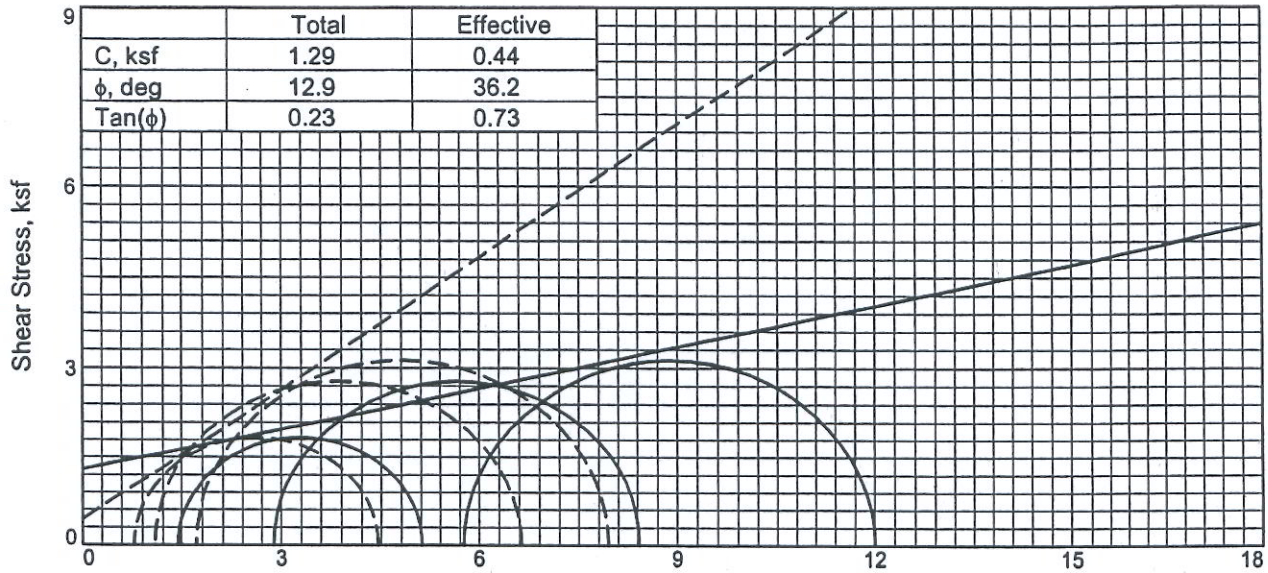
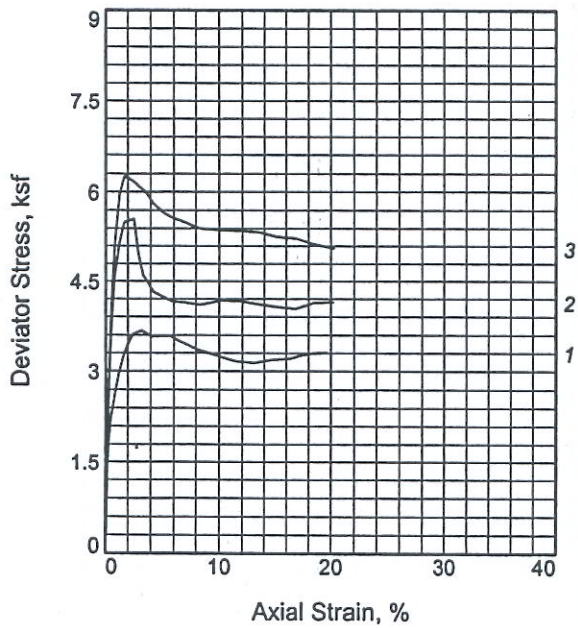
	Total	Effective
C, ksf	1.29	0.44
ϕ, deg	12.9	36.2
Tan(ϕ)	0.23	0.73



Total Normal Stress, ksf ———
Effective Normal Stress, ksf — — —



Sample No.		1	2	3
Initial	Water Content,	82.8	82.8	82.8
	Dry Density, pcf	50.0	50.5	51.5
	Saturation,	97.8	99.4	102.4
	Void Ratio	2.1040	2.0713	2.0096
	Diameter, in.	2.87	2.86	2.86
	Height, in.	6.15	5.98	5.98
At Test	Water Content,	83.2	80.6	76.9
	Dry Density, pcf	50.6	51.7	53.3
	Saturation,	100.0	100.0	100.0
	Void Ratio	2.0678	2.0023	1.9122
	Diameter, in.	2.85	2.84	2.83
	Height, in.	6.13	5.94	5.92
Strain rate, in./min.		0.05	0.05	0.05
Back Pressure, ksf		4.32	4.32	4.32
Cell Pressure, ksf		5.76	7.20	10.08
Fail. Stress, ksf		3.67	5.55	6.25
Total Pore Pr., ksf		4.98	6.12	8.38
Ult. Stress, ksf				
Total Pore Pr., ksf				
$\bar{\sigma}_1$ Failure, ksf		4.45	6.63	7.95
$\bar{\sigma}_3$ Failure, ksf		0.78	1.08	1.70

Type of Test:
CU with Pore Pressures
Sample Type: UD
Description: Gray Slightly Sandy CLAY

Specific Gravity= 2.485
Remarks:

Reviewed By: [illegible]

Client: Dunkelberger Engineering and Testing, Inc.

Project: Berry Groves

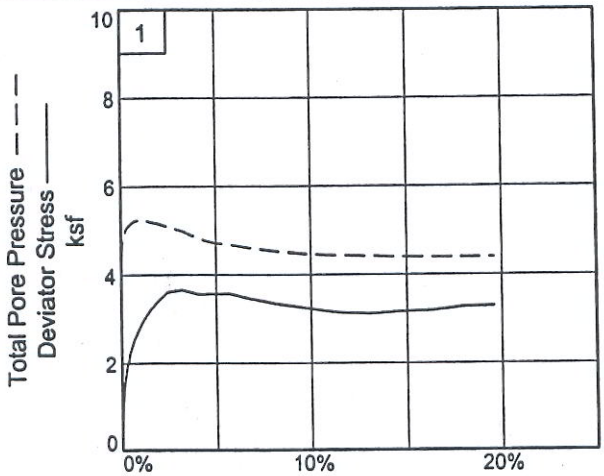
Sample Number: CB-68, 29-31'

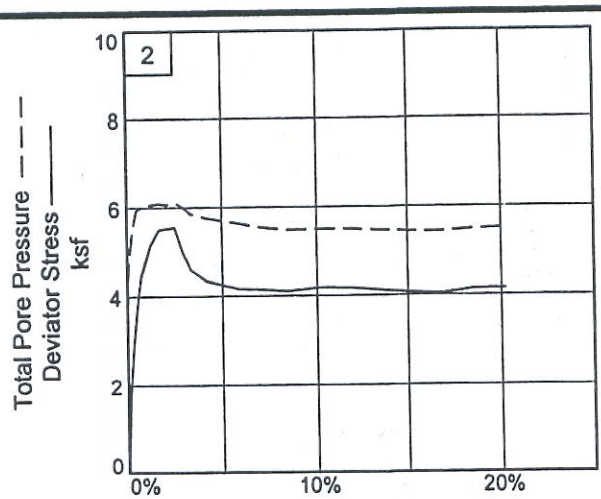
Proj. No.: 6738-04-4450 **Date:**

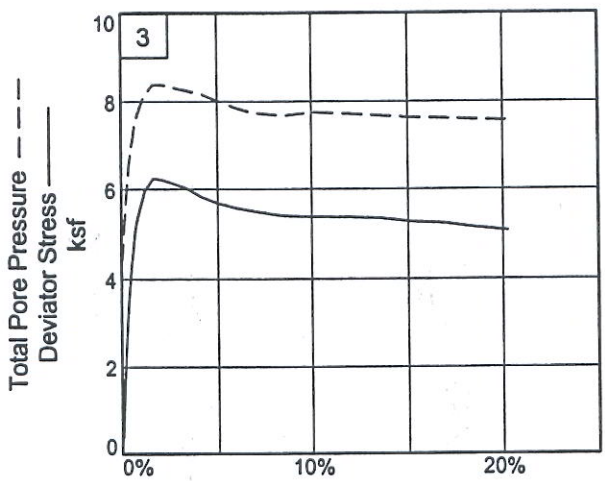
TRIAXIAL SHEAR TEST REPORT

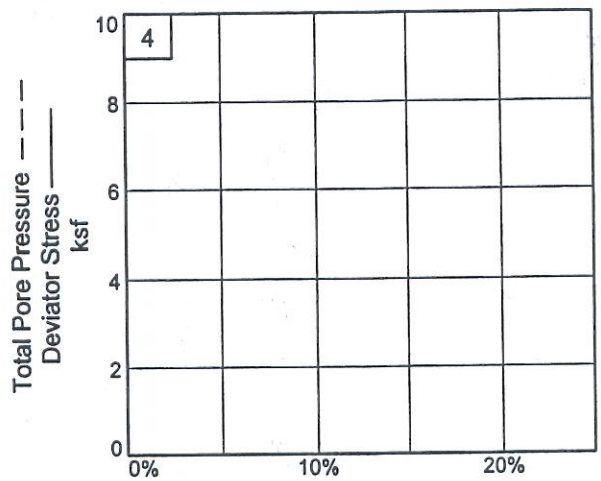
MACTEC ENGINEERING AND CONSULTING, INC.

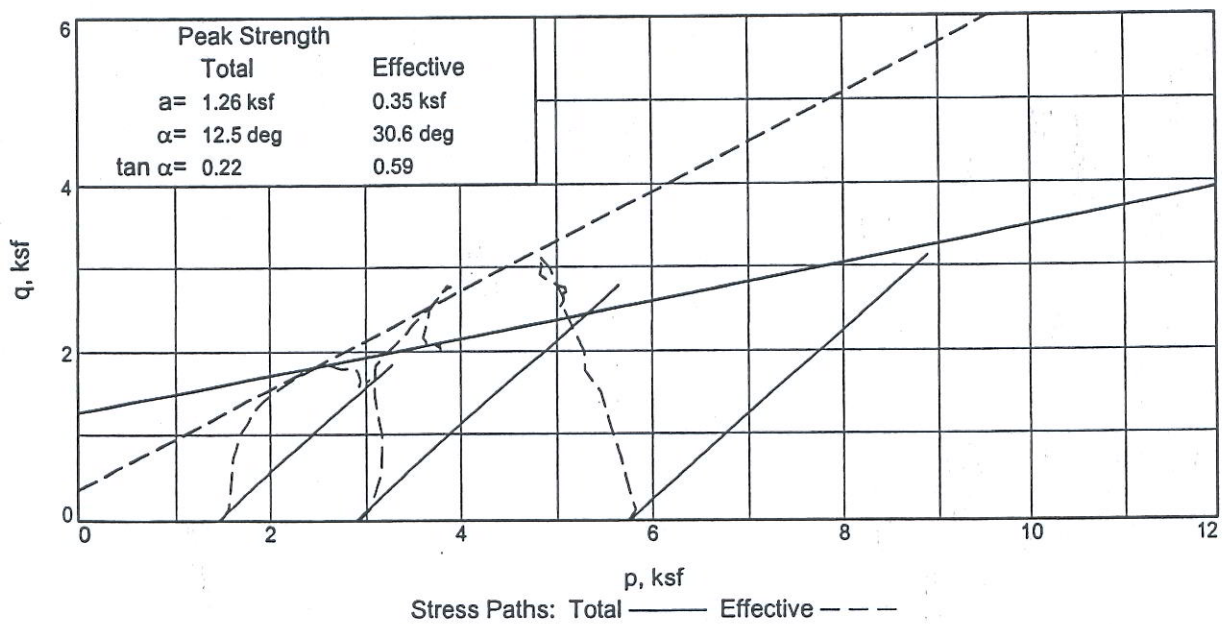
Tested By: mc **Checked By:** [illegible] 8-2-04







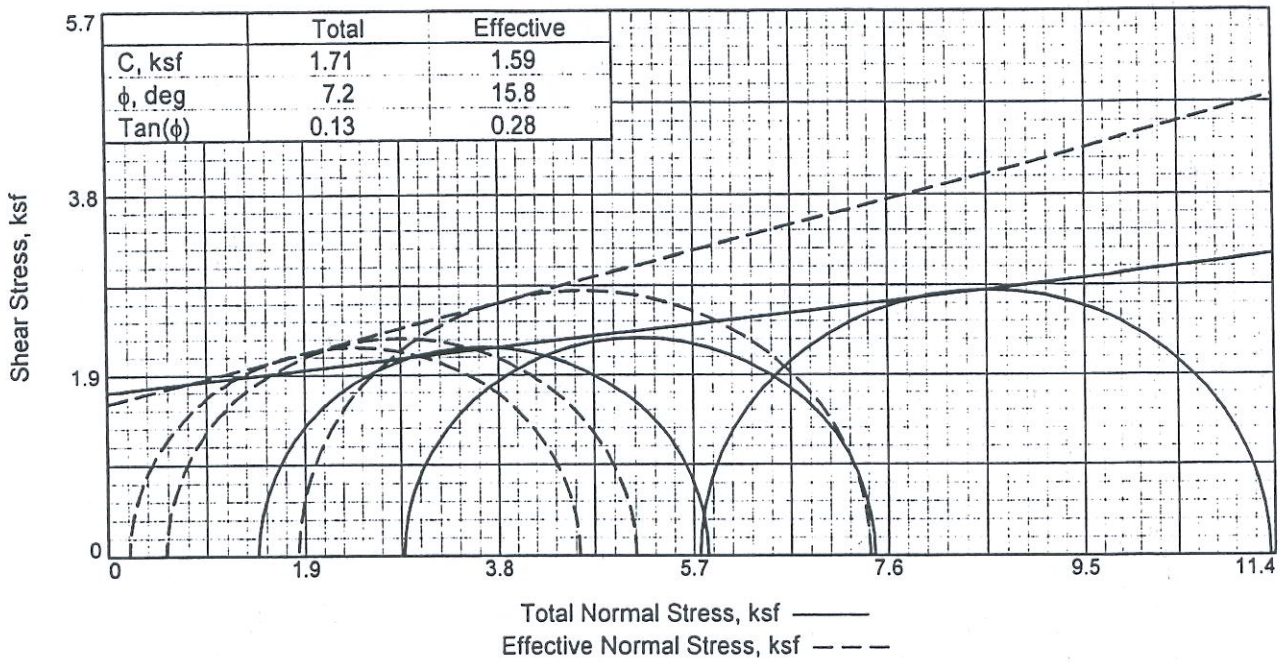




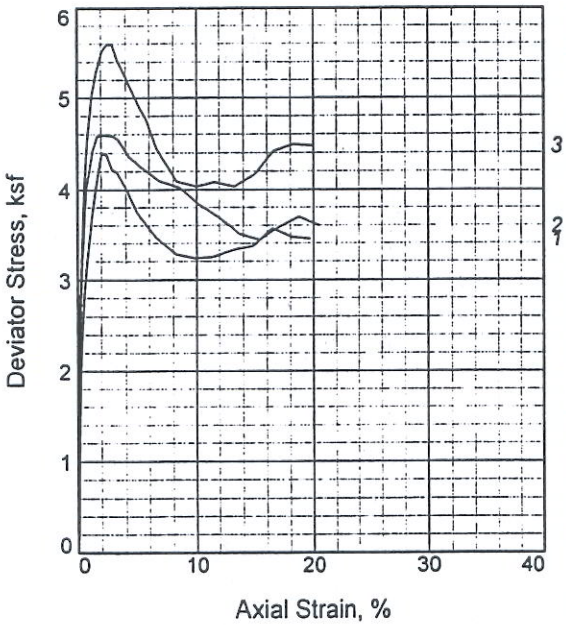
Client: Dunkelberger Engineering and Testing, Inc.
Project: Berry Groves
Sample Number: CB-68
Project No.: 6738-04-4450

Reviewed By: _____ **MACTEC Engineering and Consulting, Inc.**

Tested By: mc _____ **Checked By:** _____



	Total	Effective
C, ksf	1.71	1.59
ϕ, deg	7.2	15.8
Tan(ϕ)	0.13	0.28



Sample No.		1	2	3
Initial	Water Content,	72.5	72.5	72.5
	Dry Density, pcf	56.8	57.6	55.9
	Saturation,	101.0	102.9	98.4
	Void Ratio	1.8891	1.8539	1.9393
	Diameter, in.	2.87	2.86	2.85
	Height, in.	6.11	5.92	6.11
At Test	Water Content,	70.6	67.7	69.9
	Dry Density, pcf	57.5	59.0	57.9
	Saturation,	100.0	100.0	100.0
	Void Ratio	1.8566	1.7820	1.8391
	Diameter, in.	2.86	2.84	2.82
	Height, in.	6.09	5.87	6.04
Strain rate, in./min.		0.05	0.05	0.05
Back Pressure, ksf		4.32	4.32	4.32
Cell Pressure, ksf		5.76	7.20	10.08
Fail. Stress, ksf		4.40	4.59	5.60
Total Pore Pr., ksf		5.56	6.65	8.25
Ult. Stress, ksf				
Total Pore Pr., ksf				
$\bar{\sigma}_1$ Failure, ksf		4.60	5.14	7.42
$\bar{\sigma}_3$ Failure, ksf		0.20	0.55	1.83

Type of Test:
CU with Pore Pressures

Sample Type: UD

Description: Gray Slightly Sandy CLAY

Specific Gravity= 2.631

Remarks: Two samples from CB-38, one sample from CB-61

Reviewed By SL

Client: Dunkelberger Engineering and Testing, Inc.

Project: Berry Groves

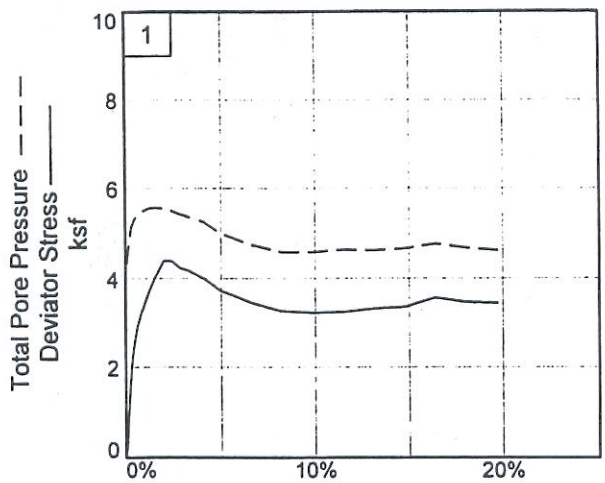
Sample Number: CB-38 & 61 group 3

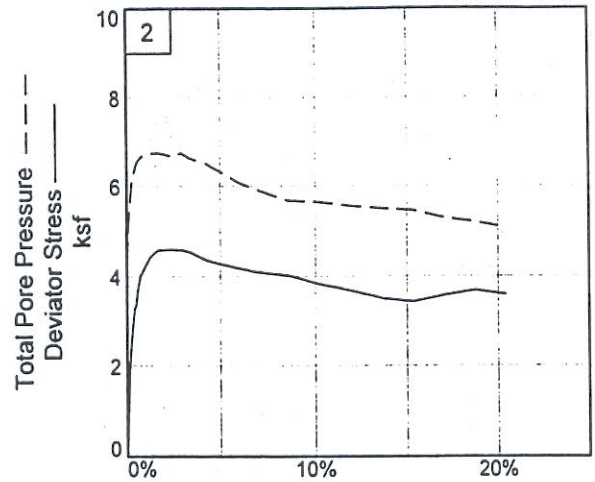
Proj. No.: 6738-04-4450 **Date:**

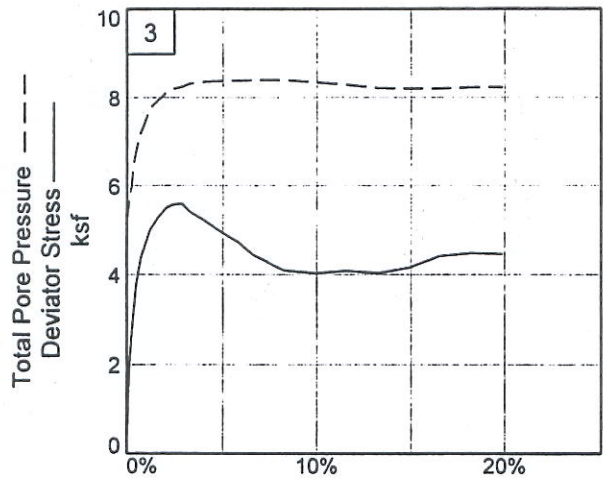
TRIAXIAL SHEAR TEST REPORT

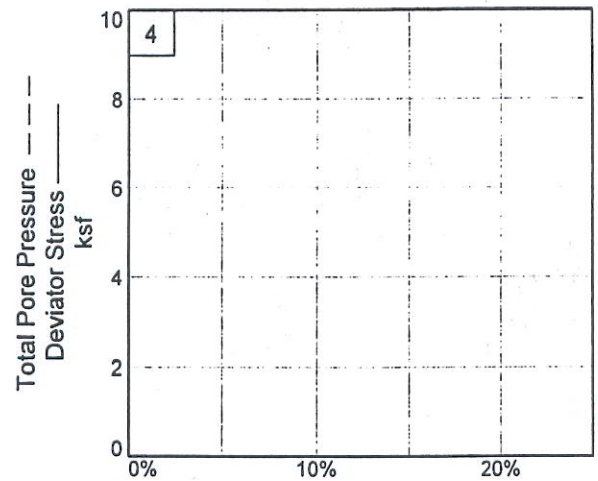
MACTEC ENGINEERING AND CONSULTING, INC.

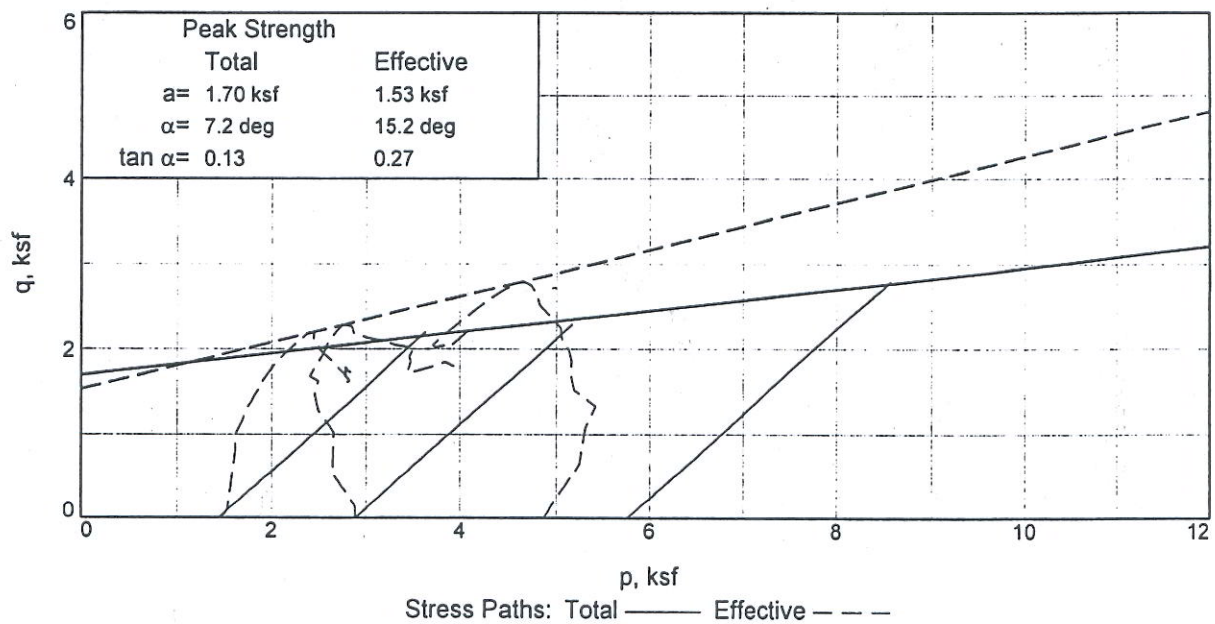
Tested By: mc **Checked By:** SL







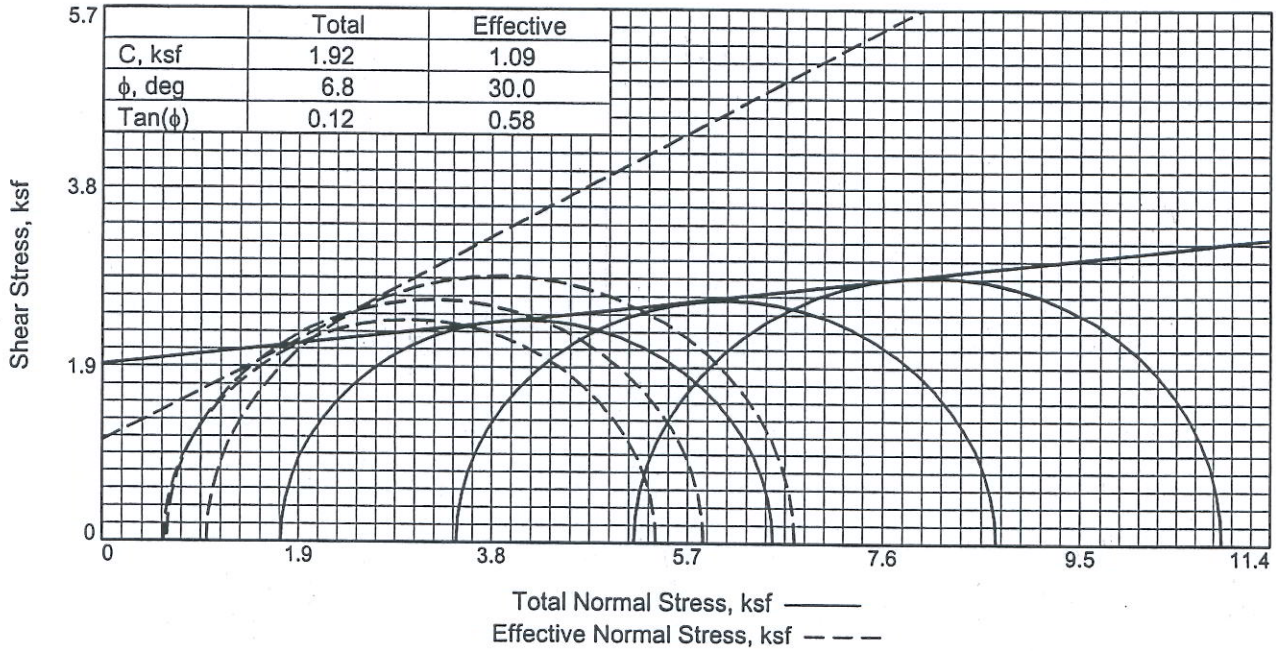




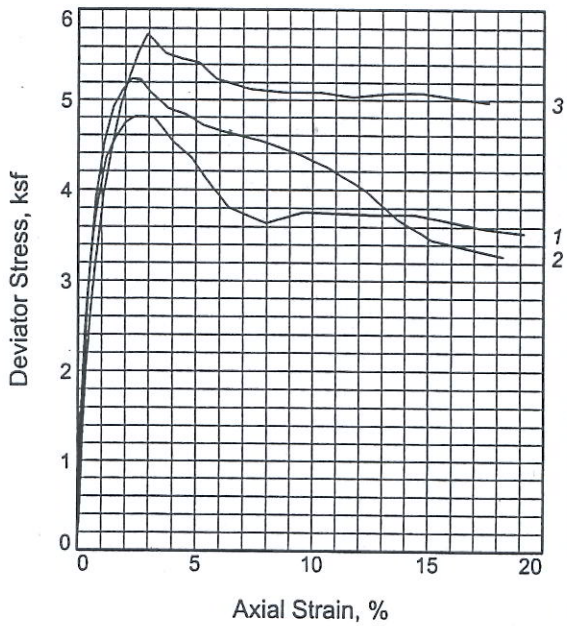
Client: Dunkelberger Engineering and Testing, Inc.
Project: Berry Groves
Sample Number: CB-38 & 61 group 3
Project No.: 6738-04-4450

Reviewed By _____ **MACTEC Engineering and Consulting, Inc.**

Tested By: mc _____ **Checked By:** _____



	Total	Effective
C, ksf	1.92	1.09
ϕ, deg	6.8	30.0
Tan(ϕ)	0.12	0.58



Sample No.		1	2	3
Initial	Water Content,	94.9	68.0	94.5
	Dry Density, pcf	48.5	58.2	49.8
	Saturation,	108.4	102.9	112.1
	Void Ratio	2.1305	1.6088	2.0511
	Diameter, in.	2.82	2.83	2.84
	Height, in.	6.35	6.67	6.91
At Test	Water Content,	82.3	61.3	78.5
	Dry Density, pcf	50.6	61.0	52.2
	Saturation,	100.0	100.0	100.0
	Void Ratio	2.0015	1.4903	1.9108
	Diameter, in.	2.78	2.79	2.80
	Height, in.	6.26	6.57	6.80
Strain rate, in./min.		0.05	0.05	0.05
Back Pressure, ksf		5.76	5.76	5.76
Cell Pressure, ksf		7.49	9.22	10.94
Fail. Stress, ksf		4.80	5.24	5.73
Total Pore Pr., ksf		6.90	8.60	9.94
Ult. Stress, ksf				
Total Pore Pr., ksf				
$\bar{\sigma}_1$ Failure, ksf		5.39	5.85	6.74
$\bar{\sigma}_3$ Failure, ksf		0.59	0.62	1.01

Type of Test:
CU with Pore Pressures

Sample Type: ud

Description: Light Brown and Gray CLAY with a Trace of Sand

LL= 188 **PL=** 59 **PI=** 129

Assumed Specific Gravity= 2.433

Remarks: 12 and 36 psi confining is CB-97, 24 psi is CB-98

Reviewed By _____

Client: Dunkelberger Engineering, Inc.

