

REFERENCE: B-5898/B-3186

PROJECT: 48030

SEE SHEET 3 FOR PLAN SHEET LAYOUT  
AT TIME OF INVESTIGATION

**CONTENTS**

<u>LINE</u>	<u>STATION</u>	<u>PLAN</u>
-L.LT-	6+89.01 TO 40+74.50	4-6
-L.RT-	6+86.51 TO 44.61+60	4-6
-Y.LRT-	10+00 TO 28+83.27	6
EXISTING	N/A	7-9

**APPENDICES**

<u>APPENDIX</u>	<u>TITLE</u>	<u>SHEETS</u>
A	BORING LOGS AND CORE REPORTS	10 TO 57
B	SOIL TEST RESULTS	58 TO 75
C	HDR ROCK CORE PHOTOGRAPHS	76 TO 87

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

**ROADWAY**  
**SUBSURFACE INVESTIGATION**

COUNTY HAYWOOD  
PROJECT DESCRIPTION B-3186, BRIDGES 430155 AND  
430158 OVER RICHLAND CREEK ON US23/74  
B-5898, BRIDGE 430168 OVER US 1923 ON US23/74  
**INVENTORY**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5898/B-3186	1	

**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 1901 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**

RYAN DOYLE

ALEX LOZADA

ADDISON TAIT

MICHAEL MOSELEY

SUMMIT

GTC

INVESTIGATED BY ALEX LOZADA

DRAWN BY ALEX LOZADA

CHECKED BY RYAN DOYLE

SUBMITTED BY AECOM

DATE SEPTEMBER 2023



DocuSigned by:  
Ryan Patrick Doyle, PE 9/12/2023  
CDBB60B5C3BF42A  
SIGNATURE DATE

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CONTRACT: C204684 TIP PROJECT: B-3186 / B-5898

See Sheet 1A For Index of Sheets

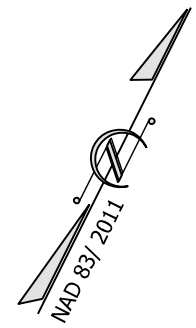
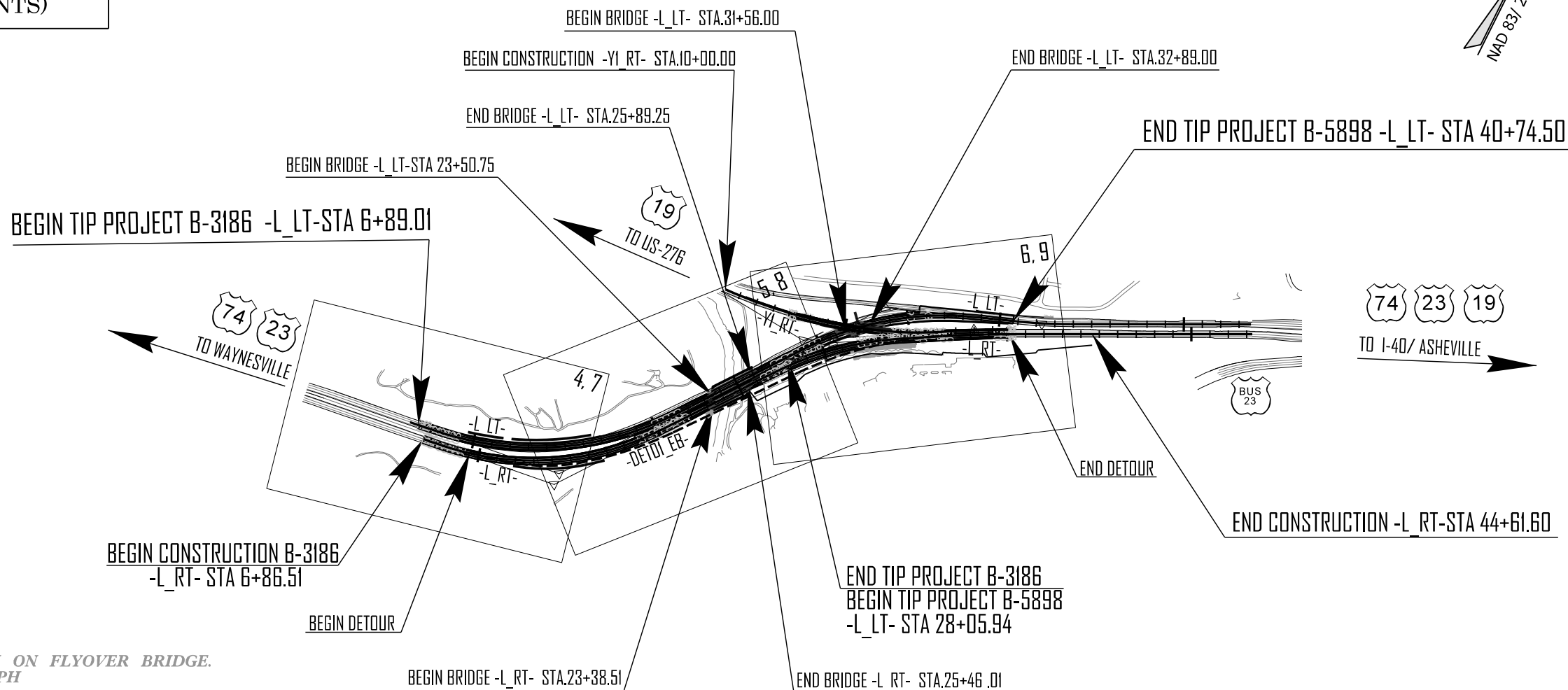
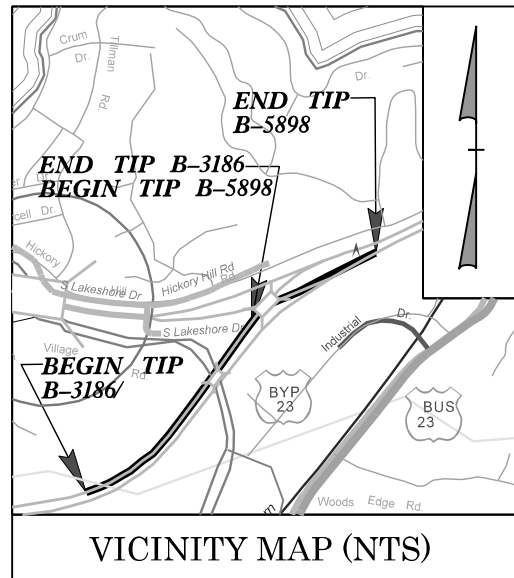
# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

## HAYWOOD COUNTY

LOCATION: *B-3186, BRIDGES 430155 AND 430158 OVER RICHLAND CREEK ON US 23/74*  
*B-5898, BRIDGE 430168 OVER US 19/23 ON US 23/74*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, AND STRUCTURES*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3186/ B-5898	3	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
38332.1.FS1 (B-3186)	BRNHP-0023(32)	P.E.	
48030.1.FS1 (B-5898)	BRSTP-0019(49)	P.E.	
38332.2.1 (B-3186)	BRNHP-0023(32)	RW/UTILITY	
48030.2.1 (B-5898)	BRSTP-0019(49)	RW/UTILITY	
38332.3.1 (B-3186)	BRNHP-0023(32)	CONST.	
48030.3.1 (B-5898)	BRSTP-0019(49)	CONST.	



\*\* HORIZONTAL SSD EXCEPTION ON FLYOVER BRIDGE.  
INSIDE SHOULDER MEETS 55 MPH

THIS IS A CONTROLLED-ACCESS PROJECT WITH  
ACCESS BEING LIMITED TO INTERCHANGES

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<p><b>GRAPHIC SCALES</b></p> <p>50 25 0 50 100 PLANS</p> <p>50 25 0 50 100 PROFILE (HORIZONTAL)</p> <p>10 5 0 10 20 PROFILE (VERTICAL)</p>	<p><b>DESIGN DATA</b></p> <p>ADT 2023 = 48,800 ADT 2043 = 60,800</p> <p>K = 8 % D = 55 % T = 5 % * V = 65 MPH **</p> <p>* TTST = 2% DUAL 3% FUNC CLASS = FREEWAY STATEWIDE TIER</p>	<p><b>PROJECT LENGTH</b></p> <p>LENGTH ROADWAY TIP PROJECT B-3186 = 0.352 MI LENGTH STRUCTURE TIP PROJECT B-3186 = 0.045 MI TOTAL LENGTH TIP PROJECT B-3186 = 0.401 MI</p> <p>LENGTH ROADWAY TIP PROJECT B-5898 = 0.215 MI LENGTH STRUCTURE TIP PROJECT B-5898 = 0.025 MI TOTAL LENGTH TIP PROJECT B-5898 = 0.240 MI (LENGTHS BASED ON L-LT ALIGNMENT)</p>	<p>Prepared in the Office of: <b>AECOM</b> NC FIRM LICENSE No: F-0342 5438 Wade Park Blvd., Suite 200 Raleigh, NC 27607 (919) 854-6200 • (919) 854-6259(FAX)</p> <p>2018 STANDARD SPECIFICATIONS</p> <p>RIGHT OF WAY DATE: N/A</p> <p>LETTING DATE: DECEMBER 19, 2023</p>	<p>HYDRAULICS ENGINEER</p> <p>_____ SIGNATURE: _____ P.E.</p> <p>ROADWAY DESIGN ENGINEER</p> <p>_____ SIGNATURE: _____ P.E.</p>	
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AECOM – North Carolina  
5438 Wade Park Blvd Suite 200  
Raleigh, NC 27607  
Tel: 919-854-6200

August 11, 2023

WBS NO.: 48030.1.FS1  
NCDOT TIP: B-3186/B-5898  
COUNTY: Haywood

DESCRIPTION: B-3186, Bridges 430155 and 430158 Over Richland Creek on US23/74  
B-5898, Bridge 430168 Over US 19/23 on US23/74

SUBJECT: Geotechnical Report – Roadway Inventory

### Project Description

The project area lies in the town of Lake Junaluska, NC between Highway 276 and NC 209. A geotechnical investigation was conducted by HDR at the site from January to April 2021. The HDR investigation was conducted to support a design which included upgrading US 74 to a six-lane, median divided facility from east of the US 276 Interchange to the US 23 Business Interchange and upgrading US 19 with full depth paved, 10-ft shoulders from east of Holston Village Road to the US 74 Interchange. However, this design did not go to construction and NCDOT contracted AECOM to redesign the project area. The AECOM design includes the replacement of Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23, resulting in a shift of US23/74 just to the south in this area. AECOM reviewed the data collected by HDR prior to developing a boring plan to determine where additional investigation would be necessary to support AECOM's design. Both AECOM and relevant HDR borings were used to develop this Roadway Inventory Report.

The AECOM geotechnical field investigation was conducted from February to May 2023. A CME 550X drill rig with oversized ATV tires and equipped with an automatic hammer was used to advance borings for the subsurface exploration. Hollow stem auger drilling procedures were used to advance borings to the required depths. Standard Penetration Tests were generally performed at 2.5-ft intervals in the top 10-ft and 5-ft intervals thereafter. Boring termination depths were based on the proposed design and the material encountered in the field (e.g. if loose/soft material was encountered, boring extended further until denser/harder material was encountered; or if rock was encountered, boring terminated on rock.) Representative soil samples were collected for visual classification in the field and selected samples were submitted to a NCDOT certified materials and testing laboratory for analysis.

The following alignments were explored:

<u>Line</u>	<u>Station(±)</u>
-L_LT-	6+89.01 to 40+74.50
-L_RT-	6+86.51 to 44.61.60
-Y1_RT-	10+00.00 to 28+83.27

### Physiography and Geology

The project is located in the Blue Ridge Physiographic Province and within the Central Blue Ridge terranes. Along the project corridor the terrain is mountainous and mostly consists of existing roadways, adjacent commercial businesses, private properties, and woods. According to the US Geological Survey<sup>1</sup>, the near surface geology consists primarily of metamorphic rock belonging to the Coweeta Group (Biotite Gneiss) (ZYbn). This group is described as migmatic; interlayered and gradational with biotite-garnet gneiss and amphibolite; locally abundant quartz and alumino-silicates. The stratigraphic position is uncertain. The geologic age is Middle/Late Proterozoic. Alluvial material is also located within the project limits as Richland Creek flows underneath US 23/US 74. These alluvial deposits are non-homogeneous and consists of varying size soil deposits with sand lenses intermixed.

### Soil Properties

Soils encountered at the project site include roadway embankment, artificial fill, alluvial, residual, weathered metamorphic rock, and crystalline metamorphic rock.

Roadway Embankment soils were mainly encountered along the existing sections of US 74 and US 19 and consisting of gray, red, and brown, very soft to very stiff silt and clay (A-4, A-5, A-6, A-7) and loose to medium dense, clayey and silty sand and gravel (A-2-6, A-2-4, A-3, A-1-b). N-values ranged from 1 to 34 blows per foot (bpf) with an average N-value of 8 bpf.

Artificial fill soils consist of brown, orange, and gray, very soft to stiff, silt and clay (A-4, A-6, A-7-6), and loose to medium dense, sand and gravel (A-3, A-1-b). N-values range from 1 to 35 bpf with an average N-value of 10 bpf. The artificial fill is underlain by residual soils.

Alluvial deposits are located within the floodplains of Richland Creek and nearby streams within the project limits. These soils are black, gray, and brown, very soft to very stiff, silt and clay (A-4, A-5, A-7), and very loose to dense, sand and gravel and silty sand (A-1-b, A-1-a, A-2-4, A-2-6, A-3). N-values range from 0 to 46 bpf with an average N-value of 5 bpf.

Residual soils were encountered throughout the project. These soils consist primarily of red, tan, and brown, soft to hard silt and clay (A-4, A-5, A-7), and loose to very dense, silty and clayey sand (A-2-4, A-2-5, A-2-6, A-2-7, A-3). N-values range from 2 to 84 bpf with an average N-value of 25 bpf.

### Rock Properties

Weathered rock was encountered during the roadway investigation at elevations ranging from approximately 2608 to 2537 feet. It originates from the underlying metamorphic rock, specifically Gneiss.

Crystalline rock was encountered during the roadway investigation at elevations ranging from approximately 2613 to 2535 feet and consists of Gneiss. Refer to the "Areas of Special Geotechnical Interest" for areas of rock encountered within 6 feet of proposed grade.

<sup>1</sup><https://mrdata.usgs.gov/geology/state/state.php?state=NC>



**Groundwater Properties**

Groundwater was encountered in multiple borings and ranges in elevation from approximately 2621 to 2564 feet. Groundwater may fluctuate with seasonal precipitation.

**Areas of Special Geotechnical Interest**

- 1) **Shallow Rock:** Crystalline rock was encountered within 6 feet of existing grade at the following locations:

<b><u>Line</u></b>	<b><u>Stations (±)</u></b>	<b><u>Offset</u></b>
-L_RT-	13+80	RT
-L_LT-	20+75 to 20+95	LT

- 2) **Highly Plastic Soils:** Highly plastic soils were generally not encountered within the project area; however, one lab sample did come back as highly plastic - S1\_EB2\_B (HDR), SS-8, 25.0'-26.5'. This sample is well below the design elevations and should not have an adverse impact to the project.

- 3) **Loose/Soft Soils:** Very soft or very loose soils were encountered during the investigation. Such soils (N-value < 4) could have the potential to cause embankment/subgrade and/or slope stability problems during construction. These soils were encountered along the following intervals:

<b><u>Line</u></b>	<b><u>Stations (±)</u></b>	<b><u>Offset</u></b>
-L_LT-	36+00	RT
-L_LT-	25+79 - 29+50	RT
-L_LT-	31+40 - 34+30	RT
-L_RT-	29+50 - 31+50	RT
-Y1_RT-	18+90	RT

- 4) **High Groundwater:** The following areas encountered water within 6-ft of existing grade:

<b><u>Line</u></b>	<b><u>Stations (±)</u></b>	<b><u>Offset</u></b>
-L_LT-	29+77	RT

Additionally, around streams and creeks, seasonal high ground water can create the potential for groundwater related construction problems.

- 5) **Ponds:** No ponds were found or identified on or within close proximity of right of way on this project.
- 6) **Water Wells:** Water wells were not found or identified within or in close proximity to the proposed right of way.

5/26/20

B-3186/B-5898

PSH 04

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
HAYWOOD COUNTY



ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER



HYDRAULICS ENGINEER

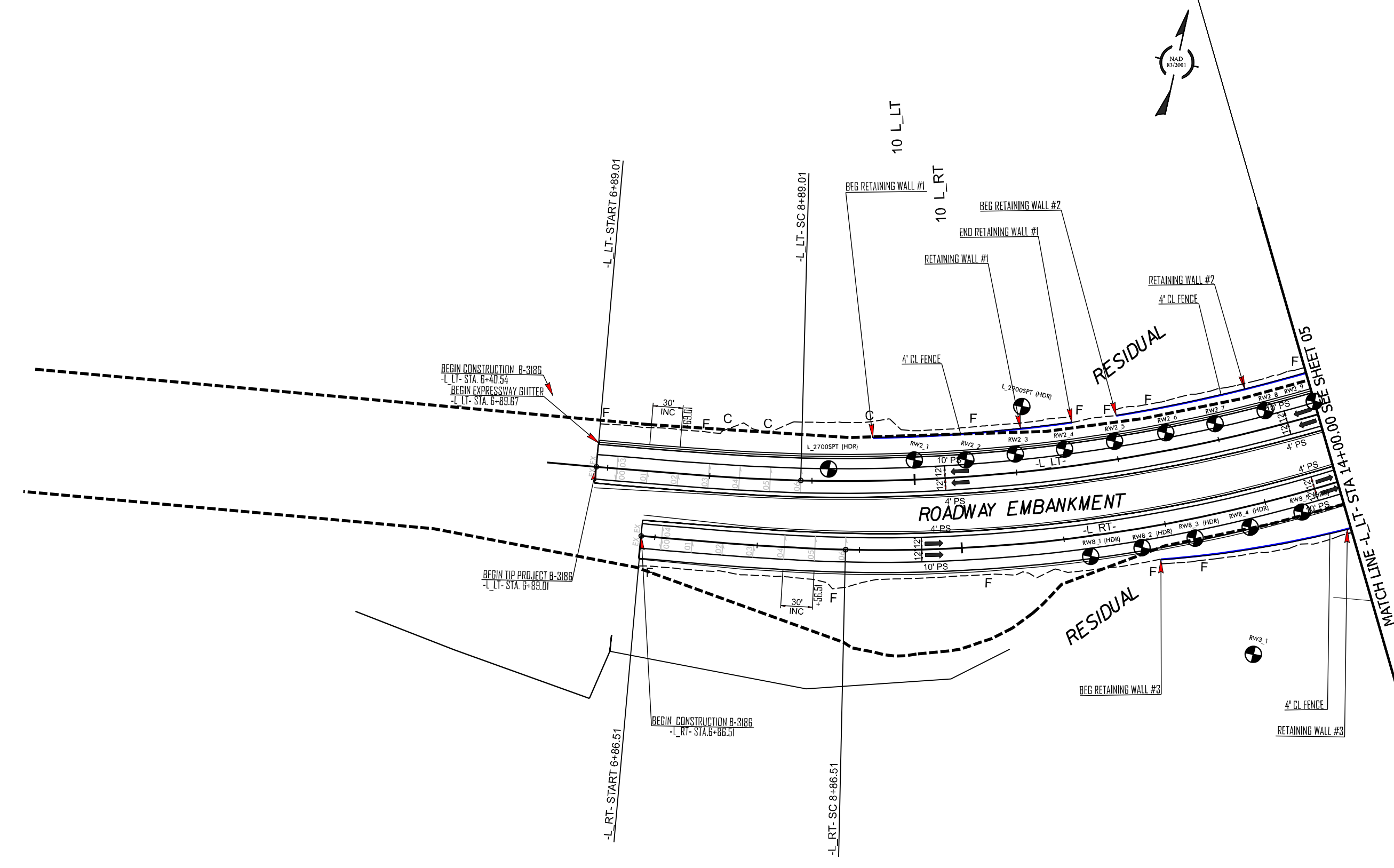


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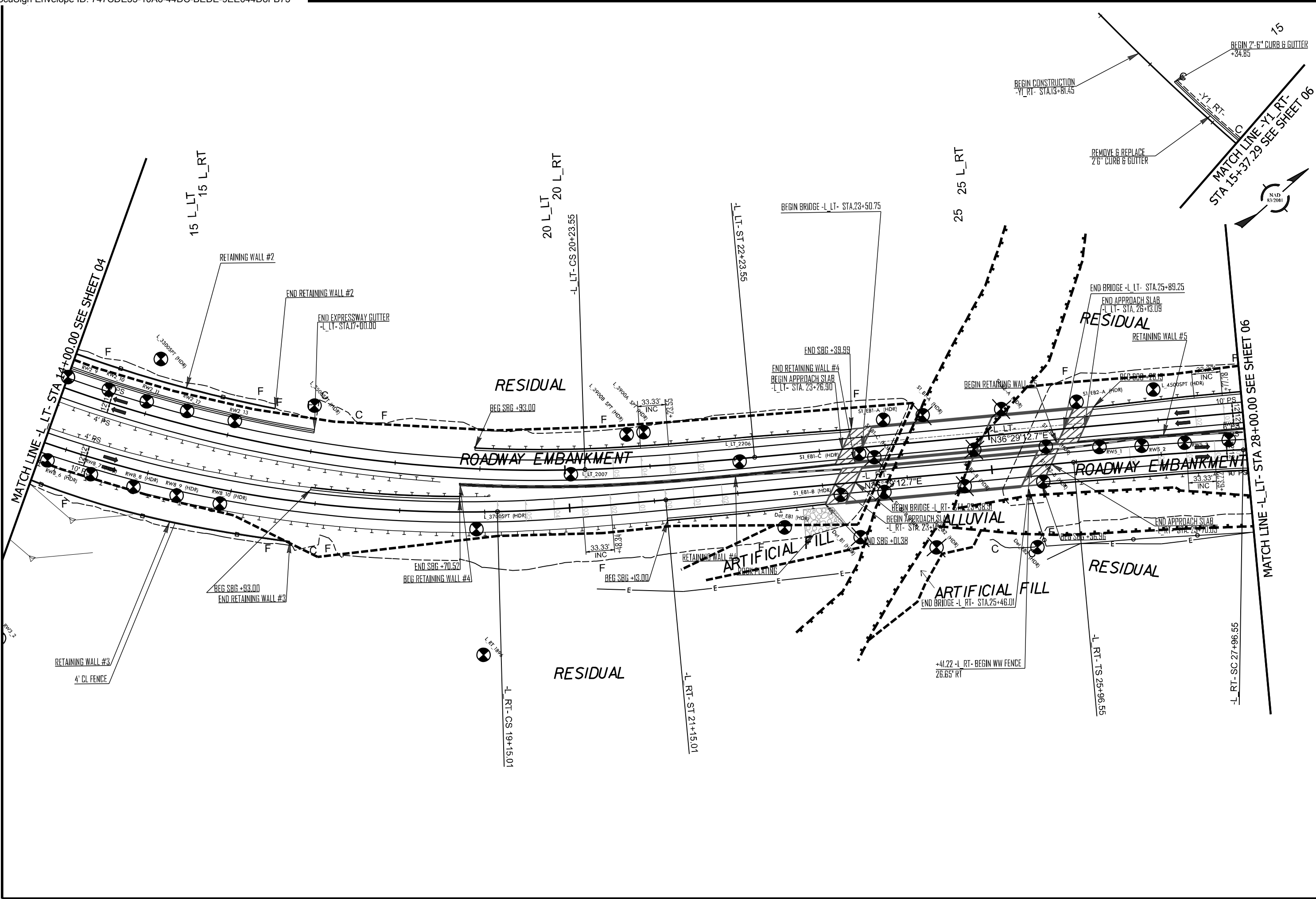
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REVISIONS



5/26/20



B-3186/B-5898  
 PSH 05  
 NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 HAYWOOD COUNTY

ROADWAY DESIGN UNIT  
 ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

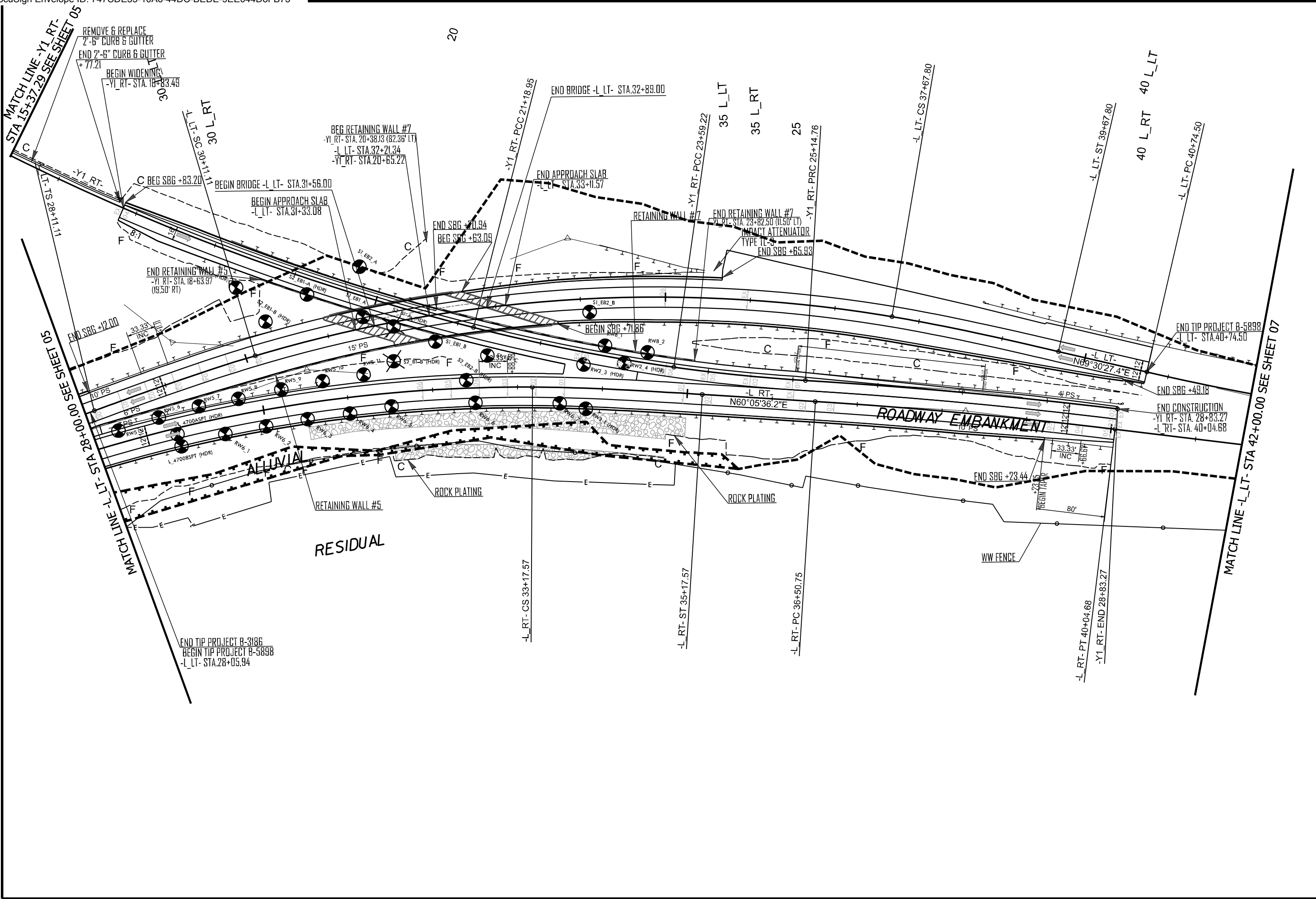
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B-3186/B-5898

PSH 06

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
HAYWOOD COUNTY

ROADWAY DESIGN UNIT  
ROADWAY DESIGN  
ENGINEER

NORTH CAROLINA  
PROFESSIONAL  
SEAL  
049634  
ENGINEER  
MOHAMMED FALLAH

HYDRAULICS  
ENGINEER

NORTH CAROLINA  
PROFESSIONAL  
SEAL  
037863  
ENGINEER  
WENDE D. BUSCH

PREPARED BY

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MATCH LINE -Y1\_RT- STA 15+37.29 SEE SHEET 05

MATCH LINE -L\_LT- STA 28+00.00 SEE SHEET 07

REVISIONS

5/26/20

B-3186/B-5898

PSH 07

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
HAYWOOD COUNTY



ROADWAY DESIGN UNIT

ROADWAY DESIGN  
ENGINEER



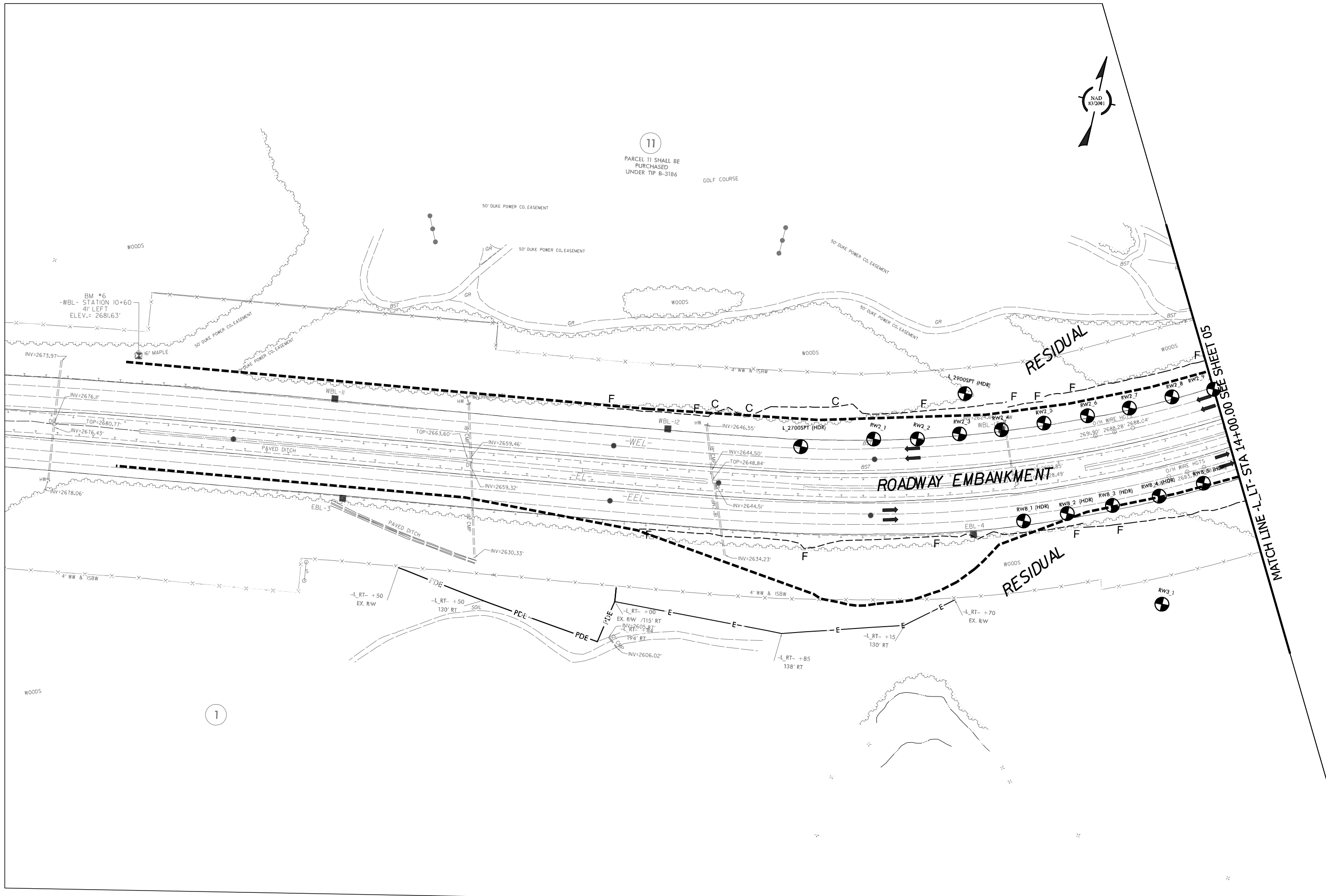
HYDRAULICS  
ENGINEER



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11  
PARCEL 11 SHALL BE  
PURCHASED  
UNDER TIP B-3186  
GOLF COURSE

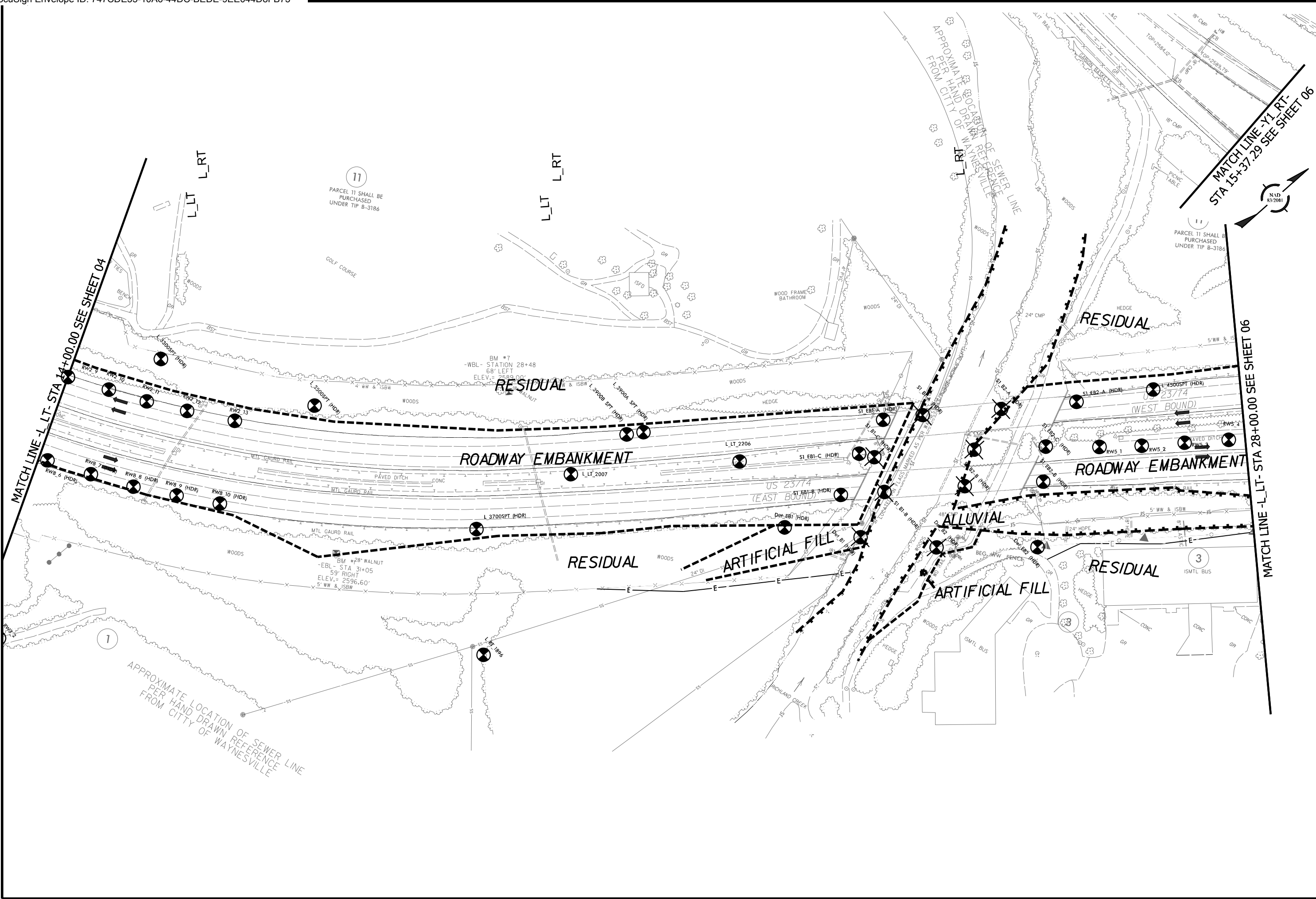


SEE SHEET 05  
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MATCH LINE - L+11+00.00

1

REVISIONS

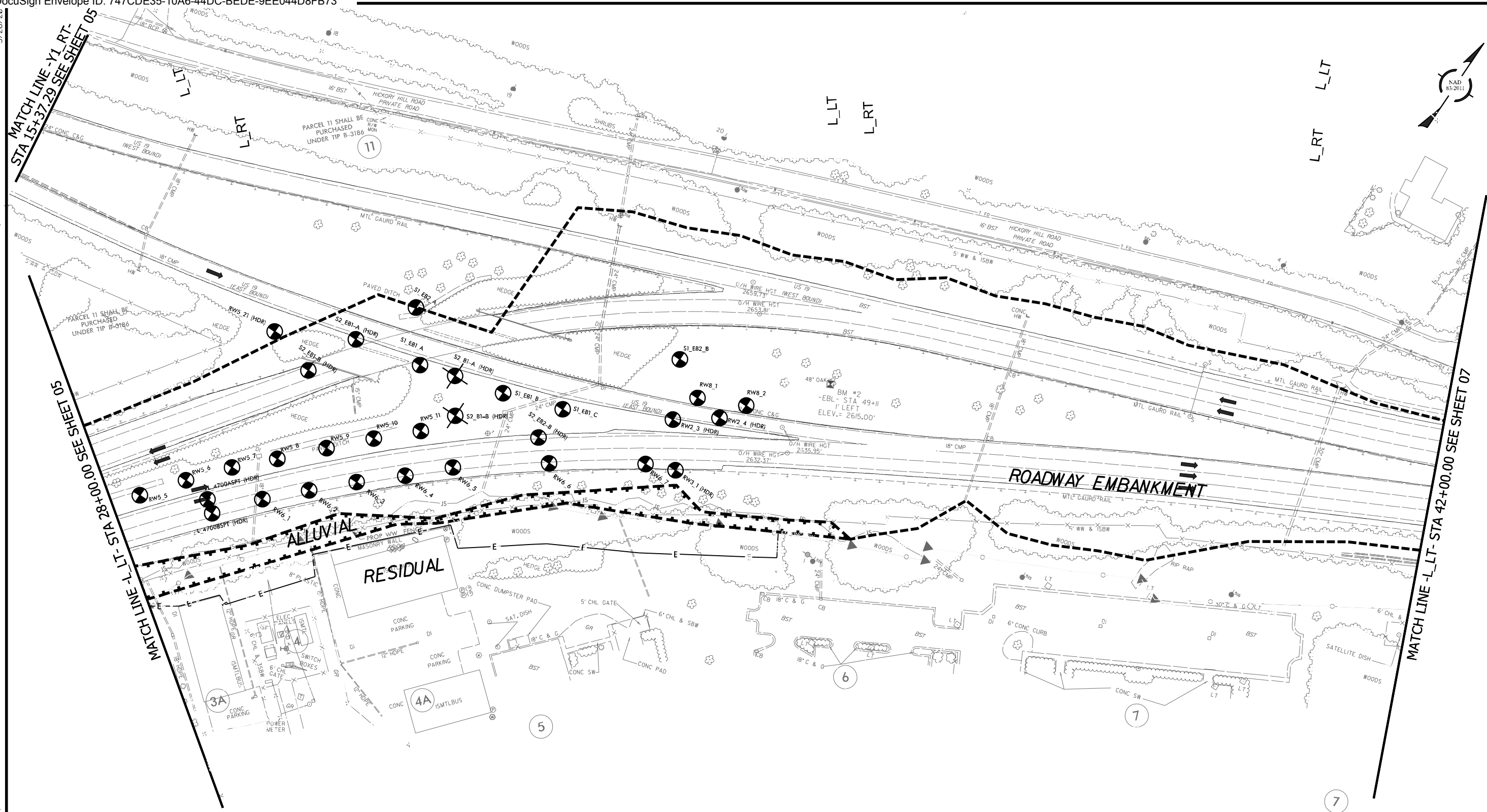
5/26/20



B-3186/B-5898  
 PSH 08  
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
 ROADWAY DESIGN UNIT  
 ROADWAY DESIGN ENGINEER  
 NORTH CAROLINA PROFESSIONAL SEAL 049634  
 ENGINEER MOHAMMED FALLAWI  
 HYDRAULICS ENGINEER  
 NORTH CAROLINA PROFESSIONAL SEAL 037863  
 ENGINEER WHEMIE D. BUSCHEN  
 PREPARED BY  
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MATCH LINE - Y1 RT- STA 15+37.29 SEE SHEET 05

MATCH LINE - LT- STA 28+00.00 SEE SHEET 05

MATCH LINE - LT- STA 42+00.00 SEE SHEET 07

**B-3186/B-5898**  
**PSH 09**  
 NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 HAYWOOD COUNTY

ROADWAY DESIGN UNIT  
 ROADWAY DESIGN  
 ENGINEER

**NORTH CAROLINA**  
**PROFESSIONAL**  
**SEAL**  
**049634**  
 ENGINEER  
 MOHAMMED FALLUJI

HYDRAULICS  
 ENGINEER

**NORTH CAROLINA**  
**PROFESSIONAL**  
**SEAL**  
**037863**  
 ENGINEER  
 WENDE O. BUSCH

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B-5898/B-3186

10

**REFERENCE: B-5898/B-3186**

**PROJECT: 48030**

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

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***SUBSURFACE INVESTIGATION***

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***APPENDIX A  
BORING LOGS AND CORE REPORTS***



# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi										
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)									
BORING NO. Det_B1 (HDR)		STATION 23+39		OFFSET 65 ft RT		ALIGNMENT L_RT										
COLLAR ELEV. 2,567.0 ft		TOTAL DEPTH 43.0 ft		NORTHING 666,223		EASTING 818,945										
DRILL RIG/HAMMER EFF./DATE GTC8255 CME-55 93% (11/24/2020)				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic										
DRILLER L. Wansrath		START DATE 03/17/21		COMP. DATE 03/17/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
2570															2,567.0	GROUND SURFACE 0.0
2565	2,564.5	2.5	1	0	1								M		2,567.0	<b>ARTIFICIAL FILL</b> Very loose to loose, brown, clayey SAND (A-2-6)
	2,562.0	5.0	2	4	3								M		2,562.0	
2560	2,559.5	7.5	2	1	5								W		2,559.5	Medium stiff, brown and gray, CLAY (A-7-6), with little gravel
	2,557.0	10.0	2	3	3								M		2,559.5	<b>RESIDUAL</b> Medium stiff to stiff, gray and white, sandy SILT (A-4)
2555			2	2	3								M			
	2,552.0	15.0	2	2	3								M			
2550			5	6	8								M			
	2,547.0	20.0	57	100	0.3										2,547.0	<b>WEATHERED ROCK</b> Brown and black, GNEISS
2545															2,545.0	<b>CRYSTALLINE ROCK</b> Light to medium gray and white with tan, m-c grained GRANITE with trace Biotite Gneiss zenoliths
2540													RS-1			
2535													RS-2			
2530															2,532.0	Light to dark gray with brown, Migmatitic Biotite GNEISS
													RS-3			
2525															2,524.0	Boring Terminated at Elevation 2,524.0 ft in Crystalline Rock (GNEISS)

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi										
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)									
BORING NO. Det_B2 (HDR)		STATION 24+27		OFFSET 85 ft RT		ALIGNMENT L_RT										
COLLAR ELEV. 2,568.0 ft		TOTAL DEPTH 49.5 ft		NORTHING 666,281		EASTING 819,014										
DRILL RIG/HAMMER EFF./DATE GTC8255 CME-55 93% (11/24/2020)				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic										
DRILLER L. Wansrath		START DATE 03/11/21		COMP. DATE 03/11/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
2570															2,568.0	GROUND SURFACE 0.0
	2,568.0	0.0	2	2	2								M		2,568.0	<b>ARTIFICIAL FILL</b> Soft, brown, clayey SILT (A-5), micaceous Medium dense to dense, gray, brown, and white, SAND and GRAVEL (A-1-b)
2565	2,565.5	2.5	5	10	9										2,566.0	
	2,563.0	5.0	6	8	12										2,563.0	
2560	2,560.5	7.5	33	15	20										2,560.5	
	2,558.0	10.0	4	6	6										2,558.0	
2555																
	2,553.0	15.0	53	58	100/0.5										2,553.0	<b>WEATHERED ROCK</b> Gray, GNEISS
2550															2,549.0	<b>CRYSTALLINE ROCK</b> Light to dark gray, white, and brown, Migmatitic Biotite GNEISS interlayered with weathered rock seams and high concentrations of felsic dikes, with trace fault breccia
2545																
2540																
2535																
2530																
													RS-4			
2525																
2520															2,518.5	Boring Terminated at Elevation 2,518.5 ft in Crystalline Rock (GNEISS)

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## CORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi					
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)				
BORING NO. Det_B1 (HDR)		STATION 23+39		OFFSET 65 ft RT		ALIGNMENT L_RT					
COLLAR ELEV. 2,567.0 ft		TOTAL DEPTH 43.0 ft		NORTHING 666,223		EASTING 818,945					
DRILL RIG/HAMMER EFF./DATE GTC8255 CME-55 93% (11/24/2020)				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic					
DRILLER L. Wansrath		START DATE 03/17/21		COMP. DATE 03/17/21		SURFACE WATER DEPTH N/A					
CORE SIZE NQ2		TOTAL RUN 21.0 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %			
2545	2,545.0	22.0	3.0	1:17	(3.0)	(1.4)	(13.0)	(11.2)		2,545.0	22.0
	2,542.0	25.0		1:13 1:08	100%	47%	100%	86%		Light to medium gray and white with tan, m-c grained GRANITE with trace Biotite Gneiss xenoliths, slight to very slight weathering, moderately hard to hard, very close to close fracture spacing	
2540			5.0	1:38 1:59 2:08 2:04 2:07	(5.0)	(4.8)				Slight to fresh, hard, moderately close to wide fracture spacing	
	2,537.0	30.0								RS-1 27.0' - 27.7'	
										GSI= 85 - 95	
										Qu= 22,108 psi	
2535			5.0		(5.0)	(5.0)				RS-2 30.8' - 31.3'	
	2,532.0	35.0			100%	100%				GSI= 85 - 95	
										Qu= 20,364 psi	
2530			5.0	2:25 2:01 2:03 1:56 1:56	(5.0)	(5.0)	(7.0)	(7.0)		Light to dark gray with brown, Migmatitic Biotite GNEISS, slight to fresh weathering, hard, moderately close to wide fracture spacing	
	2,527.0	40.0			100%	100%	100%	100%			
2525			3.0	1:36 1:49 2:36	(3.0)	(3.0)			RS-3 40.1 - 40.6'		
	2,524.0	43.0			100%	100%			GSI= 85 - 95		
									Qu= 16,519 psi		
Boring Terminated at Elevation 2,524.0 ft in Crystalline Rock (GNEISS)											

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi					
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)				
BORING NO. Det_B2 (HDR)		STATION 24+27		OFFSET 85 ft RT		ALIGNMENT L_RT					
COLLAR ELEV. 2,568.0 ft		TOTAL DEPTH 49.5 ft		NORTHING 666,281		EASTING 819,014					
DRILL RIG/HAMMER EFF./DATE GTC8255 CME-55 93% (11/24/2020)				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic					
DRILLER L. Wansrath		START DATE 03/11/21		COMP. DATE 03/11/21		SURFACE WATER DEPTH N/A					
CORE SIZE NQ2		TOTAL RUN 30.5 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %			
2549	2,549.0	19.0	5.5	-0:5 1:38 1:18 1:01 0:58 1:00	(1.3)	(0.6)	(17.9)	(11.5)		2,549.0	19.0
					24%	11%	59%	38%		Light to dark gray, white, and brown, Migmatitic Biotite GNEISS interlayered with weathered rock seams and high concentrations of felsic dikes, with trace fault breccia moderately severe to moderate weathering, moderately hard to hard, very close to close fracture spacing	
2545			5.0	0:38 0:12 0:20 0:12 0:31	(2.9)	(0.5)				4.2' core loss	
	2,543.5	24.5			58%	10%					
2540			5.0							2.1' core loss	
	2,538.5	29.5									
2535			5.0	0:57 0:48 0:49 0:53 1:00	(1.4)	(0.4)				3.6' core loss	
	2,533.5	34.5			28%	8%					
2530			5.0	1:11 1:15 1:10 1:23 1:27	(3.6)	(2.8)				Moderate to slight weathering, hard, very close to moderately close fracture spacing, with few healed fractures	
	2,528.5	39.5			72%	56%				1.4' core loss	
2525			5.0	1:29 1:25 1:32 1:49 1:45	(4.4)	(2.9)			<1cm normal-sense displacement on healed subvertical fracture		
	2,523.5	44.5			88%	58%			0.6' core loss		
2520			5.0	1:49 1:47 1:48 1:19 1:26	(4.3)	(4.3)			RS-4 40.2' - 41.0"		
	2,518.5	49.5			86%	86%			GSI= 65 - 75		
									Qu= 8,866 psi		
									0.7' core loss		
									RS-5 48.5' - 49.0'		
									GSI= 65 - 75		
									Qu= 8,369		
Boring Terminated at Elevation 2,518.5 ft in Crystalline Rock (GNEISS)											

