

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-2729	1	19

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.

ROADWAY
SUBSURFACE INVESTIGATION

COUNTY FORSYTH
PROJECT DESCRIPTION SR 1672 (HANES MILL ROAD)
FROM MUSEUM DRIVE TO NC 66
(UNIVERSITY PARKWAY) IN WINSTON-SALEM
INVENTORY

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LINE	STATION	PLAN	PROFILE
-L-	12+00 - 52+50	4-6	7-8
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-Y1B-	10+31 - 11+32	4	8
-Y2-	11+34 - 12+29	5	9
-LPA-	13+50 - 18+60	5	9
-LPB-	15+50 - 20+15	5	10
-RPA-	17+50 - 22+52	5	10
-RPB-	23+50 - 27+40	5	11
-Y5-	10+35 - 11+76	6	11
-Y6A-	11+80 - 18+08	6	12
-Y6B-	10+00 - 13+30	6	12
-RDBT-	10+00 - 13+71	4	12

CROSS SECTIONS

LINE	STATION	SHEETS
-L-	32+50	13
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-Y6A-	15+00 - 18+00	17-18
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REFERENCE: U-2729

PROJECT: 34853

PERSONNEL

M. LEAR

C. TREMBLAY

L. GONZALEZ-CASTILLO

INVESTIGATED BY WOOD E&S, INC.

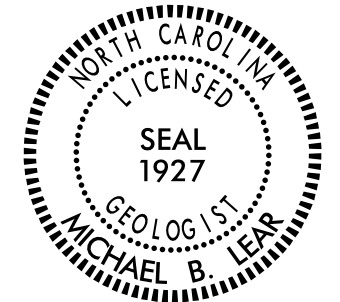
DRAWN BY R. RAHIE

CHECKED BY S. JOHNSON

SUBMITTED BY M. LEAR

DATE DECEMBER, 2018

NC Engineering F-1253 NC Geology C-247



DocuSigned by:
Michael B. Lear 12/14/2018

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

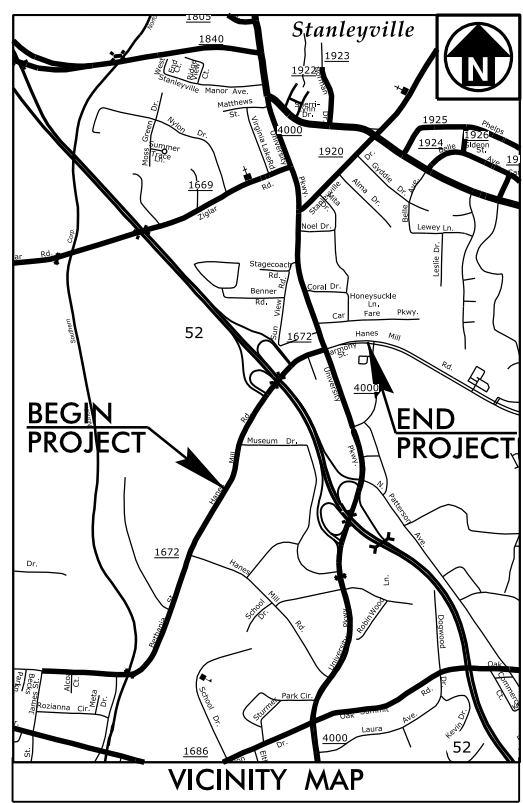
**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS**

SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS																																																																																																																																																													
<p>SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i></p>										<p>WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.</p>										<p>HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED, AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:</p>										<p>ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC. ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>																																																																																																																																																													
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<p>COLOR</p> <p>DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-BROWN). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.</p>										<p>NOTES:</p> <p>FIAD - FILLED IMMEDIATELY AFTER DRILLING</p>																																																																																																																																																																																	

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 \$\$\$USERNAME\$\$\$

TIP PROJECT: U-2729

CONTRACT:



25% PLANS

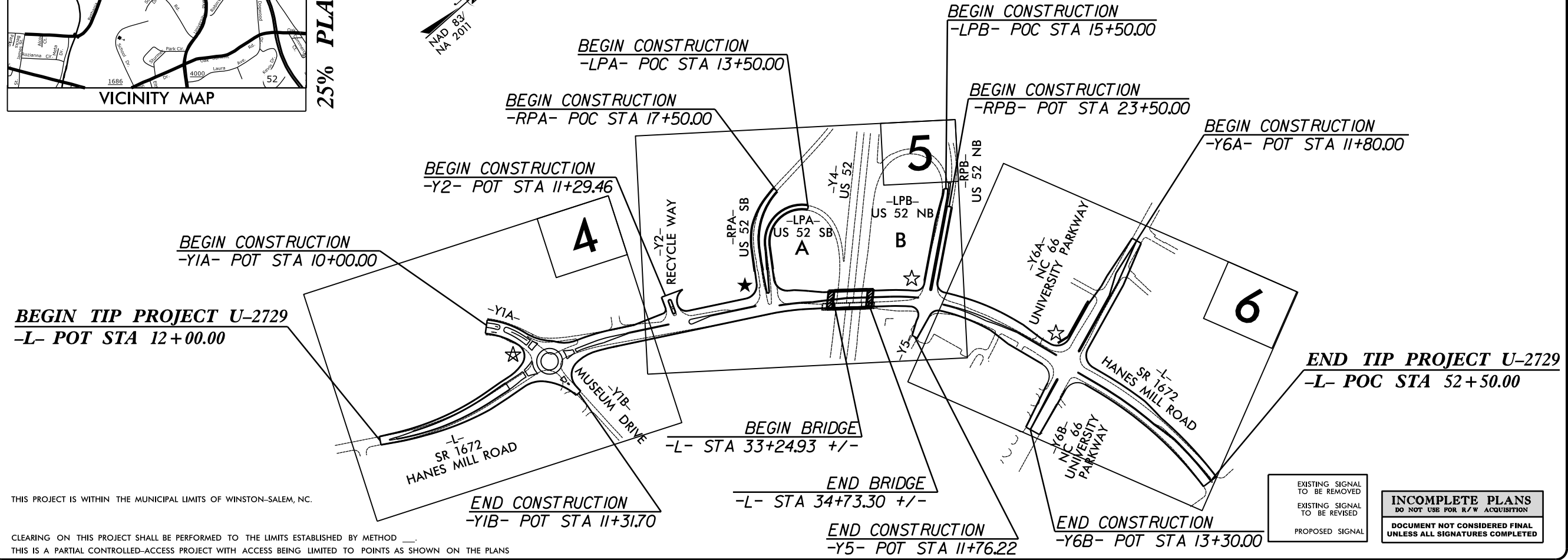
STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

FORSYTH COUNTY

**LOCATION: SR 1672 (HANES MILL ROAD) FROM MUSEUM DRIVE TO
 NC 66 (UNIVERSITY PARKWAY) IN WINSTON-SALEM**

TYPE OF WORK: GRADING, PAVING, DRAINAGE, STRUCTURE, AND SIGNALS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2729	3	19
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34853.1.2		PE	

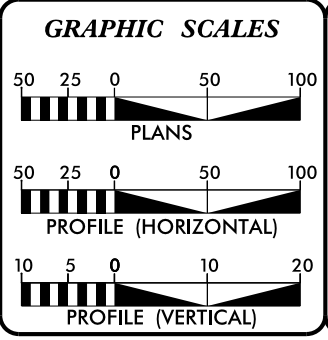


THIS PROJECT IS WITHIN THE MUNICIPAL LIMITS OF WINSTON-SALEM, NC.

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD ____.
 THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS

EXISTING SIGNAL TO BE REMOVED
 EXISTING SIGNAL TO BE REVISED
 PROPOSED SIGNAL

INCOMPLETE PLANS
 DO NOT USE FOR R/W ACQUISITION
 DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2016 =	17,700
ADT 2040 =	22,700
K =	8 %
D =	60 %
T =	5 % *
V =	50 MPH
* (TTST 1% + DUAL 4%)	
FUNC CLASS =	MAJOR COLLECTOR
REGIONAL TIER	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-2729 =	0.739 MILES
LENGTH STRUCTURE TIP PROJECT U-2729 =	0.028 MILES
TOTAL LENGTH OF TIP PROJECT U-2729 =	0.767 MILES

TOTAL PROJECT LENGTH BASED ON -L- STATIONS.

PLANS PREPARED FOR THE NCDOT BY:

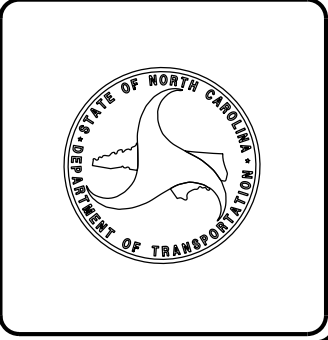
M MOTT MACDONALD	PO Box 700 Fuquay-Varina, NC 27526 (919) 552-2223 (919) 552-2254 (Fax) www.mottmac.com/nctdms
2018 STANDARD SPECIFICATIONS	DAVID C. WALLER, PE PROJECT ENGINEER P.E. ENGINEER
RIGHT OF WAY DATE: FEBRUARY 27, 2019	JEFFREY R. COOKE PROJECT DESIGN ENGINEER P.E. ENGINEER
LETTING DATE: MAY 19, 2020	CONNIE JAMES, PE NCDOT DIVISION PROJECT ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



December 10, 2018

WBS Number: 34853.1.2
 TIP Number: U-2729
 COUNTY: Forsyth
 DESCRIPTION: SR 1672 (Hanes Mill Road) from Museum Drive to NC 66 (University Parkway) in Winston-Salem
 WOOD E&IS Number: 6468188106
 SUBJECT: Geotechnical Inventory Report

Project Description

The project consists of proposed roadway widening of Hanes Mill Road (-L-) from just south of Museum Drive (-Y1B-) to just east of University Parkway (-Y6A- and -Y6B-), located approximately 7 miles north of downtown Winston-Salem in Forsyth County. The proposed roadway widening will accommodate two travel lanes in both directions as well as median and outside turning lanes, a new roundabout (-RDBT-) at the intersection of Hanes Mill Road and Museum Drive, and widening of intersecting roads, ramps, and loops (-Y1A-, -Y2-, -RPA-, -LPA-, -LPB-, -RPB-, and -Y5-). The project includes construction of a new bridge to carry Hanes Mill Road over US 52, which will replace the existing structure at the current location.

The geotechnical field investigation for the roadway portion of the project was conducted during October 2018. A CME-550X ATV drill rig equipped with an automatic hammer was used during the investigation. Hollow-stem auger drilling procedures were used to advance borings to the required depths. Standard Penetration Tests (SPT) were performed at approximately 2.5-foot to 5.0-foot intervals to termination in selected borings. A hand auger boring was performed to complete a boring that was abandoned due to site utility issues at that location. The hand auger boring was advanced to a depth of six feet. Representative soil samples were collected for visual classification in the field and selected samples were submitted for laboratory analysis.

The following alignments, totalling approximately 1.5 miles, were explored. Subsurface profiles and/or cross sections of these alignments are included in this report.

