

SEE SHEET 3 FOR PLAN SHEET LAYOUT
AT TIME OF INVESTIGATION

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

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

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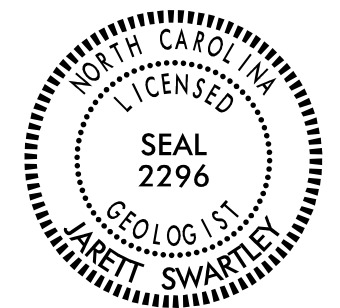
PERSONNEL

<u>J. SWARTLEY</u>	<u>B. BLIZZARD</u>
<u>M. HAYES</u>	<u>J. JONES</u>
<u>M. STEPHENSON</u>	<u>Z. RODRIGUEZ</u>
<u>L. BUTLER</u>	
<u>A. MESSER</u>	
<u>H. HOBERT</u>	
<u>T. BUNCH</u>	

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



DocuSigned by:
Jarett Swartley 10/18/2019
919460487BA3471...
SIGNATURE DATE

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LINE	STATION	PLAN	PROFILE
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-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
-YI-	13+00-16+00	15	21
-YI-	16+00-25+00	16	21
-YI-	25+00-46+00	5	21-23
-YIDET-	12+00-20+00	16	24
-YIDET-	20+50-38+19	5	24-25
-YIDRV-	10+00-13+50	16	26
-Y2SBL-	10+00-21+00	10	27
-Y2SBL-	21+50-33+00	11	27
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-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
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-Y2RPB-	10+00-19+15	4	36
-Y2RPB-	19+15-32+50	16	36
-Y2RPB-	32+50-49+07	14	36-37
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-Y3RPC-	10+00-11+00	11	40
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-Y3LPC-	10+00-19+11	12	41
-Y4-	10+14-16+94	17	42
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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
-YI-	33+00-35+50	63-65
-YIDET-	11+50-16+00	66-67
-YIDET-	35+50-36+50	68
-YIDRV-	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
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REFERENCE: U-2579AA

PROJECT: 34839

09/08/

TIP PROJECT: U-2579AA

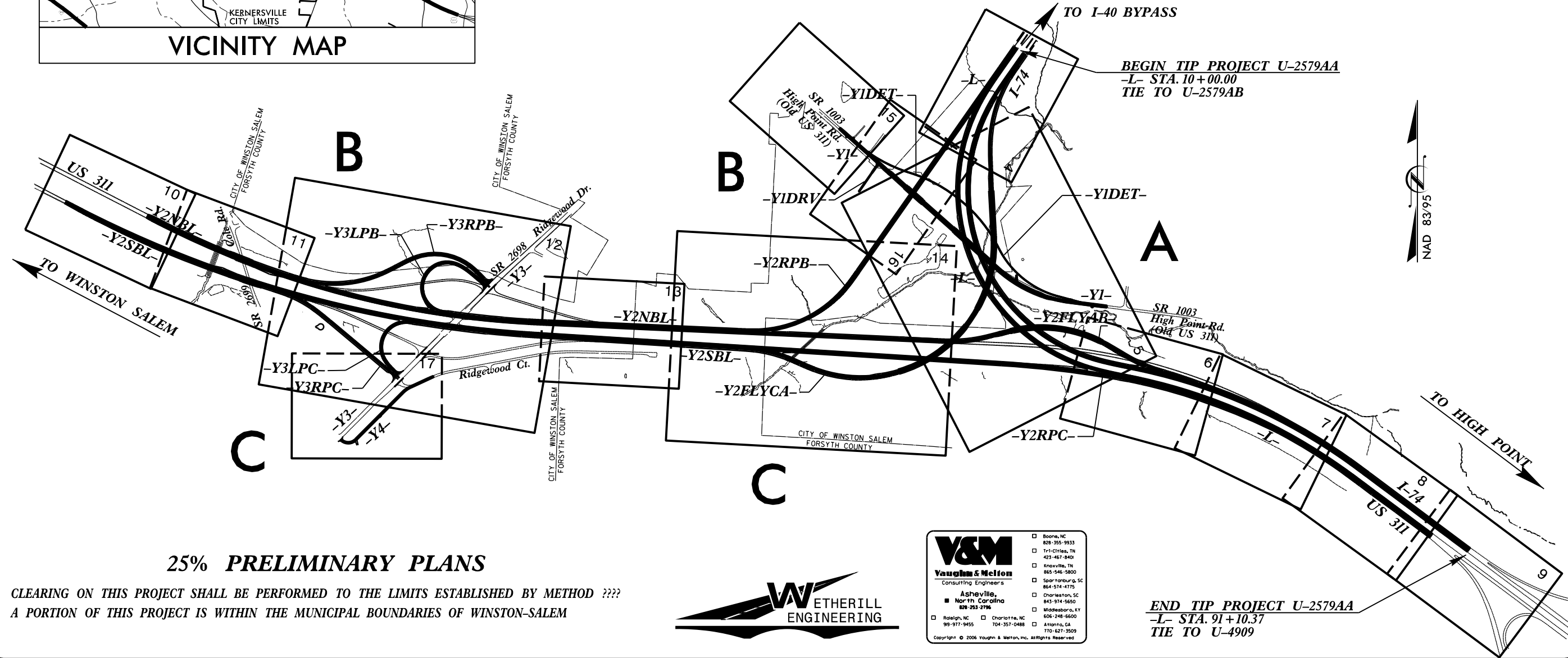
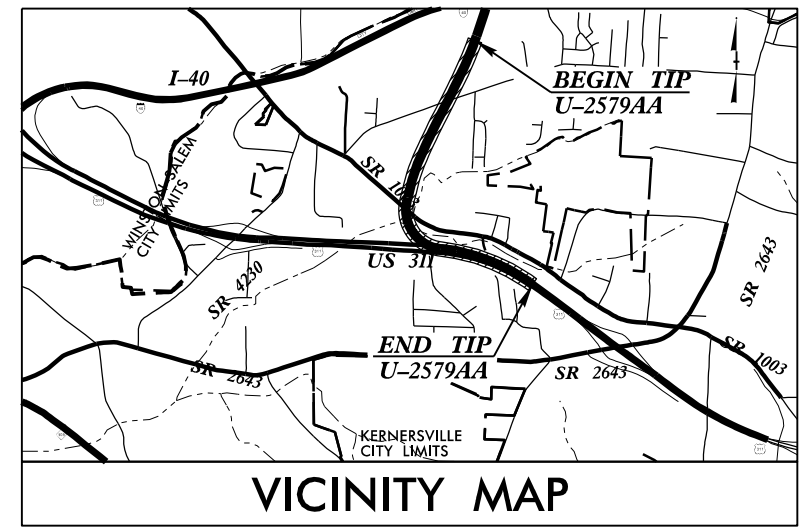
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

FORSYTH COUNTY

**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**

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	

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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



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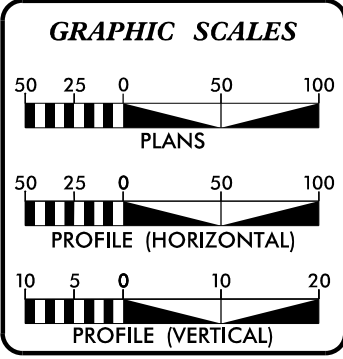
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END TIP PROJECT U-2579AA
-L- STA. 91+10.37
TIE TO U-4909

CONTRACT:



DESIGN DATA

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

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

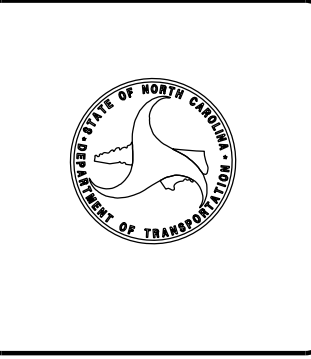
RIGHT OF WAY DATE: JUNE 15, 2018	JOHN LANSFORD, PE PROJECT ENGINEER
LETTING DATE: OCTOBER 20, 2020	VAN TRAN, PE PROJECT DESIGN ENGINEER
NCDOT CONTACT:	TATIA L. WHITE, PE, PLS

HYDRAULICS ENGINEER

SIGNATURE: _____

ROADWAY DESIGN ENGINEER

SIGNATURE: _____



\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DON\$\$\$\$\$
\$\$\$\$\$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.

<u>Line</u>	<u>Station</u>
-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:

<u>Line</u>	<u>Station</u>
-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:

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

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

<u>Line</u>	<u>Station</u>
-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:

<u>Line</u>	<u>Stations</u>	<u>Offset (ft)</u>
-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:

<u>Line</u>	<u>Stations and Offsets (ft)</u>
-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:

<u>Sample No.</u>	<u>Line</u>	<u>Station & Offset</u>	<u>Depth</u>	<u>Test</u>
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:

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

Respectfully Submitted,



Jarett Swartley, PG
Senior Geologist

8/17/99

PROJECT REFERENCE NO. U-2579AA	SHEET NO. 4
RW SHEET NO.	
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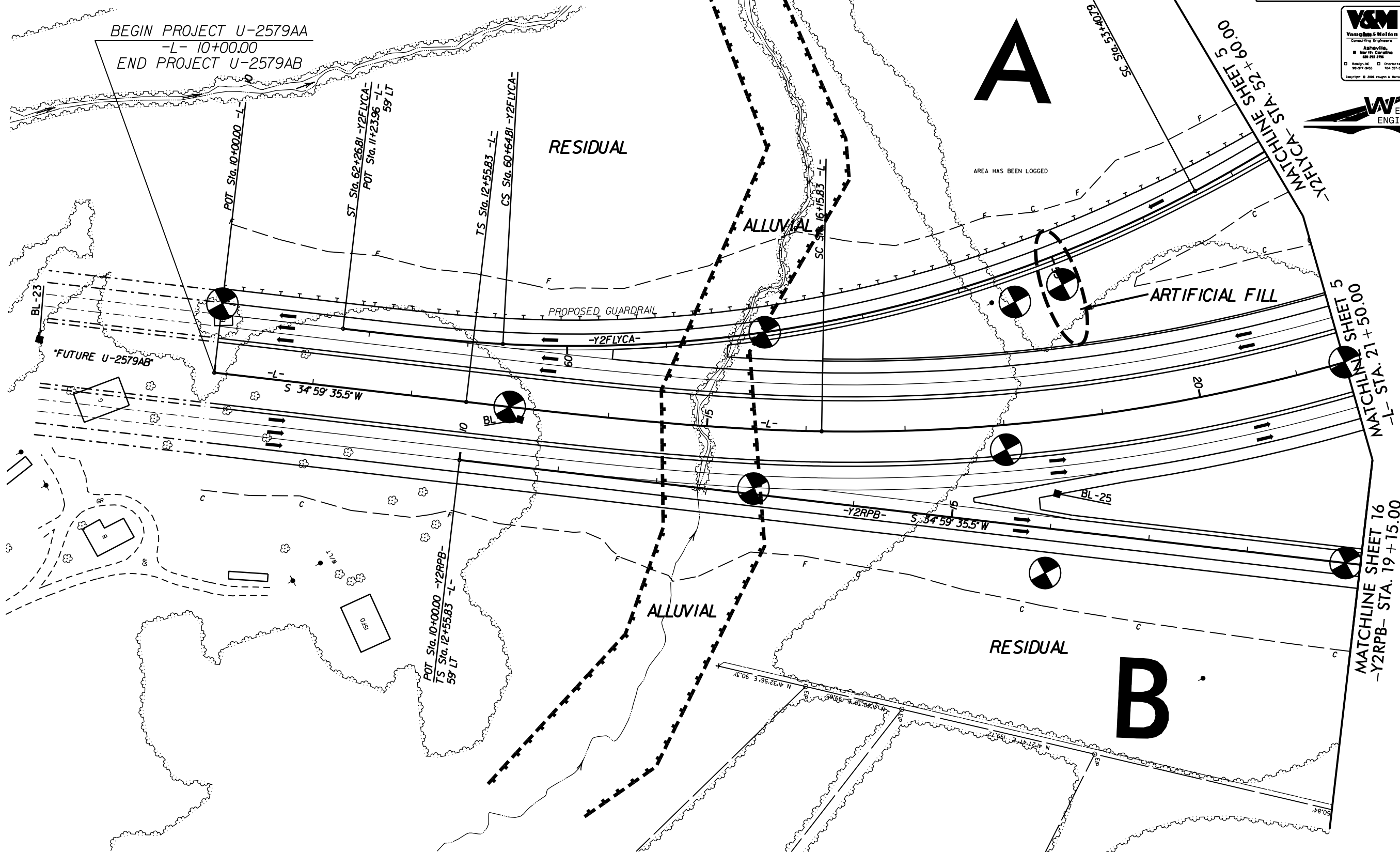
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PROJECT REFERENCE NO. U-2579AA	SHEET NO. 5
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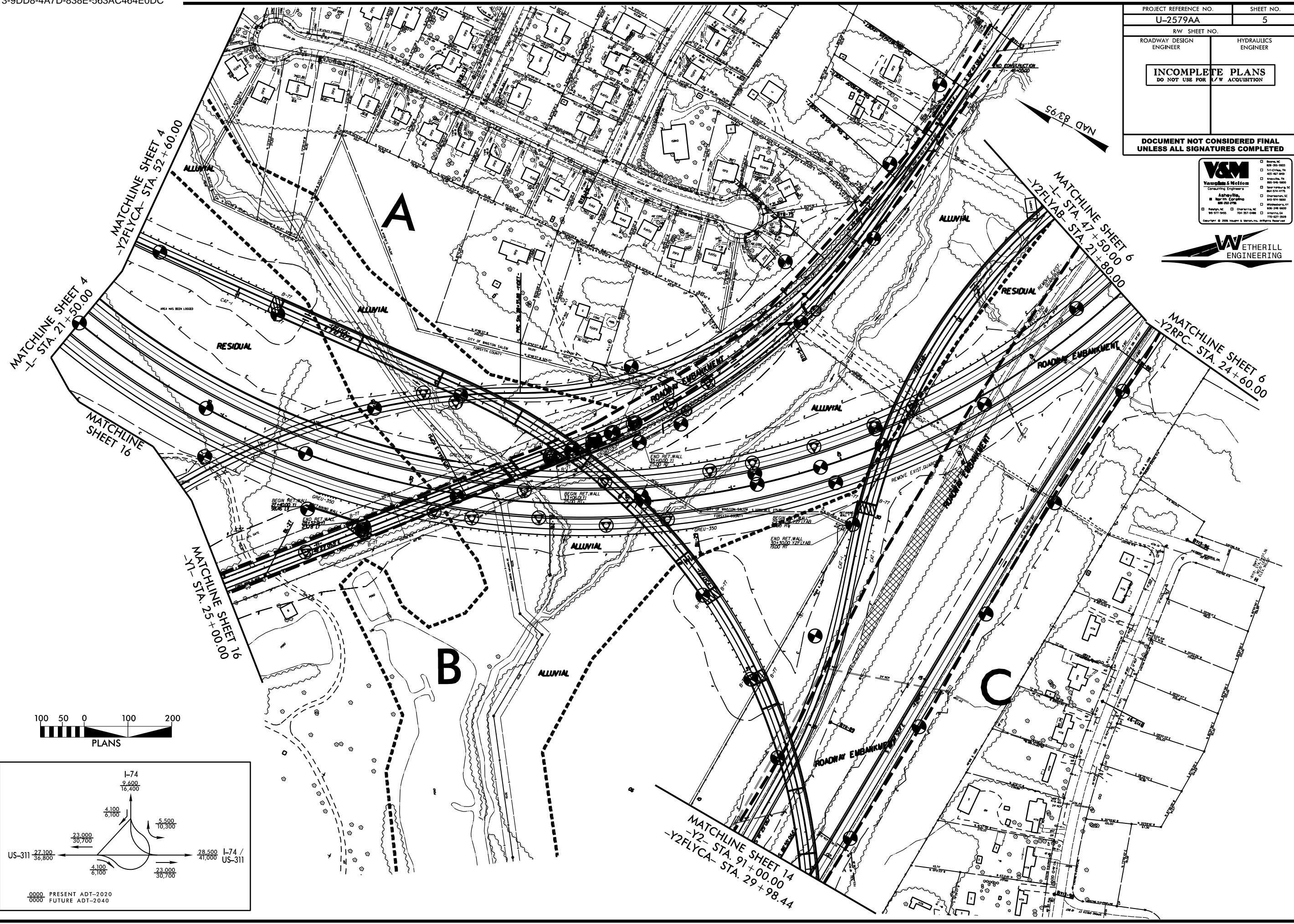
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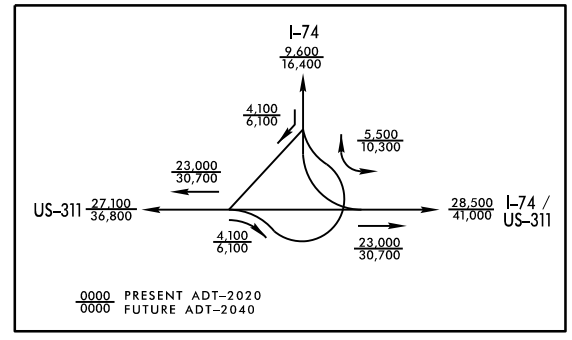
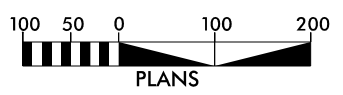
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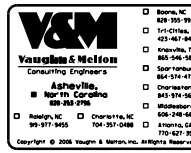


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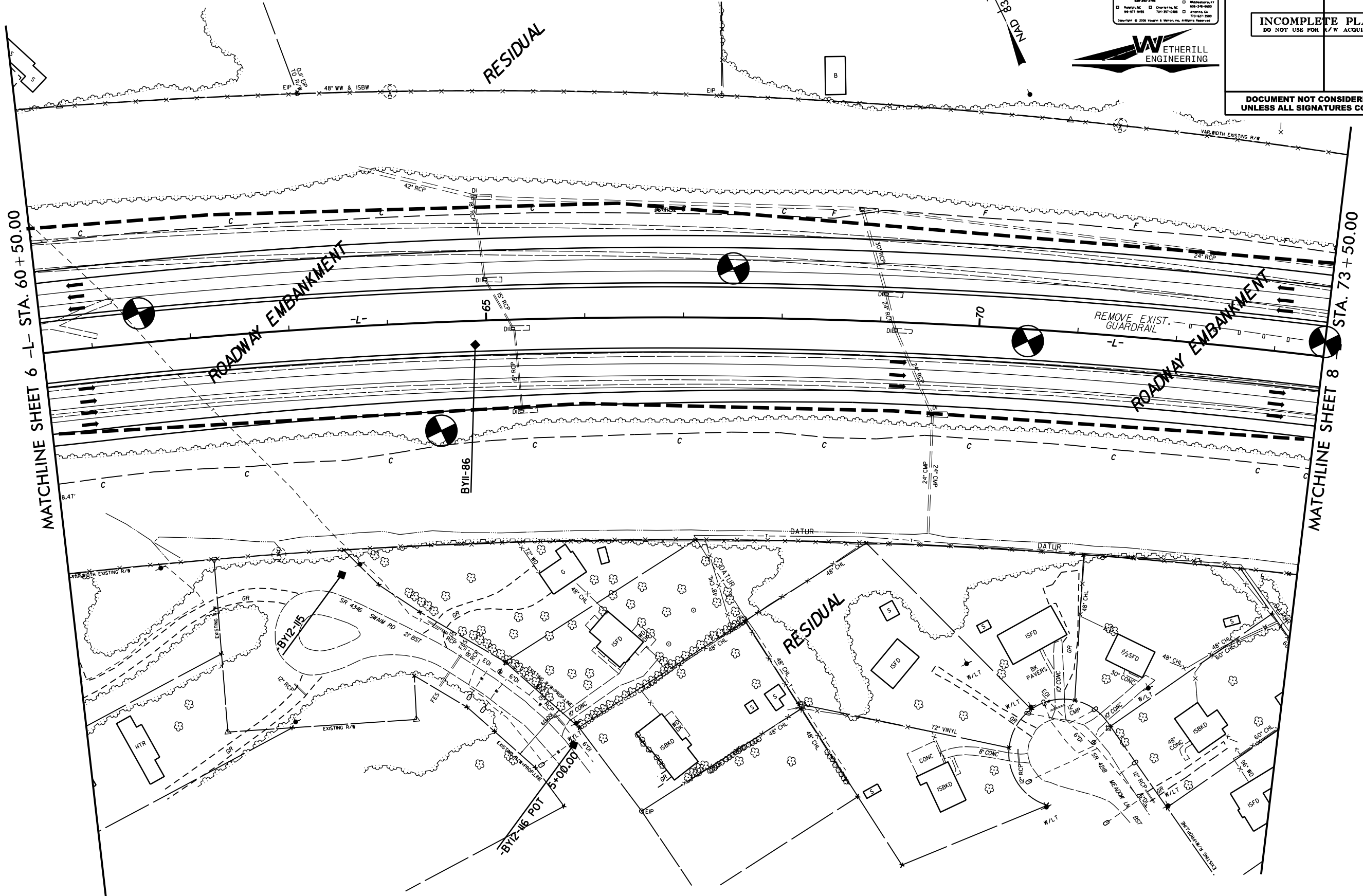
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PROJECT REFERENCE NO. U-2579AA	SHEET NO. 7
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RESIDUAL

ROADWAY EMBANKMENT

ROADWAY EMBANKMENT

RESIDUAL

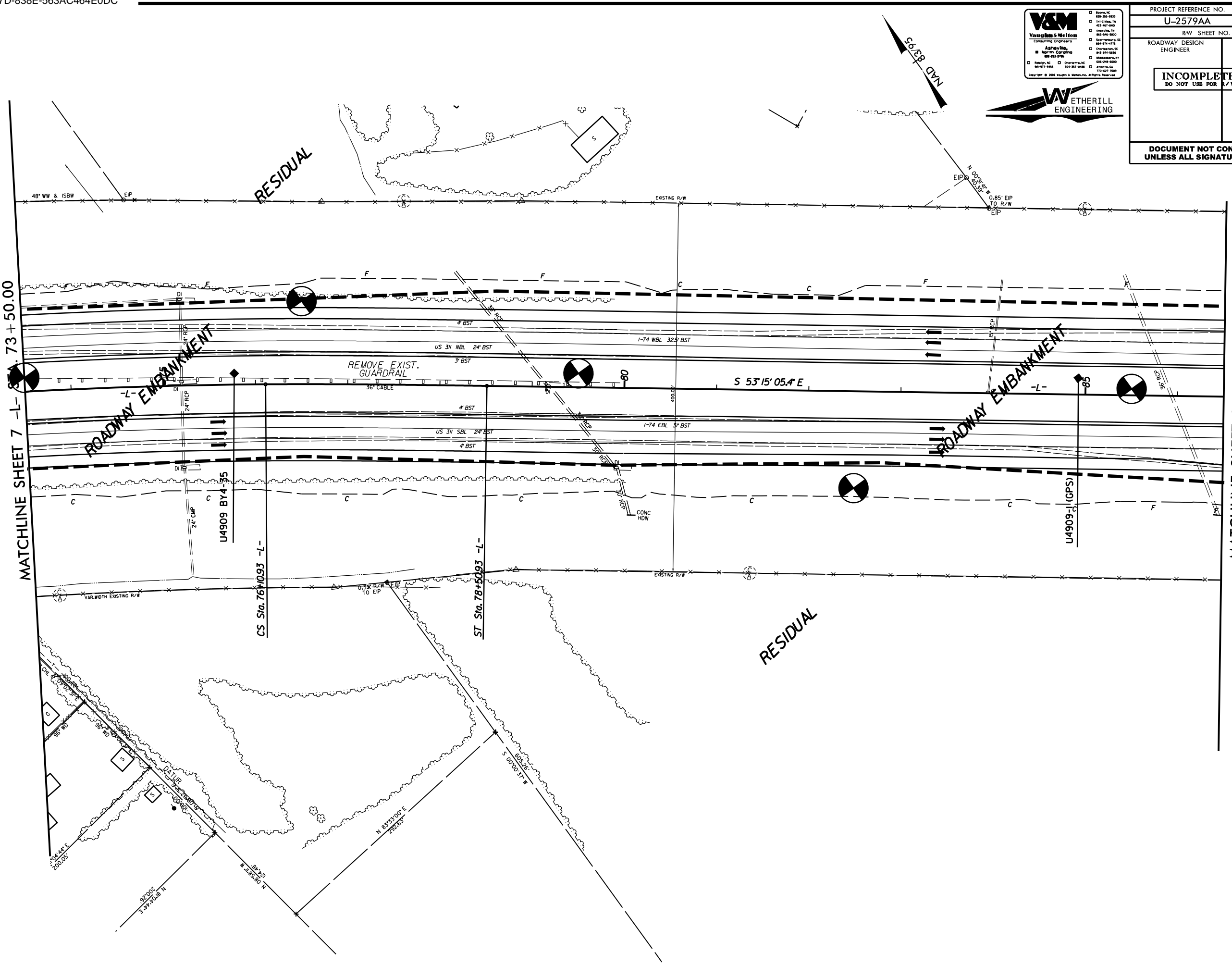
BY12-116 POT

BY12-115

BY11-86

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REVISIONS



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Vaughan & Melton
Consulting Engineers

Atlanta, GA
Nashville, TN
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Knoxville, TN
Greenville, SC
Spartanburg, SC
Asheville, NC
Charlotte, NC
Raleigh, NC
Wilmington, NC
Durham, NC
Fayetteville, NC
Charlotte, NC
Spartanburg, SC
Asheville, NC
Charlotte, NC
Raleigh, NC
Wilmington, NC
Durham, NC
Fayetteville, NC

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	

ETHERILL
ENGINEERING

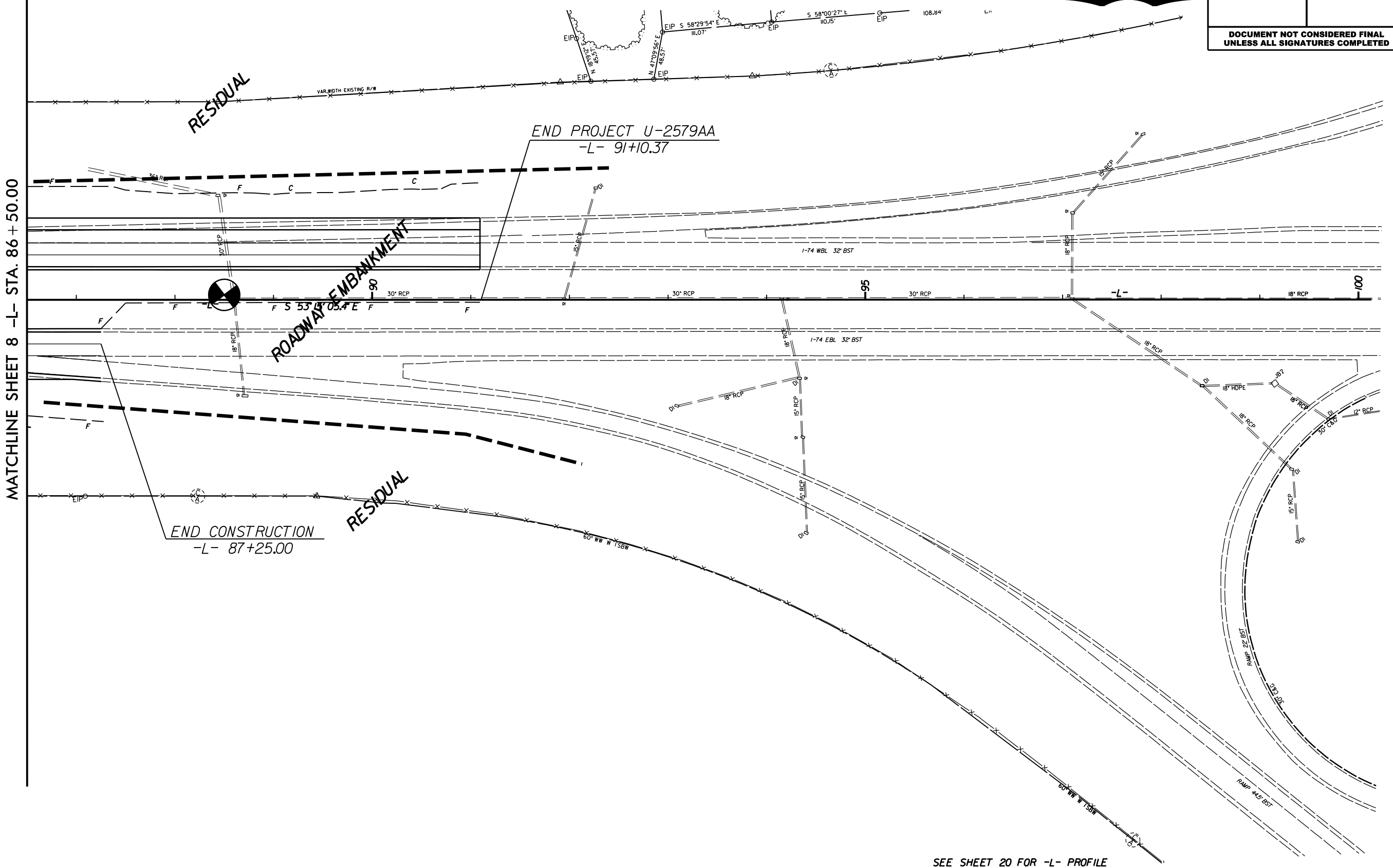
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Yasuda & McIlroy
 Consulting Engineers
 Asheville, NC
 828-253-2796

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PROJECT REFERENCE NO. U-2579AA	SHEET NO. 9
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	ROADWAY DESIGN ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



REVISIONS

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\$\$\$BY\$\$\$

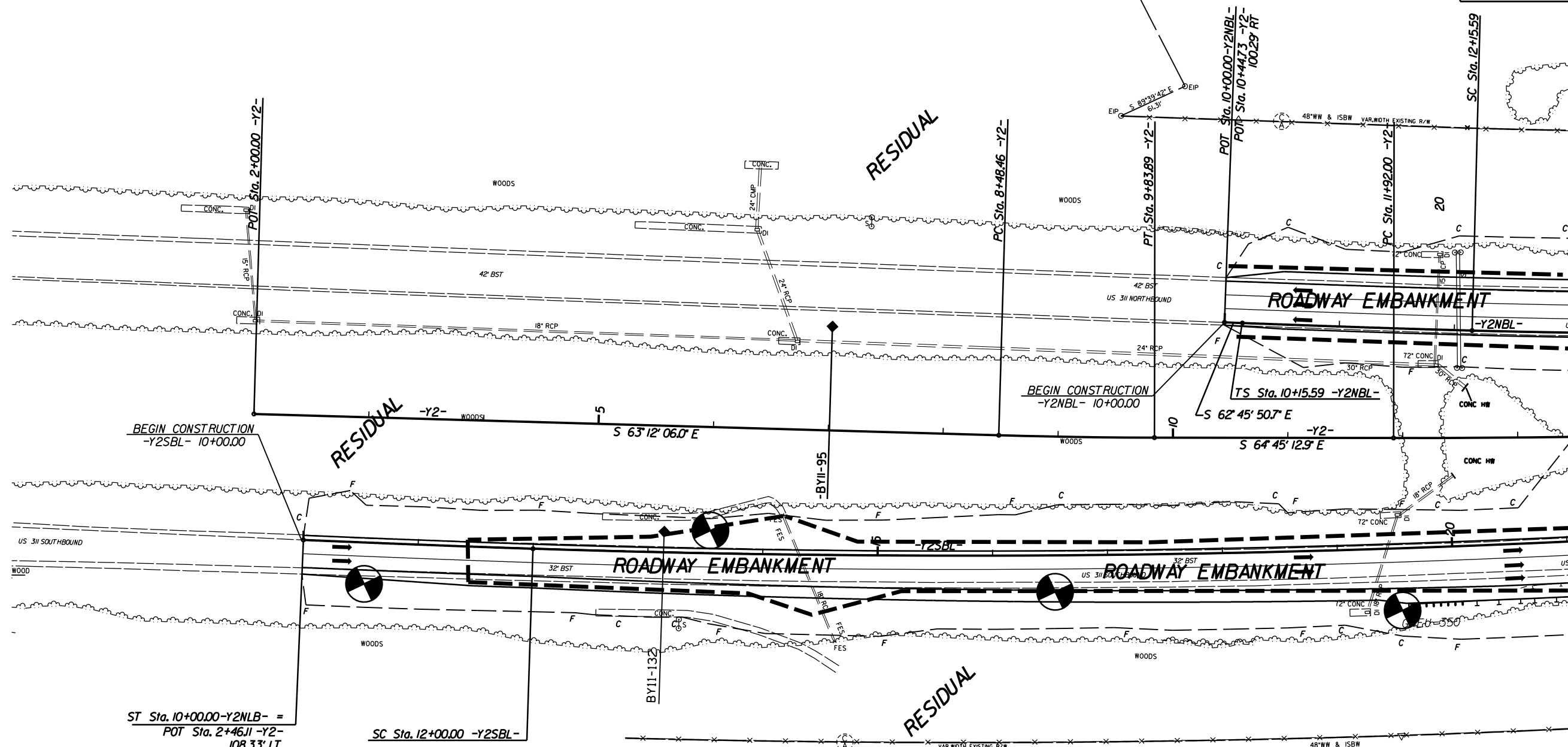
SEE SHEET 20 FOR -L- PROFILE

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PROJECT REFERENCE NO. U-2579AA	SHEET NO. 10
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

REVISIONS



MATCHLINE SHEET 11 -Y2- STA. 13 + 50.00

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\$\$\$DATE\$\$\$

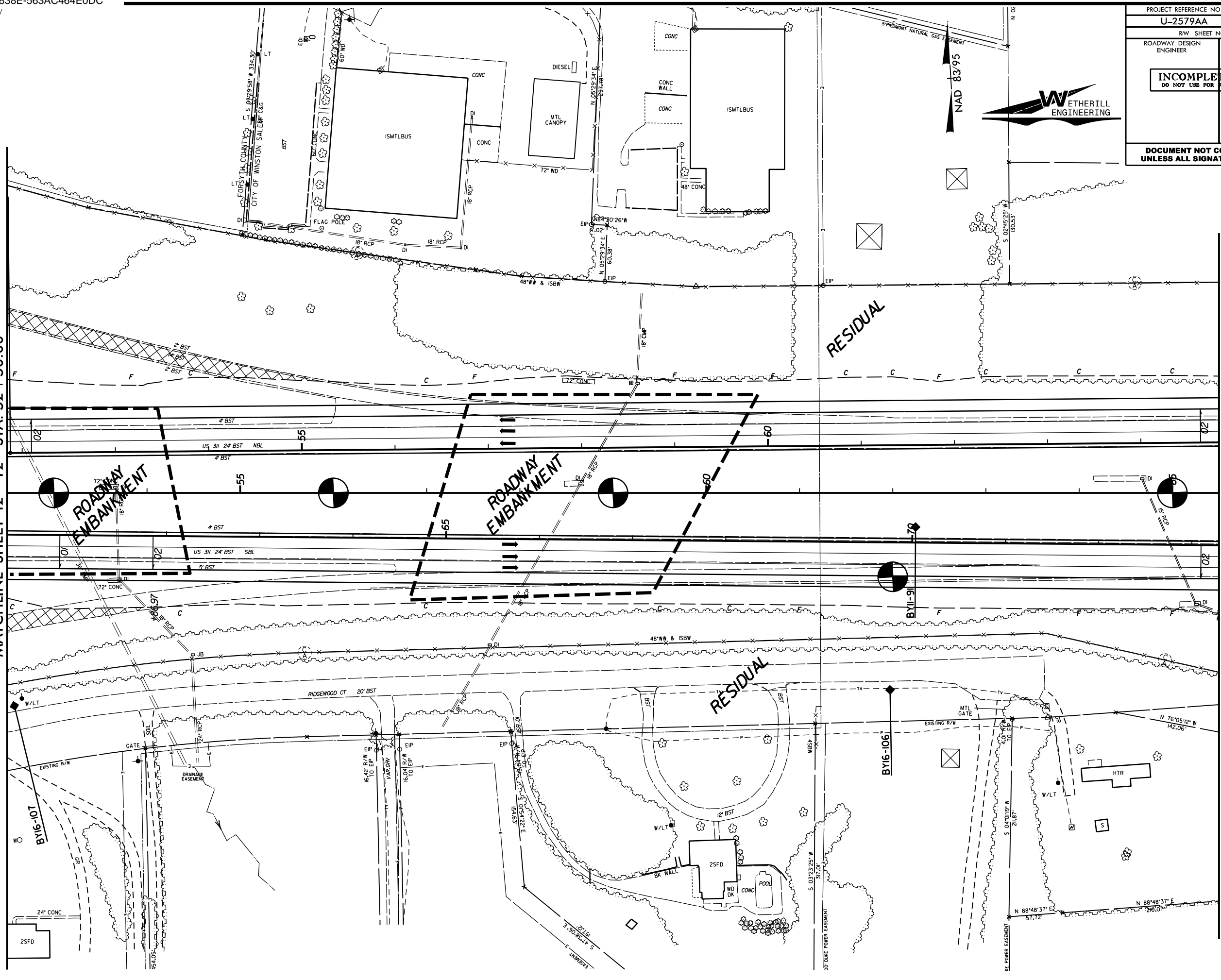
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PROJECT REFERENCE NO. U-2579AA	SHEET NO. 13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MATCHLINE SHEET 12 -Y2- STA. 52 + 50.00

MATCHLINE SHEET 14 -Y2- STA. 65 + 50.00



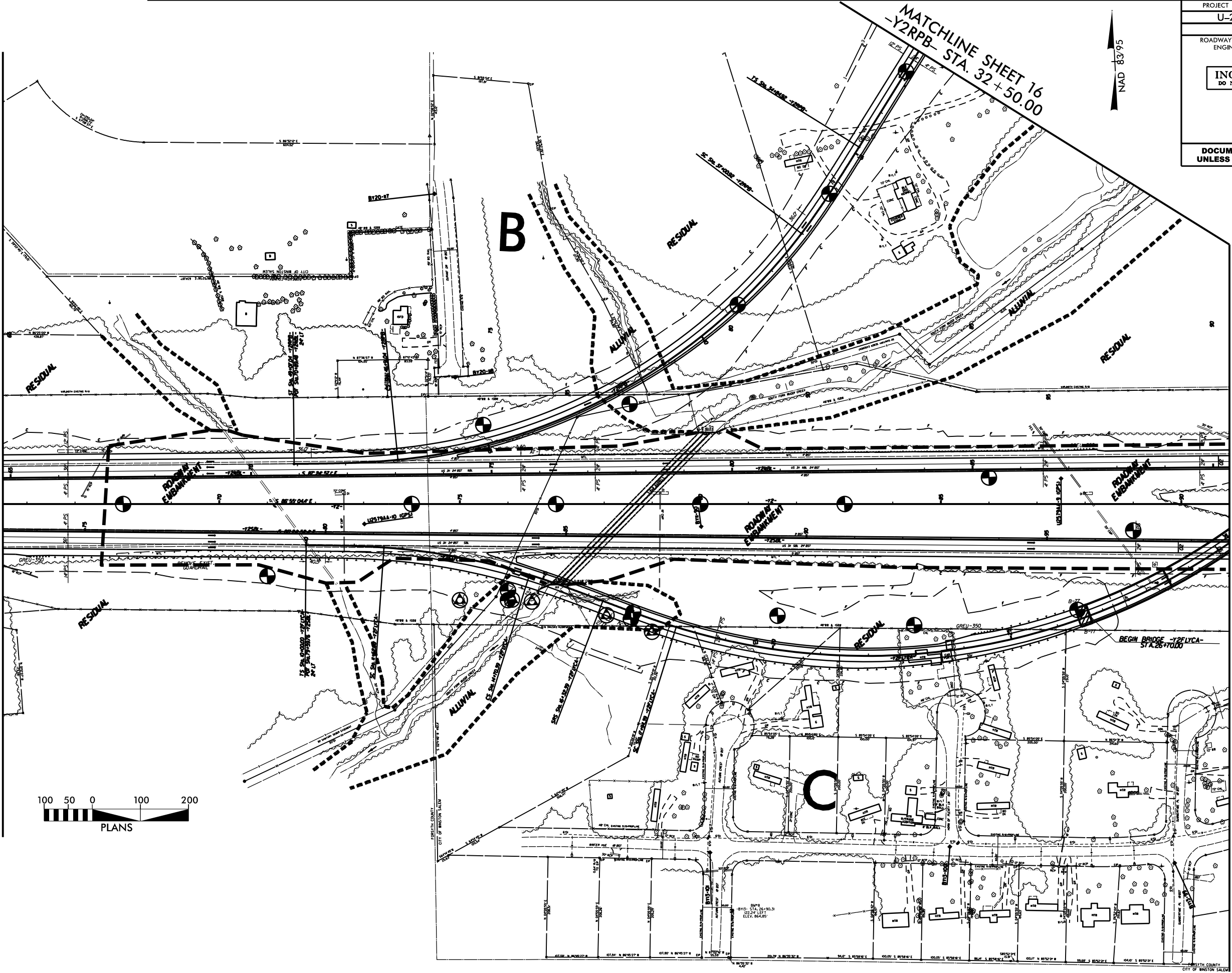
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REVISIONS

MATCHLINE SHEET 13 -Y2- STA. 65 + 50.00

MATCHLINE SHEET 16
-Y2RPB- STA. 32 + 50.00



PROJECT REFERENCE NO. U-2579AA	SHEET NO. 14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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Consulting Engineers
Asheville, NC
919-251-9555

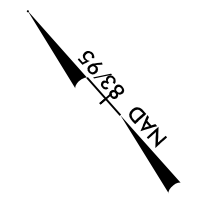
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ENGINEERING

MATCHLINE SHEET 5
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-Y2FLYCA- STA. 29 + 98.44

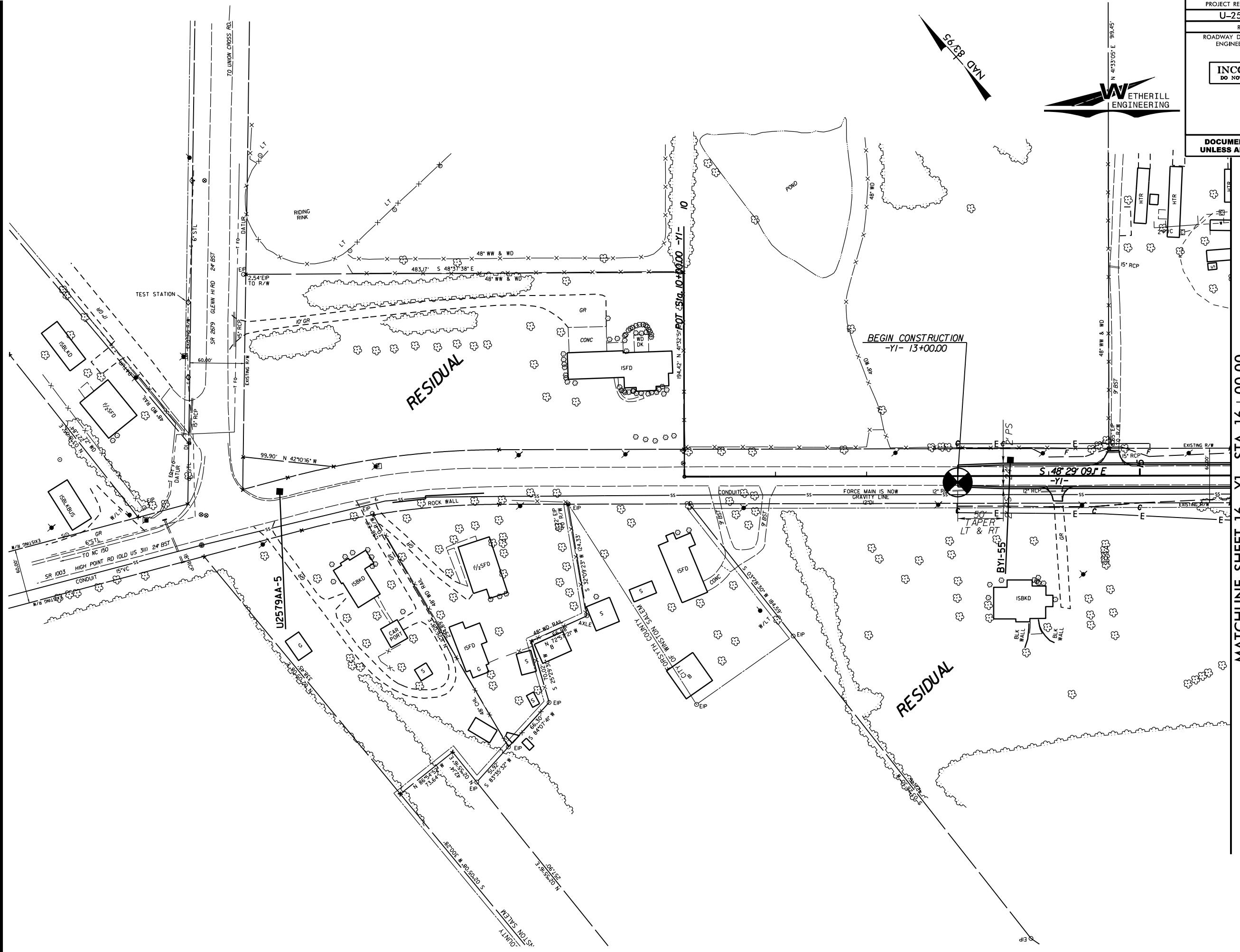
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



REVISIONS



MATCHLINE SHEET 16 -YI- STA. 16+00.00

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DGN\$\$\$\$\$
\$\$\$\$\$\$\$\$\$\$

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REVISIONS

V&M
Vaughan & Melton
 Consulting Engineers

Asheville, NC
 North Carolina
 828-253-2796

Charlotte, NC
 704-375-5652

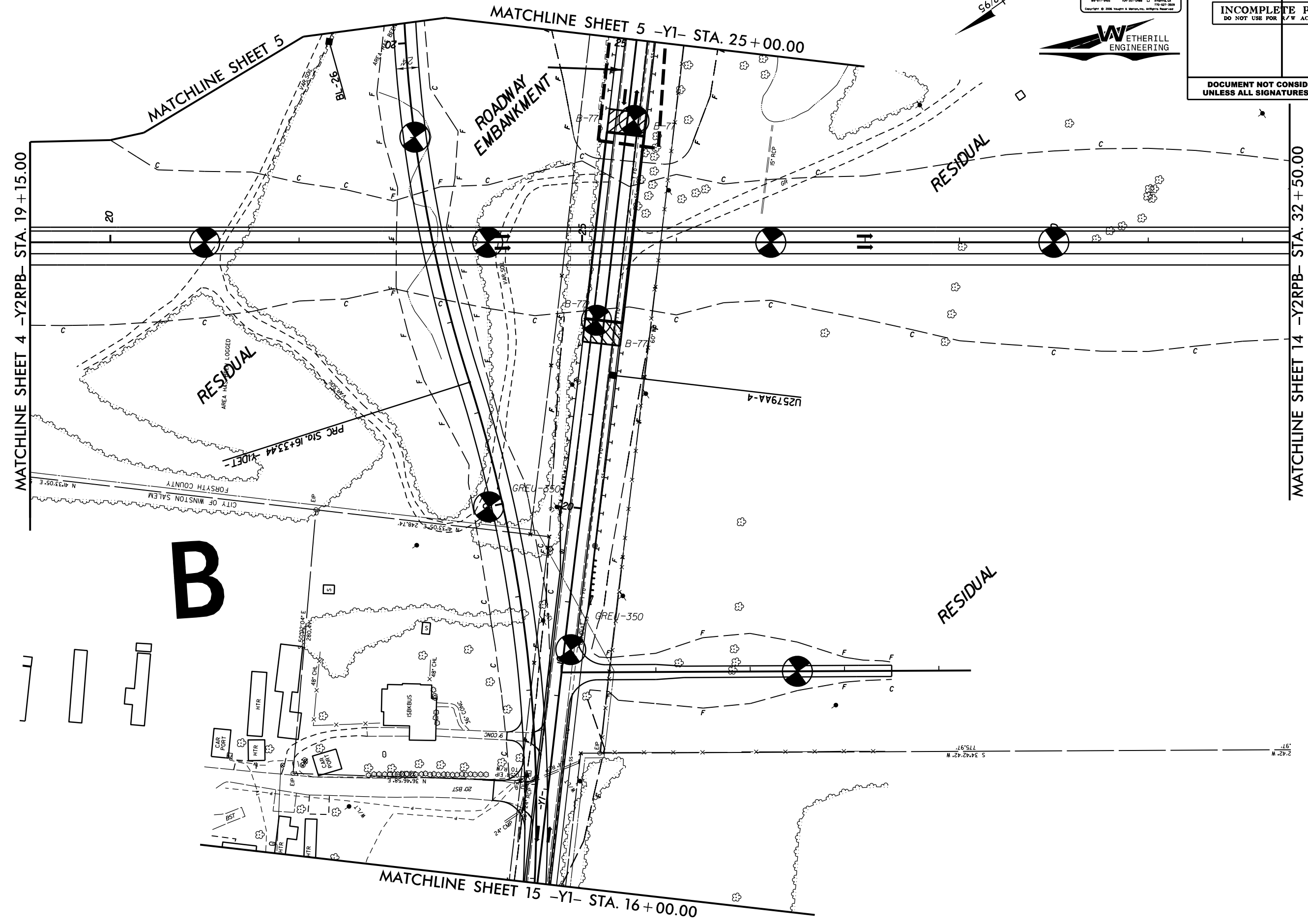
Winston-Salem, NC
 704-252-8800

Greensboro, NC
 336-733-9688

Raleigh, NC
 919-877-9655

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PROJECT REFERENCE NO. U-2579AA		SHEET NO. 16	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			



B

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 \$\$\$\$\$\$SYTIME\$\$\$\$\$

PROJECT REFERENCE NO.		SHEET NO.	
U-2579AA		17	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



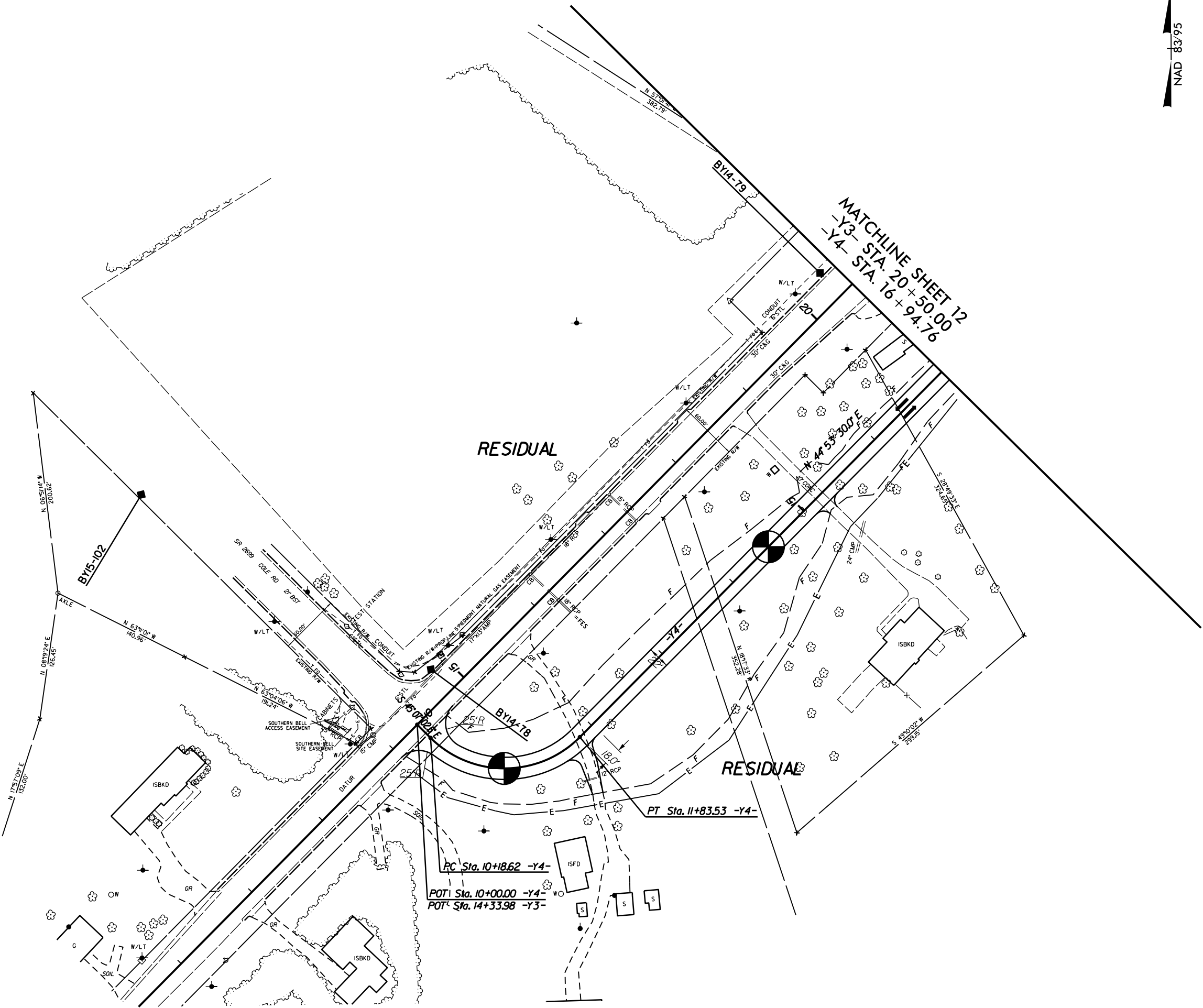
V&M
Consulting Engineers
Asheville, NC
199-377-9955

- Boone, NC 828-395-9933
- Ft. Collins, CO 970-467-8400
- Greenville, SC 864-146-1800
- Charlotte, NC 704-544-4178
- Chapel Hill, NC 919-974-1800
- Mooresville, NC 704-248-6800
- Wilmington, NC 910-321-5900
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NAD 83/95

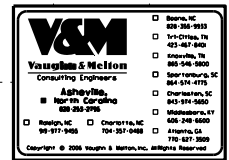
REVISIONS



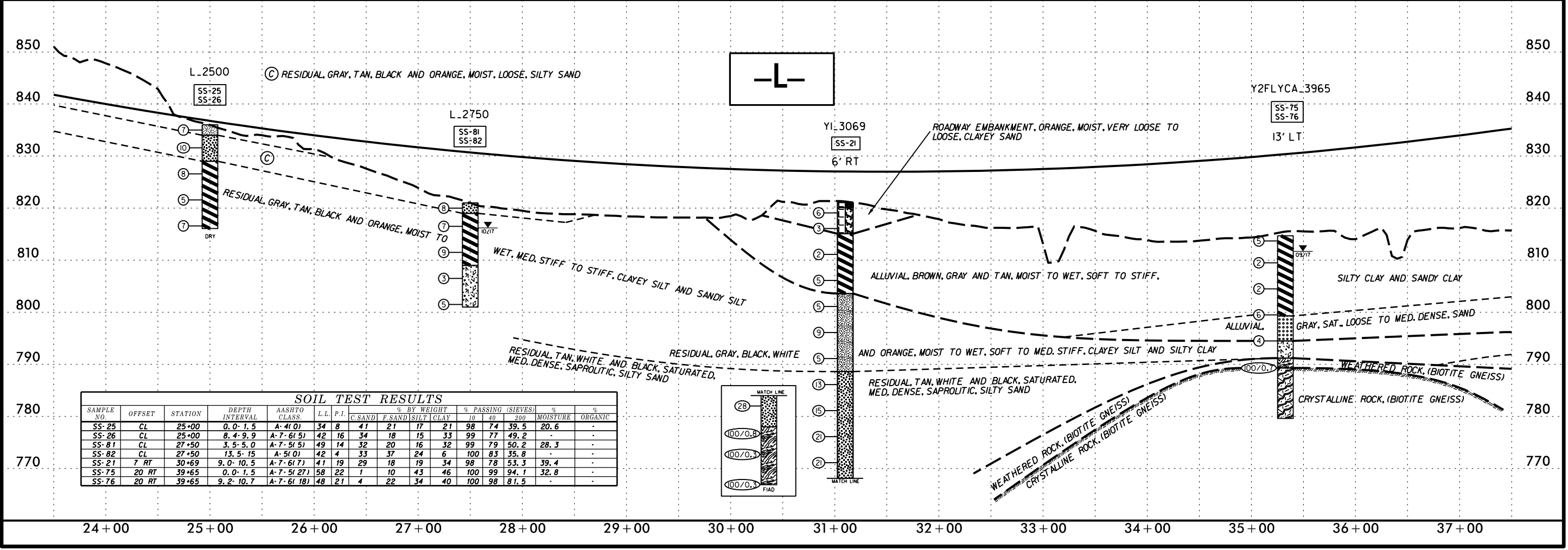
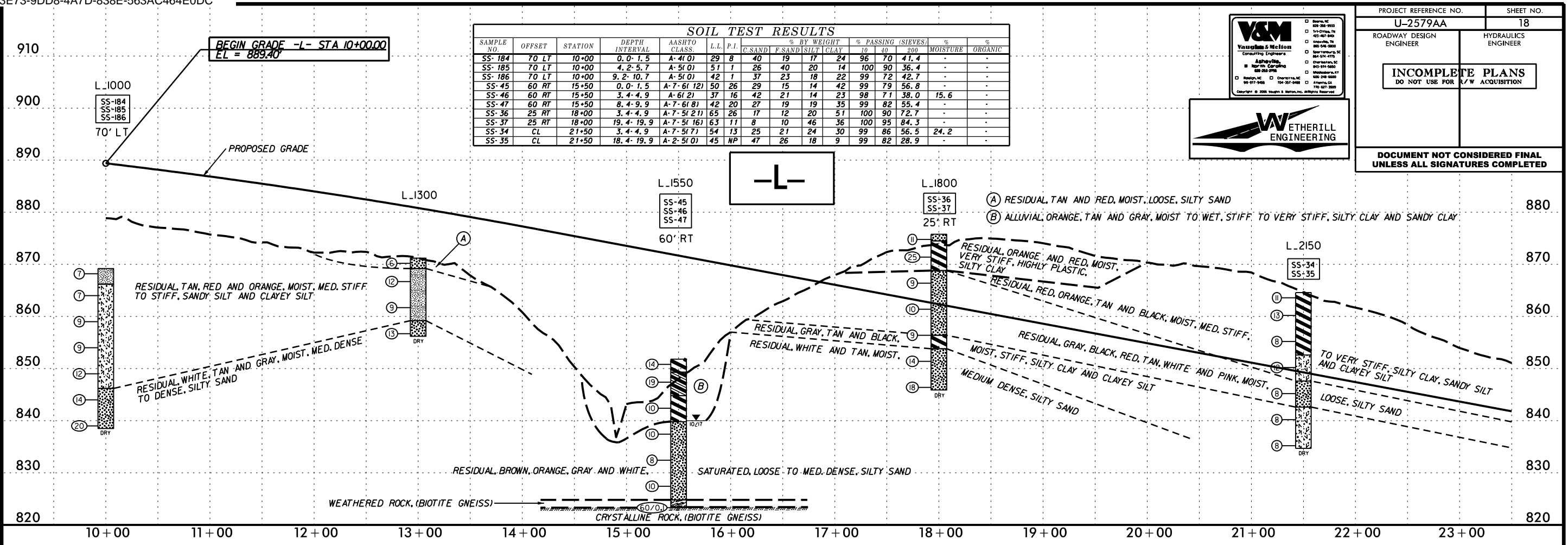
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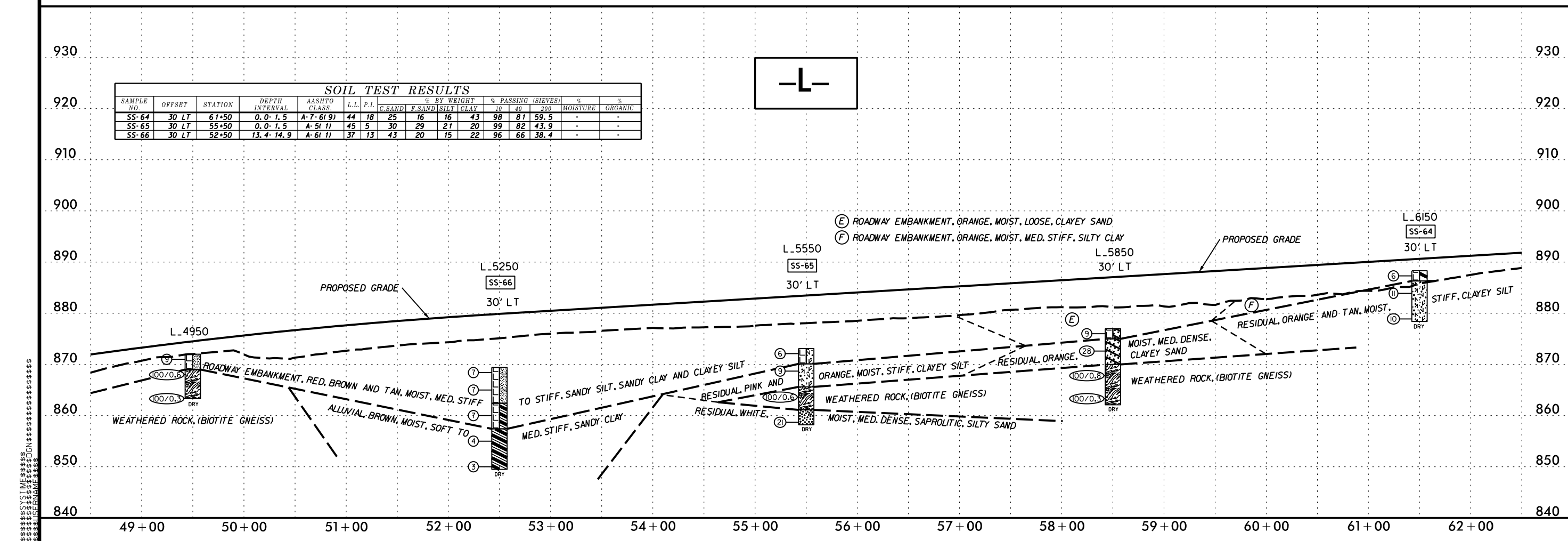
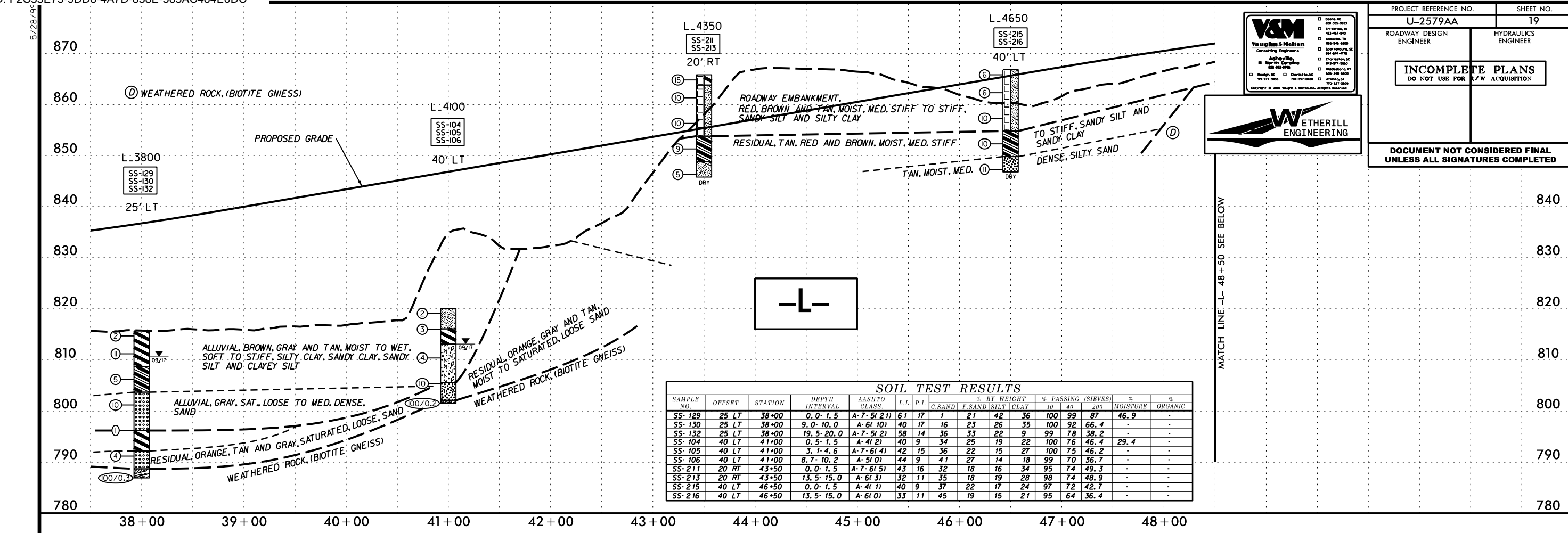
SOIL TEST RESULTS														
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)		% MOISTURE	% ORGANIC
							C SAND	F SAND	SILT	CLAY	10	200		
SS-184	70 LT	10+00	0.0-1.5	A-4(0)	29	8	40	19	17	24	96	70	41.4	-
SS-185	70 LT	10+00	4.2-5.7	A-5(0)	51	1	26	40	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	-



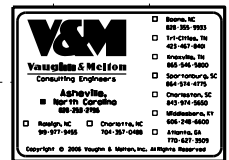
PROJECT REFERENCE NO. U-2579AA	SHEET NO. 18
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



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	200		
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	-

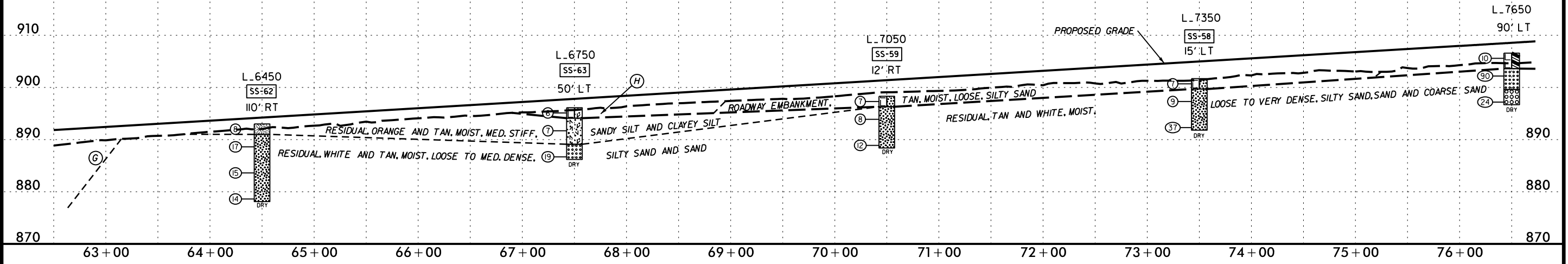


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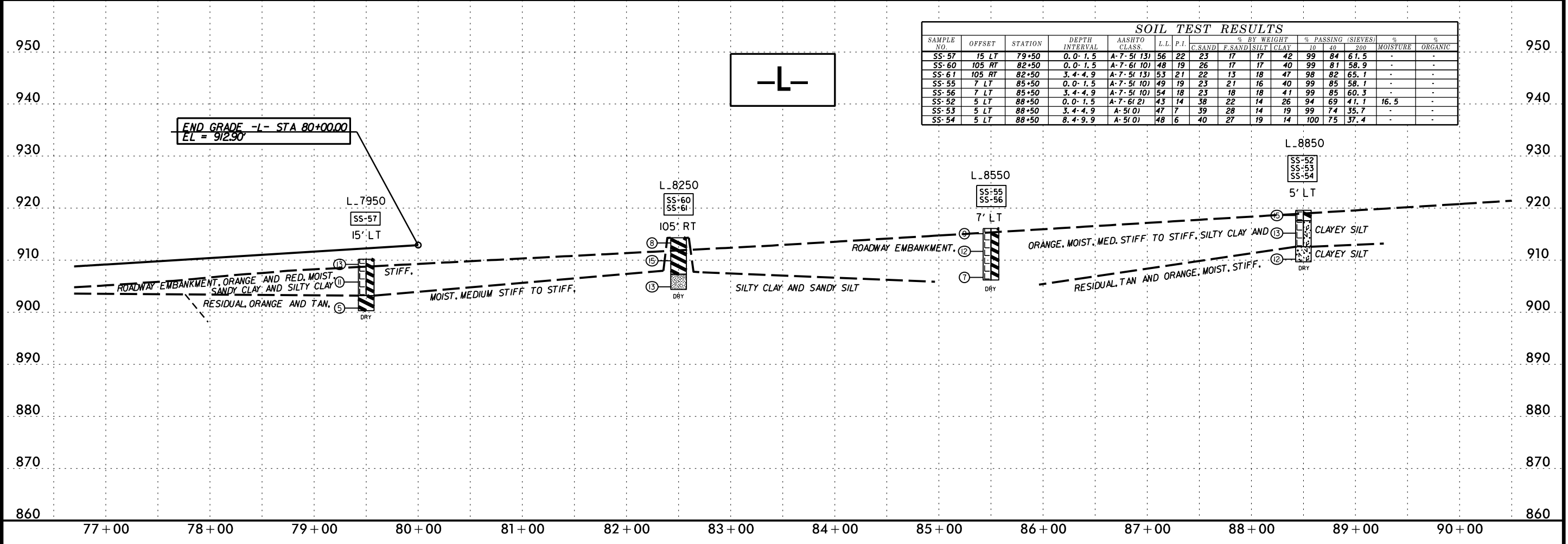
PROJECT REFERENCE NO. U-2579AA	SHEET NO. 20
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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-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	-



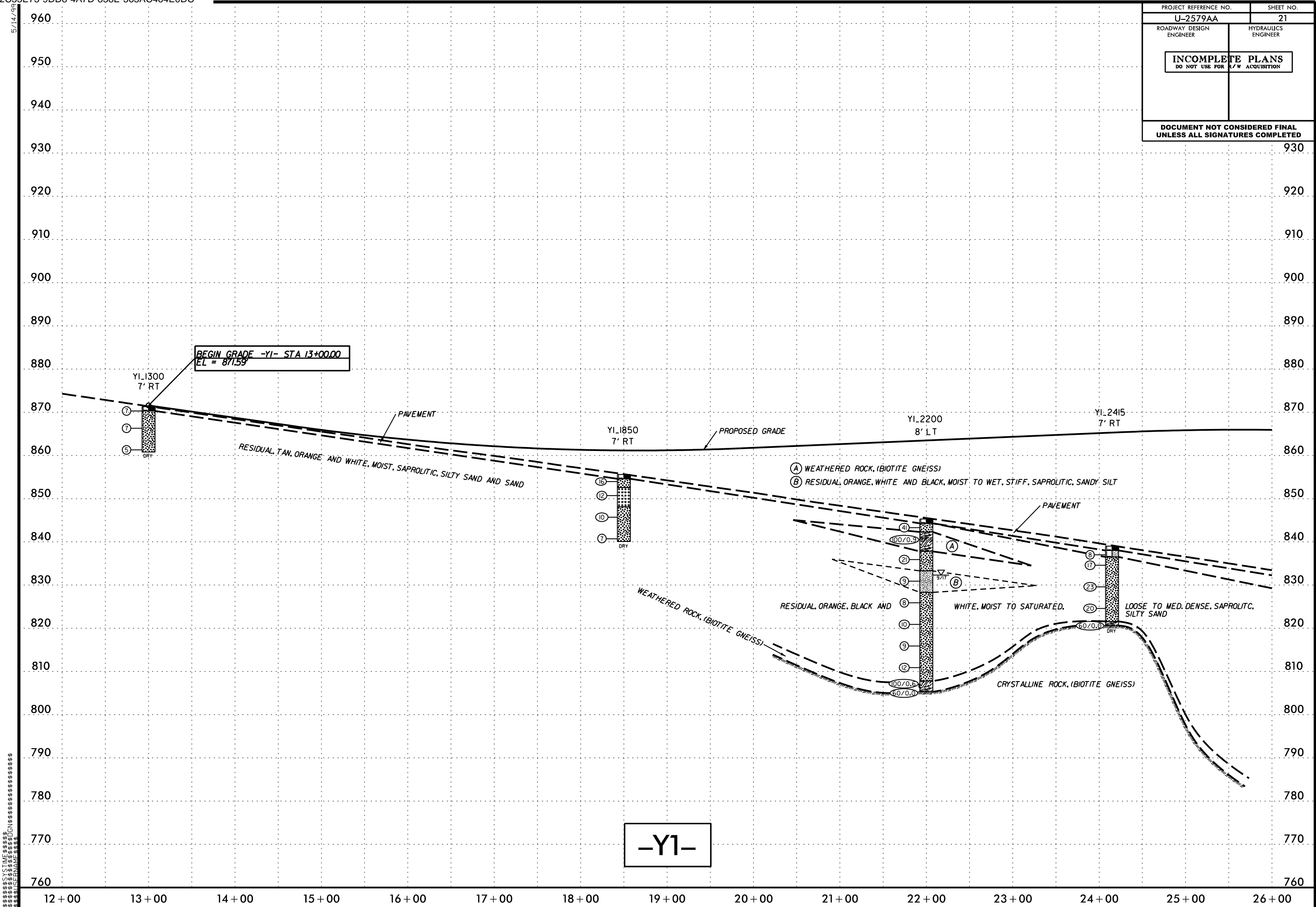
- (G) RESIDUAL ORANGE AND TAN, MOIST, STIFF, CLAYEY SILT
- (H) ROADWAY EMBANKMENT, ORANGE, MOIST, MED. STIFF, CLAYEY SILT

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-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	-	-



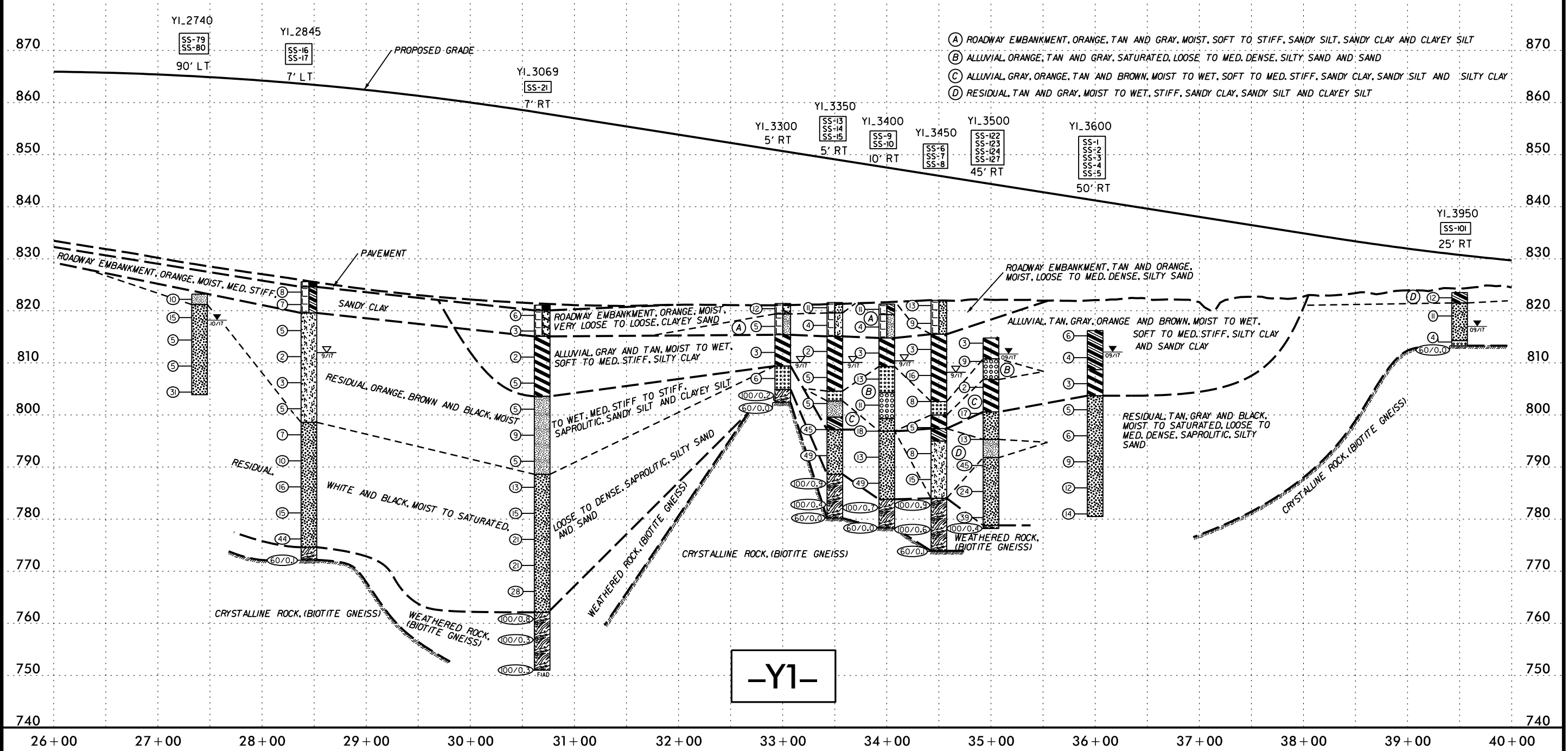
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PROJECT REFERENCE NO. U-2579AA	SHEET NO. 21
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	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		
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	86	20.6	-
SS-6	CL	34+50	8.4-9.9	A-7-5(26)	55	21	1	7	47	45	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-7-6(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	-



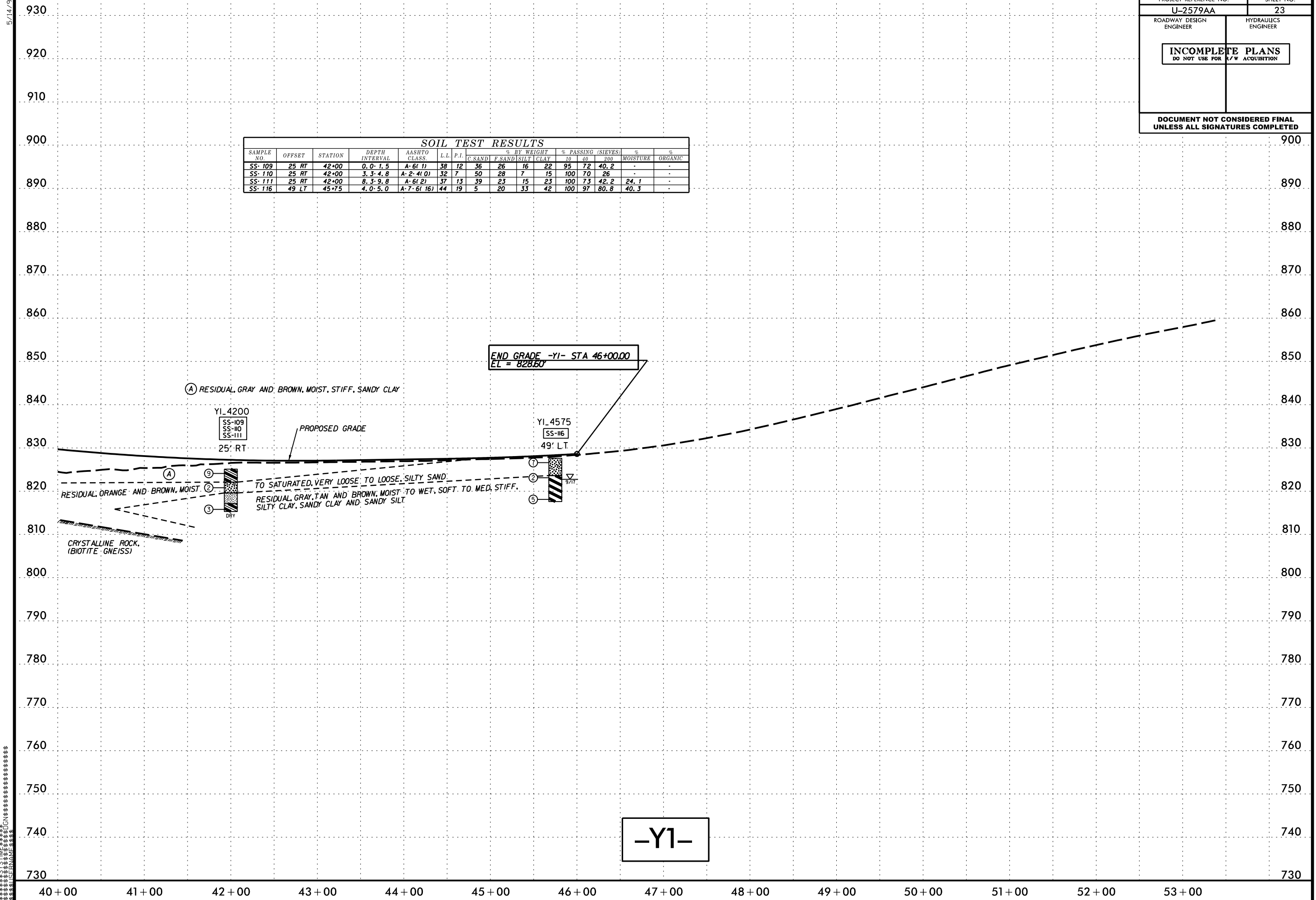
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5/14/99
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*****CDGN*****

5/14/99

PROJECT REFERENCE NO. U-2579AA	SHEET NO. 23
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	200		
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

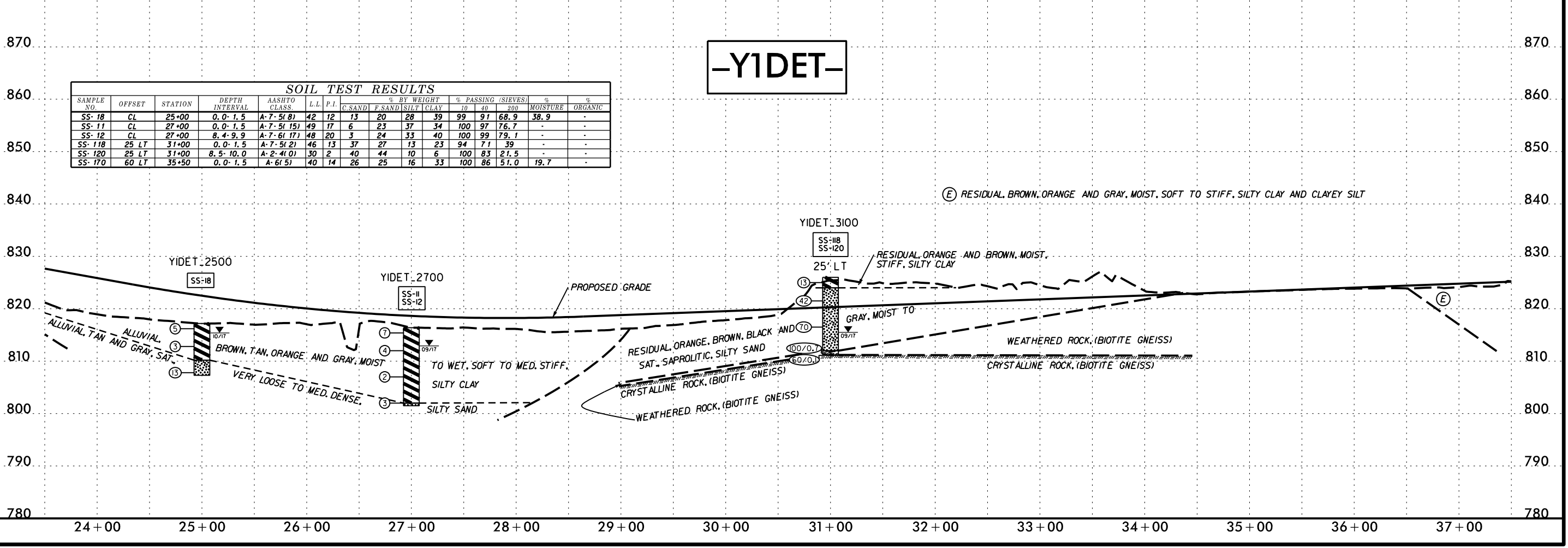
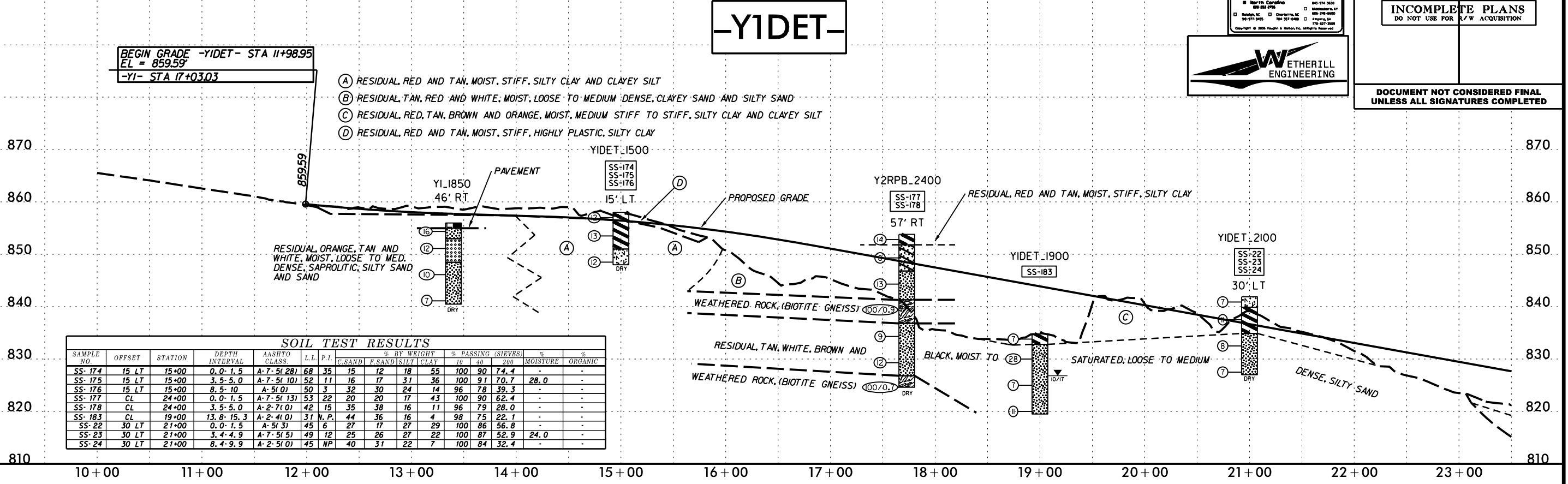


