ONE - DIMENSIONAL CONSOLIDATION TEST: CALCULATED CRS LOADING DATA

Loading Info. (1)	Julian Day (dd)	Hour (hr.:min.:s)	Elapsed Time from Start of Loading, Δt_n (min)	Total Vertical Stress, $\sigma_{v,n}$ (2) (ksf)	Excess Pore-Water Pressure, ΔU_n (ksf)	Total Specimen Deformation, ΔH_n (3) (mm)	Apparatus Flexibility Correction, $\Delta d_{afc,n}$ (mm)	Corr. Total Specimen Deformation, $\Delta H_{c,n}$ (4) (mm)	Strain Rate, between n & n-1, $\Delta\varepsilon_{ac,rate}$ (%/hr)
	98	23 : 28 : 00	680	57.33	7.492	1.912	0.261	1.651	0.683
UE	98	23 : 30 : 00	682	56.61	6.900	1.915	0.259	1.656	0.741
	99	00 : 24 : 00	736	49.83	1.379	1.936	0.242	1.694	0.223
	99	01 : 18 : 00	790	38.45	-1.247	1.899	0.211	1.688	-0.035
	99	02 : 12 : 00	844	29.09	-1.976	1.848	0.182	1.666	-0.130
US	99	03 : 06 : 00	898	21.79	-2.609	1.789	0.156	1.632	-0.194
	99	04 : 00 : 00	952	16.25	-3.074	1.724	0.134	1.590	-0.249
	99	04 : 54 : 00	1006	12.04	-3.321	1.654	0.115	1.539	-0.294
	99	05 : 48 : 00	1060	8.82	-3.431	1.581	0.099	1.482	-0.332
	99	06 : 42 : 00	1114	6.37	-3.440	1.505	0.085	1.420	-0.358
	99	07 : 36 : 00	1168	4.55	-3.325	1.428	0.072	1.355	-0.379
UE	99	08 : 30 : 00	1222	3.17	-3.151	1.349	0.061	1.288	-0.392
	99	08 : 32 : 00	1224	3.13	-3.145	1.347	0.061	1.286	-0.306
	99	08 : 34 : 00	1226	3.26	-3.018	1.345	0.062	1.283	-0.520
	99	09 : 10 : 00	1262	9.29	1.465	1.388	0.102	1.287	0.037
	99	09 : 46 : 00	1298	15.78	4.044	1.470	0.132	1.338	0.443
US	99	10 : 22 : 00	1334	22.03	5.690	1.557	0.157	1.399	0.538
	99	10 : 58 : 00	1370	28.25	6.844	1.644	0.179	1.464	0.568
	99	11 : 34 : 00	1406	34.62	7.430	1.729	0.200	1.529	0.566
	99	12 : 10 : 00	1442	41.55	7.850	1.813	0.220	1.593	0.555
	99	12 : 46 : 00	1478	48.71	8.003	1.898	0.240	1.658	0.569
	99	13 : 22 : 00	1514	56.25	8.492	1.980	0.259	1.721	0.550
	99	13 : 58 : 00	1550	63.46	8.449	2.065	0.276	1.789	0.596
	99	14 : 34 : 00	1586	70.10	8.941	2.150	0.292	1.858	0.598
	99	15 : 10 : 00	1622	77.44	9.722	2.239	0.310	1.929	0.620
	99	15 : 46 : 00	1658	83.88	10.050	2.322	0.326	1.996	0.587
	99	16 : 22 : 00	1694	90.93	10.234	2.405	0.343	2.063	0.579
	99	16 : 58 : 00	1730	98.23	10.778	2.491	0.361	2.131	0.595
	99	17 : 34 : 00	1766	105.61	10.861	2.575	0.379	2.196	0.571
	99	18 : 10 : 00	1802	113.87	11.531	2.662	0.399	2.263	0.584
	99	18 : 46 : 00	1838	121.59	11.732	2.745	0.418	2.326	0.553
	99	19 : 22 : 00	1874	130.21	12.286	2.830	0.440	2.391	0.561
	99	19 : 58 : 00	1910	138.30	12.213	2.912	0.460	2.452	0.537
	99	20 : 34 : 00	1946	147.78	13.016	2.996	0.484	2.512	0.524
UE	99	21 : 02 : 00	1974	155.00	13.151	3.060	0.502	2.558	0.519
	99	21 : 04 : 00	1976	154.34	12.628	3.063	0.501	2.562	0.607
	99	23 : 24 : 00	2116	140.01	1.714	3.104	0.479	2.625	0.141
	100	01 : 44 : 00	2256	101.37	-2.645	3.011	0.414	2.597	-0.063
	100	04 : 04 : 00	2396	68.08	-4.353	2.886	0.348	2.538	-0.131
US	100	06 : 24 : 00	2536	43.27	-5.873	2.741	0.286	2.454	-0.189
	100	08 : 44 : 00	2676	26.40	-6.599	2.576	0.234	2.341	-0.254
	100	11 : 04 : 00	2816	15.38	-6.760	2.388	0.192	2.196	-0.325

ONE - DIMENSIONAL CONSOLIDATION TEST:
CALCULATED CRS LOADING DATA

Load-ing Info. (1)	Julian Day (dd)	Hour (hr.:min.:s)	Elapsed Time from Start of Loading, Δt_n (min)	Total Vertical Stress, $\sigma_{v,n}$ (2) (ksf)	Excess Pore-Water Pressure, ΔU_n (ksf)	Total Specimen Deformation, ΔH_n (3) (mm)	Apparatus Flexibility Correction, $\Delta d_{afc,n}$ (mm)	Corr. Total Specimen Deformation, $\Delta H_{c,n}$ (4) (mm)	Strain Rate, between n & n-1, $\Delta \varepsilon_{ac,rate}$ (%/hr)
	100	13 : 24 : 00	2956	8.38	-6.614	2.184	0.158	2.026	-0.383
	100	15 : 44 : 00	3096	4.18	-5.988	1.975	0.131	1.844	-0.408
UE	100	18 : 04 : 00	3236	1.96	-5.105	1.761	0.111	1.651	-0.433
	100	20 : 24 : 00	3376	0.82	-4.275	1.544	0.093	1.451	-0.448
	100	20 : 34 : 00	3386	0.77	-4.207	1.528	0.092	1.437	-0.460
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ONE - DIMENSIONAL CONSOLIDATION TEST: CRS LOADING RESULTS (Load Time - Deformation Properties)

Project Number: 0411-08-1686 Test Station No.: CRS-1 [X] Undisturbed or ; [ ] Reconstituted - Specimen. File Name: B-2321_UD4

Task No.: NA Date; Start: 4/6/2008 Back Pressure, $U_{b,cs}$ (psi): 70.6 Piston Uplift, P_{up} (lbf): 34.67

Project Name: Exelon (Victoria) Completed: 4/10/2008 Transient Time Factor, $T_v = (C_v \cdot t) / H^2 =$ 0.5

4186-06-Summary of Methods: NA [ ] Data corrected for salt _____; in [ ] g/kg

Final Description of Specimen: Mottled Brownish Yellow and Light Gray Fat CLAY (CH)

	Ring No.:	1	Area, A_r (cm^2):	31.739	Solids Ht., H_s (mm):	11.604	Specific Gravity, G_s =	2.720	[X] Meas. ;	[ ] Assumed
Initial:	Height	H_o:	19.10	Water	20.7	Void	0.646	Deg. of	87.1	Total Unit	124.3	Dry Unit	103.0
Final:	(mm):	H_f:	17.65	Content, w (%):	19.7	Ratio, e:	0.521	Sat., S (%):	102.6	Weight, γ_t (pcf):	133.3	Weight, γ_d (pcf):	111.4

Notes:

(1) S - Seating, BS - Start of Back Pressure, BE - End of Back Pressure, SC - Stress Controlled, CS - Constant Rate of Strain, US - Start of Uniform Strain Rate, UE - End of Uniform Strain Rate or ΔU_n to errati

(2) Excess pore-water pressure measured at the base of the specimen.

(3) Only applicable during stress controlled (SC) loading.

Data Management by: DH Reviewed By: HP HP

Load-ing Info. (1)	Elapsed Time from Start of Loading, Δt_n (min)	Overall Effective Vertical Stress, $\sigma'_{v,n}$ (ksf)	Corrected Volumetric (Axial) Strain, $\varepsilon_{v,n}$ ($\varepsilon_{ac,n}$) $\Delta H_{c,n} / H_o$ (%)	Overall Void Ratio, e_n	Total Vertical Stress, $\sigma_{v,n}$ (ksf)	Excess Pore-Water Pressure, ΔU_n (2) (ksf)	Loading Pore-Water Pressure Ratio, R_u $\Delta U_n / \sigma_{v,n}$ (%)	Corrected Specimen Height, $H_{c,n}$ (mm)	Calculations Between n and n-1: Average Effective Vertical Stress, $\sigma'_{v,avg}$ (ksf)	Coefficient of Consolidation, c_v (m^2/y)	Average Void Ratio, e_{avg}	Hydraulic Conductivity, k @ 20°C (m/y)	Steady State Ratio, $SSR_n = \frac{c_v \cdot t_n \cdot UCF}{T_v \cdot (H_{c,avg})^2}$	Rate of Secondary Comp. (3), $c_\alpha = \Delta d_{a,sc} / H_o$ ($\times 10^{-4}$)
S					0.32				Data on given line represents average conditions between that line and the previous line of data.					
BS			0.11	0.644	1.22			19.079						
BE		1.11	0.02	0.646	1.11	-0.001	-0.1	19.096			0.645			
CS	0	1.13	0.02	0.646	1.13	0.000	0.0	19.096			0.646			
	18	1.85	0.10	0.644	1.85	0.004	0.2	19.081	1.49		0.645			
	36	2.30	0.26	0.642	2.30	0.008	0.3	19.050	2.07		0.643			
US	54	2.69	0.43	0.639	2.70	0.012	0.4	19.019	2.49		0.640			
	80	3.37	0.75	0.634	3.39	0.029	0.8	18.957	3.03	124.96	0.636	1.20E-01	34.29	
	116	4.42	1.26	0.625	4.47	0.071	1.6	18.860	3.90	56.86	0.629	5.43E-02	37.52	
	152	5.71	1.77	0.617	5.83	0.168	2.9	18.762	5.07	29.18	0.621	2.27E-02	30.75	
	188	7.20	2.26	0.609	7.42	0.329	4.4	18.668	6.46	16.15	0.613	1.04E-02	23.51	
	224	8.89	2.78	0.600	9.24	0.528	5.7	18.570	8.04	10.55	0.605	6.26E-03	19.69	
	260	10.79	3.29	0.592	11.32	0.781	6.9	18.472	9.84	7.70	0.596	4.02E-03	17.61	
	296	12.93	3.79	0.584	13.68	1.109	8.1	18.377	11.86	5.98	0.588	2.72E-03	16.23	
	332	15.29	4.27	0.576	16.31	1.506	9.2	18.284	14.11	4.72	0.580	1.89E-03	14.87	
	368	17.95	4.76	0.568	19.34	2.048	10.6	18.191	16.62	3.94	0.572	1.38E-03	14.17	
	404	20.83	5.25	0.560	22.62	2.628	11.6	18.097	19.39	3.18	0.564	1.05E-03	12.88	

