DIRECT SIMPLE SHEAR TEST (ASTM D 6528-07): Specimen Setup / Take Down

Project Number: 0411-08-1686 | Test Type: SDSS | Sta. No.: 7G | File Name: B-2321_UD15b
Task No.: NA | Assign, $\sigma'_{v,c}$ = 11.52 ksf | $K_{c,DSS}$ ($\tau_{h,c}$ / $\sigma'_{v,c}$)= NA
Project Name: Exelon (Victoria) | Induced OCR = NA | $K_{ub,DSS}$ ($\tau_{hu,b}$ / $\sigma'_{v,c}$) = NA
Test No.: NA | Test Series for/on: NA | Type Stage: NA = NA , NA , NA & NA
Assig. Remarks: | Specific Gravity: 2.710 [X] Meas.; [ ] Assumed

[X] Tube [ ] Field Extruded	[ ] Liner [ ] Remolded	[ ] Tamping	[ ] Constant Effort:	Blows/Tamps per Layer =
Boring No.: B-2321UD	[ ] LPC Core	[ ] Impact/Rammer	Rammer Wgt.(lbf)=	No. Layers =
Sample No.: UD-15	Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)=	Drop (in.) =
Depth (ft): 130.5 - 132.5	Specimen No.: B	[ ] Kneading	[ ] Undercompaction: U_{ni} (%) =	Dia. (in.) =
[ ] Spec. Selection by X-ray;	[ ] Geomarine Sample		Ref. Effort= % Comp. =	± Opt.=

Type Consolidation:	[X] K_o at:	[X] Incremental; [ ] Anisotropic at:	[ ] Inclined Stress Path, $K_{c,DSS}$	[ ] Used Automated System	
		[ ] CRS	[ ] 90° Stress Path	Remarks:	
Loading Conditions:	[X] Static	[X] Strain	[ ] Creep	[X] Const, Vol./Ht	[X] Without - Water
	[ ] Rapid	[ ] Stress	[ ] Post Cyclic	[ ] Drained	[ ] With - Bath

[ ] Cyclic (Hz) Rate: [ ] 0.1; [ ] 1; Other: [ ] Strain [ ] Stress

Water Content (WC);	Initial - Trimming Location			Final, W_{at}
	Top ($W_{o,1}$)	Bottom ($W_{o,2}$)	Sides ($W_{o,3}$)	(see below)
Container No.	139	771	4041	4041
Mass Moist Soil + Cont. (g)	63.13	126.69	66.00	69.73
Mass Dry Soil + Container (g)	58.33	110.38	60.25	63.16
Mass Container (g)	30.12	31.53	30.00	30.01
WATER CONTENT (%)	17.02	20.68	19.01	19.82
Avg. Initial WC, $W_{o,avg}$ (%)	18.90	Final W_{at}:	[X] Slice ;	[ ] Whole Spec.

[ ] See attached data sheet(s) for additional water contents

Soil and Ring Masses	Initial	Final
Mass Moist Soil + Tare (g)	315.61	135.56
Mass Tare (g)	183.39	3.83
Mass Moist Soil, $M_{t,o}$ $Mt_{,at}$ (g)	132.22	131.73
Excess Dry Soil (soil not included in final mass above)		
Container No.		
Mass Dry Soil + Container (g)		
Mass Container (g)		
Mass Excess Dry Soil (g)	0.00	

Specimen Trimming:

[ ] Trimming Ring for Fugro Apparatus		NL6	Large-ring ID #
[X] Trimming Ring for NGI Apparatus			Small-ring ID #
$H_{s,t}$ (mm):	18.78	$A_{s,t}$ (cm^2):	34.68
$D_{s,t}$ (mm) :	66.45	$V_{s,t}$ (cm^3):	65.10

Remarks:

[ ] Free Standing by Wire Saw Lathe or Reconstituted Spec. (mm)

	Height (H_{tr})		Diameter (D_o)	Remarks:
1	18.850	1-T	NA	
2	18.670	2-M	NA	
3	18.830	3-B	NA	
4	18.770	1'-T	NA	For Free Standing
5	18.790	2'-M	NA	or Reconstituted Spec.:
Avg.		3'-B	NA	A_{tr} (cm^2): NA
=	18.775	Avg	NA	V_{tr} (cm^3): NA

Note: NA indicates not applicable.

F or G in the Sta. No. indicates Fugro or GEOTAC apparatus.

Estimated Initial Unit Weight

Total, $\gamma_{t,o}$ (lb/ft^3)= 126.79 | Dry, $\gamma_{d,o}$ (lb/ft^3)= 106.63

Specimen Lateral Confinement by:

[ ] **Wire Reinforced, Model:** Thickness (mm) =

Stress Level	Dia. by PiTape (mm) Meas.	Corr.	Area, $A_{c,n}$ (cm^2)	(in^2)
0				
$\sigma'_{v,c}$				
$\sigma'_{v,max}$				

[X] **Regular Membrane with Ring Set No.** 7 | ID, Rings (mm)

Thickness (mm): Top: 0.57 , | = 67.01
[ ] Single Bottom: 0.54 , | Corr. for mem.
[X] Double Membr. Thick. = 0.28 | = 66.450

Area Ring with mem., A_o: (cm^2)= 34.68 ; (in^2)= 5.375

Mass Top Cap, etc., M_{tc} = 527.2 g, 1.16 lbf

Data corr. for M_{tc}: [X] Yes; [ ] No Plattens with Pins: [ ] Yes; [X] No

Final Visual Description: Pale Yellow Fat CLAY with sand (CH)

Other Remarks :

Trim./ Recon. By: HC | Setup By: HC | Take Down By: HC
Date: 3/24/2008 | Date: 3/24/2008 | Date: 3/26/2008
Prelim. Calc. By: HC | Final Calc. By: LF | Reviewed By: HP

Specimen Take Down: [X] Spec. removed right after shearing
[ ] Spec. unloaded to zero stress with access to water

Remarks:

KAW 7/16/08

DIRECT SIMPLE SHEAR TEST (ASTM D 6528-07): Specimen Calculations & Summary

Project Number: 0411-08-1686 | Test Station No.: 7G | File Name: B-2321_UD15b

Task Number: NA | Specific Gravity: 2.710 [X] Measured; [ ] Assumed

Type Test: SDSS | Specimen: [X] "Undisturbed"; [ ] Reconstituted; [ ] Remolded

Calculations Corr. for Salt (dissolved solids): [X] No or, [ ] Yes, with concentration = _____ ppm

Consolidation Stress Summary and Loading Summary							
Test Stage:	Max. Stress	Pre-Shear	Post Cyclic	X	Static Strain Rate = NA (%/hr or)		
Nominal Vertical Stress, σ'_v (ksf)	NA	11.52	NA		Cyclic Rate (Hz):	0.1;	1; Other =
Axial/Vertical Force, $P_{vr,n}$ (lbf)	NA	NA	NA		During/End of Loading	Static	Cyclic
Horizontal Force, $P_{hr,n}$ (lbf)	NA	0	NA		Change in Height, $\Delta H_{L,n}$ (mm)	NA	NA
Nominal OCR	NA	NA	NA		Change in Vol., $\Delta V_{L,n}$ (cm^3)	NA	NA
t_c,(ON,days,hrs)	NA	0.91 days	NA		Post Cy.Displ. Reset to Null Position:	Yes;	No

[ ] Undrained ambient stress applied: with Delta shear force (lbf) = NA & Duration (min) = NA & Delta disp., $\Delta d_{h,ua}$ (mm) = NA

Trimmed Specimen (TS) - Inital Water Contents over Saturation (%):						
	Top, $W_{o,1}$	Botttom, $W_{o,2}$	Sides, $W_{o,3}$	Avg., $W_{o,avg}$	Selct., $W_{o,s}$	Back Cal.
W_o	17.02	20.68	19.01	18.90	18.90	20.26
S_o	82.5	92.3	88.0	87.8	87.7	91.2
Measured final mass of moist soil, $M_{t,at}$ (g)						131.73
Final mass of moist soil corrected for excess dry soil, $M_{tat,c}$ (g)						131.73

Calculated Mass of Dry Soil (g)	
Initial Selected Water Content (%)	18.90
Initial , $M_{d,o}$	111.20
Final, $M_{d,at}$	109.94
Selected, M_d	110.57

Initial Back Cal. Specific Gravity (TS):	
Selected S_o (%)	
Selected W_o (%)	
Specific Gravity, $G_{s,bc}$	

