

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.	I-5979	1	54

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NOTES:

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- 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

A. SUTTLE, GIT

A. BLACKMORE

HPC

INVESTIGATED BY ECS SOUTHEAST, LLP

DRAWN BY K. DE MONTBRUN, P.E.

CHECKED BY M. WALKO, P.E.

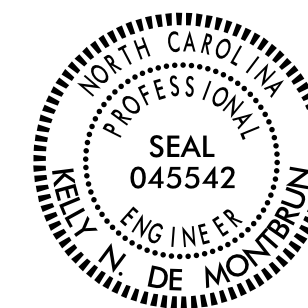
SUBMITTED BY ECS SOUTHEAST, LLP

DATE SEPTEMBER 2021

Prepared in the Office of:



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ENGINEERING
FIRM # F-1078



DocuSigned by:

Kelly de Montbrun

9/22/2021

7BDD9975E82C48C SIGNATURE

DATE

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CONTENTS

LINE	STATION	PLAN	PROFILE
-L-	21+69 TO 54+78	4-6	N/A
-RABI-	10+00 TO 14+71	4	7
-RAB2-	10+00 TO 14+71	5	8
-RPA1-	10+00 TO 13+64	5	N/A
-RPA2-	10+00 TO 14+94	5	N/A
-RPB-	10+00 TO 14+09	5	N/A
-RPC-	10+00 TO 13+60	4	N/A
-RPD-	10+00 TO 12+40	4	N/A
-SPURC-	10+00 TO 12+21	4	N/A

CROSS SECTIONS

LINE	STATION	SHEETS
-L-	21+50 TO 51+00	9-29
-RPA1-	10+50 TO 12+50	30-32
-RPA2-	10+00 TO 12+50	33-35
-RPB-	10+50 TO 14+00	36-40
-RPC-	10+50 TO 13+50	41-44
-RPD-	10+50 TO 12+00	45
-SPURC-	10+00 TO 12+00	46-47

APPENDICES

LINE	TITLE	SHEETS
A	LABORATORY TEST RESULTS	48-51

ROADWAY
SUBSURFACE INVESTIGATION

COUNTY RICHMOND

PROJECT DESCRIPTION INTERCHANGE IMPROVEMENTS
US 74 AT US 1 (EXIT 311)

INVENTORY

REFERENCE: I-5979

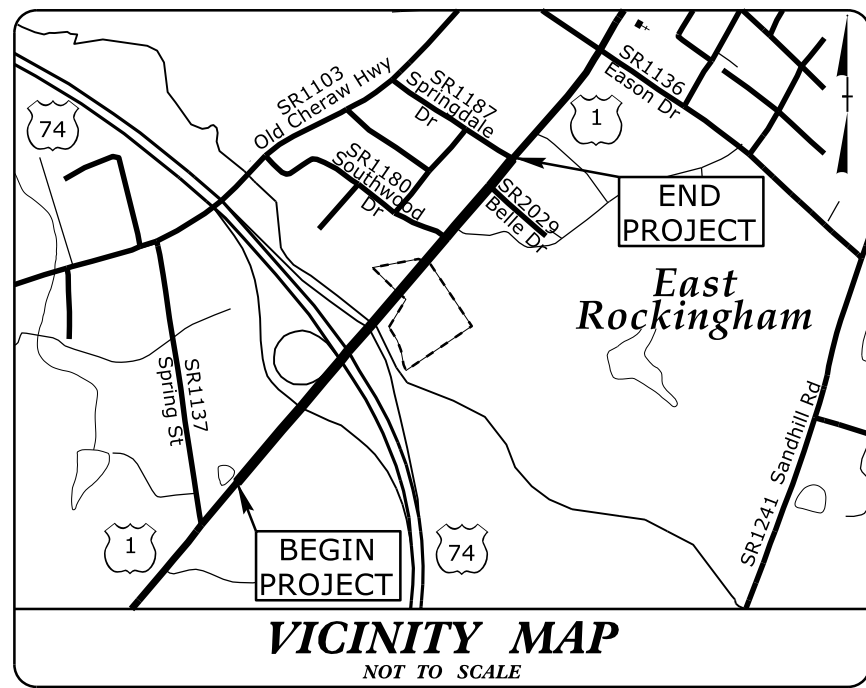
PROJECT: 37795

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5979	3	54
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
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46963.2.1		RW, UTIL.	
46963.3.1		CONST.	

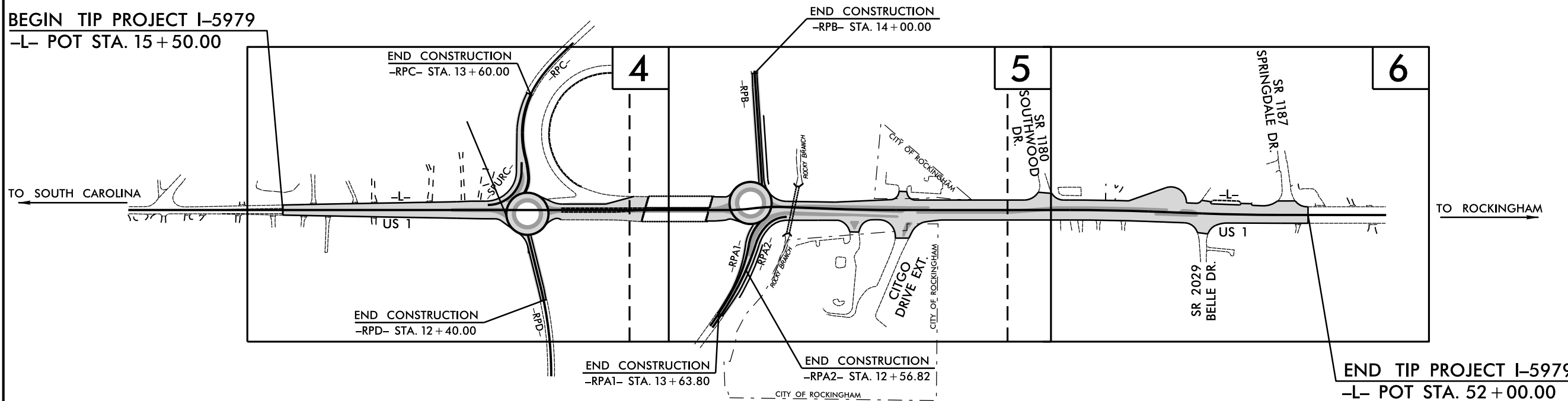
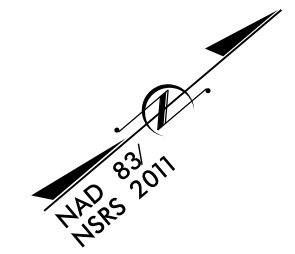
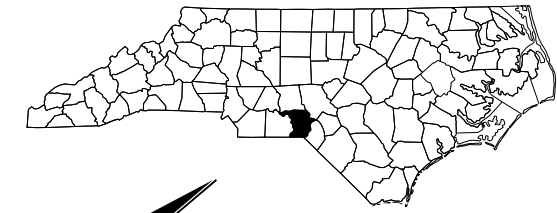
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
RICHMOND COUNTY

**LOCATION: US 74 (FUTURE I-74) /US 1 (EXIT 311).
INTERCHANGE IMPROVEMENTS AT US 1
FROM JUST WEST OF THE EASTBOUND US 74 RAMP
TO SR 1187 (SPRINGDALE DR.)**

TYPE OF WORK: GRADING, PAVING, AND DRAINAGE



25% PLANS

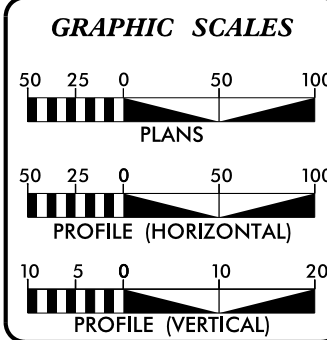


A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF ROCKINGHAM.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD ___.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL
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TIP PROJECT: I-5979

CONTRACT:



DESIGN DATA

ADT 2020 =	13,200
ADT 2040 =	13,200
K =	8 %
D =	55 %
T =	23 % *
V =	50 MPH
* (TTST 19 + DUAL 4)	
FUNC CLASS =	PRINCIPAL ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-5979	=	0.648 MI.
LENGTH EXISTING STRUCTURE	=	0.043 MI.
TOTAL LENGTH OF TIP PROJECT I-5979	=	0.691 MI.

Prepared for the North Carolina Department of Transportation
In the Office of:

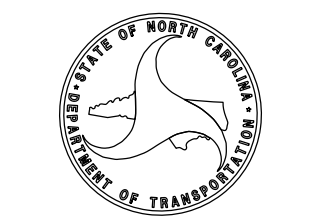
2018 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE:	JIMMY GOODNIGHT, PE PROJECT ENGINEER
OCTOBER 2021	
LETTING DATE:	JERRY JAVELLANA, PE PROJECT DESIGN ENGINEER
DECEMBER 20, 2022	
NCDOT CONTACT	GREG DAVIS, PE DIVISION PROJECT ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



21-SEP-2021 16:28 C:\User\skdemont\brun\OneDrive - ECS Corporate Services\08 Geo Projects Other\33-Fayatville\33-5539 - I-5979 - Interchange Improvements-US 74 at US 1\CADD-GEOTECH\Plan\Prof\159 09/08/19



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September 22, 2021

WBS NO: 46963.1.1
TIP NO: I-5979
PROJECT ID: 37795
COUNTY: Richmond
DESCRIPTION: Interchange Improvements – US 74 at US 1 (Exit 311)

SUBJECT: Geotechnical Report – Inventory

Project Description

The project consists of interchange improvements along US 1 at Exit 311 on US 74 in Richmond County, North Carolina. Improvements include widening of US 1, improvements to various side streets and interstate ramps, a new turning bulb along US 1, and two new roundabouts (-RAB1- and -RAB2-) are planned on US 1 to facilitate entrance and exit traffic flow onto US 74. The project is approximately 0.7 miles in length, measured along the US 1 (-L-) alignment.

The project site is located along US 1 at the US 74 interchange, from just west of the eastbound US 74 ramp to SR 1187 (Springdale Drive) in Rockingham, Richmond County, North Carolina. We understand that the project will consist of upgrading an existing 2-lane roadway with a turn lane into a 4-lane roadway with a center turn lane as well as constructing two (2) new roundabouts. The roundabouts will be constructed at the intersection of US 1 and the westbound and eastbound entrance and exit ramps for US 74. Additionally, a new earthen berm with a maximum height of approximately 4.5 feet is planned along US 1 (-L-) approximately between stations 25+50 and 28+00, left of the alignment. Median left turn lanes and a new turning bulb are also planned for the corridor.

The road elevations along the -L- alignment centerline range from approximately 255.2 feet at the beginning of the project corridor west of the interchange to 224.9 feet just east of the interchange. Soils encountered in the proposed construction areas generally consisted of roadway embankment, and/or alluvial soils underlain by Coastal Plain (Middendorf Formation) and residual soils. Based on the Roadway Plans provided to us by NCDOT, a majority of the planned construction will occur along the -L- alignment and US 74 entrance and exit ramps (-RPA1-, -RPA2-, -RPB-, -RPC-, -RPD-, -SPURC-) from US 1. Mass grading will generally be limited to the new alignment/roundabout areas (-RAB1- and -RAB2-) with cut and fill depths on the order of approximately 5 feet or less.

The following roads are included as part of this exploration:

<u>Line</u>	<u>Road Name</u>	<u>Station (±)</u>	<u>Offsets</u>
-L-	US 1	21+69 to 54+78	LT to RT
-RAB1-	Roundabout on US 1	10+00 to 14+71	LT to RT
-RAB2-	Roundabout on US 1	10+00 to 14+71	LT to RT
-RPA1-	US 74 WB exit Ramp to US 1	10+00 to 13+64	LT to RT
-RPA2-	US 74 WB exit Ramp to US 1	10+00 to 14+94	LT to RT
-RPB-	US 74 WB entrance Ramp from US1	10+00 to 14+09	LT to RT
-RPC-	US 74 EB exit Ramp to US 1	10+00 to 13+60	LT to RT
-RPD-	US 74 EB entrance Ramp from US1	10+00 to 12+40	LT to RT
-SPURC-	US 74 EB exit Ramp to US 1	10+00 to 12+21	LT to RT

A geotechnical field investigation was performed by ECS in May 2021. During this time period, a total of forty (40) standard test borings and two (2) hand auger borings supplemented with Dynamic Cone Penetrometer (DCP) tests were performed throughout the project corridor. Representative soil samples were collected for visual classification in the field and for analysis by ECS's testing laboratory. Two (2) bulk samples were collected from the -L- alignment and were used for standard Proctor and California Bearing Ratio (CBR) testing.

Physiography and Geology

In accordance with the Geologic Map of North Carolina, 1985, the project corridor is located in the Coastal Plain and Piedmont Physiographic Provinces of North Carolina. Piedmont soils are the residual product of in-place chemical weathering of rock that is similar to the rock presently underlying the site (mapped as predominantly mudstone, siltstone, and sandstones). Portions of the alignment are also located in the Coastal Plain Physiographic Province of North Carolina (Middendorf Formation). Soils in this area generally consist of sedimentary materials transported from other areas by the ocean or rivers. The Middendorf Formation was formed in the Cretaceous geologic age consisting primarily of sand, sandstone, and mudstone, gray to pale gray with an orange cast, and mottled.

Soil Properties

Soils within the area of this project have been divided into four categories: roadway embankment, alluvial, Coastal Plain, and residual soils.

Roadway Embankment: Roadway Embankment (R.E.) soils generally consist of loose to medium dense fine to coarse sand (A-1-b), very loose to dense silty fine to coarse sand (A-2-4), very loose to loose clayey fine to coarse sand (A-2-6/7), soft to very stiff fine to coarse sandy silt (A-4), medium stiff to hard clayey silt (A-5), medium stiff to stiff fine to coarse sandy clay (A-6), and soft to stiff silty clay (A-7-5/6). The roadway embankment extends to depths ranging from approximately 3.0 to at least 13.0 feet below existing grades. Laboratory testing of the roadway embankment material indicated Plasticity Indices (PI's) ranging between 6 and 30 for the sandy soils (A-2-4, A-2-7), PI's ranging from Non-Plastic (NP) to 10 for the silty soils (A-4), and PI's ranging from 16 to 40 for the clayey soils (A-6, A-7-5, A-7-6).

Alluvial: Alluvial soils were encountered along the -L- alignment in Boring L_4700L. The alluvial soils generally consist of very loose silty/clayey fine to coarse sand (A-2-4/A-2-6) and extend to a depth of approximately 18.0 feet below the existing ground surface.

Coastal Plain Soils (Middendorf Formation): Coastal Plain soils were encountered predominantly along the eastern and northern portions of the project corridor. Coastal Plain Soils generally consist of very loose to medium dense clayey fine to coarse sand (A-2-6), loose to medium dense silty fine to coarse sand (A-2-4), very stiff fine to coarse sandy silt (A-4), very stiff fine to coarse sandy clay (A-6), and stiff to hard silty clay (A-7-6). Laboratory testing of the Coastal Plain soils indicated a PI of Non-Plastic (NP) for the silty soils (A-4), a PI of 11 for the sandy soils (A-2-6), and PI's ranging from 18 to 29 for the clayey soils (A-6, A-7-6).

Residual Soils: Residual soils throughout the project corridor are derived from the weathering of the underlying parent bedrock. A majority of the residual soils encountered generally consisted of stiff to hard fine to coarse sandy silt (A-4); medium stiff to stiff clayey silt (A-5), medium stiff to stiff fine to coarse sandy clay (A-6), and medium stiff to very stiff silty clay (A-7-5 and A-7-6). Laboratory testing of the residual soils indicated PI's ranging from 26 to 44 for the clayey (A-7-5, A-7-6) soils.

Groundwater Properties

Groundwater was encountered in one (1) boring (Boring L_4700L) immediately after drilling at a depth of approximately 10.5 feet below the existing ground surface, corresponding to an approximate elevation of 240.3 feet. After a stabilization period of at least 24 hours, groundwater was encountered in Borings L_2250L and RPD_1200R at depths of approximately 6.3 feet and 4.2 feet below the existing ground surface, respectively, corresponding to elevations of approximately 239.2 feet and 232.1 feet, respectively. Due to their proximity to the existing roadway, eighteen (18) bore holes were filled in after drilling/augering making stabilized (24-hour) water readings unobtainable.

Areas of Special Geotechnical Interest

- 1) **Soft/Very Loose Soils:** The following areas contain relatively soft or very loose soils that have the potential for subgrade instability, embankment stability or long-term settlement problems during construction:

<u>Line</u>	<u>Station (±)</u>	<u>Offsets</u>
-L-	21+69 to 22+80	LT
-L-	26+25 to 28+38	LT
-L-	46+75 to 47+25	RT

- 2) **High Plasticity Soils:** The following areas contain high plasticity soils with plasticity indices (PI's) in excess of 25 in Piedmont residual soils and PI's in excess of 15 in Coastal Plain soils. High plasticity soils have the potential to cause subgrade instability during construction, embankment stability or long term settlement problems.

<u>Line</u>	<u>Station (±)</u>	<u>Offsets</u>
-L-	24+75 to 27+25	LT to RT
-L-	30+86 to 31+44	RT
-L-	32+89 to 36+25	LT to RT
-L-	42+75 to 44+75	LT to RT
-L-	48+25 to 51+06	RT
-RAB1-	12+75 to 14+71	LT to RT
-RAB2-	11+25 to 13+75	LT
-RPA1-	10+00 to 11+75	LT to RT
-RPA2-	10+00 to 12+25	LT
-RPB-	11+75 to 14+00	LT
-RPC-	10+00 to 13+60	LT to RT
-SPURC-	10+00 to 12+21	LT

- 3) **High Groundwater:** Groundwater was encountered within six feet of the proposed subgrade at the following locations. This has the potential to cause subgrade instability and/or constructability issues.

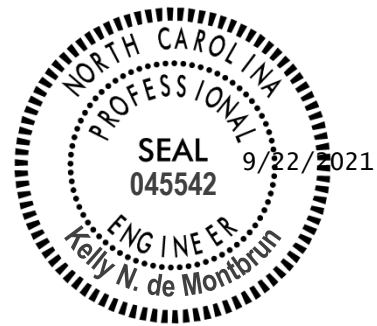
<u>Line</u>	<u>Station (±)</u>	<u>Offsets</u>
-RPD-	11+75 to 12+40	RT

Bulk Samples

Bulk soil samples were obtained at the following locations and were used for standard Proctor and California Bearing Ratio (CBR) testing.

<u>Sample</u>	<u>Line</u>	<u>Station (±)</u>	<u>Offset</u>	<u>Depth (ft)</u>
S-1	-L-	42+00	50' RT	0.0 – 5.0
S-2	-L-	47+00	60' LT	0.0 – 5.0

Prepared by,



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7BDD9975E22C480...


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Project Engineer
N.C. Registration No. 045542

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Michael J. Walko
78222AC7F82F4D7...

Michael J. Walko, P.E.
Principal Engineer

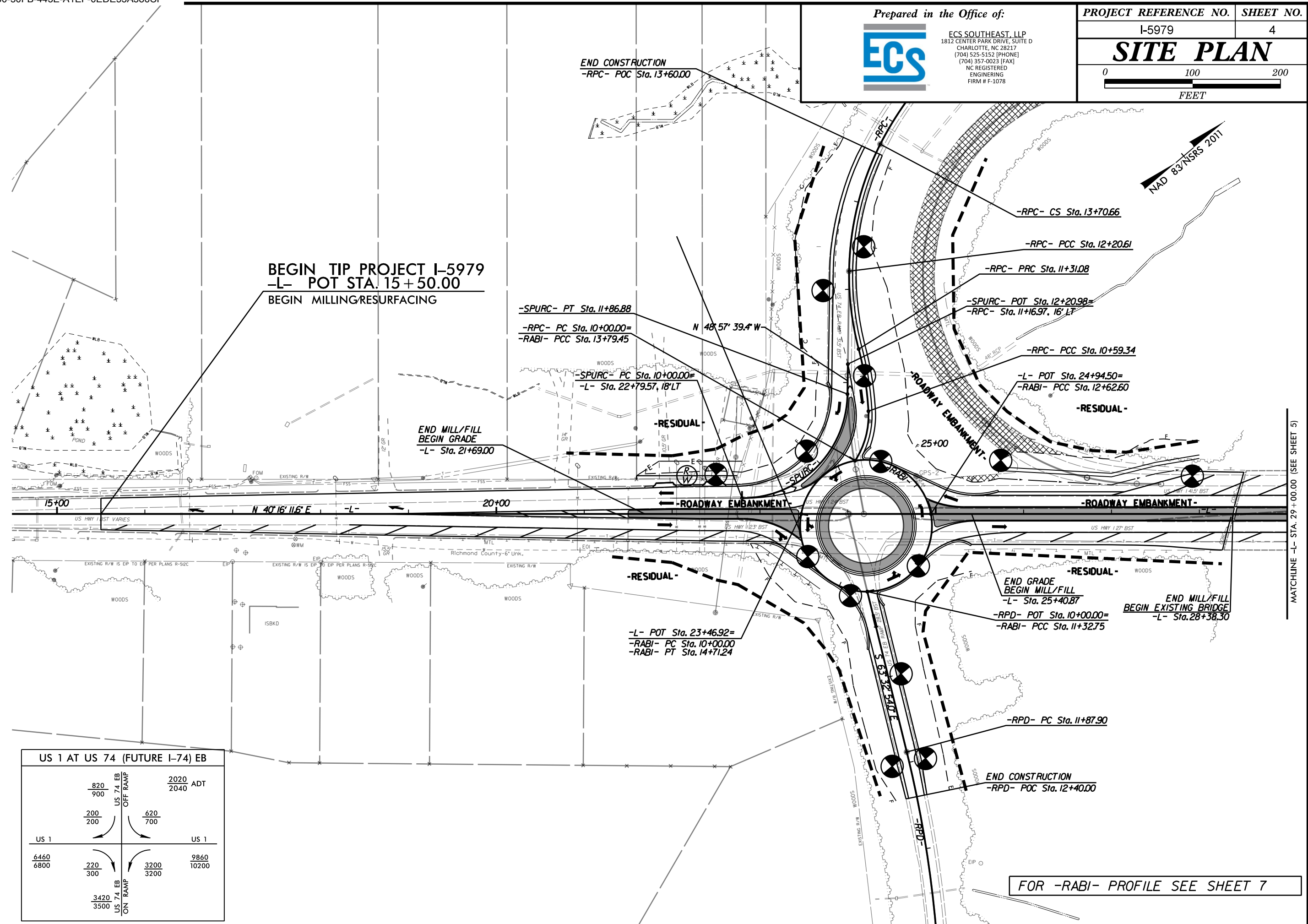

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ENGINEERING
FIRM # F-1078

PROJECT REFERENCE NO.	I-5979	SHEET NO.	4
SITE PLAN			
0 100 200 FEET			



BEGIN TIP PROJECT I-5979
-L- POT STA. 15+50.00
BEGIN MILLING/RESURFACING

US 1 AT US 74 (FUTURE I-74) EB

	820 900	US 74 EB OFF RAMP	2020 2040 ADT	
	200 200		620 700	
US 1				US 1
6460 6800	220 300	US 74 EB ON RAMP	3200 3200	9860 10200
	3420 3500			

FOR -RABI- PROFILE SEE SHEET 7

MATCHLINE -L- STA. 29+00.00 (SEE SHEET 5)

8/17/99
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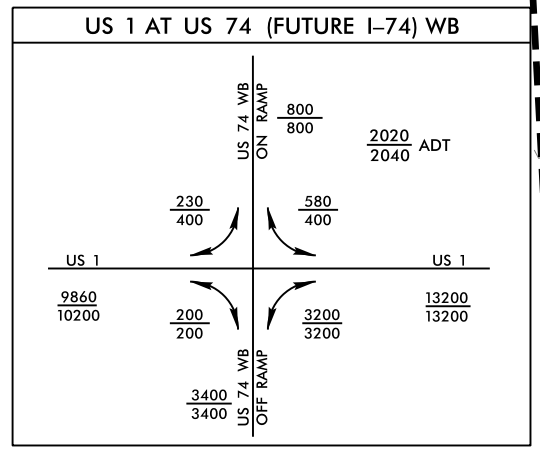
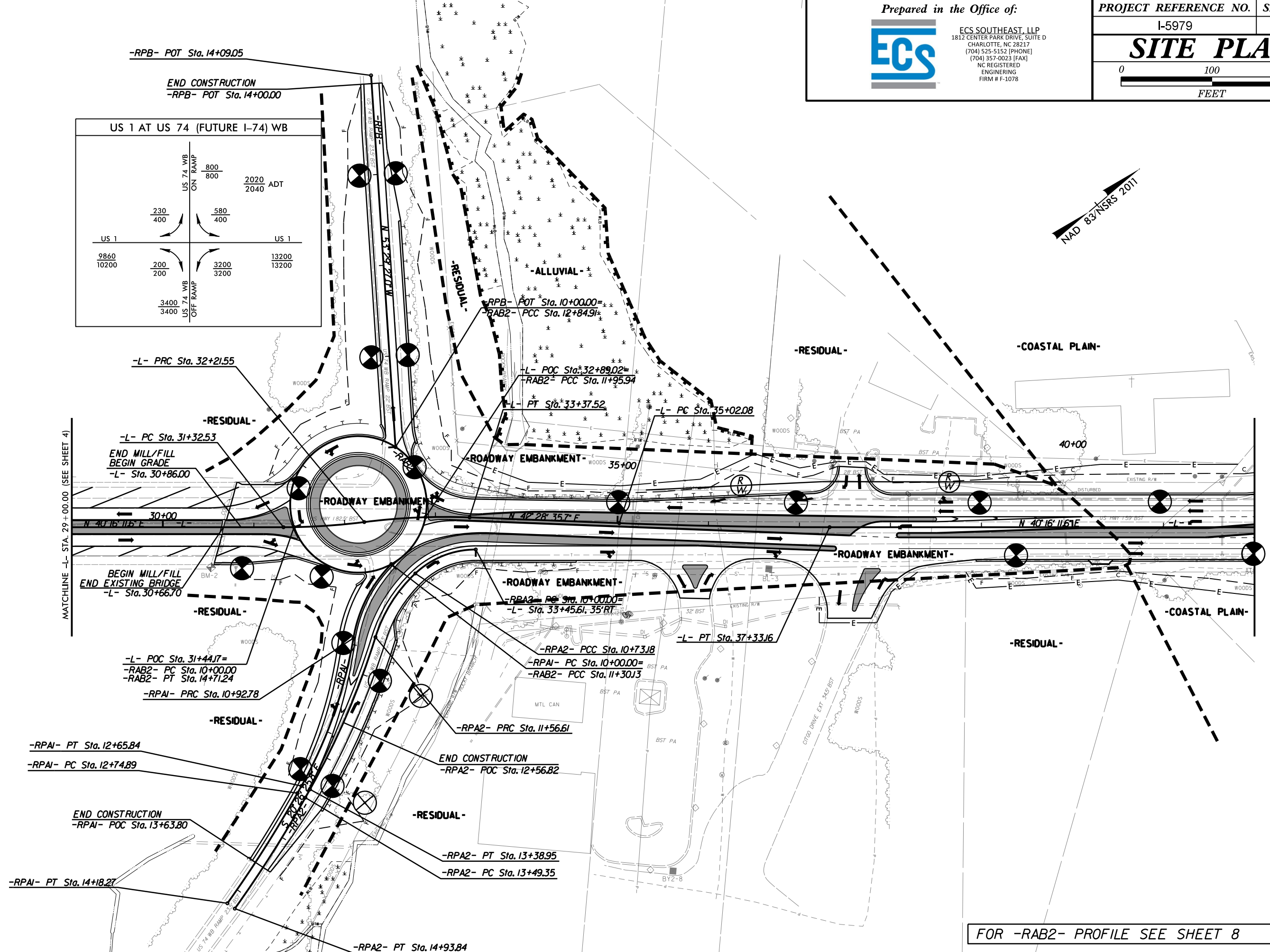
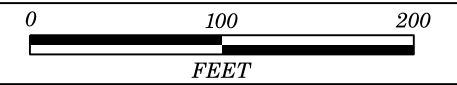
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FIRM # F-1078

PROJECT REFERENCE NO. I-5979 SHEET NO. 5

SITE PLAN



MATCHLINE -L- STA. 29+00.00 (SEE SHEET 4)

MATCHLINE -L- STA. 42+00.00 (SEE SHEET 6)

FOR -RAB2- PROFILE SEE SHEET 8

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-L- CURVE DATA

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L = 281.75'	L = 271.40'
T = 140.89'	T = 135.71'
R = 7,639.44'	R = 7,639.44'