ONE - DIMENSIONAL CONSOLIDATION TEST: CRS LOADING RESULTS (Load Time - Deformation Properties)

Load-ing Info. (1)	Elapsed Time from Start of Loading, Δt_n (min)	Overall Effective Vertical Stress, $\sigma'_{v,n}$ (ksf)	Corrected Volumetric (Axial) Strain, $\varepsilon_{v,n}$ ($\varepsilon_{ac,n}$) $\Delta H_{c,n} / H_o$ (%)	Overall Void Ratio, e_n	Total Vertical Stress, $\sigma_{v,n}$ (ksf)	Excess Pore-Water Pressure, ΔU_n (2) (ksf)	Loading Pore-Water Pressure Ratio, R_u $\Delta U_n / \sigma_{v,n}$ (%)	Corrected Specimen Height, $H_{c,n}$ (mm)	Calculations Between n and n-1: Average Effective Vertical Stress, $\sigma'_{v,avg}$ (ksf)	Coefficient of Consolidation, c_v (m^2/y)	Average Void Ratio, e_{avg}	Hydraulic Conductivity, k @ 20°C (m/y)	Steady State Ratio, $SSR_n = \frac{c_v \cdot t_n \cdot UCF}{T_v \cdot (H_{c,avg})^2}$	Rate of Secondary Comp. (3), $c_\alpha = \Delta d_{a,sc} / H_o$ ($\times 10^{-4}$)
	440	23.96	5.73	0.552	26.16	3.234	12.4	18.006	22.39	2.70	0.556	8.06E-04	12.17	
	476	27.28	6.20	0.544	29.89	3.825	12.8	17.916	25.62	2.33	0.548	6.56E-04	11.60	
	512	31.08	6.65	0.537	34.11	4.453	13.1	17.830	29.18	2.23	0.540	5.36E-04	12.15	
	548	34.92	7.08	0.530	38.33	4.996	13.0	17.749	33.00	1.93	0.533	4.33E-04	11.45	
	584	39.27	7.52	0.522	43.16	5.706	13.2	17.664	37.10	1.93	0.526	3.97E-04	12.41	
	620	43.89	7.95	0.515	48.25	6.389	13.2	17.582	41.58	1.78	0.519	3.36E-04	12.35	
	656	48.83	8.37	0.508	53.61	7.018	13.1	17.501	46.36	1.68	0.512	2.97E-04	12.49	
	680	52.22	8.64	0.504	57.33	7.492	13.1	17.449	50.52	1.60	0.506	2.63E-04	12.47	
UE	682	51.91	8.67	0.503	56.61	6.900	12.2	17.444	52.07		0.504		-29.29	
	736	48.91	8.87	0.500	49.83	1.379	2.8	17.406	50.41		0.502			
	790	39.28	8.84	0.501	38.45	-1.247	-3.2	17.412	44.09		0.500			
	844	30.39	8.72	0.502	29.09	-1.976	-6.8	17.434	34.83		0.501			
US	898	23.49	8.55	0.505	21.79	-2.609	-12.0	17.468	26.94		0.504			
	952	18.24	8.32	0.509	16.25	-3.074	-18.9	17.510	20.86	3.14	0.507	2.34E-04	2.11	
	1006	14.17	8.06	0.513	12.04	-3.321	-27.6	17.561	16.20	2.20	0.511	2.45E-04	2.94	
	1060	10.98	7.76	0.518	8.82	-3.431	-38.9	17.618	12.57	1.67	0.516	2.61E-04	3.33	
	1114	8.49	7.44	0.524	6.37	-3.440	-54.0	17.680	9.74	1.32	0.521	2.74E-04	3.49	
	1168	6.55	7.10	0.529	4.55	-3.325	-73.1	17.745	7.52	1.07	0.526	2.93E-04	3.50	
UE	1222	5.03	6.74	0.535	3.17	-3.151	-99.3	17.812	5.79	0.91	0.532	3.14E-04	3.53	
	1224	4.98	6.73	0.535	3.13	-3.145	-100.5	17.814	5.00		0.535			
	1226	5.04	6.72	0.535	3.26	-3.018	-92.7	17.817	5.01		0.535			
	1262	8.29	6.74	0.535	9.29	1.465	15.8	17.813	6.66		0.535			
	1298	12.95	7.00	0.531	15.78	4.044	25.6	17.762	10.62		0.533			
US	1334	18.05	7.33	0.525	22.03	5.690	25.8	17.701	15.50		0.528			
	1370	23.48	7.67	0.520	28.25	6.844	24.2	17.636	20.76		0.523		0.87	
	1406	29.47	8.01	0.514	34.62	7.430	21.5	17.571	26.47	1.79	0.517	2.30E-04	1.58	
	1442	36.14	8.34	0.509	41.55	7.850	18.9	17.507	32.80	1.83	0.511	2.08E-04	2.45	
	1478	43.22	8.68	0.503	48.71	8.003	16.4	17.442	39.68	1.83	0.506	2.03E-04	3.29	
	1514	50.43	9.01	0.498	56.25	8.492	15.1	17.379	46.82	1.86	0.500	1.86E-04	4.21	
	1550	57.70	9.37	0.492	63.46	8.449	13.3	17.311	54.06	1.74	0.495	1.94E-04	4.75	

Boring B-2321UD, Sample UD-4A, Depth 13.5 - 15.2 ft

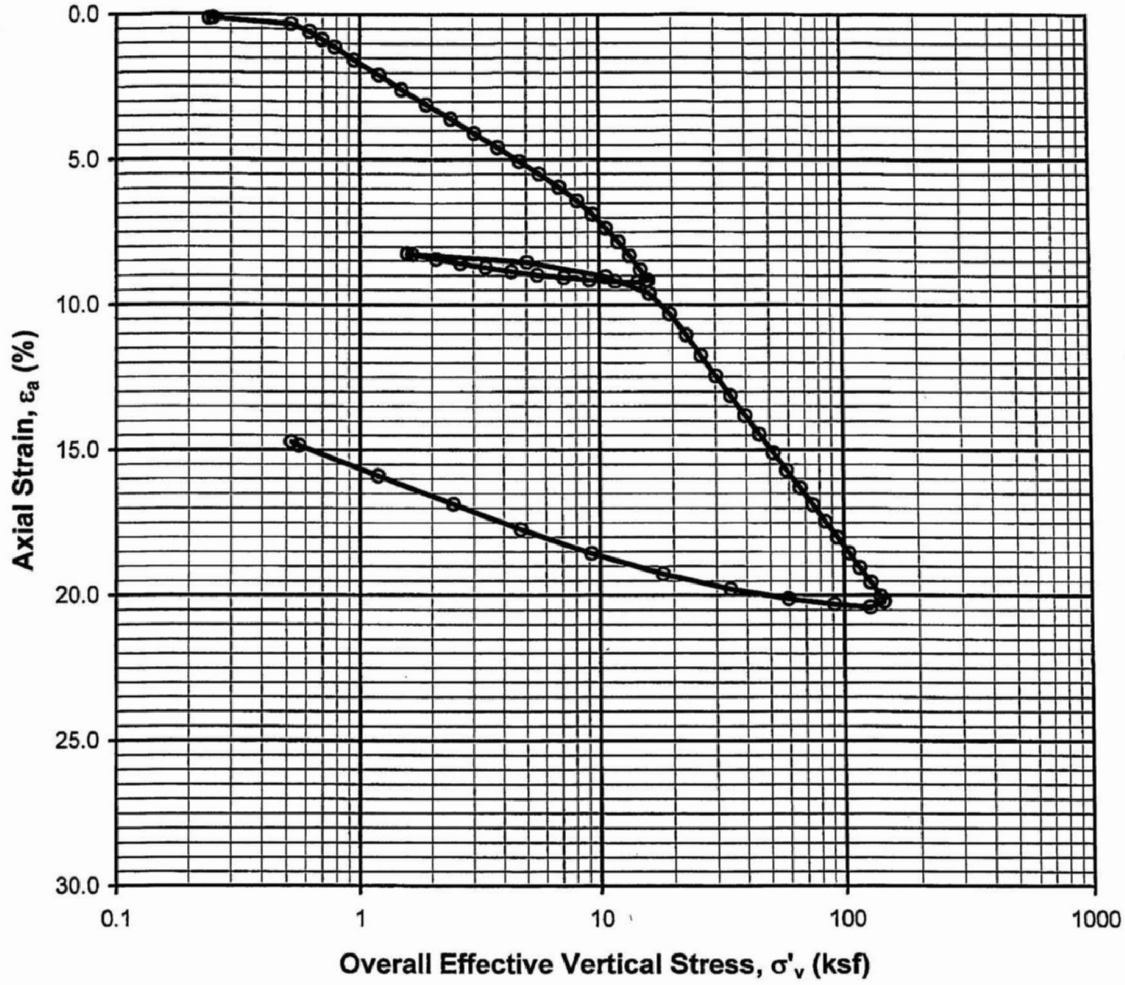
FUGRO CONSULTANTS, INC.

