

REFERENCE: R-2561CA

PROJECT: 34466

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<u>SHEET NO.</u>	<u>DESCRIPTION</u>
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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 (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:

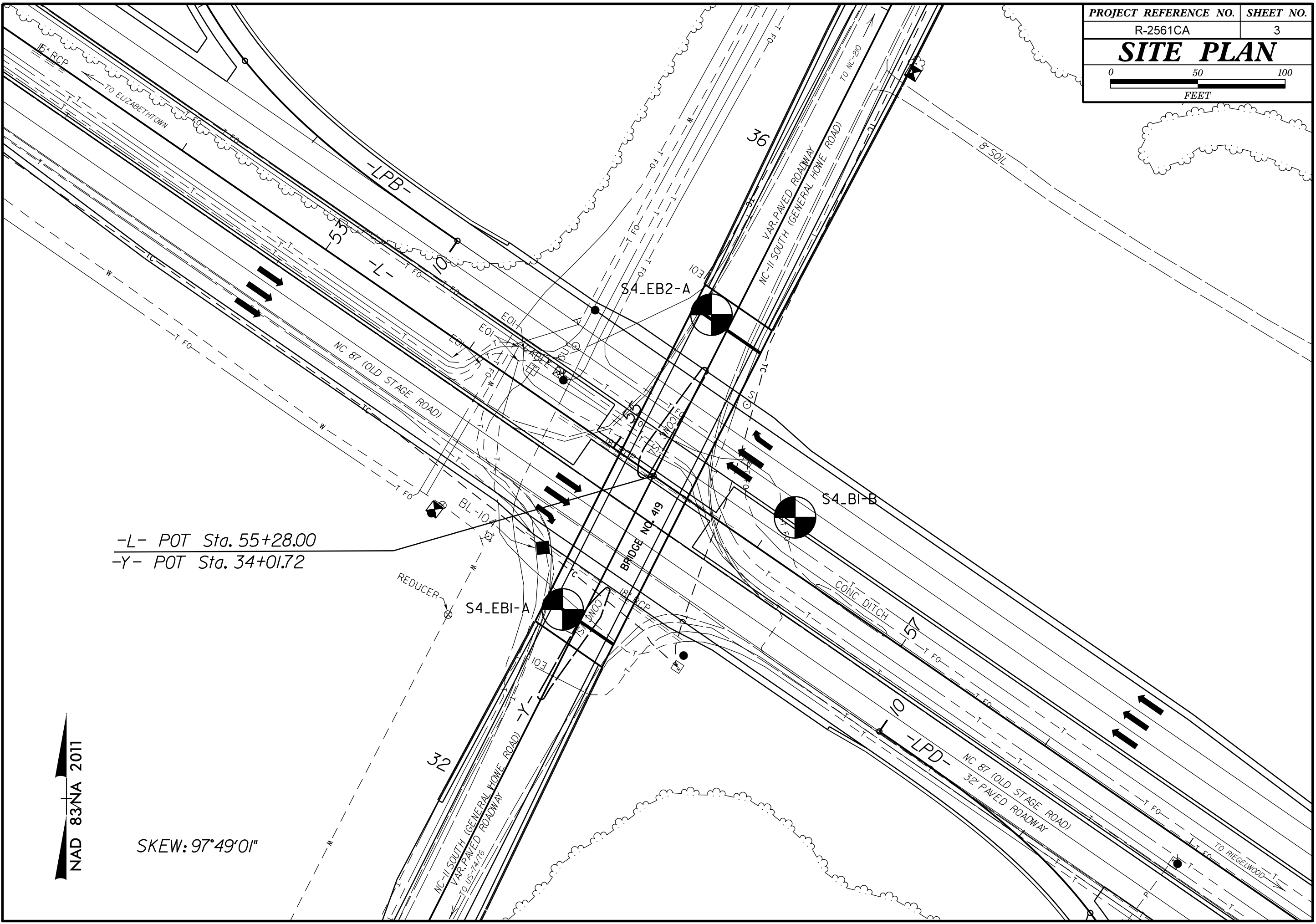


Thomas R. Wells 01/18/20
 SIGNATURE DATE

**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

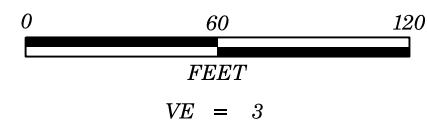
Table containing technical specifications and standards for soil and rock investigations. It includes sections for: SOIL DESCRIPTION (soil classification criteria), GRADATION (angularity of grains, mineralogical composition), ROCK DESCRIPTION (rock types and weathering criteria), TERMS AND DEFINITIONS (geological terms like alluvium, aquifer, etc.), SOIL LEGEND AND AASHTO CLASSIFICATION (classification table), CONSISTENCY OR DENSENESS (consistency ranges), TEXTURE OR GRAIN SIZE (sieve analysis table), SOIL MOISTURE - CORRELATION OF TERMS (moisture scale), PLASTICITY (plasticity index and strength), COLOR (color modifiers), MISCELLANEOUS SYMBOLS (field symbols for borings, boundaries, etc.), RECOMMENDATION SYMBOLS (excavation types), and ABBREVIATIONS (standard abbreviations for soil and rock tests).



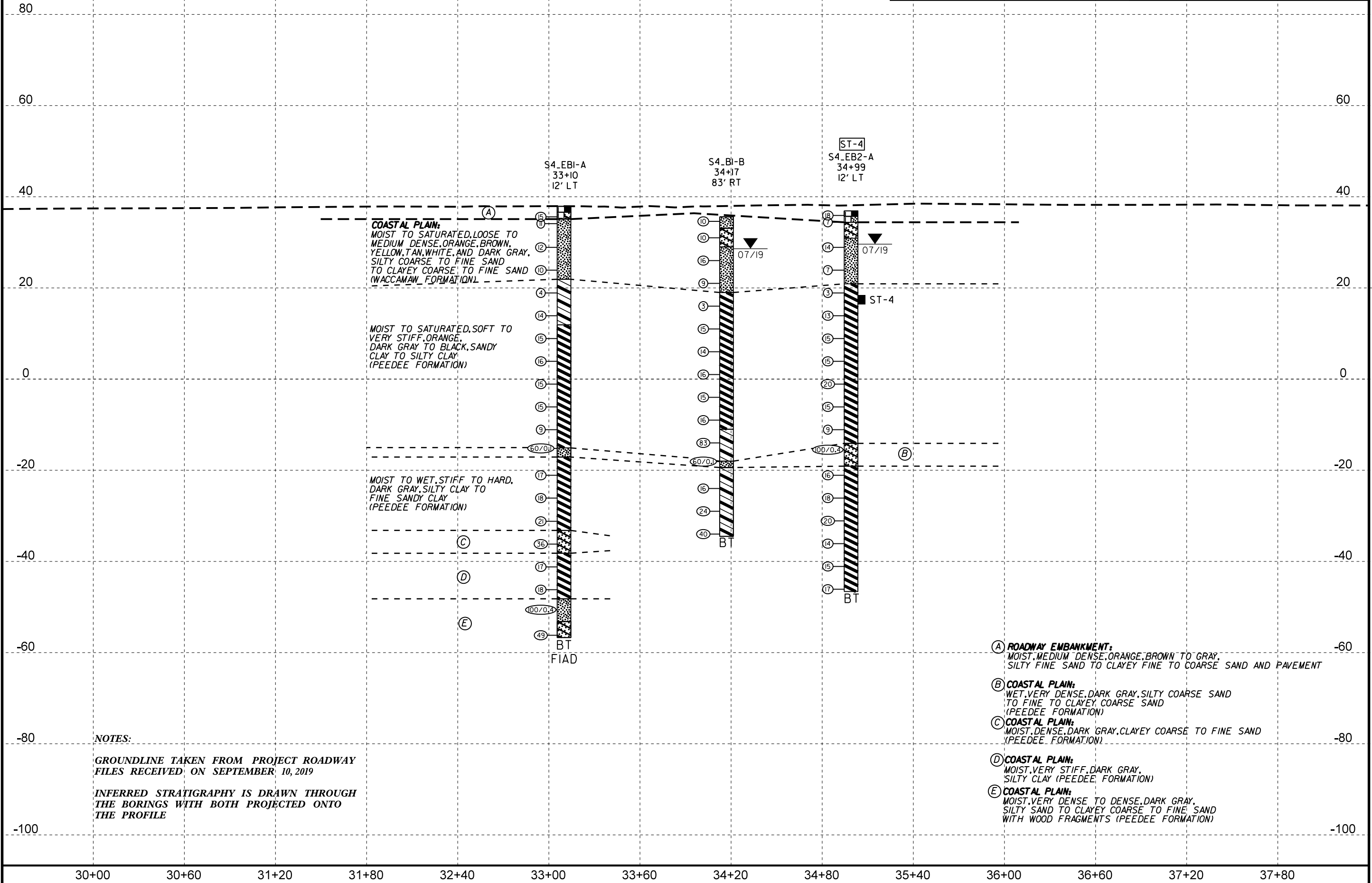
-L- POT Sta. 55+28.00
 -Y- POT Sta. 34+01.72

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

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_B1-B		STATION 34+17		OFFSET 83 ft RT		ALIGNMENT -Y-	
COLLAR ELEV. 35.6 ft		TOTAL DEPTH 70.1 ft		NORTHING 228,739		EASTING 2,218,154	
DRILL RIG/HAMMER EFF./DATE MID5464 CME-45C 90% 02/21/2019				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic	
DRILLER B. Fowler		START DATE 07/08/19		COMP. DATE 07/08/19		SURFACE WATER DEPTH N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
40															
35	35.6	0.0	2	4	6								GROUND SURFACE	0.0	
30	32.0	3.6	3	4	6								COASTAL PLAIN Brown and Yellow, Silty, Coarse to Fine SAND (Waccamaw Formation)	2.5	
25	27.0	8.6	7	7	9									Orange, Clayey, Coarse to Fine SAND (Waccamaw Formation)	6.6
20	22.0	13.6	4	5	4								Orange and Tan, Silty, Fine to Coarse SAND (Waccamaw Formation)		
15	17.0	18.6	1	1	2								Dark Gray to Black, Silty CLAY (Peedee Formation)	16.6	
10	12.0	23.6	5	6	9										
5	7.0	28.6	5	5	9										
0	2.0	33.6	5	7	9										
-5	-3.0	38.6	5	6	9										
-10	-8.0	43.6	5	7	9										
-15	-13.0	48.6	4	43	40								Dark Gray, Coarse to Fine Sandy, CLAY (Peedee Formation)	46.6	
-20	-18.0	53.6	60/0.1											Silty Coarse SAND (Peedee Formation)	53.6
-25	-23.0	58.6	6	7	9								Dark Gray, Fine Sandy, CLAY (Peedee Formation)	55.0	
-30	-28.0	63.6	6	11	13										
	-33.0	68.6	6	11	29										
													Boring Terminated at Elevation -34.5 ft in COASTAL PLAIN (PEEDEE FORMATION): SANDY CLAY		70.1

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

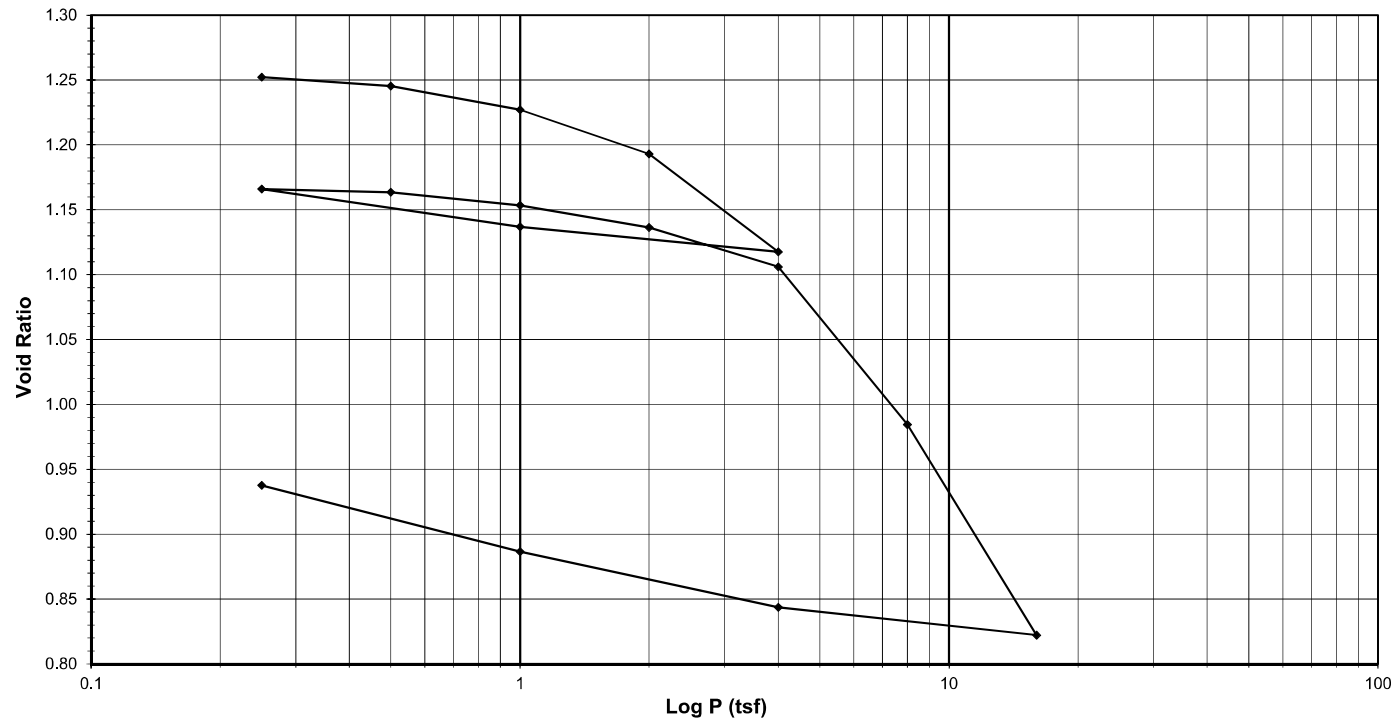
									Atterberg Limits			Gradation Results							
Sample No.	Boring Number	Alignment	Station	Offset	Sample Depth (ft.)	Natural Moisture Content (%)	Organic Content (%)	AASHTO Class.	L.L.	P.L.	P.I.	Retained #4 Sieve	Pass #10 Sieve	Pass #40 Sieve	Pass #200 Sieve	Coarse Sand (%)	Fine Sand (%)	Silt (%)	Clay (%)
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

