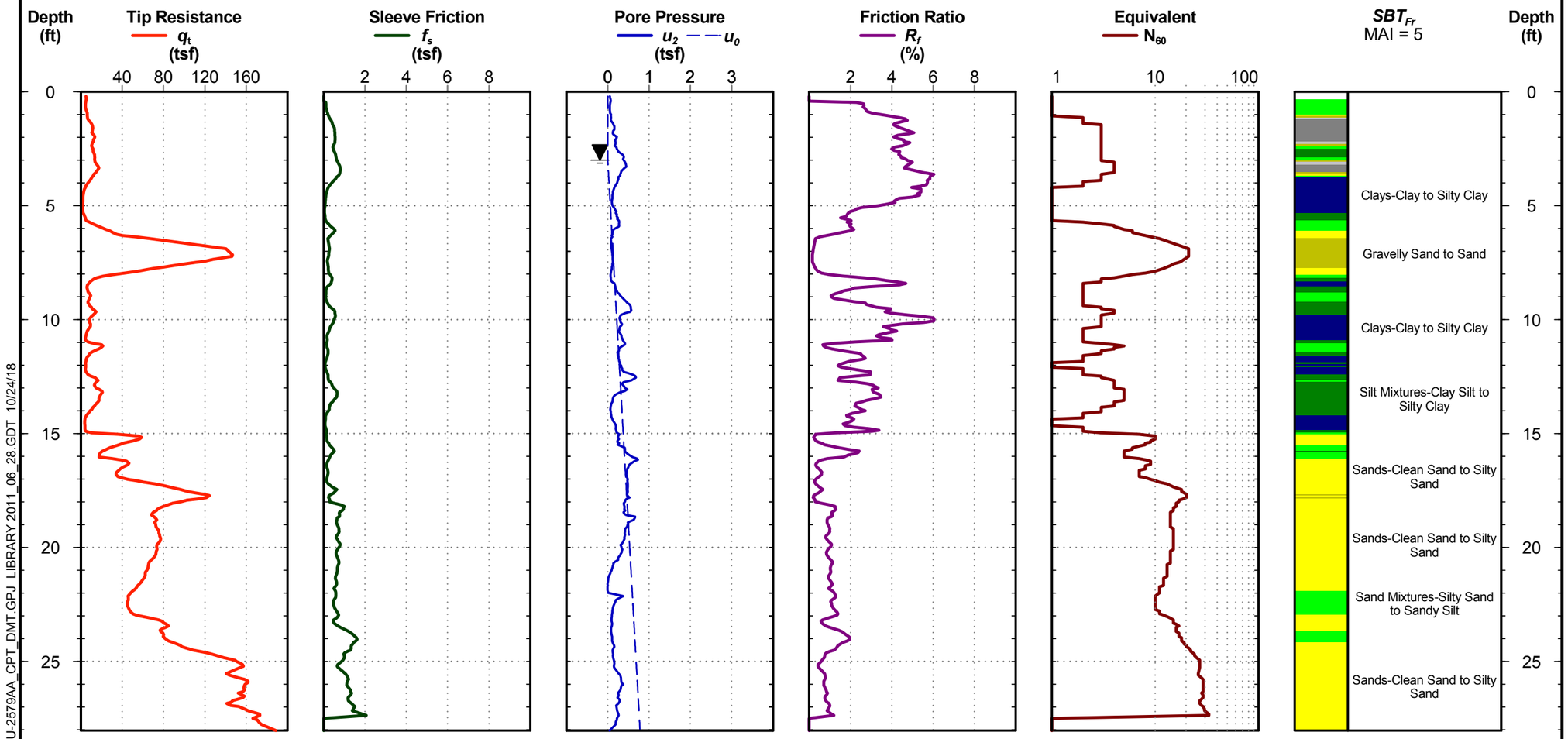
Electronic Filename: CUL3_3698(005)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: Y1DET - 26+16
Offset: 15 LT
Elevation: 817.7 ft
Date: Oct. 5, 2018
Estimated Water Depth: 3 ft
Rig/Operator: Marooka/D. Watson

Sounding ID:
Y1 DET_EB1-A

Total Depth: 28.0 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR U-2579AA_CPT_DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

