Moisture & Organic Content Determinations
ASTM D 2974

CLIENT: Tetra Tech
LOCATION: Rocky Flats, OLF, #114-181750

JOB NO.: 2592-04

BORING	Tt-7	Tt-5	Tt-2
SAMPLE DEPTH	9.0-10.0'	19.0-20.0'	15.5-16.0'
SAMPLE NO.			
DATE SAMPLED			
DATE TESTED	04-24-08 TMR	04-24-08 TMR	04-24-08 TMR
SOIL DESCRIPTION			
MOISTURE DETERMINATIONS			
Wt. Wet Soil & Dish (gms)	371.96	262.34	365.30
Wt. Dry Soil & Dish (gms)	367.93	260.33	362.85
Net Loss of Moisture (gms)	4.03	2.01	2.45
Wt. of Dish (gms)	120.33	110.14	121.31
Wt. of Dry Soil (gms)	247.60	150.19	241.54
Moisture Content (%)	1.6	1.3	1.0
ORGANIC CONTENT DETERMINATIONS			
Wt. Dry Soil & Dish (gms)	367.93	260.33	362.85
Wt. Ash & Dish (gms)	353.22	256.94	355.69
Wt. Organic Matter [A] (gms)	14.71	3.39	7.16
Wt. of Dish (gms)	120.33	110.14	121.31
Wt. of Ash [B] (gms)	232.89	146.80	234.38
Organic Matter Content (%)	5.9	2.3	3.0

% Organic Matter = [A/(A+B)]*100

Data entered by: SR
Data checked by: BKL
FileName: TTO0T752

Date: 4.25.08

Date: 04/24/2008

ADVANCED TERRA TESTING, INC. ATT

Moisture & Density Determinations
ASTM D 2216 & D 2937

CLIENT: Tetra Tech MM (Fort Collins)
LOCATION: Rocky Flats OLF, Project #114-181750

JOB NO.: 2592-04

BORING	Tt-4
SAMPLE DEPTH	3.0-6.0'
SAMPLE NO.	
DATE SAMPLED	
DATE TESTED	04-21-08 CAL
SOIL DESCRIPTION	

DENSITY DETERMINATIONS	
Sample Height (IN)	12.231
Sample Diameter (IN)	3.746
Wt of Wet Soil (GMs)	4356.00
Sample Volume (CU Ft)	0.07801
WET DENSITY (PCF)	123.1
DRY DENSITY (PCF)	105.2

MOISTURE DETERMINATIONS	
Wt. of Wet Soil & Dish (gms)	2233.80
Wt. of Dry Soil & Dish (gms)	1914.80
Net Loss of Moisture (gms)	319.00
Wt. of Dish (gms)	35.70
Wt. of Dry Soil (gms)	1879.10
Moisture Content (%)	17.0

Data entered by: SR Date: 04/22/2008
Data checked by: BKL Date: 4.23.08
FileName: TTMDTT4

ADVANCED TERRA TESTING, INC. ATT

Moisture & Density Determinations
ASTM D 2216 & D 2937

CLIENT: Tetra Tech

JOB NO.: 2592-04

LOCATION: Rocky Flats, Original Location, #114-181750

BORING		
SAMPLE DEPTH	Tt-7	Tt-1
SAMPLE NO.	6.0-7.0'	8.5-9.0'
DATE SAMPLED		
DATE TESTED	04-18-08 TMR	04-18-08 TMR
SOIL DESCRIPTION		

DENSITY DETERMINATIONS		
Sample Height (IN)	5.372	5.141
Sample Diameter (IN)	3.470	3.753
Wt of Wet Soil (GMs)	1740.60	2015.50
Sample Volume (CU Ft)	0.02940	0.03291
WET DENSITY (PCF)	130.5	135.0
DRY DENSITY (PCF)	108.7	123.5

MOISTURE DETERMINATIONS		
Wt. of Wet Soil & Dish (gms)	3156.00	2590.40
Wt. of Dry Soil & Dish (gms)	2635.10	2373.60
Net Loss of Moisture (gms)	520.90	216.80
Wt. of Dish (gms)	34.10	36.70
Wt. of Dry Soil (gms)	2601.00	2336.90
Moisture Content (%)	20.0	9.3

Data entered by: SR Date: 04/21/2008

Data checked by: BKL Date: 4.22.08

FileName: TTMDTT71

ADVANCED TERRA TESTING, INC. ATT

ATTERBERG LIMITS TEST
ASTM D 4318

CLIENT	Tetra Tech	JOB NO.	2592-04
BORING NO.	Tt-7	DATE SAMPLED	
DEPTH	9.0-10.0'	DATE TESTED	04-23-08 WAR
SAMPLE NO.			
SOIL DESCR.	#114-181750		
LOCATION	Rocky Flats OLF		

Plastic Limit Determination

	1	2	3
Wt Dish & Wet Soil	7.24	8.60	8.05
Wt Dish & Dry Soil	6.27	7.41	6.93
Wt of Moisture	0.97	1.19	1.12
Wt of Dish	1.11	1.14	1.14
Wt of Dry Soil	5.16	6.27	5.79
Moisture Content	18.80	18.98	19.34

Liquid Limit Determination — Device Number 0966

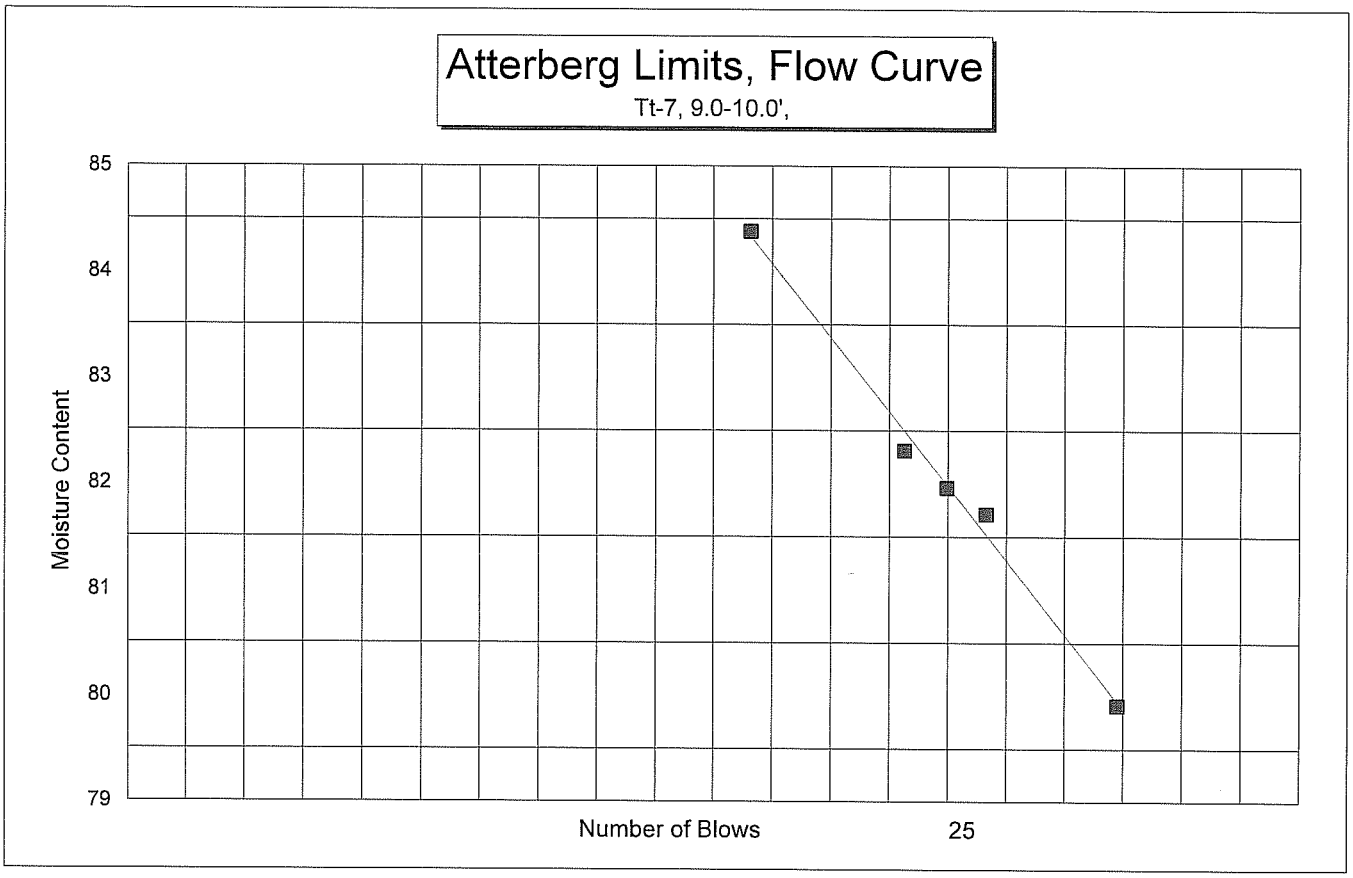
	1	2	3	4	5
Number of Blows	35	25	27	23	17
Wt Dish & Wet Soil	9.26	12.85	14.06	13.28	13.77
Wt Dish & Dry Soil	5.64	7.58	8.25	7.79	7.99
Wt of Moisture	3.62	5.27	5.81	5.49	5.78
Wt of Dish	1.11	1.15	1.14	1.12	1.14
Wt of Dry Soil	4.53	6.43	7.11	6.67	6.85
Moisture Content	79.91	81.96	81.72	82.31	84.38

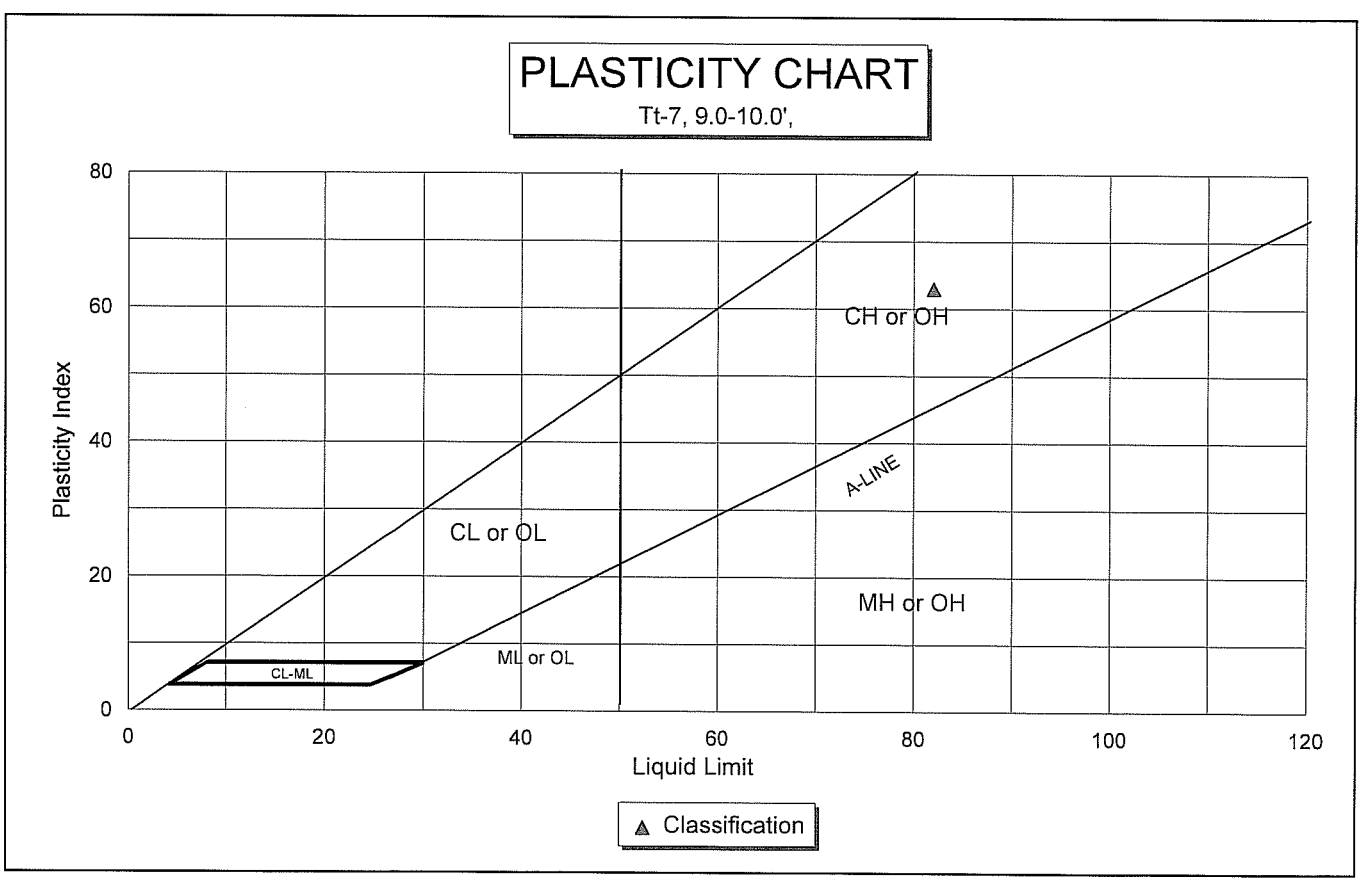
Liquid Limit	82.0
Plastic Limit	19.0
Plasticity Index	62.9

Atterberg Classification CH

Data entry by: SR Date: 04/24/2008
Checked by: BKL Date: 4.25.08
FileName: TTG0TT7

ADVANCED TERRA TESTING, INC. ATT


Atterberg Limits, Flow Curve
Tt-7, 9.0-10.0',
Moisture Content
85
84
83
82
81
80
79
Number of Blows
25


PLASTICITY CHART
Tt-7, 9.0-10.0',
Plasticity Index
80
60
40
20
0
CH or OH
A-LINE
CL or OL
MH or OH
ML or OL
CL-ML
0
20
40
60
80
100
120
Liquid Limit
Classification