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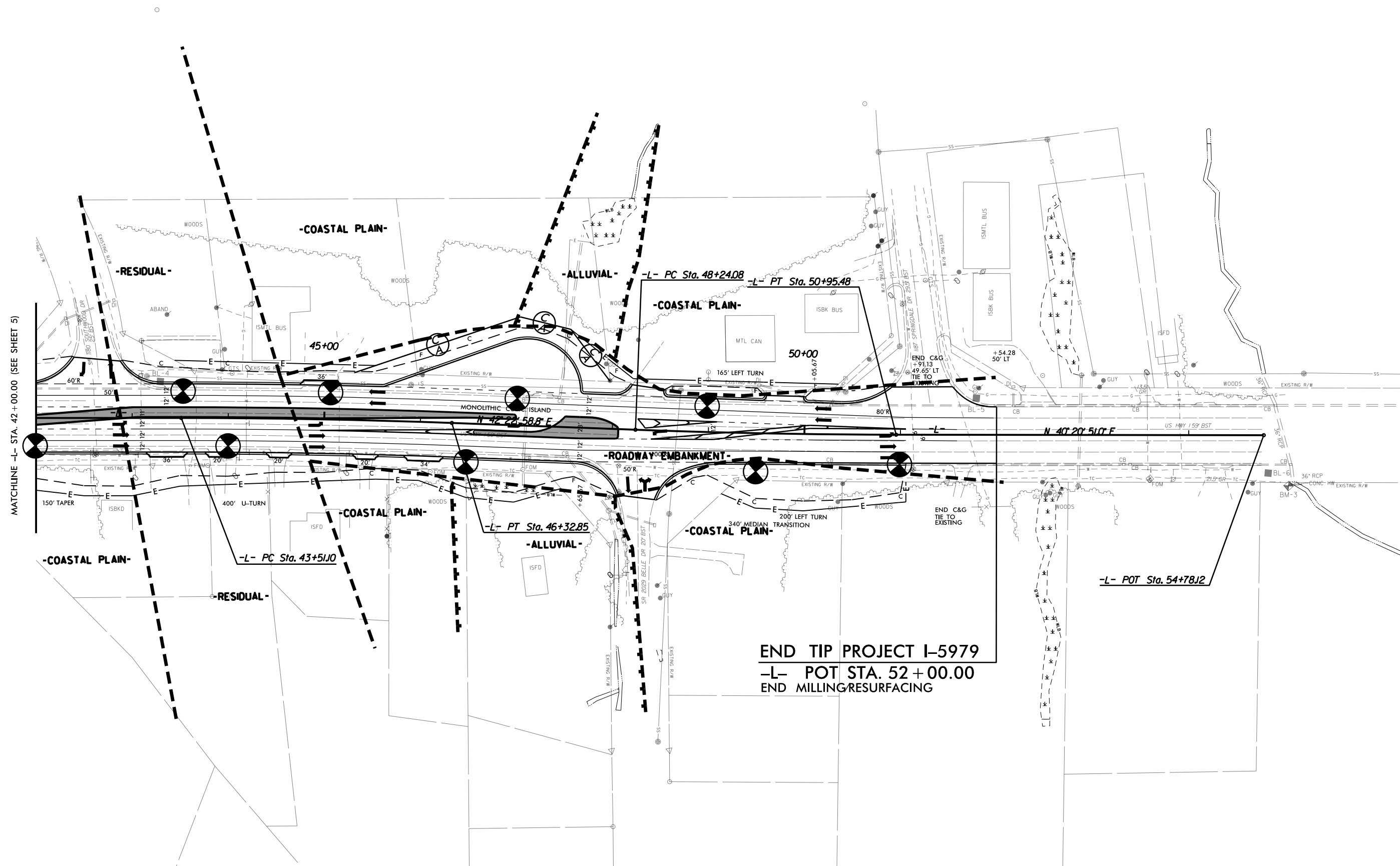
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 FIRM # F-1078

PROJECT REFERENCE NO.	SHEET NO.
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I-5979

6

SITE PLAN



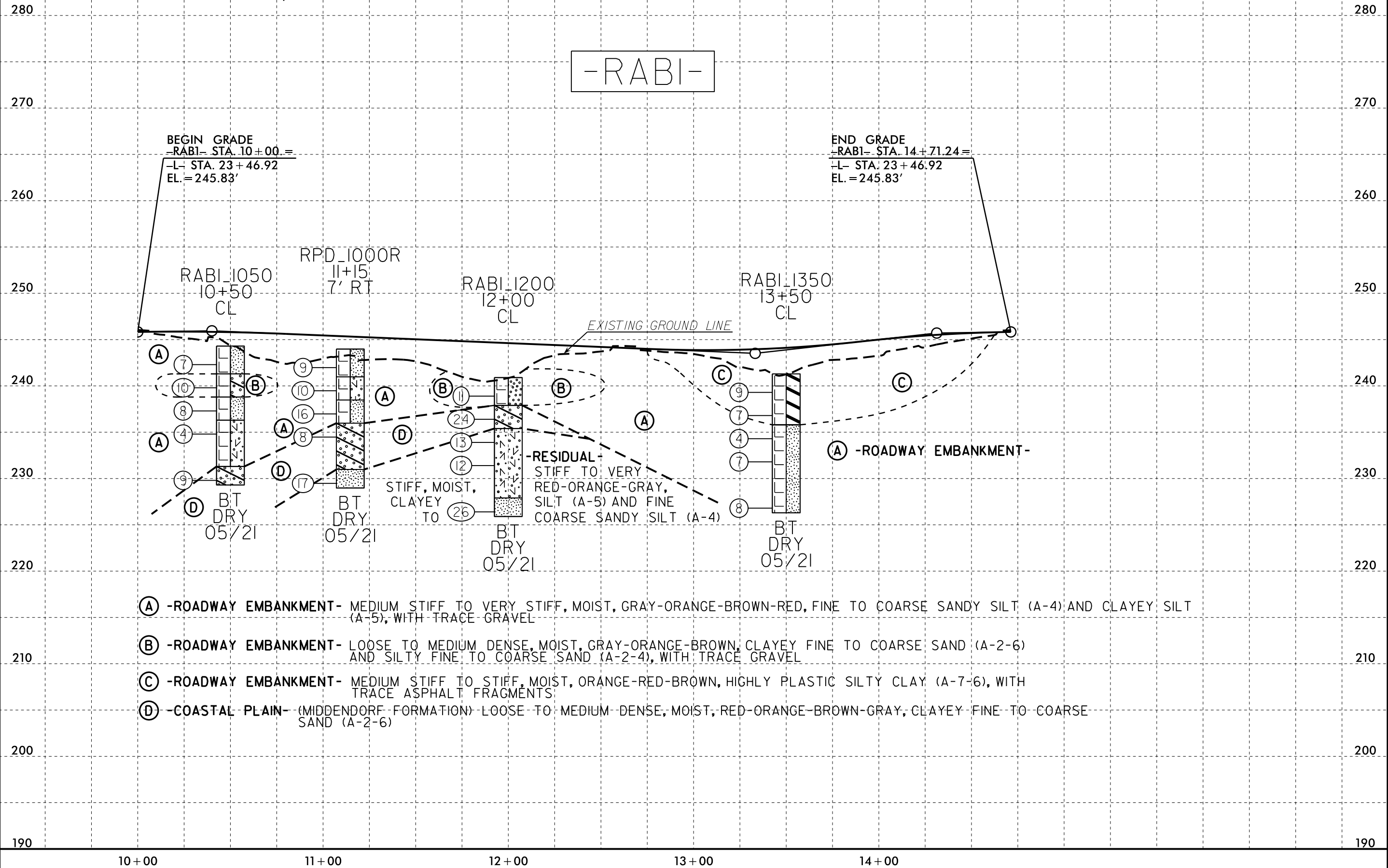
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 END MILLING/RESURFACING

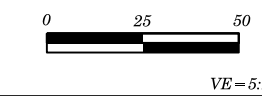
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PROJECT REFERENCE NO.		SHEET NO.	
I-5979		7	
PROFILE BORINGS PROJECTED ON -RABI- EXISTING GROUNDLINE AT CENTERLINE			

-RABI- PROFILE FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE PROFILE.

-RABI-

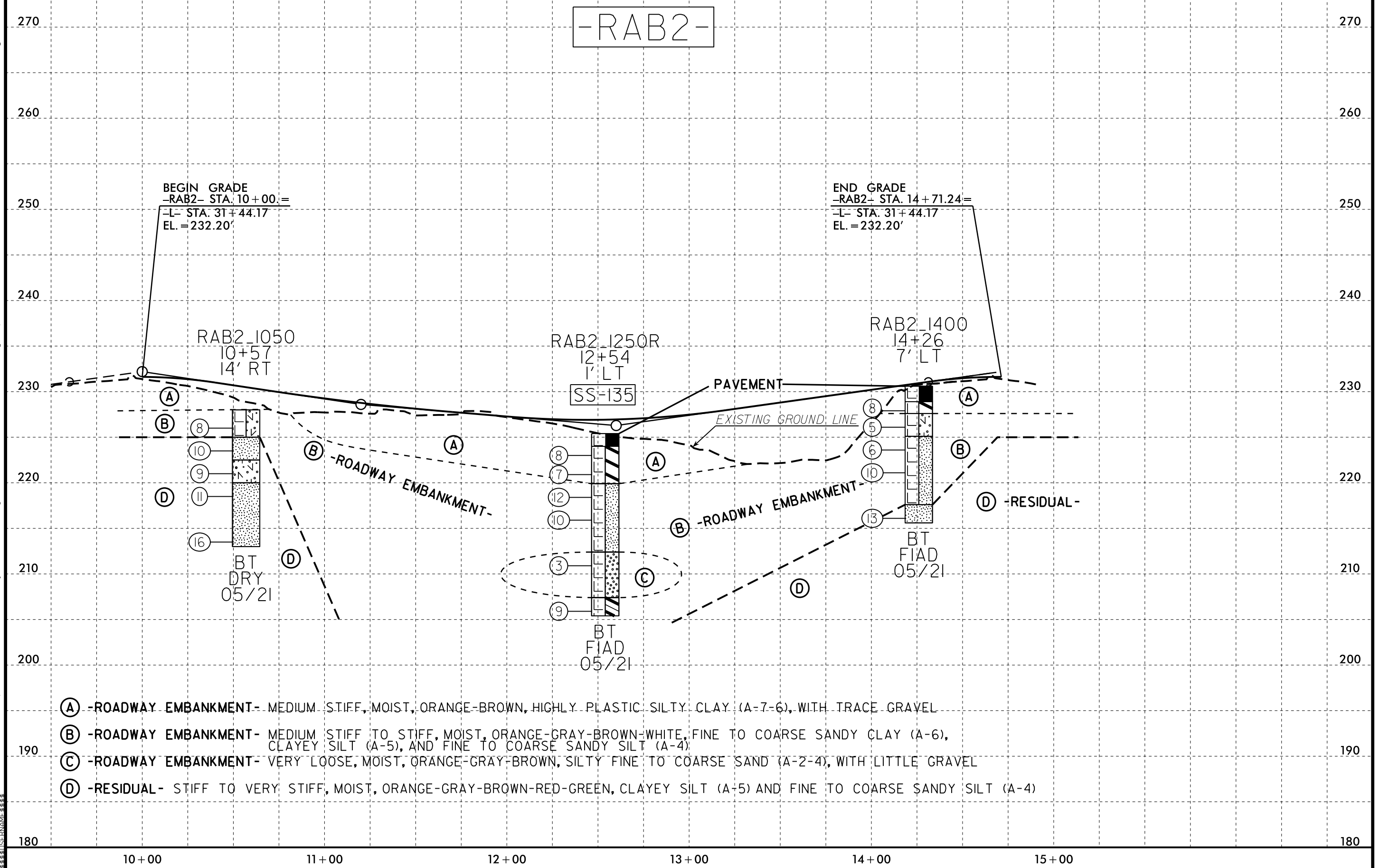




PROJECT REFERENCE NO.	SHEET NO.
I-5979	8
PROFILE BORINGS PROJECTED ON -RAB2- EXISTING GROUNDLINE AT CENTERLINE	

-RAB2- PROFILE FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT ON 09/26/18. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE PROFILE.

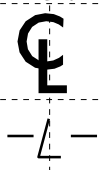
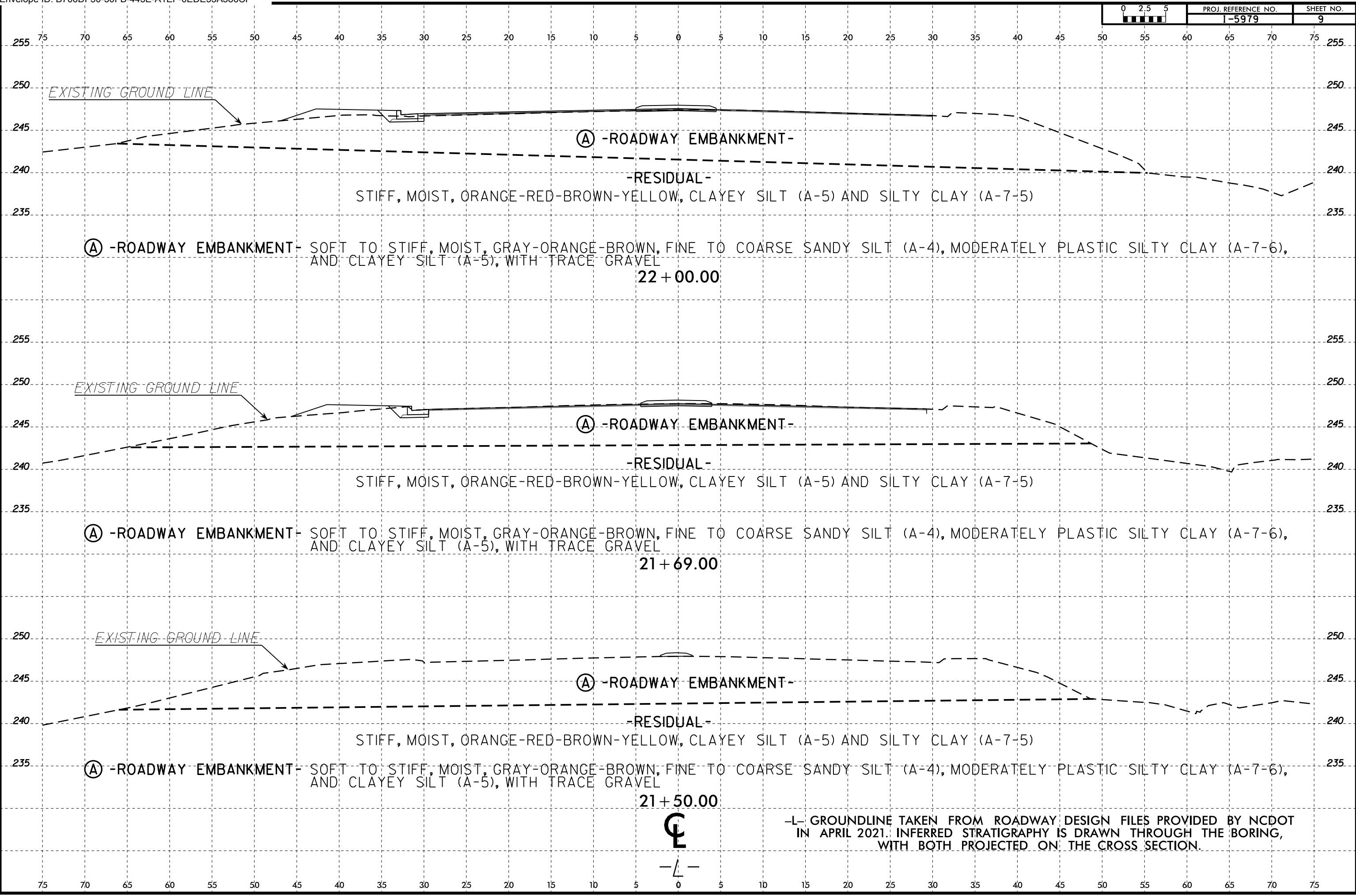
-RAB2-



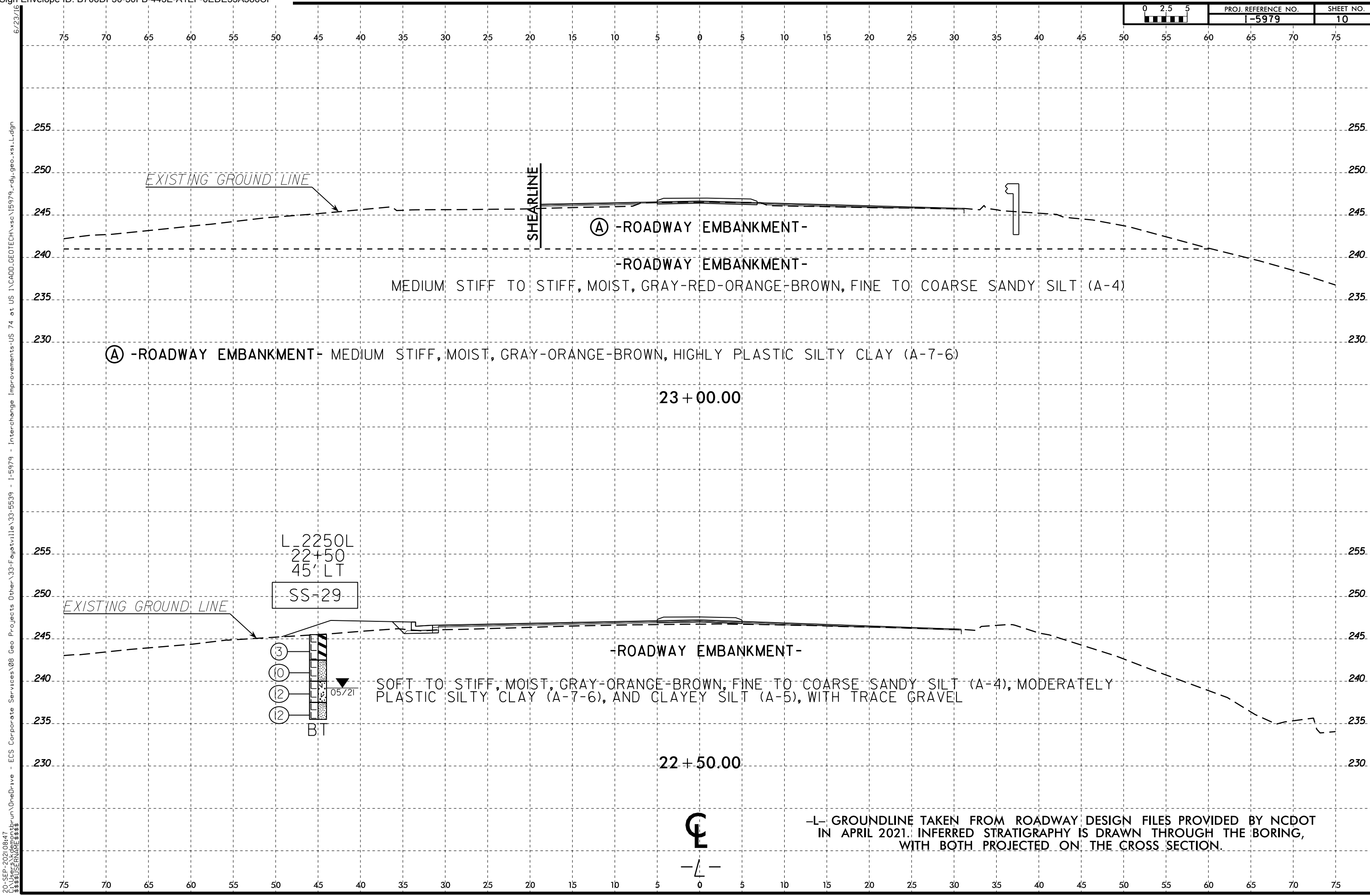
- (A) -ROADWAY EMBANKMENT- MEDIUM STIFF, MOIST, ORANGE-BROWN, HIGHLY PLASTIC SILTY CLAY (A-7-6), WITH TRACE GRAVEL
- (B) -ROADWAY EMBANKMENT- MEDIUM STIFF TO STIFF, MOIST, ORANGE-GRAY-BROWN-WHITE, FINE TO COARSE SANDY CLAY (A-6), CLAYEY SILT (A-5), AND FINE TO COARSE SANDY SILT (A-4)
- (C) -ROADWAY EMBANKMENT- VERY LOOSE, MOIST, ORANGE-GRAY-BROWN, SILTY FINE TO COARSE SAND (A-2-4), WITH LITTLE GRAVEL
- (D) -RESIDUAL- STIFF TO VERY STIFF, MOIST, ORANGE-GRAY-BROWN-RED-GREEN, CLAYEY SILT (A-5) AND FINE TO COARSE SANDY SILT (A-4)

5/14/99
I:\CADD\GEO\TECH\PlanProf\15979_GEO_PFI8.dgn
Interchange_Improvements-US 74 at US 1\CADD\GEO\TECH\PlanProf\15979_GEO_PFI8.dgn
ECS Corporate Services\08_Geo Projects\Other\33-Fayetteville\33-5539 - I-5979
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11/24/2021 11:52:01 AM

6/23/16
I:\CADD\GEO\TECH\15979_rdy.geo_xsi.L.dgn
Interchange Improvements-US 74 at US 1\CA00.GEOTECH\15979_rdy.geo_xsi.L.dgn
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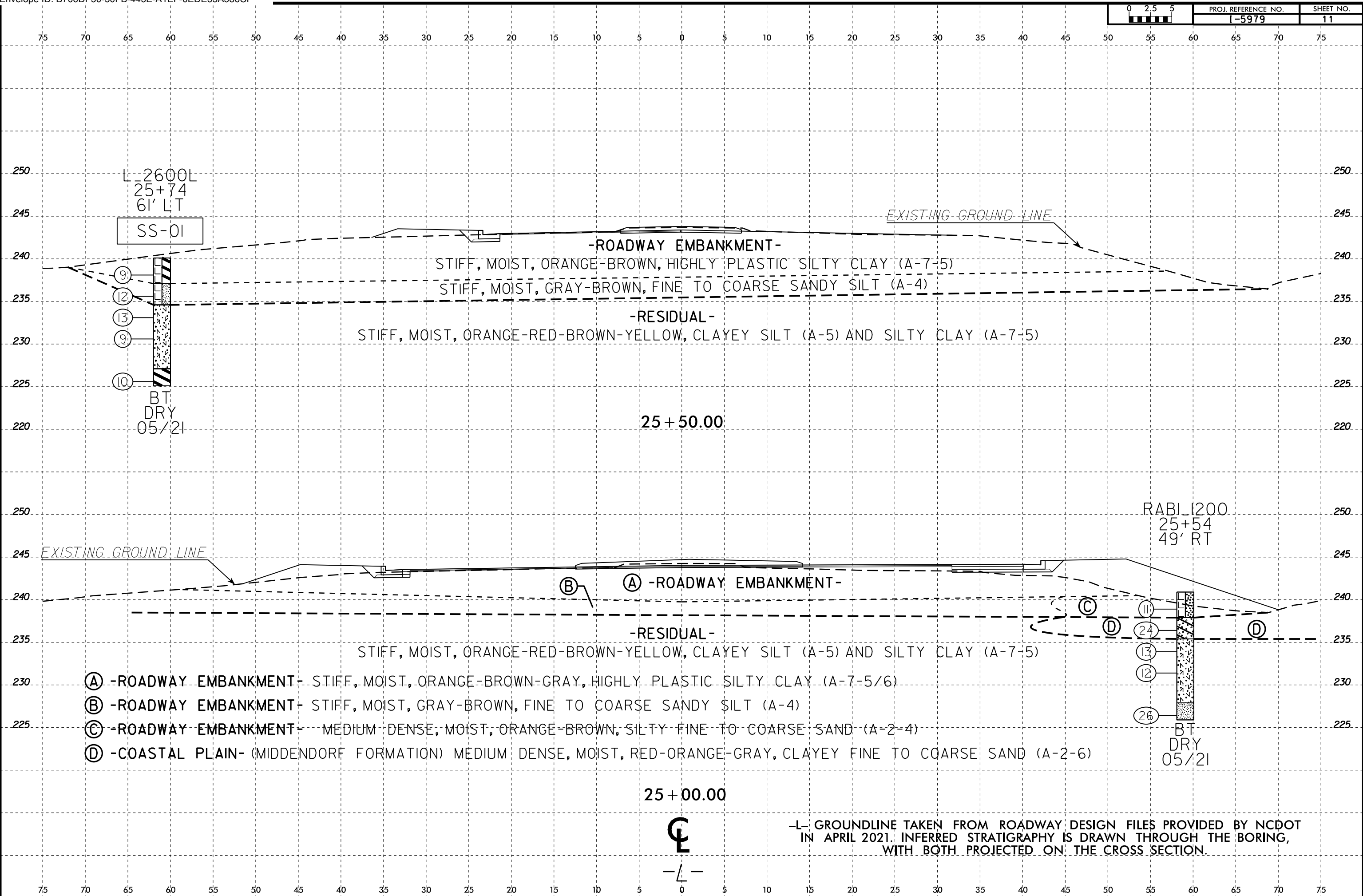
-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.



-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

20-SEP-2021 08:47
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6/23/16
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L-2600L
25+74
61' LT

SS-01

- 9
- 12
- 13
- 9
- 10

BT
DRY
05/21

-ROADWAY EMBANKMENT-

STIFF, MOIST, ORANGE-BROWN, HIGHLY PLASTIC SILTY CLAY (A-7-5)

STIFF, MOIST, GRAY-BROWN, FINE TO COARSE SANDY SILT (A-4)

-RESIDUAL-

STIFF, MOIST, ORANGE-RED-BROWN-YELLOW, CLAYEY SILT (A-5) AND SILTY CLAY (A-7-5)

25 + 50.00

EXISTING GROUND LINE

RAB1200
25+54
49' RT

EXISTING GROUND LINE

(A) -ROADWAY EMBANKMENT-

-RESIDUAL-

STIFF, MOIST, ORANGE-RED-BROWN-YELLOW, CLAYEY SILT (A-5) AND SILTY CLAY (A-7-5)

(A) -ROADWAY EMBANKMENT- STIFF, MOIST, ORANGE-BROWN-GRAY, HIGHLY PLASTIC SILTY CLAY (A-7-5/6)

(B) -ROADWAY EMBANKMENT- STIFF, MOIST, GRAY-BROWN, FINE TO COARSE SANDY SILT (A-4)

(C) -ROADWAY EMBANKMENT- MEDIUM DENSE, MOIST, ORANGE-BROWN, SILTY FINE TO COARSE SAND (A-2-4)

(D) -COASTAL PLAIN- (MIDDENDORF FORMATION) MEDIUM DENSE, MOIST, RED-ORANGE-GRAY, CLAYEY FINE TO COARSE SAND (A-2-6)

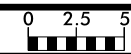
- 11
- 24
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- 12
- 26

BT
DRY
05/21

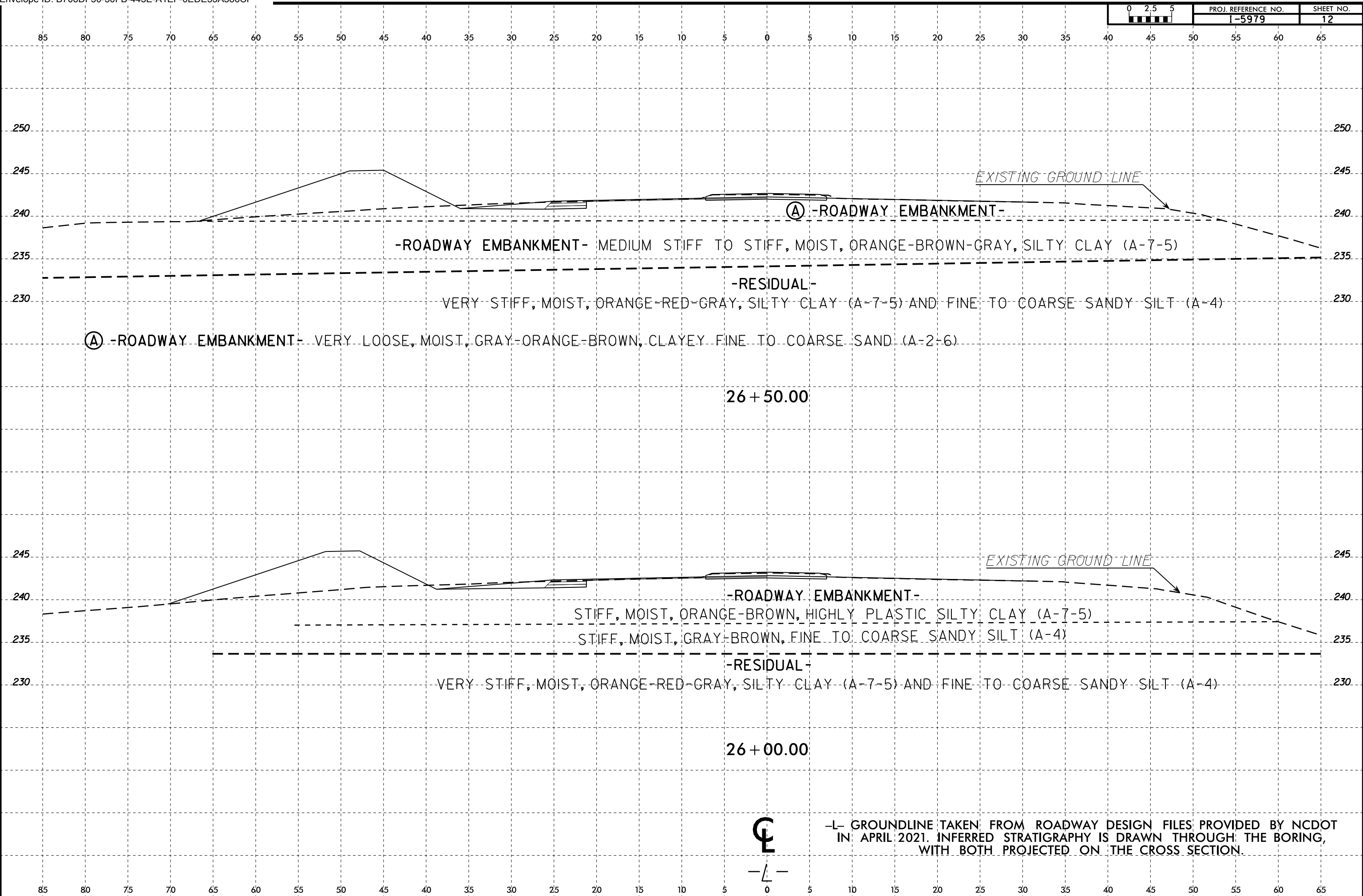
25 + 00.00

-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.