Project: C-43

Source of Sample: CB-97 and CB-98 **Depth:** 30'-32'

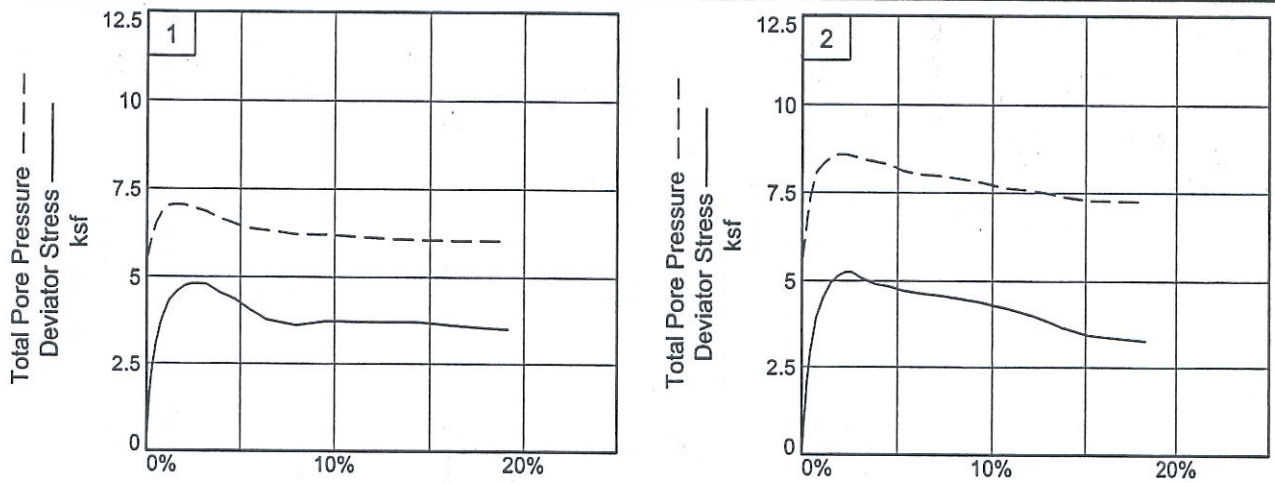
Sample Number: ud

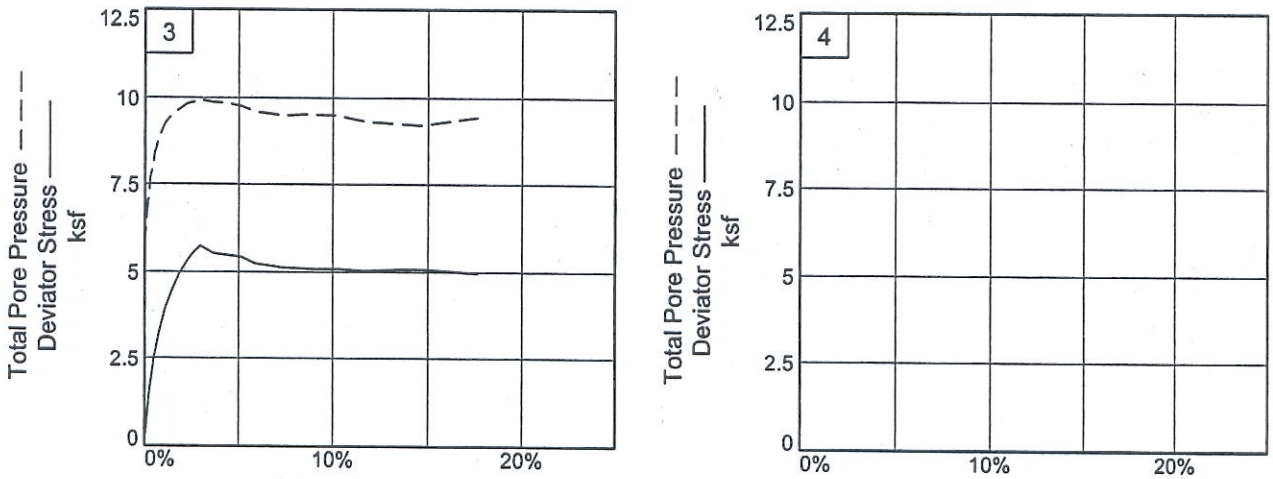
Proj. No.: 6738-04-4500-02 **Date:** 8-10-05

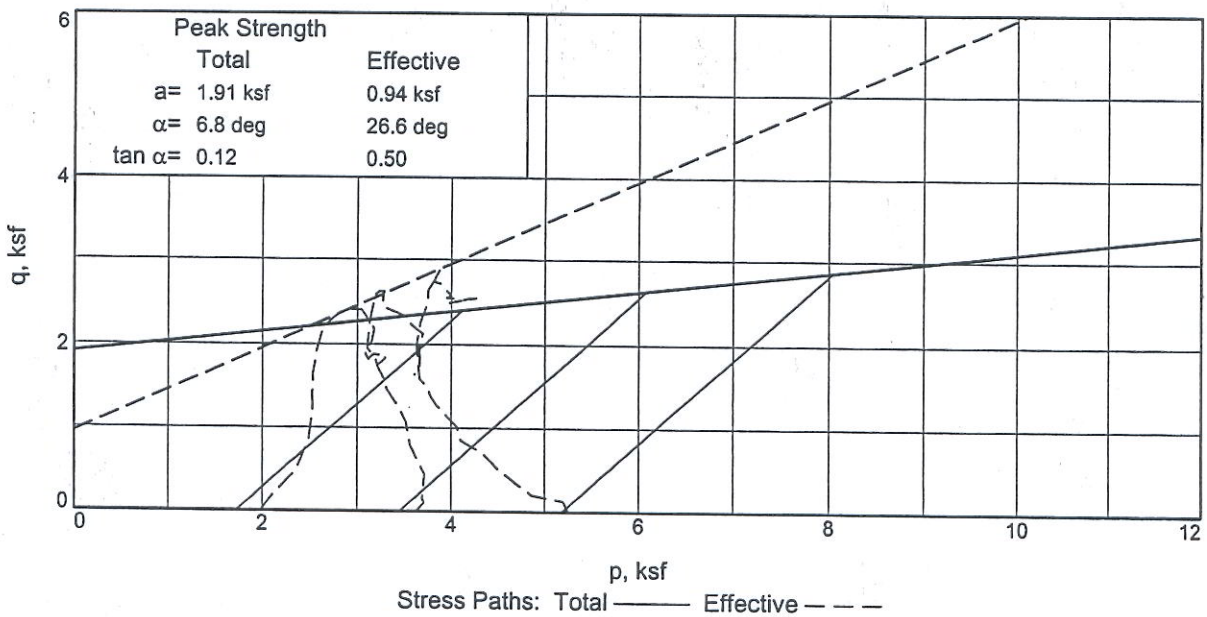
TRIAXIAL SHEAR TEST REPORT

MACTEC ENGINEERING AND CONSULTING, INC.

Tested By: mc **Checked By:** RS





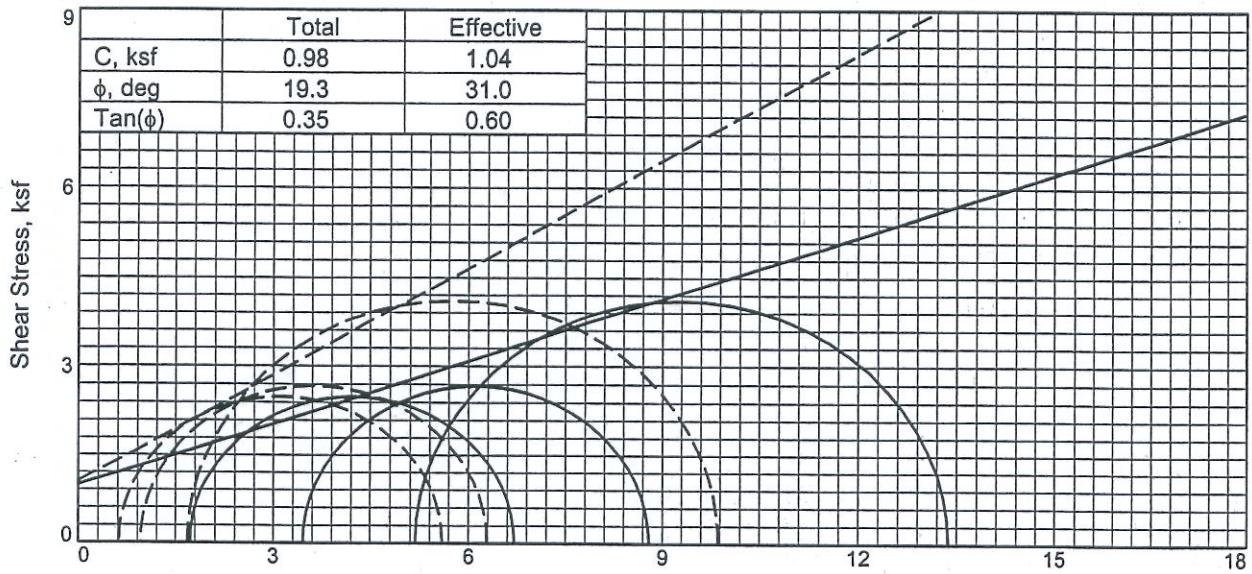


Stress Paths: Total ——— Effective — — —

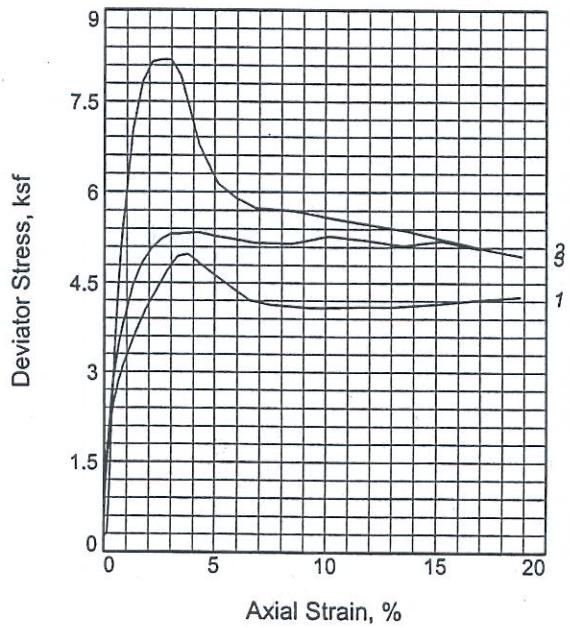
Client: Dunkelberger Engineering, Inc.
Project: C-43
Source of Sample: CB-97 and CB-98 **Depth:** 30'-32' **Sample Number:** ud
Project No.: 6738-04-4500-02 **Reviewed By** _____ **MACTEC Engineering and Consulting, Inc.**

Tested By: mc _____ **Checked By:** _____

	Total	Effective
C, ksf	0.98	1.04
ϕ, deg	19.3	31.0
Tan(ϕ)	0.35	0.60



Total Normal Stress, ksf ———
Effective Normal Stress, ksf — — —



Sample No.		1	2	3
Initial	Water Content,	55.8	55.8	39.8
	Dry Density, pcf	58.8	63.8	67.8
	Saturation,	81.6	93.0	73.4
	Void Ratio	1.8041	1.5820	1.4312
	Diameter, in.	2.84	2.86	2.85
	Height, in.	5.55	6.00	5.98
At Test	Water Content,	55.1	55.2	47.0
	Dry Density, pcf	67.2	67.0	73.6
	Saturation,	100.0	100.0	100.0
	Void Ratio	1.4539	1.4581	1.2407
	Diameter, in.	2.71	2.81	2.77
	Height, in.	5.32	5.90	5.82
Strain rate, in./min.		0.05	0.05	0.05
Back Pressure, ksf		4.32	4.32	4.32
Cell Pressure, ksf		6.05	7.78	9.50
Fail. Stress, ksf		4.98	5.34	8.19
Total Pore Pr., ksf		5.43	6.83	7.82
Ult. Stress, ksf				
Total Pore Pr., ksf				
$\bar{\sigma}_1$ Failure, ksf		5.60	6.29	9.88
$\bar{\sigma}_3$ Failure, ksf		0.62	0.95	1.68

Type of Test:
CU with Pore Pressures
Sample Type: ud
Description: Greenish Gray Very Sandy CLAY

LL= 151 **PL=** 48 **PI=** 103
Assumed Specific Gravity= 2.640
Remarks: samples at 12 and 36 psi from CB-108, sample at 24 psi from CB-107, 20'-22'

Reviewed By _____

Client: Dunkelberger Engineering, Inc.

Project: C-43

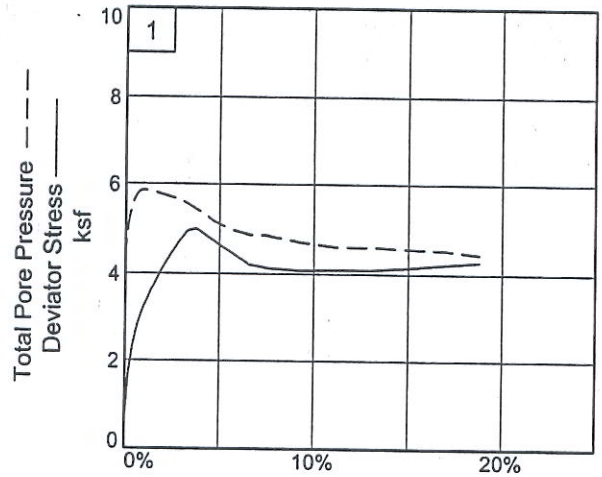
Source of Sample: CB-108 **Depth:** 37'-39'
Sample Number: ud

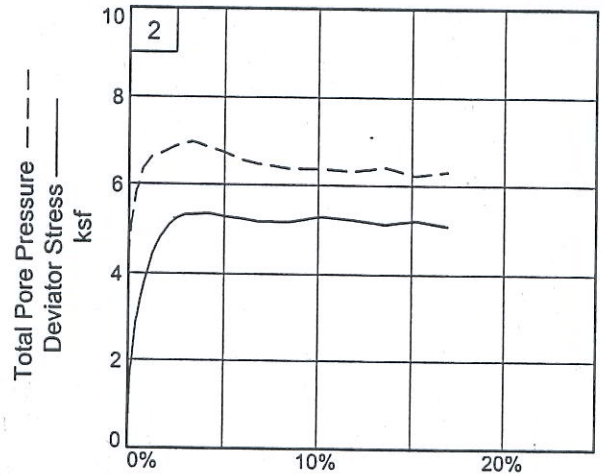
Proj. No.: 6738-04-4500-02 **Date:**

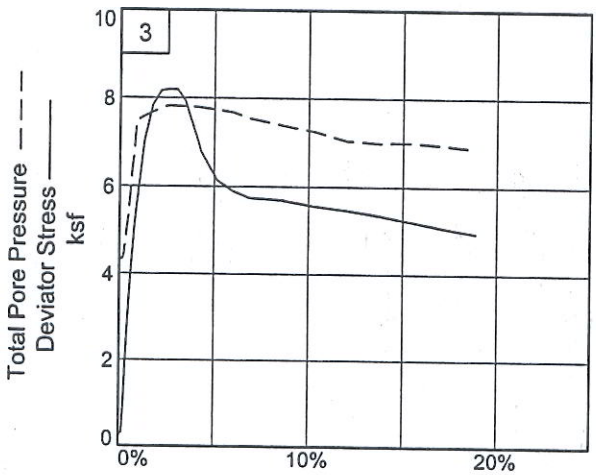
TRIAXIAL SHEAR TEST REPORT

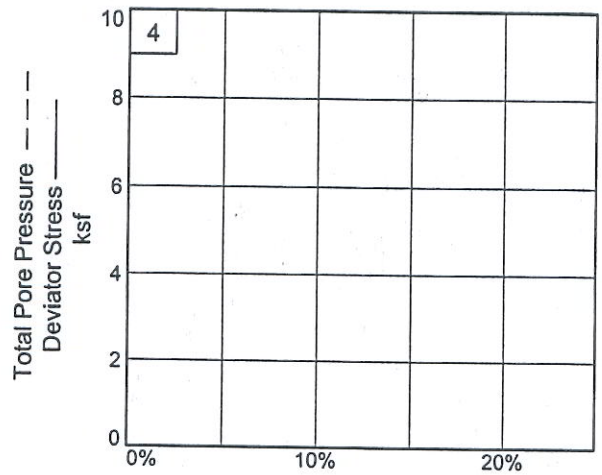
MACTEC ENGINEERING AND CONSULTING, INC.

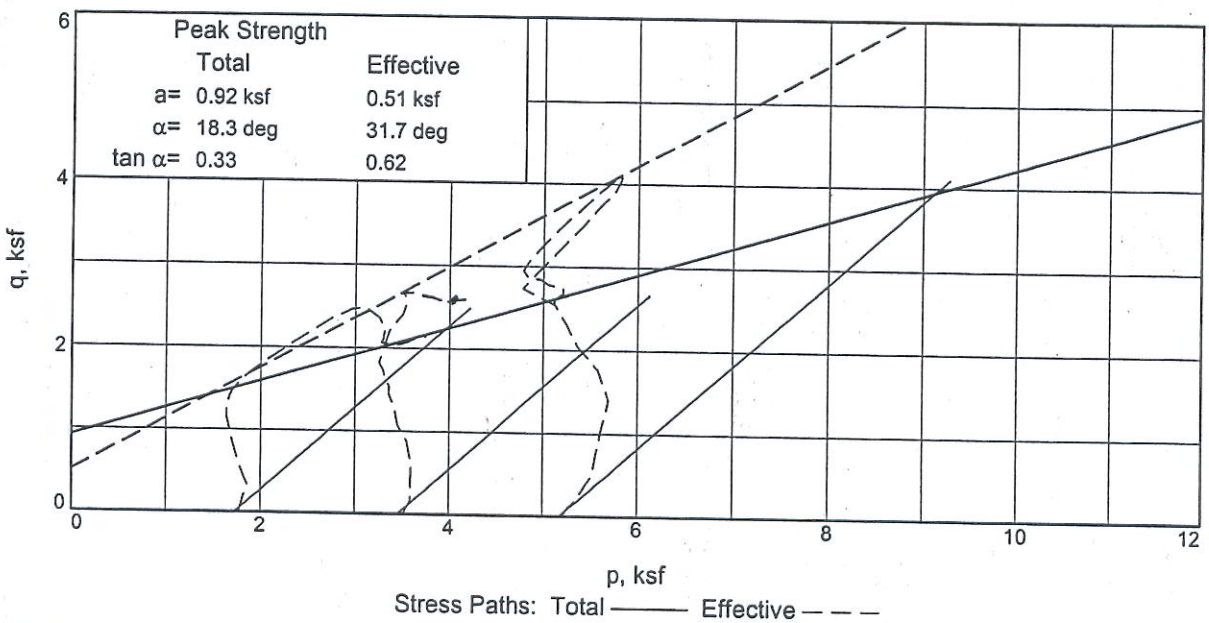
Tested By: MC **Checked By:** R.S





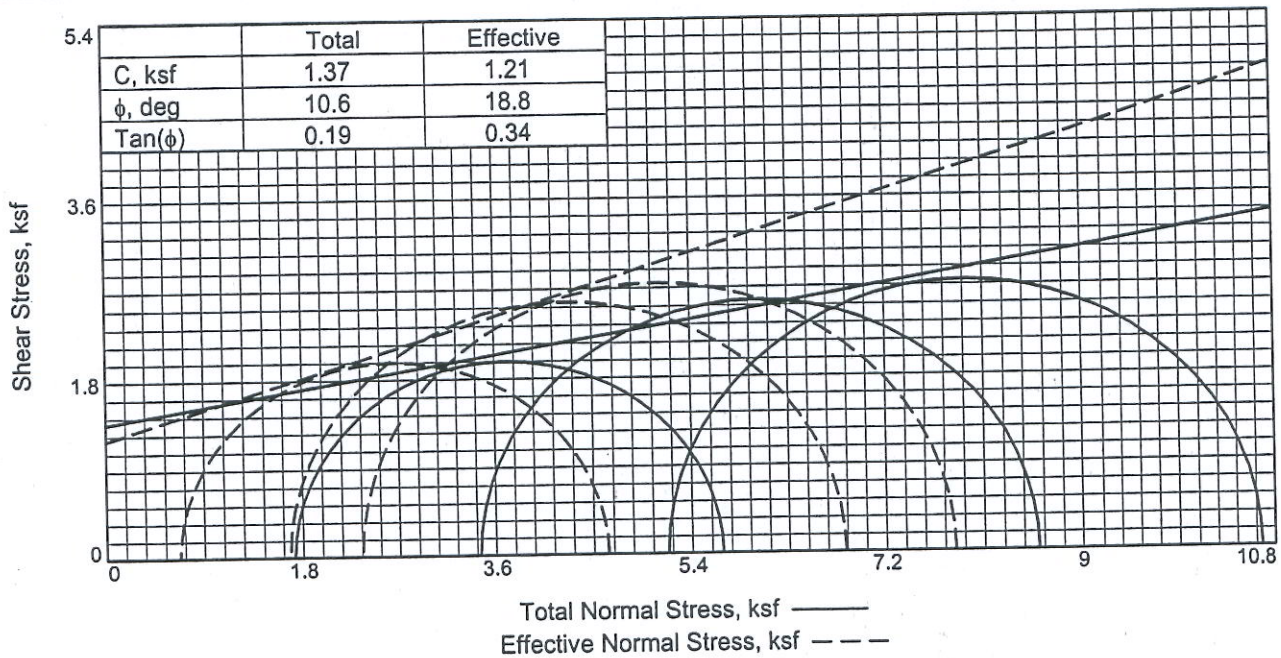




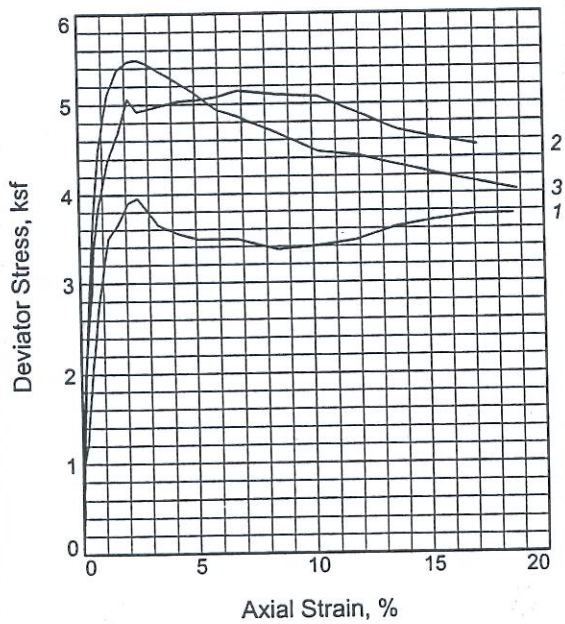


Client: Dunkelberger Engineering, Inc.
Project: C-43
Source of Sample: CB-108 **Depth:** 37'-39' **Sample Number:** ud
Project No.: 6738-04-4500-02 **Reviewed By** _____ **MACTEC Engineering and Consulting, Inc.**

Tested By: MC **Checked By:** R.S



	Total	Effective
C, ksf	1.37	1.21
ϕ, deg	10.6	18.8
Tan(ϕ)	0.19	0.34



Sample No.		1	2	3
Initial	Water Content,	91.8	91.8	N/A
	Dry Density, pcf	49.6	48.6	N/A
	Saturation,	103.0	100.1	N/A
	Void Ratio	2.4280	2.4984	N/A
	Diameter, in.	2.88	2.88	2.88
	Height, in.	5.96	5.91	5.94
At Test	Water Content,	84.6	86.2	
	Dry Density, pcf	51.5	50.8	
	Saturation,	100.0	100.0	
	Void Ratio	2.3031	2.3490	
	Diameter, in.	2.84	2.83	
	Height, in.	5.89	5.83	
Strain rate, in./min.		0.01	0.01	0.01
Back Pressure, ksf		4.32	4.32	4.32
Cell Pressure, ksf		6.05	7.78	9.50
Fail. Stress, ksf		3.96	5.14	5.49
Total Pore Pr., ksf		5.37	6.09	7.16
Ult. Stress, ksf				
Total Pore Pr., ksf				
$\bar{\sigma}_1$ Failure, ksf		4.63	6.83	7.84
$\bar{\sigma}_3$ Failure, ksf		0.68	1.68	2.35

Type of Test:
CU with Pore Pressures
Sample Type: ud
Description: Gray Sandy CLAY

LL= 203 **PL=** 52 **PI=** 151
Assumed Specific Gravity= 2.724
Remarks:

Reviewed By _____

Client: Dunkelberger Engineering, Inc.

Project: C-43

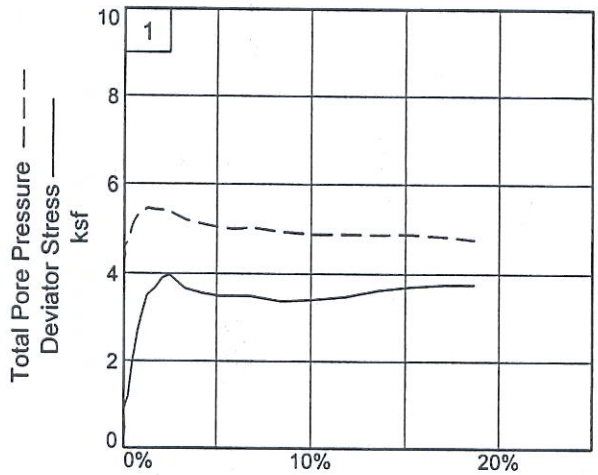
Source of Sample: CB-134 **Depth:** 23'-25'
Sample Number: ud

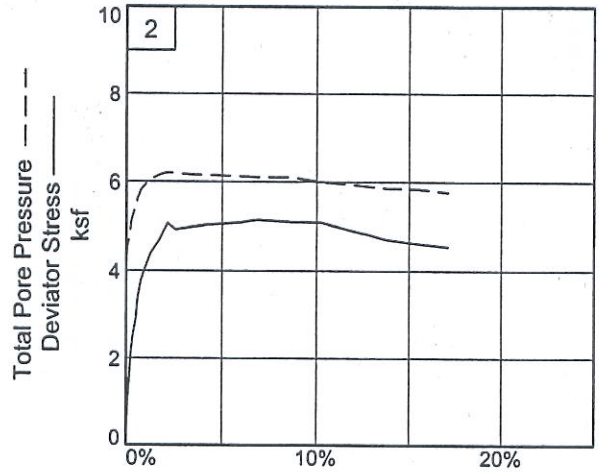
Proj. No.: 6738-04-4500-02 **Date:**

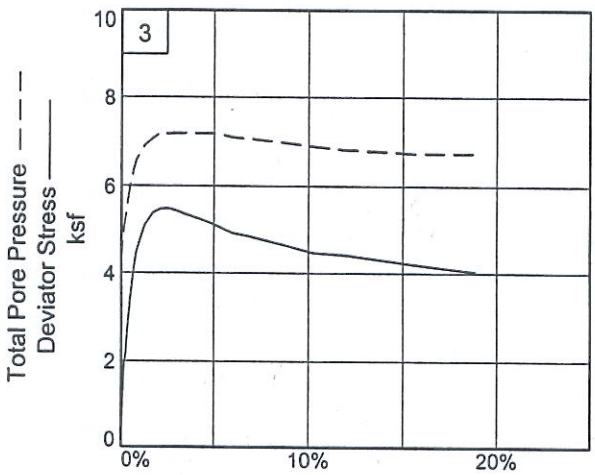
TRIAXIAL SHEAR TEST REPORT

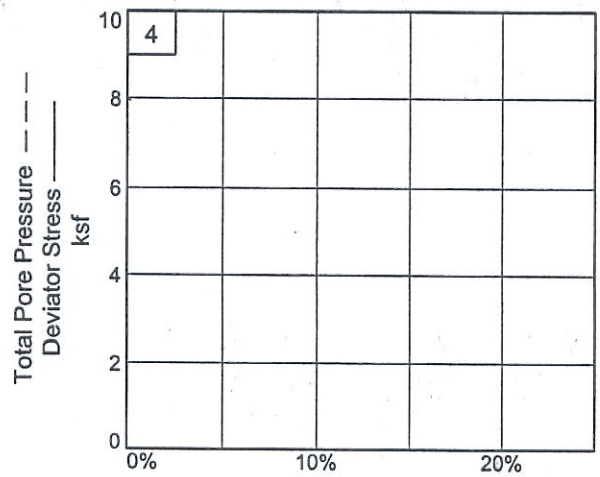
MACTEC ENGINEERING AND CONSULTING, INC.