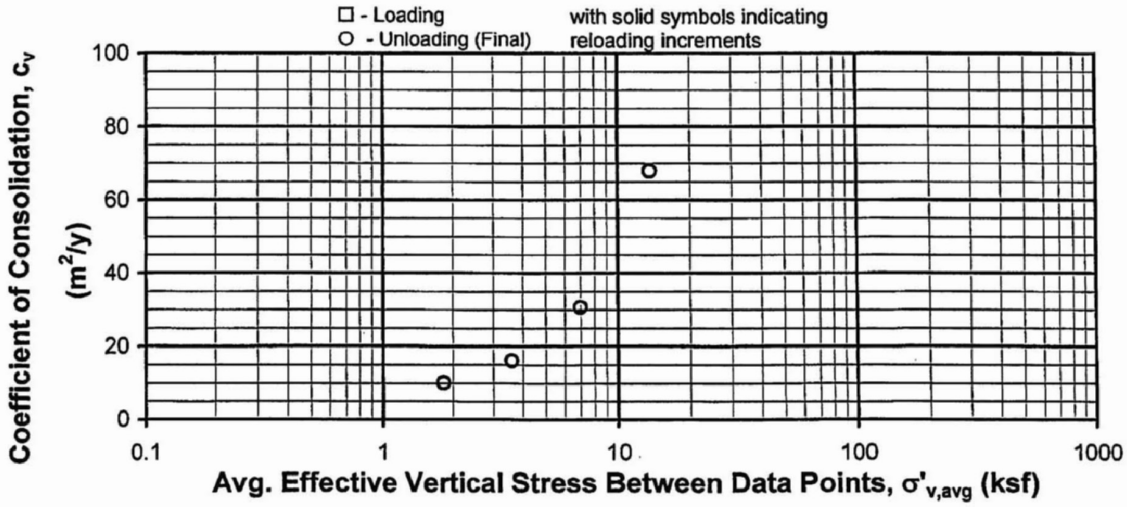
ONE - DIMENSIONAL CONSOLIDATION TEST: CRS LOADING RESULTS (Load Time - Deformation Properties)

Load-ing Info. (1)	Elapsed Time from Start of Loading, Δt_n (min)	Overall Effective Vertical Stress, $\sigma'_{v,n}$ (ksf)	Corrected Volumetric (Axial) Strain, $\varepsilon_{v,n}$ ($\varepsilon_{ac,n}$) $\Delta H_{c,n} / H_o$ (%)	Overall Void Ratio, e_n	Total Vertical Stress, $\sigma_{v,n}$ (ksf)	Excess Pore-Water Pressure, ΔU_n (2) (ksf)	Loading Pore-Water Pressure Ratio, R_u $\Delta U_n / \sigma_{v,n}$ (%)	Corrected Specimen Height, $H_{c,n}$ (mm)	Calculations Between n and n-1: Average Effective Vertical Stress, $\sigma'_{v,avg}$ (ksf)	Coefficient of Consolidation, c_v (m^2/y)	Average Void Ratio, e_{avg}	Hydraulic Conductivity, k @ 20°C (m/y)	Steady State Ratio, $SSR_n = \frac{c_v \cdot t_n \cdot UCF}{T_v \cdot (H_{c,avg})^2}$	Rate of Secondary Comp. (3), $c_\alpha = \Delta d_{a,sc} / H_o$ ($\times 10^{-4}$)
	1586	64.01	9.73	0.486	70.10	8.941	12.8	17.242	60.85	1.55	0.489	1.88E-04	4.99	
	1622	70.81	10.10	0.480	77.44	9.722	12.6	17.171	67.41	1.59	0.483	1.80E-04	5.89	
	1658	77.04	10.45	0.474	83.88	10.050	12.0	17.104	73.93	1.31	0.477	1.60E-04	5.50	
	1694	83.98	10.80	0.468	90.93	10.234	11.3	17.037	80.51	1.39	0.471	1.52E-04	6.54	
	1730	90.90	11.16	0.462	98.23	10.778	11.0	16.969	87.44	1.38	0.465	1.49E-04	7.21	
	1766	98.24	11.50	0.457	105.61	10.861	10.3	16.904	94.57	1.35	0.460	1.38E-04	7.75	
	1802	106.05	11.85	0.451	113.87	11.531	10.1	16.837	102.15	1.45	0.454	1.35E-04	9.10	
	1838	113.64	12.18	0.446	121.59	11.732	9.6	16.774	109.85	1.30	0.448	1.22E-04	8.83	
	1874	121.88	12.52	0.440	130.21	12.286	9.4	16.709	117.76	1.40	0.443	1.19E-04	10.24	
	1910	130.03	12.84	0.435	138.30	12.213	8.8	16.648	125.96	1.28	0.437	1.11E-04	10.08	
	1946	138.97	13.15	0.430	147.78	13.016	8.8	16.588	134.50	1.45	0.432	1.04E-04	12.21	
UE	1974	146.10	13.40	0.426	155.00	13.151	8.5	16.542	142.54	1.36	0.428	9.88E-05	12.06	
	1976	145.81	13.42	0.425	154.34	12.628	8.2	16.538	145.95		0.425			
	2116	138.86	13.74	0.420	140.01	1.714	1.2	16.475	142.33		0.422			
	2256	103.12	13.60	0.422	101.37	-2.645	-2.6	16.503	120.99		0.421			
	2396	70.95	13.29	0.427	68.08	-4.353	-6.4	16.562	87.04		0.425			
US	2536	47.11	12.85	0.435	43.27	-5.873	-13.6	16.646	59.03		0.431			
	2676	30.64	12.26	0.444	26.40	-6.599	-25.0	16.759	38.87	1.57	0.439	9.89E-05	3.00	
	2816	19.61	11.50	0.457	15.38	-6.760	-43.9	16.904	25.12	1.04	0.450	1.18E-04	3.89	
	2956	12.35	10.61	0.471	8.38	-6.614	-79.0	17.074	15.98	0.74	0.464	1.38E-04	4.08	
	3096	7.56	9.65	0.487	4.18	-5.988	-143.2	17.256	9.96	0.55	0.479	1.56E-04	4.00	
UE	3236	4.61	8.64	0.504	1.96	-5.105	-260.4	17.449	6.09	0.42	0.495	1.86E-04	3.67	
	3376	2.77	7.60	0.521	0.82	-4.275	-523.6	17.649	3.69		0.512			
	3386	2.68	7.52	0.522	0.77	-4.207	-544.1	17.663	2.72		0.522			

Boring B-2321UD, Sample UD-4A, Depth 13.5 - 15.2 ft

FUGRO CONSULTANTS, INC.





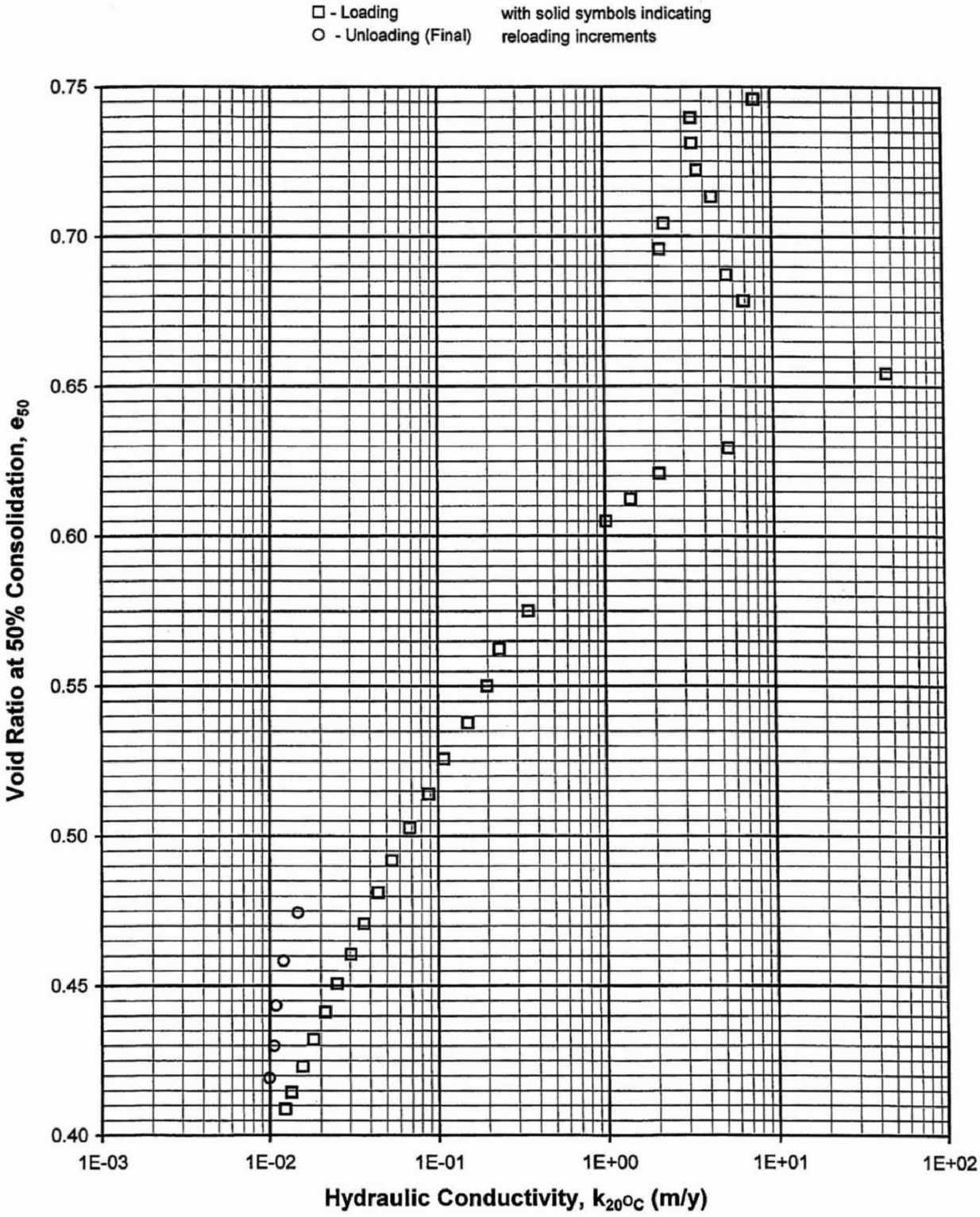
1-D CONSOLIDATION TEST: CRS

Sample No. UD-5A - Depth 17.0 - 18.7 ft

Boring B-2321UD

KAW 7/16/08

Reviewed By: HP



1-D CONSOLIDATION TEST: CRS

Sample No. UD-5A - Depth 17.0 - 18.7 ft

Boring B-2321UD

KAW 7/16/08

ONE - DIMENSIONAL CONSOLIDATION TEST: Specimen Setup / Take Down

Project Number: 0411-08-1686 | Test Station No.: CRS-3 | File Name: B-2321_UD5a
Task No.: NA | Specific Gravity, G_s: 2.720 [X] Meas.; [ ] Assumed | Ring No.: 3
Project Name: Exelon (Victoria) | Assig. Remarks: | Ring Area, A_r (cm^2) = 31.723
TEST TYPE: [X] CRS (D 4186-06); [ ] Method A; [ ] Method B; [ ] Method C; [ ] Method D; | Ring Height (mm) = NA
[ ] Method E; [ ] Method F; [ ] Method G; [ ] Method H; [ ] Method I; [ ] Method J; | **Summary of Methods:** NA