MECHANICAL ANALYSIS - SIEVE TEST DATA
ASTM D-6913

CLIENT Tetra Tech

JOB NO. 2592-04

BORING NO.	Tt-7
DEPTH	9.0-10.0'
SAMPLE NO.	
SOIL DESCR.	#114-181750
LOCATION	Rocky Flats OLF

SAMPLED	
DATE TESTED	04-23-08 TMR
WASH SIEVE	Yes
DRY SIEVE	No

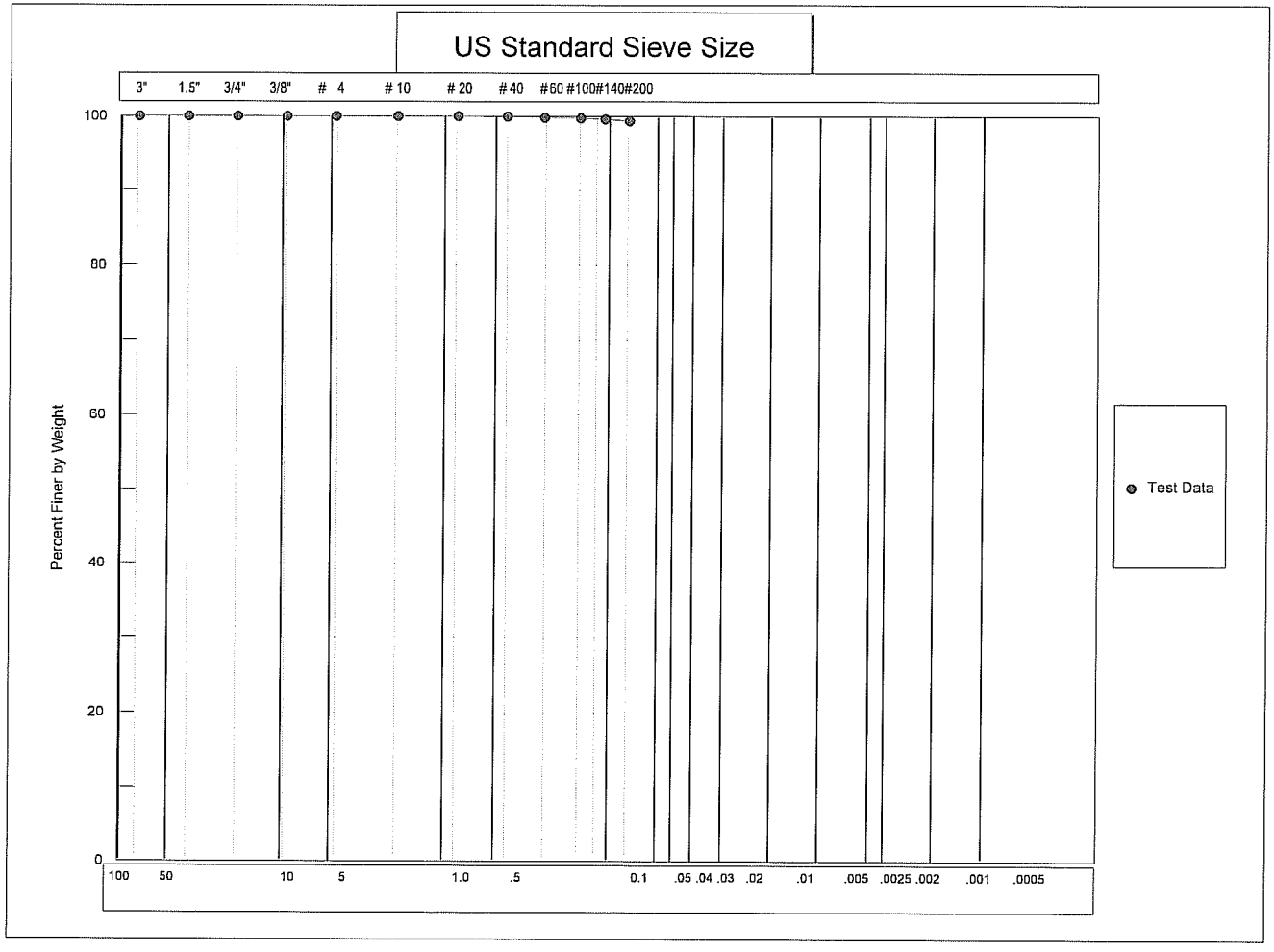
WASH SIEVE ANALYSIS

Wt. Wet Soil & Pan Before Washing (g)	1162.5
Wt. Dry Soil & Pan Before Washing (g)	1155.3
Weight of Pan (g)	843.2
Wt. of Dry Soil Before Washing	312.1
Wt. Dry Soil & Pan After Washing (g)	845.1
Wt. of Dry Soil After Washing (g)	1.9
-#200 Wash. Out %	99.4

Sieve Number (Size)	Pan Weight (g)	Indiv. Wt. + Pan (g)	Indiv. Wt. Retain.	Cum. Wt. Retain.	Cum. % Retain.	% Finer By Wt.
3"	0.00	0.00	0.00	0.00	0.0	100.0
1 1/2"	0.00	0.00	0.00	0.00	0.0	100.0
3/4"	0.00	0.00	0.00	0.00	0.0	100.0
3/8"	0.00	0.00	0.00	0.00	0.0	100.0
#4	0.00	0.00	0.00	0.00	0.0	100.0
#10	0.00	0.00	0.00	0.00	0.0	100.0
#20	3.75	3.78	0.03	0.03	0.0	100.0
#40	3.10	3.30	0.20	0.23	0.1	99.9
#60	3.68	3.98	0.30	0.53	0.2	99.8
#100	3.20	3.49	0.29	0.82	0.3	99.7
#140	3.09	3.44	0.35	1.17	0.4	99.6
#200	3.18	3.91	0.73	1.90	0.6	99.4

Data entered by: SR Date: 04/24/2008
Data checked by: BKL Date: 4.25.08
FileName: TTM0TT7

ADVANCED TERRA TESTING, INC. ATT



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	CRS	MEDIUM	FINE	

USCS

COBBLES TO BOULDERS	PEBBLE GRAVEL				SAND			SILT	CLAY
	COARSE	MED	FINE	GRAN	COARSE	MED	FINE		

WENTWORTH

Client: Tetra Tech
Job Number: 2592-04
Classification **N/A**

Boring No.: Tt-7
Depth: 9.0-10.0'

Sample No.:

MECHANICAL ANALYSIS - SIEVE TEST DATA
ASTM D-6913

CLIENT Tetra Tech

JOB NO. 2592-04

BORING NO.	Tt-2
DEPTH	15.5-16.0'
SAMPLE NO.	
SOIL DESCR.	#114-181750
LOCATION	Rocky Flats OLF

SAMPLED	
DATE TESTED	04-23-08 TMR
WASH SIEVE	Yes
DRY SIEVE	No

MOISTURE DATA

Wt. Wet Soil & Pan (g)	1052.0
Wt. Dry Soil & Pan (g)	1049.6
Wt. Lost Moisture (g)	2.3
Wt. of Pan Only (g)	814.9
Wt. of Dry Soil (g)	234.8
Moisture Content %	1.0

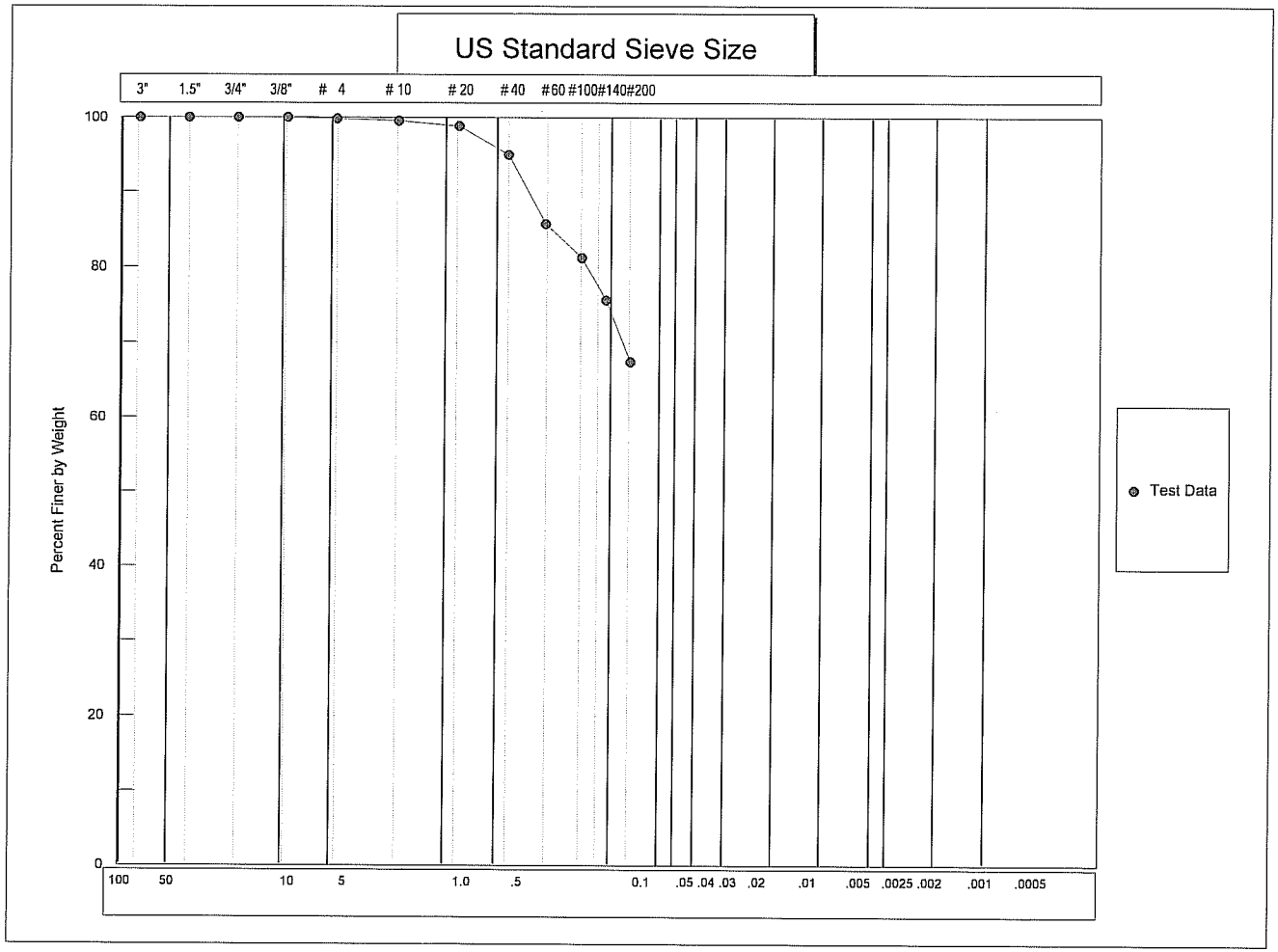
WASH SIEVE ANALYSIS

Wt. Wet Soil & Pan Before Washing (g)	1052.0
Wt. Dry Soil & Pan Before Washing (g)	1049.6
Weight of Pan (g)	814.9
Wt. of Dry Soil Before Washing	234.8
Wt. Dry Soil & Pan After Washing (g)	891.2
Wt. of Dry Soil After Washing (g)	76.3
-#200 Wash. Out %	67.5

Sieve Number (Size)	Pan Weight (g)	Indiv. Wt. + Pan (g)	Indiv. Wt. Retain.	Cum. Wt. Retain.	Cum. % Retain.	% Finer By Wt.
3"	0.00	0.00	0.00	0.00	0.0	100.0
1 1/2"	0.00	0.00	0.00	0.00	0.0	100.0
3/4"	0.00	0.00	0.00	0.00	0.0	100.0
3/8"	0.00	0.00	0.00	0.00	0.0	100.0
#4	3.24	3.68	0.44	0.44	0.2	99.8
#10	3.10	3.80	0.70	1.14	0.5	99.5
#20	3.65	5.29	1.64	2.78	1.2	98.8
#40	3.10	12.11	9.01	11.79	5.0	95.0
#60	3.16	24.96	21.80	33.59	14.3	85.7
#100	3.61	14.15	10.54	44.13	18.8	81.2
#140	3.20	16.28	13.08	57.21	24.4	75.6
#200	3.65	22.79	19.14	76.35	32.5	67.5

Data entered by: SR Date: 04/24/2008
Data checked by: BLL Date: 4.25.08
FileName: TTM0TT2

ADVANCED TERRA TESTING, INC. ATT



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	CRS	MEDIUM	FINE	

USCS

COBBLES TO BOULDERS	PEBBLE GRAVEL				SAND			SILT	CLAY
	COARSE	MED	FINE	GRAN	COARSE	MED	FINE		

WENTWORTH

Client: Tetra Tech
Job Number: 2592-04
Classification N/A

Boring No.: Tt-2
Depth: 15.5-16.0'
Sample No.:

MECHANICAL ANALYSIS - SIEVE TEST DATA
ASTM D 6913

CLIENT Tetra Tech

JOB NO. 2592-04

BORING NO.	Tt-4, Tt-7, Tt-5
DEPTH	6.0-10.0', 5.0-10.0', 5.0-8.0'
SAMPLE NO.	Composite
SOIL DESCR.	#114-181750
LOCATION	Rocky Flats, OLF

SAMPLED	
DATE+#4 WASHED	04-24-08 WAR
DATE -#4 WASHED	04-24-08 WAR
WASH SIEVE	Yes
DRY SIEVE	No

MOISTURE DATA

HYGROSCOPIC	Yes
NATURAL	No

Wt. Wet Soil & Pan (g)	53.75
Wt. Dry Soil & Pan (g)	52.54
Wt. Lost Moisture (g)	1.21
Wt. of Pan Only (g)	3.75
Wt. of Dry Soil (g)	48.79
Moisture Content %	2.5

Wt. Partial -#4 Sample Wet (g)	225.39
Wt. Partial Sample Dry (g)	219.94

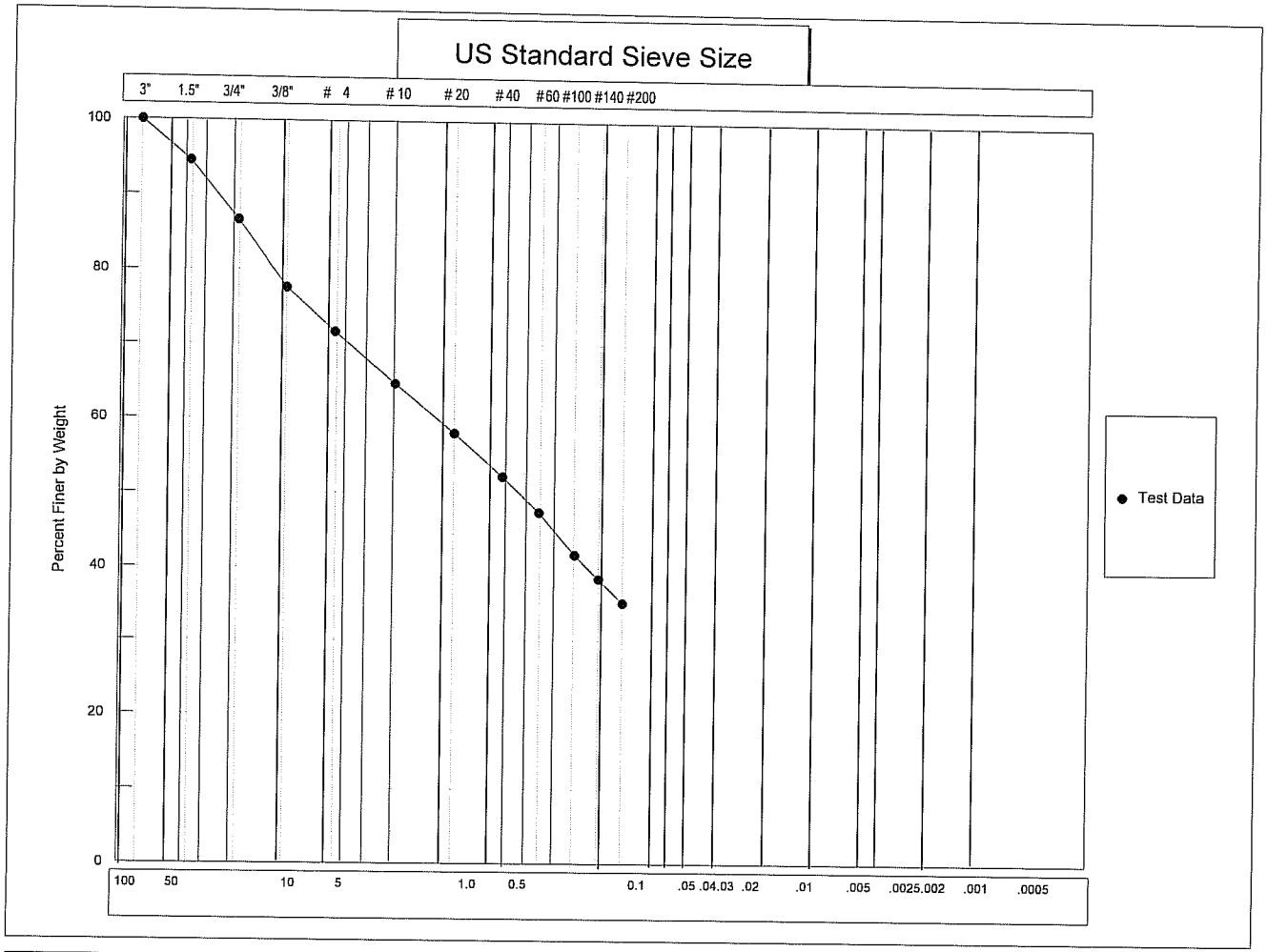
WASH SIEVE ANALYSIS

Wt. Total Sample Wet (g)	3474.61
Weight of + #4 Before Washing (g)	1012.81
Weight of + #4 After Washing (g)	967.97
Weight of - #4 Wet (g)	2461.80
Weight of - #4 Dry (g)	2445.98
Wt. Total Sample Dry (g)	3413.95
Calc. Wt. "W" (g)	306.97
Calc. Mass + #4	87.04