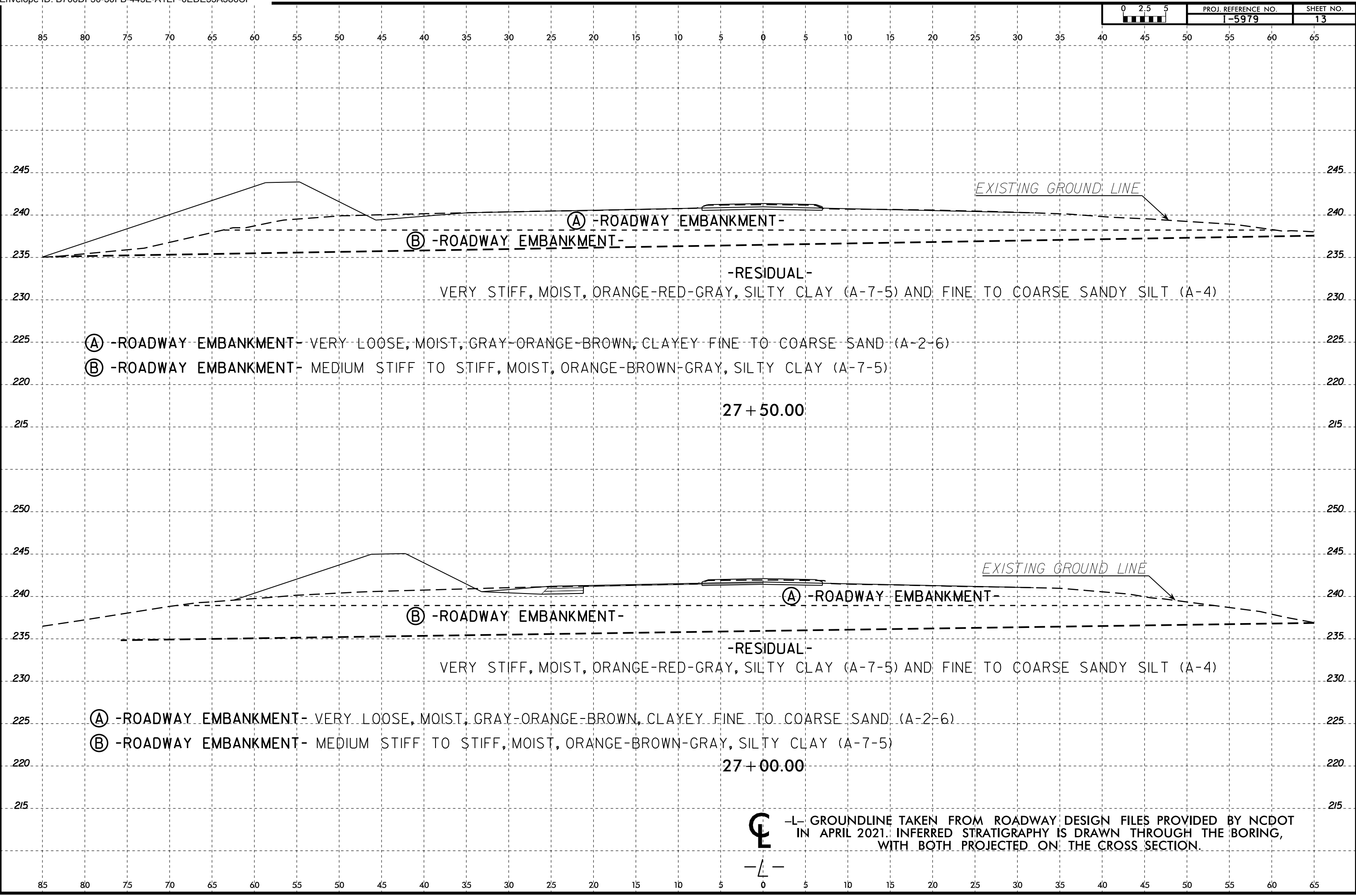


6/23/16
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Interchange Improvements-US 74 at US 1
I-5979 - Fayetteville\33-5539 - I-5979 - Interchange Improvements-US 74 at US 1
ECS Corporate Services\08 Geo Projects Other\33-Fayetteville\33-5539 - I-5979 - Interchange Improvements-US 74 at US 1
20-SEP-2021 08:47
C:\Users\jgordon\OneDrive - ECS Corporate Services\08 Geo Projects Other\33-Fayetteville\33-5539 - I-5979 - Interchange Improvements-US 74 at US 1
SUBSERIAL#



-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

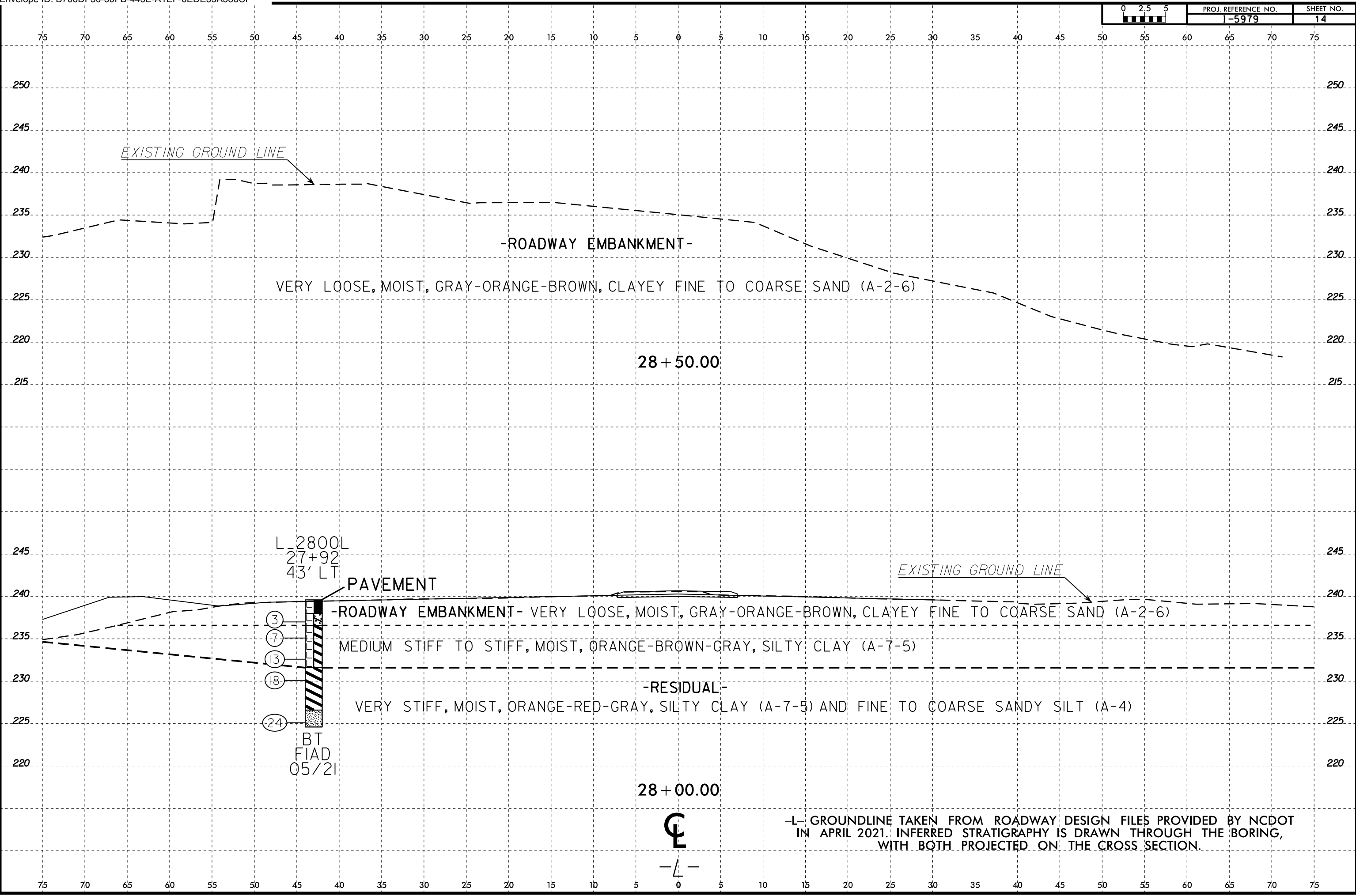
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-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.



20-SEP-2021 08:48 C:\Users\jgordon\OneDrive - ECS Corporate Services\08 Geo Projects\Other\33-Fayetteville\33-5539 - I-5979 - Interchange Improvements-US 74 at US 1\CAD\GEO\TECH\XSE\15979_rdy_geo_xsi_L.dgn



EXISTING GROUND LINE

-ROADWAY EMBANKMENT-

VERY LOOSE, MOIST, GRAY-ORANGE-BROWN, CLAYEY FINE TO COARSE SAND (A-2-6)

28 + 50.00

L 2800L
27+92
43' LT

PAVEMENT

3
7
13
18
24

-ROADWAY EMBANKMENT- VERY LOOSE, MOIST, GRAY-ORANGE-BROWN, CLAYEY FINE TO COARSE SAND (A-2-6)

MEDIUM STIFF TO STIFF, MOIST, ORANGE-BROWN-GRAY, SILTY CLAY (A-7-5)

-RESIDUAL-

VERY STIFF, MOIST, ORANGE-RED-GRAY, SILTY CLAY (A-7-5) AND FINE TO COARSE SANDY SILT (A-4)

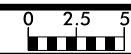
BT
FIAD
05/21

28 + 00.00

EXISTING GROUND LINE

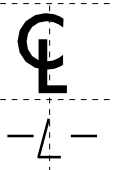
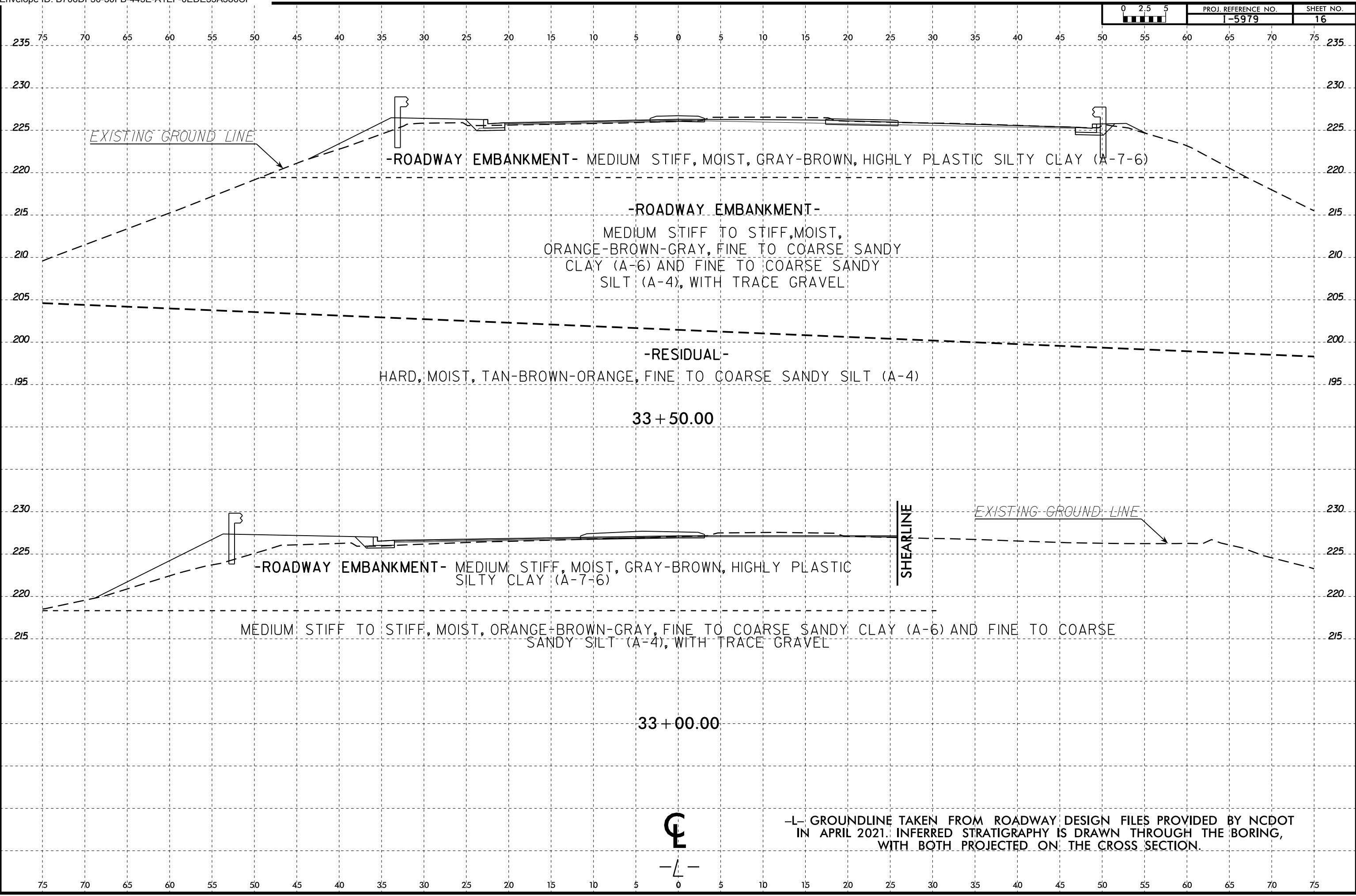


-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

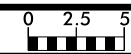


PROJ. REFERENCE NO.	SHEET NO.
1-5979	16

6/23/16
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I-5979 - Interchange Improvements-US 74 at US 1\CADD\GEO\TECH\XSE\15979_rdy.geo_xsi.L.dgn
33-Fayetteville\33-5539 - I-5979 - Interchange Improvements-US 74 at US 1\CADD\GEO\TECH\XSE\15979_rdy.geo_xsi.L.dgn
ECS Corporate Services\08 Geo Projects\Other\33-Fayetteville\33-5539 - I-5979 - Interchange Improvements-US 74 at US 1\CADD\GEO\TECH\XSE\15979_rdy.geo_xsi.L.dgn
20-SEP-2021 08:48
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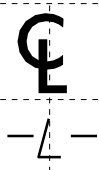
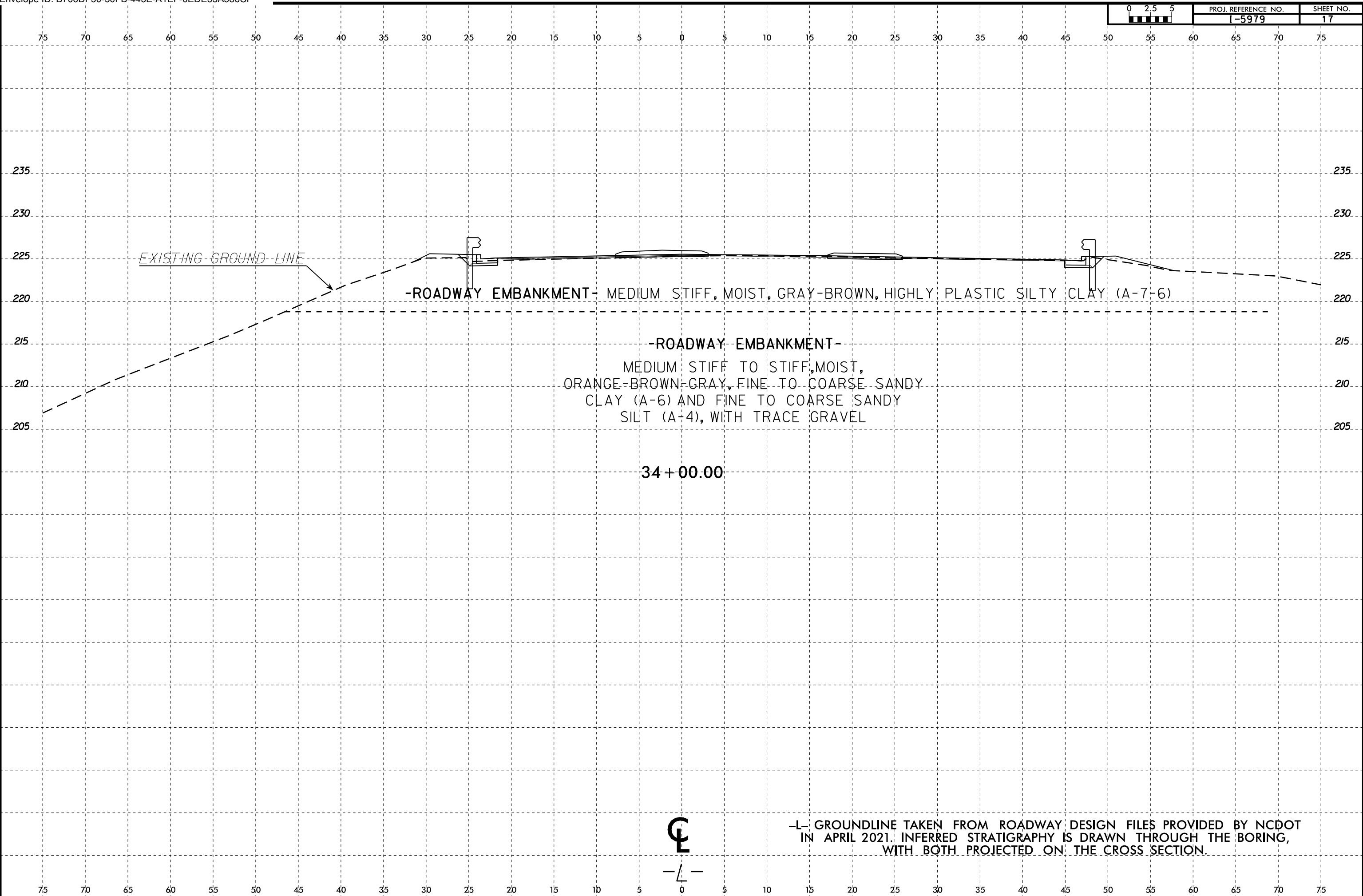


-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

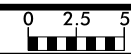


PROJ. REFERENCE NO.	SHEET NO.
1-5979	17

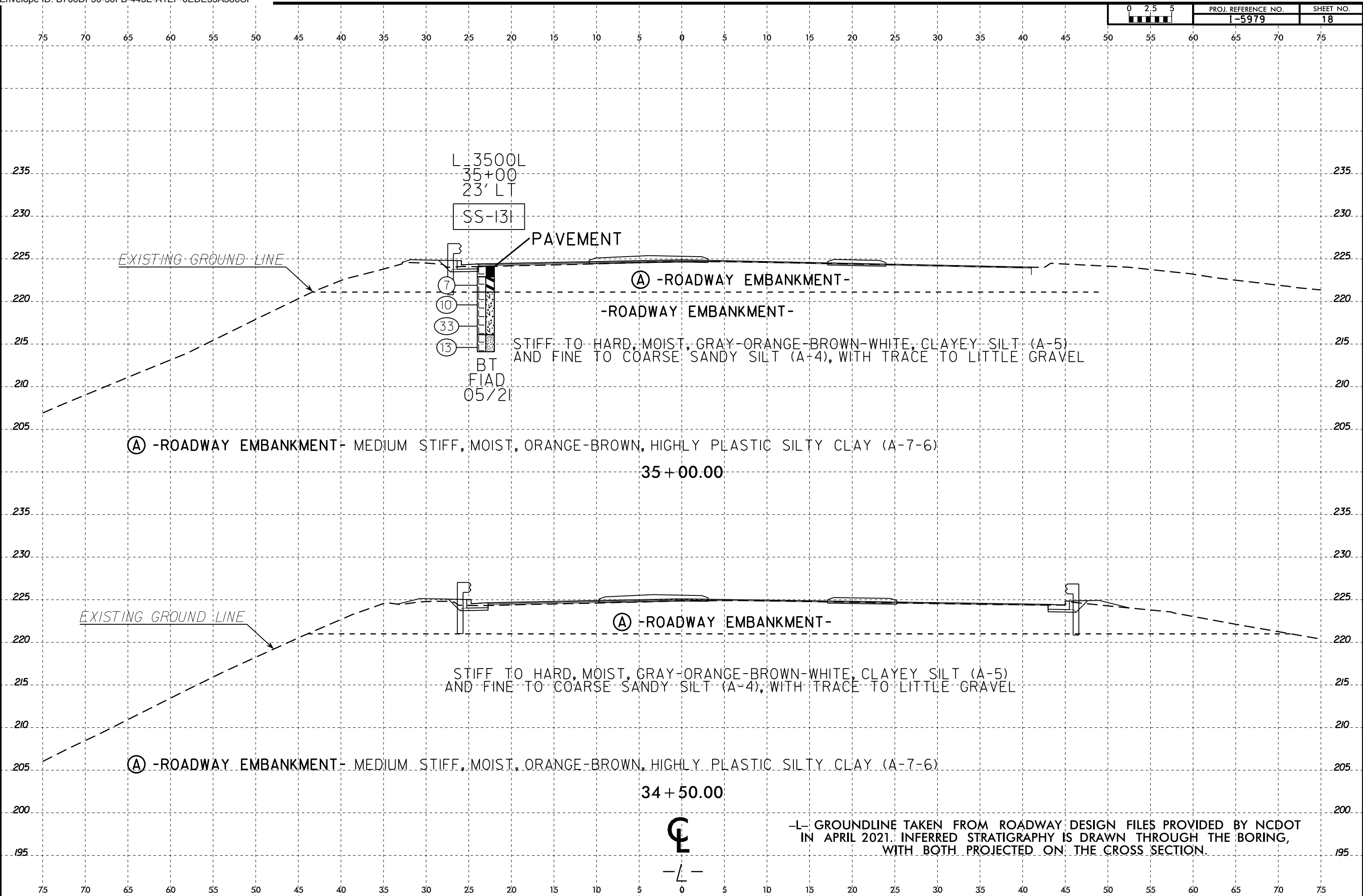
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I-5979 - Interchange Improvements-US 74 at US 1\CADDD\GEO\TECH\XSEC\15979_rdy.geo_xsi.L.dgn



-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

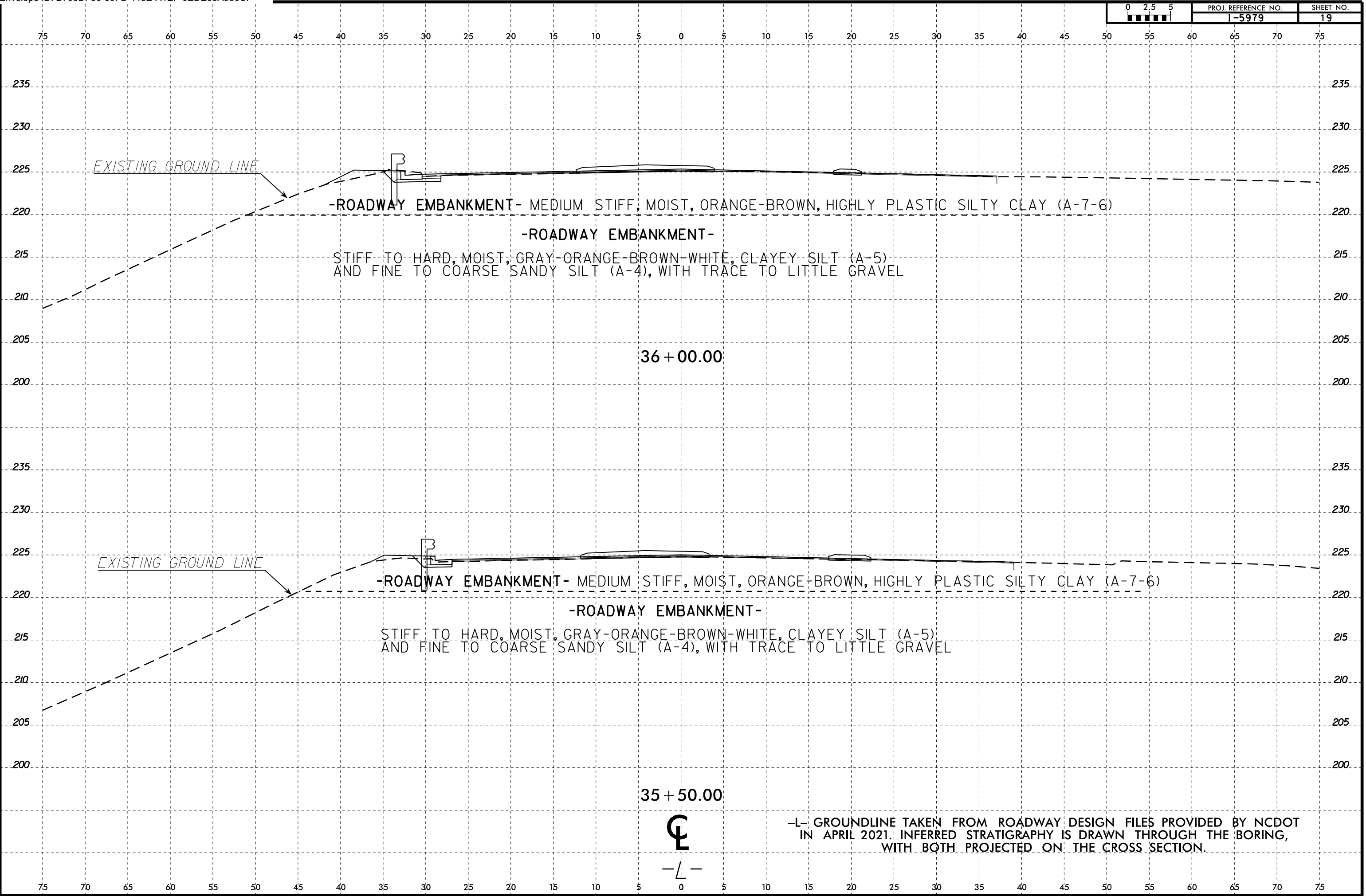


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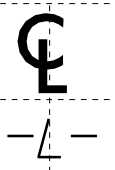


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Interchange Improvements-US 74 at US 1\CADD\GEO\TECH\se\15979_rdy\geo_xsl.L.dgn
20-SEP-2021 08:48
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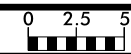


36 + 00.00

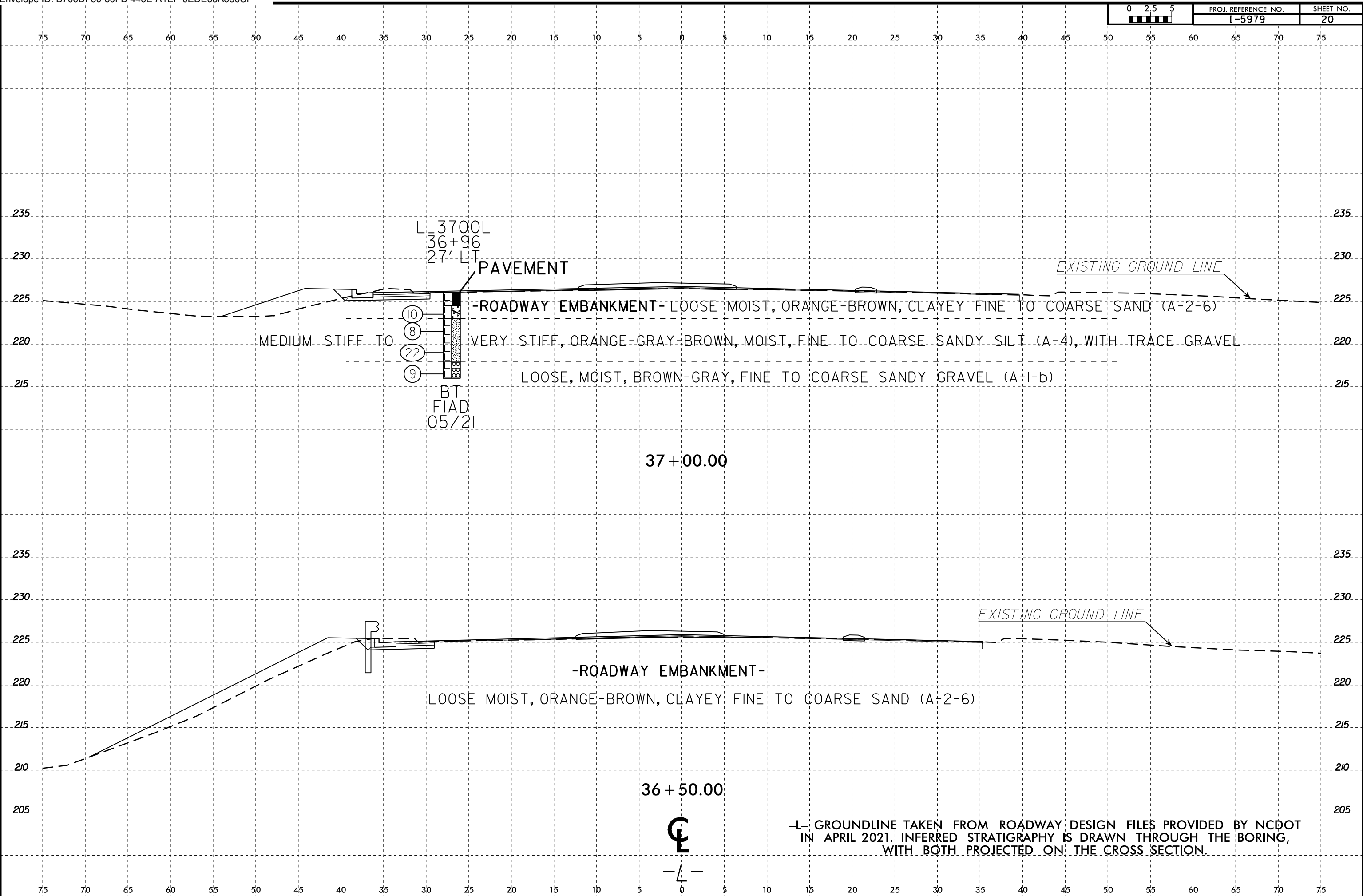
35 + 50.00



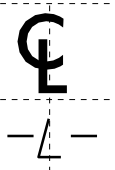
-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

