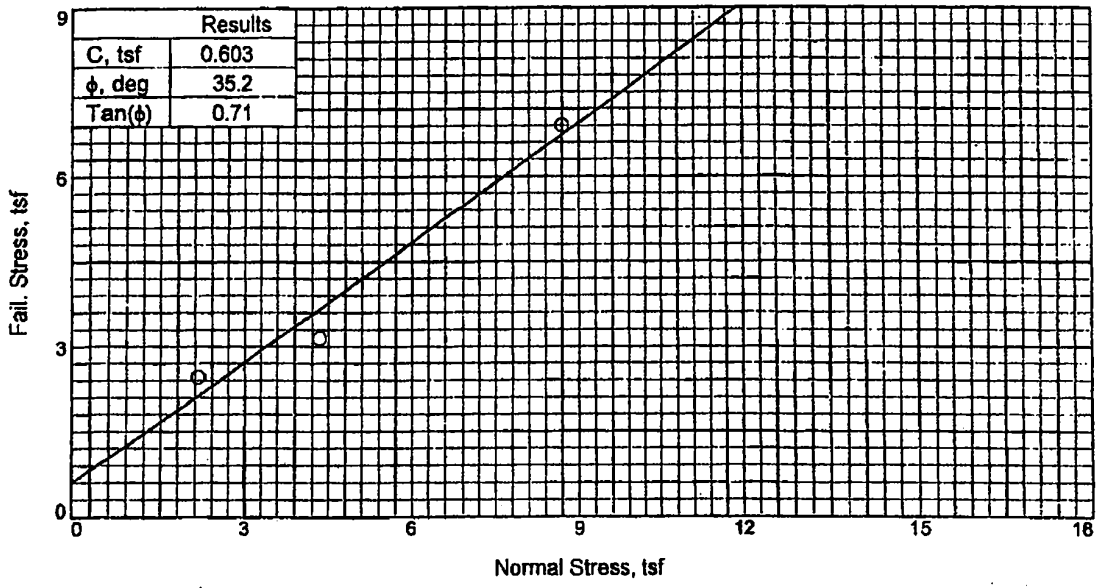
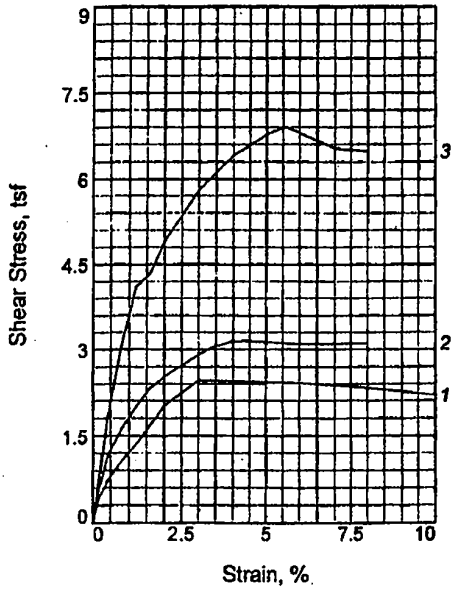




Sample No.		1	2	3
Initial	Water Content, %	24.0	22.7	21.4
	Dry Density, pcf	98.2	99.4	106.2
	Saturation, %	91.1	88.6	98.8
	Void Ratio	0.7094	0.6902	0.5818
	Diameter, in.	2.50	2.50	2.50
	Height, in.	1.01	1.01	1.01
At Test	Water Content, %	22.8	21.7	17.4
	Dry Density, pcf	104.0	105.9	114.2
	Saturation, %	99.8	99.8	99.5
	Void Ratio	0.6150	0.5850	0.4710
	Diameter, in.	2.50	2.50	2.50
	Height, in.	0.96	0.95	0.94
Normal Stress, tsf		2.160	4.330	8.700
Fail. Stress, tsf		2.464	3.154	6.908
Strain, %		3.0	4.4	5.6
Ult. Stress, tsf				
Strain, %				
Strain rate, in./min.		0.01	0.01	0.01

Sample Type: Undisturbed
Description: Light Yellowish Brown Poorly Graded SAND with Silt (SP-SM)) Visual
LL= ND **PL=** ND **PI=** ND
Specific Gravity= 2.69
Remarks: ASTM D 3080-04. ND=Not Determined. Lever arm mechanical shear device was used to perform the test. Samples sheared to the limitation of the machine.
Lab No. 8359

Client: Bechtel
Project: Exelon Texas COL (Victoria)
Location: B-2321UD
Sample Number: UD-12 **Depth:** 93-95.7 Ft
Proj. No.: 6468-07-1777 **Date:** 2/4/08

DIRECT SHEAR TEST REPORT

MACTEC ENGINEERING AND CONSULTING, INC.

Tested By: BM **Checked By:** HJ 7/16/08 - KAW 7/16/08

Remarks: Some of the data points measured are not shown to allow for plotting of failure plane. Unexpected increase in stress beyond 7% strain. Failure stresses have been chosen from within a range of 7% strain.

DIRECT SHEAR TEST

7/16/2008

Date: 2/4/08
Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project No.: 6468-07-1777
Location: B-2321UD
Depth: 93-95.7 Ft **Sample Number:** UD-12
Description: Light Yellowish Brown Poorly Graded SAND with Silt (SP-SM)) Visual
Remarks: ASTM D 3080-04. ND=Not Determined.
Lever arm mechanical shear device was used to perform the test. Samples sheared to the limitation of the machine.
Type of Sample: Undisturbed
Specific Gravity=2.69 **LL**= ND **PL**= ND **PI**= ND

Parameters for Specimen No. 1

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	170.400		161.340
Moisture content: Dry soil+tare, gms.	138.230		132.160
Moisture content: Tare, gms.	4.260		4.220
Moisture, %	24.0	22.8	22.8
Moist specimen weight, gms.	159.2		
Diameter, in.	2.50	2.50	
Area, in.^{2}	4.91	4.91	
Height, in.	1.01	0.96	
Net decrease in height, in.		0.06	
Wet Density, pcf	121.8	127.7	
Dry density, pcf	98.2	104.0	
Void ratio	0.7094	0.6150	
Saturation, %	91.1	99.8	

