

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-5839	1	49

CAUTION NOTICE

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

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

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

- NOTES:
- THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 - BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

P. PATTON

A. VERDICCHIO

S. GOWAN

T. MILLER

A. MORGAN

L. GREENE

INVESTIGATED BY S&ME, INC.

DRAWN BY M. HARTMAN

H. CAMP

CHECKED BY J. DAILY

SUBMITTED BY S. LANEY

DATE SEPTEMBER 2019

CONTENTS

LINE	STATION	PLAN	PROFILE
-L-	10+00 TO 14+50	4	25
-L-	14+50 TO 19+25	5	25
-L-	19+25 TO 24+50	6	25 TO 26
-L-	24+50 TO 30+00	7	26
-L-	30+00 TO 34+75	8	26
-L-	34+75 TO 40+20	9	26 TO 27
-L-	40+20 TO 45+90	10	27
-L-	45+90 TO 51+50	11	27
-L-	51+50 TO 57+10	12	27
-L-	57+10 TO 62+40	13	27
-L-	62+40 TO 67+50	14	27 TO 28
-L-	67+50 TO 72+70	15	28
-L-	72+70 TO 73+20	16	28
-Y1-	12+88 TO 18+22	4	
-Y2-	10+00 TO 13+30	5	28
-Y2A-	10+00 TO 14+50	17	28
-Y2A-	14+50 TO 15+27	5	28
-Y3-	13+46 TO 14+91	17	
-Y3-	14+91 TO 16+87	5	29
-Y4-	10+00 TO 12+63	6	29
-Y5-	10+00 TO 12+89	6	29
-Y7-	13+52 TO 16+37	9	29
-Y8-	10+00 TO 10+50	9	29
-Y8-	10+50 TO 11+04	18	29
-Y9-	10+00 TO 14+50	19	29
-Y9-	14+50 TO 16+75	10	29
-Y10-	10+00 TO 11+50	10	30
-Y10-	11+50 TO 15+72	20	30
-Y11-	10+00 TO 12+14	11	30
-Y12-	10+00 TO 13+38	11	
-Y13-	10+00 TO 11+40	11	30
-Y13-	11+40 TO 14+52	21	30
-Y14-	10+00 TO 12+70	22	30
-Y14-	12+70 TO 14+07	12	30
-Y14A-	10+00 TO 12+28	12	30
-Y15-	10+00 TO 12+99	13	30
-Y15-	14+91 TO 17+88	23	
-Y16-	10+00 TO 14+26	24	
-Y16-	14+26 TO 18+04	15	31
-Y17-	10+00 TO 11+59	7	31
-Y18-	10+00 TO 12+35	9	31
-Y18-	12+35 TO 16+22	18	
-Y20-	10+58 TO 12+52	12	31
-Y21-	13+96 TO 18+57	14	
-Y21RPA-	12+88 TO 15+02	14	31
-Y21RPB-	10+00 TO 15+50	23	31
-Y21RPB-	15+50 TO 16+91	14	31
-Y21LPB-	10+00 TO 11+03	14	
-Y21LPB-	12+43 TO 18+50	23	31
-Y21LPB-	18+50 TO 19+97	14	31
-Y21RPD-	10+00 TO 15+24	24	32
-Y21RPD-	15+24 TO 17+88	15	32

ROADWAY
SUBSURFACE INVESTIGATION

COUNTY HAYWOOD

PROJECT DESCRIPTION RUSS AVE - US 276 FROM
US 23 /74 (GREAT SMOKY MOUNTAINS EXPWY)
TO US 23 BUS (N MAIN ST)

INVENTORY

LINE	STATION	PLAN	PROFILE
-Y21LPD-	10+00 TO 11+36	14	32
-Y21LPD-	13+56 TO 17+80	24	32
-Y21LPD-	17+80 TO 20+28	15	32

CROSS SECTIONS

LINE	STATION	SHEETS
-L-	10+50 TO 12+00	33 TO 34
-L-	25+50 TO 27+00	35 TO 36
-L-	28+00 TO 29+00	37 TO 38
-L-	30+00 TO 31+00	39 TO 40
-L-	32+00 TO 33+00	41 TO 42
-L-	47+00 TO 50+00	43 TO 45
-Y2-	10+50 TO 11+50	46
-Y2A-	14+00 TO 15+00	47

APPENDIX

TITLE	SHEETS
SOIL TEST RESULTS	48 TO 49

REFERENCE: U-5839

PROJECT: 50230

Prepared in the Office of:



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



DocuSigned by:

Stewart Laney

75BB4AB1AB3B4CB...

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

Table with multiple columns: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, TERMS AND DEFINITIONS, SOIL LEGEND AND AASHTO CLASSIFICATION, MINERALOGICAL COMPOSITION, COMPRESSIBILITY, PERCENTAGE OF MATERIAL, GROUND WATER, MISCELLANEOUS SYMBOLS, RECOMMENDATION SYMBOLS, ABBREVIATIONS, EQUIPMENT USED ON SUBJECT PROJECT, FRACTURE SPACING, BEDDING, INDURATION, PLASTICITY, COLOR.

09/20/19

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HAYWOOD COUNTY

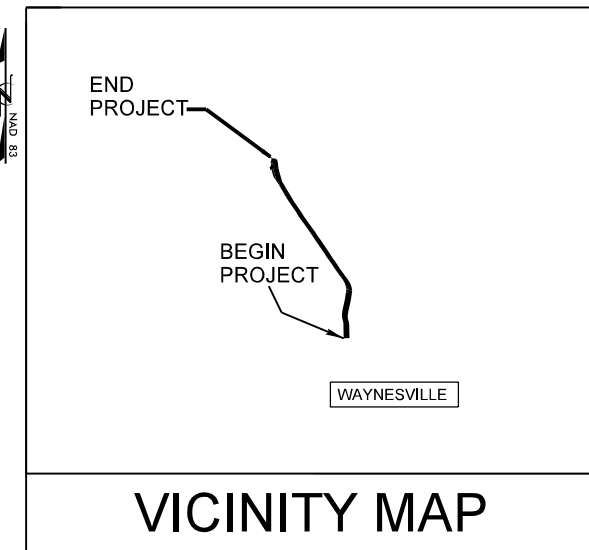
LOCATION: RUSS AVE - US 276 FROM US 23/74 (GREAT SMOKY MOUNTAINS EXPWY) TO US 23 BUS (N MAIN ST)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNALS, STRUCTURES, AND CULVERT

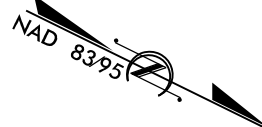
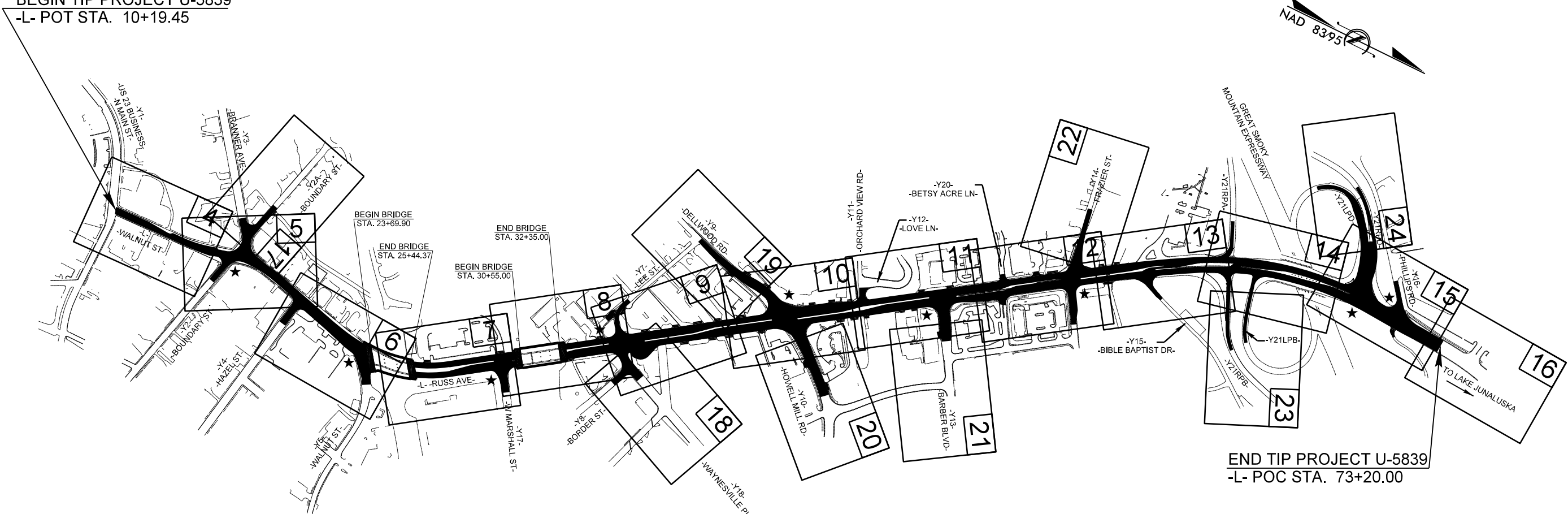
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5839	3	49
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
50230.1.1		P.E.	
50230.2.1		RW, UTL.	

★ UPGRADE EXISTING SIGNAL

TIP PROJECT: U-5839



BEGIN TIP PROJECT U-5839
-L- POT STA. 10+19.45

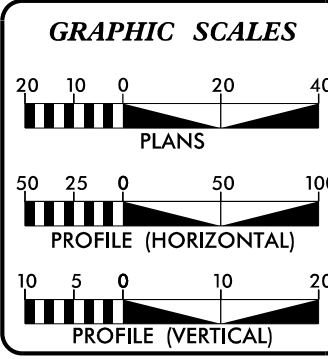


END TIP PROJECT U-5839
-L- POC STA. 73+20.00

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF WAYNESVILLE. THERE IS NO CONTROL OF ACCESS ON THIS PROJECT EXCEPT INTERCHANGES & U-TURN BULBS HAVE FULL CONTROL OF ACCESS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT:



DESIGN DATA

ADT 2021 =	26,650
ADT 2041 =	30,150
K =	8 %
D =	55 %
T =	4 % *
V =	40 MPH
* TTST = 1% DUAL 3%	
FUNC CLASS = URBAN ARTERIAL STATEWIDE TIER	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-5839	1.126 Miles
LENGTH STRUCTURE TIP PROJECT U-5839	0.067 Miles
TOTAL LENGTH TIP PROJECT U-5839	1.193 Miles

Prepared In the Office of:

CALYX
ENGINEERS + CONSULTANTS NC License # F-1333

FOR THE NORTH CAROLINA DEPT. OF TRANSPORTATION
2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JUNE 3, 2019

LETTING DATE: MAY 18, 2021

NCDOT CONTACT: JOSH DEYTON, PE
DIVISION PROJECT ENGINEER

STEVE DRUM, PE
PROJECT ENGINEER

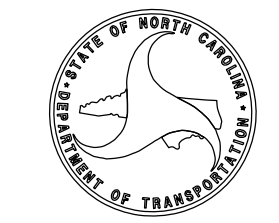
MICHAEL HOLT, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



19-AUG-2019 16:00
C:\Projects\2016\Trans\1305-16-028 - NCDOT - Russ Avenue (U-5839)\U5839_GEO_RDWY\CADD_GEO\TECH\Plan\U-5839_RDY_TSH_INV.dgn
\$\$\$\$\$USERNAME\$\$\$\$



September 20, 2019

STATE PROJECT: 50230.1.1 (U-5839)
FEDERAL PROJECT: N/A
COUNTY: Haywood
DESCRIPTION: Russ Ave – US 276 from US 23/74 (Great Smoky Mountains Expwy) to US 23 BUS (N Main St)
SUBJECT: Geotechnical Report – Inventory

S&ME, Inc. has completed a reconnaissance and subsurface investigation for the above roadway project and presents the following inventory:

◆ **Project Description**

The project will widen approximately 1.2 miles of US 276/Russ Avenue (-L-) in the Town of Waynesville, as well as adding bicycle lanes and sidewalks. The type of work being performed includes grading, drainage, paving, signals, structures, and culvert. Some of the major Y-alignments along this project include Boundary Street (-Y2- and -Y2A-), Dellwood Road (-Y9-), Howell Mill Road (-Y10-), Frazier Street (-Y14- and -Y14A-), and loops and ramps associated with the interchange of -L- and US 23/74/Great Smoky Mountains Expressway (-Y21-). Many of the other Y-alignments are minor side streets and driveways with minimal construction and were not investigated extensively due to their nature. Nearby information from surrounding borings was used to infer the stratigraphy for some of the Y-alignments included in this report.

The geotechnical field investigation was conducted in May and June of 2019. All Standard Penetration Test borings during this investigation were performed using a truck-mounted CME-55 drilling machine equipped with an automatic hammer. 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. Soil test results are referenced back to the original alignment to which the boring was assigned during layout and drilling.

The following alignments, totaling approximately 1.6 miles, were investigated. Subsurface profiles and selected cross-sections of the following alignments are included in this report:

<u>Alignment</u>	<u>Station(s)</u>
-L-	10+19 to 73+20
-Y2-	10+12 to 11+50
-Y2A-	14+00 to 15+11

<u>Alignment</u>	<u>Station(s)</u>
-Y3-	15+00 to 16+75
-Y4-	10+14 to 11+00
-Y5-	10+45 to 12+05
-Y7-	14+20 to 16+01
-Y8-	10+20 to 10+75
-Y9-	11+30 to 16+37
-Y10-	10+38 to 13+84
-Y11-	11+20 to 11+78
-Y12-	10+76 to 13+31
-Y13-	10+36 to 12+00
-Y14-	10+72 to 13+66
-Y14A-	10+36 to 12+06
-Y15-	10+43 to 11+74
-Y16-	15+95 to 17+62
-Y17-	10+36 to 11+42
-Y18-	10+36 to 11+86
-Y20-	11+88 to 12+16
-Y21RPA-	13+04 to 14+66
-Y21RPB-	13+05 to 16+55
-Y21LPB-	16+50 to 19+61
-Y21RPD-	12+52 to 17+52
-Y21LPD-	13+75 to 19+92

◆ **Areas of Special Geotechnical Interest**

- 1. Soft cohesive soils:** Soft (N<5), cohesive soils were encountered at the following borehole locations:

<u>Alignment</u>	<u>Station</u>	<u>Offset</u>
-L-	11+00	8' LT
-L-	15+00	20' LT
-L-	22+60	6' RT
-L-	23+84	55' RT
-L-	25+81	17' LT
-L-	29+20	60' LT
-L-	47+00	60' LT
-L-	49+20	55' LT
-L-	49+33	50' RT
-L-	49+90	53' LT
-L-	56+50	90' LT
-L-	65+00	45' LT

<u>Alignment</u>	<u>Station</u>	<u>Offset</u>
-L-	70+00	30' RT
-Y2A-	14+00	10' LT
-Y5-	11+25	40' RT
-Y9-	12+00	41' RT
-Y9-	13+60	56' RT
-Y9-	14+15	73' RT
-Y10-	11+00	67' RT
-Y10-	12+00	72' RT
-Y14-	11+00	25' LT
-Y14A-	11+30	9' LT
-Y21RPD-	17+00	15' RT

2. Loose sands: Loose (N<11) sandy soils were encountered at the following borehole locations:

<u>Alignment</u>	<u>Station</u>	<u>Offset</u>
-L-	15+00	20' LT
-L-	23+84	55' RT
-L-	25+81	17' LT
-L-	25+82	21' RT
-L-	26+60	60' LT
-L-	28+50	90' RT
-L-	30+42	42' RT
-L-	30+49	22' LT
-L-	31+75	20' RT
-L-	32+50	9' RT
-L-	42+00	22' RT
-L-	52+20	57' RT
-Y2-	11+00	12' LT
-Y7-	15+50	15' LT
-Y9-	13+60	56' RT
-Y9-	14+15	73' RT
-Y13-	11+50	35' LT
-Y14-	13+70	30' RT
-Y21RPB-	15+00	42' LT

3. Highly plastic clays: Highly plastic (P.I.>25) clay was encountered at the following borehole locations:

<u>Alignment</u>	<u>Station</u>	<u>Offset</u>
-L-	11+00	8' LT
-Y2A-	14+00	10' LT

4. Artificial Fill: Artificial Fill soils were encountered in the following areas:

<u>Alignment</u>	<u>Station</u>	<u>Offset</u>
-L-	26+60 to 30+00	LT

◆ Physiography and Geology

The project corridor is located in western North Carolina, in the Blue Ridge Physiographic Province. The project corridor is urban and is generally surrounded by homes and businesses. The project is within the city limits of Waynesville, with the city's center being due south from the project corridor. Topography along the project corridor is sloping. Elevations along the project range from 2,625± to 2,735± feet above sea level.

Surficial soils in the project area are classified as Roadway Embankment, Artificial Fill, Alluvial, or Residual soil. The rock underlying these surficial soils consists of biotite gneiss and amphibolite. Geologically, the project is located within the Blue Ridge Belt, which contains the oldest rocks in North Carolina. The Blue Ridge Belt consists of igneous, sedimentary, and metamorphic rocks that have been repeatedly fractured, folded, and faulted throughout geologic time. These rocks are Cambrian to Proterozoic in age.

◆ Water Bodies

1. Streams: Richland Creek flows northeast across the vicinity of the project. The stream flows across -L- underneath a bridge located at station 31+45.

◆ Soil Properties

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

Roadway Embankment soils consist of loose to very dense, brown, gray, tan, and red gravelly sand, silty sand, and clayey sand, and soft to very stiff, brown, red and gray sandy silt, clayey silt, and moderately plastic silty clay.

Artificial Fill soils consist of medium dense, tan and brown silty sand and medium stiff to stiff, brown sandy silt.

Alluvial sediments consist of loose to medium dense, gray, red, and brown silty sand and soft to medium stiff, gray, tan, and brown sandy silt and sandy clay.

Residual soils consist of very loose to very dense, gray, brown, white, orange, and tan gravelly sand, silty sand, and clayey sand, and soft to hard, gray, white, orange, red, tan, pink, and brown sandy silt, clayey silt, slightly plastic sandy clay, and moderately to highly plastic silty clay.

◆ **Rock Properties**

Rock encountered during this investigation is separated into two categories: Weathered Rock and Crystalline rock. Weathered Rock was first encountered at depths ranging from 3.0 to 53.5 feet below the existing ground surface, and Crystalline Rock was first encountered at depths ranging from 10.0 to 68.5 feet below the existing ground surface. The crystalline rock encountered during this investigation is classified as medium hard to hard, slightly to moderately weathered biotite gneiss with close fracture spacing. The average core recovery achieved is 85.6%, and the average Rock Quality Designation is 26.6%. These figures are taken from core borings performed as part of the bridge investigation for this project.

◆ **Groundwater Properties**

All borings were backfilled immediately upon completion of drilling, due to being drilled through the existing roadway. Groundwater was encountered at depths ranging from 7.0' to 26.9' at the time of drilling.

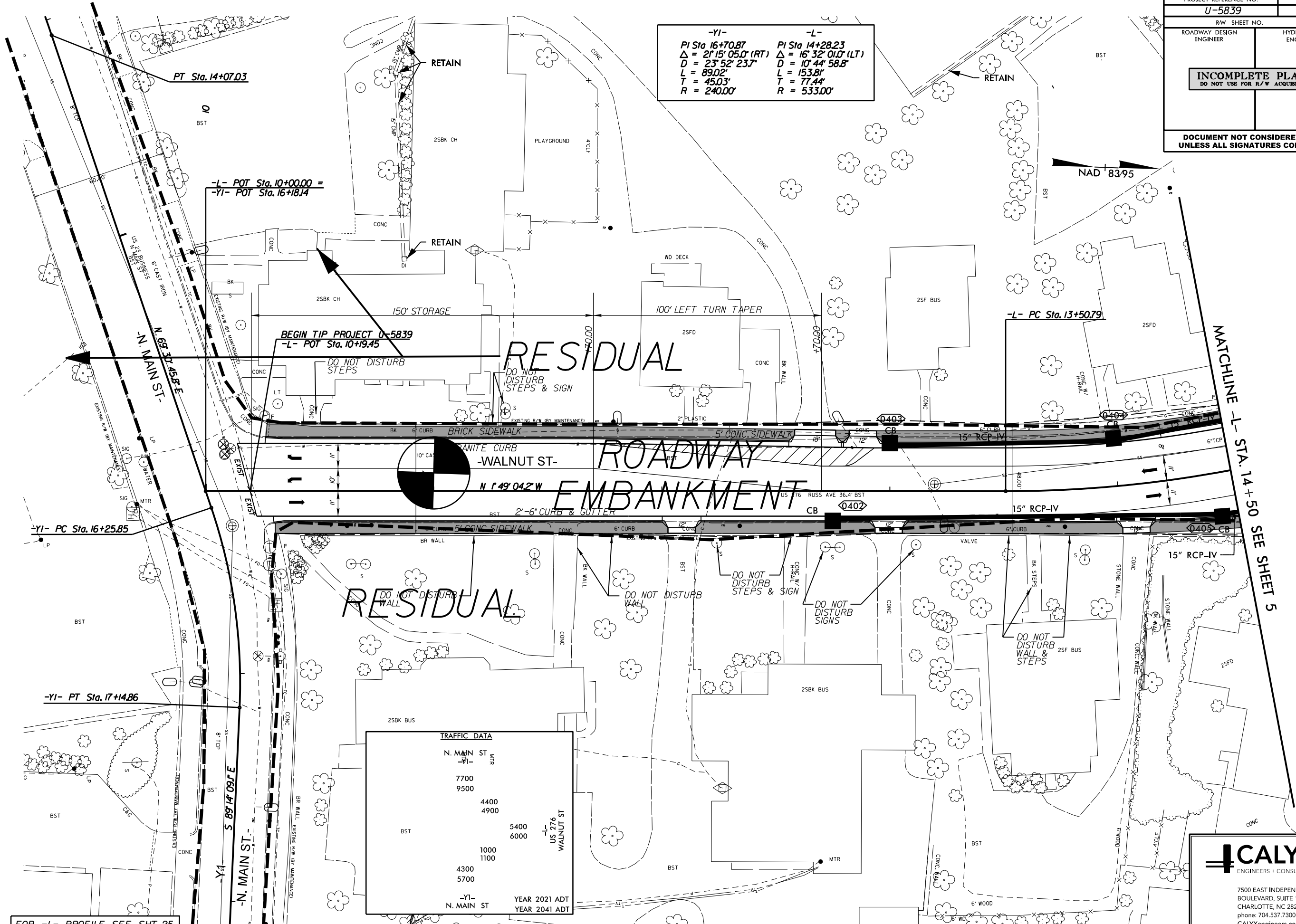
Respectfully Submitted,



Matthew L. Hartman, GIT
Geotechnical Staff Professional

8/17/19
 14-AUG-2019 09:51
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 8/17/19

PROJECT REFERENCE NO. U-5839	SHEET NO. 4
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	



-YI-	-L-
PI Sta 16+70.87	PI Sta 14+28.23
$\Delta = 21' 15" 05.0" (RT)$	$\Delta = 16' 32" 01.0" (LT)$
$D = 23' 52" 23.7"$	$D = 10' 44" 58.8"$
$L = 89.02'$	$L = 153.8'$
$T = 45.03'$	$T = 77.44'$
$R = 240.00'$	$R = 533.00'$

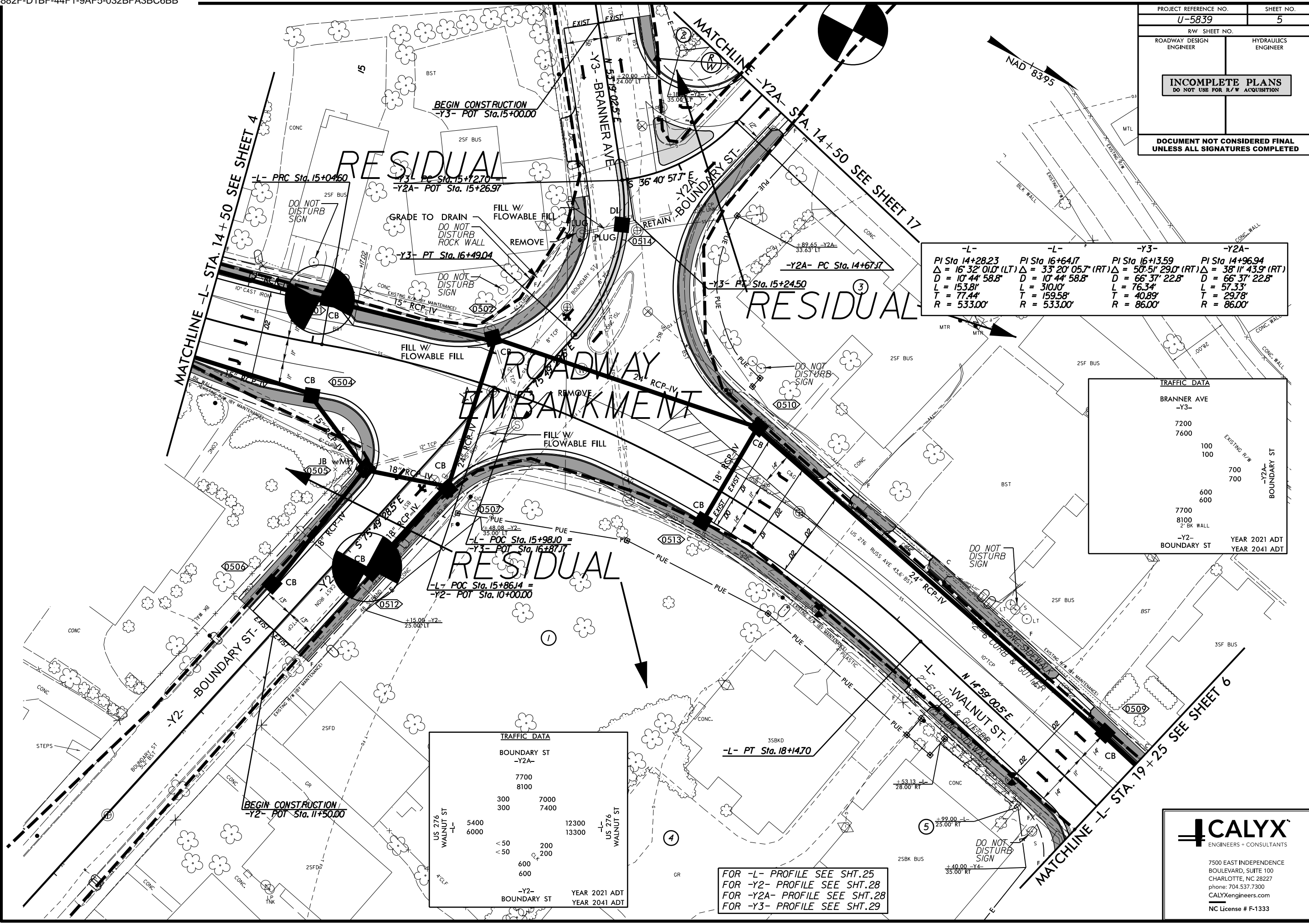
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N. MAIN ST	MTR		
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	9500		
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		1000	
		1100	
		4300	
		5700	
-YI-			
N. MAIN ST		YEAR 2021 ADT	
		YEAR 2041 ADT	

FOR -L- PROFILE SEE SHT.25

CALYX
ENGINEERS + CONSULTANTS

7500 EAST INDEPENDENCE BOULEVARD, SUITE 100
CHARLOTTE, NC 28227
phone: 704.537.7300
CALYXengineers.com
NC License # F-1333

PROJECT REFERENCE NO.	SHEET NO.
U-5839	5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
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-L-	-L-	-Y3-	-Y2A-
PI Sta 14+28.23	PI Sta 16+64.77	PI Sta 16+13.59	PI Sta 14+96.94
$\Delta = 16^{\circ} 32' 01.0''$ (LT)	$\Delta = 33^{\circ} 20' 05.7''$ (RT)	$\Delta = 50^{\circ} 51' 29.0''$ (RT)	$\Delta = 38^{\circ} 11' 43.9''$ (RT)
D = 10' 44' 58.8"	D = 10' 44' 58.8"	D = 66' 37' 22.8"	D = 66' 37' 22.8"
L = 153.81'	L = 310.10'	L = 76.34'	L = 57.33'
T = 77.44'	T = 159.58'	T = 40.89'	T = 29.78'
R = 533.00'	R = 533.00'	R = 86.00'	R = 86.00'

TRAFFIC DATA	
BRANNER AVE -Y3-	
7200	EXISTING R/W
7600	
100	-Y2A- BOUNDARY ST
100	
700	-Y2- BOUNDARY ST
700	
600	YEAR 2021 ADT
600	
7700	YEAR 2041 ADT
8100	
2' BK WALL	

TRAFFIC DATA	
BOUNDARY ST -Y2A-	
7700	US 276 WALNUT ST
8100	
300	US 276 WALNUT ST
300	
12300	YEAR 2021 ADT
13300	
< 50	YEAR 2041 ADT
< 50	
600	BOUNDARY ST
600	