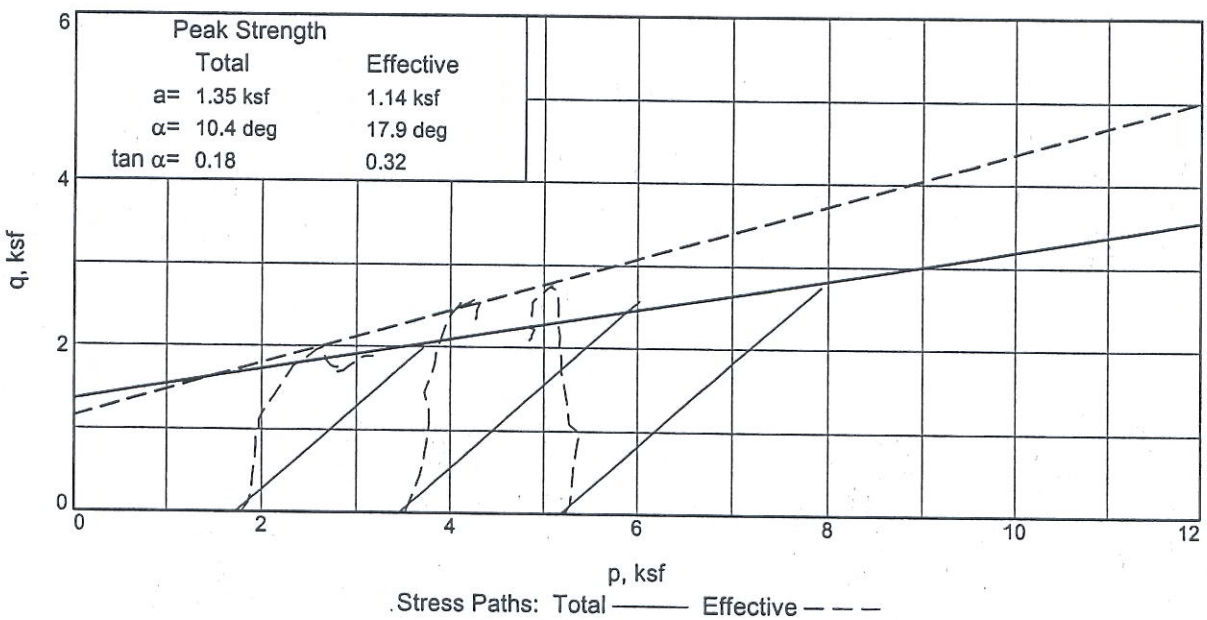
Tested By: mc **Checked By:** Rajni Sukhwani





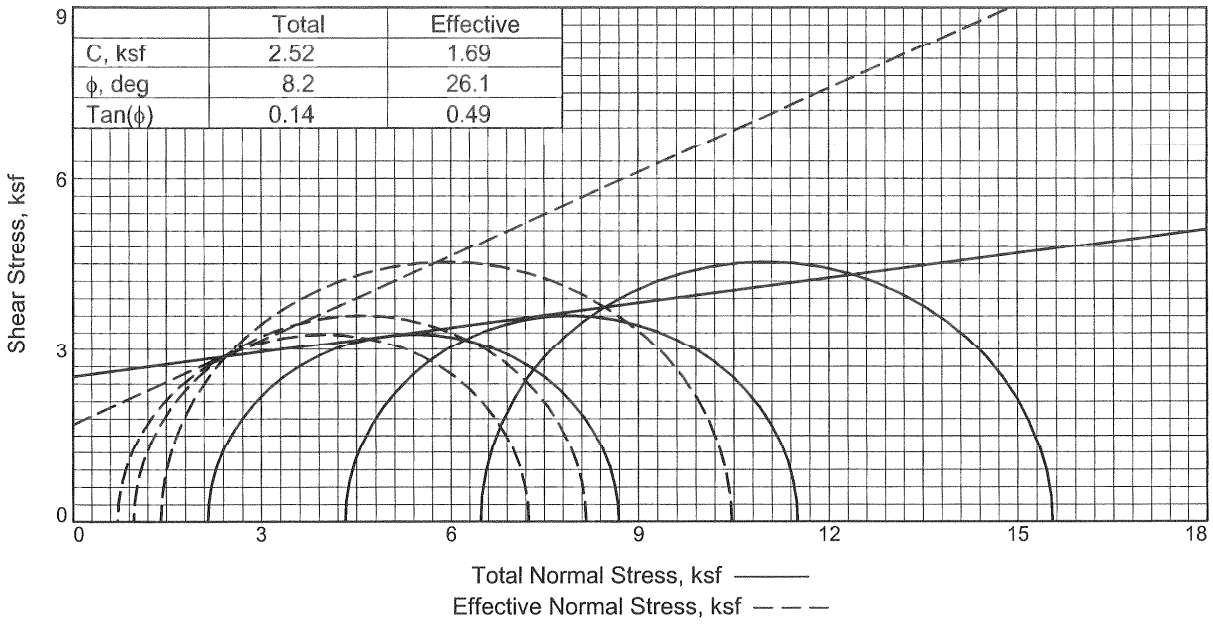




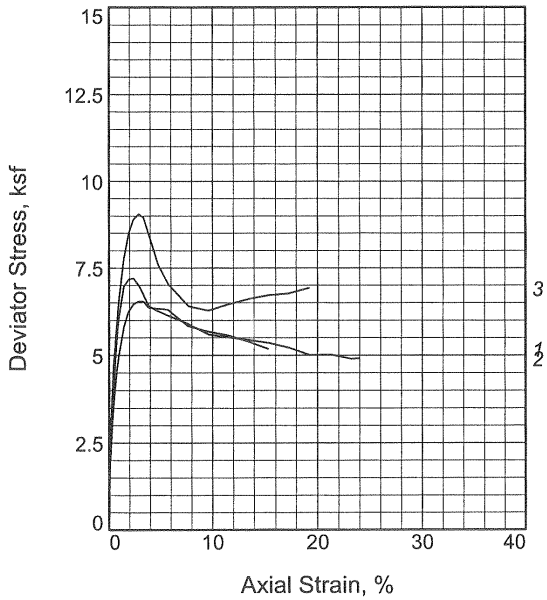


Client: Dunkelberger Engineering, Inc.
Project: C-43
Source of Sample: CB-134 **Depth:** 23'-25' **Sample Number:** ud
Project No.: 6738-04-4500-02 **Reviewed By** _____ **MACTEC Engineering and Consulting, Inc.**

Tested By: mc _____ **Checked By:** _____



	Total	Effective
C, ksf	2.52	1.69
ϕ, deg	8.2	26.1
Tan(ϕ)	0.14	0.49



Sample No.		1	2	3
Initial	Water Content, %	121.2	121.2	121.2
	Dry Density, pcf	37.6	38.1	39.5
	Saturation, %	94.6	96.2	100.8
	Void Ratio	3.3927	3.3359	3.1836
	Diameter, in.	2.87	2.88	2.88
	Height, in.	5.32	5.29	5.45
At Test	Water Content, %	122.6	116.7	101.3
	Dry Density, pcf	38.9	40.4	44.9
	Saturation, %	100.0	100.0	100.0
	Void Ratio	3.2451	3.0883	2.6819
	Diameter, in.	2.84	2.82	2.75
	Height, in.	5.26	5.19	5.23
Strain rate, in./min.		0.00	0.00	0.00
Back Pressure, psi		30.00	30.00	30.00
Cell Pressure, psi		45.00	60.00	75.00
Fail. Stress, ksf		6.5	7.2	9.1
Total Pore Pr., ksf		5.8	7.7	9.4
Ult. Stress, ksf				
Total Pore Pr., ksf				
$\bar{\sigma}_1$ Failure, ksf		7.3	8.2	10.5
$\bar{\sigma}_3$ Failure, ksf		0.7	1.0	1.4

Type of Test:
CU with Pore Pressures
Sample Type: UD
Description: Elastic SILT, some clay, few medium to fine sand, gray
LL= 211 **PL=** 97 **PI=** 114
Specific Gravity= 2.647
Remarks:

Reviewed By _____

Client: GCME

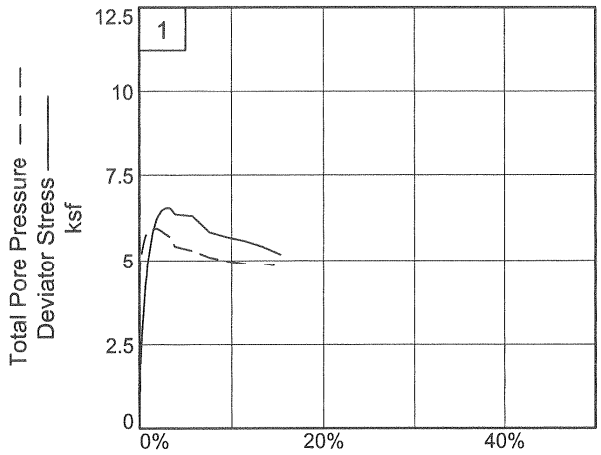
Project: C-43

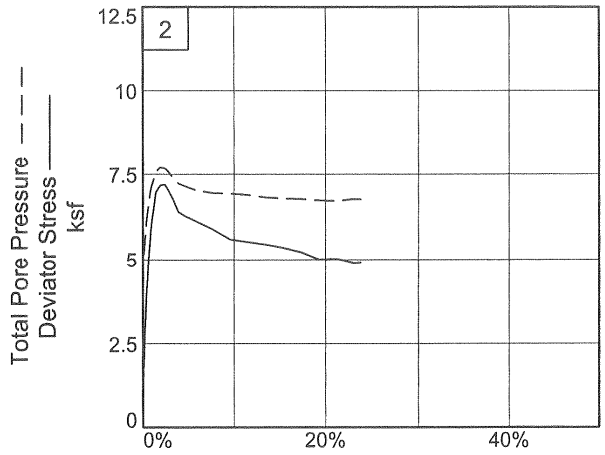
Source of Sample: Boring No.: CB-160 **Depth:** 36'-38'
Sample Number: UD
Proj. No.: 6738-06-4686 **Date Sampled:**

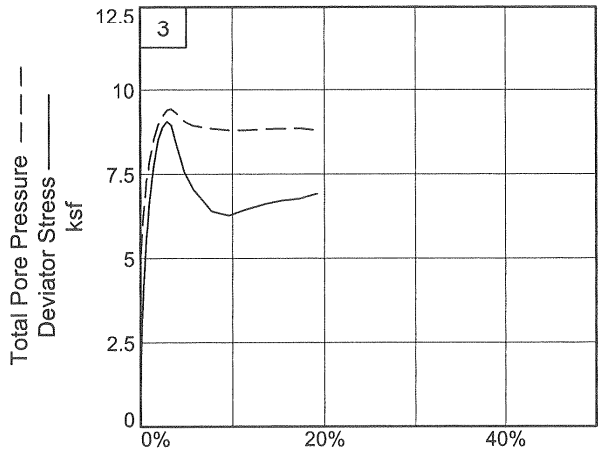
TRIAXIAL SHEAR TEST REPORT

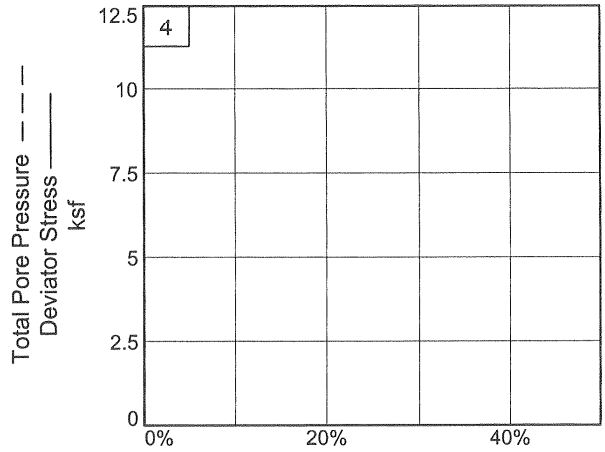
MACTEC ENGINEERING AND CONSULTING, INC.

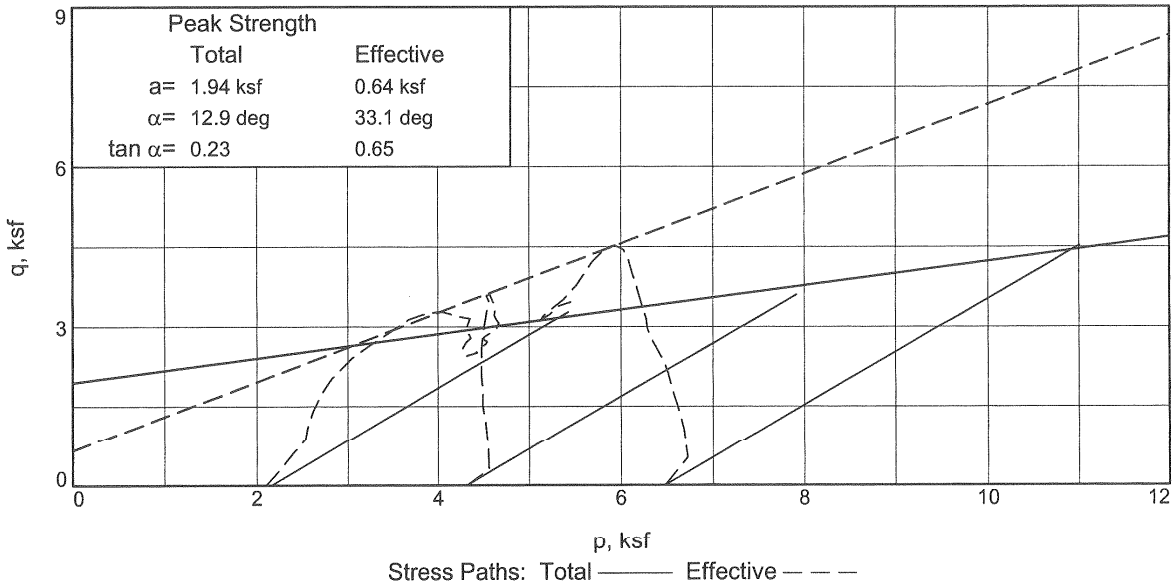
Tested By: MC **Checked By:** 4-8-02









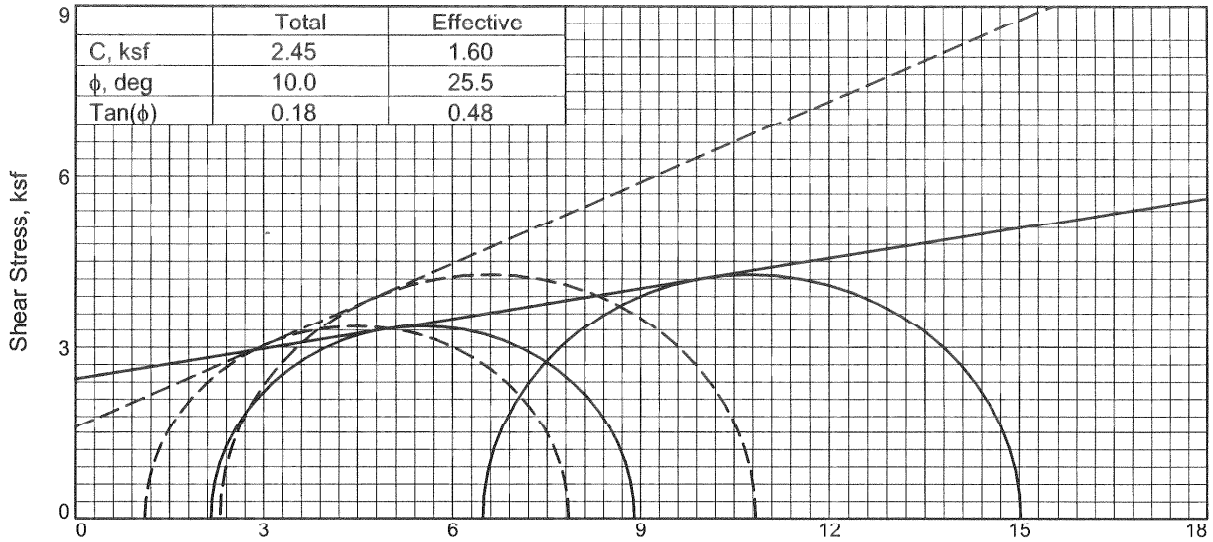


Stress Paths: Total ——— Effective — — —

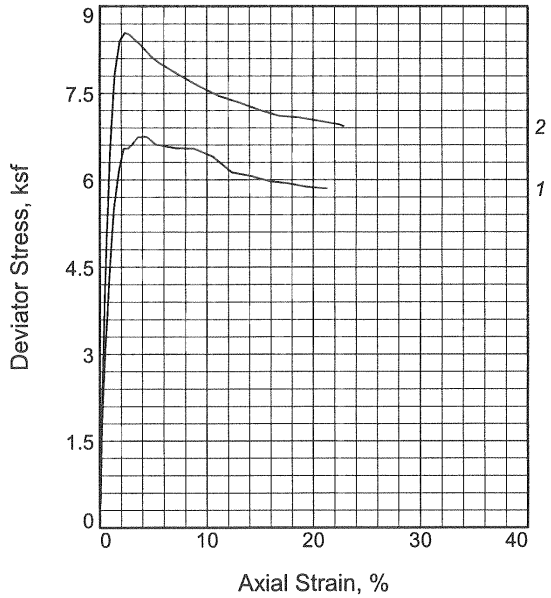
Client: GCME
Project: C-43
Source of Sample: Boring No.: CB-160 **Depth:** 36'-38' **Sample Number:** UD
Project No.: 6738-06-4686 **Reviewed By** _____ **MACTEC Engineering and Consulting, Inc.**

Tested By: MC **Checked By:** Michael [illegible] 4-9-07

	Total	Effective
C, ksf	2.45	1.60
ϕ, deg	10.0	25.5
Tan(ϕ)	0.18	0.48



Total Normal Stress, ksf ———
Effective Normal Stress, ksf — — —



Sample No.		1	2
Initial	Water Content, %	109.2	109.2
	Dry Density, pcf	40.9	42.4
	Saturation, %	95.1	99.9
	Void Ratio	3.0313	2.8843
	Diameter, in.	2.87	2.87
	Height, in.	5.78	5.52
At Test	Water Content, %	107.5	97.9
	Dry Density, pcf	42.9	46.0
	Saturation, %	100.0	100.0
	Void Ratio	2.8347	2.5836
	Diameter, in.	2.82	2.79
	Height, in.	5.69	5.38
Strain rate, in./min.		0.00	0.00
Back Pressure, psi		30.00	30.00
Cell Pressure, psi		45.00	75.00
Fail. Stress, ksf		6.7	8.5
Total Pore Pr., ksf		5.4	8.5
Ult. Stress, ksf			
Total Pore Pr., ksf			
$\bar{\sigma}_1$ Failure, ksf		7.8	10.9
$\bar{\sigma}_3$ Failure, ksf		1.1	2.3

Type of Test:
CU with Pore Pressures
Sample Type: UD
Description: Elastic SILT, some clay, little sand, gray
LL= 170 **PL=** 96 **PI=** 74
Specific Gravity= 2.638
Remarks:

Reviewed By _____

Client: GCME

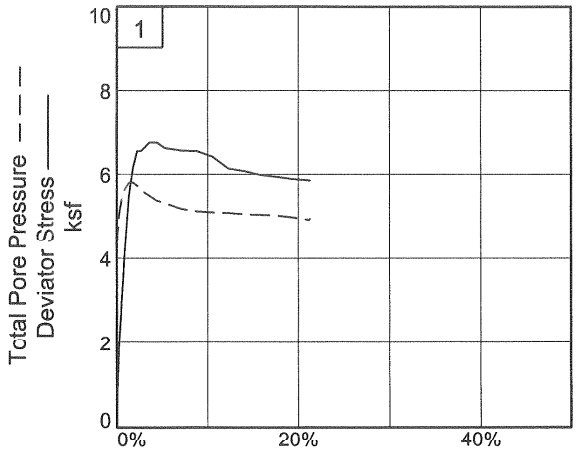
Project: C-43

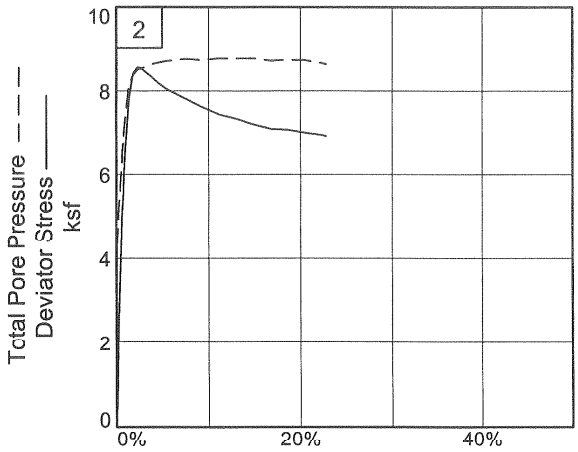
Source of Sample: Boring No.: CB-162 **Depth:** 56'-58'
Sample Number: UD
Proj. No.: 6738-06-4686 **Date Sampled:**

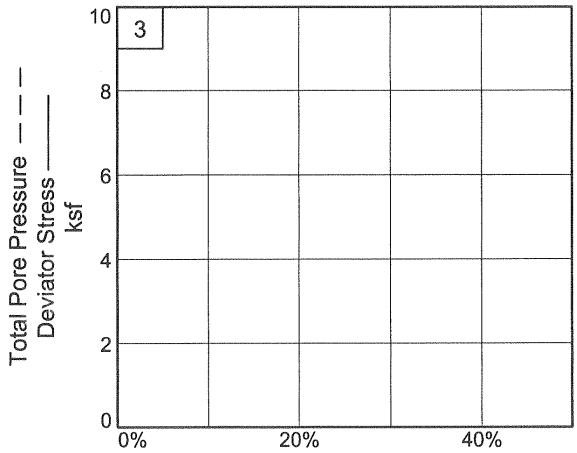
TRIAXIAL SHEAR TEST REPORT

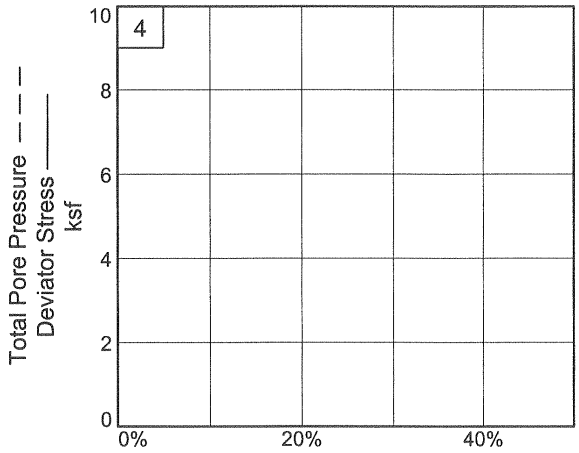
MACTEC ENGINEERING AND CONSULTING, INC.

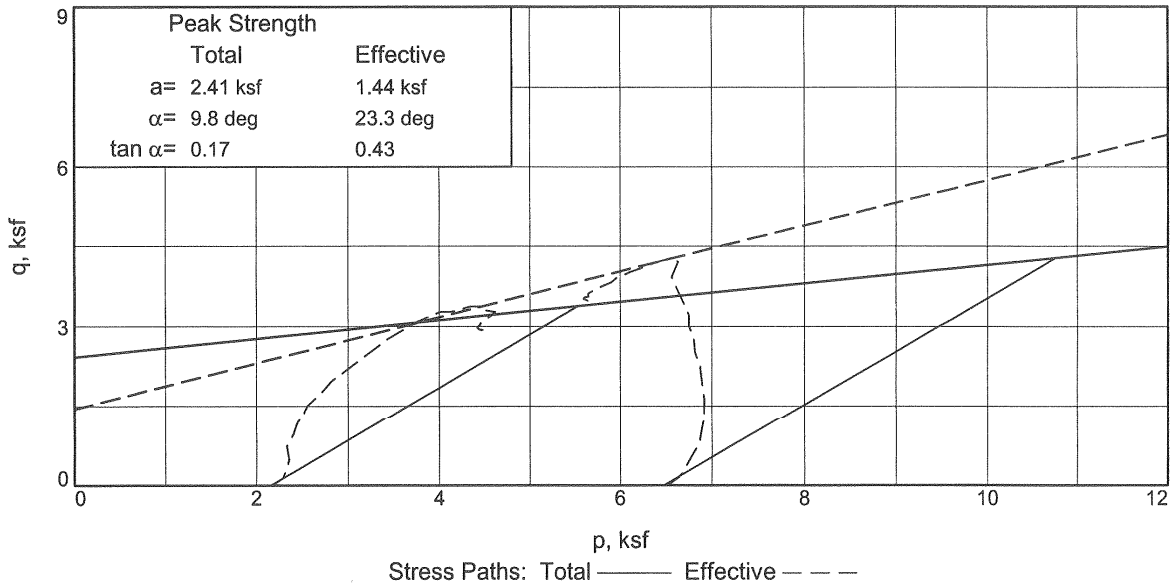
Tested By: MC **Checked By:** [illegible] 4/25/07







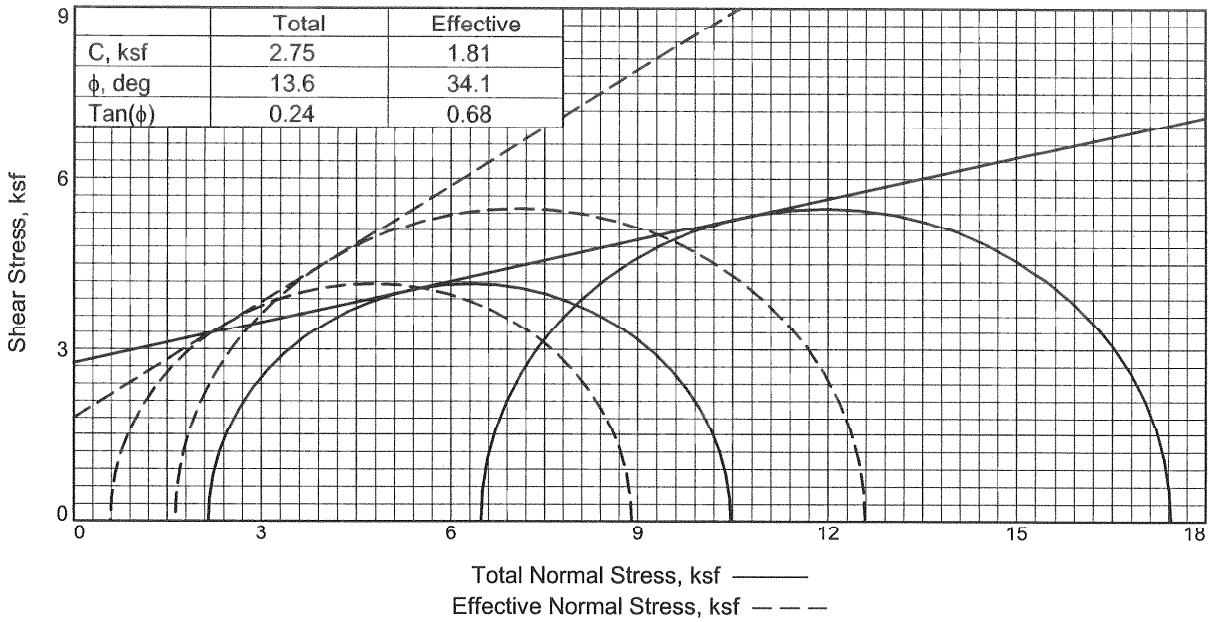




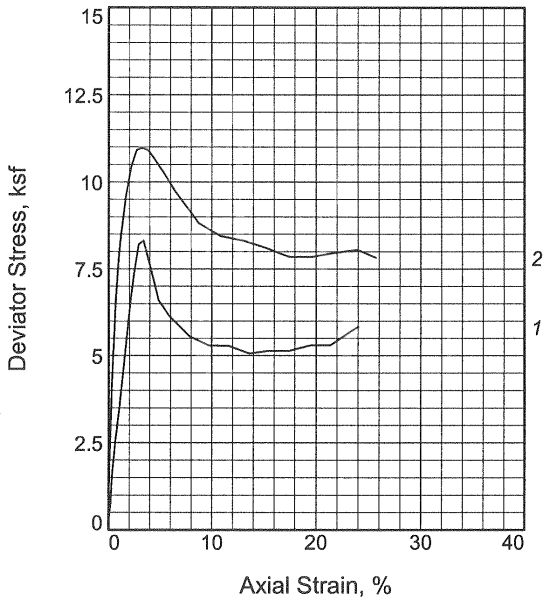
Stress Paths: Total ——— Effective – – –

Client: GCME
Project: C-43
Source of Sample: Boring No.: CB-162 **Depth:** 56'-58' **Sample Number:** UD
Project No.: 6738-06-4686 **Reviewed By** _____ **MACTEC Engineering and Consulting, Inc.**

