

REFERENCE: R-2561CA

PROJECT: 34466

CONTENTS

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
4	PROFILE
5-7	BORE LOGS
8-38	SOIL LABORATORY RESULTS

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY COLUMBUS
 PROJECT DESCRIPTION NEW INTERCHANGE AT THE
INTERSECTION OF NC 87 AND NC 11
 SITE DESCRIPTION BRIDGE NO.372 ON NC 87 (-L-)
EASTBOUND LANE OVER WEYMAN CREEK

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2561CA	1	38

CAUTION NOTICE

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

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

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

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

PERSONNEL

S. PAPKE
MID-ATLANTIC DRILLING

INVESTIGATED BY S. PAPKE
 DRAWN BY C. DRISCOLL
 CHECKED BY T. WELLS
 SUBMITTED BY KLEINFELDER, INC.
 DATE AUGUST 2020

Prepared in the Office of:



Th. R. Wells 8/18/20
 SIGNATURE DATE

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

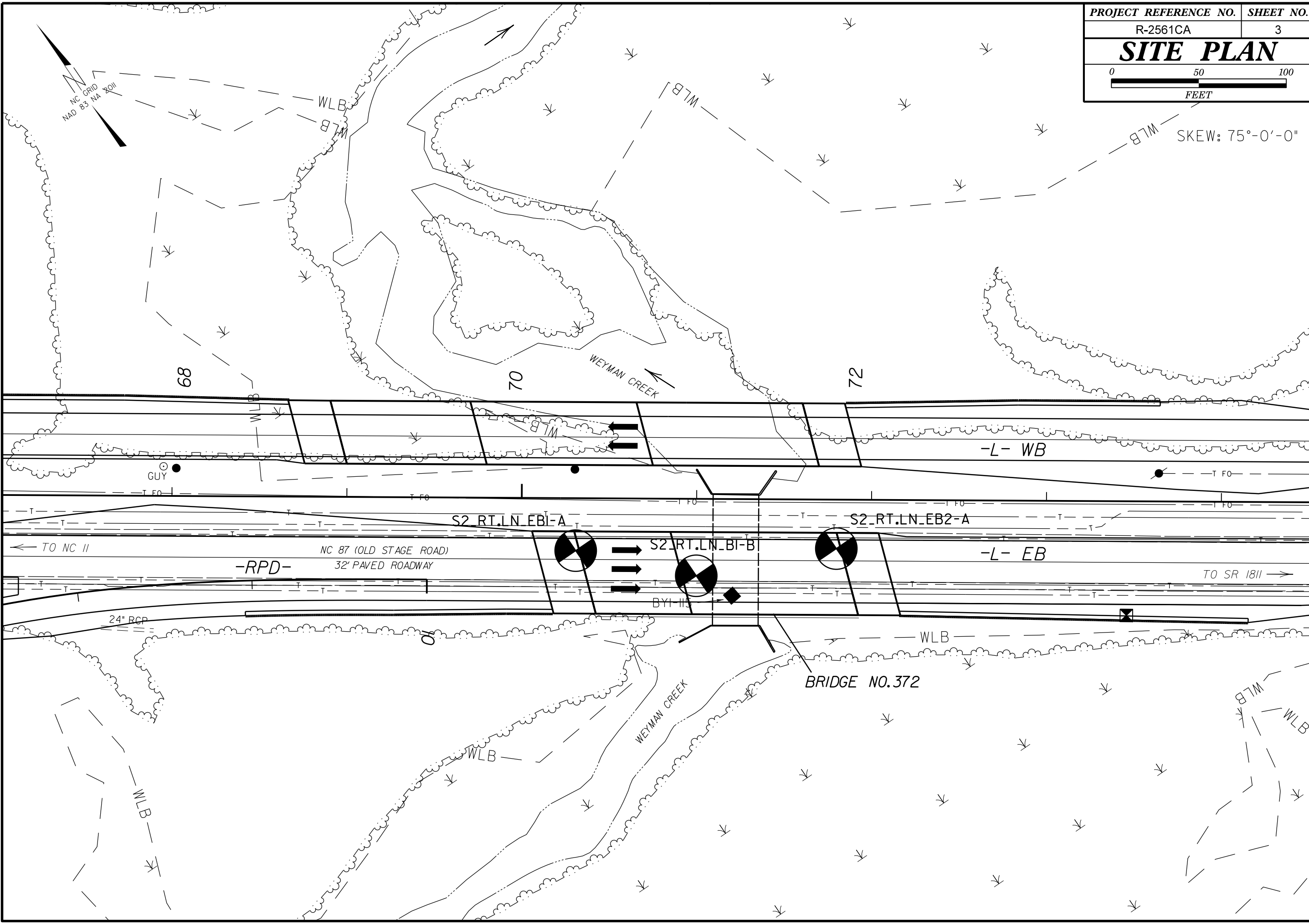
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT SUBSURFACE INVESTIGATION SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION, SOIL LEGEND AND AASHTO CLASSIFICATION, CONSISTENCY OR DENSENESS, TEXTURE OR GRAIN SIZE, SOIL MOISTURE - CORRELATION OF TERMS, PLASTICITY, COLOR

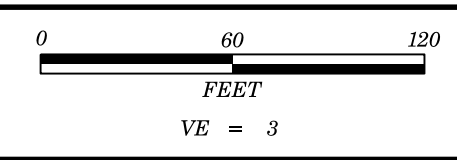
GRADATION, ANGULARITY OF GRAINS, MINERALOGICAL COMPOSITION, COMPRESSIBILITY, PERCENTAGE OF MATERIAL, GROUND WATER, MISCELLANEOUS SYMBOLS, RECOMMENDATION SYMBOLS, ABBREVIATIONS, EQUIPMENT USED ON SUBJECT PROJECT

ROCK DESCRIPTION, WEATHERING, ROCK HARDNESS, FRACTURE SPACING, BEDDING, INDURATION

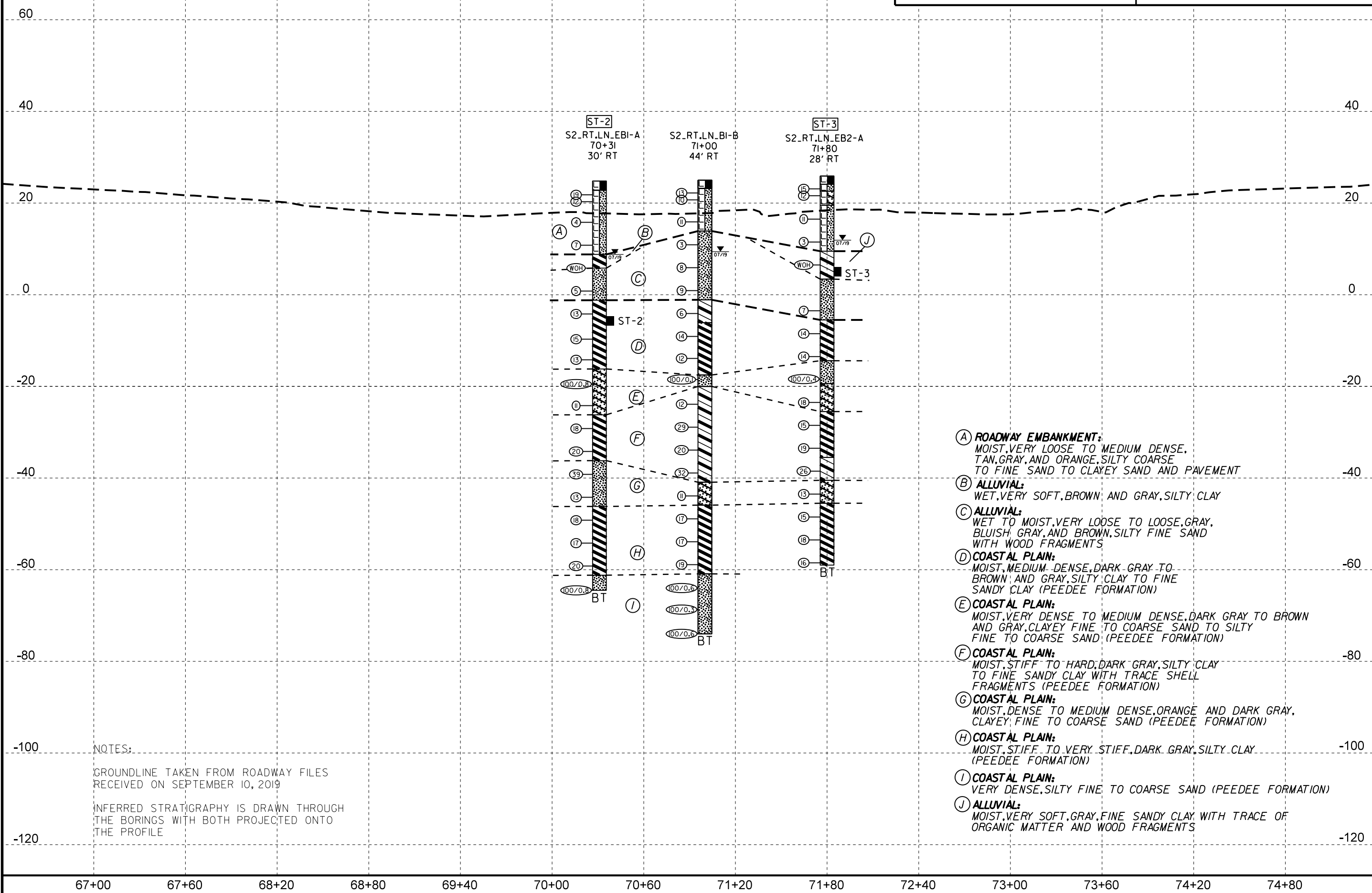
TERMS AND DEFINITIONS, ALLUVIUM (ALLUV.), AQUIFER, ARENACEOUS, ARGILLACEOUS, ARTESIAN, CALCareous (CALC.), COLLUVIUM, CORE RECOVERY (REC.), DIKE, DIP, DIP DIRECTION (DIP AZIMUTH), FAULT, FISSILE, FLOAT, FLOOD PLAIN (FP), FORMATION (FM), JOINT, LEDGE, LENS, MOTTLED (MOT.), PERCHED WATER, RESIDUAL (RES.) SOIL, ROCK QUALITY DESIGNATION (ROD), SAPROLITE (SAP.), SILL, SLICKENSIDE, STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT), STRATA CORE RECOVERY (SREC.), STRATA ROCK QUALITY DESIGNATION (SROD), TOPSOIL (TS.), BENCH MARK: BY-115 AT STA. 71+20.16 -L- 55' RT (227,813 FT.N., 2,219,352 FT.E) ELEVATION: 24.22 FEET



SKEW: 75°-0'-0"



PROJECT REFERENCE NO.	SHEET NO.
R-2561CA	4
PROFILE FOR BRIDGE NO. 372 ON NC 87 (-L-) EB OVER WEYMAN CREEK	



- (A) **ROADWAY EMBANKMENT:**
MOIST, VERY LOOSE TO MEDIUM DENSE, TAN, GRAY, AND ORANGE, SILTY COARSE TO FINE SAND TO CLAYEY SAND AND PAVEMENT
- (B) **ALLUVIAL:**
WET, VERY SOFT, BROWN AND GRAY, SILTY CLAY
- (C) **ALLUVIAL:**
WET TO MOIST, VERY LOOSE TO LOOSE, GRAY, BLuish GRAY, AND BROWN, SILTY FINE SAND WITH WOOD FRAGMENTS
- (D) **COASTAL PLAIN:**
MOIST, MEDIUM DENSE, DARK GRAY TO BROWN AND GRAY, SILTY CLAY TO FINE SANDY CLAY (PEEDEE FORMATION)
- (E) **COASTAL PLAIN:**
MOIST, VERY DENSE TO MEDIUM DENSE, DARK GRAY TO BROWN AND GRAY, CLAYEY FINE TO COARSE SAND TO SILTY FINE TO COARSE SAND (PEEDEE FORMATION)
- (F) **COASTAL PLAIN:**
MOIST, STIFF TO HARD, DARK GRAY, SILTY CLAY TO FINE SANDY CLAY WITH TRACE SHELL FRAGMENTS (PEEDEE FORMATION)
- (G) **COASTAL PLAIN:**
MOIST, DENSE TO MEDIUM DENSE, ORANGE AND DARK GRAY, CLAYEY FINE TO COARSE SAND (PEEDEE FORMATION)
- (H) **COASTAL PLAIN:**
MOIST, STIFF TO VERY STIFF, DARK GRAY, SILTY CLAY (PEEDEE FORMATION)
- (I) **COASTAL PLAIN:**
VERY DENSE, SILTY FINE TO COARSE SAND (PEEDEE FORMATION)
- (J) **ALLUVIAL:**
MOIST, VERY SOFT, GRAY, FINE SANDY CLAY WITH TRACE OF ORGANIC MATTER AND WOOD FRAGMENTS

NOTES:
GROUNDLINE TAKEN FROM ROADWAY FILES RECEIVED ON SEPTEMBER 10, 2019
INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34466.4.1		TIP R-2561CA		COUNTY COLUMBUS		GEOLOGIST S. Papke	
SITE DESCRIPTION Bridge No. 372 on NC 87 (-L-) Eastbound Lane over Weyman Creek							GROUND WTR (ft)
BORING NO. S2_RT.LN_EB1-A		STATION 70+31		OFFSET 30 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 24.8 ft		TOTAL DEPTH 89.3 ft		NORTHING 227,885		EASTING 2,219,293	
DRILL RIG/HAMMER EFF./DATE MID5464 CME-45C 90% 02/21/2019			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic		
DRILLER B. Fowler		START DATE 07/12/19		COMP. DATE 07/12/19		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				
25													GROUND SURFACE	0.0
	22.8	2.0											ROADWAY EMBANKMENT	2.0
	21.3	3.5	8	9	10								Asphalt (0.0 - 2.0 Feet)	
20			6	6	6								Tan, Gray and Orange, Silty Coarse to Fine SAND with Trace Clay Seams	
	16.8	8.0	3	1	3									
15														
	11.8	13.0	2	3	4									
10														
	6.8	18.0	WOH	WOH	WOH									
5														
	1.8	23.0	1	3	2									
0														
	-3.2	28.0	4	6	7									
-5														
	-8.7	33.5	4	7	8									
-10														
	-13.2	38.0	4	5	8									
-15														
	-18.2	43.0	17	65	35/0.3									
-20														
	-23.2	48.0	4	5	6									
-25														
	-28.2	53.0	6	8	10									
-30														
	-33.2	58.0	8	9	11									
-35														
	-38.2	63.0	12	21	18									
-40														
	-43.2	68.0	5	5	8									
-45														
	-48.2	73.0	6	8	10									
-50														
	-53.2	78.0	6	7	10									
-55														

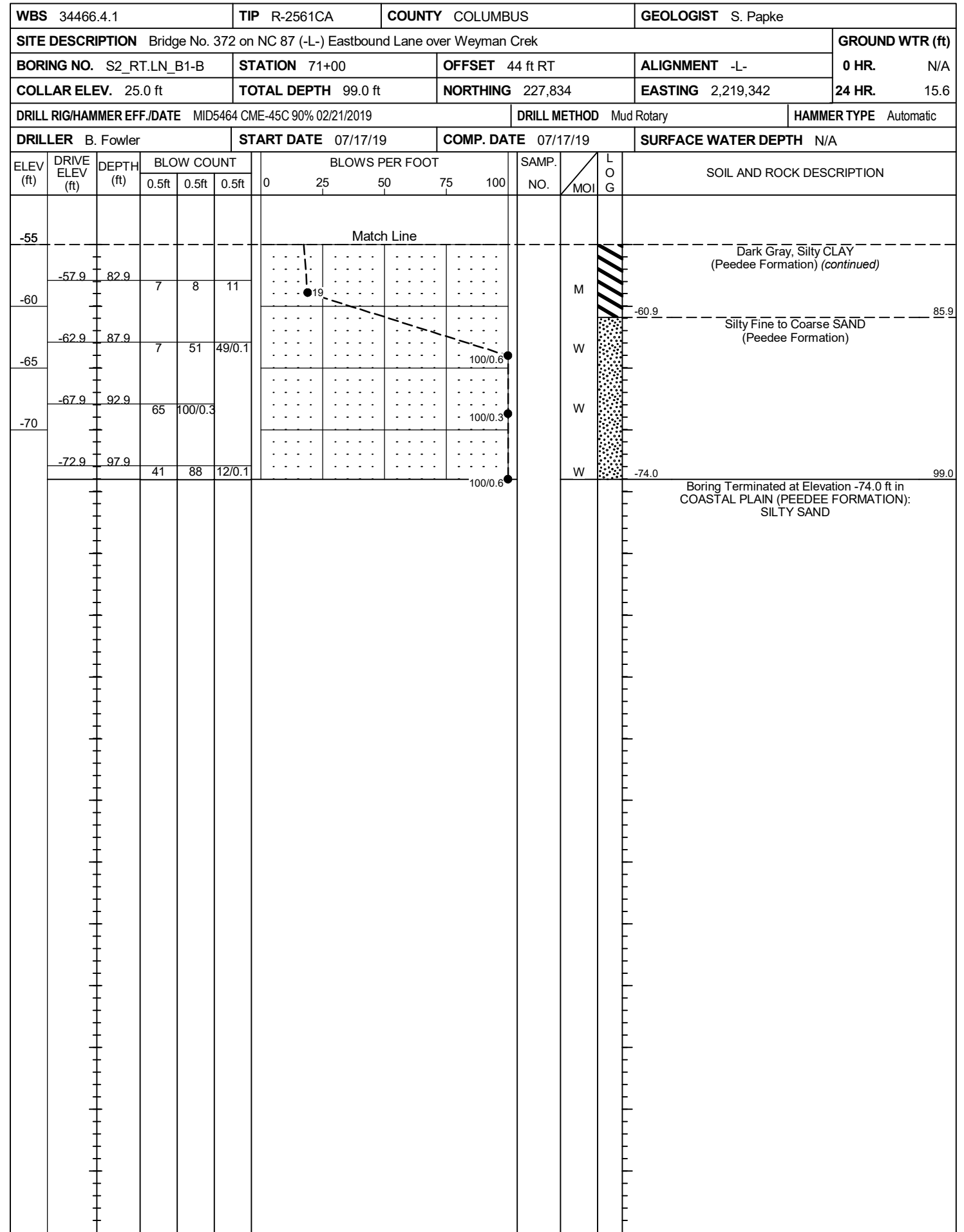
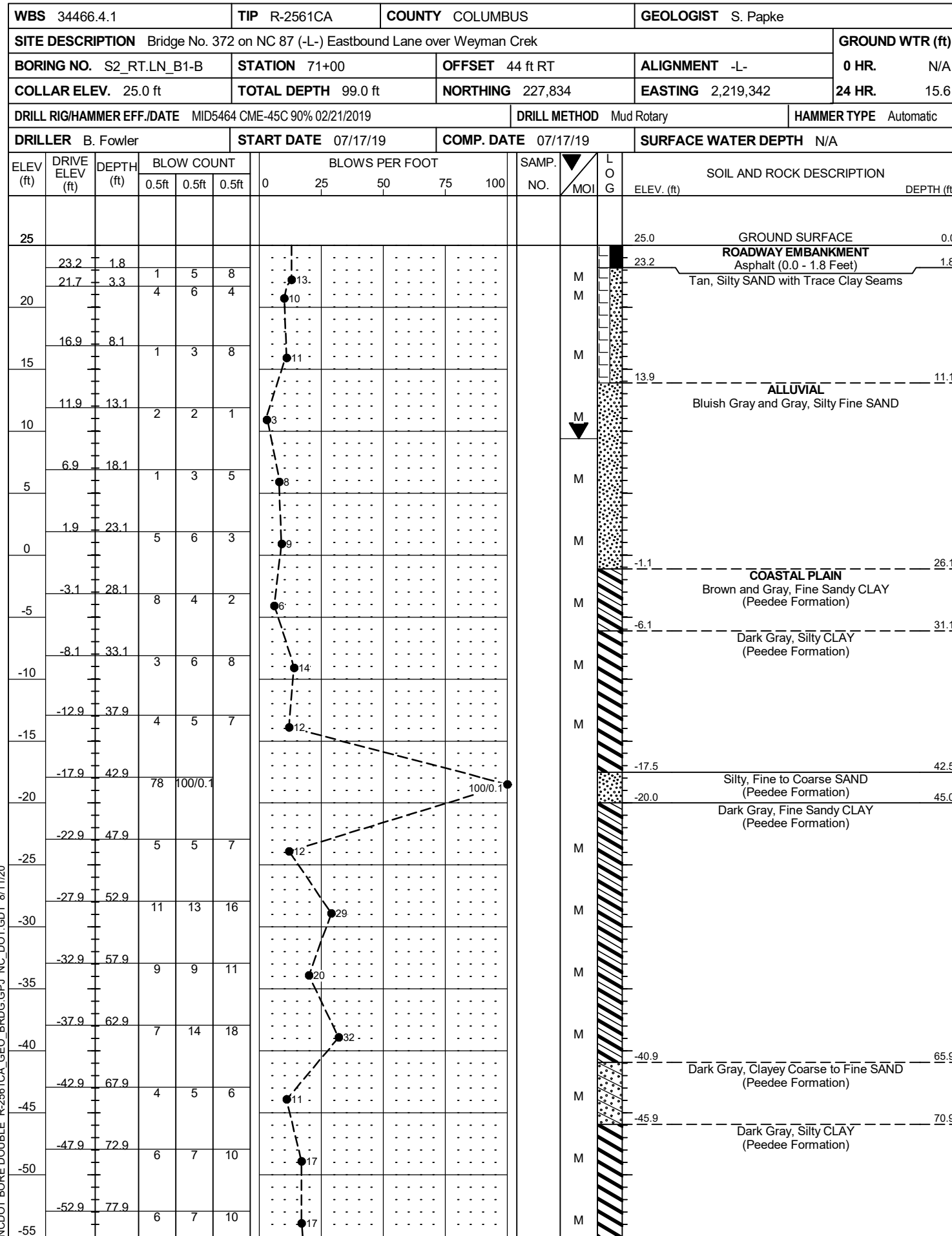
WBS 34466.4.1		TIP R-2561CA		COUNTY COLUMBUS		GEOLOGIST S. Papke	
SITE DESCRIPTION Bridge No. 372 on NC 87 (-L-) Eastbound Lane over Weyman Creek							GROUND WTR (ft)
BORING NO. S2_RT.LN_EB1-A		STATION 70+31		OFFSET 30 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 24.8 ft		TOTAL DEPTH 89.3 ft		NORTHING 227,885		EASTING 2,219,293	
DRILL RIG/HAMMER EFF./DATE MID5464 CME-45C 90% 02/21/2019			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic		
DRILLER B. Fowler		START DATE 07/12/19		COMP. DATE 07/12/19		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				
-55													Match Line	
	-58.2	83.0	6	9	11								Dark Gray, Silty CLAY (Peedee Formation) (continued)	
-60														
	-63.2	88.0	5	37	63/0.3								Silty Fine to Coarse SAND (Peedee Formation)	86.0
														89.3
													Boring Terminated at Elevation -64.5 ft in COASTAL PLAIN (PEEDEE FORMATION): SILTY SAND	
													Other Samples: ST-2 (29.5 - 31.5)	

NCDOT BORE DOUBLE R-2561CA GEO_BRDG.GPJ NC_DOT.GDT 8/11/20

GEOTECHNICAL BORING REPORT

BORE LOG



NCDOT BORE DOUBLE R-2561CA GEO_BRDG.GPJ NC_DOT_GDT 8/11/20

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
APPENDIX A
LABORATORY RESULTS

REFERENCE: R-2561CA

PROJECT: 34466

Prepared in the Office of:



LABORATORY SUMMARY SHEET FOR SOIL SAMPLES

SHEET 9

PROJECT NO.: 34466.4.1 (R-2561CA)

COUNTY: COLUMBUS

NEW INTERCHANGE AT INTERSECTION OF NC 87 AND NC 11

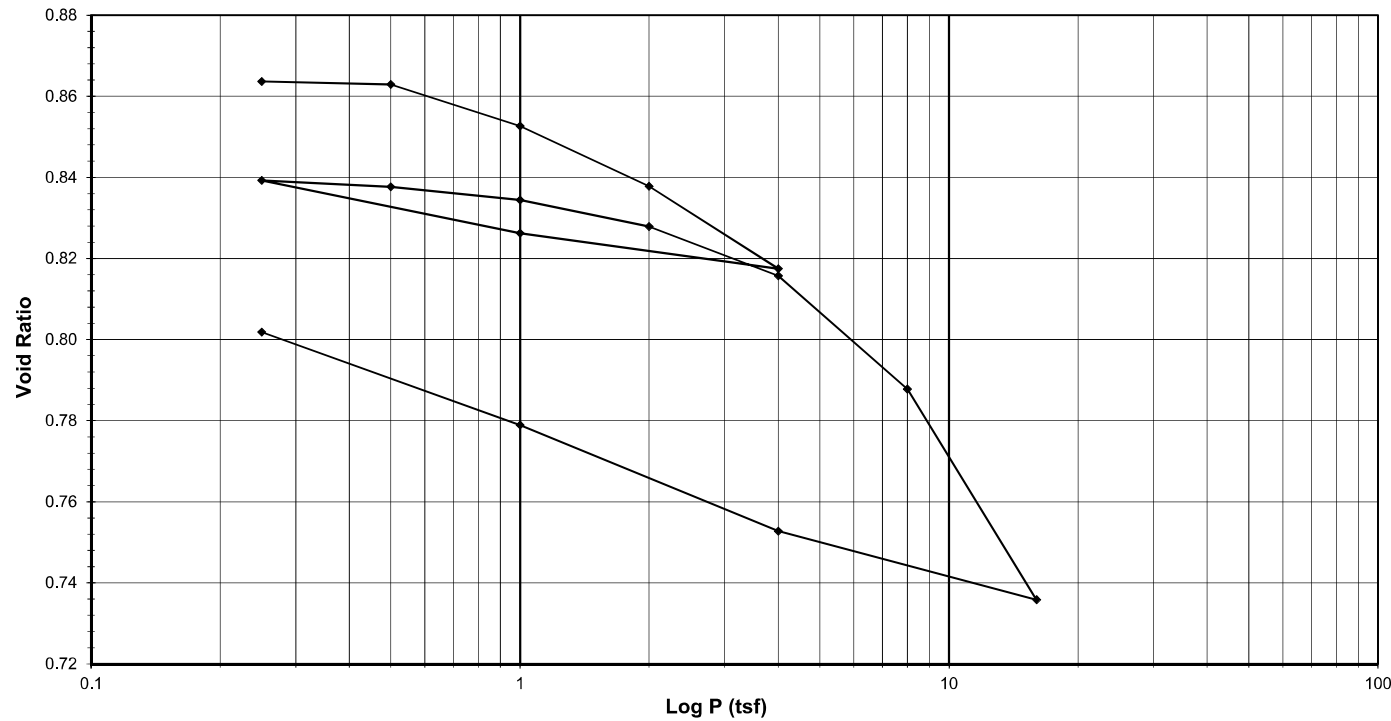
Sample No.	Boring Number	Alignment	Station	Offset	Sample Depth (ft.)	Natural Moisture Content (%)	Organic Content (%)	AASHTO Class.	Atterberg Limits			Gradation Results							
									L.L.	P.L.	P.I.	Retained #4 Sieve	Pass #10 Sieve	Pass #40 Sieve	Pass #200 Sieve	Coarse Sand (%)	Fine Sand (%)	Silt (%)	Clay (%)
ST-2	S2_RT.LN_EB1-A	-L-	70+31	30' RT	29.5 - 31.5	26.5	--	A-7-6	45	17	28	0.0	100.0	99.8	75.9	0.4	35.3	24.7	39.6
ST-3	S2_RT.LN_EB2-A	-L-	71+80	28' RT	19.9 - 21.9	--	--	A-6	37	17	20	0.0	100.0	99.9	74.9	0.1	36.6	25.1	38.2



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT_LN_EB1-A
 Client Reference R-2561CA Depth (ft) 29.5-31.5
 Project No. R-2019-209-001 Sample No. ST-2
 Lab ID R-2019-209-001-010 Visual Description GRAY LEAN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Tested By 129-0411 Date 7/19/2019 Approved By MPS Date 7/29/2019

ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT_LN_EB1-A
 Client Reference R-2561CA Depth (ft) 29.5-31.5
 Project No. R-2019-209-001 Sample No. ST-2
 Lab ID R-2019-209-001-010 Visual Description GRAY LEAN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

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

Sample Properties

	Initial	Final
<i>Water Content</i>		
Tare Number	TB-04	X-15
Wt. Tare & WS (g)	330.14	293.80
Wt. Tare & DS (g)	289.26	261.85
Wt. Water (g)	40.88	31.95
Wt. Tare (g)	135.09	142.28
Wt. DS (g)	154.17	119.57
Water Content (%)	26.52	26.72

	Initial	Final
<i>Sample Parameters</i>		
Sample Diameter (in)	2.5	2.5
Sample Height (in)	1.0000	0.9656
Sample Volume (cc)	80.44	77.67
Wt. Wet Sample + Ring (g)	365.80	366.04
Wt. of Ring (g)	214.73	214.73
Wt. of Wet Sample (g)	151.07	151.31
Wet Density (pcf)	117.19	121.56
Wet Density (g/cc)	1.88	1.95
Water Content (%)	26.52	26.72
Wt. of Dry Sample (g)	119.41	119.41
Dry Density (pcf)	92.63	95.93
Dry Density (g/cc)	1.48	1.54
Void Ratio	0.8660	0.8018
Saturation (%)	84.81	92.31
Specific Gravity	2.77	Measured

Test Data Summary

Applied Pressure (tsf)	Final Dial Reading (div)	Machine Deflection (div)	Corrected Reading (div)	Height of Sample (mm)	Volume (cc)	Dry Density (g/cc)	Void Ratio
Seating	0	0	0	25.400	80.440	1.48443	0.86603
0.25	35.5	22.8	12.7	25.368	80.338	1.48632	0.86366
0.5	60.9	44.2	16.7	25.358	80.305	1.48692	0.86291
1	132.4	60.5	71.9	25.217	79.861	1.49519	0.85261
2	244.9	93.6	151.3	25.016	79.223	1.50723	0.83780
4	390.8	130.5	260.3	24.739	78.346	1.52411	0.81746
1	296.4	83.0	213.4	24.858	78.724	1.51680	0.82622
0.25	196.3	52.7	143.6	25.035	79.285	1.50606	0.83923
0.5	210.1	58.3	151.8	25.014	79.219	1.50732	0.83770
1	244.4	74.9	169.5	24.969	79.076	1.51003	0.83440
2	304.6	100.0	204.6	24.880	78.794	1.51544	0.82786
4	402.9	133.4	269.5	24.715	78.272	1.52555	0.81574
8	589.3	169.9	419.4	24.335	77.066	1.54942	0.78777
16	923.9	226.1	697.8	23.628	74.827	1.59579	0.73582
4	768.7	161.7	607.1	23.858	75.557	1.58037	0.75275
1	578.7	111.7	466.9	24.214	76.684	1.55715	0.77890
0.25	417.0	73.0	344.0	24.526	77.673	1.53732	0.80184

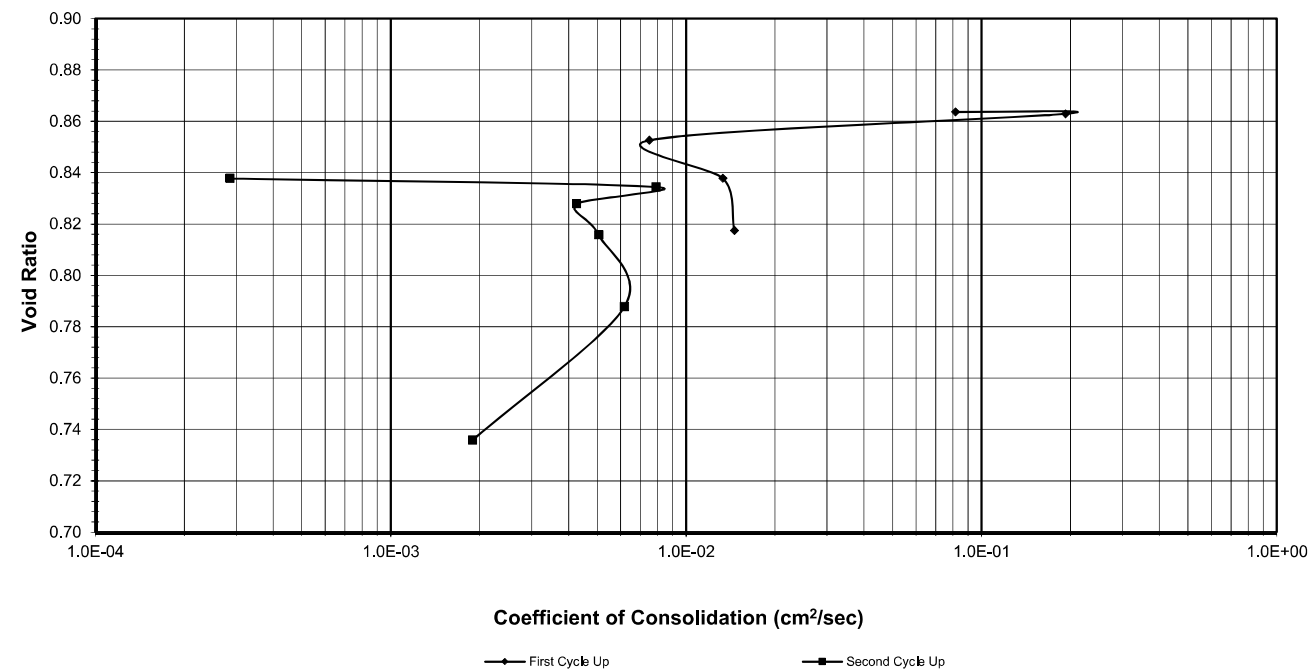
Tested By 129-0411 Date 7/19/2019 Input Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT_LN_EB1-A
 Client Reference R-2561CA Depth (ft) 29.5-31.5
 Project No. R-2019-209-001 Sample No. ST-2
 Lab ID R-2019-209-001-010 Visual Description GRAY LEAN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Tested By 129-0411 Date 7/19/2019 Input Checked By GEM Date 7/29/2019

ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT_LN_EB1-A
 Client Reference R-2561CA Depth (ft) 29.5-31.5
 Project No. R-2019-209-001 Sample No. ST-2
 Lab ID R-2019-209-001-010 Visual Description GRAY LEAN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

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

Sample Properties	Initial	Final
Water Content		
Tare Number	TB-04	X-15
Wt. Tare & WS (g)	330.14	293.80
Wt. Tare & DS (g)	289.26	261.85
Wt. Water (g)	40.88	31.95
Wt. Tare (g)	135.09	142.28
Wt. DS (g)	154.17	119.57
Water Content (%)	26.52	26.72
Sample Parameters		
Sample Diameter (in)	2.5	2.5
Sample Height (in)	1.000	0.966
Sample Volume (cc)	80.44	77.67
Wt. Wet Sample + Ring (g)	365.80	366.04
Wt. of Ring (g)	214.73	214.73
Wt. of Wet Sample (g)	151.07	151.31
Wet Density (pcf)	117.19	121.56
Wet Density (g/cc)	1.88	1.95
Water Content (%)	26.52	26.72
Wt. of Dry Sample (g)	119.41	119.41
Dry Density (pcf)	92.63	95.93
Dry Density (g/cc)	1.48	1.54
Void Ratio	0.8660	0.8018
Saturation (%)	84.81	92.31
Specific Gravity	2.77	Measured

Load Increment (tsf)	Dial Reading @ t ₅₀ (div)	Machine Deflection (div)	C _v Test Data Summary		Time t ₅₀ (min.)	C _v (cm ² /sec)
			Corrected Dial Reading @ t ₅₀ (div)	Sample Height @ t ₅₀ (cm)		
0 - 0.25	16.5	22.8	-6.3	2.542	0.07	0.08158
0.25 - 0.5	45.8	44.2	1.6	2.540	0.03	0.19251
0.5 - 1.0	100.7	60.5	40.2	2.530	0.70	0.00750
1.0 - 2.0	192.7	93.6	99.1	2.515	0.39	0.01331
2.0 - 4.0	317.3	130.5	186.8	2.493	0.35	0.01457
4.0 - 1.0	NA	83.0	NA	NA	NA	NA
1.0 - 0.25	NA	52.7	NA	NA	NA	NA
0.25 - 0.5	205.1	58.3	146.8	2.503	18.00	0.00029
0.5 - 1.0	226.1	74.9	151.2	2.502	0.65	0.00790
1.0 - 2.0	279.3	100.0	179.2	2.494	1.20	0.00426
2.0 - 4.0	359.1	133.4	225.7	2.483	1.00	0.00506
4.0 - 8.0	506.3	169.9	336.4	2.455	0.80	0.00618
8.0 - 16.0	776.7	226.1	550.6	2.400	2.50	0.00189
16.0 - 4.0	NA	161.7	NA	NA	NA	NA
4.0 - 1.0	NA	111.7	NA	NA	NA	NA
1.0 - 0.25	NA	73.0	NA	NA	NA	NA

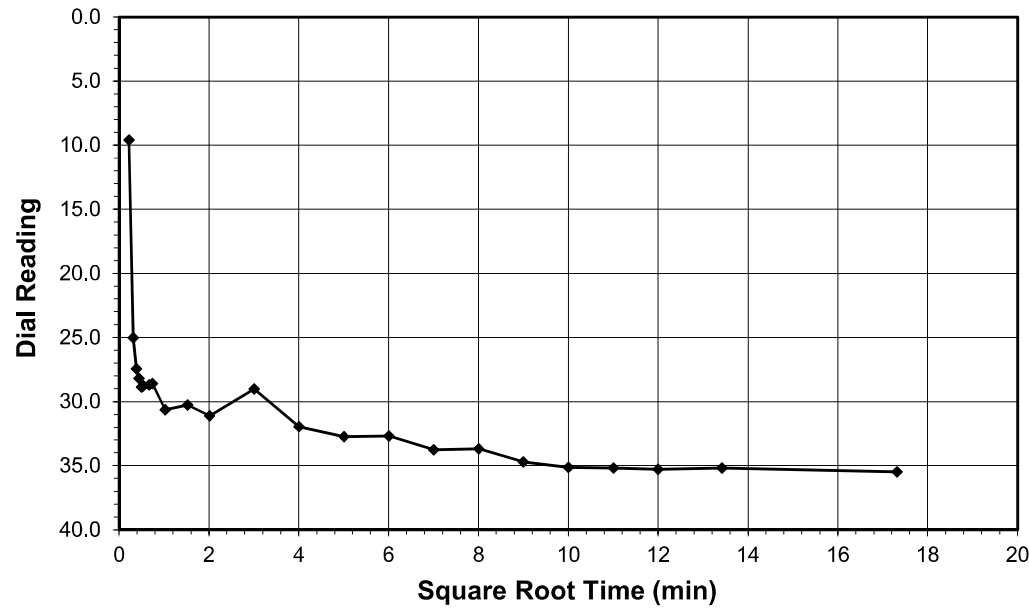
Tested By 129-0411 Date 7/19/2019 Input Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client: Kleinfelder Boring No.: S2_RT_LN_EB1-A
 Client Project: R-2561CA Depth (ft): 29.5-31.5
 Project No.: R-2019-209-001 Sample No.: ST-2
 Lab ID: R-2019-209-001-010 Visual Description: GRAY LEAN CLAY

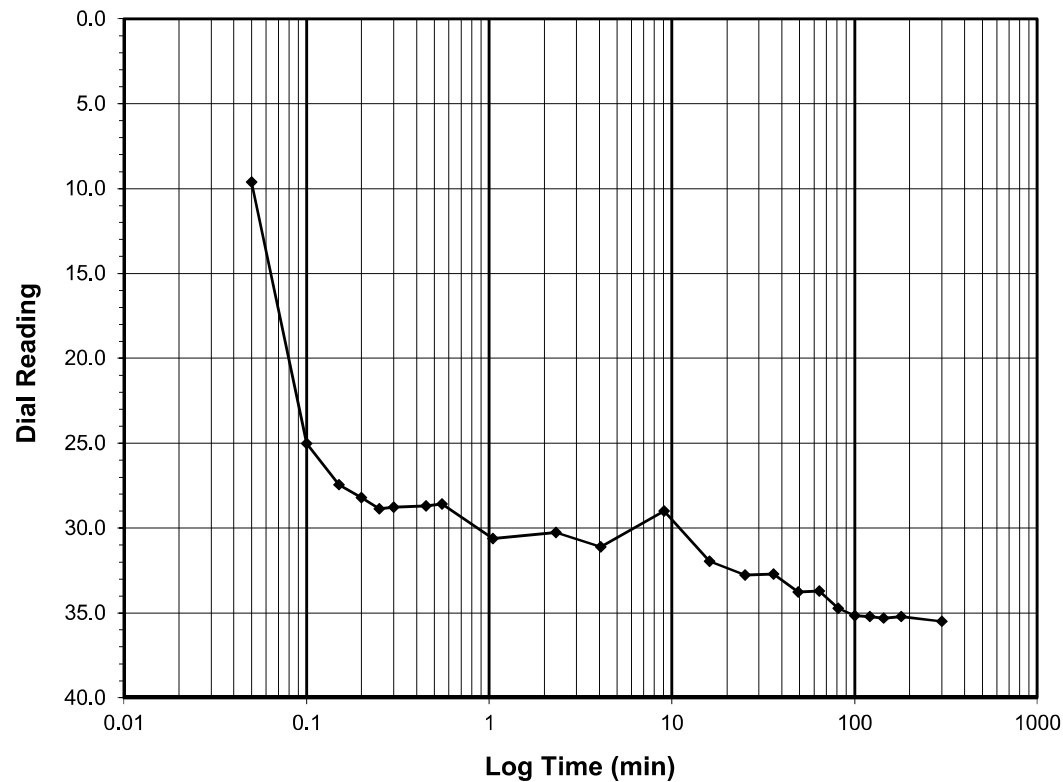
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf): 0.0-0.25
Final Reading (div): 35.5
 Consolidometer No.: R470
 1 Division (in): 0.0001

Start Date: 7/19/2019
 Start Time: 10:46:49

Elapsed Time (min)	Dial Reading (div)
Initial	0.0
0.05	9.6
0.10	25.0
0.15	27.4
0.20	28.2
0.25	28.9
0.30	28.8
0.45	28.7
0.55	28.6
1.05	30.6
2.32	30.3
4.07	31.1
9.07	29.0
16.07	32.0
25.07	32.8
36.07	32.7
49.07	33.8
64.07	33.7
81.07	34.7
100.07	35.1
121.07	35.2
144.07	35.3
180.07	35.2
300.07	35.5



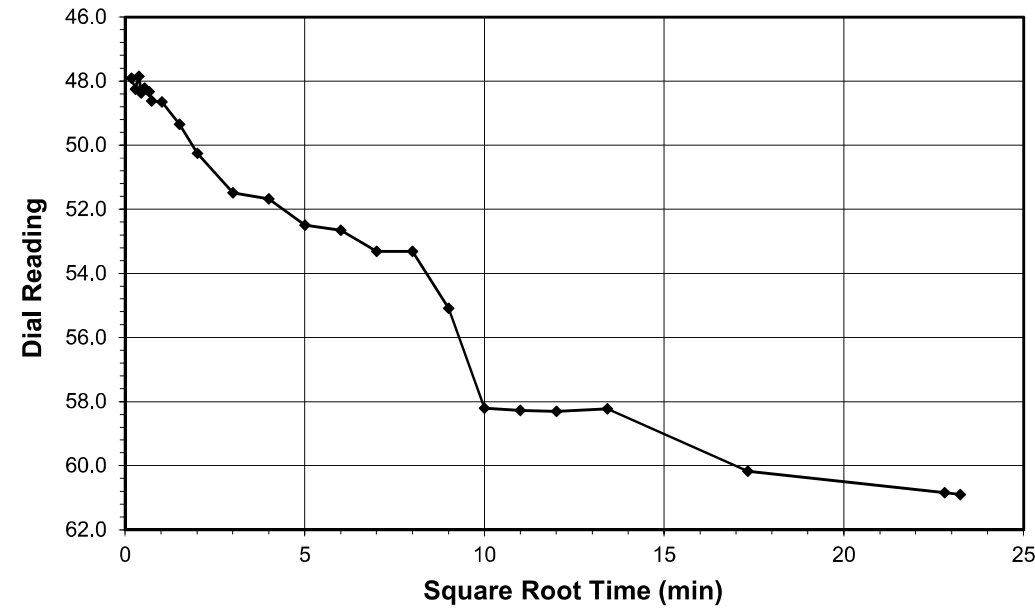
Tested By 129-0411 Date 7/19/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client: Kleinfelder Boring No.: S2_RT_LN_EB1-A
 Client Project: R-2561CA Depth (ft): 29.5-31.5
 Project No.: R-2019-209-001 Sample No.: ST-2
 Lab ID: R-2019-209-001-010 Visual Description: GRAY LEAN CLAY

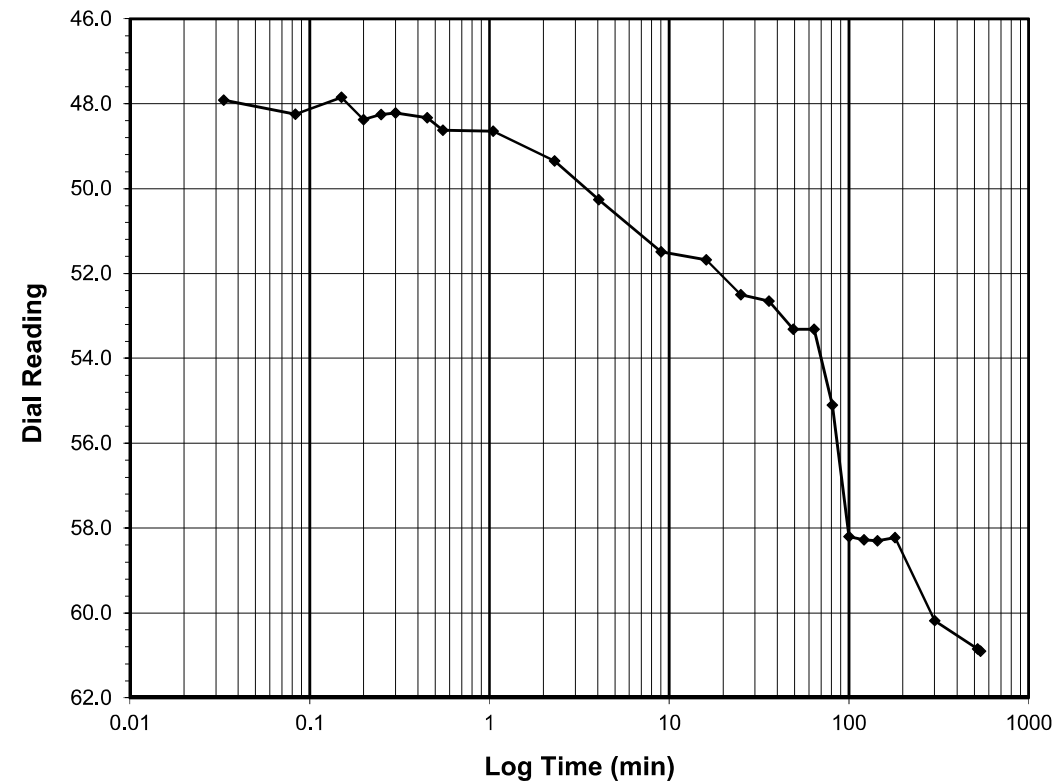
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf): 0.25-0.5
Final Reading (div): 60.9
 Consolidometer No.: R470
 1 Division (in): 0.0001

Start Date: 7/19/2019
 Start Time: 19:47:08

Elapsed Time (min)	Dial Reading (div)
Initial	35.5
0.03	47.9
0.08	48.3
0.15	47.9
0.20	48.4
0.25	48.3
0.30	48.2
0.45	48.3
0.55	48.6
1.05	48.7
2.30	49.3
4.05	50.3
9.05	51.5
16.05	51.7
25.05	52.5
36.05	52.7
49.05	53.3
64.05	53.3
81.05	55.1
100.05	58.2
121.05	58.3
144.05	58.3
180.05	58.2
300.05	60.2
520.05	60.8
540.28	60.9



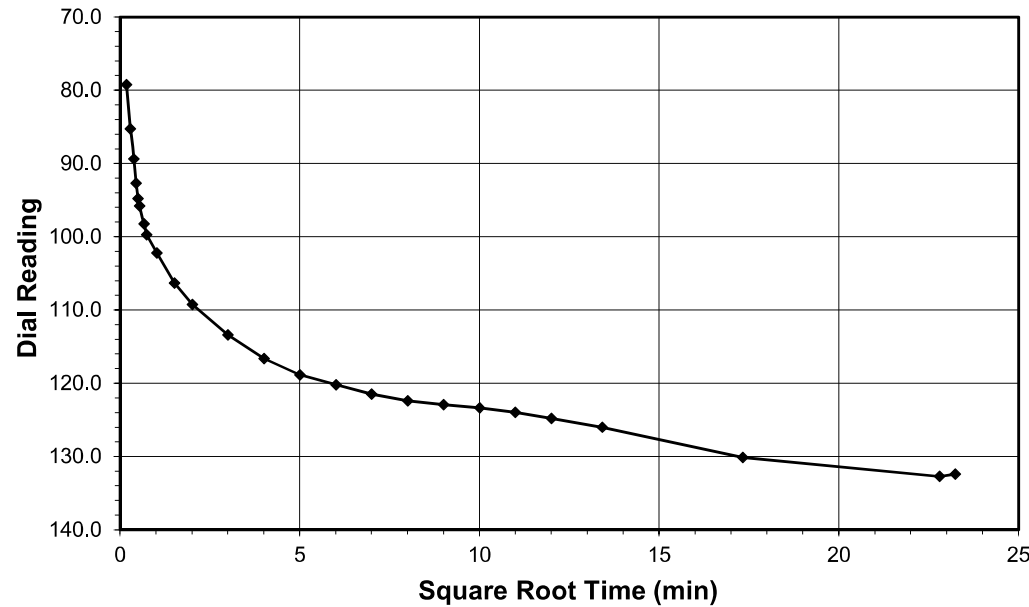
Tested By 129-0411 Date 7/19/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT_LN_EB1-A
 Client Project R-2561CA Depth (ft) 29.5-31.5
 Project No. R-2019-209-001 Sample No. ST-2
 Lab ID R-2019-209-001-010 Visual Description GRAY LEAN CLAY

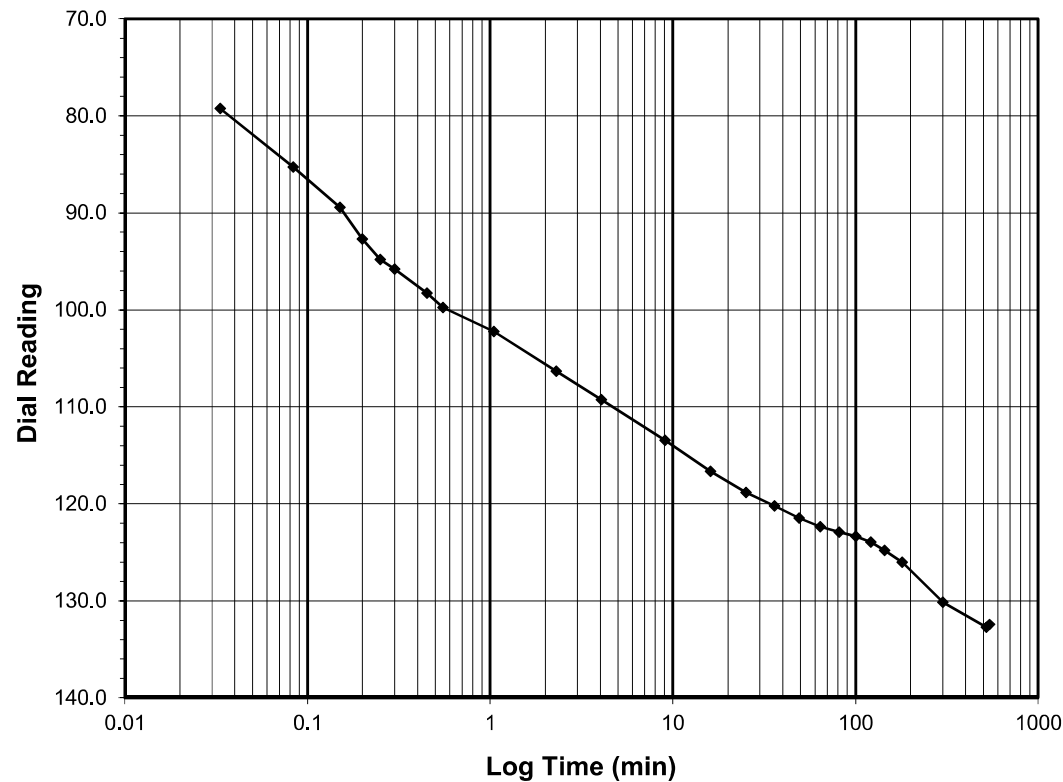
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 0.5-1.0
 Final Reading (div) 132.4
 Consolidometer No. R470
 1 Division (in) 0.0001

Start Date 7/20/2019
 Start Time 4:47:26

Elapsed Time (min)	Dial Reading (div)
Initial	60.9
0.03	79.3
0.08	85.3
0.15	89.4
0.20	92.7
0.25	94.8
0.30	95.8
0.45	98.3
0.55	99.7
1.05	102.2
2.30	106.3
4.05	109.3
9.07	113.4
16.07	116.7
25.07	118.8
36.07	120.2
49.07	121.5
64.07	122.4
81.07	122.9
100.07	123.4
121.07	123.9
144.07	124.8
180.07	126.0
300.07	130.1
520.07	132.7
540.38	132.4



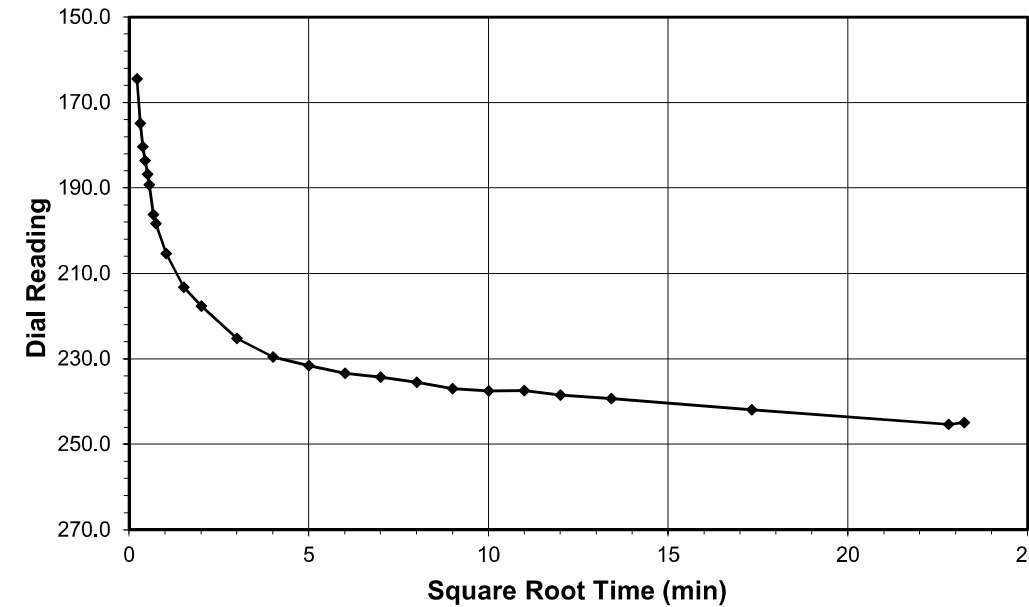
Tested By 129-0411 Date 7/20/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT_LN_EB1-A
 Client Project R-2561CA Depth (ft) 29.5-31.5
 Project No. R-2019-209-001 Sample No. ST-2
 Lab ID R-2019-209-001-010 Visual Description GRAY LEAN CLAY

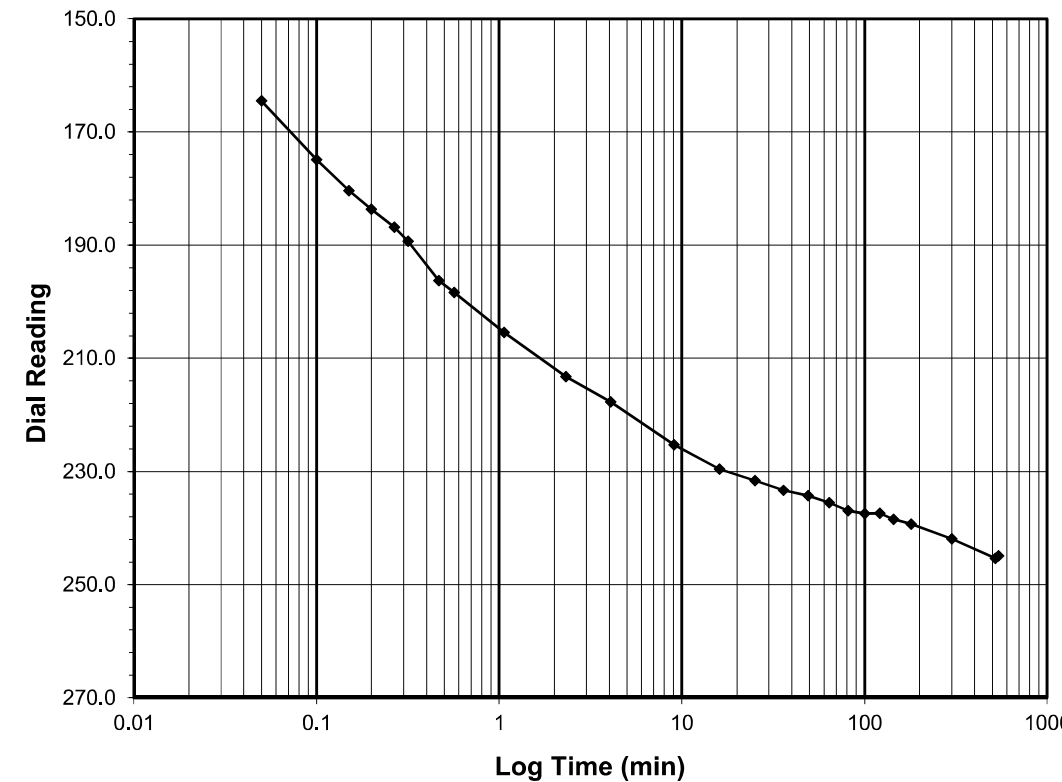
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 1.0-2.0
 Final Reading (div) 244.9
 Consolidometer No. R470
 1 Division (in) 0.0001

Start Date 7/20/2019
 Start Time 13:47:50

Elapsed Time (min)	Dial Reading (div)
Initial	132.4
0.05	164.5
0.10	174.9
0.15	180.3
0.20	183.6
0.27	186.8
0.32	189.3
0.47	196.3
0.57	198.4
1.07	205.4
2.32	213.2
4.07	217.7
9.07	225.3
16.07	229.6
25.07	231.6
36.07	233.3
49.07	234.3
64.07	235.5
81.07	237.0
100.07	237.5
121.07	237.4
144.08	238.5
180.08	239.3
300.08	241.9
520.08	245.3
540.33	244.9



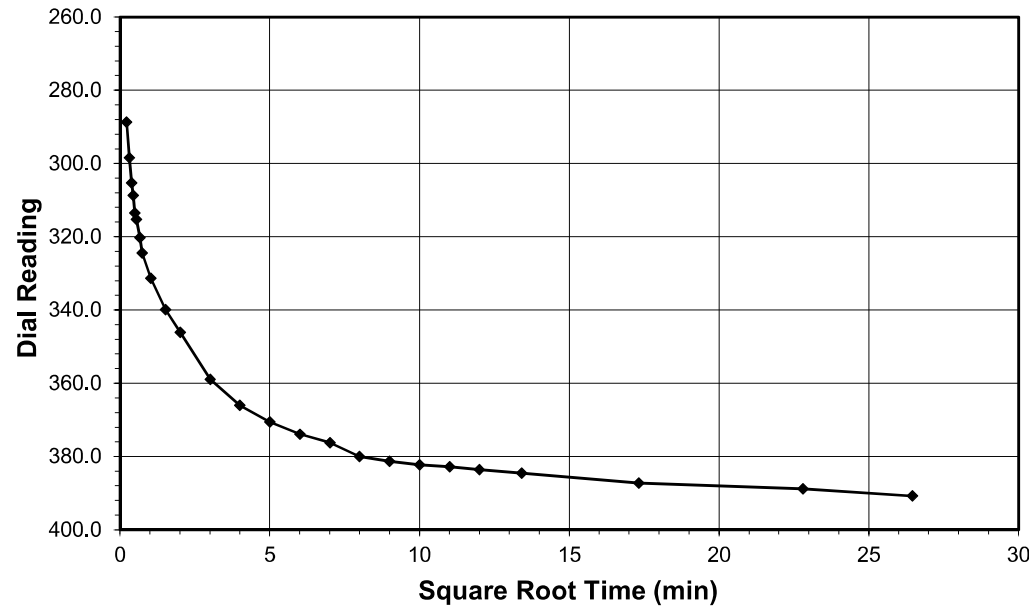
Tested By 129-0411 Date 7/20/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT_LN_EB1-A
 Client Project R-2561CA Depth (ft) 29.5-31.5
 Project No. R-2019-209-001 Sample No. ST-2
 Lab ID R-2019-209-001-010 Visual Description GRAY LEAN CLAY

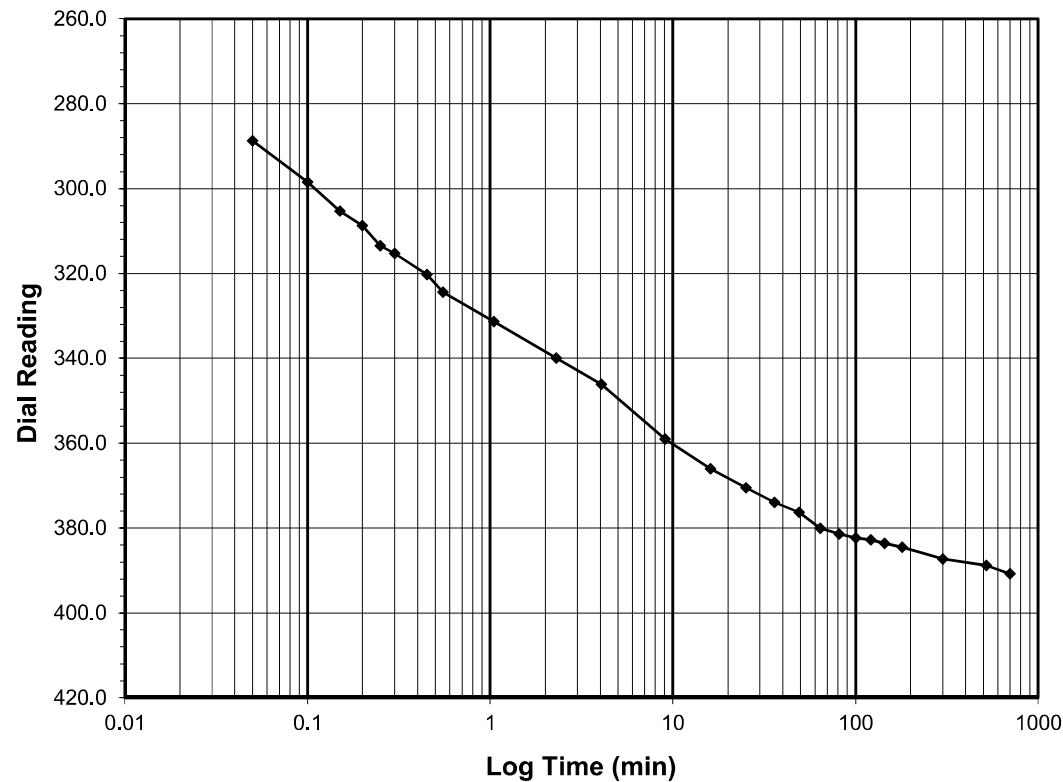
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 2.0-4.0
Final Reading (div) 390.8
 Consolidometer No. **R470**
 1 Division (in) 0.0001

