MULTISTAGE TRIAXIAL TEST: Specimen Calculations & Summary(1)

Project Number: 0411-08-1686 | Cell No.: 17 | File Name: Comp. Bc
Task Number: NA | Specific Gravity: 2.693 | [ ] Measured; [X] Assumed
Boring No.: TP-2317 - TP-2334 | Sample No.: Comp. B | Specimen No.: C | Depth (ft): NA
Type Test: CIU Triaxial | Specimen: [ ] "Undisturbed"; [ ] Reconstituted; [X] Recompacted
Calculations Corr. for Salt (dissolved solids): [X] No or, [ ] Yes, with concentration = _____ ppm

	Inital Water Contents (WC), (W_o) over Saturation, (S_o), in (%):						Calculated Mass of Dry Soil (g)	
	Top, $W_{o,1}$	Botttom, $W_{o,2}$	Sides, $W_{o,3}$	Avg., $W_{o,avg}$	Selct., $W_{o,s}$	Back Cal., $W_{o,bc}$	Initial Selected WC, w_o (%)	16.24
W_c	16.24			16.24	16.24	129.24	Initial , $M_{d,o}$	424.26
S_o	96.3			96.3	96.3	778.6	Final, $M_{d,at}$	426.37
	Measured final mass of moist soil, $M_{t,at}$ (g)					498.71	Selected, M_d	425.31
	Final mass of moist soil corrected for excess dry soil, $M_{tat,c}$ (g)					498.71		

Consolidation Data Changes in Height (mm) and Volume (cm^3) Within Given Consolidation Stages/Columns	Column 1 At Initial Seating Stress	Column 2 During Back-Pressuring	Column 3 1st Consol. Increment (1)	Column 4 Column 2 or 3 to 1st Test Stage (1)	Column 5 Column 4 to 2nd Test Stage	Column 6 Column 5 to 3rd Test Stage	Column 7 Column 6 to 4th Test Stage	
Sign Convention: (+) Deformation in compression or Flow out of spec.; (-) Deformation in extension (swell) or Flow into spec.								
Change in Height, $\Delta H_{c,n}$	0.03	-2.00		2.49	NA	NA	NA	
Sum of changes in (+ out)	1.10			15.10	NA	NA	NA	
burette readings, $\Delta b_{r,n}$ (- in)		-16.00	NA	15.93	NA	NA	NA	(2)
Theoretical $\Delta V_{ct,n} = (3V_o \times \Delta H_{c,n}/H_o)$	0.18	-11.88		14.78	NA	NA	NA	
Vol. Factor, $F_v = \Delta b_{r,n} / \Delta V_{t,n}$				1.02	NA	NA	NA	
Corrected $\Delta V_{ct,n} = F_v \times \Delta V_{t,n}$			NA	0.00	NA	NA	NA	(3)
Selected $\Delta V_{c,n}$	0.18	-16.00		15.10	NA	NA	NA	

Summary For Test Stages					
Test Stage:	1st = 1	2nd = 2	3rd = 3	4th = 4	
Cell Pressure, $\sigma_{c,n}$ (psi)	120.00	NA	NA	NA	Number of
Back Pressure, $U_{b,n}$ (psi)	60.00	NA	NA	NA	Test Stages = 1
Axial Force Reading, $P_{r,n}$ (lbf)	1.00	NA	NA	NA	t_{50} = 95 min
Eff. Consol. Stress (σ'_c or $\sigma'_{v,c}$) (4), (ksf)	8.52	NA	NA	NA	
t_c, ON or in [X] days [ ] hrs	5.00	NA	NA	NA	

At Final Test Stress/Stage - Summary of Calculation of ΔV_c (cm^3) by Different Procedures					
By Selected Volumes	By Saturation = 100 %	By Change in Mass (5)	For Diff. in Meas. Vol. (V_o-V_{at}),	For Selected ΔV_c, required	
ΔV_c = -0.72	ΔV_c = -2.24	ΔV_c = 10.42	& corr. for ΔH_{td} ΔV_c=	G_s for S_c = 100 %:	2.719

At Final Test Stress/Stage - Consolidation Conclusions					
$\Delta H_{c,f}$ (mm) = 0.52	$\Delta V_{c,f}$ (cm^3) = -0.72	Back Cal. G_s for S=100% = 2.719	Normalized	Ht. Ch. (%) =	0.85
$\varepsilon_{ac,c}$ (%) = 0.45	$\varepsilon_{vc,f}$ (%) = -0.31		Diff. in:	Vol. Ch. (%) =	

Summary of Specimen Physical Properties											
Specific Gravity: G_s = 2.693 Measured Condition:	Height (mm)	Volume (cm^3)	Area (cm^2)	Water Content (%)	Unit Weight Total (pcf)	Unit Weight Dry (pcf)	Saturation (%)	Void Ratio e	Volumetric Water Content	Porosity n	Skempton B parameter %(6)
Initial:	115.96	229.51	19.79	15.95	134.14	115.69	95.3	0.451	0.2961	0.311	99.0
After to 1st σ'_c	115.44	230.23	19.94	17.26	135.23	115.33	102.1	0.455	0.3194	0.313	
Consol.: to 2nd σ'_c											
to 3rd σ'_c											
to 4th σ'_c											

Notes: (1) If the consol. stress in the 1st consol. increment & 1st test stage are equal, log the data in Column 4.
(2) The height changes occuring within each shearing and unloading stage (1 - 4) are recorded in these rows (after Column 3).
(3) The volume changes occuring within each shearing and unloading stage (1 - 4) are calculated/recorded in these rows (after Column 3).
(4) Stresses are corrected for membrane. (5) ~ $M_{t,o}-(M_{tat,c}+\rho_{water} \times \Delta V_{in,column\,1\&2})$
(6) Initial value is after back pressuring
NA - Not Applicable ON - Over Night; WC - Water Content Remarks: Wet Method used in the Saturation Stage
Calculated By: TP Reviewed By: WLN

MULTISTAGE TRIAXIAL TEST: Specimen Calculations Summary(2)

Project Number: 0411-08-1686 Test Type: CIU Triaxial App. No.: 17 File Name: Comp. Bc

Project Name: Exelon (Victoria) Task No.: NA Test No.: 0 Test Series for: 0

[ ] Tube [ ] Field Extruded	[ ] Liner [X] Remolded	[ ] Tamping	[ ] Constant Effort:	Blows/Tamps per Layer = 10-16
Boring No.: TP-2317 - TP-2334	[ ] Reconstituted	[ ] Impact/Rammer	Rammer Wgt.(lbf)= 4.50	No. Layers = 4.00
Sample No.: Comp. B	Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)=	Drop (in.) = 0.5-1
Depth (ft): NA	Specimen No.: C	[ ] Kneading	[X] Undercompaction: U_{nl} (%) =	Dia. (in.) = 1.50
[ ] Spec. Selection by X-ray;	[ ] Geomarine Sample	[X] Recompacted	Ref. Effort = MOD % Comp. = 95.0	± Opt. = + 4%

Type Consolidation	[X] Isotropic	[ ] K_o stress path	[ ] Used automated system Drained Axial Strain Rate, $\varepsilon_{a,rate}$ (%/hr.)=
	[ ] Anistropic	[ ] 45° stress path	Remarks:

Loading Conditions	[X] Static	[X] Undrained	[X] Comp.	[X] Strain [ ] Stress	[X] Constant Cell pressure	[ ] Cyclic (Hz)	[ ] Stress [ ] Strain
	[ ] Post Cyclic	[ ] Drained	[ ] Ext.	[ ] Stress Path	[ ] Variable Cell pressure	Rate: [ ] 0.1;	[ ] 1; Other:

Specific Gravity: G_s = 2.693 Measured		Height	Volume	Area	Water Content	Unit Weight Total	Unit Weight Dry	Saturation	Void Ratio	Skempton B parameter %(1)
Condition:		(mm)	(cm^3)	(cm^2)	(%)	(pcf)	(pcf)	(%)	e	
	Initial:	115.96	229.51	19.79	15.95	134.14	115.69	95.32	0.45	99.0
After Consol.:	to 1st σ'_c	115.44	230.23	19.94	17.26	135.23	115.33	102.09	0.46	
	to 2nd σ'_c									
	to 3rd σ'_c									
	to 4th σ'_c									

Unit for Stresses: (ksf)

Consolidation Stress Summary and Loading Summary

Item	Unit	1st Stage	2nd Stage	3rd Stage	4th Stage
Axial Strain during Consol., ε_{c} :	%	0.448	NA	NA	NA
Vol. Strain during Consol., $\varepsilon_{v,c}$:	%	-0.314	NA	NA	NA
Effective Vertical Stress, σ'_v	(ksf)	8.519	NA	NA	NA
Effective Horizontal Stress, σ'_h:	(ksf)	8.497	NA	NA	NA
Consol. Stress Ratio, k (σ'_h / σ'_v) :	-	0.997			
Induced OCR :	-	1.00	NA	NA	NA
Eff. Average Stress, (σ'_v + σ'_h)/2 :	(ksf)	17.016			
Eff. Mean Stress, (σ'_v + 2*σ'_h)/3 :	(ksf)	8.504			
Undr. Ambient Shear Stress, τ_{a} :	(ksf)	NA	NA	NA	NA
Undr. Ambient Shear Strain, $\varepsilon_{a,ua}$	%	NA	NA	NA	NA

Membrane Correction

Type: Bulge

Modulus: 150.0 psi

Diameter: 48.38 mm

Thickness: 0.29 mm

Area Correction

Type: Bulge

Stage	Area Corr. Const.:	Final Area (cm^2):
1st	1.263	23.97
2nd		
3rd		
4th		

Filter Paper Correction

Type: None Type Strips: Sprial #1

Strips: 8

Force: 0.000 lbf/strip

Notes: See Fugro South, Inc. Notation Listing for definition of symbols and acronyms.

(1) Initial B is after saturation

NA - Not Applicable

Final Visual Description and Remarks: Gray Lean CLAY with sand (CL)

Loading Summary

Stage	Stress Status	ε_a (%)	q (ksf)	p' (ksf)	ΔU (ksf)	σ_1' (ksf)	σ_3' (ksf)
1st	Max Shear Stress	8.14	3.709	7.689	4.467	11.398	3.980
	Max Obliquity	5.70	3.648	7.327	4.788	10.975	3.679
2nd	Max Shear Stress						
	Max Obliquity						
3rd	Max Shear Stress						
	Max Obliquity						
4th	Max Shear Stress						
	Max Obliquity						

Remarks: Stain Rate (%/min) = 4.17E-03

STAGE 1

Project: 0411-08-1686 Boring No.: TP-2317 - TP-2334 Depth (ft.): NA

Test Type: CIU Triaxial Sample No.: Comp. B Stage No.: 1

Specimen No.: C

Elapsed Time (min)	Axial Strain ε_a (%)	q (ksf)	p' (ksf)	Excess PWP, ΔU (ksf)	Volume Change (cm^3)	Obliquity σ'_1/σ'_3 -	A_f -	E_S (ksf)	E_T (ksf)
0.0	0.000	0.011	8.508	0.000	0.000	1.003	0.000	-	-
6.0	0.021	0.161	8.588	0.077	0.000	1.038	0.233	1426.5	1745.0
12.0	0.041	0.364	8.608	0.244	0.000	1.088	0.359	1734.7	1858.4
18.0	0.066	0.577	8.645	0.390	0.000	1.143	0.379	1703.1	1766.6
24.0	0.088	0.784	8.698	0.541	0.000	1.198	0.377	1747.2	1588.1
30.0	0.118	0.974	8.737	0.708	0.000	1.251	0.381	1634.7	1382.7
36.0	0.142	1.155	8.755	0.858	0.000	1.304	0.392	1606.2	1374.6
42.0	0.164	1.296	8.739	1.005	0.000	1.348	0.410	1562.4	1326.0
48.0	0.185	1.440	8.740	1.152	0.000	1.395	0.419	1540.9	1268.0
54.0	0.208	1.571	8.719	1.296	0.000	1.440	0.432	1500.0	1178.5
60.0	0.229	1.699	8.702	1.437	0.000	1.485	0.443	1471.4	1268.3
66.0	0.247	1.818	8.680	1.574	0.000	1.530	0.452	1462.2	1235.2
72.0	0.271	1.952	8.667	1.718	0.000	1.582	0.459	1432.6	940.3
78.0	0.304	2.076	8.646	1.866	0.000	1.632	0.467	1359.6	923.6
84.0	0.321	2.173	8.601	1.994	0.000	1.676	0.479	1344.9	946.6
90.0	0.344	2.262	8.560	2.122	0.000	1.718	0.488	1309.6	660.8
96.0	0.368	2.326	8.502	2.241	0.000	1.753	0.501	1256.6	537.6
102.0	0.390	2.386	8.454	2.355	0.000	1.786	0.511	1217.8	593.5
108.0	0.409	2.446	8.404	2.457	0.000	1.821	0.521	1190.8	513.7
114.0	0.432	2.491	8.343	2.550	0.000	1.852	0.533	1147.9	379.1
120.0	0.457	2.536	8.308	2.651	0.000	1.879	0.540	1105.9	427.1
126.0	0.481	2.597	8.255	2.738	0.000	1.918	0.549	1074.2	433.6
132.0	0.506	2.643	8.212	2.825	0.000	1.949	0.556	1040.2	338.4
138.0	0.529	2.678	8.174	2.910	0.000	1.975	0.563	1007.5	274.4
144.0	0.554	2.709	8.130	2.982	0.000	1.999	0.570	974.1	261.1
150.0	0.576	2.738	8.081	3.050	0.000	2.025	0.578	947.5	216.9
156.0	0.599	2.757	8.038	3.114	0.000	2.044	0.586	916.6	179.6
162.0	0.622	2.780	8.011	3.175	0.000	2.063	0.590	889.9	220.3
168.0	0.645	2.807	7.963	3.233	0.000	2.089	0.598	867.7	243.4
174.0	0.666	2.833	7.939	3.292	0.000	2.110	0.601	847.7	252.5
180.0	0.692	2.867	7.909	3.350	0.000	2.137	0.605	825.5	227.7
186.0	0.715	2.890	7.871	3.394	0.000	2.160	0.611	805.1	177.3
192.0	0.737	2.907	7.841	3.447	0.000	2.179	0.615	785.9	152.6
198.0	0.765	2.927	7.813	3.494	0.000	2.198	0.619	762.8	123.7
204.0	0.789	2.940	7.785	3.532	0.000	2.214	0.623	742.0	97.4
210.0	0.808	2.949	7.749	3.575	0.000	2.228	0.629	727.2	128.7
216.0	0.830	2.966	7.731	3.613	0.000	2.245	0.632	712.5	145.2
222.0	0.855	2.982	7.706	3.650	0.000	2.263	0.635	695.2	146.1

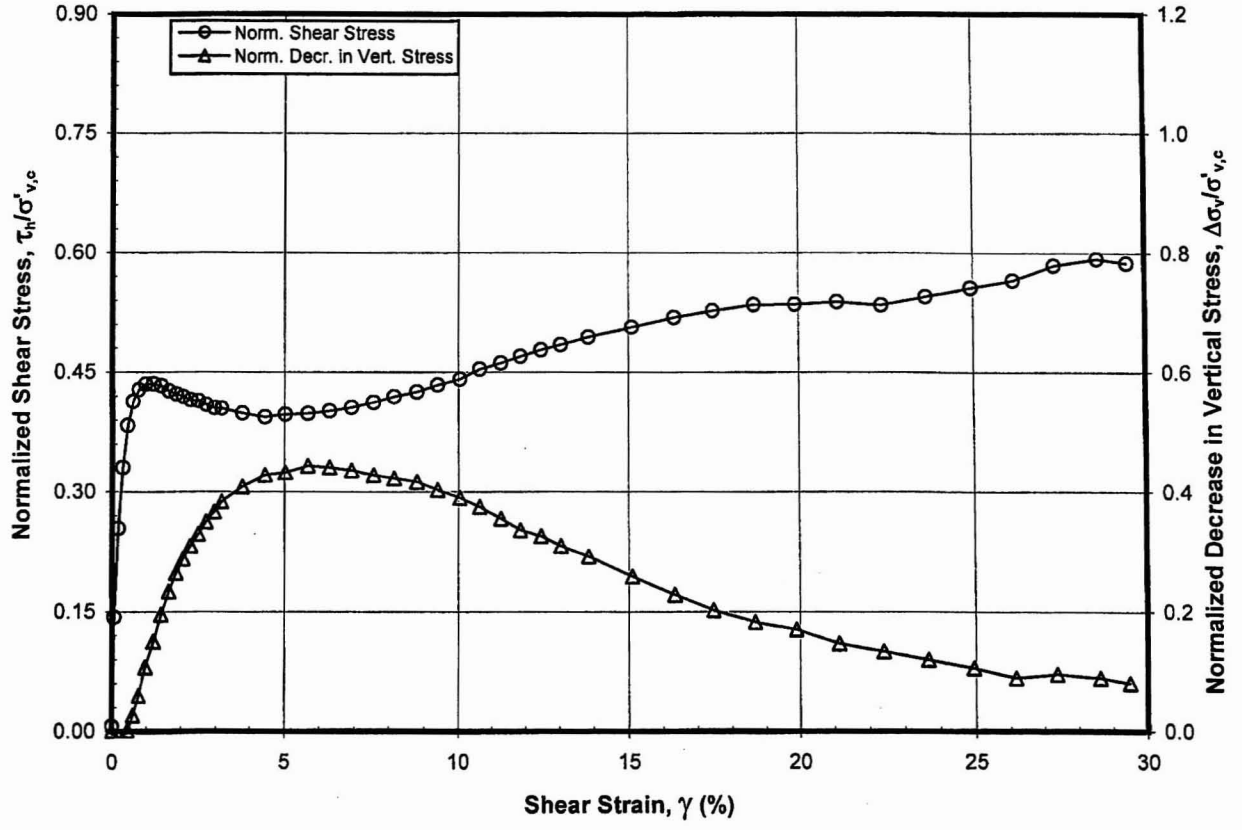
STAGE 1

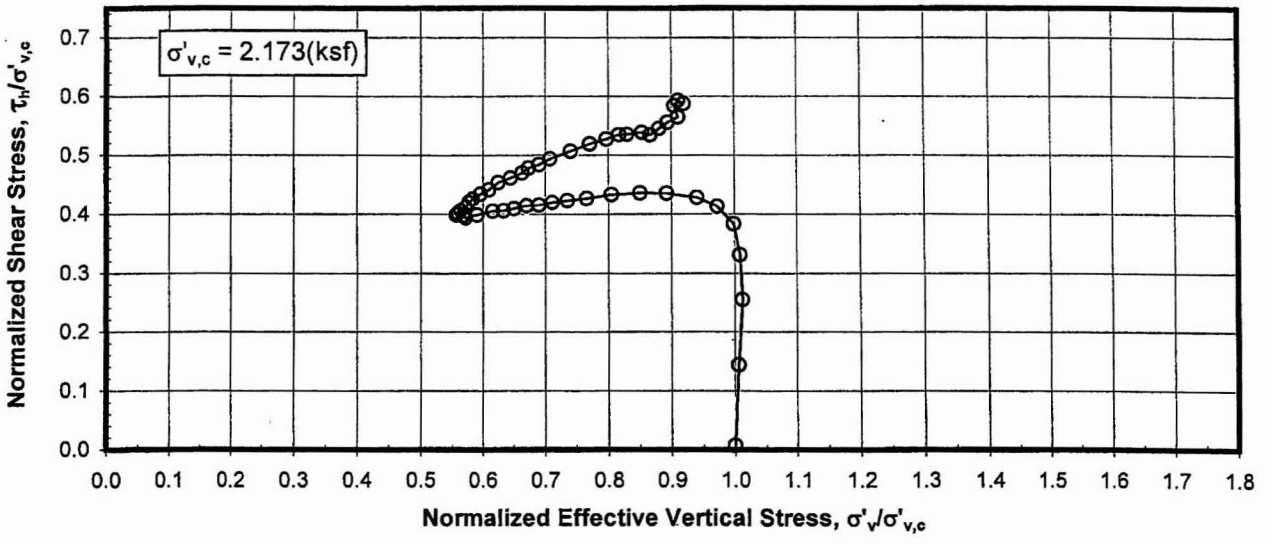
Elapsed Time (min)	Axial Strain ε_a (%)	q (ksf)	p' (ksf)	Excess PWP, ΔU (ksf)	Volume Change (cm^3)	Obliquity σ'_1/σ'_3 -	A_f -	E_S (ksf)	E_T (ksf)
228.0	0.876	3.000	7.686	3.691	0.000	2.280	0.637	682.2	145.7
252.0	0.980	3.066	7.607	3.827	0.000	2.350	0.647	623.1	98.8
276.0	1.069	3.098	7.532	3.921	0.000	2.397	0.658	577.4	95.1
300.0	1.166	3.155	7.496	4.025	0.000	2.453	0.661	539.3	83.5
324.0	1.257	3.177	7.439	4.088	0.000	2.491	0.669	503.9	74.3
348.0	1.353	3.225	7.421	4.160	0.000	2.537	0.669	474.9	63.6
372.0	1.451	3.239	7.383	4.211	0.000	2.563	0.674	444.7	55.6
396.0	1.544	3.277	7.353	4.272	0.000	2.608	0.677	423.1	57.8
420.0	1.648	3.294	7.319	4.322	0.000	2.637	0.681	398.5	28.4
444.0	1.739	3.305	7.291	4.363	0.000	2.658	0.685	378.9	46.1
468.0	1.836	3.338	7.277	4.409	0.000	2.695	0.685	362.4	42.2
492.0	1.929	3.346	7.167	4.517	0.000	2.751	0.701	345.7	38.4
516.0	2.030	3.376	7.143	4.585	0.000	2.792	0.703	331.6	25.9
540.0	2.124	3.372	7.158	4.568	0.000	2.781	0.701	316.4	33.4
564.1	2.218	3.407	7.172	4.590	0.000	2.810	0.697	306.2	34.0
588.1	2.315	3.404	7.152	4.597	0.000	2.816	0.700	293.2	22.2
612.1	2.409	3.428	7.174	4.611	0.000	2.830	0.695	283.7	38.4
636.1	2.506	3.441	7.178	4.616	0.000	2.841	0.694	273.7	9.1
660.1	2.596	3.437	7.168	4.628	0.000	2.843	0.696	264.0	20.7
684.1	2.698	3.462	7.170	4.648	0.000	2.867	0.694	255.8	23.2
708.1	2.795	3.461	7.177	4.655	0.000	2.863	0.693	246.8	21.4
732.1	2.890	3.482	7.176	4.676	0.000	2.885	0.692	240.2	16.7
756.1	2.985	3.477	7.160	4.679	0.000	2.888	0.694	232.2	23.1
780.1	3.080	3.504	7.180	4.697	0.000	2.907	0.690	226.8	26.1
804.1	3.178	3.502	7.168	4.704	0.000	2.910	0.692	219.7	10.5
828.1	3.272	3.514	7.165	4.726	0.000	2.925	0.692	214.1	15.6
852.1	3.377	3.517	7.160	4.733	0.000	2.930	0.692	207.6	2.2
876.1	3.469	3.517	7.147	4.739	0.000	2.937	0.694	202.1	17.0
900.1	3.574	3.535	7.169	4.753	0.000	2.945	0.690	197.2	11.2
924.1	3.668	3.529	7.164	4.745	0.000	2.942	0.691	191.8	13.9
948.1	3.767	3.549	7.180	4.747	0.000	2.954	0.688	187.8	15.5
972.1	3.861	3.545	7.182	4.747	0.000	2.949	0.688	183.0	23.9
996.1	3.959	3.572	7.199	4.748	0.000	2.970	0.684	179.9	13.7
1020.1	4.058	3.558	7.196	4.736	0.000	2.956	0.685	174.8	7.7
1044.1	4.155	3.579	7.233	4.746	0.000	2.959	0.679	171.7	14.8
1068.1	4.259	3.571	7.230	4.741	0.000	2.952	0.679	167.2	-10.4
1092.1	4.343	3.569	7.220	4.721	0.000	2.955	0.681	163.8	6.1
1116.1	4.442	3.578	7.238	4.734	0.000	2.955	0.678	160.6	14.2
1140.1	4.533	3.582	7.242	4.726	0.000	2.958	0.677	157.6	26.6
1164.1	4.633	3.604	7.259	4.717	0.000	2.972	0.674	155.1	7.5
1188.1	4.732	3.590	7.266	4.716	0.000	2.953	0.673	151.3	-8.2
1248.1	4.971	3.604	7.293	4.693	0.000	2.954	0.669	144.6	12.1
1308.1	5.215	3.619	7.366	4.739	0.000	2.932	0.658	138.4	12.4