Tested By: MC **Checked By:** _____



	Total	Effective
C, ksf	2.75	1.81
ϕ, deg	13.6	34.1
Tan(ϕ)	0.24	0.68



Sample No.		1	2
Initial	Water Content, %	100.1	100.1
	Dry Density, pcf	42.3	42.0
	Saturation, %	90.5	89.7
	Void Ratio	2.9845	3.0081
	Diameter, in.	2.86	2.84
	Height, in.	5.25	4.85
At Test	Water Content, %	102.9	90.3
	Dry Density, pcf	44.6	49.0
	Saturation, %	100.0	100.0
	Void Ratio	2.7775	2.4350
	Diameter, in.	2.81	2.70
	Height, in.	5.16	4.61
Strain rate, in./min.		0.00	0.00
Back Pressure, psi		30.00	30.00
Cell Pressure, psi		45.00	75.00
Fail. Stress, ksf		8.3	11.0
Total Pore Pr., ksf		5.9	9.2
Ult. Stress, ksf			
Total Pore Pr., ksf			
$\bar{\sigma}_1$ Failure, ksf		8.9	12.6
$\bar{\sigma}_3$ Failure, ksf		0.6	1.6

Type of Test:
CU with Pore Pressures

Sample Type: UD

Description: Elastic SILT, some clay, trace sand, gray

LL= 184 **PL=** 88 **PI=** 96

Specific Gravity= 2.698

Remarks:

Reviewed By _____

Client: GCME

Project: C-43

Source of Sample: Boring No.: CB-167 **Depth:** 48'-50'

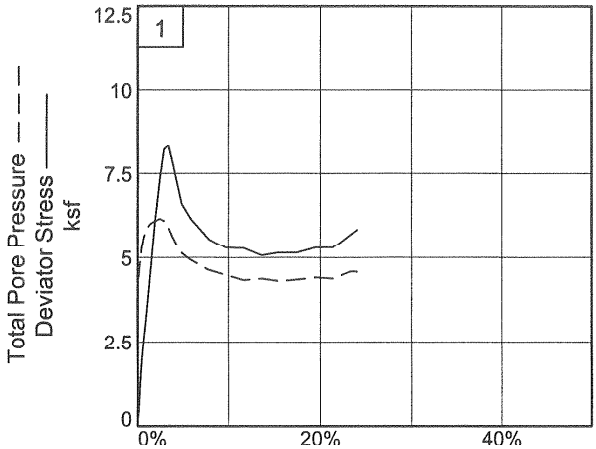
Sample Number: UD

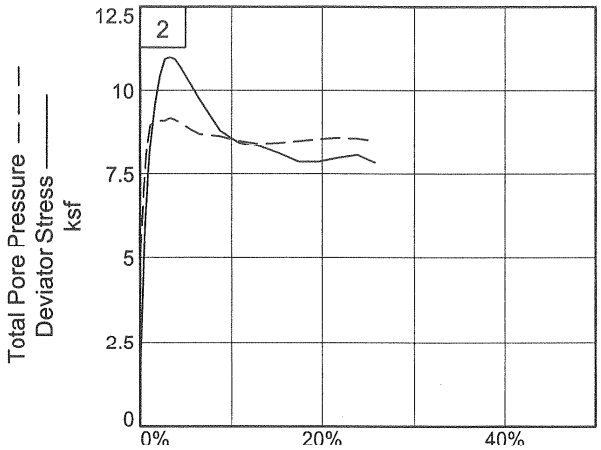
Proj. No.: 6738-06-4686 **Date Sampled:**

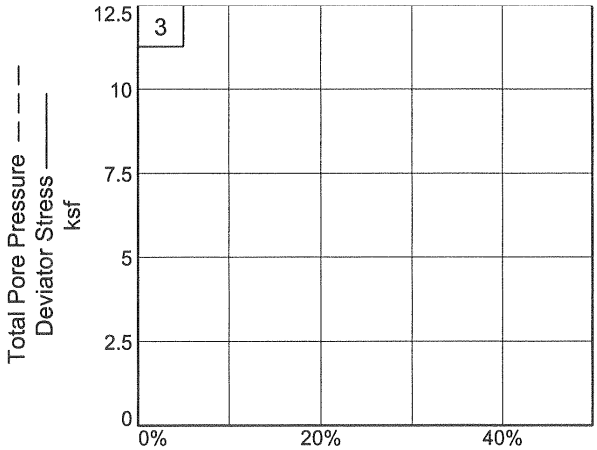
TRIAXIAL SHEAR TEST REPORT

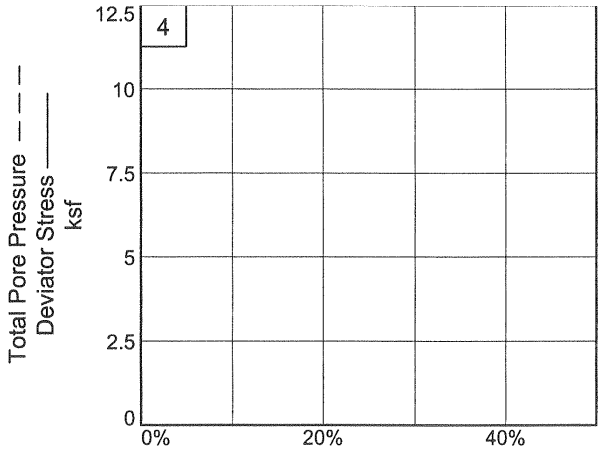
MACTEC ENGINEERING AND CONSULTING, INC.

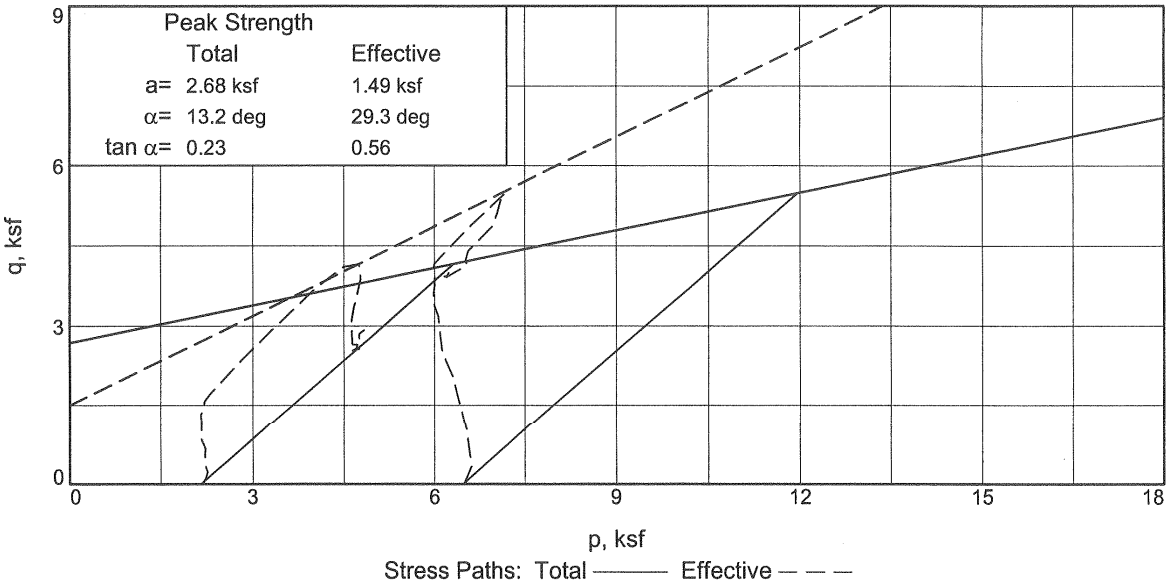
Tested By: MC **Checked By:** [illegible] 4/15/07





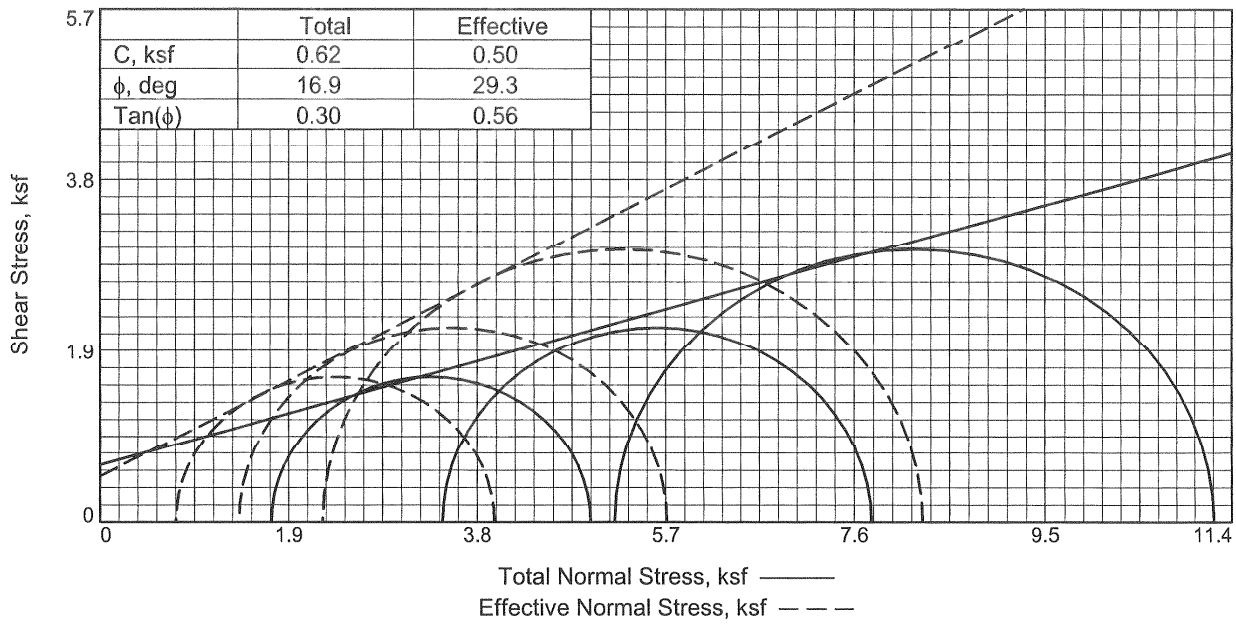




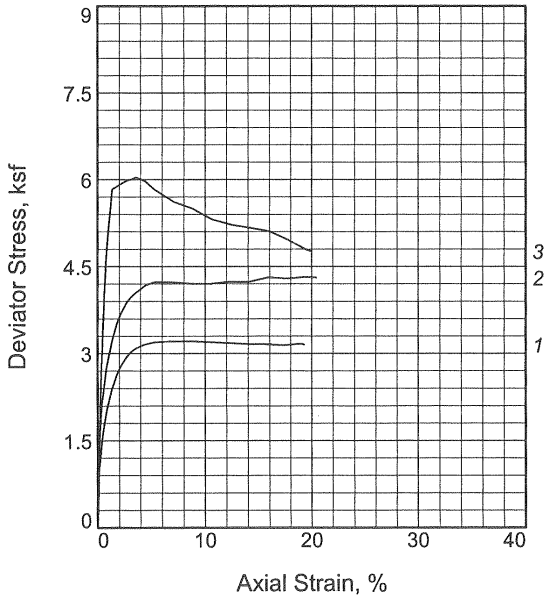


Client: GCME
Project: C-43
Source of Sample: Boring No.: CB-167 **Depth:** 48'-50' **Sample Number:** UD
Project No.: 6738-06-4686 **Reviewed By** _____ **MACTEC Engineering and Consulting, Inc.**

Tested By: MC **Checked By:** Michael 4-25-07



	Total	Effective
C, ksf	0.62	0.50
ϕ, deg	16.9	29.3
Tan(ϕ)	0.30	0.56



Sample No.		1	2	3
Initial	Water Content, %	32.6	32.6	32.6
	Dry Density, pcf	80.4	81.1	76.3
	Saturation, %	80.1	81.5	72.8
	Void Ratio	1.1009	1.0816	1.2111
	Diameter, in.	2.85	2.84	2.87
	Height, in.	5.80	5.75	5.76
At Test	Water Content, %	39.4	36.6	39.5
	Dry Density, pcf	81.7	84.8	81.6
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.0663	0.9902	1.0693
	Diameter, in.	2.83	2.80	2.81
	Height, in.	5.77	5.67	5.64
Strain rate, in./min.		0.00	0.00	0.00
Back Pressure, psi		30.00	30.00	30.00
Cell Pressure, psi		42.00	54.00	66.00
Fail. Stress, ksf		3.21	4.32	6.03
Total Pore Pr., ksf		5.28	6.38	7.26
Ult. Stress, ksf				
Total Pore Pr., ksf				
$\bar{\sigma}_1$ Failure, ksf		3.97	5.71	8.28
$\bar{\sigma}_3$ Failure, ksf		0.76	1.40	2.25

Type of Test:
CU with Pore Pressures
Sample Type: UD
Description: CLAY, some silt, little sand, light gray
LL= 72 **PL=** 30 **PI=** 42
Specific Gravity= 2.704
Remarks:

Reviewed By _____

Client: GCME

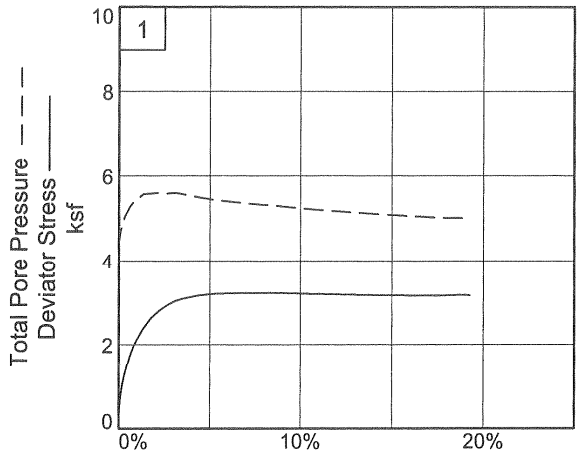
Project: C-43

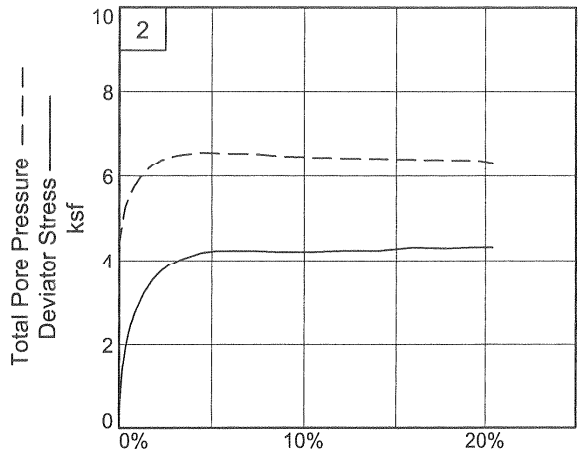
Source of Sample: CB-169 **Depth:** 27.5-30.0
Sample Number: UD
Proj. No.: 6738-06-4686 **Date Sampled:**

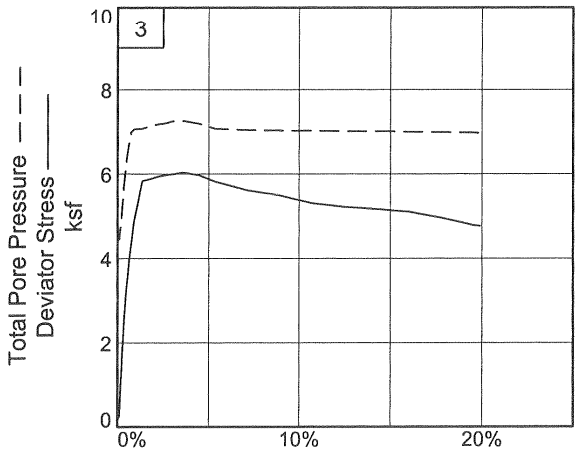
TRIAXIAL SHEAR TEST REPORT

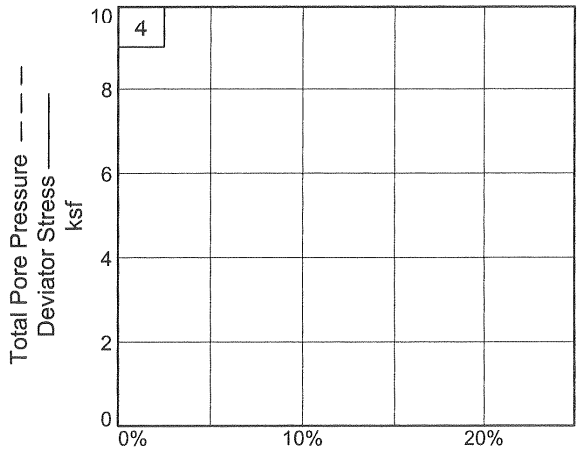
MACTEC ENGINEERING AND CONSULTING, INC.

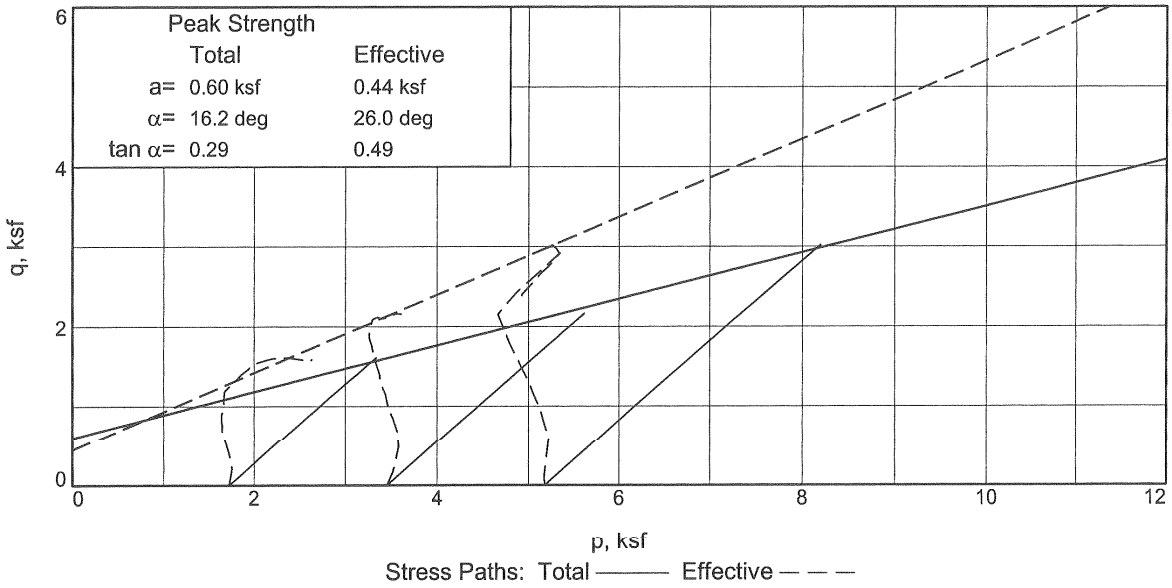
Tested By: MC **Checked By:** Michael Hel 4-11-07





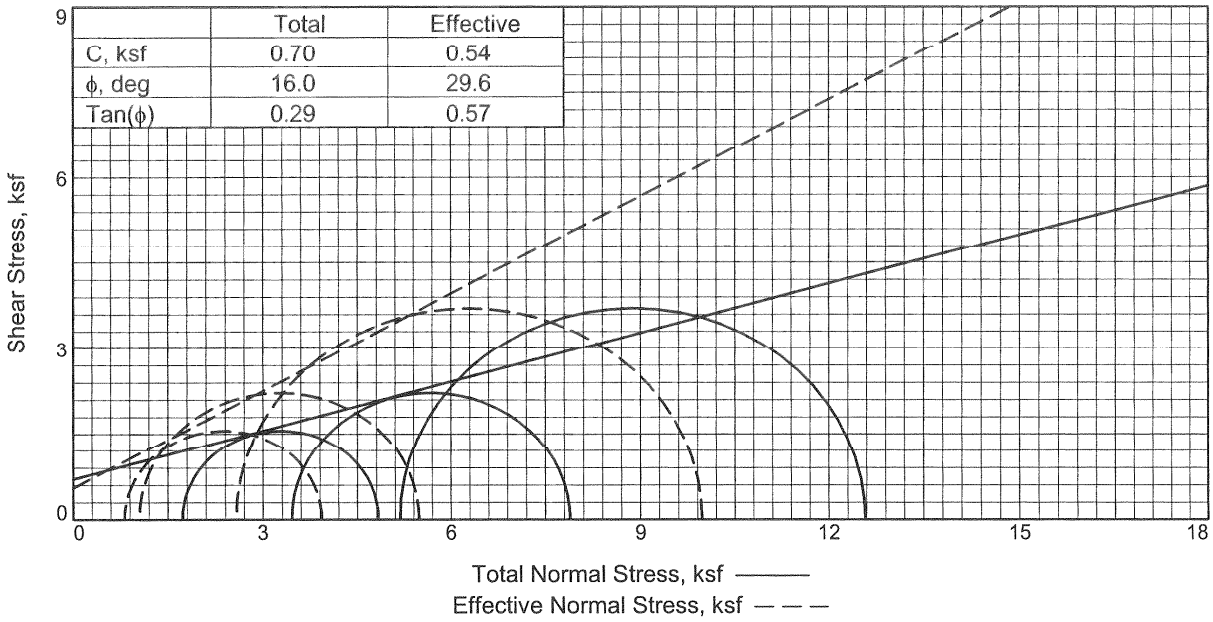




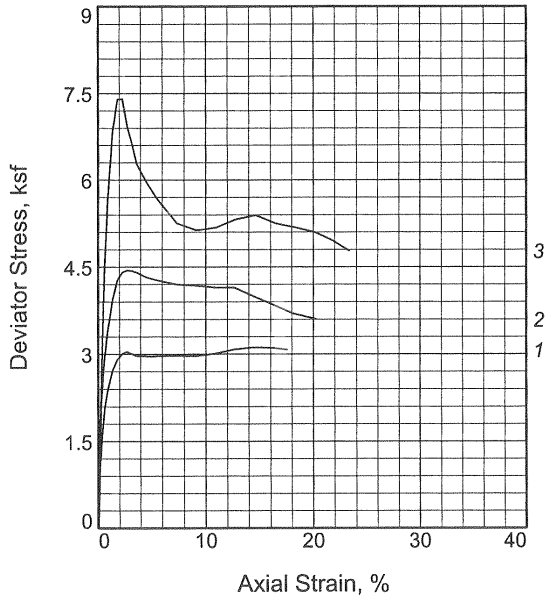


Client: GCME
Project: C-43
Source of Sample: CB-169 **Depth:** 27.5-30.0 **Sample Number:** UD
Project No.: 6738-06-4686 **Reviewed By** _____ **MACTEC Engineering and Consulting, Inc.**

Tested By: MC **Checked By:** Michael 4-11-07



	Total	Effective
C, ksf	0.70	0.54
ϕ, deg	16.0	29.6
Tan(ϕ)	0.29	0.57



Sample No.		1	2	3
Initial	Water Content, %	49.1	49.1	49.1
	Dry Density, pcf	66.5	70.2	67.3
	Saturation, %	88.2	96.8	89.9
	Void Ratio	1.4548	1.3256	1.4281
	Diameter, in.	2.87	2.87	2.88
	Height, in.	5.63	5.64	5.60
At Test	Water Content, %	52.3	45.9	48.8
	Dry Density, pcf	69.0	74.2	71.7
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.3679	1.2010	1.2767
	Diameter, in.	2.84	2.82	2.82
	Height, in.	5.57	5.54	5.48
Strain rate, in./min.		0.00	0.00	0.00
Back Pressure, psi		30.00	30.00	30.00
Cell Pressure, psi		42.00	54.00	66.00
Fail. Stress, ksf		3.11	4.44	7.40
Total Pore Pr., ksf		5.23	6.72	6.93
Ult. Stress, ksf				
Total Pore Pr., ksf				
$\bar{\sigma}_1$ Failure, ksf		3.93	5.49	9.98
$\bar{\sigma}_3$ Failure, ksf		0.82	1.05	2.58

Type of Test:
CU with Pore Pressures
Sample Type: UD
Description: CLAY, some fine sand, some silt, gray
LL= 100 **PL=** 28 **PI=** 72
Specific Gravity= 2.616
Remarks:

Reviewed By _____

Client: GCME

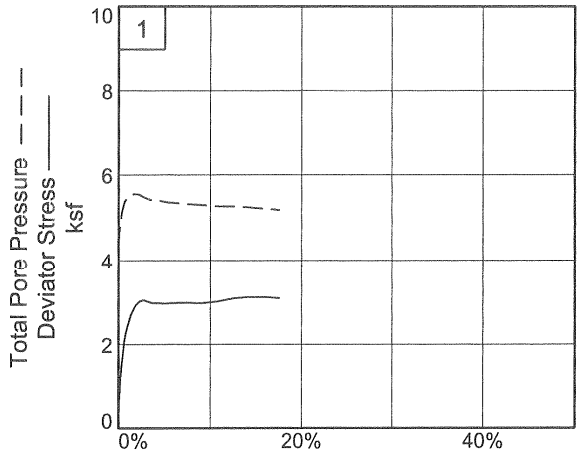
Project: C-43

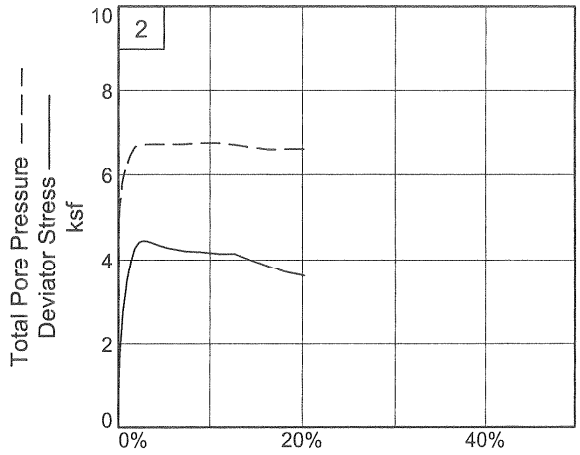
Source of Sample: Boring No.: CB-172 **Depth:** 28'-30'
Sample Number: UD
Proj. No.: 6738-06-4686 **Date Sampled:**

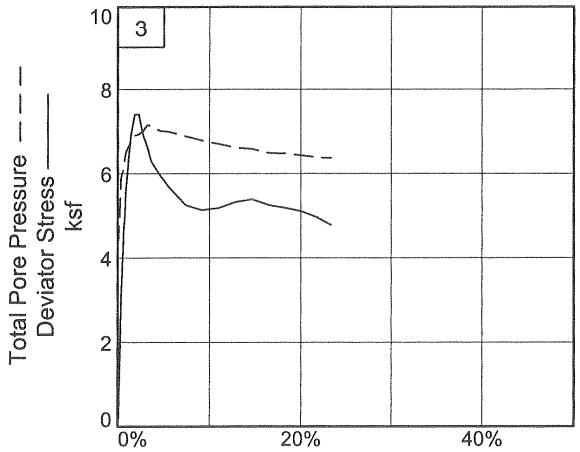
TRIAXIAL SHEAR TEST REPORT

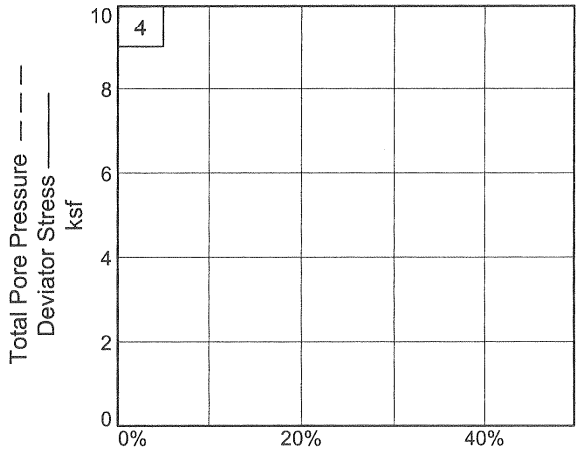
MACTEC ENGINEERING AND CONSULTING, INC.