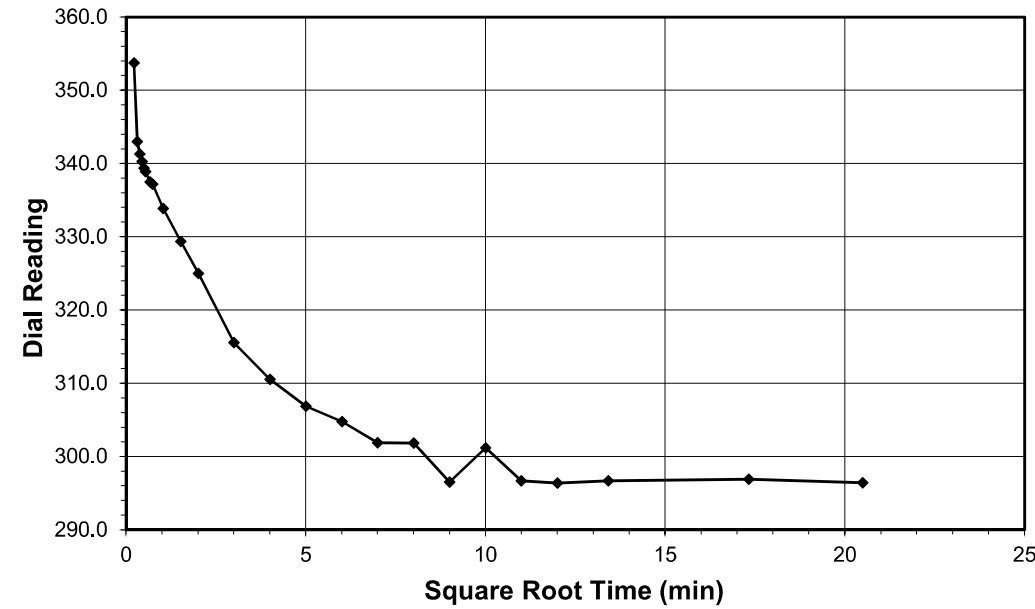
Start Date 7/20/2019
 Start Time 22:48:10

Elapsed Time (min)	Dial Reading (div)
Initial	244.9
0.05	288.7
0.10	298.5
0.15	305.3
0.20	308.8
0.25	313.5
0.30	315.3
0.45	320.3
0.55	324.4
1.05	331.3
2.30	340.0
4.05	346.1
9.05	359.0
16.07	366.0
25.07	370.5
36.07	374.0
49.07	376.3
64.07	380.1
81.07	381.4
100.07	382.3
121.07	382.8
144.07	383.6
180.07	384.5
300.07	387.3
520.07	388.8
700.07	390.8



Client Kleinfelder Boring No. S2_RT_LN_EB1-A
 Client Project R-2561CA Depth (ft) 29.5-31.5
 Project No. R-2019-209-001 Sample No. ST-2
 Lab ID R-2019-209-001-010 Visual Description GRAY LEAN CLAY

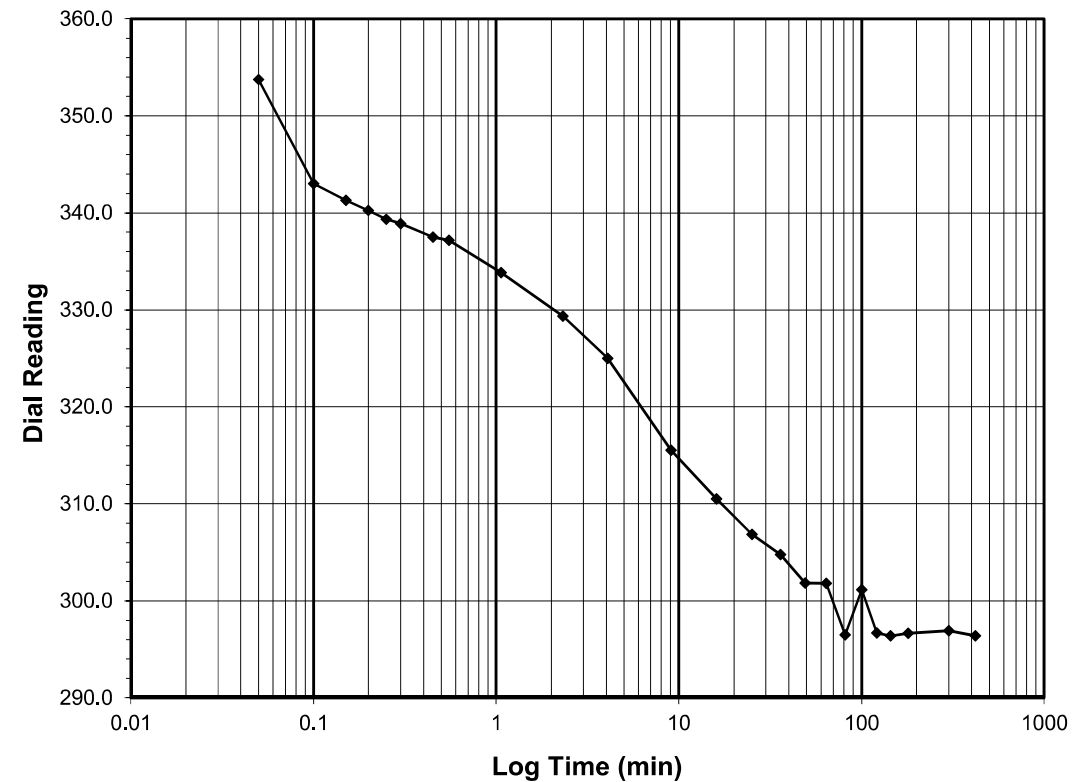
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 4.0-1.0
Final Reading (div) 296.4
 Consolidometer No. **R470**
 1 Division (in) 0.0001

Start Date 7/21/2019
 Start Time 10:48:27

Elapsed Time (min)	Dial Reading (div)
Initial	390.8
0.05	353.7
0.10	343.0
0.15	341.3
0.20	340.3
0.25	339.3
0.30	338.9
0.45	337.5
0.55	337.2
1.07	333.8
2.32	329.3
4.07	325.0
9.07	315.6
16.07	310.5
25.07	306.9
36.07	304.8
49.07	301.9
64.08	301.8
81.08	296.5
100.08	301.2
121.08	296.7
144.08	296.4
180.08	296.7
300.08	296.9
420.12	296.4



Tested By 129-0411 Date 7/20/2019 Checked By GEM Date 7/29/2019

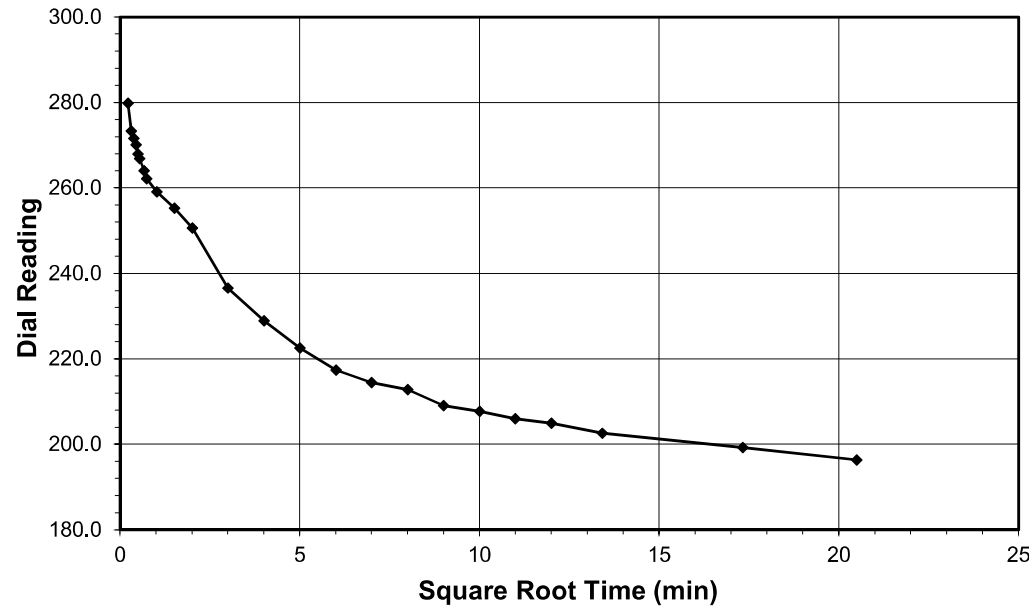
Tested By 129-0411 Date 7/21/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT_LN_EB1-A
 Client Project R-2561CA Depth (ft) 29.5-31.5
 Project No. R-2019-209-001 Sample No. ST-2
 Lab ID R-2019-209-001-010 Visual Description GRAY LEAN CLAY

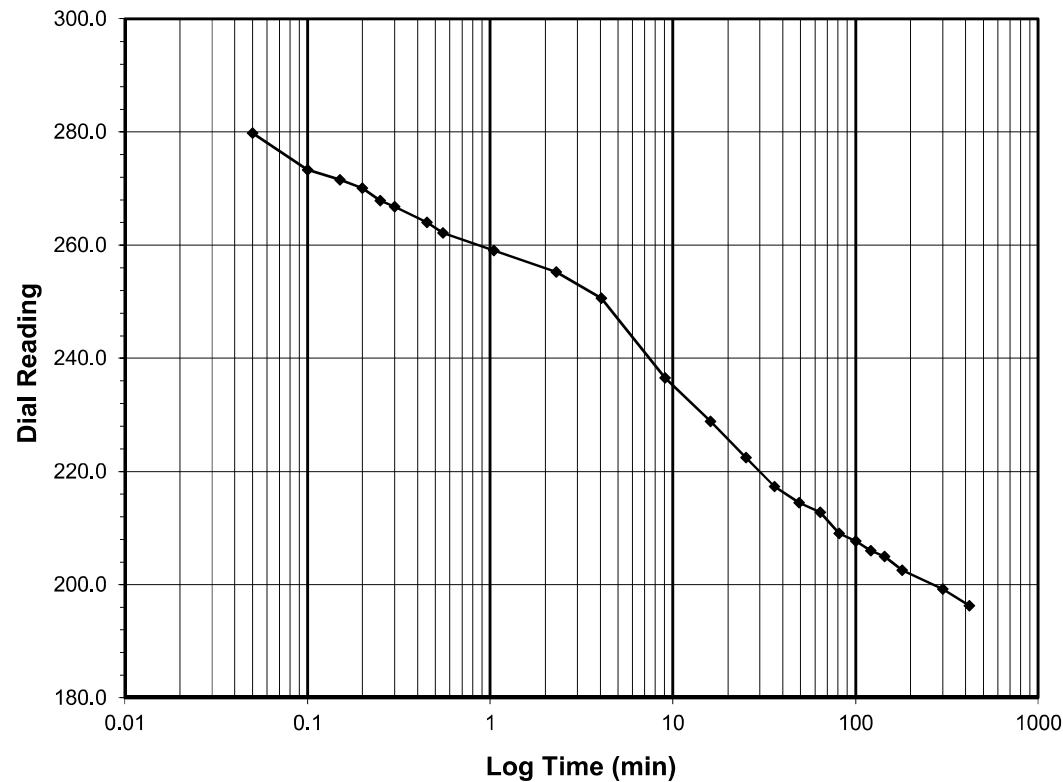
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 1.0-0.25
Final Reading (div) 196.3
 Consolidometer No. **R470**
 1 Division (in) 0.0001

Start Date 7/21/2019
 Start Time 17:48:34

Elapsed Time (min)	Dial Reading (div)
Initial	296.4
0.05	279.8
0.10	273.3
0.15	271.6
0.20	270.1
0.25	267.9
0.30	266.8
0.45	264.0
0.55	262.1
1.05	259.0
2.30	255.3
4.05	250.6
9.07	236.5
16.07	228.9
25.07	222.5
36.07	217.4
49.07	214.5
64.07	212.8
81.07	209.1
100.07	207.7
121.07	206.0
144.07	205.0
180.07	202.6
300.07	199.2
420.10	196.3



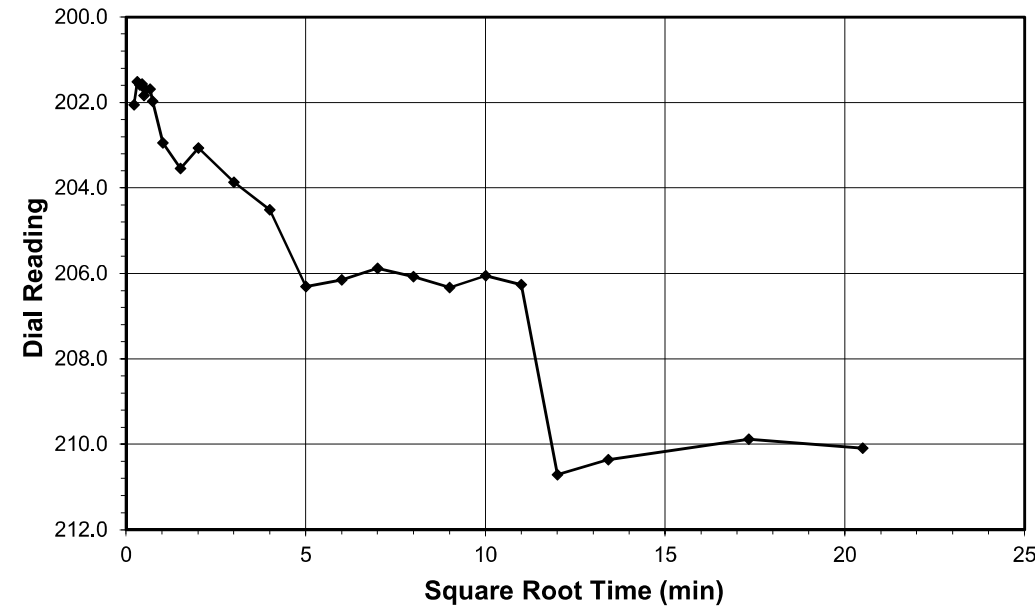
Tested By 129-0411 Date 7/21/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT_LN_EB1-A
 Client Project R-2561CA Depth (ft) 29.5-31.5
 Project No. R-2019-209-001 Sample No. ST-2
 Lab ID R-2019-209-001-010 Visual Description GRAY LEAN CLAY

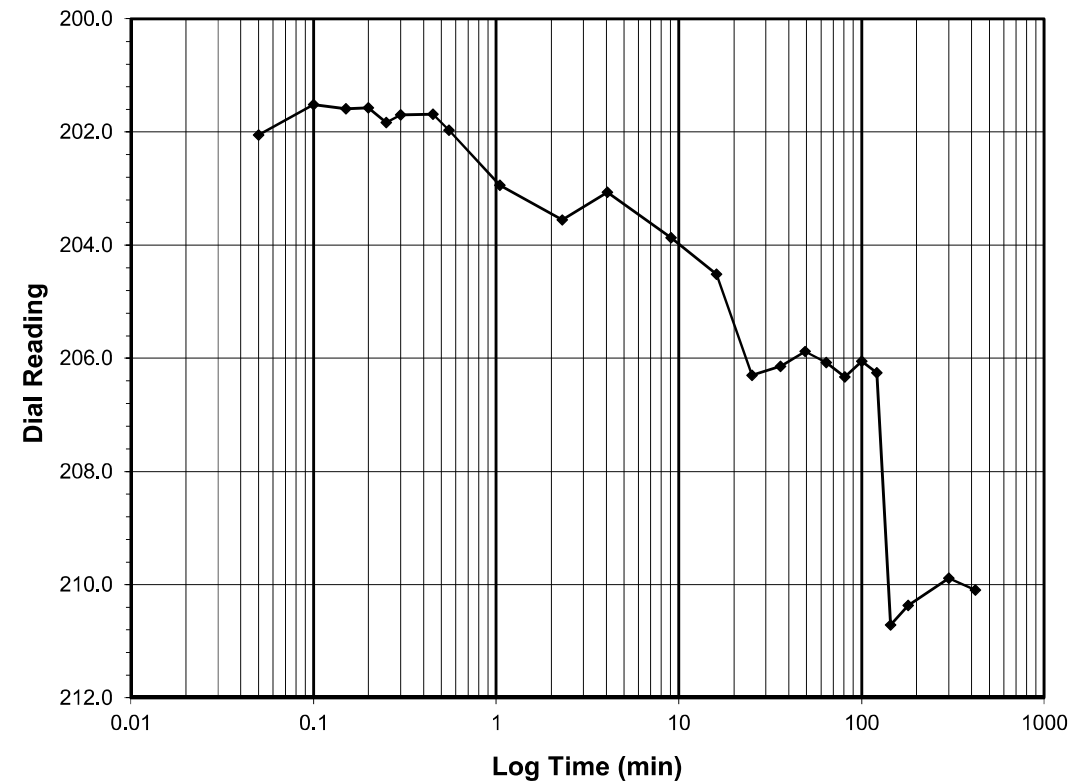
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 0.25-0.5
Final Reading (div) 210.1
 Consolidometer No. **R470**
 1 Division (in) 0.0001

Start Date 7/22/2019
 Start Time 0:48:40

Elapsed Time (min)	Dial Reading (div)
Initial	196.3
0.05	202.1
0.10	201.5
0.15	201.6
0.20	201.6
0.25	201.8
0.30	201.7
0.45	201.7
0.55	202.0
1.05	202.9
2.30	203.6
4.05	203.1
9.05	203.9
16.05	204.5
25.05	206.3
36.05	206.1
49.05	205.9
64.05	206.1
81.05	206.3
100.07	206.1
121.07	206.3
144.07	210.7
180.07	210.4
300.07	209.9
420.08	210.1



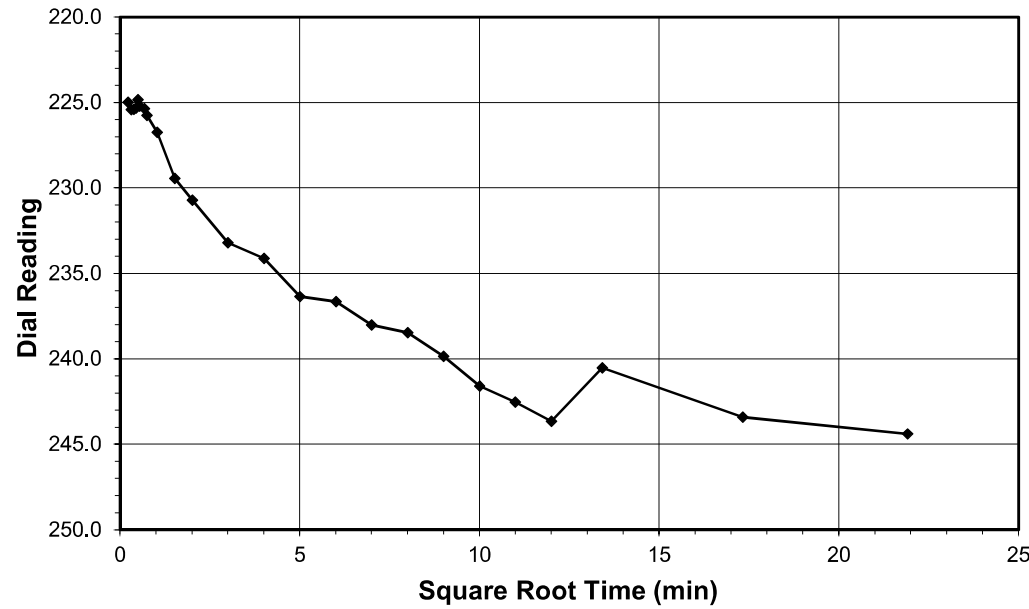
Tested By 129-0411 Date 7/22/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT_LN_EB1-A
 Client Project R-2561CA Depth (ft) 29.5-31.5
 Project No. R-2019-209-001 Sample No. ST-2
 Lab ID R-2019-209-001-010 Visual Description GRAY LEAN CLAY

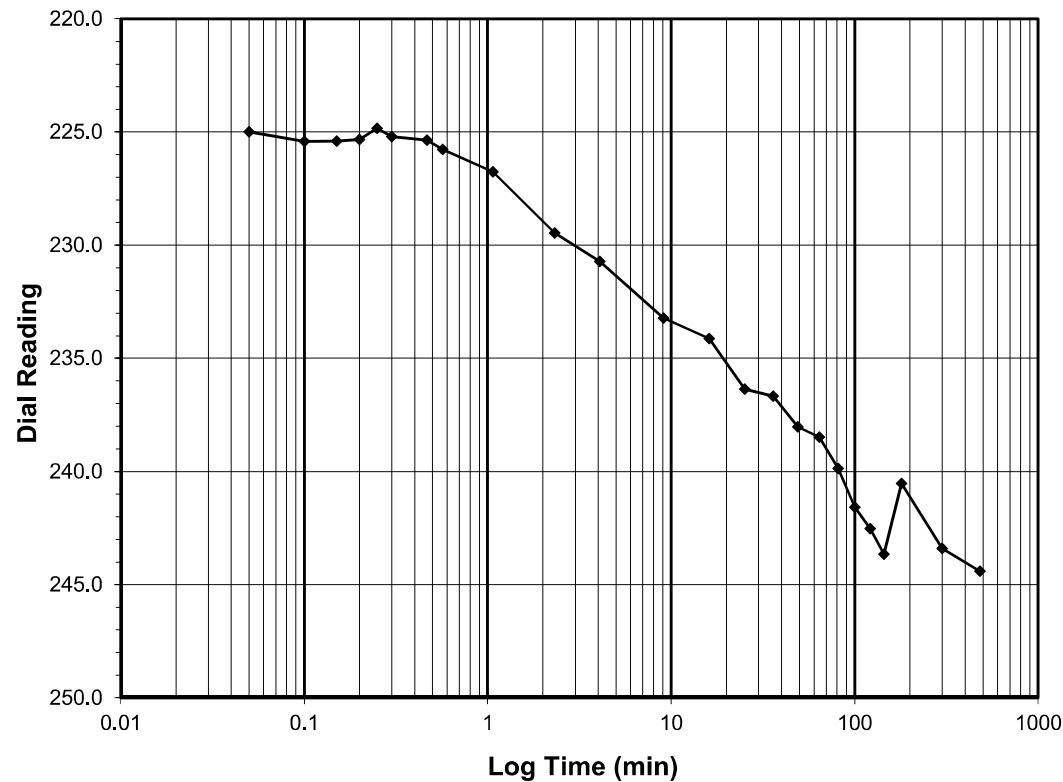
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 0.5-1.0
 Final Reading (div) 244.4
 Consolidometer No. R470
 1 Division (in) 0.0001

Start Date 7/22/2019
 Start Time 7:48:45

Elapsed Time (min)	Dial Reading (div)
Initial	210.1
0.05	225.0
0.10	225.4
0.15	225.4
0.20	225.3
0.25	224.8
0.30	225.2
0.47	225.4
0.57	225.8
1.07	226.8
2.32	229.5
4.07	230.7
9.07	233.2
16.07	234.1
25.07	236.4
36.07	236.7
49.07	238.0
64.07	238.5
81.07	239.9
100.07	241.6
121.07	242.5
144.07	243.6
180.07	240.5
300.07	243.4
480.23	244.4



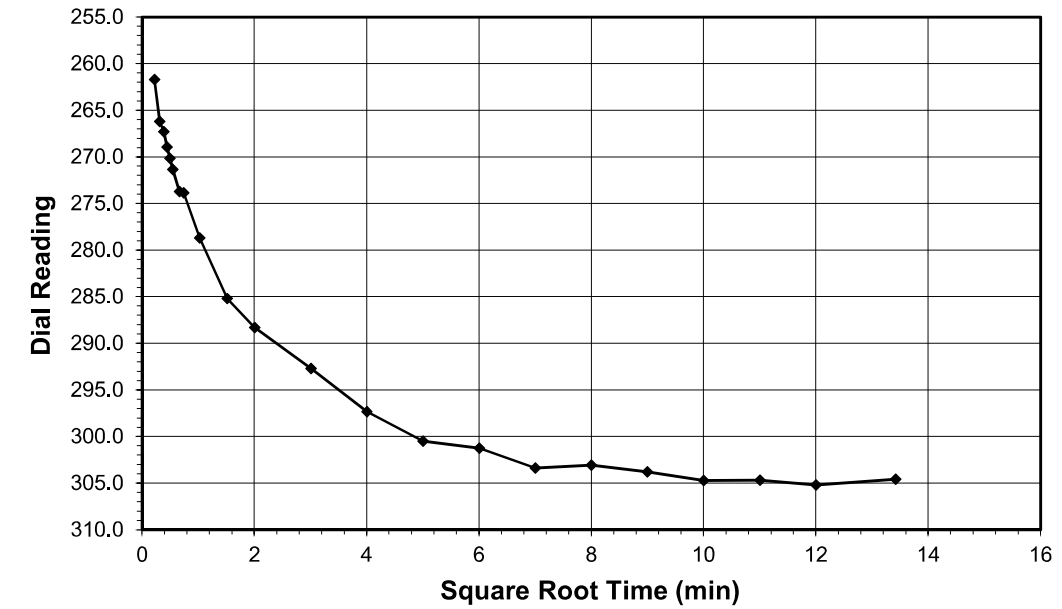
Tested By 129-0411 Date 7/22/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT_LN_EB1-A
 Client Project R-2561CA Depth (ft) 29.5-31.5
 Project No. R-2019-209-001 Sample No. ST-2
 Lab ID R-2019-209-001-010 Visual Description GRAY LEAN CLAY

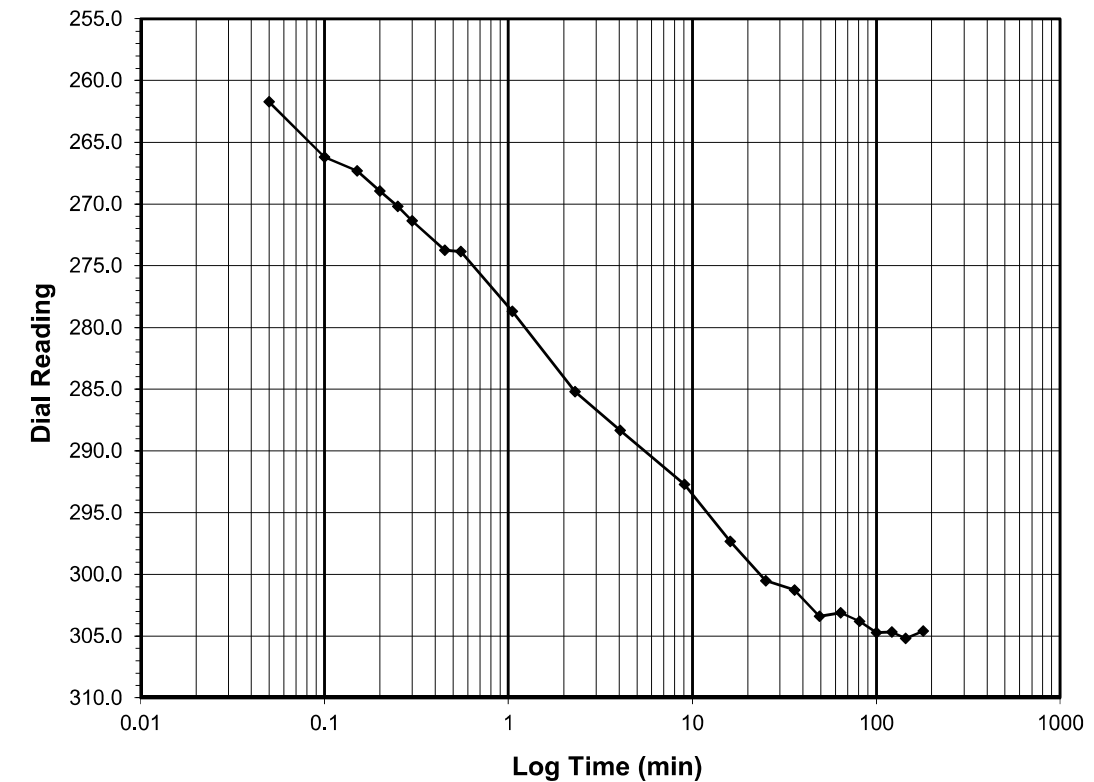
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 1.0-2.0
 Final Reading (div) 304.6
 Consolidometer No. R470
 1 Division (in) 0.0001

Start Date 7/22/2019
 Start Time 15:48:59

Elapsed Time (min)	Dial Reading (div)
Initial	244.4
0.05	261.7
0.10	266.2
0.15	267.3
0.20	268.9
0.25	270.2
0.30	271.4
0.45	273.7
0.55	273.9
1.05	278.7
2.30	285.2
4.05	288.3
9.05	292.7
16.05	297.3
25.05	300.5
36.05	301.3
49.07	303.4
64.07	303.1
81.07	303.8
100.07	304.7
121.07	304.7
144.07	305.2
180.07	304.6



Tested By 129-0411 Date 7/22/2019 Checked By GEM Date 7/29/2019

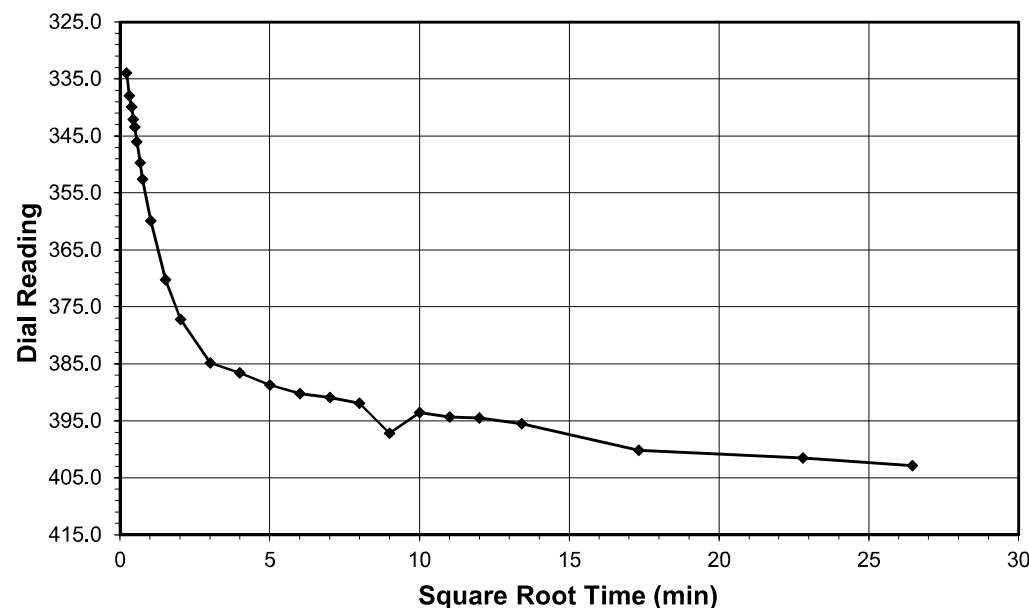


ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

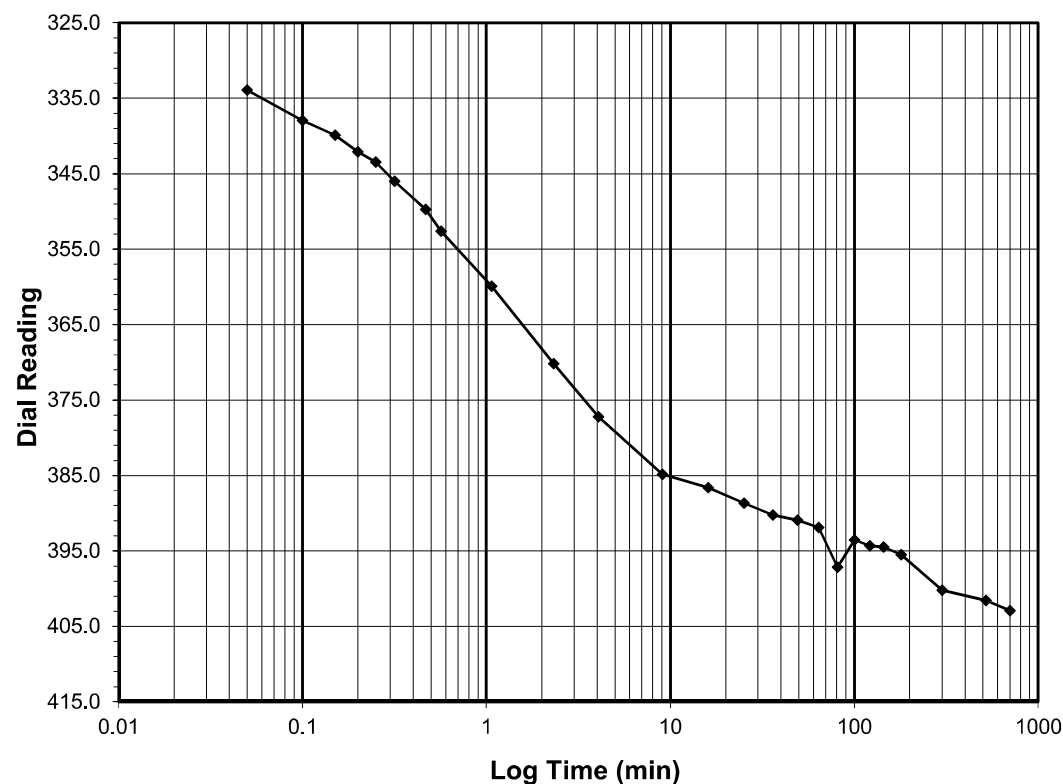
Client Kleinfelder Boring No. S2_RT_LN_EB1-A
 Client Project R-2561CA Depth (ft) 29.5-31.5
 Project No. R-2019-209-001 Sample No. ST-2
 Lab ID R-2019-209-001-010 Visual Description GRAY LEAN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 2.0-4.0
Final Reading (div) 402.9
 Consolidometer No. **R470**
 1 Division (in) 0.0001
 Start Date 7/23/2019
 Start Time 0:49:21

Elapsed Time (min)	Dial Reading (div)
Initial	304.6
0.05	333.9
0.10	337.9
0.15	339.9
0.20	342.1
0.25	343.4
0.32	346.0
0.47	349.7
0.57	352.6
1.07	359.9
2.32	370.2
4.07	377.2
9.07	384.8
16.07	386.6
25.07	388.7
36.07	390.2
49.07	390.9
64.07	391.9
81.07	397.2
100.07	393.6
121.07	394.3
144.07	394.5
180.07	395.5
300.07	400.2
520.07	401.6
700.08	402.9



Tested By 129-0411 Date 7/23/2019 Checked By GEM Date 7/29/2019

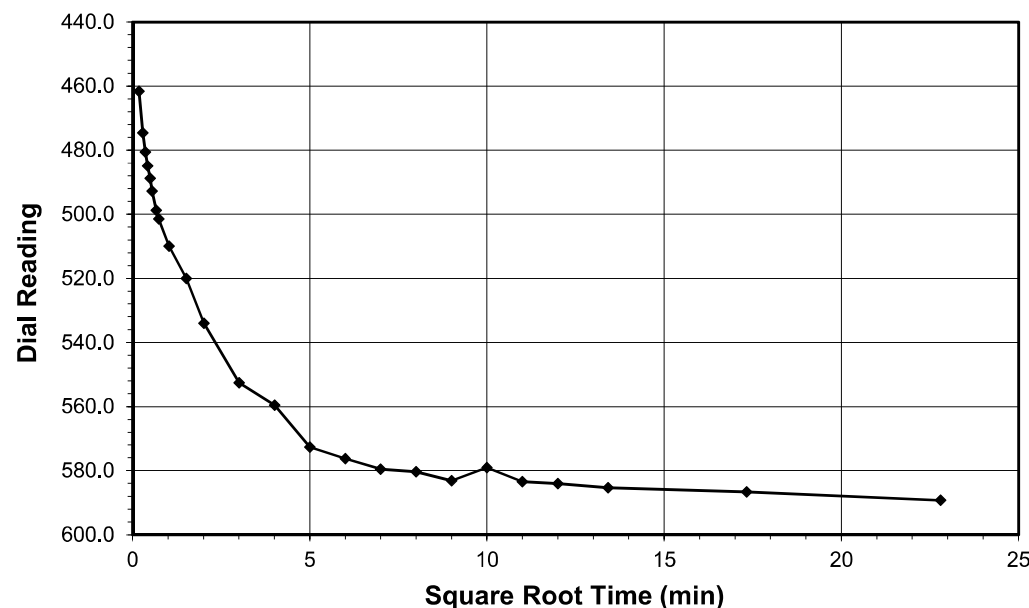


ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

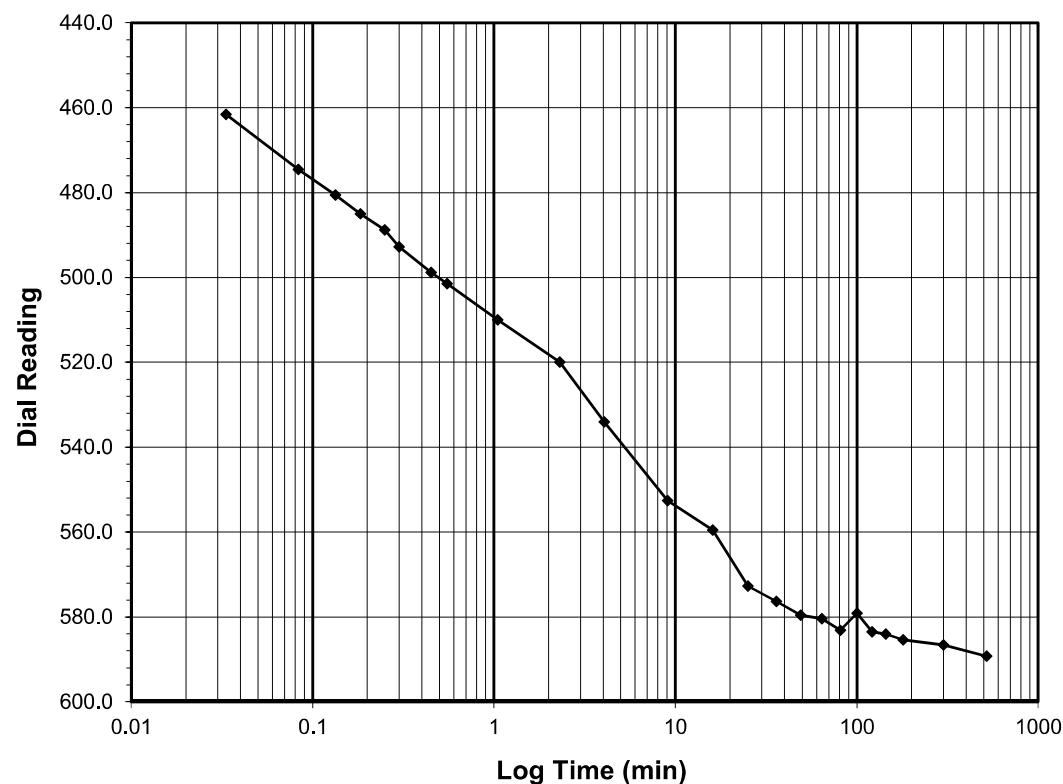
Client Kleinfelder Boring No. S2_RT_LN_EB1-A
 Client Project R-2561CA Depth (ft) 29.5-31.5
 Project No. R-2019-209-001 Sample No. ST-2
 Lab ID R-2019-209-001-010 Visual Description GRAY LEAN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 4.0-8.0
Final Reading (div) 589.3
 Consolidometer No. **R470**
 1 Division (in) 0.0001
 Start Date 7/23/2019
 Start Time 12:49:41

Elapsed Time (min)	Dial Reading (div)
Initial	402.9
0.03	461.6
0.08	474.6
0.13	480.6
0.18	485.0
0.25	488.9
0.30	492.8
0.45	498.8
0.55	501.4
1.05	509.9
2.30	520.0
4.05	534.0
9.05	552.6
16.05	559.5
25.05	572.7
36.05	576.3
49.05	579.5
64.05	580.4
81.05	583.1
100.07	579.1
121.07	583.5
144.07	584.1
180.07	585.4
300.07	586.6
520.07	589.3



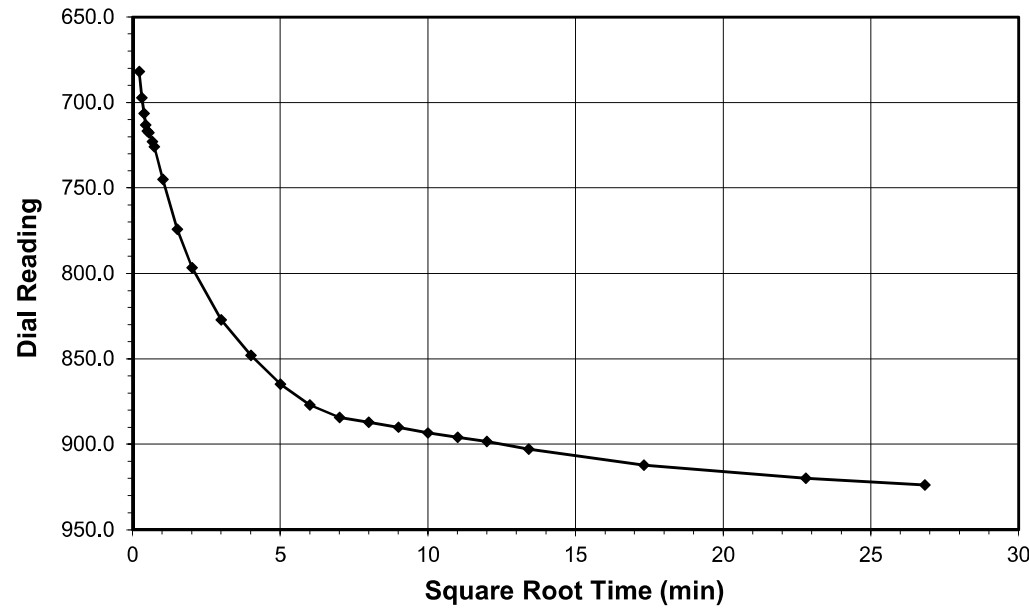
Tested By 129-0411 Date 7/23/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT_LN_EB1-A
 Client Project R-2561CA Depth (ft) 29.5-31.5
 Project No. R-2019-209-001 Sample No. ST-2
 Lab ID R-2019-209-001-010 Visual Description GRAY LEAN CLAY

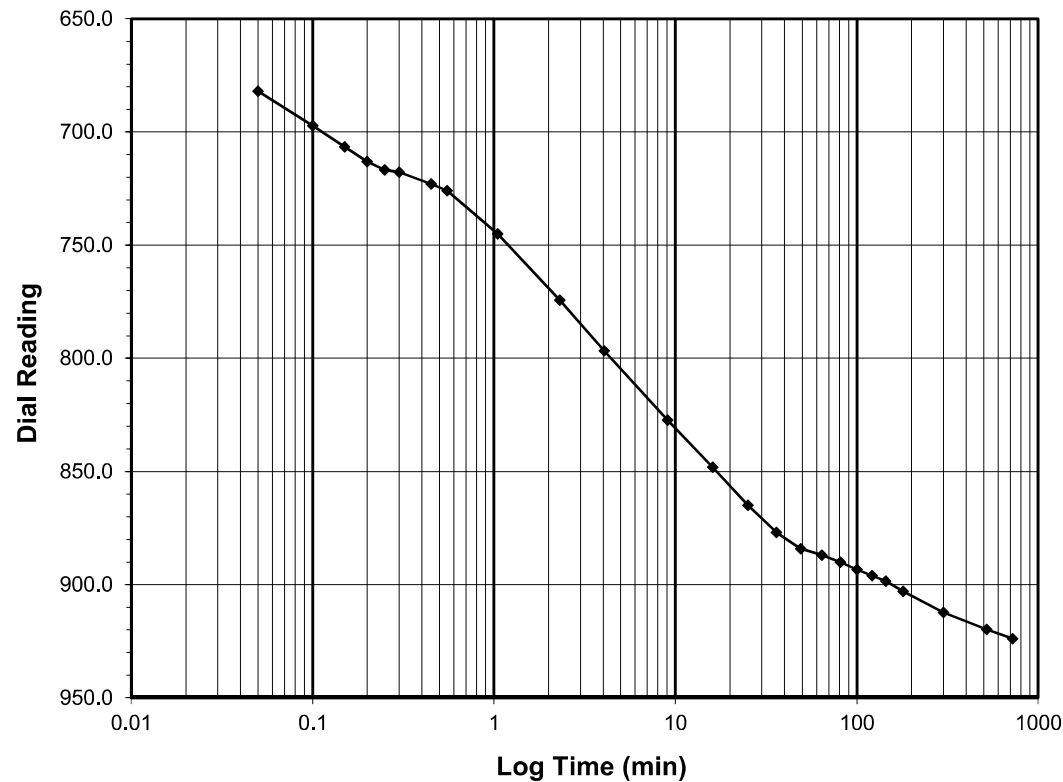
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 8.0-16.0
 Final Reading (div) 923.9
 Consolidometer No. R470
 1 Division (in) 0.0001

Start Date 7/24/2019
 Start Time 0:49:57

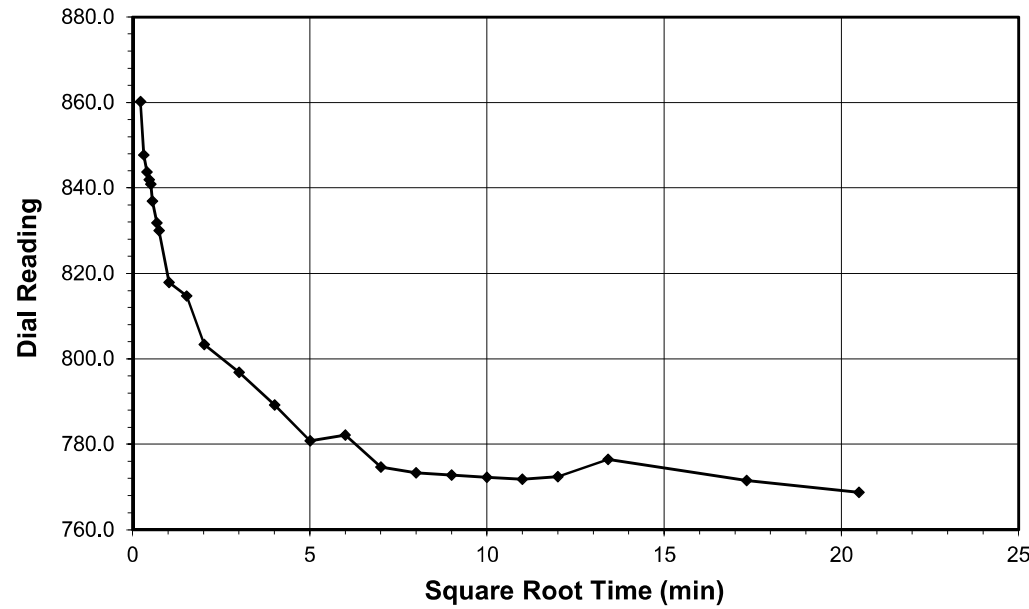
Elapsed Time (min)	Dial Reading (div)
Initial	589.3
0.05	682.0
0.10	697.3
0.15	706.5
0.20	713.1
0.25	716.7
0.30	717.7
0.45	722.9
0.55	725.9
1.05	745.1
2.30	774.3
4.05	796.6
9.05	827.3
16.07	848.1
25.07	864.9
36.07	876.9
49.07	884.2
64.07	887.0
81.07	890.0
100.07	893.4
121.07	896.0
144.07	898.4
180.07	902.9
300.07	912.2
520.07	919.8
720.20	923.9



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT_LN_EB1-A
 Client Project R-2561CA Depth (ft) 29.5-31.5
 Project No. R-2019-209-001 Sample No. ST-2
 Lab ID R-2019-209-001-010 Visual Description GRAY LEAN CLAY

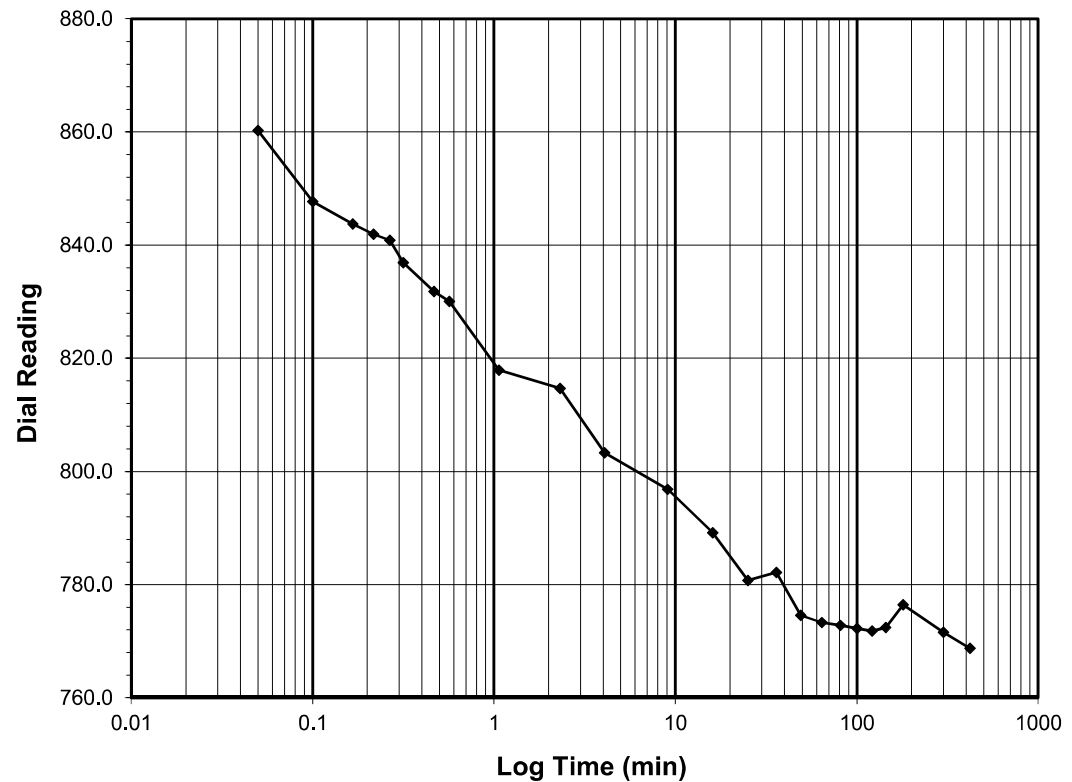
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 16.0-4.0
 Final Reading (div) 768.7
 Consolidometer No. R470
 1 Division (in) 0.0001

Start Date 7/24/2019
 Start Time 12:50:09

Elapsed Time (min)	Dial Reading (div)
Initial	923.9
0.05	860.2
0.10	847.7
0.17	843.7
0.22	841.9
0.27	840.8
0.32	836.9
0.47	831.8
0.57	830.0
1.07	817.9
2.32	814.7
4.07	803.3
9.07	796.8
16.07	789.2
25.07	780.8
36.07	782.1
49.08	774.6
64.08	773.3
81.08	772.8
100.08	772.2
121.08	771.8
144.08	772.4
180.08	776.5
300.08	771.5
420.03	768.7



Tested By 129-0411 Date 7/24/2019 Checked By GEM Date 7/29/2019

Tested By 129-0411 Date 7/24/2019 Checked By GEM Date 7/29/2019

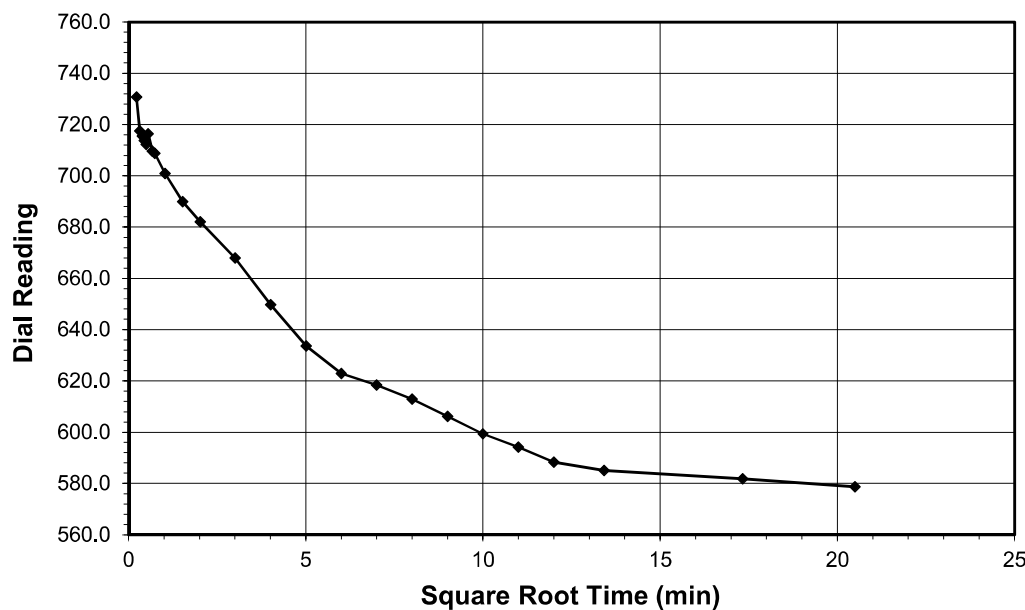


ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

Client Kleinfelder Boring No. S2_RT_LN_EB1-A
 Client Project R-2561CA Depth (ft) 29.5-31.5
 Project No. R-2019-209-001 Sample No. ST-2
 Lab ID R-2019-209-001-010 Visual Description GRAY LEAN CLAY

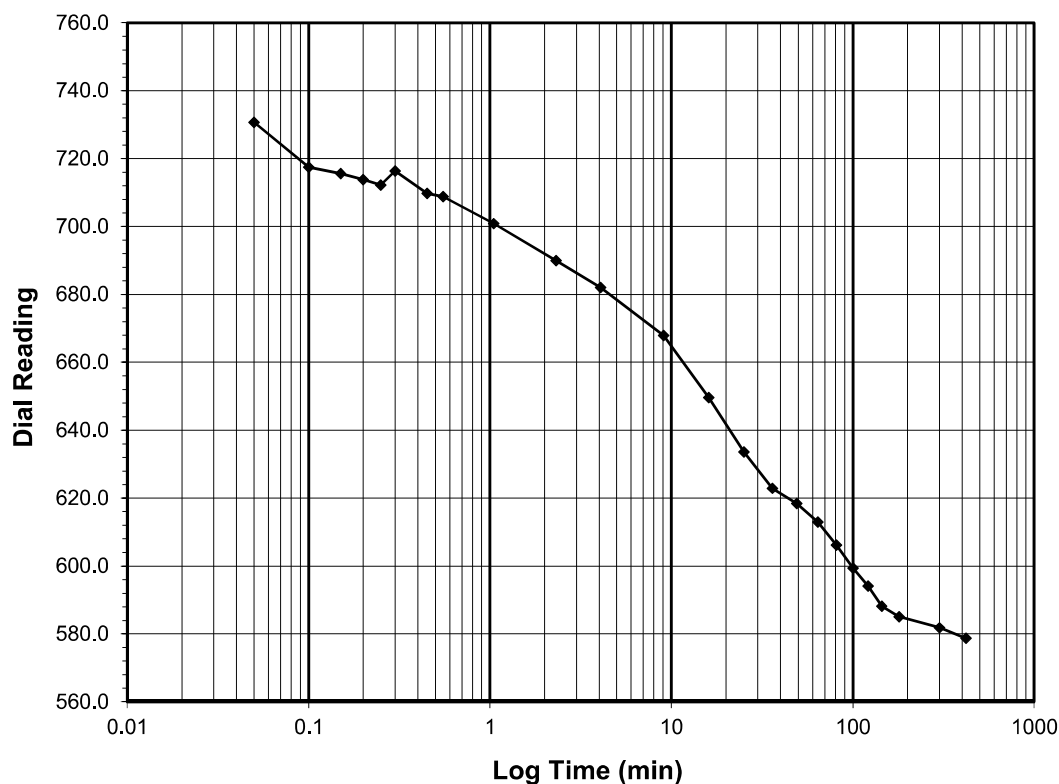
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 4.0-1.0
 Final Reading (div) 578.7
 Consolidometer No. R470
 1 Division (in) 0.0001

Start Date 7/24/2019
 Start Time 19:50:11

Elapsed Time (min)	Dial Reading (div)
Initial	768.7
0.05	730.7
0.10	717.5
0.15	715.6
0.20	713.8
0.25	712.3
0.30	716.4
0.45	709.7
0.55	708.9
1.05	700.9
2.32	689.9
4.07	682.0
9.07	667.9
16.07	649.6
25.07	633.6
36.07	622.9
49.07	618.4
64.07	612.9
81.07	606.2
100.07	599.4
121.07	594.1
144.07	588.2
180.07	585.1
300.07	581.8
420.05	578.7



Tested By 129-0411 Date 7/24/2019 Checked By GEM Date 7/29/2019

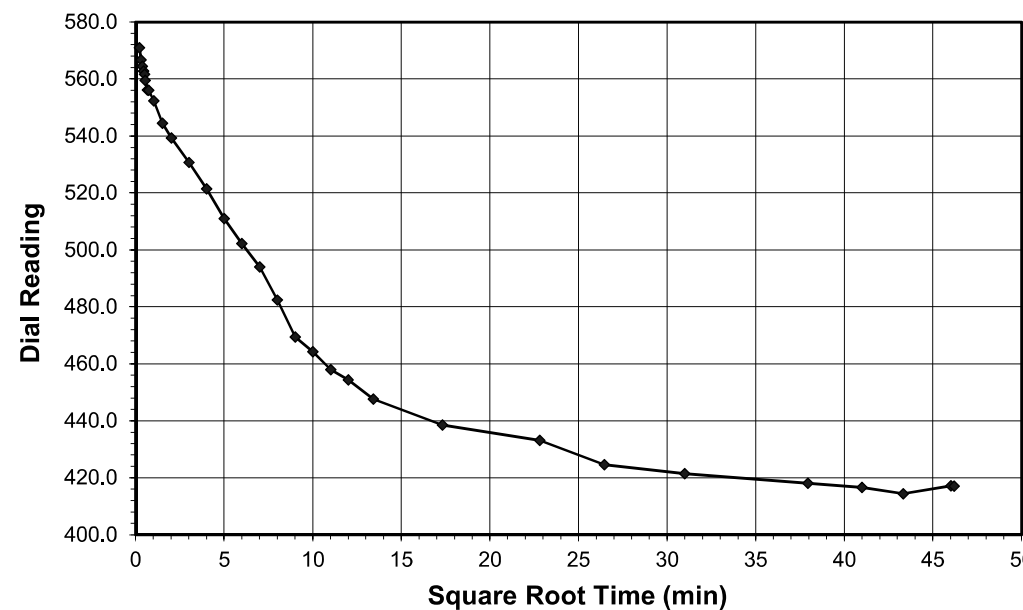


ONE DIMENSIONAL CONSOLIDATION

AASHTO T-216

Client Kleinfelder Boring No. S2_RT_LN_EB1-A
 Client Project R-2561CA Depth (ft) 29.5-31.5
 Project No. R-2019-209-001 Sample No. ST-2
 Lab ID R-2019-209-001-010 Visual Description GRAY LEAN CLAY

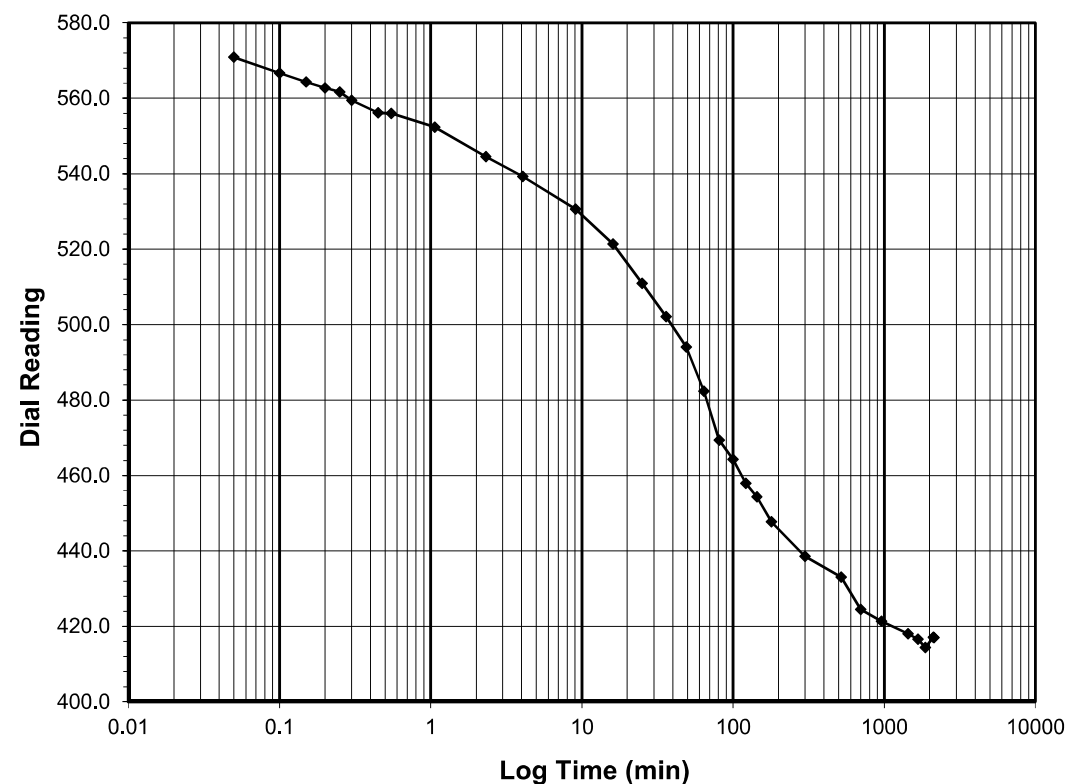
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 1.0-0.25
 Final Reading (div) 417.0
 Consolidometer No. R470
 1 Division (in) 0.0001

Start Date 7/25/2019
 Start Time 2:50:14

Elapsed Time (min)	Dial Reading (div)
Initial	578.7
0.05	570.9
0.10	566.7
0.15	564.4
0.20	562.8
0.25	561.6
0.30	559.4
0.45	556.1
0.55	556.0
1.07	552.3
2.32	544.5
4.07	539.3
9.07	530.7
16.07	521.3
25.07	510.9
36.07	502.2
49.07	494.1
64.07	482.3
81.07	469.4
100.07	464.3
121.07	457.9
144.07	454.3
180.07	447.7
300.07	438.6
520.08	433.1
700.08	424.5
960.08	421.4
1440.08	418.0
1680.08	416.6
1877.92	414.4
2117.92	417.1
2134.02	417.0



Tested By 129-0411 Date 7/25/2019 Checked By GEM Date 7/29/2019

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**

AASHTO T-297

Client: Kleinfelder Boring No.: S2_RT_LN_EB1-A
 Client Reference: R-2561CA Depth (ft): 29.5-31.5
 Project No.: R-2019-209-001 Sample No.: ST-2
 Lab ID: R-2019-209-001-010

Visual Description: Gray Clay (UNDISTURBED)

Stage No.	2
Test No.	1

INITIAL SAMPLE DIMENSIONS (in)			
Length 1:	6.379	Diameter 1:	2.859
Length 2:	6.458	Diameter 2:	2.875
Length 3:	6.444	Diameter 3:	2.862
Length 4:	6.395	Diameter 4:	2.858
Avg. Length:	6.419	Avg. Diam.:	2.864

PRESSURES (psi)	
Cell Pressure (psi)	55.0
Back Pressure (psi)	50.0
Eff. Conf. Pressure (psi)	5.0
Pore Pressure Response (%)	100

VOLUME CHANGE	
Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	13.5
Final Change (ml)	10.5

MAXIMUM OBLIQUITY POINTS	
\bar{P} =	7.09
\bar{Q} =	6.06

LOAD (LB)	DEFORMATION (IN)	PORE PRESSURE (PSI)
9.5	0.000	50.0
10.5	0.001	50.4
11.1	0.003	50.4
24.2	0.009	51.7
30.9	0.015	52.4
35.5	0.021	52.8
40.6	0.031	53.3
44.9	0.040	53.5
49.9	0.053	53.8
58.2	0.076	54.0
70.2	0.108	54.1
85.7	0.146	54.0
100.8	0.185	53.7
115.6	0.229	53.1
123.9	0.261	52.6
130.6	0.306	51.9
134.6	0.367	51.2
140.2	0.431	50.7
145.2	0.479	50.4
151.6	0.543	50.0
155.3	0.591	49.8
160.1	0.639	49.5
164.7	0.687	49.2
165.9	0.719	49.2
168.0	0.751	49.0
166.9	0.783	49.0
169.3	0.815	48.9
172.1	0.863	48.7
174.6	0.911	48.5
177.2	0.959	48.4
179.1	1.008	48.2

Tested By: 129-07-0411 Date: 8/2/19 Input Checked By: GEM Date: 8/12/19

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**

AASHTO T-297

Client: Kleinfelder Boring No.: S2_RT_LN_EB1-A
 Client Reference: R-2561CA Depth (ft): 29.5-31.5
 Project No.: R-2019-209-001 Sample No.: ST-2
 Lab ID: R-2019-209-001-010

Visual Description: Gray Clay (UNDISTURBED)

Effective Confining Pressure (psi)	5.0	Stage No.	2
		Test No.	1

INITIAL DIMENSIONS	
Initial Sample Length (in)	6.42
Initial Sample Diameter (in)	2.86
Initial Sample Area (in ²)	6.44
Initial Sample Volume (in ³)	41.34