STAGE 1

Elapsed Time (min)	Axial Strain ε_a (%)	q (ksf)	p' (ksf)	Excess PWP, ΔU (ksf)	Volume Change (cm^3)	Obliquity σ'_1/σ'_3 -	A_f -	E_S (ksf)	E_T (ksf)
1368.1	5.457	3.634	7.310	4.798	0.000	2.977	0.665	132.8	11.7
1428.1	5.704	3.648	7.327	4.788	0.000	2.983	0.662	127.5	10.6
1488.1	5.954	3.660	7.384	4.748	0.000	2.966	0.654	122.6	6.3
1548.1	6.197	3.664	7.437	4.698	0.000	2.942	0.647	117.9	3.5
1608.1	6.440	3.669	7.472	4.666	0.000	2.929	0.642	113.6	1.9
1668.1	6.686	3.668	7.500	4.631	0.000	2.915	0.638	109.4	1.4
1728.1	6.925	3.672	7.522	4.606	0.000	2.908	0.635	105.7	1.5
1788.1	7.166	3.672	7.558	4.583	0.000	2.890	0.630	102.2	2.6
1848.1	7.414	3.679	7.589	4.556	0.000	2.882	0.625	98.9	5.5
1908.1	7.648	3.685	7.614	4.527	0.000	2.876	0.622	96.1	11.2
1968.1	7.896	3.706	7.662	4.499	0.000	2.874	0.615	93.6	9.5
2028.1	8.140	3.709	7.689	4.467	0.000	2.863	0.611	90.8	-3.0
2088.1	8.386	3.699	7.701	4.419	0.000	2.848	0.609	88.0	-7.8
2148.1	8.628	3.690	7.738	4.390	0.000	2.823	0.605	85.3	-5.0
2208.1	8.877	3.687	7.771	4.362	0.000	2.805	0.600	82.8	-0.7
2268.1	9.120	3.688	7.784	4.334	0.000	2.801	0.598	80.6	-1.4
2328.1	9.360	3.683	7.810	4.312	0.000	2.785	0.595	78.5	0.3
2388.1	9.608	3.689	7.842	4.285	0.000	2.776	0.591	76.6	8.4
2448.1	9.859	3.704	7.883	4.256	0.000	2.773	0.585	74.9	6.0
2508.1	10.112	3.704	7.913	4.248	0.000	2.760	0.581	73.0	-2.9
2568.1	10.365	3.697	7.934	4.216	0.000	2.745	0.578	71.1	-4.4
2628.1	10.612	3.693	7.922	4.204	0.000	2.746	0.580	69.4	-3.7
2688.1	10.847	3.688	7.944	4.191	0.000	2.733	0.577	67.8	-2.2
2748.1	11.089	3.687	7.966	4.154	0.000	2.724	0.574	66.3	-3.1
2808.2	11.332	3.681	7.988	4.121	0.000	2.709	0.571	64.8	-7.5
2868.2	11.571	3.669	8.006	4.105	0.000	2.692	0.569	63.2	-4.5
2928.2	11.810	3.670	8.012	4.081	0.000	2.690	0.568	62.0	-1.2
2988.2	12.057	3.666	8.026	4.082	0.000	2.682	0.566	60.6	0.0
3048.2	12.299	3.670	8.012	4.078	0.000	2.690	0.568	59.5	1.0
3108.2	12.542	3.669	8.013	4.063	0.000	2.689	0.568	58.3	-6.5
3168.2	12.796	3.653	8.036	4.055	0.000	2.667	0.565	56.9	-6.8
3228.2	13.041	3.652	8.038	4.026	0.000	2.665	0.565	55.8	-1.8
3288.2	13.290	3.649	8.084	4.008	0.000	2.645	0.558	54.7	-4.7
3348.2	13.534	3.640	8.087	3.984	0.000	2.637	0.558	53.6	-5.3
3408.2	13.778	3.636	8.102	3.964	0.000	2.628	0.556	52.6	0.2
3468.2	14.019	3.641	8.125	3.941	0.000	2.624	0.553	51.8	4.0
3528.2	14.269	3.646	8.167	3.931	0.000	2.612	0.547	50.9	0.4
3585.7	14.505	3.642	8.183	3.900	0.000	2.604	0.545	50.1	-3.4

Direct Simple Shear Test Results – Composite Soils





STATIC DSS TEST

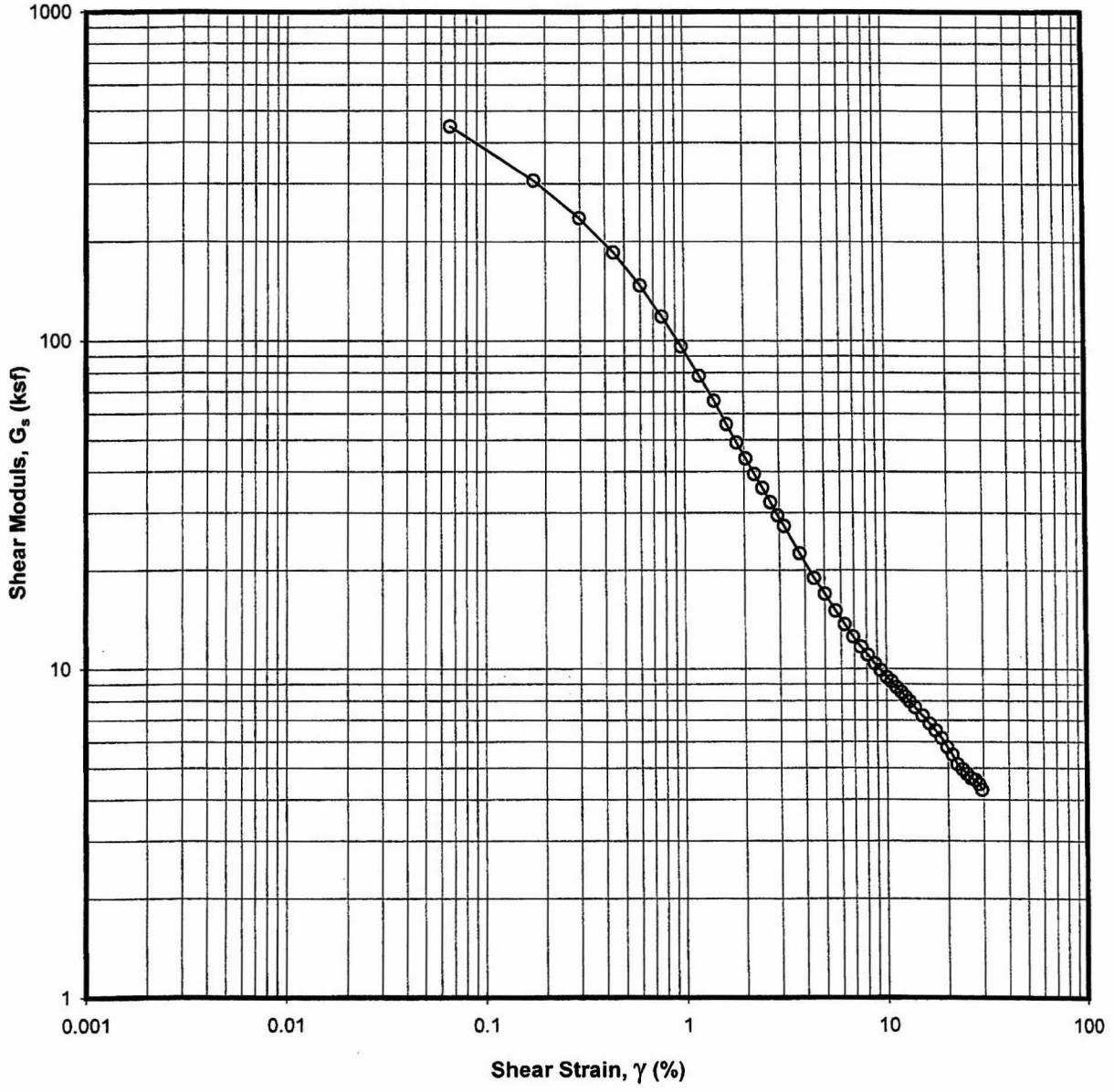
K_o Consolidation - OCR = NA

Sample: Comp-AA - Depth: NA ft

Boring TP2319/TP2334

Exelon (Victoria)

KAW 7/16/08



STATIC DSS TEST

K_o Consolidation - OCR = NA

Sample: Comp-AA - Depth: NA ft

Boring TP2319/TP2334

Exelon (Victoria)

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.: 10G File Name: _Comp-Aa

Task No.: NA Assign, $\sigma'_{v,c}$ = 2.16 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: 2.659 [X] Meas.; [ ] Assumed

[ ] Tube [ ] Field Extruded	[ ] Liner [X] Remolded	[X] Tamping	[ ] Constant Effort:	Blows/Tamps per Layer = 11
Boring No.: TP2319/TP2334	[ ] LPC Core	[ ] Impact/Rammer	Rammer Wgt.(lbf)=	No. Layers = 3.00
Sample No.: Comp-A	Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)= 4.00	Drop (in.) = 12.00
Depth (ft): NA	Specimen No.: A	[ ] Kneading	[X] Undercompaction: U_{ni} (%) =	Dia. (in.) = 1.40
[ ] Spec. Selection by X-ray;	[ ] Geomarine Sample		Ref. Effort= MOD % Comp. = 95.0	± Opt.= +4

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 - / [ ] With - Water Bath; [ ] Cyclic (Hz) Rate: [ ] 0.1; [ ] 1; [ ] Strain [ ] Stress Other:

Water Content (WC);	Top ($W_{o,1}$)	Bottom ($W_{o,2}$)	Sides ($W_{o,3}$)	Final, W_{at} (see below)
Container No.	4010			9.57
Mass Moist Soil + Cont. (g)	101.78			85.19
Mass Dry Soil + Container (g)	92.99			77.91
Mass Container (g)	30.12			32.17
WATER CONTENT (%)	13.98			15.92
Avg. Initial WC, $W_{o,avg}$ (%)	13.98	Final W_{at}: [X] Slice ;	[ ]	Whole Spec.

(Initial - Trimming Location: Top, Bottom, Sides)

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

Soil and Ring Masses	Initial	Final
Mass Moist Soil + Tare (g)	327.43	146.52
Mass Tare (g)	186.84	4.53
Mass Moist Soil, $M_{t,o}$ $Mt_{,at}$ (g)	140.59	141.99

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		NL3	Large-ring ID #
[X] Trimming Ring for NGI Apparatus			Small-ring ID #
$H_{s,t}$ (mm):	18.50	$A_{s,t}$ (cm²):	34.87
$D_{s,t}$ (mm) :	66.63	$V_{s,t}$ (cm³):	64.51

Remarks:

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

	Height (H_{tr})		Diameter (D_o)	Remarks:	
1	18.560	1-T	NA		
2	18.500	2-M	NA		
3	18.460	3-B	NA		
4	18.470	1'-T	NA	For Free Standing	
5	18.570	2'-M	NA	or Reconstituted Spec.:	
Avg.		3'-B	NA	A_{tr} (cm²):	NA
=	18.500	Avg	NA	V_{tr} (cm³):	NA

Estimated Initial Unit Weight	
Total, $\gamma_{t,o}$ (lb/ft³)= 136.05	Dry, $\gamma_{d,o}$ (lb/ft³)= 119.36

Specimen Lateral Confinement by:

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

Stress Level	Dia. by PiTape (mm) Meas.	Corr.	Area, $A_{c,n}$ (cm²)	(in²)
0				
$\sigma'_{v,c}$				
$\sigma'_{v,max}$				

[X] Regular Membrane with Ring Set No. 10 — ID, Rings (mm)

Thickness (mm): Top: 0.65 , = 67.27

[ ] Single Bottom: 0.63 , Corr. for mem.

[X] Double Membr. Thick. = 0.32 = 66.630

Area Ring with mem., A_o: (cm²)= 34.87 ; (in²)= 5.405

Mass Top Cap, etc., M_{tc} = 528.2 g, 1.16 lbf

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

Note: NA indicates not applicable.

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

Final Visual Description: Light Brown Clayey SAND (SC)

Other Remarks :

Trim./ Recon. By: DBN Setup By: HC Take Down By: HC

Date: 4/16/2008 Date: 4/16/2008 Date: 4/18/2008

Prelim. Calc. By: HC Final Calc. By: LF Reviewed By: HP HP

Specimen Take Down: [X] Spec. removed right after shearing Remarks:

[ ] Spec. unloaded to zero stress with access to water

KAW 6/13/08

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

Project Number: 0411-08-1686 | Test Station No.: 10G | File Name: _Comp-Aa

Task Number: NA | Specific Gravity: 2.659 [X] Measured; [ ] Assumed

Type Test: SDSS | Specimen: [ ] "Undisturbed"; [X] Reconstituted; [X] Remolded | Boring No.: TP2319/TP2334

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

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	2.16	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	0.80 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	13.98			13.98	13.98	14.77
S_o	95.8			95.8	95.8	98.7
Measured final mass of moist soil, $M_{t,at}$ (g)						141.99
Final mass of moist soil corrected for excess dry soil, $M_{tat,c}$ (g)						141.99

Calculated Mass of Dry Soil (g)	
Initial Selected Water Content (%)	13.98
Initial , $M_{d,o}$	123.35
Final, $M_{d,at}$	122.49
Selected, M_d	122.92

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)	2.160	NA	NA	
Sign Convention: (+) ΔV out & ΔH down; (-) ΔV in & ΔH up				
Delta Def. Read., $\Delta d_{ar,n}$ (mm)	0.210			
Total Equip. Comp., $\Sigma\Delta d_{afc}$ (mm)	0.000			
Corr. Total Def. $\Delta H_{c,n}$ (mm)	0.210			
ΔV_n using A_o - spec. (cm^3)	0.73			
ΔV_n using $A_{c,n}$ - app. (cm^3)	0.73			
ΔV_n using burette meas.(cm^3)	-2.60			
Selected ΔV_n (cm^3)	0.73	NA	NA	= ΔV_{uL}
After Test WC Corr. for ΔV during Shear & Unloading, $W_{at,c}$ (%)			NA	

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

Calculation of ΔV_c by Different Procedures			
By Selected Volumes		By Change in Mass	
ΔV_c (cm^3)	0.73	~ $M_{t,o}$ - ($M_{tat,c}$ + ΔV_L + ΔV_{uL})	
By Cal. Height & App. Area		ΔV_c (cm^3)	-1.40
ΔV_c (cm^3)	0.73	By Saturation = 100% and	
By Cal. Ht. & Init. Spec. Area		Spec. Unloaded to 0 Stress	
ΔV_c (cm^3)	0.73	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, $W_{c,bc}$ (%)	14.18
Back Cal.WC at Max. Stress, $W_{cmax,bc}$ (%)	NA

Consolidation & Preshear Conclusions								
	ΔV_c (cm^3) =	0.74	ΔH_c (mm) =	0.210	$\varepsilon_{a,c}$ (%) =	1.14	$\Delta V_{c,max}$ (cm^3) =	NA
	V_c (cm^3) =	63.77	H_c (mm) =	18.290	$\varepsilon_{v,c}$ (%) =	1.14	$\varepsilon_{ac,max}$ (%)=	NA
	A_c (cm^2) =	34.87	$\Delta\gamma_c$ (mm) =	NA	γ_c (%) =	NA	Preshear: γ_{ua} (%)=	NA

Summary of Specimen Physical Properties:								
Specific Gravity: G_s = 2.659 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)	18.500	64.51	34.87	14.4	136.0	119.0	97.2	0.396
After Consol.: to $\sigma'_{v,c}$	18.290	63.77	34.87	14.2	137.4	120.3	100.0	0.380
After Consol.: to $\sigma'_{vc,max}$	NA	NA	NA	NA	NA	NA	NA	NA

LCA-Method & Note(s): 1- Initial measured value remains constant. 2 - Initial measured value corrected for applied stress. 3 - Uses measured value at appropriate stress level (NA for rings). 4 - Based on change in height & volume. NA - Not Applicable

Calculated By: LF

Reviewed By: HP HP

Remarks: t95 for max stress = 2.1 min

Project Number: 0411-08-1686	Test Type: SDSS	Test Sta. No.: 10G	File Name: _Comp-Aa
Project Name: Exelon (Victoria)	Task No.: NA	Test No.: NA	Test Series for: NA

[ ] Tube [ ] Field Extruded	[ ] Liner [X] Remolded	[X] Tamping	[ ] Constant Effort: Blows/Tamps per Layer = 11
Boring No.: TP2319/TP2334	[ ] LPC Core	[ ] Impact/Rammer	Rammer Wgt.(lbf)= ___ No. Layers = 3.00
Sample No.: Comp-A	Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)= 4.00 Drop (in.) = 12.00
Depth (ft): NA	Specimen No.: A	[ ] Kneading	[X] Undercompaction: U_{ni} (%) = ___ Dia. (in.) = 1.40
[ ] Spec. Selection by X-ray;	[ ] Geomarine Sample	[ ]	Ref. Effort= MOD % Comp. = 95.0 ± Opt.= +4

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 = 2.659 Measured	Height	Volume	Area	Water Content	Unit Weight Total	Unit Weight Dry	Saturation	LL / PL / PI	-200	Void Ratio,
Condition:	(mm)	(cm^3)	(cm^2)	(%)	(pcf)	(pcf)	(%)		%	e
Initial	18.50	64.51	34.87	14.38	136.0	119.0	97.2	34	46.4	0.396
After Consol.: to $\sigma'_{v,c}$	18.29	63.77	34.87	14.18	137.4	120.3	100.0	12	NA	0.380
to $\sigma'_{vc,max}$	NA	NA	NA	NA	NA	NA	NA	22	NA	NA

Consolidation Stress Summary and Loading Summary

Item	Unit	Max. Stress	Pre-Shear	Post Cyclic
Vert. Consol. Stress, $\sigma'_{v,c}$:	(ksf)	NA	2.173	NA
Induced OCR:	-	NA	NA	NA
Axial Strain during Consol., $\varepsilon_{a,c}$:	%	NA	1.14	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: 2.173 (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

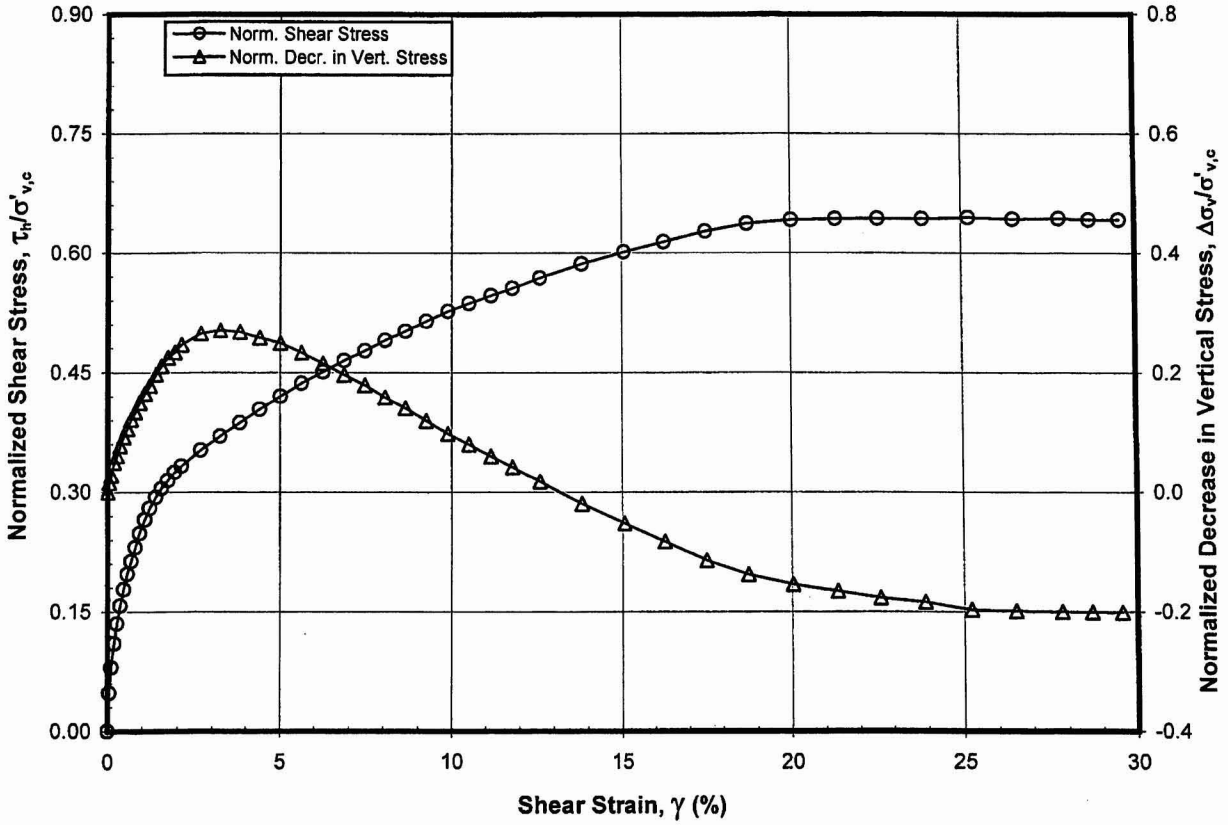
Final Visual Description and Remarks: Light Brown Clayey SAND (SC)

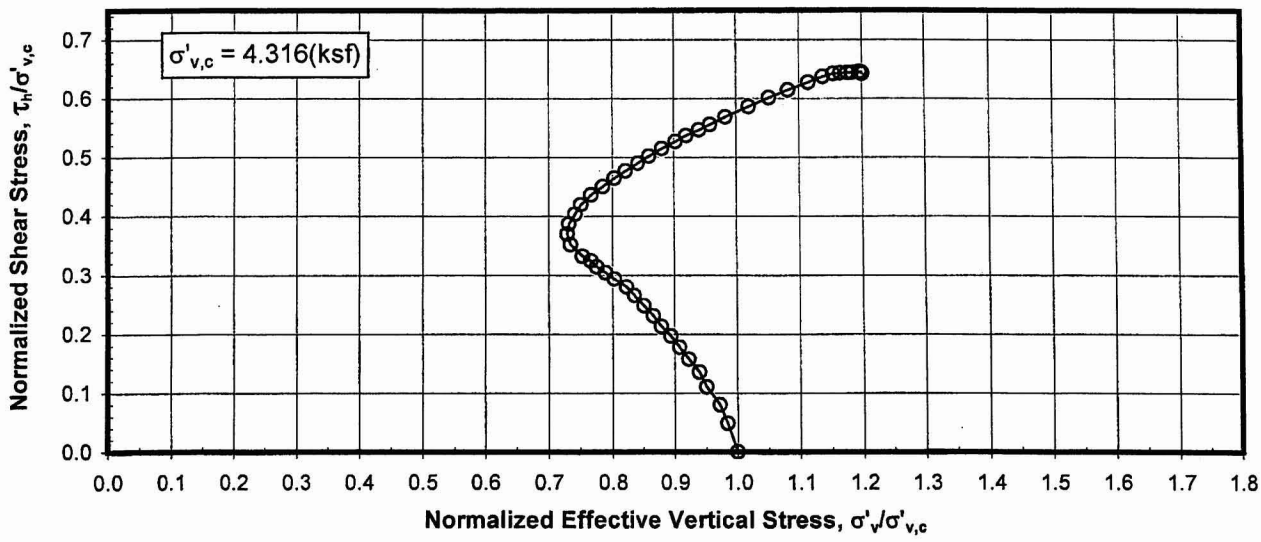
Loading Summary

	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	1.287	28.63	1.979	0.650	0.089	0.592
at Maximum Strain	1.275	29.49	1.998	0.638	0.081	-