FOR -L- PROFILE SEE SHT.25
 FOR -Y2- PROFILE SEE SHT.28
 FOR -Y2A- PROFILE SEE SHT.28
 FOR -Y3- PROFILE SEE SHT.29

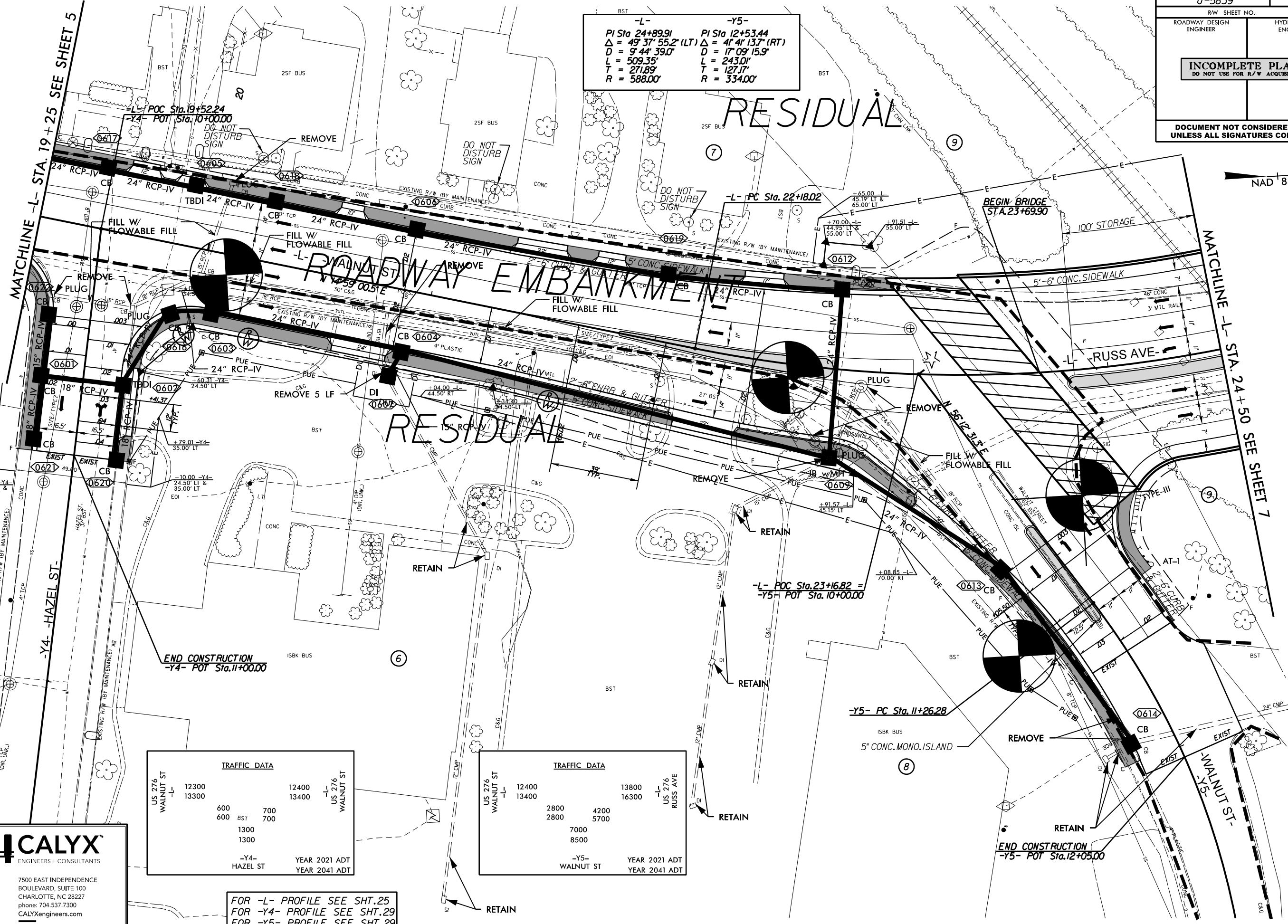
CALYX
 ENGINEERS + CONSULTANTS

7500 EAST INDEPENDENCE BOULEVARD, SUITE 100
 CHARLOTTE, NC 28227
 phone: 704.537.7300
 CALYXengineers.com
 NC License # F-1333

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8/17/19

PROJECT REFERENCE NO.	SHEET NO.
U-5839	6
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	



-L-	-Y5-
PI Sta 24+89.91	PI Sta 12+53.44
$\Delta = 49^{\circ} 37' 55.2''$ (LT)	$\Delta = 41^{\circ} 41' 13.7''$ (RT)
D = 9' 44' 39.0"	D = 17' 09' 15.9"
L = 509.35'	L = 243.01'
T = 271.89'	T = 127.17'
R = 588.00'	R = 334.00'

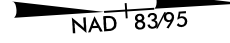
TRAFFIC DATA			
US 276 WALNUT ST	12300		12400
	13300		13400
	600	700	
	600	700	
		1300	
		1300	
		-Y4- HAZEL ST	YEAR 2021 ADT YEAR 2041 ADT

TRAFFIC DATA			
US 276 WALNUT ST	12400		13800
	13400		16300
	2800	4200	
	2800	5700	
		7000	
		8500	
		-Y5- WALNUT ST	YEAR 2021 ADT YEAR 2041 ADT

FOR -L- PROFILE SEE SHT.25
FOR -Y4- PROFILE SEE SHT.29
FOR -Y5- PROFILE SEE SHT.29

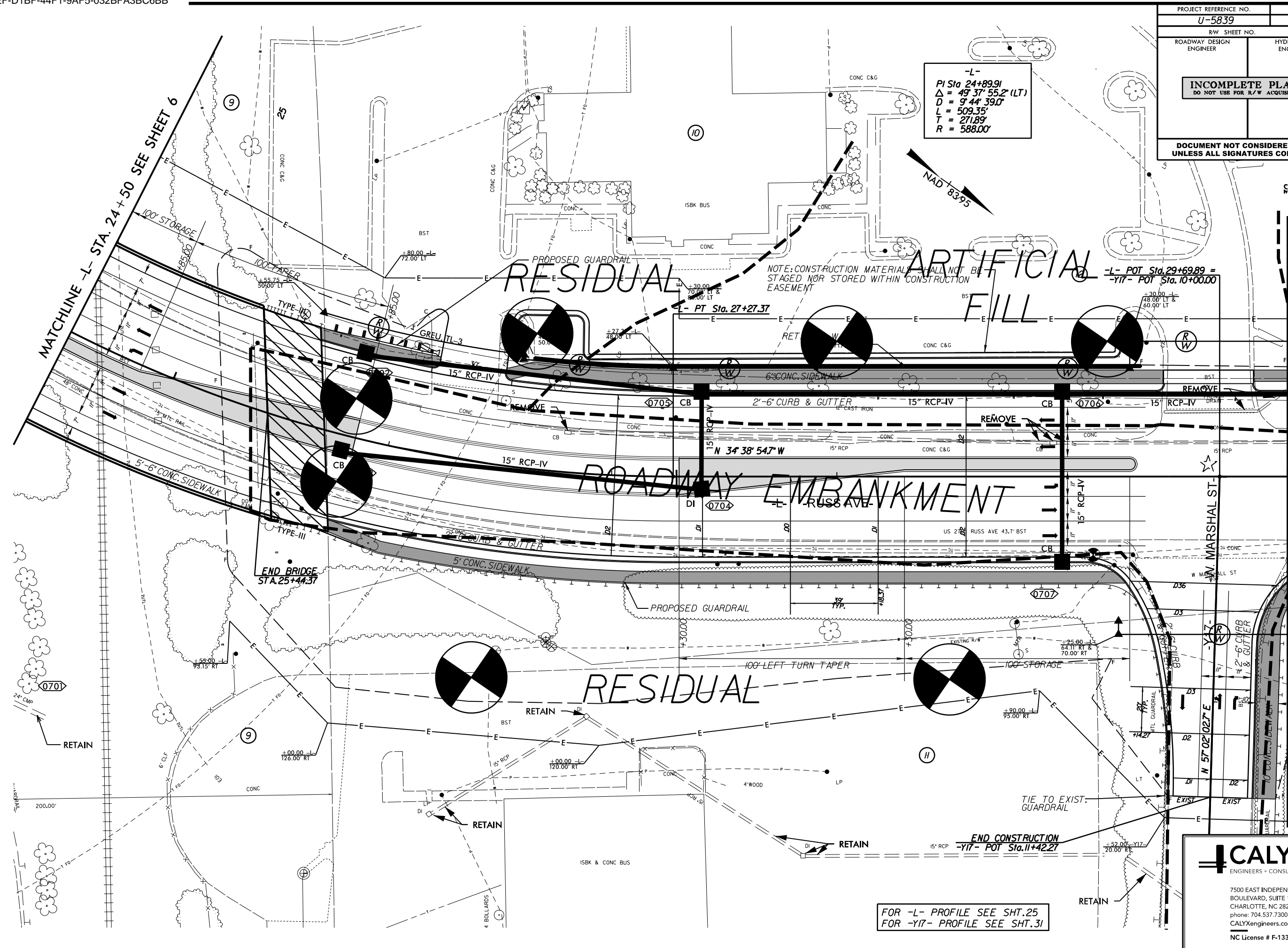
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PROJECT REFERENCE NO. U-5839	SHEET NO. 7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



-L-
 PI Sta. 24+89.91
 $\Delta = 49^\circ 37' 55.2''$ (LT)
 $D = 9' 44'' 39.0''$
 $L = 509.35'$
 $T = 271.89'$
 $R = 588.00'$

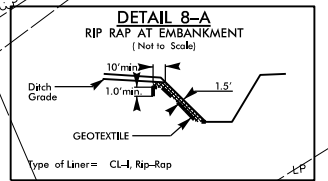
FOR -L- PROFILE SEE SHT. 25
 FOR -Y17- PROFILE SEE SHT. 31

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PROJECT REFERENCE NO. U-5839		SHEET NO. 8	
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			

TRAFFIC DATA			
BUSINESS DRIVEWAY			
	100	100	
	< 50	< 50	
	< 50	< 50	
US 276	14500	15200	US 276
RUSS AVE	17000	17700	RUSS AVE
	2200	2900	
	2300	3000	
	5200	5400	
-Y18-		YEAR 2021 ADT	
WAYNESVILLE PL		YEAR 2041 ADT	

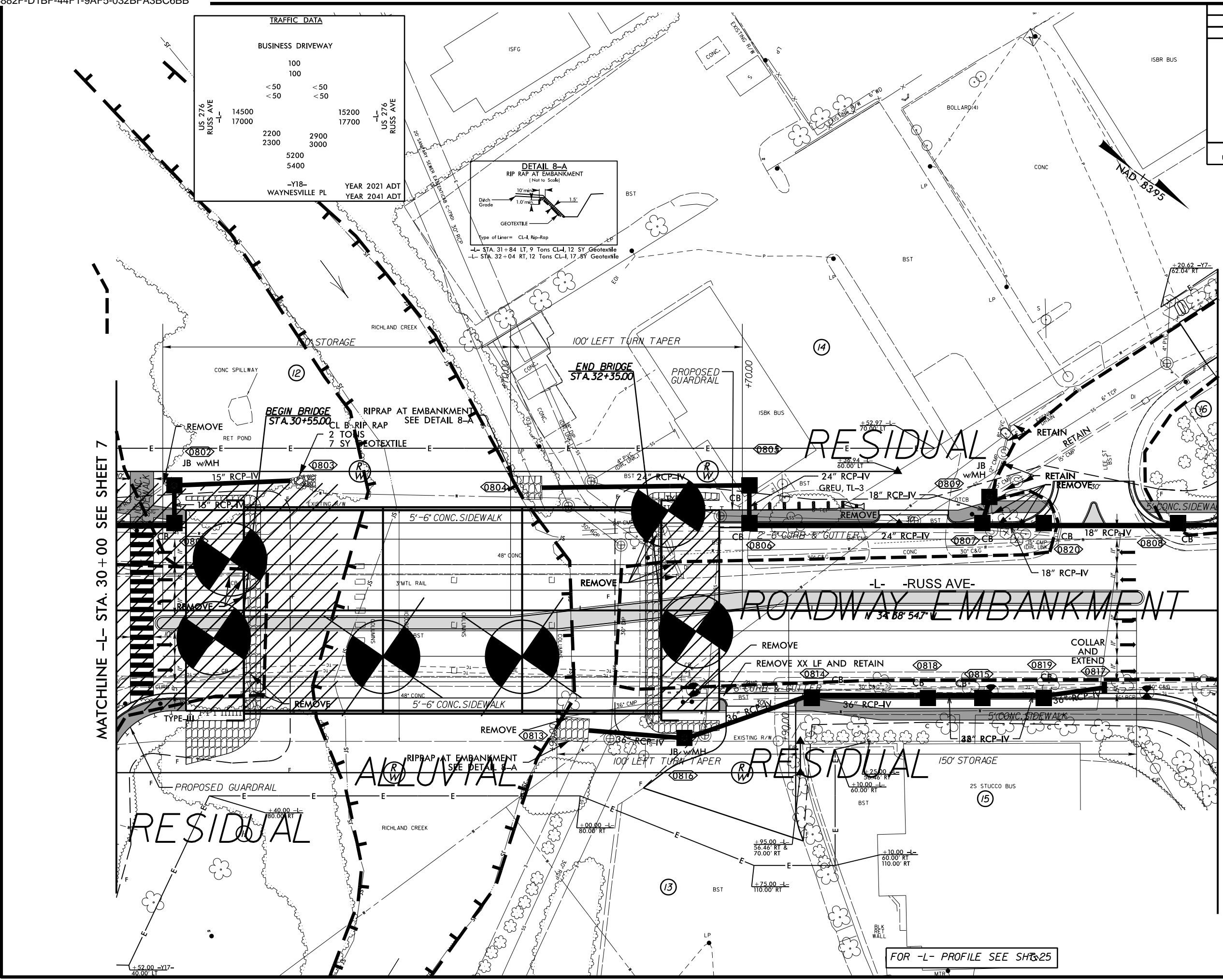


-L- STA. 31+84 LT, 9 Tons CL-1, 12 SY Geotextile
 -L- STA. 32+04 RT, 12 Tons CL-1, 17 SY Geotextile

MATCHLINE -L- STA. 30+00 SEE SHEET 7

MATCHLINE -L- STA. 34+75 SEE SHEET 9

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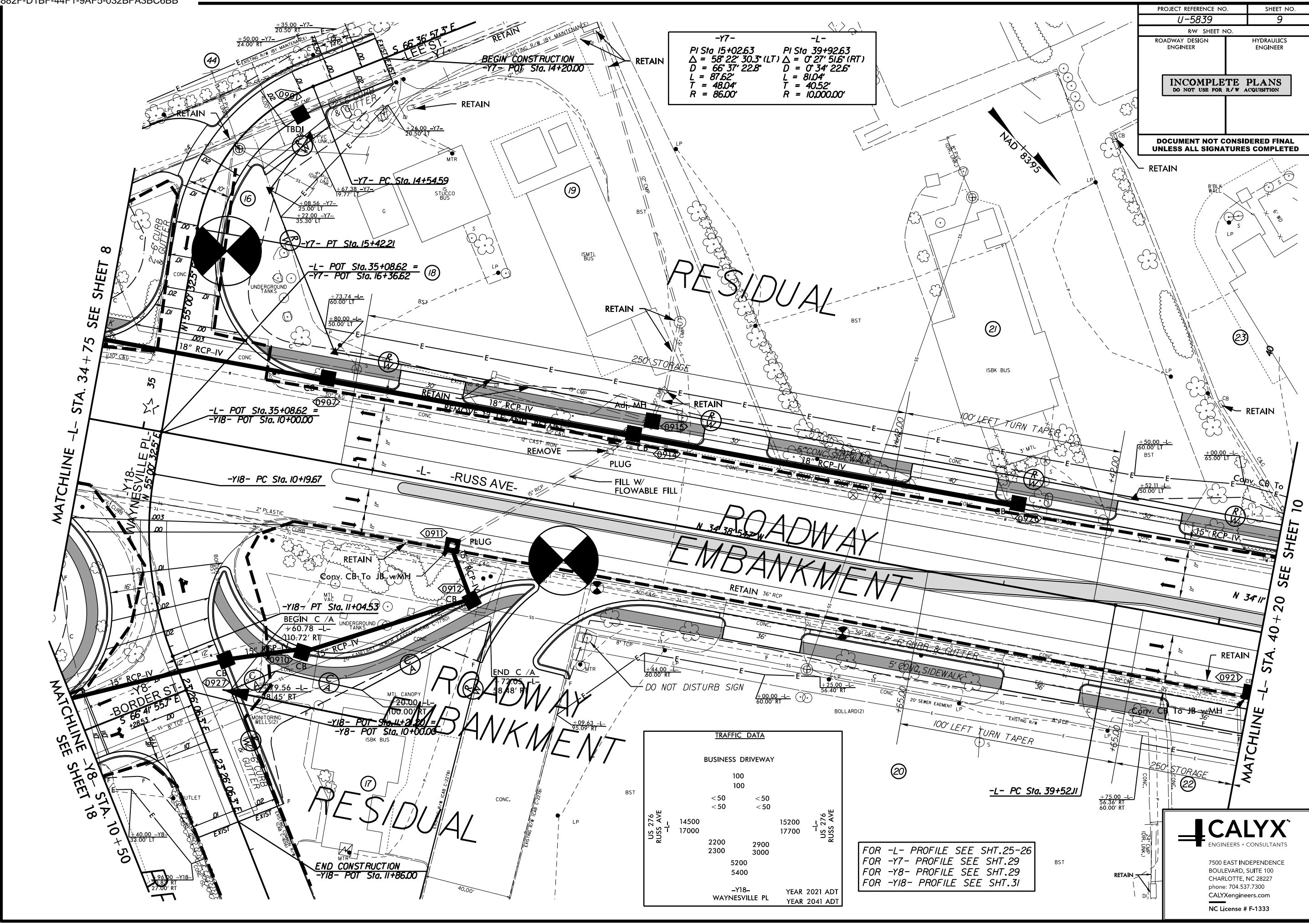
FOR -L- PROFILE SEE SHS 25

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PROJECT REFERENCE NO.	SHEET NO.
U-5839	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

-Y7-	-L-
PI Sta 15+02.63	PI Sta 39+92.63
$\Delta = 58' 22' 30.3" (LT)$	$\Delta = 0' 27' 51.6" (RT)$
$D = 66' 37' 22.8"$	$D = 0' 34' 22.6"$
$L = 87.62'$	$L = 81.04'$
$T = 48.04'$	$T = 40.52'$
$R = 86.00'$	$R = 10,000.00'$



TRAFFIC DATA

BUSINESS DRIVEWAY		100		100	
<50		<50		<50	
US 276	14500		15200	US 276	
RUSS AVE	17000		17700	RUSS AVE	
	2200	2900			
	2300	3000			
	5200				
	5400				
-Y18- WAYNESVILLE PL		YEAR 2021 ADT		YEAR 2041 ADT	

FOR -L- PROFILE SEE SHT. 25-26
 FOR -Y7- PROFILE SEE SHT. 29
 FOR -Y8- PROFILE SEE SHT. 29
 FOR -Y18- PROFILE SEE SHT. 31

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MATCHLINE -L- STA. 34+75 SEE SHEET 8
 MATCHLINE SEE SHEET 18 -Y- STA. 10+50

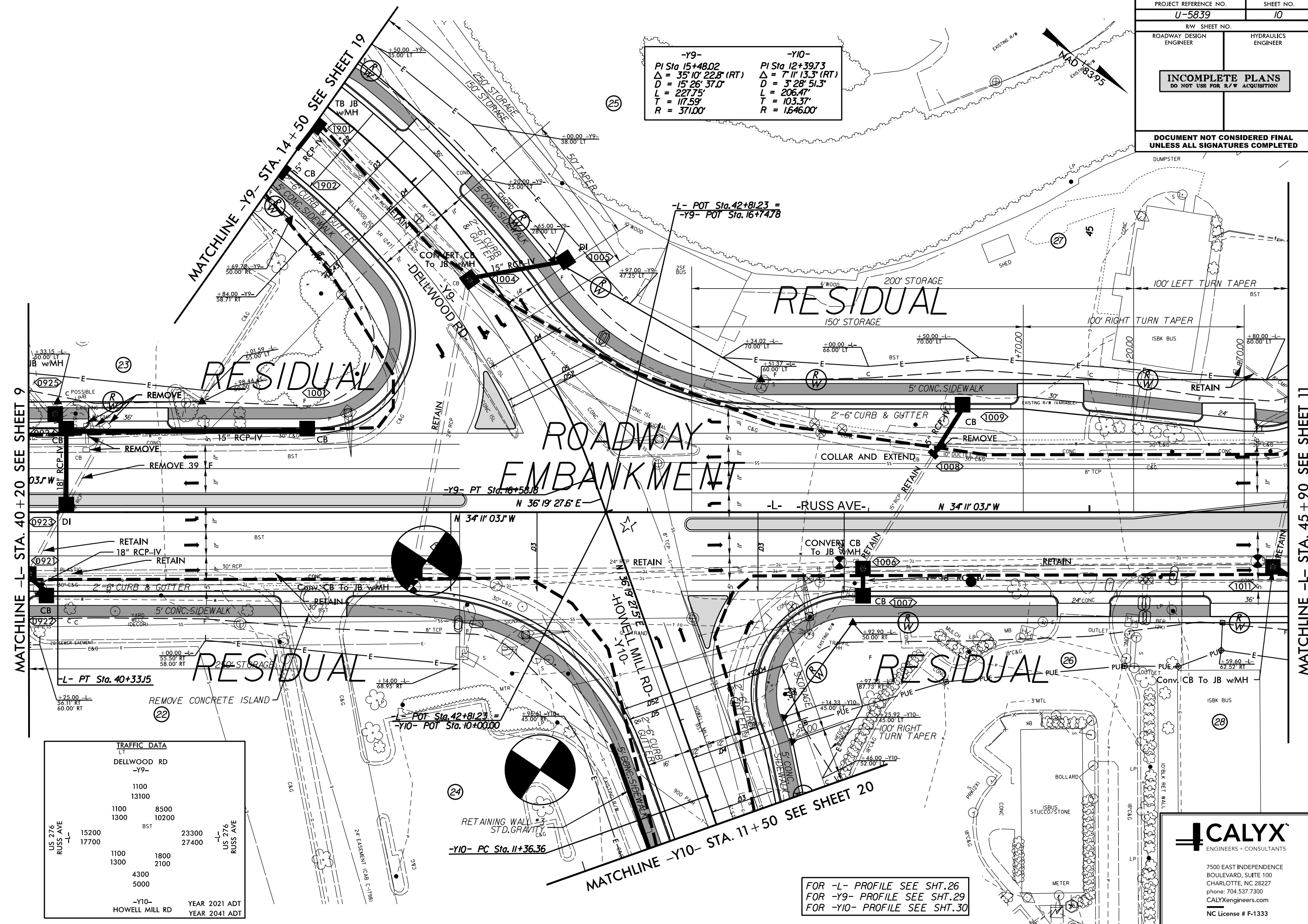
MATCHLINE -L- STA. 40+20 SEE SHEET 10

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PROJECT REFERENCE NO.	SHEET NO.
U-5839	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS	
DO NOT USE FOR R/W ACQUISITION	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

-Y9-	-Y10-
PI Sta 15+48.02	PI Sta 12+39.73
Δ = 35° 10' 22.8" (RT)	Δ = 7° 11' 13.3" (RT)
D = 15' 26' 37.0"	D = 3' 28' 51.3"
L = 227.75'	L = 206.47'
T = 117.59'	T = 103.37'
R = 371.00'	R = 1646.00'



MATCHLINE -L- STA. 40 + 20 SEE SHEET 9

MATCHLINE -L- STA. 45 + 90 SEE SHEET 11

LT	DELLWOOD RD -Y9-		US 276 RUSS AVE	
	1100	13100	15200	17700
	1100	8500		
	1300	10200		
			BST	23300
				27400
	1100	1800		
	1300	2100		
			4300	
			5000	
	-Y10-			
	HOWELL MILL RD		YEAR 2021 ADT	
			YEAR 2041 ADT	

FOR -L- PROFILE SEE SHT.26
 FOR -Y9- PROFILE SEE SHT.29
 FOR -Y10- PROFILE SEE SHT.30

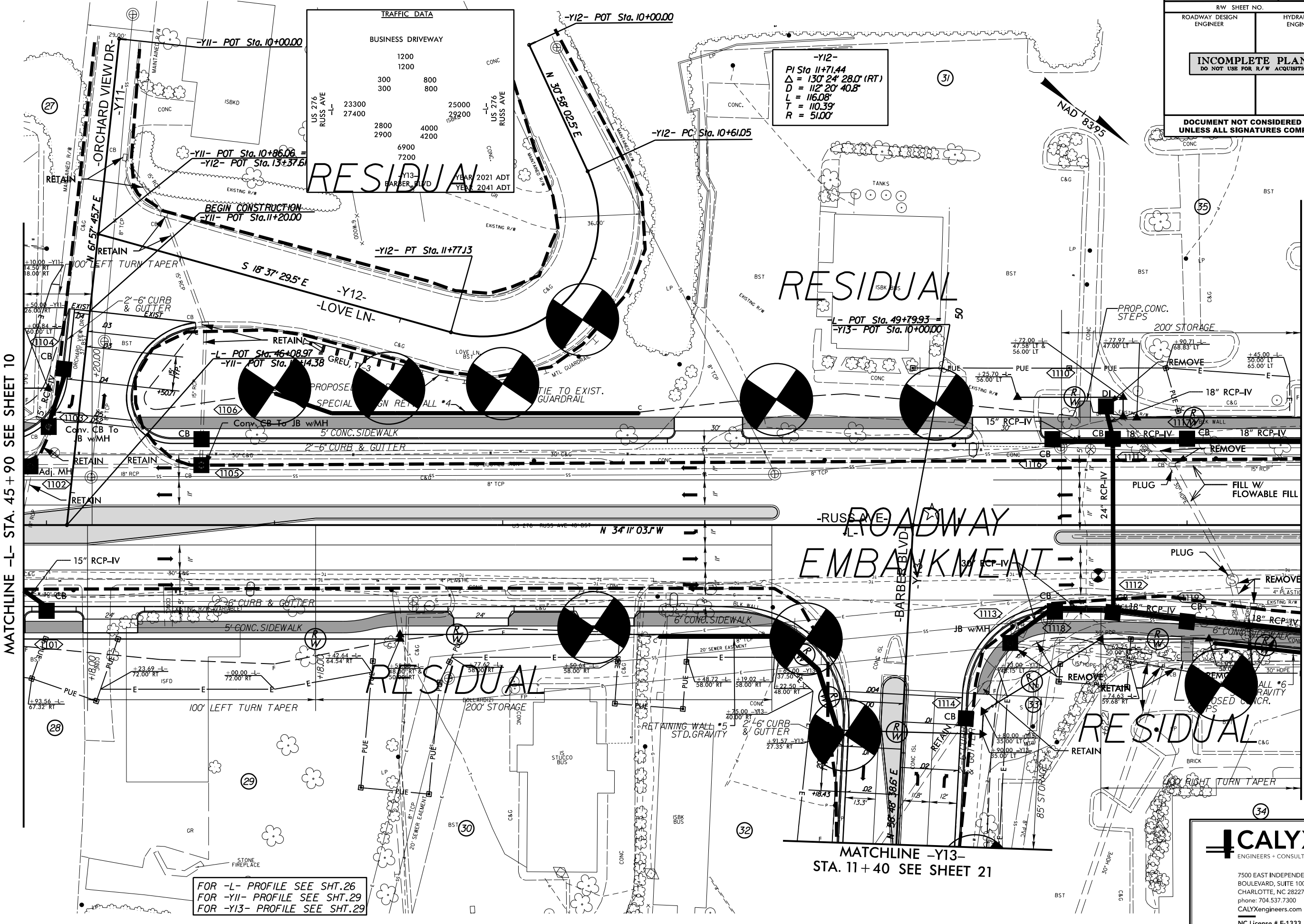
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PROJECT REFERENCE NO.	SHEET NO.
U-5839	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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MATCHLINE -L- STA. 45 + 90 SEE SHEET 10

MATCHLINE -L- STA. 51 + 50 SEE SHEET 12



TRAFFIC DATA			
BUSINESS DRIVEWAY			
1200			
1200			
300	800		
300	800		
		25000	
		29200	
		6900	7200
		2800	4000
		2900	4200

-Y12-
 PI Sta 11+71.44
 $\Delta = 130^\circ 24' 28.0'' (RT)$
 $D = 112' 20' 40.8''$
 $L = 116.08'$
 $T = 110.39'$
 $R = 51.00'$