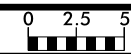


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Interchange Improvements-US 74 at US 1
ECS Corporate Services\08 Geo Projects Other\33-Fayetteville\33-5539 - I-5979 -

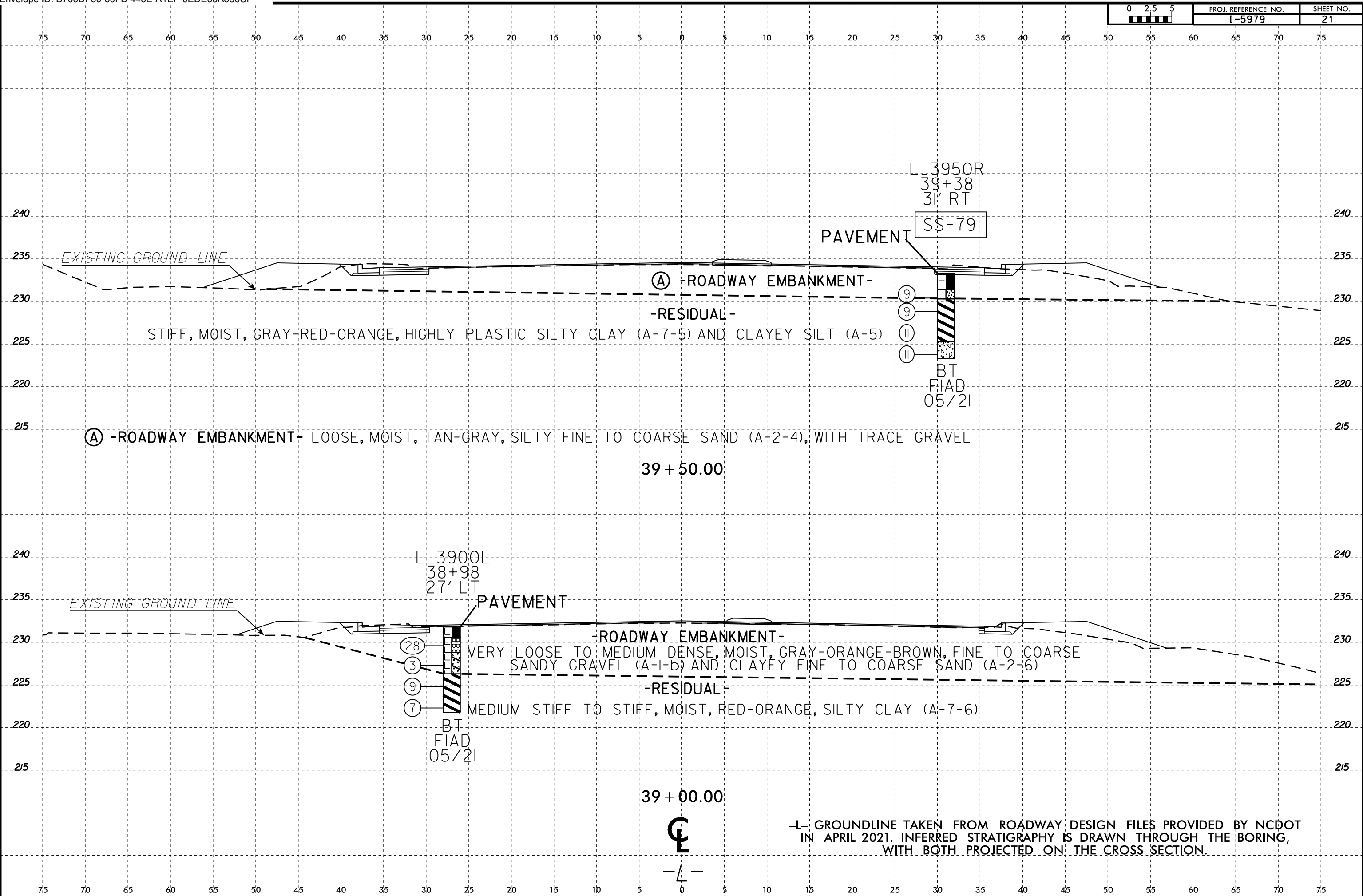


-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.





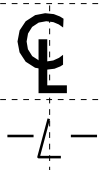
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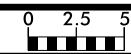


(A) -ROADWAY EMBANKMENT- LOOSE, MOIST, TAN-GRAY, SILTY FINE TO COARSE SAND (A-2-4), WITH TRACE GRAVEL
39 + 50.00

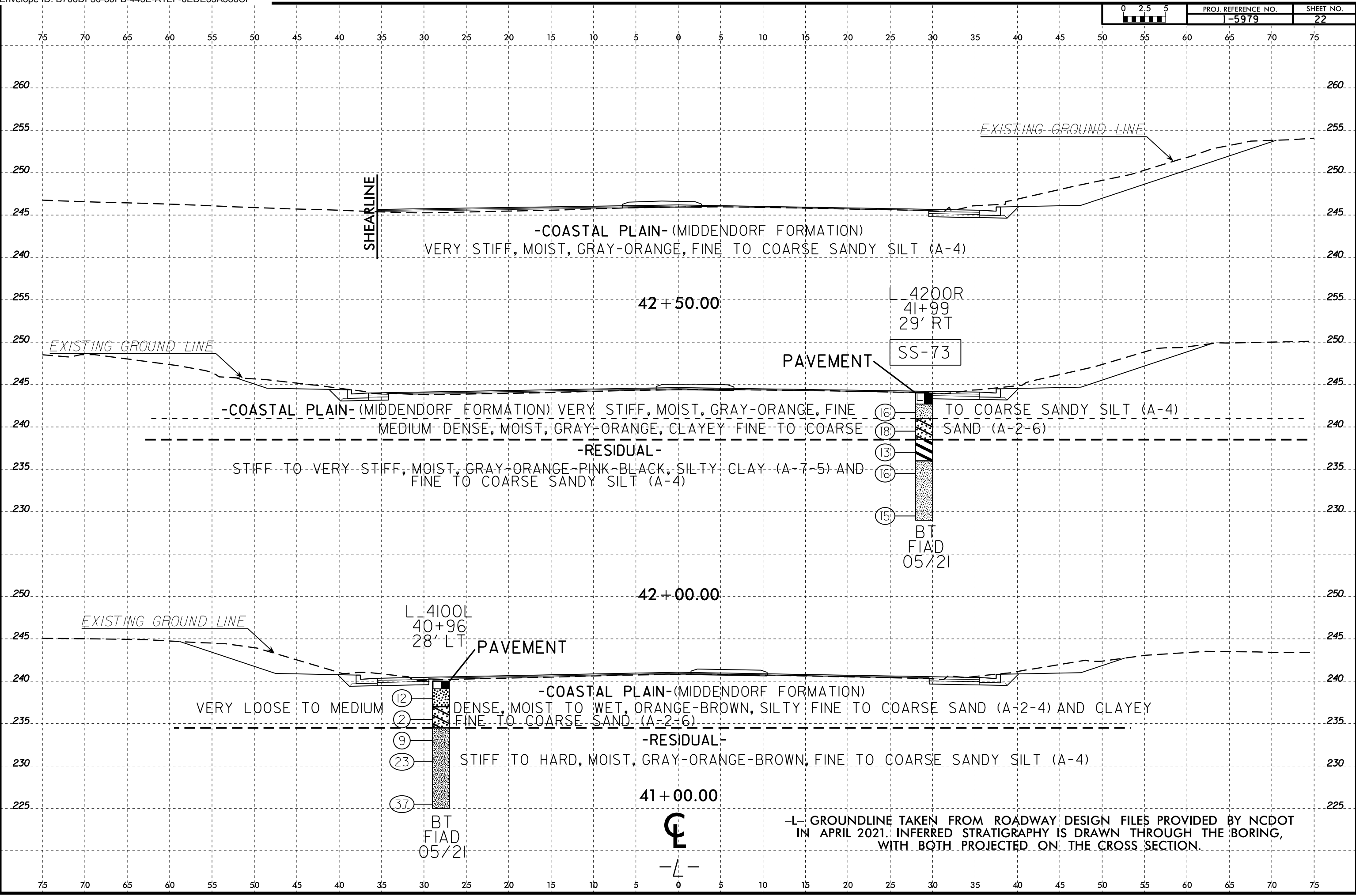
(A) -ROADWAY EMBANKMENT- VERY LOOSE TO MEDIUM DENSE, MOIST, GRAY-ORANGE-BROWN, FINE TO COARSE SANDY GRAVEL (A-1-b) AND CLAYEY FINE TO COARSE SAND (A-2-6)
39 + 00.00

-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

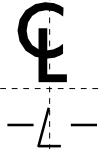


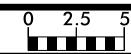


6/23/16
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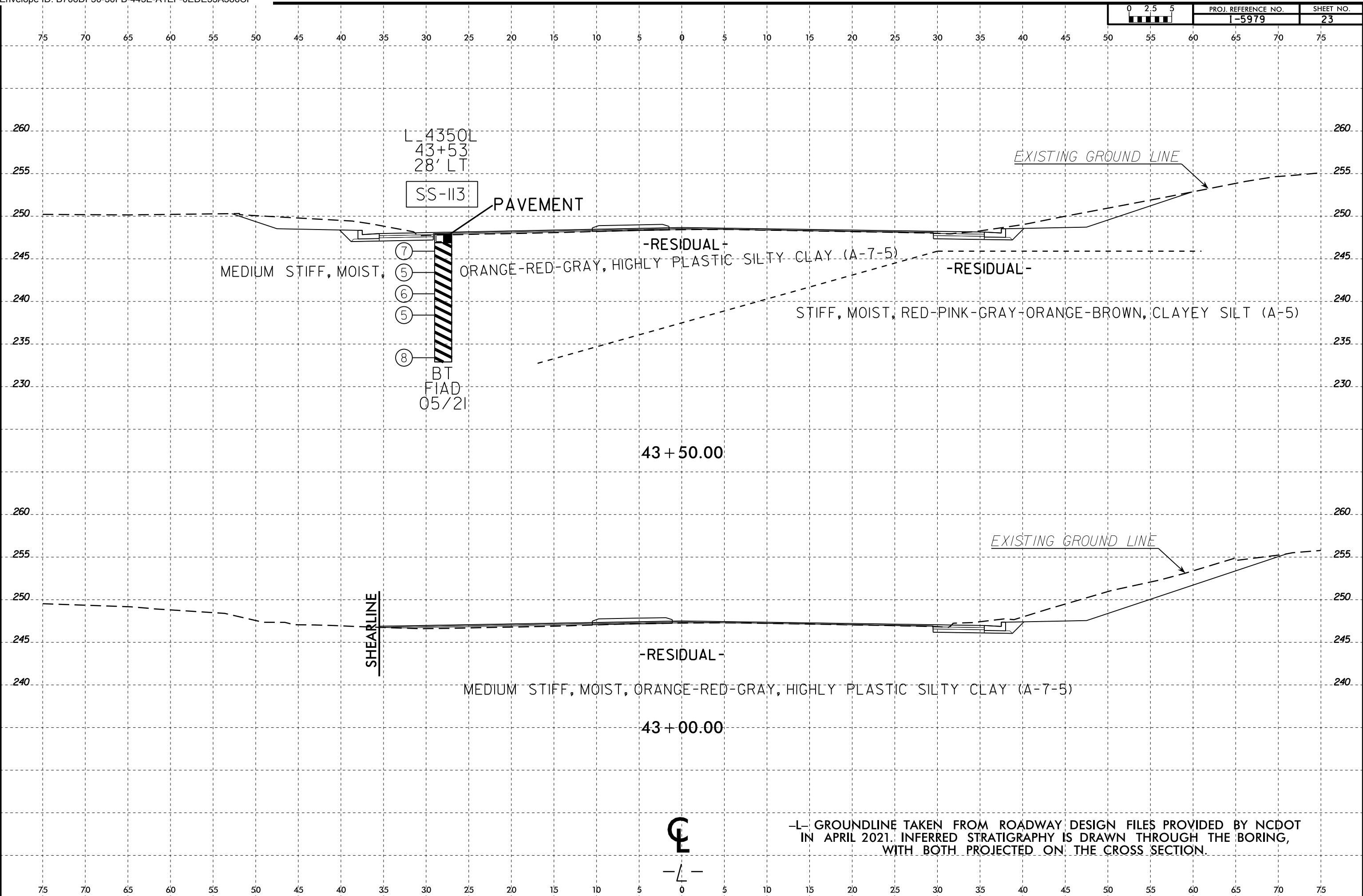
-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.





PROJ. REFERENCE NO.	SHEET NO.
1-5979	23

6/23/16
C:\Users\jgordon\OneDrive - ECS Corporate Services\08 Geo Projects Other\33-Fayetteville\33-5539 - I-5979 - Interchange Improvements-US 74 at US 1\CAD\GEO\TECH\XSE\15979_rdy_geo_xsl.dgn



L 4350L
43+53'
28' LT

SS-II3

PAVEMENT

- ⑦
- ⑤
- ⑥
- ⑤
- ⑧

BT
FIAD
05/21

MEDIUM STIFF, MOIST,

-RESIDUAL-
ORANGE-RED-GRAY, HIGHLY PLASTIC SILTY CLAY (A-7-5)

-RESIDUAL-

STIFF, MOIST, RED-PINK-GRAY-ORANGE-BROWN, CLAYEY SILT (A-5)

EXISTING GROUND LINE

43 + 50.00

SHEARLINE

-RESIDUAL-

MEDIUM STIFF, MOIST, ORANGE-RED-GRAY, HIGHLY PLASTIC SILTY CLAY (A-7-5)

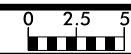
EXISTING GROUND LINE

43 + 00.00

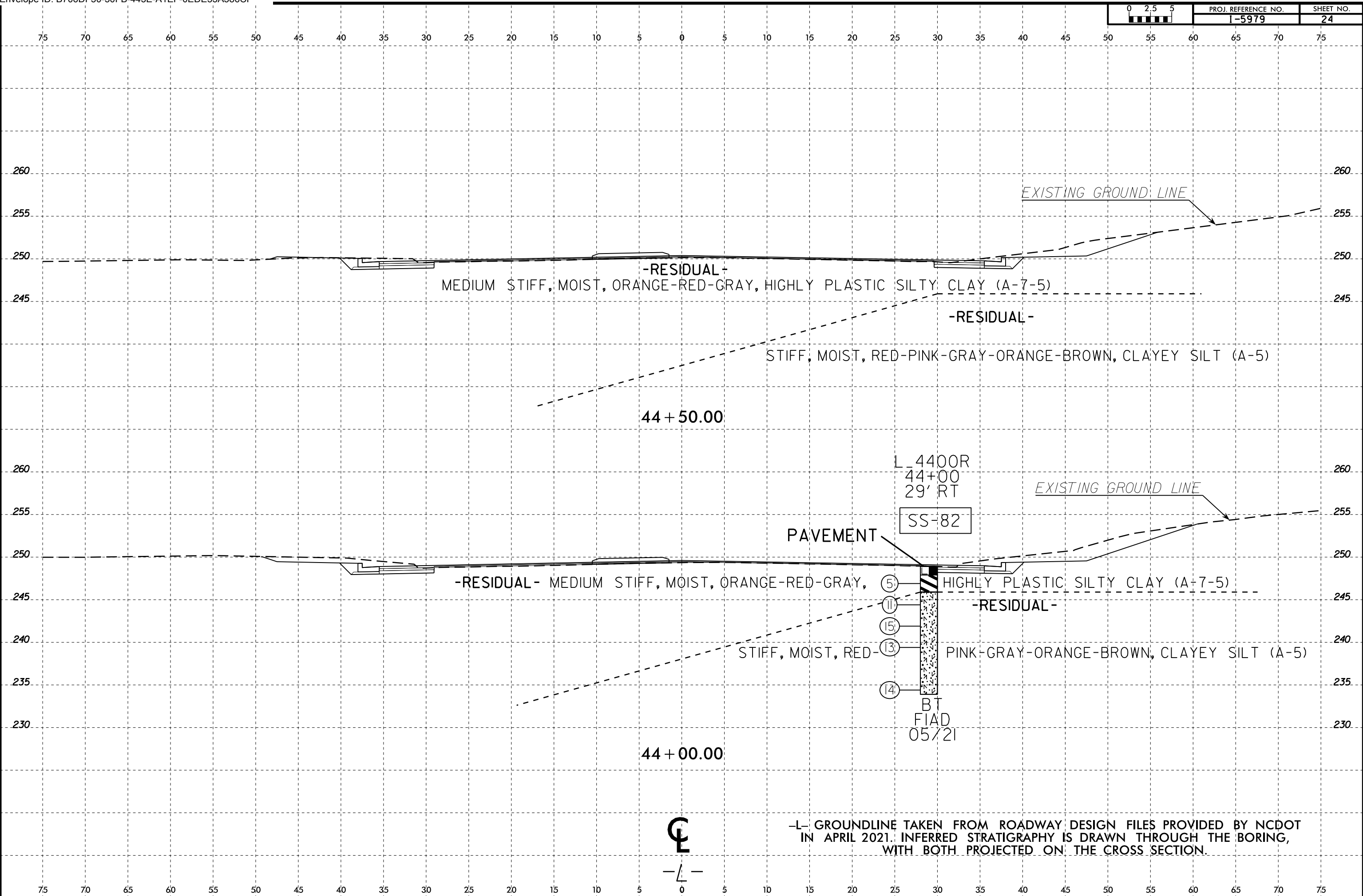


-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT
IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING,
WITH BOTH PROJECTED ON THE CROSS SECTION.

20-SEP-2021 08:48
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6/23/16
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\$\$\$SERIALNAME\$\$\$



-RESIDUAL-
MEDIUM STIFF, MOIST, ORANGE-RED-GRAY, HIGHLY PLASTIC SILTY CLAY (A-7-5)

-RESIDUAL-
STIFF, MOIST, RED-PINK-GRAY-ORANGE-BROWN, CLAYEY SILT (A-5)

44 + 50.00

L_4400R
44+00
29' RT

SS-82

PAVEMENT

-RESIDUAL- MEDIUM STIFF, MOIST, ORANGE-RED-GRAY,

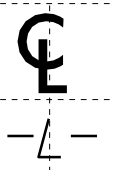
HIGHLY PLASTIC SILTY CLAY (A-7-5)

STIFF, MOIST, RED-

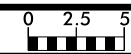
PINK-GRAY-ORANGE-BROWN, CLAYEY SILT (A-5)

44 + 00.00

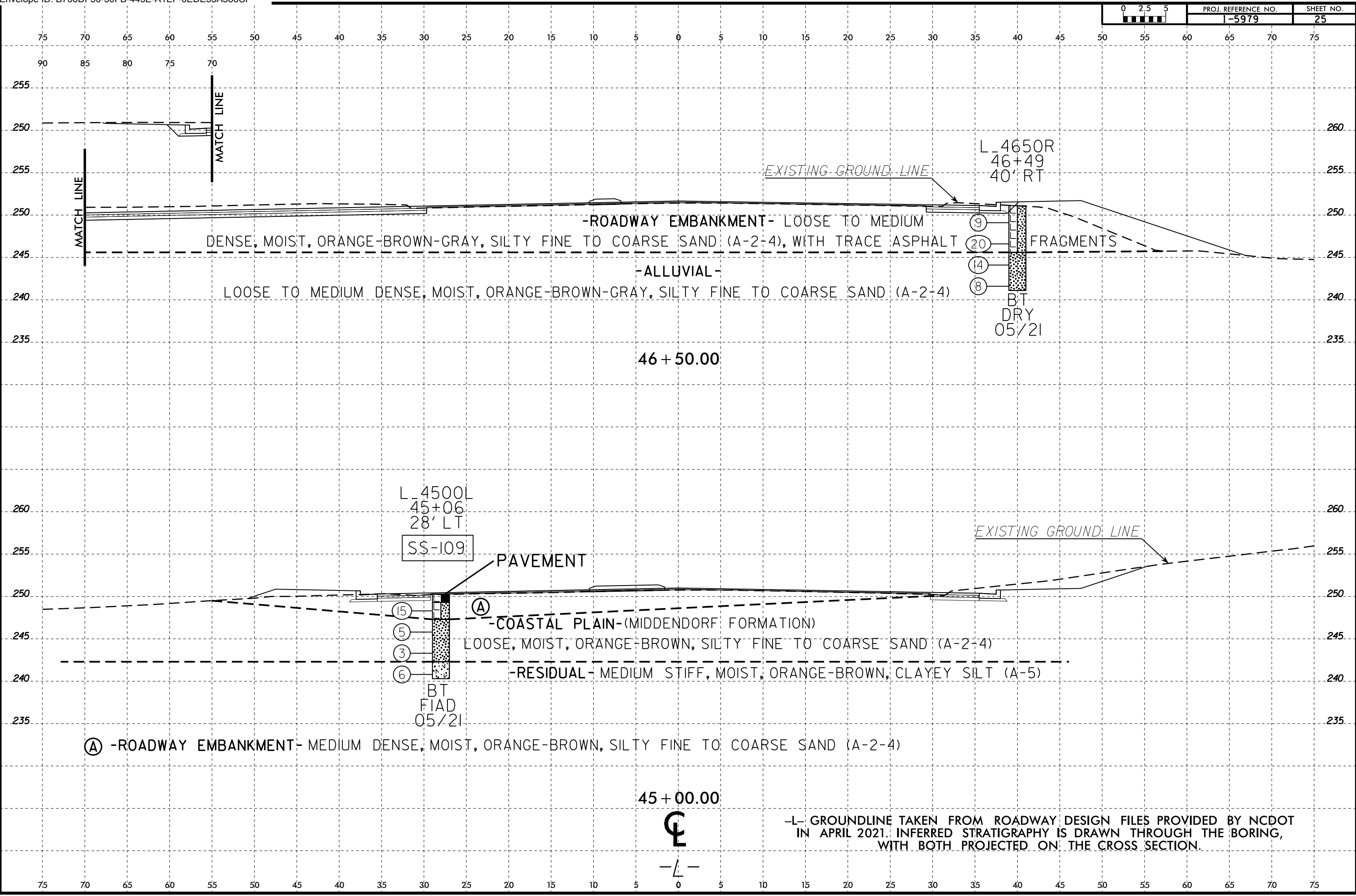
BT
FIAD
05/21



-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT
IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING,
WITH BOTH PROJECTED ON THE CROSS SECTION.



6/23/16
C:\Users\jgordon\OneDrive - ECS Corporate Services\08 Geo Projects Other\33-Fayetteville\33-5539 - I-5979 - Interchange Improvements-US 74 at US 1\CAD\GEO\TECH\33-5539 - I-5979 - rdj.geo.xsl.dgn

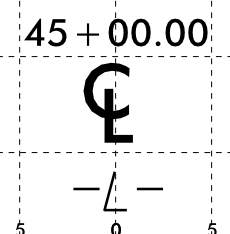


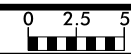
(A) -ROADWAY EMBANKMENT- MEDIUM DENSE, MOIST, ORANGE-BROWN, SILTY FINE TO COARSE SAND (A-2-4)

(A) -COASTAL PLAIN-(MIDDENDORF FORMATION)
LOOSE, MOIST, ORANGE-BROWN, SILTY FINE TO COARSE SAND (A-2-4)
-RESIDUAL- MEDIUM STIFF, MOIST, ORANGE-BROWN, CLAYEY SILT (A-5)

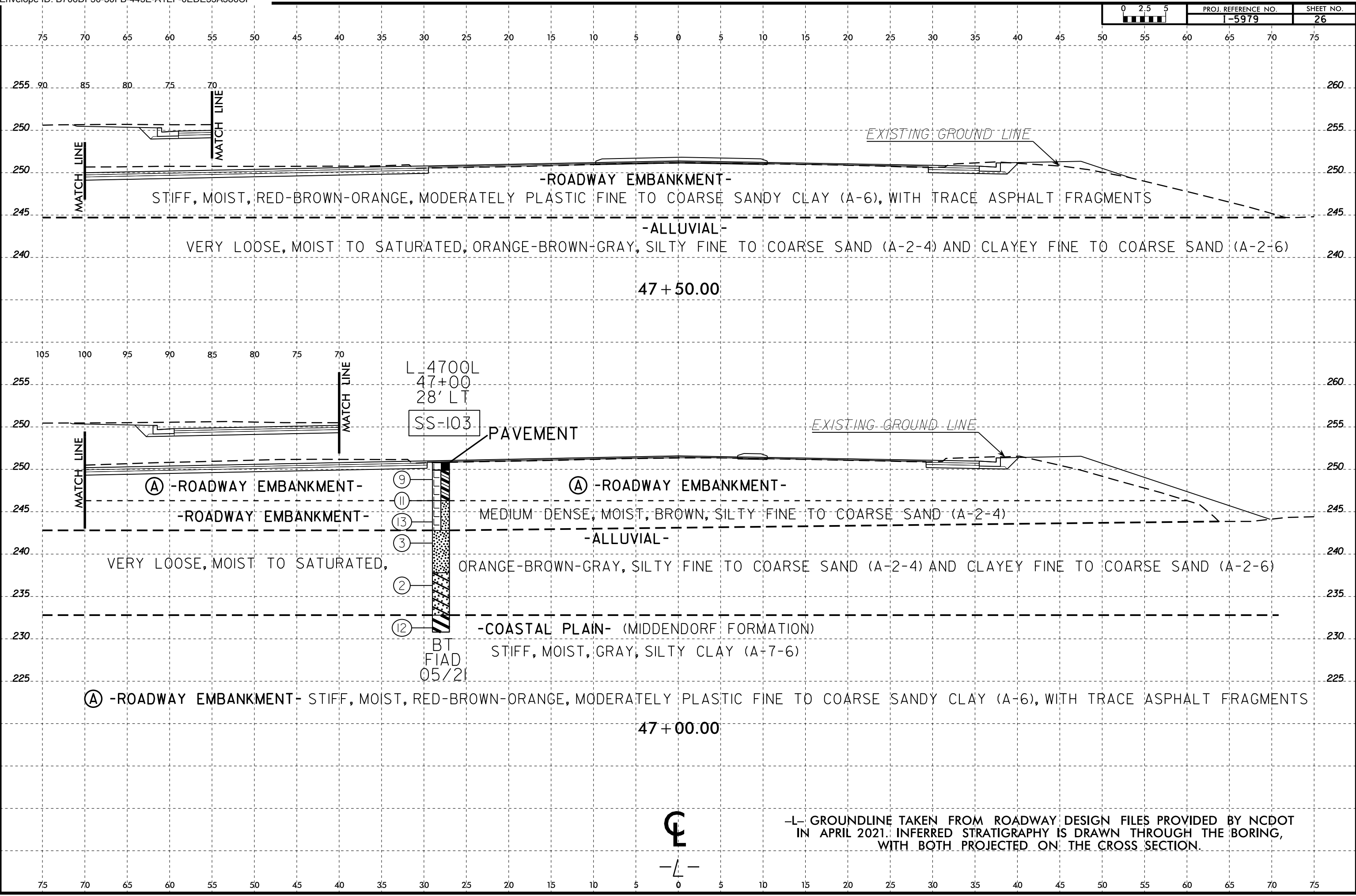
-ROADWAY EMBANKMENT- LOOSE TO MEDIUM
DENSE, MOIST, ORANGE-BROWN-GRAY, SILTY FINE TO COARSE SAND (A-2-4), WITH TRACE ASPHALT FRAGMENTS
-ALLUVIAL-
LOOSE TO MEDIUM DENSE, MOIST, ORANGE-BROWN-GRAY, SILTY FINE TO COARSE SAND (A-2-4)

-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.





