

REFERENCE: U-4713A

PROJECT: 39077

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-4713A	1	43

ROADWAY
SUBSURFACE INVESTIGATION

COUNTY MECKLENBURG
PROJECT DESCRIPTION SR 3440 (McKEE ROAD) FROM
SR 3448 (PLEASANT PLAINS ROAD) TO SR 1009
(EAST JOHN STREET)

INVENTORY

CONTENTS

<u>LINE</u>	<u>STATION</u>	<u>PLAN</u>	<u>PROFILE</u>
-L-	11+40 - 18+10	4-7	9,10
-Y1-	10+00 - 22+58	4,8	-
-Y2-	10+00 - 12+20	5	-
-Y3-	10+00 - 10+77	6	-
-Y4-	10+00 - 11+75	6	-
-Y5-	-	7	-

CROSS SECTIONS

<u>LINE</u>	<u>STATION</u>	<u>SHEET</u>
-L-	14+00, 16+00	11
-L-	18+00, 20+00	12
-L-	21+50, 22+00, 22+50	13
-L-	23+00, 23+50, 24+00	14
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-L-	32+00	21
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-Y4-	10+50	41

APPENDICES

<u>APPENDIX</u>	<u>TITLE</u>	<u>SHEET</u>
A	SOIL TEST RESULTS	42,43

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.

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

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

PERSONNEL

C.T. TANG, PE

S. WOODS

HPC DRILLING

C. ODOM

G. MEDLIN

INVESTIGATED BY S. WOODS

DRAWN BY C.T. TANG, PE

CHECKED BY D. BROWN, PE

SUBMITTED BY C.T. TANG, PE

DATE JUNE 2019



DocuSigned by:
Chien-Ting Tang 8/8/2019
806B9478DA4C46E... DATE

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

Main content table divided into sections: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, TERMS AND DEFINITIONS, SOIL LEGEND AND AASHTO CLASSIFICATION, ANGULARITY OF GRAINS, MINERALOGICAL COMPOSITION, COMPRESSION, PERCENTAGE OF MATERIAL, GROUND WATER, MISCELLANEOUS SYMBOLS, RECOMMENDATION SYMBOLS, ABBREVIATIONS, EQUIPMENT USED ON SUBJECT PROJECT, SOIL MOISTURE - CORRELATION OF TERMS, PLASTICITY, COLOR, FRACTURE SPACING, BEDDING, INDURATION.

TIP PROJECT: U-4713A

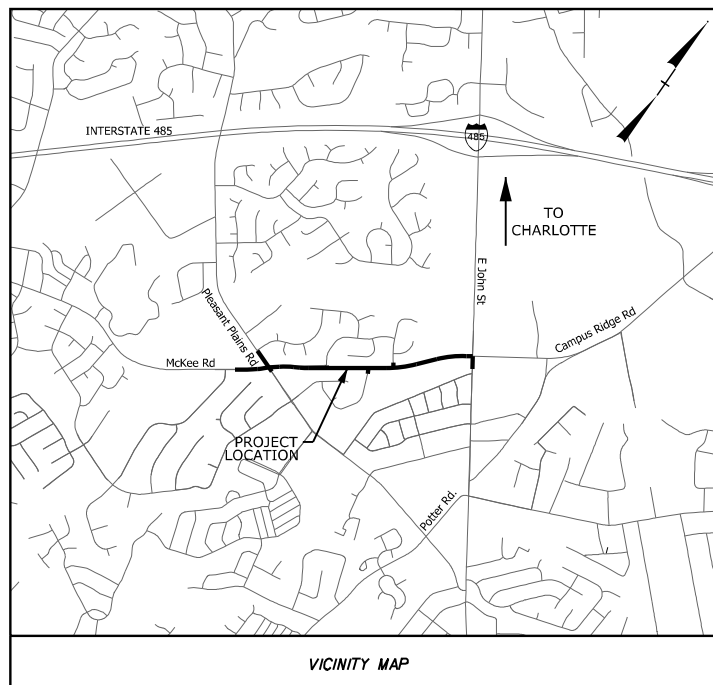
See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MECKLENBURG COUNTY

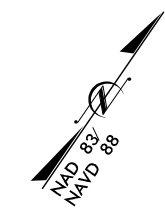
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N.C.	U-4713A	3	43
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

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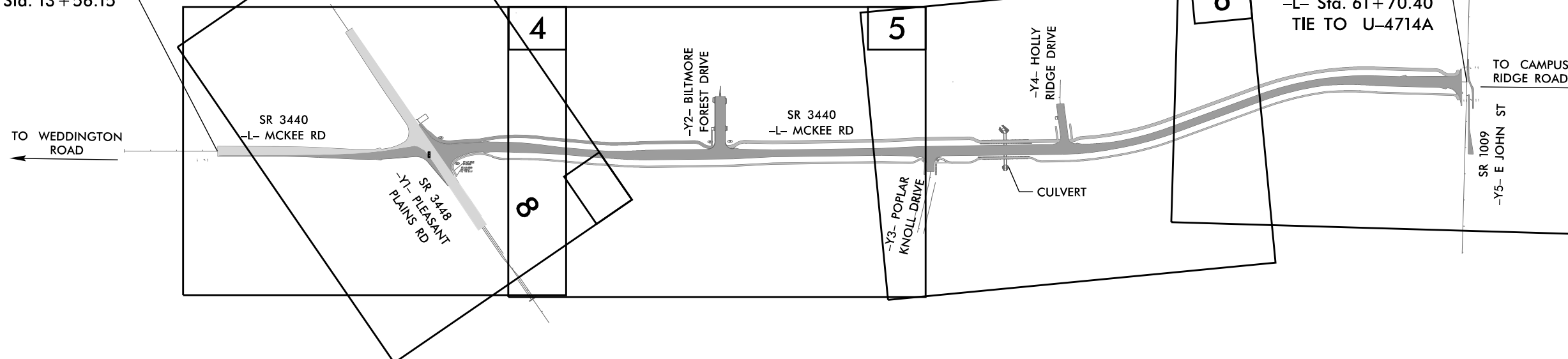
**LOCATION: SR 3440 (McKEE ROAD) FROM
SR 3448 (PLEASANT PLAINS RD) TO SR 1009 (EAST JOHN STREET)**

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND CULVERT EXTENSION



BEGIN TIP PROJECT
U-4713A
-L- Sta. 13 + 56.15

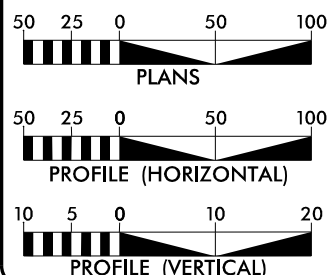
END TIP PROJECT
U-4713A
-L- Sta. 61 + 70.40
TIE TO U-4714A



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PROJECT: xxxxx.x.x

GRAPHIC SCALES



DESIGN DATA

ADT 2017 = 121,000 VPD
ADT 2040 = 138,000 VPD

K = 8%
D = 45%
T = 3%*
V = 40 MPH

FUNCTIONAL CLASSIFICATION: MINOR COLLECTOR

* 1% TTST 2% DUAL SUB REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-4713A = 0.908 MILES
TOTAL LENGTH TIP PROJECT U-4713A = 0.908 MILES

PLANS PREPARED FOR THE NCDOT BY:



2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

JULY 2019

LETTING DATE:

JULY 2020

FRANK D. MASTERSON, P.E.
PROJECT ENGINEER

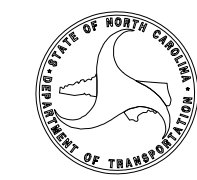
BEN J VONDENBRINK
PROJECT DESIGN ENGINEER

SEAN EPPERSON, P.E.
NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.
ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.





June 24, 2019

STATE PROJECT: 39077.1.2 (U-4713A)
 COUNTY: Mecklenburg
 DESCRIPTION: SR 3440 (McKee Road) from SR 3448 (Pleasant Plains Road) to SR 1009 (East John Street)

SUBJECT: Roadway Subsurface Inventory

Project Description

The proposed project consists of the extension of McKee Road, located in Matthews, North Carolina. The total length of the project is approximately 0.9 miles, with six alignments:

Alignment	Road Name	Stations
-L-	McKee Road	13+56 to 61+70±
-Y1-	Pleasant Plains Road	14+96 to 26+47±
-Y2-	Biltmore Forest Drive	10+00 to 12+20±
-Y3-	Poplar Knoll Drive	10+00 to 10+77±
-Y4-	Holly Ridge Drive	10+00 to 11+75±
-Y5-	East John Street	-

Plans call for the extension of McKee Road on new alignment (-L-) from the current intersection of McKee Road and Pleasant Plains Road to East John Street. The extension will be two-lanes with associated turn lanes. The project also includes a 10-foot wide multi-use path and a 5-foot sidewalk. The plans also include the improvements of the five alignments (-Y1- thru -Y5) that connect to the new McKee Road extension.

This project includes an 8-foot x 6-foot reinforced concrete box culvert (RCBC), located at approximate station 43+65 -L-. The structure of the proposed culvert is an. Project embankments will range in height up to 15 feet and the cut sections will vary and extend as deep as 10 feet.

A geotechnical field investigation was conducted in March of 2019 for this project. Drilling was performed by HPC of Albemarle, NC using an ATV-mounted CME-550 drill rig. The drill rig was equipped with a - automatic hammer with the hammer efficiency of 89%. All drilling activities were supervised by Stewart personnel.

A total of 24 Standard Penetration Test (SPT) borings were performed for the project. Representative soil samples from select borings were collected in the field for laboratory analysis. Six hand auger borings were also performed in areas that were inaccessible to drill rigs or have underground utility conflict.

Physiography & Geology

The project site is located in Mecklenburg County, North Carolina, which lies within the Charlotte Belt of the Piedmont Geologic Province of North Carolina. The project corridor contains primarily undeveloped land, between residential communities.

Review of the Geologic Map of the Charlotte 1° x 2° Quadrangle, North Carolina and South Carolina (Goldsmith, Mitton and Horton) shows that the site is primarily underlain by metamorphosed tonalite porphyry (mqdp) from between the Cambrian and Late Proterozoic periods.

Soil Properties

Soils encountered at the site include artificial fill, alluvial, and residual soils. Artificial fill was encountered in borings L_3600, L_3800, L_4350 and L_4400, with material classified as medium stiff to stiff Sandy CLAY (A-6), stiff Clayey SILT (A-5), and loose to medium dense Clayey SAND (A-2-6) and Silty SAND (A-2-4).

Alluvial deposits associated with the stream that runs across -L- alignment were encountered in boring L_4350 below artificial fill, with material classified as soft Sandy SILT (A-4) and very dense, coarse SAND (A-1).

The native residual soils, which are the weathered remains of the parent rock, consists of soft to very stiff Sandy SILT (A-4), Silty CLAY (A-7), Clayey SILT (A-5), Sandy CLAY (A-6), and loose to very dense Silty SAND (A-2-4) and Clayey SAND (A-2-6). N-values in residual soil ranged from 4 to 86 bpf. The clays exhibit variable plastic indices of 12 to 66 percent.

Rock Properties

Weathered rock (porphyry) was encountered in borings L_3000, L_4350, L_4800 and L_5800 at depths ranging from approximately 12 to 17 feet below the current ground surface (el. 704.7± to 740.6± feet).

Refusal on hard rock (porphyry) was encountered at three boring locations, L_3000, L_4350, L_4400 and L_6000, at depths of approximately 10.6 to 12.5 feet below the current ground surface (el. 704.3± to 740.1± feet).

Groundwater

Five out of 24 SPT borings were encountered groundwater during the drilling process, at depths ranging from 2.3 to 13.8 feet below the ground surface (el. 711.1± to 727.5± feet). Sixteen borings were left open for a 24+ hour stabilization period, after which groundwater was measured in eight borings at depths ranging from approximately 1.3 to 13.7 feet below the current ground surface (el. 725.9± to 751.5± feet).

Areas of Special Geotechnical Interest

Highly Plastic Soils

Highly plastic soils are present in portions of the project and will impact grading at the following locations.

Alignment	Station	Offset (ft)
-L-	22+00± to 30+50±	55± LT - 60± RT
-L-	33+00± to 35+00±	65± LT - 62± RT
-L-	39+00± to 42+50±	57± LT - 57± RT
-L-	51+50± to 53+50±	20± LT - 62± RT

Alluvial Soils

A stream runs across -L- alignment near station of 43+70 and thus alluvial soils are likely to be encountered in the area. This is the crossing with a planned RCBC with approximately 15 feet of roadway embankment cover. Lesser amounts of alluvium may also be encountered where -L- crosses a small stream at approximate station 60+10.

Sewer Line

Two 8-inch PVC sewer pipes extend across -L- alignment - one near station of 43+70 and one near station of 44+20.

Laboratory CBR Testing

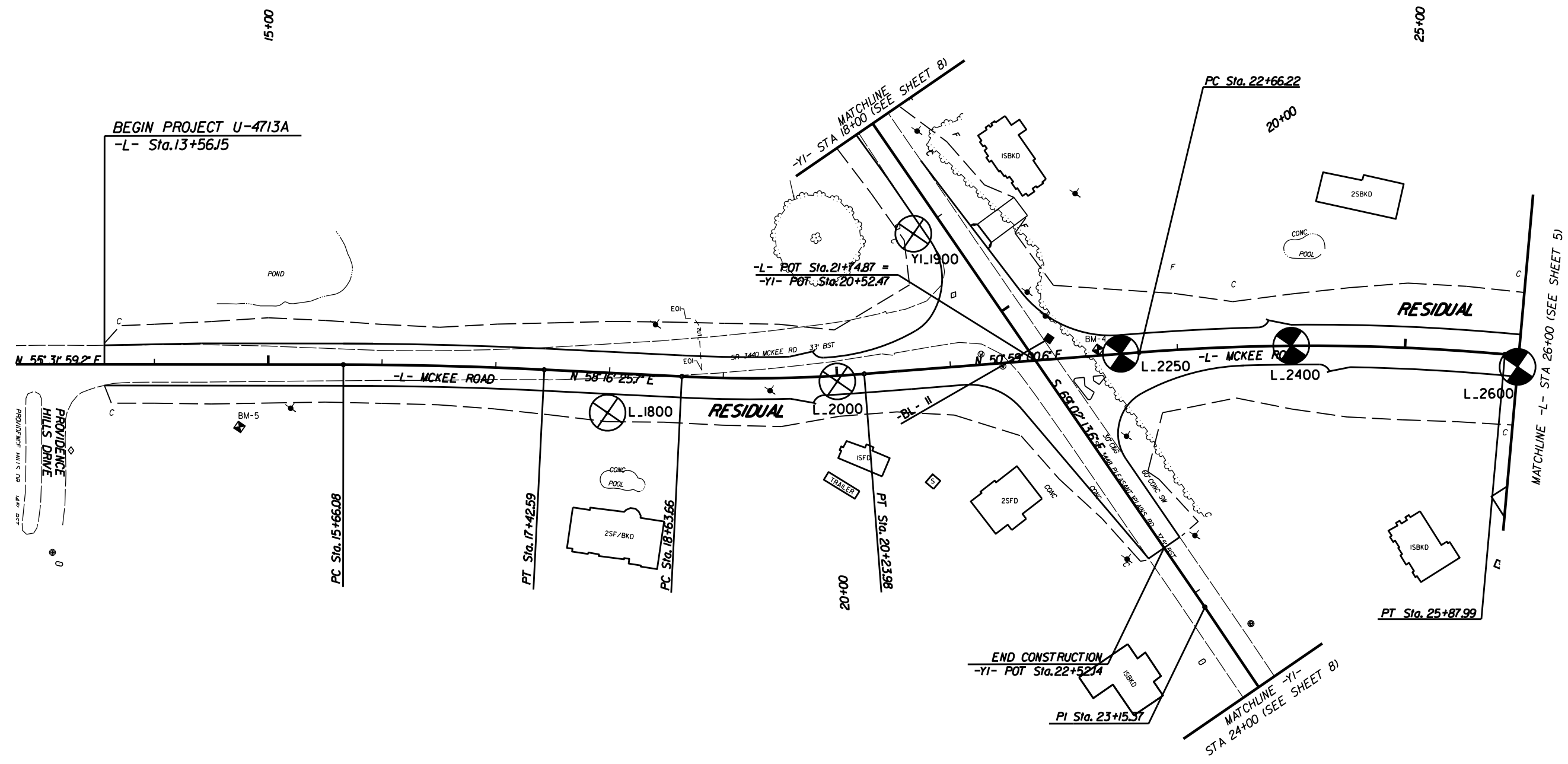
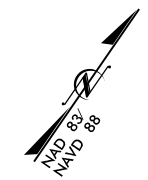
Three bulk samples were collected and tested to determine their standard-effort maximum dry density (MDD), optimum water content (Wc), and California Bearing Ratio (CBR).

Sample I.D.	Boring	Station	Offset (ft)	Depth (ft)	MDD (pcf)	Opt. Wc (%)	CBR
CBR-1	L_5000	50+00 -L-	10 RT	3.0-5.0	116.2	14.1	11.7
CBR-2	L_2600	26+00 -L-	10 RT	5.0-7.0	107.5	16.9	8.7
CBR-3	L_3000	30+00 -L-	20 RT	3.0-5.0	99.9	21.7	9.2
CBR-4	L_4200	42+00 -L-	35 RT	3.0-5.0	100.1	20.7	9.1

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REVISIONS

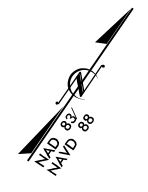
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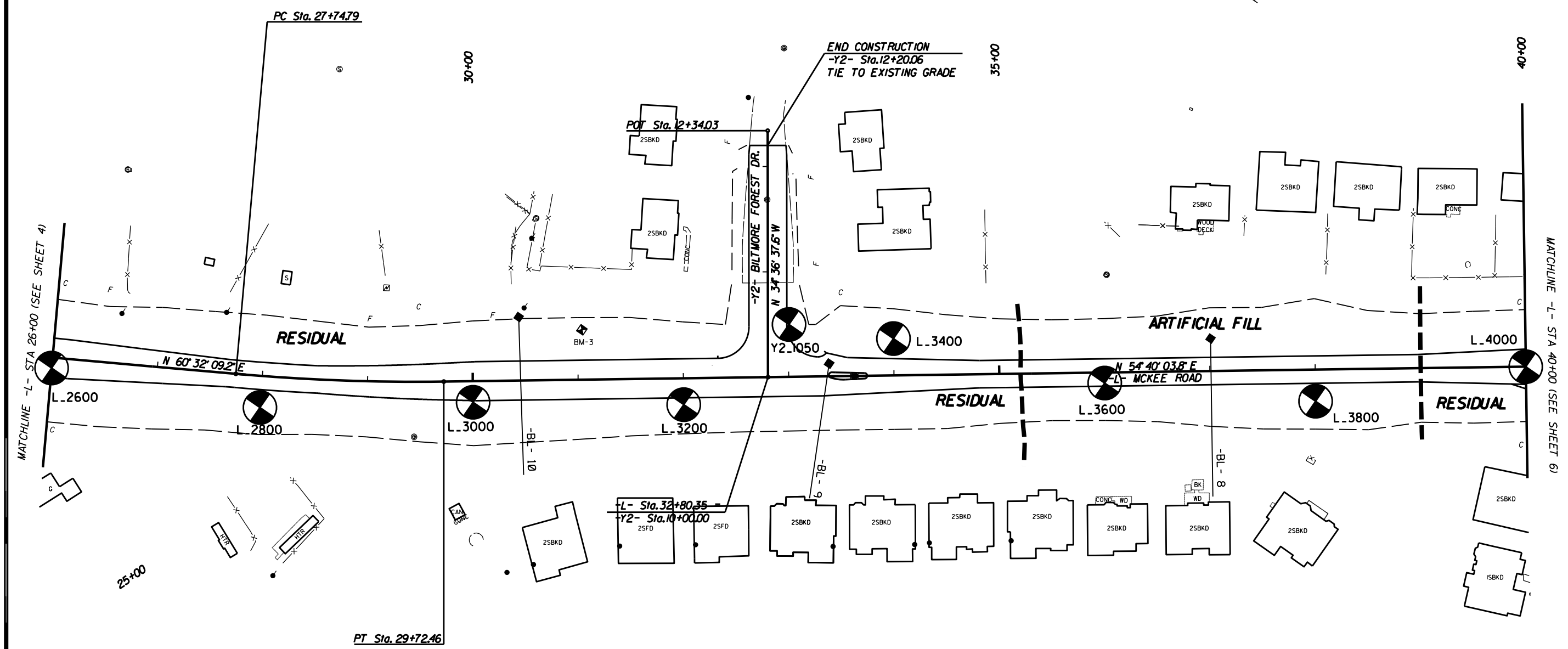
MATCHLINE -L- STA 26+00 (SEE SHEET 5)

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MATCHLINE -L- STA 26+00 (SEE SHEET 4)

MATCHLINE -L- STA 40+00 (SEE SHEET 6)

25+00

30+00

35+00

40+00

PT Sta. 29+72.46

L- Sta. 32+80.35
+Y2- Sta. 10+00.00

END CONSTRUCTION
-Y2- Sta. 12+20.06
TIE TO EXISTING GRADE

ARTIFICIAL FILL

RESIDUAL

RESIDUAL

MCKEE ROAD

BILTMORE FOREST DR.