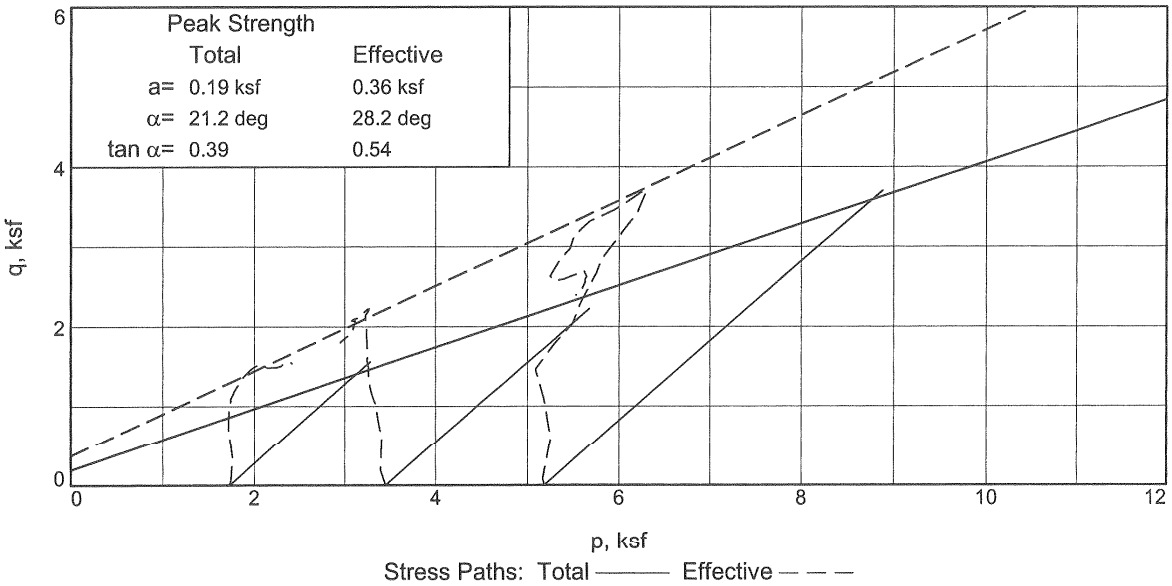
Tested By: MC **Checked By:** Michael Hd, 4-9-07





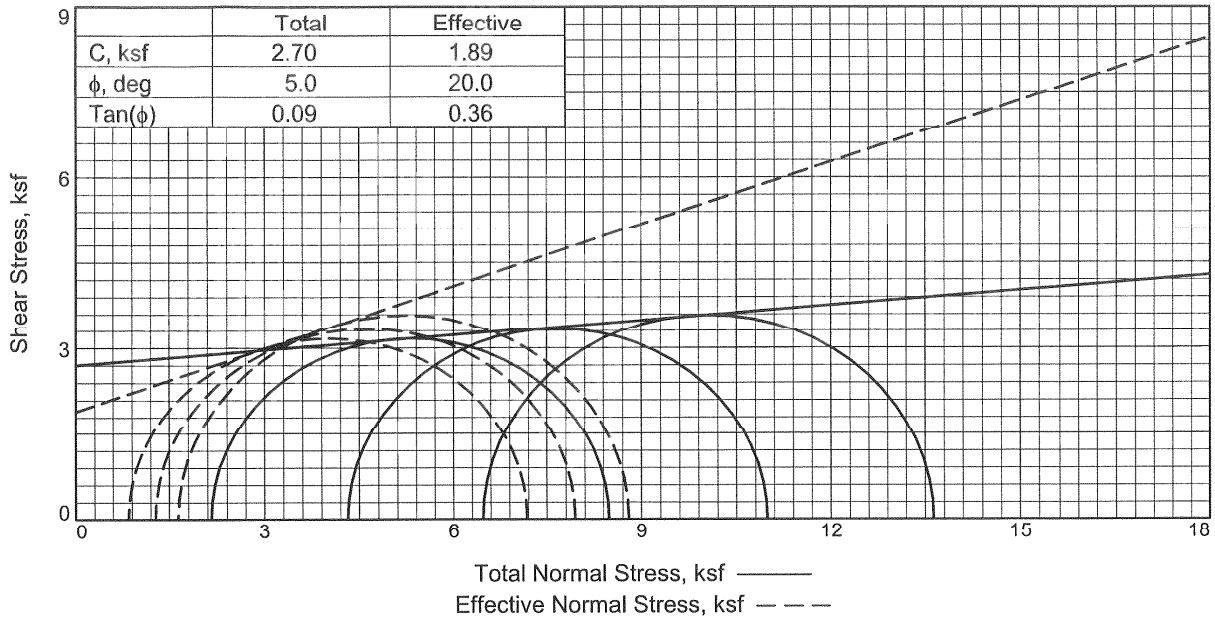




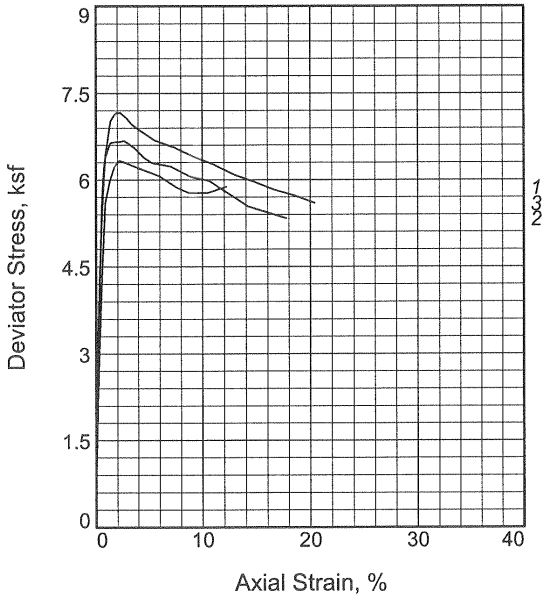


Client: GCME
Project: C-43
Source of Sample: Boring No.: CB-172 **Depth:** 28'-30' **Sample Number:** UD
Project No.: 6738-06-4686 **Reviewed By** _____ **MACTEC Engineering and Consulting, Inc.**

Tested By: MC _____ **Checked By:** _____



	Total	Effective
C, ksf	2.70	1.89
ϕ, deg	5.0	20.0
Tan(ϕ)	0.09	0.36



Sample No.		1	2	3
Initial	Water Content, %	72.9	72.9	72.9
	Dry Density, pcf	56.8	57.0	57.2
	Saturation, %	101.7	102.2	102.6
	Void Ratio	1.8757	1.8666	1.8581
	Diameter, in.	2.84	2.85	2.85
	Height, in.	5.80	5.74	5.55
At Test	Water Content, %	68.9	66.4	62.6
	Dry Density, pcf	58.3	59.6	61.9
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.8018	1.7390	1.6380
	Diameter, in.	2.82	2.81	2.78
	Height, in.	5.75	5.65	5.41
Strain rate, in./min.		0.00	0.00	0.00
Back Pressure, psi		30.00	30.00	30.00
Cell Pressure, psi		45.00	60.00	75.00
Fail. Stress, ksf		6.33	6.67	7.16
Total Pore Pr., ksf		5.63	7.36	9.16
Ult. Stress, ksf				
Total Pore Pr., ksf				
$\bar{\sigma}_1$ Failure, ksf		7.18	7.95	8.80
$\bar{\sigma}_3$ Failure, ksf		0.85	1.28	1.64

Type of Test:
CU with Pore Pressures

Sample Type: UD

Description: Elastic SILT, some clay, some fine sand, greenish gray

LL= 126 **PL=** 52 **PI=** 74

Specific Gravity= 2.617

Remarks:

Reviewed By _____

Client: GCME

Project: C-43

Source of Sample: Boring No.: CB-178 **Depth:** 66'-68'

Sample Number: UD

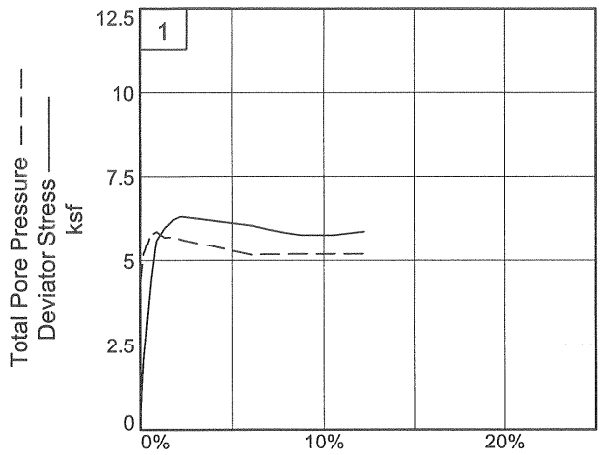
Proj. No.: 6738-06-4686 **Date Sampled:**

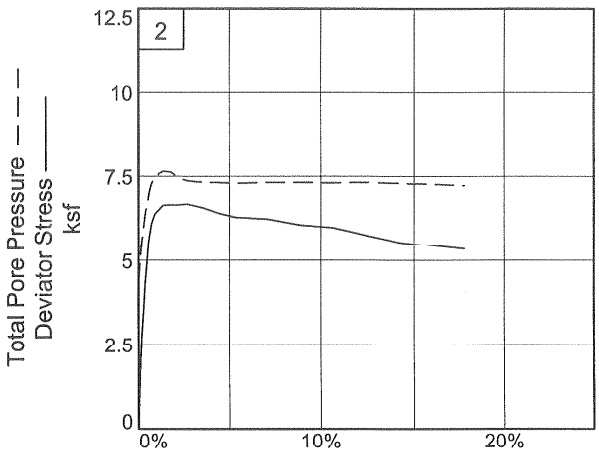
TRIAXIAL SHEAR TEST REPORT

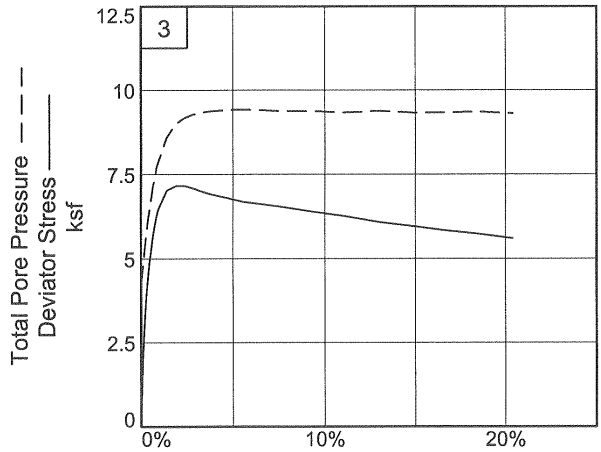
MACTEC ENGINEERING AND CONSULTING, INC.

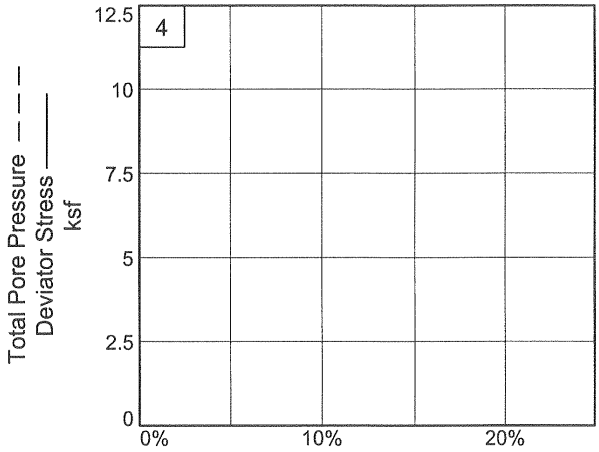
Tested By: MC **Checked By:** Michael Holm 4-13-07

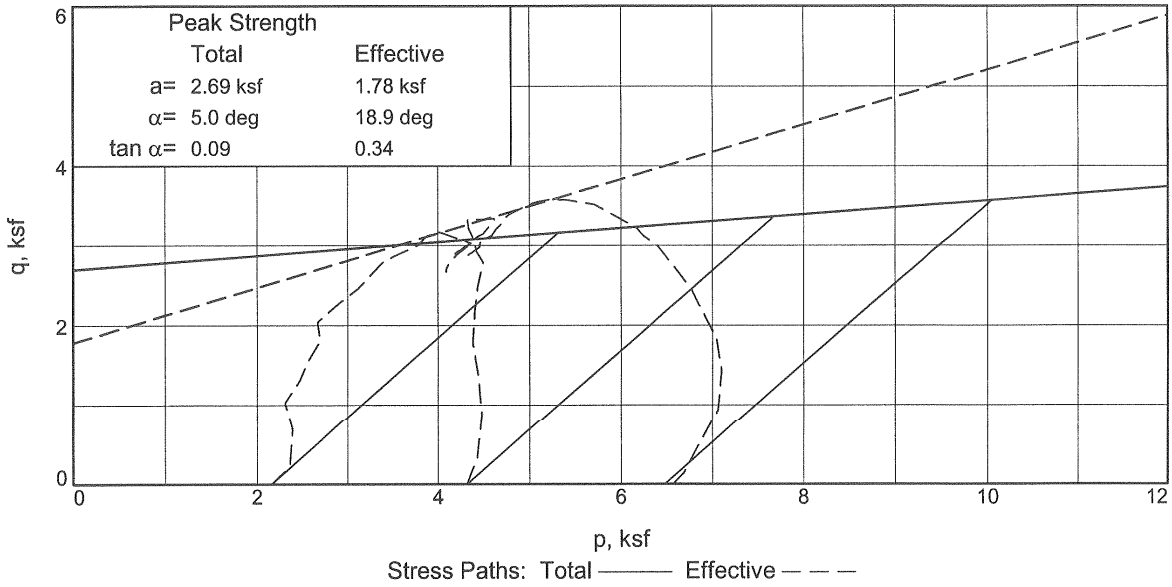
Michael J. Holm









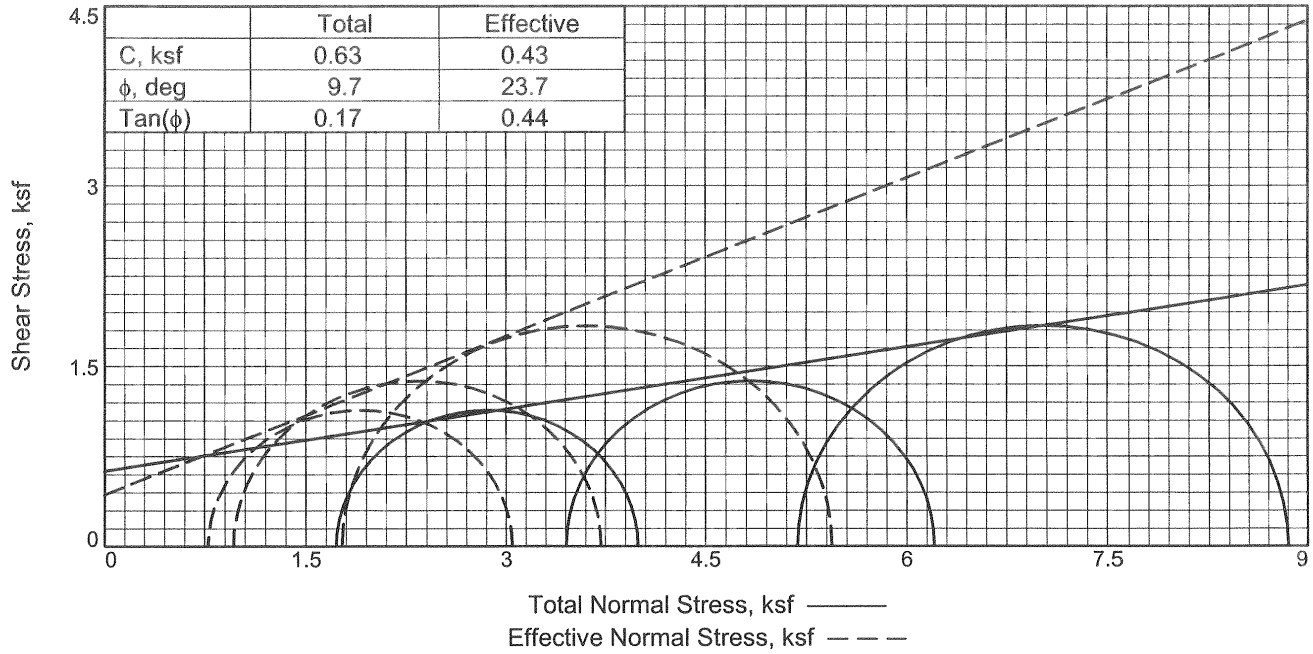


Stress Paths: Total ——— Effective — — —

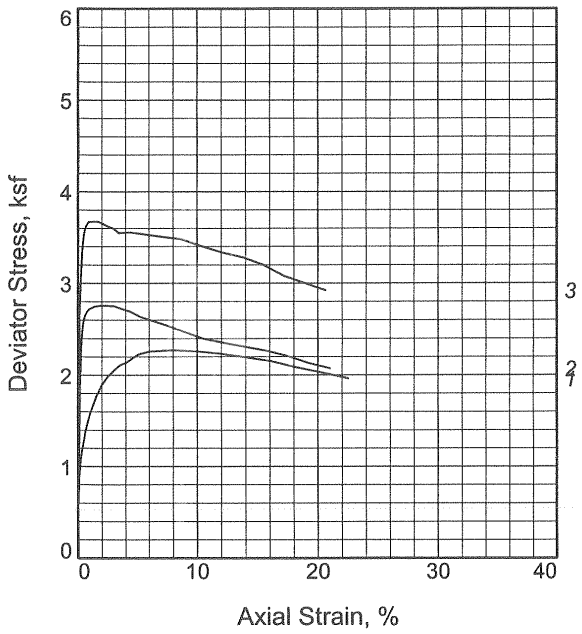
Client: GCME
Project: C-43
Source of Sample: Boring No.: CB-178 **Depth:** 66'-68' **Sample Number:** UD
Project No.: 6738-06-4686 **Reviewed By** _____ **MACTEC Engineering and Consulting, Inc.**

Tested By: MC **Checked By:** Michael Holm 4-13-07

Michael J. Holm



	Total	Effective
C, ksf	0.63	0.43
ϕ, deg	9.7	23.7
Tan(ϕ)	0.17	0.44



Sample No.		1	2	3
Initial	Water Content, %	27.8	27.8	27.8
	Dry Density, pcf	94.5	92.3	96.6
	Saturation, %	94.7	89.8	99.6
	Void Ratio	0.7987	0.8420	0.7589
	Diameter, in.	2.85	2.86	2.84
	Height, in.	5.04	5.78	5.86
At Test	Water Content, %	27.6	29.4	26.4
	Dry Density, pcf	97.0	94.4	98.8
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.7519	0.8001	0.7195
	Diameter, in.	2.83	2.84	2.82
	Height, in.	5.00	5.74	5.82
Strain rate, in./min.		0.01	0.01	0.01
Back Pressure, psi		20.00	20.00	20.00
Cell Pressure, psi		32.00	44.00	56.00
Fail. Stress, ksf		2.27	2.75	3.67
Total Pore Pr., ksf		3.83	5.37	6.29
Ult. Stress, ksf				
Total Pore Pr., ksf				
$\bar{\sigma}_1$ Failure, ksf		3.05	3.72	5.44
$\bar{\sigma}_3$ Failure, ksf		0.78	0.96	1.77

Type of Test:
CU with Pore Pressures
Sample Type: UD
Description: CLAY, some medium to fine sand sized limerock and shell fragments, little silt,
LL= 24 **PL=** 19 **PI=** 5
Specific Gravity= 2.722
Remarks:

Reviewed By _____

Client: GCME

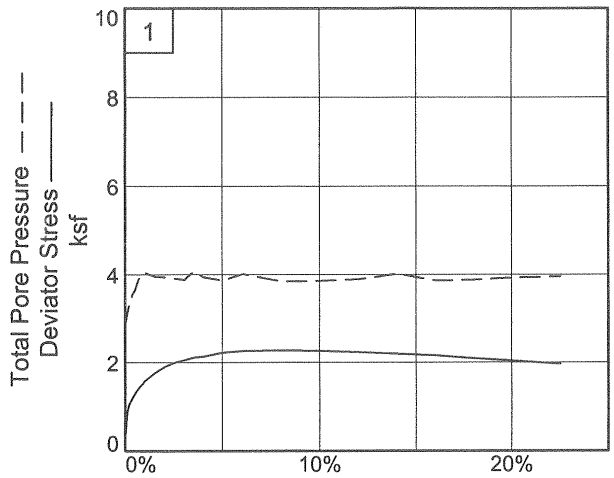
Project: C-43

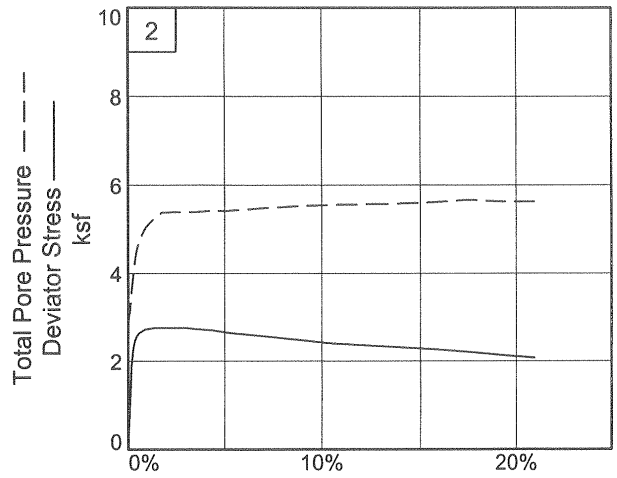
Source of Sample: Boring No.: CB-182 **Depth:** 21'-21.1'
Sample Number: UD
Proj. No.: 6738064686 **Date Sampled:**

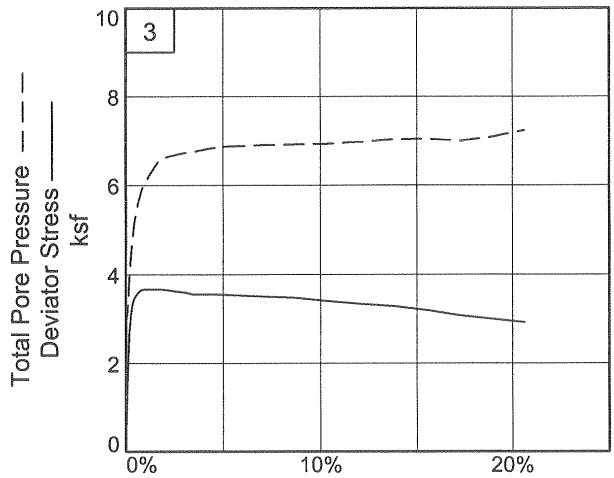
TRIAXIAL SHEAR TEST REPORT

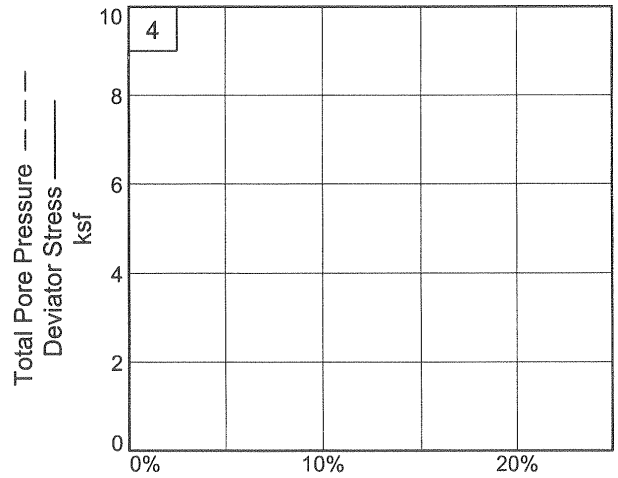
MACTEC ENGINEERING AND CONSULTING, INC.

