

PROJECT: 32572.1.FS10 REFERENCE: A-0009CC

**CONTENTS**

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3-5	SITE PLAN SHEETS
6-21	CPT LOGS

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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

COUNTY GRAHAM

PROJECT DESCRIPTION UPGRADE NC 143 FROM 0.5  
MILES NORTH OF APPALACHIAN TRAIL TO NC 28  
AND UPGRADE NC 28 FROM 0.2 MILES WEST OF  
NC 143 TO 0.2 MILES WEST OF SR 1228 (STECOAH  
RD)

SITE DESCRIPTION RETAINING WALL #27, RETAINING  
WALL #30, AND RETAINING WALL #32:  
SUPPLEMENTAL CPT INVESTIGATION

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	A-0009CC	1	21

**CAUTION NOTICE**

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

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

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

NOTES:

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

PERSONNEL

CG2 EXPLORATION

M. BREWER

INVESTIGATED BY CG2

DRAWN BY M. BREWER, P.E.

CHECKED BY R. KRAL, P.E.

SUBMITTED BY M. BREWER, P.E.

DATE OCTOBER 2022

Prepared in the Office of:



**CAROLINAS  
GEOTECHNICAL  
GROUP**  
 2400 CROWNPOINT EXECUTIVE DRIVE  
 SUITE 800  
 CHARLOTTE, NC 28227  
 (980) 339-8684



DocuSigned by:

D. Matthew Brewer

10/17/22

386129C0A4C1462

SIGNATURE

DATE

**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

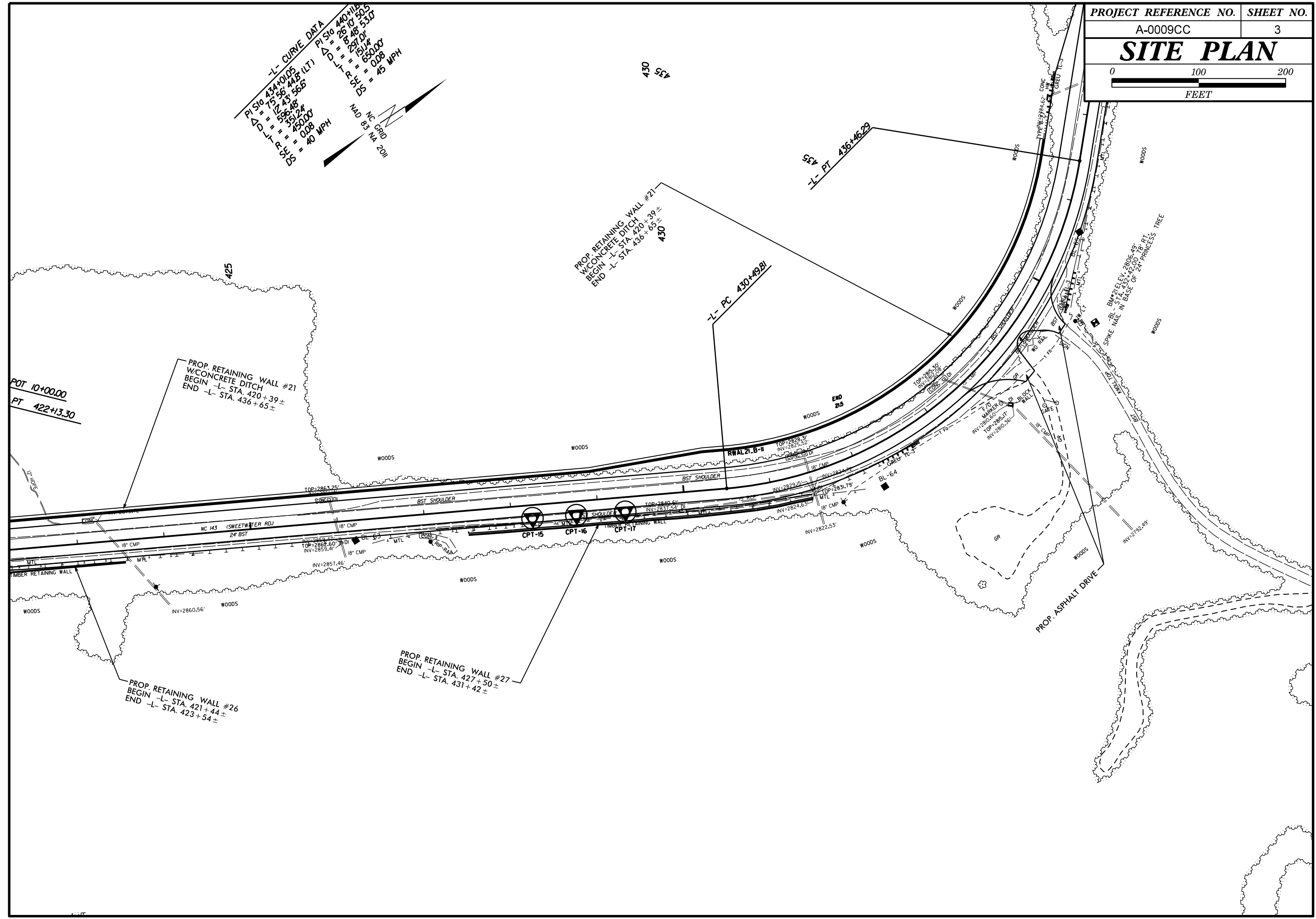
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT SUBSURFACE INVESTIGATION SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

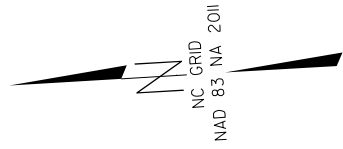
Technical document containing: SOIL DESCRIPTION (ASTM classification), GRADATION (angularity, mineralogy), ROCK DESCRIPTION (weathering, hardness), TERMS AND DEFINITIONS (alluvium, aquifer, etc.), TEXTURE OR GRAIN SIZE, SOIL MOISTURE - CORRELATION OF TERMS, PLASTICITY, COLOR, EQUIPMENT USED ON SUBJECT PROJECT, FRACTURE SPACING, BEDDING, and INDURATION. Includes various charts, tables, and diagrams.

**L- CURVE DATA**

PI STA	424+00.05	PI STA	440+118.5
ΔD	75° 56' 44.8" (LT)	ΔD	26° 10' 50.5"
L	122.43	L	281.04
ΔD	596.48'	ΔD	151.4'
ΔD	35.24'	ΔD	650.00'
ΔD	0.08	ΔD	0.08
DS	40 MPH	DS	45 MPH