[X] Tube [ ] Field Extruded	[ ] Liner [ ] Remolded	[ ] Tamping	[ ] Constant Effort:	Blows/Tamps per Layer =
Boring No.: B-2321UD	[ ] LPC Core	[ ] Impact/Rammer	Rammer Wgt.(lbf)=	No. Layers =
Sample No.: UD-5	Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)=	Drop (in.) =
Depth (ft): 17.0 - 18.7	Specimen No.: A	[ ] Kneading	[ ] Undercompaction: U_{ni} (%) =	Dia. (in.) =
[ ] Spec. Selection by X-ray;	[ ] Geomarine Sample		Ref. Effort= % Comp. =	± Opt.=

Water Content (W);	Initial - Trimming Location			Final, W_{at}
	Top (W1)	Bottom (W2)	Sides (W3)	(see below)
Container No.	779	802	2026	684
Mass Moist Soil + Container (g)	126.23	106.73	102.68	62.57
Mass Dry Soil + Container (g)	110.41	94.82	91.03	56.55
Mass Container (g)	31.69	32.03	30.63	24.63
WATER CONTENT (%)	20.10	18.97	19.29	18.86
Avg. Initial Water Content, W4 (%)	19.45	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 + Ring (g)	323.88	323.49
Mass Ring (g)	211.72	
Mass Moist Soil, $M_{t,o}$ or $M_{t,at}$ (g)	112.16	111.77
EXCESS DRY SOIL (soil not incl. in final mass above)		
Container No.		5023
Mass Dry Soil + Container (g)		31.19
Mass Container (g)		31.14
Mass Excess Dry Soil, $M_{d,es}$ (g)		0.05

Soil Height: Measurements (mm)			
Initial		Final	
with Spec.	without Spec.	with Spec.	without Spec.
19.050	0.000	10.730	13.100
19.070	0.000	10.580	13.040
19.050	0.000	10.560	13.050
19.070	0.000	10.690	13.100
19.020	0.000	10.760	13.060
[ ] Yes ;	[X] No	[X] Yes ;	[ ] No
[ ] Yes ;	[X] No	[X] Yes ;	[ ] No

Require H_{gb} & d_{gb} (1)
Filter Paper Included:

(1) Req. block ht. to set bench comparator so the final soil ht. can be determined directly by the diff. between the reading with and without spec. : ~ 12.7 mm; CRS ~ 25 mm
Enter value of H_{gb} & d_{gb} only when that value has to be included in the determination of the soil height.

Soil Height: Calculations, (mm)	Initial	Final
Height of Gauge Block, H_{gb} (1)	0.000	19.060
Reading on Gauge Block, d_{gb}	0.000	0.000
Avg. Reading on Soil, d_{soil}	19.052	10.664
Avg. Reading on Apparatus without Specimen, d_{app}	0.000	13.070
Soil Height, $H = d_{soil} - d_{app} + H_{gb} - d_{gb}$	19.052	16.654

Soil Height: Final by Dial Change During Test (mm)	
Initial Height, H_o	19.052
Final (end of test) Corr. Total Spec. Deformation, $\Delta H_{c,f}$	2.806
Final Calculated Height, $H_{f,c} = H_o - \Delta H_{c,f}$	16.246
Final Soil Height Measurement, $H_{f,m}$	16.654
Normalized Difference in %, $(H_{f,c} - H_{f,m})/H_o$	-2.14

Estimated Initial Unit Weight	
Total, $\gamma_{t,o}$ (pcf)= 115.85	Dry, $\gamma_{d,o}$ (pcf)= 96.99

Filter Paper Used: [X] Whatman No. 54; [ ] Other
Incremental Test: Top & Bottom: [ ] Yes ; [ ] No
CRS Test: Top Only: [X] Yes ; [ ] No

Soil Extruded During Loading	
Container No.	
Mass Dry Soil + Cont. (g)	NA
Mass Cont. (g)	NA
Dry Mass - Soil Extruded During Loading, $M_{d,et}$ (g)	0.00

Photo taken of Sliced Test Specimen: [ ] Yes ; [X] No
Final Visual Description: Mottled Brownish Yellow and Light Gray Lean CLAY (CL)

Trimming/Etc. Remarks:

Method of trimming periphery: [X] "Casagrande" Lathe ; [ ] Cutting Shoe ; [ ] Wire Saw; [ ] Other
Method of trimming ends: [ ] Wire Saw & Sharp (knife) Straight Edge; [X] Wire Saw & Straight Edge; [ ] Wire Saw

Trim./Recon. By: JTG | Setup By: JTG | Prelim. Calc. By: LF | Take Down By: JTG
Date: 3/28/2008 | Date: 3/28/2008 | Final Calc. By: LF | Date: 4/1/2008
Reviewed By: HP HP

Note: NA - Not Applicable

KAW 7/16/08

ONE - DIMENSIONAL CONSOLIDATION TEST: Specimen Calculations & Summary

Project Number: 0411-08-1686 Test Station No.: CRS-3 File Name: B-2321_UD5a

Task No.: NA Specific Gravity, G_s: 2.720 [X] Measured ; [ ] Assumed.

Calculations Corrected for Salt (dissolved solids): [X] No or, [ ] Yes, with Concentration = _____ g/kg

Cal.-Routine	ITEM	Water Content, (%)	Mass Dry Soil, (g)	Degree of Saturation, S in %		
				Height Initial	Final Height Meas.	Final Height Dial
1	Initial, Top, W1	20.10	93.39	72.2	99.9	107.4
2	" Bottom, W2	18.97	94.28	69.7	96.8	104.2
3	" Sides, W3	19.29	94.02	70.4	97.7	105.1
4	" Average, W4	19.45	93.90	70.8	98.1	105.6
5	" Back Calculated (1)	19.21	94.09 (3)	70.2	97.5	104.9
6	Final	18.86	94.09 (2)	70.2	97.5	104.9

Calculated Specific Gravity for Final Saturation = 100%:

Used Cal. Routine No. [5] to obtain the mass of dry soil

and final height by: [X] Measurement; [ ] Dial Change.

Back Cal. G_s = 2.684

Avg. G_s (measured/assumed) & Back Cal. G_s = 2.702

Calculation Constant, K = (unit conversion) / $G_s \times \rho_w \times A_r$	
Estimated, K_e	0.11610
Final Selected, K_f	0.11610

Calculated Mass Dry Soil for Final Saturation = 100%: using measured/assumed G_s

and final height by: [X] Measurement; [ ] Dial Change.

Back Cal. Mass Dry Soil, (g) = 93.35

Avg. Back Calculated and Measured Mass Dry Soil (g) = 93.72

Summary of Specimen Physical Properties

Specific Gravity G_s = 2.720		[ ] Assumed	[ ]	To make S_f = 100% at end of test.	
		[X] Measured	[ ]	Avg. of measured/assumed G_s and G_s to make S_f = 100%	
Mass Dry Soil, (g)	Initial: 94.09	[X] From Cal. Routine No.	5	Note: Routine #5 is based on final measurements.	
	Final (4): NA	[ ] Make S_f = 100%, or;	[ ]	Avg. of measured & make S_f = 100%	
Initial Height (mm) = 19.05		[X] Measured ;	[ ]	Back Calculated	Back-cal. Sat. (%) = NA
Final Height (mm) = 16.65		[X] Measured ;	[ ]	Initial H_o & dial change during loading	

	Water Content, w (%)	Void Ratio, e	Degree of Saturation, S (%)	Total Unit Weight, γ_t (pcf)	Dry Unit Weight, γ_d (pcf)	Height of Solids, H_s (2,4) (mm)	Extruded soil loss proportioned in increasing loading increments (5) : From	To (ksf)
Initial	19.2	0.744	70.2	115.9	97.2	10.923		
Final	18.8	0.525	97.5	132.1	111.2	NA	NA	NA

Graphical Construction	σ'_p (ksf)	ε_a (%)	CR	RR	OCR	Liquid Limit (LL)	40	Minus 200 (%)
Casagrande Method	10.00	NA	0.113	0.012	4.3	Plastic Limit (PL)	15	90.4
Becker Method	NA	Becker minimium σ'_p (ksf):			NA	Plasticity Index (PI)	25	

NA - Indicates not applicable

Notes:

(1) Back Calculated based on final mass of oven-dry soil (corrected for dry mass of any excess and extruded soil).

(2) Corrected for any excess dry soil (soil stuck to ring, filter paper, etc.).

(3) This value is only different from the final value if there is soil extrusion during loading.

(4) Final is only different from the initial value if there is soil extrusion during loading.

(5) There should not be any soil loss in a CRS test, unless stress increments are applied.