5/28/96
DATE
TIME
DRAWN
BY

PROJECT REFERENCE NO. U-2579AA		SHEET NO. 24
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

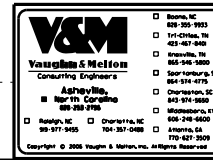
V&M
 Consulting Engineers
 4605 W. Carleton
 Suite 200
 Dallas, TX 75247
 972-977-9495

WETHERILL ENGINEERING

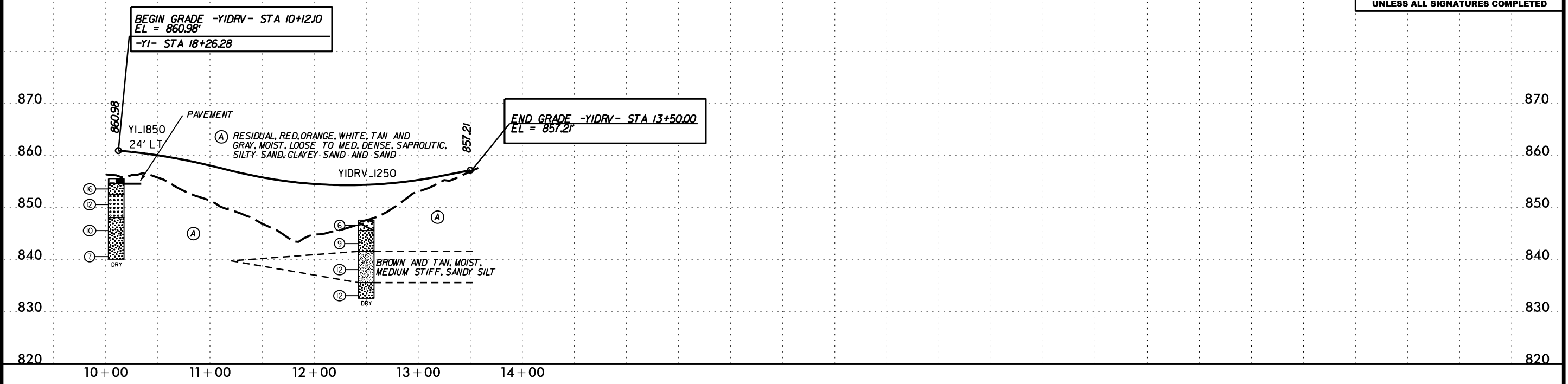


5/28/98

-YIDRV-

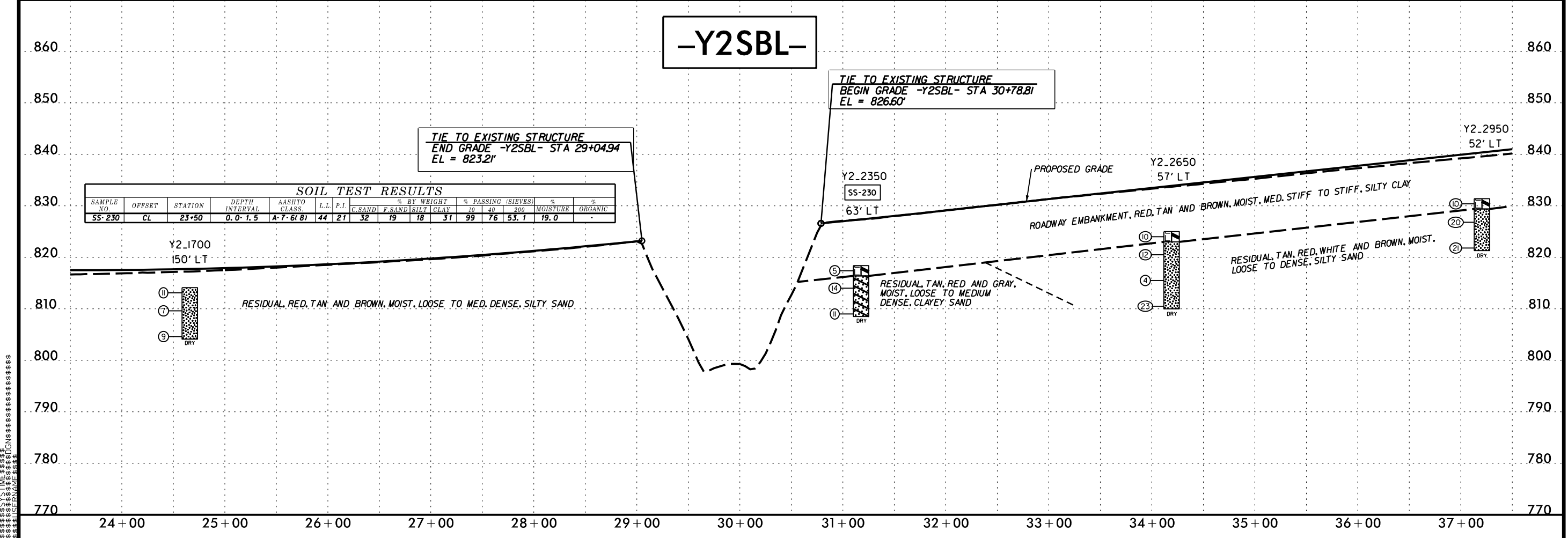
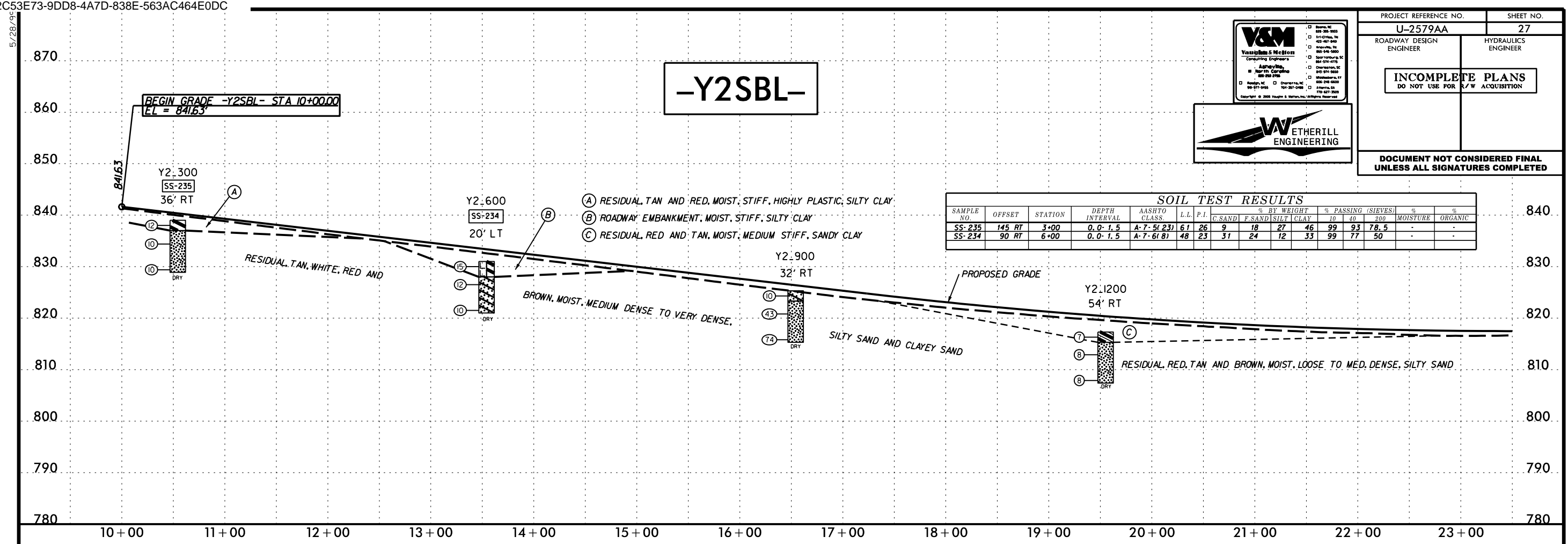


PROJECT REFERENCE NO. U-2579AA	SHEET NO. 26
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

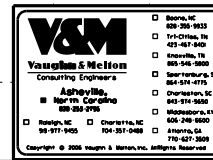


5/28/98
V&M CONSULTING ENGINEERS
WETHERILL ENGINEERING

PROJECT REFERENCE NO. U-2579AA	SHEET NO. 27
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



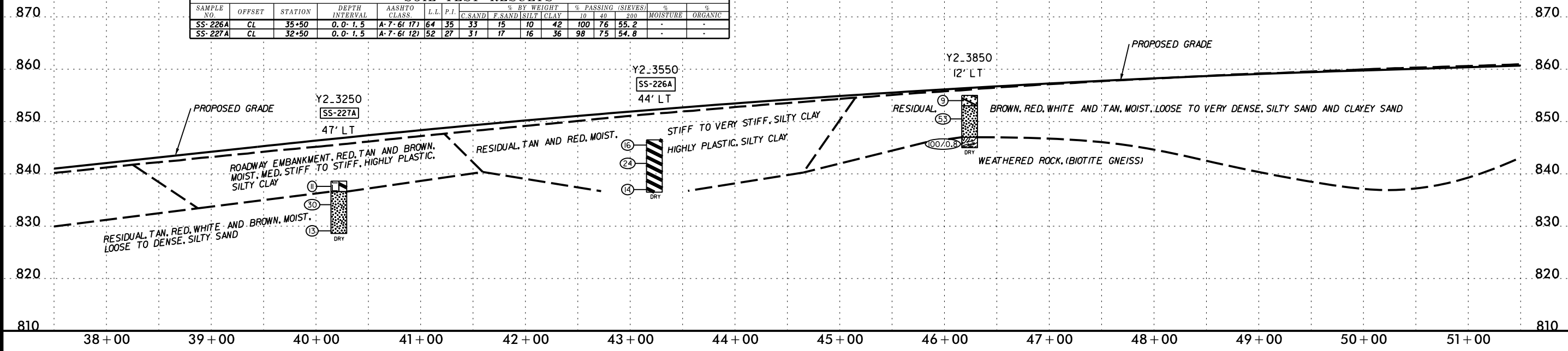
5/28/98



PROJECT REFERENCE NO. U-2579AA	SHEET NO. 28
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

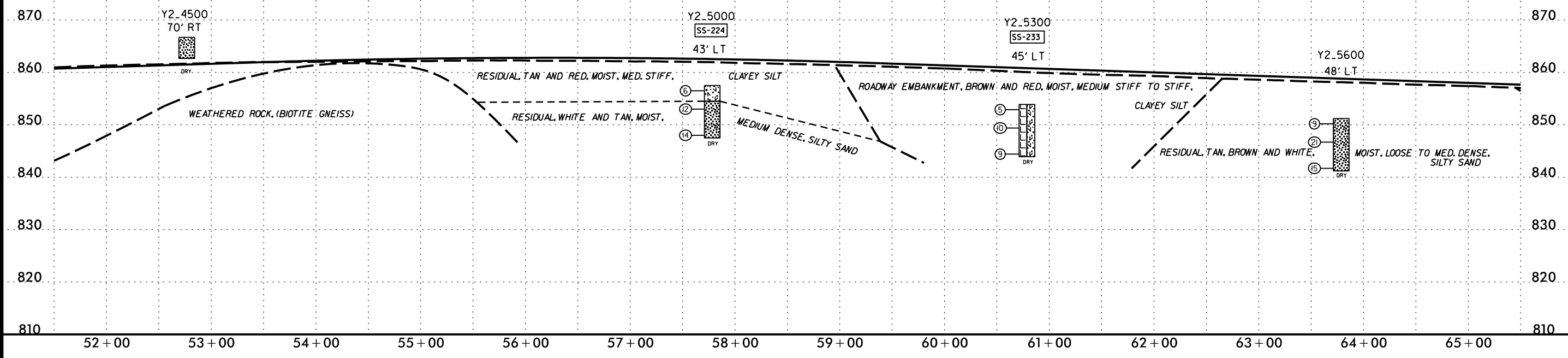
-Y2SBL-

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-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	-	-



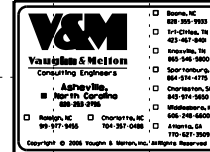
-Y2SBL-

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
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	-	-



\$\$\$\$\$\$ TIME \$\$\$\$\$\$
 \$\$\$\$\$\$ DATE \$\$\$\$\$\$
 \$\$\$\$\$\$ DRAWN \$\$\$\$\$\$
 \$\$\$\$\$\$ CHECKED \$\$\$\$\$\$
 \$\$\$\$\$\$ APPROVED \$\$\$\$\$\$

5/28/95

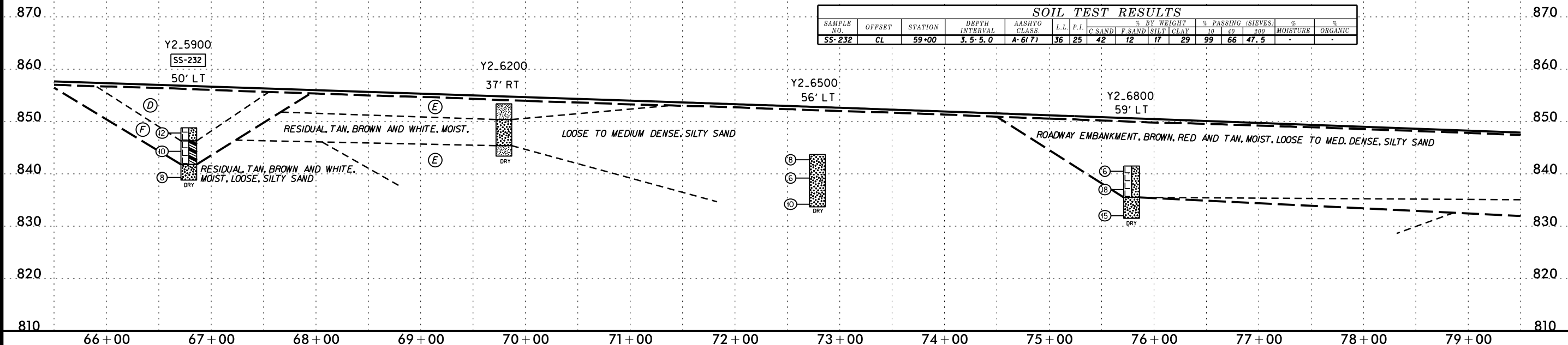


PROJECT REFERENCE NO. U-2579AA	SHEET NO. 29
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

-Y2SBL-

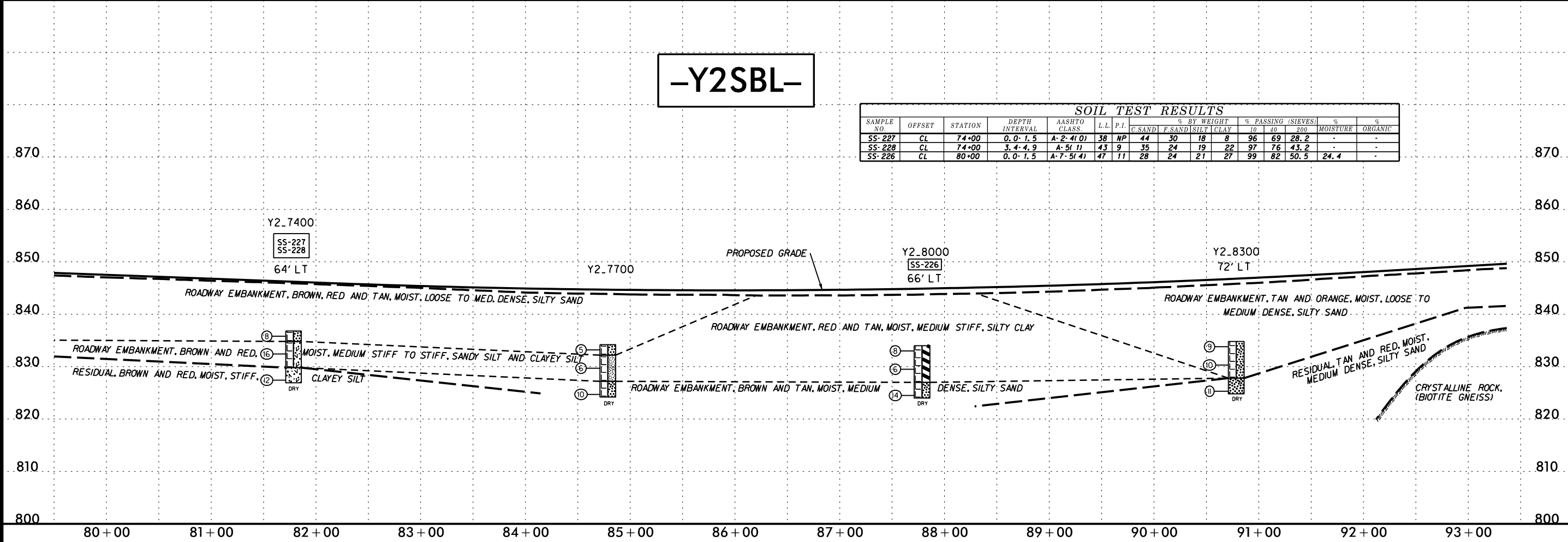
- (D) ROADWAY EMBANKMENT, BROWN AND RED, MOIST, MEDIUM DENSE, SILTY SAND
- (E) RESIDUAL, RED, BROWN, TAN AND ORANGE, MOIST, MED. STIFF, SANDY SILT
- (F) ROADWAY EMBANKMENT, BROWN AND RED, MOIST, STIFF, SANDY CLAY

SOIL TEST RESULTS														
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)		% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	200		
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)		% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	200		
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



\$\$\$\$\$\$ TIME \$\$\$\$\$\$
 \$\$\$\$\$\$ DATE \$\$\$\$\$\$
 \$\$\$\$\$\$ DRAWN \$\$\$\$\$\$
 \$\$\$\$\$\$ CHECKED \$\$\$\$\$\$
 \$\$\$\$\$\$ APPROVED \$\$\$\$\$\$

5/28/98

Young & Melson
Consulting Engineers

1601 W. Wendover St.
Raleigh, NC 27609

919-771-9400
919-771-9409

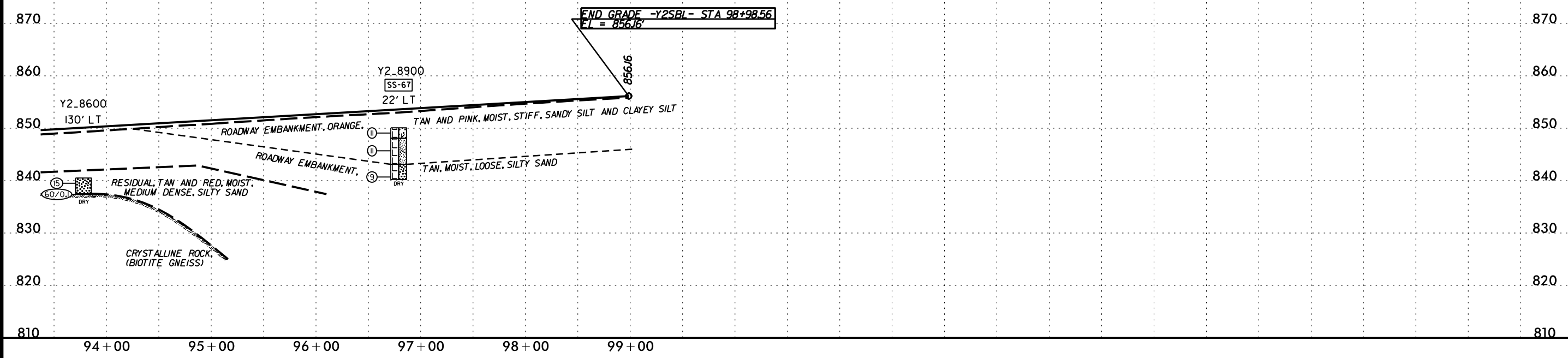
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- Beaufort, NC 255-265-8000
- Charlotte, NC 336-487-9900
- Durham, NC 919-286-8800
- Fayetteville, NC 910-437-5600
- Greensboro, NC 336-286-8800
- Hendersonville, NC 828-437-5600
- Raleigh, NC 919-771-9400
- Salisbury, NC 813-339-0700
- Winterville, NC 919-752-8800
- Washington, NC 919-542-8800
- Wilmington, NC 910-341-5600
- York, NC 815-427-5600

W
ETHERILL
ENGINEERING

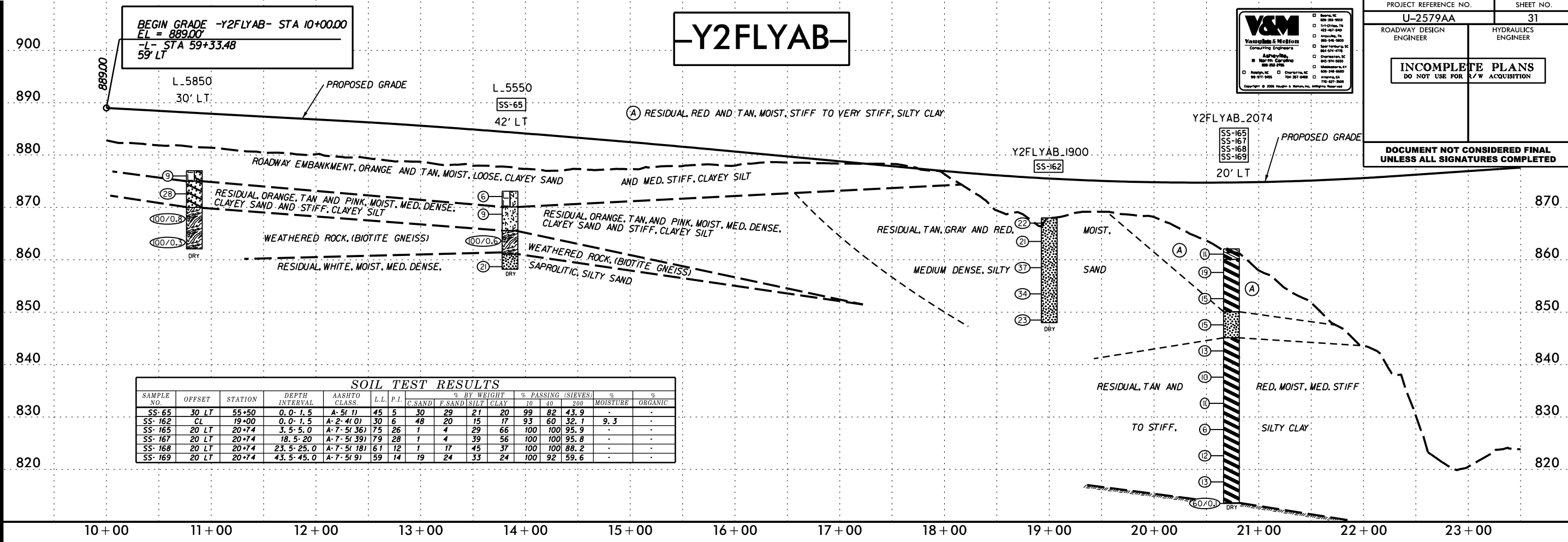
PROJECT REFERENCE NO. U-2579AA	SHEET NO. 30
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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

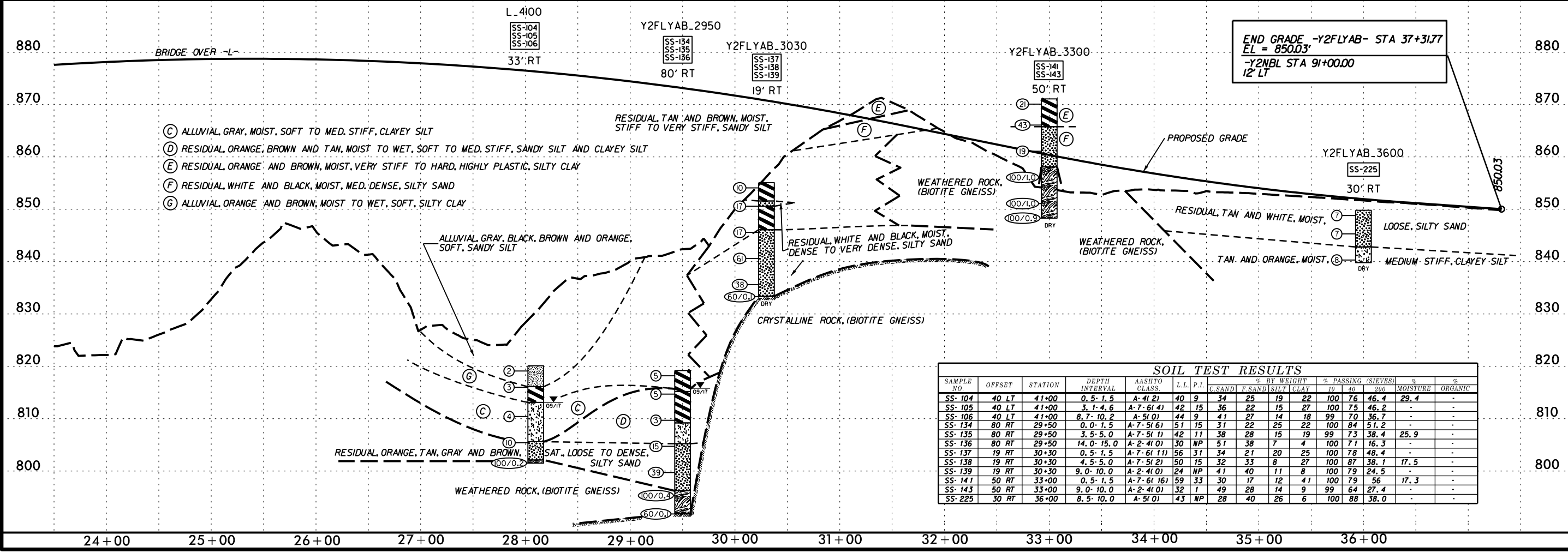


\$\$\$\$\$ TIME\$\$\$\$\$

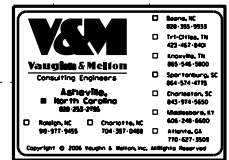
5/28/09



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(1)	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	-	-



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

ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

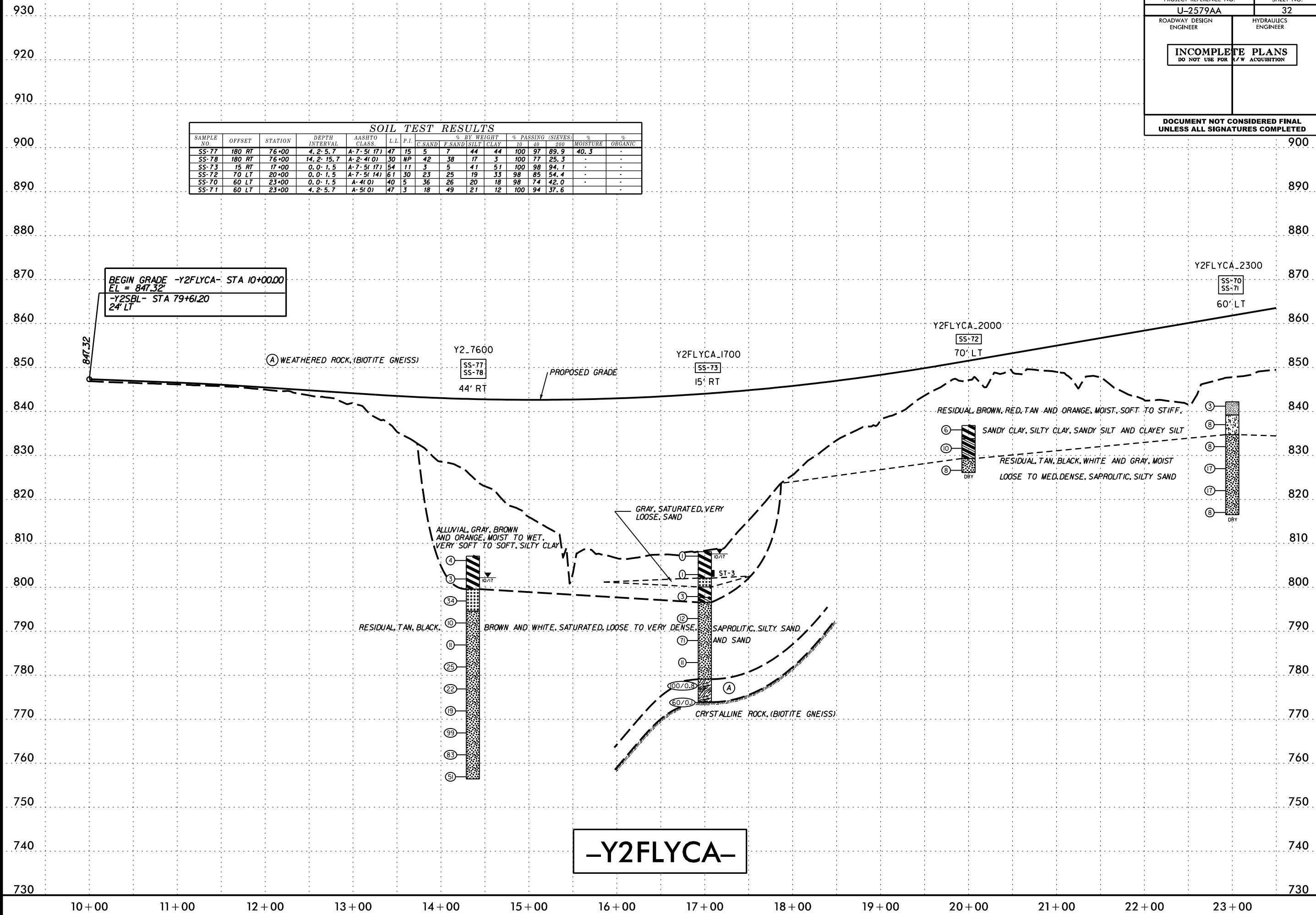
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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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				% 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	-	
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	-	



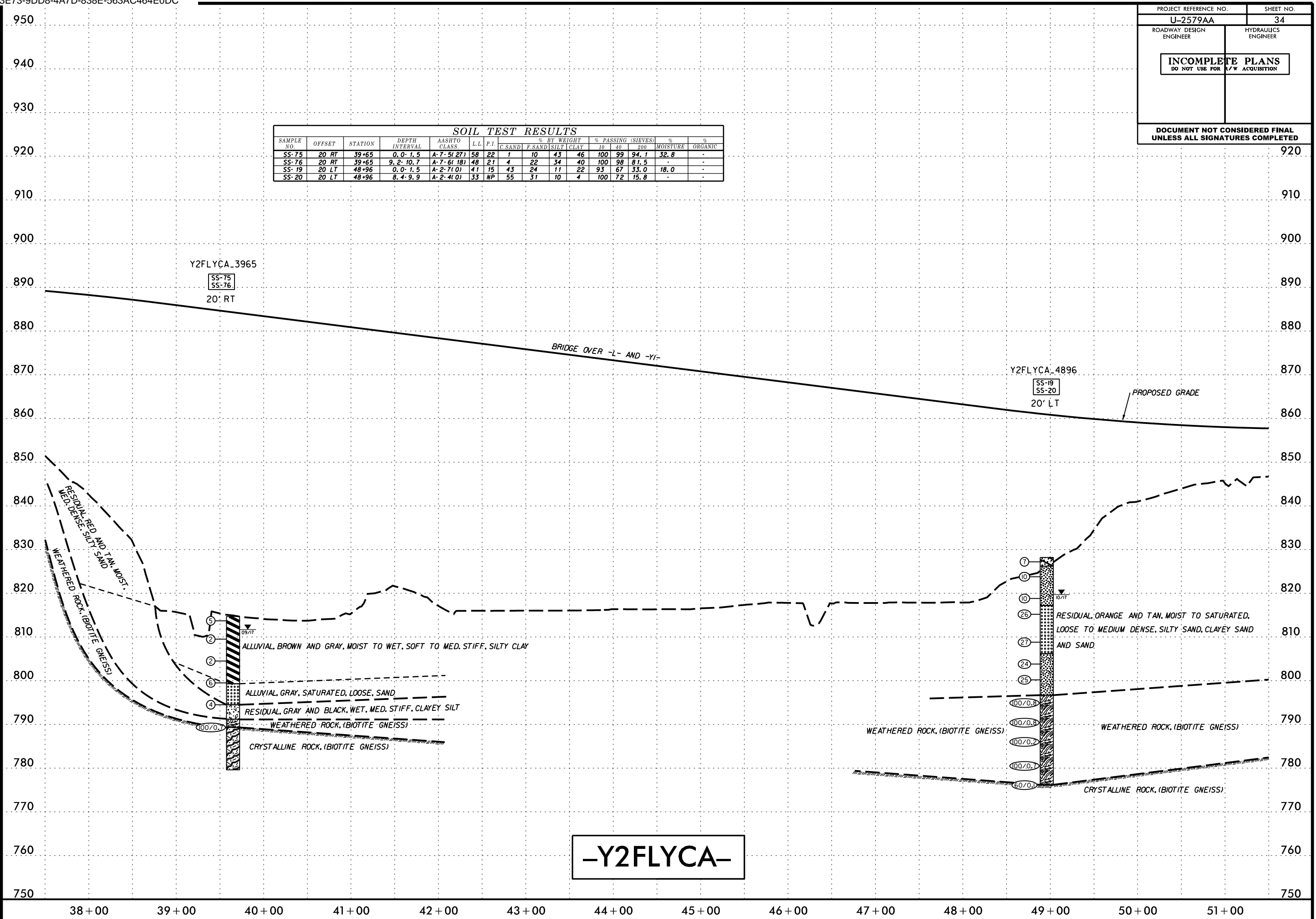
5/14/99
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-Y2FLYCA-

5/14/99
 Y2FLYCA
 TIME
 DESIGN
 SHEET

PROJECT REFERENCE NO. U-2579AA	SHEET NO. 34
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

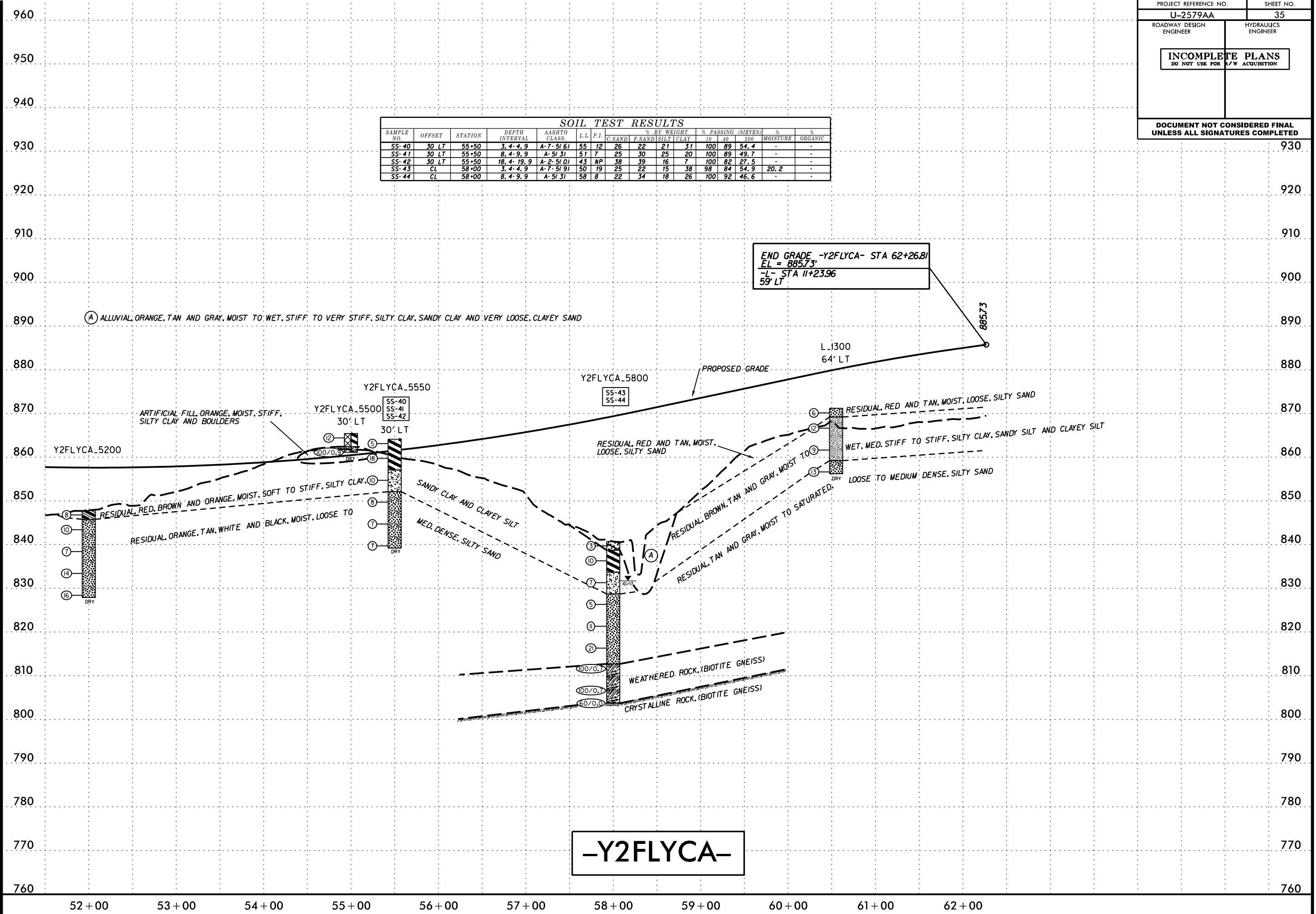
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)		% MOISTURE		% ORGANIC	
							C. SAND	F. SAND	SILT	CLAY	10	40	200			
SS-75	20 RT	39+65	0.0-1.5	A-7-5(27)	58	22	1	10	43	46	100	99	94.1	32.8	-	-
SS-76	20 RT	39+65	9.2-10.7	A-7-6(18)	48	21	4	22	34	40	100	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	-	-	



-Y2FLYCA-

PROJECT REFERENCE NO. U-2579AA	SHEET NO. 35
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		
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	-

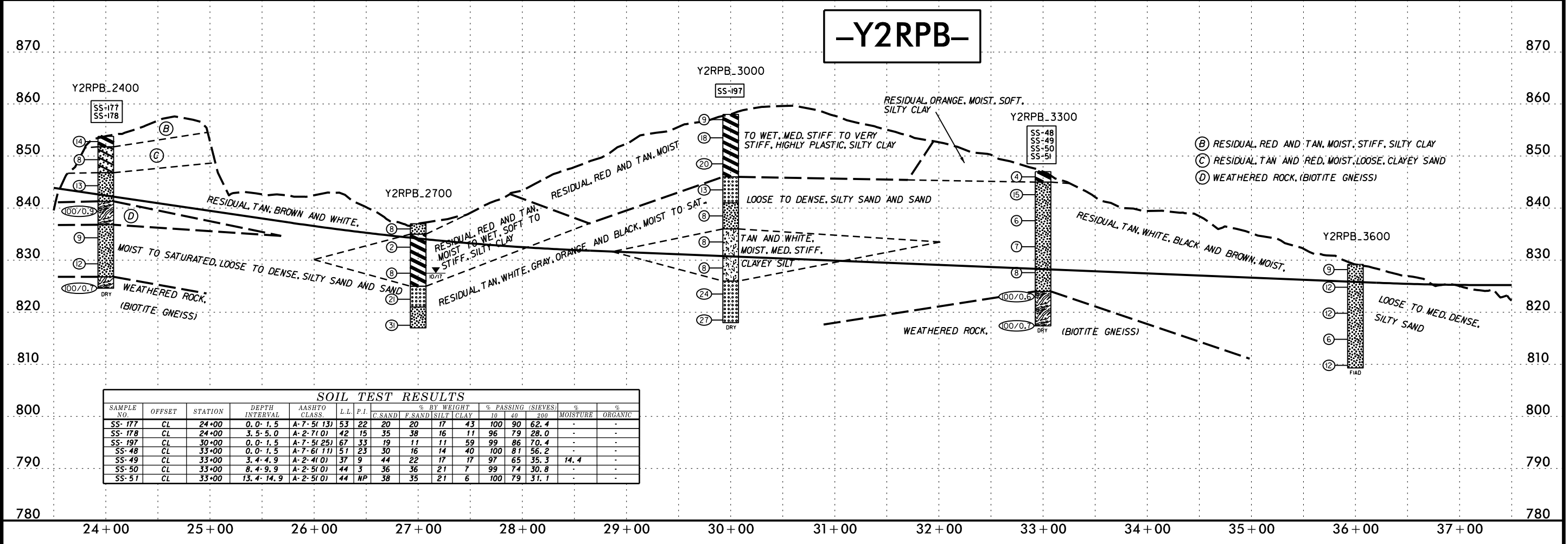
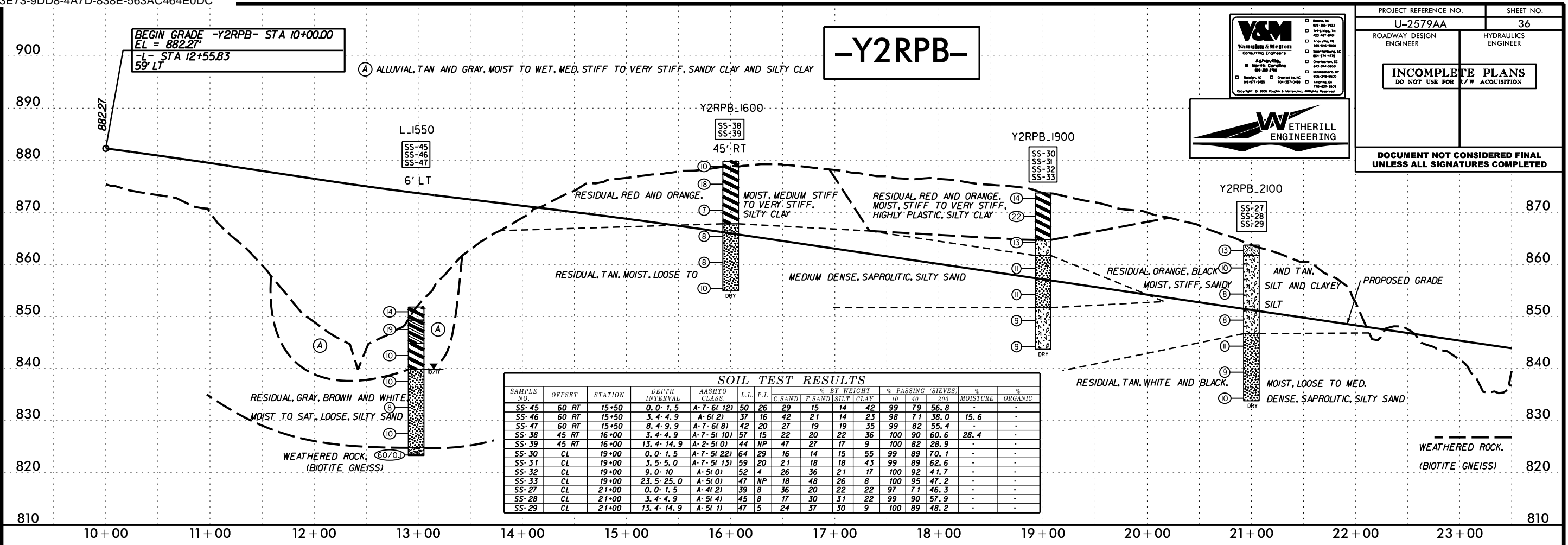
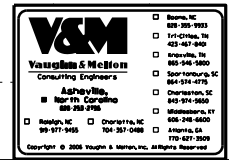


-Y2FLYCA-

5/14/99
SCHEMATIC DESIGN

5/28/09

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	

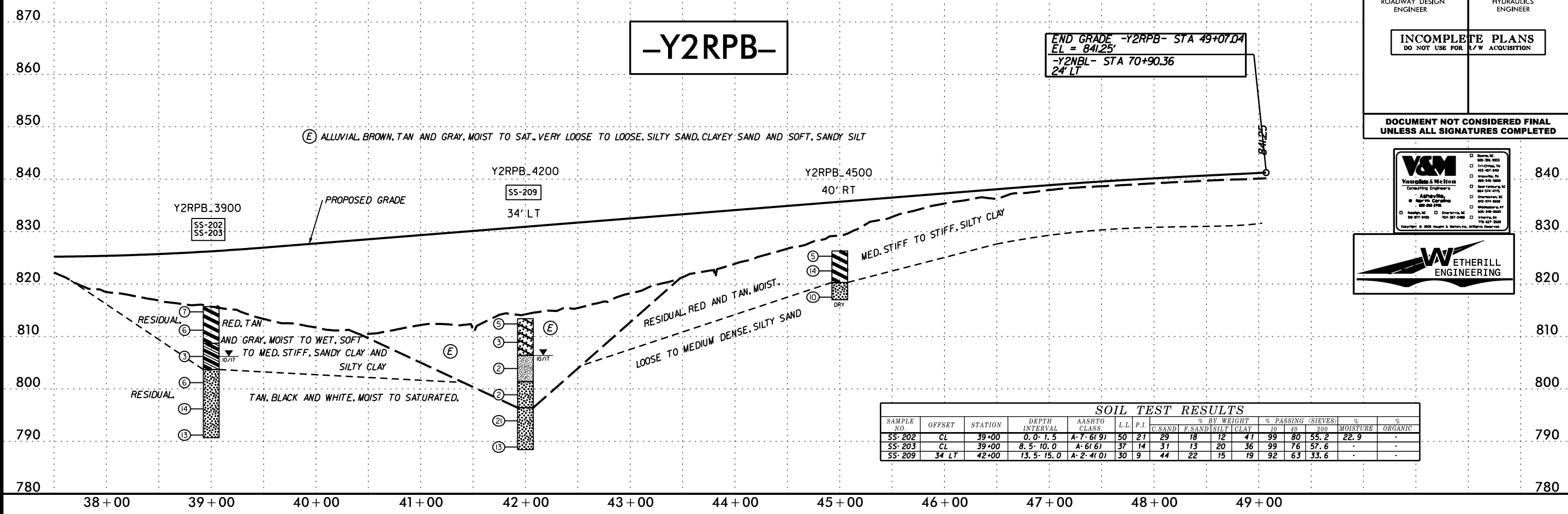


5/28/98

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	

-Y2RPB-

END GRADE -Y2RPB- STA 49+07.04
EL = 841.25'
-Y2NBL- STA 70+90.36
24' LT

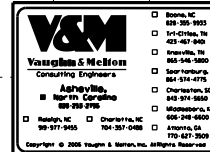


SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS	L.L.	P.I.	% BY WEIGHT			% PASSING (SIEVES)		% MOISTURE	% ORGANIC	
							F. SAND	F. SAND	SILT/CLAY	10	40			
SS-202	CL	39+00	0.0'-1.5'	A-7-6(9)	50	21	29	18	12	41	99	80	55.2	22.9
SS-203	CL	39+00	8.5'-10.0'	A-6(6)	37	14	31	13	20	36	99	76	57.6	-
SS-209	34' LT	42+00	13.5'-15.0'	A-2-4(0)	30	9	44	22	15	19	92	63	33.6	-



SCHEMATIC

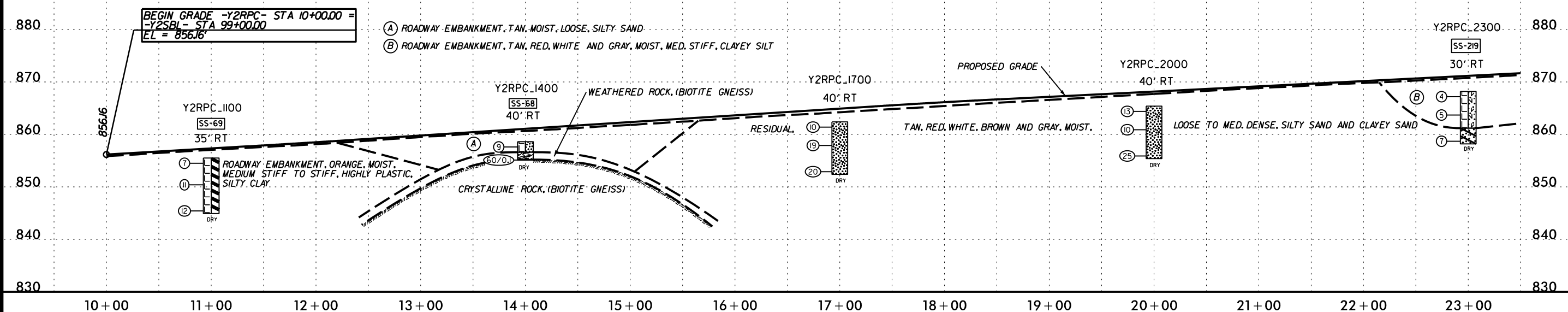
5/28/98



PROJECT REFERENCE NO. U-2579AA	SHEET NO. 38
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

-Y2RPC-

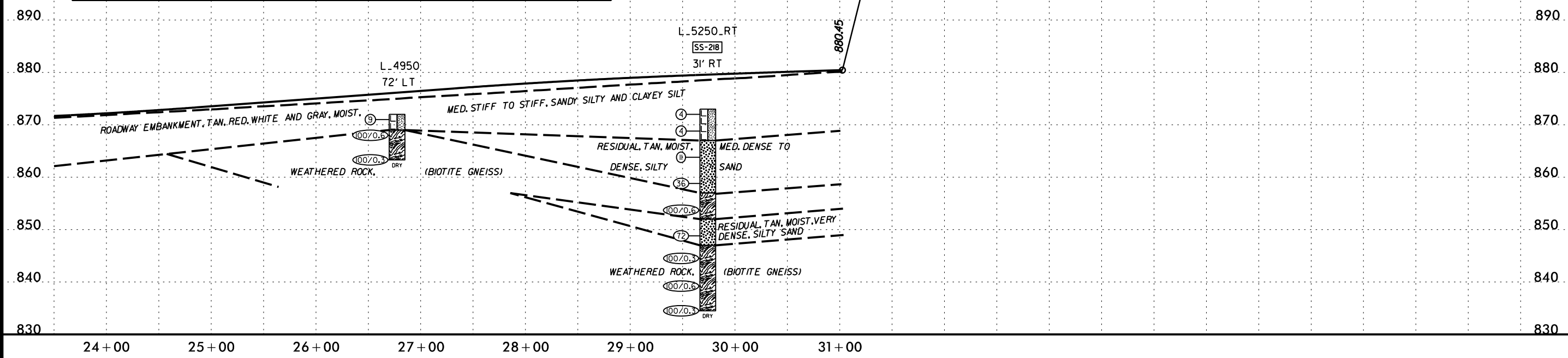
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)		% MOISTURE	% ORGANIC
							C SAND	F SAND	SILT	CLAY	10	200		
SS-68	40 RT	14+00	0.0-1.5	A-2-4(1)	33	NP	45	31	16	8	97	68	27.1	-
SS-69	35 RT	11+00	0.0-1.5	A-7-6(17)	55	27	21	16	18	45	99	85	64.6	-
SS-219	30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

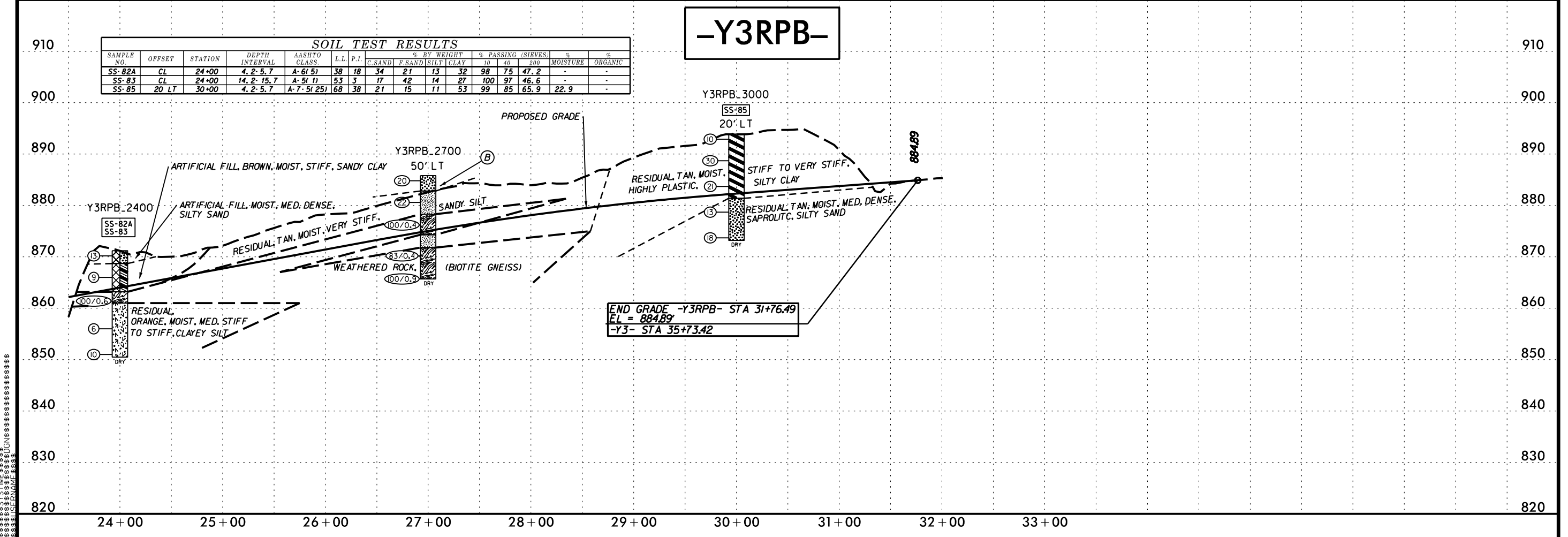
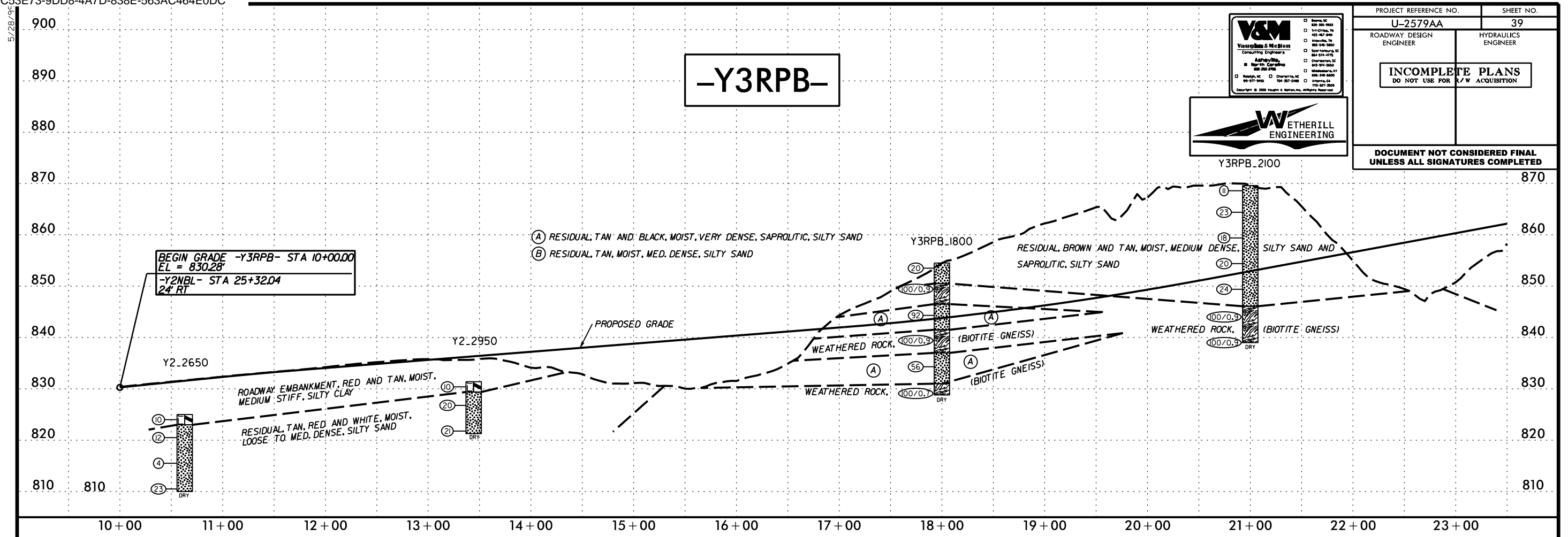


-Y2RPC-

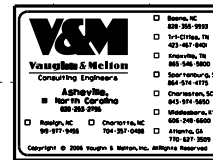
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)		% MOISTURE	% ORGANIC
							C SAND	F SAND	SILT	CLAY	10	200		
SS-218	90 RT	52+50	0.0-1.5	A-5(3)	42	10	33	21	19	27	96	75	47.5	22.5

END GRADE -Y2RPC- STA 31+02.54
EL = 880.45'
-L- STA 53+79J3
59' LT





5/28/98

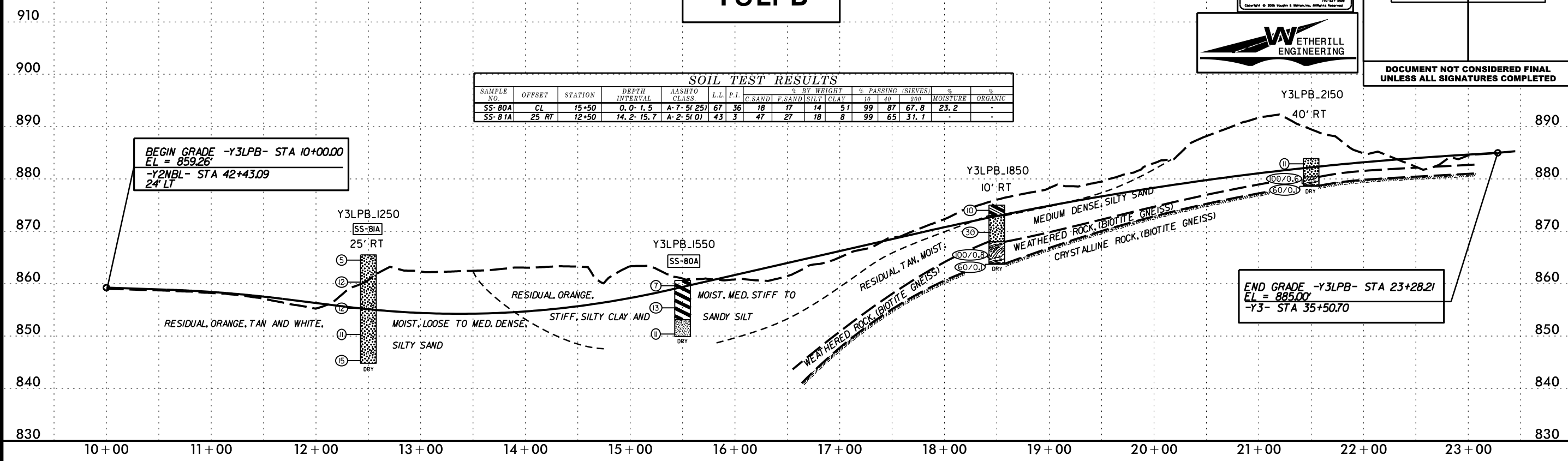


PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	41
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

-Y3LPB-

SOIL TEST RESULTS

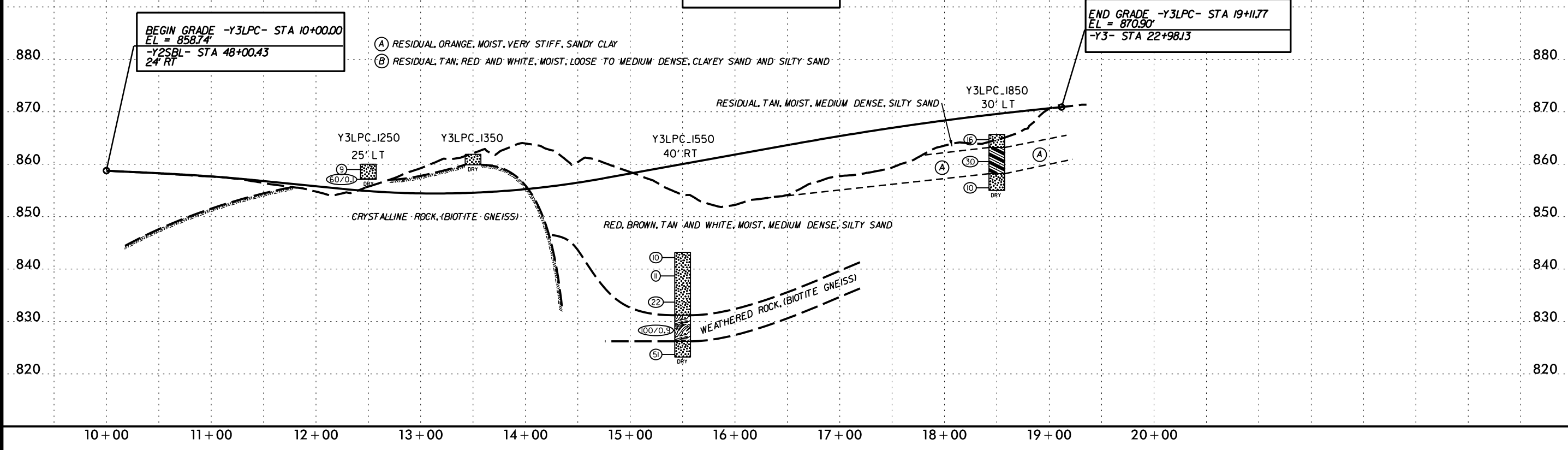
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)		MOISTURE	ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40		
SS-80A	CL	15+50	0.0'-1.5'	A-7-5(25)	67	36	18	17	14	51	99	87	67.8	23.2
SS-81A	25' RT	12+50	14.2'-15.7'	A-2-5(0)	43	3	47	27	18	8	99	65	31.1	-



BEGIN GRADE -Y3LPB- STA 10+00.00
EL = 859.26'
-Y2NBL- STA 42+43.09
24' LT

END GRADE -Y3LPB- STA 23+28.21
EL = 885.00'
-Y3- STA 35+50.70

-Y3LPC-



BEGIN GRADE -Y3LPC- STA 10+00.00
EL = 858.74'
-Y2SBL- STA 48+00.43
24' RT

END GRADE -Y3LPC- STA 19+11.77
EL = 870.90'
-Y3- STA 22+98.13

- (A) RESIDUAL, ORANGE, MOIST, VERY STIFF, SANDY CLAY
- (B) RESIDUAL, TAN, RED AND WHITE, MOIST, LOOSE TO MEDIUM DENSE, CLAYEY SAND AND SILTY SAND

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 \$\$\$\$\$\$DATE\$\$\$\$\$\$
 \$\$\$\$\$\$DRAWN\$\$\$\$\$\$
 \$\$\$\$\$\$CHECKED\$\$\$\$\$\$
 \$\$\$\$\$\$DATE\$\$\$\$\$\$
 \$\$\$\$\$\$BY\$\$\$\$\$\$

5/28/96

-Y4-

V&M
 Young & McElroy
 Consulting Engineers
 Raleigh, NC
 919-781-9700
 919-781-9705

Baltimore, MD
 410-528-9833
 410-528-9838
 410-528-9840
 410-528-9842
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 410-528-9846
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W **ETHERILL**
 ENGINEERING

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

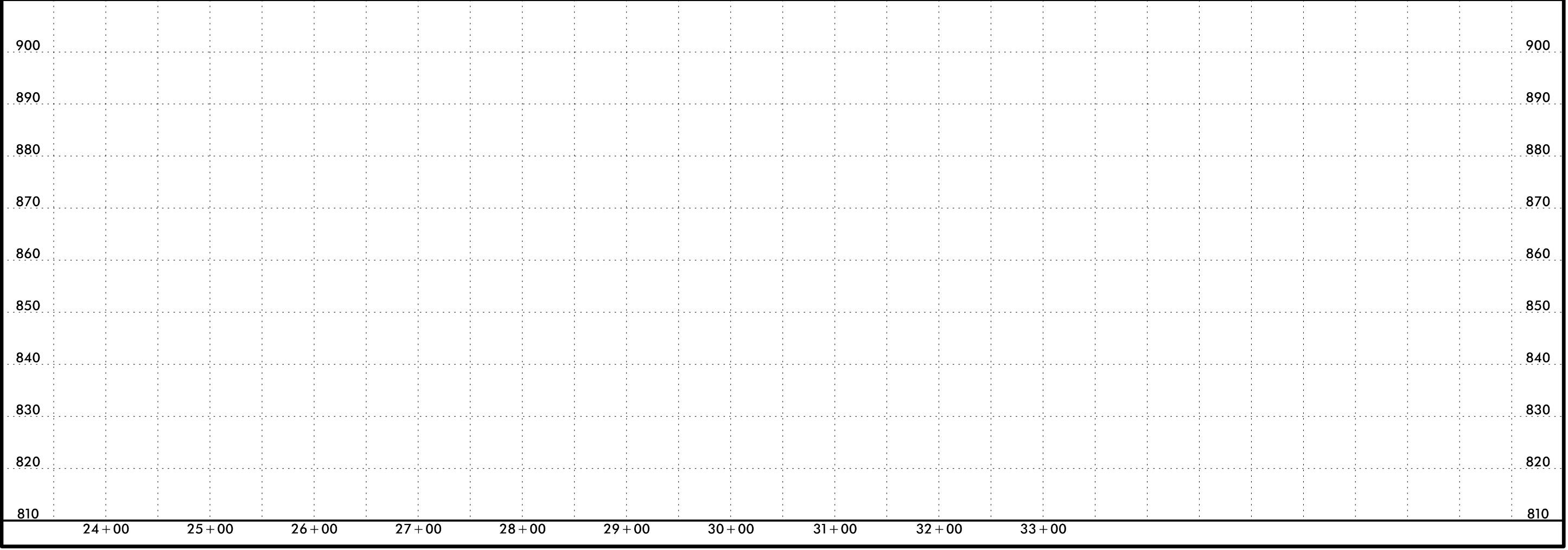
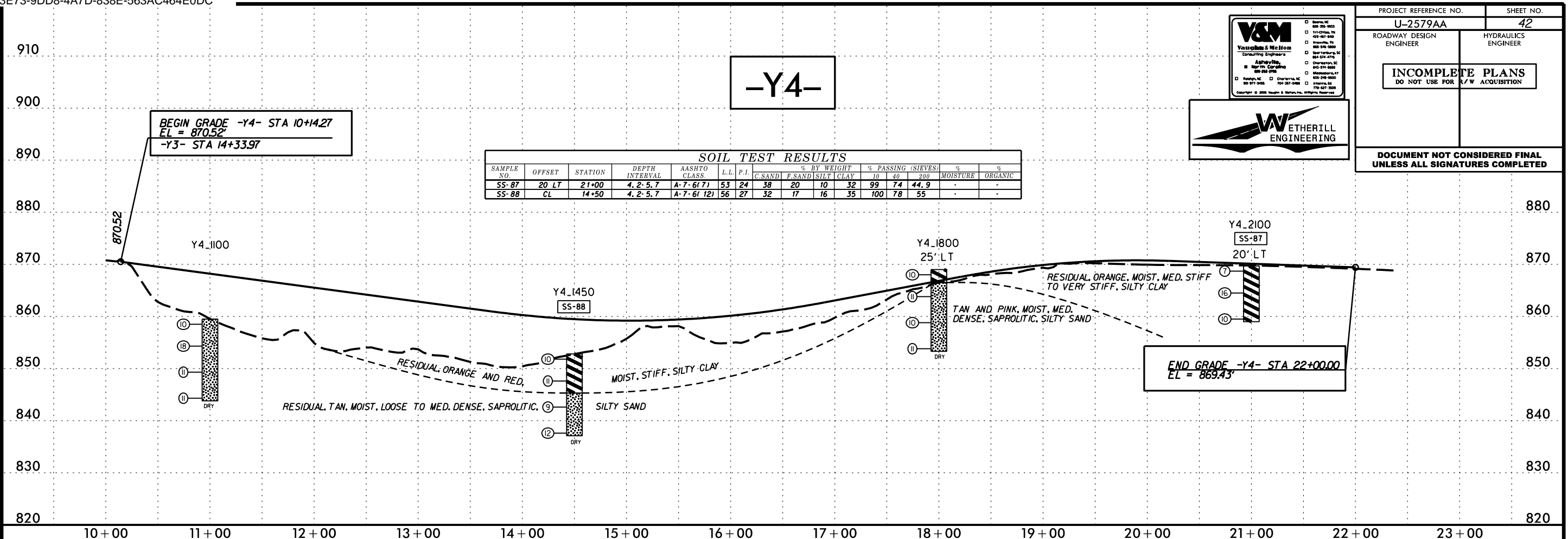
ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

INCOMPLETE PLANS
 DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

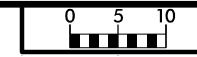
SOIL TEST RESULTS

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		
SS-87	20 LT	21+00	4.2-5.7	A-7-6(1)	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	-

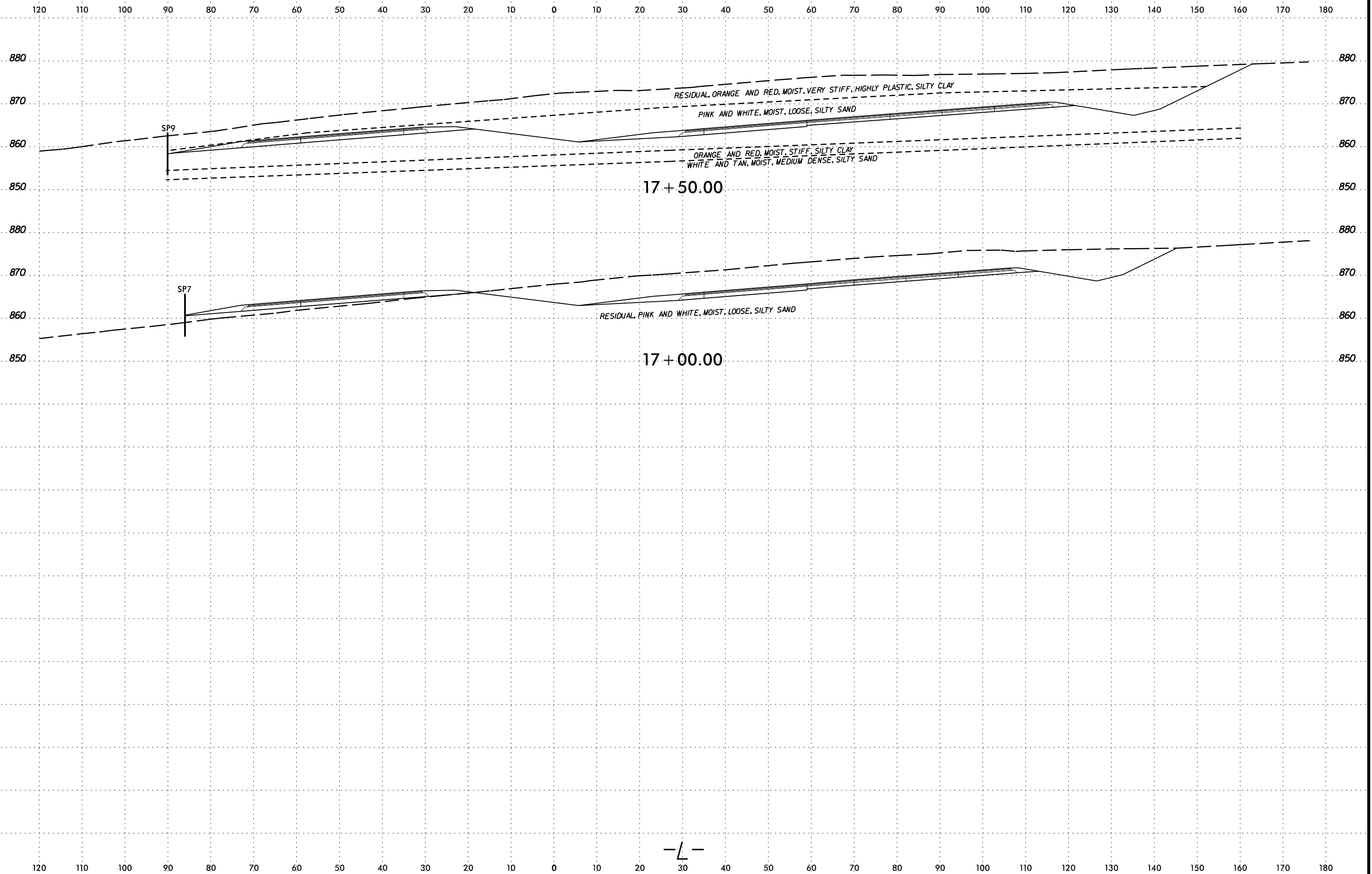


SC-2579AA-DWG

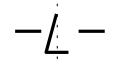
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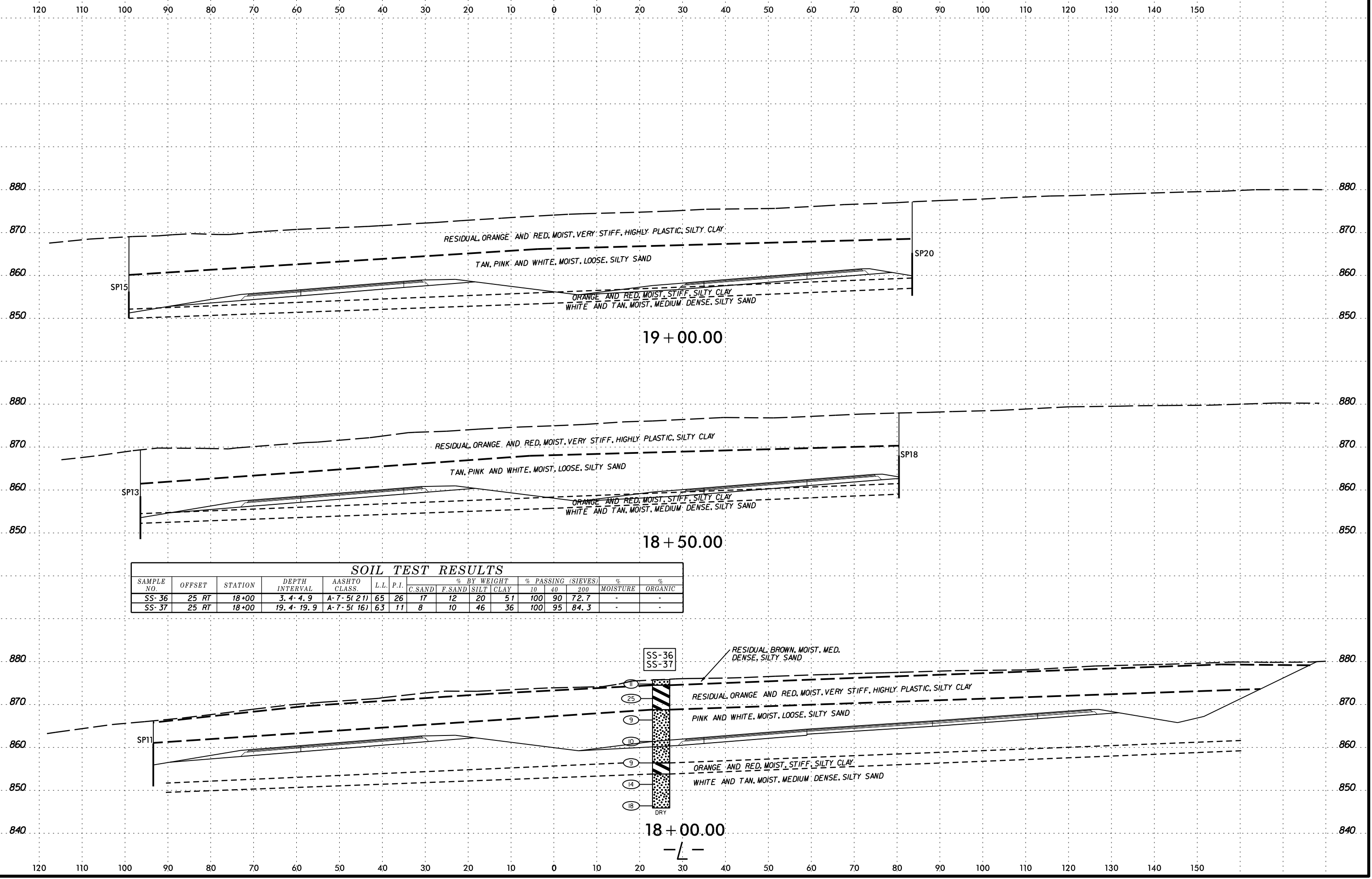


PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	43



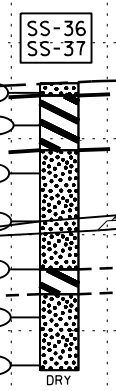
DATE: 6/23/16
SCALE: AS SHOWN
PROJECT: U-2579AA
SHEET: 43





SOIL TEST RESULTS

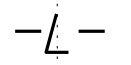
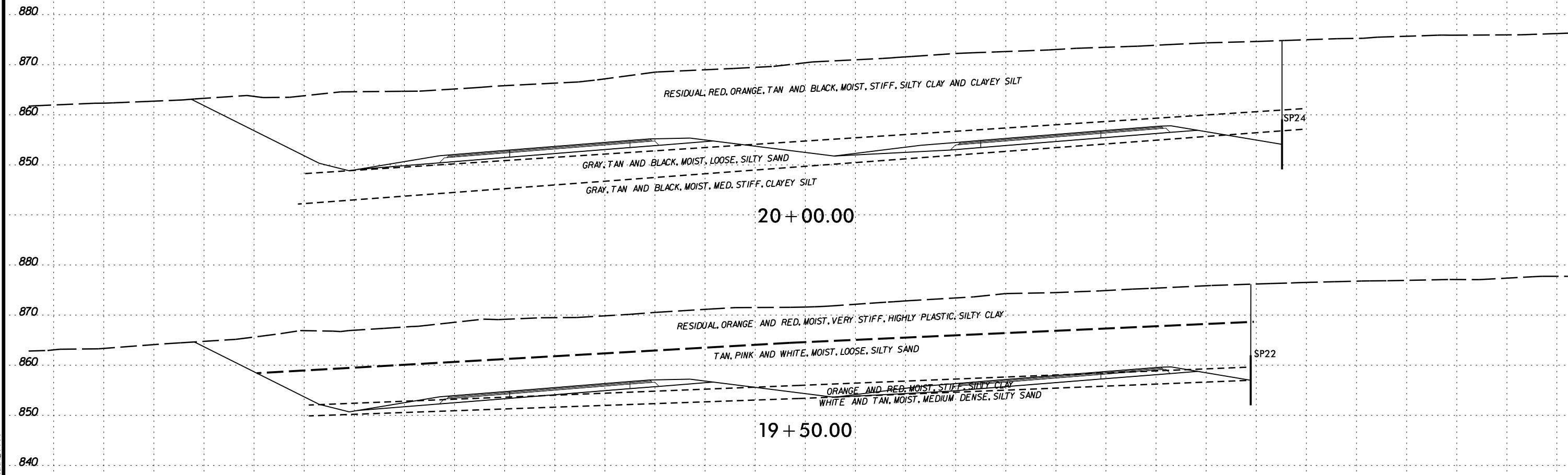
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-36	25 RT	18+00	3.4-4.9	A-7-5(21)	65	26	17	12	20	51	100	90	72.7	-	-
SS-37	25 RT	18+00	19.4-19.9	A-7-5(16)	63	11	8	10	46	36	100	95	84.3	-	-



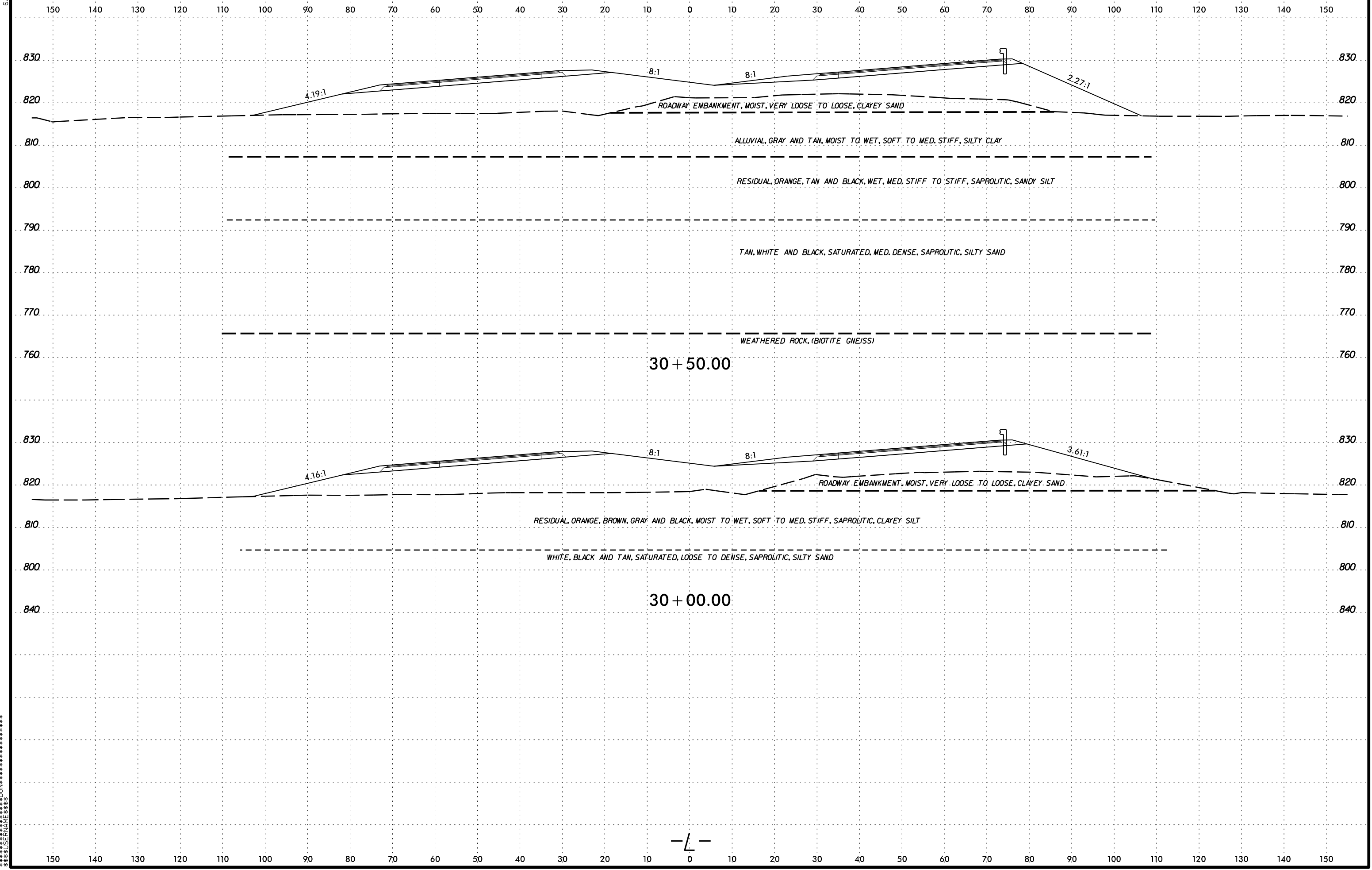
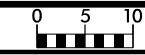
6/23/16

DATE: 6/23/16

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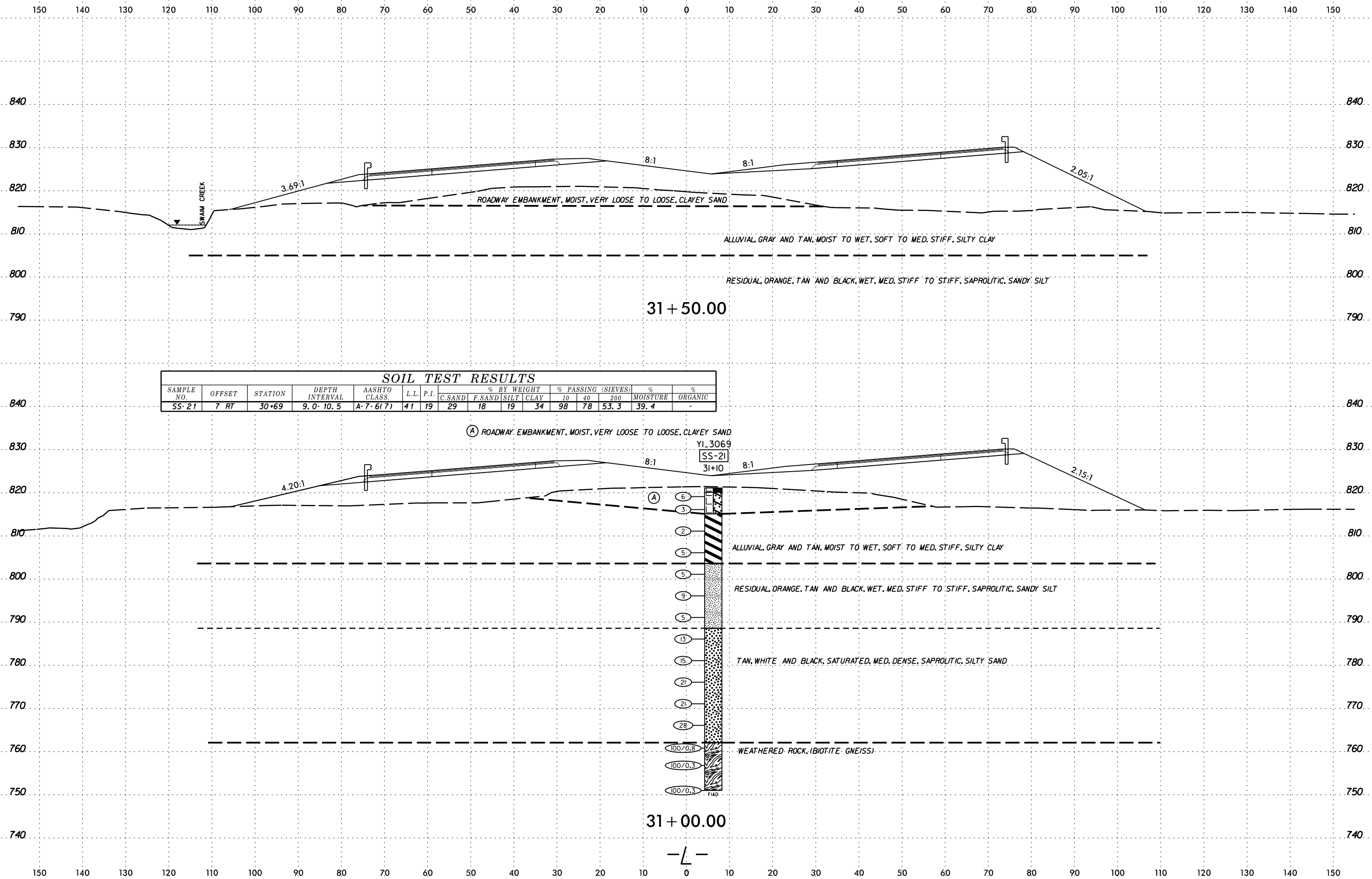