Sieve Number (Size)	Pan Weight (g)	Indiv. Wt. + Pan (g)	Indiv. Wt. Retain.	Cum. Wt. Retain.	Cum. % Retain.	% Finer By Wt.
3"	0.00	0.00	0.00	0.00	0.0	100.0
1 1/2"	0.00	186.86	186.86	186.86	5.5	94.5
3/4"	0.00	270.86	270.86	457.72	13.4	86.6
3/8"	0.00	306.72	306.72	764.44	22.4	77.6
#4	0.00	203.53	203.53	967.97	28.4	71.6
#10	3.08	24.48	21.40	21.40	35.3	64.7
#20	3.18	23.53	20.35	41.75	42.0	58.0
#40	3.20	21.06	17.86	59.61	47.8	52.2
#60	3.17	17.83	14.66	74.27	52.5	47.5
#100	3.20	20.65	17.45	91.72	58.2	41.8
#140	3.19	13.49	10.30	102.02	61.6	38.4
#200	3.64	13.57	9.93	111.95	64.8	35.2

Data entered by: SR Date: 04/25/2008
Data checked by: DPM Date: 4/28/08
FileName: TTM0T475

ADVANCED TERRA TESTING, INC. ATT



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	CRS	MEDIUM	FINE	

USCS

COBBLES TO BOULDERS	PEBBLE GRAVEL				SAND			SILT	CLAY
	COARSE	MED	FINE	GRAN	COARSE	MED	FINE		

WENTWORTH

Client: Tetra Tech
Job Number: 2592-04
Classification: **Classification Not Performed**

Boring No.: Tt-4, Tt-7, Tt-5
Depth: 6.0-10.0', 5.0-10.0', 5.0-8.0'

Sample No.: Composite

DIRECT SHEAR TEST DATA
ASTM D 3080

CLIENT Tetra Tech

JOB NO. 2592-04

BORING NO.	Tt 3	SAMPLED	04/01/08 JLR
DEPTH	25'	TEST STARTED	04/11/08 DPM
SAMPLE NO.		TEST FINISHED	04/14/08 DPM
POINT	A	CELL NUMBER	Geomatic
SOIL DESCR.	Proj. #181750	SATURATED TEST	Yes
LOCATION	Rocky Flats OLF	TEST TYPE	CD
NORMAL STRESS (psf)	5992		

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	105.4	104.6
Wt. Wet Soil & Pan (g)	113.6	112.9
Wt. Dry Soil & Pan (g)	99.9	99.9
Wt. Lost Moisture (g)	13.7	13.0
Wt. of Pan Only (g)	8.3	8.3
Wt. of Dry Soil (g)	91.6	91.6
Moisture Content %	15.0	14.2
Wet Density (pcf)	136.1	140.0
Dry Density (pcf)	118.3	122.6

Init. Diameter (in)	1.938
Init. Area (sq in)	2.950
Init. Height (in)	1.000
Vol. Bef. Consol. (cu ft)	0.00171
Final Height (in)	0.965
Vol. After Consol. (cu ft)	0.00165

Test Set Up: Continuous Increasing Deflection Control
Shear Speed: 0.00180 in/min

Notes & Comments:

Data File Name: TTDS325A.DAT

Normal Stress:	5992 psf	41.61 psi
Peak Stress:	5203 psf	36.13 psi
Ultimate Stress:	5203 psf	36.13 psi

Data entry by: DPM Date: 04/16/2008
Data checked by: cor Date: 4/18/08
FileName: TTDS325

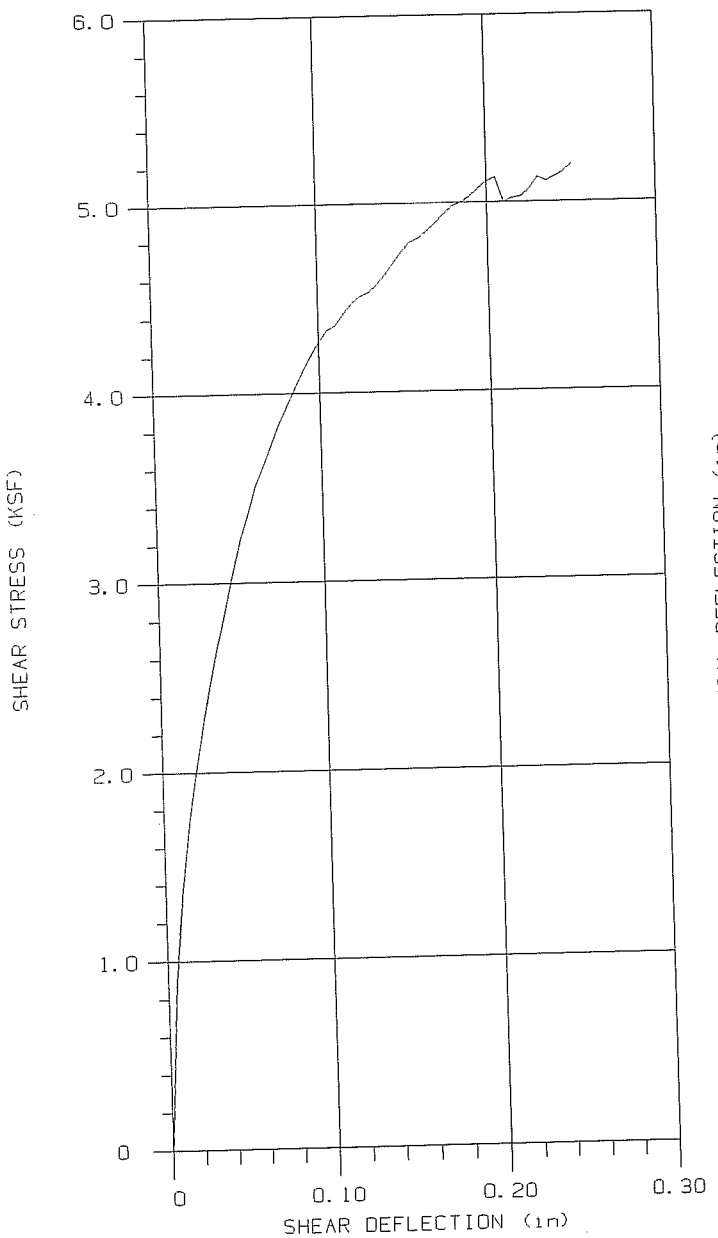
ADVANCED TERRA TESTING, Inc. ATT

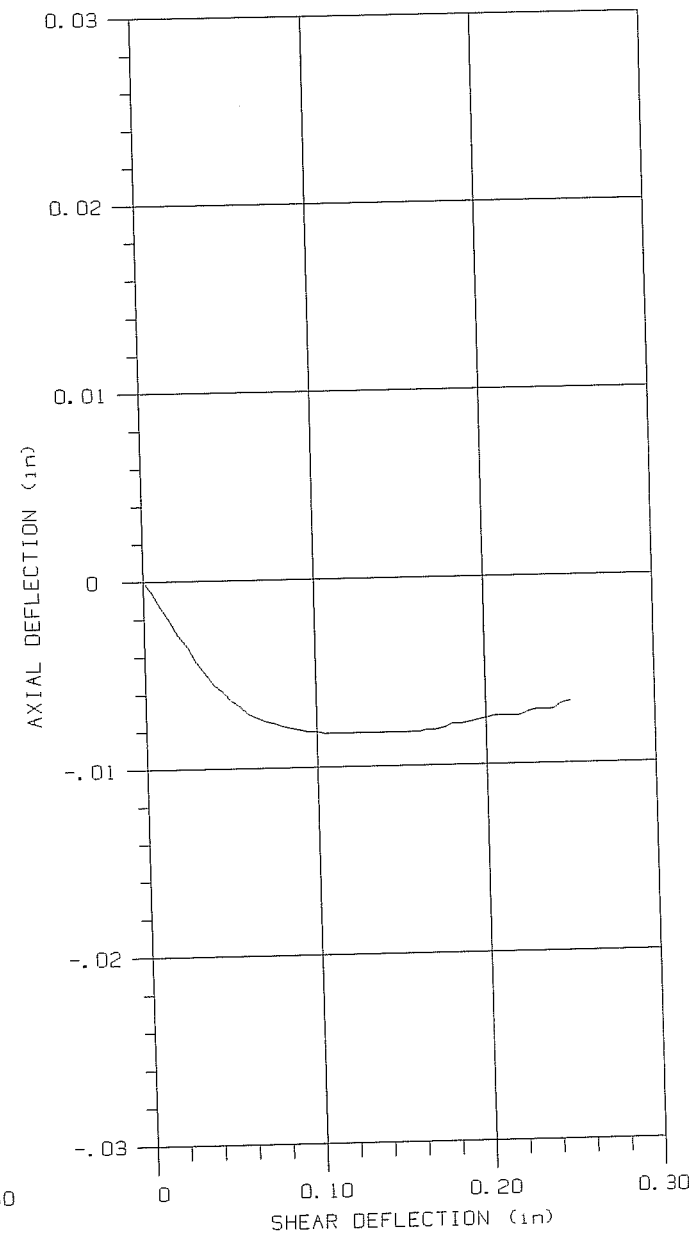
ADVANCED TERRA TESTING
Direct Shear Test

Client..... Tetra Tech
Location..... Rocky Flats OLF

Soil Type..... 181750
Depth..... 25' (ft)
Confining Pressure.. 5992 (psf)
Shear Rate..... .0018 (in/min)
Date Tested..... 04-14-2008

Job Number..... 2592-04
Sample Number... Pt. A
Boring..... Tt 3
File Name..... ttds325a.DAT
Tested By..... DPM





Pass Number and Line Type....	1 ———	2 - - - - - -	3 — — —	4 — - - —
Maximum Shear Stress.....	5203	.0000	.0000	.0000
Shear Deflection @ Max Stress.	.2465	.0000	.0000	.0000

EOMATIC Direct Shear Data

ile Name.....ttds325a.DAT
lient.....Tetra Tech
ob Number....2592-04
ocation.....Rocky Flats OLF
ate.....04-14-2008
echnician....DPM
ample Diameter (in).....1.9380
onfining Pressure (psf)..5992
umber of Passes.....1
hear Distance (in).....0.25
hear Rate (in/min).....0018
oil Type.....181750
oring Number.....Tt 3
ample Number.....Pt. A
epth (ft).....25'

SHEAR DEFLECTION (in)	SHEAR STRESS (lb/sqFT)	AXIAL DEFLECTION (in)
0.005	858	-.0006
0.010	1380	-.0014
0.015	1716	-.0021
0.020	2014	-.0029
0.025	2256	-.0035
0.030	2480	-.0043
0.035	2685	-.0049
0.040	2872	-.0055
0.045	3058	-.0059
0.050	3226	-.0064
0.055	3357	-.0067
0.060	3506	-.0071
0.065	3618	-.0073
0.070	3730	-.0075
0.075	3841	-.0076
0.080	3935	-.0078
0.085	4028	-.0079
0.090	4121	-.0080
0.095	4196	-.0081
0.100	4270	-.0081
0.105	4326	-.0082
0.110	4364	-.0082
0.115	4420	-.0082
0.120	4475	-.0082
0.125	4513	-.0082
0.130	4531	-.0082
0.135	4569	-.0082
0.140	4625	-.0082
0.145	4681	-.0082
0.150	4737	-.0082
0.155	4792	-.0082
0.160	4811	-.0082
0.165	4848	-.0081
0.170	4886	-.0081
0.175	4942	-.0080

Continued next page.

Pass 1 Continued

SHEAR DEFLECTION (in)	SHEAR STRESS (lb/sqFT)	AXIAL DEFLECTION (in)
0.180	4979	-.0078
0.185	4998	-.0078
0.190	5035	-.0077
0.195	5072	-.0076
0.200	5109	-.0075
0.205	5128	-.0074
0.210	4998	-.0074
0.215	5016	-.0074
0.220	5035	-.0074
0.225	5072	-.0072
0.230	5128	-.0071
0.235	5109	-.0071
0.240	5128	-.0071
0.245	5165	-.0068
0.250	5203	-.0067

Pass 1 completed with max load = 5203 psf at deflection of .2465 in

DIRECT SHEAR TEST DATA
ASTM D 3080

CLIENT Tetra Tech

JOB NO. 2592-04

BORING NO.	Tt 3	SAMPLED	04/01/08 JLR
DEPTH	25'	TEST STARTED	04/11/08 DPM
SAMPLE NO.		TEST FINISHED	04/14/08 DPM
POINT	B	CELL NUMBER	Geomatic
SOIL DESCR.	Proj. #181750	SATURATED TEST	Yes
LOCATION	Rocky Flats OLF	TEST TYPE	CD
NORMAL STRESS (psf)	3016		

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	103.5	103.1
Wt. Wet Soil & Pan (g)	112.0	111.6
Wt. Dry Soil & Pan (g)	97.4	97.4
Wt. Lost Moisture (g)	14.5	14.1
Wt. of Pan Only (g)	8.5	8.5
Wt. of Dry Soil (g)	89.0	89.0
Moisture Content %	16.3	15.9
Wet Density (pcf)	133.7	136.1
Dry Density (pcf)	114.9	117.5

Init. Diameter (in)	1.938
Init. Area (sq in)	2.950
Init. Height (in)	1.000
Vol. Bef. Consol. (cu ft)	0.00171
Final Height (in)	0.978
Vol. After Consol. (cu ft)	0.00167

Test Set Up: Continuous Increasing Deflection Control
Shear Speed: 0.00180 in/min

Notes & Comments:

Data File Name: TTDS325B.DAT

Normal Stress:	3016 psf	20.94 psi
Peak Stress:	2555 psf	17.74 psi
Ultimate Stress:	2517 psf	17.48 psi

Data entry by: DPM Date: 04/16/2008
Data checked by: cw Date: 4/18/08
FileName: TTDS325