Calculated By: LF Reviewed By: HP HP

Date: 4/2/2008

ONE - DIMENSIONAL CONSOLIDATION TEST: CALCULATED CRS LOADING DATA

Project Number: 0411-08-1686 Test Station No.: CRS-3 File Name: B-2321_UD5a
Task No.: NA Date; Start: 3/28/2008 Initial Height, H_o (mm): 19.05
Project Name: Exelon (Victoria) Completed: 4/1/2008 Ring Area, A_r (cm^2): 31.7233
Test: Initial / Pressure Gauge Back Pressure, U_G (psi): 70 [X] Undisturbed or ; [ ] Reconstituted - Specimen.
Reference Values: Back Pressure, $U_{b,BE}$ (psi): 70.65509 ,V: 0.02312581 Piston Uplift, P_{up} (lbf): 34.70
Back Pressure, $U_{b,CS}$ (psi): 70.63945 ,V: 0.02312065 Setup DT_{ref} (V): 0.04953916
Displacement Transducer No.: DT-103 Calib. Factor (mm/V): -213.848 Ch. No.: 7
Pore Press. Transducer No.: PT-108 Calib. Factor (psi/V): 3029.501 Ref. Zero (V): -0.000197 Ch. No.: 8
Force Cell No.: FT-103 Calib. Factor (lbf/V): 161103.256 Ref. Zero (V): 0.000105 Ch. No.: 9

Notes:

(1) S - Seating, BS - Start of Back Pressure, BE - End of Back Pressure, SC - Stress Controlled, CS - Constant Rate of Strain
US - Start of Uniform Strain Rate, UE - End of Uniform Strain Rate

(2) Total Vertical Stress (σ_v) corrected to account for the force caused by the back pressure acting on the piston (Piston Uplift).

(3) Increasing deformation value indicates: [X] compression; or [ ] swell.

(4) "App. Flex. Corr." values based on the apparatus calibration.

Data Management By: LF Reviewed By: HP HP

Remarks:

Loading Info. (1)	Julian Day (dd)	Hour (hr.:min.:s)	Elapsed Time from Start of Loading, Δt_n (min)	Total Vertical Stress, $\sigma_{v,n}$ (2) (ksf)	Excess Pore-Water Pressure, ΔU_n (ksf)	Total Specimen Deformation, ΔH_n (3) (mm)	Apparatus Flexibility Correction, $\Delta d_{afc,n}$ (mm)	Corr. Total Specimen Deformation, $\Delta H_{c,n}$ (4) (mm)	Strain Rate, between n & n-1, $\Delta\varepsilon_{ac,rate}$ (%/hr)
S	88	15 : 17 : 00		0.14		0.000			
BS	88	15 : 30 : 00		0.37		0.047	0.000	0.047	
BE	89	16 : 49 : 00		0.25	0.002	0.027	0.000	0.027	
CS	89	16 : 50 : 00	0	0.25	0.000	0.027	0.004	0.023	
	89	17 : 10 : 00	20	0.52	0.000	0.069	0.007	0.062	0.608
	89	17 : 30 : 00	40	0.62	0.000	0.123	0.010	0.113	0.813
US	89	17 : 50 : 00	60	0.70	0.000	0.177	0.012	0.165	0.808
	89	18 : 10 : 00	80	0.79	0.001	0.230	0.015	0.215	0.793
	89	18 : 44 : 00	114	0.95	0.001	0.320	0.020	0.300	0.786
	89	19 : 24 : 00	154	1.21	0.001	0.426	0.028	0.398	0.773
	89	20 : 04 : 00	194	1.50	0.001	0.530	0.036	0.494	0.760
	89	20 : 44 : 00	234	1.91	0.000	0.637	0.045	0.591	0.763
	89	21 : 24 : 00	274	2.41	0.002	0.740	0.055	0.685	0.740
	89	22 : 04 : 00	314	3.04	0.000	0.843	0.065	0.778	0.730
	89	22 : 44 : 00	354	3.82	0.000	0.948	0.076	0.872	0.737
	89	23 : 24 : 00	394	4.73	0.000	1.050	0.086	0.964	0.722
	90	00 : 04 : 00	434	5.69	-0.001	1.141	0.096	1.046	0.646
	90	00 : 44 : 00	474	6.85	0.000	1.238	0.106	1.133	0.688
	90	01 : 24 : 00	514	8.13	0.000	1.338	0.115	1.223	0.709
	90	02 : 04 : 00	554	9.41	-0.001	1.436	0.124	1.312	0.701
	90	02 : 44 : 00	594	10.72	0.001	1.535	0.132	1.403	0.717
	90	03 : 24 : 00	634	12.04	0.000	1.633	0.139	1.494	0.714
	90	04 : 04 : 00	674	13.36	0.002	1.732	0.146	1.586	0.725
	90	04 : 44 : 00	714	14.78	0.001	1.831	0.154	1.678	0.724

ONE - DIMENSIONAL CONSOLIDATION TEST: CALCULATED CRS LOADING DATA

Load-ing Info. (1)	Julian Day (dd)	Hour (hr.:min.:s)	Elapsed Time from Start of Loading, Δt_n (min)	Total Vertical Stress, $\sigma_{v,n}$ (2) (ksf)	Excess Pore-Water Pressure, ΔU_n (ksf)	Total Specimen Deformation, ΔH_n (3) (mm)	Apparatus Flexibility Correction, $\Delta d_{afc,n}$ (mm)	Corr. Total Specimen Deformation, $\Delta H_{c,n}$ (4) (mm)	Strain Rate, between n & n-1, $\Delta\varepsilon_{ac,rate}$ (%/hr)
UE	90	05 : 14 : 00	744	15.88	0.003	1.905	0.159	1.746	0.720
	90	05 : 16 : 00	746	15.58	0.000	1.906	0.158	1.748	0.334
	90	05 : 46 : 00	776	14.36	0.000	1.911	0.153	1.758	0.096
	90	06 : 16 : 00	806	11.66	-0.001	1.896	0.142	1.754	-0.039
	90	06 : 46 : 00	836	9.14	-0.001	1.873	0.130	1.743	-0.116
	90	07 : 16 : 00	866	7.15	-0.001	1.847	0.120	1.727	-0.164
	90	07 : 46 : 00	896	5.57	0.000	1.819	0.110	1.709	-0.189
US	90	08 : 16 : 00	926	4.35	-0.002	1.788	0.100	1.687	-0.228
	90	08 : 46 : 00	956	3.39	0.000	1.754	0.091	1.663	-0.255
	90	09 : 16 : 00	986	2.65	0.000	1.719	0.083	1.636	-0.286
	90	09 : 46 : 00	1016	2.09	-0.001	1.682	0.075	1.607	-0.304
	90	10 : 16 : 00	1046	1.66	-0.001	1.646	0.068	1.578	-0.307
	90	10 : 22 : 00	1052	1.58	0.000	1.639	0.067	1.572	-0.310
UE	90	10 : 24 : 00	1054	1.58	0.000	1.637	0.067	1.570	-0.299
	90	11 : 26 : 00	1116	5.05	0.003	1.732	0.106	1.626	0.285
	90	12 : 28 : 00	1178	10.70	0.002	1.860	0.138	1.722	0.488
	90	13 : 30 : 00	1240	16.10	0.003	1.994	0.160	1.834	0.567
US	90	14 : 32 : 00	1302	19.50	0.004	2.142	0.175	1.967	0.675
	90	15 : 34 : 00	1364	22.70	0.006	2.292	0.188	2.104	0.696
	90	16 : 36 : 00	1426	26.15	0.008	2.440	0.201	2.239	0.688
	90	17 : 38 : 00	1488	30.20	0.009	2.588	0.215	2.372	0.676
	90	18 : 40 : 00	1550	34.77	0.013	2.735	0.231	2.504	0.669
	90	19 : 42 : 00	1612	39.82	0.016	2.879	0.246	2.632	0.652
	90	20 : 44 : 00	1674	45.55	0.018	3.019	0.263	2.756	0.628
	90	21 : 46 : 00	1736	51.96	0.024	3.157	0.281	2.876	0.609
	90	22 : 48 : 00	1798	58.95	0.027	3.293	0.300	2.993	0.595
	90	23 : 50 : 00	1860	66.71	0.032	3.426	0.319	3.107	0.576
	91	00 : 52 : 00	1922	75.20	0.038	3.558	0.340	3.218	0.567
	91	01 : 54 : 00	1984	84.46	0.043	3.687	0.361	3.327	0.551
	91	02 : 56 : 00	2046	94.52	0.050	3.813	0.382	3.431	0.529
	91	03 : 58 : 00	2108	105.24	0.055	3.936	0.405	3.532	0.513
	91	05 : 00 : 00	2170	116.64	0.062	4.057	0.427	3.629	0.495
	91	06 : 02 : 00	2232	128.95	0.069	4.175	0.450	3.725	0.485
	91	07 : 04 : 00	2294	141.50	0.075	4.289	0.473	3.816	0.462
UE	91	07 : 26 : 00	2316	146.33	0.080	4.330	0.482	3.848	0.461
	91	07 : 28 : 00	2318	145.89	0.057	4.331	0.481	3.850	0.371
	91	10 : 06 : 00	2476	128.38	-0.003	4.339	0.453	3.887	0.073
	91	12 : 44 : 00	2634	91.53	-0.013	4.256	0.387	3.868	-0.036
	91	15 : 22 : 00	2792	59.41	-0.022	4.155	0.322	3.833	-0.072
US	91	18 : 00 : 00	2950	34.24	-0.036	4.031	0.262	3.769	-0.126
	91	20 : 38 : 00	3108	18.00	-0.048	3.884	0.214	3.670	-0.198
	91	23 : 16 : 00	3266	9.19	-0.059	3.714	0.178	3.536	-0.267

ONE - DIMENSIONAL CONSOLIDATION TEST: CALCULATED CRS LOADING DATA

Loading Info. (1)	Julian Day (dd)	Hour (hr.:min.:s)	Elapsed Time from Start of Loading, Δt_n (min)	Total Vertical Stress, $\sigma_{v,n}$ (2) (ksf)	Excess Pore-Water Pressure, ΔU_n (ksf)	Total Specimen Deformation, ΔH_n (3) (mm)	Apparatus Flexibility Correction, $\Delta d_{afc,n}$ (mm)	Corr. Total Specimen Deformation, $\Delta H_{c,n}$ (4) (mm)	Strain Rate, between n & n-1, $\Delta \varepsilon_{ac,rate}$ (%/hr)
	92	01 : 54 : 00	3424	4.68	-0.065	3.530	0.150	3.379	-0.312
	92	04 : 32 : 00	3582	2.43	-0.056	3.341	0.127	3.214	-0.330
UE	92	07 : 10 : 00	3740	1.15	-0.057	3.136	0.107	3.029	-0.368
	92	09 : 48 : 00	3898	0.53	-0.048	2.927	0.099	2.828	-0.402
	92	10 : 04 : 00	3914	0.50	-0.046	2.906	0.100	2.806	-0.434
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ONE - DIMENSIONAL CONSOLIDATION TEST: CRS LOADING RESULTS (Load Time - Deformation Properties)