Height/Volume Change Summary			
Variation in Height & Volume During Consol.	During Initial Consol. to $\sigma'_{v,c}$ or $\sigma'_{vc,max}$=	During Rebound to $\sigma'_{v,c}$ =	Specimen Unloaded After Test To
Stress Units (ksf)	11.520	NA	NA
Sign Convention: (+) ΔV out & ΔH down; (-) ΔV in & ΔH up			
Delta Def. Read., $\Delta d_{ar,n}$ (mm)	0.670		
Total Equip. Comp., $\Sigma\Delta d_{afc}$ (mm)	0.000		
Corr. Total Def. $\Delta H_{c,n}$ (mm)	0.670		
ΔV_n using A_o - spec. (cm^3)	2.32		
ΔV_n using $A_{c,n}$ - app. (cm^3)	2.32		
ΔV_n using burette meas.(cm^3)	-6.00		
Selected ΔV_n (cm^3)	2.32	NA	NA = ΔV_{uL}
After Test WC Corr. for ΔV during Shear & Unloading, $W_{at,c}$ (%)			NA

Calculation of ΔV_c by Different Procedures			
By Selected Volumes		By Change in Mass	
ΔV_c (cm^3)	2.32	~ $M_{t,o}$ - ($M_{tat,c}$ + ΔV_L + ΔV_{uL})	
By Cal. Height & App. Area		ΔV_c (cm^3)	0.49
ΔV_c (cm^3)	2.32	By Saturation = 100% and Spec. Unloaded to 0 Stress	
By Cal. Ht. & Init. Spec. Area			
ΔV_c (cm^3)	2.32	ΔV_c (cm^3)	NA

Back Cal. Water Content During Consol. - Based on the Consolidation Conclusions Given Below	
Assumed Saturation (%)	100.00
Back Cal. WC before Loading, $W_{c,bc}$ (%)	19.78
Back Cal.WC at Max. Stress, $W_{cmax,bc}$ (%)	NA

Lateral Confinement Area Cal. Approach (LCA); Method 1, 2, 3 or 4: 1

Consolidation & Preshear Conclusions								
	ΔV_c (cm^3) =	2.31	ΔH_c (mm) =	0.670	$\varepsilon_{a,c}$ (%) =	3.57	$\Delta V_{c,max}$ (cm^3) =	NA
	V_c (cm^3) =	62.79	H_c (mm) =	18.105	$\varepsilon_{v,c}$ (%) =	3.56	$\varepsilon_{ac,max}$ (%)=	NA
	A_c (cm^2) =	34.68	$\Delta\gamma_c$ (mm) =	NA	γ_c (%) =	NA	Preshear: γ_{ua} (%)=	NA

Summary of Specimen Physical Properties:								
Specific Gravity: G_s = 2.710 Measured Condition:	Height (mm)	Volume (cm^3)	Area (cm^2)	Water Content (%)	Total Unit Weight (pcf)	Dry Unit Weight (pcf)	Saturation (%)	Void Ratio, e
Initial (as trimmed)	18.775	65.10	34.68	19.6	126.8	106.0	89.5	0.596
After Consol.: to $\sigma'_{v,c}$	18.105	62.79	34.68	19.8	131.7	109.9	100.0	0.539
After Consol.: to $\sigma'_{vc,max}$	NA	NA	NA	NA	NA	NA	NA	NA

LCA-Method: 1- Initial measured value remains constant. 4 - Based on change in height & volume.

& Note(s) 2 - Initial measured value corrected for applied stress. NA - Not Applicable

3 - Uses measured value at appropriate stress level (NA for rings).

Calculated By: LF

Reviewed By: HP HP

Remarks: t95 for max stress = 5.1 min

Project Number:	0411-08-1686	Test Type:	SDSS	Test Sta. No.:	7G
Project Name:	Exelon (Victoria)	Task No.:	NA	Test No.:	NA

File Name: B-2321_UD15b
Test Series for: NA

X Tube ☐ Field Extruded	☐ Liner ☐ Remolded	☐ Tamping	☐ Constant Effort:	Blows/Tamps per Layer =
Boring No.: B-2321UD	☐ LPC Core	☐ Impact/Rammer	Rammer Wgt.(lbf)=	No. Layers =
Sample No.: UD-15	Compostite No.:	☐ Pluviated:	Tamper Force (lbf)=	Drop (in.) =
Depth (ft): 130.5 - 132.5	Specimen No.: B	☐ Kneading	☐ Undercompaction: U_{ni} (%) =	Dia. (in.) =
☐ Spec. Selection by X-ray;	☐ Geomarine Sample		Ref. Effort= % Comp. =	± Opt.=

Type Consolidation:	X K_o at:	X Incremental CRS	☐ Anisotropic at:	☐ Inclined Stress Path, $K_{c,DSS}$ ☐ 90° Stress Path	☐ Used Automated System Remarks:	
Loading Conditions:	X Static ☐ Dynamic	X Strain ☐ Stress	☐ Creep ☐ Post Cyclic	X Const, Vol./Ht ☐ Drained	X Without - Water ☐ With - Bath	☐ Cyclic (Hz) Rate: ☐ 0.1; ☐ 1; Other: ☐ Strain ☐ Stress

Summary of Specimen Physical Properties

Specific Gravity: G_s = 2.710 Measured Condition:	Height (mm)	Volume (cm^3)	Area (cm^2)	Water Content (%)	Unit Weight Total (pcf)	Unit Weight Dry (pcf)	Saturation (%)	LL PL PI	-200 %	Void Ratio, e
Initial	18.78	65.10	34.68	19.58	126.8	106.0	89.5	61	77	0.596
After Consol.: to $\sigma'_{v,c}$	18.11	62.79	34.68	19.78	131.7	109.9	100.0	17	NA	0.539
After Consol.: to $\sigma'_{vc,max}$	NA	NA	NA	NA	NA	NA	NA	44	NA	NA

Consolidation Stress Summary and Loading Summary

Item	Unit	Max. Stress	Pre-Shear	Post Cyclic
Vert. Consol. Stress, $\sigma'_{v,c}$:	(ksf)	NA	11.550	NA
Induced OCR:	-	NA	NA	NA
Axial Strain during Consol., $\varepsilon_{a,c}$:	%	NA	3.57	NA
Horiz. Consol. Stress, $\tau_{h,c}$:	(ksf)	NA	NA	NA
Consol. Stress Ratio, $\tau_{h,c} / \sigma'_{v,c}$:	-	NA	NA	NA
Shear Strain during Consol., $\varepsilon_{h,c}$:	%	NA	NA	NA
Undr. Ambient Shear Stress, $\tau_{h,ua}$:	(ksf)	NA	NA	NA
Undr. Ambient Shear Strain, ε_{ua}:	%	NA	NA	NA

X Static Strain Rate = 4.6 %/hr.
Cyclic Rate (Hz): ☐ 0.1; ☐ 1; Other =

During/End of Loading	Static	Cyclic
Change in Height, $\Delta H_{L,n}$ (mm):	NA	NA
Change in Vol., $\Delta V_{L,n}$ (cm^3):	NA	NA

Post Cy.Displ. Reset to Null Pos.: ☐ Yes; ☐ No
Number of Loading Cycles, N = NA
$\pm\tau_h$ = NA (ksf) $\pm\gamma$ = NA %
at end of cyclic loading, $\sigma'_{vcy,r}$ = NA (ksf)

Weight Top Cap, etc., M_{tc} (lbf): 1.16		Data Normalization: X Yes ☐ No	Value: 11.550 (ksf)
Data corr. for M_{tc}: X Yes; ☐ No	Plattens with Pins: ☐ Yes; X No	Using Effective Vertical Stress:	
☐ Wire Reinforced Membrane, Model:	Data corr. for Membr. strength	X Pre-Shear Conditions	☐ Post-Cyclic Conditions
X Regular Membrane with Rings	☐ Yes X No	☐ Maximum Stress during Consol.	

Notes: See Fugro South, Inc. Notation Listing for definition of symbols and acronyms. F or G in the Test Sta. No. indicates Fugro or GEOTAC apparatus.
NA - Not Applicable