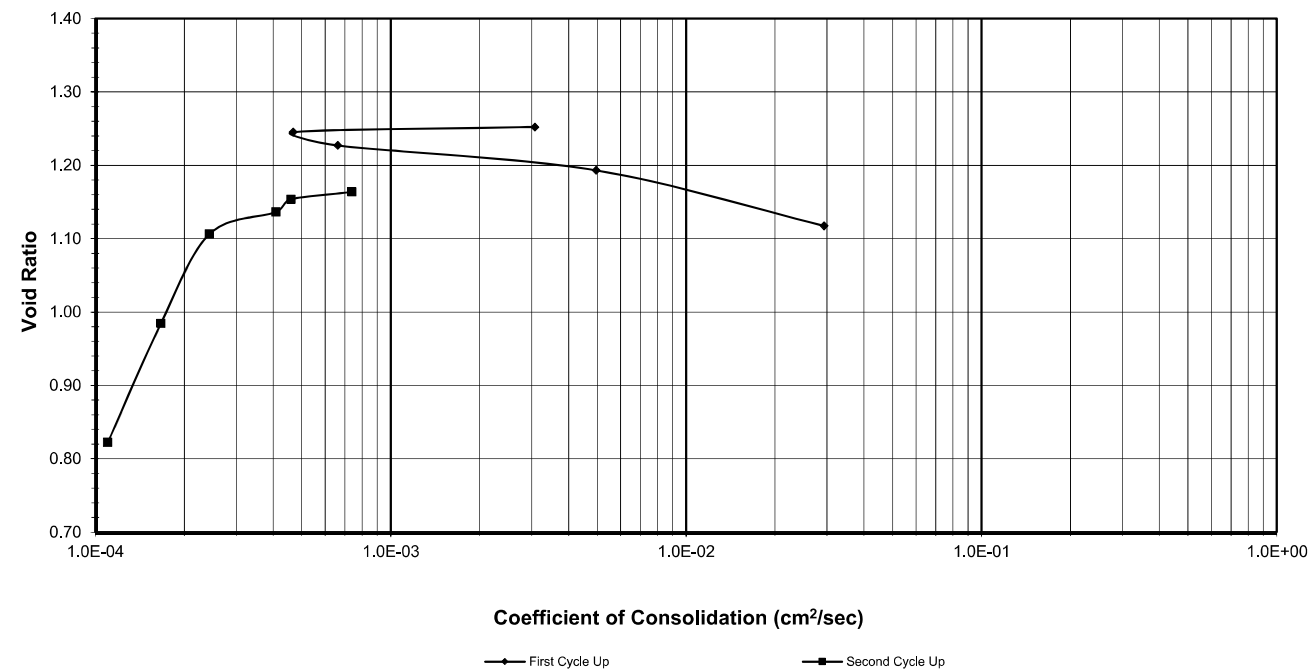
Tested By 129-0411 Date 7/19/2019 Input Checked By GEM Date 7/29/2019



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

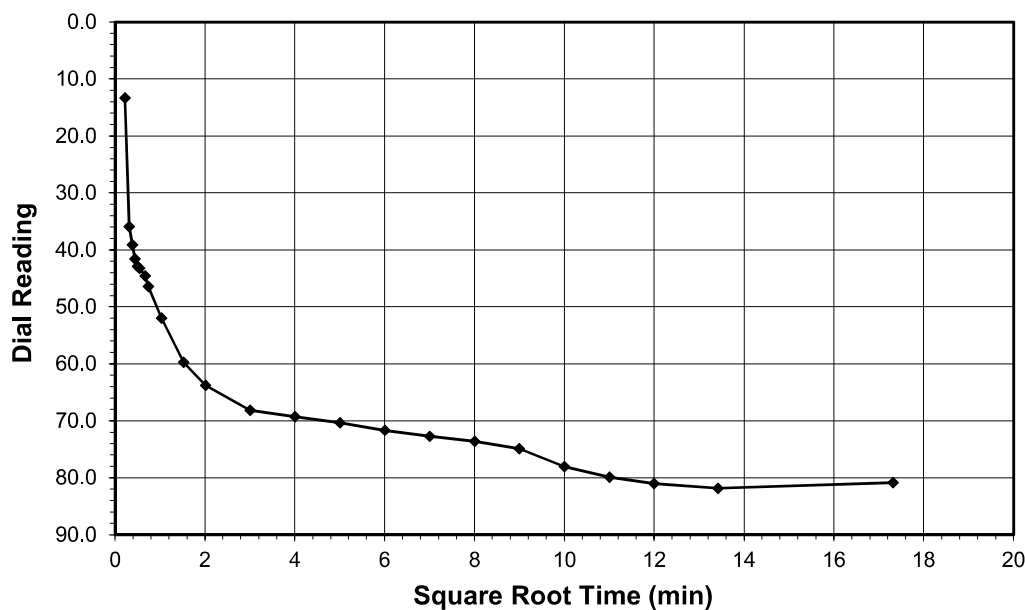
Tested By 129-0411 Date 7/19/2019 Input Checked By GEM Date 7/29/2019



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

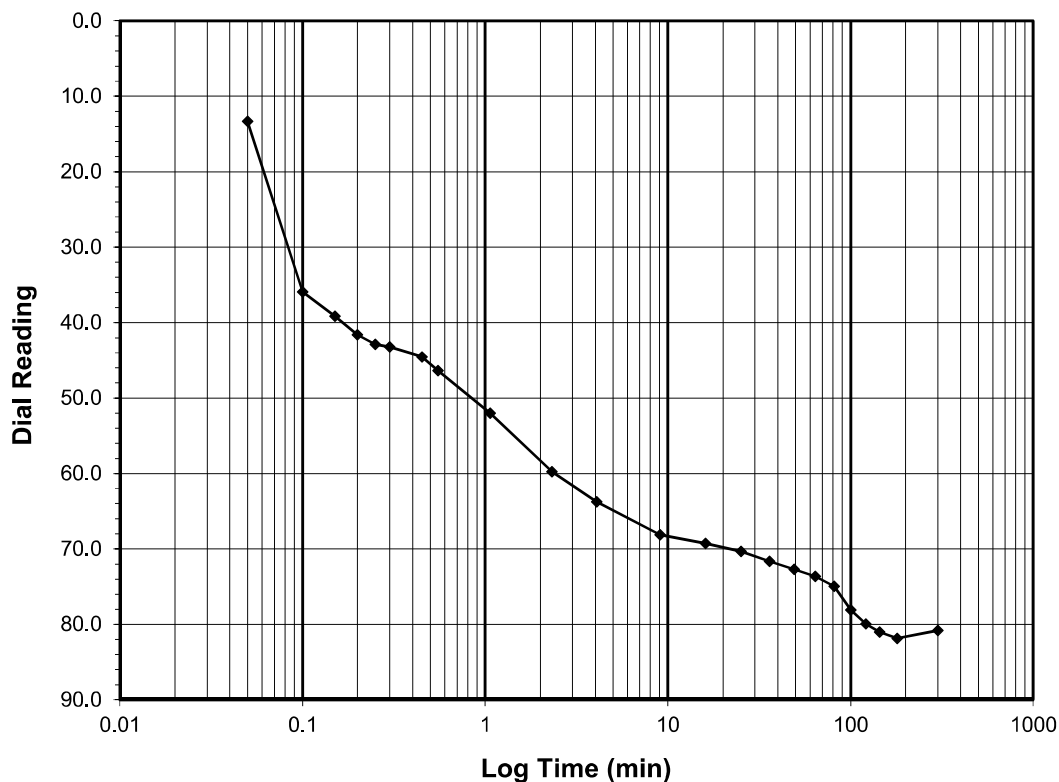
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



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



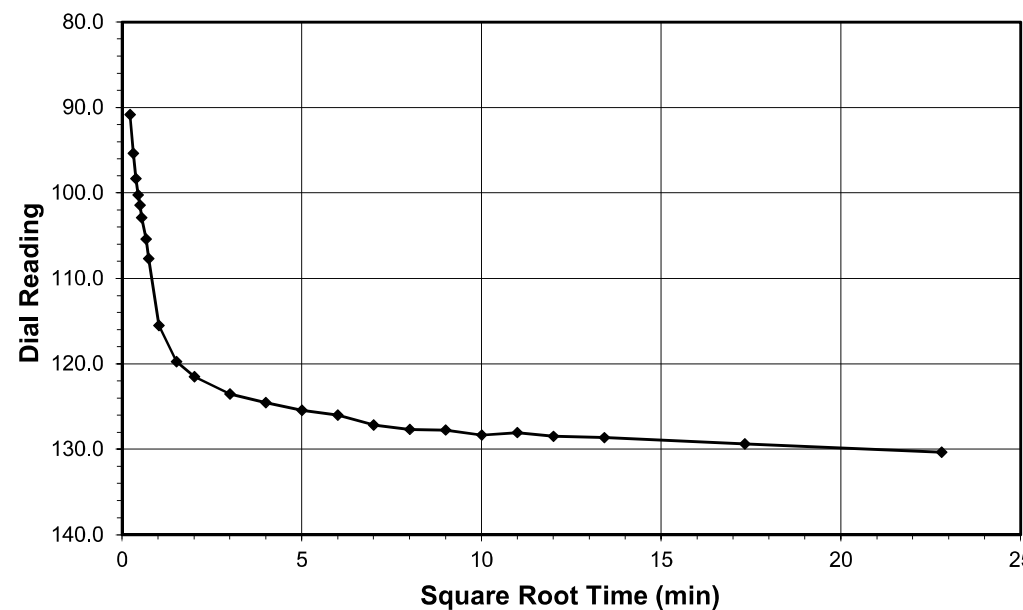
Tested By 129-0411 Date 7/19/2019 Checked By GEM Date 7/29/2019



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

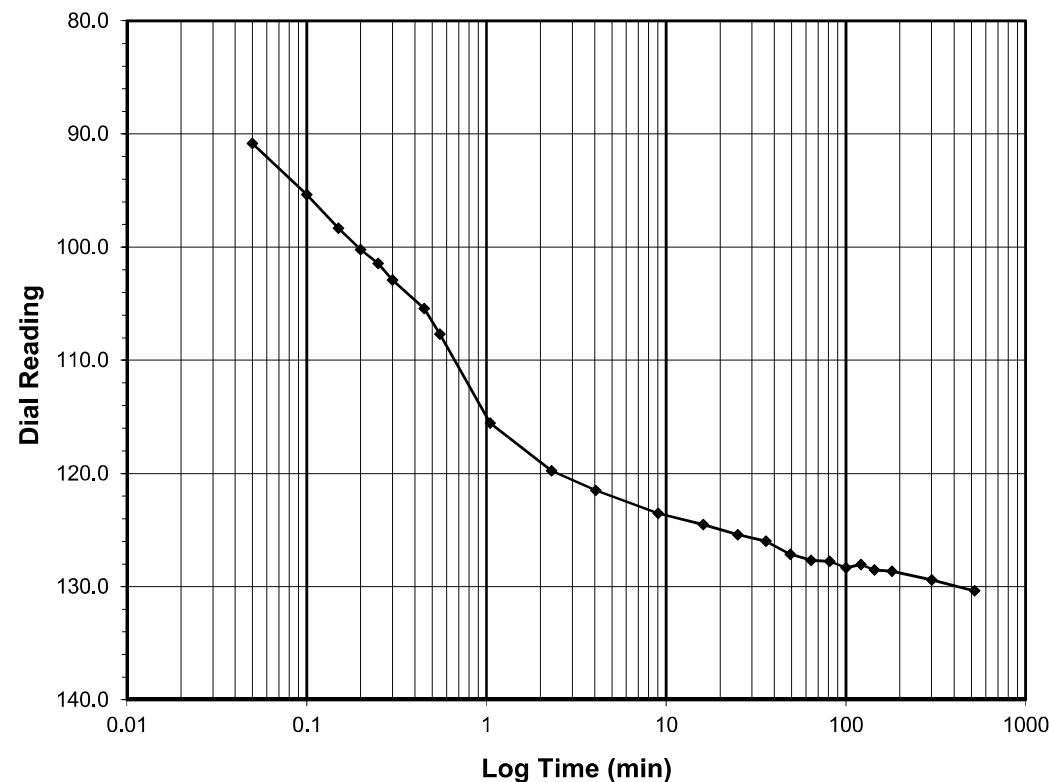
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



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



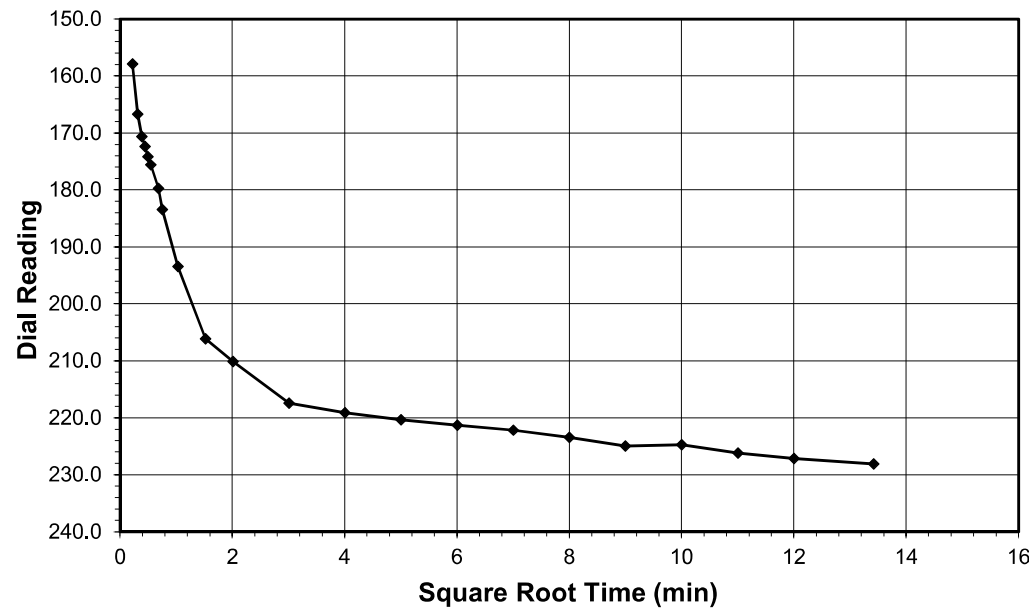
Tested By 129-0411 Date 7/19/2019 Checked By GEM Date 7/29/2019