Project Number: 0411-08-1686 Test Station No.: CRS-3 [X] Undisturbed or ; [ ] Reconstituted - Specimen. File Name: B-2321_UD5

Task No.: NA Date; Start: 3/28/2008 Back Pressure, $U_{b,CS}$ (psi): 70.6 Piston Uplift, P_{up} (lbf): 34.70

Project Name: Exelon (Victoria) Completed: 4/1/2008 Transient Time Factor, $T_v = (C_v \cdot t) / H^2$ = 0.5

4186-06-Summary of Methods: NA [ ] Data corrected for salt _____; in [ ] g/kg

Final Description of Specimen: Mottled Brownish Yellow and Light Gray Lean CLAY (CL)

	Ring No.:	3	Area, A_r (cm^2):	31.723	Solids Ht., H_s (mm):	10.923	Specific Gravity, G_s =	2.720	[X] Meas. ;	[ ] Assumed					
Initial:	Height	H_o:	19.05	Water	19.2	Void	0.744	Deg. of	70.2	Total Unit	115.9	Dry Unit	97.2		
Final:	(mm):	H_f:	16.65	Content, w (%):	18.8	Ratio, e:	0.525	Sat., S (%):	97.5	Weight, γ_t (pcf):	132.1	Weight, γ_d (pcf):	111.2		

Notes:

(1) S - Seating, BS - Start of Back Pressure, BE - End of Back Pressure, SC - Stress Controlled, CS - Constant Rate of Strain, US - Start of Uniform Strain Rate, UE - End of Uniform Strain Rate or ΔU_n to erratic

(2) Excess pore-water pressure measured at the base of the specimen.

(3) Only applicable during stress controlled (SC) loading.

Data Management by: LF Reviewed By: HP HP

Load-ing Info. (1)	Elapsed Time from Start of Loading, Δt_n (min)	Overall Effective Vertical Stress, $\sigma'_{v,n}$ (ksf)	Corrected Volumetric (Axial) Strain, $\varepsilon_{v,n}$ ($\varepsilon_{ac,n}$) $\Delta H_{c,n} / H_o$ (%)	Overall Void Ratio, e_n	Total Vertical Stress, $\sigma_{v,n}$ (ksf)	Excess Pore-Water Pressure, ΔU_n (2) (ksf)	Loading Pore-Water Pressure Ratio, R_u $\Delta U_n / \sigma_{v,n}$ (%)	Corrected Specimen Height, $H_{c,n}$ (mm)	Calculations Between n and n-1: Average Effective Vertical Stress, $\sigma'_{v,avg}$ (ksf)	Coefficient of Consolidation, c_v (m^2/y)	Average Void Ratio, e_{avg}	Hydraulic Conductivity, k @ 20°C (m/y)	Steady State Ratio, $SSR_n = \frac{c_v \cdot t_n \cdot UCF}{T_v \cdot (H_{c,avg})^2}$	Rate of Secondary Comp. (3), $c_\alpha = \Delta d_{a,sc} / H_o$ ($\times 10^{-4}$)
S					0.14				Data on given line represents average conditions between that line and the previous line of data.					
BS			0.25	0.740	0.37			19.005						
BE		0.24	0.14	0.742	0.25	0.002	0.9	19.025			0.741			
CS	0	0.25	0.12	0.742	0.25	0.000	0.0	19.029			0.742			
	20	0.52	0.32	0.739	0.52	0.000	-0.1	18.990	0.39		0.740			
	40	0.62	0.59	0.734	0.62	0.000	-0.1	18.939	0.57		0.736			
US	60	0.70	0.86	0.729	0.70	0.000	0.0	18.887	0.66		0.731			
	80	0.79	1.13	0.724	0.79	0.001	0.1	18.837	0.75	1357.75	0.727	8.03E+00	290.43	
	114	0.95	1.57	0.717	0.95	0.001	0.1	18.752	0.87	599.57	0.721	3.43E+00	348.77	
	154	1.21	2.09	0.708	1.21	0.001	0.1	18.654	1.08	839.73	0.712	3.45E+00	858.65	
	194	1.50	2.60	0.699	1.50	0.001	0.0	18.558	1.35	1048.67	0.703	3.68E+00	1544.63	
	234	1.91	3.10	0.690	1.91	0.000	0.0	18.461	1.70	1782.95	0.694	4.50E+00	3445.84	
	274	2.41	3.60	0.681	2.41	0.002	0.1	18.367	2.16	1163.66	0.686	2.31E+00	2794.72	
	314	3.04	4.08	0.673	3.04	0.000	0.0	18.274	2.73	1387.77	0.677	2.19E+00	3996.38	
	354	3.82	4.58	0.664	3.82	0.000	0.0	18.180	3.43	4279.20	0.669	5.49E+00	14409.72	
	394	4.73	5.06	0.656	4.73	0.000	0.0	18.088	4.27	6345.46	0.660	6.86E+00	24523.57	
	434	5.69	5.49	0.648	5.69	-0.001	0.0	18.006	5.21		0.652		-24858.66	

Boring B-2321UD, Sample UD-5A, Depth 17.0 - 18.7 ft

FUGRO CONSULTANTS, INC.

ONE - DIMENSIONAL CONSOLIDATION TEST: CRS LOADING RESULTS (Load Time - Deformation Properties)

Load-ing Info. (1)	Elapsed Time from Start of Loading, Δt_n (min)	Overall Effective Vertical Stress, $\sigma'_{v,n}$ (ksf)	Corrected Volumetric (Axial) Strain, $\varepsilon_{v,n}$ ($\varepsilon_{ac,n}$) $\Delta H_{c,n} / H_o$ (%)	Overall Void Ratio, e_n	Total Vertical Stress, $\sigma_{v,n}$ (ksf)	Excess Pore-Water Pressure, ΔU_n (2) (ksf)	Loading Pore-Water Pressure Ratio, R_u $\Delta U_n / \sigma_{v,n}$ (%)	Corrected Specimen Height, $H_{c,n}$ (mm)	Calculations Between n and n-1: Average Effective Vertical Stress, $\sigma'_{v,avg}$ (ksf)	Coefficient of Consolidation, c_v (m^2/y)	Average Void Ratio, e_{avg}	Hydraulic Conductivity, k @ 20°C (m/y)	Steady State Ratio, $SSR_n = \frac{c_v \cdot t_n \cdot UCF}{T_v \cdot (H_{c,avg})^2}$	Rate of Secondary Comp. (3), $c_\alpha = \Delta d_{a,sc} / H_o$ ($\times 10^{-4}$)
	474	6.85	5.95	0.640	6.85	0.000	0.0	17.919	6.27		0.644		-25034.75	
	514	8.13	6.42	0.632	8.13	0.000	0.0	17.829	7.49	61837.69	0.636	4.64E+01	###	
	554	9.41	6.89	0.624	9.41	-0.001	0.0	17.740	8.77		0.628		-41130.32	
	594	10.72	7.36	0.616	10.72	0.001	0.0	17.649	10.07		0.620		###	
	634	12.04	7.84	0.607	12.04	0.000	0.0	17.558	11.38	7509.04	0.612	5.53E+00	52925.59	
	674	13.36	8.32	0.599	13.36	0.002	0.0	17.466	12.70	2869.13	0.603	2.14E+00	21857.94	
	714	14.77	8.81	0.591	14.78	0.001	0.0	17.374	14.07	2054.82	0.595	1.44E+00	16850.84	
UE	744	15.88	9.17	0.584	15.88	0.003	0.0	17.306	15.33	1525.73	0.587	1.02E+00	13207.36	
	746	15.58	9.18	0.584	15.58	0.000	0.0	17.304	15.73		0.584			
	776	14.36	9.23	0.583	14.36	0.000	0.0	17.294	14.97		0.584			
	806	11.67	9.21	0.584	11.66	-0.001	0.0	17.298	13.01		0.583			
	836	9.14	9.15	0.585	9.14	-0.001	0.0	17.309	10.40		0.584			
	866	7.15	9.07	0.586	7.15	-0.001	0.0	17.325	8.15		0.585			
	896	5.57	8.97	0.588	5.57	0.000	0.0	17.343	6.36		0.587			
US	926	4.35	8.86	0.590	4.35	-0.002	0.0	17.365	4.96		0.589			
	956	3.39	8.73	0.592	3.39	0.000	0.0	17.389	3.87	2717.99	0.591	7.35E-01	1027.57	
	986	2.65	8.59	0.594	2.65	0.000	0.0	17.416	3.02	18483.78	0.593	7.25E+00	13934.75	
	1016	2.09	8.43	0.597	2.09	-0.001	0.0	17.445	2.37	3166.75	0.596	1.75E+00	3569.54	
	1046	1.66	8.28	0.600	1.66	-0.001	0.0	17.474	1.88	1551.74	0.598	1.11E+00	2324.38	
	1052	1.58	8.25	0.600	1.58	0.000	0.0	17.480	1.62	2311.38	0.600	1.83E+00	3628.06	
UE	1054	1.58	8.24	0.600	1.58	0.000	0.0	17.482	1.58	3185.49	0.600	-2.89E+01	5077.20	
	1116	5.05	8.53	0.595	5.05	0.003	0.1	17.426	3.31		0.598			
	1178	10.70	9.04	0.587	10.70	0.002	0.0	17.330	7.88		0.591			
	1240	16.10	9.62	0.576	16.10	0.003	0.0	17.218	13.40		0.581			
US	1302	19.50	10.32	0.564	19.50	0.004	0.0	17.085	17.80		0.570			
	1364	22.70	11.04	0.552	22.70	0.006	0.0	16.948	21.10	766.76	0.558	3.51E-01	624.70	
	1426	26.14	11.75	0.539	26.15	0.008	0.0	16.813	24.42	557.63	0.545	2.35E-01	923.37	
	1488	30.20	12.45	0.527	30.20	0.009	0.0	16.680	28.17	563.49	0.533	1.98E-01	1422.15	
	1550	34.76	13.14	0.515	34.77	0.013	0.0	16.548	32.48	488.47	0.521	1.51E-01	1670.05	
	1612	39.81	13.82	0.503	39.82	0.016	0.0	16.420	37.28	398.61	0.509	1.08E-01	1730.51	

Boring B-2321UD, Sample UD-5A, Depth 17.0 - 18.7 ft

FUGRO CONSULTANTS, INC.