L- STA 26+00 (SEE SHEET 4)

MATCHLINE -L- STA 40+00 (SEE SHEET 6)

L.2600

L.2800

L.3000

L.3200

L.3400

L.3600

L.3800

L.4000

L- Sta. 32+80.35
+Y2- Sta. 10+00.00

25FD

25FD

25BKD

25BKD

25BKD

25BKD

25BKD

25BKD

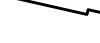
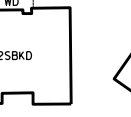
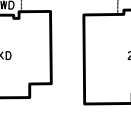
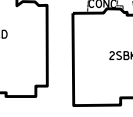
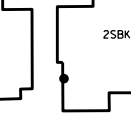
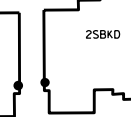
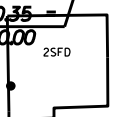
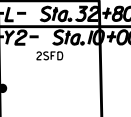
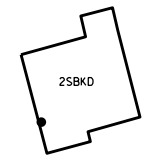
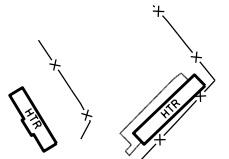
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15BKD

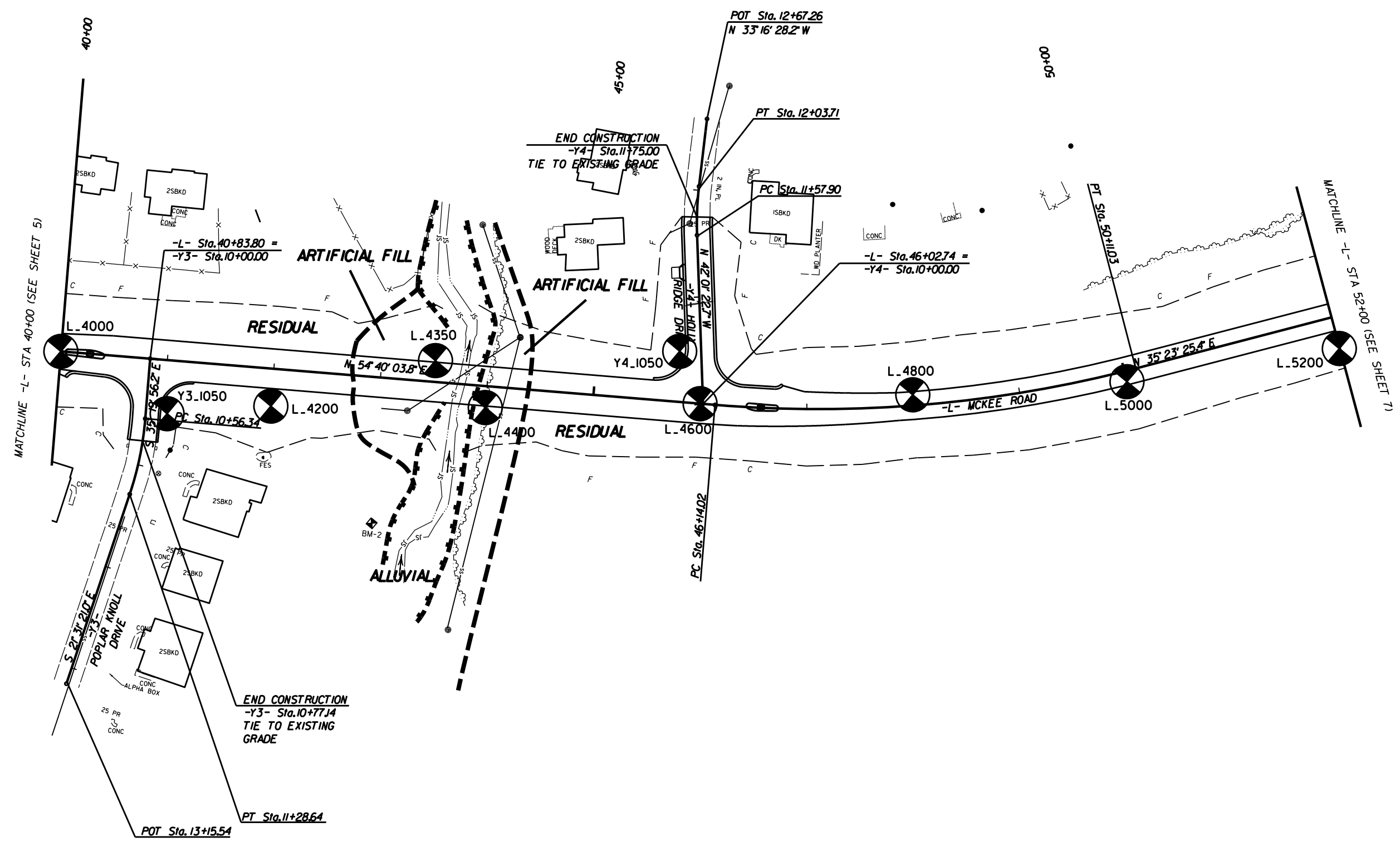
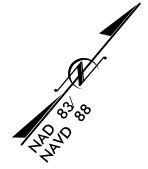
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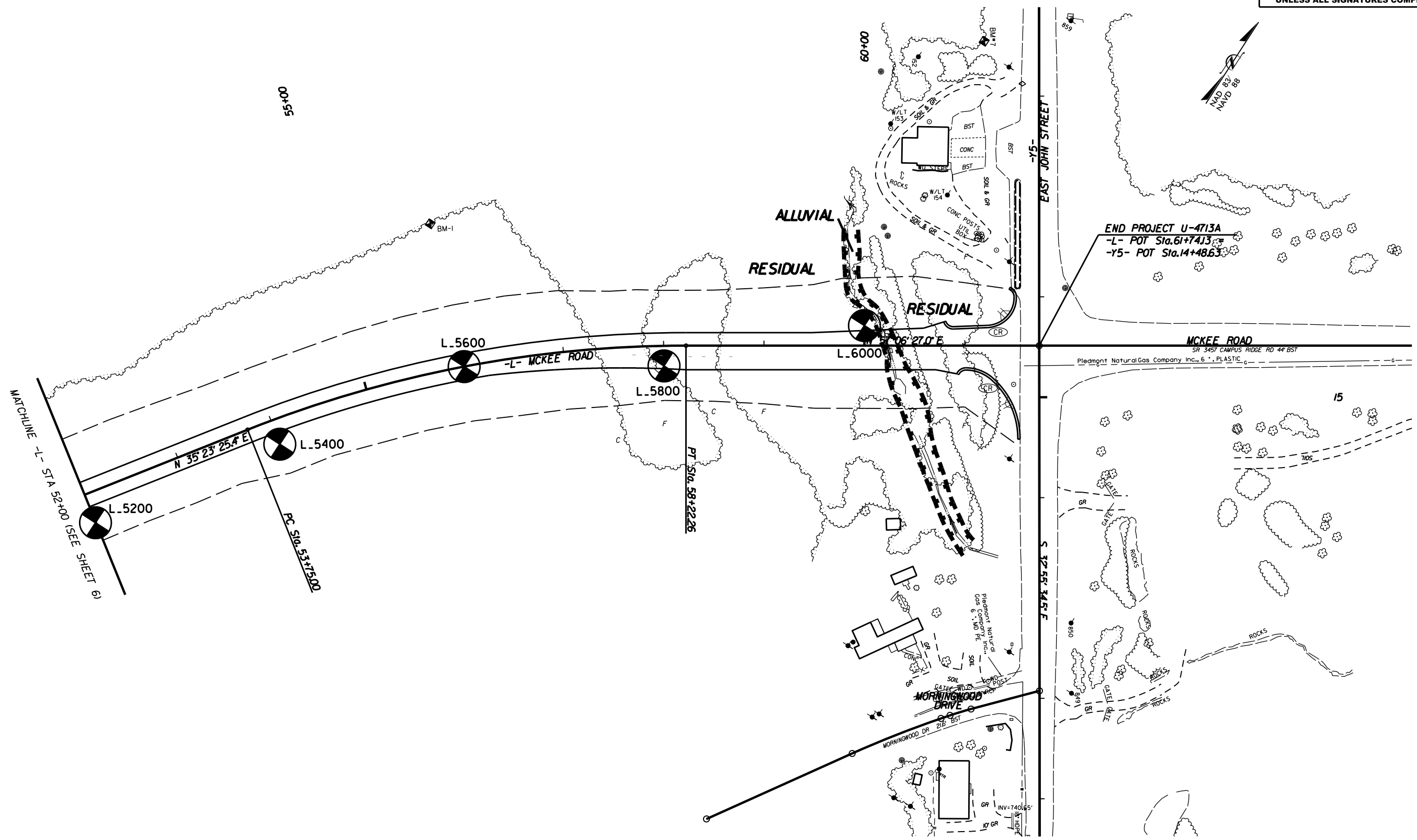
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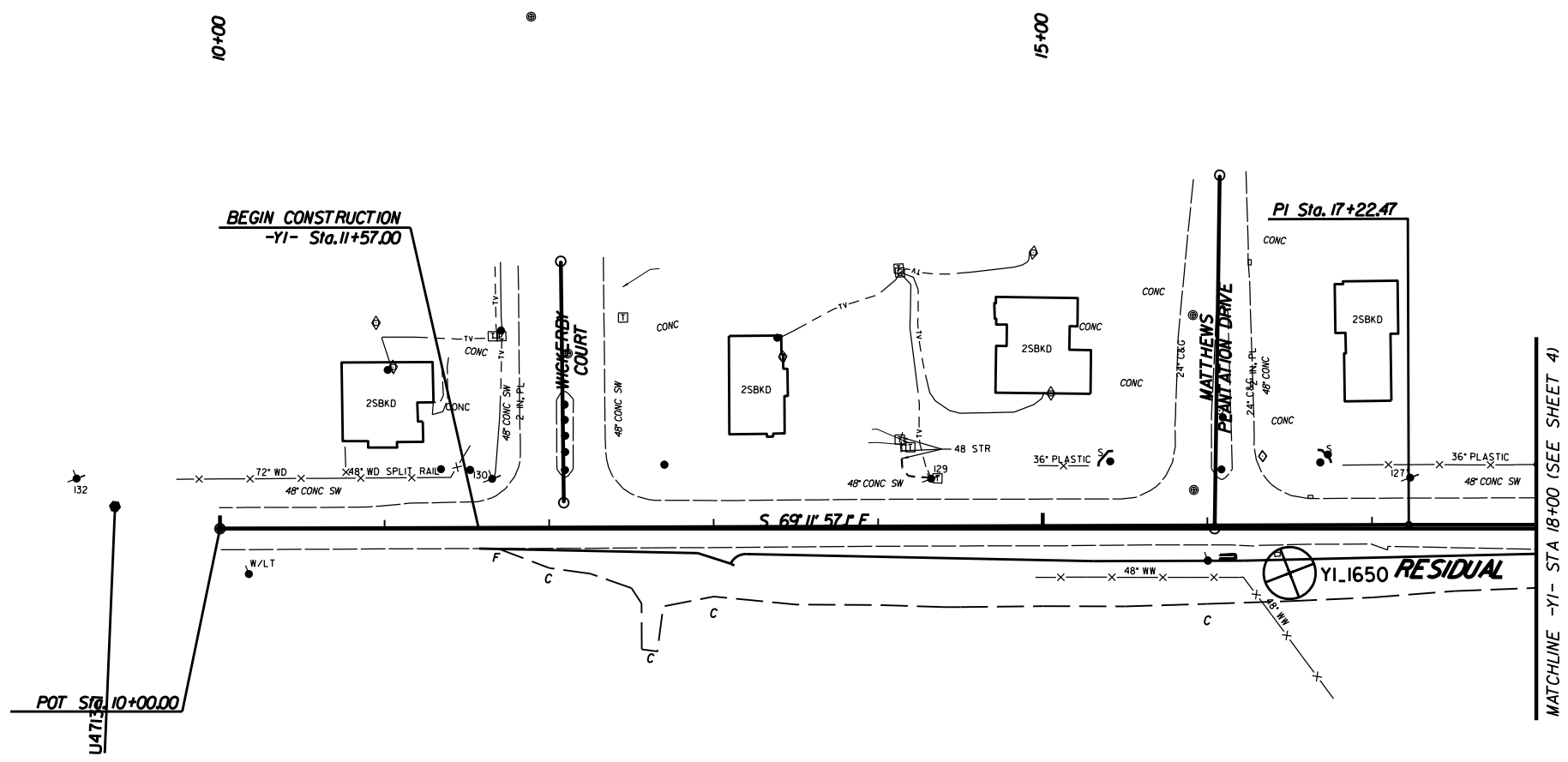
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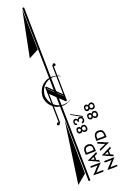
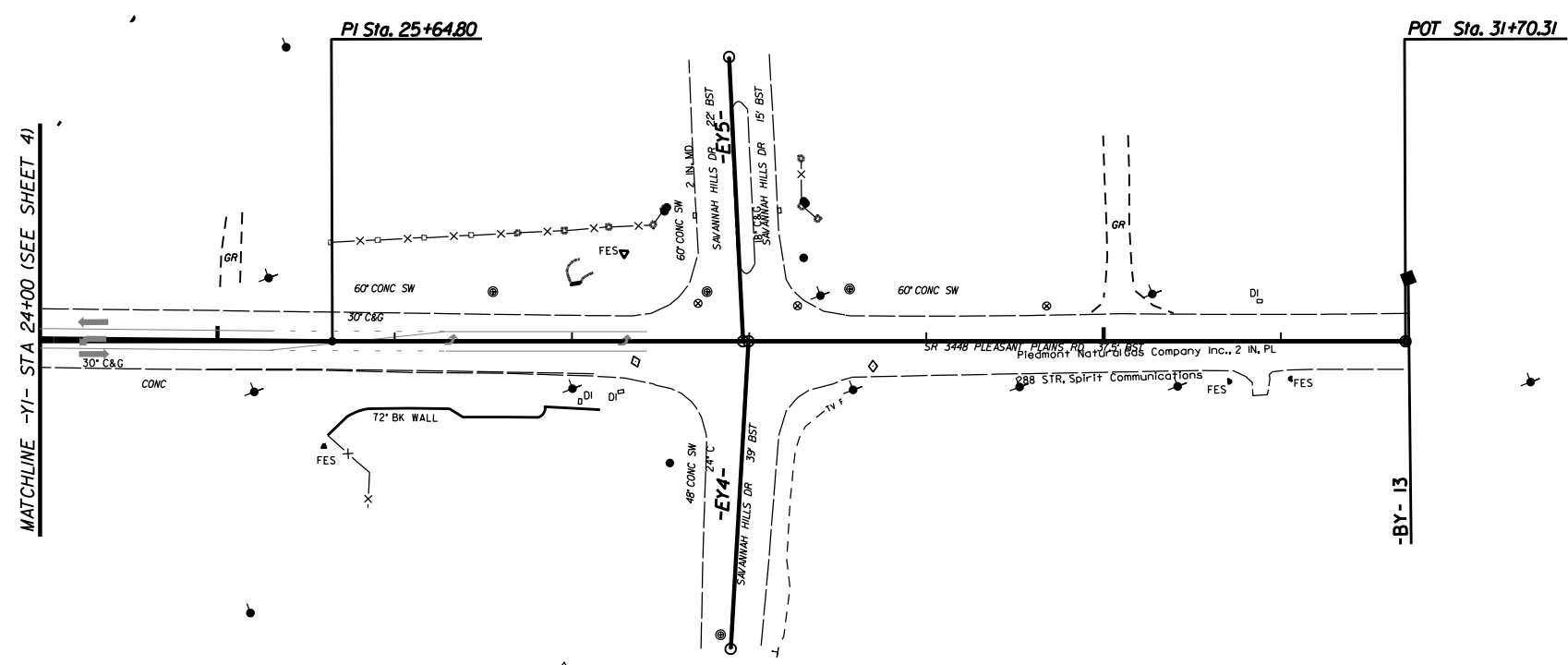
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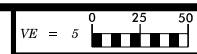


MATCHLINE -YI- STA 18+00 (SEE SHEET 4)

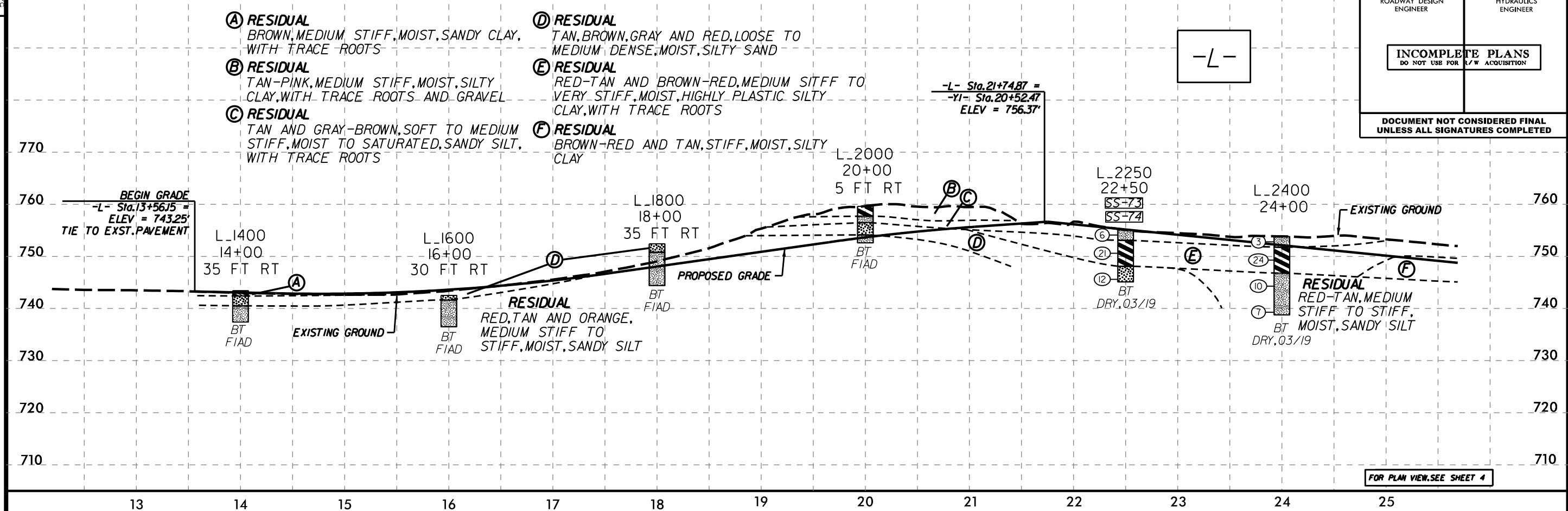
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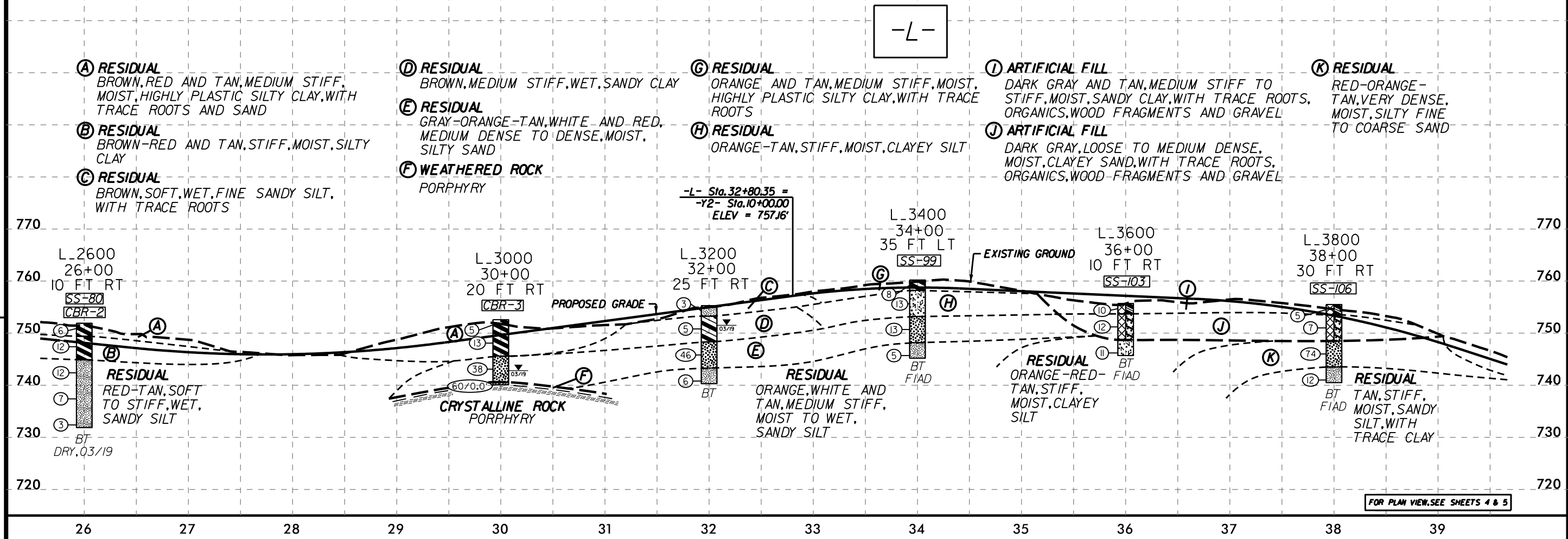
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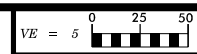
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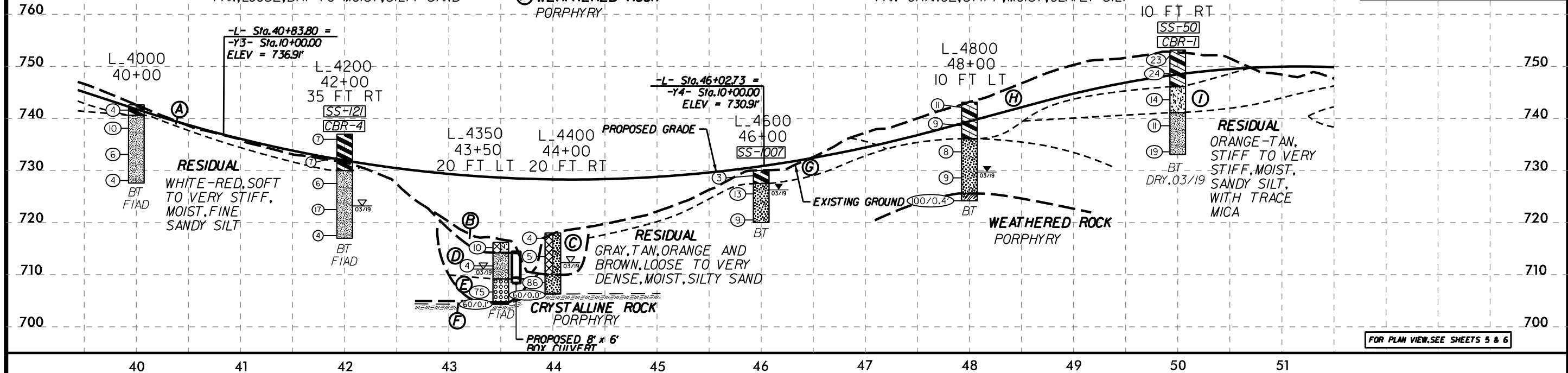