ADVANCED TERRA TESTING, INC. ATT

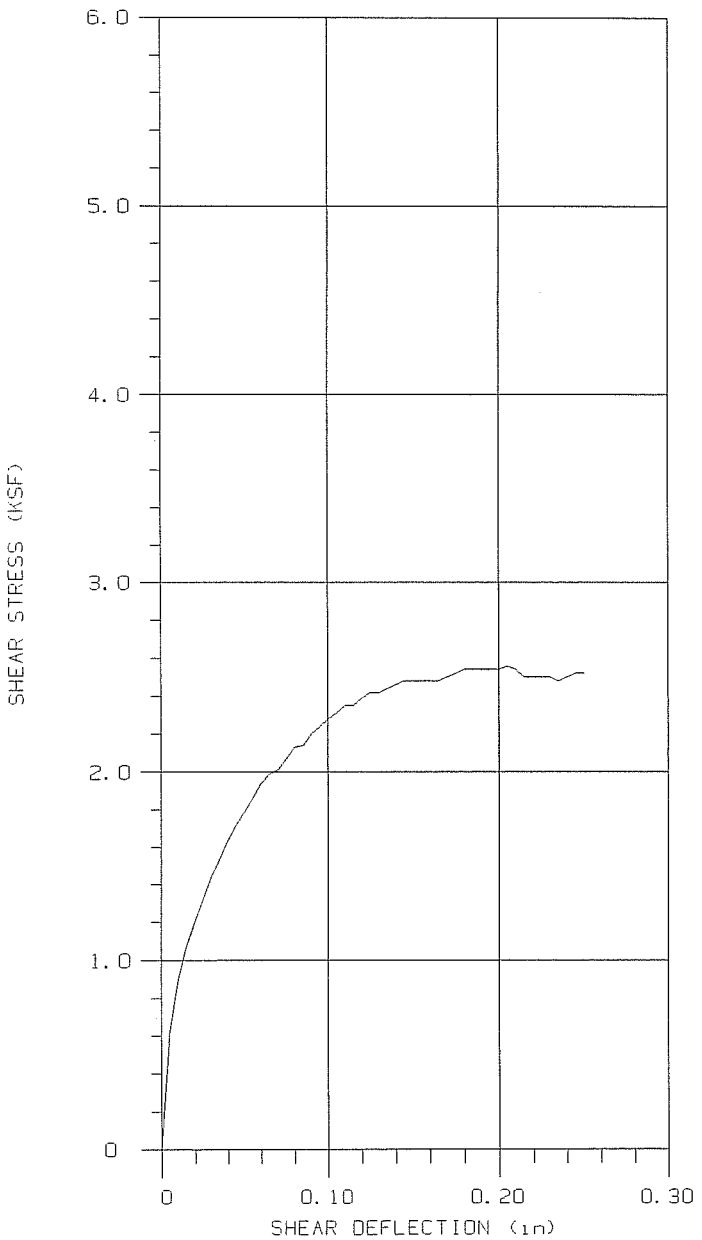
ADVANCED TERRA TESTING

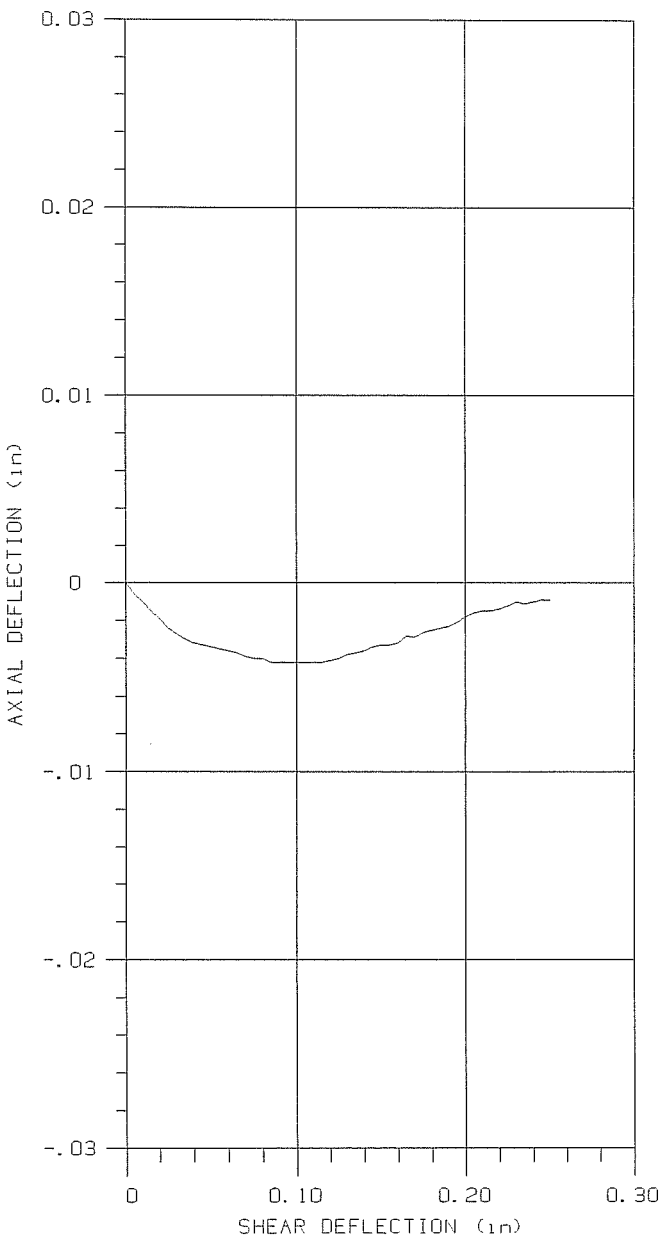
Direct Shear Test

Client..... Tetra Tech
Location..... Rocky Flats OLF

Soil Type..... 181750
Depth..... 25' (ft)
Confining Pressure.. 3016 (psf)
Shear Rate..... .0018 (in/min)
Date Tested..... 04-14-2008

Job Number..... 2592-04
Sample Number... Pt. B
Boring..... Tt 3
File Name..... ttds325b.DAT
Tested By..... DPM





Pass Number and Line Type....	1 ———	2 - - - - - -	3 ——— -	4 ——— - - -
Maximum Shear Stress.....	2555	.0000	.0000	.0000
Shear Deflection @ Max Stress.	.1977	.0000	.0000	.0000

EOMATIC Direct Shear Data

ile Name.....ttds325b.DAT
lient.....Tetra Tech
ob Number....2592-04
ocation.....Rocky Flats OLF
ate.....04-14-2008
echnician....DPM
ample Diameter (in).....1.9380
onfining Pressure (psf)..3016
umber of Passes.....1
hear Distance (in).....0.25
hear Rate (in/min).....0018
oil Type.....181750
oring Number.....Tt 3
ample Number.....Pt. B
epth (ft).....25'

SHEAR DEFLECTION (in)	SHEAR STRESS (lb/sqFT)	AXIAL DEFLECTION (in)
0.005	615	-.0006
0.010	876	-.0010
0.015	1063	-.0015
0.020	1212	-.0019
0.025	1324	-.0024
0.030	1436	-.0027
0.035	1529	-.0030
0.040	1641	-.0032
0.045	1716	-.0033
0.050	1790	-.0034
0.055	1865	-.0035
0.060	1939	-.0036
0.065	1995	-.0037
0.070	2014	-.0039
0.075	2070	-.0040
0.080	2126	-.0040
0.085	2144	-.0042
0.090	2200	-.0042
0.095	2238	-.0042
0.100	2275	-.0042
0.105	2312	-.0042
0.110	2350	-.0042
0.115	2350	-.0042
0.120	2387	-.0041
0.125	2424	-.0040
0.130	2424	-.0038
0.135	2443	-.0037
0.140	2462	-.0036
0.145	2480	-.0034
0.150	2480	-.0033
0.155	2480	-.0033
0.160	2480	-.0032
0.165	2480	-.0028
0.170	2499	-.0029
0.175	2517	-.0026

Continued next page.

Pass 1 Continued

SHEAR DEFLECTION (in)	SHEAR STRESS (lb/sqFT)	AXIAL DEFLECTION (in)
0.180	2536	-.0025
0.185	2536	-.0024
0.190	2536	-.0023
0.195	2536	-.0021
0.200	2536	-.0018
0.205	2555	-.0016
0.210	2536	-.0015
0.215	2499	-.0015
0.220	2499	-.0014
0.225	2499	-.0012
0.230	2499	-.0010
0.235	2480	-.0011
0.240	2499	-.0010
0.245	2517	-.0009
0.250	2517	-.0009

Pass 1 completed with max load = 2555 psf at deflection of .1977 in

DIRECT SHEAR TEST DATA
ASTM D 3080

CLIENT Tetra Tech

JOB NO. 2592-04

BORING NO.	Tt 3	SAMPLED	04/01/08 JLR
DEPTH	25'	TEST STARTED	04/11/08 DPM
SAMPLE NO.		TEST FINISHED	04/14/08 DPM
POINT	C	CELL NUMBER	Geomatic
SOIL DESCR.	Proj. #181750	SATURATED TEST	Yes
LOCATION	Rocky Flats OLF	TEST TYPE	CD
NORMAL STRESS (psf)	1508		

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	102.1	102.3
Wt. Wet Soil & Pan (g)	110.1	110.4
Wt. Dry Soil & Pan (g)	94.1	94.1
Wt. Lost Moisture (g)	16.1	16.3
Wt. of Pan Only (g)	8.1	8.1
Wt. of Dry Soil (g)	86.0	86.0
Moisture Content %	18.7	19.0
Wet Density (pcf)	131.8	133.5
Dry Density (pcf)	111.1	112.2

Init. Diameter (in)	1.938
Init. Area (sq in)	2.950
Init. Height (in)	1.000
Vol. Bef. Consol. (cu ft)	0.00171
Final Height (in)	0.990
Vol. After Consol. (cu ft)	0.00169

Test Set Up: Continuous Increasing Deflection Control
Shear Speed: 0.00180 in/min

Notes & Comments:

Data File Name: TTDS325C.DAT

Normal Stress:	1508 psf	10.47 psi
Peak Stress:	1268 psf	8.81 psi
Ultimate Stress:	1175 psf	8.16 psi

Data entry by: DPM Date: 04/16/2008
Data checked by: ae Date: 4/18/08
FileName: TTDS325

ADVANCED TERRA TESTING, INC. ATT

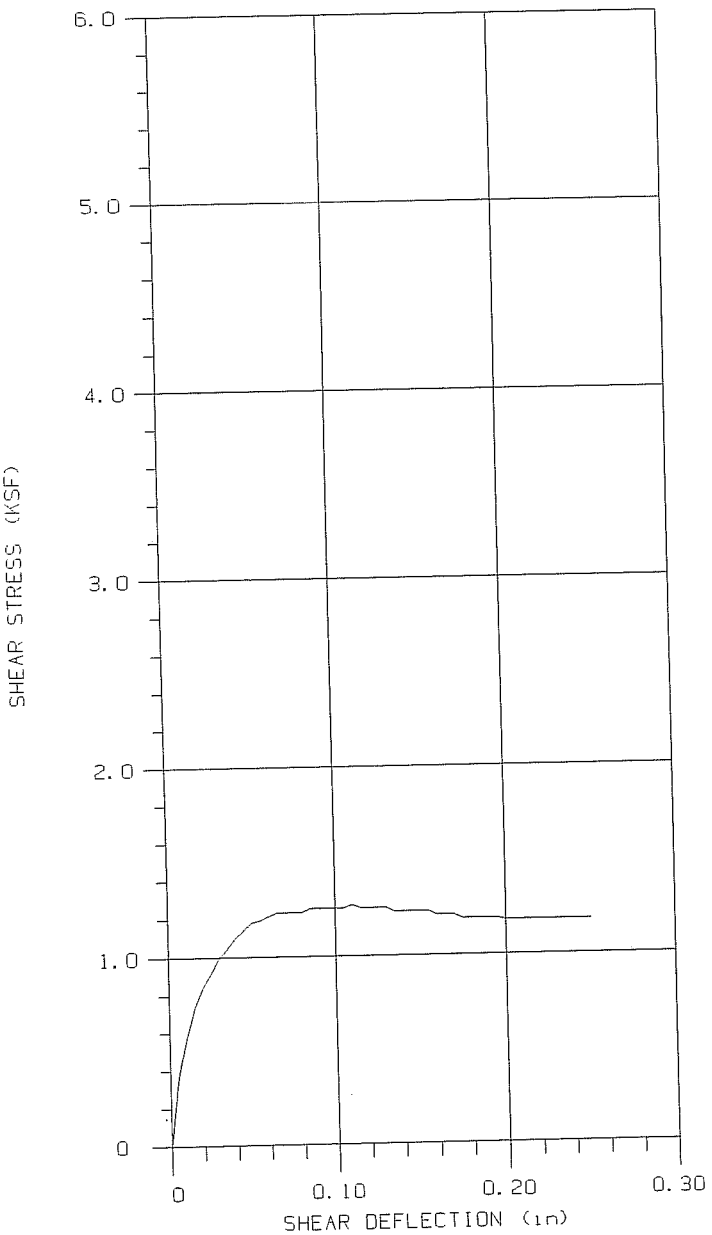
ADVANCED TERRA TESTING

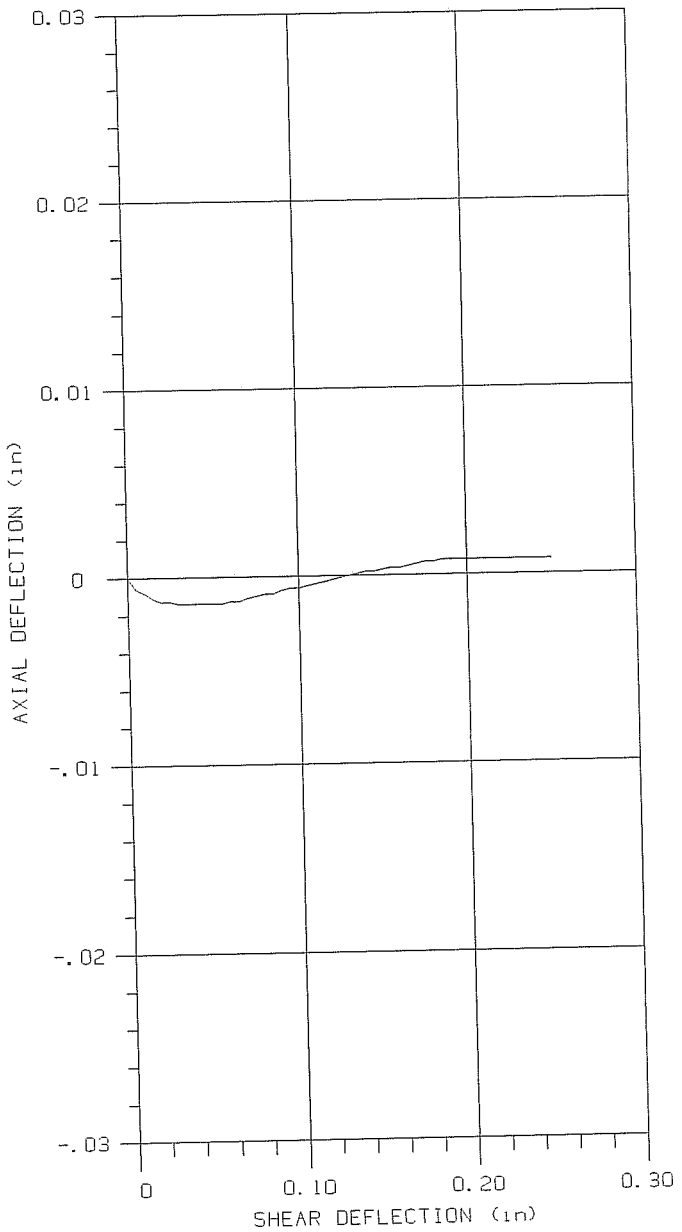
Direct Shear Test

Client..... Tetra Tech
Location..... Rocky Flats OLF

Soil Type..... 181750
Depth..... 25′ (ft)
Confining Pressure.. 1508 (psf)
Shear Rate..... .0018 (in/min)
Date Tested..... 04-14-2008

Job Number..... 2592-04
Sample Number... Pt. C
Boring..... Tt 3
File Name..... ttds325c.DAT
Tested By..... DPM





Pass Number and Line Type....	1 ———	2 - - - - - -	3 — — —	4 — - - —
Maximum Shear Stress.....	1268	.0000	.0000	.0000
Shear Deflection @ Max Stress.	.0994	.0000	.0000	.0000

GEOMATIC Direct Shear Data

File Name.....ttds325c.DAT
Client.....Tetra Tech
Job Number....2592-04
Location.....Rocky Flats OLF
Date.....04-14-2008
Technician....DPM
Sample Diameter (in).....1.9380
Confining Pressure (psf)..1508
Number of Passes.....1
Shear Distance (in).....0.25
Shear Rate (in/min).....0018
Soil Type.....181750
Boring Number.....Tt 3
Sample Number.....Pt. C
Depth (ft).....25'