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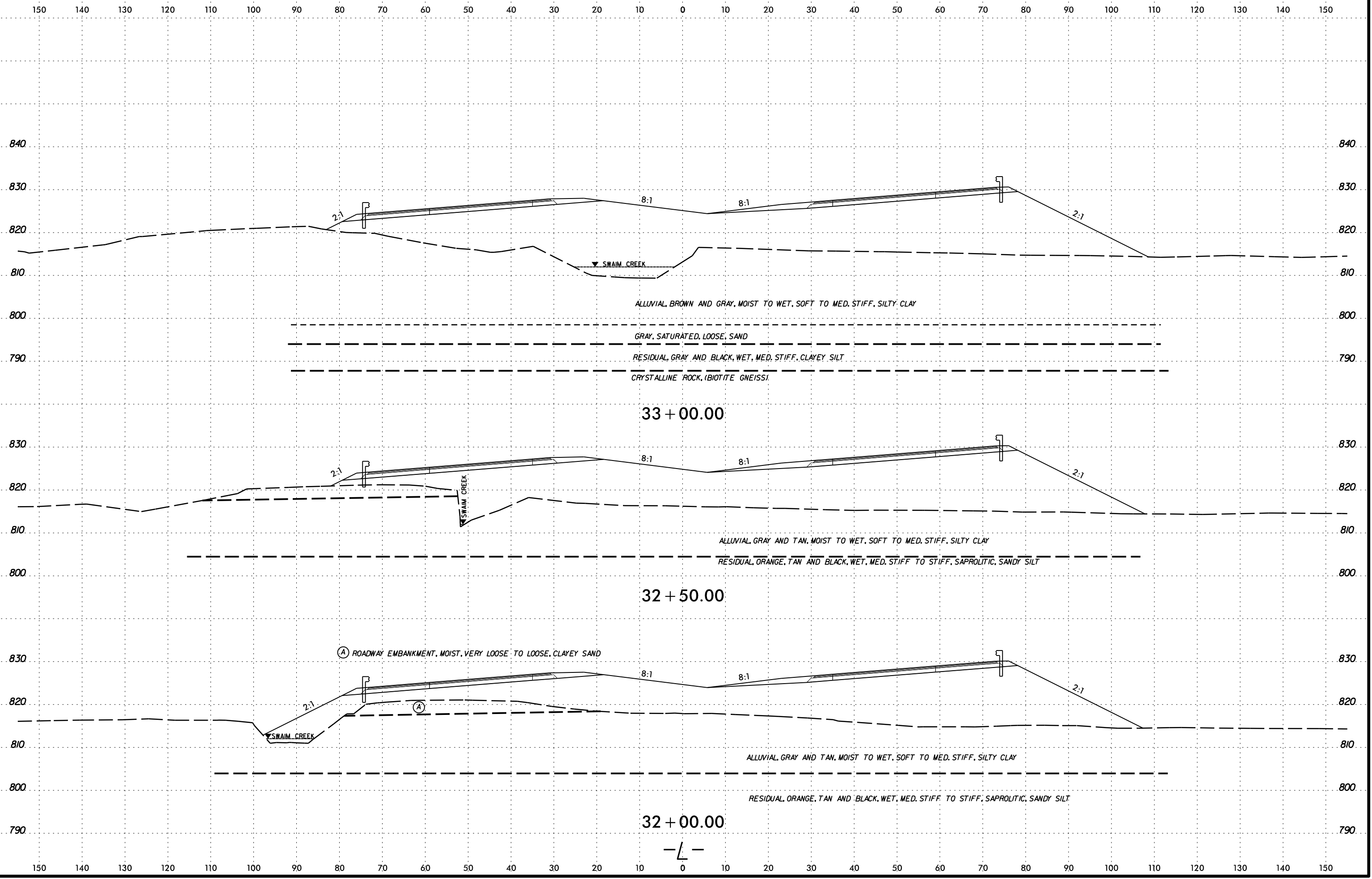


6/23/16



6/23/16
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 DIVISION
 STATE OF ALABAMA
 DEPARTMENT OF TRANSPORTATION

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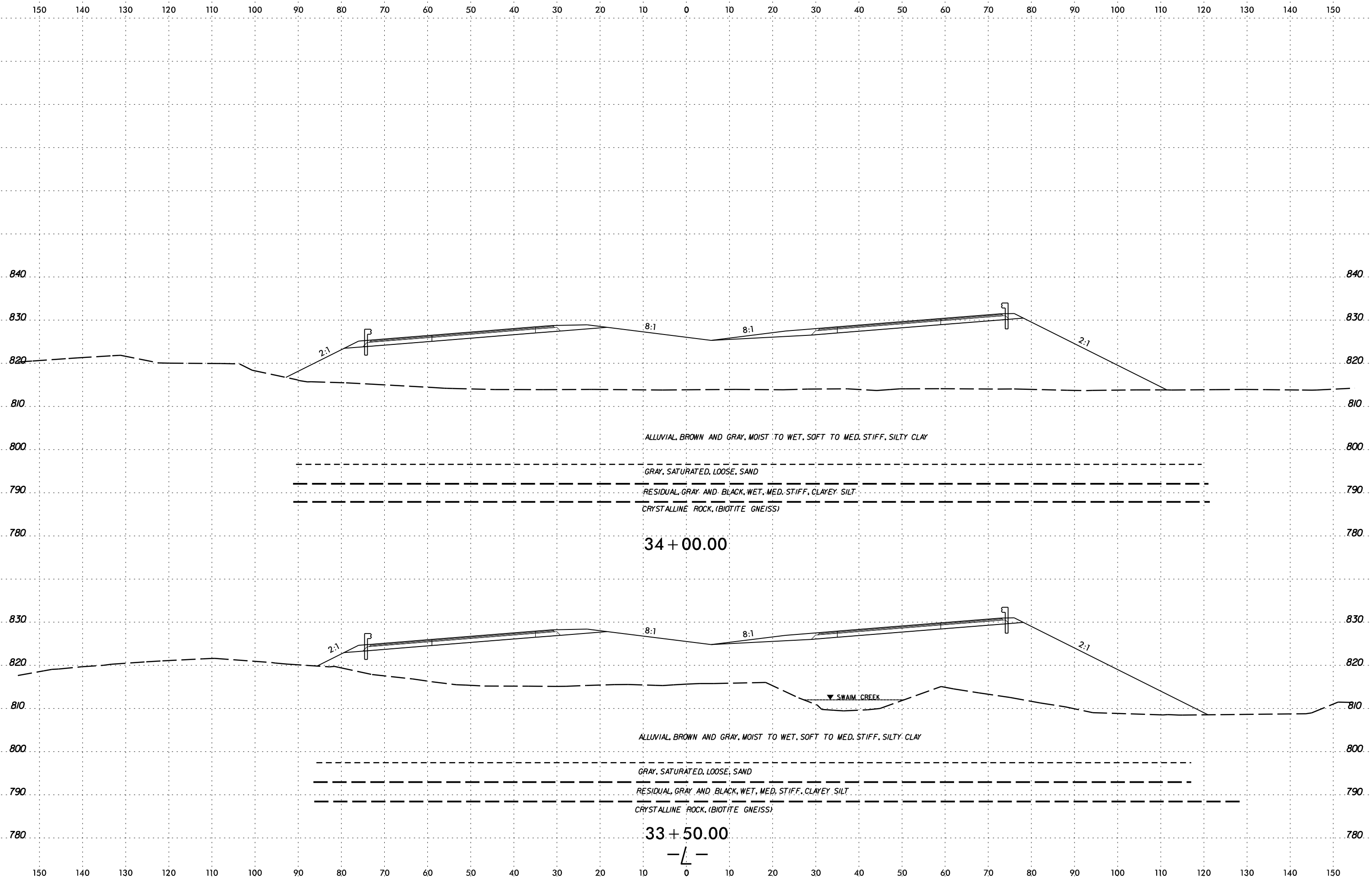
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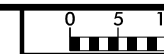
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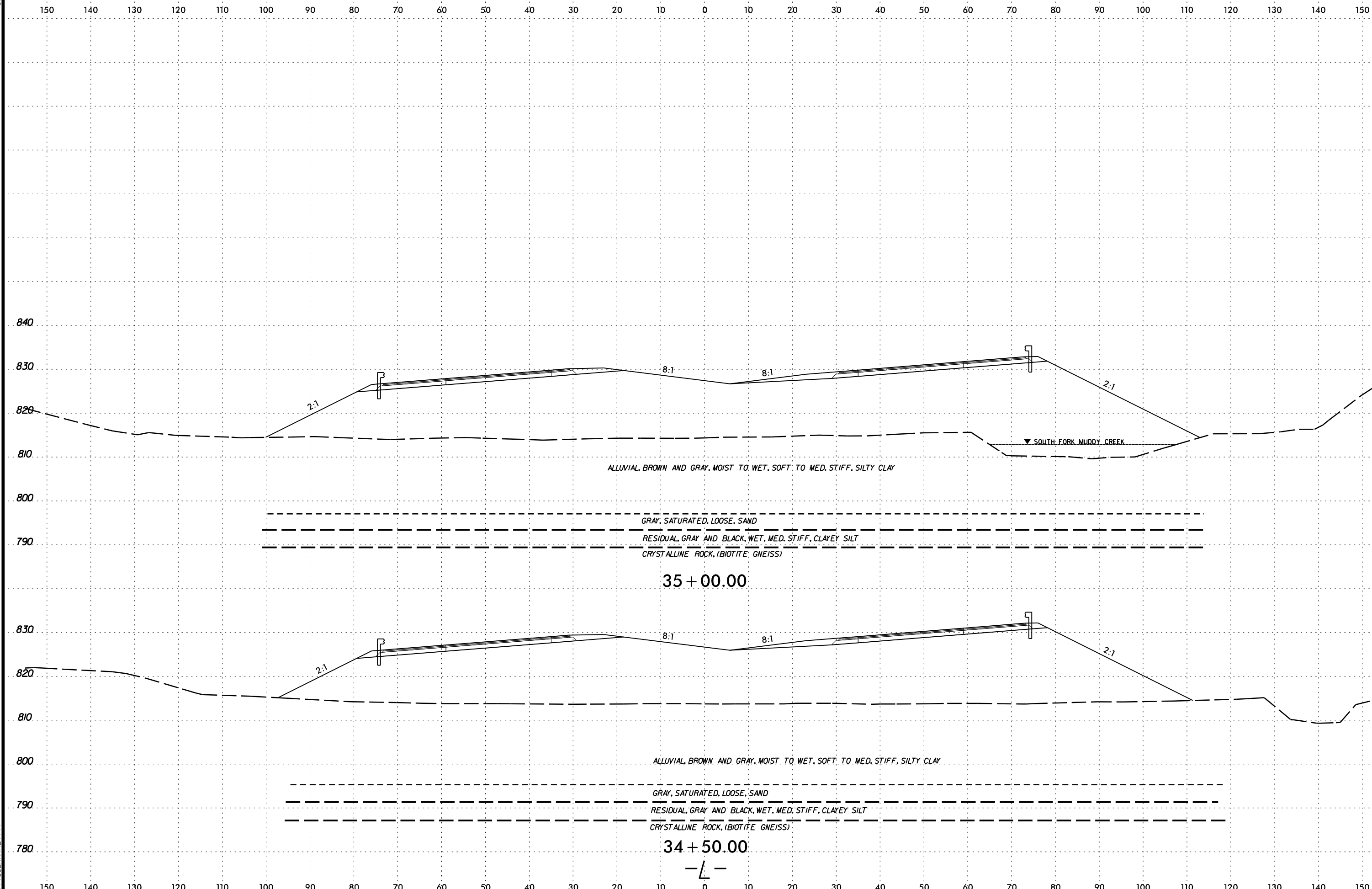
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U-2579AA	49



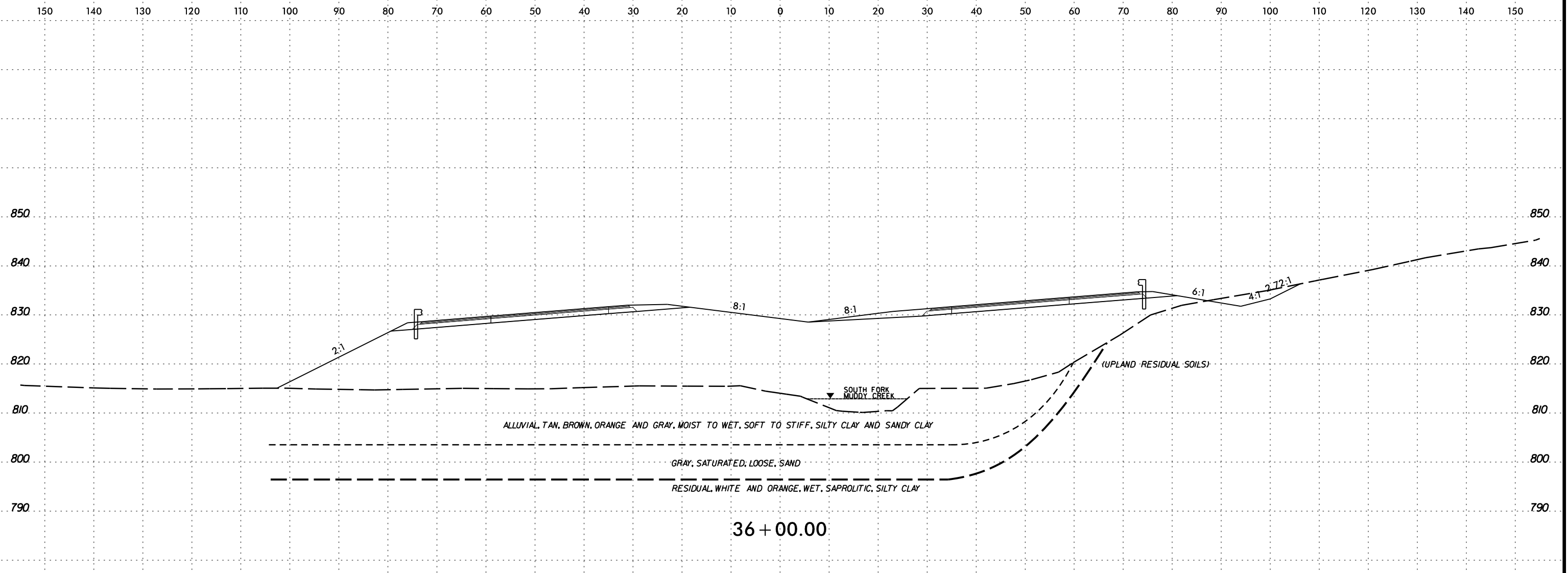
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PROJ. REFERENCE NO.	SHEET NO.
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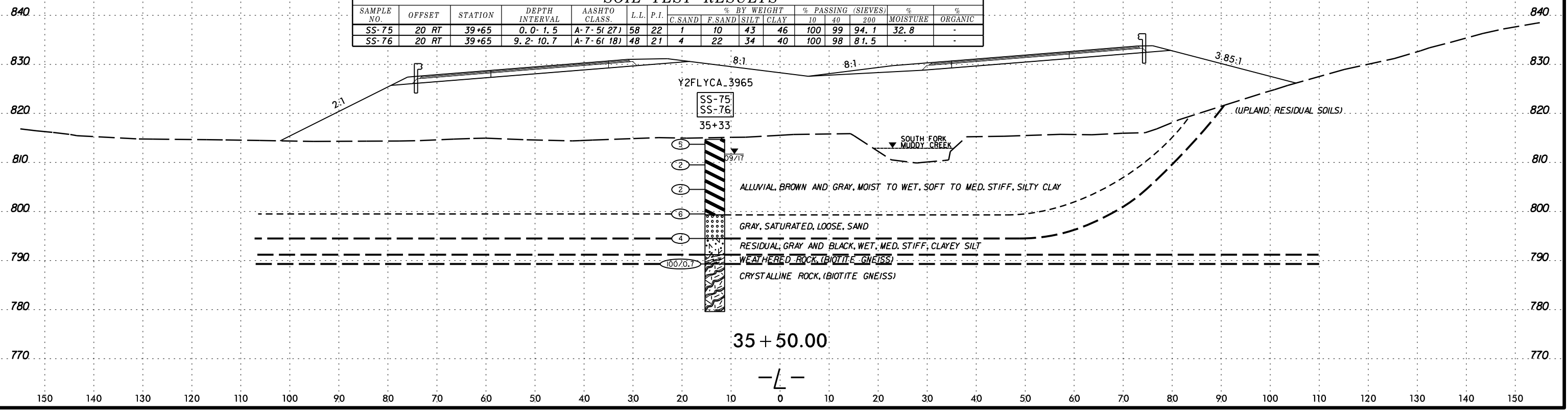


6/23/16
SCHEMATIC
PLAN
SECTION
DRAWING



36 + 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-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	-	-



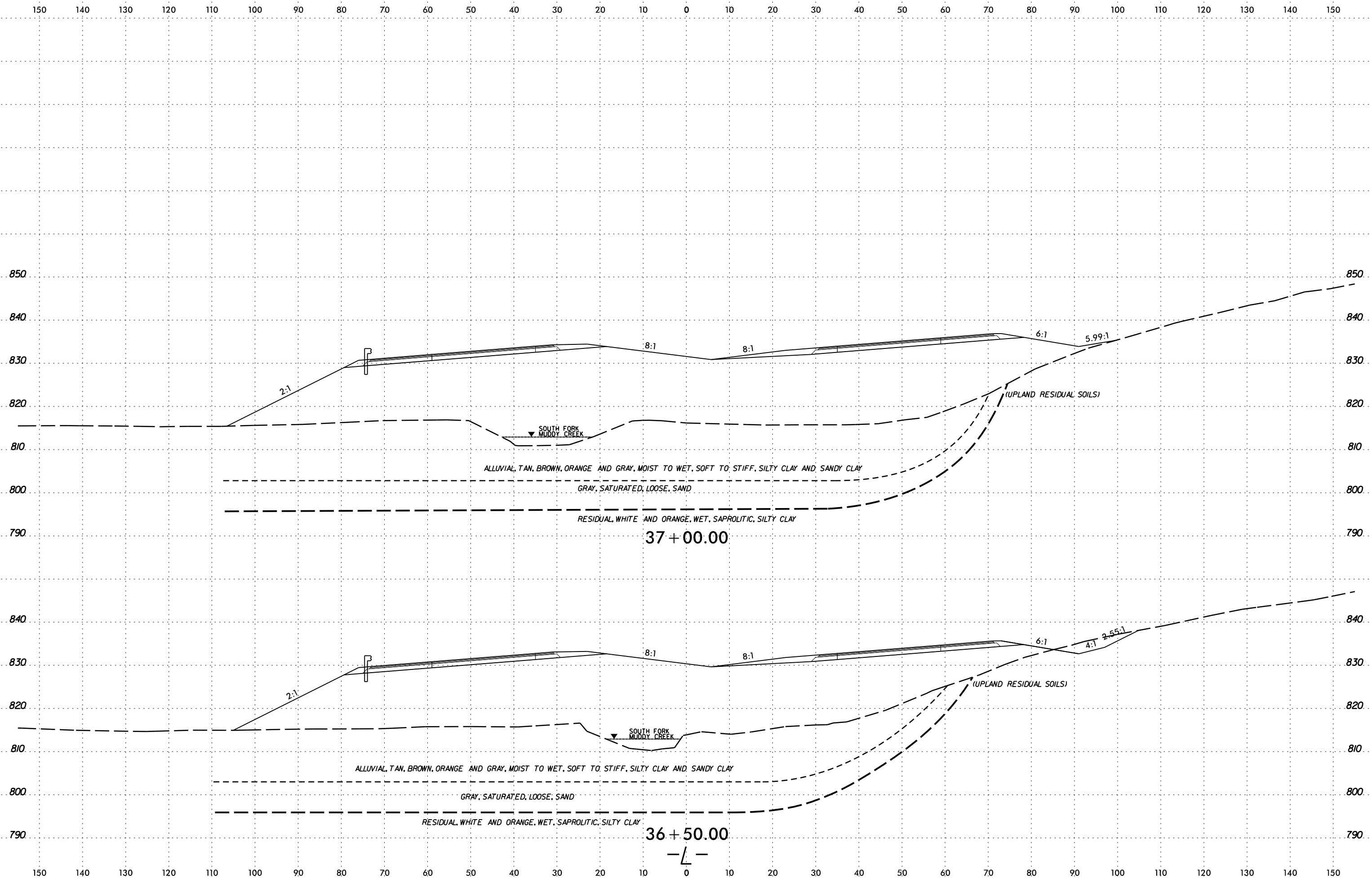
35 + 50.00

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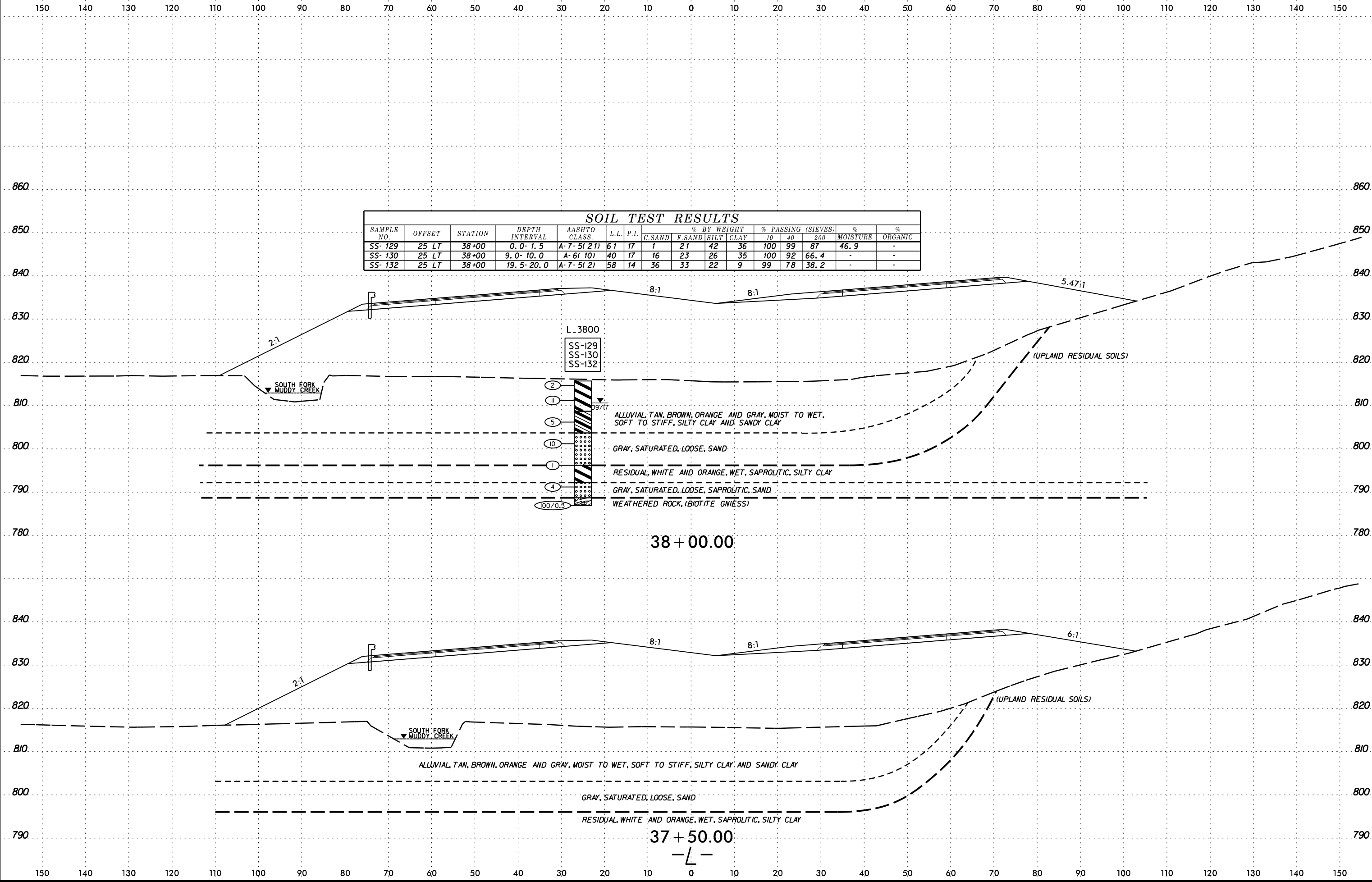
6/23/16



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

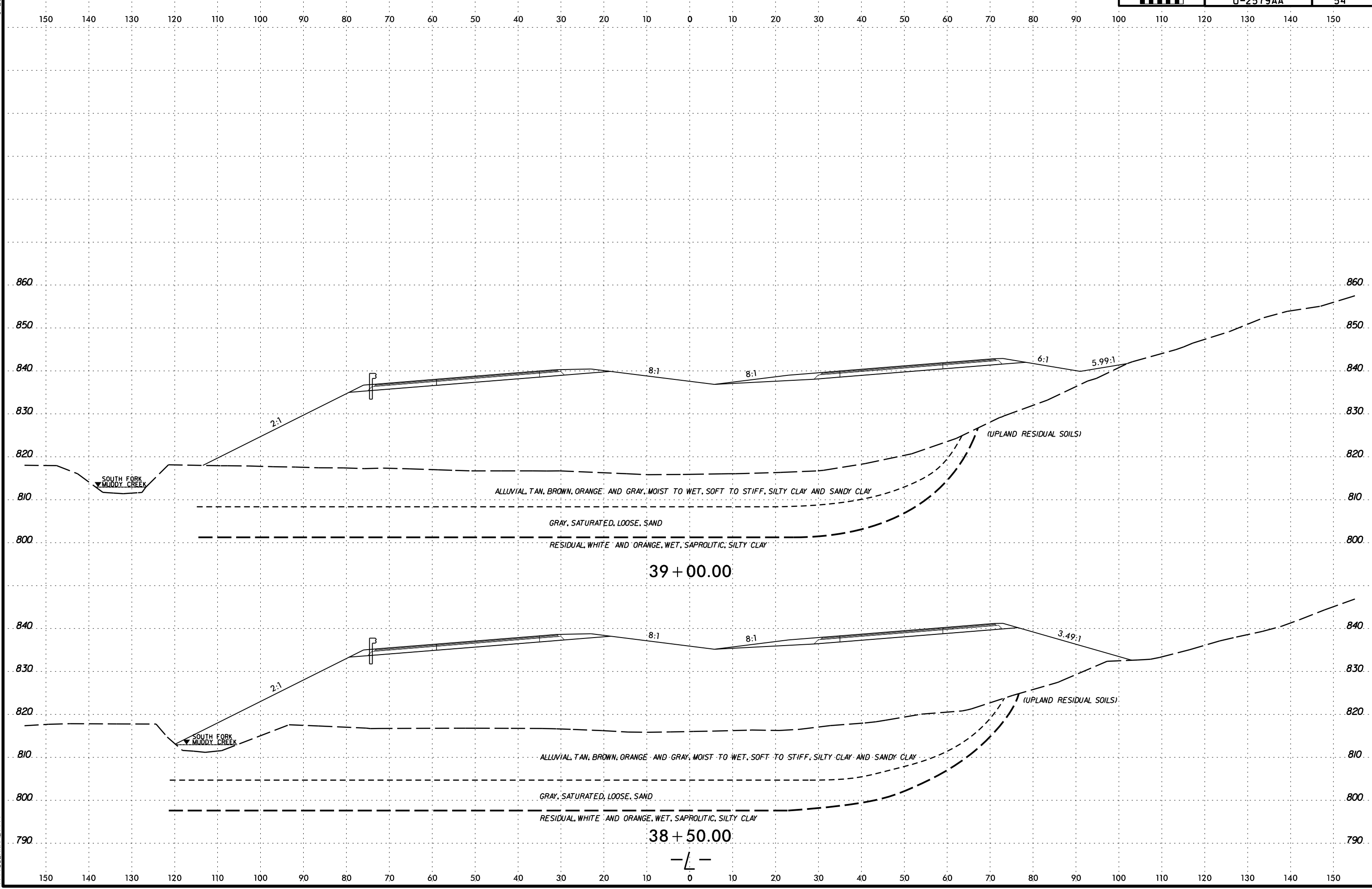


SYTIME CONSTRUCTION SERVICES



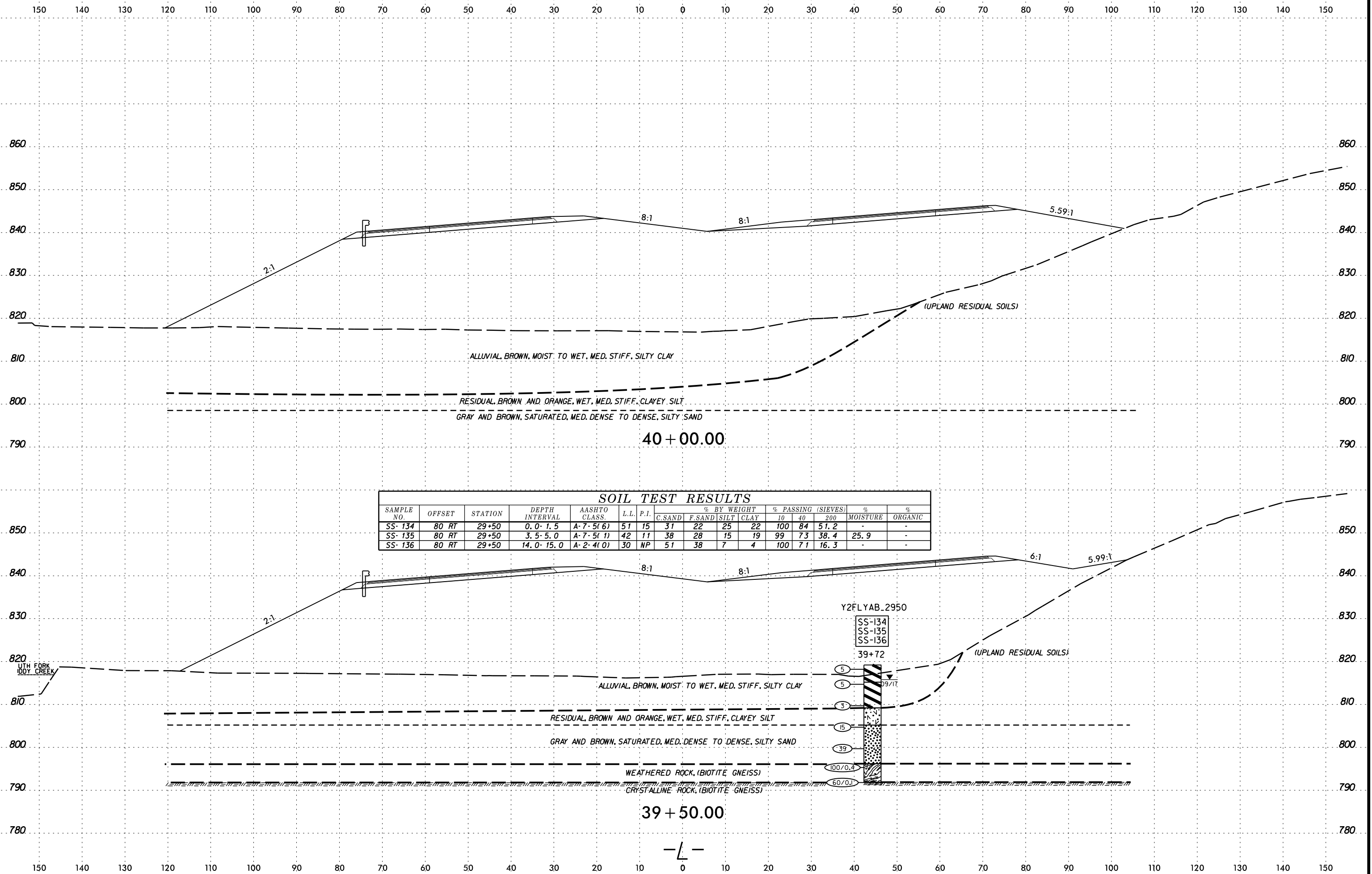
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-129	25 LT	38+00	0.0- 1.5	A-7-5(21)	61	17	1	21	42	36	100	99	87	46.9	-
SS-130	25 LT	38+00	9.0- 10.0	A-6(10)	40	17	16	23	26	35	100	92	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	-	-

DATE: 6/23/16



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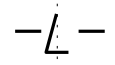
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-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	-	-

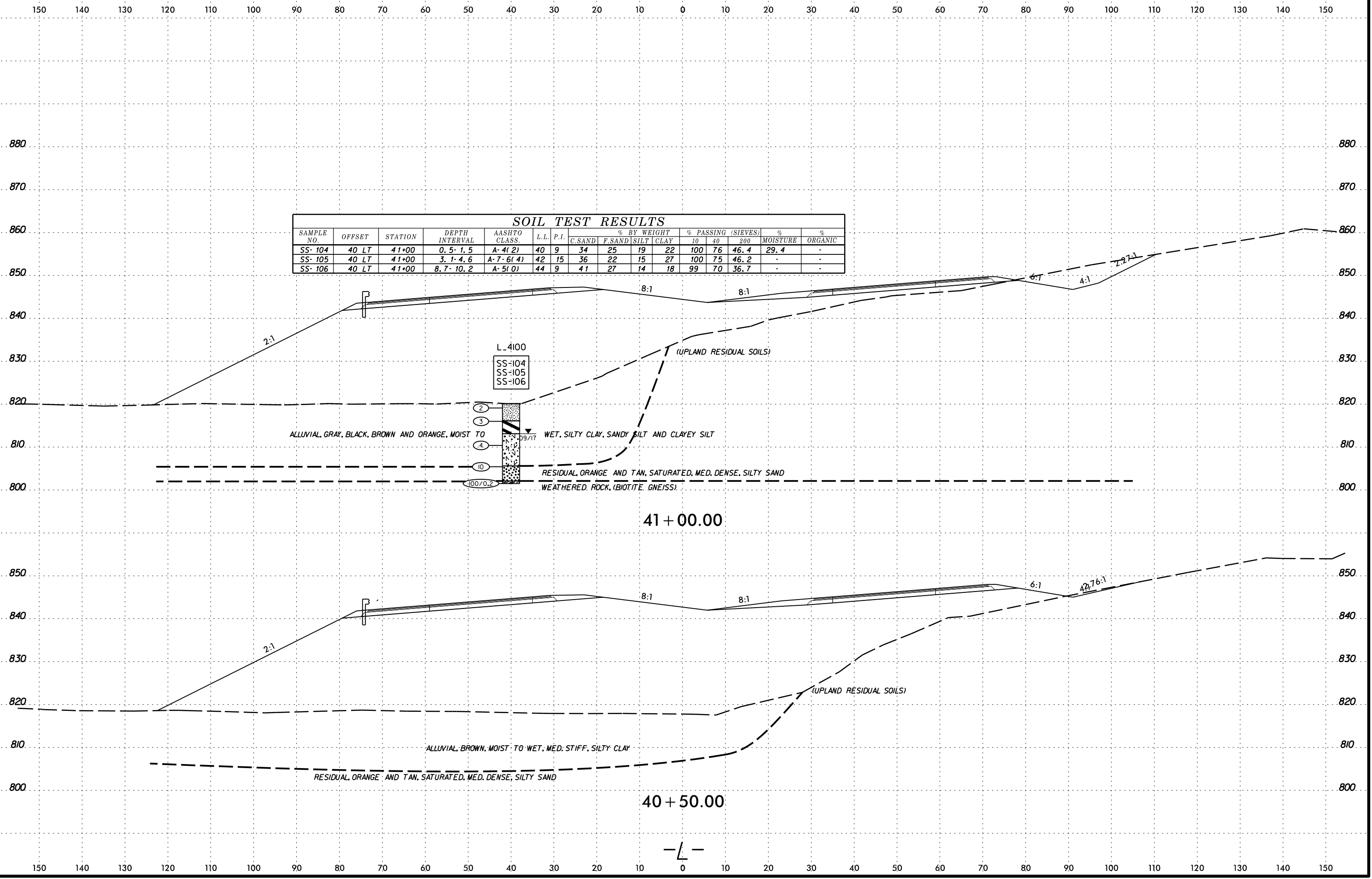
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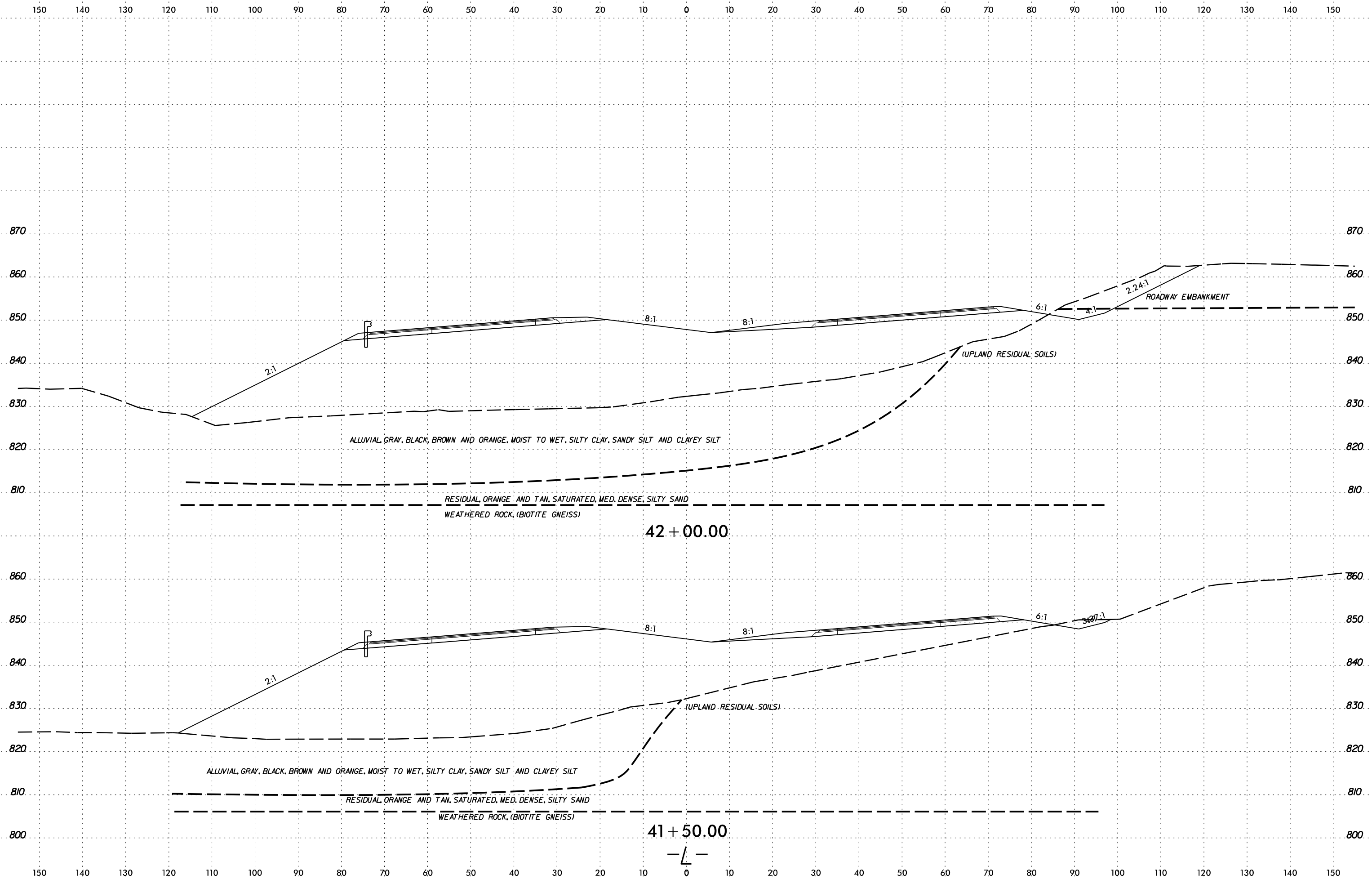
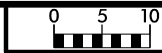
39 + 50.00



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	-	-



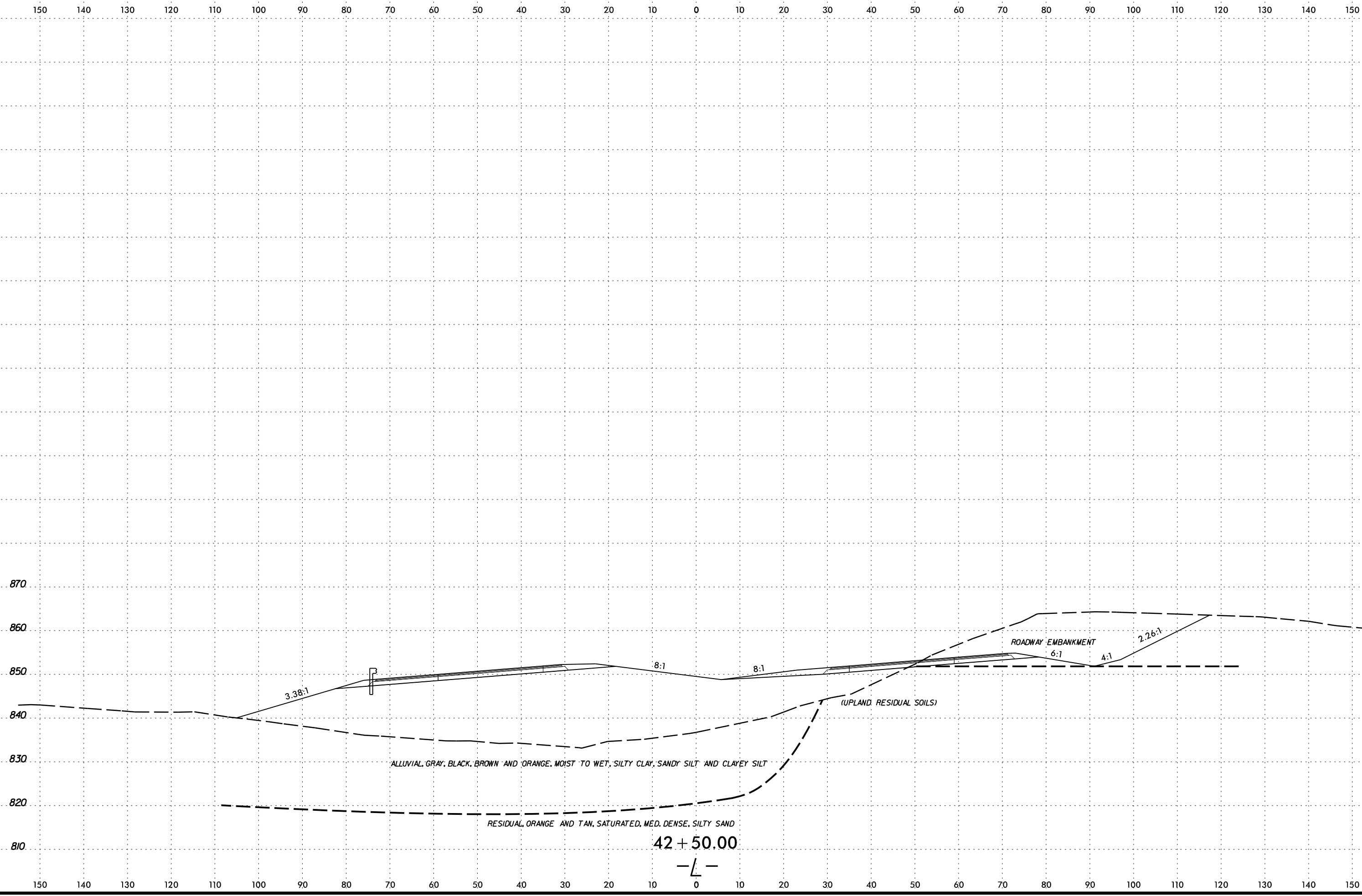
6/23/16
 SYSTEMS
 CONSTRUCTION
 SERVICES
 INC.
 1000
 W. BERRY
 AVENUE
 SUITE 100
 DENVER, CO 80202



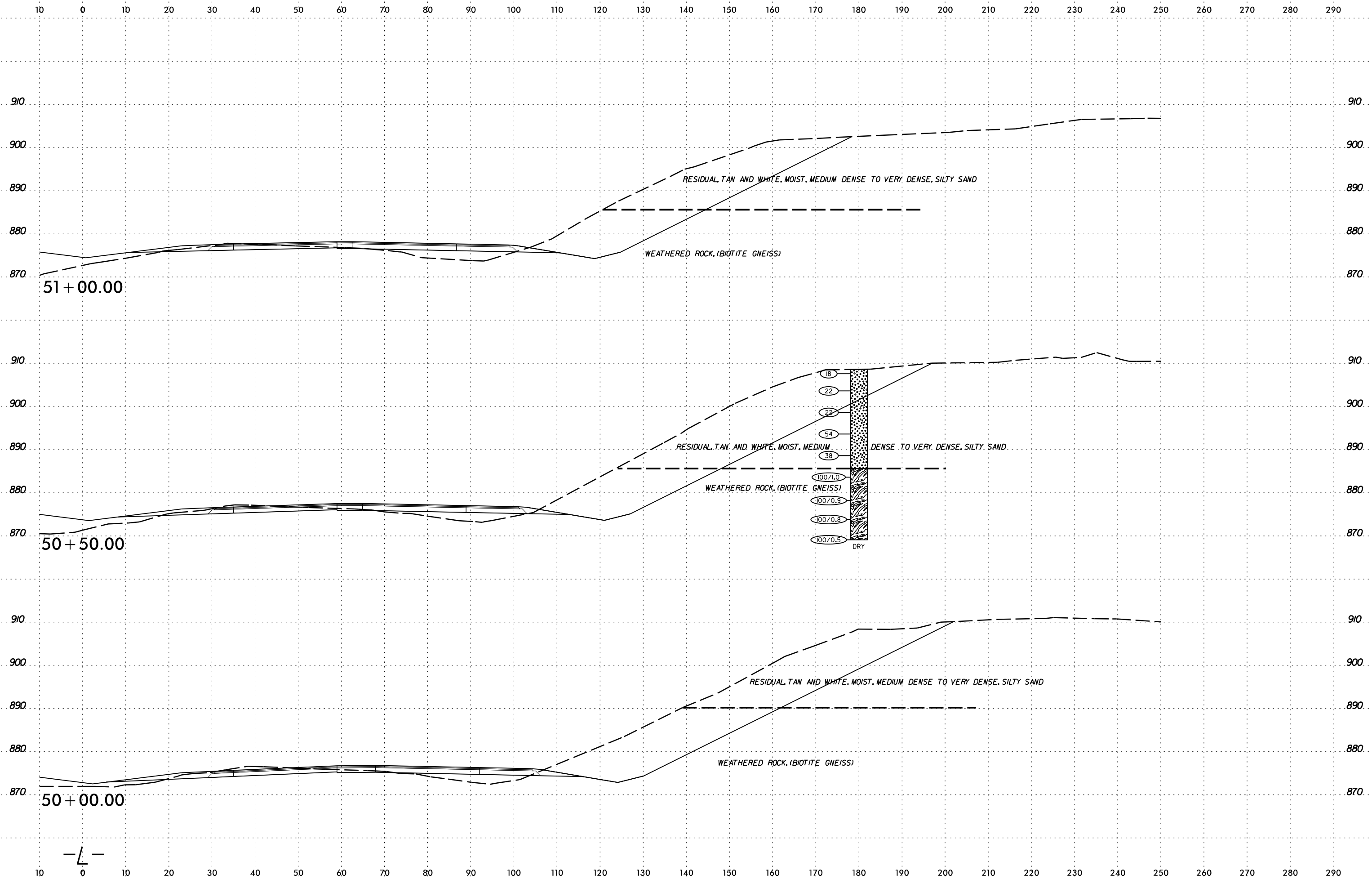
42 + 00.00

41 + 50.00



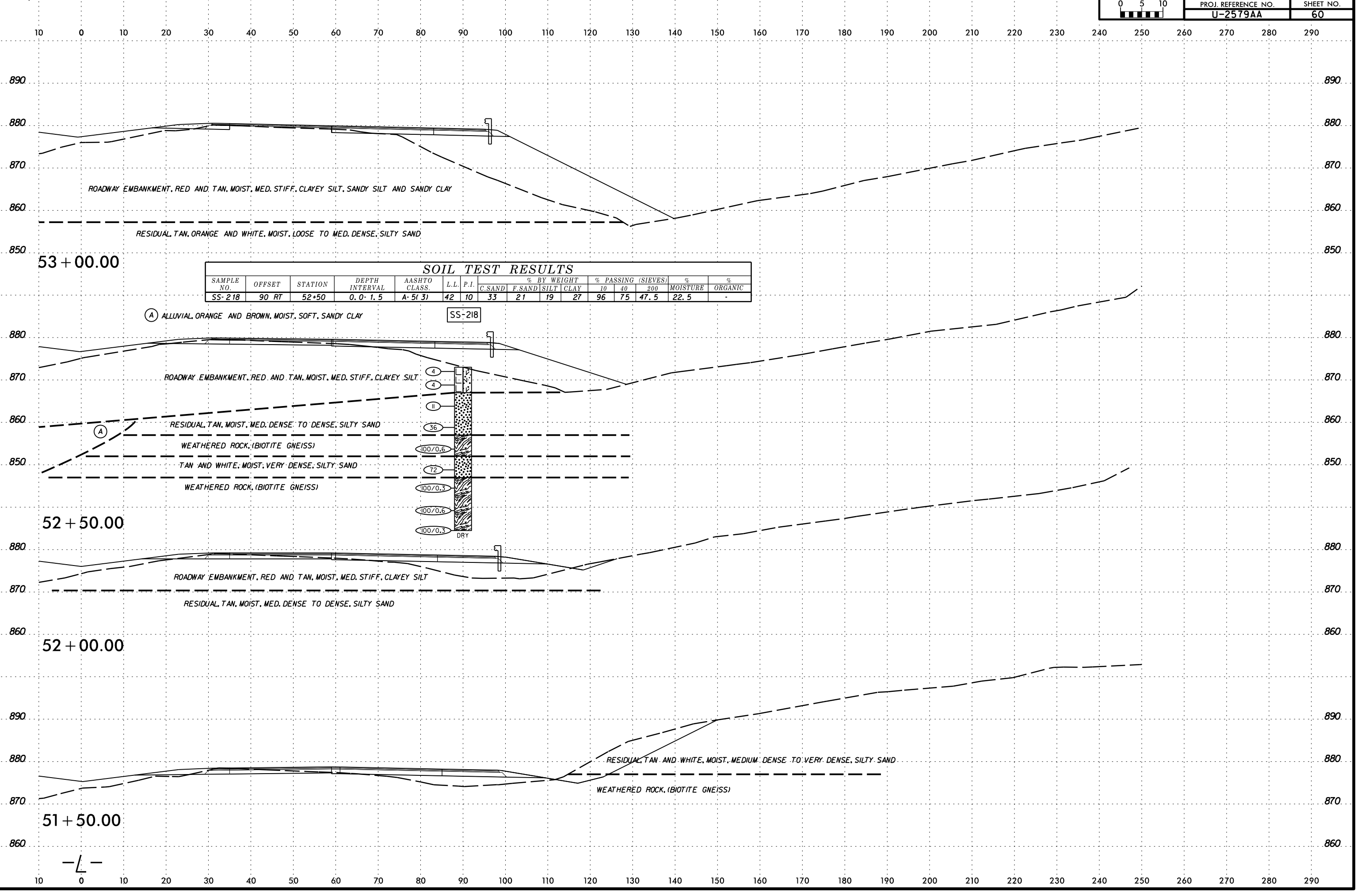
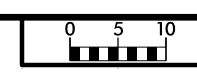


6/23/16
CUSTOMER CONNECTION
SERVICES

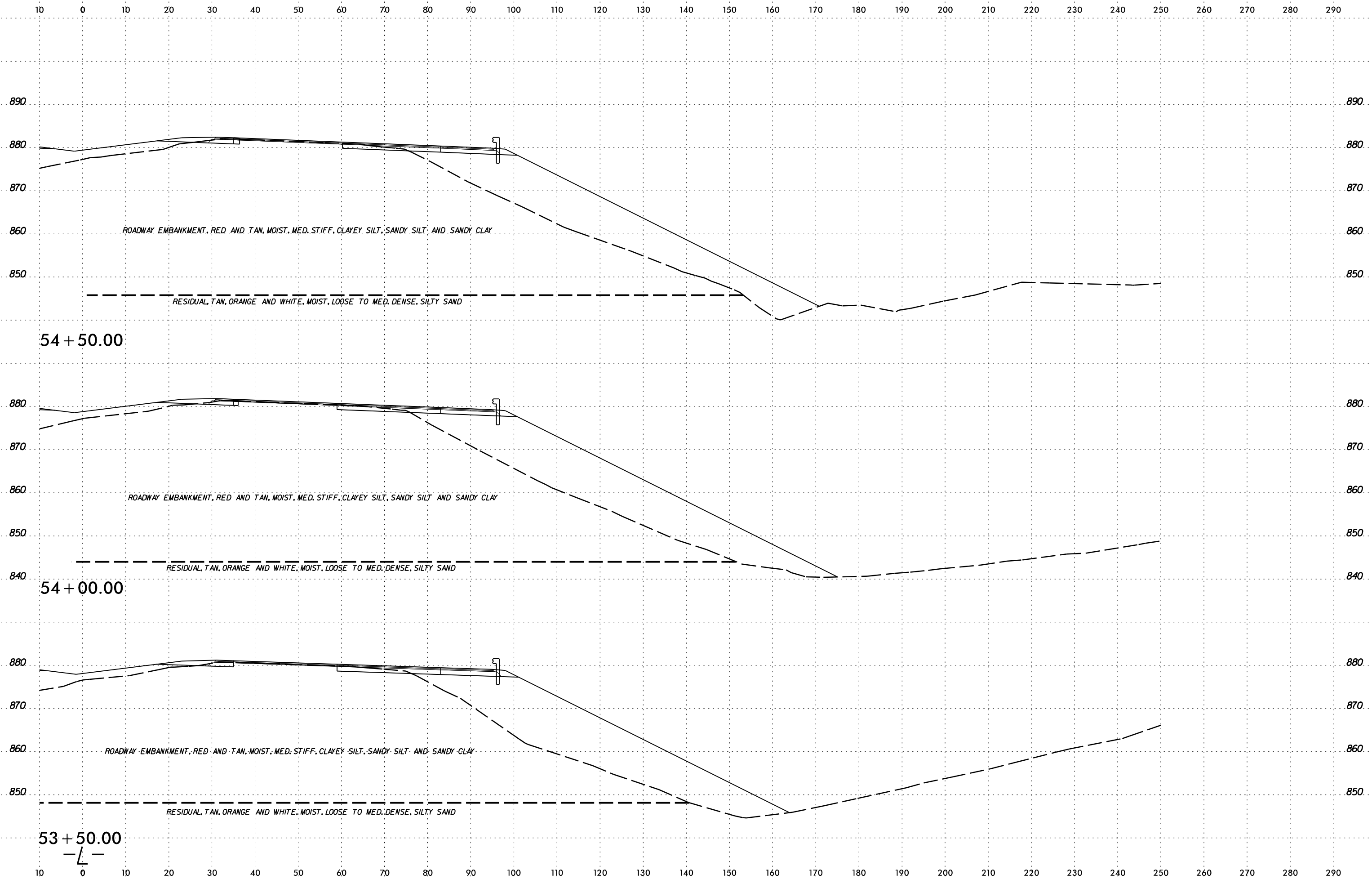


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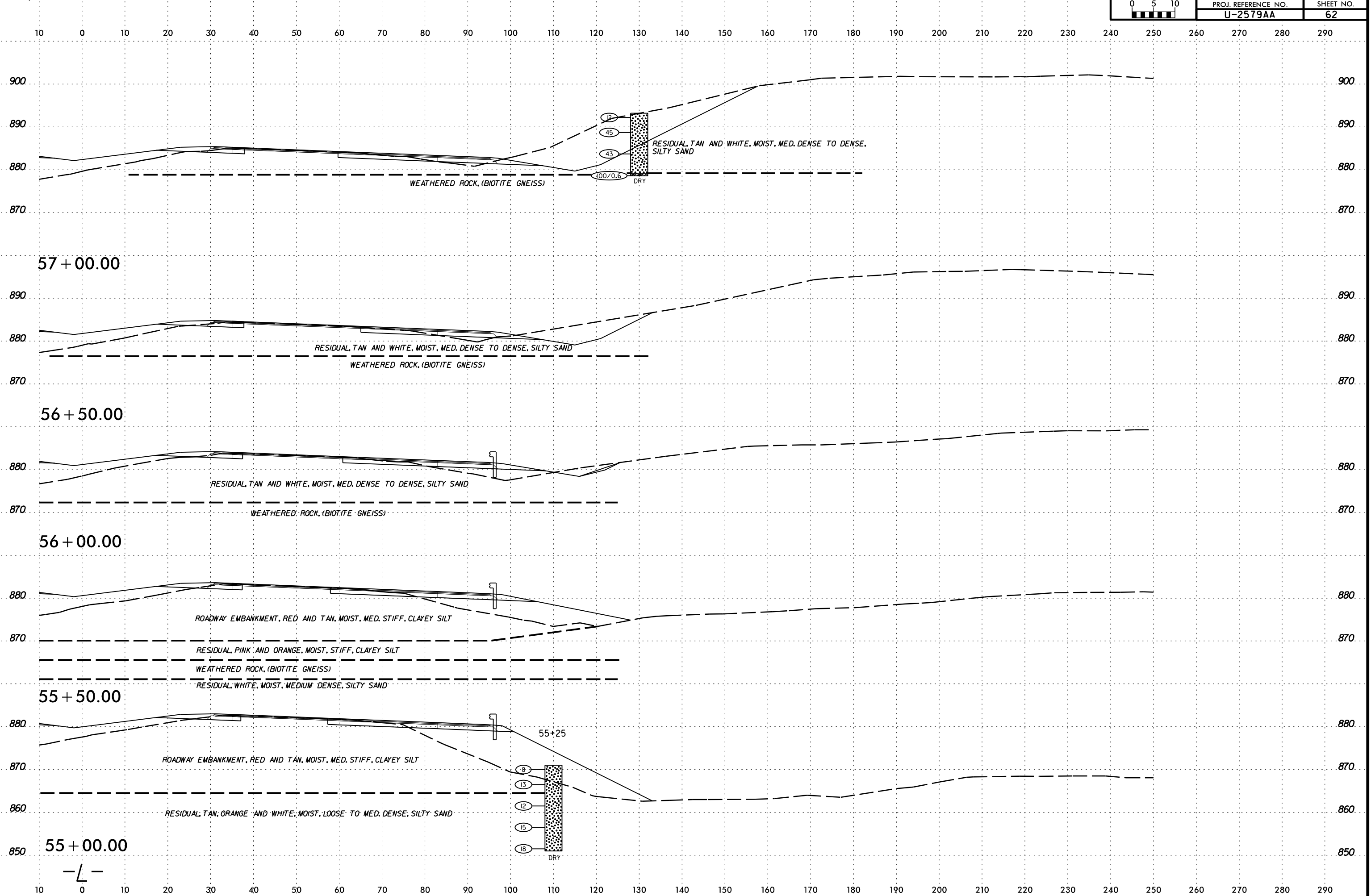


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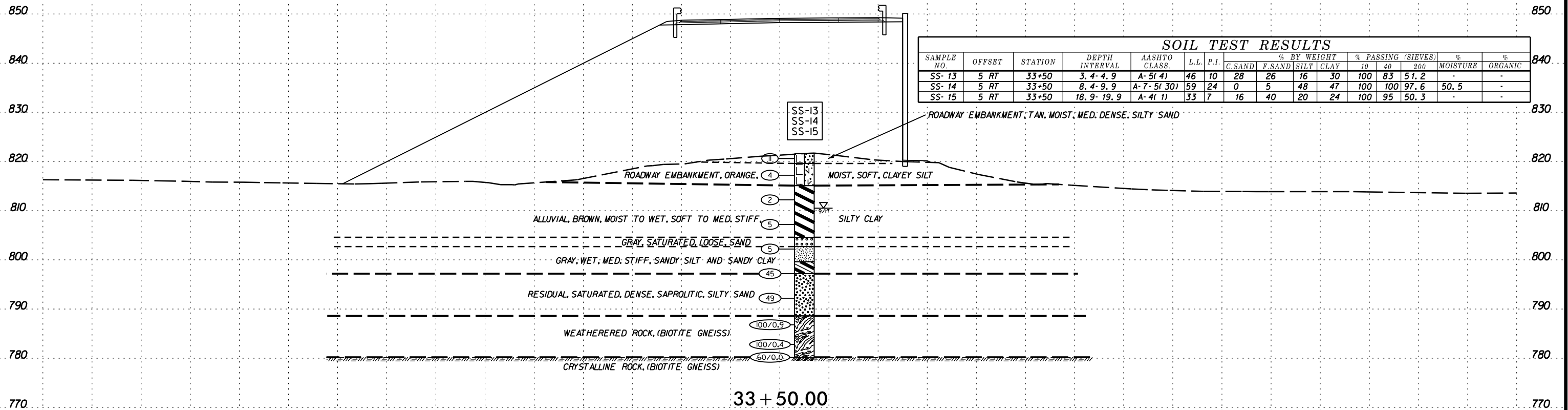
6/23/16
 54+50.00
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6/23/16
CUSTOMER: CONCORDIA UNIVERSITY
PROJECT: UNIVERSITY DRIVE
DRAWN BY: J. W. BROWN

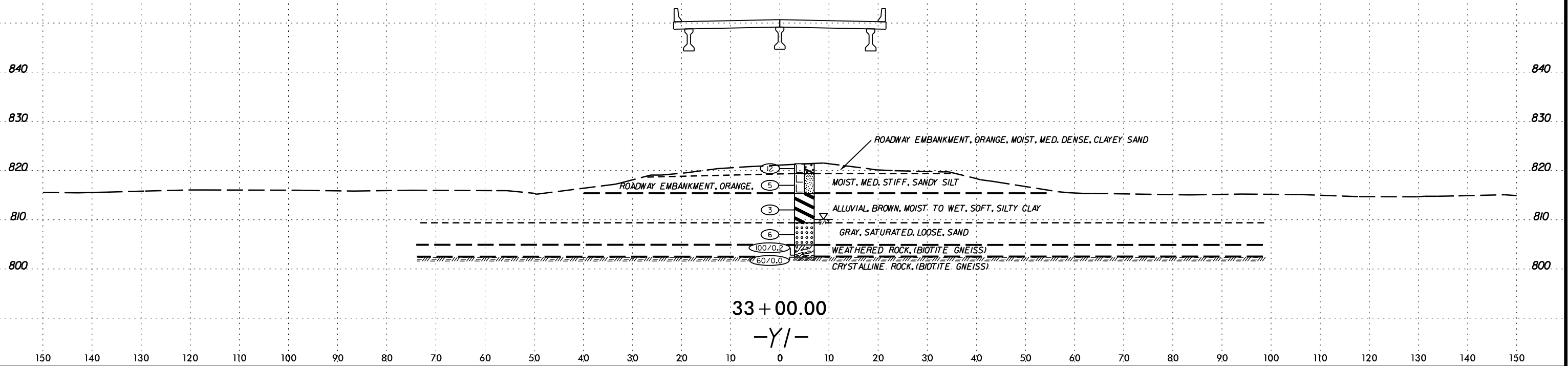




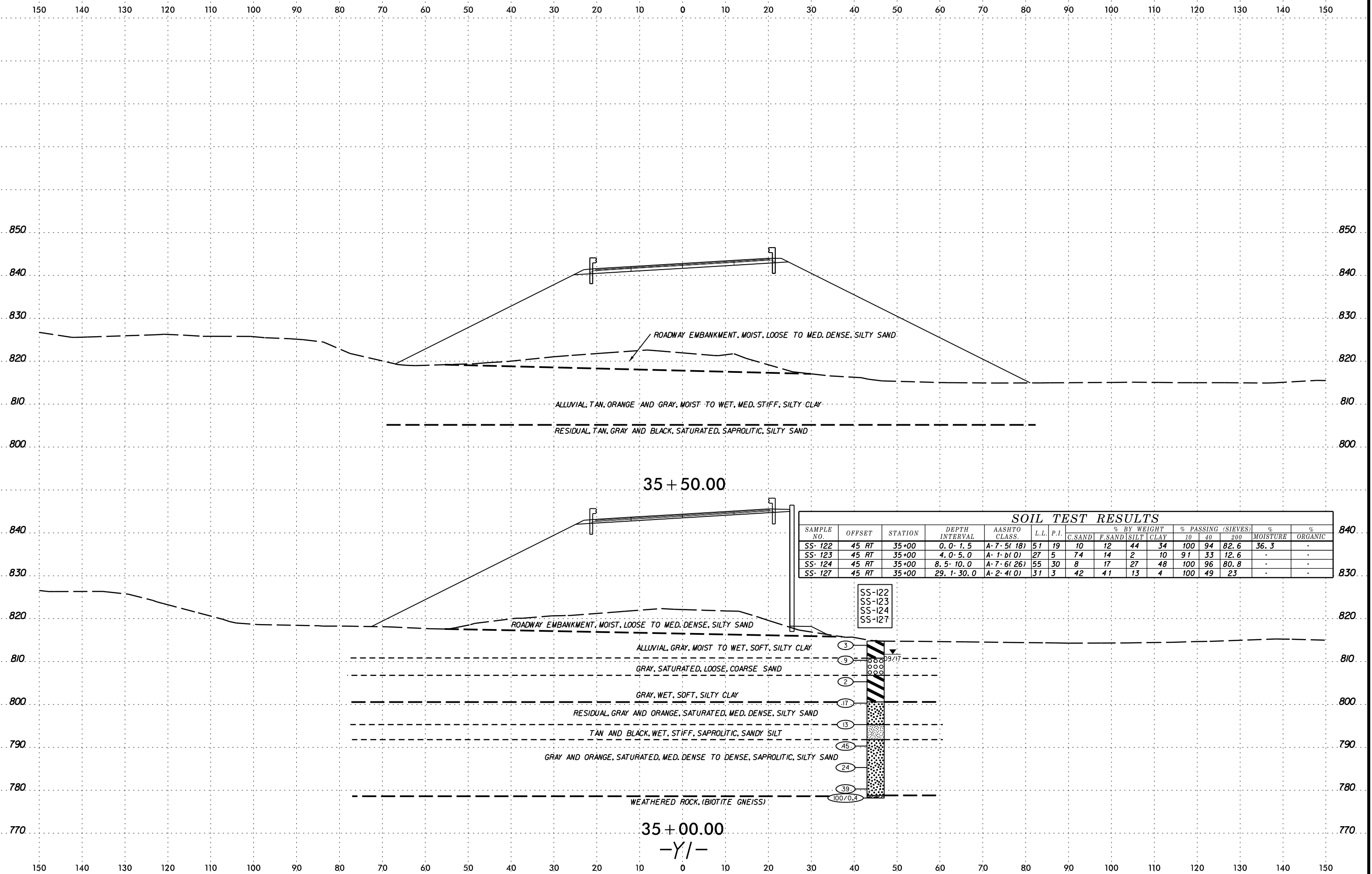
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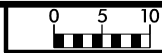
SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-13	5 RT	33+50	3.4-4.9	A-5(4)	46	10	28	26	16	30	100	83	51.2	-	-
SS-14	5 RT	33+50	8.4-9.9	A-7-5(30)	59	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	-	-



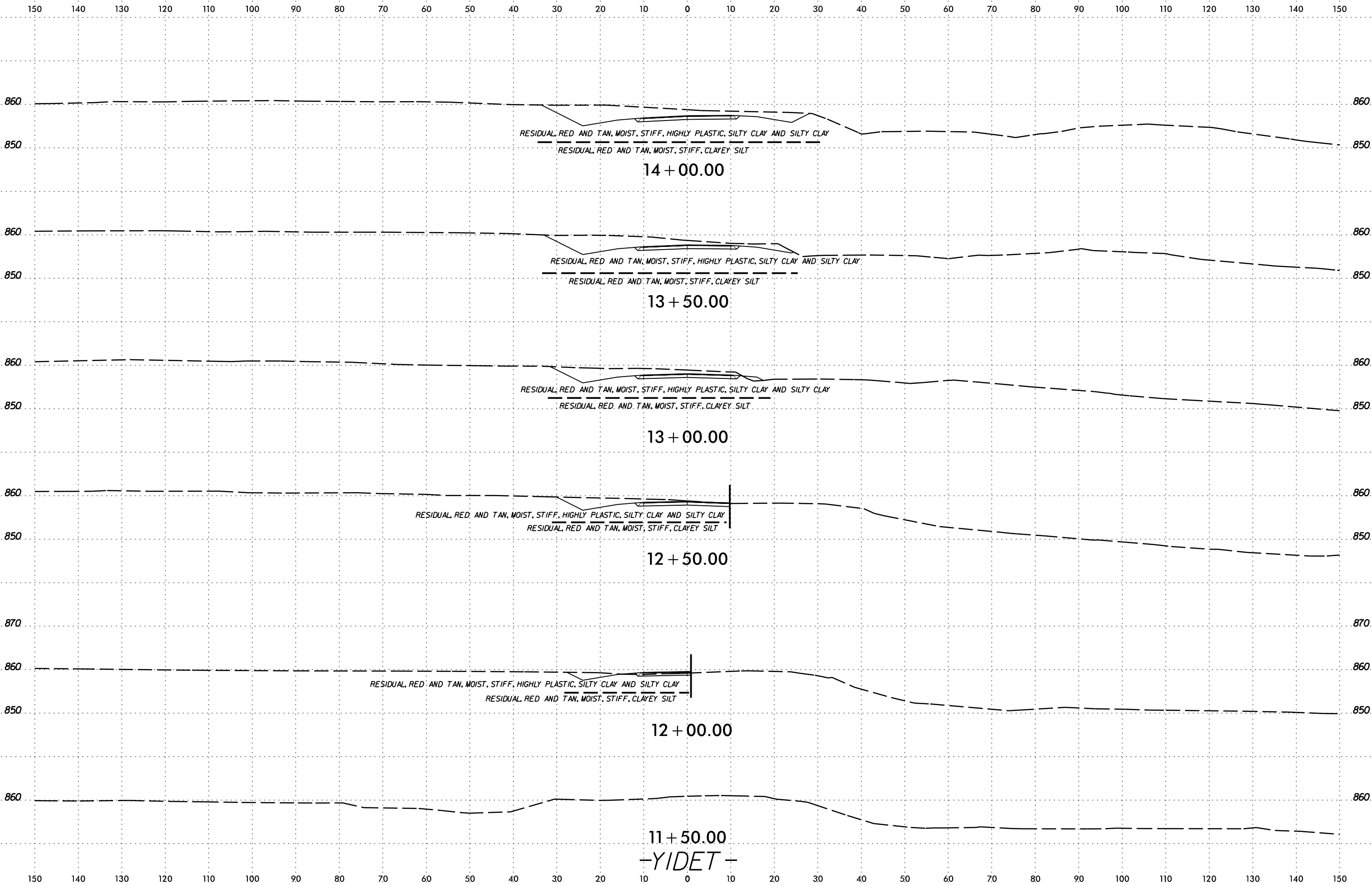
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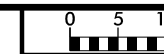
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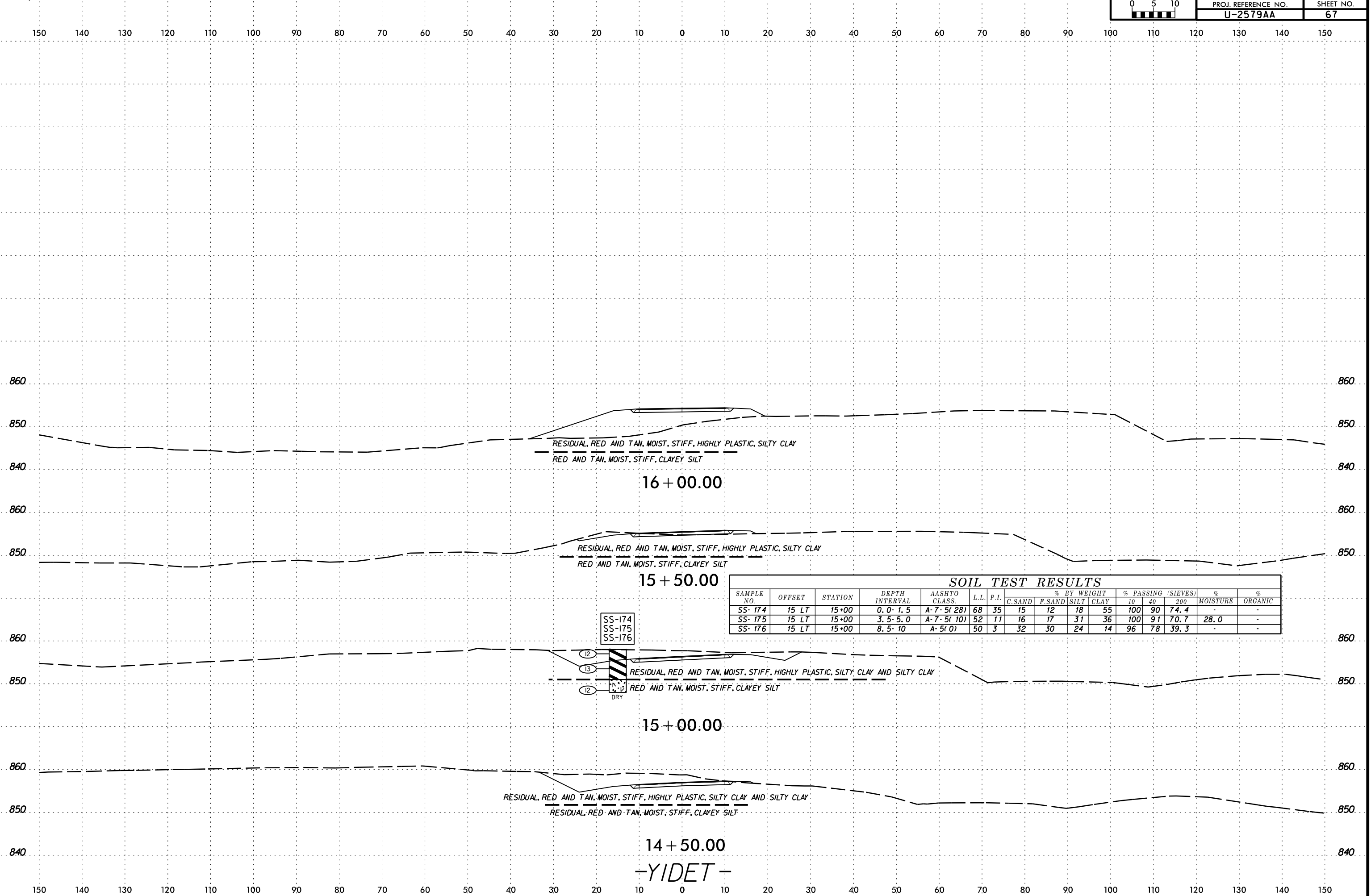
PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	66



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

16 + 00.00

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

15 + 50.00

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	-	-

SS-174
SS-175
SS-176

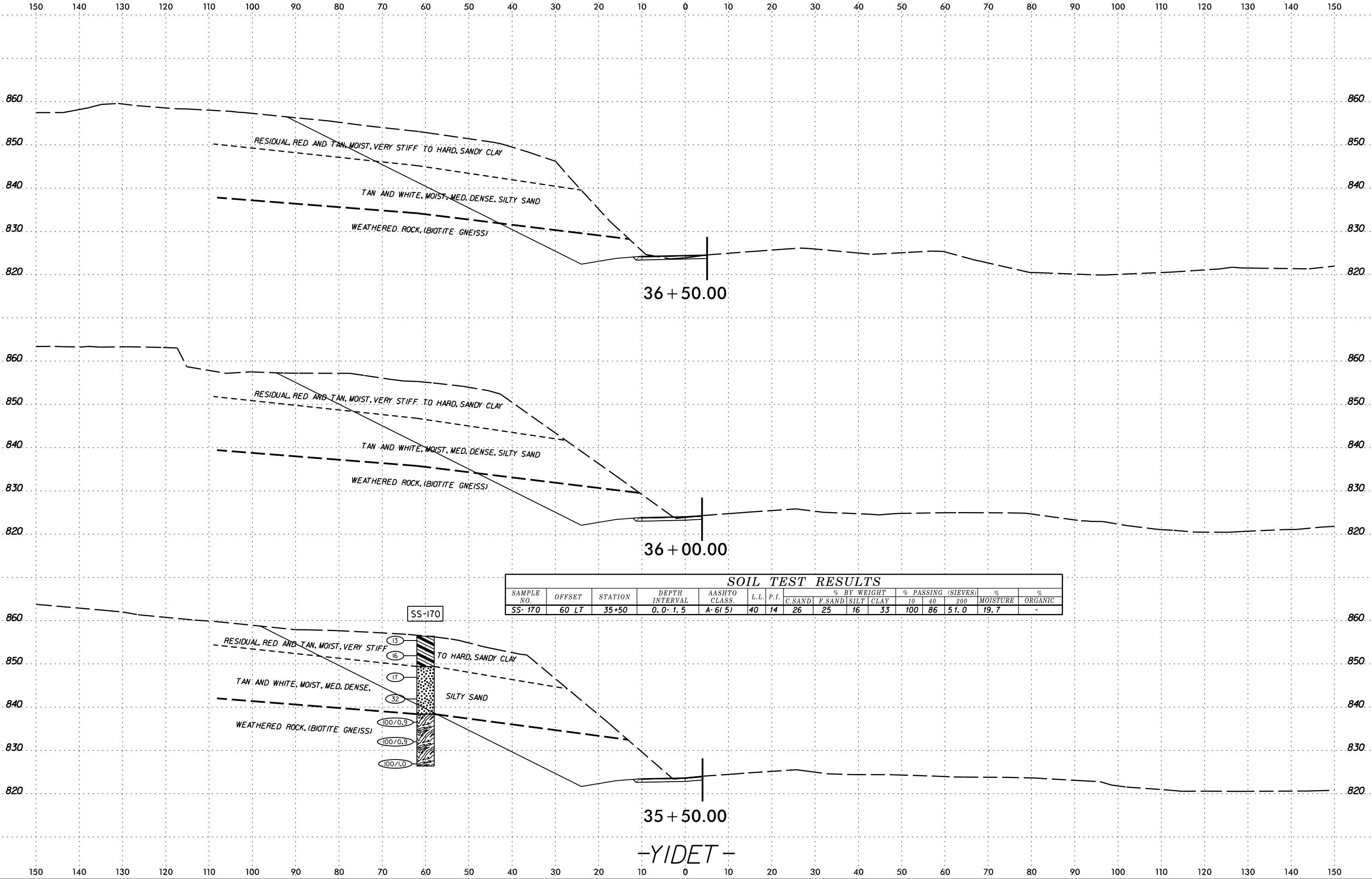
RESIDUAL, RED AND TAN, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY AND SILTY CLAY
RED AND TAN, MOIST, STIFF, CLAYEY SILT

15 + 00.00

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

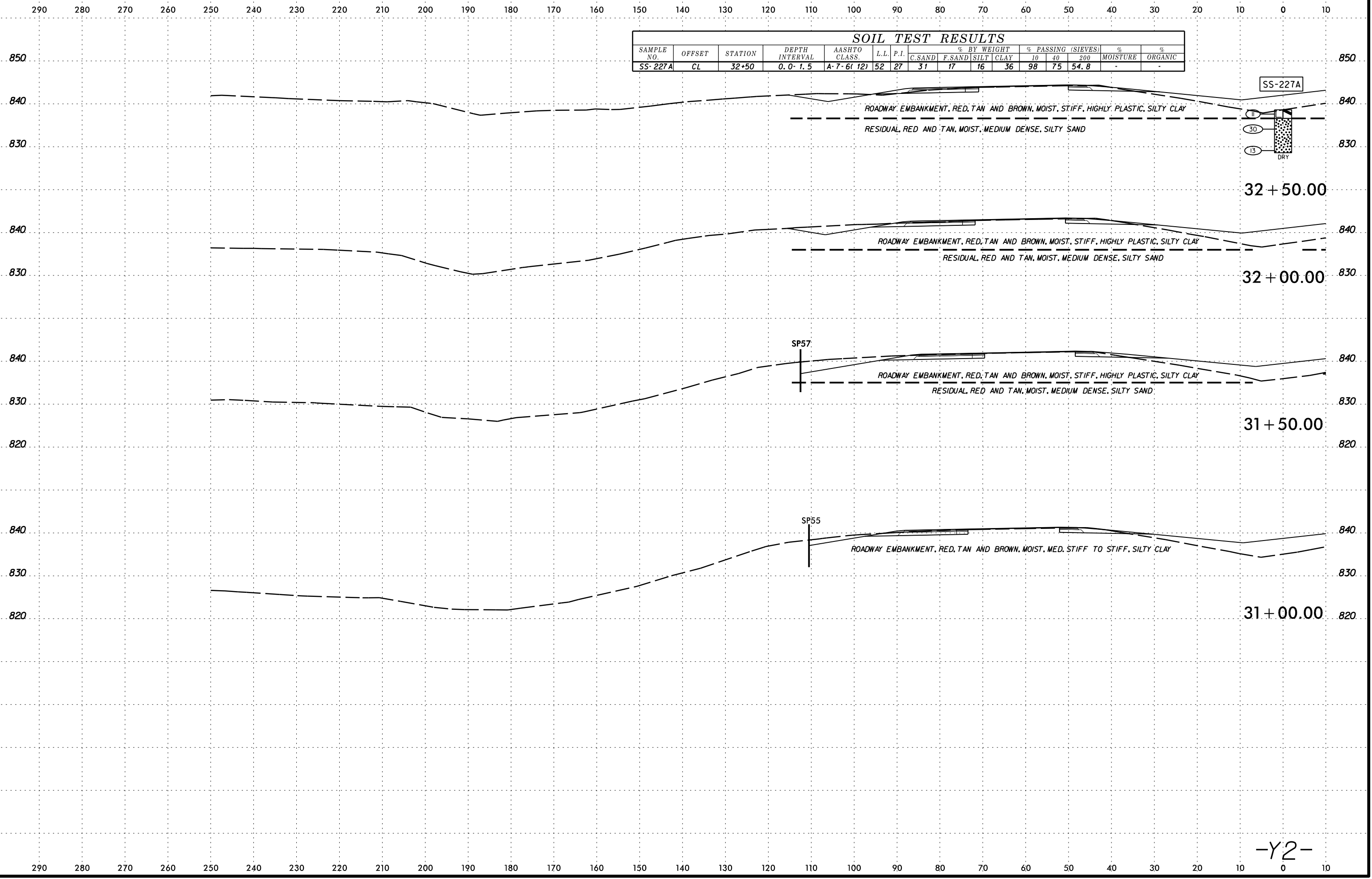
14 + 50.00

-YIDET-

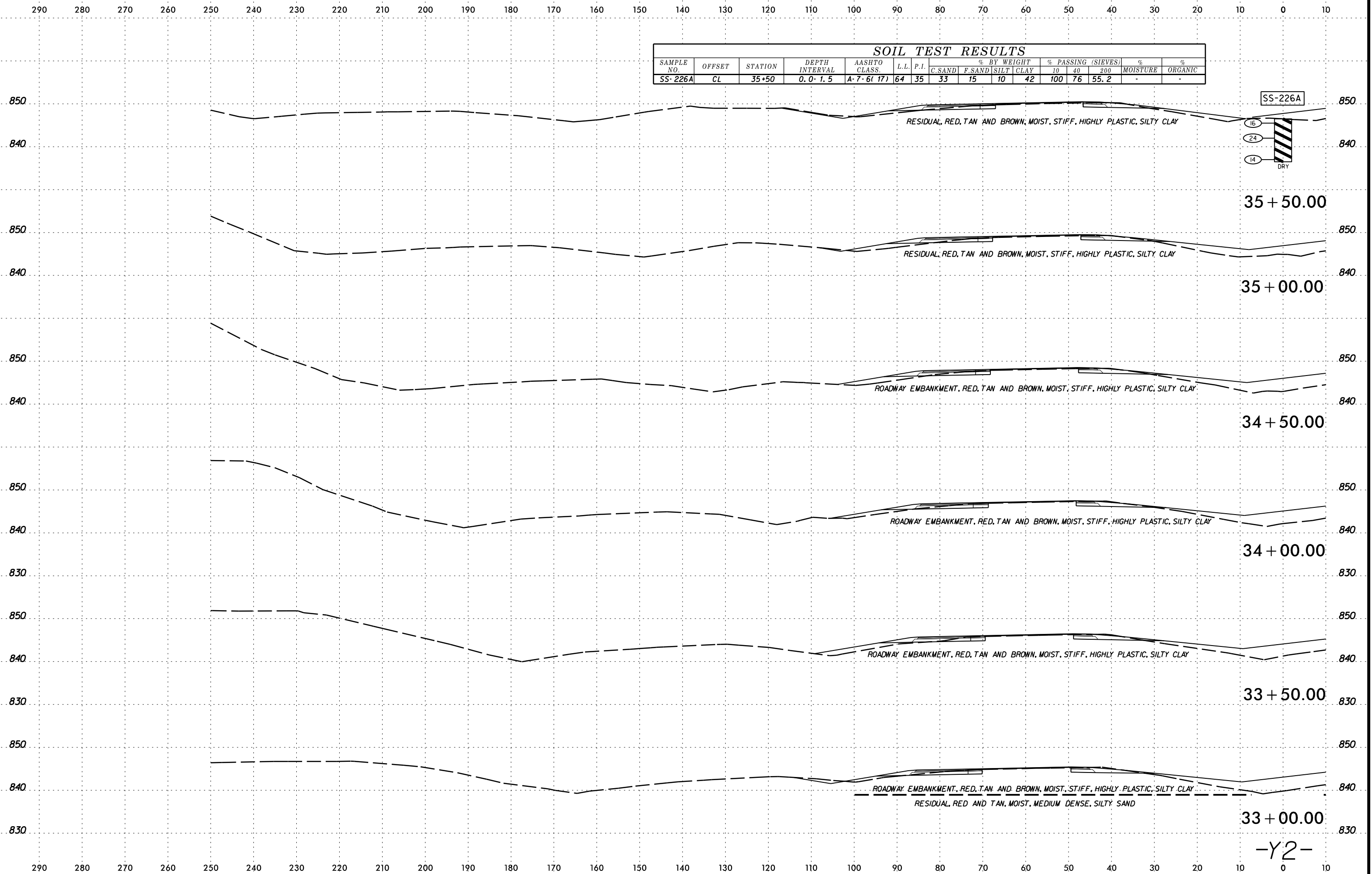


6/23/16
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SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-227A	CL	32+50	0.0-1.5	A-7-6(12)	52	27	31	17	16	36	98	75	54.8	-	-



SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-226A	CL	35+50	0.0-1.5	A-7-6(17)	64	35	33	15	10	42	100	76	55.2	-	-



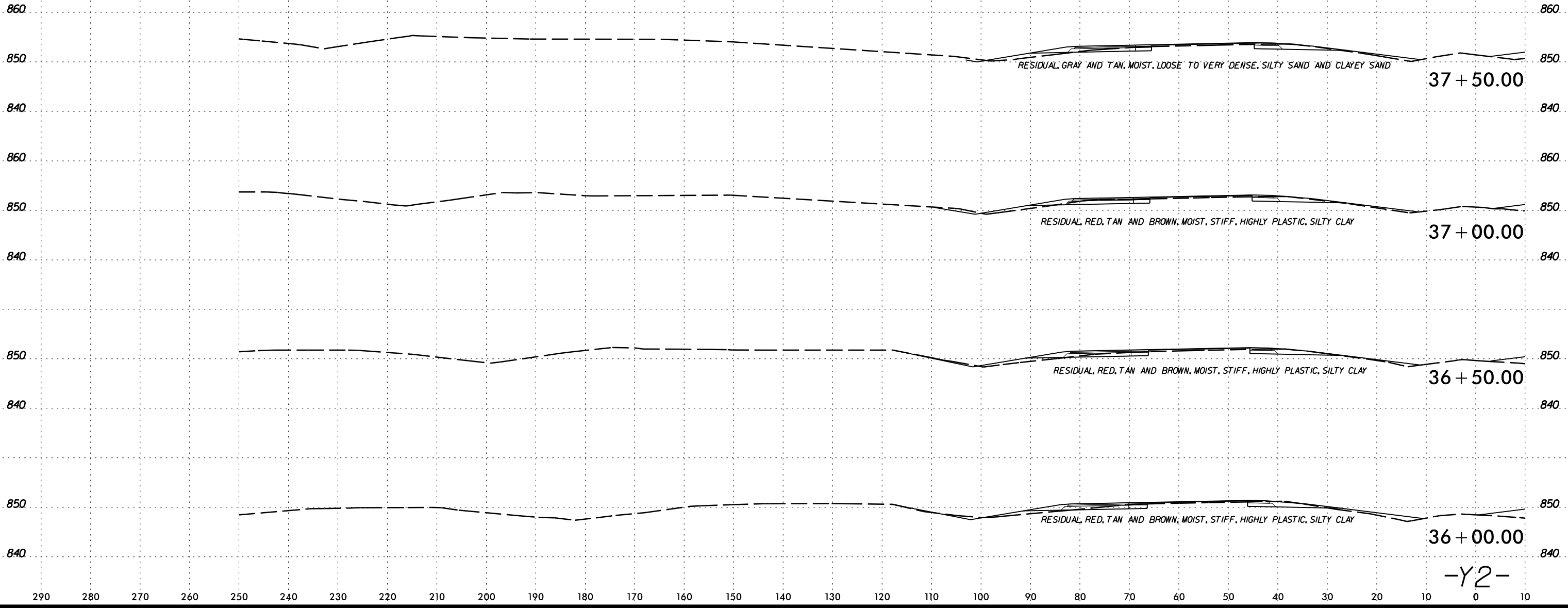
-Y2-



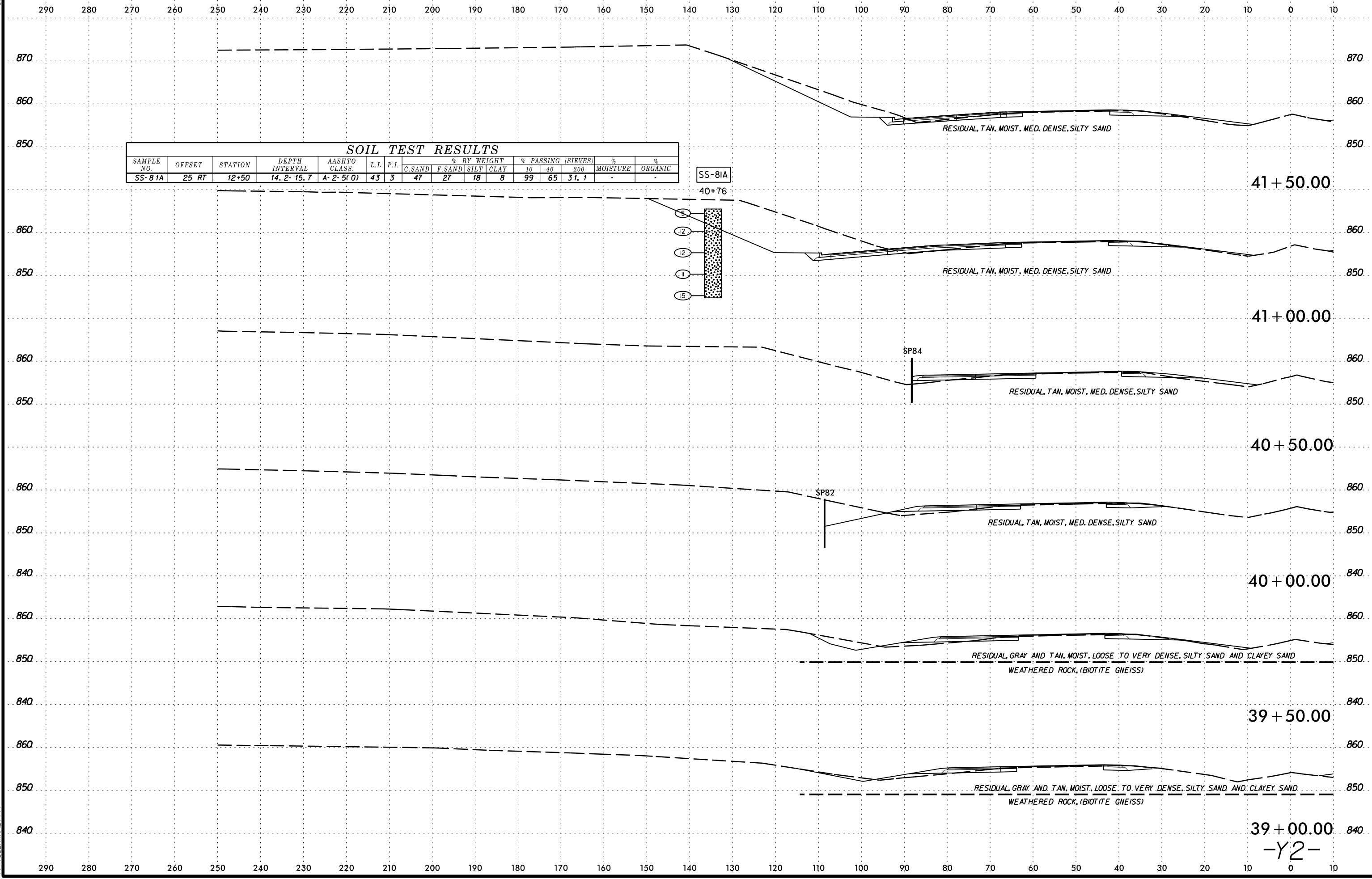
PROJ. REFERENCE NO.
U-2579AA

SHEET NO.
71

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

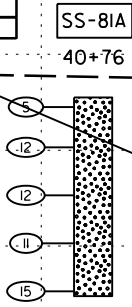


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1"=40'



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	-	-



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

41 + 50.00

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

41 + 00.00

SP84

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

40 + 50.00

SP82

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

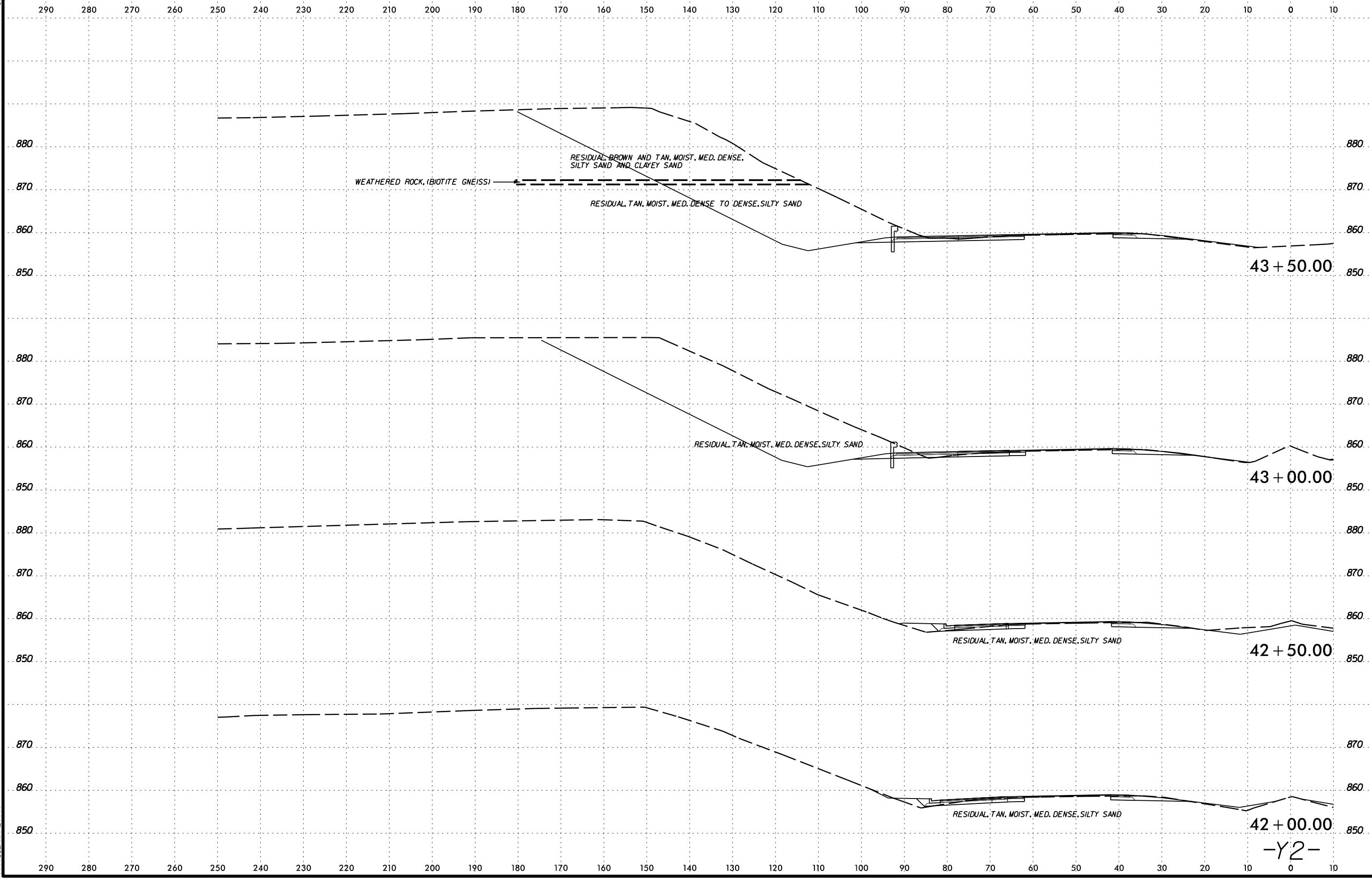
40 + 00.00

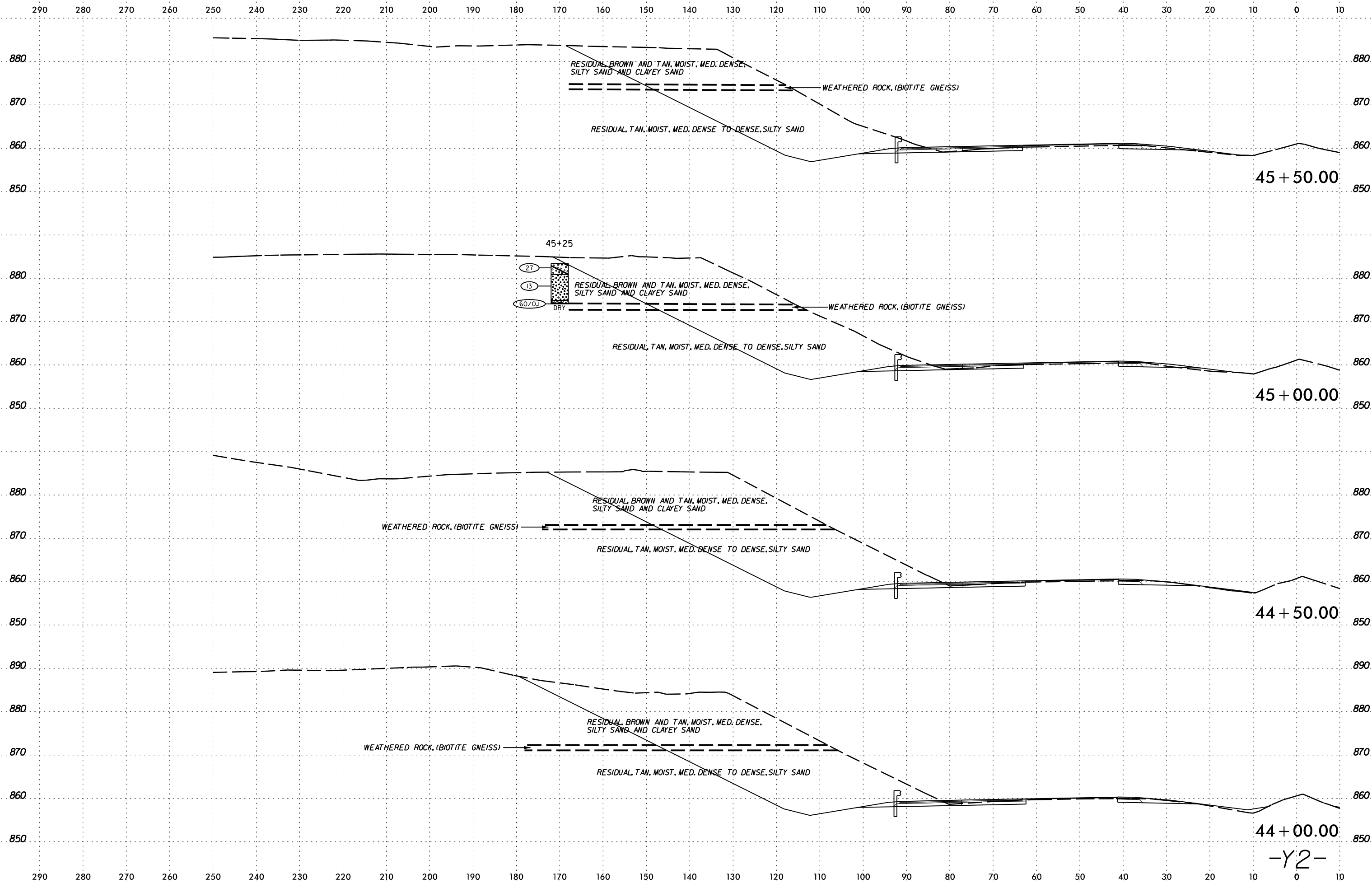
RESIDUAL, GRAY AND TAN, MOIST, LOOSE TO VERY DENSE, SILTY SAND AND CLAYEY SAND
 WEATHERED ROCK, (BIOTITE GNEISS)

39 + 50.00

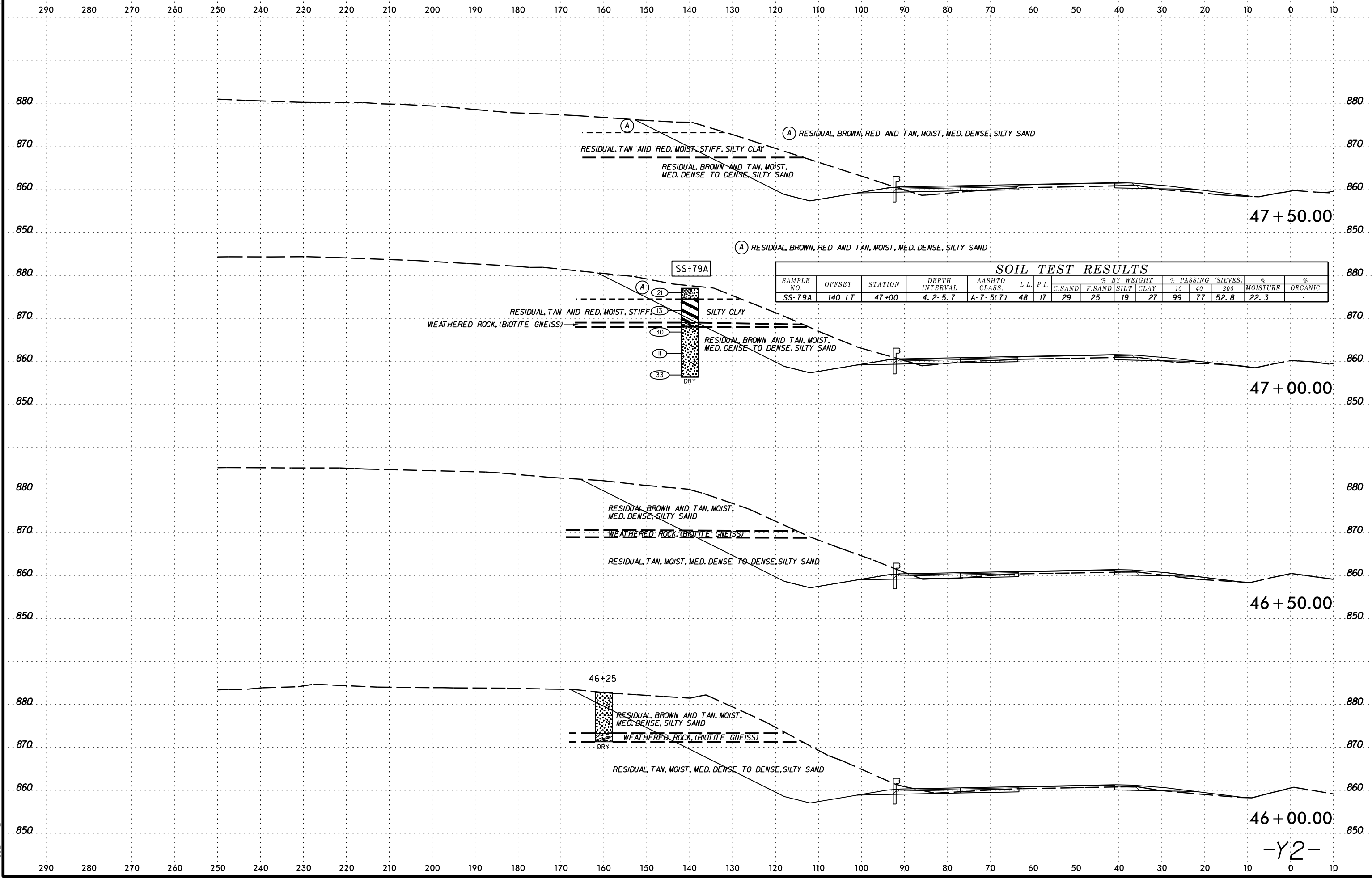
RESIDUAL, GRAY AND TAN, MOIST, LOOSE TO VERY DENSE, SILTY SAND AND CLAYEY SAND
 WEATHERED ROCK, (BIOTITE GNEISS)

39 + 00.00



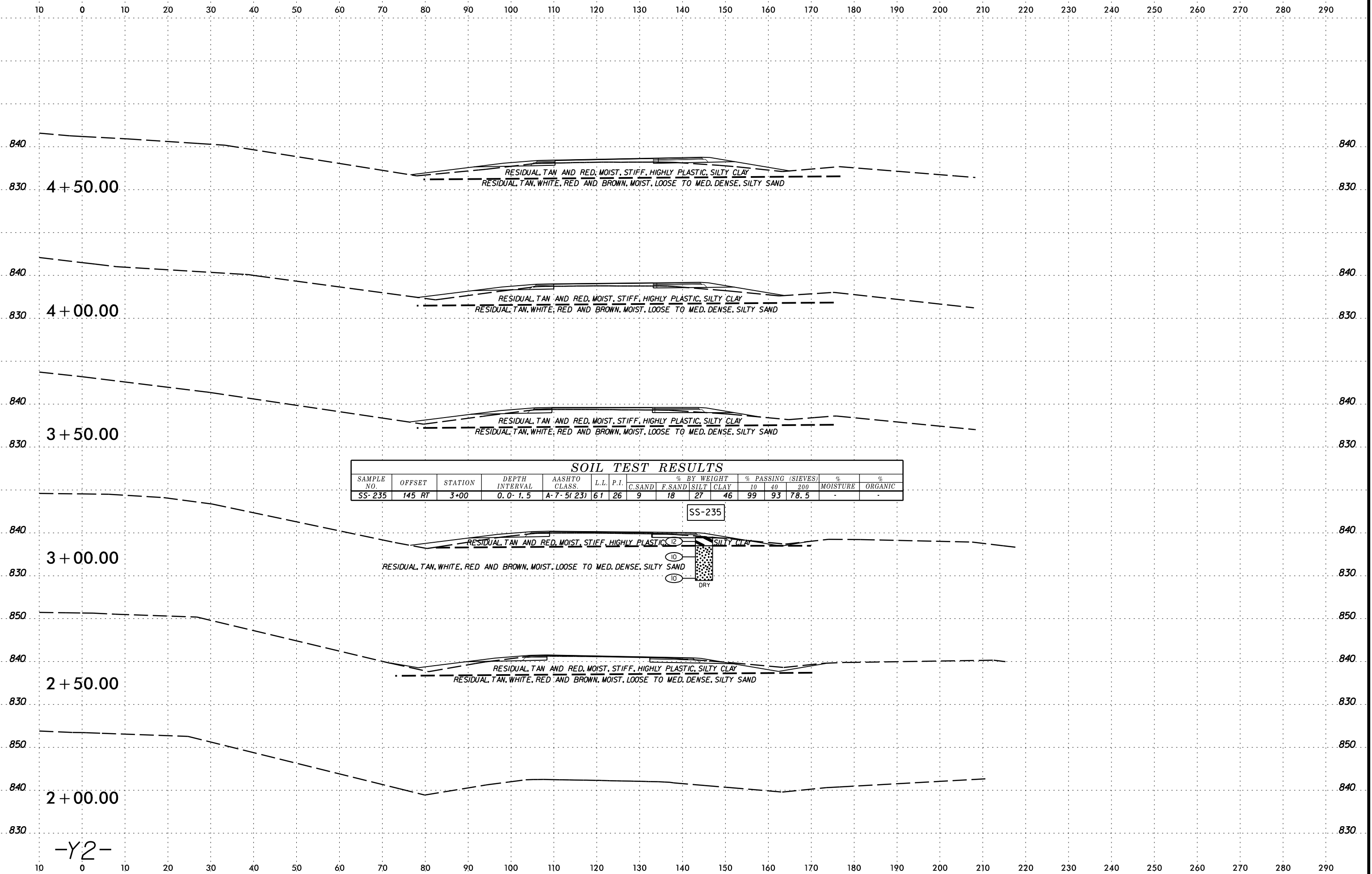


6/23/16
 SHEET NO.
 74
 PROJ. REFERENCE NO.
 U-2579AA



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	-





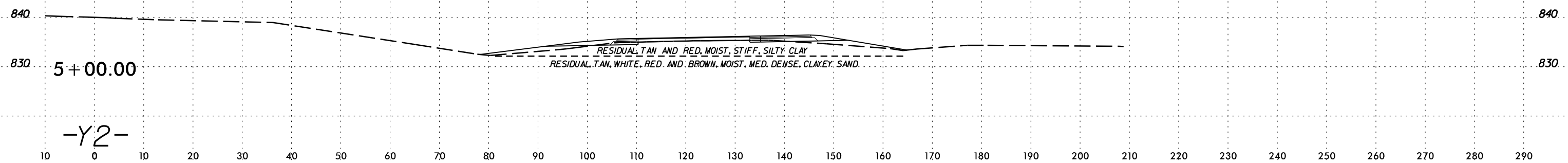
6/23/16
SUNSHINE CONSULTING ENGINEERS
10000 JEFFERSON AVENUE
DENVER, CO 80231
303.751.1000

6/23/16



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

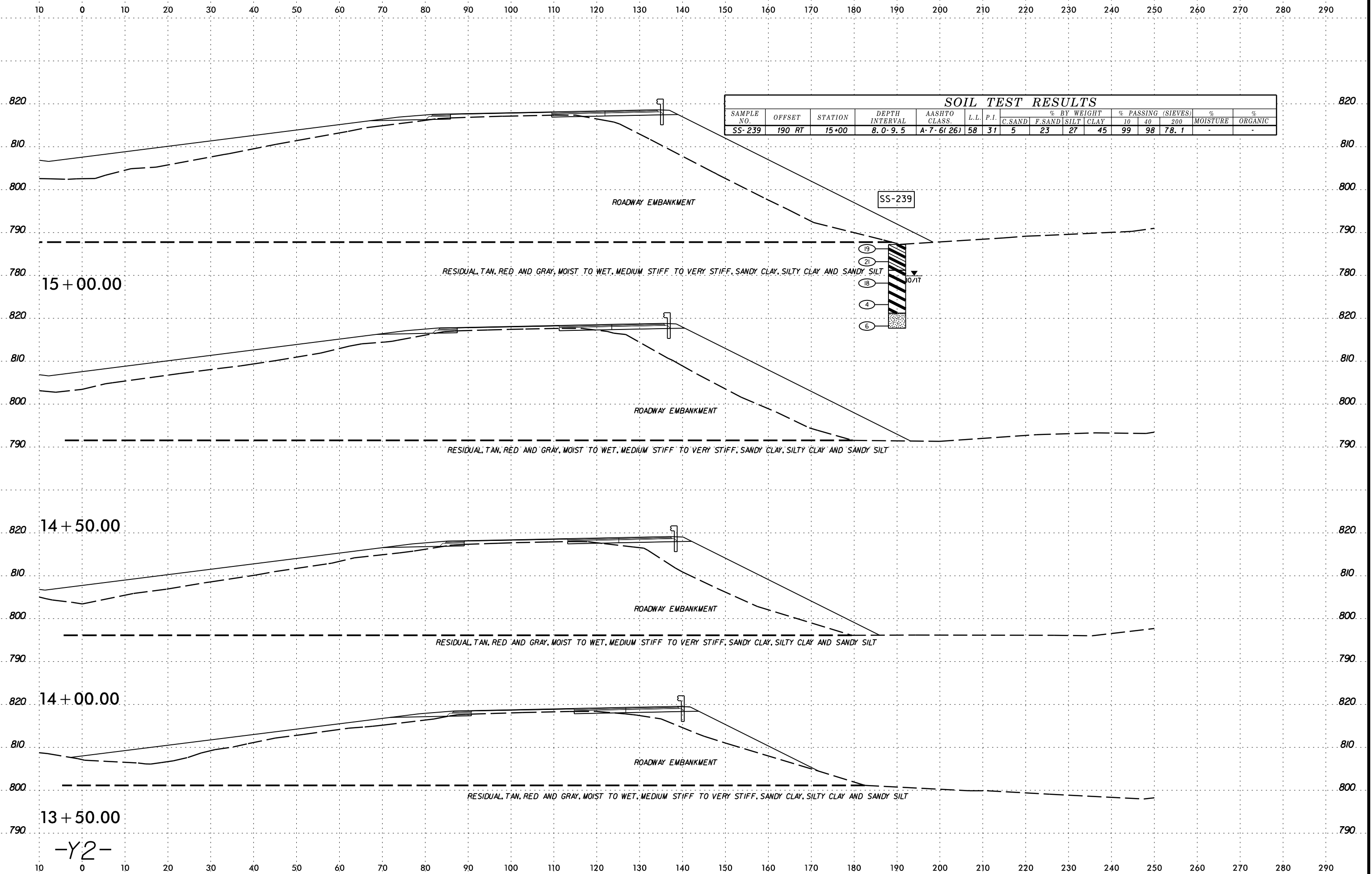
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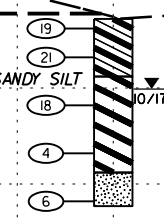
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10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290

6/23/16



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



RESIDUAL, TAN, RED AND GRAY, MOIST TO WET, MEDIUM STIFF TO VERY STIFF, SANDY CLAY, SILTY CLAY AND SANDY SILT

15+00.00

14+50.00

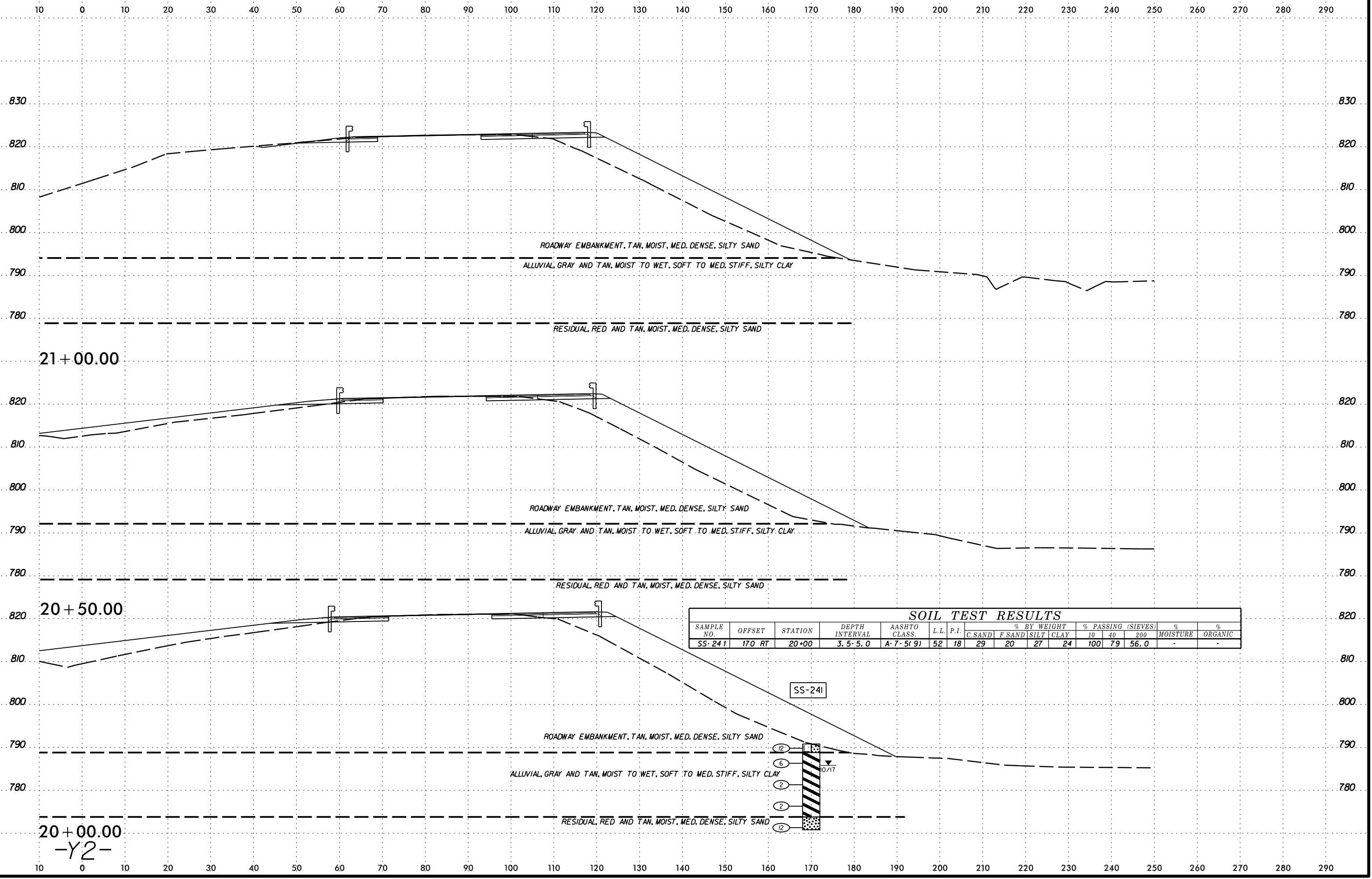
14+00.00

13+50.00

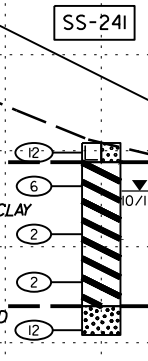
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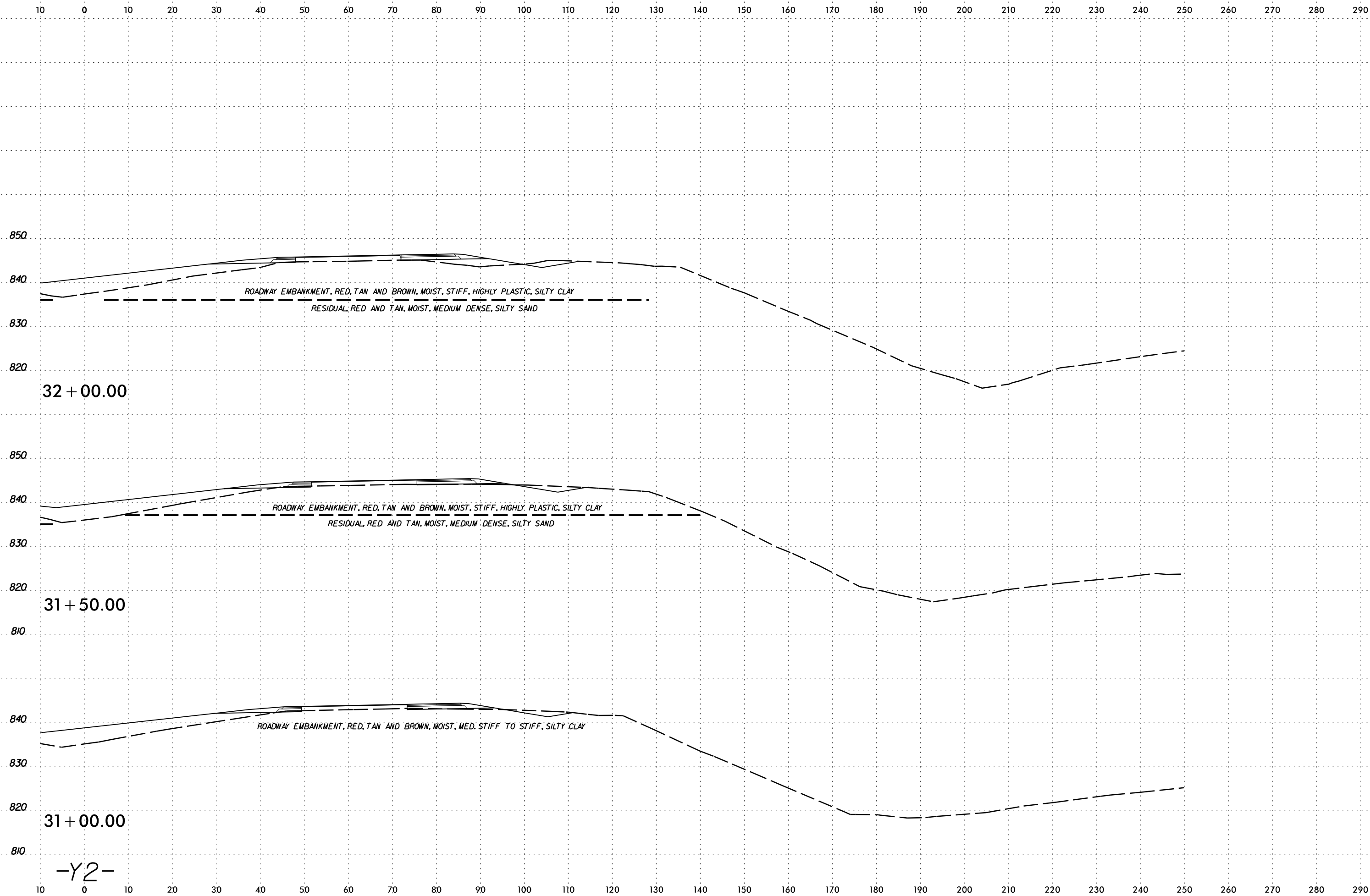
DATE PLOTTED: 6/23/16 11:48 AM

6/23/16
CUSTOMER: DCDN
PROJECT: 2015
SHEET: 79

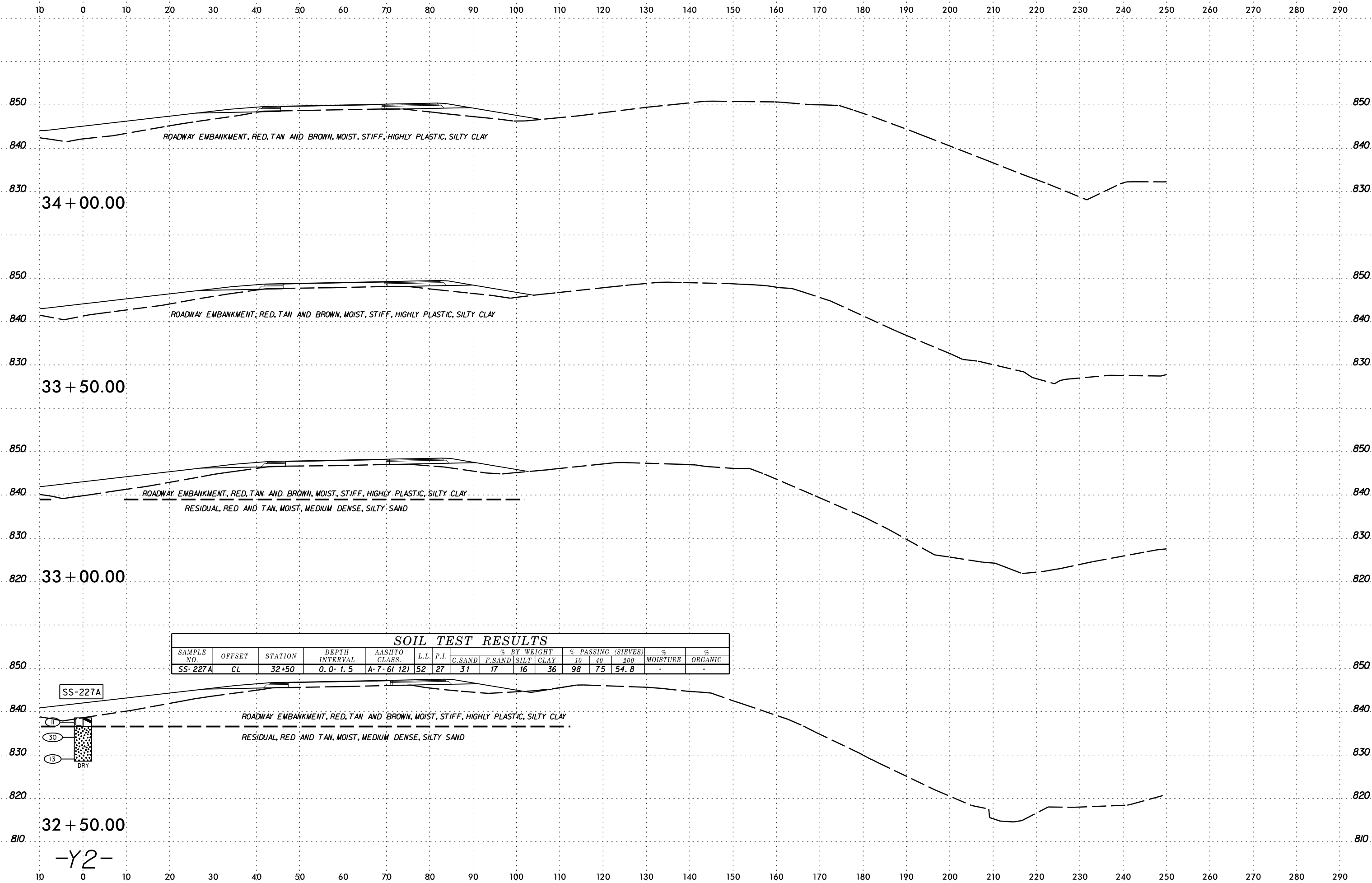
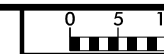


SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-241	170 RT	20+00	3.5-5.0	A-7-5(9)	52	18	29	20	27	24	100	79	56.0	-	-



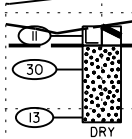


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SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)		% MOISTURE	% ORGANIC	
							C. SAND	F. SAND	SILT	CLAY	10	40			200
SS-227A	CL	32+50	0.0-1.5	A-7-6(12)	52	27	31	17	16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

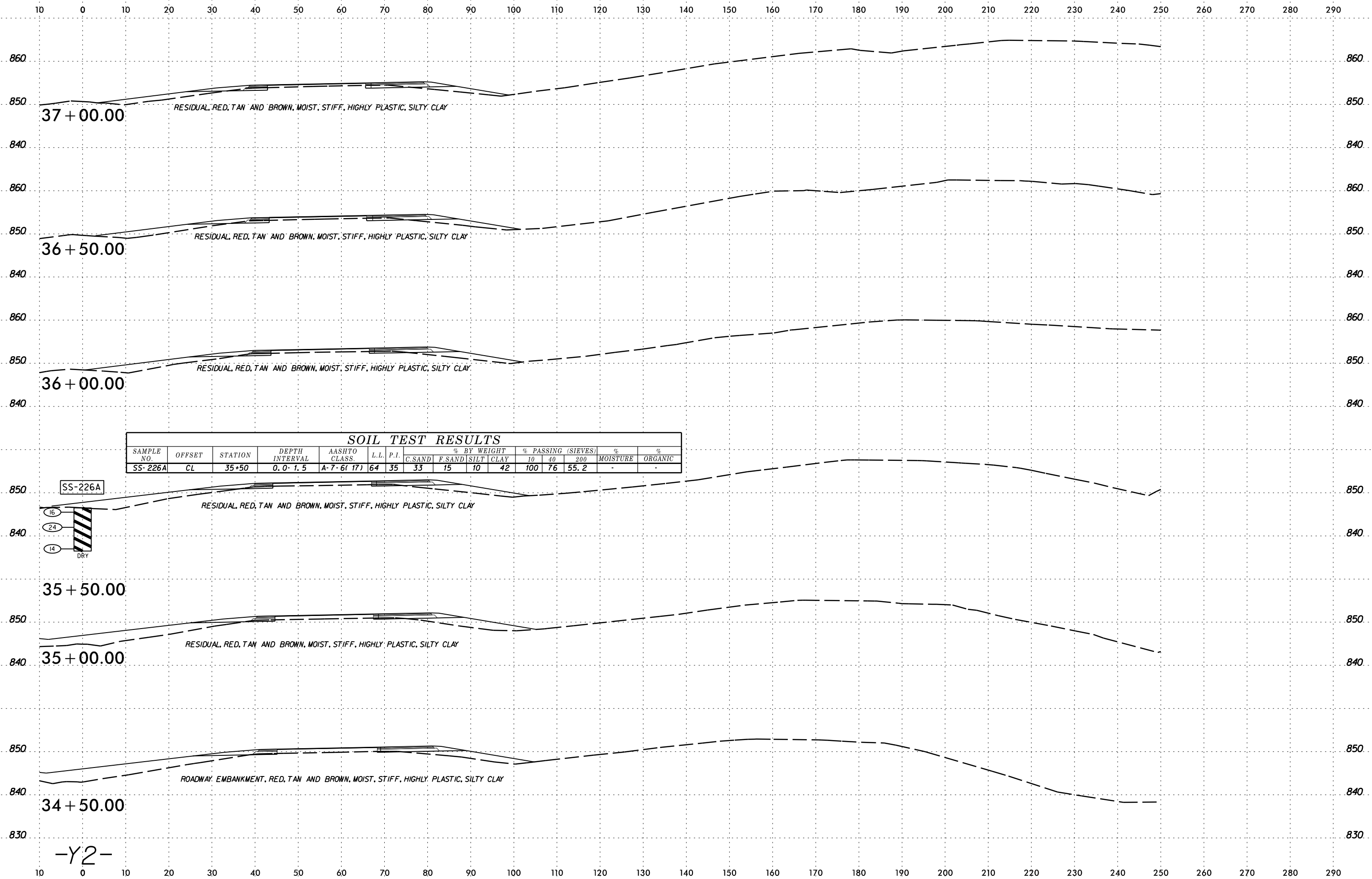
SS-227A



32+50.00

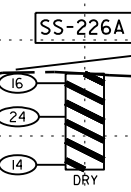
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SOIL TEST RESULTS

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



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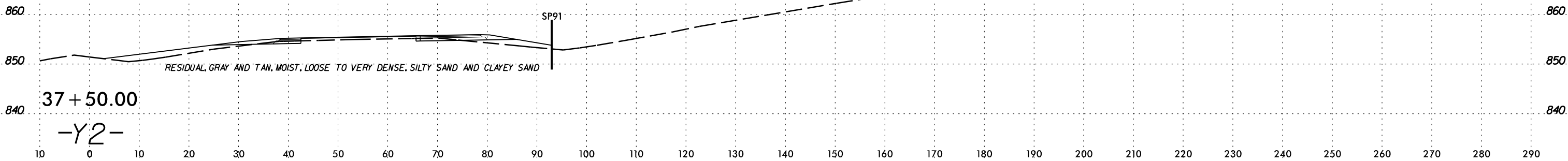
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PROJ. REFERENCE NO.
U-2579AA

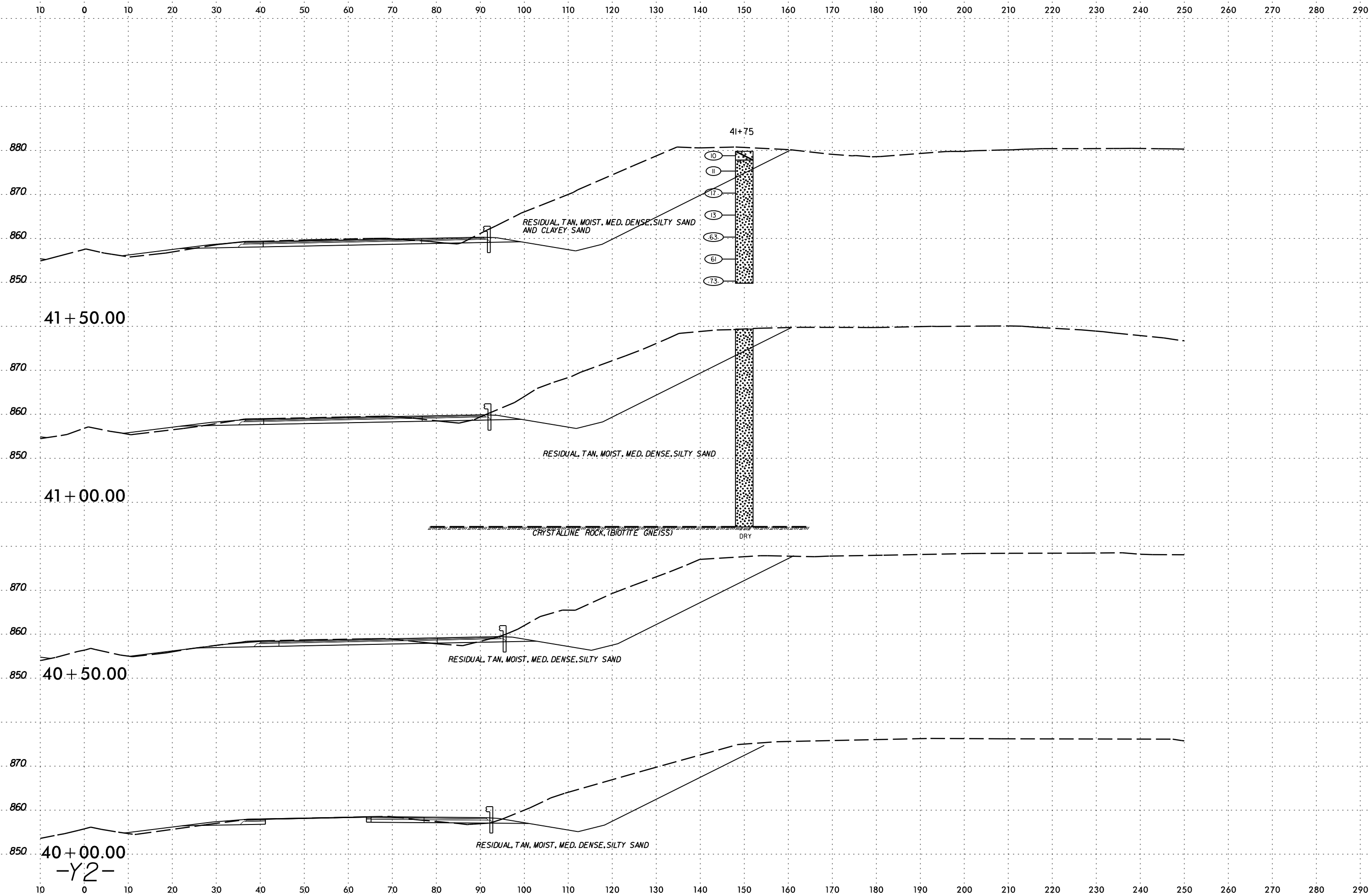
SHEET NO.
83

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VERTICAL CURVE DATA

37+50.00
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RESIDUAL TAN, MOIST, MED. DENSE, SILTY SAND AND CLAYEY SAND

RESIDUAL TAN, MOIST, MED. DENSE, SILTY SAND

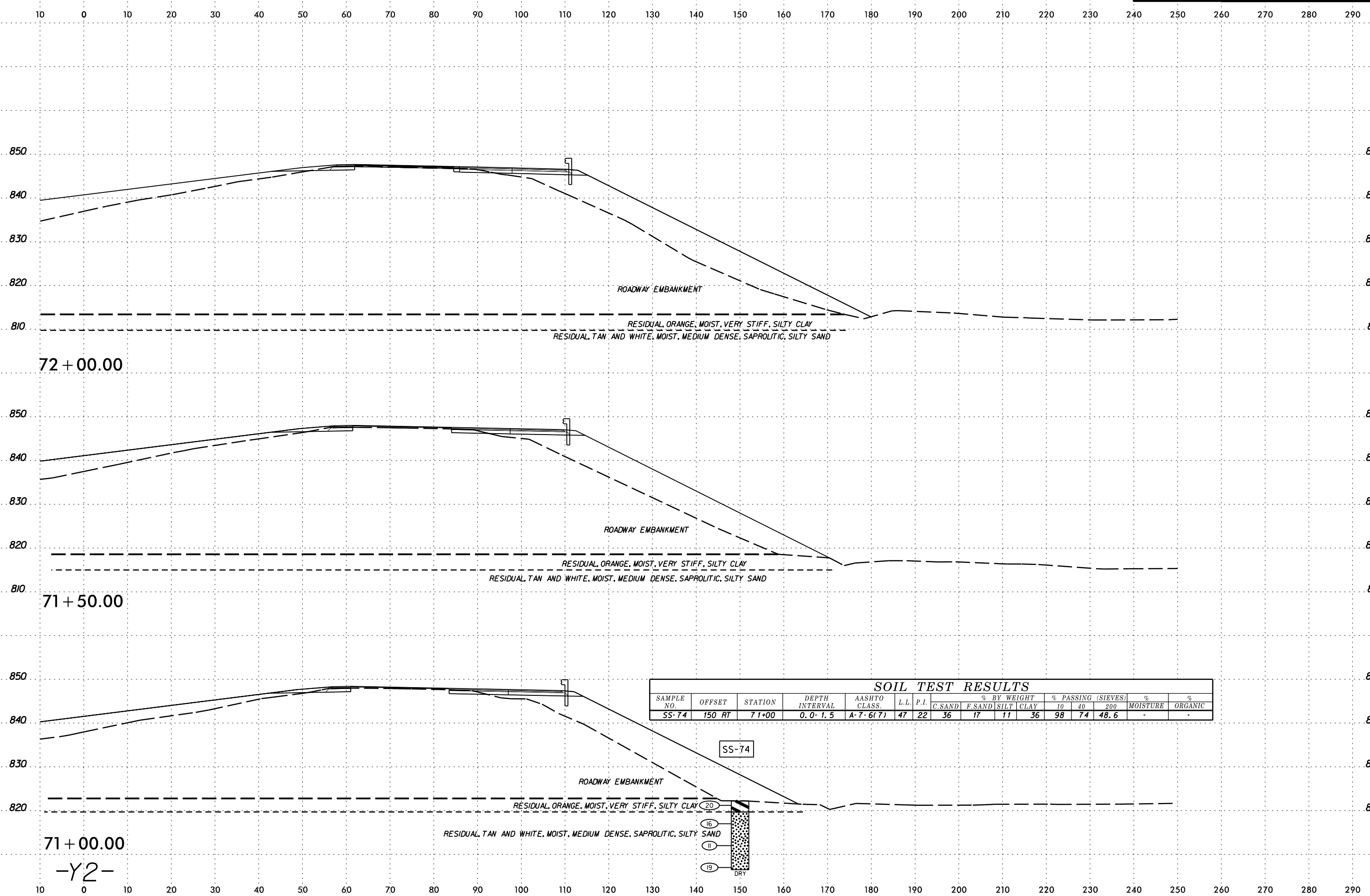
CRYSTALLINE ROCK (BIOTITE GNEISS)

DRY

RESIDUAL TAN, MOIST, MED. DENSE, SILTY SAND

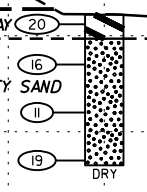
RESIDUAL TAN, MOIST, MED. DENSE, SILTY SAND

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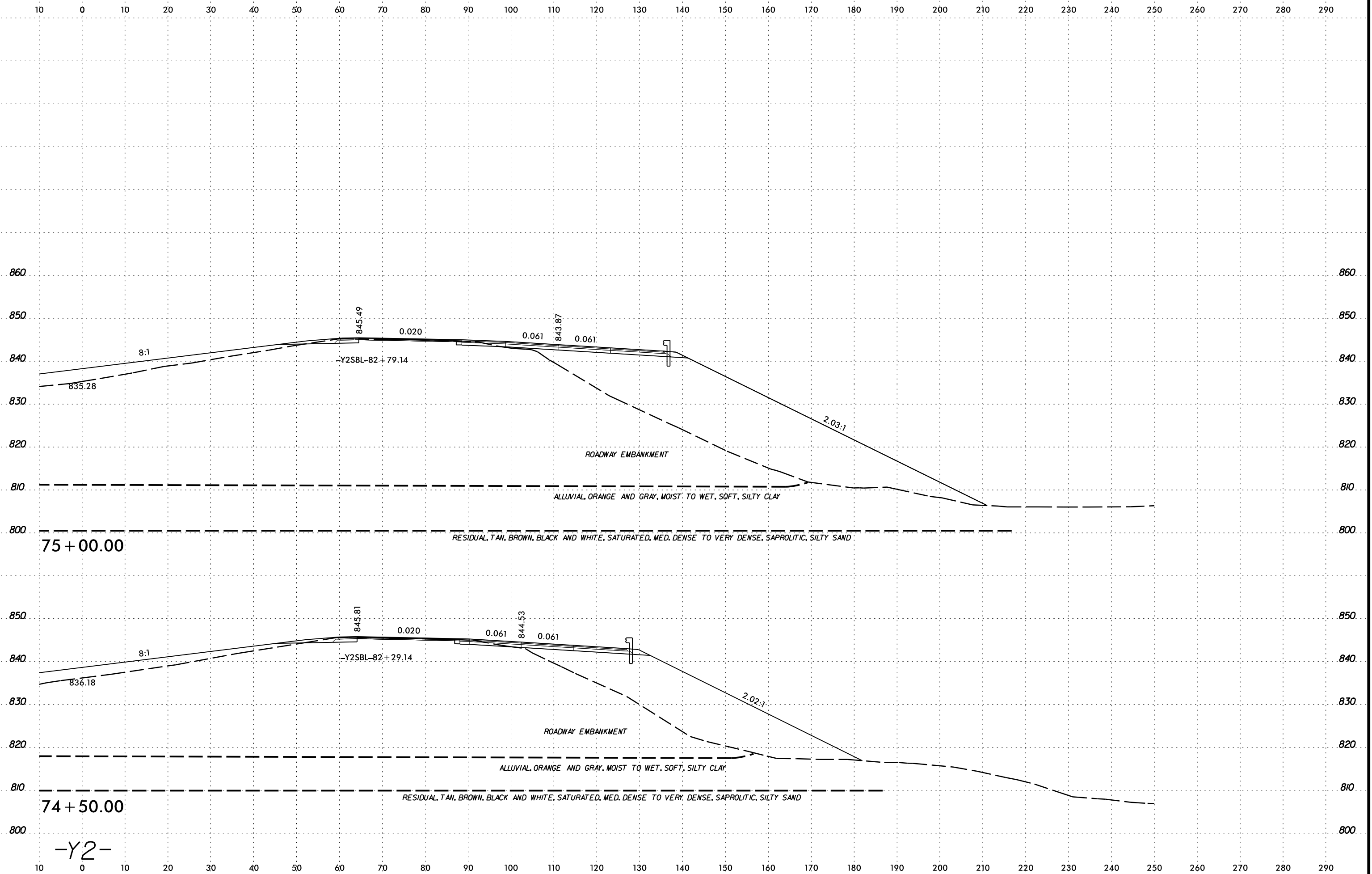
SOIL TEST RESULTS														
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)		% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40		
SS-74	150 RT	71+00	0.0-1.5	A-7-6(7)	47	22	36	17	11	36	98	74	48.6	-

SS-74



DATE: 6/23/16
 TIME: 10:00 AM
 DRAWN: J. J. J.
 CHECKED: J. J. J.
 APPR: J. J. J.

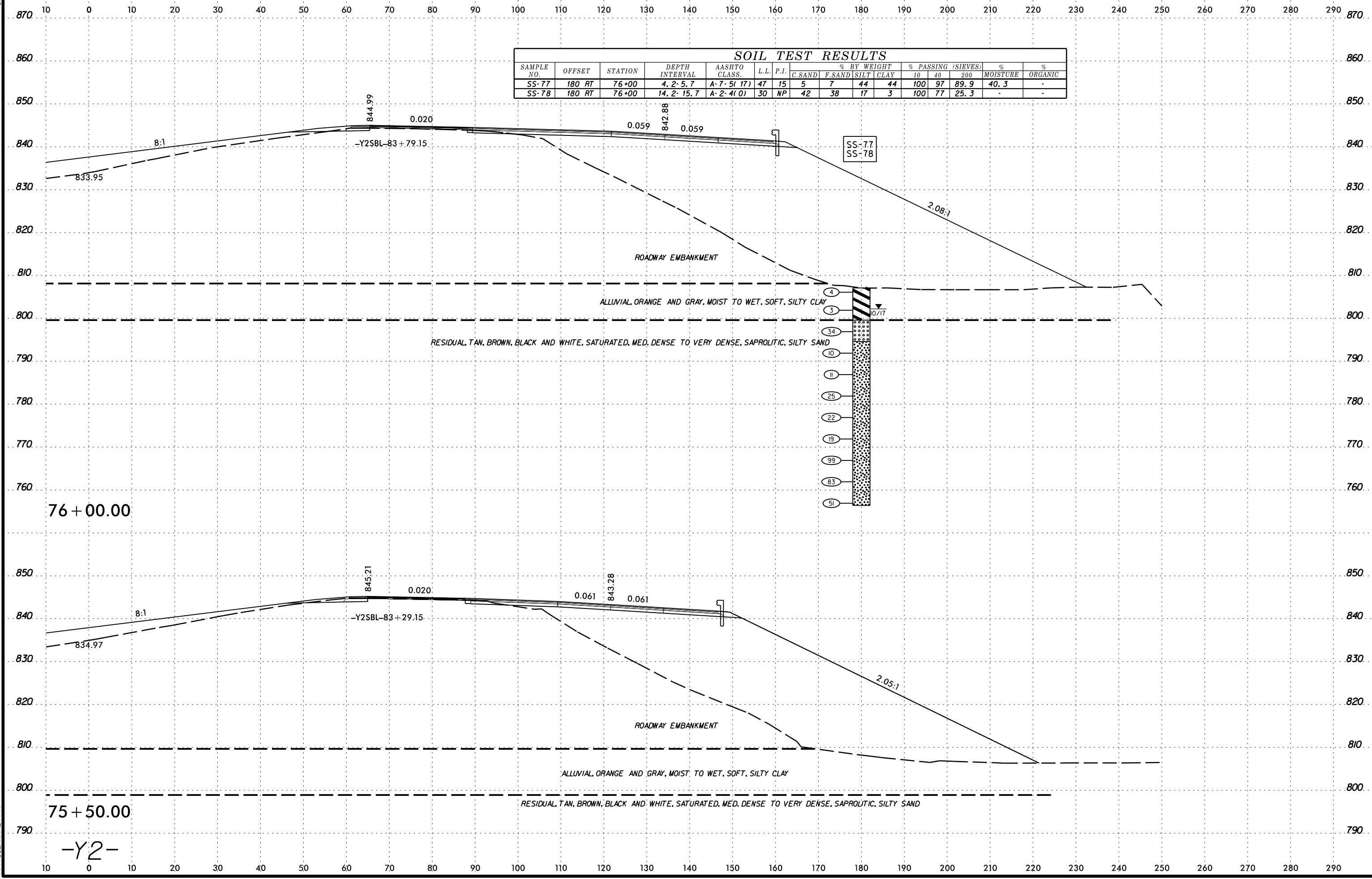
-Y2-



6/23/16
 CUSTOMER CONNECTION
 UPLINK
 800-368-6868
 www.docusign.com

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	-	-



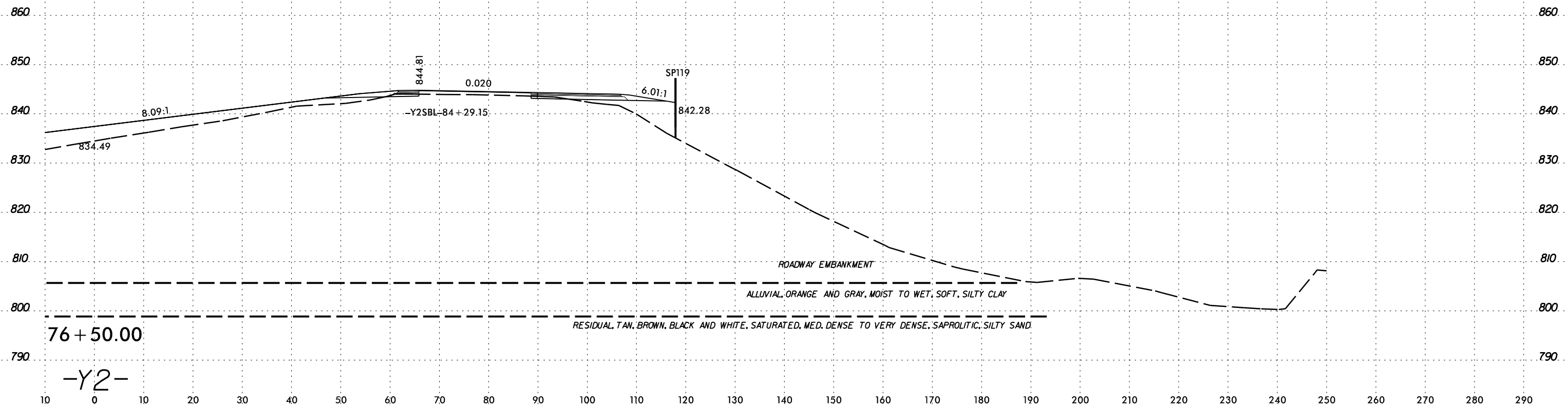
6/23/16
CUSTOMER CONNECTION
FOR ALL INFORMATION
PLEASE CONTACT
THE ENGINEER

6/23/16



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

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



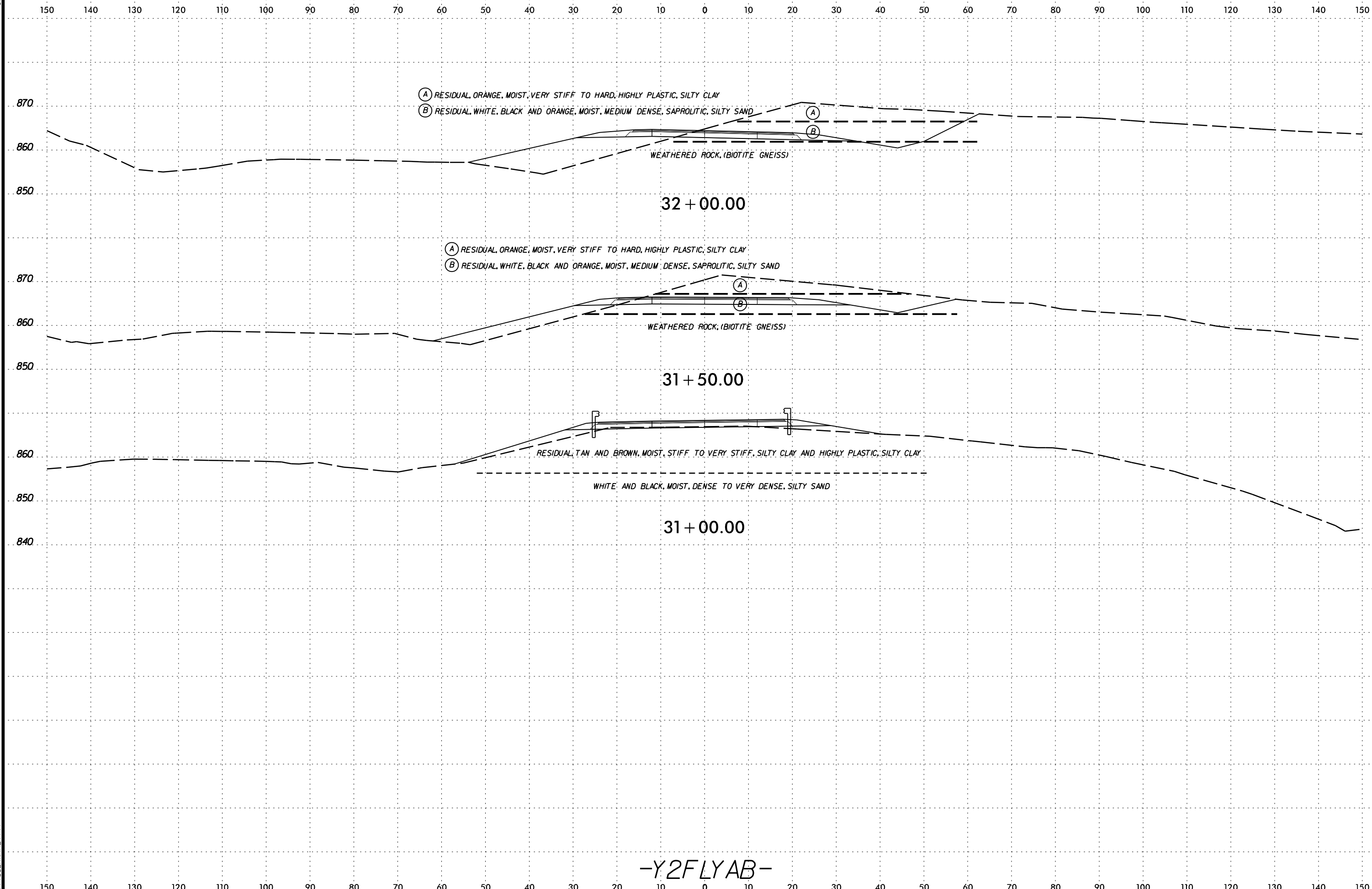
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76 + 50.00

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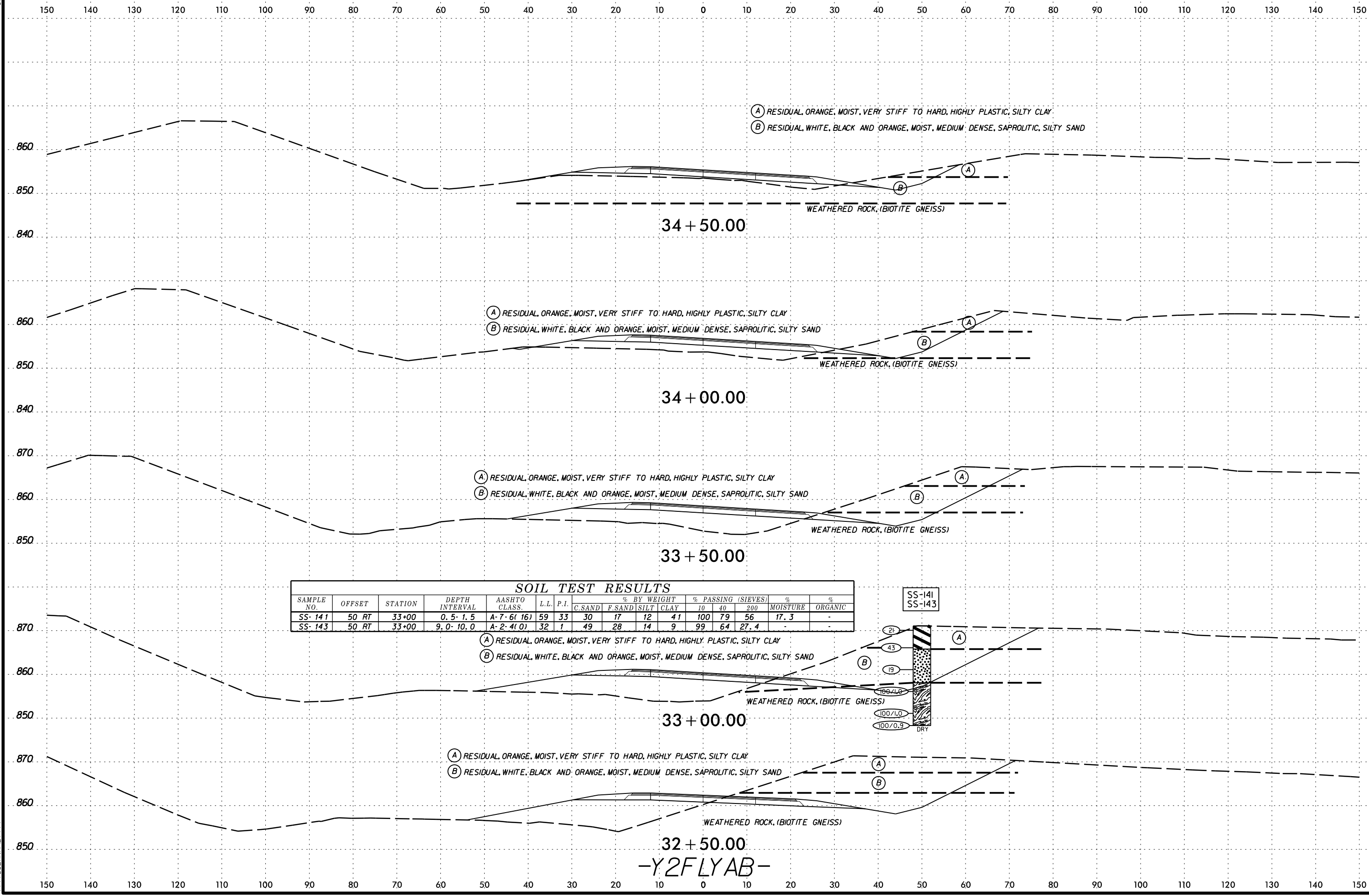
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CHECKED BY: [unreadable]



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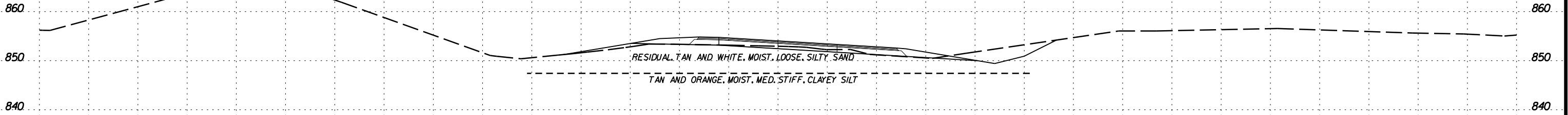
6/23/16



PROJ. REFERENCE NO.
U-2579AA

SHEET NO.
91

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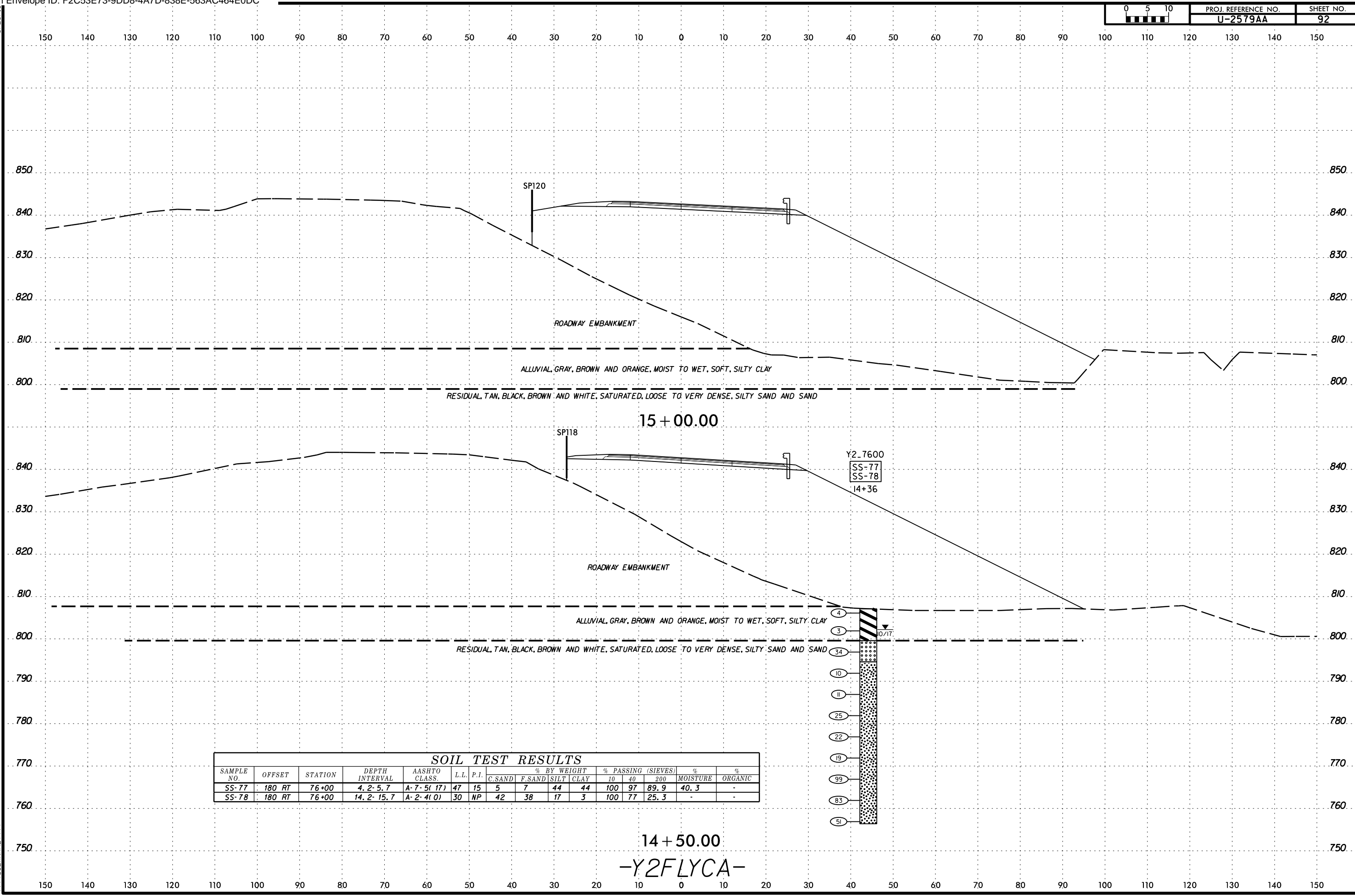


35 + 00.00

-Y2FLYAB-

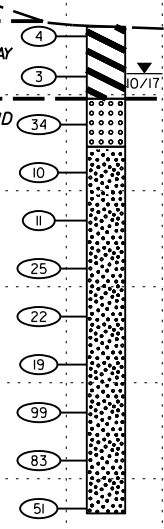
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SECTION
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BY
CHECKED
APPROVED