FOR -L- PROFILE SEE SHT. 26
 FOR -Y11- PROFILE SEE SHT. 29
 FOR -Y13- PROFILE SEE SHT. 29

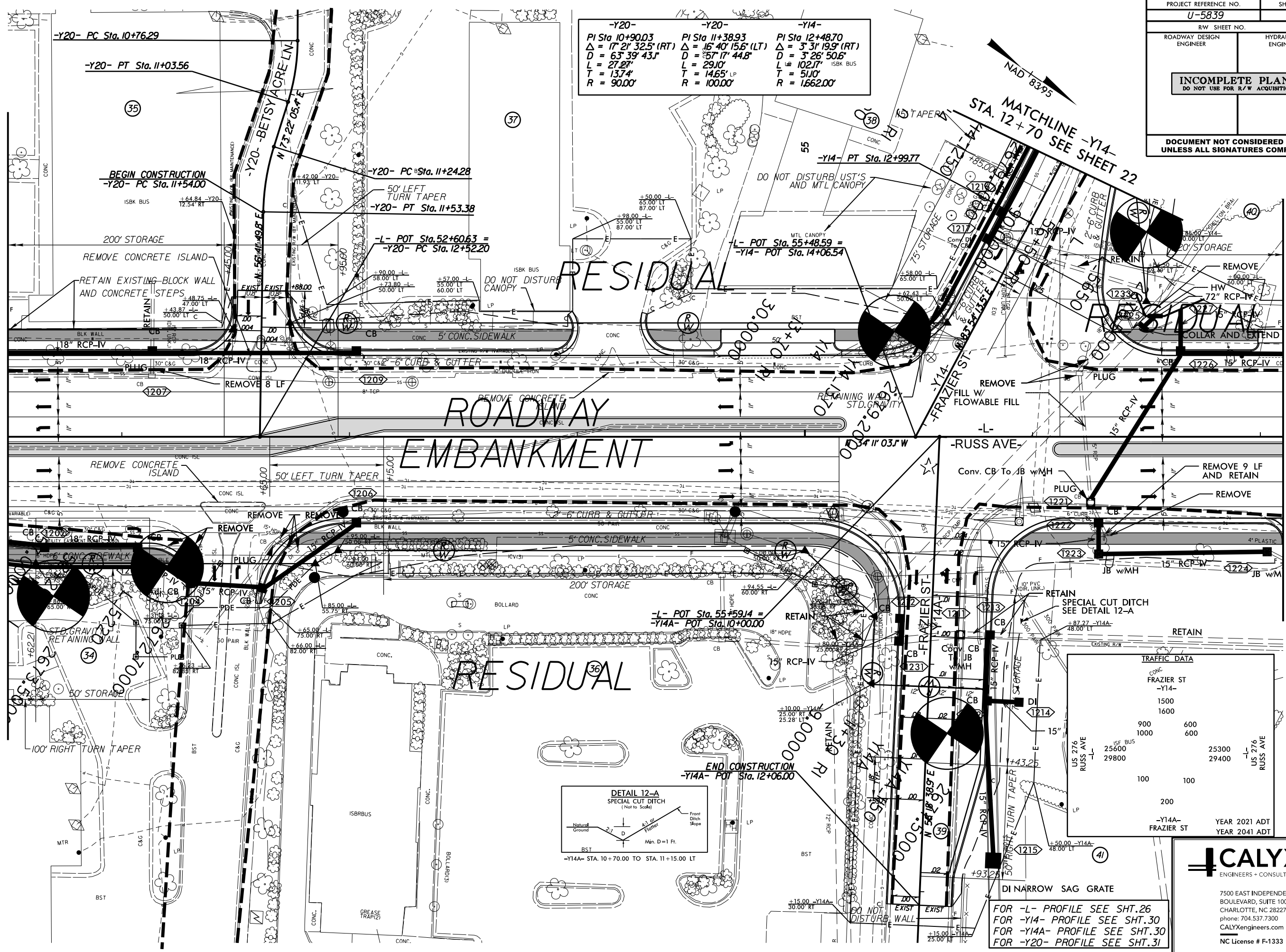
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PROJECT REFERENCE NO. U-5839	SHEET NO. 12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

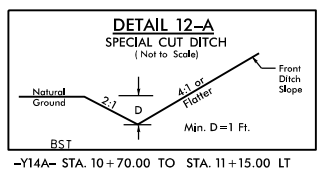
MATCHLINE -L- STA. 51 + 50 SEE SHEET 11

MATCHLINE -L- STA. 57 + 10 SEE SHEET 13

-Y20- PI Sta 10+90.03 $\Delta = 17' 21" 32.5' (RT)$ $D = 63' 39" 43'$ $L = 27.27'$ $T = 13.74'$ $R = 90.00'$	-Y20- PI Sta 11+38.93 $\Delta = 16' 40" 15.6' (LT)$ $D = 57' 17" 44.8'$ $L = 29.10'$ $T = 14.65' LP$ $R = 100.00'$	-Y14- PI Sta 12+48.70 $\Delta = 3' 31" 19.9' (RT)$ $D = 3' 26" 50.6'$ $L = 102.17'$ ISBK BUS $T = 51.10'$ $R = 1662.00'$
---	---	---



TRAFFIC DATA			
CONC.	FRAZIER ST	-Y14-	1500
			1600
900	1000	600	600
25600	29800	25300	29400
100	100		
200			
	-Y14-	FRAZIER ST	YEAR 2021 ADT
			YEAR 2041 ADT



FOR -L- PROFILE SEE SHT.26
 FOR -Y14- PROFILE SEE SHT.30
 FOR -Y14A- PROFILE SEE SHT.30
 FOR -Y20- PROFILE SEE SHT.31

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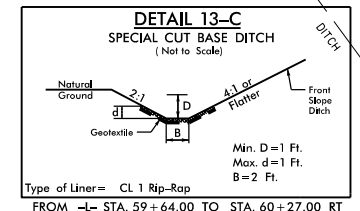
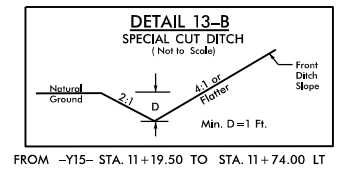
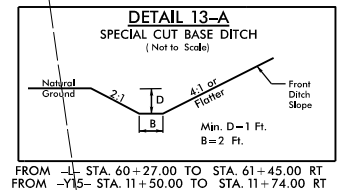
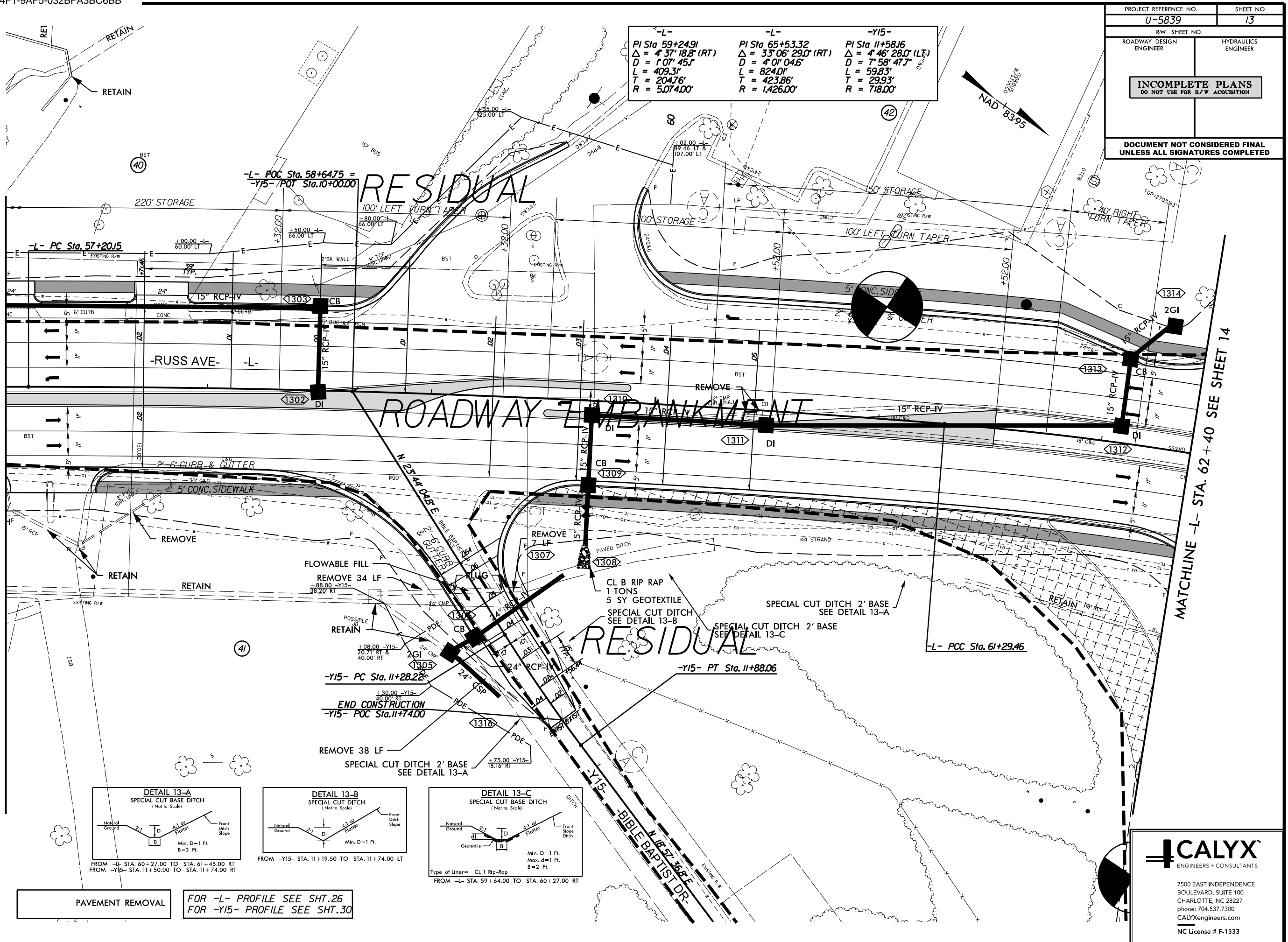
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PROJECT REFERENCE NO. U-5839	SHEET NO. 13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

-L- PI Sta 59+24.91 Δ = 4° 37' 18.8" (RT) D = 1° 07' 45.1" L = 409.31' T = 204.76' R = 5,074.00'	-L- PI Sta 65+53.32 Δ = 3° 06' 29.0" (RT) D = 4° 01' 04.6" L = 824.01' T = 423.86' R = 1,426.00'	-Y15- PI Sta 11+58.16 Δ = 4° 46' 28.0" (LT) D = 7° 58' 47.7" L = 59.83' T = 29.93' R = 718.00'
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MATCHLINE -L- STA. 57 + 10 SEE SHEET 12

MATCHLINE -L- STA. 62 + 40 SEE SHEET 14



PAVEMENT REMOVAL

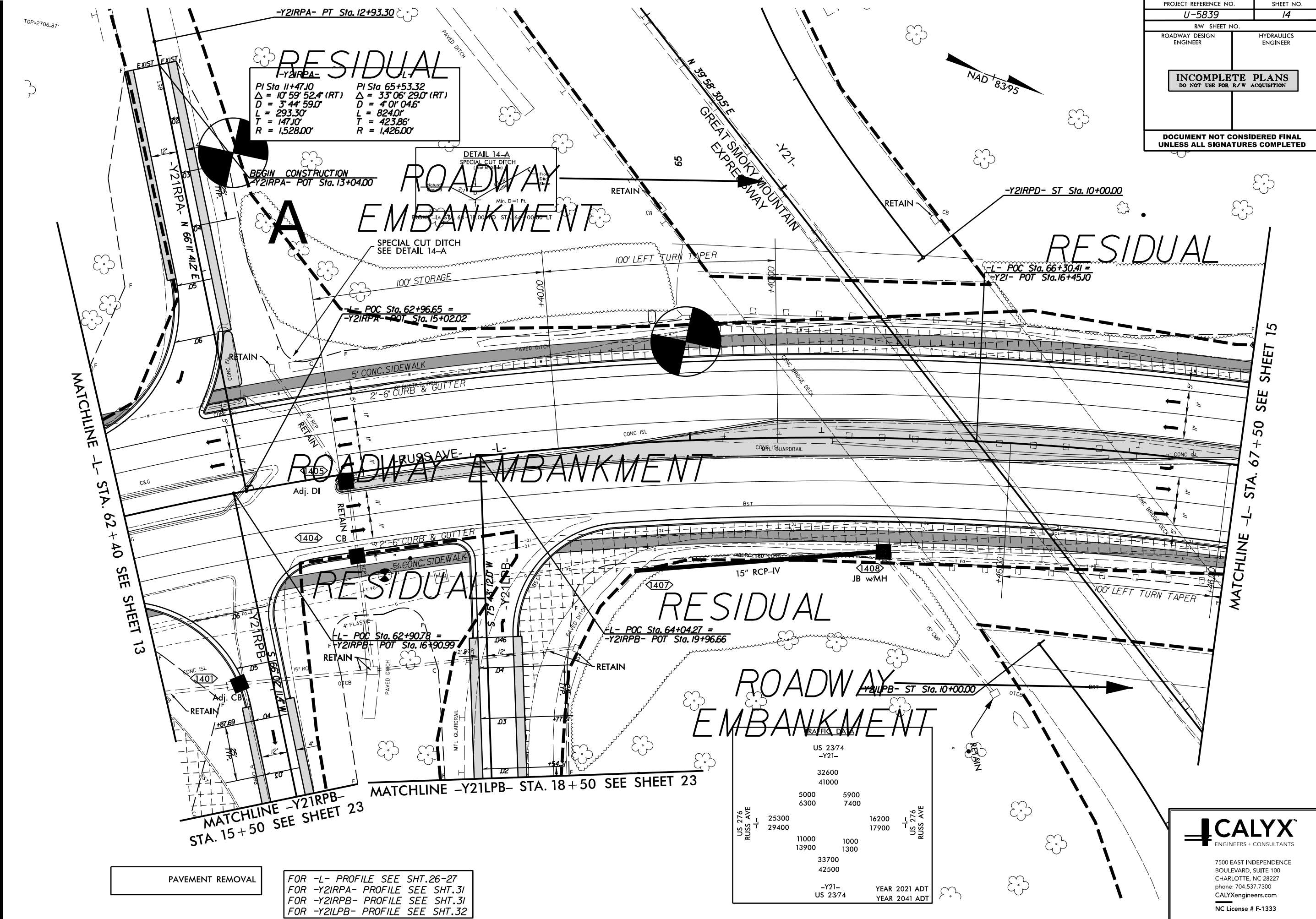
FOR -L- PROFILE SEE SHT. 26
FOR -Y15- PROFILE SEE SHT. 30

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PROJECT REFERENCE NO. U-5839	SHEET NO. 14
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	



RESIDUAL
 -Y2IRPA- L-
 PI Sta 11+47.10 PI Sta 65+53.32
 Δ = 10° 59' 52.4" (RT) Δ = 33° 06' 29.0" (RT)
 D = 3' 44' 59.0" D = 4' 01' 04.6"
 L = 293.30' L = 824.0'
 T = 147.10' T = 423.86'
 R = 1,528.00' R = 1,426.00'

BEGIN CONSTRUCTION
 -Y2IRPA- POT Sta. 13+04.00

ROADWAY EMBANKMENT
 DETAIL 14-A
 SPECIAL CUT DITCH
 Min. D=1 Ft.

RESIDUAL
 -L- POC Sta. 66+30.41 =
 -Y21- POT Sta. 16+45.10

ROADWAY EMBANKMENT
 RUSS AVE-
 Adj. DI

RESIDUAL
 -L- POC Sta. 64+04.27 =
 -Y2IRPB- POT Sta. 19+96.66

ROADWAY EMBANKMENT
 TRAFFIC DATA

US 2374			
-Y21-			
	32600		
	41000		
	5000	5900	
	6300	7400	
US 276			
RUSS AVE	25300		16200
	29400		17900
	11000	1000	
	13900	1300	
	33700		
	42500		
	-Y21-	YEAR 2021 ADT	
	US 2374	YEAR 2041 ADT	

PAVEMENT REMOVAL

FOR -L- PROFILE SEE SHT. 26-27
 FOR -Y2IRPA- PROFILE SEE SHT. 31
 FOR -Y2IRPB- PROFILE SEE SHT. 31
 FOR -Y2ILPB- PROFILE SEE SHT. 32

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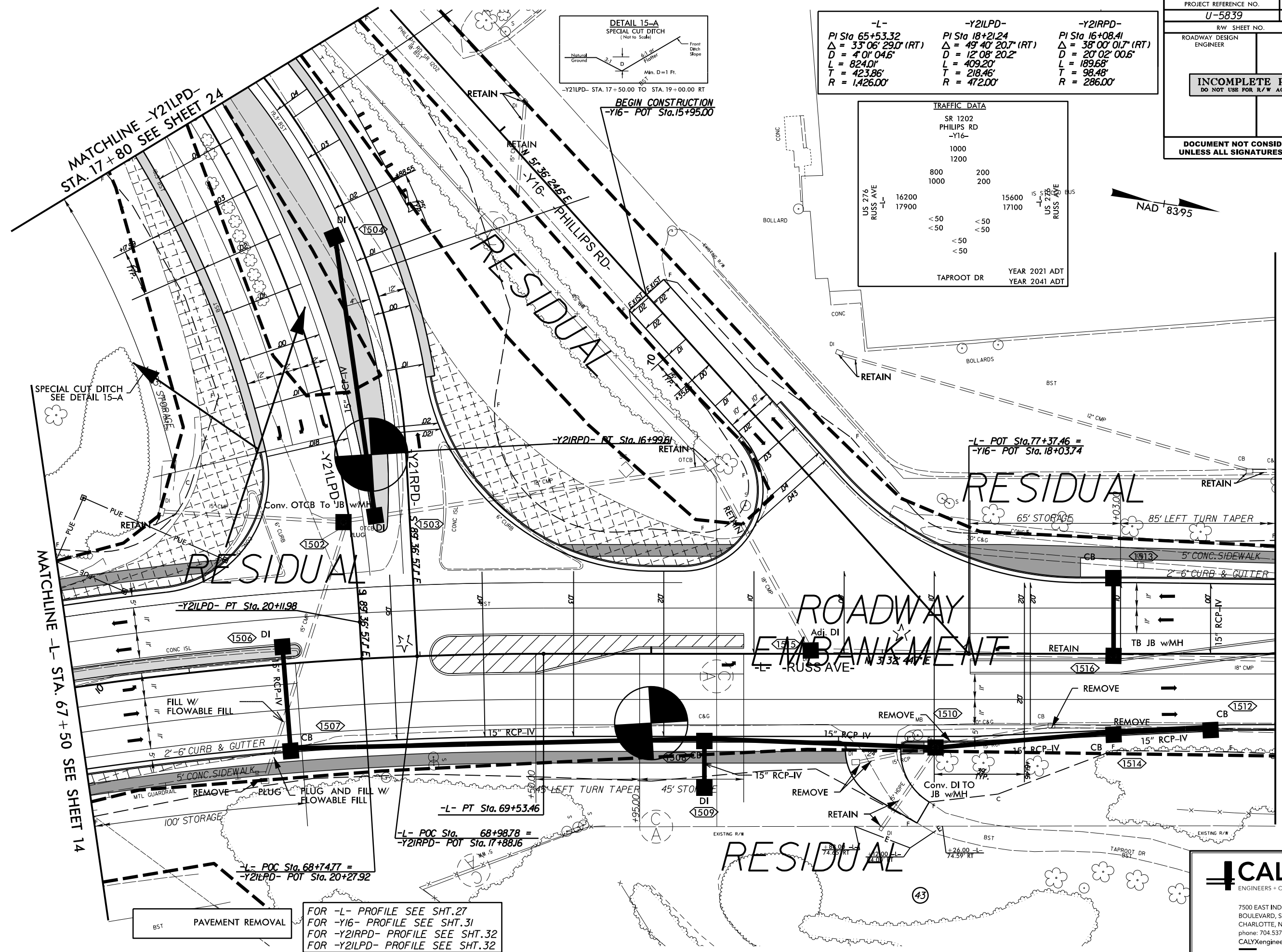
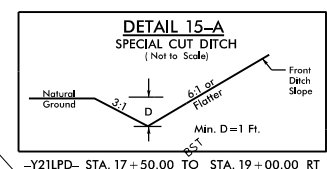
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 8/17/19

PROJECT REFERENCE NO. U-5839	SHEET NO. 15
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	

-L- PI Sta 65+53.32 Δ = 33°06'29.0" (RT) D = 4°01'04.6" L = 824.0' T = 423.86' R = 1,426.00'	-Y2ILPD- PI Sta 18+21.24 Δ = 49°40'20.7" (RT) D = 12°08'20.2" L = 409.20' T = 218.46' R = 472.00'	-Y2IRPD- PI Sta 16+08.41 Δ = 38°00'01.7" (RT) D = 20°02'00.6" L = 189.68' T = 98.48' R = 286.00'
---	--	---

TRAFFIC DATA	
SR 1202 PHILLIPS RD -Y16-	
1000	200
1200	200
US 276 RUSS AVE	US 276 RUSS AVE
16200	15600
17900	17100
< 50	< 50
< 50	< 50
< 50	< 50
TAPROOT DR	YEAR 2021 ADT
	YEAR 2041 ADT



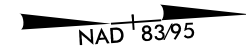
FOR -L- PROFILE SEE SHT.27
 FOR -Y16- PROFILE SEE SHT.31
 FOR -Y2IRPD- PROFILE SEE SHT.32
 FOR -Y2ILPD- PROFILE SEE SHT.32

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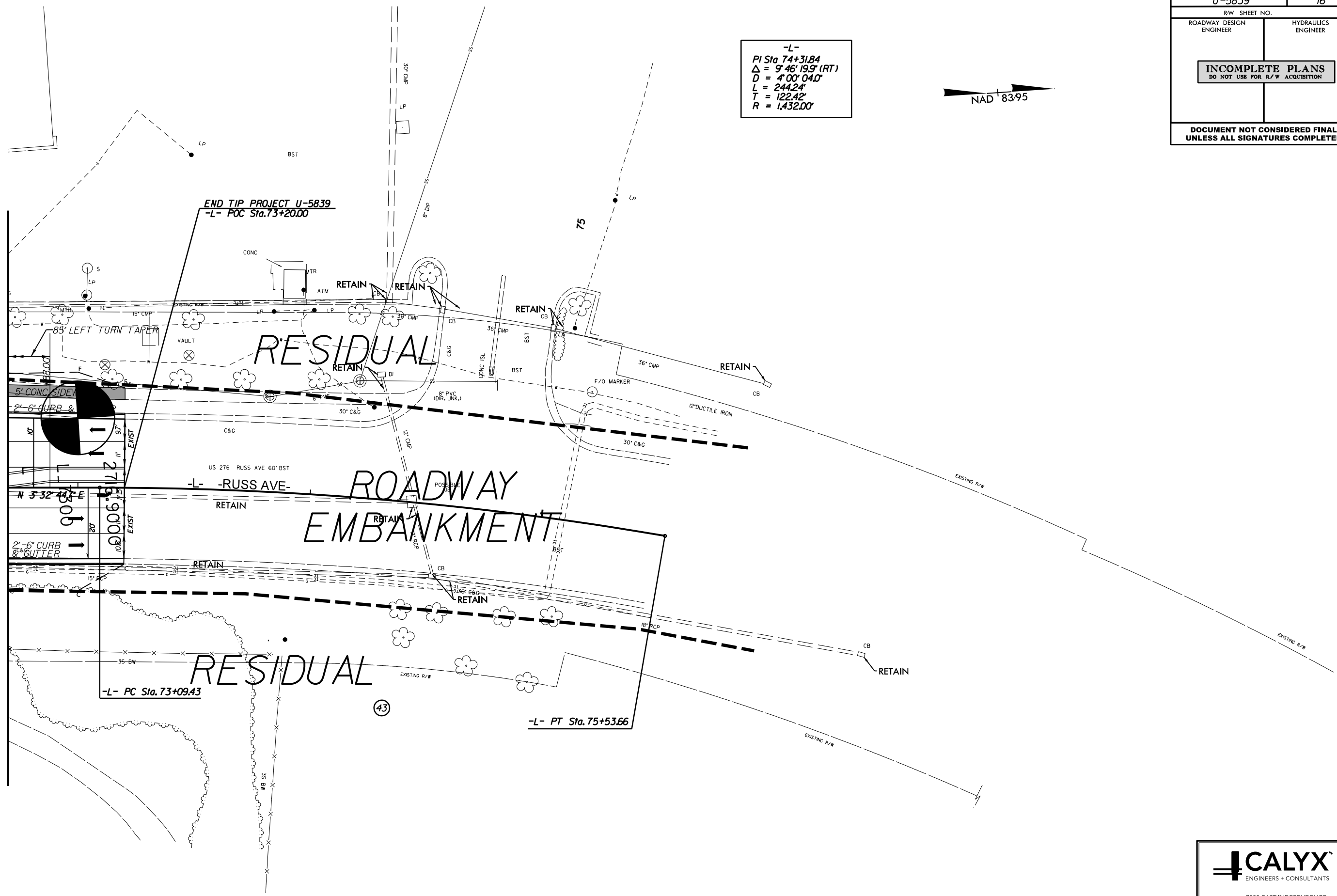
MATCHLINE -L- STA. 72 + 70 SEE SHEET 16

PROJECT REFERENCE NO. U-5839	SHEET NO. 16
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	

-L-
 PI Sta 74+31.84
 $\Delta = 9' 46' 19.9" (RT)$
 $D = 4' 00' 04.0"$
 $L = 244.24'$
 $T = 122.42'$
 $R = 1,432.00'$



MATCHLINE -L- STA. 72 + 70 SEE SHEET 15



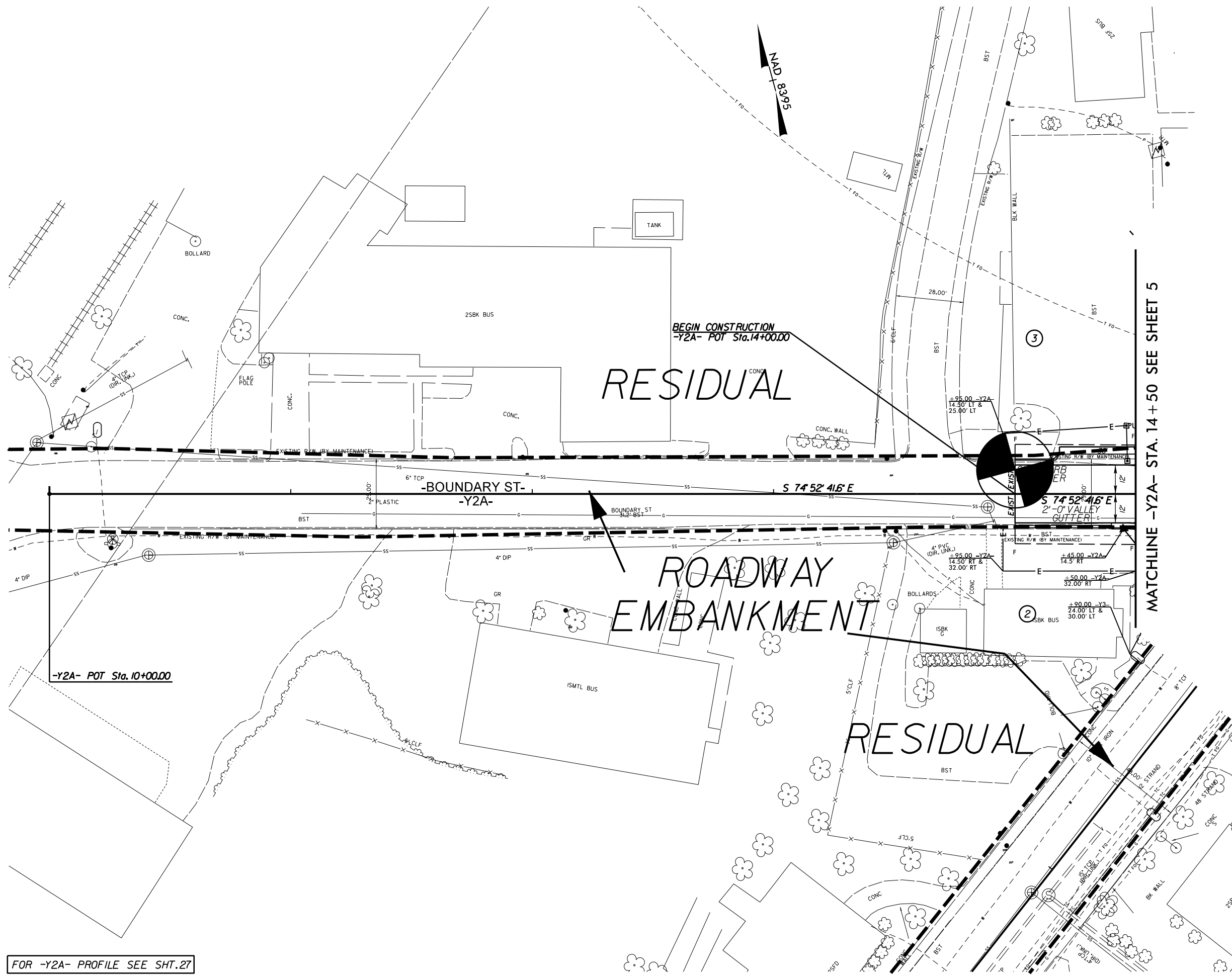
FOR -L- PROFILE SEE SHT. 27

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PROJECT REFERENCE NO. U-5839		SHEET NO. 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			