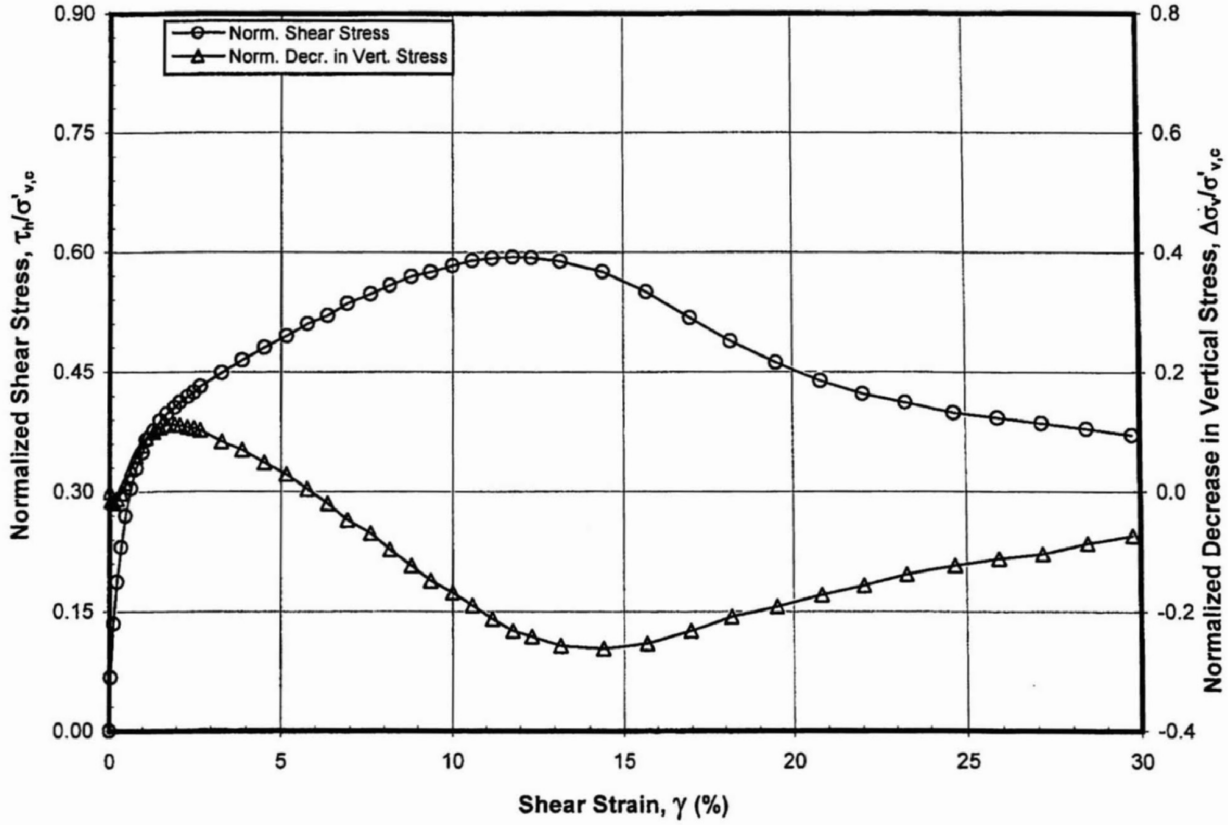
Final Visual Description and Remarks: Pale Yellow Fat CLAY with sand (CH)

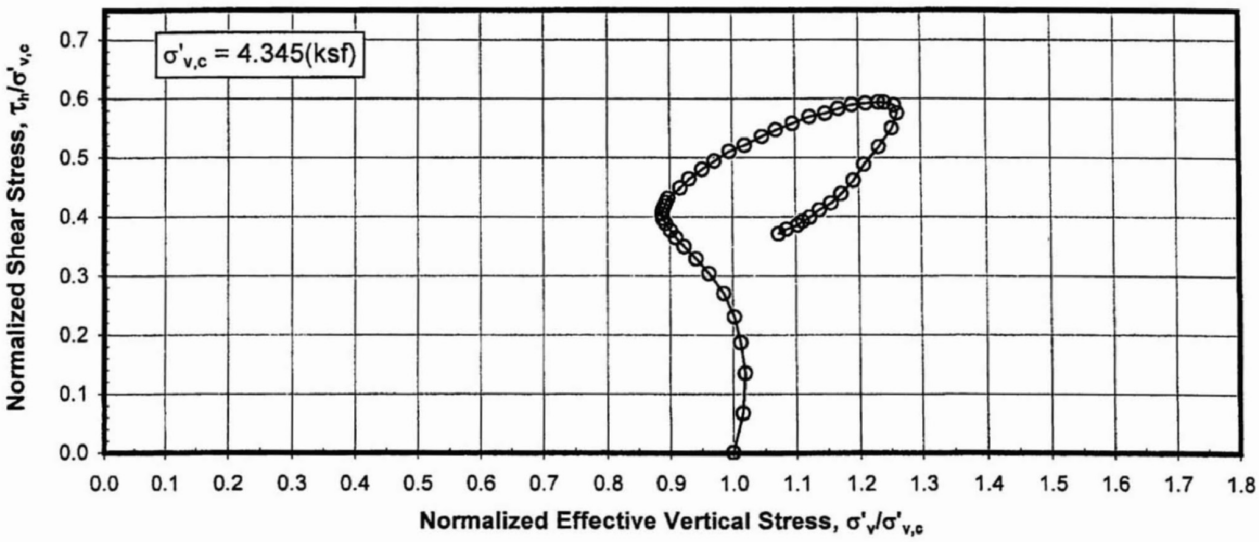
Loading Summary

	τ_h (ksf)	γ (%)	σ'_v (ksf)	τ_h/σ'_v -	$\Delta\sigma'_v/\sigma'_{v,c}$ -	$c_u/\sigma'_{v,c}$ -
at Peak Shear Stress	5.065	15.67	9.411	0.538	0.185	0.439
at Maximum Strain	3.669	29.90	8.598	0.427	0.256	-

Boring No.: B-2321UD Sample No.: UD-15B

Elapsed Time (min)	Shear Strain γ (%)	Shear Stress τ_h (ksf)	Effective Vertical Stress σ'_v (ksf)	Calulated Pore Press. Change $\Delta U = \Delta\sigma'_v$ (ksf)	Secant Shear Modulus G_s (ksf)	Tangent Modulus G_T (ksf)	Norm. Shear Stress $\tau_h/\sigma'_{v,c}$	Norm. Vert. Stress $\sigma'_v/\sigma'_{v,c}$	Norm. Decr. in V. Stress $\Delta\sigma'_v/\sigma'_{v,c}$	Stress Ratio Angle ϕ'_{DSS} (°)
0.0	0.00	-0.004	11.550	0.000	-	-	0.000	1.000	0.000	-0.02
2.5	0.00	0.058	11.566	-0.015	2427.057	1529.118	0.005	1.001	-0.001	0.29
5.1	0.04	0.271	11.601	-0.051	757.852	471.937	0.023	1.004	-0.004	1.34
7.6	0.10	0.462	11.544	0.006	478.784	248.504	0.040	1.000	0.000	2.29
10.1	0.17	0.602	11.466	0.085	349.540	183.416	0.052	0.993	0.007	3.01
12.6	0.24	0.732	11.399	0.151	300.944	202.807	0.063	0.987	0.013	3.67
15.2	0.32	0.902	11.350	0.200	282.497	196.205	0.078	0.983	0.017	4.54
17.7	0.42	1.065	11.300	0.250	256.315	181.081	0.092	0.978	0.022	5.38
20.2	0.51	1.249	11.232	0.319	244.510	212.958	0.108	0.972	0.028	6.34
22.8	0.60	1.462	11.192	0.358	242.778	216.268	0.127	0.969	0.031	7.44
25.3	0.70	1.661	11.121	0.429	236.634	205.926	0.144	0.963	0.037	8.49
27.8	0.80	1.872	11.056	0.494	233.630	209.901	0.162	0.957	0.043	9.61
30.4	0.91	2.089	10.969	0.581	230.606	191.435	0.181	0.950	0.050	10.78
32.9	1.03	2.300	10.864	0.686	224.175	168.924	0.199	0.941	0.059	11.95
35.4	1.16	2.507	10.752	0.798	217.350	154.136	0.217	0.931	0.069	13.12
37.9	1.29	2.700	10.633	0.917	210.015	132.581	0.234	0.921	0.079	14.25
40.5	1.43	2.868	10.512	1.038	201.043	113.940	0.248	0.910	0.090	15.26
43.0	1.58	3.031	10.395	1.155	192.260	93.576	0.262	0.900	0.100	16.26
50.6	2.07	3.413	9.995	1.555	165.463	65.040	0.296	0.865	0.135	18.85
58.2	2.58	3.676	9.661	1.889	142.880	42.902	0.318	0.836	0.164	20.83
65.7	3.13	3.868	9.376	2.174	123.547	29.522	0.335	0.812	0.188	22.42
73.3	3.73	4.015	9.199	2.351	107.757	20.185	0.348	0.796	0.204	23.58
80.9	4.32	4.107	9.083	2.467	95.210	13.183	0.356	0.786	0.214	24.33
88.5	4.94	4.174	9.003	2.547	84.616	10.173	0.361	0.779	0.221	24.87
96.0	5.52	4.230	8.980	2.570	76.659	9.958	0.366	0.777	0.223	25.22
103.6	6.16	4.296	8.957	2.594	69.791	11.828	0.372	0.775	0.225	25.62
111.2	6.76	4.375	8.966	2.584	64.820	14.385	0.379	0.776	0.224	26.01
118.8	7.36	4.468	8.989	2.561	60.766	14.724	0.387	0.778	0.222	26.43
126.4	7.96	4.553	9.006	2.544	57.228	13.468	0.394	0.780	0.220	26.82
133.9	8.57	4.631	9.036	2.514	54.109	12.682	0.401	0.782	0.218	27.13
141.5	9.17	4.706	9.069	2.481	51.343	12.361	0.407	0.785	0.215	27.43
149.1	9.77	4.780	9.131	2.420	48.946	11.732	0.414	0.791	0.209	27.63
156.7	10.41	4.851	9.172	2.379	46.649	10.466	0.420	0.794	0.206	27.87
164.3	11.00	4.909	9.223	2.327	44.645	7.921	0.425	0.799	0.201	28.03
174.4	11.85	4.961	9.283	2.268	41.885	5.568	0.429	0.804	0.196	28.12
189.5	13.11	5.024	9.357	2.193	38.347	3.932	0.435	0.810	0.190	28.23
204.7	14.38	5.060	9.395	2.155	35.208	1.615	0.438	0.813	0.187	28.31
219.8	15.67	5.065	9.411	2.140	32.360	-2.279	0.439	0.815	0.185	28.29
235.0	16.94	5.002	9.399	2.151	29.559	-8.791	0.433	0.814	0.186	28.02
250.2	18.23	4.839	9.307	2.243	26.565	-24.006	0.419	0.806	0.194	27.47
265.3	19.58	4.362	9.023	2.527	22.302	-26.302	0.378	0.781	0.219	25.80
280.5	20.92	4.131	8.929	2.621	19.765	-14.653	0.358	0.773	0.227	24.83
295.6	22.27	3.968	8.847	2.703	17.833	-8.913	0.344	0.766	0.234	24.15
310.8	23.54	3.895	8.815	2.735	16.562	-5.168	0.337	0.763	0.237	23.84
325.9	24.84	3.835	8.778	2.773	15.458	-3.521	0.332	0.760	0.240	23.60
341.1	26.13	3.804	8.751	2.799	14.571	-3.619	0.329	0.758	0.242	23.49
356.2	27.42	3.742	8.711	2.839	13.664	-4.281	0.324	0.754	0.246	23.25
371.4	28.67	3.695	8.650	2.901	12.904	-2.930	0.320	0.749	0.251	23.13
386.6	29.90	3.669	8.598	2.952	12.283	-2.111	0.318	0.744	0.256	23.11