NCDOT CORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

<b>WBS</b> 48030.1.FS1		<b>TIP</b> B-5898/B-3186		<b>COUNTY</b> HAYWOOD		<b>GEOLOGIST</b> R. Dugger	
<b>SITE DESCRIPTION</b> US 23/ US 74 (Great Smoky Mountain Highway)							<b>GROUND WTR (ft)</b>
<b>BORING NO.</b> Det_EB1 (HDR)		<b>STATION</b> 22+51		<b>OFFSET</b> 45 ft RT		<b>ALIGNMENT</b> L_RT	
<b>COLLAR ELEV.</b> 2,570.8 ft		<b>TOTAL DEPTH</b> 24.0 ft		<b>NORTHING</b> 666,164		<b>EASTING</b> 818,877	
<b>DRILL RIG/HAMMER EFF./DATE</b> GTC8255 CME-55 93% (11/24/2020)				<b>DRILL METHOD</b> H.S. Augers		<b>HAMMER TYPE</b> Automatic	
<b>DRILLER</b> L. Wansrath		<b>START DATE</b> 03/22/21		<b>COMP. DATE</b> 03/22/21		<b>SURFACE WATER DEPTH</b> N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2575																
2570	2,570.8	0.0	1	1	1									2,570.8	GROUND SURFACE	0.0
	2,568.3	2.5	10	11	7									2,568.8	<b>ARTIFICIAL FILL</b> Very soft, brown and orange, silty CLAY (A-7-6), micaceous	2.0
	2,565.8	5.0	10	3	2									2,563.8	Loose to medium dense, brown and gray, SAND and GRAVEL (A-1-b)	7.0
	2,563.3	7.5	3	3	4									2,561.3	Medium stiff, brown, and tan, silty CLAY (A-7-6)	9.5
	2,560.8	10.0	2	3	8									2,550.3	<b>RESIDUAL</b> Stiff, brown and orange, SILT (A-4), with trace clay, contains little rock fragments	20.5
	2,555.8	15.0	6	8	7									2,546.8	<b>WEATHERED ROCK</b> Brown, GNEISS	24.0
	2,550.8	20.0	22	15	85/0.3											
	2,546.8	24.0	60/0.0													

<b>WBS</b> 48030.1.FS1		<b>TIP</b> B-5898/B-3186		<b>COUNTY</b> HAYWOOD		<b>GEOLOGIST</b> N. Yacobi	
<b>SITE DESCRIPTION</b> US 23/ US 74 (Great Smoky Mountain Highway)							<b>GROUND WTR (ft)</b>
<b>BORING NO.</b> Det_EB2 (HDR)		<b>STATION</b> 25+45		<b>OFFSET</b> 96 ft RT		<b>ALIGNMENT</b> L_RT	
<b>COLLAR ELEV.</b> 2,584.5 ft		<b>TOTAL DEPTH</b> 43.3 ft		<b>NORTHING</b> 666,370		<b>EASTING</b> 819,092	
<b>DRILL RIG/HAMMER EFF./DATE</b> GTC8255 CME-55 93% (11/24/2020)				<b>DRILL METHOD</b> H.S. Augers		<b>HAMMER TYPE</b> Automatic	
<b>DRILLER</b> L. Wansrath		<b>START DATE</b> 03/11/21		<b>COMP. DATE</b> 03/11/21		<b>SURFACE WATER DEPTH</b> N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2585																
	2,584.5	0.0	3	2	2									2,584.5	GROUND SURFACE	0.0
	2,582.0	2.5	1	1	2									2,582.5	<b>ARTIFICIAL FILL</b> Soft, red and brown, sandy CLAY (A-6), micaceous	2.0
	2,579.5	5.0	2	3	4									2,577.5	Very loose to loose, red, brown, and gray, clayey SAND (A-2-6), micaceous	7.0
	2,577.0	7.5	4	3	3									2,571.5	Loose, red, brown, and gray, silty SAND (A-2-4), micaceous	13.0
	2,574.5	10.0	2	2	2									2,566.5	Soft, gray, clayey SILT (A-5), micaceous	18.0
	2,569.5	15.0	1	1	2									2,561.5	Soft, gray, lean CLAY (A-7-6)	23.0
	2,564.5	20.0	1	1	3									2,559.0	Very dense, gray, white and tan, SAND and GRAVEL (A-1-b)	25.5
	2,559.5	25.0	14	86	24/0.5									2,556.5	<b>WEATHERED ROCK</b> Gray, white, and tan, GNEISS	28.0
	2,554.5	30.0	15	9	11										<b>RESIDUAL</b> Very stiff to hard, white, gray, tan and brown, SILT (A-4), micaceous, saprolitic	
	2,549.5	35.0	8	15	16											
	2,544.5	40.0	6	7	25											
	2,541.3	43.2	60/0.1											2,541.3	<b>CRYSTALLINE ROCK</b> Gray, white, and brown, GNEISS	43.2
														2,541.2	Boring Terminated with Standard Penetration Test Refusal at Elevation 2,541.2 ft in Crystalline Rock (GNEISS)	43.3

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST R. Dugger										
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)									
BORING NO. L_2700SPT (HDR)		STATION 9+16		OFFSET 12 ft LT		ALIGNMENT L_LT										
COLLAR ELEV. 2,644.1 ft		TOTAL DEPTH 11.5 ft		NORTHING 665,486		EASTING 817,735										
DRILL RIG/HAMMER EFF./DATE GTC9083 CME-550X 80% (11/24/2020)		DRILL METHOD H.S. Augers		HAMMER TYPE Automatic												
DRILLER L. Wanstrath		START DATE 03/01/21		COMP. DATE 03/01/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2645														2,644.1	GROUND SURFACE	0.0
	2,643.5	0.6	10	7	5											
	2,641.6	2.5	4	6	6									2,641.6	ROADWAY EMBANKMENT Stiff, brown and tan, SILT (A-4) with trace sand and gravel	2.5
2640	2,639.1	5.0												2,639.6	Stiff, brown, CLAY (A-6)(10), contains little roots and wood fragments, micaceous	4.5
	2,636.6	7.5	5	5	7										RESIDUAL Medium stiff to stiff, brown and tan, SILT (A-4), with trace clay, micaceous	
2635	2,634.1	10.0	4	6	7									2,632.6	Boring Terminated at Elevation 2,632.6 ft in SILT	11.5

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST C. Swafford										
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)									
BORING NO. L_2900SPT (HDR)		STATION 11+12		OFFSET 64 ft LT		ALIGNMENT L_LT										
COLLAR ELEV. 2,659.7 ft		TOTAL DEPTH 41.5 ft		NORTHING 665,587		EASTING 817,906										
DRILL RIG/HAMMER EFF./DATE GTC9083 CME-550X 80% (11/24/2020)		DRILL METHOD H.S. Augers		HAMMER TYPE Automatic												
DRILLER L. Wanstrath		START DATE 04/06/21		COMP. DATE 04/06/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2660	2,659.7	0.0	2	2	3									2,659.7	GROUND SURFACE	0.0
	2,657.2	2.5	3	4	6										RESIDUAL Medium stiff to stiff, dark red and black, CLAY (A-7-6), contains trace root fibers	
2655	2,654.7	5.0	3	4	6									2,653.7	Stiff to very stiff, red, tan, white, and black, SILT (A-4) with trace clay and sand, contains trace rock fragments, micaceous, saprolitic	6.0
	2,652.2	7.5	3	5	5											
2650	2,649.7	10.0	4	5	6											
2645	2,644.7	15.0	3	3	6											
2640	2,639.7	20.0	3	5	8											
2635	2,634.7	25.0	4	6	11											
2630	2,629.7	30.0	5	9	10											
2625	2,624.7	35.0	5	9	12											
2620	2,619.7	40.0	5	7	8											
														2,618.2	Boring Terminated at Elevation 2,618.2 ft in SILT	41.5

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23



# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST R. Dugger										
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)									
BORING NO. L_3300SPT (HDR)		STATION 15+00		OFFSET 67 ft LT		ALIGNMENT L_LT										
COLLAR ELEV. 2,629.4 ft		TOTAL DEPTH 36.5 ft		NORTHING 665,749		EASTING 818,241										
DRILL RIG/HAMMER EFF./DATE GTC8255 CME-55 93% (11/24/2020)			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER L. Wansrath		START DATE 03/26/21		COMP. DATE 03/26/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2630	2,629.4	0.0												2,629.4	GROUND SURFACE	0.0
	2,626.9	2.5	2	1	2								M		<b>RESIDUAL</b> Soft to stiff, red, brown, and tan, silty CLAY (A-7-6), with trace sand, micaceous	
2625	2,624.4	5.0	3	2	5								M			
	2,621.9	7.5	4	5	7								M			
2620	2,619.4	10.0	5	7	8								M			
	2,614.4	15.0	5	6	7								M		Medium dense, brown, red and tan, silty SAND (A-2-4), with trace clay, micaceous	9.5
2615	2,614.4	15.0	8	10	11								D			
2610	2,609.4	20.0	5	5	6								D		Stiff to very stiff, brown, tan and orange, SILT (A-4), contains trace rock fragments, micaceous	18.0
2605	2,604.4	25.0	11	8	10								D			
2600	2,599.4	30.0	10	8	10								D			
2595	2,594.4	35.0	8	10	15								D			
	2,592.9														Boring Terminated at Elevation 2,592.9 ft in SILT	36.5

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST R. Dugger										
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)									
BORING NO. L_3500SPT (HDR)		STATION 16+95		OFFSET 54 ft LT		ALIGNMENT L_LT										
COLLAR ELEV. 2,605.9 ft		TOTAL DEPTH 35.9 ft		NORTHING 665,847		EASTING 818,402										
DRILL RIG/HAMMER EFF./DATE GTC8255 CME-55 93% (11/24/2020)			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER L. Wansrath		START DATE 03/26/21		COMP. DATE 03/26/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2610	2,605.9	0.0												2,605.9	GROUND SURFACE	0.0
2605	2,603.4	2.5	2	2	2								M		<b>RESIDUAL</b> Medium stiff to stiff, red, silty CLAY (A-7-5)(16), micaceous	
2600	2,600.9	5.0	3	3	3								M			
	2,595.9	10.0	4	3	5								M			
2595	2,595.9	10.0	6	8	8								M		Very stiff, brown and red, SILT (A-4), micaceous	9.5
2590	2,590.9	15.0	13	11	13								D		Medium dense, brown and tan, silty SAND (A-2-4)	13.0
2585	2,585.9	20.0	11	11	16								D			
2580	2,580.9	25.0	18	62	38/0.3								D			
2575	2,575.9	30.0														
2570	2,570.9	35.0	13	87/0.4												
	2,572.9														<b>WEATHERED ROCK</b> Brown and gray, GNEISS	25.5
	2,575.9														<b>CRYSTALLINE ROCK</b> Brown and gray, GNEISS	30.0
	2,572.9														<b>RESIDUAL</b> Hard, brown and gray, sandy CLAY (A-7-6)	35.0
	2,570.9														<b>WEATHERED ROCK</b> Brown and gray, GNEISS	35.9
	2,570.0														Boring Terminated at Elevation 2,570.0 ft in Weathered Rock (GNEISS)	
															Other Samples: ST-7 (3.5 - 5.5)	

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi									
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)								
BORING NO. L_3700SPT (HDR)		STATION 18+90		OFFSET 20 ft LT		ALIGNMENT L_RT									
COLLAR ELEV. 2,589.5 ft		TOTAL DEPTH 15.0 ft		NORTHING 665,892		EASTING 818,637									
DRILL RIG/HAMMER EFF./DATE GTC3277 CME-75 83% (09/15/2020)				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER K. Boone		START DATE 01/30/21		COMP. DATE 01/30/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2590	2,589.1	0.4	2	9	8									2,589.5	0.0
	2,587.0	2.5	5	5	5									2,587.5	2.0
2585	2,584.5	5.0	2	3	3									2,585.0	4.5
	2,582.0	7.5	3	3	4									2,582.5	7.0
2580	2,579.5	10.0	4	4	7									2,580.0	9.5
	2,576.0	13.5	9	6	3									2,574.5	15.0
Boring Terminated at Elevation 2,574.5 ft in SILT															

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST C. Swafford									
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)								
BORING NO. L_3900A SPT (HDR)		STATION 20+75		OFFSET 39 ft LT		ALIGNMENT L_LT									
COLLAR ELEV. 2,580.6 ft		TOTAL DEPTH 5.0 ft		NORTHING 666,115		EASTING 818,683									
DRILL RIG/HAMMER EFF./DATE GTC3277 CME-75 83% (09/15/2020)				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER K. Boone		START DATE 03/01/21		COMP. DATE 03/01/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2585														2,580.6	0.0
														2,580.0	0.6
2580	2,580.0	0.6	9	12	7									2,577.6	3.0
	2,577.3	3.3	3	4	5									2,575.6	5.0
Boring Terminated by Auger Refusal at Elevation 2,575.6 ft on Crystalline Rock (GNEISS)															

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST R. Dugger									
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)								
BORING NO. L_3900B SPT (HDR)		STATION 20+95		OFFSET 40 ft LT		ALIGNMENT L_LT									
COLLAR ELEV. 2,581.2 ft		TOTAL DEPTH 3.5 ft		NORTHING 666,098		EASTING 818,672									
DRILL RIG/HAMMER EFF./DATE GTC9083 CME-550X 80% (11/24/2020)		DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER L. Wanstrath		START DATE 03/01/21		COMP. DATE 03/01/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2585															
2580	2,580.5	0.7	12	7	5									2,581.2 GROUND SURFACE 0.0	
	2,578.7	2.5												2,580.5 0.7	
	2,577.7	3.5	100/0.3											2,578.7 ROADWAY EMBANKMENT 2.5	
		60/0.0												2,577.7 Stiff, brown, SILT (A-4), with little gravel, micaceous 3.5	
														WEATHERED ROCK Brown, GNEISS	
														Boring Terminated by Auger Refusal at Elevation 2,577.7 ft on Crystalline Rock (GNEISS)	

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST C. Swafford									
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)								
BORING NO. L_4500SPT (HDR)		STATION 26+98		OFFSET 36 ft LT		ALIGNMENT L_LT									
COLLAR ELEV. 2,582.5 ft		TOTAL DEPTH 10.1 ft		NORTHING 666,595		EASTING 819,045									
DRILL RIG/HAMMER EFF./DATE GTC3277 CME-75 83% (09/15/2020)		DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER K. Boone		START DATE 03/01/21		COMP. DATE 03/01/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2585															
2580	2,581.7	0.8	10	9	5									2,582.5 GROUND SURFACE 0.0	
	2,578.9	3.6												2,581.7 0.8	
	2,576.8	5.7	4	5	5									2,579.5 ROADWAY EMBANKMENT 3.0	
2575	2,573.9	8.6	2	2	4									2,576.5 Stiff, brown and orange, SILT (A-4), micaceous, mottled 6.0	
			4	4	2									2,574.5 Medium stiff, gray and orange with brown, silty CLAY (A-6), with trace sand, micaceous 8.0	
														2,572.4 ALLUVIAL 10.1	
														Loose, gray, SAND (A-3), micaceous	
														Boring Terminated at Elevation 2,572.4 ft in SAND	

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi									
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)								
BORING NO. L_4700ASPT (HDR)		STATION 28+95		OFFSET 7 ft RT		ALIGNMENT L_RT									
COLLAR ELEV. 2,580.5 ft		TOTAL DEPTH 15.0 ft		NORTHING 666,696		EASTING 819,238									
DRILL RIG/HAMMER EFF./DATE GTC3277 CME-75 83% (09/15/2020)			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER K. Boone		START DATE 02/10/21		COMP. DATE 02/10/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2585															
2580	2,579.8	0.7	14	13	7									2,580.5 GROUND SURFACE 0.0	
														2,579.8 0.7' PAVEMENT 0.7	
	2,577.0	3.5	6	4	5									2,577.5 ROADWAY EMBANKMENT 3.0	
														2,575.0 Medium dense, brown, silty SAND and GRAVEL (A-1-b) 5.5	
2575	2,574.5	6.0	5	4	7									2,575.0 Loose, brown, clayey SAND (A-2-6), micaceous 8.0	
														2,572.5 Stiff, brown, clayey SILT (A-5), contains trace gravel, micaceous 9.0	
	2,572.0	8.5	6	5	4									2,572.5 ALLUVIAL 9.0	
														2,568.5 Loose, gray, SAND (A-2-4), with trace clay, micaceous 12.0	
2570	2,567.0	13.5	3	1	1									2,568.5 Very soft, gray, CLAY (A-7-6), contains little roots and wood fragments 15.0	
														2,565.5 Boring Terminated at Elevation 2,565.5 ft in CLAY 15.0	

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST R. Dugger									
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)								
BORING NO. L_4700BSPT (HDR)		STATION 28+96		OFFSET 22 ft RT		ALIGNMENT L_RT									
COLLAR ELEV. 2,579.5 ft		TOTAL DEPTH 16.5 ft		NORTHING 666,687		EASTING 819,250									
DRILL RIG/HAMMER EFF./DATE GTC9083 CME-550X 80% (11/24/2020)			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER L. Wanstrath		START DATE 01/28/21		COMP. DATE 01/28/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2580															
	2,578.6	0.9	12	11	9									2,579.5 GROUND SURFACE 0.0	
														2,578.6 0.9' PAVEMENT 0.9	
	2,577.0	2.5	11	5	6									2,577.0 ROADWAY EMBANKMENT 2.5	
2575	2,574.5	5.0	7	8	8									2,575.0 Medium dense, brown, SAND and GRAVEL (A-1-b) 4.5	
														2,575.0 Stiff, brown and orange, clayey SILT (A-5), micaceous 4.5	
	2,572.0	7.5	3	4	3									2,570.5 Very stiff, brown, SILT (A-4), with trace clay and sand, micaceous 9.0	
2570	2,569.5	10.0	2	1	2									2,570.5 ALLUVIAL 9.0	
														Soft to medium stiff, brown, clayey SILT (A-5), contains trace wood fragments	
2565	2,564.5	15.0	1	2	2									2,563.0 Boring Terminated at Elevation 2,563.0 ft in SILT 16.5	

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait										
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)									
BORING NO. L_LT_2007		STATION 20+07		OFFSET 5 ft RT		ALIGNMENT L_LT										
COLLAR ELEV. 2,583.5 ft		TOTAL DEPTH 20.0 ft		NORTHING 666,018		EASTING 818,663										
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Michael Moseley		START DATE 02/23/23		COMP. DATE 02/23/23		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2585															2,583.5	0.0
	2,582.5	1.0	4	4	4											
2580	2,580.0	3.5	3	4	4											
	2,577.5	6.0	4	4	6											
2575	2,575.0	8.5	3	4	6											
2570	2,570.0	13.5	4	5	6											
2565	2,565.0	18.5	100/0.8													

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait										
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)									
BORING NO. L_LT_2206		STATION 22+06		OFFSET 3 ft RT		ALIGNMENT L_LT										
COLLAR ELEV. 2,577.6 ft		TOTAL DEPTH 20.0 ft		NORTHING 666,176		EASTING 818,784										
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Michael Moseley		START DATE 02/23/23		COMP. DATE 02/23/23		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2580															2,577.6	0.0
	2,576.6	1.0	8	9	8											
2575	2,574.1	3.5	3	2	3											
	2,571.6	6.0	8	7	7											
2570	2,569.1	8.5	100/0.8													
2565	2,564.1	13.5	5	19	12											
2560	2,559.1	18.5	5	31	46											

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait										
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)									
BORING NO. L_RT_1896		STATION 18+96		OFFSET 168 ft RT		ALIGNMENT L_RT										
COLLAR ELEV. 2,676.3 ft		TOTAL DEPTH 10.0 ft		NORTHING 665,800		EASTING 818,753										
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Michael Moseley		START DATE 03/01/23		COMP. DATE 03/01/23		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2680																
2675	2,675.3	1.0	6	6	8								M		2,676.3	0.0
	2,672.8	3.5	3	2	2										GROUND SURFACE	
	2,670.3	6.0	2	2	4										RESIDUAL	
2670	2,667.8	8.5	5	10	28								M		Brown, soft to stiff, sandy clay (A-6), fine to coarse grained sand, some gravel, fine to coarse grained gravel, trace organics	
														SS-274 20%		
														M	Brown, medium stiff, sandy silt (A-4), fine to coarse grained sand, micaceous	6.0
														M	Brown, dense, silty sand (A-2-4), fine to coarse grained sand, some gravel	9.5
															Boring Terminated at Elevation 2,666.3 ft in silty sand.	10.0

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait										
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)									
BORING NO. RW2_1		STATION 10+00		OFFSET 19 ft LT		ALIGNMENT L_LT										
COLLAR ELEV. 2,637.6 ft		TOTAL DEPTH 15.0 ft		NORTHING 665,513		EASTING 817,815										
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Michael Moseley		START DATE 02/21/23		COMP. DATE 02/21/23		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2640																
2635	2,636.6	1.0	2	5	6								M		2,637.6	0.0
	2,634.1	3.5	4	5	7										ROADWAY EMBANKMENT	1.0
															ABC Stone	
															Brown, loose, silty sand (A-2-4), fine to coarse grained sand, trace clay, trace gravel	3.5
2630	2,629.1	8.5	4	5	6								M	RESIDUAL		
														SS-120 24%		
2625	2,624.6	13.0	9	14	16								M	Brown, stiff to very stiff, sandy silt (A-4), fine to coarse grained sand, trace clay	15.0	
															Boring Terminated at Elevation 2,622.6 ft in silty sand.	

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# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait										
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)									
BORING NO. RW2_2		STATION 10+51		OFFSET 17 ft LT		ALIGNMENT L_LT										
COLLAR ELEV. 2,634.8 ft		TOTAL DEPTH 25.0 ft		NORTHING 665,524		EASTING 817,864										
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Michael Moseley		START DATE 02/21/23		COMP. DATE 02/21/23		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2635															2,634.8	0.0
	2,633.8	1.0	3	5	7											
	2,631.3	3.5	6	7	10											
2630	2,628.8	6.0	4	6	7											
	2,626.3	8.5	5	10	19											
2625	2,621.3	13.5	3	5	6										2,621.3	13.5
	2,616.3	18.5	2	3	5										2,616.3	18.5
2620	2,611.3	23.5	7	15	29										2,611.3	23.5
															2,609.8	25.0
Boring Terminated at Elevation 2,609.8 ft in silty sand.																

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Alex Lozada										
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)									
BORING NO. RW2_3		STATION 11+01		OFFSET 18 ft LT		ALIGNMENT L_LT										
COLLAR ELEV. 2,631.5 ft		TOTAL DEPTH 25.0 ft		NORTHING 665,540		EASTING 817,910										
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Michael Moseley		START DATE 02/21/23		COMP. DATE 02/21/23		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2635															2,631.5	0.0
	2,630.5	1.0	6	5	4											
2630	2,628.0	3.5	3	4	4										2,628.0	3.5
	2,625.5	6.0	4	5	6											
2625	2,623.0	8.5	3	5	5										2,623.0	8.5
	2,618.0	13.5	6	10	11											
2620	2,613.0	18.5	4	6	8										2,613.0	18.5
	2,608.0	23.5	3	5	7										2,608.0	23.5
2615																
2610																
Boring Terminated at Elevation 2,606.5 ft in sandy silt.																

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait										
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)									
BORING NO. RW2_4		STATION 11+49		OFFSET 17 ft LT		ALIGNMENT L_LT										
COLLAR ELEV. 2,629.0 ft		TOTAL DEPTH 10.0 ft		NORTHING 665,555		EASTING 817,956										
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Michael Moseley		START DATE 02/21/23		COMP. DATE 02/21/23		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2630															2,629.0	0.0
	2,628.0	1.0	3	2	4											
2625	2,625.5	3.5	3	4	6											
	2,623.0	6.0	4	7	11											
2620	2,620.5	8.5	4	5	5											
															2,619.0	10.0
Boring Terminated at Elevation 2,619.0 ft in sandy silt.																

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait										
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)									
BORING NO. RW2_5		STATION 11+99		OFFSET 18 ft LT		ALIGNMENT L_LT										
COLLAR ELEV. 2,626.1 ft		TOTAL DEPTH 25.0 ft		NORTHING 665,573		EASTING 818,002										
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Michael Moseley		START DATE 02/21/23		COMP. DATE 02/21/23		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2630															2,626.1	0.0
	2,625.1	1.0	3	5	7											
2625	2,622.6	3.5	3	5	5											
2620	2,620.1	6.0	3	6	7											
	2,617.6	8.5	5	7	8											
2615	2,612.6	13.5	5	9	12											
2610	2,607.6	18.5	5	6	6											
2605	2,602.6	23.5	6	4	5											
															2,601.1	25.0
Boring Terminated at Elevation 2,601.1 ft in sandy silt.																

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

## GEOTECHNICAL BORING REPORT BORE LOG

WBS 48030.1.FS1			TIP B-5898/B-3186			COUNTY HAYWOOD			GEOLOGIST Addison Tait							
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74								GROUND WTR (ft)								
BORING NO. RW2_6			STATION 12+50			OFFSET 18 ft LT			ALIGNMENT L_LT			0 HR.	Dry			
COLLAR ELEV. 2,623.0 ft			TOTAL DEPTH 25.0 ft			NORTHING 665,592			EASTING 818,049			24 HR.	Dry			
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic							
DRILLER Michael Moseley			START DATE 02/21/23			COMP. DATE 02/21/23			SURFACE WATER DEPTH N/A							
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2625														2,623.0	0.0	GROUND SURFACE
2620	2,622.0	1.0	4	8	10									2,619.5	3.5	RESIDUAL Brown, medium dense, silty sand (A-2-4), fine to coarse grained sand
	2,619.5	3.5	7	9	11									2,617.0	6.0	SS-148 18% Brown, very stiff, sandy silt (A-4), fine to medium grained sand, trace clay and gravel, micaceous
2615	2,617.0	6.0	7	10	12									2,614.5	8.5	M Brown, very stiff to hard, sandy silt (A-4), fine to medium grained sand, micaceous
	2,614.5	8.5	4	8	9									2,609.5	13.5	M Brown, very stiff to hard, sandy silt (A-4), fine to medium grained sand, micaceous
2610	2,609.5	13.5	6	6	11									2,604.5	18.5	SS-152 30% Brown, stiff, silt (A-4), some clay, trace sand
2605	2,604.5	18.5	5	5	6									2,599.5	23.5	M Boring Terminated at Elevation 2,598.0 ft in silt.
2600	2,599.5	23.5	7	6	11									2,598.0	25.0	

WBS 48030.1.FS1			TIP B-5898/B-3186			COUNTY HAYWOOD			GEOLOGIST Addison Tait							
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74								GROUND WTR (ft)								
BORING NO. RW2_7			STATION 13+00			OFFSET 16 ft LT			ALIGNMENT L_LT			0 HR.	Dry			
COLLAR ELEV. 2,620.4 ft			TOTAL DEPTH 25.0 ft			NORTHING 665,611			EASTING 818,094			24 HR.	Dry			
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic							
DRILLER Michael Moseley			START DATE 02/22/23			COMP. DATE 02/22/23			SURFACE WATER DEPTH N/A							
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2625														2,620.4	0.0	GROUND SURFACE
2620	2,619.4	1.0												2,619.4	1.0	ROADWAY EMBANKMENT ABC Stone
2615	2,616.9	3.5	5	6	8									2,614.4	6.0	RESIDUAL Brown, medium dense, silty sand (A-2-4), fine to coarse grained sand, trace gravel, micaceous
	2,614.4	6.0	3	5	6									2,611.9	8.5	M Brown, very stiff to hard, sandy silt (A-4), fine to medium grained sand, micaceous
2610	2,611.9	8.5	6	8	12									2,606.9	13.5	M Brown to white, stiff, silt (A-4), trace sand and clay
2605	2,606.9	13.5	3	6	8									2,601.9	18.5	SS-158 25% Brown, medium dense, silty sand (A-2-4), fine to coarse grained sand, trace clay, micaceous
2600	2,601.9	18.5	3	5	8									2,596.9	23.5	M Boring Terminated at Elevation 2,595.4 ft in silty sand.
	2,596.9	23.5	9	12	14									2,595.4	25.0	

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait											
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)										
BORING NO. RW2_8		STATION 13+51		OFFSET 17 ft LT		ALIGNMENT L_LT											
COLLAR ELEV. 2,617.4 ft		TOTAL DEPTH 25.0 ft		NORTHING 665,634		EASTING 818,139											
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic												
DRILLER Michael Moseley		START DATE 02/22/23		COMP. DATE 02/22/23		SURFACE WATER DEPTH N/A											
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
2620															2,617.4	0.0	
2615	2,616.4	1.0	2	6	8									M	RESIDUAL Brown, medium dense, silty sand, (A-2-4), fine to coarse grained sand, trace clay, trace gravel		
	2,613.9	3.5	5	8	13									M			
2610	2,611.4	6.0	7	11	11									SS-163	14%	2,611.4	6.0
	2,608.9	8.5	10	21	31									M	Brown, very stiff to hard, sandy silt (A-4), fine to coarse grained sand, micaceous		
2605	2,603.9	13.5	10	10	10									M	2,603.9	13.5	
2600	2,598.9	18.5	3	4	5									M	Brown, medium to very stiff, silt (A-5), trace to some sand, trace to some clay, micaceous		
2595	2,593.9	23.5	6	10	15									M	2,592.4	25.0	
															Boring Terminated at Elevation 2,592.4 ft in silt.		

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait											
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)										
BORING NO. RW2_9		STATION 14+00		OFFSET 13 ft LT		ALIGNMENT L_LT											
COLLAR ELEV. 2,615.1 ft		TOTAL DEPTH 20.0 ft		NORTHING 665,653		EASTING 818,184											
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic												
DRILLER Michael Moseley		START DATE 02/22/23		COMP. DATE 02/22/23		SURFACE WATER DEPTH N/A											
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
2620															2,615.1	0.0	
2615	2,614.1	1.0	8	6	6									M	2,614.1	1.0	
	2,611.6	3.5	8	5	7									SS-169	23%	2,611.6	3.5
2610	2,609.1	6.0	3	4	5									M	ROADWAY EMBANKMENT 0.4' Asphalt 0.6' ABC Stone RESIDUAL Brown, stiff, sandy silt (A-4), fine to coarse grained sand, trace gravel		
	2,606.6	8.5	8	9	14									M			
2605	2,601.6	13.5	5	7	8									M	2,601.6	13.5	
2600	2,596.6	18.5	10	13	17									M	2,596.6	18.5	
	2,595.1	20.0												M	2,595.1	20.0	
															Boring Terminated at Elevation 2,595.1 ft in sandy silt.		

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT BORE LOG

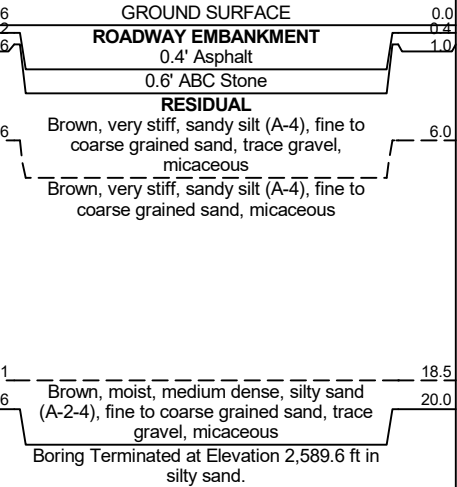
<b>WBS</b> 48030.1.FS1	<b>TIP</b> B-5898/B-3186	<b>COUNTY</b> HAYWOOD	<b>GEOLOGIST</b> Addison Tait
<b>SITE DESCRIPTION</b> Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74			<b>GROUND WTR (ft)</b>
<b>BORING NO.</b> RW2_10	<b>STATION</b> 14+51	<b>OFFSET</b> 14 ft LT	<b>ALIGNMENT</b> L_LT
<b>COLLAR ELEV.</b> 2,612.1 ft	<b>TOTAL DEPTH</b> 20.0 ft	<b>NORTHING</b> 665,679	<b>EASTING</b> 818,227
<b>DRILL RIG/HAMMER EFF./DATE</b> SUM3123 CME-550X 91% 11/19/2020		<b>DRILL METHOD</b> H.S. Augers	<b>HAMMER TYPE</b> Automatic
<b>DRILLER</b> Michael Moseley	<b>START DATE</b> 02/22/23	<b>COMP. DATE</b> 02/22/23	<b>SURFACE WATER DEPTH</b> N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
2615																
2610	2,611.1	1.0	7	6	8											
	2,608.6	3.5	5	6	7											
2605	2,606.1	6.0	5	7	8											
	2,603.6	8.5	4	5	8											
2600	2,598.6	13.5	5	7	9											
2595	2,593.6	18.5	4	10	9											

Boring Terminated at Elevation 2,592.1 ft in sandy silt.

<b>WBS</b> 48030.1.FS1	<b>TIP</b> B-5898/B-3186	<b>COUNTY</b> HAYWOOD	<b>GEOLOGIST</b> Addison Tait
<b>SITE DESCRIPTION</b> Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74			<b>GROUND WTR (ft)</b>
<b>BORING NO.</b> RW2_11	<b>STATION</b> 14+98	<b>OFFSET</b> 15 ft LT	<b>ALIGNMENT</b> L_LT
<b>COLLAR ELEV.</b> 2,609.6 ft	<b>TOTAL DEPTH</b> 20.0 ft	<b>NORTHING</b> 665,703	<b>EASTING</b> 818,267
<b>DRILL RIG/HAMMER EFF./DATE</b> SUM3123 CME-550X 91% 11/19/2020		<b>DRILL METHOD</b> H.S. Augers	<b>HAMMER TYPE</b> Automatic
<b>DRILLER</b> Michael Moseley	<b>START DATE</b> 02/22/23	<b>COMP. DATE</b> 02/22/23	<b>SURFACE WATER DEPTH</b> N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
2610	2,608.6	1.0	7	9	9											
2605	2,606.1	3.5	7	8	10											
	2,603.6	6.0	5	6	9											
2600	2,601.1	8.5	6	9	10											
2595	2,596.1	13.5	7	9	11											
2590	2,591.1	18.5	7	11	11											



NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait										
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)									
BORING NO. RW2_12		STATION 15+47		OFFSET 17 ft LT		ALIGNMENT L_LT										
COLLAR ELEV. 2,606.7 ft		TOTAL DEPTH 15.0 ft		NORTHING 665,731		EASTING 818,307										
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Michael Moseley		START DATE 02/22/23		COMP. DATE 02/22/23		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2610																
2605	2,605.7	1.0	5	6	7											
	2,603.2	3.5	4	6	7											
2600	2,600.7	6.0	5	6	6											
	2,598.2	8.5	5	7	10											
2595	2,593.2	13.5	3	3	4											

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait										
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)									
BORING NO. RW2_13		STATION 16+05		OFFSET 18 ft LT		ALIGNMENT L_LT										
COLLAR ELEV. 2,603.2 ft		TOTAL DEPTH 10.0 ft		NORTHING 665,765		EASTING 818,353										
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Michael Moseley		START DATE 02/22/23		COMP. DATE 02/22/23		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2605																
	2,602.2	1.0	6	7	7											
2600	2,599.7	3.5	6	5	5											
	2,597.2	6.0	6	9	9											
2595	2,594.7	8.5	7	8	10											

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23



# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait										
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)									
BORING NO. RW3_1		STATION 12+56		OFFSET 142 ft RT		ALIGNMENT L_RT										
COLLAR ELEV. 2,673.0 ft		TOTAL DEPTH 50.0 ft		NORTHING 665,399		EASTING 818,179										
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Michael Moseley		START DATE 02/28/23		COMP. DATE 02/28/23		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2675																
	2,672.0	1.0	3	3	4										2,673.0	0.0
2670	2,669.5	3.5	2	2	2											
	2,667.0	6.0	2	3	3											
2665	2,664.5	8.5	2	3	4											
2660	2,659.5	13.5	4	4	4											
2655	2,654.5	18.5	3	4	6											
2650	2,649.5	23.5	4	5	6											
2645	2,644.5	28.5	15	17	31											
2640	2,639.5	33.5	20	26	23											
2635	2,634.5	38.5	8	11	13											
2630	2,629.5	43.5	11	16	16											
2625	2,624.5	48.5	15	22	41											

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait										
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)									
BORING NO. RW3_2		STATION 13+94		OFFSET 235 ft RT		ALIGNMENT L_RT										
COLLAR ELEV. 2,642.7 ft		TOTAL DEPTH 36.5 ft		NORTHING 665,388		EASTING 818,359										
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Michael Moseley		START DATE 03/01/23		COMP. DATE 03/01/23		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2645																
	2,641.7	1.0	10	7	6										2,642.7	0.0
2640	2,639.2	3.5	4	7	11											
	2,636.7	6.0	6	3	3											
2635	2,634.2	8.5	11	12	12											
2630	2,629.2	13.5	10	13	13											
2625	2,624.2	18.5	10	10	8											
2620	2,619.2	23.5	12	100/0.9												
2615	2,614.2	28.5	100/0.9													
2610	2,609.2	33.5	100/0.4													
	2,606.2	36.5	60/0.0													

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait									
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)								
BORING NO. RW5_1		STATION 26+29		OFFSET 25 ft RT		ALIGNMENT L_LT									
COLLAR ELEV. 2,576.1 ft		TOTAL DEPTH 25.6 ft		NORTHING 666,503		EASTING 819,053									
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER Michael Moseley		START DATE 02/28/23		COMP. DATE 02/28/23		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2580															
2575	2,575.1	1.0	5	6	6								M	GROUND SURFACE 0.0	
	2,572.6	3.5	7	7	4								M	ROADWAY EMBANKMENT Brown, medium dense, silty sand (A-2-4), fine to coarse grained sand, trace gravel	
2570	2,570.1	6.0	0	2	1								M	ALLUVIAL Dark gray, medium dense, silty sand (A-2-4), fine to medium grained sand, slightly micaceous	4.5
	2,567.6	8.5	0	0	0								M	ALLUVIAL Dark gray, soft, silty clay (A-7-5), trace fine sand, slightly micaceous	6.0
2565													SS-245	80%	
	2,562.6	13.5	11	17	16								W	Dark gray, dense, gravelly sand (A-1-a), fine to coarse grained sand, fine to coarse grained gravel	13.5
2560													W	Dark gray, dense, silty sand (A-2-4), fine to coarse grained sand, trace gravel	18.5
	2,557.6	18.5	19	25	21								W	Dark gray, dense, silty sand (A-2-4), fine to coarse grained sand, trace gravel	18.5
2555													W	WEATHERED ROCK Dark gray, gneiss	23.5
	2,552.6	23.5	100/0.2										W	Boring Terminated by Auger Refusal at Elevation 2,550.5 ft on Rock.	25.6
	2,550.5	25.6	60/0.0												

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait									
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)								
BORING NO. RW5_2		STATION 26+79		OFFSET 28 ft RT		ALIGNMENT L_LT									
COLLAR ELEV. 2,583.7 ft		TOTAL DEPTH 25.7 ft		NORTHING 666,541		EASTING 819,085									
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER Michael Moseley		START DATE 02/24/23		COMP. DATE 02/24/23		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2585															
	2,582.7	1.0	3	4	4								M	GROUND SURFACE 0.0	
2580	2,580.2	3.5	4	5	4								M	ROADWAY EMBANKMENT Brown, medium stiff, sandy silt (A-4)	1.0
	2,577.7	6.0	4	4	4								M	ALLUVIAL Dark gray, medium stiff, sandy silt (A-4), fine to coarse grained sand, trace gravel	3.5
2575	2,575.2	8.5	2	2	3								M	ALLUVIAL Dark gray, loose, silty sand (A-2-4), fine to medium grained sand, trace gravel, micaceous	8.5
	2,570.2	13.5	2	8	9								W	Dark gray, medium stiff, sandy silt (A-4), fine grained sand, slightly micaceous	13.5
2570													W	Dark gray, very stiff, silt (A-5), trace fine grained sand	14.5
	2,565.2	18.5	14	5	4								W	Dark gray, medium dense, sandy gravel (A-1-a), fine to coarse grained gravel, fine to coarse grained sand	18.5
2560	2,560.2	23.5	7	10	40								M	Dark gray, loose, gravelly sand (A-1-a), fine to coarse grained sand, fine to coarse grained gravel	23.5
	2,558.0	25.7	60/0.0										M	RESIDUAL Brown, dense, silty sand, (A-2-4), fine to coarse grained sand, trace gravel	25.7
															Boring Terminated by Auger Refusal at Elevation 2,558.0 ft on Rock.

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait									
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)								
BORING NO. RW5_3		STATION 27+29		OFFSET 29 ft RT		ALIGNMENT L_LT									
COLLAR ELEV. 2,577.1 ft		TOTAL DEPTH 18.5 ft		NORTHING 666,581		EASTING 819,116									
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER Michael Moseley		START DATE 02/24/23		COMP. DATE 02/24/23		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2580															
	2,576.1	1.0	5	5	7								M	2,577.1 GROUND SURFACE 0.0 2,576.1 ROADWAY EMBANKMENT 1.0 Brown, loose, silty sand (A-2-4)	
2575	2,573.6	3.5	6	8	8								M	ALLUVIAL Dark gray, loose to medium dense, silty sand (A-2-4), fine to coarse grained sand, trace fine grained gravel, micaceous	
	2,571.1	6.0	5	2	2										
2570	2,568.6	8.5	2	1	1								SS-231 75%	2,568.6 Dark gray, soft, sandy clay (A-6), micaceous 8.5	
	2,563.6	13.5	3	3	2								M	2,563.6 Dark gray, loose, silty sand (A-2-4), fine to medium grained sand, micaceous 13.5	
2560	2,558.6	18.5	60/0.0'			60/0.0'							2,558.6 Boring Terminated by Auger Refusal at Elevation 2,558.6 ft on Rock. 18.5		

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait									
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)								
BORING NO. RW5_4		STATION 27+81		OFFSET 31 ft RT		ALIGNMENT L_LT									
COLLAR ELEV. 2,577.9 ft		TOTAL DEPTH 23.0 ft		NORTHING 666,622		EASTING 819,148									
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER Michael Moseley		START DATE 02/23/23		COMP. DATE 02/23/23		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2580															
	2,576.9	1.0	4	5	5								M	2,577.9 GROUND SURFACE 0.0 2,576.9 ROADWAY EMBANKMENT 1.0 Brown, loose to medium dense, silty sand (A-2-4), fine to coarse grained sand, trace gravel, fine to coarse grained gravel	
2575	2,574.4	3.5	3	7	9								M	ALLUVIAL Dark gray, loose to medium dense, silty sand (A-2-4), fine to coarse grained sand, trace fine grained gravel, micaceous	
	2,571.9	6.0	-	-	-										
2570	2,569.4	8.5	2	2	2								SS-224 69%	2,569.4 Dark gray, soft, sandy clay (A-7-5), trace fine grained sand 8.5	
	2,564.4	13.5	2	2	2								M	2,564.4 Dark gray, soft, sandy, silt (A-4), fine grained sand, trace clay 13.5	
2560	2,559.4	18.5	4	4	7								W	2,559.4 Dark gray, medium dense, sandy gravel (A-1-a), fine to coarse grained gravel, fine to coarse grained sand 18.5	
2555	2,554.9	23.0	60/0.0'			60/0.0'							2,554.9 Boring Terminated by Auger Refusal at Elevation 2,554.9 ft on Rock. 23.0		

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait										
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)									
BORING NO. RW5_5		STATION 28+29		OFFSET 32 ft RT		ALIGNMENT L_LT										
COLLAR ELEV. 2,578.4 ft		TOTAL DEPTH 21.5 ft		NORTHING 666,661		EASTING 819,178										
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Michael Moseley		START DATE 02/23/23		COMP. DATE 02/23/23		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2580														2,578.4	GROUND SURFACE	0.0
	2,577.4	1.0	3	3	4								M		<b>ROADWAY EMBANKMENT</b> Brown, loose to medium dense, silty sand (A-2-4), fine to coarse grained sand, trace gravel, fine to medium grained gravel, trace clay	
2575	2,574.9	3.5	5	4	7								M			
	2,572.4	6.0	5	5	5								M			
2570	2,569.9	8.5	4	3	3								M		<b>ALLUVIAL</b> White, loose, sand (A-1-b), micaceous	6.5
	2,564.9	13.5	0	0	1								M		<b>ALLUVIAL</b> Dark gray, sandy silt (A-4), fine to coarse grained sand, trace gravel, micaceous	7.0
2565	2,564.9	13.5	0	0	1								M		<b>ALLUVIAL</b> Dark gray, very soft, silt (A-5), trace fine grained sand, trace clay	13.5
2560	2,559.9	18.5	7	12	11								W		<b>SS-219</b> Dark gray, sandy gravel (A-1-A), fine to coarse grained gravel, fine to coarse grained sand	18.5
	2,556.9	21.5													Boring Terminated by Auger Refusal at Elevation 2,556.9 ft on Rock.	21.5

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait										
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)									
BORING NO. RW5_6		STATION 28+80		OFFSET 33 ft RT		ALIGNMENT L_LT										
COLLAR ELEV. 2,579.4 ft		TOTAL DEPTH 22.9 ft		NORTHING 666,700		EASTING 819,209										
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Michael Moseley		START DATE 02/23/23		COMP. DATE 02/23/23		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2580														2,579.4	GROUND SURFACE	0.0
	2,578.4	1.0	3	4	4								M		<b>ROADWAY EMBANKMENT</b> Brown to dark brown, loose to medium dense, silty sand (A-2-4), fine to coarse grained sand, trace gravel, trace clay	
2575	2,575.9	3.5	3	5	6								M			
	2,573.4	6.0	6	7	6								M			
2570	2,570.9	8.5	3	4	3								M		<b>SS-209</b> White, loose, sand (A-1-b), trace clay, micaceous	9.0
	2,565.9	13.5	0	2	2								M		<b>ALLUVIAL</b> Dark gray, soft, silt (A-5), trace fine grained sand, trace clay, slightly micaceous	13.5
2565	2,560.9	18.5	0	2	2								W		<b>ALLUVIAL</b> Dark gray, loose, sand (A-1-b), fine to coarse grained sand, trace gravel	18.5
	2,556.5	22.9													Boring Terminated by Auger Refusal at Elevation 2,556.5 ft on Rock.	22.9

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

## GEOTECHNICAL BORING REPORT BORE LOG

<b>WBS</b> 48030.1.FS1		<b>TIP</b> B-5898/B-3186		<b>COUNTY</b> HAYWOOD		<b>GEOLOGIST</b> Alex Lozada										
<b>SITE DESCRIPTION</b> Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74						<b>GROUND WTR (ft)</b>										
<b>BORING NO.</b> RW5_7		<b>STATION</b> 29+30		<b>OFFSET</b> 36 ft RT		<b>ALIGNMENT</b> L_LT										
<b>COLLAR ELEV.</b> 2,580.4 ft		<b>TOTAL DEPTH</b> 26.1 ft		<b>NORTHING</b> 666,737		<b>EASTING</b> 819,241										
<b>DRILL RIG/HAMMER EFF./DATE</b> SUM3123 CME-550X 91% 11/19/2020				<b>DRILL METHOD</b> H.S. Augers		<b>HAMMER TYPE</b> Automatic										
<b>DRILLER</b> Michael Moseley		<b>START DATE</b> 02/21/23		<b>COMP. DATE</b> 02/21/23		<b>SURFACE WATER DEPTH</b> N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
2585																
2580	2,579.4	1.0	5	3	3									2,580.4	0.0	GROUND SURFACE ROADWAY EMBANKMENT Brown, loose, silty sand (A-2-4), fine to coarse grained sand
2575	2,576.9	3.5	4	4	6									2,574.0	6.4	SS-110 M
2570	2,574.4	6.0	8	9	11									2,570.4	10.0	M ALLUVIAL Gray, medium stiff to very stiff, sandy silt (A-4), trace mica
2565	2,571.9	8.5	4	4	4									2,570.4	10.0	M Gray, loose, sand (A-1-B), some gravel, micaceous
2560	2,566.9	13.5	1	1	1									2,567.4	13.0	M Brown-gray, soft, clayey silt (A-5), highly plastic
2555	2,561.9	18.5	1	10	8									2,563.4	17.0	M RESIDUAL Brown-gray, medium dense, silty sand (A-2-4)
2550	2,556.9	23.5	100/0.3											2,557.9	22.5	M WEATHERED ROCK Gray to white, very dense, sand with gravel (A-1-A)
2545	2,554.3	26.1	60/0.0											2,554.3	26.1	Boring Terminated by Auger Refusal at Elevation 2,554.3 ft on Rock.