<u>Alignment</u>	<u>Station (±)</u>
-L-	12+00 to 52+50
-Y1A-	10+00 to 12+39
-Y1B-	10+31 to 11+32
-Y2-	11+34 to 12+29
-LPA-	13+50 to 18+60
-LPB-	15+50 to 20+15
-RPA-	17+50 to 22+52
-RPB-	23+50 to 27+40
-Y5-	10+35 to 11+76
-Y6A-	11+80 to 18+08
-Y6B-	10+00 to 13+30
-RDBT-	10+00 to 13+71

Areas of Special Geotechnical Interest

1) Highly Plastic Clays: Highly plastic clays (PI>25) were encountered on the project at the following section.

<u>Line</u>	<u>Stations (±)</u>	<u>Offsets (ft.)</u>
-L-	38+00 to 41+00	LT to RT

2) Soft Fine Grained Soils: The following sections contain soft, fine grained/cohesive soils which have the potential to cause embankment/subgrade and/or slope stability problems during construction.

<u>Line</u>	<u>Stations (±)</u>	<u>Offsets (ft.)</u>
-L-	37+75 to 38+75	LT to RT
-Y5-	10+34 to 11+76	LT to RT
-Y6A-	16+25 to 17+70	RT
-RDBT-	10+00 to 13+70	LT to RT

3) Artificial Fill: Artificial fill was encountered at the following locations:

<u>Line</u>	<u>Stations (±)</u>	<u>Offsets (ft.)</u>
-L-	39+50 to 41+20	LT
-L-	41+20 to 41+75	LT and RT
-L-	41+75 to 43+86	LT
-L-	44+78 to 49+26	LT
-L-	50+30 to 52+50	LT
-Y6A-	16+25 to 17+70	LT and RT

Several smaller areas of artificial fill are present throughout the project corridor and are related to gravel and soil driveways or previous infrastructure construction.

4) Wells: Four existing residential water supply wells or ground water monitoring wells were observed on or within close proximity to the right of way on this project at the following locations:

<u>Line</u>	<u>Station (±)</u>	<u>Offset (ft.)</u>
-L-	39+39	126 LT
-L-	41+57	49 LT
-Y6B-	13+82	121 LT
-Y6B-	14+91	124 LT

5) Ponds: One pond is located within close proximity to the right of way on this project at the following location:

<u>Line</u>	<u>Station (±)</u>	<u>Offset (ft.)</u>
-L-	48+88 to 49+68	175 LT to 292 LT

Physiography and Geology

The project site is located within the Piedmont Physiographic Province. The topography along the project is mostly gently rolling hills and long low ridges. Elevations along the project alignments range from a low of 865± feet at the start of the project to a high of 915± feet in the middle of the project. A mixture of mostly commercial properties, few residential properties, and small areas of woods occur along the project corridor.

Geologically, the project is located within the Milton Belt. Residual soils within the Milton Belt are derived from in-situ weathering of the underlying gneiss, schist and metamorphosed intrusive rocks. Rocks in this belt are generally foliated, and trend in a northeasterly direction.

Soil Properties

Soils encountered during this investigation have been divided into three categories based on origin, including roadway embankment, artificial fill, and residual soils.

Roadway embankment soils are present along portions of existing Hanes Mill Road (-L-) and intersecting ramps, loops, and -Y- lines and consist of reddish brown, brown, and tan, soft to very stiff, dry to moist, sandy and silty clay (A-6, A-7-5, A-7-6) and sandy and clayey silt (A-4), typically slightly micaceous and locally with trace gravel. These soils exhibit low to moderate plasticity with plastic indices from 8 to 25.

Artificial fill soils are present throughout the eastern portion of the project corridor. These areas are listed in "Areas of Special Geotechnical Interest." Artificial fill is soil fill material placed outside the roadway embankment by entities other than the NCDOT, typically for commercial infrastructure or construction purposes. The artificial fill, where encountered, consists of brown, gray, and reddish brown, soft to stiff, moist, sandy and silty clay (A-6, A-7-6) and sandy silt (A-4), typically slightly micaceous and locally with trace gravel. These soils exhibit low to moderate plasticity with plastic indices from 14 to 25.

Residual soils are derived from the weathering of the underlying gneiss, schist, and metamorphosed intrusive rocks. These soils consist of reddish brown, orange, brown, tan, pink, white, and black, soft to hard, dry to wet, slightly micaceous, sandy and silty clay (A-6, A-7-5, A-7-6) and sandy silt (A-4, A-5), locally with relic quartz vein rock fragments. The surficial residual silty clays exhibit low to high plasticity with plastic indices from 7 to 37. Samples of these soils typically exhibit saprolitic structure.

Groundwater

Groundwater was not encountered in any of the completed roadway borings. In deeper borings completed for the associated bridge on Hanes Mill Road (-L-) over US 52, groundwater was encountered at depths ranging from 41 to 52 feet below existing grades, which correspond to groundwater elevations ranging from 860.7 to 861.8 feet in the central portion of the project site. Groundwater levels may fluctuate with seasonal precipitation.

Ponds

One pond was found on or near the project right of way. This pond is listed by alignment, station, and offset in the "Areas of Special Geotechnical Interest". This pond was found to not cross any of the project alignments.

Prepared By,

DocuSigned by:
Michael B. Lear
080B6C28A029442...
Michael B. Lear, PG
Senior Geologist

8/17/18

14-DEC-2018 08:07 P:\projects\Road\2018\646818106 U-2729 Hanes Mill Road\6.0 Deliverables\U2729_GEO_ROW\Y\CADD_GEO\TECH\Plan\of\U2729_GEO_psh04.dgn

-L-

PI Sta 15+02.37
 $\Delta = 21' 58" 17.1$ (LT)
 $D = 4' 47" 40.7$
 $L = 458.25'$
 $T = 231.98'$
 $R = 1,195.00'$
 $SE = 0.04$
 $RO = 192'$
 $TR = 96'$

PI Sta 21+43.26
 $\Delta = 21' 17" 09.8$ (RT)
 $D = 5' 47" 14.8$
 $L = 367.80'$
 $T = 186.04'$
 $R = 990.00'$
 $SE = 0.04$
 $RO = 192'$
 $TR = 96'$

-Y1A-

PI Sta 11+18.20
 $\Delta = 32' 06" 40.0$ (RT)
 $D = 16' 02" 57.3$
 $L = 200.08'$
 $T = 102.74'$
 $R = 357.00'$

PI Sta 12+84.47
 $\Delta = 7' 53" 15.9$ (RT)
 $D = 5' 43" 46.5$
 $L = 137.67'$
 $T = 68.94'$
 $R = 1,000.00'$

-RDBT-

PI Sta 10+73.09
 $\Delta = 102' 10" 45.6$ (LT)
 $D = 97' 06" 41.4$
 $L = 105.22'$
 $T = 73.09'$
 $R = 59.00'$

PI Sta 11+50.01
 $\Delta = 74' 24" 20.1$ (LT)
 $D = 97' 06" 41.4$
 $L = 76.62'$
 $T = 44.79'$
 $R = 59.00'$

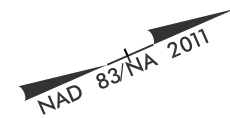
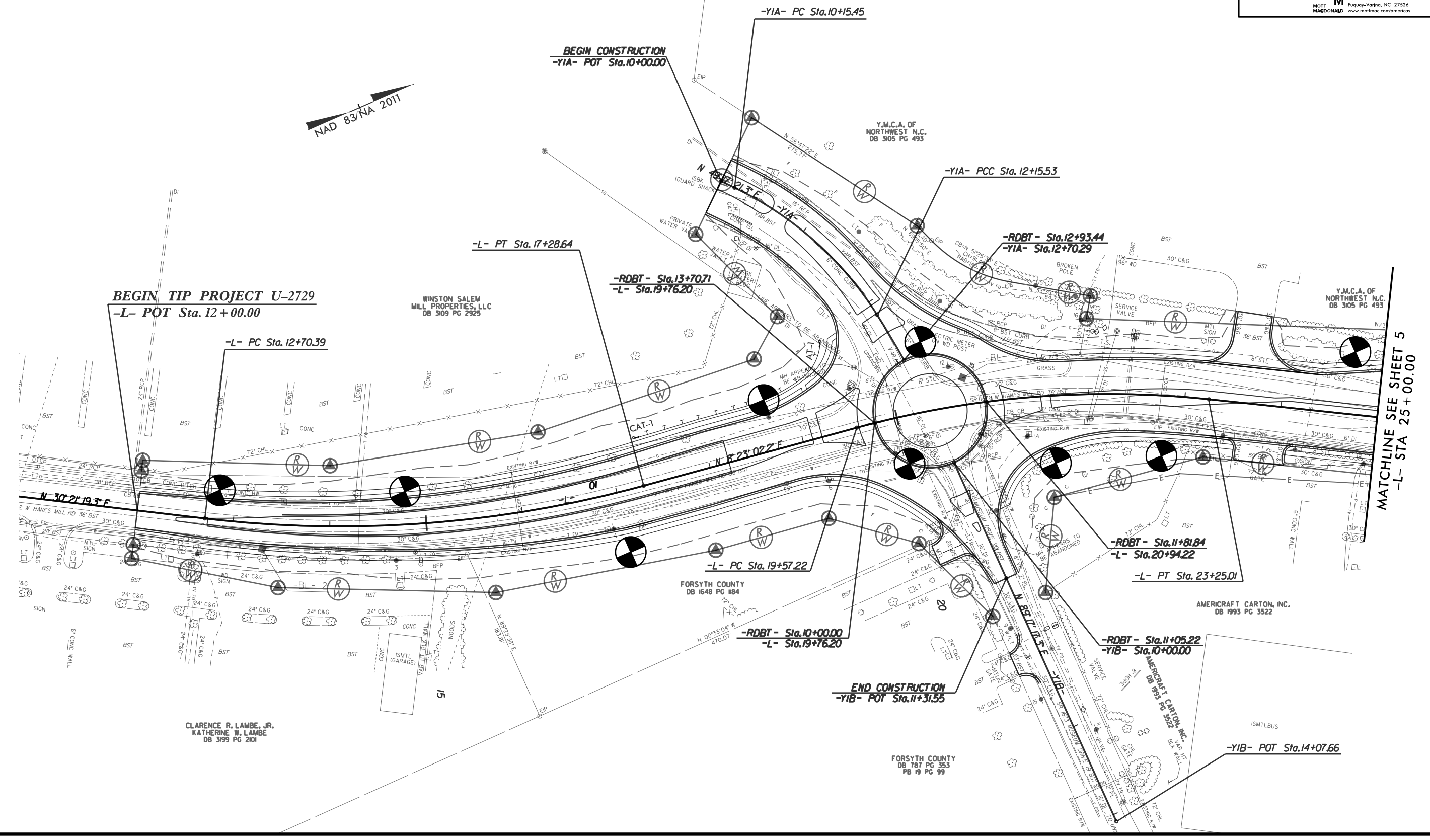
PI Sta 12+63.61
 $\Delta = 108' 22" 36.7$ (LT)
 $D = 97' 06" 41.4$
 $L = 111.60'$
 $T = 81.77'$
 $R = 59.00'$

PI Sta 13+38.74
 $\Delta = 75' 02" 08.0$ (LT)
 $D = 97' 06" 41.4$
 $L = 77.27'$
 $T = 45.30'$
 $R = 59.00'$