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INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
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- (A) RESIDUAL**
BROWN, SOFT, MOIST, HIGHLY PLASTIC SILTY CLAY, WITH TRACE ROOTS
- (B) ARTIFICIAL FILL**
BROWN, STIFF, MOIST, CLAYEY SILT, WITH TRACE ROOTS
- (C) ARTIFICIAL FILL**
TAN, LOOSE, DRY TO MOIST, SILTY SAND

- (D) ALLUVIAL**
DARK GRAY, SOFT, SATURATED, FINE SANDY SILT, WITH TRACE ROOTS AND ORGANICS
- (E) ALLUVIAL**
BROWN, VERY DENSE, SATURATED, FINE TO COARSE SAND WITH TRACE SILT AND GRAVEL
- (F) WEATHERED ROCK**
PORPHYRY

- (G) RESIDUAL**
TAN, SOFT, MOIST, SILTY CLAY, WITH SOME ROOTS
- (H) RESIDUAL**
GRAY AND ORANGE, STIFF TO VERY STIFF, MOIST, SANDY CLAY
- (I) RESIDUAL**
TAN-ORANGE, STIFF, MOIST, CLAYEY SILT



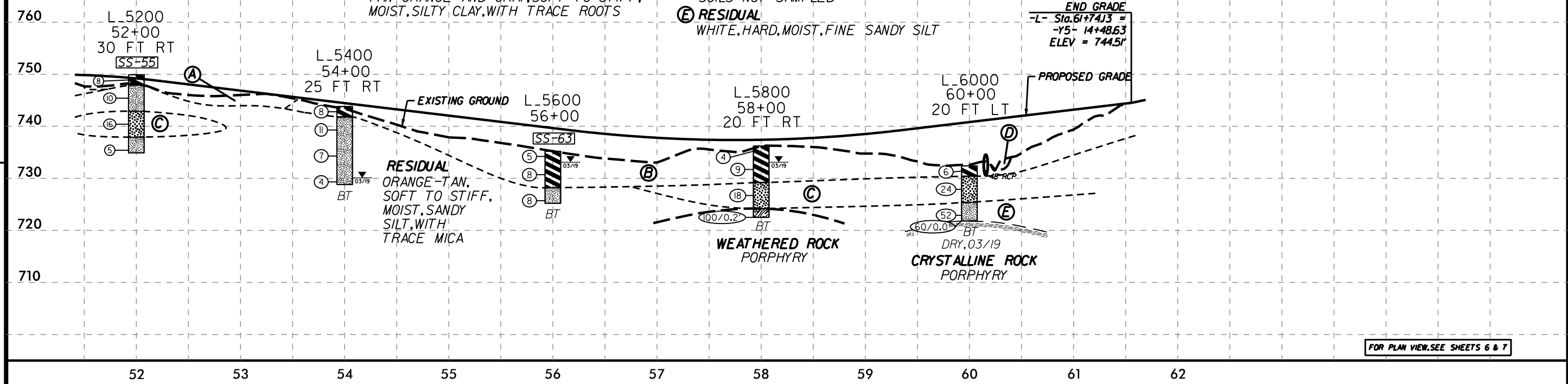
FOR PLAN VIEW, SEE SHEETS 5 & 6

REVISIONS

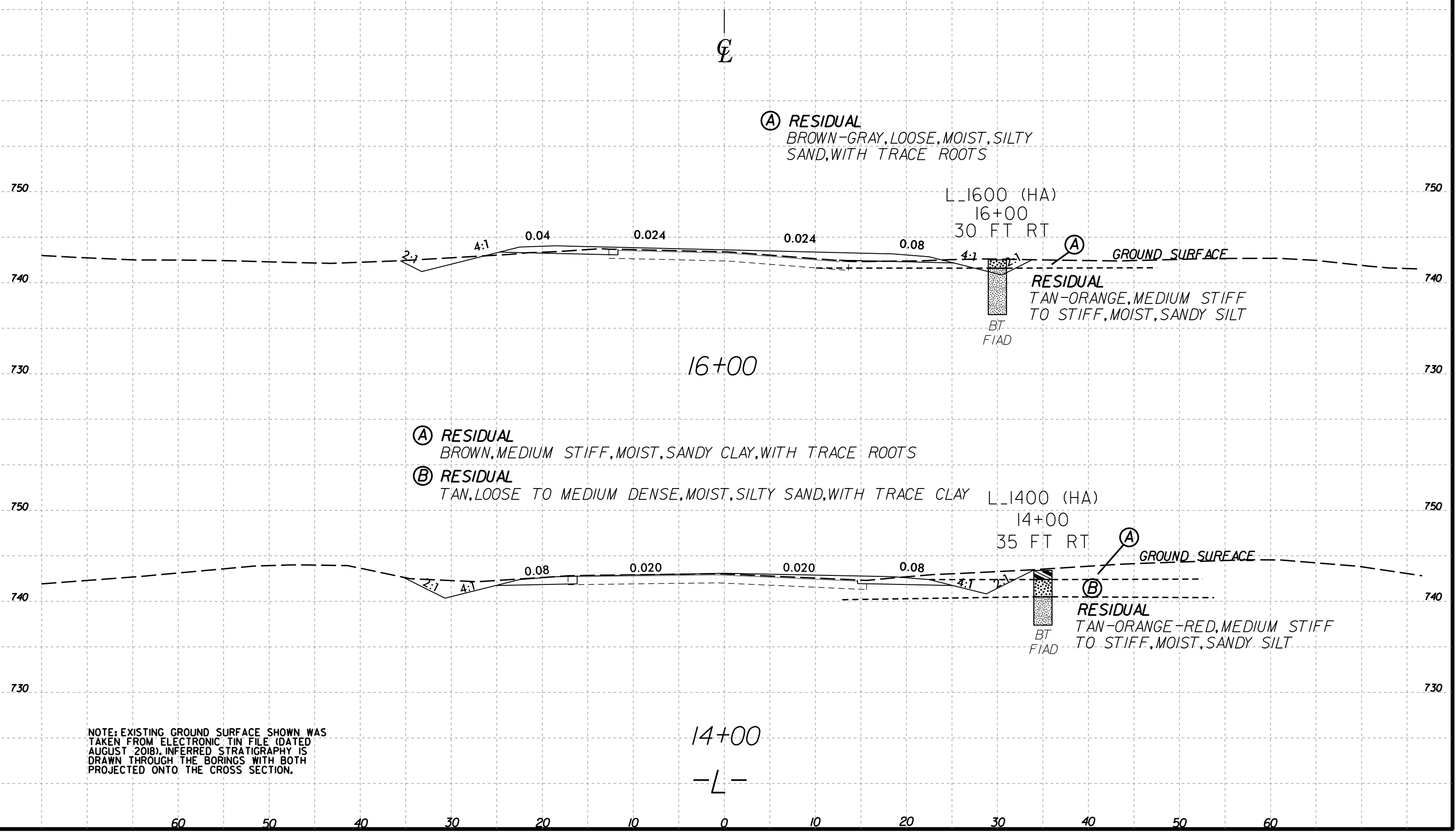
-L-

- (A) RESIDUAL**
TAN-ORANGE, MEDIUM STIFF, MOIST, HIGHLY PLASTIC SILTY CLAY, WITH TRACE ROOTS
- (B) RESIDUAL**
TAN-ORANGE AND GRAY, SOFT TO STIFF, MOIST, SILTY CLAY, WITH TRACE ROOTS

- (C) RESIDUAL**
TAN, BROWN-WHITE AND ORANGE-TAN-GRAY, MEDIUM DENSE, MOIST, SILTY FINE SAND
- (D) ALLUVIAL**
SOILS NOT SAMPLED
- (E) RESIDUAL**
WHITE, HARD, MOIST, FINE SANDY SILT



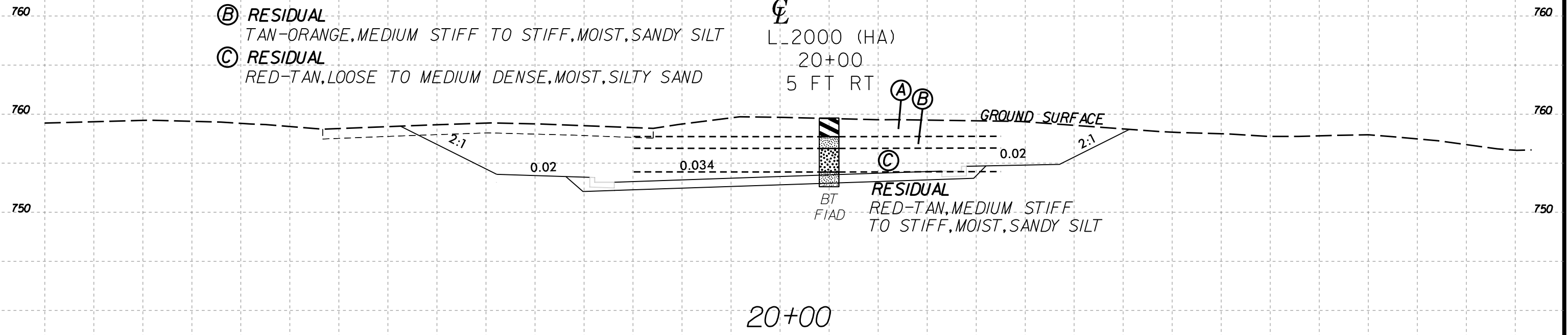
FOR PLAN VIEW, SEE SHEETS 6 & 7



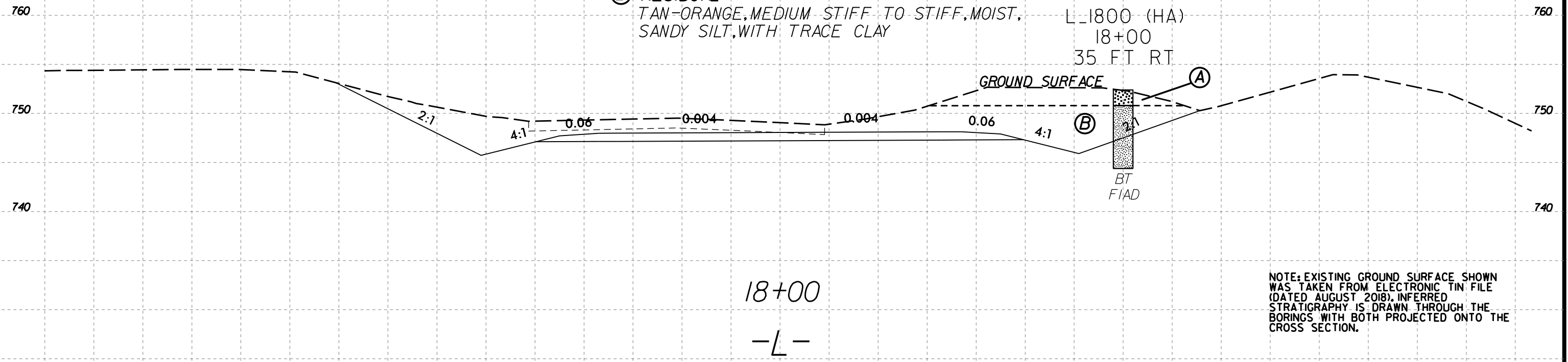
NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED AUGUST 2018). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

14+00
-L-

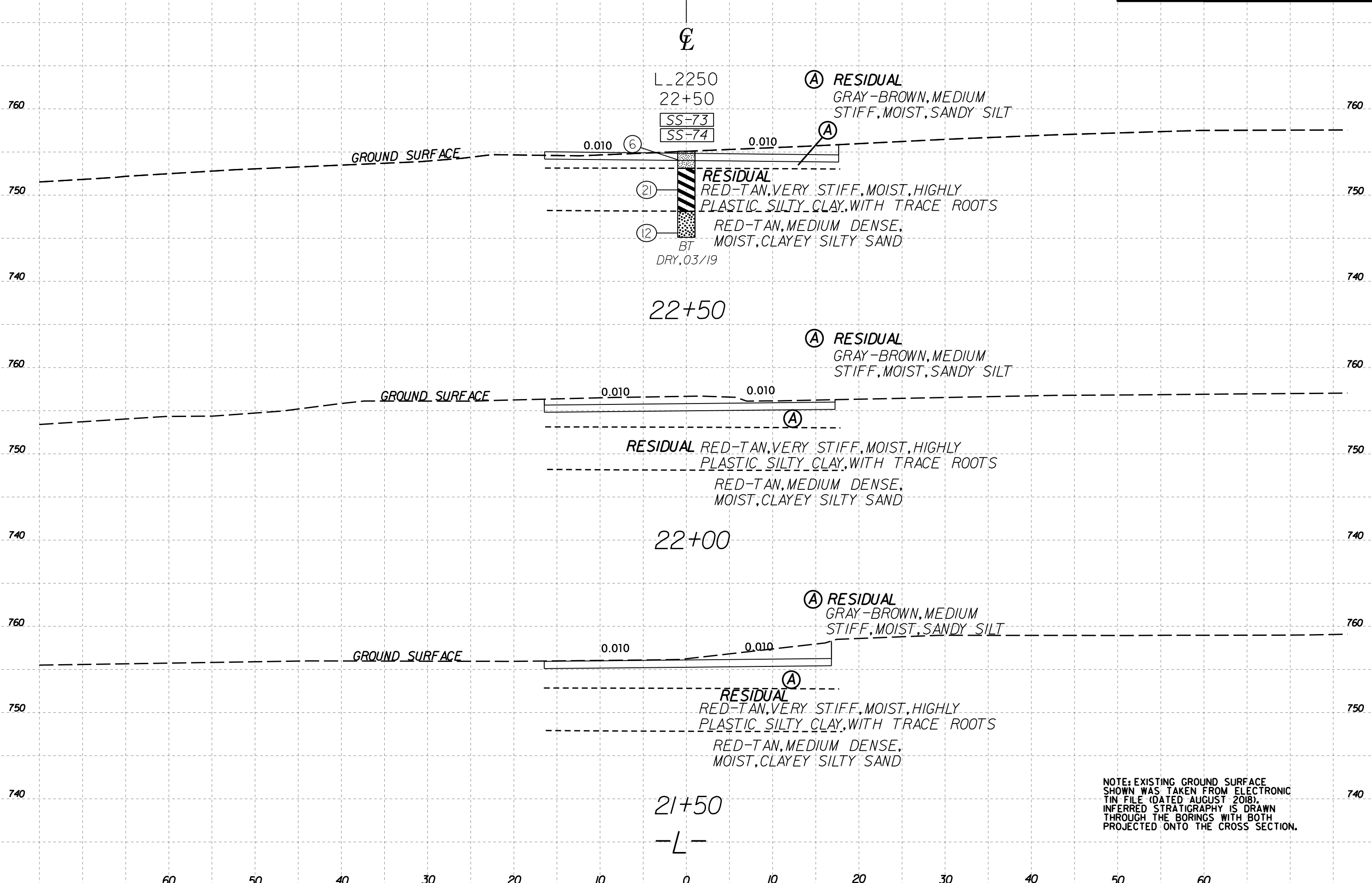
- Ⓐ RESIDUAL
TAN-PINK, MEDIUM STIFF TO STIFF, MOIST, SILTY CLAY, WITH TRACE ROOTS AND GRAVEL
- Ⓑ RESIDUAL
TAN-ORANGE, MEDIUM STIFF TO STIFF, MOIST, SANDY SILT
- Ⓒ RESIDUAL
RED-TAN, LOOSE TO MEDIUM DENSE, MOIST, SILTY SAND



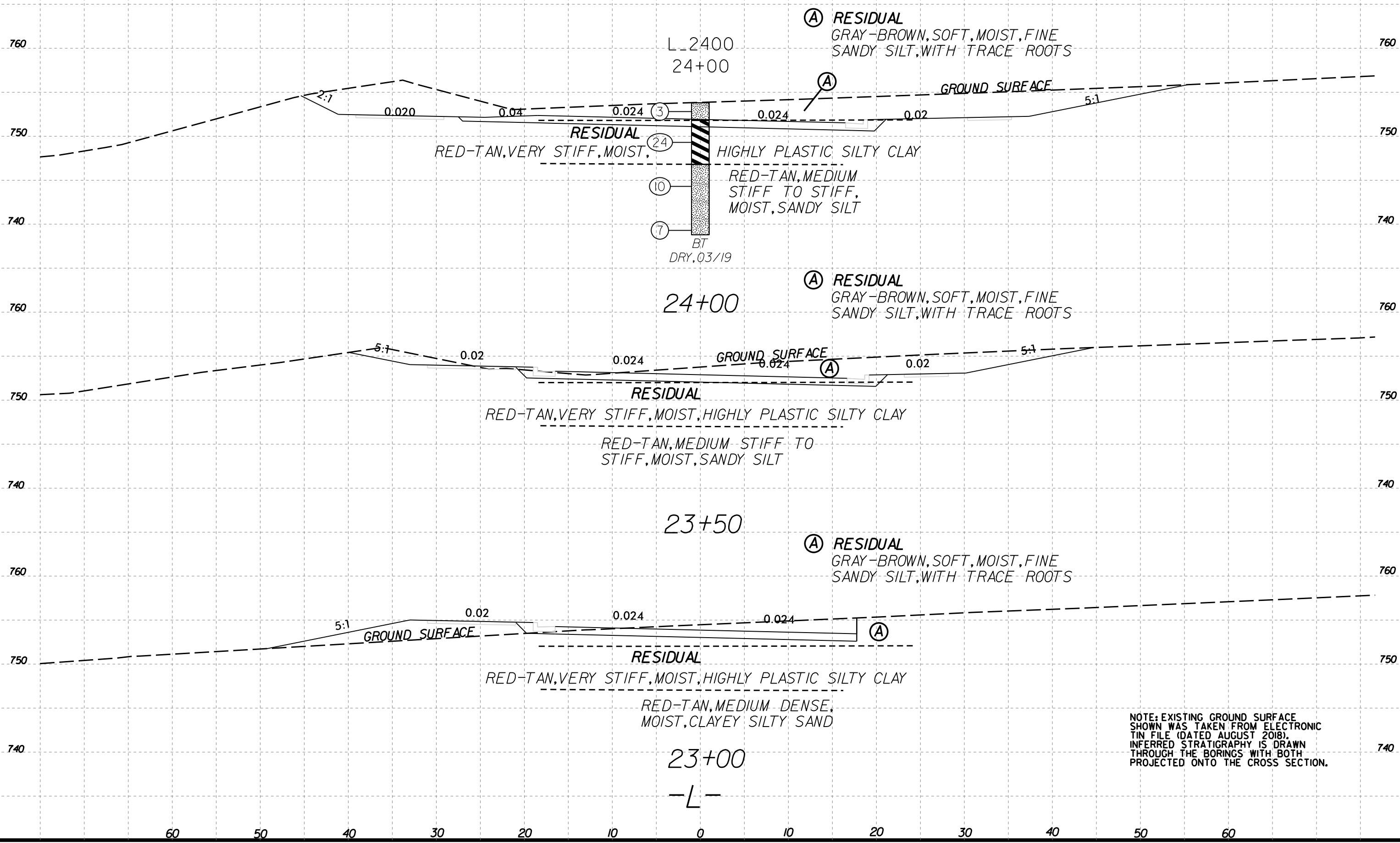
- Ⓐ RESIDUAL
BROWN, LOOSE, MOIST, SILTY SAND, WITH TRACE ROOTS
- Ⓑ RESIDUAL
TAN-ORANGE, MEDIUM STIFF TO STIFF, MOIST, SANDY SILT, WITH TRACE CLAY



NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED AUGUST 2018). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

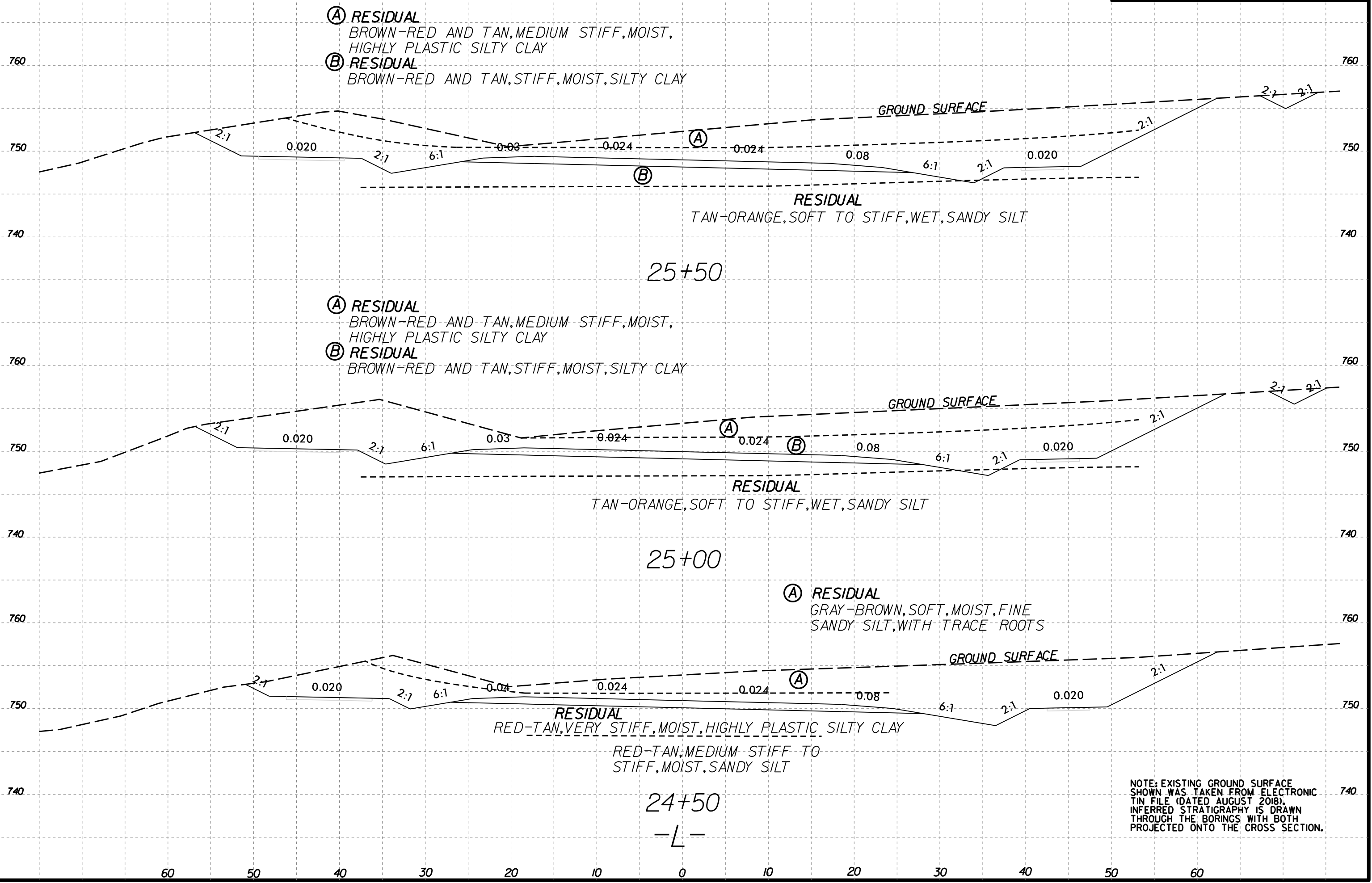


NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED AUGUST 2018). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