6/23/16
20-SEP-2021 08:48
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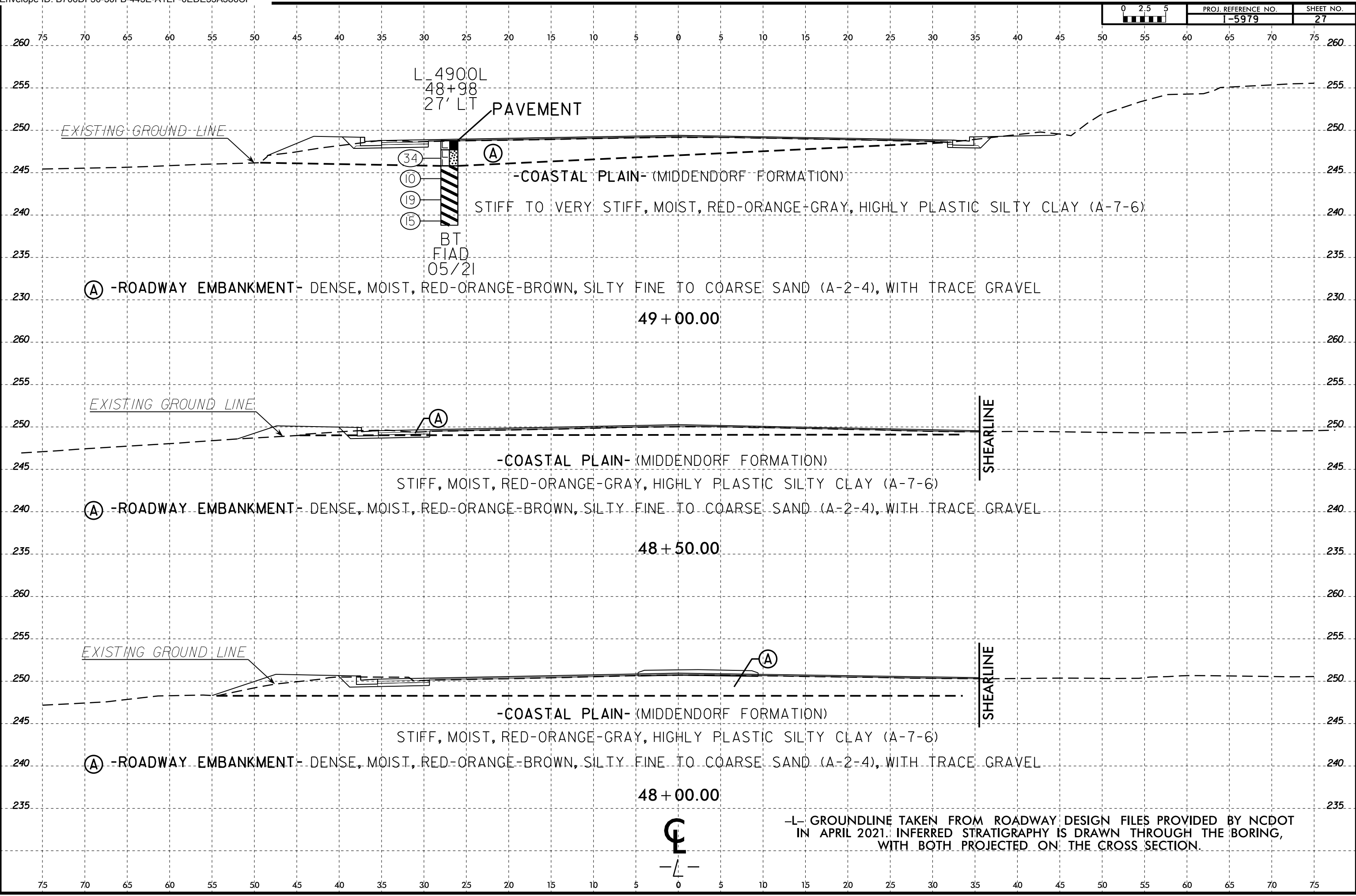
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47 + 00.00

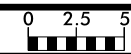


-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

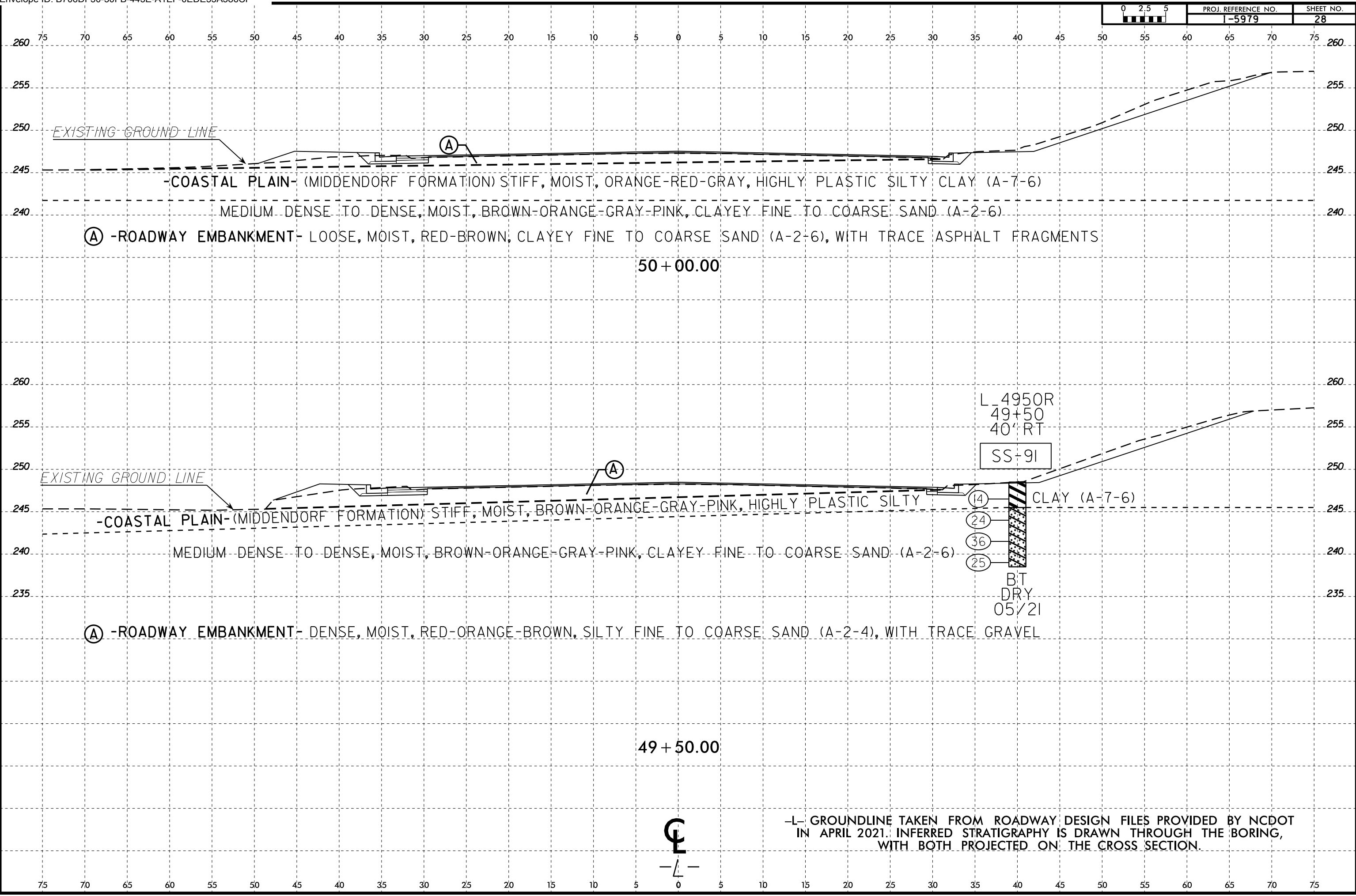
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ECS Corporate Services\08 Geo Projects\Other\33-Fayetteville\33-5539 - I-5979 - Interchange Improvements-US 74 at US 1\CAD\GEO\TECH\se\15979_rdy_geo_xsl.dgn
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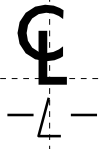
-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.



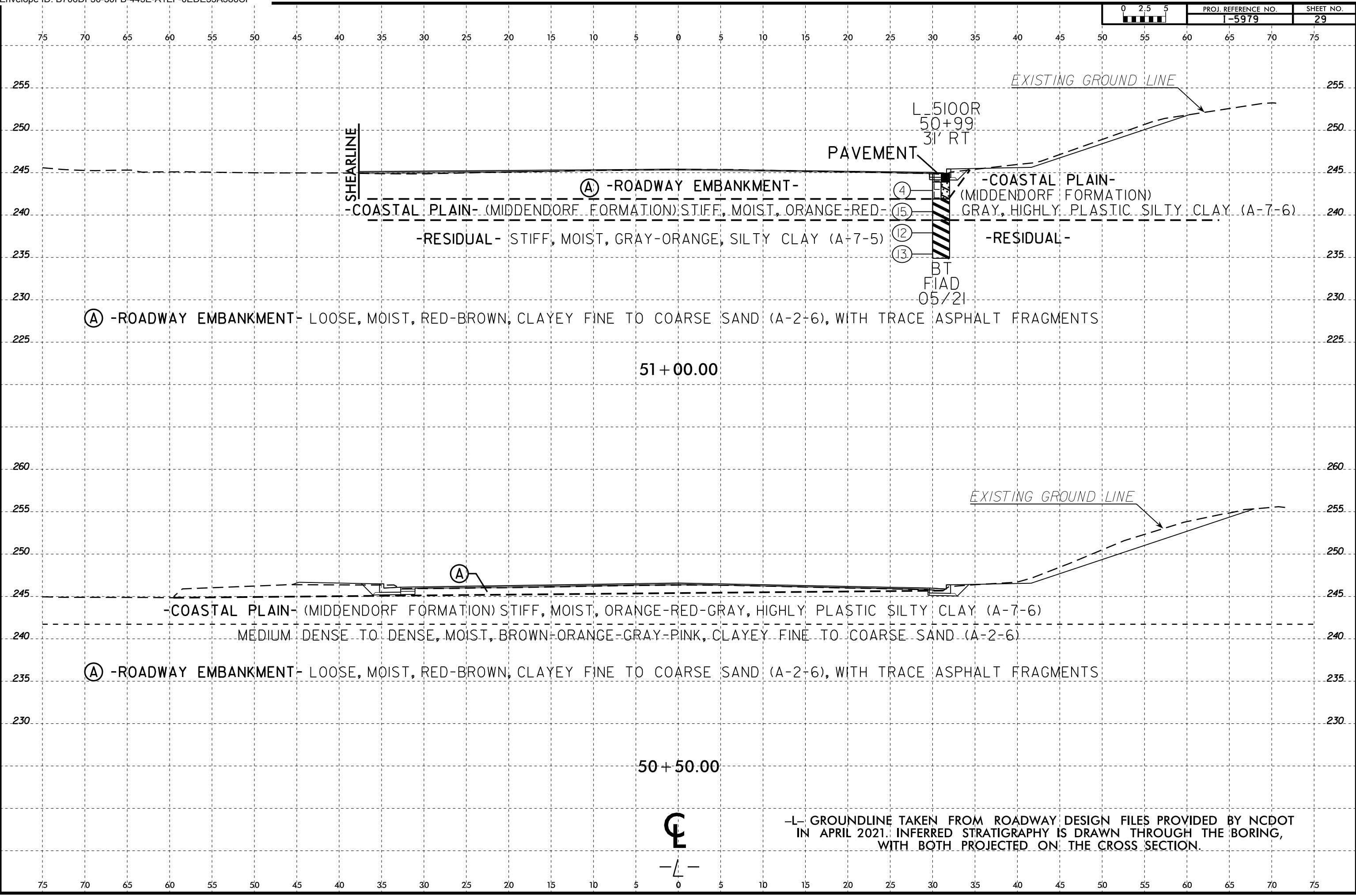
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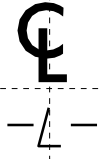
-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.



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ECS Corporate Services\08 Geo Projects Other\33-Fayetteville\33-9539 - I-5979

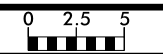


-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

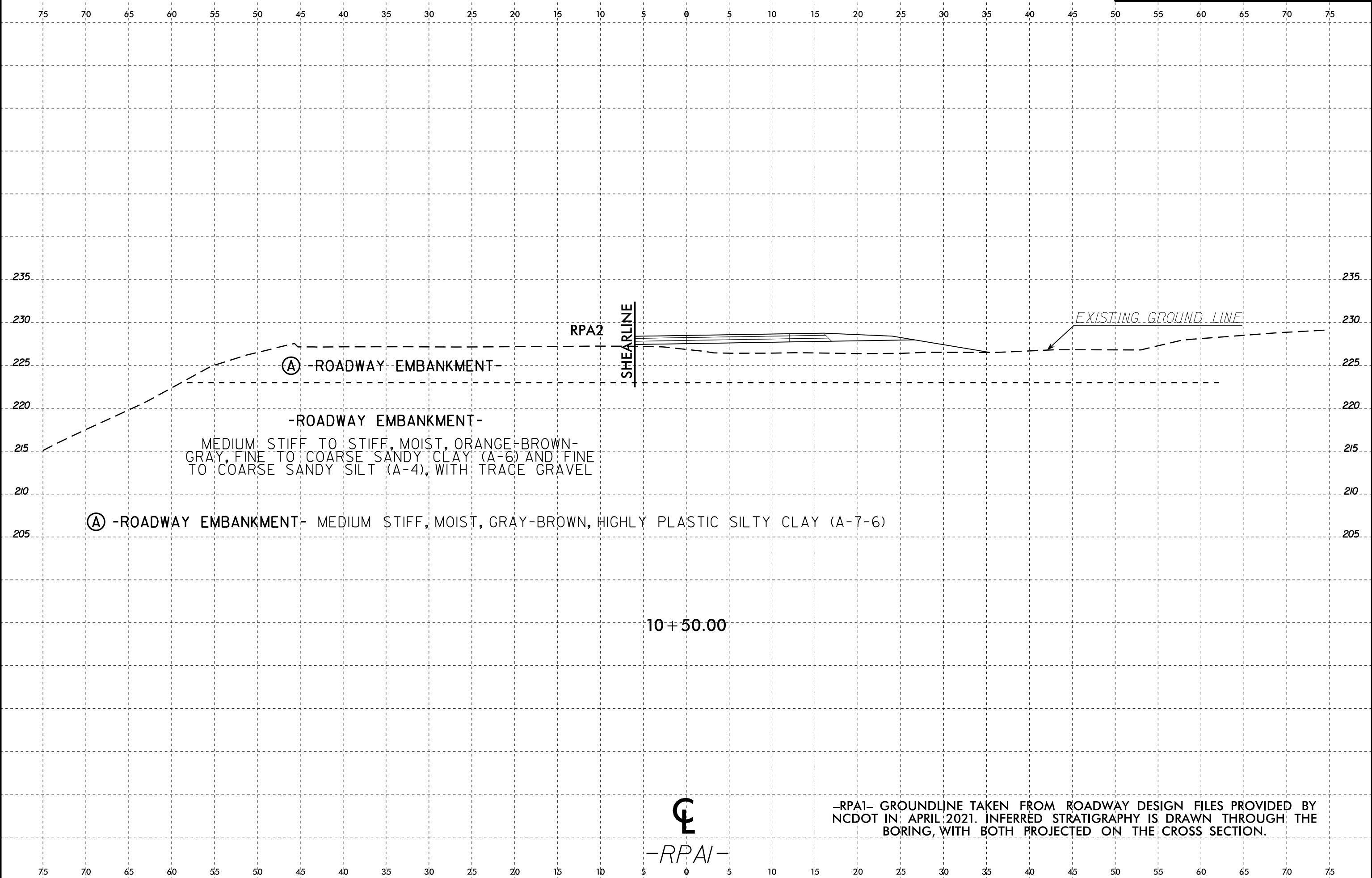


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Interchange Improvements-US 74 at US 1
33-5539 - 1-5979
Fayetteville\33-Fayetteville\33-5539 - 1-5979
Geo Projects Other\33-Fayetteville\33-5539 - 1-5979
ECS Corporate Services\08 Geo Projects Other\33-Fayetteville\33-5539 - 1-5979
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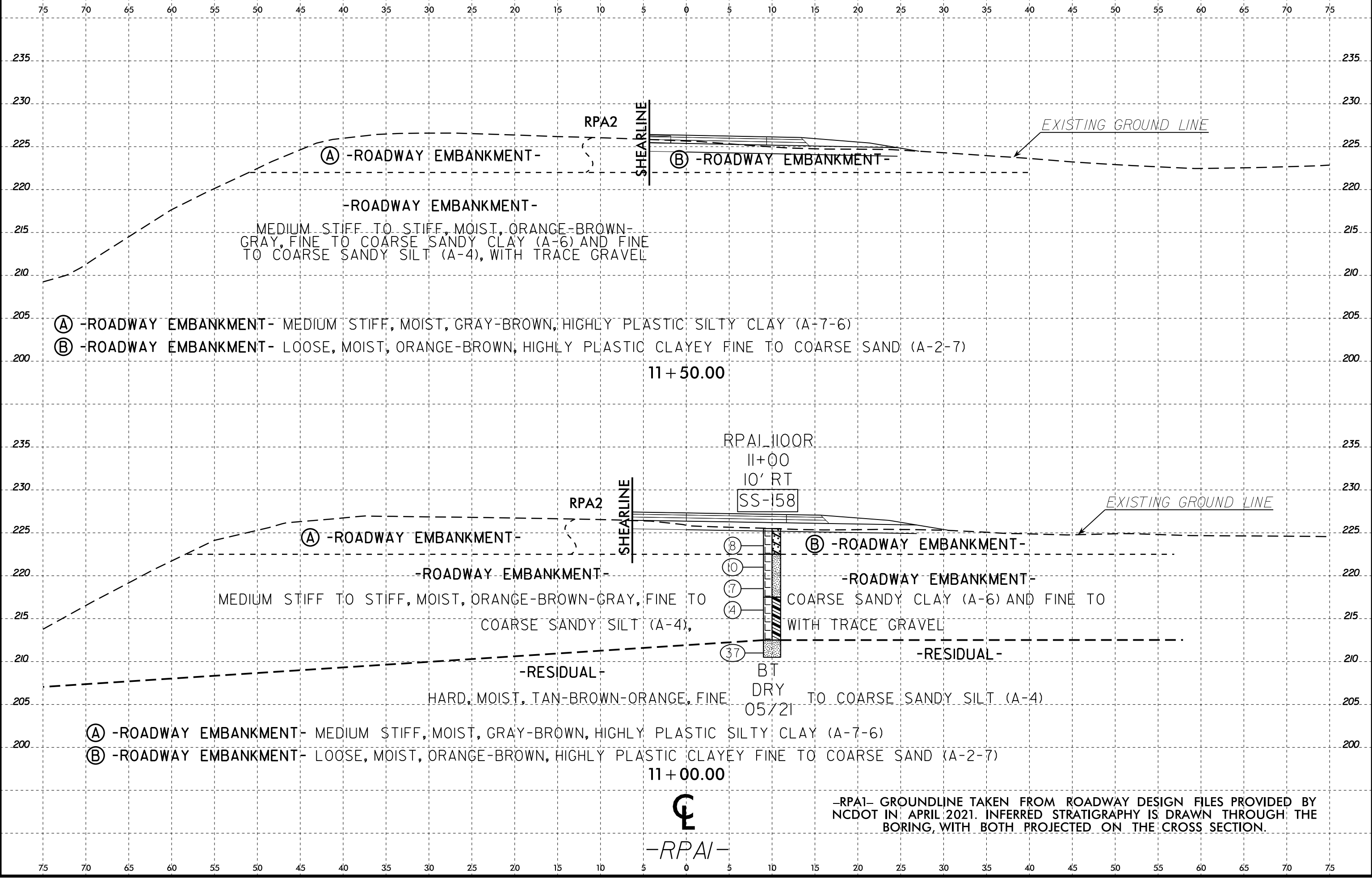


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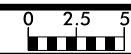


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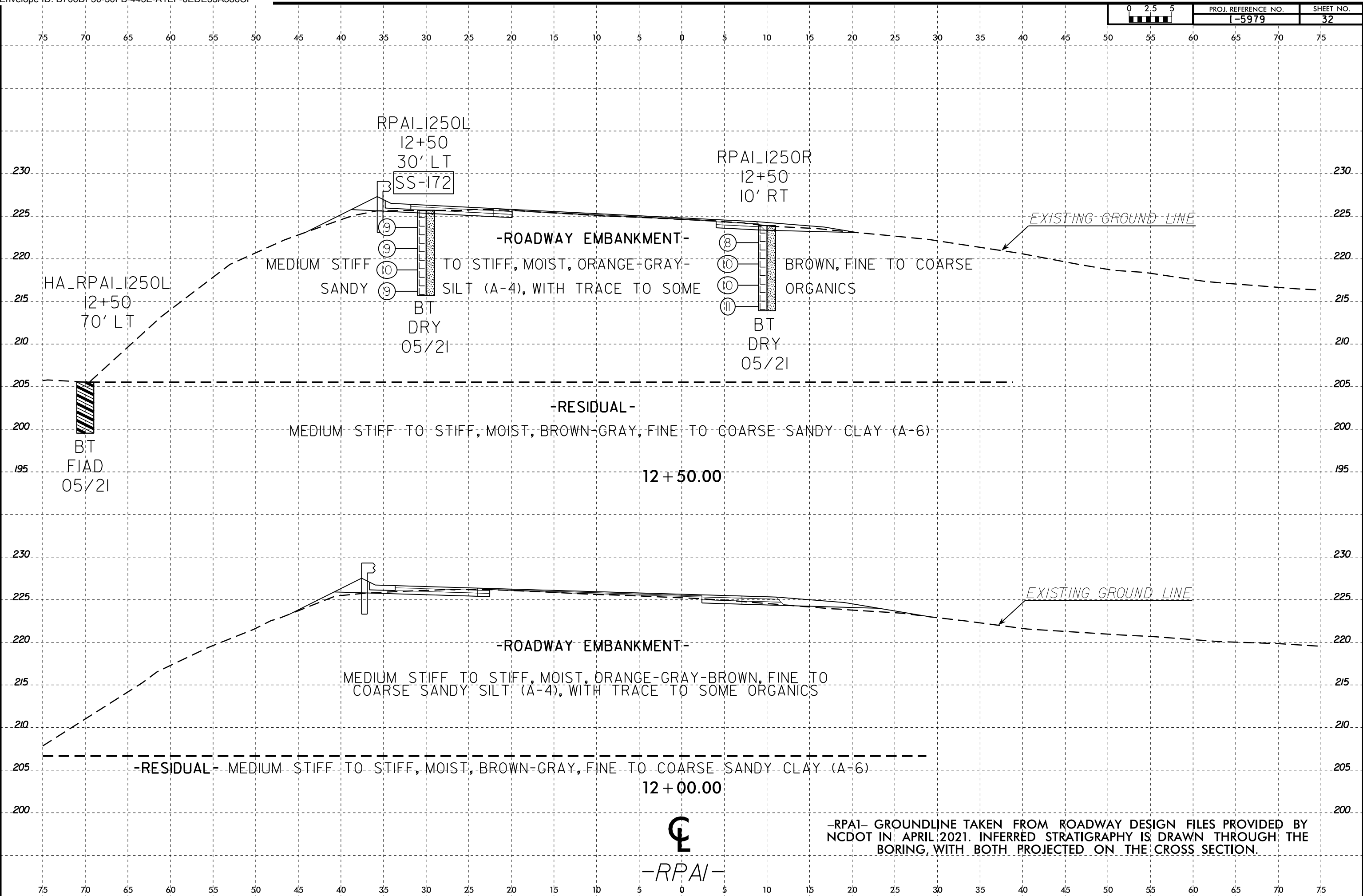
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	1-5979	31



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225 225

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215 215

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230 230

225 225

220 220

215 215

210 210

205 205

200 200

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

RPAI_1250L

12+50

30' LT

SS-172

RPAI_1250R

12+50

10' RT

HA_RPAI_1250L

12+50

70' LT

-ROADWAY EMBANKMENT-

MEDIUM STIFF TO STIFF, MOIST, ORANGE-GRAY-

SANDY SILT (A-4), WITH TRACE TO SOME

BROWN, FINE TO COARSE

ORGANICS

BT

DRY

05/21

BT

DRY

05/21

-RESIDUAL-

MEDIUM STIFF TO STIFF, MOIST, BROWN-GRAY, FINE TO COARSE SANDY CLAY (A-6)

12 + 50.00

-ROADWAY EMBANKMENT-

MEDIUM STIFF TO STIFF, MOIST, ORANGE-GRAY-BROWN, FINE TO COARSE SANDY SILT (A-4), WITH TRACE TO SOME ORGANICS

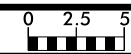
-RESIDUAL- MEDIUM STIFF TO STIFF, MOIST, BROWN-GRAY, FINE TO COARSE SANDY CLAY (A-6)

12 + 00.00

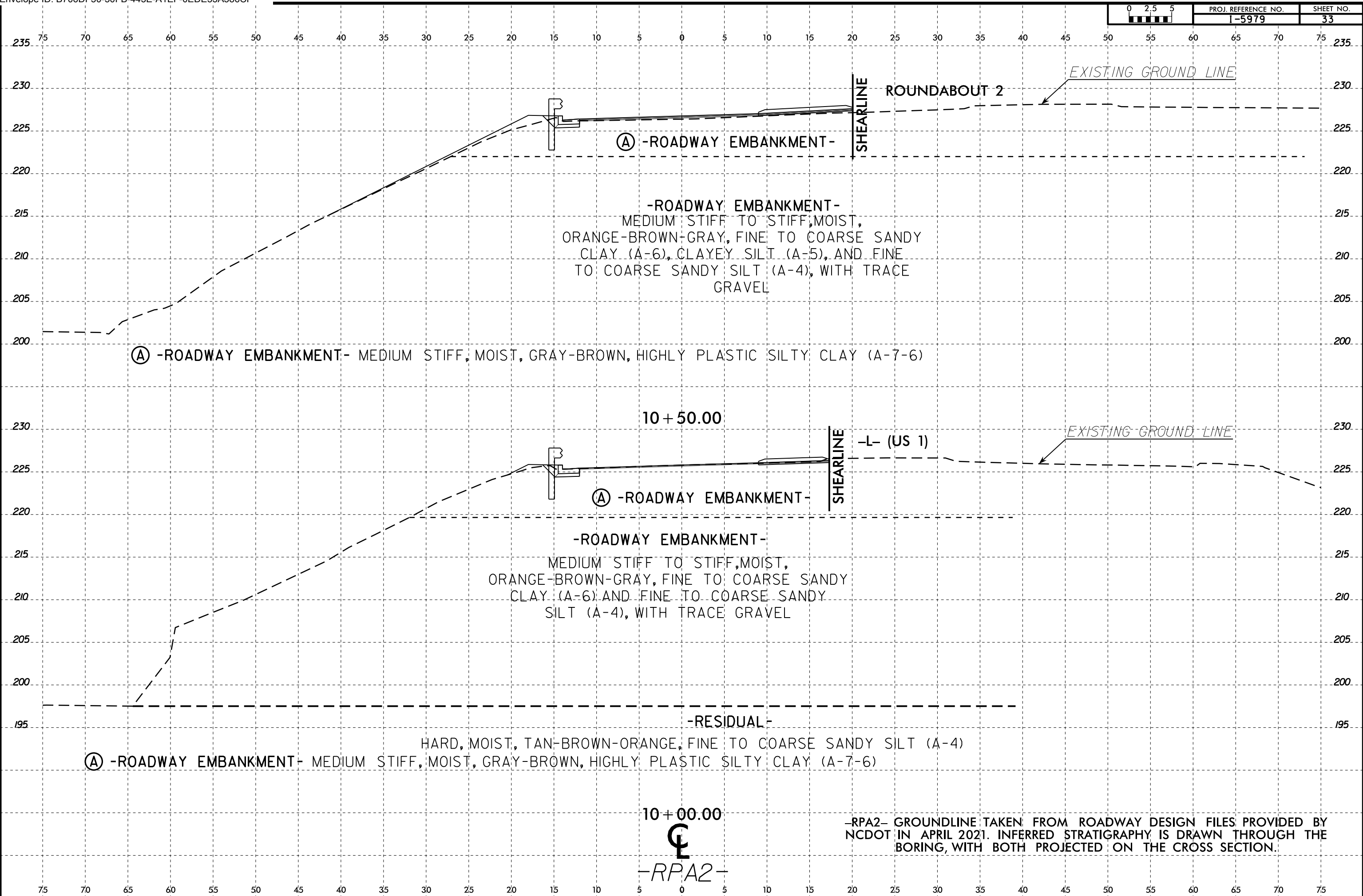


-RPAI-

-RPAI- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

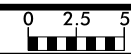


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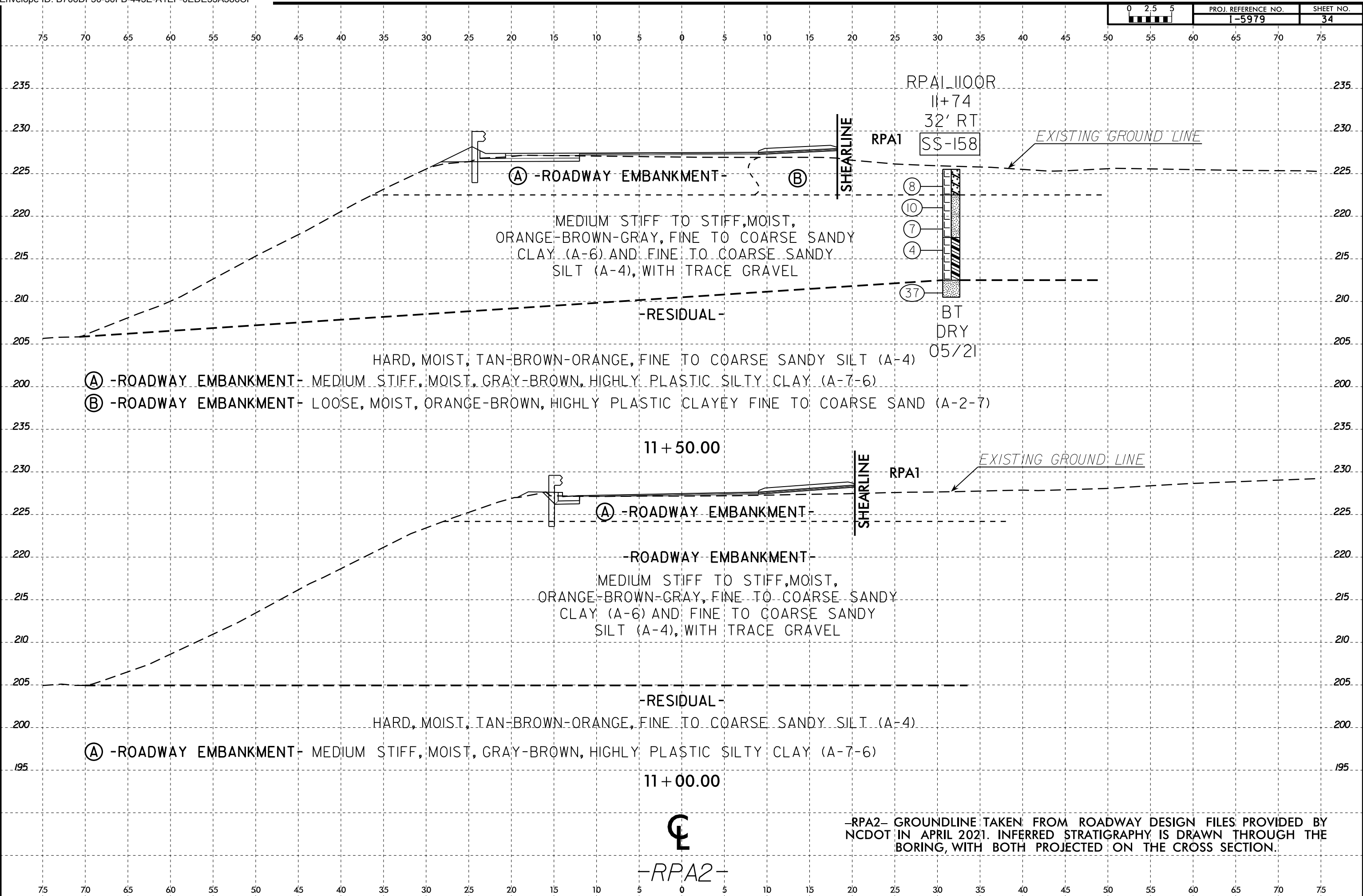