Cone Penetration Test

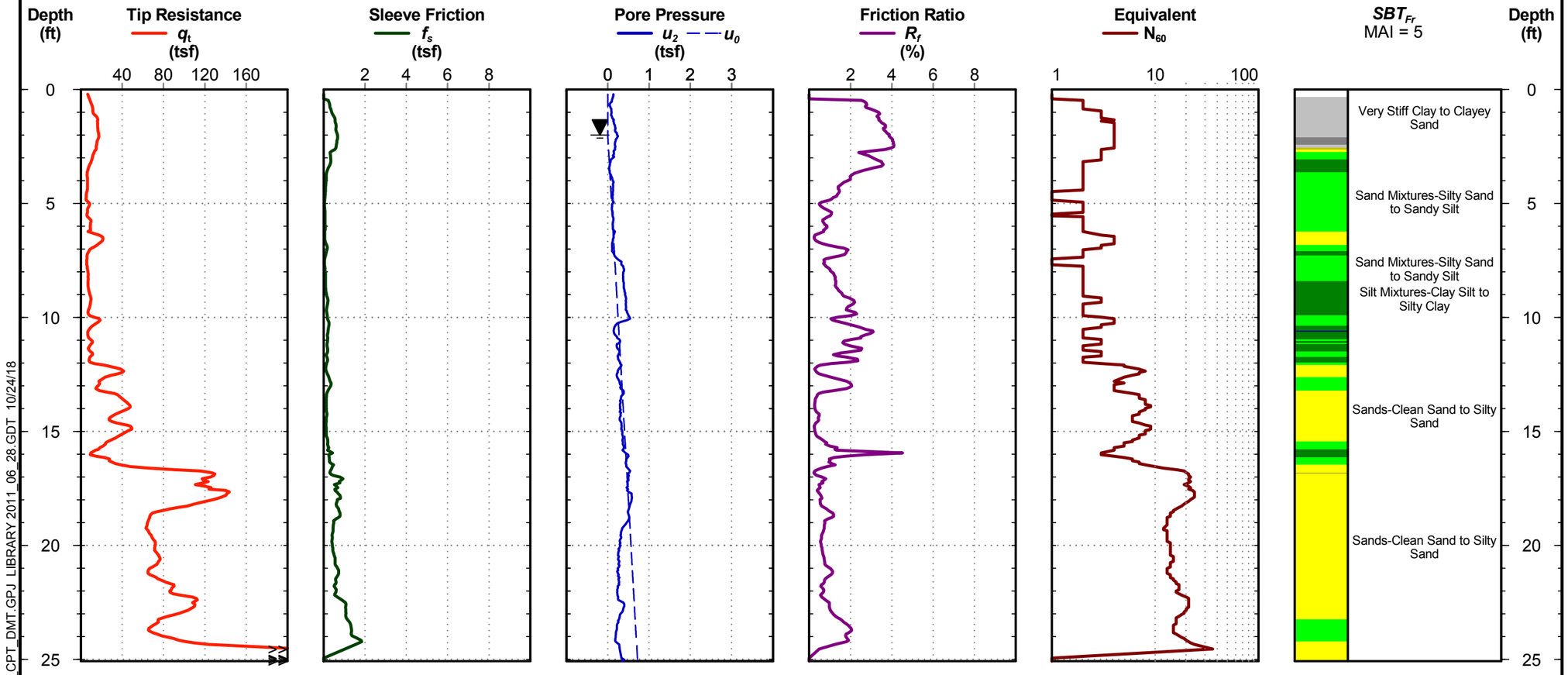
Electronic Filename: Y1DET_EB1-A(004)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: Y1DET - 26+87
Offset: 15 RT
Elevation: 816.7 ft
Date: Oct. 5, 2018
Estimated Water Depth: 2 ft
Rig/Operator: Marooka/D. Watson

Sounding ID:
Y1 DET_EB2-B

Total Depth: 25.1 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR U-2579AA_CPT_DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

Cone Penetration Test

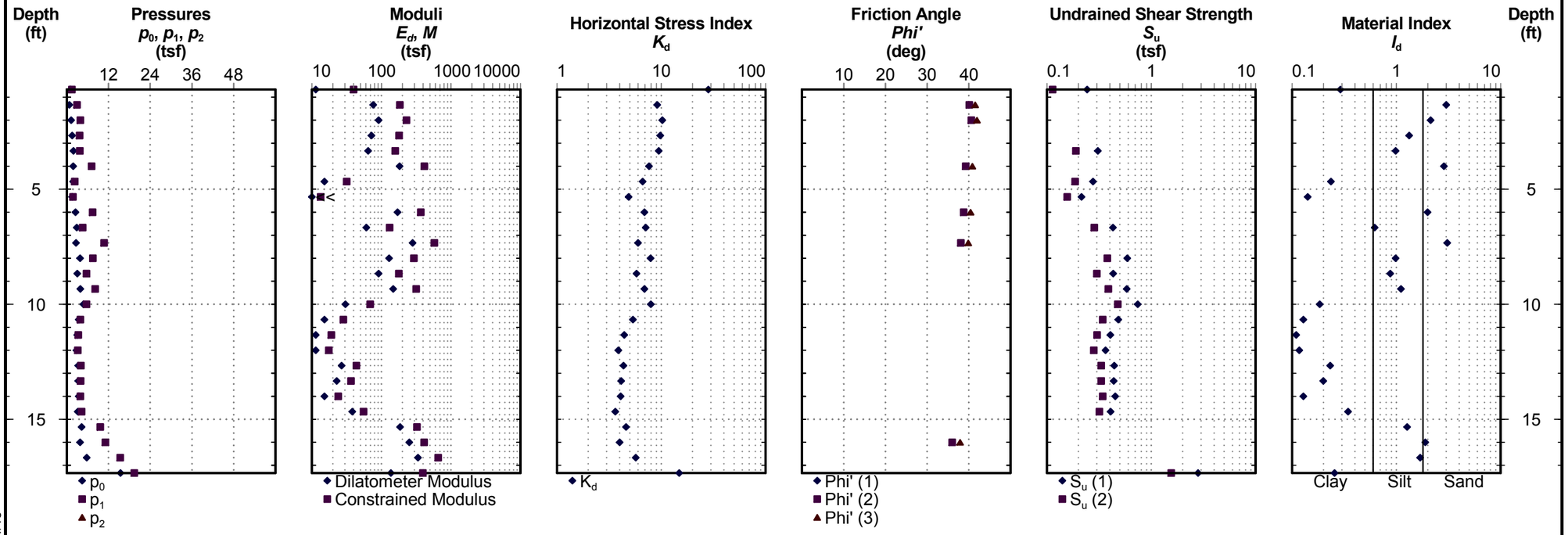
Electronic Filename: Y1DET_EB2-B(003)_PD.DAT

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: L - 35+38
Offset: CL
Elevation: 815.6 ft
Date: Oct. 5, 2018
Estimated Water Depth: 6 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: DILA1

Total Depth: 17.3 ft
Termination Criteria: Maximum Reaction Force
Membrane Type: soft