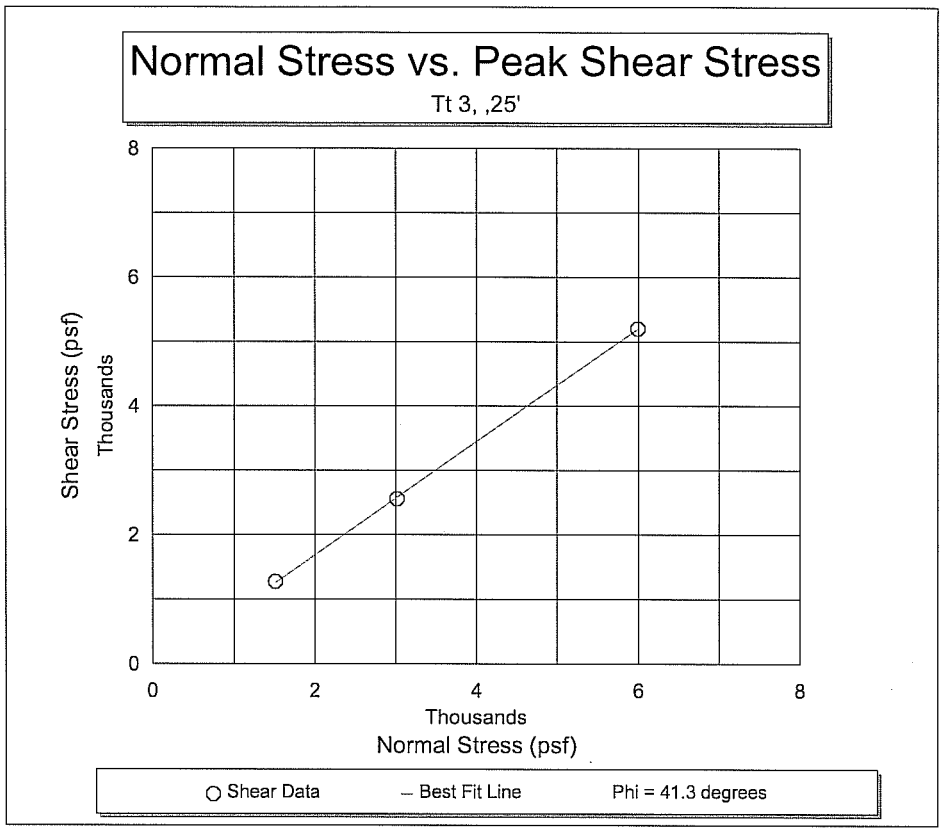
SHEAR DEFLECTION (in)	SHEAR STRESS (lb/sqFT)	AXIAL DEFLECTION (in)
0.005	373	-.0006
0.010	578	-.0008
0.015	727	-.0011
0.020	839	-.0013
0.025	914	-.0013
0.030	988	-.0014
0.035	1044	-.0014
0.040	1100	-.0014
0.045	1138	-.0014
0.050	1175	-.0014
0.055	1193	-.0014
0.060	1212	-.0013
0.065	1231	-.0013
0.070	1231	-.0011
0.075	1231	-.0010
0.080	1231	-.0009
0.085	1249	-.0009
0.090	1249	-.0007
0.095	1249	-.0006
0.100	1249	-.0006
0.105	1249	-.0005
0.110	1268	-.0004
0.115	1249	-.0003
0.120	1249	-.0002
0.125	1249	-.0001
0.130	1249	0.0000
0.135	1231	0.0001
0.140	1231	0.0002
0.145	1231	0.0002
0.150	1231	0.0003
0.155	1231	0.0004
0.160	1212	0.0004
0.165	1212	0.0005
0.170	1212	0.0006
0.175	1193	0.0007

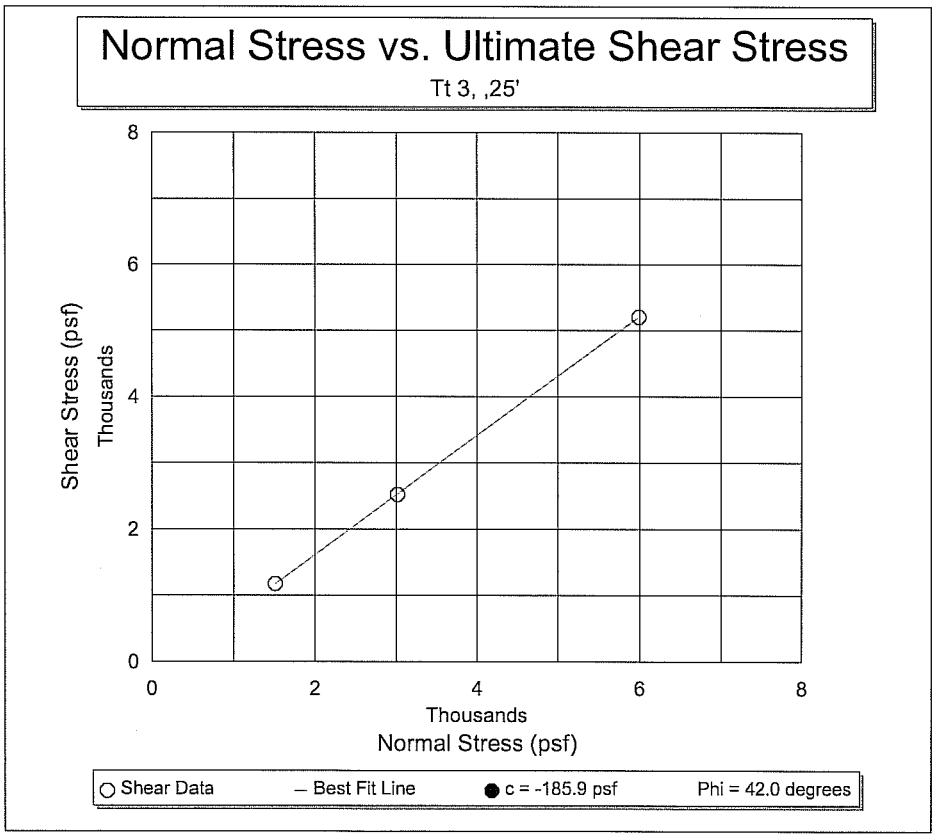
Continued next page.

ass 1 Continued

SHEAR DEFLECTION (in)	SHEAR STRESS (lb/sqFT)	AXIAL DEFLECTION (in)
0.180	1193	0.0007
0.185	1193	0.0008
0.190	1193	0.0008
0.195	1193	0.0008
0.200	1175	0.0008
0.205	1175	0.0008
0.210	1175	0.0008
0.215	1175	0.0008
0.220	1175	0.0008
0.225	1175	0.0008
0.230	1175	0.0008
0.235	1175	0.0008
0.240	1175	0.0008
0.245	1175	0.0008
0.250	1175	0.0008

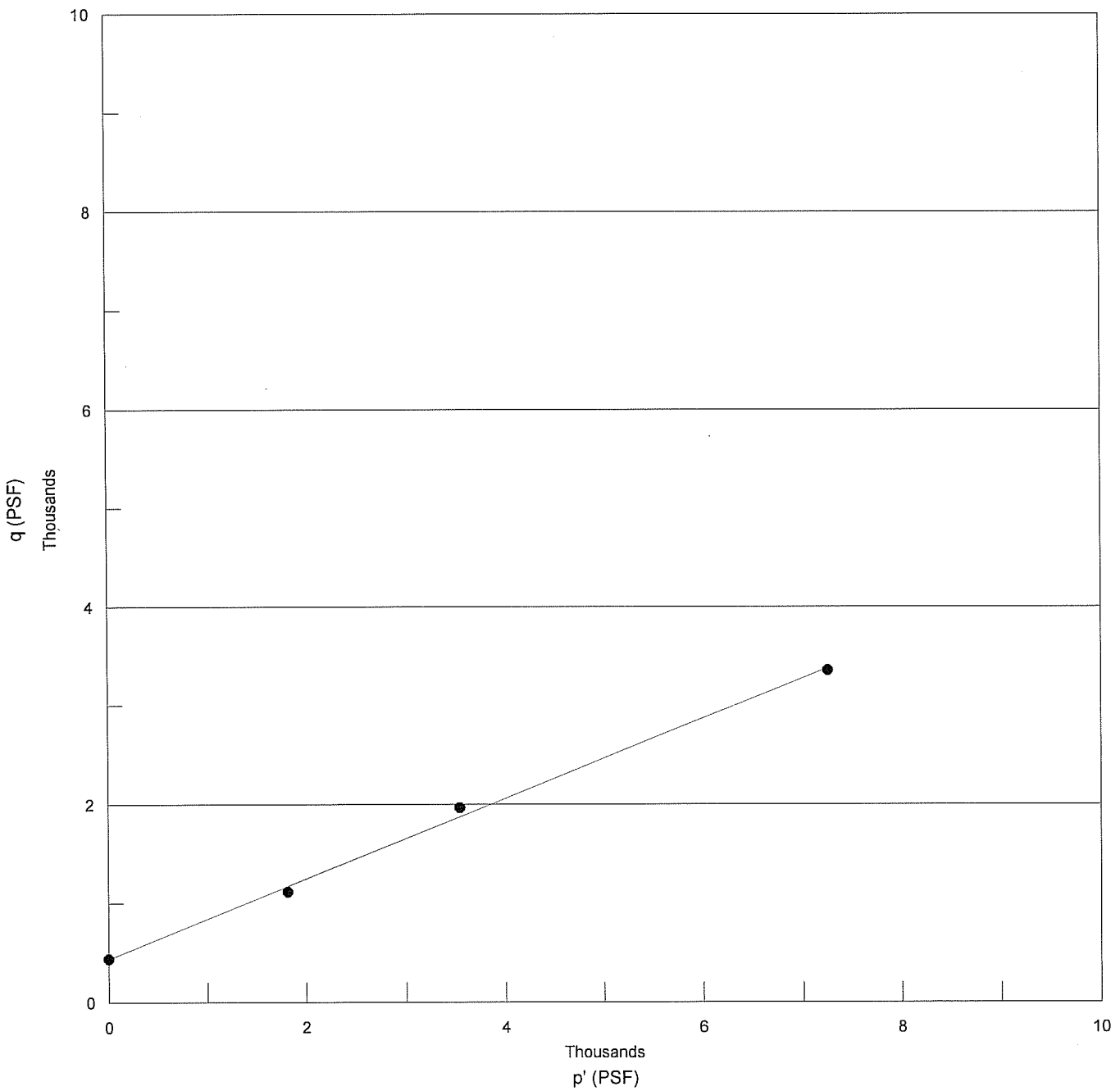
ass 1 completed with max load = 1268 psf at deflection of .0994 in


Normal Stress vs. Peak Shear Stress
Tt 3, ,25'
Shear Stress (psf)
Thousands
0
2
4
6
8
Thousands
Normal Stress (psf)
Shear Data
Best Fit Line
Phi = 41.3 degrees


Normal Stress vs. Ultimate Shear Stress
Tt 3, ,25'
Shear Stress (psf)
Thousands
0
2
4
6
8
Thousands
Normal Stress (psf)
Shear Data
Best Fit Line
c = -185.9 psf
Phi = 42.0 degrees

Effective Stress Path Analysis - p' q Regression Plot

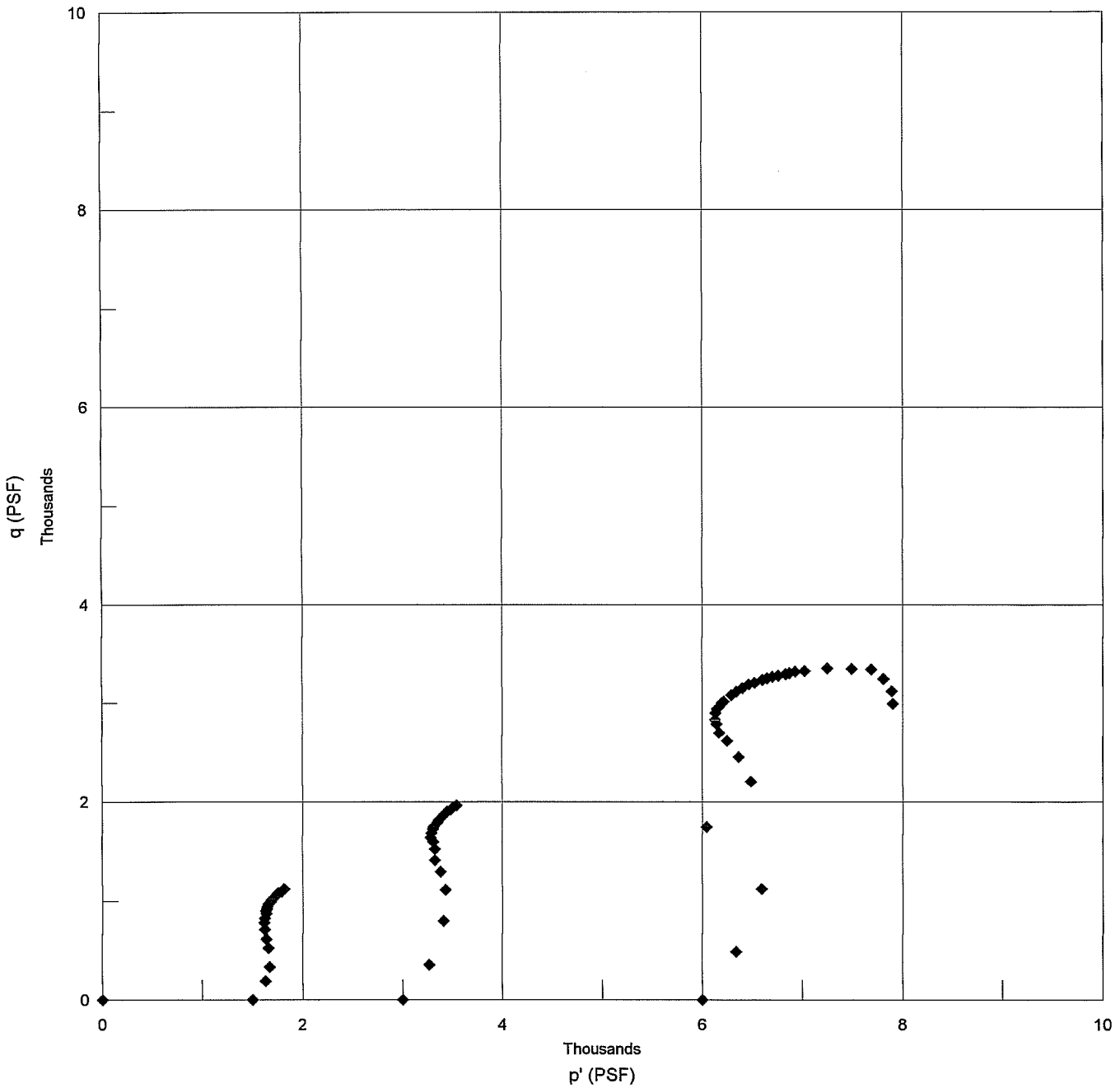
Tetra Tech (MM) Fort Collins,TH 3,35.0',Stage 1 of 3,Stage 2 of 3,Stage 3 of 3



● Shear Data – Best Fit Line Tau = 22.1 degrees a = 443.8 PSF

Effective Stress Path Analysis - p' q Plots

Tetra Tech (MM) Fort Collins,TH 3,35.0',Stage 1 of 3,Stage 2 of 3,Stage 3 of 3



◆ Stress Paths of Stages 1, 2, & 3

EFFECTIVE STRESS PATH ANALYSIS TEST DATA
ASTM D4767

CLIENT	Tetra Tech (MM) Fort Collins		
		JOB NO.	2592-04
BORING NO.	TH 3		
DEPTH	35.0'	SAMPLED	04-01-08 JLR
SAMPLE NO.	Stages 1, 2 & 3	SATURATED TEST	Yes
SOIL DESCR.	#114-181750	TEST TYPE	TX/CUpp
LOCATION	Rocky Flats, OLF		

				Peak Points p' PSF	Peak Points q PSF
CONF. PRES. PSF	STAGE 1	1500	STAGE 1	1813	1119
	STAGE 2	3000	STAGE 2	3539	1965
	STAGE 3	6000	STAGE 3	7253	3356

STAGE 1

σ 3' PSF	σ 1' PSF	p' PSF	q PSF
1500	1500	1500	0
1442	1823	1633	190
1342	2007	1674	332
1140	2184	1662	522
1025	2257	1641	616
910	2330	1620	710
838	2399	1618	781
794	2448	1621	827
766	2512	1639	873
737	2529	1633	896
722	2560	1641	919
708	2591	1649	941
694	2621	1657	964
694	2666	1680	986
679	2697	1688	1009
679	2742	1710	1031
679	2786	1733	1054
679	2831	1755	1076
679	2829	1754	1075
694	2888	1791	1097
694	2932	1813	1119

STAGE 2

σ 3' PSF	σ 1' PSF	p' PSF	q PSF
3000	3000	3000	0
2914	3620	3267	353
2611	4212	3412	800
2323	4534	3428	1105
2093	4677	3385	1292
1920	4736	3328	1408
1805	4853	3329	1524
1718	4904	3311	1593
1646	4922	3284	1638
1603	4969	3286	1683
1574	5030	3302	1728
1560	5059	3309	1749
1560	5149	3354	1794
1546	5177	3361	1816
1546	5220	3383	1837
1546	5263	3404	1859
1546	5305	3425	1880
1546	5348	3447	1901
1560	5405	3482	1922
1560	5447	3504	1944
1574	5504	3539	1965
1574	5503	3539	1964