10+00.00
RPA2

-RPA2- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

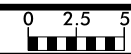


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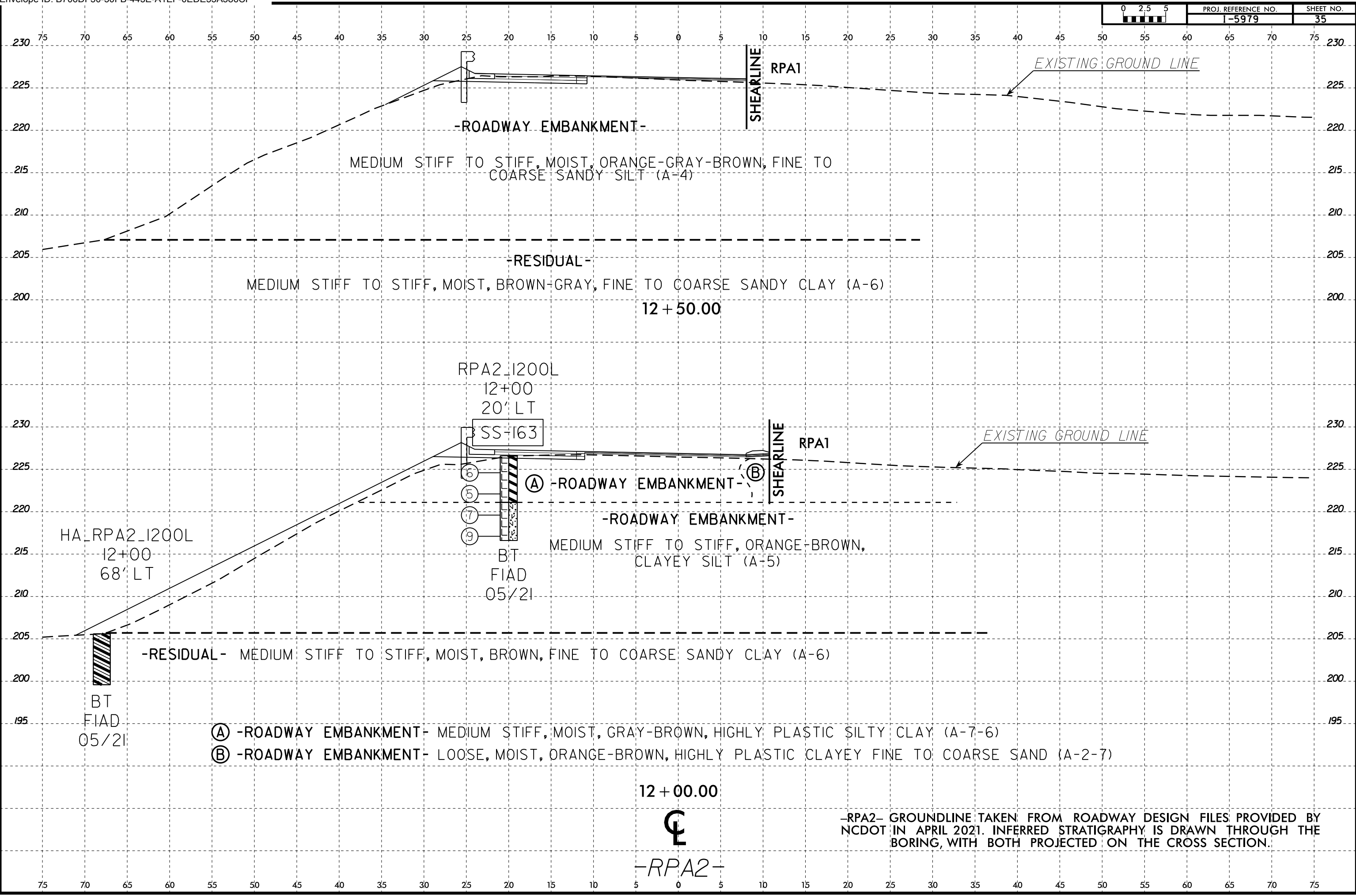


-RPA2- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

CL
-RPA2-



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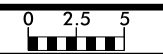


- (A) -ROADWAY EMBANKMENT- MEDIUM STIFF, MOIST, GRAY-BROWN, HIGHLY PLASTIC SILTY CLAY (A-7-6)
- (B) -ROADWAY EMBANKMENT- LOOSE, MOIST, ORANGE-BROWN, HIGHLY PLASTIC CLAYEY FINE TO COARSE SAND (A-2-7)

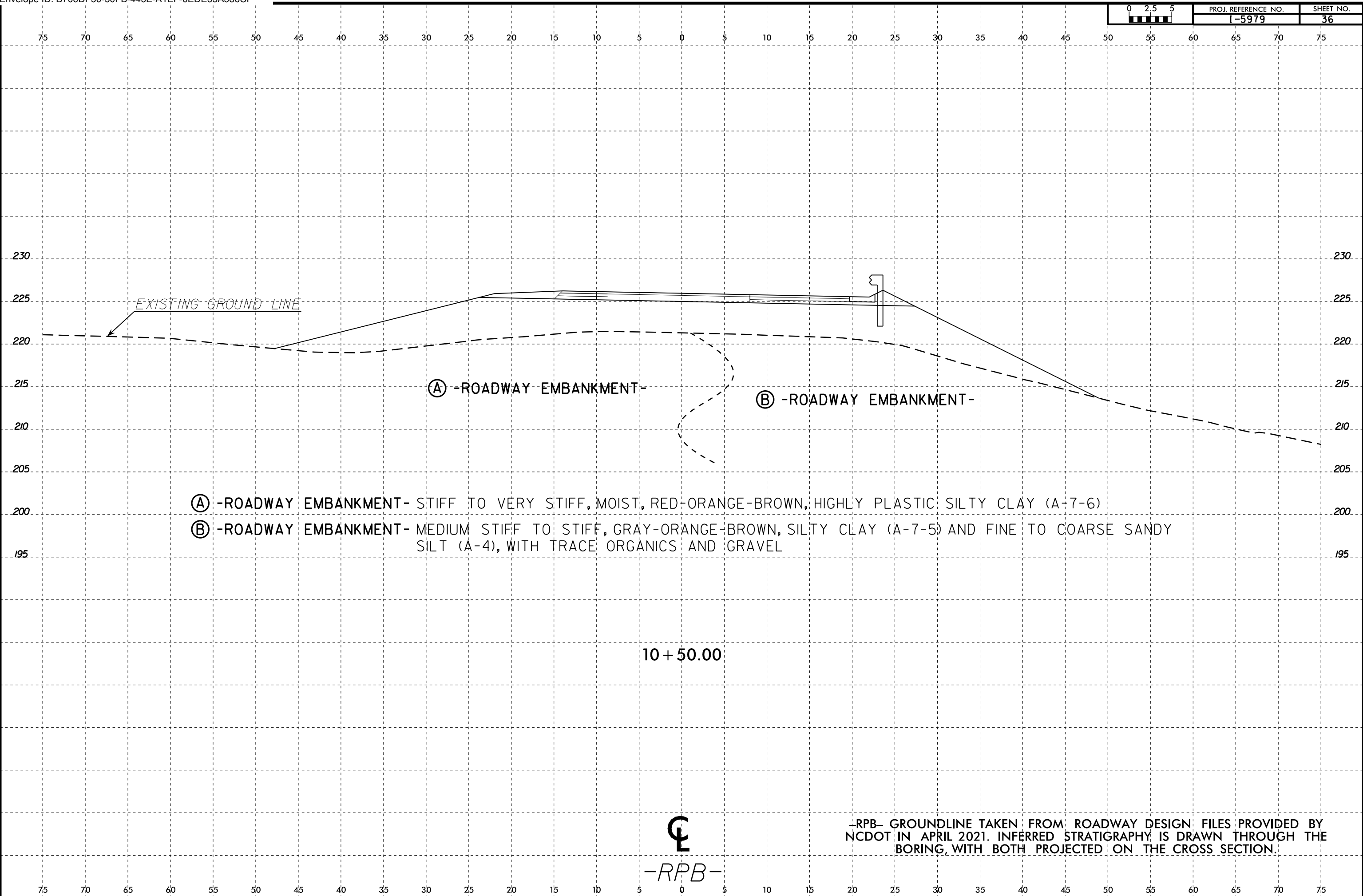
-RPA2- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

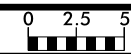
12 + 00.00
RPA2

6/23/16
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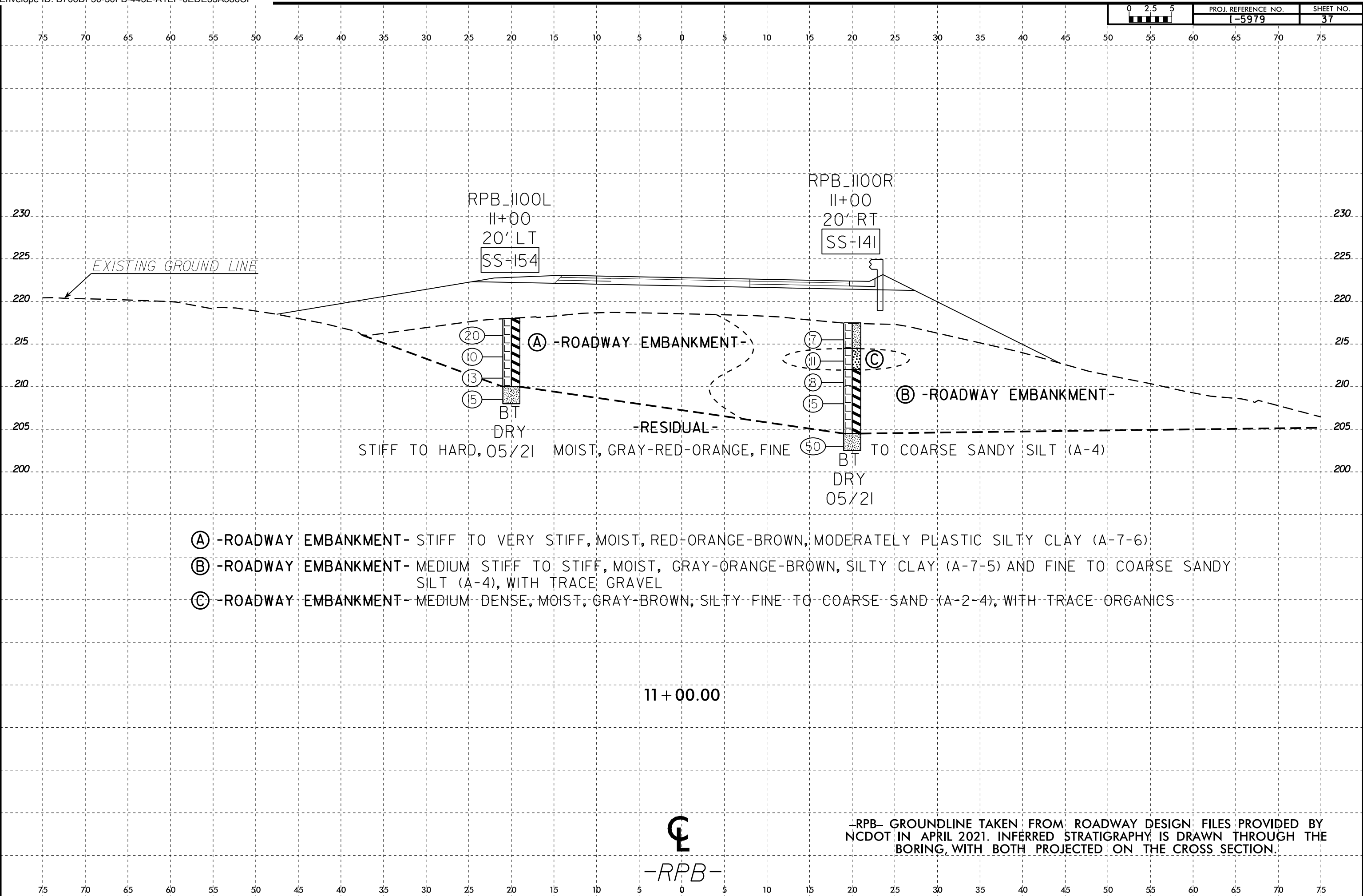


PROJ. REFERENCE NO.	SHEET NO.
1-5979	36





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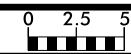


- Ⓐ -ROADWAY EMBANKMENT- STIFF TO VERY STIFF, MOIST, RED-ORANGE-BROWN, MODERATELY PLASTIC SILTY CLAY (A-7-6)
- Ⓑ -ROADWAY EMBANKMENT- MEDIUM STIFF TO STIFF, MOIST, GRAY-ORANGE-BROWN, SILTY CLAY (A-7-5) AND FINE TO COARSE SANDY SILT (A-4), WITH TRACE GRAVEL
- Ⓒ -ROADWAY EMBANKMENT- MEDIUM DENSE, MOIST, GRAY-BROWN, SILTY FINE TO COARSE SAND (A-2-4), WITH TRACE ORGANICS

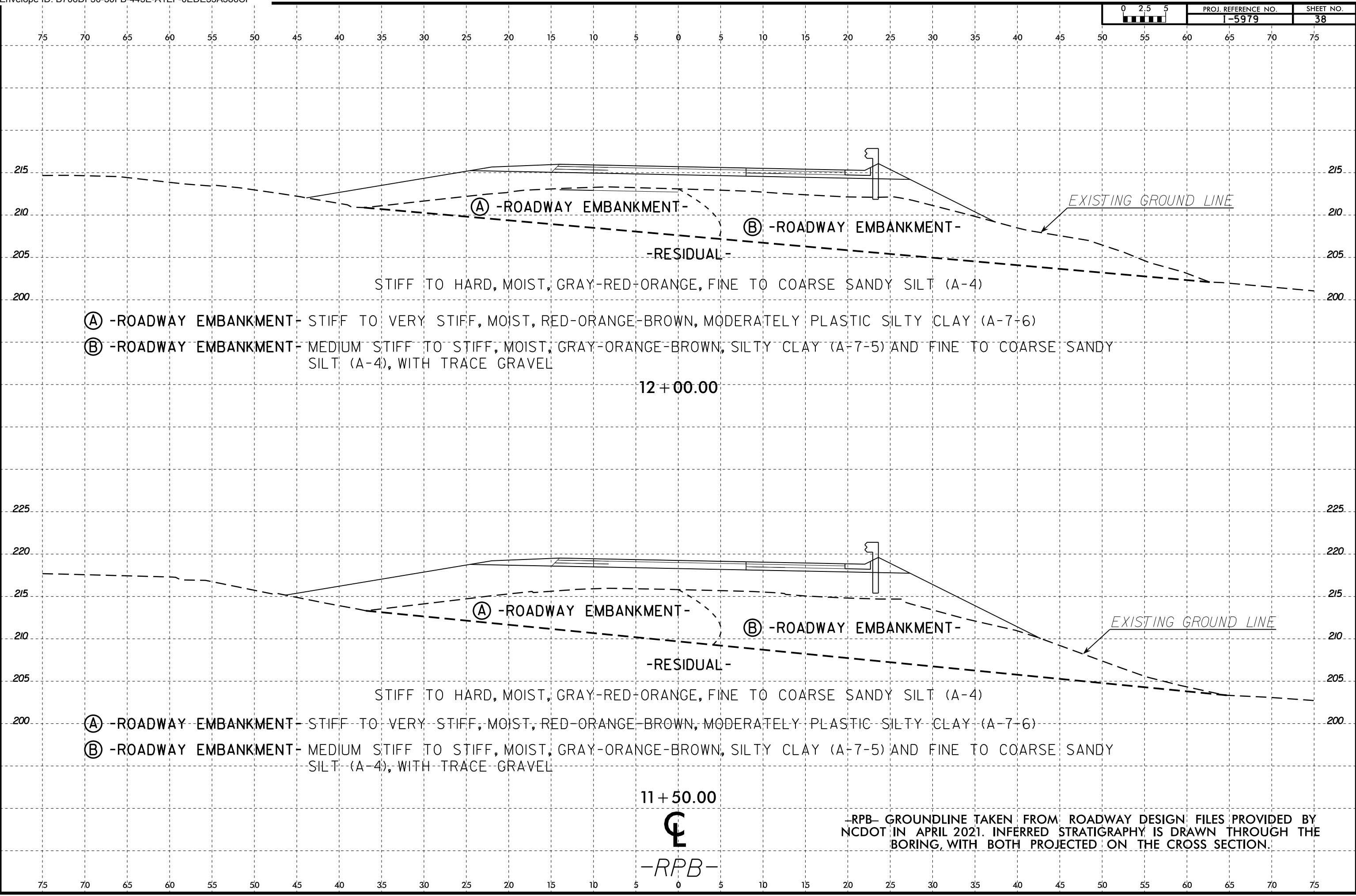
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Ⓒ
-RPB-

-RPB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.



6/23/16
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 \$\$\$SERVNAME\$\$\$



(A) -ROADWAY EMBANKMENT- STIFF TO HARD, MOIST, GRAY-RED-ORANGE, FINE TO COARSE SANDY SILT (A-4)
 (B) -ROADWAY EMBANKMENT- MEDIUM STIFF TO STIFF, MOIST, GRAY-ORANGE-BROWN, SILTY CLAY (A-7-5) AND FINE TO COARSE SANDY SILT (A-4), WITH TRACE GRAVEL
 -RESIDUAL-
 EXISTING GROUND LINE

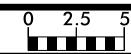
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(A) -ROADWAY EMBANKMENT- STIFF TO HARD, MOIST, GRAY-RED-ORANGE, FINE TO COARSE SANDY SILT (A-4)
 (B) -ROADWAY EMBANKMENT- MEDIUM STIFF TO STIFF, MOIST, GRAY-ORANGE-BROWN, SILTY CLAY (A-7-5) AND FINE TO COARSE SANDY SILT (A-4), WITH TRACE GRAVEL
 -RESIDUAL-
 EXISTING GROUND LINE

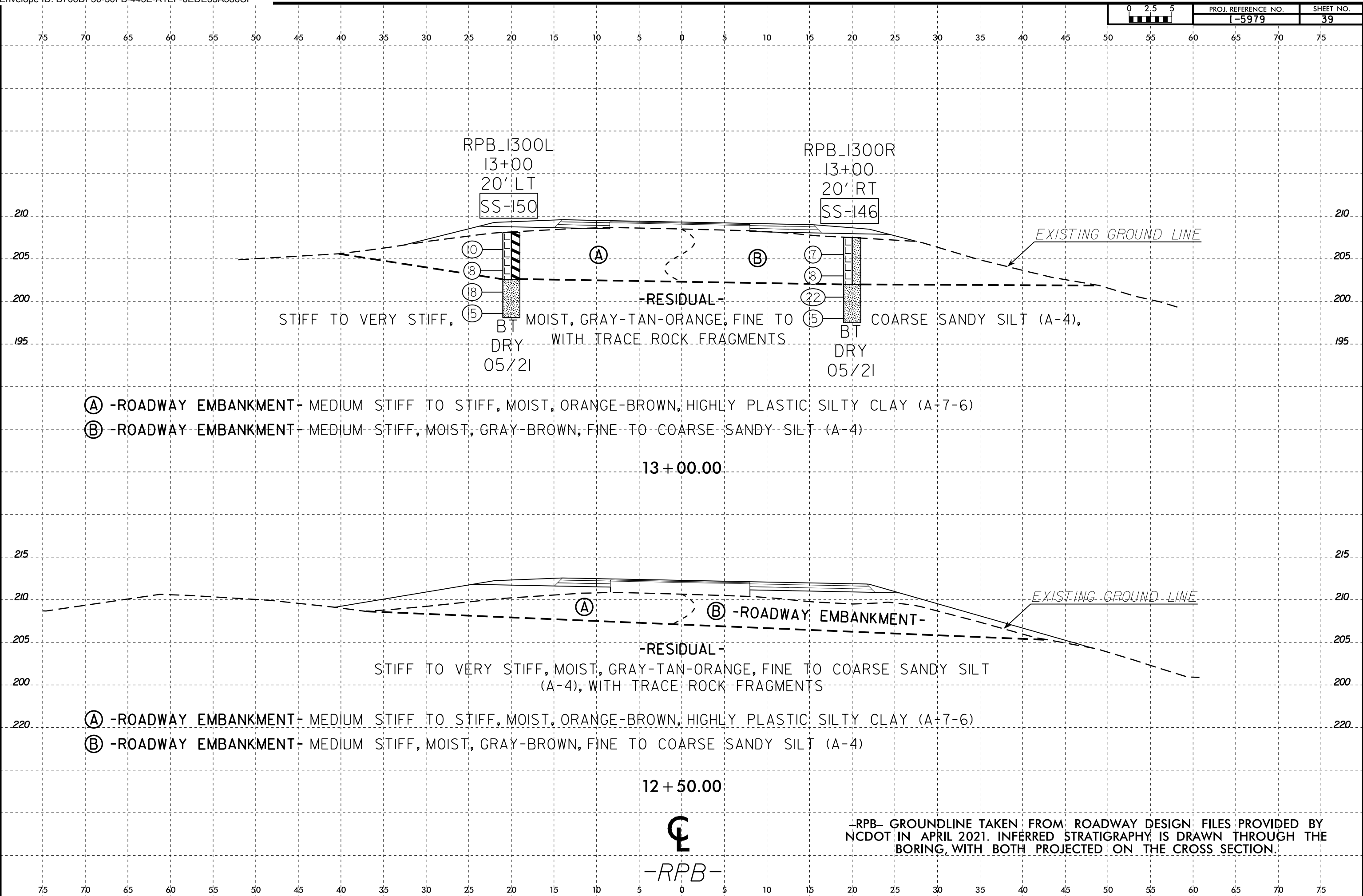
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⊕
 -RPB-

-RPB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.