Boring No.: TP2319/TP2334 Sample No.: Comp-AA

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	0.014	2.173	0.000	-	-	0.006	1.000	0.000	0.36
2.5	0.07	0.311	2.186	-0.013	447.289	333.806	0.143	1.006	-0.006	8.10
5.0	0.18	0.552	2.199	-0.026	306.204	177.605	0.254	1.012	-0.012	14.09
7.5	0.30	0.718	2.192	-0.019	235.622	107.341	0.331	1.009	-0.009	18.14
10.0	0.44	0.832	2.170	0.003	185.193	60.499	0.383	0.999	0.001	20.99
12.5	0.60	0.898	2.115	0.058	147.200	29.887	0.413	0.973	0.027	23.00
15.0	0.77	0.930	2.043	0.130	118.331	13.146	0.428	0.940	0.060	24.47
17.5	0.97	0.945	1.940	0.233	96.051	4.081	0.435	0.893	0.107	25.97
20.0	1.19	0.946	1.848	0.325	78.097	-1.036	0.435	0.850	0.150	27.11
22.5	1.42	0.941	1.750	0.423	65.480	-4.298	0.433	0.805	0.195	28.26
25.0	1.64	0.927	1.666	0.507	55.630	-5.128	0.426	0.767	0.233	29.09
27.5	1.85	0.918	1.599	0.574	48.982	-3.796	0.423	0.736	0.264	29.86
30.0	2.05	0.911	1.546	0.627	43.738	-3.870	0.419	0.712	0.288	30.51
32.5	2.26	0.902	1.500	0.673	39.279	-2.768	0.415	0.690	0.310	31.02
35.0	2.49	0.899	1.457	0.716	35.624	-2.805	0.414	0.671	0.329	31.69
37.5	2.72	0.889	1.413	0.760	32.222	-4.125	0.409	0.650	0.350	32.19
40.0	2.95	0.880	1.377	0.796	29.363	-2.201	0.405	0.634	0.366	32.59
42.5	3.17	0.879	1.339	0.834	27.270	-1.349	0.405	0.616	0.384	33.28
50.0	3.79	0.866	1.284	0.889	22.495	-1.886	0.398	0.591	0.409	33.98
57.5	4.45	0.855	1.243	0.930	18.901	-0.162	0.393	0.572	0.428	34.52
65.0	5.03	0.863	1.234	0.939	16.882	0.845	0.397	0.568	0.432	34.94
72.5	5.67	0.865	1.210	0.963	15.007	0.720	0.398	0.557	0.443	35.56
80.0	6.29	0.872	1.216	0.957	13.641	1.336	0.401	0.559	0.441	35.64
87.5	6.93	0.882	1.226	0.947	12.530	1.848	0.406	0.564	0.436	35.74
95.0	7.56	0.895	1.243	0.930	11.661	2.392	0.412	0.572	0.428	35.76
102.5	8.16	0.911	1.255	0.918	11.000	2.360	0.419	0.577	0.423	35.99
110.0	8.80	0.924	1.267	0.906	10.347	2.572	0.425	0.583	0.417	36.10
117.5	9.40	0.943	1.296	0.877	9.885	2.777	0.434	0.596	0.404	36.04
125.0	10.06	0.959	1.325	0.848	9.399	3.486	0.441	0.610	0.390	35.89
132.5	10.64	0.985	1.358	0.815	9.132	3.598	0.453	0.625	0.375	35.97
140.0	11.27	1.002	1.401	0.772	8.773	2.925	0.461	0.645	0.355	35.58
147.5	11.85	1.021	1.442	0.731	8.498	3.005	0.470	0.664	0.336	35.29
155.0	12.46	1.038	1.464	0.709	8.221	2.561	0.478	0.674	0.326	35.33
162.5	13.05	1.051	1.501	0.672	7.954	2.469	0.484	0.691	0.309	35.02
172.5	13.85	1.073	1.539	0.634	7.643	2.428	0.494	0.708	0.292	34.88
187.5	15.10	1.100	1.611	0.562	7.195	2.211	0.506	0.741	0.259	34.33
202.5	16.34	1.127	1.677	0.496	6.818	1.910	0.519	0.772	0.228	33.91
217.5	17.47	1.146	1.733	0.440	6.482	1.476	0.527	0.798	0.202	33.47
232.5	18.67	1.162	1.776	0.397	6.148	0.704	0.535	0.817	0.183	33.20
247.4	19.90	1.163	1.803	0.370	5.774	0.336	0.535	0.830	0.170	32.82
262.4	21.13	1.170	1.855	0.318	5.472	-0.065	0.538	0.854	0.146	32.25
277.4	22.40	1.161	1.883	0.290	5.121	0.540	0.534	0.867	0.133	31.65
292.4	23.67	1.184	1.914	0.259	4.943	1.862	0.545	0.881	0.119	31.74
307.4	24.94	1.208	1.944	0.229	4.790	1.771	0.556	0.894	0.106	31.87
322.4	26.16	1.228	1.979	0.194	4.642	2.483	0.565	0.911	0.089	31.81
337.4	27.37	1.269	1.966	0.207	4.584	2.419	0.584	0.905	0.095	32.83
352.4	28.63	1.287	1.979	0.194	4.448	0.052	0.592	0.911	0.089	33.04
362.4	29.49	1.275	1.998	0.175	4.278	-1.384	0.587	0.919	0.081	32.55





STATIC DSS TEST

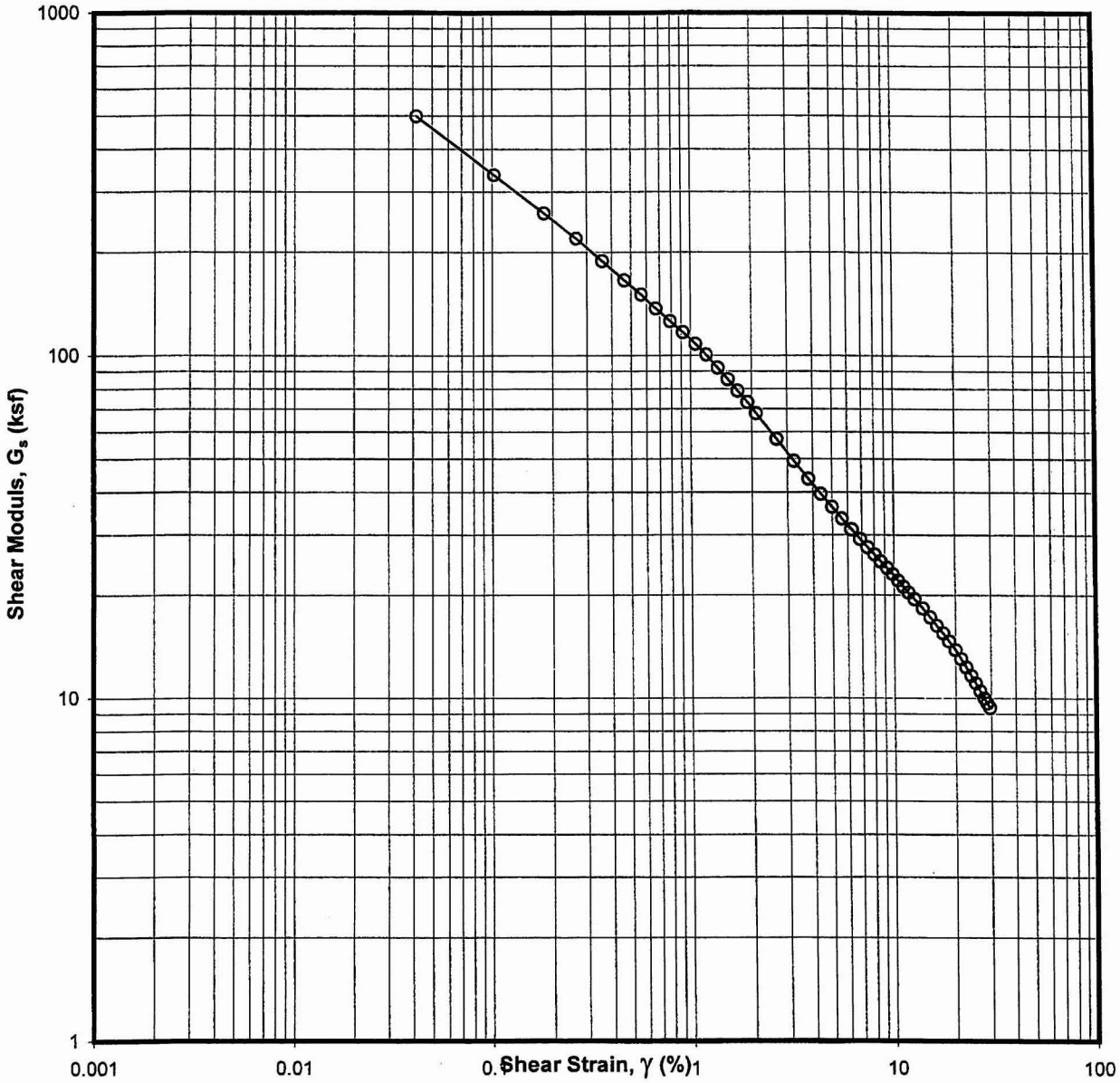
K_o Consolidation - OCR = NA

Sample: Comp-AB - Depth: NA ft

Boring TP2319/TP2334

Exelon (Victoria)

KAW 7/16/08



STATIC DSS TEST

K_o Consolidation - OCR = NA

Sample: Comp-AB - Depth: NA ft

Boring TP2319/TP2334

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.: 5G | File Name: _Comp-Ab
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: 2.659 [X] Meas.; [ ] Assumed

[ ] Tube [ ] Field Extruded	[ ] Liner [X] Remolded	[X] Tamping	[ ] Constant Effort:	Blows/Tamps per Layer =	11
Boring No.: TP2319/TP2334	[ ] LPC Core	[ ] Impact/Rammer	Rammer Wgt.(lbf)=	No. Layers =	3.00
Sample No.: Comp-A	Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)= 4.00	Drop (in.) =	12.00
Depth (ft): NA	Specimen No.: B	[ ] Kneading	[X] Undercompaction:	U_{ni} (%) =	Dia. (in.) = 1.40
[ ] Spec. Selection by X-ray;	[ ] Geomarine Sample		Ref. Effort= MOD	% Comp. = 95.0	± Opt.= +4

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.	4031			D-11
Mass Moist Soil + Cont. (g)	120.75			80.57
Mass Dry Soil + Container (g)	109.61			74.14
Mass Container (g)	29.70			30.25
WATER CONTENT (%)	13.94			14.65
Avg. Initial WC, $W_{o,avg}$ (%)	13.94	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)	323.90	149.19
Mass Tare (g)	183.32	4.68
Mass Moist Soil, $M_{t,o}$ $Mt_{,at}$ (g)	140.58	144.51
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):	18.55	$A_{s,t}$ (cm^2):	34.68
$D_{s,t}$ (mm) :	66.45	$V_{s,t}$ (cm^3):	64.32

Remarks:

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

	Height (H_{tr})	Diameter (D_o)		Remarks:
1	18.610	1-T	NA	
2	18.550	2-M	NA	
3	18.590	3-B	NA	
4	18.510	1'-T	NA	For Free Standing
5	18.540	2'-M	NA	or Reconstituted Spec.:
	Avg.	3'-B	NA	A_{tr} (cm^2): NA
=	18.550	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)= 136.44 | Dry, $\gamma_{d,o}$ (lb/ft^3)= 119.75

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.** 5 | ID, Rings (mm)
Thickness (mm): Top: 0.63 , | = 67.10
[ ] Single Bottom: 0.66 , | Corr. for mem.
[X] Double Membr. Thick. = 0.32 | = 66.450
Area Ring with mem., A_o (cm^2)= 34.68 ; (in^2)= 5.375
Mass Top Cap, etc., M_{tc} = 528.0 g, 1.16 lbf
Data corr. for M_{tc}: [X] Yes; [ ] No | Plattens with Pins: [ ] Yes; [X] No

Final Visual Description: Light Brown Clayey SAND (SC)

Other Remarks :

Trim./ Recon. By: DBN | Setup By: HC | Take Down By: HC
Date: 4/16/2008 | Date: 4/17/2008 | Date: 4/18/2008
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 6/13/08

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

Project Number: 0411-08-1686 | Test Station No.: 5G | File Name: _Comp-Ab
Task Number: NA | Specific Gravity: 2.659 [X] Measured; [ ] Assumed
Type Test: SDSS | Specimen: [ ] "Undisturbed"; [X] Reconstituted; [X] Remolded | Boring No.: TP2319/TP2334
Calculations Corr. for Salt (dissolved solids): [X] No or, [ ] Yes, with concentration = _____ ppm | Sample No.: Comp-AB

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	0.11 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	13.94			13.94	13.94	11.53
S_o	96.6			96.6	96.6	86.5
Measured final mass of moist soil, $M_{t,at}$ (g)						144.51
Final mass of moist soil corrected for excess dry soil, $M_{tat,c}$ (g)						144.51

Calculated Mass of Dry Soil (g)	
Initial Selected Water Content (%)	13.94
Initial , $M_{d,o}$	123.38
Final, $M_{d,at}$	126.04
Selected, M_d	124.71

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)	0.580			
Total Equip. Comp., $\Sigma\Delta d_{afc}$ (mm)	0.000			
Corr. Total Def. $\Delta H_{c,n}$ (mm)	0.580			
ΔV_n using A_o - spec. (cm^3)	2.01			
ΔV_n using $A_{c,n}$ - app. (cm^3)	2.01			
ΔV_n using burette meas.(cm^3)	-3.60			
Selected ΔV_n (cm^3)	2.01	NA	NA	= ΔV_{uL}
After Test WC Corr. for ΔV during Shear & Unloading, $W_{at,c}$ (%)			NA	

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

Calculation of ΔV_c by Different Procedures			
By Selected Volumes		By Change in Mass	
ΔV_c (cm^3)	2.01	~ $M_{t,o}$ - ($M_{tat,c}$ + ΔV_L + ΔV_{uL})	
By Cal. Height & App. Area		ΔV_c (cm^3)	-3.93
ΔV_c (cm^3)	2.01	By Saturation = 100% and	
By Cal. Ht. & Init. Spec. Area		Spec. Unloaded to 0 Stress	
ΔV_c (cm^3)	2.01	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, $W_{c,bc}$ (%)	12.27
Back Cal.WC at Max. Stress, $W_{cmax,bc}$ (%)	NA

Consolidation & Preshear Conclusions	ΔV_c (cm^3) =	2.00	ΔH_c (mm) =	0.580	$\varepsilon_{a,c}$ (%) =	3.13	$\Delta V_{c,max}$ (cm^3) = NA
	V_c (cm^3) =	62.32	H_c (mm) =	17.970	$\varepsilon_{v,c}$ (%) =	3.11	$\varepsilon_{ac,max}$ (%)= 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 = 2.659 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)	18.550	64.32	34.68	12.7	136.4	121.0	91.7	0.371
After Consol.: to $\sigma'_{v,c}$	17.970	62.32	34.68	12.3	140.3	124.9	100.0	0.329
After Consol.: to $\sigma'_{vc,max}$	NA	NA	NA	NA	NA	NA	NA	NA

LCA-Method & Note(s): 1- Initial measured value remains constant. 2 - Initial measured value corrected for applied stress. 3 - Uses measured value at appropriate stress level (NA for rings). 4 - Based on change in height & volume. NA - Not Applicable

Calculated By: LF
Reviewed By: HP HP

Remarks: t95 for max stress = 0.5 min

Project Number:	0411-08-1686	Test Type:	SDSS	Test Sta. No.:	5G	File Name:	_Comp-Ab
Project Name:	Exelon (Victoria)	Task No.:	NA	Test No.:	NA	Test Series for:	NA

[ ] Tube [ ] Field Extruded	[ ] Liner [X] Remolded	[X] Tamping	[ ] Constant Effort:	Blows/Tamps per Layer = 11
Boring No.: TP2319/TP2334	[ ] LPC Core	[ ] Impact/Rammer	Rammer Wgt.(lbf)=	No. Layers = 3.00
Sample No.: Comp-A	Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)= 4.00	Drop (in.) = 12.00
Depth (ft): NA	Specimen No.: B	[ ] Kneading	[X] Undercompaction: U_{ni} (%) =	Dia. (in.) = 1.40
[ ] Spec. Selection by X-ray;	[ ] Geomarine Sample	[ ]	Ref. Effort= MOD % Comp. = 95.0	± Opt.= +4

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 - [ ] With - Water Bath	[ ] Cyclic (Hz) Rate: [ ] 0.1; [ ] 1; Other:	[ ] Strain [ ] Stress

Summary of Specimen Physical Properties

Specific Gravity: G_s = 2.659 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	18.55	64.32	34.68	12.72	136.4	121.0	91.7	34	46.4	0.371
After	to $\sigma'_{v,c}$	17.97	62.32	34.68	12.27	140.3	124.9	100.0	12	NA	0.329
Consol.:	to $\sigma'_{vc,max}$	NA	NA	NA	NA	NA	NA	NA	22	NA	NA

Consolidation Stress Summary and Loading Summary

Item	Unit	Max. Stress	Pre-Shear	Post Cyclic			
					[X] Static Strain Rate = 4.7 %/hr.		
Vert. Consol. Stress, $\sigma'_{v,c}$:	(ksf)	NA	4.316	NA	[ ] Cyclic Rate (Hz): [ ] 0.1; [ ] 1; Other =		
Induced OCR:	-	NA	NA	NA	During/End of Loading	Static	Cyclic
Axial Strain during Consol., $\varepsilon_{a,c}$:	%	NA	3.13	NA	Change in Height, $\Delta H_{L,n}$ (mm):	NA	NA
Horiz. Consol. Stress, $\tau_{h,c}$:	(ksf)	NA	NA	NA	Change in Vol., $\Delta V_{L,n}$ (cm^3):	NA	NA
Consol. Stress Ratio, $\tau_{h,c} / \sigma'_{v,c}$:	-	NA	NA	NA	Post Cy.Displ. Reset to Null Pos.:	[ ] Yes;	[ ] No
Shear Strain during Consol., $\varepsilon_{h,c}$:	%	NA	NA	NA	Number of Loading Cycles, N = NA		
Undr. Ambient Shear Stress, $\tau_{h,ua}$:	(ksf)	NA	NA	NA	$\pm\tau_h$ = NA (ksf)	$\pm\gamma$ = NA %	
Undr. Ambient Shear Strain, ε_{ua}:	%	NA	NA	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: 4.316 (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

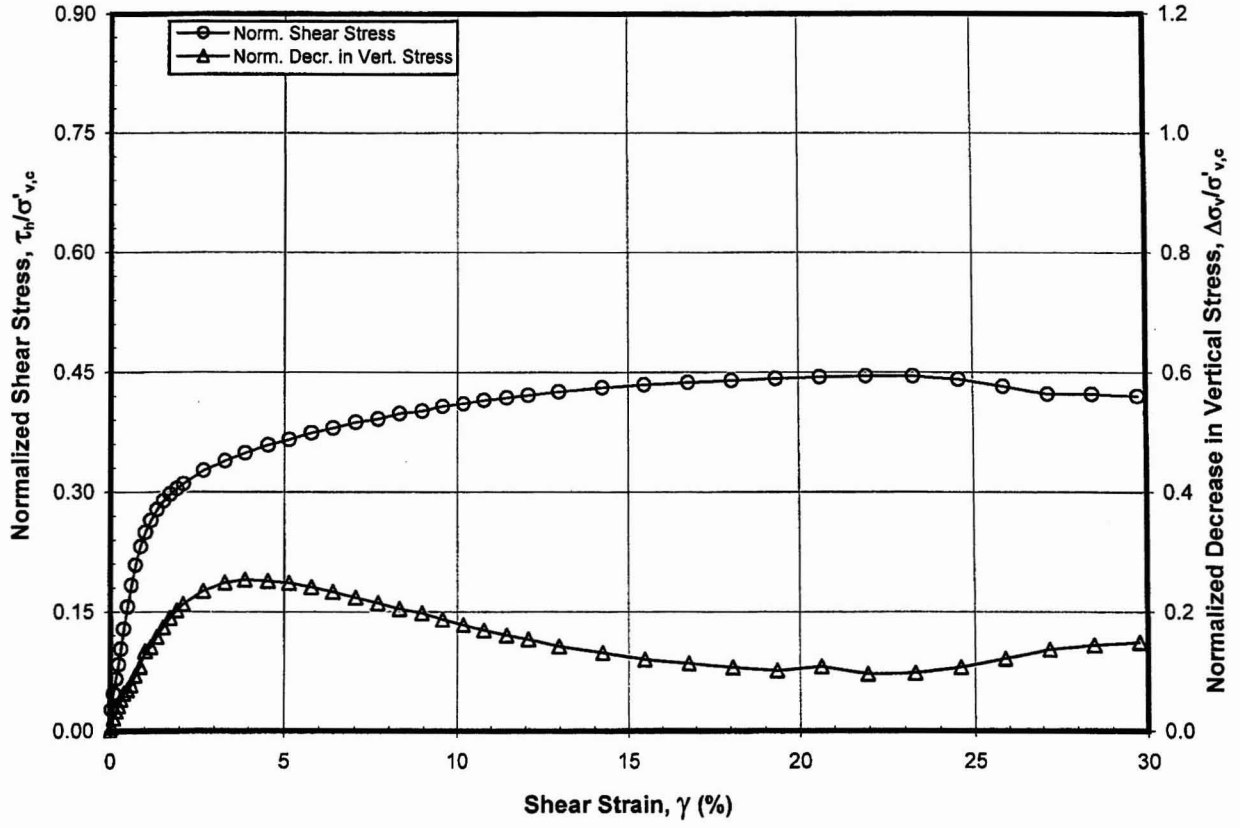
Final Visual Description and Remarks: Light Brown Clayey SAND (SC)

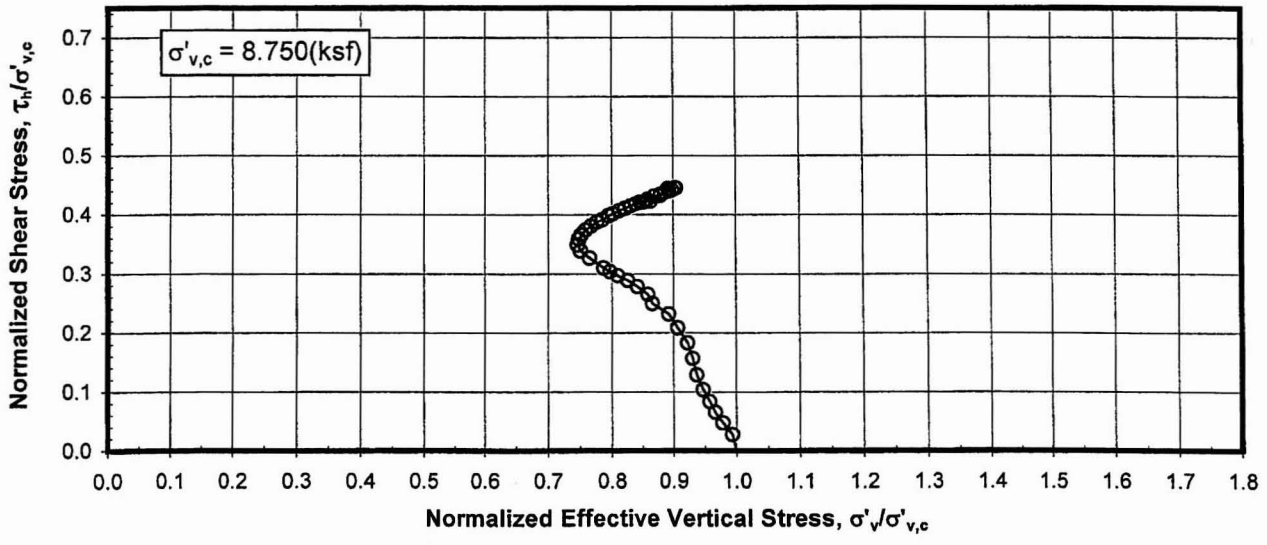
Loading Summary

	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	2.784	25.21	5.166	0.539	-0.197	0.645
at Maximum Strain	2.772	29.56	5.185	0.535	-0.201	-