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

<b>WBS</b> 48030.1.FS1		<b>TIP</b> B-5898/B-3186		<b>COUNTY</b> HAYWOOD		<b>GEOLOGIST</b> Alex Lozada										
<b>SITE DESCRIPTION</b> Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74						<b>GROUND WTR (ft)</b>										
<b>BORING NO.</b> RW5_8		<b>STATION</b> 29+77		<b>OFFSET</b> 43 ft RT		<b>ALIGNMENT</b> L_LT										
<b>COLLAR ELEV.</b> 2,581.4 ft		<b>TOTAL DEPTH</b> 32.5 ft		<b>NORTHING</b> 666,770		<b>EASTING</b> 819,275										
<b>DRILL RIG/HAMMER EFF./DATE</b> SUM3123 CME-550X 91% 11/19/2020				<b>DRILL METHOD</b> H.S. Augers		<b>HAMMER TYPE</b> Automatic										
<b>DRILLER</b> Michael Moseley		<b>START DATE</b> 02/20/23		<b>COMP. DATE</b> 02/20/23		<b>SURFACE WATER DEPTH</b> N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
2585																
2580	2,580.4	1.0	4	4	3									2,581.4	0.0	GROUND SURFACE ROADWAY EMBANKMENT Brown, medium stiff to stiff, sandy silt (A-4)
2575	2,577.9	3.5	2	3	4									2,574.4	7.0	SS-101 21% M ALLUVIAL Gray, loose, silty sand (A-2-4)
2570	2,575.4	6.0	4	4	6									2,574.4	7.0	SS-103 M Gray, loose, silty sand (A-2-4)
2565	2,572.9	8.5	5	5	6									2,568.4	13.0	M Dark gray, medium stiff, silt (A-4)
2560	2,567.9	13.5	0	2	3									2,563.9	17.5	M Gray, loose, silty sand (A-2-4)
2555	2,562.9	18.5	1	1	4									2,560.4	21.0	W WEATHERED ROCK Weathered rock, gneiss
2550	2,557.9	23.5	100/0.3											2,553.9	27.5	W RESIDUAL Brown to black, very dense, sand (A-1-B), some gravel
2545	2,552.9	28.5	33	27	32									2,548.9	32.5	Boring Terminated by Auger Refusal at Elevation 2,548.9 ft on Rock.
2540	2,548.9	32.5	60/0.0											2,548.9	32.5	Boring Terminated by Auger Refusal at Elevation 2,548.9 ft on Rock.

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Alex Lozada										
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)									
BORING NO. RW5_9		STATION 30+29		OFFSET 47 ft RT		ALIGNMENT L_LT										
COLLAR ELEV. 2,582.4 ft		TOTAL DEPTH 36.5 ft		NORTHING 666,807		EASTING 819,311										
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Michael Moseley		START DATE 02/16/23		COMP. DATE 02/16/23		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2585																
	2,581.4	1.0	3	2	2										2,582.4	GROUND SURFACE
2580	2,578.9	3.5	4	5	11							SS-090	24%		2,582.4	ROADWAY EMBANKMENT Brown, loose, sandy silt (A-4), fine to medium grained sand
	2,576.4	6.0	4	7	11										2,576.4	ALLUVIAL Gray, medium dense, sand (A-1-B), trace silt
2575	2,573.9	8.5	4	6	8										2,573.9	ALLUVIAL Gray, medium dense, silty sand (A-2-4), fine to coarse grained sand
	2,568.9	13.5	2	2	2										2,568.9	Dark brown to black, soft, silt (A-4), trace sand
2565	2,563.9	18.5	2	2	4										2,563.9	Dark brown to black, soft, silt (A-4), trace to some organic matter
2560	2,558.9	23.5	9	8	7										2,558.9	Dark gray-brown, medium dense, gravel (A-1-A), angular gravel
2555	2,553.9	28.5	13	26	48										2,553.9	RESIDUAL Dark brown to tan-brown, very dense, silty sand (A-2-4)
2550	2,548.9	33.5	100/0.9												2,548.9	WEATHERED ROCK Weathered rock, dark brown, gneiss
	2,545.9	36.5	60/0.0												2,545.9	Boring Terminated by Auger Refusal at Elevation 2,545.9 ft on Rock.

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Alex Lozada										
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)									
BORING NO. RW5_10		STATION 30+81		OFFSET 50 ft RT		ALIGNMENT L_LT										
COLLAR ELEV. 2,583.7 ft		TOTAL DEPTH 48.5 ft		NORTHING 666,842		EASTING 819,346										
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Michael Moseley		START DATE 02/16/23		COMP. DATE 02/16/23		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2585																
	2,582.7	1.0	4	3	4										2,583.7	GROUND SURFACE
2580	2,580.2	3.5	4	4	5										2,580.2	ROADWAY EMBANKMENT Red-brown, loose, clayey sand (A-2-6), fine to medium grained sand, some rock fragments
	2,577.7	6.0	4	6	8										2,577.3	ALLUVIAL Gray-brown, medium dense, silty sand (A-2-4), fine to coarse grained sand
2575	2,575.2	8.5	5	6	5										2,575.2	ALLUVIAL Gray-brown, medium dense, silty sand (A-2-4), fine to coarse grained sand
	2,570.2	13.5	1	2	2										2,570.2	Dark brown to black, soft, silt (A-4), trace sand
2565	2,565.2	18.5	0	2	2										2,565.2	Dark brown to black, soft, silt (A-4), trace to some organic matter
2560	2,560.2	23.5	2	5	8										2,560.2	Dark gray-brown, medium dense, gravel (A-1-A), angular gravel
2555	2,555.2	28.5	5	100/0.8											2,555.2	RESIDUAL Dark brown to tan-brown, very dense, silty sand (A-2-4)
2550	2,550.2	33.5	100/0.8												2,550.2	WEATHERED ROCK Weathered rock, dark brown, gneiss
2545	2,545.2	38.5	6	100/0.9											2,545.2	Boring Terminated by Auger Refusal at Elevation 2,545.2 ft on Rock.
2540	2,540.2	43.5	100/0.5												2,540.2	Boring Terminated by Auger Refusal at Elevation 2,540.2 ft on Rock.
	2,535.2	48.5	60/0.0												2,535.2	Boring Terminated by Auger Refusal at Elevation 2,535.2 ft on Rock.

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait									
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)								
BORING NO. RW5_11		STATION 31+31		OFFSET 54 ft RT		ALIGNMENT L_LT									
COLLAR ELEV. 2,585.4 ft		TOTAL DEPTH 42.9 ft		NORTHING 666,875		EASTING 819,382									
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER Michael Moseley		START DATE 02/28/23		COMP. DATE 02/28/23		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2590															
2585	2,584.4	1.0	3	5	8										
	2,581.9	3.5	3	6	5										
2580	2,579.4	6.0	3	4	4										
	2,576.9	8.5	2	2	2										
2575															
	2,571.9	13.5	1	1	1										
2570															
	2,566.9	18.5	2	1	1										
2565															
	2,561.9	23.5	0	2	4										
2560															
	2,556.9	28.5	3	5	7										
2555															
	2,551.9	33.5	100/0.8												
2550															
	2,546.9	38.5	100/0.9												
2545															
	2,542.5	42.9	60/0.0												

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi									
SITE DESCRIPTION Retaining Wall No. 5 from -Y1RT- STA 15+25 to 26+13							GROUND WTR (ft)								
BORING NO. RW5_21 (HDR)		STATION 30+12		OFFSET 83 ft LT		ALIGNMENT L_LT									
COLLAR ELEV. 2,582.4 ft		TOTAL DEPTH 32.5 ft		NORTHING 666,877		EASTING 819,201									
DRILL RIG/HAMMER EFF./DATE GTC9083 CME-550X 80% (11/24/2020)				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER K. Boone		START DATE 02/14/21		COMP. DATE 02/14/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2585															
	2,582.4	0.0	3	2	4										
2580															
	2,577.4	5.0	3	2	3										
2575															
	2,574.9	7.5	2	1	2										
	2,572.4	10.0	2	3	2										
2570															
	2,567.4	15.0	7	6	6										
2565															
	2,562.4	20.0	3	5	15										
2560															
	2,557.4	25.0	14	18	43										
2555															
	2,552.4	30.0	18	35	65/0.5										
2550															
	2,549.9	32.5	60/0.0												

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ\_NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait									
SITE DESCRIPTION Right Shoulder of US-74 E							GROUND WTR (ft)								
BORING NO. RW6_1		STATION 29+50		OFFSET 19 ft RT		ALIGNMENT L_RT									
COLLAR ELEV. 2,580.6 ft		TOTAL DEPTH 28.5 ft		NORTHING 666,727		EASTING 819,285									
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Michael Moseley		START DATE 05/23/23		COMP. DATE 05/23/23		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2585															
2580	2,579.6	1.0	17	8	6							M	GROUND SURFACE ROADWAY EMBANKMENT 0.7' Asphalt, 0.3' ABC	0.0	
	2,577.1	3.5	4	5	7							M	Brown, medium dense, silty sand (A-2-4), fine to coarse grained, some gravel, trace clay	1.0	
2575	2,574.6	6.0	6	6	9							M	ALLUVIAL Brownish gray, medium dense, silty sand (A-2-4), fine grained sand	6.0	
	2,572.1	8.5	3	2	2							M	Dark gray, soft, sandy silt (A-4), trace fine sand, micaceous	8.5	
2570	2,567.1	13.5	1	1	1							M	Dark gray to black, soft, sandy silt (A-5), fine grained sand, micaceous, trace organics	13.5	
2565	2,562.1	18.5	2	2	2							M			
2560	2,557.1	23.5	8	8	10							W			
2555	2,552.1	28.5	60/0.0									NR	Boring Terminated by Auger Refusal at Elevation 2,552.1 ft on Rock.	28.5	

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait									
SITE DESCRIPTION Right Shoulder of US-74 E							GROUND WTR (ft)								
BORING NO. RW6_2		STATION 30+00		OFFSET 19 ft RT		ALIGNMENT L_RT									
COLLAR ELEV. 2,581.5 ft		TOTAL DEPTH 35.0 ft		NORTHING 666,761		EASTING 819,320									
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Michael Moseley		START DATE 05/23/23		COMP. DATE 05/23/23		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2585															
2580	2,580.5	1.0	19	9	7							M	GROUND SURFACE ROADWAY EMBANKMENT 0.6' Asphalt	0.0	
	2,578.0	3.5	5	4	6							M	Brown, loose to medium dense, silty sand (A-2-4), fine to coarse grained, trace gravel, trace clay	0.6	
2575	2,575.5	6.0	5	6	10							M	ALLUVIAL Brownish gray, loose to medium dense, fine grained sand, silty sand (A-2-4)	6.0	
	2,573.0	8.5	4	4	4							M			
2570	2,568.0	13.5	0	2	1							M	Dark gray to black, soft to medium stiff, silt (A-5), trace fine grained sand, trace organics, micaceous	13.5	
2565	2,563.0	18.5	0	2	3							M			
2560	2,558.0	23.5	3	2	2							M	Dark gray, soft, sandy silt (A-4), fine to coarse grained sand, trace fine grained gravel	23.5	
2555	2,553.0	28.5	10	20	35							W	Dark gray, very dense, sand (A-1-b), fine to coarse grained sand, with fine grained gravel	28.5	
2550	2,548.0	33.5	22	36	30							M	RESIDUAL Brown, hard, sandy silt (A-4), fine to coarse grained sand, trace clay, trace fine grained gravel Boring Terminated at Elevation 2,546.5 ft in sandy silt	32.5	

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23



# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait									
SITE DESCRIPTION Right Shoulder of US-74 E							GROUND WTR (ft)								
BORING NO. RW6_3		STATION 30+50		OFFSET 18 ft RT		ALIGNMENT L_RT									
COLLAR ELEV. 2,582.8 ft		TOTAL DEPTH 32.3 ft		NORTHING 666,795		EASTING 819,356									
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Michael Moseley		START DATE 05/23/23		COMP. DATE 05/23/23		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2585															
	2,581.8	1.0	17	12	7									GROUND SURFACE	0.0
	2,580.9	3.5												ROADWAY EMBANKMENT 0.55' Asphalt	0.9
2580	2,579.3	3.5	6	5	5									Brown, medium dense, silty sand (A-2-4), fine to coarse grained, some gravel, trace clay	3.5
	2,576.8	6.0	3	4	7									Brown, stiff, sandy clay (A-6), fine to coarse grained sand, trace fine grained gravel, trace silt	6.0
2575	2,574.3	8.5	6	9	9									ALLUVIAL Dark gray, loose to medium dense, silty sand (A-2-4), fine grained sand, micaceous	
	2,569.3	13.5	0	2	2									Dark gray to black, soft, silt (A-5), trace fine grained sand, trace organics, micaceous	13.5
2570	2,569.3	13.5	0	2	2									Dark gray to black, soft, silt (A-5), trace fine grained sand, trace organics, micaceous	13.5
	2,564.3	18.5	0	0	3									Dark gray to white, stiff to hard, sandy silt (A-4), fine to coarse grained sand, trace fine grained gravel	23.5
2565	2,559.3	23.5	4	5	6									Dark gray to white, stiff to hard, sandy silt (A-4), fine to coarse grained sand, trace fine grained gravel	23.5
	2,554.3	28.5	9	12	19									Boring Terminated by Auger Refusal at Elevation 2,550.5 ft on Rock.	32.3
	2,550.5	32.3	60/0.0												

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait									
SITE DESCRIPTION Right Shoulder of US-74 E							GROUND WTR (ft)								
BORING NO. RW6_4		STATION 31+00		OFFSET 19 ft RT		ALIGNMENT L_RT									
COLLAR ELEV. 2,584.4 ft		TOTAL DEPTH 38.5 ft		NORTHING 666,828		EASTING 819,394									
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Michael Moseley		START DATE 05/23/23		COMP. DATE 05/23/23		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2585															
	2,583.4	1.0	14	12	7									GROUND SURFACE	0.0
	2,580.9	3.5	3	5	6									ROADWAY EMBANKMENT 0.5' Asphalt	0.9
2580	2,578.4	6.0	6	10	13									Brown, medium dense, silty sand (A-2-4), fine to coarse grained, some gravel, trace clay	3.5
	2,575.9	8.5	5	4	6									Brown, stiff, sandy clay (A-6), fine to coarse grained sand, trace fine grained gravel, trace silt	6.0
2575	2,570.9	13.5	0	2	1									ALLUVIAL Dark gray, loose to medium dense, silty sand (A-2-4), fine grained sand, micaceous	
	2,565.9	18.5	1	2	2									Dark gray to black, soft, silt (A-5), trace fine grained sand, trace organics, micaceous	13.5
2570	2,560.9	23.5	8	9	13									Dark gray, medium dense, sand (A-1-b), fine to coarse grained sand, some fine to coarse grained gravel, trace silt	23.5
	2,555.9	28.5	7	6	12									RESIDUAL Dark gray to brown, medium dense, silty sand (A-2-4), fine to coarse grained, trace fine grained gravel	28.5
2565	2,550.9	33.5	9	14	22									Brown to white to maroon, hard, sand silt (A-4), fine grained sand	33.5
	2,545.9	38.5	60/0.0											Boring Terminated by Auger Refusal at Elevation 2,545.9 ft on Rock.	38.5

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

## GEOTECHNICAL BORING REPORT BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait										
SITE DESCRIPTION Right Shoulder of US-74 E							GROUND WTR (ft)									
BORING NO. RW6_5		STATION 31+50		OFFSET 16 ft RT		ALIGNMENT L_RT										
						0 HR. Dry										
COLLAR ELEV. 2,586.6 ft		TOTAL DEPTH 39.4 ft		NORTHING 666,862		EASTING 819,430										
						24 HR. FIAD										
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Michael Moseley		START DATE 05/24/23		COMP. DATE 05/24/23		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2590																
2585	2,585.6	1.0	15	15	10									M	2.586.6	0.0
	2,583.1	3.5	5	7	8									M	2,583.1	0.7
2580	2,580.6	6.0	7	9	7									M	2,580.6	
	2,578.1	8.5	4	2	2									M	2,578.1	
2575																
2570	2,573.1	13.5	2	1	2									M	2,572.1	14.5
	2,568.1	18.5	2	1	2									M	2,568.1	
2565	2,563.1	23.5	0	0	0									W	SS-328	47%
2560	2,558.1	28.5	3	5	5									M	2,558.1	28.5
2555	2,553.1	33.5	22	17	16									M	2,553.1	33.5
2550	2,548.1	38.5	67	33/5										M	2,547.2	39.4
																100

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait										
SITE DESCRIPTION Right Shoulder of US-74 E							GROUND WTR (ft)									
BORING NO. RW6_6		STATION 32+50		OFFSET 18 ft RT		ALIGNMENT L_RT										
						0 HR. 14.2										
COLLAR ELEV. 2,590.3 ft		TOTAL DEPTH 40.0 ft		NORTHING 666,920		EASTING 819,510										
						24 HR. FIAD										
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Michael Moseley		START DATE 05/24/23		COMP. DATE 05/24/23		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2595																
2590	2,589.3	1.0	7	4	10									M	2,589.3	0.0
	2,586.8	3.5	4	6	6									M	2,586.8	0.5
2585	2,584.3	6.0	3	3	5									M	2,584.3	3.5
	2,581.8	8.5	1	3	7									M	2,581.8	8.5
2580																
2575	2,576.8	13.5	2	1	3									M	2,576.8	
	2,571.8	18.5	2	2	3									M	2,571.8	18.5
2570	2,566.8	23.5	2	3	2									M	2,566.8	
2565	2,561.8	28.5	3	7	10									M	2,561.8	28.5
2560																
2555	2,556.8	33.5	19	25	14									M	2,556.8	33.5
	2,551.8	38.5	13	19	21									M	2,551.8	38.5

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# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Addison Tait										
SITE DESCRIPTION Right Shoulder of US-74 E							GROUND WTR (ft)									
BORING NO. RW6_7		STATION 33+50		OFFSET 19 ft RT		ALIGNMENT L_RT										
COLLAR ELEV. 2,595.4 ft		TOTAL DEPTH 43.6 ft		NORTHING 666,974		EASTING 819,593										
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Michael Moseley		START DATE 05/24/23		COMP. DATE 05/24/23		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2600																
2595	2,594.4	1.0	9	7	4											
2590	2,591.9	3.5	3	5	6											
	2,589.4	6.0	3	3	5											
	2,586.9	8.5	3	5	7											
2585	2,581.9	13.5														
2580	2,576.9	18.5	2	3	4											
2575	2,571.9	23.5	2	3	3											
2570	2,566.9	28.5	2	2	2											
2565	2,561.9	33.5	2	3	3											
2560	2,556.9	38.5	7	9	14											
2555	2,551.9	43.5														
		60/0.1														60/0.1

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Alex Lozada										
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)									
BORING NO. RW8_1		STATION 34+27		OFFSET 56 ft RT		ALIGNMENT L_LT										
COLLAR ELEV. 2,599.6 ft		TOTAL DEPTH 40.0 ft		NORTHING 667,060		EASTING 819,600										
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Michael Moseley		START DATE 02/15/23		COMP. DATE 02/15/23		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2600																
	2,598.6	1.0	2	3	4											
2595	2,596.1	3.5	5	3	5											
	2,593.6	6.0	3	3	5											
2590	2,591.1	8.5	4	4	6											
	2,586.1	13.5	3	2	4											
2585	2,581.1	18.5	2	1	2											
2580	2,576.1	23.5	0	2	2											
2575	2,571.1	28.5	2	3	4											
2570	2,566.1	33.5	3	4	4											
2565	2,561.1	38.5	3	2	3											
2560																

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# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Alex Lozada									
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)								
BORING NO. RW8_2		STATION 34+78		OFFSET 65 ft RT		ALIGNMENT L_LT									
COLLAR ELEV. 2,602.5 ft		TOTAL DEPTH 40.0 ft		NORTHING 667,081		EASTING 819,646									
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Michael Moseley		START DATE 02/15/23		COMP. DATE 02/15/23		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2605															
2600	2,601.5	1.0	5	3	4							M	GROUND SURFACE 2,602.5	0.0	
	2,599.0	3.5	4	3	4							M	ROADWAY EMBANKMENT Red-brown, medium stiff, sandy clay (A-6), low plasticity	2.5	
	2,596.5	6.0	4	7	7							M	Brown, loose to medium dense, silty sand (A-2-4), fine to coarse grained sand		
2595	2,594.0	8.5	4	4	3							M			
2590	2,589.0	13.5	3	2	4							M			
2585	2,584.0	18.5	2	2	3							M			
2580	2,579.0	23.5	3	2	3							W	ALLUVIAL Gray, medium stiff, sandy silt (A-4), fine grained sand	24.2	
2575	2,574.0	28.5	0	2	3							M	Dark gray-black, medium stiff, sandy silt (A-4), trace roots and organics	28.0	
2570	2,569.0	33.5	3	4	4							M	RESIDUAL Dark gray, medium stiff, sandy clay (A-6)	29.5	
2565	2,564.0	38.5	5	6	7							M	Dark gray, medium stiff, sandy silt (A-4)	37.0	
														40.0	
Boring Terminated at Elevation 2,562.5 ft in sandy silt.															

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi									
SITE DESCRIPTION Retaining Wall No. 8 from -DET01_EB- STA 34+83.83 to 29+30.48							GROUND WTR (ft)								
BORING NO. RW8_1 (HDR)		STATION 11+24		OFFSET 20 ft RT		ALIGNMENT L_RT									
COLLAR ELEV. 2,633.3 ft		TOTAL DEPTH 21.5 ft		NORTHING 665,458		EASTING 818,003									
DRILL RIG/HAMMER EFF./DATE GTC3277 CME-75 83% (09/15/2020)			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER L. Wanstrath		START DATE 01/26/21		COMP. DATE 01/26/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2635	2,632.7	0.6													
2630	2,630.8	2.5	10	11	10							D	GROUND SURFACE 2,633.3	0.0	
	2,628.3	5.0	8	6	8							D	0.6' PAVEMENT 2,632.7	0.6	
2625	2,625.8	7.5	7	9	10							D	ROADWAY EMBANKMENT Medium dense, gray and brown, silty GRAVEL (A-1-b)	2.0	
2620	2,623.3	10.0	4	12	15							D	RESIDUAL Medium dense, tan and brown, silty SAND (A-2-4), micaceous	4.0	
2615	2,618.3	15.0	12	17	23							D	Very stiff to hard, brown, tan and white, SILT (A-4), with trace sand, micaceous, saprolitic		
	2,613.3	20.0	9	10	11							D			
														21.5	
Boring Terminated at Elevation 2,611.8 ft in SILT															

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# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi									
SITE DESCRIPTION Retaining Wall No. 8 from -DET01_EB- STA 34+83.83 to 29+30.48							GROUND WTR (ft)								
BORING NO. RW8_2 (HDR)		STATION 11+74		OFFSET 19 ft RT		ALIGNMENT L_RT									
COLLAR ELEV. 2,630.5 ft		TOTAL DEPTH 21.5 ft		NORTHING 665,477		EASTING 818,051									
DRILL RIG/HAMMER EFF./DATE GTC3277 CME-75 83% (09/15/2020)				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER L. Wanstrath		START DATE 01/26/21		COMP. DATE 01/27/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2635															
2630	2,629.9	0.6	11	12	10										
	2,628.0	2.5	8	12	17										
2625	2,625.5	5.0	9	15	16										
	2,623.0	7.5	11	16	21										
2620	2,620.5	10.0	15	17	21										
	2,615.5	15.0	6	9	9										
2610	2,610.5	20.0	8	7	11										
Boring Terminated at Elevation 2,609.0 ft in CLAY															

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi									
SITE DESCRIPTION Retaining Wall No. 8 from -DET01_EB- STA 34+83.83 to 29+30.48							GROUND WTR (ft)								
BORING NO. RW8_3 (HDR)		STATION 12+26		OFFSET 19 ft RT		ALIGNMENT L_RT									
COLLAR ELEV. 2,627.4 ft		TOTAL DEPTH 21.5 ft		NORTHING 665,498		EASTING 818,099									
DRILL RIG/HAMMER EFF./DATE GTC3277 CME-75 83% (09/15/2020)				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER L. Wanstrath		START DATE 01/27/21		COMP. DATE 01/27/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2630															
	2,626.8	0.6	10	10	8										
2625	2,624.9	2.5	8	7	6										
	2,622.4	5.0	9	9	11										
2620	2,619.9	7.5	7	8	9										
	2,617.4	10.0	8	8	9										
2615	2,612.4	15.0	8	8	8										
2610	2,607.4	20.0	12	13	12										
Boring Terminated at Elevation 2,605.9 ft in SILT															

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi										
SITE DESCRIPTION Retaining Wall No. 8 from -DET01_EB- STA 34+83.83 to 29+30.48							GROUND WTR (ft)									
BORING NO. RW8_4 (HDR)		STATION 12+80		OFFSET 20 ft RT		ALIGNMENT L_RT										
COLLAR ELEV. 2,624.4 ft		TOTAL DEPTH 21.5 ft		NORTHING 665,520		EASTING 818,149										
DRILL RIG/HAMMER EFF./DATE GTC3277 CME-75 83% (09/15/2020)				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER L. Wanstrath		START DATE 01/27/21		COMP. DATE 01/27/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
2625	2,623.8	0.6	6	7	7									2,624.4	0.0	GROUND SURFACE
	2,621.9	2.5	7	8	8									2,623.8	0.6	0.6' PAVEMENT
2620	2,619.4	5.0	4	6	9									2,621.9	2.5	ROADWAY EMBANKMENT Medium dense, brown and black, SAND and GRAVEL (A-1-b)
	2,616.9	7.5	10	10	8											RESIDUAL Stiff to hard, white, gray, brown and black, SILT (A-4), micaceous, saprolitic
2615	2,614.4	10.0	7	7	10											
2610	2,609.4	15.0	6	6	8											
2605	2,604.4	20.0	12	15	23											
														2,602.9	21.5	Boring Terminated at Elevation 2,602.9 ft in SILT

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi										
SITE DESCRIPTION Retaining Wall No. 8 from -DET01_EB- STA 34+83.83 to 29+30.48							GROUND WTR (ft)									
BORING NO. RW8_5 (HDR)		STATION 13+32		OFFSET 19 ft RT		ALIGNMENT L_RT										
COLLAR ELEV. 2,621.3 ft		TOTAL DEPTH 16.5 ft		NORTHING 665,545		EASTING 818,196										
DRILL RIG/HAMMER EFF./DATE GTC3277 CME-75 83% (09/15/2020)				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER L. Wanstrath		START DATE 01/27/21		COMP. DATE 01/27/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
2625																
2620	2,620.7	0.6	6	6	7									2,621.3	0.0	GROUND SURFACE
	2,618.8	2.5	8	6	7									2,620.7	0.6	0.6' PAVEMENT
2615	2,616.3	5.0	18	21	15									2,618.8	2.5	ROADWAY EMBANKMENT Medium dense, brown and gray, SAND and GRAVEL (A-1-b)
	2,613.8	7.5	5	5	10											RESIDUAL Stiff to hard, white, gray and brown, SILT (A-4), with trace clay, micaceous, saprolitic
2610	2,611.3	10.0	8	10	13											
2605	2,606.3	15.0	5	7	11											
														2,604.8	16.5	Boring Terminated at Elevation 2,604.8 ft in SILT

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi									
SITE DESCRIPTION Retaining Wall No. 8 from -DET01_EB- STA 34+83.83 to 29+30.48							GROUND WTR (ft)								
BORING NO. RW8_6 (HDR)		STATION 13+83		OFFSET 19 ft RT		ALIGNMENT L_RT									
COLLAR ELEV. 2,618.4 ft		TOTAL DEPTH 5.0 ft		NORTHING 665,570		EASTING 818,241									
DRILL RIG/HAMMER EFF./DATE GTC3277 CME-75 83% (09/15/2020)				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER L. Wanstrath		START DATE 01/27/21		COMP. DATE 01/27/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2620															
	2,617.8	0.6	9	6	10										2,618.4 GROUND SURFACE 0.0
	2,615.9	2.5	9	10	15										2,617.8 0.6' PAVEMENT 0.6
2615	2,613.4	5.0	60/0.0												2,615.9 ROADWAY EMBANKMENT 2.5 Medium dense, brown and gray, SAND and GRAVEL (A-1-b)
															2,613.4 RESIDUAL 5.0 Very stiff, brown, black, and gray, SILT (A-4), saprolitic
															Boring Terminated with Standard Penetration Test Refusal at Elevation 2,613.4 ft on Crystalline Rock (GNEISS)

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi									
SITE DESCRIPTION Retaining Wall No. 8 from -DET01_EB- STA 34+83.83 to 29+30.48							GROUND WTR (ft)								
BORING NO. RW8_7 (HDR)		STATION 14+36		OFFSET 19 ft RT		ALIGNMENT L_RT									
COLLAR ELEV. 2,615.3 ft		TOTAL DEPTH 10.3 ft		NORTHING 665,597		EASTING 818,287									
DRILL RIG/HAMMER EFF./DATE GTC3277 CME-75 83% (09/15/2020)				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER L. Wanstrath		START DATE 01/27/21		COMP. DATE 01/27/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2620															
	2,614.8	0.5	6	8	9										2,615.3 GROUND SURFACE 0.0
2615	2,612.8	2.5	5	6	7										2,614.7 0.6' PAVEMENT 0.6
	2,610.3	5.0	10	53	41										2,612.8 ROADWAY EMBANKMENT 2.5 Medium dense, brown and gray, SAND and GRAVEL (A-1-b)
2610	2,607.8	7.5	32	68/0.2											2,610.3 RESIDUAL 5.0 Stiff to hard, brown and gray, SILT (A-4), micaceous, saprolitic
2605	2,605.3	10.0	100/0.3												2,608.3 WEATHERED ROCK 7.0 Gray, GNEISS
															Boring Terminated at Elevation 2,605.0 ft in Weathered Rock (GNEISS)

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi									
SITE DESCRIPTION Retaining Wall No. 8 from -DET01_EB- STA 34+83.83 to 29+30.48							GROUND WTR (ft)								
BORING NO. RW8_8 (HDR)		STATION 14+88		OFFSET 20 ft RT		ALIGNMENT L_RT									
COLLAR ELEV. 2,612.3 ft		TOTAL DEPTH 10.9 ft		NORTHING 665,625		EASTING 818,331									
DRILL RIG/HAMMER EFF./DATE GTC3277 CME-75 83% (09/15/2020)				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER L. Wanstrath		START DATE 01/27/21		COMP. DATE 01/27/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2615															
	2,611.7	0.6	6	4	5									2,612.3	0.0
	2,609.8	2.5	8	7	8									2,611.7	0.6
2610	2,609.8	2.5	8	7	8									2,609.8	2.5
	2,607.3	5.0	64	36/0.2										2,607.8	4.5
	2,604.8	7.5	10	15	14									2,605.3	7.0
2605	2,604.8	7.5	10	15	14									2,603.3	9.0
	2,602.3	10.0	24	76/0.3										2,601.4	10.9

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi									
SITE DESCRIPTION Retaining Wall No. 8 from -DET01_EB- STA 34+83.83 to 29+30.48							GROUND WTR (ft)								
BORING NO. RW8_9 (HDR)		STATION 15+39		OFFSET 18 ft RT		ALIGNMENT L_RT									
COLLAR ELEV. 2,609.5 ft		TOTAL DEPTH 11.5 ft		NORTHING 665,656		EASTING 818,373									
DRILL RIG/HAMMER EFF./DATE GTC3277 CME-75 83% (09/15/2020)				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER L. Wanstrath		START DATE 01/27/21		COMP. DATE 01/27/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2610	2,608.9	0.6	7	11	8										
	2,607.0	2.5	4	9	7										
2605	2,604.5	5.0	8	8	10										
	2,602.0	7.5	4	8	11										
2600	2,599.5	10.0	16	32	22										

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23



# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi									
SITE DESCRIPTION Retaining Wall No. 8 from -DET01_EB- STA 34+83.83 to 29+30.48							GROUND WTR (ft)								
BORING NO. RW8_10 (HDR)		STATION 15+90		OFFSET 17 ft RT		ALIGNMENT L_RT									
COLLAR ELEV. 2,606.5 ft		TOTAL DEPTH 11.5 ft		NORTHING 665,687		EASTING 818,414									
DRILL RIG/HAMMER EFF./DATE GTC3277 CME-75 83% (09/15/2020)			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER L. Wanstrath		START DATE 01/26/21		COMP. DATE 01/26/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2610															
2605	2,605.9	0.6	7	10	7										
	2,604.0	2.5	4	4	5										
	2,601.5	5.0	6	8	13										
2600	2,599.0	7.5	5	5	7										
	2,596.5	10.0	6	7	10										
2595															

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST R. Dugger									
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)								
BORING NO. S1_B1-A (HDR)		STATION 24+25		OFFSET 31 ft LT		ALIGNMENT L_LT									
COLLAR ELEV. 2,564.5 ft		TOTAL DEPTH 27.5 ft		NORTHING 666,373		EASTING 818,887									
DRILL RIG/HAMMER EFF./DATE GTC9083 CME-550X 80% (11/24/2020)			DRILL METHOD SPT Core Boring			HAMMER TYPE Automatic									
DRILLER L. Wanstrath		START DATE 02/28/21		COMP. DATE 02/28/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2565	2,564.5	0.0													
2560	2,559.5	5.0	67	25	21										
	2,557.0	7.5	60/0.0												
2555															
2550															
2545															
2540															

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## CORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST R. Dugger					
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)				
BORING NO. S1_B1-A (HDR)		STATION 24+25		OFFSET 31 ft LT		ALIGNMENT L_LT					
COLLAR ELEV. 2,564.5 ft		TOTAL DEPTH 27.5 ft		NORTHING 666,373		EASTING 818,887					
DRILL RIG/HAMMER EFF./DATE GTC9083 CME-550X 80% (11/24/2020)				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic					
DRILLER L. Wanstrath		START DATE 02/28/21		COMP. DATE 02/28/21		SURFACE WATER DEPTH N/A					
CORE SIZE NQ2		TOTAL RUN 20.0 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	SAMP. NO.	REC. (ft) %			
2557	2,557.0	7.5	5.0	1:18	(5.0)	(4.4)				Begin Coring @ 7.5 ft	7.5
2555	2,555.0	12.5	5.0	1:58 1:35 1:58 2:00	100%	88%	RS-6	(8.9) (8.3)	100% 93%	CRYSTALLINE ROCK Light to dark gray with brown, m-c grained Biotite GNEISS, with trace garnets, slight weathering, hard, close to wide fracture spacing Moderate to severe weathering, moderately hard, very close fracture spacing RS-6 11.0' - 11.5' GSI= 70 - 80 Qu= 18,520 psi	
2550	2,550.0	17.5	5.0	1:28 2:05 2:15 2:15 2:10	100%	100%		(10.5)	(9.3)	Slight weathering, hard, close to wide fracture spacing	16.4
2545	2,545.0	22.5	5.0	1:45 0:15 2:00 2:02 2:10	88%	78%	RS-7	95%	84%	Light to dark gray with brown, Migmatitic Biotite GNEISS, slight weathering, hard, close to wide fracture spacing RS-7 16.8' - 17.5' GSI= 70 - 80 Qu= 10,027 psi 0.6' core loss	
2540	2,540.0	27.5	5.0	1:33 1:35 1:33 2:10 2:30	100%	86%				Very severe weathering, moderately hard, very close fracture spacing Slight weathering, hard, close to wide fracture spacing	
	2,537.0									Boring Terminated at Elevation 2,537.0 ft in Crystalline Rock (GNEISS)	27.5

NCDOT CORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST R. Dugger									
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)								
BORING NO. S1_B1-B (HDR)		STATION 23+72		OFFSET 14 ft RT		ALIGNMENT L_RT									
COLLAR ELEV. 2,565.6 ft		TOTAL DEPTH 35.7 ft		NORTHING 666,279		EASTING 818,924									
DRILL RIG/HAMMER EFF./DATE GTC9083 CME-550X 80% (11/24/2020)			DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic										
DRILLER L. Wanstrath		START DATE 02/16/21		COMP. DATE 02/16/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2570															
2565	2,565.6	0.0	2	1	1								W	2,565.6 GROUND SURFACE 0.0	
2560	2,560.6	5.0	15	20	12								Sat.	2,562.6 ALLUVIAL Very loose, brown and orange, silty SAND, micaceous Medium dense to dense, brown, SAND (A-3), with little gravel 3.0	
2555	2,555.6	10.0	10	12	14								Sat.		
2550	2,550.6	15.0	10	100/0.0										2,550.1 CRYSTALLINE ROCK Brown, GNEISS Light to dark gray with brown, Migmatitic Biotite GNEISS 15.5	
2545															
2540															
2535															
2530														2,529.9 Boring Terminated at Elevation 2,529.9 ft in Crystalline Rock (GNEISS) 35.7	

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi									
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)								
BORING NO. S1_B1-C (HDR)		STATION 23+64		OFFSET 13 ft RT		ALIGNMENT L_LT									
COLLAR ELEV. 2,575.5 ft		TOTAL DEPTH 44.0 ft		NORTHING 666,298		EASTING 818,886									
DRILL RIG/HAMMER EFF./DATE GTC3277 CME-75 83% (09/15/2020)			DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic										
DRILLER L. Wanstrath		START DATE 03/10/21		COMP. DATE 03/10/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2580															
2575	2,575.5	0.0	1	1	2								D	2,575.5 GROUND SURFACE 0.0	
2570	2,573.0	2.5	3	3	3								D	2,573.5 ROADWAY EMBANKMENT Very soft, red and brown, sandy CLAY (A-6) Soft to medium stiff, red, gray, and brown, CLAY (A-7-6) 2.0	
2565	2,568.0	7.5	2	2	1								M		
2560	2,565.5	10.0	1	2	3								M		
2555	2,560.5	15.0	11	16	15								W	2,562.5 ALLUVIAL Dense, gray, SAND and GRAVEL (A-1-b) 13.0	
2550	2,555.5	20.0	87	50/0.5										2,557.5 WEATHERED ROCK Gray and black, GNEISS 18.0	
2545	2,551.5	24.0	60/0.0											2,551.5 CRYSTALLINE ROCK Gray, black, and white, Migmatitic Biotite GNEISS 24.0	
2540															
2535														2,531.5 Boring Terminated at Elevation 2,531.5 ft in Crystalline Rock (GNEISS) 44.0	

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## CORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST R. Dugger					
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)				
BORING NO. S1_B1-B (HDR)		STATION 23+72		OFFSET 14 ft RT		ALIGNMENT L_RT					
COLLAR ELEV. 2,565.6 ft		TOTAL DEPTH 35.7 ft		NORTHING 666,279		EASTING 818,924					
DRILL RIG/HAMMER EFF./DATE GTC9083 CME-550X 80% (11/24/2020)				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic					
DRILLER L. Wanstrath		START DATE 02/16/21		COMP. DATE 02/16/21		SURFACE WATER DEPTH N/A					
CORE SIZE NQ2		TOTAL RUN 20.0 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %			
2549.9	2,549.9	15.7	5.0	1:10 1:24 1:45 1:46 1:40	(4.8) 96%	(3.6) 72%	(19.4) 97%	(17.3) 87%		Begin Coring @ 15.7 ft <b>CRYSTALLINE ROCK (continued)</b> Light to dark gray with brown, Migmatitic Biotite GNEISS slight to moderate weathering, hard, close to moderately close fracture spacing 0.2' core loss	
2545	2,544.9	20.7	5.0	2:10 2:12 2:14 2:17 2:13	(4.6) 92%	(3.5) 70%					0.4' core loss; Moderately severe weathering, medium to moderately hard, very close fracture spacing
2540	2,539.9	25.7	5.0	2:31 2:31 2:35 2:34 2:31	(5.0) 100%	(4.6) 92%					Moderate to slight weathering, hard, close to moderately close fracture spacing
2535	2,534.9	30.7	5.0	2:35 2:37 2:39 2:45 2:41	(5.0) 100%	(4.7) 94%					RS-8
2530	2,529.9	35.7									RS-8 32.1' - 32.5' GSI= 70 - 80 Qu= 10,265 psi
Boring Terminated at Elevation 2,529.9 ft in Crystalline Rock (GNEISS)											

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi					
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)				
BORING NO. S1_B1-C (HDR)		STATION 23+64		OFFSET 13 ft RT		ALIGNMENT L_LT					
COLLAR ELEV. 2,575.5 ft		TOTAL DEPTH 44.0 ft		NORTHING 666,298		EASTING 818,886					
DRILL RIG/HAMMER EFF./DATE GTC3277 CME-75 83% (09/15/2020)				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic					
DRILLER L. Wanstrath		START DATE 03/10/21		COMP. DATE 03/10/21		SURFACE WATER DEPTH N/A					
CORE SIZE NQ2		TOTAL RUN 20.0 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %			
2551.5	2,551.5	24.0	6.0	2:18 2:09 2:20 2:13 2:07 2:08	(4.5) 75%	(2.9) 48%				Begin Coring @ 24.0 ft <b>CRYSTALLINE ROCK</b> Gray, black, and white, Migmatitic Biotite GNEISS moderate to slight weathering, hard, close fracture spacing (continued) 1.5' core loss	
2550	2,551.5	24.0	6.0	2:19 2:13 2:17 1:58 2:09	(4.8) 96%	(3.5) 70%					Close to moderately close fracture spacing; 0.2' core loss
2545	2,545.5	30.0	5.0	2:19 2:13 2:17 1:58 2:09	(4.8) 96%	(3.5) 70%					Moderately hard, very close to close fracture spacing
2540	2,540.5	35.0	5.0	1:46 1:48 1:53 1:50 1:59	(4.0) 80%	(1.9) 38%					Close to moderately close fracture spacing, hard, moderate to slight weathering; 1.0' core loss
2535	2,535.5	40.0	4.0	2:11 1:49 2:21 2:13	(3.7) 93%	(2.4) 60%					RS-9 39.4' - 40.0' GSI= 70 - 80 Qu= 13,205 psi
2531.5	2,531.5	44.0							RS-9	0.3' core loss	
Boring Terminated at Elevation 2,531.5 ft in Crystalline Rock (GNEISS)											

NCDOT CORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST R. Dugger									
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)								
BORING NO. S1_B2-A (HDR)		STATION 25+17		OFFSET 30 ft LT		ALIGNMENT L_LT									
COLLAR ELEV. 2,565.2 ft		TOTAL DEPTH 36.3 ft		NORTHING 666,446		EASTING 818,943									
DRILL RIG/HAMMER EFF./DATE GTC9083 CME-550X 80% (11/24/2020)				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic									
DRILLER L. Wanstrath		START DATE 03/01/21		COMP. DATE 03/01/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2570															
2565	2,565.2	0.0	3	2	1									2,565.2	0.0
														2,562.2	3.0
2560	2,560.2	5.0	7	13	18									2,559.6	5.6
	2,557.4	7.8	60/0.0											2,557.4	7.8
2555															
2550															
2545															
2540															
2535															
2530															
Boring Terminated at Elevation 2,528.9 ft in Crystalline Rock (GNEISS)															

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi									
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)								
BORING NO. S1_B2-B (HDR)		STATION 24+67		OFFSET 16 ft RT		ALIGNMENT L_RT									
COLLAR ELEV. 2,565.5 ft		TOTAL DEPTH 32.6 ft		NORTHING 666,354		EASTING 818,982									
DRILL RIG/HAMMER EFF./DATE GTC3277 CME-75 83% (09/15/2020)				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER K. Boone		START DATE 02/15/21		COMP. DATE 02/15/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2570															
2565	2,565.5	0.0	1	1	0									2,565.5	0.0
2560															
2555	2,554.8	10.7	100/0.5											2,554.8	10.7
2550	2,550.9	14.6	60/0.1											2,550.9	14.6
2545															
2540															
2535															
Boring Terminated at Elevation 2,532.9 ft in Crystalline Rock (GNEISS)															

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## CORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST R. Dugger					
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)				
BORING NO. S1_B2-A (HDR)		STATION 25+17		OFFSET 30 ft LT		ALIGNMENT L_LT					
COLLAR ELEV. 2,565.2 ft		TOTAL DEPTH 36.3 ft		NORTHING 666,446		EASTING 818,943					
DRILL RIG/HAMMER EFF./DATE GTC9083 CME-550X 80% (11/24/2020)				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic					
DRILLER L. Wanstrath		START DATE 03/01/21		COMP. DATE 03/01/21		SURFACE WATER DEPTH N/A					
CORE SIZE NQ2		TOTAL RUN 28.5 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)	REC. (%)	RQD (%)			
2557.4	2,557.4	7.8	3.5	0:53/0.5 2:00/1.0 1:45/1.0 3:22/1.0	(2.6) 74%	(1.3) 37%	(23.7) 83%	(14.2) 50%		Begin Coring @ 7.8 ft <b>CRYSTALLINE ROCK</b>	7.8
2555	2,553.9	11.3	5.0	1:18/1.0 3:02/1.0 0:47/1.0 0:55/1.0 1:25/1.0	(3.2) 64%	(0.0) 0%				Light to medium gray with dark brown, Migmatitic Biotite GNEISS, moderate weathering, medium hard to hard, very close to close fracture spacing 0.9' core loss; very severely weathered, soft With trace epidote on fractures, moderate weathering, moderately hard Very severely weathered, soft 1.8' core loss Moderate to slight weathering, hard, close fracture spacing	
2550	2,548.9	16.3	5.0	1:50/1.0 1:33/1.0 1:37/1.0 1:54/1.0 2:13/1.0	(5.0) 100%	(4.0) 80%				Severe weathering, soft, very close fracture spacing Moderate to slight weathering, hard, close fracture spacing RS-10	
2545	2,543.9	21.3	5.0	1:18/1.0 1:39/1.0 1:31/1.0 1:29/1.0 2:09/1.0	(3.8) 76%	(1.9) 38%				RS-10 20.0' - 20.8' GSI= 75 - 85 Qu= 9,796 psi Very close fracture spacing 1.2' core loss With trace garnets, slight weathering, hard, close to wide fracture spacing	
2540	2,538.9	26.3	5.0	2:01/1.0 1:47/1.0 1:50/1.0 2:23/1.0 2:38/1.0	(5.0) 100%	(4.5) 90%				Very close to close fracture spacing	
2535	2,533.9	31.3	5.0	2:15/1.0 2:09/1.0 2:14/1.0 1:16/1.0 2:05/1.0	(5.0) 100%	(2.5) 50%					
2530	2,528.9	36.3								Boring Terminated at Elevation 2,528.9 ft in Crystalline Rock (GNEISS)	36.3

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi					
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)				
BORING NO. S1_B2-B (HDR)		STATION 24+67		OFFSET 16 ft RT		ALIGNMENT L_RT					
COLLAR ELEV. 2,565.5 ft		TOTAL DEPTH 32.6 ft		NORTHING 666,354		EASTING 818,982					
DRILL RIG/HAMMER EFF./DATE GTC3277 CME-75 83% (09/15/2020)				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic					
DRILLER K. Boone		START DATE 02/15/21		COMP. DATE 02/15/21		SURFACE WATER DEPTH N/A					
CORE SIZE NQ2		TOTAL RUN 18.0 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)	REC. (%)	RQD (%)			
2550.9	2,550.9	14.6	3.0	(2.5) 83%	(0.5) 17%					Begin Coring @ 14.6 ft <b>CRYSTALLINE ROCK</b>	14.6
2550	2,547.9	17.6	5.0	(5.0) 100%	(5.0) 100%					Light to dark gray with brown, Migmatitic Biotite GNEISS moderately severe to moderate weathering, soft to moderately hard, very close to close fracture spacing 0.4' core loss Slight weathering, hard, moderately close to wide fracture spacing	
2545	2,542.9	22.6	5.0	(5.0) 100%	(4.7) 94%					Close to moderately close fracture spacing	
2540	2,537.9	27.6	5.0	(5.0) 100%	(4.7) 94%						
2535	2,532.9	32.6								Boring Terminated at Elevation 2,532.9 ft in Crystalline Rock (GNEISS)	32.6