MATCHLINE -Y2A- STA. 14 + 50 SEE SHEET 5

FOR -Y2A- PROFILE SEE SHT. 27

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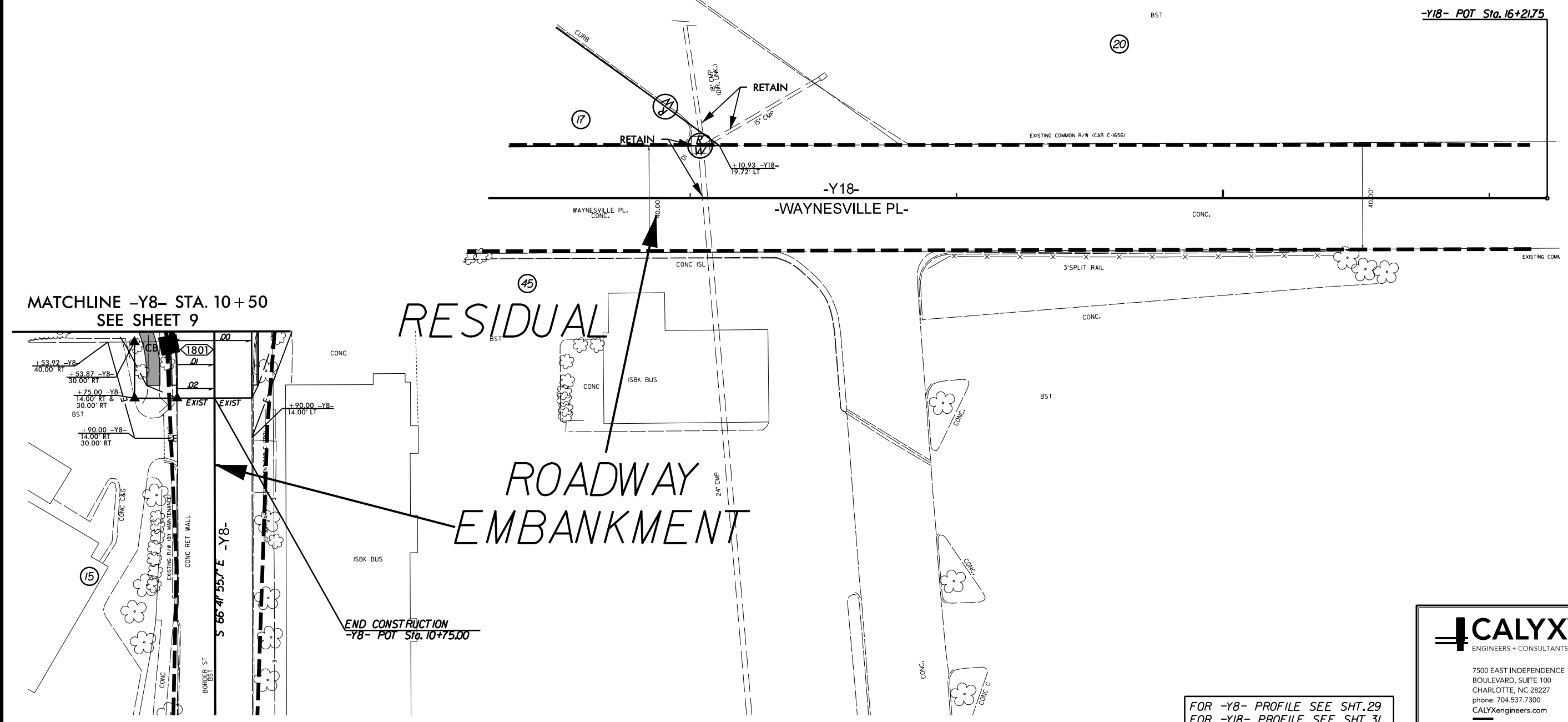
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PROJECT REFERENCE NO. U-5839	SHEET NO. 18
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

-Y18-
 PI Sta 10+63.21
 $\Delta = 37^{\circ}34'26.1"$ (LT)
 $D = 37^{\circ}12'18.2"$
 $L = 84.86'$
 $T = 43.54'$
 $R = 154.00'$



RESIDUAL



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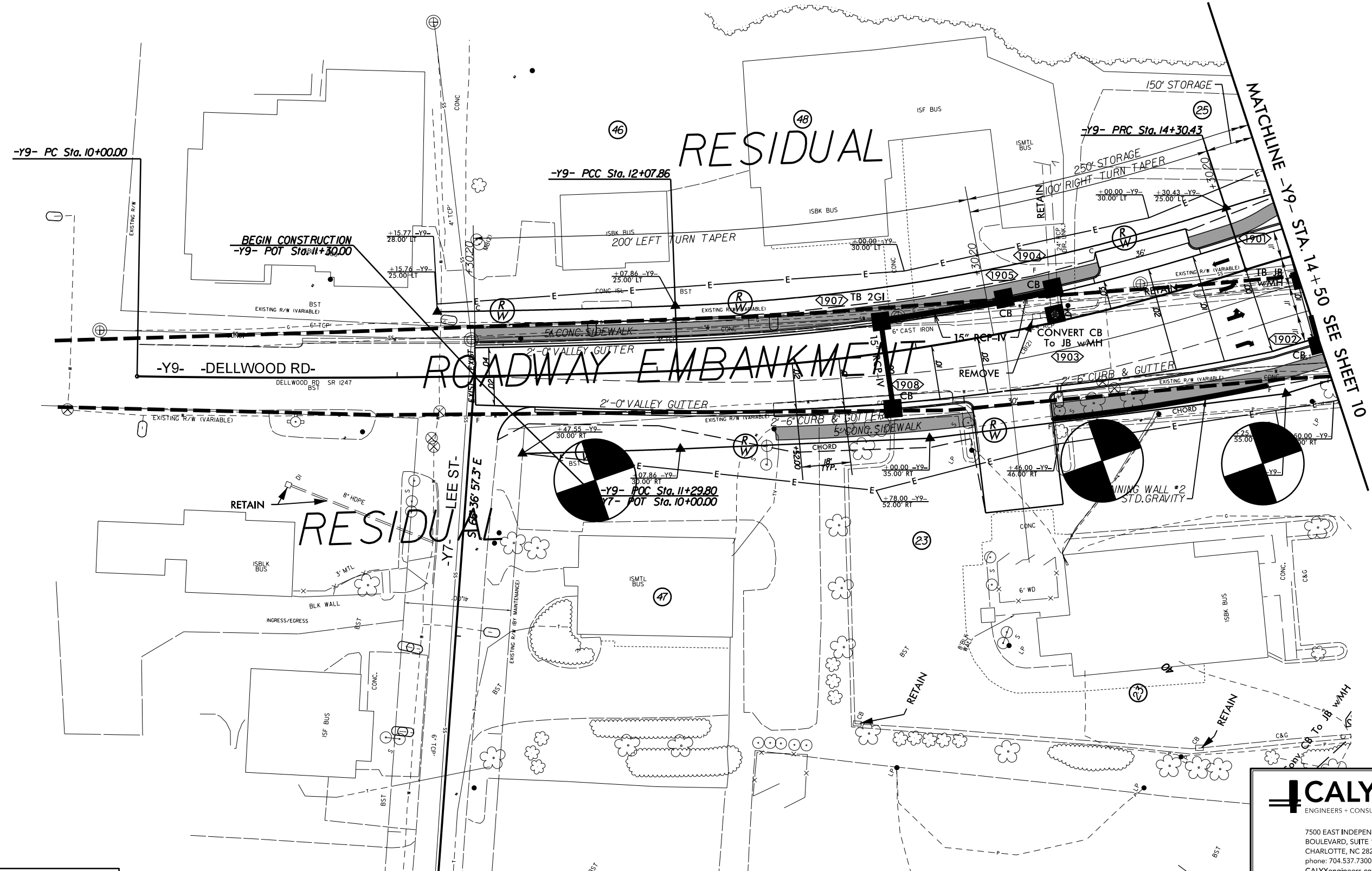
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-Y9-	-Y9-	-Y9-
PI Sta 11+03.95	PI Sta 13+19.87	PI Sta 15+48.02
$\Delta = 3^{\circ} 04' 15.7" (LT)$	$\Delta = 15^{\circ} 56' 26.3" (LT)$	$\Delta = 35^{\circ} 10' 22.8" (RT)$
$D = 128' 38.8"$	$D = 709' 43.1"$	$D = 1526' 37.0"$
$L = 207.86'$	$L = 222.57'$	$L = 227.75'$
$T = 103.95'$	$T = 112.01'$	$T = 117.59'$
$R = 3878.00'$	$R = 800.00'$	$R = 371.00'$



PROJECT REFERENCE NO. U-5839	SHEET NO. 19
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	



FOR -Y9- PROFILE SEE SHT.29

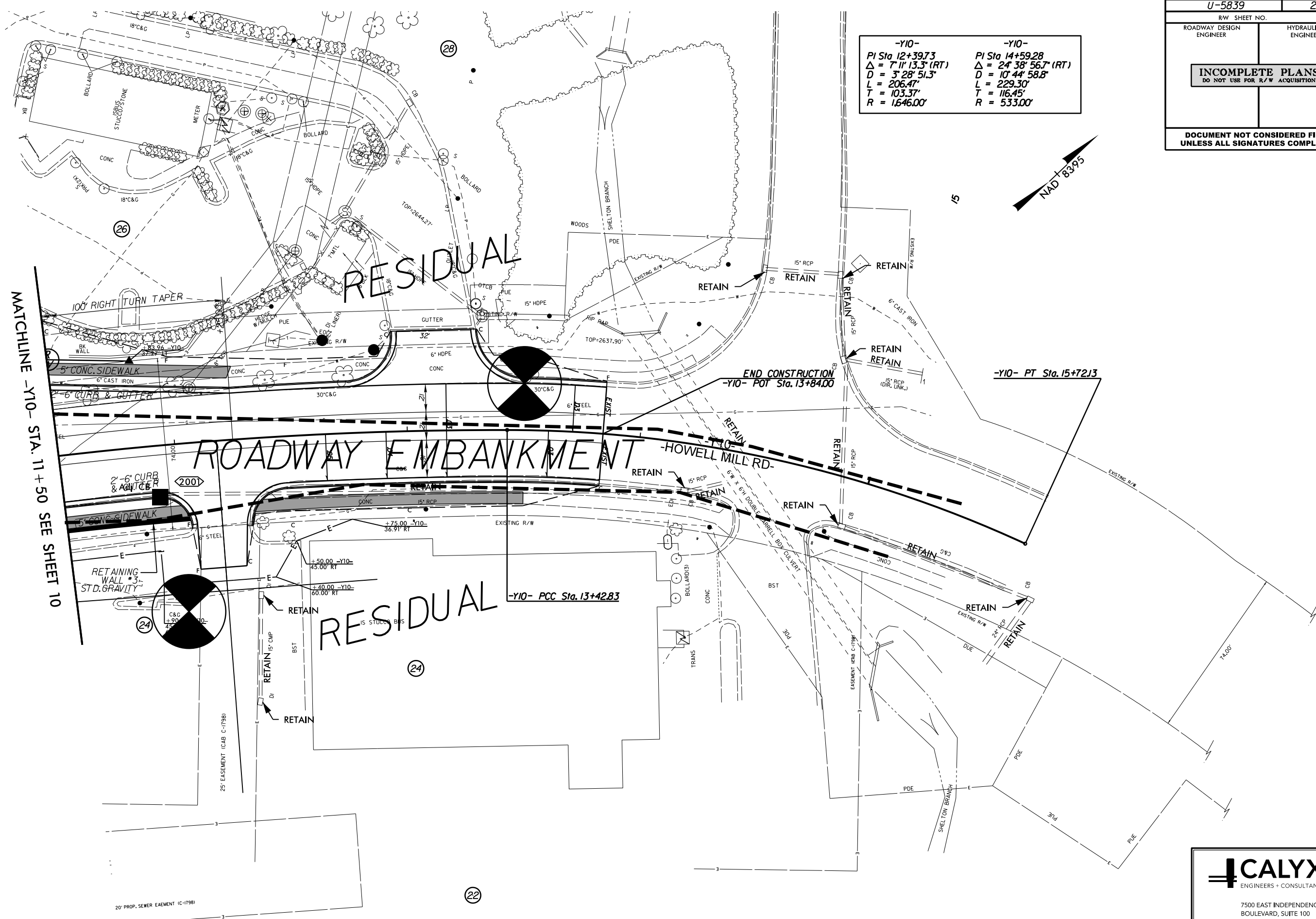
CALYX
ENGINEERS + CONSULTANTS

7500 EAST INDEPENDENCE
BOULEVARD, SUITE 100
CHARLOTTE, NC 28227
phone: 704.537.7300
CALYXengineers.com
NC License # F-1333

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14-AUG-2019 09:52
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U5839_PSH_20.dgn

PROJECT REFERENCE NO. U-5839	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	



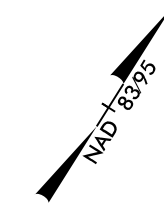
FOR -Y10- PROFILE SEE SHT.30

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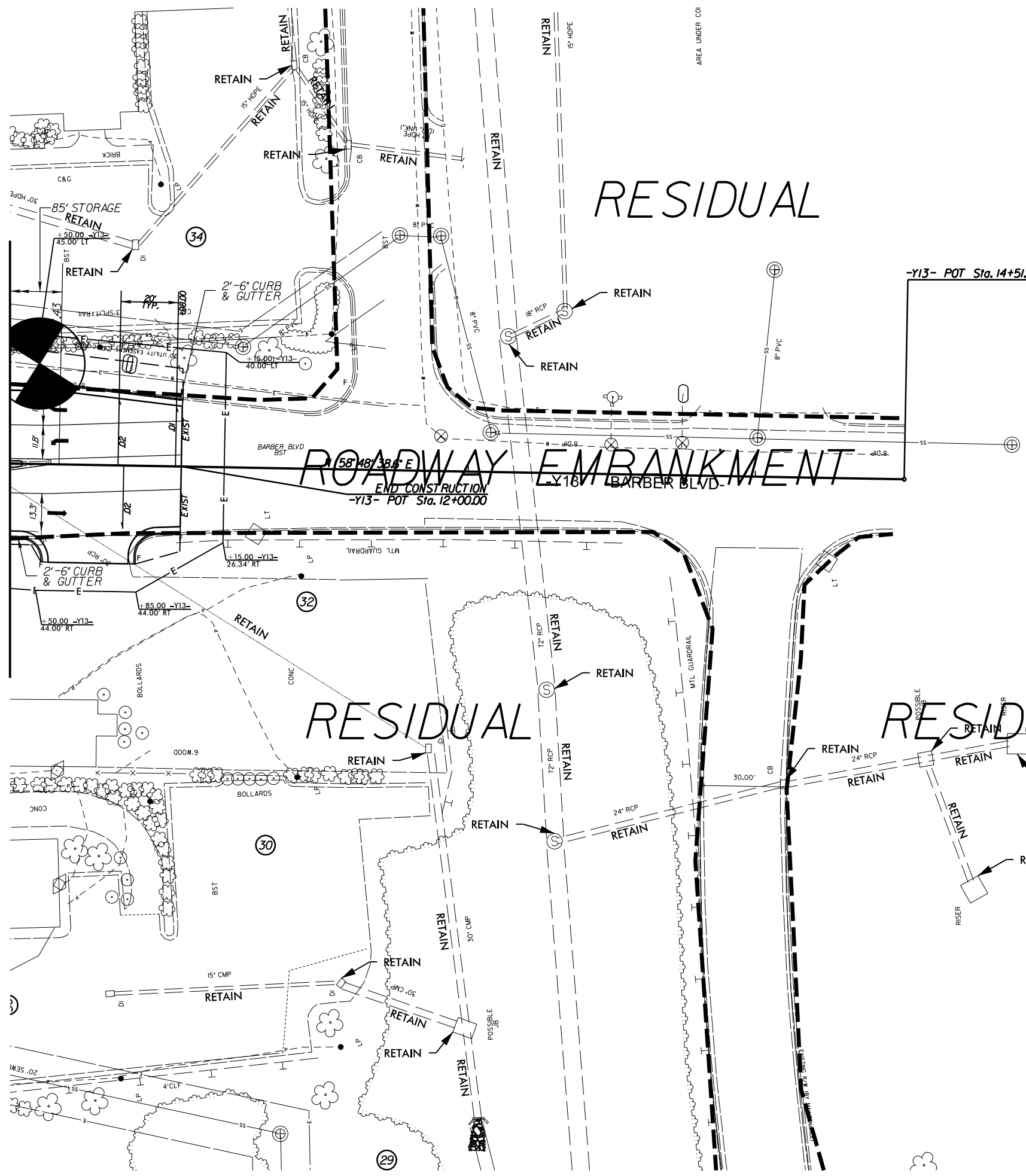
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PROJECT REFERENCE NO. U-5839	SHEET NO. 21
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MATCHLINE -Y13- STA. 11 + 40 SEE SHEET 11



ROADWAY EMBANKMENT
 END CONSTRUCTION
 -Y13- POT Sta. 12+00.00

-Y13- POT Sta. 14+51.90

RESIDUAL

RESIDUAL

14-AUG-2019 09:52
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 8/17/19 10:55 AM

FOR -Y13- PROFILE SEE SHT. 30

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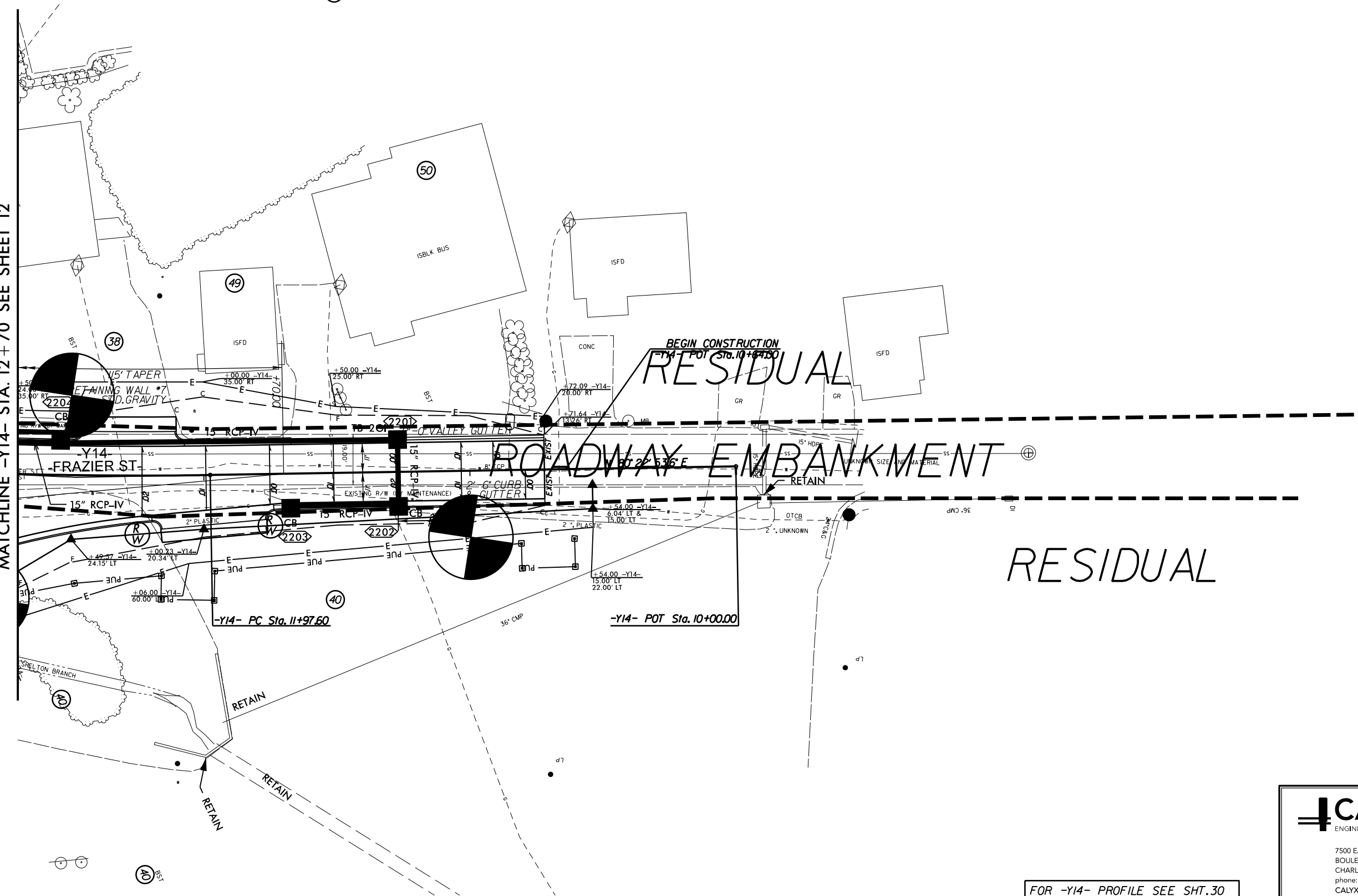
8/17/99

PROJECT REFERENCE NO. U-5839	SHEET NO. 22
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	

-Y14-
 PI Sta 12+48.70
 $\Delta = 3' 31' 19.9" (RT)$
 $D = 3' 26' 50.6"$
 $L = 102.17'$
 $T = 51.0'$
 $R = 1,662.00'$



MATCHLINE -Y14- STA. 12 + 70 SEE SHEET 12



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FOR -Y14- PROFILE SEE SHT. 30

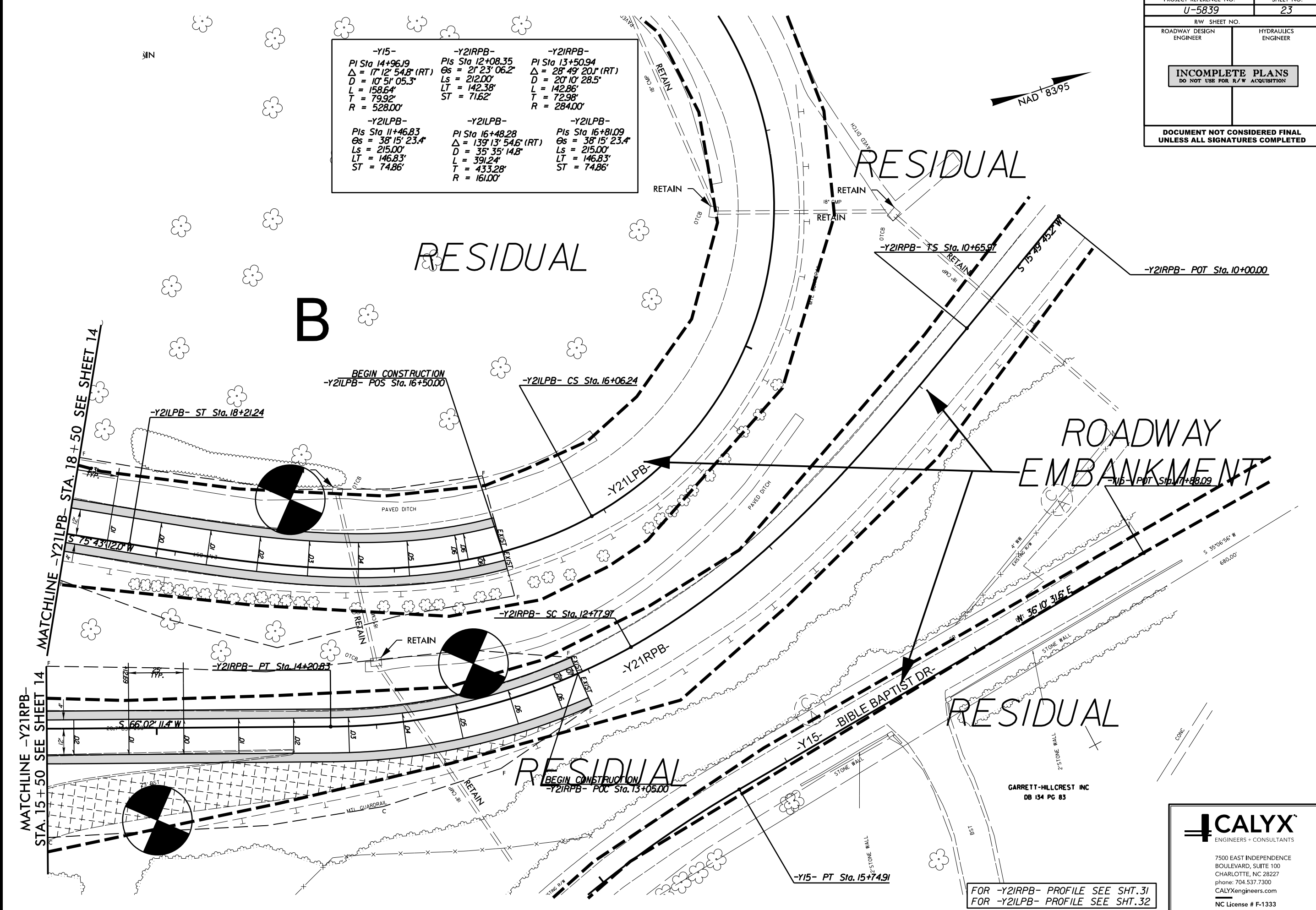
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PROJECT REFERENCE NO. U-5839	SHEET NO. 23
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

-Y15- PI Sta 14+96.19 $\Delta = 17^\circ 12' 54.8" (RT)$ D = 10' 51' 05.3" L = 158.64' T = 79.92' R = 528.00'	-Y2IRPB- PIs Sta 12+08.35 $\Theta_s = 21^\circ 23' 06.2"$ Ls = 212.00' LT = 142.38' ST = 71.62'	-Y2IRPB- PI Sta 13+50.94 $\Delta = 28^\circ 49' 20.1" (RT)$ D = 20' 10' 28.5" L = 142.86' T = 72.98' R = 284.00'
-Y2ILPB- PIs Sta 11+46.83 $\Theta_s = 38^\circ 15' 23.4"$ Ls = 215.00' LT = 146.83' ST = 74.86'	-Y2ILPB- PI Sta 16+48.28 $\Delta = 139^\circ 13' 54.6" (RT)$ D = 35' 35' 14.8" L = 391.24' LT = 433.28' R = 161.00'	-Y2ILPB- PIs Sta 16+81.09 $\Theta_s = 38^\circ 15' 23.4"$ Ls = 215.00' LT = 146.83' ST = 74.86'



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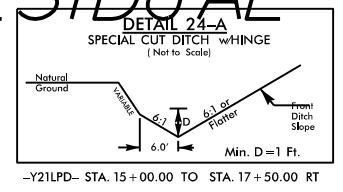
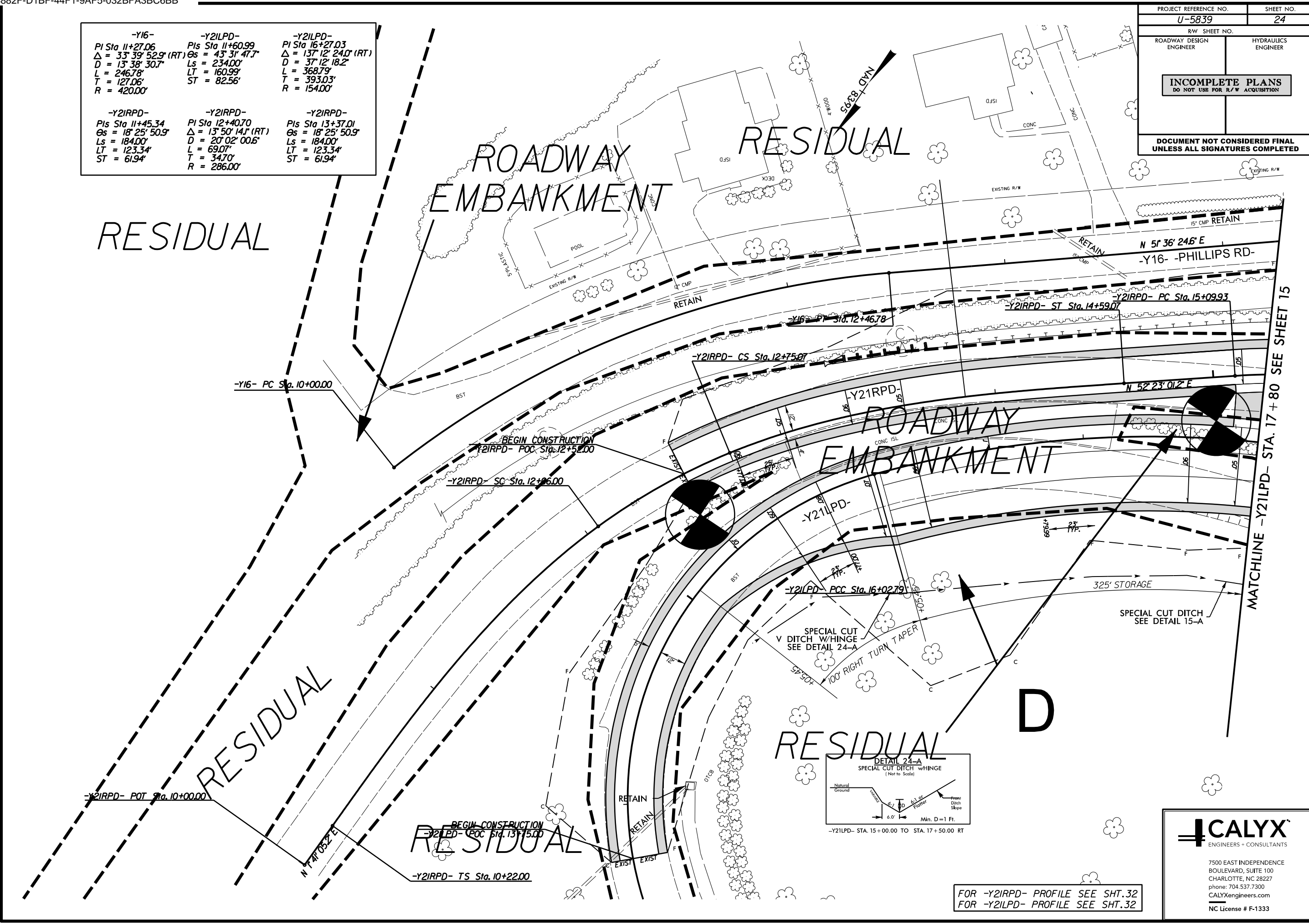
FOR -Y2IRPB- PROFILE SEE SHT. 31
FOR -Y2ILPB- PROFILE SEE SHT. 32