Boring No.: TP2319/TP2334 Sample No.: Comp-AB

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	0.001	4.316	0.000	-	-	0.000	1.000	0.000	0.01
2.5	0.04	0.209	4.248	0.068	498.024	361.020	0.048	0.984	0.016	2.82
5.1	0.10	0.345	4.194	0.122	335.818	193.529	0.080	0.972	0.028	4.70
7.6	0.18	0.475	4.102	0.214	260.164	146.176	0.110	0.950	0.050	6.61
10.2	0.27	0.583	4.055	0.261	219.077	115.586	0.135	0.939	0.061	8.18
12.7	0.36	0.679	3.983	0.333	188.354	93.650	0.157	0.923	0.077	9.68
15.3	0.46	0.768	3.918	0.398	165.262	83.481	0.178	0.908	0.092	11.09
17.8	0.57	0.851	3.858	0.458	150.275	73.333	0.197	0.894	0.106	12.43
20.4	0.67	0.920	3.793	0.523	136.781	63.958	0.213	0.879	0.121	13.64
22.9	0.79	0.995	3.739	0.578	125.564	61.396	0.231	0.866	0.134	14.91
25.5	0.92	1.072	3.673	0.643	116.483	56.240	0.248	0.851	0.149	16.27
28.0	1.06	1.146	3.605	0.711	107.966	48.078	0.265	0.835	0.165	17.63
30.6	1.20	1.209	3.549	0.767	100.302	38.600	0.280	0.822	0.178	18.81
33.1	1.38	1.267	3.467	0.849	91.912	31.081	0.293	0.803	0.197	20.07
35.7	1.54	1.314	3.407	0.909	85.181	26.141	0.304	0.789	0.211	21.08
38.2	1.72	1.356	3.348	0.968	78.793	23.170	0.314	0.776	0.224	22.05
40.8	1.92	1.401	3.309	1.007	72.972	19.913	0.325	0.767	0.233	22.94
43.3	2.11	1.434	3.254	1.062	67.845	16.397	0.332	0.754	0.246	23.78
51.0	2.66	1.520	3.173	1.143	57.075	14.376	0.352	0.735	0.265	25.60
58.6	3.24	1.596	3.151	1.165	49.217	12.791	0.370	0.730	0.270	26.86
66.2	3.83	1.669	3.161	1.155	43.609	12.442	0.387	0.732	0.268	27.83
73.9	4.41	1.741	3.203	1.113	39.467	12.064	0.403	0.742	0.258	28.53
81.5	5.01	1.812	3.243	1.073	36.159	11.557	0.420	0.751	0.249	29.19
89.1	5.63	1.883	3.312	1.004	33.411	10.588	0.436	0.767	0.233	29.62
96.8	6.26	1.944	3.390	0.926	31.051	9.878	0.450	0.786	0.214	29.83
104.4	6.87	2.005	3.469	0.847	29.171	9.487	0.464	0.804	0.196	30.02
112.0	7.47	2.059	3.547	0.770	27.556	9.234	0.477	0.822	0.178	30.14
119.7	8.06	2.115	3.634	0.682	26.222	9.118	0.490	0.842	0.158	30.20
127.3	8.65	2.167	3.713	0.604	25.042	8.945	0.502	0.860	0.140	30.27
134.9	9.25	2.221	3.801	0.515	23.998	8.652	0.515	0.881	0.119	30.30
142.6	9.89	2.274	3.896	0.420	22.985	7.586	0.527	0.903	0.097	30.27
150.2	10.52	2.317	3.971	0.345	22.025	6.616	0.537	0.920	0.080	30.27
157.9	11.17	2.359	4.059	0.257	21.105	6.307	0.546	0.940	0.060	30.16
165.5	11.80	2.398	4.136	0.180	20.322	6.634	0.556	0.958	0.042	30.10
175.7	12.60	2.454	4.242	0.074	19.463	6.540	0.569	0.983	0.017	30.05
190.9	13.82	2.529	4.402	-0.086	18.290	5.728	0.586	1.020	-0.020	29.88
206.2	15.07	2.595	4.543	-0.227	17.214	4.946	0.601	1.053	-0.053	29.74
221.5	16.28	2.651	4.674	-0.358	16.278	4.636	0.614	1.083	-0.083	29.56
236.7	17.51	2.708	4.812	-0.496	15.464	4.022	0.628	1.115	-0.115	29.37
252.0	18.74	2.750	4.913	-0.597	14.669	2.477	0.637	1.138	-0.138	29.23
267.2	20.04	2.770	4.985	-0.669	13.819	0.943	0.642	1.155	-0.155	29.06
282.5	21.35	2.774	5.031	-0.715	12.991	0.267	0.643	1.166	-0.166	28.87
297.8	22.62	2.777	5.081	-0.765	12.276	0.117	0.643	1.177	-0.177	28.66
313.0	23.92	2.777	5.111	-0.795	11.606	0.244	0.643	1.184	-0.184	28.52
328.3	25.21	2.784	5.166	-0.849	11.037	-0.090	0.645	1.197	-0.197	28.32
343.6	26.49	2.775	5.174	-0.858	10.471	-0.203	0.643	1.199	-0.199	28.20
358.8	27.82	2.779	5.181	-0.865	9.985	-0.277	0.644	1.200	-0.200	28.21
369.0	28.68	2.771	5.182	-0.866	9.659	-0.370	0.642	1.201	-0.201	28.14
379.2	29.56	2.772	5.185	-0.869	9.374	0.101	0.642	1.201	-0.201	28.13





STATIC DSS TEST

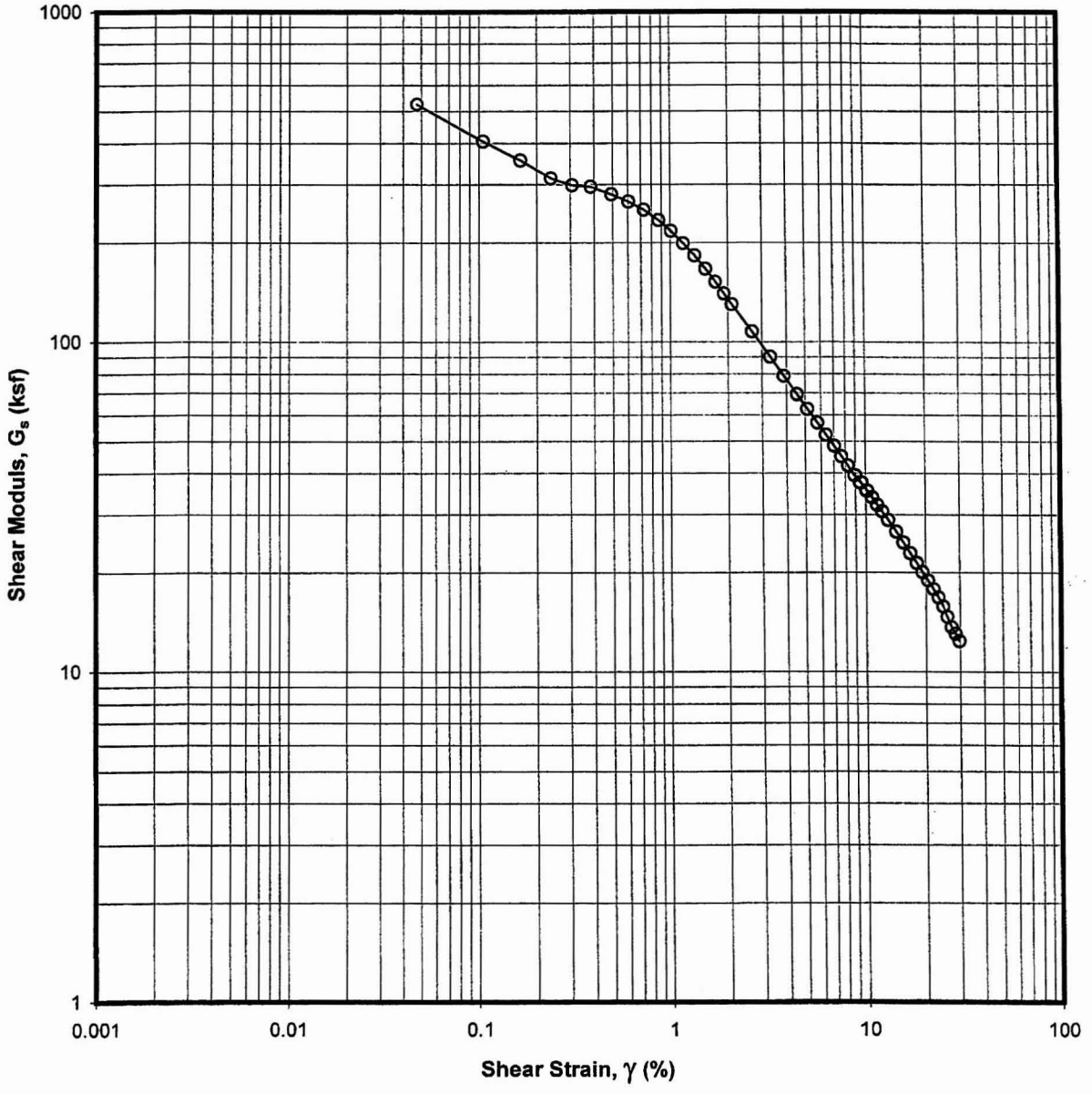
K_o Consolidation - OCR = NA

Sample: Comp-AC - Depth: NA ft

Boring TP2319/TP2334

Exelon (Victoria)

KAW 7/16/08



STATIC DSS TEST

K_o Consolidation - OCR = NA

Sample: Comp-AC - Depth: NA ft

Boring TP2319/TP2334

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.: 9G | File Name: _Comp-Ac
Task No.: NA | Assign, $\sigma'_{v,c}$ = 8.64 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: 2.659 [X] Meas.; [ ] Assumed

[ ] Tube [ ] Field Extruded	[ ] Liner [X] Remolded	[X] Tamping	[ ] Constant Effort:	Blows/Tamps per Layer =	11
Boring No.: TP2319/TP2334	[ ] LPC Core	[ ] Impact/Rammer	Rammer Wgt.(lbf)=	No. Layers =	3.00
Sample No.: Comp-A	Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)= 4.00	Drop (in.) =	12.00
Depth (ft): NA	Specimen No.: C	[ ] Kneading	[X] Undercompaction: U_{ni} (%) =	Dia. (in.) =	1.40
[ ] Spec. Selection by X-ray;	[ ] Geomarine Sample		Ref. Effort= MOD	% Comp. = 95.0	± Opt.= +4

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.	4179			5059
Mass Moist Soil + Cont. (g)	127.84			70.42
Mass Dry Soil + Container (g)	115.94			65.42
Mass Container (g)	30.57			30.59
WATER CONTENT (%)	13.94			14.36
Avg. Initial WC, $W_{o,avg}$ (%)	13.94	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)	328.10	146.34
Mass Tare (g)	186.79	4.60
Mass Moist Soil, $M_{t,o}$ $M_{t,at}$ (g)	141.31	141.74
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 — NL3 — Large-ring ID #
[X] Trimming Ring for NGI Apparatus — Small-ring ID #

$H_{s,t}$ (mm):	18.53	$A_{s,t}$ (cm^2):	34.87
$D_{s,t}$ (mm) :	66.63	$V_{s,t}$ (cm^3):	64.60

Remarks:

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

	Height (H_{tr})	Diameter (D_o)		Remarks:
1	18.570	1-T	NA	
2	18.540	2-M	NA	
3	18.510	3-B	NA	
4	18.550	1'-T	NA	For Free Standing
5	18.510	2'-M	NA	or Reconstituted Spec.:
	Avg.	3'-B	NA	A_{tr} (cm^2): NA
=	18.525	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)=	136.56	Dry, $\gamma_{d,o}$ (lb/ft^3)=	119.85

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. 9 — ID, Rings (mm)
Thickness (mm): Top: 0.69 , = 67.34
[ ] Single — Bottom: 0.72 , Corr. for mem.
[X] Double — Membr. Thick. = 0.35 = 66.630
Area Ring with mem., A_o: (cm^2)= 34.87 ; (in^2)= 5.405
Mass Top Cap, etc., M_{tc} = 528.7 g, 1.17 lbf
Data corr. for M_{tc}: [X] Yes; [ ] No — Plattens with Pins: [ ] Yes; [X] No

Final Visual Description: Light Brown Clayey SAND (SC)

Other Remarks :

Trim./ Recon. By: DBN — Date: 4/21/2008
Setup By: HC — Date: 4/1/2108
Take Down By: HC — Date: 4/23/2008
Prelim. Calc. By: LF
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 6/13/08

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

Project Number: 0411-08-1686 | Test Station No.: 9G | File Name: _Comp-Ac
Task Number: NA | Specific Gravity: 2.659 [X] Measured; [ ] Assumed
Type Test: SDSS | Specimen: [ ] "Undisturbed"; [X] Reconstituted; [X] Remolded | Boring No.: TP2319/TP2334
Calculations Corr. for Salt (dissolved solids): [X] No or, [ ] Yes, with concentration = _____ ppm | Sample No.: Comp-AC

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	8.64	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	0.82 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	13.94			13.94	13.94	14.01
S_o	96.9			96.9	96.9	97.2

Measured final mass of moist soil, $M_{t,at}$ (g)	141.74
Final mass of moist soil corrected for excess dry soil, $M_{tat,c}$ (g)	141.74

Calculated Mass of Dry Soil (g)

Initial Selected Water Content (%)	13.94
Initial , $M_{d,o}$	124.02
Final, $M_{d,at}$	123.95
Selected, M_d	123.98

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)	8.640	NA	NA
Sign Convention: (+) ΔV out & ΔH down; (-) ΔV in & ΔH up			
Delta Def. Read., $\Delta d_{ar,n}$ (mm)	0.801		
Total Equip. Comp., $\Sigma\Delta d_{afc}$ (mm)	0.000		
Corr. Total Def. $\Delta H_{c,n}$ (mm)	0.801		
ΔV_n using A_o - spec. (cm^3)	2.79		
ΔV_n using $A_{c,n}$ - app. (cm^3)	2.79		
ΔV_n using burette meas.(cm^3)	0.40		
Selected ΔV_n (cm^3)	2.72	NA	NA = ΔV_{uL}
After Test WC Corr. for ΔV during Shear & Unloading, $W_{at,c}$ (%)			NA

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

Calculation of ΔV_c by Different Procedures

By Selected Volumes		By Change in Mass	
ΔV_c (cm^3)	2.72	~ $M_{t,o}$ - ($M_{tat,c}$ + ΔV_L + ΔV_{uL})	
By Cal. Height & App. Area		ΔV_c (cm^3)	-0.43
ΔV_c (cm^3)	2.79	**By Saturation = 100% and**	
By Cal. Ht. & Init. Spec. Area		**Spec. Unloaded to 0 Stress**	
ΔV_c (cm^3)	2.79	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, $W_{c,bc}$ (%)	12.15
Back Cal.WC at Max. Stress, $W_{cmax,bc}$ (%)	NA

Consolidation & Preshear Conclusions							
	ΔV_c (cm^3) =	2.80	ΔH_c (mm) =	0.801	$\varepsilon_{a,c}$ (%) =	4.32	$\Delta V_{c,max}$ (cm^3) = NA
	V_c (cm^3) =	61.80	H_c (mm) =	17.724	$\varepsilon_{v,c}$ (%) =	4.33	$\varepsilon_{ac,max}$ (%)= NA
	A_c (cm^2) =	34.87	$\Delta\gamma_c$ (mm) =	NA	γ_c (%) =	NA	Preshear: γ_{ua} (%)= NA

Summary of Specimen Physical Properties:

Specific Gravity: G_s = 2.659 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)	18.525	64.60	34.87	14.0	136.6	119.8	97.0	0.385
After Consol.: to $\sigma'_{v,c}$	17.724	61.80	34.87	12.1	140.5	125.2	100.0	0.326
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 = 1.8 min

Project Number:	0411-08-1686	Test Type:	SDSS	Test Sta. No.:	9G	File Name:	_Comp-Ac
Project Name:	Exelon (Victoria)	Task No.:	NA	Test No.:	NA	Test Series for:	NA

[ ] Tube [ ] Field Extruded	[ ] Liner [X] Remolded	[X] Tamping	[ ] Constant Effort:	Blows/Tamps per Layer =	11		
Boring No.: TP2319/TP2334	[ ] LPC Core	[ ] Impact/Rammer	Rammer Wgt.(lbf)=		No. Layers =	3.00	
Sample No.: Comp-A	Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)=	4.00	Drop (in.) =	12.00	
Depth (ft): NA	Specimen No.: C	[ ] Kneading	[X] Undercompaction:	U_{ni} (%) =	Dia. (in.) =	1.40	
[ ] Spec. Selection by X-ray;	[ ] Geomarine Sample		Ref. Effort= MOD	% Comp. = 95.0	± Opt.=	+4	

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 = 2.659 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	18.53	64.60	34.87	13.97	136.6	119.8	97.0	34	46.4	0.385
After Consol.: to $\sigma'_{v,c}$	17.72	61.80	34.87	12.15	140.5	125.2	100.0	12	NA	0.326
After Consol.: to $\sigma'_{vc,max}$	NA	NA	NA	NA	NA	NA	NA	22	NA	NA

Consolidation Stress Summary and Loading Summary

Item	Unit	Max. Stress	Pre-Shear	Post Cyclic
Vert. Consol. Stress, $\sigma'_{v,c}$:	(ksf)	NA	8.750	NA
Induced OCR:	-	NA	NA	NA
Axial Strain during Consol., $\varepsilon_{a,c}$:	%	NA	4.32	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 = 4.7 %/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): 1.17
Data corr. for M_{tc}: [X] Yes; [ ] No
Plattens with Pins: [ ] Yes; [X] No
[ ] Wire Reinforced Membrane, Model:
[X] Regular Membrane with Rings
Data corr. for Membr. strength: [ ] Yes [X] No

Data Normalization: [X] Yes [ ] No Value: 8.750 (ksf)
Using Effective Vertical Stress:
[X] Pre-Shear Conditions [ ] Post-Cyclic Conditions
[ ] 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

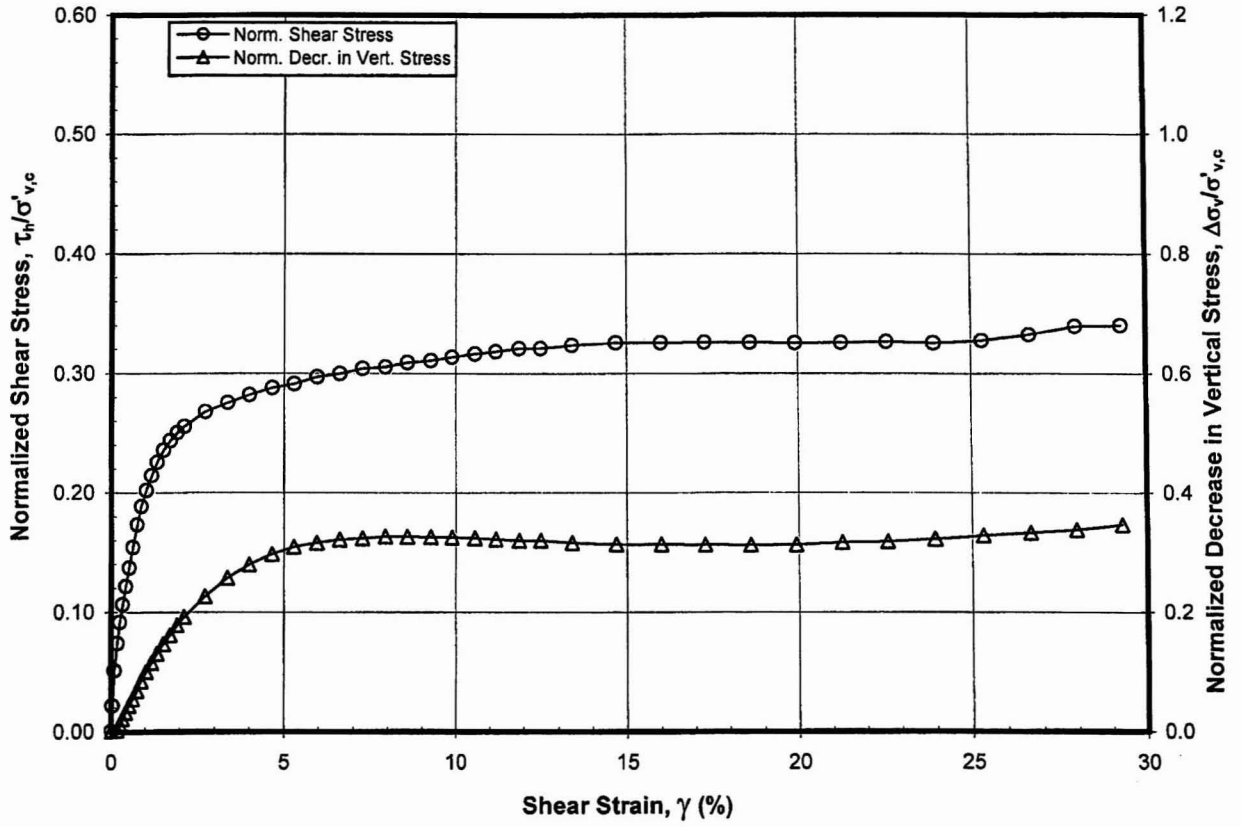
Final Visual Description and Remarks: Light Brown Clayey SAND (SC)

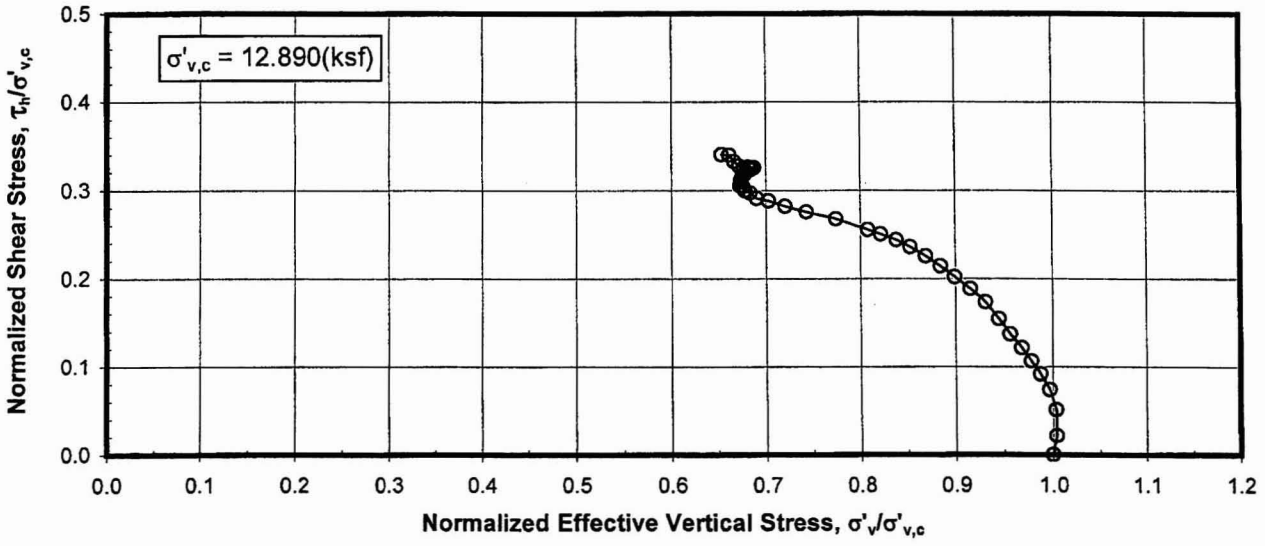
Loading Summary

	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	3.895	23.29	7.903	0.493	0.097	0.445
at Maximum Strain	3.677	29.77	7.450	0.494	0.149	-

Boring No.: TP2319/TP2334 Sample No.: Comp-AC

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	-0.014	8.750	0.000	-	-	-0.002	1.000	0.000	-0.09
2.6	0.05	0.235	8.695	0.055	524.382	415.848	0.027	0.994	0.006	1.55
5.2	0.11	0.413	8.564	0.186	405.027	286.508	0.047	0.979	0.021	2.76
7.7	0.17	0.572	8.460	0.290	354.638	241.839	0.065	0.967	0.033	3.87
10.3	0.24	0.730	8.384	0.366	312.946	233.144	0.083	0.958	0.042	4.98
12.9	0.31	0.904	8.290	0.460	298.287	266.060	0.103	0.947	0.053	6.22
15.5	0.38	1.122	8.200	0.550	295.383	254.846	0.128	0.937	0.063	7.79
18.1	0.49	1.368	8.145	0.605	280.048	215.805	0.156	0.931	0.069	9.54
20.6	0.61	1.601	8.075	0.675	266.184	192.355	0.183	0.923	0.077	11.22
23.2	0.73	1.824	7.933	0.817	251.347	161.003	0.208	0.907	0.093	12.95
25.8	0.87	2.024	7.810	0.940	233.951	127.345	0.231	0.893	0.107	14.53
28.4	1.01	2.182	7.579	1.171	216.891	96.882	0.249	0.866	0.134	16.06
31.0	1.17	2.312	7.519	1.231	198.651	76.226	0.264	0.859	0.141	17.09
33.6	1.34	2.430	7.368	1.382	182.507	60.894	0.278	0.842	0.158	18.25
36.1	1.53	2.527	7.228	1.522	166.383	44.285	0.289	0.826	0.174	19.27
38.7	1.72	2.598	7.089	1.661	151.889	34.330	0.297	0.810	0.190	20.13
41.3	1.91	2.658	6.980	1.770	139.956	29.645	0.304	0.798	0.202	20.85
43.9	2.09	2.710	6.889	1.861	130.015	26.843	0.310	0.787	0.213	21.47
51.6	2.67	2.860	6.696	2.054	107.451	21.050	0.327	0.765	0.235	23.13
59.3	3.31	2.963	6.575	2.175	89.910	15.614	0.339	0.751	0.249	24.26
67.0	3.89	3.050	6.536	2.214	78.723	14.300	0.349	0.747	0.253	25.02
74.8	4.55	3.139	6.553	2.197	69.347	11.796	0.359	0.749	0.251	25.59
82.5	5.14	3.198	6.582	2.168	62.521	10.674	0.366	0.752	0.248	25.91
90.2	5.78	3.271	6.639	2.111	56.808	9.966	0.374	0.759	0.241	26.23
98.0	6.39	3.324	6.713	2.037	52.207	9.144	0.380	0.767	0.233	26.34
105.7	7.04	3.386	6.795	1.955	48.302	7.665	0.387	0.777	0.223	26.49
113.4	7.67	3.422	6.873	1.877	44.803	7.577	0.391	0.785	0.215	26.47
121.2	8.30	3.482	6.961	1.789	42.117	6.828	0.398	0.796	0.204	26.57
128.9	8.95	3.509	7.022	1.728	39.353	6.354	0.401	0.802	0.198	26.55
136.6	9.55	3.560	7.112	1.638	37.418	6.549	0.407	0.813	0.187	26.59
144.4	10.19	3.590	7.193	1.557	35.352	5.443	0.410	0.822	0.178	26.52
152.1	10.79	3.628	7.273	1.477	33.736	5.398	0.415	0.831	0.169	26.51
159.8	11.46	3.657	7.344	1.406	32.035	4.248	0.418	0.839	0.161	26.47
167.6	12.08	3.682	7.407	1.343	30.596	4.226	0.421	0.847	0.153	26.43
177.9	12.97	3.722	7.511	1.239	28.796	4.098	0.425	0.858	0.142	26.36
193.3	14.23	3.769	7.604	1.146	26.580	3.142	0.431	0.869	0.131	26.37
208.8	15.49	3.801	7.698	1.052	24.629	2.200	0.434	0.880	0.120	26.28
224.2	16.78	3.825	7.758	0.992	22.873	1.749	0.437	0.887	0.113	26.25
239.7	18.07	3.846	7.816	0.934	21.358	1.533	0.440	0.893	0.107	26.20
255.2	19.34	3.865	7.864	0.886	20.051	1.508	0.442	0.899	0.101	26.17
270.6	20.63	3.885	7.805	0.945	18.897	1.102	0.444	0.892	0.108	26.46
286.1	21.97	3.893	7.916	0.834	17.787	0.377	0.445	0.905	0.095	26.19
301.5	23.29	3.895	7.903	0.847	16.780	-1.310	0.445	0.903	0.097	26.24
317.0	24.59	3.859	7.815	0.935	15.750	-4.340	0.441	0.893	0.107	26.28
332.5	25.89	3.782	7.693	1.057	14.661	-6.216	0.432	0.879	0.121	26.18
347.9	27.21	3.696	7.556	1.194	13.635	-3.120	0.422	0.864	0.136	26.07
363.3	28.49	3.699	7.492	1.258	13.034	-0.739	0.423	0.856	0.144	26.28
378.8	29.77	3.677	7.450	1.300	12.397	-1.716	0.420	0.851	0.149	26.27