NCDOT CORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

<b>WBS</b> 48030.1.FS1		<b>TIP</b> B-5898/B-3186		<b>COUNTY</b> HAYWOOD		<b>GEOLOGIST</b> N. Yacobi										
<b>SITE DESCRIPTION</b> US 23/ US 74 (Great Smoky Mountain Highway)							<b>GROUND WTR (ft)</b>									
<b>BORING NO.</b> S1_B2-C (HDR)		<b>STATION</b> 24+82		<b>OFFSET</b> 15 ft RT		<b>ALIGNMENT</b> L_LT										
<b>COLLAR ELEV.</b> 2,567.3 ft		<b>TOTAL DEPTH</b> 48.5 ft		<b>NORTHING</b> 666,391		<b>EASTING</b> 818,957										
<b>DRILL RIG/HAMMER EFF./DATE</b> GTC9083 CME-550X 80% (11/24/2020)				<b>DRILL METHOD</b> SPT Core Boring		<b>HAMMER TYPE</b> Automatic										
<b>DRILLER</b> L. Wanstrath		<b>START DATE</b> 03/10/21		<b>COMP. DATE</b> 03/10/21		<b>SURFACE WATER DEPTH</b> N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
2570														2,567.3	0.0	GROUND SURFACE
2565	2,567.3	0.0	1	2	3	5						M	ROADWAY EMBANKMENT Very soft to medium stiff, red and brown, silty CLAY (A-7-6), micaceous			
	2,564.8	2.5	1	1	1	2										
	2,562.3	5.0	3	3	7	10						W		2,560.3	7.0	ALLUVIAL
2560	2,559.8	7.5	18	14	26	40						W	Medium dense to very dense, gray, black, and white, SAND and GRAVEL (A-1-b)			
	2,557.3	10.0	4	5	7	12						D		RESIDUAL	2,557.8	9.5
2555	2,552.3	15.0	3	4	6	10						D	Medium dense to dense, red, tan, and black, SILT (A-4), contains little rock fragments, micaceous, saprolitic			
2550	2,547.3	20.0	8	16	30	46						D				
2545	2,542.3	25.0	100/0.5			100/0.5							WEATHERED ROCK	2,542.3	25.0	
2540	2,538.8	28.5	60/0.0			60/0.0							Red, brown, and black, GNEISS	2,538.8	28.5	
2535													CRYSTALLINE ROCK			
													Light to dark gray with brown, f-c grained Biotite GNEISS, with trace garnets			
2530													Light to dark gray with brown, Migmatic Biotite GNEISS	2,531.9	35.4	
2525																
2520														2,518.8	48.5	
Boring Terminated at Elevation 2,518.8 ft in Crystalline Rock (GNEISS)																

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## CORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi					
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)				
BORING NO. S1_B2-C (HDR)		STATION 24+82		OFFSET 15 ft RT		ALIGNMENT L_LT					
COLLAR ELEV. 2,567.3 ft		TOTAL DEPTH 48.5 ft		NORTHING 666,391		EASTING 818,957					
DRILL RIG/HAMMER EFF./DATE GTC9083 CME-550X 80% (11/24/2020)				DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic					
DRILLER L. Wanstrath		START DATE 03/10/21		COMP. DATE 03/10/21		SURFACE WATER DEPTH N/A					
CORE SIZE NQ2		TOTAL RUN 20.0 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	SAMP. NO.	REC. (ft) %			
2538.8	2538.8	28.5	1.5	1:49/0.5	(1.5)	(1.3)				Begin Coring @ 28.5 ft	28.5
	2537.3	30.0	5.0	2:09	100%	87%	(6.7)	(3.7)		<b>WEATHERED ROCK (continued)</b>	
				2:32	(4.8)	(2.4)				<b>CRYSTALLINE ROCK</b>	
2535				1:49	96%	48%				Light to dark gray with brown, f-c grained Biotite GNEISS, with trace garnets, moderately severe to slight weathering, moderately hard to hard, very close to close fracture spacing	
	2532.3	35.0	5.0	2:31						Severe weathering, medium to moderately hard, very close fracture spacing	35.4
				2:49						0.2' core loss	
2530				2:37	(5.0)	(4.3)				Moderate to slight weathering, moderately hard to hard, very close to close fracture spacing	
				3:02	100%	86%	(11.4)	(6.6)		RS-11 33.5' - 34.1'	
				2:42						GSI= 60 - 70	
	2527.3	40.0	5.0	2:18						Qu= 3,264 psi (sampled along healed joint)	
				1:59						Light to dark gray with brown, Migmatitic Biotite GNEISS, moderate to slight weathering, hard to moderately hard, very close to close fracture spacing	
2525				1:37	(5.0)	(1.0)				Core barrel blocked off	
				1:42	100%	20%				1.9' core loss	
	2522.3	45.0	3.5	1:57							
				1:53							
	2520			1:59							
				1:38	(1.6)	(0.4)					
				1:41	46%	11%					
	2518.8	48.5	1.08	2:09							
				1:08/0.5						Boring Terminated at Elevation 2,518.8 ft in Crystalline Rock (GNEISS)	48.5

NCDOT CORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23



# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Alex Lozada										
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)									
BORING NO. S1_EB1_A		STATION 31+44		OFFSET 13 ft LT		ALIGNMENT L_LT										
COLLAR ELEV. 2,585.9 ft		TOTAL DEPTH 38.5 ft		NORTHING 666,931		EASTING 819,344										
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Michael Moseley		START DATE 02/14/23		COMP. DATE 02/14/23		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2590																
2585	2,584.9	1.0	2	5	4									M	2,585.9	0.0
	2,582.4	3.5	3	5	4									M	2,580.9	5.0
2580	2,579.9	6.0	2	2	2									SS-003	2,577.4	8.5
	2,577.4	8.5	4	4	4									M	2,573.9	12.0
2575																
	2,572.4	13.5	0	0	1									Sat.	2,573.9	12.0
2570																
	2,567.4	18.5	WOH	2	3									M	2,563.9	22.0
2565																
	2,562.4	23.5	46	32	19									SS-007	2,554.8	31.1
2560																
	2,557.4	28.5	10	19	65									M	2,554.8	31.1
2555																
	2,552.4	33.5	30	29	26									M	2,547.4	38.5
2550																
	2,547.4	38.5	60/0.0													
Boring Terminated by Auger Refusal at Elevation 2,547.4 ft on Rock. ST-001 had 100% recovery. Other Samples: ST-001 (15.0 - 17.0)																

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Alex Lozada										
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)									
BORING NO. S1_EB1_B		STATION 32+24		OFFSET 31 ft RT		ALIGNMENT L_LT										
COLLAR ELEV. 2,587.7 ft		TOTAL DEPTH 42.7 ft		NORTHING 666,954		EASTING 819,431										
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Michael Moseley		START DATE 02/14/23		COMP. DATE 02/14/23		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2590																
	2,586.7	1.0	4	4	5										2,587.7	0.0
2585	2,584.2	3.5	7	6	8									M	2,581.2	6.5
	2,581.7	6.0	5	7	10									SS-012	2,576.7	11.0
2580	2,579.2	8.5	3	3	3									M	2,576.7	11.0
	2,574.2	13.5	0	2	2									W	2,570.7	17.0
2575																
	2,569.2	18.5	0	2	2									W	2,564.2	23.5
2570																
	2,564.2	23.5	2	3	3									SS-017	2,558.4	29.3
2565																
	2,559.2	28.5	6	13	36									W	2,550.2	37.5
2560																
	2,554.2	33.5	22	24	35									W	2,550.2	37.5
2555																
	2,549.2	38.5	100/0.7													
2550																
	2,545.0	42.7	60/0.0													
Boring Terminated by Auger Refusal at Elevation 2,545.0 ft on Rock.																

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST Alex Lozada										
SITE DESCRIPTION Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							GROUND WTR (ft)									
BORING NO. S1_EB1_C		STATION 32+83		OFFSET 56 ft RT		ALIGNMENT L_LT										
COLLAR ELEV. 2,591.3 ft		TOTAL DEPTH 53.0 ft		NORTHING 666,974		EASTING 819,491										
DRILL RIG/HAMMER EFF./DATE SUM3123 CME-550X 91% 11/19/2020			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Michael Moseley		START DATE 02/14/23		COMP. DATE 02/14/23		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2595																
2590	2,590.3	1.0	4	4	5											
	2,587.8	3.5	4	5	6											
2585	2,585.3	6.0	7	6	5											
	2,582.8	8.5	3	2	3											
2580																
	2,577.8	13.5	3	2	3											
2575																
	2,572.8	18.5	1	2	2											
2570																
	2,567.8	23.5	0	1	3											
2565																
	2,562.8	28.5	25	5	5											
2560																
	2,557.8	33.5	21	23	29											
2555																
	2,552.8	38.5	20	16	16											
2550																
	2,547.8	43.5	12	21	25											
2545																
	2,542.8	48.5	40	60												
2540																
	2,538.3	53.0	60/0.0													

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST R. Dugger										
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)									
BORING NO. S1_EB1-A (HDR)		STATION 23+78		OFFSET 30 ft LT		ALIGNMENT L_LT										
COLLAR ELEV. 2,577.2 ft		TOTAL DEPTH 30.1 ft		NORTHING 666,335		EASTING 818,860										
DRILL RIG/HAMMER EFF./DATE GTC9083 CME-550X 80% (11/24/2020)			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER L. Wanstrath		START DATE 03/01/21		COMP. DATE 03/01/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2580																
	2,576.5	0.7	13	13	6											
2575																
	2,574.7	2.5	3	3	6											
	2,572.2	5.0	3	4	3											
2570																
	2,569.7	7.5	1	2	3											
	2,567.2	10.0	1	2	2											
2565																
	2,562.2	15.0	14	16	19											
2560																
	2,557.2	20.0	60/0.1													
2555																
	2,552.2	25.0	17	20	80/0.4											
2550																
	2,547.2	30.0	60/0.1													

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

Other Samples:  
ST-1 (8.5 - 9.6)

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST R. Dugger										
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)									
BORING NO. S1_EB1-B (HDR)		STATION 23+20		OFFSET 12 ft RT		ALIGNMENT L_RT										
COLLAR ELEV. 2,578.8 ft		TOTAL DEPTH 32.5 ft		NORTHING 666,239		EASTING 818,893										
DRILL RIG/HAMMER EFF./DATE GTC9083 CME-550X 80% (11/24/2020)			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER L. Wanstrath		START DATE 01/29/21		COMP. DATE 01/21/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2580																
	2,578.2	0.6	15	18	10											
2575	2,576.3	2.5	2	3	4											
	2,573.8	5.0	11	11	7											
2570	2,571.3	7.5	1	2	3											
	2,568.8	10.0	2	2	4											
2565	2,563.8	15.0	2	7	14											
2560	2,558.8	20.0	2	2	2											
2555	2,553.8	25.0	2	5	6											
2550	2,548.8	30.0	100/0.5													
	2,546.3	32.5	60/0.0													

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi										
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)									
BORING NO. S1_EB1-C (HDR)		STATION 23+46		OFFSET 7 ft RT		ALIGNMENT L_LT										
COLLAR ELEV. 2,575.8 ft		TOTAL DEPTH 25.1 ft		NORTHING 666,287		EASTING 818,871										
DRILL RIG/HAMMER EFF./DATE GTC9083 CME-550X 80% (11/24/2020)			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER L. Wanstrath		START DATE 03/09/21		COMP. DATE 03/09/21		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2580																
	2,575.8	0.0	2	3	3											
2575	2,573.3	2.5	4	2	3											
	2,570.8	5.0	2	3	4											
2570	2,568.3	7.5	2	2	2											
2565	2,565.8	10.0	1	1	4											
2560	2,560.8	15.0	6	11	20											
2555	2,555.8	20.0	14	13	21											
	2,551.1	24.7	100/0.3													
	2,550.7	25.1	60/0.0													

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

<b>WBS</b> 48030.1.FS1		<b>TIP</b> B-5898/B-3186		<b>COUNTY</b> HAYWOOD		<b>GEOLOGIST</b> Alex Lozada	
<b>SITE DESCRIPTION</b> Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							<b>GROUND WTR (ft)</b>
<b>BORING NO.</b> S1_EB2_A		<b>STATION</b> 31+53		<b>OFFSET</b> 71 ft LT		<b>ALIGNMENT</b> L_LT	
<b>COLLAR ELEV.</b> 2,585.4 ft		<b>TOTAL DEPTH</b> 41.3 ft		<b>NORTHING</b> 666,978		<b>EASTING</b> 819,308	
<b>DRILL RIG/HAMMER EFF./DATE</b> SUM3123 CME-550X 91% 11/19/2020				<b>DRILL METHOD</b> H.S. Augers		<b>HAMMER TYPE</b> Automatic	
<b>DRILLER</b> Michael Moseley		<b>START DATE</b> 02/15/23		<b>COMP. DATE</b> 02/15/23		<b>SURFACE WATER DEPTH</b> N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2590															
2585	2,584.4	1.0													
	2,581.9	3.5	4	3	4										
2580	2,579.4	6.0	3	2	3										
	2,576.9	8.5	0	0	2										
2575			0	0	3										
	2,571.9	13.5	4	4	5										
2570															
	2,566.9	18.5	3	3	4										
2565															
	2,561.9	23.5	4	8	13										
2560															
	2,556.9	28.5	28	100/0.9											
2555															
	2,551.9	33.5	100/0.3												
2550															
	2,546.9	38.5	100/0.3												
2545															
	2,544.1	41.3	60/0.0												

<b>WBS</b> 48030.1.FS1		<b>TIP</b> B-5898/B-3186		<b>COUNTY</b> HAYWOOD		<b>GEOLOGIST</b> Alex Lozada	
<b>SITE DESCRIPTION</b> Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74							<b>GROUND WTR (ft)</b>
<b>BORING NO.</b> S1_EB2_B		<b>STATION</b> 34+10		<b>OFFSET</b> 16 ft RT		<b>ALIGNMENT</b> L_LT	
<b>COLLAR ELEV.</b> 2,607.3 ft		<b>TOTAL DEPTH</b> 45.7 ft		<b>NORTHING</b> 667,083		<b>EASTING</b> 819,563	
<b>DRILL RIG/HAMMER EFF./DATE</b> SUM3123 CME-550X 91% 11/19/2020				<b>DRILL METHOD</b> H.S. Augers		<b>HAMMER TYPE</b> Automatic	
<b>DRILLER</b> Michael Moseley		<b>START DATE</b> 02/16/23		<b>COMP. DATE</b> 02/16/23		<b>SURFACE WATER DEPTH</b> N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2610															
	2,606.3	1.0													
2605			5	4	4										
	2,603.8	3.5	4	3	3										
2600			0	0	1										
	2,598.8	8.5	2	3	3										
2595															
	2,593.8	13.5	2	2	2										
2590															
	2,588.8	18.5	4	3	5										
2585															
	2,583.8	23.5	0	2	2										
2580															
	2,578.8	28.5	2	2	3										
2575															
	2,573.8	33.5	3	4	5										
2570															
	2,568.8	38.5	3	4	4										
2565															
	2,563.8	43.5	12	12	29										
	2,561.6	45.7	60/0.0												

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST C. Swafford									
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)								
BORING NO. S1_EB2-A (HDR)		STATION 26+08		OFFSET 30 ft LT		ALIGNMENT L_LT									
COLLAR ELEV. 2,580.0 ft		TOTAL DEPTH 27.0 ft		NORTHING 666,518		EASTING 818,995									
DRILL RIG/HAMMER EFF./DATE GTC3277 CME-75 83% (09/15/2020)			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER K. Boone		START DATE 02/28/21		COMP. DATE 02/28/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2580	2,579.1	0.9	14	19	9									2,580.0 GROUND SURFACE 0.0	
	2,579.1													2,579.1 0.9' PAVEMENT 0.9	
	2,576.5	3.5	6	3	4									ROADWAY EMBANKMENT Loose to medium dense, brown, SAND (A-3), with some gravel	5.5
2575	2,574.2	5.8	4	3	3									Soft to medium stiff, gray, SILT (A-4), contains trace root fragments, micaceous, organic odor	
	2,571.5	8.5	2	1	1										
2570	2,566.5	13.5	2	1	2									Soft, gray, CLAY (A-7-6), contains trace wood fragments, micaceous	12.0
	2,561.5	18.5	4	6	12									ALLUVIAL Very loose, gray, SAND and GRAVEL (A-1-b)	17.0
2565	2,556.5	23.5	13	21	33									RESIDUAL Very dense, brown, orange, and white, silty SAND (A-2-4), saprolitic	22.0
	2,553.0	27.0	60/0.0											Boring Terminated with Standard Penetration Test Refusal at Elevation 2,553.0 ft on Crystalline Rock (GNEISS)	27.0
<b>NOTES</b> Shelby tube obtained from 6.0'-8.0' Shelby tube obtained from 13.5'-15.5' Rig chatter and grinding at 27.0'															

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST R. Dugger									
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)								
BORING NO. S1_EB2-B (HDR)		STATION 25+59		OFFSET 20 ft RT		ALIGNMENT L_RT									
COLLAR ELEV. 2,577.5 ft		TOTAL DEPTH 45.4 ft		NORTHING 666,426		EASTING 819,039									
DRILL RIG/HAMMER EFF./DATE GTC9083 CME-550X 80% (11/24/2020)			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER L. Wanstrath		START DATE 01/28/21		COMP. DATE 01/28/21		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2580														2,577.5 GROUND SURFACE 0.0	
	2,576.6	0.9	11	10	5									ROADWAY EMBANKMENT 0.9' PAVEMENT	0.9
	2,575.0	2.5	4	2	4									ROADWAY EMBANKMENT Medium dense, brown and orange, SAND and GRAVEL (A-1-b)	2.5
2575	2,572.5	5.0	2	4	5									Loose, brown and orange, clayey SAND (A-2-6)	4.5
	2,570.0	7.5	4	2	3									Medium stiff to stiff, brown and orange, sandy SILT (A-4), micaceous	
2570	2,567.5	10.0	5	3	4										
	2,562.5	15.0	9	9	6									ALLUVIAL Medium dense, brown and gray, clayey SAND (A-2-6), with little gravel	13.0
2565	2,557.5	20.0	6	12	20									RESIDUAL Dense, brown and white, SAND (A-3), contains trace rock fragments, saprolitic	18.0
	2,552.5	25.0	4	7	11									Medium dense, brown, orange and white, clayey SAND (A-2-7), contains little rock fragments, micaceous	23.0
2560	2,547.5	30.0	52	40	45									Very dense, brown and orange with black, silty SAND (A-2-4)	28.0
	2,542.5	35.0	100/0.3												
2555	2,537.5	40.0	100/0.2											WEATHERED ROCK Brown and orange, GNEISS	35.0
	2,532.5	45.0	100/0.4												
2550														Boring Terminated at Elevation 2,532.1 ft in Weathered Rock (GNEISS)	45.4

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ\_NC\_DOT.GDT 8/31/23

## GEOTECHNICAL BORING REPORT BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST N. Yacobi								
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)							
BORING NO. S1_EB2-C (HDR)		STATION 25+66		OFFSET 19 ft RT		ALIGNMENT L_LT								
COLLAR ELEV. 2,577.1 ft		TOTAL DEPTH 27.5 ft		NORTHING 666,456		EASTING 819,011								
DRILL RIG/HAMMER EFF./DATE GTC9083 CME-550X 80% (11/24/2020)			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic									
DRILLER L. Wanstrath		START DATE 03/10/21		COMP. DATE 03/10/21		SURFACE WATER DEPTH N/A								
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
2580	2,577.1	0.0	1	2	1								GROUND SURFACE	0.0
2575	2,574.6	2.5	3	4	3								<b>ROADWAY EMBANKMENT</b> Very loose to loose, red and brown, clayey SAND (A-2-6)	4.5
2570	2,572.1	5.0	2	1	2								Very loose, gray and green, silty SAND (A-2-4)	7.0
	2,569.6	7.5	1	1	2								Soft, red, gray and tan, CLAY (A-7-6), with trace sand	7.0
	2,567.1	10.0	1	1	3									
2565	2,564.1	13.0	1	1	3								<b>ALLUVIAL</b> Medium dense, gray, red, and brown, SAND and GRAVEL (A-1-b)	13.0
2560	2,562.1	15.0	5	10	8									
2555	2,557.1	20.0	25	15	6									
2550	2,552.1	25.0	100/0.5										<b>WEATHERED ROCK</b> Gray and black, granitic GNEISS	25.0
	2,549.6	27.5	60/0.0										Boring Terminated with Standard Penetration Test Refusal at Elevation 2,549.6 ft on Crystalline Rock (GNEISS)	27.5

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST C. Swafford								
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)							
BORING NO. S2_B1-A (HDR)		STATION 31+78		OFFSET 5 ft RT		ALIGNMENT L_LT								
COLLAR ELEV. 2,586.8 ft		TOTAL DEPTH 65.0 ft		NORTHING 666,942		EASTING 819,380								
DRILL RIG/HAMMER EFF./DATE GTC9083 CME-550X 80% (11/24/2020)			DRILL METHOD SPT Core Boring		HAMMER TYPE Automatic									
DRILLER L. Wanstrath		START DATE 02/26/21		COMP. DATE 02/27/21		SURFACE WATER DEPTH N/A								
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
2590	2,586.8	0.0											GROUND SURFACE	0.0
2585	2,584.3	2.5	3	3	3								<b>ROADWAY EMBANKMENT</b> Medium stiff, brown and orange, CLAY (A-7), micaceous	2.0
	2,581.8	5.0	5	10	10								Stiff to very stiff, brown and gray, sandy SILT (A-4) with trace clay and gravel, micaceous, mottled	7.0
2580	2,579.3	7.5	10	6	7								Medium stiff, orange, CLAY (A-7) with trace sand, mottled	7.0
	2,576.8	10.0	2	1	3									
	2,573.8	13.0	1	2	3									
2575	2,571.8	15.0	1	WOH	1								<b>ALLUVIAL</b> Very soft to soft, gray and brown, sandy CLAY (A-7), micaceous	13.0
	2,566.8	20.0	1	1	2									
2565	2,561.8	25.0	60/0.1										<b>NON-CRYSTALLINE ROCK</b> Light gray, BOULDER (Quartz fragments)	25.0
	2,558.8	28.0											<b>RESIDUAL</b> Very stiff, brown, tan, and white, sandy SILT (A-4), micaceous, saprolitic	28.0
2550	2,551.8	35.0	14	40	60/0.4								<b>WEATHERED ROCK</b> Brown, tan, and white, GNEISS	35.0
	2,546.8	40.0	100/0.4											
	2,541.8	45.0	60/0.0										<b>CRYSTALLINE ROCK</b> Light gray, black, and white, Migmatitic Biotite GNEISS	45.0
2535-2525														
													<b>NOTES</b> 0.5' topsoil	

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST R. Dugger								
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)							
BORING NO. S2_B1-B (HDR)		STATION 31+70		OFFSET 45 ft RT		ALIGNMENT L_LT								
COLLAR ELEV. 2,584.7 ft		TOTAL DEPTH 62.8 ft		NORTHING 666,908		EASTING 819,403								
DRILL RIG/HAMMER EFF./DATE GTC9083 CME-550X 80% (11/24/2020)			DRILL METHOD SPT Core Boring			HAMMER TYPE Automatic								
DRILLER L. Wanstrath		START DATE 02/10/21		COMP. DATE 02/27/21		SURFACE WATER DEPTH N/A								
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
2585	2,584.7	0.0	2	4	5							M	GROUND SURFACE	0.0
	2,582.2	2.5	7	12	11							D	ROADWAY EMBANKMENT Stiff, brown and orange, clayey SILT (A-5), micaceous	2.9
2580	2,579.7	5.0	18	18	16							D	Medium dense, brown, clayey SAND (A-2-6) with trace gravel	4.5
	2,577.2	7.5	4	4	4							D	Dense, brown and gray, silty SAND (A-2-4) with little gravel, micaceous	7.0
2575	2,574.7	10.0	2	2	3							M	ALLUVIAL Loose, brown and gray, silty SAND (A-2-4), micaceous	13.0
2570	2,569.7	15.0	1	1	1							SS-222	Very soft, gray, silty CLAY (A-7-5)(16) and SILT (A-5)(13), micaceous	18.0
2565	2,564.7	20.0	WOH	WOH	1							W	Very loose, brown and gray, silty SAND (A-2-4)	21.1
2560	2,559.7	25.0	7	5	2							Sat.	Very soft, brown and gray, CLAY (A-7-6)	23.0
2555	2,554.7	30.0	9	16	14							D	Loose, gray, SAND and GRAVEL (A-1-b)	28.0
2550	2,549.7	35.0	15	15	14							D	RESIDUAL Medium dense to dense, brown, white, and tan, silty SAND (A-2-4) with little rock fragments	33.0
2545	2,544.7	40.0	100/0.5									D	Very stiff, brown, orange, and tan, sandy SILT (A-4) with little rock fragments, micaceous, saprolitic	40.0
	2,542.2	42.5	60/0.0									D	WEATHERED ROCK Brown, gray, and white, GNEISS	42.0
2540													CRYSTALLINE ROCK No Recovery, begin rock coring at 42.0' Light to dark gray and white with trace pink, Migmatic Biotite GNEISS	
2535												RS-13		
2530														
2525													Grey and white, METAGRAYWACKE and QUARTZITE	58.1
													Boring Terminated at Elevation 2,521.9 ft in Crystalline Rock (METAGRAYWACKE and QUARTZITE)	62.8
<p><b>NOTES</b></p> <p>15.0- 17.0': ST-2 lab classified as (A-7-5)(16) in offset hole ~3' upstation</p> <p>15.0 - 16.5': SS-222 lab classified as (A-5)(13)</p> <p><b>Other Samples:</b> ST-2 (15.0 - 17.0)</p>														

NCDOT BORE DOUBLE B-5898 AECOM + HDR RELEVANT LOGS.GPJ NC\_DOT.GDT 8/31/23

WBS 48030.1.FS1		TIP B-5898/B-3186		COUNTY HAYWOOD		GEOLOGIST C. Swafford								
SITE DESCRIPTION US 23/ US 74 (Great Smoky Mountain Highway)							GROUND WTR (ft)							
BORING NO. S2_EB1-A (HDR)		STATION 30+87		OFFSET 53 ft LT		ALIGNMENT L_LT								
COLLAR ELEV. 2,584.6 ft		TOTAL DEPTH 34.5 ft		NORTHING 666,917		EASTING 819,274								
DRILL RIG/HAMMER EFF./DATE GTC9083 CME-550X 80% (11/24/2020)			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic								
DRILLER L. Wanstrath		START DATE 02/25/21		COMP. DATE 02/25/21		SURFACE WATER DEPTH N/A								
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
2585	2,584.6	0.0	5	7	4							M	GROUND SURFACE	0.0
	2,582.1	2.5	3	4	4							M	ROADWAY EMBANKMENT Medium dense, brown, f SAND (A-2-4), with trace gravel	1.0
2580	2,579.6	5.0	6	5	6							M	Soft, brown and orange, CLAY (A-7)	4.5
	2,577.1	7.5	3	3	3							Sat.	Loose to medium dense, gray, f-c SAND (A-2-4)	7.0
2575	2,574.6	10.0	3	2	2							SS-513	ALLUVIAL Soft, gray, SILT (A-5)(9), micaceous	10.0
2570	2,569.6	15.0	1	WOH	1							W	Very loose, gray, f silty SAND (A-2-4), micaceous	13.0
2565	2,564.6	20.0	1	1	2							W	Soft, gray, f sandy SILT (A-4), micaceous	18.0
2560	2,559.6	25.0	4	7	11							W	RESIDUAL Very stiff, brown and orange, f sandy SILT (A-4), micaceous, saprolitic	23.0
2555	2,554.6	30.0	90	10/0.1								W	WEATHERED ROCK Brown, orange, and white, GNEISS	30.0
	2,550.1	34.5	60/0.0										Boring Terminated with Standard Penetration Test Refusal at Elevation 2,550.1 ft on Crystalline Rock (GNEISS)	34.5
<p><b>Other Samples:</b> ST-4 (15.0 - 17.0)</p>														

PROJECT REFERENCE NO.	SHEET NO.
B-5898/B-3186	58

**REFERENCE: B-5898/B-3186**

**PROJECT: 48030**

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

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***SUBSURFACE INVESTIGATION***

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***APPENDIX B  
SOIL TEST RESULTS***





## SOIL TEST RESULTS

*Soil Classification and Gradation*


**5438 Wade Park Blvd Suite 200, Raleigh, NC 27607**

WBS No.: 48030.1.FS1  
 Project Description: Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74  
 Client Name: NCDOT

County: Haywood  
 TIP No: B-5898/B-3186

BORING NO.	SAMPLE NO.	OFFSET	STATION	ALIGNMENT	DEPTH INTERVAL	AASHTO CLASS	L.L.	P.L.	P.I.	% BY WEIGHT				% FINER (SIEVES)			% MOISTURE	% ORGANICS
										GRAVEL	C. SAND	F. SAND	FINES	10	40	200		
L_2700SPT (HDR)	SS-547	12' LT	9+16	L_LT	15.0-16.5	A-6 (10)	38	23	15	0.00	17.50	29.70	52.80	93.50	84.20	72.00	21.0	-
RW2_1	SS-120	19' LT	10+00	L_LT	8.5-10.0	A-4 (0)	0	0	0	1.72	16.88	27.84	53.57	98.28	81.41	53.57	24.4	-
RW2_2	SS-127	17' LT	10+51	L_LT	18.5-20.0	A-4 (0)	0	0	0	0.96	3.98	27.83	67.23	99.04	95.07	67.23	31.5	-
RW2_3	SS-132	18' LT	11+01	L_LT	8.5-10.0	A-4 (0)	0	0	0	0.60	19.99	41.89	37.53	99.40	79.41	37.53	20.7	-
RW2_4	SS-136	17' LT	11+49	L_LT	1.0-2.5	A-4 (0)	0	0	0	1.10	19.95	41.63	37.33	98.90	78.96	37.33	19.3	-
RW2_5	SS-141	18' LT	11+99	L_LT	3.5-5.0	A-4 (0)	0	0	0	0.26	10.70	39.23	49.81	99.74	89.04	49.81	21.3	-
RW2_6	SS-148	18' LT	12+50	L_LT	3.5-5.0	A-4 (1)	36	32	4	0.14	9.46	37.16	53.24	99.86	90.40	53.24	17.9	-
RW2_6	SS-152	18' LT	12+50	L_LT	18.5-20.0	A-4 (0)	0	0	0	0.01	4.09	26.98	68.91	99.99	95.89	68.91	30.2	-
RW2_7	SS-158	16' LT	13+00	L_LT	13.5-15.5	A-4 (0)	0	0	0	0.00	6.47	43.42	50.11	100.00	93.53	50.11	24.9	-
RW2_8	SS-163	17' LT	13+51	L_LT	6.0-7.5	A-4 (0)	0	0	0	1.07	9.64	41.75	47.54	98.93	89.29	47.54	14.1	-
RW2_9	SS-169	13' LT	14+00	L_LT	3.5-5.0	A-4 (0)	0	0	0	0.76	10.69	42.26	46.29	99.24	88.55	46.29	22.7	-
RW2_10	SS-176	14' LT	14+51	L_LT	6.0-7.5	A-4 (0)	39	37	2	0.27	19.31	40.07	40.35	99.73	80.43	40.35	18.9	-
RW2_11	SS-180	15' LT	14+98	L_LT	1.0-2.5	A-4 (0)	0	0	0	1.19	20.83	35.56	42.42	98.81	77.98	42.42	16.5	-
RW2_12	SS-187	17' LT	15+47	L_LT	3.5-5.0	A-4 (0)	0	0	0	0.29	5.59	37.59	56.52	99.71	94.11	56.52	21.5	-
RW2_13	SS-193	18' LT	16+05	L_LT	6.0-7.5	A-2-4 (0)	0	0	0	5.17	22.05	41.30	31.48	94.83	72.79	31.48	-	-
L_3500SPT (HDR)	ST-7	54' LT	16+95	L_LT	3.5-5.5	A-7-5 (16)	53	34	19	0.00	12.40	12.20	75.40	99.10	91.70	75.00	34.0	-
L_3700SPT (HDR)	SS-1011	20' LT	18+90	L_LT	5.0-6.5	A-7-5 (8)	49	32	17	0.00	23.90	20.60	55.50	90.60	76.40	54.60	28.0	-
L_LT_2007	SS-201	5 RT	20+07	L_LT	1.0-2.5	A-7-5 (5)	45	33	12	5.88	10.31	30.23	53.58	94.12	83.81	53.58	28.8	-
L_LT_2007	SS-203	5 RT	20+07	L_LT	6.0-7.5	A-7-5 (6)	44	32	12	1.22	9.94	29.90	58.94	98.78	88.84	58.94	25.1	-
L_LT_2206	SS-196	3' RT	22+06	L_LT	3.5-5.0	A-6 (4)	40	28	12	1.29	12.06	34.47	52.18	98.71	86.65	52.18	28.7	-
L_LT_2206	SS-199	3' RT	22+06	L_LT	13.5-15.0	A-1-A (1)	0	0	0	53.70	17.96	21.44	6.90	46.30	28.33	6.90	-	-
S1_EB1-A (HDR)	ST-1	30' LT	23+78	L_LT	8.5-9.6	A-7-6 (21)	24	27	0.00	7.80	19.60	72.60	98.90	86.80	75.40	26.0	-	-
RW5_1	SS-245	25' RT	26+29	L_LT	8.5-10.0	A-7-5 (25)	66	47	19	0.00	0.80	9.10	90.10	100.00	99.20	90.10	79.7	-
RW5_2	SS-235	28' RT	26+79	L_LT	3.5-5.0	A-2-4 (0)	0	0	0	2.18	18.88	51.90	27.03	97.82	78.93	27.03	-	-
RW5_3	SS-231	29' RT	27+29	L_LT	8.5-10.0	A-5 (7)	51	42	9	0.00	2.28	32.98	64.74	100.00	97.72	64.74	74.6	-
RW5_4	SS-224	31' RT	27+81	L_LT	8.5-10.0	A-7-5 (17)	63	49	14	0.00	0.84	17.18	81.98	100.00	99.16	81.98	68.6	-
RW5_5	SS-219	32' RT	28+29	L_LT	18.5-20.0	A-1-A (1)	0	0	0	64.18	14.39	14.32	7.12	35.82	21.43	7.12	-	-
RW5_6	SS-209	33' RT	28+80	L_LT	6.0-7.5	A-2-4 (0)	0	0	0	11.85	21.66	44.09	22.40	88.15	66.49	22.40	-	-
RW5_7	SS-110	36' RT	29+30	L_LT	3.5-5.0	A-4 (0)	0	0	0	4.56	17.19	39.16	39.09	95.44	78.25	39.09	22.4	-
RW5_8	SS-101	17' LT	13+51	L_LT	3.5-5.0	A-4 (0)	34	6	4.43	16.72	42.20	36.65	95.57	78.85	36.65	20.9	-	-
RW5_8	SS-103	43' RT	29+77	L_LT	8.5-10.0	A-2-4 (0)	0	0	0	3.73	14.24	58.88	23.15	96.27	82.03	23.15	-	-
RW5_9	SS-90	47' RT	30+29	L_LT	1.0-2.5	A-4 (0)	0	0	0	8.60	14.01	40.63	36.76	91.40	77.40	36.76	23.6	-
RW5_10	SS-81	50' RT	30+81	L_LT	8.5-10.0	A-2-4 (0)	0	0	0	5.15	13.59	63.88	17.38	94.85	81.26	17.38	-	-
S2_EB1-A (HDR)	SS-513	53' LT	30+87	L_LT	10.0-11.5	A-5 (9)	48	38	10	0.00	4.10	32.50	63.40	100.00	98.00	74.10	51.0	-
S2_EB1-A (HDR)	ST-4	53' LT	30+87	L_LT	15.0-17.0	A-2-4	27	21	6	0.00	41.20	30.80	28.00	94.40	66.30	31.20	-	-
RW5_11	SS-252	54' RT	31+31	L_LT	6.0-7.5	A-2-4 (0)	0	0	0	5.42	17.87	54.99	21.72	94.58	76.71	21.72	-	-
S1_EB1_A	SS-003	13' LT	31+44	L_LT	6.0-7.5	A-7-6 (12)	48	24	24	1.81	9.71	28.45	60.04	98.19	88.49	60.04	24.2	40.2
S1_EB1_A	SS-007	13' LT	31+44	L_LT	23.5-25.0	A-2-6 (1)	32	17	15	31.43	10.19	39.01	33.62	68.57	58.38	33.62	-	-
S1_EB1_A	ST-001	13' LT	31+44	L_LT	15.0-17.0	A-6 (8)	38	25	13	0.45	8.83	22.07	68.64	99.55	90.72	68.64	45.5	-
S1_EB2_A	SS-38	71' LT	31+53	L_LT	8.5-10.0	A-7-6 (13)	50	28	22	0.04	13.00	22.82	64.14	99.96	86.96	64.14	31.1	-
S1_EB2_A	SS-40	71' LT	31+53	L_LT	18.5-20.0	A-4 (0)	0	0	0	1.34	15.78	33.29	49.59	98.66	82.88	49.59	18.6	-
S1_EB1_B	SS-12	31' RT	32+24	L_LT	3.5-5.0	A-4 (0)	0	0	0	19.99	12.39	30.65	36.97	80.01	67.62	36.97	40.1	0.2
S1_EB1_B	SS-17	31' RT	32+24	L_LT	23.5-25.0	A-4 (0)	0	0	0	0.02	4.68	19.89	75.41	99.98	95.31	75.41	205.7	-
S2_B1-B (HDR)	SS-222	45' RT	31+70	L_LT	13.5-15.0	A-5 (13)	41	10	0.00	26.80	36.00	37.20	86.60	72.30	36.70	43.0	-	-
S2_B1-B (HDR)	ST-2	45' RT	31+70	L_LT	15.0-17.0	A-7-5 (16)	46	11	0.00	1.30	14.30	84.40	100.00	99.60	87.30	68.0	-	-

**SOIL TEST RESULTS**  
Soil Classification and Gradation



5438 Wade Park Blvd Suite 200, Raleigh, NC 27607

WBS No.: 48030.1.FS1  
Project Description: Bridges 430155 and 430158 over Richland Creek and Bridge 430168 over US 19/23 on US 23-74  
Client Name: NCDOT

County: Haywood  
TIP No: B-5898/B-3186

BORING NO.	SAMPLE NO.	OFFSET	STATION	ALIGNMENT	DEPTH INTERVAL	AASHTO CLASS	L.L.	P.L.	P.I.	% BY WEIGHT				% FINER (SIEVES)			% MOISTURE	% ORGANICS
										GRAVEL	C. SAND	F. SAND	FINES	10	40	200		
S1_EB1_C	SS-25	56' RT	32+83	L_LT	8.5-10.0	A-6 (7)	40	22	18	1.29	11.72	33.46	53.54	98.71	87.00	53.54	29.1	-
S1_EB1_C	SS-26	56' RT	32+83	L_LT	13.5-15.0	A-2-4 (0)	0	0	0	0.10	5.32	68.58	25.99	99.90	94.58	25.99	-	-
S1_EB2_B	SS-68	16' RT	34+10	L_LT	6.0-7.5	A-4 (2)	36	26	10	5.60	17.19	32.70	44.50	94.40	77.20	44.50	25.8	-
S1_EB2_B	SS-74	16' RT	34+10	L_LT	33.5-35.0	A-4 (2)	27	18	9	2.73	15.00	33.51	48.76	97.27	82.27	48.76	18.0	1.2
RW-8_1	SS-56	56' RT	34+27	L_LT	1.0-2.5	A-7-5 (5)	49	30	19	9.87	12.18	32.15	45.80	90.13	77.95	45.80	22.8	-
RW-8_1	SS-60	56' RT	34+27	L_LT	13.5-15.0	A-4 (0)	0	0	0	1.61	13.97	35.05	49.37	98.39	84.42	49.37	36.5	-
RW-8_2	SS-54	65' RT	34+78	L_LT	33.5-35.0	A-6 (8)	37	19	18	4.29	11.04	24.70	59.97	95.71	84.66	59.97	29.6	-
RW8_2 (HDR)	SS-2	19' RT	11+74	L_RT	2.5-4.0	A-6 (2)	34	21	13	0.00	33.60	31.10	35.30	96.00	76.00	41.00	15.0	-
RW3_1	SS-266	142' RT	12+56	L_RT	18.5-20.0	A-5 (3)	53	44	9	0.03	7.14	46.72	46.11	99.97	92.83	46.11	23.3	-
RW3_1	SS-268	142' RT	12+56	L_RT	28.5-30.0	A-2-4 (0)	0	0	0	8.40	16.15	40.24	35.21	91.60	75.45	35.21	-	-
RW3_2	SS-282	235' RT	13+94	L_RT	18.5-20.0	A-4(0)	33	29	4	2.36	18.22	41.66	37.75	97.64	79.42	37.75	9.4	-
RW8_8 (HDR)	SS-4	20' RT	14+88	L_RT	7.5-9.0	A-2-4 (0)	28	22	6	0.00	54.40	23.40	22.20	87.70	50.70	24.30	10.0	-
RW8_10 (HDR)	SS-3	17' RT	15+90	L_RT	2.5-4.0	A-2-5 (1)	44	37	7	0.00	54.20	24.30	21.50	95.10	55.90	25.70	-	-
L_RT_1896	SS-274	168' RT	18+96	L_RT	3.5-5.0	A-6 (1)	40	26	14	27.30	12.79	24.04	35.87	72.70	59.91	35.87	20.3	-
S1_EB1-B (HDR)	ST-8	12' RT	23+20	L_RT	7.5-9.1	A-6 (8)	39	19	20	0.00	29.10	11.00	59.90	91.40	70.30	55.10	28.0	-
S1_EB1-B (HDR)	SS-50	12' RT	23+20	L_RT	7.5-7.0	A-6 (16)	40	20	20	0.00	14.00	10.30	75.70	99.70	90.90	80.90	63.0	-
S1_EB2-B (HDR)	SS-5	20' RT	25+59	L_RT	10.0-11.5	A-4 (1)	34	25	9	0.00	35.70	25.10	39.20	93.20	71.20	43.30	28.0	-
S1_EB2-B (HDR)	SS-8	20' RT	25+59	L_RT	25.0-26.5	A-2-7 (4)	52	22	30	0.00	47.30	29.70	23.00	91.90	58.90	28.60	18.0	-
RW6_5	SS-328	16' RT	31+50	L_RT	18.5-20.0	A-4 (0)	0	0	0	3.25	14.01	32.45	50.29	96.75	82.74	50.29	47.2	-
RW6_6	SS-335	18' RT	32+50	L_RT	13.5-15.0	A-4 (0)	0	0	0	7.61	10.86	29.30	52.23	92.39	81.53	52.23	26.7	-
RW6_6	SS-337	18' RT	32+50	L_RT	6.0-7.5	A-2-4 (0)	0	0	0	0.14	3.75	63.81	32.30	99.86	96.11	32.30	-	-



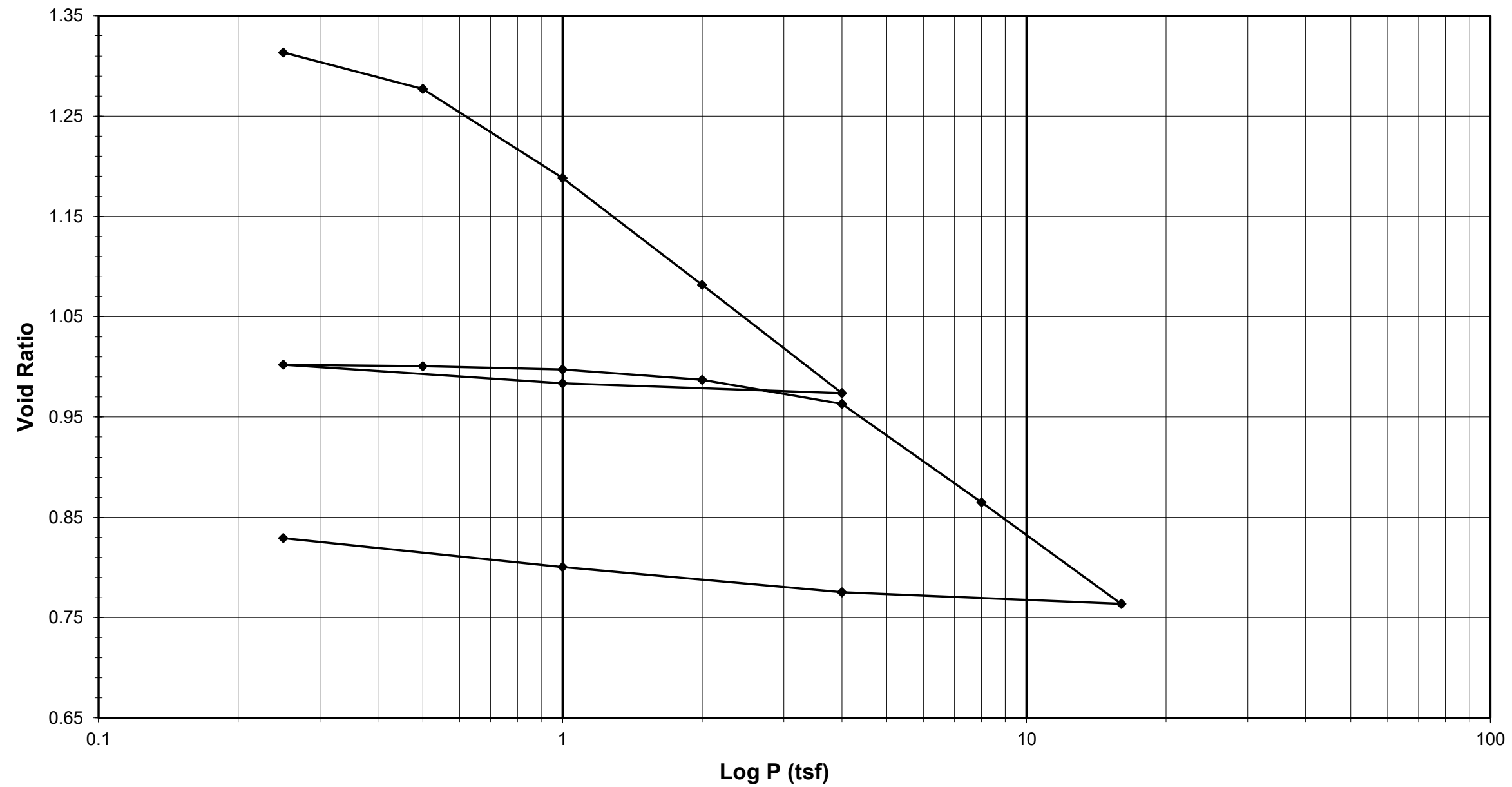
# ONE DIMENSIONAL CONSOLIDATION

ASTM D2435 / D2435M-11

Client: AECOM  
 Client Project: B-5898 / B-3186  
 Project No.: R-2023-090-001  
 Lab ID: R-2023-090-001-048

Boring No.: S1\_EB1\_A  
 Depth (ft): 15.0-17.0  
 Sample No.: ST-1  
 Visual Description: Brown Sandy Silt

**Sample Conditions:** Undisturbed, Inundated, Double Drained



Tested By MY Date 4/4/23 Approved By MPS Date 4/21/23



## ONE DIMENSIONAL CONSOLIDATION

ASTM D2435 / D2435M-11

Client: AECOM  
 Client Project: B-5898 / B-3186  
 Project No.: R-2023-090-001  
 Lab ID: R-2023-090-001-048

Boring No.: S1\_EB1\_A  
 Depth (ft): 15.0-17.0  
 Sample No.: ST-1  
 Visual Description: Brown Sandy Silt