Test Readings for Specimen No. 1

Normal stress = 2.16 tsf
Strain rate, in./min. = 0.01
Fail. Stress = 2.464 tsf **at reading no.** 7

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress tsf
0	0.0000	0.00	0.0	0.0	0.000
1	0.0050	32.00	32.0	0.2	0.469
2	0.0100	48.00	48.0	0.4	0.704
3	0.0200	72.00	72.0	0.8	1.056
4	0.0300	92.00	92.0	1.2	1.349
5	0.0400	114.00	114.0	1.6	1.672
6	0.0500	137.00	137.0	2.0	2.009
7	0.0750	168.00	168.0	3.0	2.464
8	0.1500	165.00	165.0	6.0	2.420
9	0.2000	159.00	159.0	8.0	2.332
10	0.2500	150.00	150.0	10.0	2.200

Parameters for Specimen No. 2

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	165.130		159.170
Moisture content: Dry soil+tare, gms.	135.330		131.530
Moisture content: Tare, gms.	4.210		4.220
Moisture, %	22.7	21.7	21.7
Moist specimen weight, gms.	159.0		
Diameter, in.	2.50	2.50	
Area, in.^{2}	4.91	4.91	
Height, in.	1.01	0.95	
Net decrease in height, in.		0.06	
Wet Density, pcf	121.9	129.0	
Dry density, pcf	99.4	105.9	
Void ratio	0.6902	0.5850	
Saturation, %	88.6	99.8	

Test Readings for Specimen No. 2

Normal stress = 4.33 tsf

Strain rate, in./min. = 0.01

Fail. Stress = 3.154 tsf **at reading no.** 10

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress tsf
0	0.0000	0.00	0.0	0.0	0.000
1	0.0050	44.00	44.0	0.2	0.645
2	0.0100	76.00	76.0	0.4	1.115
3	0.0200	110.00	110.0	0.8	1.613
4	0.0300	136.00	136.0	1.2	1.995
5	0.0400	158.00	158.0	1.6	2.317
6	0.0500	172.00	172.0	2.0	2.523
7	0.0750	198.00	198.0	3.0	2.904
8	0.0850	207.00	207.0	3.4	3.036
9	0.1000	214.00	214.0	4.0	3.139
10	0.1100	215.00	215.0	4.4	3.154
11	0.1500	211.00	211.0	6.0	3.095
12	0.2000	212.00	212.0	8.0	3.110

Parameters for Specimen No. 3

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	119.100		170.470
Moisture content: Dry soil+tare, gms.	98.880		145.790
Moisture content: Tare, gms.	4.210		4.200
Moisture, %	21.4	17.4	17.4
Moist specimen weight, gms.	168.3		
Diameter, in.	2.50	2.50	
Area, in.^{2}	4.91	4.91	
Height, in.	1.01	0.94	
Net decrease in height, in.		0.07	
Wet Density, pcf	128.8	134.1	
Dry density, pcf	106.2	114.2	
Void ratio	0.5818	0.4710	
Saturation, %	98.8	99.5	