VOLUME CHANGE	
Volume After Consolidation (in ³)	38.51
Length After Consolidation (in)	6.28
Area After Consolidation (in ²)	6.137

Strain (%)	Deviation Stress	ΔU	$\bar{\sigma}_1$	$\bar{\sigma}_3$	Effective Principle Stress Ratio	\bar{A}	\bar{P}	\bar{Q}
0.02	0.17	0.40	4.77	4.6	1.036	2.39	4.69	0.08
0.04	0.26	0.44	4.82	4.6	1.056	1.72	4.69	0.13
0.14	2.39	1.66	5.73	3.3	1.716	0.69	4.54	1.20
0.23	3.48	2.39	6.09	2.6	2.335	0.69	4.35	1.74
0.34	4.22	2.84	6.38	2.2	2.956	0.67	4.27	2.11
0.49	5.05	3.26	6.79	1.7	3.906	0.65	4.26	2.52
0.64	5.74	3.53	7.21	1.5	4.909	0.62	4.34	2.87
0.85	6.53	3.77	7.77	1.2	6.299	0.58	4.50	3.27
1.21	7.84	3.98	8.86	1.0	8.702	0.51	4.94	3.92
1.71	9.72	4.08	10.64	0.9	11.561	0.42	5.78	4.86
2.33	12.12	3.97	13.15	1.0	12.771	0.33	7.09	6.06
2.94	14.43	3.67	15.76	1.3	11.859	0.25	8.55	7.22
3.65	16.66	3.07	18.59	1.9	9.639	0.18	10.26	8.33
4.16	17.86	2.60	20.27	2.4	8.429	0.15	11.34	8.93
4.88	18.78	1.93	21.85	3.1	7.114	0.10	12.46	9.39
5.85	19.19	1.21	22.98	3.8	6.061	0.06	13.39	9.59
6.86	19.84	0.73	24.11	4.3	5.649	0.04	14.19	9.92
7.64	20.43	0.42	25.01	4.6	5.460	0.02	14.80	10.21
8.65	21.15	0.03	26.12	5.0	5.258	0.00	15.54	10.58
9.42	21.53	-0.23	26.75	5.2	5.120	-0.01	15.99	10.76
10.18	22.04	-0.52	27.56	5.5	4.993	-0.02	16.54	11.02
10.94	22.53	-0.76	28.28	5.8	4.914	-0.03	17.02	11.26
11.46	22.57	-0.83	28.40	5.8	4.870	-0.04	17.12	11.29
11.97	22.75	-0.95	28.70	6.0	4.822	-0.04	17.32	11.37
12.48	22.45	-1.03	28.48	6.0	4.721	-0.05	17.26	11.23
12.99	22.66	-1.14	28.80	6.1	4.688	-0.05	17.47	11.33
13.74	22.86	-1.29	29.15	6.3	4.636	-0.06	17.72	11.43
14.52	23.00	-1.46	29.45	6.5	4.560	-0.06	17.96	11.50
15.29	23.15	-1.61	29.76	6.6	4.502	-0.07	18.19	11.58
16.05	23.21	-1.75	29.96	6.8	4.436	-0.08	18.36	11.60

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
AASHTO T-297**

Client: Kleinfelder Boring No.: S2_RT_LN_EB1-A
 Client Reference: R-2561CA Depth (ft): 29.5-31.5
 Project No.: R-2019-209-001 Sample No.: ST-2
 Lab ID: R-2019-209-001-010

Visual Description: Gray Clay (UNDISTURBED)

Stage No.	3
Test No.	2

INITIAL SAMPLE DIMENSIONS (in)			
Length 1:	6.253	Diameter 1:	2.867
Length 2:	6.224	Diameter 2:	2.868
Length 3:	6.243	Diameter 3:	2.863
Length 4:	6.293	Diameter 4:	2.864
Avg. Length:	6.253	Avg. Diam.:	2.866

PRESSURES (psi)	
Cell Pressure (psi)	60.0
Back Pressure (psi)	50.0
Eff. Conf. Pressure (psi)	10.1
Pore Pressure Response (%)	98

VOLUME CHANGE	
Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	7.3
Final Change (ml)	16.7

MAXIMUM OBLIQUITY POINTS	
\bar{P} =	13.03
Q =	8.80

Initial Dial Reading (mil)	512
Dial Reading After Saturation (mil)	572
Dial Reading After Consolidation (mil)	645

LOAD (LB)	DEFORMATION (IN)	PORE PRESSURE (PSI)
11.7	0.000	50.0
14.0	0.001	49.9
17.0	0.004	50.0
37.2	0.009	51.3
46.4	0.016	52.3
55.0	0.022	53.1
64.4	0.031	53.8
66.4	0.041	54.3
75.7	0.053	54.8
84.7	0.076	55.4
96.9	0.107	55.8
109.3	0.145	56.0
117.4	0.182	55.9
125.6	0.225	55.8
129.6	0.257	55.6
138.2	0.301	55.3
144.8	0.361	54.7
145.5	0.423	54.2
150.7	0.470	53.8
155.4	0.534	53.5
161.2	0.582	53.3
162.2	0.629	53.1
164.3	0.675	52.7
167.9	0.707	52.7
169.5	0.739	52.5
173.2	0.770	52.3
172.8	0.802	52.2
171.9	0.849	52.1
178.1	0.897	51.9
183.5	0.928	51.9
181.7	0.959	51.7

Tested By: 129-07-0411 Date: 8/2/19 Input Checked By: GEM Date: 8/12/19
 page 5 of 11 DCN: CT-S28 DATE: 4/12/13 REVISION: 3

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
AASHTO T-297**

Client: Kleinfelder Boring No.: S2_RT_LN_EB1-A
 Client Reference: R-2561CA Depth (ft): 29.5-31.5
 Project No.: R-2019-209-001 Sample No.: ST-2
 Lab ID: R-2019-209-001-010

Visual Description: Gray Clay (UNDISTURBED)

Effective Confining Pressure (psi)	10.1	Stage No.	3
		Test No.	2

INITIAL DIMENSIONS	
Initial Sample Length (in)	6.25
Initial Sample Diameter (in)	2.87
Initial Sample Area (in ²)	6.45
Initial Sample Volume (in ³)	40.33

VOLUME CHANGE	
Volume After Consolidation (in ³)	38.15
Length After Consolidation (in)	6.12
Area After Consolidation (in ²)	6.233

Strain (%)	Deviation Stress	ΔU	$\bar{\sigma}_1$	$\bar{\sigma}_3$	Effective Principle Stress Ratio	\bar{A}	\bar{P}	Q
------------	------------------	------------	------------------	------------------	----------------------------------	-----------	-----------	---

0.02	0.36	-0.03	10.45	10.1	1.036	-0.08	10.27	0.18
0.06	0.85	0.03	10.88	10.0	1.084	0.03	10.45	0.42
0.15	4.09	1.31	12.84	8.7	1.468	0.33	10.80	2.05
0.25	5.55	2.39	13.21	7.7	1.724	0.44	10.44	2.77
0.35	6.92	3.15	13.83	6.9	2.001	0.46	10.37	3.46
0.51	8.41	3.84	14.62	6.2	2.352	0.47	10.42	4.20
0.67	8.72	4.34	14.44	5.7	2.526	0.51	10.08	4.36
0.87	10.18	4.80	15.43	5.3	2.936	0.48	10.34	5.09
1.23	11.57	5.40	16.23	4.7	3.482	0.48	10.44	5.78
1.75	13.43	5.83	17.66	4.2	4.179	0.44	10.94	6.72
2.36	15.29	6.06	19.29	4.0	4.826	0.40	11.64	7.65
2.97	16.46	5.93	20.59	4.1	4.986	0.37	12.36	8.23
3.68	17.60	5.82	21.83	4.2	5.156	0.34	13.03	8.80
4.20	18.11	5.66	22.51	4.4	5.124	0.32	13.45	9.06
4.92	19.29	5.30	24.05	4.8	5.055	0.28	14.40	9.64
5.91	20.09	4.76	25.39	5.3	4.795	0.24	15.34	10.05
6.92	19.99	4.27	25.78	5.8	4.451	0.22	15.78	9.99
7.69	20.59	3.85	26.80	6.2	4.315	0.19	16.51	10.29
8.73	21.05	3.57	27.53	6.5	4.244	0.17	17.01	10.52
9.50	21.70	3.39	28.37	6.7	4.254	0.16	17.52	10.85
10.27	21.66	3.11	28.61	6.9	4.120	0.15	17.78	10.83
11.03	21.78	2.77	29.07	7.3	3.987	0.13	18.18	10.89
11.55	22.16	2.77	29.45	7.3	4.039	0.13	18.37	11.08
12.07	22.26	2.57	29.75	7.5	3.975	0.12	18.61	11.13
12.58	22.65	2.36	30.35	7.7	3.945	0.11	19.02	11.33
13.11	22.46	2.27	30.25	7.8	3.883	0.10	19.02	11.23
13.88	22.13	2.10	30.09	8.0	3.780	0.10	19.03	11.07
14.65	22.78	1.90	30.94	8.2	3.793	0.09	19.55	11.39
15.17	23.38	1.92	31.52	8.1	3.875	0.08	19.83	11.69
15.68	23.00	1.80	31.26	8.3	3.783	0.08	19.76	11.50

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
AASHTO T-297**

Client: Kleinfelder Boring No.: S2_RT_LN_EB1-A
 Client Reference: R-2561CA Depth (ft): 29.5-31.5
 Project No.: R-2019-209-001 Sample No.: ST-2
 Lab ID: R-2019-209-001-010

Visual Description: Gray Clay (UNDISTURBED)

Stage No.	1
Test No.	3

INITIAL SAMPLE DIMENSIONS (in)			
Length 1:	6.004	Diameter 1:	2.850
Length 2:	5.980	Diameter 2:	2.871
Length 3:	6.009	Diameter 3:	2.887
Length 4:	6.017	Diameter 4:	2.862
Avg. Length:	6.003	Avg. Diam.:	2.868

PRESSURES (psi)	
Cell Pressure (psi)	70.0
Back Pressure (psi)	50.0
Eff. Conf. Pressure (psi)	20.0
Pore Pressure Response (%)	98

VOLUME CHANGE	
Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	6.2
Final Change (ml)	17.8

MAXIMUM OBLIQUITY POINTS	
\bar{P} =	35.56
Q =	28.29

Initial Dial Reading (mil)	172
Dial Reading After Saturation (mil)	211
Dial Reading After Consolidation (mil)	278

LOAD (LB)	DEFORMATION (IN)	PORE PRESSURE (PSI)
11.5	0.000	50.0
16.2	0.001	50.1
27.9	0.003	50.2
66.6	0.008	53.2
86.7	0.014	55.1
102.2	0.020	56.6
121.1	0.029	58.2
137.7	0.037	59.4
157.8	0.049	60.6
193.0	0.070	61.9
249.5	0.099	63.0
315.9	0.135	63.3
376.4	0.171	62.8
436.0	0.211	61.0
460.4	0.241	58.4
370.9	0.284	53.7
374.3	0.341	53.1
388.3	0.400	52.9
398.4	0.445	52.7
411.9	0.506	52.3
423.8	0.551	52.2
430.9	0.596	52.0
407.0	0.641	51.9
409.6	0.670	51.8
412.8	0.701	51.6
418.6	0.731	51.6
427.4	0.761	51.5
434.7	0.806	51.2
448.2	0.850	50.9
453.8	0.881	50.7
455.6	0.910	50.4

Tested By: 129-07-0411 Date: 8/2/2019 Input Checked By: GEM Date: 8/12/2019
 page 7 of 11 DCN: CT-S28 DATE: 4/12/13 REVISION: 3

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
AASHTO T-297**

Client: Kleinfelder Boring No.: S2_RT_LN_EB1-A
 Client Reference: R-2561CA Depth (ft): 29.5-31.5
 Project No.: R-2019-209-001 Sample No.: ST-2
 Lab ID: R-2019-209-001-010

Visual Description: Gray Clay (UNDISTURBED)

Effective Confining Pressure (psi)	20.0	Stage No.	1
		Test No.	3

INITIAL DIMENSIONS	
Initial Sample Length (in)	6.00
Initial Sample Diameter (in)	2.87
Initial Sample Area (in ²)	6.46
Initial Sample Volume (in ³)	38.76

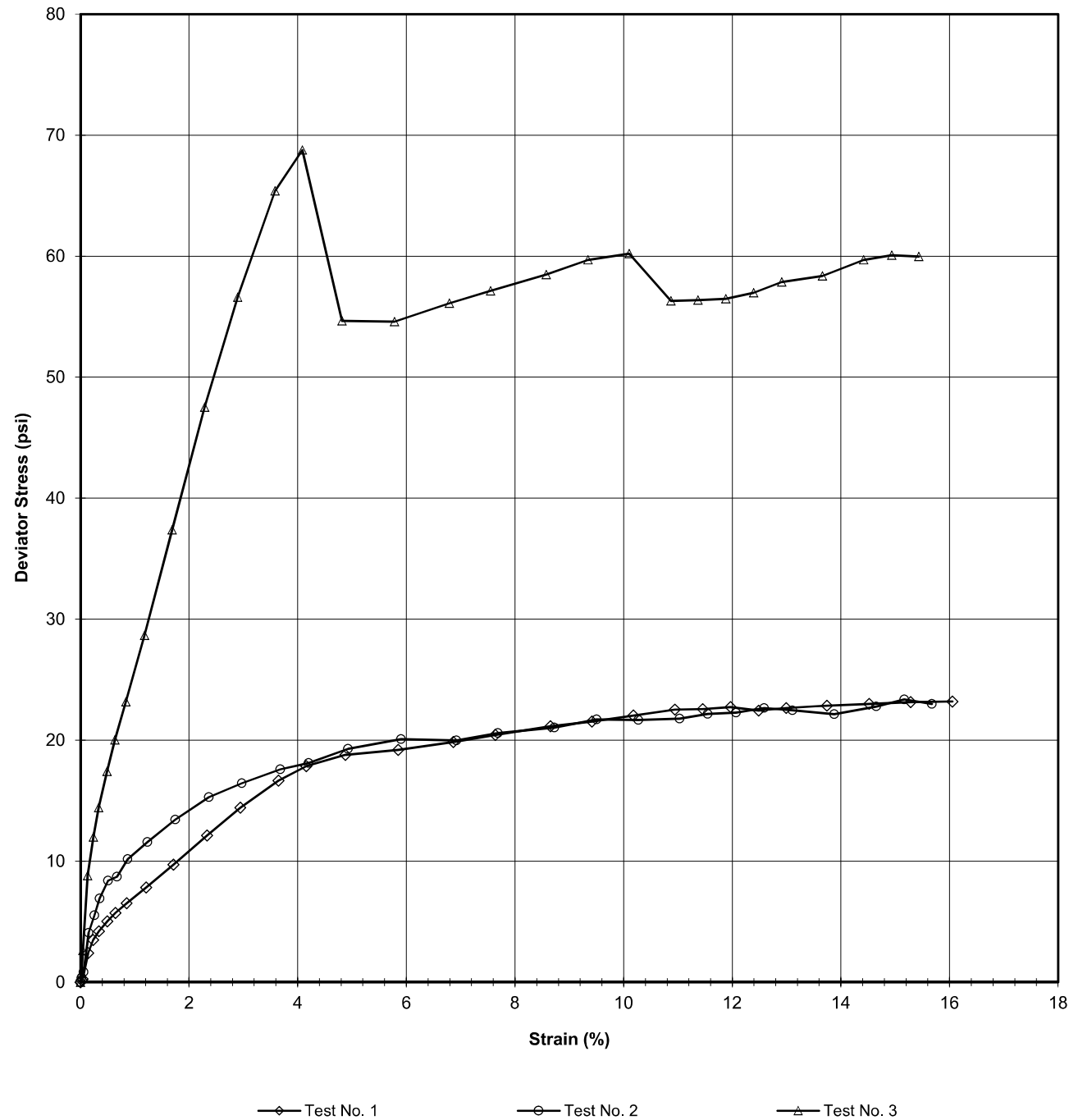
VOLUME CHANGE	
Volume After Consolidation (in ³)	36.92
Length After Consolidation (in)	5.90
Area After Consolidation (in ²)	6.262

Strain (%)	Deviation Stress	ΔU	$\bar{\sigma}_1$	$\bar{\sigma}_3$	Effective Principle Stress Ratio	\bar{A}	\bar{P}	Q
------------	------------------	------------	------------------	------------------	----------------------------------	-----------	-----------	---

0.02	0.76	0.13	20.68	19.9	1.038	0.17	20.30	0.38
0.04	2.62	0.22	22.45	19.8	1.132	0.08	21.14	1.31
0.13	8.80	3.21	25.64	16.8	1.522	0.37	21.24	4.40
0.24	11.98	5.17	26.86	14.9	1.806	0.44	20.86	5.99
0.33	14.44	6.64	27.85	13.4	2.077	0.47	20.63	7.22
0.49	17.42	8.22	29.24	11.8	2.473	0.48	20.53	8.71
0.63	20.03	9.42	30.65	10.6	2.885	0.48	20.64	10.01
0.83	23.17	10.60	32.62	9.4	3.452	0.47	21.04	11.59
1.18	28.65	11.97	36.73	8.1	4.546	0.43	22.40	14.32
1.69	37.38	13.01	44.42	7.0	6.310	0.36	25.73	18.69
2.29	47.51	13.31	54.24	6.7	8.054	0.29	30.49	23.75
2.89	56.59	12.78	63.86	7.3	8.786	0.23	35.56	28.29
3.59	65.38	11.02	74.41	9.0	8.239	0.17	41.72	32.69
4.09	68.77	8.42	80.39	11.6	6.917	0.13	46.01	34.39
4.81	54.64	3.71	70.98	16.3	4.344	0.07	43.66	27.32
5.78	54.59	3.15	71.49	16.9	4.231	0.06	44.19	27.30
6.79	56.10	2.88	73.26	17.2	4.269	0.05	45.21	28.05
7.55	57.13	2.73	74.45	17.3	4.299	0.05	45.88	28.56
8.58	58.46	2.37	76.14	17.7	4.308	0.04	46.91	29.23
9.34	59.69	2.21	77.53	17.8	4.347	0.04	47.69	29.85
10.10	60.22	2.06	78.20	18.0	4.348	0.03	48.09	30.11
10.87	56.30	1.91	74.43	18.1	4.105	0.03	46.28	28.15
11.37	56.36	1.79	74.62	18.3	4.087	0.03	46.44	28.18
11.88	56.48	1.67	74.86	18.4	4.073	0.03	46.62	28.24
12.39	56.96	1.60	75.40	18.4	4.089	0.03	46.92	28.48
12.91	57.85	1.49	76.41	18.6	4.117	0.03	47.49	28.93
13.66	58.36	1.24	77.16	18.8	4.103	0.02	47.98	29.18
14.42	59.69	0.95	78.78	19.1	4.126	0.02	48.94	29.84
14.94	60.09	0.70	79.43	19.3	4.106	0.01	49.39	30.04
15.44	59.98	0.39	79.63	19.7	4.052	0.01	49.64	29.99

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
AASHTO T-297**

Client: Kleinfelder Boring No.: S2_RT_LN_EB1-A
 Client Reference: R-2561CA Depth (ft): 29.5-31.5
 Project No.: R-2019-209-001 Sample No.: ST-2
 Lab ID: R-2019-209-001-010
 Visual Description: Gray Clay (UNDISTURBED)

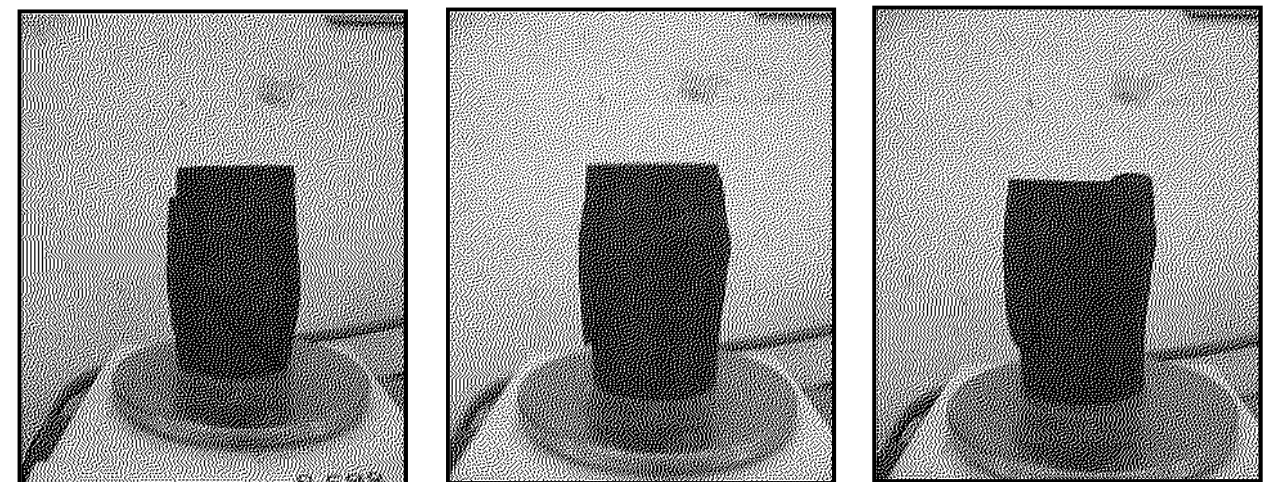


**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
AASHTO T-297**

Client: Kleinfelder
 Client Reference: R-2561CA
 Project No.: R-2019-209-001
 Lab ID: R-2019-209-001-010 Specific Gravity (Measured) 2.68
 Visual Description: Gray Clay (UNDISTURBED)

SAMPLE CONDITION SUMMARY

	S2_RT_LN_EB1-A	S2_RT_LN_EB1-A	S2_RT_LN_EB1-A
Boring No.:	S2_RT_LN_EB1-A	S2_RT_LN_EB1-A	S2_RT_LN_EB1-A
Depth (ft):	29.5-31.5	29.5-31.5	29.5-31.5
Sample No.:	ST- 2	ST-2	ST-2
Test No.	T1	T2	T3
Deformation Rate (in/min)	0.0011	0.0011	0.0011
Back Pressure (psi)	50.0	50.0	50.0
Consolidation Time (days)	1	1	1
Moisture Content (%) (INITIAL)	37.4	31.9	27.4
Total Unit Weight (pcf)	114.1	114.8	120.5
Dry Unit Weight (pcf)	83.0	87.1	94.6
Moisture Content (%) (FINAL)	32.3	33.5	27.9
Initial State Void Ratio, e	1.015	0.921	0.769
Void Ratio at Shear, e	0.877	0.817	0.685



Tested By: 129-07-0411 Date: 8/2/2019 Approved By: MPS Date: 8/12/2019

Tested By: 129-07-0411 Date: 8/2/19 Input Checked By: GEM Date: 8/12/19



**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
AASHTO T-297**

**MOHR TOTAL STRENGTH ENVELOPE
AASHTO T-297**

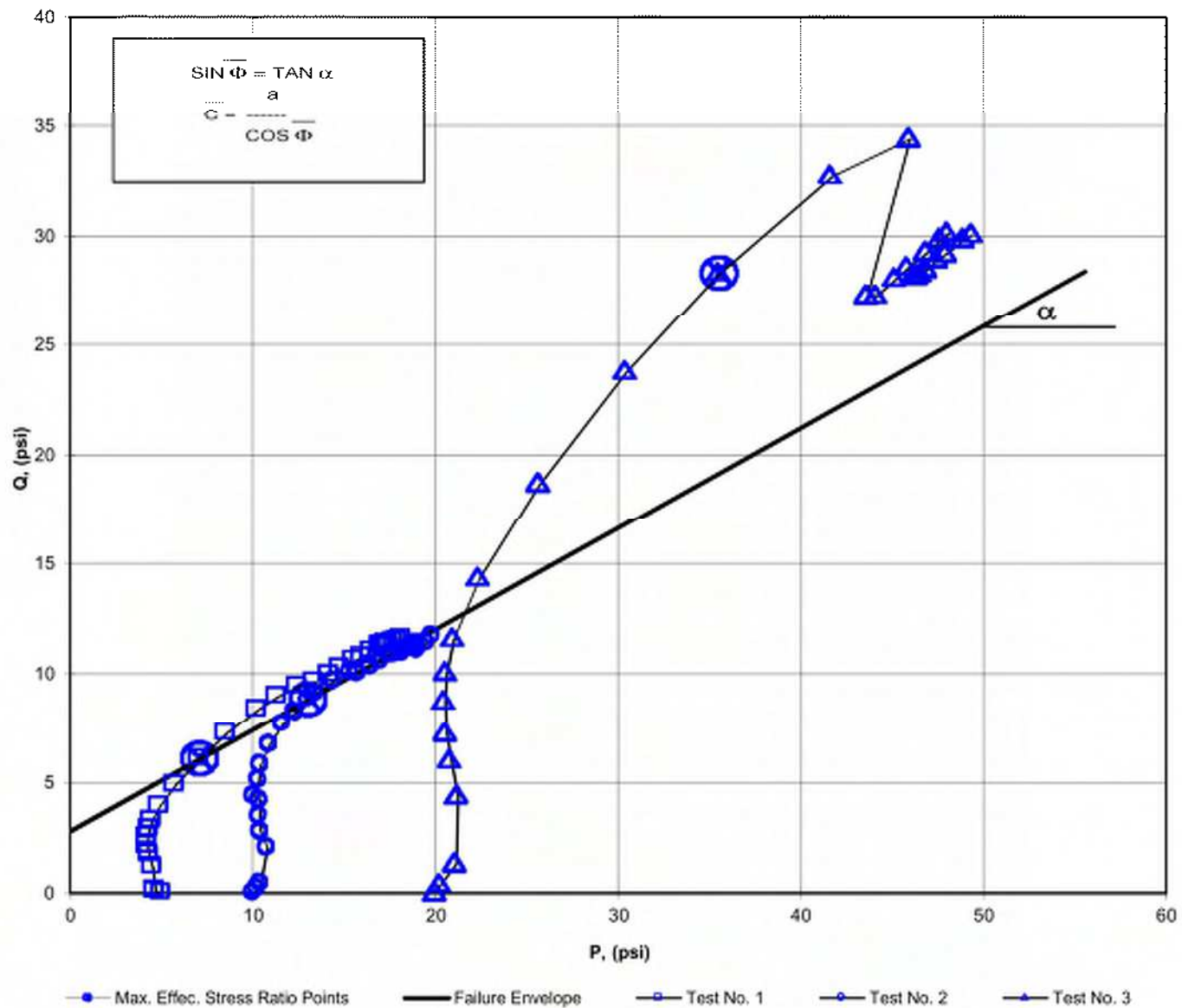
Client: Kleinfelder
 Client Reference: R-2561CA
 Project No.: R-2019-209-001
 Lab ID: R-2019-209-001-010

Boring No.: S2_RT_LN_EB1-A
 Depth (ft): 29.5-31.5
 Sample No.: ST-2

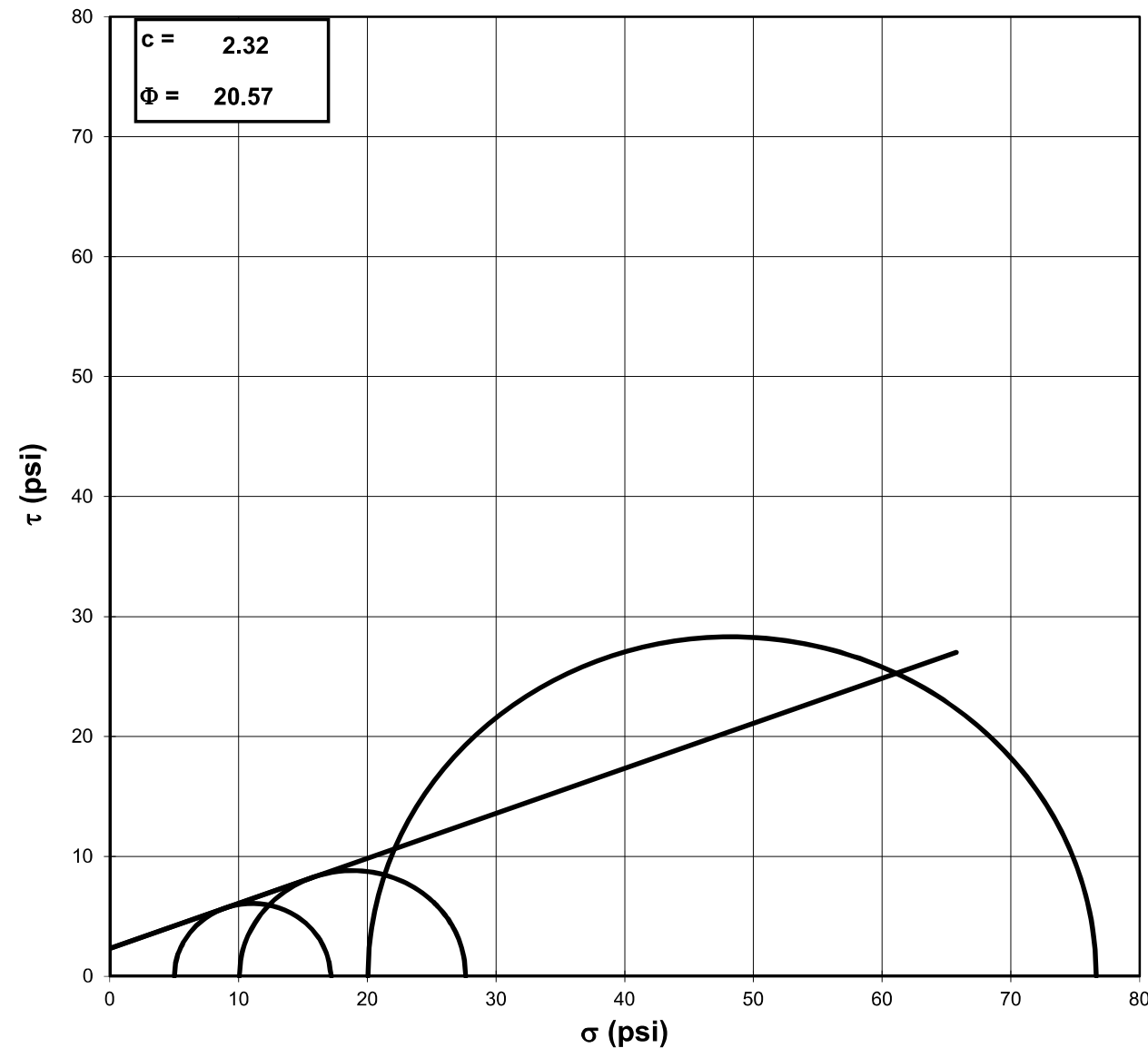
Client: Kleinfelder
 Client Reference: R-2561CA
 Project No.: R-2019-209-001
 Lab ID: R-2019-209-001-010
 Visual Description: Gray Clay (UNDISTURBED)

Boring No.: S2_RT_LN_EB1-A
 Depth (ft): 29.5-31.5
 Sample No.: ST-2

Consolidated Undrained Triaxial Test with Pore Pressure



a	=	2.79	C	=	3.15
α	=	24.7	Φ	=	27.44



Failure Based on Maximum Effective Principal Stress Ratio

NOTE: GRAPH NOT TO SCALE

Tested By: 129-07-0411 Date: 8/2/19 Approved By: MPS Date: 8/12/19

Tested By: 129-07-0411 Date: 8/2/19 Approved By: MPS Date: 8/12/19



**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
AASHTO T-297

Client: Kleinfelder Boring No.: S2_RT_LN_EB1-A
 Client Reference: R-2561CA Depth (ft): 29.5-31.5
 Project No.: R-2019-209-001 Sample No.: ST-2
 Lab ID: R-2019-209-001-010

Visual Description: Gray Clay (UNDISTURBED)

Stage No.	2
Test No.	1

INITIAL SAMPLE DIMENSIONS (in)			
Length 1:	6.379	Diameter 1:	2.859
Length 2:	6.458	Diameter 2:	2.875
Length 3:	6.444	Diameter 3:	2.862
Length 4:	6.395	Diameter 4:	2.858
Avg. Length:	6.419	Avg. Diam.:	2.864

PRESSURES (psi)	
Cell Pressure (psi)	55.0
Back Pressure (psi)	50.0
Eff. Conf. Pressure (psi)	5.0
Pore Pressure Response (%)	100

VOLUME CHANGE	
Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	13.5
Final Change (ml)	10.5

MAXIMUM OBLIQUITY POINTS	
\bar{P} =	7.09
\bar{Q} =	6.06

LOAD (LB)	DEFORMATION (IN)	PORE PRESSURE (PSI)
9.5	0.000	50.0
10.5	0.001	50.4
11.1	0.003	50.4
24.2	0.009	51.7
30.9	0.015	52.4
35.5	0.021	52.8
40.6	0.031	53.3
44.9	0.040	53.5
49.9	0.053	53.8
58.2	0.076	54.0
70.2	0.108	54.1
85.7	0.146	54.0
100.8	0.185	53.7
115.6	0.229	53.1
123.9	0.261	52.6
130.6	0.306	51.9
134.6	0.367	51.2
140.2	0.431	50.7
145.2	0.479	50.4
151.6	0.543	50.0
155.3	0.591	49.8
160.1	0.639	49.5
164.7	0.687	49.2
165.9	0.719	49.2
168.0	0.751	49.0
166.9	0.783	49.0
169.3	0.815	48.9
172.1	0.863	48.7
174.6	0.911	48.5
177.2	0.959	48.4
179.1	1.008	48.2

Tested By: 129-07-0411 Date: 8/2/19 Input Checked By: GEM Date: 8/12/19
 page 3 of 11 DCN: CT-S28 DATE: 4/12/13 REVISION: 3 Sigmatrax.xls



**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
AASHTO T-297

Client: Kleinfelder Boring No.: S2_RT_LN_EB1-A
 Client Reference: R-2561CA Depth (ft): 29.5-31.5
 Project No.: R-2019-209-001 Sample No.: ST-2
 Lab ID: R-2019-209-001-010

Visual Description: Gray Clay (UNDISTURBED)

Effective Confining Pressure (psi)	5.0	Stage No.	2
		Test No.	1

INITIAL DIMENSIONS	
Initial Sample Length (in)	6.42
Initial Sample Diameter (in)	2.86
Initial Sample Area (in ²)	6.44
Initial Sample Volume (in ³)	41.34

VOLUME CHANGE	
Volume After Consolidation (in ³)	38.51
Length After Consolidation (in)	6.28
Area After Consolidation (in ²)	6.137

Strain (%)	Deviation Stress	ΔU	$\bar{\sigma}_1$	$\bar{\sigma}_3$	Effective Principle Stress Ratio	\bar{A}	\bar{P}	\bar{Q}
0.02	0.17	0.40	4.77	4.6	1.036	2.39	4.69	0.08
0.04	0.26	0.44	4.82	4.6	1.056	1.72	4.69	0.13
0.14	2.39	1.66	5.73	3.3	1.716	0.69	4.54	1.20
0.23	3.48	2.39	6.09	2.6	2.335	0.69	4.35	1.74
0.34	4.22	2.84	6.38	2.2	2.956	0.67	4.27	2.11
0.49	5.05	3.26	6.79	1.7	3.906	0.65	4.26	2.52
0.64	5.74	3.53	7.21	1.5	4.909	0.62	4.34	2.87
0.85	6.53	3.77	7.77	1.2	6.299	0.58	4.50	3.27
1.21	7.84	3.98	8.86	1.0	8.702	0.51	4.94	3.92
1.71	9.72	4.08	10.64	0.9	11.561	0.42	5.78	4.86
2.33	12.12	3.97	13.15	1.0	12.771	0.33	7.09	6.06
2.94	14.43	3.67	15.76	1.3	11.859	0.25	8.55	7.22
3.65	16.66	3.07	18.59	1.9	9.639	0.18	10.26	8.33
4.16	17.86	2.60	20.27	2.4	8.429	0.15	11.34	8.93
4.88	18.78	1.93	21.85	3.1	7.114	0.10	12.46	9.39
5.85	19.19	1.21	22.98	3.8	6.061	0.06	13.39	9.59
6.86	19.84	0.73	24.11	4.3	5.649	0.04	14.19	9.92
7.64	20.43	0.42	25.01	4.6	5.460	0.02	14.80	10.21
8.65	21.15	0.03	26.12	5.0	5.258	0.00	15.54	10.58
9.42	21.53	-0.23	26.75	5.2	5.120	-0.01	15.99	10.76
10.18	22.04	-0.52	27.56	5.5	4.993	-0.02	16.54	11.02
10.94	22.53	-0.76	28.28	5.8	4.914	-0.03	17.02	11.26
11.46	22.57	-0.83	28.40	5.8	4.870	-0.04	17.12	11.29
11.97	22.75	-0.95	28.70	6.0	4.822	-0.04	17.32	11.37
12.48	22.45	-1.03	28.48	6.0	4.721	-0.05	17.26	11.23
12.99	22.66	-1.14	28.80	6.1	4.688	-0.05	17.47	11.33
13.74	22.86	-1.29	29.15	6.3	4.636	-0.06	17.72	11.43
14.52	23.00	-1.46	29.45	6.5	4.560	-0.06	17.96	11.50
15.29	23.15	-1.61	29.76	6.6	4.502	-0.07	18.19	11.58
16.05	23.21	-1.75	29.96	6.8	4.436	-0.08	18.36	11.60

page 4 of 11

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
AASHTO T-297



Client: Kleinfelder Boring No.: S2_RT_LN_EB1-A
 Client Reference: R-2561CA Depth (ft): 29.5-31.5
 Project No.: R-2019-209-001 Sample No.: ST-2
 Lab ID: R-2019-209-001-010

Visual Description: Gray Clay (UNDISTURBED)

Stage No.	3
Test No.	2

INITIAL SAMPLE DIMENSIONS (in)

Length 1:	6.253	Diameter 1:	2.867
Length 2:	6.224	Diameter 2:	2.868
Length 3:	6.243	Diameter 3:	2.863
Length 4:	6.293	Diameter 4:	2.864
Avg. Length:	6.253	Avg. Diam.:	2.866

PRESSURES (psi)

Cell Pressure (psi)	60.0
Back Pressure (psi)	50.0
Eff. Conf. Pressure (psi)	10.1
Pore Pressure Response (%)	98

VOLUME CHANGE

Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	7.3
Final Change (ml)	16.7

MAXIMUM OBLIQUITY POINTS

\bar{P}	=	13.03
Q	=	8.80

Initial Dial Reading (mil)	512
Dial Reading After Saturation (mil)	572
Dial Reading After Consolidation (mil)	645

LOAD (LB)	DEFORMATION (IN)	PORE PRESSURE (PSI)
11.7	0.000	50.0
14.0	0.001	49.9
17.0	0.004	50.0
37.2	0.009	51.3
46.4	0.016	52.3
55.0	0.022	53.1
64.4	0.031	53.8
66.4	0.041	54.3
75.7	0.053	54.8
84.7	0.076	55.4
96.9	0.107	55.8
109.3	0.145	56.0
117.4	0.182	55.9
125.6	0.225	55.8
129.6	0.257	55.6
138.2	0.301	55.3
144.8	0.361	54.7
145.5	0.423	54.2
150.7	0.470	53.8
155.4	0.534	53.5
161.2	0.582	53.3
162.2	0.629	53.1
164.3	0.675	52.7
167.9	0.707	52.7
169.5	0.739	52.5
173.2	0.770	52.3
172.8	0.802	52.2
171.9	0.849	52.1
178.1	0.897	51.9
183.5	0.928	51.9
181.7	0.959	51.7

Tested By: 129-07-0411 Date: 8/2/19 Input Checked By: GEM Date: 8/12/19

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
AASHTO T-297



Client: Kleinfelder Boring No.: S2_RT_LN_EB1-A
 Client Reference: R-2561CA Depth (ft): 29.5-31.5
 Project No.: R-2019-209-001 Sample No.: ST-2
 Lab ID: R-2019-209-001-010

Visual Description: Gray Clay (UNDISTURBED)

Effective Confining Pressure (psi)	10.1	Stage No.	3
		Test No.	2

INITIAL DIMENSIONS

Initial Sample Length (in)	6.25
Initial Sample Diameter (in)	2.87
Initial Sample Area (in ²)	6.45
Initial Sample Volume (in ³)	40.33

VOLUME CHANGE

Volume After Consolidation (in ³)	38.15
Length After Consolidation (in)	6.12
Area After Consolidation (in ²)	6.233

Strain (%)	Deviation Stress	ΔU	$\bar{\sigma}_1$	$\bar{\sigma}_3$	Effective Principle Stress Ratio	\bar{A}	\bar{P}	Q
------------	------------------	------------	------------------	------------------	----------------------------------	-----------	-----------	---

0.02	0.36	-0.03	10.45	10.1	1.036	-0.08	10.27	0.18
0.06	0.85	0.03	10.88	10.0	1.084	0.03	10.45	0.42
0.15	4.09	1.31	12.84	8.7	1.468	0.33	10.80	2.05
0.25	5.55	2.39	13.21	7.7	1.724	0.44	10.44	2.77
0.35	6.92	3.15	13.83	6.9	2.001	0.46	10.37	3.46
0.51	8.41	3.84	14.62	6.2	2.352	0.47	10.42	4.20
0.67	8.72	4.34	14.44	5.7	2.526	0.51	10.08	4.36
0.87	10.18	4.80	15.43	5.3	2.936	0.48	10.34	5.09
1.23	11.57	5.40	16.23	4.7	3.482	0.48	10.44	5.78
1.75	13.43	5.83	17.66	4.2	4.179	0.44	10.94	6.72
2.36	15.29	6.06	19.29	4.0	4.826	0.40	11.64	7.65
2.97	16.46	5.93	20.59	4.1	4.986	0.37	12.36	8.23
3.68	17.60	5.82	21.83	4.2	5.156	0.34	13.03	8.80
4.20	18.11	5.66	22.51	4.4	5.124	0.32	13.45	9.06
4.92	19.29	5.30	24.05	4.8	5.055	0.28	14.40	9.64
5.91	20.09	4.76	25.39	5.3	4.795	0.24	15.34	10.05
6.92	19.99	4.27	25.78	5.8	4.451	0.22	15.78	9.99
7.69	20.59	3.85	26.80	6.2	4.315	0.19	16.51	10.29
8.73	21.05	3.57	27.53	6.5	4.244	0.17	17.01	10.52
9.50	21.70	3.39	28.37	6.7	4.254	0.16	17.52	10.85
10.27	21.66	3.11	28.61	6.9	4.120	0.15	17.78	10.83
11.03	21.78	2.77	29.07	7.3	3.987	0.13	18.18	10.89
11.55	22.16	2.77	29.45	7.3	4.039	0.13	18.37	11.08
12.07	22.26	2.57	29.75	7.5	3.975	0.12	18.61	11.13
12.58	22.65	2.36	30.35	7.7	3.945	0.11	19.02	11.33
13.11	22.46	2.27	30.25	7.8	3.883	0.10	19.02	11.23
13.88	22.13	2.10	30.09	8.0	3.780	0.10	19.03	11.07
14.65	22.78	1.90	30.94	8.2	3.793	0.09	19.55	11.39
15.17	23.38	1.92	31.52	8.1	3.875	0.08	19.83	11.69
15.68	23.00	1.80	31.26	8.3	3.783	0.08	19.76	11.50

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
AASHTO T-297**



Client: Kleinfelder Boring No.: S2_RT_LN_EB1-A
 Client Reference: R-2561CA Depth (ft): 29.5-31.5
 Project No.: R-2019-209-001 Sample No.: ST-2
 Lab ID: R-2019-209-001-010

Visual Description: Gray Clay (UNDISTURBED)

Stage No.	1
Test No.	3

INITIAL SAMPLE DIMENSIONS (in)

Length 1:	6.004	Diameter 1:	2.850
Length 2:	5.980	Diameter 2:	2.871
Length 3:	6.009	Diameter 3:	2.887
Length 4:	6.017	Diameter 4:	2.862
Avg. Length:	6.003	Avg. Diam.:	2.868

PRESSURES (psi)

Cell Pressure (psi)	70.0
Back Pressure (psi)	50.0
Eff. Conf. Pressure (psi)	20.0
Pore Pressure Response (%)	98

VOLUME CHANGE

Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	6.2
Final Change (ml)	17.8

MAXIMUM OBLIQUITY POINTS

\bar{P}	=	35.56	Initial Dial Reading (mil)	172
Q	=	28.29	Dial Reading After Saturation (mil)	211
			Dial Reading After Consolidation (mil)	278

LOAD (LB)	DEFORMATION (IN)	PORE PRESSURE (PSI)
11.5	0.000	50.0
16.2	0.001	50.1
27.9	0.003	50.2
66.6	0.008	53.2
86.7	0.014	55.1
102.2	0.020	56.6
121.1	0.029	58.2
137.7	0.037	59.4
157.8	0.049	60.6
193.0	0.070	61.9
249.5	0.099	63.0
315.9	0.135	63.3
376.4	0.171	62.8
436.0	0.211	61.0
460.4	0.241	58.4
370.9	0.284	53.7
374.3	0.341	53.1
388.3	0.400	52.9
398.4	0.445	52.7
411.9	0.506	52.3
423.8	0.551	52.2
430.9	0.596	52.0
407.0	0.641	51.9
409.6	0.670	51.8
412.8	0.701	51.6
418.6	0.731	51.6
427.4	0.761	51.5
434.7	0.806	51.2
448.2	0.850	50.9
453.8	0.881	50.7
455.6	0.910	50.4

Tested By: 129-07-0411 Date: 8/2/2019 Input Checked By: GEM Date: 8/12/2019

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
AASHTO T-297**



Client: Kleinfelder Boring No.: S2_RT_LN_EB1-A
 Client Reference: R-2561CA Depth (ft): 29.5-31.5
 Project No.: R-2019-209-001 Sample No.: ST-2
 Lab ID: R-2019-209-001-010

Visual Description: Gray Clay (UNDISTURBED)

Effective Confining Pressure (psi)	20.0	Stage No.	1
		Test No.	3

INITIAL DIMENSIONS

Initial Sample Length (in)	6.00
Initial Sample Diameter (in)	2.87
Initial Sample Area (in ²)	6.46
Initial Sample Volume (in ³)	38.76

VOLUME CHANGE

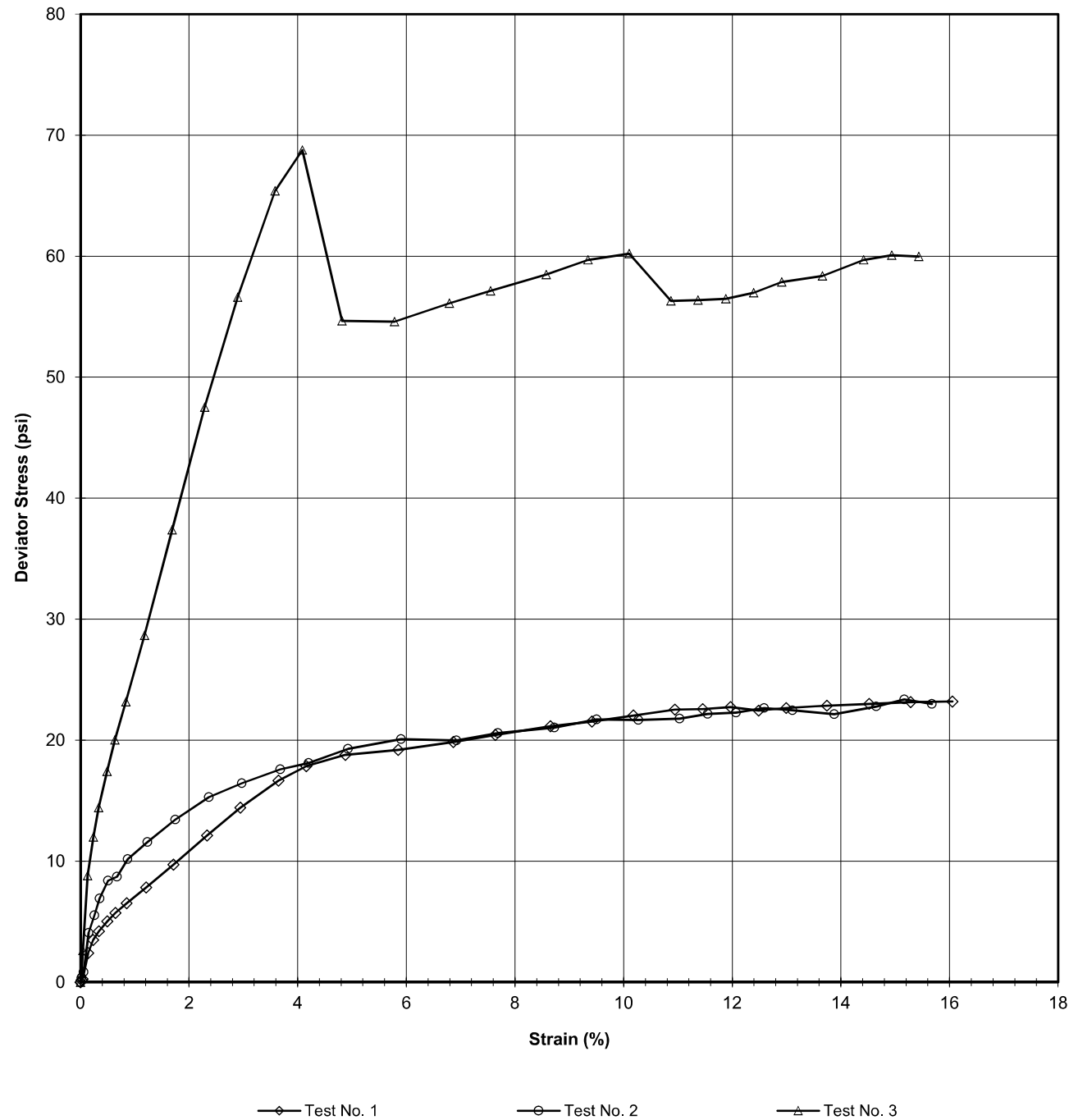
Volume After Consolidation (in ³)	36.92
Length After Consolidation (in)	5.90
Area After Consolidation (in ²)	6.262

Strain (%)	Deviation Stress	ΔU	$\bar{\sigma}_1$	$\bar{\sigma}_3$	Effective Principle Stress Ratio	\bar{A}	\bar{P}	Q
------------	------------------	------------	------------------	------------------	----------------------------------	-----------	-----------	---

0.02	0.76	0.13	20.68	19.9	1.038	0.17	20.30	0.38
0.04	2.62	0.22	22.45	19.8	1.132	0.08	21.14	1.31
0.13	8.80	3.21	25.64	16.8	1.522	0.37	21.24	4.40
0.24	11.98	5.17	26.86	14.9	1.806	0.44	20.86	5.99
0.33	14.44	6.64	27.85	13.4	2.077	0.47	20.63	7.22
0.49	17.42	8.22	29.24	11.8	2.473	0.48	20.53	8.71
0.63	20.03	9.42	30.65	10.6	2.885	0.48	20.64	10.01
0.83	23.17	10.60	32.62	9.4	3.452	0.47	21.04	11.59
1.18	28.65	11.97	36.73	8.1	4.546	0.43	22.40	14.32
1.69	37.38	13.01	44.42	7.0	6.310	0.36	25.73	18.69
2.29	47.51	13.31	54.24	6.7	8.054	0.29	30.49	23.75
2.89	56.59	12.78	63.86	7.3	8.786	0.23	35.56	28.29
3.59	65.38	11.02	74.41	9.0	8.239	0.17	41.72	32.69
4.09	68.77	8.42	80.39	11.6	6.917	0.13	46.01	34.39
4.81	54.64	3.71	70.98	16.3	4.344	0.07	43.66	27.32
5.78	54.59	3.15	71.49	16.9	4.231	0.06	44.19	27.30
6.79	56.10	2.88	73.26	17.2	4.269	0.05	45.21	28.05
7.55	57.13	2.73	74.45	17.3	4.299	0.05	45.88	28.56
8.58	58.46	2.37	76.14	17.7	4.308	0.04	46.91	29.23
9.34	59.69	2.21	77.53	17.8	4.347	0.04	47.69	29.85
10.10	60.22	2.06	78.20	18.0	4.348	0.03	48.09	30.11
10.87	56.30	1.91	74.43	18.1	4.105	0.03	46.28	28.15
11.37	56.36	1.79	74.62	18.3	4.087	0.03	46.44	28.18
11.88	56.48	1.67	74.86	18.4	4.073	0.03	46.62	28.24
12.39	56.96	1.60	75.40	18.4	4.089	0.03	46.92	28.48
12.91	57.85	1.49	76.41	18.6	4.117	0.03	47.49	28.93
13.66	58.36	1.24	77.16	18.8	4.103	0.02	47.98	29.18
14.42	59.69	0.95	78.78	19.1	4.126	0.02	48.94	29.84
14.94	60.09	0.70	79.43	19.3	4.106	0.01	49.39	30.04
15.44	59.98	0.39	79.63	19.7	4.052	0.01	49.64	29.99

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
AASHTO T-297**

Client: Kleinfelder Boring No.: S2_RT_LN_EB1-A
 Client Reference: R-2561CA Depth (ft): 29.5-31.5
 Project No.: R-2019-209-001 Sample No.: ST-2
 Lab ID: R-2019-209-001-010
 Visual Description: Gray Clay (UNDISTURBED)

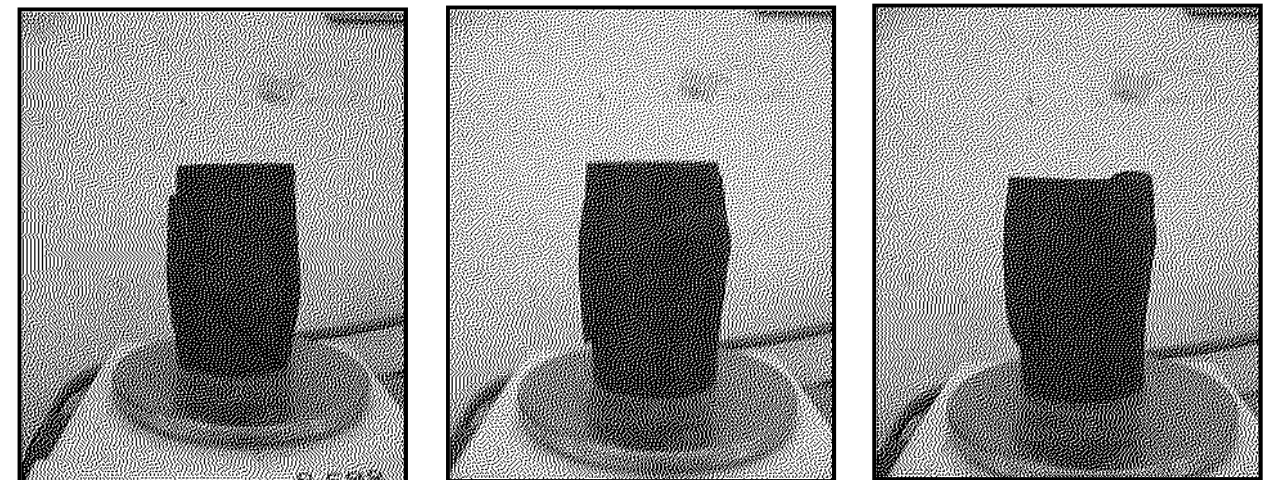


**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
AASHTO T-297**

Client: Kleinfelder
 Client Reference: R-2561CA
 Project No.: R-2019-209-001
 Lab ID: R-2019-209-001-010 Specific Gravity (Measured) 2.68
 Visual Description: Gray Clay (UNDISTURBED)

SAMPLE CONDITION SUMMARY

	S2_RT_LN_EB1-A	S2_RT_LN_EB1-A	S2_RT_LN_EB1-A
Boring No.:	S2_RT_LN_EB1-A	S2_RT_LN_EB1-A	S2_RT_LN_EB1-A
Depth (ft):	29.5-31.5	29.5-31.5	29.5-31.5
Sample No.:	ST-2	ST-2	ST-2
Test No.	T1	T2	T3
Deformation Rate (in/min)	0.0011	0.0011	0.0011
Back Pressure (psi)	50.0	50.0	50.0
Consolidation Time (days)	1	1	1
Moisture Content (%) (INITIAL)	37.4	31.9	27.4
Total Unit Weight (pcf)	114.1	114.8	120.5
Dry Unit Weight (pcf)	83.0	87.1	94.6
Moisture Content (%) (FINAL)	32.3	33.5	27.9
Initial State Void Ratio, e	1.015	0.921	0.769
Void Ratio at Shear, e	0.877	0.817	0.685



Tested By: 129-07-0411 Date: 8/2/2019 Approved By: MPS Date: 8/12/2019

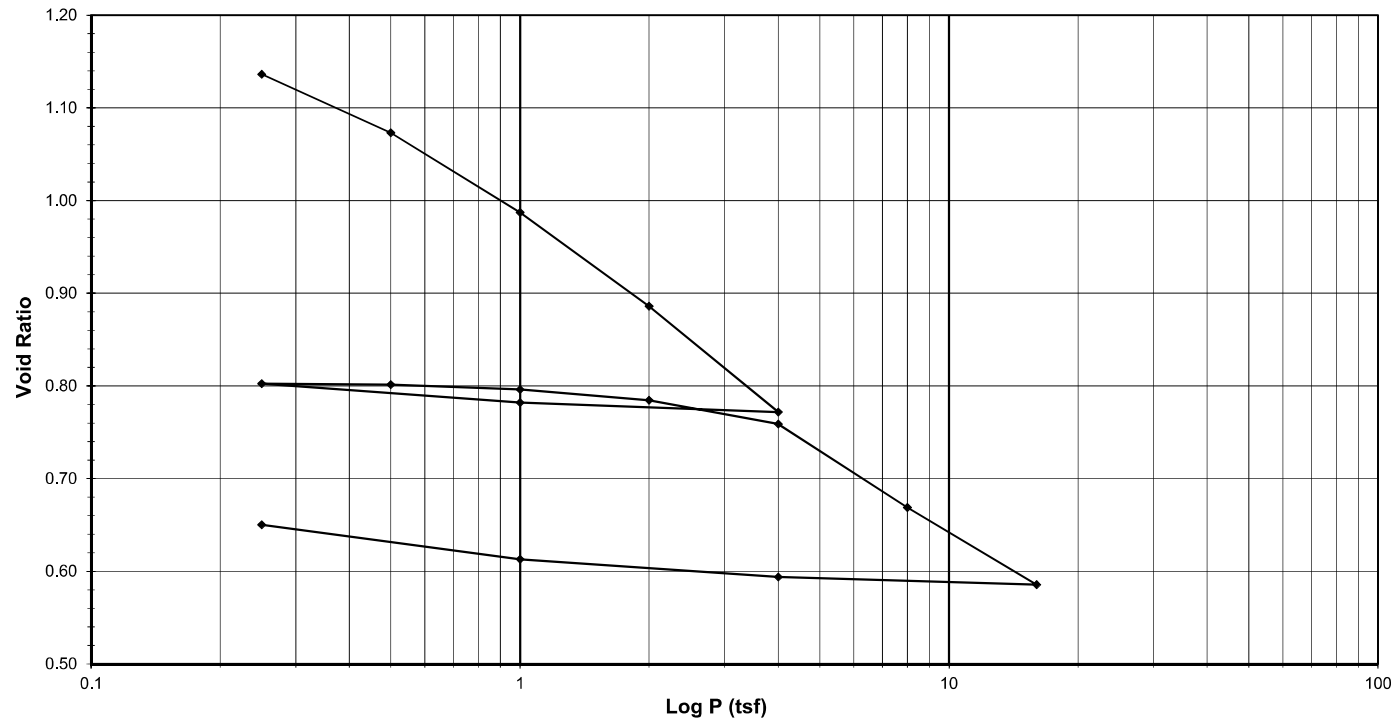
Tested By: 129-07-0411 Date: 8/2/19 Input Checked By: GEM Date: 8/12/19



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT.LN_EB2-A
 Client Reference R-2561CA Depth (ft) 19.9-21.9
 Project No. R-2019-209-002 Sample No. ST-3
 Lab ID R-2019-209-002-003 Visual Description Gray Clay with Organics

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Tested By 129-08-0411 Date 8/5/2019 Approved By MPS Date 8/19/2019

ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT.LN_EB2-A
 Client Reference R-2561CA Depth (ft) 19.9-21.9
 Project No. R-2019-209-002 Sample No. ST-3
 Lab ID R-2019-209-002-003 Visual Description Gray Clay with Organics

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

Consolidometer No. R409
 1 Division = 0.0001 (in.)

Sample Properties

	Initial	Final
<i>Water Content</i>		
Tare Number	TB-09	812
Wt. Tare & WS (g)	324.50	218.25
Wt. Tare & DS (g)	273.74	196.15
Wt. Water (g)	50.76	22.10
Wt. Tare (g)	134.08	104.60
Wt. DS (g)	139.66	91.55
Water Content (%)	36.35	24.14
<i>Sample Parameters</i>		
Sample Diameter (in)	2.5	2.5
Sample Height (in)	1.0000	0.7431
Sample Volume (cc)	80.44	59.78
Wt. Wet Sample + Ring (g)	346.56	334.71
Wt. of Ring (g)	214.20	214.20
Wt. of Wet Sample (g)	132.36	120.51
Wet Density (pcf)	102.68	125.80
Wet Density (g/cc)	1.65	2.02
Water Content (%)	36.35	24.14
Wt. of Dry Sample (g)	97.08	97.08
Dry Density (pcf)	75.31	101.34
Dry Density (g/cc)	1.21	1.62
Void Ratio	1.2207	0.6503
Saturation (%)	79.80	99.49
Specific Gravity	2.68	Measured

Test Data Summary

Applied Pressure (tsf)	Final Dial Reading (div)	Machine Deflection (div)	Corrected Reading (div)	Height of Sample (mm)	Volume (cc)	Dry Density (g/cc)	Void Ratio
Seating	0	0	0	25.400	80.440	1.20683	1.22070
0.25	391.0	10.7	380.3	24.434	77.380	1.25454	1.13624
0.5	694.5	30.0	664.5	23.712	75.095	1.29273	1.07313
1	1099.3	47.1	1052.2	22.727	71.976	1.34875	0.98703
2	1580.9	74.4	1506.5	21.573	68.321	1.42089	0.88614
4	2122.3	101.3	2021.0	20.267	64.183	1.51250	0.77190
1	2045.5	69.8	1975.7	20.382	64.547	1.50397	0.78195
0.25	1917.5	34.5	1883.0	20.617	65.293	1.48678	0.80255
0.5	1928.6	40.8	1887.8	20.605	65.254	1.48767	0.80148
1	1967.2	55.4	1911.8	20.544	65.061	1.49209	0.79614
2	2041.4	77.3	1964.1	20.411	64.640	1.50180	0.78452
4	2181.9	102.2	2079.7	20.118	63.711	1.52371	0.75887
8	2632.0	146.5	2485.5	19.087	60.447	1.60600	0.66874
16	3060.2	199.9	2860.3	18.135	57.431	1.69031	0.58551
4	2961.2	138.4	2822.8	18.230	57.734	1.68146	0.59385
1	2823.6	86.8	2736.8	18.449	58.425	1.66156	0.61294
0.25	2614.4	45.6	2568.8	18.875	59.777	1.62400	0.65025

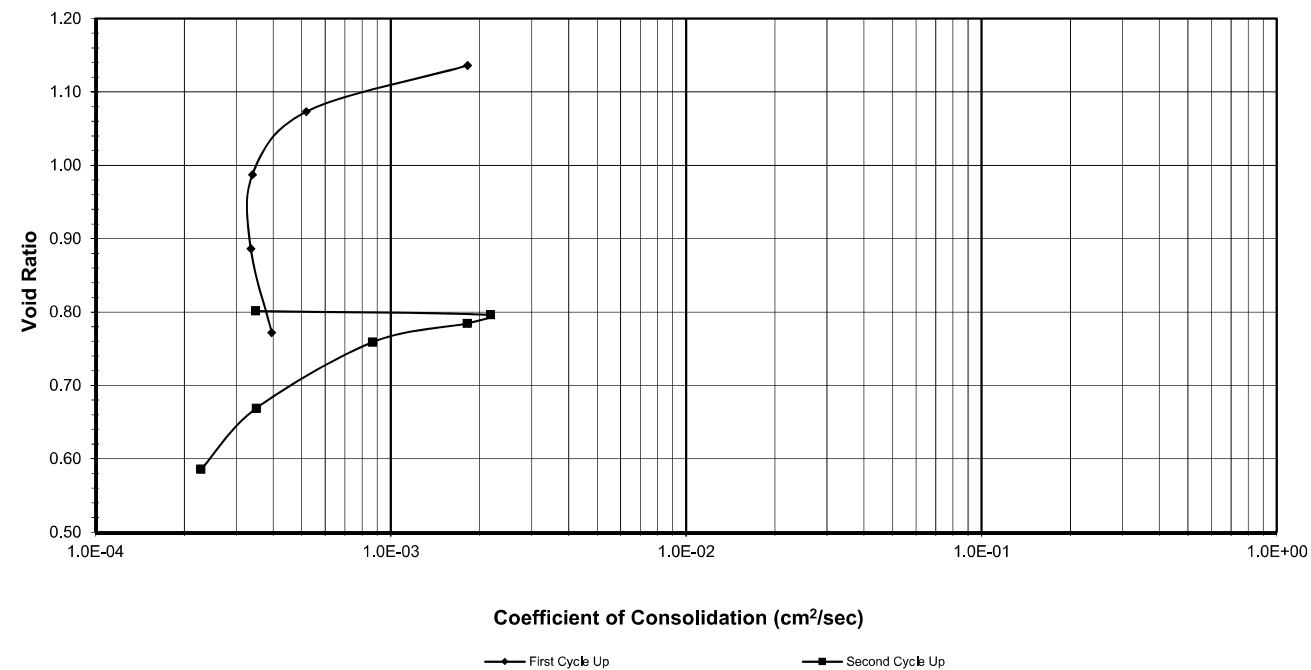
Tested By 129-08-0411 Date 8/5/2019 Input Checked By GEM Date 8/19/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT.LN_EB2-A
 Client Reference R-2561CA Depth (ft) 19.9-21.9
 Project No. R-2019-209-002 Sample No. ST-3
 Lab ID R-2019-209-002-003 Visual Description Gray Clay with Organics

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Tested By 129-08-0411 Date 8/5/2019 Input Checked By GEM Date 8/19/2019

ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT.LN_EB2-A
 Client Reference R-2561CA Depth (ft) 19.9-21.9
 Project No. R-2019-209-002 Sample No. ST-3
 Lab ID R-2019-209-002-003 Visual Description Gray Clay with Organics

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

Consolidometer No. R409
 1 Division = 0.0001 (in.)

