

ONE - DIMENSIONAL CONSOLIDATION TEST: Specimen Calculations & Summary

Project Number: 0411-08-1686 Test Station No.: CRS-2 File Name: B-2359_UD4a
 Task No.: NA Specific Gravity, G_s : 2.730 Measured ; Assumed.
 Calculations Corrected for Salt (dissolved solids): 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. Dial	
1	Initial, Top, W1	21.60	101.05	92.6	98.9	96.6
2	" Bottom, W2	21.71	100.96	92.9	99.2	96.9
3	" Sides, W3	21.49	101.13	92.4	98.6	96.3
4	" Average, W4	21.60	101.05	92.6	98.9	96.6
5	" Back Calculated (1)	22.54	100.27 (3)	94.8	101.3	99.0
6	Final	21.33	100.27 (2)	94.8	101.3	99.0

Calculated Specific Gravity for Final Saturation = 100%:
 Used Cal. Routine No. 5 to obtain the mass of dry soil
 and final height by: Measurement; Dial Change.
 Back Cal. G_s = 2.750
 Avg. G_s (measured/assumed) & Back Cal. G_s = 2.740

Calculation Constant, K
 = (unit conversion) / $G_s \times \rho_w \times A_r$
 Estimated, K_e 0.11597
 Final Selected, K_f 0.11597

Calculated Mass Dry Soil for Final Saturation = 100%: using measured/assumed G_s
 and final height by: Measurement; Dial Change.
 Back Cal. Mass Dry Soil, (g) = 100.69
 Avg. Back Calculated and Measured Mass Dry Soil (g) = 100.48

Summary of Specimen Physical Properties							
Specific Gravity		Assumed		To make $S_r = 100\%$ at end of test.			
$G_s = 2.730$		<input checked="" type="checkbox"/> Measured		Avg. of measured/assumed G_s and G_s to make $S_r = 100\%$			
Mass Dry Soil, (g)	Initial: <u>100.27</u>	<input checked="" type="checkbox"/>	From Cal. Routine No. <u>5</u>	Note: Routine #5 is based on final measurements.			
	Final (4): <u>NA</u>		Make $S_r = 100\%$, or,	Avg. of measured & make $S_r = 100\%$			
Initial Height (mm) = <u>19.18</u>		<input checked="" type="checkbox"/>	Measured ;	Back Calculated		Back-cal. Sat. (%) = <u>NA</u>	
Final Height (mm) = <u>18.14</u>		<input checked="" type="checkbox"/>	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)
Initial	22.5	0.649	94.8	126.4	103.2	11.627	From To (ksf)
Final	20.8	0.560	101.3	131.7	109.1	NA	NA NA

Graphical Construction	σ'_p (ksf)	ϵ_s (%)	CR	RR	OCR	Liquid Limit (LL)	68	Minus 200 (%)
Casagrande Method	43.90	NA	0.141	0.065	9.6	Plastic Limit (PL)	17	98.2
Becker Method	NA	Becker minimum σ'_p (ksf):			NA	Plasticity Index (PI)	51	

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: DH Reviewed By: HP HP
 Date: 4/18/2008

ONE - DIMENSIONAL CONSOLIDATION TEST: CALCULATED CRS LOADING DATA

Project Number: 0411-08-1686 Test Station No.: CRS-2 File Name: B-2359_UD4a
 Task No.: NA Date, Start: 4/7/2008 Initial Height, H_o (mm): 19.18
 Project Name: Exelon (Victoria) Completed: 4/17/2008 Ring Area, A_r (cm²): 31.6439
 Test: Initial / Pressure Gauge Back Pressure, U_G (psi): 70 Undisturbed or ; Reconstituted - Specimen.
 Reference Values: Back Pressure, U_{b,BE} (psi): 70.5372, V: 0.02217552 Piston Uplift, P_{up} (lbf): 34.77
 Back Pressure, U_{b,CS} (psi): 70.76277, V: 0.02224866 Setup DT_{ref} (V): 0.04639604
 Displacement Transducer No.: DT-102 Calib. Factor (mm/V): -212.321 Ch. No.: 4
 Pore Press. Transducer No.: PT-110 Calib. Factor (psi/V): 3084.04 Ref. Zero (V): -0.000696 Ch. No.: 5
 Force Cell No.: FT-106 Calib. Factor (lbf/V): 161475.386 Ref. Zero (V): 0.000148 Ch. No.: 6

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: compression; or swell.
- (4) "App. Flex. Corr." values based on the apparatus calibration.