**Sample Conditions:** Undisturbed, Inundated, Double Drained

**Consolidometer No.** R470  
**1 Division** = 0.0001 (in.)

<u>Sample Properties</u>	<u>Initial</u>	<u>Final</u>	<u>Test Data Summary</u>							
<b>Water Content</b>			<b>Applied Pressure</b>	<b>Final Dial Reading</b>	<b>Machine Deflection</b>	<b>Corrected Reading</b>	<b>Height of Sample</b>	<b>Volume</b>	<b>Dry Density</b>	<b>Void Ratio</b>
Tare Number	490	720	(tsf)	(div)	(div)	(div)	(mm)	(cm <sup>3</sup> )	(g/cm <sup>3</sup> )	
Wt. of Tare & WS (g)	256.44	209.25	Seating	0	0	0	25.400	80.440	1.13137	<b>1.36881</b>
Wt. of Tare & DS (g)	207.21	181.94	0.25	242.8	8.9	233.9	24.806	78.559	1.15846	<b>1.31341</b>
Wt. of Water (g)	49.23	27.31	0.5	407.5	21.1	386.4	24.418	77.331	1.17685	<b>1.27727</b>
Wt. of Tare (g)	99.05	89.89	1	798.7	36.0	762.7	23.463	74.304	1.22479	<b>1.18813</b>
Wt. of DS (g)	108.16	92.05	2	1265.4	53.3	1212.1	22.321	70.689	1.28743	<b>1.08167</b>
Water Content (%)	45.52	29.67	4	1743.6	76.0	1667.6	21.164	67.026	1.35779	<b>0.97379</b>
<b>Sample Parameters</b>			1	1670.3	43.7	1626.6	21.268	67.356	1.35115	<b>0.98350</b>
Sample Diameter (in)	2.5	2.5	0.25	1570.6	23.4	1547.2	21.470	67.994	1.33845	<b>1.00231</b>
Sample Height (in)	1.0000	0.7722	0.5	1581.7	27.8	1553.9	21.453	67.940	1.33952	<b>1.00072</b>
Sample Volume (cm <sup>3</sup> )	80.44	62.12	1	1607.3	39.9	1567.4	21.419	67.831	1.34167	<b>0.99751</b>
Wt. of Wet Sample + Ring (g)	347.10	332.68	2	1666.1	55.0	1611.1	21.308	67.480	1.34866	<b>0.98716</b>
Wt. of Ring (g)	214.67	214.67	4	1789.6	76.4	1713.2	21.048	66.659	1.36527	<b>0.96298</b>
Wt. of Wet Sample (g)	132.43	118.01	8	2223.9	96.8	2127.2	19.997	63.329	1.43706	<b>0.86492</b>
Wet Density (pcf)	102.73	118.55	16	2689.8	135.5	2554.3	18.912	59.893	1.51950	<b>0.76374</b>
Wet Density (g/cm <sup>3</sup> )	1.65	1.90	4	2590.4	84.2	2506.2	19.034	60.280	1.50974	<b>0.77514</b>
Water Content (%)	45.52	29.67	1	2451.4	52.3	2399.1	19.306	61.141	1.48848	<b>0.80050</b>
Wt. of Dry Sample (g)	91.01	91.01	0.25	2306.4	28.5	2277.9	19.614	62.116	1.46511	<b>0.82921</b>
Dry Density (pcf)	70.60	91.42								
Dry Density (g/cm <sup>3</sup> )	1.13	1.47								
Void Ratio	1.3688	0.8292								
Saturation (%)	89.12	95.89								
Specific Gravity	2.68	<i>Measured</i>								
			<i>Tested By</i>	<i>MY</i>	<i>Date</i>	<i>4/4/23</i>	<i>Checked By</i>	<i>MPS</i>	<i>Date</i>	<i>4/21/23</i>



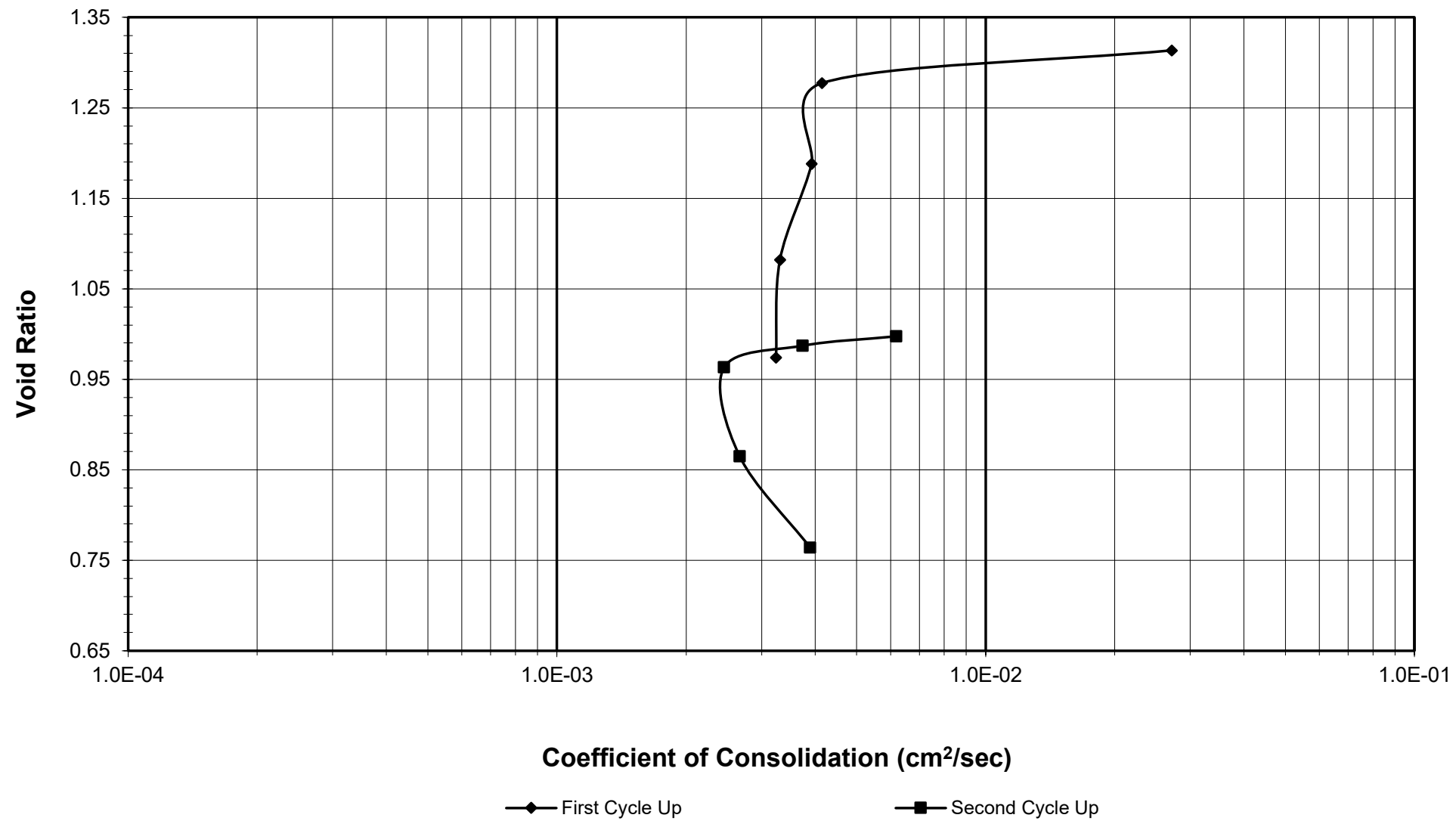
# ONE DIMENSIONAL CONSOLIDATION

ASTM D2435 / D2435M-11

Client: AECOM  
 Client Project: B-5898 / B-3186  
 Project No.: R-2023-090-001  
 Lab ID: R-2023-090-001-048

Boring No.: S1\_EB1\_A  
 Depth (ft): 15.0-17.0  
 Sample No.: ST-1  
 Visual Description: Brown Sandy Silt

**Sample Conditions:** Undisturbed, Inundated, Double Drained



Tested By MY Date 4/4/23 Checked By MPS Date 4/21/23



## ONE DIMENSIONAL CONSOLIDATION

ASTM D2435 / D2435M-11

Client: AECOM  
 Client Project: B-5898 / B-3186  
 Project No.: R-2023-090-001  
 Lab ID: R-2023-090-001-048

Boring No.: S1\_EB1\_A  
 Depth (ft): 15.0-17.0  
 Sample No.: ST-1  
 Visual Description: Brown Sandy Silt

**Sample Conditions:** Undisturbed, Inundated, Double Drained

**Consolidometer No.** R470  
**1 Division** = 0.0001 (in.)

### C<sub>v</sub> Test Data Summary

<u>Sample Properties</u>	<u>Initial</u>	<u>Final</u>	<u>Load</u>	<u>Dial</u>	<u>Machine</u>	<u>Corrected</u>	<u>Sample</u>	<u>Time</u>	<u>C<sub>v</sub></u>
			<u>Increment</u>	<u>Reading</u>	<u>Deflection</u>	<u>Dial Reading</u>	<u>Height</u>	<u>t<sub>50</sub></u>	<u>(cm<sup>2</sup>/sec)</u>
			(tsf)	@ t <sub>50</sub> (div)	(div)	@ t <sub>50</sub> (div)	@ t <sub>50</sub> (cm)	(min.)	
<b>Water Content</b>									
Tare Number	490	720							
Wt. of Tare & WS (g)	256.44	209.25							
Wt. of Tare & DS (g)	207.21	181.94							
Wt. of Water (g)	49.23	27.31	0 - 0.25	141.5	8.9	132.6	2.506	<b>0.19</b>	<b>0.0271</b>
Wt. of Tare (g)	99.05	89.89	0.25 - 0.5	318.1	21.1	297.0	2.465	<b>1.20</b>	<b>0.0042</b>
Wt. of DS (g)	108.16	92.05	0.5 - 1	603.0	36.0	567.0	2.396	<b>1.20</b>	<b>0.0039</b>
Water Content (%)	45.52	29.67	1 - 2	1035.1	53.3	981.8	2.291	<b>1.30</b>	<b>0.0033</b>
			2 - 4	1506.8	76.0	1430.8	2.177	<b>1.20</b>	<b>0.0032</b>
			4 - 1	NA	NA	NA	NA	<b>NA</b>	<b>NA</b>
<b>Sample Parameters</b>									
Sample Diameter (in)	2.5	2.5	1 - 0.25	NA	NA	NA	NA	<b>NA</b>	<b>NA</b>
Sample Height (in)	1.0000	0.7722	0.25 - 0.5	NA	NA	NA	NA	<b>NA</b>	<b>NA</b>
Sample Volume (cm <sup>3</sup> )	80.44	62.12	0.5 - 1	1598.2	39.9	1558.3	2.144	<b>0.61</b>	<b>0.0062</b>
Wt. of Wet Sample + Ring (g)	347.10	332.68	1 - 2	1651.0	55.0	1596.0	2.135	<b>1.00</b>	<b>0.0037</b>
Wt. of Ring (g)	214.67	214.67	2 - 4	1740.5	76.4	1664.1	2.117	<b>1.50</b>	<b>0.0025</b>
Wt. of Wet Sample (g)	132.43	118.01	4 - 8	2003.2	96.8	1906.4	2.056	<b>1.30</b>	<b>0.0027</b>
Wet Density (pcf)	102.73	118.55	8 - 16	2461.4	135.5	2325.9	1.949	<b>0.80</b>	<b>0.0039</b>
Wet Density (g/cm <sup>3</sup> )	1.65	1.90	16 - 4	NA	NA	NA	NA	<b>NA</b>	<b>NA</b>
Water Content (%)	45.52	29.67	4 - 1	NA	NA	NA	NA	<b>NA</b>	<b>NA</b>
Wt. of Dry Sample (g)	91.01	91.01	1 - 0.25	NA	NA	NA	NA	<b>NA</b>	<b>NA</b>
Dry Density (pcf)	70.60	91.42							
Dry Density (g/cm <sup>3</sup> )	1.13	1.47							
Void Ratio	1.3688	0.8292							
Saturation (%)	89.12	95.89							
Specific Gravity	2.68	<i>Measured</i>							

Tested By MY Date 4/4/23 Checked By MPS Date 4/21/23

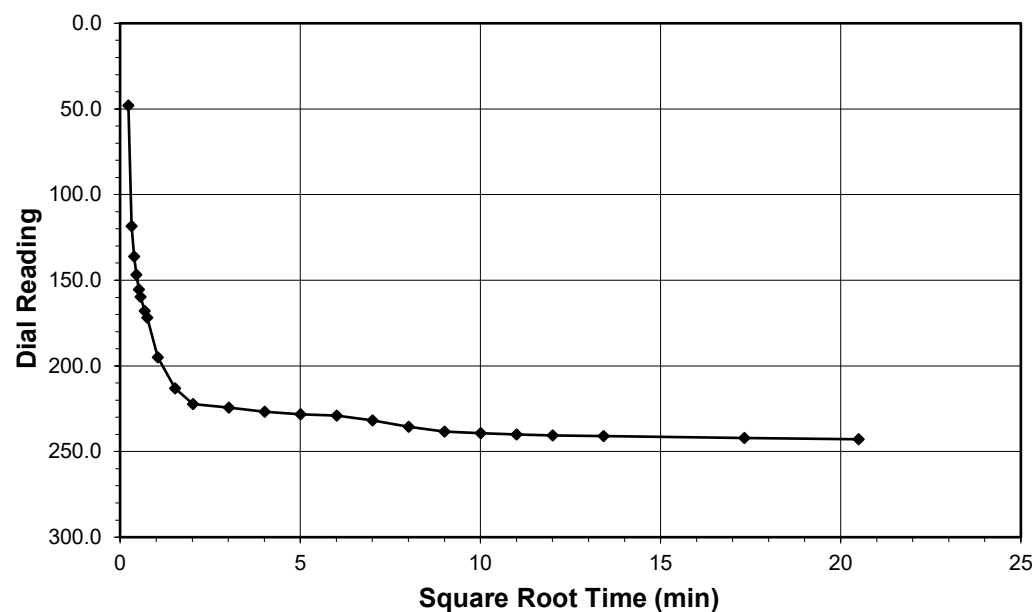


### ONE DIMENSIONAL CONSOLIDATION

ASTM D2435 / D2435M-11

Client: AECOM Boring No.: S1\_EB1\_A  
 Client Project: B-5898 / B-3186 Depth (ft): 15.0-17.0  
 Project No.: R-2023-090-001 Sample No.: ST-1  
 Lab ID: R-2023-090-001-048 Visual Description: Brown Sandy Silt

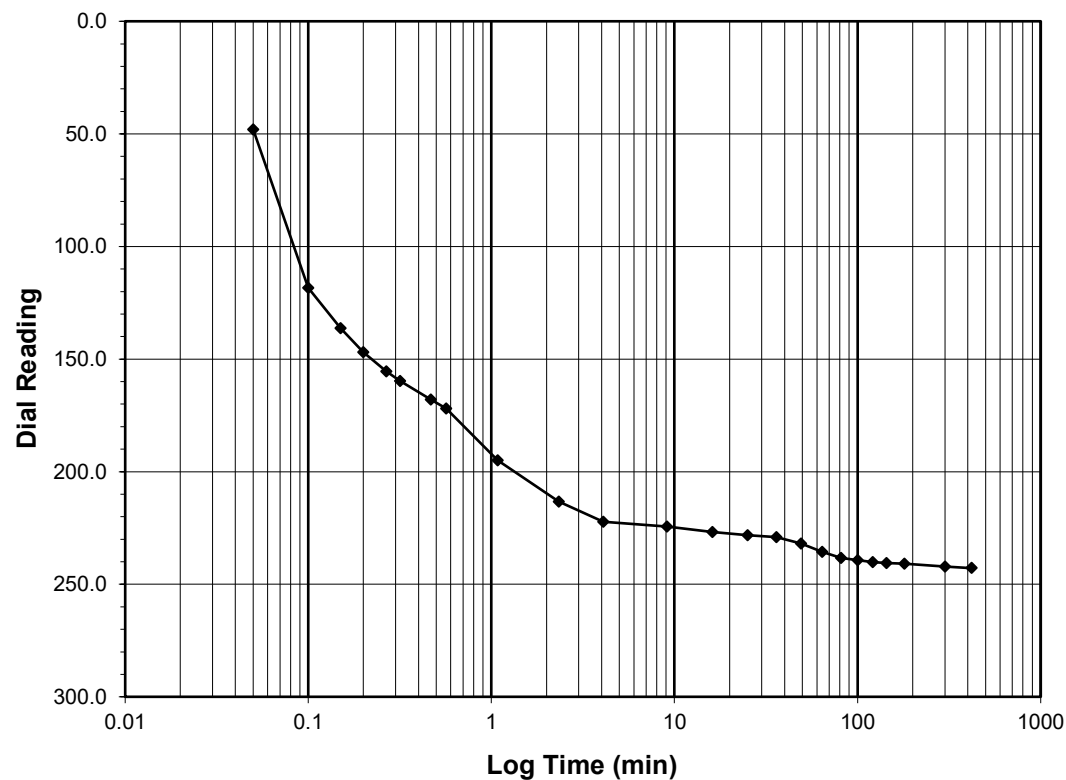
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) **0 - 0.25**  
 Final Reading (div) **242.8**  
 Consolidometer No. **R470**  
 1 Division (in) 0.0001

Start Date 4/4/2023  
 Start Time 16:39:25

Elapsed Time (min)	Dial Reading (div)
<b>Initial</b>	<b>0.0</b>
0.05	48.0
0.10	118.4
0.15	136.2
0.20	146.9
0.27	155.4
0.32	159.7
0.47	167.9
0.57	171.9
1.08	195.0
2.33	213.2
4.08	222.3
9.08	224.3
16.08	226.7
25.10	228.2
36.10	229.0
49.10	231.8
64.12	235.6
81.12	238.3
100.12	239.3
121.12	240.1
144.12	240.5
180.12	240.9
300.12	242.1
420.22	242.8



Tested By 129-07-0411 Date 4/4/23 Checked By MPS Date 4/21/23

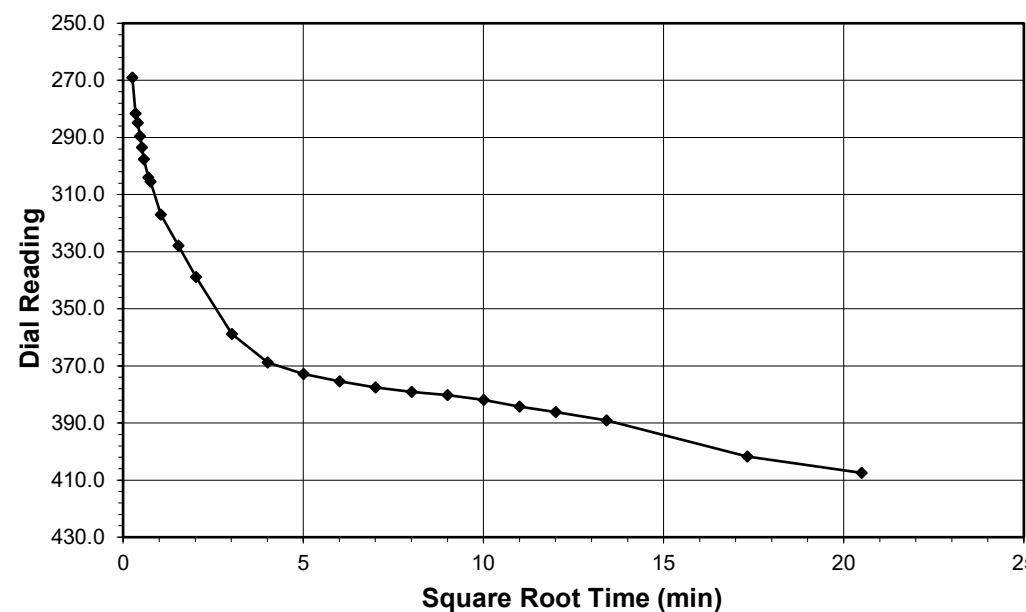


### ONE DIMENSIONAL CONSOLIDATION

ASTM D2435 / D2435M-11

Client: AECOM Boring No.: S1\_EB1\_A  
 Client Project: B-5898 / B-3186 Depth (ft): 15.0-17.0  
 Project No.: R-2023-090-001 Sample No.: ST-1  
 Lab ID: R-2023-090-001-048 Visual Description: Brown Sandy Silt

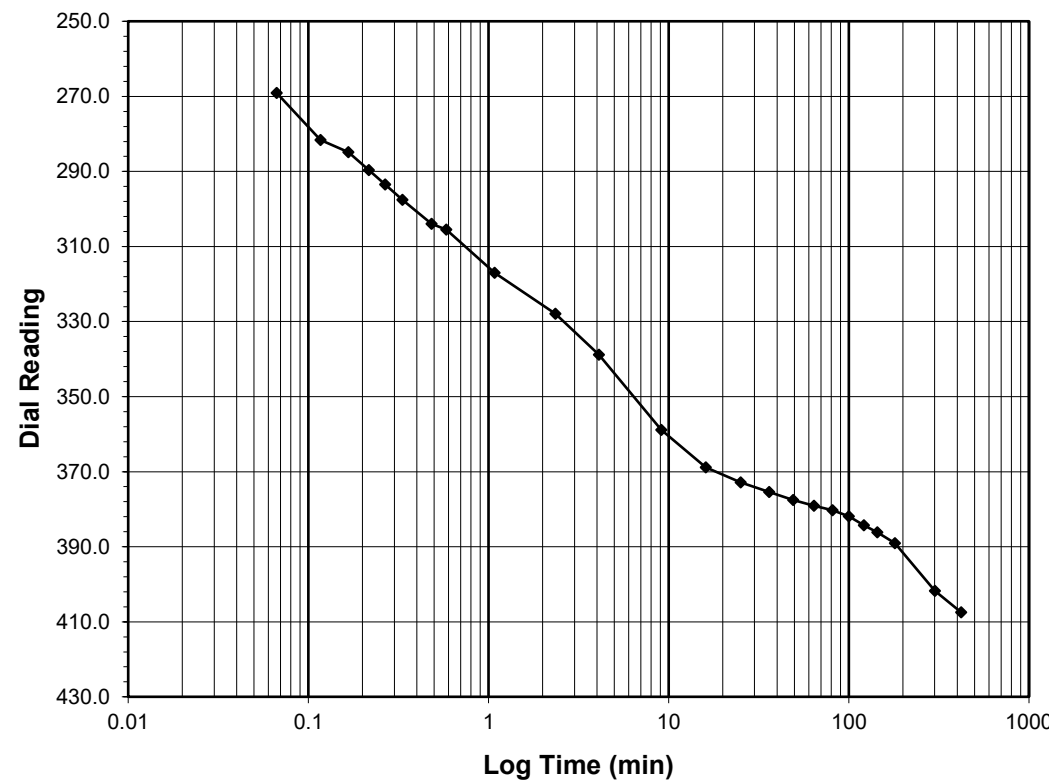
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) **0.25 - 0.5**  
 Final Reading (div) **407.5**  
 Consolidometer No. **R470**  
 1 Division (in) 0.0001

Start Date 4/4/2023  
 Start Time 23:39:39

Elapsed Time (min)	Dial Reading (div)
<b>Initial</b>	<b>242.8</b>
0.07	269.1
0.12	281.6
0.17	284.8
0.22	289.6
0.27	293.5
0.33	297.6
0.48	304.0
0.58	305.5
1.08	317.0
2.35	327.9
4.10	338.8
9.10	358.8
16.10	368.8
25.10	372.9
36.10	375.4
49.10	377.6
64.12	379.1
81.12	380.3
100.12	381.9
121.13	384.3
144.13	386.2
180.13	389.0
300.15	401.8
420.25	407.5



Tested By 129-07-0411 Date 4/4/23 Checked By MPS Date 4/21/23



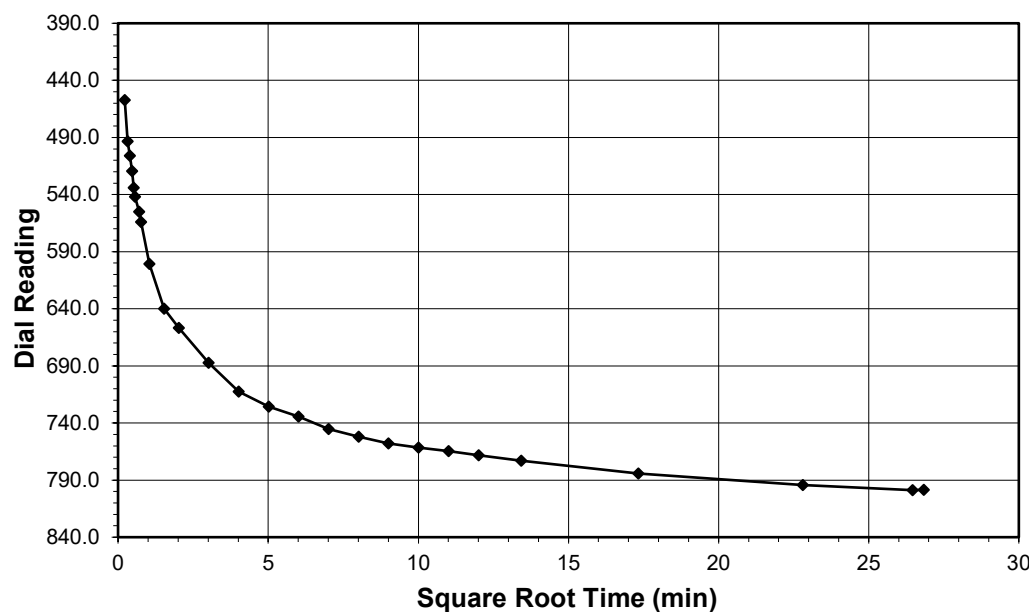


### ONE DIMENSIONAL CONSOLIDATION

ASTM D2435 / D2435M-11

Client: AECOM Boring No.: S1\_EB1\_A  
 Client Project: B-5898 / B-3186 Depth (ft): 15.0-17.0  
 Project No.: R-2023-090-001 Sample No.: ST-1  
 Lab ID: R-2023-090-001-048 Visual Description: Brown Sandy Silt

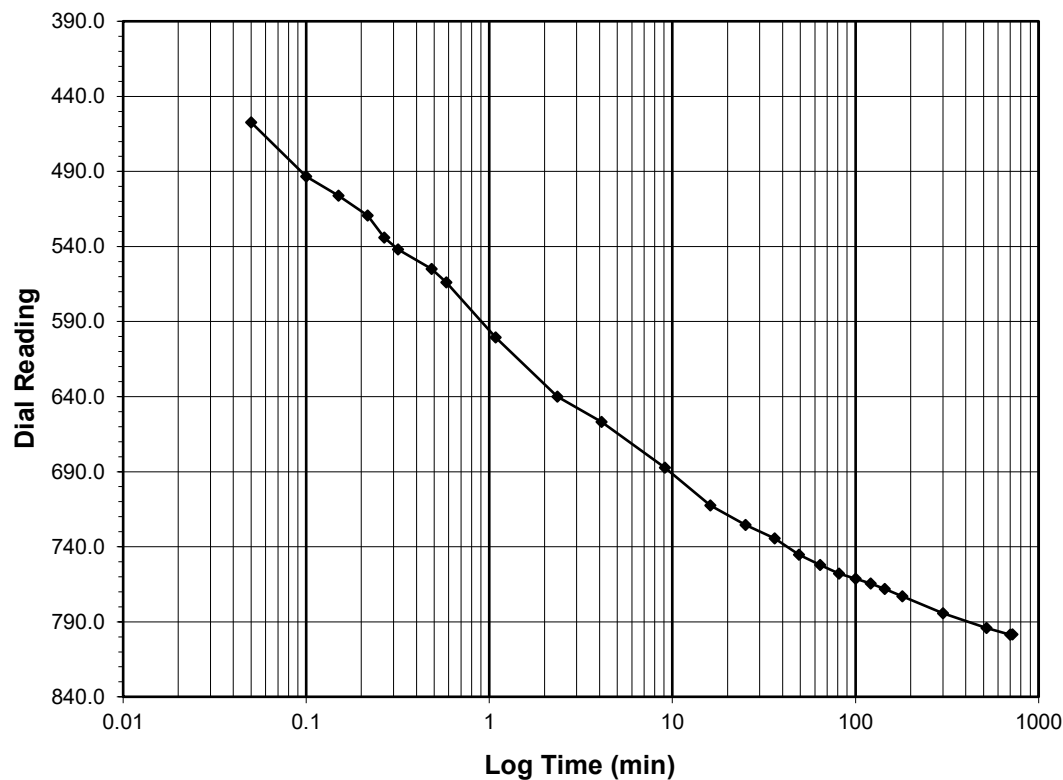
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) 0.5 - 1  
 Final Reading (div) 798.7  
 Consolidometer No. R470  
 1 Division (in) 0.0001

Start Date 4/5/2023  
 Start Time 6:39:53

Elapsed Time (min)	Dial Reading (div)
<b>Initial</b>	<b>407.5</b>
0.05	457.3
0.10	493.4
0.15	506.1
0.22	519.4
0.27	534.0
0.32	541.9
0.48	555.0
0.58	564.0
1.08	600.6
2.35	640.0
4.10	656.8
9.10	687.3
16.12	712.5
25.12	725.6
36.12	734.4
49.12	745.4
64.13	752.0
81.13	758.0
100.13	761.4
121.13	764.5
144.13	768.2
180.15	772.9
300.17	784.3
520.17	794.2
700.17	798.7
720.33	798.5



Tested By 129-07-0411 Date 4/5/23 Checked By MPS Date 4/21/23

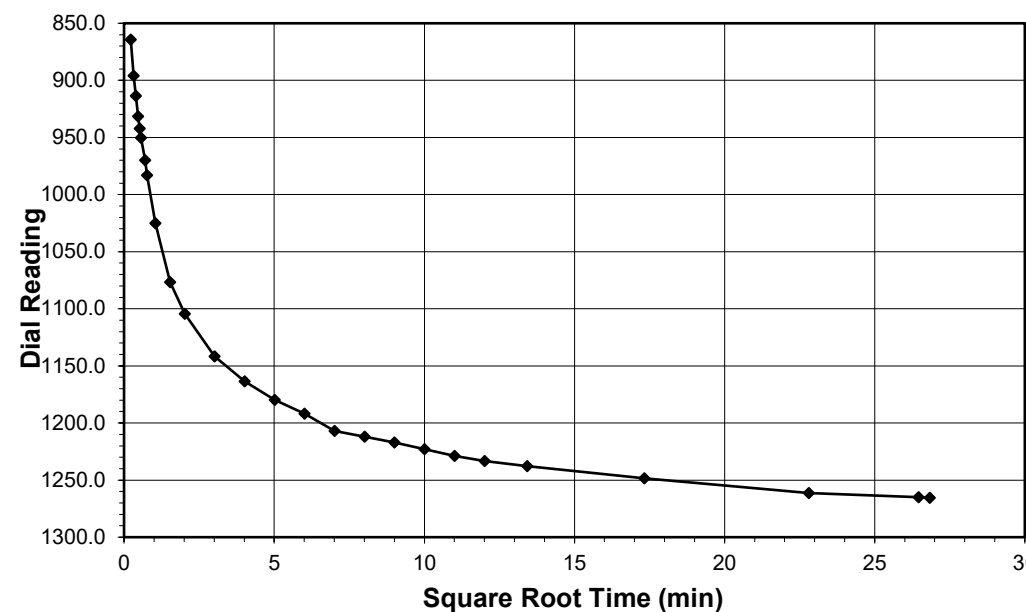


### ONE DIMENSIONAL CONSOLIDATION

ASTM D2435 / D2435M-11

Client: AECOM Boring No.: S1\_EB1\_A  
 Client Project: B-5898 / B-3186 Depth (ft): 15.0-17.0  
 Project No.: R-2023-090-001 Sample No.: ST-1  
 Lab ID: R-2023-090-001-048 Visual Description: Brown Sandy Silt

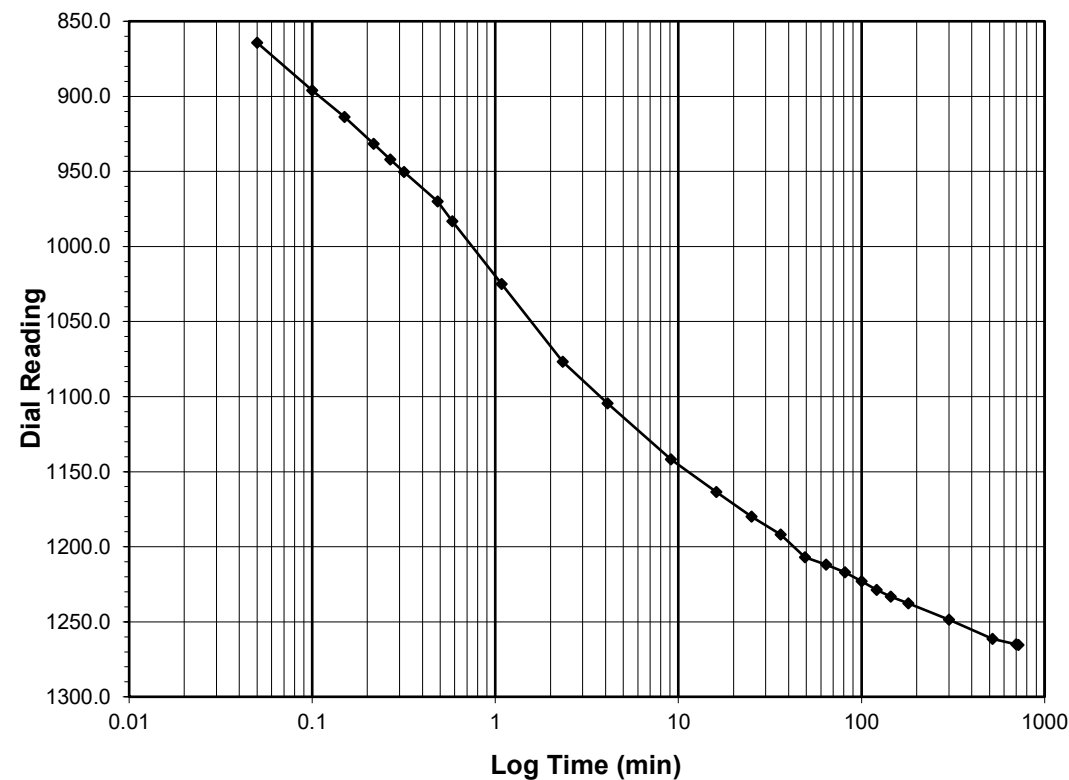
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) 1 - 2  
 Final Reading (div) 1265.4  
 Consolidometer No. R470  
 1 Division (in) 0.0001

Start Date 4/5/2023  
 Start Time 18:40:13

Elapsed Time (min)	Dial Reading (div)
<b>Initial</b>	<b>798.7</b>
0.05	864.3
0.10	896.0
0.15	913.6
0.22	931.6
0.27	942.1
0.32	950.4
0.48	970.0
0.58	983.1
1.08	1025.0
2.33	1076.7
4.10	1104.4
9.10	1141.7
16.10	1163.5
25.12	1179.8
36.12	1191.8
49.12	1207.0
64.13	1212.0
81.13	1217.0
100.13	1223.0
121.15	1228.7
144.15	1233.2
180.15	1237.8
300.15	1248.5
520.17	1261.3
700.17	1265.1
720.02	1265.4



Tested By 129-07-0411 Date 4/5/23 Checked By MPS Date 4/21/23



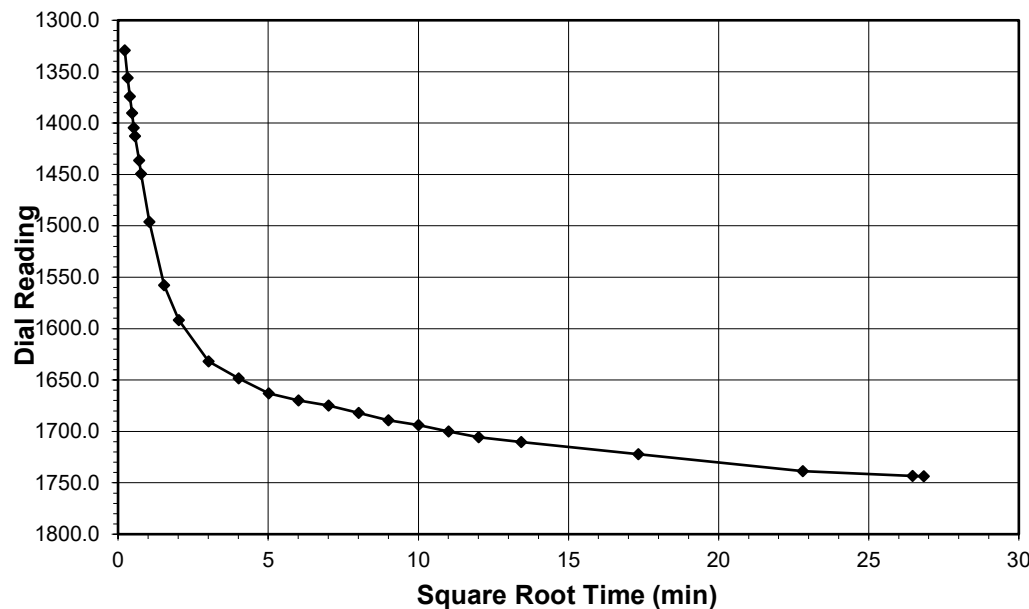


### ONE DIMENSIONAL CONSOLIDATION

ASTM D2435 / D2435M-11

Client: AECOM Boring No.: S1\_EB1\_A  
 Client Project: B-5898 / B-3186 Depth (ft): 15.0-17.0  
 Project No.: R-2023-090-001 Sample No.: ST-1  
 Lab ID: R-2023-090-001-048 Visual Description: Brown Sandy Silt

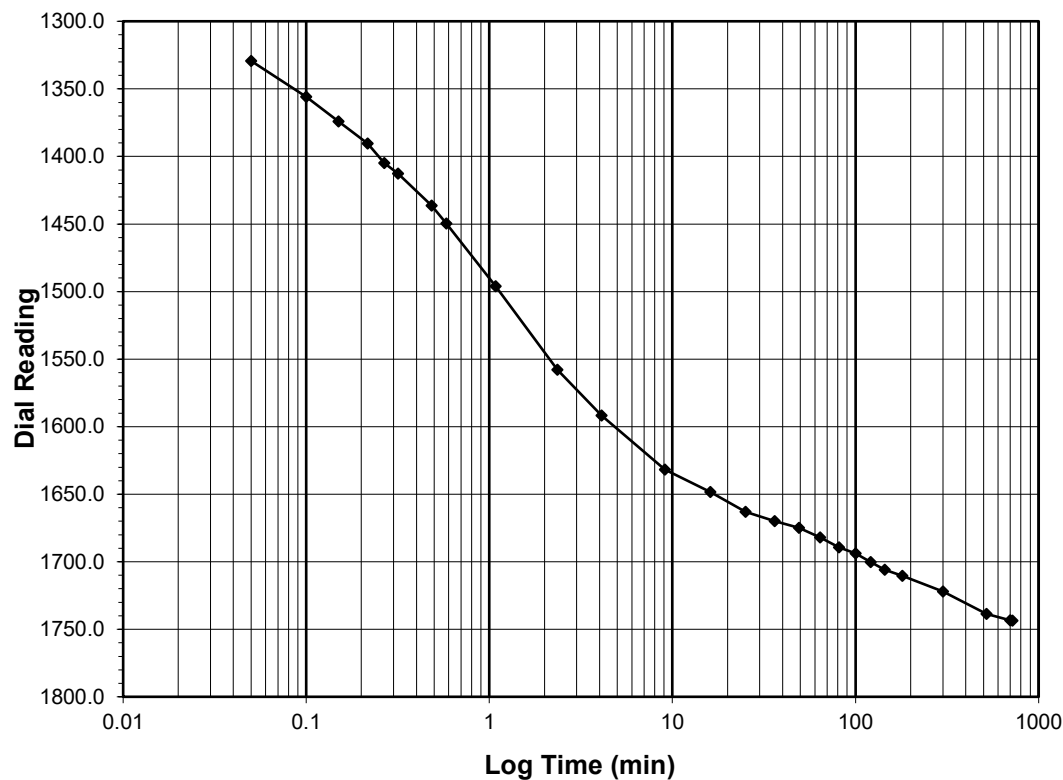
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) **2 - 4**  
 Final Reading (div) **1743.6**  
 Consolidometer No. **R470**  
 1 Division (in) 0.0001

Start Date 4/6/2023  
 Start Time 6:40:14

Elapsed Time (min)	Dial Reading (div)
<b>Initial</b>	<b>1265.4</b>
0.05	1329.4
0.10	1355.9
0.15	1374.0
0.22	1390.4
0.27	1404.8
0.32	1412.8
0.48	1436.3
0.58	1449.6
1.08	1496.1
2.35	1557.9
4.10	1591.8
9.10	1631.8
16.12	1648.3
25.12	1662.9
36.12	1669.9
49.13	1674.9
64.13	1681.9
81.13	1689.2
100.13	1693.8
121.13	1700.1
144.13	1705.8
180.13	1710.4
300.15	1722.0
520.15	1738.6
700.15	1743.3
720.23	1743.6



Tested By 129-07-0411 Date 4/6/23 Checked By MPS Date 4/21/23

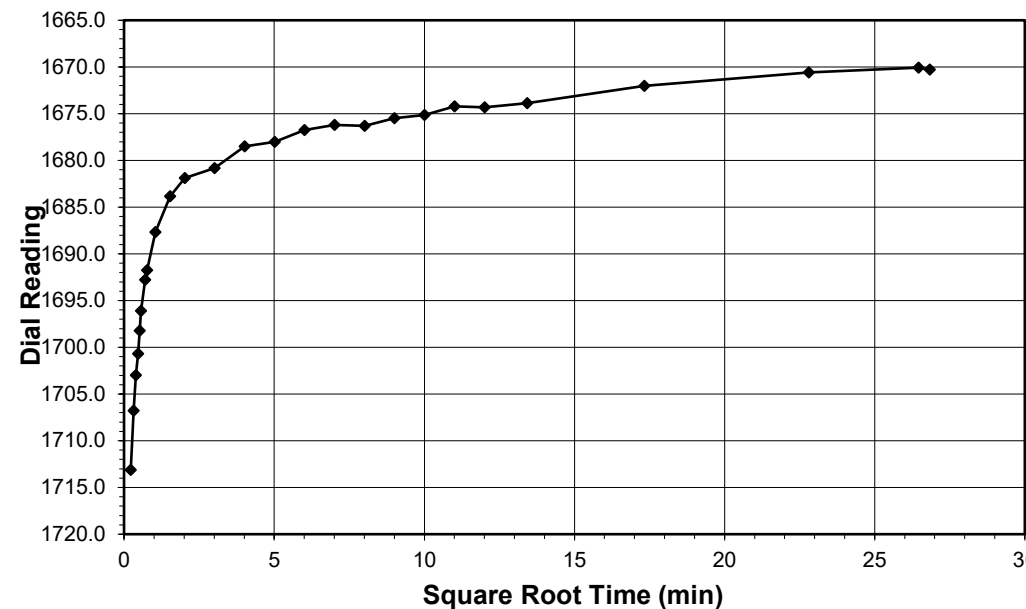


### ONE DIMENSIONAL CONSOLIDATION

ASTM D2435 / D2435M-11

Client: AECOM Boring No.: S1\_EB1\_A  
 Client Project: B-5898 / B-3186 Depth (ft): 15.0-17.0  
 Project No.: R-2023-090-001 Sample No.: ST-1  
 Lab ID: R-2023-090-001-048 Visual Description: Brown Sandy Silt

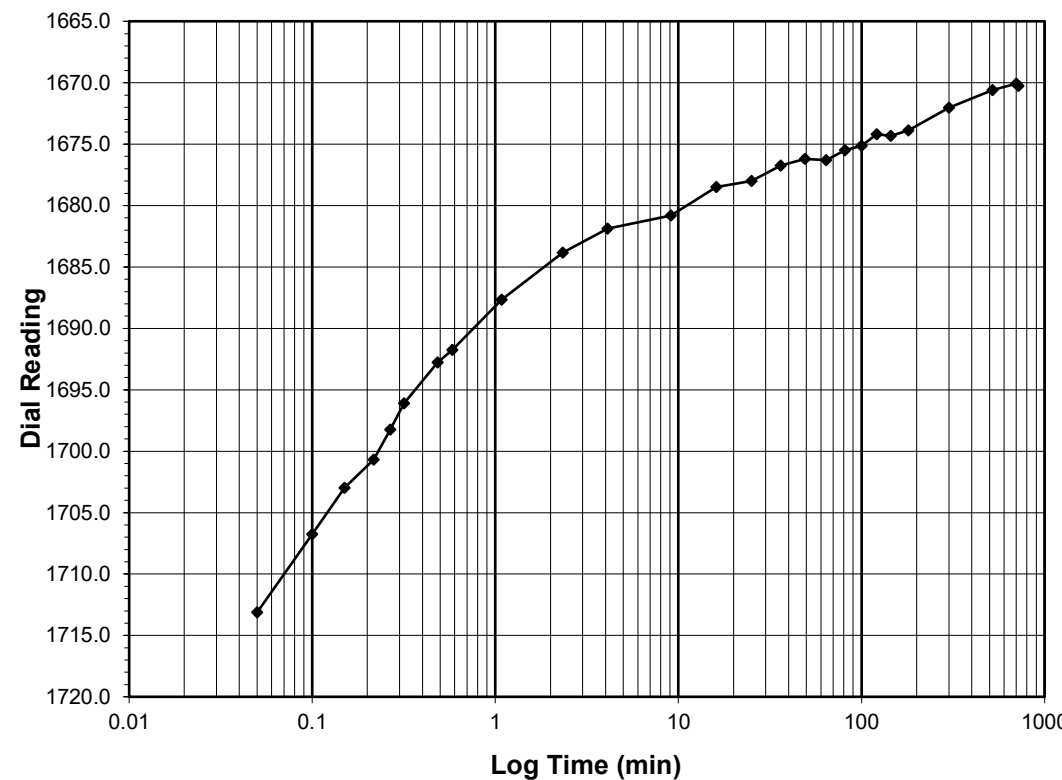
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) **4 - 1**  
 Final Reading (div) **1670.3**  
 Consolidometer No. **R470**  
 1 Division (in) 0.0001

Start Date 4/6/2023  
 Start Time 18:40:28

Elapsed Time (min)	Dial Reading (div)
<b>Initial</b>	<b>1743.6</b>
0.05	1713.1
0.10	1706.8
0.15	1703.0
0.22	1700.7
0.27	1698.2
0.32	1696.1
0.48	1692.8
0.58	1691.8
1.08	1687.7
2.33	1683.8
4.10	1681.9
9.10	1680.8
16.12	1678.5
25.12	1678.0
36.12	1676.7
49.13	1676.2
64.13	1676.3
81.13	1675.5
100.13	1675.1
121.13	1674.2
144.13	1674.3
180.13	1673.9
300.15	1672.0
520.15	1670.6
700.17	1670.1
720.15	1670.3



Tested By 129-07-0411 Date 4/6/23 Checked By MPS Date 4/21/23

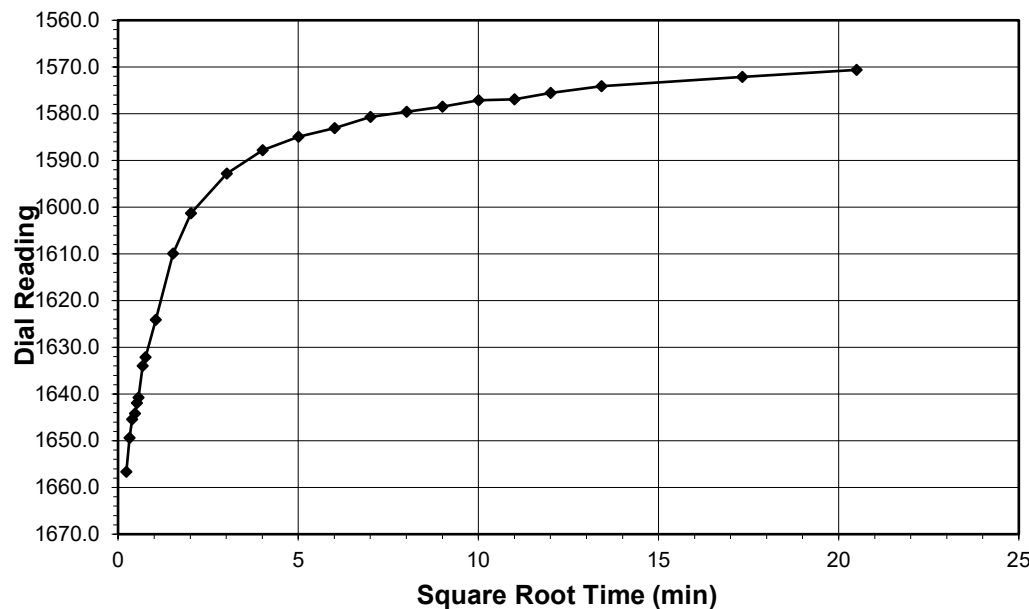


### ONE DIMENSIONAL CONSOLIDATION

ASTM D2435 / D2435M-11

Client: AECOM Boring No.: S1\_EB1\_A  
 Client Project: B-5898 / B-3186 Depth (ft): 15.0-17.0  
 Project No.: R-2023-090-001 Sample No.: ST-1  
 Lab ID: R-2023-090-001-048 Visual Description: Brown Sandy Silt