STATIC DSS TEST

K_o Consolidation - OCR = NA

Sample: UD-4B - Depth: 35.0 - 36.7 ft

Boring B-2359UD

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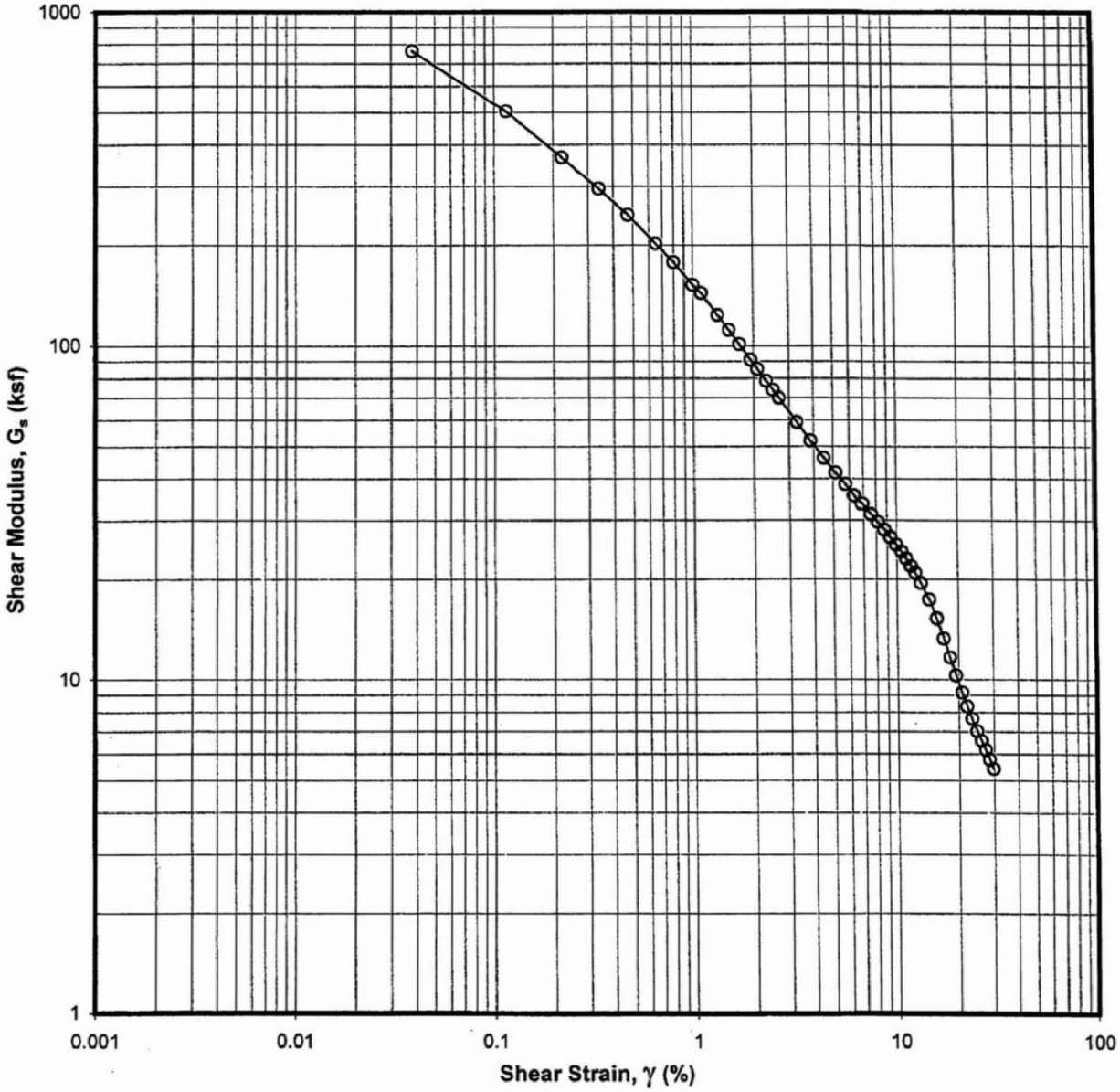


STATIC DSS TEST

K_o Consolidation - OCR = NA

Sample: UD-4B - Depth: 35.0 - 36.7 ft

Boring B-2359UD

KAW 7/16/08

DIRECT SIMPLE SHEAR TEST (ASTM D 6528-07): Specimen Setup / Take Down

Project Number: 0411-08-1686 | Test Type: SDSS | Sta. No.: 6G | File Name: B-2359_UD4b
Task No.: NA | Assign, $\sigma'_{v,c}$ = 4.32 ksf | $K_{c,DSS}$ ($\tau_{h,c}$ / $\sigma'_{v,c}$)= NA
Project Name: Exelon (Victoria) | Induced OCR = NA | $K_{ub,DSS}$ ($\tau_{hu,b}$ / $\sigma'_{v,c}$) = NA
Test No.: NA | Test Series for/on: NA | Type Stage: NA | = NA , NA , NA & NA
Assig. Remarks: | Specific Gravity: 2.730 [X] Meas.; [ ] Assumed

[X] Tube [ ] Field Extruded	[ ] Liner [ ] Remolded	[ ] Tamping	[ ] Constant Effort:	Blows/Tamps per Layer =	
Boring No.: B-2359UD	[ ] LPC Core	[ ] Impact/Rammer	Rammer Wgt.(lbf)=	No. Layers =	
Sample No.: UD-4	Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)=	Drop (in.) =	
Depth (ft): 35.0 - 36.7	Specimen No.: B	[ ] Kneading	[ ] Undercompaction:	U_{ni} (%) =	Dia. (in.) =
[ ] Spec. Selection by X-ray;	[ ] Geomarine Sample		Ref. Effort=	% Comp. =	± Opt.=

Type Consolidation:	[X] K_o at:	[X] Incremental / [ ] CRS	; [ ] Anisotropic at:	[ ] Inclined Stress Path, $K_{c,DSS}$ / [ ] 90° Stress Path	[ ] Used Automated System / Remarks:

Loading Conditions:	[X] Static	[ ] Rapid	[X] Strain	[ ] Stress	[ ] Creep	[ ] Post Cyclic	[X] Const, Vol./Ht	[ ] Drained	[X] Without - Water	[ ] With - Bath	[ ] Cyclic (Hz) Rate: [ ] 0.1;	[ ] Strain [ ] Stress	[ ] 1; Other:

Water Content (WC);	Initial - Trimming Location			Final, W_{at}
	Top ($W_{o,1}$)	Bottom ($W_{o,2}$)	Sides ($W_{o,3}$)	(see below)
Container No.	771	997	4201	D-11
Mass Moist Soil + Cont. (g)	86.29	80.18	76.08	66.62
Mass Dry Soil + Container (g)	76.50	71.18	67.75	59.94
Mass Container (g)	31.56	31.59	30.35	30.24
WATER CONTENT (%)	21.78	22.73	22.27	22.49
Avg. Initial WC, $W_{o,avg}$ (%)	22.26	Final W_{at}:	[X] Slice ;	[ ] Whole Spec.