Data Management By: DH Reviewed By: HP

Remarks: _____

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, $\Delta d_{arc,n}$ (mm)	Corr. Total Specimen Deformation, $\Delta H_{c,n}$ (4) (mm)	Strain Rate, between n & n-1, $\Delta \epsilon_{ac,rate}$ (%/hr)
S	98	13 : 30 : 00		0.33		0.000			
BS	98	13 : 44 : 00		1.32		0.043	0.068	-0.025	
BE	99	12 : 56 : 00		3.43	-0.032	0.015	0.121	-0.106	
CS	99	12 : 57 : 00	0	3.48	0.000	0.015	0.122	-0.106	
	99	13 : 48 : 00	51	8.28	3.892	0.083	0.181	-0.098	0.049
	99	14 : 39 : 00	102	11.08	6.042	0.138	0.205	-0.067	0.196
	99	16 : 12 : 00	195	14.59	8.344	0.222	0.231	-0.008	0.197
US	99	17 : 54 : 00	297	18.49	10.596	0.314	0.255	0.058	0.204
	99	19 : 36 : 00	399	22.71	12.796	0.407	0.279	0.127	0.211
	99	21 : 18 : 00	501	26.94	14.627	0.498	0.301	0.196	0.212
	99	23 : 00 : 00	603	31.54	16.470	0.591	0.324	0.268	0.219
	100	00 : 42 : 00	705	36.13	18.031	0.682	0.344	0.338	0.216
	100	02 : 24 : 00	807	40.90	19.605	0.775	0.365	0.410	0.220
	100	04 : 06 : 00	909	45.86	21.230	0.862	0.385	0.477	0.206
	100	05 : 48 : 00	1011	51.06	23.072	0.952	0.405	0.547	0.215
	100	07 : 30 : 00	1113	56.48	25.101	1.041	0.425	0.617	0.213
	100	09 : 12 : 00	1215	61.86	27.037	1.131	0.444	0.688	0.218
	100	10 : 54 : 00	1317	66.76	27.182	1.221	0.460	0.761	0.225
	100	12 : 36 : 00	1419	71.88	27.694	1.310	0.477	0.833	0.220
	100	14 : 18 : 00	1521	76.70	27.019	1.398	0.493	0.905	0.223
	100	16 : 00 : 00	1623	81.98	27.237	1.485	0.509	0.976	0.217
	100	17 : 42 : 00	1725	87.57	27.784	1.574	0.526	1.048	0.220
	100	19 : 24 : 00	1827	93.29	28.588	1.661	0.543	1.118	0.216
UE	100	21 : 06 : 00	1929	99.25	29.638	1.748	0.560	1.189	0.216