DMT REPORT - STANDARD U-2579AA_CPT_DMT.GPJ S&ME.GDT 10/24/18

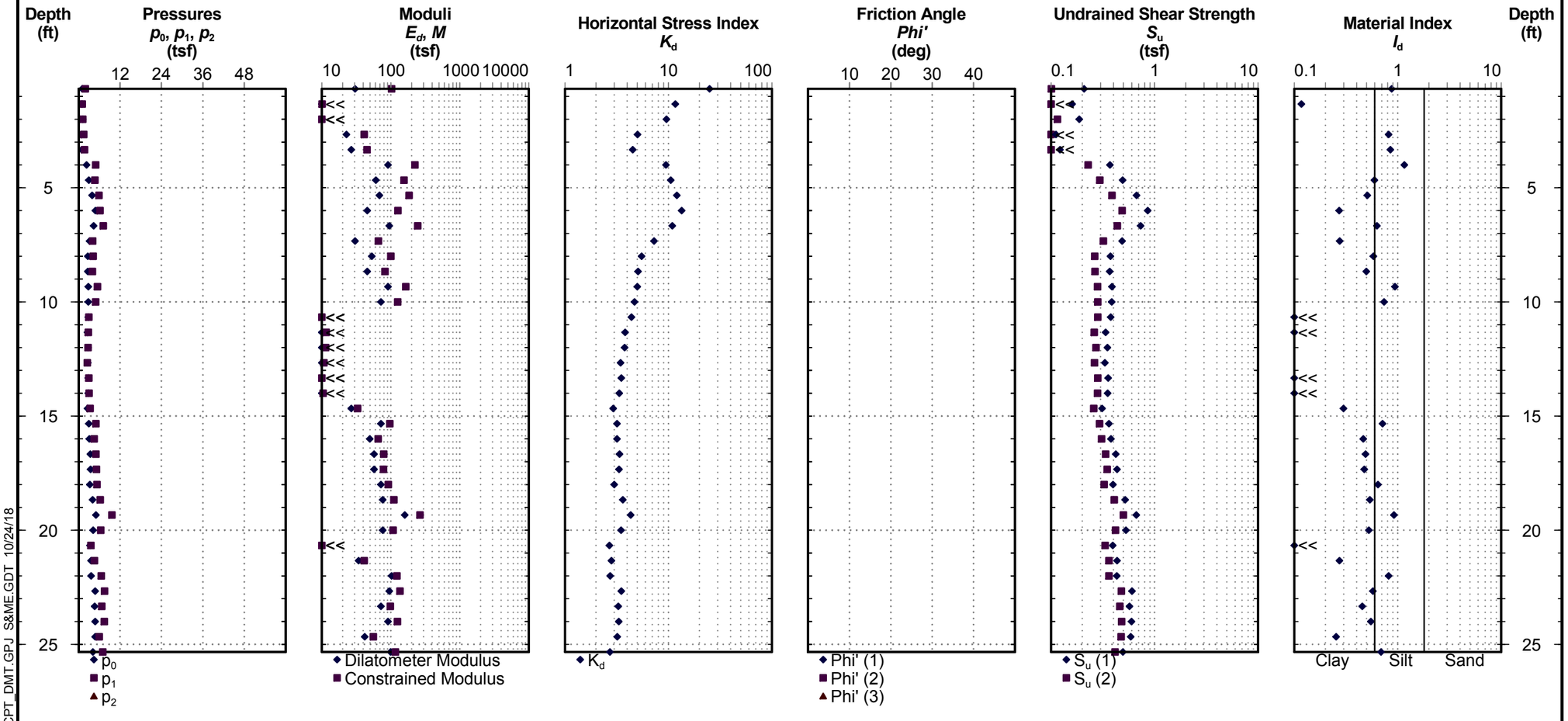
Dilatometer Test

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: L - 38+00
Offset: CL
Elevation: 815.7 ft
Date: Oct. 5, 2018
Estimated Water Depth: 6 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: DILA2

Total Depth: 25.3 ft
Termination Criteria: Maximum Reaction Force
Membrane Type: soft



DMT REPORT - STANDARD U-2579AA_CPT_DMT.GPJ S&ME.GDT 10/24/18

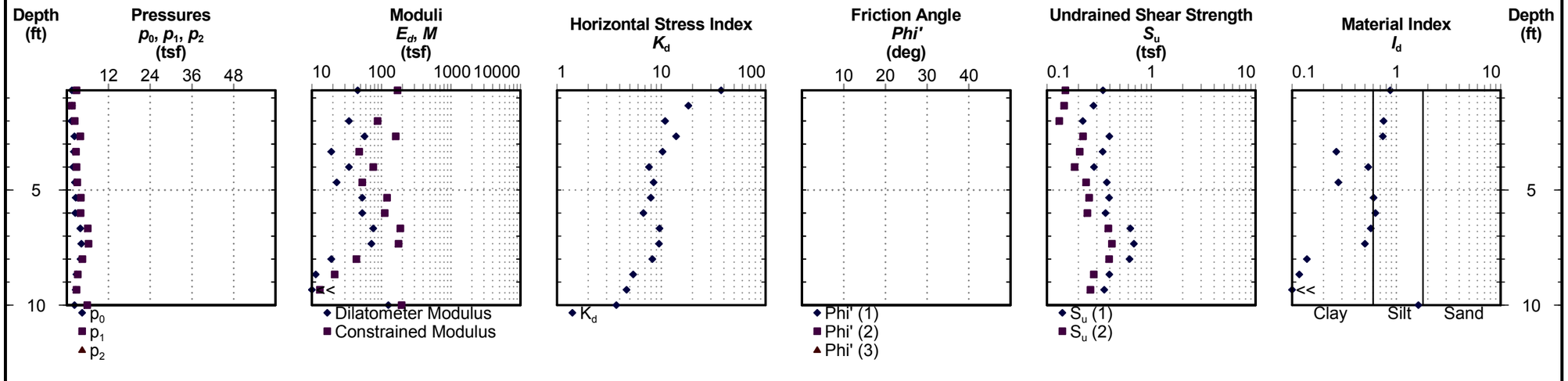
Dilatometer Test

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: L - 39+50
Offset: CL
Elevation: 816.6 ft
Date: Oct. 5, 2018
Estimated Water Depth: 6 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: DILA3