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

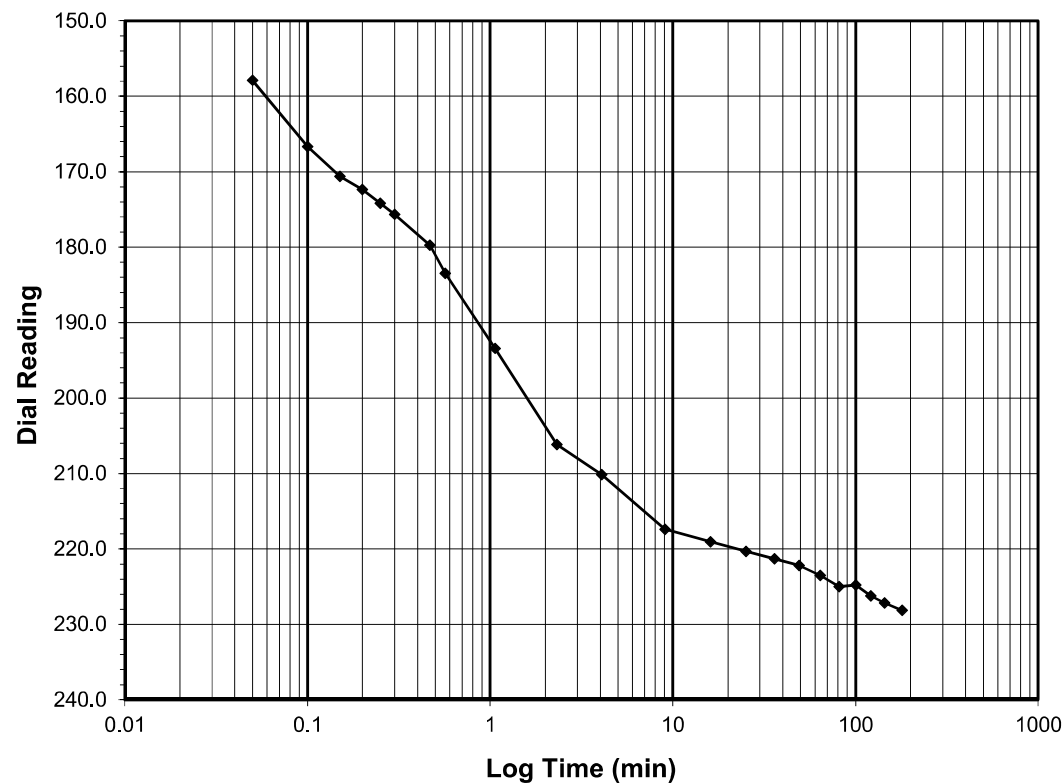
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



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



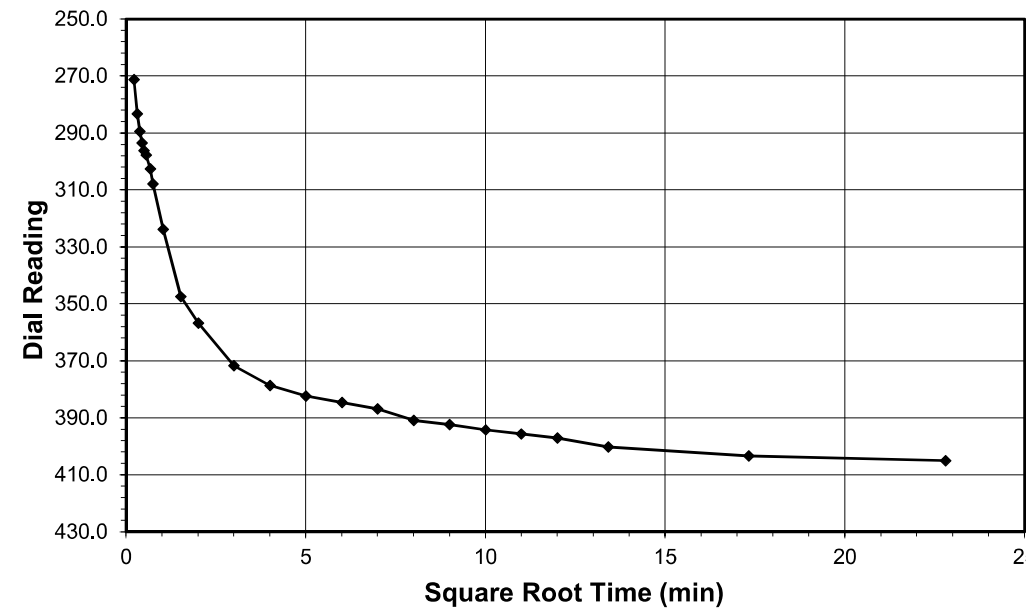
Tested By 129-0411 Date 7/20/2019 Checked By GEM Date 7/29/2019



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

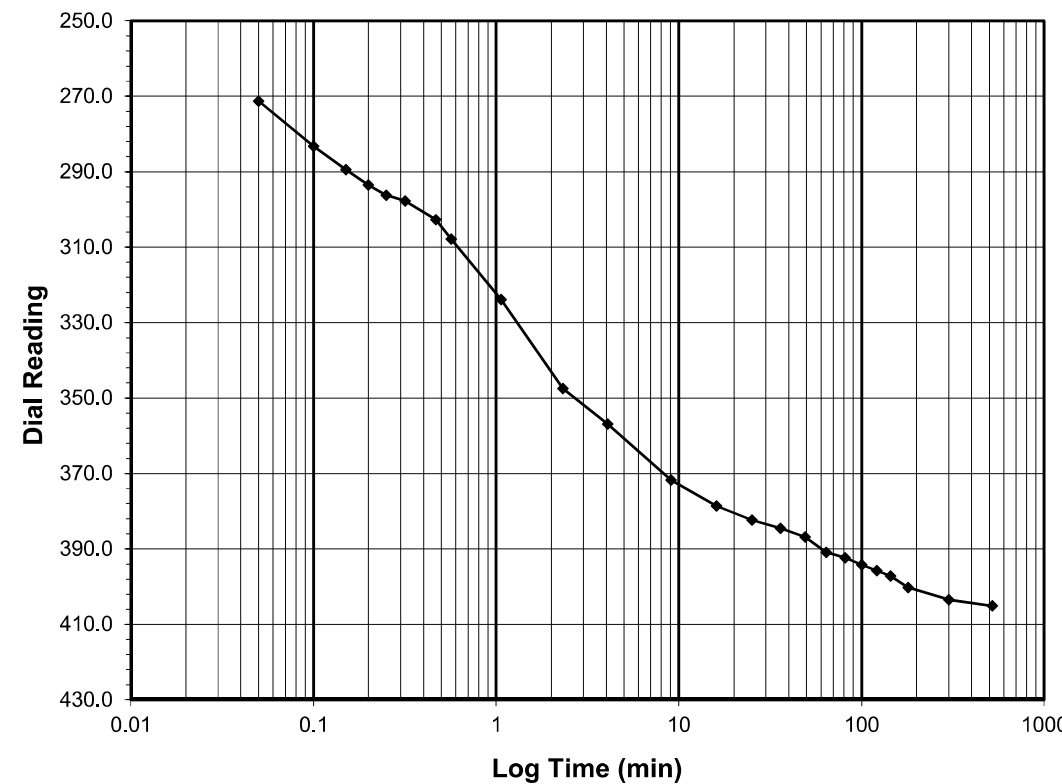
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 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



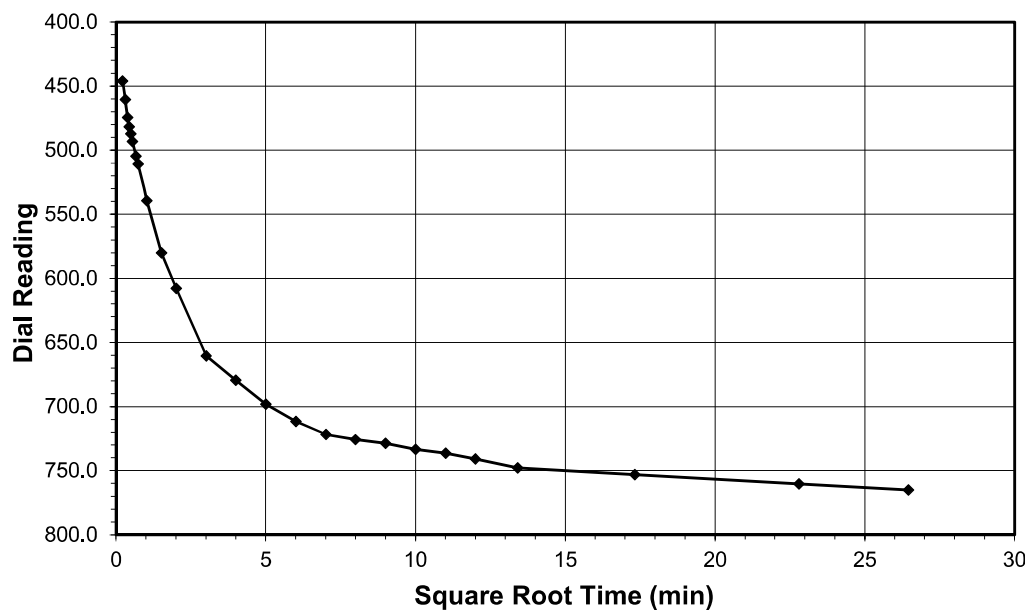
Tested By 129-0411 Date 7/20/2019 Checked By GEM Date 7/29/2019



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

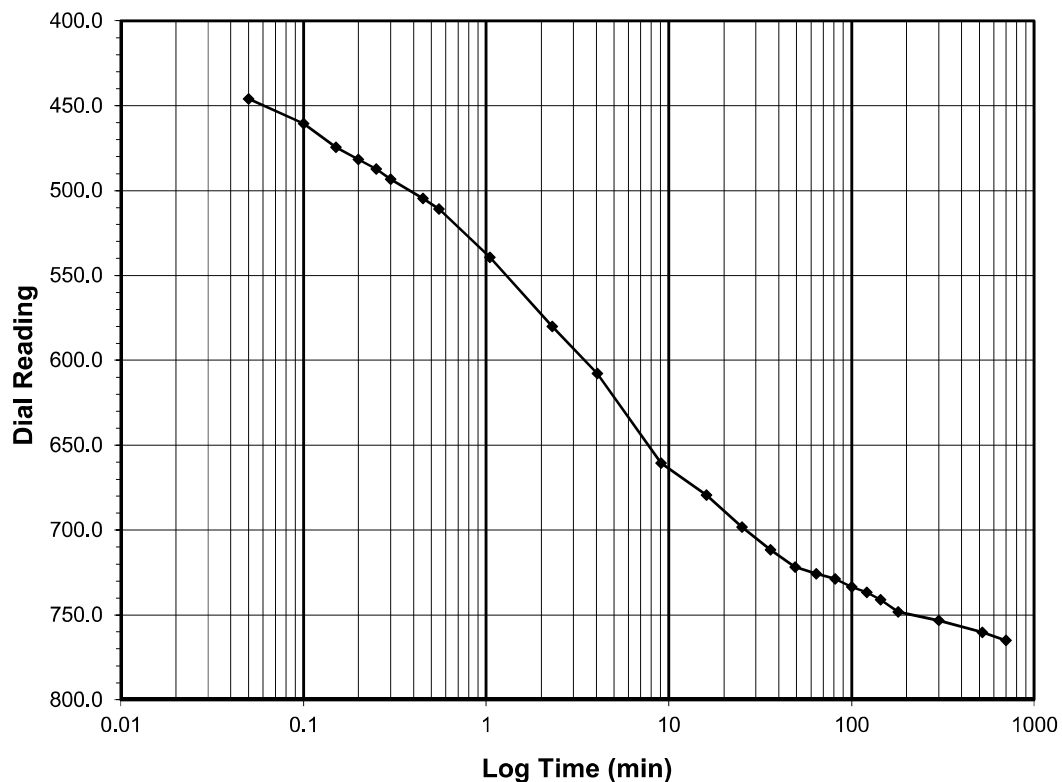
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



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



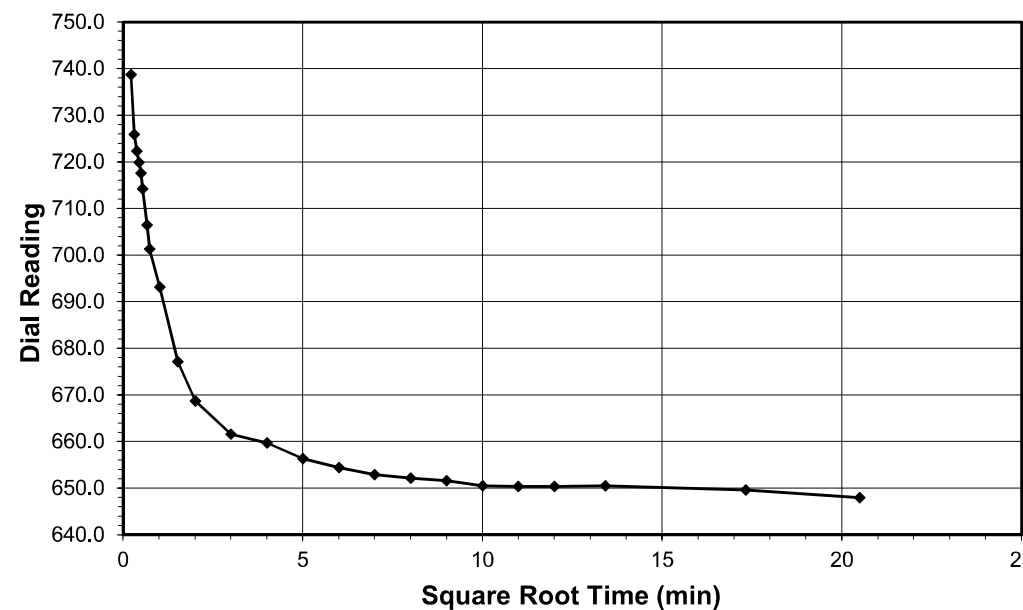
Tested By 129-0411 Date 7/20/2019 Checked By GEM Date 7/29/2019