**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, $\Delta \epsilon_{ac,rate}$ (%/hr)
	100	21 : 18 : 00	1941	99.99	29.773	1.757	0.562	1.196	0.184
	100	21 : 20 : 00	1943	99.82	29.595	1.758	0.561	1.197	0.206
	101	02 : 18 : 00	2241	78.89	5.796	1.782	0.518	1.264	0.070
	101	07 : 16 : 00	2539	55.92	-6.350	1.699	0.465	1.234	-0.032
	101	12 : 14 : 00	2837	40.47	-9.521	1.591	0.424	1.167	-0.070
	101	17 : 12 : 00	3135	29.13	-10.517	1.469	0.388	1.080	-0.091
US	101	22 : 10 : 00	3433	20.90	-10.347	1.339	0.359	0.981	-0.105
	102	03 : 08 : 00	3731	14.73	-10.291	1.203	0.332	0.871	-0.115
	102	08 : 06 : 00	4029	9.62	-10.340	1.065	0.305	0.760	-0.116
	102	13 : 04 : 00	4327	5.99	-10.339	0.925	0.279	0.646	-0.120
UE	102	18 : 02 : 00	4625	3.11	-10.312	0.775	0.247	0.528	-0.124
	102	22 : 58 : 00	4921	1.23	-10.189	0.631	0.205	0.427	-0.107
	102	23 : 00 : 00	4923	1.27	-10.187	0.629	0.206	0.423	-0.612
	103	01 : 08 : 00	5051	7.72	-9.527	0.703	0.293	0.411	-0.029
	103	03 : 16 : 00	5179	13.67	-7.531	0.809	0.327	0.482	0.175
	103	05 : 24 : 00	5307	20.28	-1.064	0.913	0.356	0.557	0.183
US	103	07 : 32 : 00	5435	28.76	8.952	1.009	0.387	0.622	0.158
	103	09 : 40 : 00	5563	37.81	16.563	1.108	0.416	0.692	0.171
	103	11 : 48 : 00	5691	46.47	22.603	1.209	0.440	0.768	0.187
	103	13 : 56 : 00	5819	55.02	27.117	1.316	0.463	0.853	0.208
	103	16 : 04 : 00	5947	63.07	28.968	1.416	0.483	0.934	0.197
	103	18 : 12 : 00	6075	71.07	29.681	1.520	0.501	1.018	0.207
	103	20 : 20 : 00	6203	79.15	29.973	1.630	0.519	1.111	0.226
	103	22 : 28 : 00	6331	87.98	30.263	1.727	0.538	1.190	0.192
	104	00 : 36 : 00	6459	96.97	30.649	1.834	0.556	1.279	0.218
	104	02 : 44 : 00	6587	106.44	31.456	1.936	0.579	1.357	0.191
	104	04 : 52 : 00	6715	115.86	32.775	2.038	0.604	1.433	0.186
	104	07 : 00 : 00	6843	125.05	34.395	2.142	0.628	1.514	0.199
	104	09 : 08 : 00	6971	134.62	36.473	2.248	0.652	1.596	0.199
	104	11 : 16 : 00	7099	144.43	38.639	2.353	0.675	1.678	0.200
	104	13 : 24 : 00	7227	154.25	40.360	2.451	0.698	1.753	0.184
UE	104	15 : 32 : 00	7355	164.79	42.481	2.553	0.722	1.831	0.191
	104	17 : 40 : 00	7483	175.23	44.328	2.655	0.745	1.910	0.192
	104	17 : 48 : 00	7491	175.77	44.534	2.666	0.746	1.920	0.380
	104	17 : 50 : 00	7493	175.67	44.398	2.666	0.746	1.920	0.087
	105	00 : 46 : 00	7909	147.08	9.652	2.703	0.701	2.002	0.061
	105	07 : 42 : 00	8325	109.21	-6.958	2.599	0.635	1.964	-0.029
	105	14 : 38 : 00	8741	80.61	-10.402	2.465	0.578	1.887	-0.058
	105	21 : 34 : 00	9157	59.35	-10.133	2.319	0.530	1.789	-0.073
US	106	04 : 30 : 00	9573	43.16	-10.202	2.149	0.487	1.662	-0.096
	106	11 : 26 : 00	9989	30.84	-10.471	1.975	0.450	1.525	-0.103
	106	18 : 22 : 00	10405	21.19	-10.657	1.790	0.416	1.374	-0.114

**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, $\Delta \epsilon_{ac,rate}$ (%/hr)
	107	01 : 18 : 00	10821	13.92	-10.782	1.596	0.384	1.212	-0.122
	107	08 : 14 : 00	11237	8.42	-10.854	1.397	0.353	1.044	-0.126
UE	107	15 : 10 : 00	11653	4.24	-10.891	1.193	0.318	0.875	-0.127
	107	15 : 16 : 00	11659	4.23	-10.891	1.187	0.318	0.869	-0.290
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ONE - DIMENSIONAL CONSOLIDATION TEST: CRS LOADING RESULTS (Load Time - Deformation Properties)

Project Number: 0411-08-1686 Test Station No.: CRS-2 Undisturbed or ; Reconstituted - Specimen. File Name: B-2359_UD4
 Task No.: NA Date; Start: 4/7/2008 Back Pressure, $U_{b,CS}$ (psi): 70.8 Piston Uplift, P_{up} (lbf): 34.77
 Project Name: Exelon (Victoria) Completed: 4/17/2008 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: Light Gray Fat CLAY (CH)
 Ring No.: 10 Area, A_r (cm²): 31.644 Solids Ht., H_s (mm): 11.627 Specific Gravity, $G_s =$ 2.730 Meas. ; Assumed
Initial: Height H_o : 19.18 Water 22.5 Void 0.649 Deg. of 94.8 Total Unit 126.4 Dry Unit 103.2
Final: (mm): H_f : 18.14 Content, w (%): 20.8 Ratio, e: 0.560 Sat., S (%): 101.3 Weight, γ_t (pcf): 131.7 Weight, γ_d (pcf): 109.1