[ ] See attached data sheet(s) for additional water contents

Soil and Ring Masses	Initial	Final
Mass Moist Soil + Tare (g)	316.80	135.64
Mass Tare (g)	183.37	4.59
Mass Moist Soil, $M_{t,o}$ $Mt_{,at}$ (g)	133.43	131.05
Excess Dry Soil (soil not included in final mass above)		
Container No.		
Mass Dry Soil + Container (g)		
Mass Container (g)		
Mass Excess Dry Soil (g)		0.00

Specimen Trimming:

[ ] Trimming Ring for Fugro Apparatus		NL6	Large-ring ID #
[X] Trimming Ring for NGI Apparatus			Small-ring ID #
$H_{s,t}$ (mm):	18.68	$A_{s,t}$ (cm^2):	34.68
$D_{s,t}$ (mm) :	66.45	$V_{s,t}$ (cm^3):	64.76

Remarks:

[ ] Free Standing by Wire Saw Lathe or Reconstituted Spec. (mm)

	Height (H_{tr})	Diameter (D_o)		Remarks:
1	18.730	1-T	NA	
2	18.660	2-M	NA	
3	18.670	3-B	NA	
4	18.640	1'-T	NA	For Free Standing
5	18.700	2'-M	NA	or Reconstituted Spec.:
	Avg.	3'-B	NA	A_{tr} (cm^2): NA
=	18.675	Avg	NA	V_{tr} (cm^3): NA

Note: NA indicates not applicable.

F or G in the Sta. No. indicates Fugro or GEOTAC apparatus.

Estimated Initial Unit Weight

Total, $\gamma_{t,o}$ (lb/ft^3)= 128.63	Dry, $\gamma_{d,o}$ (lb/ft^3)= 105.21

Specimen Lateral Confinement by:

[ ] **Wire Reinforced, Model:** Thickness (mm) =

Stress Level	Dia. by PiTape (mm) Meas.	Corr.	Area, $A_{c,n}$ (cm^2)	(in^2)
0				
$\sigma'_{v,c}$				
$\sigma'_{v,max}$				

[X] **Regular Membrane with Ring Set No.** 6 | ID, Rings (mm)

Thickness (mm): Top: 0.64 , | = 67.11
[ ] Single Bottom: 0.67 , | Corr. for mem.
[X] Double Membr. Thick. = 0.33 | = 66.450

Area Ring with mem., A_o: (cm^2)= 34.68 ; (in^2)= 5.375

Mass Top Cap, etc., M_{tc} = 526.0 g, 1.16 lbf

Data corr. for M_{tc}: [X] Yes; [ ] No Plattens with Pins: [ ] Yes; [X] No

Final Visual Description: Light Gray Fat CLAY (CH)

Other Remarks :

Trim./ Recon. By: HC | Setup By: HC | Take Down By: HC
Date: 4/2/2008 | Date: 4/2/2008 | Date: 4/6/2008
Prelim. Calc. By: HC | Final Calc. By: LF | Reviewed By: HP HP

Specimen Take Down: [X] Spec. removed right after shearing
[ ] Spec. unloaded to zero stress with access to water

Remarks:

KAW 7/16/08

DIRECT SIMPLE SHEAR TEST (ASTM D 6528-07): Specimen Calculations & Summary

Project Number: 0411-08-1686 | Test Station No.: 6G | File Name: B-2359_UD4b

Task Number: NA | Specific Gravity: 2.730 [X] Measured; [ ] Assumed

Type Test: SDSS | Specimen: [X] "Undisturbed"; [ ] Reconstituted; [ ] Remolded

Calculations Corr. for Salt (dissolved solids): [X] No or, [ ] Yes, with concentration = _____ ppm

Consolidation Stress Summary and Loading Summary							
Test Stage:	Max. Stress	Pre-Shear	Post Cyclic	X	Static Strain Rate = NA (%/hr or)		
Nominal Vertical Stress, σ'_v (ksf)	NA	4.32	NA		Cyclic Rate (Hz): [ ] 0.1; [ ] 1; Other =		
Axial/Vertical Force, $P_{vr,n}$ (lbf)	NA	NA	NA		During/End of Loading	Static	Cyclic
Horizontal Force, $P_{hr,n}$ (lbf)	NA	0	NA		Change in Height, $\Delta H_{L,n}$ (mm)	NA	NA
Nominal OCR	NA	NA	NA		Change in Vol., $\Delta V_{L,n}$ (cm^3)	NA	NA
t_c,(ON,days,hrs)	NA	1.64 days	NA		Post Cy.Displ. Reset to Null Position:	[ ] Yes;	[ ] No

[ ] Undrained ambient stress applied: with Delta shear force (lbf) = NA & Duration (min) = NA & Delta disp., $\Delta d_{h,ua}$ (mm) = NA

Trimmed Specimen (TS) - Inital Water Contents over Saturation (%):	Top, $W_{o,1}$	Botttom, $W_{o,2}$	Sides, $W_{o,3}$	Avg., $W_{o,avg}$	Selct., $W_{o,s}$	Back Cal.
W_o	21.78	22.73	22.27	22.26	22.26	24.72
S_o	97.4	99.6	98.5	98.5	98.5	103.9
Measured final mass of moist soil, $M_{t,at}$ (g)						131.05
Final mass of moist soil corrected for excess dry soil, $M_{tat,c}$ (g)						131.05

Calculated Mass of Dry Soil (g)	
Initial Selected Water Content (%)	22.26
Initial , $M_{d,o}$	109.14
Final, $M_{d,at}$	106.99
Selected, M_d	108.06

Initial Back Cal. Specific Gravity (TS):	
Selected S_o (%)	
Selected W_o (%)	
Specific Gravity, $G_{s,bc}$	

Height/Volume Change Summary			
Variation in Height & Volume During Consol.	During Initial Consol. to $\sigma'_{v,c}$ or $\sigma'_{vc,max}$=	During Rebound to $\sigma'_{v,c}$ =	Specimen Unloaded After Test To
Stress Units (ksf)	4.320	NA	NA
Sign Convention: (+) ΔV out & ΔH down; (-) ΔV in & ΔH up			
Delta Def. Read., $\Delta d_{ar,n}$ (mm)	0.360		
Total Equip. Comp., $\Sigma\Delta d_{afc}$ (mm)	0.000		
Corr. Total Def. $\Delta H_{c,n}$ (mm)	0.360		
ΔV_n using A_o - spec. (cm^3)	1.25		
ΔV_n using $A_{c,n}$ - app. (cm^3)	1.25		
ΔV_n using burette meas.(cm^3)	-0.90		
Selected ΔV_n (cm^3)	1.25	NA	NA = ΔV_{uL}
After Test WC Corr. for ΔV during Shear & Unloading, $W_{at,c}$ (%)			NA

Calculation of ΔV_c by Different Procedures			
By Selected Volumes		By Change in Mass	
ΔV_c (cm^3)	1.25	~ $M_{t,o}$ - ($M_{tat,c}$ + ΔV_L + ΔV_{uL})	
By Cal. Height & App. Area		ΔV_c (cm^3)	2.38
ΔV_c (cm^3)	1.25	By Saturation = 100% and Spec. Unloaded to 0 Stress	
By Cal. Ht. & Init. Spec. Area			
ΔV_c (cm^3)	1.25	ΔV_c (cm^3)	NA

Back Cal. Water Content During Consol. - Based on the Consolidation Conclusions Given Below	
Assumed Saturation (%)	100.00
Back Cal. WC before Loading, $W_{c,bc}$ (%)	22.04
Back Cal.WC at Max. Stress, $W_{cmax,bc}$ (%)	NA

Lateral Confinement Area Cal. Approach (LCA); Method 1, 2, 3 or 4: 1

Consolidation & Preshear Conclusions								
	ΔV_c (cm^3) =	1.24	ΔH_c (mm) =	0.360	$\varepsilon_{a,c}$ (%) =	1.93	$\Delta V_{c,max}$ (cm^3) =	NA
	V_c (cm^3) =	63.52	H_c (mm) =	18.315	$\varepsilon_{v,c}$ (%) =	1.91	$\varepsilon_{ac,max}$ (%)=	NA
	A_c (cm^2) =	34.68	$\Delta\gamma_c$ (mm) =	NA	γ_c (%) =	NA	Preshear: γ_{ua} (%)=	NA

Summary of Specimen Physical Properties:								
Specific Gravity: G_s = 2.730 Measured Condition:	Height (mm)	Volume (cm^3)	Area (cm^2)	Water Content (%)	Total Unit Weight (pcf)	Dry Unit Weight (pcf)	Saturation (%)	Void Ratio, e
Initial (as trimmed)	18.675	64.76	34.68	23.5	128.6	104.2	101.2	0.636
After Consol.: to $\sigma'_{v,c}$	18.315	63.52	34.68	22.0	129.6	106.2	100.0	0.604
After Consol.: to $\sigma'_{vc,max}$	NA	NA	NA	NA	NA	NA	NA	NA

LCA-Method: 1- Initial measured value remains constant. 4 - Based on change in height & volume.