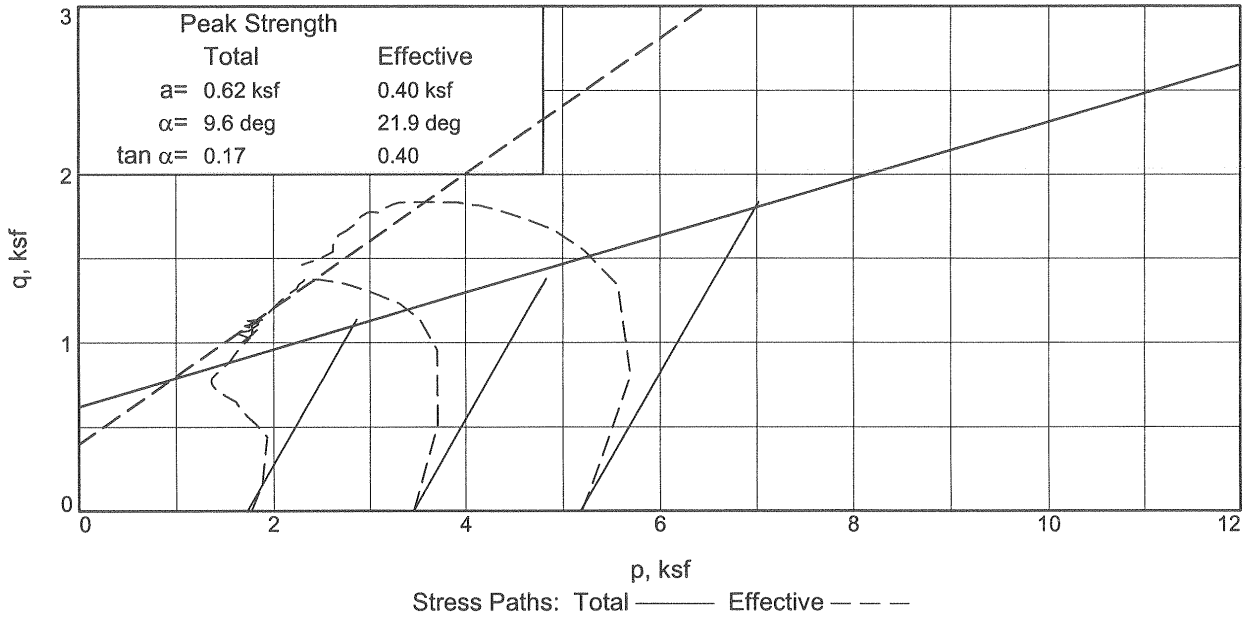
Tested By: MC _____ **Checked By:** _____





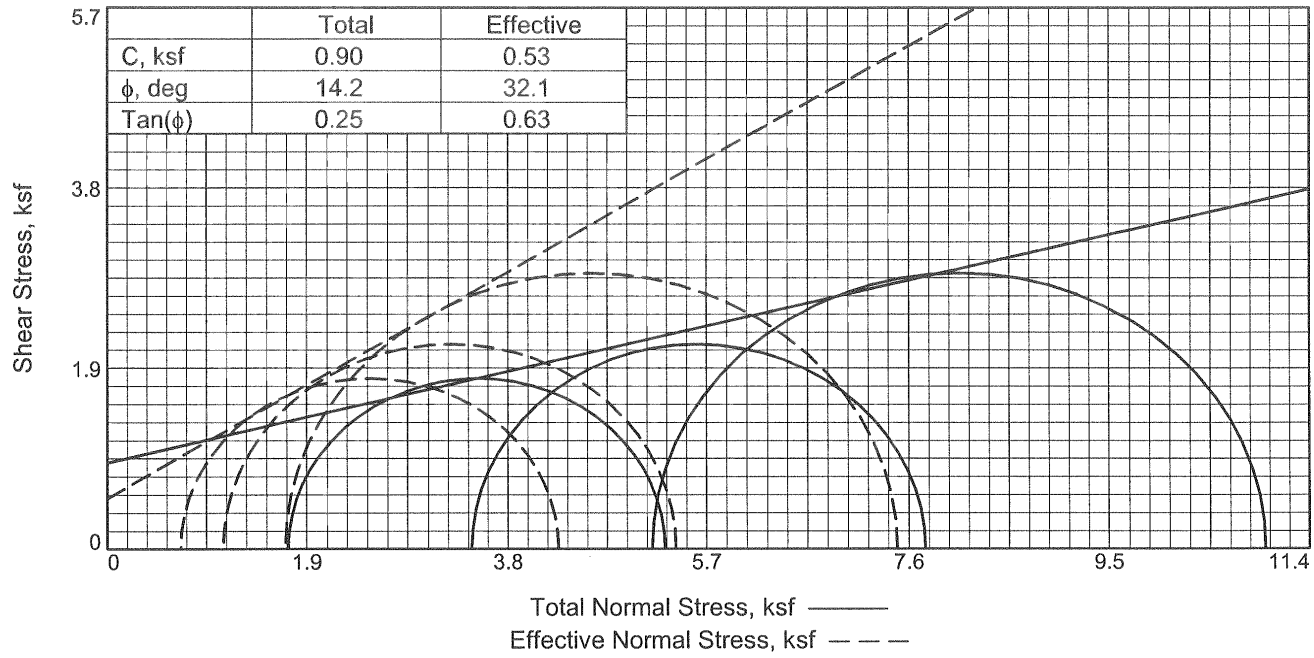




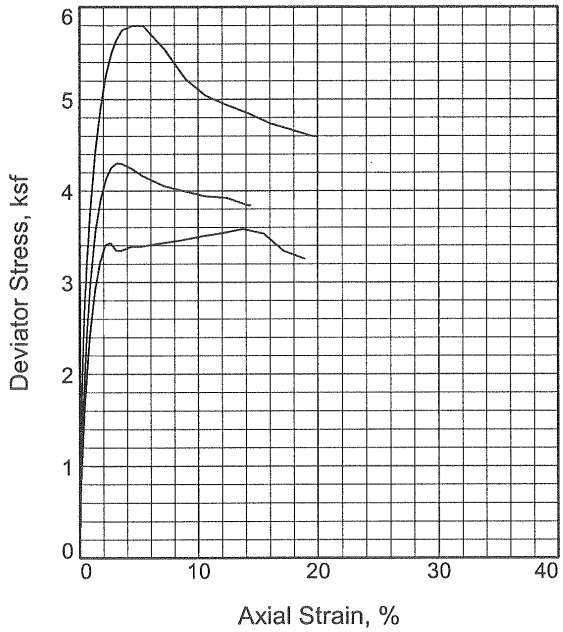


Client: GCME
Project: C-43
Source of Sample: Boring No.: CB-182 **Depth:** 21'-21.1' **Sample Number:** UD
Project No.: 6738064686 **Reviewed By** _____ **MACTEC Engineering and Consulting, Inc.**

Tested By: MC **Checked By:** _____



	Total	Effective
C, ksf	0.90	0.53
ϕ, deg	14.2	32.1
Tan(ϕ)	0.25	0.63



Sample No.		1	2	3
Initial	Water Content, %	58.6	58.6	58.6
	Dry Density, pcf	65.1	62.0	62.5
	Saturation, %	100.8	93.2	94.4
	Void Ratio	1.5373	1.6625	1.6426
	Diameter, in.	2.87	2.87	2.87
	Height, in.	5.92	5.82	5.88
At Test	Water Content, %	54.1	55.8	51.1
	Dry Density, pcf	67.9	66.7	70.2
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.4315	1.4761	1.3518
	Diameter, in.	2.83	2.80	2.76
	Height, in.	5.83	5.68	5.65
Strain rate, in./min.		0.00	0.00	0.00
Back Pressure, psi		20.00	20.00	20.00
Cell Pressure, psi		32.00	44.00	56.00
Fail. Stress, ksf		3.58	4.30	5.80
Total Pore Pr., ksf		3.90	5.23	6.36
Ult. Stress, ksf				
Total Pore Pr., ksf				
$\bar{\sigma}_1$ Failure, ksf		4.28	5.41	7.50
$\bar{\sigma}_3$ Failure, ksf		0.71	1.11	1.70

Type of Test:
CU with Pore Pressures
Sample Type: UD
Description: Gray CLAY, some silt, little sand

LL= 154 **PL=** 28 **PI=** 126
Specific Gravity= 2.644
Remarks: Percent Passing No. 200 Sieve: 81%

Reviewed By _____

Client: GCME

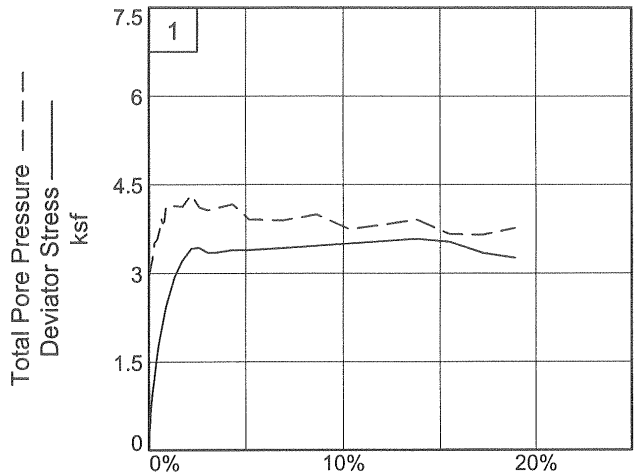
Project: C-43

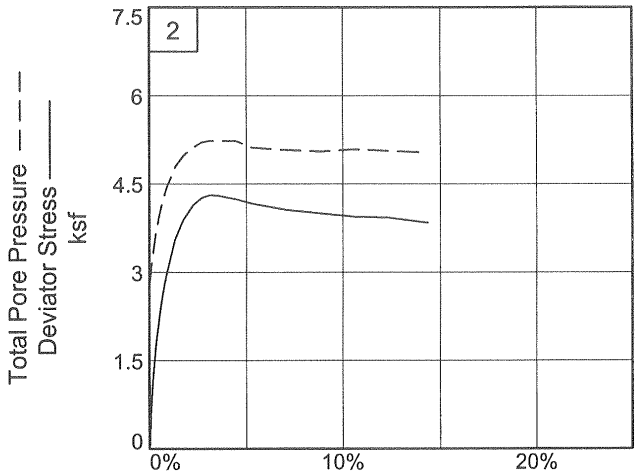
Source of Sample: Boring No.: CB-188 **Depth:** 15'-17'
Sample Number: UD
Proj. No.: 6738064686 **Date Sampled:**

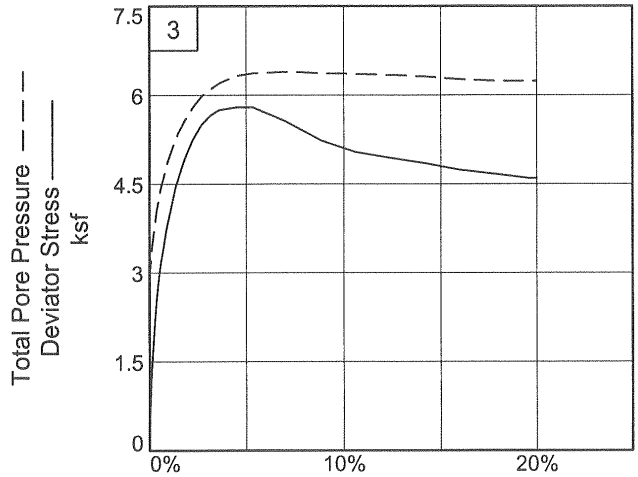
TRIAXIAL SHEAR TEST REPORT

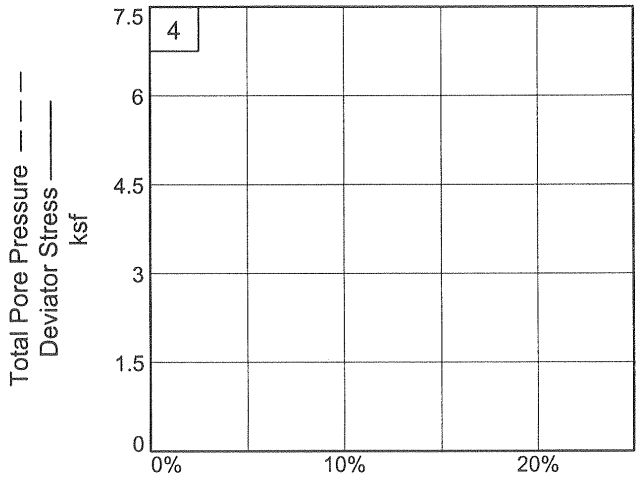
MACTEC ENGINEERING AND CONSULTING, INC.

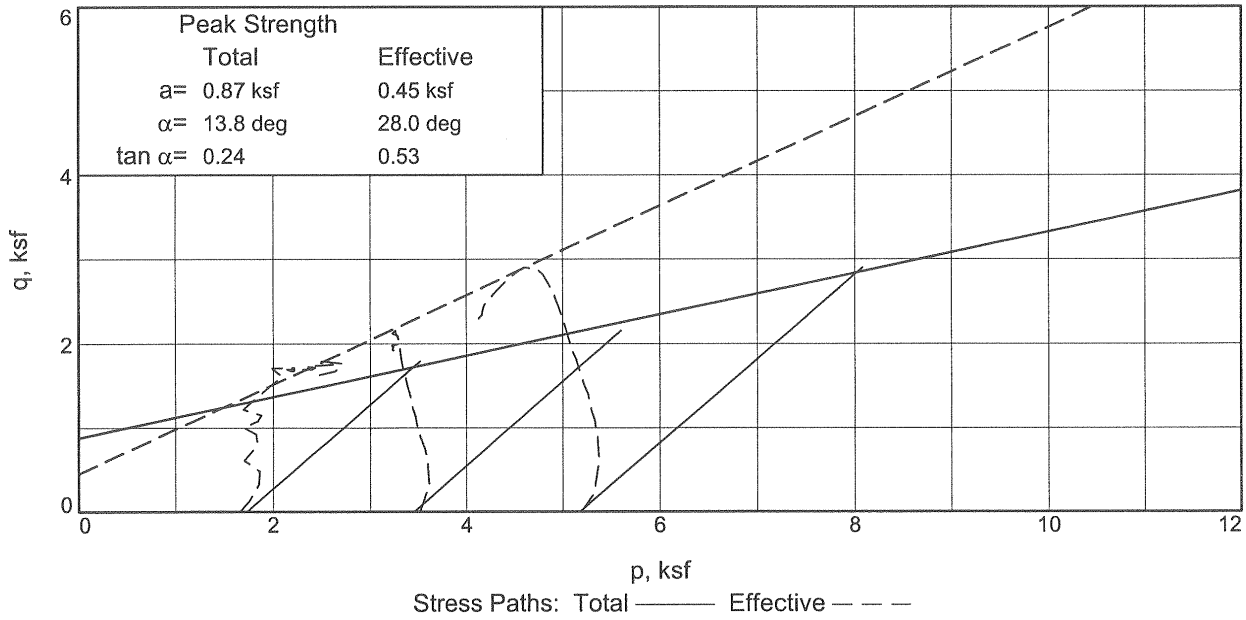
Tested By: MC **Checked By:** MJH











Client: GCME
Project: C-43
Source of Sample: Boring No.: CB-188 **Depth:** 15'-17' **Sample Number:** UD
Project No.: 6738064686 **Reviewed By** _____ **MACTEC Engineering and Consulting, Inc.**

Tested By: MC **Checked By:** MJH

CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST
ASTM D4767

Terracon
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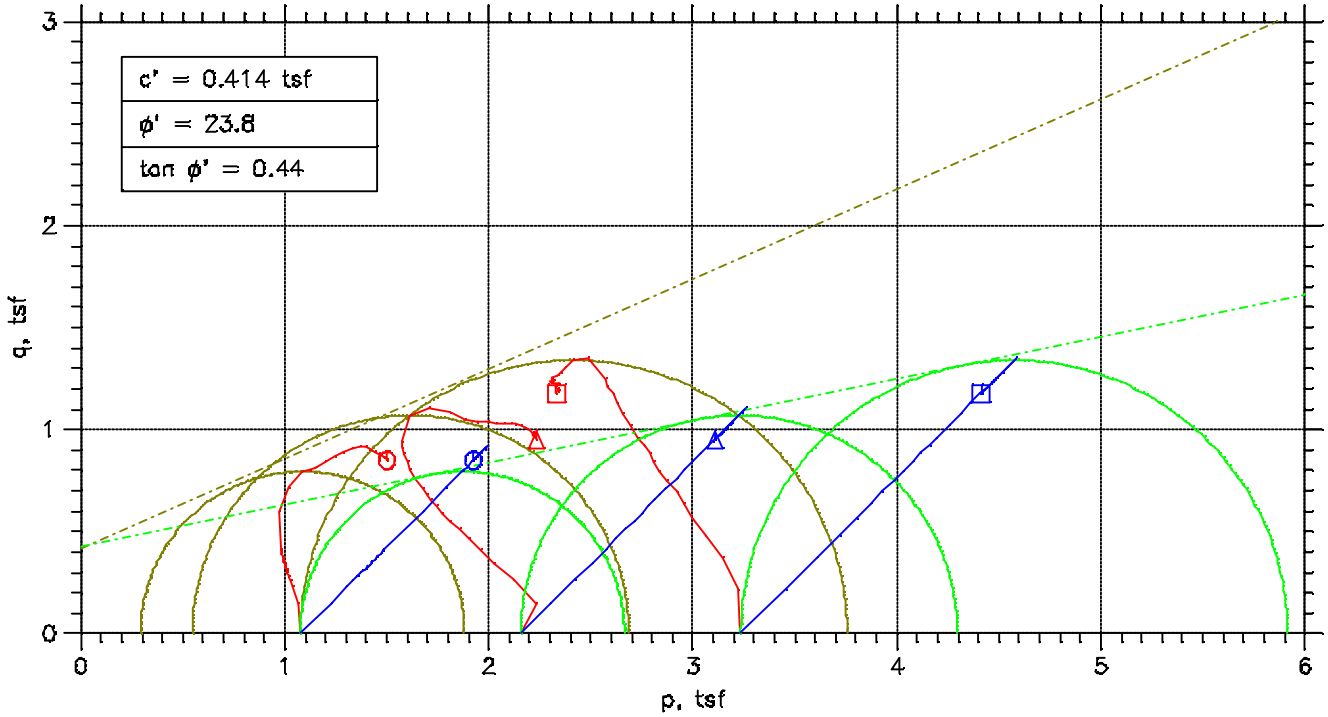

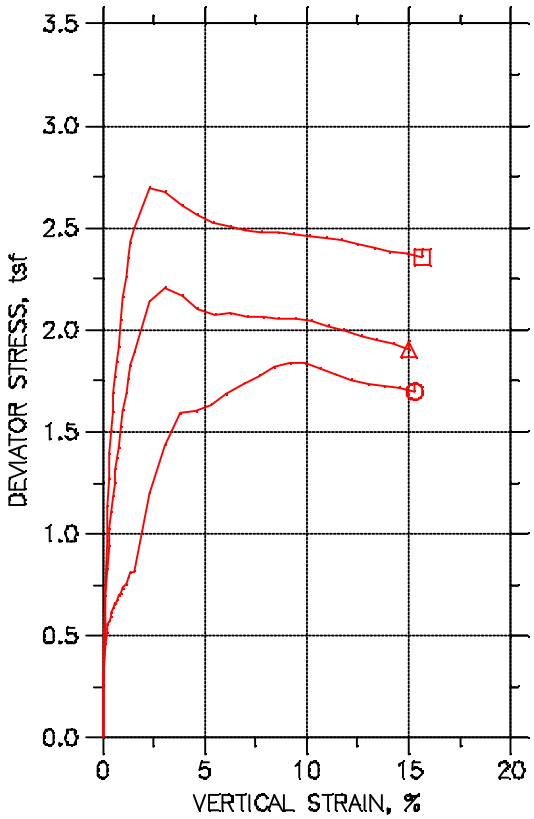

Symbol		○	△	□	
Test No.		15.0 PSI	30.0 PSI	45.0 PSI	
Initial	Diameter, in	2.8496	2.8512	2.865	
	Height, in	6.1299	6.2102	6.3622	
	Water Content, %	68.32	77.85	73.71	
	Dry Density, pcf	54.78	53.15	54.33	
	Saturation, %	88.82	96.79	94.68	
	Void Ratio	2.0768	2.1715	2.1022	
Before Shear	Water Content, %	75.12	71.73	66.25	
	Dry Density, pcf	55.66	57.4	60.44	
	Saturation, %	100.00	100.00	100.00	
	Void Ratio	2.0283	1.9366	1.7888	
	Back Press., tsf	5.0451	5.044	5.0443	
Minor Prin. Stress, tsf		1.0749	2.156	3.2357	
Max. Dev. Stress, tsf		1.8366	2.209	2.6983	
Time to Failure, min		780	240	180	
Strain Rate, %/min		0.02	0.02	0.02	
B-Value		0.96	0.99	0.95	
Estimated Specific Gravity		2.70	2.70	2.70	
Liquid Limit		150	150	150	
Plastic Limit		26	26	26	
Plasticity Index		124	124	124	

Failure Sketch

Project: C-43 W. BASIN STORAGE RES
Location: HENDRY COUNTY, FL
Project No.: HD165048
Boring No.: CB204 21-23
Sample Type: 3.0" ST

Description: LIGHT GRAY MARINE CLAY WITH SAND - SAND POCKETS AND SHELL NOTED

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767

Mon, 16-MAY-2016 10:56:04

SHEET C12

CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST
ASTM D4767

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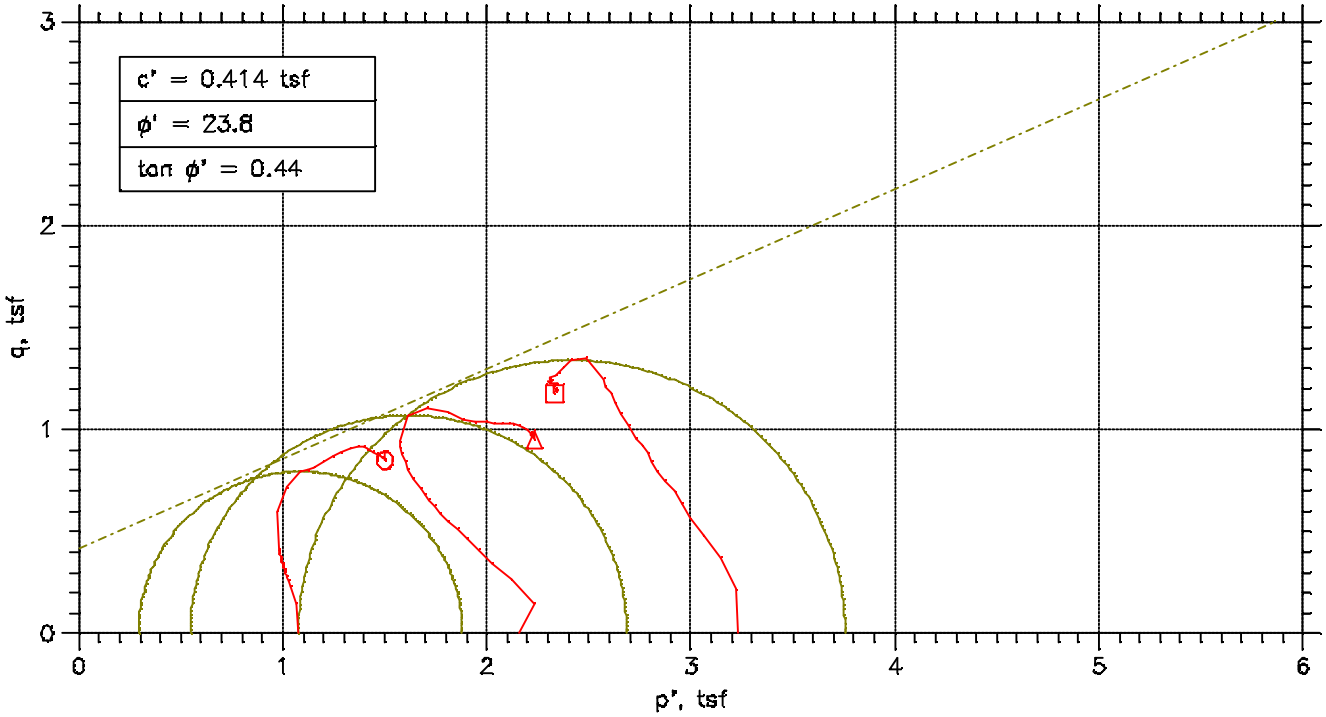

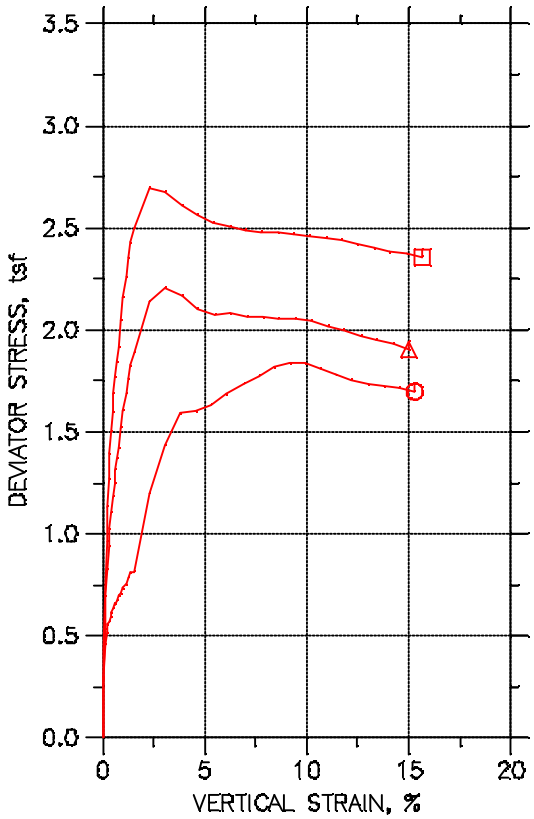

Symbol		○	△	□	
Test No.		15.0 PSI	30.0 PSI	45.0 PSI	
Initial	Diameter, in	2.8496	2.8512	2.865	
	Height, in	6.1299	6.2102	6.3622	
	Water Content, %	68.32	77.85	73.71	
	Dry Density, pcf	54.78	53.15	54.33	
	Saturation, %	88.82	96.79	94.68	
	Void Ratio	2.0768	2.1715	2.1022	
Before Shear	Water Content, %	75.12	71.73	66.25	
	Dry Density, pcf	55.66	57.4	60.44	
	Saturation, %	100.00	100.00	100.00	
	Void Ratio	2.0283	1.9366	1.7888	
	Back Press., tsf	5.0451	5.044	5.0443	
Minor Prin. Stress, tsf		1.0749	2.156	3.2357	
Max. Dev. Stress, tsf		1.8366	2.209	2.6983	
Time to Failure, min		780	240	180	
Strain Rate, %/min		0.02	0.02	0.02	
B-Value		0.96	0.99	0.95	
Estimated Specific Gravity		2.70	2.70	2.70	
Liquid Limit		150	150	150	
Plastic Limit		26	26	26	
Plasticity Index		124	124	124	

Failure Sketch

Project: C-43 W. BASIN STORAGE RES
Location: HENDRY COUNTY, FL
Project No.: HD165048
Boring No.: CB204 21-23
Sample Type: 3.0" ST

Description: LIGHT GRAY MARINE CLAY WITH SAND - SAND POCKETS AND SHELL NOTED

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767

SHEET C13

Mon, 16-MAY-2016 10:56:47

CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST
ASTM D4767

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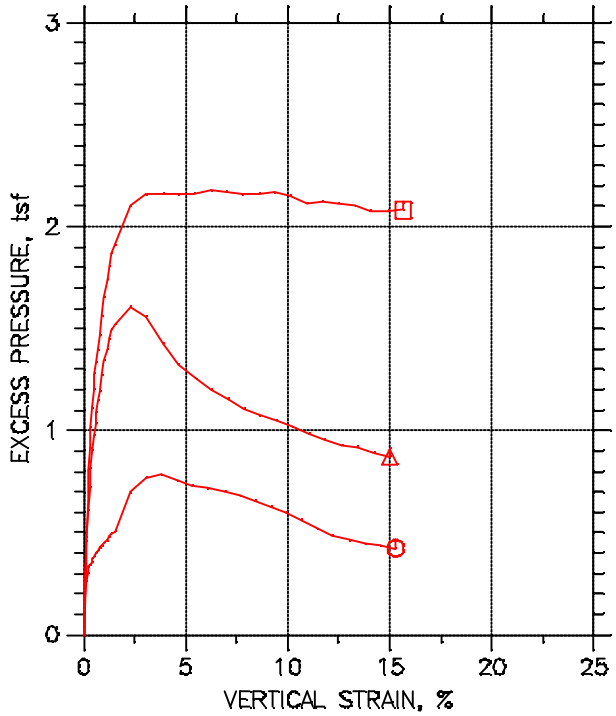

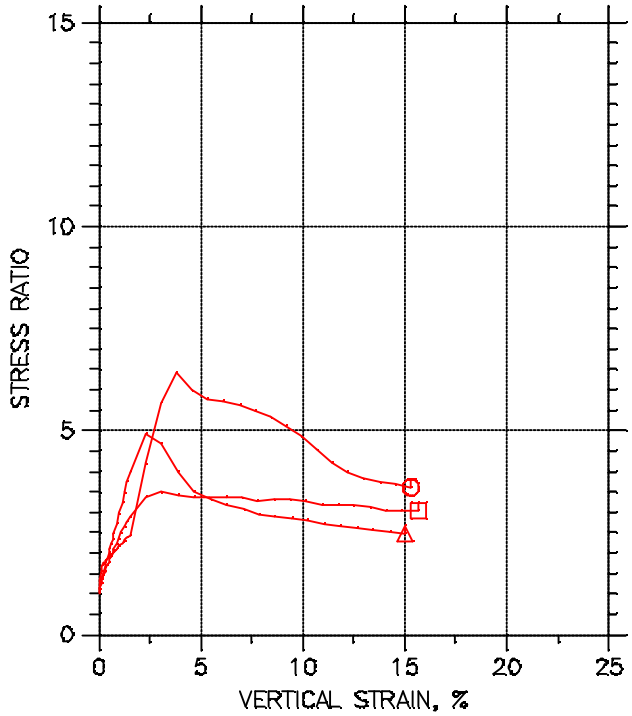

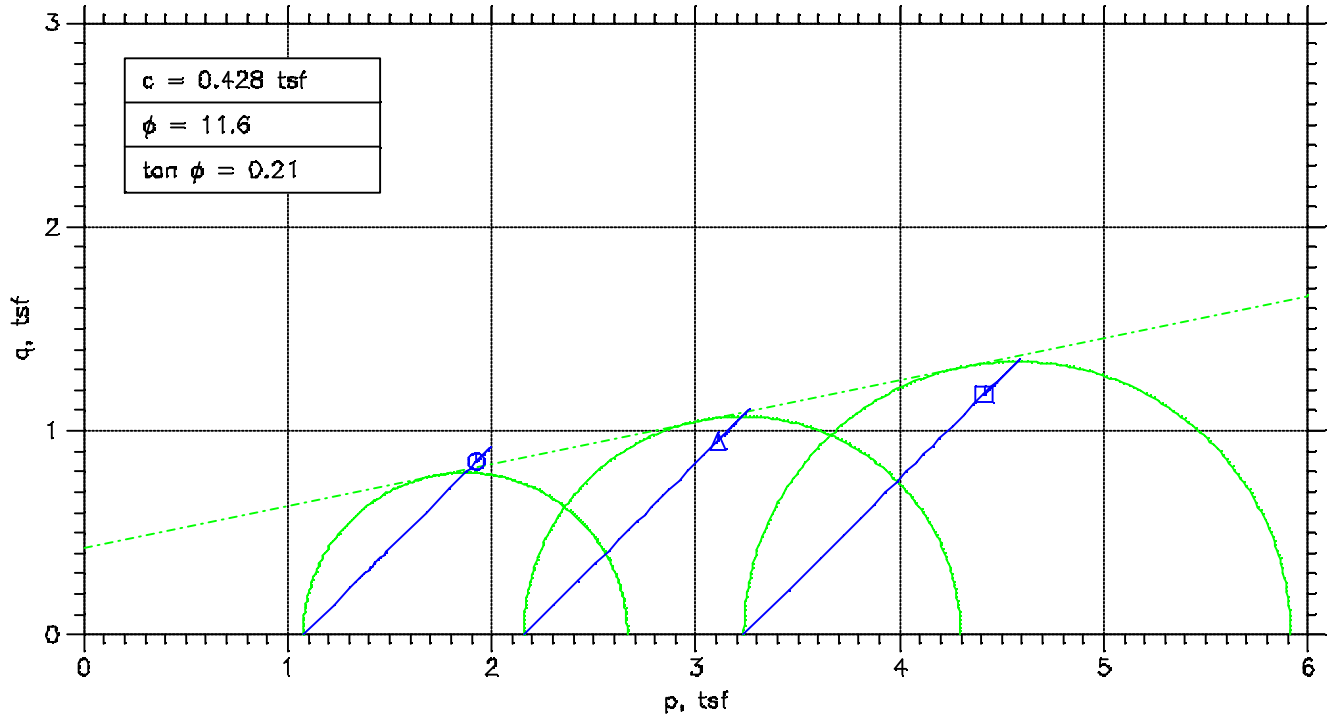

Project: C-43 W. BASIN STORAGE RES	Location: HENDRY COUNTY, FL	Project No.: HD165048
Boring No.: CB204 21-23	Tested By: BCM	Checked By: WPQ
Sample No.: N/A	Test Date: 5/9/16	Depth: 21.0'-23.0'
Test No.: CB204 21-23	Sample Type: 3.0" ST	Elevation: -----
Description: LIGHT GRAY MARINE CLAY WITH SAND - SAND POCKETS AND SHELL NOTED		
Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767		