STATIC DSS TEST

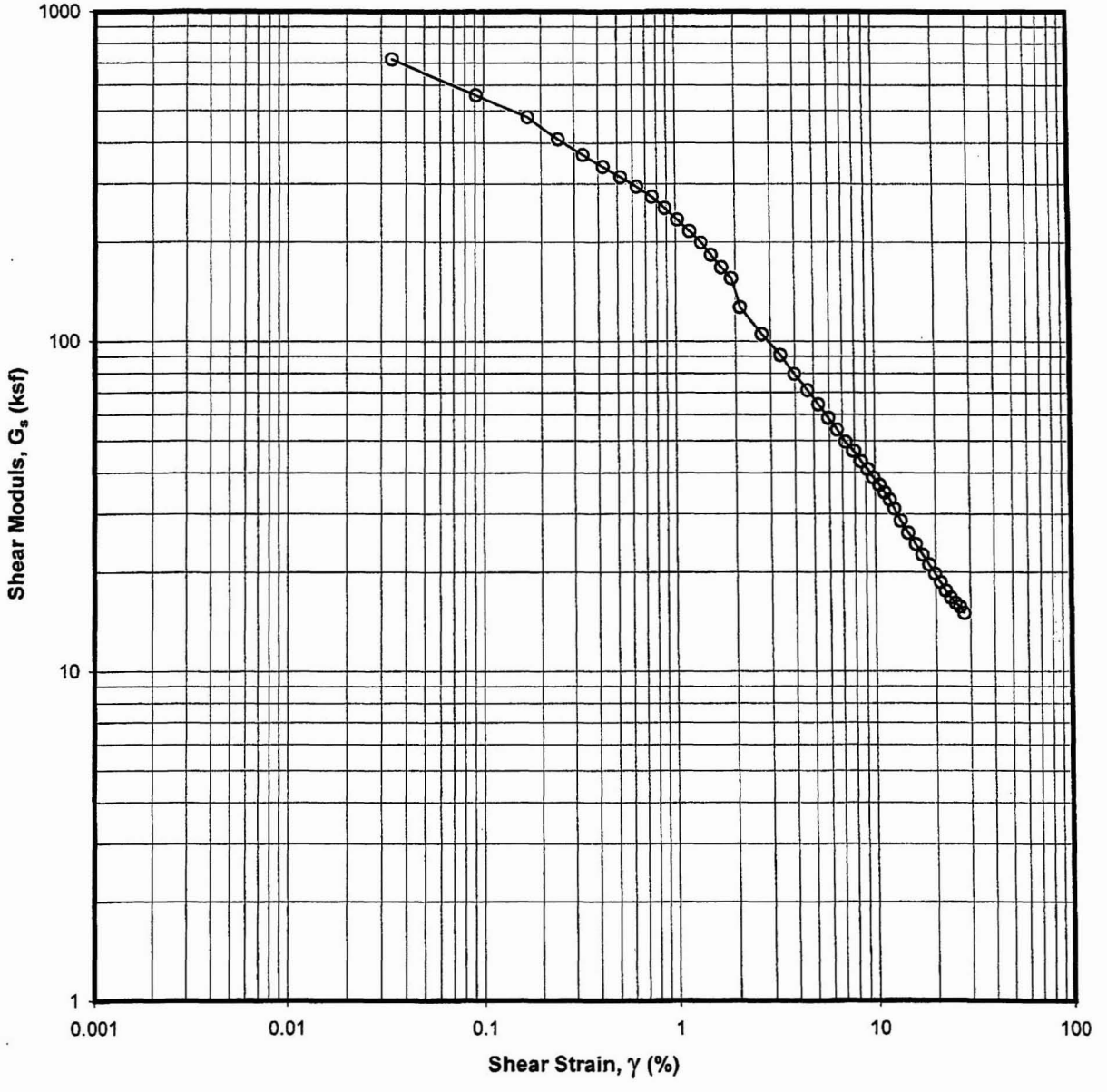
K_o Consolidation - OCR = NA

Sample: Comp-AD - Depth: NA ft

Boring TP2319/TP2334

Exelon (Victoria)

KAW 7/16/08



STATIC DSS TEST

K_o Consolidation - OCR = NA

Sample: Comp-AD - Depth: NA ft

Boring TP2319/TP2334

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.: 10G | File Name: _Comp-Ad
Task No.: NA | Assign, $\sigma'_{v,c}$ = 12.96 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: 2.659 [X] Meas.; [ ] Assumed

[ ] Tube [ ] Field Extruded	[ ] Liner [X] Remolded	[X] Tamping	[ ] Constant Effort:	Blows/Tamps per Layer =	11
Boring No.: TP2319/TP2334	[ ] LPC Core	[ ] Impact/Rammer	Rammer Wgt.(lbf)=	No. Layers =	3.00
Sample No.: Comp-A	Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)= 4.00	Drop (in.) =	12.00
Depth (ft): NA	Specimen No.: D	[ ] Kneading	[X] Undercompaction:	U_{ni} (%) =	Dia. (in.) = 1.40
[ ] Spec. Selection by X-ray;	[ ] Geomarine Sample		Ref. Effort= MOD	% Comp. = 95.0	± Opt.= +4

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.	4202			D7
Mass Moist Soil + Cont. (g)	139.62			71.14
Mass Dry Soil + Container (g)	125.82			66.17
Mass Container (g)	30.13			30.14
WATER CONTENT (%)	14.42			13.79
Avg. Initial WC, $W_{o,avg}$ (%)	14.42	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)	324.28	145.10
Mass Tare (g)	183.31	4.31
Mass Moist Soil, $M_{t,o}$ $M_{t,at}$ (g)	140.97	140.79
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): 18.50 | $A_{s,t}$ (cm^2): 34.68
$D_{s,t}$ (mm): 66.45 | $V_{s,t}$ (cm^3): 64.15

Remarks:

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

	Height (H_{tr})	Diameter (D_o)		Remarks:
1	18.530	1-T	NA	
2	18.490	2-M	NA	
3	18.480	3-B	NA	
4	18.510	1'-T	NA	For Free Standing
5	18.460	2'-M	NA	or Reconstituted Spec.:
	Avg.	3'-B	NA	A_{tr} (cm^2): NA
=	18.500	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)= 137.19 | Dry, $\gamma_{d,o}$ (lb/ft^3)= 119.90

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.** 10 | ID, Rings (mm)
Thickness (mm): Top: 0.63 , | = 67.07
[ ] Single Bottom: 0.61 , | Corr. for mem.
[X] Double Membr. Thick. = 0.31 | = 66.450
Area Ring with mem., A_o (cm^2)= 34.68 ; (in^2)= 5.375
Mass Top Cap, etc., M_{tc} = 528.2 g, 1.16 lbf
Data corr. for M_{tc}: [X] Yes; [ ] No | Plattens with Pins: [ ] Yes; [X] No

Final Visual Description: Light Brown Clayey SAND (SC)

Other Remarks :

Trim./ Recon. By: DBN | Setup By: HC | Take Down By: HC
Date: 4/21/2008 | Date: 4/21/2008 | Date: 4/23/2008
Prelim. Calc. By: LF | 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 6/13/08

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

Project Number: 0411-08-1686 | Test Station No.: 10G | File Name: _Comp-Ad
Task Number: NA | Specific Gravity: 2.659 [X] Measured; [ ] Assumed
Type Test: SDSS | Specimen: [ ] "Undisturbed"; [X] Reconstituted; [X] Remolded | Boring No.: TP2319/TP2334
Calculations Corr. for Salt (dissolved solids): [X] No or, [ ] Yes, with concentration = _____ ppm | Sample No.: Comp-AD

Consolidation Stress Summary and Loading Summary

Test Stage:	Max. Stress	Pre-Shear	Post Cyclic
Nominal Vertical Stress, σ'_v (ksf)	NA	12.96	NA
Axial/Vertical Force, $P_{vr,n}$ (lbf)	NA	NA	NA
Horizontal Force, $P_{hr,n}$ (lbf)	NA	0	NA
Nominal OCR	NA	NA	NA
t_c,(ON,days,hrs)	NA	0.75 days	NA

[X] Static Strain Rate = NA (%/hr or)
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 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	14.42			14.42	14.42	13.94
S_o	100.4			100.4	100.4	98.5

Measured final mass of moist soil, $M_{t,at}$ (g)	140.79
Final mass of moist soil corrected for excess dry soil, $M_{tat,c}$ (g)	140.79

Calculated Mass of Dry Soil (g)

Initial Selected Water Content (%)	14.42
Initial , $M_{d,o}$	123.20
Final, $M_{d,at}$	123.72
Selected, M_d	123.46

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)	12.960	NA	NA
Sign Convention: (+) ΔV out & ΔH down; (-) ΔV in & ΔH up			
Delta Def. Read., $\Delta d_{ar,n}$ (mm)	1.320		
Total Equip. Comp., $\Sigma\Delta d_{afc}$ (mm)	0.000		
Corr. Total Def. $\Delta H_{c,n}$ (mm)	1.320		
ΔV_n using A_o - spec. (cm^3)	4.58		
ΔV_n using $A_{c,n}$ - app. (cm^3)	4.58		
ΔV_n using burette meas.(cm^3)	2.30		
Selected ΔV_n (cm^3)	4.58	NA	NA = ΔV_{uL}
After Test WC Corr. for ΔV during Shear & Unloading, $W_{at,c}$ (%)			NA

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

Calculation of ΔV_c by Different Procedures

By Selected Volumes		By Change in Mass	
ΔV_c (cm^3)	4.58	~ $M_{t,o}$ - ($M_{tat,c}$ + ΔV_L + ΔV_{uL})	
By Cal. Height & App. Area		ΔV_c (cm^3)	0.18
ΔV_c (cm^3)	4.58	**By Saturation = 100% and**	
By Cal. Ht. & Init. Spec. Area		**Spec. Unloaded to 0 Stress**	
ΔV_c (cm^3)	4.58	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, $W_{c,bc}$ (%)	10.56
Back Cal.WC at Max. Stress, $W_{cmax,bc}$ (%)	NA

Consolidation & Preshear Conclusions							
	ΔV_c (cm^3) =	4.57	ΔH_c (mm) =	1.320	$\varepsilon_{a,c}$ (%) =	7.14	$\Delta V_{c,max}$ (cm^3) = NA
	V_c (cm^3) =	59.58	H_c (mm) =	17.180	$\varepsilon_{v,c}$ (%) =	7.12	$\varepsilon_{ac,max}$ (%)= 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 = 2.659 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)	18.500	64.15	34.68	14.2	137.2	120.2	99.4	0.382
After Consol.: to $\sigma'_{v,c}$	17.180	59.58	34.68	10.6	143.0	129.4	100.0	0.283
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. Calculated By: LF
& Note(s) 2 - Initial measured value corrected for applied stress. NA - Not Applicable Reviewed By: HP
3 - Uses measured value at appropriate stress level (NA for rings).

Remarks: t95 for max stress = 4.7 min

Project Number:	0411-08-1686	Test Type:	SDSS	Test Sta. No.:	10G	File Name:	_Comp-Ad
Project Name:	Exelon (Victoria)	Task No.:	NA	Test No.:	NA	Test Series for:	NA

[ ] Tube [ ] Field Extruded	[ ] Liner [X] Remolded	[X] Tamping	[ ] Constant Effort:		Blows/Tamps per Layer =	11
Boring No.: TP2319/TP2334	[ ] LPC Core	[ ] Impact/Rammer	Rammer Wgt.(lbf)=		No. Layers =	3.00
Sample No.: Comp-A	Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)=	4.00	Drop (in.) =	12.00
Depth (ft): NA	Specimen No.: D	[ ] Kneading	[X] Undercompaction:	U_{ni} (%) =	Dia. (in.) =	1.40
[ ] Spec. Selection by X-ray;	[ ] Geomarine Sample	[ ]	Ref. Effort= MOD	% Comp. = 95.0	± Opt.=	+4

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	[ ] Cyclic (Hz)	[ ] Strain [ ] Stress
	[ ] Dynamic	[ ] Stress	[ ] Post Cyclic	[ ] Drained	[ ] With - Bath	Rate: [ ] 0.1;	[ ] 1; Other:

Summary of Specimen Physical Properties

Specific Gravity: G_s = 2.659 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	18.50	64.15	34.68	14.18	137.2	120.2	99.4	34	46.4	0.382
After Consol.: to $\sigma'_{v,c}$	17.18	59.58	34.68	10.56	143.0	129.4	100.0	12	NA	0.283
to $\sigma'_{vc,max}$	NA	NA	NA	NA	NA	NA	NA	22	NA	NA

Consolidation Stress Summary and Loading Summary

Item	Unit	Max. Stress	Pre-Shear	Post Cyclic
Vert. Consol. Stress, $\sigma'_{v,c}$:	(ksf)	NA	12.890	NA
Induced OCR:	-	NA	NA	NA
Axial Strain during Consol., $\varepsilon_{a,c}$:	%	NA	7.14	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, τ_{ha}:	(ksf)	NA	NA	NA
Undr. Ambient Shear Strain, ε_{ha}:	%	NA	NA	NA

[X] Static Strain Rate = 4.7 %/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 corr. for M_{tc}: [X] Yes; [ ] No Plattens with Pins: [ ] Yes; [X] No

[ ] Wire Reinforced Membrane, Model:

[X] Regular Membrane with Rings

Data corr. for Membr. strength: [ ] Yes [X] No

Data Normalization: [X] Yes [ ] No Value: 12.890 (ksf)

Using Effective Vertical Stress:

[X] Pre-Shear Conditions [ ] Post-Cyclic Conditions

[ ] 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

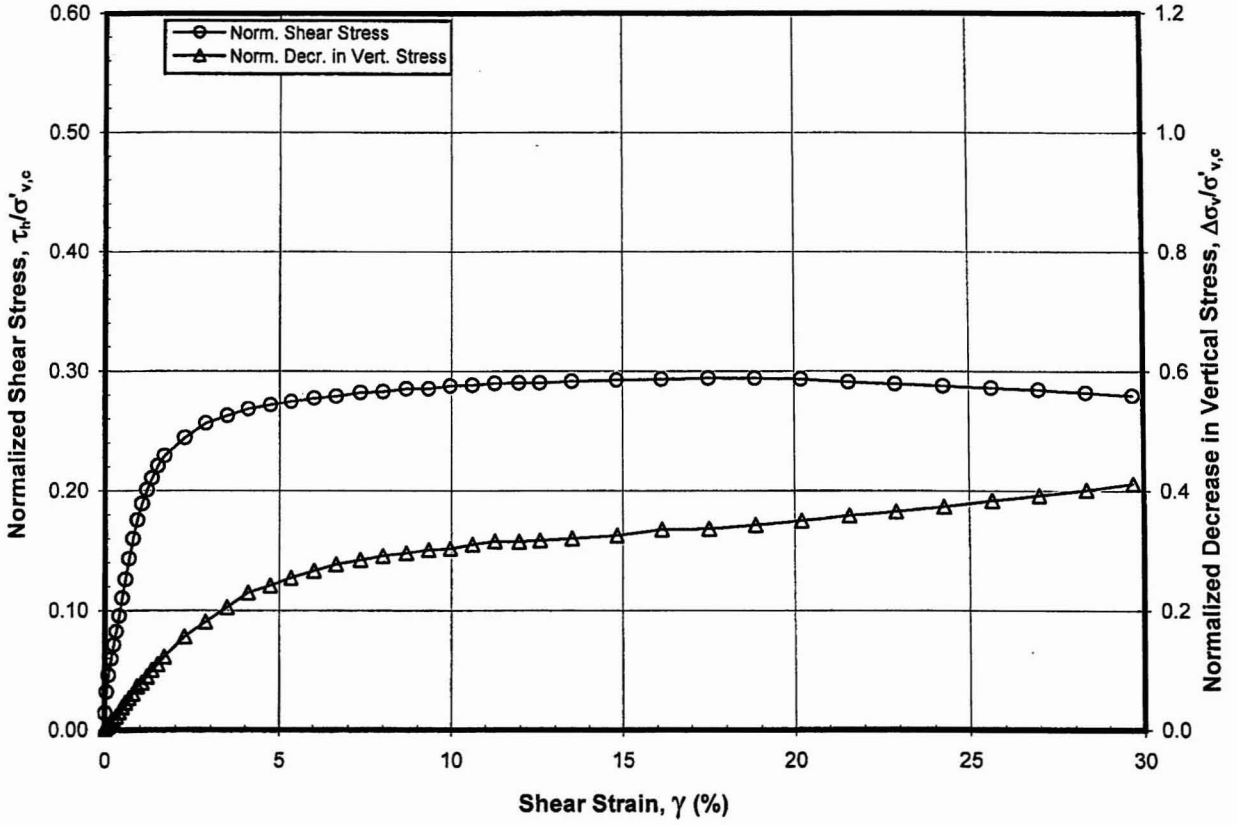
Final Visual Description and Remarks: Light Brown Clayey SAND (SC)

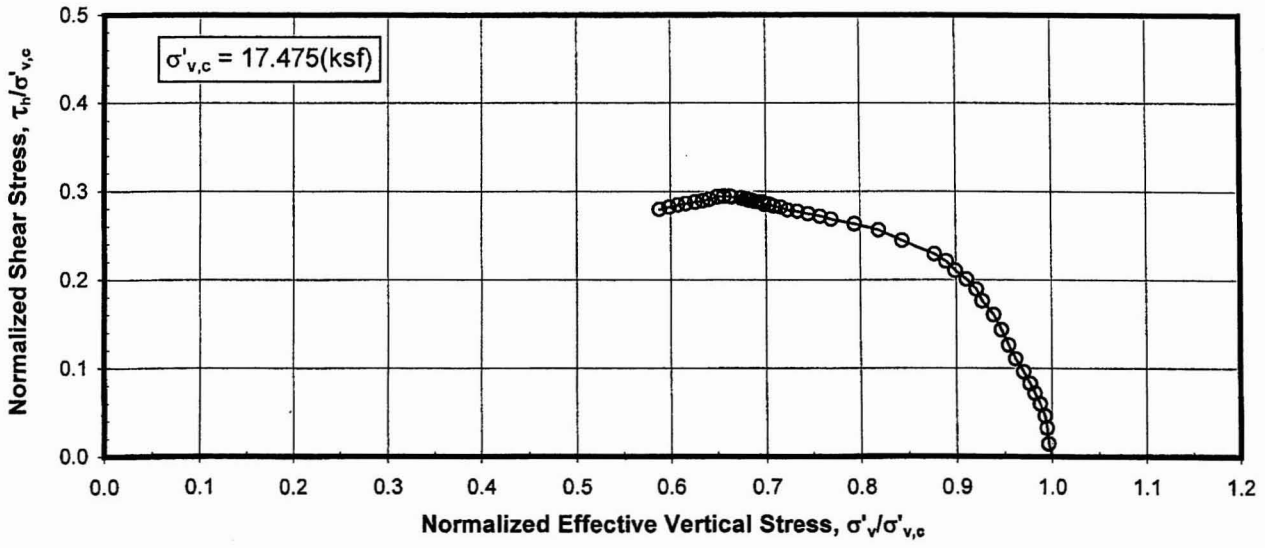
Loading Summary

	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	4.387	29.28	8.424	0.521	0.346	0.340
at Maximum Strain	4.387	29.28	8.424	0.521	0.346	-

Boring No.: TP2319/TP2334 Sample No.: Comp-AD

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	12.890	0.000	-	-	0.000	1.000	0.000	0.01
2.6	0.03	0.281	12.939	-0.049	813.581	735.071	0.022	1.004	-0.004	1.24
5.3	0.09	0.660	12.935	-0.046	714.979	515.239	0.051	1.004	-0.004	2.92
8.0	0.17	0.952	12.852	0.038	558.171	336.417	0.074	0.997	0.003	4.24
10.7	0.25	1.182	12.729	0.161	477.525	257.928	0.092	0.988	0.012	5.31
13.3	0.33	1.372	12.607	0.283	409.286	214.951	0.106	0.978	0.022	6.21
16.0	0.43	1.565	12.480	0.410	367.506	211.053	0.121	0.968	0.032	7.15
18.7	0.52	1.767	12.327	0.563	338.225	205.001	0.137	0.956	0.044	8.16
21.3	0.63	1.989	12.182	0.708	314.163	196.285	0.154	0.945	0.055	9.27
24.0	0.76	2.234	12.001	0.889	293.612	173.333	0.173	0.931	0.069	10.54
26.6	0.89	2.429	11.801	1.089	273.923	138.700	0.188	0.915	0.085	11.63
29.3	1.03	2.601	11.597	1.293	253.124	112.740	0.202	0.900	0.100	12.64
32.0	1.18	2.761	11.407	1.483	233.423	95.164	0.214	0.885	0.115	13.61
34.7	1.35	2.905	11.208	1.682	215.537	81.194	0.225	0.870	0.130	14.53
37.3	1.52	3.037	10.997	1.893	199.287	63.924	0.236	0.853	0.147	15.44
40.0	1.72	3.142	10.810	2.080	182.438	47.255	0.244	0.839	0.161	16.21
42.6	1.92	3.227	10.596	2.294	167.531	37.212	0.250	0.822	0.178	16.94
45.3	2.12	3.291	10.418	2.472	155.071	29.475	0.255	0.808	0.192	17.53
53.3	2.72	3.449	9.978	2.912	126.590	20.873	0.268	0.774	0.226	19.07
61.3	3.38	3.551	9.578	3.312	104.994	14.445	0.275	0.743	0.257	20.34
69.3	4.00	3.634	9.288	3.602	90.809	12.534	0.282	0.721	0.279	21.37
77.3	4.67	3.712	9.059	3.831	79.511	9.069	0.288	0.703	0.297	22.28
85.3	5.29	3.752	8.903	3.987	70.933	8.836	0.291	0.691	0.309	22.85
93.3	5.96	3.827	8.816	4.074	64.206	8.290	0.297	0.684	0.316	23.46
101.3	6.61	3.862	8.743	4.146	58.391	6.792	0.300	0.678	0.322	23.83
109.2	7.26	3.916	8.719	4.171	53.881	5.390	0.304	0.676	0.324	24.18
117.2	7.93	3.933	8.679	4.211	49.549	5.044	0.305	0.673	0.327	24.38
125.2	8.58	3.981	8.687	4.203	46.379	5.241	0.309	0.674	0.326	24.62
133.2	9.26	4.002	8.690	4.200	43.175	4.558	0.310	0.674	0.326	24.73
141.2	9.88	4.040	8.699	4.190	40.848	5.604	0.313	0.675	0.325	24.91
149.2	10.56	4.074	8.712	4.177	38.548	4.524	0.316	0.676	0.324	25.06
157.2	11.19	4.099	8.741	4.149	36.619	4.524	0.318	0.678	0.322	25.12
165.2	11.87	4.134	8.770	4.120	34.803	2.615	0.321	0.680	0.320	25.24
173.2	12.51	4.135	8.770	4.120	33.039	1.867	0.321	0.680	0.320	25.24
183.8	13.41	4.167	8.817	4.073	31.064	2.853	0.323	0.684	0.316	25.30
199.8	14.69	4.194	8.852	4.038	28.534	1.097	0.325	0.687	0.313	25.35
215.8	15.99	4.195	8.847	4.043	26.219	0.183	0.325	0.686	0.314	25.37
231.7	17.28	4.199	8.856	4.034	24.280	0.001	0.326	0.687	0.313	25.37
247.7	18.61	4.195	8.865	4.025	22.534	-0.225	0.325	0.688	0.312	25.32
263.7	19.93	4.193	8.856	4.034	21.032	-0.002	0.325	0.687	0.313	25.34
279.7	21.27	4.195	8.811	4.079	19.711	0.427	0.325	0.684	0.316	25.46
295.7	22.61	4.204	8.788	4.102	18.585	-0.067	0.326	0.682	0.318	25.57
311.6	23.96	4.193	8.730	4.160	17.488	0.548	0.325	0.677	0.323	25.66
327.6	25.32	4.219	8.660	4.229	16.654	3.481	0.327	0.672	0.328	25.98
343.6	26.64	4.286	8.594	4.296	16.077	6.002	0.333	0.667	0.333	26.51
359.6	27.94	4.377	8.532	4.358	15.653	3.870	0.340	0.662	0.338	27.16
375.5	29.28	4.387	8.424	4.466	14.974	0.775	0.340	0.654	0.346	27.51