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PROJECT REFERENCE NO. U-5839	SHEET NO. 24
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	

-Y16- PI Sta 11+27.06 $\Delta = 33^{\circ} 39' 52.9''$ (RT) Ds = 43' 31' 47.7" D = 13' 38' 30.7" L = 246.78' T = 127.06' R = 420.00'	-Y21LPD- PIs Sta 11+60.99 $\Delta = 43^{\circ} 31' 47.7''$ Ls = 234.00' LT = 160.99' ST = 82.56'	-Y21LPD- PI Sta 16+27.03 $\Delta = 137^{\circ} 12' 24.0''$ (RT) D = 37' 12' 18.2" L = 368.79' T = 393.03' R = 154.00'
-Y2IRPD- PIs Sta 11+45.34 $\Delta = 18^{\circ} 25' 50.9''$ Ls = 184.00' LT = 123.34' ST = 61.94'	-Y2IRPD- PI Sta 12+40.70 $\Delta = 13^{\circ} 50' 14.1''$ (RT) D = 20' 02' 00.6" L = 69.07' T = 34.70' R = 286.00'	-Y2IRPD- PIs Sta 13+37.01 $\Delta = 18^{\circ} 25' 50.9''$ Ls = 184.00' LT = 123.34' ST = 61.94'



FOR -Y2IRPD- PROFILE SEE SHT. 32
FOR -Y21LPD- PROFILE SEE SHT. 32

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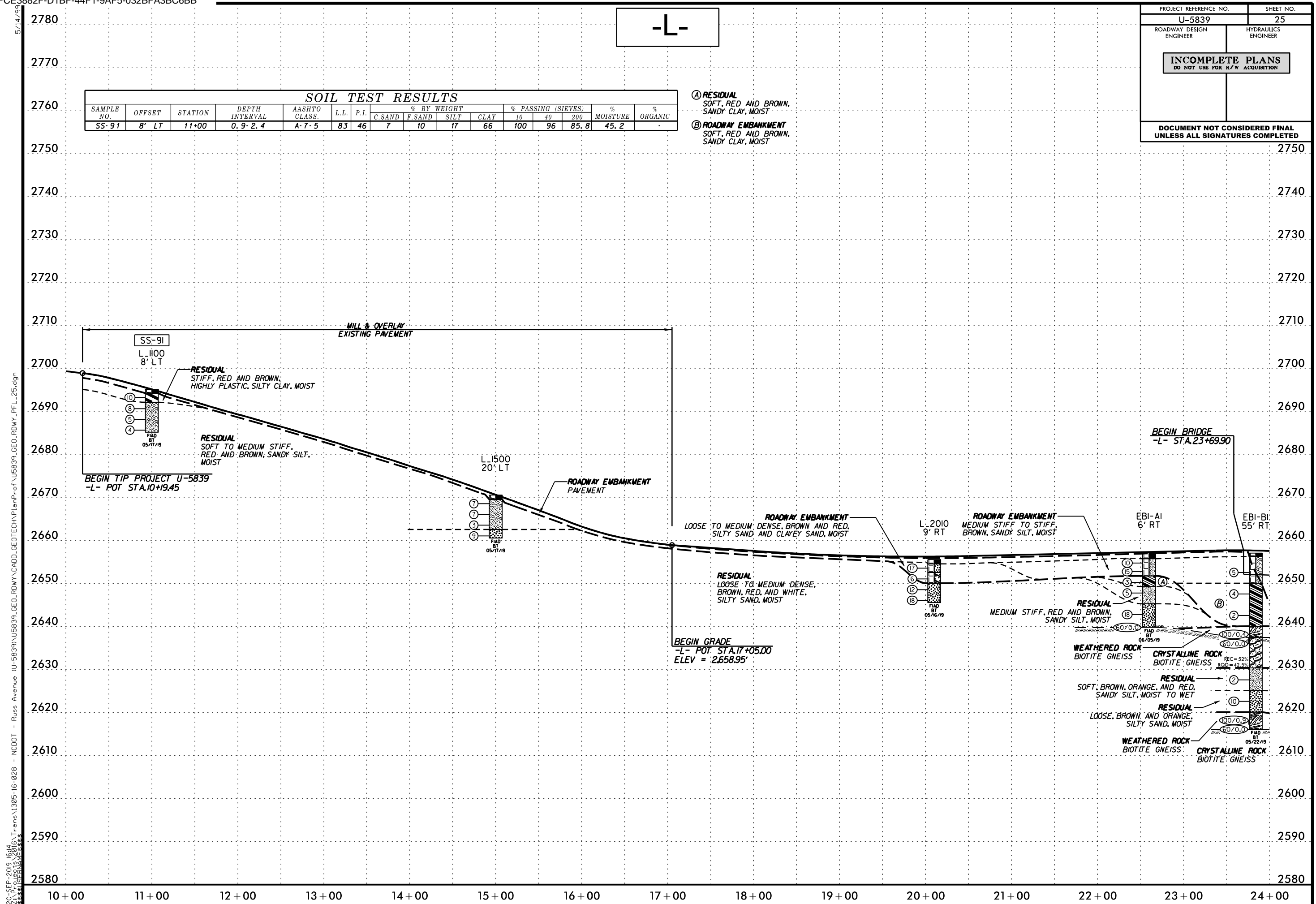
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 8/17/19

PROJECT REFERENCE NO.		SHEET NO.	
U-5839		25	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

-L-

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-91	8' LT	11+00	0.9-2.4	A-7-5	83	46	7	10	17	66	100	96	85.8	45.2	-

- Ⓐ RESIDUAL
SOFT, RED AND BROWN,
SANDY CLAY, MOIST
- Ⓑ ROADWAY EMBANKMENT
SOFT, RED AND BROWN,
SANDY CLAY, MOIST

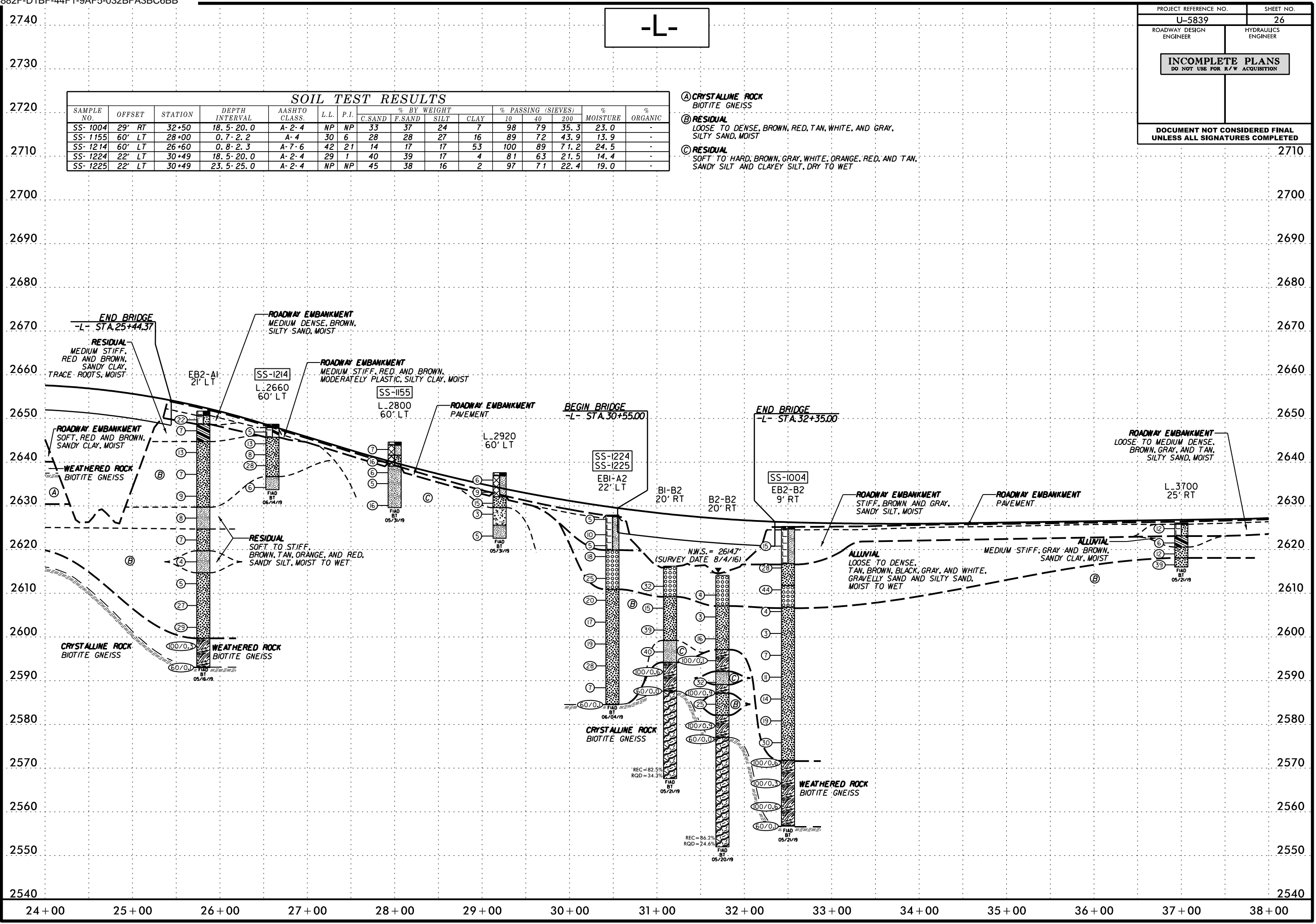


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 5/14/19

PROJECT REFERENCE NO. U-5839	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	

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-1004	29' RT	32+50	18.5-20.0	A-2-4	NP	NP	33	37	24	7	98	79	35.3	23.0	-
SS-1155	60' LT	28+00	0.7-2.2	A-4	30	6	28	28	27	16	89	72	43.9	13.9	-
SS-1214	60' LT	26+60	0.8-2.3	A-7-6	42	21	14	17	17	53	100	89	71.2	24.5	-
SS-1224	22' LT	30+49	18.5-20.0	A-2-4	29	1	40	39	17	4	81	63	21.5	14.4	-
SS-1225	22' LT	30+49	23.5-25.0	A-2-4	NP	NP	45	38	16	2	97	71	22.4	19.0	-

- Ⓐ **CRYSTALLINE ROCK**
BIOTITE GNEISS
- Ⓑ **RESIDUAL**
LOOSE TO DENSE, BROWN, RED, TAN, WHITE, AND GRAY, SILTY SAND, MOIST
- Ⓒ **RESIDUAL**
SOFT TO HARD, BROWN, GRAY, WHITE, ORANGE, RED, AND TAN, SANDY SILT AND CLAYEY SILT, DRY TO WET

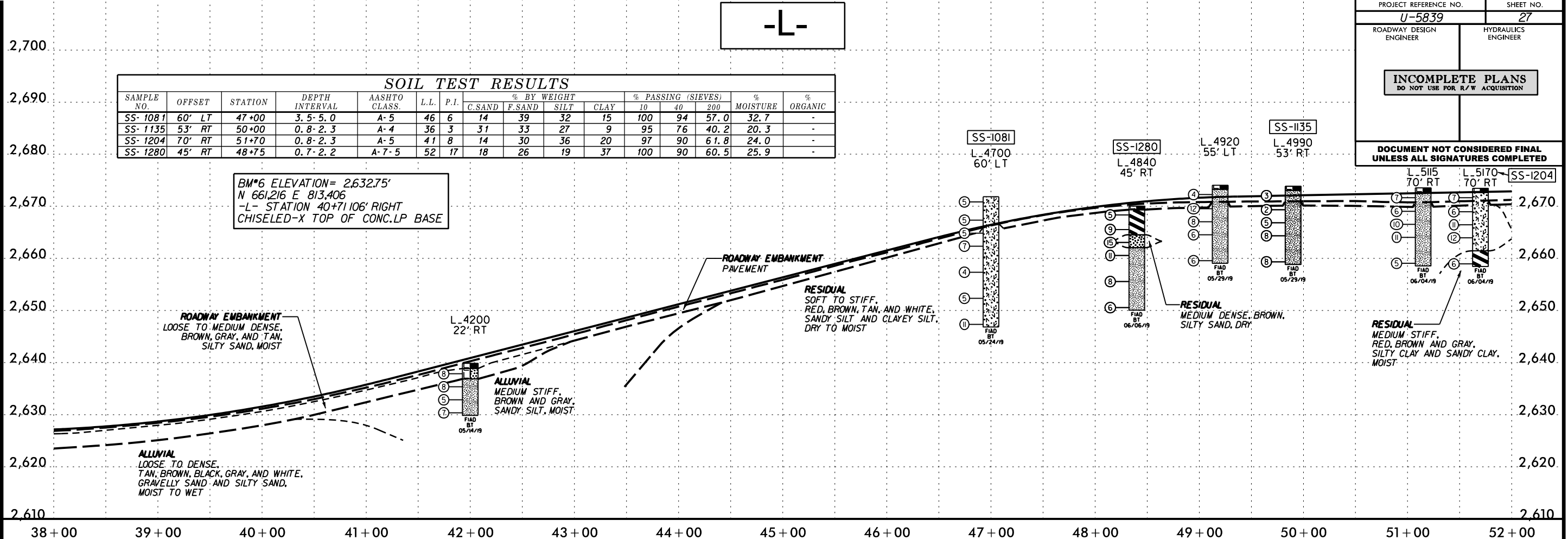


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 5:14/29
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 5:14/29
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 NCDDOT - Russ Avenue (U-5839)\U5839_GEO_RDWY\CADD_GEO\TECH\Plan\Prof\U5839_GEO_RDWY_PFL_26.dgn

PROJECT REFERENCE NO. U-5839		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		

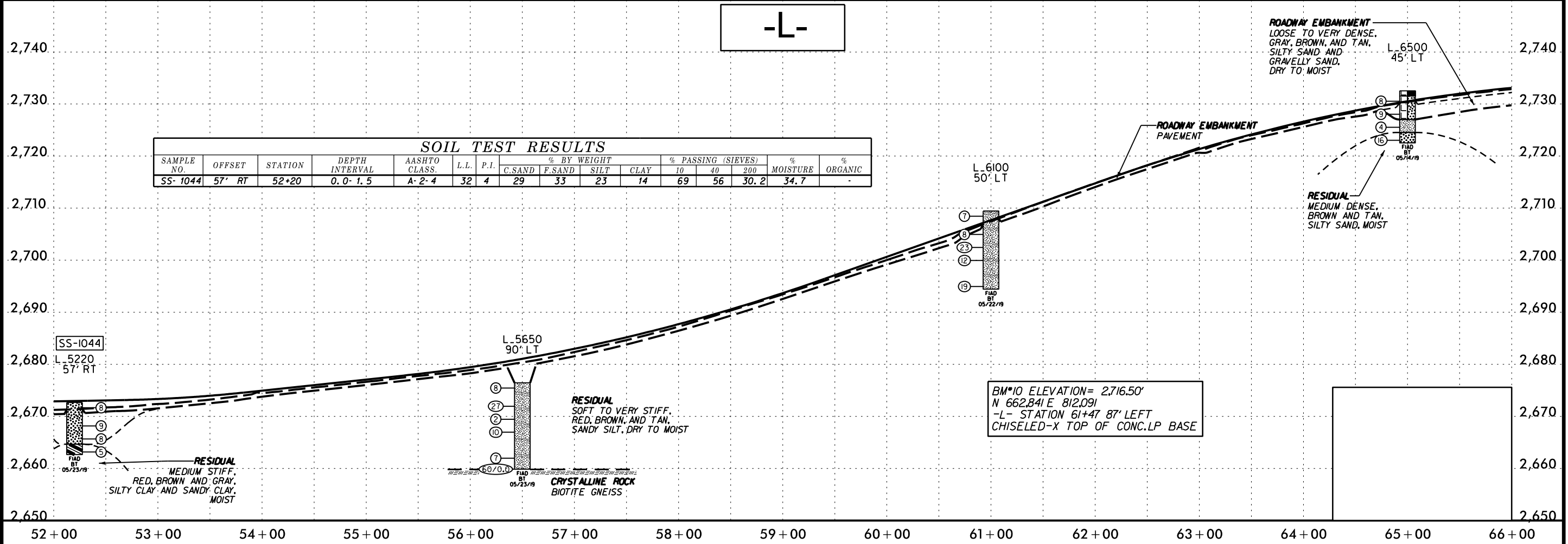
SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-1081	60' LT	47+00	3.5-5.0	A-5	46	6	14	39	32	15	100	94	57.0	32.7	-
SS-1135	53' RT	50+00	0.8-2.3	A-4	36	3	31	33	27	9	95	76	40.2	20.3	-
SS-1204	70' RT	51+70	0.8-2.3	A-5	41	8	14	30	36	20	97	90	61.8	24.0	-
SS-1280	45' RT	48+75	0.7-2.2	A-7-5	52	17	18	26	19	37	100	90	60.5	25.9	-

BM#6 ELEVATION= 2,632.75'
N 661.216 E 813.406
-L- STATION 40+71.06' RIGHT
CHISELED-X TOP OF CONC.LP BASE



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-1044	57' RT	52+20	0.0-1.5	A-2-4	32	4	29	33	23	14	69	56	30.2	34.7	-

BM#10 ELEVATION= 2,716.50'
N 662.841 E 812.091
-L- STATION 61+47 87' LEFT
CHISELED-X TOP OF CONC.LP BASE



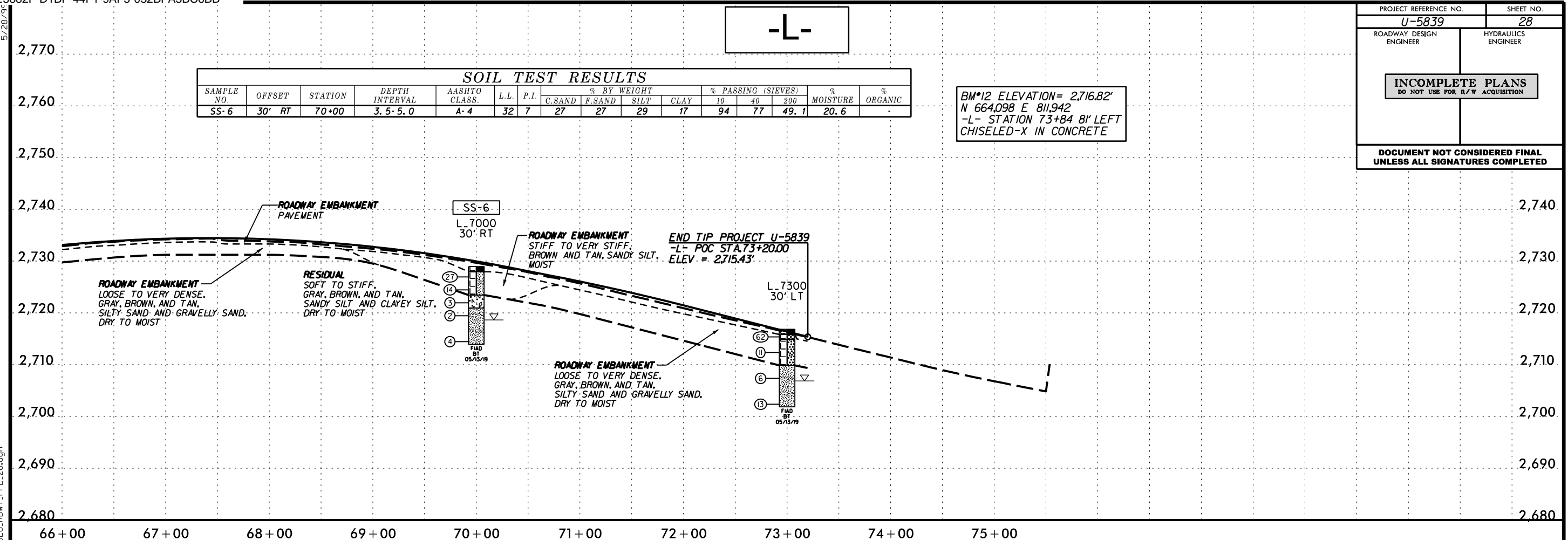
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PROJECT REFERENCE NO.		SHEET NO.	
U-5839		28	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER		
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

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-6	30' RT	70+00	3.5-5.0	A-4	32	7	27	27	29	17	94	77	49.1	20.6	-

BM#12 ELEVATION= 2716.82'
N 664.098 E 811.942
-L- STATION 73+84 8' LEFT
CHISELED-X IN CONCRETE



-Y2-

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-83	12' LT	11+00	0.8-2.3	A-7-6	42	22	14	14	25	47	96	88	71.8	22.5	-

BEGIN CONSTRUCTION
-Y2- STA.10+12.04 =
-L- STA.15+81.18 (11.00' RT.)

END CONSTRUCTION
-Y2- STA.11+50.00

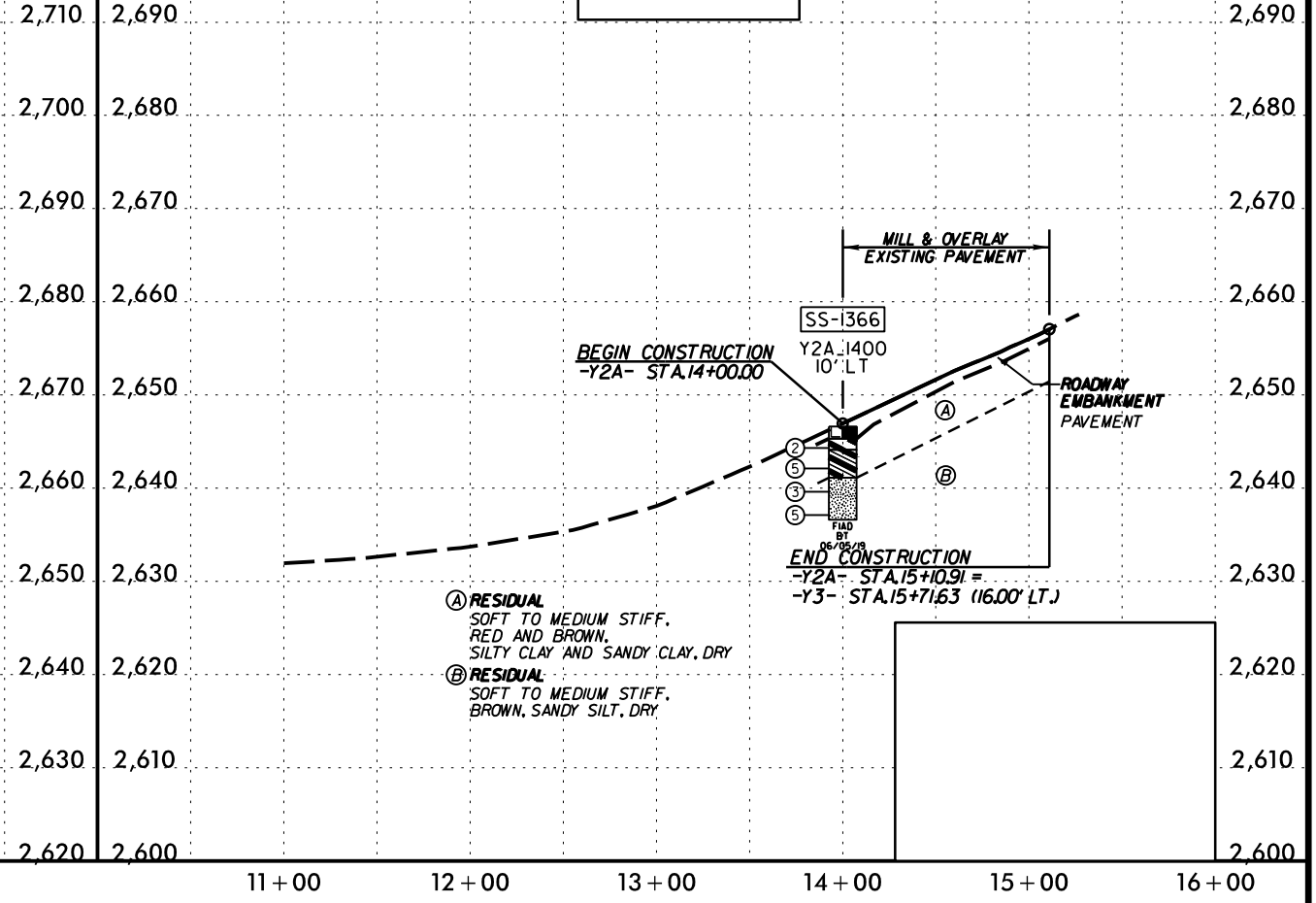
MILL & OVERLAY
EXISTING PAVEMENT

SS-83
Y2_1100
8' LT

- (A) RESIDUAL MEDIUM STIFF TO STIFF, BROWN AND RED, MODERATELY PLASTIC, SILTY CLAY, MOIST.
- (B) RESIDUAL STIFF, RED AND BROWN, SANDY SILT, MOIST
- (C) RESIDUAL LOOSE, RED AND BROWN, SILTY SAND, MOIST

BM#13 ELEVATION= 2656.65'
N 658.796 E 814.715
-Y2- STATION 16+81.15' LEFT
RR SPIKE IN BASE OF 24" OAK

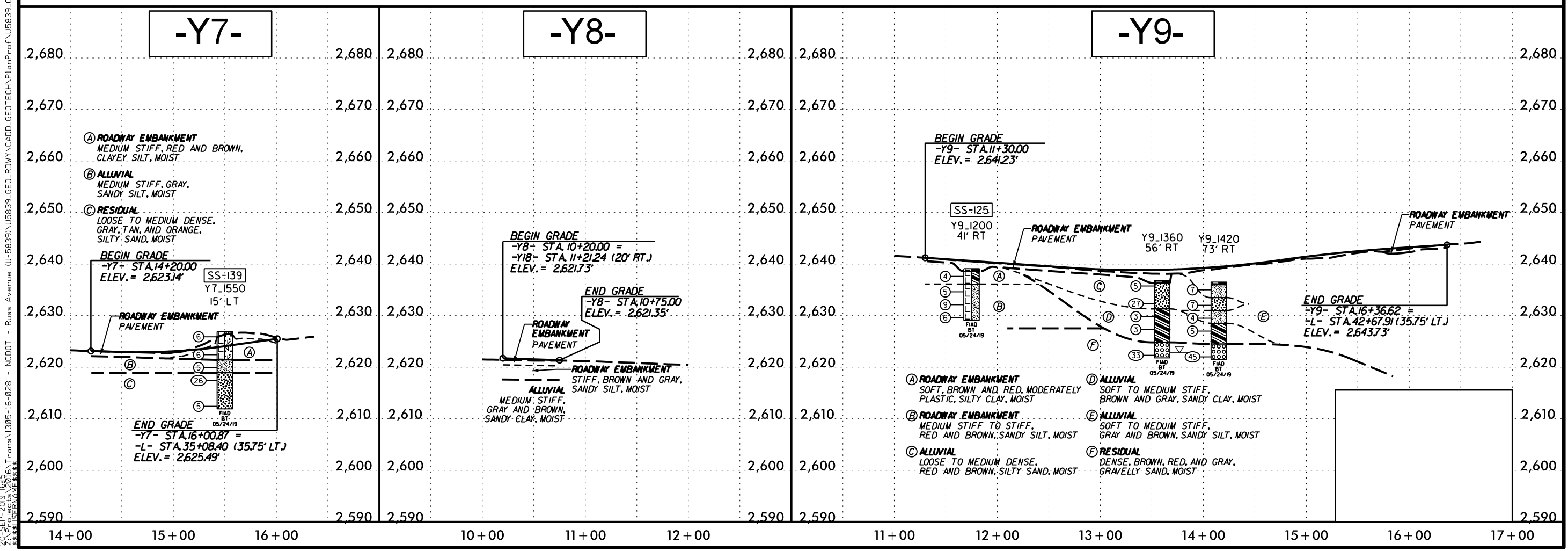
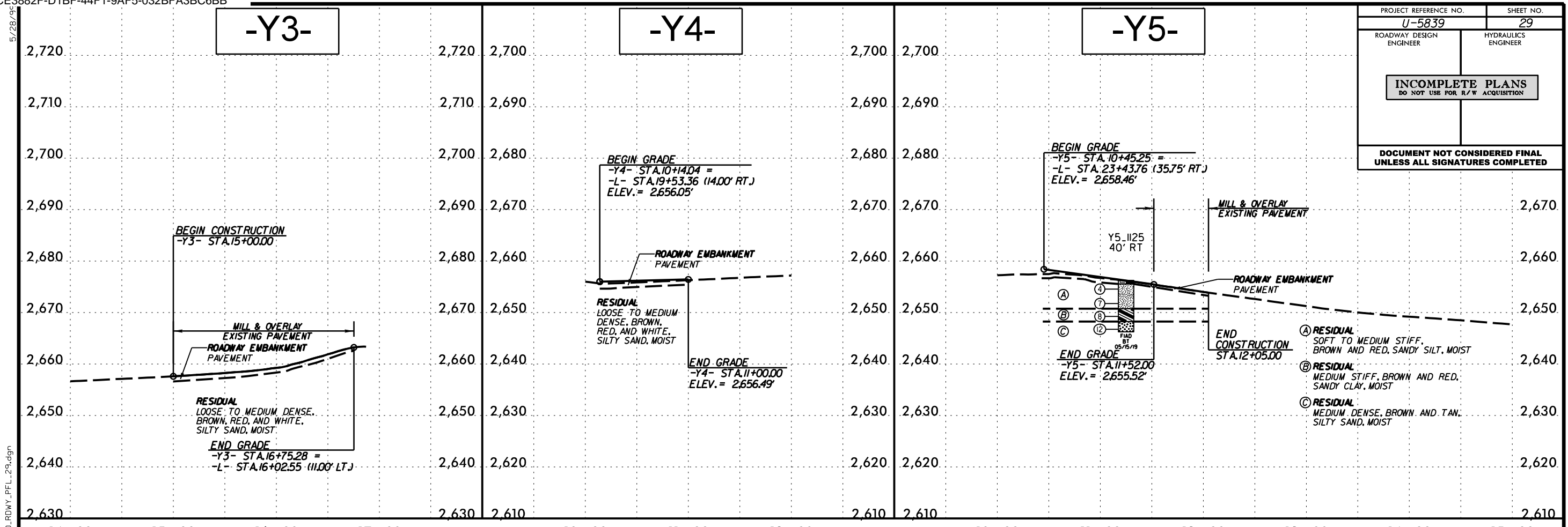
-Y2A-