Sample Properties	Initial	Final
Water Content		
Tare Number	TB-09	812
Wt. Tare & WS (g)	324.50	218.25
Wt. Tare & DS (g)	273.74	196.15
Wt. Water (g)	50.76	22.10
Wt. Tare (g)	134.08	104.60
Wt. DS (g)	139.66	91.55
Water Content (%)	36.35	24.14
Sample Parameters		
Sample Diameter (in)	2.5	2.5
Sample Height (in)	1.000	0.743
Sample Volume (cc)	80.44	59.78
Wt. Wet Sample + Ring (g)	346.56	334.71
Wt. of Ring (g)	214.20	214.20
Wt. of Wet Sample (g)	132.36	120.51
Wet Density (pcf)	102.68	125.80
Wet Density (g/cc)	1.65	2.02
Water Content (%)	36.35	24.14
Wt. of Dry Sample (g)	97.08	97.08
Dry Density (pcf)	75.31	101.34
Dry Density (g/cc)	1.21	1.62
Void Ratio	1.2207	0.6503
Saturation (%)	79.80	99.49
Specific Gravity	2.68	Measured

Load Increment (tsf)	Dial Reading @ t ₅₀ (div)	Machine Deflection (div)	C _v Test Data Summary		Time t ₅₀ (min.)	C _v (cm ² /sec)
			Corrected Dial Reading @ t ₅₀ (div)	Sample Height @ t ₅₀ (cm)		
0 - 0.25	202.4	10.7	191.7	2.491	2.80	0.00182
0.25 - 0.5	546.6	30.0	516.6	2.409	9.20	0.00052
0.5 - 1.0	911.6	47.1	864.5	2.320	13.00	0.00034
1.0 - 2.0	1345.4	74.4	1271.0	2.217	12.00	0.00034
2.0 - 4.0	1856.2	101.3	1754.9	2.094	9.10	0.00040
4.0 - 1.0	NA	69.8	NA	NA	NA	NA
1.0 - 0.25	NA	34.5	NA	NA	NA	NA
0.25 - 0.5	1923.6	40.8	1882.8	2.062	10.00	0.00035
0.5 - 1.0	1949.2	55.4	1893.8	2.059	1.60	0.00217
1.0 - 2.0	2008.9	77.3	1931.6	2.049	1.90	0.00181
2.0 - 4.0	2114.5	102.2	2012.3	2.029	3.90	0.00087
4.0 - 8.0	2426.9	146.5	2280.4	1.961	9.00	0.00035
8.0 - 16.0	2869.1	199.9	2669.2	1.862	12.50	0.00023
16.0 - 4.0	NA	138.4	NA	NA	NA	NA
4.0 - 1.0	NA	86.8	NA	NA	NA	NA
1.0 - 0.25	NA	45.6	NA	NA	NA	NA

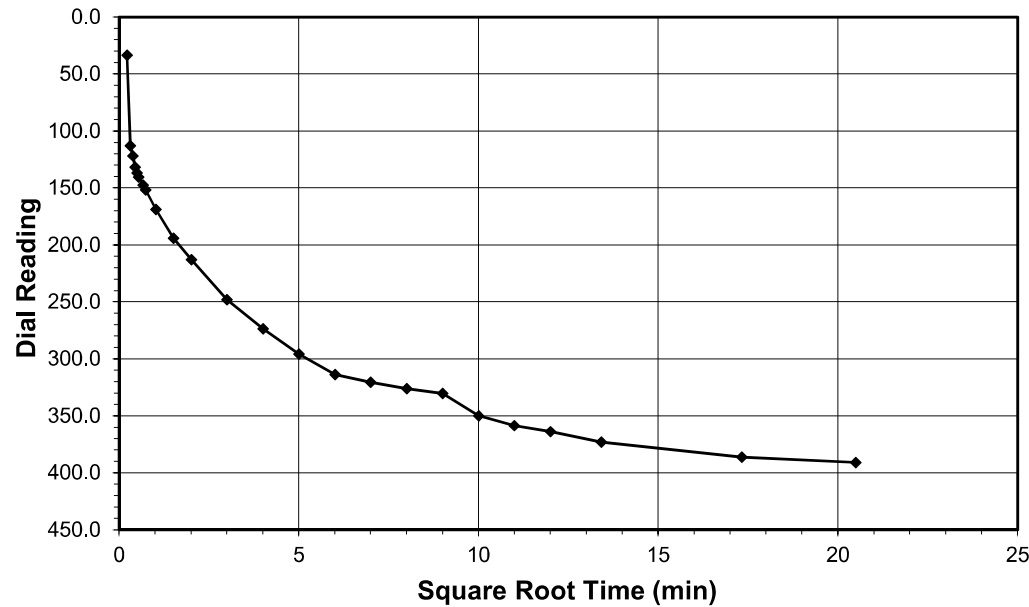
Tested By 129-08-0411 Date 8/5/2019 Input Checked By GEM Date 8/19/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT.LN_EB2-A
 Client Project R-2561CA Depth (ft) 19.9-21.9
 Project No. R-2019-209-002 Sample No. ST-3
 Lab ID R-2019-209-002-003 Visual Description Gray Clay with Organics

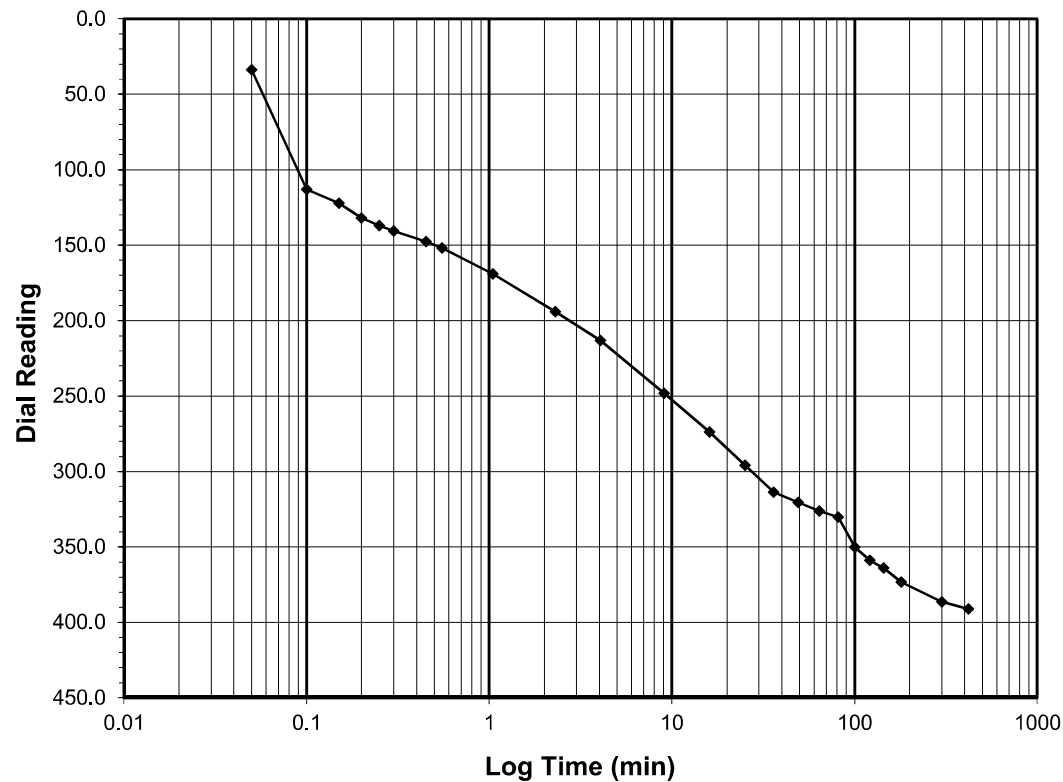
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 0.0-0.25
Final Reading (div) 391.0
 Consolidometer No. **R409**
 1 Division (in) 0.0001

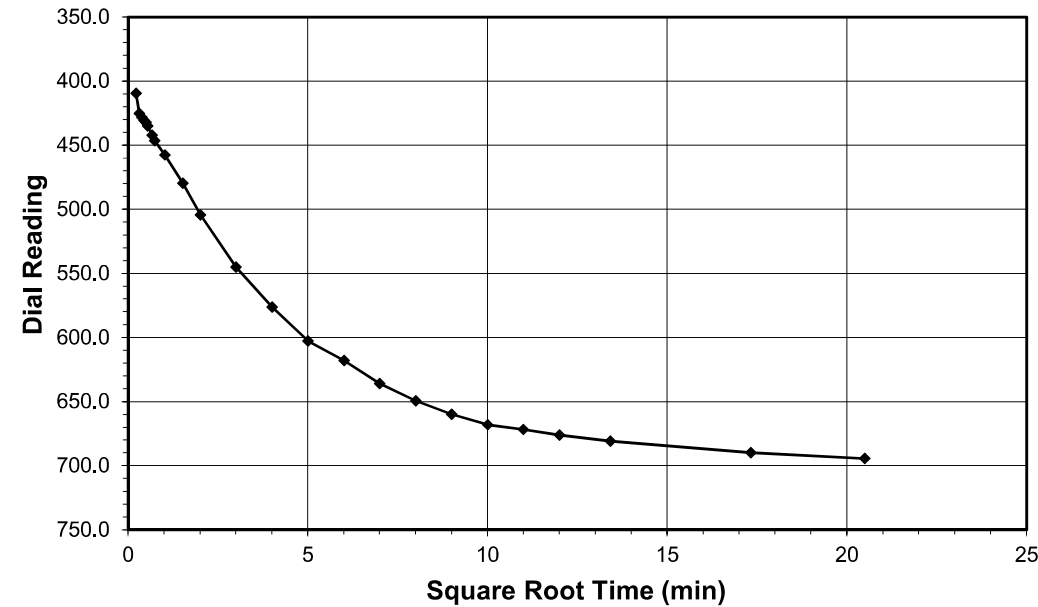
Start Date 8/5/2019
 Start Time 13:57:53

Elapsed Time (min)	Dial Reading (div)
Initial	0.0
0.05	33.7
0.10	113.0
0.15	122.0
0.20	132.1
0.25	137.1
0.30	140.8
0.45	147.8
0.55	152.0
1.05	169.0
2.30	194.1
4.05	213.1
9.05	248.2
16.07	273.9
25.07	295.8
36.07	313.9
49.07	320.6
64.07	326.2
81.07	330.4
100.07	350.1
121.07	358.8
144.07	363.8
180.07	373.3
300.07	386.4
420.12	391.0



Client Kleinfelder Boring No. S2_RT.LN_EB2-A
 Client Project R-2561CA Depth (ft) 19.9-21.9
 Project No. R-2019-209-002 Sample No. ST-3
 Lab ID R-2019-209-002-003 Visual Description Gray Clay with Organics

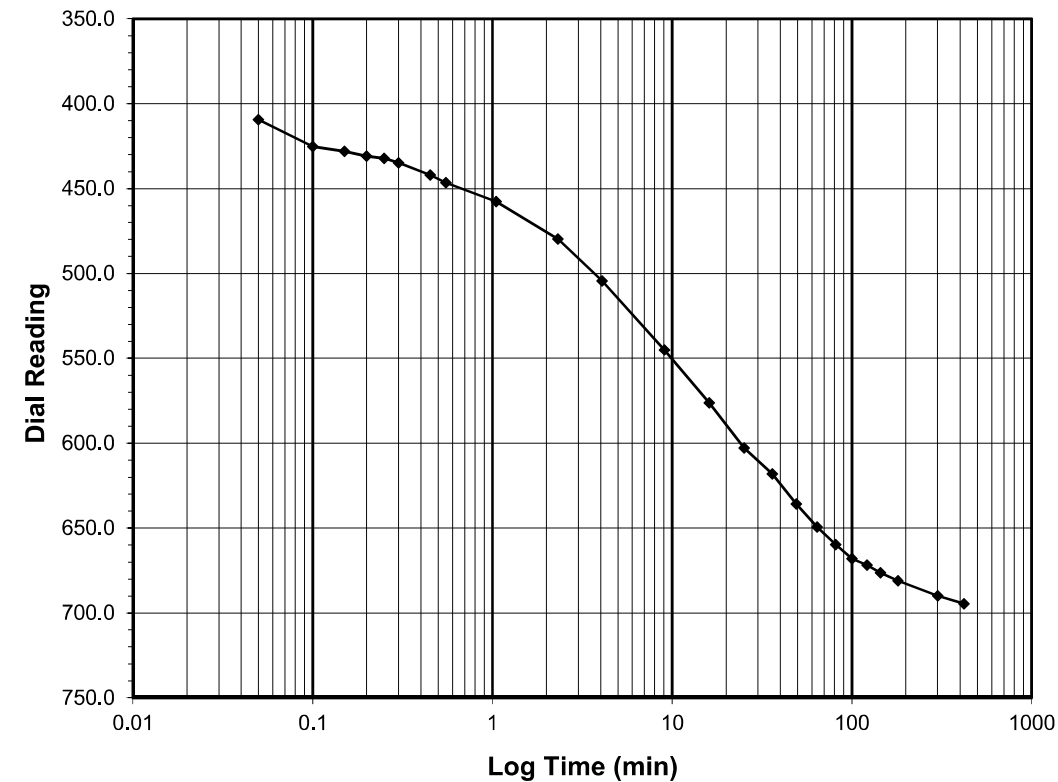
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 0.25-0.5
Final Reading (div) 694.5
 Consolidometer No. **R409**
 1 Division (in) 0.0001

Start Date 8/5/2019
 Start Time 20:58:00

Elapsed Time (min)	Dial Reading (div)
Initial	391.0
0.05	409.5
0.10	425.3
0.15	428.1
0.20	430.8
0.25	432.2
0.30	434.8
0.45	442.1
0.55	446.5
1.05	457.5
2.32	479.8
4.07	504.4
9.07	545.0
16.07	576.3
25.07	602.8
36.07	618.0
49.07	635.8
64.07	649.4
81.07	659.8
100.07	668.0
121.07	671.9
144.07	676.3
180.07	681.0
300.08	689.9
420.17	694.5



Tested By 129-08-0411 Date 8/5/2019 Checked By GEM Date 8/19/2019

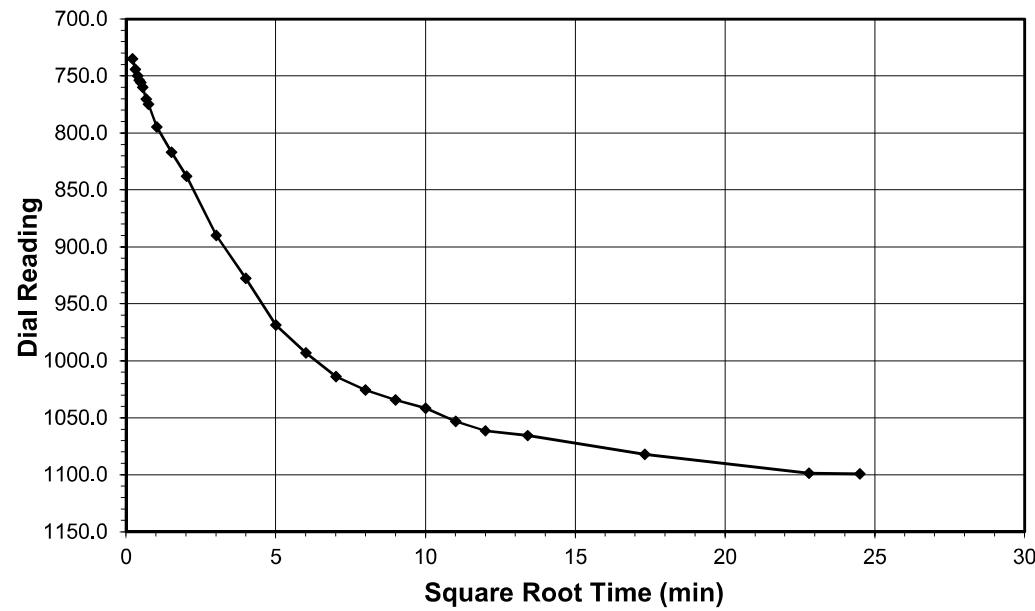
Tested By 129-08-0411 Date 8/5/2019 Checked By GEM Date 8/19/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT.LN_EB2-A
 Client Project R-2561CA Depth (ft) 19.9-21.9
 Project No. R-2019-209-002 Sample No. ST-3
 Lab ID R-2019-209-002-003 Visual Description Gray Clay with Organics

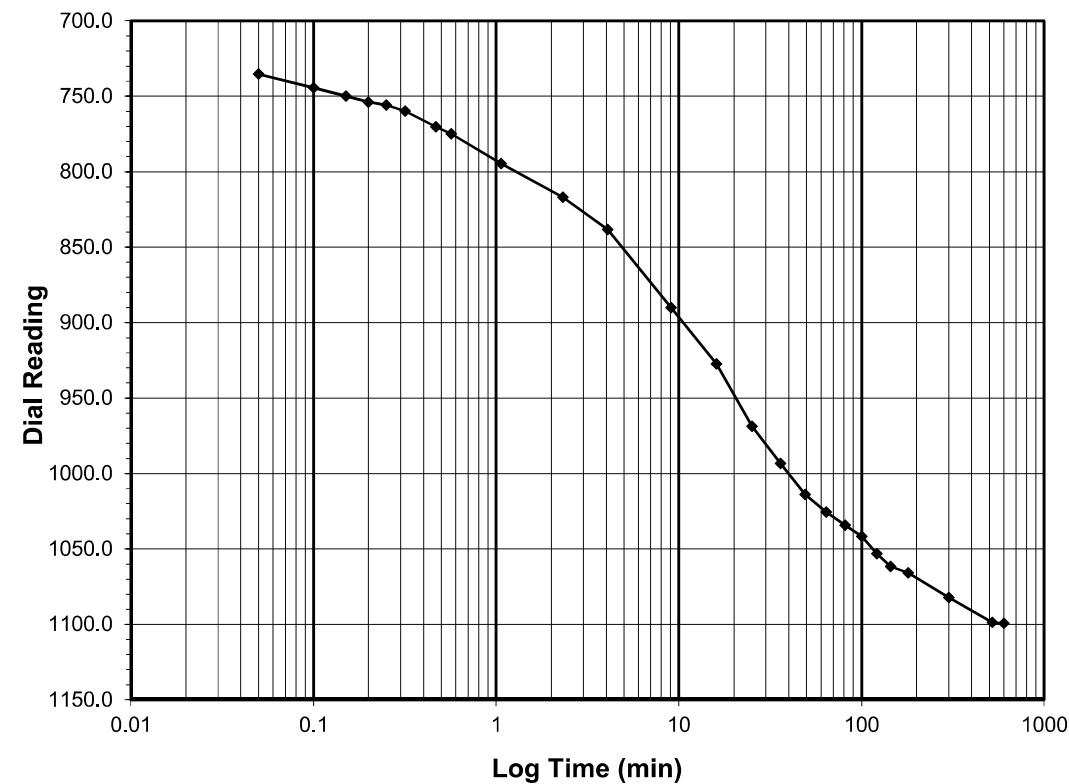
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 0.5-1.0
Final Reading (div) 1099.3
 Consolidometer No. **R409**
 1 Division (in) 0.0001

Start Date 8/6/2019
 Start Time 3:58:10

Elapsed Time (min)	Dial Reading (div)
Initial	694.5
0.05	735.2
0.10	744.4
0.15	749.9
0.20	753.9
0.25	755.8
0.32	759.9
0.47	770.2
0.57	774.9
1.07	794.6
2.32	816.7
4.07	838.3
9.07	889.9
16.07	927.5
25.07	968.8
36.07	993.2
49.07	1013.9
64.07	1025.6
81.07	1034.4
100.07	1041.6
121.07	1053.1
144.07	1061.6
180.08	1065.8
300.08	1082.2
520.08	1098.7
600.08	1099.3



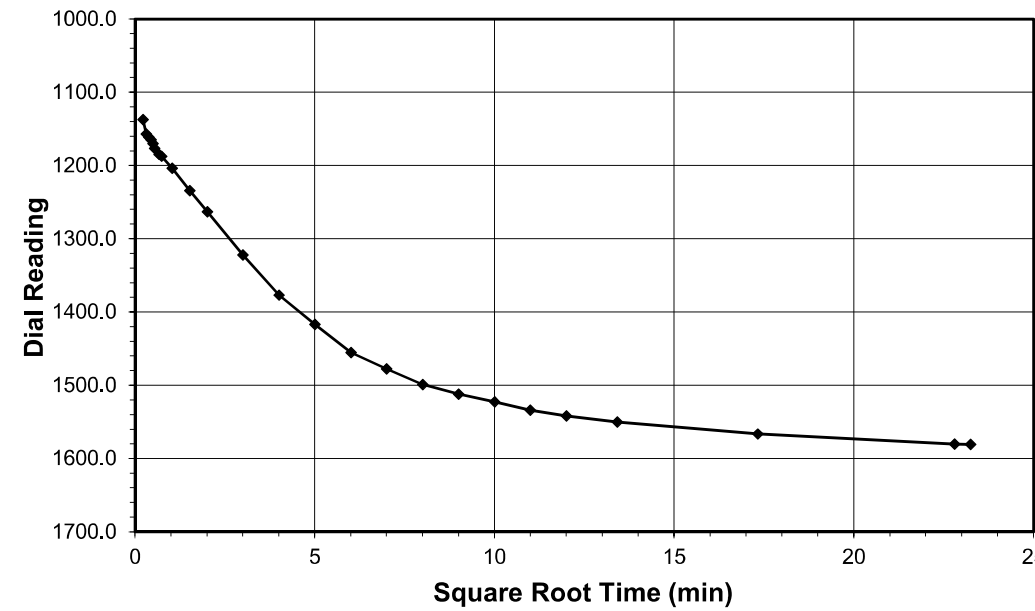
Tested By 129-08-0411 Date 8/6/2019 Checked By GEM Date 8/19/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT.LN_EB2-A
 Client Project R-2561CA Depth (ft) 19.9-21.9
 Project No. R-2019-209-002 Sample No. ST-3
 Lab ID R-2019-209-002-003 Visual Description Gray Clay with Organics

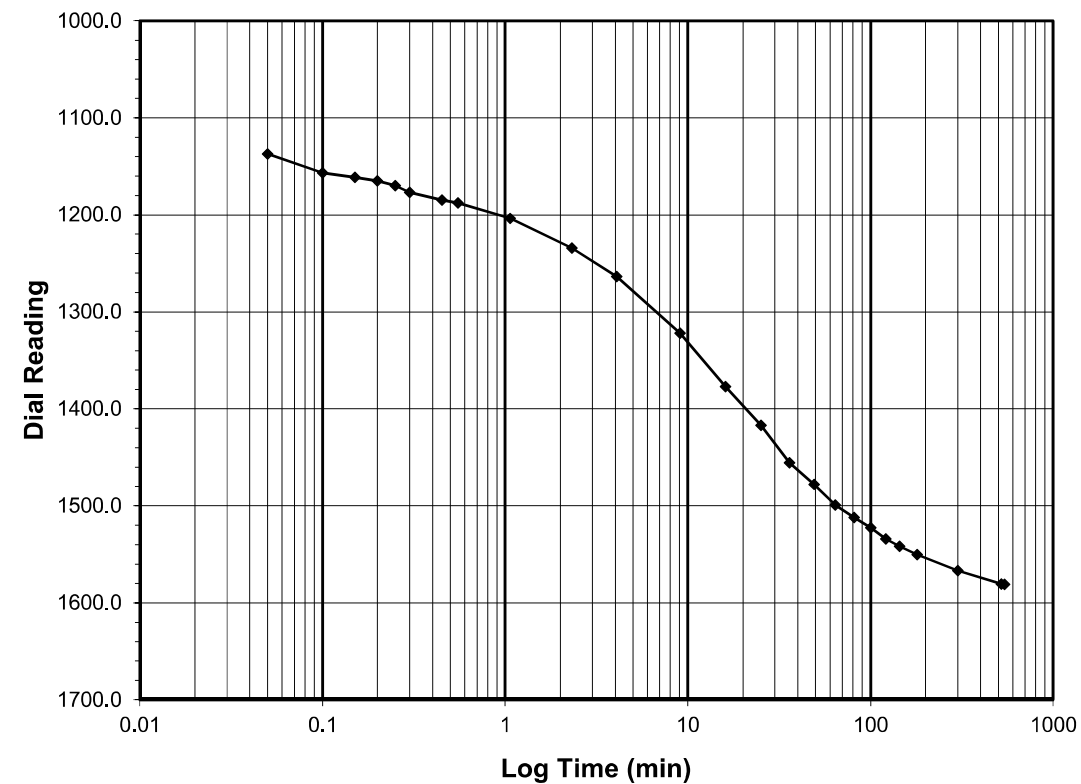
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 1.0-2.0
Final Reading (div) 1580.9
 Consolidometer No. **R409**
 1 Division (in) 0.0001

Start Date 8/6/2019
 Start Time 12:58:33

Elapsed Time (min)	Dial Reading (div)
Initial	1099.3
0.05	1137.1
0.10	1156.8
0.15	1161.2
0.20	1164.9
0.25	1169.9
0.30	1176.6
0.45	1184.7
0.55	1187.5
1.07	1203.8
2.32	1234.3
4.07	1263.5
9.07	1322.0
16.07	1377.2
25.07	1417.0
36.07	1455.5
49.07	1477.8
64.07	1499.1
81.07	1512.2
100.07	1522.7
121.07	1534.1
144.07	1541.9
180.07	1550.2
300.07	1566.7
520.07	1580.7
540.43	1580.9



Tested By 129-08-0411 Date 8/6/2019 Checked By GEM Date 8/19/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216



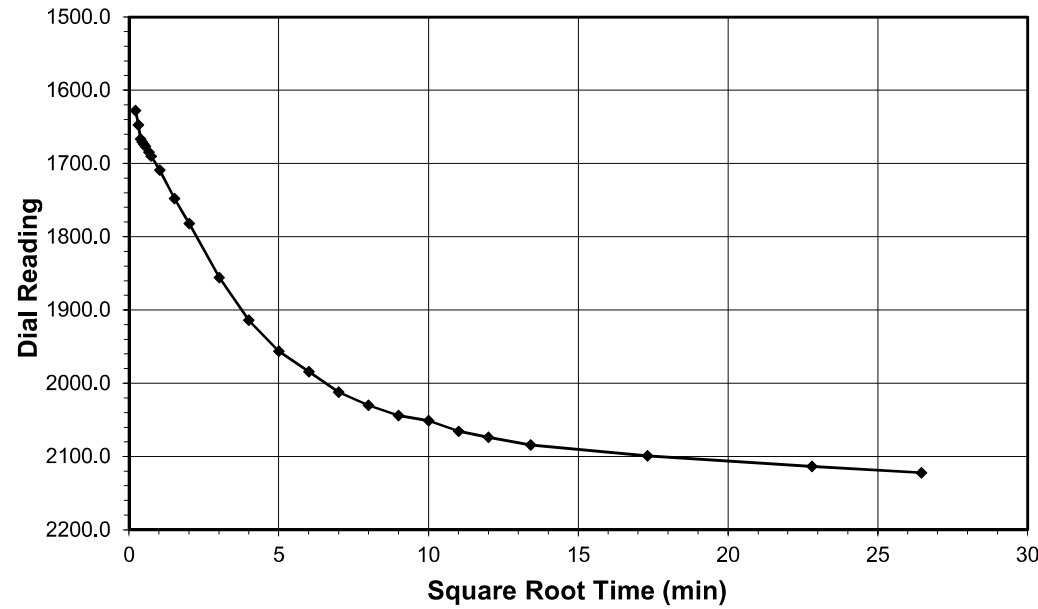
ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT.LN_EB2-A
 Client Project R-2561CA Depth (ft) 19.9-21.9
 Project No. R-2019-209-002 Sample No. ST-3
 Lab ID R-2019-209-002-003 Visual Description Gray Clay with Organics

Client Kleinfelder Boring No. S2_RT.LN_EB2-A
 Client Project R-2561CA Depth (ft) 19.9-21.9
 Project No. R-2019-209-002 Sample No. ST-3
 Lab ID R-2019-209-002-003 Visual Description Gray Clay with Organics

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

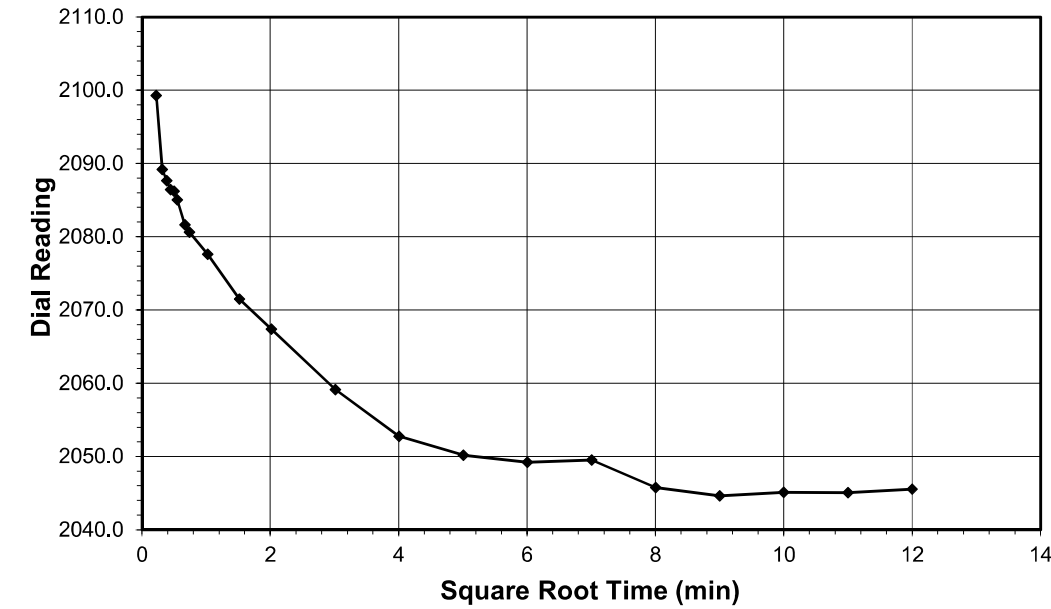
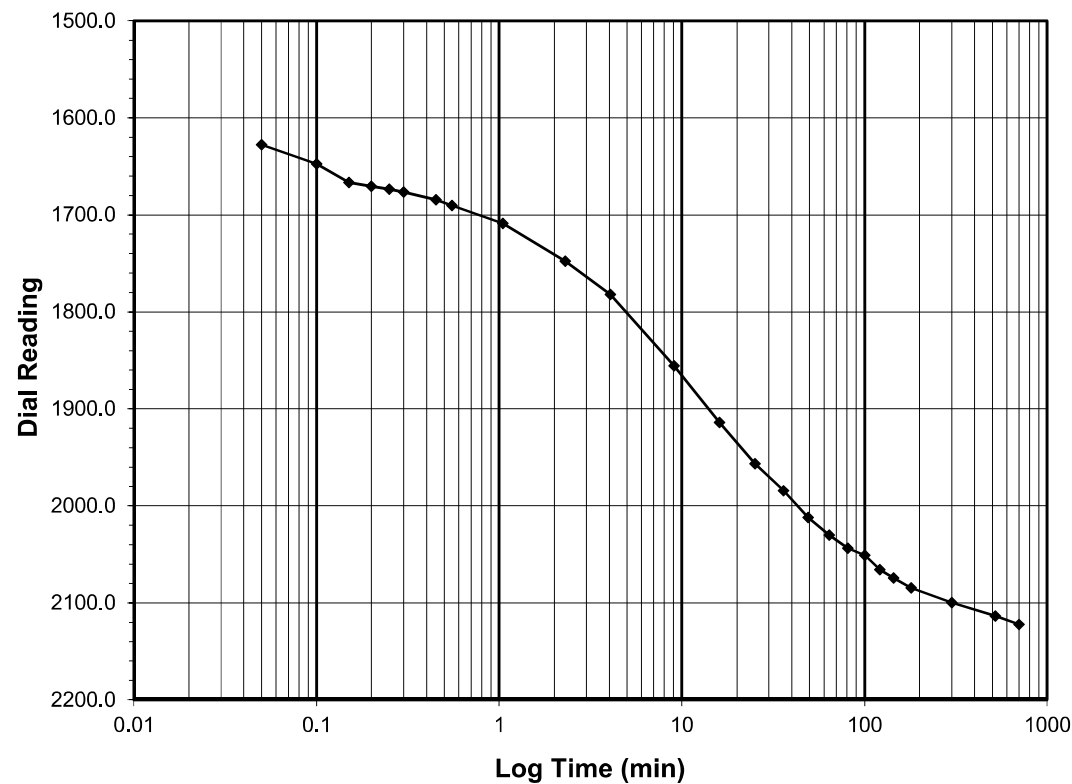
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 2.0-4.0
Final Reading (div) 2122.3
 Consolidometer No. **R409**
 1 Division (in) 0.0001

Start Date 8/6/2019
 Start Time 21:58:59

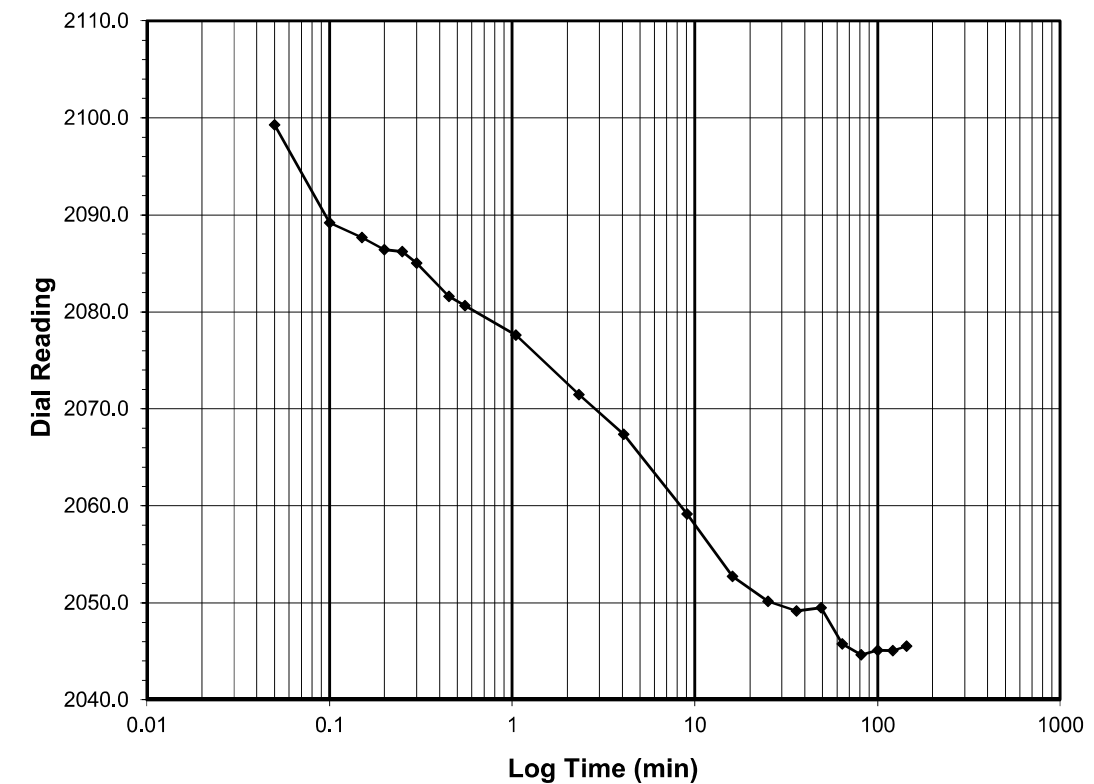
Elapsed Time (min)	Dial Reading (div)
Initial	1580.9
0.05	1627.7
0.10	1647.5
0.15	1666.4
0.20	1670.5
0.25	1673.4
0.30	1676.4
0.45	1684.3
0.55	1690.1
1.05	1709.1
2.30	1747.8
4.05	1782.0
9.05	1855.8
16.05	1914.0
25.05	1956.5
36.05	1984.4
49.05	2012.1
64.05	2030.1
81.05	2043.7
100.05	2051.1
121.05	2065.7
144.05	2074.2
180.05	2084.5
300.05	2099.5
520.05	2113.6
700.07	2122.3



Test Load (tsf) 4.0-1.0
Final Reading (div) 2045.5
 Consolidometer No. **R409**
 1 Division (in) 0.0001

Start Date 8/7/2019
 Start Time 9:59:21

Elapsed Time (min)	Dial Reading (div)
Initial	2122.3
0.05	2099.3
0.10	2089.2
0.15	2087.6
0.20	2086.4
0.25	2086.2
0.30	2085.0
0.45	2081.6
0.55	2080.6
1.05	2077.6
2.32	2071.5
4.07	2067.4
9.07	2059.1
16.07	2052.7
25.07	2050.2
36.07	2049.2
49.07	2049.5
64.07	2045.8
81.07	2044.6
100.07	2045.1
121.07	2045.1
144.07	2045.5



Tested By 129-08-0411 Date 8/6/2019 Checked By GEM Date 8/19/2019

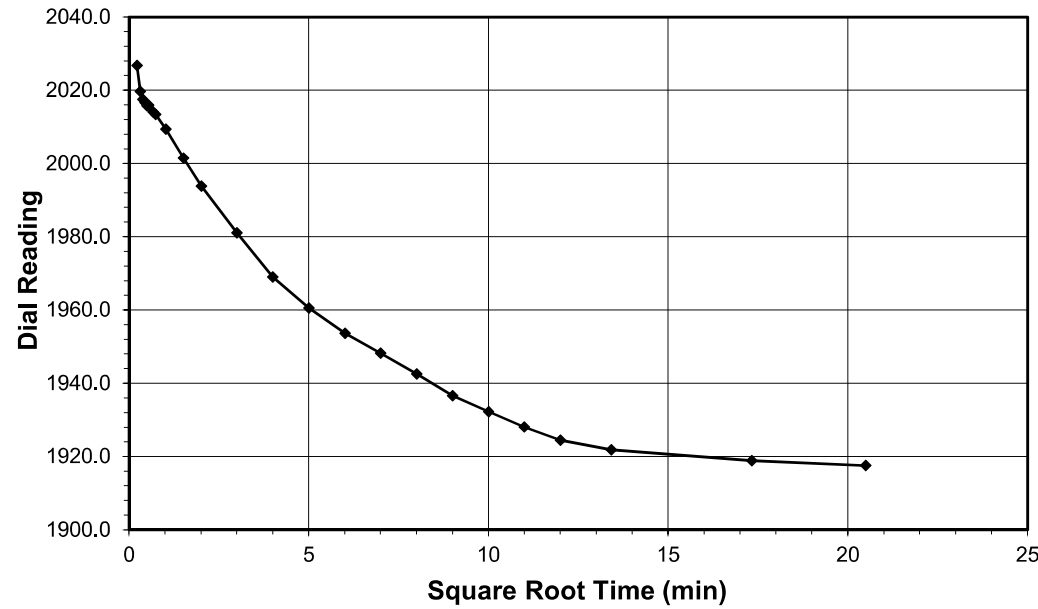
Tested By 129-08-0411 Date 8/7/2019 Checked By GEM Date 8/19/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT.LN_EB2-A
 Client Project R-2561CA Depth (ft) 19.9-21.9
 Project No. R-2019-209-002 Sample No. ST-3
 Lab ID R-2019-209-002-003 Visual Description Gray Clay with Organics

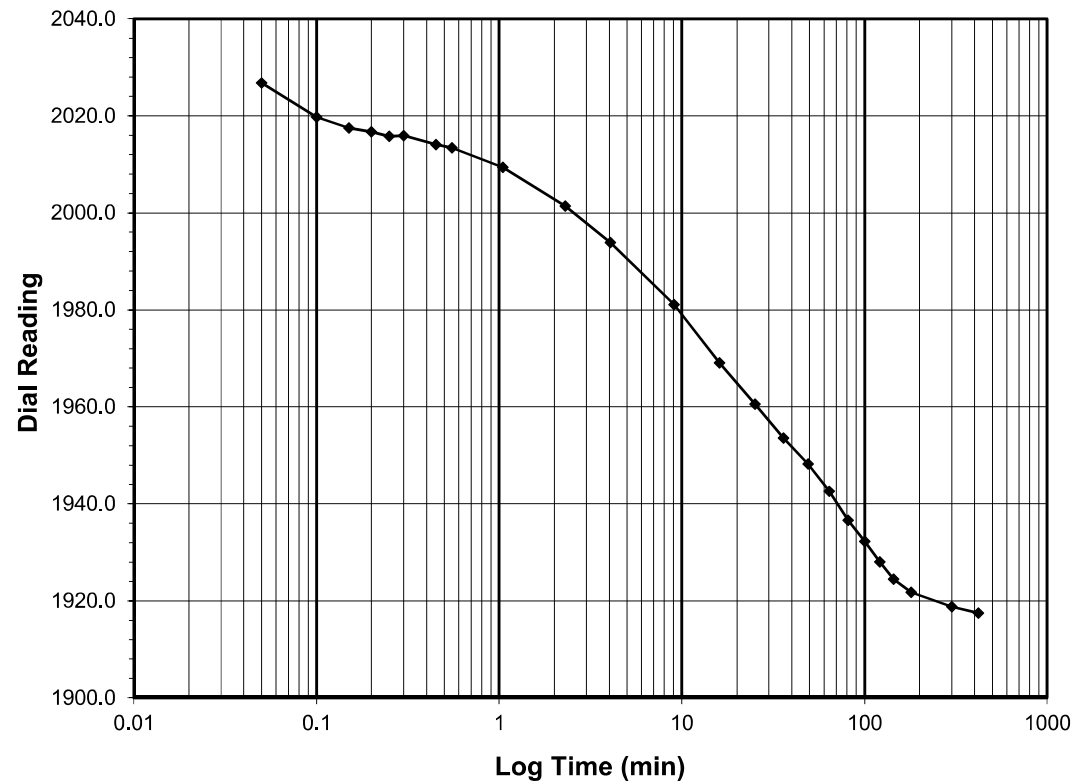
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 1.0-0.25
Final Reading (div) 1917.5
 Consolidometer No. **R409**
 1 Division (in) 0.0001

Start Date 8/7/2019
 Start Time 12:53:25

Elapsed Time (min)	Dial Reading (div)
Initial	2045.5
0.05	2026.8
0.10	2019.7
0.15	2017.5
0.20	2016.7
0.25	2015.8
0.30	2015.9
0.45	2014.1
0.55	2013.4
1.05	2009.4
2.30	2001.4
4.05	1993.8
9.05	1981.1
16.05	1969.0
25.07	1960.5
36.07	1953.6
49.07	1948.2
64.07	1942.6
81.07	1936.6
100.07	1932.2
121.07	1928.0
144.07	1924.4
180.07	1921.8
300.07	1918.8
420.10	1917.5



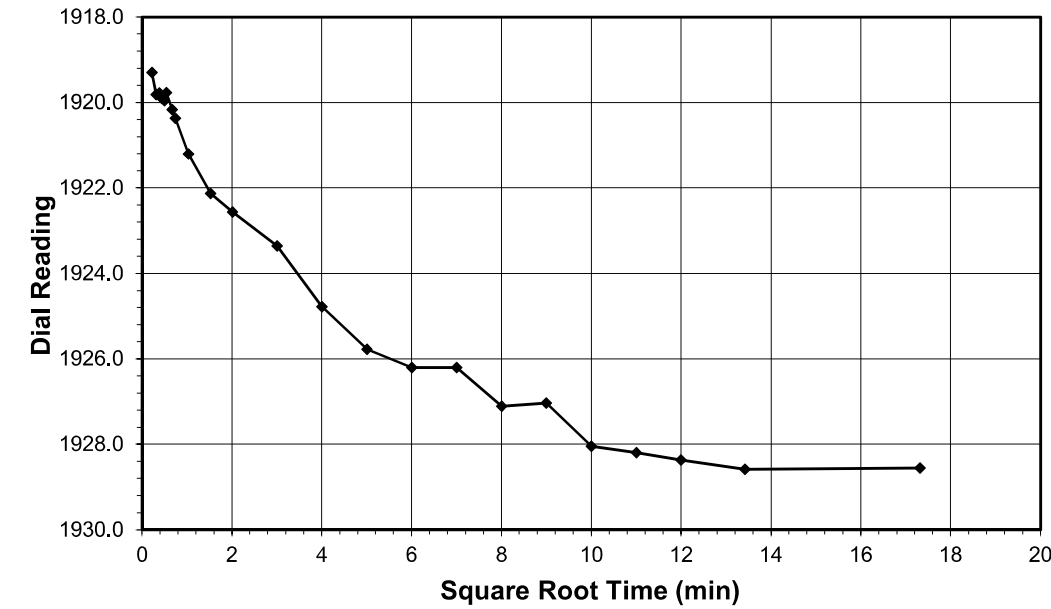
Tested By 129-08-0411 Date 8/7/2019 Checked By GEM Date 8/19/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT.LN_EB2-A
 Client Project R-2561CA Depth (ft) 19.9-21.9
 Project No. R-2019-209-002 Sample No. ST-3
 Lab ID R-2019-209-002-003 Visual Description Gray Clay with Organics

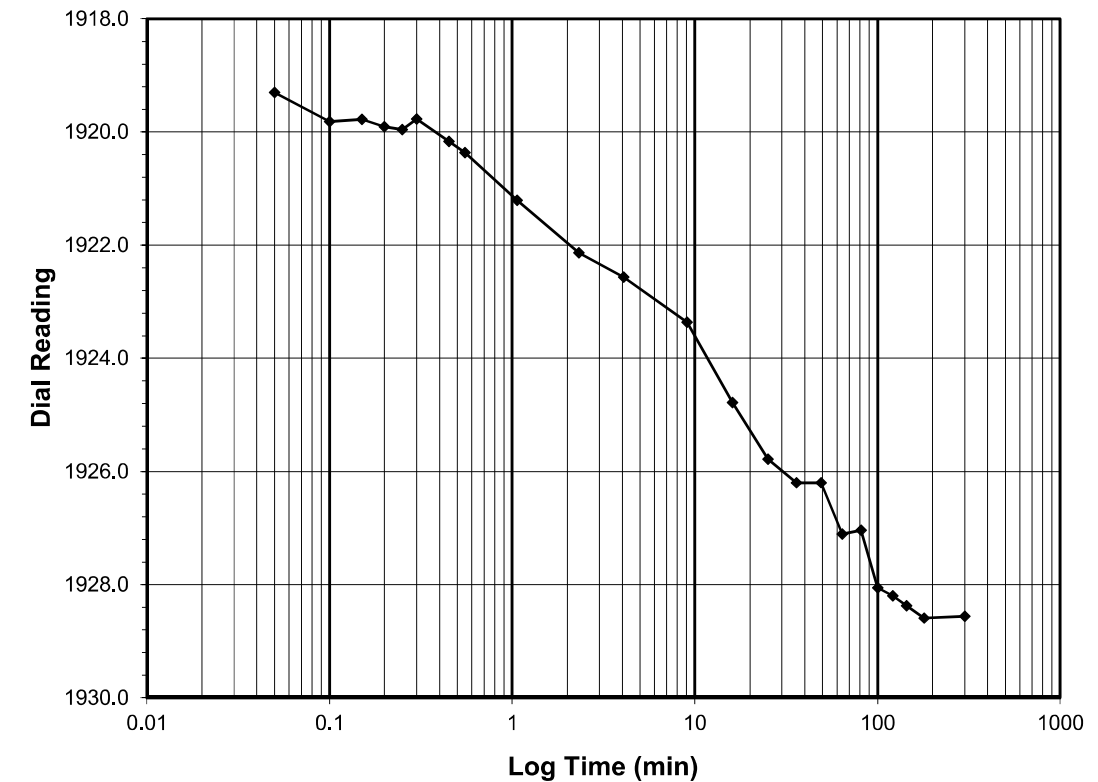
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 0.25-0.5
Final Reading (div) 1928.6
 Consolidometer No. **R409**
 1 Division (in) 0.0001

Start Date 8/7/2019
 Start Time 19:53:31

Elapsed Time (min)	Dial Reading (div)
Initial	1917.5
0.05	1919.3
0.10	1919.8
0.15	1919.8
0.20	1919.9
0.25	1920.0
0.30	1919.8
0.45	1920.2
0.55	1920.4
1.07	1921.2
2.32	1922.1
4.07	1922.6
9.07	1923.4
16.07	1924.8
25.07	1925.8
36.07	1926.2
49.07	1926.2
64.07	1927.1
81.07	1927.0
100.07	1928.1
121.07	1928.2
144.07	1928.4
180.07	1928.6
300.07	1928.6



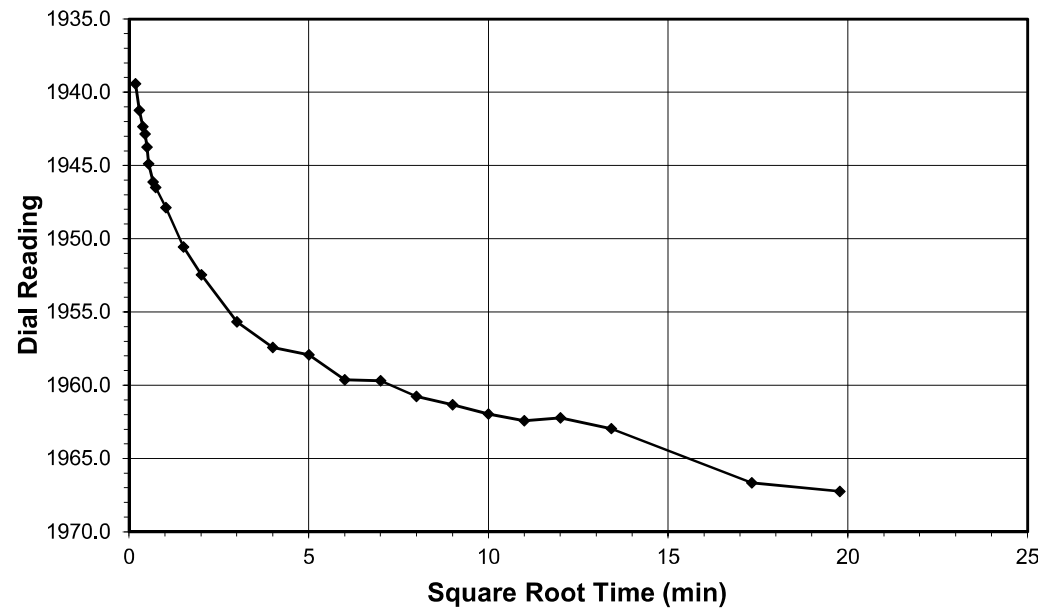
Tested By 129-08-0411 Date 8/7/2019 Checked By GEM Date 8/19/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT.LN_EB2-A
 Client Project R-2561CA Depth (ft) 19.9-21.9
 Project No. R-2019-209-002 Sample No. ST-3
 Lab ID R-2019-209-002-003 Visual Description Gray Clay with Organics

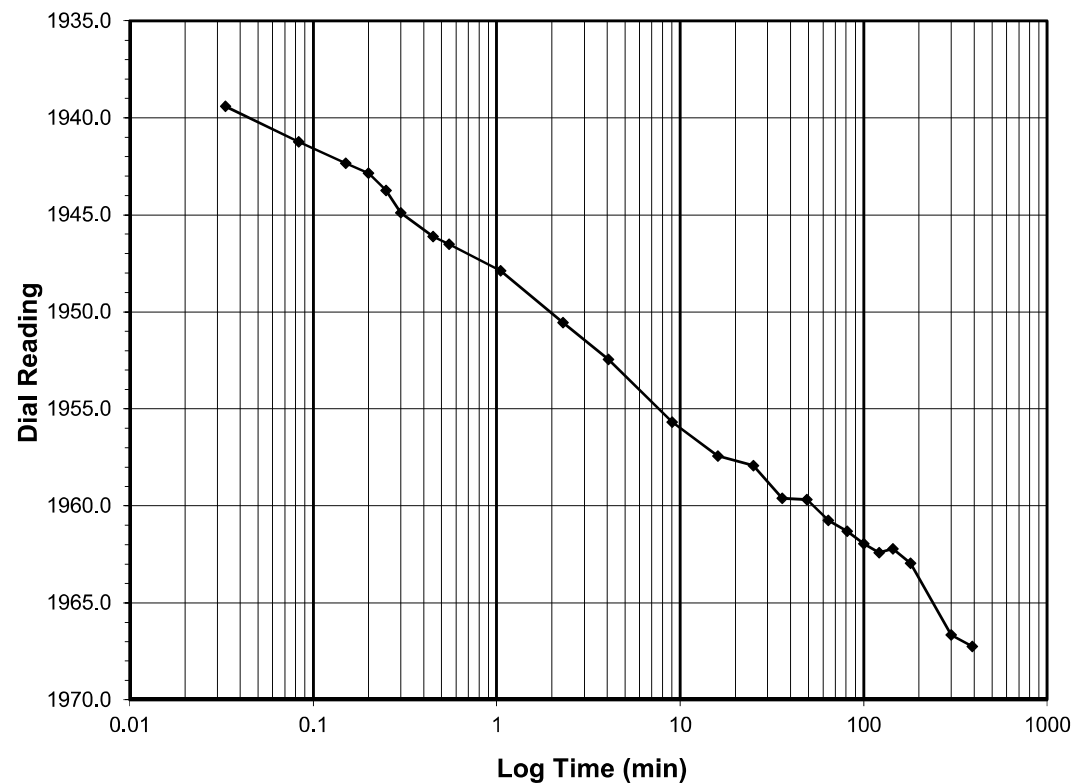
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 0.5-1.0
Final Reading (div) 1967.2
 Consolidometer No. **R409**
 1 Division (in) 0.0001

Start Date 8/8/2019
 Start Time 3:53:42

Elapsed Time (min)	Dial Reading (div)
Initial	1928.6
0.03	1939.4
0.08	1941.2
0.15	1942.3
0.20	1942.9
0.25	1943.7
0.30	1944.9
0.45	1946.1
0.55	1946.5
1.05	1947.9
2.30	1950.6
4.05	1952.5
9.05	1955.7
16.05	1957.4
25.05	1957.9
36.05	1959.6
49.05	1959.7
64.05	1960.8
81.05	1961.3
100.05	1962.0
121.05	1962.4
144.05	1962.2
180.07	1963.0
300.07	1966.7
391.07	1967.2



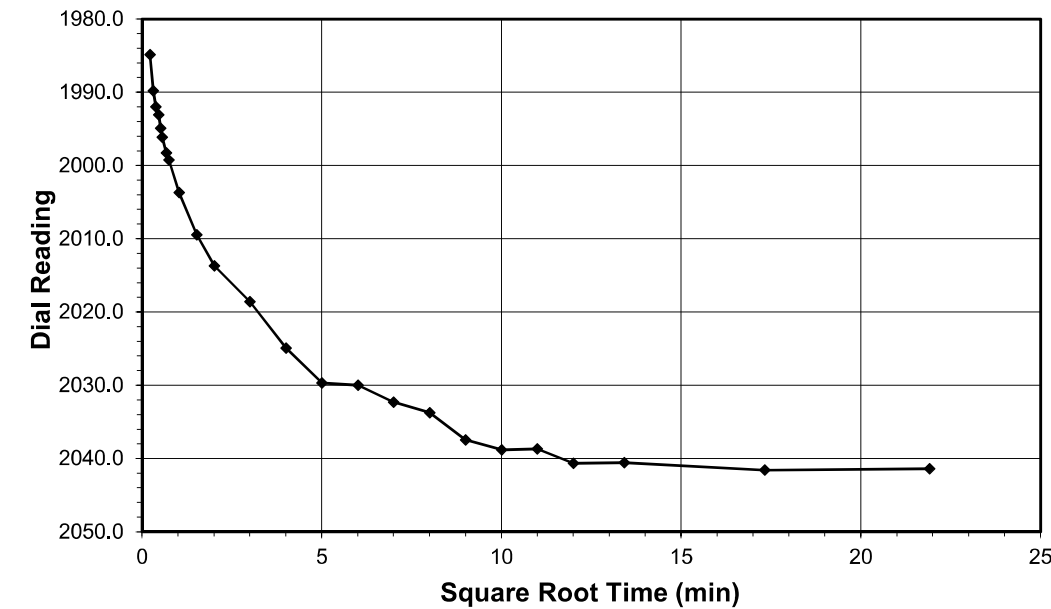
Tested By 129-08-0411 Date 8/8/2019 Checked By GEM Date 8/19/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT.LN_EB2-A
 Client Project R-2561CA Depth (ft) 19.9-21.9
 Project No. R-2019-209-002 Sample No. ST-3
 Lab ID R-2019-209-002-003 Visual Description Gray Clay with Organics

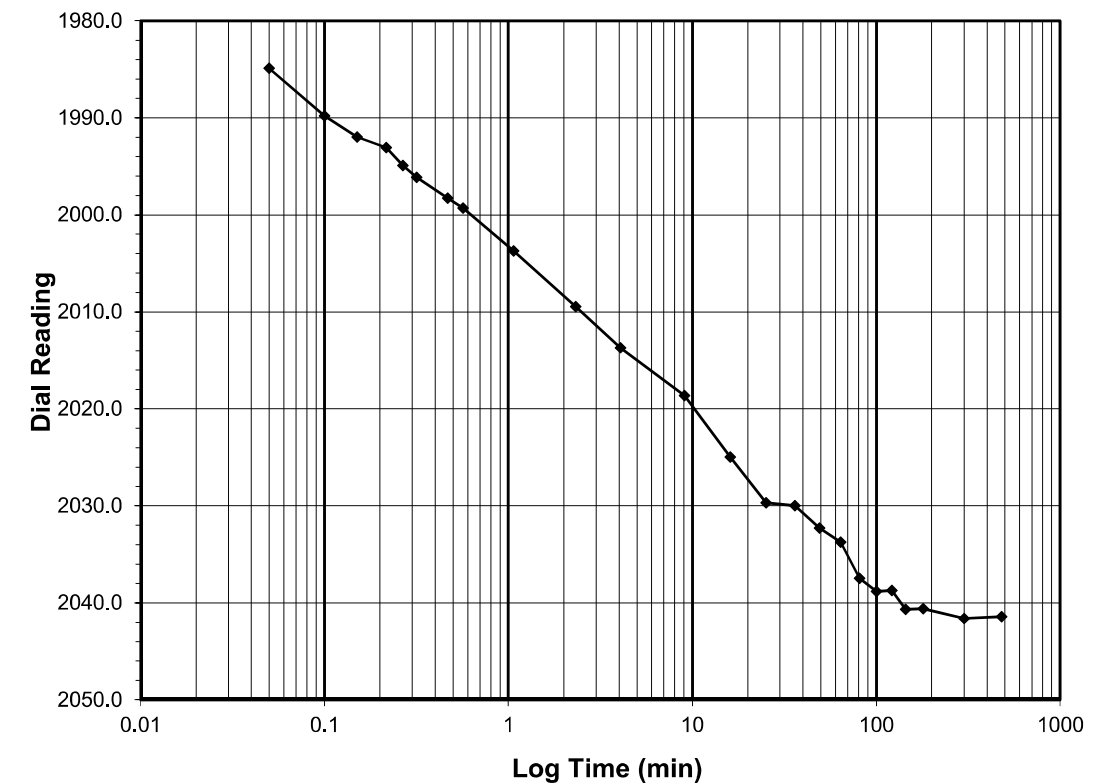
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 1.0-2.0
Final Reading (div) 2041.4
 Consolidometer No. **R409**
 1 Division (in) 0.0001

Start Date 8/8/2019
 Start Time 10:24:47

Elapsed Time (min)	Dial Reading (div)
Initial	1967.2
0.05	1984.9
0.10	1989.8
0.15	1992.0
0.22	1993.1
0.27	1994.9
0.32	1996.1
0.47	1998.3
0.57	1999.3
1.07	2003.7
2.32	2009.4
4.07	2013.7
9.07	2018.6
16.07	2024.9
25.07	2029.7
36.07	2030.0
49.07	2032.3
64.07	2033.7
81.07	2037.5
100.08	2038.8
121.08	2038.7
144.08	2040.7
180.08	2040.6
300.08	2041.6
480.30	2041.4



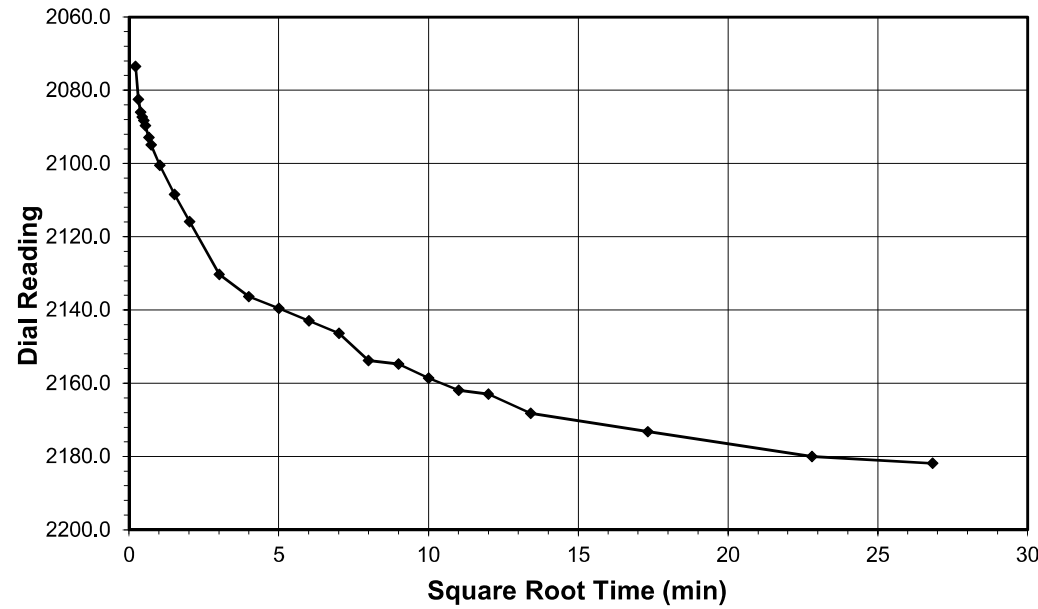
Tested By 129-08-0411 Date 8/8/2019 Checked By GEM Date 8/19/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT.LN_EB2-A
 Client Project R-2561CA Depth (ft) 19.9-21.9
 Project No. R-2019-209-002 Sample No. ST-3
 Lab ID R-2019-209-002-003 Visual Description Gray Clay with Organics