STATIC DSS TEST

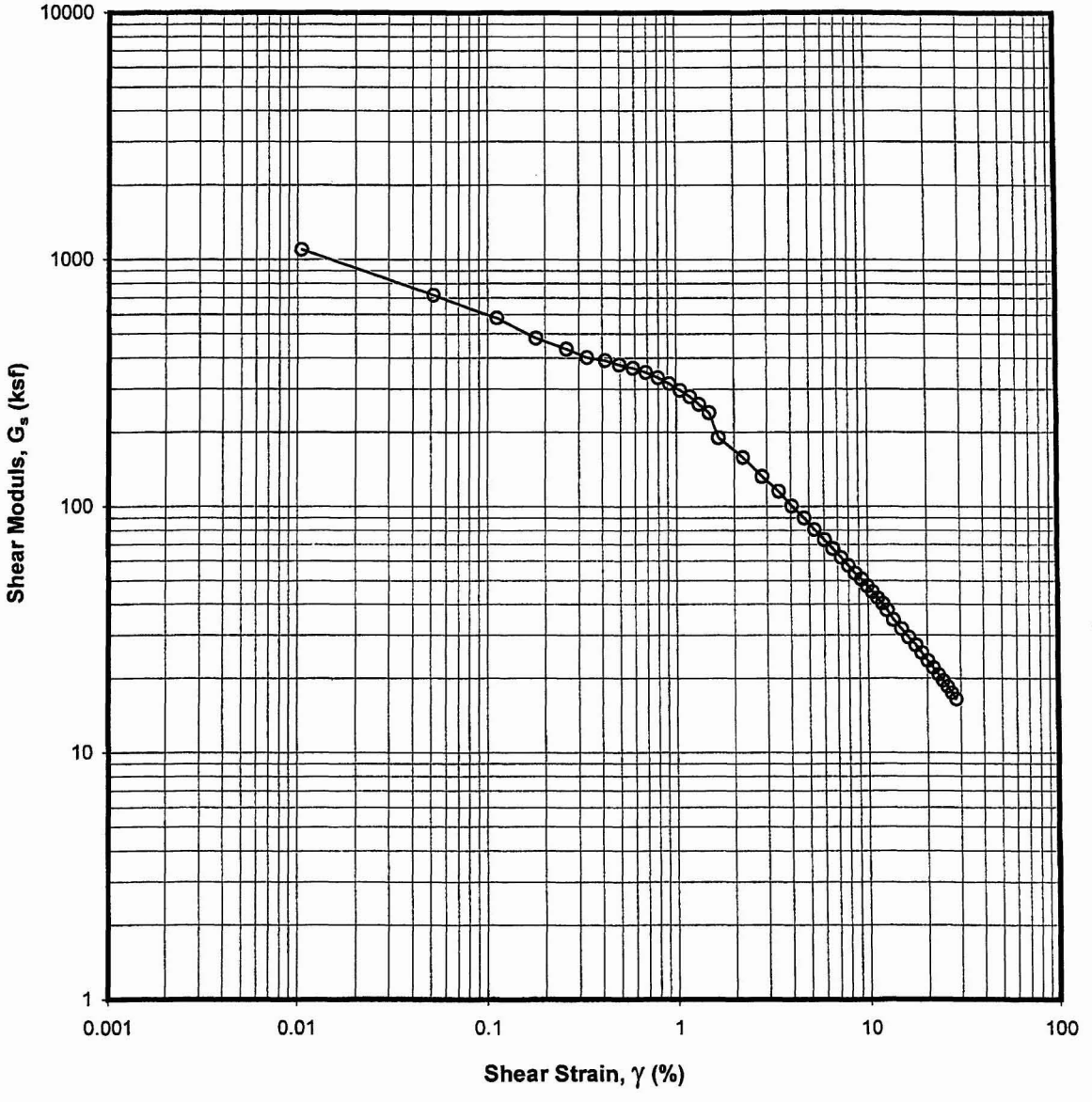
K_o Consolidation - OCR = NA

Sample: Comp-AE - Depth: NA ft

Boring TP2319/TP2334

Exelon (Victoria)

KAW 7/16/08



STATIC DSS TEST

K_o Consolidation - OCR = NA

Sample: Comp-AE - Depth: NA ft

Boring TP2319/TP2334

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.: 9G | File Name: _Comp-Ae
Task No.: NA | Assign, $\sigma'_{v,c}$ = 17.28 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: 2.659 [X] Meas.; [ ] Assumed

[ ] Tube [ ] Field Extruded	[ ] Liner [X] Remolded	[X] Tamping	[ ] Constant Effort:	Blows/Tamps per Layer =	11
Boring No.: TP2319/TP2334	[ ] LPC Core	[ ] Impact/Rammer	Rammer Wgt.(lbf)=	No. Layers =	3.00
Sample No.: Comp-A	Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)= 4.00	Drop (in.) =	12.00
Depth (ft): NA	Specimen No.: E	[ ] Kneading	[X] Undercompaction: U_{ni} (%) =	Dia. (in.) =	1.40
[ ] Spec. Selection by X-ray;	[ ] Geomarine Sample		Ref. Effort= MOD	% Comp. = 95.0	± Opt.= +4

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)	[ ] Strain [ ] Stress	Rate: [ ] 0.1; [X] 1; Other:			

Water Content (WC);	Initial - Trimming Location: Top ($W_{o,1}$)	Bottom ($W_{o,2}$)	Sides ($W_{o,3}$)	Final, W_{at} (see below)
Container No.	1122			4247
Mass Moist Soil + Cont. (g)	127.19			66.89
Mass Dry Soil + Container (g)	115.22			62.46
Mass Container (g)	31.67			30.14
WATER CONTENT (%)	14.33			13.71
Avg. Initial WC, $W_{o,avg}$ (%)	14.33	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)	328.08	145.13
Mass Tare (g)	186.80	4.49
Mass Moist Soil, $M_{t,o}$ $M_{t,at}$ (g)	141.28	140.64
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 | NL3 | Large-ring ID #
[X] Trimming Ring for NGI Apparatus | | Small-ring ID #

$H_{s,t}$ (mm):	18.48	$A_{s,t}$ (cm^2):	34.87
$D_{s,t}$ (mm):	66.63	$V_{s,t}$ (cm^3):	64.42

Remarks:

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

	Height (H_{tr})	Diameter (D_o)		Remarks:
1	18.520	1-T	NA	
2	18.490	2-M	NA	
3	18.460	3-B	NA	
4	18.480	1'-T	NA	For Free Standing
5	18.450	2'-M	NA	or Reconstituted Spec.:
	Avg.	3'-B	NA	A_{tr} (cm^2): NA
=	18.475	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)= 136.90 | Dry, $\gamma_{d,o}$ (lb/ft^3)= 119.75

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: 0.62 , | = 67.27
[ ] Single Bottom: 0.65 , | Corr. for mem.
[X] Double Membr. Thick. = 0.32 | = 66.630
Area Ring with mem., A_o (cm^2)= 34.87 ; (in^2)= 5.405
Mass Top Cap, etc., M_{tc} = 527.2 g, 1.16 lbf
Data corr. for M_{tc}: [X] Yes; [ ] No | Platten with Pins: [ ] Yes; [X] No

Final Visual Description: Light Brown Clayey SAND (SC)

Other Remarks :

Trim./ Recon. By: DBN | Setup By: AW | Take Down By: AW
Date: 4/25/2008 | Date: 4/25/2008 | Date: 4/25/2008
Prelim. Calc. By: LF | 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 6/13/08

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

Project Number: 0411-08-1686 | Test Station No.: 9G | File Name: _Comp-Ae
Task Number: NA | Specific Gravity: 2.659 [X] Measured; [ ] Assumed
Type Test: SDSS | Specimen: [ ] "Undisturbed"; [X] Reconstituted; [X] Remolded | Boring No.: TP2319/TP2334
Calculations Corr. for Salt (dissolved solids): [X] No or, [ ] Yes, with concentration = _____ ppm | Sample No.: Comp-AE

Consolidation Stress Summary and Loading Summary

Test Stage:	Max. Stress	Pre-Shear	Post Cyclic
Nominal Vertical Stress, σ'_v (ksf)	NA	17.28	NA
Axial/Vertical Force, $P_{vr,n}$ (lbf)	NA	NA	NA
Horizontal Force, $P_{hr,n}$ (lbf)	NA	0	NA
Nominal OCR	NA	NA	NA
t_c,(ON,days,hrs)	NA	1.73 days	NA

[X] Static Strain Rate = NA (%/hr or)
Cyclic Rate (Hz): [ ] 0.1; [X] 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 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	14.33			14.33	14.33	14.22
S_o	99.3			99.3	99.3	98.9

Measured final mass of moist soil, $M_{t,at}$ (g)	140.64
Final mass of moist soil corrected for excess dry soil, $M_{tat,c}$ (g)	140.64

Calculated Mass of Dry Soil (g)

Initial Selected Water Content (%)	14.33
Initial , $M_{d,o}$	123.57
Final, $M_{d,at}$	123.69
Selected, M_d	123.63

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)	17.280	NA	NA
Sign Convention: (+) ΔV out & ΔH down; (-) ΔV in & ΔH up			
Delta Def. Read., $\Delta d_{ar,n}$ (mm)	1.384		
Total Equip. Comp., $\Sigma\Delta d_{afc}$ (mm)	0.000		
Corr. Total Def. $\Delta H_{c,n}$ (mm)	1.384		
ΔV_n using A_o - spec. (cm^3)	4.83		
ΔV_n using $A_{c,n}$ - app. (cm^3)	4.83		
ΔV_n using burette meas.(cm^3)	2.10		
Selected ΔV_n (cm^3)	4.83	NA	NA = ΔV_{uL}
After Test WC Corr. for ΔV during Shear & Unloading, $W_{at,c}$ (%)			NA

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

Calculation of ΔV_c by Different Procedures

By Selected Volumes		By Change in Mass	
ΔV_c (cm^3)	4.83	~ $M_{t,o}$ - ($M_{tat,c}$ + ΔV_L + ΔV_{uL})	
By Cal. Height & App. Area		ΔV_c (cm^3)	0.64
ΔV_c (cm^3)	4.83	**By Saturation = 100% and**	
By Cal. Ht. & Init. Spec. Area		**Spec. Unloaded to 0 Stress**	
ΔV_c (cm^3)	4.83	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, $W_{c,bc}$ (%)	10.51
Back Cal.WC at Max. Stress, $W_{cmax,bc}$ (%)	NA

Consolidation & Preshear Conclusions							
	ΔV_c (cm^3) =	4.83	ΔH_c (mm) =	1.384	$\varepsilon_{a,c}$ (%) =	7.49	$\Delta V_{c,max}$ (cm^3) = NA
	V_c (cm^3) =	59.59	H_c (mm) =	17.091	$\varepsilon_{v,c}$ (%) =	7.50	$\varepsilon_{ac,max}$ (%)= NA
	A_c (cm^2) =	34.87	$\Delta\gamma_c$ (mm) =	NA	γ_c (%) =	NA	Preshear: γ_{ua} (%)= NA

Summary of Specimen Physical Properties:

Specific Gravity: G_s = 2.659 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)	18.475	64.42	34.87	14.3	136.9	119.8	99.1	0.386
After to $\sigma'_{v,c}$	17.091	59.59	34.87	10.5	143.1	129.5	100.0	0.282
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 = 144.5 min

Project Number:	0411-08-1686	Test Type: SDSS	Test Sta. No.: 9G	File Name:	_Comp-Ae
Project Name:	Exelon (Victoria)	Task No.: NA	Test No.: NA	Test Series for:	NA

[ ] Tube [ ] Field Extruded	[ ] Liner [X] Remolded	[X] Tamping	[ ] Constant Effort:	Blows/Tamps per Layer =	11
Boring No.: TP2319/TP2334	[ ] LPC Core	[ ] Impact/Rammer	Rammer Wgt.(lbf)=	No. Layers =	3.00
Sample No.: Comp-A	Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)= 4.00	Drop (in.) =	12.00
Depth (ft): NA	Specimen No.: E	[ ] Kneading	[X] Undercompaction: U_{ni} (%) =	Dia. (in.) =	1.40
[ ] Spec. Selection by X-ray;	[ ] Geomarine Sample		Ref. Effort= MOD	% Comp. = 95.0	± Opt.= +4

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	[ ] Cyclic (Hz)		[ ] Strain	[ ] Stress
	[ ] Dynamic	[ ] Stress	[ ] Post Cyclic	[ ] Drained	[ ] With - Bath	Rate: [ ] 0.1;	[X] 1; Other:		

Summary of Specimen Physical Properties

Specific Gravity: G_s = 2.659 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	18.48	64.42	34.87	14.28	136.9	119.8	99.1	34	46.4	0.386
After Consol.: to $\sigma'_{v,c}$	17.09	59.59	34.87	10.51	143.1	129.5	100.0	12	NA	0.282
to $\sigma'_{vc,max}$	NA	NA	NA	NA	NA	NA	NA	22	NA	NA

Consolidation Stress Summary and Loading Summary

Item	Unit	Max. Stress	Pre-Shear	Post Cyclic
Vert. Consol. Stress, $\sigma'_{v,c}$:	(ksf)	NA	17.475	NA
Induced OCR:	-	NA	NA	NA
Axial Strain during Consol., $\varepsilon_{a,c}$:	%	NA	7.49	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; [X] 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 corr. for M_{tc}: [X] Yes; [ ] No
Plattens with Pins: [ ] Yes; [X] No
[ ] Wire Reinforced Membrane, Model:
[X] Regular Membrane with Rings
Data corr. for Membr. strength: [ ] Yes [X] No

Data Normalization: [X] Yes [ ] No Value: 17.475 (ksf)
Using Effective Vertical Stress:
[X] Pre-Shear Conditions [ ] Post-Cyclic Conditions
[ ] 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

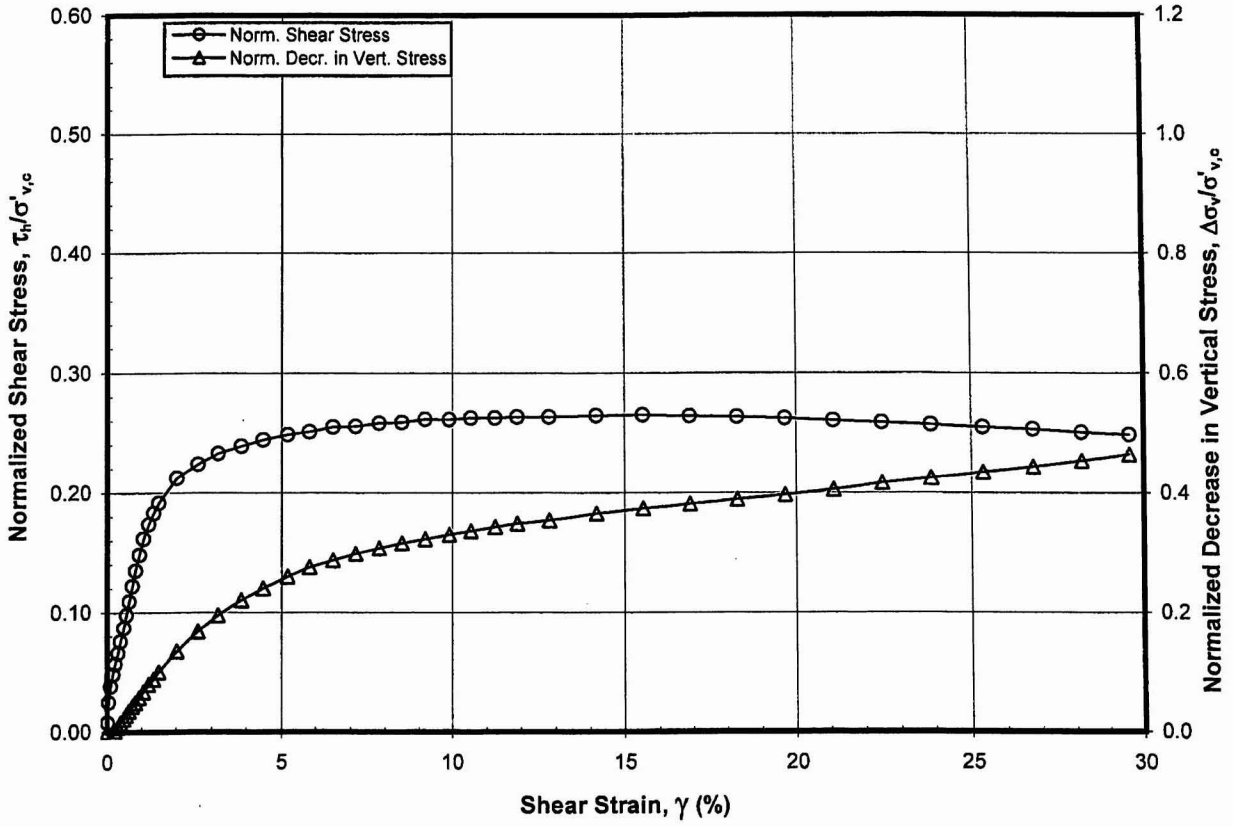
Final Visual Description and Remarks: Light Brown Clayey SAND (SC)

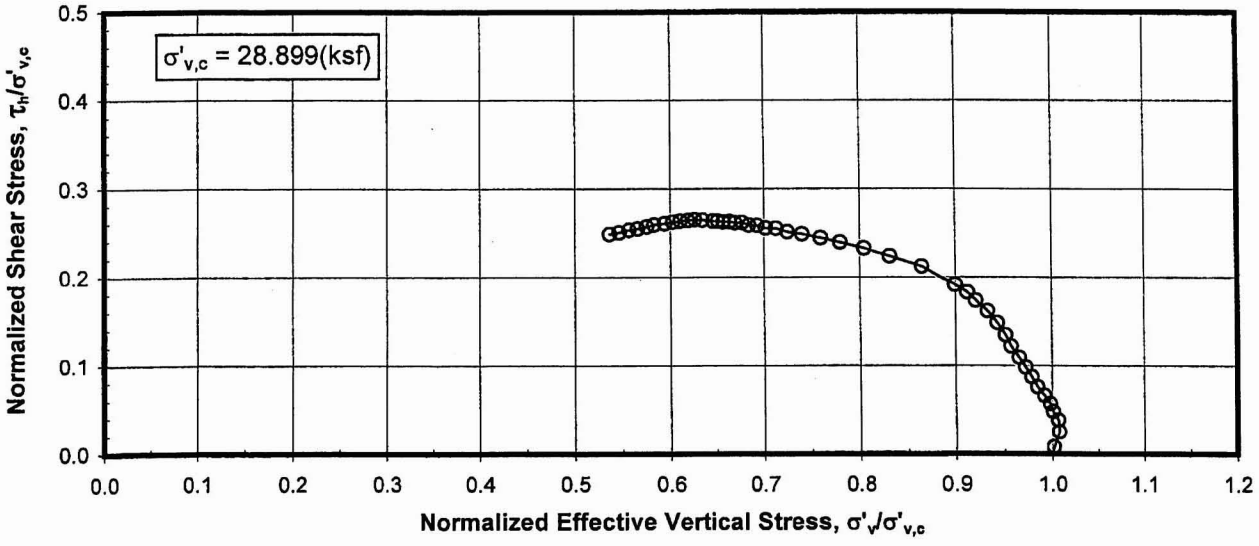
Loading Summary

	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	5.139	18.84	11.484	0.447	0.343	0.294
at Maximum Strain	4.885	29.70	10.286	0.475	0.411	-

Boring No.: TP2319/TP2334 Sample No.: Comp-AE

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	-0.003	17.475	0.000	-	-	0.000	1.000	0.000	-0.01
2.7	0.01	0.248	17.416	0.059	2395.745	1578.678	0.014	0.997	0.003	0.82
5.4	0.05	0.561	17.388	0.087	1094.502	579.540	0.032	0.995	0.005	1.85
8.0	0.11	0.802	17.354	0.121	717.576	372.143	0.046	0.993	0.007	2.65
10.7	0.18	1.038	17.264	0.211	577.910	303.285	0.059	0.988	0.012	3.44
13.4	0.26	1.245	17.169	0.306	480.052	262.397	0.071	0.983	0.017	4.15
16.1	0.33	1.438	17.080	0.395	433.030	270.170	0.082	0.977	0.023	4.81
18.8	0.42	1.670	16.963	0.512	401.248	301.205	0.096	0.971	0.029	5.62
21.4	0.50	1.929	16.816	0.659	389.398	311.436	0.110	0.962	0.038	6.54
24.1	0.59	2.198	16.685	0.790	374.898	295.813	0.126	0.955	0.045	7.50
26.8	0.69	2.500	16.552	0.923	363.196	279.849	0.143	0.947	0.053	8.59
29.5	0.80	2.794	16.412	1.063	349.362	242.112	0.160	0.939	0.061	9.66
32.1	0.92	3.065	16.203	1.272	332.197	201.834	0.175	0.927	0.073	10.71
34.8	1.05	3.302	16.101	1.374	313.900	165.689	0.189	0.921	0.079	11.59
37.5	1.19	3.501	15.921	1.554	295.178	137.446	0.200	0.911	0.089	12.40
40.2	1.32	3.675	15.722	1.753	277.655	118.320	0.210	0.900	0.100	13.16
42.9	1.49	3.856	15.559	1.916	259.157	94.571	0.221	0.890	0.110	13.92
45.5	1.67	4.000	15.345	2.130	239.541	62.863	0.229	0.878	0.122	14.61
53.6	2.25	4.268	14.756	2.719	190.078	40.650	0.244	0.844	0.156	16.13
61.6	2.84	4.475	14.320	3.155	157.644	26.415	0.256	0.819	0.181	17.35
69.6	3.48	4.589	13.888	3.587	132.005	17.057	0.263	0.795	0.205	18.29
77.6	4.08	4.687	13.461	4.013	114.902	12.499	0.268	0.770	0.230	19.20
85.7	4.74	4.745	13.254	4.221	100.202	8.269	0.272	0.758	0.242	19.70
93.7	5.35	4.792	13.035	4.440	89.567	7.790	0.274	0.746	0.254	20.19
101.7	6.03	4.845	12.829	4.646	80.427	6.085	0.277	0.734	0.266	20.69
109.8	6.66	4.872	12.644	4.830	73.187	6.125	0.279	0.724	0.276	21.07
117.8	7.35	4.927	12.513	4.962	67.119	5.189	0.282	0.716	0.284	21.49
125.8	8.00	4.943	12.384	5.091	61.798	4.282	0.283	0.709	0.291	21.76
133.8	8.67	4.984	12.304	5.171	57.522	3.208	0.285	0.704	0.296	22.05
141.9	9.33	4.985	12.213	5.262	53.477	3.491	0.285	0.699	0.301	22.21
149.9	9.96	5.028	12.174	5.301	50.513	3.924	0.288	0.697	0.303	22.44
157.9	10.63	5.035	12.053	5.422	47.420	2.741	0.288	0.690	0.310	22.67
166.0	11.27	5.064	11.956	5.518	44.944	2.412	0.290	0.684	0.316	22.95
174.0	11.97	5.067	11.970	5.505	42.356	0.150	0.290	0.685	0.315	22.94
181.5	12.58	5.066	11.927	5.548	40.290	1.221	0.290	0.683	0.317	23.01
192.2	13.50	5.090	11.877	5.598	37.728	2.003	0.291	0.680	0.320	23.20
208.3	14.82	5.108	11.794	5.681	34.486	1.323	0.292	0.675	0.325	23.42
224.3	16.15	5.125	11.613	5.861	31.747	1.118	0.293	0.665	0.335	23.81
240.4	17.52	5.138	11.593	5.882	29.355	0.518	0.294	0.663	0.337	23.90
256.4	18.84	5.139	11.484	5.991	27.290	-0.499	0.294	0.657	0.343	24.11
272.5	20.20	5.125	11.365	6.110	25.385	-2.088	0.293	0.650	0.350	24.27
288.5	21.58	5.081	11.216	6.259	23.559	-2.660	0.291	0.642	0.358	24.37
304.6	22.94	5.052	11.093	6.382	22.040	-2.023	0.289	0.635	0.365	24.49
320.6	24.29	5.027	10.949	6.526	20.705	-1.965	0.288	0.627	0.373	24.66
336.7	25.65	4.999	10.776	6.699	19.500	-2.092	0.286	0.617	0.383	24.88
352.7	27.00	4.970	10.631	6.844	18.417	-2.632	0.284	0.608	0.392	25.06
368.8	28.35	4.927	10.467	7.008	17.389	-3.169	0.282	0.599	0.401	25.21
384.8	29.70	4.885	10.286	7.188	16.459	-3.184	0.280	0.589	0.411	25.40