ONE - DIMENSIONAL CONSOLIDATION TEST: CRS LOADING RESULTS (Load Time - Deformation Properties)

Load-ing Info. (1)	Elapsed Time from Start of Loading, Δt_n (min)	Overall Effective Vertical Stress, $\sigma'_{v,n}$ (ksf)	Corrected Volumetric (Axial) Strain, $\varepsilon_{v,n}$ ($\varepsilon_{ac,n}$) $\Delta H_{c,n} / H_o$ (%)	Overall Void Ratio, e_n	Total Vertical Stress, $\sigma_{v,n}$ (ksf)	Excess Pore-Water Pressure, ΔU_n (2) (ksf)	Loading Pore-Water Pressure Ratio, R_u $\Delta U_n / \sigma_{v,n}$ (%)	Corrected Specimen Height, $H_{c,n}$ (mm)	Calculations Between n and n-1: Average Effective Vertical Stress, $\sigma'_{v,avg}$ (ksf)	Coefficient of Consolidation, c_v (m^2/y)	Average Void Ratio, e_{avg}	Hydraulic Conductivity, k @ 20°C (m/y)	Steady State Ratio, $SSR_n = \frac{c_v \cdot t_n \cdot UCF}{T_v \cdot (H_{c,avg})^2}$	Rate of Secondary Comp. (3), $c_\alpha = \Delta d_{a,sc} / H_o$ ($\times 10^{-4}$)
	1674	45.54	14.47	0.492	45.55	0.018	0.0	16.296	42.67	381.34	0.498	8.81E-02	2017.35	
	1736	51.94	15.10	0.481	51.96	0.024	0.0	16.176	48.74	339.26	0.486	6.80E-02	2125.39	
	1798	58.93	15.71	0.470	58.95	0.027	0.0	16.059	55.43	299.38	0.475	5.37E-02	2175.20	
	1860	66.69	16.31	0.460	66.71	0.032	0.0	15.945	62.81	284.65	0.465	4.45E-02	2360.30	
	1922	75.17	16.89	0.450	75.20	0.038	0.1	15.834	70.93	260.31	0.455	3.66E-02	2432.42	
	1984	84.44	17.46	0.440	84.46	0.043	0.1	15.725	79.80	241.71	0.445	3.03E-02	2519.25	
	2046	94.49	18.01	0.430	94.52	0.050	0.1	15.621	89.46	225.47	0.435	2.50E-02	2598.53	
	2108	105.20	18.54	0.421	105.24	0.055	0.1	15.520	99.85	210.66	0.425	2.13E-02	2664.95	
	2170	116.60	19.05	0.412	116.64	0.062	0.1	15.423	110.90	197.87	0.416	1.81E-02	2730.32	
	2232	128.90	19.55	0.403	128.95	0.069	0.1	15.327	122.75	188.24	0.408	1.57E-02	2817.98	
	2294	141.45	20.03	0.395	141.50	0.075	0.1	15.236	135.17	172.60	0.399	1.34E-02	2789.89	
UE	2316	146.28	20.20	0.392	146.33	0.080	0.1	15.204	143.86	172.60	0.393	1.23E-02	2874.83	
	2318	145.85	20.21	0.392	145.89	0.057	0.0	15.202	146.06		0.392			
	2476	128.39	20.40	0.388	128.38	-0.003	0.0	15.165	137.12		0.390			
	2634	91.54	20.30	0.390	91.53	-0.013	0.0	15.184	109.96		0.389			
	2792	59.42	20.12	0.393	59.41	-0.022	0.0	15.219	75.48		0.392			
US	2950	34.27	19.78	0.399	34.24	-0.036	-0.1	15.283	46.84		0.396			
	3108	18.03	19.26	0.408	18.00	-0.048	-0.3	15.382	26.15	157.25	0.404	9.96E-03	402.16	
	3266	9.23	18.56	0.420	9.19	-0.059	-0.6	15.516	13.63	67.91	0.414	1.07E-02	342.12	
	3424	4.72	17.74	0.435	4.68	-0.065	-1.4	15.673	6.98	30.67	0.428	1.09E-02	227.47	
	3582	2.46	16.87	0.450	2.43	-0.056	-2.3	15.838	3.59	16.10	0.442	1.21E-02	155.96	
UE	3740	1.19	15.90	0.467	1.15	-0.057	-5.0	16.023	1.83	10.09	0.458	1.47E-02	119.57	
	3898	0.56	14.84	0.485	0.53	-0.048	-8.9	16.224	0.88		0.476			
	3914	0.53	14.73	0.487	0.50	-0.046	-9.3	16.246	0.55		0.486			

Boring B-2321UD, Sample UD-5A, Depth 17.0 - 18.7 ft

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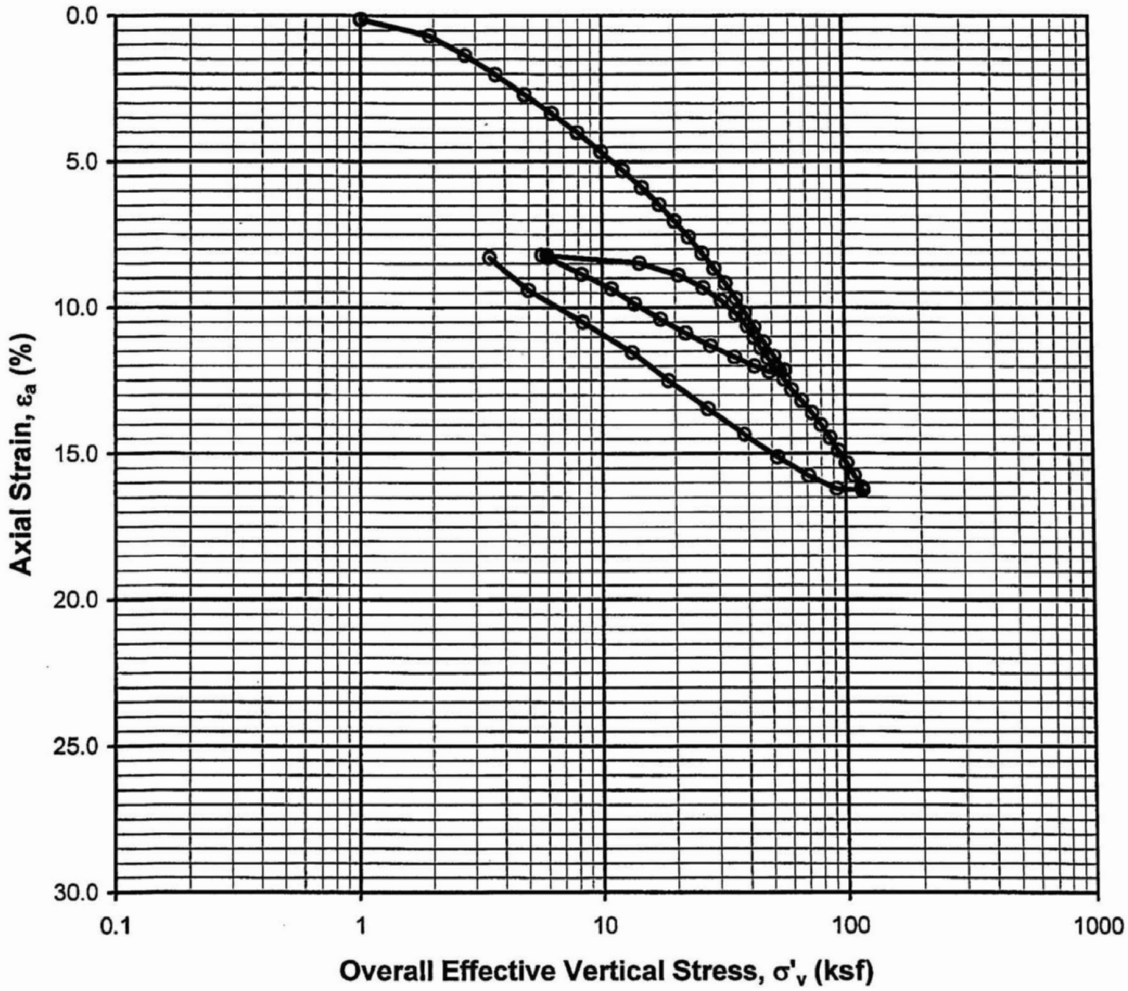
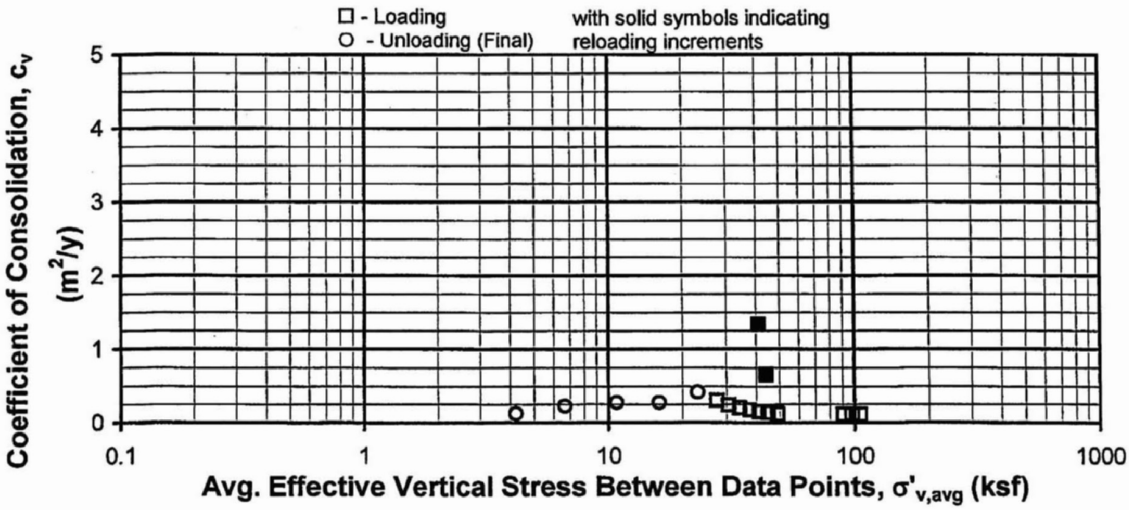