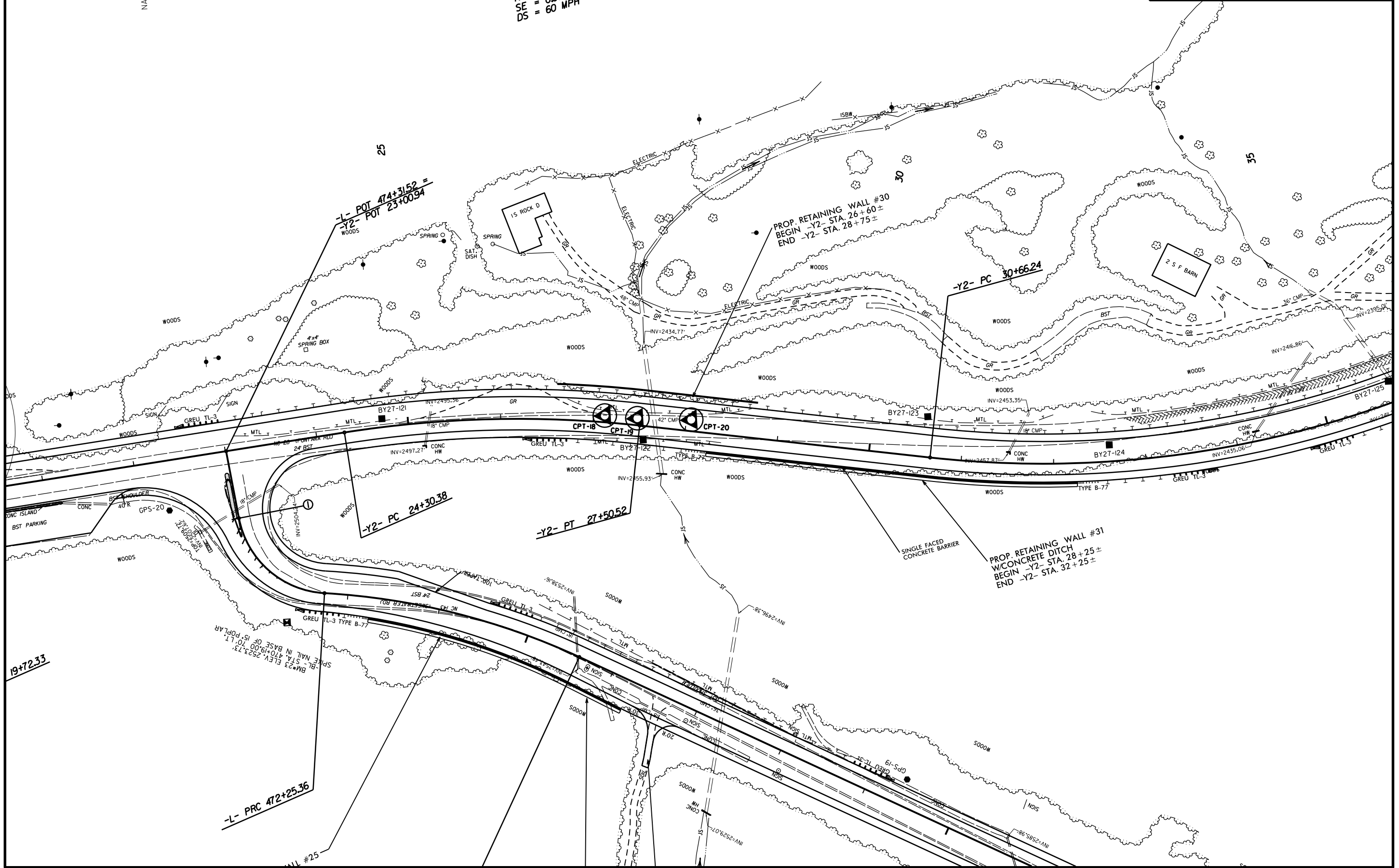
NAD 83 NA 2011



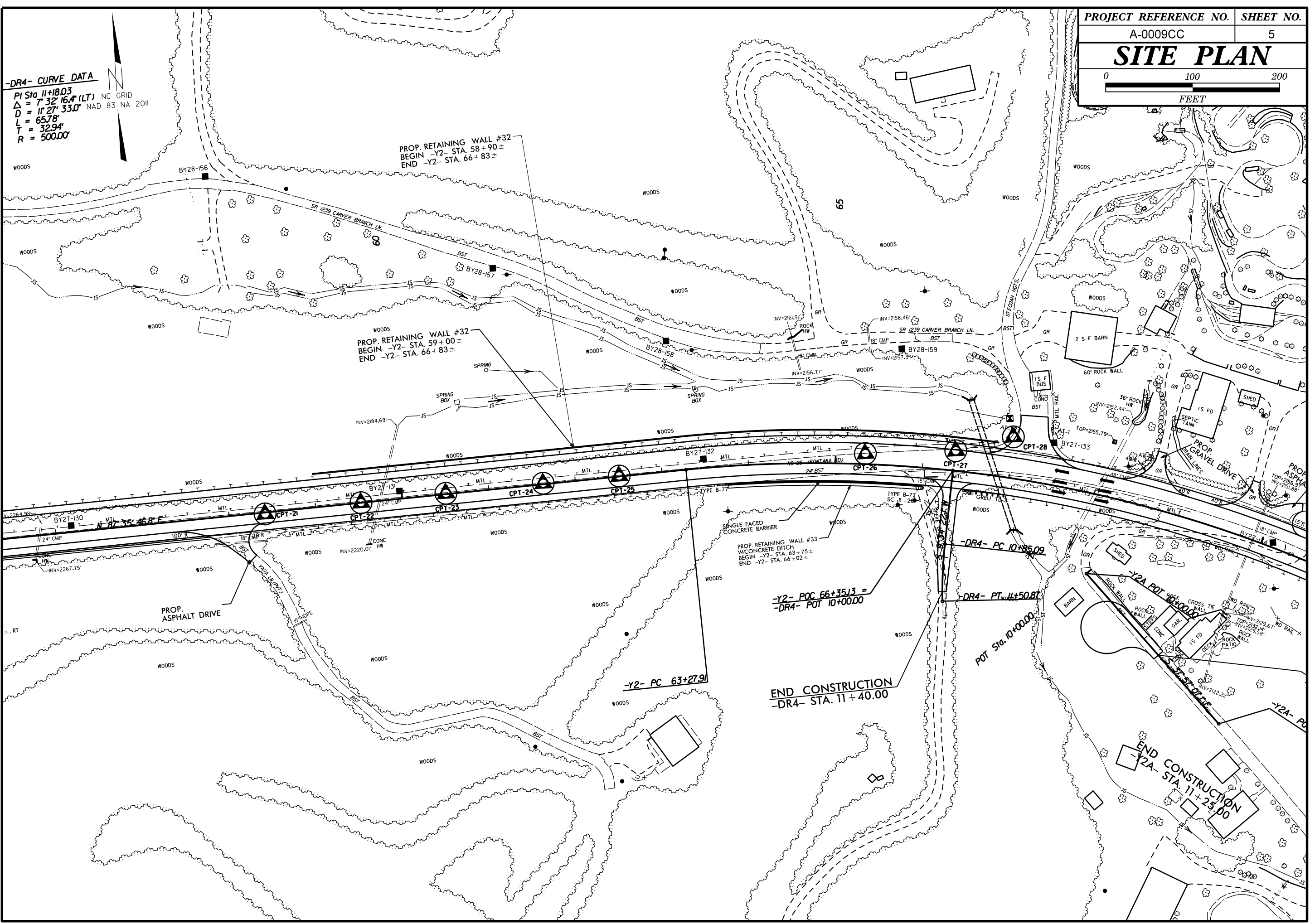


**-Y2- CURVE DATA**

PI Sta 25+91.41	PI Sta 44+39.36
$\Delta = 15^{\circ} 17' 06.5''$ (RT)	$\Delta = 102^{\circ} 05' 50.9''$ (LT)
D = 4' 46" 28.7"	D = 5' 09" 42.4"
L = 320.13'	L = 1977.95'
R = 161.02'	R = 1373.12'
SE = 0.08	SE = 0.08
DS = 60 MPH	DS = 55 MPH



**-DR4- CURVE DATA**  
 PI Sta 11+18.03  
 $\Delta = 7^{\circ} 32' 16.4" (LT)$  NC GRID  
 $D = 11^{\circ} 27' 33.0"$  NAD 83 NA 2011  
 $L = 65.78'$   
 $T = 32.94'$   
 $R = 500.00'$



PROP. RETAINING WALL #32  
 BEGIN -Y2- STA. 58+90±  
 END -Y2- STA. 66+83±

PROP. RETAINING WALL #32  
 BEGIN -Y2- STA. 59+00±  
 END -Y2- STA. 66+83±

PROP. RETAINING WALL #33  
 W/CONCRETE DITCH  
 BEGIN -Y2- STA. 63+75±  
 END -Y2- STA. 66+02±

END CONSTRUCTION  
 -DR4- STA. 11+40.00

END CONSTRUCTION  
 -Y2A- STA. 11+25.00

PROP. ASPHALT DRIVE

-Y2- PC 66+35.13 =  
 -DR4- POT 10+00.00

-DR4- PT 11+50.81

POT Sta. 10+00.00

-Y2- PC 63+27.91

-Y2A- PC



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A-0009CC  
Graham County  
Project Number: 240020068