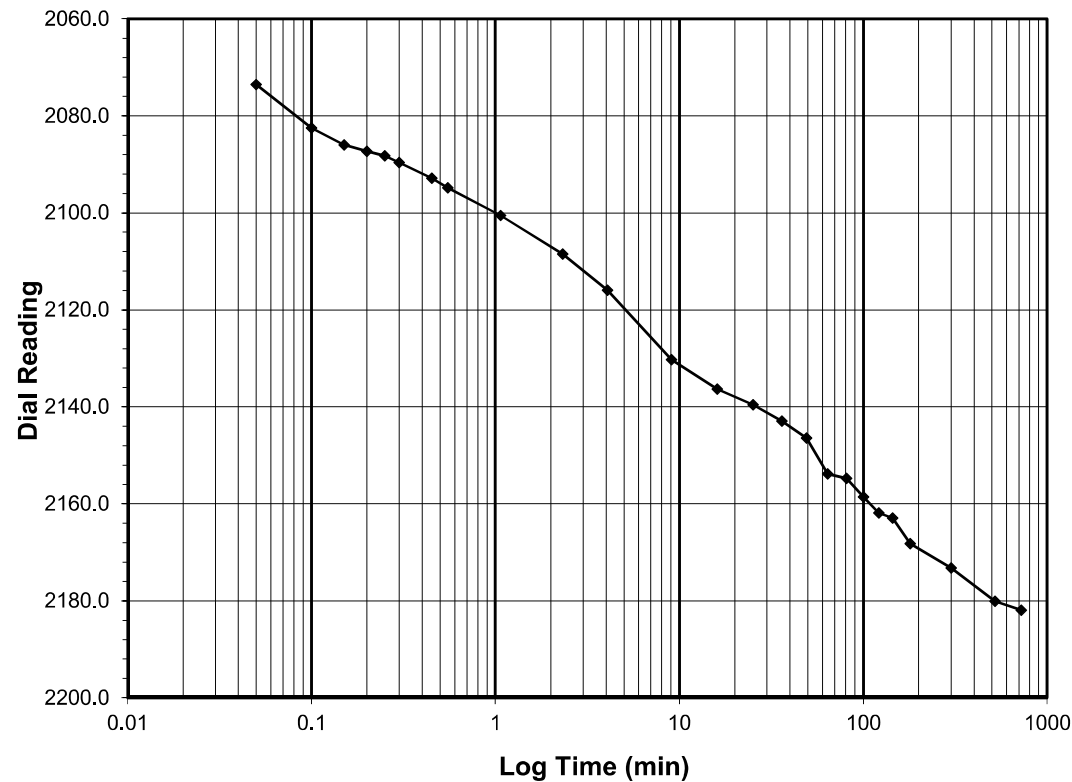
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 2.0-4.0
Final Reading (div) 2181.9
 Consolidometer No. **R409**
 1 Division (in) 0.0001

Start Date 8/8/2019
 Start Time 18:25:05

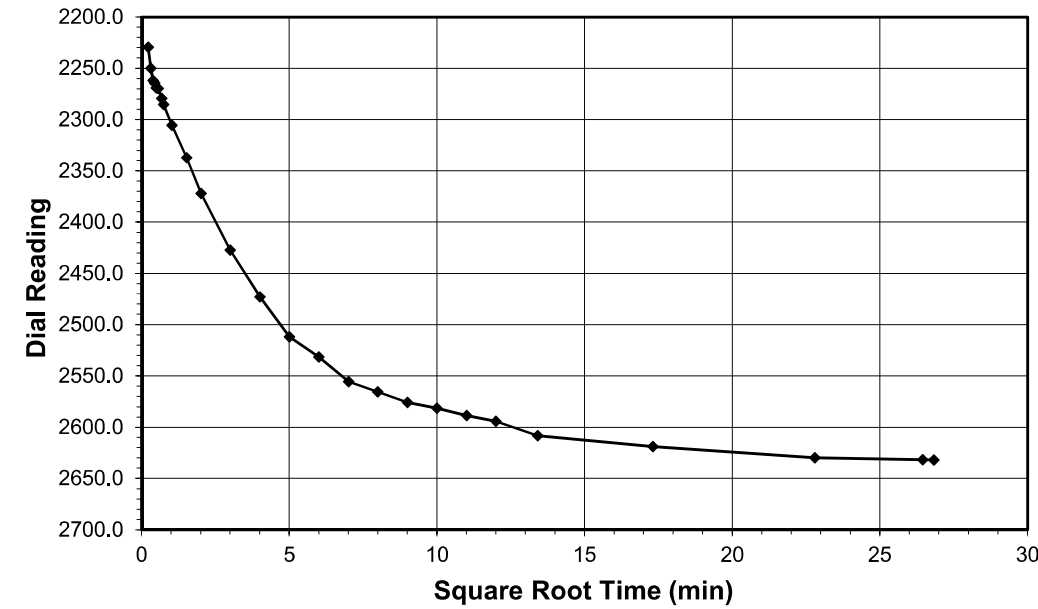
Elapsed Time (min)	Dial Reading (div)
Initial	2041.4
0.05	2073.6
0.10	2082.5
0.15	2086.0
0.20	2087.3
0.25	2088.3
0.30	2089.6
0.45	2092.9
0.55	2094.8
1.07	2100.6
2.32	2108.5
4.07	2115.9
9.07	2130.3
16.07	2136.4
25.07	2139.6
36.07	2142.9
49.07	2146.4
64.07	2153.8
81.07	2154.7
100.07	2158.6
121.07	2161.9
144.07	2163.0
180.07	2168.2
300.07	2173.2
520.07	2180.1
720.33	2181.9



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT.LN_EB2-A
 Client Project R-2561CA Depth (ft) 19.9-21.9
 Project No. R-2019-209-002 Sample No. ST-3
 Lab ID R-2019-209-002-003 Visual Description Gray Clay with Organics

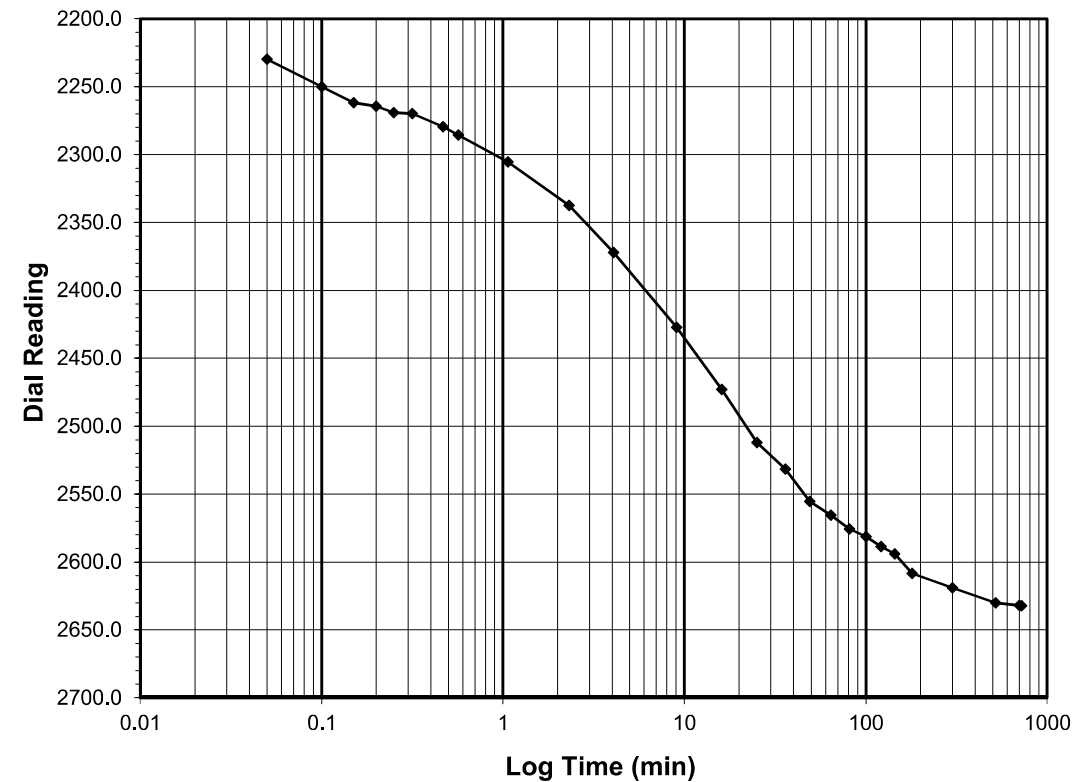
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 4.0-8.0
Final Reading (div) 2632.0
 Consolidometer No. **R409**
 1 Division (in) 0.0001

Start Date 8/9/2019
 Start Time 6:25:25

Elapsed Time (min)	Dial Reading (div)
Initial	2181.9
0.05	2229.6
0.10	2250.1
0.15	2261.9
0.20	2264.5
0.25	2269.2
0.32	2269.9
0.47	2279.5
0.57	2285.5
1.07	2305.4
2.32	2337.3
4.07	2372.1
9.07	2427.2
16.07	2473.0
25.07	2511.9
36.07	2531.5
49.07	2555.5
64.07	2565.6
81.07	2575.7
100.07	2581.4
121.08	2588.7
144.08	2594.1
180.08	2608.4
300.08	2618.9
520.08	2630.0
700.08	2631.9
720.32	2632.0



Tested By 129-08-0411 Date 8/8/2019 Checked By GEM Date 8/19/2019

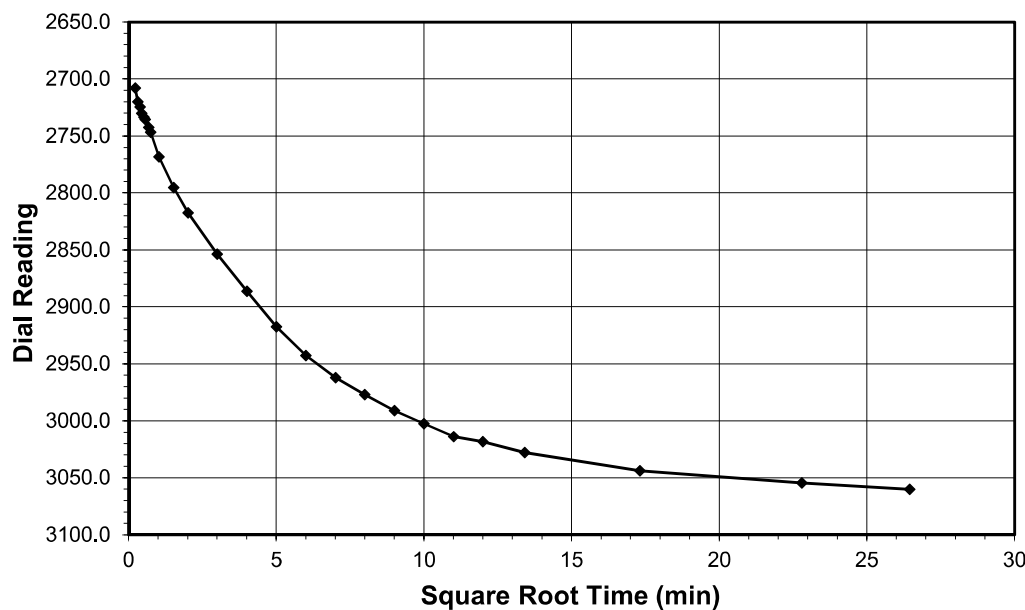
Tested By 129-08-0411 Date 8/9/2019 Checked By GEM Date 8/19/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

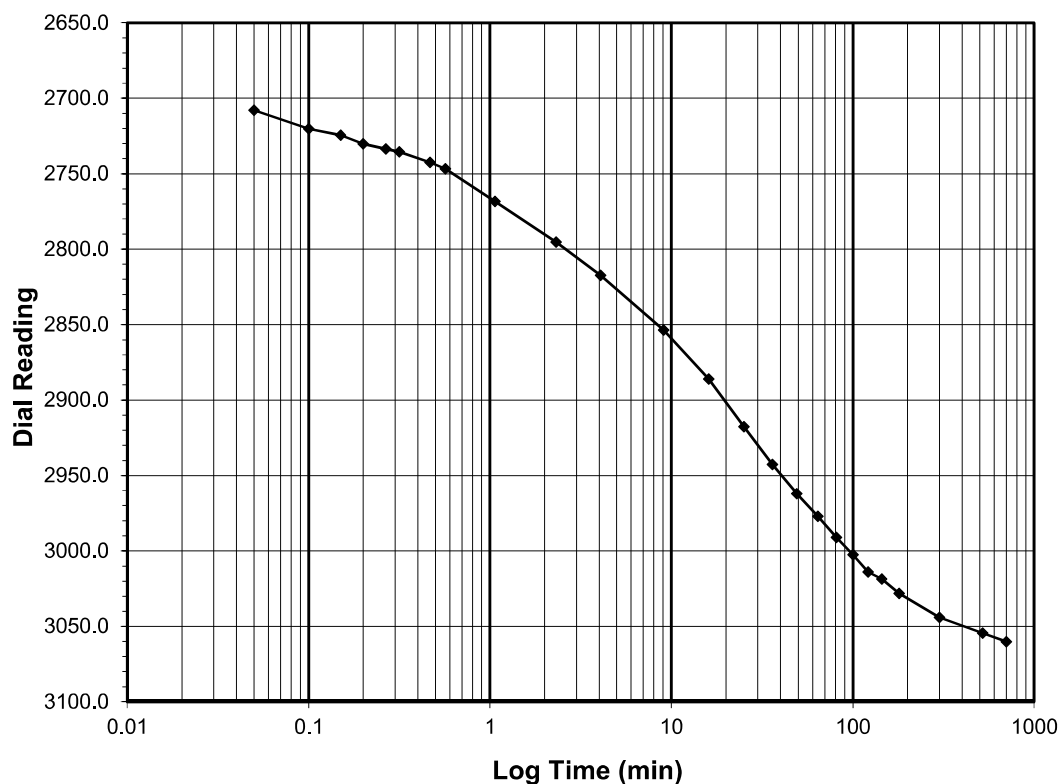
Client Kleinfelder Boring No. S2_RT.LN_EB2-A
 Client Project R-2561CA Depth (ft) 19.9-21.9
 Project No. R-2019-209-002 Sample No. ST-3
 Lab ID R-2019-209-002-003 Visual Description Gray Clay with Organics

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 8.0-16.0
 Final Reading (div) 3060.2
 Consolidometer No. R409
 1 Division (in) 0.0001
 Start Date 8/9/2019
 Start Time 18:25:44

Elapsed Time (min)	Dial Reading (div)
Initial	2632.0
0.05	2708.0
0.10	2720.2
0.15	2724.6
0.20	2730.3
0.27	2733.6
0.32	2735.6
0.47	2742.5
0.57	2746.8
1.07	2768.3
2.32	2795.4
4.07	2817.4
9.07	2853.6
16.07	2886.2
25.07	2917.7
36.07	2942.7
49.07	2962.1
64.07	2977.0
81.07	2991.0
100.07	3002.5
121.07	3013.9
144.07	3018.5
180.08	3028.0
300.08	3044.0
520.08	3054.5
700.08	3060.2



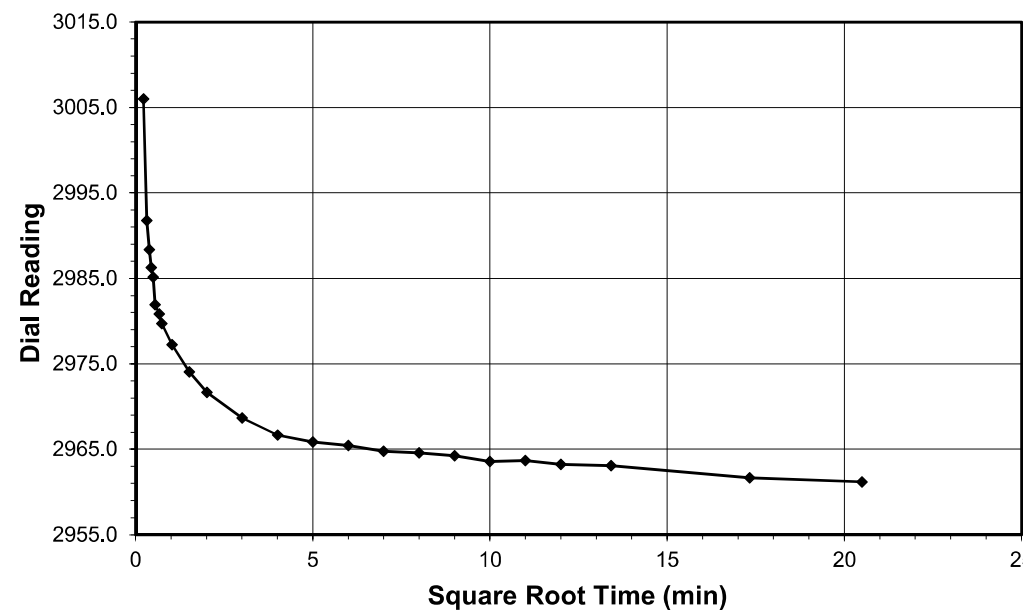
Tested By 129-08-0411 Date 8/9/2019 Checked By GEM Date 8/19/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

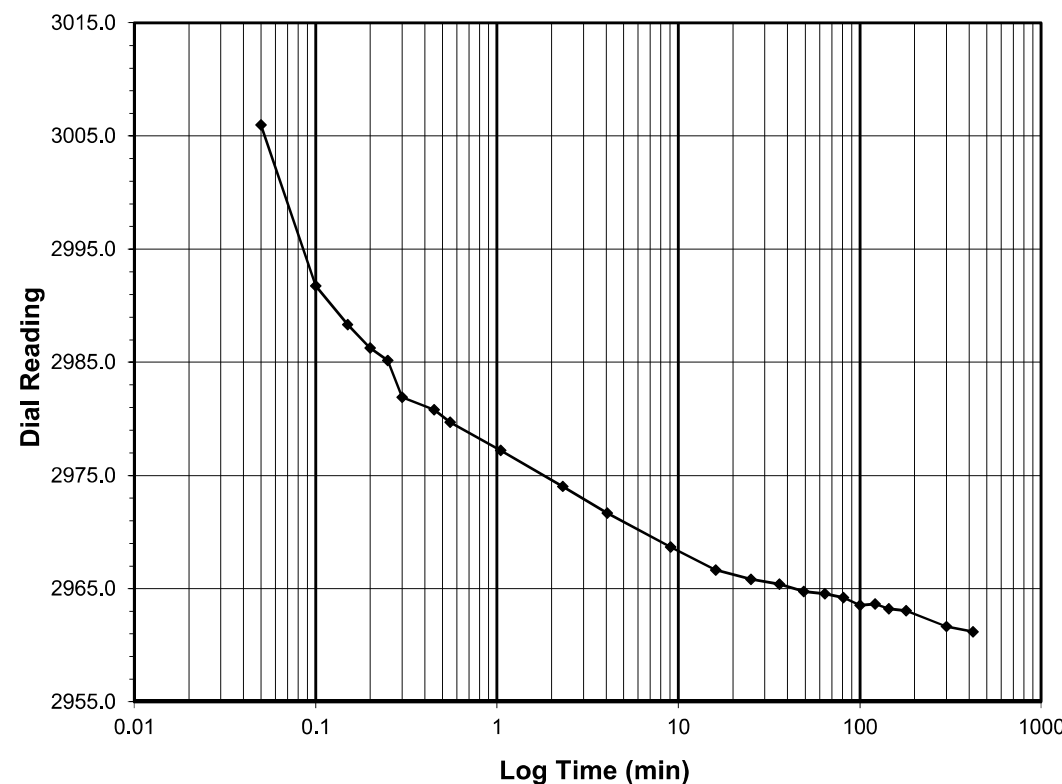
Client Kleinfelder Boring No. S2_RT.LN_EB2-A
 Client Project R-2561CA Depth (ft) 19.9-21.9
 Project No. R-2019-209-002 Sample No. ST-3
 Lab ID R-2019-209-002-003 Visual Description Gray Clay with Organics

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 16.0-4.0
 Final Reading (div) 2961.2
 Consolidometer No. R409
 1 Division (in) 0.0001
 Start Date 8/10/2019
 Start Time 6:26:10

Elapsed Time (min)	Dial Reading (div)
Initial	3060.2
0.05	3006.0
0.10	2991.7
0.15	2988.3
0.20	2986.3
0.25	2985.1
0.30	2981.9
0.45	2980.8
0.55	2979.7
1.05	2977.2
2.30	2974.0
4.05	2971.7
9.05	2968.7
16.05	2966.6
25.05	2965.8
36.05	2965.4
49.05	2964.8
64.05	2964.6
81.07	2964.2
100.07	2963.6
121.07	2963.7
144.07	2963.2
180.07	2963.1
300.07	2961.7
420.18	2961.2



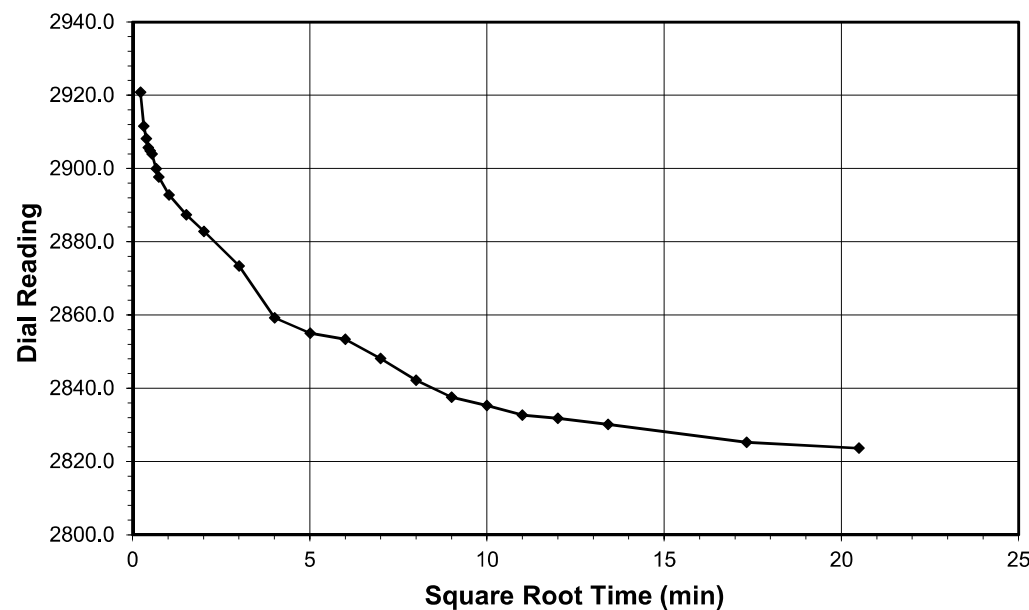
Tested By 129-08-0411 Date 8/10/2019 Checked By GEM Date 8/19/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S2_RT.LN_EB2-A
 Client Project R-2561CA Depth (ft) 19.9-21.9
 Project No. R-2019-209-002 Sample No. ST-3
 Lab ID R-2019-209-002-003 Visual Description Gray Clay with Organics

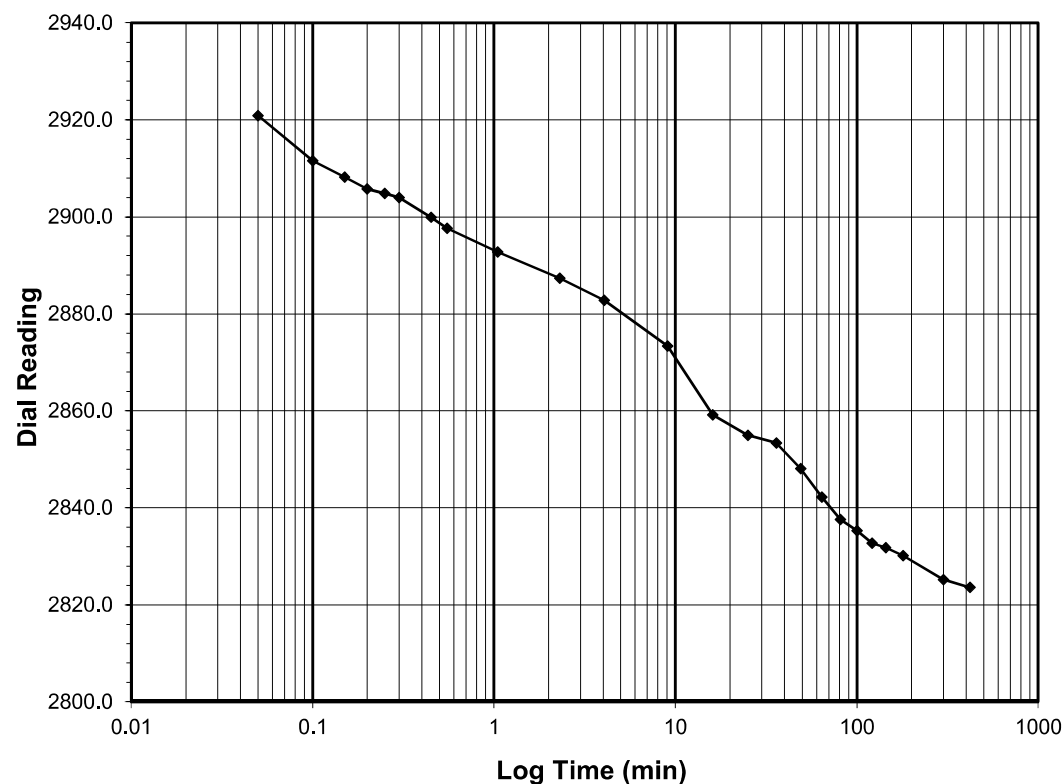
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 4.0-1.0
Final Reading (div) 2823.6
 Consolidometer No. **R409**
 1 Division (in) 0.0001

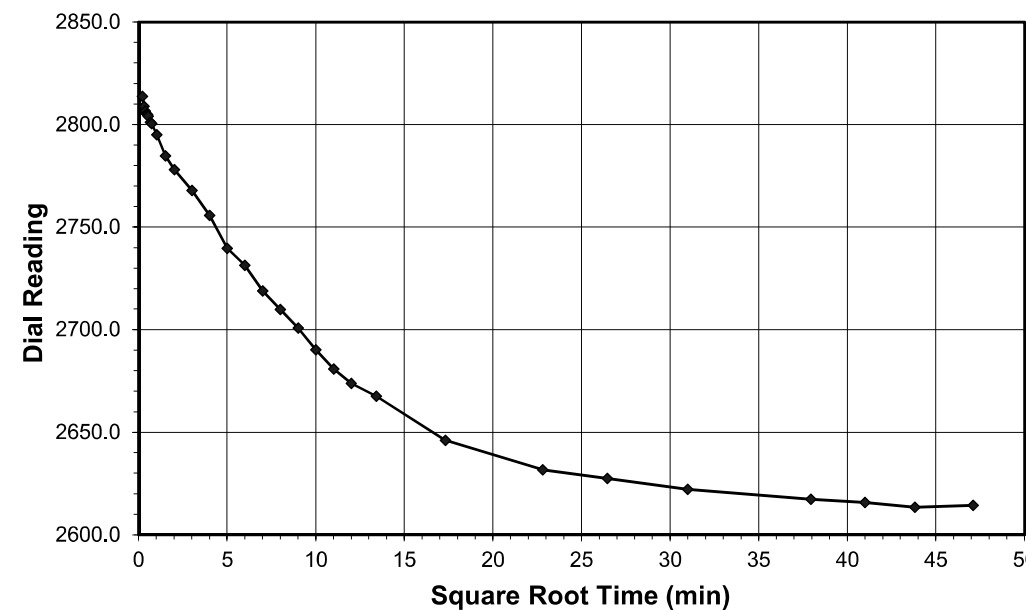
Start Date 8/10/2019
 Start Time 13:26:21

Elapsed Time (min)	Dial Reading (div)
Initial	2961.2
0.05	2920.9
0.10	2911.6
0.15	2908.2
0.20	2905.7
0.25	2904.8
0.30	2904.0
0.45	2899.9
0.55	2897.6
1.05	2892.7
2.30	2887.3
4.05	2882.8
9.07	2873.4
16.07	2859.2
25.07	2855.0
36.07	2853.4
49.07	2848.1
64.07	2842.2
81.07	2837.6
100.07	2835.3
121.07	2832.7
144.07	2831.8
180.07	2830.2
300.07	2825.2
420.02	2823.6



Client Kleinfelder Boring No. S2_RT.LN_EB2-A
 Client Project R-2561CA Depth (ft) 19.9-21.9
 Project No. R-2019-209-002 Sample No. ST-3
 Lab ID R-2019-209-002-003 Visual Description Gray Clay with Organics

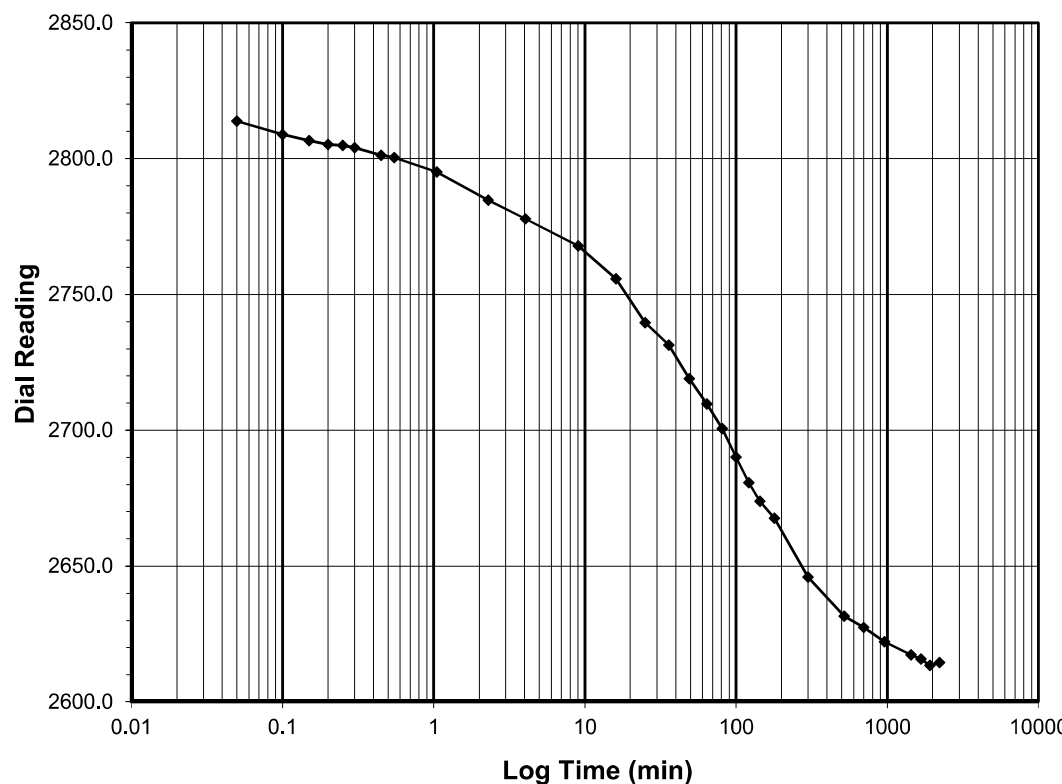
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 1.0-0.25
Final Reading (div) 2614.4
 Consolidometer No. **R409**
 1 Division (in) 0.0001

Start Date 8/10/2019
 Start Time 20:26:22

Elapsed Time (min)	Dial Reading (div)
Initial	2823.6
0.05	2813.8
0.10	2808.9
0.15	2806.6
0.20	2805.2
0.25	2804.9
0.30	2804.0
0.45	2801.2
0.55	2800.4
1.05	2795.0
2.30	2784.7
4.05	2777.9
9.05	2767.9
16.05	2755.7
25.05	2739.6
36.05	2731.4
49.05	2719.0
64.05	2709.7
81.05	2700.7
100.05	2690.1
121.07	2680.8
144.07	2673.8
180.07	2667.6
300.07	2646.0
520.07	2631.6
700.07	2627.4
960.07	2622.1
1440.07	2617.2
1680.07	2615.7
1920.07	2613.4
2218.40	2614.4



Tested By 129-08-0411 Date 8/10/2019 Checked By GEM Date 8/19/2019

Tested By 129-08-0411 Date 8/10/2019 Checked By GEM Date 8/19/2019

REFERENCE: R-2561CA

PROJECT: 34466

CONTENTS

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

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY COLUMBUS
 PROJECT DESCRIPTION NEW INTERCHANGE AT THE
INTERSECTION OF NC 87 AND NC 11
 SITE DESCRIPTION BRIDGE NO. 374 ON NC 11 (-Y-)
OVER WEYMAN CREEK

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2561CA	1	6

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 1919 T07-6850. 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

S. PAPKE
MID-ATLANTIC DRILLING

INVESTIGATED BY S. PAPKE
 DRAWN BY C. DRISCOLL
 CHECKED BY T. WELLS
 SUBMITTED BY KLEINFELDER, INC.
 DATE AUGUST 2020

Prepared in the Office of:



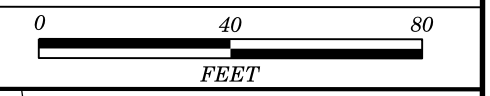

 SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

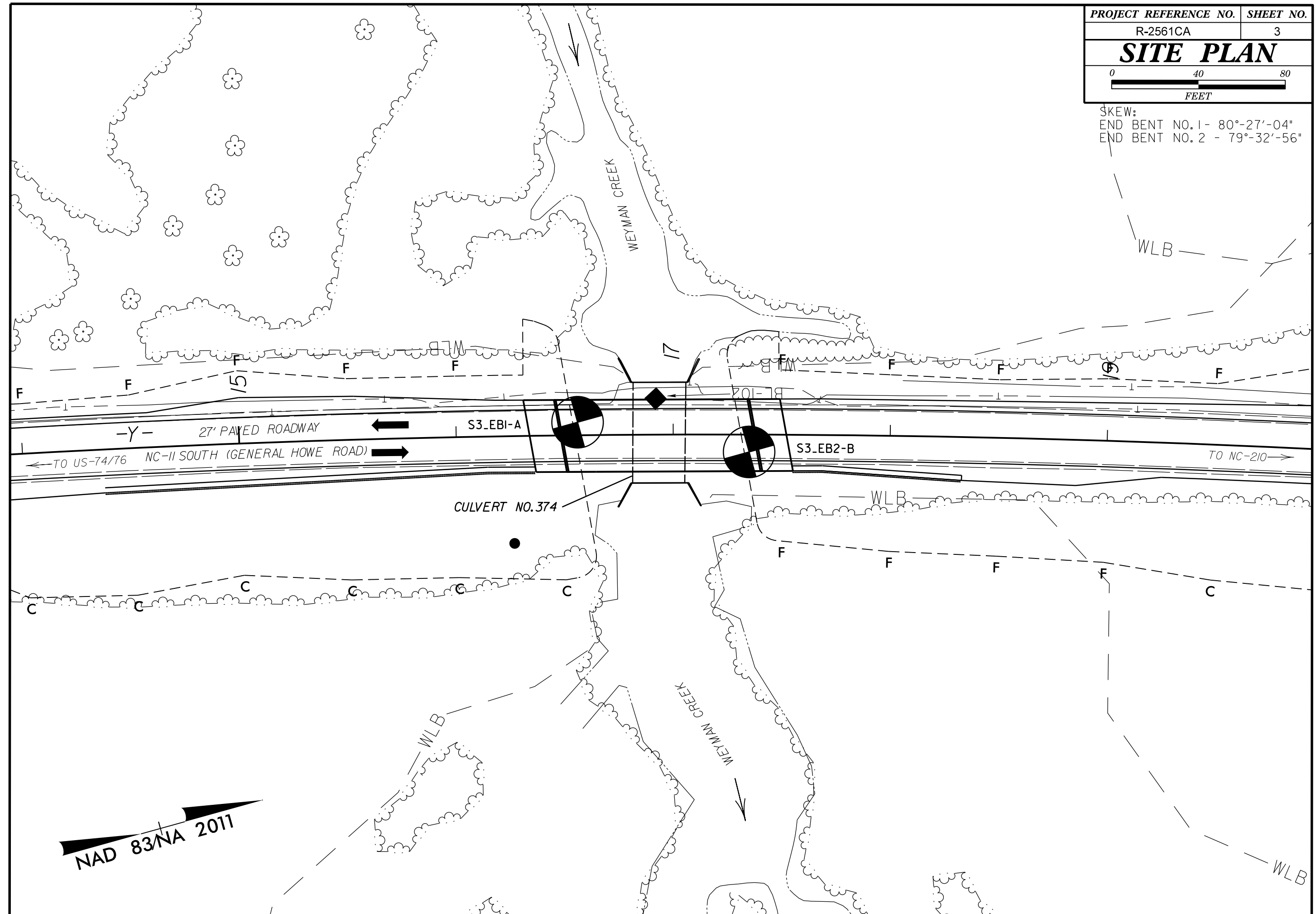
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT SUBSURFACE INVESTIGATION SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

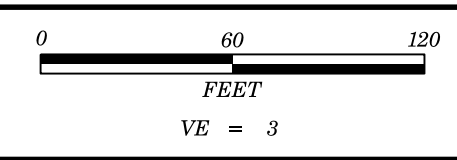
SOIL DESCRIPTION GRADATION ROCK DESCRIPTION TERMS AND DEFINITIONS SOIL LEGEND AND AASHTO CLASSIFICATION MINERALOGICAL COMPOSITION COMPRESSIBILITY PERCENTAGE OF MATERIAL GROUND WATER MISCELLANEOUS SYMBOLS RECOMMENDATION SYMBOLS ABBREVIATIONS EQUIPMENT USED ON SUBJECT PROJECT FRACTURE SPACING BEDDING INDURATION

SITE PLAN

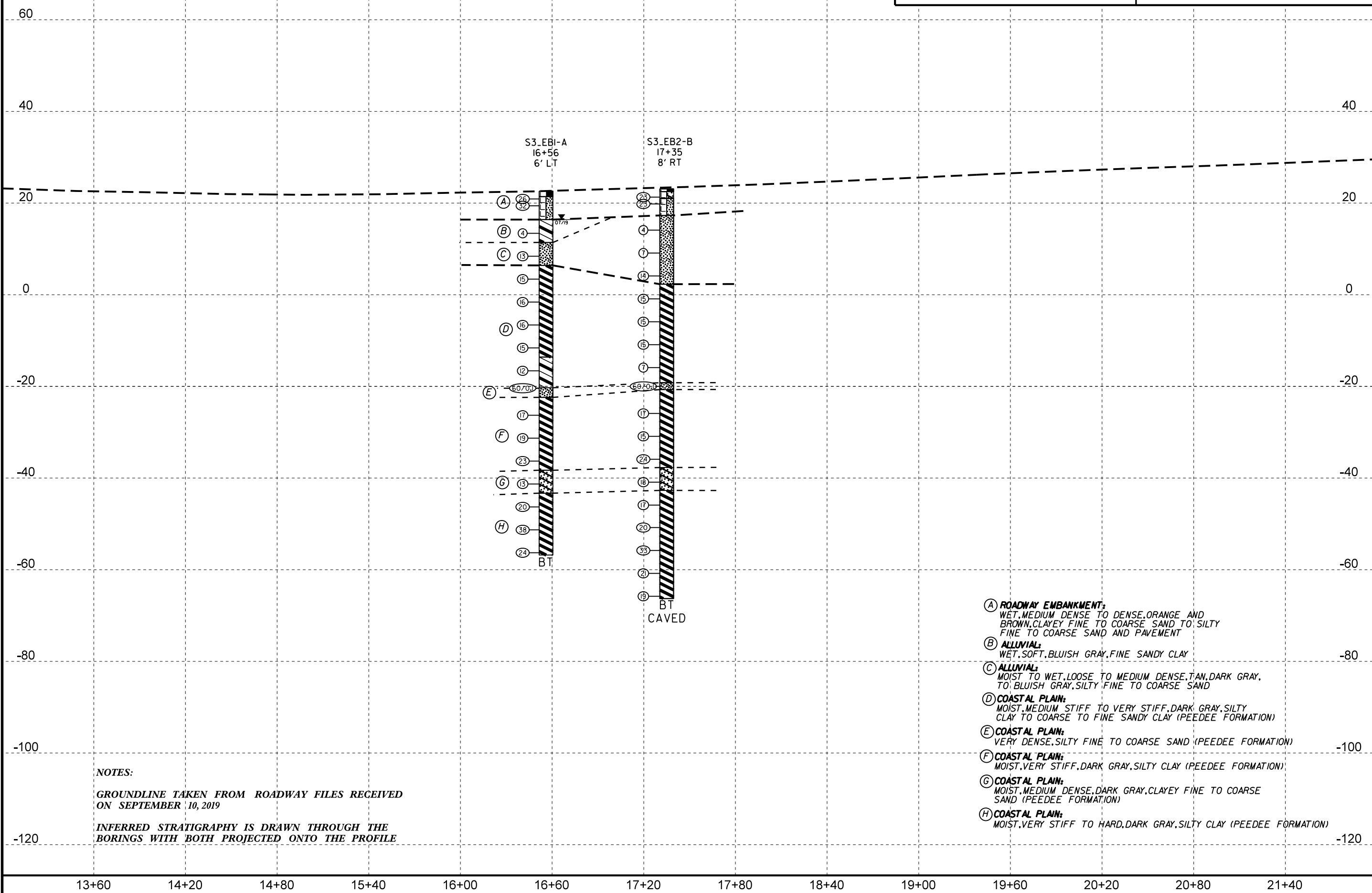


SKEW:
 END BENT NO. 1 - 80°-27'-04"
 END BENT NO. 2 - 79°-32'-56"





PROJECT REFERENCE NO.	SHEET NO.
R-2561CA	4
PROFILE ON BRIDGE NO. 374 ON NC 11 (-Y-) OVER WEYMAN CREEK	



NOTES:
 GROUNDLINE TAKEN FROM ROADWAY FILES RECEIVED
 ON SEPTEMBER 10, 2019
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE
 BORINGS WITH BOTH PROJECTED ONTO THE PROFILE

- (A) **ROADWAY EMBANKMENT:**
WET, MEDIUM DENSE TO DENSE, ORANGE AND BROWN, CLAYEY FINE TO COARSE SAND TO SILTY FINE TO COARSE SAND AND PAVEMENT
- (B) **ALLUVIAL:**
WET, SOFT, BLUISH GRAY, FINE SANDY CLAY
- (C) **ALLUVIAL:**
MOIST TO WET, LOOSE TO MEDIUM DENSE, TAN, DARK GRAY, TO BLUISH GRAY, SILTY FINE TO COARSE SAND
- (D) **COASTAL PLAIN:**
MOIST, MEDIUM STIFF TO VERY STIFF, DARK GRAY, SILTY CLAY TO COARSE TO FINE SANDY CLAY (PEEDEE FORMATION)
- (E) **COASTAL PLAIN:**
VERY DENSE, SILTY FINE TO COARSE SAND (PEEDEE FORMATION)
- (F) **COASTAL PLAIN:**
MOIST, VERY STIFF, DARK GRAY, SILTY CLAY (PEEDEE FORMATION)
- (G) **COASTAL PLAIN:**
MOIST, MEDIUM DENSE, DARK GRAY, CLAYEY FINE TO COARSE SAND (PEEDEE FORMATION)
- (H) **COASTAL PLAIN:**
MOIST, VERY STIFF TO HARD, DARK GRAY, SILTY CLAY (PEEDEE FORMATION)

REFERENCE: R-2561CA

PROJECT: 34466

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY COLUMBUS
PROJECT DESCRIPTION NEW INTERCHANGE AT THE
INTERSECTION OF NC 87 AND NC 11
SITE DESCRIPTION BRIDGE NO. 418 ON NC 87 (-L-)
WESTBOUND LANE OVER WEYMAN CREEK

CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
4	PROFILE
5-8	BORE LOGS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2561CA	1	8

CAUTION NOTICE

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

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

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

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

PERSONNEL

S. PAPKE
MID-ATLANTIC DRILLING

INVESTIGATED BY S. PAPKE
 DRAWN BY C. DRISCOLL
 CHECKED BY T. WELLS
 SUBMITTED BY KLEINFELDER, INC.
 DATE AUGUST 2020

Prepared in the Office of:



Th. R. Wells 8/18/20
 SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 296, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, *VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6*

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)						SILT-CLAY MATERIALS (> 35% PASSING #200)						ORGANIC MATERIALS					
	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12	A-13	A-14	A-15			
GROUP CLASS.	A-1-a	A-1-b	A-2-4	A-2-5	A-2-6	A-2-7	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12	A-13	A-14	A-15
SYMBOL	[Soil Legend Patterns]																	
% PASSING #10 #40 #200	[Soil Legend Data]																	
MATERIAL PASSING #40 #10 #200	[Soil Legend Data]																	
GROUP INDEX	[Soil Legend Data]																	
USUAL TYPES OF MAJOR MATERIALS	[Soil Legend Data]																	
GEN. RATING AS SUBGRADE	[Soil Legend Data]																	

GRADATION

WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS:
ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LL < 31
MODERATELY COMPRESSIBLE	LL = 31 - 50
HIGHLY COMPRESSIBLE	LL > 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS	OTHER MATERIAL
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE 1 - 10%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	LITTLE 10 - 20%
MODERATELY ORGANIC	5 - 10%	12 - 20%	SOME 20 - 35%
HIGHLY ORGANIC	> 10%	> 20%	HIGHLY 35% AND ABOVE

GROUND WATER

- [Symbol] WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- [Symbol] STATIC WATER LEVEL AFTER 24 HOURS
- [Symbol] PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- [Symbol] SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- [Symbol] ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- [Symbol] SOIL SYMBOL
- [Symbol] ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- [Symbol] INFERRED SOIL BOUNDARY
- [Symbol] INFERRED ROCK LINE
- [Symbol] ALLUVIAL SOIL BOUNDARY
- [Symbol] DIP & DIP DIRECTION OF ROCK STRUCTURES
- [Symbol] TEST BORING
- [Symbol] AUGER BORING
- [Symbol] CORE BORING
- [Symbol] MONITORING WELL
- [Symbol] PIEZOMETER INSTALLATION
- [Symbol] SLOPE INDICATOR INSTALLATION
- [Symbol] CONE PENETROMETER TEST
- [Symbol] SOUNDING ROD
- [Symbol] TEST BORING WITH CORE
- [Symbol] SPT N-VALUE

RECOMMENDATION SYMBOLS

- [Symbol] UNDERCUT
- [Symbol] SHALLOW UNDERCUT
- [Symbol] UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE
- [Symbol] UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK
- [Symbol] UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL

ABBREVIATIONS

AR - AUGER REFUSAL	MED. - MEDIUM	VST - VANE SHEAR TEST
BT - BORING TERMINATED	MICA - MICACEOUS	WEA. - WEATHERED
CL. - CLAY	MOD. - MODERATELY	UNIT WEIGHT
CPT - COARSE PENETRATION TEST	NP - NON PLASTIC	DRY UNIT WEIGHT
CSE. - COARSE	ORG. - ORGANIC	SAMPLE ABBREVIATIONS
DMT - DILATOMETER TEST	PMT - PRESSUREMETER TEST	S - BULK
DPT - DYNAMIC PENETRATION TEST	SAP. - SAPROLITIC	SS - SPLIT SPOON
e - VOID RATIO	SD. - SAND, SANDY	ST - SHELBY TUBE
F - FINE	SL. - SILTY, SILTY	RS - ROCK
FOSS. - FOSSILIFEROUS	SLI. - SLIGHTLY	RT - RECOMPACTED TRIAXIAL
FRAC. - FRACTURED, FRACTURES	TCR - TRICONE REFUSAL	CBR - CALIFORNIA BEARING RATIO
FRAGS. - FRAGMENTS	w - MOISTURE CONTENT	
HI. - HIGHLY	V - VERY	

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED, AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL, SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
CRYSTALLINE ROCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SL.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN. CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.
SLIGHT (SL.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. IF TESTED, WOULD YIELD SPT REFUSAL.
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF.
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF.
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. FABRIC MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROOVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
AQUIFER - A WATER BEARING FORMATION OR STRATA.
ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.
CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.
DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOADED FROM PARENT MATERIAL.
FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.
JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.
LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.
RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.
SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
Slickenside - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.
STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 60 BLOWS PER FOOT PER 60 BLOWS.
STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK: BY-I15 AT STA. 71+20.16 -L- 55' RT (227,813 FT.N., 2,219,352 FT.E)
ELEVATION: 24.22 FEET

NOTES:
FIAD - FILLED IMMEDIATELY AFTER DRILLING

EQUIPMENT USED ON SUBJECT PROJECT

<input checked="" type="checkbox"/> CME-45C	<input type="checkbox"/> CLAY BITS	<input checked="" type="checkbox"/> AUTOMATIC	<input type="checkbox"/> MANUAL
<input type="checkbox"/> CME-55	<input type="checkbox"/> 6" CONTINUOUS FLIGHT AUGER	CORE SIZE:	
<input type="checkbox"/> CME-550	<input type="checkbox"/> 8" HOLLOW AUGERS	<input type="checkbox"/> -B	<input type="checkbox"/> -H
<input type="checkbox"/> VANE SHEAR TEST	<input type="checkbox"/> HARD FACED FINGER BITS	<input type="checkbox"/> -N	
<input type="checkbox"/> PORTABLE HOIST	<input type="checkbox"/> TUNG-CARBIDE INSERTS	HAND TOOLS:	
	<input checked="" type="checkbox"/> CASING <input type="checkbox"/> W/ ADVANCER	<input type="checkbox"/> POST HOLE DIGGER	
	<input type="checkbox"/> TRICONE <input type="checkbox"/> STEEL TEETH	<input type="checkbox"/> HAND AUGER	
	<input checked="" type="checkbox"/> TRICONE 2-1/16" TUNG-CARB.	<input type="checkbox"/> SOUNDING ROD	
	<input type="checkbox"/> CORE BIT	<input type="checkbox"/> VANE SHEAR TEST	

FRACTURE SPACING

TERM	SPACING	TERM	THICKNESS
VERY WIDE	MORE THAN 10 FEET	VERY THICKLY BEDDED	4 FEET
WIDE	3 TO 10 FEET	THICKLY BEDDED	1.5 - 4 FEET
MODERATELY CLOSE	1 TO 3 FEET	THINLY BEDDED	0.16 - 1.5 FEET
CLOSE	0.16 TO 1 FOOT	VERY THINLY BEDDED	0.03 - 0.16 FEET
VERY CLOSE	LESS THAN 0.16 FEET	THICKLY LAMINATED	0.008 - 0.03 FEET
		THINLY LAMINATED	< 0.008 FEET

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

FRIBLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE (OPENING (MM))	4	10	40	60	200	270
	4.76	2.00	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE	MM	305	75	2.0	0.25	0.05	0.005
	IN.	12	3				

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
LL - LIQUID LIMIT	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
PL - PLASTIC LIMIT	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
OM - OPTIMUM MOISTURE	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
SL - SHRINKAGE LIMIT	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

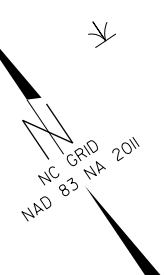
NON PLASTIC	PLASTICITY INDEX (PI)		DRY STRENGTH
SLIGHTLY PLASTIC	0-5		VERY LOW
MODERATELY PLASTIC	6-15		SLIGHT
HIGHLY PLASTIC	16-25		MEDIUM
	26 OR MORE		HIGH

COLOR

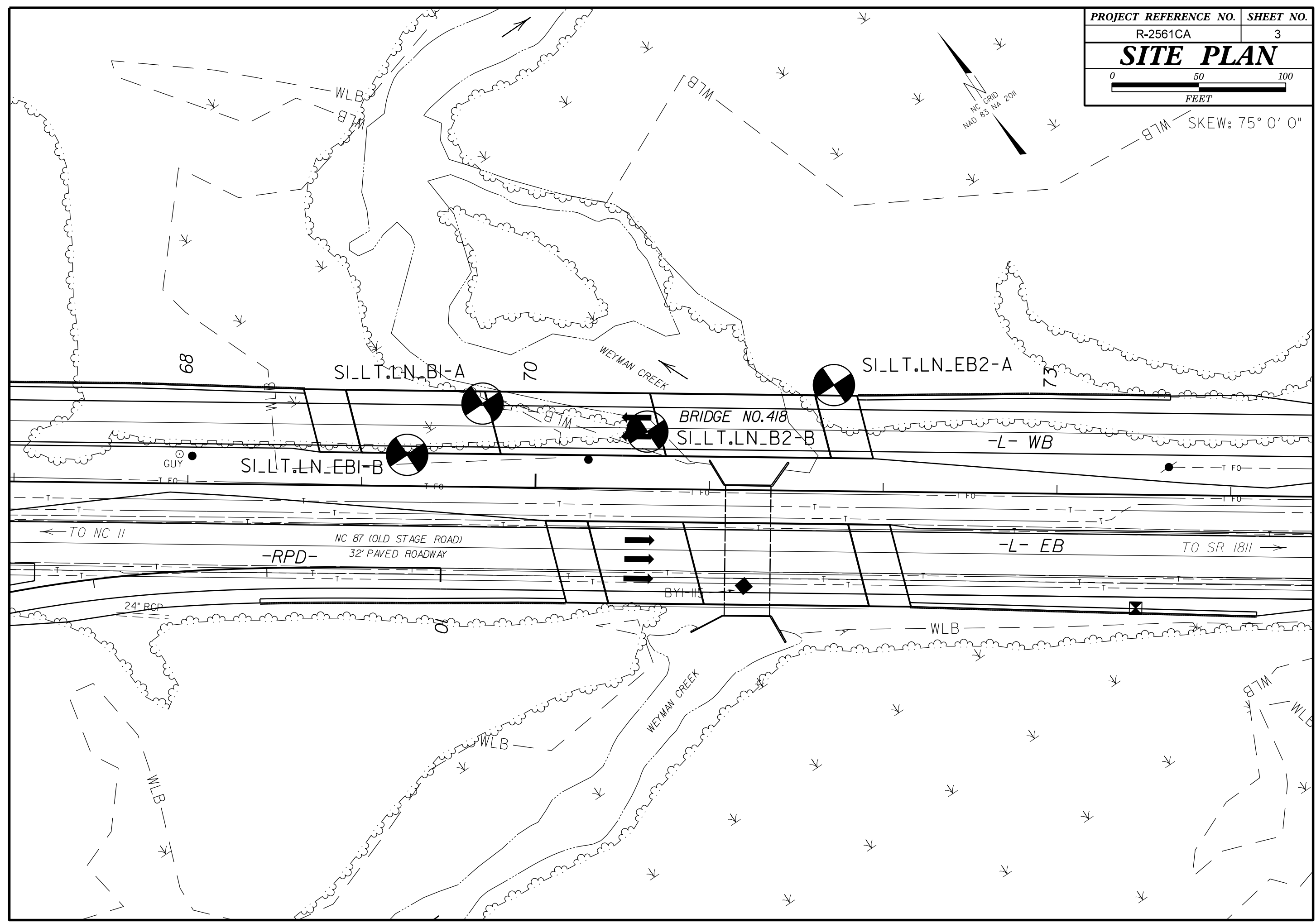
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

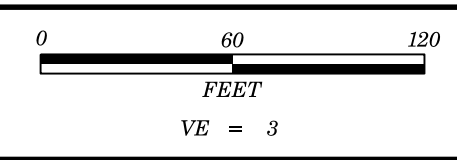
DATE: 8-15-14

PROJECT REFERENCE NO.	SHEET NO.
R-2561CA	3
SITE PLAN	
 0 50 100 FEET	

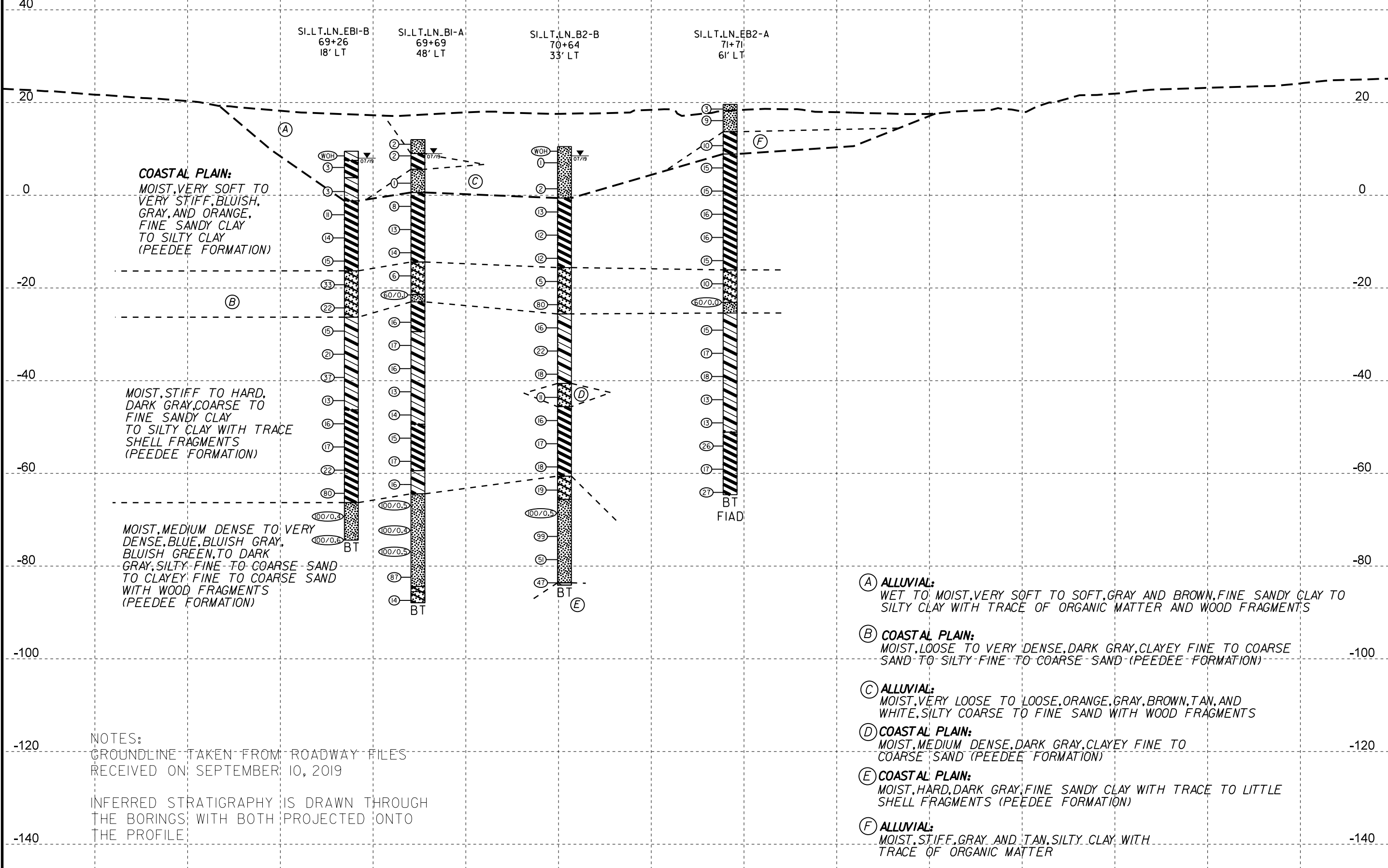


SKEW: 75° 0' 0"





PROJECT REFERENCE NO.	SHEET NO.
R-2561CA	4
PROFILE ON BRIDGE NO. 418 ON NC 87 (-L-) WB OVER WEYMAN CREEK	



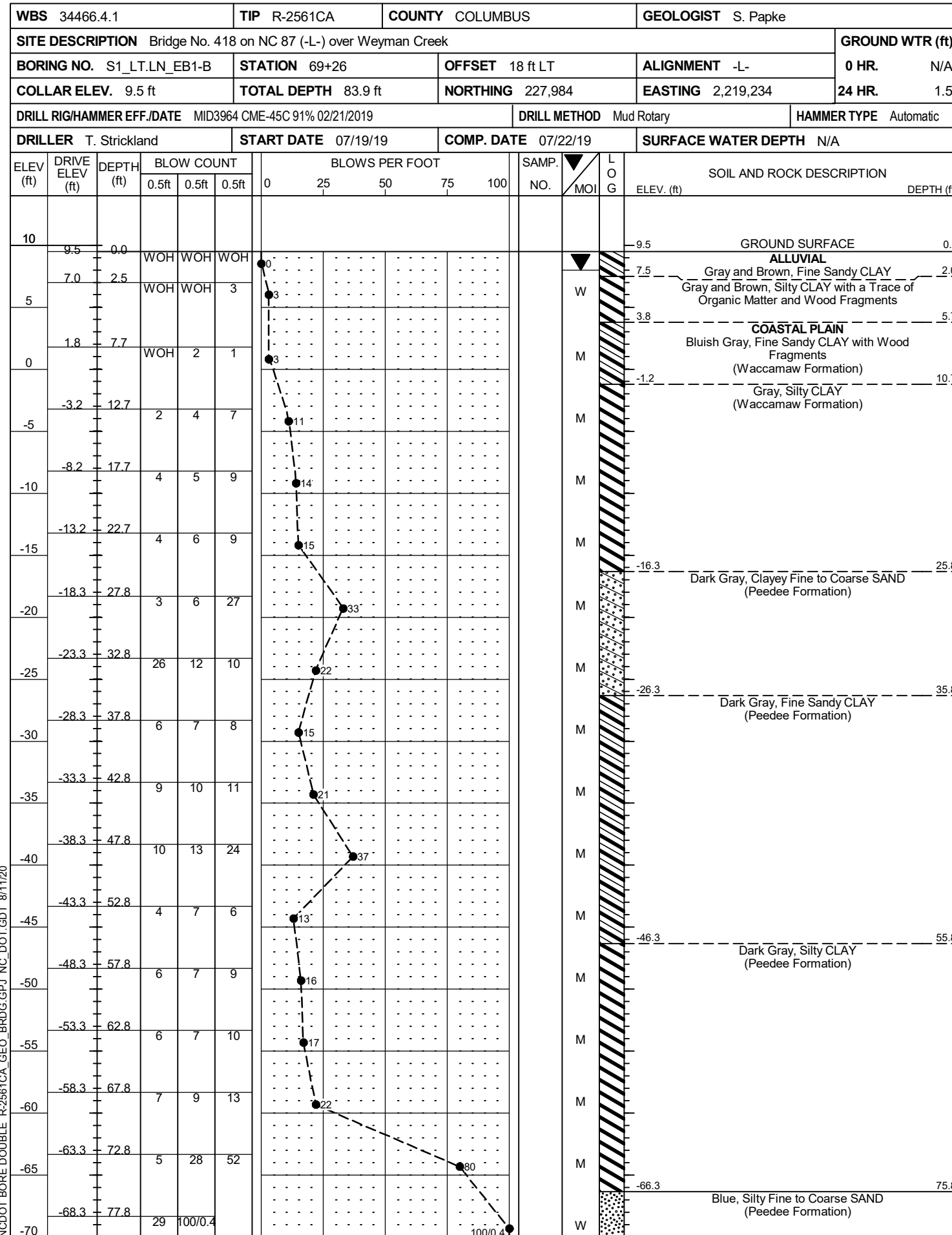
NOTES:
 GROUNDLINE TAKEN FROM ROADWAY FILES
 RECEIVED ON SEPTEMBER 10, 2019
 INFERRED STRATIGRAPHY IS DRAWN THROUGH
 THE BORINGS WITH BOTH PROJECTED ONTO
 THE PROFILE

- (A) **ALLUVIAL:**
WET TO MOIST, VERY SOFT TO SOFT, GRAY AND BROWN, FINE SANDY CLAY TO SILTY CLAY WITH TRACE OF ORGANIC MATTER AND WOOD FRAGMENTS
- (B) **COASTAL PLAIN:**
MOIST, LOOSE TO VERY DENSE, DARK GRAY, CLAYEY FINE TO COARSE SAND TO SILTY FINE TO COARSE SAND (PEEDEE FORMATION)
- (C) **ALLUVIAL:**
MOIST, VERY LOOSE TO LOOSE, ORANGE, GRAY, BROWN, TAN, AND WHITE, SILTY COARSE TO FINE SAND WITH WOOD FRAGMENTS
- (D) **COASTAL PLAIN:**
MOIST, MEDIUM DENSE, DARK GRAY, CLAYEY FINE TO COARSE SAND (PEEDEE FORMATION)
- (E) **COASTAL PLAIN:**
MOIST, HARD, DARK GRAY, FINE SANDY CLAY WITH TRACE TO LITTLE SHELL FRAGMENTS (PEEDEE FORMATION)
- (F) **ALLUVIAL:**
MOIST, STIFF, GRAY AND TAN, SILTY CLAY WITH TRACE OF ORGANIC MATTER