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

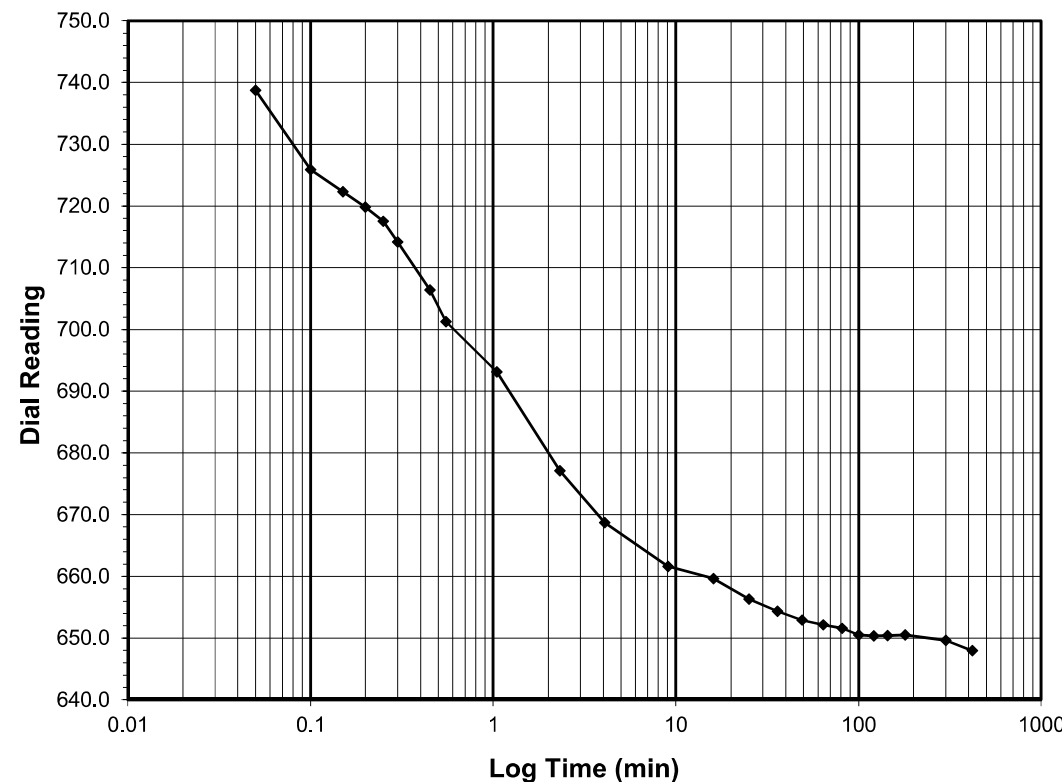
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



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



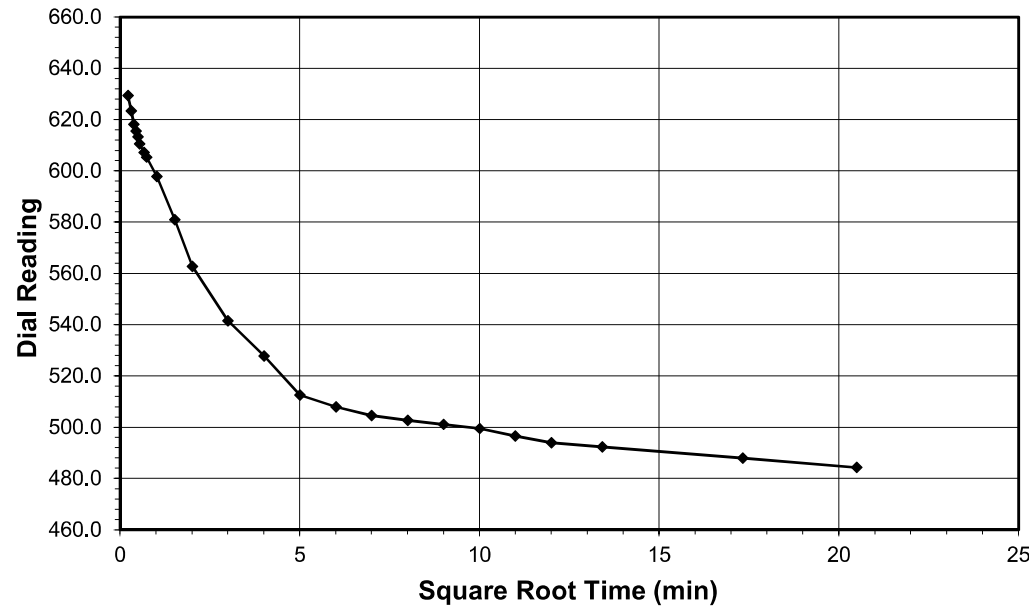
Tested By 129-0411 Date 7/21/2019 Checked By GEM Date 7/29/2019



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

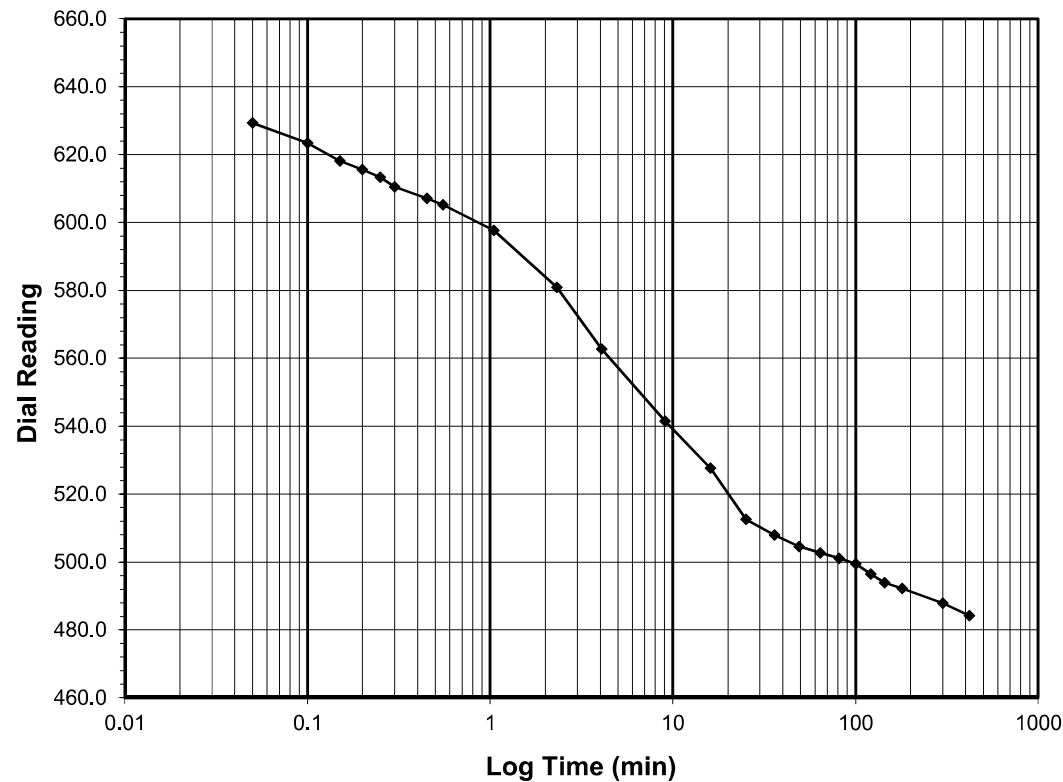
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



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



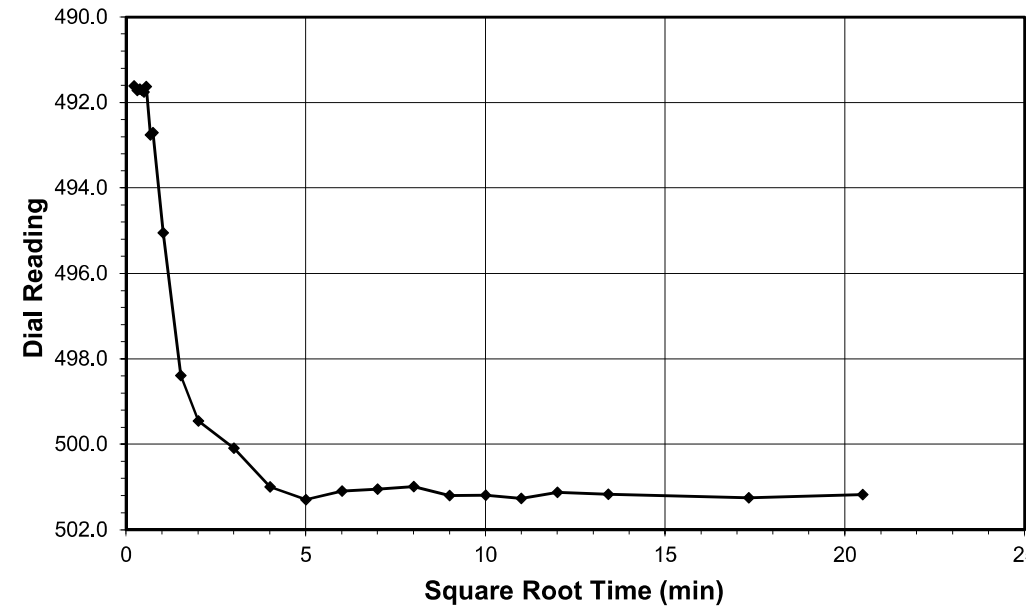
Tested By 129-0411 Date 7/21/2019 Checked By GEM Date 7/29/2019



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

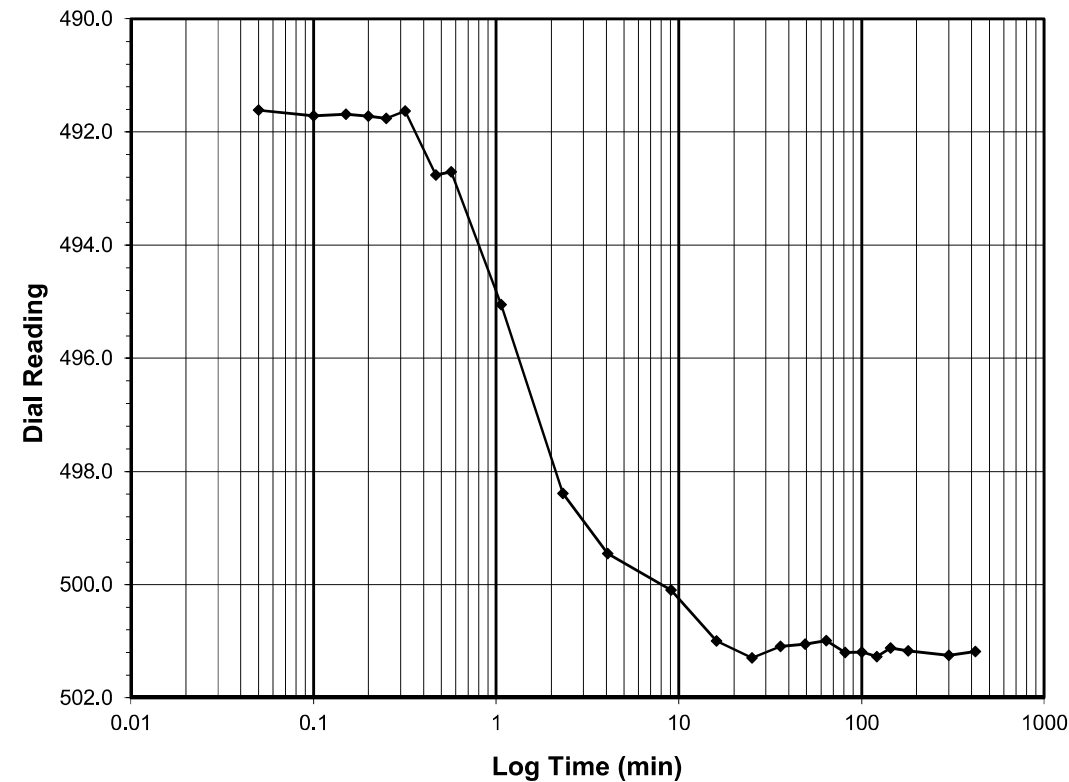
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



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



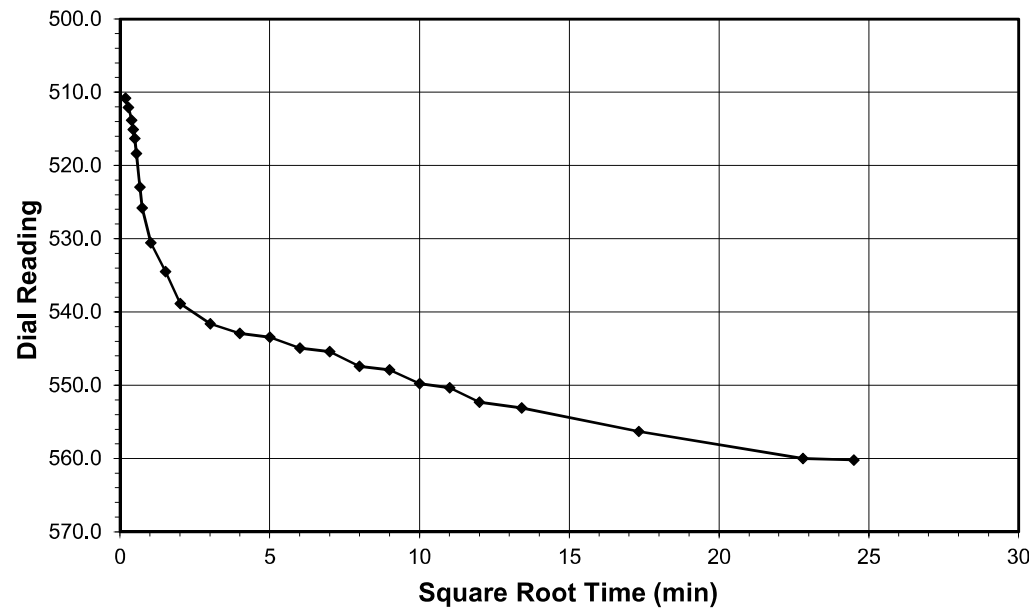
Tested By 129-0411 Date 7/22/2019 Checked By GEM Date 7/29/2019