& Note(s) 2 - Initial measured value corrected for applied stress. NA - Not Applicable

3 - Uses measured value at appropriate stress level (NA for rings).

Calculated By: LF

Reviewed By: HP HP

Remarks: t95 for max stress = 0.4 min

Project Number:	0411-08-1686	Test Type:	SDSS	Test Sta. No.: 6G	File Name: B-2359_UD4b
Project Name:	Exelon (Victoria)	Task No.:	NA	Test No.: NA	Test Series for: NA

X Tube ☐ Field Extruded	☐ Liner ☐ Remolded	☐ Tamping	☐ Constant Effort: Blows/Tamps per Layer =
Boring No.: B-2359UD	☐ LPC Core	☐ Impact/Rammer	Rammer Wgt.(lbf)= No. Layers =
Sample No.: UD-4	Compostite No.:	☐ Pluviated:	Tamper Force (lbf)= Drop (in.) =
Depth (ft): 35.0 - 36.7	Specimen No.: B	☐ Kneading	☐ Undercompaction: U_{ni} (%) = Dia. (in.) =
☐ Spec. Selection by X-ray;	☐ Geomarine Sample	☐	Ref. Effort= % Comp. = ± Opt.=

Type Consolidation:	X K_o at: X Incremental ☐ CRS	☐ Anisotropic at:	☐ Inclined Stress Path, $K_{c,DSS}$ ☐ 90° Stress Path	☐ Used Automated System Remarks:	
Loading Conditions:	X Static ☐ Dynamic; X Strain ☐ Stress	☐ Creep ☐ Post Cyclic	X Const, Vol./Ht ☐ Drained	X Without - Water ☐ With - Bath	☐ Cyclic (Hz) Rate: ☐ 0.1; ☐ 1; Other: ☐ Strain ☐ Stress

Summary of Specimen Physical Properties

Specific Gravity: G_s = 2.730 Measured Condition:	Height (mm)	Volume (cm^3)	Area (cm^2)	Water Content (%)	Unit Weight Total (pcf)	Unit Weight Dry (pcf)	Saturation (%)	LL PL PI	-200 %	Void Ratio, e
Initial	18.68	64.76	34.68	23.48	128.6	104.2	101.2	68	98.2	0.636
After Consol.: to $\sigma'_{v,c}$	18.32	63.52	34.68	22.04	129.6	106.2	100.0	17	NA	0.604
After Consol.: to $\sigma'_{vc,max}$	NA	NA	NA	NA	NA	NA	NA	51	NA	NA

Consolidation Stress Summary and Loading Summary

Item	Unit	Max. Stress	Pre-Shear	Post Cyclic
Vert. Consol. Stress, $\sigma'_{v,c}$:	(ksf)	NA	4.345	NA
Induced OCR:	-	NA	NA	NA
Axial Strain during Consol., $\varepsilon_{a,c}$:	%	NA	1.93	NA
Horiz. Consol. Stress, $\tau_{h,c}$:	(ksf)	NA	NA	NA
Consol. Stress Ratio, $\tau_{h,c} / \sigma'_{v,c}$:	-	NA	NA	NA
Shear Strain during Consol., $\varepsilon_{h,c}$:	%	NA	NA	NA
Undr. Ambient Shear Stress, $\tau_{h,ua}$:	(ksf)	NA	NA	NA
Undr. Ambient Shear Strain, ε_{ua}:	%	NA	NA	NA

X Static Strain Rate = 4.9 %/hr.

☐ Cyclic Rate (Hz): ☐ 0.1; ☐ 1; Other =

During/End of Loading	Static	Cyclic
Change in Height, $\Delta H_{L,n}$ (mm):	NA	NA
Change in Vol., $\Delta V_{L,n}$ (cm^3):	NA	NA
Post Cy.Displ. Reset to Null Pos.:	☐ Yes;	☐ No

Number of Loading Cycles, N = NA

$\pm\tau_h$ = NA (ksf) $\pm\gamma$ = NA %

at end of cyclic loading, $\sigma'_{vcy,r}$ = NA (ksf)

Weight Top Cap, etc., M_{tc} (lbf): 1.16			Data Normalization: X Yes ☐ No Value: 4.345 (ksf)
Data corr. for M_{tc}: X Yes; ☐ No	Plattens with Pins: ☐ Yes; X No		Using Effective Vertical Stress:
☐ Wire Reinforced Membrane, Model:	Data corr. for Membr. strength		X Pre-Shear Conditions ☐ Post-Cyclic Conditions
X Regular Membrane with Rings	☐ Yes X No		☐ Maximum Stress during Consol.

Notes: See Fugro South, Inc. Notation Listing for definition of symbols and acronyms. F or G in the Test Sta. No. indicates Fugro or GEOTAC apparatus.

NA - Not Applicable

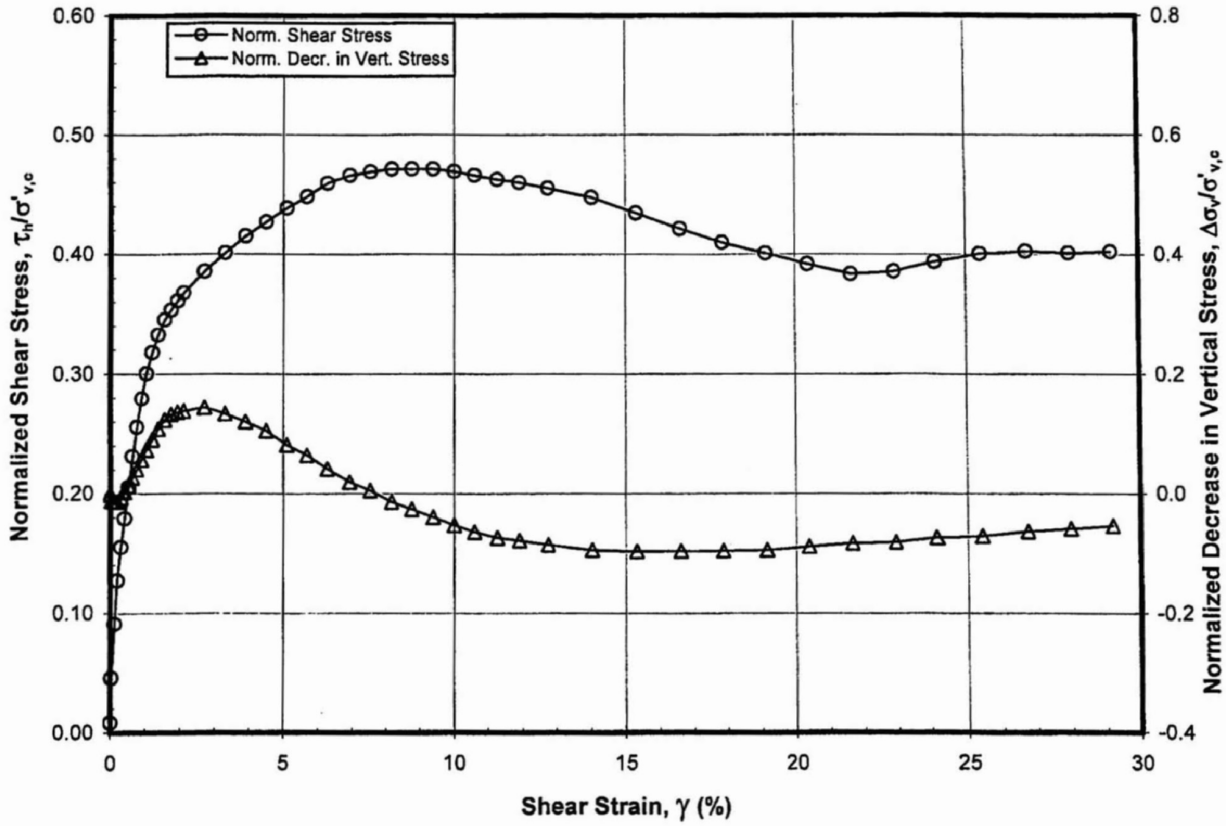
Final Visual Description and Remarks: Light Gray Fat CLAY (CH)