STAGE 3

σ 3' PSF	σ 1' PSF	p' PSF	q PSF
6000	6000	6000	0
5856	6835	6345	489
5482	7716	6599	1117
4301	7790	6045	1745
4286	8695	6490	2204
3912	8824	6368	2456
3638	8868	6253	2615
3466	8873	6169	2704
3350	8935	6143	2792
3293	8962	6128	2835
3235	9035	6135	2900
3206	9091	6149	2942
3206	9129	6168	2961
3192	9198	6195	3003
3192	9236	6214	3022
3206	9371	6289	3082
3221	9460	6340	3120
3250	9563	6406	3157
3278	9665	6472	3193
3322	9736	6529	3207
3365	9852	6609	3244
3394	9908	6651	3257
3437	9979	6708	3271
3480	10049	6764	3284
3538	10133	6835	3298
3566	10188	6877	3311
3610	10257	6933	3324
3696	10358	7027	3331
3898	10609	7253	3356
4142	10845	7494	3351
4344	11036	7690	3346
4560	11066	7813	3253
4762	11013	7887	3126
4906	10901	7904	2998

Data entry by: SR Date: 04/23/2008
Data checked by: cr Date: 4/23/08
FileName: TTT0H335

TRIAXIAL COMPRESSION TEST DATA
ASTM D 4767

CLIENT	Tetra Tech (MM) Fort Collins	JOB NO.	2592-04
BORING NO.	TH 3	SAMPLED	04-01-08 JLR
DEPTH	35.0'	TEST STARTED	04-11-08 CAL
SAMPLE NO.	Stage 1 of 3	TEST FINISHED	04-22-08 CAL
SOIL DESCR.	#114-181750	CELL NUMBER	15S
LOCATION	Rocky Flats, OLF	SATURATED TEST	Yes
TEST TYPE	TX/CUpp	CONF. PRES. PSF	1500

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER CONSOL
Wt. Soil + Moisture (g)	396.1	406.2
Wt. Wet Soil & Pan (g)	404.4	414.5
Wt. Dry Soil & Pan (g)	345.3	345.3
Wt. Lost Moisture (g)	59.1	69.2
Wt. of Pan Only (g)	8.3	8.3
Wt. of Dry Soil (g)	337.0	337.0
Moisture Content %	17.5	20.5
Wet Density PCF	130.7	128.9
Dry Density PCF	111.2	106.9

Init. Diameter (in)	1.919
Init. Area (sq in)	2.892
Init. Height (in)	3.991
Vol. Bef. Consol. (cu ft)	0.00668
Vol. After Consol. (cu ft)	0.00695

Notes & Comments:

Data entry by: SR Date: 04/23/2008
Data checked by: ce Date: 4/23/08
FileName: TTT0H335

ADVANCED TERRA TESTING, INC. ATT

TRIAXIAL COMPRESSION TEST DATA
ASTM D 4767

CLIENT	Tetra Tech (MM) Fort Collins	JOB NO.	2592-04
BORING NO.	TH 3	SAMPLED	04-01-08 JLR
DEPTH	35.0'	TEST STARTED	04-11-08 CAL
SAMPLE NO.	Stage 1 of 3	TEST FINISHED	04-22-08 CAL
SOIL DESCR.	#114-181750	CELL NUMBER	15S
LOCATION	Rocky Flats, OLF	SATURATED TEST	Yes
TEST TYPE	TX/CUpp	CONF. PRES. PSF	1500

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	1.0	7.2				
50.0	48.0	-0.5	0.2	38.5	47.6	9.1	0.91
60.0	58.0	0.0	0.6	49.0	58.2	9.2	0.92
70.0		0.7	0.8	59.0	68.5	9.5	0.95

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	0.7	0.00
0.25	0.5	1.7	-1.00
0.50	0.7	1.8	-1.10
1	1.0	1.9	-1.20
2	1.4	2.0	-1.30
4	2.0	2.2	-1.50
9	3.0	2.5	-1.80
16	4.0	2.7	-2.00
30	5.5	2.9	-2.20
60	7.7	3.1	-2.40
120	11.0	3.3	-2.60
240	15.5	3.4	-2.70
360	19.0	3.4	-2.70

Initial Height (in)	3.991	Init. Vol. (CC)	189.19
Height Change (in)	0.023	Vol. Change (CC)	3.00
Ht. After Cons. (in)	3.968	Cell Exp. (CC)	10.59
Initial Area (sq in)	2.892	Net Change (CC)	-7.59
Area After Cons. (sq in)	3.026	Cons. Vol. (CC)	196.78

Data entry by: SR Date: 04/23/2008
Data checked by: cal Date: 4/23/08
FileName: TTT0H335

ADVANCED TERRA TESTING, INC. ATT

TRIAXIAL COMPRESSION TEST DATA

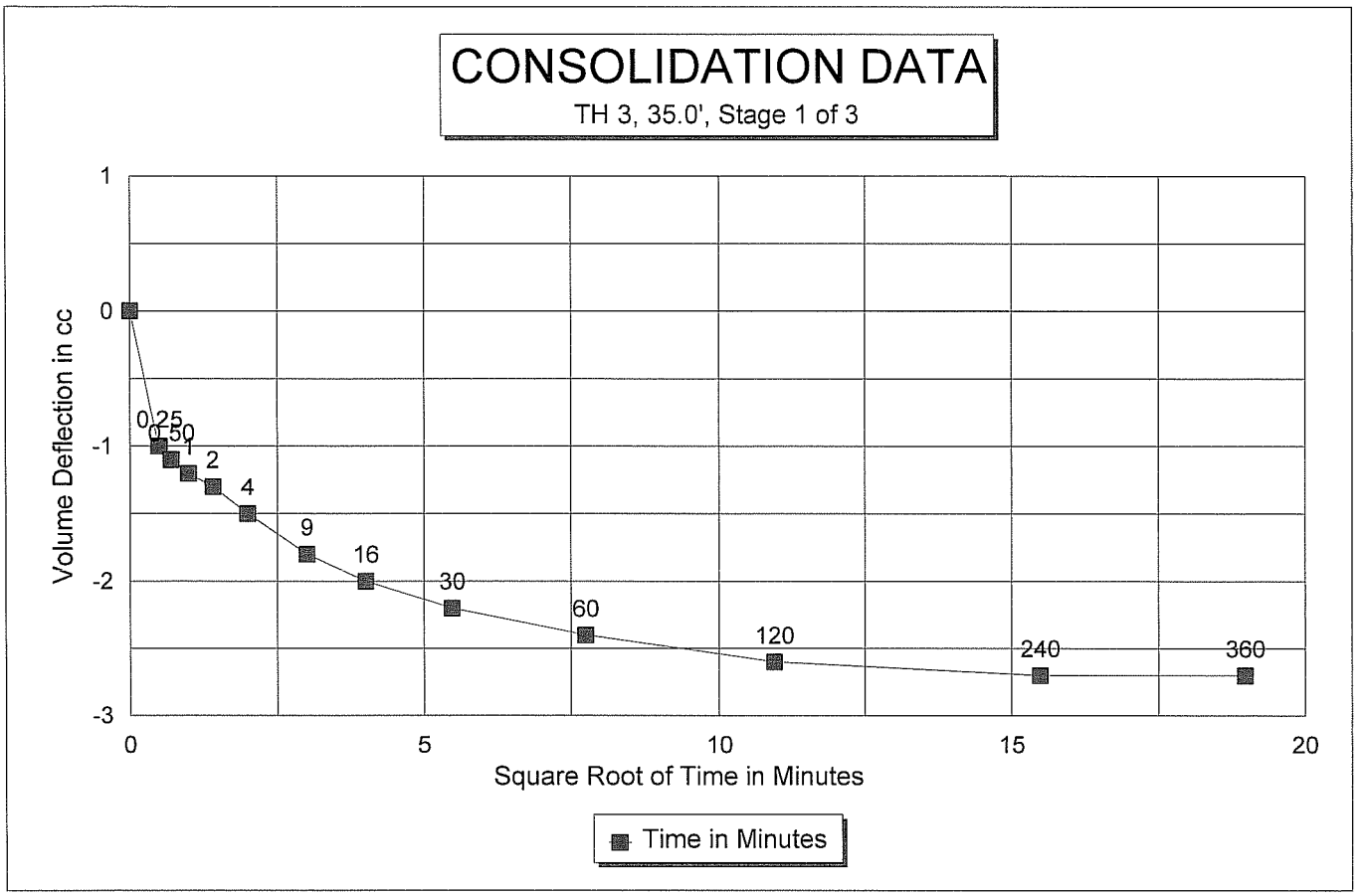
CLIENT	Tetra Tech (MM) Fort Collins	JOB NO.	2592-04
BORING NO.	TH 3	SAMPLED	04-01-08 JLR
DEPTH	35.0'	TEST STARTED	04-11-08 CAL
SAMPLE NO.	Stage 1 of 3	TEST FINISHED	04-22-08 CAL
SOIL DESCR.	#114-181750	CELL NUMBER	15S
LOCATION	Rocky Flats, OLF	SATURATED TEST	Yes
TEST TYPE	TX/CUpp	CONF. PRES. PSF	1500

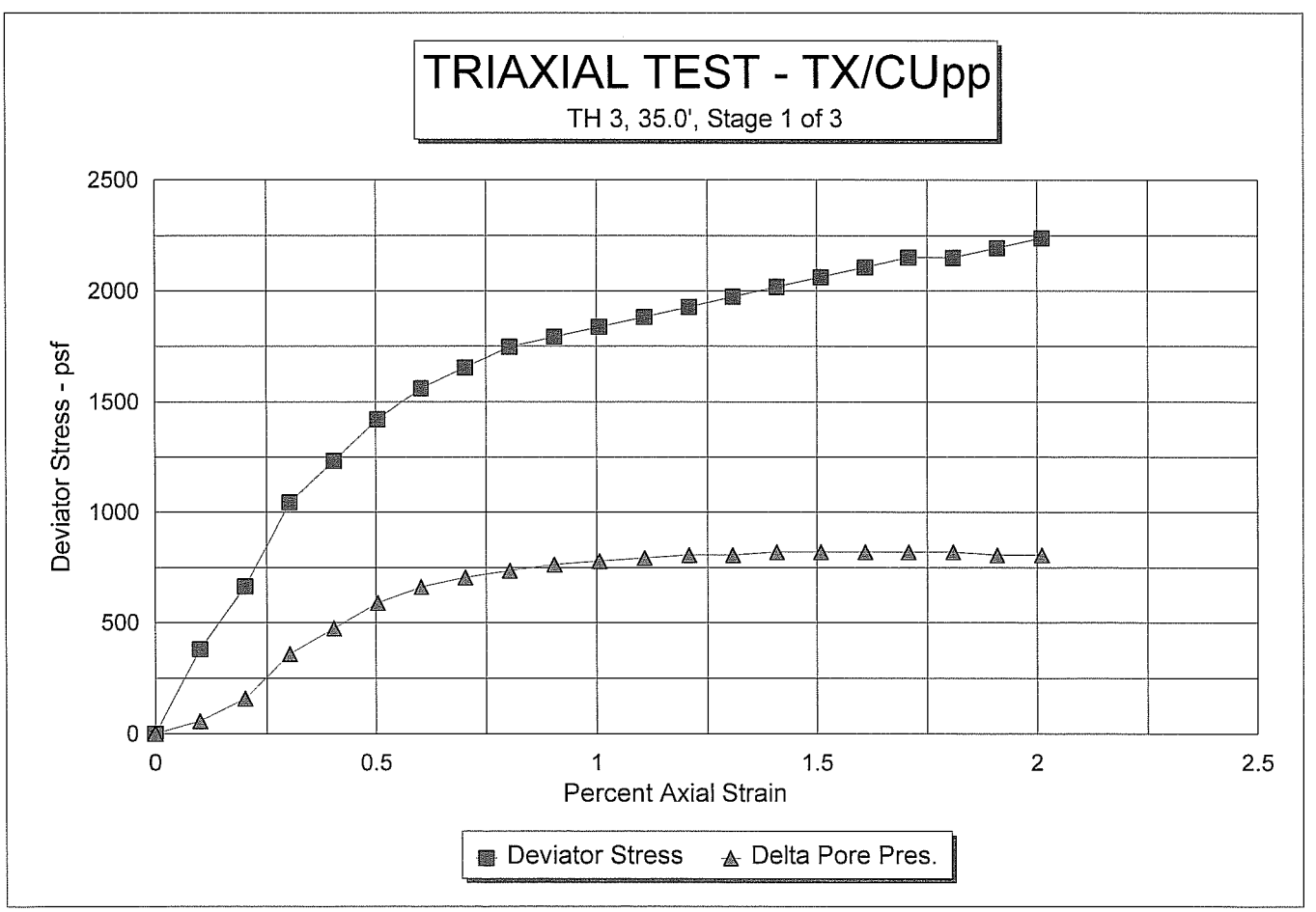
Init. Ht. (in)	3.991	Init. Area (sq in)	2.892
Consol. Ht. (in)	3.968	Consol. Area (sq in)	3.026
Back Pres. PSI	58.7	Strain Rate (in/min)	0.001

Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	σ 3' PSF	σ 1' PSF	Prin. Stress Ratio
0.0	0	0.00	0.00	3.026	0	58.7	0	1500	1500	1.00
8.0	381	0.004	0.10	3.029	380	59.1	58	1442	1823	1.26
14.0	666	0.008	0.20	3.032	665	59.8	158	1342	2007	1.50
22.0	1047	0.012	0.30	3.035	1044	61.2	360	1140	2184	1.92
26.0	1237	0.016	0.40	3.038	1232	62.0	475	1025	2257	2.20
30.0	1428	0.020	0.50	3.041	1421	62.8	590	910	2330	2.56
33.0	1571	0.024	0.60	3.044	1561	63.3	662	838	2399	2.86
35.0	1666	0.028	0.70	3.047	1654	63.6	706	794	2448	3.08
37.0	1761	0.032	0.80	3.050	1747	63.8	734	766	2512	3.28
38.0	1808	0.036	0.90	3.053	1792	64.0	763	737	2529	3.43
39.0	1856	0.040	1.01	3.056	1837	64.1	778	722	2560	3.54
40.0	1904	0.044	1.11	3.060	1883	64.2	792	708	2591	3.66
41.0	1951	0.048	1.21	3.063	1928	64.3	806	694	2621	3.78
42.0	1999	0.052	1.31	3.066	1973	64.3	806	694	2666	3.84
43.0	2046	0.056	1.41	3.069	2018	64.4	821	679	2697	3.97
44.0	2094	0.060	1.51	3.072	2062	64.4	821	679	2742	4.04
45.0	2142	0.064	1.61	3.075	2107	64.4	821	679	2786	4.10
46.0	2189	0.068	1.71	3.078	2152	64.4	821	679	2831	4.17
46.0	2189	0.072	1.81	3.081	2150	64.4	821	679	2829	4.16
47.0	2237	0.076	1.91	3.085	2194	64.3	806	694	2888	4.16
48.0	2284	0.080	2.01	3.088	2238	64.3	806	694	2932	4.23

Data entry by: SR Date: 04/23/2008
Data checked by: ce Date: 4/23/08
FileName: TTT0H335

ADVANCED TERRA TESTING, INC. ATT


CONSOLIDATION DATA
TH 3, 35.0', Stage 1 of 3
Volume Deflection in cc
1
0
-1
-2
-3
0.25
0.50
1
2
4
9
16
30
60
120
240
360
0
5
10
15
20
Square Root of Time in Minutes
Time in Minutes


TRIAXIAL TEST - TX/CUpp
TH 3, 35.0', Stage 1 of 3
Deviator Stress - psf
2500
2000
1500
1000
500
0
0
0.5
1
1.5
2
2.5
Percent Axial Strain
Deviator Stress
Delta Pore Pres.