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: DH Reviewed By: HP MP

Loading Info. (1)	Elapsed Time from Start of Loading, Δt_n (min)	Overall Effective Vertical Stress, $\sigma'_{v,n}$ (ksf)	Corrected Volumetric (Axial) Strain, $\epsilon_{v,n}$ ($\epsilon_{ac,n}$) $\Delta H_{c,n} / H_o$ (%)	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				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), $c_\alpha = \Delta d_{s,sc} / H_o$ ($\times 10^{-4}$)
									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)		
S					0.33				Data on given line represents average conditions					
BS			-0.13	0.651	1.32			19.201	between that line and the previous line of data.					
BE		3.45	-0.55	0.658	3.43	-0.032	-0.9	19.282			0.655			
CS	0	3.48	-0.55	0.658	3.48	0.000	0.0	19.282			0.658			
	51	5.42	-0.51	0.658	8.28	3.892	47.0	19.274	4.45		0.658			
	102	6.55	-0.35	0.655	11.08	6.042	54.5	19.243	5.99		0.656			
	195	8.28	-0.04	0.650	14.59	8.344	57.2	19.184	7.42		0.652			
US	297	10.49	0.30	0.644	18.49	10.596	57.3	19.118	9.38		0.647			
	399	13.07	0.66	0.638	22.71	12.796	56.3	19.049	11.78		0.641		0.24	
	501	15.99	1.02	0.632	26.94	14.627	54.3	18.980	14.53		0.635		0.43	
	603	19.28	1.40	0.626	31.54	16.470	52.2	18.908	17.63		0.629		0.62	
	705	22.79	1.76	0.620	36.13	18.031	49.9	18.838	21.03		0.623		0.76	
	807	26.47	2.14	0.614	40.90	19.605	47.9	18.766	24.63		0.617		0.92	
	909	30.30	2.49	0.608	45.86	21.230	46.3	18.699	28.38	0.16	0.611	3.58E-05	1.08	
	1011	34.20	2.85	0.602	51.06	23.072	45.2	18.629	32.25	0.16	0.605	3.40E-05	1.23	
	1113	38.17	3.22	0.596	56.48	25.101	44.4	18.559	36.19	0.15	0.599	3.06E-05	1.36	
	1215	42.18	3.59	0.590	61.86	27.037	43.7	18.488	40.17	0.14	0.593	2.87E-05	1.41	