6/23/16
20-SEP-2021 08:49
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\$\$\$\$SERIALNAME\$\$\$\$



RPB_I300L
13+00
20' LT
SS-150

RPB_I300R
13+00
20' RT
SS-146

EXISTING GROUND LINE

STIFF TO VERY STIFF, (10) (8) (18) (5) BT DRY 05/21
-RESIDUAL-
MOIST, GRAY-TAN-ORANGE, FINE TO WITH TRACE ROCK FRAGMENTS
COARSE SANDY SILT (A-4), (17) (8) (22) (15) BT DRY 05/21

- (A) -ROADWAY EMBANKMENT- MEDIUM STIFF TO STIFF, MOIST, ORANGE-BROWN, HIGHLY PLASTIC SILTY CLAY (A-7-6)
- (B) -ROADWAY EMBANKMENT- MEDIUM STIFF, MOIST, GRAY-BROWN, FINE TO COARSE SANDY SILT (A-4)

13 + 00.00

EXISTING GROUND LINE

(A) (B) -ROADWAY EMBANKMENT-
-RESIDUAL-
STIFF TO VERY STIFF, MOIST, GRAY-TAN-ORANGE, FINE TO COARSE SANDY SILT (A-4), WITH TRACE ROCK FRAGMENTS

- (A) -ROADWAY EMBANKMENT- MEDIUM STIFF TO STIFF, MOIST, ORANGE-BROWN, HIGHLY PLASTIC SILTY CLAY (A-7-6)
- (B) -ROADWAY EMBANKMENT- MEDIUM STIFF, MOIST, GRAY-BROWN, FINE TO COARSE SANDY SILT (A-4)

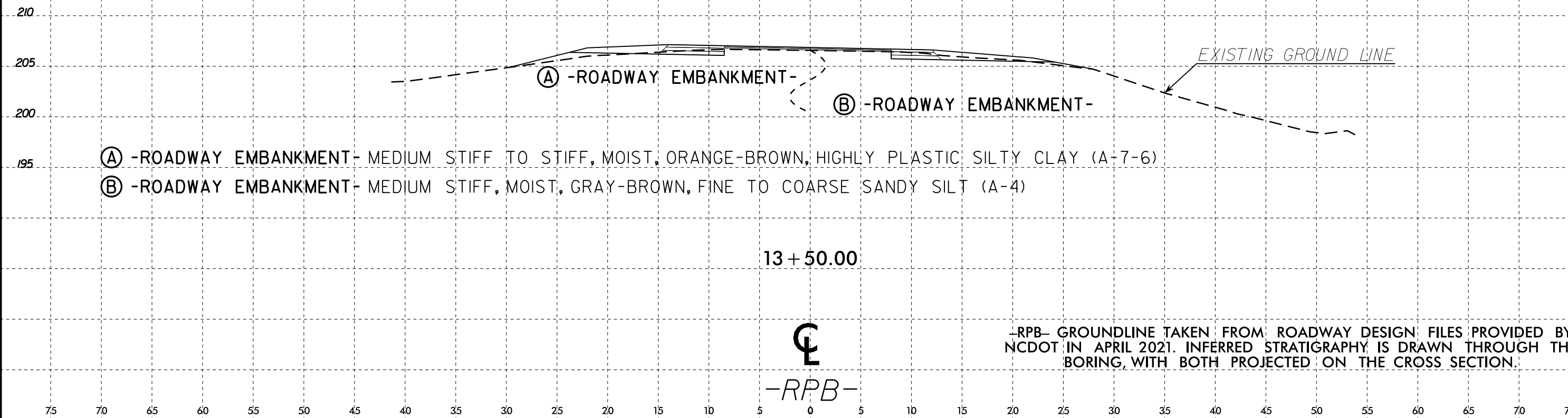
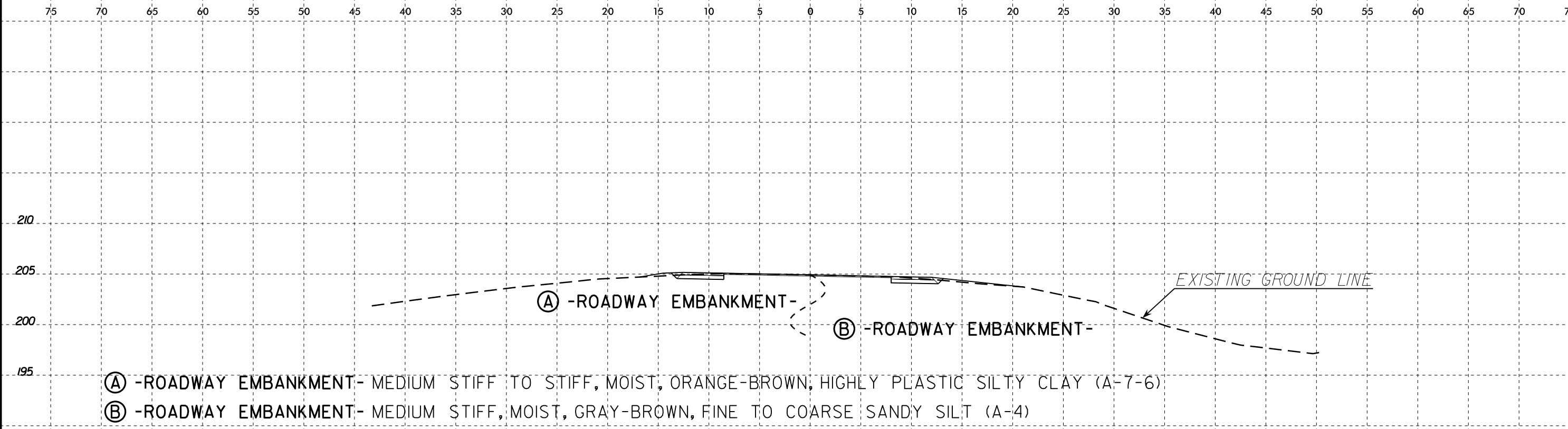
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Ⓞ
-RPB-

-RPB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

6/23/16
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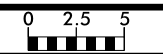
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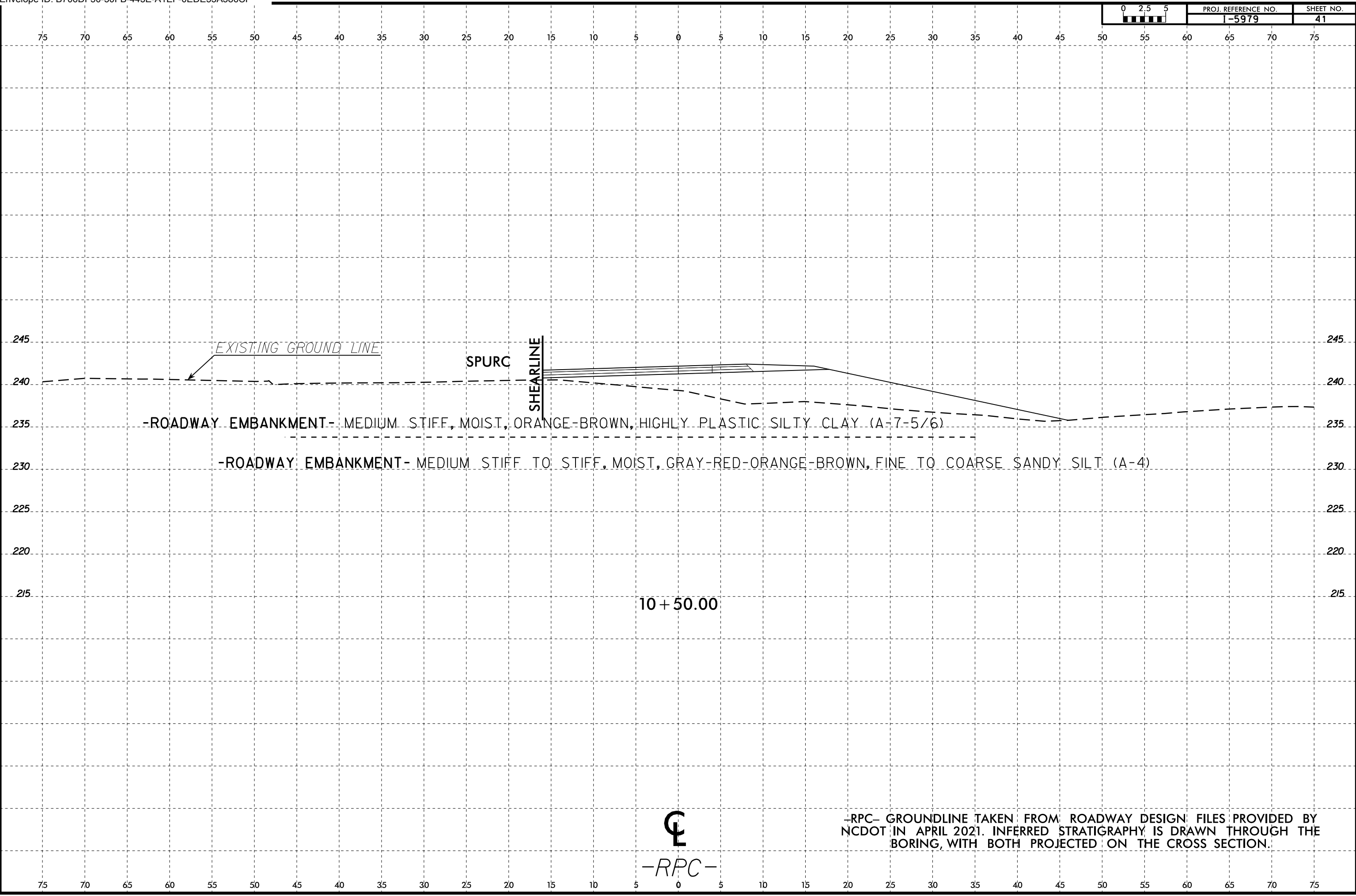
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-RPB-

-RPB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

6/23/16
20-SEP-2021 08:49
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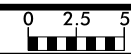
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I-5979	41



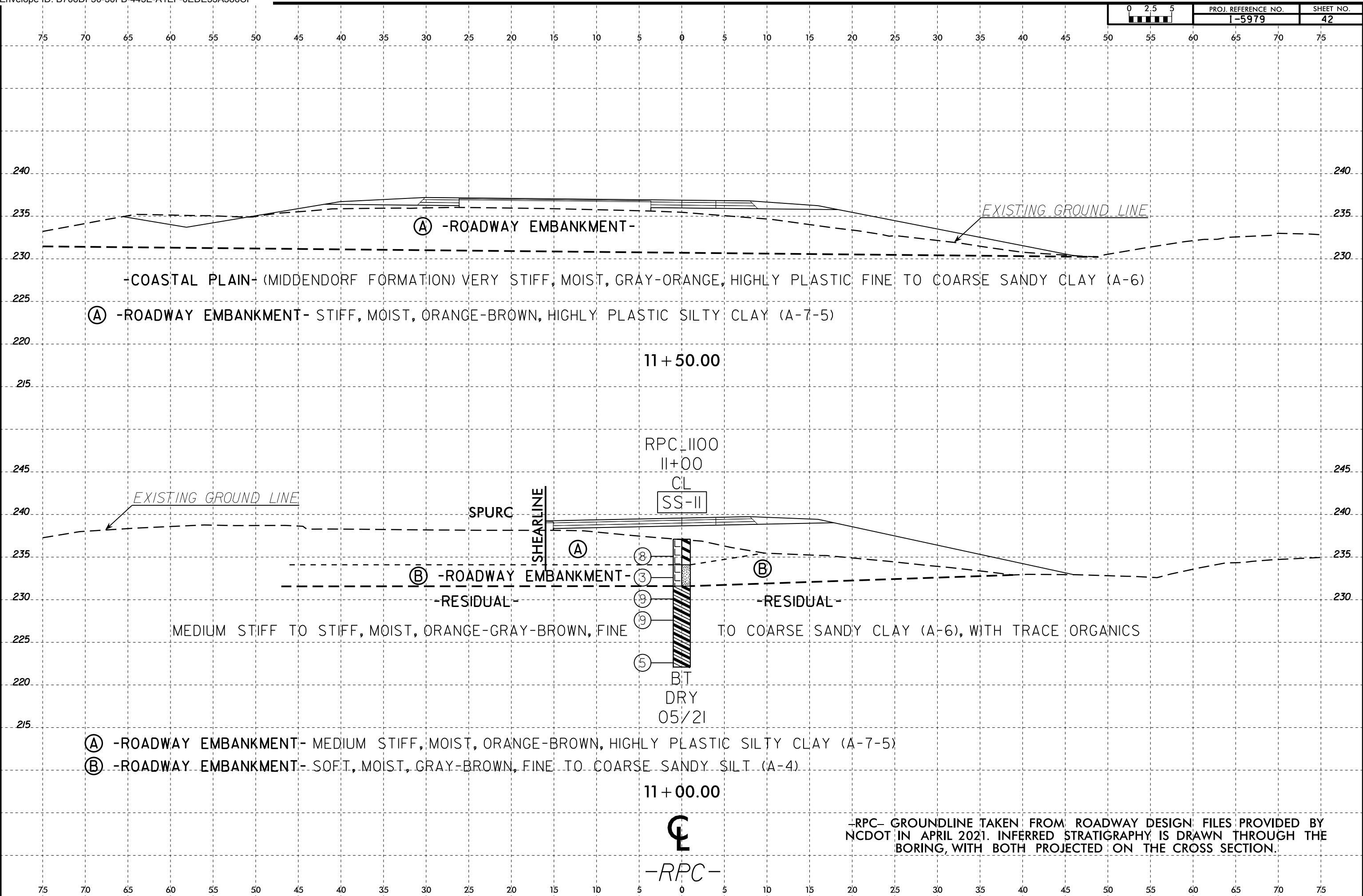
10 + 50.00

⊕
-RPC-

-RPC- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.



6/23/16
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① -ROADWAY EMBANKMENT-
-COASTAL PLAIN- (MIDDENDORF FORMATION) VERY STIFF, MOIST, GRAY-ORANGE, HIGHLY PLASTIC FINE TO COARSE SANDY CLAY (A-6)

① -ROADWAY EMBANKMENT- STIFF, MOIST, ORANGE-BROWN, HIGHLY PLASTIC SILTY CLAY (A-7-5)

11 + 50.00

RPC 1100
11+00
CL
SS-II

EXISTING GROUND LINE

SPURC

SHEARLINE

② -ROADWAY EMBANKMENT-
-RESIDUAL-

② -RESIDUAL-

MEDIUM STIFF TO STIFF, MOIST, ORANGE-GRAY-BROWN, FINE TO COARSE SANDY CLAY (A-6), WITH TRACE ORGANICS

BT
DRY
05/21

① -ROADWAY EMBANKMENT- MEDIUM STIFF, MOIST, ORANGE-BROWN, HIGHLY PLASTIC SILTY CLAY (A-7-5)

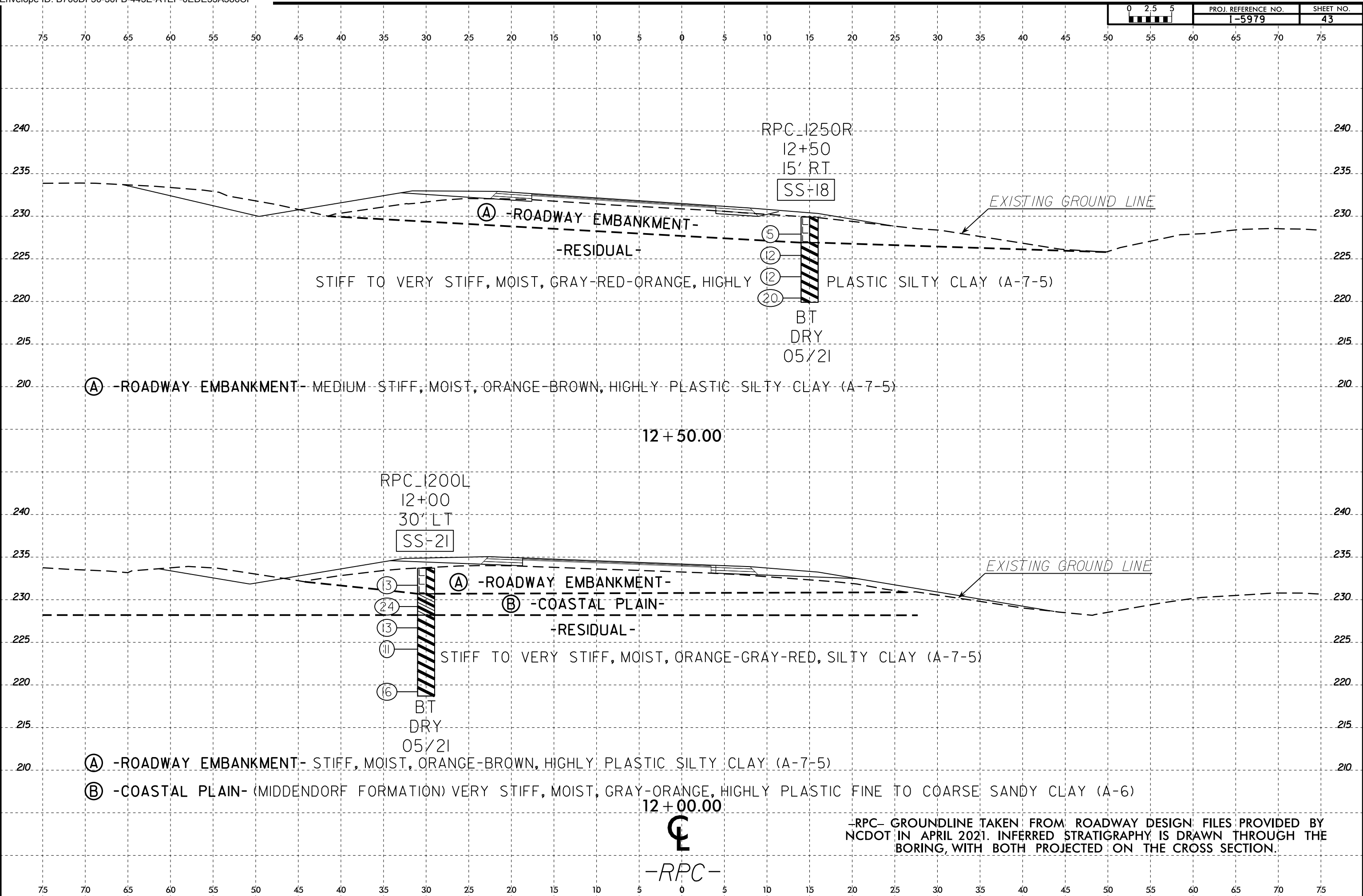
② -ROADWAY EMBANKMENT- SOFT, MOIST, GRAY-BROWN, FINE TO COARSE SANDY SILT (A-4)

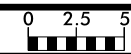
11 + 00.00

Ⓞ
-RPC-

-RPC- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

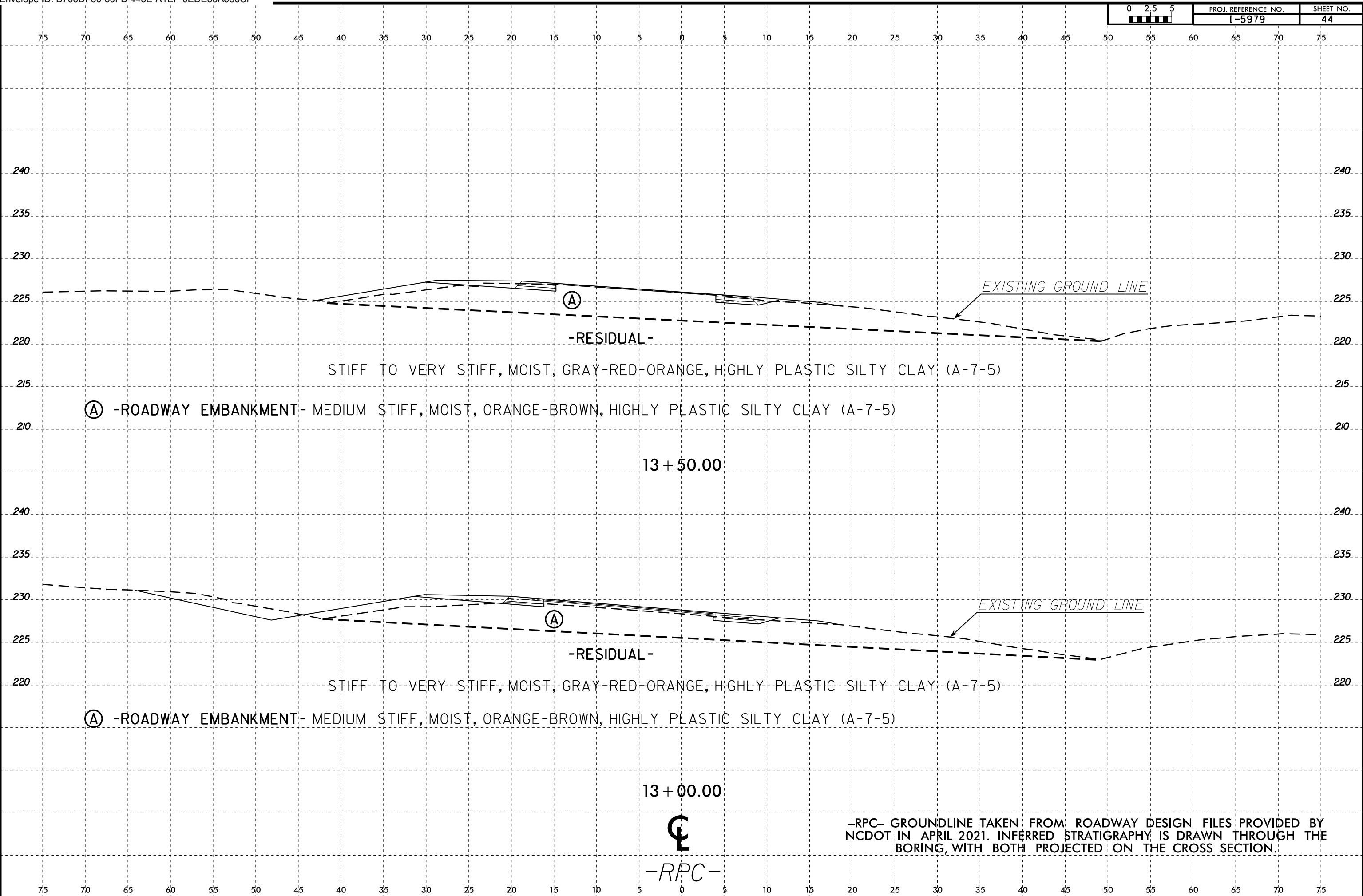
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PROJ. REFERENCE NO.	SHEET NO.
1-5979	44

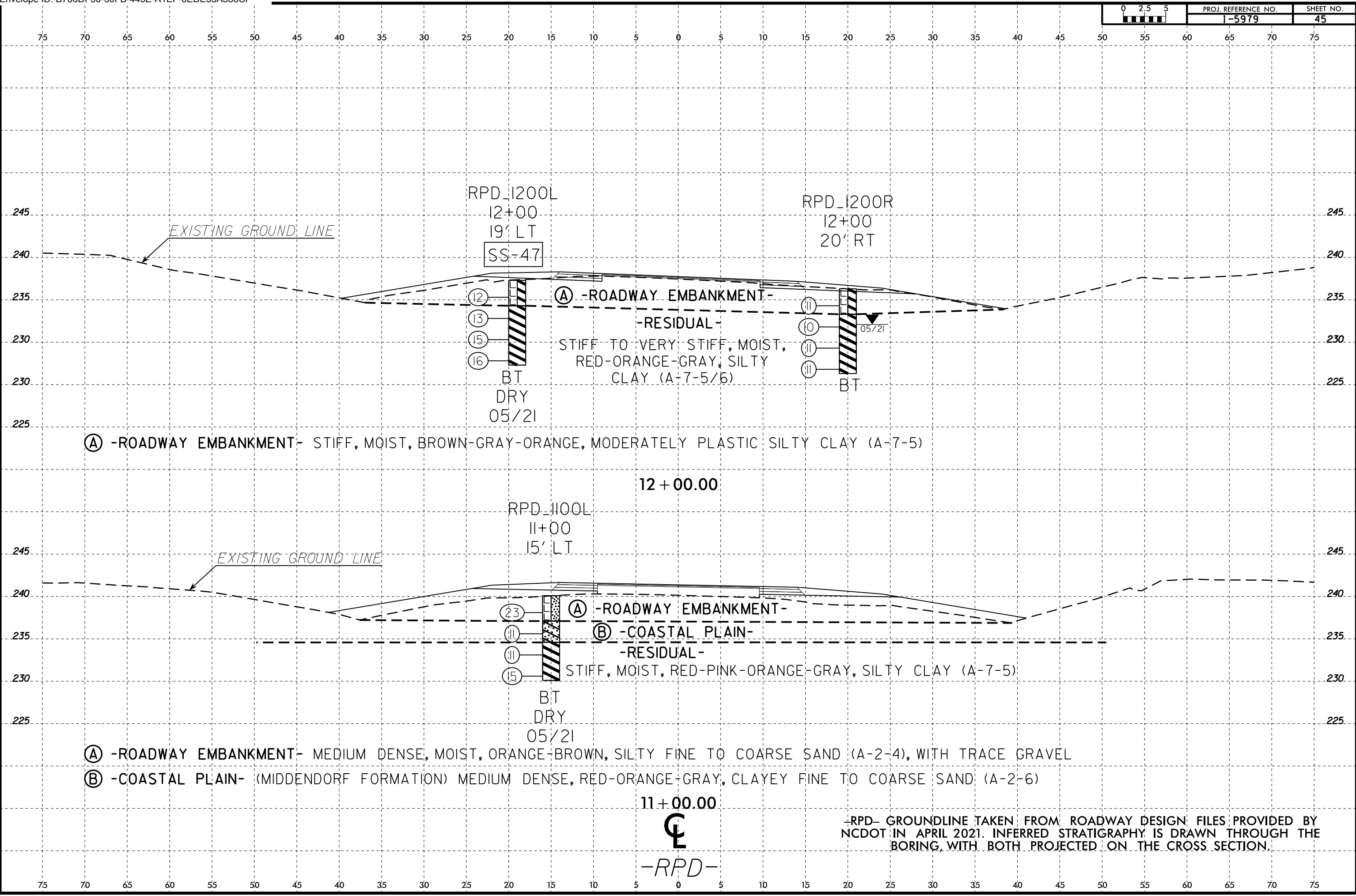
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\$\$\$\$SERIALNAME\$\$\$\$



Ⓞ
-RPC-

-RPC- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

6/23/16
20-SEP-2021 08:49
C:\Users\jgordon\OneDrive - ECS Corporate Services\08 Geo Projects Other\33-Fayetteville\33-9539 - I-5979 - Interchange Improvements-US 74 at US 1\CADD\GEO\TECH\XSE\15979_rdy_geo_xsi_RPD.dgn
SSUBSERNAME\$\$\$\$



RPD_I200L
12+00
19' LT
SS-47

EXISTING GROUND LINE

245
240
235
230
230
225

12
13
15
16

BT
DRY
05/21

Ⓐ -ROADWAY EMBANKMENT-
-RESIDUAL-
STIFF TO VERY STIFF, MOIST,
RED-ORANGE-GRAY, SILTY
CLAY (A-7-5/6)

RPD_I200R
12+00
20' RT

05/21

11
10
11
11

BT

Ⓐ -ROADWAY EMBANKMENT- STIFF, MOIST, BROWN-GRAY-ORANGE, MODERATELY PLASTIC SILTY CLAY (A-7-5)

12 + 00.00

RPD_I100L
11+00
15' LT

EXISTING GROUND LINE

245
240
235
230
230
225

23
11
11
15

BT
DRY
05/21

Ⓐ -ROADWAY EMBANKMENT-
Ⓑ -COASTAL PLAIN-
-RESIDUAL-
STIFF, MOIST, RED-PINK-ORANGE-GRAY, SILTY CLAY (A-7-5)

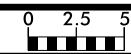
Ⓐ -ROADWAY EMBANKMENT- MEDIUM DENSE, MOIST, ORANGE-BROWN, SILTY FINE TO COARSE SAND (A-2-4), WITH TRACE GRAVEL
Ⓑ -COASTAL PLAIN- (MIDDENDORF FORMATION) MEDIUM DENSE, RED-ORANGE-GRAY, CLAYEY FINE TO COARSE SAND (A-2-6)

11 + 00.00

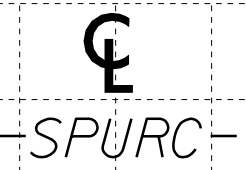
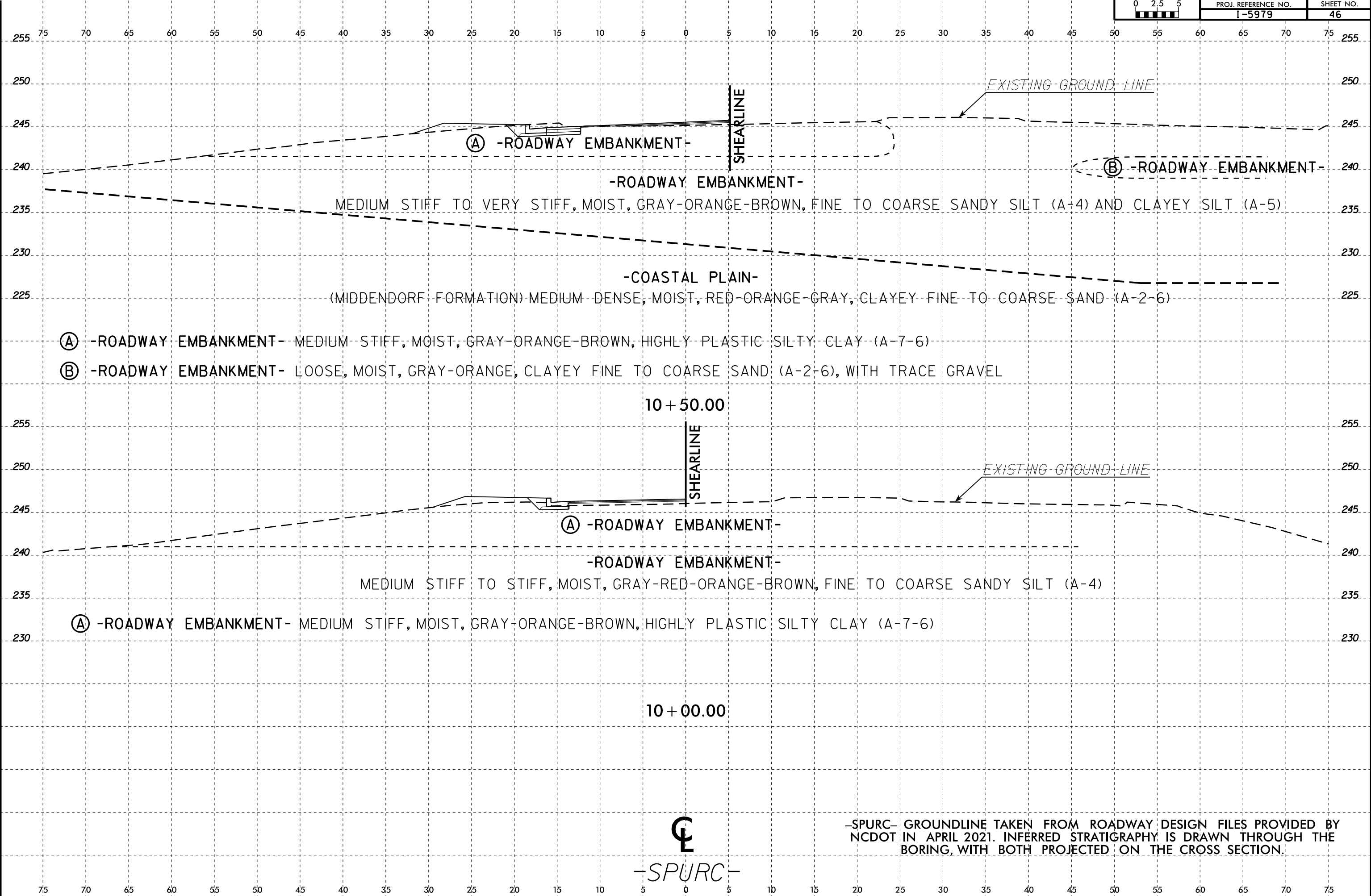
Ⓒ
-RPD-

-RPD- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

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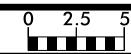