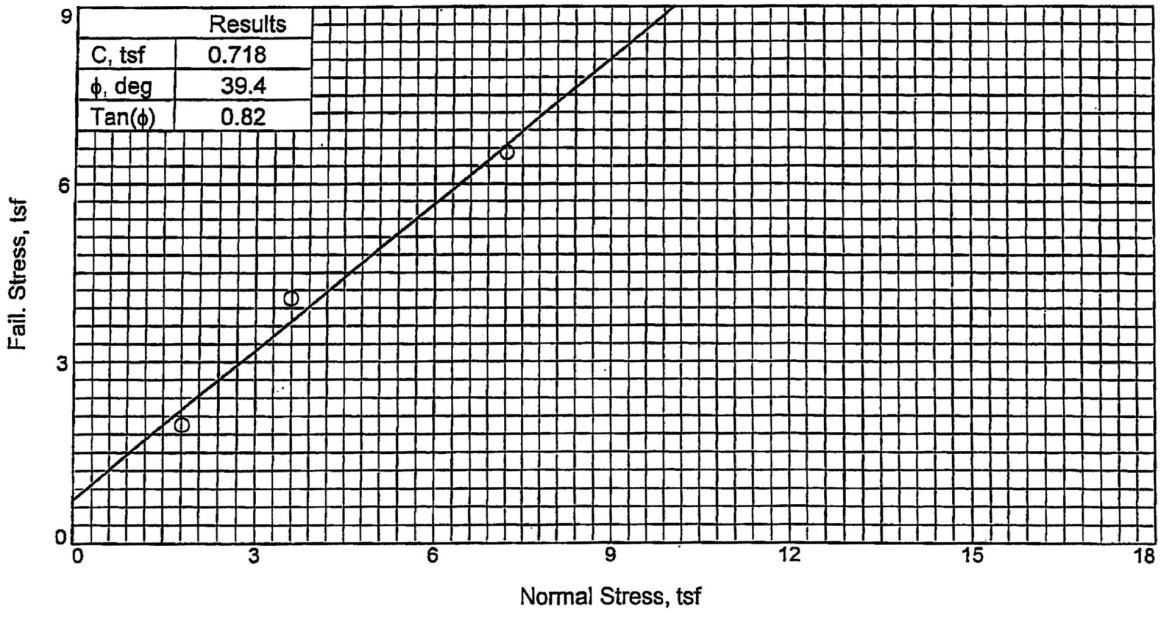
Test Readings for Specimen No. 3

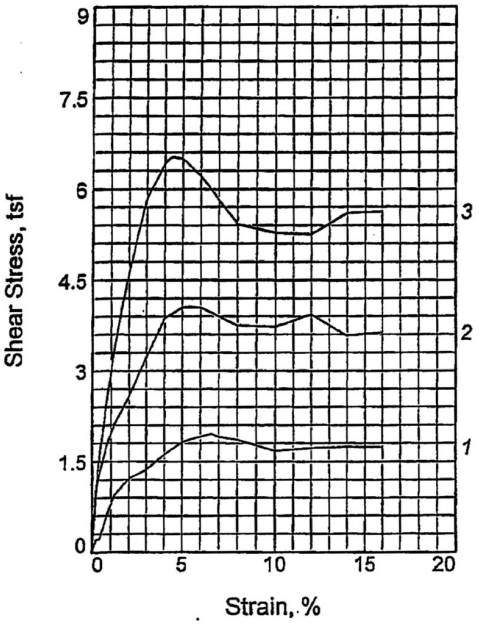
Normal stress = 8.7 tsf

Strain rate, in./min. = 0.01

Fail. Stress = 6.908 tsf **at reading no.** 10

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress tsf
0	0.0000	0.00	0.0	0.0	0.000
1	0.0050	60.00	60.0	0.2	0.880
2	0.0100	120.00	120.0	0.4	1.760
3	0.0200	210.00	210.0	0.8	3.080
4	0.0300	280.00	280.0	1.2	4.107
5	0.0400	296.00	296.0	1.6	4.342
6	0.0500	334.00	334.0	2.0	4.899
7	0.0750	396.00	396.0	3.0	5.808
8	0.1000	437.00	437.0	4.0	6.410
9	0.1250	462.00	462.0	5.0	6.776
10	0.1400	471.00	471.0	5.6	6.908
11	0.1750	446.00	446.0	7.0	6.542
12	0.2000	442.00	442.0	8.0	6.483





Sample No.		1	2	3
Initial	Water Content, %	16.4	14.2	12.5
	Dry Density, pcf	106.9	107.6	107.5
	Saturation, %	77.9	68.7	60.3
	Void Ratio	0.5655	0.5554	0.5557
	Diameter, in.	2.50	2.50	2.50
	Height, in.	1.02	1.01	1.01
At Test	Water Content, %	17.5	16.6	17.2
	Dry Density, pcf	113.2	115.7	113.1
	Saturation, %	98.2	99.8	96.0
	Void Ratio	0.4783	0.4459	0.4787
	Diameter, in.	2.50	2.50	2.50
	Height, in.	0.97	0.94	0.96
Normal Stress, tsf		1.820	3.590	7.220
Fail. Stress, tsf		1.951	4.063	6.527
Strain, %		6.6	5.4	4.4
Ult. Stress, tsf				
Strain, %				
Strain rate, in./min.		0.01	0.01	0.01

Sample Type: Undisturbed
Description: Light Gray Silty SAND (SM) Visual

LL= ND **PL=** ND **PI=** ND
Specific Gravity= 2.68
Remarks: ASTM D 3080-04. ND=Not Determined. Lever arm mechanical shear device was used to perform the test. Samples sheared to the limitation of the machine.
Lab No. 8365

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Location: B-2352UD
Sample Number: UD-8 **Depth:** 68-69.35 Ft
Proj. No.: 6468-07-1777 **Date:** 2/1/08

DIRECT SHEAR TEST REPORT

MACTEC ENGINEERING AND CONSULTING, INC.

Tested By: BM **Checked By:** HJ HJ 4/15/08 KAW 4.15.08

DIRECT SHEAR TEST

4/15/2008

Date: 2/1/08
Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project No.: 6468-07-1777
Location: B-2352UD
Depth: 68-69.35 Ft **Sample Number:** UD-8
Description: Light Gray Silty SAND (SM) Visual
Remarks: ASTM D 3080-04. ND=Not Determined.
Lever arm mechanical shear device was used to perform the test. Samples sheared to the limitation of the machine.
Type of Sample: Undisturbed
Specific Gravity=2.68 **LL**=ND **PL**= ND **PI**=ND

Parameters for Specimen No. 1

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	243.560		167.960
Moisture content: Dry soil+tare, gms.	229.370		143.540
Moisture content: Tare, gms.	143.070		4.220
Moisture, %	16.4	17.5	17.5
Moist specimen weight, gms.	164.1		
Diameter, in.	2.50	2.50	
Area, in.^{2}	4.91	4.91	
Height, in.	1.02	0.97	
Net decrease in height, in.		0.06	
Wet Density, pcf	124.4	133.0	
Dry density, pcf	106.9	113.2	
Void ratio	0.5655	0.4783	
Saturation, %	77.9	98.2	

Test Readings for Specimen No. 1

Normal stress = 1.82 tsf
Strain rate, in./min. = 0.01
Fail. Stress = 1.951 tsf **at reading no.** 11

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress tsf
0	0.0000	0.00	0.0	0.0	0.000
1	0.0050	14.00	14.0	0.2	0.205
2	0.0100	15.00	15.0	0.4	0.220
3	0.0200	42.00	42.0	0.8	0.616
4	0.0300	64.00	64.0	1.2	0.939
5	0.0400	74.00	74.0	1.6	1.085
6	0.0500	83.00	83.0	2.0	1.217
7	0.0750	93.00	93.0	3.0	1.364
8	0.1000	110.00	110.0	4.0	1.613
9	0.1250	124.00	124.0	5.0	1.819
10	0.1400	128.00	128.0	5.6	1.877
11	0.1650	133.00	133.0	6.6	1.951
12	0.1750	130.00	130.0	7.0	1.907

MACTEC Engineering and Consulting, Inc.

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress tsf
13	0.2000	127.00	127.0	8.0	1.863
14	0.2500	114.00	114.0	10.0	1.672
15	0.3000	117.00	117.0	12.0	1.716
16	0.3500	119.00	119.0	14.0	1.745
17	0.4000	118.00	118.0	16.0	1.731

Parameters for Specimen No. 2

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	147.510		163.120
Moisture content: Dry soil+tare, gms.	131.210		140.490
Moisture content: Tare, gms.	16.750		4.210
Moisture, %	14.2	16.6	16.6
Moist specimen weight, gms.	159.7		
Diameter, in.	2.50	2.50	
Area, in.^{2}	4.91	4.91	
Height, in.	1.01	0.94	
Net decrease in height, in.		0.07	
Wet Density, pcf	122.9	134.9	
Dry density, pcf	107.6	115.7	
Void ratio	0.5554	0.4459	
Saturation, %	68.7	99.8	