- (A) RESIDUAL SOFT TO MEDIUM STIFF, RED AND BROWN, SILTY CLAY AND SANDY CLAY, DRY
- (B) RESIDUAL SOFT TO MEDIUM STIFF, BROWN, SANDY SILT, DRY

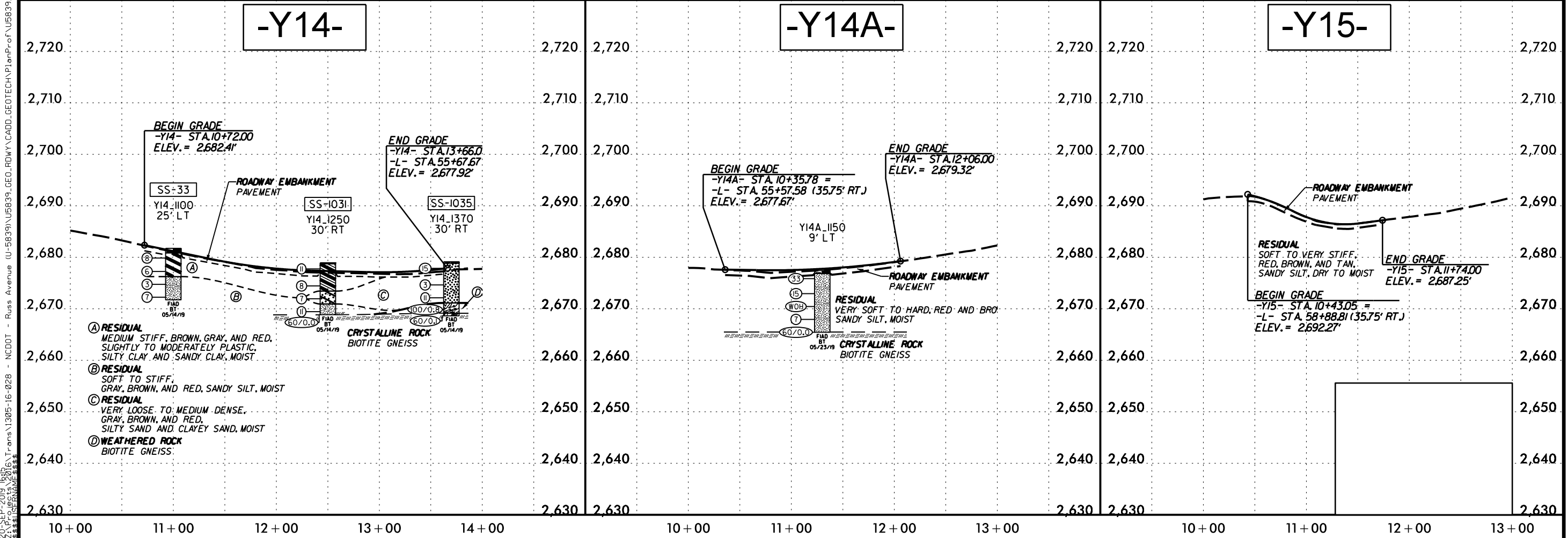
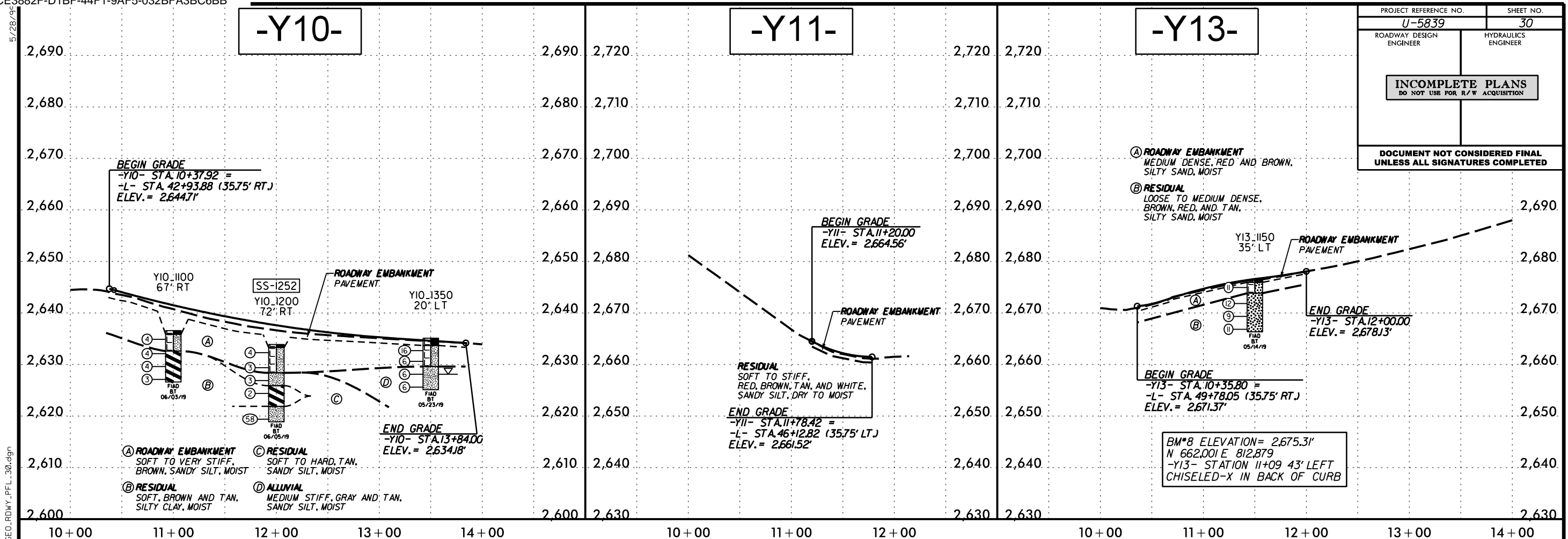
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PROJECT REFERENCE NO. U-5839	SHEET NO. 29
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



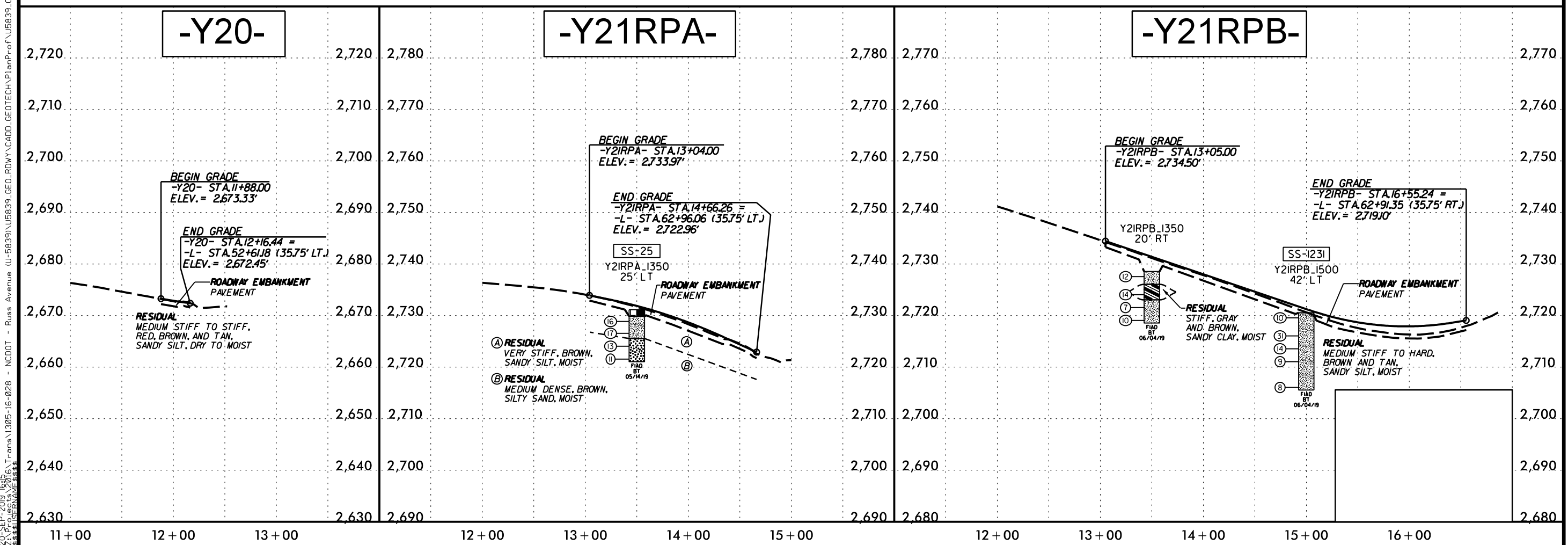
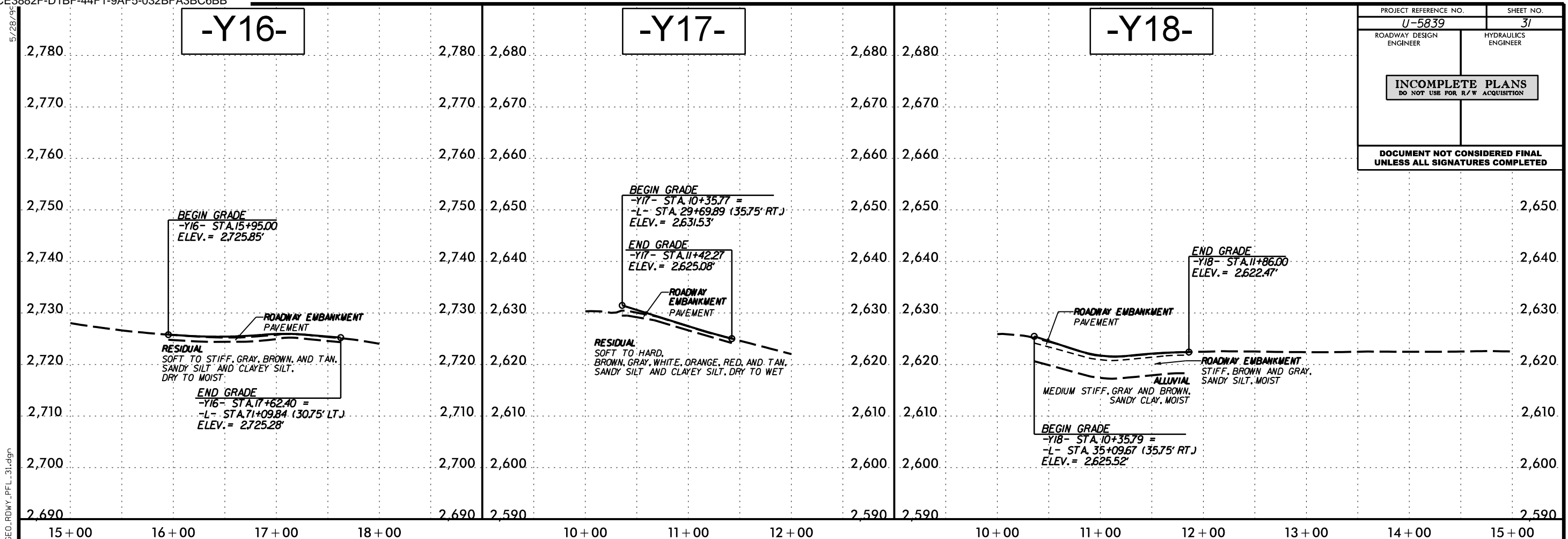
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PROJECT REFERENCE NO. U-5839	SHEET NO. 30
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



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 5/28/2019

PROJECT REFERENCE NO. U-5839	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	

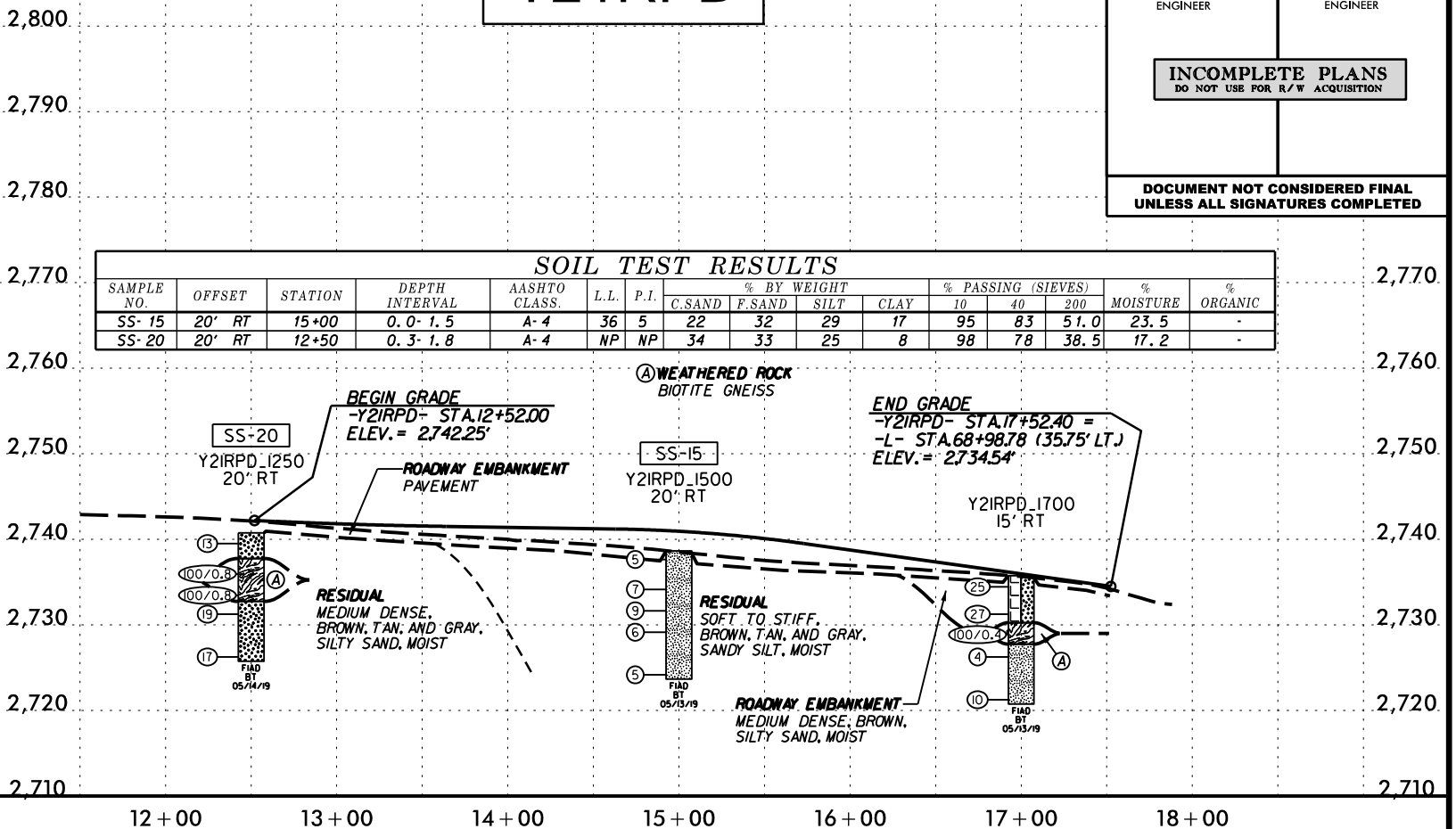
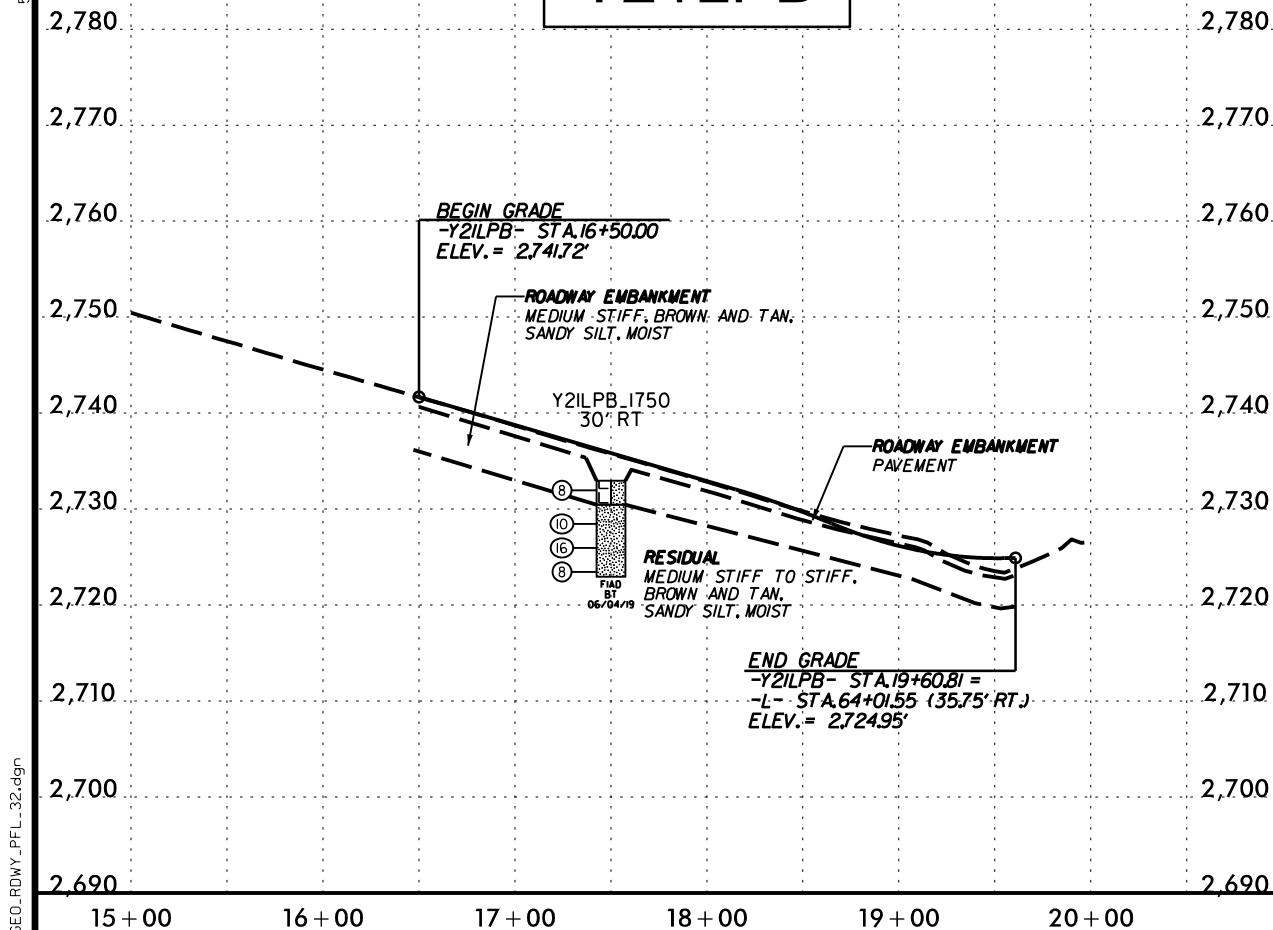


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PROJECT REFERENCE NO. U-5839	SHEET NO. 32
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

-Y21LPB-

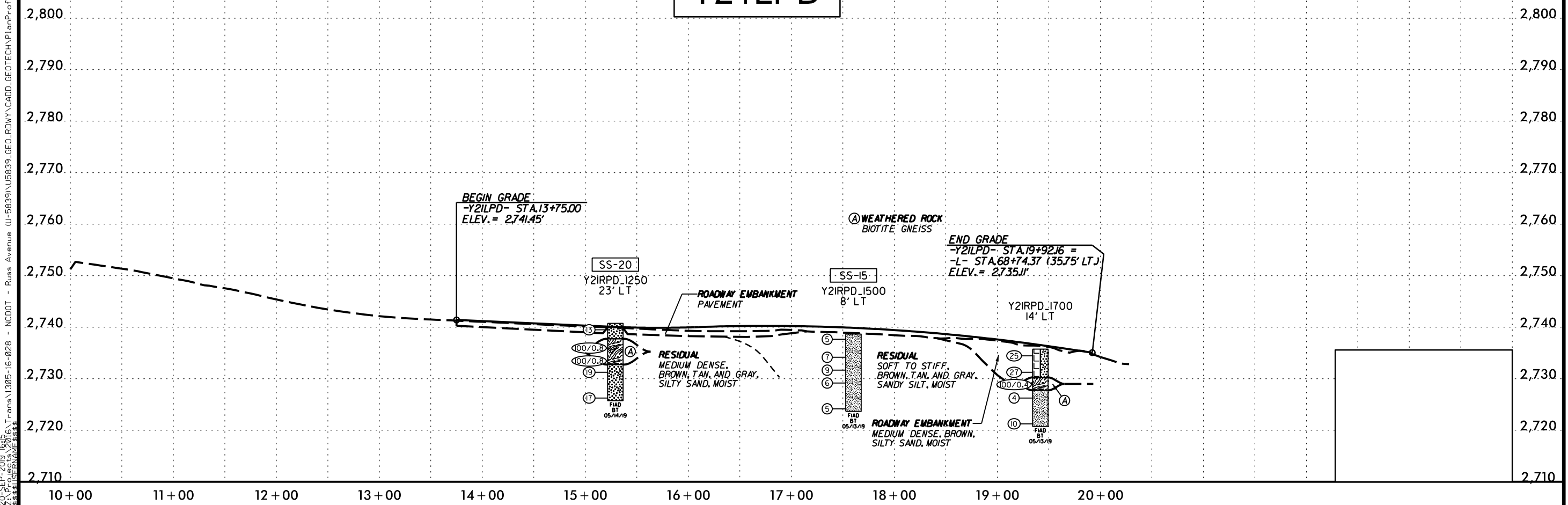
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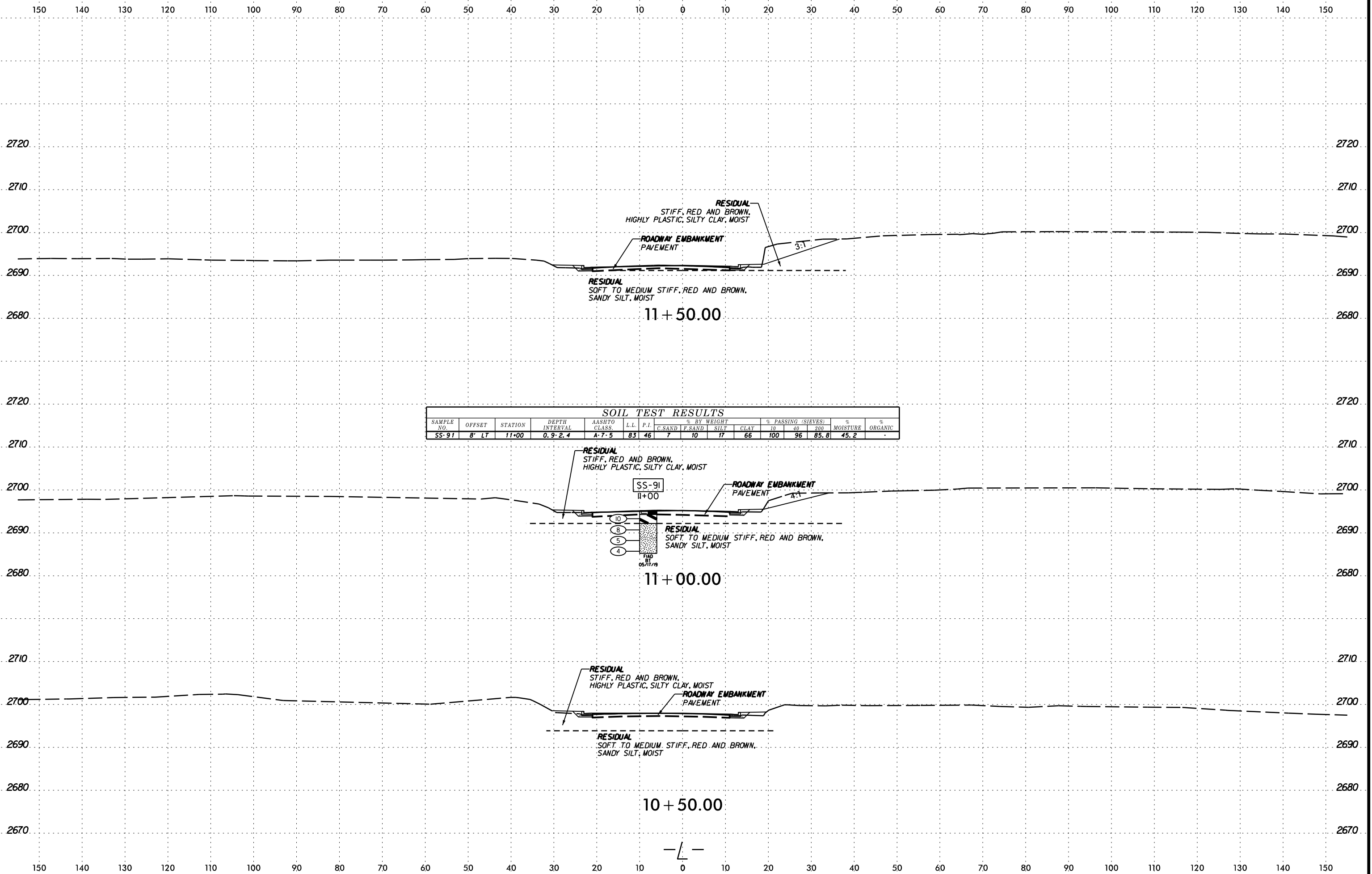
SOIL TEST RESULTS

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-15	20' RT	15+00	0.0-1.5	A-4	36	5	22	32	29	17	95	83	51.0	23.5	-
SS-20	20' RT	12+50	0.3-1.8	A-4	NP	NP	34	33	25	8	98	78	38.5	17.2	-

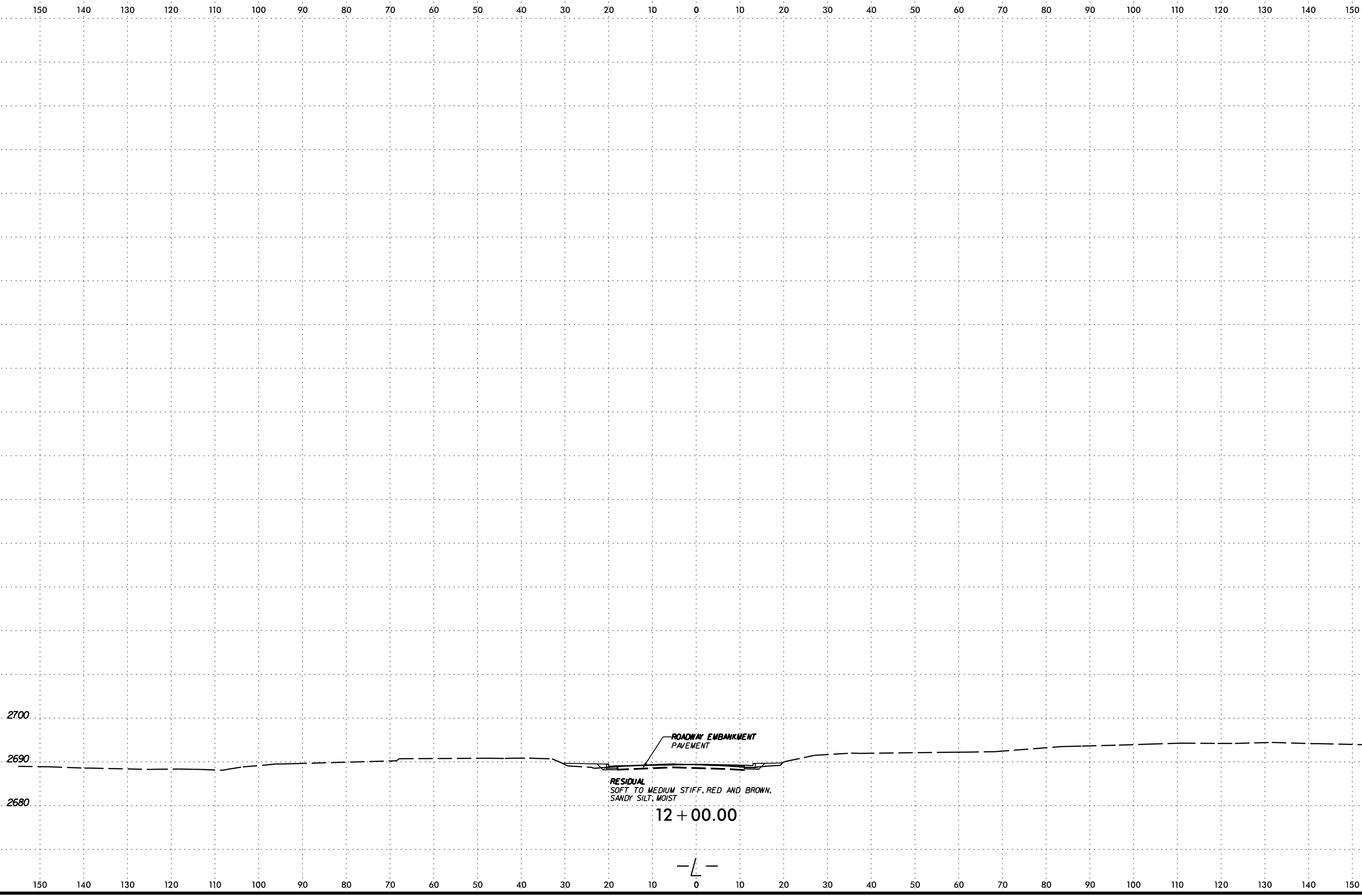
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 5/28/2019