TRIAXIAL COMPRESSION TEST DATA
ASTM D 4767

CLIENT	Tetra Tech (MM) Fort Collins	JOB NO.	2592-04
BORING NO.	TH 3	SAMPLED	04-01-08 JLR
DEPTH	35.0'	TEST STARTED	04-11-08 CAL
SAMPLE NO.	Stage 2 of 3	TEST FINISHED	04-22-08 CAL
SOIL DESCR.	#114-181750	CELL NUMBER	15S
LOCATION	Rocky Flats, OLF	SATURATED TEST	Yes
TEST TYPE	TX/CUpp	CONF. PRES. PSF	3000

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER CONSOL
Wt. Soil + Moisture (g)	396.1	406.2
Wt. Wet Soil & Pan (g)	404.4	414.5
Wt. Dry Soil & Pan (g)	345.3	345.3
Wt. Lost Moisture (g)	59.1	69.2
Wt. of Pan Only (g)	8.3	8.3
Wt. of Dry Soil (g)	337.0	337.0
Moisture Content %	17.5	20.5
Wet Density PCF	125.7	130.6
Dry Density PCF	106.9	108.3

Init. Diameter (in)	1.983
Init. Area (sq in)	3.088
Init. Height (in)	3.888
Vol. Bef. Consol. (cu ft)	0.00695
Vol. After Consol. (cu ft)	0.00686

Notes & Comments:

Data entry by: SR Date: 04/23/2008
Data checked by: ae Date: 4/23/08
FileName: TTT0H335

ADVANCED TERRA TESTING, INC. ATT

TRIAXIAL COMPRESSION TEST DATA
ASTM D 4767

CLIENT Tetra Tech (MM) Fort Collins JOB NO. 2592-04

BORING NO.	TH 3	SAMPLED	04-01-08 JLR
DEPTH	35.0'	TEST STARTED	04-11-08 CAL
SAMPLE NO.	Stage 2 of 3	TEST FINISHED	04-22-08 CAL
SOIL DESCR.	#114-181750	CELL NUMBER	15S
LOCATION	Rocky Flats, OLF	SATURATED TEST	Yes
TEST TYPE	TX/CUpp	CONF. PRES. PSF	3000

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	4.2	0.00
0.25	0.5	5.0	-0.80
0.5	0.7	5.1	-0.90
1	1.0	5.2	-1.00
2	1.4	5.3	-1.10
4	2.0	5.5	-1.25
9	3.0	5.7	-1.50
16	4.0	6.0	-1.80
30	5.5	6.3	-2.10
60	7.7	6.7	-2.50
120	11.0	7.0	-2.80
240	15.5	7.2	-3.00
360	19.0	7.3	-3.10

Initial Height (in)	3.888	Init. Vol. (CC)	196.78
Height Change (in)	0.006	Vol. Change (CC)	3.40
Ht. After Cons. (in)	3.882	Cell Exp. (CC)	0.86
Initial Area (sq in)	3.088	Net Change (CC)	2.54
Area After Cons. (sq in)	3.053	Cons. Vol. (CC)	194.24

Data entry by: SR Date: 04/23/2008
Data checked by: cel Date: 4/23/08
FileName: TTT0H335

TRIAXIAL COMPRESSION TEST DATA
ASTM D 4767

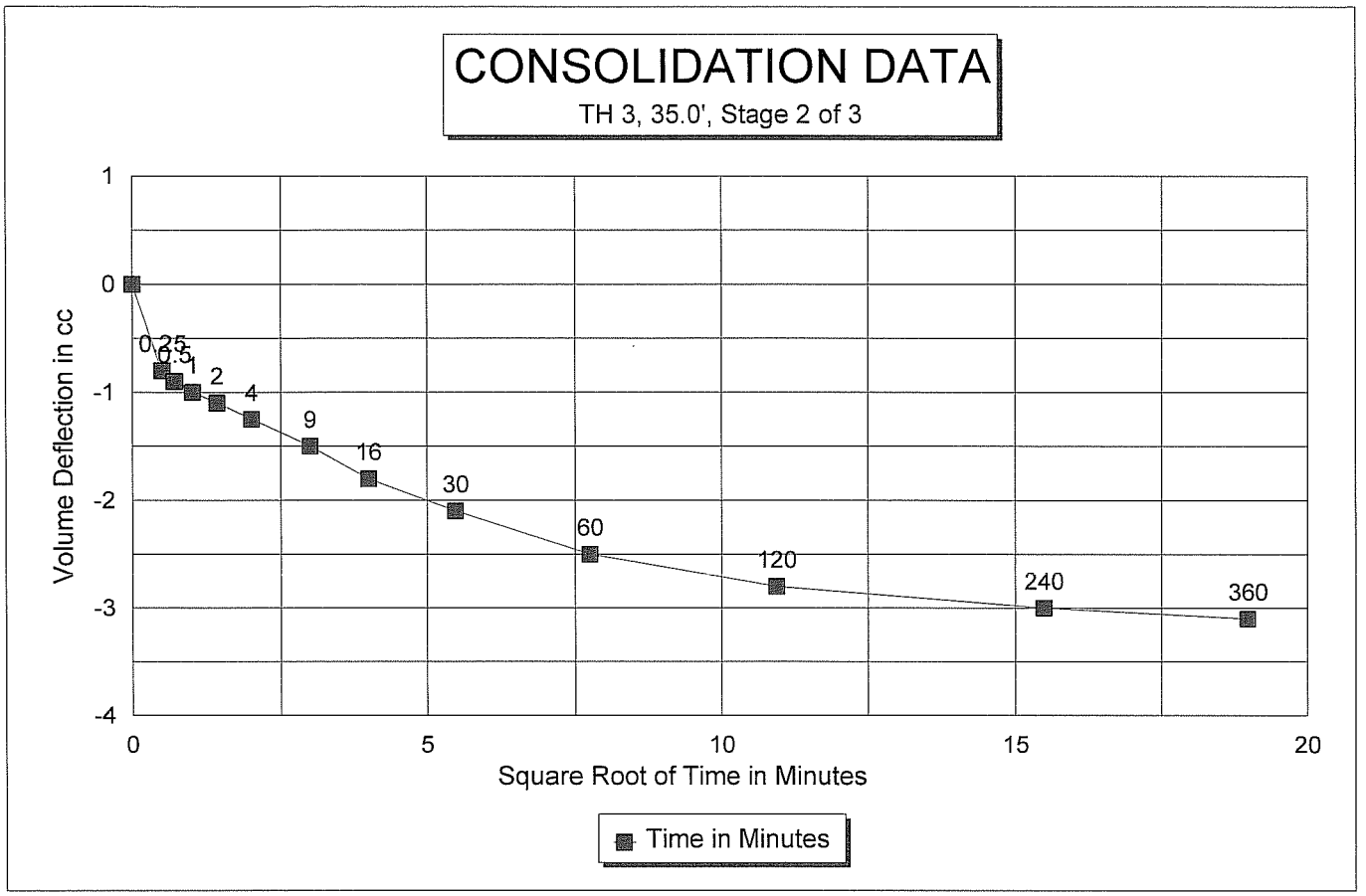
CLIENT	Tetra Tech (MM) Fort Collins	JOB NO.	2592-04
BORING NO.	TH 3	SAMPLED	04-01-08 JLR
DEPTH	35.0'	TEST STARTED	04-11-08 CAL
SAMPLE NO.	Stage 2 of 3	TEST FINISHED	04-22-08 CAL
SOIL DESCR.	#114-181750	CELL NUMBER	15S
LOCATION	Rocky Flats, OLF	SATURATED TEST	Yes
TEST TYPE	TX/CUpp	CONF. PRES. PSF	3000

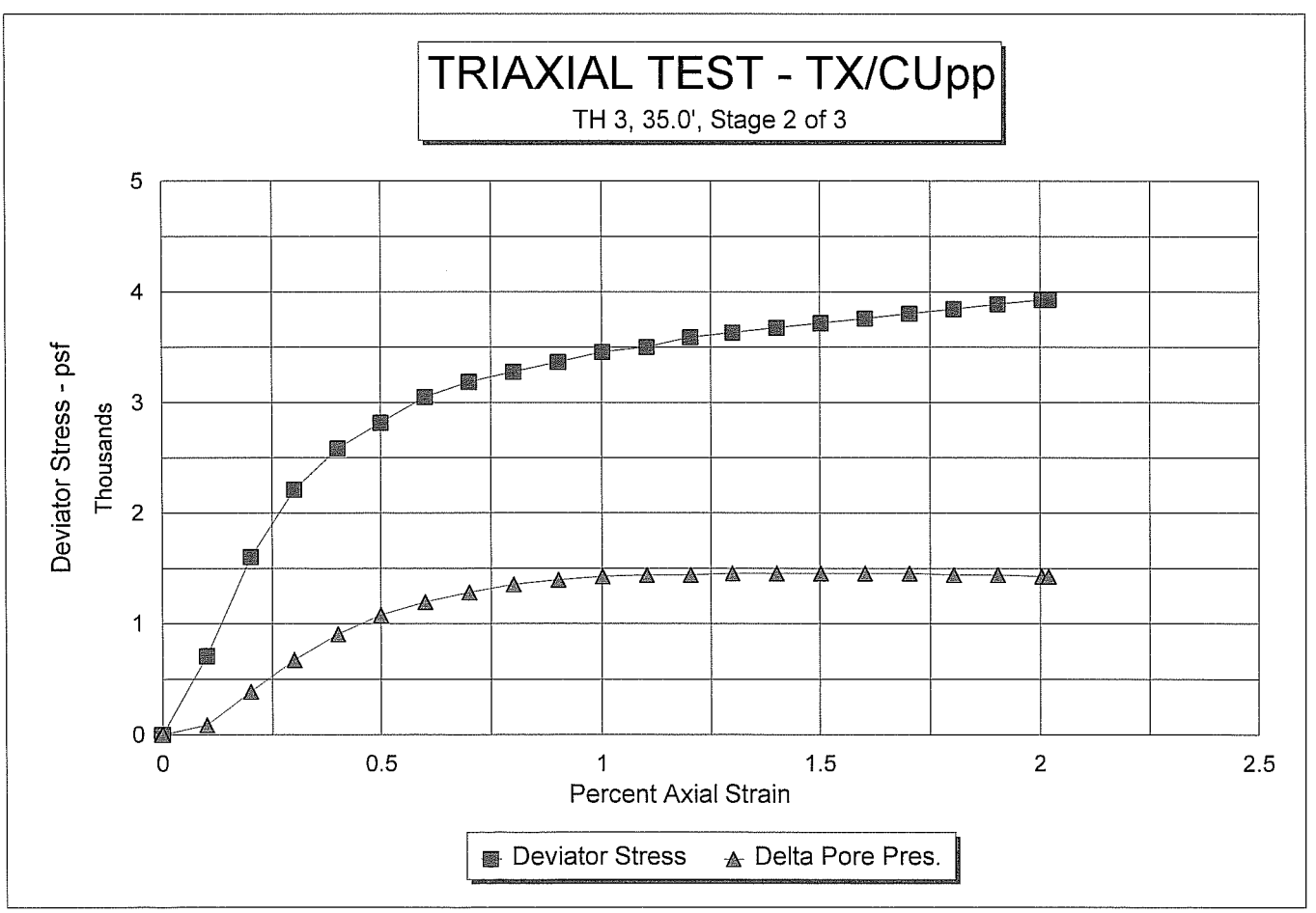
Init. Ht. (in)	3.888	Init. Area (sq in)	3.088
Consol. Ht. (in)	3.882	Consol. Area (sq in)	3.053
Back Pres. PSI	58.8	Strain Rate (in/min)	0.002

Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	σ 3' PSF	σ 1' PSF	Prin. Stress Ratio
0.0	0	0.00	0.00	3.053	0	58.8	0	3000	3000	1.00
15.0	708	0.004	0.10	3.056	707	59.4	86	2914	3620	1.24
34.0	1604	0.008	0.20	3.059	1601	61.5	389	2611	4212	1.61
47.0	2217	0.012	0.30	3.062	2210	63.5	677	2323	4534	1.95
55.0	2594	0.016	0.40	3.065	2584	65.1	907	2093	4677	2.23
60.0	2830	0.019	0.50	3.068	2816	66.3	1080	1920	4736	2.47
65.0	3066	0.023	0.60	3.071	3048	67.1	1195	1805	4853	2.69
68.0	3208	0.027	0.70	3.074	3185	67.7	1282	1718	4904	2.85
70.0	3302	0.031	0.80	3.077	3276	68.2	1354	1646	4922	2.99
72.0	3396	0.035	0.90	3.080	3366	68.5	1397	1603	4969	3.10
74.0	3491	0.039	1.00	3.084	3456	68.7	1426	1574	5030	3.19
75.0	3538	0.043	1.10	3.087	3499	68.8	1440	1560	5059	3.24
77.0	3632	0.047	1.20	3.090	3589	68.8	1440	1560	5149	3.30
78.0	3679	0.051	1.30	3.093	3632	68.9	1454	1546	5177	3.35
79.0	3727	0.054	1.40	3.096	3674	68.9	1454	1546	5220	3.38
80.0	3774	0.058	1.50	3.099	3717	68.9	1454	1546	5263	3.40
81.0	3821	0.062	1.60	3.102	3760	68.9	1454	1546	5305	3.43
82.0	3868	0.066	1.70	3.105	3802	68.9	1454	1546	5348	3.46
83.0	3915	0.070	1.80	3.109	3845	68.8	1440	1560	5405	3.46
84.0	3962	0.074	1.90	3.112	3887	68.8	1440	1560	5447	3.49
85.0	4010	0.078	2.00	3.115	3929	68.7	1426	1574	5504	3.50
85.0	4010	0.078	2.02	3.116	3929	68.7	1426	1574	5503	3.50

Data entry by: SR Date: 04/23/2008
Data checked by: ce Date: 4/23/08
FileName: TTT0H335

ADVANCED TERRA TESTING, INC. ATT


CONSOLIDATION DATA
TH 3, 35.0', Stage 2 of 3
Volume Deflection in cc
1
0
-1
-2
-3
-4
0
5
10
15
20
Square Root of Time in Minutes
0.25
0.5
1
2
4
9
16
30
60
120
240
360
Time in Minutes


TRIAXIAL TEST - TX/CUpp
TH 3, 35.0', Stage 2 of 3
Deviator Stress - psf
Thousands
5
4
3
2
1
0
0
0.5
1
1.5
2
2.5
Percent Axial Strain
Deviator Stress
Delta Pore Pres.