Test Readings for Specimen No. 2

Normal stress = 3.59 tsf

Strain rate, in./min. = 0.01

Fail. Stress = 4.063 tsf **at reading no.** 10

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress tsf
0	0.0000	0.00	0.0	0.0	0.000
1	0.0050	66.00	66.0	0.2	0.968
2	0.0100	90.00	90.0	0.4	1.320
3	0.0200	122.00	122.0	0.8	1.789
4	0.0300	145.00	145.0	1.2	2.127
5	0.0400	160.00	160.0	1.6	2.347
6	0.0500	176.00	176.0	2.0	2.582
7	0.0750	220.00	220.0	3.0	3.227
8	0.1000	264.00	264.0	4.0	3.872
9	0.1250	276.00	276.0	5.0	4.048
10	0.1350	277.00	277.0	5.4	4.063
11	0.1500	276.00	276.0	6.0	4.048
12	0.1750	266.00	266.0	7.0	3.902
13	0.2000	256.00	256.0	8.0	3.755
14	0.2500	254.00	254.0	10.0	3.726
15	0.3000	268.00	268.0	12.0	3.931
16	0.3500	244.00	244.0	14.0	3.579
17	0.4000	248.00	248.0	16.0	3.638

Parameters for Specimen No. 3

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	124.500		163.700
Moisture content: Dry soil+tare, gms.	112.420		140.350
Moisture content: Tare, gms.	15.750		4.200
Moisture, %	12.5	17.2	17.2
Moist specimen weight, gms.	157.4		
Diameter, in.	2.50	2.50	
Area, in.²	4.91	4.91	
Height, in.	1.01	0.96	
Net decrease in height, in.		0.05	
Wet Density, pcf	121.0	132.6	
Dry density, pcf	107.5	113.1	
Void ratio	0.5557	0.4787	
Saturation, %	60.3	96.0	

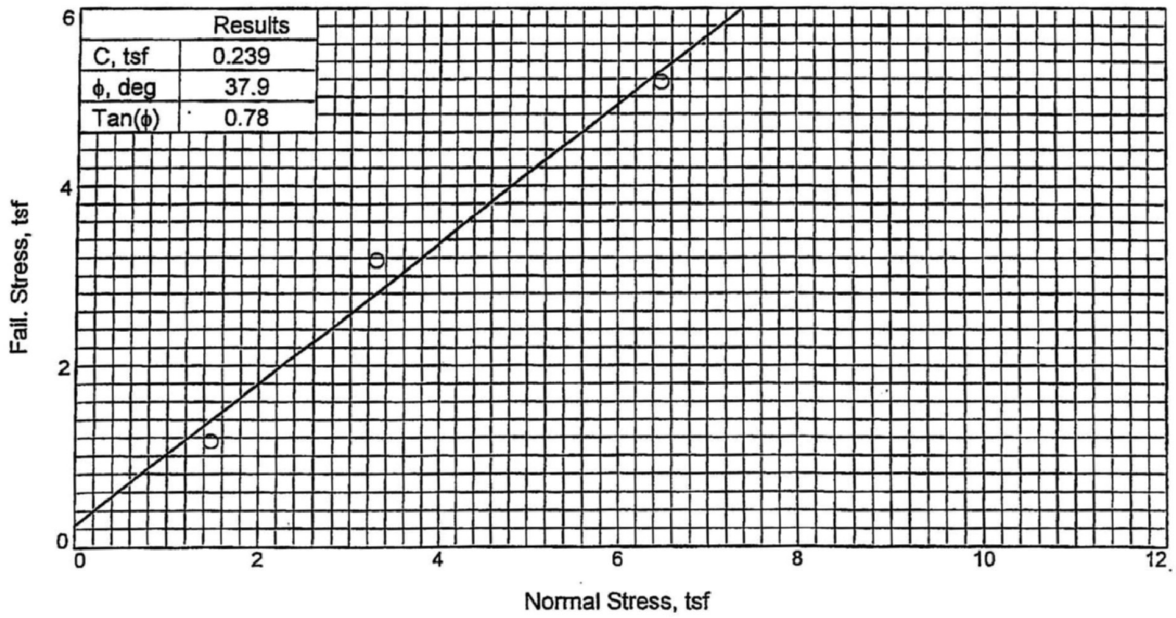
Test Readings for Specimen No. 3

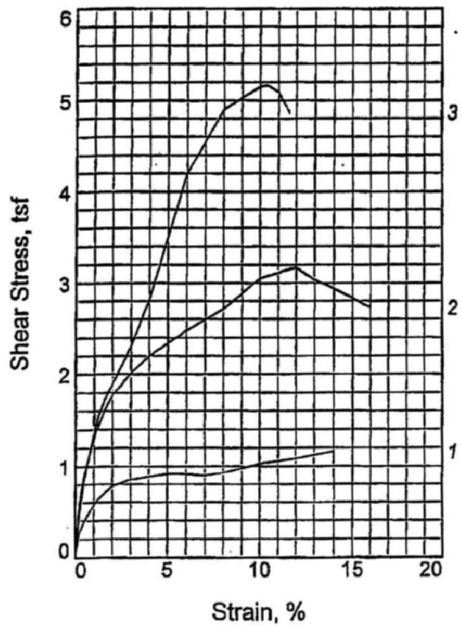
Normal stress = 7.22 tsf

Strain rate, in./min. = 0.01

Fail. Stress = 6.527 tsf **at reading no.** 9

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress tsf
0	0.0000	0.00	0.0	0.0	0.000
1	0.0050	74.00	74.0	0.2	1.085
2	0.0100	110.00	110.0	0.4	1.613
3	0.0200	174.00	174.0	0.8	2.552
4	0.0300	230.00	230.0	1.2	3.374
5	0.0400	276.00	276.0	1.6	4.048
6	0.0500	315.00	315.0	2.0	4.620
7	0.0750	398.00	398.0	3.0	5.838
8	0.1000	438.00	438.0	4.0	6.424
9	0.1100	445.00	445.0	4.4	6.527
10	0.1250	443.00	443.0	5.0	6.498
11	0.1500	424.00	424.0	6.0	6.219
12	0.2000	370.00	370.0	8.0	5.427
13	0.2500	360.00	360.0	10.0	5.280
14	0.3000	358.00	358.0	12.0	5.251
15	0.3500	382.00	382.0	14.0	5.603
16	0.4000	384.00	384.0	16.0	5.632