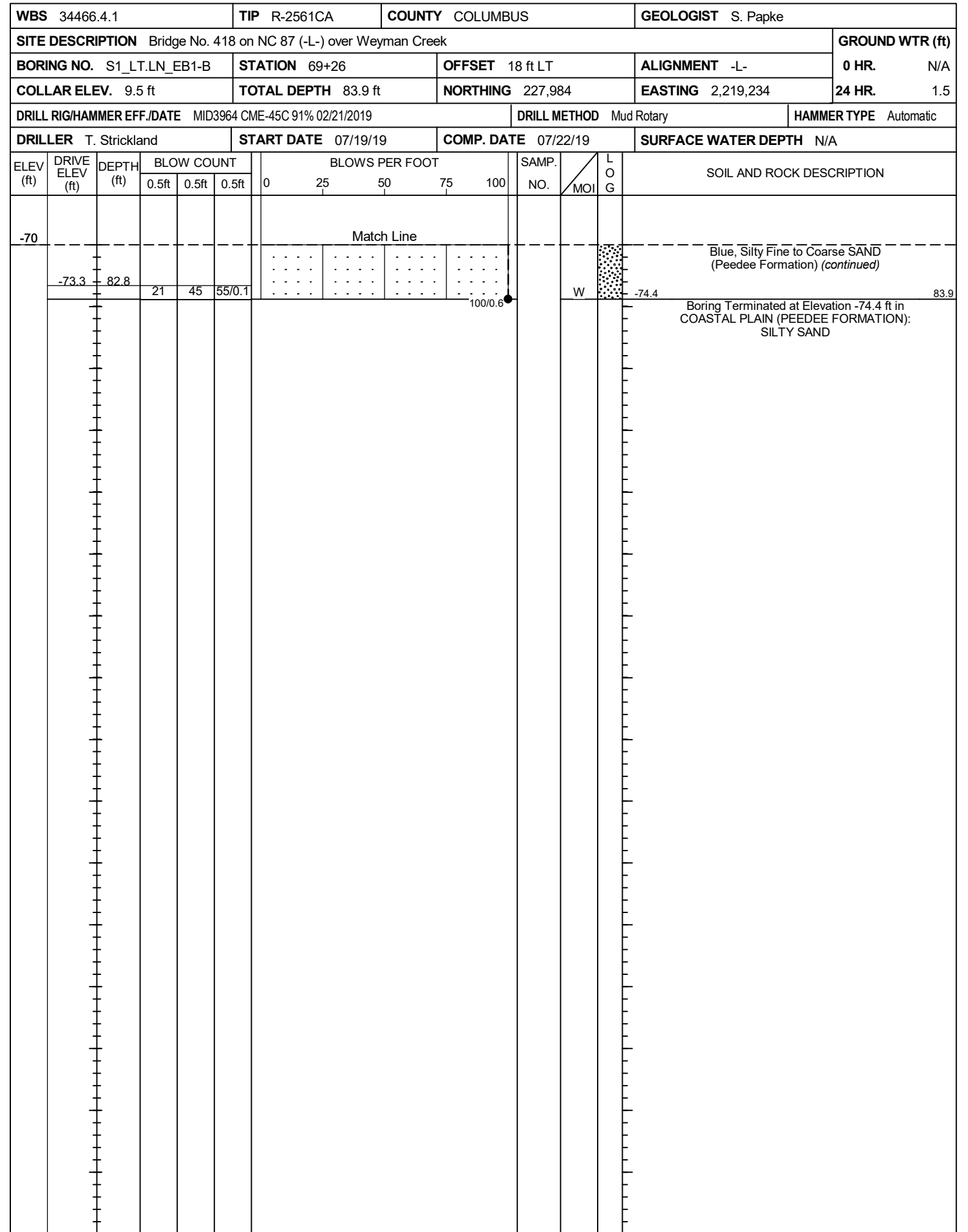
67+60 68+20 68+80 69+40 70+00 70+60 71+20 71+80 72+40 73+00 73+60 74+20 74+80 75+40

GEOTECHNICAL BORING REPORT

BORE LOG



NCDOT BORE DOUBLE R-2561CA GEO BRDG.GPJ NC_DOT.GDT 8/11/20



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34466.4.1			TIP R-2561CA			COUNTY COLUMBUS			GEOLOGIST S. Papke							
SITE DESCRIPTION Bridge No. 418 on NC 87 (-L-) over Weyman Creek									GROUND WTR (ft)							
BORING NO. S1_LT.LN_B1-A			STATION 69+69			OFFSET 48 ft LT			ALIGNMENT -L-							
COLLAR ELEV. 12.0 ft			TOTAL DEPTH 99.9 ft			NORTHING 227,984			EASTING 2,219,287							
DRILL RIG/HAMMER EFF./DATE MID5464 CME-45C 90% 02/21/2019						DRILL METHOD Mud Rotary			HAMMER TYPE Automatic							
DRILLER B. Fowler			START DATE 07/23/19			COMP. DATE 07/23/19			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						
15																
	12.0	0.0	1	1	1								M	12.0	GROUND SURFACE	0.0
10	9.5	2.5	1	0	2								M	9.0	ALLUVIAL Orange, Silty Coarse to Fine SAND	3.0
													M		Gray, Silty CLAY	
5	3.6	8.4	1	0	1								M	5.6	Gray and Brown, Silty Fine SAND with Wood Fragments	6.4
0	-1.4	13.4	WOH	3	5								M	0.6	COASTAL PLAIN Orange and Gray, Silty CLAY (Waccamaw Formation)	11.4
-5	-6.4	18.4		4	6								M			
-10	-11.4	23.4		4	7								M			
-15	-16.4	28.4		2	3								M	-14.4	Dark Gray, Clayey Coarse to Fine SAND (Peedee Formation)	26.4
-20	-21.4	33.4		60/0.1									M	-21.4	Silty Coarse to Fine SAND (Peedee Formation)	33.4
-25	-26.4	38.4		4	7								M	-23.0	Dark Gray, Silty CLAY (Peedee Formation)	35.0
-30	-31.4	43.4		6	8								M	-29.4	Dark Gray, Fine Sandy CLAY (Peedee Formation)	41.4
-35	-36.4	48.4		6	7								M			
-40	-41.4	53.4		5	6								M			
-45	-46.4	58.4		5	6								M			
-50	-51.4	63.4		6	7								M	-49.4	Dark Gray, Silty CLAY (Peedee Formation)	61.4
-55	-56.4	68.4		4	8								M			
-60	-61.4	73.4		6	7								M	-59.4	Dark Gray, Coarse to Fine Sandy CLAY (Peedee Formation)	71.4
-65													M	-64.4		76.4

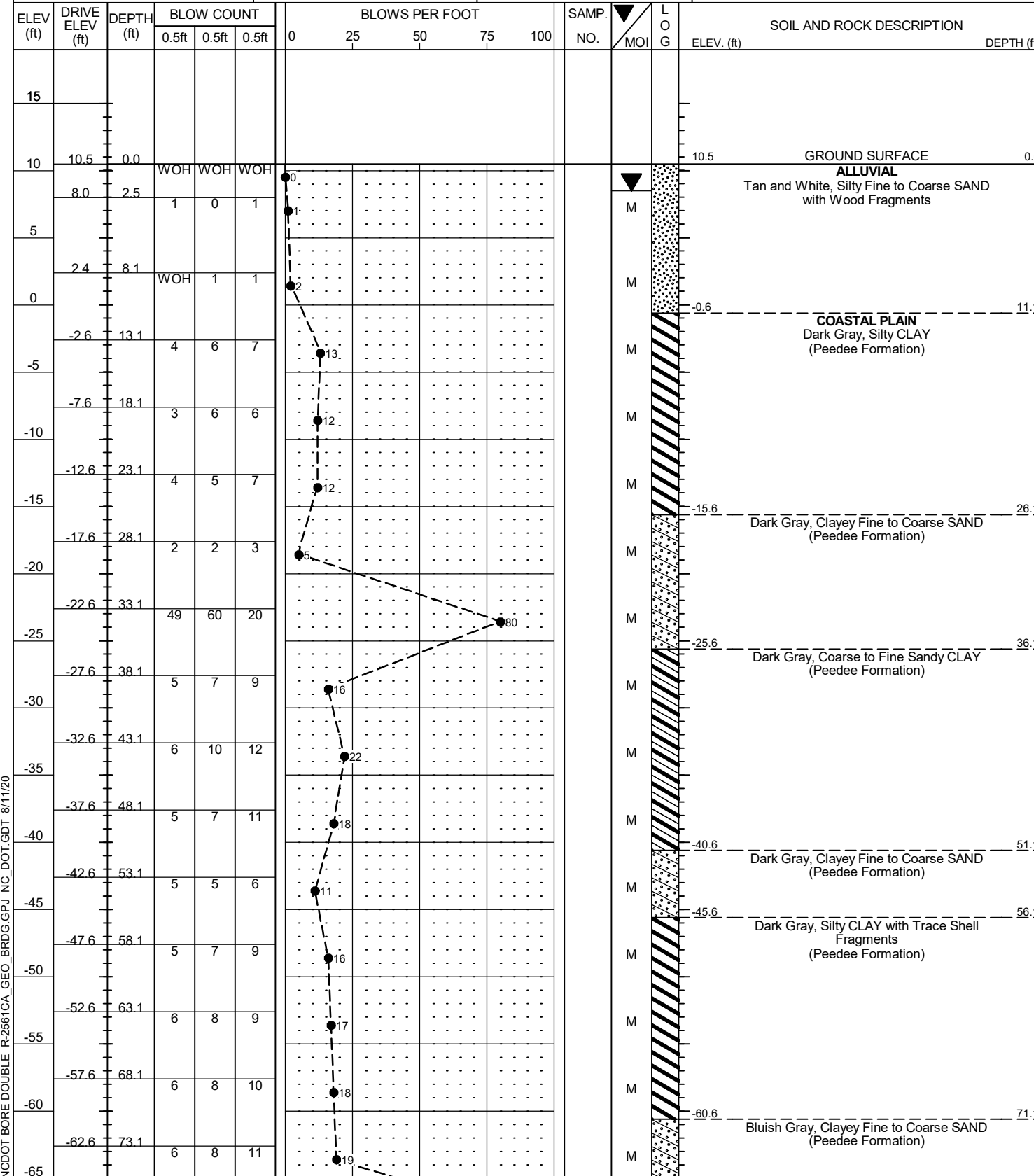
WBS 34466.4.1			TIP R-2561CA			COUNTY COLUMBUS			GEOLOGIST S. Papke							
SITE DESCRIPTION Bridge No. 418 on NC 87 (-L-) over Weyman Creek									GROUND WTR (ft)							
BORING NO. S1_LT.LN_B1-A			STATION 69+69			OFFSET 48 ft LT			ALIGNMENT -L-							
COLLAR ELEV. 12.0 ft			TOTAL DEPTH 99.9 ft			NORTHING 227,984			EASTING 2,219,287							
DRILL RIG/HAMMER EFF./DATE MID5464 CME-45C 90% 02/21/2019						DRILL METHOD Mud Rotary			HAMMER TYPE Automatic							
DRILLER B. Fowler			START DATE 07/23/19			COMP. DATE 07/23/19			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						
-65																
	-66.4	78.4		100/0.5									W		Bluish Gray, Silty Fine to Coarse SAND (Peedee Formation) (continued)	
-70	-71.4	83.4		29	100/0.4								W			
-75	-76.4	88.4		100/0.5									W			
-80	-81.4	93.4		20	45	42							W			
-85	-86.4	98.4		5	7	7							W	-84.4	Dark Gray, Clayey Coarse to Fine SAND (Peedee Formation)	96.4
														-87.9	Boring Terminated at Elevation -87.9 ft in COASTAL PLAIN (PEEDEE FORMATION): CLAYEY SAND	99.9

NCDOT BORE DOUBLE R-2561CA GEO_BRDG.GPJ NC_DOT.GDT 8/11/20

GEOTECHNICAL BORING REPORT

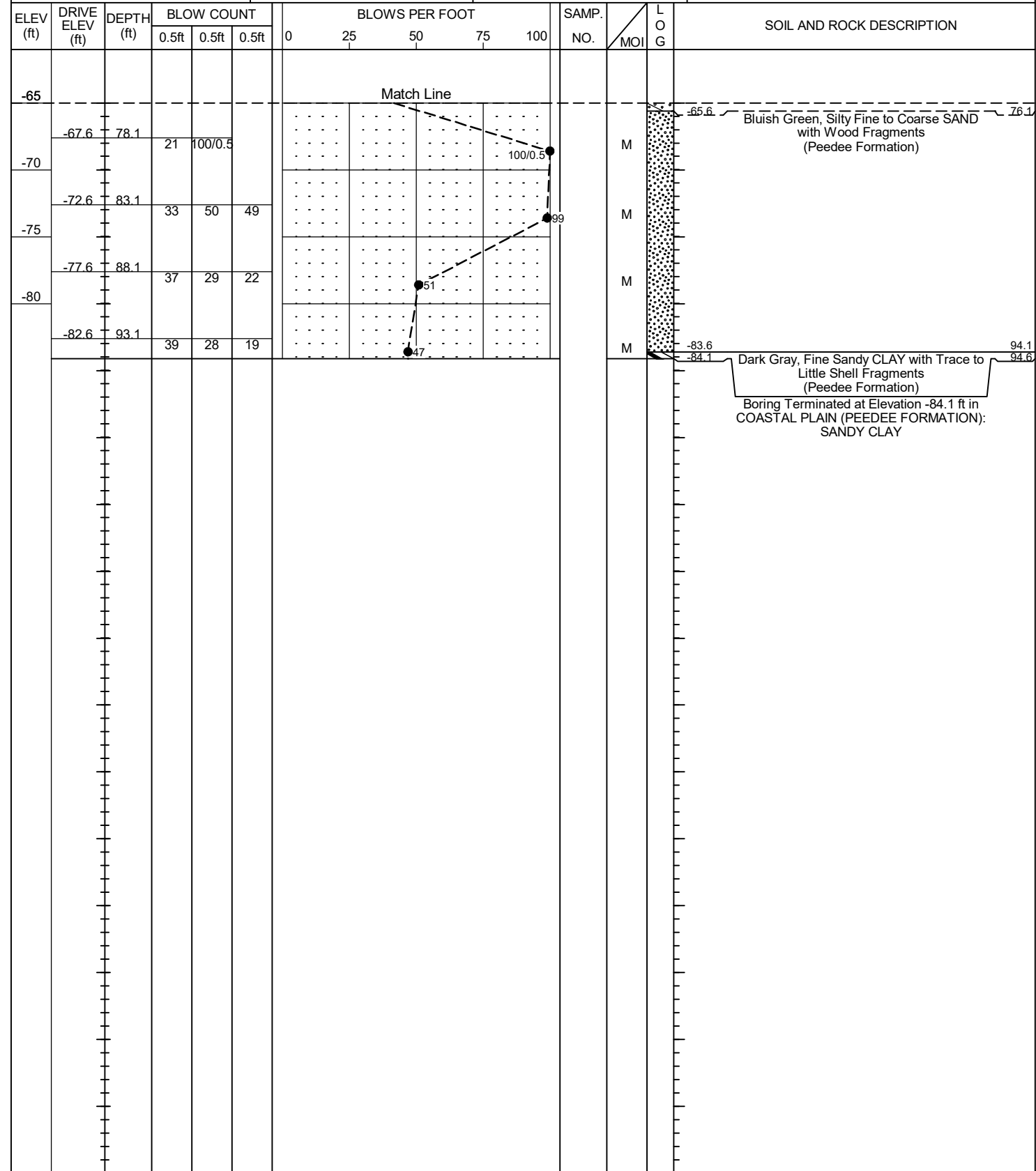
BORE LOG

WBS 34466.4.1	TIP R-2561CA	COUNTY COLUMBUS	GEOLOGIST S. Papke
SITE DESCRIPTION Bridge No. 418 on NC 87 (-L-) over Weyman Creek			GROUND WTR (ft)
BORING NO. S1_LT.LN_B2-B	STATION 70+64	OFFSET 33 ft LT	ALIGNMENT -L-
COLLAR ELEV. 10.5 ft	TOTAL DEPTH 94.6 ft	NORTHING 227,918	EASTING 2,219,356
DRILL RIG/HAMMER EFF./DATE MID5464 CME-45C 90% 02/21/2019		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER B. Fowler	START DATE 07/24/19	COMP. DATE 07/24/19	SURFACE WATER DEPTH N/A



NCDOT BORE DOUBLE R-2561CA GEO_BRDG.GPJ NC_DOT.GDT 8/11/20

WBS 34466.4.1	TIP R-2561CA	COUNTY COLUMBUS	GEOLOGIST S. Papke
SITE DESCRIPTION Bridge No. 418 on NC 87 (-L-) over Weyman Creek			GROUND WTR (ft)
BORING NO. S1_LT.LN_B2-B	STATION 70+64	OFFSET 33 ft LT	ALIGNMENT -L-
COLLAR ELEV. 10.5 ft	TOTAL DEPTH 94.6 ft	NORTHING 227,918	EASTING 2,219,356
DRILL RIG/HAMMER EFF./DATE MID5464 CME-45C 90% 02/21/2019		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER B. Fowler	START DATE 07/24/19	COMP. DATE 07/24/19	SURFACE WATER DEPTH N/A



REFERENCE: R-2561CA

PROJECT: 34466

CONTENTS

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
4	PROFILE
5-7	BORE LOGS
8-29	SOIL LABORATORY RESULTS

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY COLUMBUS
 PROJECT DESCRIPTION NEW INTERCHANGE AT THE
INTERSECTION OF NC 87 AND NC 11
 SITE DESCRIPTION BRIDGE NO. 419 ON NC 11 (-Y-)
OVER NC 87 (-L-)

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2561CA	1	29

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 1919 T07-6850. 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

S. PAPKE
MID-ATLANTIC DRILLING

INVESTIGATED BY S. PAPKE
 DRAWN BY C. DRISCOLL
 CHECKED BY T. WELLS
 SUBMITTED BY KLEINFELDER, INC.
 DATE AUGUST 2020

Prepared in the Office of:

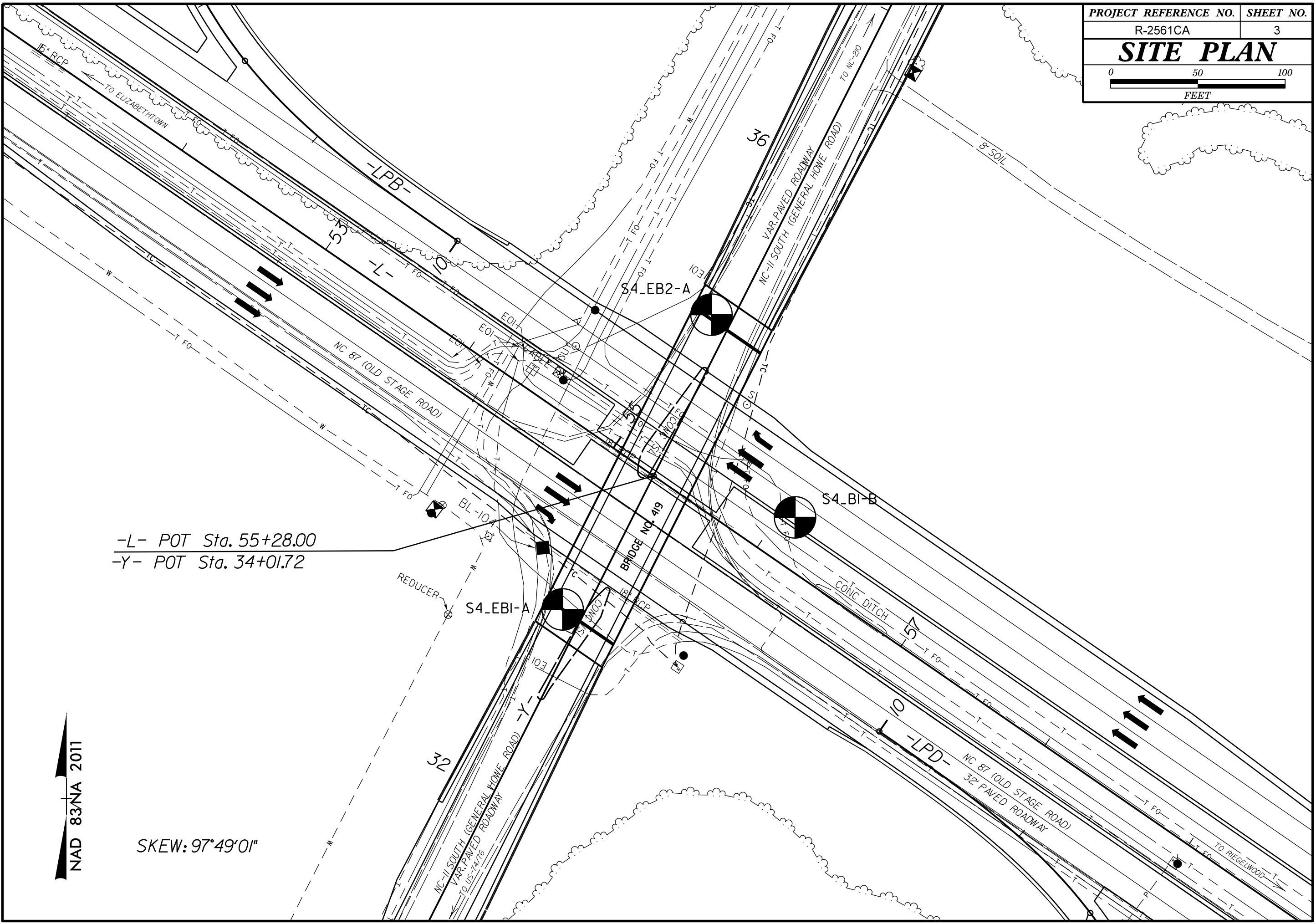


Thomas R. Wells 08/18/20
 SIGNATURE DATE

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

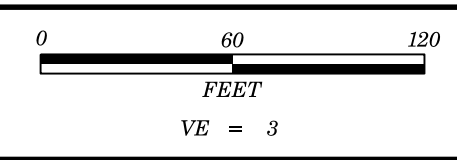
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT SUBSURFACE INVESTIGATION SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

Main content table with 4 columns: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, and TERMS AND DEFINITIONS. Includes sub-sections like SOIL LEGEND AND AASHTO CLASSIFICATION, CONSISTENCY OR DENSENESS, TEXTURE OR GRAIN SIZE, SOIL MOISTURE - CORRELATION OF TERMS, PLASTICITY, COLOR, MISCELLANEOUS SYMBOLS, and EQUIPMENT USED ON SUBJECT PROJECT.

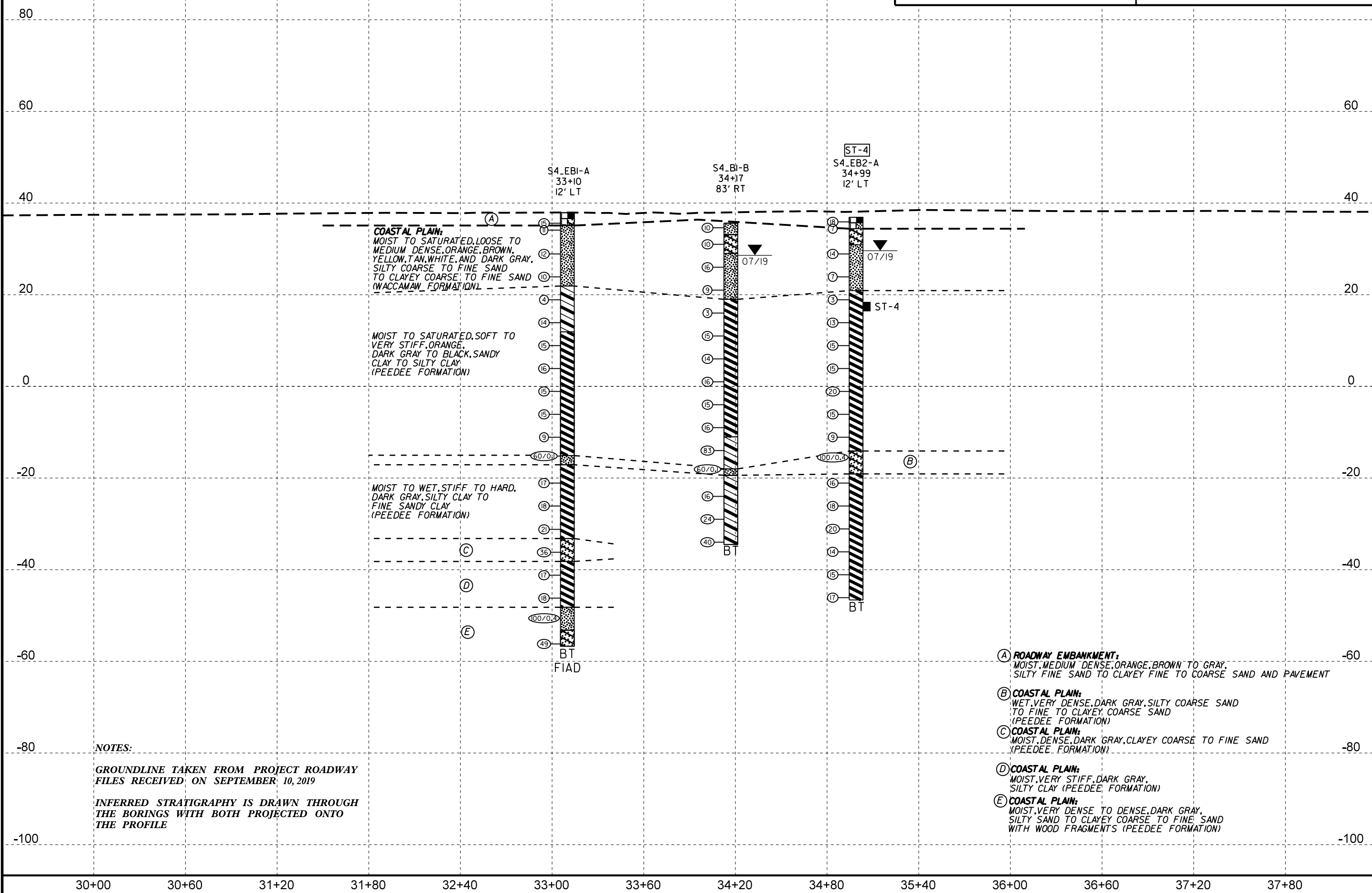


NAD 83/NA 2011

SKEW: 97°49'01"



PROJECT REFERENCE NO.	SHEET NO.
R-2561CA	4
BRIDGE NO. 419 ON NC 11 (-Y-) OVER NC 87 (-L-)	



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 34466.4.1		TIP R-2561CA		COUNTY COLUMBUS		GEOLOGIST S. Papke									
SITE DESCRIPTION Bridge No. 419 on NC 11 (-Y-) over NC 87 (-L-)							GROUND WTR (ft)								
BORING NO. S4_EB1-A		STATION 33+10		OFFSET 12 ft LT		ALIGNMENT -Y-									
COLLAR ELEV. 37.9 ft		TOTAL DEPTH 94.6 ft		NORTHING 228,687		EASTING 2,218,021									
DRILL RIG/HAMMER EFF./DATE MID5464 CME-45C 90% 02/21/2019			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER B. Fowler		START DATE 07/09/19		COMP. DATE 07/10/19		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					
40															
	36.6	1.3	8	7	8										
35	35.1	2.8	7	6	5										
30	29.9	8.0	4	6	6										
25	24.9	13.0	4	4	6										
20	19.9	18.0	WOH	2	2										
15	14.9	23.0	4	6	8										
10	9.9	28.0	5	6	9										
5	4.9	33.0	5	7	9										
0	-0.1	38.0	5	6	9										
-5	-5.1	43.0	5	6	9										
-10	-10.1	48.0	3	4	5										
-15	-15.1	53.0	60/0.1												
-20	-20.1	58.0	5	8	9										
-25	-25.1	63.0	5	7	11										
-30	-30.2	68.1	6	9	12										
-35	-35.2	73.1	5	5	31										
-40															

WBS 34466.4.1		TIP R-2561CA		COUNTY COLUMBUS		GEOLOGIST S. Papke									
SITE DESCRIPTION Bridge No. 419 on NC 11 (-Y-) over NC 87 (-L-)							GROUND WTR (ft)								
BORING NO. S4_EB1-A		STATION 33+10		OFFSET 12 ft LT		ALIGNMENT -Y-									
COLLAR ELEV. 37.9 ft		TOTAL DEPTH 94.6 ft		NORTHING 228,687		EASTING 2,218,021									
DRILL RIG/HAMMER EFF./DATE MID5464 CME-45C 90% 02/21/2019			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER B. Fowler		START DATE 07/09/19		COMP. DATE 07/10/19		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					
-40															
	-40.2	78.1	6	7	10										
-45	-45.2	83.1	8	8	10										
-50	-50.2	88.1	100/0.4												
-55	-55.2	93.1	6	13	36										

NCDOT BORE DOUBLE R-2561CA GEO_BRDG.GPJ NC_DOT.GDT 8/11/20

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
APPENDIX A
LABORATORY RESULTS

REFERENCE: R-2561CA

PROJECT: 34466

Prepared in the Office of:



LABORATORY SUMMARY SHEET FOR SOIL SAMPLES

SHEET 9

PROJECT NO.: 34466.4.1 (R-2561CA)

COUNTY: COLUMBUS

NEW INTERCHANGE AT INTERSECTION OF NC 87 AND NC 11

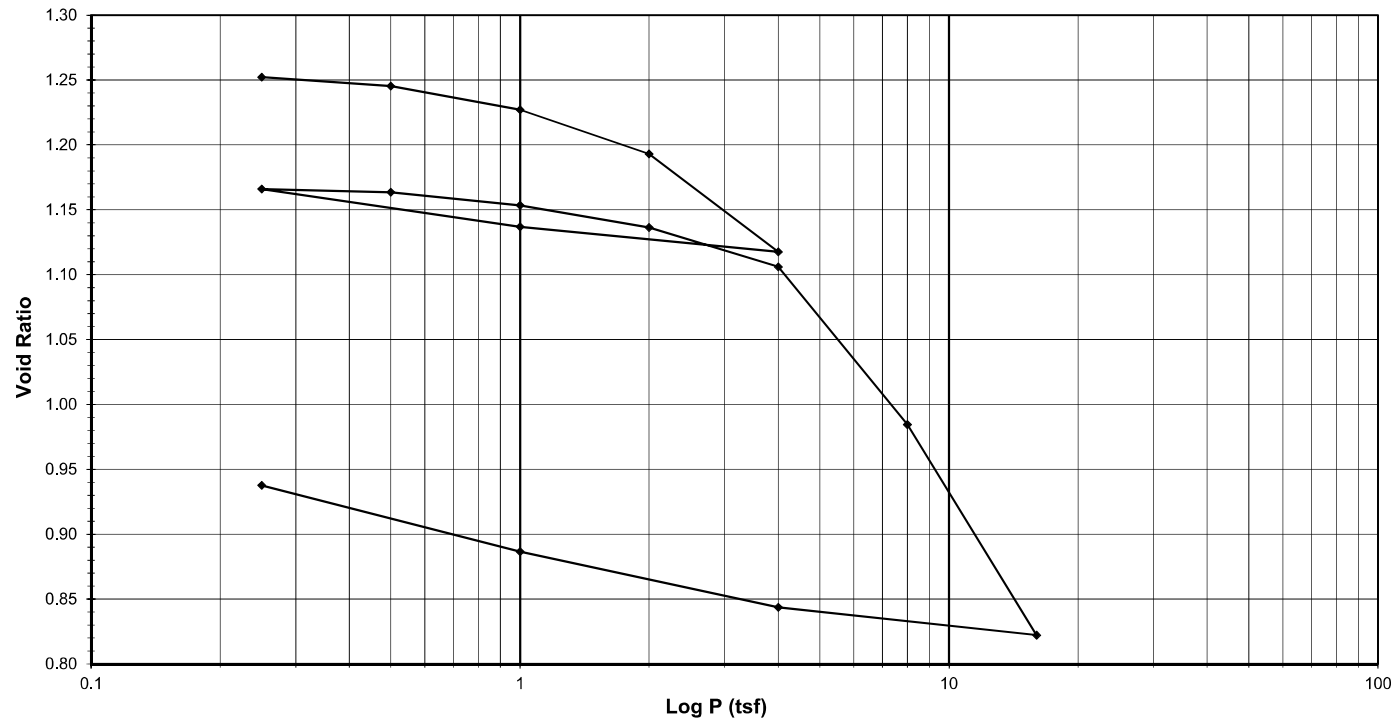
									Atterberg Limits			Gradation Results							
Sample No.	Boring Number	Alignment	Station	Offset	Sample Depth (ft.)	Natural Moisture Content (%)	Organic Content (%)	AASHTO Class.	L.L.	P.L.	P.I.	Retained #4 Sieve	Pass #10 Sieve	Pass #40 Sieve	Pass #200 Sieve	Coarse Sand (%)	Fine Sand (%)	Silt (%)	Clay (%)
ST-4	S4_EB2-A	-Y-	34+99	12' LT	19.7 - 21.7	41.5	--	A-7-6	49	18	31	0.0	100.0	99.8	70.0	0.3	42.7	28.1	28.9



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S4_EB2-A
 Client Reference R-2561CA Depth (ft) 19.7-21.7
 Project No. R-2019-209-001 Sample No. ST-4
 Lab ID R-2019-209-001-012 Visual Description GRAY LEAN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Tested By 129-0411 Date 7/19/2019 Approved By MPS Date 7/29/2019

ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S4_EB2-A
 Client Reference R-2561CA Depth (ft) 19.7-21.7
 Project No. R-2019-209-001 Sample No. ST-4
 Lab ID R-2019-209-001-012 Visual Description GRAY LEAN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

Consolidometer No. R409
 1 Division = 0.0001 (in.)

Sample Properties

	Initial	Final
<i>Water Content</i>		
Tare Number	TB-05	SS-3
Wt. Tare & WS (g)	370.62	231.69
Wt. Tare & DS (g)	301.70	199.43
Wt. Water (g)	68.92	32.26
Wt. Tare (g)	135.63	100.71
Wt. DS (g)	166.07	98.72
Water Content (%)	41.50	32.68
<i>Sample Parameters</i>		
Sample Diameter (in)	2.5	2.5
Sample Height (in)	1.0000	0.8544
Sample Volume (cc)	80.44	68.72
Wt. Wet Sample + Ring (g)	355.21	346.42
Wt. of Ring (g)	214.19	214.19
Wt. of Wet Sample (g)	141.02	132.23
Wet Density (pcf)	109.39	120.06
Wet Density (g/cc)	1.75	1.92
Water Content (%)	41.50	32.68
Wt. of Dry Sample (g)	99.66	99.66
Dry Density (pcf)	77.31	90.49
Dry Density (g/cc)	1.24	1.45
Void Ratio	1.2681	0.9377
Saturation (%)	91.96	97.92
Specific Gravity	2.81	Measured

Test Data Summary

Applied Pressure (tsf)	Final Dial Reading (div)	Machine Deflection (div)	Corrected Reading (div)	Height of Sample (mm)	Volume (cc)	Dry Density (g/cc)	Void Ratio
Seating	0	0	0	25.400	80.440	1.23894	1.26806
0.25	80.8	10.7	70.1	25.222	79.876	1.24769	1.25216
0.5	130.4	30.0	100.4	25.145	79.633	1.25150	1.24530
1	228.1	47.1	181.1	24.940	78.983	1.26179	1.22699
2	405.1	74.4	330.7	24.560	77.780	1.28131	1.19306
4	765.1	101.3	663.8	23.714	75.100	1.32703	1.11751
1	647.9	69.8	578.1	23.932	75.789	1.31497	1.13693
0.25	484.2	34.5	449.7	24.258	76.822	1.29728	1.16607
0.5	501.2	40.8	460.4	24.231	76.736	1.29874	1.16364
1	560.2	55.4	504.8	24.118	76.379	1.30481	1.15357
2	658.1	77.3	580.8	23.925	75.768	1.31534	1.13633
4	816.7	102.2	714.5	23.585	74.692	1.33428	1.10601
8	1397.1	146.5	1250.6	22.223	70.380	1.41603	0.98442
16	2165.6	199.9	1965.8	20.407	64.627	1.54208	0.82221
4	2010.0	138.4	1871.6	20.646	65.385	1.52421	0.84358
1	1769.0	86.8	1682.1	21.127	66.909	1.48950	0.88654
0.25	1502.1	45.6	1456.5	21.701	68.724	1.45016	0.93772

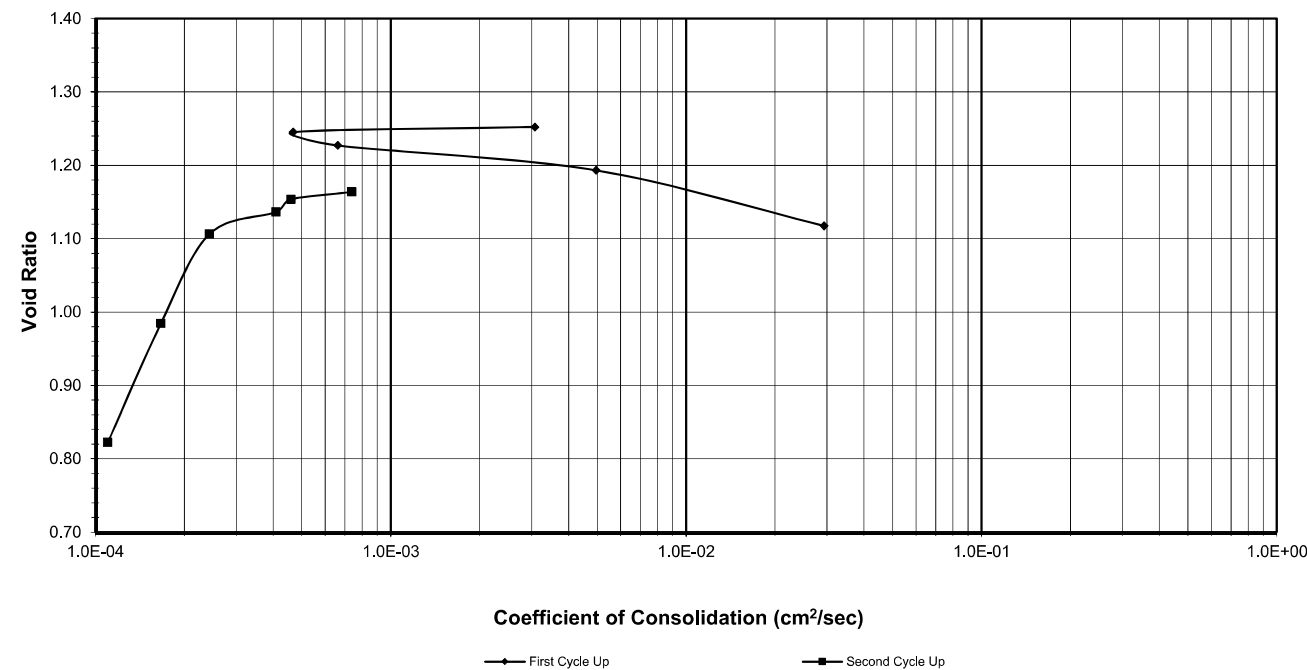
Tested By 129-0411 Date 7/19/2019 Input Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S4_EB2-A
 Client Reference R-2561CA Depth (ft) 19.7-21.7
 Project No. R-2019-209-001 Sample No. ST-4
 Lab ID R-2019-209-001-012 Visual Description GRAY LEAN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Tested By 129-0411 Date 7/19/2019 Input Checked By GEM Date 7/29/2019

ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S4_EB2-A
 Client Reference R-2561CA Depth (ft) 19.7-21.7
 Project No. R-2019-209-001 Sample No. ST-4
 Lab ID R-2019-209-001-012 Visual Description GRAY LEAN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED

Consolidometer No. R409
 1 Division = 0.0001 (in.)

Sample Properties	Initial	Final
Water Content		
Tare Number	TB-05	SS-3
Wt. Tare & WS (g)	370.62	231.69
Wt. Tare & DS (g)	301.70	199.43
Wt. Water (g)	68.92	32.26
Wt. Tare (g)	135.63	100.71
Wt. DS (g)	166.07	98.72
Water Content (%)	41.50	32.68
Sample Parameters		
Sample Diameter (in)	2.5	2.5
Sample Height (in)	1.000	0.854
Sample Volume (cc)	80.44	68.72
Wt. Wet Sample + Ring (g)	355.21	346.42
Wt. of Ring (g)	214.19	214.19
Wt. of Wet Sample (g)	141.02	132.23
Wet Density (pcf)	109.39	120.06
Wet Density (g/cc)	1.75	1.92
Water Content (%)	41.50	32.68
Wt. of Dry Sample (g)	99.66	99.66
Dry Density (pcf)	77.31	90.49
Dry Density (g/cc)	1.24	1.45
Void Ratio	1.2681	0.9377
Saturation (%)	91.96	97.92
Specific Gravity	2.81	Measured

Load Increment (tsf)	Dial Reading @ t ₅₀ (div)	Machine Deflection (div)	C _v Test Data Summary		Time t ₅₀ (min.)	C _v (cm ² /sec)
			Corrected Dial Reading @ t ₅₀ (div)	Sample Height @ t ₅₀ (cm)		
0 - 0.25	68.7	10.7	58.0	2.525	1.70	0.00308
0.25 - 0.5	175.6	30.0	145.6	2.503	11.00	0.00047
0.5 - 1.0	369.8	47.1	322.7	2.458	7.50	0.00066
1.0 - 2.0	400.0	74.4	325.6	2.457	1.00	0.00496
2.0 - 4.0	404.9	101.3	303.6	2.463	0.17	0.02929
4.0 - 1.0	NA	69.8	NA	NA	NA	NA
1.0 - 0.25	NA	34.5	NA	NA	NA	NA
0.25 - 0.5	1126.2	40.8	1085.4	2.264	5.70	0.00074
0.5 - 1.0	1725.0	55.4	1669.6	2.116	8.00	0.00046
1.0 - 2.0	2373.6	77.3	2296.3	1.957	7.70	0.00041
2.0 - 4.0	3000.0	102.2	2897.8	1.804	11.00	0.00024
4.0 - 8.0	4000.0	146.5	3853.5	1.561	12.00	0.00017
8.0 - 16.0	5000.0	199.9	4800.1	1.321	13.00	0.00011
16.0 - 4.0	NA	138.4	NA	NA	NA	NA
4.0 - 1.0	NA	86.8	NA	NA	NA	NA
1.0 - 0.25	NA	45.6	NA	NA	NA	NA

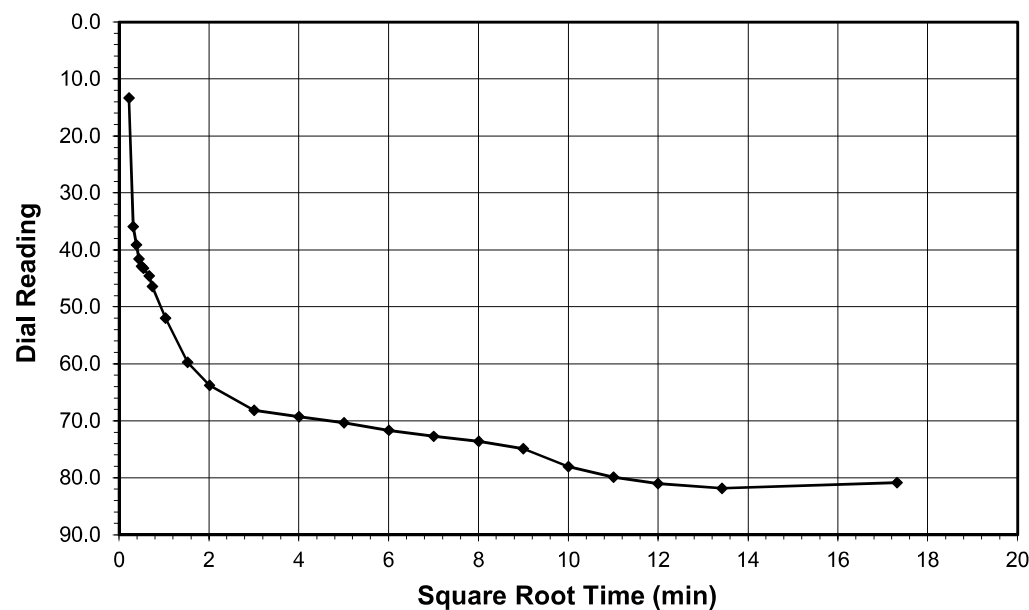
Tested By 129-0411 Date 7/19/2019 Input Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

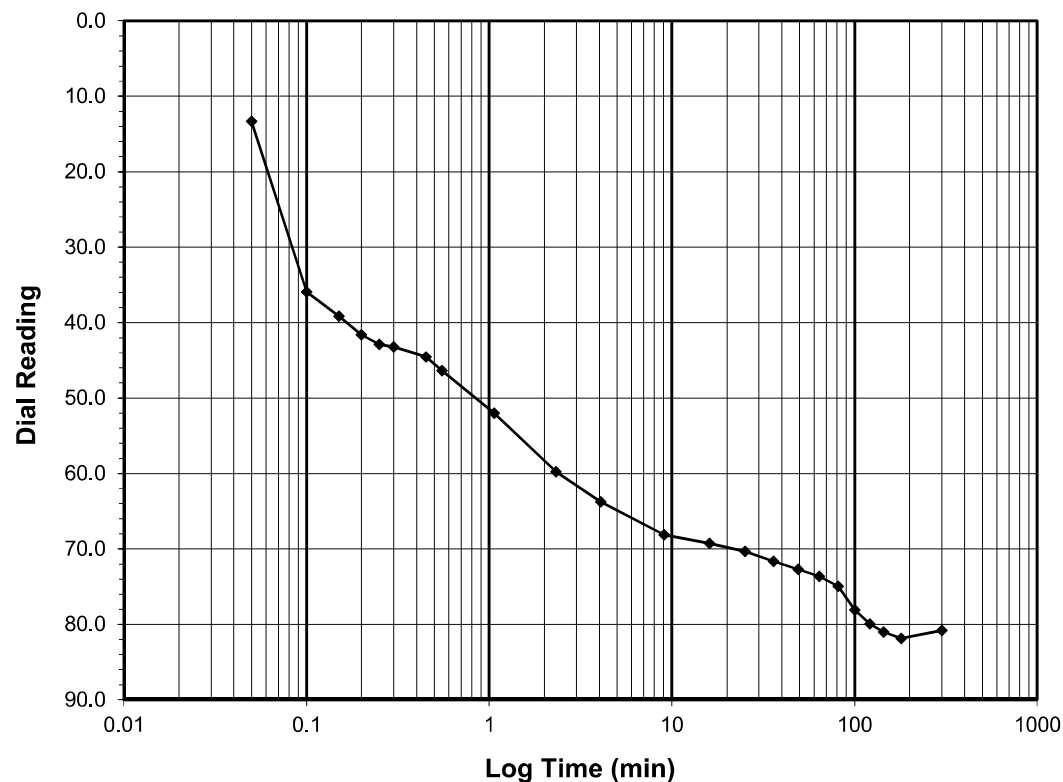
Client: Kleinfelder Boring No.: S4_EB2-A
 Client Project: R-2561CA Depth (ft): 19.7-21.7
 Project No.: R-2019-209-001 Sample No.: ST-4
 Lab ID: R-2019-209-001-012 Visual Description: GRAY LEAN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf): 0.0-0.25
Final Reading (div): 80.8
 Consolidometer No.: R409
 1 Division (in): 0.0001
 Start Date: 7/19/2019
 Start Time: 11:07:25

Elapsed Time (min)	Dial Reading (div)
Initial	0.0
0.05	13.3
0.10	35.9
0.15	39.1
0.20	41.6
0.25	42.9
0.30	43.2
0.45	44.6
0.55	46.4
1.07	52.0
2.32	59.7
4.07	63.8
9.07	68.1
16.07	69.3
25.07	70.3
36.07	71.7
49.07	72.7
64.07	73.6
81.07	74.9
100.07	78.1
121.07	79.9
144.07	81.0
180.07	81.9
300.08	80.8



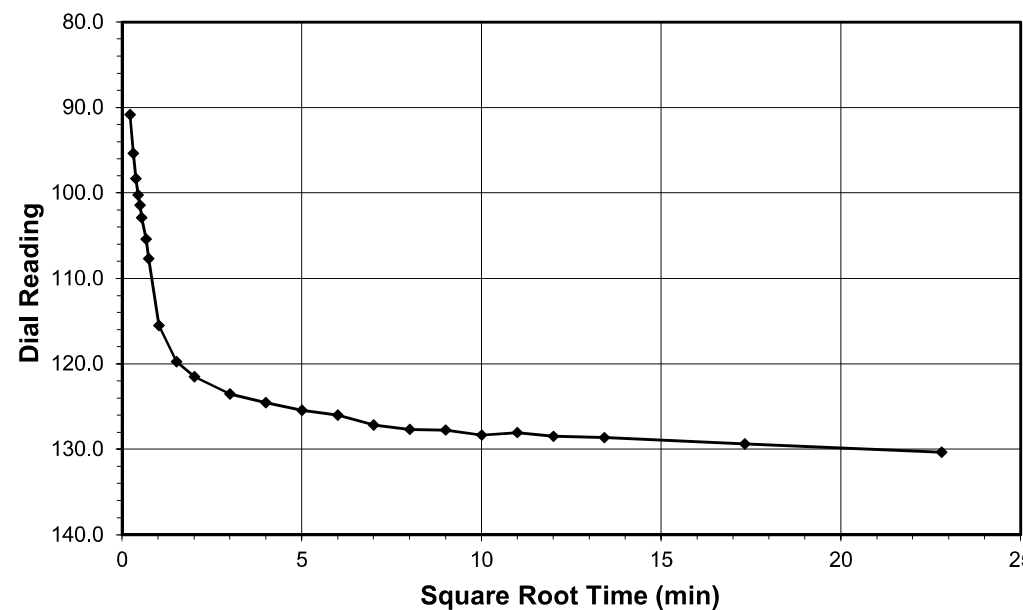
Tested By 129-0411 Date 7/19/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

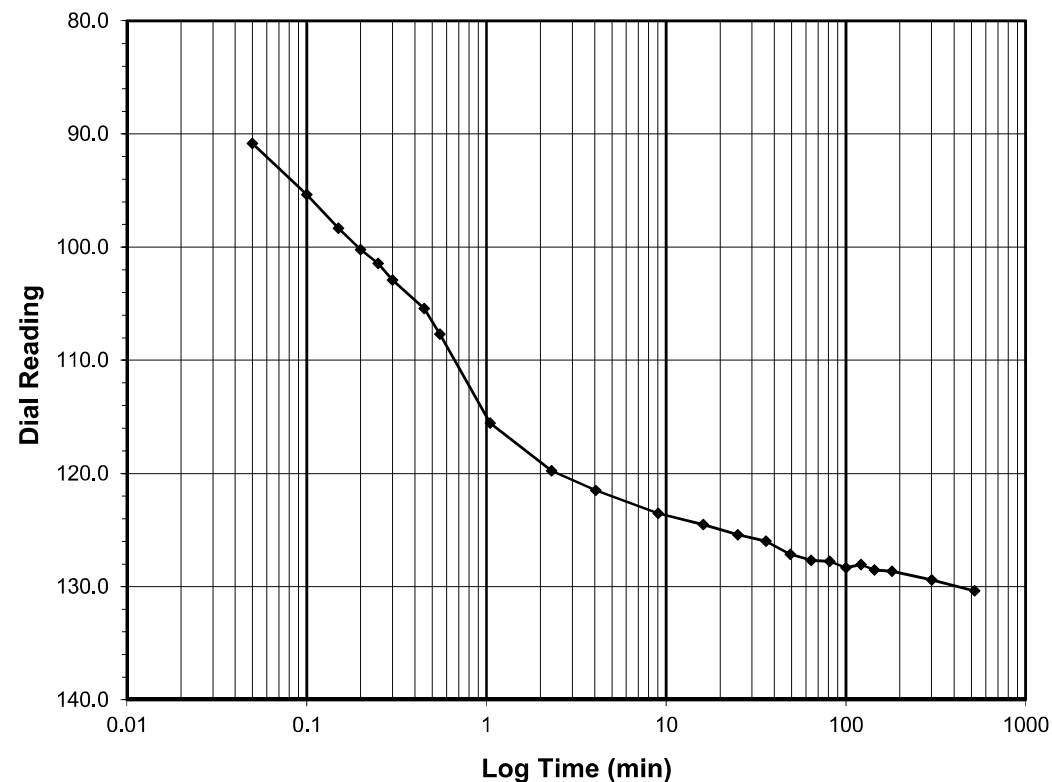
Client: Kleinfelder Boring No.: S4_EB2-A
 Client Project: R-2561CA Depth (ft): 19.7-21.7
 Project No.: R-2019-209-001 Sample No.: ST-4
 Lab ID: R-2019-209-001-012 Visual Description: GRAY LEAN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf): 0.25-0.5
Final Reading (div): 130.4
 Consolidometer No.: R409
 1 Division (in): 0.0001
 Start Date: 7/19/2019
 Start Time: 20:07:44

Elapsed Time (min)	Dial Reading (div)
Initial	80.8
0.05	90.8
0.10	95.4
0.15	98.3
0.20	100.2
0.25	101.5
0.30	102.9
0.45	105.4
0.55	107.7
1.05	115.5
2.30	119.7
4.05	121.5
9.05	123.5
16.05	124.5
25.05	125.4
36.05	126.0
49.07	127.1
64.07	127.7
81.07	127.8
100.07	128.3
121.07	128.0
144.07	128.5
180.07	128.6
300.07	129.4
520.07	130.4



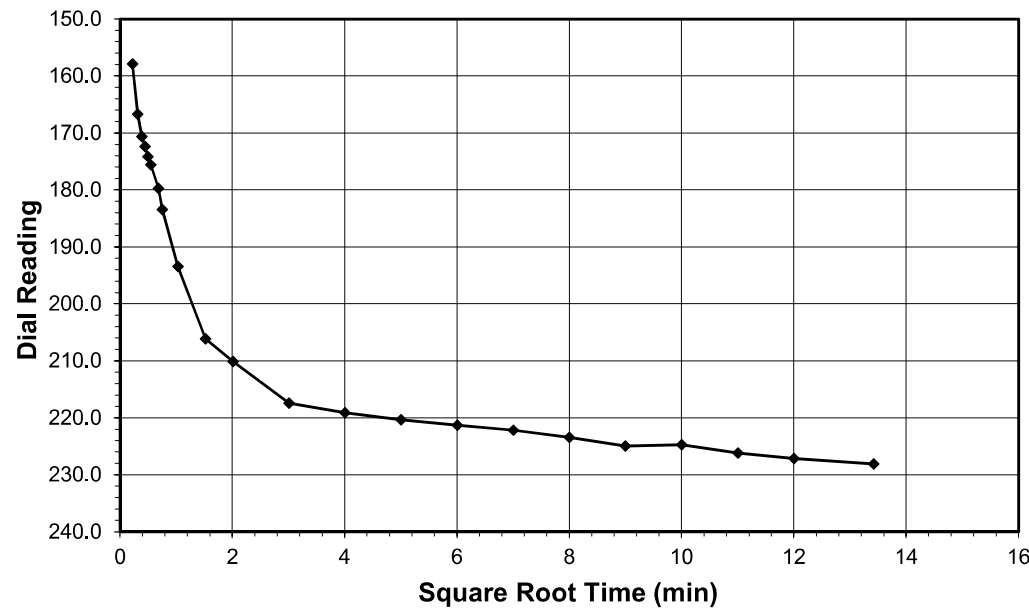
Tested By 129-0411 Date 7/19/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S4_EB2-A
 Client Project R-2561CA Depth (ft) 19.7-21.7
 Project No. R-2019-209-001 Sample No. ST-4
 Lab ID R-2019-209-001-012 Visual Description GRAY LEAN CLAY

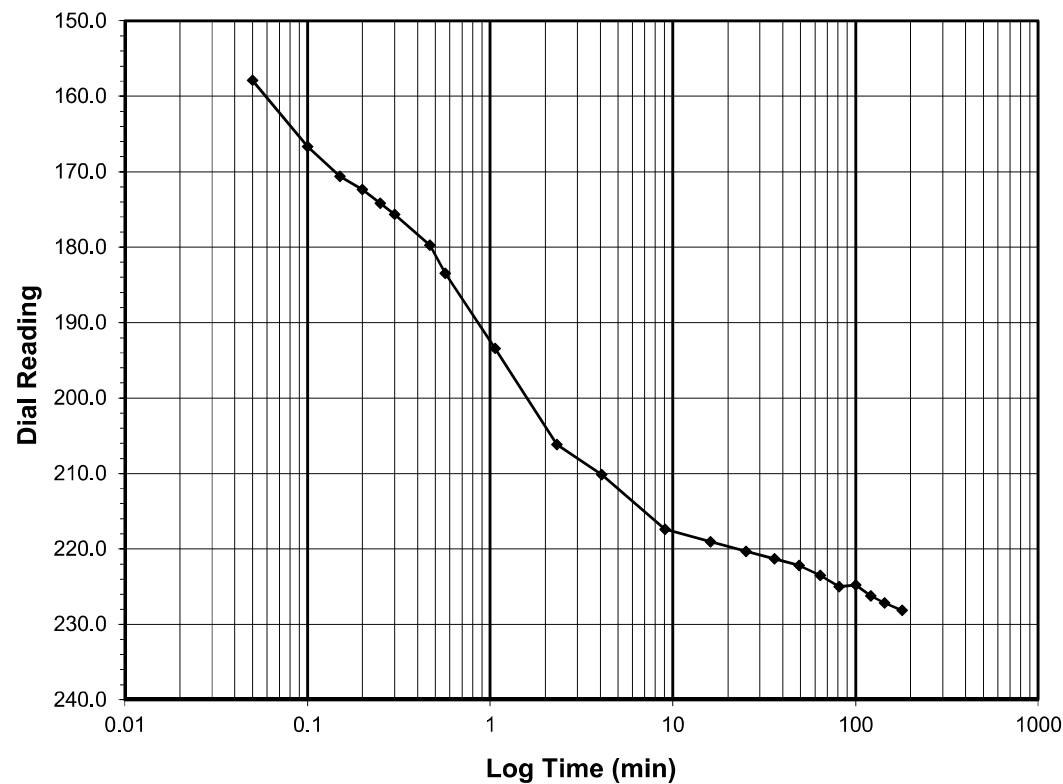
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 0.5-1.0
Final Reading (div) 228.1
 Consolidometer No. **R409**
 1 Division (in) 0.0001

Start Date 7/20/2019
 Start Time 5:08:07

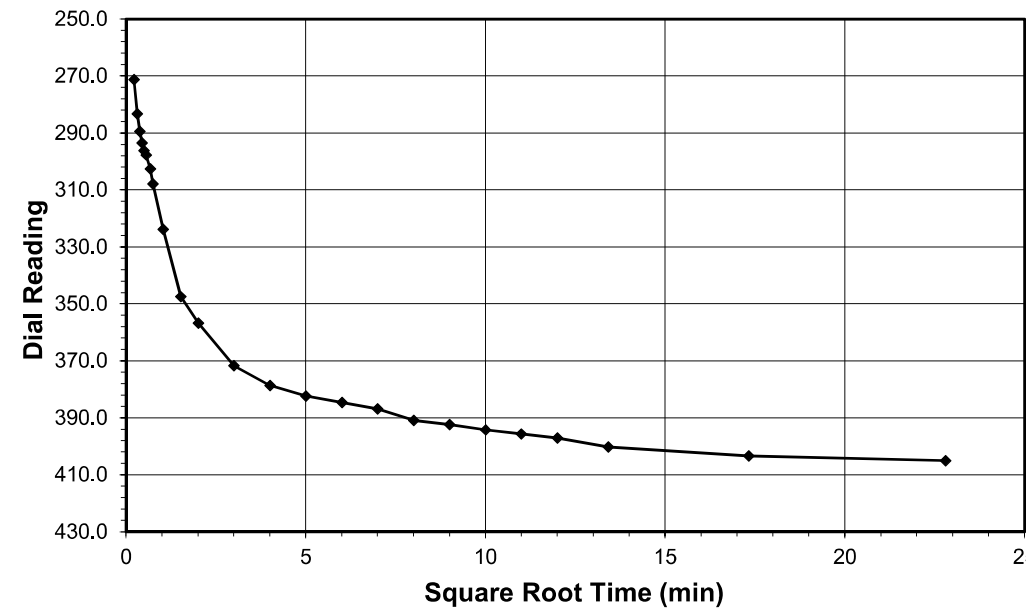
Elapsed Time (min)	Dial Reading (div)
Initial	130.4
0.05	157.9
0.10	166.7
0.15	170.6
0.20	172.3
0.25	174.1
0.30	175.6
0.47	179.8
0.57	183.5
1.07	193.4
2.32	206.1
4.07	210.1
9.07	217.4
16.07	219.1
25.07	220.3
36.07	221.3
49.07	222.2
64.07	223.5
81.07	225.0
100.07	224.8
121.07	226.2
144.07	227.2
180.07	228.1



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S4_EB2-A
 Client Project R-2561CA Depth (ft) 19.7-21.7
 Project No. R-2019-209-001 Sample No. ST-4
 Lab ID R-2019-209-001-012 Visual Description GRAY LEAN CLAY

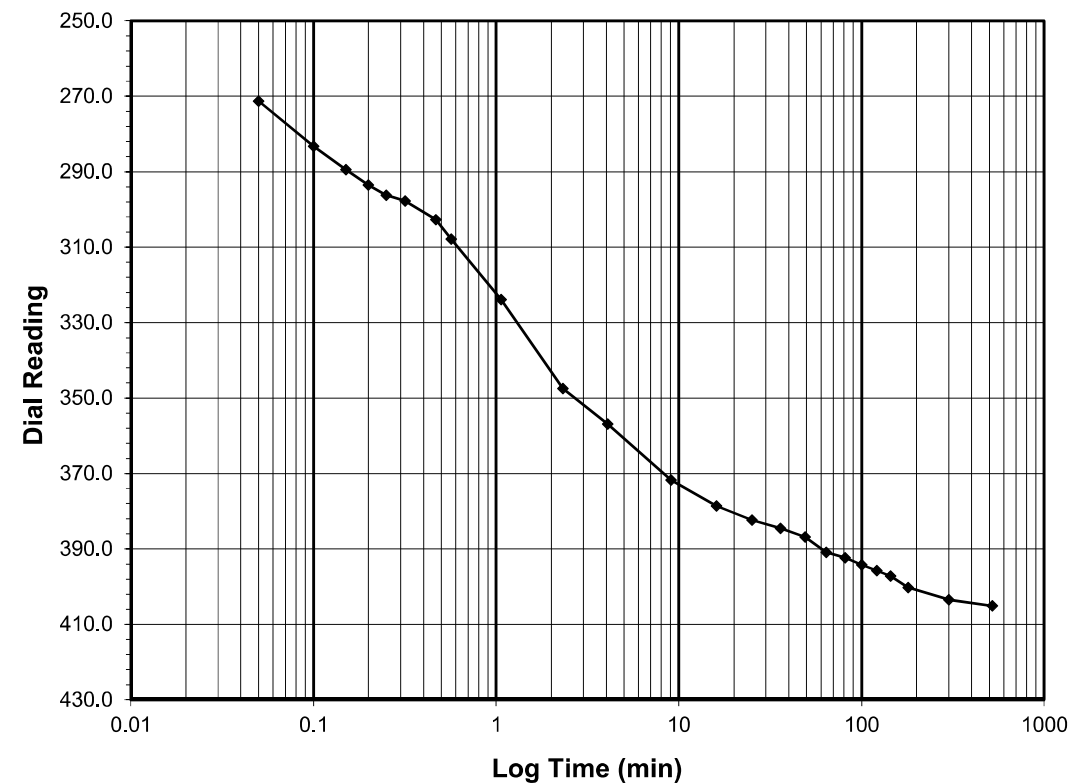
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 1.0-2.0
Final Reading (div) 405.1
 Consolidometer No. **R409**
 1 Division (in) 0.0001

Start Date 7/20/2019
 Start Time 14:08:26

Elapsed Time (min)	Dial Reading (div)
Initial	228.1
0.05	271.3
0.10	283.2
0.15	289.4
0.20	293.5
0.25	296.2
0.32	297.8
0.47	302.7
0.57	307.9
1.07	323.9
2.32	347.5
4.07	356.9
9.07	371.7
16.07	378.7
25.07	382.4
36.08	384.6
49.08	386.9
64.08	390.9
81.08	392.4
100.08	394.2
121.08	395.7
144.08	397.1
180.08	400.2
300.08	403.4
520.08	405.1