SHEET C14

Mon, 16-MAY-2016 10:57:25

CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST
ASTM D4767

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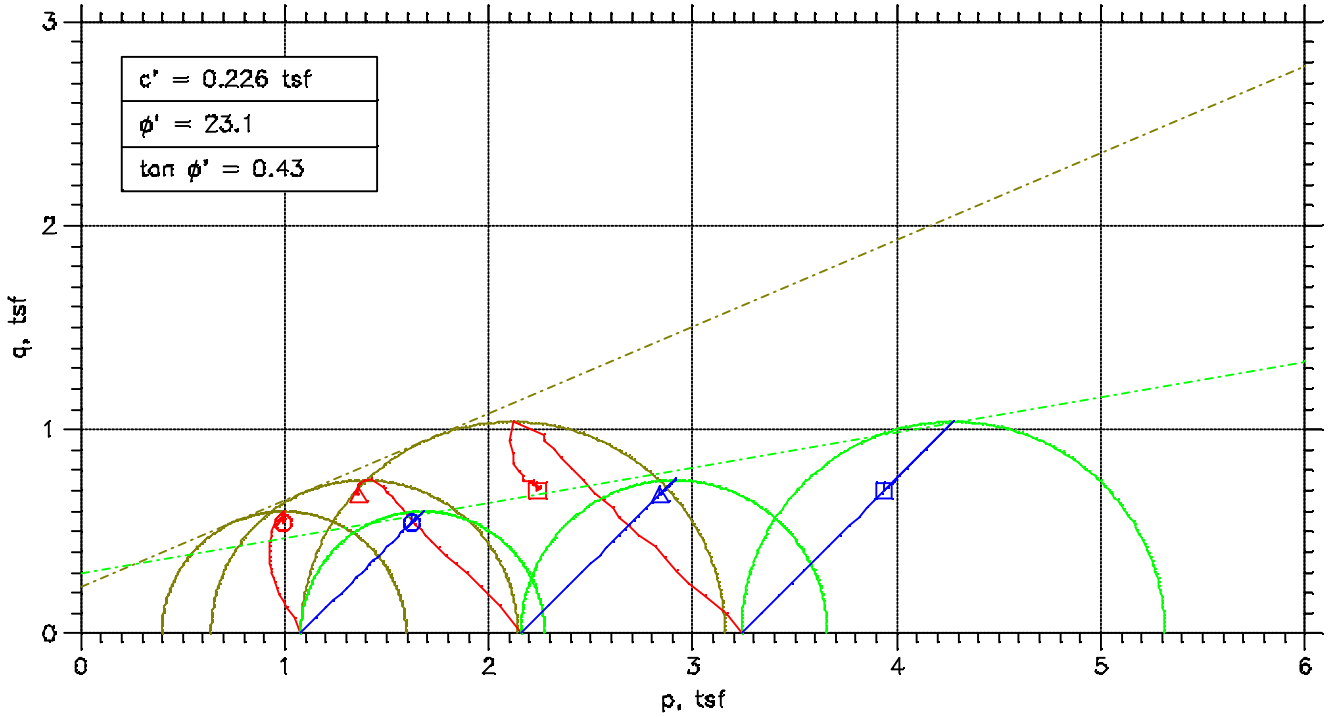

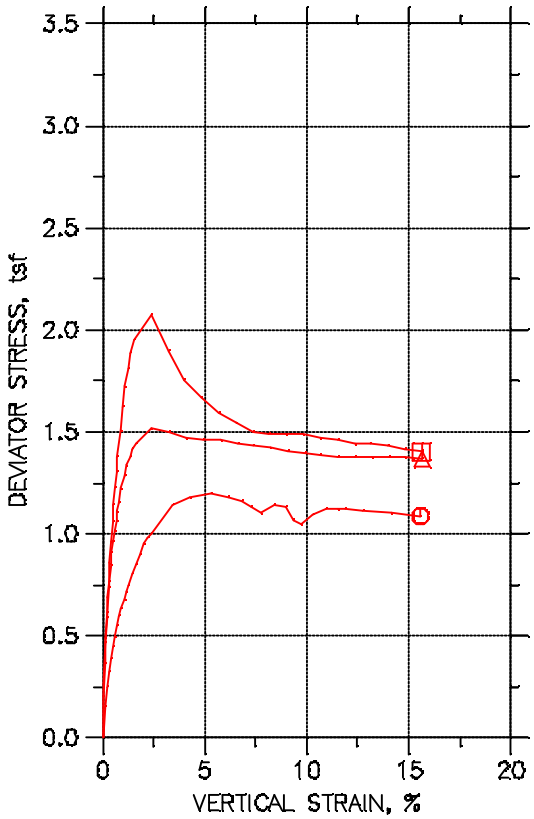

Symbol		○	△	□	
Test No.		15.0 PSI	30.0 PSI	45.0 PSI	
Initial	Diameter, in	2.8437	2.8591	2.863	
	Height, in	6.1843	6.0169	6.0594	
	Water Content, %	52.09	53.85	57.63	
	Dry Density, pcf	69.62	67.03	63.04	
	Saturation, %	98.97	96.00	92.97	
	Void Ratio	1.4212	1.5145	1.6736	
Before Shear	Water Content, %	50.19	51.06	51.56	
	Dry Density, pcf	71.57	70.86	70.46	
	Saturation, %	100.00	100.00	100.00	
	Void Ratio	1.355	1.3787	1.3921	
	Back Press., tsf	5.0434	5.044	5.0426	
Minor Prin. Stress, tsf		1.0766	2.156	3.2374	
Max. Dev. Stress, tsf		1.1972	1.5151	2.0767	
Time to Failure, min		300	180	180	
Strain Rate, %/min		0.018	0.018	0.018	
B-Value		0.95	0.95	0.98	
Estimated Specific Gravity		2.70	2.70	2.70	
Liquid Limit		81	81	81	
Plastic Limit		15	15	15	
Plasticity Index		66	66	66	

Failure Sketch

Project: C-43 W. BASIN STORAGE RES
Location: HENDRY COUNTY , FL
Project No.: HD165048
Boring No.: CB204 28-30
Sample Type: 3.0" ST

Description: LIGHT GRAY SANDY MARINE CLAY - SAND POCKETS AND LAYERS, SHELL NOTED

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767

SHEET C15

Mon, 16-MAY-2016 12:26:26

CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST
ASTM D4767

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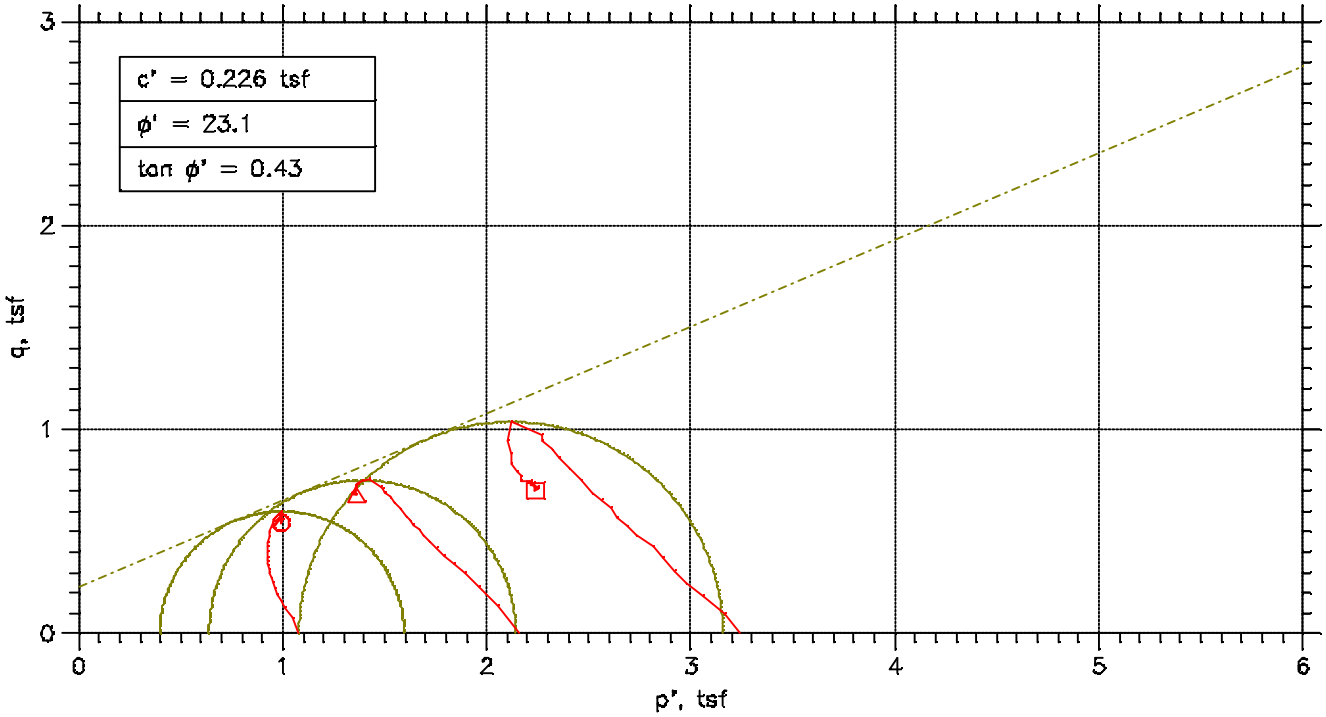

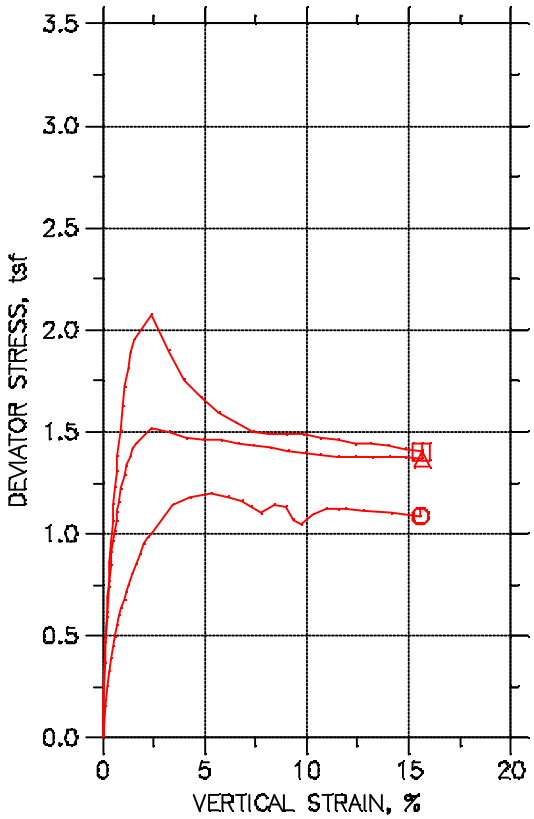

Symbol		○	△	□	
Test No.		15.0 PSI	30.0 PSI	45.0 PSI	
Initial	Diameter, in	2.8437	2.8591	2.863	
	Height, in	6.1843	6.0169	6.0594	
	Water Content, %	52.09	53.85	57.63	
	Dry Density, pcf	69.62	67.03	63.04	
	Saturation, %	98.97	96.00	92.97	
	Void Ratio	1.4212	1.5145	1.6736	
Before Shear	Water Content, %	50.19	51.06	51.56	
	Dry Density, pcf	71.57	70.86	70.46	
	Saturation, %	100.00	100.00	100.00	
	Void Ratio	1.355	1.3787	1.3921	
	Back Press., tsf	5.0434	5.044	5.0426	
Minor Prin. Stress, tsf		1.0766	2.156	3.2374	
Max. Dev. Stress, tsf		1.1972	1.5151	2.0767	
Time to Failure, min		300	180	180	
Strain Rate, %/min		0.018	0.018	0.018	
B-Value		0.95	0.95	0.98	
Estimated Specific Gravity		2.70	2.70	2.70	
Liquid Limit		81	81	81	
Plastic Limit		15	15	15	
Plasticity Index		66	66	66	

Failure Sketch

Project: C-43 W. BASIN STORAGE RES
Location: HENDRY COUNTY , FL
Project No.: HD165048
Boring No.: CB204 28-30
Sample Type: 3.0" ST

Description: LIGHT GRAY SANDY MARINE CLAY - SAND POCKETS AND LAYERS, SHELL NOTED

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767

Mon, 16-MAY-2016 12:25:21

SHEET C16

CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST
ASTM D4767

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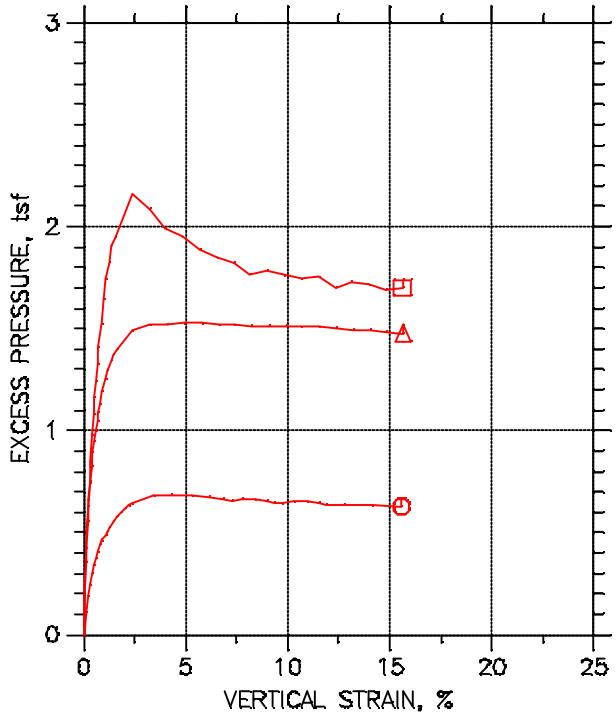

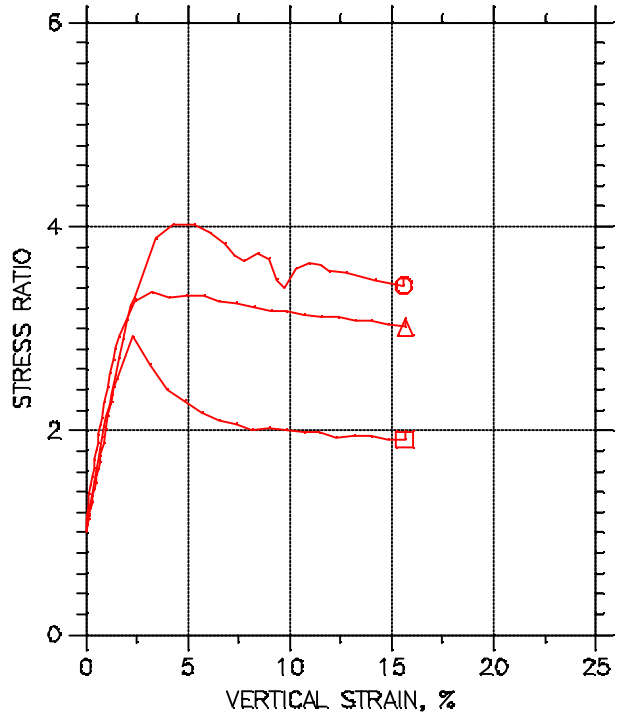

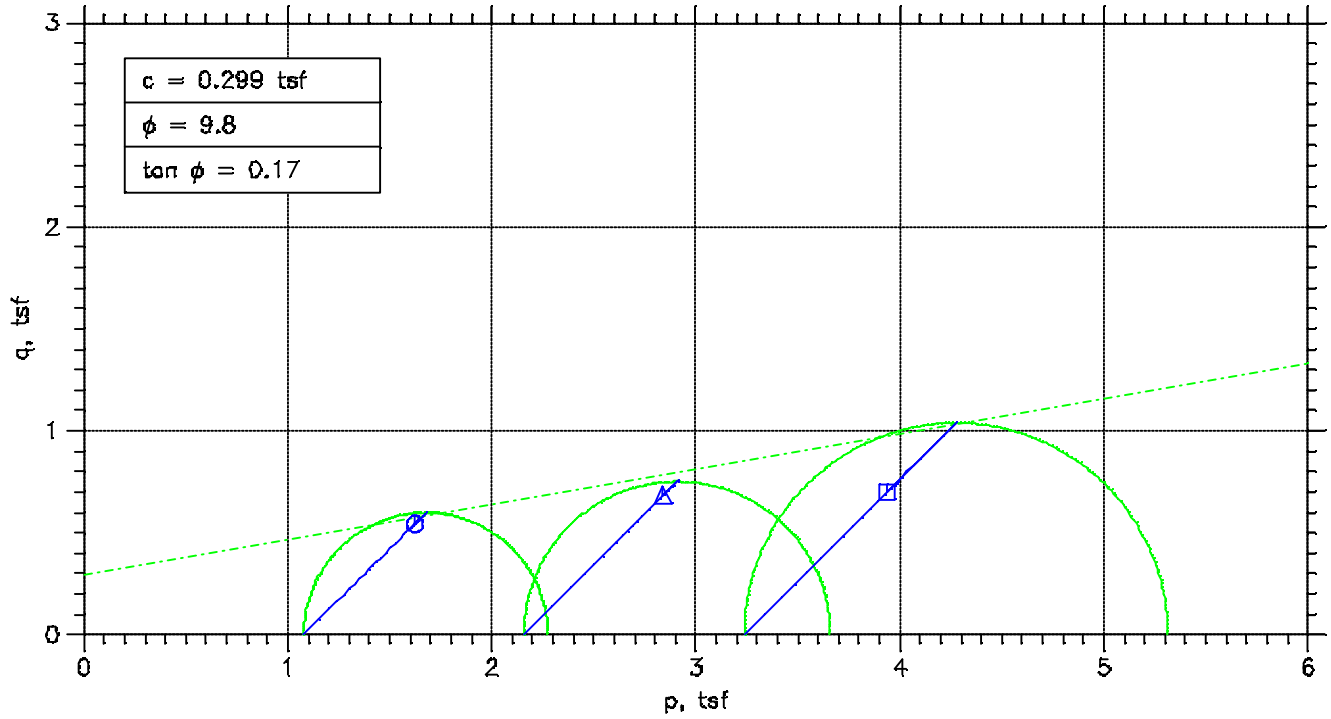

Project: C-43 W. BASIN STORAGE RES	Location: HENDRY COUNTY , FL	Project No.: HD165048
Boring No.: CB204 28-30	Tested By: BCM	Checked By: WPQ
Sample No.: N/A	Test Date: 5/12/16	Depth: 28.0'-30.0'
Test No.: CB204 28-30	Sample Type: 3.0" ST	Elevation: -----
Description: LIGHT GRAY SANDY MARINE CLAY - SAND POCKETS AND LAYERS, SHELL NOTED		
Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767		

SHEET C17

Mon, 16-MAY-2016 12:27:44

CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST
ASTM D4767

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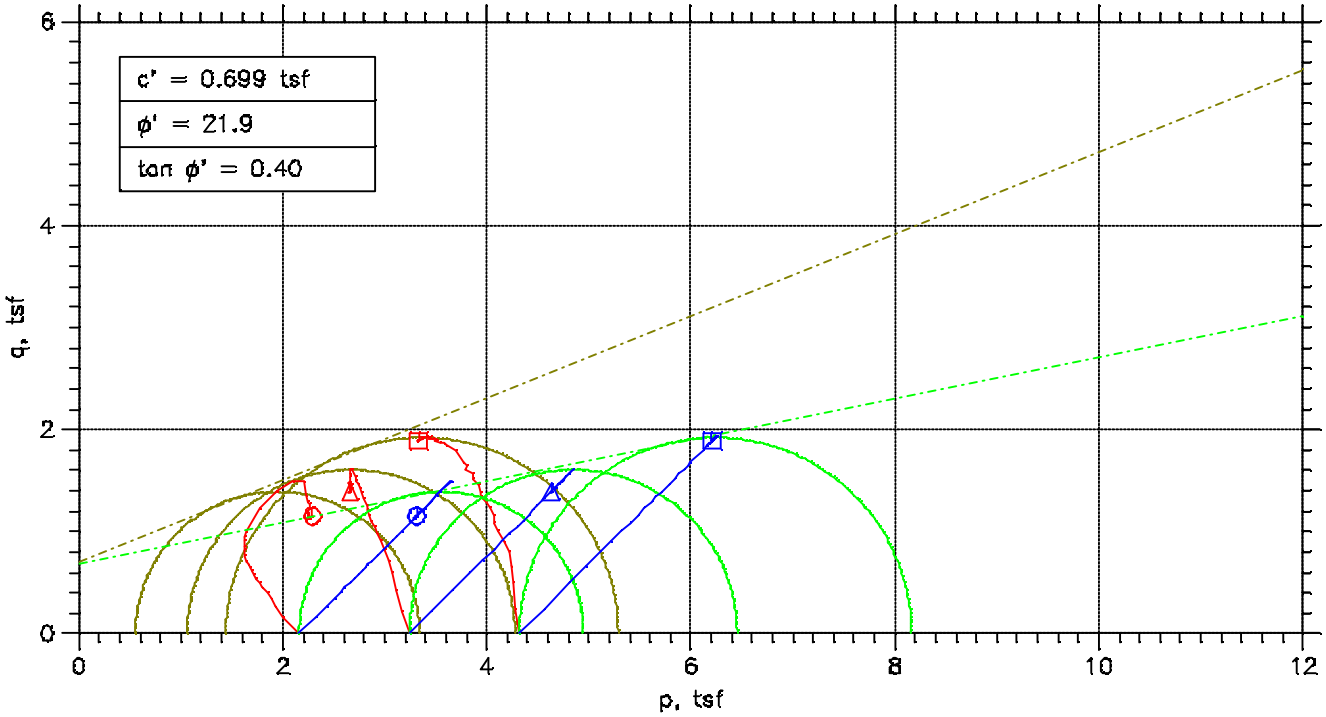

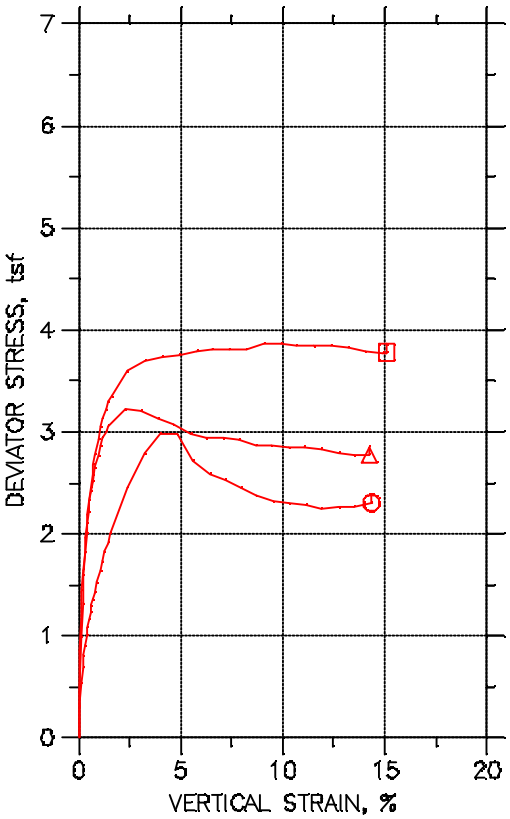

Symbol		○	△	□	
Test No.		30.0 PSI	45.0 PSI	60.0 PSI	
Initial	Diameter, in	2.8598	2.8287	2.8642	
	Height, in	5.8705	6.1689	6.0047	
	Water Content, %	107.13	108.17	104.31	
	Dry Density, pcf	40.57	41.65	43.73	
	Saturation, %	91.69	95.85	98.66	
	Void Ratio	3.1548	3.0469	2.8546	
Before Shear	Water Content, %	109.19	99.12	82.75	
	Dry Density, pcf	42.69	45.85	52.12	
	Saturation, %	100.00	100.00	100.00	
	Void Ratio	2.9481	2.6762	2.2343	
	Back Press., tsf	5.0404	5.0405	4.3221	
Minor Prin. Stress, tsf		2.1596	3.2395	4.3179	
Max. Dev. Stress, tsf		2.9825	3.2191	3.8718	
Time to Failure, min		300	180	720	
Strain Rate, %/min		0.021	0.021	0.021	
B-Value		0.97	0.99	0.96	
Estimated Specific Gravity		2.70	2.70	2.70	
Liquid Limit		155	155	155	
Plastic Limit		46	46	46	
Plasticity Index		109	109	109	

Failure Sketch

Project: C-43 W. BASIN STORAGE RES
Location: HENDRY COUNTY, FL
Project No.: HD165048
Boring No.: CB204 31-33
Sample Type: 3.0" ST

Description: LIGHT GRAY MARINE CLAY WITH SAND - SAND POCKETS AND SHELL NOTED

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767

SHEET C18

Mon, 16-MAY-2016 12:50:09

CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST
ASTM D4767

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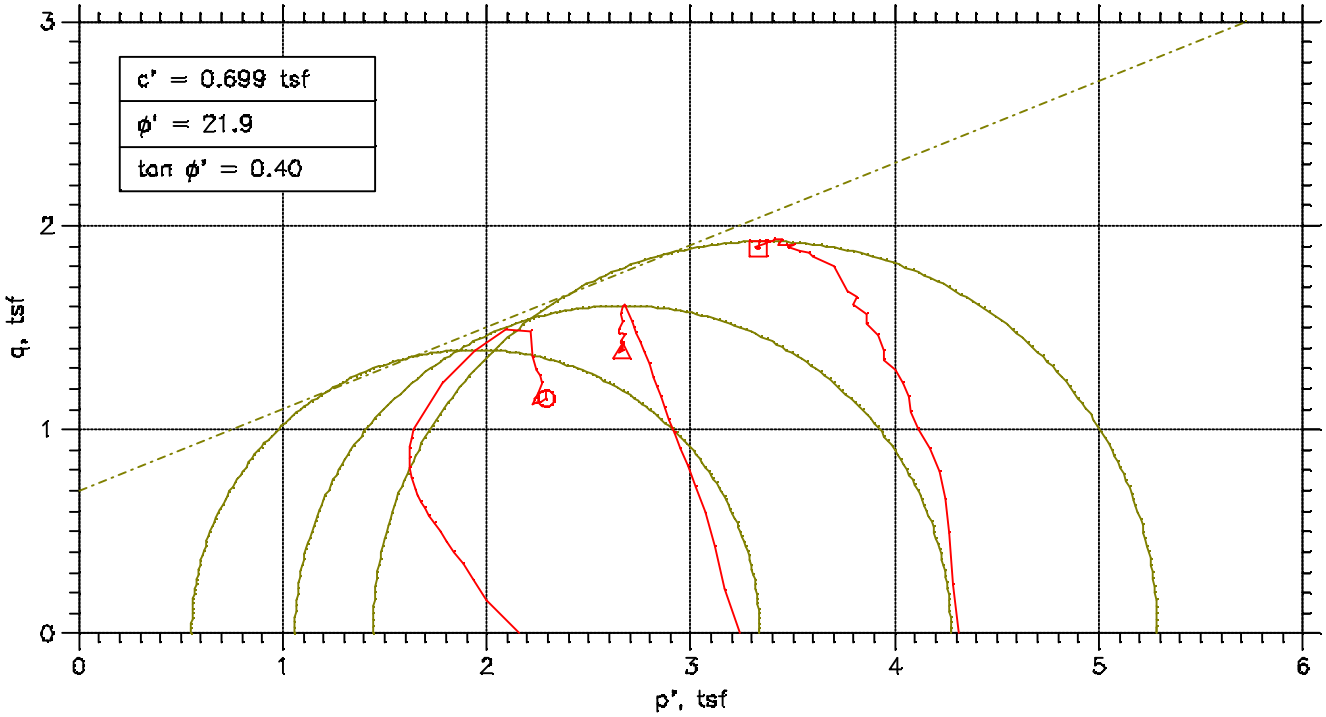