SEE SHEET 2B-1 FOR INTERSECTION DETAILS
 SEE SHEET 2B-5 THRU 2B-8 FOR ISLAND DETAILS

-L- SEE PROFILE SHEET 7
 -Y1A- SEE PROFILE SHEET 8
 -Y1AB- SEE PROFILE SHEET 8
 -RDBT- SEE PROFILE SHEET 12

PROJECT REFERENCE NO. U-2729	SHEET NO. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
Prepared in the Office of:	M MOTT MACDONALD PO Box 700 Fuquay-Varina, NC 27526 www.mottmac.com/bmterkas



CLARENCE R. LAMBE, JR.
 KATHERINE W. LAMBE
 DB 3199 PG 201

FORSYTH COUNTY
 DB 787 PG 353
 PB 19 PG 99

AMERICRAFT CARTON, INC.
 DB 1993 PG 3522

Y.M.C.A. OF NORTHWEST N.C.
 DB 3105 PG 493

FORSYTH COUNTY
 DB 1648 PG 184

WINSTON SALEM
 MILL PROPERTIES, LLC
 DB 3109 PG 2925

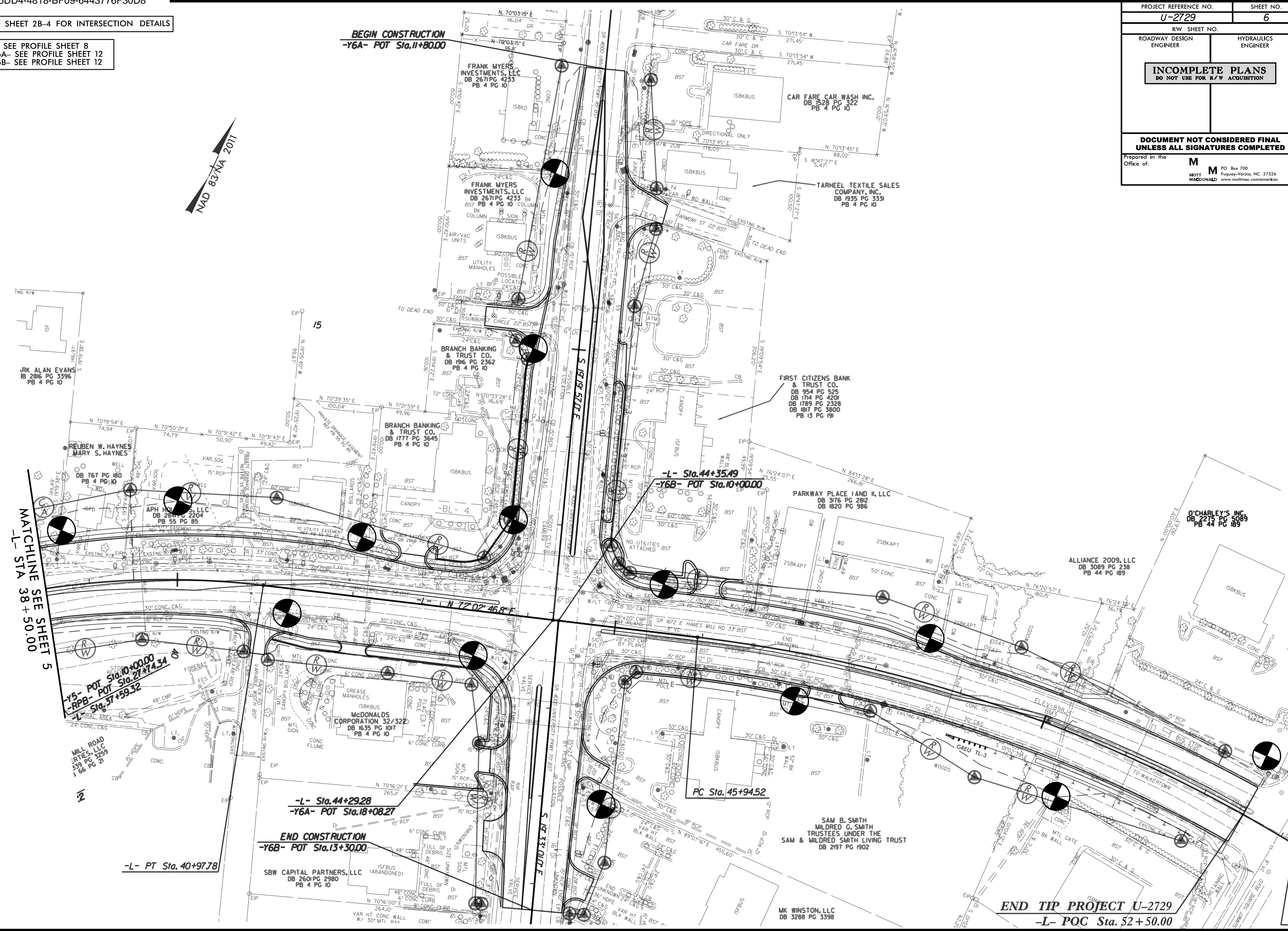
8/17/09

SEE SHEET 2B-4 FOR INTERSECTION DETAILS

- L- SEE PROFILE SHEET 8
- Y6A- SEE PROFILE SHEET 12
- Y6B- SEE PROFILE SHEET 12



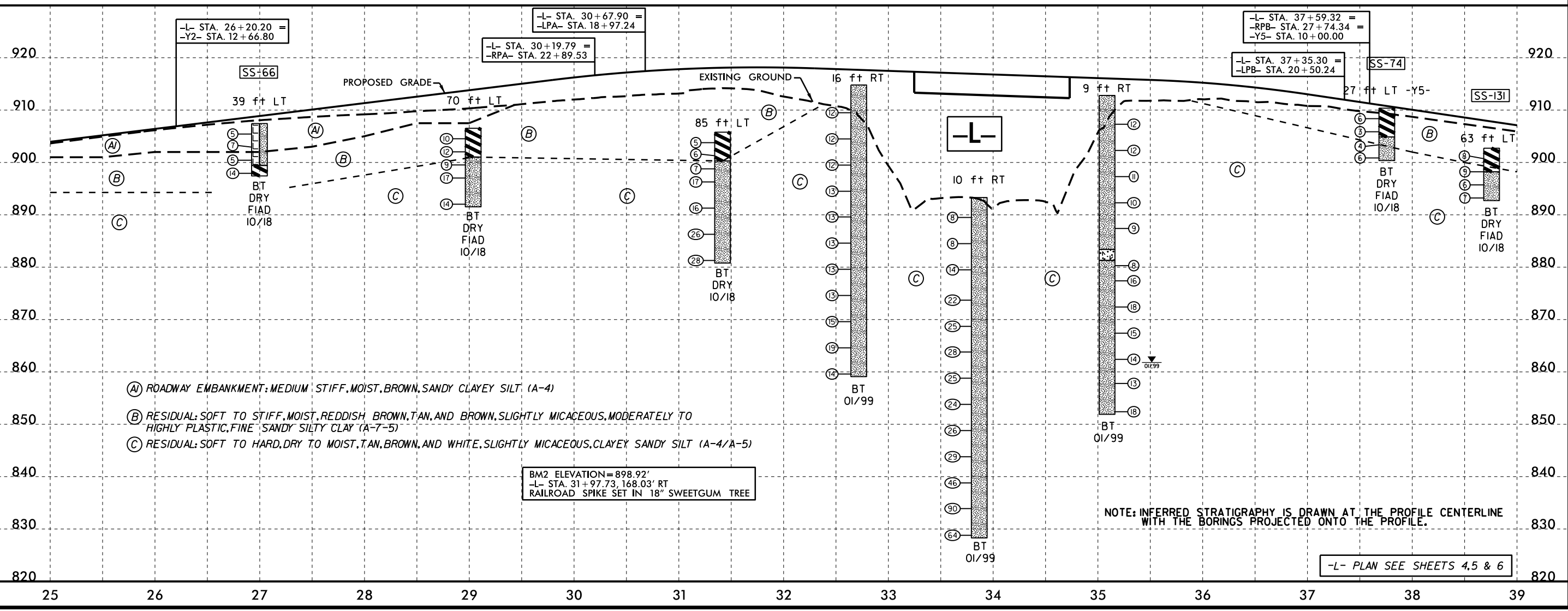
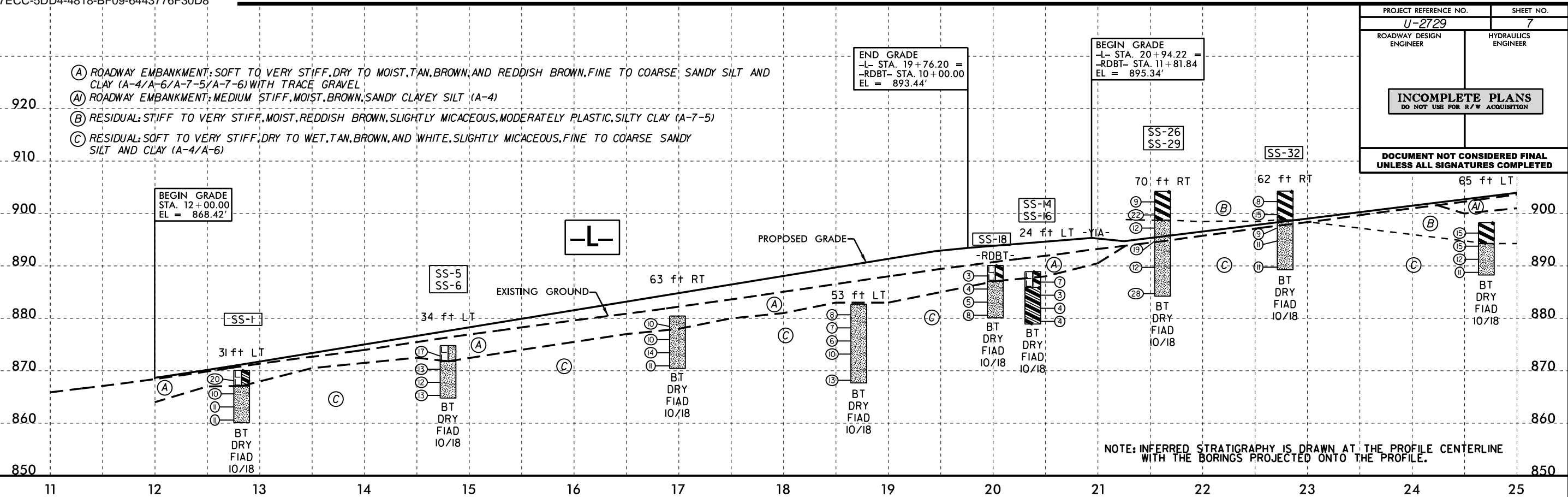
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PROJECT REFERENCE NO. U-2729		SHEET NO. 6	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER		
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
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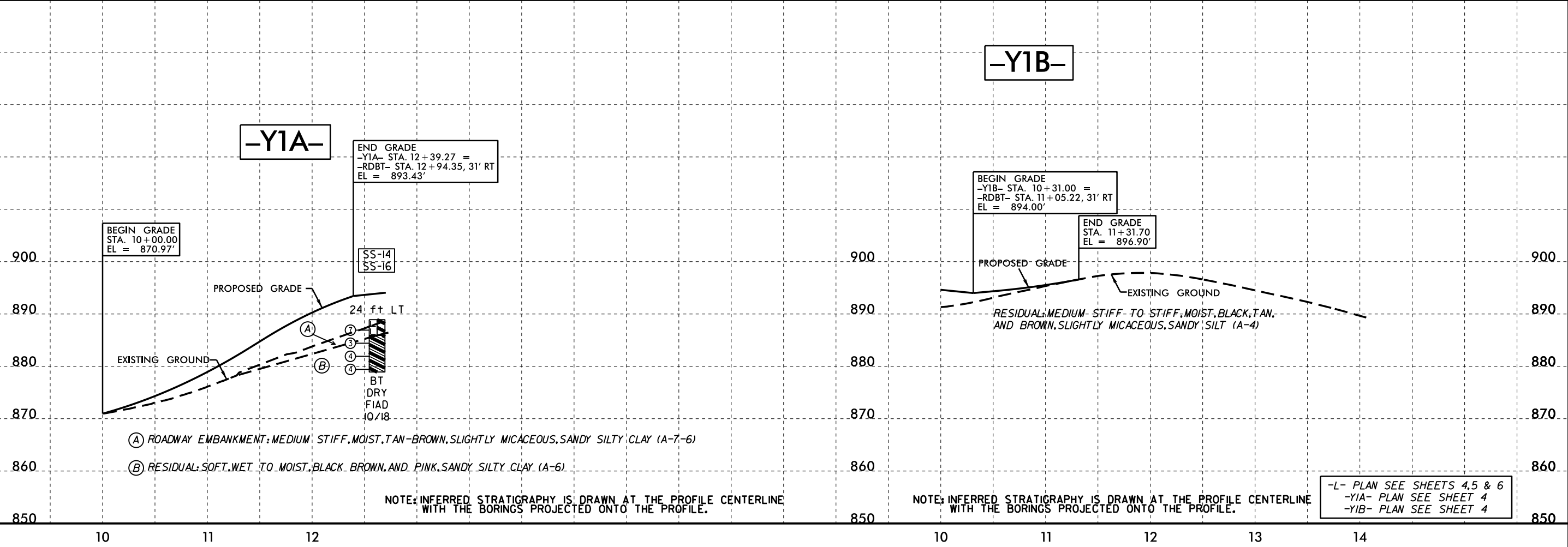
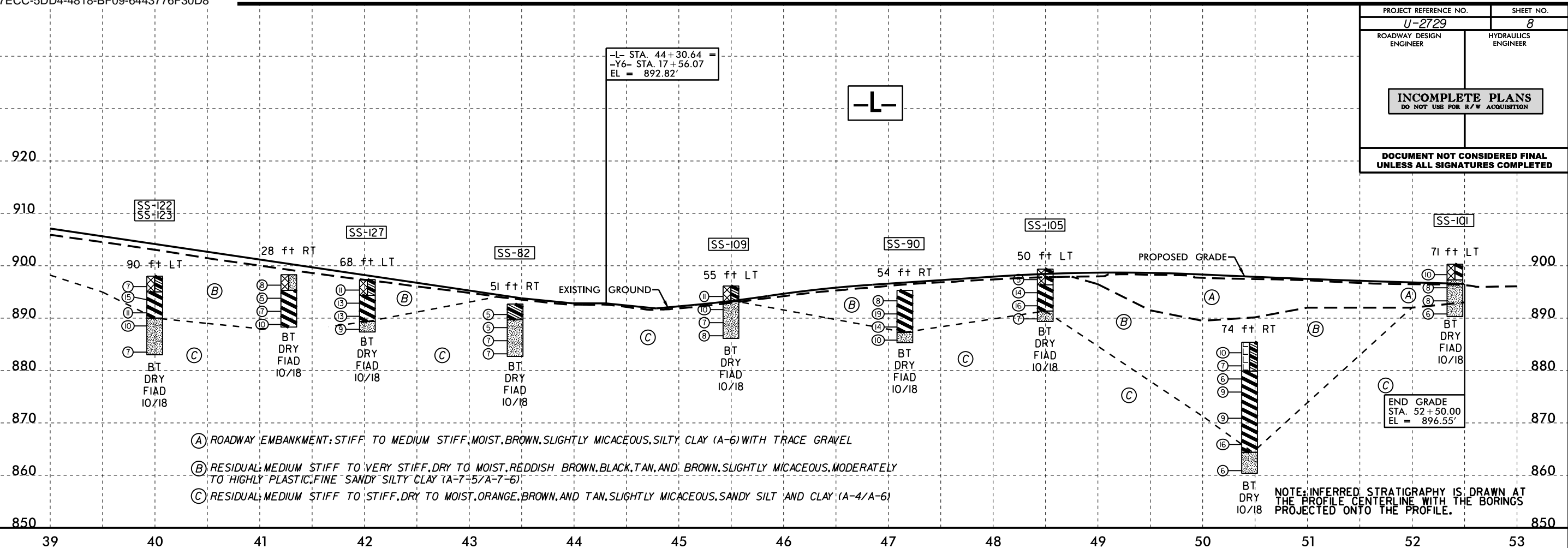
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ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