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

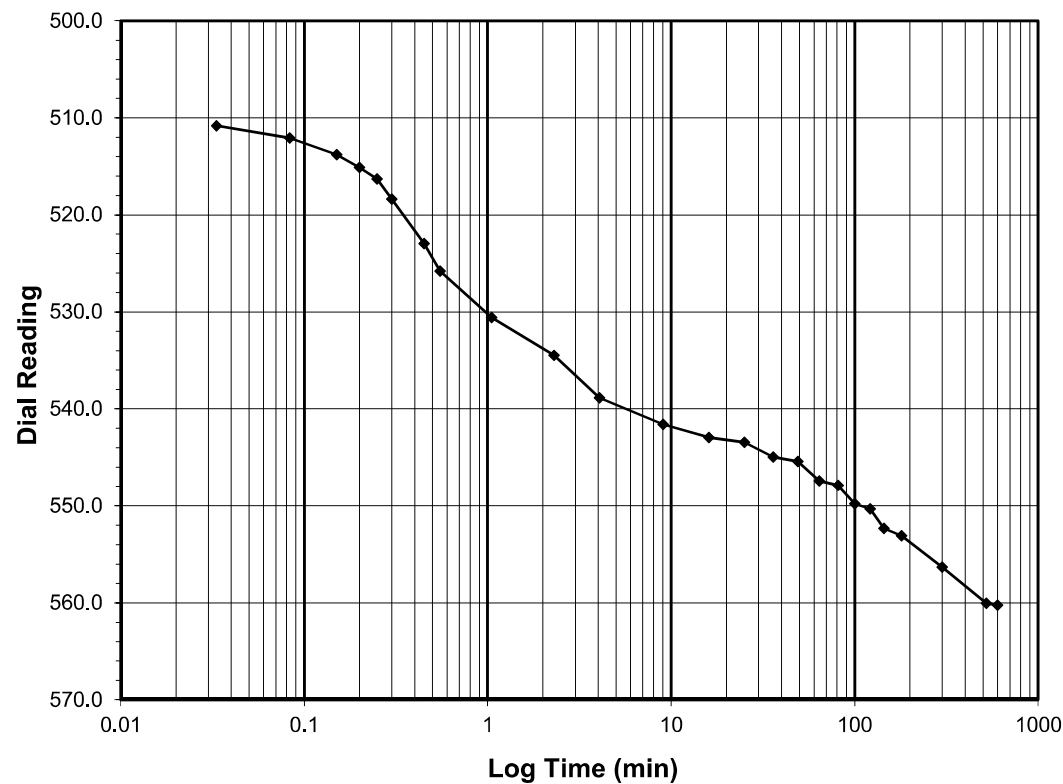
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



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



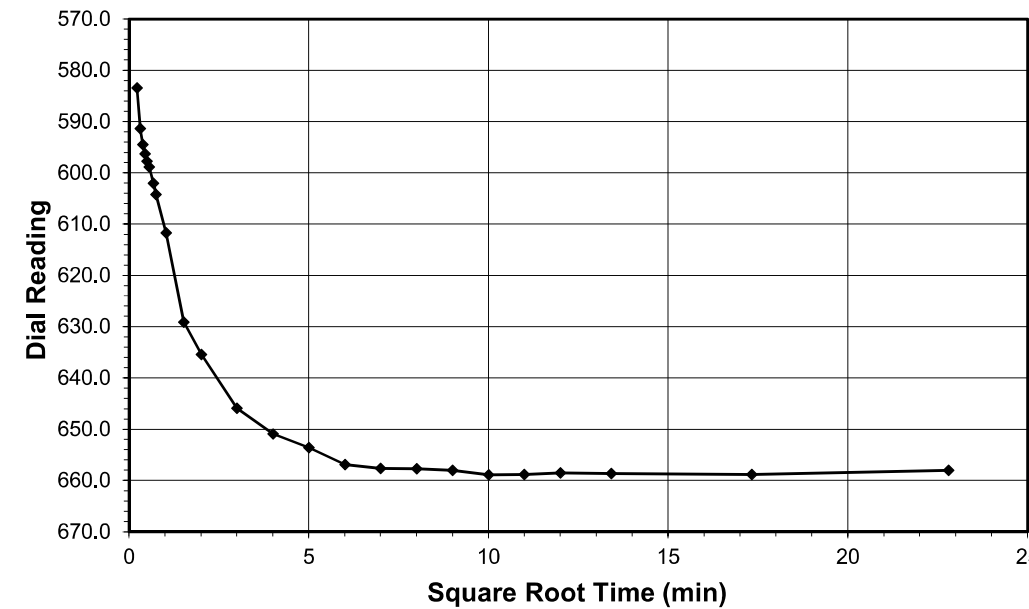
Tested By 129-0411 Date 7/22/2019 Checked By GEM Date 7/29/2019



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

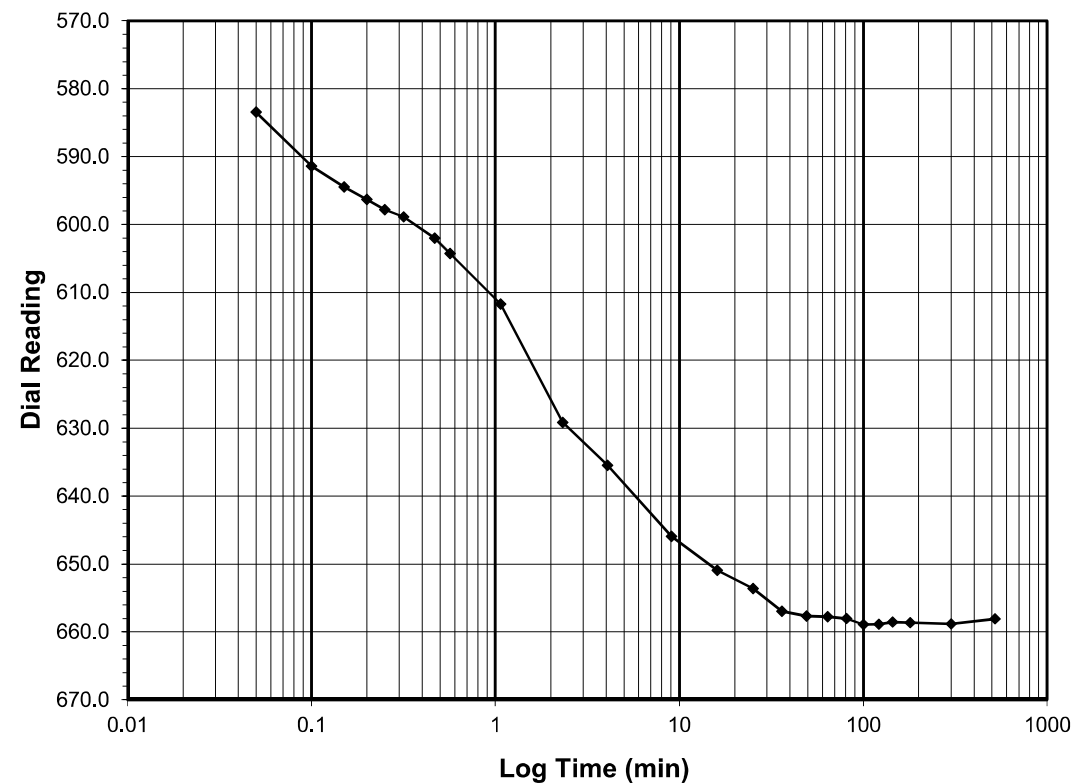
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



Test Load (tsf) 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



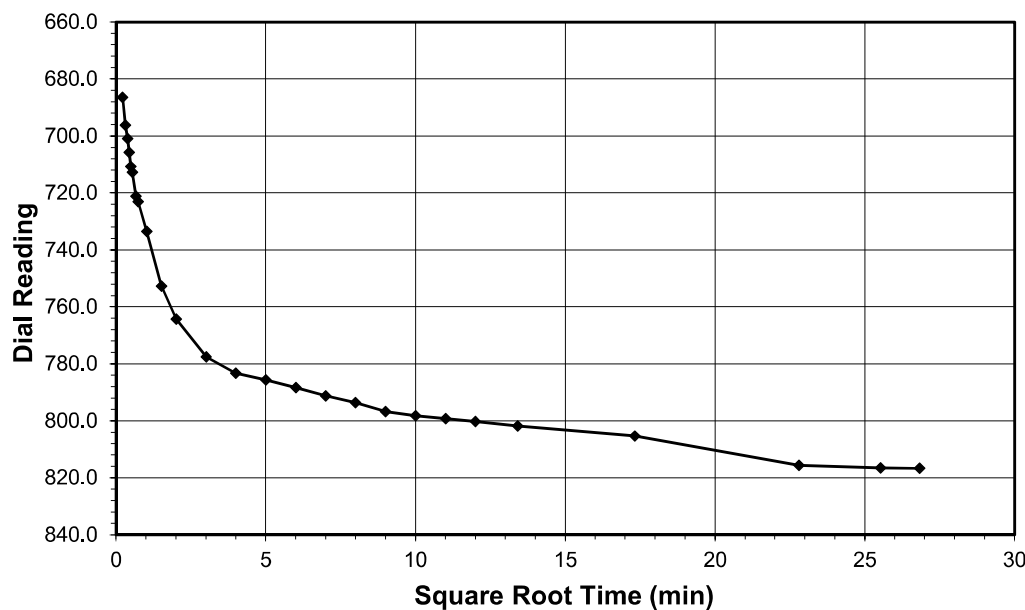
Tested By 129-0411 Date 7/22/2019 Checked By GEM Date 7/29/2019



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

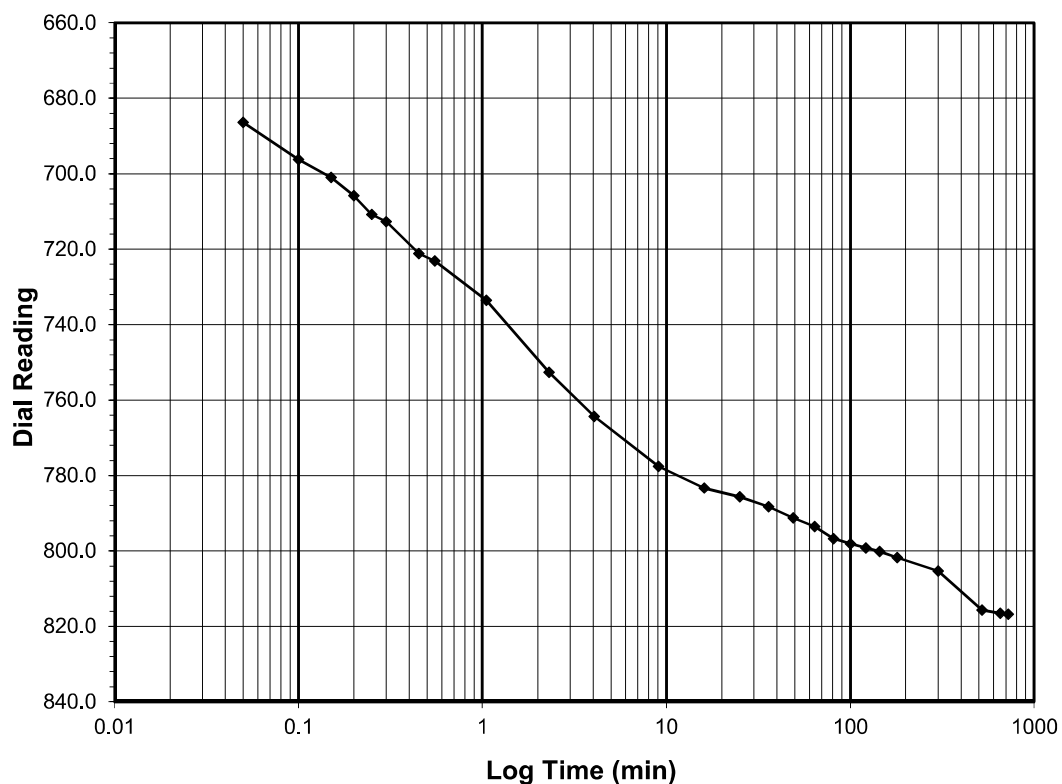
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



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



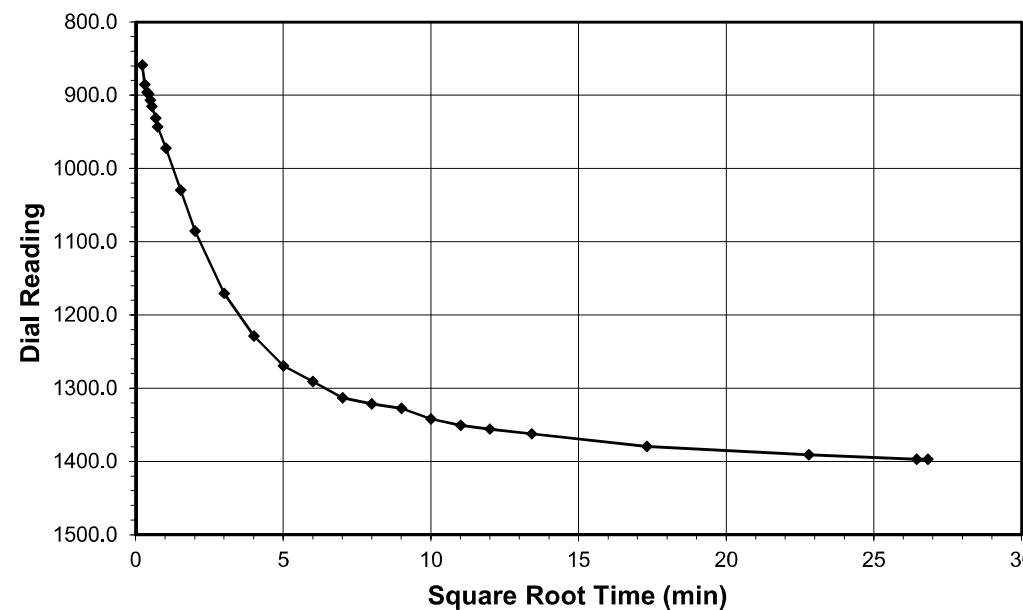
Tested By 129-0411 Date 7/23/2019 Checked By GEM Date 7/29/2019