Tested By 129-0411 Date 7/20/2019 Checked By GEM Date 7/29/2019

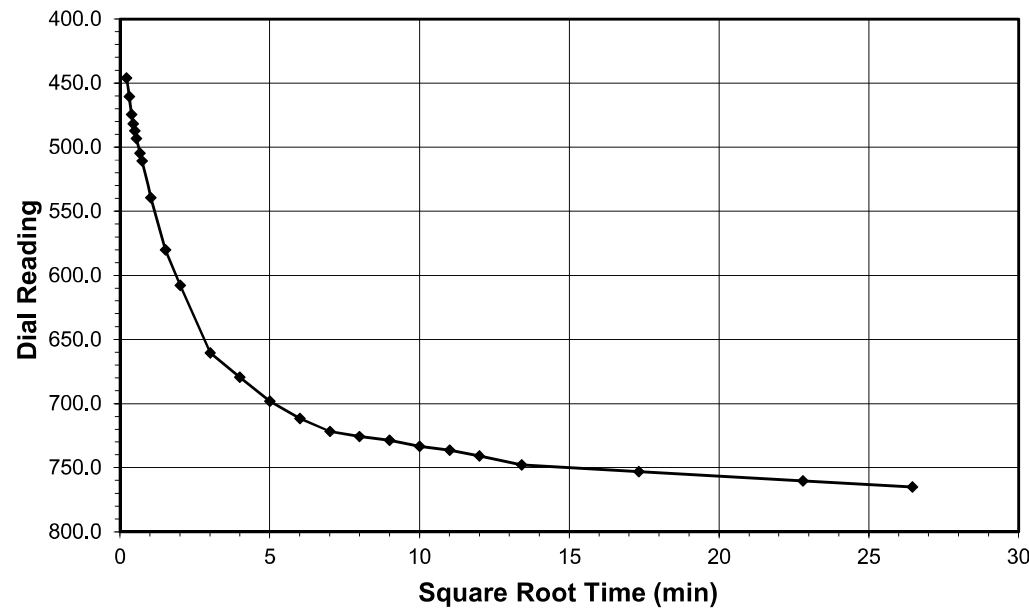
Tested By 129-0411 Date 7/20/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S4_EB2-A
 Client Project R-2561CA Depth (ft) 19.7-21.7
 Project No. R-2019-209-001 Sample No. ST-4
 Lab ID R-2019-209-001-012 Visual Description GRAY LEAN CLAY

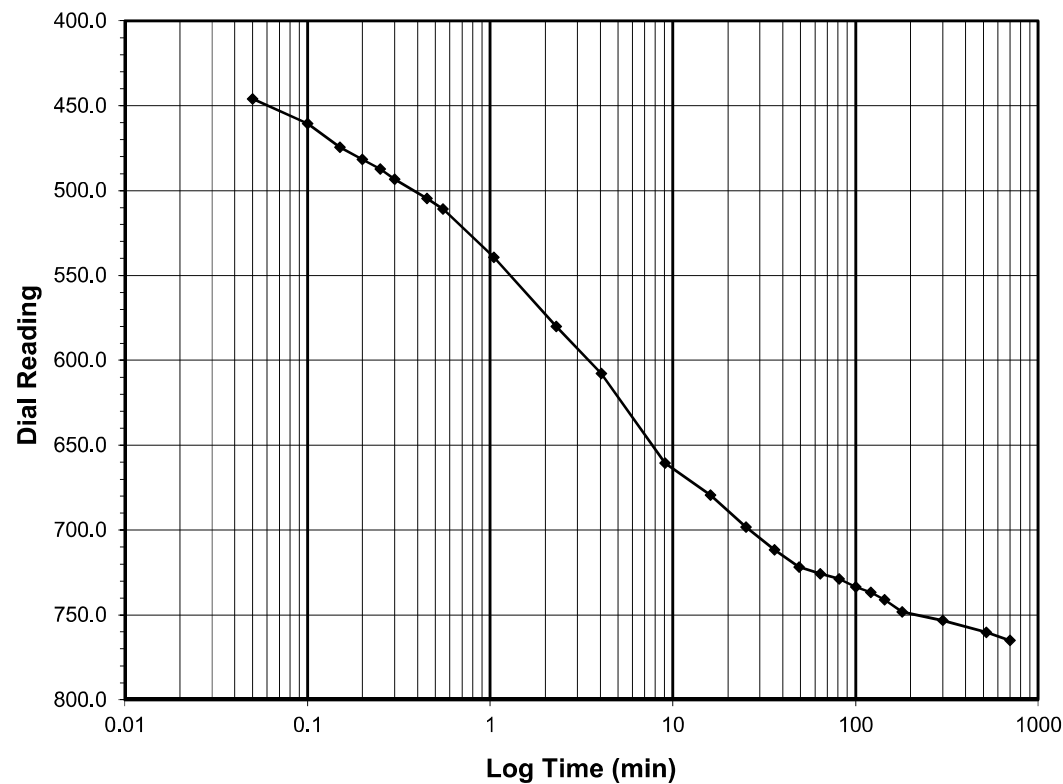
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 2.0-4.0
Final Reading (div) 765.1
 Consolidometer No. **R409**
 1 Division (in) 0.0001

Start Date 7/20/2019
 Start Time 23:08:48

Elapsed Time (min)	Dial Reading (div)
Initial	405.1
0.05	446.1
0.10	460.5
0.15	474.5
0.20	481.7
0.25	487.3
0.30	493.3
0.45	504.6
0.55	510.9
1.05	539.4
2.30	580.0
4.05	607.8
9.05	660.5
16.07	679.5
25.07	698.2
36.07	711.6
49.07	721.8
64.07	725.8
81.07	728.7
100.07	733.4
121.07	736.6
144.07	741.1
180.07	748.0
300.07	753.1
520.07	760.4
700.07	765.1



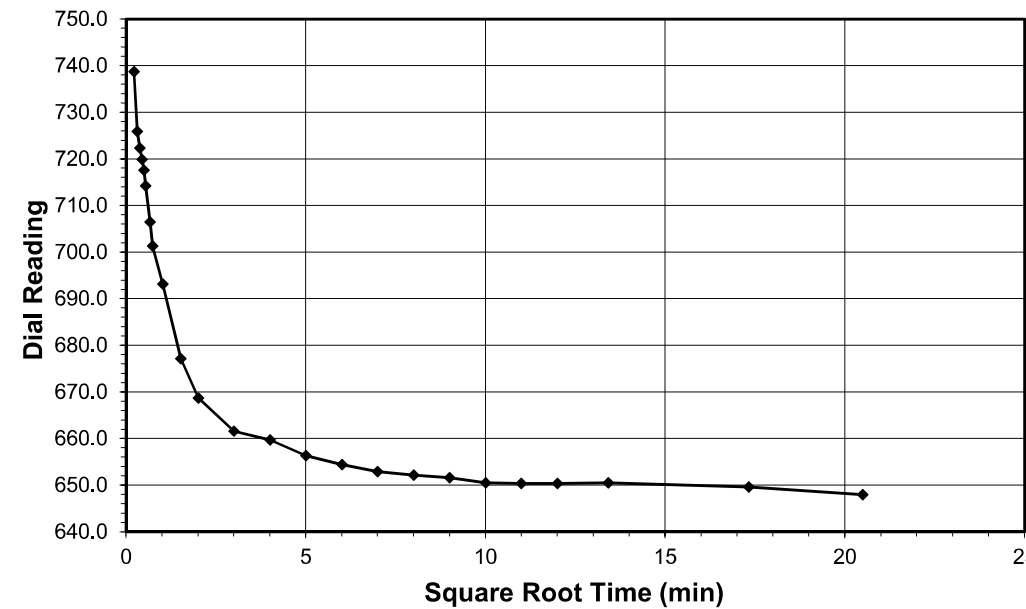
Tested By 129-0411 Date 7/20/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S4_EB2-A
 Client Project R-2561CA Depth (ft) 19.7-21.7
 Project No. R-2019-209-001 Sample No. ST-4
 Lab ID R-2019-209-001-012 Visual Description GRAY LEAN CLAY

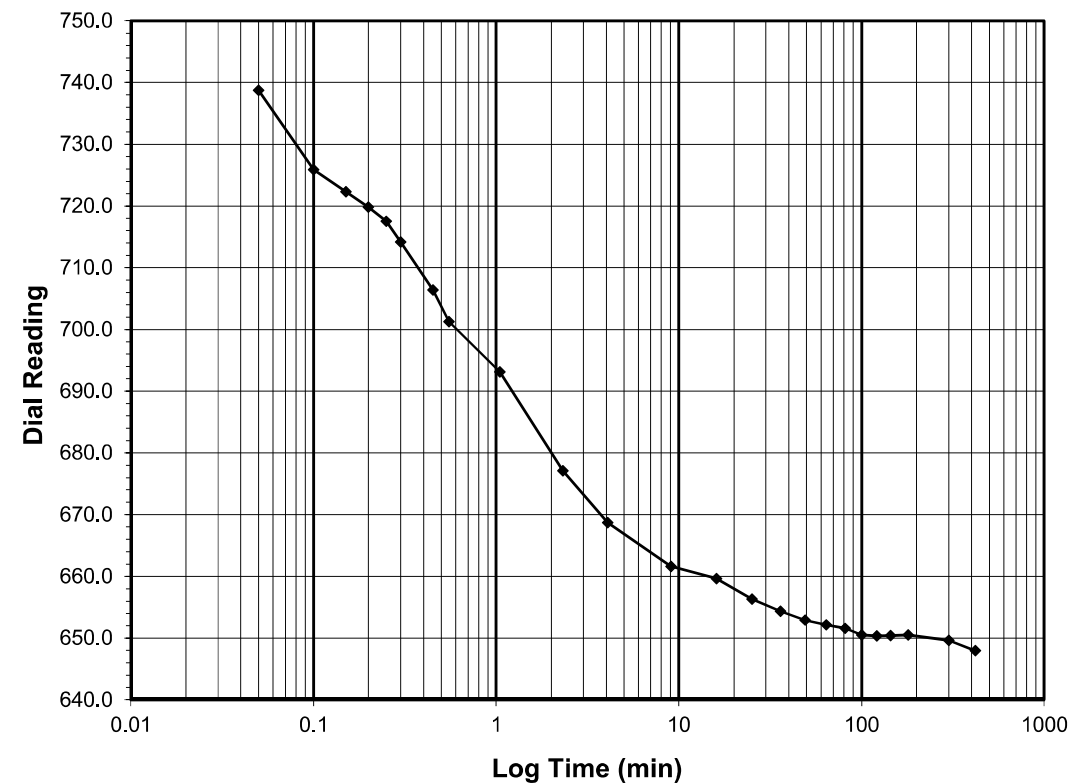
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 4.0-1.0
Final Reading (div) 647.9
 Consolidometer No. **R409**
 1 Division (in) 0.0001

Start Date 7/21/2019
 Start Time 11:08:57

Elapsed Time (min)	Dial Reading (div)
Initial	765.1
0.05	738.7
0.10	725.9
0.15	722.3
0.20	719.9
0.25	717.5
0.30	714.1
0.45	706.4
0.55	701.3
1.05	693.1
2.32	677.1
4.07	668.7
9.07	661.6
16.07	659.6
25.07	656.3
36.07	654.4
49.07	652.9
64.07	652.2
81.07	651.6
100.07	650.5
121.07	650.4
144.08	650.4
180.08	650.5
300.08	649.6
420.08	647.9



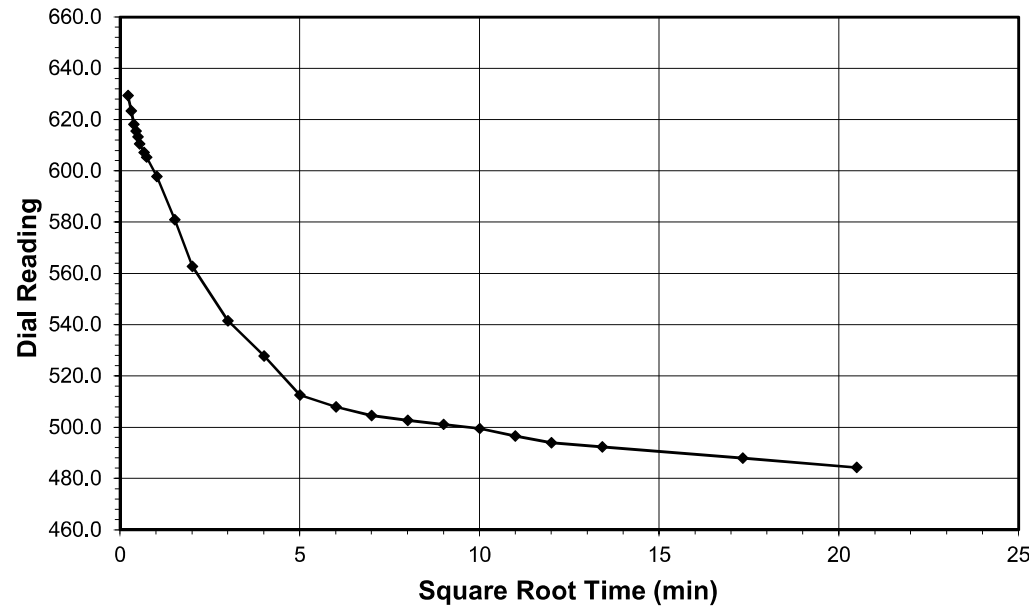
Tested By 129-0411 Date 7/21/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S4_EB2-A
 Client Project R-2561CA Depth (ft) 19.7-21.7
 Project No. R-2019-209-001 Sample No. ST-4
 Lab ID R-2019-209-001-012 Visual Description GRAY LEAN CLAY

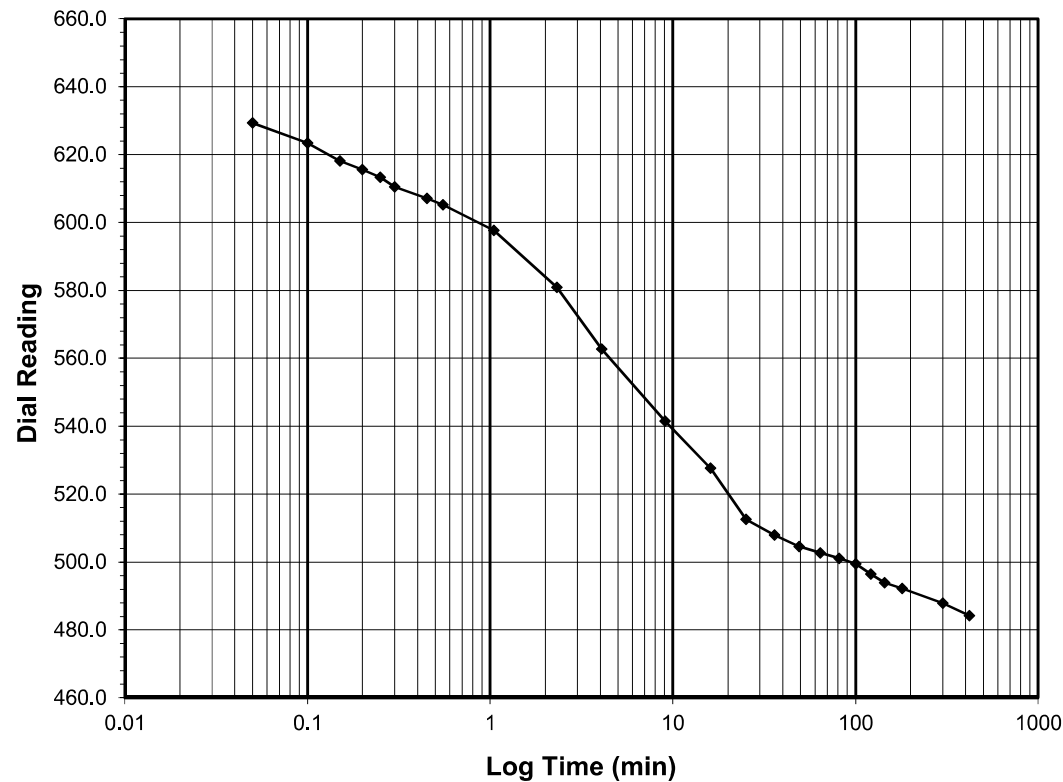
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 1.0-0.25
 Final Reading (div) 484.2
 Consolidometer No. R409
 1 Division (in) 0.0001

Start Date 7/21/2019
 Start Time 18:09:02

Elapsed Time (min)	Dial Reading (div)
Initial	647.9
0.05	629.3
0.10	623.4
0.15	618.1
0.20	615.6
0.25	613.3
0.30	610.6
0.45	607.1
0.55	605.3
1.05	597.7
2.32	580.9
4.07	562.8
9.07	541.5
16.07	527.7
25.07	512.6
36.07	507.9
49.07	504.6
64.07	502.7
81.07	501.1
100.07	499.5
121.07	496.5
144.07	493.9
180.07	492.2
300.07	487.9
420.00	484.2



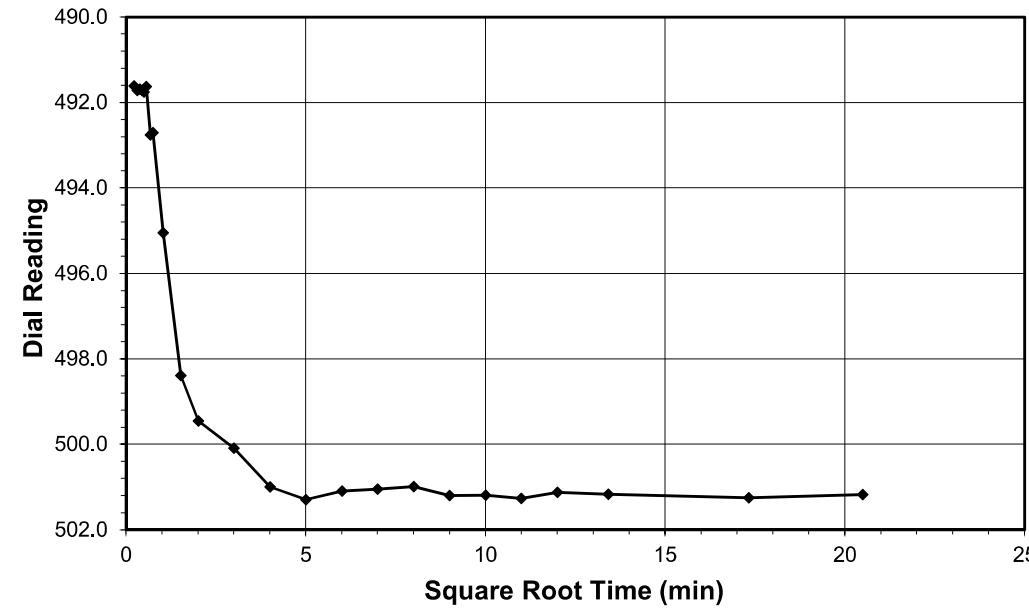
Tested By 129-0411 Date 7/21/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S4_EB2-A
 Client Project R-2561CA Depth (ft) 19.7-21.7
 Project No. R-2019-209-001 Sample No. ST-4
 Lab ID R-2019-209-001-012 Visual Description GRAY LEAN CLAY

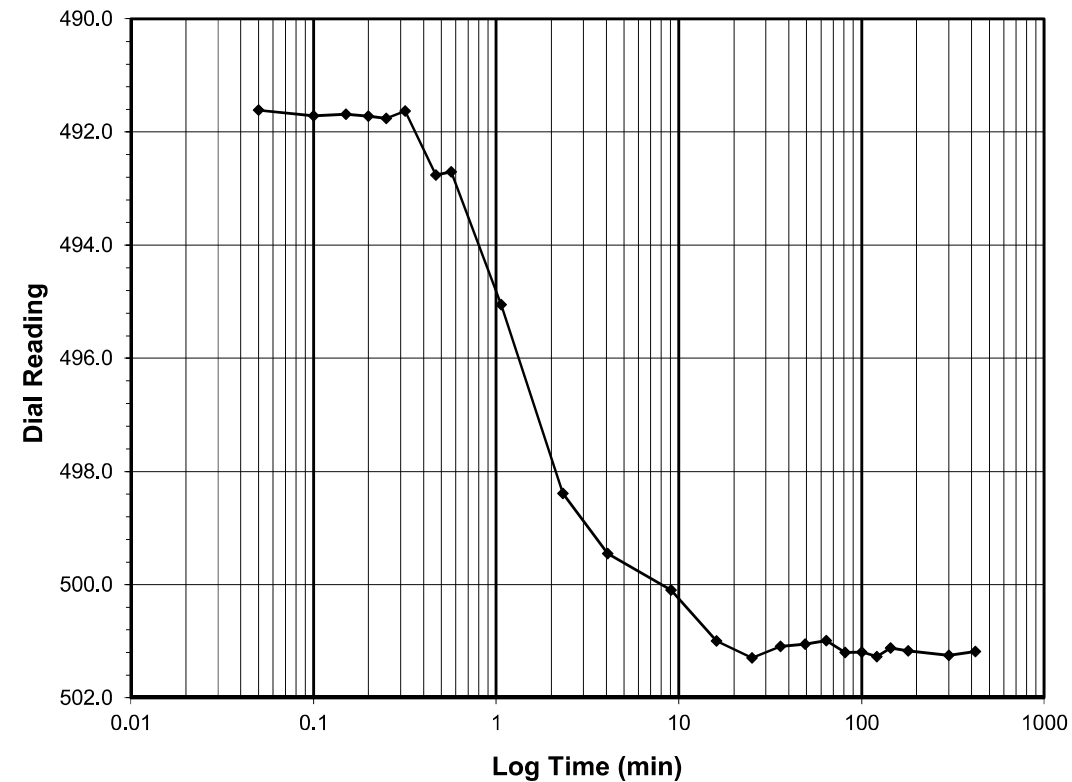
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 0.25-0.5
 Final Reading (div) 501.2
 Consolidometer No. R409
 1 Division (in) 0.0001

Start Date 7/22/2019
 Start Time 1:09:02

Elapsed Time (min)	Dial Reading (div)
Initial	484.2
0.05	491.6
0.10	491.7
0.15	491.7
0.20	491.7
0.25	491.8
0.32	491.6
0.47	492.8
0.57	492.7
1.07	495.0
2.32	498.4
4.07	499.5
9.07	500.1
16.07	501.0
25.07	501.3
36.07	501.1
49.07	501.1
64.07	501.0
81.07	501.2
100.07	501.2
121.07	501.3
144.07	501.1
180.07	501.2
300.07	501.3
420.07	501.2



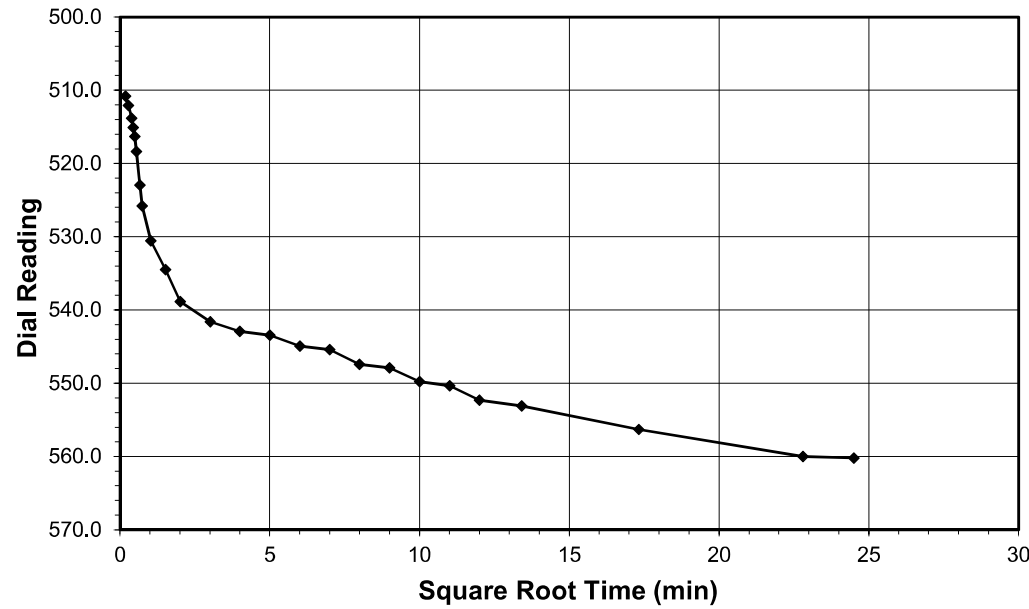
Tested By 129-0411 Date 7/22/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S4_EB2-A
 Client Project R-2561CA Depth (ft) 19.7-21.7
 Project No. R-2019-209-001 Sample No. ST-4
 Lab ID R-2019-209-001-012 Visual Description GRAY LEAN CLAY

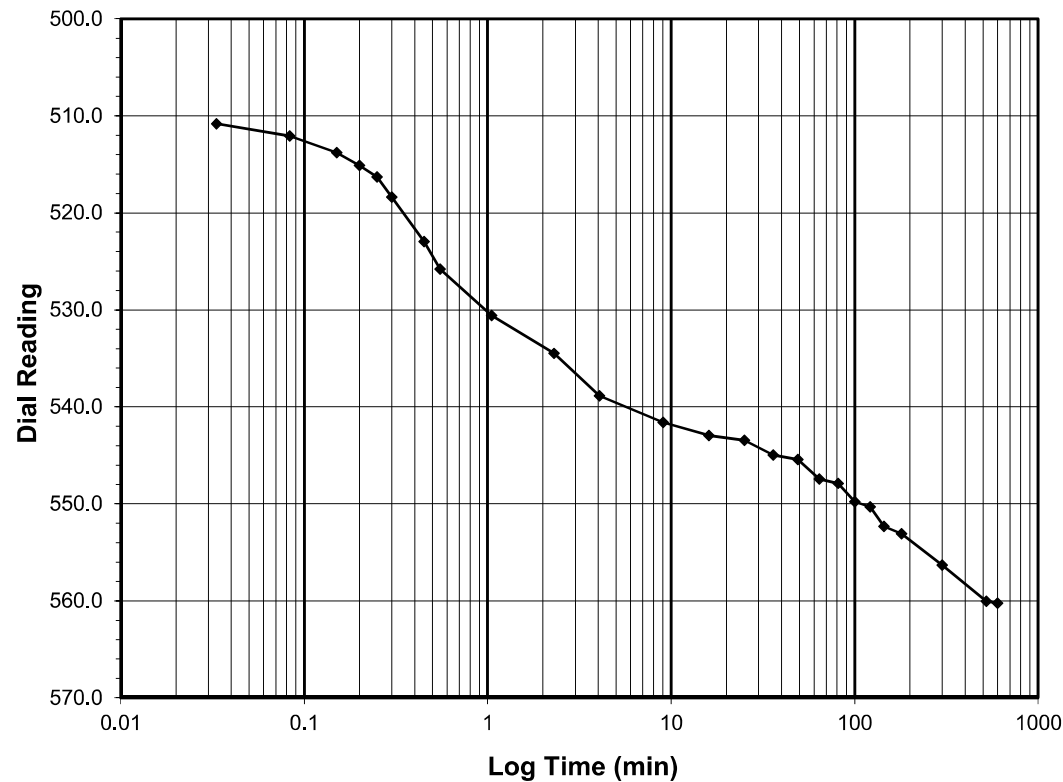
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 0.5-1.0
Final Reading (div) 560.2
 Consolidometer No. **R409**
 1 Division (in) 0.0001

Start Date 7/22/2019
 Start Time 8:09:06

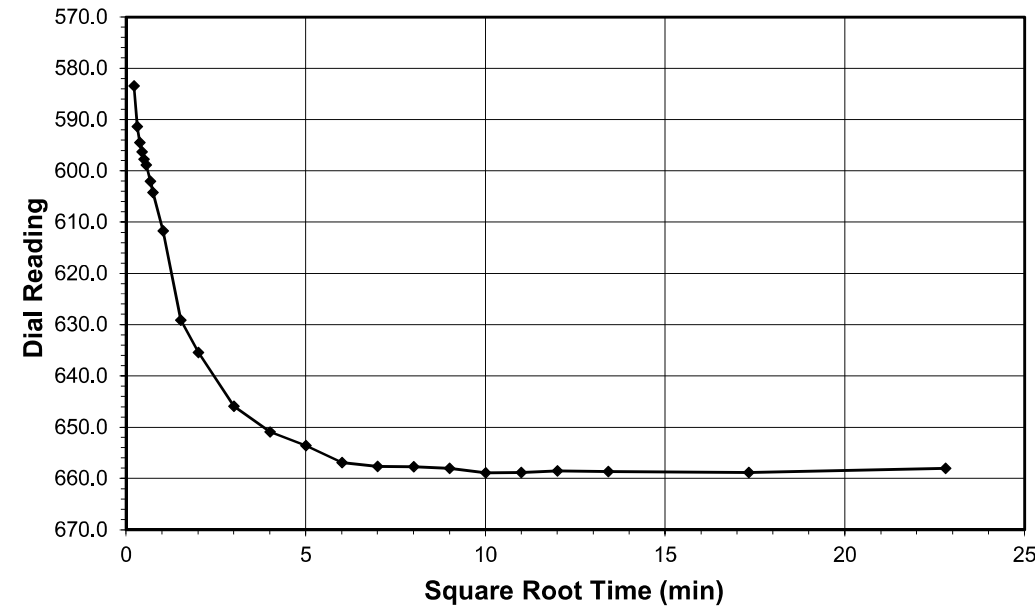
Elapsed Time (min)	Dial Reading (div)
Initial	501.2
0.03	510.8
0.08	512.1
0.15	513.8
0.20	515.1
0.25	516.3
0.30	518.4
0.45	523.0
0.55	525.8
1.05	530.6
2.30	534.5
4.05	538.9
9.05	541.6
16.05	542.9
25.05	543.4
36.05	544.9
49.05	545.4
64.05	547.4
81.05	547.9
100.05	549.8
121.05	550.3
144.05	552.3
180.05	553.1
300.07	556.3
520.07	560.0
600.07	560.2



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S4_EB2-A
 Client Project R-2561CA Depth (ft) 19.7-21.7
 Project No. R-2019-209-001 Sample No. ST-4
 Lab ID R-2019-209-001-012 Visual Description GRAY LEAN CLAY

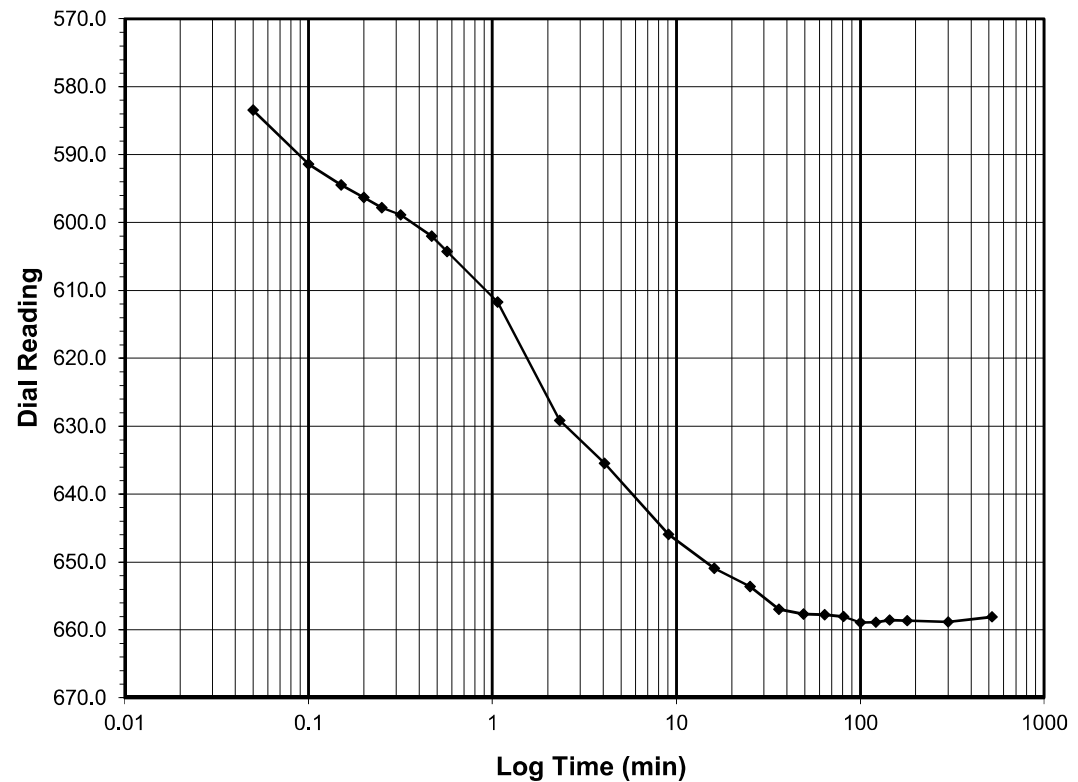
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 1.0-2.0
Final Reading (div) 658.1
 Consolidometer No. **R409**
 1 Division (in) 0.0001

Start Date 7/22/2019
 Start Time 18:09:11

Elapsed Time (min)	Dial Reading (div)
Initial	560.2
0.05	583.5
0.10	591.4
0.15	594.5
0.20	596.3
0.25	597.8
0.32	598.9
0.47	602.0
0.57	604.3
1.07	611.7
2.32	629.2
4.07	635.4
9.07	645.9
16.07	650.9
25.07	653.6
36.07	656.9
49.07	657.7
64.08	657.8
81.08	658.0
100.08	658.9
121.08	658.9
144.08	658.5
180.08	658.6
300.08	658.8
520.08	658.1



Tested By 129-0411 Date 7/22/2019 Checked By GEM Date 7/29/2019

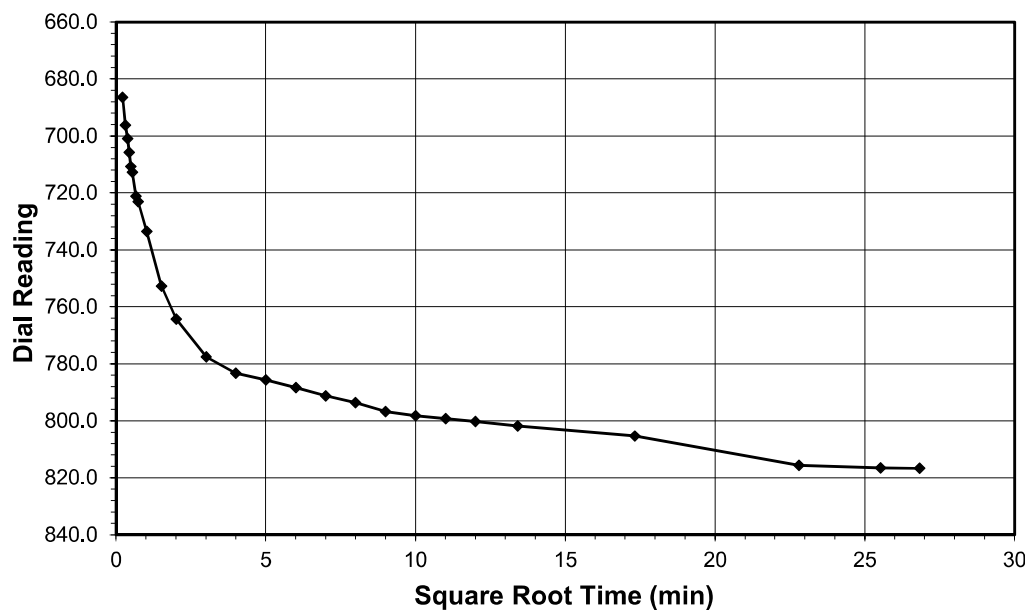
Tested By 129-0411 Date 7/22/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S4_EB2-A
 Client Project R-2561CA Depth (ft) 19.7-21.7
 Project No. R-2019-209-001 Sample No. ST-4
 Lab ID R-2019-209-001-012 Visual Description GRAY LEAN CLAY

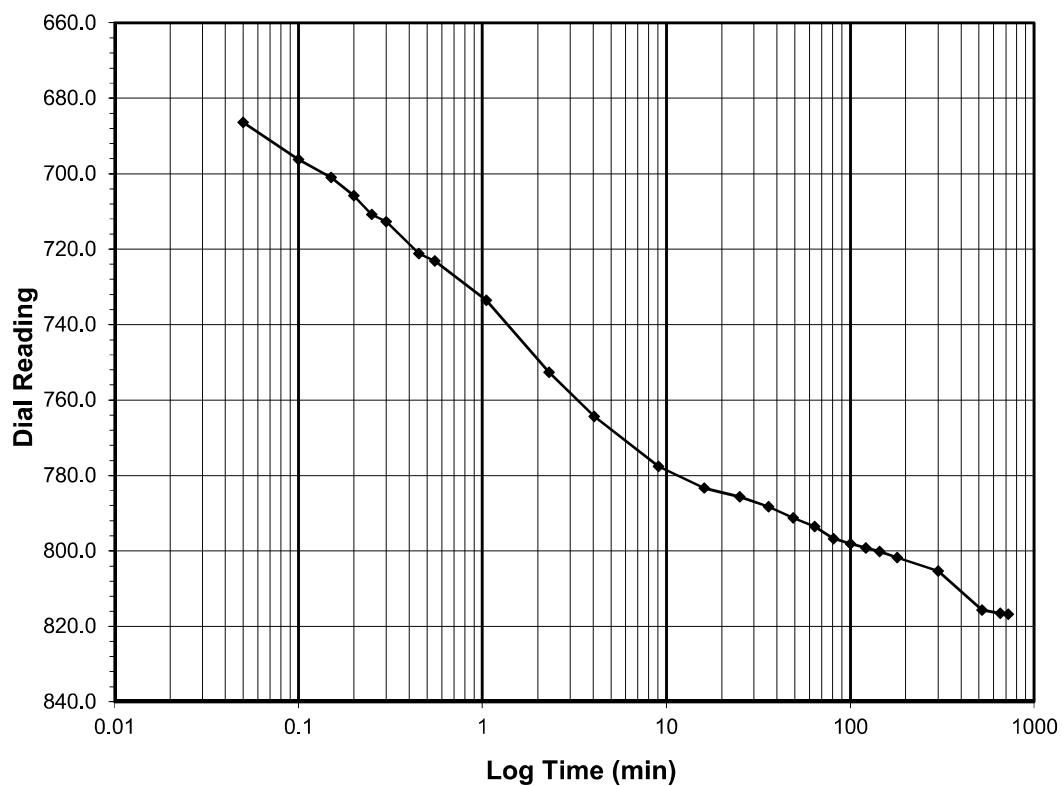
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 2.0-4.0
 Final Reading (div) 816.7
 Consolidometer No. R409
 1 Division (in) 0.0001

Start Date 7/23/2019
 Start Time 4:09:12

Elapsed Time (min)	Dial Reading (div)
Initial	658.1
0.05	686.4
0.10	696.2
0.15	700.9
0.20	705.8
0.25	710.8
0.30	712.8
0.45	721.1
0.55	723.1
1.05	733.6
2.30	752.7
4.05	764.4
9.05	777.5
16.05	783.3
25.05	785.7
36.05	788.3
49.05	791.2
64.05	793.6
81.07	796.7
100.07	798.2
121.07	799.2
144.07	800.2
180.07	801.8
300.07	805.3
520.07	815.7
651.70	816.5
720.05	816.7



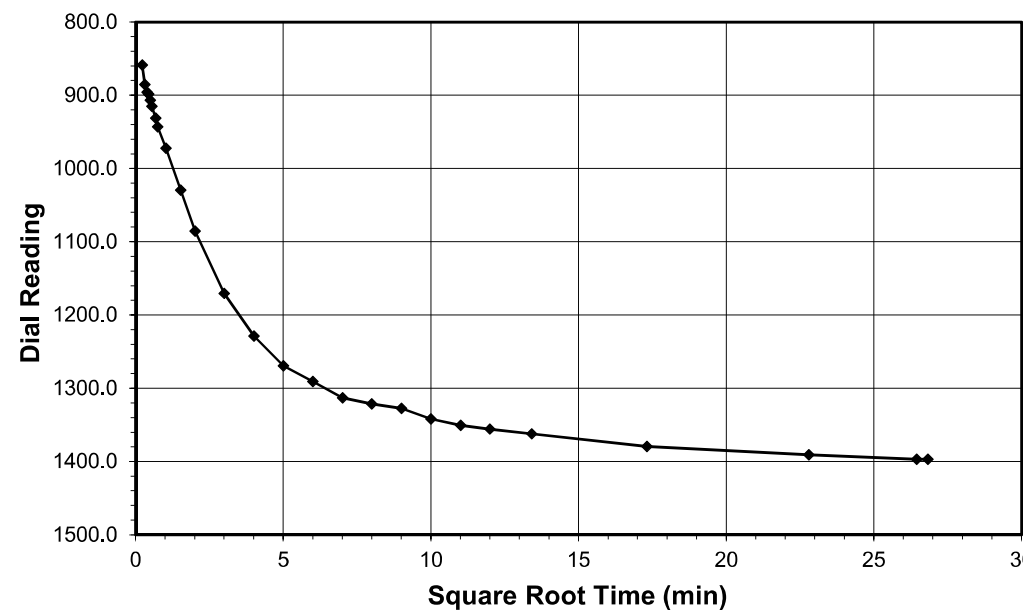
Tested By 129-0411 Date 7/23/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S4_EB2-A
 Client Project R-2561CA Depth (ft) 19.7-21.7
 Project No. R-2019-209-001 Sample No. ST-4
 Lab ID R-2019-209-001-012 Visual Description GRAY LEAN CLAY

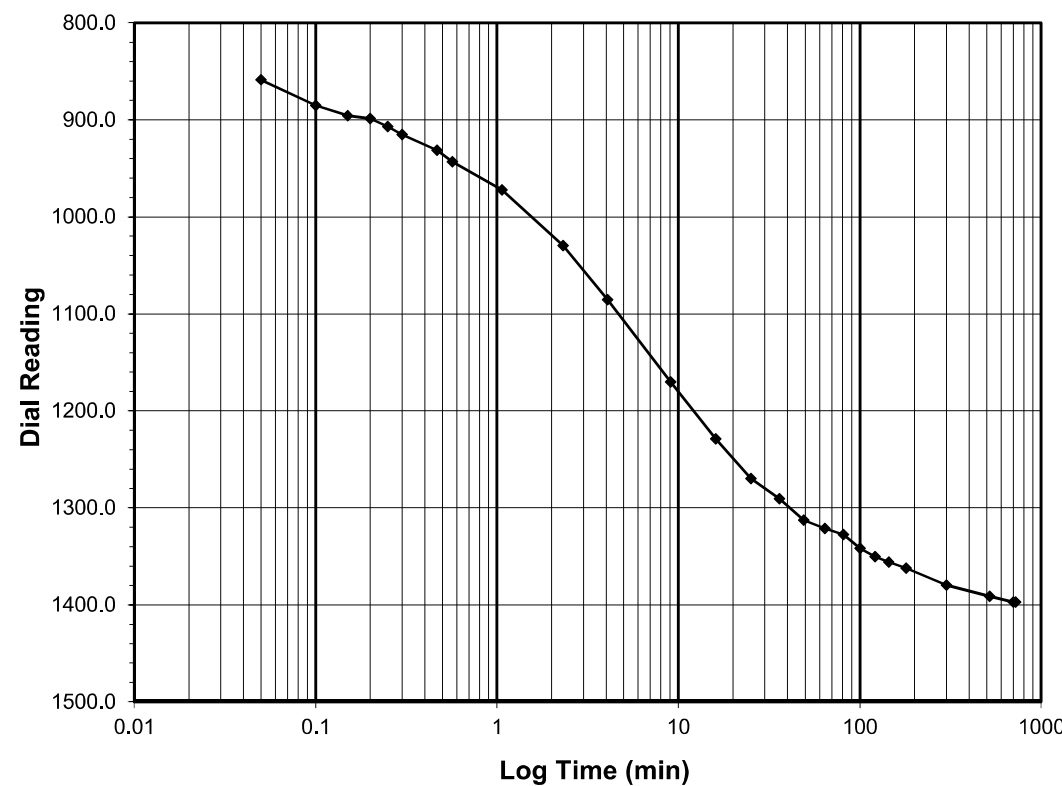
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 4.0-8.0
 Final Reading (div) 1397.1
 Consolidometer No. R409
 1 Division (in) 0.0001

Start Date 7/23/2019
 Start Time 16:09:15

Elapsed Time (min)	Dial Reading (div)
Initial	816.7
0.05	858.7
0.10	885.3
0.15	895.9
0.20	898.6
0.25	906.9
0.30	915.2
0.47	931.3
0.57	943.1
1.07	972.1
2.32	1029.7
4.07	1085.5
9.07	1170.4
16.07	1228.8
25.07	1269.6
36.07	1290.6
49.07	1312.8
64.07	1321.3
81.07	1327.5
100.07	1341.7
121.07	1350.3
144.07	1355.9
180.08	1362.1
300.08	1379.6
520.08	1391.2
700.08	1396.9
720.20	1397.1



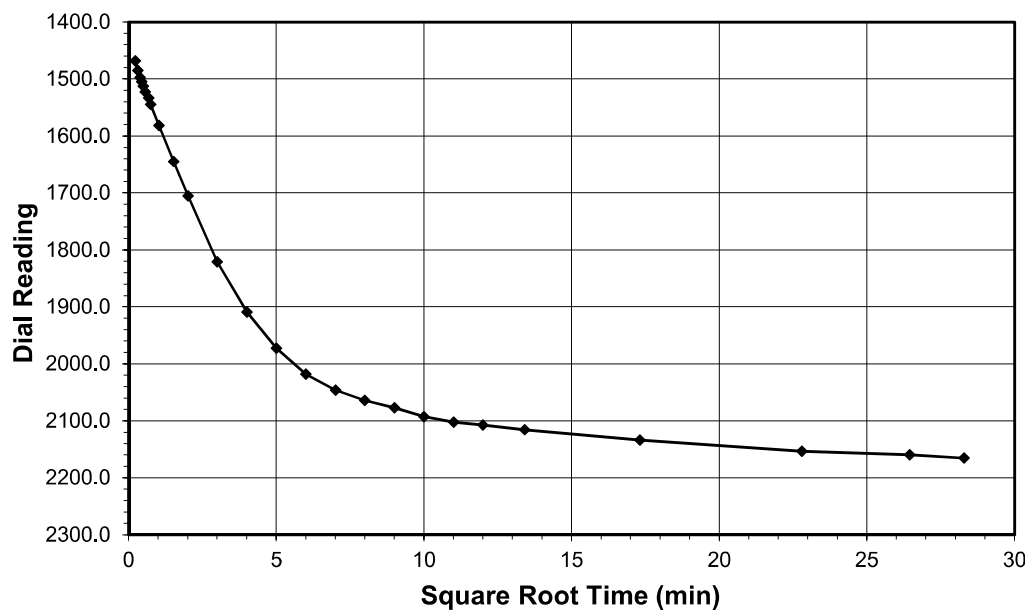
Tested By 129-0411 Date 7/23/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

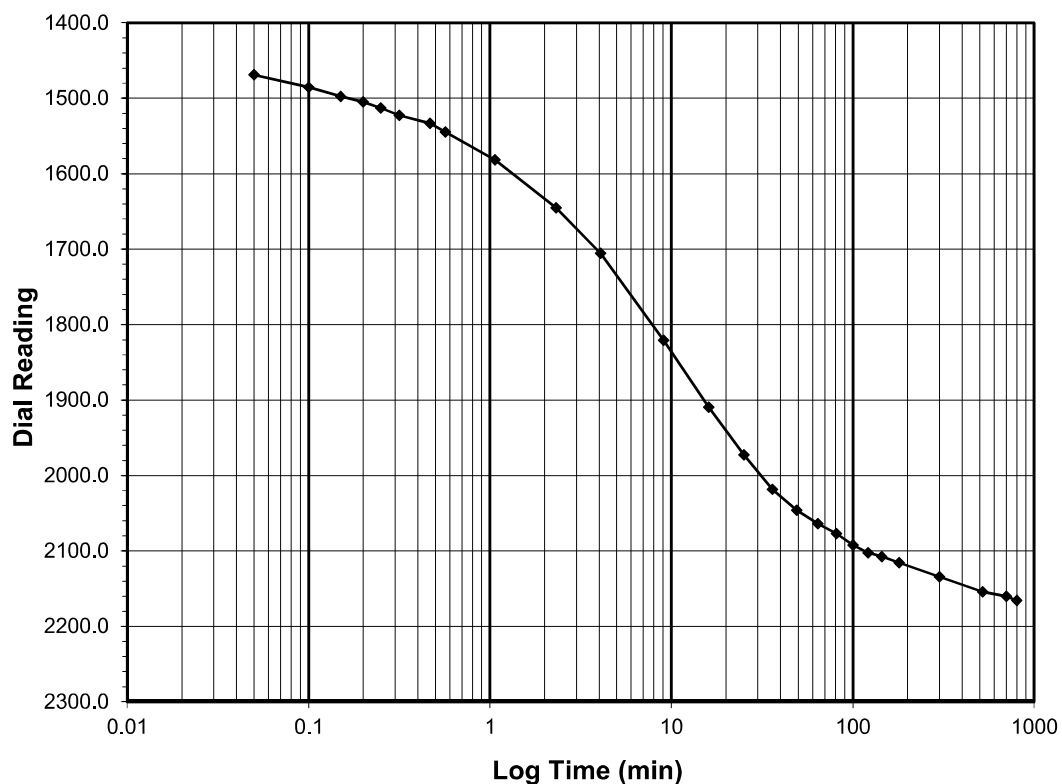
Client Kleinfelder Boring No. S4_EB2-A
 Client Project R-2561CA Depth (ft) 19.7-21.7
 Project No. R-2019-209-001 Sample No. ST-4
 Lab ID R-2019-209-001-012 Visual Description GRAY LEAN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 8.0-16.0
 Final Reading (div) 2165.6
 Consolidometer No. R409
 1 Division (in) 0.0001
 Start Date 7/24/2019
 Start Time 4:09:27

Elapsed Time (min)	Dial Reading (div)
Initial	1397.1
0.05	1468.7
0.10	1485.4
0.15	1497.7
0.20	1504.9
0.25	1512.9
0.32	1522.8
0.47	1533.4
0.57	1544.6
1.07	1581.6
2.32	1644.8
4.07	1705.7
9.07	1820.7
16.07	1909.3
25.07	1972.6
36.07	2018.4
49.07	2046.1
64.07	2063.8
81.07	2076.9
100.07	2092.4
121.07	2102.3
144.07	2107.4
180.07	2115.6
300.07	2134.2
520.08	2154.0
700.08	2160.1
800.23	2165.6



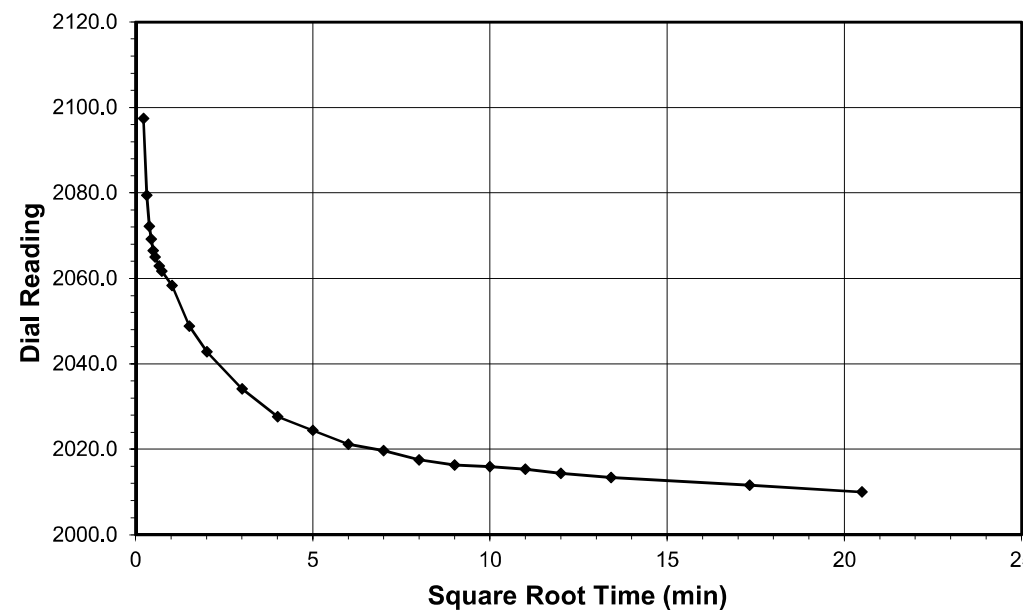
Tested By 129-0411 Date 7/24/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

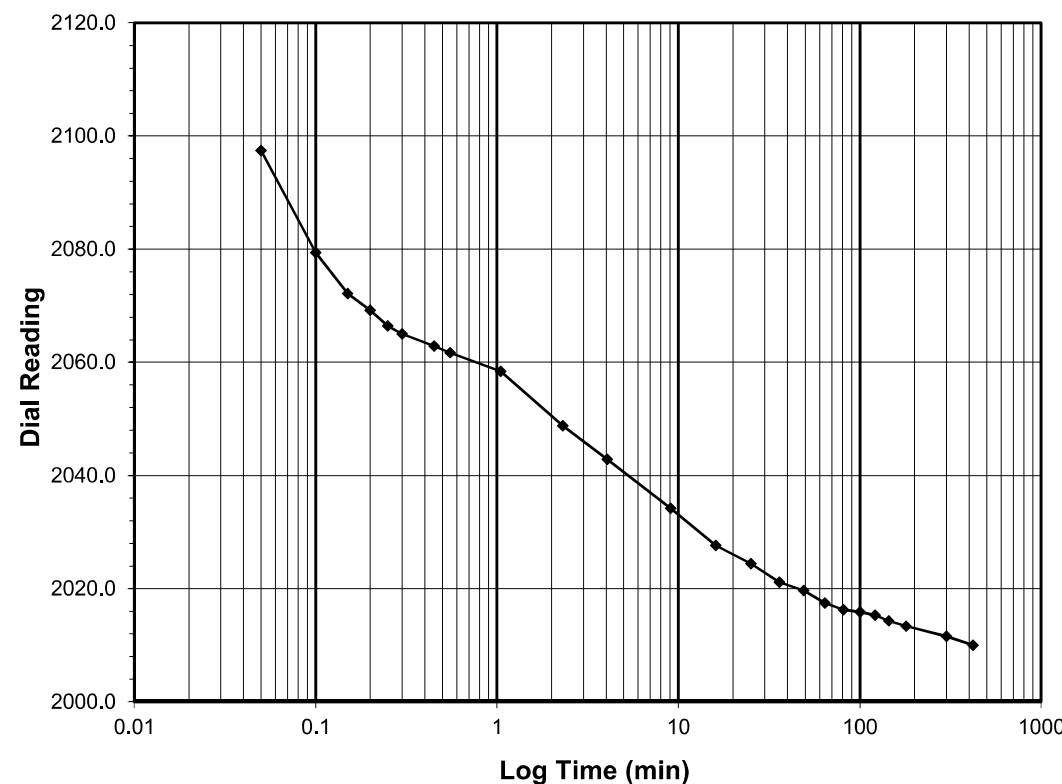
Client Kleinfelder Boring No. S4_EB2-A
 Client Project R-2561CA Depth (ft) 19.7-21.7
 Project No. R-2019-209-001 Sample No. ST-4
 Lab ID R-2019-209-001-012 Visual Description GRAY LEAN CLAY

Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 16.0-4.0
 Final Reading (div) 2010.0
 Consolidometer No. R409
 1 Division (in) 0.0001
 Start Date 7/24/2019
 Start Time 17:29:41

Elapsed Time (min)	Dial Reading (div)
Initial	2165.6
0.05	2097.4
0.10	2079.4
0.15	2072.2
0.20	2069.2
0.25	2066.5
0.30	2065.0
0.45	2062.9
0.55	2061.7
1.05	2058.4
2.30	2048.8
4.05	2042.9
9.05	2034.2
16.05	2027.7
25.05	2024.4
36.07	2021.1
49.07	2019.7
64.07	2017.5
81.07	2016.3
100.07	2015.9
121.07	2015.3
144.07	2014.3
180.07	2013.4
300.07	2011.6
420.12	2010.0



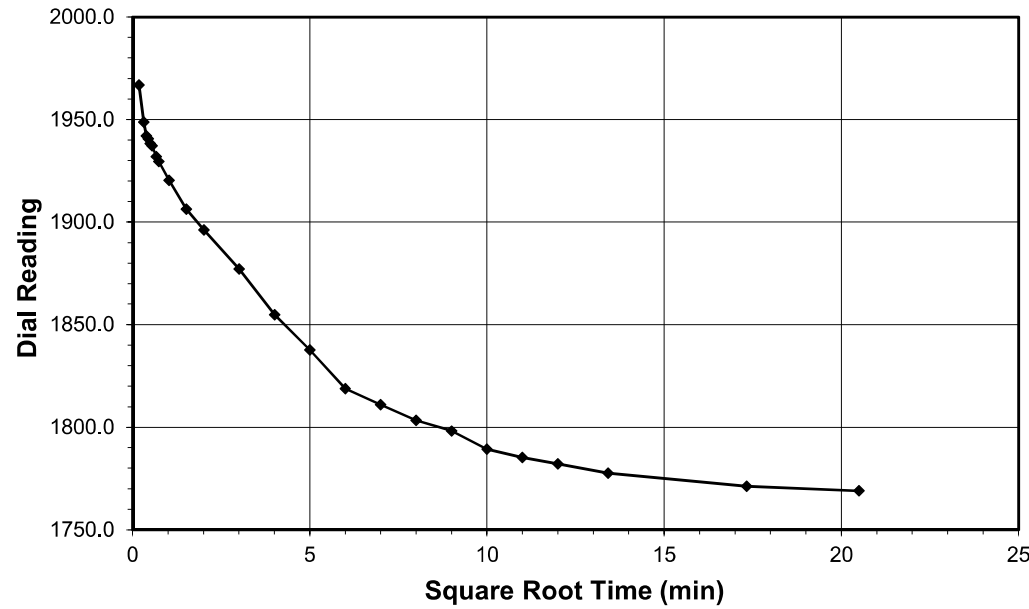
Tested By 129-0411 Date 7/24/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S4_EB2-A
 Client Project R-2561CA Depth (ft) 19.7-21.7
 Project No. R-2019-209-001 Sample No. ST-4
 Lab ID R-2019-209-001-012 Visual Description GRAY LEAN CLAY

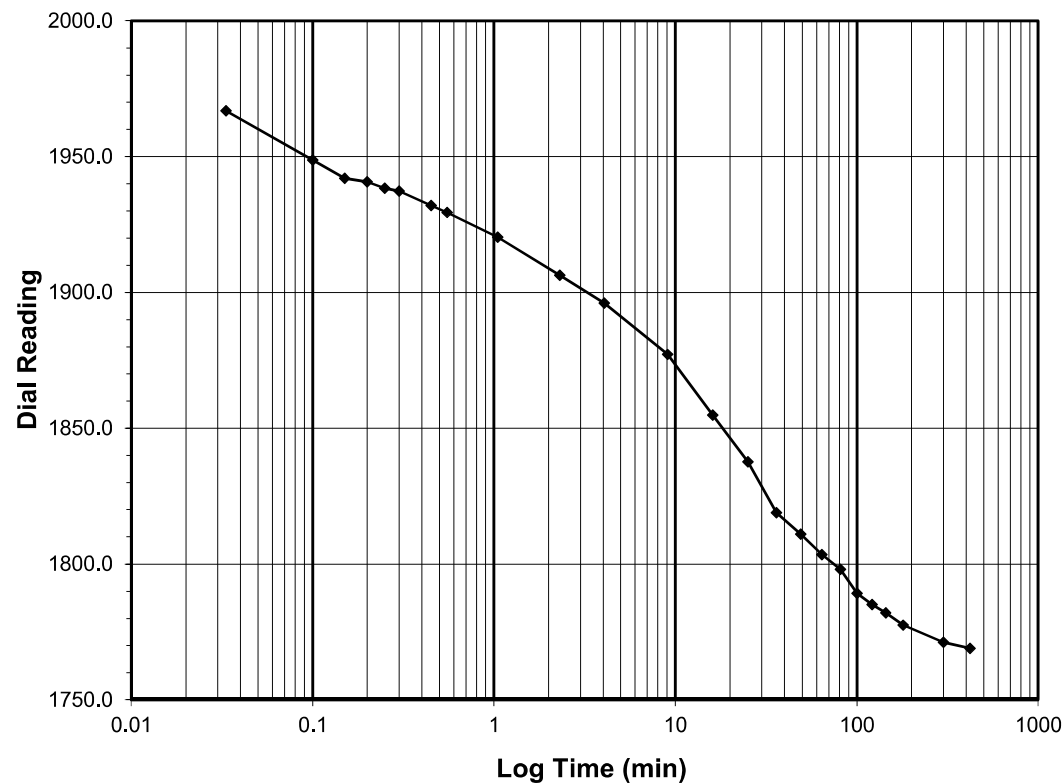
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 4.0-1.0
Final Reading (div) 1769.0
 Consolidometer No. **R409**
 1 Division (in) 0.0001

Start Date 7/25/2019
 Start Time 0:29:48

Elapsed Time (min)	Dial Reading (div)
Initial	2010.0
0.03	1966.8
0.10	1948.7
0.15	1942.0
0.20	1940.7
0.25	1938.4
0.30	1937.3
0.45	1932.0
0.55	1929.5
1.05	1920.3
2.30	1906.3
4.05	1896.1
9.05	1877.2
16.05	1854.8
25.05	1837.7
36.05	1818.8
49.05	1811.0
64.05	1803.4
81.05	1798.0
100.05	1789.3
121.05	1785.1
144.05	1782.1
180.05	1777.5
300.07	1771.1
420.05	1769.0



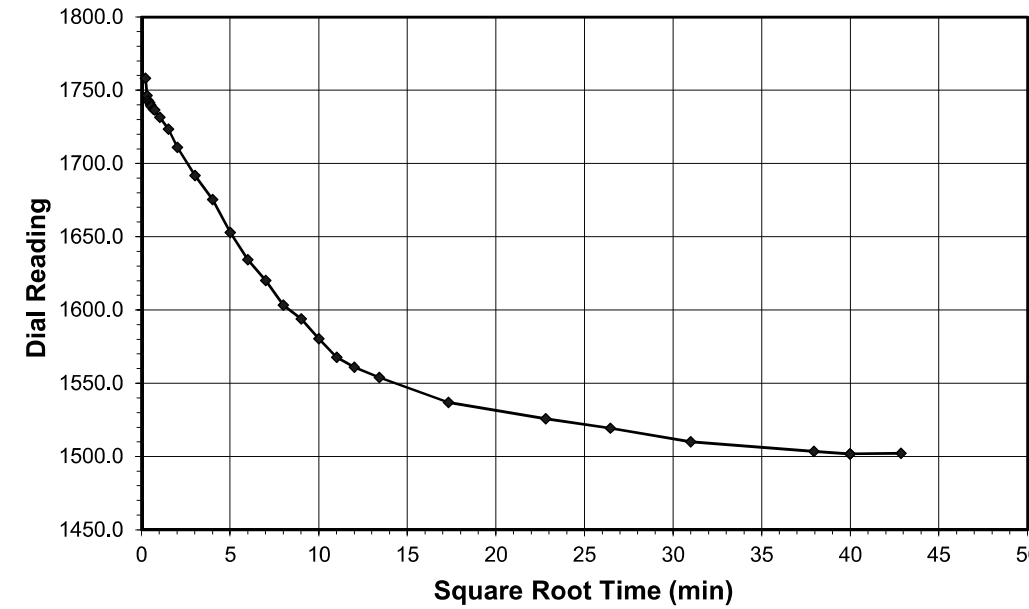
Tested By 129-0411 Date 7/25/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

Client Kleinfelder Boring No. S4_EB2-A
 Client Project R-2561CA Depth (ft) 19.7-21.7
 Project No. R-2019-209-001 Sample No. ST-4
 Lab ID R-2019-209-001-012 Visual Description GRAY LEAN CLAY

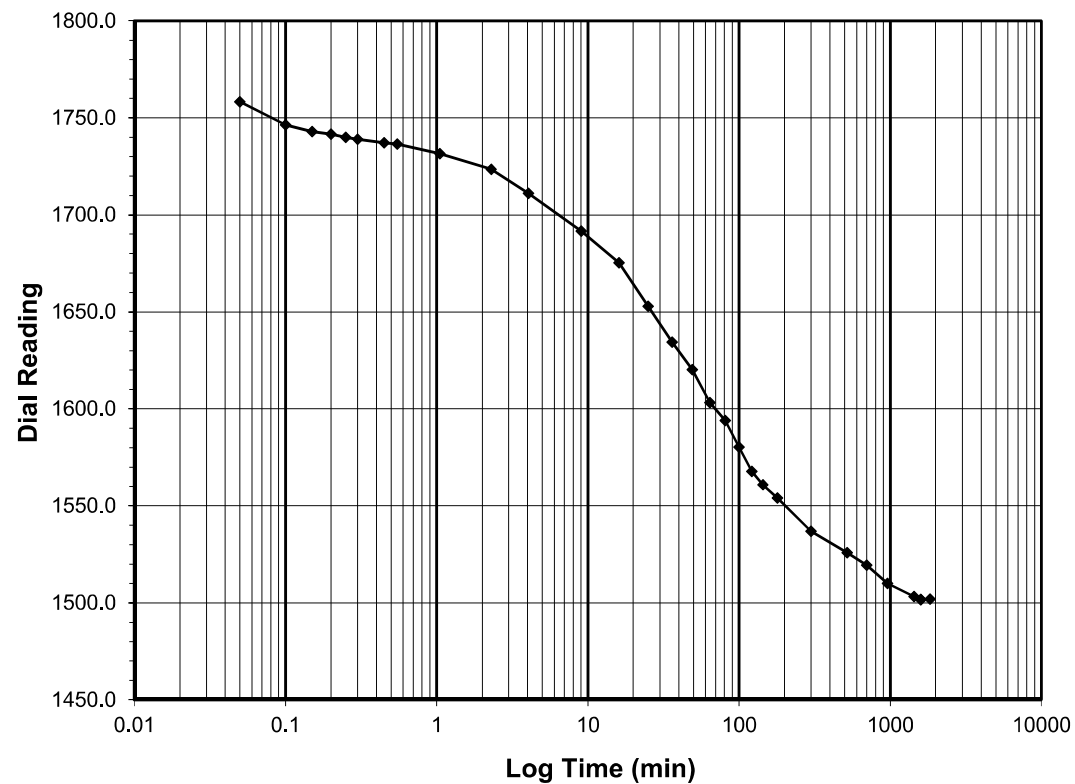
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 1.0-0.25
Final Reading (div) 1502.1
 Consolidometer No. **R409**
 1 Division (in) 0.0001