Total Depth: 10.0 ft
Termination Criteria: Maximum Reaction Force
Membrane Type: soft



DMT REPORT - STANDARD U-2579AA_CPT_DMT.GPJ S&ME.GDT 10/24/18

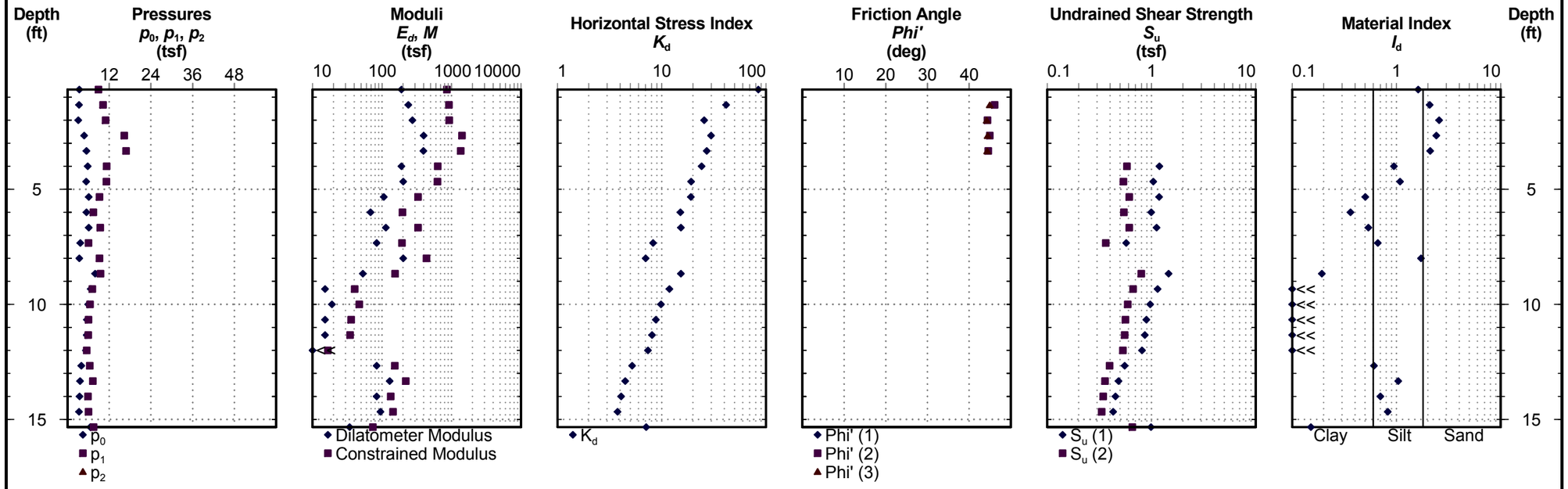
Dilatometer Test

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: L - 41+00
Offset: CL
Elevation: 834.9 ft
Date: Oct. 5, 2018
Estimated Water Depth: 6 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: DILA4

Total Depth: 15.3 ft
Termination Criteria: Maximum Reaction Force
Membrane Type: soft