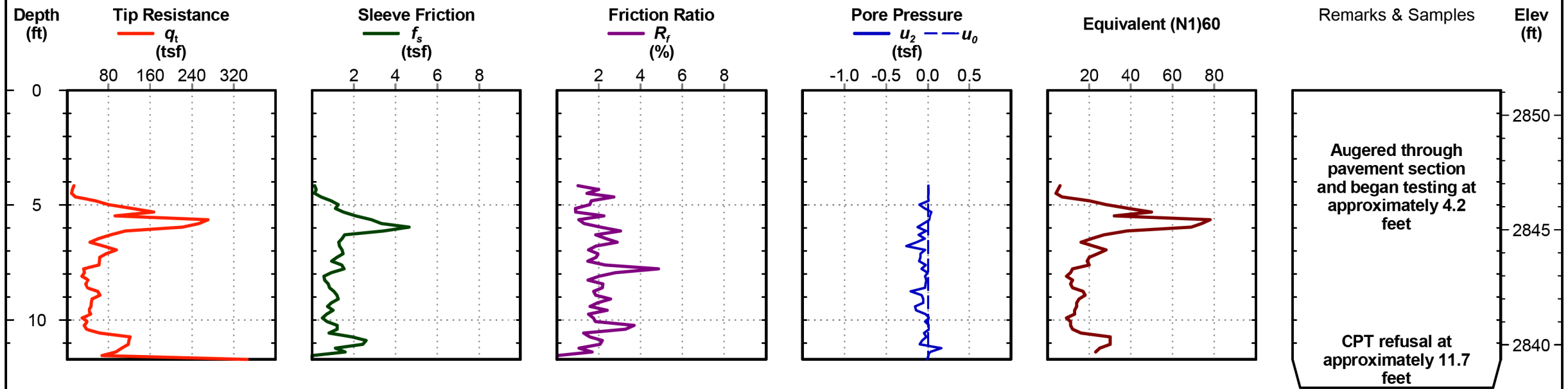
# Cone Penetration Test

## CPT-15

Date: Jul. 27, 2022  
Estimated Water Depth:  
Rig/Operator: M. Brewer

Northing: 621875.8  
Easting: 596544.5  
Elevation: 2851.1

Total Depth: 11.7 ft  
Termination Criteria: Maximum Reaction Force  
Cone Size:



CPT REPORT - DYNAMIC A-0009CC\_CPT.GPJ DF STD US LAB.GDT 10/17/22

-L-  
STA. 428+34  
15' RT

## CPT-15



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Graham County  
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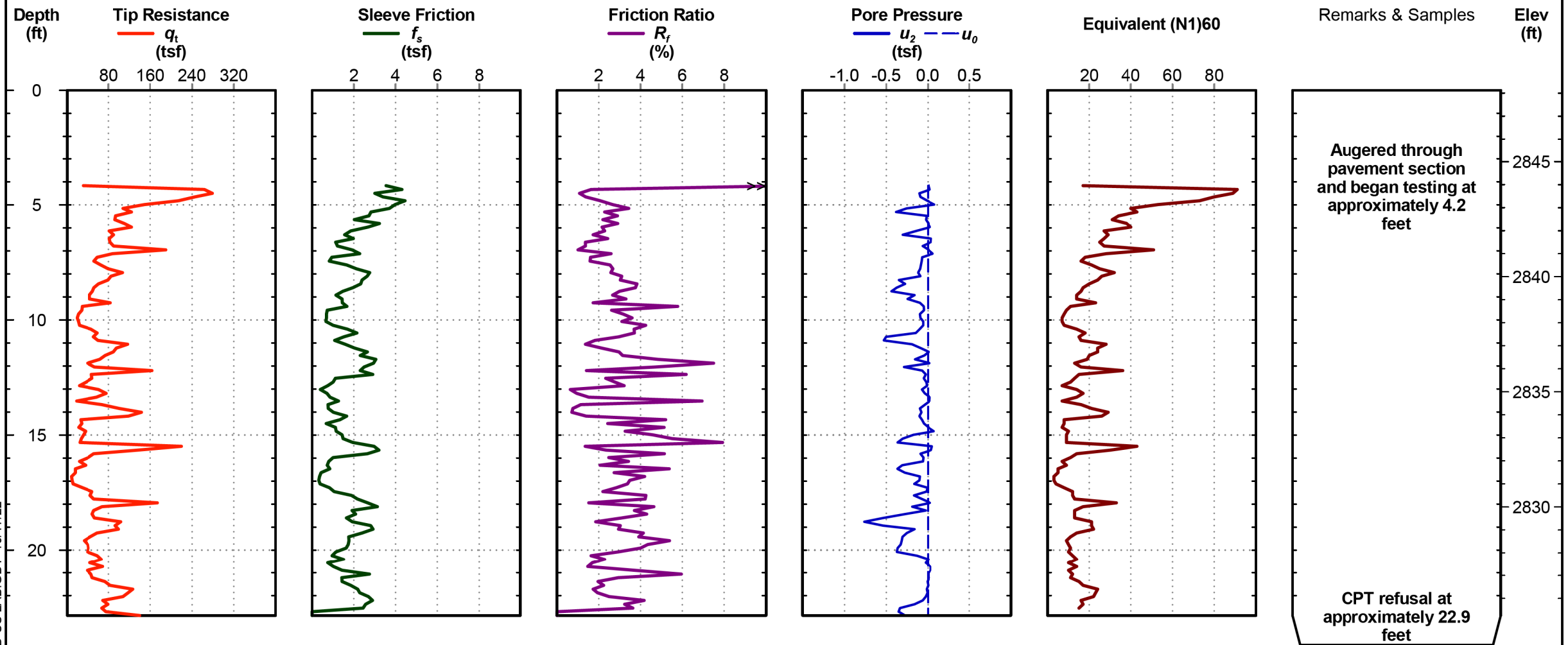
# Cone Penetration Test

## CPT-16

Date: Jul. 27, 2022  
Estimated Water Depth:  
Rig/Operator: M. Brewer

Northing: 621920.2  
Easting: 596570.0  
Elevation: 2848.1

Total Depth: 22.9 ft  
Termination Criteria: Maximum Reaction Force  
Cone Size:



CPT REPORT - DYNAMIC A-0009CC\_CPT.GPJ DF STD US LAB.GDT 10/17/22

-L-  
STA. 428+74  
16' RT

## CPT-16



A-0009CC  
Graham County  
Project Number: 240020068

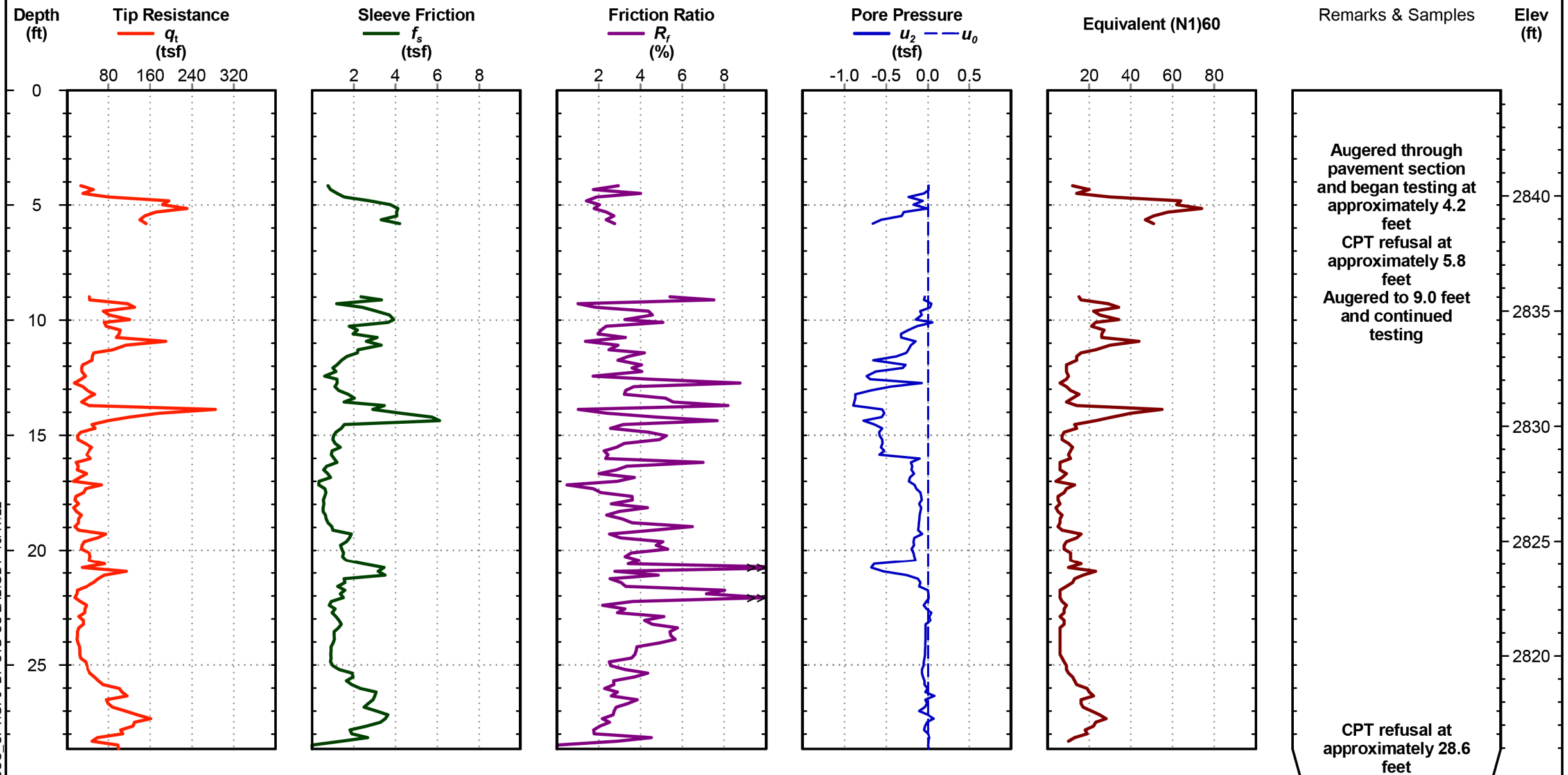
# Cone Penetration Test

## CPT-17

Date: Jul. 27, 2022  
Estimated Water Depth:  
Rig/Operator: M. Brewer

Northing: 621969.3  
Easting: 596597.6  
Elevation: 2844.6

Total Depth: 28.6 ft  
Termination Criteria: Maximum Reaction Force  
Cone Size:



CPT REPORT - DYNAMIC A-0009CC\_CPT.GPJ DF STD US LAB.GDT 10/17/22

## CPT-17





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Project Number: 240020068

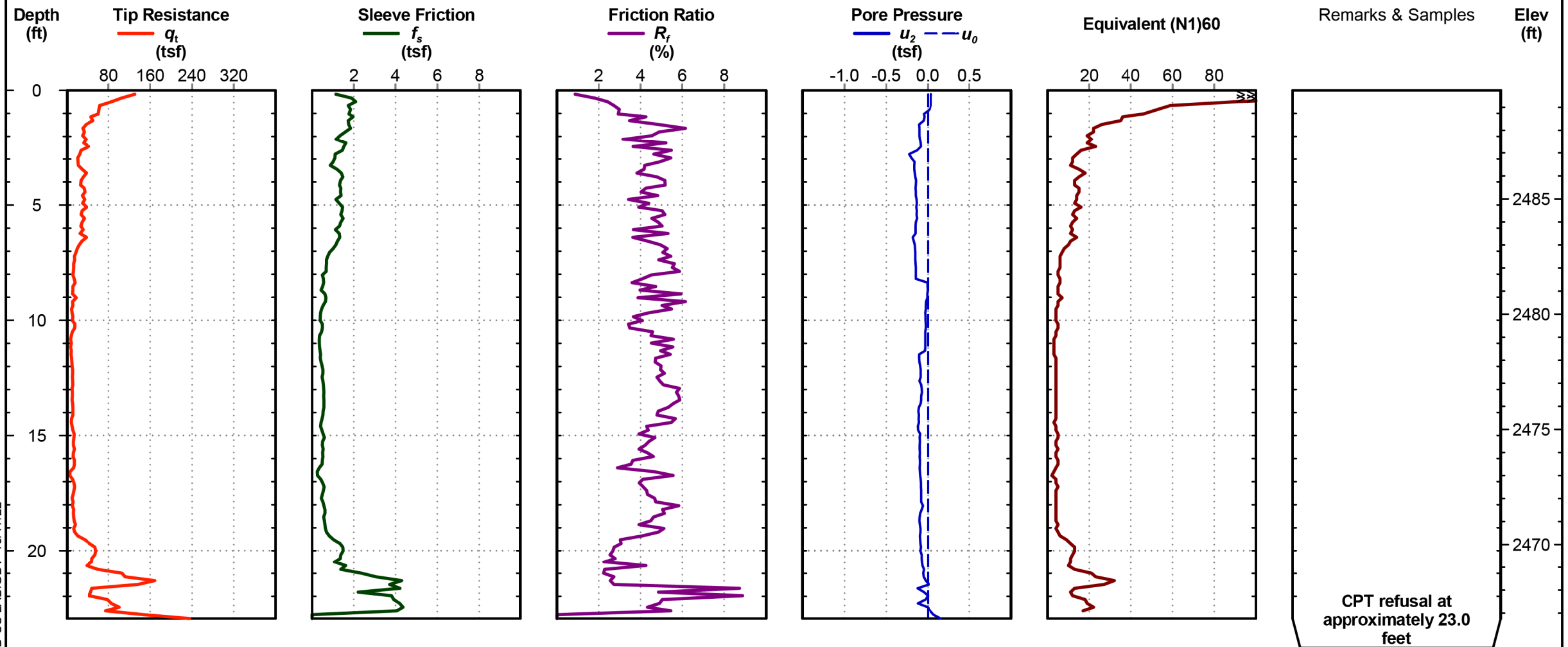
# Cone Penetration Test

## CPT-18

Date: Jul. 27, 2022  
Estimated Water Depth:  
Rig/Operator: M. Brewer

Northing: 625536.4  
Easting: 596544.5  
Elevation: 2489.7

Total Depth: 23.0 ft  
Termination Criteria: Maximum Reaction Force  
Cone Size:



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## CPT-18



A-0009CC  
Graham County  
Project Number: 240020068

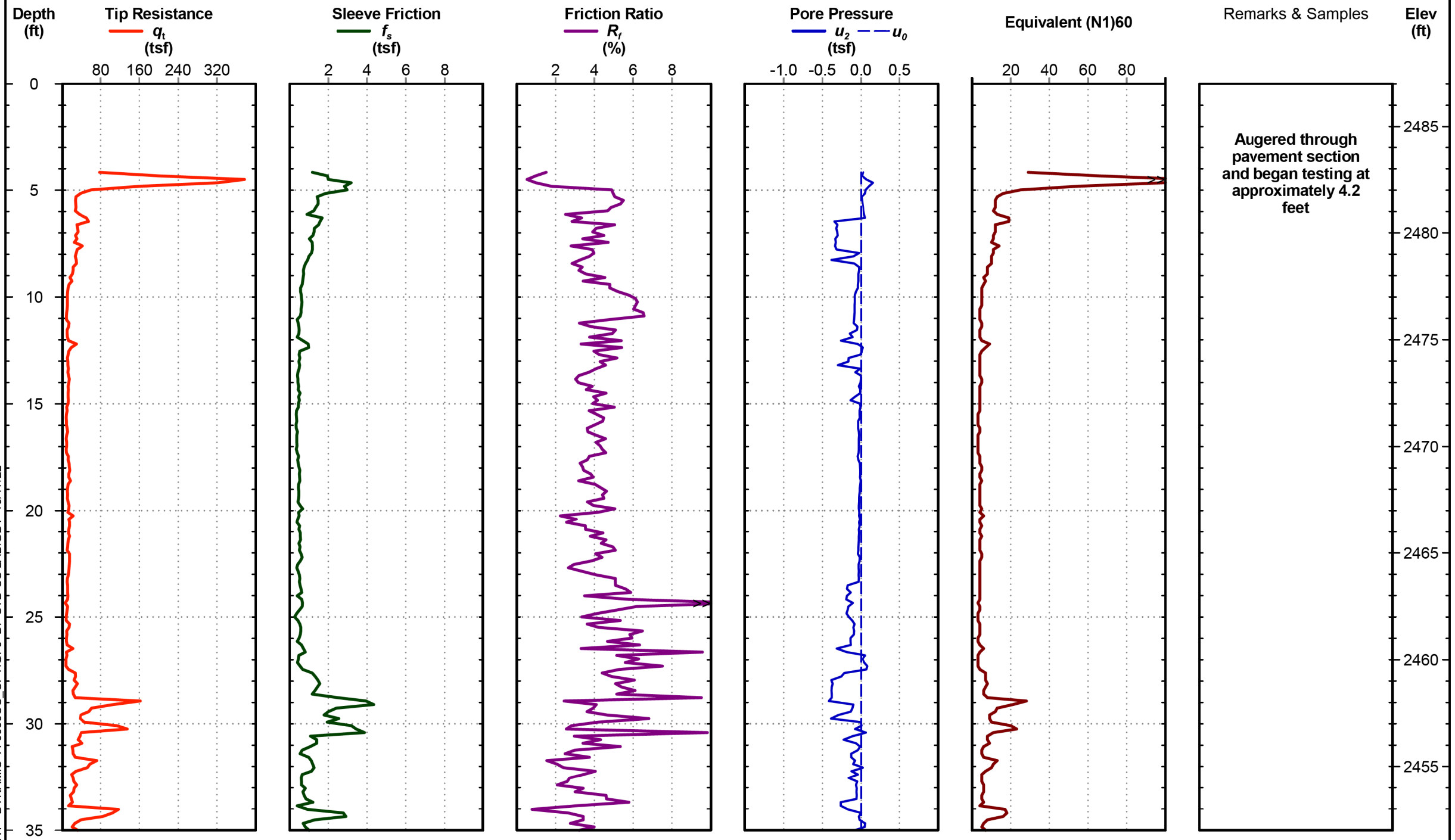
# Cone Penetration Test

## CPT-19

Date: Jul. 27, 2022  
Estimated Water Depth:  
Rig/Operator: M. Brewer

Northing: 625500.5  
Easting: 596539.8  
Elevation: 2487.0

Total Depth: 39.4 ft  
Termination Criteria: Maximum Reaction Force  
Cone Size:



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-Y2-  
STA. 27+47  
8' LT

## CPT-19



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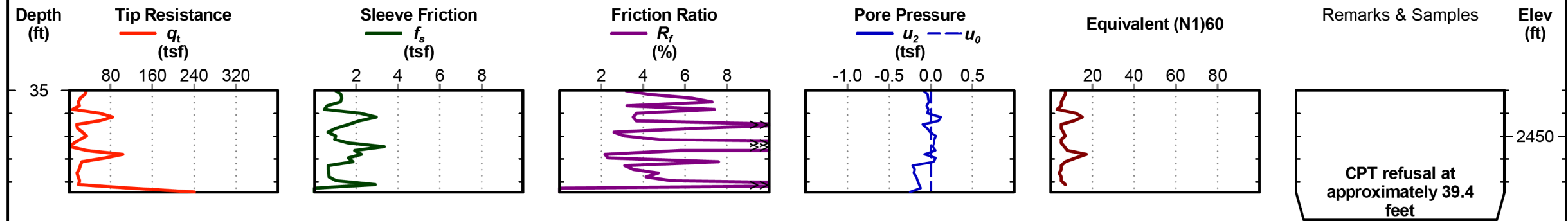
# Cone Penetration Test

## CPT-19

Date: Jul. 27, 2022  
Estimated Water Depth:  
Rig/Operator: M. Brewer

Northing: 625500.5  
Easting: 596539.8  
Elevation: 2487.0

Total Depth: 39.4 ft  
Termination Criteria: Maximum Reaction Force  
Cone Size:



CPT REPORT - DYNAMIC A-0009CC\_CPT.GPJ DF STD US LAB.GDT 10/17/22

## CPT-19



A-0009CC  
Graham County  
Project Number: 240020068

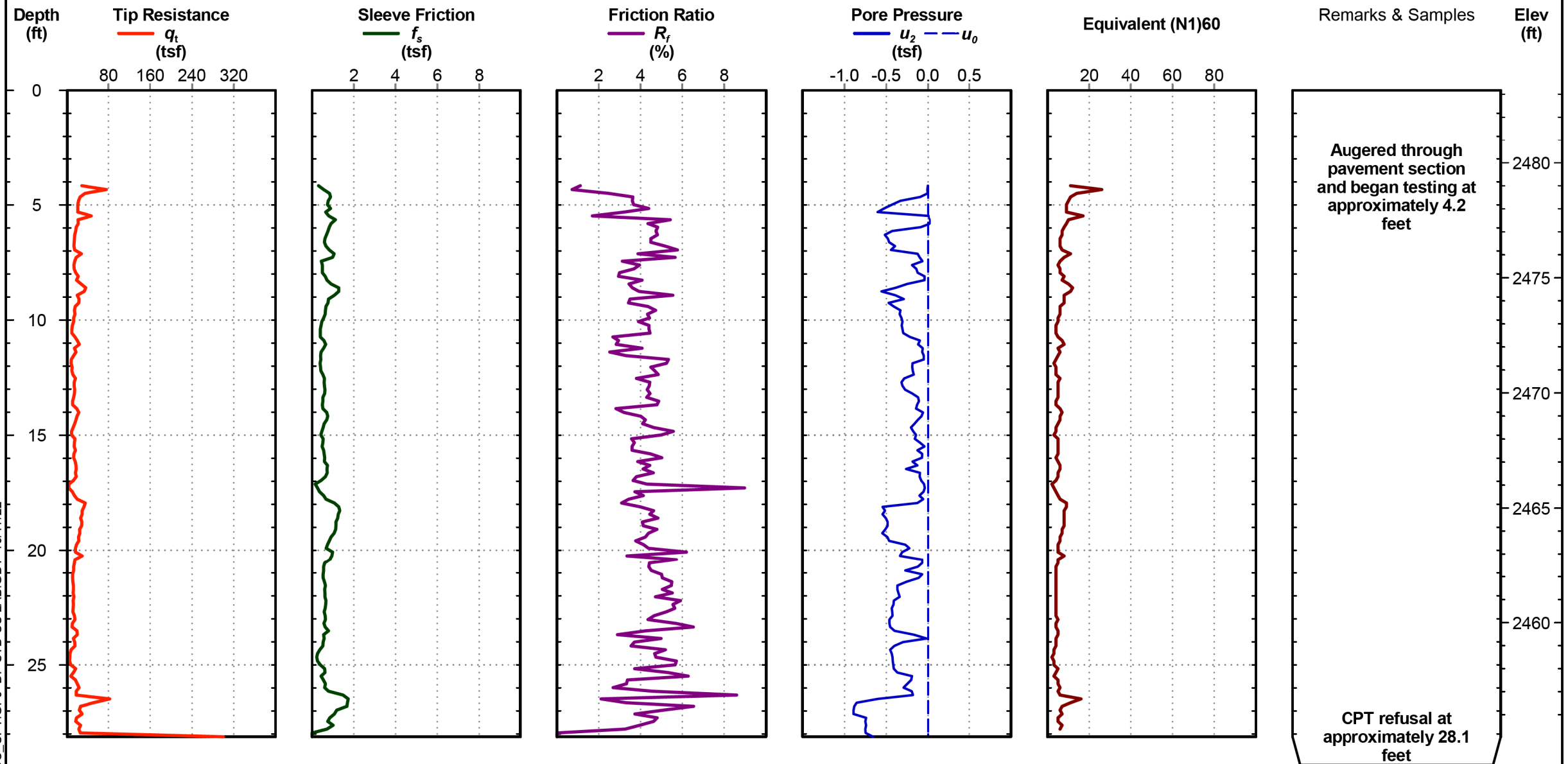
# Cone Penetration Test

## CPT-20

Date: Jul. 27, 2022  
Estimated Water Depth:  
Rig/Operator: M. Brewer

Northing: 625442.7  
Easting: 596534.7  
Elevation: 2483.2

Total Depth: 28.1 ft  
Termination Criteria: Maximum Reaction Force  
Cone Size:



CPT REPORT - DYNAMIC A-0009CC\_CPT.GPJ DF STD US LAB.GDT 10/17/22

## CPT-20



A-0009CC  
Graham County  
Project Number: 240020068

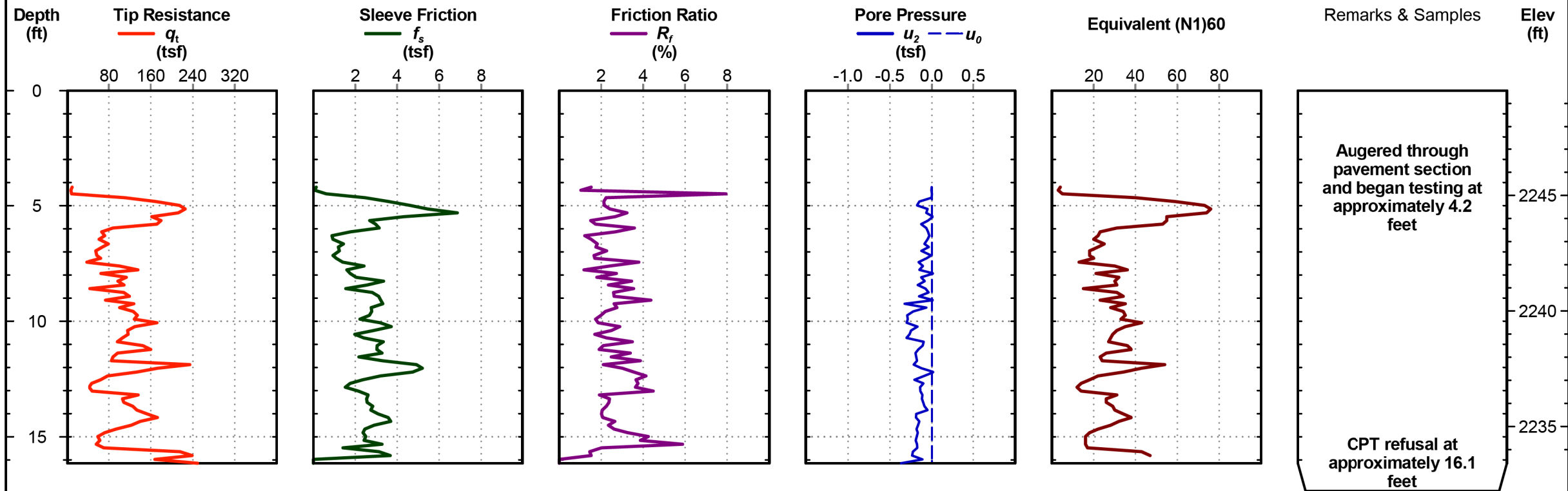
# Cone Penetration Test

## CPT-21

Date: Jul. 28, 2022  
Estimated Water Depth:  
Rig/Operator: M. Brewer

Northing: 623919.9  
Easting: 598416.3  
Elevation: 2249.6

Total Depth: 16.1 ft  
Termination Criteria: Maximum Reaction Force  
Cone Size:



CPT REPORT - DYNAMIC A-0009CC\_CPT.GPJ DF STD US LAB.GDT 10/17/22

## CPT-21



A-0009CC  
Graham County  
Project Number: 240020068

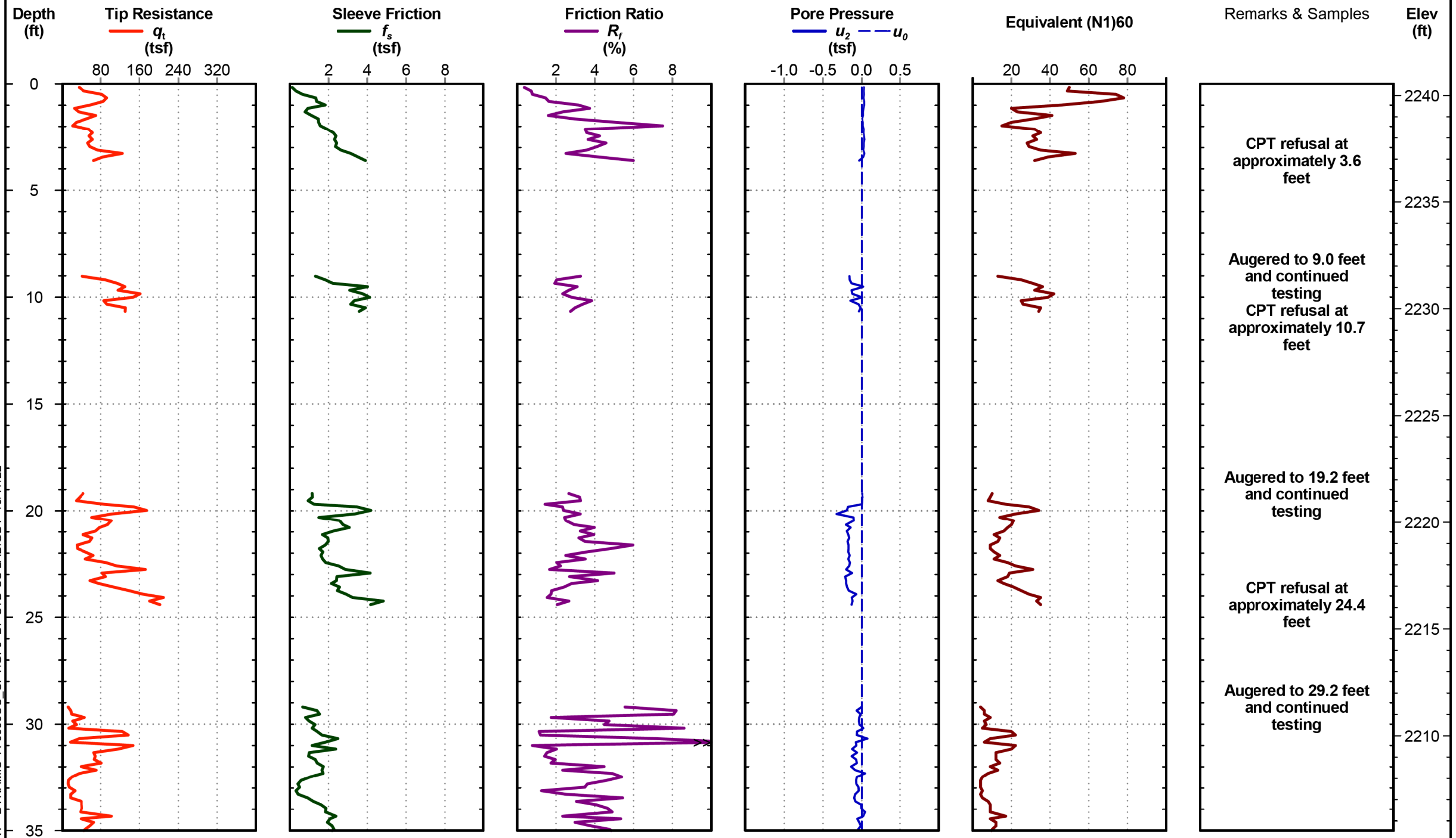
# Cone Penetration Test

## CPT-22

Date: Jul. 28, 2022  
Estimated Water Depth:  
Rig/Operator: M. Brewer

Northing: 623929.5  
Easting: 598527.0  
Elevation: 2240.5

Total Depth: 39.7 ft  
Termination Criteria: Maximum Reaction Force  
Cone Size:



CPT REPORT - DYNAMIC A-0009CC CPT.GPJ DF STD US LAB.GDT 10/17/22

-Y2-  
STA. 59+52  
CL

## CPT-22



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Graham County  
Project Number: 240020068

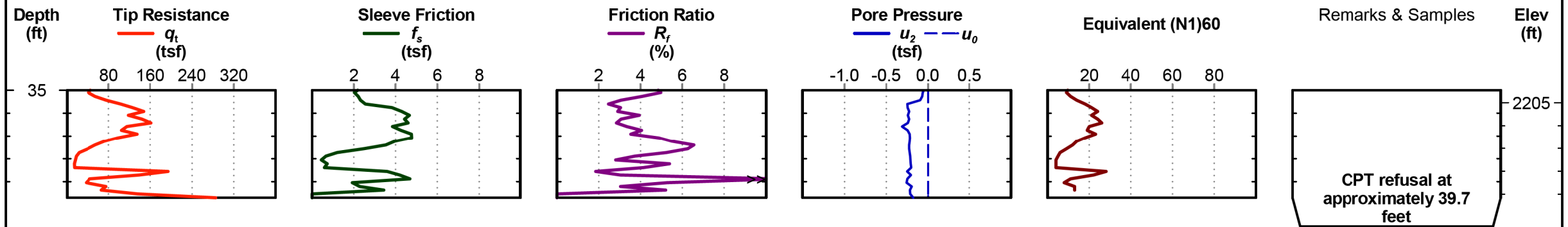
# Cone Penetration Test

## CPT-22

Date: Jul. 28, 2022  
Estimated Water Depth:  
Rig/Operator: M. Brewer

Northing: 623929.5  
Easting: 598527.0  
Elevation: 2240.5

Total Depth: 39.7 ft  
Termination Criteria: Maximum Reaction Force  
Cone Size:



CPT REPORT - DYNAMIC A-0009CC\_CPT.GPJ DF STD US LAB.GDT 10/17/22

-Y2-  
STA. 59+52  
CL

## CPT-22



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Graham County  
Project Number: 240020068