STATIC DSS TEST

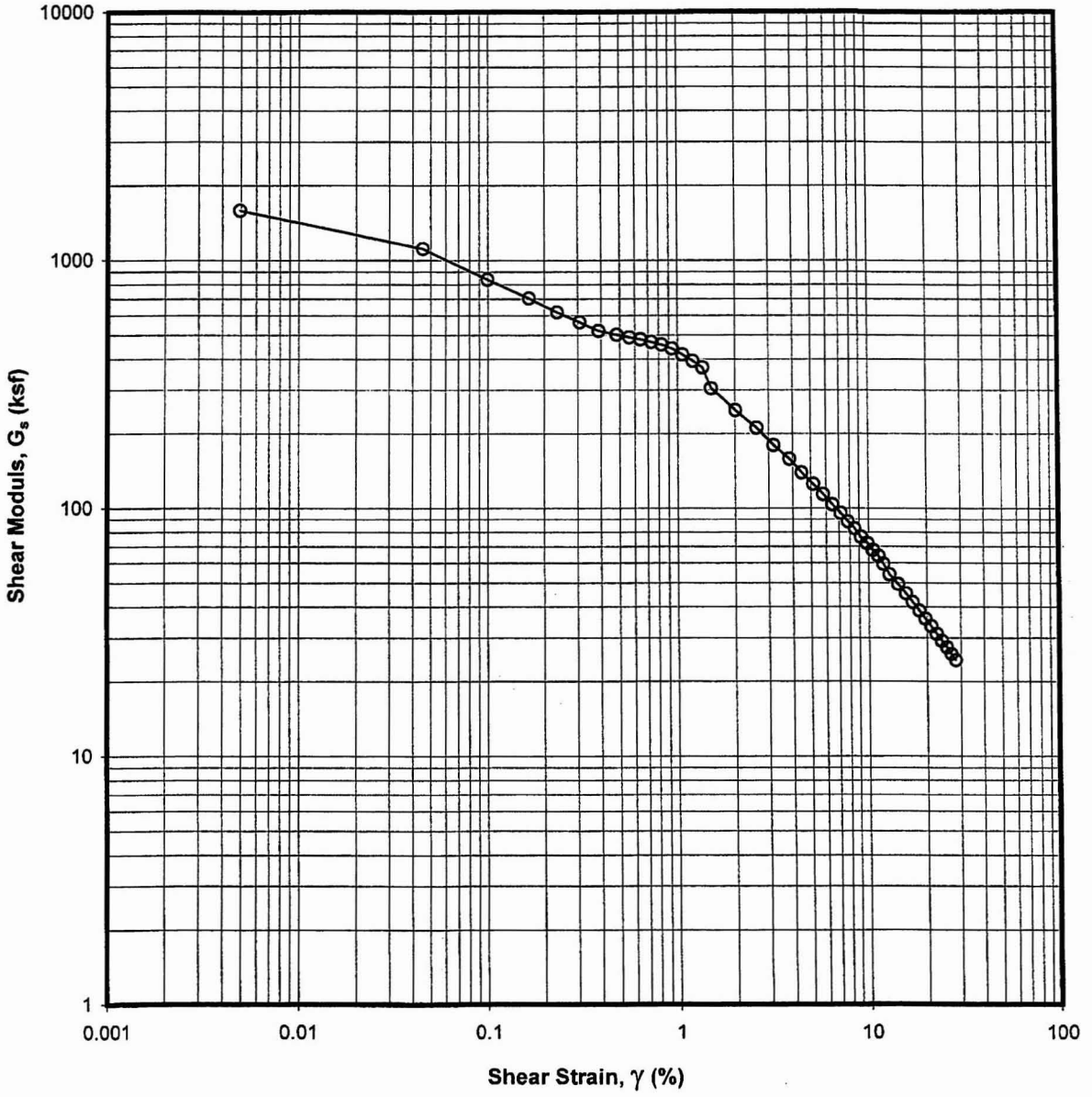
K_o Consolidation - OCR = NA

Sample: Comp-AF - Depth: NA ft

Boring TP2319/TP2334

Exelon (Victoria)

KAW 7/16/08



STATIC DSS TEST

K_o Consolidation - OCR = NA

Sample: Comp-AF - Depth: NA ft

Boring TP2319/TP2334

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.: 10G | File Name: _Comp-Af
Task No.: NA | Assign, $\sigma'_{v,c}$ = 28.80 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: 2.659 [X] Meas.; [ ] Assumed

[ ] Tube [ ] Field Extruded	[ ] Liner [X] Remolded	[X] Tamping	[ ] Constant Effort:	Blows/Tamps per Layer =	11
Boring No.: TP2319/TP2334	[ ] LPC Core	[ ] Impact/Rammer	Rammer Wgt.(lbf)=	No. Layers =	3.00
Sample No.: Comp-A	Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)= 4.00	Drop (in.) =	12.00
Depth (ft): NA	Specimen No.: F	[ ] Kneading	[X] Undercompaction:	U_{ni} (%) =	Dia. (in.) = 1.40
[ ] Spec. Selection by X-ray;	[ ] Geomarine Sample		Ref. Effort= MOD	% Comp. = 95.0	± Opt.= +4

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}	Soil and Ring Masses	Initial	Final
	Top ($W_{o,1}$)	Bottom ($W_{o,2}$)	Sides ($W_{o,3}$)	(see below)	Mass Moist Soil + Tare (g)	324.09	144.00
Container No.	1134			4155	Mass Tare (g)	183.31	4.66
Mass Moist Soil + Cont. (g)	134.34			76.52	Mass Moist Soil, $M_{t,o}$ $Mt_{,at}$ (g)	140.78	139.34
Mass Dry Soil + Container (g)	121.57			71.12	Excess Dry Soil (soil not included in final mass above)		
Mass Container (g)	31.67			29.96	Container No.		
WATER CONTENT (%)	14.20			13.12	Mass Dry Soil + Container (g)		
Avg. Initial WC, $W_{o,avg}$ (%)	14.20	Final W_{at}: [X] Slice ; [ ] Whole Spec.			Mass Container (g)		
[ ] See attached data sheet(s) for additional water contents					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):	18.53	$A_{s,t}$ (cm^2):	34.68
$D_{s,t}$ (mm) :	66.45	$V_{s,t}$ (cm^3):	64.24

Remarks:

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

	Height (H_{tr})	Diameter (D_o)		Remarks:
1	18.550	1-T	NA	
2	18.510	2-M	NA	
3	18.550	3-B	NA	
4	18.490	1'-T	NA	For Free Standing
5	18.530	2'-M	NA	or Reconstituted Spec.:
	Avg.	3'-B	NA	A_{tr} (cm^2): NA
=	18.525	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)=	136.82	Dry, $\gamma_{d,o}$ (lb/ft^3)=	119.80

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. 10 | ID, Rings (mm)
Thickness (mm): Top: 0.67 , = 67.13
[ ] Single Bottom: 0.68 , Corr. for mem.
[X] Double Membr. Thick. = 0.34 = 66.450
Area Ring with mem., A_o: (cm^2)= 34.68 ; (in^2)= 5.375
Mass Top Cap, etc., M_{tc} = 528.2 g, 1.16 lbf
Data corr. for M_{tc}: [X] Yes; [ ] No Plattens with Pins: [ ] Yes; [X] No

Final Visual Description: Light Brown Clayey SAND (SC)

Other Remarks :

Trim./ Recon. By: DBN | Setup By: HC | Take Down By: HC
Date: 4/25/2008 | Date: 4/25/2008 | Date: 4/27/2008
Prelim. Calc. By: LF | Final Calc. By: LF | Reviewed By: HP HP
Specimen Take Down: [X] Spec. removed right after shearing | Remarks:
[ ] Spec. unloaded to zero stress with access to water

KAW 6/13/08

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

Project Number: 0411-08-1686 | Test Station No.: 10G | File Name: _Comp-Af

Task Number: NA | Specific Gravity: 2.659 [X] Measured; [ ] Assumed

Type Test: SDSS | Specimen: [ ] "Undisturbed"; [X] Reconstituted; [X] Remolded | Boring No.: TP2319/TP2334

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

Consolidation Stress Summary and Loading Summary

Test Stage:	Max. Stress	Pre-Shear	Post Cyclic
Nominal Vertical Stress, σ'_v (ksf)	NA	28.8	NA
Axial/Vertical Force, $P_{vr,n}$ (lbf)	NA	NA	NA
Horizontal Force, $P_{hr,n}$ (lbf)	NA	0	NA
Nominal OCR	NA	NA	NA
t_c,(ON,days,hrs)	NA	1.66 days	NA

[X] Static Strain Rate = NA (%/hr or)

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 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	14.20			14.20	14.20	14.29
S_o	98.6			98.6	98.6	98.9

Measured final mass of moist soil, $M_{t,at}$ (g)	139.34
Final mass of moist soil corrected for excess dry soil, $M_{tat,c}$ (g)	139.34

Calculated Mass of Dry Soil (g)

Initial Selected Water Content (%)	14.20
Initial , $M_{d,o}$	123.27
Final, $M_{d,at}$	123.18
Selected, M_d	123.23

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)	28.800	NA	NA
Sign Convention: (+) ΔV out & ΔH down; (-) ΔV in & ΔH up			
Delta Def. Read., $\Delta d_{ar,n}$ (mm)	2.040		
Total Equip. Comp., $\Sigma\Delta d_{afc}$ (mm)	0.000		
Corr. Total Def. $\Delta H_{c,n}$ (mm)	2.040		
ΔV_n using A_o - spec. (cm^3)	7.07		
ΔV_n using $A_{c,n}$ - app. (cm^3)	7.07		
ΔV_n using burette meas.(cm^3)	4.20		
Selected ΔV_n (cm^3)	7.07	NA	NA = ΔV_{uL}
After Test WC Corr. for ΔV during Shear & Unloading, $W_{at,c}$ (%)			NA

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

Calculation of ΔV_c by Different Procedures

By Selected Volumes		By Change in Mass	
ΔV_c (cm^3)	7.07	~ $M_{t,o}$ - ($M_{tat,c}$ + ΔV_L + ΔV_{uL})	
By Cal. Height & App. Area		ΔV_c (cm^3)	1.44
ΔV_c (cm^3)	7.07	**By Saturation = 100% and**	
By Cal. Ht. & Init. Spec. Area		**Spec. Unloaded to 0 Stress**	
ΔV_c (cm^3)	7.07	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, $W_{c,bc}$ (%)	8.70
Back Cal.WC at Max. Stress, $W_{cmax,bc}$ (%)	NA

Consolidation & Preshear Conclusions							
	ΔV_c (cm^3) =	7.07	ΔH_c (mm) =	2.040	$\varepsilon_{a,c}$ (%) =	11.01	$\Delta V_{c,max}$ (cm^3) = NA
	V_c (cm^3) =	57.17	H_c (mm) =	16.485	$\varepsilon_{v,c}$ (%) =	11.00	$\varepsilon_{ac,max}$ (%)= 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 = 2.659 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)	18.525	64.24	34.68	14.2	136.8	119.8	98.7	0.386
After Consol.: to $\sigma'_{v,c}$	16.485	57.17	34.68	8.7	146.3	134.6	100.0	0.233
to $\sigma'_{vc,max}$	NA	NA	NA	NA	NA	NA	NA	NA

LCA-Method & Note(s): 1- Initial measured value remains constant. 2 - Initial measured value corrected for applied stress. 3 - Uses measured value at appropriate stress level (NA for rings). 4 - Based on change in height & volume. NA - Not Applicable

Calculated By: LF

Reviewed By: HP HP

Remarks: t95 for max stress = 209.9 min

Project Number:	0411-08-1686	Test Type:	SDSS	Test Sta. No.:	10G	File Name:	_Comp-Af
Project Name:	Exelon (Victoria)	Task No.:	NA	Test No.:	NA	Test Series for:	NA

[ ] Tube [ ] Field Extruded	[ ] Liner [X] Remolded	[X] Tamping	[ ] Constant Effort:	Blows/Tamps per Layer =	11
Boring No.: TP2319/TP2334	[ ] LPC Core	[ ] Impact/Rammer	Rammer Wgt.(lbf)=		No. Layers =	3.00
Sample No.: Comp-A	Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)=	4.00	Drop (in.) =	12.00
Depth (ft): NA	Specimen No.: F	[ ] Kneading	[X] Undercompaction:	U_{ni} (%) =	Dia. (in.) =	1.40
[ ] Spec. Selection by X-ray;	[ ] Geomarine Sample		Ref. Effort= MOD	% Comp. = 95.0	± Opt.=	+4

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;	[ ] Strain [ ] Stress [ ] 1; Other:

Summary of Specimen Physical Properties

Specific Gravity: G_s = 2.659 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	18.53	64.24	34.68	14.24	136.8	119.8	98.7	34	46.4	0.386
After Consol.: to $\sigma'_{v,c}$	16.49	57.17	34.68	8.70	146.3	134.6	100.0	12	NA	0.233
After Consol.: to $\sigma'_{vc,max}$	NA	NA	NA	NA	NA	NA	NA	22	NA	NA

Consolidation Stress Summary and Loading Summary

Item	Unit	Max. Stress	Pre-Shear	Post Cyclic
Vert. Consol. Stress, $\sigma'_{v,c}$:	(ksf)	NA	28.899	NA
Induced OCR:	-	NA	NA	NA
Axial Strain during Consol., $\varepsilon_{a,c}$:	%	NA	11.01	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 = 4.7 %/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 corr. for M_{tc}: [X] Yes; [ ] No
Plattens with Pins: [ ] Yes; [X] No
[ ] Wire Reinforced Membrane, Model:
[X] Regular Membrane with Rings
Data corr. for Membr. strength [ ] Yes [X] No

Data Normalization: [X] Yes [ ] No Value: 28.899 (ksf)
Using Effective Vertical Stress:
[X] Pre-Shear Conditions [ ] Post-Cyclic Conditions
[ ] 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

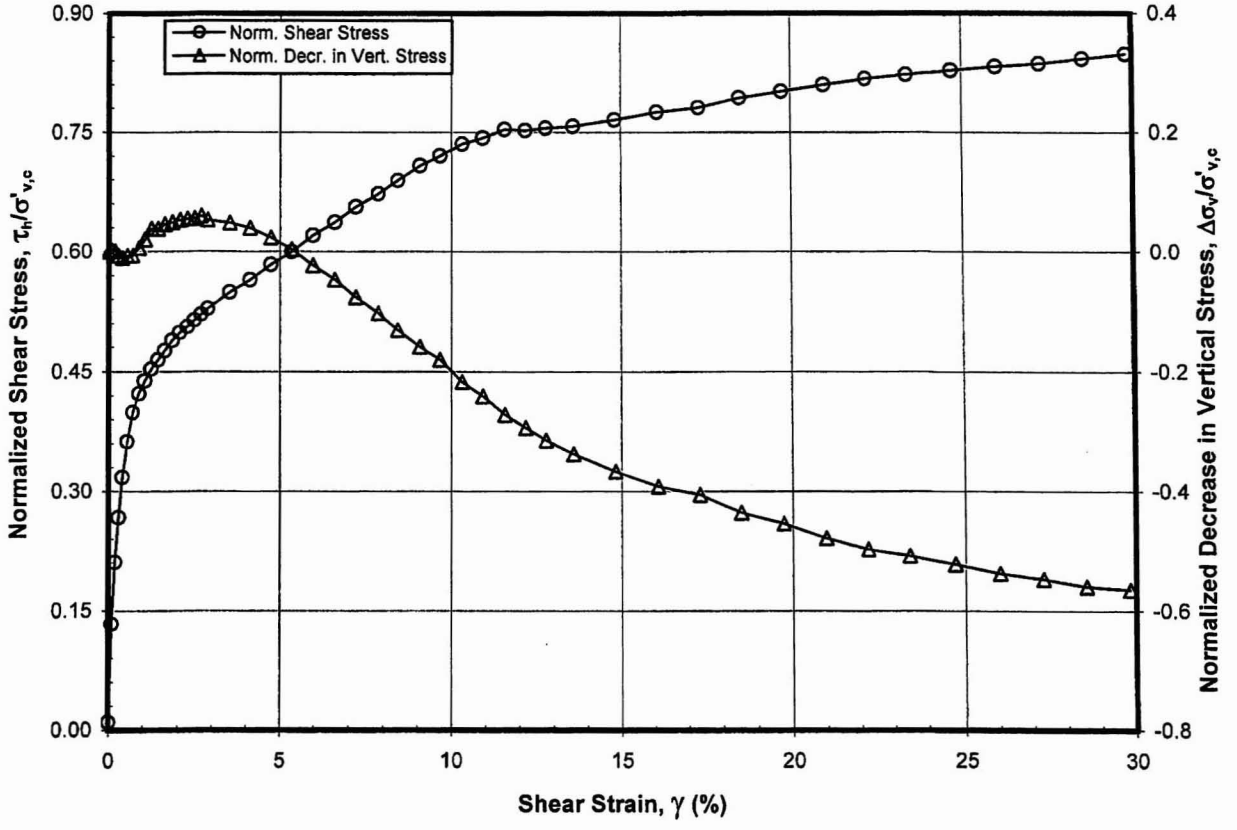
Final Visual Description and Remarks: Light Brown Clayey SAND (SC)

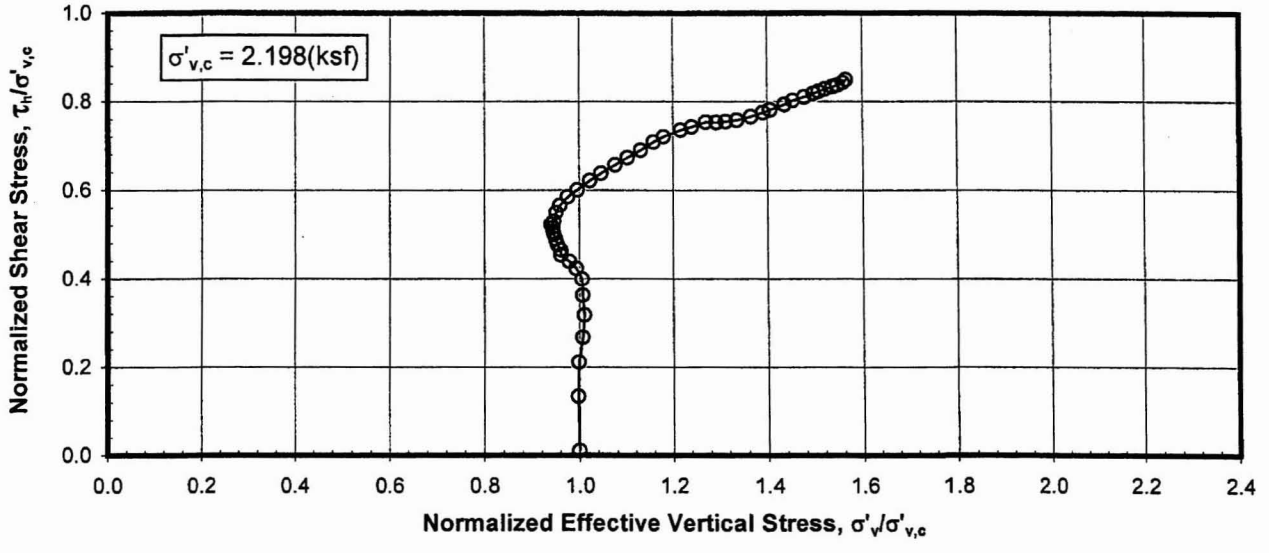
Loading Summary

	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	7.647	15.55	18.105	0.422	0.373	0.265
at Maximum Strain	7.176	29.59	15.500	0.463	0.464	-

Boring No.: TP2319/TP2334 Sample No.: Comp-AF

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	-0.009	28.899	0.000	-	-	0.000	1.000	0.000	-0.02
2.7	0.00	0.225	28.964	-0.065	4720.180	2963.455	0.008	1.002	-0.002	0.45
5.4	0.05	0.714	29.131	-0.233	1589.330	961.150	0.025	1.008	-0.008	1.40
8.1	0.10	1.103	29.095	-0.197	1113.172	571.482	0.038	1.007	-0.007	2.17
10.8	0.17	1.387	28.944	-0.046	839.398	401.788	0.048	1.002	-0.002	2.74
13.5	0.23	1.643	28.850	0.049	704.824	362.166	0.057	0.998	0.002	3.26
16.2	0.31	1.904	28.680	0.218	618.457	350.109	0.066	0.992	0.008	3.80
18.9	0.39	2.189	28.466	0.432	563.268	347.966	0.076	0.985	0.015	4.40
21.5	0.48	2.514	28.286	0.613	520.435	364.732	0.087	0.979	0.021	5.08
24.2	0.56	2.819	28.098	0.800	501.493	398.187	0.098	0.972	0.028	5.73
26.9	0.64	3.150	27.902	0.996	490.167	411.348	0.109	0.966	0.034	6.44
29.6	0.73	3.517	27.664	1.235	480.657	398.045	0.122	0.957	0.043	7.25
32.3	0.83	3.890	27.495	1.404	469.372	373.219	0.135	0.951	0.049	8.05
35.0	0.94	4.277	27.248	1.651	457.167	340.409	0.148	0.943	0.057	8.92
37.7	1.06	4.666	26.958	1.941	441.204	280.251	0.161	0.933	0.067	9.82
40.4	1.20	5.012	26.604	2.295	417.528	214.101	0.173	0.921	0.079	10.67
43.1	1.35	5.285	26.355	2.544	392.398	177.219	0.183	0.912	0.088	11.34
45.8	1.49	5.530	26.010	2.889	370.551	141.430	0.191	0.900	0.100	12.00
53.8	2.02	6.128	25.008	3.891	304.356	85.510	0.212	0.865	0.135	13.77
61.9	2.61	6.461	24.043	4.855	248.052	50.452	0.224	0.832	0.168	15.04
70.0	3.19	6.722	23.254	5.644	210.833	35.947	0.233	0.805	0.195	16.12
78.0	3.86	6.904	22.538	6.360	179.072	25.590	0.239	0.780	0.220	17.03
86.1	4.48	7.052	21.959	6.940	157.565	20.887	0.244	0.760	0.240	17.80
94.2	5.18	7.177	21.395	7.503	138.790	14.697	0.248	0.740	0.260	18.54
102.3	5.82	7.251	20.951	7.948	124.750	14.058	0.251	0.725	0.275	19.09
110.3	6.49	7.363	20.605	8.293	113.514	9.356	0.255	0.713	0.287	19.66
118.4	7.15	7.377	20.291	8.608	103.297	6.961	0.255	0.702	0.298	19.98
126.5	7.83	7.458	20.032	8.867	95.300	6.716	0.258	0.693	0.307	20.42
134.5	8.51	7.468	19.780	9.119	87.849	6.880	0.258	0.684	0.316	20.69
142.6	9.19	7.551	19.578	9.321	82.261	5.509	0.261	0.677	0.323	21.09
150.7	9.90	7.543	19.361	9.538	76.268	2.459	0.261	0.670	0.330	21.29
158.7	10.55	7.582	19.195	9.703	71.966	2.757	0.262	0.664	0.336	21.55
166.8	11.25	7.578	18.999	9.899	67.438	1.550	0.262	0.657	0.343	21.75
174.9	11.89	7.602	18.818	10.081	64.015	2.015	0.263	0.651	0.349	22.00
185.6	12.82	7.605	18.668	10.231	59.386	1.319	0.263	0.646	0.354	22.16
201.7	14.18	7.636	18.347	10.551	53.899	1.533	0.264	0.635	0.365	22.60
217.9	15.55	7.647	18.105	10.794	49.241	-0.419	0.265	0.627	0.373	22.90
234.0	16.91	7.625	17.889	11.010	45.148	-1.534	0.264	0.619	0.381	23.09
250.1	18.30	7.604	17.661	11.238	41.598	-1.987	0.263	0.611	0.389	23.30
266.3	19.69	7.569	17.436	11.463	38.490	-2.958	0.262	0.603	0.397	23.47
282.4	21.09	7.522	17.186	11.712	35.702	-3.358	0.260	0.595	0.405	23.64
298.5	22.49	7.475	16.868	12.031	33.273	-3.568	0.259	0.584	0.416	23.90
314.7	23.91	7.421	16.641	12.258	31.075	-4.112	0.257	0.576	0.424	24.04
330.8	25.34	7.358	16.364	12.534	29.077	-3.786	0.255	0.566	0.434	24.21
346.9	26.76	7.313	16.101	12.797	27.357	-4.399	0.253	0.557	0.443	24.43
363.0	28.18	7.233	15.797	13.101	25.699	-4.869	0.250	0.547	0.453	24.60
379.2	29.59	7.176	15.500	13.398	24.281	-4.104	0.248	0.536	0.464	24.84