DMT REPORT - STANDARD U-2579AA_CPT_DMT.GPJ S&ME.GDT 10/24/18

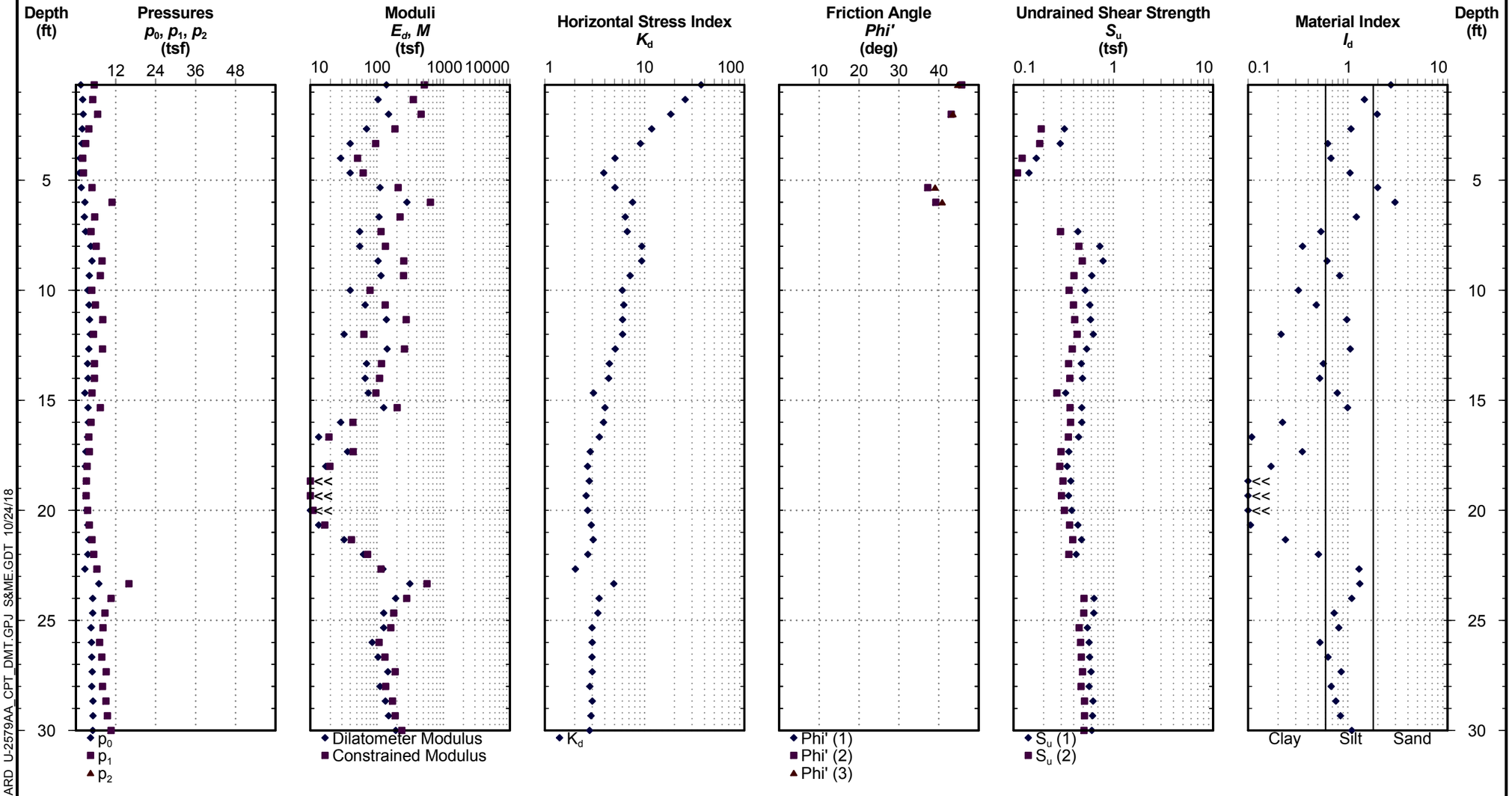
Dilatometer Test

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: Y1 - 28+39
Offset: CL
Elevation: 825.9 ft
Date: Oct. 5, 2018
Estimated Water Depth: 6 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: DILA5

Total Depth: 30.0 ft
Termination Criteria: Maximum Reaction Force
Membrane Type: soft



DMT REPORT - STANDARD U-2579AA_CPT_DMT.GPJ S&ME.GDT 10/24/18

Page 1 of 1

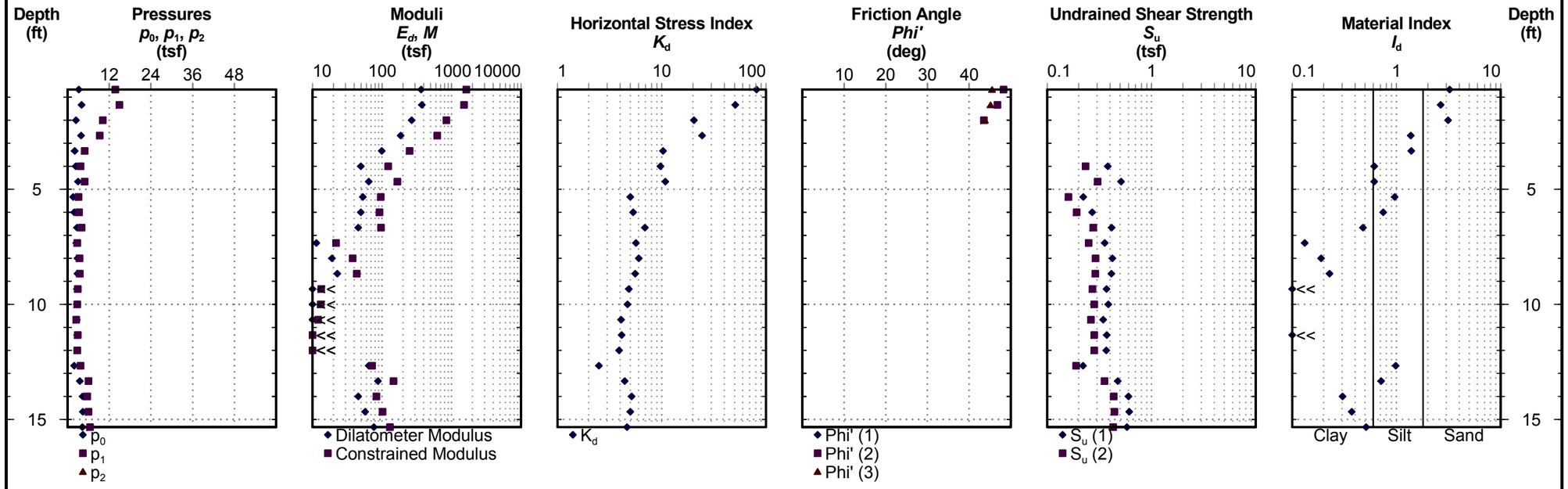
Dilatometer Test

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: Y1 - 33+55
Offset: CL
Elevation: 821.3 ft
Date: Oct. 5, 2018
Estimated Water Depth: 6 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: DILA6

Total Depth: 15.3 ft
Termination Criteria: Maximum Reaction Force
Membrane Type: soft