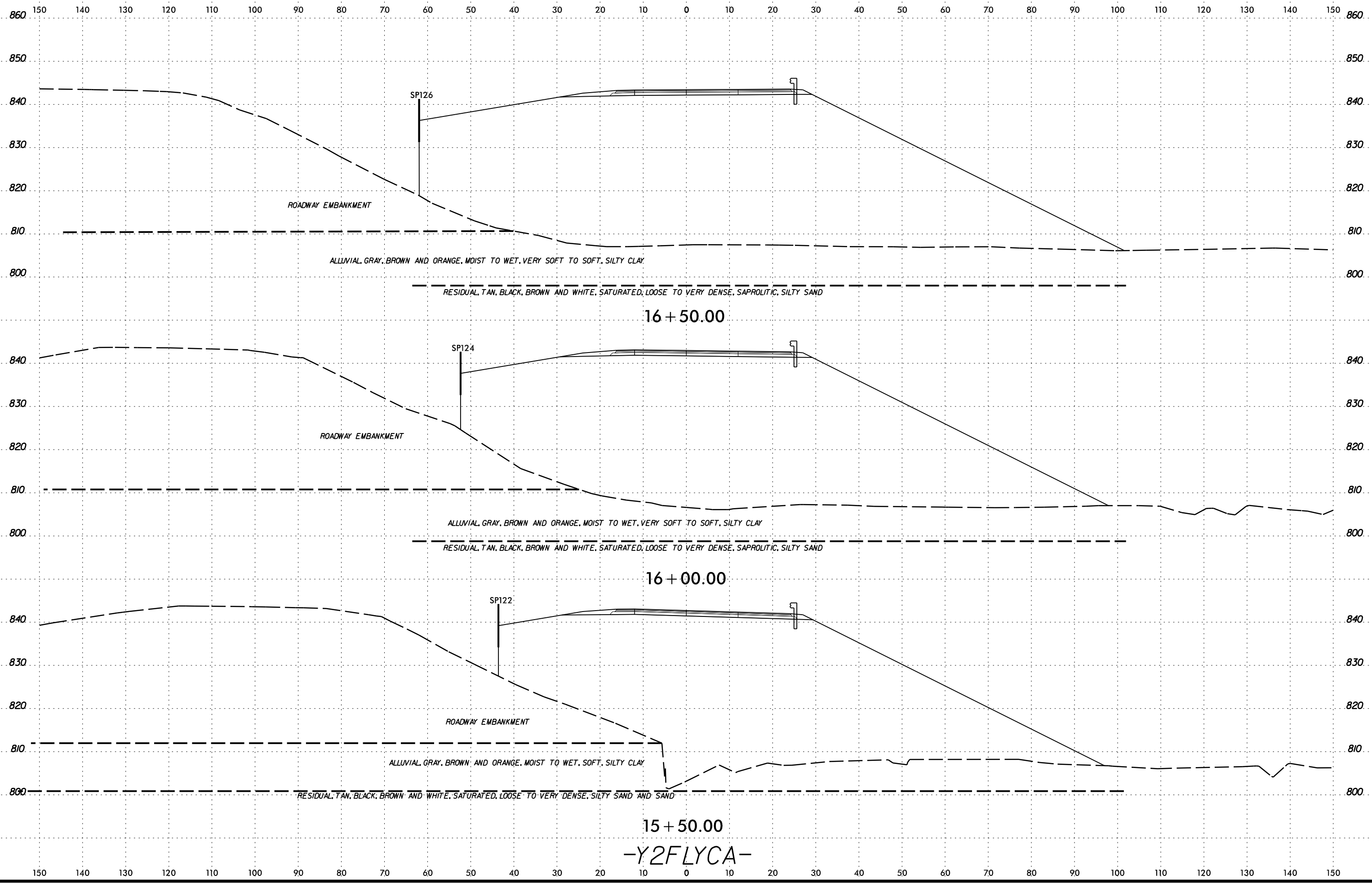
SOIL TEST RESULTS

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	-	-



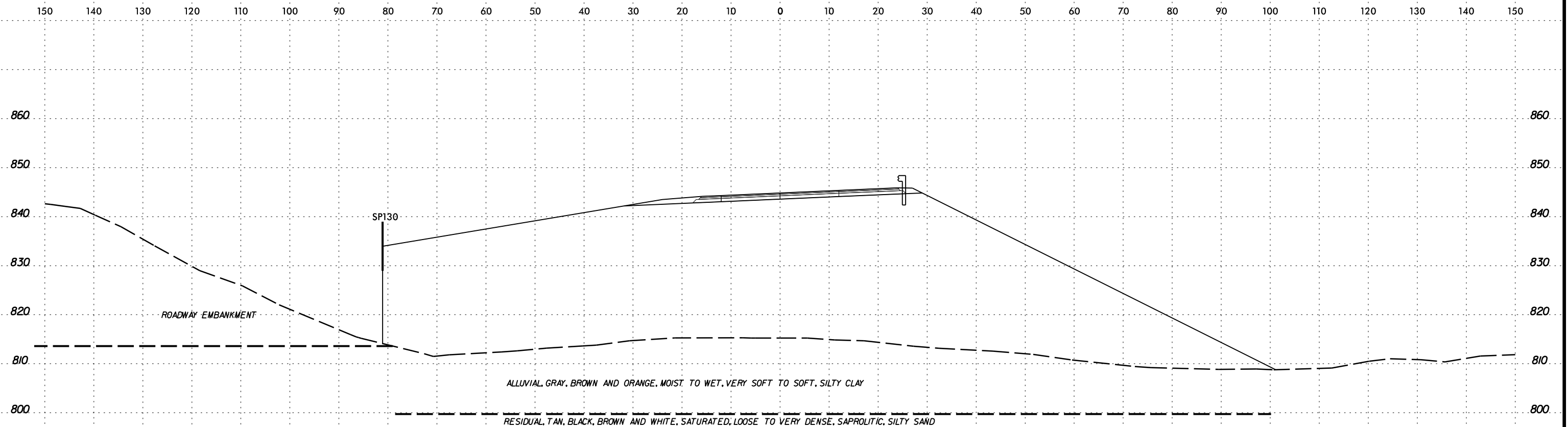
14 + 50.00
 -Y2FLYCA-

6/23/16



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15 + 50.00
 -Y2FLYCA-

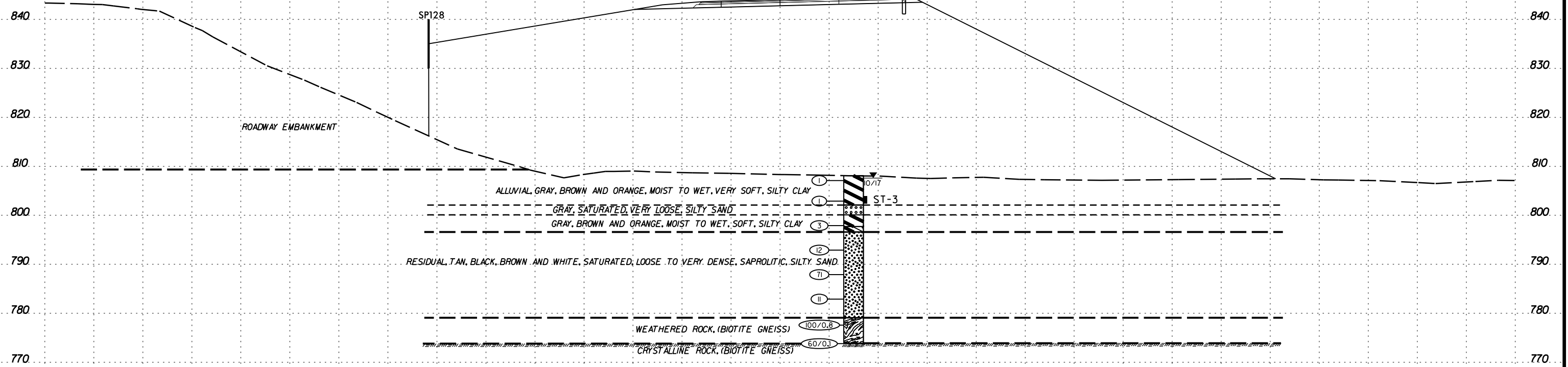


SOIL TEST RESULTS

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+50.00

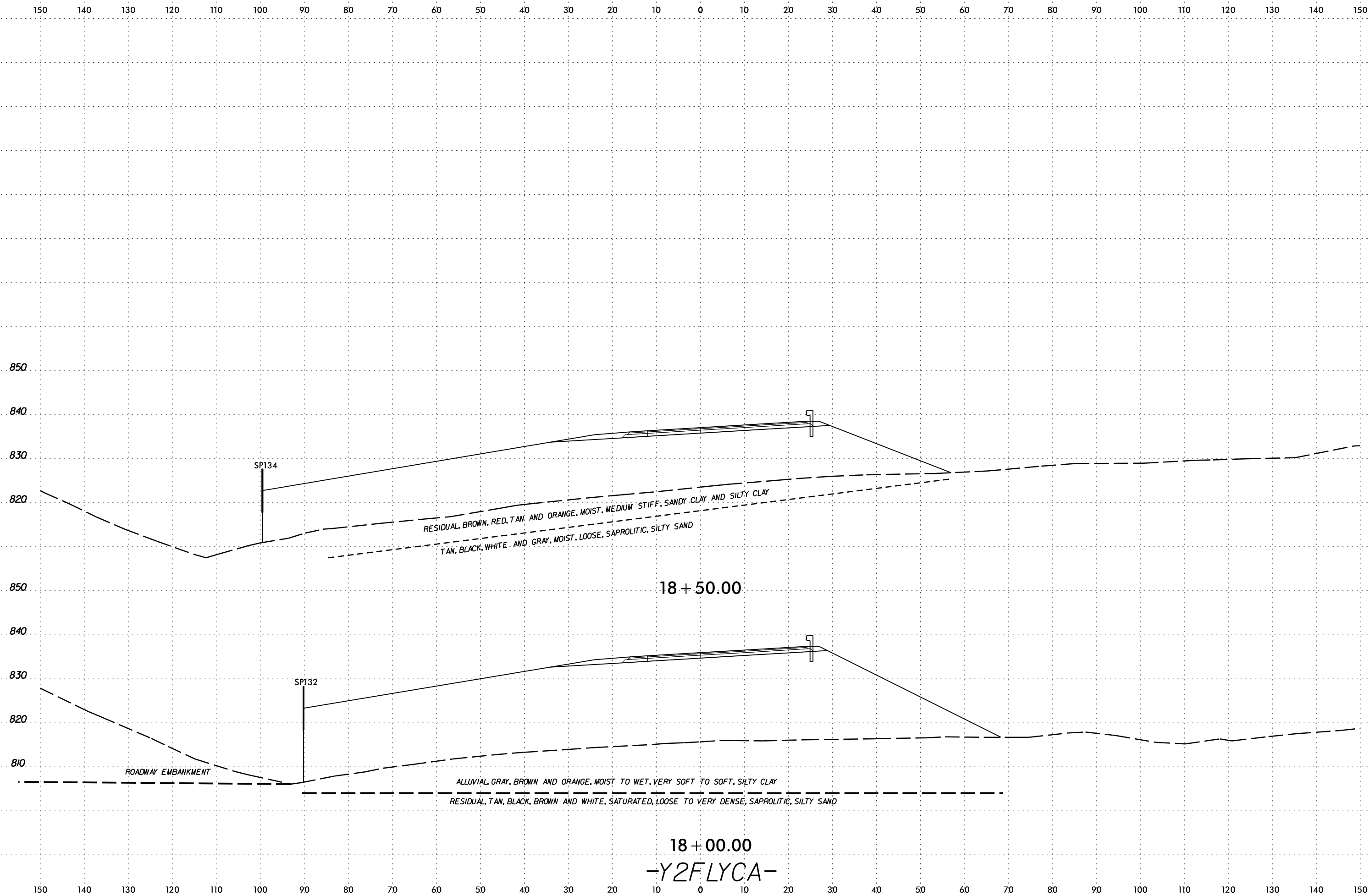
SS-73



17+00.00

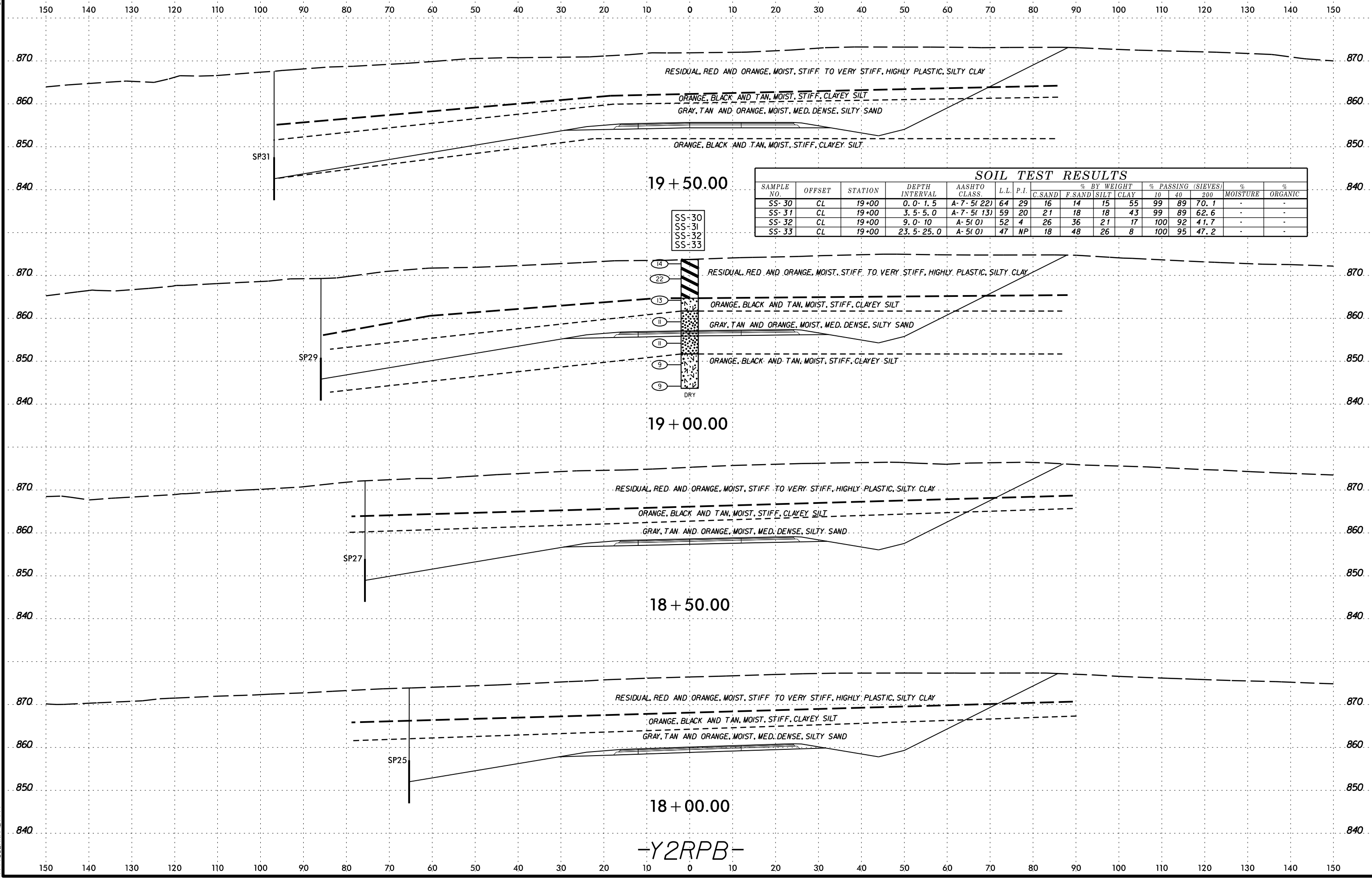
-Y2FLYCA-

6/23/16



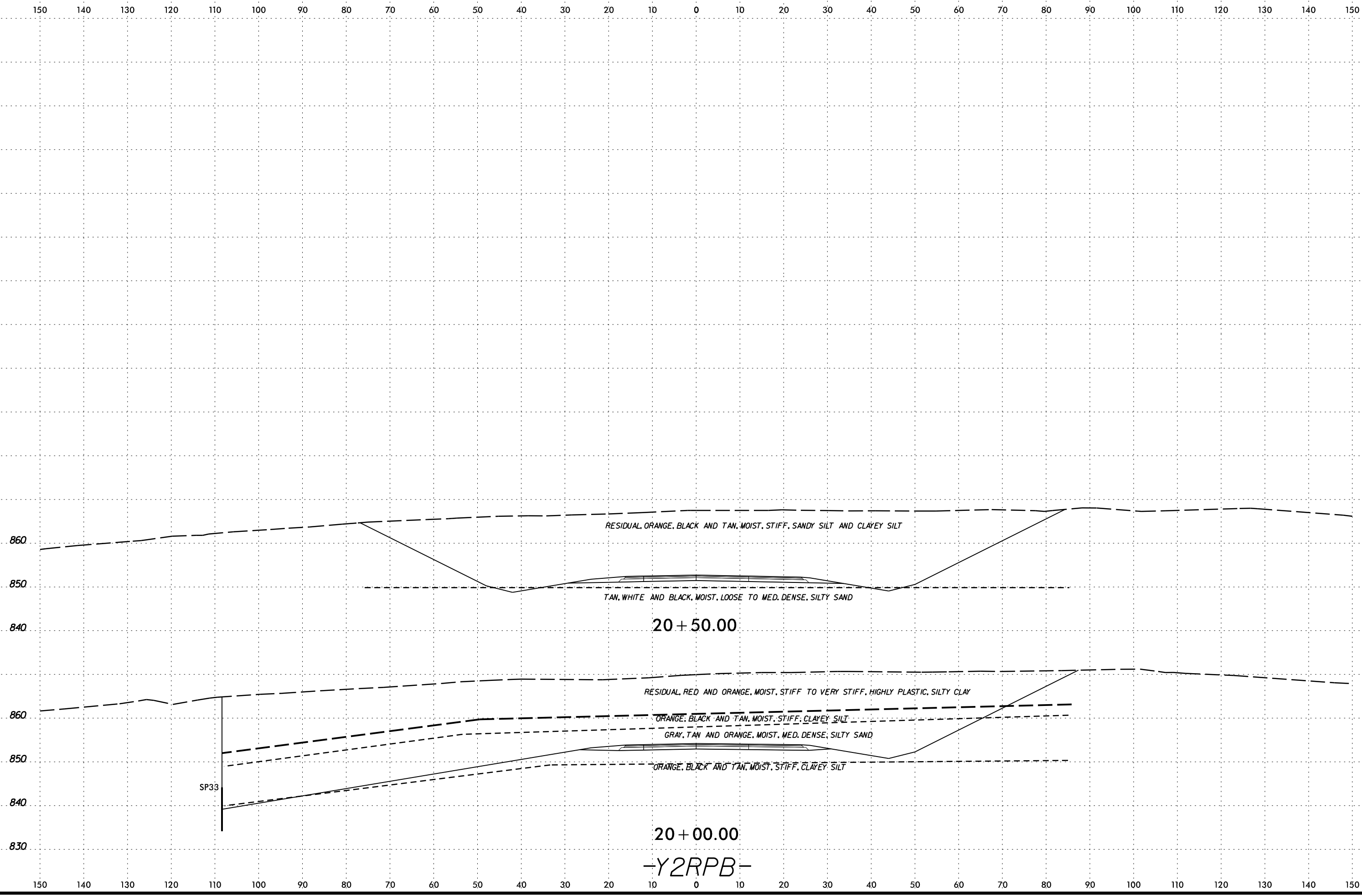
-Y2FLYCA-

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APPROVED



6/23/16
SCALE
1"=20'
VERTICAL SCALE
1"=4'

-Y2RPB-



RESIDUAL, ORANGE, BLACK AND TAN, MOIST, STIFF, SANDY SILT AND CLAYEY SILT

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

20 + 50.00

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

ORANGE, BLACK AND TAN, MOIST, STIFF, CLAYEY SILT

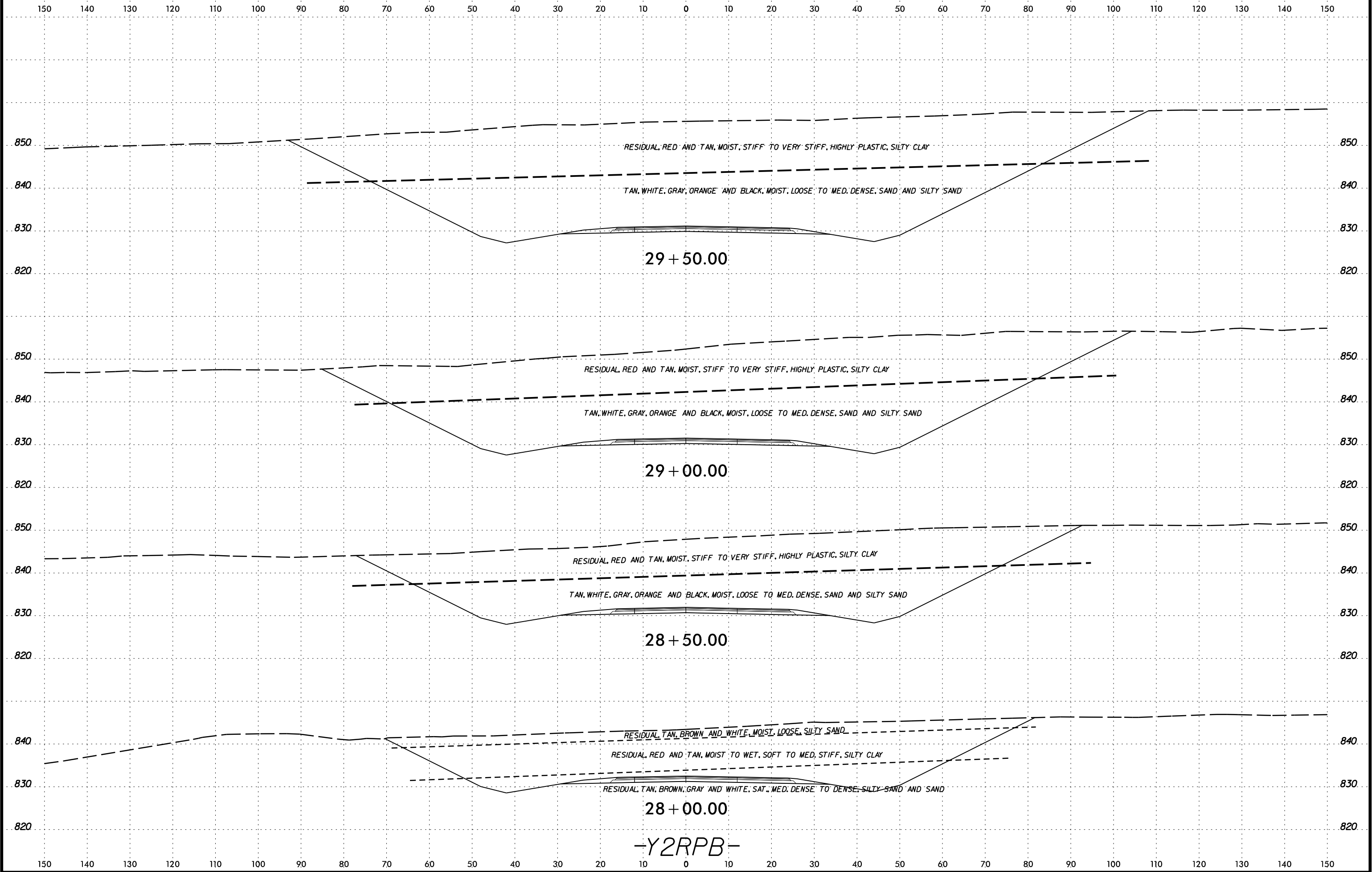
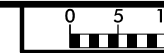
20 + 00.00

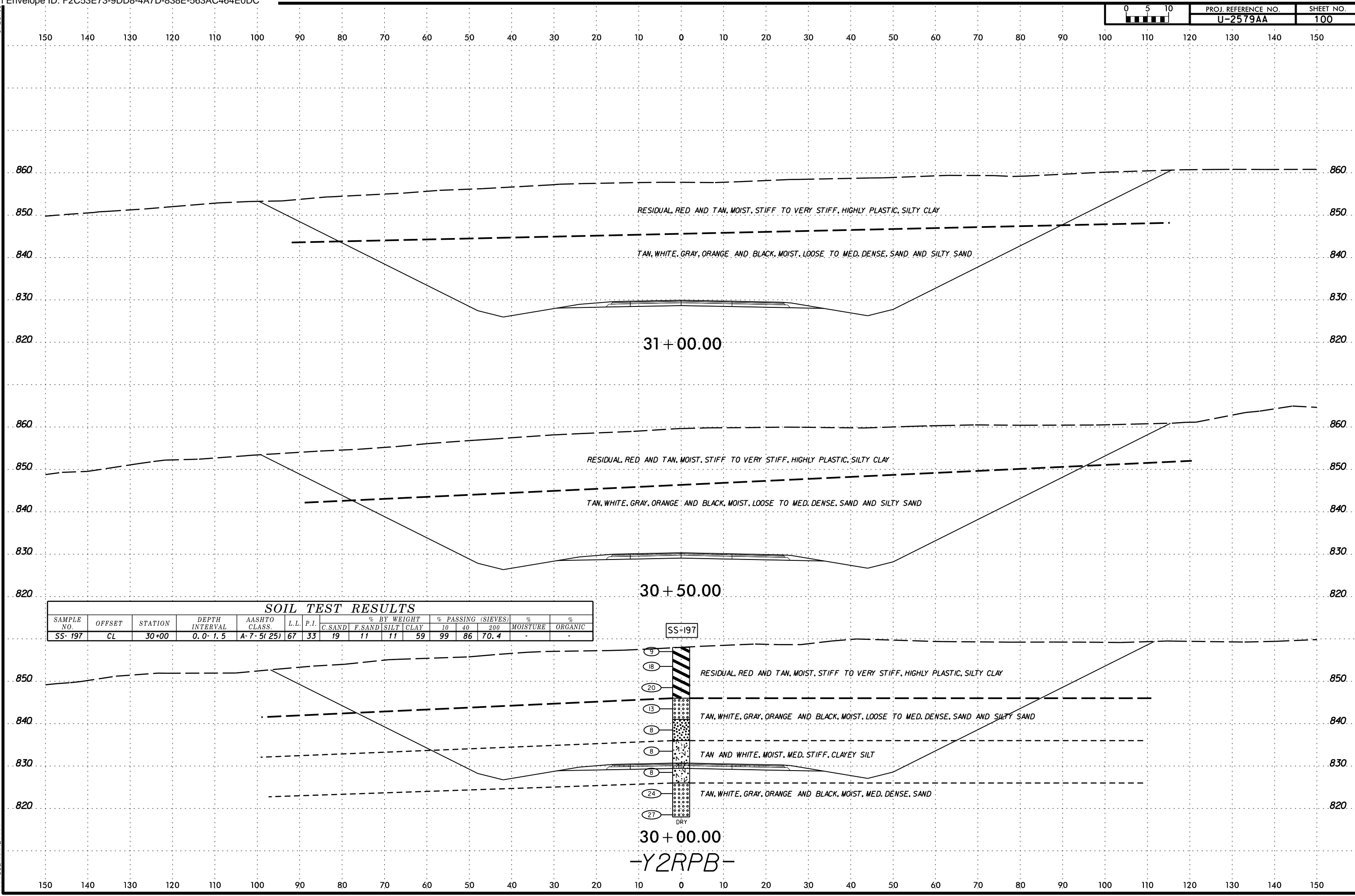
-Y2RPB-

SP33

6/23/16
CUSTOMER CONNECTION
SERVICES

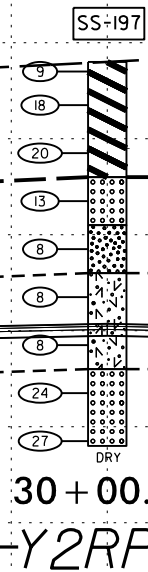
6/23/16





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



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

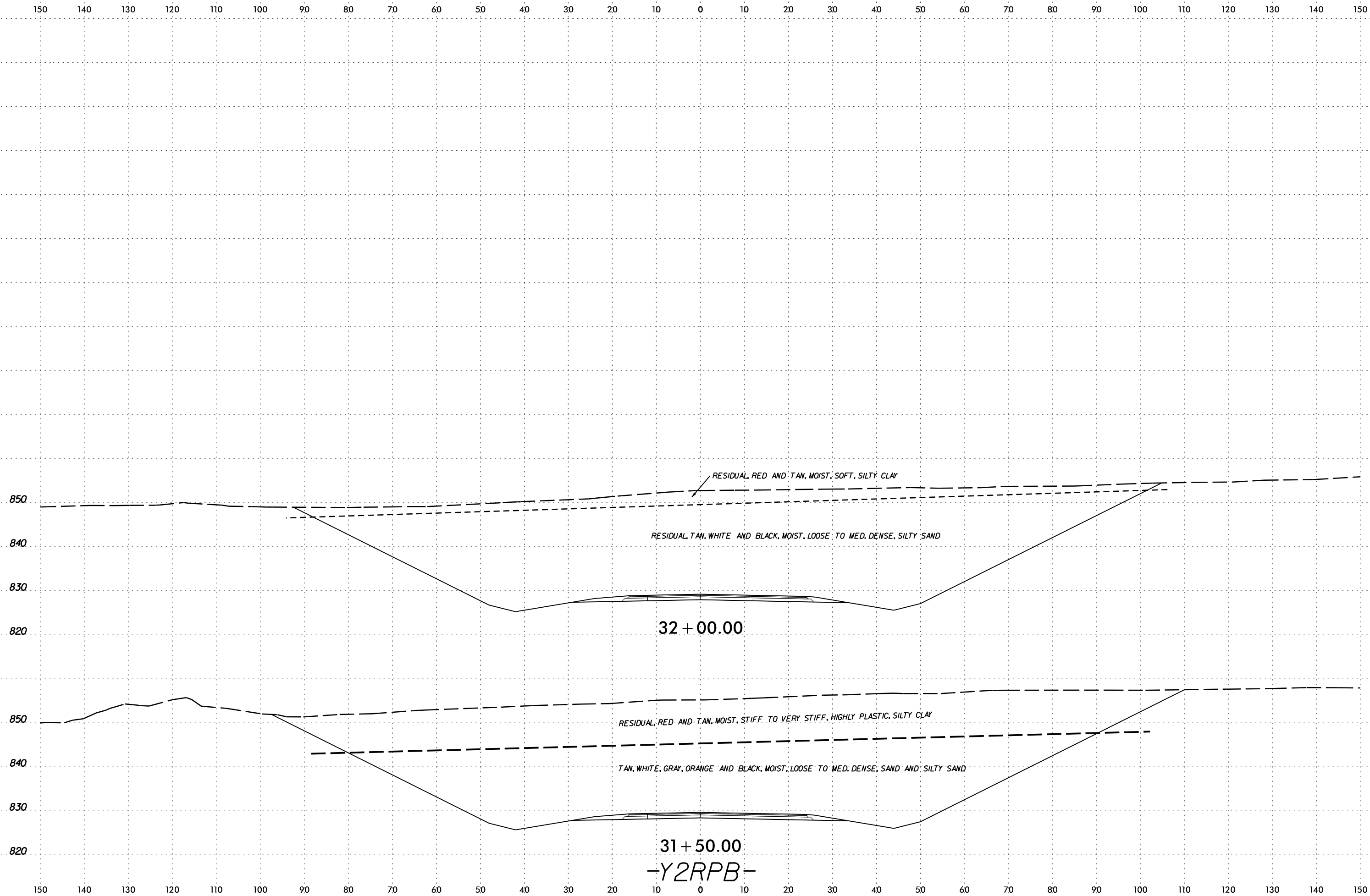
TAN, WHITE, GRAY, ORANGE AND BLACK, MOIST, LOOSE TO MED. DENSE, SAND AND SILTY SAND

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

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

30+00.00

-Y2RPB-

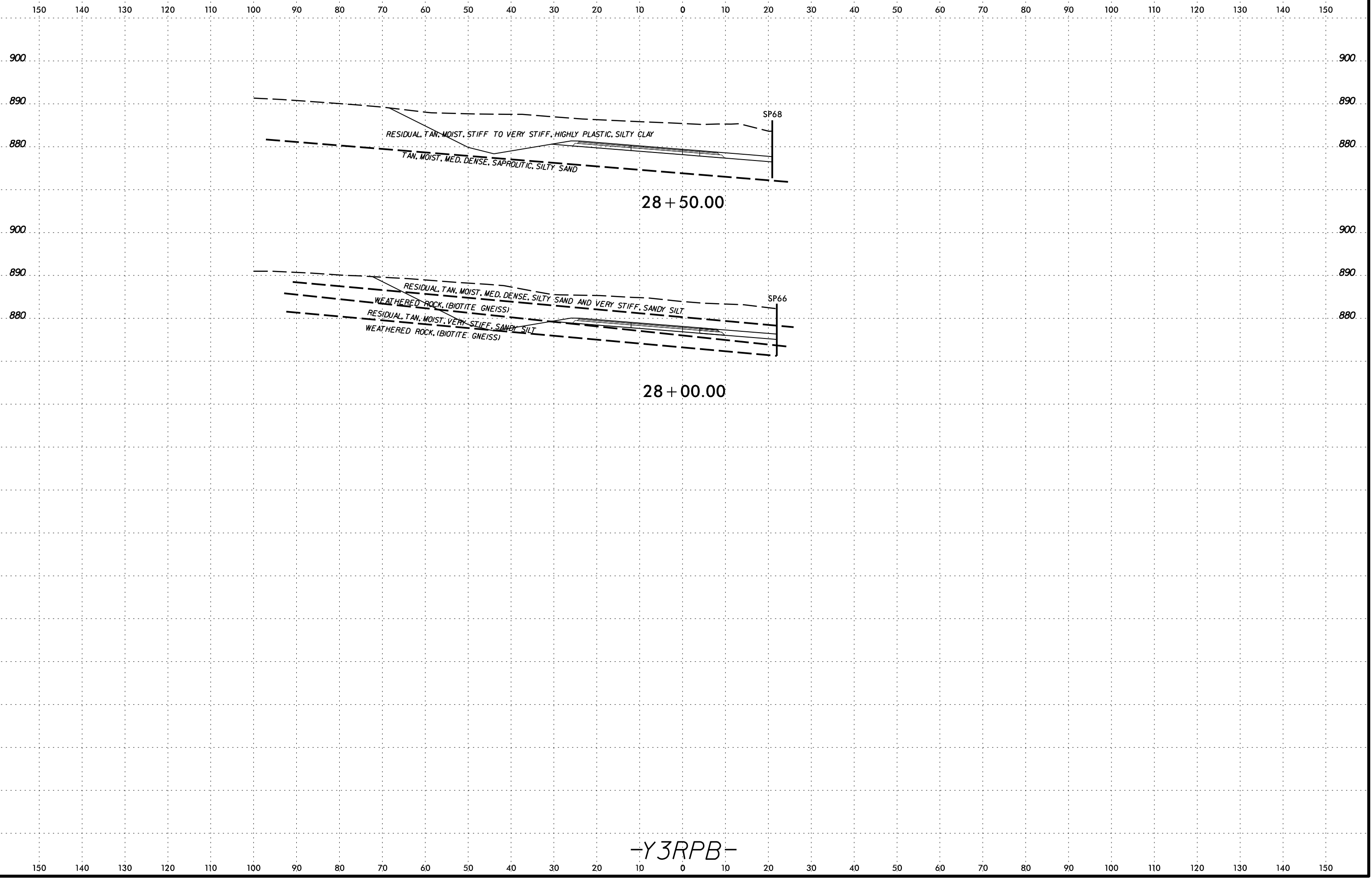


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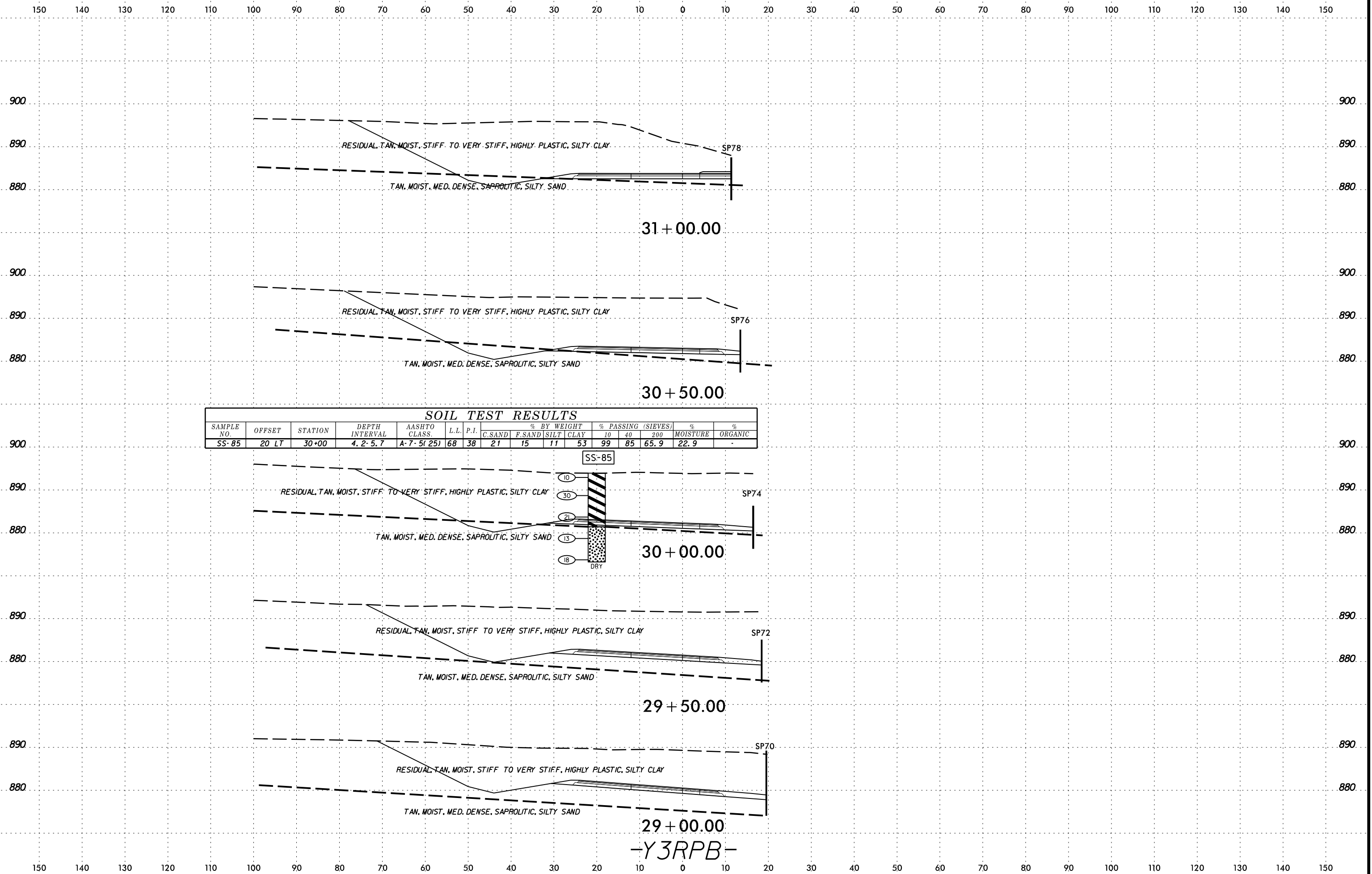
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PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	104



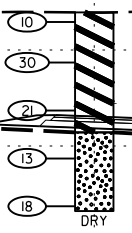
-Y3RPB-



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-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	-

SS-85



-Y3RPB-

6/23/16



PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	106

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

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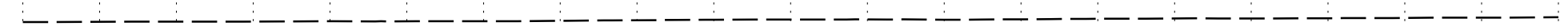
890

880

880

870

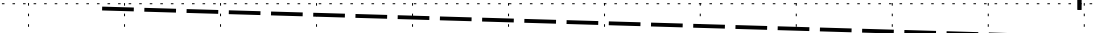
870



32 + 00.00



RESIDUAL TAN. MOIST. STIFF TO VERY STIFF, HIGHLY PLASTIC, SILTY CLAY



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



31 + 50.00

-Y3RPB-

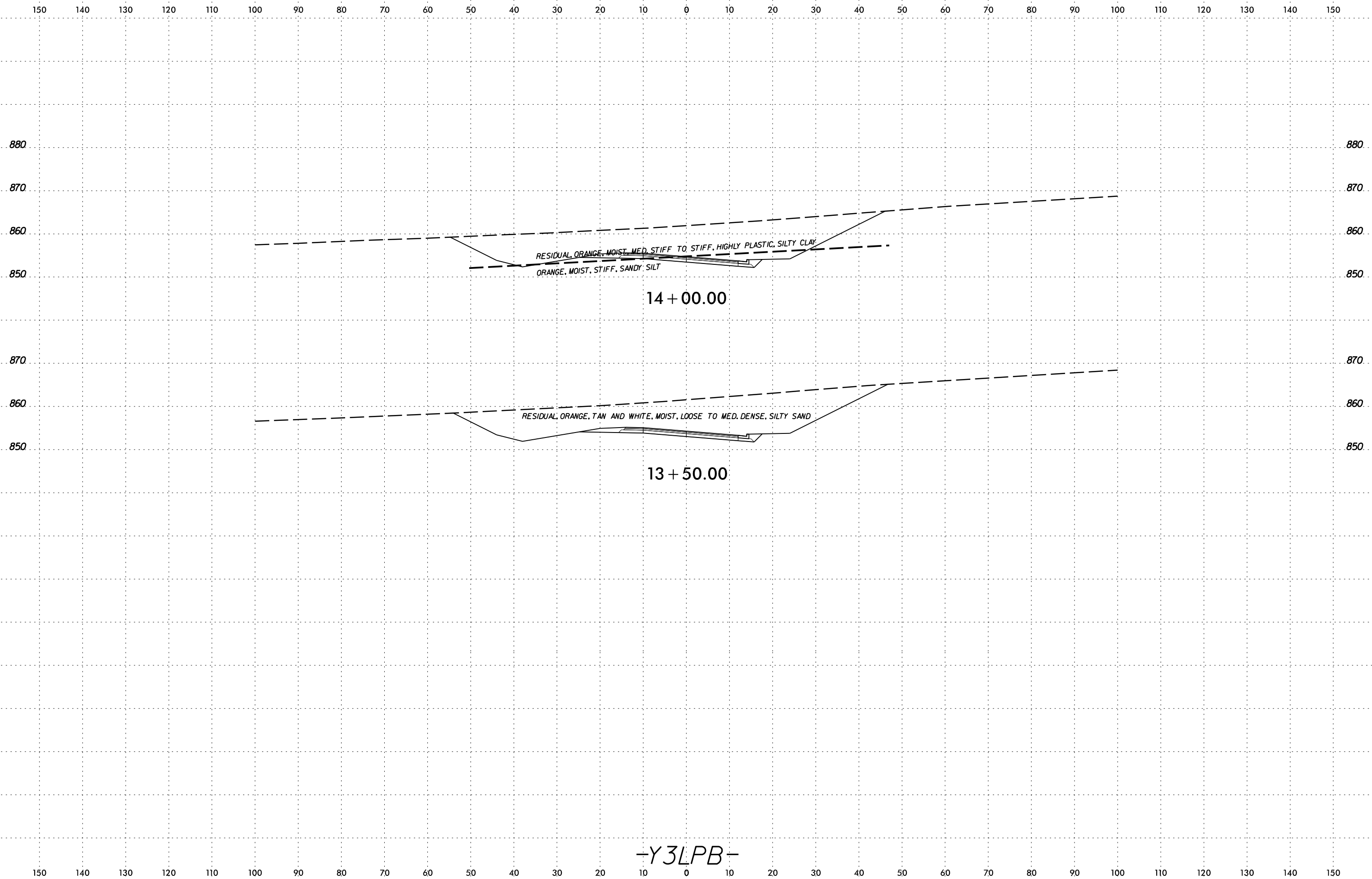
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SYTIME CONN 6/23/16

6/23/16

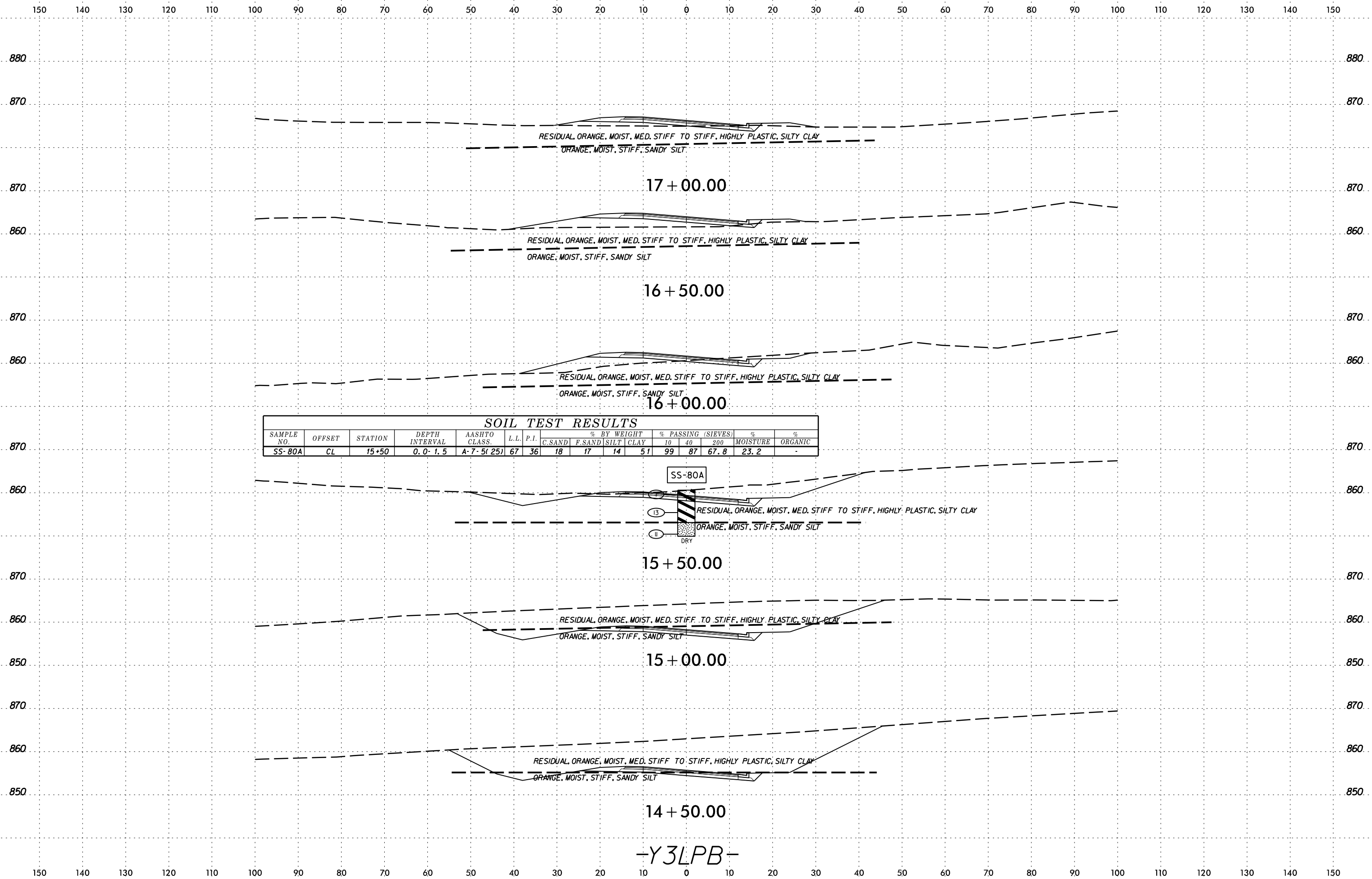


PROJ. REFERENCE NO.	SHEET NO.
U-2579AA	107



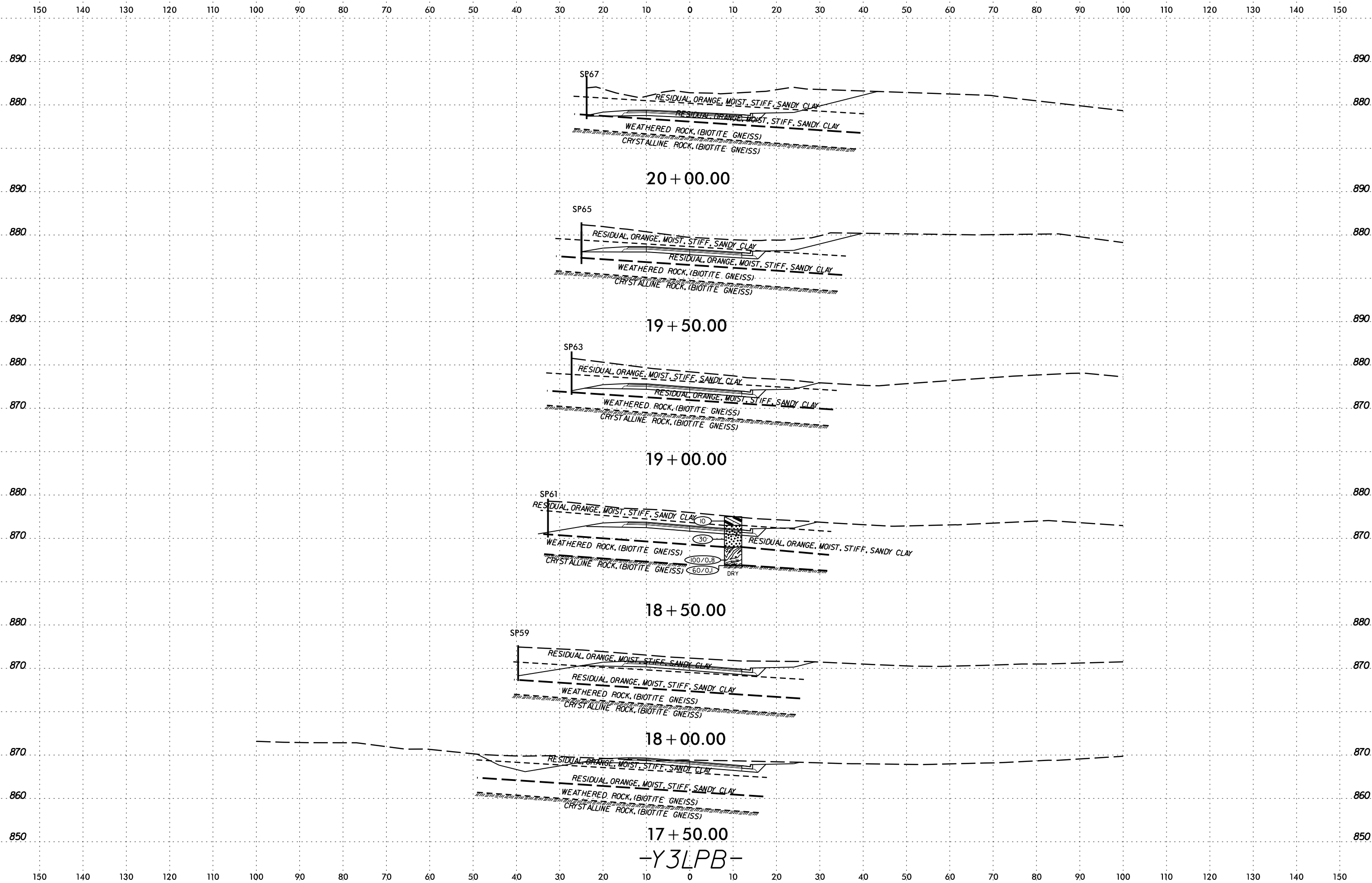
DATE: 6/23/16
SCALE: AS SHOWN
BY: JLR/ML

-Y3LPB-



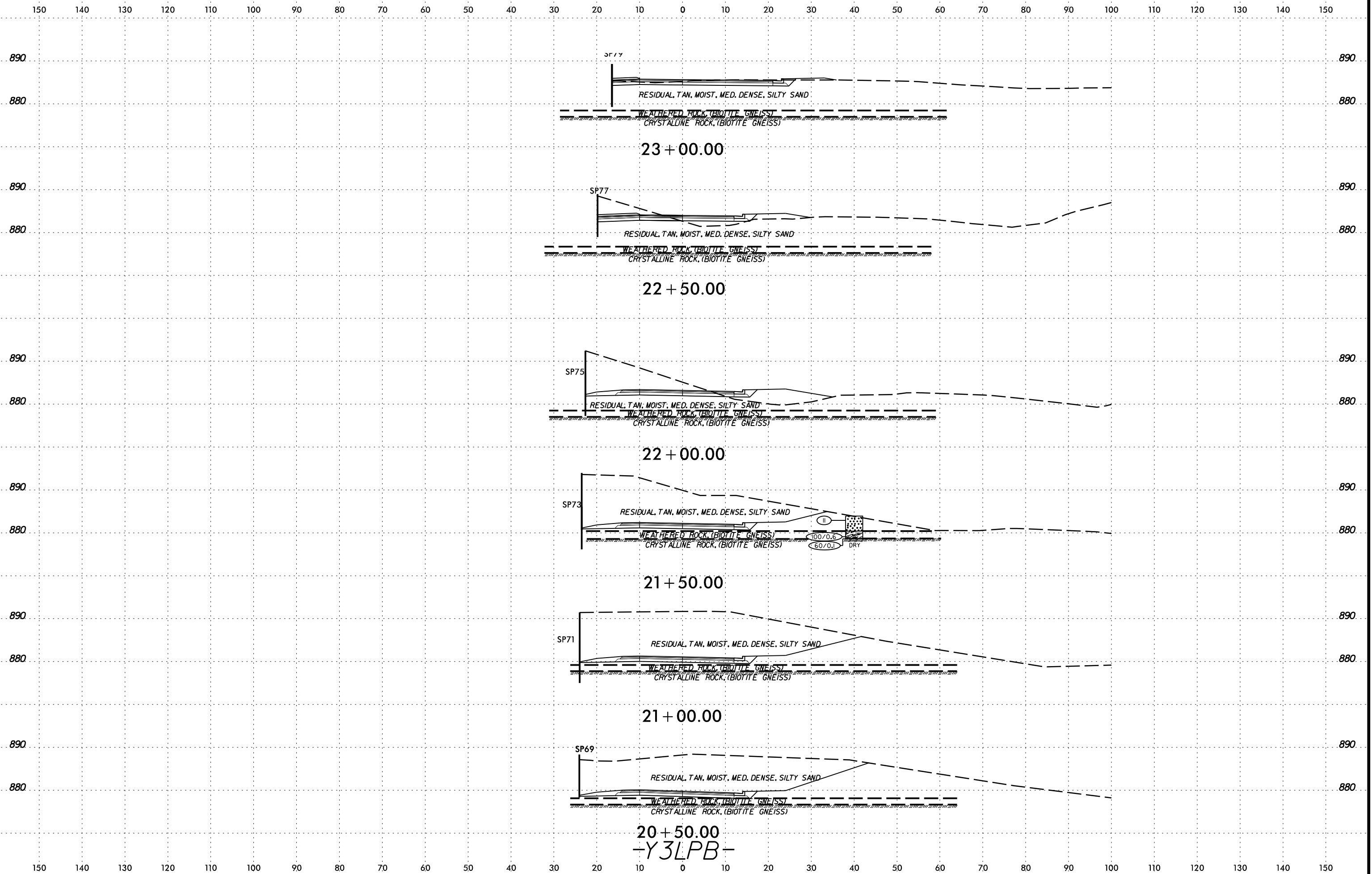
6/23/16
 COUNTY OF SAN DIEGO
 DEPARTMENT OF PUBLIC WORKS
 DIVISION OF HIGHWAYS
 1500 LA JOLLA VILLAGE DRIVE
 SAN DIEGO, CA 92161

-Y3LPB-



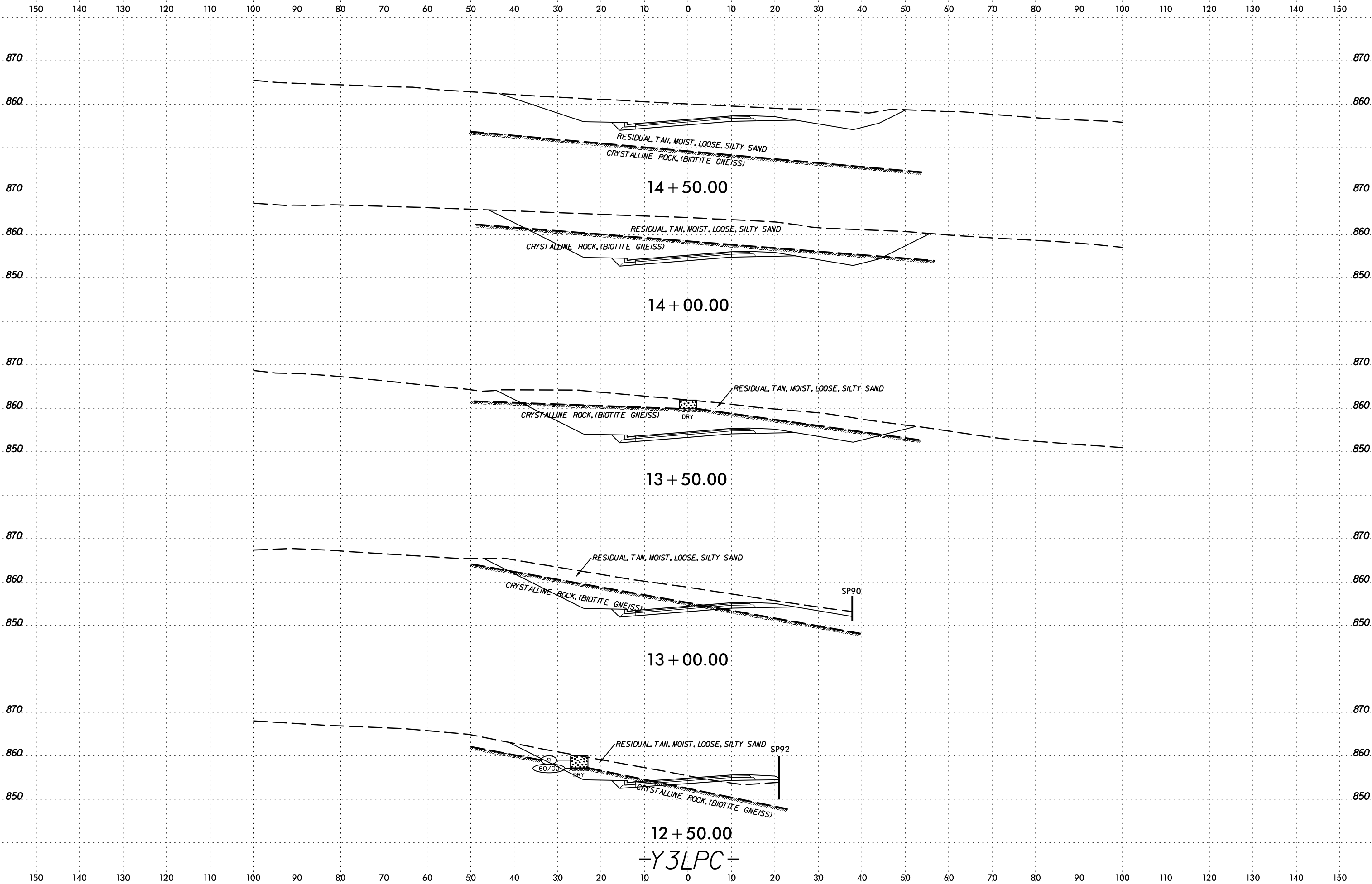
17 + 50.00
-Y3LPB-

6/23/16
SCHEMATIC
CONSTRUCTION
LEVEL
ARRANGEMENT

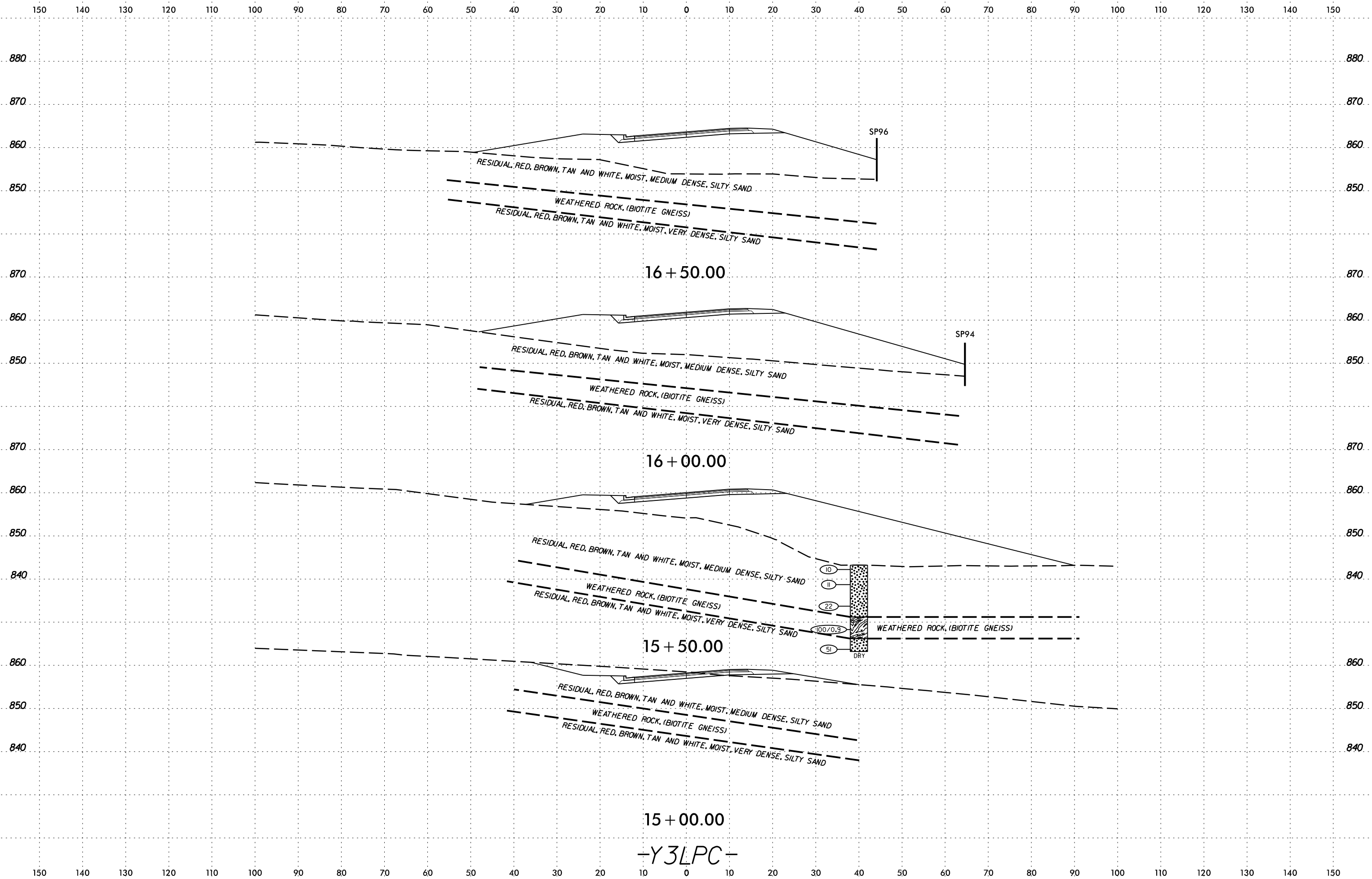


20 + 50.00
-Y3LPB-

6/23/16
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CONSTRUCTION
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6/23/16
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 16+50.00
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 -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
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
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
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 #					Total Mortar Fraction (%)				LL	PL	PI	Moist. %
						10	40	60	200	270	Coarse Sand	Fine Sand	Silt	Clay				
						ST-1	36+00	55 RT	Y1	4.2-6.2	A-6							
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 Determined.

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
Technician Name:


Signature

104-01-0703
Certification #

Stewart Laney, PE
Technical Responsibility:

Project Manager
Position

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

MOISTURE - DENSITY REPORT



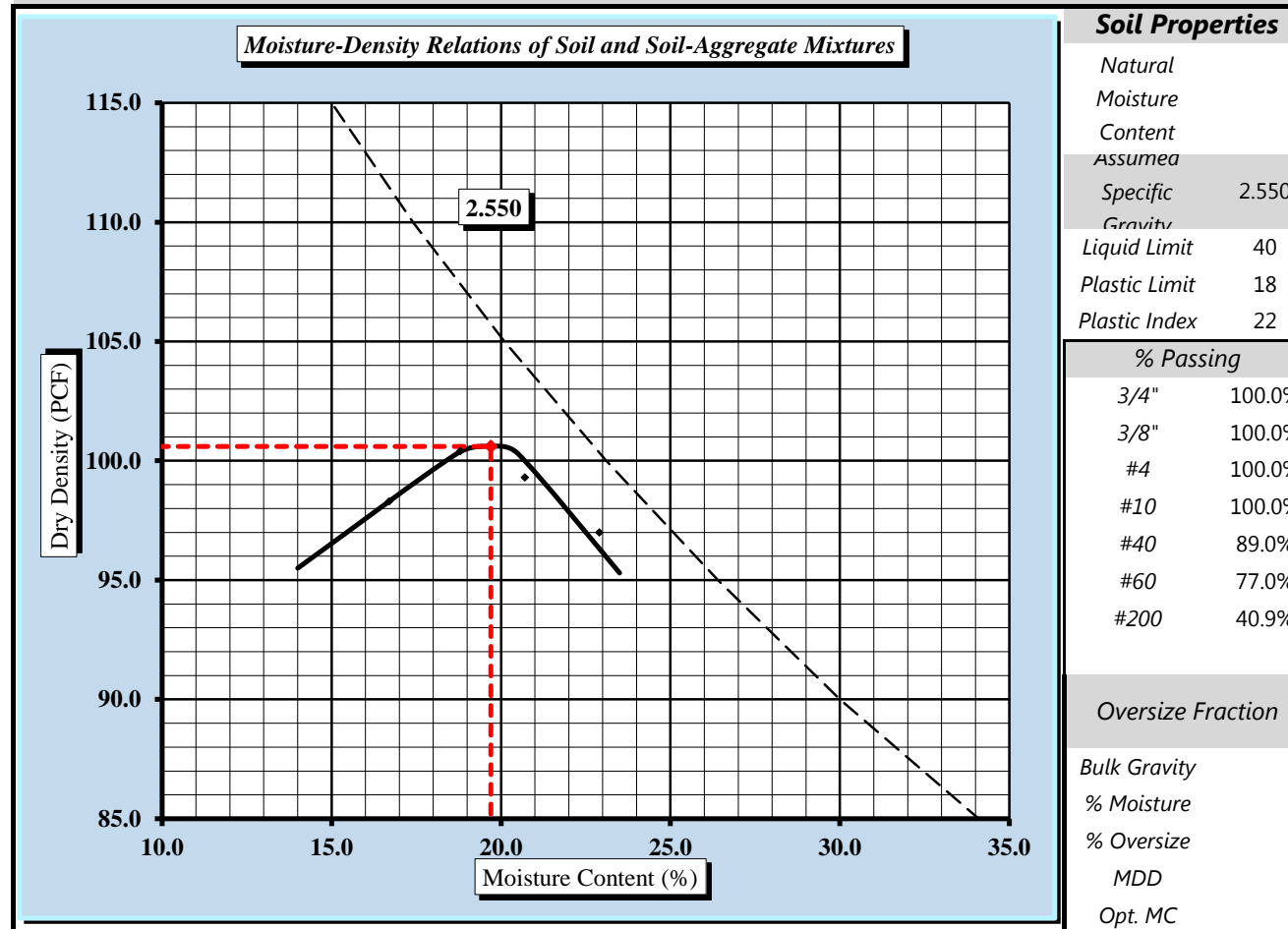
Quality Assurance

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



Moisture-Density Curve Displayed: Fine Fraction Corrected for Overize Fraction (ASTM D 4718)
 Sieve Size used to separate the Overize 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
 Technical Responsibility

Signature

Laboratory Manager
 Position

11/21/2017
 Date

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

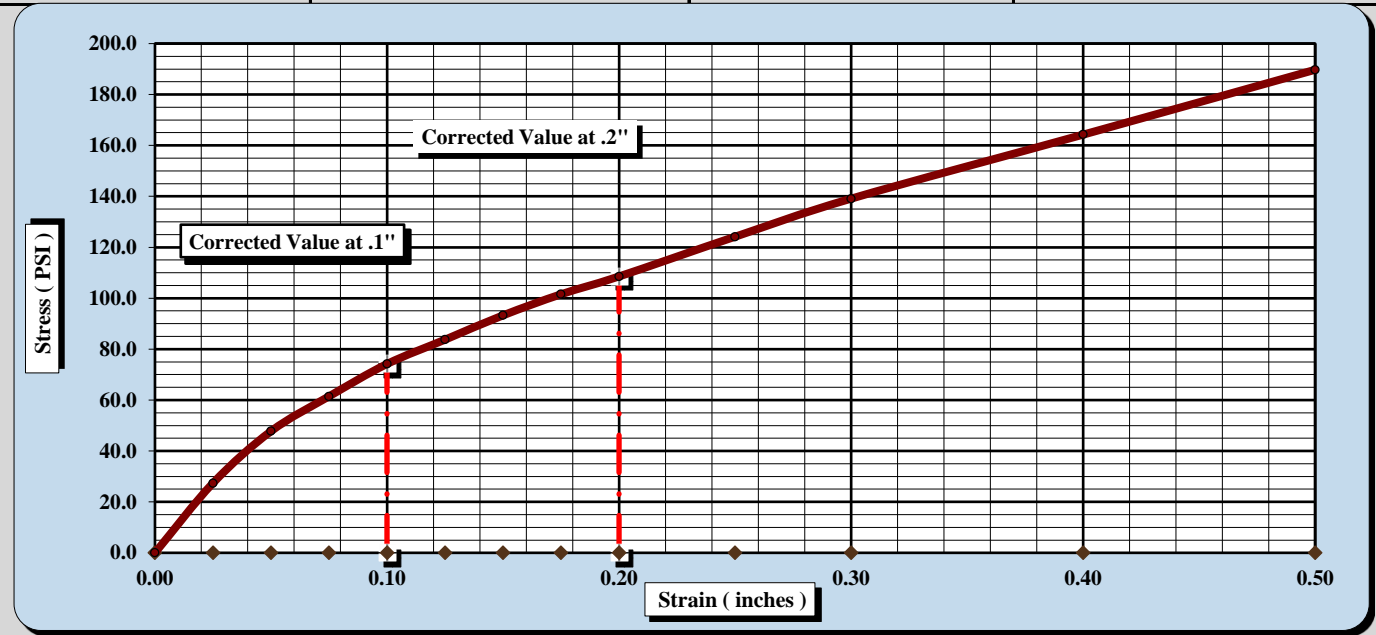
**CBR (CALIFORNIA BEARING RATIO)
 OF LABORATORY COMPACTED SOIL**



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 0.1 in.	7.4
CBR at 0.2 in.	7.2	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	Final Dry Density (PCF)	100.0
Initial Dry Density (PCF)	100.4	Moisture Content (top 1" after soaking)	26.9%
Moisture Content of the Compacted Specimen	19.9%	Percent Swell	0.6%
Percent Compaction	99.8%		

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
 Technical Responsibility

Signature

Laboratory Manager
 Position

11/27/2017
 Date

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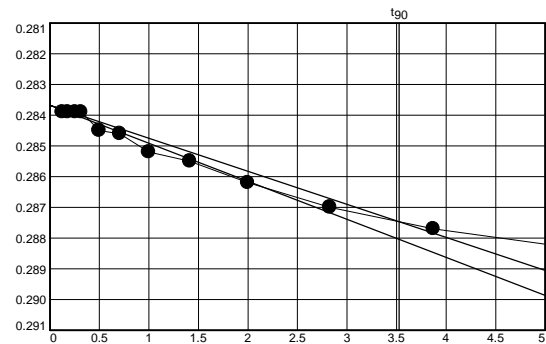
Pressure: 0.05 tsf TEST READINGS Load No. 1

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			

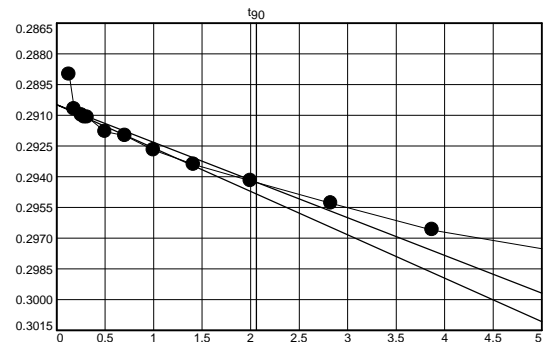


Void Ratio = 0.782 Compression = 1.5%

D₀ = 0.2837 D₉₀ = 0.2875 D₁₀₀ = 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%

D₀ = 0.2905 D₉₀ = 0.2943 D₁₀₀ = 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'
 Material Description: A-6
 Liquid Limit: 37
 AASHTO: A-6
 Figure No.: ST-1
 Testing Remarks: Sample was saturated.
 Tested by: Karen Warner

Sample Number: ST-1

Plasticity Index: 16

Checked by: Jason Reeves

Test Specimen Data

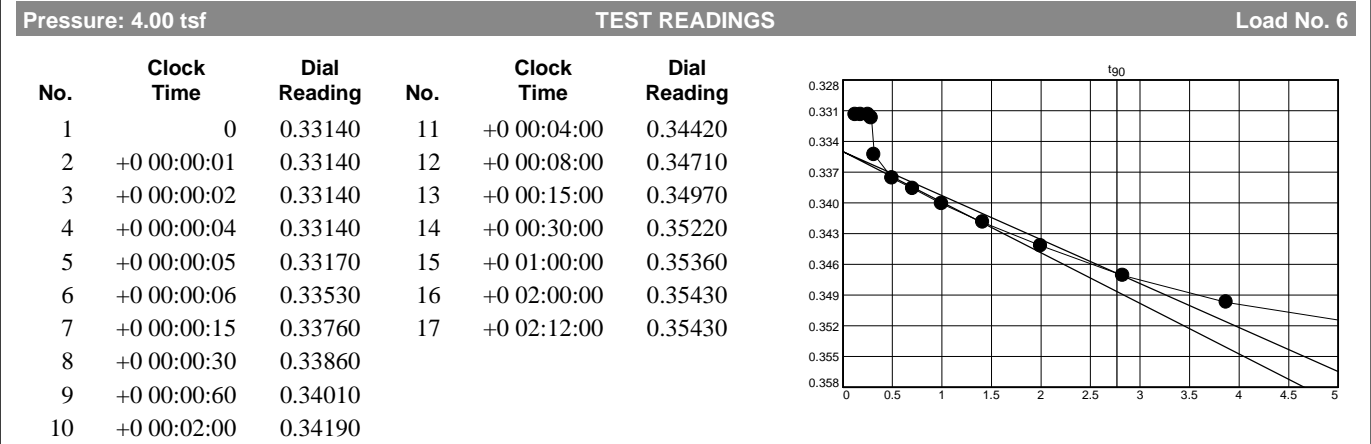
NATURAL MOISTURE	VOID RATIO	AFTER TEST
Wet w+t = 217.92 g.	Spec. Gr. = 2.75	Wet w+t = 261.71 g.
Dry w+t = 187.62 g.	Est. Ht. Solids = 0.560 in.	Dry w+t = 229.34 g.
Tare Wt. = 83.69 g.	Init. V.R. = 0.810	Tare Wt. = 106.19 g.
Moisture = 29.2 %	Init. Sat. = 98.9 %	Moisture = 26.3 %
UNIT WEIGHT	TEST START	Dry Wt. = 123.15* g.
Height = 1.002 in.	Height = 1.013 in.	
Diameter = 2.494 in.	Diameter = 2.494 in.	
Weight = 156.93 g.		
Dry Dens. = 94.6 pcf		

End-Of-Load Summary

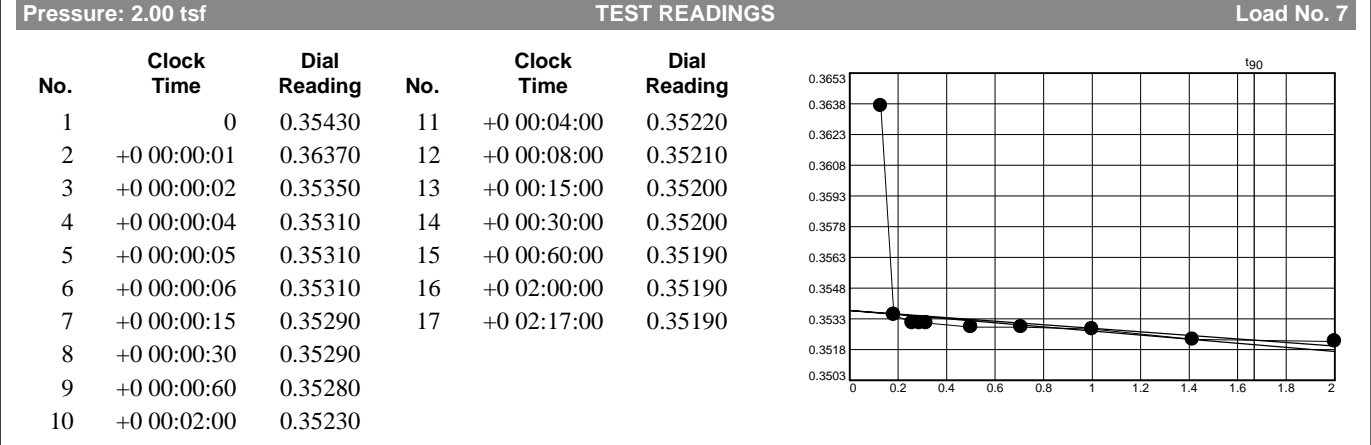
Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C _v (ft. ² /day)	C _α	Void Ratio	% Strain
start	0.27340	0.00000			0.810	
0.05	0.27750	0.00410			0.803	0.4 Compr.
0.25	0.28900	0.01560	0.172		0.782	1.5 Compr.
0.50	0.29980	0.02640	0.493		0.763	2.6 Compr.
1.00	0.31430	0.04090	0.673		0.737	4.0 Compr.
2.00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

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

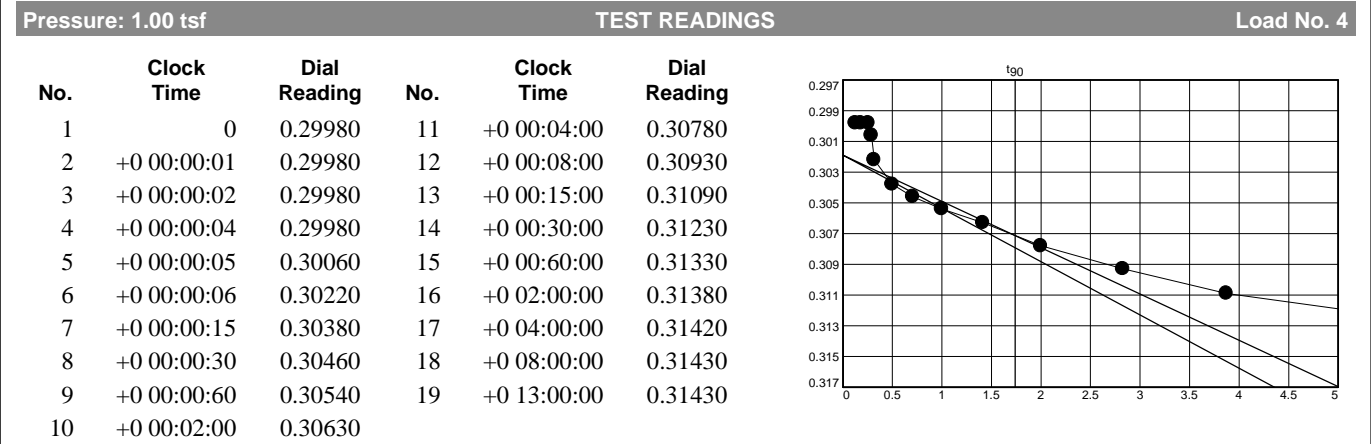
S & ME, INC.



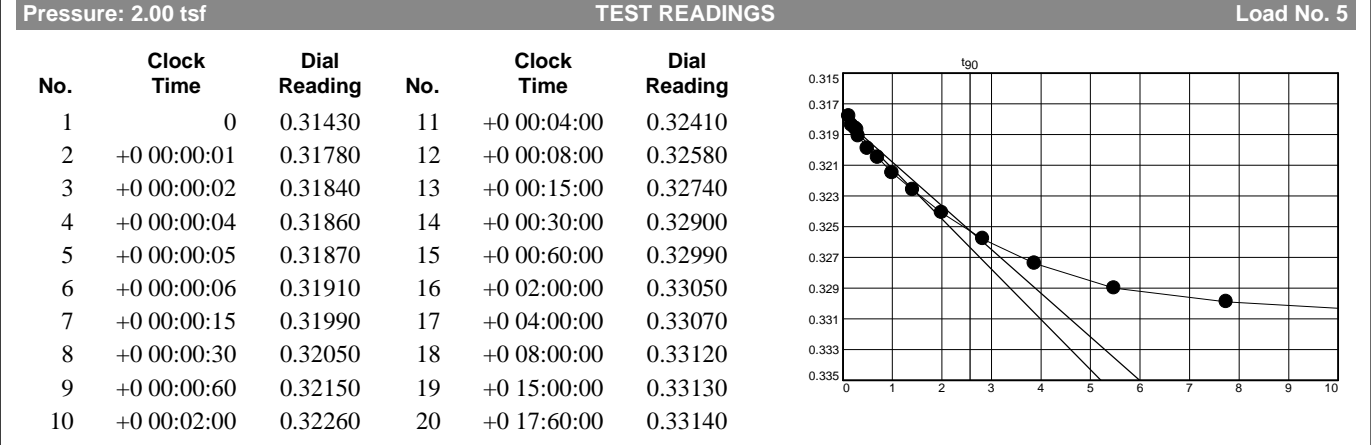
Void Ratio = 0.666 Compression = 8.0%
 $D_0 = 0.3350$ $D_{90} = 0.3469$ $D_{100} = 0.3482$ C_v at 7.66 min. = 0.247 ft.²/day



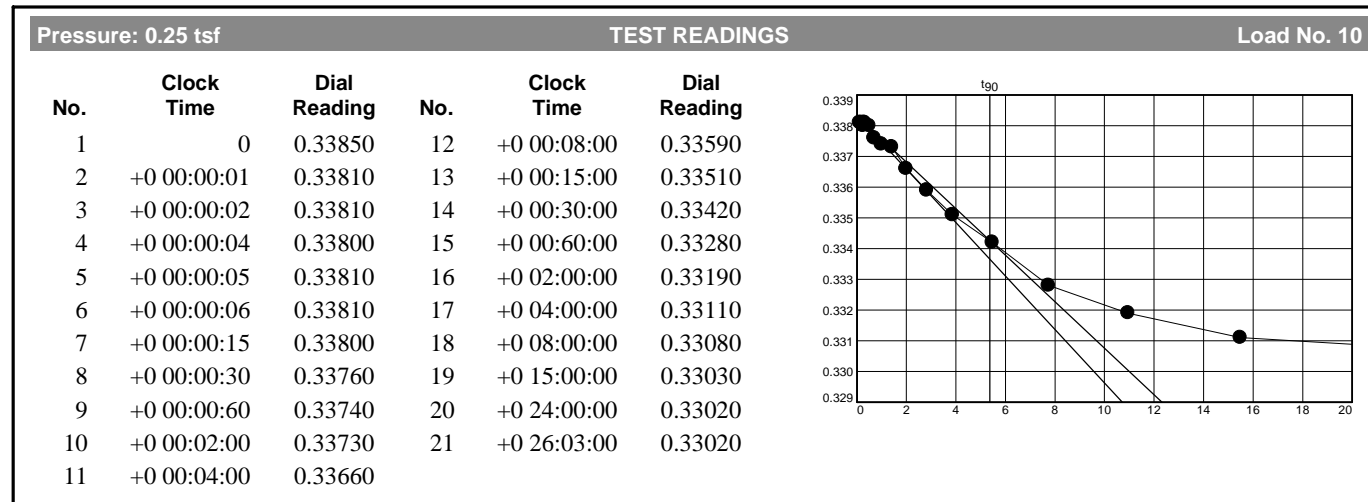
Void Ratio = 0.670 Compression = 7.7%
 $D_0 = 0.3537$ $D_{90} = 0.3523$ $D_{100} = 0.3521$ C_v at 2.78 min. = 0.664 ft.²/day



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

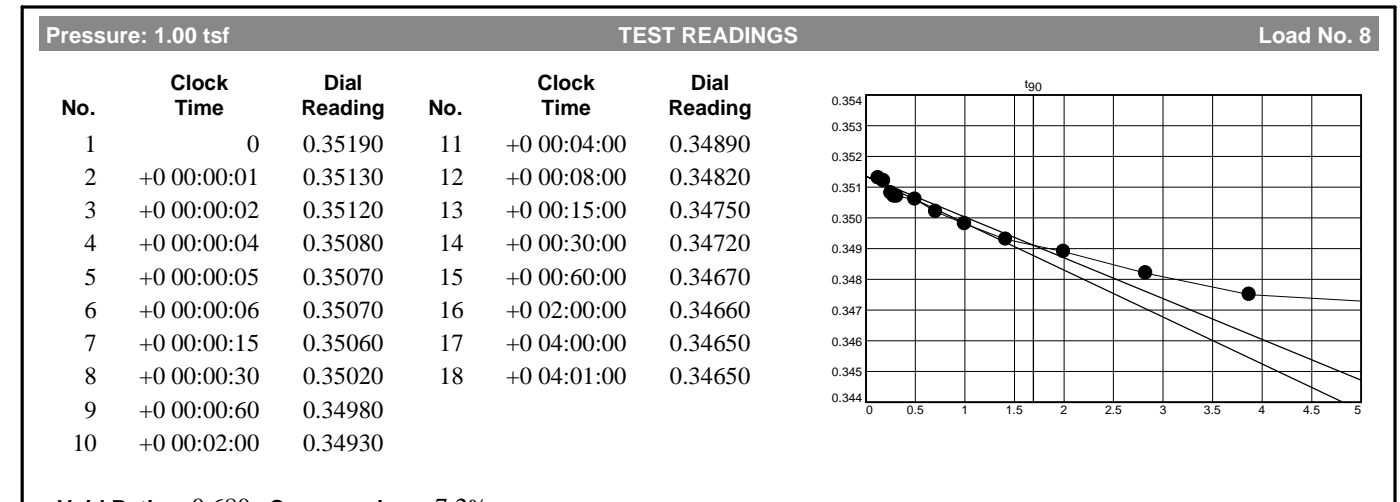


Void Ratio = 0.707 Compression = 5.7%
 $D_0 = 0.3180$ $D_{90} = 0.3253$ $D_{100} = 0.3261$ C_v at 6.59 min. = 0.299 ft.²/day

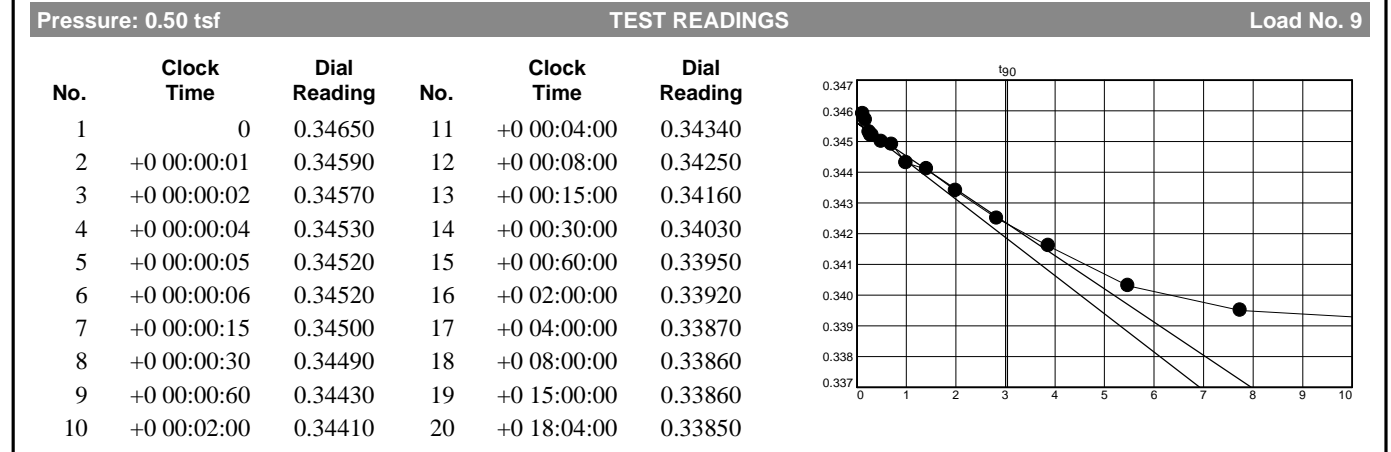


Void Ratio = 0.709 Compression = 5.6%
 $D_0 = 0.3383$ $D_{90} = 0.3343$ $D_{100} = 0.3338$ C_v at 28.76 min. = 0.067 ft.²/day

S & ME, INC.



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



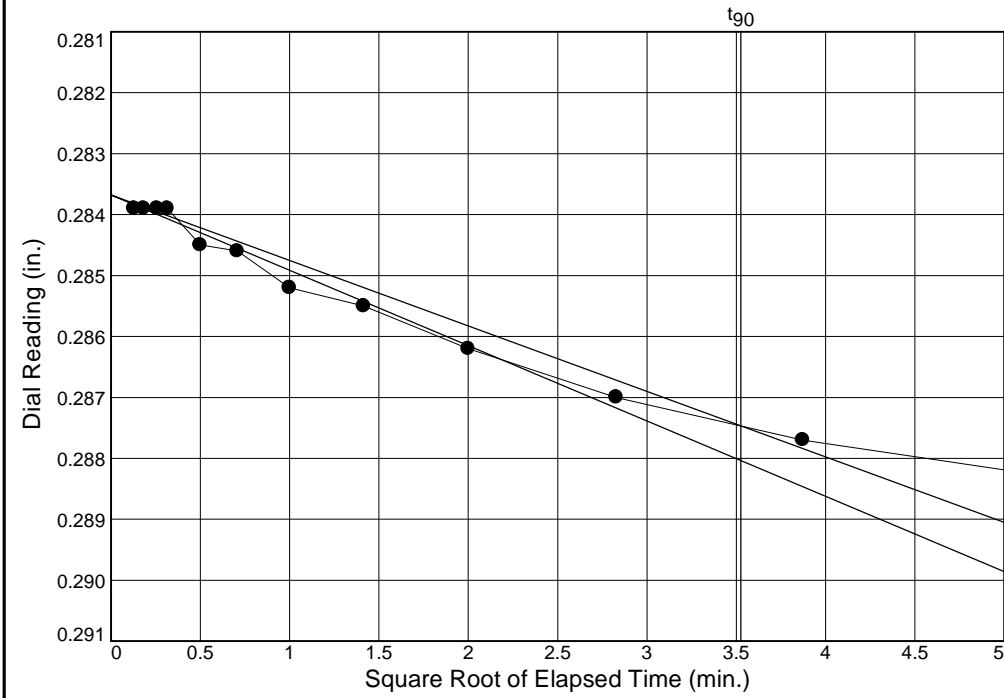
Void Ratio = 0.694 Compression = 6.4%
 $D_0 = 0.3456$ $D_{90} = 0.3423$ $D_{100} = 0.3420$ C_v at 9.25 min. = 0.204 ft.²/day

S & ME, INC.