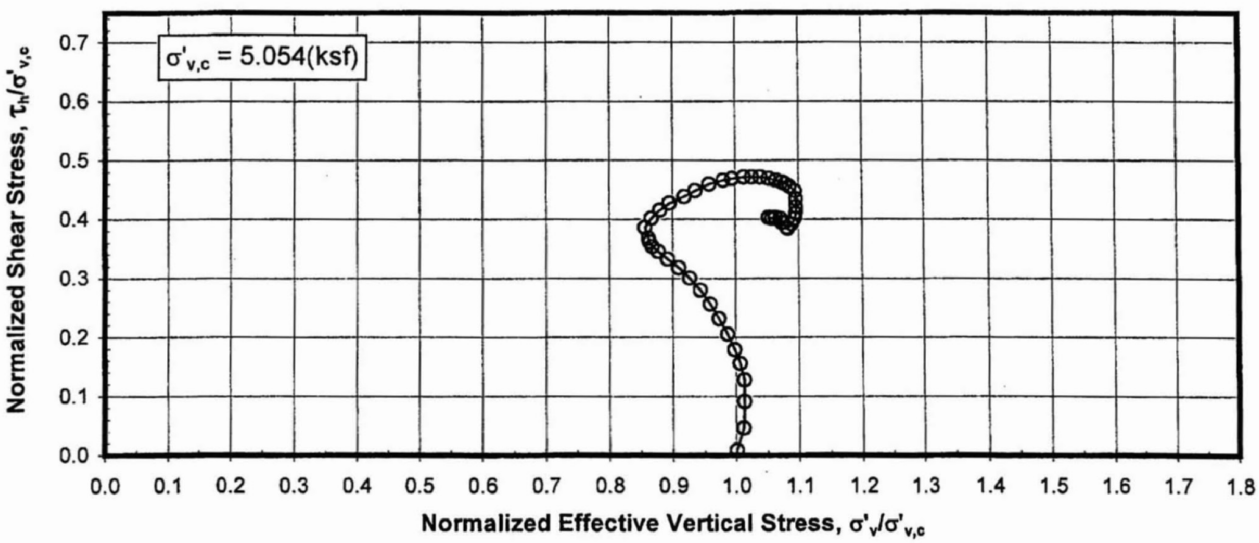
Loading Summary

	τ_h (ksf)	γ (%)	σ'_v (ksf)	τ_h/σ'_v -	$\Delta\sigma'_v/\sigma'_{v,c}$ -	$c_u/\sigma'_{v,c}$ -
at Peak Shear Stress	2.580	11.79	5.355	0.482	-0.232	0.594
at Maximum Strain	1.613	29.78	4.663	0.346	-0.073	-

Boring No.: B-2359UD Sample No.: UD-4B

Elapsed Time (min)	Shear Strain γ (%)	Shear Stress τ_h (ksf)	Effective Vertical Stress σ'_v (ksf)	Calulated Pore Press. Change $\Delta U = \Delta\sigma'_v$ (ksf)	Secant Shear Modulus G_s (ksf)	Tangent Modulus G_T (ksf)	Norm. Shear Stress $\tau_h/\sigma'_{v,c}$	Norm. Vert. Stress $\sigma'_v/\sigma'_{v,c}$	Norm. Decr. in V. Stress $\Delta\sigma'_v/\sigma'_{v,c}$	Stress Ratio Angle ϕ'_{DSS} (°)
0.0	0.00	0.002	4.345	0.000	-	-	0.001	1.000	0.000	0.03
2.5	0.04	0.293	4.410	-0.065	763.041	569.708	0.068	1.015	-0.015	3.81
5.0	0.12	0.585	4.427	-0.082	503.840	295.863	0.135	1.019	-0.019	7.53
7.5	0.22	0.813	4.397	-0.053	366.077	188.200	0.187	1.012	-0.012	10.48
10.0	0.34	1.002	4.355	-0.010	295.224	143.256	0.231	1.002	-0.002	12.95
12.5	0.47	1.172	4.282	0.063	246.620	104.460	0.270	0.986	0.014	15.31
15.0	0.65	1.320	4.178	0.167	202.267	77.993	0.304	0.962	0.038	17.53
17.5	0.80	1.429	4.089	0.256	177.848	59.085	0.329	0.941	0.059	19.27
20.0	0.99	1.517	4.010	0.335	152.364	55.044	0.349	0.923	0.077	20.72
22.5	1.10	1.583	3.952	0.393	144.075	43.741	0.364	0.910	0.090	21.84
25.0	1.32	1.635	3.915	0.429	123.586	25.093	0.376	0.901	0.099	22.66
27.5	1.51	1.687	3.883	0.462	111.469	23.497	0.388	0.894	0.106	23.48
30.0	1.70	1.725	3.863	0.482	101.055	17.489	0.397	0.889	0.111	24.06
32.5	1.93	1.759	3.858	0.486	90.911	16.778	0.405	0.888	0.112	24.51
35.0	2.10	1.790	3.864	0.480	85.251	15.917	0.412	0.889	0.111	24.85
37.5	2.31	1.819	3.877	0.468	78.478	13.565	0.419	0.892	0.108	25.14
40.0	2.50	1.844	3.884	0.460	73.773	15.148	0.424	0.894	0.106	25.39
42.5	2.68	1.875	3.899	0.446	69.801	14.397	0.431	0.897	0.103	25.68
50.0	3.30	1.950	3.982	0.363	59.064	11.828	0.449	0.916	0.084	26.09
57.5	3.88	2.017	4.043	0.302	51.903	11.183	0.464	0.931	0.069	26.51
65.0	4.52	2.086	4.135	0.210	46.144	10.317	0.480	0.952	0.048	26.77
72.5	5.16	2.148	4.221	0.123	41.595	10.611	0.494	0.972	0.028	26.97
80.0	5.76	2.217	4.327	0.018	38.478	9.473	0.510	0.996	0.004	27.13
87.5	6.35	2.262	4.432	-0.087	35.553	9.583	0.521	1.020	-0.020	27.03
95.0	6.92	2.328	4.551	-0.206	33.592	9.460	0.536	1.047	-0.047	27.10
102.5	7.61	2.377	4.646	-0.301	31.226	7.779	0.547	1.069	-0.069	27.10
110.0	8.18	2.425	4.764	-0.419	29.631	8.007	0.558	1.096	-0.096	26.98
117.5	8.81	2.473	4.883	-0.538	28.058	6.089	0.569	1.124	-0.124	26.86
125.0	9.36	2.498	4.991	-0.646	26.669	4.934	0.575	1.149	-0.149	26.59
132.5	10.00	2.533	5.078	-0.733	25.294	4.986	0.583	1.169	-0.169	26.51
140.0	10.59	2.560	5.171	-0.826	24.154	3.391	0.589	1.190	-0.190	26.34
147.5	11.18	2.573	5.266	-0.921	22.987	1.710	0.592	1.212	-0.212	26.04
155.0	11.79	2.580	5.355	-1.010	21.871	0.306	0.594	1.232	-0.232	25.73
162.5	12.35	2.577	5.397	-1.053	20.853	-1.494	0.593	1.242	-0.242	25.52
172.5	13.17	2.557	5.465	-1.120	19.400	-3.527	0.589	1.258	-0.258	25.08
187.5	14.41	2.499	5.485	-1.141	17.332	-6.596	0.575	1.263	-0.263	24.49
202.4	15.70	2.390	5.448	-1.103	15.212	-9.707	0.550	1.254	-0.254	23.69
217.4	16.97	2.250	5.354	-1.010	13.247	-10.768	0.518	1.232	-0.232	22.80
232.4	18.19	2.122	5.251	-0.906	11.652	-9.723	0.488	1.208	-0.208	22.00
247.4	19.51	2.004	5.179	-0.834	10.261	-8.203	0.461	1.192	-0.192	21.16
262.4	20.81	1.906	5.094	-0.750	9.147	-6.619	0.439	1.173	-0.173	20.51
277.4	22.04	1.836	5.027	-0.682	8.322	-4.758	0.423	1.157	-0.157	20.07
292.4	23.32	1.787	4.946	-0.601	7.657	-3.928	0.411	1.138	-0.138	19.87
307.4	24.68	1.732	4.880	-0.536	7.010	-3.188	0.399	1.123	-0.123	19.54
322.3	25.91	1.704	4.832	-0.487	6.565	-2.346	0.392	1.112	-0.112	19.42
337.3	27.15	1.675	4.796	-0.452	6.160	-2.307	0.385	1.104	-0.104	19.25
352.3	28.45	1.645	4.718	-0.373	5.775	-2.351	0.379	1.086	-0.086	19.22
367.3	29.78	1.613	4.663	-0.318	5.408	-2.434	0.371	1.073	-0.073	19.08