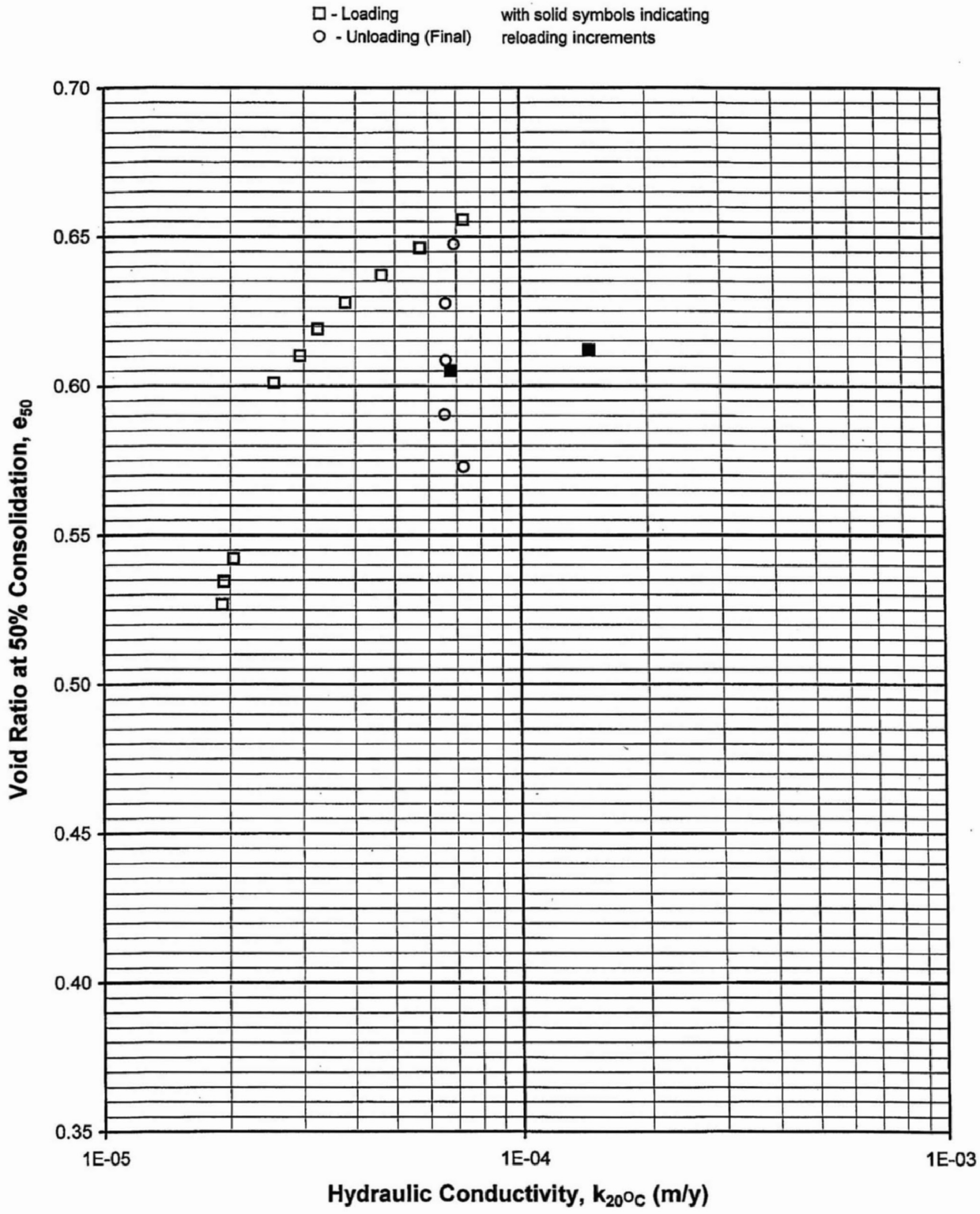
1-D CONSOLIDATION TEST: CRS

Sample No. UD-6A - Depth 28.5 - 30.2 ft

Boring B-2321UD

KAW 7/16/08

Reviewed By: HP



1-D CONSOLIDATION TEST: CRS

Sample No. UD-6A - Depth 28.5 - 30.2 ft

Boring B-2321UD

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ONE - DIMENSIONAL CONSOLIDATION TEST: Specimen Setup / Take Down

Project Number: 0411-08-1686 | Test Station No.: CRS-8 | File Name: B-2321_UD6a
Task No.: NA | Specific Gravity, G_s: 2.720 [X] Meas. ; [ ] Assumed | Ring No.: 8
Project Name: Exelon (Victoria) | Assig. Remarks: | Ring Area, A_r (cm^2) = 31.686
TEST TYPE: [X] CRS (D 4186-06); [ ] Method A; [ ] Method B; [ ] Method C; [ ] Method D; | Ring Height (mm) = NA
[ ] Method E; [ ] Method F; [ ] Method G; [ ] Method H; [ ] Method I; [ ] Method J; | **Summary of Methods:** NA

[X] Tube [ ] Field Extruded	[ ] Liner [ ] Remolded	[ ] Tamping	[ ] Constant Effort:	Blows/Tamps per Layer =
Boring No.: B-2321UD	[ ] LPC Core	[ ] Impact/Rammer	Rammer Wgt.(lbf)=	No. Layers =
Sample No.: UD-6	Compostite No.:	[ ] Pluviated:	Tamper Force (lbf)=	Drop (in.) =
Depth (ft): 28.5 - 30.2	Specimen No.: A	[ ] Kneading	[ ] Undercompaction: U_{ni} (%) =	Dia. (in.) =
[ ] Spec. Selection by X-ray;	[ ] Geomarine Sample	[ ]	Ref. Effort= % Comp. =	± Opt.=

Water Content (W);	Initial - Trimming Location			Final, W_{at}	Soil and Ring Masses	Initial	Final
	Top (W1)	Bottom (W2)	Sides (W3)	(see below)	Mass Moist Soil + Ring (g)	330.74	331.27
Container No.	116	785	819	189	Mass Ring (g)	214.27	
Mass Moist Soil + Container (g)	115.13	125.75	109.39	64.72	Mass Moist Soil, $M_{t,o}$ or $M_{t,at}$ (g)	116.47	117.00
Mass Dry Soil + Container (g)	98.86	107.59	94.26	57.51	EXCESS DRY SOIL (soil not incl. in final mass above)		
Mass Container (g)	29.69	31.96	31.98	30.39	Container No.		501
WATER CONTENT (%)	23.52	24.01	24.29	26.59	Mass Dry Soil + Container (g)		32.07
Avg. Initial Water Content, W4 (%)	23.94	Final W_{at}: [X] Slice ; [ ] Whole Spec.			Mass Container (g)		31.82
[ ] See attached data sheet(s) for additional water contents					Mass Excess Dry Soil, $M_{d,es}$ (g)		0.25

Soil Height: Measurements (mm)					Soil Height: Calculations, (mm)	Initial	Final
Initial		Final					
with Spec.	without Spec.	with Spec.	without Spec.		Height of Gauge Block, H_{gb} (1)	0.000	19.060
19.300	0.000	12.290	13.040		Reading on Gauge Block, d_{gb}	0.000	0.000
19.210	0.000	12.290	12.980		Avg. Reading on Soil, d_{soil}	19.260	12.284
19.250	0.000	12.320	12.980		Avg. Reading on Apparatus without Specimen, d_{app}	0.000	12.988
19.290	0.000	12.280	12.980		Soil Height, $H = d_{soil} - d_{app} + H_{gb} - d_{gb}$	19.260	18.356
19.250	0.000	12.240	12.960		**Soil Height: Final by Dial Change During Test (mm)**		
[ ] Yes ;	[X] No	[X] Yes ;	[ ] No	Require H_{gb} & d_{gb} (1)	Initial Height, H_o		19.260
[ ] Yes ;	[X] No	[X] Yes ;	[ ] No	Filter Paper Included:	Final (end of test) Corr. Total Spec. Deformation, $\Delta H_{c,f}$		1.599
(1) Req. block ht. to set bench comparator so the final soil ht. can be determined directly by the diff. between the reading with and without spec. : ~ 12.7 mm; CRS ~ 25 mm					Final Calculated Height, $H_{f,c} = H_o - \Delta H_{c,f}$		17.661
Enter value of H_{gb} & d_{gb} only when that value has to be included in the determination of the soil height.					Final Soil Height Measurement, $H_{f,m}$		18.356
					Normalized Difference in %, $(H_{f,c} - H_{f,m})/H_o$		-3.61

Estimated Initial Unit Weight			
Total, $\gamma_{t,o}$ (pcf)=	119.14	Dry, $\gamma_{d,o}$ (pcf)=	96.13

Filter Paper Used: [X] Whatman No. 54; [ ] Other
Incremental Test: Top & Bottom: [ ] Yes ; [ ] No
CRS Test: Top Only: [X] Yes ; [ ] No

Soil Extruded During Loading	
Container No.	
Mass Dry Soil + Cont. (g)	NA
Mass Cont. (g)	NA
Dry Mass - Soil Extruded During Loading, $M_{d,et}$ (g)	0.00

Photo taken of Sliced Test Specimen: [ ] Yes ; [X] No

Final Visual Description: Mottled Brownish Yellow and Light Gray Fat CLAY (CH)

Trimming/Etc. Remarks:

Method of trimming periphery: [X] "Casagrande" Lathe ; [ ] Cutting Shoe ; [ ] Wire Saw; [ ] Other
Method of trimming ends: [ ] Wire Saw & Sharp (knife) Straight Edge; [X] Wire Saw & Straight Edge; [ ] Wire Saw

Trim./Recon. By: JTG | Setup By: JTG | Prelim. Calc. By: LF | Take Down By: JTG
Date: 3/26/2008 | Date: 3/26/2008 | Final Calc. By: LF | Date: 4/1/2008
Reviewed By: HP HP

Note: NA - Not Applicable

KAW 7/16/08