Sample No.		1	2	3
Initial	Water Content, %	17.0	14.2	11.8
	Dry Density, pcf	106.5	114.3	104.5
	Saturation, %	81.5	84.3	53.6
	Void Ratio	0.5528	0.4478	0.5832
	Diameter, in.	2.50	2.50	2.50
	Height, in.	1.00	1.00	1.01
At Test	Water Content, %	17.4	12.7	17.0
	Dry Density, pcf	113.1	123.6	114.0
	Saturation, %	99.6	99.1	99.5
	Void Ratio	0.4632	0.3383	0.4516
	Diameter, in.	2.50	2.50	2.50
	Height, in.	0.95	0.93	0.93
Normal Stress, tsf		1.480	3.290	6.490
Fail. Stress, tsf		1.159	3.168	5.163
Strain, %		14.0	12.0	10.4
Ult. Stress, tsf				
Strain, %				
Strain rate, in./min.		0.01	0.01	0.01

Sample Type: Undisturbed
Description: Light Gray Sandy SILT (ML) Visual

LL= ND **PL=** ND **PI=** ND
Specific Gravity= 2.65
Remarks: ASTM D 3080-04. ND=Not Determined. Lever arm mechanical shear device was used to perform the test. Samples sheared to the limitation of the machine.
Lab No. 8559

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Location: B-2359UD
Sample Number: UD-7 **Depth:** 55-56.7 Ft
Proj. No.: 6468-07-1777 **Date:** 1/29/08

DIRECT SHEAR TEST REPORT

MACTEC ENGINEERING AND CONSULTING, INC.

Tested By: BM **Checked By:** HJ HJ 4/15/08 KAW 4.15.08

DIRECT SHEAR TEST

4/15/2008

Date: 1/29/08
Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project No.: 6468-07-1777
Location: B-2359UD
Depth: 55-56.7 Ft **Sample Number:** UD-7
Description: Light Gray Sandy SILT (ML) Visual
Remarks: ASTM D 3080-04. ND=Not Determined. Lever arm mechanical shear device was used to perform the test. Samples sheared to the limitation of the machine.
Type of Sample: Undisturbed
Specific Gravity=2.65 **LL=ND** **PL=** ND **PI=ND**

Parameters for Specimen No. 1

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	120.500		160.400
Moisture content: Dry soil+tare, gms.	103.600		137.250
Moisture content: Tare, gms.	4.230		4.210
Moisture, %	17.0	17.4	17.4
Moist specimen weight, gms.	161.4		
Diameter, in.	2.50	2.50	
Area, in.^{2}	4.91	4.91	
Height, in.	1.00	0.95	
Net decrease in height, in.		0.06	
Wet Density, pcf	124.7	132.7	
Dry density, pcf	106.5	113.1	
Void ratio	0.5528	0.4632	
Saturation, %	81.5	99.6	

Test Readings for Specimen No. 1

Normal stress = 1.48 tsf
Strain rate, in./min. = 0.01
Fail. Stress = 1.159 tsf **at reading no.** 15

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress tsf
0	0.0000	0.00	0.0	0.0	0.000
1	0.0050	18.00	18.0	0.2	0.264
2	0.0100	25.00	25.0	0.4	0.367
3	0.0200	35.00	35.0	0.8	0.513
4	0.0300	43.00	43.0	1.2	0.631
5	0.0400	48.00	48.0	1.6	0.704
6	0.0500	53.00	53.0	2.0	0.777
7	0.0750	58.00	58.0	3.0	0.851
8	0.1000	60.00	60.0	4.0	0.880
9	0.1250	62.00	62.0	5.0	0.909
10	0.1500	62.00	62.0	6.0	0.909
11	0.1750	61.00	61.0	7.0	0.895

MACTEC Engineering and Consulting, Inc.

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress tsf
12	0.2000	63.00	63.0	8.0	0.924
13	0.2500	70.00	70.0	10.0	1.027
14	0.3000	74.00	74.0	12.0	1.085
15	0.3500	79.00	79.0	14.0	1.159

Parameters for Specimen No. 2

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	132.210		166.470
Moisture content: Dry soil+tare, gms.	116.270		148.250
Moisture content: Tare, gms.	4.300		4.220
Moisture, %	14.2	12.7	12.7
Moist specimen weight, gms.	169.0		
Diameter, in.	2.50	2.50	
Area, in.^{2}	4.91	4.91	
Height, in.	1.00	0.93	
Net decrease in height, in.		0.08	
Wet Density, pcf	130.5	139.3	
Dry density, pcf	114.3	123.6	
Void ratio	0.4478	0.3383	
Saturation, %	84.3	99.1	

Test Readings for Specimen No. 2

Normal stress = 3.29 tsf

Strain rate, in./min. = 0.01

Fail. Stress = 3.168 tsf **at reading no.** 13

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress tsf
0	0.0000	0.00	0.0	0.0	0.000
1	0.0050	40.00	40.0	0.2	0.587
2	0.0100	58.00	58.0	0.4	0.851
3	0.0200	79.00	79.0	0.8	1.159
4	0.0300	97.00	97.0	1.2	1.423
5	0.0400	110.00	110.0	1.6	1.613
6	0.0500	121.00	121.0	2.0	1.775
7	0.0750	137.00	137.0	3.0	2.009
8	0.1000	150.00	150.0	4.0	2.200
9	0.1500	169.00	169.0	6.0	2.479
10	0.2000	185.00	185.0	8.0	2.714
11	0.2500	208.00	208.0	10.0	3.051
12	0.2850	214.00	214.0	11.4	3.139
13	0.3000	216.00	216.0	12.0	3.168
14	0.3250	207.00	207.0	13.0	3.036
15	0.4000	186.00	186.0	16.0	2.728

Parameters for Specimen No. 3

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	110.930		155.700
Moisture content: Dry soil+tare, gms.	99.680		133.730
Moisture content: Tare, gms.	4.240		4.190
Moisture, %	11.8	17.0	17.0
Moist specimen weight, gms.	152.1		
Diameter, in.	2.50	2.50	
Area, in.²	4.91	4.91	
Height, in.	1.01	0.93	
Net decrease in height, in.		0.08	
Wet Density, pcf	116.8	133.3	
Dry density, pcf	104.5	114.0	
Void ratio	0.5832	0.4516	
Saturation, %	53.6	99.5	