Dial Reading vs. Time

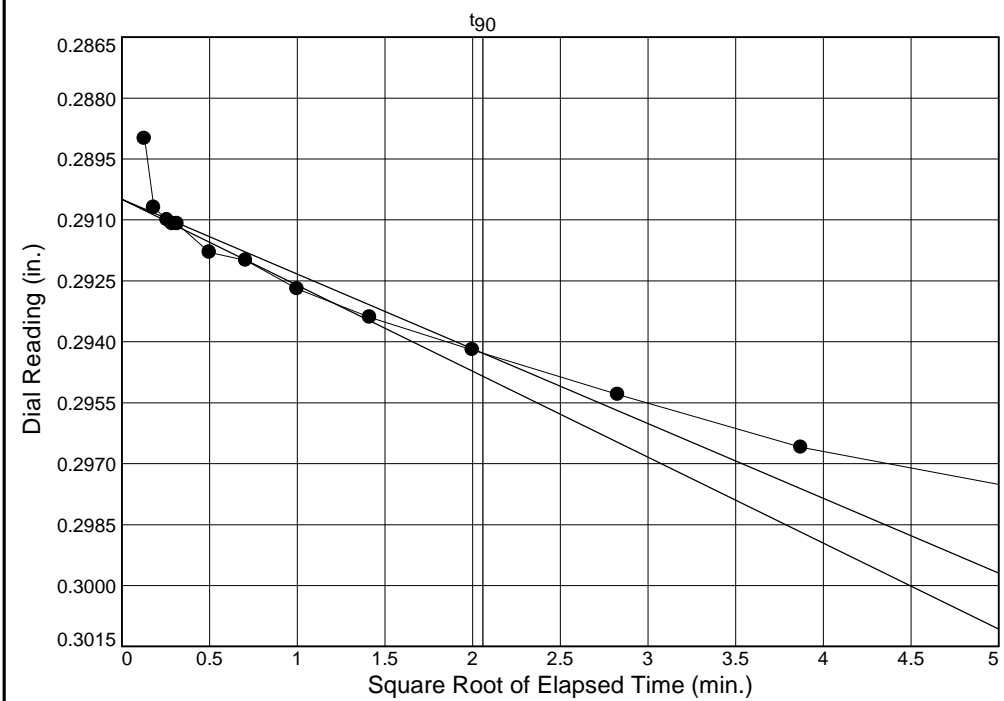
Project No.: 6235-17-038
 Project: Winston-Salem N. Beltway E. Section

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



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

$C_v @ T_{90}$
 0.172 ft.²/day



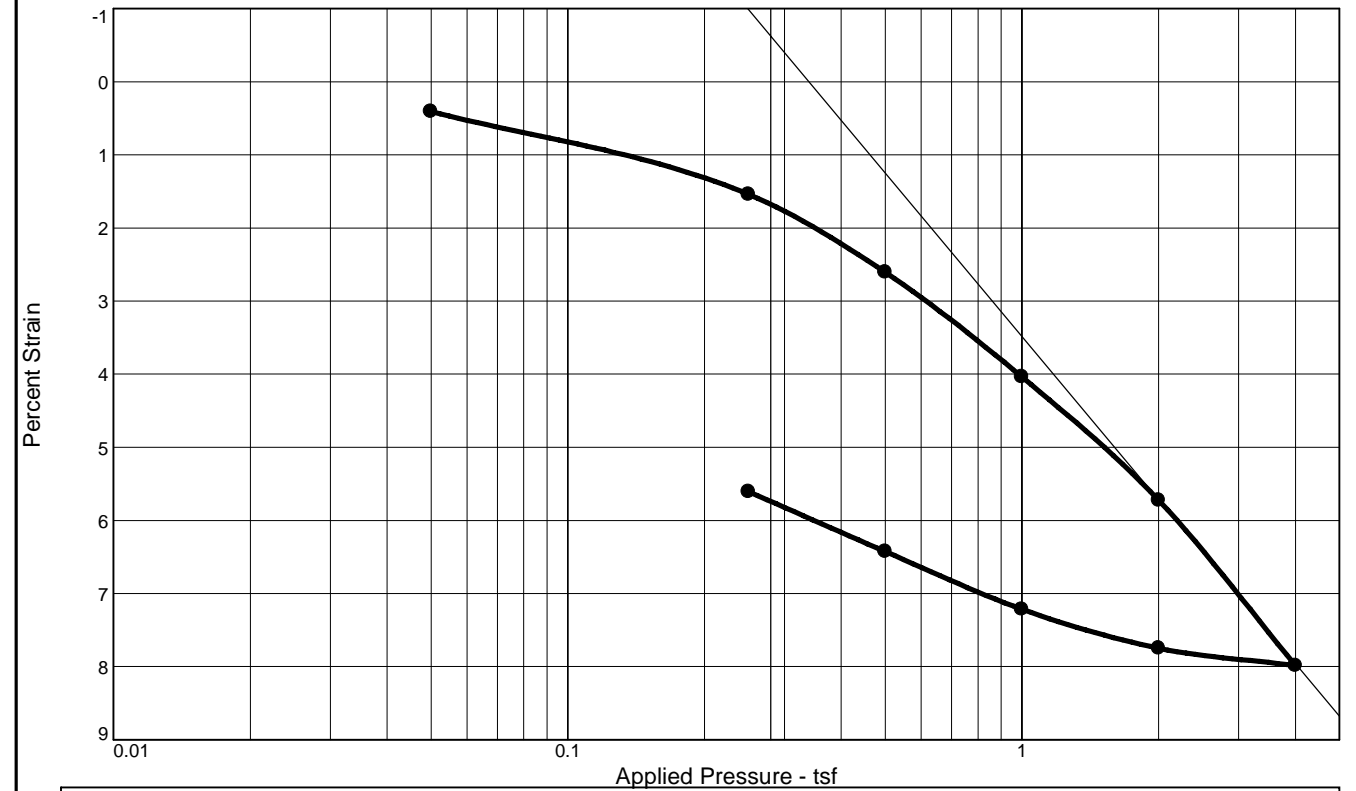
Load No.= 3
 Load= 0.50 tsf
 $D_0 = 0.2905$
 $D_{90} = 0.2943$
 $D_{100} = 0.2947$
 $T_{90} = 4.23 \text{ min.}$

$C_v @ T_{90}$
 0.493 ft.²/day

S & ME, INC.

Figure ST-2

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

MATERIAL DESCRIPTION							USCS	AASHTO
A-6								A-6

Project No. 6235-17-038	Client: NCDOT GEU	Remarks: Sample was saturated.
Project: Winston-Salem N. Beltway E. Section		
Depth: 4.2-6.2' Sample Number: ST-1		
S & ME, INC.		
Charlotte, North Carolina		Figure ST-1

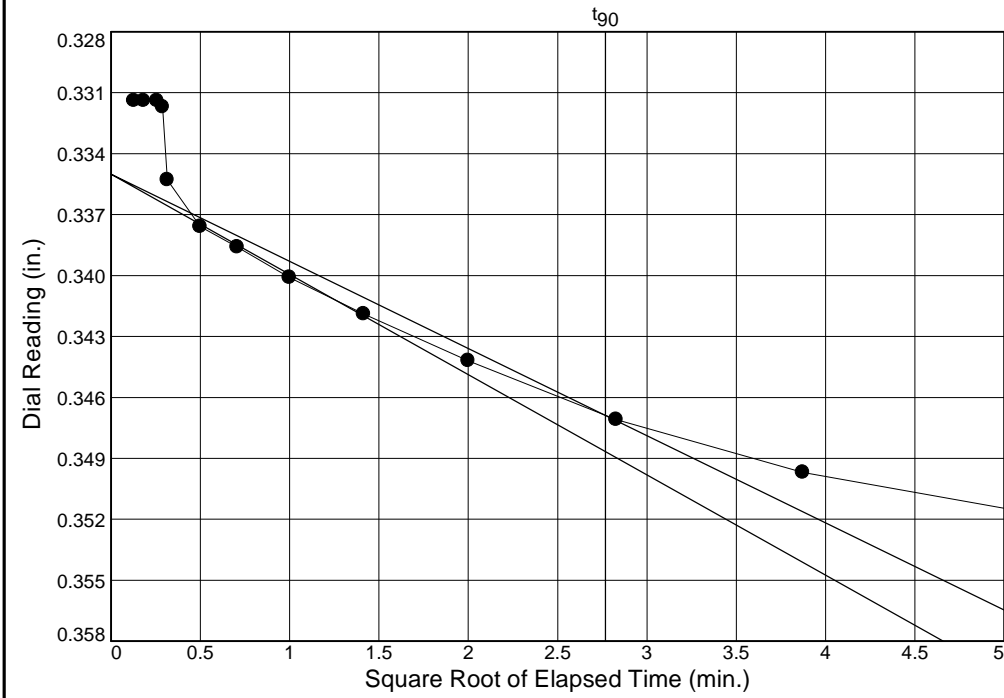
Tested By: Karen Warner

Checked By: Jason Reeves

Dial Reading vs. Time

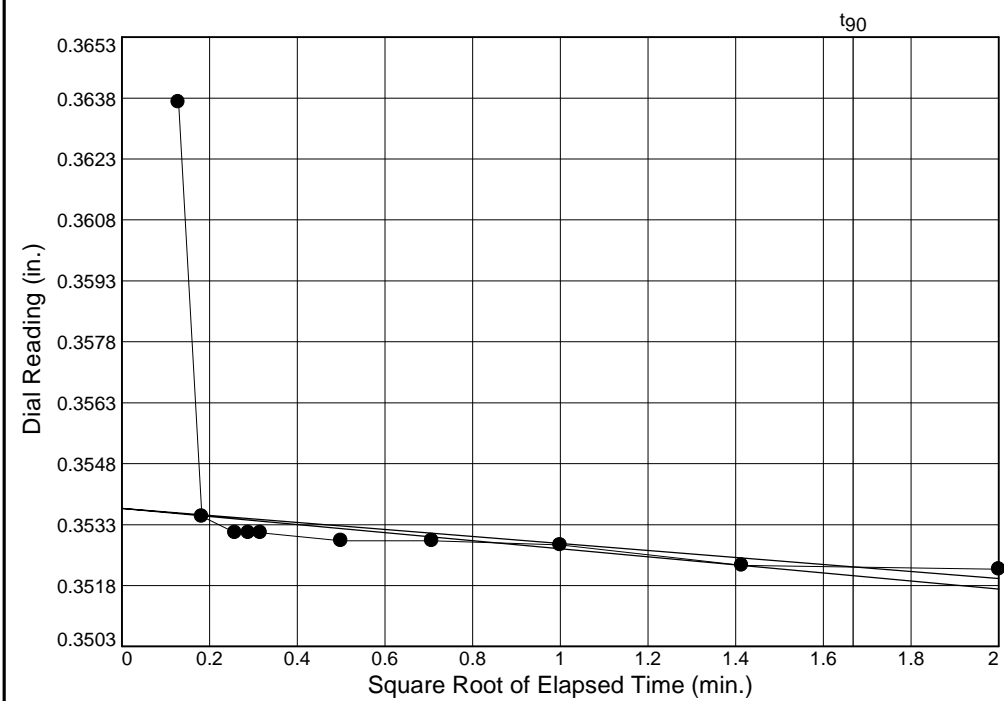
Project No.: 6235-17-038
 Project: Winston-Salem N. Beltway E. Section

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



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

$C_v @ T_{90}$
 0.247 ft.²/day



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

$C_v @ T_{90}$
 0.664 ft.²/day

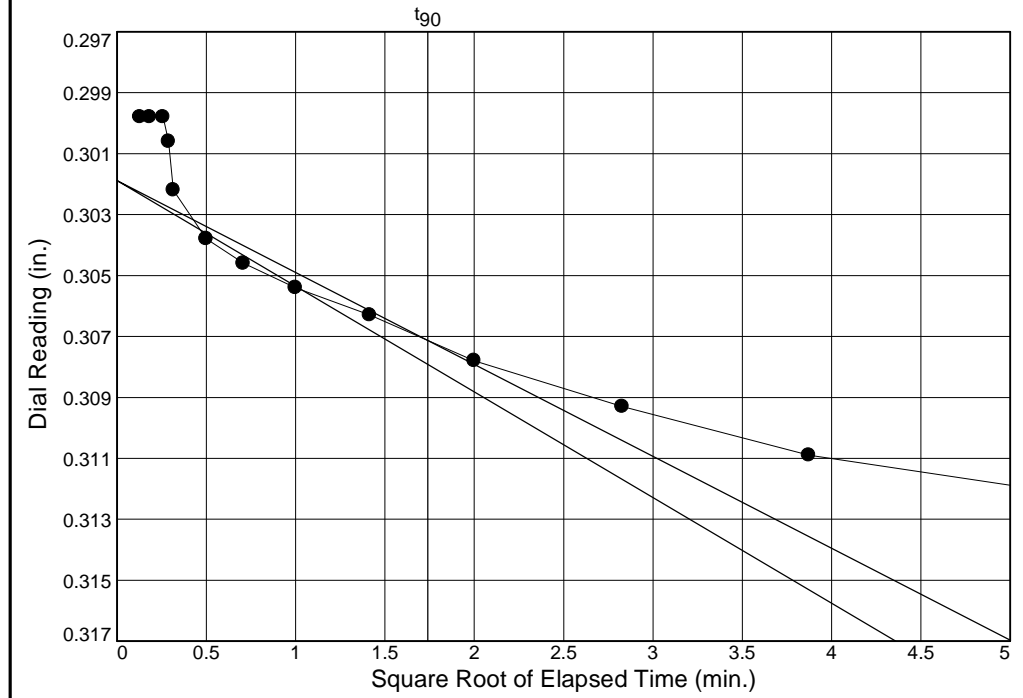
S & ME, INC.

Figure ST-4

Dial Reading vs. Time

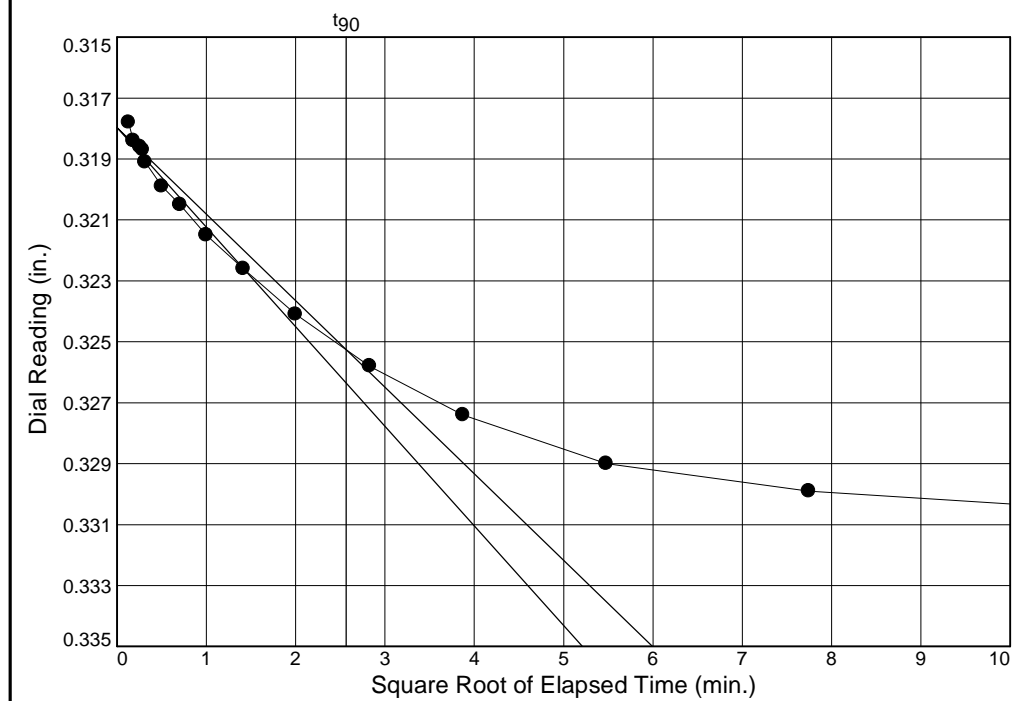
Project No.: 6235-17-038
 Project: Winston-Salem N. Beltway E. Section

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



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

$C_v @ T_{90}$
 0.673 ft.²/day



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

$C_v @ T_{90}$
 0.299 ft.²/day

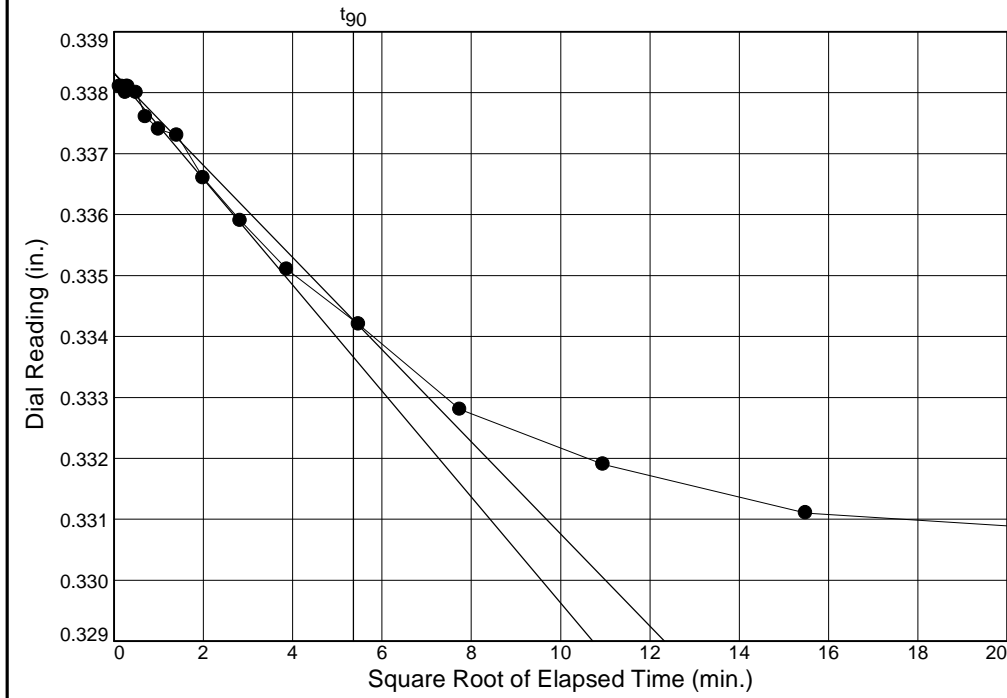
S & ME, INC.

Figure ST-3

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
 $D_0 = 0.3383$
 $D_{90} = 0.3343$
 $D_{100} = 0.3338$
 $T_{90} = 28.76 \text{ min.}$

$C_v @ T_{90}$
 0.067 ft.²/day

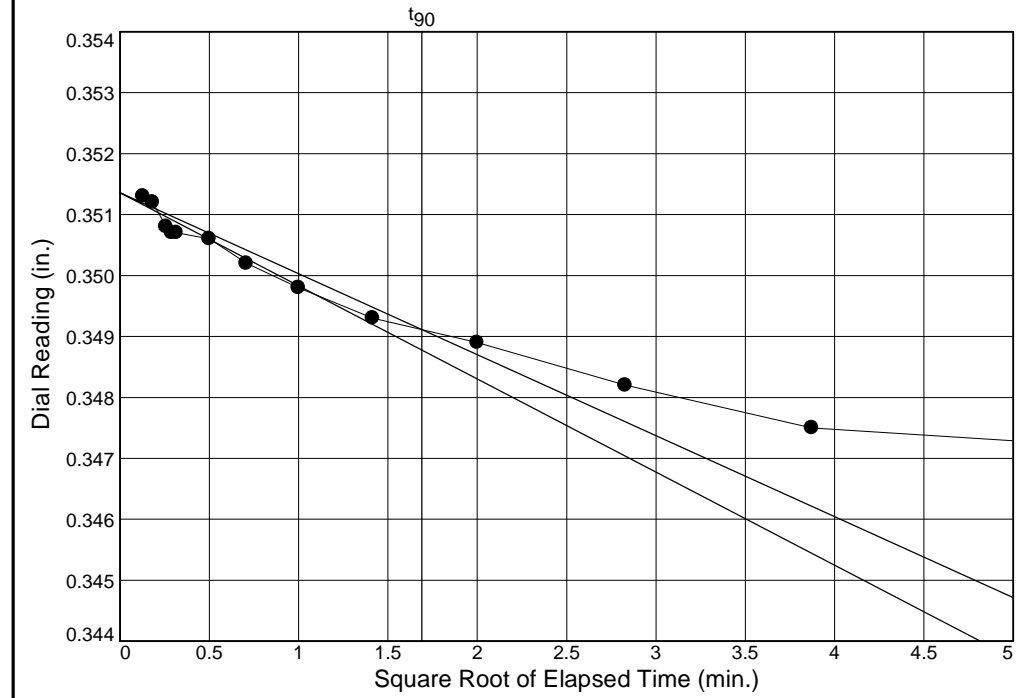
S & ME, INC.

Figure ST-6

Dial Reading vs. Time

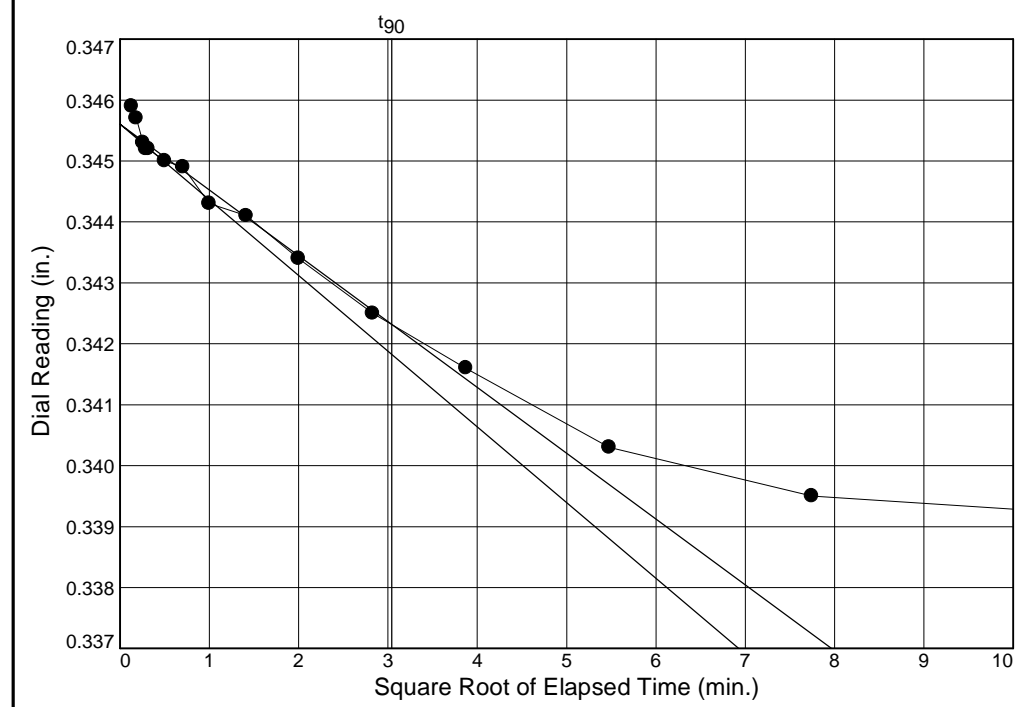
Project No.: 6235-17-038
 Project: Winston-Salem N. Beltway E. Section

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



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

$C_v @ T_{90}$
 0.652 ft.²/day



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

$C_v @ T_{90}$
 0.204 ft.²/day

S & ME, INC.

Figure ST-5

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. 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

S & ME, INC.

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

S & ME, INC.

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

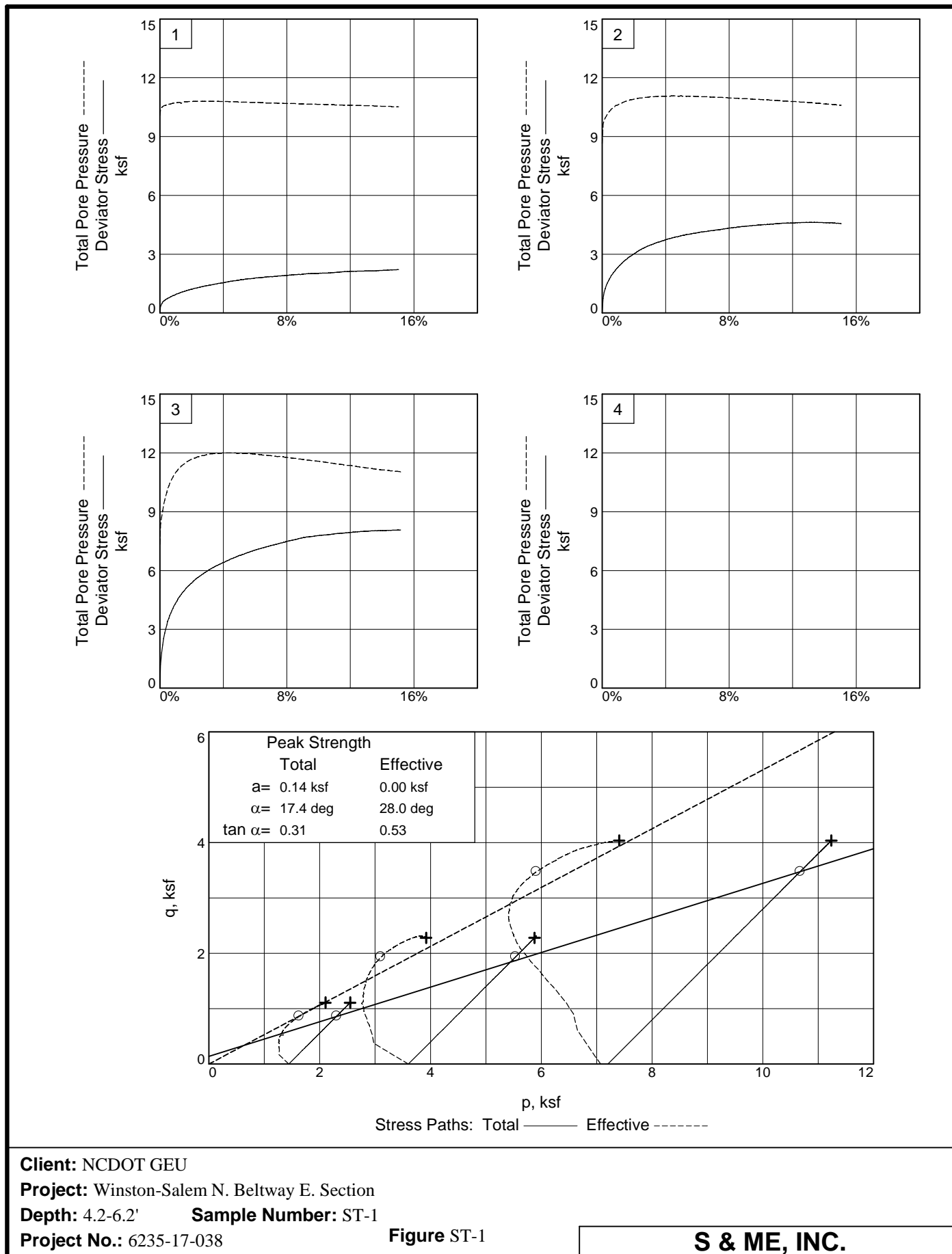
S & ME, INC.

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

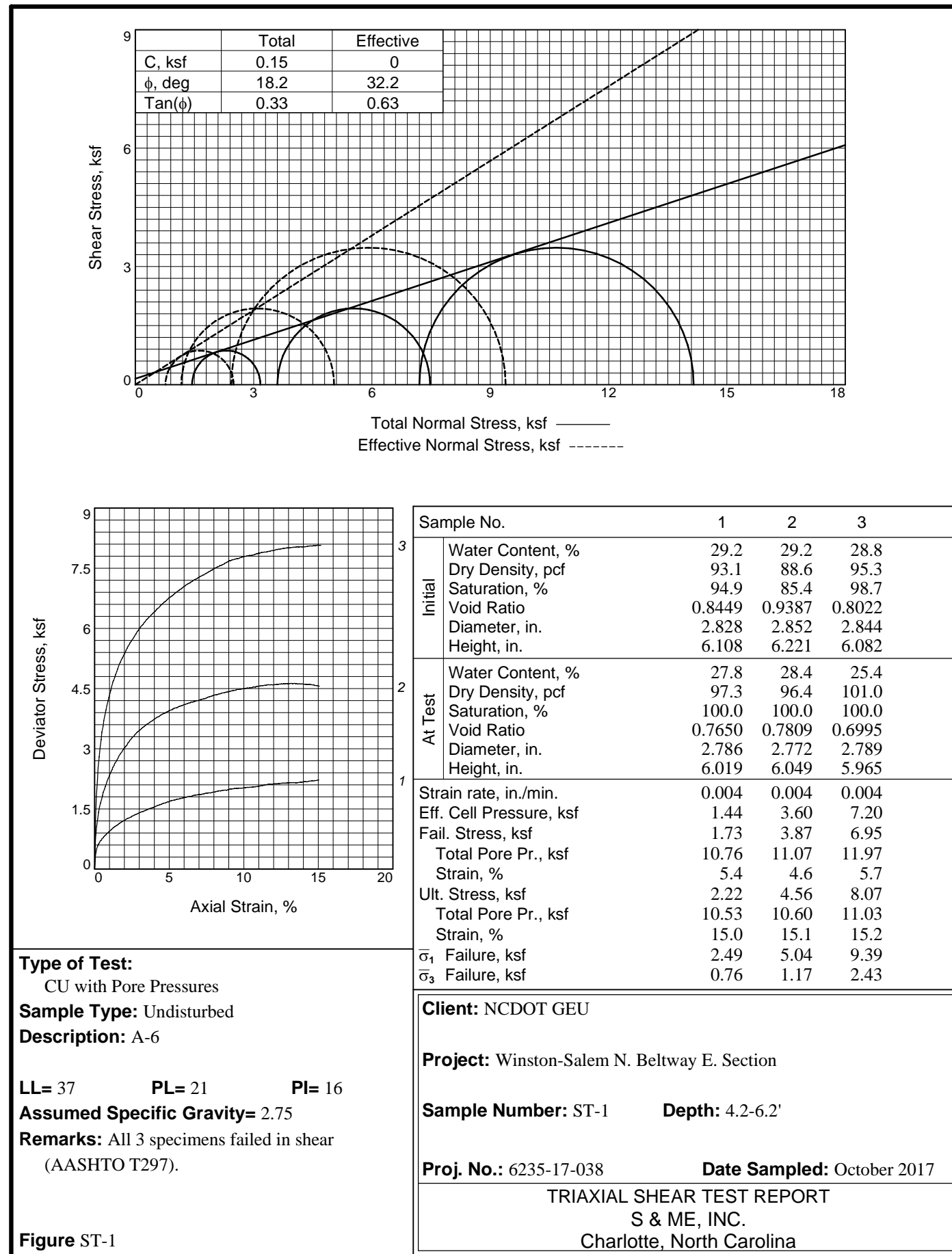
S & ME, INC.

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.



Tested By: Karen Warner Checked By: Jason Reeves

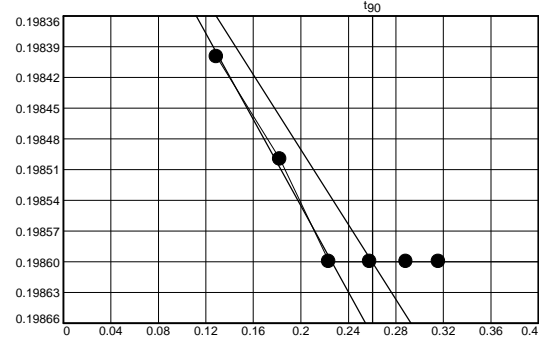
C & phi are not test results but an interpretation of the test results. The designer is responsible for interpreting test data as provided by S&ME.



Tested By: Karen Warner Checked By: Jason Reeves

Pressure: 0.05 tsf TEST READINGS Load No. 1

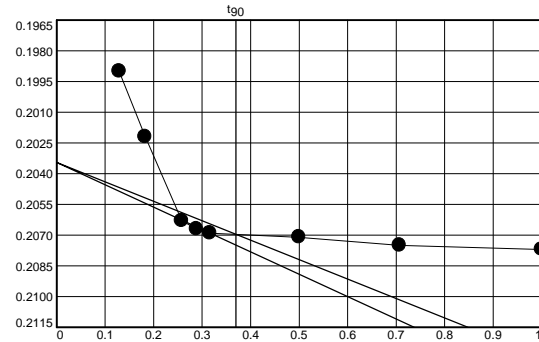
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	+0 00:00:00	0.19780	11	+0 00:02:00	0.19860
2	+0 00:00:01	0.19840	12	+0 00:04:00	0.19860
3	+0 00:00:02	0.19850	13	+0 00:04:26	0.19860
4	+0 00:00:03	0.19860			
5	+0 00:00:04	0.19860			
6	+0 00:00:05	0.19860			
7	+0 00:00:06	0.19860			
8	+0 00:00:15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

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: 11.2-13.2'
 Material Description: A-2-7
 Liquid Limit: 43
 AASHTO: A-2-7
 Figure No.: ST-2
 Testing Remarks: Sample Saturated
 Tested by: Karen Warner

Sample Number: ST-2

Plasticity Index: 18

Checked by: Jason Reeves

Test Specimen Data

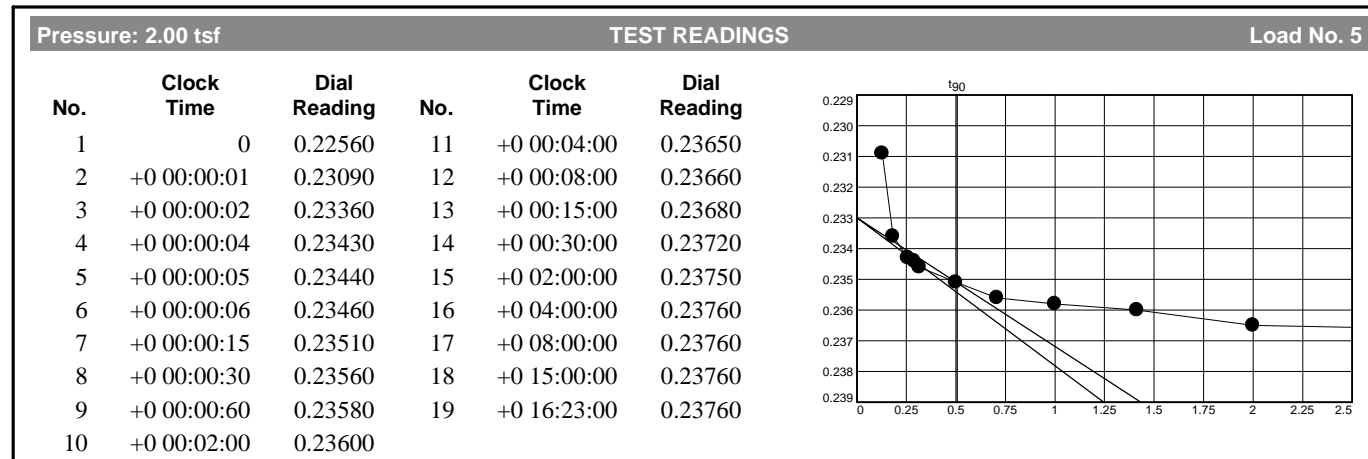
NATURAL MOISTURE	VOID RATIO	AFTER TEST
Wet w+t = 245.03 g.	Spec. Gr. = 2.65	Wet w+t = 255.01 g.
Dry w+t = 215.37 g.	Est. Ht. Solids = 0.597 in.	Dry w+t = 224.81 g.
Tare Wt. = 81.55 g.	Init. V.R. = 0.735	Tare Wt. = 98.19 g.
Moisture = 22.2 %	Init. Sat. = 79.9 %	Moisture = 23.9 %
UNIT WEIGHT	TEST START	Dry Wt. = 126.62* g.
Height = 0.999 in.	Height = 1.036 in.	
Diameter = 2.494 in.	Diameter = 2.494 in.	
Weight = 98.19 g.		
Dry Dens. = 62.7 pcf		

End-Of-Load Summary

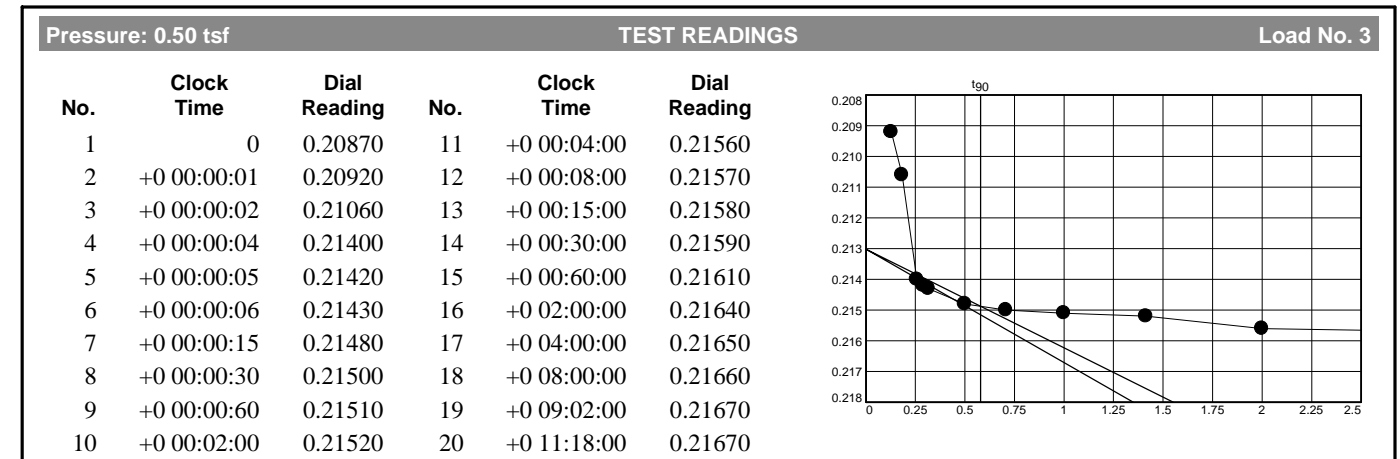
Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C_v (ft. ² /day)	C_α	Void Ratio	% Strain
start	0.19780	0.00000			0.735	
0.05	0.19860	0.00080	33.511		0.734	0.1 Compr.
0.25	0.20870	0.01090	16.465		0.717	1.1 Compr.
0.50	0.21670	0.01890	6.583		0.703	1.8 Compr.
1.00	0.22560	0.02780	6.486		0.688	2.7 Compr.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

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

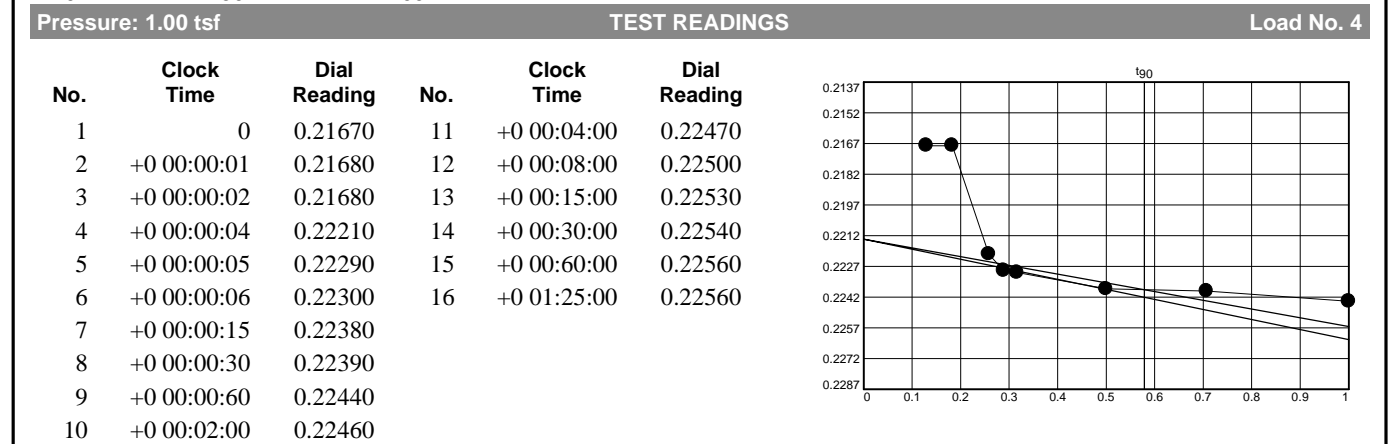
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Void Ratio = 0.668 Compression = 3.8%
 $D_0 = 0.2330$ $D_{90} = 0.2351$ $D_{100} = 0.2353$ C_v at 0.26 min. = 8.313 ft.²/day



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

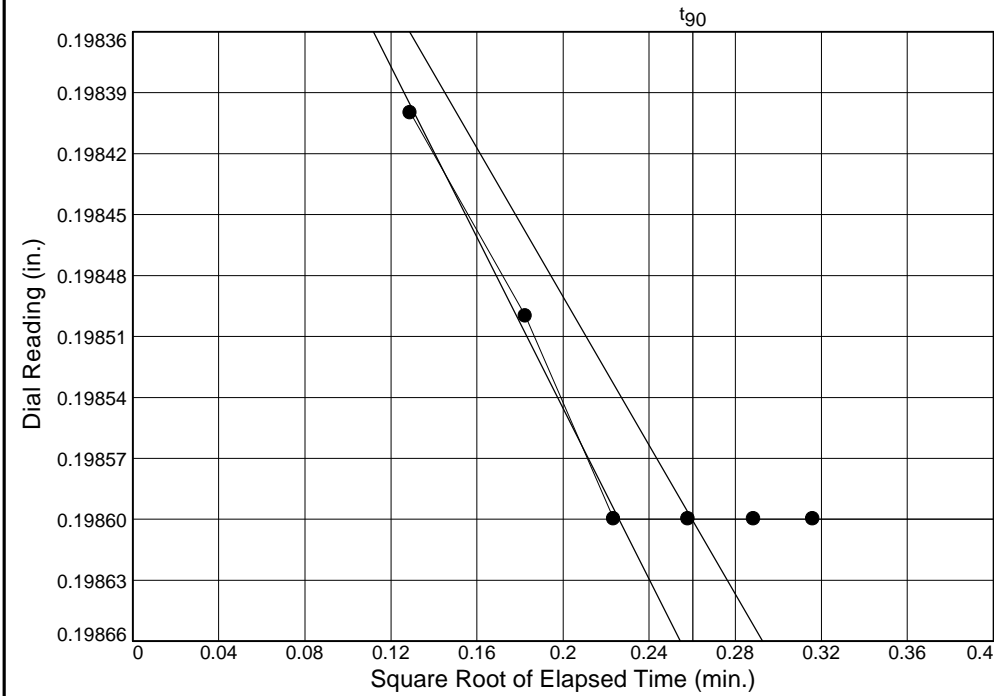


Void Ratio = 0.688 Compression = 2.7%
 $D_0 = 0.2214$ $D_{90} = 0.2238$ $D_{100} = 0.2241$ C_v at 0.33 min. = 6.486 ft.²/day

Dial Reading vs. Time

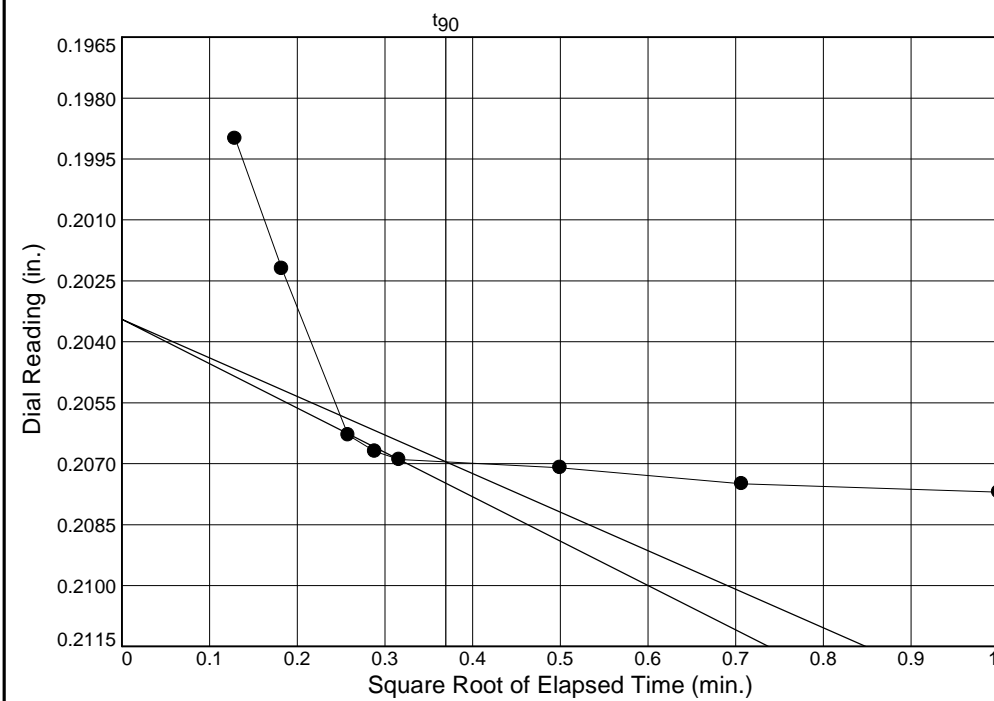
Project No.: 6235-17-038
 Project: Winston-Salem N. Beltway E. Section

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



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

$C_v @ T_{90}$
 33.511 ft.²/day



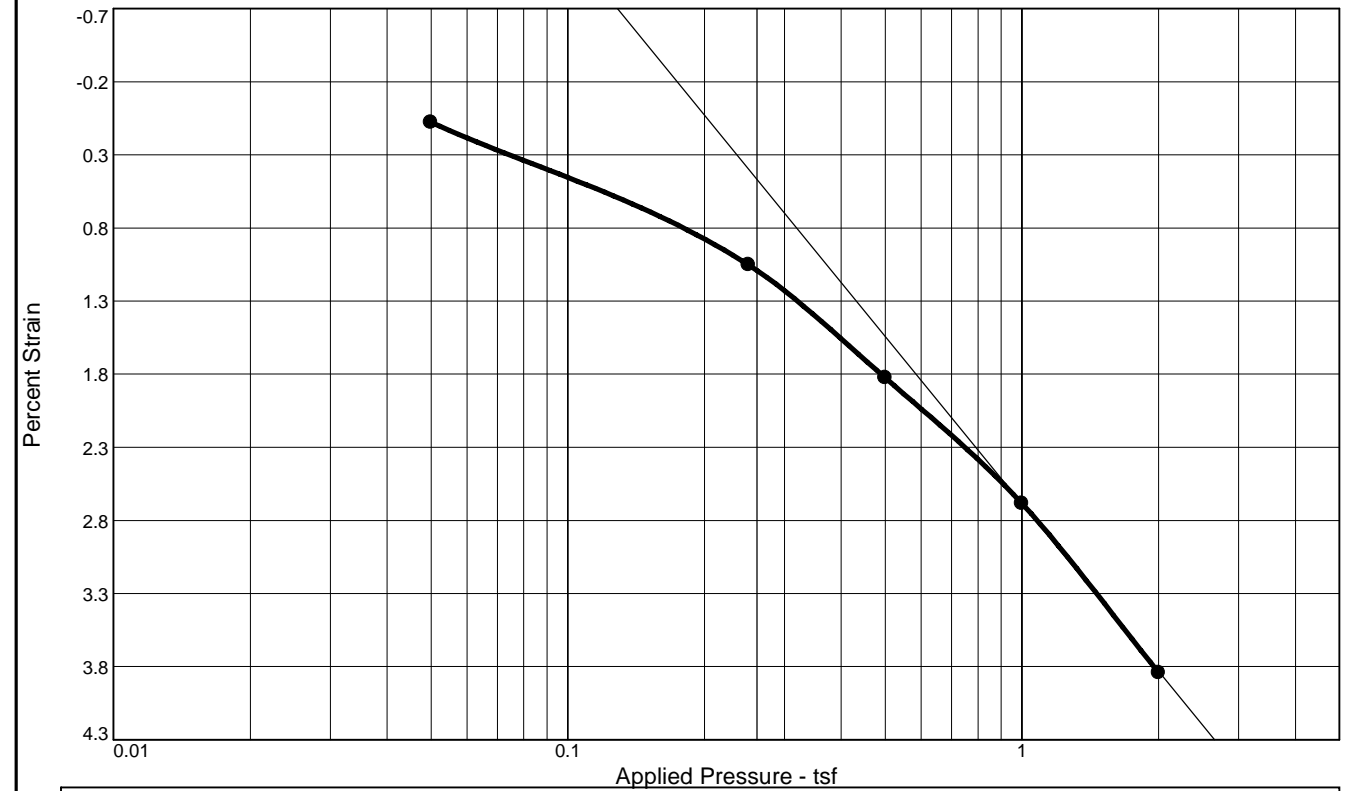
Load No.= 2
 Load= 0.25 tsf
 $D_0 = 0.2035$
 $D_{90} = 0.2070$
 $D_{100} = 0.2073$
 $T_{90} = 0.14 \text{ min.}$

$C_v @ T_{90}$
 16.465 ft.²/day

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Figure ST-3

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		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	C_c	C_r	Initial Void Ratio
Saturation	Moisture									
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

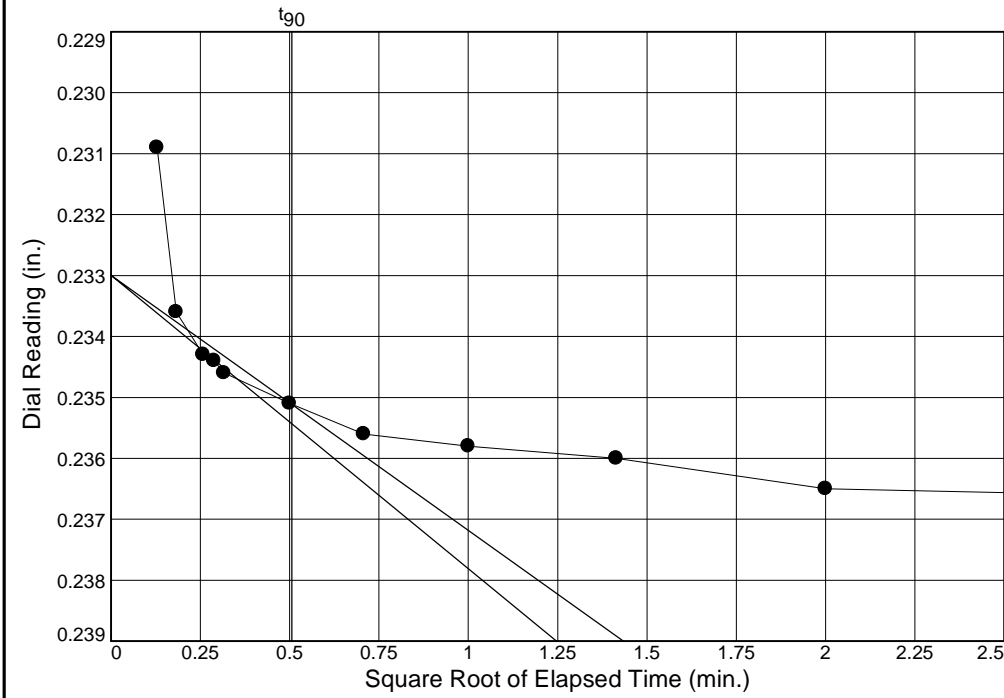
Project No. 6235-17-038	Client: NCDOT GEU	Remarks: Sample Saturated
Project: Winston-Salem N. Beltway E. Section		
Depth: 11.2-13.2' Sample Number: ST-2		
S & ME, INC.		
Charlotte, North Carolina		Figure ST-2

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
 $D_0 = 0.2330$
 $D_{90} = 0.2351$
 $D_{100} = 0.2353$
 $T_{90} = 0.26 \text{ min.}$

$C_v @ T_{90}$
 8.313 ft.²/day

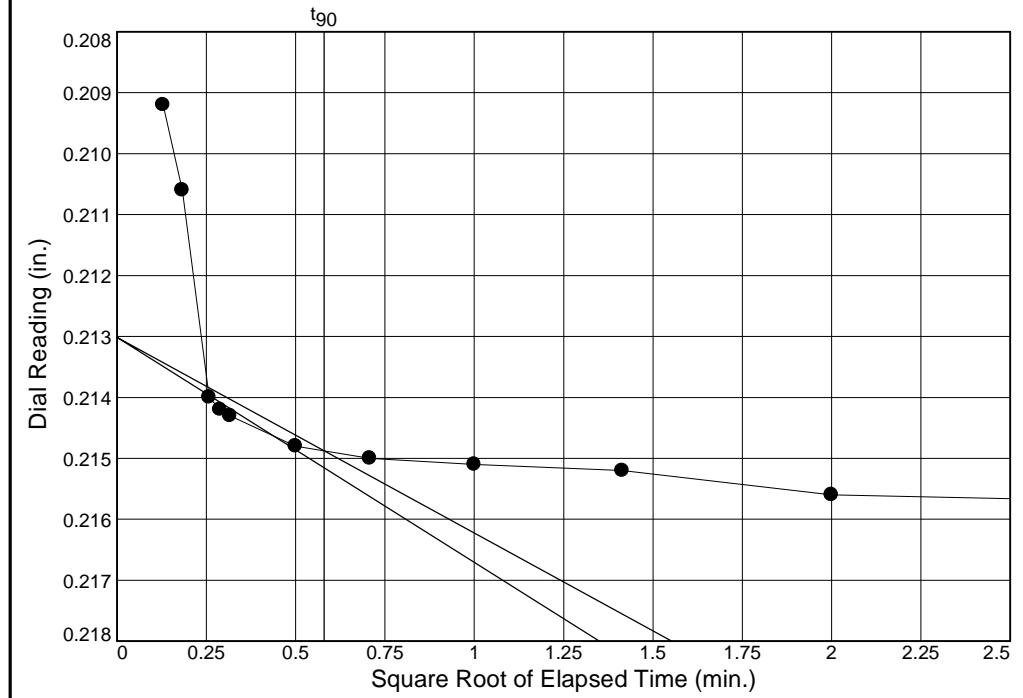
S & ME, INC.

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

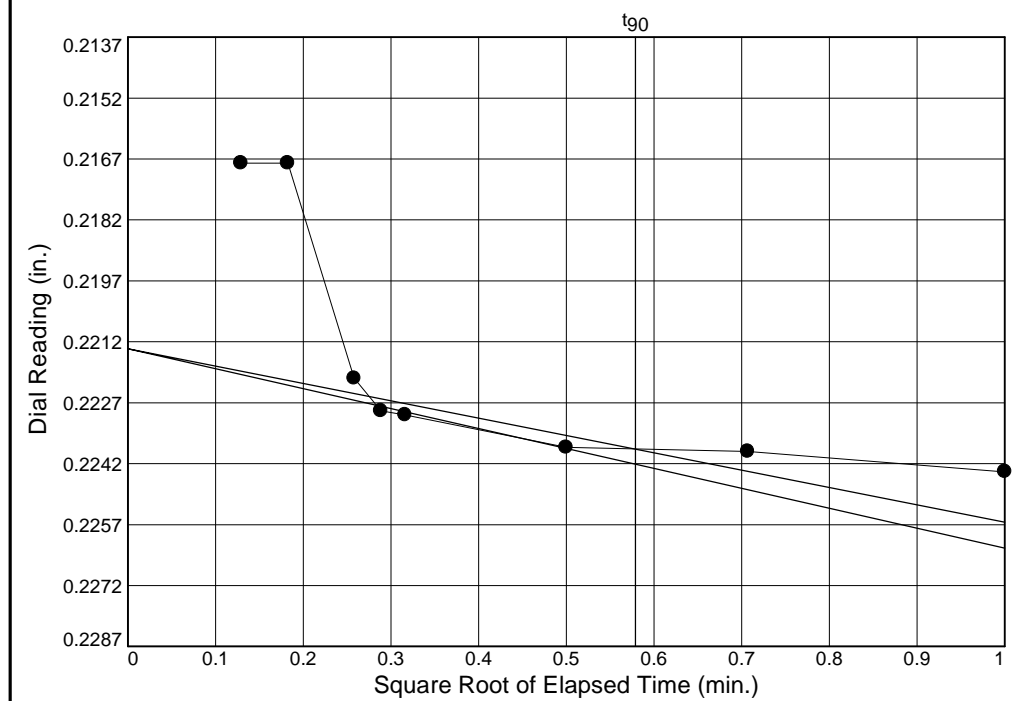


Load No.= 3
 Load= 0.50 tsf
 $D_0 = 0.2130$
 $D_{90} = 0.2149$
 $D_{100} = 0.2151$
 $T_{90} = 0.34 \text{ min.}$

$C_v @ T_{90}$
 6.583 ft.²/day

S & ME, INC.

Figure ST-4



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

$C_v @ T_{90}$
 6.486 ft.²/day

S & ME, INC.

Figure ST-3

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

S & ME, INC.

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

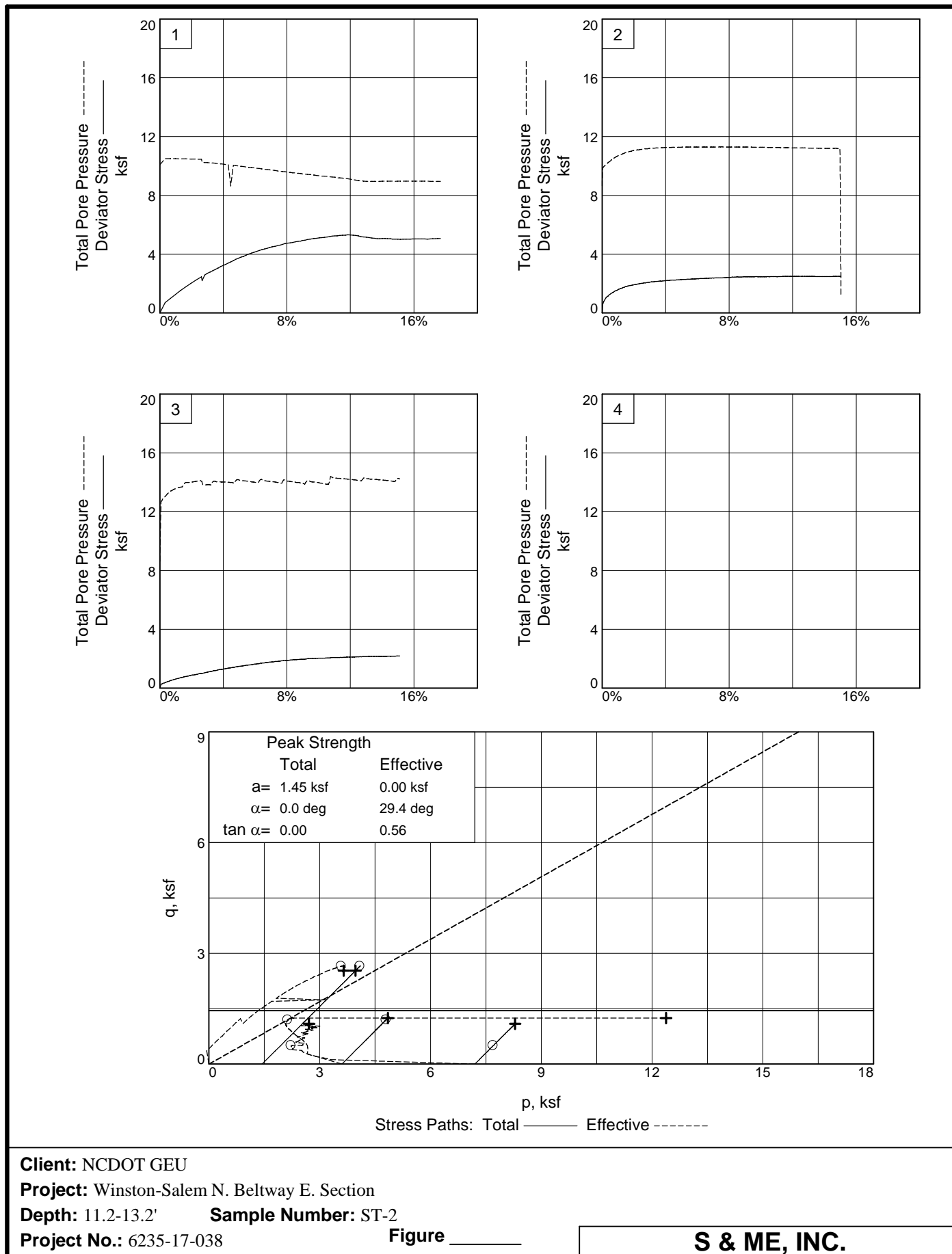
Specimen Parameter	Initial	Saturated	Consolidated	Final
Moisture content: Moist soil+tare, gms.	245.030			1352.450
Moisture content: Dry soil+tare, gms.	215.370			1095.890
Moisture content: Tare, gms.	81.550			86.440
Moisture, %	22.2	25.1	21.4	25.4
Moist specimen weight, gms.	1264.92			
Diameter, in.	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

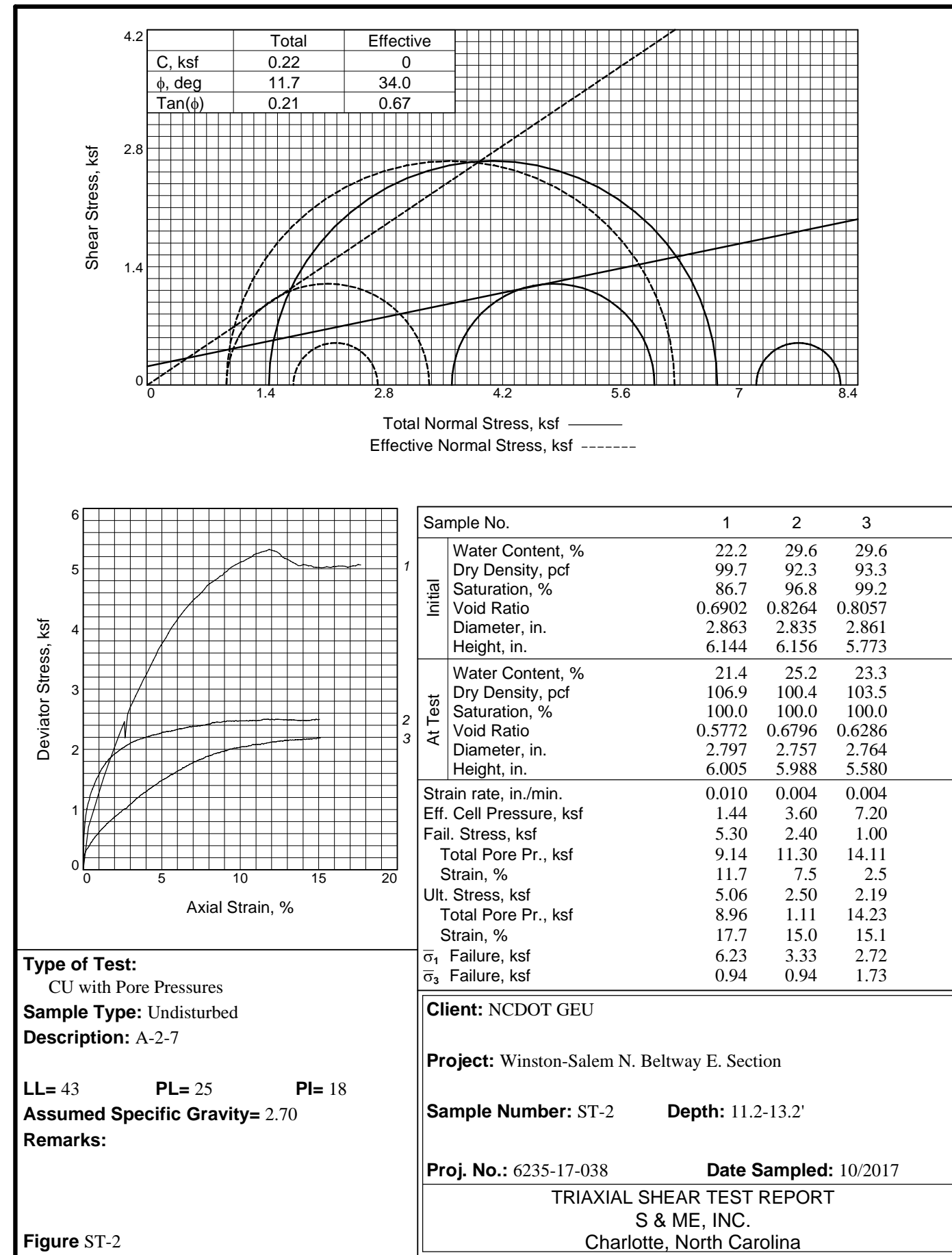
S & ME, INC.

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.



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.



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

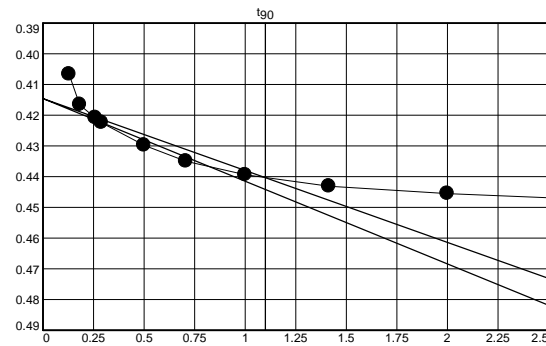
Pressure: 0.05 tsf TEST READINGS Load No. 1

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			

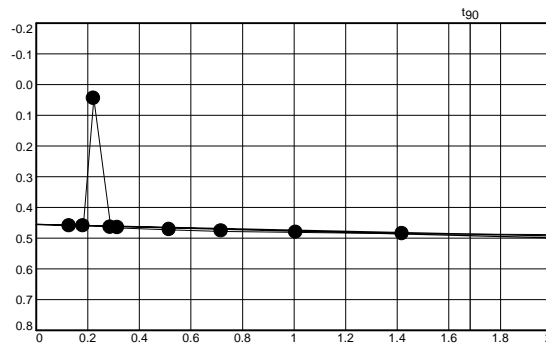


Void Ratio = 1.762 Compression = 6.2%

D₀ = 0.4145 D₉₀ = 0.4403 D₁₀₀ = 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



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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'
 Material Description: A-5
 Liquid Limit: 44
 AASHTO: A-5
 Figure No.: ST-3
 Testing Remarks: Sample was saturated
 Tested by: Karen Warner

Sample Number: ST-3

Plasticity Index: 9

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

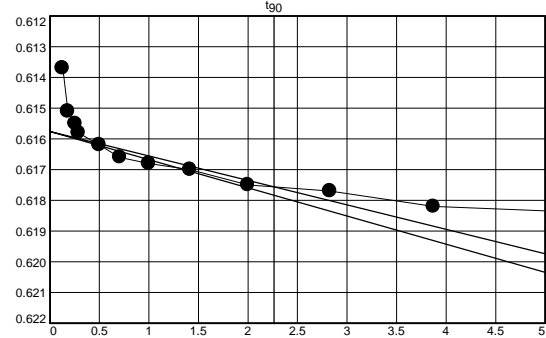
Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C _v (ft. ² /day)	C _α	Void Ratio	% Strain
start	0.39450	0.00000			1.945	
0.05	0.40670	0.01220			1.911	1.1 Compr.
0.25	0.46070	0.06620	1.837		1.762	6.2 Compr.
0.50	0.50800	0.11350	0.709		1.631	10.7 Compr.
1.00	0.56090	0.16640	0.797		1.484	15.7 Compr.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

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

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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 24:00:00	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

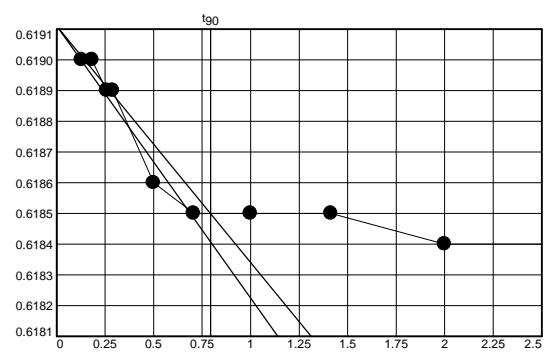
Pressure: 2.00 tsf TEST READINGS Load No. 7

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

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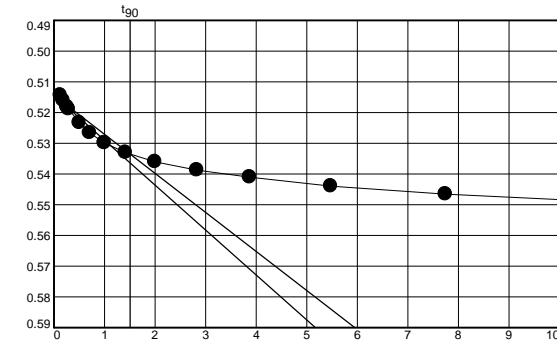
Pressure: 0.50 tsf TEST READINGS (continued) Load No. 3

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

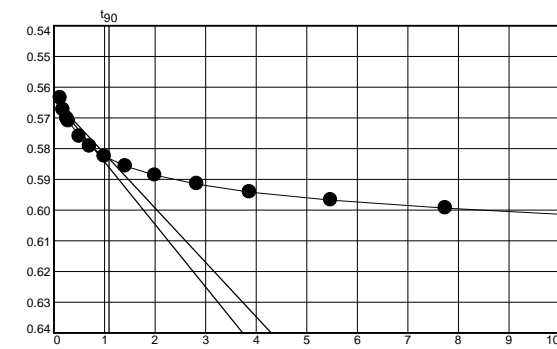
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.50800	12	+0 00:15:00	0.54100
2	+0 00:00:01	0.51430	13	+0 00:30:00	0.54390
3	+0 00:00:02	0.51600	14	+0 00:60:00	0.54650
4	+0 00:00:04	0.51810	15	+0 02:00:00	0.54900
5	+0 00:00:05	0.51880	16	+0 04:00:00	0.55180
6	+0 00:00:15	0.52330	17	+0 08:00:00	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

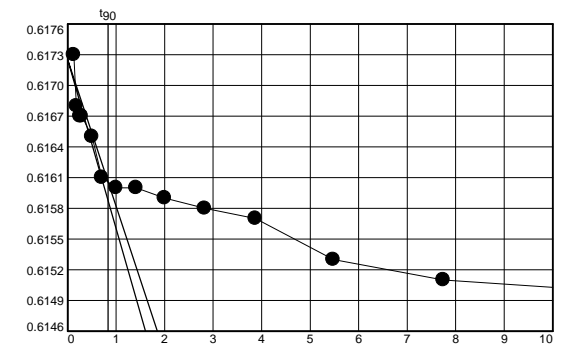


Void Ratio = 1.344 Compression = 20.4%
 $D_0 = 0.5639$ $D_{90} = 0.5832$ $D_{100} = 0.5853$ C_v at 1.18 min. = 1.360 ft.²/day

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Pressure: 0.50 tsf TEST READINGS Load No. 9

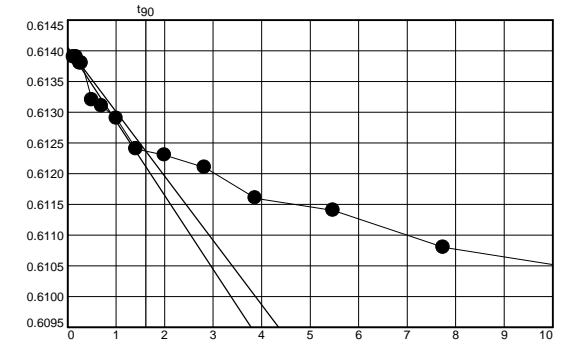
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.61820	11	+0 00:08:00	0.61580
2	+0 00:00:01	0.61730	12	+0 00:15:00	0.61570
3	+0 00:00:02	0.61680	13	+0 00:30:00	0.61530
4	+0 00:00:04	0.61670	14	+0 00:60:00	0.61510
5	+0 00:00:05	0.61670	15	+0 02:00:00	0.61500
6	+0 00:00:15	0.61650	16	+0 03:09:00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

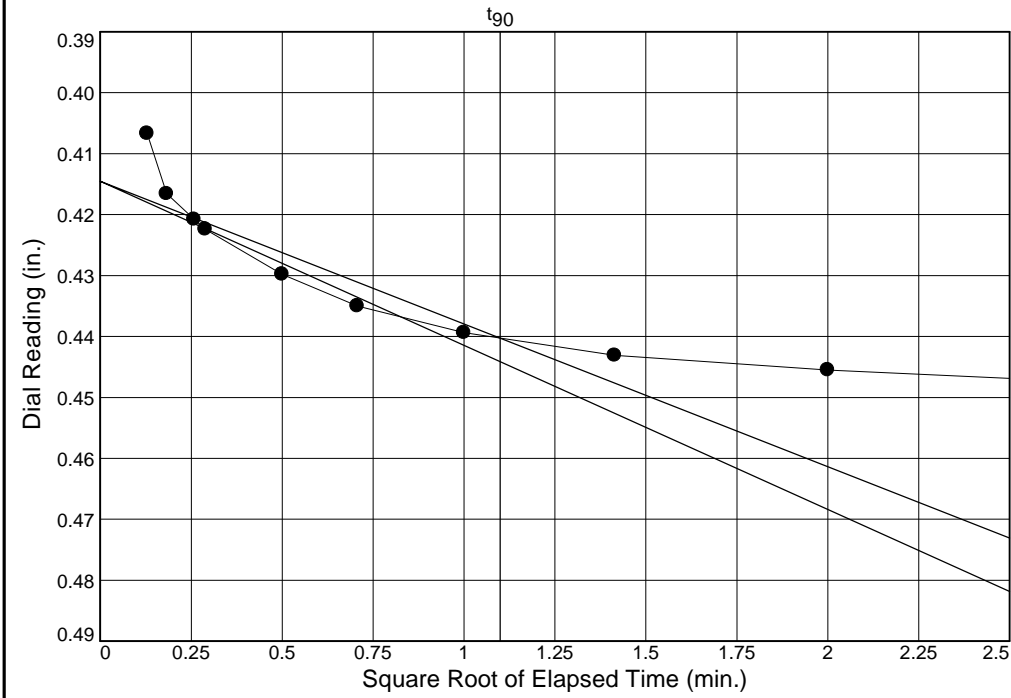


Void Ratio = 1.348 Compression = 20.3%
 $D_0 = 0.6141$ $D_{90} = 0.6124$ $D_{100} = 0.6122$ C_v at 2.59 min. = 0.584 ft.²/day

Dial Reading vs. Time

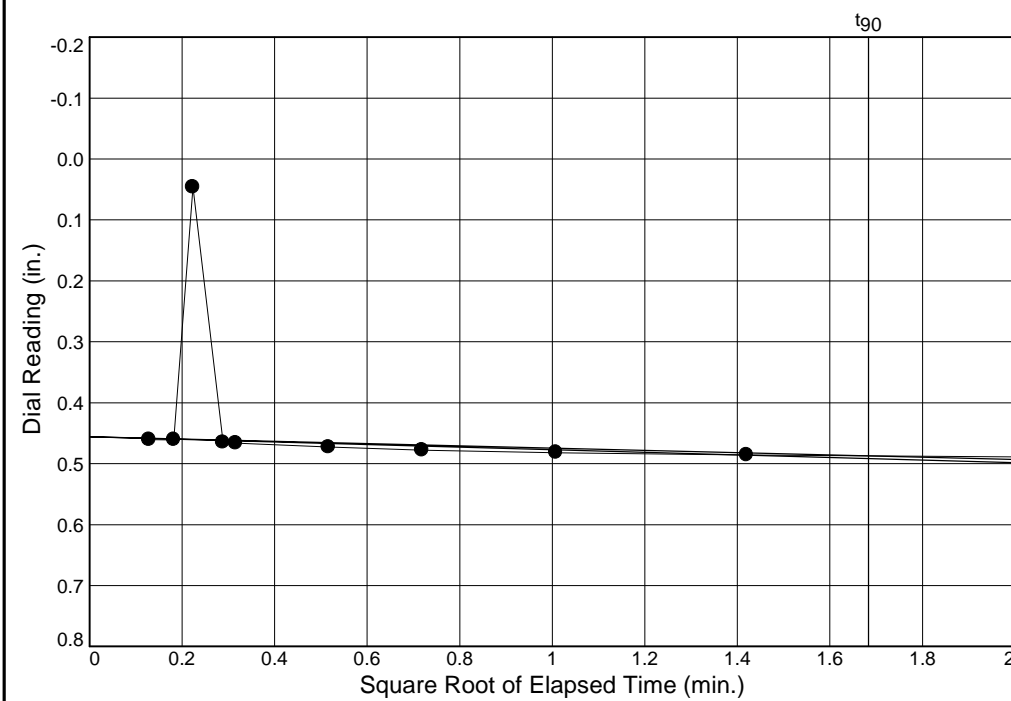
Project No.: 6235-17-038
 Project: Winston-Salem N. Beltway E. Section

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



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

$C_v @ T_{90}$
 1.837 ft.²/day



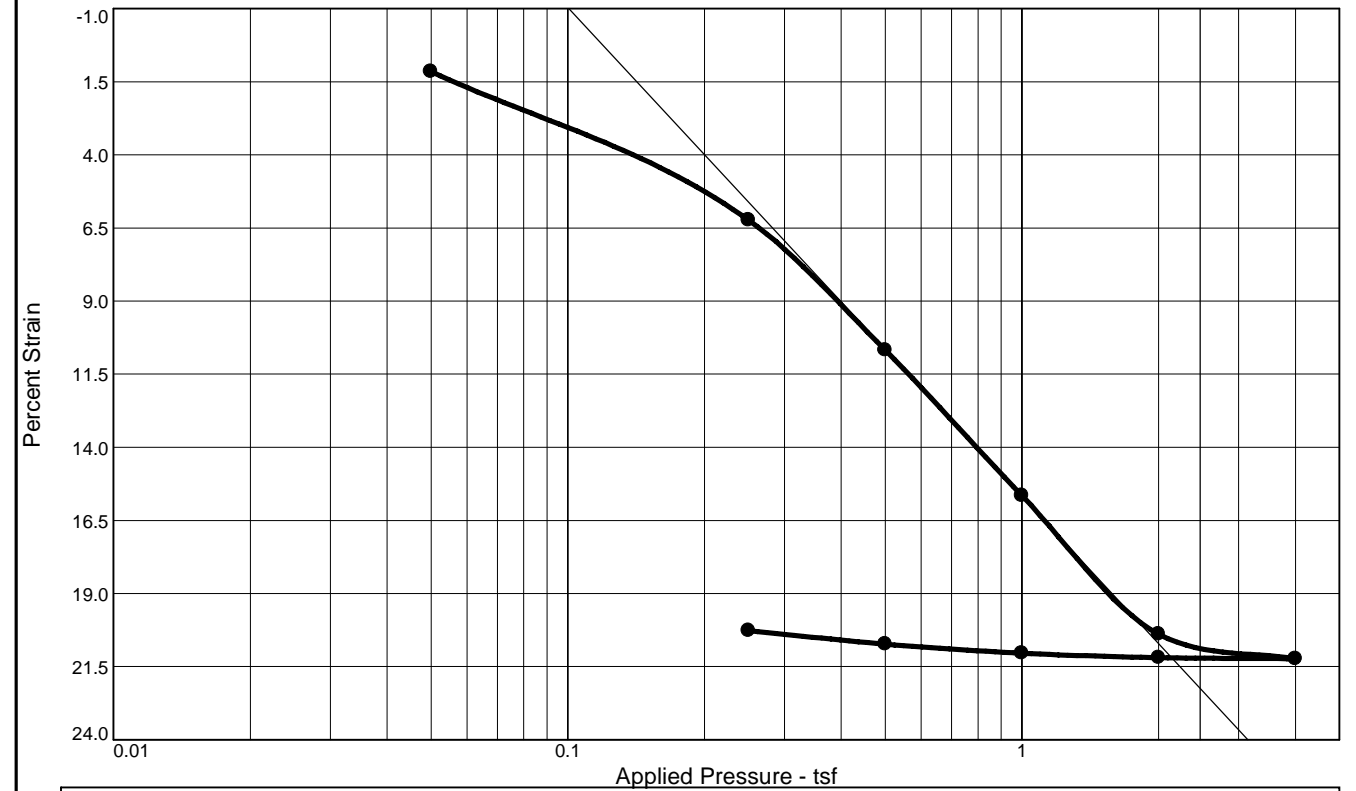
Load No.= 3
 Load= 0.50 tsf
 $D_0 = 0.4559$
 $D_{90} = 0.4871$
 $D_{100} = 0.4906$
 $T_{90} = 2.83 \text{ min.}$

$C_v @ T_{90}$
 0.709 ft.²/day

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Figure ST-4

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

MATERIAL DESCRIPTION								USCS	AASHTO
A-5									A-5

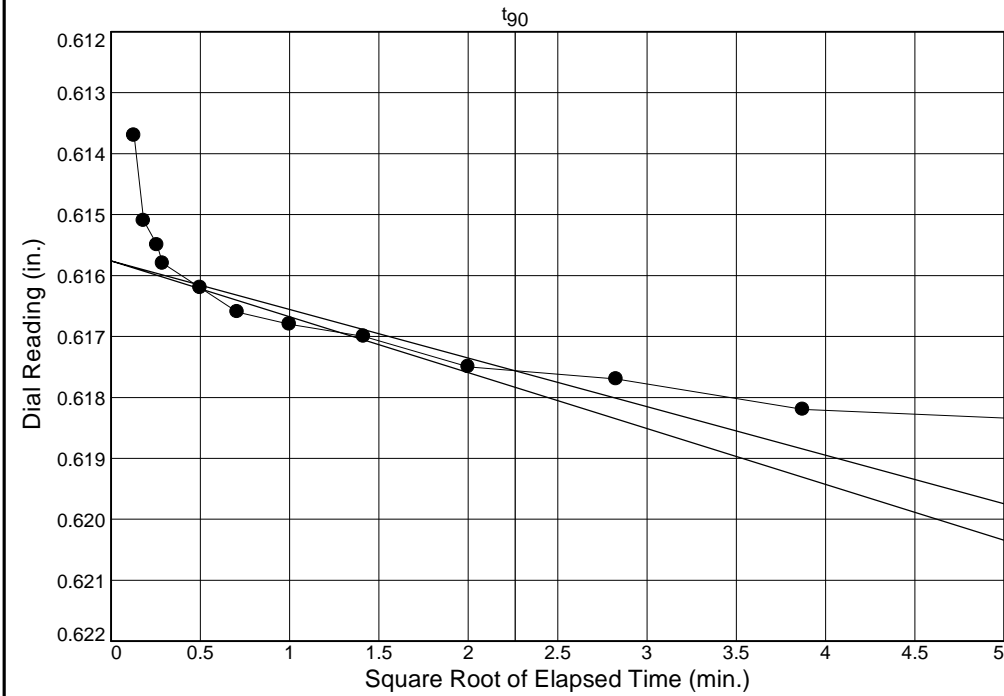
Project No. 6235-17-038	Client: NCDOT GEU	Remarks: Sample was saturated
Project: Winston-Salem N. Beltway E. Section		
Depth: 4.2-5.7' Sample Number: ST-3		
S & ME, INC.		
Charlotte, North Carolina		Figure ST-3

Tested By: Karen Warner Checked By: Jason Reeves

Dial Reading vs. Time

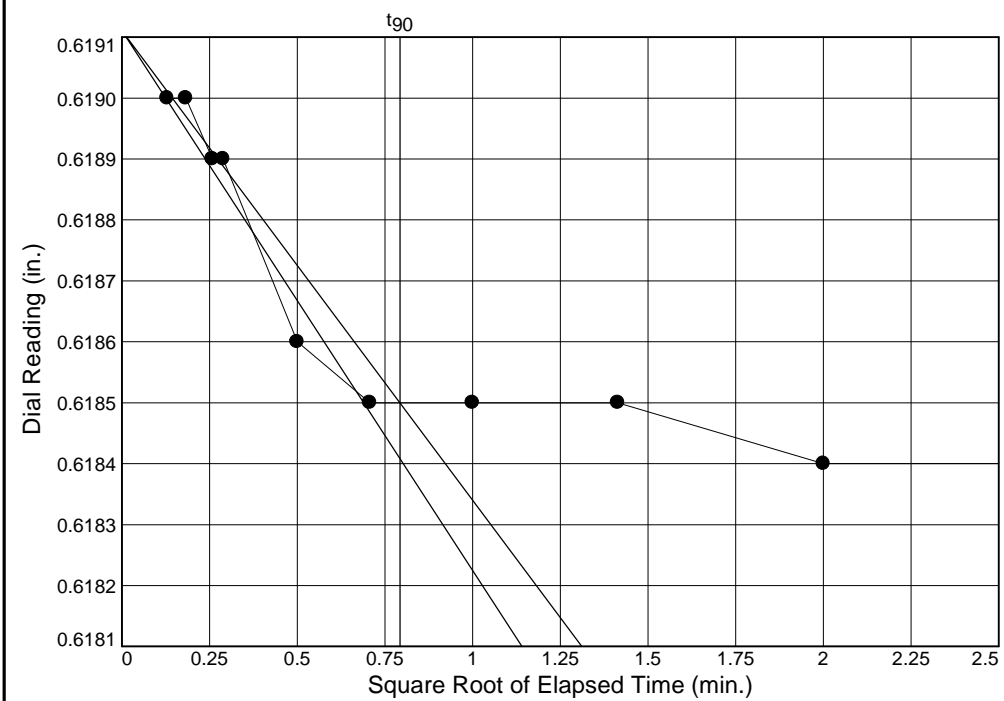
Project No.: 6235-17-038
 Project: Winston-Salem N. Beltway E. Section

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



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

$C_v @ T_{90}$
 0.294 ft.²/day



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

$C_v @ T_{90}$
 2.371 ft.²/day

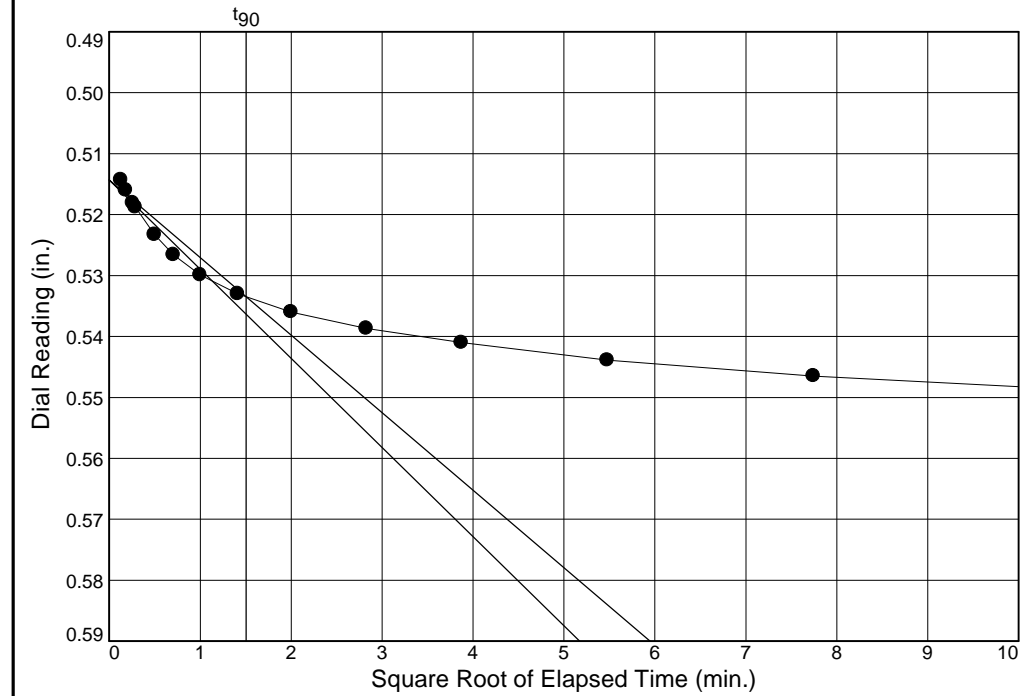
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Figure ST-6

Dial Reading vs. Time

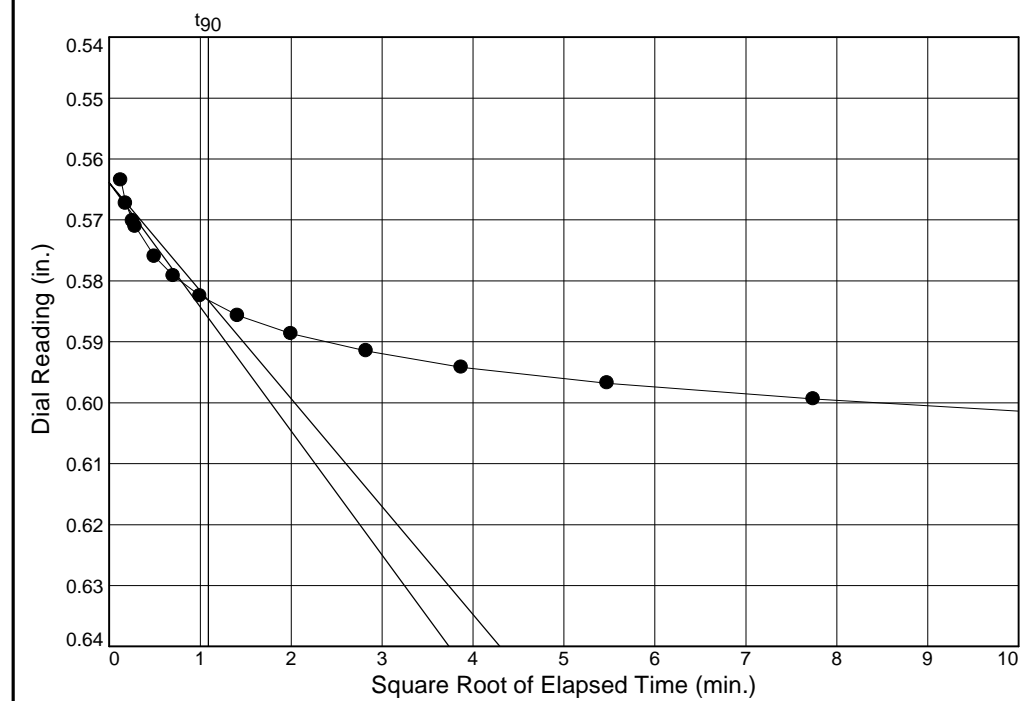
Project No.: 6235-17-038
 Project: Winston-Salem N. Beltway E. Section

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



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

$C_v @ T_{90}$
 0.797 ft.²/day



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

$C_v @ T_{90}$
 1.360 ft.²/day

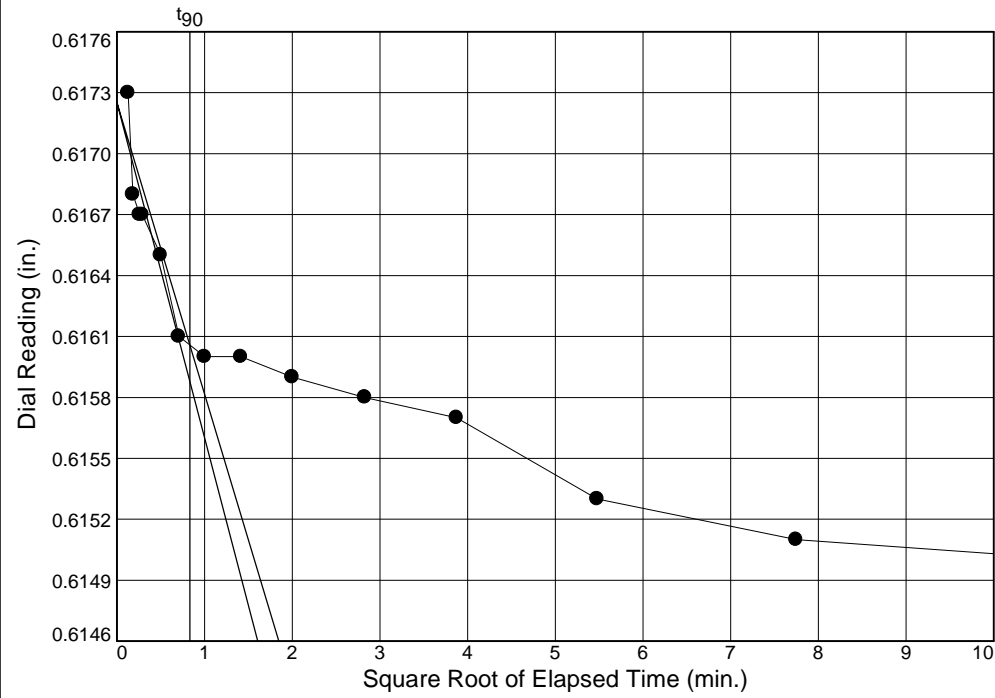
S & ME, INC.