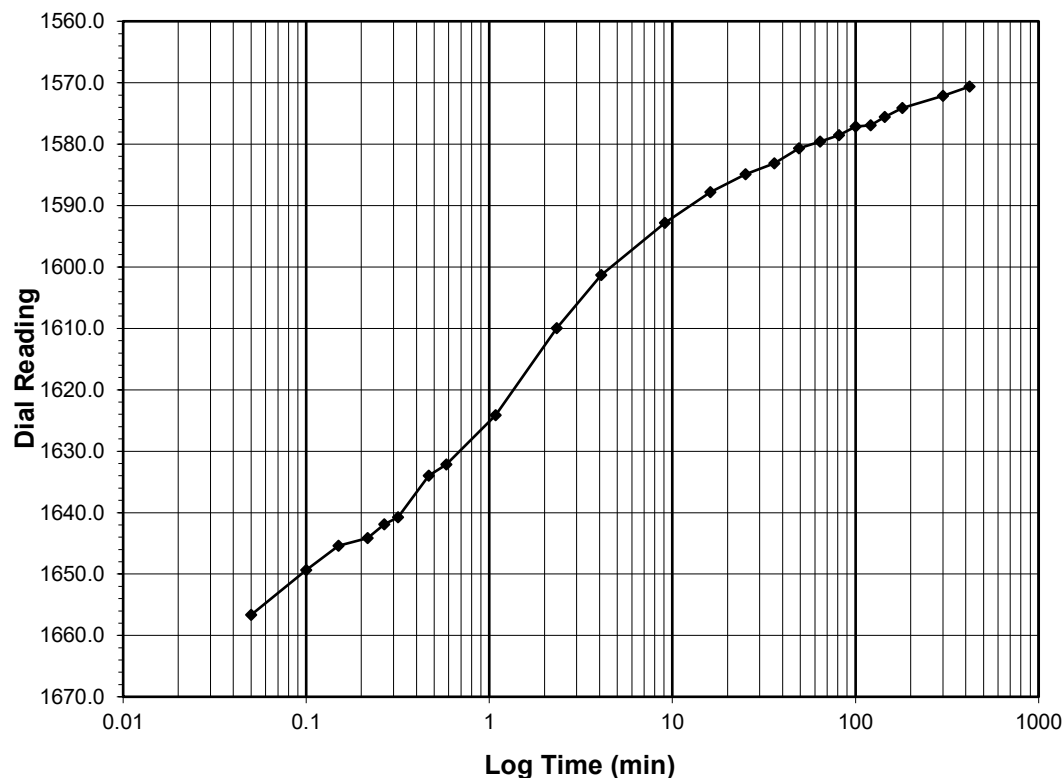
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) 1 - 0.25  
 Final Reading (div) 1570.6  
 Consolidometer No. R470  
 1 Division (in) 0.0001

Start Date 4/7/2023  
 Start Time 6:40:37

Elapsed Time (min)	Dial Reading (div)
Initial	1670.3
0.05	1656.6
0.10	1649.4
0.15	1645.4
0.22	1644.2
0.27	1641.9
0.32	1640.8
0.47	1634.0
0.58	1632.1
1.08	1624.1
2.33	1610.0
4.08	1601.3
9.08	1592.8
16.10	1587.8
25.10	1584.9
36.10	1583.1
49.12	1580.7
64.12	1579.6
81.12	1578.5
100.12	1577.1
121.12	1576.9
144.13	1575.6
180.13	1574.1
300.13	1572.1
420.22	1570.6



Tested By 129-07-0411 Date 4/7/23 Checked By MPS Date 4/21/23

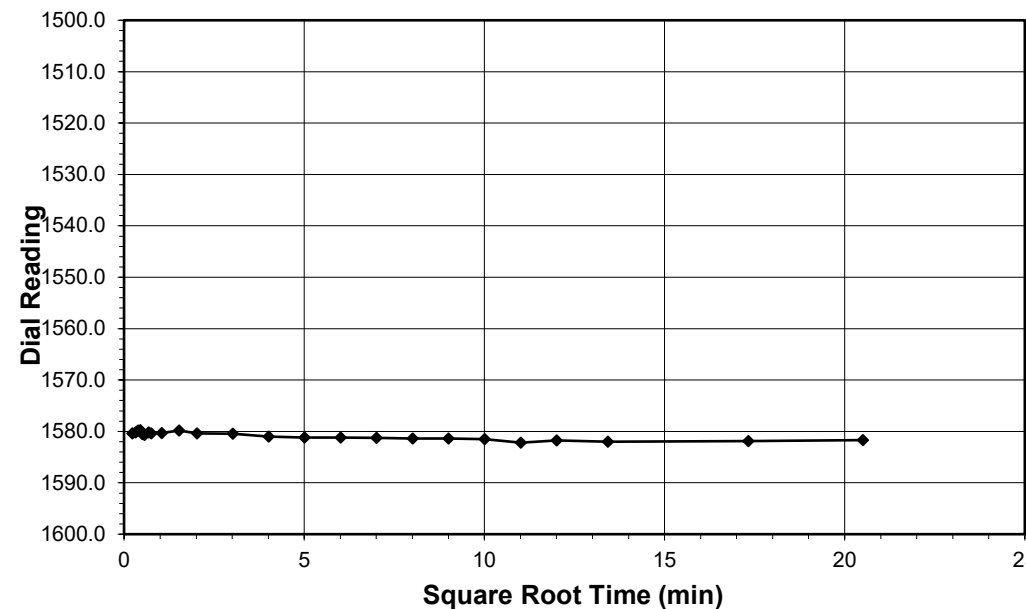


### ONE DIMENSIONAL CONSOLIDATION

ASTM D2435 / D2435M-11

Client: AECOM Boring No.: S1\_EB1\_A  
 Client Project: B-5898 / B-3186 Depth (ft): 15.0-17.0  
 Project No.: R-2023-090-001 Sample No.: ST-1  
 Lab ID: R-2023-090-001-048 Visual Description: Brown Sandy Silt

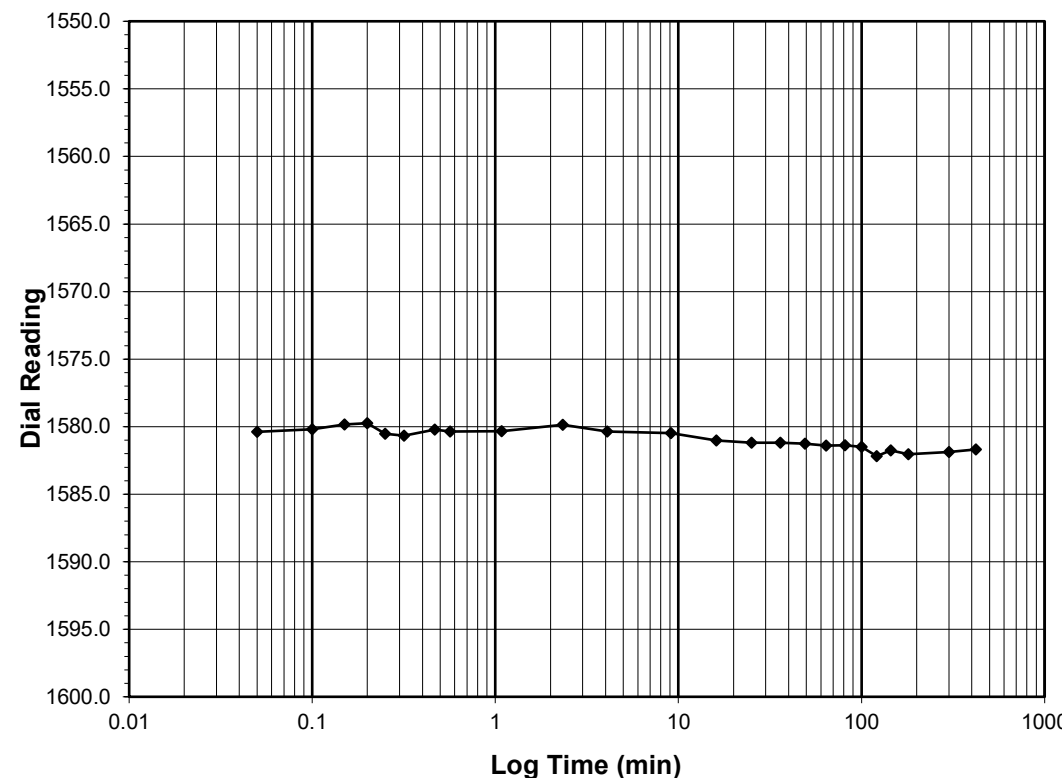
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) 0.25 - 0.5  
 Final Reading (div) 1581.7  
 Consolidometer No. R470  
 1 Division (in) 0.0001

Start Date 4/7/2023  
 Start Time 13:40:51

Elapsed Time (min)	Dial Reading (div)
Initial	1570.6
0.05	1580.4
0.10	1580.2
0.15	1579.8
0.20	1579.7
0.25	1580.5
0.32	1580.7
0.47	1580.2
0.57	1580.4
1.08	1580.3
2.33	1579.9
4.08	1580.4
9.08	1580.5
16.10	1581.0
25.10	1581.2
36.10	1581.2
49.12	1581.3
64.12	1581.4
81.13	1581.4
100.13	1581.5
121.15	1582.2
144.15	1581.7
180.17	1582.0
300.17	1581.9
420.42	1581.7



Tested By 129-07-0411 Date 4/7/23 Checked By MPS Date 4/21/23

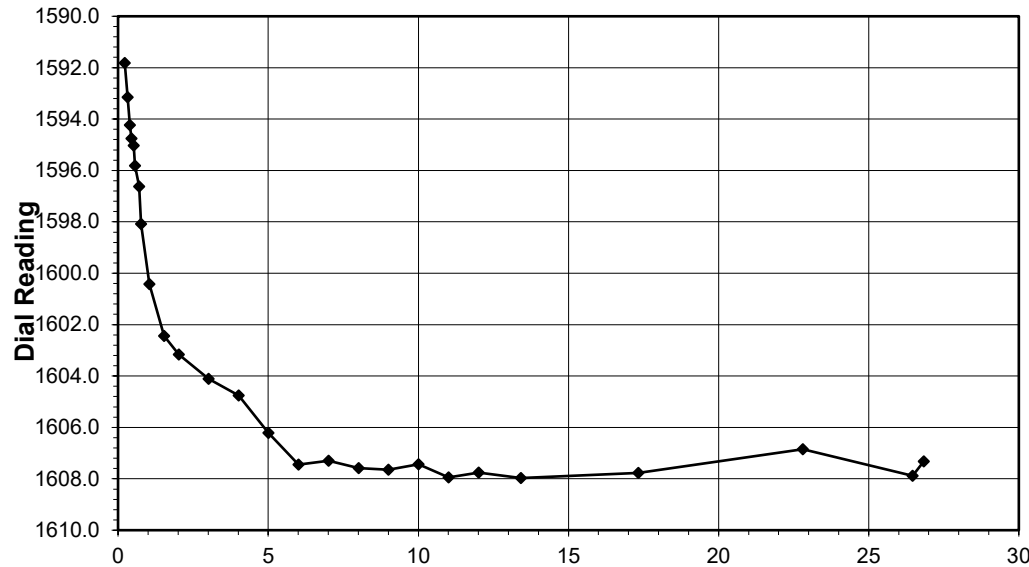


**ONE DIMENSIONAL CONSOLIDATION**

ASTM D2435 / D2435M-11

Client: AECOM Boring No.: S1\_EB1\_A  
 Client Project: B-5898 / B-3186 Depth (ft): 15.0-17.0  
 Project No.: R-2023-090-001 Sample No.: ST-1  
 Lab ID: R-2023-090-001-048 Visual Description: Brown Sandy Silt

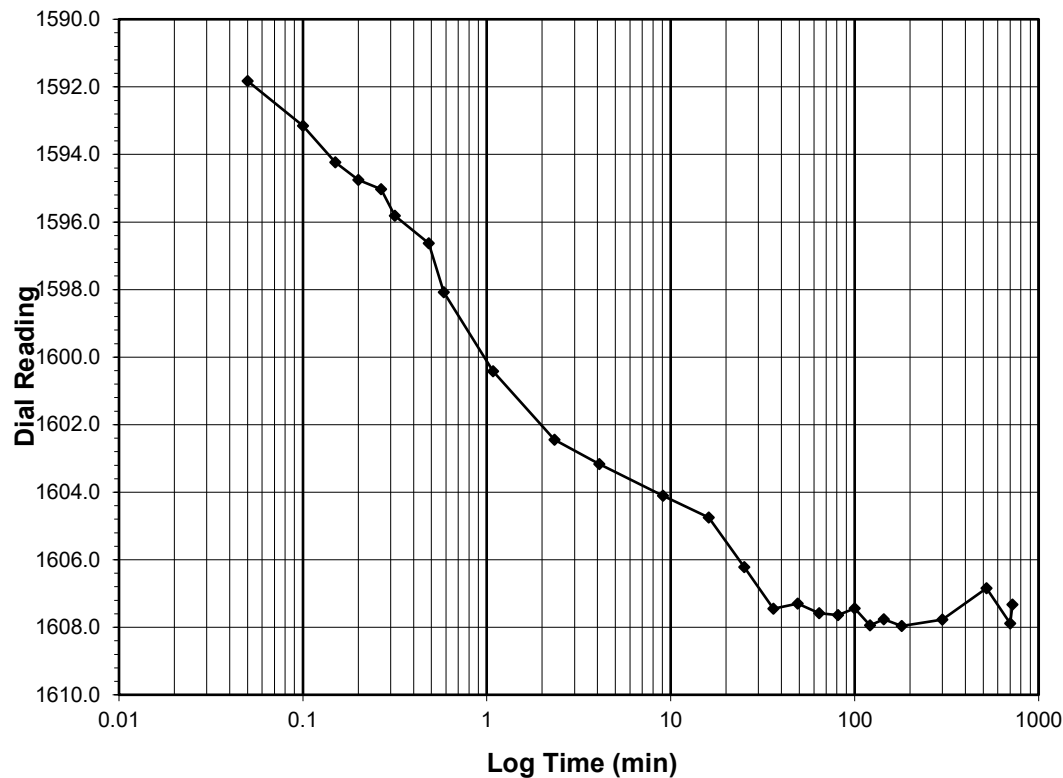
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) 0.5 - 1  
 Final Reading (div) 1607.3  
 Consolidometer No. R470  
 1 Division (in) 0.0001

Start Date 4/7/2023  
 Start Time 20:41:16

Elapsed Time (min)	Dial Reading (div)
Initial	1581.7
0.05	1591.8
0.10	1593.2
0.15	1594.2
0.20	1594.8
0.27	1595.0
0.32	1595.8
0.48	1596.6
0.58	1598.1
1.08	1600.4
2.33	1602.4
4.08	1603.2
9.08	1604.1
16.10	1604.8
25.10	1606.2
36.10	1607.5
49.10	1607.3
64.10	1607.6
81.10	1607.6
100.10	1607.4
121.10	1607.9
144.10	1607.8
180.12	1608.0
300.12	1607.8
520.12	1606.8
700.12	1607.9
720.05	1607.3



Tested By 129-07-0411 Date 4/7/23 Checked By MPS Date 4/21/23

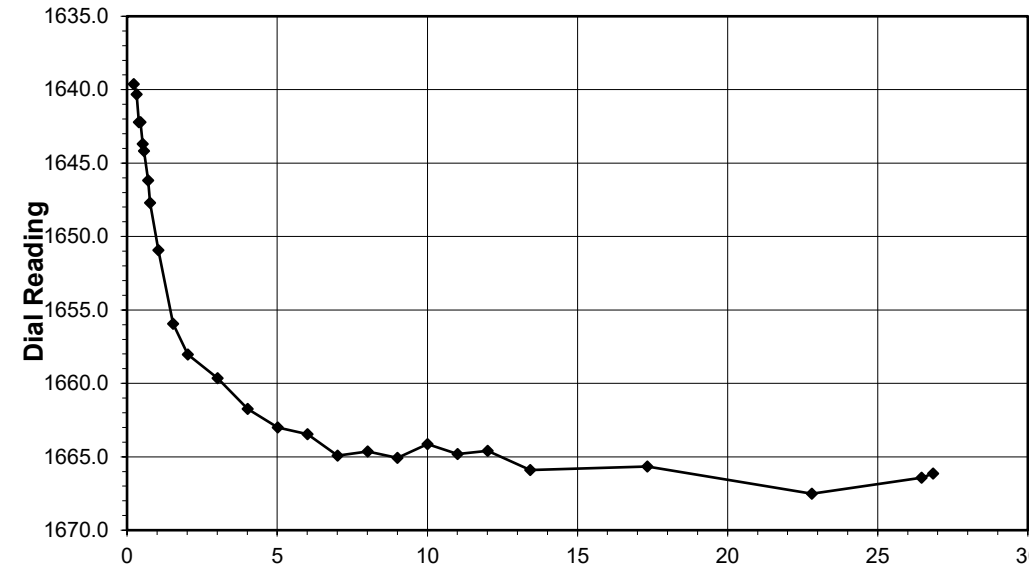


**ONE DIMENSIONAL CONSOLIDATION**

ASTM D2435 / D2435M-11

Client: AECOM Boring No.: S1\_EB1\_A  
 Client Project: B-5898 / B-3186 Depth (ft): 15.0-17.0  
 Project No.: R-2023-090-001 Sample No.: ST-1  
 Lab ID: R-2023-090-001-048 Visual Description: Brown Sandy Silt

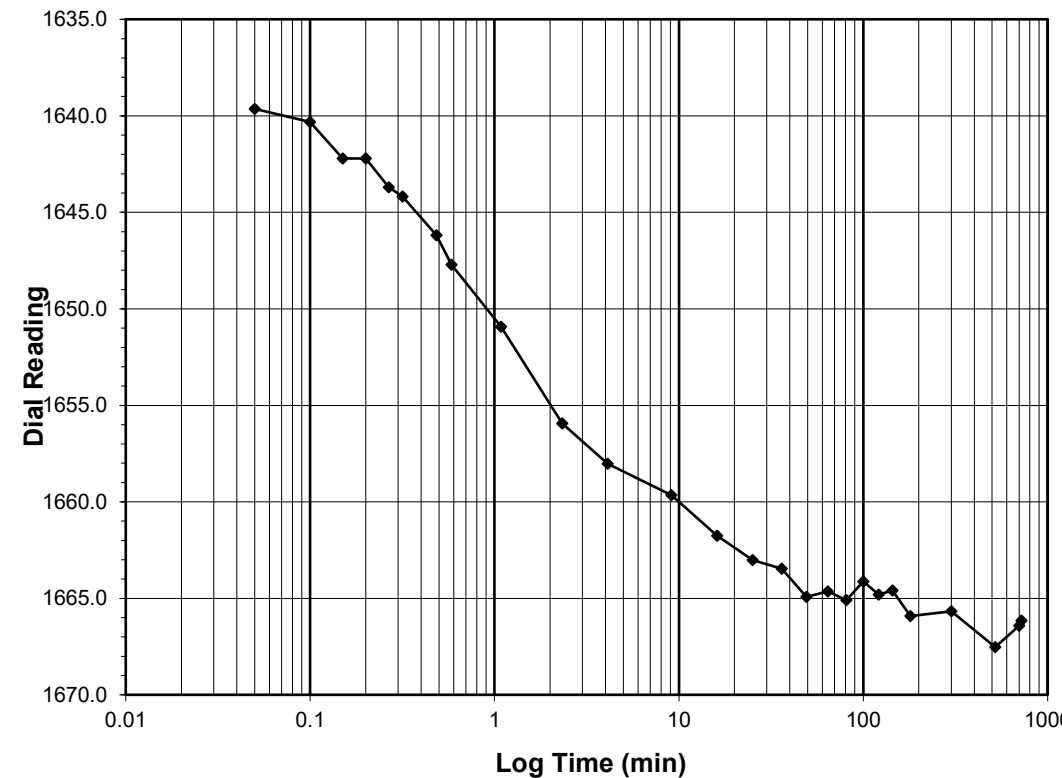
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) 1 - 2  
 Final Reading (div) 1666.1  
 Consolidometer No. R470  
 1 Division (in) 0.0001

Start Date 4/8/2023  
 Start Time 8:41:19

Elapsed Time (min)	Dial Reading (div)
Initial	1607.3
0.05	1639.6
0.10	1640.3
0.15	1642.2
0.20	1642.2
0.27	1643.7
0.32	1644.2
0.48	1646.2
0.58	1647.7
1.08	1650.9
2.33	1655.9
4.10	1658.0
9.10	1659.6
16.10	1661.7
25.12	1663.0
36.12	1663.5
49.12	1664.9
64.12	1664.6
81.12	1665.1
100.13	1664.1
121.13	1664.8
144.13	1664.6
180.13	1665.9
300.13	1665.7
520.13	1667.5
700.13	1666.4
720.48	1666.1



Tested By 129-07-0411 Date 4/8/23 Checked By MPS Date 4/21/23

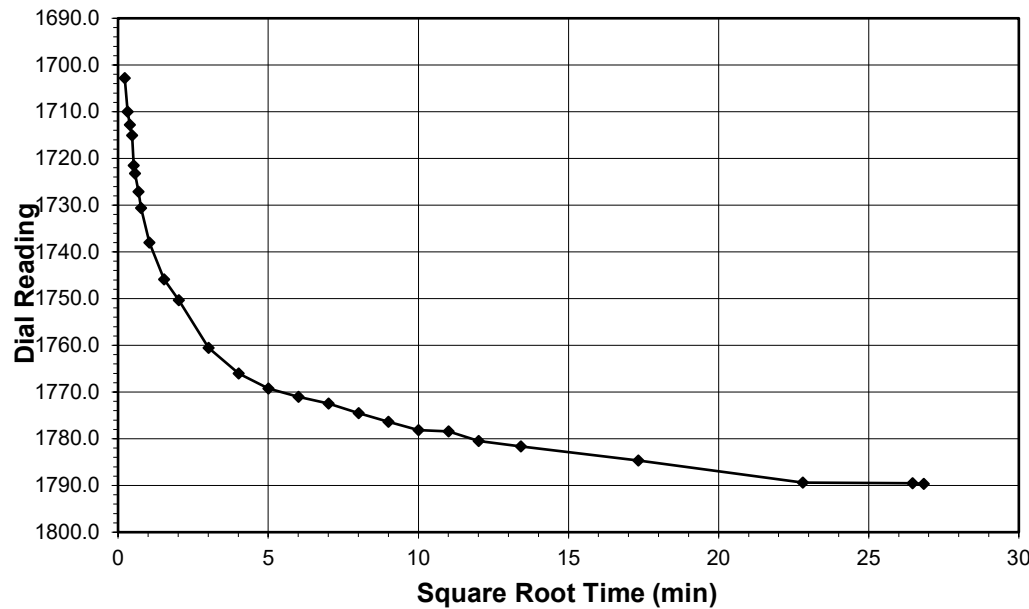


### ONE DIMENSIONAL CONSOLIDATION

ASTM D2435 / D2435M-11

Client: AECOM Boring No.: S1\_EB1\_A  
 Client Project: B-5898 / B-3186 Depth (ft): 15.0-17.0  
 Project No.: R-2023-090-001 Sample No.: ST-1  
 Lab ID: R-2023-090-001-048 Visual Description: Brown Sandy Silt

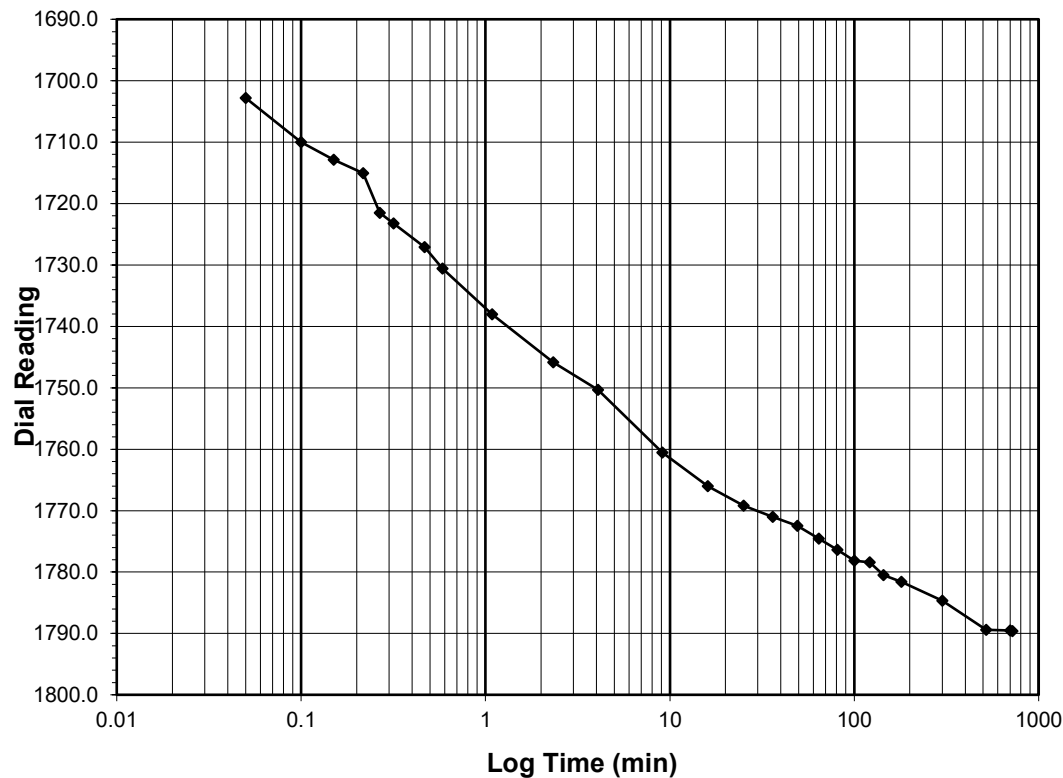
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) 2 - 4  
 Final Reading (div) 1789.6  
 Consolidometer No. R470  
 1 Division (in) 0.0001

Start Date 4/8/2023  
 Start Time 20:41:48

Elapsed Time (min)	Dial Reading (div)
<b>Initial</b>	<b>1666.1</b>
0.05	1702.8
0.10	1710.0
0.15	1712.8
0.22	1715.1
0.27	1721.5
0.32	1723.2
0.47	1727.1
0.58	1730.6
1.08	1738.0
2.33	1745.9
4.08	1750.3
9.08	1760.5
16.08	1766.0
25.10	1769.2
36.10	1771.0
49.10	1772.5
64.12	1774.5
81.12	1776.4
100.12	1778.2
121.12	1778.4
144.12	1780.5
180.12	1781.6
300.13	1784.7
520.13	1789.4
700.15	1789.5
720.35	1789.6



Tested By 129-07-0411 Date 4/8/23 Checked By MPS Date 4/21/23

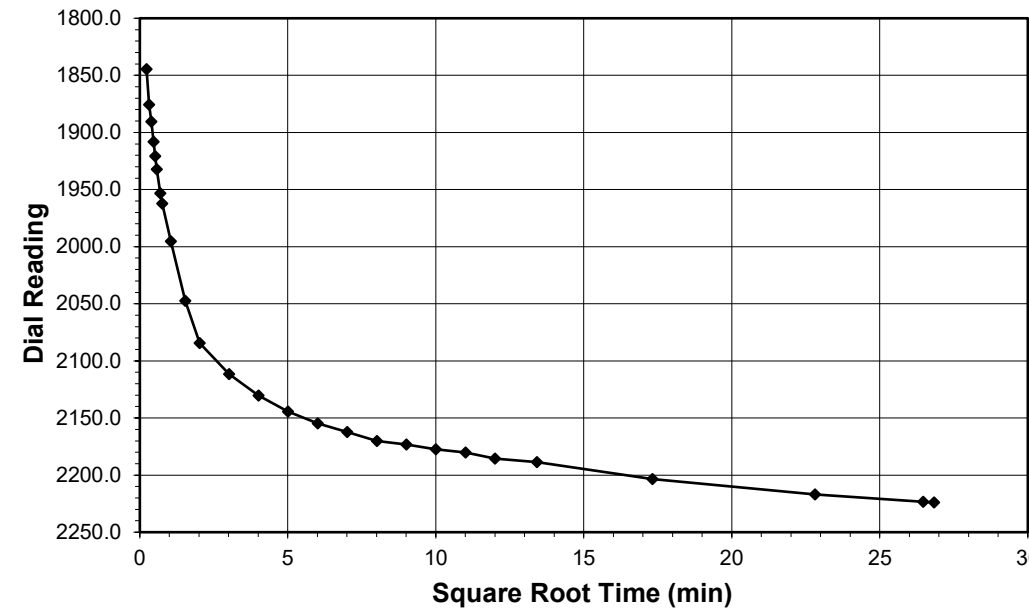


### ONE DIMENSIONAL CONSOLIDATION

ASTM D2435 / D2435M-11

Client: AECOM Boring No.: S1\_EB1\_A  
 Client Project: B-5898 / B-3186 Depth (ft): 15.0-17.0  
 Project No.: R-2023-090-001 Sample No.: ST-1  
 Lab ID: R-2023-090-001-048 Visual Description: Brown Sandy Silt

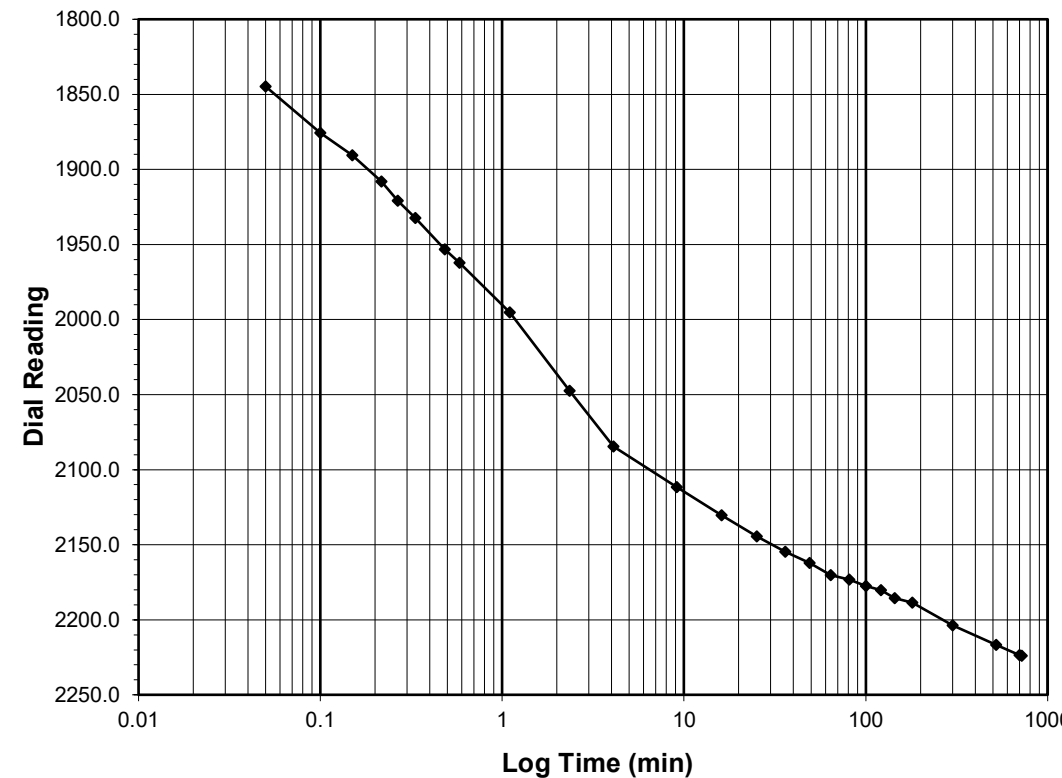
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) 4 - 8  
 Final Reading (div) 2223.9  
 Consolidometer No. R470  
 1 Division (in) 0.0001

Start Date 4/9/2023  
 Start Time 8:42:09

Elapsed Time (min)	Dial Reading (div)
<b>Initial</b>	<b>1789.6</b>
0.05	1844.6
0.10	1875.7
0.15	1890.5
0.22	1908.1
0.27	1920.8
0.33	1932.3
0.48	1953.3
0.58	1962.2
1.10	1995.3
2.35	2047.4
4.10	2084.5
9.12	2111.6
16.12	2130.4
25.12	2144.4
36.12	2154.6
49.13	2162.2
64.13	2170.2
81.13	2173.2
100.13	2177.5
121.15	2180.2
144.15	2185.7
180.15	2188.6
300.15	2203.6
520.15	2216.8
700.17	2223.5
720.23	2223.9



Tested By 129-07-0411 Date 4/9/23 Checked By MPS Date 4/21/23

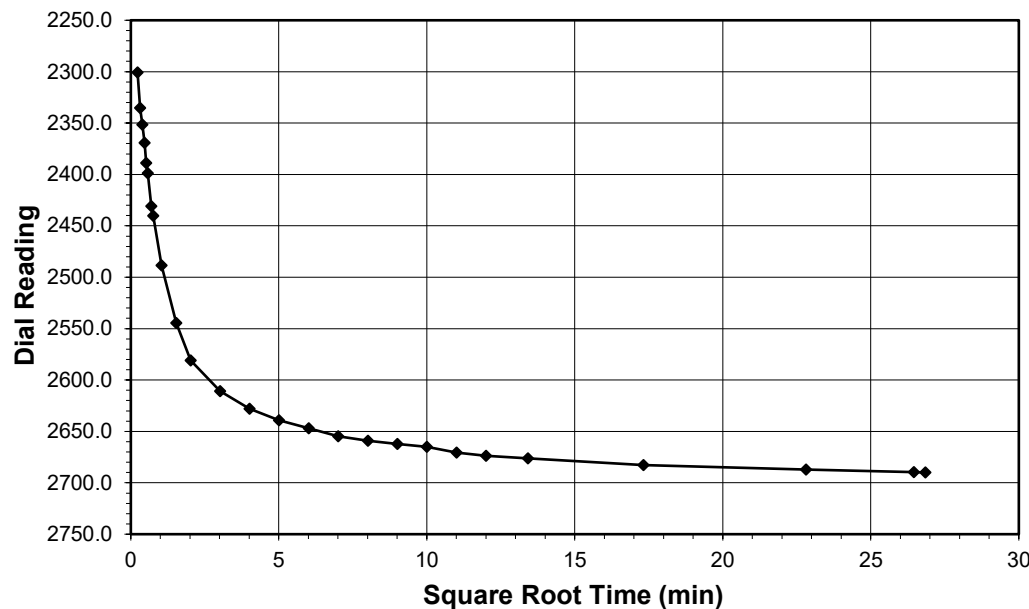


### ONE DIMENSIONAL CONSOLIDATION

ASTM D2435 / D2435M-11

Client: AECOM Boring No.: S1\_EB1\_A  
 Client Project: B-5898 / B-3186 Depth (ft): 15.0-17.0  
 Project No.: R-2023-090-001 Sample No.: ST-1  
 Lab ID: R-2023-090-001-048 Visual Description: Brown Sandy Silt

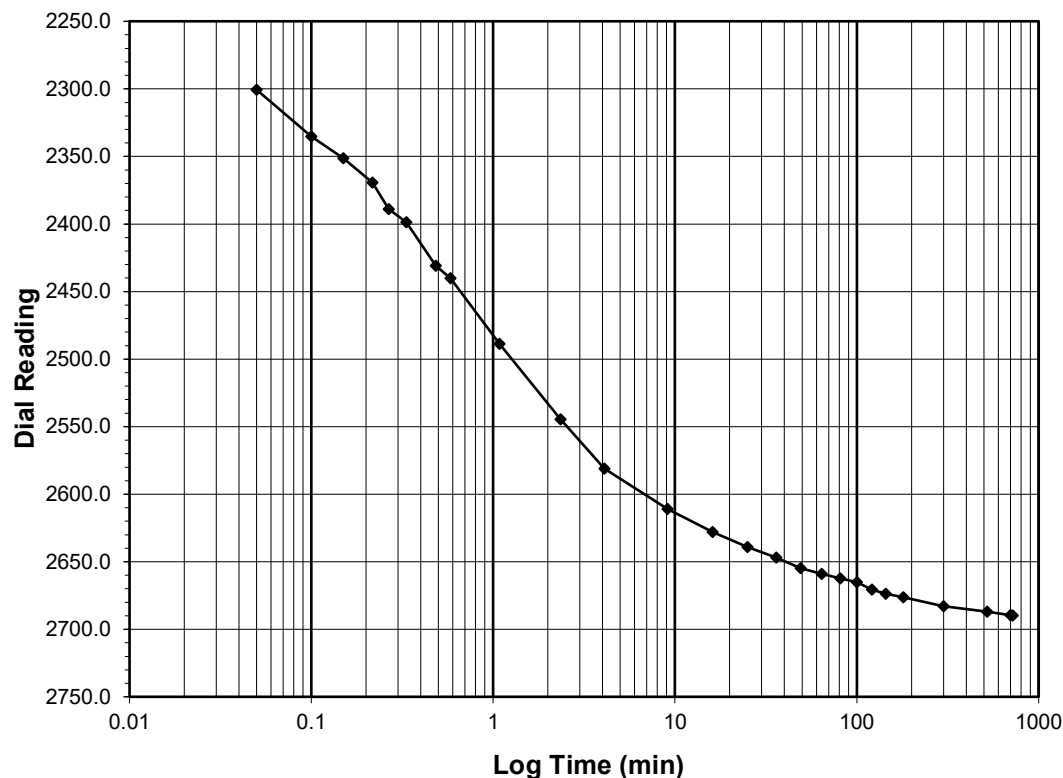
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) 8 - 16  
 Final Reading (div) 2689.8  
 Consolidometer No. R470  
 1 Division (in) 0.0001

Start Date 4/9/2023  
 Start Time 20:42:23

Elapsed Time (min)	Dial Reading (div)
Initial	2223.9
0.05	2300.7
0.10	2335.3
0.15	2351.4
0.22	2369.2
0.27	2389.0
0.33	2398.8
0.48	2430.9
0.58	2440.1
1.08	2488.6
2.35	2544.6
4.10	2581.0
9.10	2610.9
16.10	2628.0
25.10	2639.1
36.12	2646.8
49.12	2654.7
64.12	2659.0
81.13	2662.3
100.13	2665.1
121.13	2670.5
144.13	2673.6
180.13	2676.3
300.13	2682.8
520.15	2687.0
700.15	2689.6
720.40	2689.8



Tested By 129-07-0411 Date 4/9/23 Checked By MPS Date 4/21/23

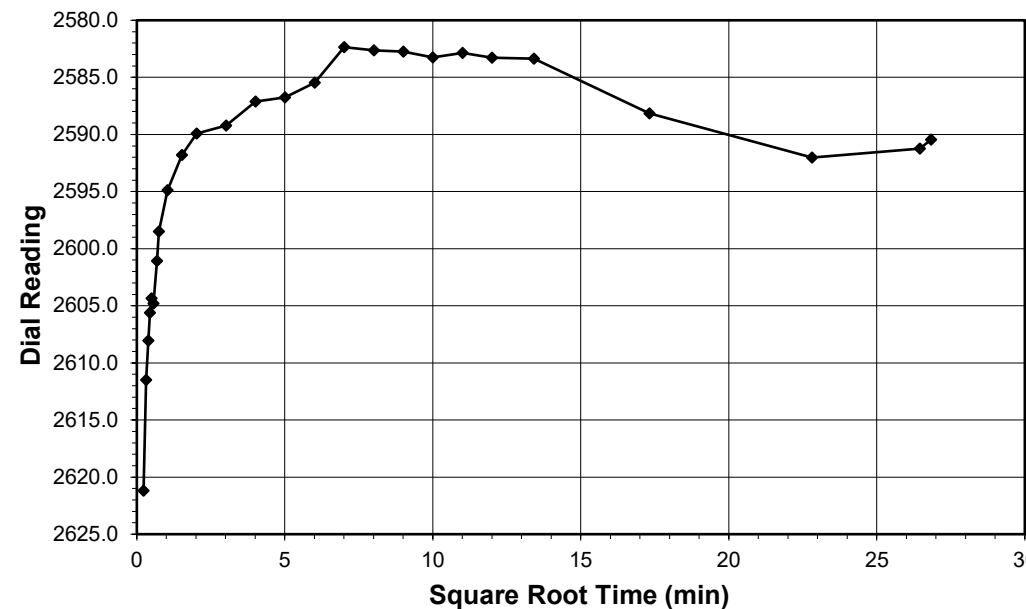


### ONE DIMENSIONAL CONSOLIDATION

ASTM D2435 / D2435M-11

Client: AECOM Boring No.: S1\_EB1\_A  
 Client Project: B-5898 / B-3186 Depth (ft): 15.0-17.0  
 Project No.: R-2023-090-001 Sample No.: ST-1  
 Lab ID: R-2023-090-001-048 Visual Description: Brown Sandy Silt

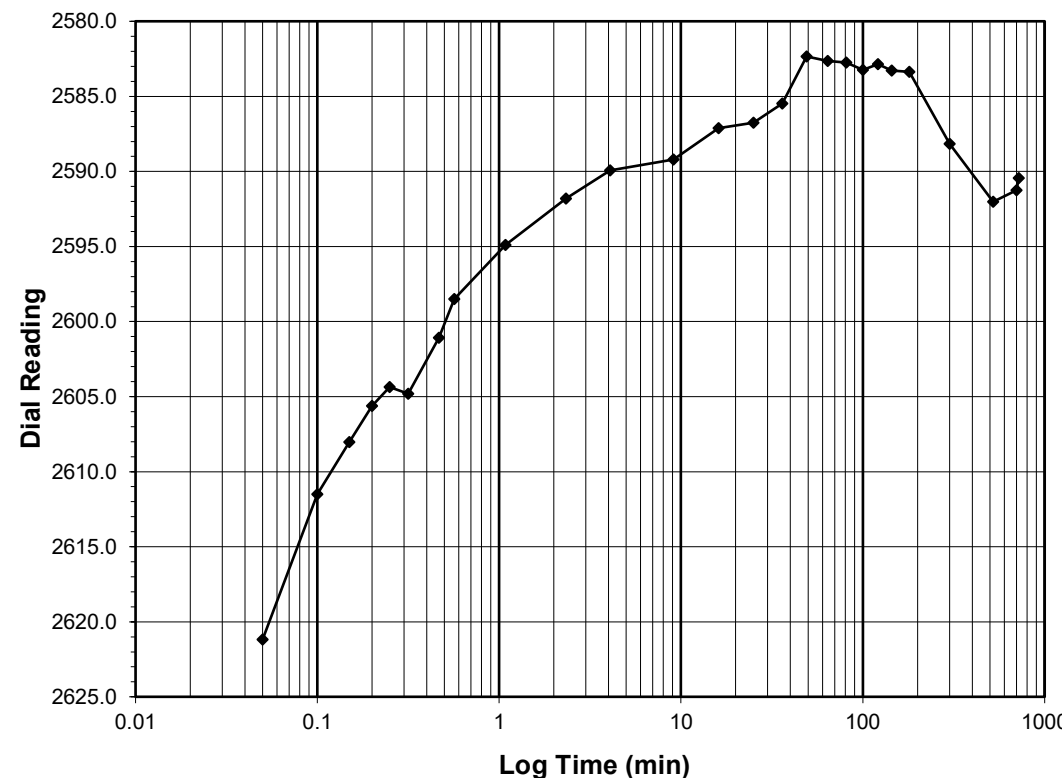
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) 16 - 4  
 Final Reading (div) 2590.4  
 Consolidometer No. R470  
 1 Division (in) 0.0001

Start Date 4/10/2023  
 Start Time 8:42:48

Elapsed Time (min)	Dial Reading (div)
Initial	2689.8
0.05	2621.2
0.10	2611.5
0.15	2608.0
0.20	2605.6
0.25	2604.4
0.32	2604.8
0.47	2601.1
0.57	2598.5
1.08	2594.9
2.33	2591.8
4.08	2589.9
9.10	2589.2
16.10	2587.1
25.10	2586.7
36.12	2585.5
49.12	2582.3
64.12	2582.6
81.13	2582.7
100.13	2583.2
121.13	2582.9
144.13	2583.3
180.13	2583.4
300.13	2588.2
520.15	2592.0
700.15	2591.2
720.23	2590.4



Tested By 129-07-0411 Date 4/10/23 Checked By MPS Date 4/21/23

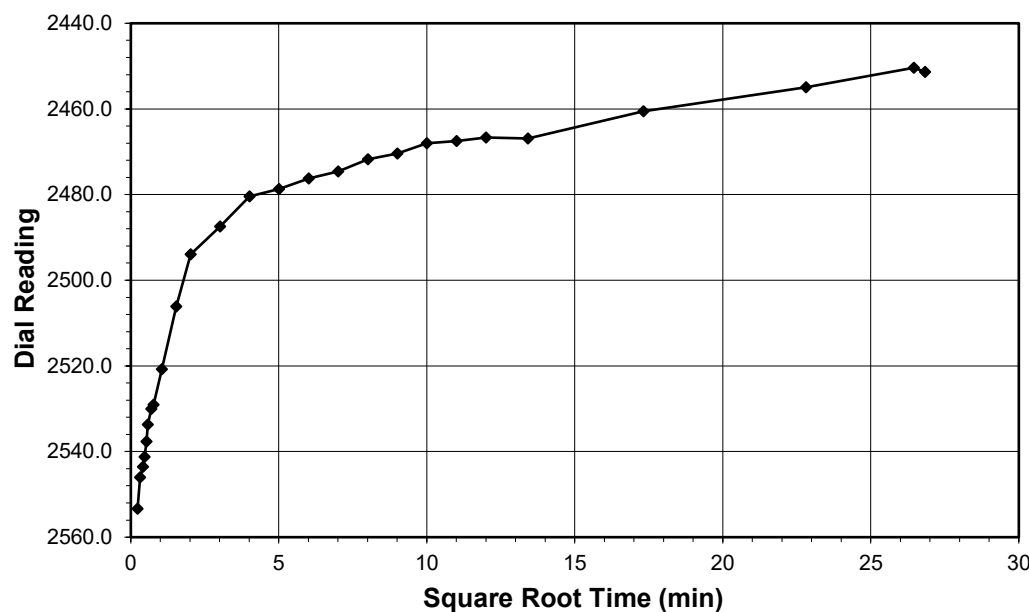


### ONE DIMENSIONAL CONSOLIDATION

ASTM D 2435-96 (SOP-S24A)

Client: AECOM Boring No.: S1\_EB1\_A  
 Client Project: B-5898 / B-3186 Depth (ft): 15.0-17.0  
 Project No.: R-2023-090-001 Sample No.: ST-1  
 Lab ID: R-2023-090-001-048 Visual Description: Brown Sandy Silt

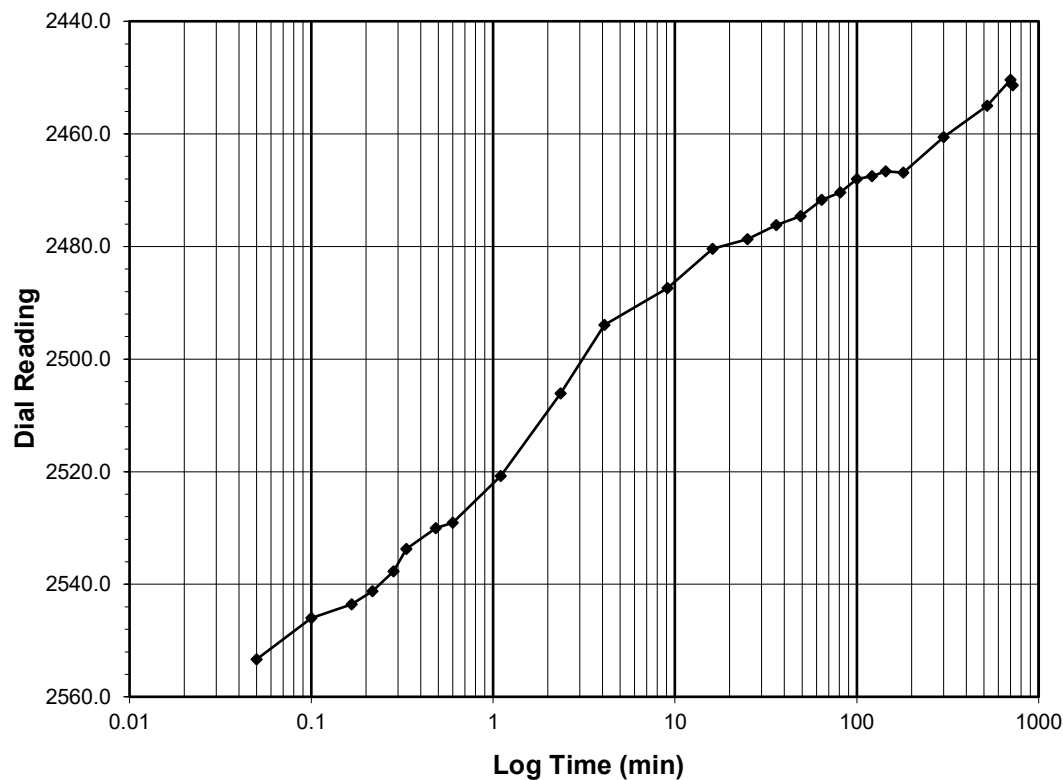
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) 4 - 1  
 Final Reading (div) 2451.4  
 Consolidometer No. R470  
 1 Division (in) 0.0001