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

Loading Info. (1)	Elapsed Time from Start of Loading, Δt_n (min)	Overall Effective Vertical Stress, $\sigma'_{v,n}$ (ksf)	Corrected Volumetric (Axial) Strain, $\epsilon_{v,n}$ ($\epsilon_{ac,n}$) $\Delta H_{c,n} / H_o$ (%)	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				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), $C_\alpha = \frac{\Delta d_{a,sc}}{H_o}$ ($\times 10^{-4}$)
									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)		
	1317	47.11	3.97	0.584	66.76	27.182	40.7	18.415	44.64	0.12	0.587	2.81E-05	1.39	
	1419	51.97	4.34	0.578	71.88	27.694	38.5	18.343	49.54	0.13	0.581	2.66E-05	1.61	
	1521	57.42	4.72	0.571	76.70	27.019	35.2	18.271	54.69	0.12	0.574	2.66E-05	1.69	
	1623	62.63	5.09	0.565	81.98	27.237	33.2	18.200	60.03	0.14	0.568	2.57E-05	2.07	
	1725	67.90	5.46	0.559	87.57	27.784	31.7	18.128	65.27	0.14	0.562	2.53E-05	2.35	
	1827	73.10	5.83	0.553	93.29	28.588	30.6	18.058	70.50	0.14	0.556	2.40E-05	2.54	
UE	1929	78.35	6.20	0.547	99.25	29.638	29.9	17.987	75.72	0.14	0.550	2.30E-05	2.75	
	1941	78.99	6.24	0.546	99.99	29.773	29.8	17.980	78.67		0.547			
	1943	78.96	6.24	0.546	99.82	29.595	29.6	17.979	78.98		0.546			
	2241	74.98	6.59	0.541	78.89	5.796	7.3	17.912	76.97		0.543			
	2539	60.07	6.43	0.543	55.92	-6.350	-11.4	17.942	67.53		0.542			
	2837	46.59	6.09	0.549	40.47	-9.521	-23.5	18.009	53.33		0.546			
	3135	35.77	5.63	0.556	29.13	-10.517	-36.1	18.096	41.18		0.553			
US	3433	27.32	5.11	0.565	20.90	-10.347	-49.5	18.195	31.55		0.561			
	3731	20.97	4.54	0.574	14.73	-10.291	-69.8	18.305	24.15		0.570		0.76	
	4029	15.65	3.97	0.584	9.62	-10.340	-107.5	18.416	18.31	0.21	0.579	3.11E-05	1.39	
	4327	11.69	3.37	0.594	5.99	-10.339	-172.5	18.530	13.67	0.17	0.589	3.17E-05	1.68	
UE	4625	8.25	2.75	0.604	3.11	-10.312	-331.4	18.648	9.97	0.17	0.599	3.26E-05	2.21	
	4921	5.43	2.23	0.612	1.23	-10.189	-830.6	18.749	6.84		0.608			
	4923	5.51	2.21	0.613	1.27	-10.187	-801.3	18.753	5.47		0.613			
	5051	13.19	2.14	0.614	7.72	-9.527	-123.4	18.765	9.35		0.613			
	5179	18.32	2.52	0.608	13.67	-7.531	-55.1	18.694	15.76		0.611			
	5307	20.98	2.91	0.601	20.28	-1.064	-5.2	18.619	19.65		0.604			
US	5435	22.43	3.24	0.596	28.76	8.952	31.1	18.554	21.71		0.598			
	5563	25.74	3.61	0.590	37.81	16.563	43.8	18.484	24.09		0.593		0.57	
	5691	29.80	4.01	0.583	46.47	22.603	48.6	18.408	27.77		0.586		0.66	
	5819	34.99	4.45	0.576	55.02	27.117	49.3	18.323	32.40		0.579		0.75	
	5947	41.86	4.87	0.569	63.07	28.968	45.9	18.242	38.43		0.572		0.85	
	6075	49.57	5.31	0.562	71.07	29.681	41.8	18.158	45.71	0.14	0.565	2.33E-05	1.04	
	6203	57.63	5.79	0.554	79.15	29.973	37.9	18.065	53.60	0.14	0.558	2.45E-05	1.28	