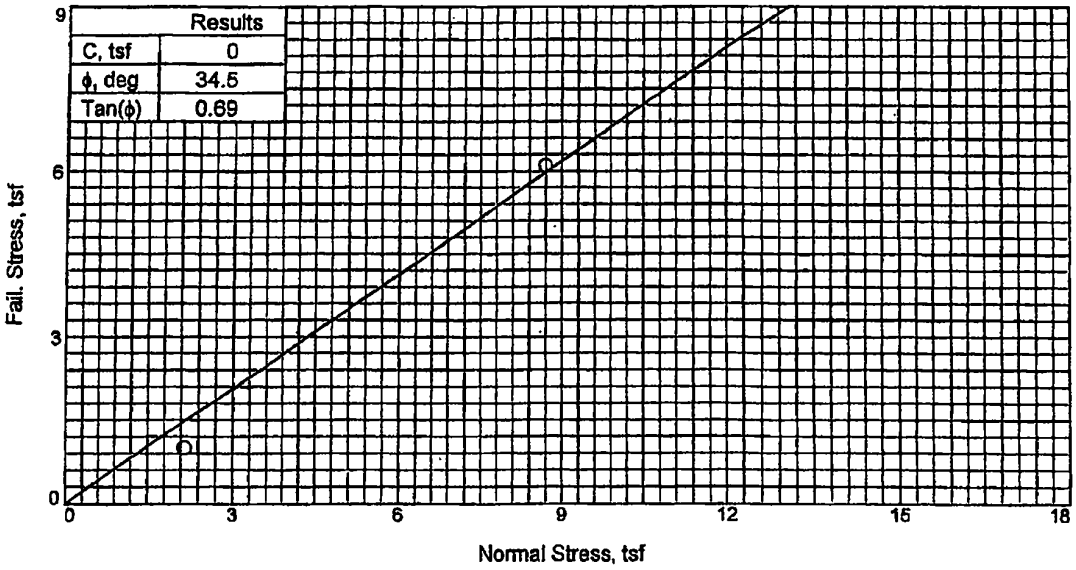
Test Readings for Specimen No. 3

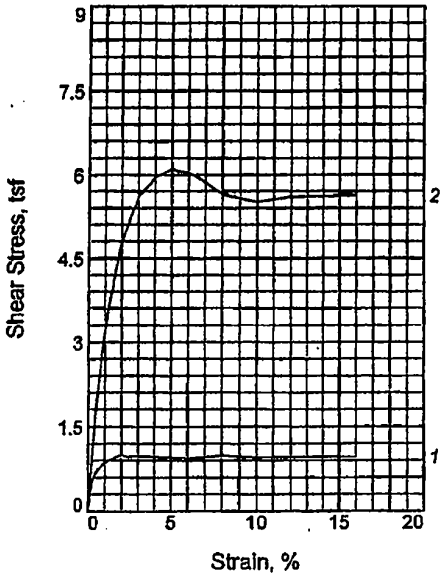
Normal stress = 6.49 tsf

Strain rate, in./min. = 0.01

Fail. Stress = 5.163 tsf at reading no. 13

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress tsf
0	0.0000	0.00	0.0	0.0	0.000
1	0.0050	32.00	32.0	0.2	0.469
2	0.0100	52.00	52.0	0.4	0.763
3	0.0200	80.00	80.0	0.8	1.173
4	0.0300	104.00	104.0	1.2	1.525
5	0.0400	118.00	118.0	1.6	1.731
6	0.0500	129.00	129.0	2.0	1.892
7	0.0750	157.00	157.0	3.0	2.303
8	0.1000	192.00	192.0	4.0	2.816
9	0.1500	286.00	286.0	6.0	4.195
10	0.2000	334.00	334.0	8.0	4.899
11	0.2250	343.00	343.0	9.0	5.031
12	0.2500	351.00	351.0	10.0	5.148
13	0.2600	352.00	352.0	10.4	5.163
14	0.2750	347.00	347.0	11.0	5.090
15	0.2900	332.00	332.0	11.6	4.870





Sample No.		1	2
Initial	Water Content, %	31.4	19.2
	Dry Density, pcf	89.9	103.3
	Saturation, %	95.2	80.4
	Void Ratio	0.9029	0.6554
	Diameter, in.	2.50	2.50
	Height, in.	1.01	1.01
At Test	Water Content, %	26.2	21.3
	Dry Density, pcf	99.6	108.0
	Saturation, %	100.0	100.0
	Void Ratio	0.7174	0.5832
	Diameter, in.	2.50	2.50
	Height, in.	0.91	0.96
Normal Stress, tsf		2.160	8.700
Fail. Stress, tsf		0.997	6.102
Strain, %		2.0	5.0
Ult. Stress, tsf			
Strain, %			
Strain rate, in./min.		0.01	0.01

Sample Type: Undisturbed
Description: Pale Brown Sandy SILT (ML) Visual

LL= ND **PL=** ND **PI=** ND
Specific Gravity= 2.74
Remarks: ASTM D 3080-04.
ND=Not Determined. Lever arm mechanical shear device was used to perform the test.
Samples sheared to the limitation of the machine.
Lab No. 8367

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Location: B-2359UD
Sample Number: UD-14 **Depth:** 88-90.5 Ft
Proj. No.: 6468-07-1777 **Date:** 1/30/08

DIRECT SHEAR TEST REPORT

MACTEC ENGINEERING AND CONSULTING, INC.

Tested By: BM **Checked By:** HJ HJ 4/15/08 KAW 4.15.08

DIRECT SHEAR TEST

4/15/2008

Date:	1/30/08
Client:	Bechtel
Project:	Exelon Texas COL (Victoria)
Project No.:	6468-07-1777
Location:	B-2359UD
Depth:	88-90.5 Ft **Sample Number:** UD-14
Description:	Pale Brown Sandy SILT (ML) Visual
Remarks:	ASTM D 3080-04.
	ND=Not Determined. Lever arm mechanical shear device was used to perform the test. Samples sheared to the limitation of the machine.
Type of Sample:	Undisturbed

Specific Gravity=2.74 **LL**=ND **PL**= ND **PI**=ND

Parameters for Specimen No. 1

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	113.900		151.850
Moisture content: Dry soil+tare, gms.	87.720		121.210
Moisture content: Tare, gms.	4.220		4.220
Moisture, %	31.4	26.2	26.2
Moist specimen weight, gms.	152.9		
Diameter, in.	2.50	2.50	
Area, in.²	4.91	4.91	
Height, in.	1.01	0.91	
Net decrease in height, in.		0.10	
Wet Density, pcf	118.1	125.7	
Dry density, pcf	89.9	99.6	
Void ratio	0.9029	0.7174	
Saturation, %	95.2	100.0	