Start Date 4/10/2023  
 Start Time 20:43:02

Elapsed Time (min)	Dial Reading (div)
Initial	2590.4
0.05	2553.3
0.10	2546.0
0.17	2543.6
0.22	2541.2
0.28	2537.7
0.33	2533.7
0.48	2530.0
0.60	2529.1
1.10	2520.8
2.35	2506.1
4.10	2493.9
9.10	2487.4
16.10	2480.4
25.10	2478.7
36.12	2476.2
49.12	2474.6
64.12	2471.7
81.12	2470.4
100.12	2468.0
121.13	2467.5
144.13	2466.6
180.15	2466.9
300.15	2460.6
520.15	2455.0
700.15	2450.4
720.12	2451.4



Tested By 129-07-0411 Date 4/10/23 Checked By MPS Date 4/21/23

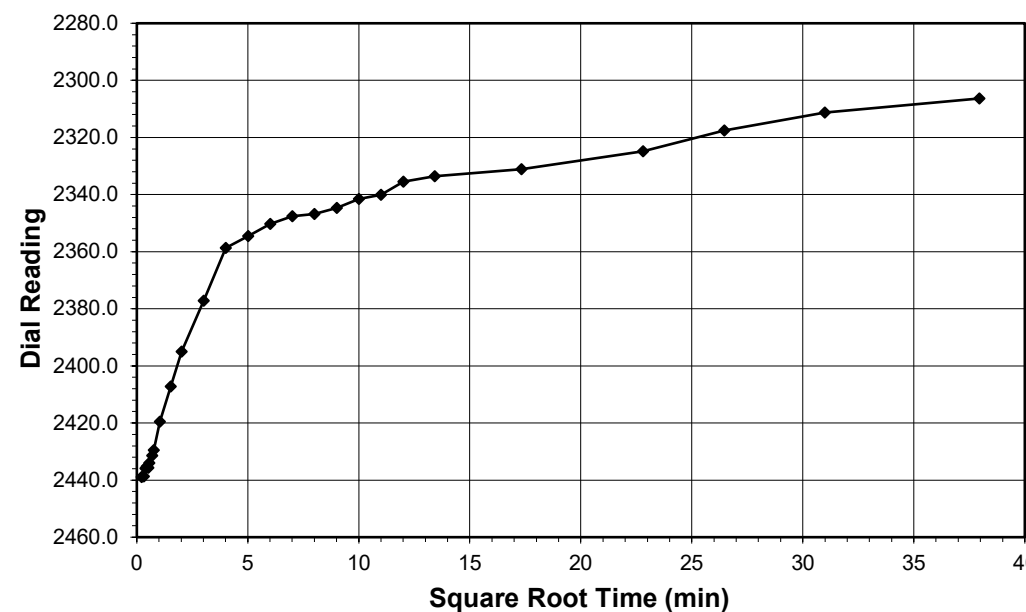


### ONE DIMENSIONAL CONSOLIDATION

ASTM D2435 / D2435M-11

Client: AECOM Boring No.: S1\_EB1\_A  
 Client Project: B-5898 / B-3186 Depth (ft): 15.0-17.0  
 Project No.: R-2023-090-001 Sample No.: ST-1  
 Lab ID: R-2023-090-001-048 Visual Description: Brown Sandy Silt

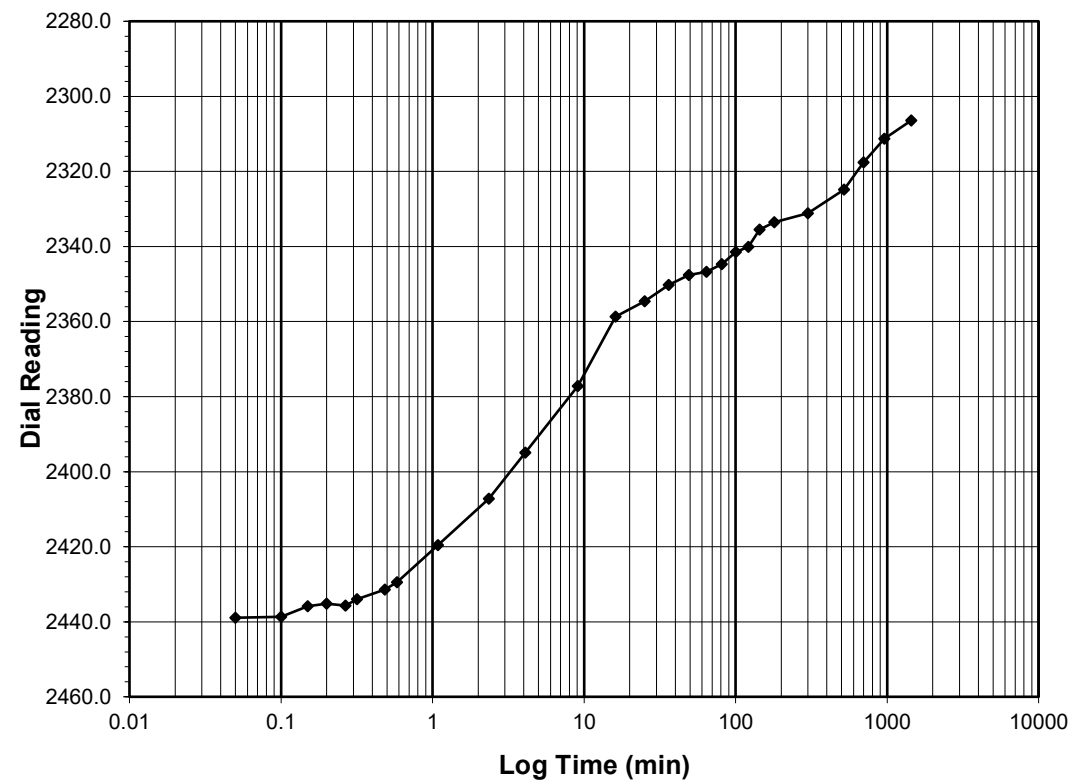
Sample Conditions: Undisturbed, Inundated, Double Drained



Test Load (tsf) 1 - 0.25  
 Final Reading (div) 2306.4  
 Consolidometer No. R470  
 1 Division (in) 0.0001

Start Date 4/11/2023  
 Start Time 8:43:09

Elapsed Time (min)	Dial Reading (div)
Initial	2451.4
0.05	2438.9
0.10	2438.7
0.15	2435.9
0.20	2435.2
0.27	2435.6
0.32	2434.0
0.48	2431.4
0.58	2429.5
1.08	2419.6
2.35	2407.2
4.10	2395.0
9.10	2377.2
16.10	2358.7
25.12	2354.6
36.12	2350.3
49.12	2347.6
64.13	2346.8
81.13	2344.7
100.13	2341.5
121.15	2340.1
144.15	2335.5
180.15	2333.5
300.17	2331.2
520.17	2324.9
700.17	2317.6
960.17	2311.3
1440.03	2306.4



Tested By 129-07-0411 Date 4/11/23 Checked By MPS Date 4/21/23





**SIEVE AND HYDROMETER ANALYSIS**

NCDOT MOD. AASHTO T-88,

Client AECOM Boring No. S1\_EB1\_A  
 Client Reference B-5898 / B-3186 Depth (ft) 15.0-17.0  
 Project No. R-2023-090-001 Sample No. ST-1  
 Lab ID R-2023-090-001-048 Soil Color **Brown**

**WASH SIEVE ANALYSIS**

NCDOT MOD. AASHTO T-88,

Client AECOM Boring No. S1\_EB1\_A  
 Client Reference B-5898 / B-3186 Depth (ft) 15.0-17.0  
 Project No. R-2023-090-001 Sample No. ST-1  
 Lab ID R-2023-090-001-048 Soil Color **Brown**

USCS AASHTO	SIEVE ANALYSIS			HYDROMETER
	cobbles	gravel	sand	silt and clay fraction



Sieve Size (mm)	Percent Finer	USCS %	AASHTO %	NCDOT SOIL MORTAR %
100	100.00	Gravel 0.00	Gravel 0.45	Coarse Sand Ret. #60 14.49
2	99.55	Sand 31.36	Coarse Sand 8.83	Fine Sand Ret. #270 19.84
0.075	68.64	Silt&Clay 68.64	Fine Sand 22.07	Silt 0.05-0.005mm 25.12
			Silt & Clay 68.64	Clay <0.005mm 40.55

AASHTO (GI) A-6 (8)

Minus #10 for Hygroscopic (10-15gm)		Hydrometer Specimen 50 or 100gms	
Tare No.	AN	Air Dried Hydrometer Material (gm)	70.75
Wgt. Tare + Wet Specimen (gm)	46.84	Corrected Dry Wt. of Hydro Mtrl. (gm)	67.65
Wgt. Tare + Dry Specimen (gm)	45.46		
Weight of Tare (gm)	15.38	Weight of -#270 Material	44.43
Weight of Water (gm)	1.38	Weight of -#10; +#270 Material	23.22
Weight of Dry Soil (gm)	30.08		
<b>Moisture Content (%)</b>	<b>4.6</b>		

Tare No.	425	Dry Weight of Material Ret. #10 (gm)	0.96
Wgt. Tare + Air Dry Soil (gm)	320.13	Corrected Dry Sample Wt - #10 (gm)	210.34
Weight of Tare (gm)	99.18		
Air Dried Wgt. Total Sample (gm)	220.95		
Total Dry Weight Sample (gm)	211.3	<b>J - Factor (Percent Finer than #10)</b>	<b>0.9955</b>

Sieve Size	Sieve Opening (mm)	Wgt. of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100.00
6"	150	0.00	0.00	0.00	100.00	100.00
3"	75	0.00	0.00	0.00	100.00	100.00
2"	50	0.00	0.00	0.00	100.00	100.00
1 1/2"	37.5	0.00	0.00	0.00	100.00	100.00
1"	25.0	0.00	0.00	0.00	100.00	100.00
3/4"	19.0	0.00	0.00	0.00	100.00	100.00
1/2"	12.5	0.00	0.00	0.00	100.00	100.00
3/8"	9.5	0.00	0.00	0.00	100.00	100.00
#4	4.75	0.00	0.00	0.00	100.00	100.00
#10	2.00	0.96	0.45	0.45	99.55	99.55
#20	0.85	2.20	3.25	3.25	96.75	96.31
#40	0.425	3.80	5.62	8.87	91.13	90.72
#60	0.25	3.80	5.62	14.49	85.51	85.12
#140	0.106	7.78	11.50	25.99	74.01	73.68
#200	0.075	3.42	5.06	31.04	68.96	68.64
#270	0.053	2.22	3.28	34.33	65.67	65.38
Pan	-	44.43	65.67	100.00	-	-

Tested By 129-07-0411 Date 4/17/23 Checked By AES Date 4/19/23



**HYDROMETER ANALYSIS**  
NCDOT MOD. AASHTO T-88,

Client	AECOM	Boring No.	S1_EB1_A
Client Reference	B-5898 / B-3186	Depth (ft)	15.0-17.0
Project No.	R-2023-090-001	Sample No.	ST-1
Lab ID	R-2023-090-001-048	Soil Color	<b>Brown</b>

Elapsed Time (min)	R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
14:55:00	0	NA	NA	NA	NA	NA	NA	NA
14:55:30	0.50	48.0	-2.60	44.6	65.5	0.01279	0.0525	<b>65.2</b>
15:55:00	60.00	31.0	-2.60	27.6	40.6	0.01279	0.0055	<b>40.4</b>

Corrections	
a - Factor	0.994
Percent Finer than # 10	99.55
Specific Gravity	2.68 Measured

**Note:** Hydrometer test is performed on - #10 sieve material.

LL = 38  
PL = 25  
PI = 13

**ATTERBERG LIMITS**

AASHTO T-89, T-90 (DOT Modified)

Client	AECOM	Boring No.	S1_EB1_A
Client Reference	B-5898 / B-3186	Depth (ft)	15.0-17.0
Project No.	R-2023-090-001	Sample No.	ST-1
Lab ID	R-2023-090-001-048	Soil Description	<b>BROWN SILT</b> (Minus No. 40 sieve material, Airdried)

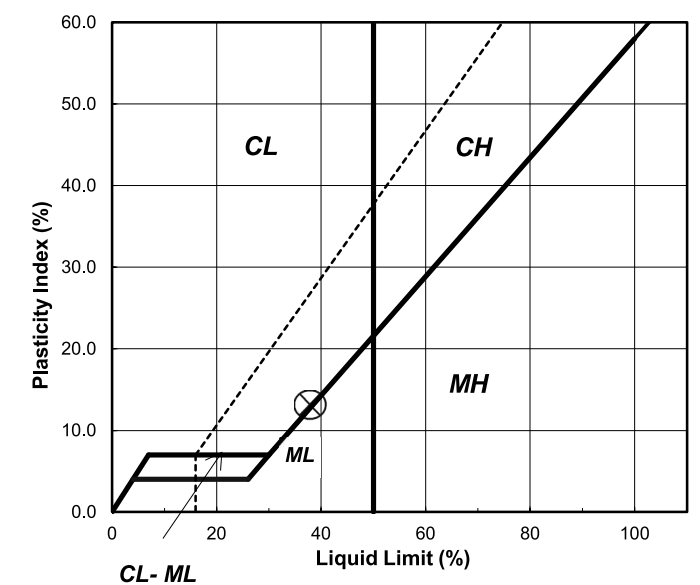
**Note:** The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.

Liquid Limit Test	1
Tare Number	17
Wt. of Tare & WS (gm)	17.68
Wt. of Tare & DS (gm)	14.72
Wt. of Tare (gm)	6.99
Wt. of Water (gm)	3.0
Wt. of DS (gm)	7.7
<b>Moisture Content (%)</b>	<b>38.3</b>
<b>Number of Blows</b>	<b>25</b>

Plastic Limit Test	1	2	Range	Test Results
Tare Number	21	23		<b>Liquid Limit (%)</b> 38
Wt. of Tare & WS (gm)	16.14	14.59		
Wt. of Tare & DS (gm)	14.33	13.11		<b>Plastic Limit (%)</b> 25
Wt. of Tare (gm)	7.06	7.10		
Wt. of Water (gm)	1.8	1.5		<b>Plasticity Index (%)</b> 13
Wt. of DS (gm)	7.3	6.0		
<b>Moisture Content (%)</b>	<b>24.9</b>	<b>24.6</b>	<b>0.3</b>	<b>USCS Symbol</b> ML

*Note: The acceptable range of the two Moisture contents is ± 2.6*

Plasticity Chart



Tested By 129-09-0411 Date 4/14/23 Checked By AES Date 4/19/23

Tested By 129-07-0411 Date 4/14/23 Checked By AES Date 4/17/23  
page 1 of 1 DCN: CT-S4B DATE: 10/8/01 REVISION: 2



**SPECIFIC GRAVITY**

AASHTO T-100-15

Client:	AECOM	Boring No.:	S1_EB1_A
Client Reference:	B-5898 / B-3186	Depth (ft):	15.0-17.0
Project No.:	R-2023-090-001	Sample No.:	ST-1
Lab ID:	R-2023-090-001-048	Visual Description:	Brown Clay

(Minus No.4 sieve material, oven dried)

<b>Replicate Number</b>	<b>1</b>	<b>2</b>
Pycnometer ID:	R 716	R 717
Weight of Pycnometer & Soil & Water (g):	684.99	683.77
Temperature (°C):	24.8	24.6
Weight of Pycnometer & Water (g):	651.99	650.62
Tare Number:	716	717
Weight of Tare & Dry Soil (g):	206.98	205.62
Weight of Tare (g):	154.21	152.77
Weight of Dry Soil (g):	52.77	52.85
Specific Gravity of Soil @ Measured Temperature:	2.669	2.683
Specific Gravity of Water @ Measured Temperature:	0.99710	0.99715
Conversion Factor for Measured Temperature:	0.99889	0.99895
Specific Gravity @ 20° Celsius:	2.672	2.686

<b>Average Specific Gravity @ 20° Celsius</b>	<b>2.68</b>
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Tested By RFF Date 4/5/23 Checked By AES Date 4/7/23

page 1 of 1 DCN: CT-S5 DATE: 3/26/18 REVISION: 21

**REFERENCE: B-5898/B-3186**

**PROJECT: 48030**

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

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***SUBSURFACE INVESTIGATION***

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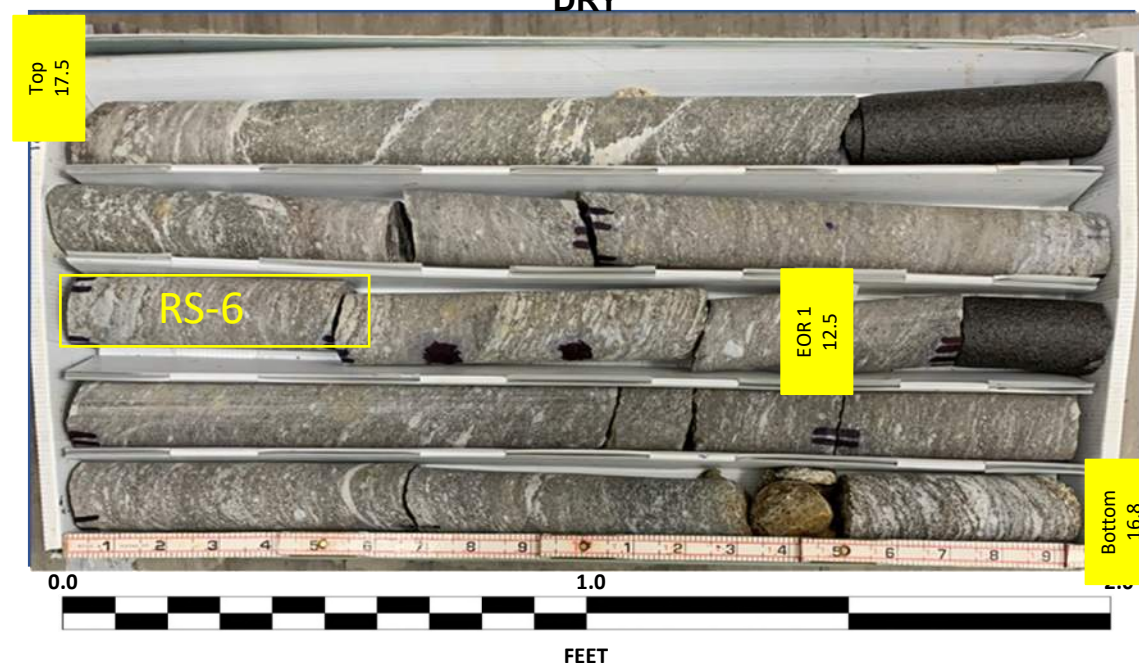
*APPENDIX C  
HDR ROCK CORE PHOTOGRAPHS*



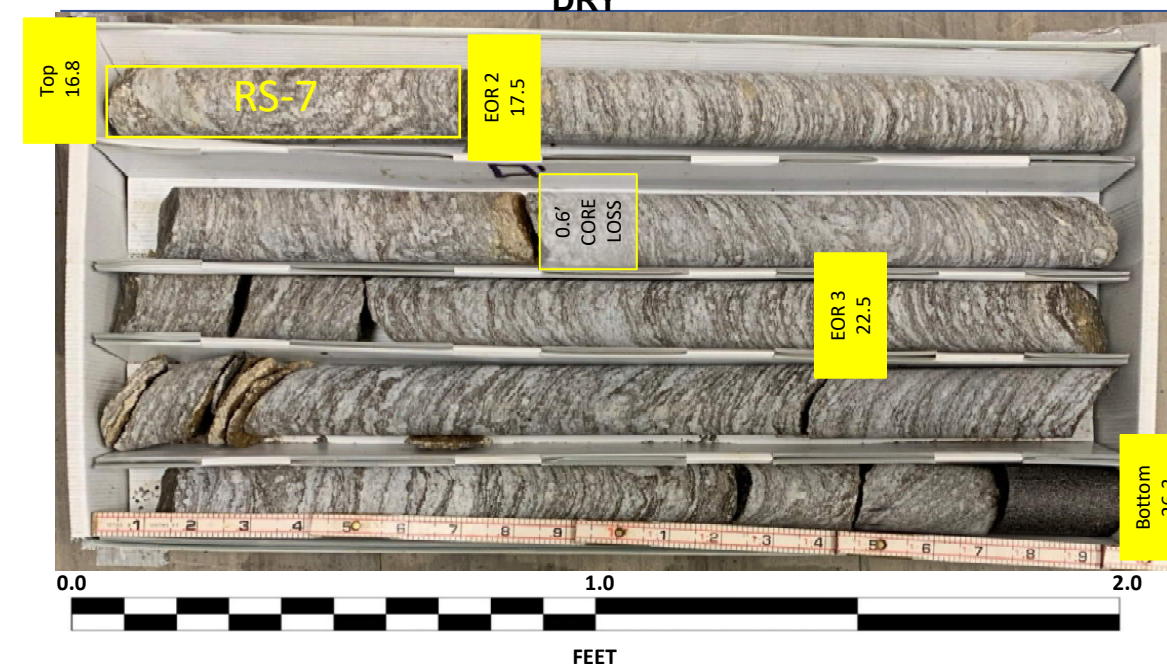
# CORE PHOTOGRAPHIC RECORD

38330.1.FS1 (B-3186/B-5898)  
US 23/ US 74 Great Smokey Mountain Highway

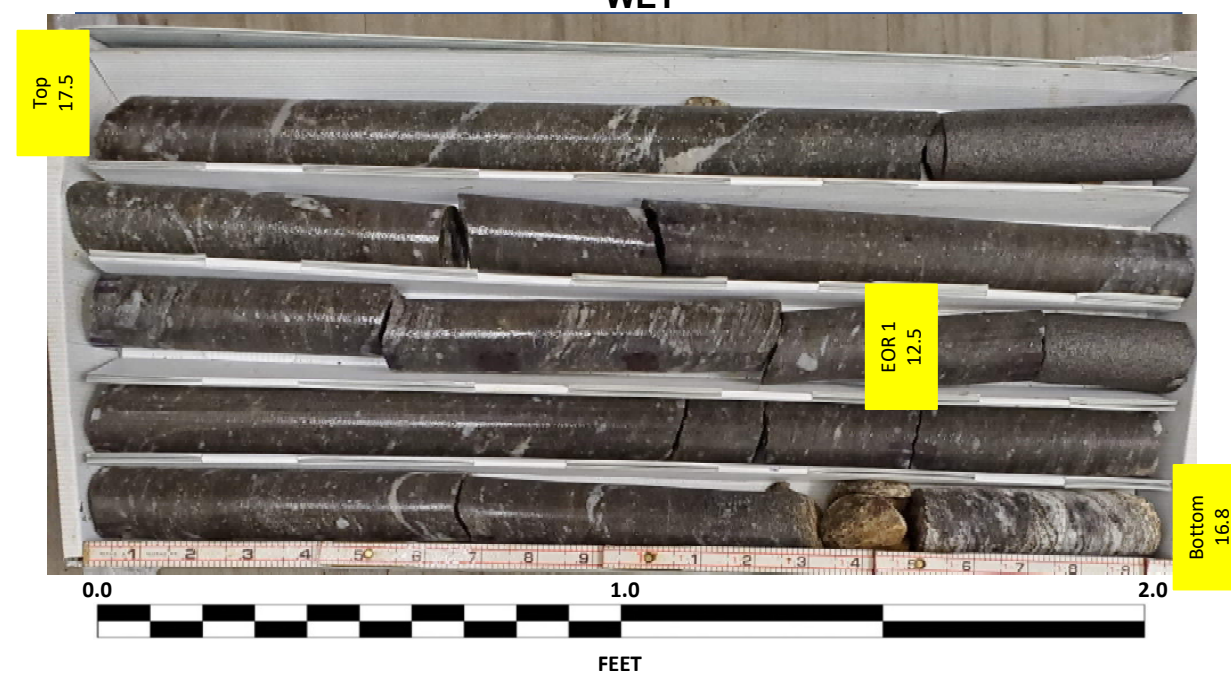
**S1\_B1-A (HDR)**  
**Box 1 of 3: 7.5 – 16.8 FEET**  
**DRY**



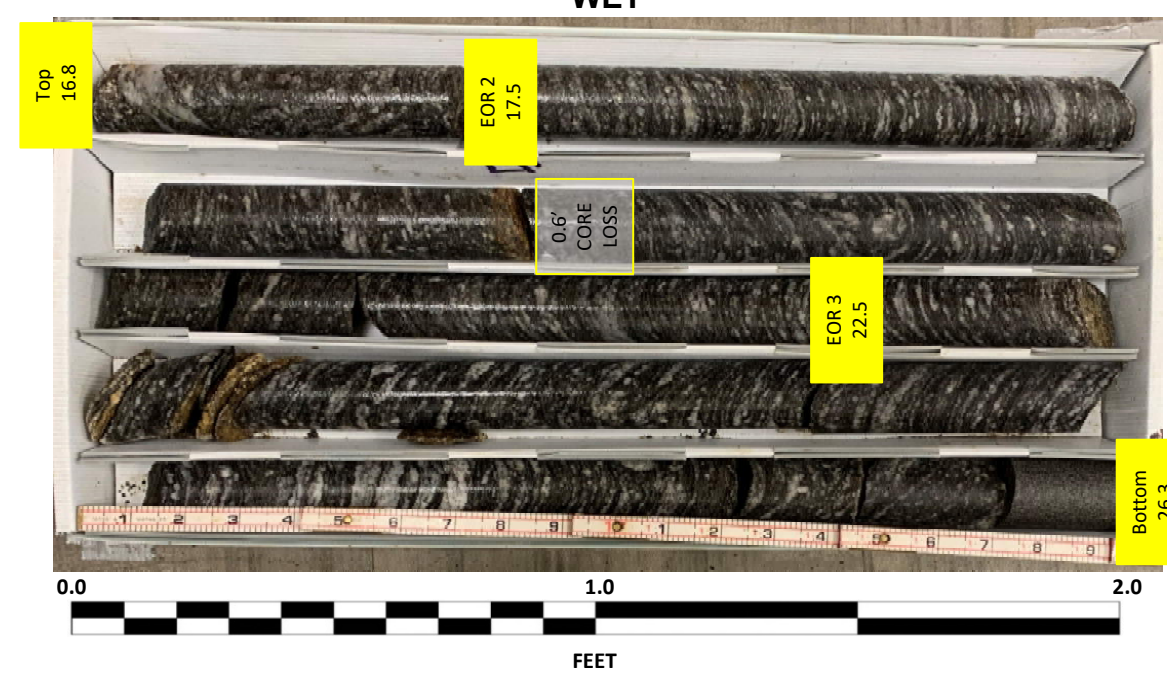
**S1\_B1-A (HDR)**  
**Box 2 of 3: 16.8 – 26.3 FEET**  
**DRY**



**S1\_B1-A (HDR)**  
**Box 1 of 3: 7.5 – 16.8 FEET**  
**WET**



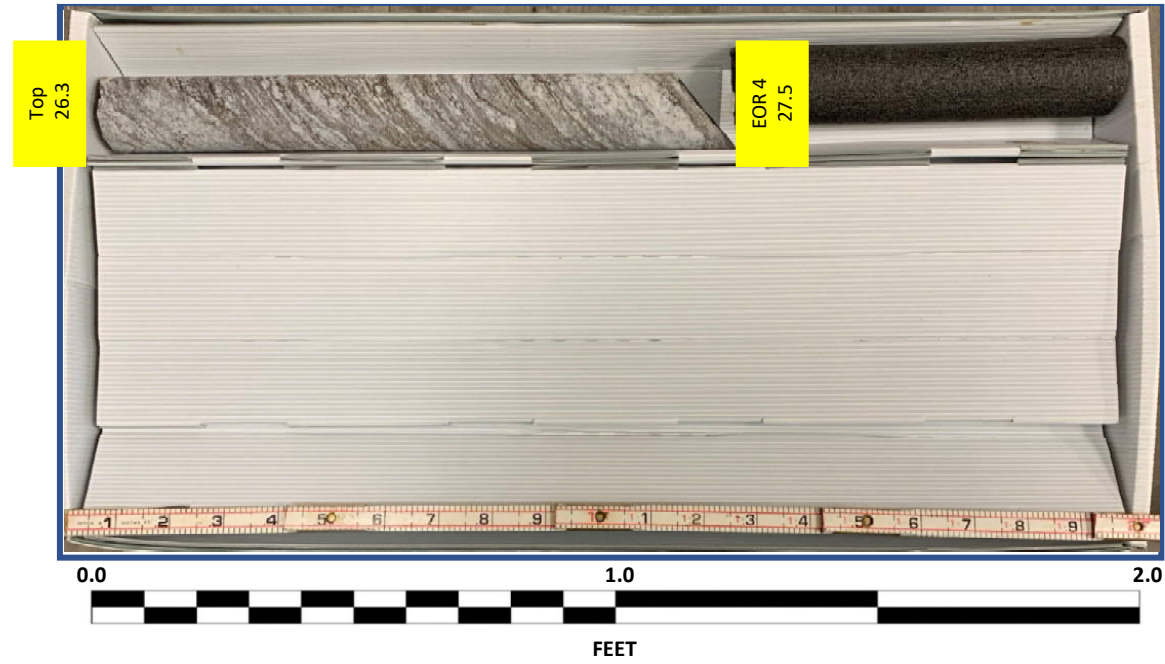
**S1\_B1-A (HDR)**  
**Box 2 of 3: 16.8 – 26.3 FEET**  
**WET**



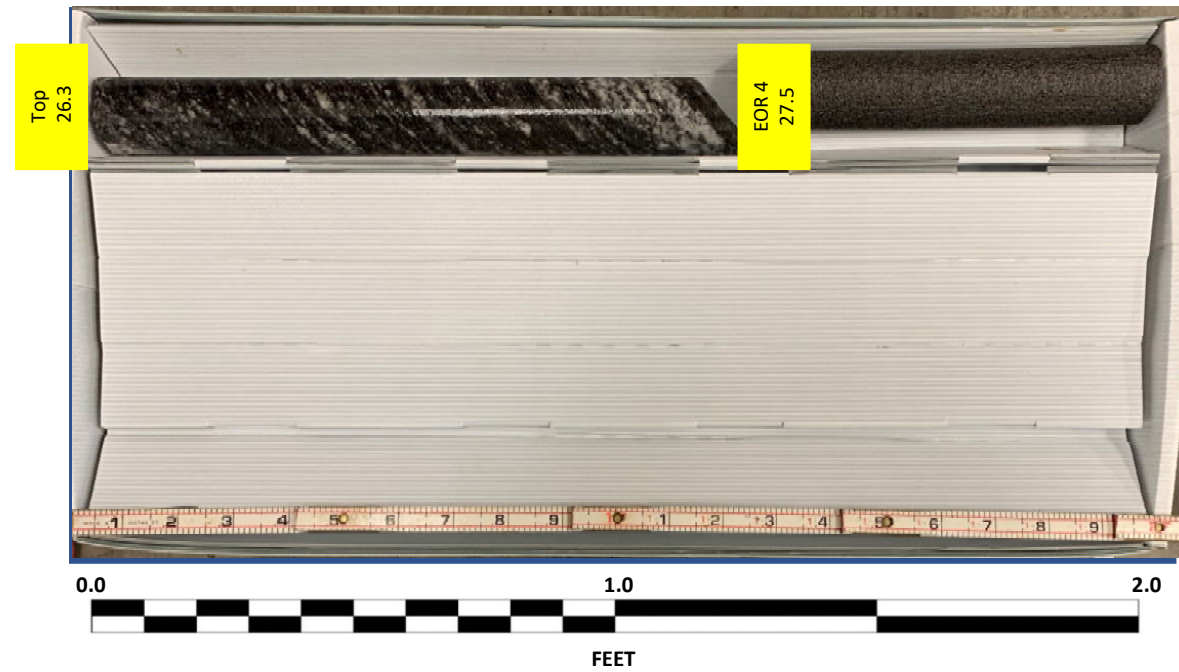


CORE PHOTOGRAPHIC RECORD  
38330.1.FS1 (B-3186/B-5898)  
US 23/ US 74 Great Smokey Mountain Highway

**S1\_B1-A (HDR)**  
**Box 3 of 3: 26.3 – 27.5 FEET**  
**DRY**



**S1\_B1-A (HDR)**  
**Box 3 of 3: 26.3 – 27.5 FEET**  
**WET**



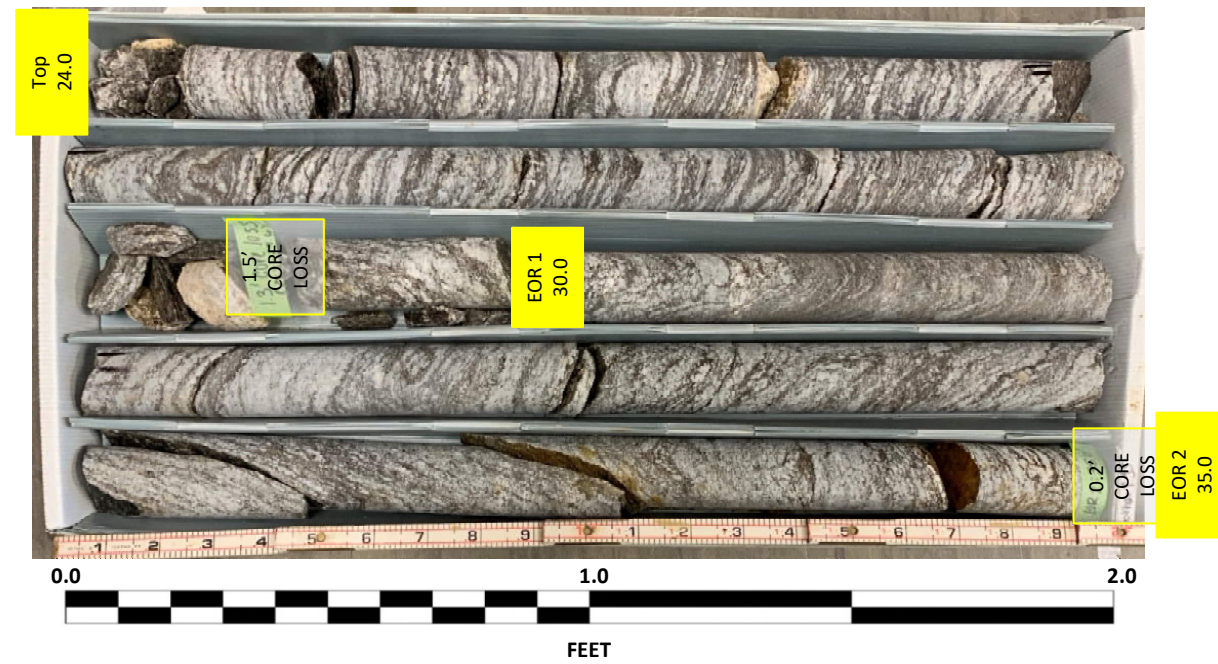


# CORE PHOTOGRAPHIC RECORD

38330.1.FS1 (B-3186/B-5898)

US 23/ US 74 Great Smokey Mountain Highway

**S1\_B1-C (HDR)**  
**Box 1 of 2: 24.0 – 35.0 FEET**  
**DRY**



**S1\_B1-C (HDR)**  
**Box 2 of 2: 35.0 – 44.0 FEET**  
**DRY**



**S1\_B1-C (HDR)**  
**Box 1 of 2: 24.0 - 35.0 FEET**  
**WET**



**S1\_B1-C (HDR)**  
**Box 2 of 2: 35.0 – 44.0 FEET**  
**WET**



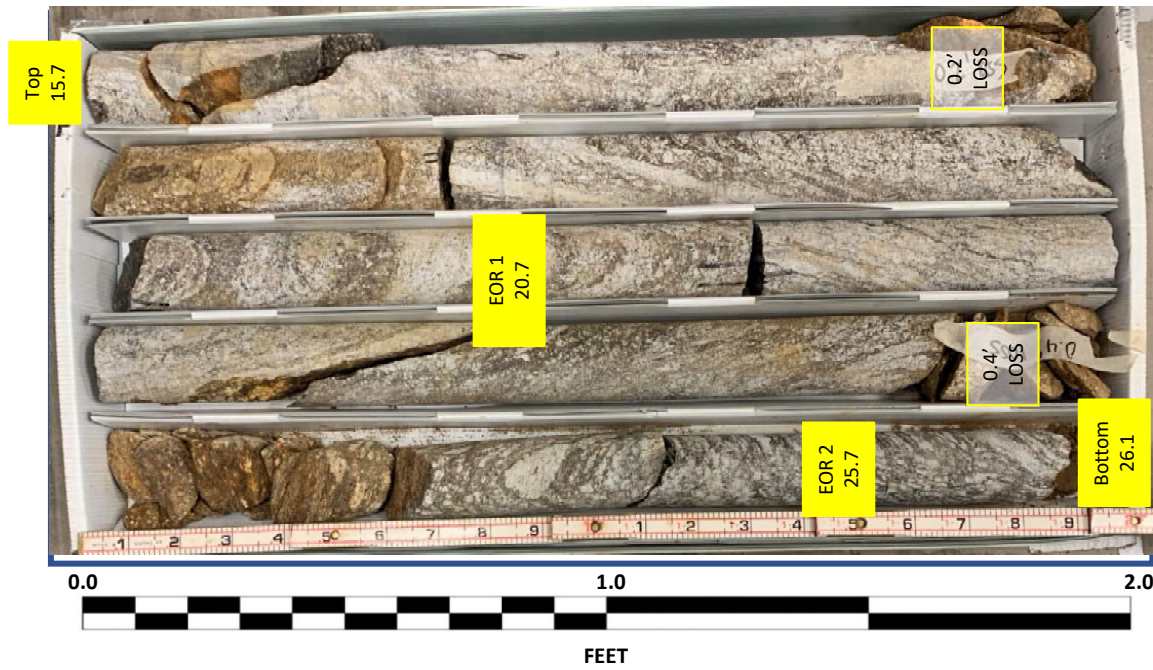


# CORE PHOTOGRAPHIC RECORD

38330.1.FS1 (B-3186/B-5898)

US 23/ US 74 Great Smokey Mountain Highway

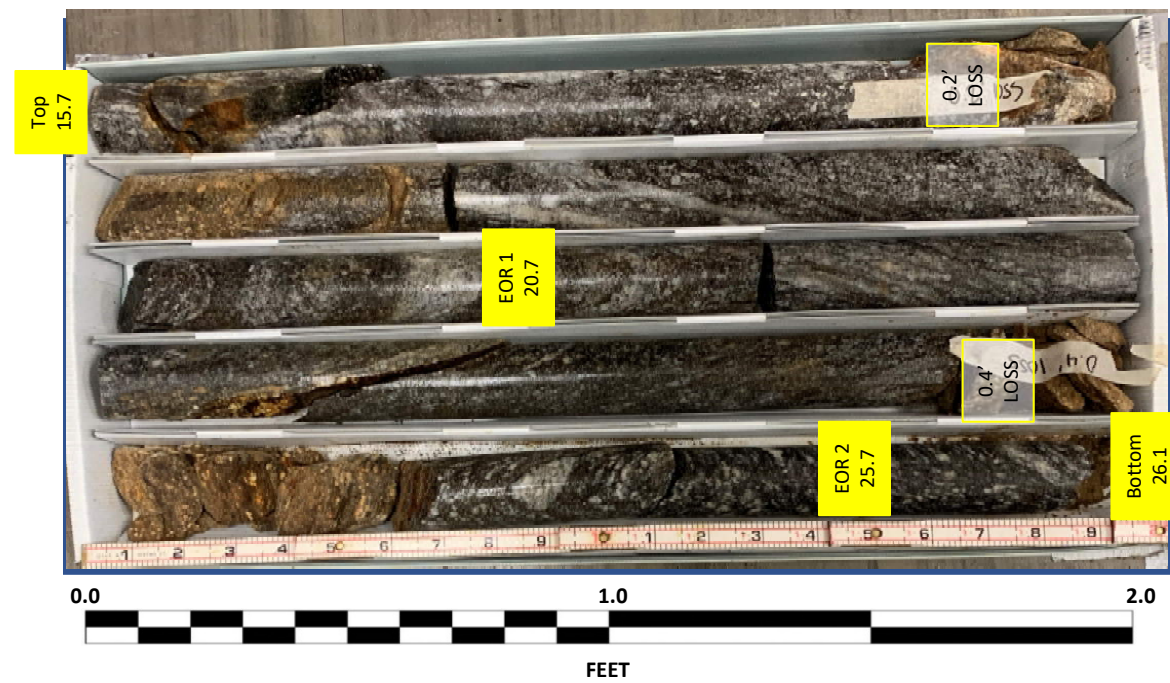
**S1\_B1-B (HDR)**  
**Box 1 of 2: 15.7 – 26.1 FEET**  
**DRY**



**S1\_B1-B (HDR)**  
**Box 2 of 2: 26.1 – 35.7 FEET**  
**DRY**



**S1\_B1-B (HDR)**  
**Box 1 of 2: 15.7 – 26.1 FEET**  
**WET**



**S1\_B1-B (HDR)**  
**Box 2 of 2: 26.1 – 35.7 FEET**  
**WET**



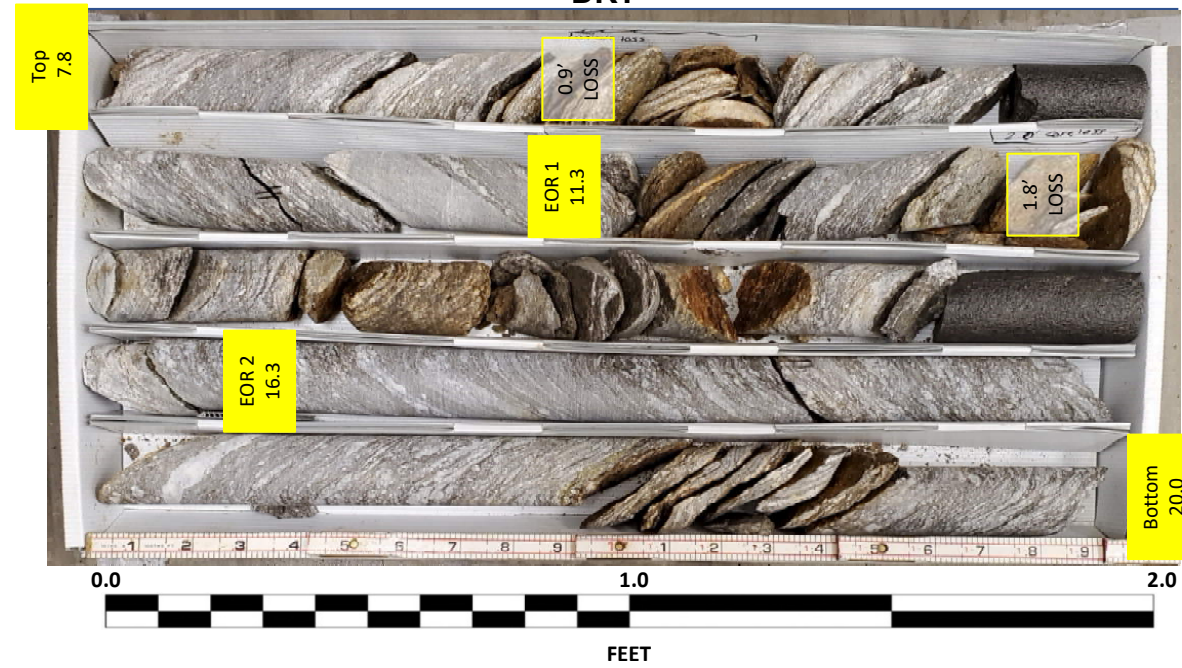


# CORE PHOTOGRAPHIC RECORD

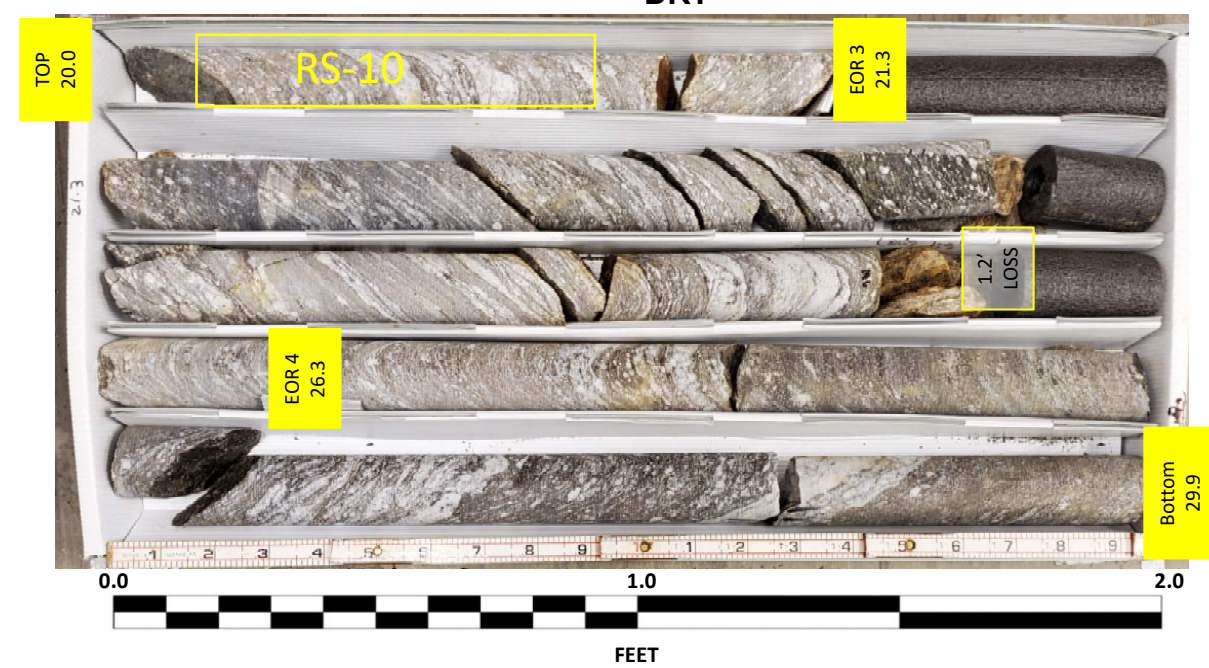
38330.1.FS1 (B-3186/B-5898)