6/23/16
20-SEP-2021 08:49
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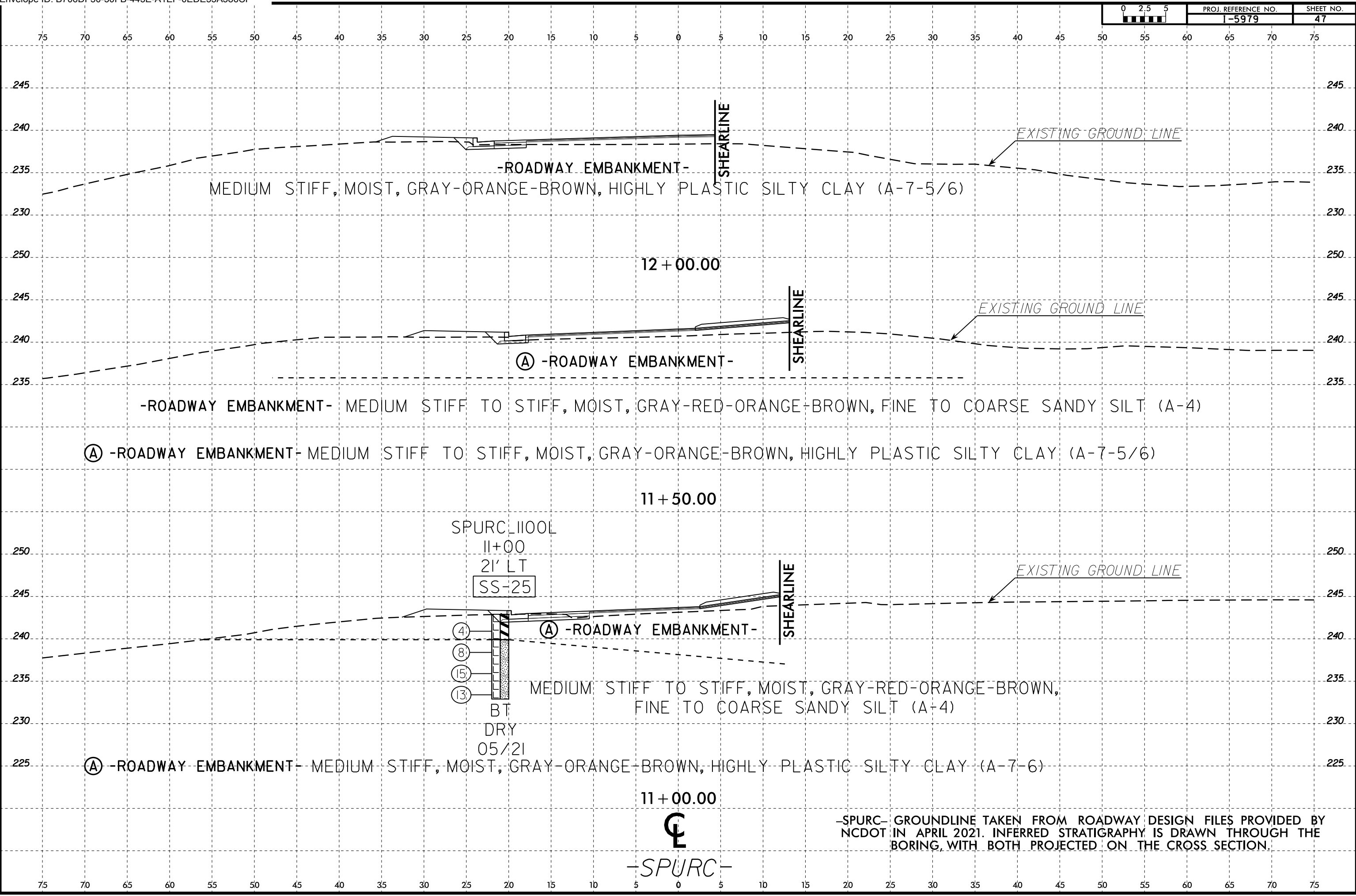
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-SPURC-



PROJ. REFERENCE NO.	SHEET NO.
1-5979	47

6/23/16
20-SEP-2021 08:49
C:\Users\jgordon\OneDrive - ECS Corporate Services\08 Geo Projects Other\33-Fayetteville\33-5539 - I-5979 - Interchange Improvements-US 74 at US 1\CADD\GEO\TECH\se\15979_rdy_geo_xsi.SPURC.dgn
SSUBSERNAME\$\$\$\$



-SPURC- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY NCDOT IN APRIL 2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

CL
-SPURC-

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

SUBSURFACE INVESTIGATION

*APPENDIX A
LABORATORY TEST RESULTS*

SOIL TESTS FOR QUALITY

REFERENCE: I-5979

PROJECT: 37795

Prepared in the Office of:



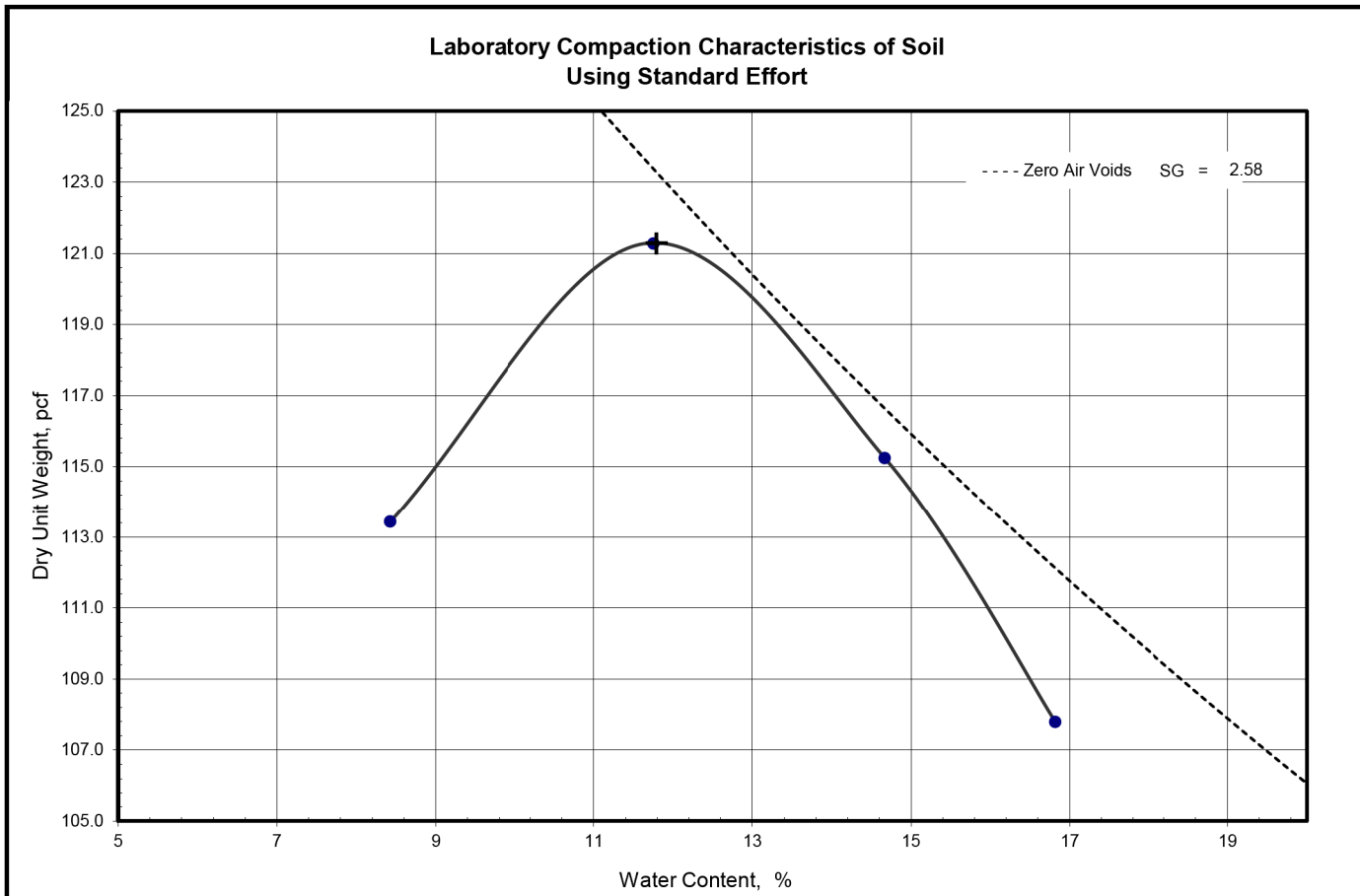
ECS SOUTHEAST, LLP
1812 CENTER PARK DRIVE, SUITE D
CHARLOTTE, NC 28217
(704) 525-5152 [PHONE]
(704) 357-0023 [FAX]
NC REGISTERED
ENGINEERING
FIRM # F-1078

SOIL TEST RESULTS

BORING ID	SAMPLE NO.	ALIGNMENT	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		
L_2250L	SS-29	-L-	45' LT	22+50	1.0-2.5'	A-7-6(5)	47	25	28.9	21.6	13.3	36.2	70.9	55.6	39.8	13.0	-
L_2600L	SS-01	-L-	61' LT	25+74	1.0-2.5'	A-7-5(23)	64	31	12.3	19.4	15.5	52.8	91.9	84.3	69.7	33.0	-
L_3100R	SS-60	-L-	45' RT	30+87	1.0-2.5'	A-7-6(28)	62	36	8.0	22.2	22.1	47.7	93.1	87.4	74.7	27.3	-
L_3500L	SS-131	-L-	23' LT	35+00	1.0-2.5'	A-7-6(13)	51	29	30.2	17.3	9.7	42.8	94.7	75.2	54.9	17.3	-
L_3950R	SS-79	-L-	31' RT	39+38	3.5-5.0'	A-7-5(52)	96	44	4.2	7.3	19.9	68.6	99.5	96.8	90.6	44.2	-
L_4200R	SS-73	-L-	29' RT	41+99	1.0-2.5'	A-4(0)	29	NP	15.2	17.9	20.0	46.9	95.4	85.9	71.0	10.1	-
L_4200R	S-1	-L-	29' RT	41+99	0.0-5.0'	A-2-6(0)	30	11	64.6	13.8	5.9	15.7	98.3	52.2	22.7	8.9	-
L_4350L	SS-113	-L-	28' LT	43+53	1.0-2.5'	A-7-5(44)	80	44	9.0	9.0	19.3	62.6	100.0	93.7	84.6	38.8	-
L_4400R	SS-82	-L-	29' RT	44+00	1.0-2.5'	A-7-6(14)	57	32	31.1	14.2	13.7	41.0	92.6	73.5	53.3	27.2	-
L_4500L	SS-109	-L-	28' LT	45+06	1.0-2.5'	A-2-4(0)	20	6	46.4	28.1	6.1	19.3	90.0	65.9	26.2	8.8	-
L_4700L	S-2	-L-	28' LT	47+00	0.0-5.0'	A-2-4(0)	20	5	55.1	23.1	4.1	17.7	98.5	67.4	23.5	8.6	-
L_4700L	SS-103	-L-	28' LT	47+00	1.0-2.5'	A-6(2)	40	20	48.7	15.7	3.7	31.9	95.9	63.7	36.1	13.6	-
L_4950R	SS-91	-L-	40' RT	49+50	1.0-2.5'	A-7-6(6)	49	29	47.6	15.1	4.6	32.6	100.0	70.9	39.5	15.6	-
RAB2_1250R	SS-135	-RAB2-	1' LT	12+54	1.0-2.5'	A-7-6(30)	64	40	0.7	30.0	19.4	50.0	95.3	87.4	73.0	22.5	-
RPA1_1100R	SS-158	-RPA1-	10' RT	11+00	1.0-2.5'	A-2-7(0)	58	30	67.0	17.2	1.8	14.1	93.7	49.5	16.7	22.0	-
RPA1_1250L	SS-172	-RPA1-	30' LT	12+50	3.5-5.0'	A-4(4)	37	6	12.6	32.3	23.2	31.8	97.0	88.7	68.9	23.7	-
RPA2_1200L	SS-163	-RPA2-	20' LT	12+00	1.0-2.5'	A-7-6(16)	53	29	24.0	17.9	18.0	40.1	95.6	79.8	61.7	16.1	-
RPB_1100L	SS-154	-RPB-	20' LT	11+00	1.0-2.5'	A-7-6(10)	42	19	22.5	19.5	18.6	39.4	96.5	81.6	62.2	15.7	-
RPB_1100R	SS-141	-RPB-	20' RT	11+00	1.0-2.5'	A-4(0)	28	NP	11.8	22.7	35.3	30.3	97.8	90.8	73.5	25.7	-
RPB_1300L	SS-150	-RPB-	20' LT	13+00	1.0-2.5'	A-7-6(33)	60	33	4.0	12.6	23.2	60.2	98.3	96.3	87.9	21.7	-
RPB_1300R	SS-146	-RPB-	20' RT	13+00	1.0-2.5'	A-4(3)	27	10	18.4	22.6	23.6	35.4	91.8	81.5	60.6	14.9	-
RPC_1100	SS-11	-RPC-	CL	11+00	1.0-2.5'	A-7-5(22)	74	37	19.8	15.6	11.9	52.7	87.4	75.8	60.2	24.0	-
RPC_1200L	SS-21	-RPC-	30' LT	12+00	3.5-5.0'	A-6(4)	36	18	38.0	19.7	7.9	34.5	97.2	72.8	45.3	11.2	-
RPC_1250R	SS-18	-RPC-	15' RT	12+50	6.0-7.5'	A-7-5(31)	75	26	4.1	15.1	30.9	49.9	100.0	97.8	86.5	50.7	-
RPD_1200L	SS-47	-RPD-	19' LT	12+00	1.0-2.5'	A-7-5(11)	46	16	19.4	18.1	24.3	38.3	98.7	85.4	69.1	21.7	-
SPURC_1100L	SS-25	-SPURC-	21' LT	11+00	1.0-2.5'	A-7-6(19)	58	29	13.9	21.6	20.4	44.1	90.2	81.3	66.7	27.4	-

LAB TECHNICIAN: CASS RUPERT

NCDOT CERTIFICATION NO. 112-01-1003



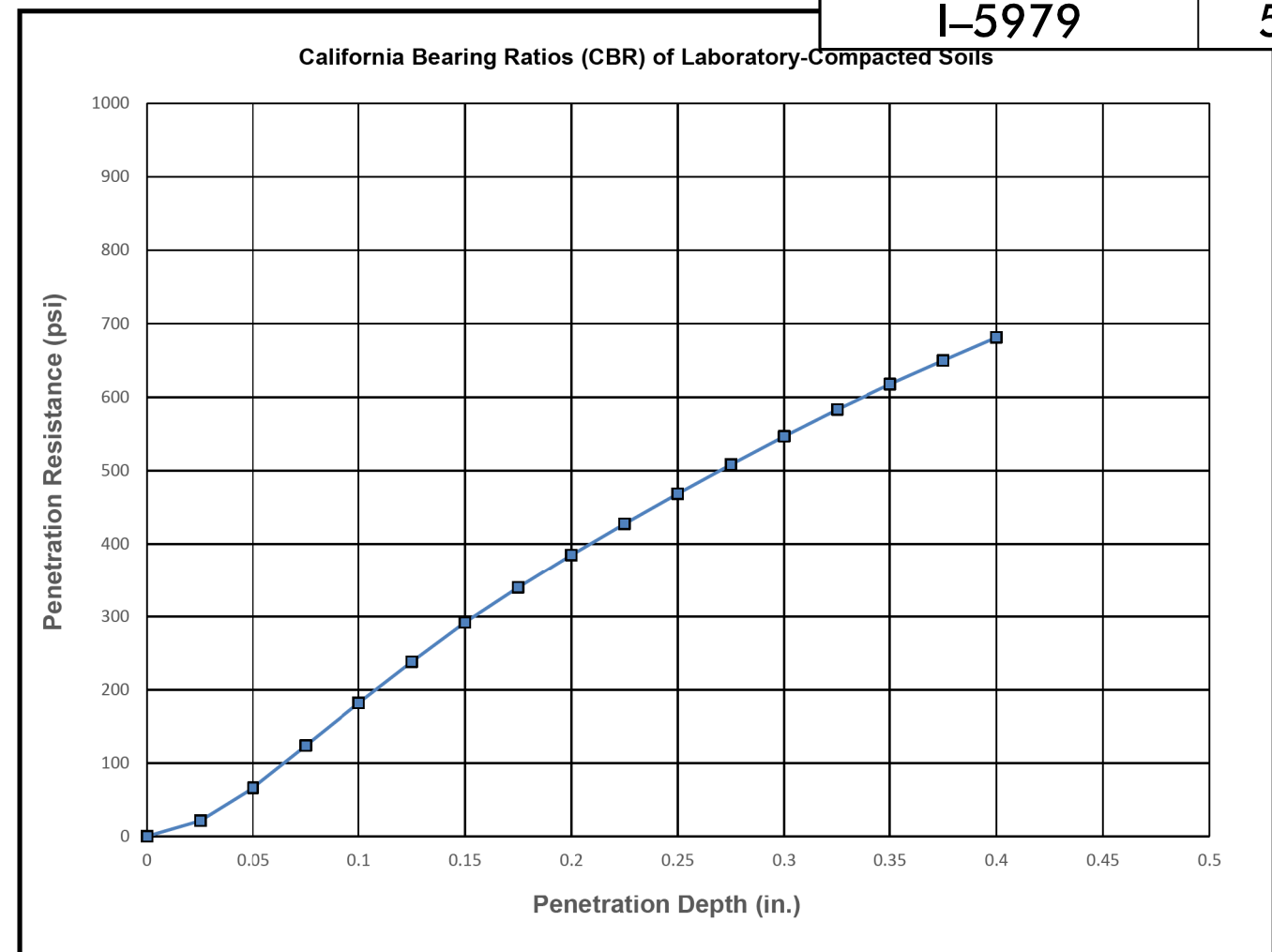
Optimum Moisture Content	11.8	%	Preparation	ASTM dry preparation method
Maximum Dry Unit Weight	121.3	pcf	Type of rammer	Manual - 5.5lbf (24.5N)
			Test Specification / Method	ASTM D693-12e2-method A
			Specific gravity - D854 water pycnometer	2.58
Cumulative material retained on:			Coarse Aggregate Specific Gravity -	
	3/4 in. sieve	0.0	%	
	3/8 in. sieve		%	
	#4 sieve		%	

Soil Description	Nat. Moist. %	Liquid Limit	Plasticity Index	% < #200	USCS	AASHTO
Gray-Orange Clayey SAND	8.9	30	11	22.7	-	A-2-6(0)

Project: I-5979 – Interchange Improvements US74 at US1 Client: NC Department of Transportation Sample / Source L_4200R Test Reference/No.:	Project No.: 33:5539 Depth (ft.): 0-5 Sample No.: S-1 Date Reported: 6/9/2021
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Office / Lab	Address	Office Number / Fax
	ECS Southeast LLP - Charlotte	1812 Center Park Drive Suite D Charlotte, NC 28217
		(704)525-5152 (704)357-0023

Tested by	Checked by	Approved by	Date Received	Remarks
CER		CRupert	5/25/2021	



TEST RESULTS ()

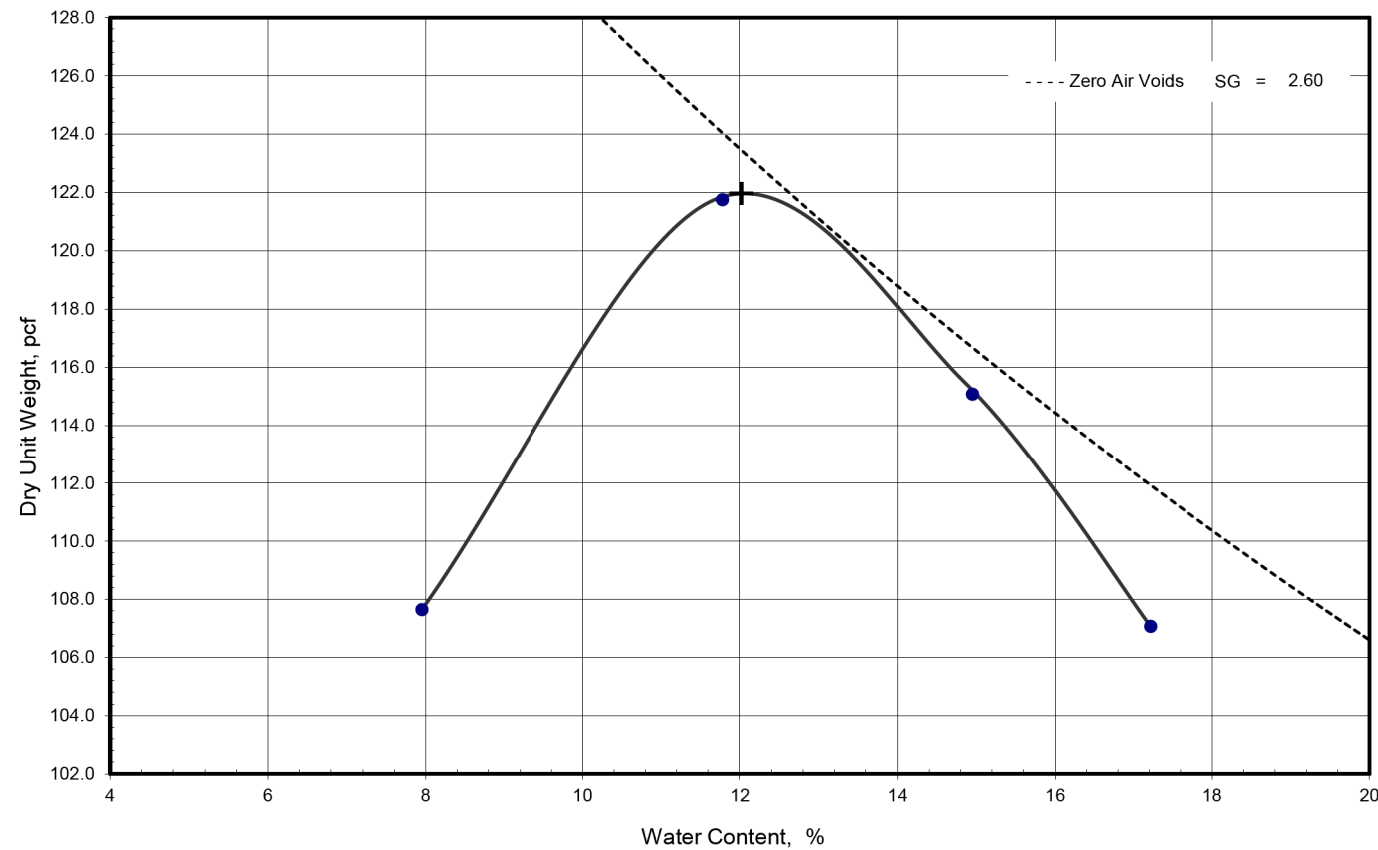
Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Swell (%)			
Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.1 in.	0.2 in.						
120.2	99.1	11.2	119.7	98.7	11.7	23.0	28.1	0.02	10	0.02			
Material Description						AASHTO	USCS	MAX. Dens. (pcf)	Optimum Moisture (%)	LL	PI	% Fines	% Gravel
Gray-Orange Clayey SAND						A-2-6(0)	-	121.3	11.8	30	11	22.7	

Project: I-5979 – Interchange Improvements US74 at US1 Client: NC Department of Transportation Sample / Source L_4200R Test Reference/No.: 1	Project No.: 33:5539 Depth (ft.): 0-5 Sample No.: S-1 Date Reported: 6/9/2021
---	--

Office / Lab	Address	Office Number / Fax
	ECS Southeast LLP - Charlotte	1812 Center Park Drive Suite D Charlotte, NC 28217
		(704)525-5152 (704)357-0023

Tested by	Checked by	Approved by	Date Received	Remarks
CER		CRupert	5/25/2021	

Laboratory Compaction Characteristics of Soil Using Standard Effort



Optimum Moisture Content	12.0 %	Preparation	ASTM dry preparation method
Maximum Dry Unit Weight	122.0 pcf	Type of rammer	Manual - 5.5lbf (24.5N)
		Test Specification / Method	
		Specific gravity - D854 water pycnometer	2.60 Assumed
Cumulative material retained on:		Coarse Aggregate Specific Gravity -	
3/4 in. sieve	0.0 %		
3/8 in. sieve	%		
#4 sieve	%		

Soil Description	Nat. Moist. %	Liquid Limit	Plasticity Index	% < #200	USCS	AASHTO
Brown Silty SAND	8.6	20	5	23.5	-	A-2-4(0)

Project: I-5979 - Interchange Improvements US74 at US1
 Client: NC Department of Transportation
 Sample / Source L_4700L
 Test Reference/No.:

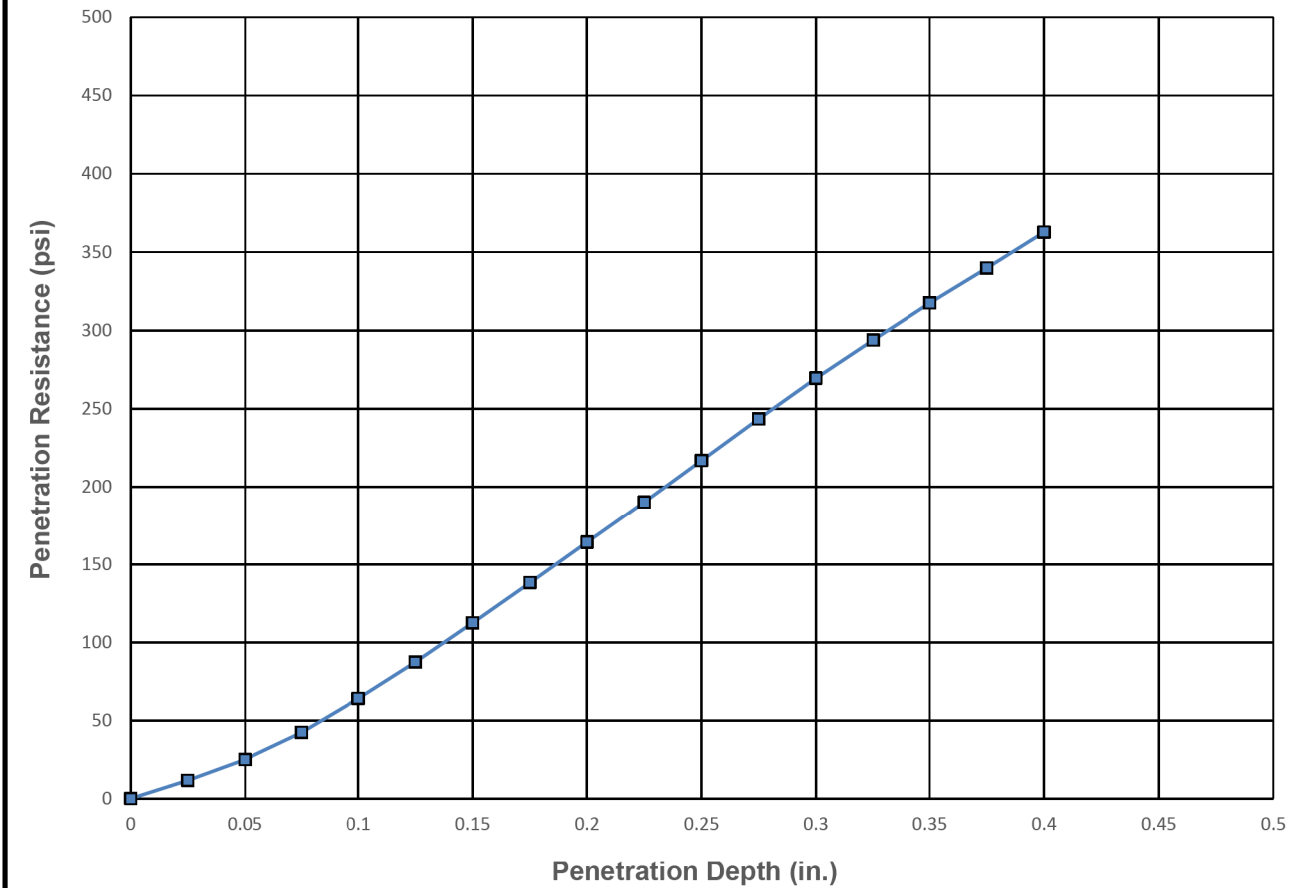
Project No.: 33:5539
 Depth (ft.): 0-5
 Sample No.: S-2
 Date Reported: 6/9/2021



Office / Lab	Address	Office Number / Fax
ECS Southeast LLP - Charlotte	1812 Center Park Drive Suite D Charlotte, NC 28217	(704)525-5152 (704)357-0023

Tested by	Checked by	Approved by	Date Received	Remarks
CER		CRupert	5/25/2021	

California Bearing Ratios (CBR) of Laboratory-Compacted Soils



TEST RESULTS (AASHTO T 193-13)

Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Swell (%)			
Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.1 in.	0.2 in.						
118.2	96.9	11.8	117.9	96.6	12.1	10.9	14.2	0.05	10	-0.02			
Material Description						AASHTO	USCS	MAX. Dens. (pcf)	Optimum Moisture (%)	LL	PI	% Fines	% Gravel
Brown Silty SAND						A-2-4(0)	-	122	12	20	5	22.7	

Project: I-5979 - Interchange Improvements US74 at US1
 Client: NC Department of Transportation
 Sample / Source L_4700L
 Test Reference/No.: 1

Project No.: 33:5539
 Depth (ft.): 0-5
 Sample No.: S-2
 Date Reported: 6/9/2021



Office / Lab	Address	Office Number / Fax
ECS Southeast LLP - Charlotte	1812 Center Park Drive Suite D Charlotte, NC 28217	(704)525-5152 (704)357-0023

Tested by	Checked by	Approved by	Date Received	Remarks
CER		CRupert	5/25/2021	