Test Readings for Specimen No. 1

Normal stress = 2.16 tsf

Strain rate, in./min. = 0.01

Fail. Stress = 0.997 tsf **at reading no.** 6

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress tsf
0	0.0000	0.00	0.0	0.0	0.000
1	0.0050	34.00	34.0	0.2	0.499
2	0.0100	46.00	46.0	0.4	0.675
3	0.0200	55.00	55.0	0.8	0.807
4	0.0300	61.00	61.0	1.2	0.895
5	0.0400	65.00	65.0	1.6	0.953
6	0.0500	68.00	68.0	2.0	0.997
7	0.0600	66.00	66.0	2.4	0.968
8	0.0750	67.00	67.0	3.0	0.983
9	0.1000	66.00	66.0	4.0	0.968
10	0.1500	64.00	64.0	6.0	0.939
11	0.2000	67.00	67.0	8.0	0.983
12	0.2500	65.00	65.0	10.0	0.953

MACTEC Engineering and Consulting, Inc.

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress tsf
13	0.3000	66.00	66.0	12.0	0.968
14	0.4000	66.00	66.0	16.0	0.968

Parameters for Specimen No. 2

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	136.460		164.000
Moisture content: Dry soil+tare, gms.	115.120		135.960
Moisture content: Tare, gms.	4.210		4.230
Moisture, %	19.2	21.3	21.3
Moist specimen weight, gms.	160.1		
Diameter, in.	2.50	2.50	
Area, in.^{2}	4.91	4.91	
Height, in.	1.01	0.96	
Net decrease in height, in.		0.04	
Wet Density, pcf	123.2	131.0	
Dry density, pcf	103.3	108.0	
Void ratio	0.6554	0.5832	
Saturation, %	80.4	100.0	

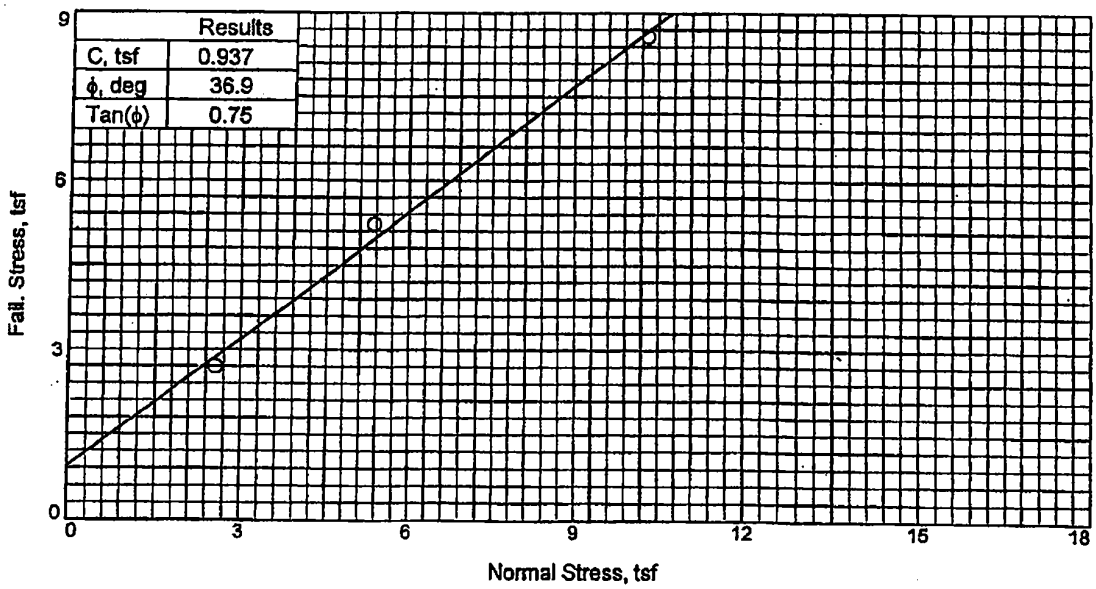
Test Readings for Specimen No. 2

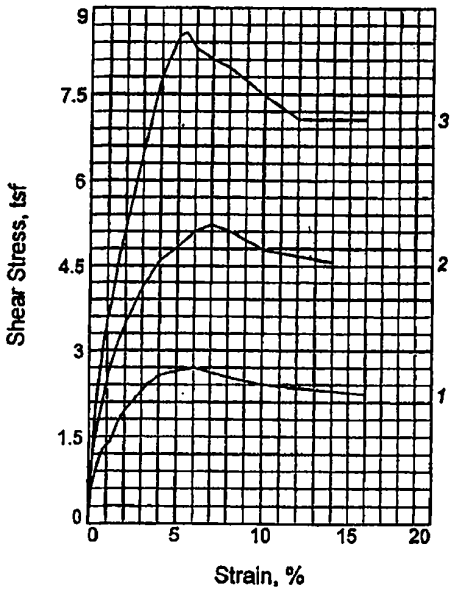
Normal stress = 8.7 tsf

Strain rate, in./min. = 0.01

Fail. Stress = 6.102 tsf **at reading no.** 10

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress tsf
0	0.0000	0.00	0.0	0.0	0.000
1	0.0050	62.00	62.0	0.2	0.909
2	0.0100	110.00	110.0	0.4	1.613
3	0.0200	188.00	188.0	0.8	2.758
4	0.0300	244.00	244.0	1.2	3.579
5	0.0400	288.00	288.0	1.6	4.224
6	0.0500	326.00	326.0	2.0	4.782
7	0.0750	382.00	382.0	3.0	5.603
8	0.1000	405.00	405.0	4.0	5.940
9	0.1150	412.00	412.0	4.6	6.043
10	0.1250	416.00	416.0	5.0	6.102
11	0.1350	414.00	414.0	5.4	6.072
12	0.1500	412.00	412.0	6.0	6.043
13	0.1750	400.00	400.0	7.0	5.867
14	0.2000	385.00	385.0	8.0	5.647
15	0.2500	376.00	376.0	10.0	5.515
16	0.3000	382.00	382.0	12.0	5.603
17	0.4000	384.00	384.0	16.0	5.632