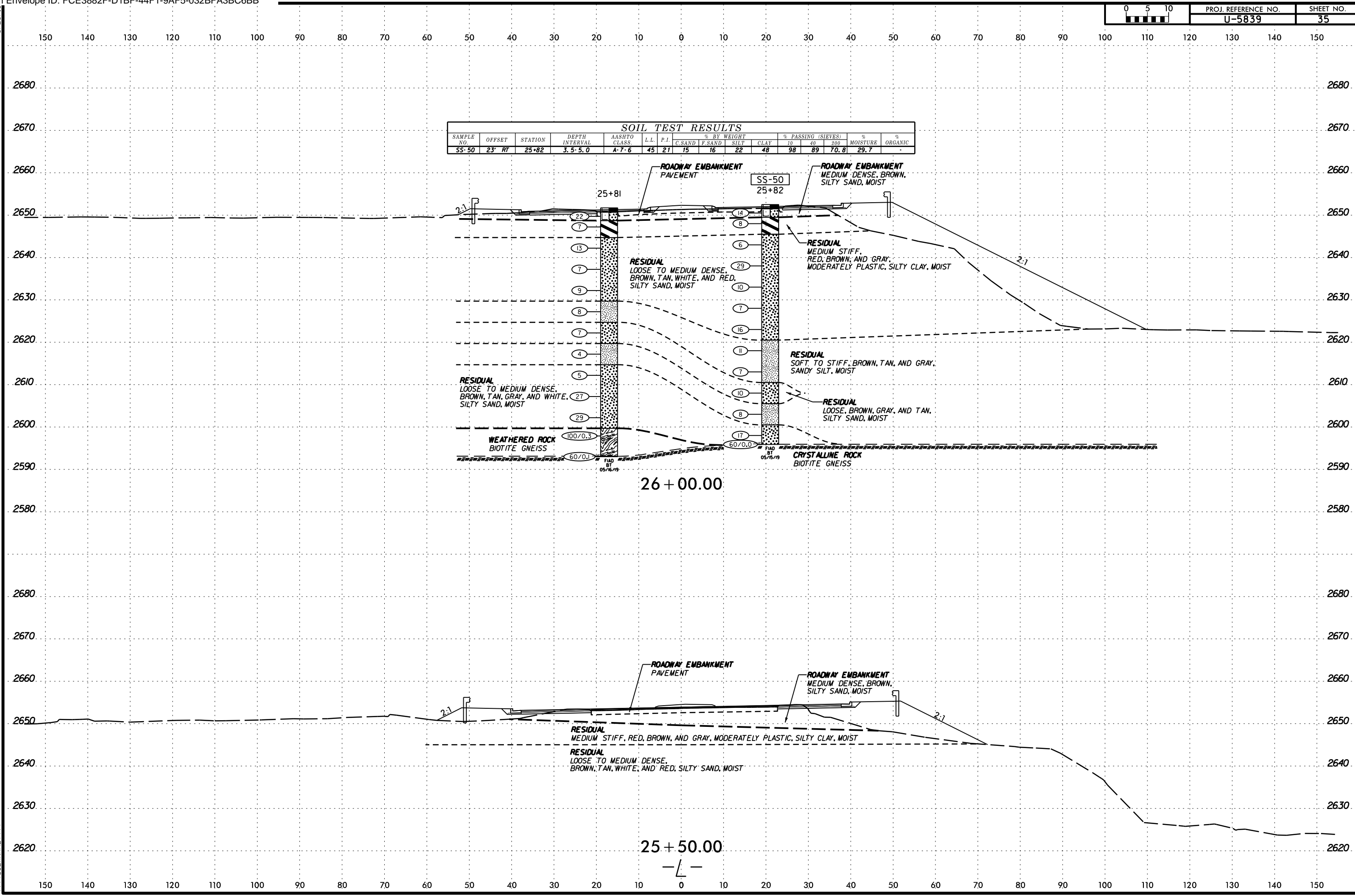
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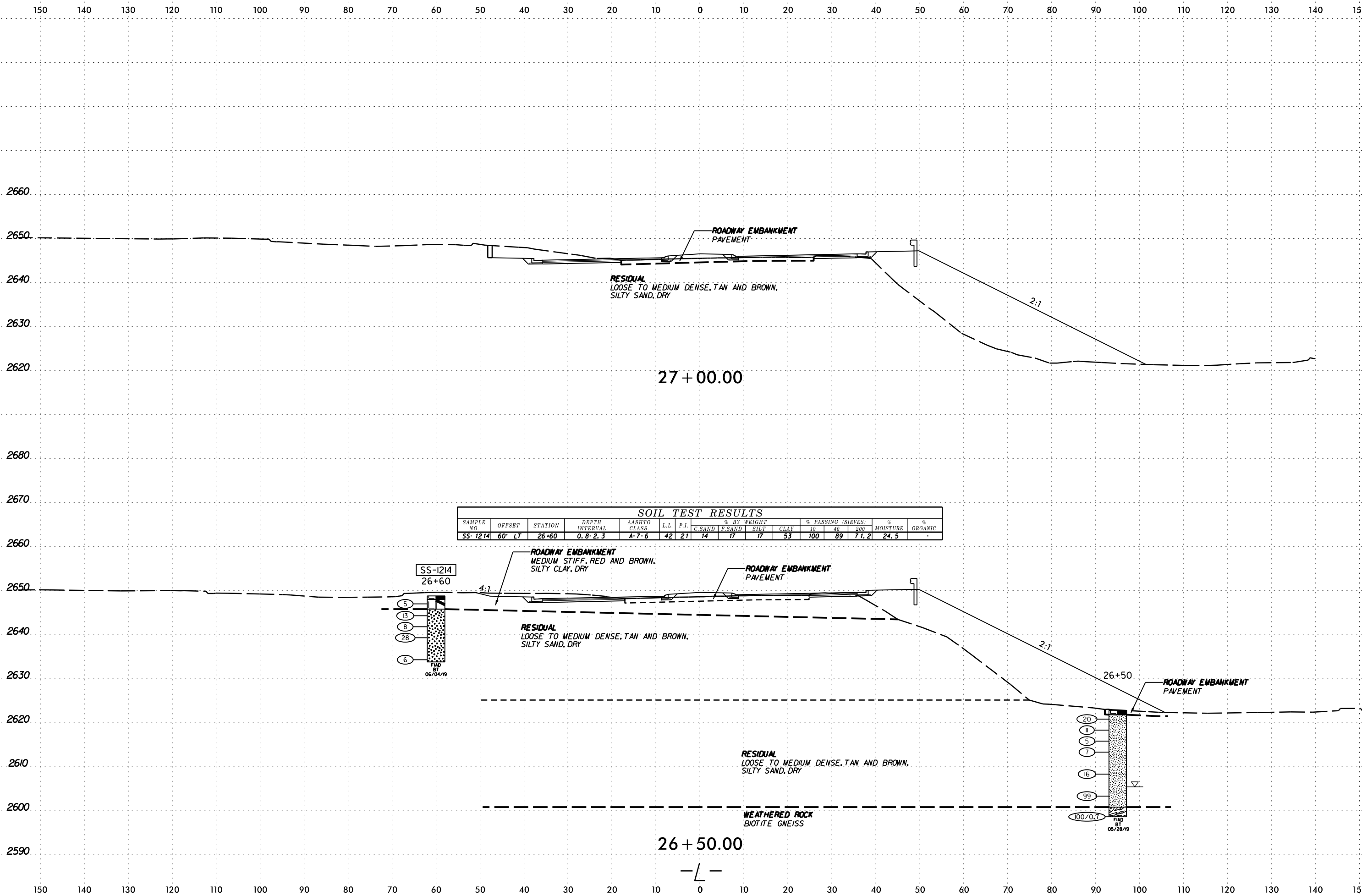
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6/23/16

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			MOISTURE	ORGANIC
SS-50	23' RT	25+82	3.5-5.0	A-7-6	45	21	C.SAND	F.SAND	SILT	CLAY	10	40	200		
							15	16	22	48	98	89	70.8	29.7	-

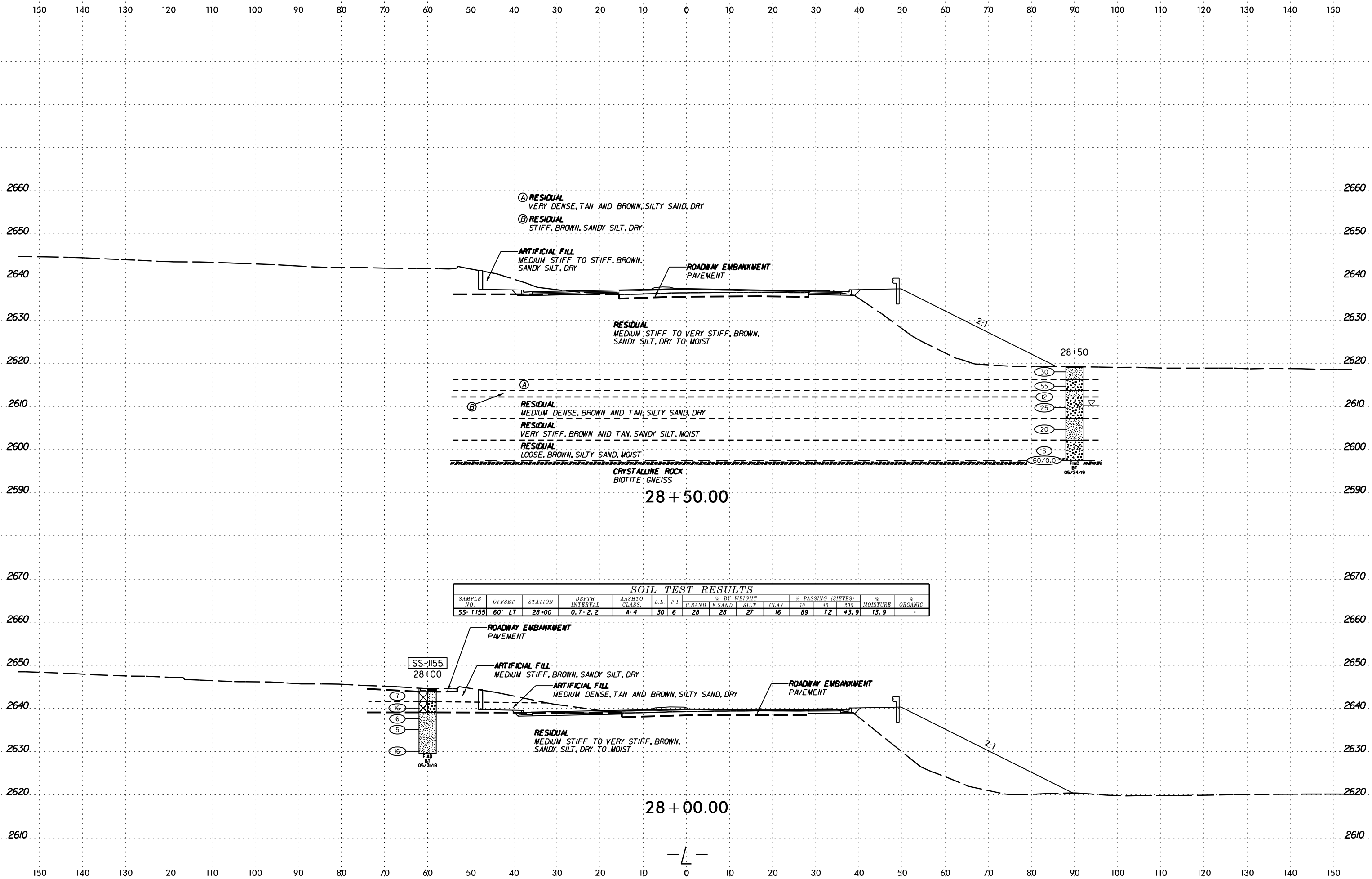


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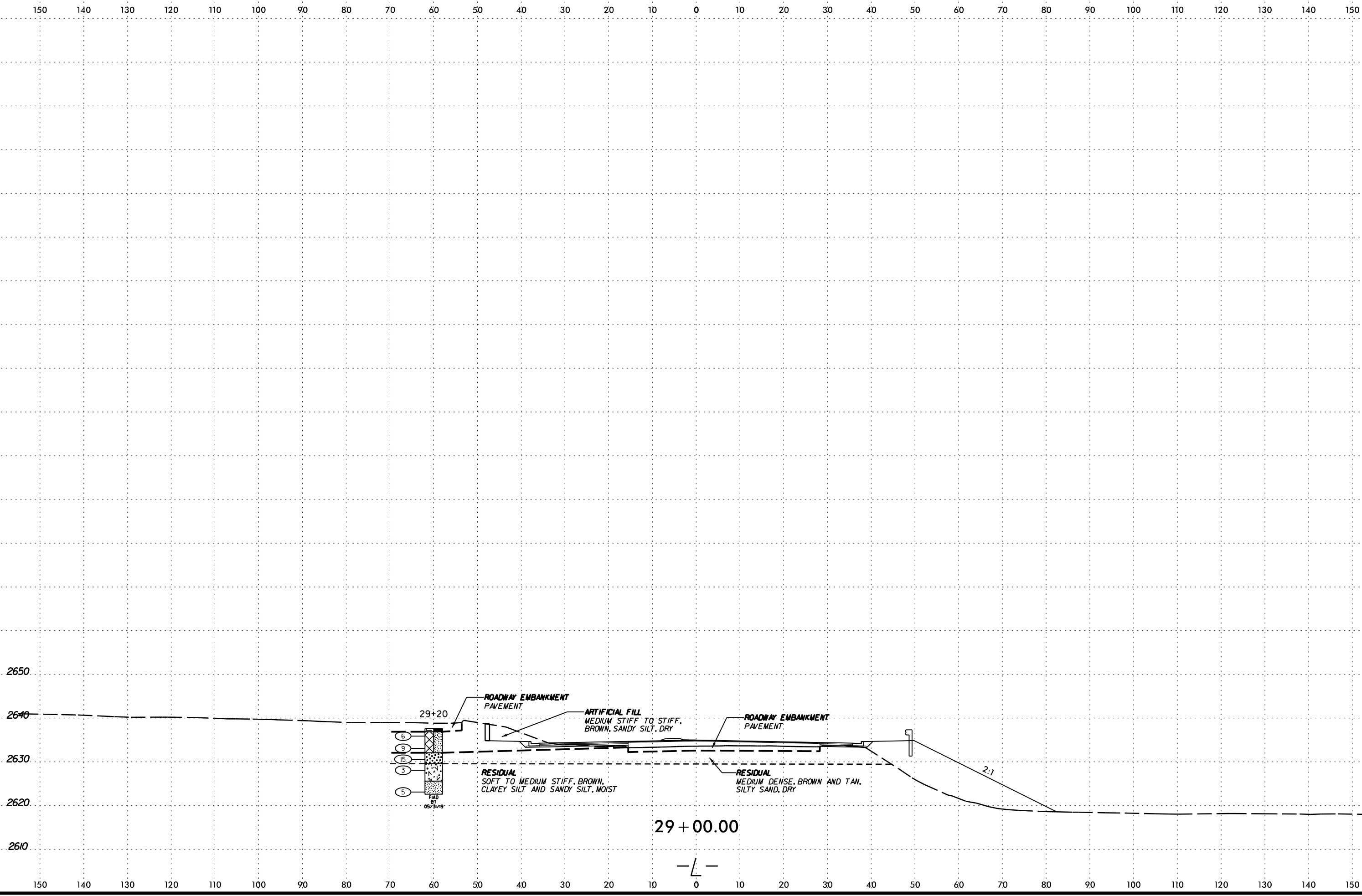
6/23/16



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-1155	60' LT	28+00	0.7'-2.2'	A-4	30	6	28	28	27	16	89	72	43.9	13.9	-

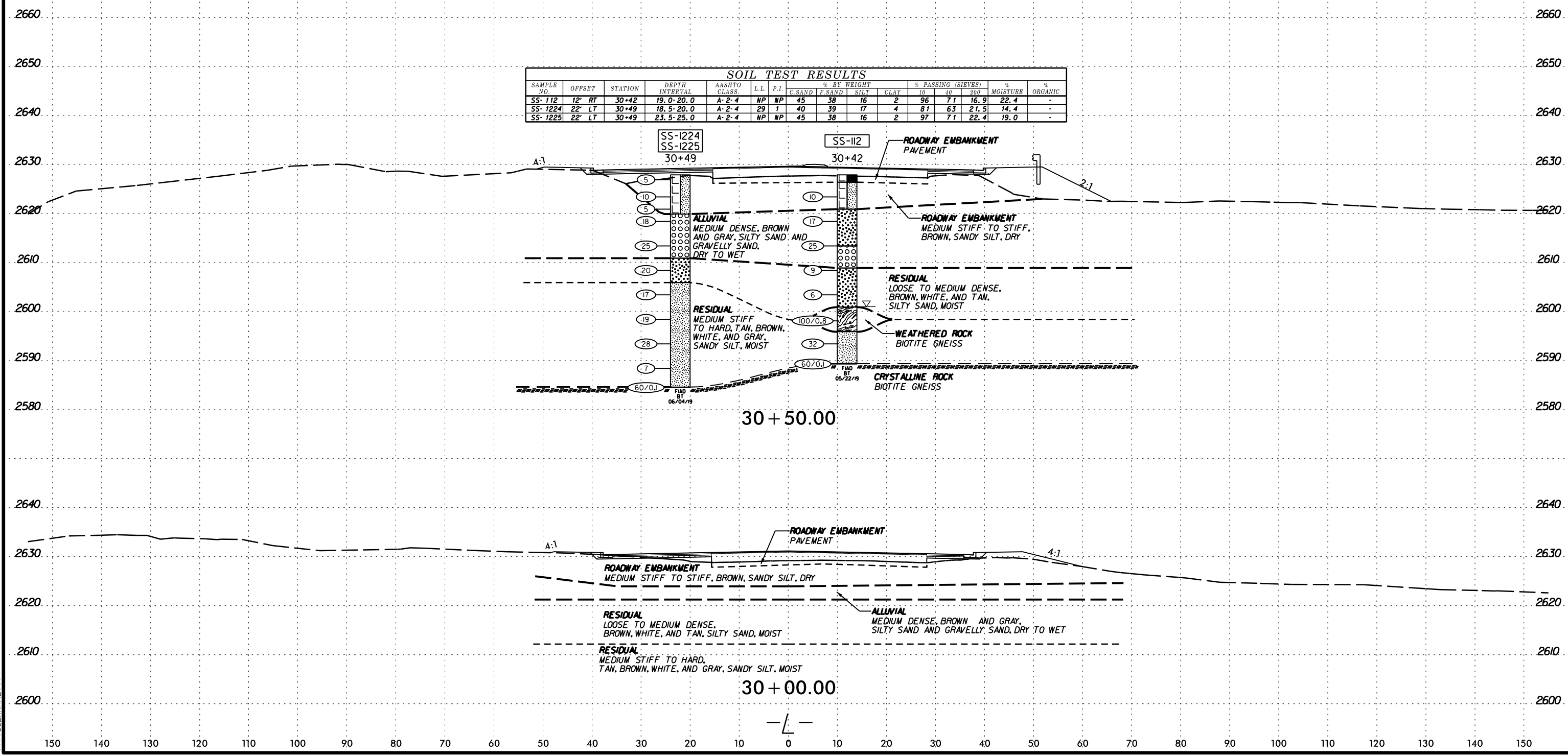
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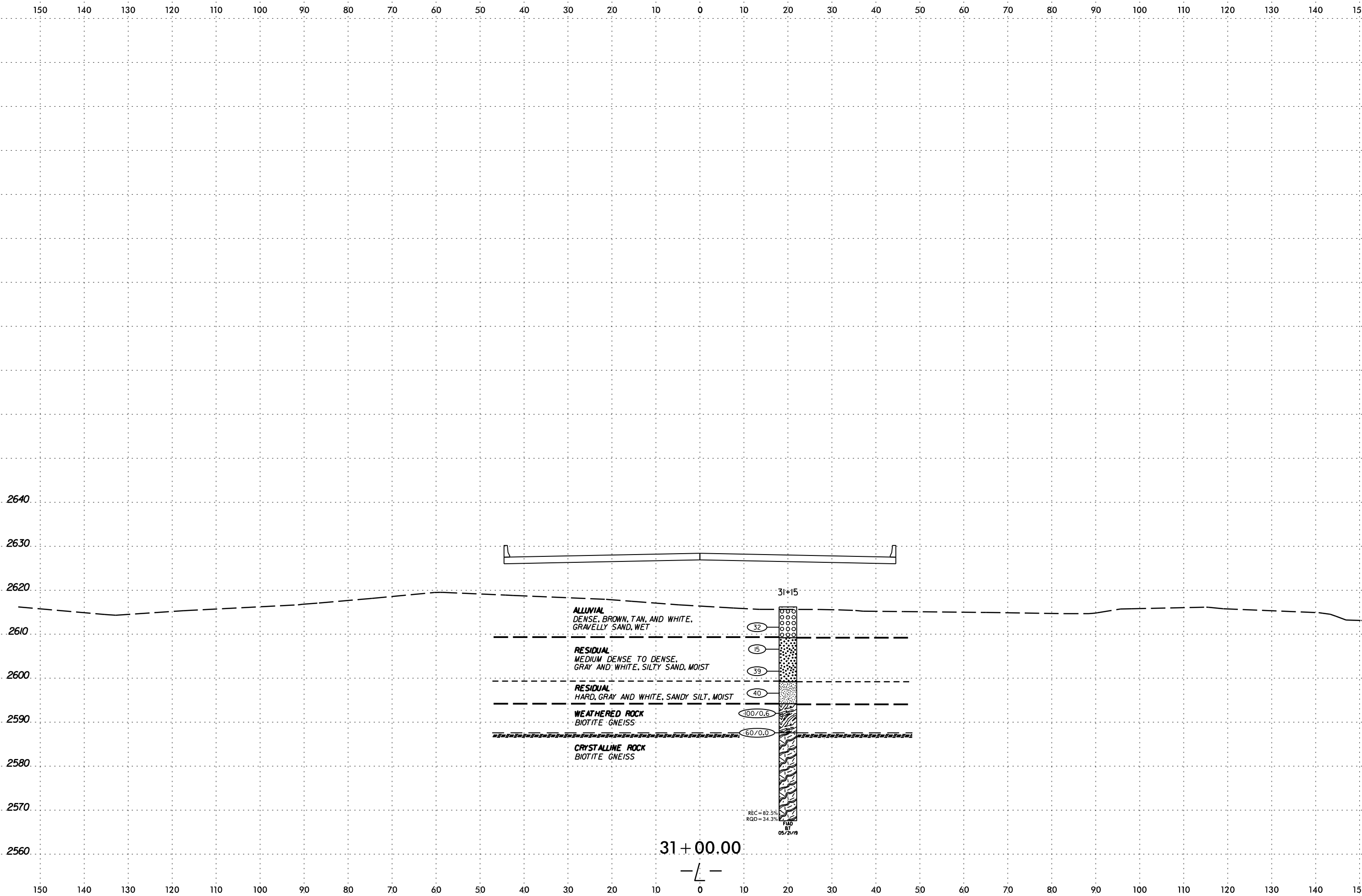
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SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-112	12' RT	30+42	19.0-20.0	A-2-4	NP	NP	45	38	16	2	96	71	16.9	22.4	-
SS-1224	22' LT	30+49	18.5-20.0	A-2-4	29	1	40	39	17	4	81	63	21.5	14.4	-
SS-1225	22' LT	30+49	23.5-25.0	A-2-4	NP	NP	45	38	16	2	97	71	22.4	19.0	-



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31 + 00.00

31+15

32

15

39

40

100/0.6

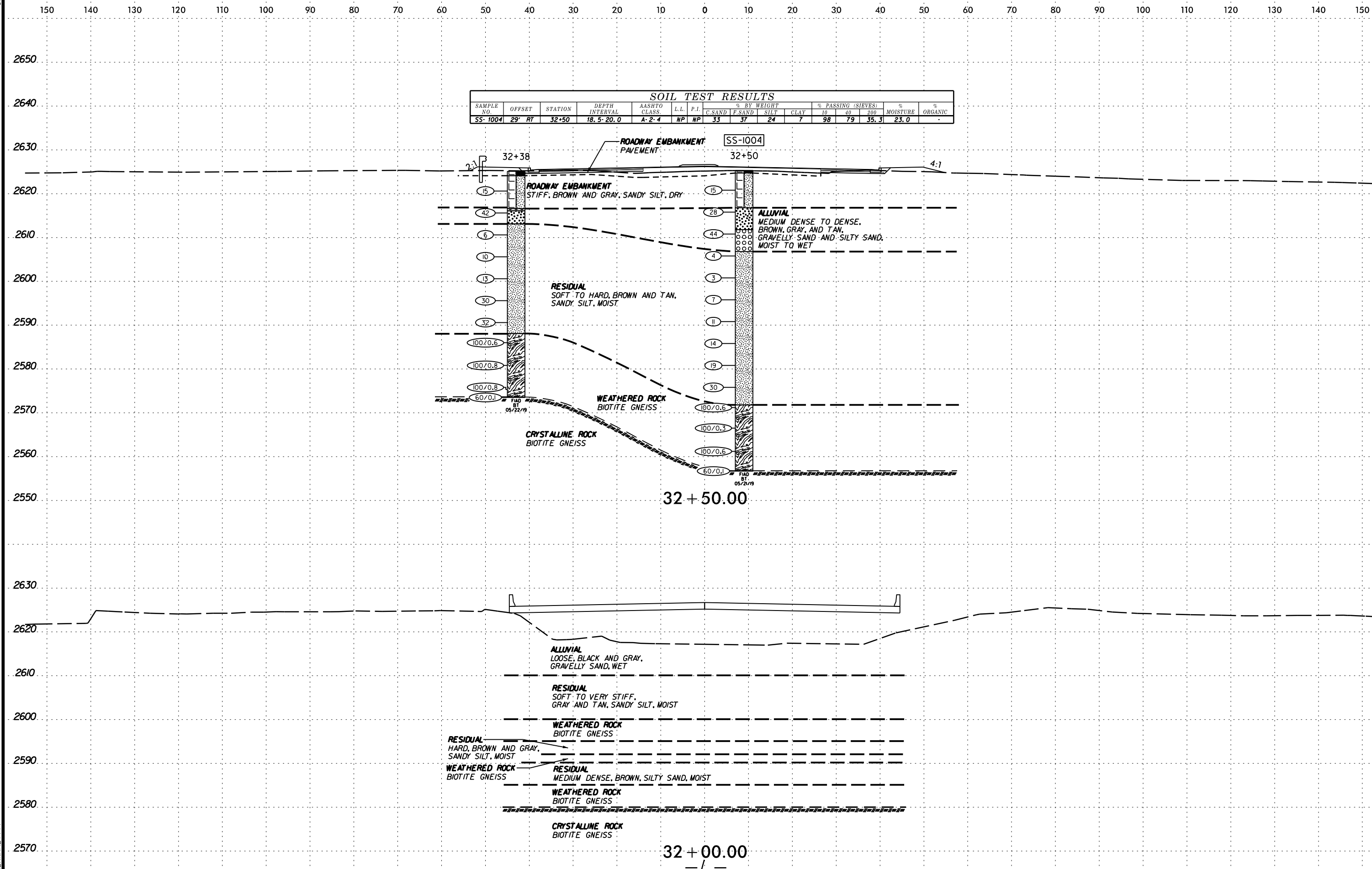
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RQD = 34.3%
FWD BY
05/21/19