TRIAXIAL COMPRESSION TEST DATA
ASTM D 4767

CLIENT Tetra Tech (MM) Fort Collins

JOB NO. 2592-04

BORING NO.	TH 3	SAMPLED	04-01-08 JLR
DEPTH	35.0'	TEST STARTED	04-11-08 CAL
SAMPLE NO.	Stage 3 of 3	TEST FINISHED	04-22-08 CAL
SOIL DESCR.	#114-181750	CELL NUMBER	15S
LOCATION	Rocky Flats, OLF	SATURATED TEST	Yes
TEST TYPE	TX/CUpp	CONF. PRES. PSF	6000

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER CONSOL
Wt. Soil + Moisture (g)	396.1	406.2
Wt. Wet Soil & Pan (g)	404.4	414.5
Wt. Dry Soil & Pan (g)	345.3	345.3
Wt. Lost Moisture (g)	59.1	69.2
Wt. of Pan Only (g)	8.3	8.3
Wt. of Dry Soil (g)	337.0	337.0
Moisture Content %	17.5	20.5
Wet Density PCF	127.3	131.8
Dry Density PCF	108.3	109.4

Init. Diameter (in)	1.992
Init. Area (sq in)	3.116
Init. Height (in)	3.804
Vol. Bef. Consol. (cu ft)	0.00686
Vol. After Consol. (cu ft)	0.00679

Notes & Comments:

Data entry by: SR Date: 04/23/2008
Data checked by: cal Date: 4/23/08
FileName: TTT0H335

ADVANCED TERRA TESTING, INC. ATT

TRIAXIAL COMPRESSION TEST DATA
ASTM D 4767

CLIENT	Tetra Tech (MM) Fort Collins	JOB NO.	2592-04
BORING NO.	TH 3	SAMPLED	04-01-08 JLR
DEPTH	35.0'	TEST STARTED	04-11-08 CAL
SAMPLE NO.	Stage 3 of 3	TEST FINISHED	04-22-08 CAL
SOIL DESCR.	#114-181750	CELL NUMBER	15S
LOCATION	Rocky Flats, OLF	SATURATED TEST	Yes
TEST TYPE	TX/CUpp	CONF. PRES. PSF	6000

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	8.50	0.00
0.25	0.5	9.90	-1.40
0.5	0.7	9.90	-1.40
1	1.0	9.95	-1.45
2	1.4	10.05	-1.55
4	2.0	10.15	-1.65
9	3.0	10.30	-1.80
16	4.0	10.50	-2.00
30	5.5	10.80	-2.30
60	7.7	11.10	-2.60
120	11.0	11.40	-2.90
240	15.5	11.60	-3.10
365	19.1	11.75	-3.25

Initial Height (in)	3.804	Init. Vol. (CC)	194.24
Height Change (in)	0.002	Vol. Change (CC)	3.60
Ht. After Cons. (in)	3.802	Cell Exp. (CC)	1.72
Initial Area (sq in)	3.116	Net Change (CC)	1.88
Area After Cons. (sq in)	3.087	Cons. Vol. (CC)	192.36

Data entry by: SR Date: 04/23/2008
Data checked by: cal Date: 4/23/08
FileName: TTT0H335

ADVANCED TERRA TESTING, INC. ATT

TRIAXIAL COMPRESSION TEST DATA
ASTM D 4767

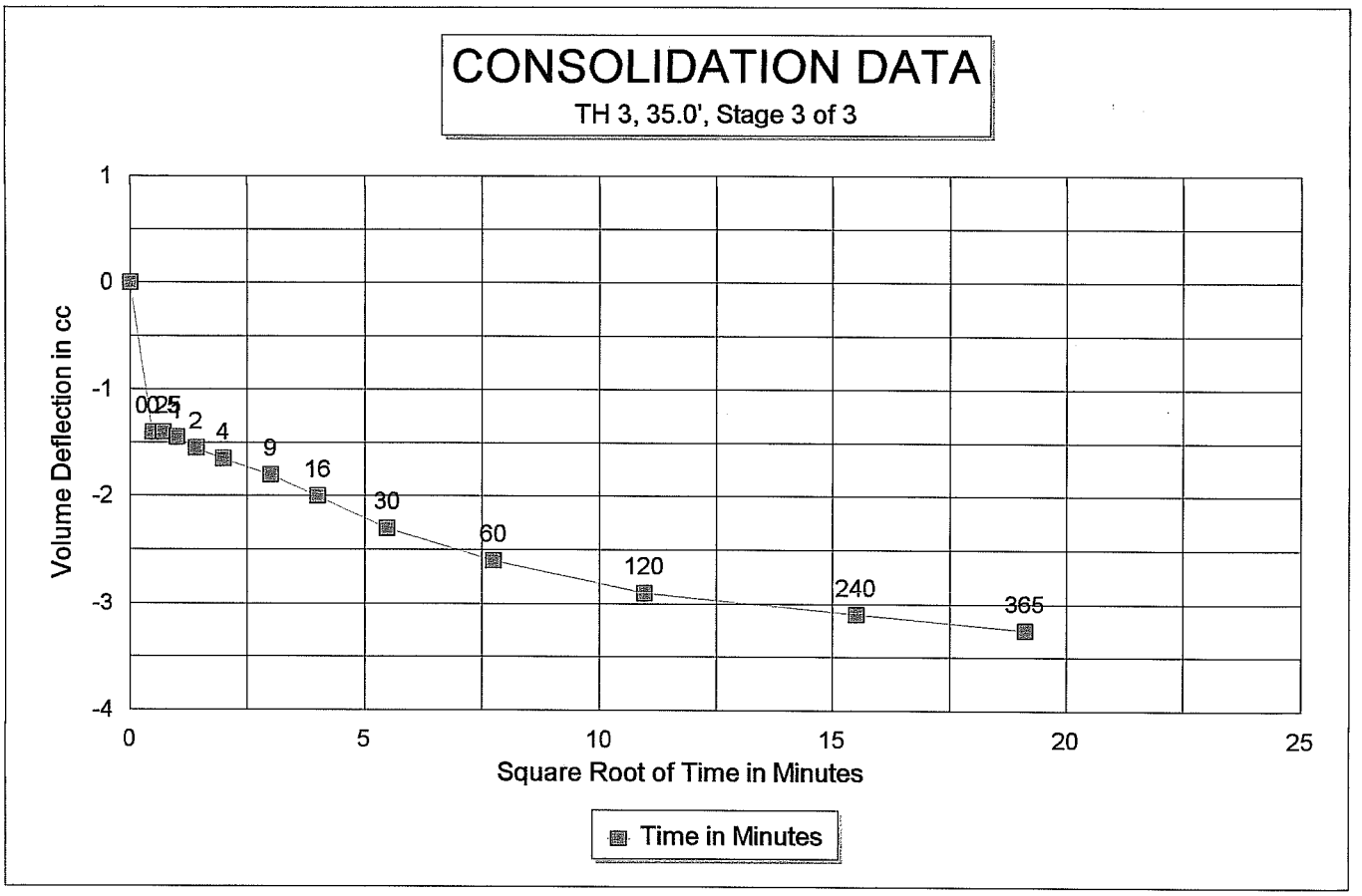
CLIENT	Tetra Tech (MM) Fort Collins	JOB NO.	2592-04
BORING NO.	TH 3	SAMPLED	04-01-08 JLR
DEPTH	35.0'	TEST STARTED	04-11-08 CAL
SAMPLE NO.	Stage 3 of 3	TEST FINISHED	04-22-08 CAL
SOIL DESCR.	#114-181750	CELL NUMBER	15S
LOCATION	Rocky Flats, OLF	SATURATED TEST	Yes
TEST TYPE	TX/CUpp	CONF. PRES. PSF	6000

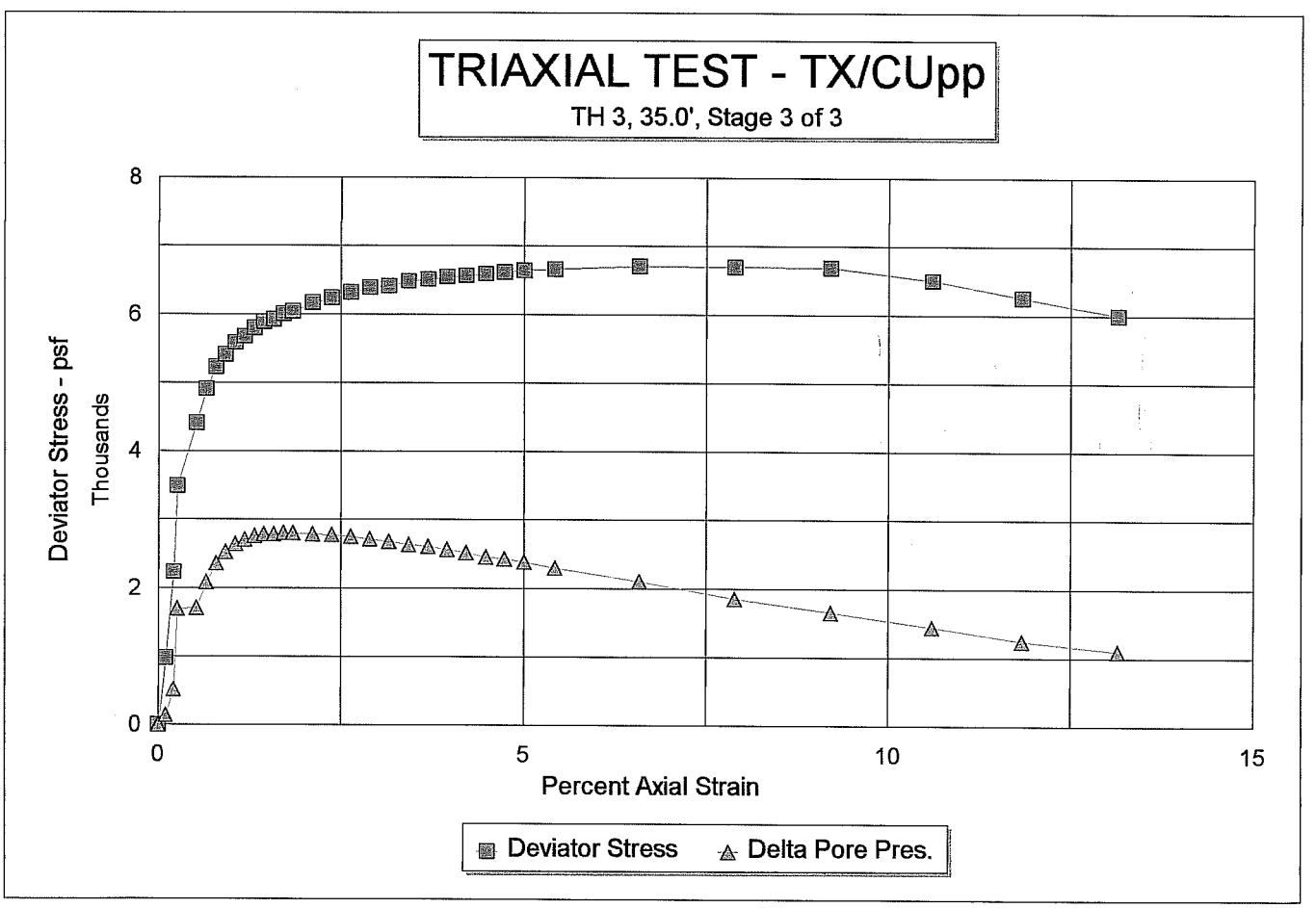
Init. Ht. (in)	3.804	Init. Area (sq in)	3.116
Consol. Ht. (in)	3.802	Consol. Area (sq in)	3.087
Back Pres. PSI	58.7	Strain Rate (in/min)	0.001

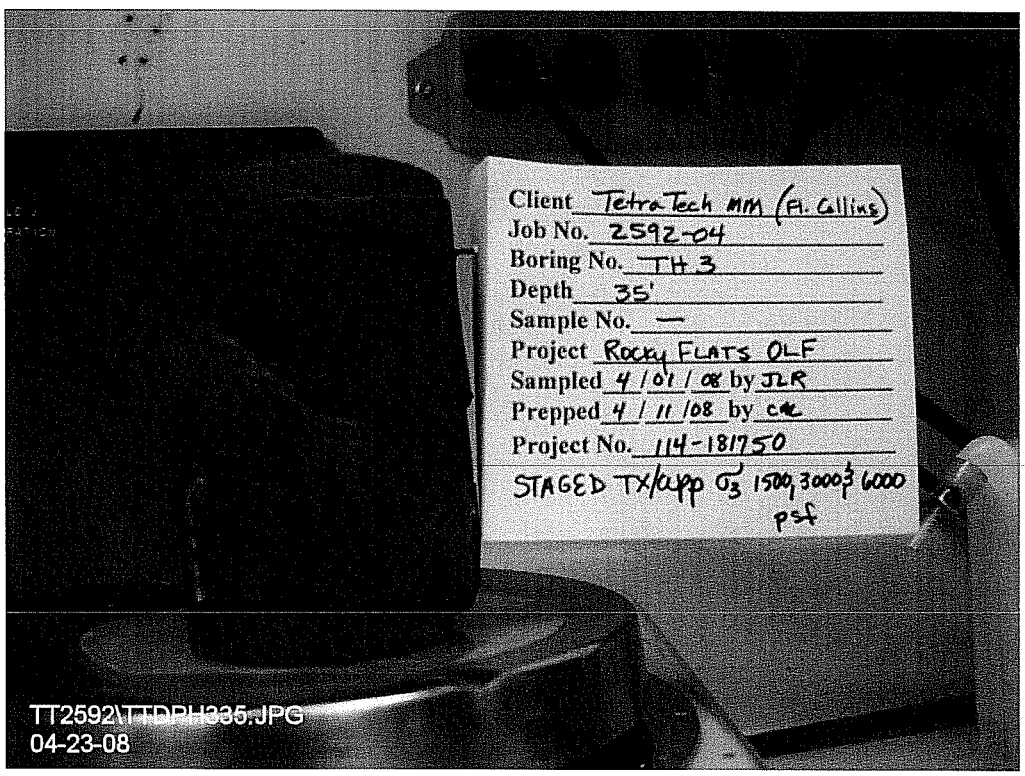
Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	σ 3' PSF	σ 1' PSF	Prin. Stress Ratio
0.0	0	0.00	0.00	3.087	0	58.7	0	6000	6000	1.00
21.0	980	0.004	0.11	3.090	979	59.7	144	5856	6835	1.17
48.0	2239	0.008	0.21	3.094	2234	62.3	518	5482	7716	1.41
75.0	3499	0.010	0.26	3.095	3489	70.5	1699	4301	7790	1.81
95.0	4431	0.020	0.53	3.103	4408	70.6	1714	4286	8695	2.03
106.0	4945	0.025	0.66	3.107	4912	73.2	2088	3912	8824	2.26
113.0	5271	0.030	0.79	3.112	5230	75.1	2362	3638	8868	2.44
117.0	5458	0.035	0.92	3.116	5407	76.3	2534	3466	8873	2.56
121.0	5644	0.040	1.05	3.120	5585	77.1	2650	3350	8935	2.67
123.0	5738	0.045	1.18	3.124	5670	77.5	2707	3293	8962	2.72
126.0	5878	0.050	1.32	3.128	5800	77.9	2765	3235	9035	2.79
128.0	5971	0.055	1.45	3.132	5884	78.1	2794	3206	9091	2.84
129.0	6017	0.060	1.58	3.137	5923	78.1	2794	3206	9129	2.85
131.0	6111	0.065	1.71	3.141	6006	78.2	2808	3192	9198	2.88
132.0	6157	0.070	1.84	3.145	6044	78.2	2808	3192	9236	2.89
135.0	6297	0.080	2.10	3.153	6165	78.1	2794	3206	9371	2.92
137.0	6391	0.090	2.37	3.162	6239	78.0	2779	3221	9460	2.94
139.0	6484	0.100	2.63	3.170	6313	77.8	2750	3250	9563	2.94
141.0	6577	0.110	2.89	3.179	6387	77.6	2722	3278	9665	2.95
142.0	6624	0.120	3.16	3.188	6415	77.3	2678	3322	9736	2.93
144.0	6717	0.130	3.42	3.196	6488	77.0	2635	3365	9852	2.93
145.0	6764	0.140	3.68	3.205	6515	76.8	2606	3394	9908	2.92
146.0	6810	0.150	3.95	3.214	6542	76.5	2563	3437	9979	2.90
147.0	6857	0.160	4.21	3.223	6569	76.2	2520	3480	10049	2.89
148.0	6904	0.170	4.47	3.232	6595	75.8	2462	3538	10133	2.86
149.0	6950	0.180	4.73	3.240	6621	75.6	2434	3566	10188	2.86
150.0	6997	0.190	5.00	3.249	6647	75.3	2390	3610	10257	2.84
151.0	7044	0.206	5.42	3.264	6662	74.7	2304	3696	10358	2.80
154.0	7184	0.250	6.58	3.304	6711	73.3	2102	3898	10609	2.72
156.0	7277	0.300	7.89	3.351	6703	71.6	1858	4142	10845	2.62
158.0	7370	0.350	9.21	3.400	6692	70.2	1656	4344	11036	2.54
156.0	7277	0.403	10.60	3.453	6506	68.7	1440	4560	11066	2.43
152.0	7090	0.450	11.84	3.501	6251	67.3	1238	4762	11013	2.31
148.0	6904	0.500	13.15	3.554	5996	66.3	1094	4906	10901	2.22

Data entry by: SR Date: 04/23/2008
Data checked by: ce Date: 4/23/08
FileName: TTT0H335

ADVANCED TERRA TESTING, INC. ATT


CONSOLIDATION DATA
TH 3, 35.0', Stage 3 of 3
Volume Deflection in cc
1
0
-1
-2
-3
-4
0025
1
2
4
9
16
30
60
120
240
365
0
5
10
15
20
25
Square Root of Time in Minutes
Time in Minutes


TRIAXIAL TEST - TX/CUpp
TH 3, 35.0', Stage 3 of 3
Deviator Stress - psf
Thousands
8
6
4
2
0
0
5
10
15
Percent Axial Strain
Deviator Stress
Delta Pore Pres.


Client Tetra Tech MM (Ft. Collins)
Job No. 2592-04
Boring No. TH 3
Depth 35'
Sample No. —
Project Rocky Flats OLF
Sampled 4 / 01 / 08 by JLR
Prepped 4 / 11 / 08 by CAL
Project No. 114-181750
STAGED TX/CUPP σ3 1500, 3000, 6000
psf
TT2592\TTDPH335.JPG
04-23-08