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

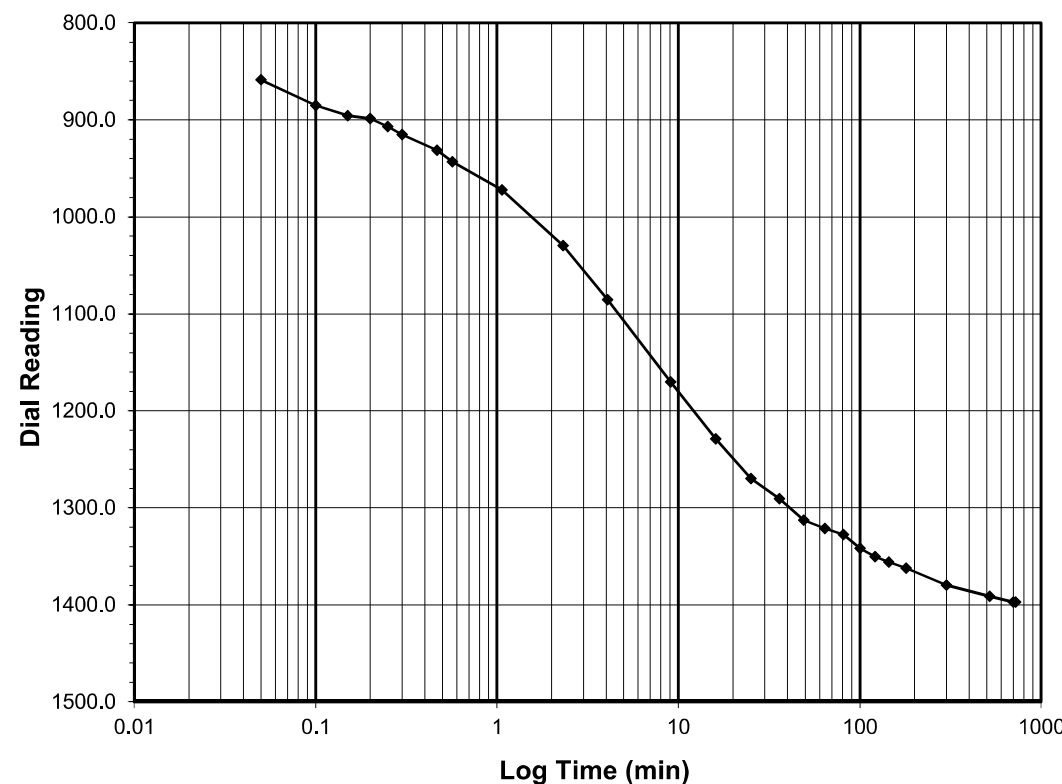
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



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



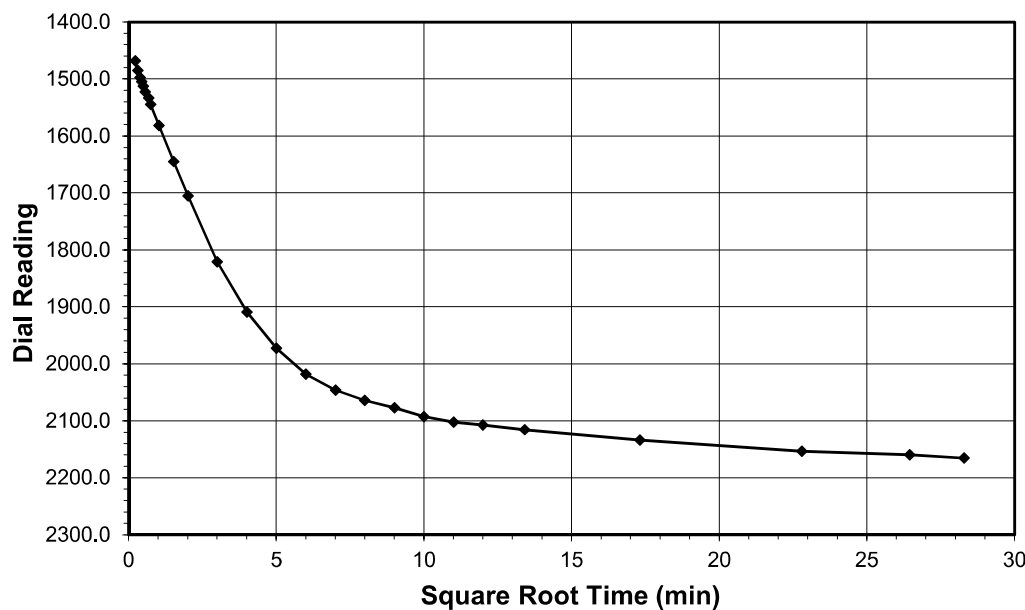
Tested By 129-0411 Date 7/23/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

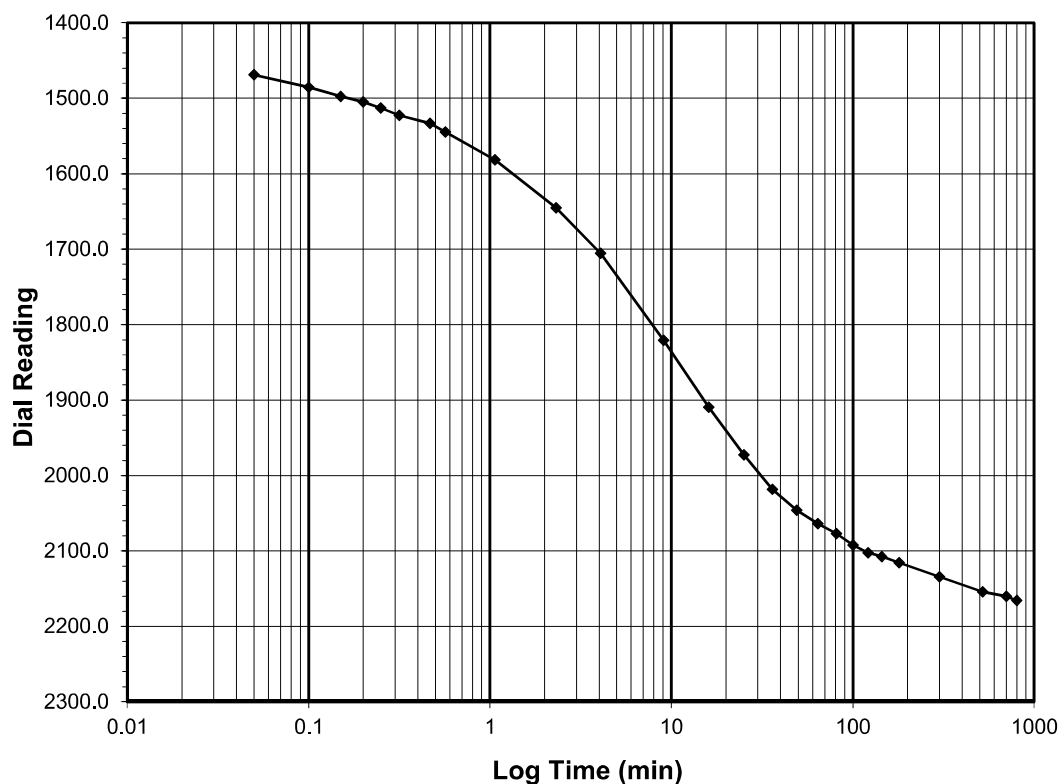
Client Kleinfelder Boring No. S4_EB2-A
 Client Project R-2561CA Depth (ft) 19.7-21.7
 Project No. R-2019-209-001 Sample No. ST-4
 Lab ID R-2019-209-001-012 Visual Description GRAY LEAN CLAY

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



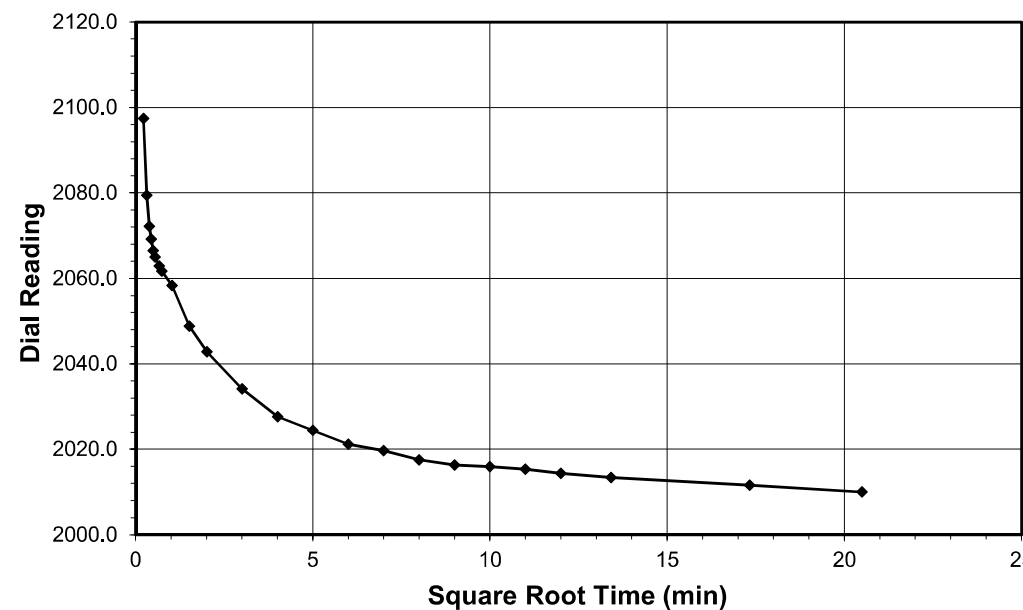
Tested By 129-0411 Date 7/24/2019 Checked By GEM Date 7/29/2019



ONE DIMENSIONAL CONSOLIDATION
AASHTO T-216

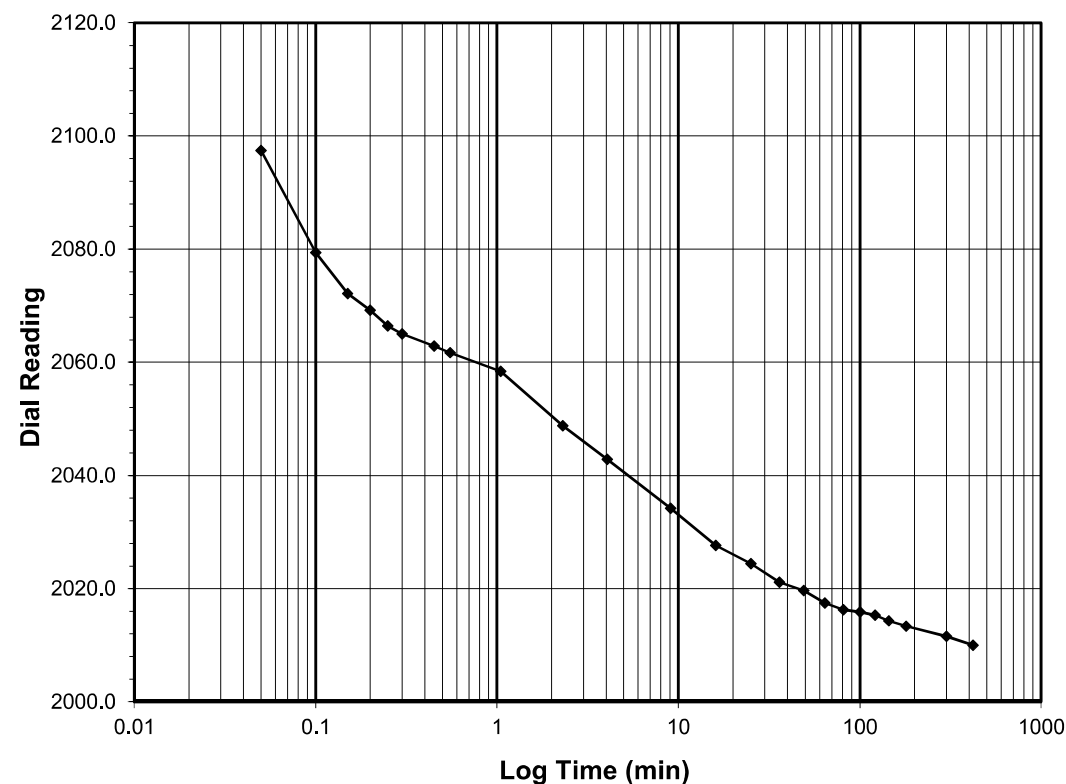
Client Kleinfelder Boring No. S4_EB2-A
 Client Project R-2561CA Depth (ft) 19.7-21.7
 Project No. R-2019-209-001 Sample No. ST-4
 Lab ID R-2019-209-001-012 Visual Description GRAY LEAN CLAY

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



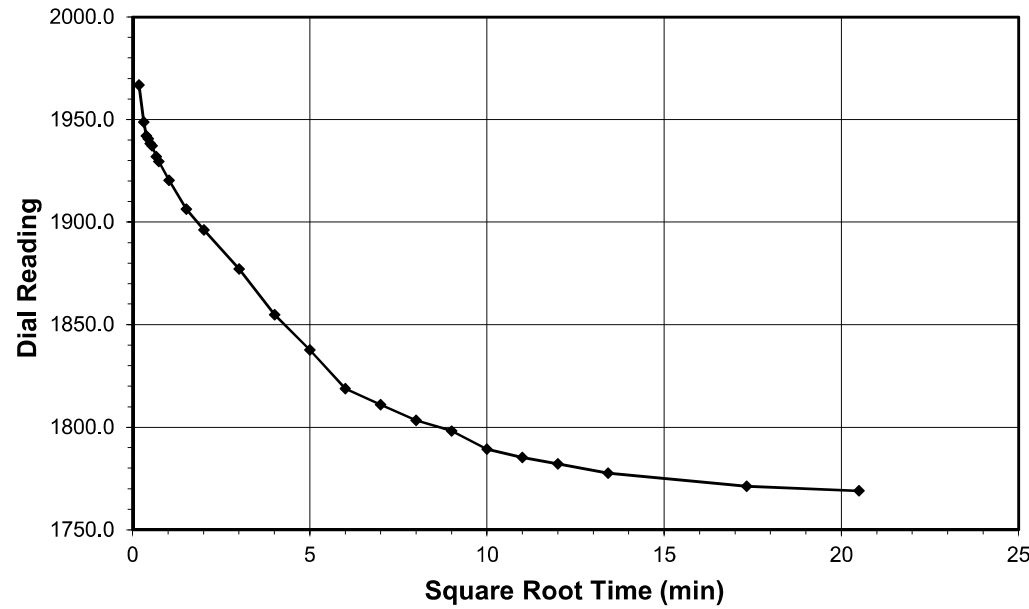
Tested By 129-0411 Date 7/24/2019 Checked By GEM Date 7/29/2019