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PROJECT REFERENCE NO. U-2729	SHEET NO. 8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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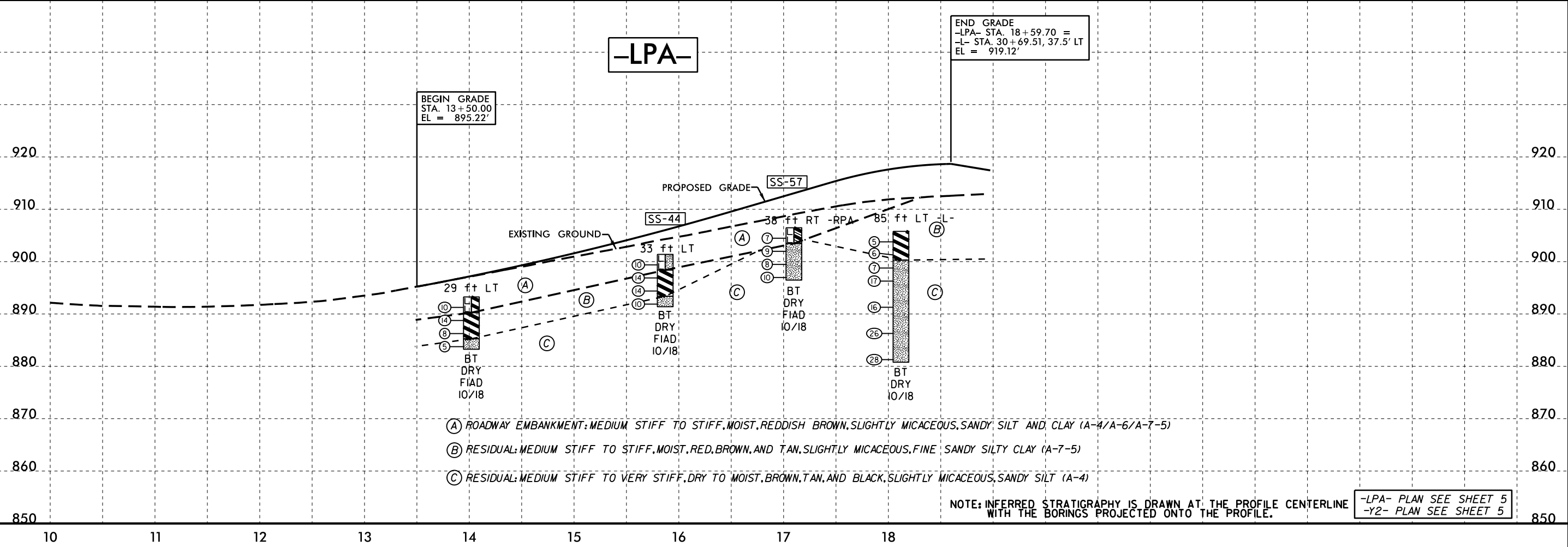
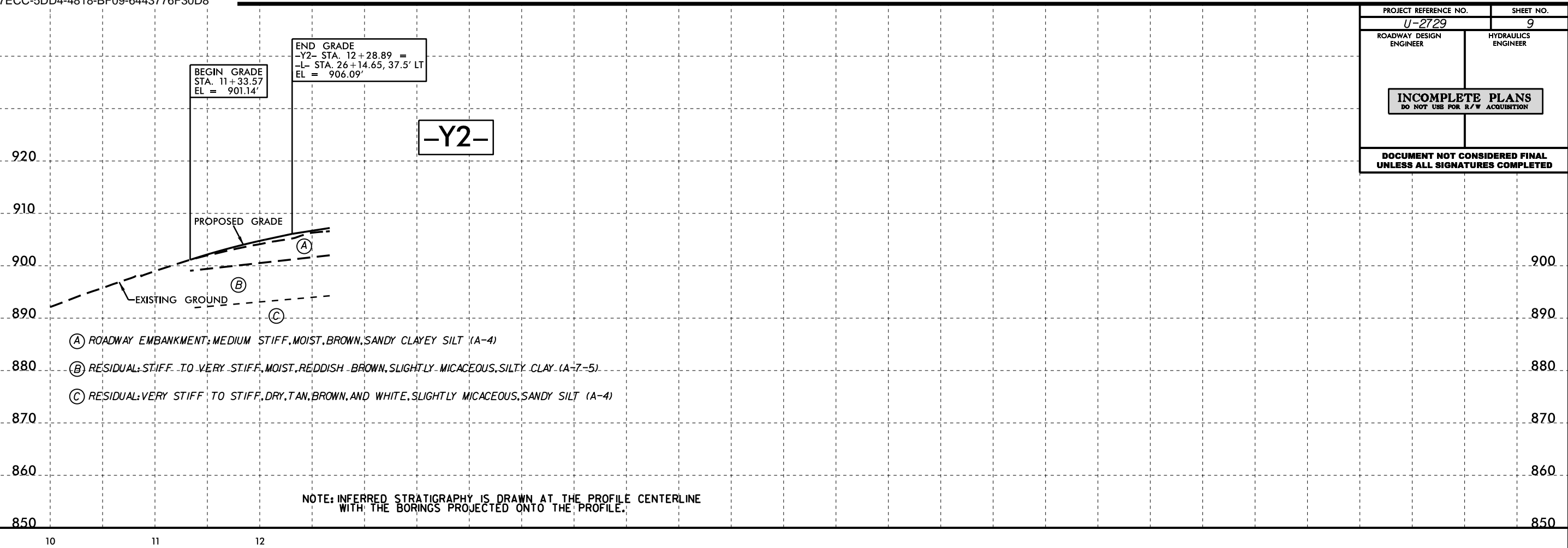