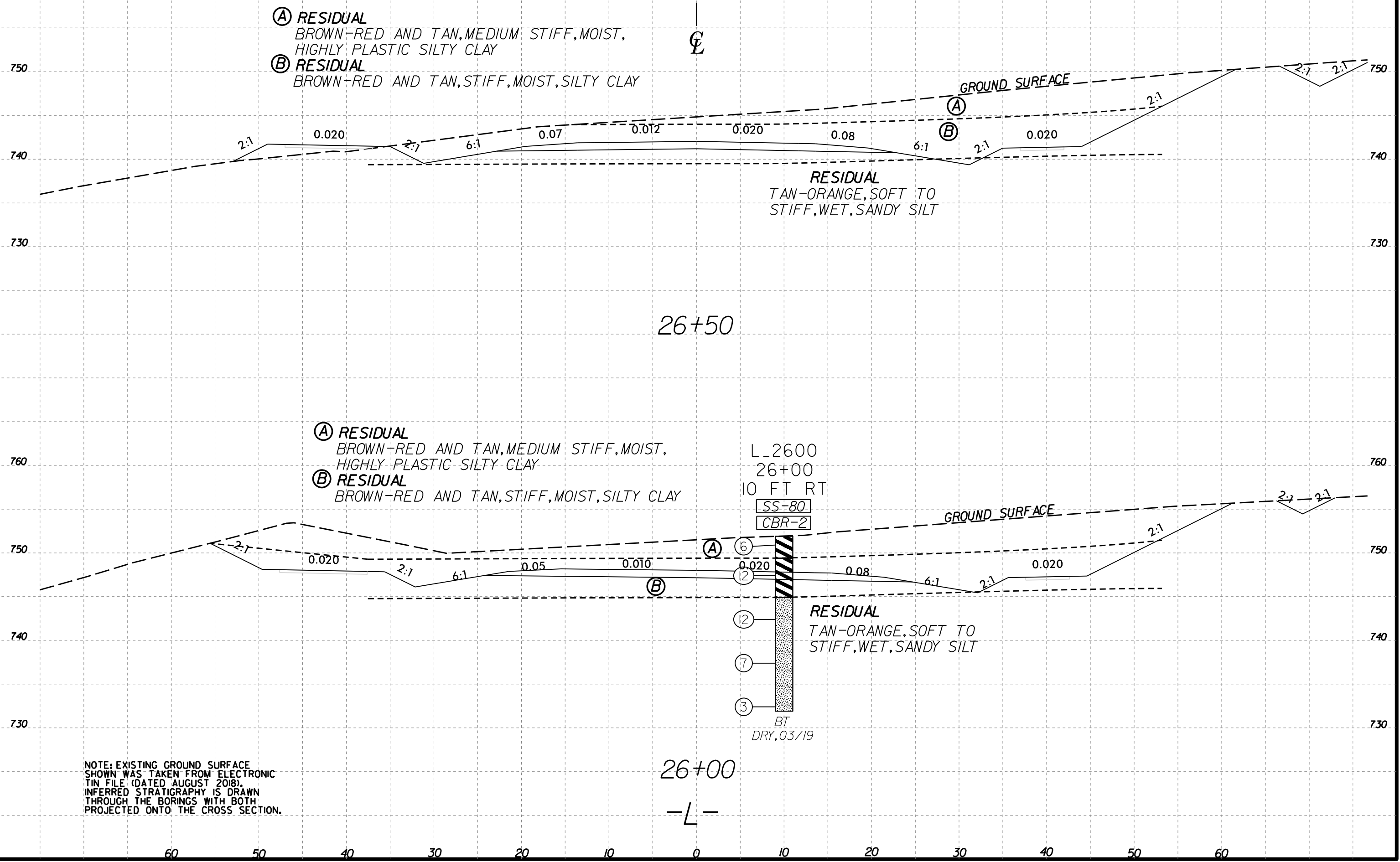


NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED AUGUST 2018). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

6/23/16



NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED AUGUST 2018). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

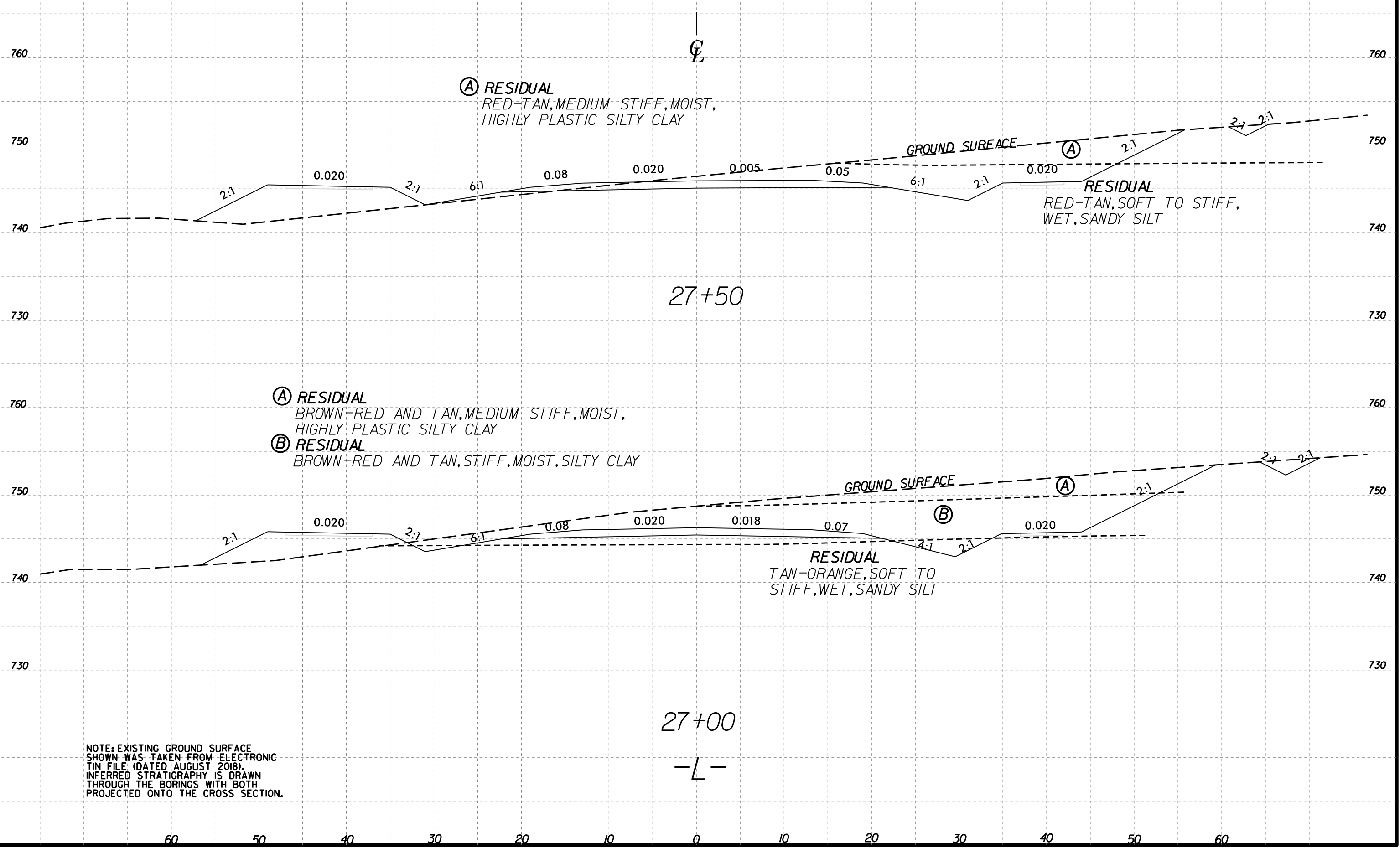


NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED AUGUST 2018). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

26+50

26+00

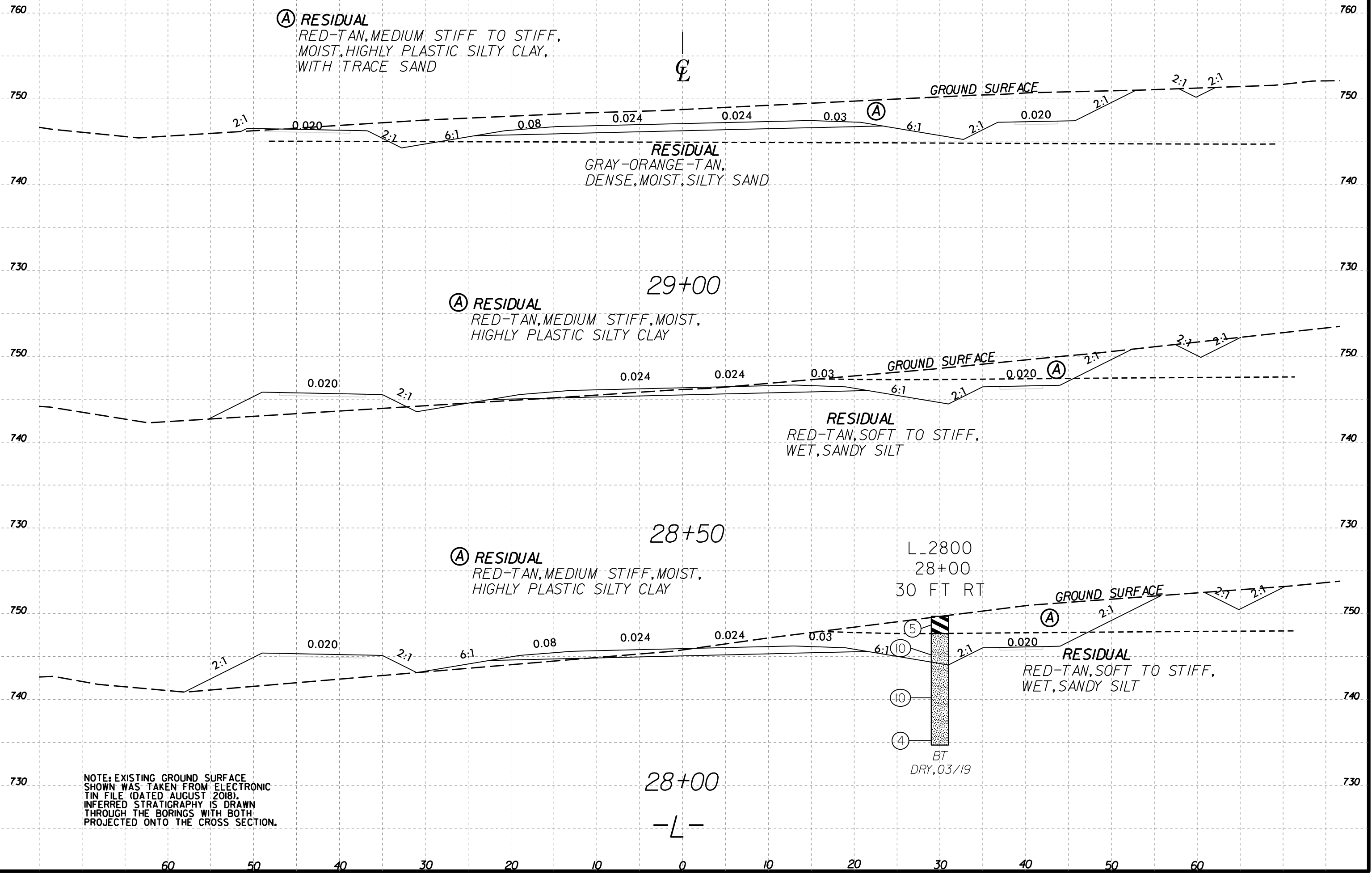
-L-



NOTE: EXISTING GROUND SURFACE
SHOWN WAS TAKEN FROM ELECTRONIC
TIN FILE (DATED AUGUST 2018).
INFERRED STRATIGRAPHY IS DRAWN
THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION.

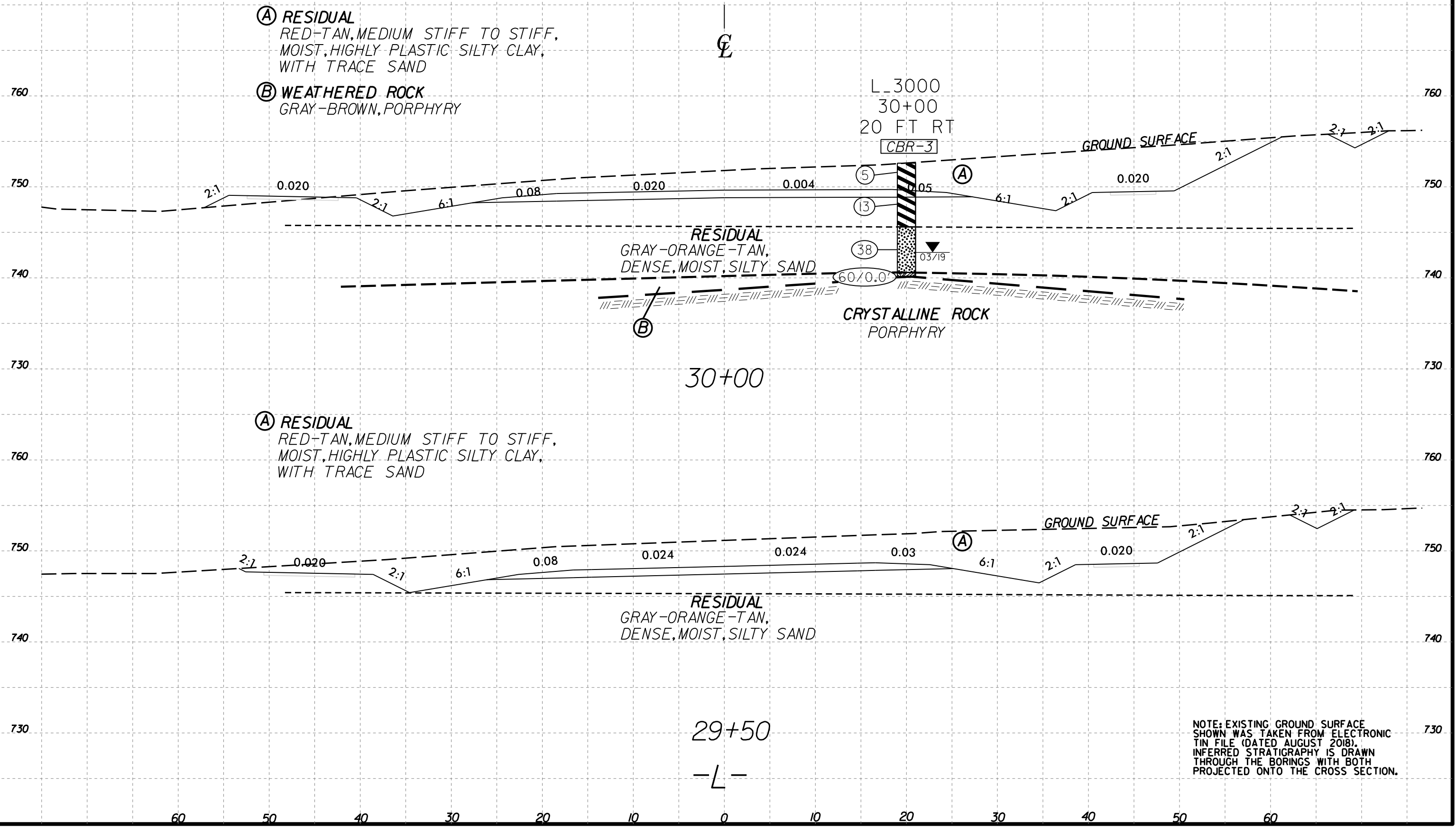
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6/23/16

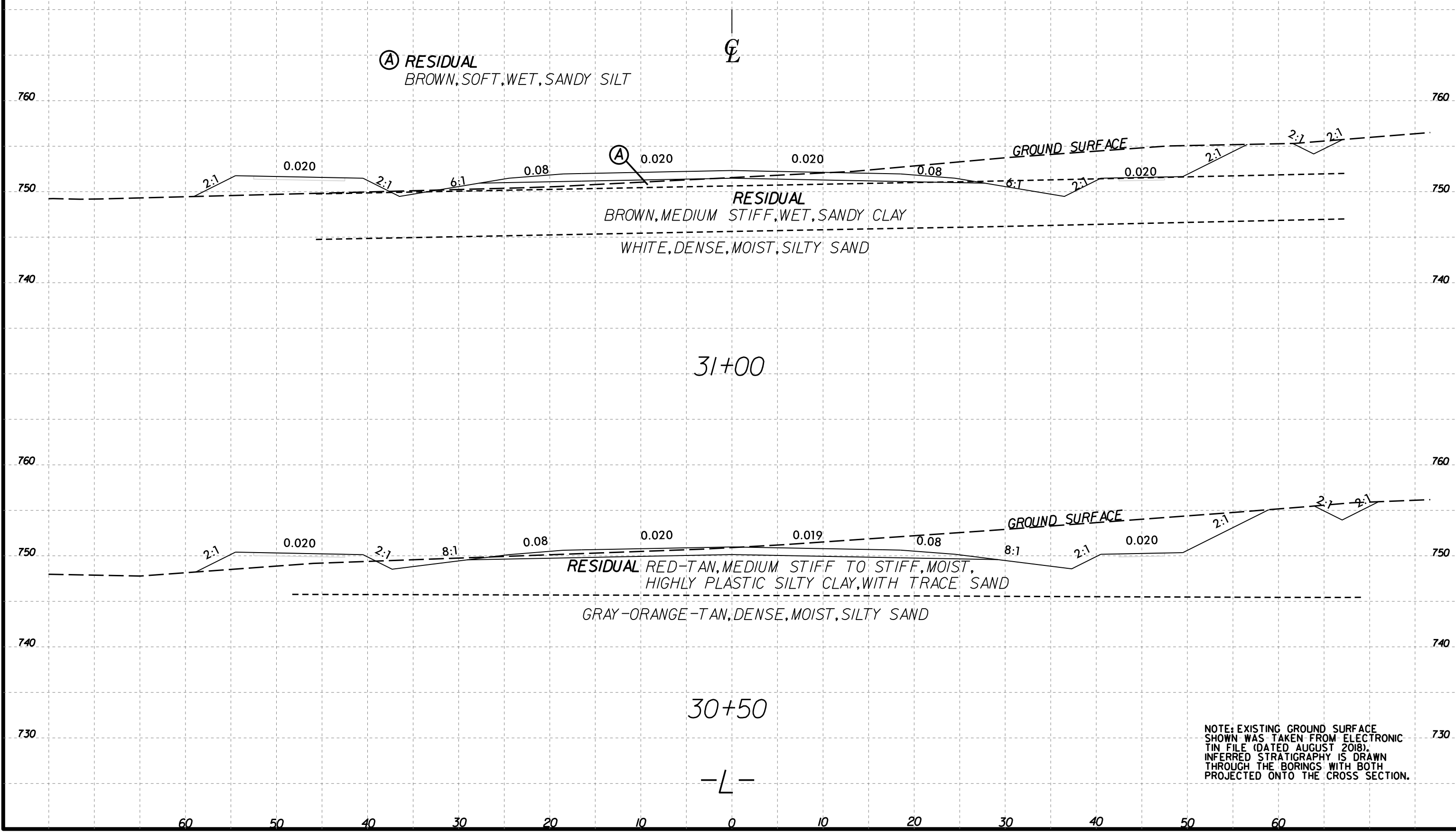


NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED AUGUST 2018). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