Start Date 7/25/2019
 Start Time 7:29:52

Elapsed Time (min)	Dial Reading (div)
Initial	1769.0
0.05	1758.2
0.10	1746.3
0.15	1742.9
0.20	1741.6
0.25	1740.0
0.30	1739.0
0.45	1737.1
0.55	1736.5
1.05	1731.6
2.30	1723.4
4.05	1711.1
9.05	1691.6
16.05	1675.3
25.05	1652.8
36.07	1634.4
49.07	1620.2
64.07	1603.2
81.07	1593.9
100.07	1580.3
121.07	1567.8
144.07	1561.0
180.07	1554.0
300.07	1536.9
520.07	1525.8
700.07	1519.4
960.07	1510.0
1440.07	1503.3
1598.22	1501.7
1598.23	1501.7
1838.23	1502.1



Tested By 129-0411 Date 7/25/2019 Checked By GEM Date 7/29/2019

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**

AASHTO T-297

Client: Kleinfelder Boring No.: S4_EB2-A
 Client Reference: R-2561CA Depth (ft): 19.7-21.7
 Project No.: R-2019-209-001 Sample No.: ST-4
 Lab ID: R-2019-209-001-012

Visual Description: Gray Clay (UNDISTURBED)

Stage No.	3
Test No.	1

INITIAL SAMPLE DIMENSIONS (in)			
Length 1:	6.252	Diameter 1:	2.871
Length 2:	6.237	Diameter 2:	2.857
Length 3:	6.277	Diameter 3:	2.843
Length 4:	6.253	Diameter 4:	2.835
Avg. Length:	6.255	Avg. Diam.:	2.852

PRESSURES (psi)

Cell Pressure (psi)	55.0
Back Pressure (psi)	50.0
Eff. Conf. Pressure (psi)	5.0
Pore Pressure Response (%)	100

VOLUME CHANGE	
Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	15.4
Final Change (ml)	8.6

MAXIMUM OBLIQUITY POINTS

\bar{P}	=	8.83
Q	=	7.36

Initial Dial Reading (mil)	092
Dial Reading After Saturation (mil)	092
Dial Reading After Consolidation (mil)	119

LOAD (LB)	DEFORMATION (IN)	PORE PRESSURE (PSI)
8.1	0.000	50.0
10.7	0.001	50.3
11.0	0.003	50.6
25.5	0.008	50.9
34.1	0.015	51.6
39.6	0.021	52.0
46.6	0.030	52.5
52.3	0.039	52.9
59.6	0.052	53.2
71.3	0.073	53.5
87.6	0.104	53.7
103.5	0.141	53.5
111.5	0.179	53.1
115.9	0.222	52.6
118.1	0.253	52.2
120.0	0.297	51.7
120.2	0.355	51.2
121.4	0.418	50.9
121.4	0.464	50.8
123.1	0.526	50.7
122.7	0.573	50.6
124.0	0.619	50.6
124.7	0.665	50.5
125.3	0.696	50.5
125.7	0.727	50.4
126.8	0.759	50.4
128.1	0.790	50.3
129.5	0.836	50.3
130.9	0.883	50.2
131.4	0.929	50.1
132.1	0.976	50.0

Tested By: 129-07-0411 Date: 8/7/19 Input Checked By: GEM Date: 8/13/19

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**

AASHTO T-297

Client: Kleinfelder Boring No.: S4_EB2-A
 Client Reference: R-2561CA Depth (ft): 19.7-21.7
 Project No.: R-2019-209-001 Sample No.: ST-4
 Lab ID: R-2019-209-001-012

Visual Description: Gray Clay (UNDISTURBED)

Effective Confining Pressure (psi)	5.0	Stage No.	3
		Test No.	1

INITIAL DIMENSIONS

Initial Sample Length (in)	6.25
Initial Sample Diameter (in)	2.85
Initial Sample Area (in ²)	6.39
Initial Sample Volume (in ³)	39.94

VOLUME CHANGE

Volume After Consolidation (in ³)	39.42
Length After Consolidation (in)	6.23
Area After Consolidation (in ²)	6.330

Strain (%)	Deviation Stress	ΔU	$\bar{\sigma}_1$	$\bar{\sigma}_3$	Effective Principle Stress Ratio	\bar{A}	\bar{P}	Q
0.02	0.40	0.29	5.12	4.7	1.085	0.73	4.92	0.20
0.06	0.46	0.59	4.88	4.4	1.105	1.29	4.65	0.23
0.13	2.74	0.89	6.86	4.1	1.666	0.32	5.49	1.37
0.24	4.09	1.58	7.52	3.4	2.192	0.39	5.47	2.04
0.33	4.95	2.03	7.92	3.0	2.664	0.41	5.45	2.48
0.48	6.05	2.52	8.55	2.5	3.430	0.42	5.52	3.03
0.63	6.93	2.85	9.09	2.2	4.213	0.41	5.62	3.47
0.83	8.06	3.15	9.92	1.9	5.346	0.39	5.89	4.03
1.17	9.87	3.48	11.39	1.5	7.469	0.35	6.46	4.93
1.67	12.34	3.67	13.68	1.3	10.241	0.30	7.51	6.17
2.27	14.72	3.54	16.20	1.5	11.006	0.24	8.83	7.36
2.87	15.87	3.14	17.74	1.9	9.496	0.20	9.80	7.94
3.57	16.42	2.57	18.86	2.4	7.727	0.16	10.65	8.21
4.07	16.67	2.16	19.52	2.9	6.841	0.13	11.19	8.33
4.77	16.83	1.67	20.17	3.3	6.034	0.10	11.76	8.41
5.70	16.70	1.22	20.48	3.8	5.412	0.07	12.13	8.35
6.71	16.70	0.89	20.82	4.1	5.050	0.05	12.47	8.35
7.45	16.56	0.75	20.82	4.3	4.888	0.05	12.54	8.28
8.45	16.63	0.64	21.00	4.4	4.811	0.04	12.68	8.32
9.20	16.44	0.57	20.88	4.4	4.699	0.03	12.66	8.22
9.94	16.48	0.56	20.93	4.4	4.706	0.03	12.69	8.24
10.68	16.45	0.50	20.95	4.5	4.648	0.03	12.73	8.22
11.18	16.45	0.46	21.00	4.6	4.614	0.03	12.77	8.22
11.68	16.40	0.42	20.99	4.6	4.571	0.03	12.79	8.20
12.18	16.47	0.37	21.11	4.6	4.549	0.02	12.87	8.23
12.68	16.55	0.33	21.23	4.7	4.538	0.02	12.96	8.28
13.43	16.61	0.26	21.36	4.8	4.493	0.02	13.06	8.30
14.18	16.64	0.21	21.44	4.8	4.468	0.01	13.12	8.32
14.92	16.57	0.12	21.46	4.9	4.386	0.01	13.18	8.28
15.67	16.52	0.04	21.48	5.0	4.326	0.00	13.23	8.26

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
AASHTO T-297

Client: Kleinfelder Boring No.: S4_EB2-A
 Client Reference: R-2561CA Depth (ft): 19.7-21.7
 Project No.: R-2019-209-001 Sample No.: ST-4
 Lab ID: R-2019-209-001-012

Visual Description: Gray Clay (UNDISTURBED)

Stage No.	2
Test No.	2

INITIAL SAMPLE DIMENSIONS (in)			
Length 1:	5.936	Diameter 1:	2.866
Length 2:	5.995	Diameter 2:	2.853
Length 3:	5.964	Diameter 3:	2.843
Length 4:	6.001	Diameter 4:	2.820
Avg. Length:	5.974	Avg. Diam.:	2.846

PRESSURES (psi)	
Cell Pressure (psi)	60.0
Back Pressure (psi)	50.0
Eff. Conf. Pressure (psi)	10.0
Pore Pressure Response (%)	100

VOLUME CHANGE	
Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	7.9
Final Change (ml)	16.1

MAXIMUM OBLIQUITY POINTS	
\bar{P}	= 11.32
\bar{Q}	= 9.31

Initial Dial Reading (mil)	189
Dial Reading After Saturation (mil)	211
Dial Reading After Consolidation (mil)	266

LOAD (LB)	DEFORMATION (IN)	PORE PRESSURE (PSI)
10.2	0.000	50.0
16.0	0.002	50.1
23.1	0.006	50.5 Run
31.9	0.009	51.1 Run
45.4	0.015	52.3 Run
55.0	0.021	53.2 Run
66.6	0.029	54.4 Run
77.7	0.038	55.2 Run
89.8	0.049	56.0 Run
106.9	0.071	57.0 Run
120.5	0.101	57.8 Run
128.5	0.137	58.0 Run
136.5	0.173	57.8 Failure
145.1	0.215	57.5
149.4	0.245	57.0
148.3	0.287	56.5
144.6	0.344	55.9
140.0	0.404	55.6
145.2	0.449	55.5
147.8	0.509	55.2
149.2	0.554	55.0
147.9	0.599	54.9
146.2	0.644	54.7
146.9	0.674	54.5
148.6	0.704	54.3
153.4	0.734	54.2
151.9	0.764	54.1
153.2	0.809	53.9
152.1	0.854	53.8
152.1	0.884	53.8
154.5	0.914	53.7

Tested By: 129-07-0411 Date: 8/7/19 Input Checked By: GEM Date: 8/13/19

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
AASHTO T-297

Client: Kleinfelder Boring No.: S4_EB2-A
 Client Reference: R-2561CA Depth (ft): 19.7-21.7
 Project No.: R-2019-209-001 Sample No.: ST-4
 Lab ID: R-2019-209-001-012

Visual Description: Gray Clay (UNDISTURBED)

Effective Confining Pressure (psi)	10.0	Stage No.	2
		Test No.	2

INITIAL DIMENSIONS	
Initial Sample Length (in)	5.97
Initial Sample Diameter (in)	2.85
Initial Sample Area (in ²)	6.36
Initial Sample Volume (in ³)	37.99

VOLUME CHANGE	
Volume After Consolidation (in ³)	36.59
Length After Consolidation (in)	5.90
Area After Consolidation (in ²)	6.205

Strain (%)	Deviation Stress	ΔU	$\bar{\sigma}_1$	$\bar{\sigma}_3$	Effective Principle Stress Ratio	\bar{A}	\bar{P}	\bar{Q}
------------	------------------	------------	------------------	------------------	----------------------------------	-----------	-----------	-----------

0.03	0.93	0.12	10.85	9.9	1.094	0.13	10.39	0.46
0.11	2.07	0.48	11.63	9.6	1.217	0.23	10.59	1.04
0.15	3.49	1.13	12.41	8.9	1.392	0.32	10.66	1.75
0.25	5.66	2.26	13.44	7.8	1.727	0.40	10.61	2.83
0.35	7.19	3.22	14.01	6.8	2.054	0.45	10.42	3.59
0.50	9.04	4.36	14.71	5.7	2.592	0.48	10.20	4.52
0.65	10.81	5.23	15.62	4.8	3.246	0.48	10.21	5.40
0.84	12.72	6.04	16.72	4.0	4.181	0.48	10.36	6.36
1.20	15.40	7.02	18.42	3.0	6.091	0.46	10.72	7.70
1.71	17.47	7.78	19.73	2.3	8.724	0.45	10.99	8.73
2.32	18.63	8.03	20.64	2.0	10.268	0.43	11.32	9.31
2.93	19.76	7.80	22.00	2.2	9.825	0.39	12.12	9.88
3.64	20.96	7.46	23.54	2.6	9.117	0.36	13.06	10.48
4.16	21.51	7.01	24.54	3.0	8.095	0.33	13.78	10.75
4.86	21.18	6.53	24.69	3.5	7.038	0.31	14.10	10.59
5.83	20.40	5.90	24.54	4.1	5.927	0.29	14.34	10.20
6.86	19.49	5.57	23.96	4.5	5.364	0.29	14.21	9.75
7.61	20.10	5.45	24.69	4.6	5.383	0.27	14.64	10.05
8.63	20.26	5.21	25.09	4.8	5.192	0.26	14.96	10.13
9.39	20.30	5.03	25.31	5.0	5.049	0.25	15.16	10.15
10.15	19.94	4.85	25.13	5.2	4.844	0.24	15.16	9.97
10.92	19.53	4.65	24.92	5.4	4.624	0.24	15.15	9.76
11.43	19.51	4.49	25.06	5.5	4.515	0.23	15.30	9.75
11.93	19.64	4.35	25.34	5.7	4.450	0.22	15.52	9.82
12.44	20.20	4.18	26.07	5.9	4.446	0.21	15.96	10.10
12.95	19.89	4.05	25.87	6.0	4.321	0.20	15.93	9.94
13.73	19.89	3.91	26.01	6.1	4.246	0.20	16.07	9.94
14.48	19.56	3.83	25.77	6.2	4.147	0.20	15.99	9.78
14.98	19.44	3.77	25.71	6.3	4.101	0.19	15.99	9.72
15.50	19.65	3.74	25.95	6.3	4.119	0.19	16.12	9.82

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
AASHTO T-297

Client: Kleinfelder Boring No.: S4_EB2-A
 Client Reference: R-2561CA Depth (ft): 19.7-21.7
 Project No.: R-2019-209-001 Sample No.: ST-4
 / DE , ' , 5 " "

9LVXDO 'HVFULSWLRQ \ *UD\ &OD\ 81',6785% ('

Stage No.	1
Test No.	3

INITIAL SAMPLE DIMENSIONS (in)			
Length 1:	6.253	Diameter 1:	2.812
Length 2:	6.291	Diameter 2:	2.843
Length 3:	6.243	Diameter 3:	2.858
Length 4:	6.251	Diameter 4:	2.866
Avg. Length:	6.260	Avg. Diam.:	2.845

PRESSURES (psi)	
Cell Pressure (psi)	70.0
Back Pressure (psi)	50.0
Eff. Conf. Pressure (psi)	20.0
Pore Pressure Response (%)	100

VOLUME CHANGE	
Initial Burette Reading (ml)	96.0
Final Burette Reading (ml)	6.9
Final Change (ml)	89.1

MAXIMUM OBLIQUITY POINTS	
\bar{P} =	17.62
\bar{Q} =	10.73

Initial Dial Reading (mil)	225
Dial Reading After Saturation (mil)	320
Dial Reading After Consolidation (mil)	522

LOAD (LB)	DEFORMATION (IN)	PORE PRESSURE (PSI)
10.6	0.000	50.0
13.9	0.002	50.1
15.5	0.003	49.7
20.6	0.009	50.0
41.0	0.016	52.0
54.2	0.021	53.4
66.5	0.030	55.2
72.7	0.040	56.5
81.3	0.052	57.9
91.9	0.074	59.6
101.1	0.105	61.0
110.8	0.142	62.0
114.8	0.179	62.4
118.8	0.222	62.9
121.8	0.253	63.1
128.0	0.297	63.0
134.5	0.356	63.1
136.5	0.418	63.1
138.2	0.464	62.9
142.0	0.525	62.8
145.8	0.572	62.7
150.8	0.619	62.5
153.2	0.665	62.4
150.6	0.696	62.3
153.5	0.727	62.3
154.3	0.757	62.2
157.4	0.789	62.3
159.6	0.836	62.0
157.4	0.883	62.0
160.5	0.915	62.0
159.4	0.946	61.9

Tested By: 129-07-0411 Date: 8/7/2019 Input Checked By: GEM Date: 8/13/2019

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
AASHTO T-297

Client: Kleinfelder Boring No.: S4_EB2-A
 Client Reference: R-2561CA Depth (ft): 19.7-21.7
 Project No.: R-2019-209-001 Sample No.: ST-4
 Lab ID: R-2019-209-001-012

Visual Description: Gray Clay (UNDISTURBED)

Effective Confining Pressure (psi)	20.0	Stage No.	1
		Test No	3

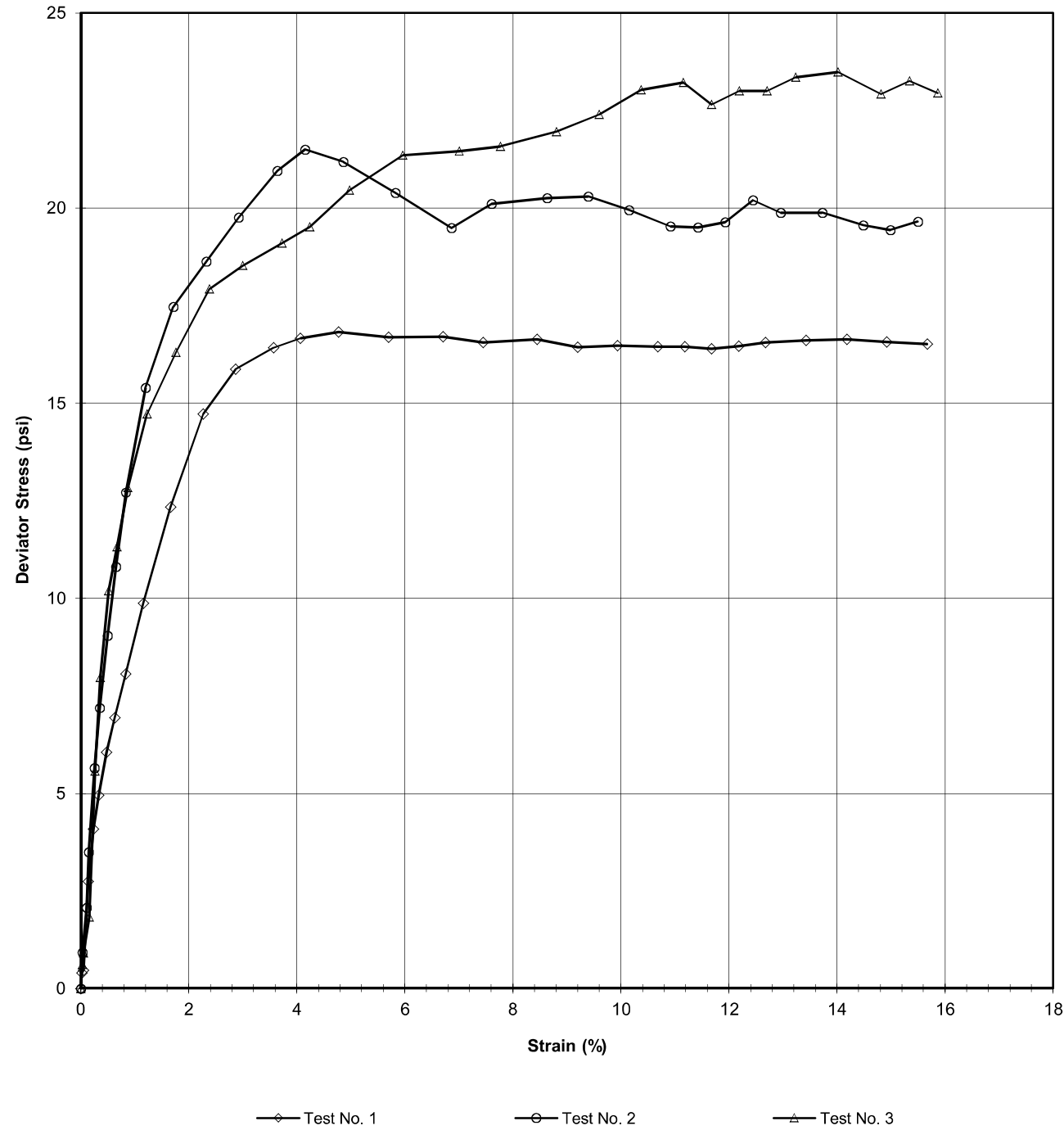
INITIAL DIMENSIONS		VOLUME CHANGE	
Initial Sample Length (in)	6.26	Volume After Consolidation (in ³)	32.54
Initial Sample Diameter (in)	2.84	Length After Consolidation (in)	5.96
Initial Sample Area (in ²)	6.36	Area After Consolidation (in ²)	5.457
Initial Sample Volume (in ³)	39.78		

Strain (%)	Deviation Stress	ΔU	$\bar{\sigma}_1$	$\bar{\sigma}_3$	Effective Principle Stress Ratio	\bar{A}	\bar{P}	\bar{Q}
------------	------------------	------------	------------------	------------------	----------------------------------	-----------	-----------	-----------

0.03	0.61	0.11	20.54	19.9	1.031	0.18	20.23	0.31
0.05	0.91	-0.24	21.18	20.3	1.045	-0.26	20.73	0.45
0.15	1.83	0.02	21.85	20.0	1.092	0.01	20.93	0.92
0.26	5.57	2.02	23.59	18.0	1.309	0.36	20.80	2.79
0.36	7.97	3.42	24.58	16.6	1.480	0.43	20.60	3.98
0.51	10.20	5.25	24.98	14.8	1.690	0.52	19.88	5.10
0.67	11.32	6.57	24.78	13.5	1.841	0.58	19.12	5.66
0.88	12.84	7.97	24.90	12.1	2.064	0.62	18.48	6.42
1.24	14.73	9.59	25.18	10.4	2.410	0.65	17.81	7.36
1.76	16.30	11.01	25.33	9.0	2.806	0.68	17.18	8.15
2.38	17.93	12.01	25.95	8.0	3.234	0.67	16.99	8.96
3.00	18.53	12.45	26.11	7.6	3.444	0.67	16.85	9.27
3.72	19.10	12.90	26.23	7.1	3.679	0.68	16.68	9.55
4.24	19.52	13.15	26.40	6.9	3.834	0.67	16.65	9.76
4.97	20.45	13.06	27.43	7.0	3.930	0.64	17.21	10.23
5.96	21.35	13.09	28.30	6.9	4.077	0.61	17.62	10.68
7.01	21.46	13.14	28.35	6.9	4.114	0.61	17.62	10.73
7.77	21.58	12.91	28.71	7.1	4.027	0.60	17.92	10.79
8.81	21.96	12.85	29.15	7.2	4.055	0.59	18.17	10.98
9.60	22.40	12.75	29.68	7.3	4.075	0.57	18.48	11.20
10.37	23.03	12.50	30.57	7.5	4.054	0.54	19.05	11.51
11.16	23.22	12.45	30.81	7.6	4.059	0.54	19.20	11.61
11.68	22.66	12.37	30.32	7.7	3.956	0.55	18.99	11.33
12.19	23.00	12.30	30.74	7.7	3.971	0.53	19.24	11.50
12.70	23.00	12.21	30.83	7.8	3.937	0.53	19.33	11.50
13.24	23.35	12.30	31.09	7.7	4.019	0.53	19.41	11.68
14.02	23.48	12.09	31.43	8.0	3.954	0.51	19.69	11.74
14.82	22.92	12.02	30.93	8.0	3.861	0.52	19.47	11.46
15.35	23.25	12.07	31.22	8.0	3.920	0.52	19.59	11.63
15.86	22.95	11.95	31.03	8.1	3.838	0.52	19.56	11.47

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
AASHTO T-297**

Client: Kleinfelder Boring No.: S4_EB2-A
 Client Reference: R-2561CA Depth (ft): 19.7-21.7
 Project No.: R-2019-209-001 Sample No.: ST-4
 Lab ID: R-2019-209-001-012
 Visual Description: Gray Clay (UNDISTURBED)

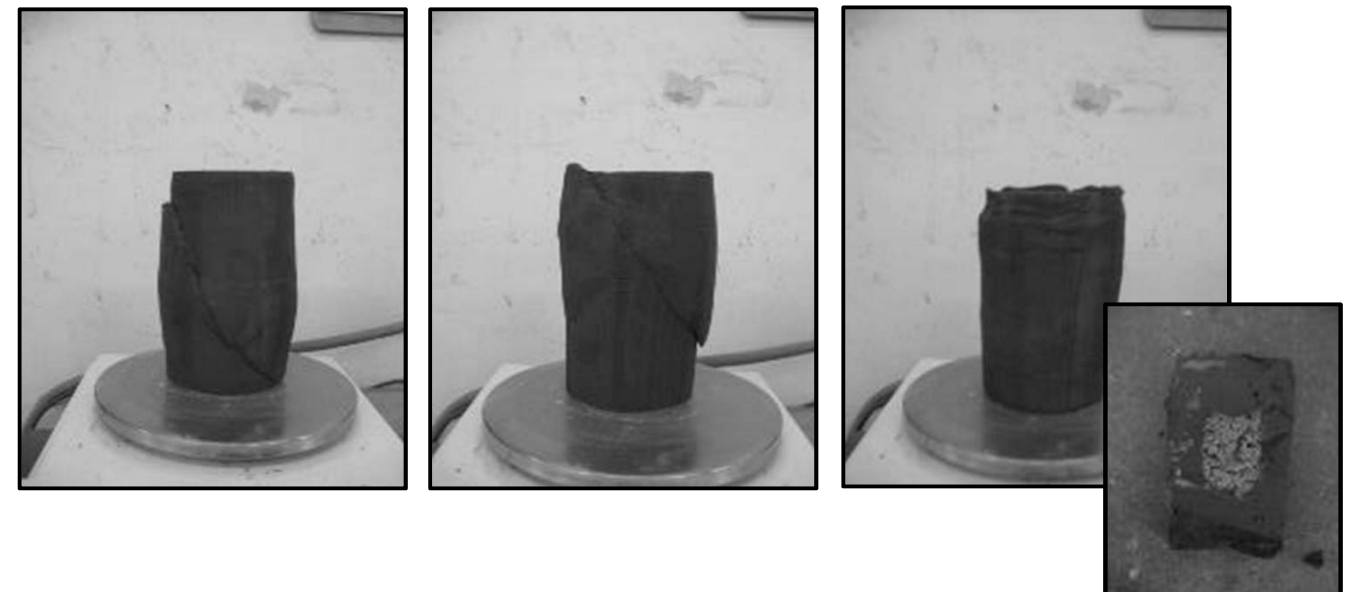


**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
AASHTO T-297**

Client: Kleinfelder
 Client Reference: R-2561CA
 Project No.: R-2019-209-001
 Lab ID: R-2019-209-001-012 Specific Gravity (Measured) 2.68
 Visual Description: Gray Clay (UNDISTURBED)

SAMPLE CONDITION SUMMARY

	S4_EB2-A	S4_EB2-A	S4_EB2-A
Boring No.:	S4_EB2-A	S4_EB2-A	S4_EB2-A
Depth (ft):	19.7-21.7	19.7-21.7	19.7-21.7
Sample No.:	ST-4	ST-4	ST-4
Test No.	T1	T2	T3
Deformation Rate (in/min)	0.0005	0.0005	0.0005
Back Pressure (psi)	50.0	50.0	50.0
Consolidation Time (days)	1	1	1
Moisture Content (%) (INITIAL)	41.5	44.1	46.5
Total Unit Weight (pcf)	112.0	112.5	113.5
Dry Unit Weight (pcf)	79.2	78.1	77.5
Moisture Content (%) (FINAL)	42.5	41.3	32.5
Initial State Void Ratio, e	1.113	1.142	1.158
Void Ratio at Shear, e	1.086	1.063	0.765



Tested By: 129-07-0411 Date: 8/7/2019 Approved By: MPS Date: #####

Tested By: 129-07-0411 Date: 8/7/19 Input Checked By: GEM Date: 8/13/19



**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
AASHTO T-297**

**MOHR TOTAL STRENGTH ENVELOPE
AASHTO T-297**

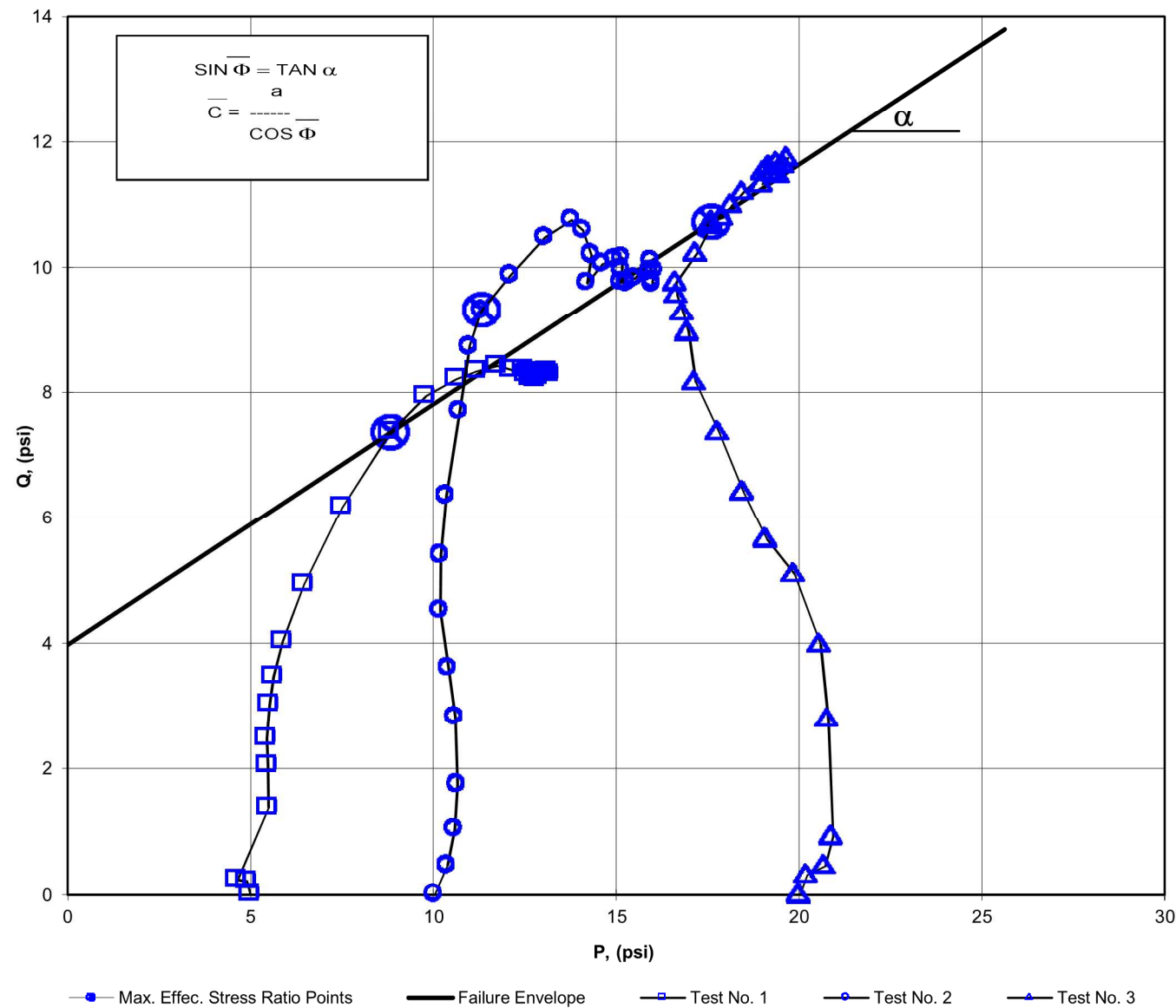
Client: Kleinfelder
 Client Reference: R-2561CA
 Project No.: R-2019-209-001
 Lab ID: R-2019-209-001-012

Boring No.: S4_EB2-A
 Depth (ft): 19.7-21.7
 Sample No.: ST-4

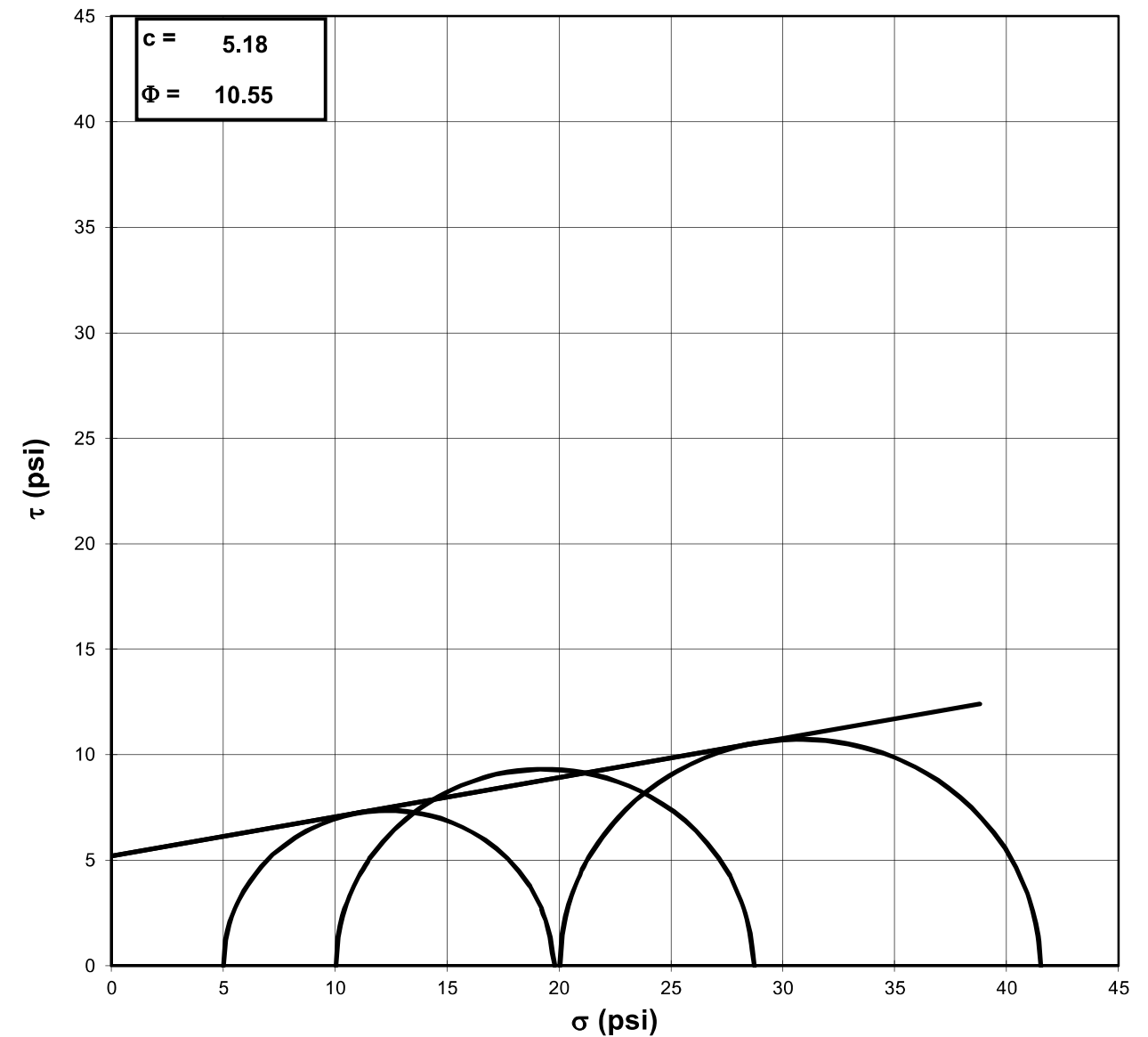
Client: Kleinfelder
 Client Reference: R-2561CA
 Project No.: R-2019-209-001
 Lab ID: R-2019-209-001-012
 Visual Description: Gray Clay (UNDISTURBED)

Boring No.: S4_EB2-A
 Depth (ft): 19.7-21.7
 Sample No.: ST-4

Consolidated Undrained Triaxial Test with Pore Pressure



a	=	3.98	C	=	4.31
α	=	21.0	Φ	=	22.54



Failure Based on Maximum Effective Principal Stress Ratio

NOTE: GRAPH NOT TO SCALE

Tested By: 129-07-0411 Date: 8/7/19 Approved By: MPS Date: 8/13/19

Tested By: 129-07-0411 Date: 8/7/19 Approved By: MPS Date: 8/13/19



**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
AASHTO T-297

Client: Kleinfelder Boring No.: S4_EB2-A
 Client Reference: R-2561CA Depth (ft): 19.7-21.7
 Project No.: R-2019-209-001 Sample No.: ST-4
 Lab ID: R-2019-209-001-012

Visual Description: Gray Clay (UNDISTURBED)

Stage No.	3
Test No.	1

INITIAL SAMPLE DIMENSIONS (in)

Length 1:	6.252	Diameter 1:	2.871
Length 2:	6.237	Diameter 2:	2.857
Length 3:	6.277	Diameter 3:	2.843
Length 4:	6.253	Diameter 4:	2.835
Avg. Length:	6.255	Avg. Diam.:	2.852

PRESSURES (psi)

Cell Pressure (psi)	55.0
Back Pressure (psi)	50.0
Eff. Conf. Pressure (psi)	5.0
Pore Pressure Response (%)	100

VOLUME CHANGE

Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	15.4
Final Change (ml)	8.6

MAXIMUM OBLIQUITY POINTS

\bar{P} =	8.83
Q =	7.36

LOAD (LB)	DEFORMATION (IN)	PORE PRESSURE (PSI)
8.1	0.000	50.0
10.7	0.001	50.3
11.0	0.003	50.6
25.5	0.008	50.9
34.1	0.015	51.6
39.6	0.021	52.0
46.6	0.030	52.5
52.3	0.039	52.9
59.6	0.052	53.2
71.3	0.073	53.5
87.6	0.104	53.7
103.5	0.141	53.5
111.5	0.179	53.1
115.9	0.222	52.6
118.1	0.253	52.2
120.0	0.297	51.7
120.2	0.355	51.2
121.4	0.418	50.9
121.4	0.464	50.8
123.1	0.526	50.7
122.7	0.573	50.6
124.0	0.619	50.6
124.7	0.665	50.5
125.3	0.696	50.5
125.7	0.727	50.4
126.8	0.759	50.4
128.1	0.790	50.3
129.5	0.836	50.3
130.9	0.883	50.2
131.4	0.929	50.1
132.1	0.976	50.0

Tested By: 129-07-0411 Date: 8/7/19 I
 page 3 of 11 DCN: CT-S28 DATE: 4/12/13 REVISION: 3



**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
AASHTO T-297

Client: Kleinfelder Boring No.: S4_EB2-A
 Client Reference: R-2561CA Depth (ft): 19.7-21.7
 Project No.: R-2019-209-001 Sample No.: ST-4
 Lab ID: R-2019-209-001-012

Visual Description: Gray Clay (UNDISTURBED)

Effective Confining Pressure (psi)	5.0	Stage No.	3
		Test No.	1

INITIAL DIMENSIONS

Initial Sample Length (in)	6.25
Initial Sample Diameter (in)	2.85
Initial Sample Area (in ²)	6.39
Initial Sample Volume (in ³)	39.94

VOLUME CHANGE

Volume After Consolidation (in ³)	39.42
Length After Consolidation (in)	6.23
Area After Consolidation (in ²)	6.330

Strain (%)	Deviation Stress	ΔU	$\bar{\sigma}_1$	$\bar{\sigma}_3$	Effective Principle Stress Ratio	\bar{A}	\bar{P}	Q
0.02	0.40	0.29	5.12	4.7	1.085	0.73	4.92	0.20
0.06	0.46	0.59	4.88	4.4	1.105	1.29	4.65	0.23
0.13	2.74	0.89	6.86	4.1	1.666	0.32	5.49	1.37
0.24	4.09	1.58	7.52	3.4	2.192	0.39	5.47	2.04
0.33	4.95	2.03	7.92	3.0	2.664	0.41	5.45	2.48
0.48	6.05	2.52	8.55	2.5	3.430	0.42	5.52	3.03
0.63	6.93	2.85	9.09	2.2	4.213	0.41	5.62	3.47
0.83	8.06	3.15	9.92	1.9	5.346	0.39	5.89	4.03
1.17	9.87	3.48	11.39	1.5	7.469	0.35	6.46	4.93
1.67	12.34	3.67	13.68	1.3	10.241	0.30	7.51	6.17
2.27	14.72	3.54	16.20	1.5	11.006	0.24	8.83	7.36
2.87	15.87	3.14	17.74	1.9	9.496	0.20	9.80	7.94
3.57	16.42	2.57	18.86	2.4	7.727	0.16	10.65	8.21
4.07	16.67	2.16	19.52	2.9	6.841	0.13	11.19	8.33
4.77	16.83	1.67	20.17	3.3	6.034	0.10	11.76	8.41
5.70	16.70	1.22	20.48	3.8	5.412	0.07	12.13	8.35
6.71	16.70	0.89	20.82	4.1	5.050	0.05	12.47	8.35
7.45	16.56	0.75	20.82	4.3	4.888	0.05	12.54	8.28
8.45	16.63	0.64	21.00	4.4	4.811	0.04	12.68	8.32
9.20	16.44	0.57	20.88	4.4	4.699	0.03	12.66	8.22
9.94	16.48	0.56	20.93	4.4	4.706	0.03	12.69	8.24
10.68	16.45	0.50	20.95	4.5	4.648	0.03	12.73	8.22
11.18	16.45	0.46	21.00	4.6	4.614	0.03	12.77	8.22
11.68	16.40	0.42	20.99	4.6	4.571	0.03	12.79	8.20
12.18	16.47	0.37	21.11	4.6	4.549	0.02	12.87	8.23
12.68	16.55	0.33	21.23	4.7	4.538	0.02	12.96	8.28
13.43	16.61	0.26	21.36	4.8	4.493	0.02	13.06	8.30
14.18	16.64	0.21	21.44	4.8	4.468	0.01	13.12	8.32
14.92	16.57	0.12	21.46	4.9	4.386	0.01	13.18	8.28
15.67	16.52	0.04	21.48	5.0	4.326	0.00	13.23	8.26

page 4 of 11

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
AASHTO T-297



Client: Kleinfelder Boring No.: S4_EB2-A
 Client Reference: R-2561CA Depth (ft): 19.7-21.7
 Project No.: R-2019-209-001 Sample No.: ST-4
 Lab ID: R-2019-209-001-012

Visual Description: Gray Clay (UNDISTURBED)

Stage No.	2
Test No.	2

INITIAL SAMPLE DIMENSIONS (in)

Length 1:	5.936	Diameter 1:	2.866
Length 2:	5.995	Diameter 2:	2.853
Length 3:	5.964	Diameter 3:	2.843
Length 4:	6.001	Diameter 4:	2.820
Avg. Length:	5.974	Avg. Diam.:	2.846

PRESSURES (psi)

Cell Pressure (psi)	60.0
Back Pressure (psi)	50.0
Eff. Conf. Pressure (psi)	10.0
Pore Pressure Response (%)	100

VOLUME CHANGE

Initial Burette Reading (ml)	24.0
Final Burette Reading (ml)	7.9
Final Change (ml)	16.1

MAXIMUM OBLIQUITY POINTS

\bar{P}	=	11.32
Q	=	9.31

Initial Dial Reading (mil)	189
Dial Reading After Saturation (mil)	211
Dial Reading After Consolidation (mil)	266

LOAD (LB)	DEFORMATION (IN)	PORE PRESSURE (PSI)
10.2	0.000	50.0
16.0	0.002	50.1
23.1	0.006	50.5
31.9	0.009	51.1
45.4	0.015	52.3
55.0	0.021	53.2
66.6	0.029	54.4
77.7	0.038	55.2
89.8	0.049	56.0
106.9	0.071	57.0
120.5	0.101	57.8
128.5	0.137	58.0
136.5	0.173	57.8
145.1	0.215	57.5
149.4	0.245	57.0
148.3	0.287	56.5
144.6	0.344	55.9
140.0	0.404	55.6
145.2	0.449	55.5
147.8	0.509	55.2
149.2	0.554	55.0
147.9	0.599	54.9
146.2	0.644	54.7
146.9	0.674	54.5
148.6	0.704	54.3
153.4	0.734	54.2
151.9	0.764	54.1
153.2	0.809	53.9
152.1	0.854	53.8
152.1	0.884	53.8
154.5	0.914	53.7

Tested By: 129-07-0411 Date: 8/7/19 Input Checked By: GEM Date: 8/13/19

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
AASHTO T-297



Client: Kleinfelder Boring No.: S4_EB2-A
 Client Reference: R-2561CA Depth (ft): 19.7-21.7
 Project No.: R-2019-209-001 Sample No.: ST-4
 Lab ID: R-2019-209-001-012

Visual Description: Gray Clay (UNDISTURBED)

Effective Confining Pressure (psi)	10.0	Stage No.	2
		Test No.	2

INITIAL DIMENSIONS	VOLUME CHANGE
Initial Sample Length (in)	Volume After Consolidation (in ³)
Initial Sample Diameter (in)	Length After Consolidation (in)
Initial Sample Area (in ²)	Area After Consolidation (in ²)
Initial Sample Volume (in ³)	

Strain (%)	Deviation Stress	ΔU	$\bar{\sigma}_1$	$\bar{\sigma}_3$	Effective Principle Stress Ratio	\bar{A}	\bar{P}	Q
------------	------------------	------------	------------------	------------------	----------------------------------	-----------	-----------	---

0.03	0.93	0.12	10.85	9.9	1.094	0.13	10.39	0.46
0.11	2.07	0.48	11.63	9.6	1.217	0.23	10.59	1.04
0.15	3.49	1.13	12.41	8.9	1.392	0.32	10.66	1.75
0.25	5.66	2.26	13.44	7.8	1.727	0.40	10.61	2.83
0.35	7.19	3.22	14.01	6.8	2.054	0.45	10.42	3.59
0.50	9.04	4.36	14.71	5.7	2.592	0.48	10.20	4.52
0.65	10.81	5.23	15.62	4.8	3.246	0.48	10.21	5.40
0.84	12.72	6.04	16.72	4.0	4.181	0.48	10.36	6.36
1.20	15.40	7.02	18.42	3.0	6.091	0.46	10.72	7.70
1.71	17.47	7.78	19.73	2.3	8.724	0.45	10.99	8.73
2.32	18.63	8.03	20.64	2.0	10.268	0.43	11.32	9.31
2.93	19.76	7.80	22.00	2.2	9.825	0.39	12.12	9.88
3.64	20.96	7.46	23.54	2.6	9.117	0.36	13.06	10.48
4.16	21.51	7.01	24.54	3.0	8.095	0.33	13.78	10.75
4.86	21.18	6.53	24.69	3.5	7.038	0.31	14.10	10.59
5.83	20.40	5.90	24.54	4.1	5.927	0.29	14.34	10.20
6.86	19.49	5.57	23.96	4.5	5.364	0.29	14.21	9.75
7.61	20.10	5.45	24.69	4.6	5.383	0.27	14.64	10.05
8.63	20.26	5.21	25.09	4.8	5.192	0.26	14.96	10.13
9.39	20.30	5.03	25.31	5.0	5.049	0.25	15.16	10.15
10.15	19.94	4.85	25.13	5.2	4.844	0.24	15.16	9.97
10.92	19.53	4.65	24.92	5.4	4.624	0.24	15.15	9.76
11.43	19.51	4.49	25.06	5.5	4.515	0.23	15.30	9.75
11.93	19.64	4.35	25.34	5.7	4.450	0.22	15.52	9.82
12.44	20.20	4.18	26.07	5.9	4.446	0.21	15.96	10.10
12.95	19.89	4.05	25.87	6.0	4.321	0.20	15.93	9.94
13.73	19.89	3.91	26.01	6.1	4.246	0.20	16.07	9.94
14.48	19.56	3.83	25.77	6.2	4.147	0.20	15.99	9.78
14.98	19.44	3.77	25.71	6.3	4.101	0.19	15.99	9.72
15.50	19.65	3.74	25.95	6.3	4.119	0.19	16.12	9.82

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
AASHTO T-297



Client: Kleinfelder Boring No.: S4_EB2-A
 Client Reference: R-2561CA Depth (ft): 19.7-21.7
 Project No.: R-2019-209-001 Sample No.: ST-4
 Lab ID: R-2019-209-001-012

Visual Description: Gray Clay (UNDISTURBED)

Stage No.	1
Test No.	3

INITIAL SAMPLE DIMENSIONS (in)

Length 1:	6.253	Diameter 1:	2.812
Length 2:	6.291	Diameter 2:	2.843
Length 3:	6.243	Diameter 3:	2.858
Length 4:	6.251	Diameter 4:	2.866
Avg. Length:	6.260	Avg. Diam.:	2.845

PRESSURES (psi)

Cell Pressure (psi)	70.0
Back Pressure (psi)	50.0
Eff. Conf. Pressure (psi)	20.0
Pore Pressure Response (%)	100

VOLUME CHANGE

Initial Burette Reading (ml)	96.0
Final Burette Reading (ml)	6.9
Final Change (ml)	89.1

MAXIMUM OBLIQUITY POINTS

\bar{P}	=	17.62
Q	=	10.73

Initial Dial Reading (mil)	225
Dial Reading After Saturation (mil)	320
Dial Reading After Consolidation (mil)	522

LOAD (LB)	DEFORMATION (IN)	PORE PRESSURE (PSI)
10.6	0.000	50.0
13.9	0.002	50.1
15.5	0.003	49.7
20.6	0.009	50.0
41.0	0.016	52.0
54.2	0.021	53.4
66.5	0.030	55.2
72.7	0.040	56.5
81.3	0.052	57.9
91.9	0.074	59.6
101.1	0.105	61.0
110.8	0.142	62.0
114.8	0.179	62.4
118.8	0.222	62.9
121.8	0.253	63.1
128.0	0.297	63.0
134.5	0.356	63.1
136.5	0.418	63.1
138.2	0.464	62.9
142.0	0.525	62.8
145.8	0.572	62.7
150.8	0.619	62.5
153.2	0.665	62.4
150.6	0.696	62.3
153.5	0.727	62.3
154.3	0.757	62.2
157.4	0.789	62.3
159.6	0.836	62.0
157.4	0.883	62.0
160.5	0.915	62.0
159.4	0.946	61.9

Tested By: 129-07-0411 Date: 8/7/2019 Input

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**
AASHTO T-297



Client: Kleinfelder Boring No.: S4_EB2-A
 Client Reference: R-2561CA Depth (ft): 19.7-21.7
 Project No.: R-2019-209-001 Sample No.: ST-4
 Lab ID: R-2019-209-001-012

Visual Description: Gray Clay (UNDISTURBED)

Effective Confining Pressure (psi)	20.0	Stage No.	1
		Test No.	3

INITIAL DIMENSIONS

Initial Sample Length (in)	6.26
Initial Sample Diameter (in)	2.84
Initial Sample Area (in ²)	6.36
Initial Sample Volume (in ³)	39.78

VOLUME CHANGE

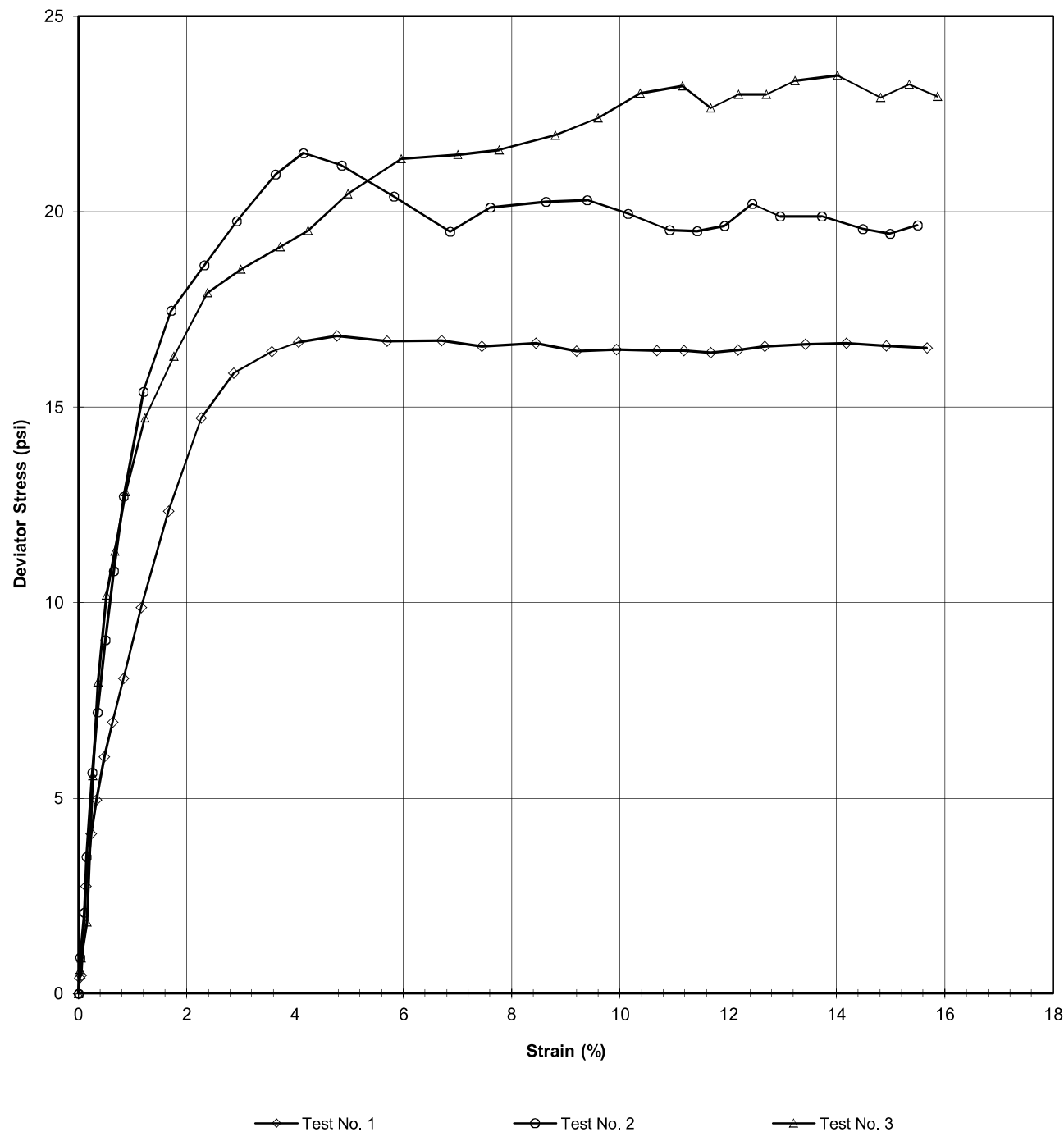
Volume After Consolidation (in ³)	32.54
Length After Consolidation (in)	5.96
Area After Consolidation (in ²)	5.457

Strain (%)	Deviation Stress	ΔU	$\bar{\sigma}_1$	$\bar{\sigma}_3$	Effective Principle Stress Ratio	\bar{A}	\bar{P}	Q
------------	------------------	------------	------------------	------------------	----------------------------------	-----------	-----------	---

0.03	0.61	0.11	20.54	19.9	1.031	0.18	20.23	0.31
0.05	0.91	-0.24	21.18	20.3	1.045	-0.26	20.73	0.45
0.15	1.83	0.02	21.85	20.0	1.092	0.01	20.93	0.92
0.26	5.57	2.02	23.59	18.0	1.309	0.36	20.80	2.79
0.36	7.97	3.42	24.58	16.6	1.480	0.43	20.60	3.98
0.51	10.20	5.25	24.98	14.8	1.690	0.52	19.88	5.10
0.67	11.32	6.57	24.78	13.5	1.841	0.58	19.12	5.66
0.88	12.84	7.97	24.90	12.1	2.064	0.62	18.48	6.42
1.24	14.73	9.59	25.18	10.4	2.410	0.65	17.81	7.36
1.76	16.30	11.01	25.33	9.0	2.806	0.68	17.18	8.15
2.38	17.93	12.01	25.95	8.0	3.234	0.67	16.99	8.96
3.00	18.53	12.45	26.11	7.6	3.444	0.67	16.85	9.27
3.72	19.10	12.90	26.23	7.1	3.679	0.68	16.68	9.55
4.24	19.52	13.15	26.40	6.9	3.834	0.67	16.65	9.76
4.97	20.45	13.06	27.43	7.0	3.930	0.64	17.21	10.23
5.96	21.35	13.09	28.30	6.9	4.077	0.61	17.62	10.68
7.01	21.46	13.14	28.35	6.9	4.114	0.61	17.62	10.73
7.77	21.58	12.91	28.71	7.1	4.027	0.60	17.92	10.79
8.81	21.96	12.85	29.15	7.2	4.055	0.59	18.17	10.98
9.60	22.40	12.75	29.68	7.3	4.075	0.57	18.48	11.20
10.37	23.03	12.50	30.57	7.5	4.054	0.54	19.05	11.51
11.16	23.22	12.45	30.81	7.6	4.059	0.54	19.20	11.61
11.68	22.66	12.37	30.32	7.7	3.956	0.55	18.99	11.33
12.19	23.00	12.30	30.74	7.7	3.971	0.53	19.24	11.50
12.70	23.00	12.21	30.83	7.8	3.937	0.53	19.33	11.50
13.24	23.35	12.30	31.09	7.7	4.019	0.53	19.41	11.68
14.02	23.48	12.09	31.43	8.0	3.954	0.51	19.69	11.74
14.82	22.92	12.02	30.93	8.0	3.861	0.52	19.47	11.46
15.35	23.25	12.07	31.22	8.0	3.920	0.52	19.59	11.63
15.86	22.95	11.95	31.03	8.1	3.838	0.52	19.56	11.47

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
AASHTO T-297**

Client: Kleinfelder Boring No.: S4_EB2-A
 Client Reference: R-2561CA Depth (ft): 19.7-21.7
 Project No.: R-2019-209-001 Sample No.: ST-4
 Lab ID: R-2019-209-001-012
 Visual Description: Gray Clay (UNDISTURBED)

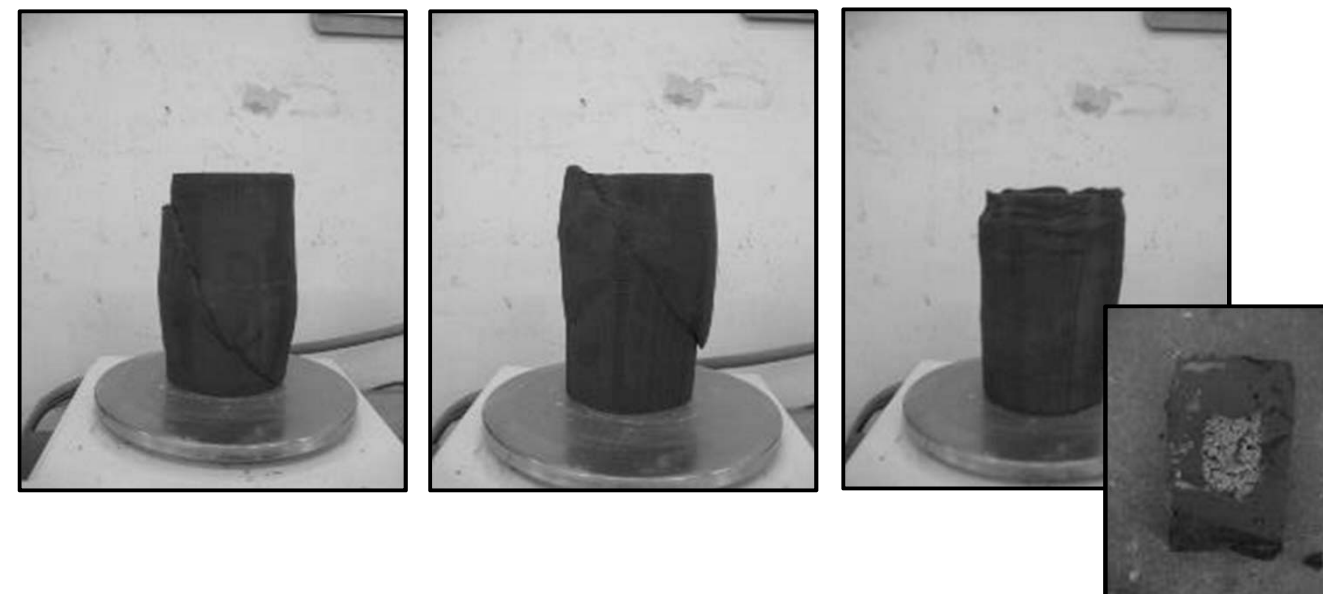


**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
AASHTO T-297**

Client: Kleinfelder
 Client Reference: R-2561CA
 Project No.: R-2019-209-001
 Lab ID: R-2019-209-001-012 Specific Gravity (Measured) 2.68
 Visual Description: Gray Clay (UNDISTURBED)

SAMPLE CONDITION SUMMARY

	S4_EB2-A	S4_EB2-A	S4_EB2-A
Boring No.:	S4_EB2-A	S4_EB2-A	S4_EB2-A
Depth (ft):	19.7-21.7	19.7-21.7	19.7-21.7
Sample No.:	ST-4	ST-4	ST-4
Test No.	T1	T2	T3
Deformation Rate (in/min)	0.0005	0.0005	0.0005
Back Pressure (psi)	50.0	50.0	50.0
Consolidation Time (days)	1	1	1
Moisture Content (%) (INITIAL)	41.5	44.1	46.5
Total Unit Weight (pcf)	112.0	112.5	113.5
Dry Unit Weight (pcf)	79.2	78.1	77.5
Moisture Content (%) (FINAL)	42.5	41.3	32.5
Initial State Void Ratio, e	1.113	1.142	1.158
Void Ratio at Shear, e	1.086	1.063	0.765



Tested By: 129-07-0411 Date: 8/7/2019 Approved By: MPS Date: 8/13/19

Tested By: 129-07-0411 Date: 8/7/19 Input Checked By: GEM

**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS**

AASHTO T-297



MOISTURE CONTENT

	T1	T2	T3
Tare Number	TB-05	SS-7	860
Weight of Tare & Wet Sample (g)	370.62	383.61	396.60
Weight of Tare & Dry Sample (g)	301.70	307.68	313.65
Weight of Tare (g)	135.63	135.41	135.19
Moisture Content (%) (INITIAL)	41.50	44.08	46.48

	TB-05	TB-02	TB-01
Tare Number	TB-05	TB-02	TB-01
Weight of Tare & Wet Sample (g)	369.95	422.04	511.81
Weight of Tare & Dry Sample (g)	300.07	338.01	419.6
Weight of Tare (g)	135.64	134.54	135.55
Moisture Content (%) (FINAL)	42.50	41.30	32.46

UNIT WEIGHT

Weight of Tube & Wet Sample (g)	1174.49	1122.28	1185.77
Weight of Tube (g)	0	0	0
Weight of Wet Sample (g)	1174.49	1122.28	1185.77
Length 1 (in)	6.252	5.936	6.253
Length 2 (in)	6.237	5.995	6.291
Length 3 (in)	6.277	5.964	6.243
Length 4 (in)	6.253	6.001	6.251
Diameter 1 (in)	2.871	2.866	2.812
Diameter 2 (in)	2.857	2.853	2.843
Diameter 3 (in)	2.843	2.843	2.858
Diameter 4 (in)	2.835	2.82	2.866
Average Length (in)	6.255	5.974	6.260
Average Area (in)	6.386	6.359	6.356
Sample Volume (cm ³)	654.56	622.55	651.96
Unit Wet Weight (g/cm ³)	1.79	1.80	1.82
Unit Wet Weight (pcf)	112.02	112.54	113.55
Unit Dry Weight (pcf)	79.17	78.11	77.52
Unit Dry Weight (g/cm ³)	1.27	1.25	1.24
Initial Burette Reading	24	24	96
Final Burette Reading	15.4	7.9	6.9
Initial Dial Reading	092	189	225
Dial Reading After Saturation	092	211	320
Dial Reading After Consolidation	119	266	522
Volume Change during Consolidation	8.6	16.1	89.1
Volume Change during Saturation	0.00	6.88	29.68
Volume at Shear (cm ³)	*These 645.96	599.57	533.17
Volume of Solids (cm ³)	measurements 309.71	290.64	302.05
Volume of Voids (cm ³)	are all 336.25	308.93	231.12
Volume of Water (cm ³)	at 352.75	321.68	262.79
Void Ratio, e	shear 1.086	1.063	0.765