-L- PLAN SEE SHEETS 4, 5 & 6
 -Y1A- PLAN SEE SHEET 4
 -Y1B- PLAN SEE SHEET 4

5/14/99
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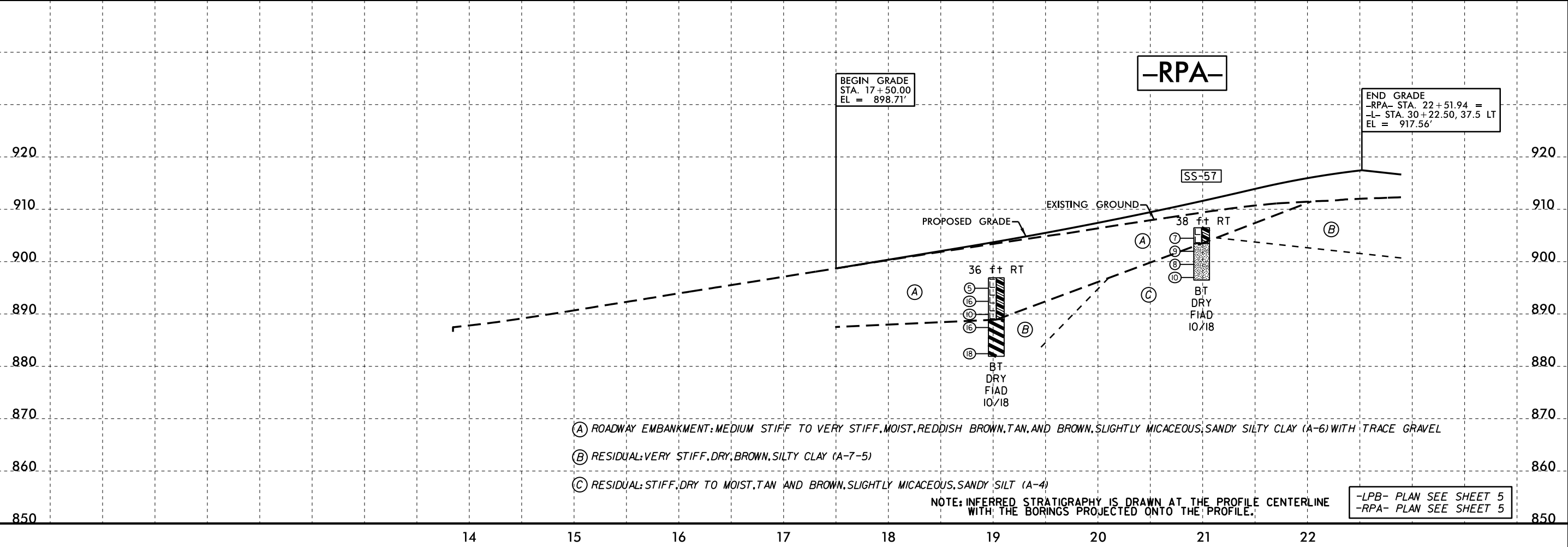
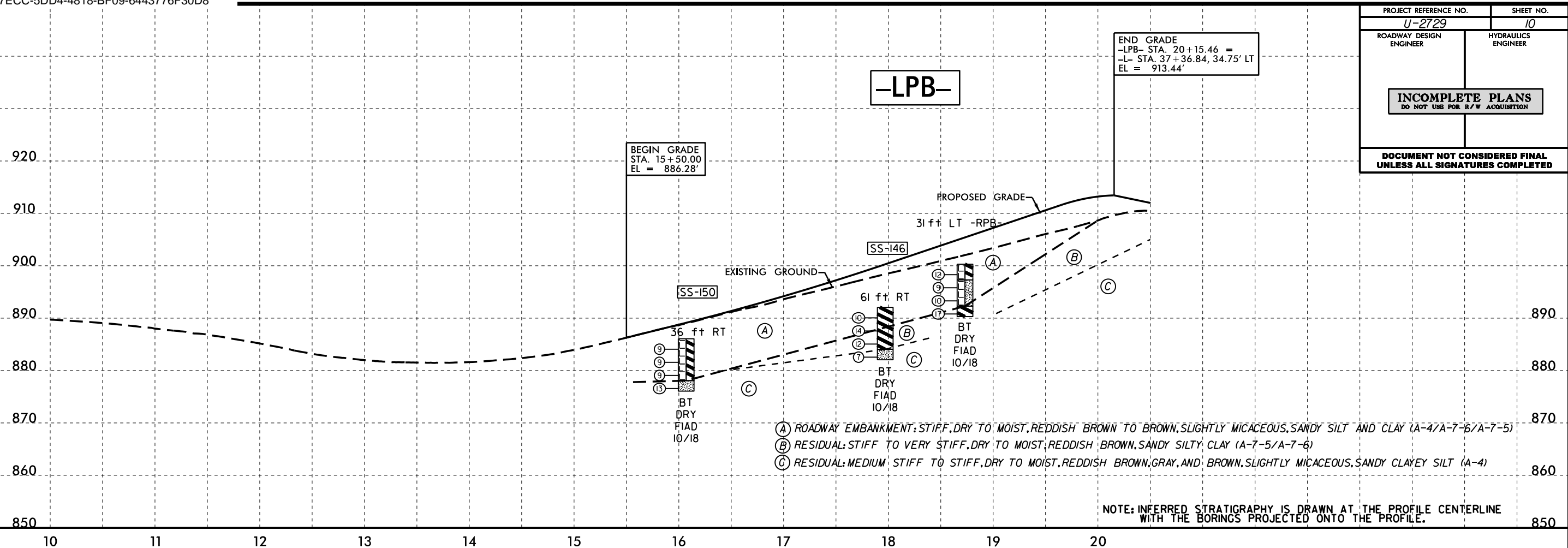
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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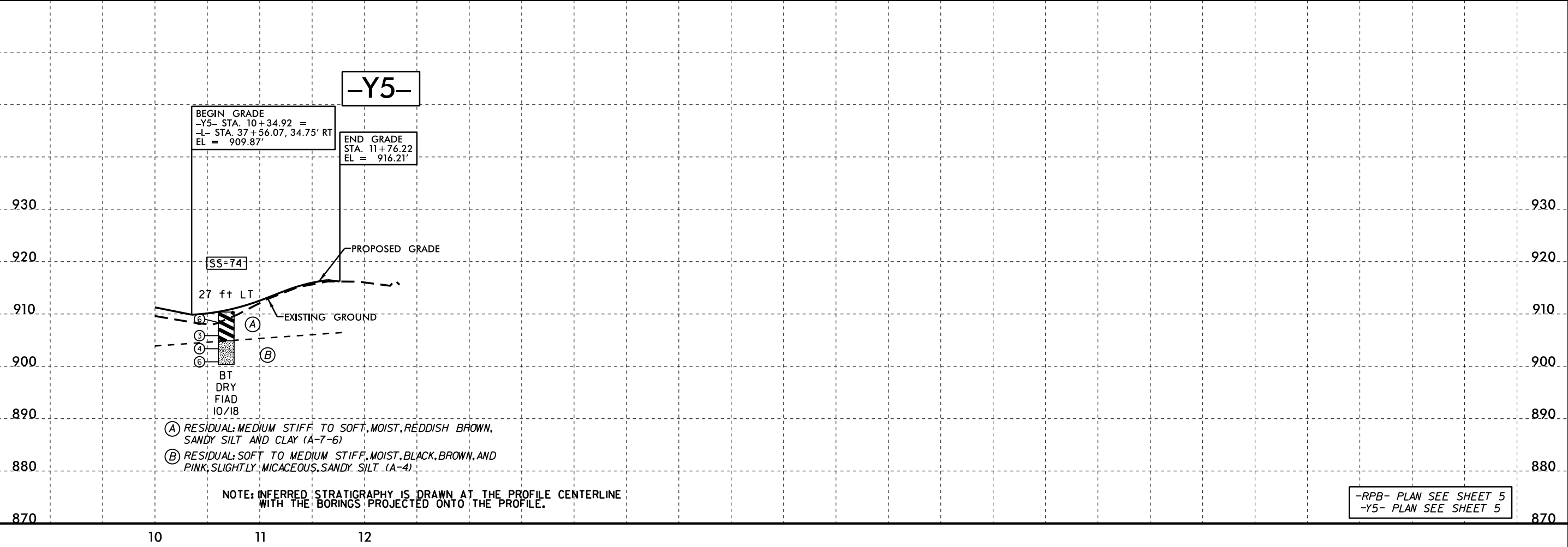
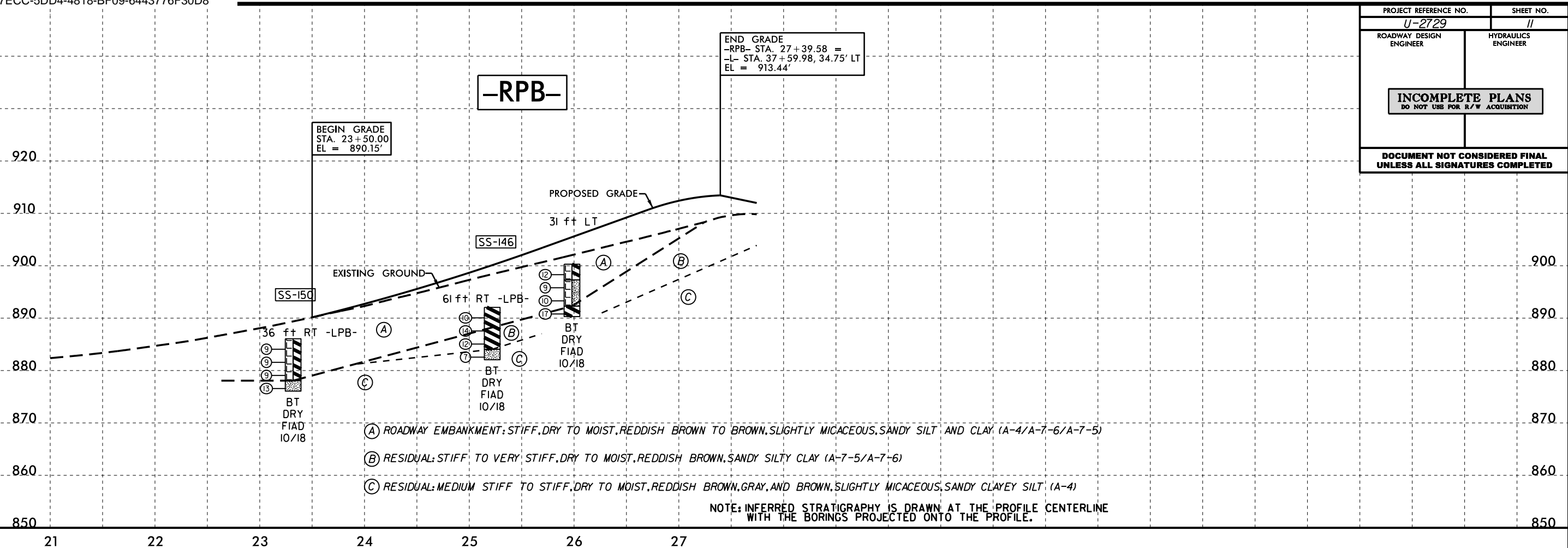
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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 \$\$\$\$ REFERENCE \$\$\$