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

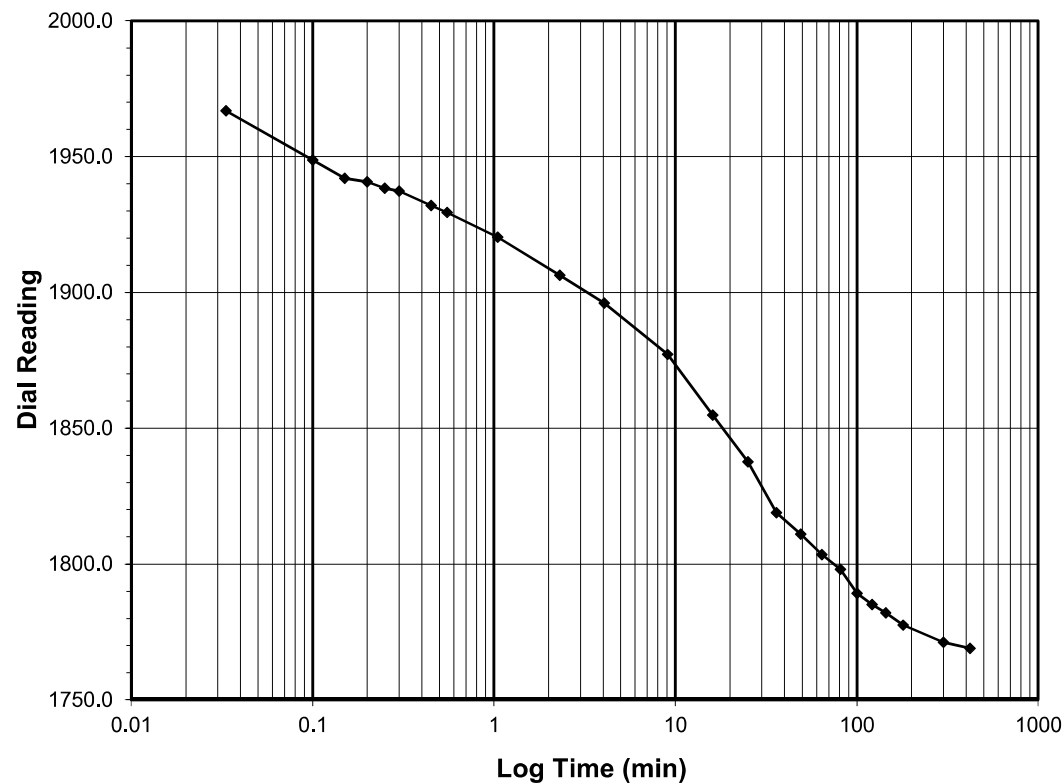
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



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



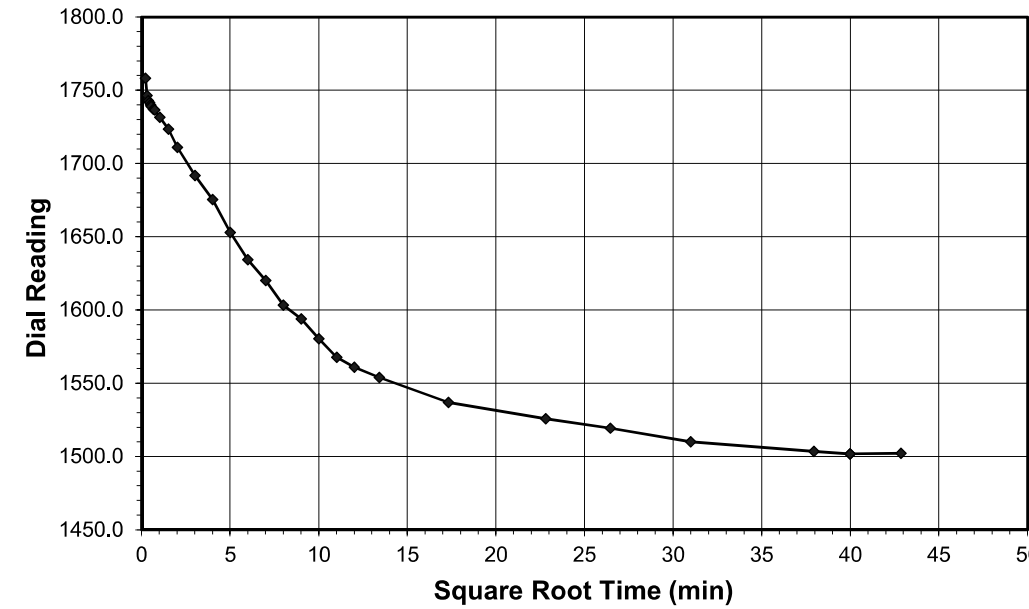
Tested By 129-0411 Date 7/25/2019 Checked By GEM Date 7/29/2019



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

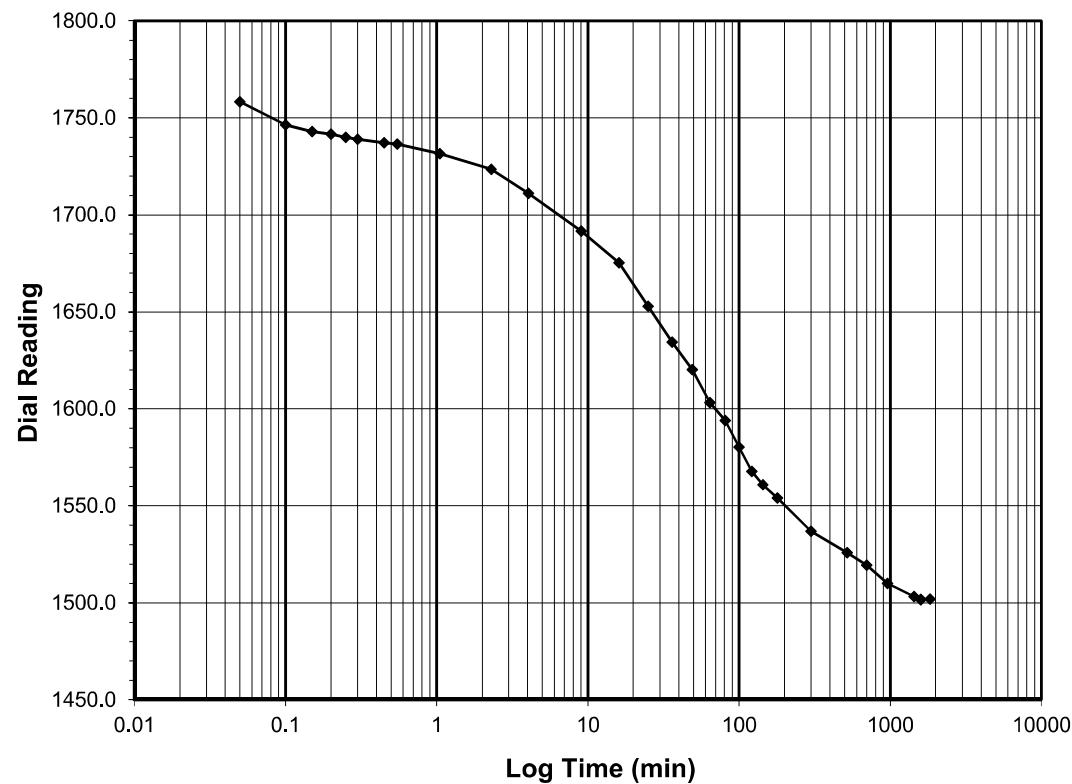
Sample Conditions: UNDISTURBED, INUNDATED AND DOUBLE DRAINED



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
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}	Q
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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
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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

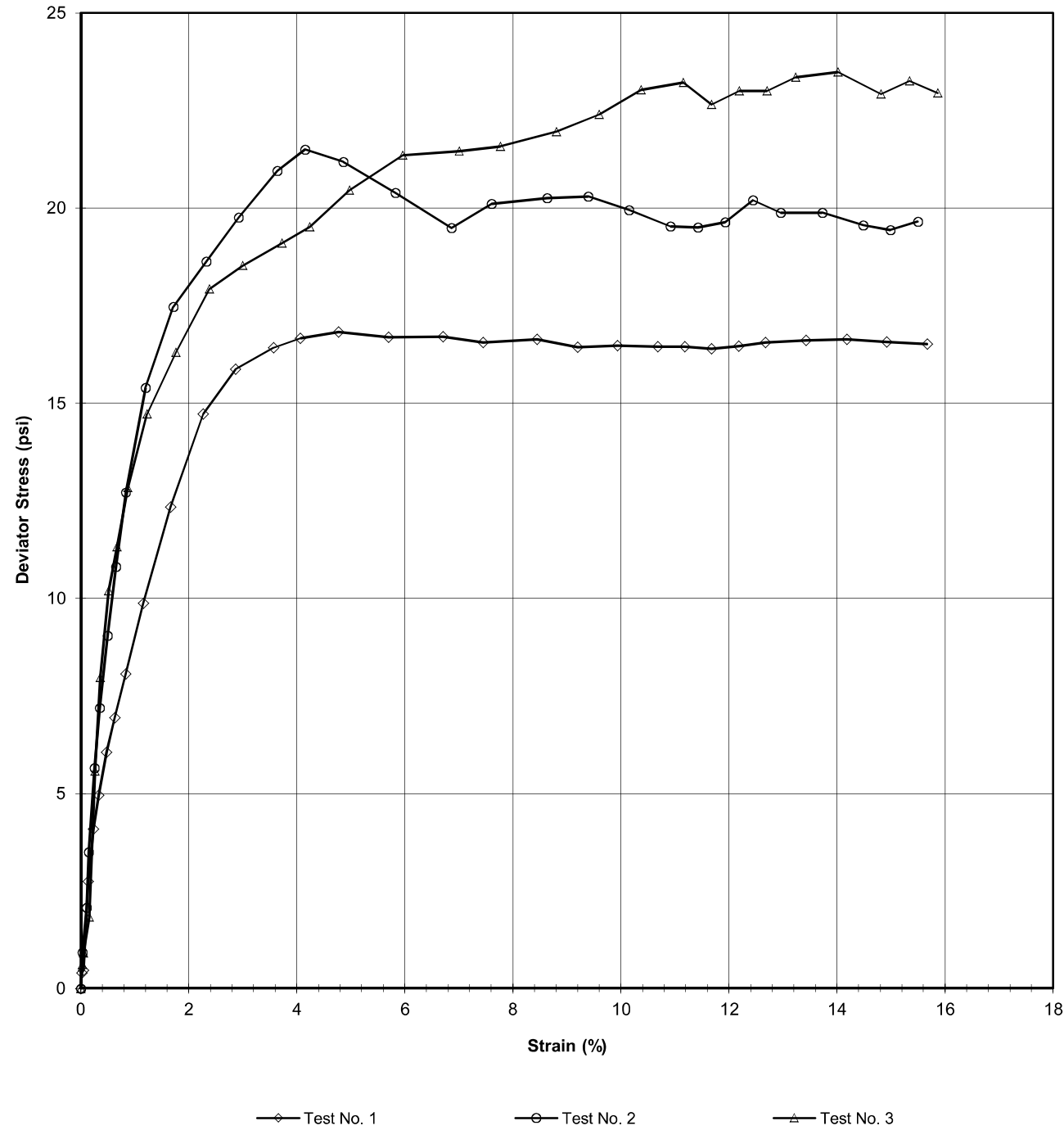
INITIAL DIMENSIONS		VOLUME CHANGE	
Initial Sample Length (in)	6.26	Volume After Consolidation (in ³)	32.54
Initial Sample Diameter (in)	2.84	Length After Consolidation (in)	5.96
Initial Sample Area (in ²)	6.36	Area After Consolidation (in ²)	5.457
Initial Sample Volume (in ³)	39.78		