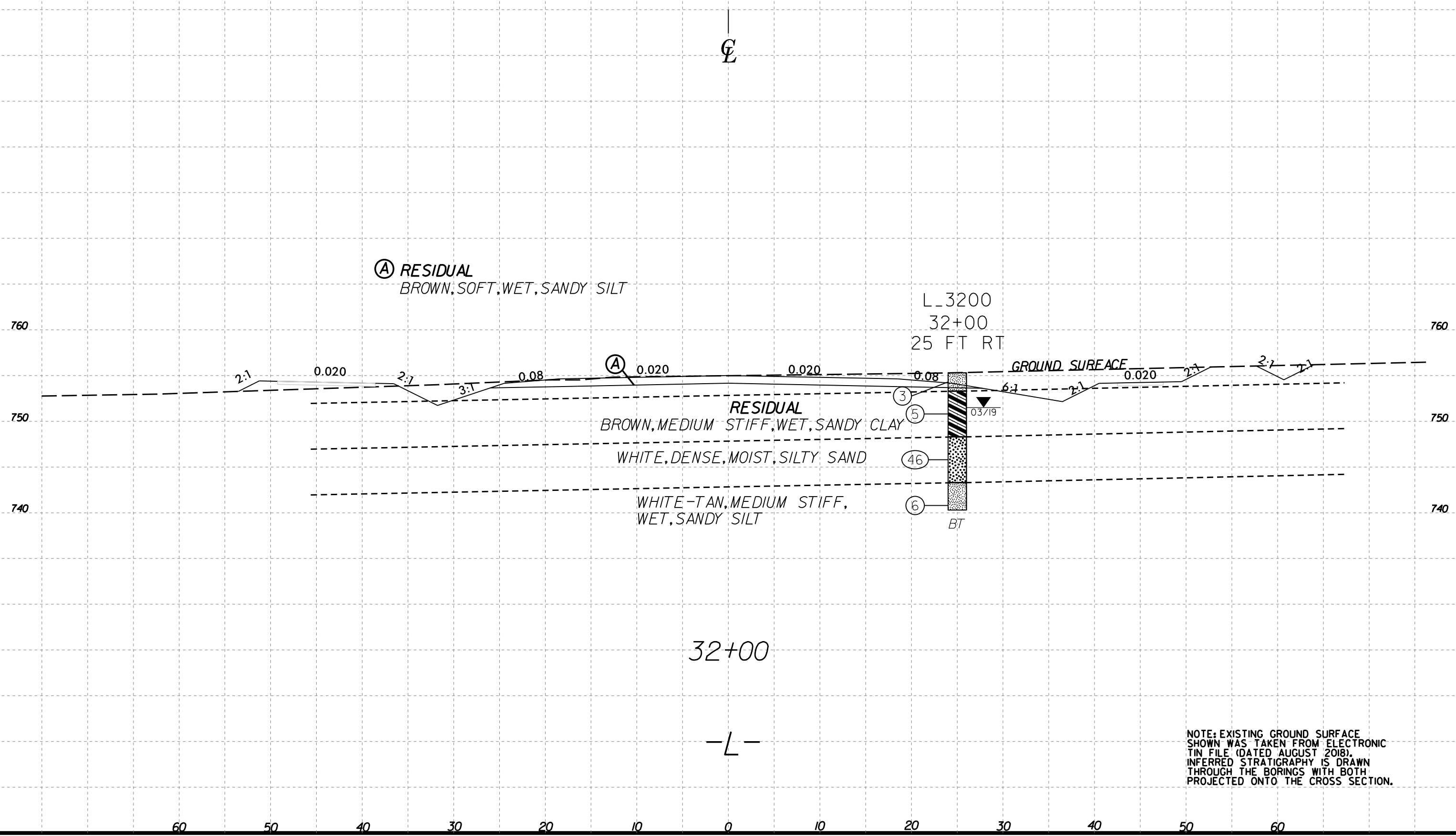
28+00
-L-



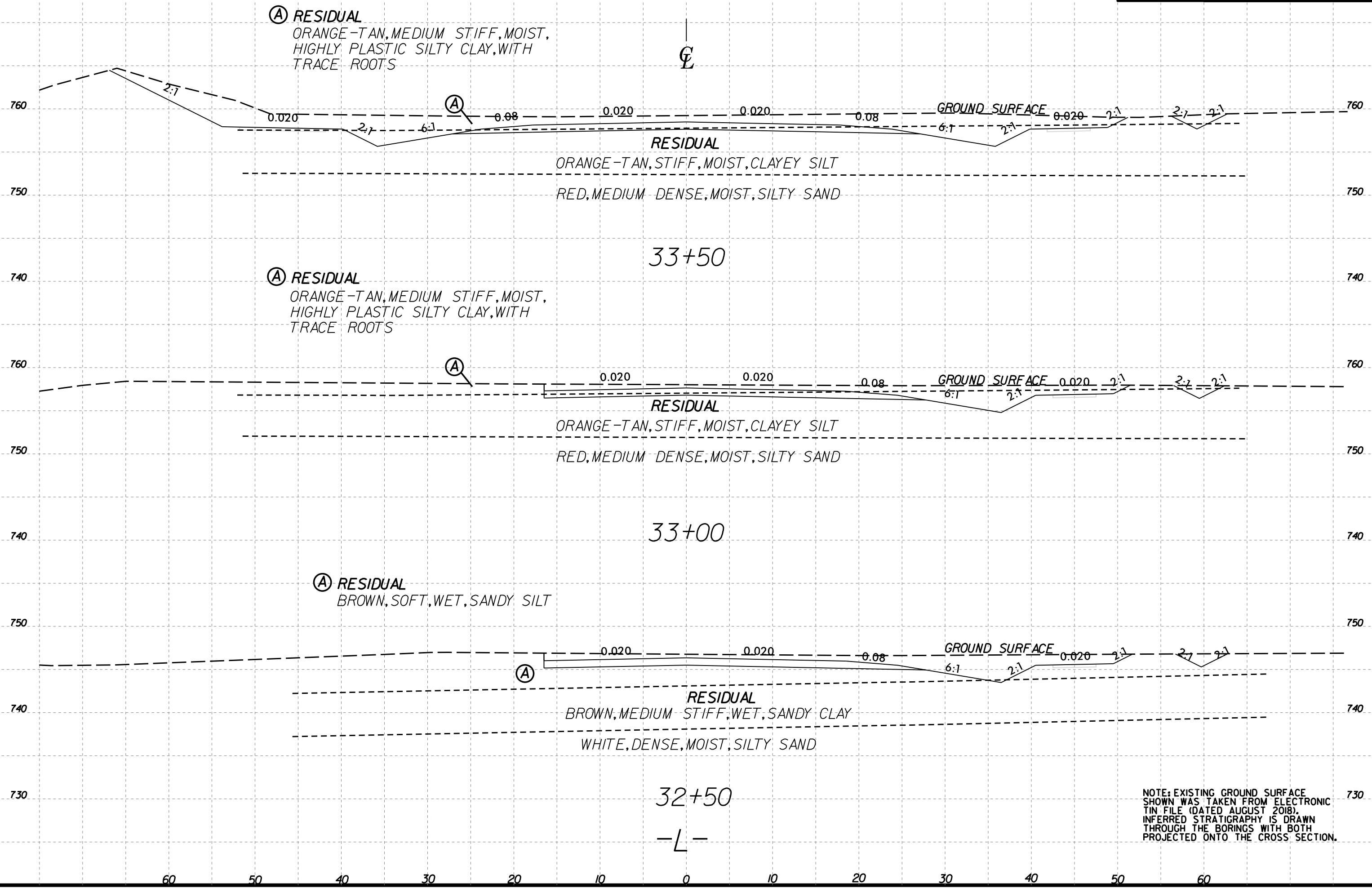
NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED AUGUST 2018). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.



NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED AUGUST 2018). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

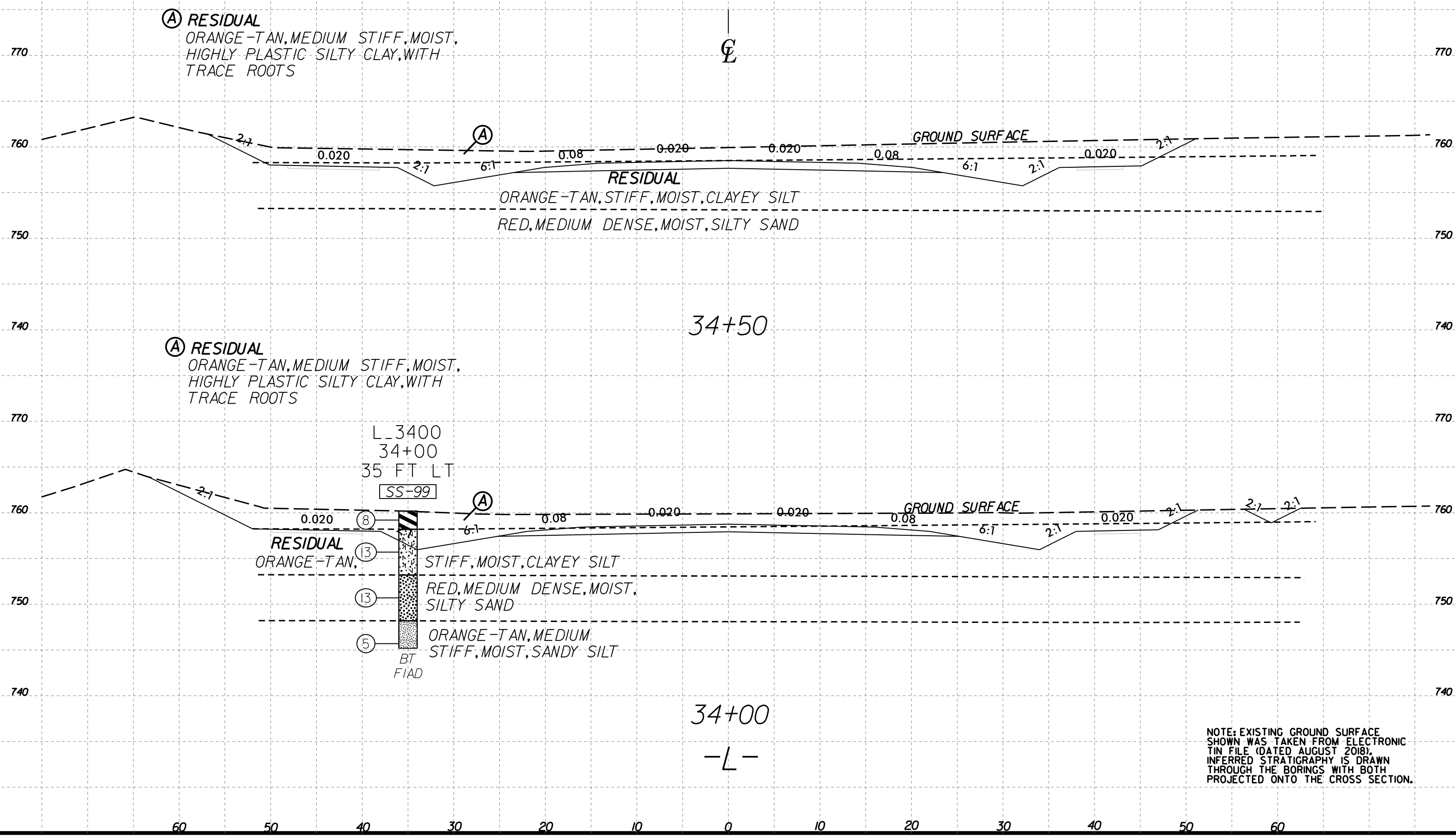


NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED AUGUST 2018). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

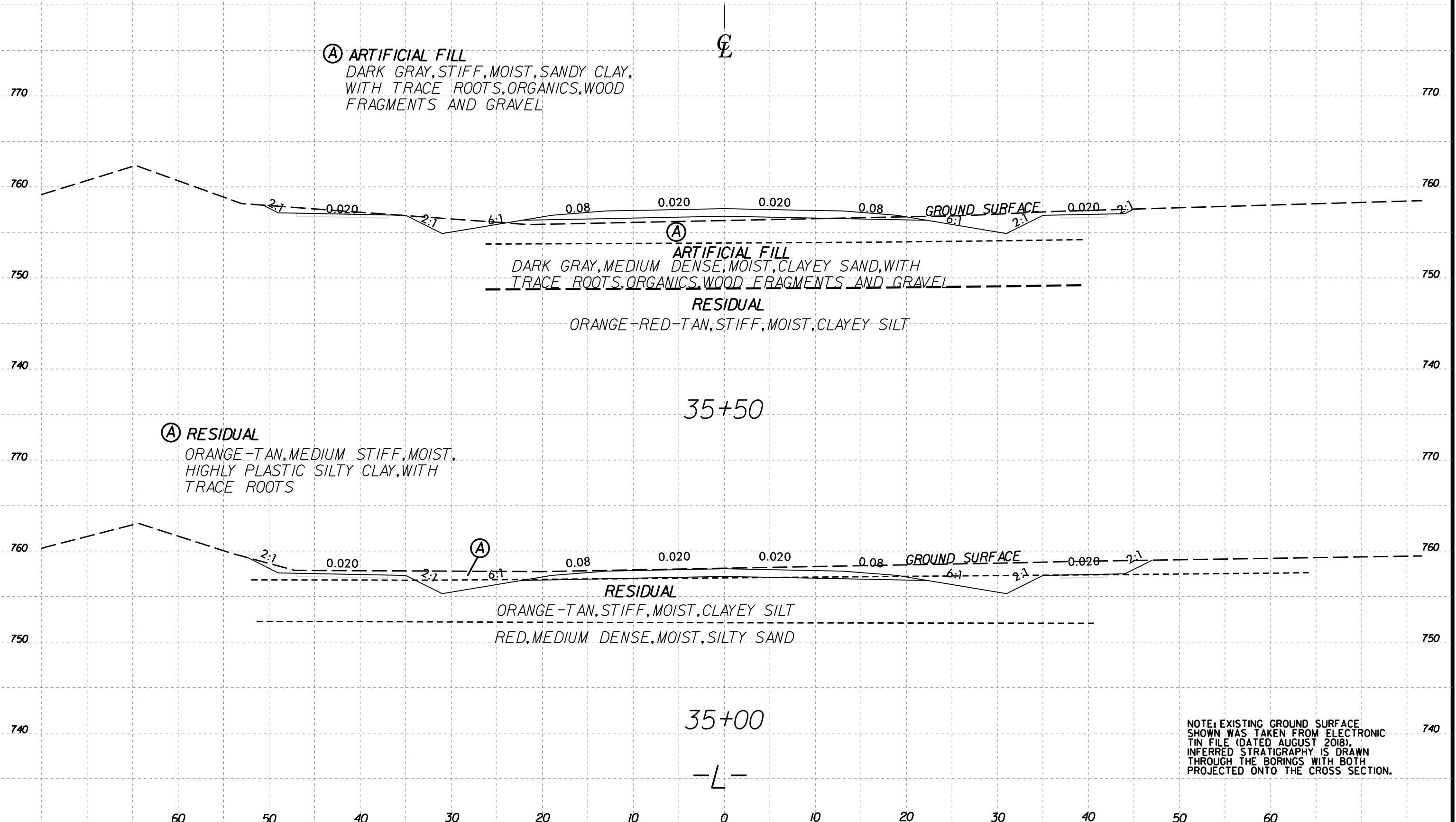


NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED AUGUST 2018). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

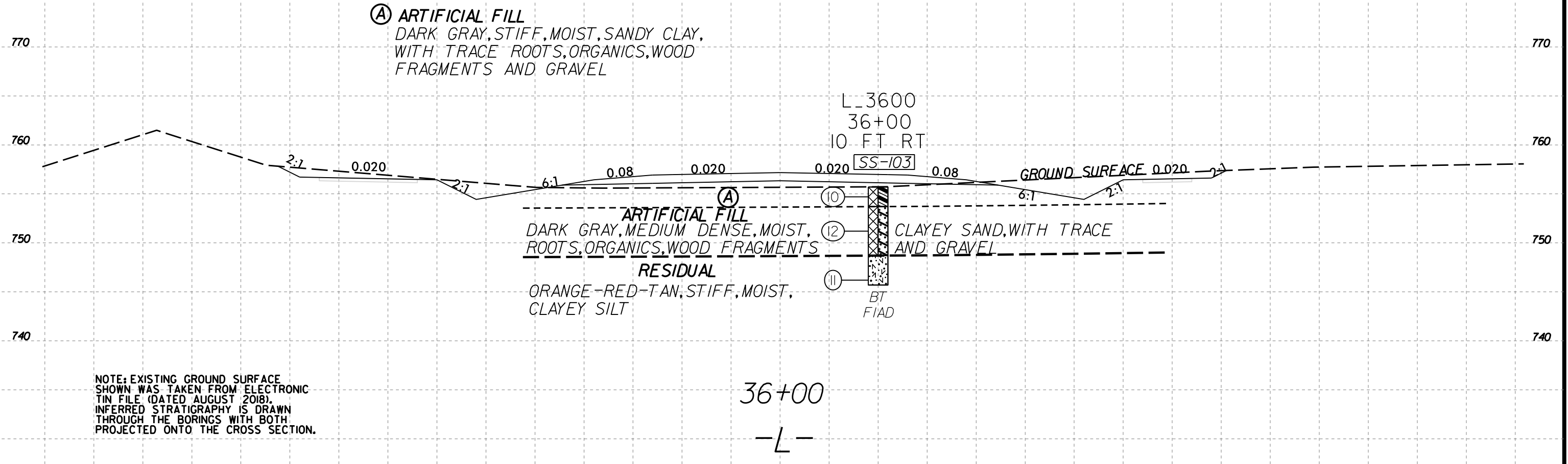
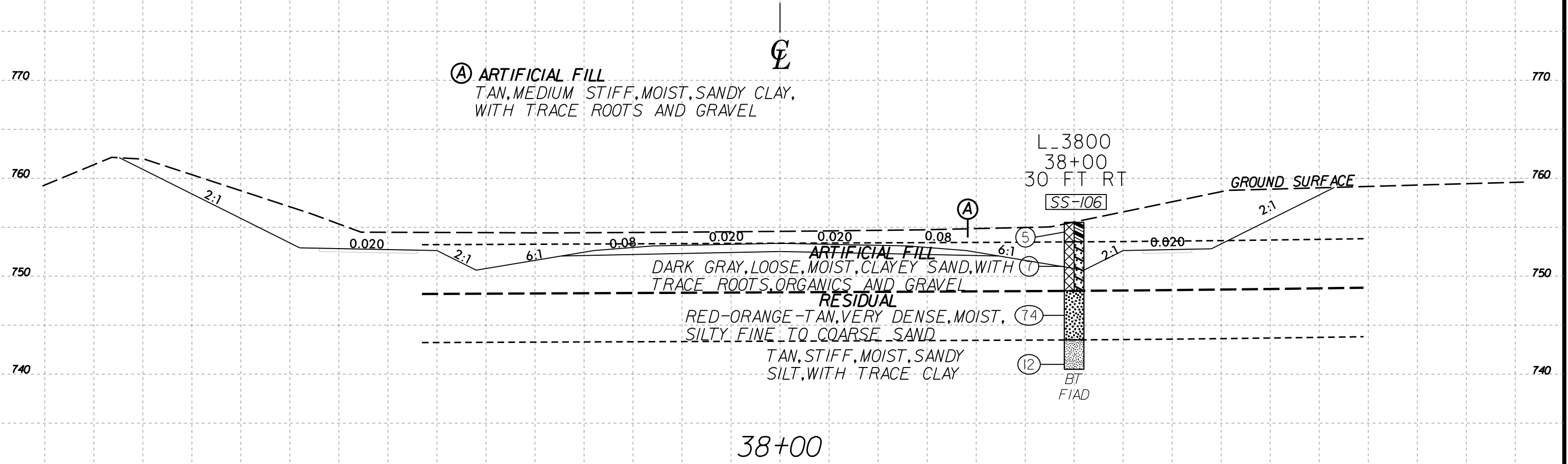
-L-



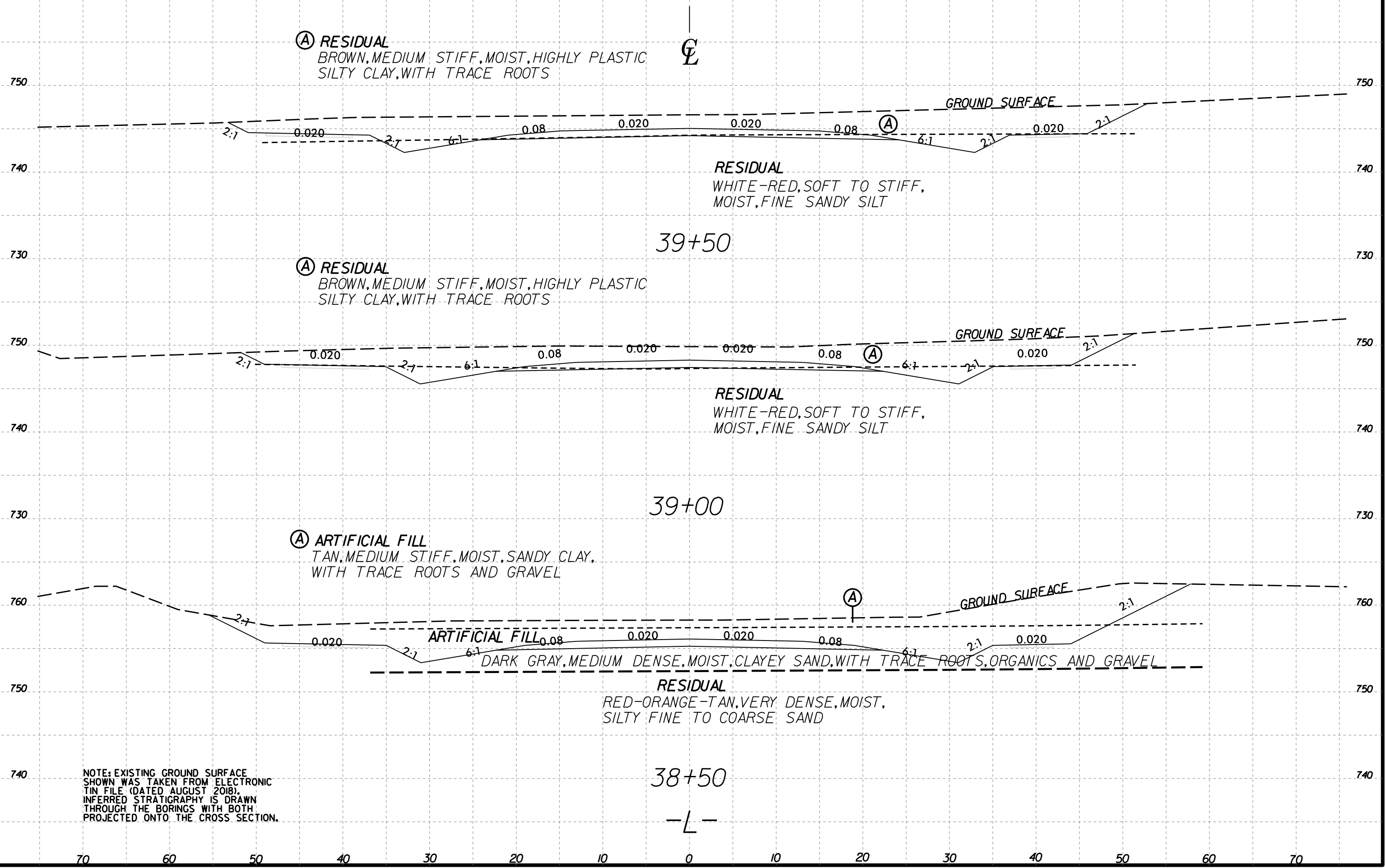
NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED AUGUST 2018). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.



NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED AUGUST 2018). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

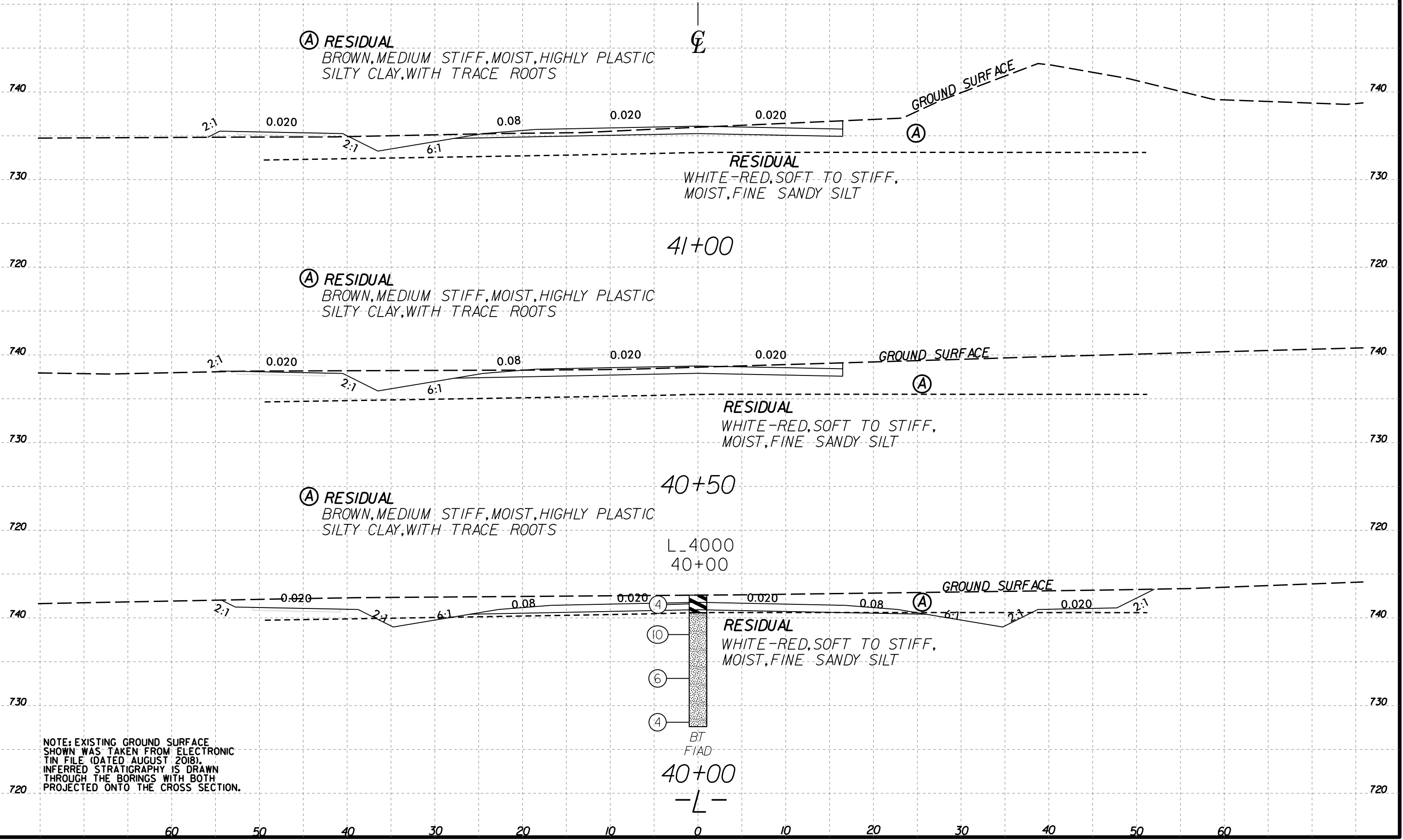


NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED AUGUST 2018). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

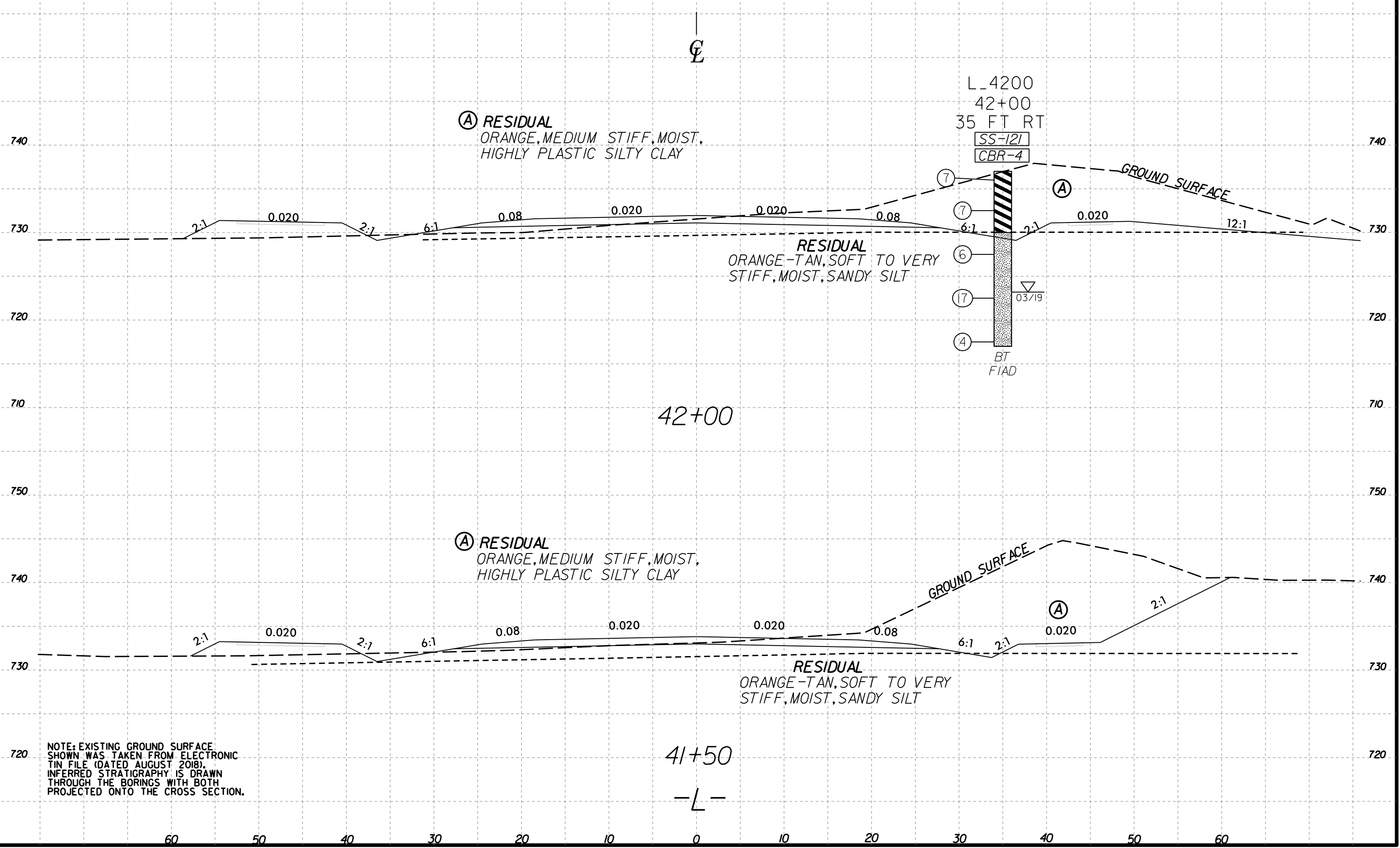


NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED AUGUST 2018). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

38+50
-L-



NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED AUGUST 2018). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.



(A) RESIDUAL
ORANGE, MEDIUM STIFF, MOIST,
HIGHLY PLASTIC SILTY CLAY

RESIDUAL
ORANGE-TAN, SOFT TO VERY
STIFF, MOIST, SANDY SILT

(A) RESIDUAL
ORANGE, MEDIUM STIFF, MOIST,
HIGHLY PLASTIC SILTY CLAY

RESIDUAL
ORANGE-TAN, SOFT TO VERY
STIFF, MOIST, SANDY SILT

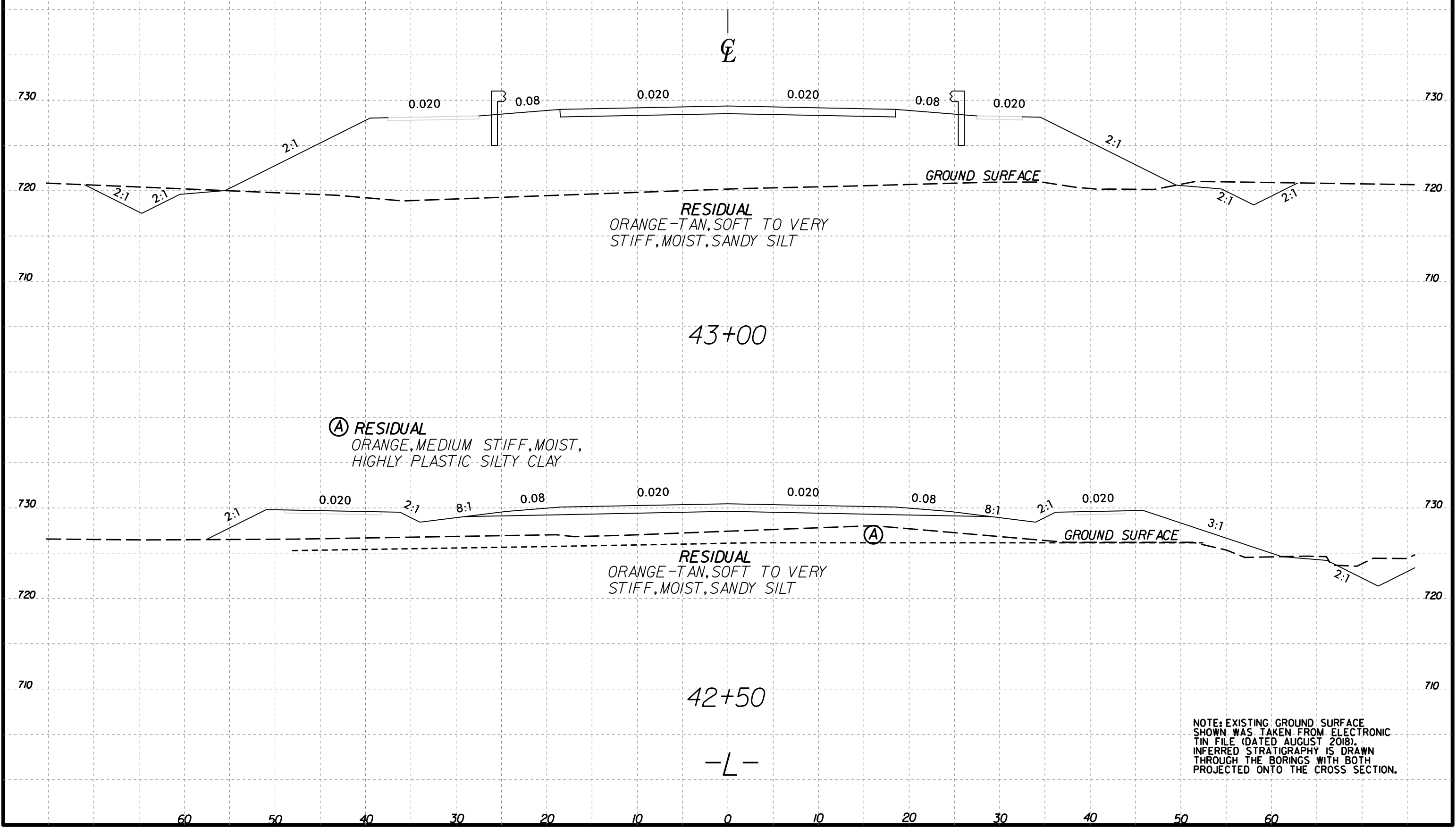
L_4200
42+00
35 FT RT
SS-121
CBR-4

NOTE: EXISTING GROUND SURFACE
SHOWN WAS TAKEN FROM ELECTRONIC
TIN FILE (DATED AUGUST 2018).
INFERRED STRATIGRAPHY IS DRAWN
THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION.

42+00

41+50

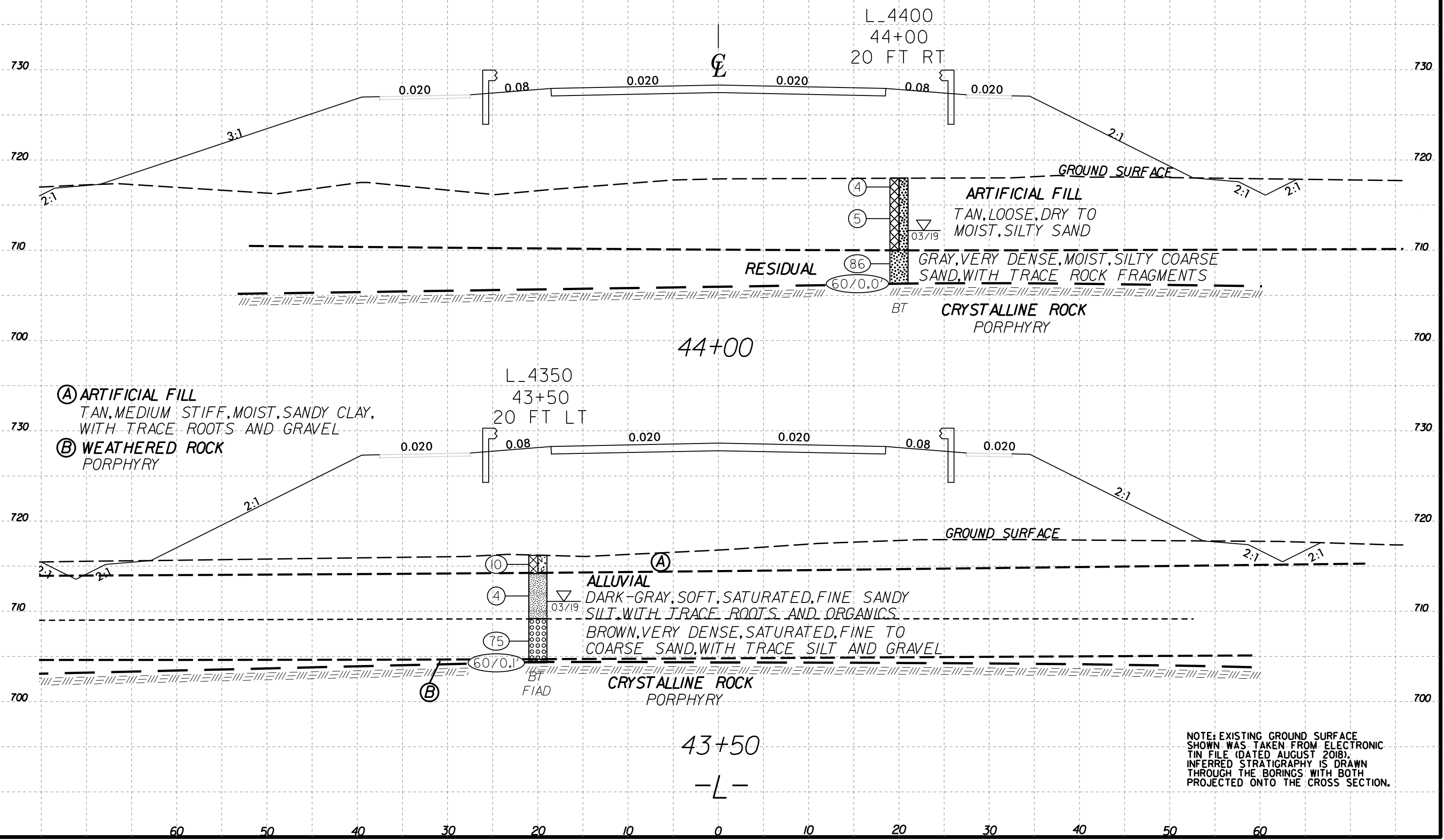
-L-



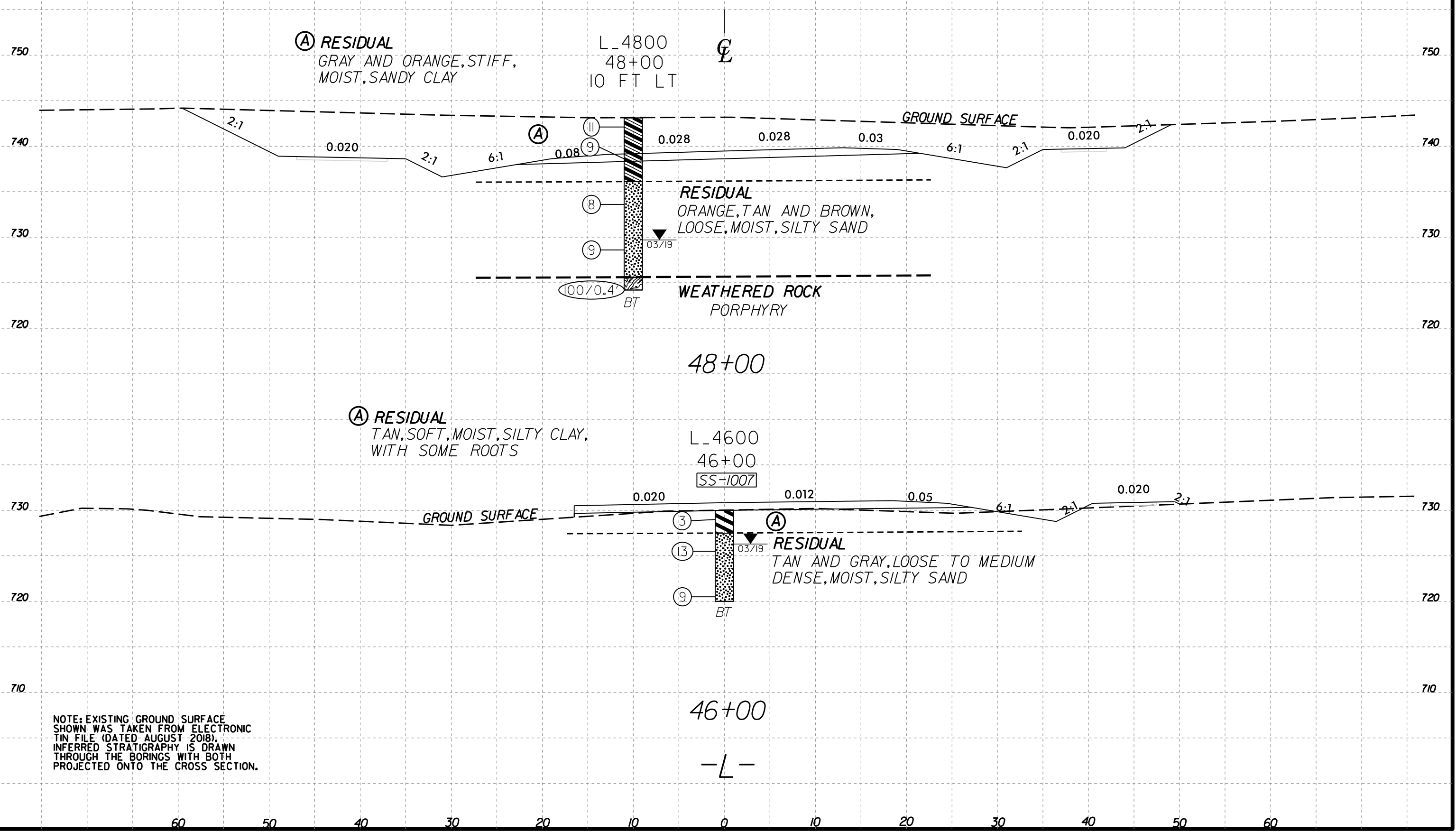
NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED AUGUST 2018). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

-L-

6/23/16

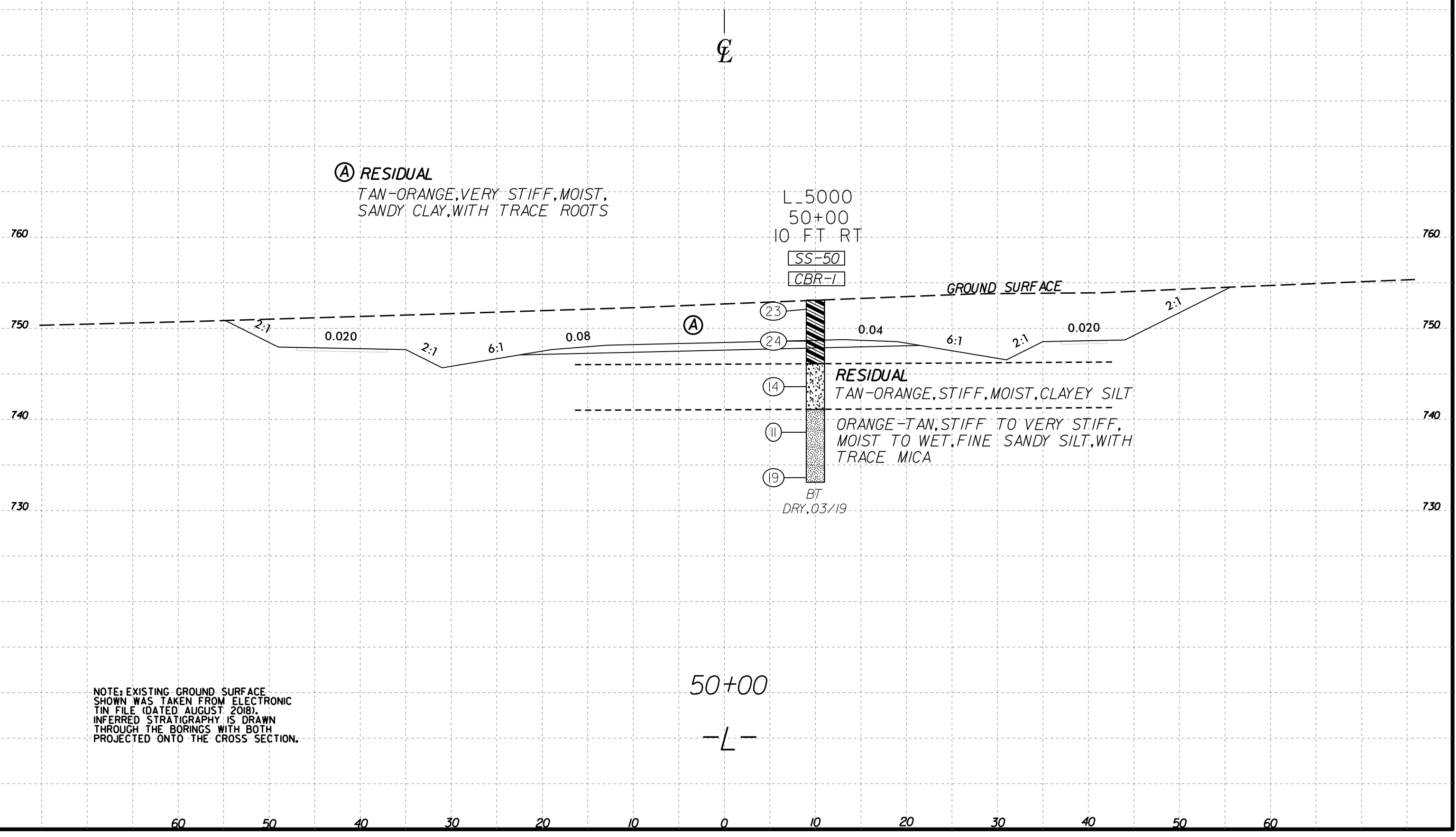


NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED AUGUST 2018). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.



NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED AUGUST 2018). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

-L-



Ⓐ RESIDUAL
TAN-ORANGE, VERY STIFF, MOIST,
SANDY CLAY, WITH TRACE ROOTS

L_5000
50+00
10 FT RT
SS-50
CBR-1

- (23)
- (24)
- (14)
- (11)
- (9)

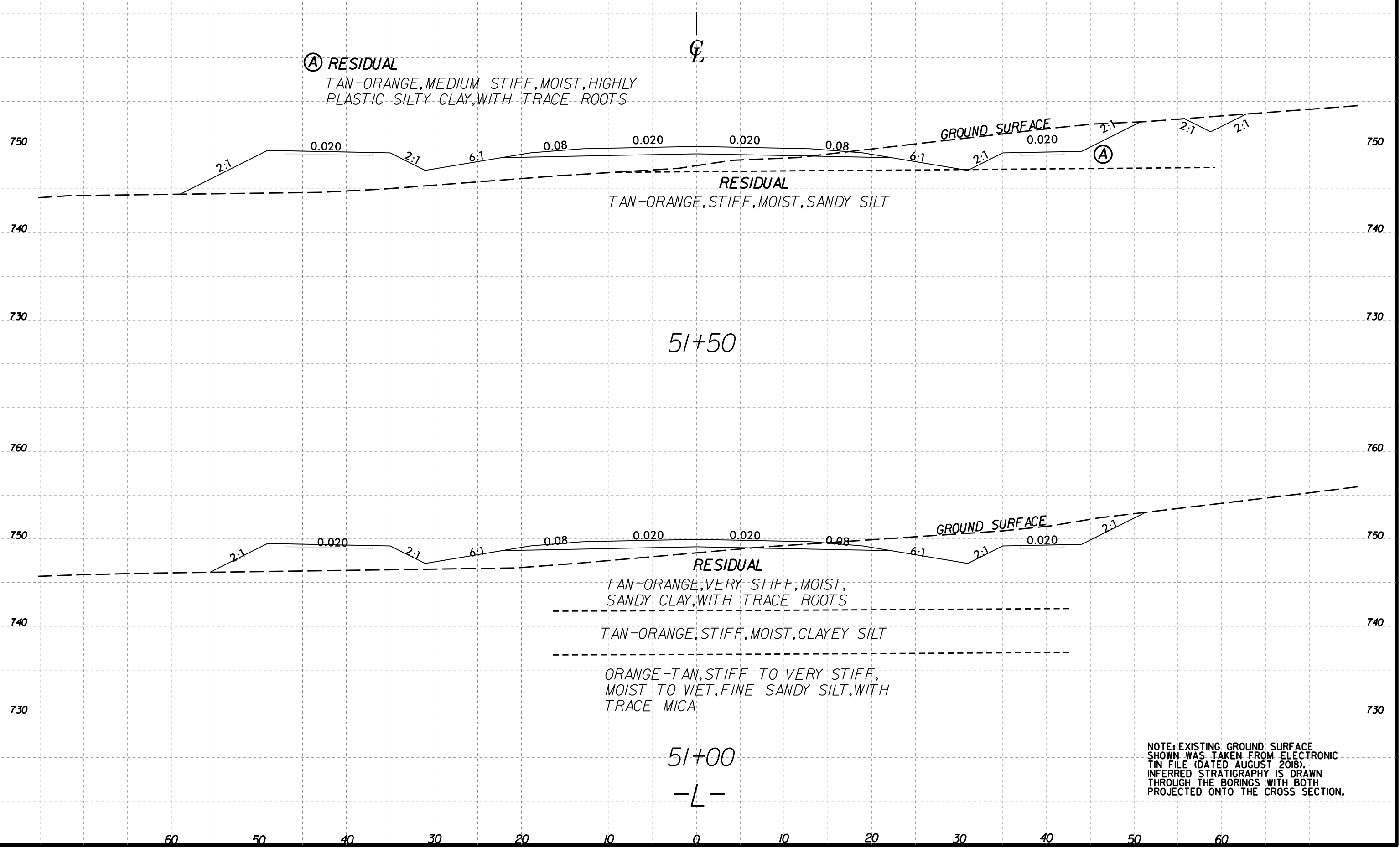
RESIDUAL
TAN-ORANGE, STIFF, MOIST, CLAYEY SILT

ORANGE-TAN, STIFF TO VERY STIFF,
MOIST TO WET, FINE SANDY SILT, WITH
TRACE MICA

BT
DRY, 03/19

NOTE: EXISTING GROUND SURFACE
SHOWN WAS TAKEN FROM ELECTRONIC
TIN FILE (DATED AUGUST 2018).
INFERRED STRATIGRAPHY IS DRAWN
THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION.

50+00
-L-



Ⓐ RESIDUAL
 TAN-ORANGE, MEDIUM STIFF, MOIST, HIGHLY
 PLASTIC SILTY CLAY, WITH TRACE ROOTS

RESIDUAL
 TAN-ORANGE, STIFF, MOIST, SANDY SILT

51+50

RESIDUAL
 TAN-ORANGE, VERY STIFF, MOIST,
 SANDY CLAY, WITH TRACE ROOTS

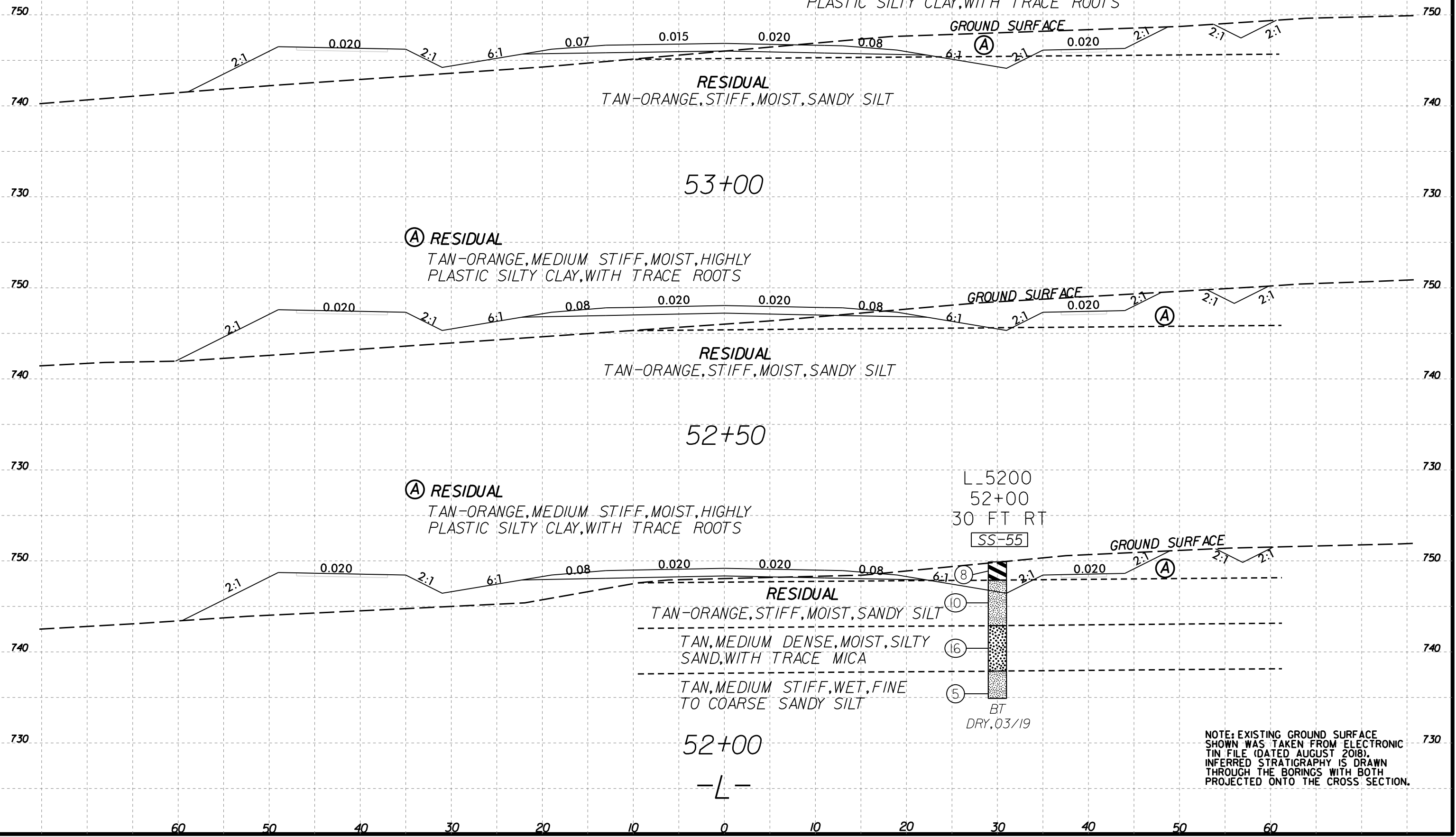
TAN-ORANGE, STIFF, MOIST, CLAYEY SILT

ORANGE-TAN, STIFF TO VERY STIFF,
 MOIST TO WET, FINE SANDY SILT, WITH
 TRACE MICA

51+00

-L-

NOTE: EXISTING GROUND SURFACE
 SHOWN WAS TAKEN FROM ELECTRONIC
 TIN FILE (DATED AUGUST 2018).
 INFERRED STRATIGRAPHY IS DRAWN
 THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION.



Ⓐ RESIDUAL
 TAN-ORANGE, MEDIUM STIFF, MOIST, HIGHLY
 PLASTIC SILTY CLAY, WITH TRACE ROOTS

RESIDUAL
 TAN-ORANGE, STIFF, MOIST, SANDY SILT

53+00

Ⓐ RESIDUAL
 TAN-ORANGE, MEDIUM STIFF, MOIST, HIGHLY
 PLASTIC SILTY CLAY, WITH TRACE ROOTS

RESIDUAL
 TAN-ORANGE, STIFF, MOIST, SANDY SILT

52+50

Ⓐ RESIDUAL
 TAN-ORANGE, MEDIUM STIFF, MOIST, HIGHLY
 PLASTIC SILTY CLAY, WITH TRACE ROOTS

RESIDUAL
 TAN-ORANGE, STIFF, MOIST, SANDY SILT

TAN, MEDIUM DENSE, MOIST, SILTY
 SAND, WITH TRACE MICA

TAN, MEDIUM STIFF, WET, FINE
 TO COARSE SANDY SILT

L_5200
 52+00
 30 FT RT

SS-55

8

10

16

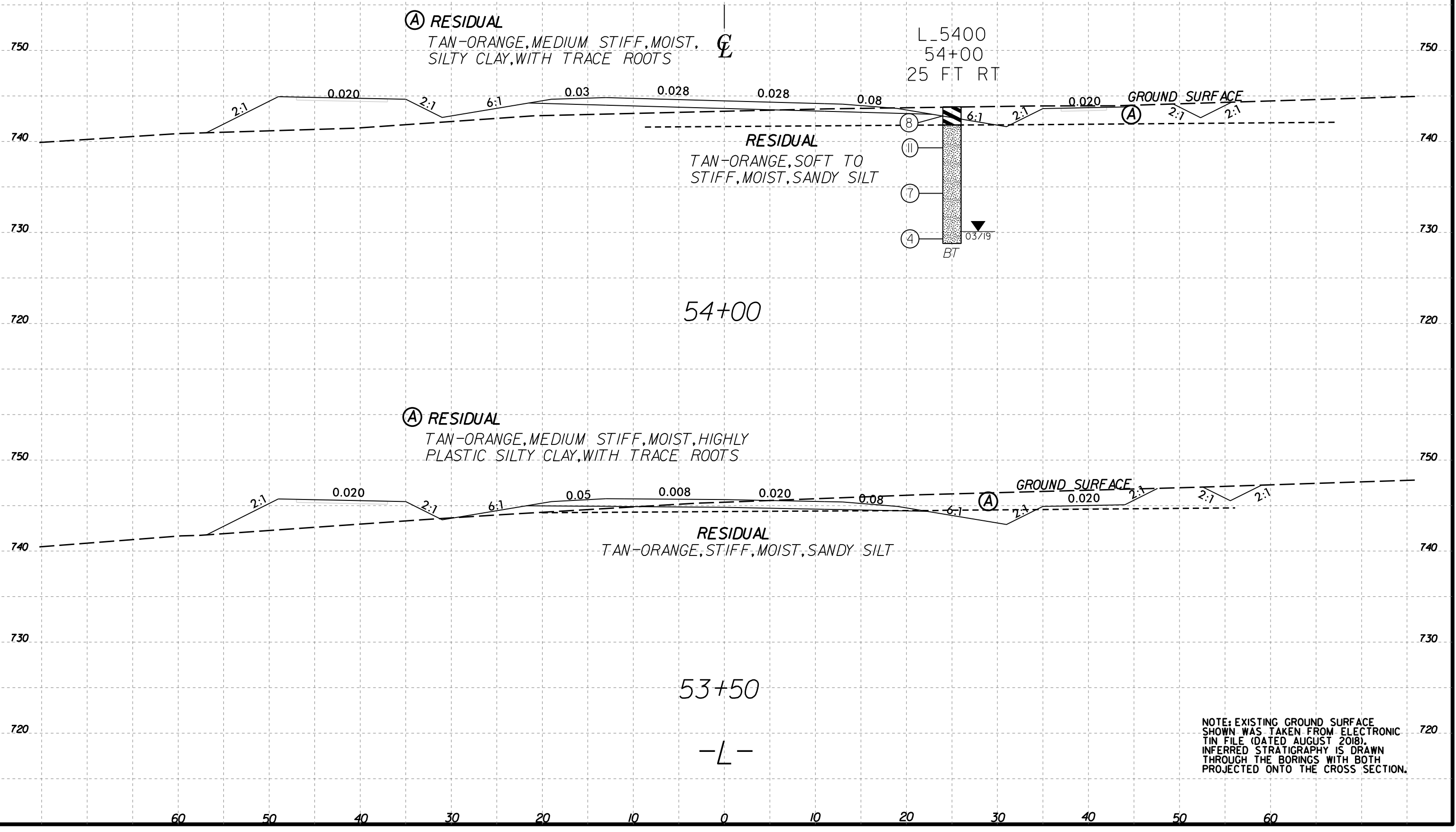
5

BT
 DRY, 03/19

52+00

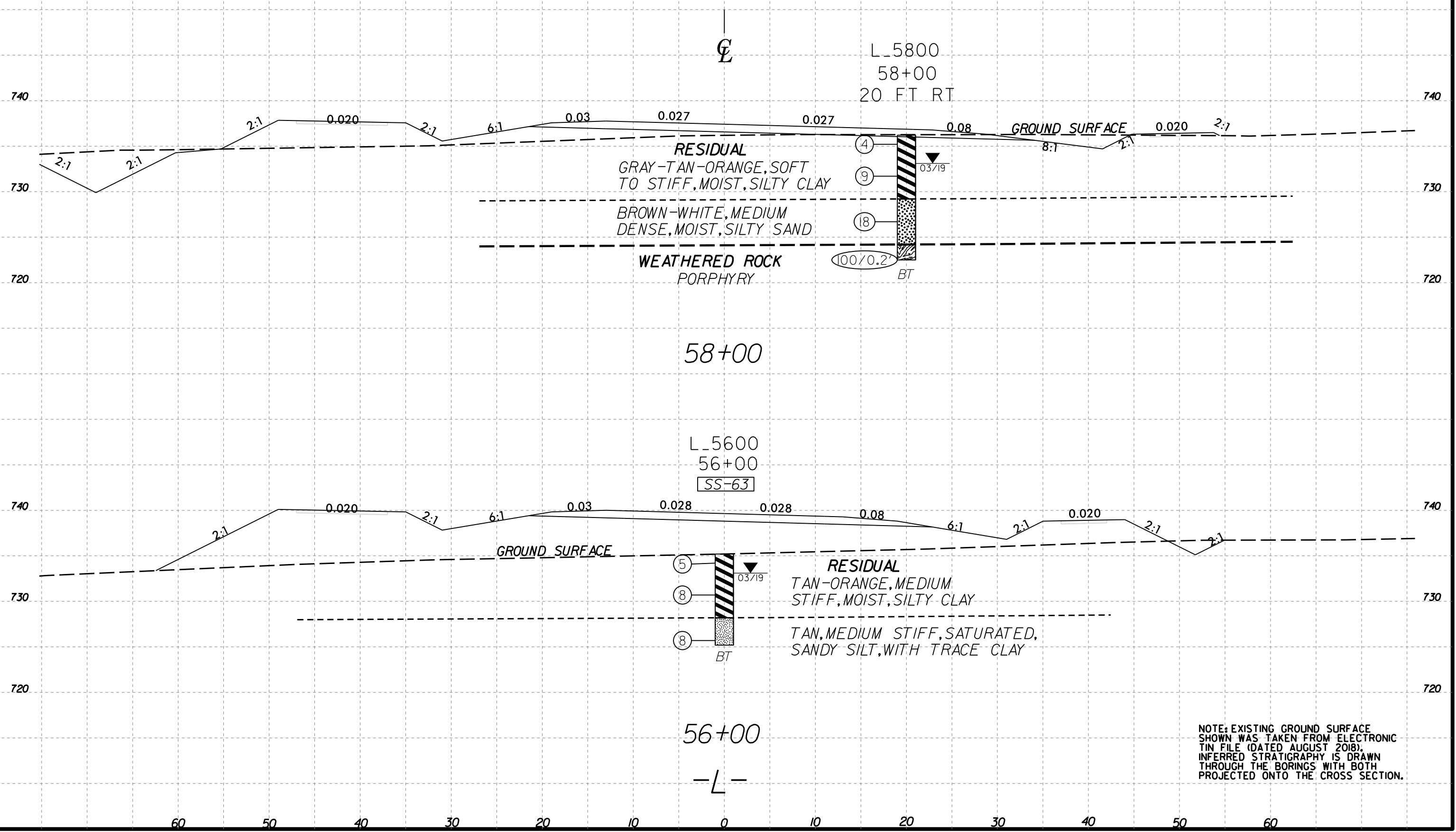
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NOTE: EXISTING GROUND SURFACE
 SHOWN WAS TAKEN FROM ELECTRONIC
 TIN FILE (DATED AUGUST 2018).
 INFERRED STRATIGRAPHY IS DRAWN
 THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO THE CROSS SECTION.

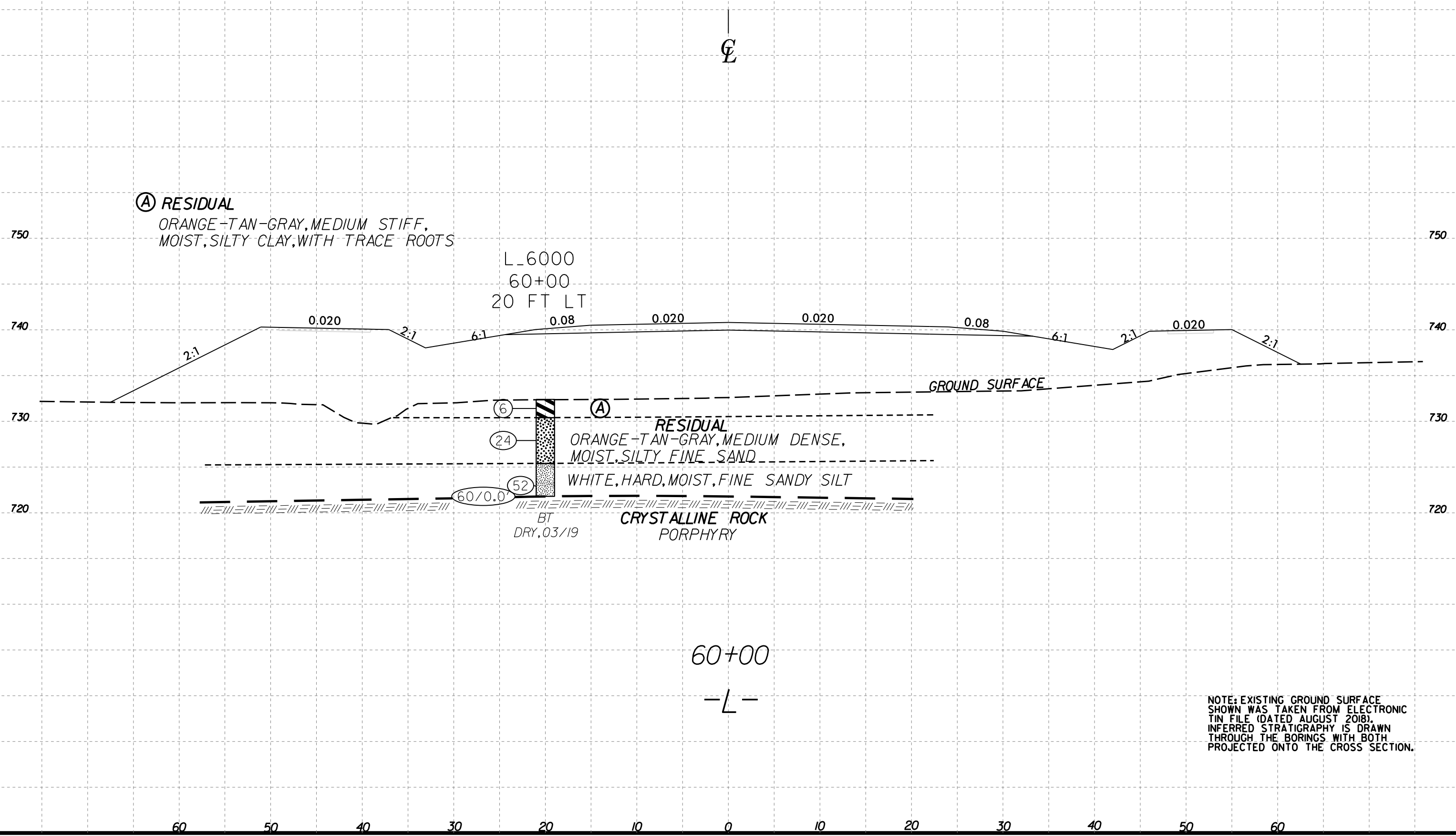


NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED AUGUST 2018). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

6/23/16



NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED AUGUST 2018). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.