-LPB- PLAN SEE SHEET 5
-RPA- PLAN SEE SHEET 5

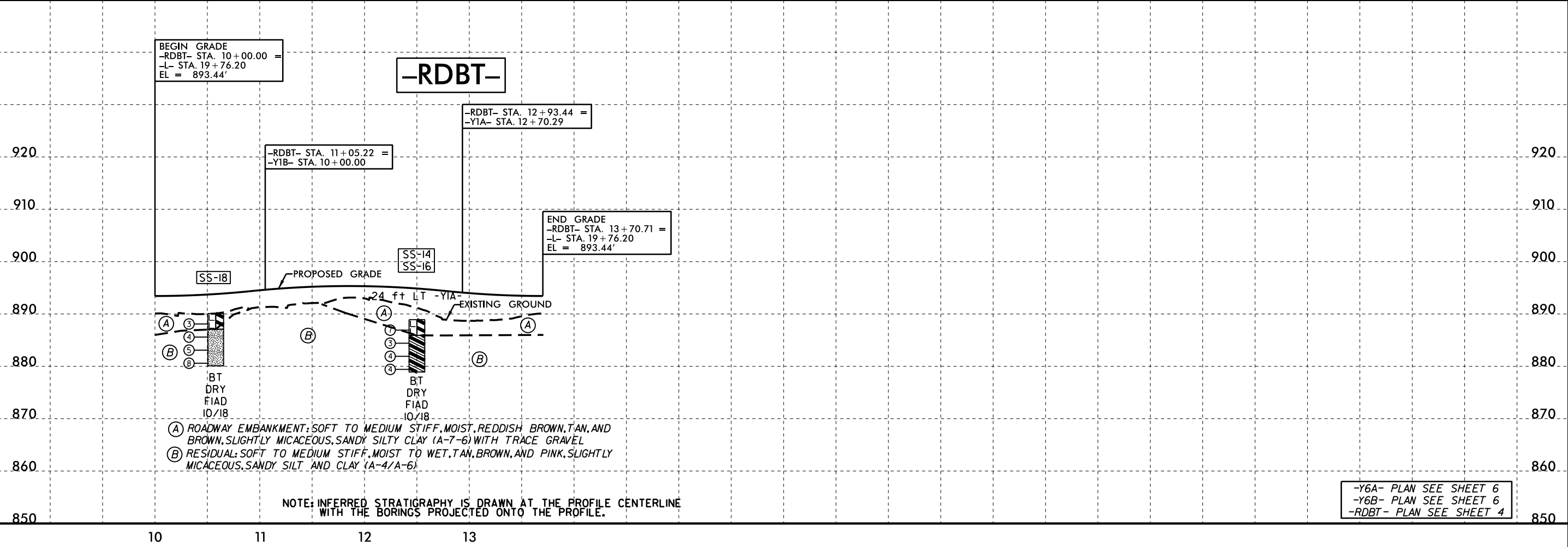
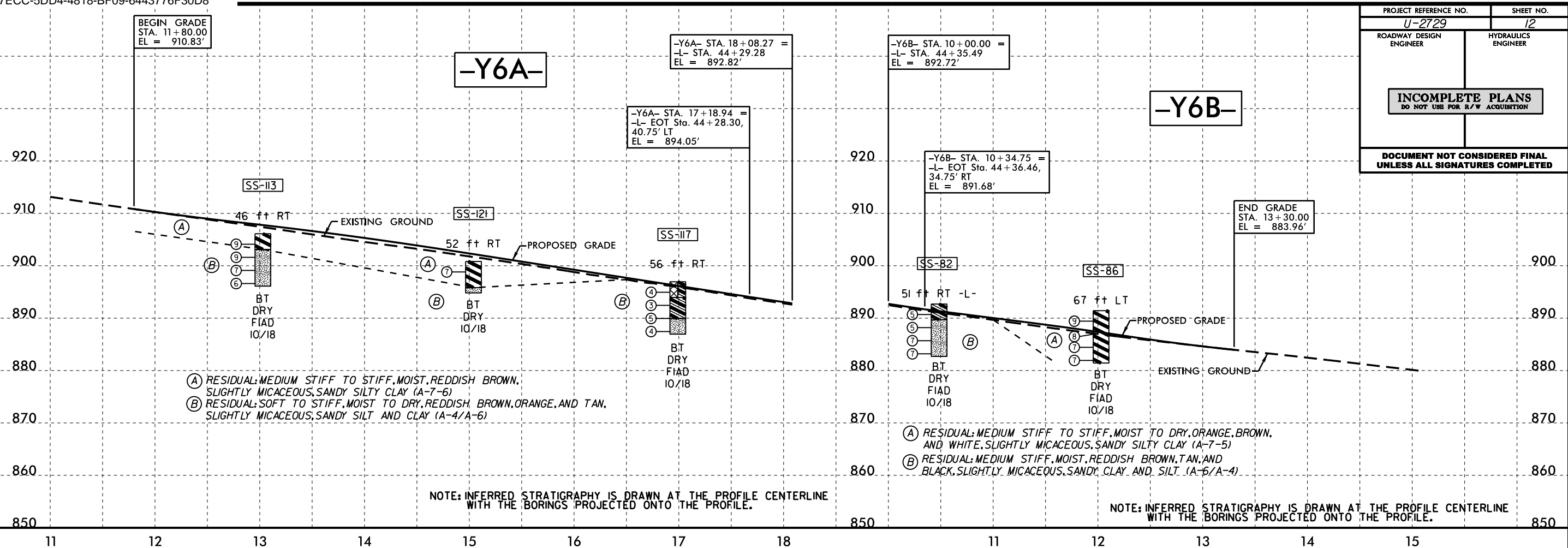
PROJECT REFERENCE NO. U-2729	SHEET NO. 11
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



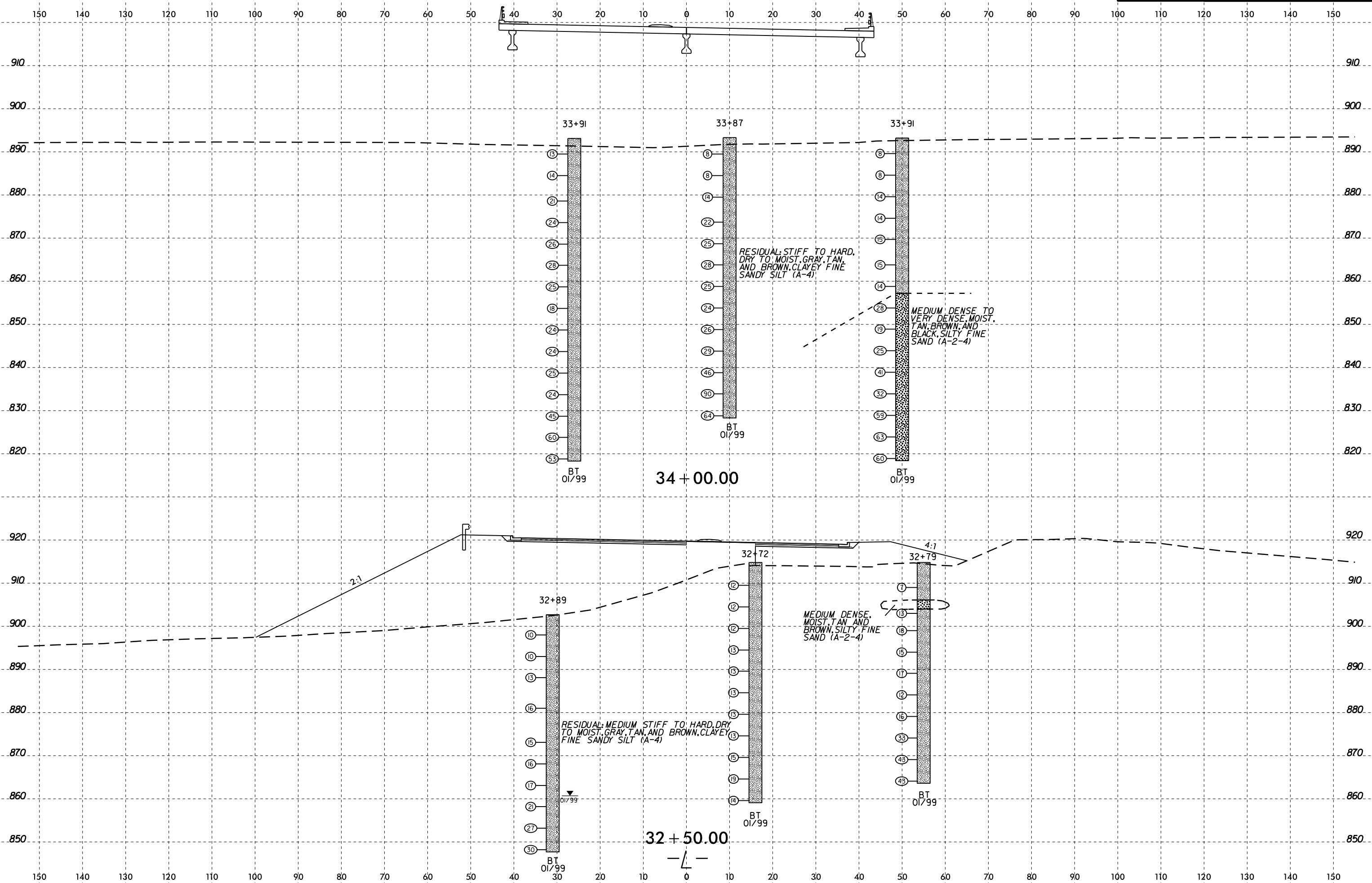
-RPB- PLAN SEE SHEET 5
-Y5- PLAN SEE SHEET 5

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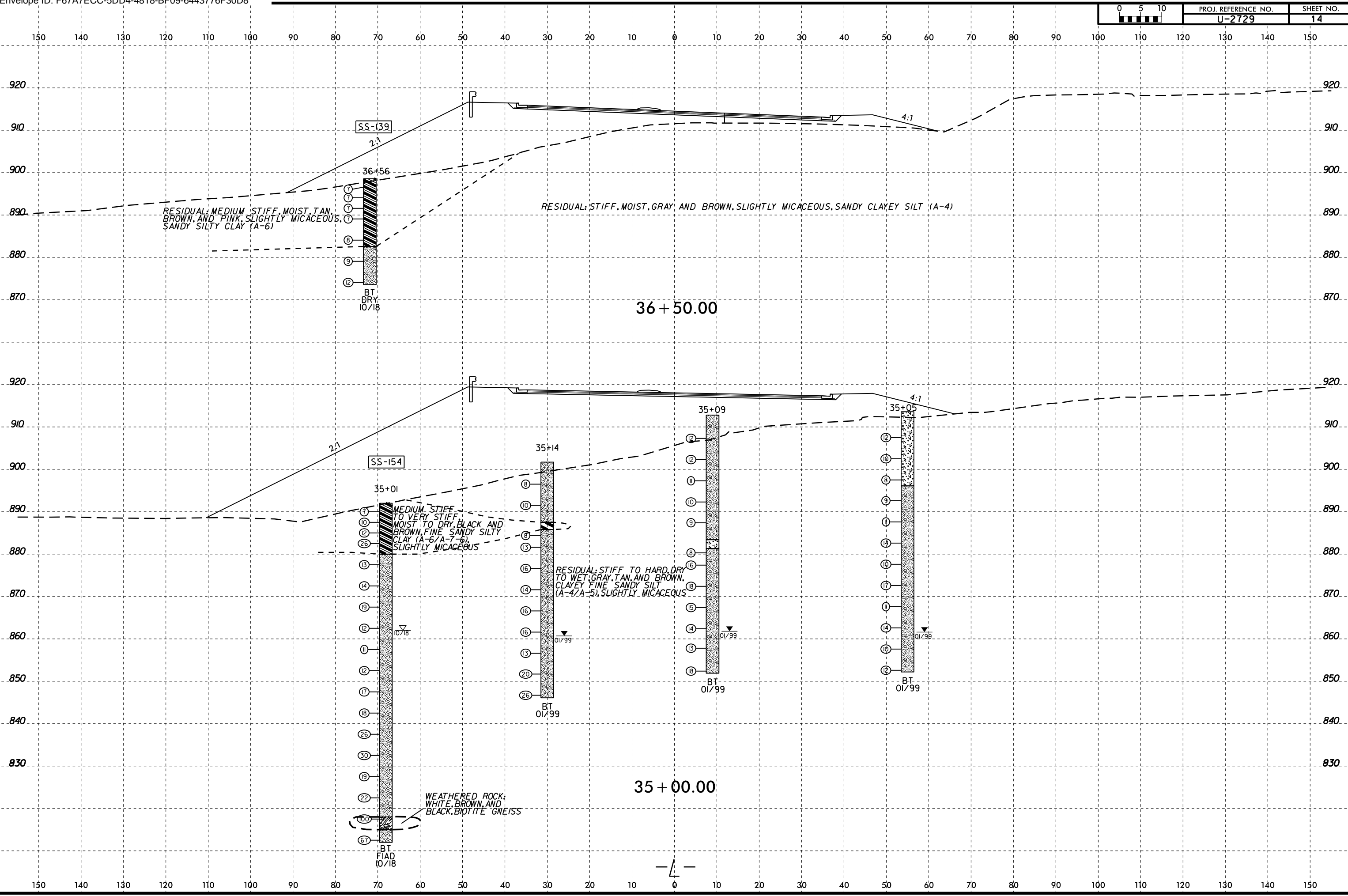
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