Sample No.		1	2	3
Initial	Water Content, %	17.6	20.1	14.3
	Dry Density, pcf	102.6	103.5	110.9
	Saturation, %	73.7	86.1	74.3
	Void Ratio	0.6434	0.6292	0.5200
	Diameter, in.	2.50	2.50	2.50
	Height, in.	1.01	1.02	1.01
At Test	Water Content, %	20.9	19.7	15.0
	Dry Density, pcf	107.5	109.7	119.8
	Saturation, %	99.2	99.2	99.6
	Void Ratio	0.5685	0.5365	0.4066
	Diameter, in.	2.50	2.50	2.50
	Height, in.	0.96	0.96	0.93
Normal Stress, tsf		2.570	5.360	10.310
Fail. Stress, tsf		2.699	5.222	8.581
Strain, %		6.0	7.0	5.4
Ult. Stress, tsf				
Strain, %				
Strain rate, in./min.		0.01	0.01	0.01

Sample Type: Undisturbed
Description: Light Gray Silty SAND (SM) Visual

LL= ND **PL=** ND **PI=** ND
Specific Gravity= 2.70
Remarks: ASTM D 3080-04. ND=Not Determined. Lever arm mechanical shear device was used to perform the test. Samples sheared to the limitation of the machine.
Lab No. 8370

Client: Bechtel

Project: Exelon Texas COL (Victoria)

Location: B-2359UD
Sample Number: UD-19 **Depth:** 114-116.6 Ft
Proj. No.: 6468-07-1777 **Date:** 1/31/08

DIRECT SHEAR TEST REPORT

MACTEC ENGINEERING AND CONSULTING, INC.

Tested By: BM **Checked By:** HJ HJ 4/15/08 KAW 4.15.08

DIRECT SHEAR TEST

4/15/2008

Date: 1/31/08
Client: Bechtel
Project: Exelon Texas COL (Victoria)
Project No.: 6468-07-1777
Location: B-2359UD
Depth: 114-116.6 Ft **Sample Number:** UD-19
Description: Light Gray Silty SAND (SM) Visual
Remarks: ASTM D 3080-04. ND=Not Determined.
Lever arm mechanical shear device was used to perform the test. Samples sheared to the limitation of the machine.
Type of Sample: Undisturbed
Specific Gravity=2.70 **LL**=ND **PL**= ND **PI**=ND

Parameters for Specimen No. 1

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	82.510		162.480
Moisture content: Dry soil+tare, gms.	70.810		135.140
Moisture content: Tare, gms.	4.180		4.200
Moisture, %	17.6	20.9	20.9
Moist specimen weight, gms.	156.9		
Diameter, in.	2.50	2.50	
Area, in.^{2}	4.91	4.91	
Height, in.	1.01	0.96	
Net decrease in height, in.		0.05	
Wet Density, pcf	120.6	129.9	
Dry density, pcf	102.6	107.5	
Void ratio	0.6434	0.5685	
Saturation, %	73.7	99.2	

Test Readings for Specimen No. 1

Normal stress = 2.57 tsf
Strain rate, in./min. = 0.01
Fail. Stress = 2.699 tsf **at reading no.** 11

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress tsf
0	0.0000	0.00	0.0	0.0	0.000
1	0.0050	44.00	44.0	0.2	0.645
2	0.0100	64.00	64.0	0.4	0.939
3	0.0200	88.00	88.0	0.8	1.291
4	0.0300	96.00	96.0	1.2	1.408
5	0.0400	117.00	117.0	1.6	1.716
6	0.0500	133.00	133.0	2.0	1.951
7	0.0750	156.00	156.0	3.0	2.288
8	0.0850	165.00	165.0	3.4	2.420
9	0.1000	174.00	174.0	4.0	2.552
10	0.1150	178.00	178.0	4.6	2.611
11	0.1500	184.00	184.0	6.0	2.699
12	0.2000	173.00	173.0	8.0	2.538

MACTEC Engineering and Consulting, Inc.

Test Readings for Specimen No. 1

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress tsf
13	0.2500	164.00	164.0	10.0	2.406
14	0.3000	160.00	160.0	12.0	2.347
15	0.4000	153.00	153.0	16.0	2.244

Parameters for Specimen No. 2

Specimen Parameter	Initial	Consolidated	Final
Moisture content: Moist soil+tare, gms.	139.300		162.340
Moisture content: Dry soil+tare, gms.	116.740		136.310
Moisture content: Tare, gms.	4.320		4.250
Moisture, %	20.1	19.7	19.7
Moist specimen weight, gms.	163.3		
Diameter, in.	2.50	2.50	
Area, in.^{2}	4.91	4.91	
Height, in.	1.02	0.96	
Net decrease in height, in.		0.06	
Wet Density, pcf	124.2	131.3	
Dry density, pcf	103.5	109.7	
Void ratio	0.6292	0.5365	
Saturation, %	86.1	99.2	

Test Readings for Specimen No. 2

Normal stress = 5.36 tsf

Strain rate, in./min. = 0.01

Fail. Stress = 5.222 tsf **at reading no.** 11

No.	Horizontal Def. Dial in.	Load Dial	Load lbs.	Strain %	Shear Stress tsf
0	0.0000	0.00	0.0	0.0	0.000
1	0.0050	74.00	74.0	0.2	1.085
2	0.0100	106.00	106.0	0.4	1.555
3	0.0200	148.00	148.0	0.8	2.171
4	0.0300	186.00	186.0	1.2	2.728
5	0.0400	214.00	214.0	1.6	3.139
6	0.0500	236.00	236.0	2.0	3.462
7	0.0750	280.00	280.0	3.0	4.107
8	0.1000	313.00	313.0	4.0	4.591
9	0.1250	329.00	329.0	5.0	4.826
10	0.1500	348.00	348.0	6.0	5.104
11	0.1750	356.00	356.0	7.0	5.222
12	0.2000	349.00	349.0	8.0	5.119
13	0.2500	326.00	326.0	10.0	4.782
14	0.3500	311.00	311.0	14.0	4.562