DMT REPORT - STANDARD U-2579AA_CPT_DMT.GPJ S&ME.GDT 10/24/18

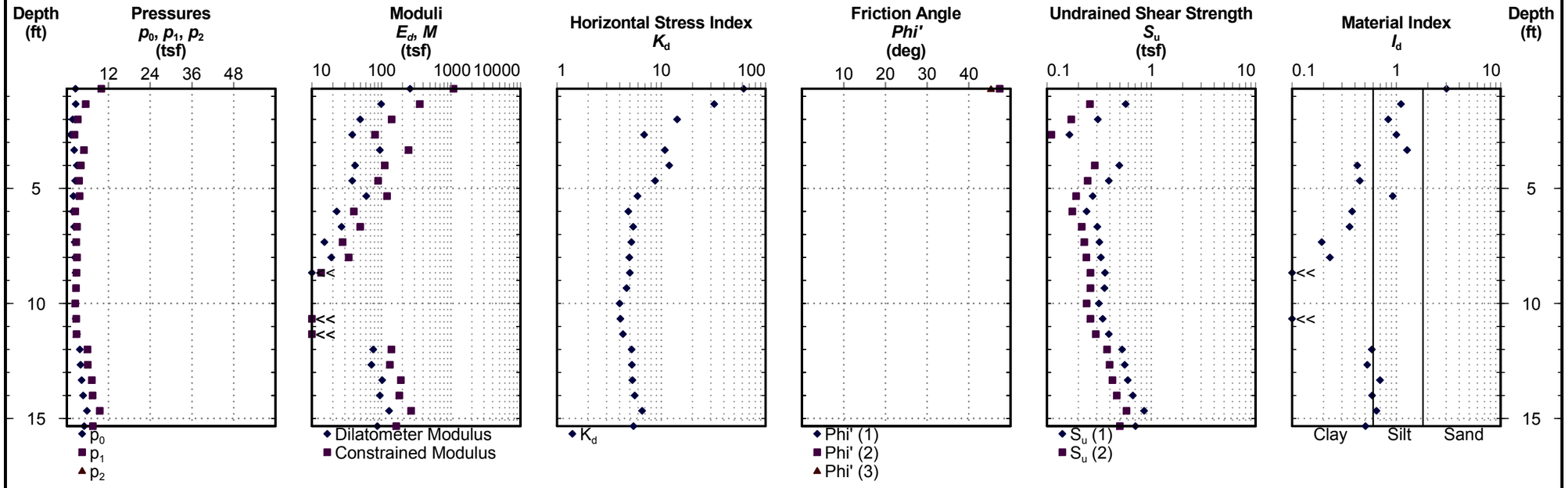
Dilatometer Test

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: Y1 - 34+10
Offset: CL
Elevation: 821.8 ft
Date: Oct. 5, 2018
Estimated Water Depth: 6 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: DILA7

Total Depth: 15.3 ft
Termination Criteria: Maximum Reaction Force
Membrane Type: soft



DMT REPORT - STANDARD U-2579AA_CPT_DMT.GPJ S&ME.GDT 10/24/18

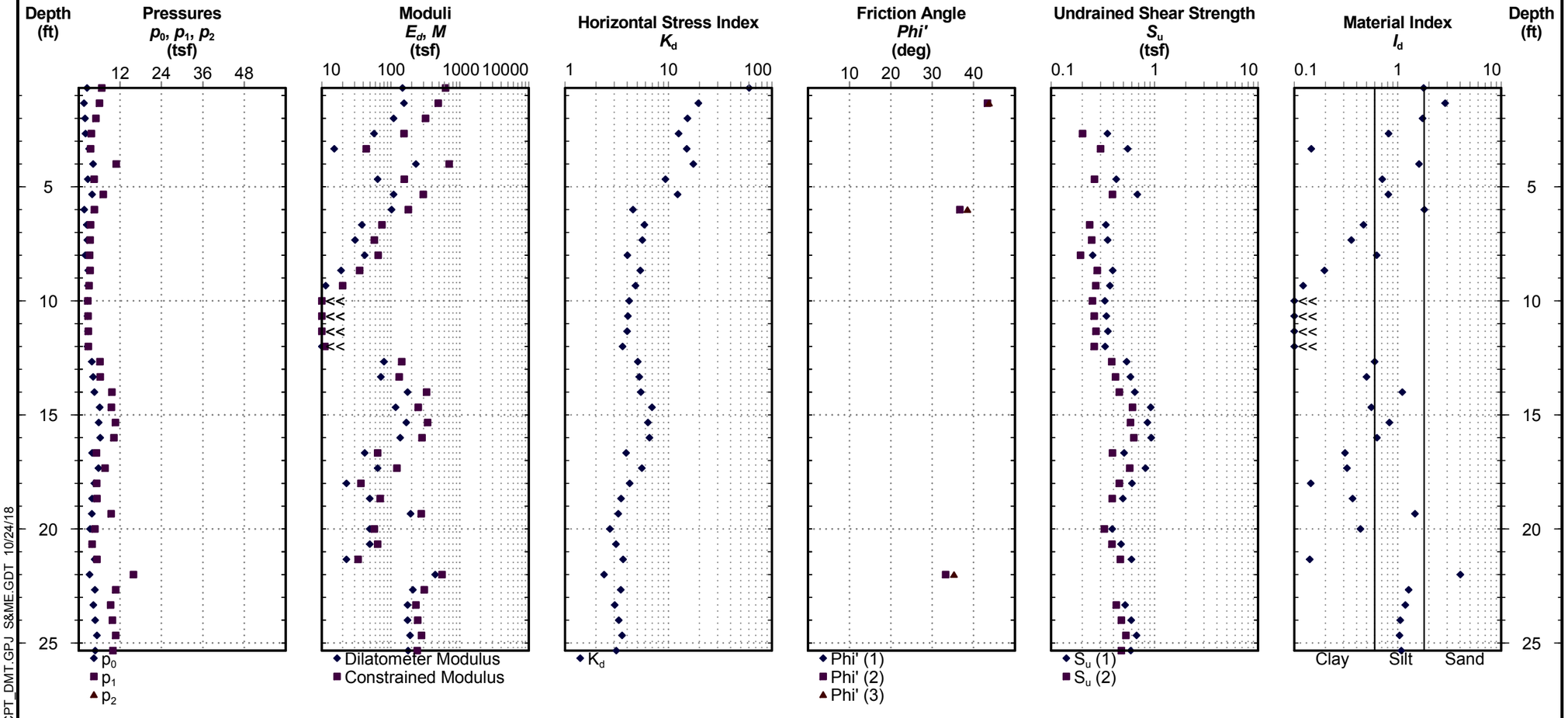
Dilatometer Test

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: Y1 - 34+55
Offset: CL
Elevation: 822.0 ft
Date: Oct. 5, 2018
Estimated Water Depth: 6 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: DILA8