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

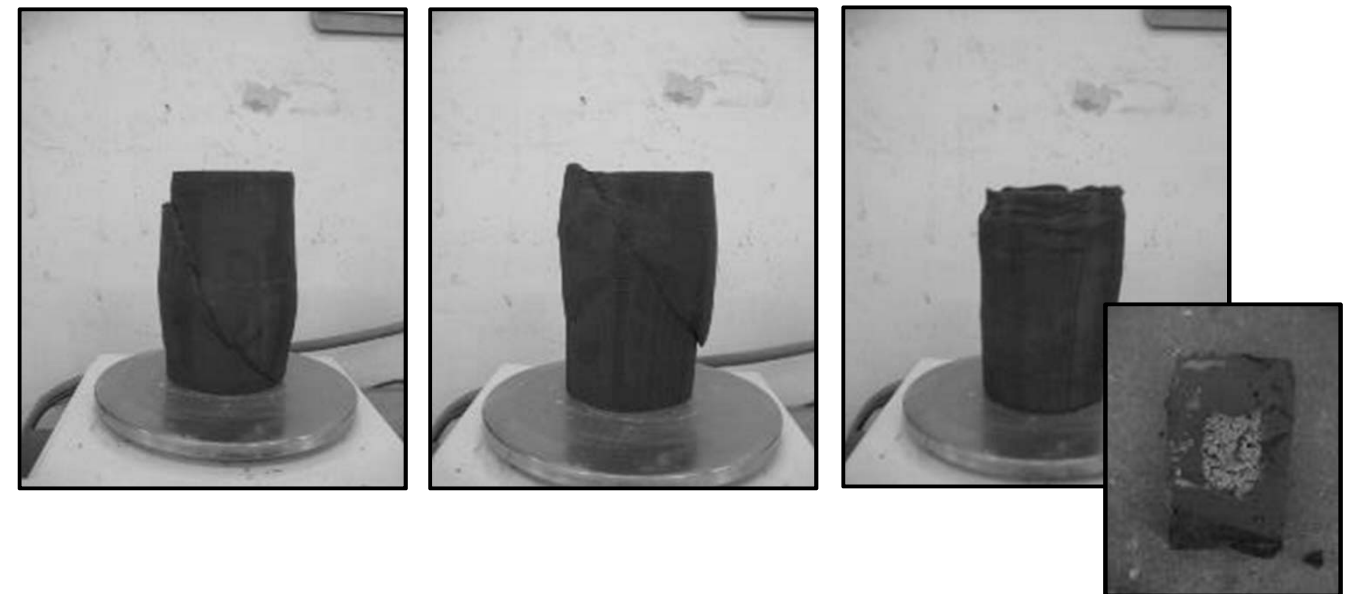


**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
AASHTO T-297**

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**

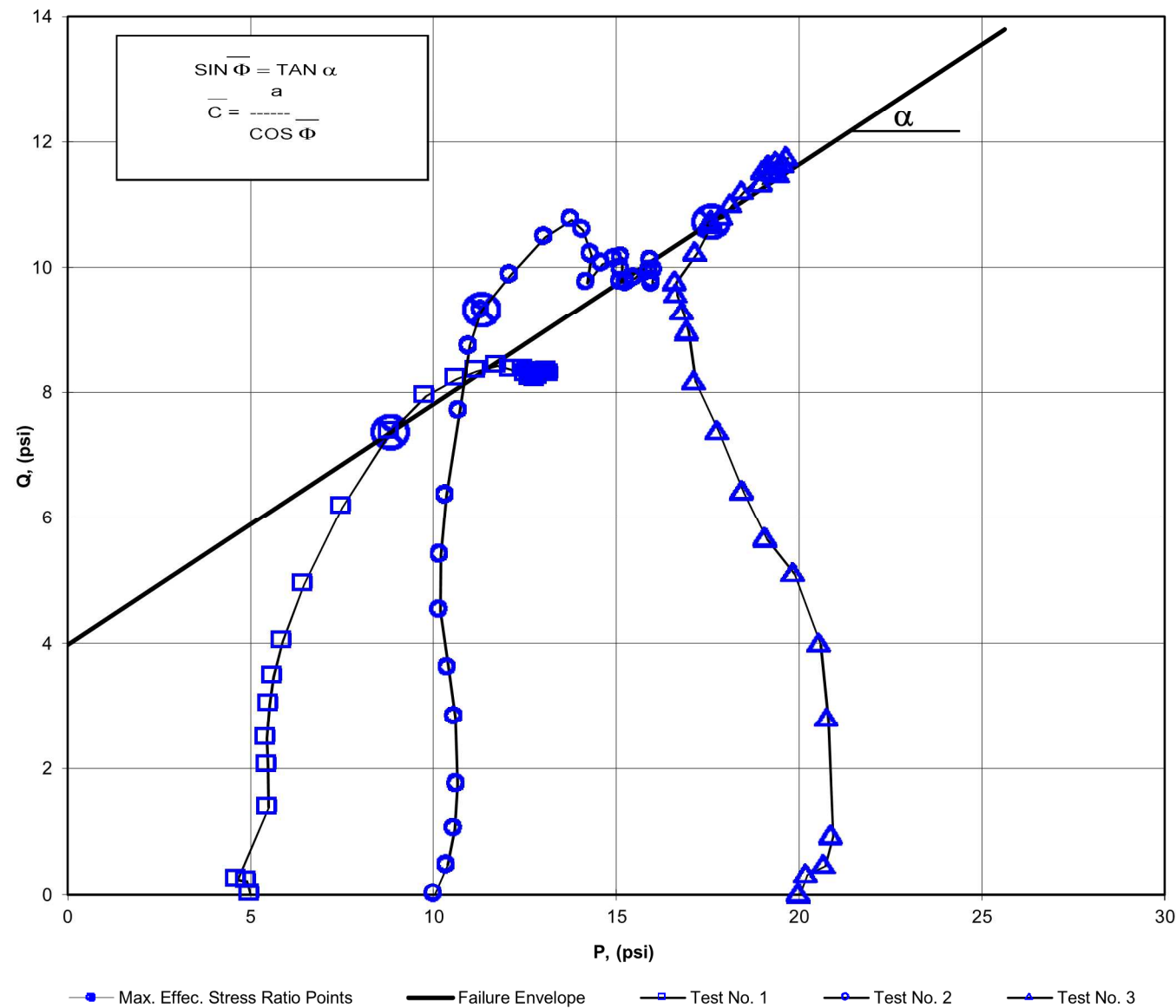
Client: Kleinfelder
Client Reference: R-2561CA
Project No.: R-2019-209-001
Lab ID: R-2019-209-001-012

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

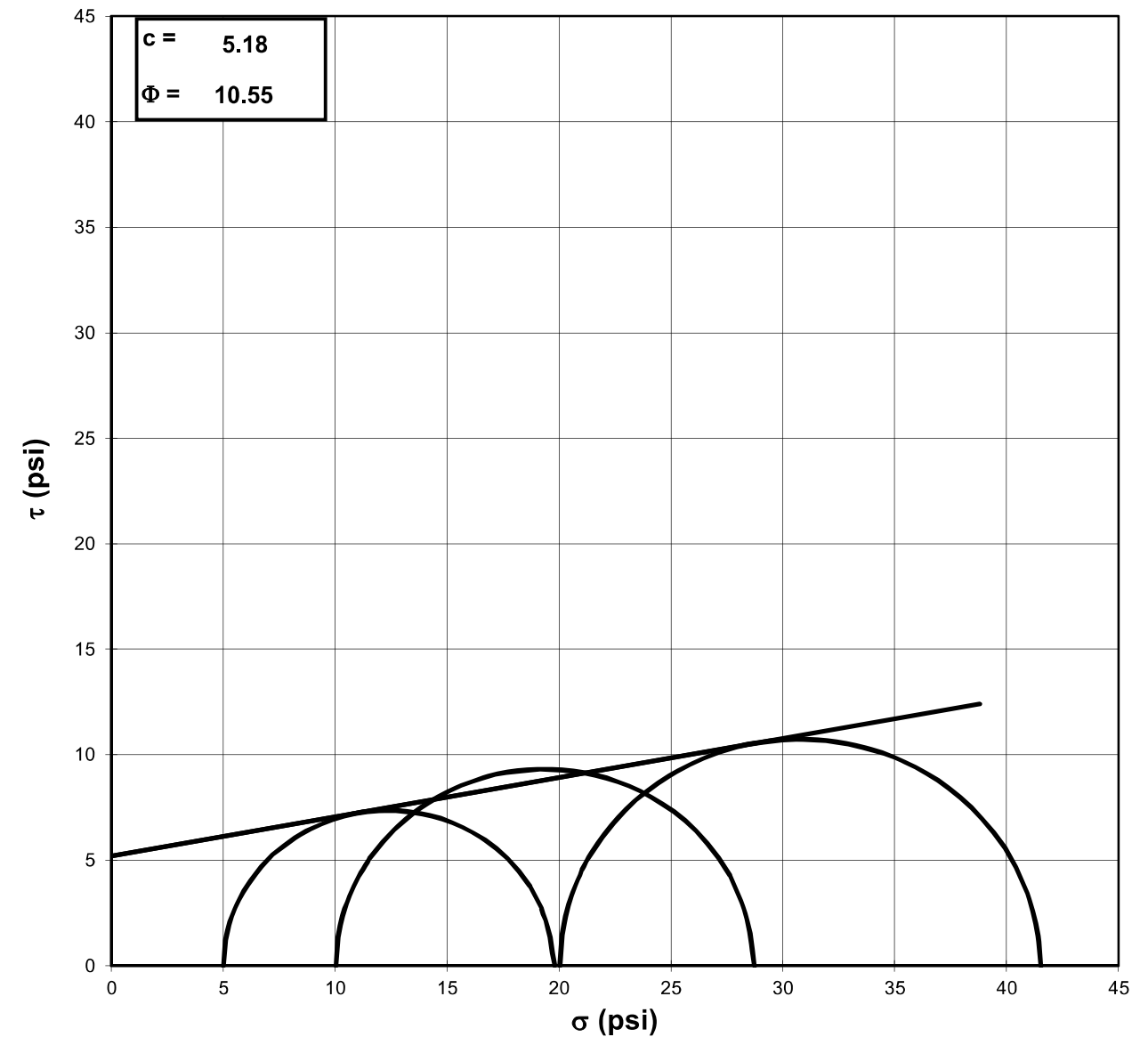
Client: Kleinfelder
Client Reference: R-2561CA
Project No.: R-2019-209-001
Lab ID: R-2019-209-001-012
Visual Description: Gray Clay (UNDISTURBED)

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	C̄	=	4.31
α	=	21.0	Φ̄	=	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

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**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
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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

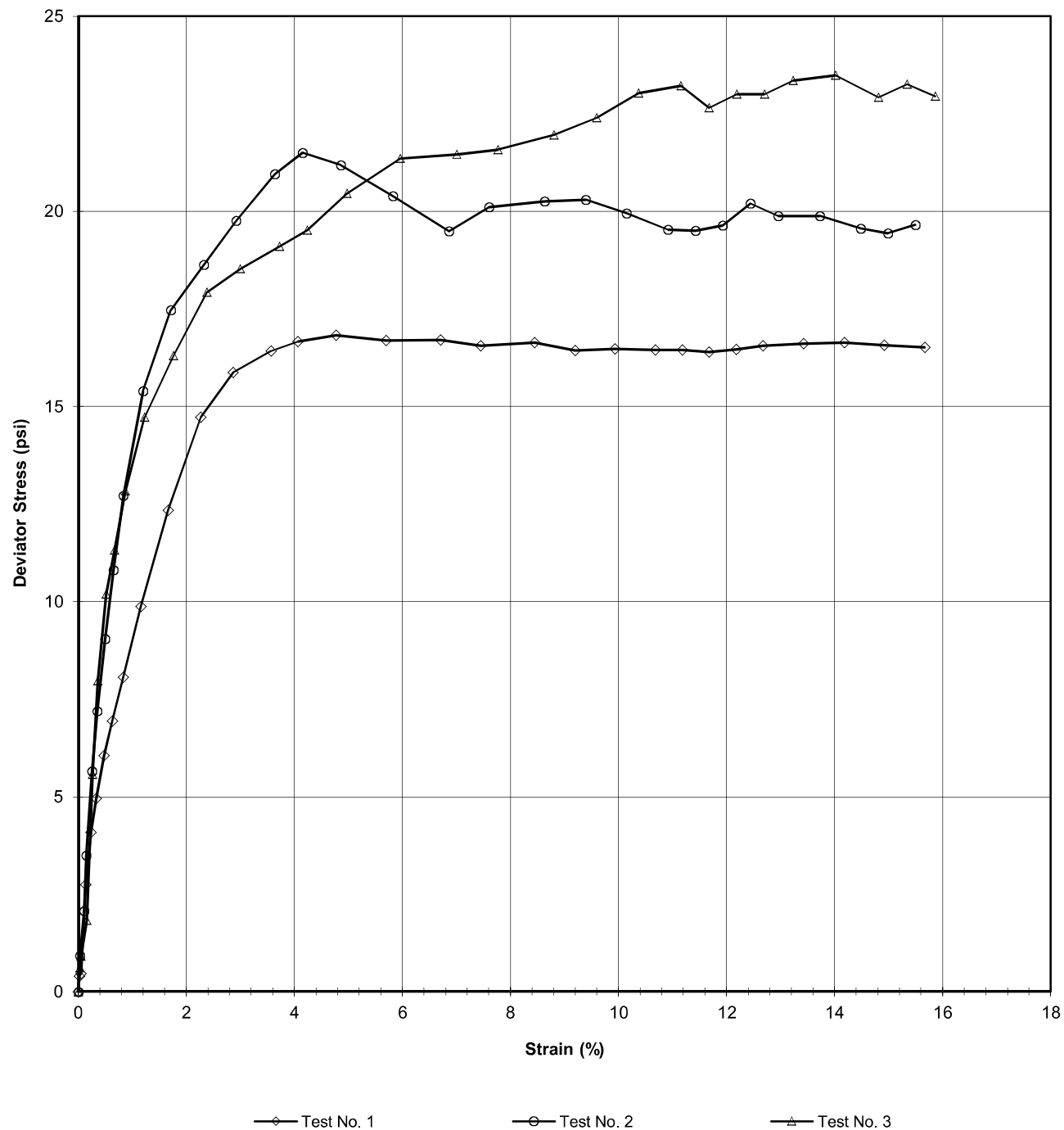
INITIAL DIMENSIONS	VOLUME CHANGE
Initial Sample Length (in)	Volume After Consolidation (in ³)
Initial Sample Diameter (in)	Length After Consolidation (in)
Initial Sample Area (in ²)	Area After Consolidation (in ²)
Initial Sample Volume (in ³)	

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

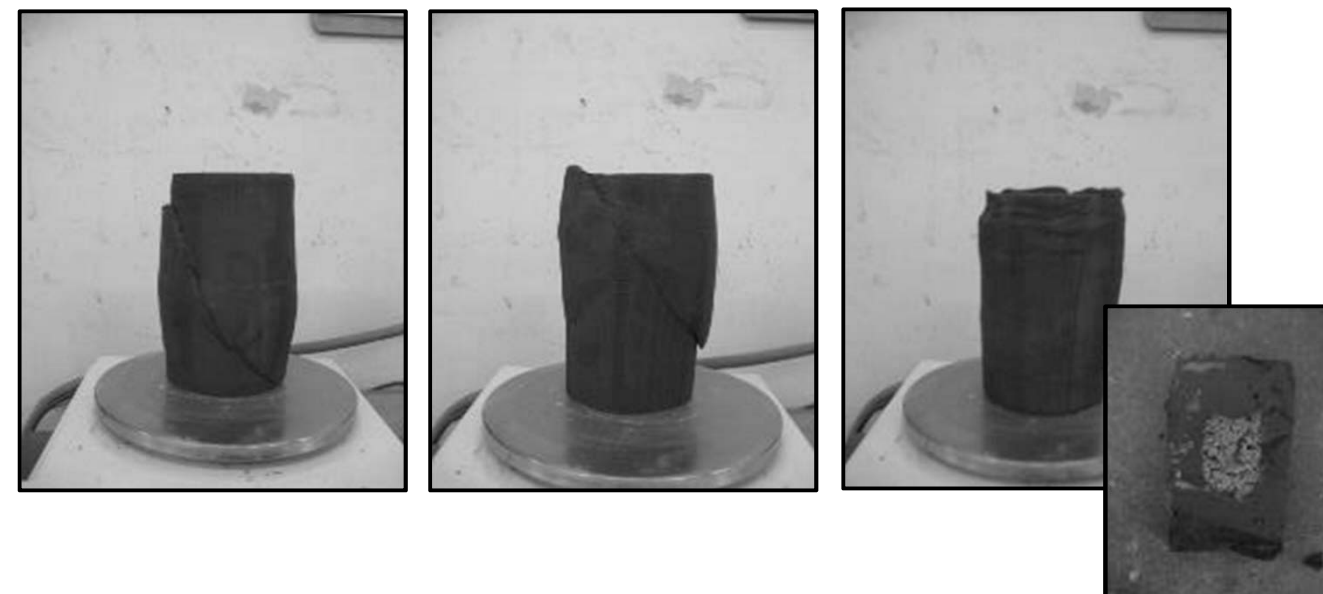


**CONSOLIDATED UNDRAINED TRIAXIAL TEST
WITH PORE PRESSURE READINGS
AASHTO T-297**

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