Figure ST-5

Dial Reading vs. Time

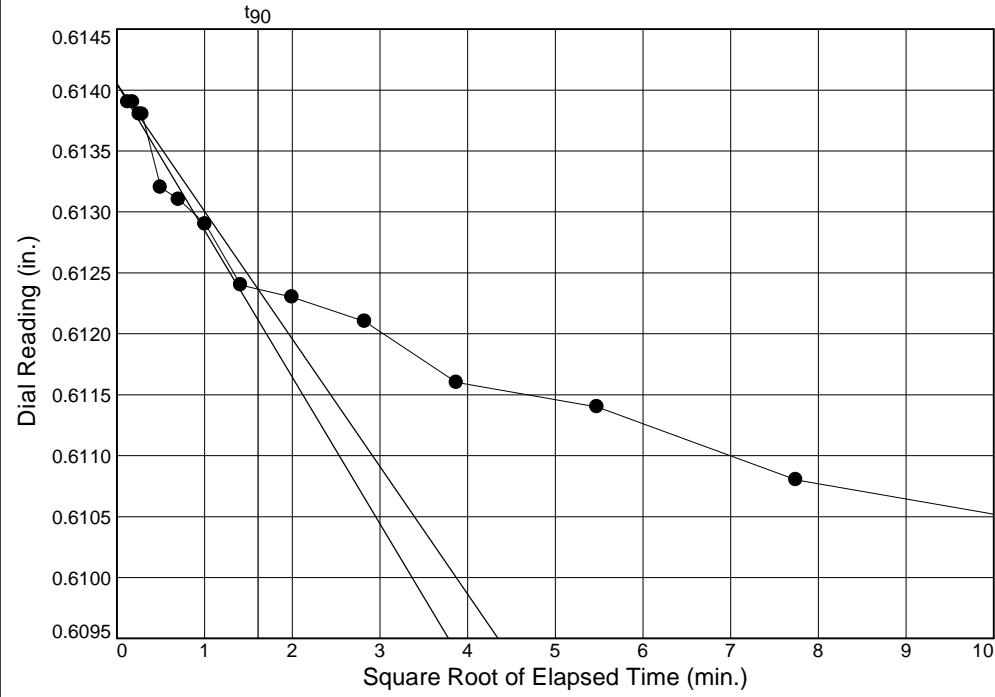
Project No.: 6235-17-038
 Project: Winston-Salem N. Beltway E. Section

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



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

$C_v @ T_{90}$
 2.167 ft.²/day



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

$C_v @ T_{90}$
 0.584 ft.²/day

Figure ST-7

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

S & ME, INC.

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

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Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial lbs.	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

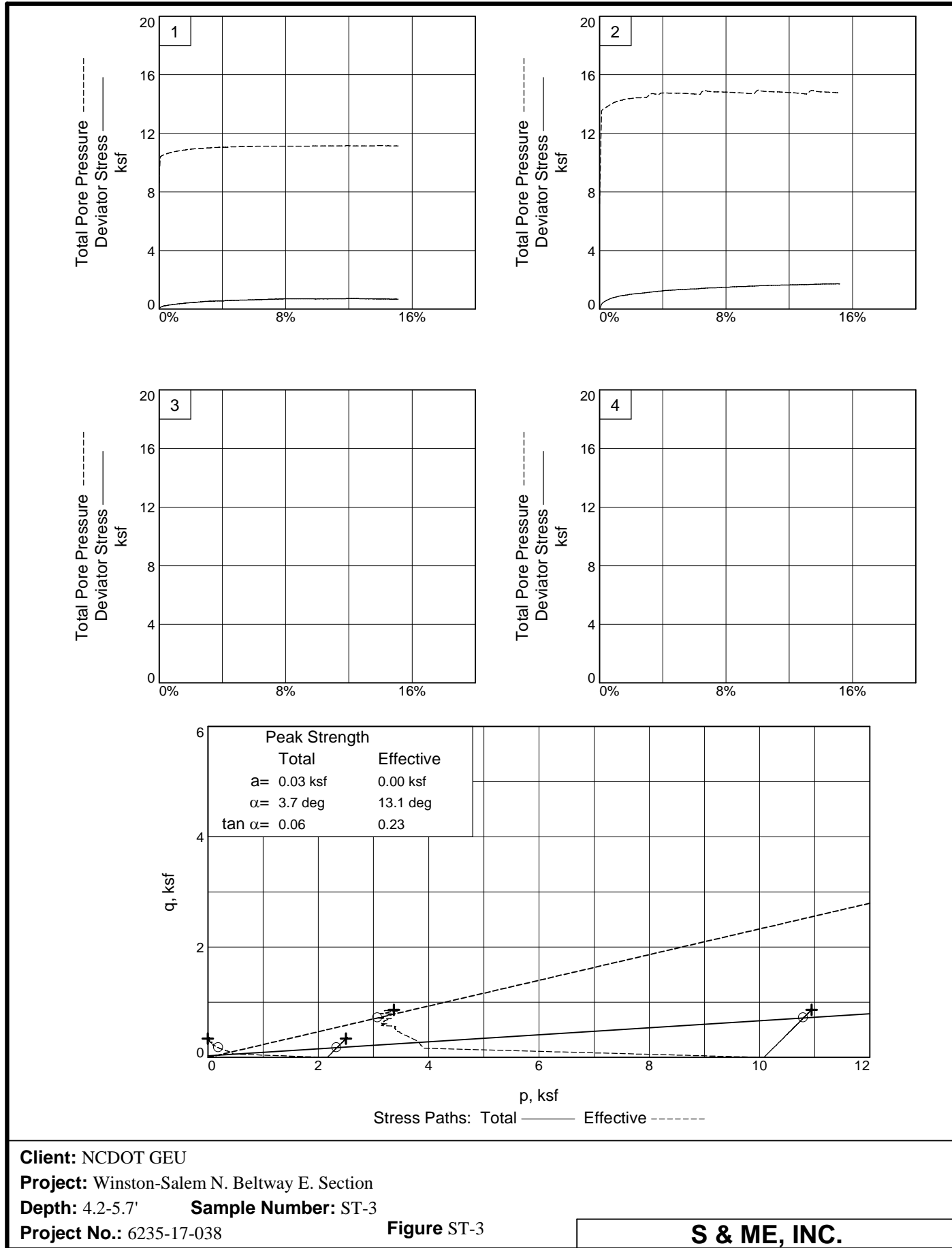
S & ME, INC.

Test Readings for Specimen No. 2

No.	Def. Dial in.	Load Dial lbs.	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

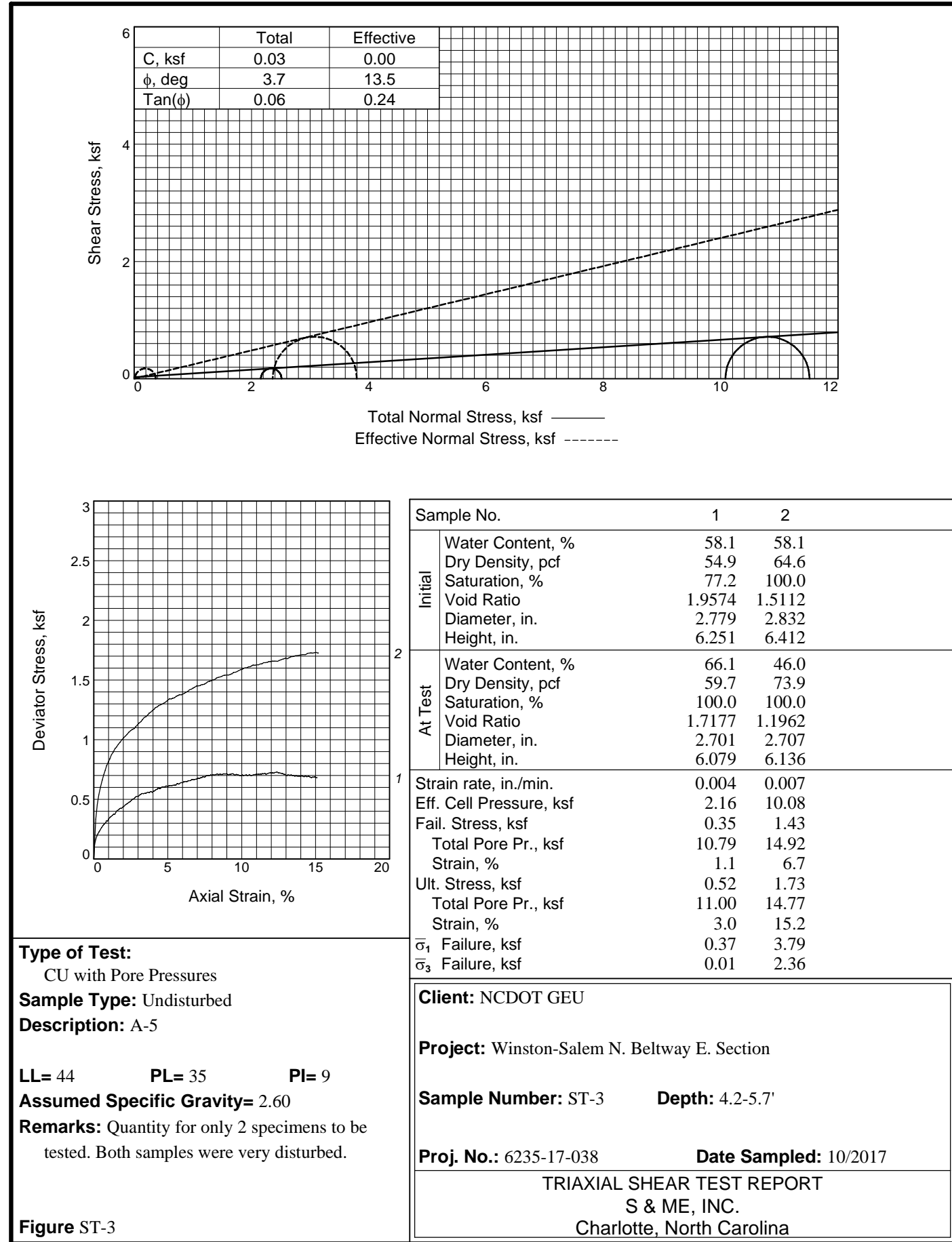
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C & phi are not test results but an interpretation of the test results. The designer is responsible for interpreting test data as provided by S&ME.



Tested By: Karen Warner Checked By: Jason Reeves

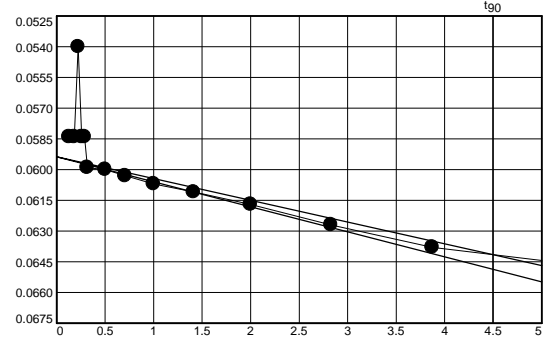
C & phi are not test results but an interpretation of the test results. The designer is responsible for interpreting test data as provided by S&ME.



Tested By: Karen Warner Checked By: Jason Reeves

Pressure: 0.05 tsf TEST READINGS Load No. 1

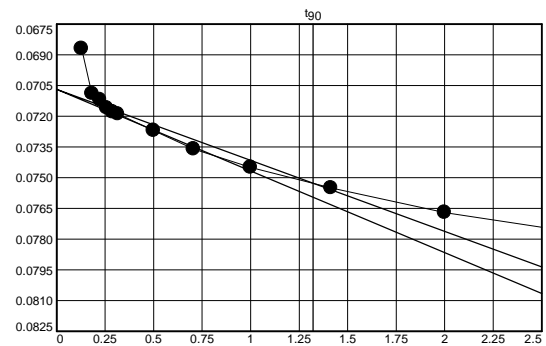
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	+0 00:00:0	0.05840	11	+0 00:02:00	0.06110
2	+0 00:00:01	0.05840	12	+0 00:04:00	0.06170
3	+0 00:00:02	0.05840	13	+0 00:08:00	0.06270
4	+0 00:00:03	0.05400	14	+0 00:15:00	0.06380
5	+0 00:00:04	0.05840	15	+0 00:30:00	0.06470
6	+0 00:00:05	0.05840	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%
 D₀ = 0.0594 D₉₀ = 0.0641 D₁₀₀ = 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%
 D₀ = 0.0707 D₉₀ = 0.0753 D₁₀₀ = 0.0758 C_v at 1.75 min. = 1.192 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: 8.4-10.4'
 Material Description: A-6
 Liquid Limit: 29
 AASHTO: A-6
 Figure No.: ST-5
 Testing Remarks: Unsaturated
 Tested by: Karen Warner

Sample Number: ST-5

Plasticity Index: 11

Checked by: Jason Reeves

Test Specimen Data

NATURAL MOISTURE	VOID RATIO	AFTER TEST
Wet w+t = 355.47 g.	Spec. Gr. = 2.65	Wet w+t = 253.62 g.
Dry w+t = 306.42 g.	Est. Ht. Solids = 0.626 in.	Dry w+t = 231.00 g.
Tare Wt. = 82.75 g.	Init. V.R. = 0.608	Tare Wt. = 98.16 g.
Moisture = 21.9 %	Init. Sat. = 95.6 %	Moisture = 17.0 %
UNIT WEIGHT	TEST START	Dry Wt. = 132.84* g.
Height = 0.999 in.	Height = 1.006 in.	
Diameter = 2.495 in.	Diameter = 2.495 in.	
Weight = 98.16 g.		
Dry Dens. = 62.8 pcf		

End-Of-Load Summary

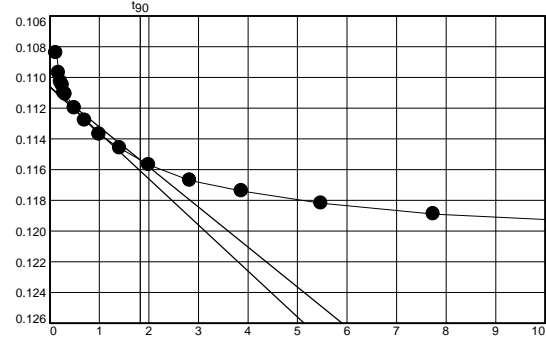
Pressure (tsf)	Final Dial (in.)	Deformation (in.)	C _v (ft. ² /day)	C _α	Void Ratio	% Strain
start	0.05840	0.00000			0.608	
0.05	0.06570	0.00730	0.105		0.596	0.7 Compr.
0.25	0.08080	0.02240	1.192		0.572	2.2 Compr.
0.50	0.09200	0.03360	0.618		0.554	3.3 Compr.
1.00	0.10410	0.04570	3.593		0.535	4.5 Compr.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

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

S & ME, INC.

Pressure: 2.00 tsf TEST READINGS Load No. 5

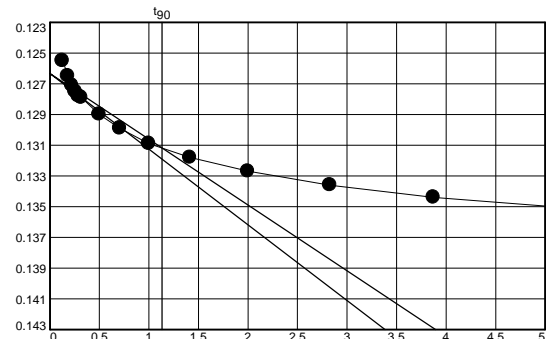
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.10410	12	+0 00:04:00	0.11570
2	+0 00:00:01	0.10840	13	+0 00:08:00	0.11670
3	+0 00:00:02	0.10970	14	+0 00:15:00	0.11740
4	+0 00:00:03	0.11030	15	+0 00:30:00	0.11820
5	+0 00:00:04	0.11050	16	+0 00:60:00	0.11890
6	+0 00:00:05	0.11100	17	+0 02:00:00	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

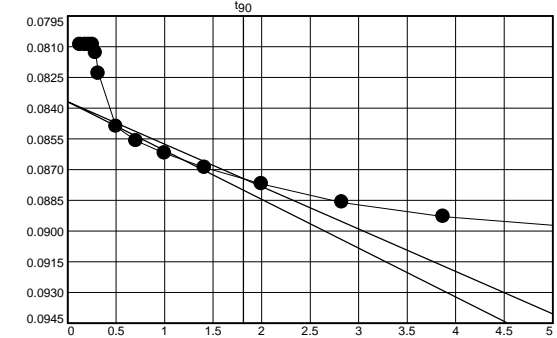
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.12070	11	+0 00:02:00	0.13180
2	+0 00:00:01	0.12550	12	+0 00:04:00	0.13270
3	+0 00:00:02	0.12650	13	+0 00:08:00	0.13360
4	+0 00:00:03	0.12710	14	+0 00:15:00	0.13440
5	+0 00:00:04	0.12750	15	+0 00:30:00	0.13520
6	+0 00:00:05	0.12780	16	+0 00:60:00	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

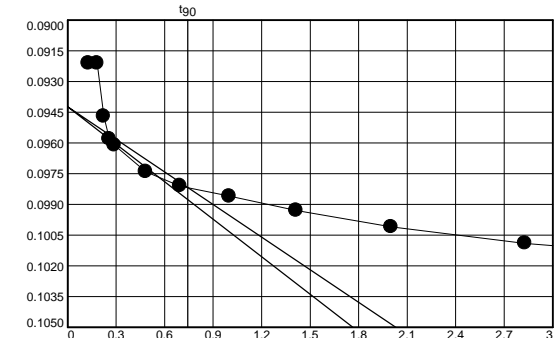
No.	Clock Time	Dial Reading	No.	Clock Time	Dial Reading
1	0	0.08080	11	+0 00:02:00	0.08690
2	+0 00:00:01	0.08090	12	+0 00:04:00	0.08770
3	+0 00:00:02	0.08090	13	+0 00:08:00	0.08860
4	+0 00:00:03	0.08090	14	+0 00:15:00	0.08930
5	+0 00:00:04	0.08090	15	+0 00:30:00	0.08990
6	+0 00:00:05	0.08130	16	+0 00:60:00	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

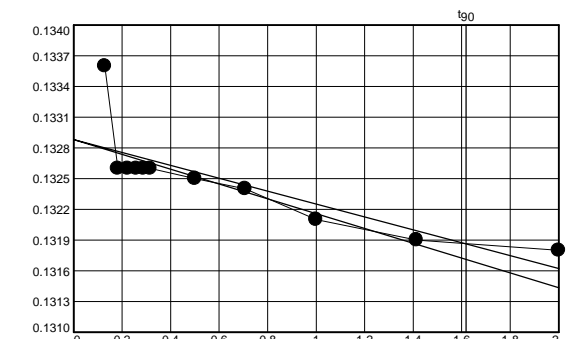
Pressure: 1.00 tsf TEST READINGS Load No. 7

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			

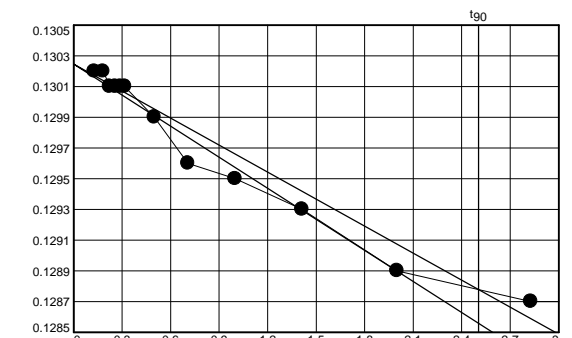


Void Ratio = 0.492 Compression = 7.2%

D₀ = 0.1329 D₉₀ = 0.1319 D₁₀₀ = 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			



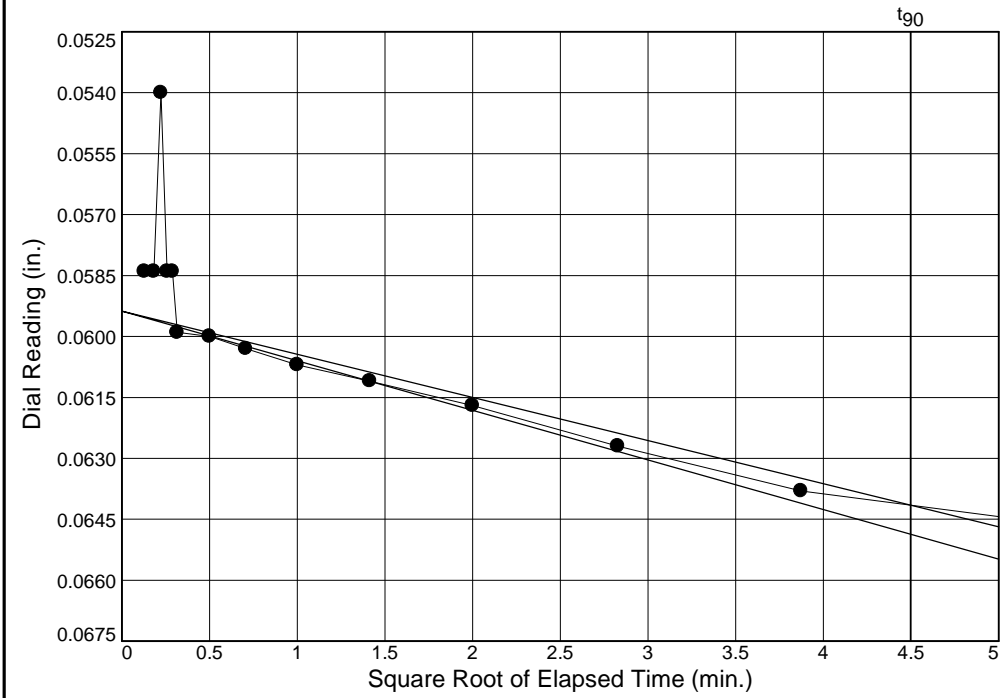
Void Ratio = 0.495 Compression = 7.0%

D₀ = 0.1302 D₉₀ = 0.1288 D₁₀₀ = 0.1286 C_v at 6.27 min. = 0.295 ft.²/day

Dial Reading vs. Time

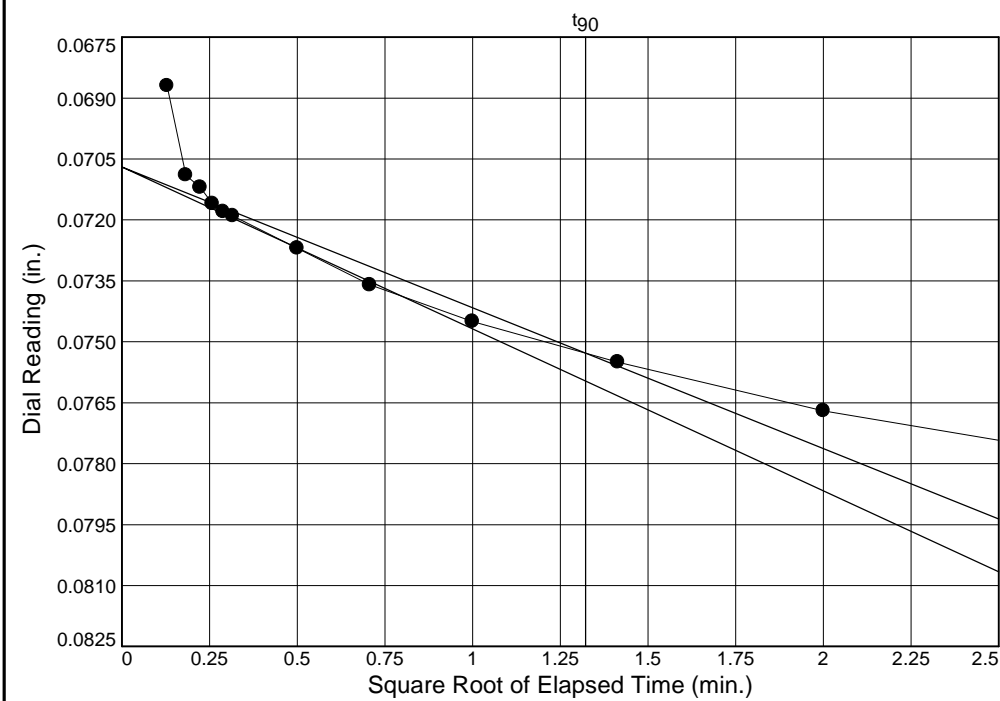
Project No.: 6235-17-038
 Project: Winston-Salem N. Beltway E. Section

Depth: 8.4-10.4' Sample Number: ST-5



Load No.= 1
 Load= 0.05 tsf
 $D_0 = 0.0594$
 $D_{90} = 0.0641$
 $D_{100} = 0.0647$
 $T_{90} = 20.22 \text{ min.}$

$C_v @ T_{90}$
 0.105 ft.²/day



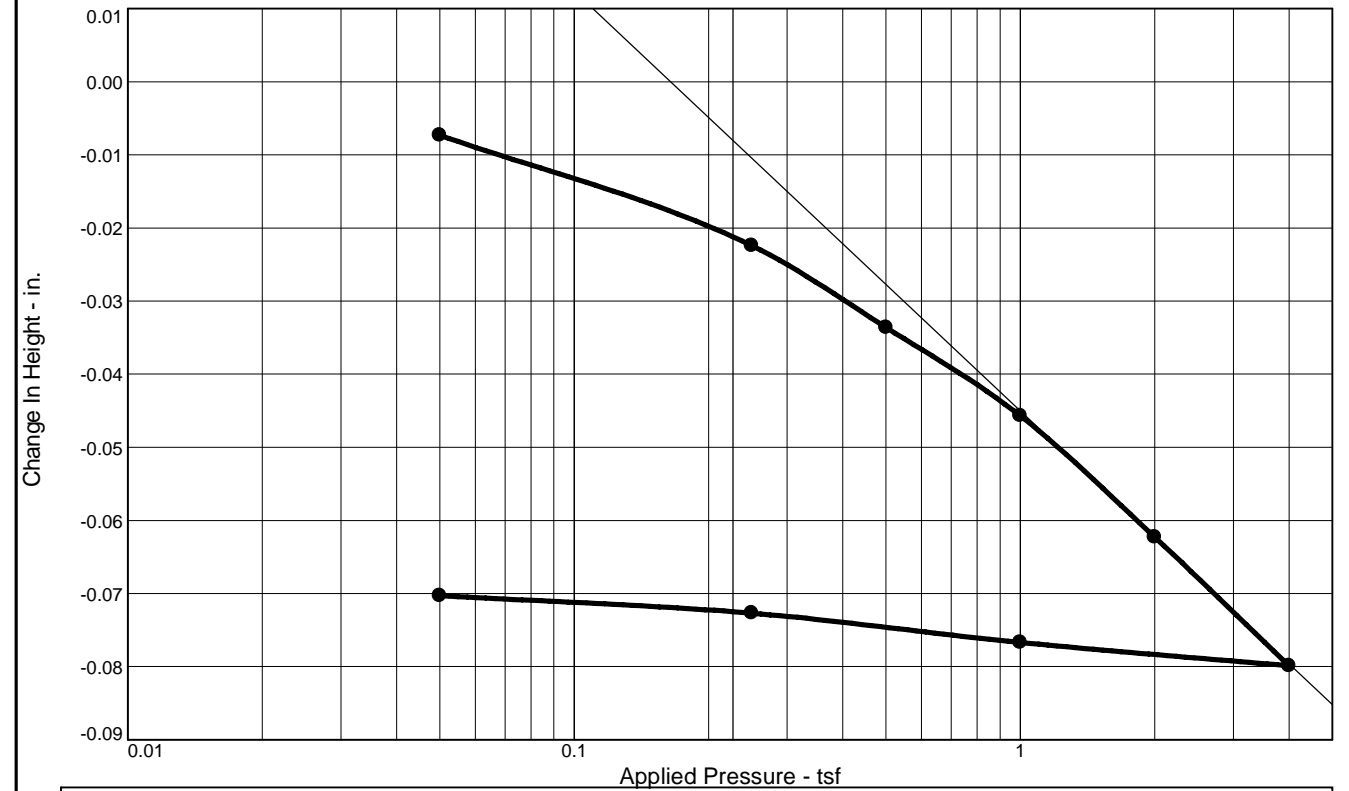
Load No.= 2
 Load= 0.25 tsf
 $D_0 = 0.0707$
 $D_{90} = 0.0753$
 $D_{100} = 0.0758$
 $T_{90} = 1.75 \text{ min.}$

$C_v @ T_{90}$
 1.192 ft.²/day

S & ME, INC.

Figure ST-6

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	62.8	29	11	2.65		0.5	0.09		0.608
95.6 %	21.9 %									

MATERIAL DESCRIPTION	USCS	AASHTO
A-6		A-6

Project No. 6235-17-038	Client: NCDOT GEU	Remarks: Unsaturated
Project: Winston-Salem N. Beltway E. Section		
Depth: 8.4-10.4' Sample Number: ST-5		
S & ME, INC.		
Charlotte, North Carolina		Figure ST-5

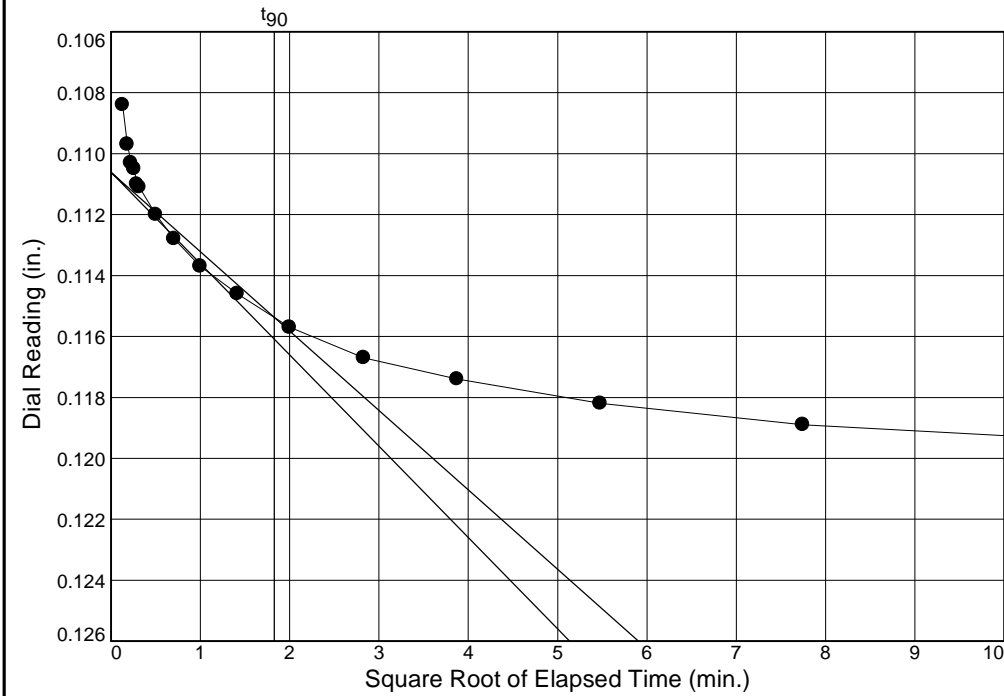
Tested By: Karen Warner

Checked By: Jason Reeves

Dial Reading vs. Time

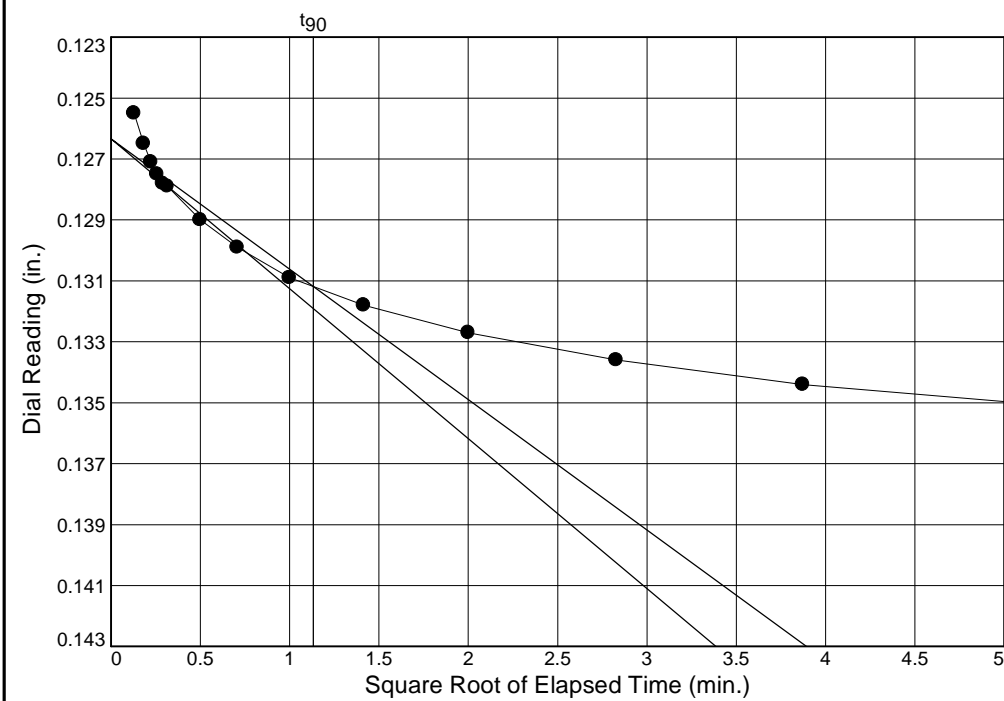
Project No.: 6235-17-038
 Project: Winston-Salem N. Beltway E. Section

Depth: 8.4-10.4' Sample Number: ST-5



Load No.= 5
 Load= 2.00 tsf
 $D_0 = 0.1106$
 $D_{90} = 0.1154$
 $D_{100} = 0.1159$
 $T_{90} = 3.34 \text{ min.}$

$C_v @ T_{90}$
 0.575 ft.²/day



Load No.= 6
 Load= 4.00 tsf
 $D_0 = 0.1263$
 $D_{90} = 0.1312$
 $D_{100} = 0.1317$
 $T_{90} = 1.28 \text{ min.}$

$C_v @ T_{90}$
 1.444 ft.²/day

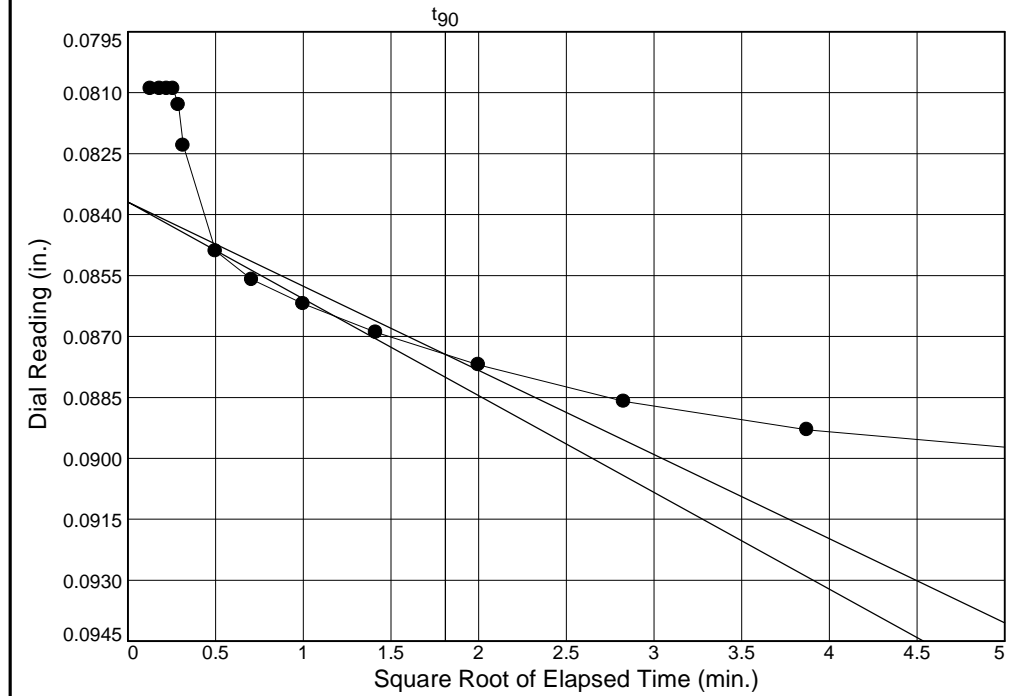
S & ME, INC.

Figure ST-8

Dial Reading vs. Time

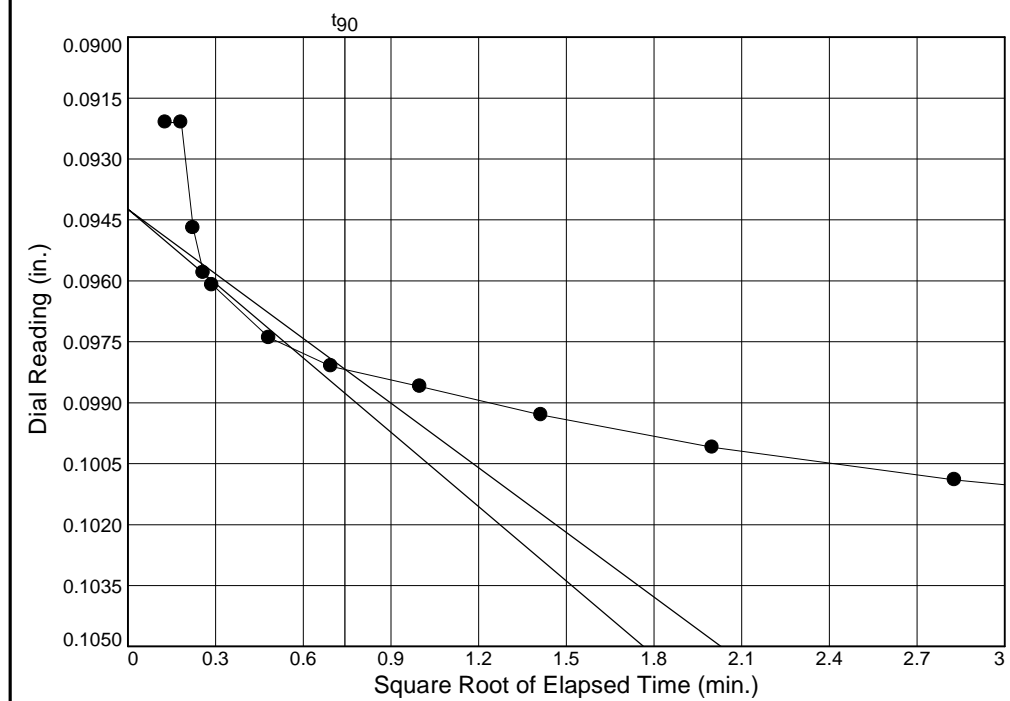
Project No.: 6235-17-038
 Project: Winston-Salem N. Beltway E. Section

Depth: 8.4-10.4' Sample Number: ST-5



Load No.= 3
 Load= 0.50 tsf
 $D_0 = 0.0837$
 $D_{90} = 0.0874$
 $D_{100} = 0.0879$
 $T_{90} = 3.28 \text{ min.}$

$C_v @ T_{90}$
 0.618 ft.²/day



Load No.= 4
 Load= 1.00 tsf
 $D_0 = 0.0942$
 $D_{90} = 0.0982$
 $D_{100} = 0.0986$
 $T_{90} = 0.55 \text{ min.}$

$C_v @ T_{90}$
 3.593 ft.²/day

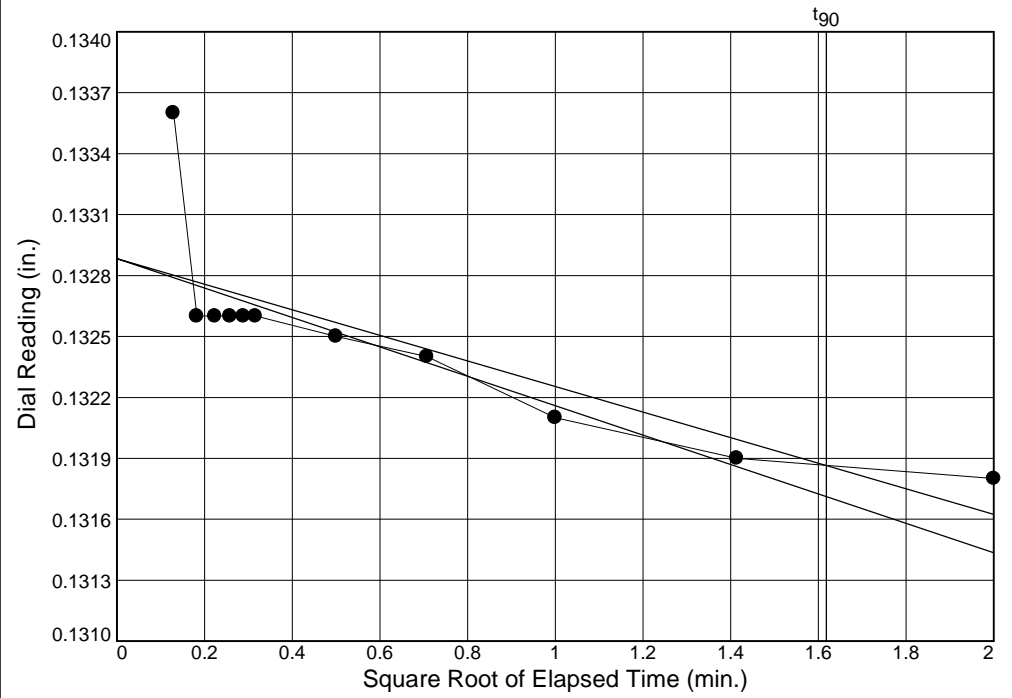
S & ME, INC.

Figure ST-7

Dial Reading vs. Time

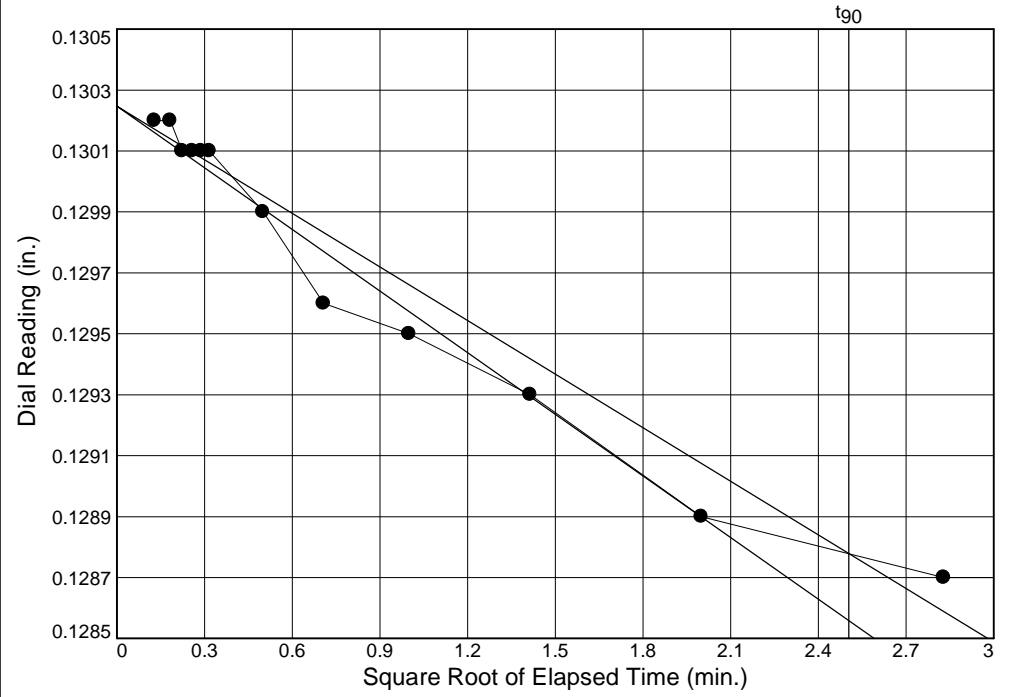
Project No.: 6235-17-038
Project: Winston-Salem N. Beltway E. Section

Depth: 8.4-10.4' Sample Number: ST-5



Load No.= 8
 Load= 0.25 tsf
 $D_0 = 0.1329$
 $D_{90} = 0.1319$
 $D_{100} = 0.1318$
 $T_{90} = 2.62 \text{ min.}$

$C_v @ T_{90}$
 $0.702 \text{ ft.}^2/\text{day}$



Load No.= 9
 Load= 0.05 tsf
 $D_0 = 0.1302$
 $D_{90} = 0.1288$
 $D_{100} = 0.1286$
 $T_{90} = 6.27 \text{ min.}$

$C_v @ T_{90}$
 $0.295 \text{ ft.}^2/\text{day}$

Figure ST-9

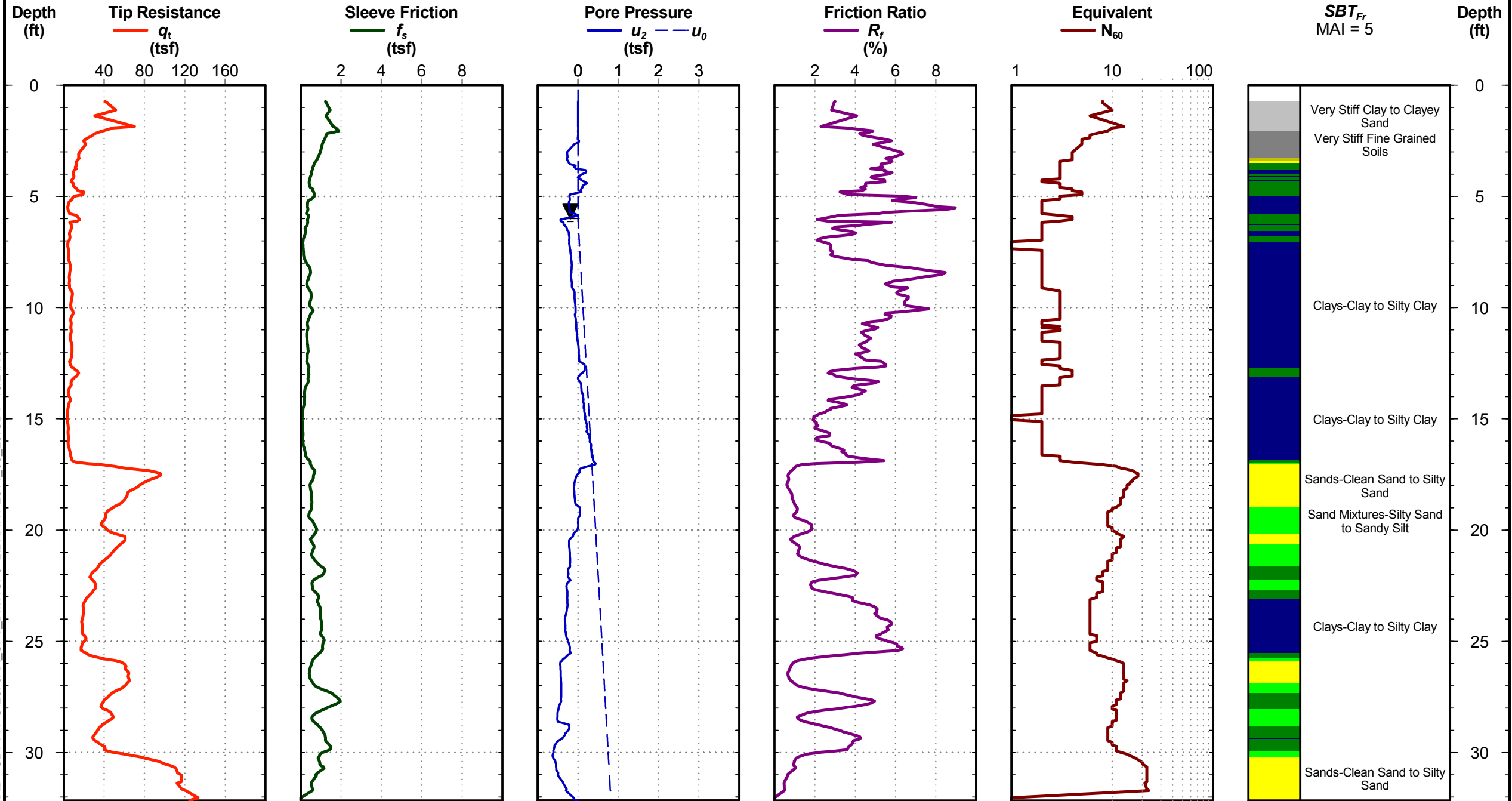


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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

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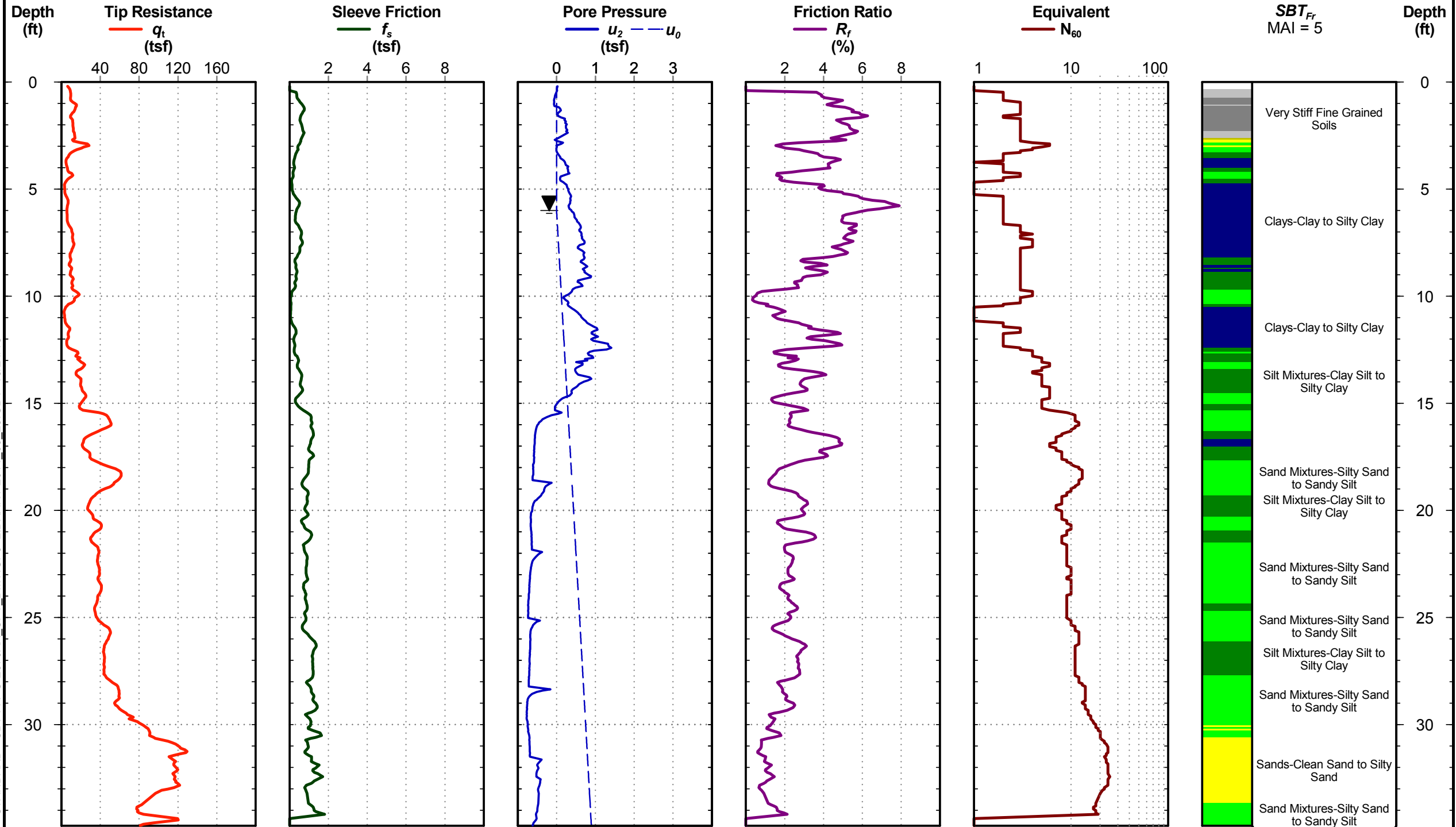


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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

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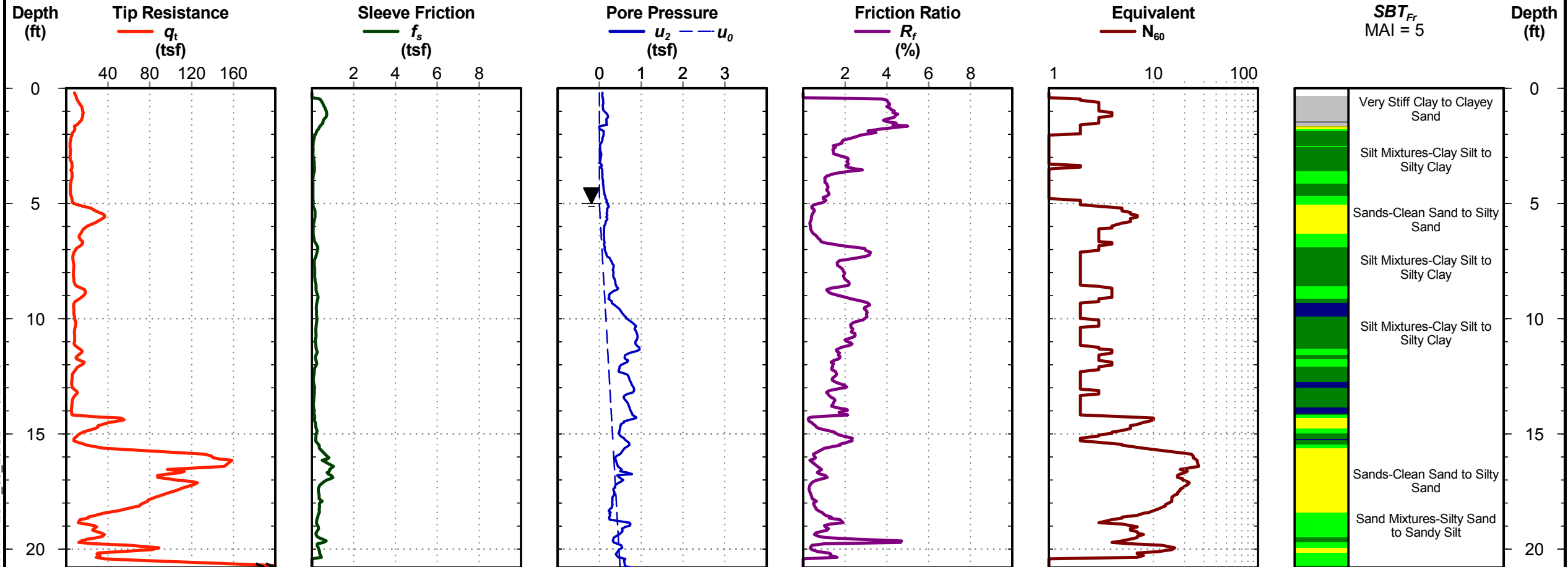


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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



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Cone Penetration Test

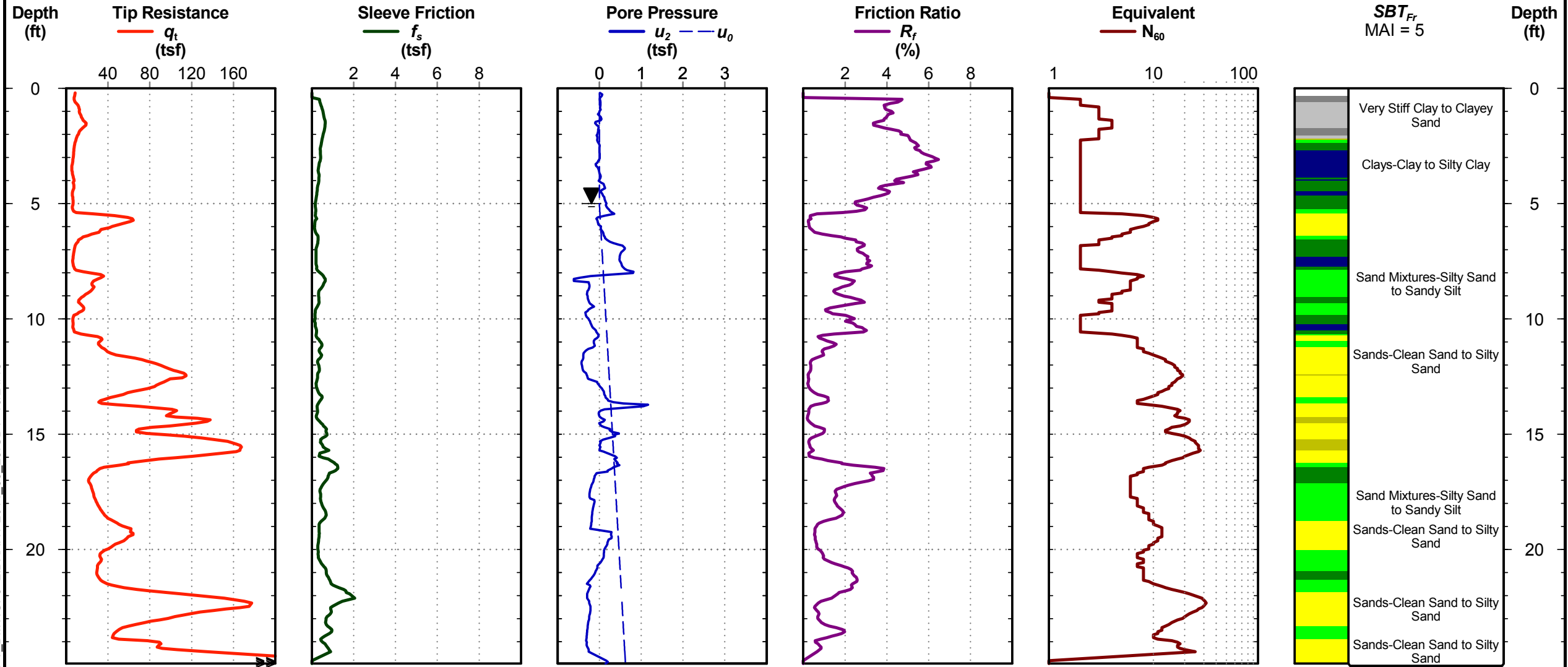


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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



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Cone Penetration Test

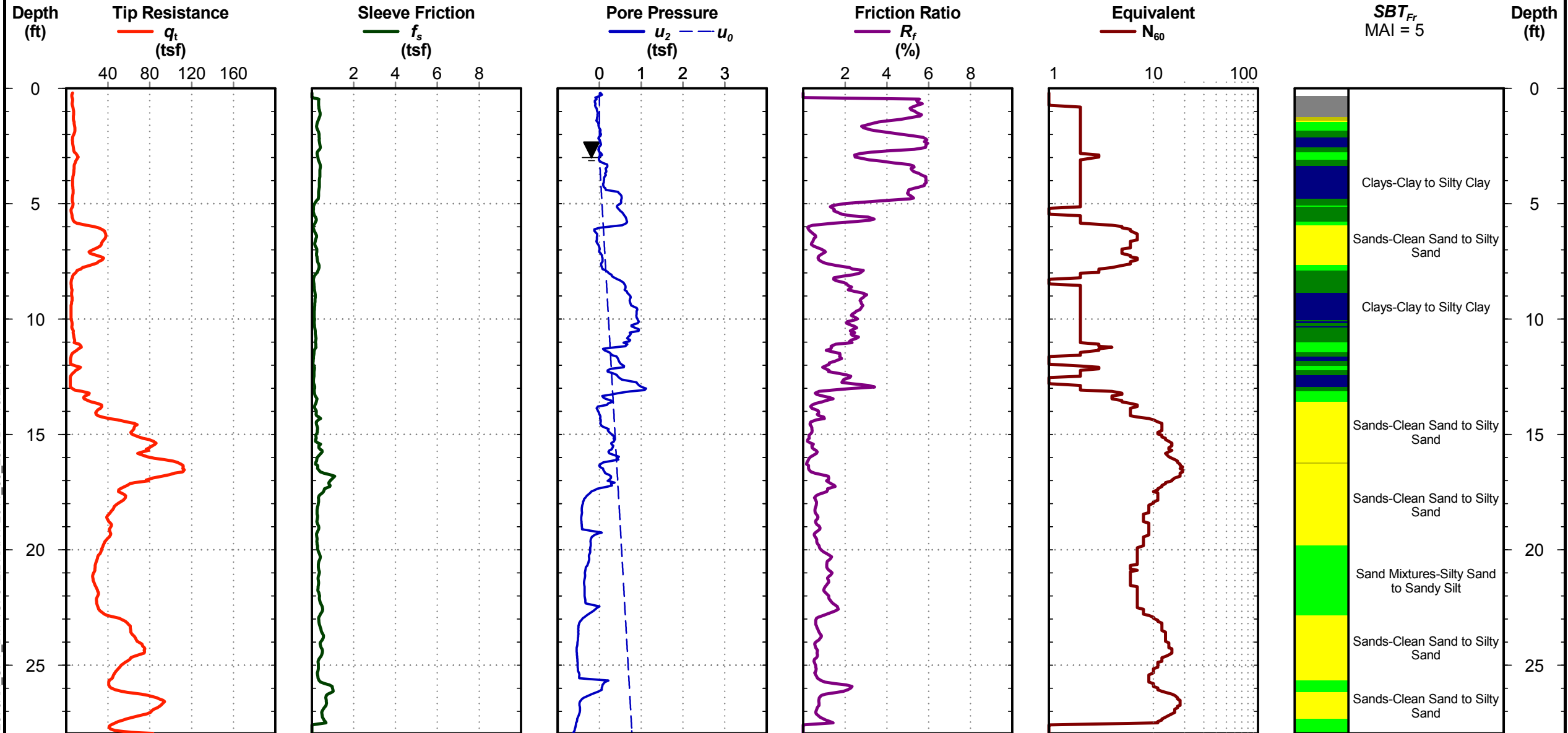


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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



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Cone Penetration Test

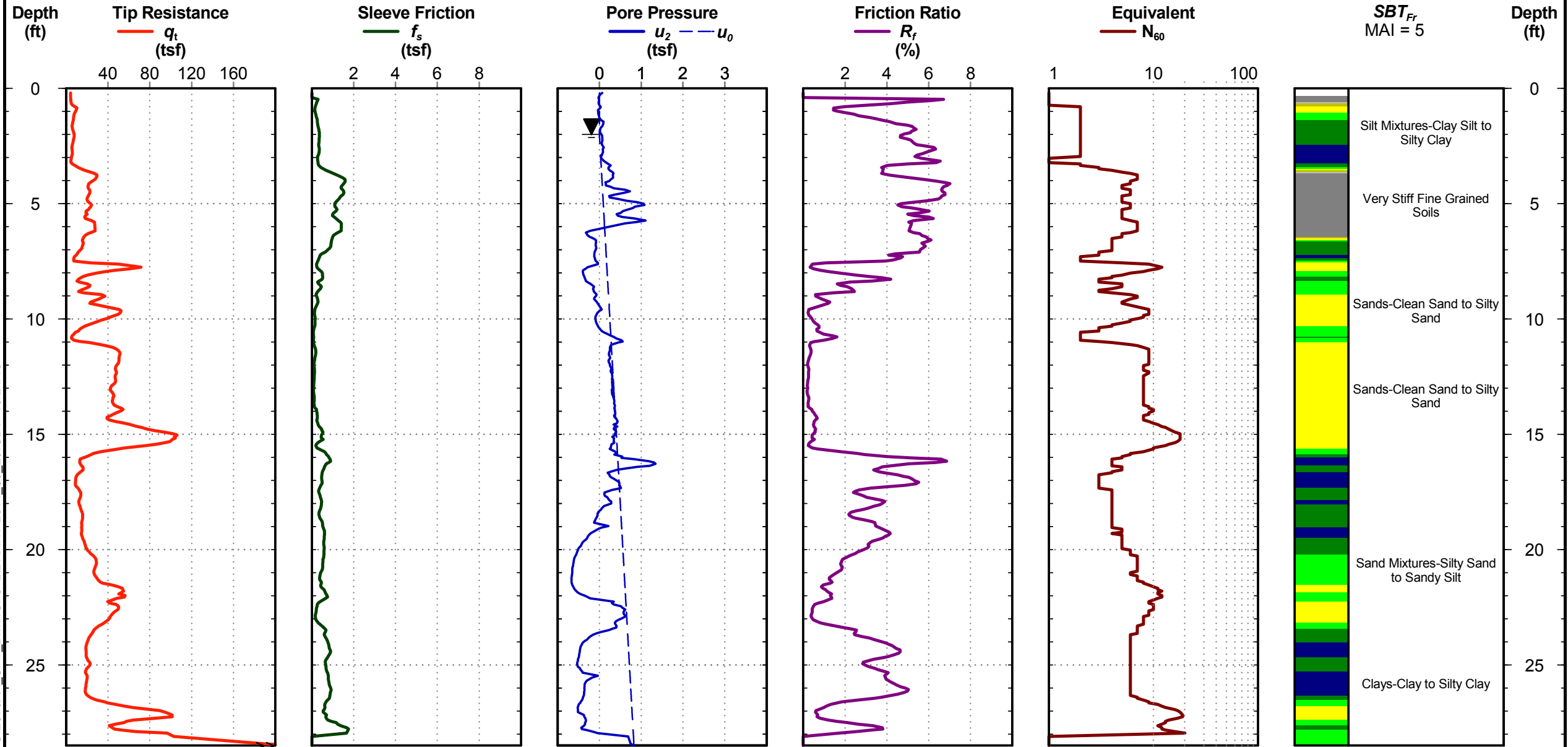


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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

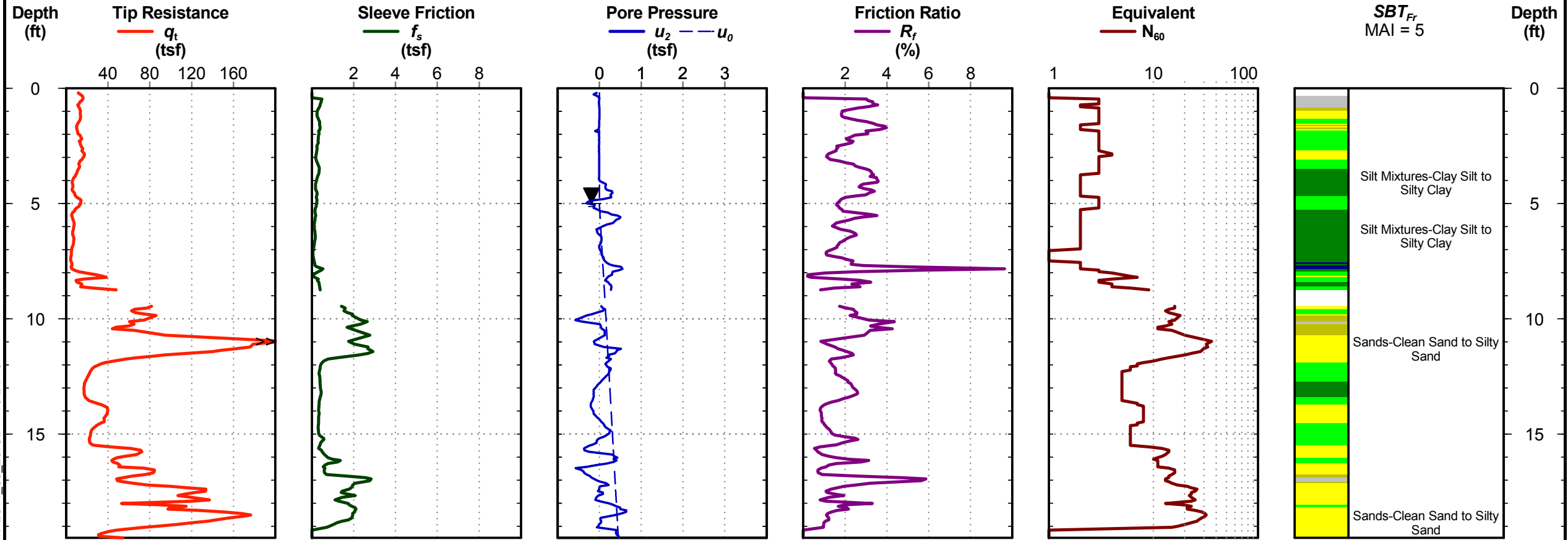


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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



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Cone Penetration Test

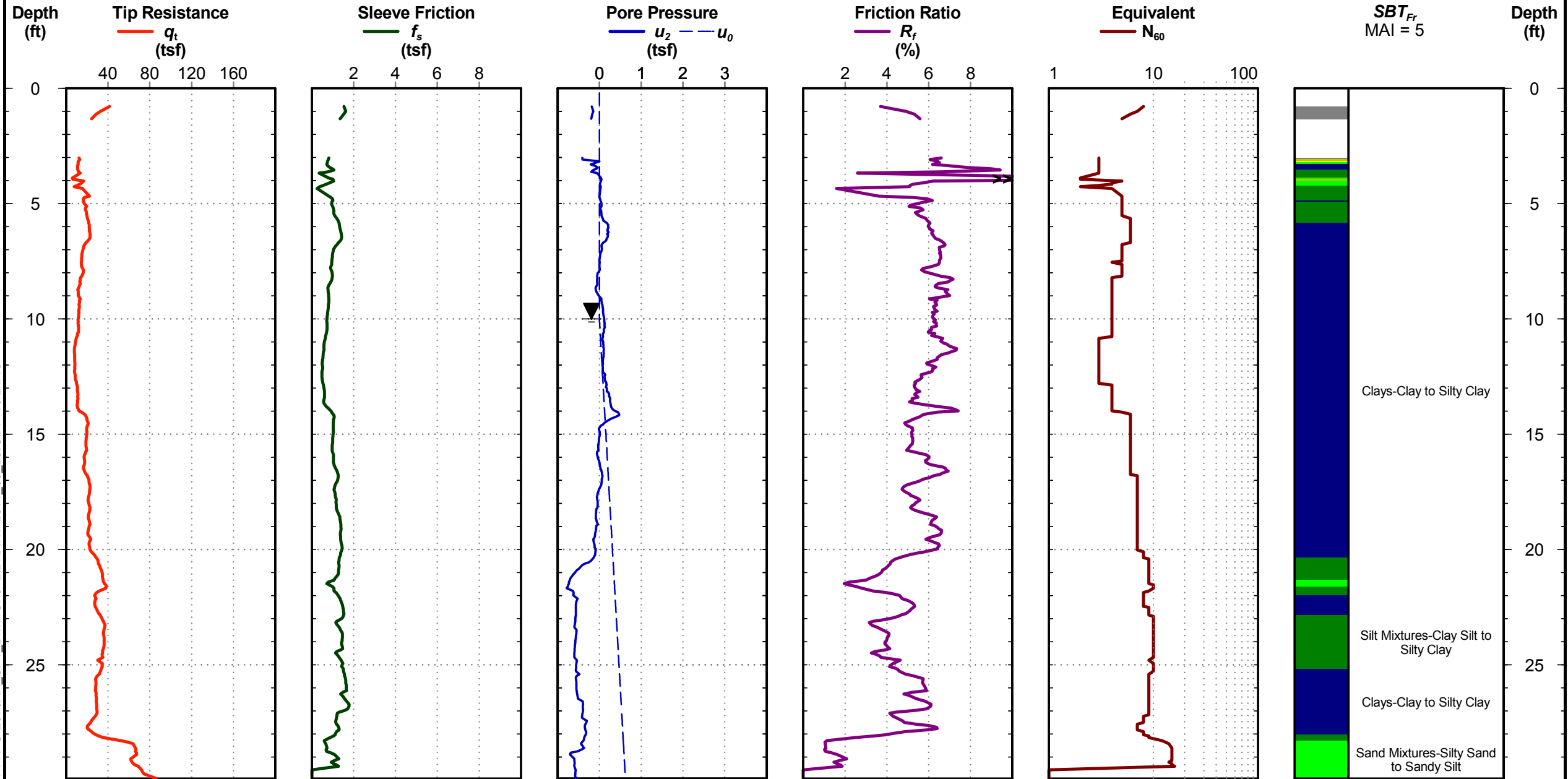


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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

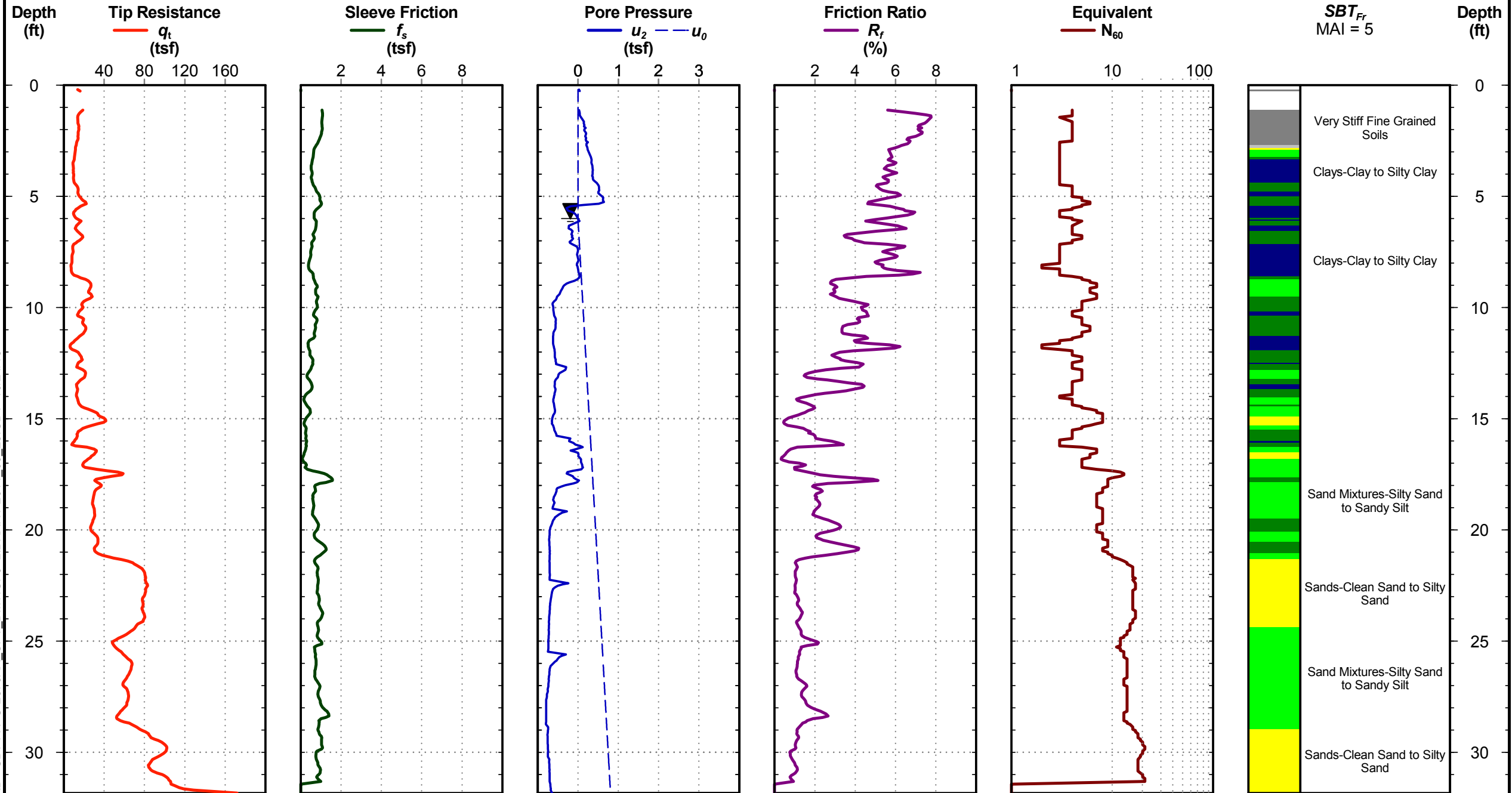


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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



Cone Penetration Test

CPT REPORT - STANDARD - SBT FR U-2579AA CPT DMT.GPJ LIBRARY 2011.06.28.GDT 10/24/18

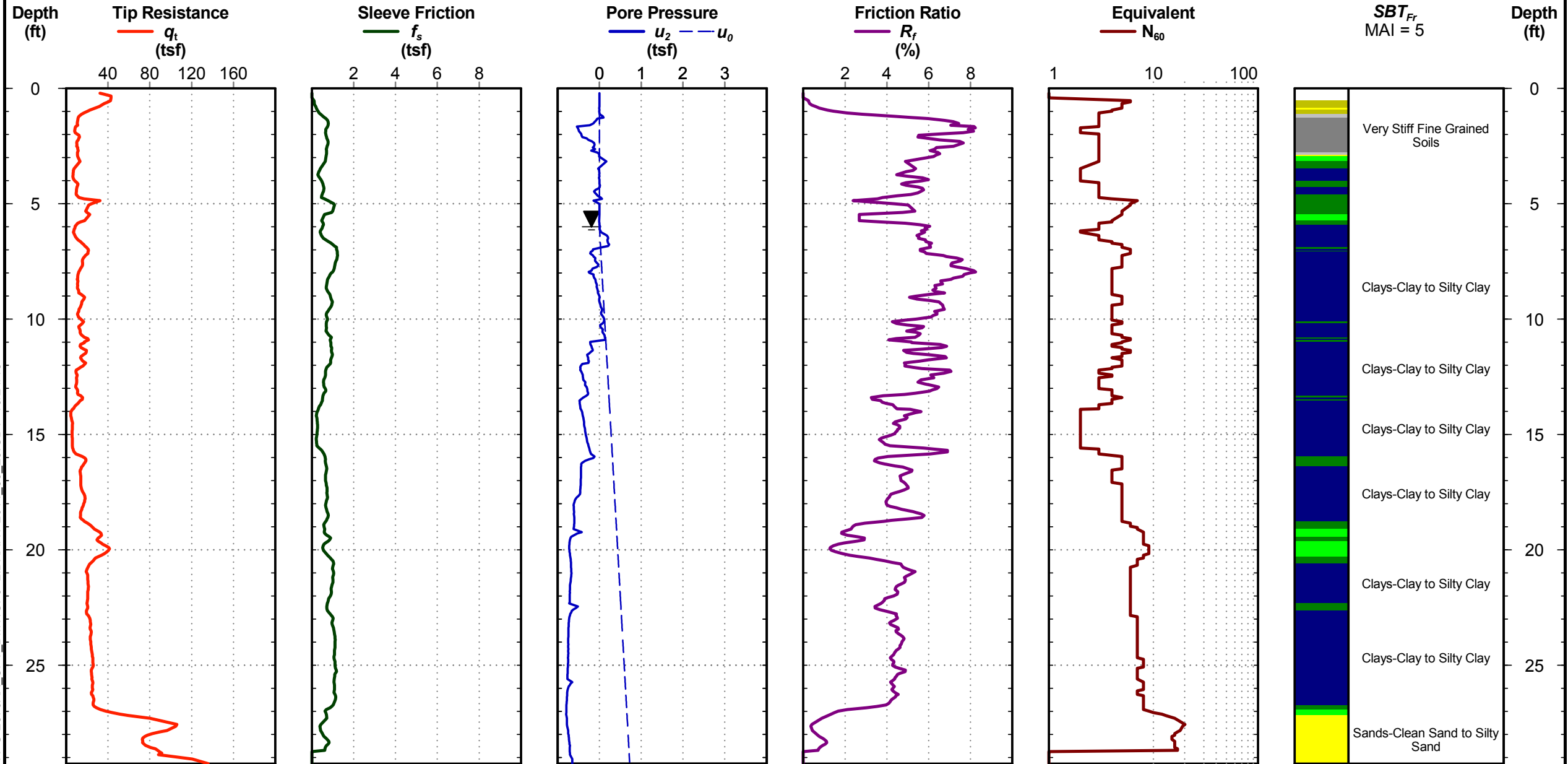


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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



Cone Penetration Test

CPT REPORT - STANDARD - SBT FR U-2579AA CPT DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

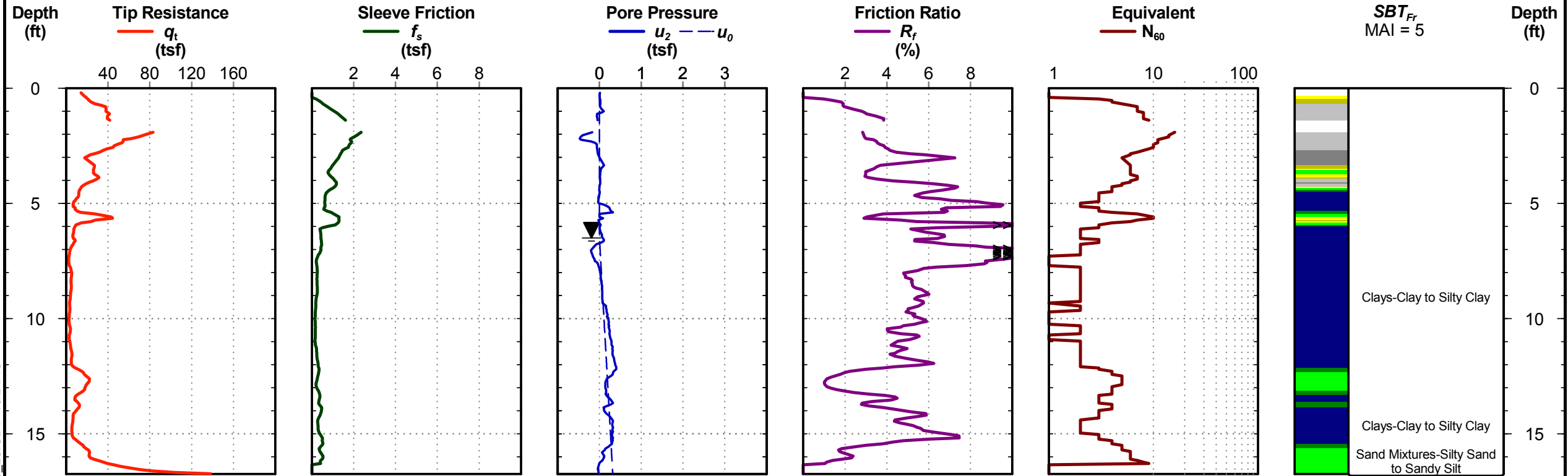


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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