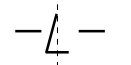
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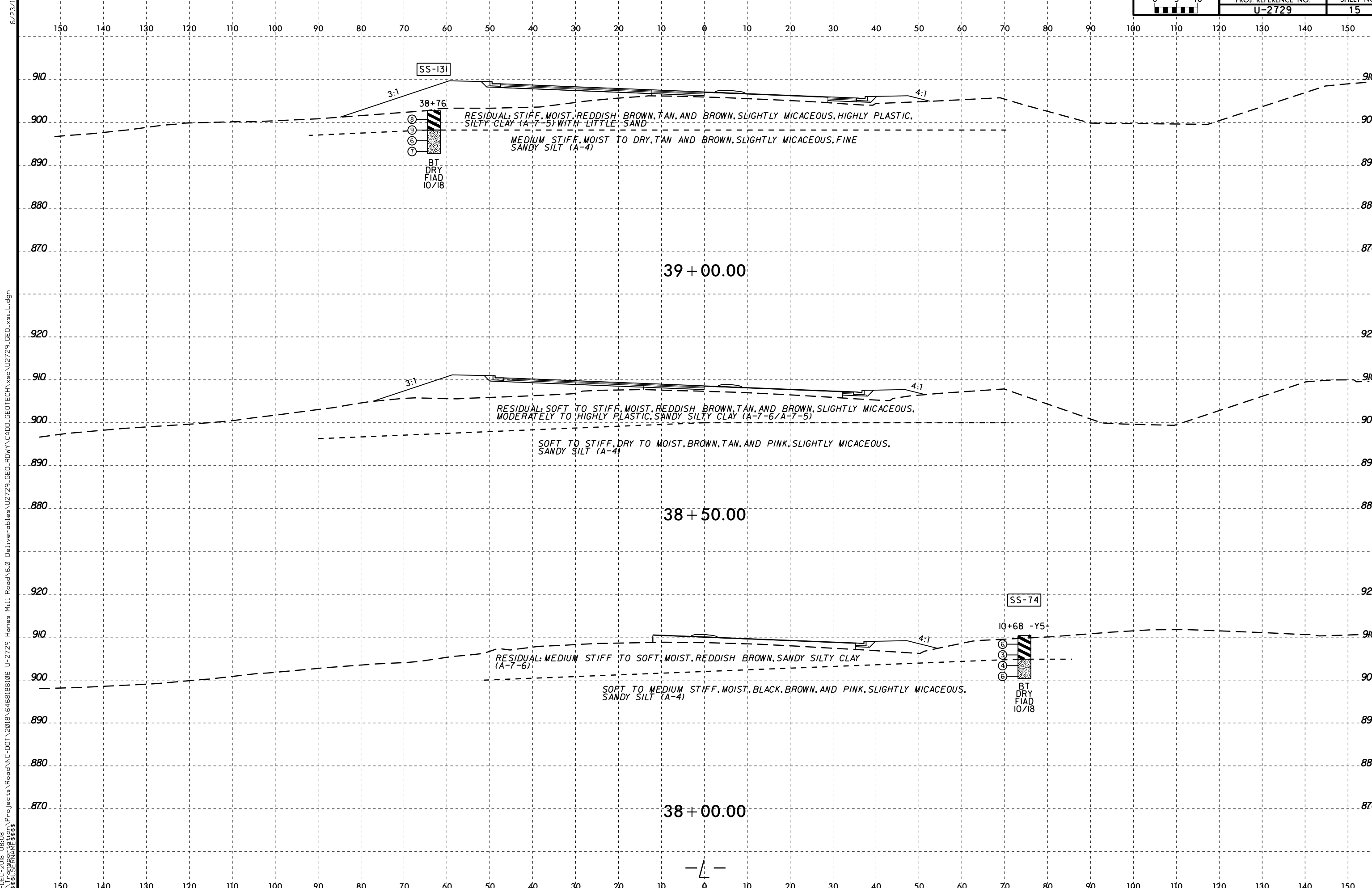


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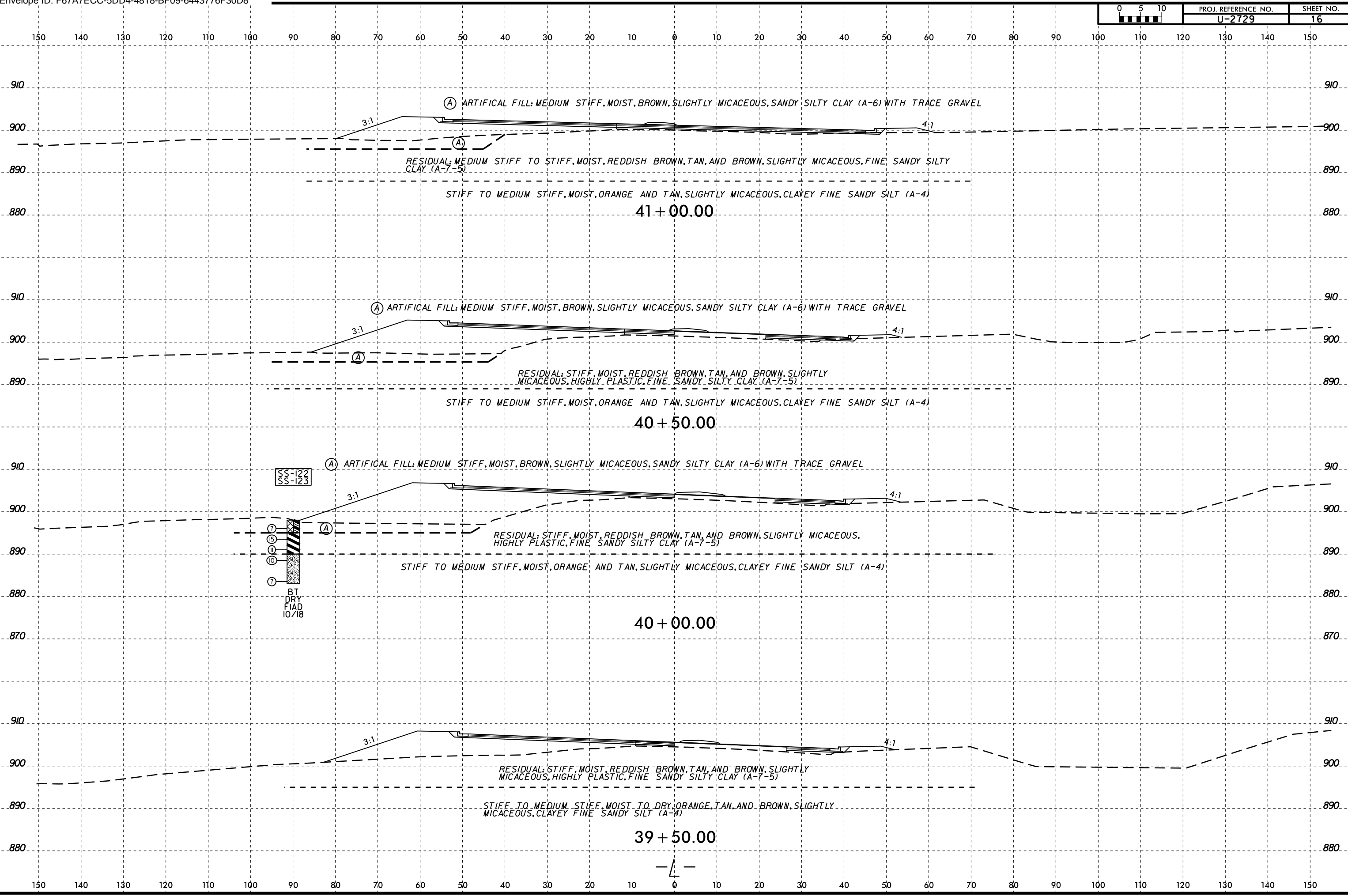
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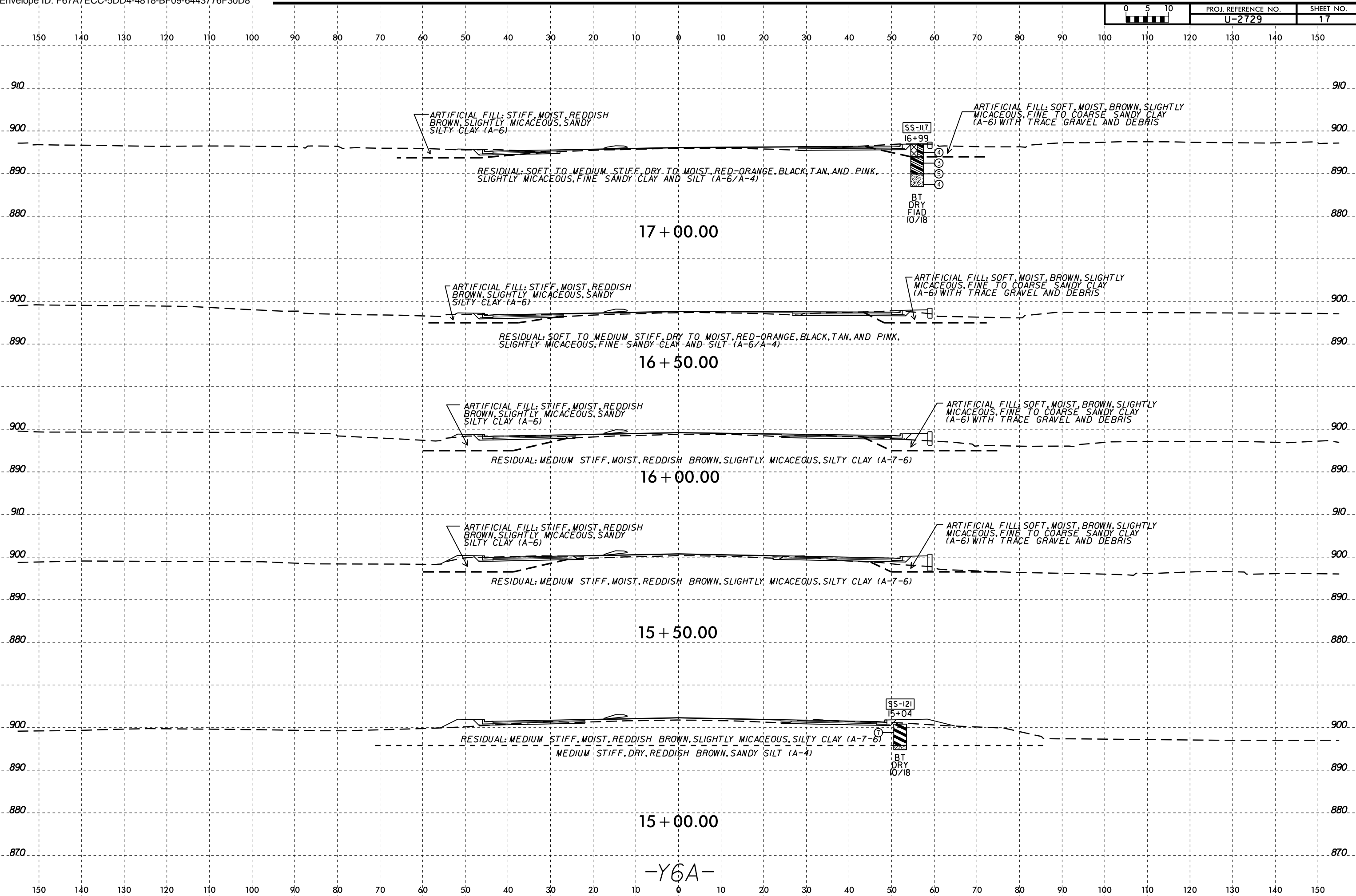