Ⓐ RESIDUAL
ORANGE-TAN-GRAY, MEDIUM STIFF,
MOIST, SILTY CLAY, WITH TRACE ROOTS

L_6000
60+00
20 FT LT

GROUND SURFACE

Ⓐ RESIDUAL
ORANGE-TAN-GRAY, MEDIUM DENSE,
MOIST, SILTY FINE SAND

WHITE, HARD, MOIST, FINE SANDY SILT

CRYSTALLINE ROCK
PORPHYRY

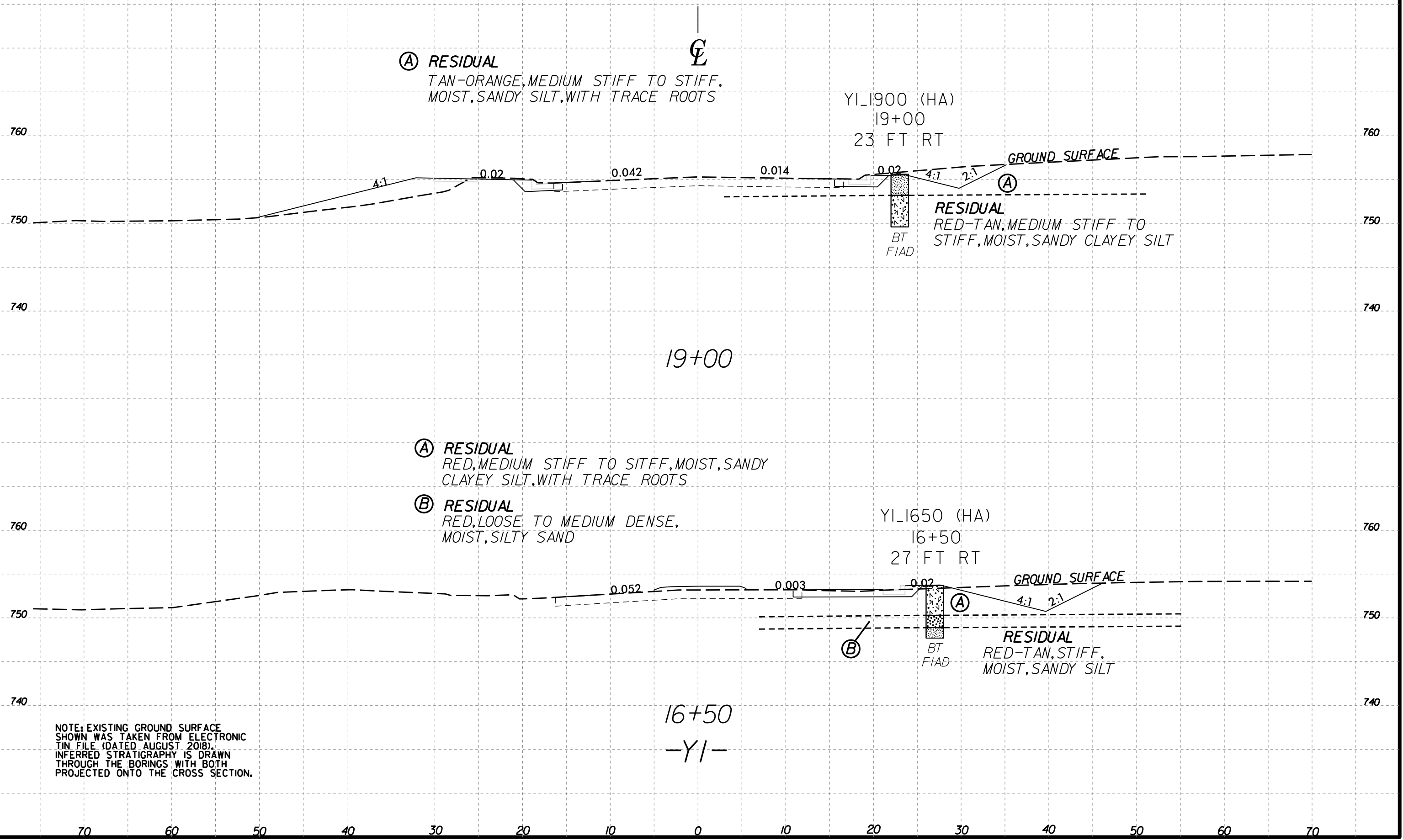
BT
DRY, 03/19

60+00

-L-

NOTE: EXISTING GROUND SURFACE
SHOWN WAS TAKEN FROM ELECTRONIC
TIN FILE (DATED AUGUST 2018).
INFERRED STRATIGRAPHY IS DRAWN
THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION.

60 50 40 30 20 10 0 10 20 30 40 50 60



Ⓐ RESIDUAL
TAN-ORANGE, MEDIUM STIFF TO STIFF,
MOIST, SANDY SILT, WITH TRACE ROOTS

YI1900 (HA)
19+00
23 FT RT

GROUND SURFACE
Ⓐ
RESIDUAL
RED-TAN, MEDIUM STIFF TO
STIFF, MOIST, SANDY CLAYEY SILT

BT
FIAD

19+00

Ⓐ RESIDUAL
RED, MEDIUM STIFF TO STIFF, MOIST, SANDY
CLAYEY SILT, WITH TRACE ROOTS

Ⓑ RESIDUAL
RED, LOOSE TO MEDIUM DENSE,
MOIST, SILTY SAND

YI1650 (HA)
16+50
27 FT RT

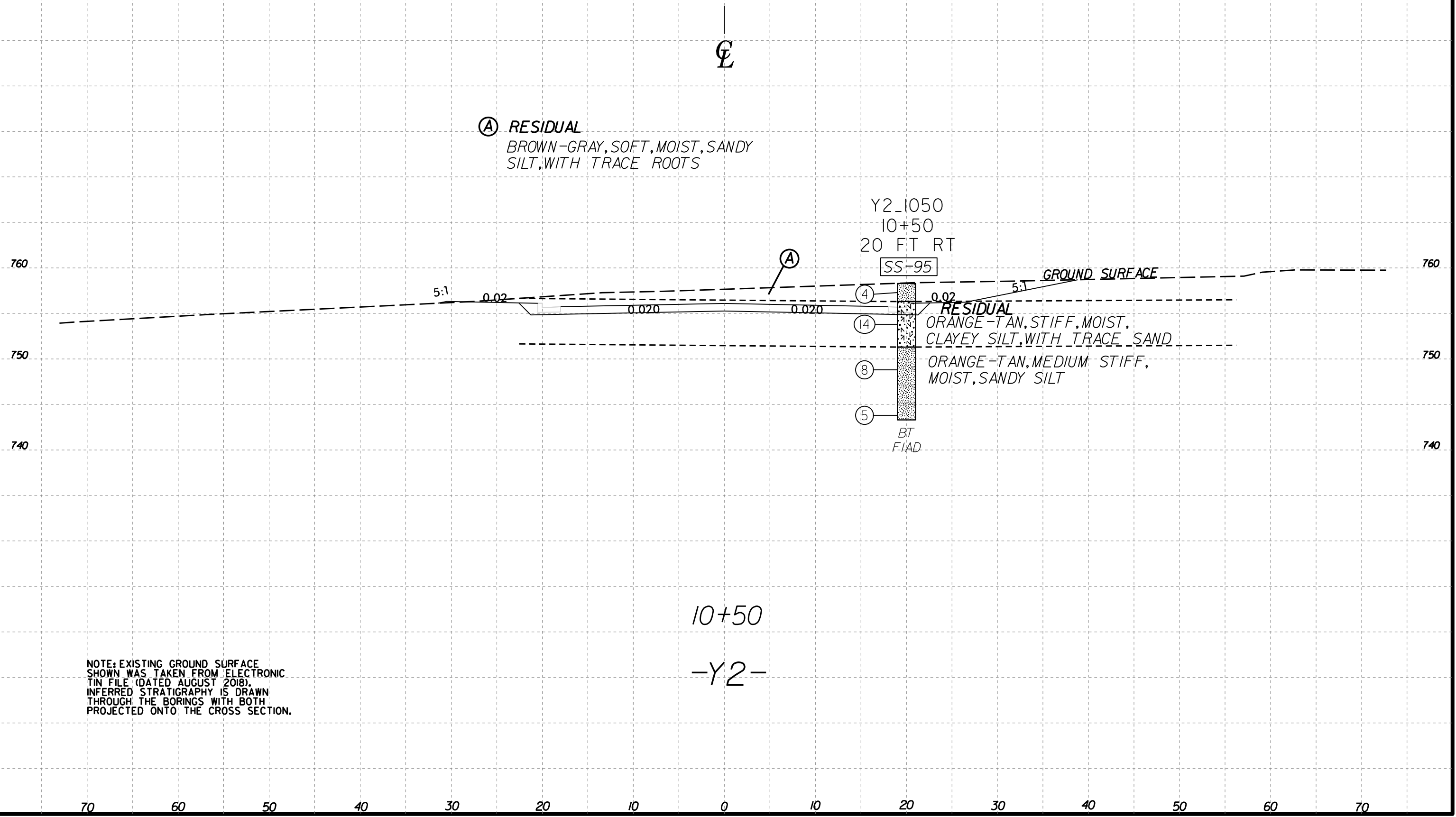
GROUND SURFACE
Ⓐ
RESIDUAL
RED-TAN, STIFF,
MOIST, SANDY SILT

BT
FIAD

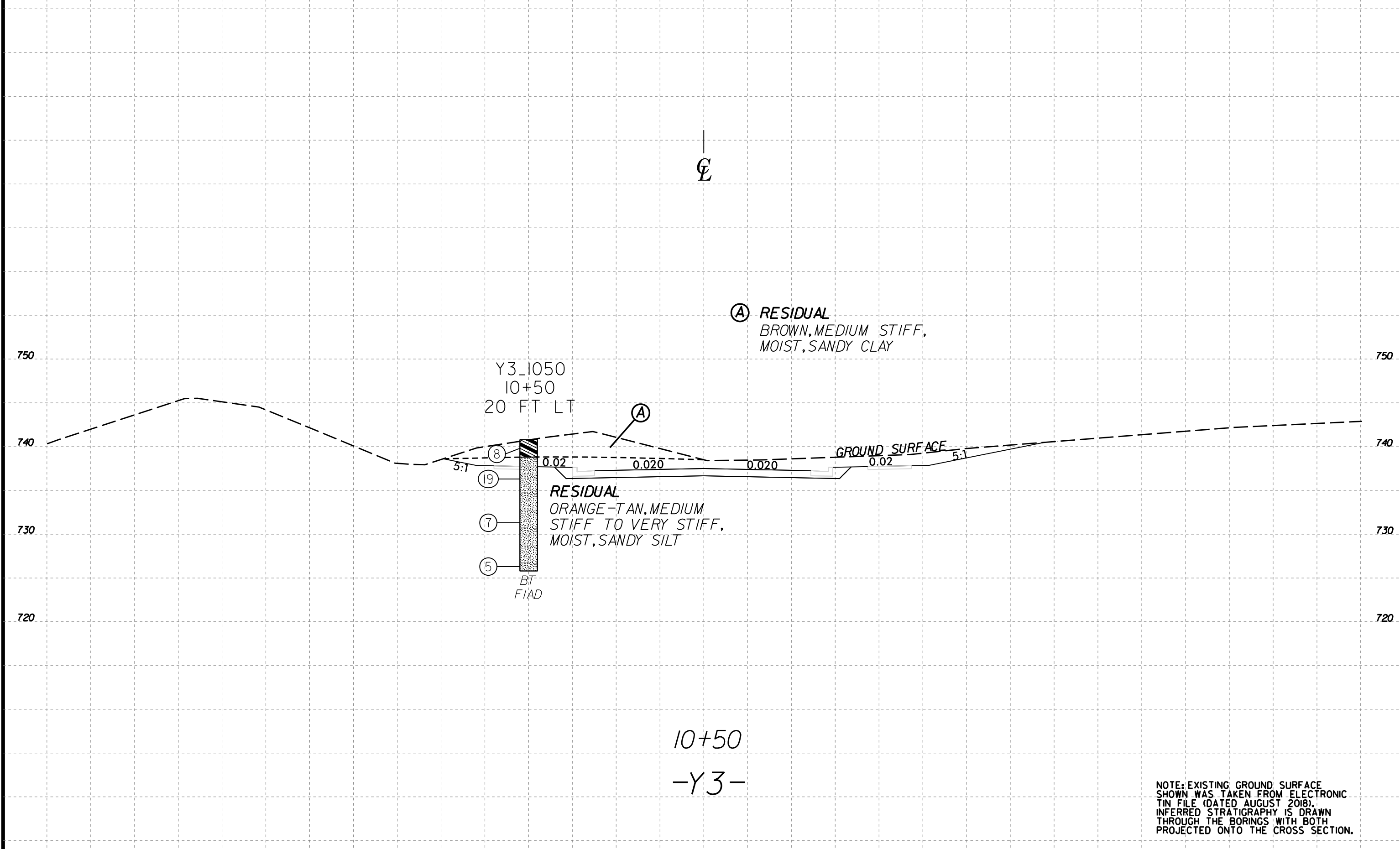
16+50

-YI-

NOTE: EXISTING GROUND SURFACE
SHOWN WAS TAKEN FROM ELECTRONIC
TIN FILE (DATED AUGUST 2018).
INFERRED STRATIGRAPHY IS DRAWN
THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION.

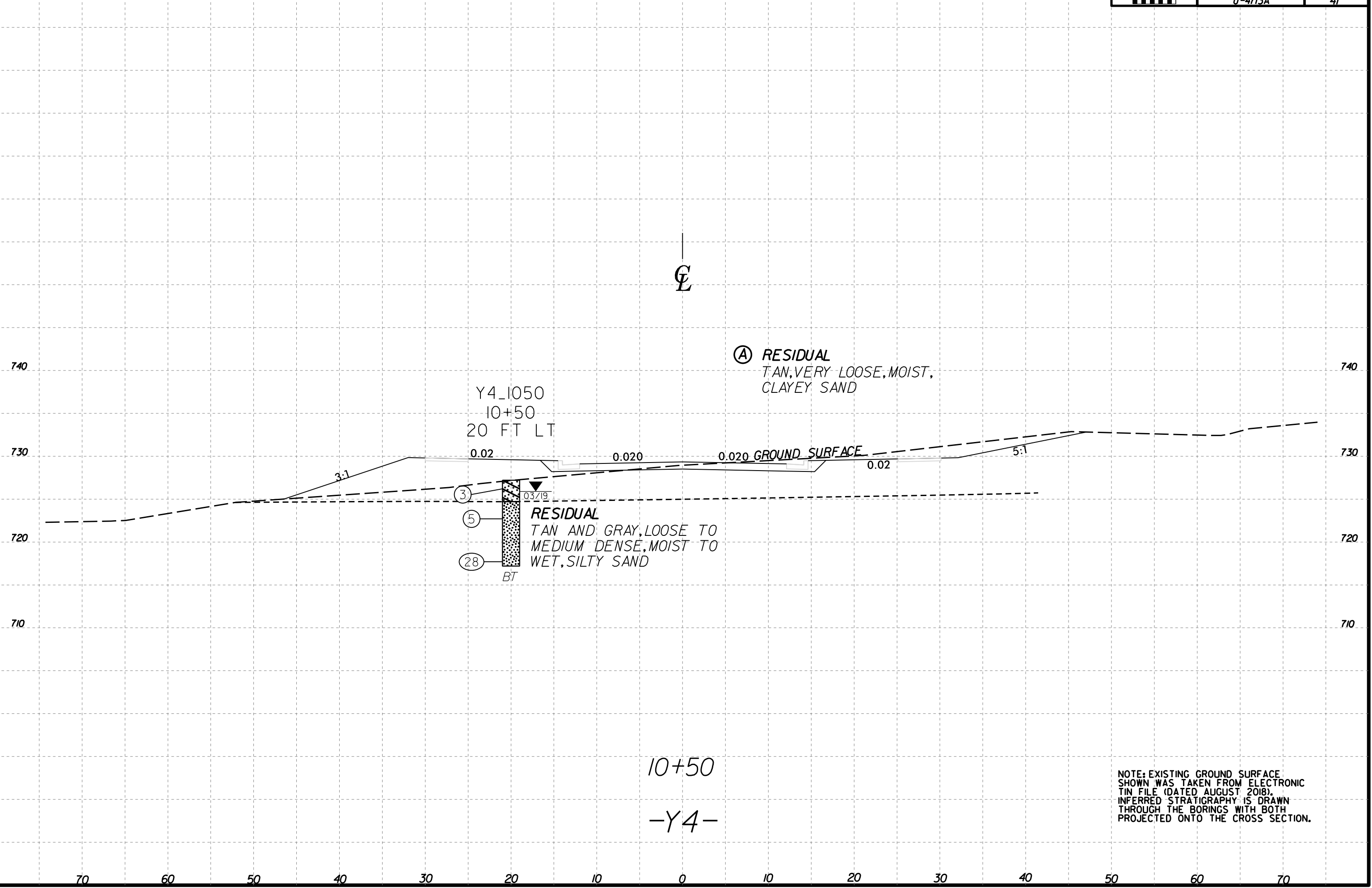


NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED AUGUST 2018). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.



10+50
-Y3-

NOTE: EXISTING GROUND SURFACE
SHOWN WAS TAKEN FROM ELECTRONIC
TIN FILE (DATED AUGUST 2018).
INFERRED STRATIGRAPHY IS DRAWN
THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION.



Y4_I050
10+50
20 FT LT

Ⓐ RESIDUAL
TAN, VERY LOOSE, MOIST,
CLAYEY SAND

(3)
(5)
(28)
BT
RESIDUAL
TAN AND GRAY, LOOSE TO
MEDIUM DENSE, MOIST TO
WET, SILTY SAND

10+50
-Y4-

NOTE: EXISTING GROUND SURFACE
SHOWN WAS TAKEN FROM ELECTRONIC
TIN FILE (DATED AUGUST 2018).
INFERRED STRATIGRAPHY IS DRAWN
THROUGH THE BORINGS WITH BOTH
PROJECTED ONTO THE CROSS SECTION.

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

ROADWAY
SUBSURFACE INVESTIGATION

APPENDIX A
SOIL TEST RESULTS

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. Sand	F. Sand	Silt	Clay	10	40	200		
SS-95	20 RT	10+50 -Y2-	0.3-1.5	A-4 (0)	16	1	34.1	30.8	23.4	11.7	99.5	73.8	40.3	15.7	-
SS-73	CL	22+50 -L-	0.3-1.5	A-4 (0)	11	2	38.4	24.8	24.8	11.9	99.4	71.0	41.3	8.9	-
SS-74	CL	22+50 -L-	3.5-5.0	A-7-5 (39)	79	49	17.8	9.0	15.0	58.3	100.0	85.4	75.0	28.6	-
SS-80	10 RT	26+00 -L-	0.4-1.5	A-7-6 (20)	64	39	28.9	14.6	12.3	44.3	99.7	77.5	58.7	19.5	-
SS-99	35 LT	34+00 -L-	0.4-1.5	A-7-6 (30)	66	40	17.0	12.4	13.3	57.4	100.0	86.3	73.2	14.9	-
SS-103	10 RT	36+00 -L-	0.4-1.5	A-6 (6)	32	16	27.6	20.9	21.1	30.3	97.8	77.0	54.7	16.1	-
SS-106	30 RT	38+00 -L-	0.3-1.5	A-6 (1)	25	12	40.9	20.7	17.2	21.2	99.1	65.4	42.3	12.6	-
SS-121	35 RT	42+00 -L-	0.2-1.5	A-7-6 (21)	58	38	23.5	16.2	15.4	44.8	97.6	80.9	61.8	22.7	-
SS-1007	CL	46+00 -L-	0.0-1.5	A-7-6 (7)	41	21	30.9	21.1	18.7	29.2	95.5	72.9	50.4	16.5	-
SS-50	10 RT	50+00 -L-	0.0-1.5	A-6 (2)	29	12	35.1	24.9	16.1	24.0	99.8	74.5	44.6	10.9	-
SS-55	30 RT	52+00 -L-	0.0-1.5	A-7-5 (52)	87	56	9.8	10.0	13.9	66.3	100.0	93.2	82.3	32.2	-
SS-63	CL	56+00 -L-	0.2-1.5	A-7-6 (13)	50	24	26.0	15.9	20.8	37.4	100.0	80.7	61.4	24.9	-
CBR-2	10 RT	26+00 -L-	5.0-7.0	A-7-6 (8)	44	15	25.7	17.6	23.9	32.9	99.7	79.2	60.6	23.9	-
CBR-3	20 RT	30+00 -L-	3.0-5.0	A-7-6 (17)	57	28	24.3	13.2	18.7	43.8	99.4	79.1	64.9	27.2	-
CBR-4	35 RT	42+00 -L-	3.0-5.0	A-7-6 (13)	56	27	31.5	15.9	19.1	33.6	99.9	76.0	55.6	31.2	-
CBR-1	10 RT	50+00 -L-	3.0-5.0	A-6 (3)	28	12	28.1	24.4	21.2	26.3	99.8	80.6	52.3	14.6	-