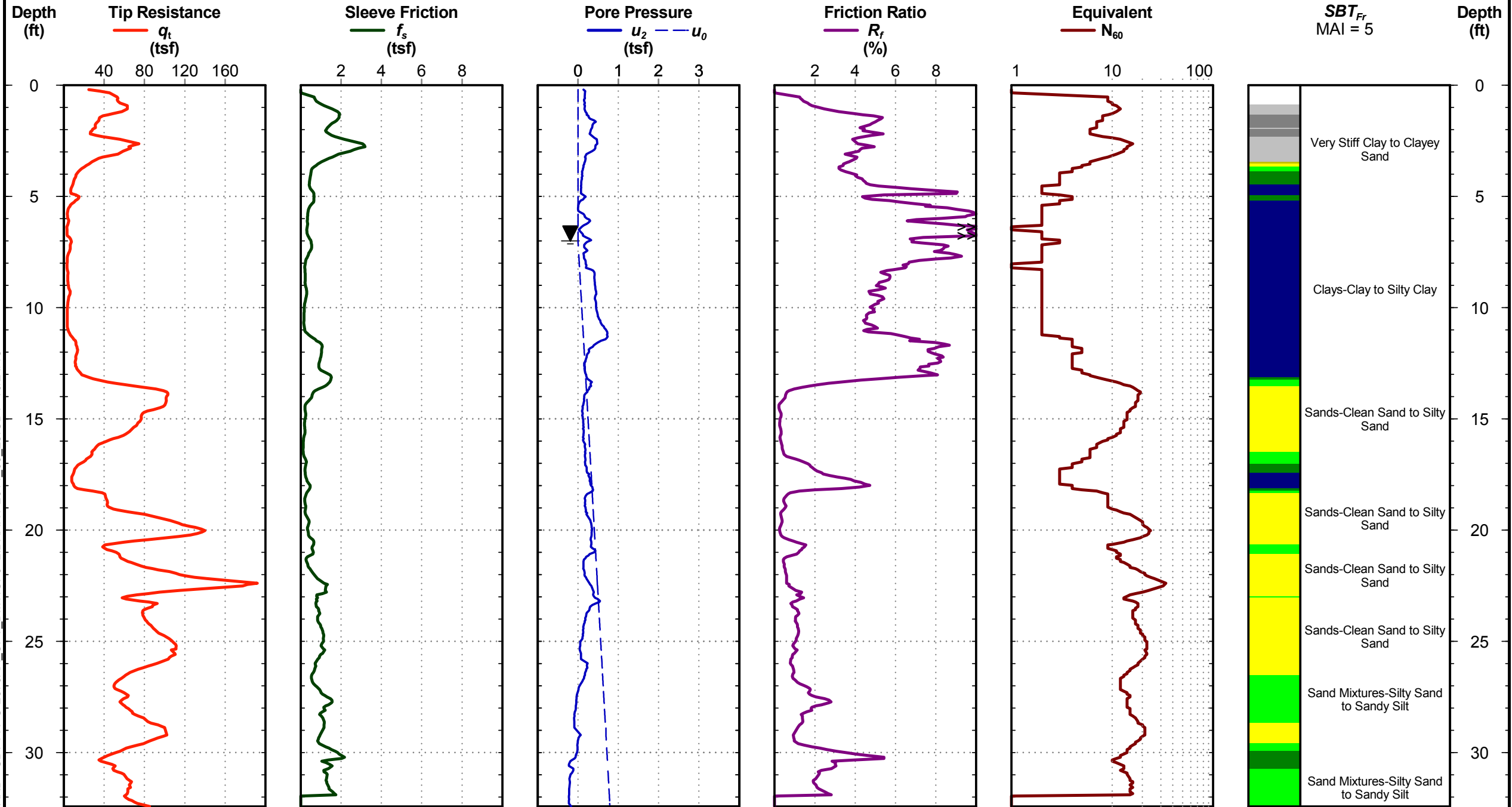


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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

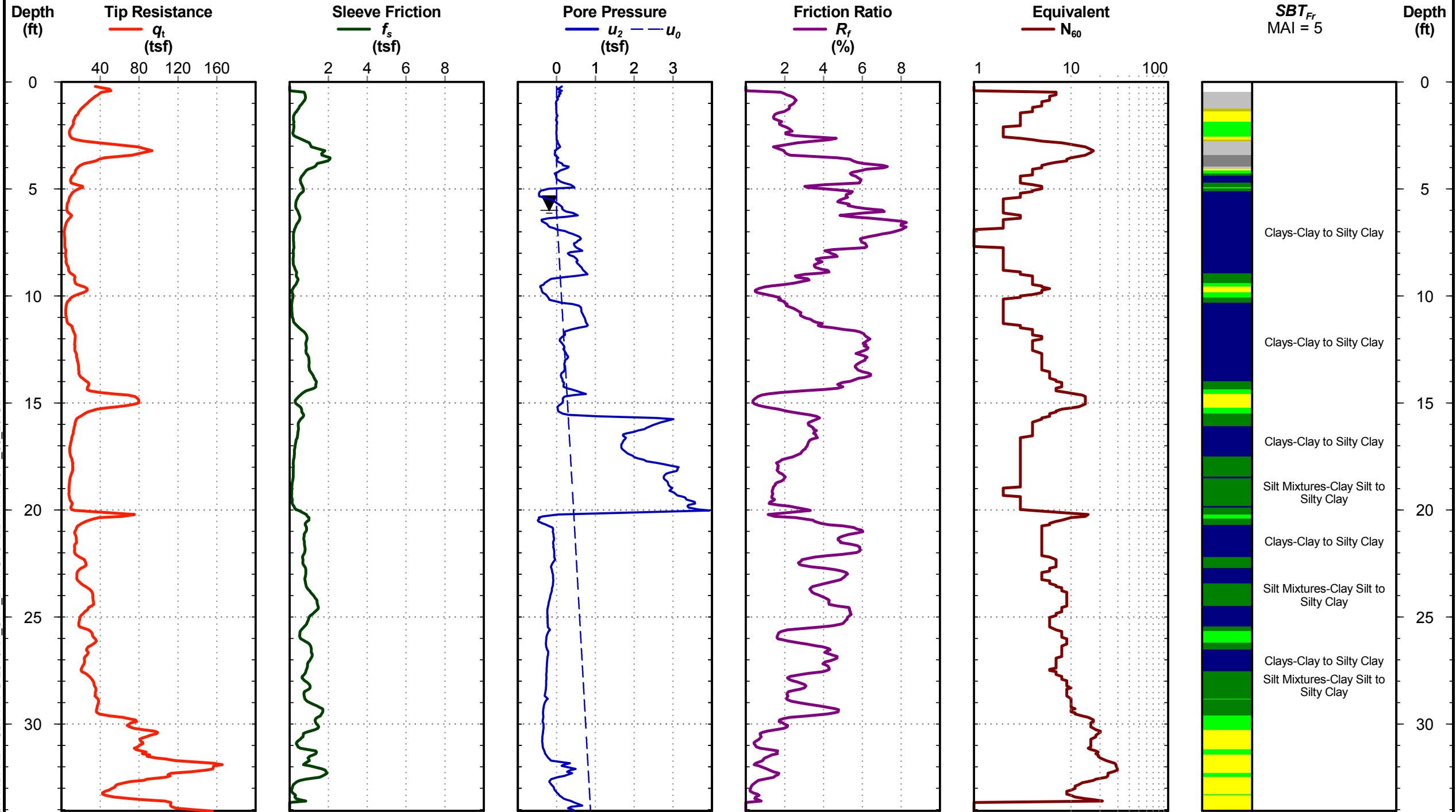


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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



Cone Penetration Test

CPT REPORT - STANDARD - SBT FR U-2579AA CPT DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

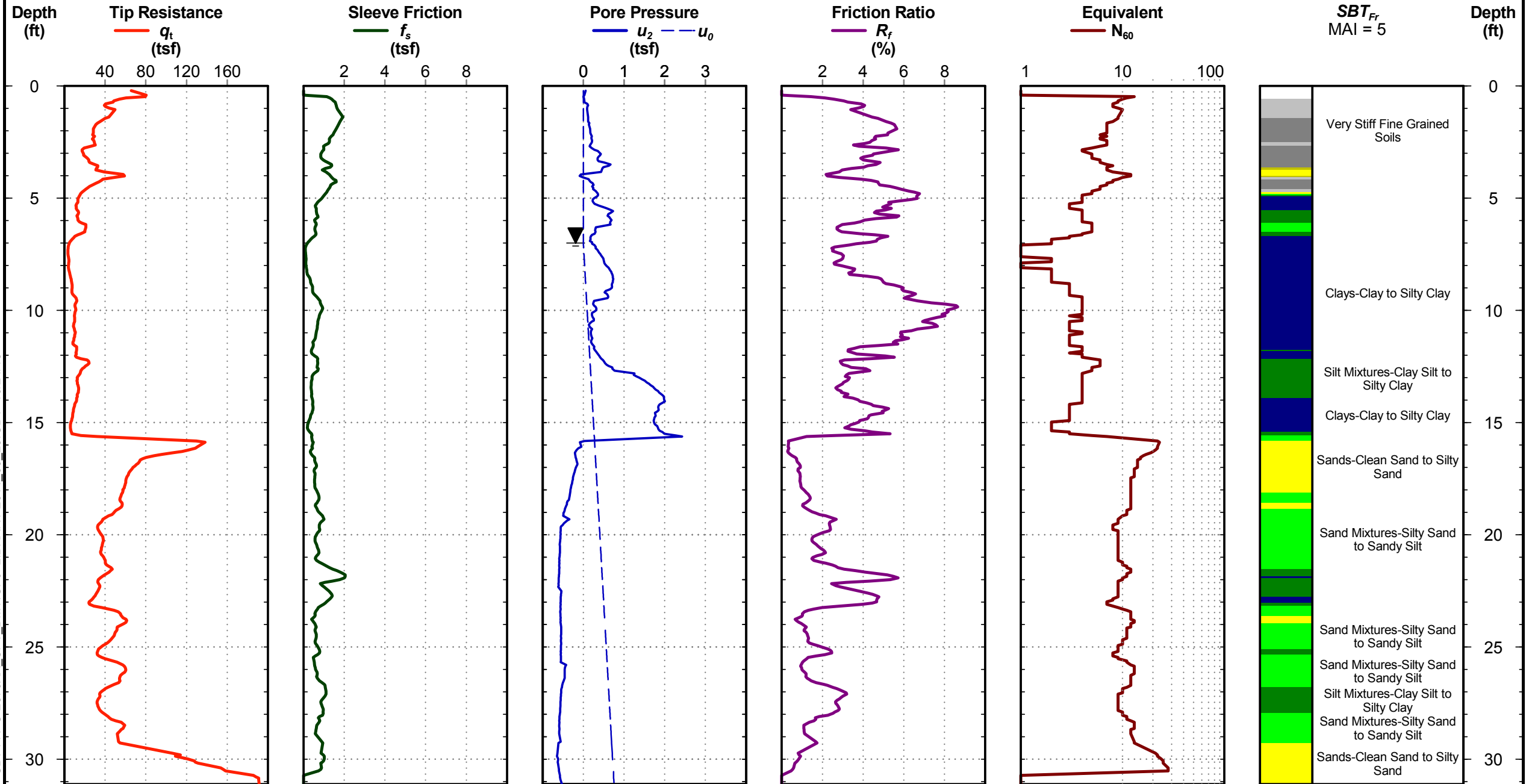


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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



Cone Penetration Test

CPT REPORT - STANDARD - SBT FR U-2579AA CPT DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

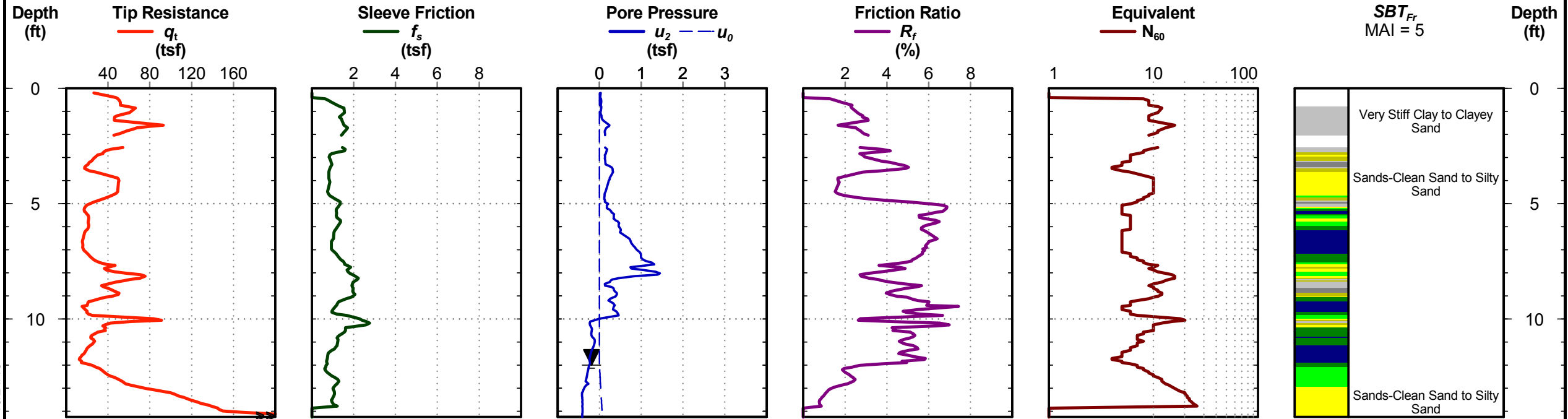


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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



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Cone Penetration Test

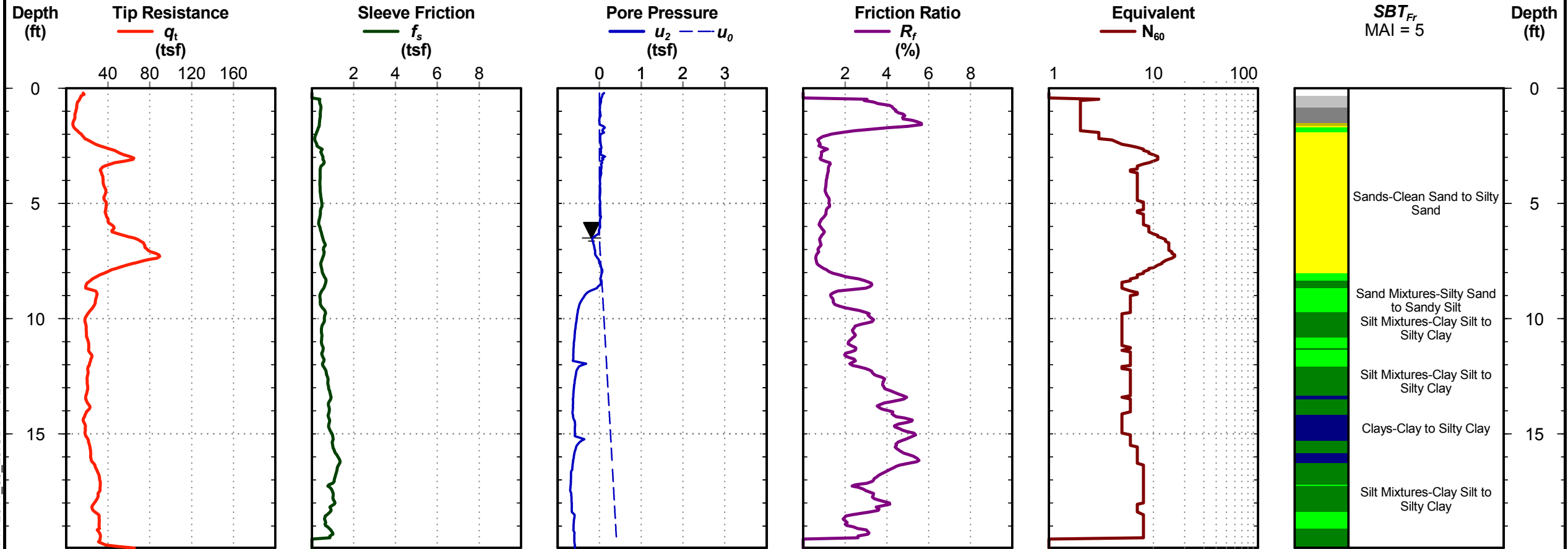


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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



CPT REPORT - STANDARD - SBT FR U-2579AA CPT DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

Cone Penetration Test

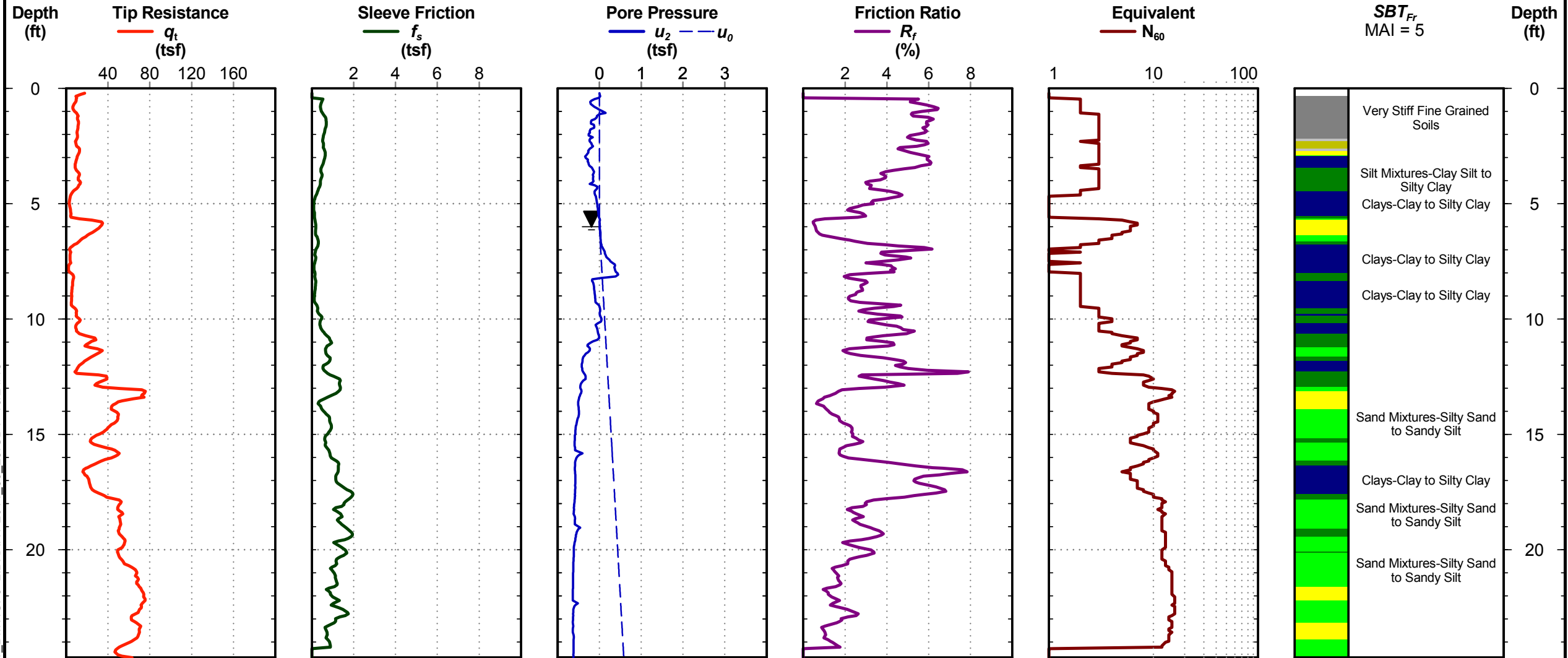


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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



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Cone Penetration Test

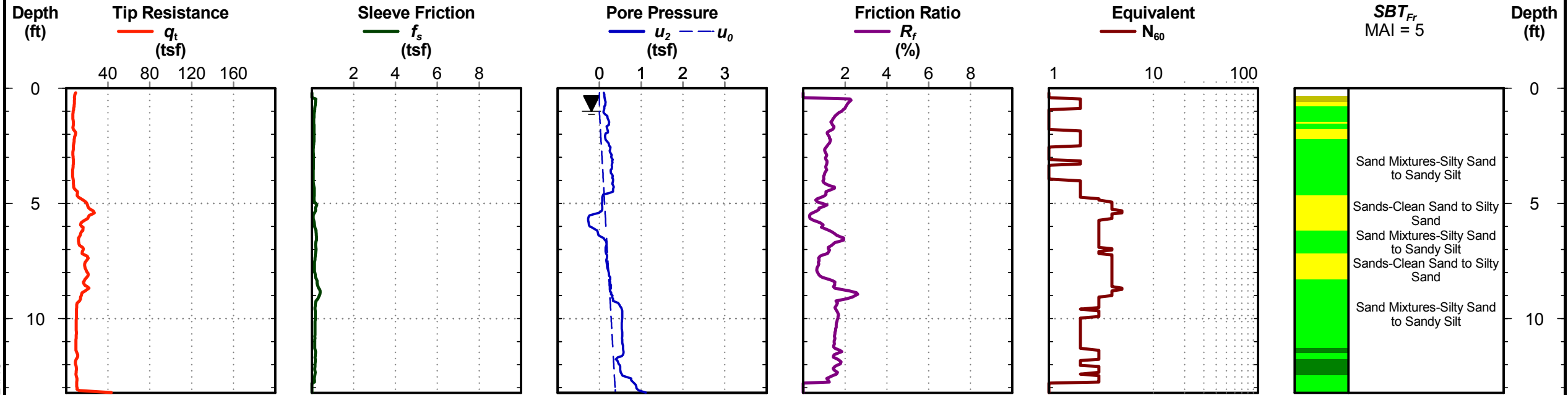


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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



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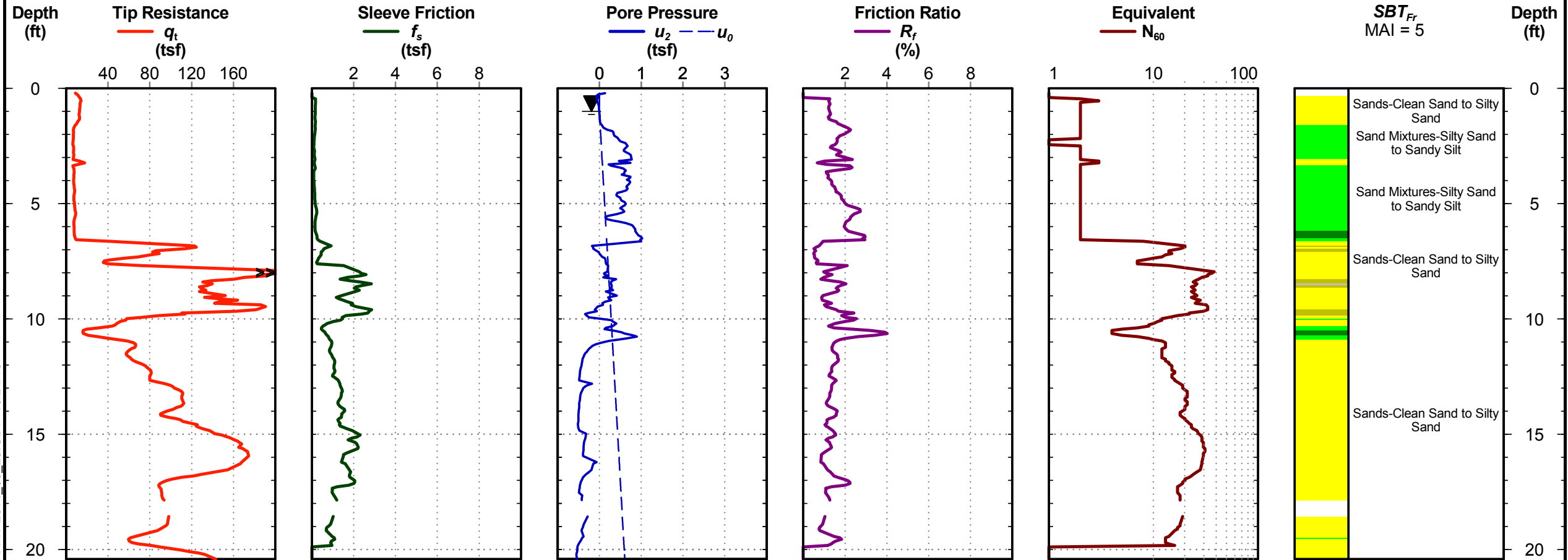
Cone Penetration Test



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



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Cone Penetration Test

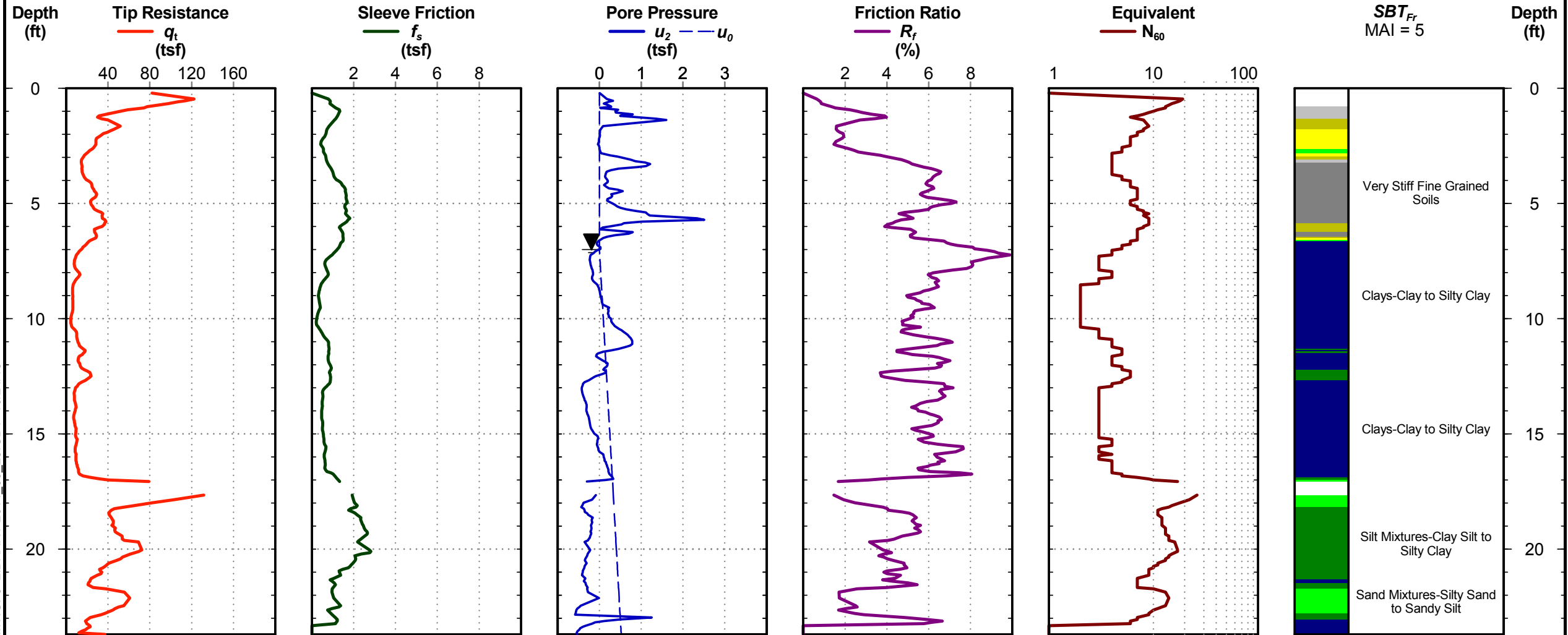


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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



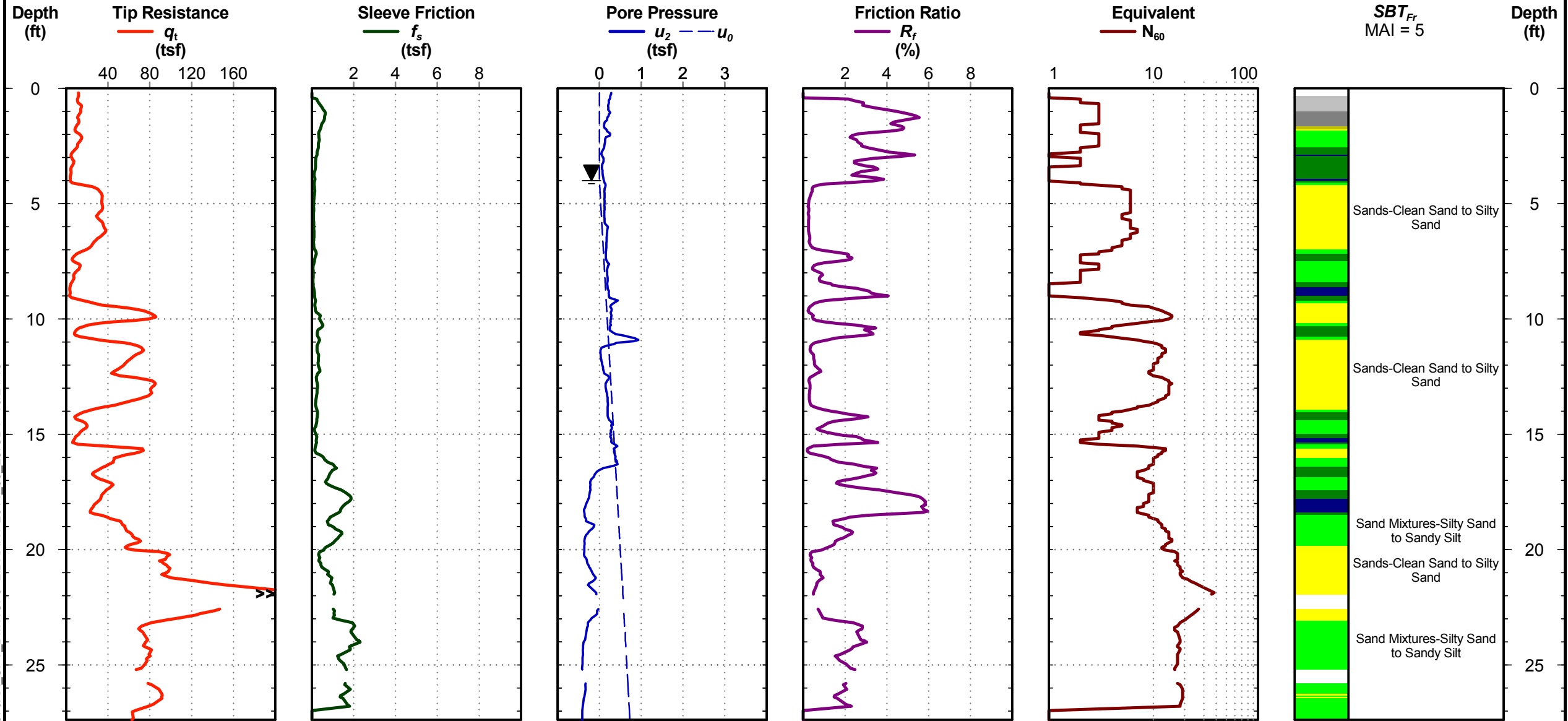
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Cone Penetration Test



U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Station: Y2 - 76+50 **Sounding ID: CUL1_7869**
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



Cone Penetration Test

CPT REPORT - STANDARD - SBT FR U-2579AA CPT DMT.GPJ LIBRARY 2011_06_28.GDT 10/24/18

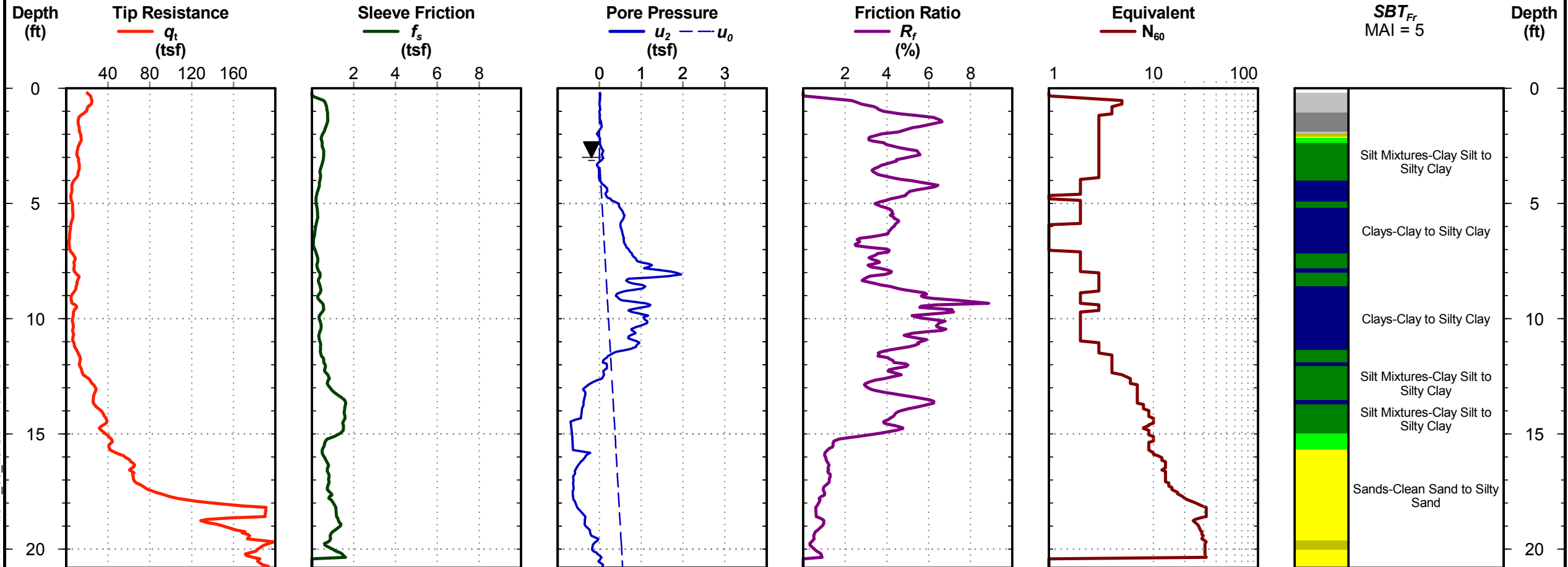


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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

Sounding ID: CUL2_3262

Total Depth: 20.8 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



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Cone Penetration Test

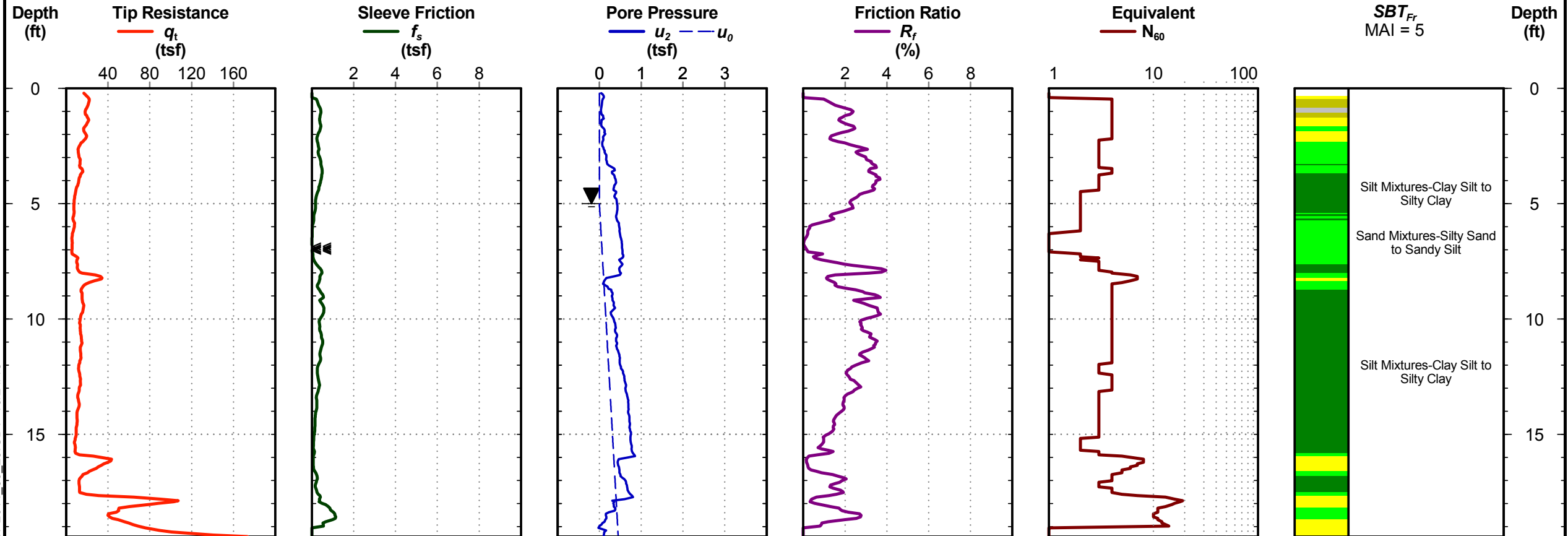


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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

Sounding ID: CUL2_3298

Total Depth: 19.4 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



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Cone Penetration Test

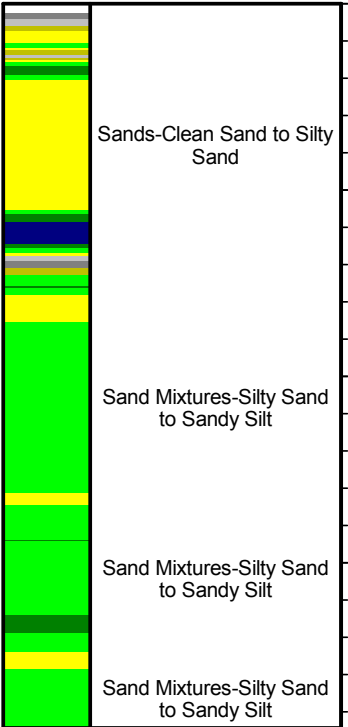
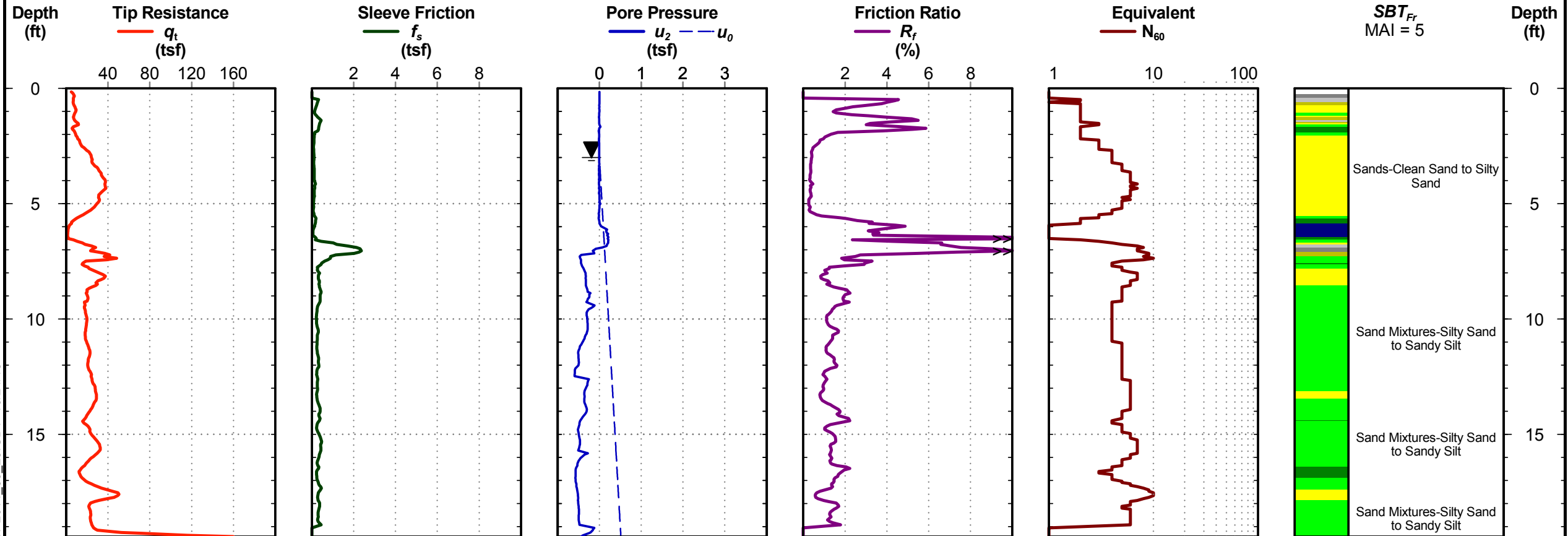


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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

Sounding ID: CUL3_3587

Total Depth: 19.4 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

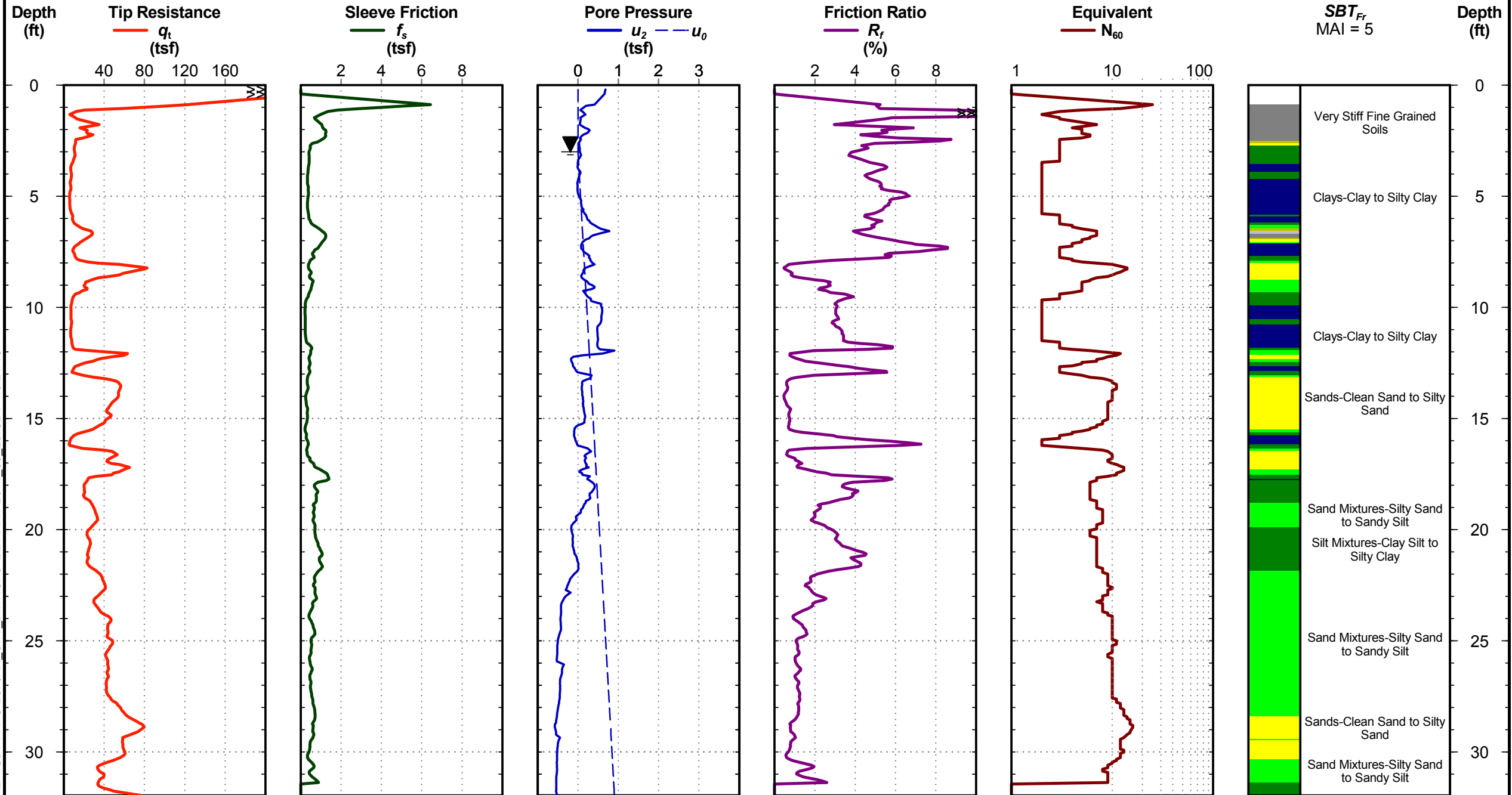


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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

Sounding ID: CUL3_3698

Total Depth: 32.0 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

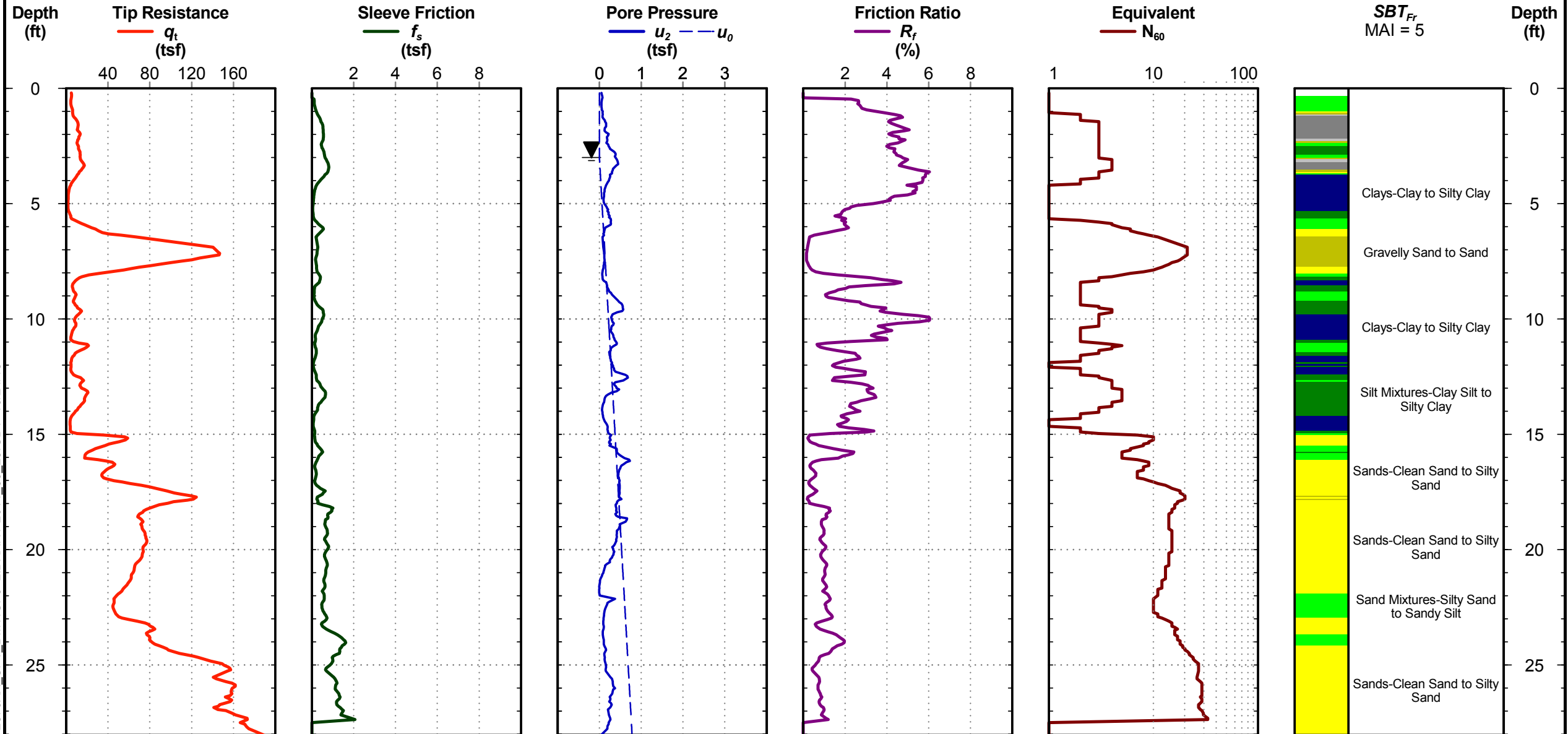


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Sounding ID:
Y1 DET_EB1-A

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

Total Depth: 28.0 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



Cone Penetration Test

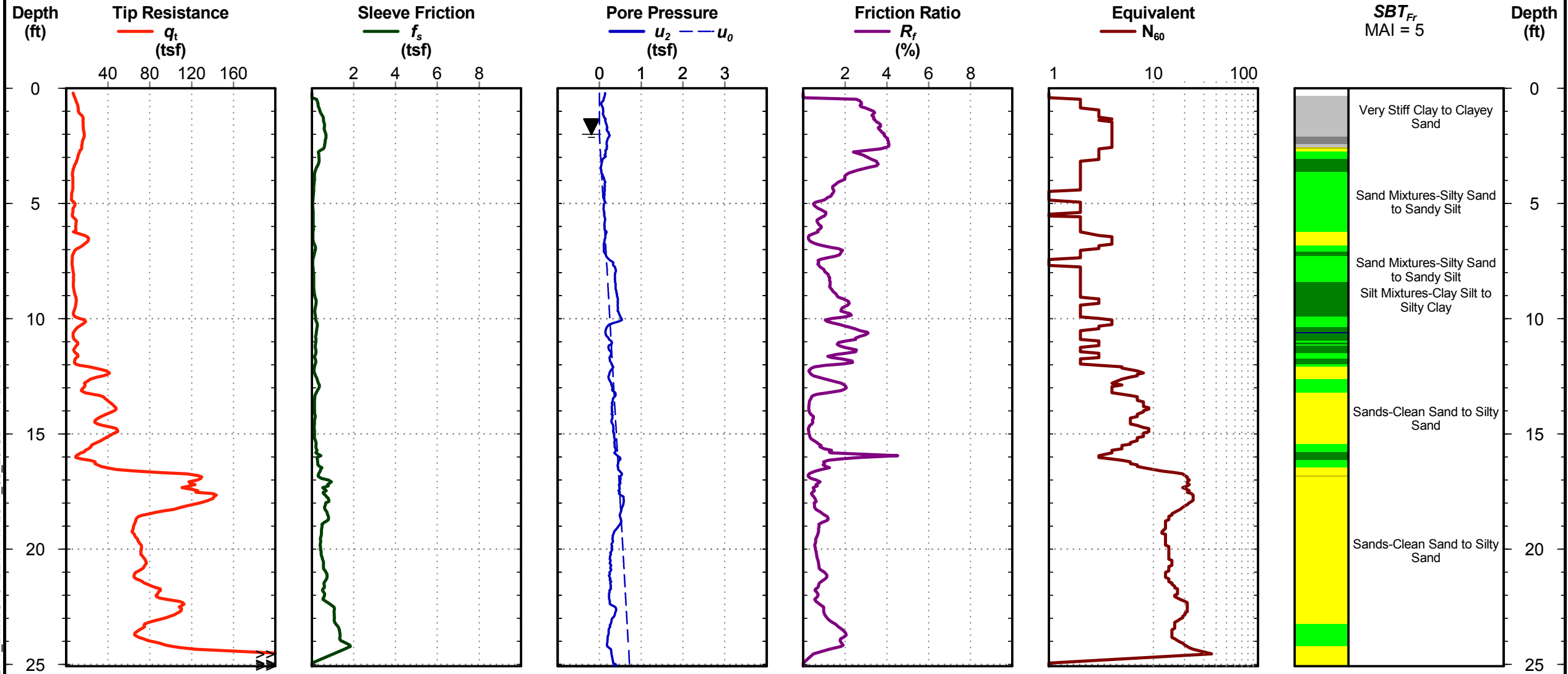
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U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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



Cone Penetration Test

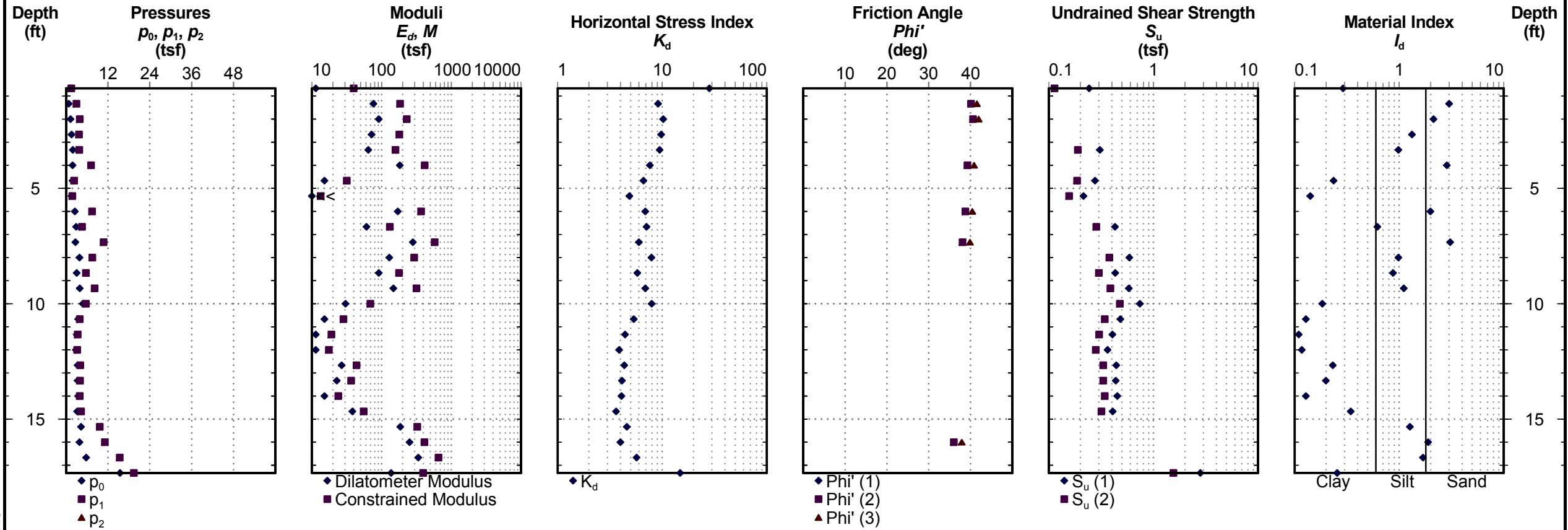
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U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Sounding ID: DILA1

Station: L - 35+38
 Offset: CL
 Elevation: 815.6 ft
 Date: Oct. 5, 2018
 Estimated Water Depth: 6 ft
 Rig/Operator: Marooka/D. Watson
 Total Depth: 17.3 ft
 Termination Criteria: Maximum Reaction Force
 Membrane Type: soft



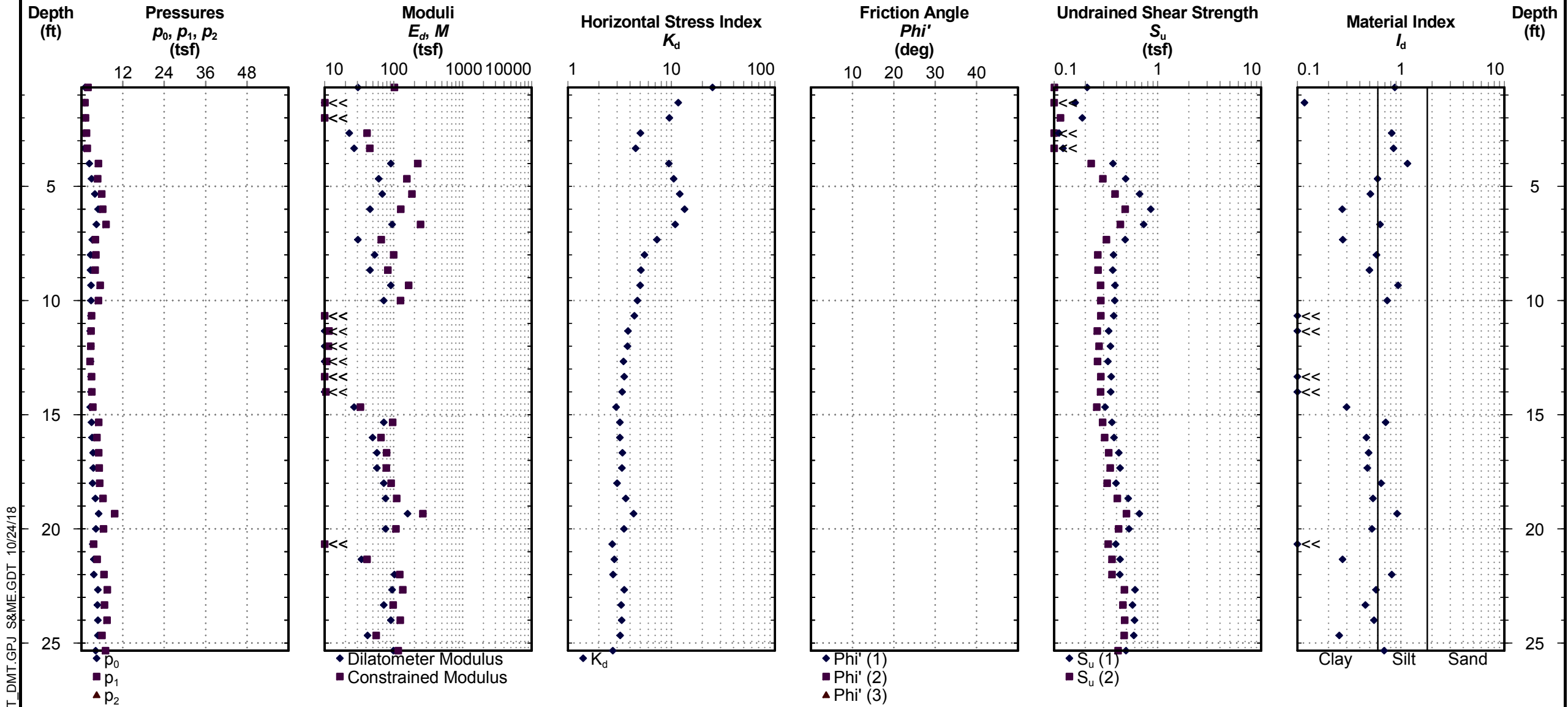
DMT REPORT - STANDARD U-2579AA_CPT_DMT.GPJ S&ME.GDT 10/24/18



U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Sounding ID: DILA2

Station: L - 38+00
 Offset: CL
 Elevation: 815.7 ft
 Date: Oct. 5, 2018
 Estimated Water Depth: 6 ft
 Rig/Operator: Marooka/D. Watson
 Total Depth: 25.3 ft
 Termination Criteria: Maximum Reaction Force
 Membrane Type: soft



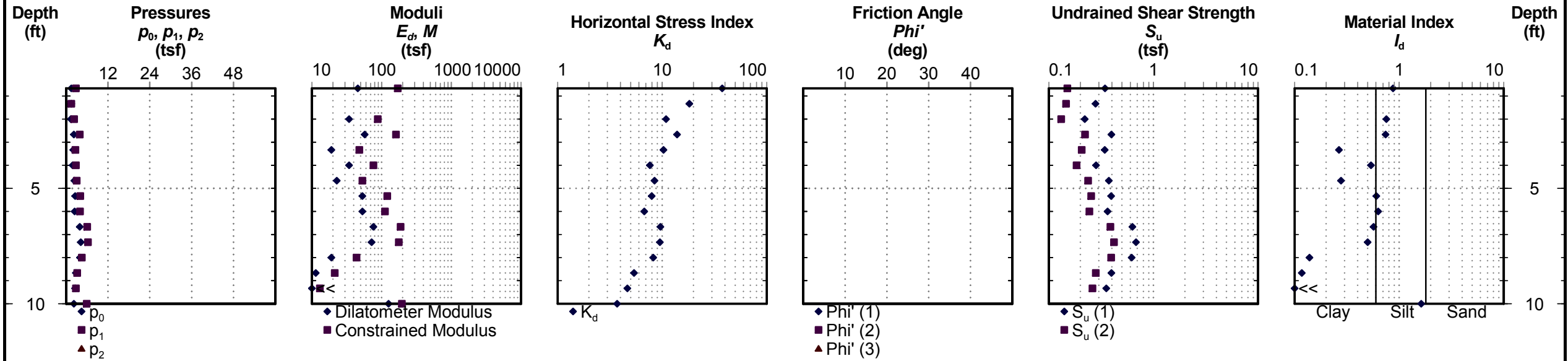
DMT REPORT - STANDARD U-2579AA_CPT DMT.GPJ S&ME.GDT 10/24/18



U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Sounding ID: DILA3

Station: L - 39+50
 Offset: CL
 Elevation: 816.6 ft
 Date: Oct. 5, 2018
 Estimated Water Depth: 6 ft
 Rig/Operator: Marooka/D. Watson
 Total Depth: 10.0 ft
 Termination Criteria: Maximum Reaction Force
 Membrane Type: soft



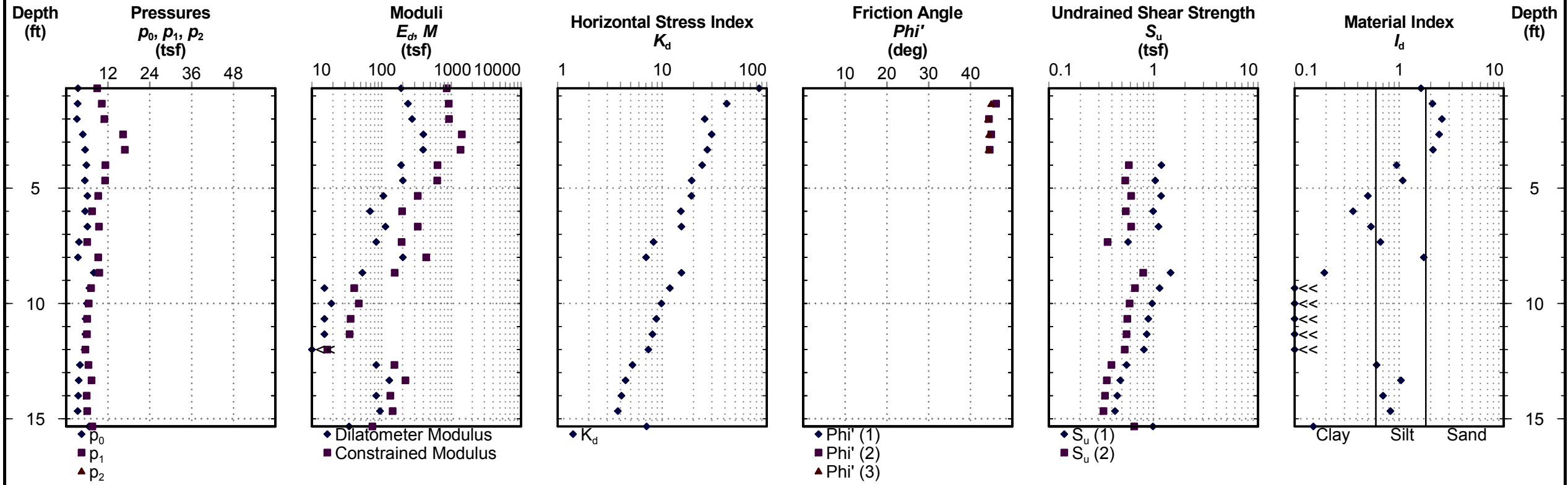
DMT REPORT - STANDARD U-2579AA_CPT_DMT.GPJ S&ME.GDT 10/24/18



U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Sounding ID: DILA4

Station: L - 41+00
 Offset: CL
 Elevation: 834.9 ft
 Date: Oct. 5, 2018
 Estimated Water Depth: 6 ft
 Rig/Operator: Marooka/D. Watson
 Total Depth: 15.3 ft
 Termination Criteria: Maximum Reaction Force soft
 Membrane Type: soft



DMT REPORT - STANDARD U-2579AA_CPT_DMT.GPJ S&ME.GDT 10/24/18

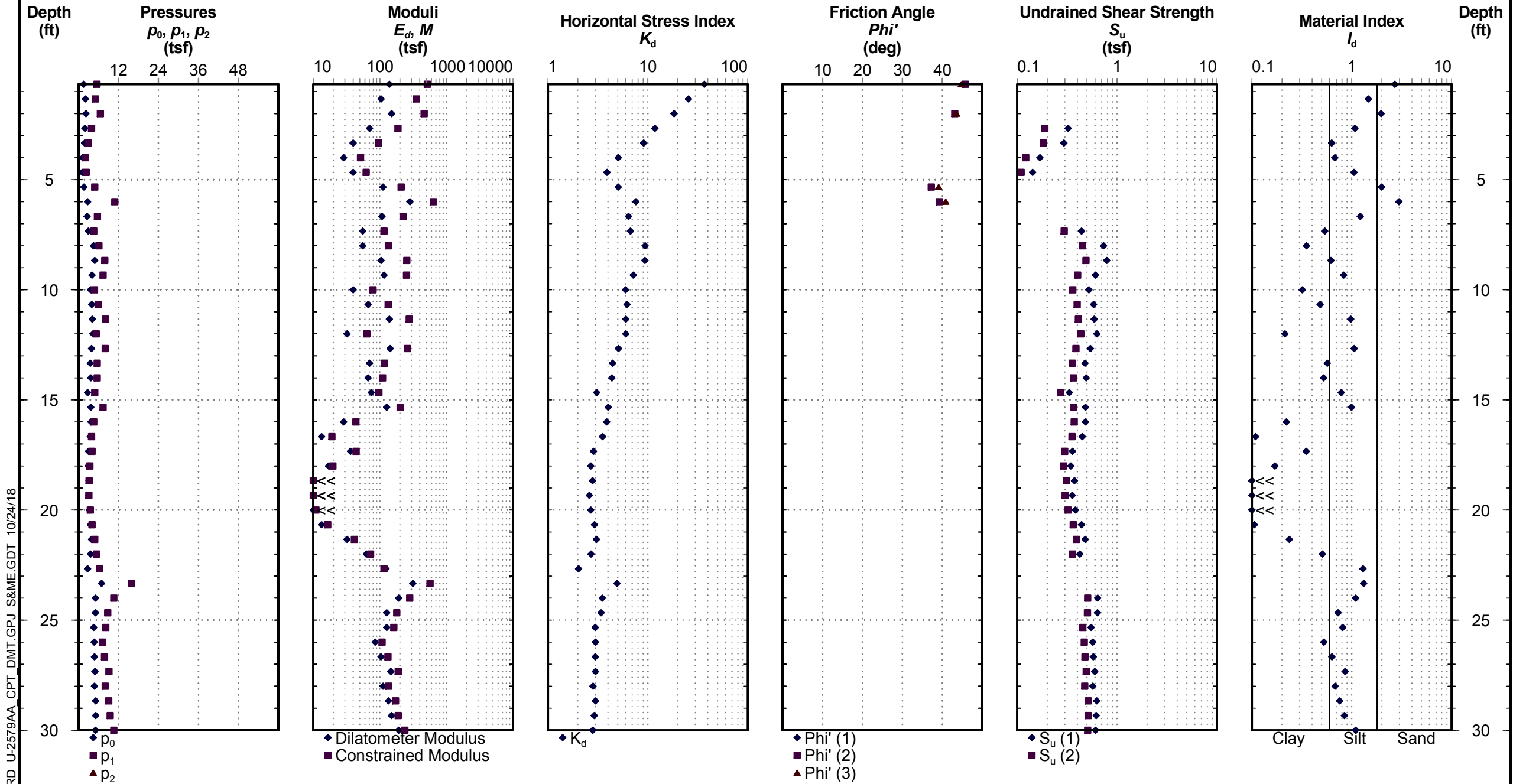


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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 soft
Membrane Type: soft



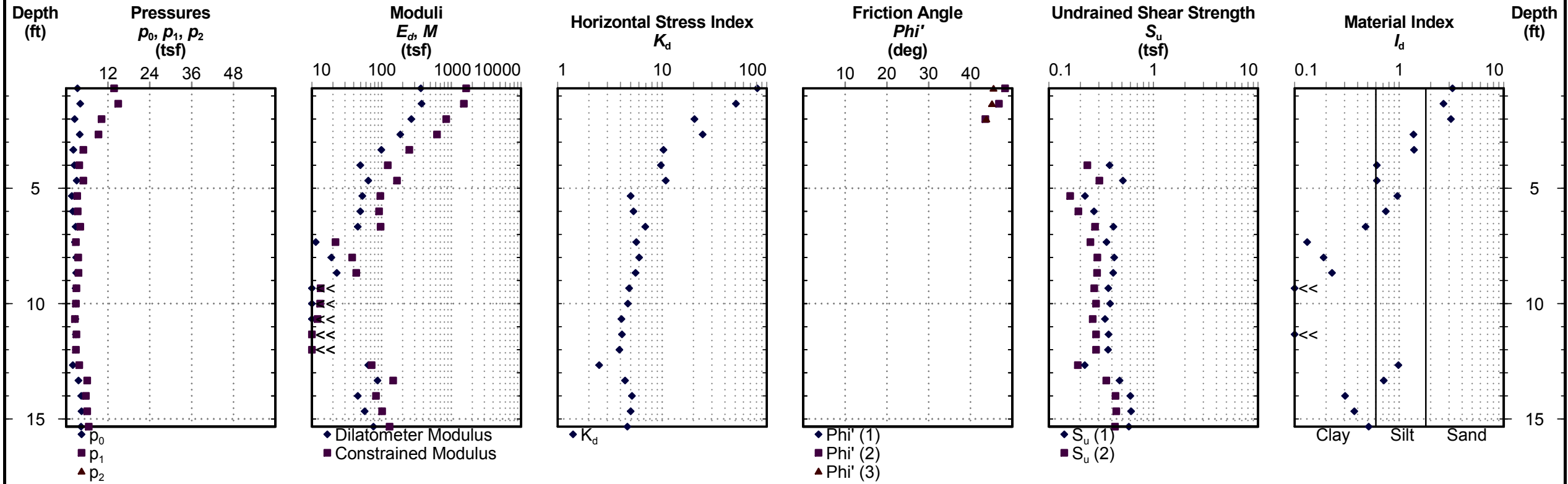
DMT REPORT - STANDARD U-2579AA_CPT_DMT.GPJ S&ME.GDT 10/24/18



U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Sounding ID: DILA6

Station: Y1 - 33+55
 Offset: CL
 Elevation: 821.3 ft
 Date: Oct. 5, 2018
 Estimated Water Depth: 6 ft
 Rig/Operator: Marooka/D. Watson
 Total Depth: 15.3 ft
 Termination Criteria: Maximum Reaction Force soft
 Membrane Type: soft



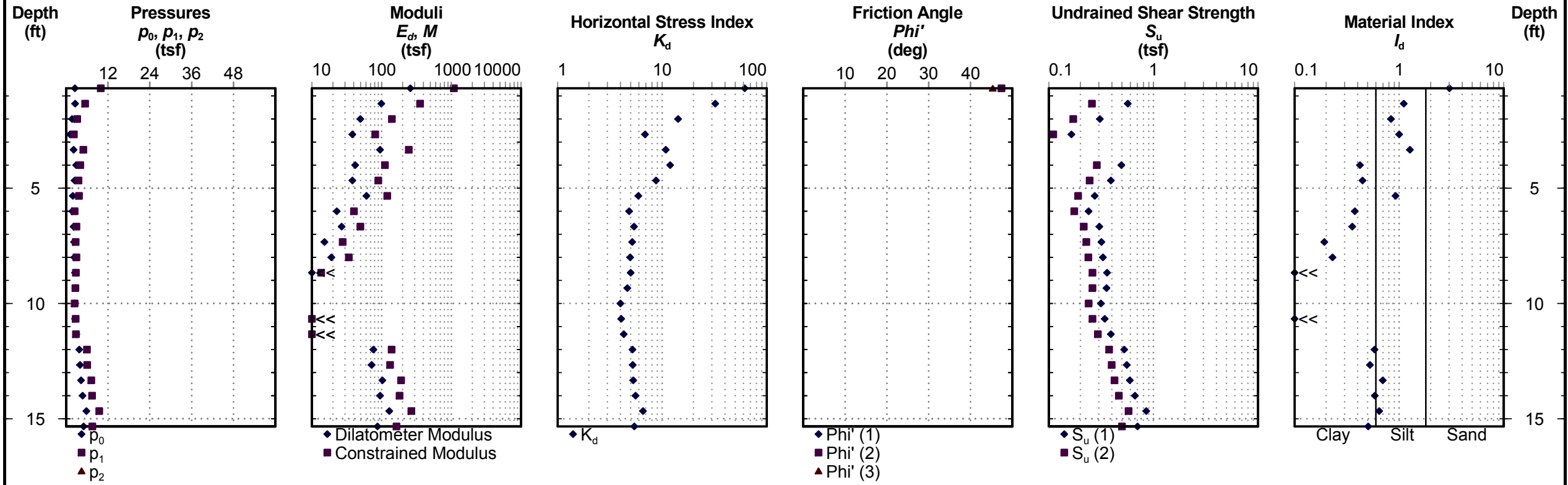
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U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Sounding ID: DILA7

Station: Y1 - 34+10
 Offset: CL
 Elevation: 821.8 ft
 Date: Oct. 5, 2018
 Estimated Water Depth: 6 ft
 Rig/Operator: Marooka/D. Watson
 Total Depth: 15.3 ft
 Termination Criteria: Maximum Reaction Force soft
 Membrane Type: soft



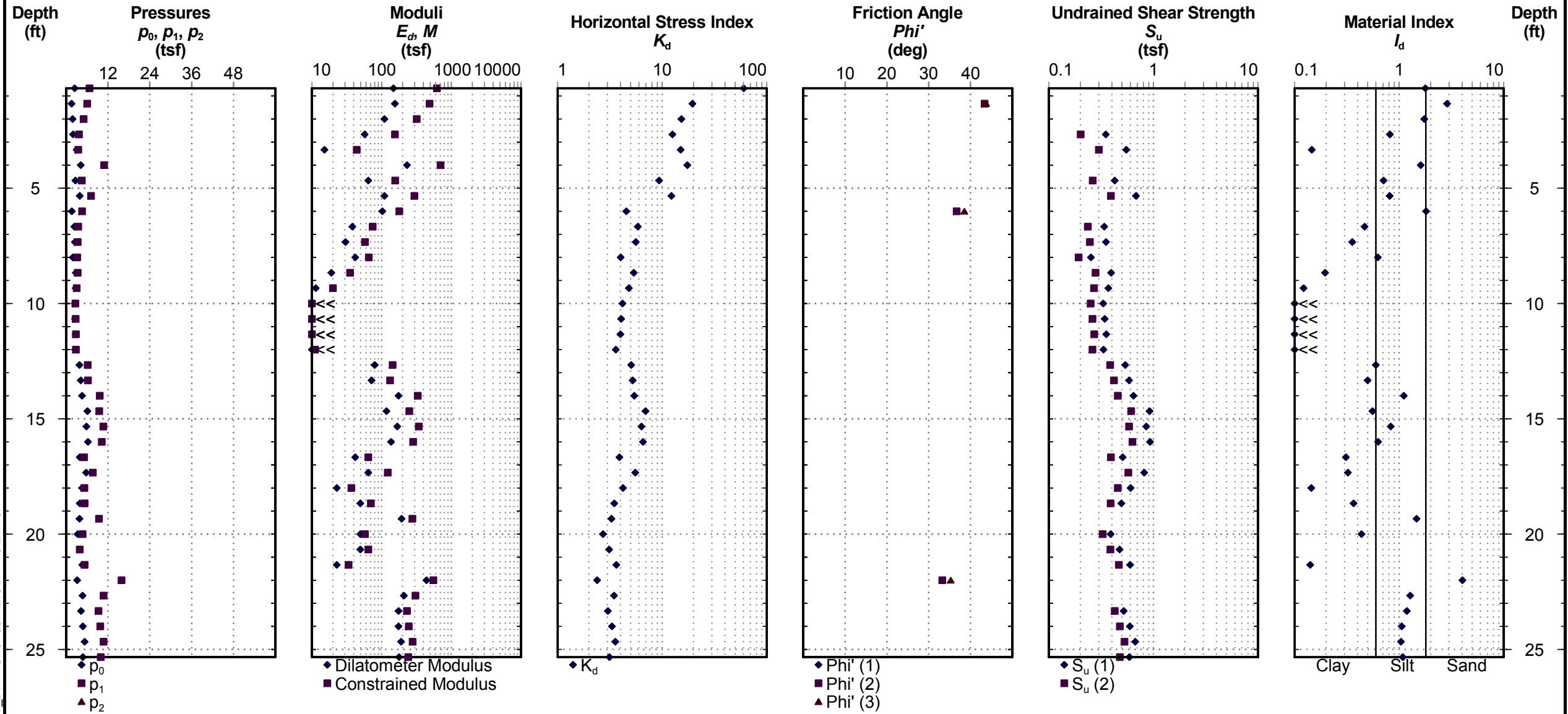
DMT REPORT - STANDARD U-2579AA_CPT_DMT.GPJ S&ME.GDT 10/24/18



U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Sounding ID: DILA8

Station: Y1 - 34+55
 Offset: CL
 Elevation: 822.0 ft
 Date: Oct. 5, 2018
 Estimated Water Depth: 6 ft
 Rig/Operator: Marooka/D. Watson
 Total Depth: 25.3 ft
 Termination Criteria: Maximum Reaction Force soft
 Membrane Type: soft



DMT REPORT - STANDARD U-2579AA_CPT DMT.GPJ S&ME.GDT 10/24/18

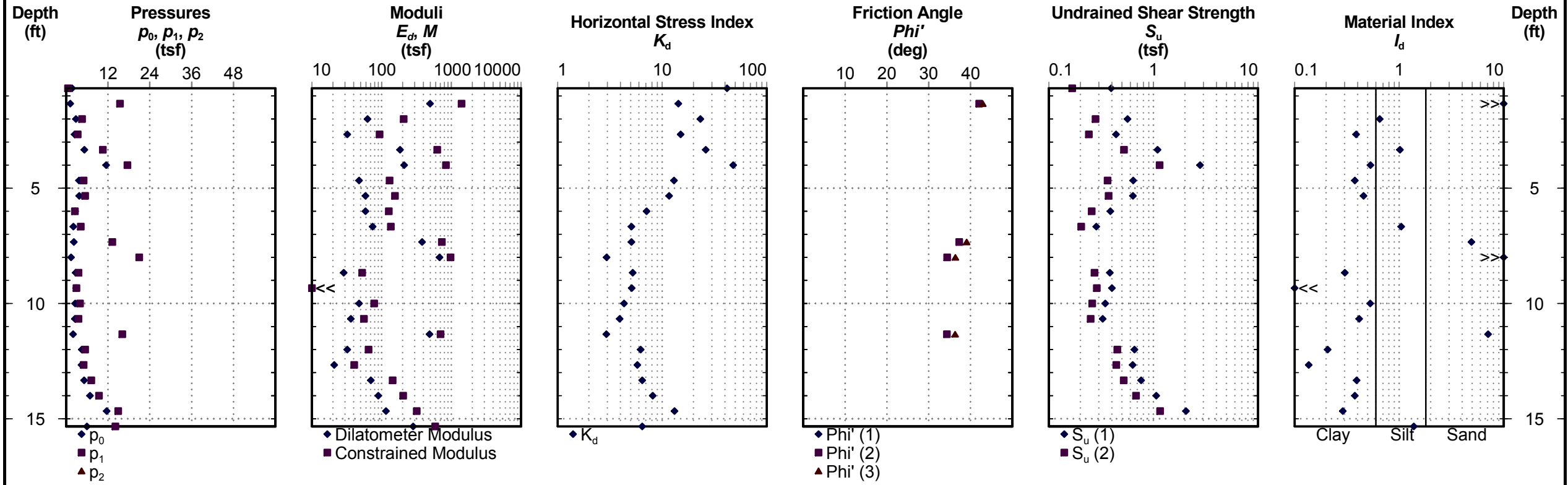


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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



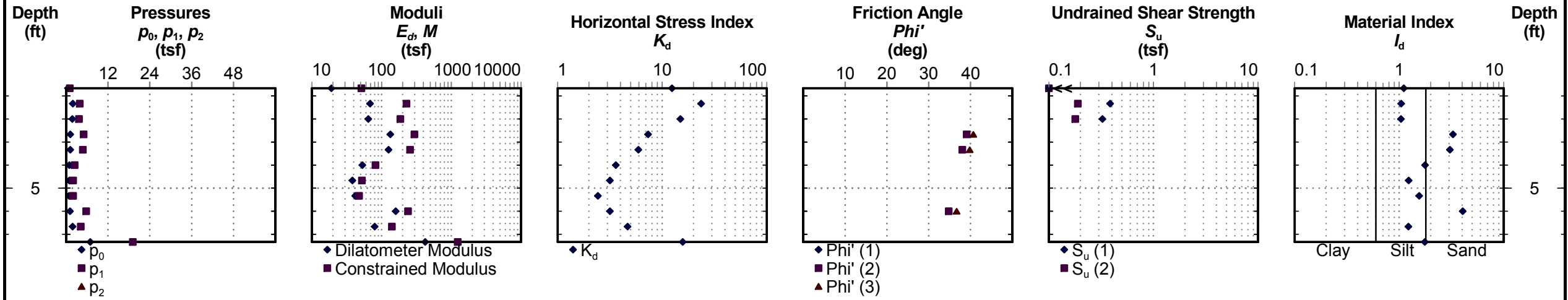
DMT REPORT - STANDARD U-2579AA_CPT_DMT.GPJ S&ME.GDT 10/24/18



U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

Sounding ID: DILA11

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
 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

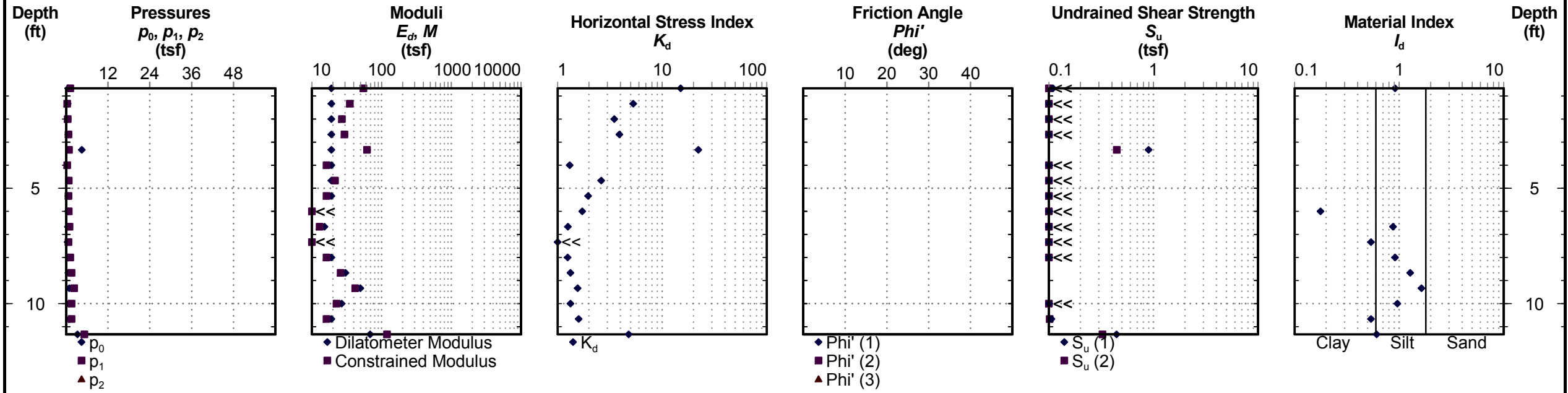


U2579AA WSNB
Winston-Salem, NC
S&ME Project No: 6235-17-038

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



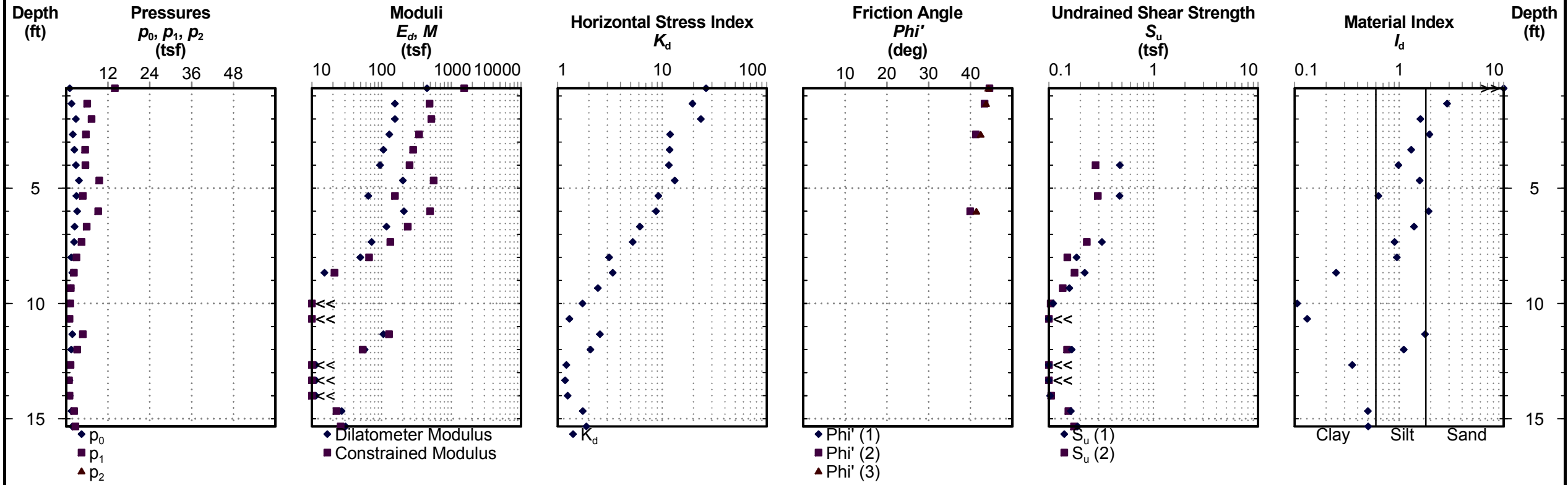
DMT REPORT - STANDARD U-2579AA_CPT_DMT.GPJ S&ME.GDT 10/24/18



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