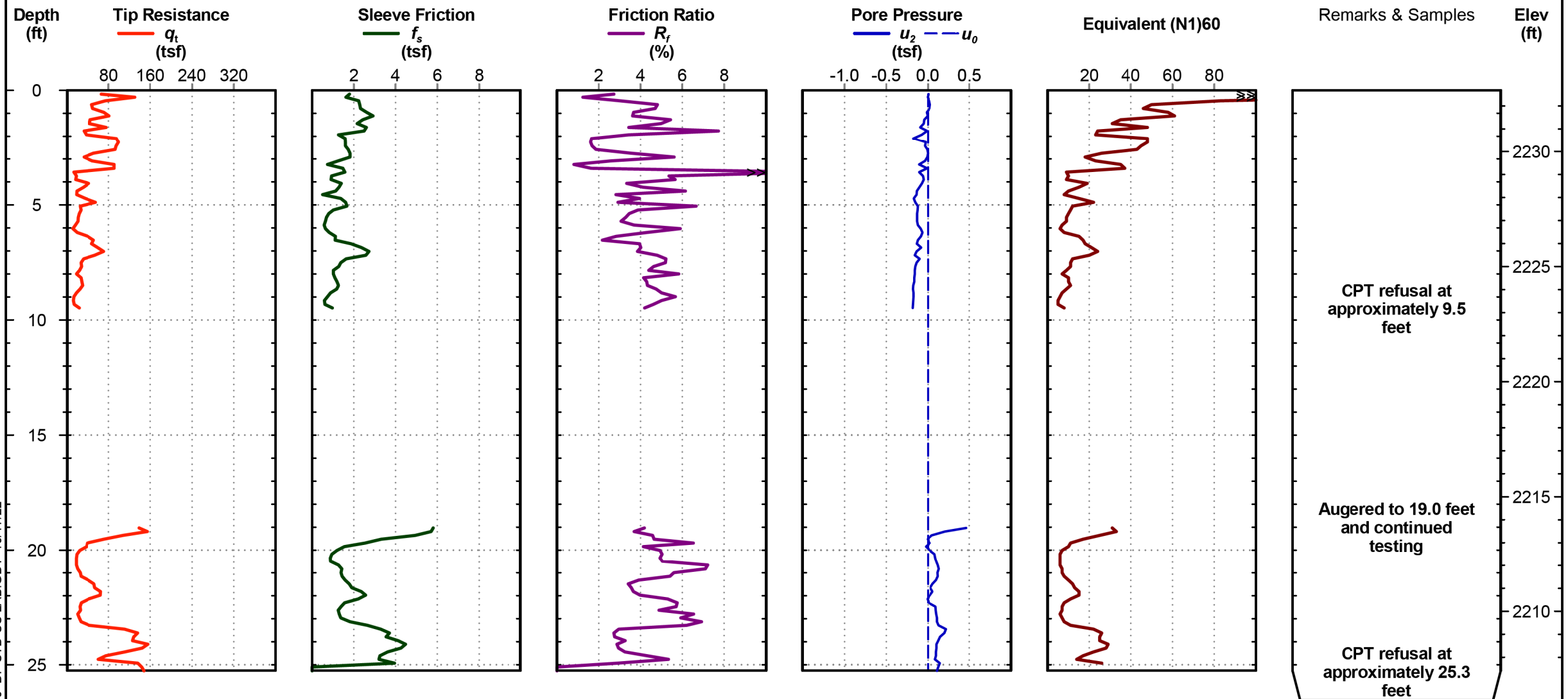
# Cone Penetration Test

## CPT-23

Date: Jul. 28, 2022  
Estimated Water Depth:  
Rig/Operator: M. Brewer

Northing: 623935.0  
Easting: 598625.2  
Elevation: 2232.7

Total Depth: 25.3 ft  
Termination Criteria: Maximum Reaction Force  
Cone Size:



CPT REPORT - DYNAMIC A-0009CC\_CPT.GPJ DF STD US LAB.GDT 10/17/22

-Y2-  
STA. 60+51  
1' LT

## CPT-23





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Graham County  
Project Number: 240020068

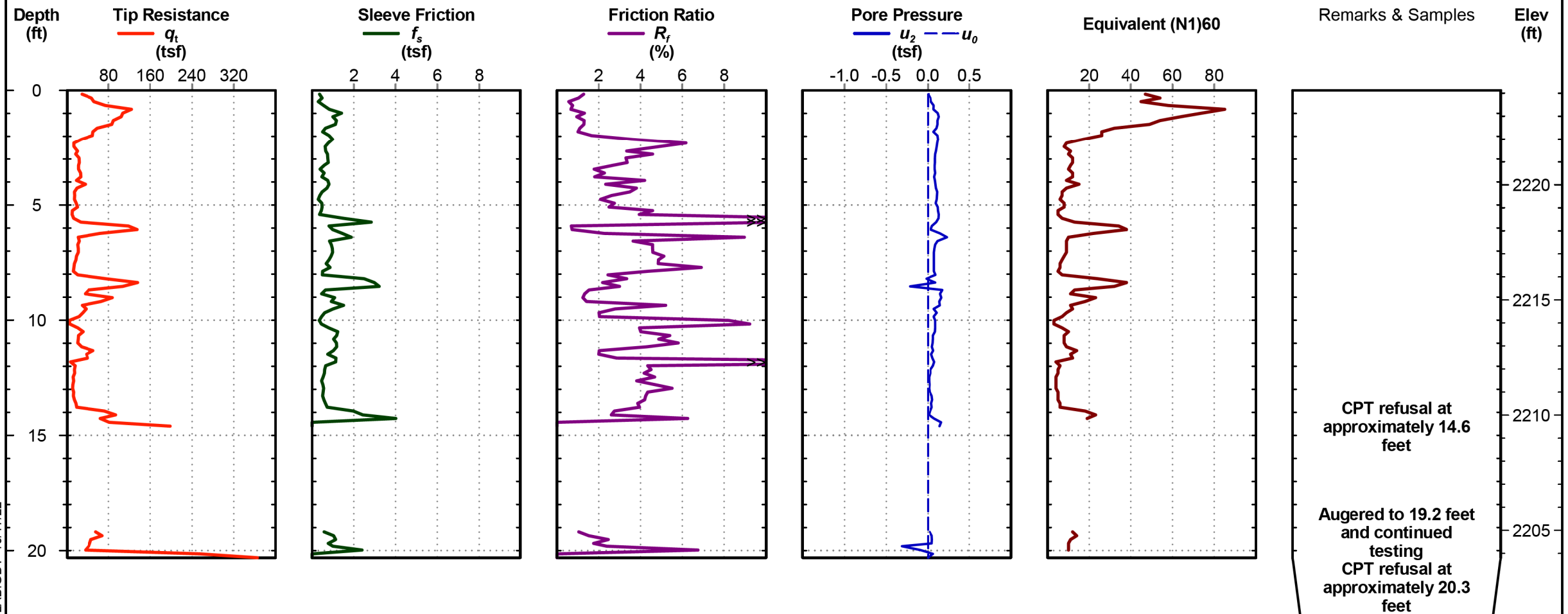
# Cone Penetration Test

## CPT-24

Date: Jul. 28, 2022  
Estimated Water Depth:  
Rig/Operator: M. Brewer

Northing: 623934.4  
Easting: 598737.0  
Elevation: 2224.1

Total Depth: 20.3 ft  
Termination Criteria: Maximum Reaction Force  
Cone Size:



CPT REPORT - DYNAMIC A-0009CC\_CPT.GPJ DF STD US LAB.GDT 10/17/22

## CPT-24



A-0009CC  
Graham County  
Project Number: 240020068

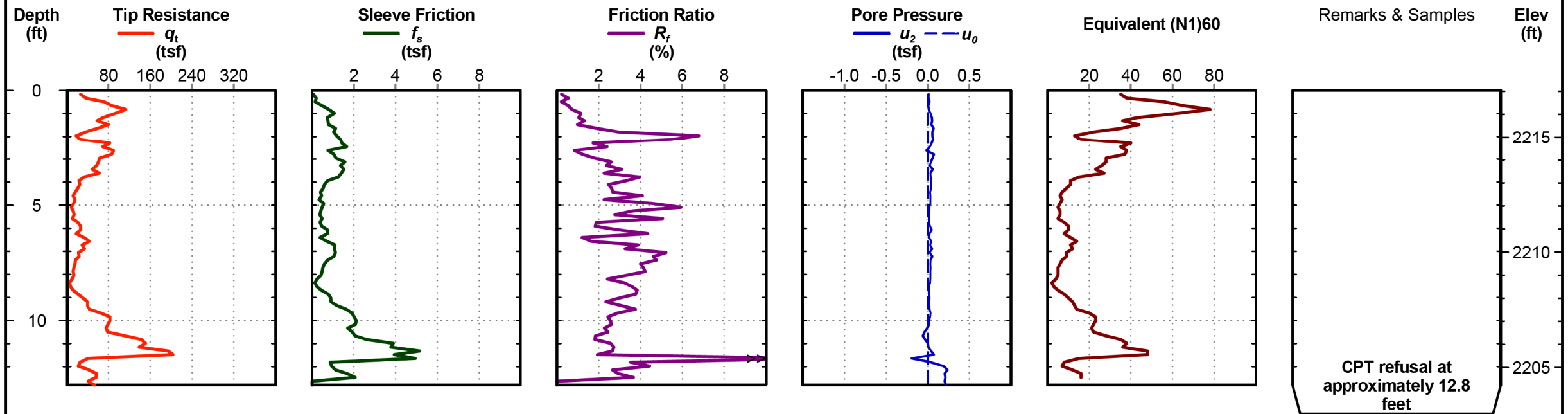
# Cone Penetration Test

## CPT-25

Date: Jul. 28, 2022  
Estimated Water Depth:  
Rig/Operator: M. Brewer

Northing: 623942.5  
Easting: 598824.7  
Elevation: 2217.0

Total Depth: 12.8 ft  
Termination Criteria: Maximum Reaction Force  
Cone Size:



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## CPT-25



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Graham County  
Project Number: 240020068

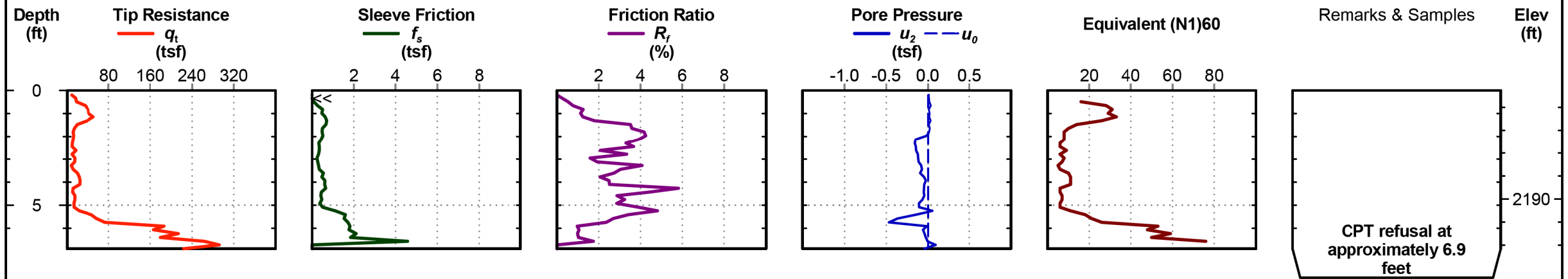
# Cone Penetration Test

## CPT-26

Date: Jul. 28, 2022  
Estimated Water Depth:  
Rig/Operator: M. Brewer

Northing: 623952.0  
Easting: 599109.0  
Elevation: 2194.7

Total Depth: 6.9 ft  
Termination Criteria: Maximum Reaction Force  
Cone Size:



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## CPT-26



A-0009CC  
Graham County  
Project Number: 240020068

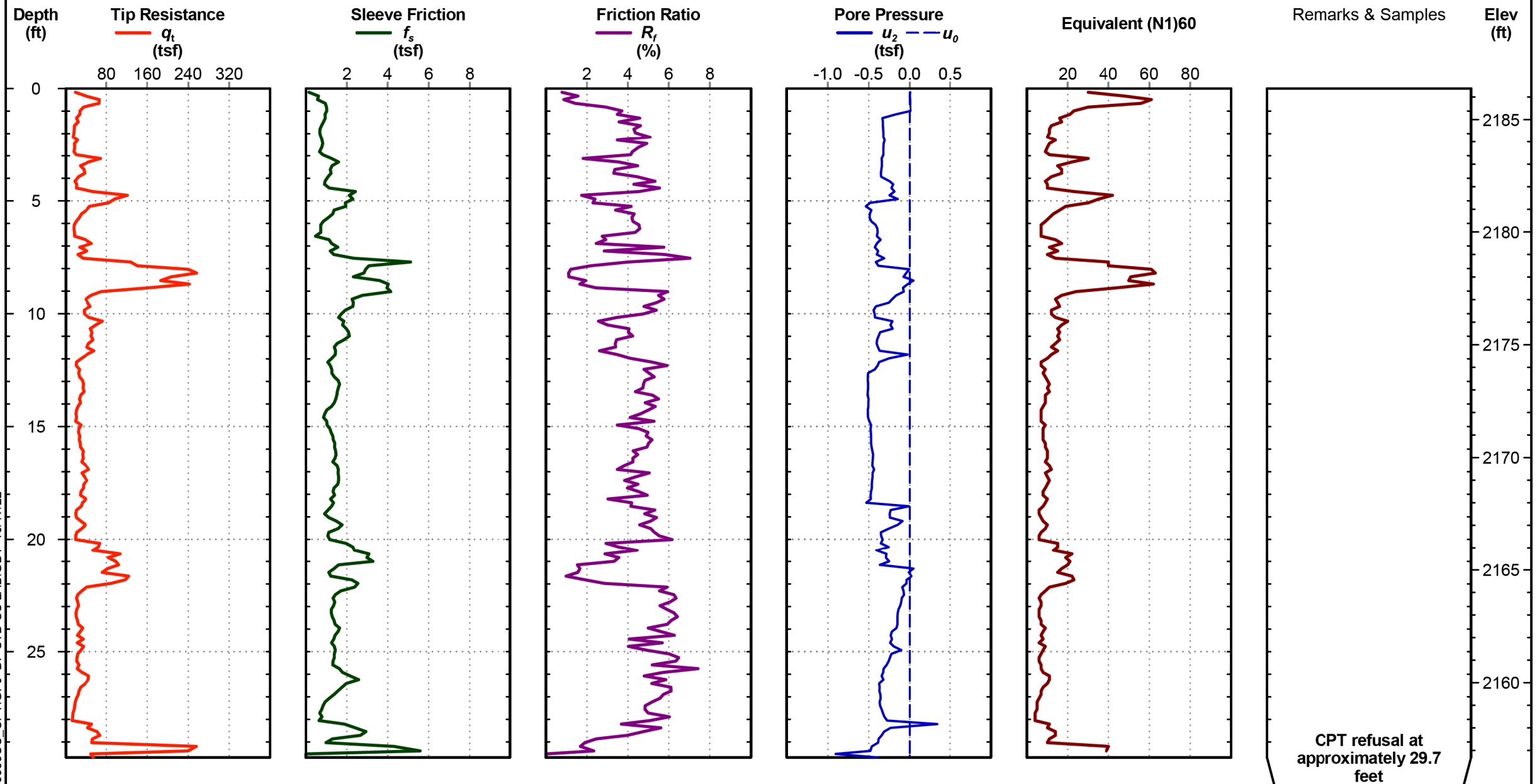
# Cone Penetration Test

## CPT-27

Date: Jul. 28, 2022  
Estimated Water Depth:  
Rig/Operator: M. Brewer

Northing: 623949.3  
Easting: 599213.0  
Elevation: 2186.4

Total Depth: 29.7 ft  
Termination Criteria: Maximum Reaction Force  
Cone Size:



CPT REPORT - DYNAMIC A-0009CC CPT.GPJ DF STD US LAB.GDT 10/17/22

-Y2-  
STA. 66+36  
23' LT

## CPT-27



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A-0009CC  
Graham County  
Project Number: 240020068

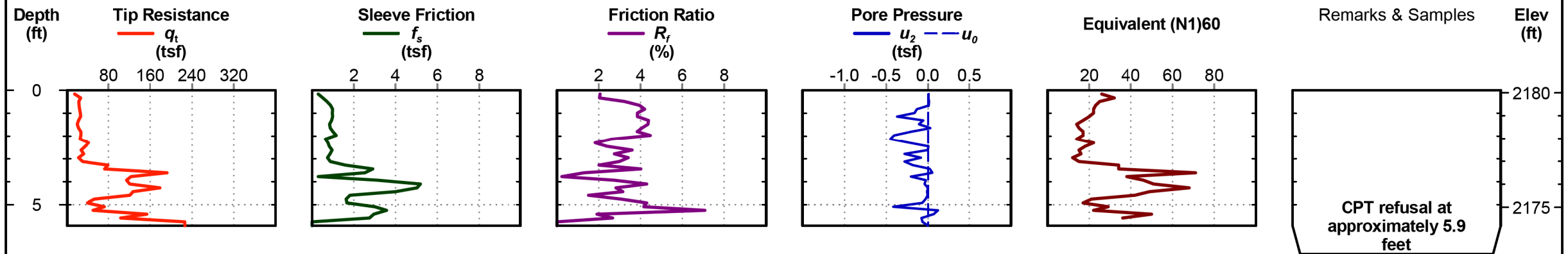
# Cone Penetration Test

## CPT-28

Date: Jul. 28, 2022  
Estimated Water Depth:  
Rig/Operator: M. Brewer

Northing: 623961.1  
Easting: 599279.9  
Elevation: 2180.1

Total Depth: 5.9 ft  
Termination Criteria: Maximum Reaction Force  
Cone Size:



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## CPT-28