Total Depth: 25.3 ft
Termination Criteria: Maximum Reaction Force
Membrane Type: soft



DMT REPORT - STANDARD U-2579AA_CPT_DMT.GPJ S&ME.GDT 10/24/18

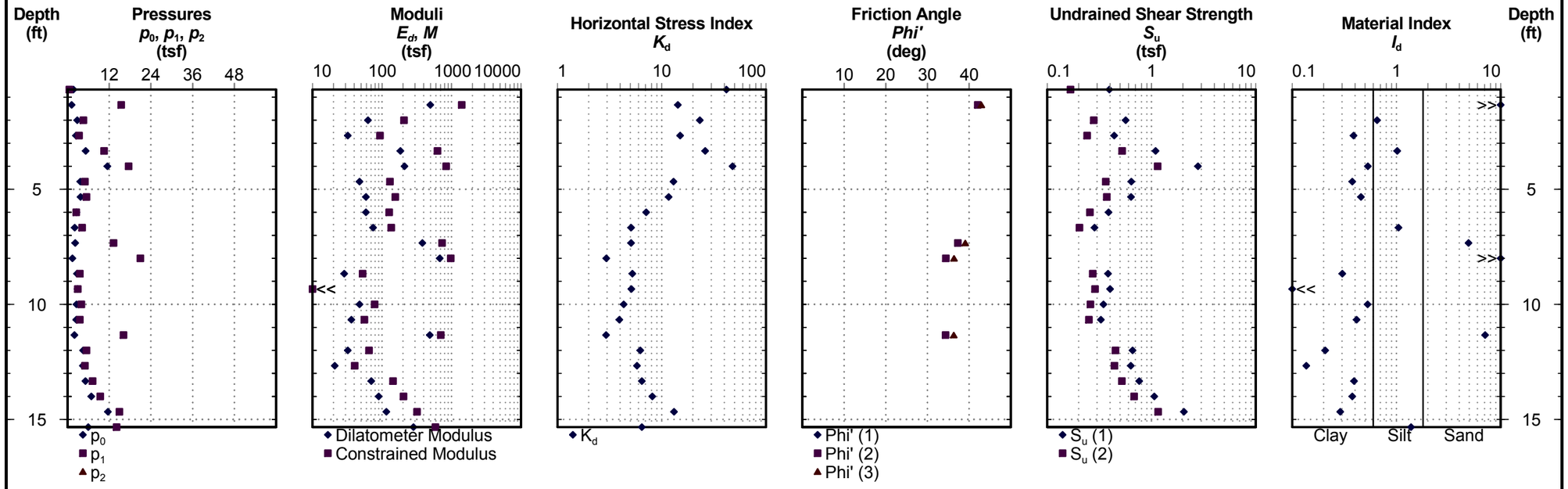
Dilatometer Test

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: Y1 - 35+10
Offset: CL
Elevation: 822.1 ft
Date: Oct. 5, 2018
Estimated Water Depth: 6 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: DILA9

Total Depth: 15.3 ft
Termination Criteria: Maximum Reaction Force
Membrane Type: soft



DMT REPORT - STANDARD U-2579AA_CPT_DMT.GPJ S&ME.GDT 10/24/18

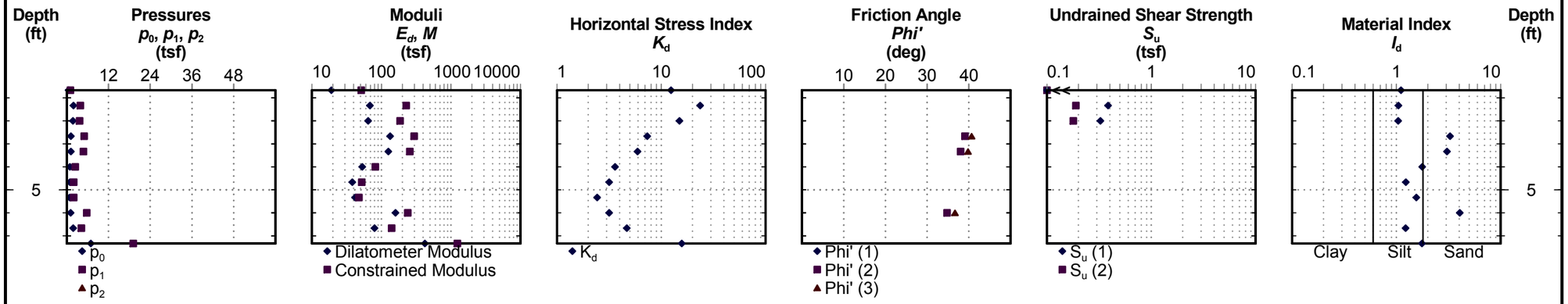
Dilatometer Test

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: Y2 - 76+00
Offset: 200 RT
Elevation: 806.7 ft
Date: Oct. 23, 2018
Estimated Water Depth: 6 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: DILA11

Total Depth: 7.3 ft
Termination Criteria: Maximum Reaction Force
Membrane Type: soft