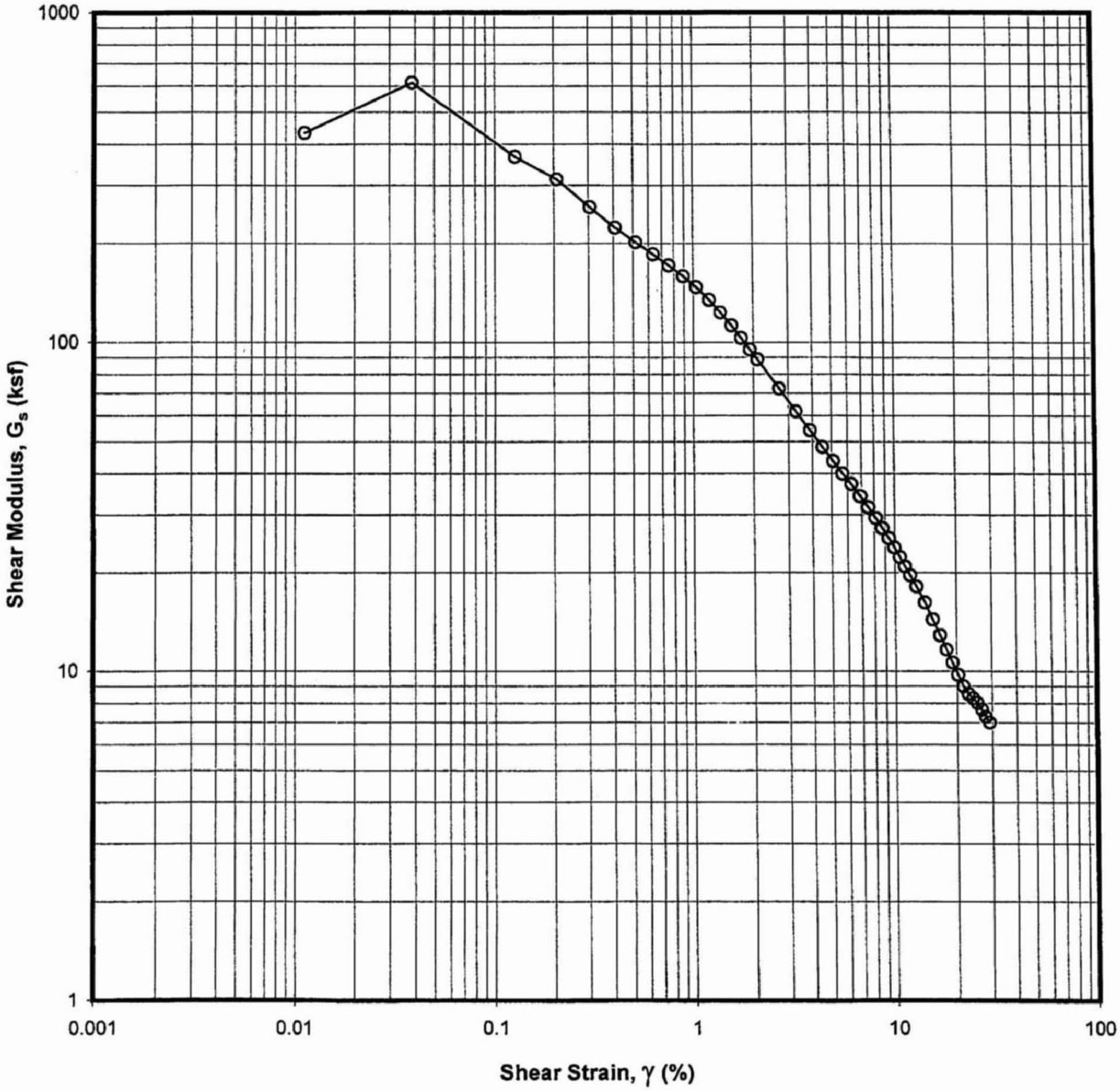
STATIC DSS TEST

K_o Consolidation - OCR = NA

Sample: UD-5B - Depth: 40.0 - 41.7 ft

Boring B-2359UD

KAW 7/16/08



STATIC DSS TEST

K_o Consolidation - OCR = NA

Sample: UD-5B - Depth: 40.0 - 41.7 ft

Boring B-2359UD

KAW 7/16/08

DIRECT SIMPLE SHEAR TEST (ASTM D 6528-07): Specimen Setup / Take Down

Project Number: 0411-08-1686 | Test Type: SDSS | Sta. No.: 7G | File Name: B-2359_UD5b
Task No.: NA | Assign, $\sigma'_{v,c}$ = 5.04 ksf | $K_{c,DSS}$ ($\tau_{h,c}$ / $\sigma'_{v,c}$)= NA
Project Name: Exelon (Victoria) | Induced OCR = NA | $K_{ub,DSS}$ ($\tau_{hu,b}$ / $\sigma'_{v,c}$) = NA
Test No.: NA | Test Series for/on: NA | Type Stage: NA = NA , NA , NA & NA
Assig. Remarks: | Specific Gravity: 2.710 [X] Meas.; [ ] Assumed

[X] Tube [ ] Field Extruded	[ ] Liner [ ] Remolded	[ ] Tamping	[ ] Constant Effort: Blows/Tamps per Layer =
Boring No.: B-2359UD	[ ] LPC Core	[ ] Impact/Rammer	Rammer Wgt.(lbf)= No. Layers =
Sample No.: UD-5	Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)= Drop (in.) =
Depth (ft): 40.0 - 41.7	Specimen No.: B	[ ] Kneading	[ ] Undercompaction: U_{ni} (%) = Dia. (in.) =
[ ] Spec. Selection by X-ray;	[ ] Geomarine Sample		Ref. Effort= % Comp. = ± Opt.=

Type Consolidation:	[X] K_o at: [X] Incremental [ ] CRS	; [ ] Anisotropic at:	[ ] Inclined Stress Path, $K_{c,DSS}$ [ ] 90° Stress Path	[ ] Used Automated System Remarks:	
Loading Conditions:	[X] Static [ ] Rapid	[X] Strain [ ] Stress	[ ] Creep [ ] Post Cyclic	[X] Const, Vol./Ht [ ] Drained	[X] Without - Water [ ] With - Bath
[ ] Cyclic (Hz) Rate: [ ] 0.1;	[ ] Strain [ ] Stress 1; Other:				

Water Content (WC);	Initial - Trimming Location			Final, W_{at}
	Top ($W_{o,1}$)	Bottom ($W_{o,2}$)	Sides ($W_{o,3}$)	(see below)
Container No.	D-7	191	4072	4091
Mass Moist Soil + Cont. (g)	84.87	79.66	74.67	74.41
Mass Dry Soil + Container (g)	74.48	70.58	66.42	65.51
Mass Container (g)	30.14	30.75	30.12	30.66
WATER CONTENT (%)	23.43	22.80	22.73	25.54
Avg. Initial WC, $W_{o,avg}$ (%)	22.99	Final W_{at}:	[X] Slice ;	[ ] Whole Spec.
[ ] See attached data sheet(s) for additional water contents				

Soil and Ring Masses	Initial	Final
Mass Moist Soil + Tare (g)	313.95	136.69
Mass Tare (g)	182.69	5.03
Mass Moist Soil, $M_{t,o}$ $Mt_{,at}$ (g)	131.26	131.66
Excess Dry Soil (soil not included in final mass above)		
Container No.		
Mass Dry Soil + Container (g)		
Mass Container (g)		
Mass Excess Dry Soil (g)	0.00	

Specimen Trimming:

[ ]	Trimming Ring for Fugro Apparatus	NL5	Large-ring ID #
[X]	Trimming Ring for NGI Apparatus		Small-ring ID #
$H_{s,t}$ (mm):	18.60	$A_{s,t}$ (cm^2):	34.90
$D_{s,t}$ (mm) :	66.66	$V_{s,t}$ (cm^3):	64.91

Remarks:

[ ] Free Standing by Wire Saw Lathe or Reconstituted Spec. (mm)

	Height (H_{tr})	Diameter (D_o)		Remarks:
1	18.650	1-T	NA	
2	18.580	2-M	NA	
3	18.610	3-B	NA	
4	18.590	1'-T	NA	For Free Standing
5	18.620	2'-M	NA	or Reconstituted Spec.:
	Avg.	3'-B	NA	A_{tr} (cm^2): NA
=	18.600	Avg	NA	V_{tr} (cm^3): NA

Note: NA indicates not applicable.

F or G in the Sta. No. indicates Fugro or GEOTAC apparatus.

Estimated Initial Unit Weight

Total, $\gamma_{t,o}$ (lb/ft^3)= 126.24 | Dry, $\gamma_{d,o}$ (lb/ft^3)= 102.64

Specimen Lateral Confinement by:

[ ] **Wire Reinforced, Model:** Thickness (mm) =

Stress Level	Dia. by PiTape (mm) Meas.	Corr.	Area, $A_{c,n}$ (cm^2)	(in^2)
0				
$\sigma'_{v,c}$				
$\sigma'_{v,max}$				

[X] **Regular Membrane with Ring Set No.** 7 | ID, Rings (mm)

Thickness (mm): Top: 0.61 , | = 67.29
[ ] Single Bottom: 0.65 , | Corr. for mem.
[X] Double Membr. Thick. = 0.32 | = 66.660

Area Ring with mem., A_o (cm^2)= 34.90 ; (in^2)= 5.409

Mass Top Cap, etc., M_{tc} = 527.2 g, 1.16 lbf

Data corr. for M_{tc}: [X] Yes; [ ] No Plattens with Pins: [ ] Yes; [X] No

Final Visual Description: Pale Brown Fat CLAY (CH)

Other Remarks :

Trim./ Recon. By: HC | Setup By: HC | Take Down By: HC
Date: 4/2/2008 | Date: 4/3/2008 | Date: 4/6/2008
Prelim. Calc. By: HC | Final Calc. By: LF | Reviewed By: HP HP

Specimen Take Down: [X] Spec. removed right after shearing
[ ] Spec. unloaded to zero stress with access to water

Remarks:

KAW 7/16/08