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6/23/16

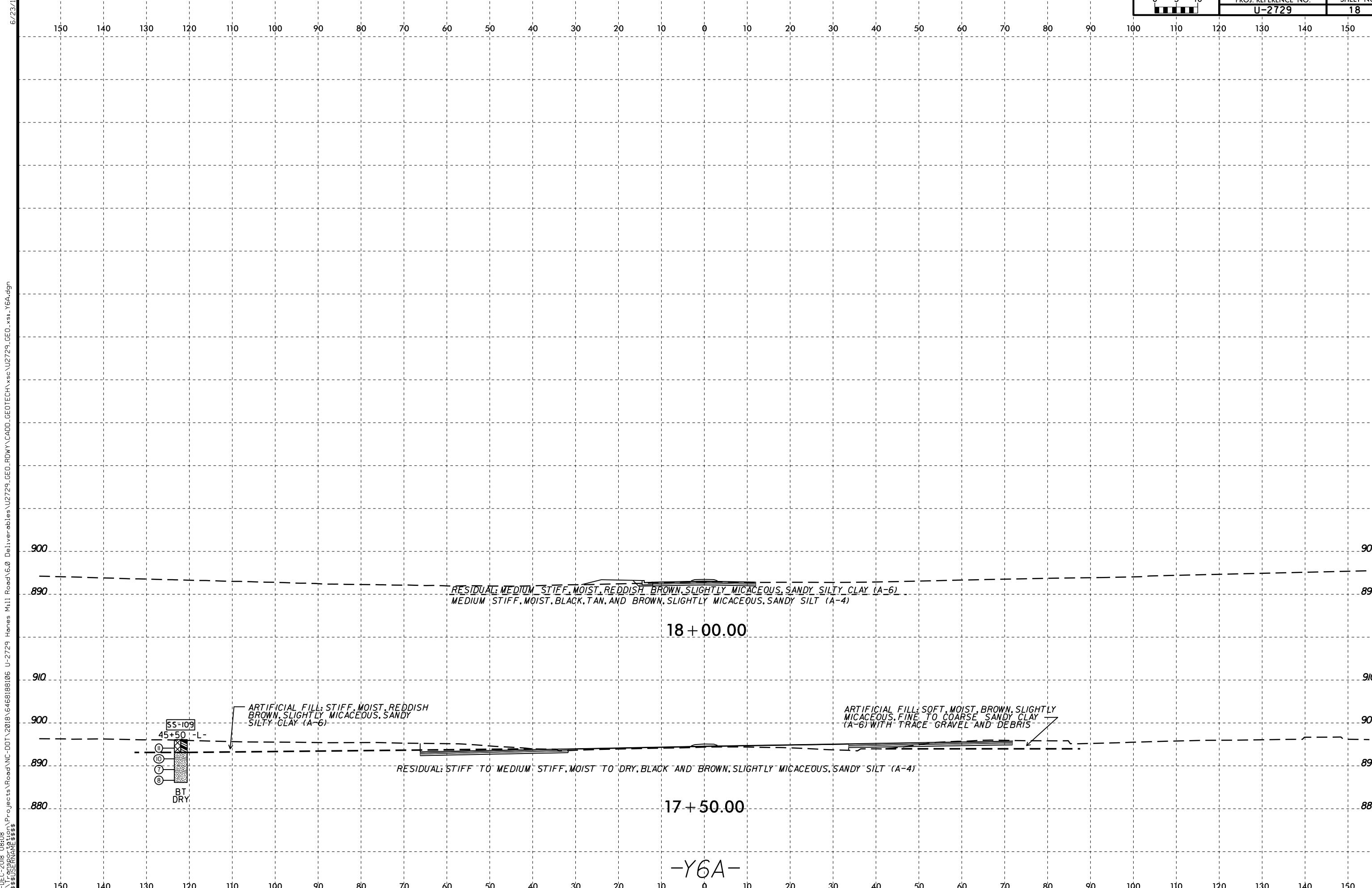


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-Y6A-

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-Y6A-

PROJECT NO.	SHEET NO.
U-2729	19

SOIL TEST RESULTS

SAMPLE NO.	STATION	OFFSET	LINE	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING SIEVES			% Moisture	% ORGANIC
								C. SAND	F. SAND	SILT	CLAY	10.0	40	200.0		
SS-1	12+83	31' LT	-L-	1.0-2.5	A-6(13)	38	18	16.5	8.3	31.8	42.7	99.3	87.3	75.8	12.6	-
SS-5	14+80	34' LT	-L-	1.0-2.5	A-4(6)	33	10	15.7	9.2	44.3	28.5	97.7	87.7	74.2	12.0	-
SS-6	14+80	34' LT	-L-	3.5-5.0	A-4(6)	36	10	15.7	17.5	39.1	27.0	99.3	89.7	69.0	11.0	-
SS-26	21+62	70' RT	-L-	1.0-2.5	A-7-6(21)	48	21	4.9	6.7	27.3	60.9	99.8	97.0	89.3	27.2	-
SS-29	21+62	70' RT	-L-	8.5-10.0	A-4(2)	28	7	23.2	15.5	40.6	18.6	97.9	81.0	61.5	12.2	-
SS-32	22+79	62' RT	-L-	1.0-2.5	A-7-5(24)	52	20	3.4	1.8	27.5	67.3	100.0	97.9	95.2	31.3	-
SS-66	27+00	39' LT	-L-	1.0-2.5	A-4(5)	38	8	21.6	14.7	36.9	25.4	98.6	83.8	64.7	23.9	-
SS-154	35+01	68' LT	-L-	1.0-2.5	A-6(7)	39	12	17.7	15.3	44.3	21.2	98.5	86.4	67.7	25.4	-
SS-139	36+56	72' LT	-L-	1.0-2.5	A-6(11)	36	15	11.6	12.0	48.9	27.4	99.9	93.0	79.5	24.9	-
SS-131	38+76	63' LT	-L-	1.0-2.5	A-7-5(39)	69	37	7.1	5.4	24.0	63.5	100.0	95.3	88.7	26.2	-
SS-122	40+00	90' LT	-L-	1.0-2.5	A-6(8)	33	14	14.8	15.7	33.4	34.6	98.5	89.3	70.3	15.1	-
SS-123	40+00	90' LT	-L-	3.5-5.0	A-7-6(37)	63	36	6.7	4.2	29.1	59.7	99.7	95.6	89.7	26.3	-
SS-127	42+03	68' LT	-L-	1.0-2.5	A-6(11)	37	17	15.6	11.6	18.7	52.0	97.9	87.7	72.4	39.9	-
SS-82	43+44	51' RT	-L-	1.0-2.5	A-6(9)	39	13	22.1	5.3	45.3	26.8	99.5	82.9	73.2	24.0	-
SS-109	45+50	55' LT	-L-	1.0-2.5	A-6(13)	38	18	19.1	6.7	27.7	44.8	98.3	85.2	75.9	15.1	-
SS-90	47+16	54' RT	-L-	1.0-2.5	A-7-6(17)	48	20	12.4	7.9	14.0	65.2	99.5	91.3	80.2	23.6	-
SS-105	48+50	50' LT	-L-	1.0-2.5	A-7-6(16)	43	21	13.8	8.3	25.1	50.7	97.9	89.2	76.7	21.1	-
SS-101	52+41	71' LT	-L-	1.0-2.5	A-7-6(22)	53	25	11.2	8.5	29.5	49.1	98.3	91.2	79.9	25.7	-
SS-18	10+58	CL	-RDBT-	1.0-2.5	A-7-6(17)	48	23	13.9	11.6	30.6	42.3	98.4	89.9	74.5	22.7	-
SS-44	15+87	33' LT	-LPA-	1.0-2.5	A-4(5)	32	9	19.7	13.5	38.4	26.8	98.4	85.3	67.1	20.4	-
SS-57	20+99	38' RT	-RPA-	1.0-2.5	A-6(11)	34	18	16.4	10.0	25.2	46.8	98.4	86.4	73.9	23.5	-
SS-150	16+07	36' RT	-LPB-	1.0-2.5	A-7-6(11)	42	16	13.9	15.5	29.9	39.9	99.2	90.4	73.4	20.1	-
SS-146	17+97	61' RT	-LPB-	1.0-2.5	A-7-6(19)	48	20	8.3	6.4	19.9	65.1	99.7	94.2	86.1	27.6	-
SS-14	12+62	24' LT	-Y1A-	1.0-2.5	A-7-6(16)	52	25	20.1	12.5	43.3	20.5	96.4	81.8	66.3	21.4	-
SS-16	12+62	24' LT	-Y1A-	6.0-7.5	A-6(8)	36	13	18.6	16.2	45.2	19.9	99.9	87.9	67.5	28.6	-
SS-74	10+68	27' LT	-Y5-	1.0-2.5	A-7-6(19)	49	24	11.4	9.5	30.9	45.6	97.4	90.2	78.1	20.3	-
SS-113	13+03	46' RT	-Y6A-	1.0-2.5	A-7-6(21)	50	24	14.6	5.3	30.8	49.3	100.0	89.5	80.8	23.9	-
SS-121	15+04	52' RT	-Y6A-	1.0-2.5	A-7-6(21)	46	22	7.9	5.9	17.7	68.3	99.8	95.2	87.0	24.6	-
SS-117	16+99	56' RT	-Y6A-	1.0-2.5	A-6(11)	40	19	19.9	11.2	28.4	37.1	96.6	82.8	67.1	20.2	-
SS-86	12+03	67' LT	-Y6B-	1.0-2.5	A-7-5(13)	49	18	23.3	8.2	35.4	32.8	99.7	86.3	69.3	30.4	-