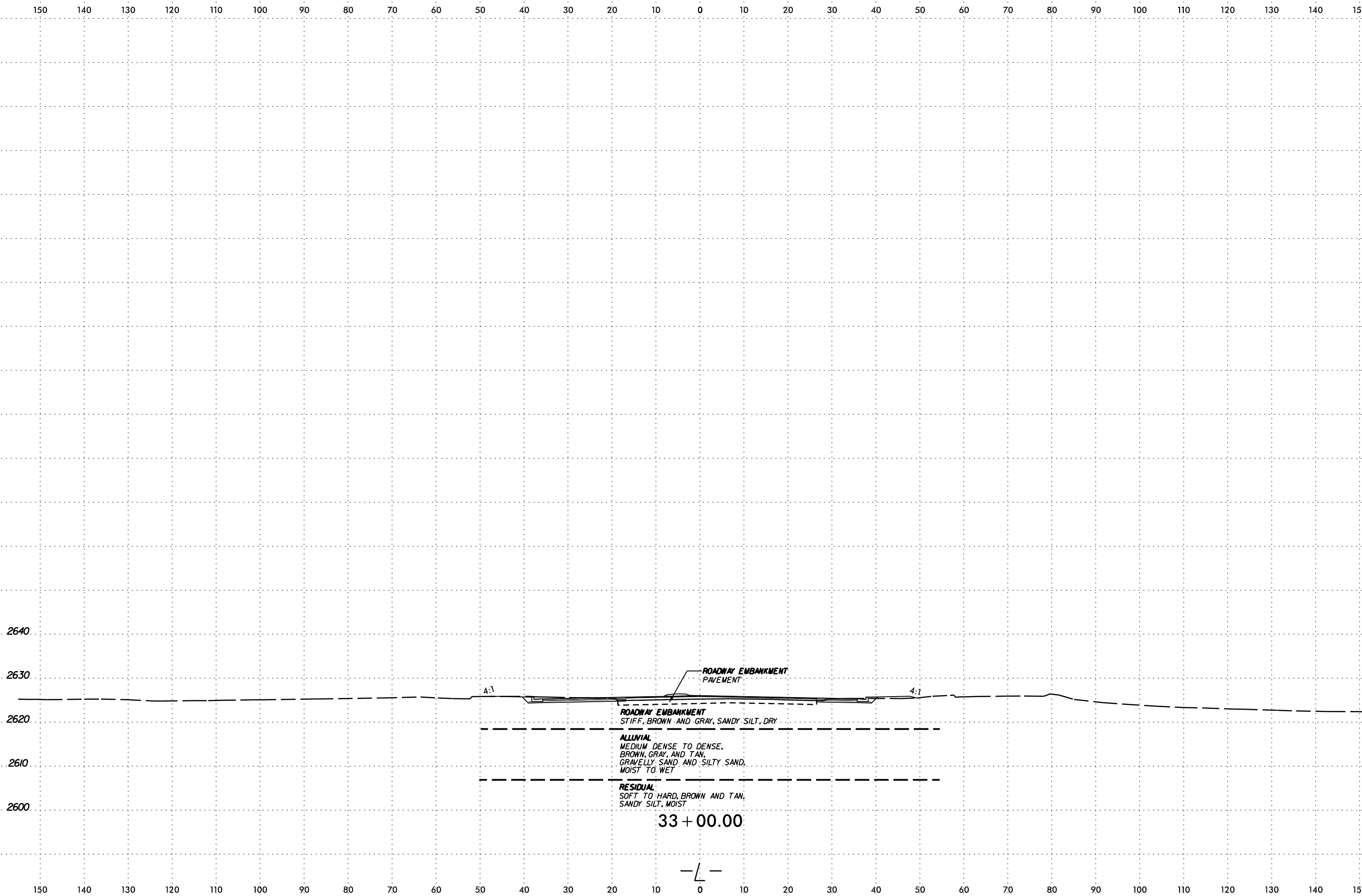
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6/23/16

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		
SS-1004	29' RT	32+50	18.5-20.0	A-2-4	NP	NP	33	37	24	7	98	79	35.3	23.0



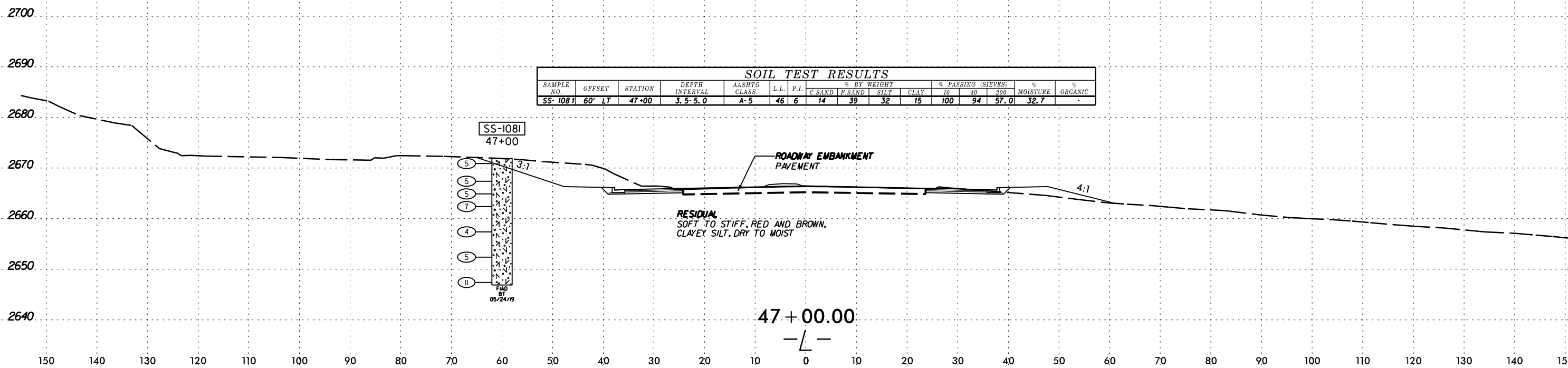
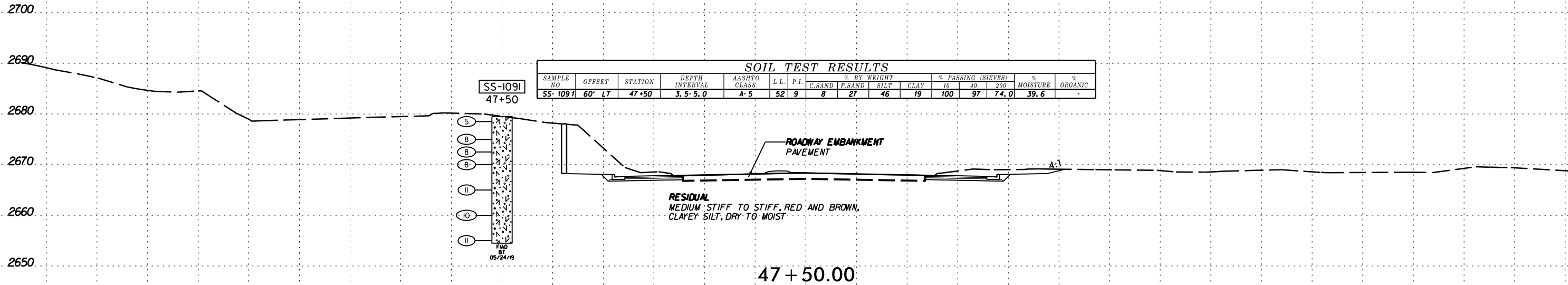
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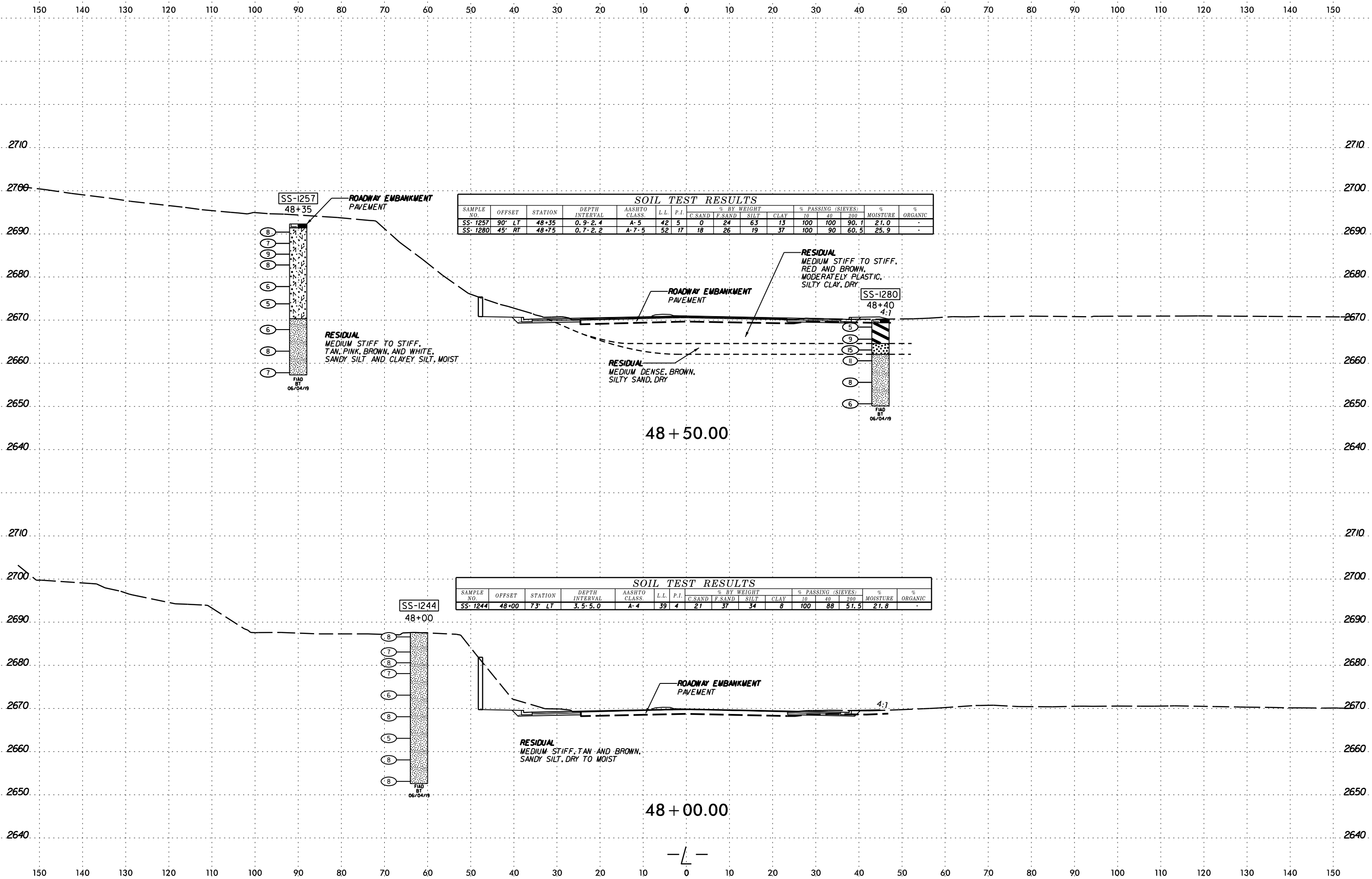
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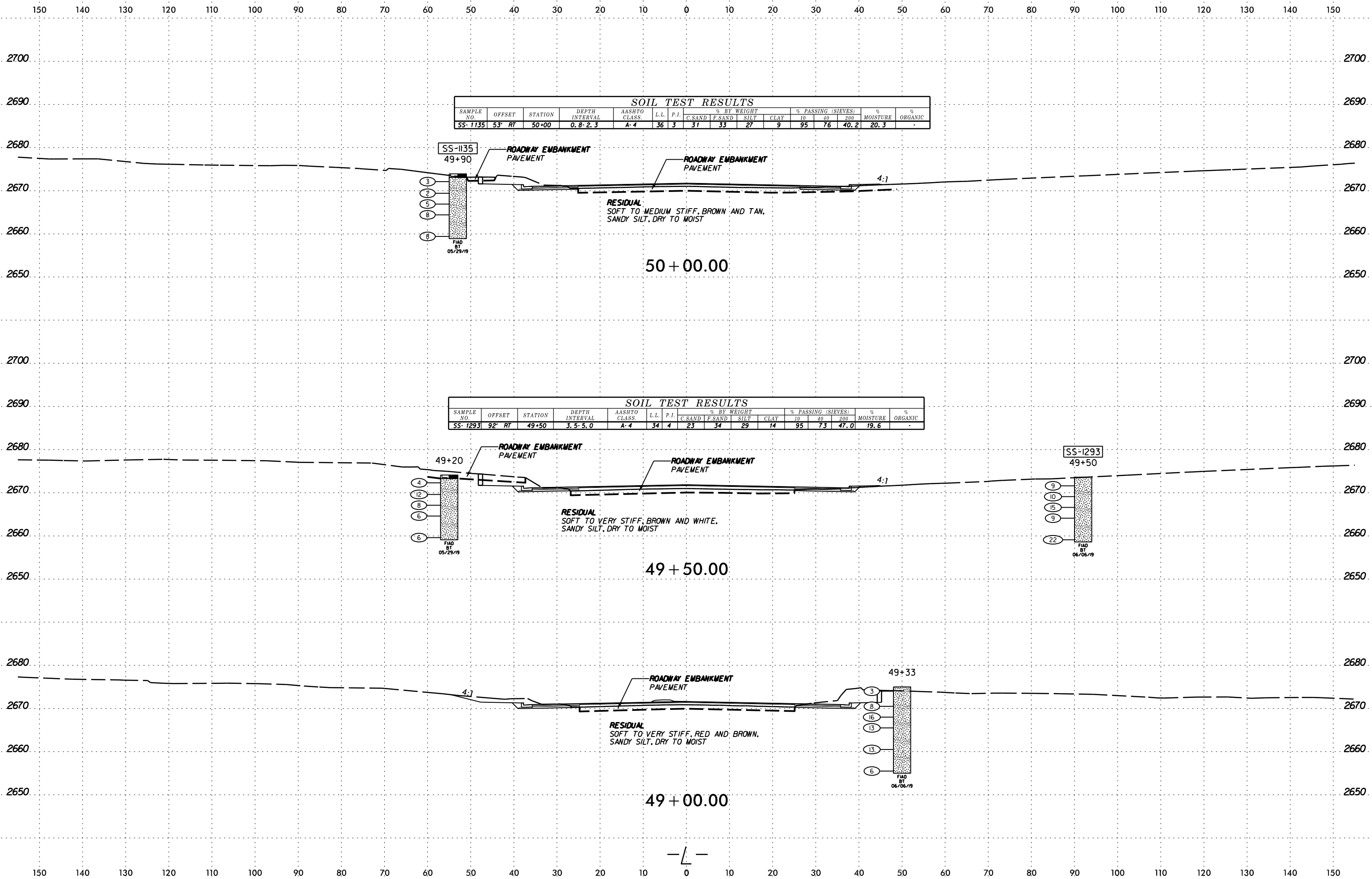
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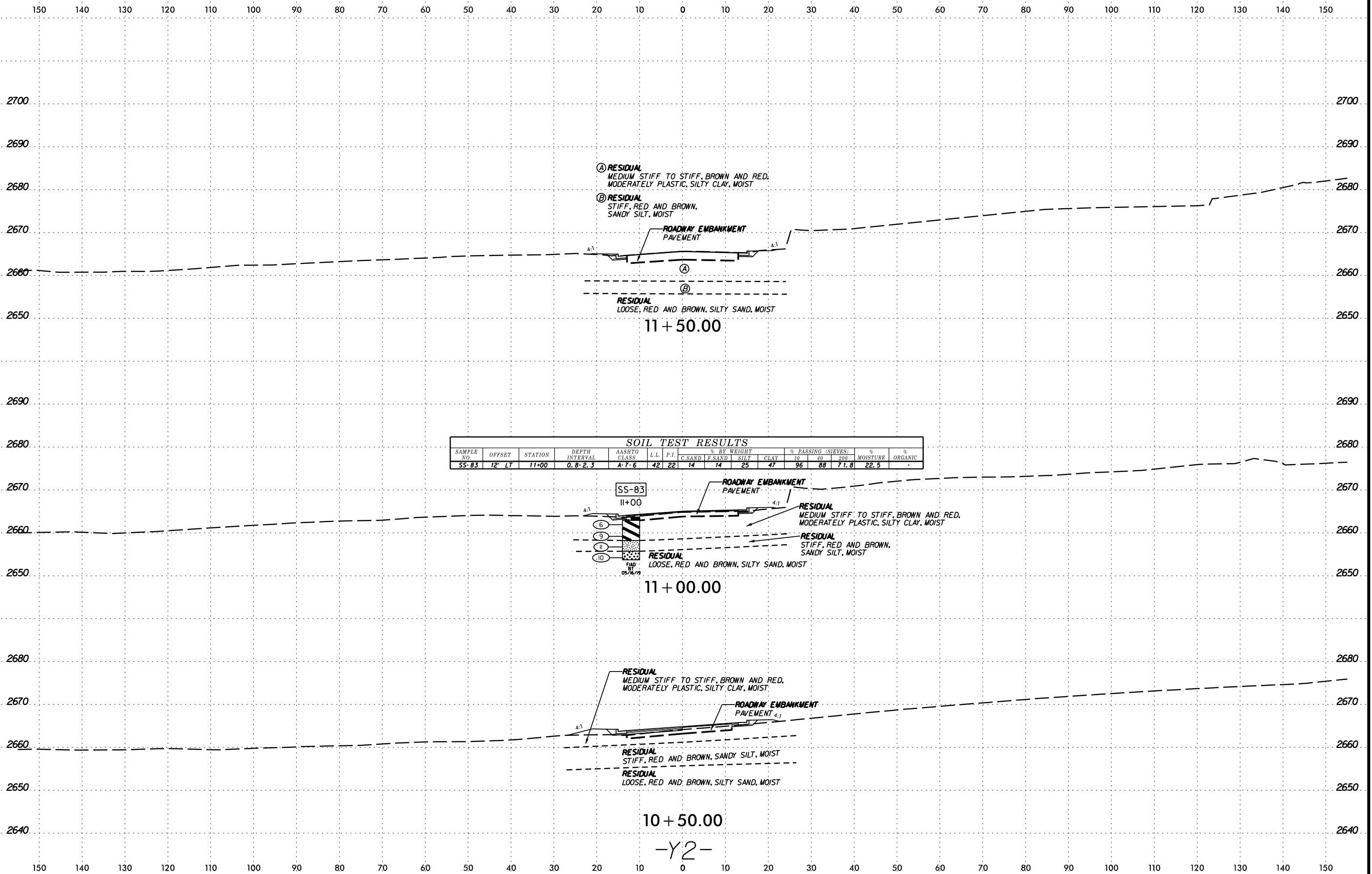
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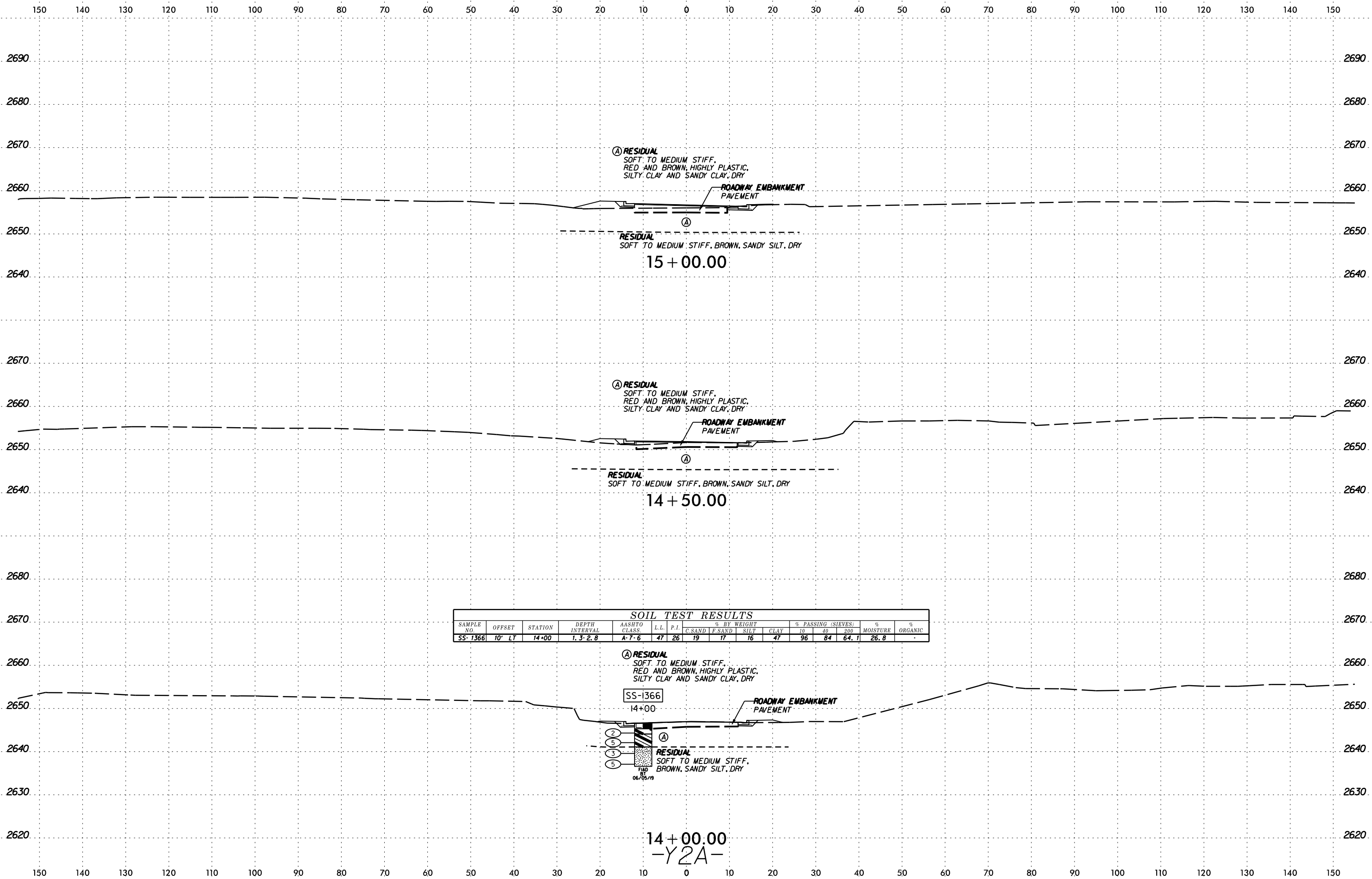
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-83	12' LT	11+00	0.8-2.3	A-7-6	42	22	14	14	25	47	96	88	71.8	22.5	-

10+50.00

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SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	ASHTO CLASS	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-1366	10' LT	14+00	1.3-2.8	A-7-6	47	26	19	17	16	47	96	84	64.1	26.8	-

(A) RESIDUAL
 SOFT TO MEDIUM STIFF,
 RED AND BROWN, HIGHLY PLASTIC,
 SILTY CLAY AND SANDY CLAY, DRY

SS-1366
 14+00

ROADWAY EMBANKMENT
 PAVEMENT

(A)
 RESIDUAL
 SOFT TO MEDIUM STIFF,
 BROWN, SANDY SILT, DRY

FIND BY
 06/05/19

14+00:00
 -Y2A-



SUMMARY OF LABORATORY TEST DATA
Soil Classification and Gradation

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616			
S&ME Project #:	1305-16-028	Date Report:	8/6/2019
State Project No.:	50230.1.1	County:	Haywood
Federal ID No.:		TIP No.:	U-5839
Project Name: Russ Avenue US 276 from US 23/74 to US 23 Business			
Client Name: CALYX		Client Address: Cary, 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	Coarse Sand	Fine Sand	Silt	Clay				
SS-6	70+00	30 RT	-L-	3.5-5.0	A-4 (1)	94	77	69	49.1	27	27	29	17	32	25	7	20.6
SS-15	15+00	20 RT	Y21RPD	0-1.5	A-4 (1)	95	83	74	51.0	22	32	29	17	36	31	5	23.5
SS-20	12+50	20 RT	Y21RPD	0.25-1.75	A-4 (0)	98	78	65	38.5	34	33	25	8	NP	NP	NP	17.2
SS-25	13+50	25 LT	Y21RPA	1.3-2.8	A-4 (0)	99	87	75	45.7	24	38	31	7	32	30	2	17.0
SS-33	11+00	25 LT	Y14	0.9-2.4	A-7-6 (11)	100	88	81	65.6	18	21	25	37	44	25	19	22.0
SS-50	25+82	23 RT	-L-	3.5-5.0	A-7-6 (14)	98	89	83	70.8	15	16	22	48	45	24	21	29.7
SS-83	11+00	12 LT	Y2	0.8-2.3	A-7-6 (15)	96	88	83	71.8	14	14	25	47	42	20	22	22.5
SS-91	11+00	8 LT	-L-	0.9-2.4	A-7-5 (47)	100	96	93	85.8	7	10	17	66	83	37	46	45.2
SS-96	31+75	20 RT	-L-	8.5-10.0	A-2-4 (0)	98	70	58	33.1	41	31	21	7	34	31	3	31.1
SS-112	30+42	29 RT	-L-	19.0-20.0	A-2-4 (0)	96	71	53	16.9	45	38	16	2	NP	NP	NP	22.4
SS-125	11+75	41 RT	Y9	0.5-2.0	A-7-6 (6)	91	74	67	52.1	26	20	20	34	41	25	16	26.8
SS-139	15+50	CL	Y7	0-1.5	A-5 (2)	93	82	72	49.8	23	29	24	25	44	38	6	21.0
SS-1004	32+50	29 RT	-L-	18.5-20.0	A-2-4 (0)	98	79	66	35.3	33	37	24	7	NP	NP	NP	23.0
SS-1031	12+50	30 RT	Y14	0.2-1.7	A-6 (3)	76	64	59	45.8	23	22	25	31	36	22	14	16.8
SS-1035	13+70	30 RT	Y14	0.3-1.8	A-2-4 (0)	67	51	44	28.5	35	28	20	17	30	24	6	10.7
SS-1044	52+20	57 RT	-L-	0-1.5	A-2-4 (0)	69	56	49	30.2	29	33	23	14	32	28	4	34.7
SS-1081	47+00	60 LT	-L-	3.5-5.0	A-5 (3)	100	94	86	57.0	14	39	32	15	46	40	6	32.7
SS-1091	47+50	60 LT	-L-	3.5-5.0	A-5 (9)	100	97	92	74.0	8	27	46	19	52	43	9	39.6

References / Comments / Deviations: ND=Not Determined. NP=Non-Plastic.

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

Karen Warner

Technician Name:

VCDOT 118-06-030!

Signature

Certification #

Joey Daily, P.E.

Technical Responsibility:

Project Manager

Position

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SUMMARY OF LABORATORY TEST DATA
Soil Classification and Gradation

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616			
S&ME Project #:	1305-16-028	Date Report:	8/6/2019
State Project No.:	50230.1.1	County:	Haywood
Federal ID No.:		TIP No.:	U-5839
Project Name: Russ Avenue US 276 from US 23/74 to US 23 Business			
Client Name: CALYX		Client Address: Cary, 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	Coarse Sand	Fine Sand	Silt	Clay				
SS-1135	49+90	53 LT	-L-	0.8-2.3	A-4(0)	95	76	65	40.2	31	33	27	9	36	33	3	20.3
SS-1155	28+00	60 LT	-L-	0.7-2.2	A-4(0)	89	72	55	43.9	28	28	27	16	30	24	6	13.9
SS-1204	51+70	70 RT	-L-	0.8-2.3	A-5(5)	97	90	84	61.8	14	30	36	20	41	33	8	24.0
SS-1214	26+60	60 LT	-L-	0.8-2.3	A-7-6(14)	100	89	84	71.2	14	17	17	53	42	21	21	24.5
SS-1224	30+49	22 LT	-L-	18.5-20.0	A-2-4(0)	81	63	49	21.5	40	39	17	4	29	28	1	14.4
SS-1225	30+49	22 LT	-L-	23.5-25.0	A-2-4(0)	97	71	54	22.4	45	38	16	2	NP	NP	NP	19.0
SS-1231	15+00	42 LT	Y21RPB	3.5-5.0	A-2-4(0)	77	57	46	25.2	40	32	22	6	35	34	1	14.4
SS-1244	48+00	73 LT	-L-	3.5-5.0	A-4(1)	100	88	79	51.5	21	37	34	8	39	35	4	21.8
SS-1252	12+00	72 RT	Y10	0.6-2.1	A-4(0)	95	76	65	41.3	31	31	24	13	29	27	2	21.9
SS-1257	48+35	90 LT	-L-	0.9-2.4	A-5(8)	100	100	100	90.1	0	24	63	13	42	37	5	21.0
SS-1280	48+40	45 RT	-L-	0.7-2.2	A-7-5(10)	100	90	82	60.5	18	26	19	37	52	35	17	25.9
SS-1293	49+50	92 RT	-L-	3.5-5.0	A-4(0)	95	82	73	47.0	23	34	29	14	34	30	4	19.6
SS-1366	14+00	10 LT	Y2A	1.3-2.8	A-7-6(15)	96	84	78	64.1	19	17	16	47	47	21	26	26.8

References / Comments / Deviations: ND=Not Determined. NP=Non-Plastic.

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

<u>Karen Warner</u>	<u>NCDOT 118-06-030</u>	<u>Joey Daily, P.E.</u>	<u>Project Manager</u>
Technician Name:	Signature	Certification #	Technical Responsibility:
			Position

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