US 23/ US 74 Great Smokey Mountain Highway

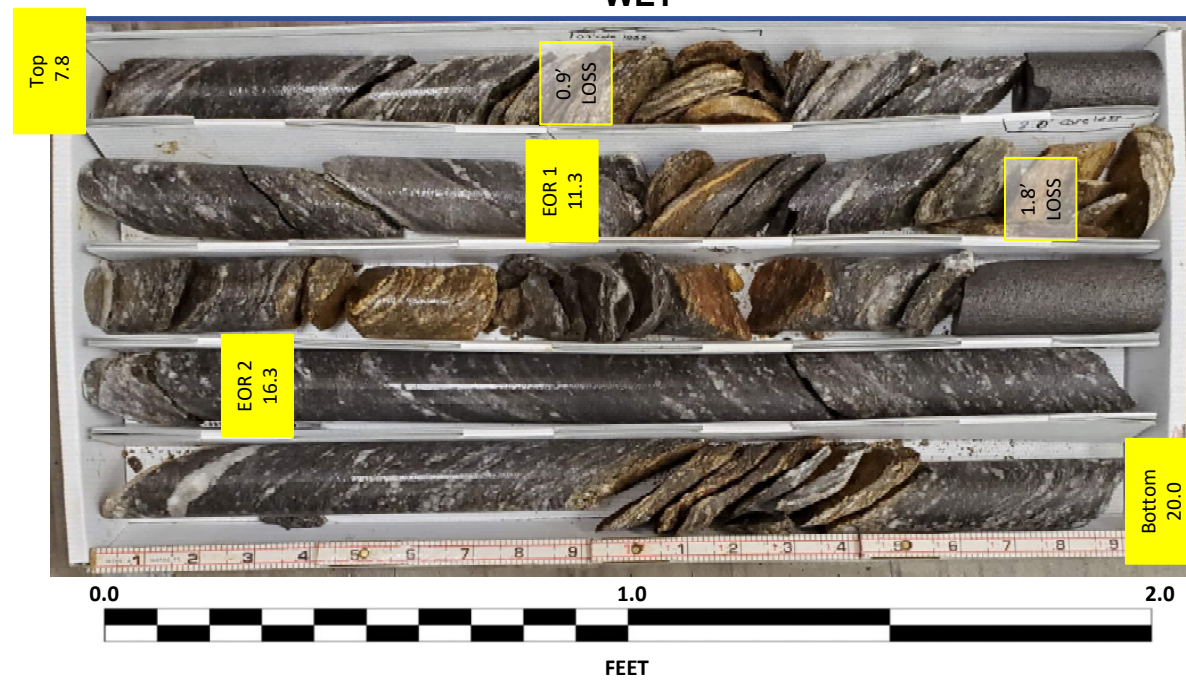
**S1\_B2-A (HDR)**  
**Box 1 of 3: 7.8 – 20.0 FEET**  
**DRY**



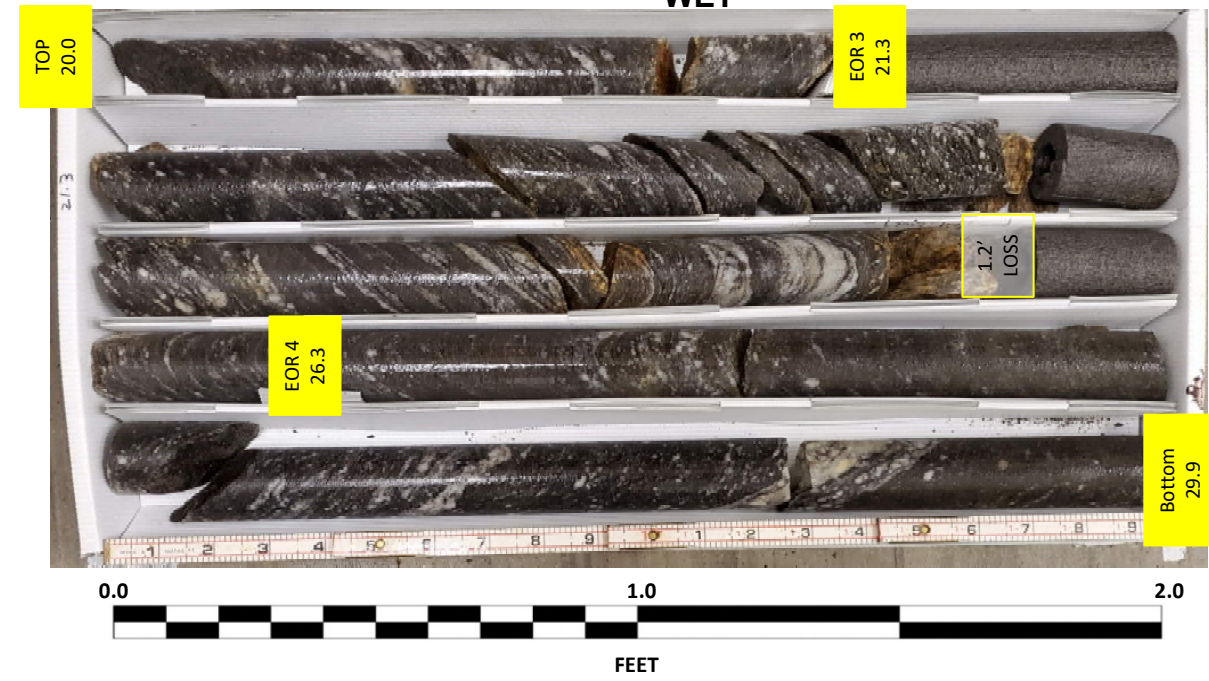
**S1\_B2-A (HDR)**  
**Box 2 of 3: 20.0-29.9 FEET**  
**DRY**



**S1\_B2-A (HDR)**  
**Box 1 of 3: 7.8 – 20.0 FEET**  
**WET**



**S1\_B2-A (HDR)**  
**Box 2 of 3: 20.0 – 29.9 FEET**  
**WET**



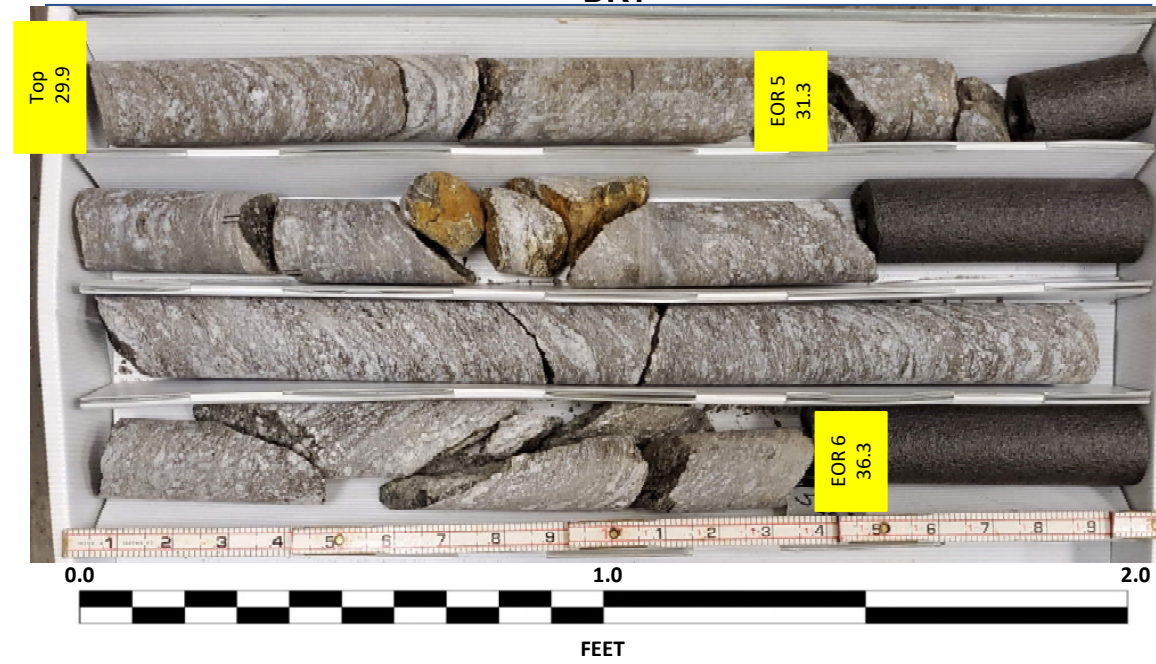


# CORE PHOTOGRAPHIC RECORD

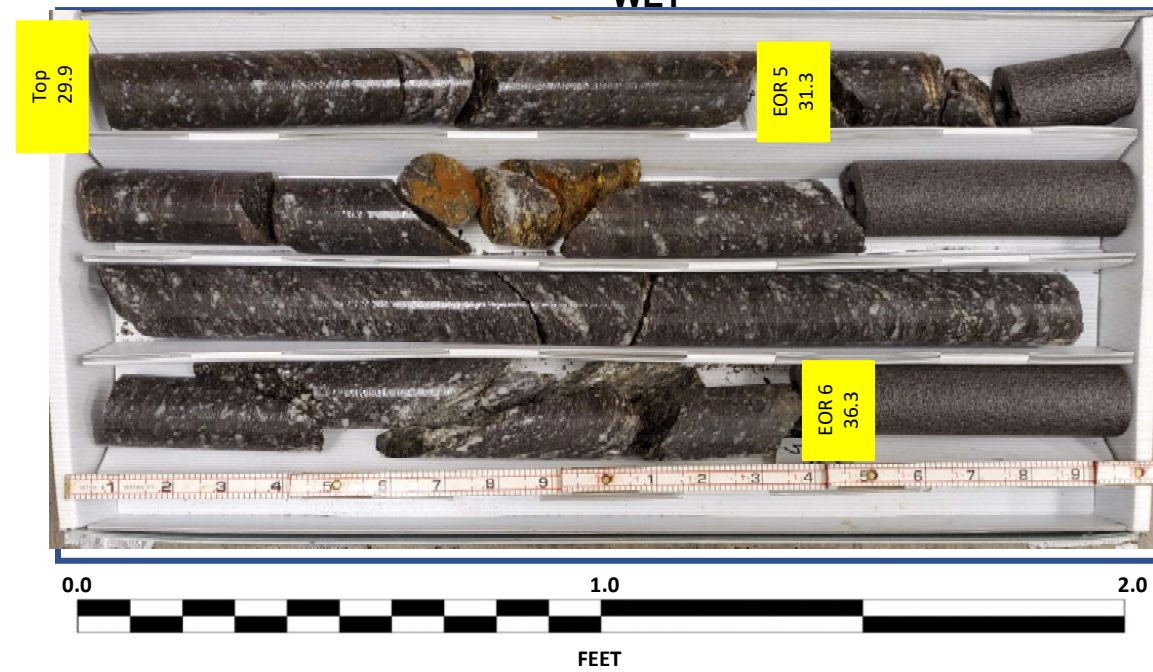
38330.1.FS1 (B-3186/B-5898)

US 23/ US 74 Great Smokey Mountain Highway

**S1\_B2-A (HDR)**  
**Box 3 of 3: 29.9 – 36.3 FEET**  
**DRY**



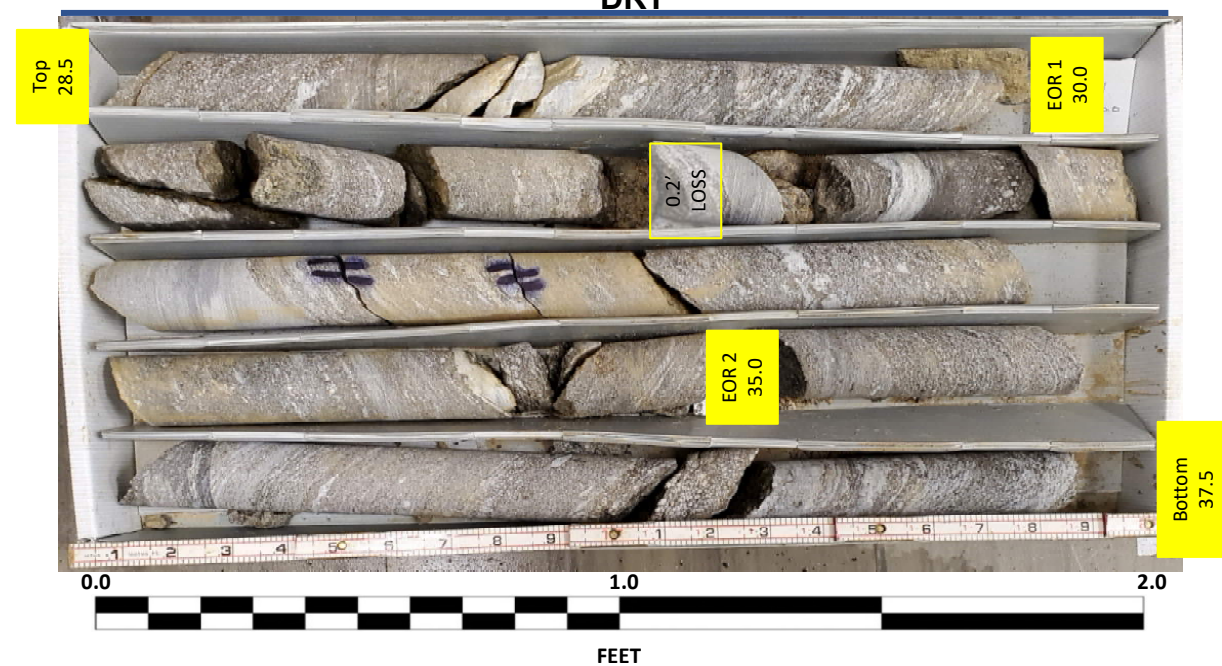
**S1\_B2-A (HDR)**  
**Box 3 of 3: 29.9 – 36.3 FEET**  
**WET**





CORE PHOTOGRAPHIC RECORD  
38330.1.FS1 (B-3186/B-5898)  
US 23/ US 74 Great Smokey Mountain Highway

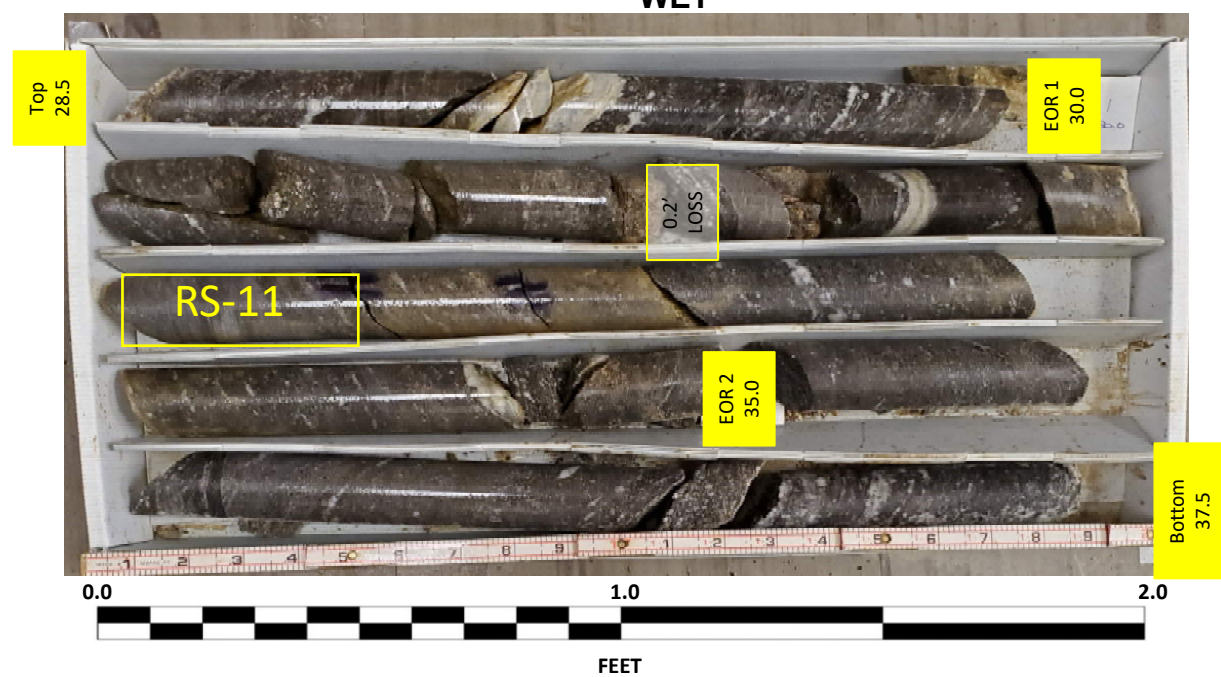
S1\_B2-C (HDR)  
Box 1 of 2: 28.5 – 37.5 FEET  
DRY



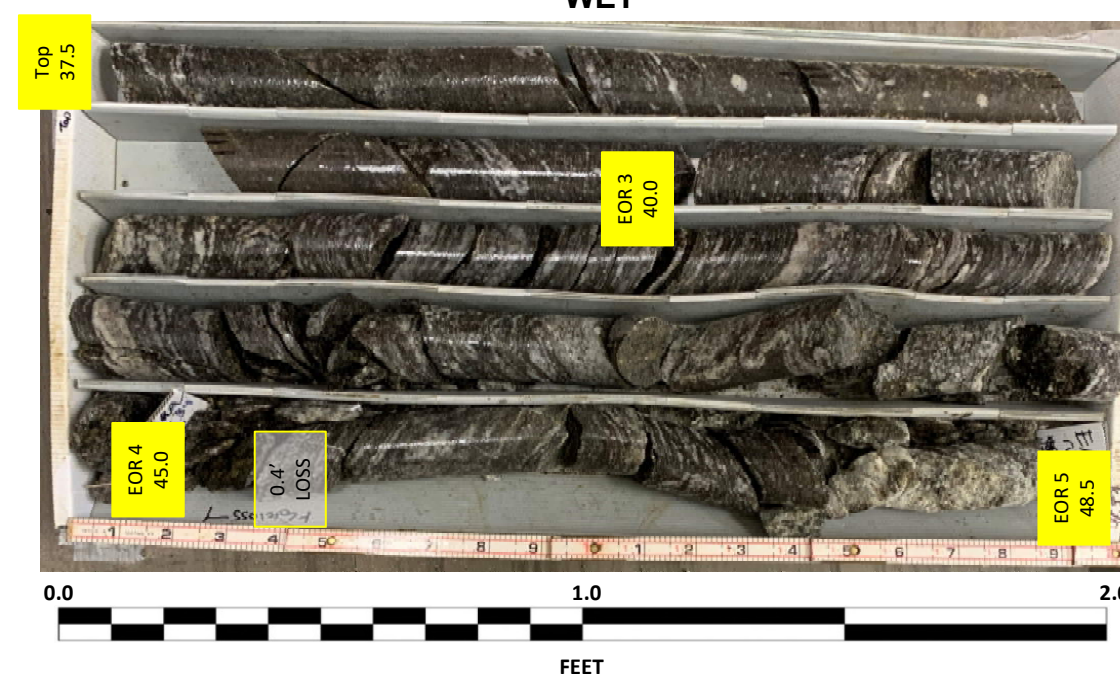
S1\_B2-C (HDR)  
Box 2 of 2: 37.5 – 48.5 FEET  
DRY



S1\_B2-C (HDR)  
Box 1 of 2: 28.5 – 37.5 FEET  
WET



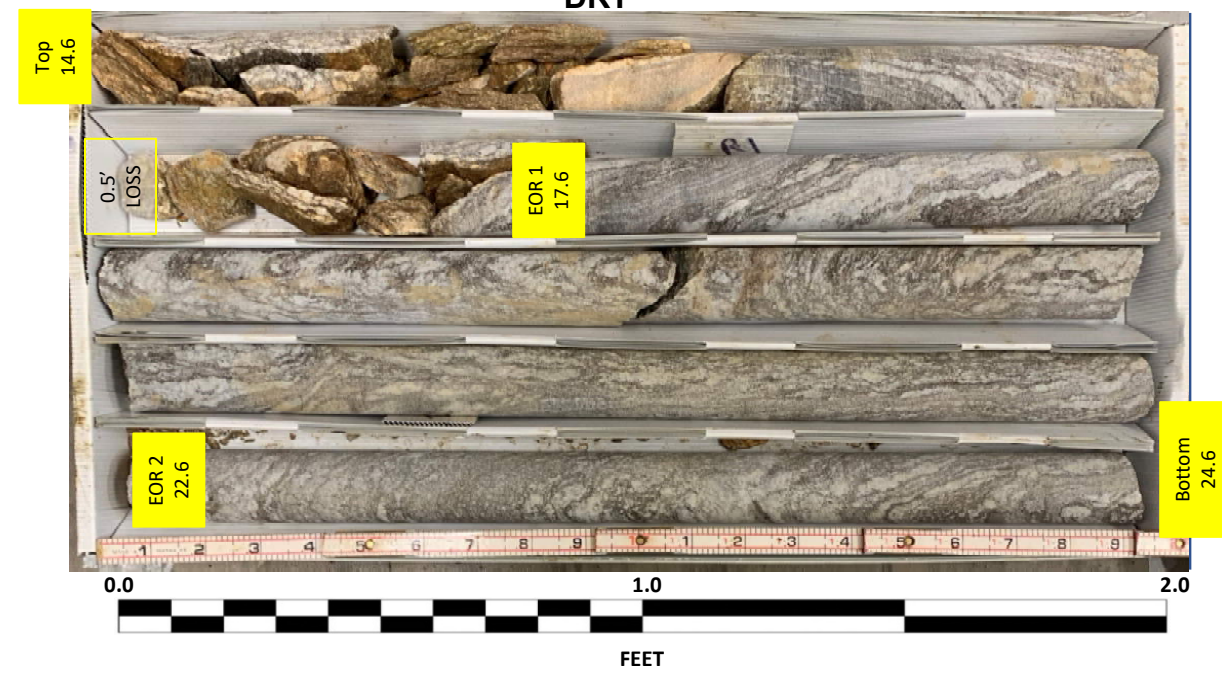
S1\_B2-C (HDR)  
Box 2 of 2: 37.5 – 48.5 FEET  
WET





CORE PHOTOGRAPHIC RECORD  
38330.1.FS1 (B-3186/B-5898)  
US 23/ US 74 Great Smokey Mountain Highway

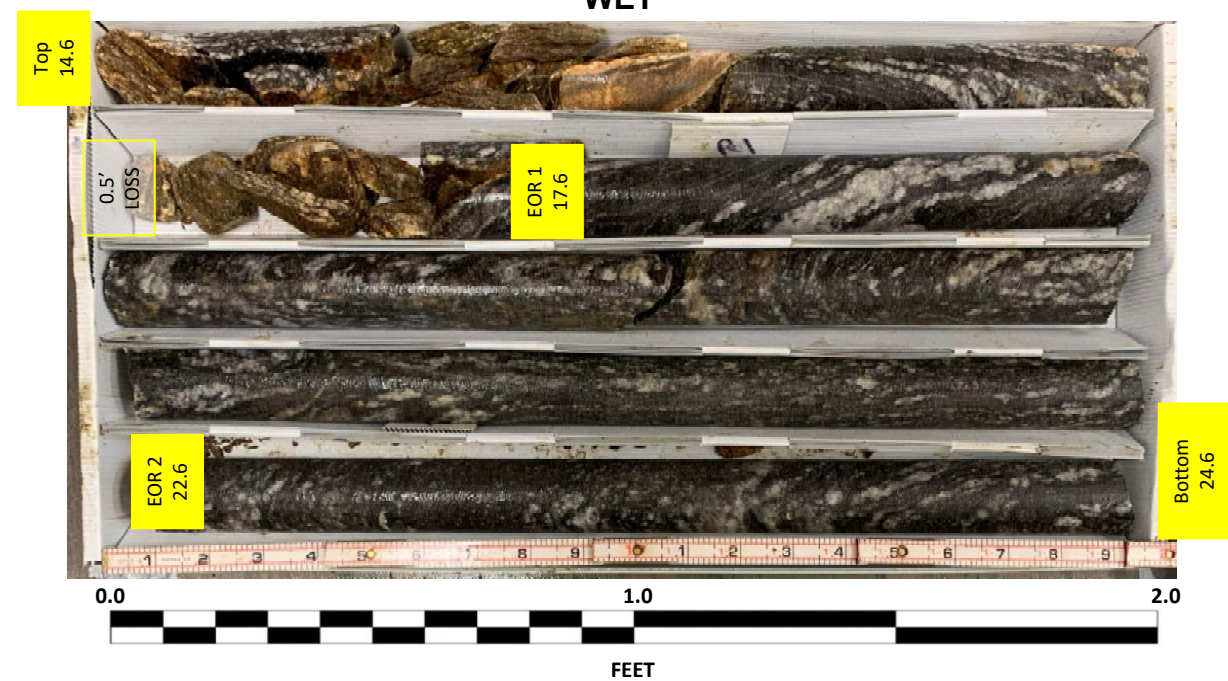
S1\_B2-B (HDR)  
Box 1 of 2: 14.6 – 24.6 FEET  
DRY



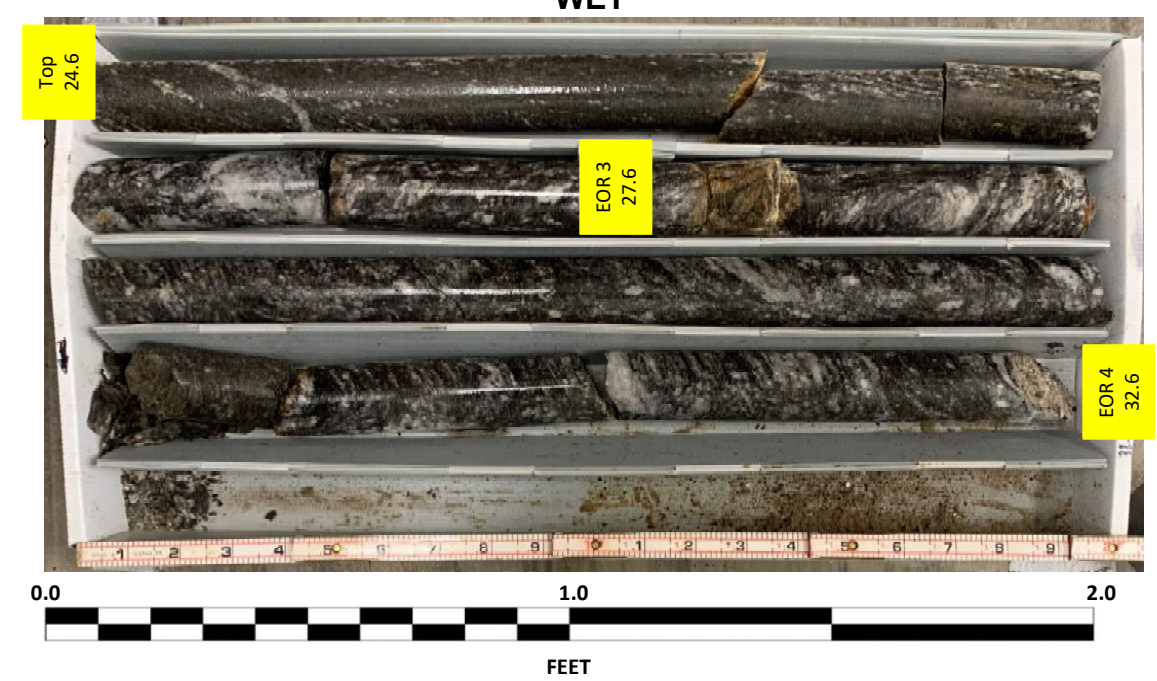
S1\_B2-B (HDR)  
Box 2 of 2: 24.6 – 32.6 FEET  
DRY



S1\_B2-B (HDR)  
Box 1 of 2: 14.6 – 24.6 FEET  
WET



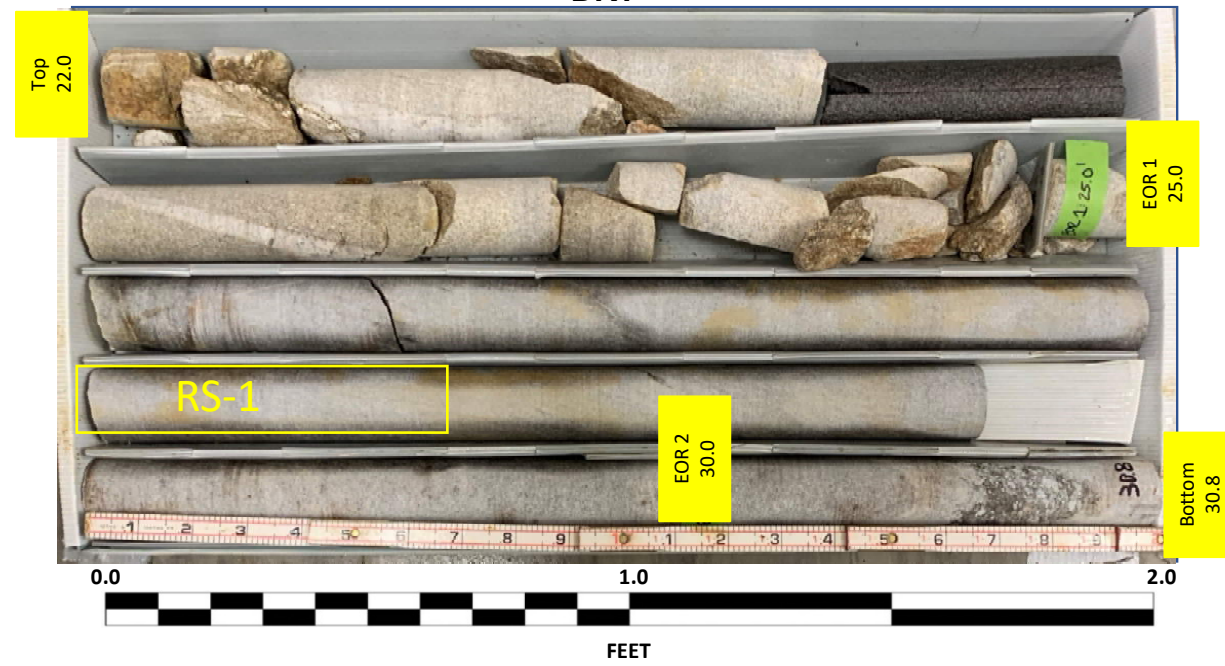
S1\_B2-B (HDR)  
Box 2 of 2: 24.6 – 32.6 FEET  
WET



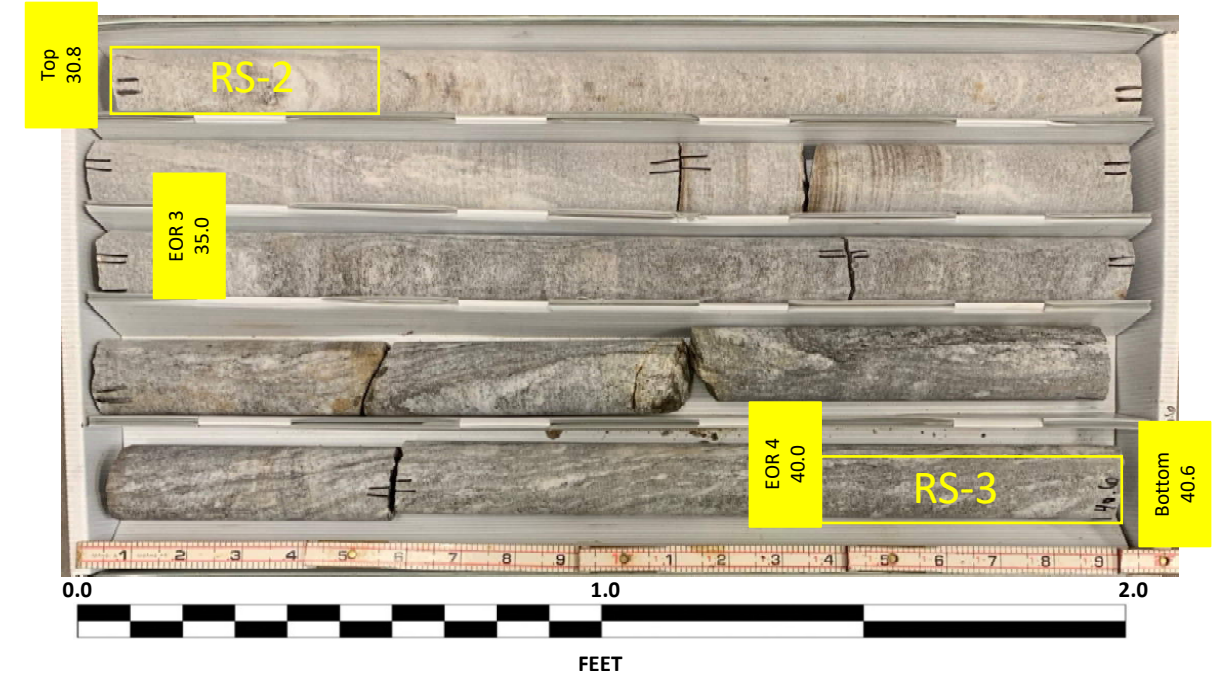


CORE PHOTOGRAPHIC RECORD  
38330.1.FS1 (B-3186/B-5898)  
US 23/ US 74 Great Smokey Mountain Highway

DET-B1 (HDR)  
Box 1 of 3: 22.0 – 30.8 FEET  
DRY



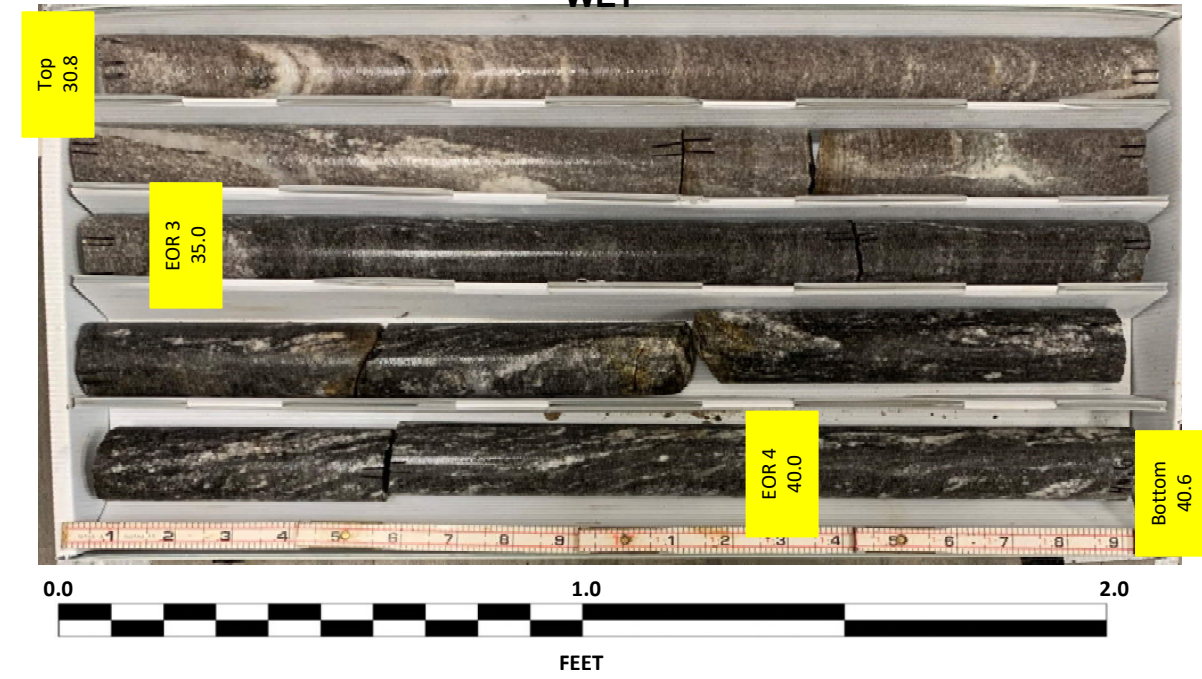
DET-B1 (HDR)  
Box 2 of 3: 30.8 – 40.6 FEET  
DRY



DET-B1 (HDR)  
Box 1 of 3: 22.0 – 30.8 FEET  
WET

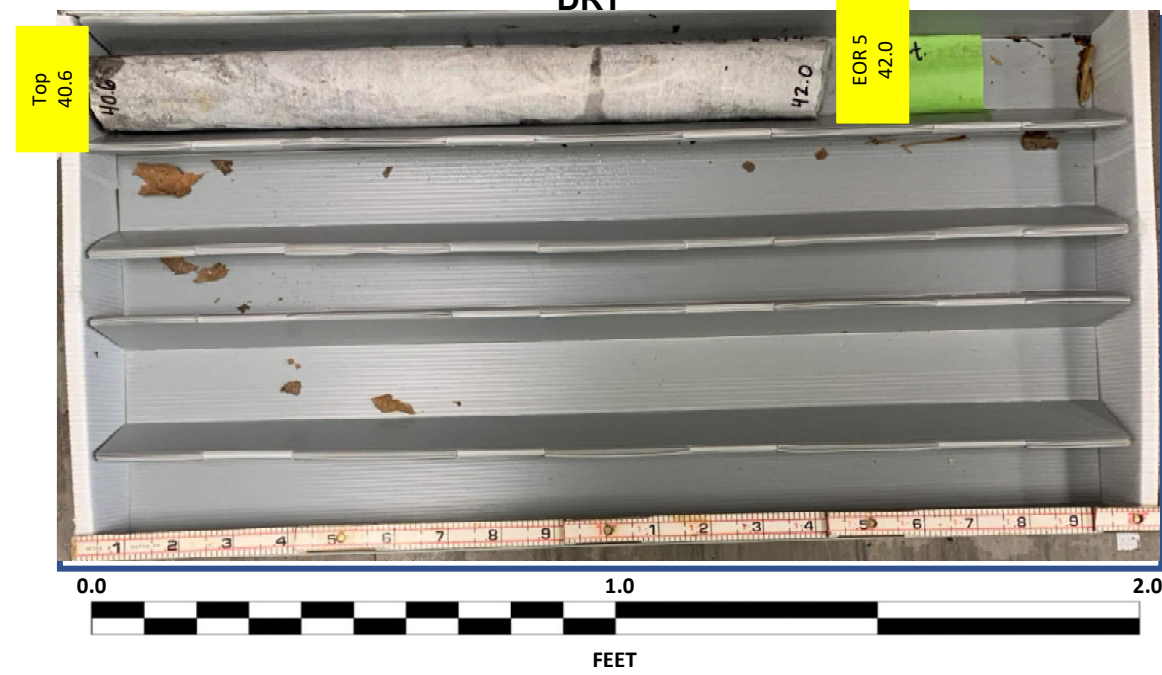


DET-B1 (HDR)  
Box 2 of 3: 30.8 – 40.6 FEET  
WET

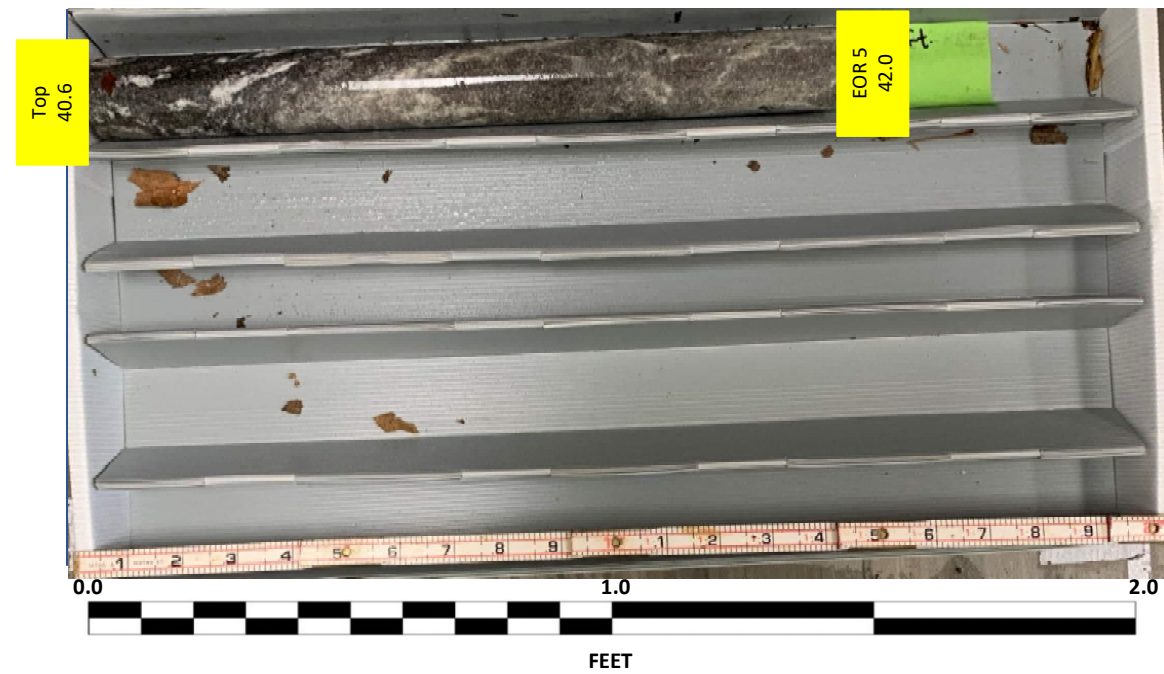


CORE PHOTOGRAPHIC RECORD  
38330.1.FS1 (B-3186/B-5898)  
US 23/ US 74 Great Smokey Mountain Highway

DET-B1 (HDR)  
Box 3 of 3: 40.6 – FEET  
DRY



DET-B1 (HDR)  
Box 3 of 3: 40.6 – 42.0 FEET  
WET



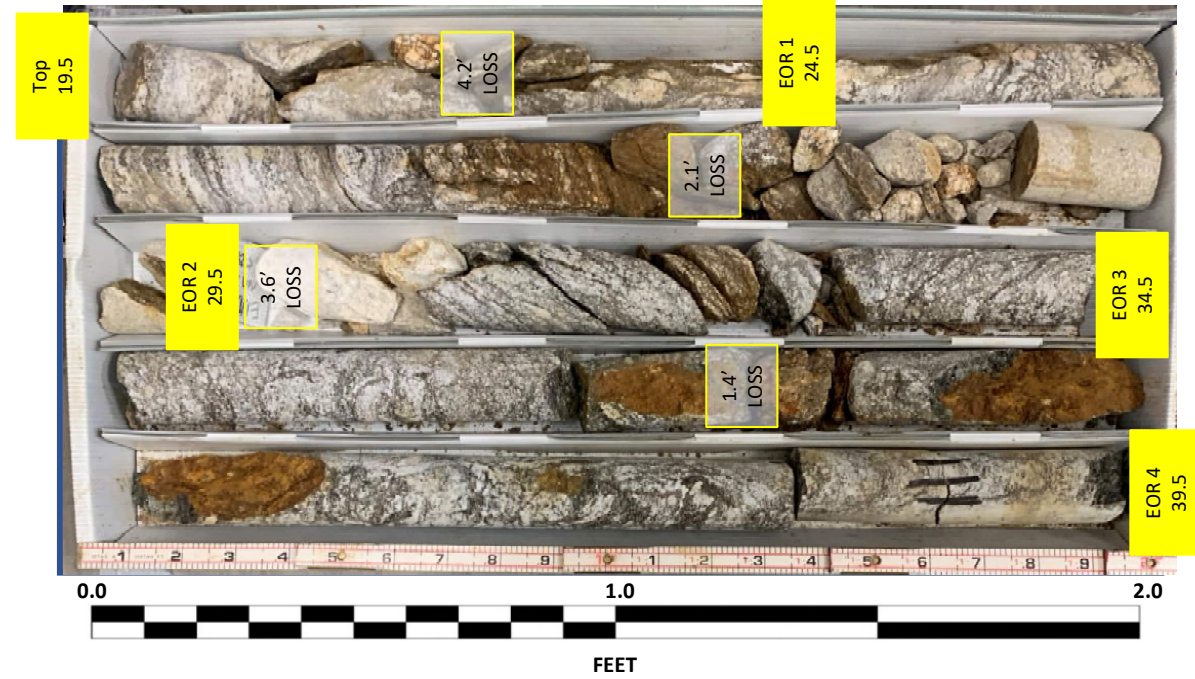


# CORE PHOTOGRAPHIC RECORD

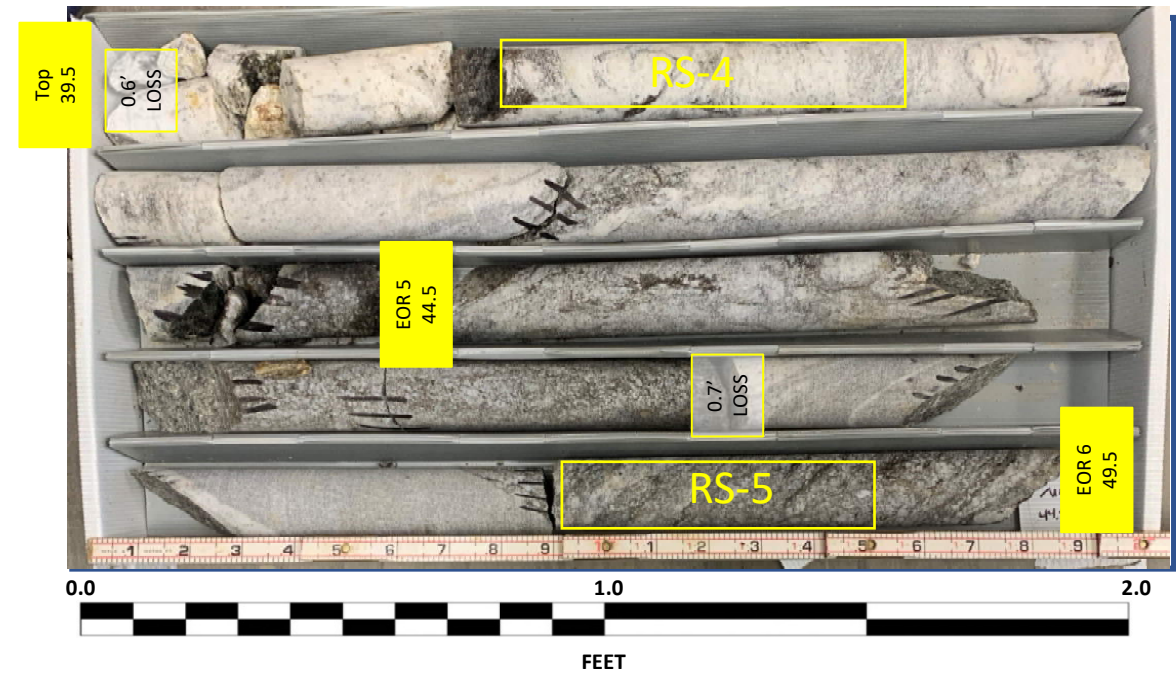
38330.1.FS1 (B-3186/B-5898)

US 23/ US 74 Great Smokey Mountain Highway

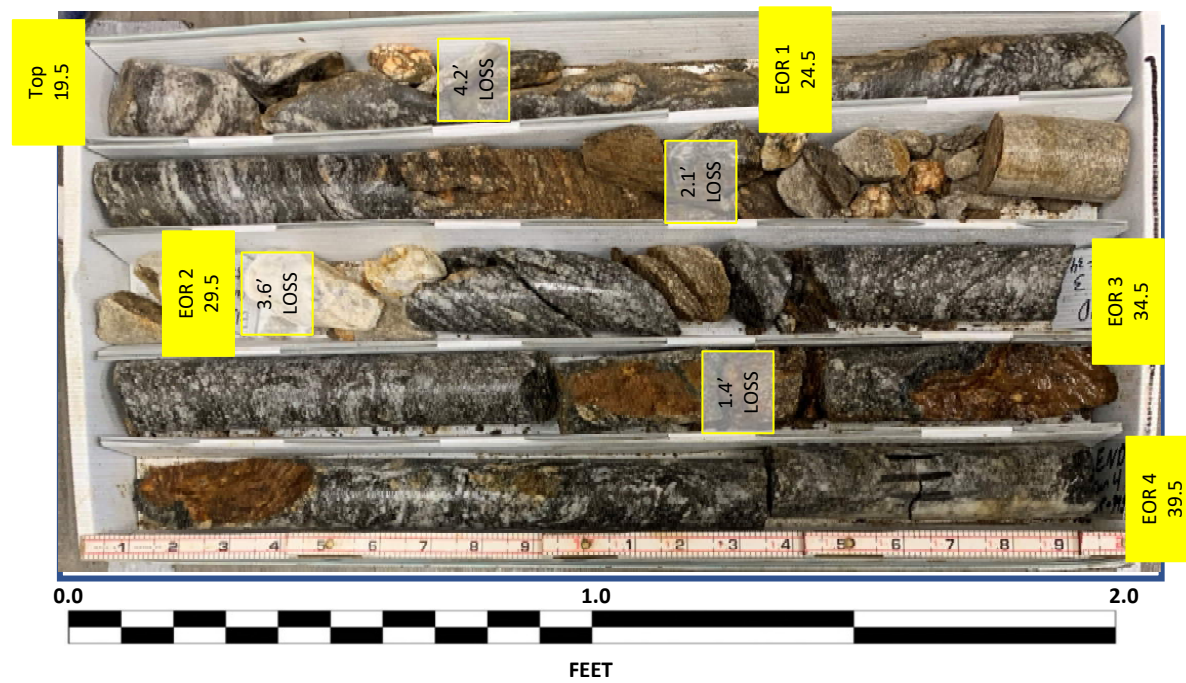
**DET-B2 (HDR)**  
**Box 1 of 2: 19.5 – 39.5 FEET**  
**DRY**



**DET-B2 (HDR)**  
**Box 2 of 2: 39.5 – 49.5 FEET**  
**DRY**



**DET-B2 (HDR)**  
**Box 1 of 2: 19.5 – 39.5 FEET**  
**WET**



**DET-B2 (HDR)**  
**Box 2 of 2: 39.5 – 49.5 FEET**  
**WET**