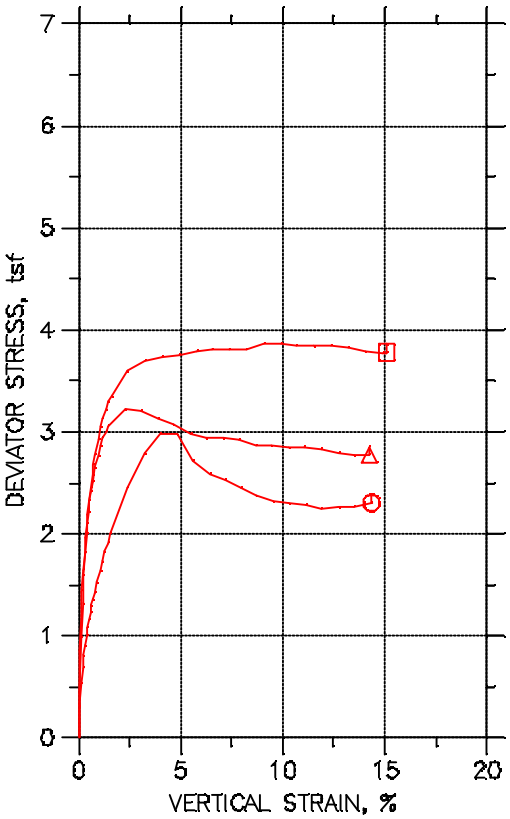

Symbol		○	△	□	
Test No.		30.0 PSI	45.0 PSI	60.0 PSI	
Initial	Diameter, in	2.8598	2.8287	2.8642	
	Height, in	5.8705	6.1689	6.0047	
	Water Content, %	107.13	108.17	104.31	
	Dry Density, pcf	40.57	41.65	43.73	
	Saturation, %	91.69	95.85	98.66	
	Void Ratio	3.1548	3.0469	2.8546	
Before Shear	Water Content, %	109.19	99.12	82.75	
	Dry Density, pcf	42.69	45.85	52.12	
	Saturation, %	100.00	100.00	100.00	
	Void Ratio	2.9481	2.6762	2.2343	
	Back Press., tsf	5.0404	5.0405	4.3221	
Minor Prin. Stress, tsf		2.1596	3.2395	4.3179	
Max. Dev. Stress, tsf		2.9825	3.2191	3.8718	
Time to Failure, min		300	180	720	
Strain Rate, %/min		0.021	0.021	0.021	
B-Value		0.97	0.99	0.96	
Estimated Specific Gravity		2.70	2.70	2.70	
Liquid Limit		155	155	155	
Plastic Limit		46	46	46	
Plasticity Index		109	109	109	

Failure Sketch

Project: C-43 W. BASIN STORAGE RES
Location: HENDRY COUNTY, FL
Project No.: HD165048
Boring No.: CB204 31-33
Sample Type: 3.0" ST

Description: LIGHT GRAY MARINE CLAY WITH SAND - SAND POCKETS AND SHELL NOTED

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767

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SHEET C19

CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST
ASTM D4767

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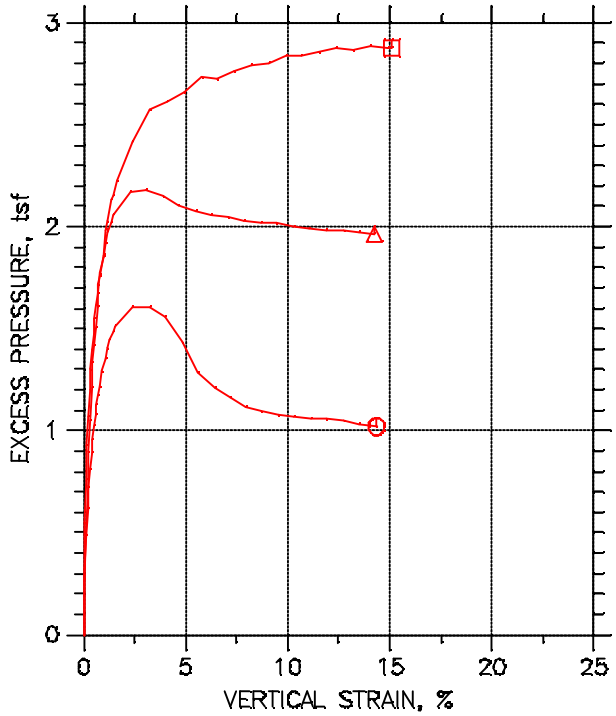

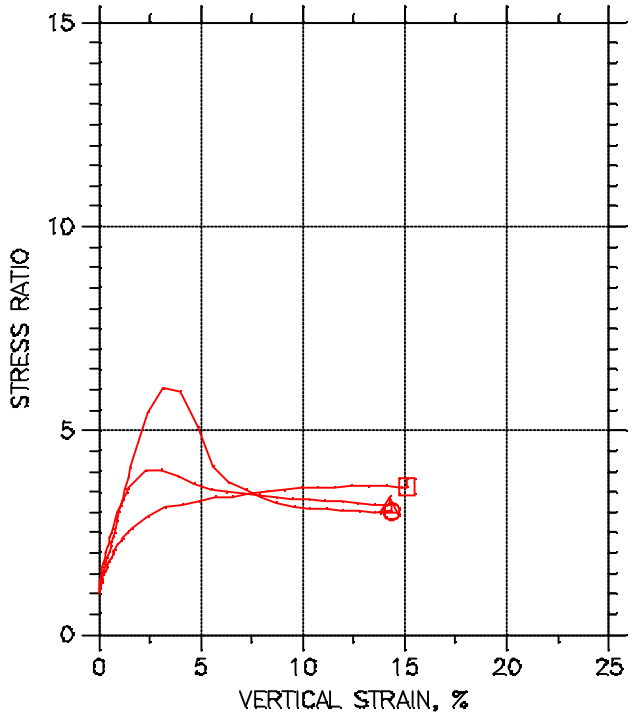

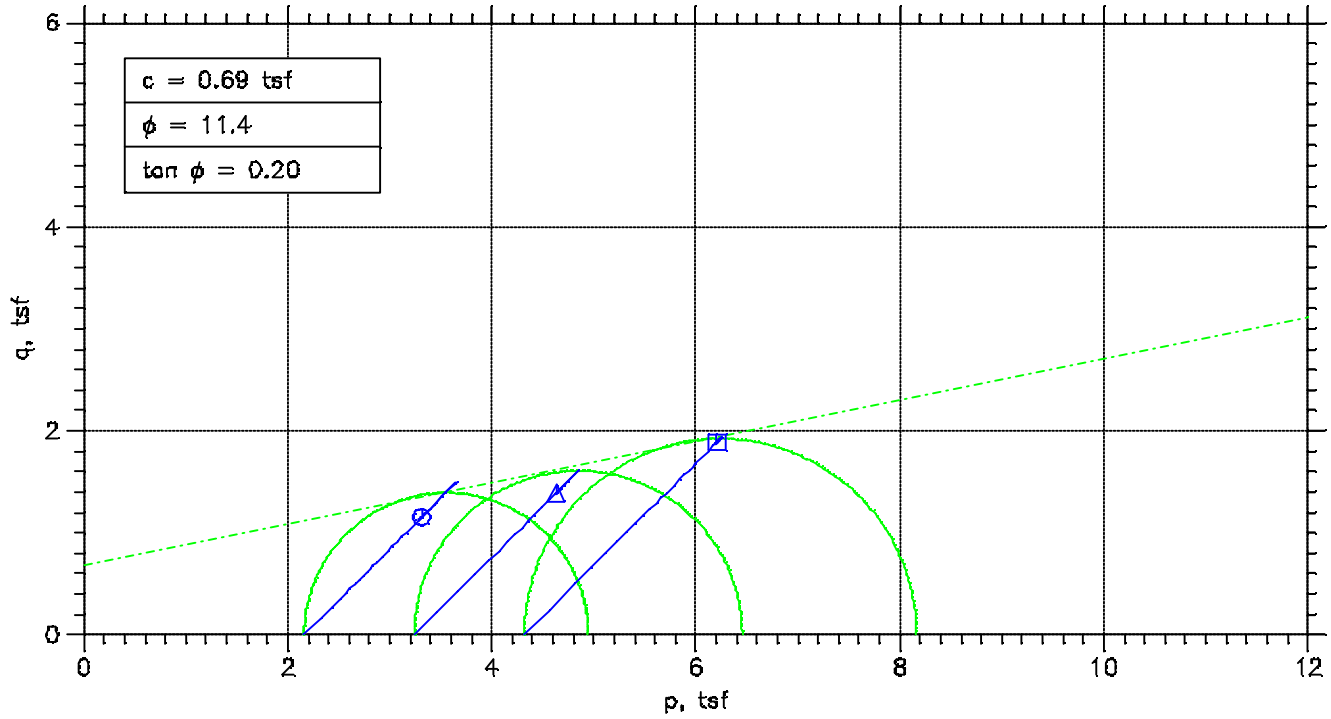

Project: C-43 W. BASIN STORAGE RES	Location: HENDRY COUNTY, FL	Project No.: HD165048
Boring No.: CB204 31-33	Tested By: BCM	Checked By: WPQ
Sample No.: N/A	Test Date: 5/10/16	Depth: 31.0'-33.0'
Test No.: CB204 31-33	Sample Type: 3.0" ST	Elevation: -----
Description: LIGHT GRAY MARINE CLAY WITH SAND - SAND POCKETS AND SHELL NOTED		
Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767		

SHEET C20

Mon, 16-MAY-2016 12:51:43

CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST
ASTM D4767

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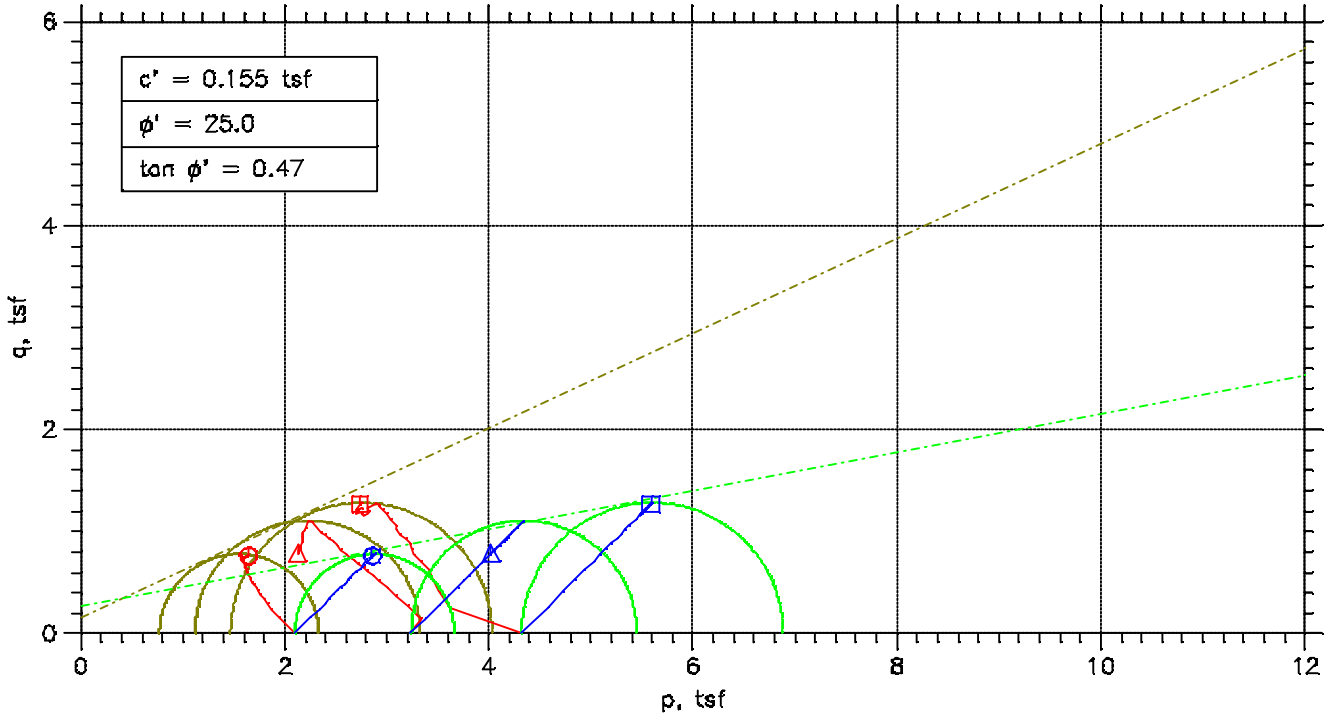

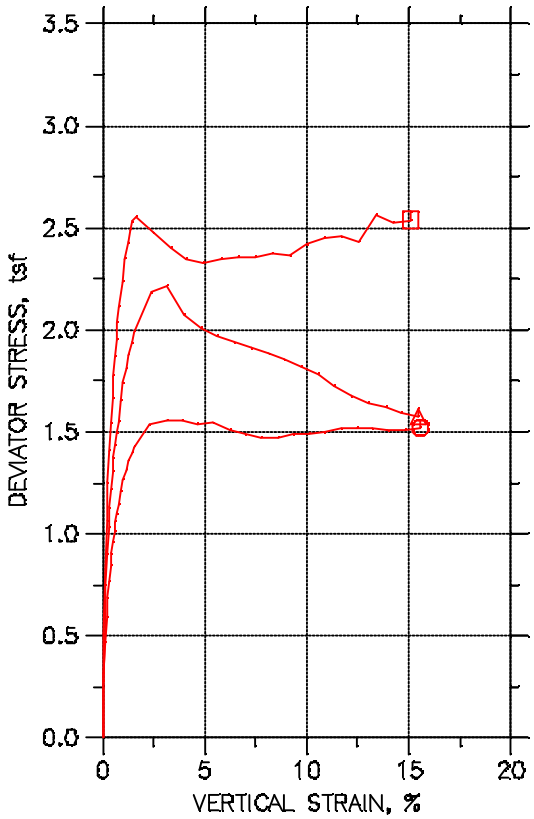

Symbol		○	△	□	
Test No.		30.0 PSI	45.0 PSI	60.0 PSI	
Initial	Diameter, mm	72.27	72.28	72.29	
	Height, mm	153.18	153.47	150.69	
	Water Content, %	74.56	76.33	71.39	
	Dry Density, pcf	52.96	52.23	54.94	
	Saturation, %	92.22	92.53	93.21	
	Void Ratio	2.1829	2.2273	2.0679	
Before Shear	Water Content, %	68.32	71.69	62.59	
	Dry Density, pcf	59.25	57.42	62.66	
	Saturation, %	100.00	100.00	100.00	
	Void Ratio	1.8447	1.9357	1.69	
	Back Press., tsf	5.1027	5.0451	4.3204	
Minor Prin. Stress, tsf		2.0973	3.2349	4.3196	
Max. Dev. Stress, tsf		1.5602	2.2135	2.5659	
Time to Failure, min		240	240	960	
Strain Rate, %/min		0.024	0.024	0.024	
B-Value		0.98	0.97	0.95	
Estimated Specific Gravity		2.70	2.70	2.70	
Liquid Limit		162	162	162	
Plastic Limit		36	36	36	
Plasticity Index		126	126	126	

Failure Sketch

Project: C-43 W. BASIN STORAGE RES
Location: HENDRY COUNTY, FL
Project No.: HD165048
Boring No.: CB204 33-35
Sample Type: 3.0" ST

Description: LIGHT GRAY SANDY MARINE CLAY - SAND POCKETS AND SHELL NOTED

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767

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SHEET C21

CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST
ASTM D4767

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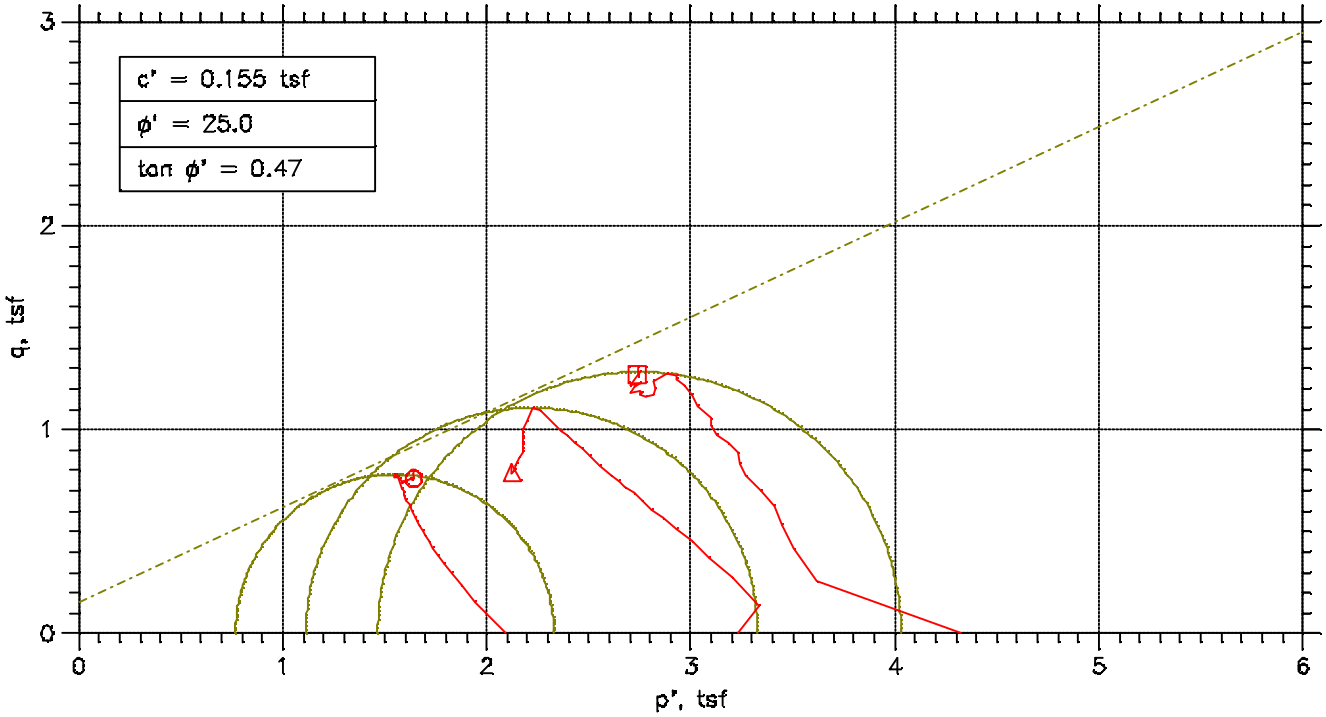

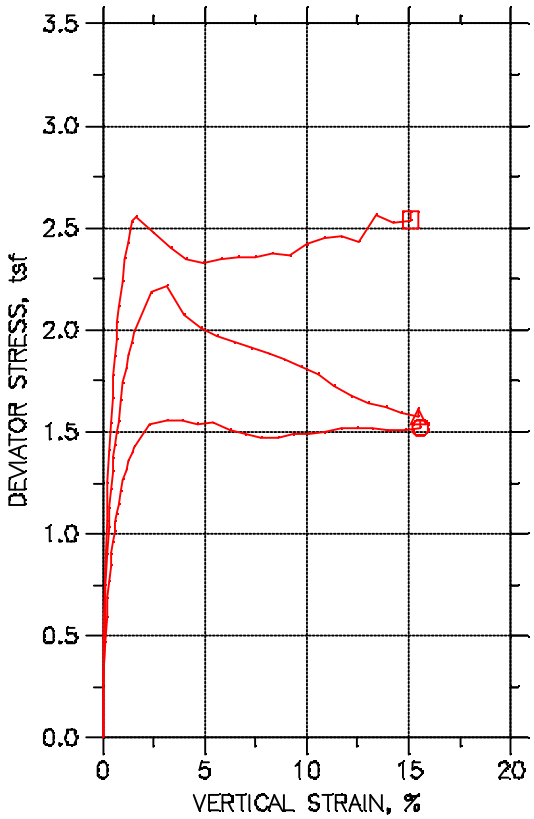

Symbol		○	△	□	
Test No.		30.0 PSI	45.0 PSI	60.0 PSI	
Initial	Diameter, mm	72.27	72.28	72.29	
	Height, mm	153.18	153.47	150.69	
	Water Content, %	74.56	76.33	71.39	
	Dry Density, pcf	52.96	52.23	54.94	
	Saturation, %	92.22	92.53	93.21	
	Void Ratio	2.1829	2.2273	2.0679	
Before Shear	Water Content, %	68.32	71.69	62.59	
	Dry Density, pcf	59.25	57.42	62.66	
	Saturation, %	100.00	100.00	100.00	
	Void Ratio	1.8447	1.9357	1.69	
	Back Press., tsf	5.1027	5.0451	4.3204	
Minor Prin. Stress, tsf		2.0973	3.2349	4.3196	
Max. Dev. Stress, tsf		1.5602	2.2135	2.5659	
Time to Failure, min		240	240	960	
Strain Rate, %/min		0.024	0.024	0.024	
B-Value		0.98	0.97	0.95	
Estimated Specific Gravity		2.70	2.70	2.70	
Liquid Limit		162	162	162	
Plastic Limit		36	36	36	
Plasticity Index		126	126	126	

Failure Sketch

Project: C-43 W. BASIN STORAGE RES
Location: HENDRY COUNTY, FL
Project No.: HD165048
Boring No.: CB204 33-35
Sample Type: 3.0" ST

Description: LIGHT GRAY SANDY MARINE CLAY - SAND POCKETS AND SHELL NOTED

Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767

SHEET C22

Mon, 16-MAY-2016 13:25:05

CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST
ASTM D4767

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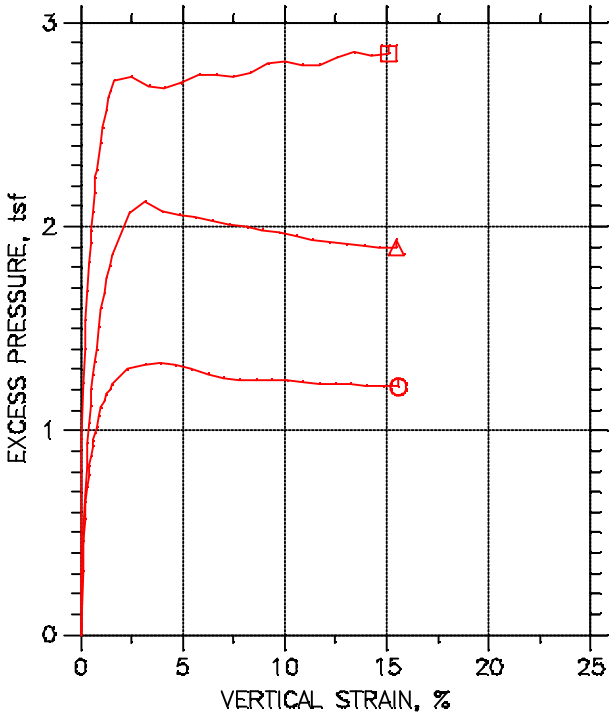

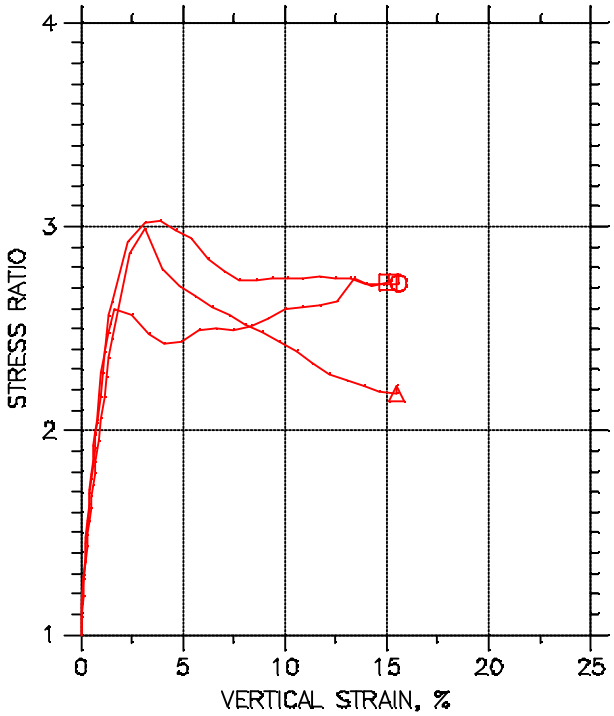

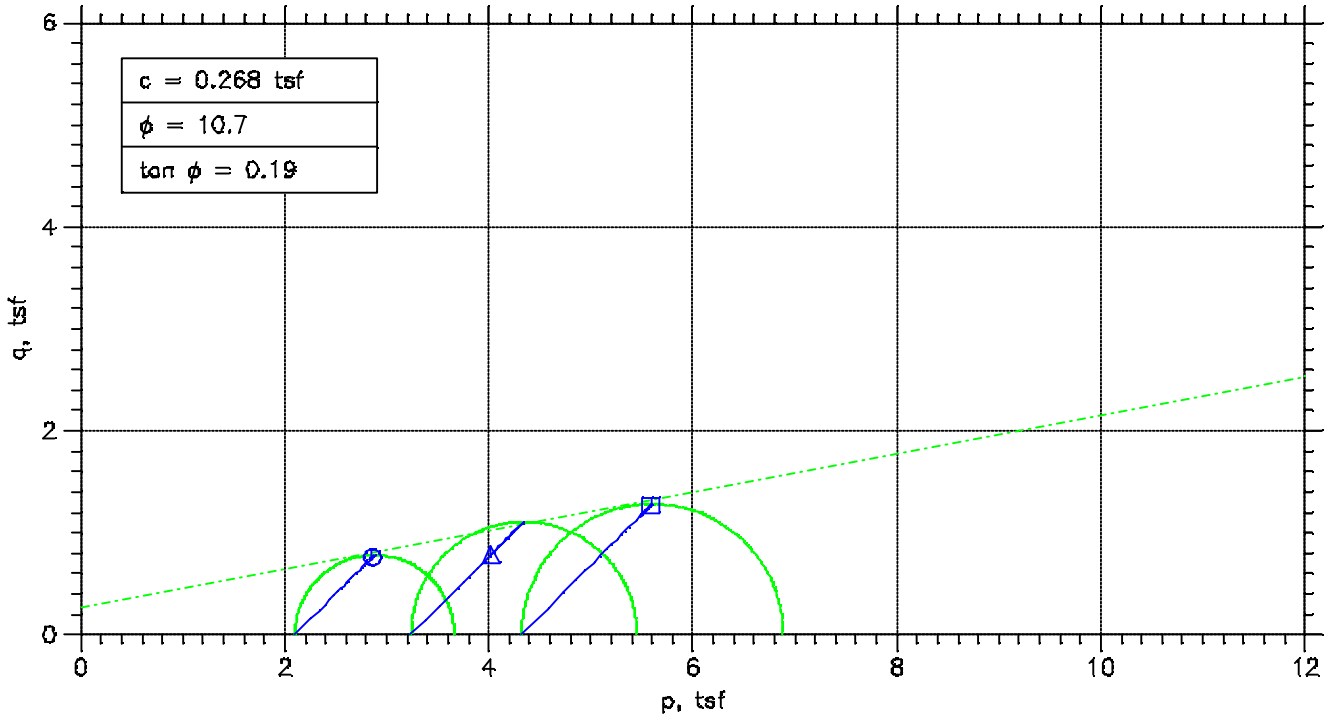

Project: C-43 W. BASIN STORAGE RES	Location: HENDRY COUNTY, FL	Project No.: HD165048
Boring No.: CB204 33-35	Tested By: BCM	Checked By: WPQ
Sample No.: N/A	Test Date: 5/9/16	Depth: 33.0'-35.0'
Test No.: CB204 33-35	Sample Type: 3.0" ST	Elevation: -----
Description: LIGHT GRAY SANDY MARINE CLAY - SAND POCKETS AND SHELL NOTED		
Remarks: FAILURE CRITERIA = MAXIMUM EFFECTIVE STRESS RATIO TEST PERFORMED AS PER ASTM D4767		

SHEET C23

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