STATIC DSS TEST

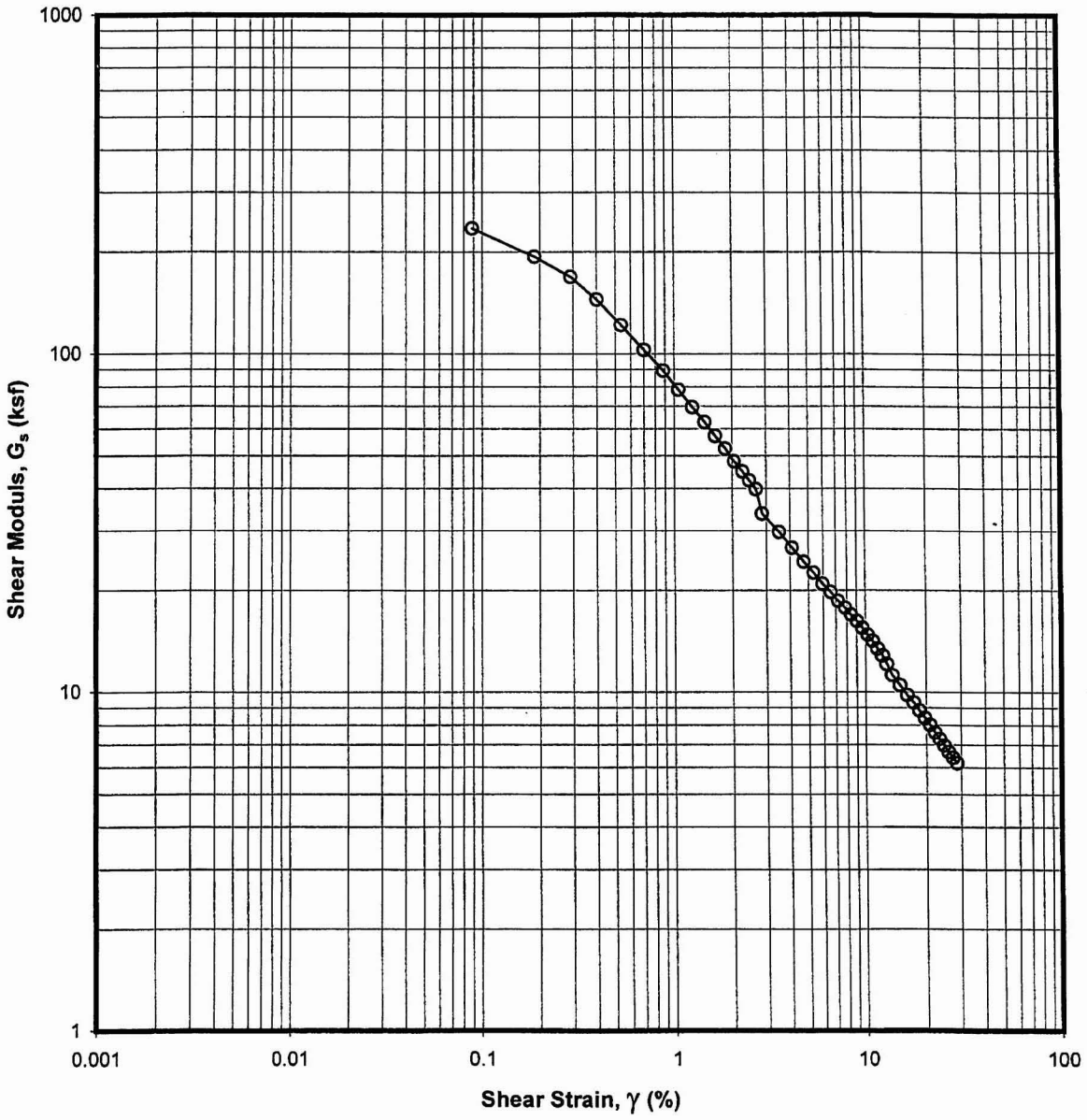
K_o Consolidation - OCR = NA

Sample: Comp-AG - Depth: NA ft

Boring TP2319/TP2334

Exelon (Victoria)

KAW 7/16/08



STATIC DSS TEST

K_o Consolidation - OCR = NA

Sample: Comp-AG - Depth: NA ft

Boring TP2319/TP2334

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.: 10G | File Name: _Comp-Ag
Task No.: NA | Assign, $\sigma'_{v,c}$ = 2.16 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: 2.659 [X] Meas.; [ ] Assumed

[ ] Tube [ ] Field Extruded	[ ] Liner [X] Remolded	[X] Tamping	[ ] Constant Effort:	Blows/Tamps per Layer =	11
Boring No.: TP2319/TP2334	[ ] LPC Core	[ ] Impact/Rammer	Rammer Wgt.(lbf)=	No. Layers =	3.00
Sample No.: Comp-A	Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)= 4.00	Drop (in.) =	12.00
Depth (ft): NA	Specimen No.: G	[ ] Kneading	[X] Undercompaction:	U_{ni} (%) =	Dia. (in.) = 1.40
[ ] Spec. Selection by X-ray;	[ ] Geomarine Sample	[ ]	Ref. Effort= MOD	% Comp. = 95.0	± Opt.= +4

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}	Soil and Ring Masses	Initial	Final
	Top ($W_{o,1}$)	Bottom ($W_{o,2}$)	Sides ($W_{o,3}$)	(see below)	Mass Moist Soil + Tare (g)	324.21	146.87
Container No.	4112			4051	Mass Tare (g)	183.30	4.73
Mass Moist Soil + Cont. (g)	105.88			64.83	Mass Moist Soil, $M_{t,o}$ $Mt_{,at}$ (g)	140.91	142.14
Mass Dry Soil + Container (g)	96.54			60.21	**Excess Dry Soil (soil not included in final mass above)**		
Mass Container (g)	30.07			29.75	Container No.		
WATER CONTENT (%)	14.05			15.17	Mass Dry Soil + Container (g)		
Avg. Initial WC, $W_{o,avg}$ (%)	14.05	Final W_{at}: [X] Slice ;		[ ] Whole Spec.	Mass Container (g)		
[ ] See attached data sheet(s) for additional water contents					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):	18.55	$A_{s,t}$ (cm^2):	34.68
$D_{s,t}$ (mm) :	66.45	$V_{s,t}$ (cm^3):	64.32

Remarks:

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

	Height (H_{tr})	Diameter (D_o)		Remarks:
1	18.560	1-T	NA	
2	18.580	2-M	NA	
3	18.520	3-B	NA	
4	18.550	1'-T	NA	For Free Standing
5	18.530	2'-M	NA	or Reconstituted Spec.:
	Avg.	3'-B	NA	A_{tr} (cm^2): NA
=	18.550	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)= 136.76	Dry, $\gamma_{d,o}$ (lb/ft^3)= 119.91

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.** 9 | ID, Rings (mm)
Thickness (mm): Top: 0.61 , | = 67.08
[ ] Single Bottom: 0.65 , | Corr. for mem.
[X] Double Membr. Thick. = 0.32 | = 66.450
Area Ring with mem., A_o: (cm^2)= 34.68 ; (in^2)= 5.375
Mass Top Cap, etc., M_{tc} = 500.0 g, 1.10 lbf
Data corr. for M_{tc}: [X] Yes; [ ] No Plattens with Pins: [ ] Yes; [X] No

Final Visual Description: Light Brown Clayey SAND (SC)

Other Remarks :

Trim./ Recon. By: DBN | Setup By: HC | Take Down By: HC
Date: 5/2/2008 | Date: 5/2/2008 | Date: 5/5/2008
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 6/13/08

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

Project Number: 0411-08-1686 | Test Station No.: 10G | File Name: _Comp-Ag
Task Number: NA | Specific Gravity: 2.659 [X] Measured; [ ] Assumed
Type Test: SDSS | Specimen: [ ] "Undisturbed"; [X] Reconstituted; [X] Remolded | Boring No.: TP2319/TP2334
Calculations Corr. for Salt (dissolved solids): [X] No or, [ ] Yes, with concentration = _____ ppm | Sample No.: Comp-AG

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	2.16	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
$t_{c,i}$(ON,days,hrs)	NA	0.66 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	14.05			14.05	14.05	14.17
S_o	97.8			97.8	97.8	98.3
Measured final mass of moist soil, $M_{t,at}$ (g)						142.14
Final mass of moist soil corrected for excess dry soil, $M_{tat,c}$ (g)						142.14

Calculated Mass of Dry Soil (g)

Initial Selected Water Content (%)	14.05
Initial , $M_{d,o}$	123.55
Final, $M_{d,at}$	123.42
Selected, M_d	123.49

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)	2.160	NA	NA
Sign Convention: (+) ΔV out & ΔH down; (-) ΔV in & ΔH up			
Delta Def. Read., $\Delta d_{ar,n}$ (mm)	0.350		
Total Equip. Comp., $\Sigma\Delta d_{afc}$ (mm)	0.000		
Corr. Total Def. $\Delta H_{c,n}$ (mm)	0.350		
ΔV_n using A_o - spec. (cm^3)	1.21		
ΔV_n using $A_{c,n}$ - app. (cm^3)	1.21		
ΔV_n using burette meas.(cm^3)	0.90		
Selected ΔV_n (cm^3)	1.21	NA	NA = ΔV_{uL}
After Test WC Corr. for ΔV during Shear & Unloading, $W_{at,c}$ (%)			NA

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

Calculation of ΔV_c by Different Procedures

By Selected Volumes		By Change in Mass	
ΔV_c (cm^3)	1.21	~ $M_{t,o}$ - ($M_{tat,c}$ + ΔV_L + ΔV_{uL})	
By Cal. Height & App. Area		ΔV_c (cm^3)	-1.23
ΔV_c (cm^3)	1.21	**By Saturation = 100% and**	
By Cal. Ht. & Init. Spec. Area		**Spec. Unloaded to 0 Stress**	
ΔV_c (cm^3)	1.21	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, $W_{c,bc}$ (%)	13.41
Back Cal.WC at Max. Stress, $W_{cmax,bc}$ (%)	NA

Consolidation & Preshear Conclusions								
	ΔV_c (cm^3) =	1.21	ΔH_c (mm) =	0.350	$\varepsilon_{a,c}$ (%) =	1.89	$\Delta V_{c,max}$ (cm^3) =	NA
	V_c (cm^3) =	63.12	H_c (mm) =	18.200	$\varepsilon_{v,c}$ (%) =	1.87	$\varepsilon_{ac,max}$ (%)=	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 = 2.659 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)	18.550	64.32	34.68	14.1	136.8	119.8	98.0	0.385
After to $\sigma'_{v,c}$	18.200	63.12	34.68	13.4	138.5	122.1	100.0	0.359
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. Calculated By: LF
& Note(s) 2 - Initial measured value corrected for applied stress. NA - Not Applicable Reviewed By: HP
3 - Uses measured value at appropriate stress level (NA for rings).

Remarks: t95 for max stress = 1.5 min

Project Number:	0411-08-1686	Test Type:	SDSS	Test Sta. No.:	10G	File Name:	_Comp-Ag
Project Name:	Exelon (Victoria)	Task No.:	NA	Test No.:	NA	Test Series for:	NA

[ ] Tube [ ] Field Extruded	[ ] Liner [X] Remolded	[X] Tamping	[ ] Constant Effort:	Blows/Tamps per Layer = 11
Boring No.: TP2319/TP2334	[ ] LPC Core	[ ] Impact/Rammer	Rammer Wgt.(lbf)=	No. Layers = 3.00
Sample No.: Comp-A	Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)= 4.00	Drop (in.) = 12.00
Depth (ft): NA	Specimen No.: G	[ ] Kneading	[X] Undercompaction: U_{ni} (%) =	Dia. (in.) = 1.40
[ ] Spec. Selection by X-ray;	[ ] Geomarine Sample	[ ]	Ref. Effort= MOD % Comp. = 95.0	± Opt.= +4

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 - [ ] With - Water Bath; [ ] Cyclic (Hz) Rate: [ ] 0.1; [ ] 1; Other: [ ] Strain [ ] Stress

Summary of Specimen Physical Properties

Specific Gravity: G_s = 2.659 Measured	Height	Volume	Area	Water Content	Unit Weight Total	Unit Weight Dry	Saturation	LL / PL / PI	-200	Void Ratio,
Condition:	(mm)	(cm^3)	(cm^2)	(%)	(pcf)	(pcf)	(%)		%	e
Initial	18.55	64.32	34.68	14.11	136.8	119.8	98.0	34	46.4	0.385
After Consol.: to $\sigma'_{v,c}$	18.20	63.12	34.68	13.41	138.5	122.1	100.0	12	NA	0.359
to $\sigma'_{vc,max}$	NA	NA	NA	NA	NA	NA	NA	22	NA	NA

Consolidation Stress Summary and Loading Summary

Item	Unit	Max. Stress	Pre-Shear	Post Cyclic
Vert. Consol. Stress, $\sigma'_{v,c}$:	(ksf)	NA	2.198	NA
Induced OCR:	-	NA	NA	NA
Axial Strain during Consol., $\varepsilon_{a,c}$:	%	NA	1.89	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 = 4.8 %/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): 1.10	Data Normalization: [X] Yes [ ] No Value: 2.198 (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

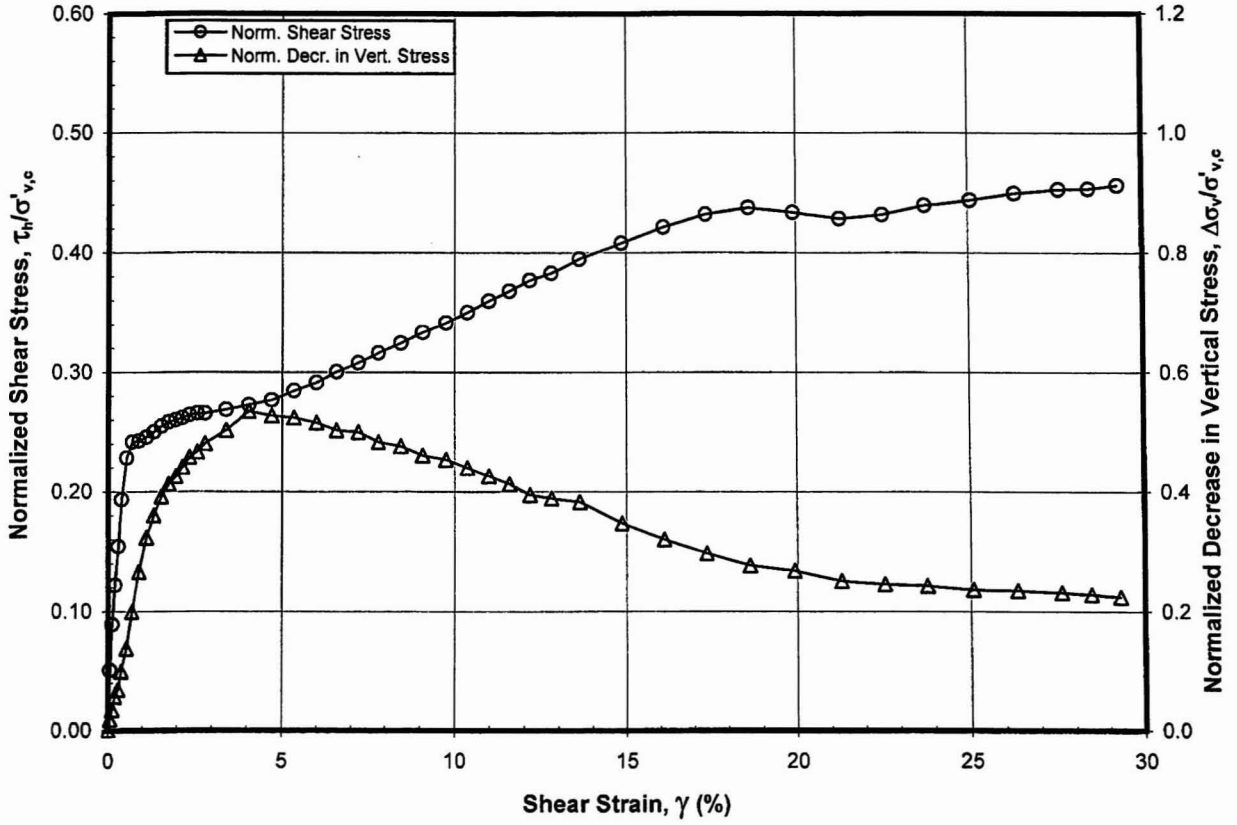
Final Visual Description and Remarks: Light Brown Clayey SAND (SC)

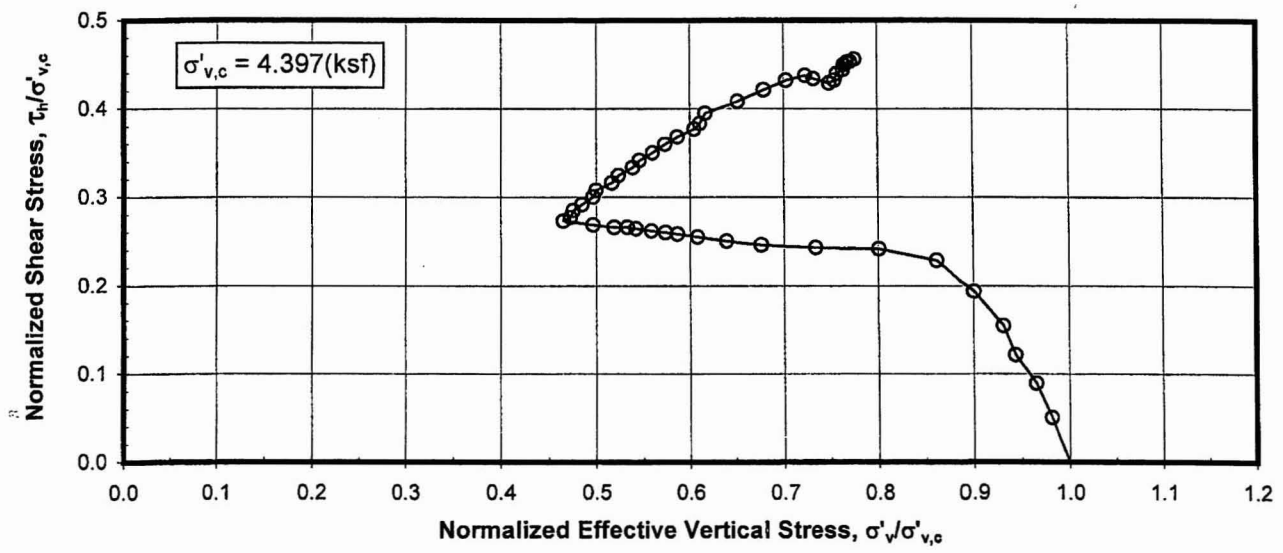
Loading Summary

	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	1.864	29.83	3.440	0.542	-0.565	0.848
at Maximum Strain	1.864	29.83	3.440	0.542	-0.565	-

Boring No.: TP2319/TP2334 Sample No.: Comp-AG

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	0.022	2.198	0.000	-	-	0.010	1.000	0.000	0.57
2.5	0.09	0.293	2.193	0.005	305.246	238.340	0.133	0.998	0.002	7.61
5.0	0.19	0.463	2.195	0.002	234.636	145.421	0.211	0.999	0.001	11.91
7.5	0.29	0.587	2.213	-0.015	193.726	110.506	0.267	1.007	-0.007	14.85
10.1	0.40	0.698	2.221	-0.024	168.621	87.208	0.317	1.011	-0.011	17.44
12.6	0.54	0.796	2.213	-0.015	144.542	60.462	0.362	1.007	-0.007	19.78
15.1	0.70	0.876	2.211	-0.014	121.565	38.252	0.399	1.006	-0.006	21.62
17.6	0.88	0.928	2.184	0.013	102.439	24.393	0.422	0.994	0.006	23.02
20.1	1.06	0.963	2.153	0.045	89.021	18.915	0.438	0.980	0.020	24.10
22.7	1.24	0.996	2.114	0.084	78.303	14.970	0.453	0.962	0.038	25.22
25.2	1.44	1.020	2.113	0.085	69.382	12.903	0.464	0.961	0.039	25.77
27.7	1.63	1.046	2.097	0.101	62.749	13.403	0.476	0.954	0.046	26.50
30.2	1.84	1.074	2.089	0.108	57.202	12.019	0.489	0.951	0.049	27.20
32.7	2.05	1.096	2.081	0.117	52.346	8.741	0.499	0.947	0.053	27.78
35.2	2.27	1.111	2.077	0.121	48.011	8.053	0.506	0.945	0.055	28.15
37.8	2.47	1.130	2.076	0.122	44.853	8.687	0.514	0.945	0.055	28.55
40.3	2.67	1.146	2.067	0.131	42.165	8.179	0.521	0.940	0.060	29.00
42.8	2.86	1.162	2.081	0.116	39.800	7.461	0.529	0.947	0.053	29.17
50.3	3.52	1.206	2.091	0.106	33.677	6.359	0.549	0.952	0.048	29.97
57.9	4.11	1.241	2.110	0.088	29.690	6.307	0.565	0.960	0.040	30.46
65.4	4.73	1.283	2.146	0.052	26.647	6.233	0.584	0.976	0.024	30.88
72.9	5.35	1.318	2.190	0.008	24.255	6.532	0.600	0.996	0.004	31.05
80.5	5.97	1.364	2.248	-0.050	22.480	6.501	0.621	1.023	-0.023	31.25
88.0	6.60	1.400	2.301	-0.103	20.874	6.314	0.637	1.047	-0.047	31.32
95.6	7.21	1.442	2.365	-0.168	19.705	6.278	0.656	1.076	-0.076	31.36
103.1	7.85	1.478	2.423	-0.226	18.552	6.028	0.673	1.103	-0.103	31.38
110.7	8.43	1.515	2.486	-0.288	17.715	6.329	0.689	1.131	-0.131	31.36
118.2	9.08	1.556	2.548	-0.350	16.896	5.464	0.708	1.159	-0.159	31.41
125.7	9.67	1.583	2.595	-0.397	16.152	4.790	0.720	1.181	-0.181	31.39
133.3	10.33	1.616	2.675	-0.478	15.435	3.850	0.735	1.217	-0.217	31.13
140.8	10.93	1.632	2.729	-0.531	14.742	3.260	0.743	1.242	-0.242	30.89
148.4	11.56	1.656	2.796	-0.599	14.136	1.698	0.754	1.272	-0.272	30.64
155.9	12.18	1.654	2.845	-0.647	13.403	0.288	0.753	1.294	-0.294	30.18
163.4	12.79	1.660	2.890	-0.692	12.811	0.818	0.755	1.315	-0.315	29.87
173.5	13.59	1.666	2.940	-0.742	12.094	1.065	0.758	1.338	-0.338	29.53
188.6	14.83	1.683	3.004	-0.806	11.203	1.541	0.766	1.367	-0.367	29.26
203.7	16.09	1.704	3.059	-0.861	10.453	1.311	0.775	1.392	-0.392	29.12
218.7	17.33	1.716	3.090	-0.892	9.775	1.623	0.781	1.406	-0.406	29.04
233.8	18.52	1.743	3.156	-0.958	9.294	1.934	0.793	1.436	-0.436	28.92
248.9	19.74	1.762	3.195	-0.997	8.817	1.500	0.802	1.454	-0.454	28.88
264.0	20.97	1.780	3.249	-1.051	8.384	1.421	0.810	1.478	-0.478	28.71
279.0	22.21	1.797	3.291	-1.093	7.995	1.098	0.818	1.497	-0.497	28.64
294.1	23.45	1.807	3.315	-1.118	7.613	0.889	0.822	1.509	-0.509	28.59
309.2	24.71	1.820	3.346	-1.148	7.276	0.922	0.828	1.522	-0.522	28.54
324.3	26.00	1.831	3.380	-1.182	6.958	0.711	0.833	1.538	-0.538	28.44
339.4	27.28	1.838	3.401	-1.203	6.658	0.812	0.836	1.548	-0.548	28.39
354.4	28.55	1.851	3.427	-1.230	6.408	1.038	0.842	1.559	-0.559	28.38
369.5	29.83	1.864	3.440	-1.242	6.177	1.021	0.848	1.565	-0.565	28.46





STATIC DSS TEST

K_o Consolidation - OCR = NA

Sample: Comp-AH - Depth: NA ft

Boring TP2319/TP2334

Exelon (Victoria)

KAW 7/16/08