DMT REPORT - STANDARD U-2579AA_CPT_DMT.GPJ S&ME.GDT 10/24/18

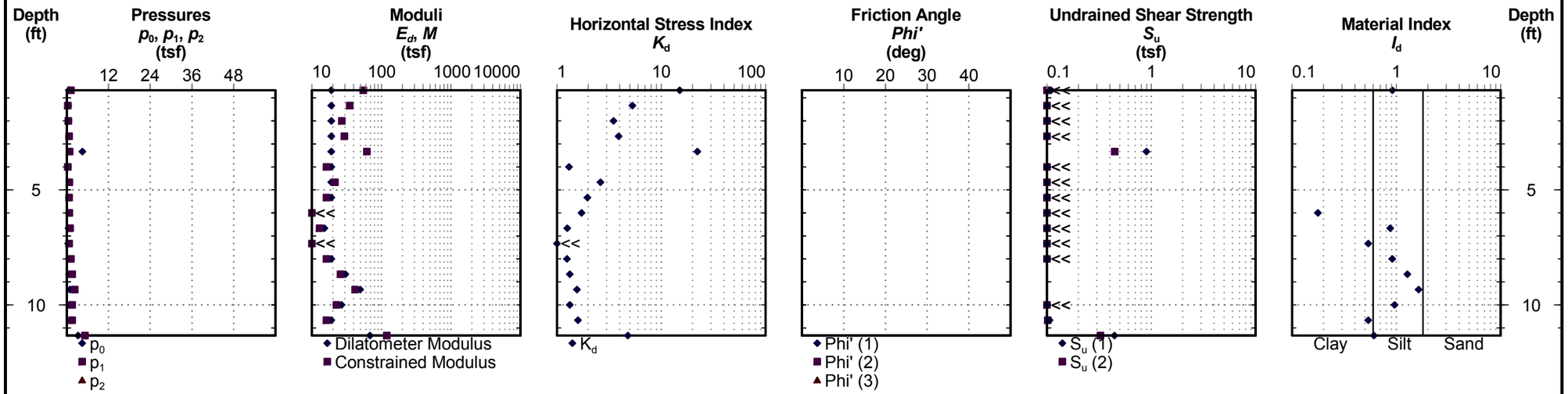
Dilatometer Test

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: Y2FLYCA - 17+00
Offset: CL
Elevation: 808.3 ft
Date: Oct. 23, 2018
Estimated Water Depth: 1 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: DILA12

Total Depth: 11.3 ft
Termination Criteria: Maximum Reaction Force
Membrane Type: soft



DMT REPORT - STANDARD U-2579AA_CPT_DMT.GPJ S&ME.GDT 10/24/18

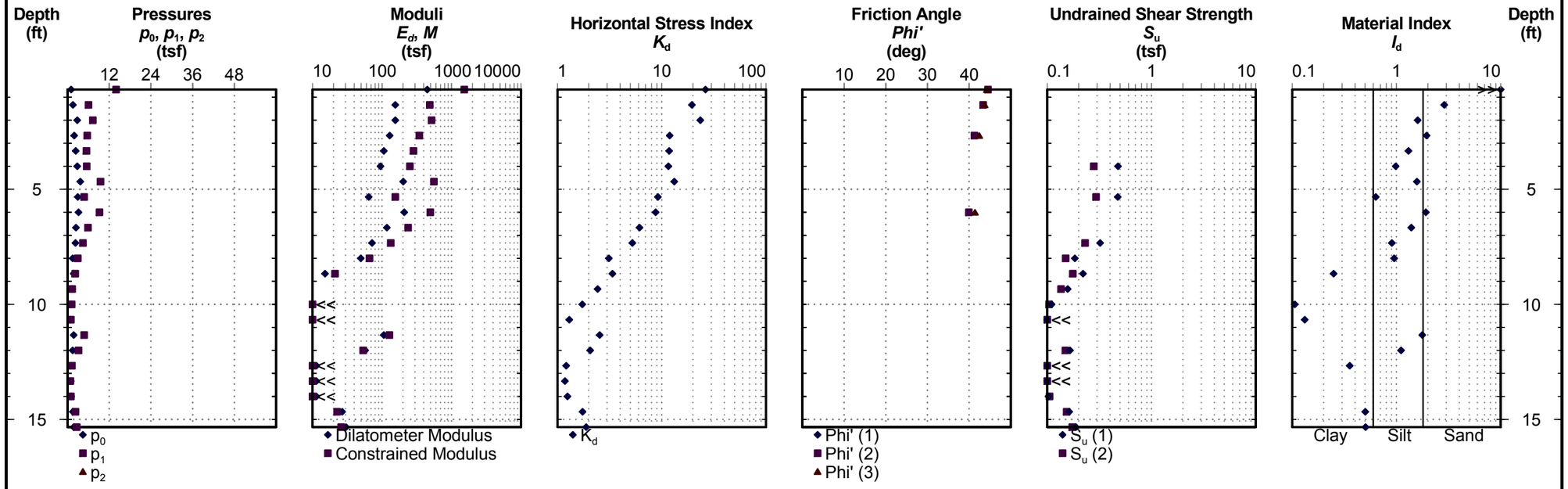
Dilatometer Test

U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: Y3RPC - 18+05
Offset: CL
Elevation: 826.0 ft
Date: Oct. 5, 2018
Estimated Water Depth: 6 ft
Rig/Operator: Marooka/D. Watson

Sounding ID: DILA13

Total Depth: 15.3 ft
Termination Criteria: Maximum Reaction Force
Membrane Type: soft



DMT REPORT - STANDARD U-2579AA_CPT_DMT.GPJ S&ME.GDT 10/24/18

Dilatometer Test