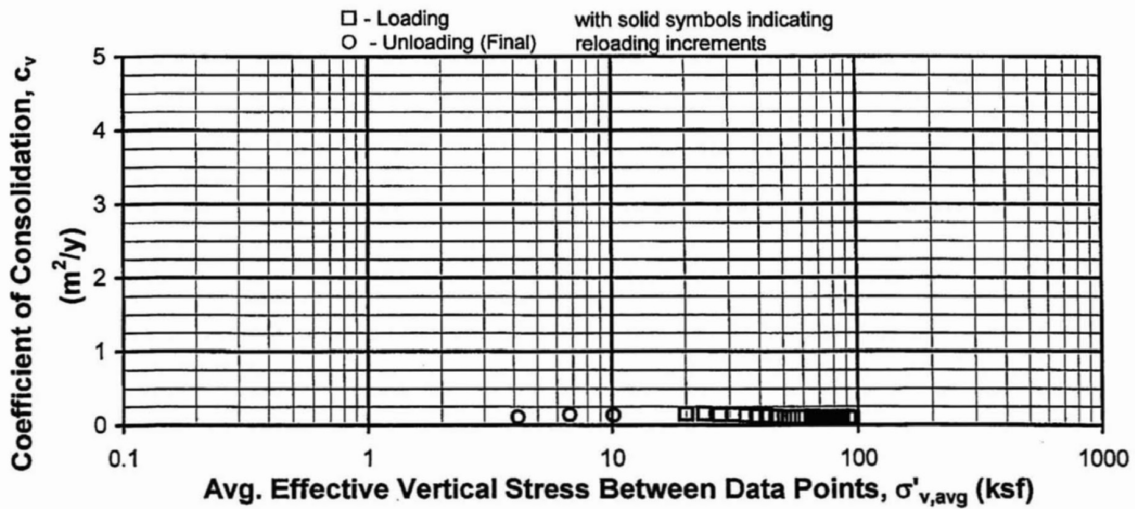
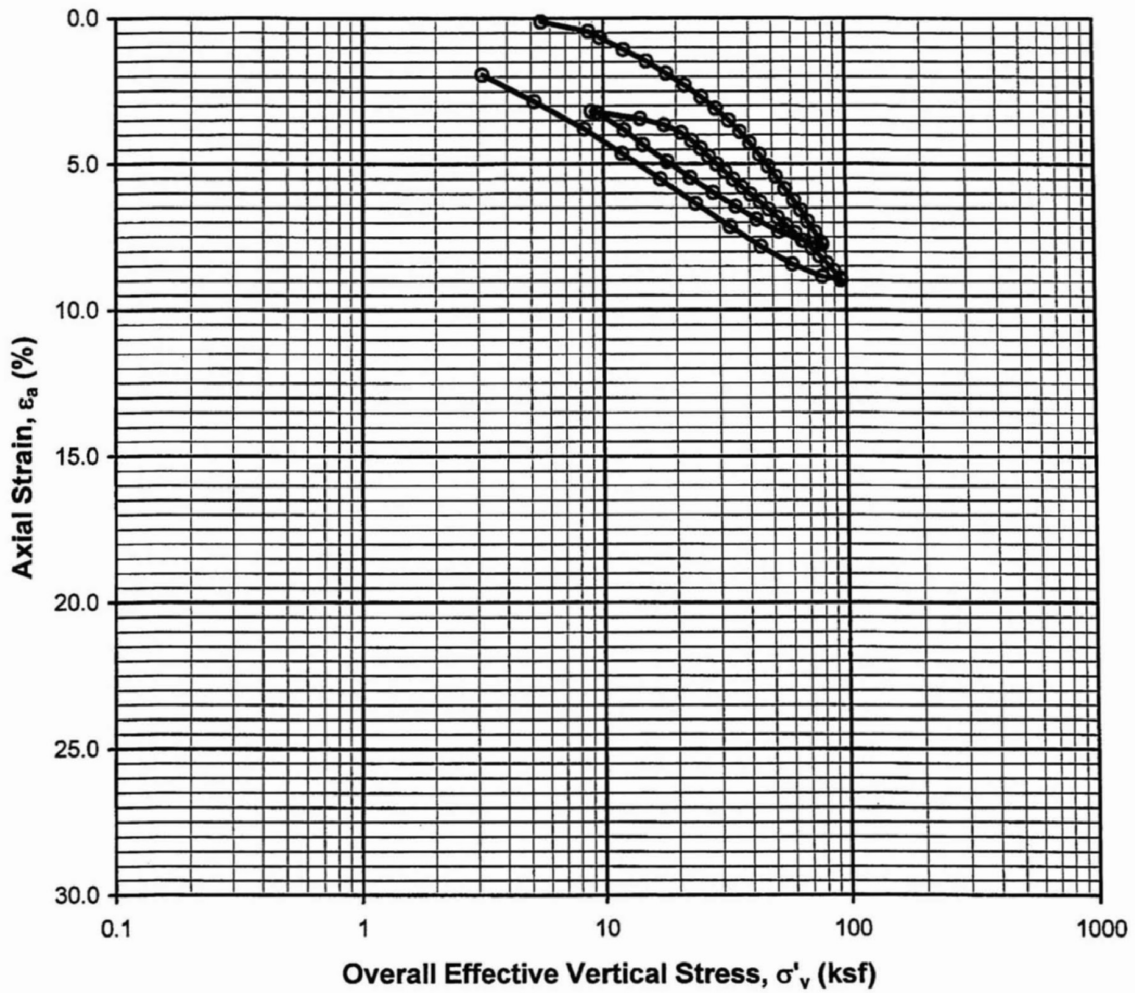
ONE - DIMENSIONAL CONSOLIDATION TEST: CRS LOADING RESULTS (Load Time - Deformation Properties)

Loading 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, $\Delta U_n(2)$ (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				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), $c_\alpha = \frac{\Delta d_{a,sc}}{H_o}$ ($\times 10^{-4}$)
									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)		
	6331	66.42	6.20	0.547	87.98	30.263	34.4	17.986	62.02	0.16	0.550	2.02E-05	1.66	
	6459	75.27	6.67	0.539	96.97	30.649	31.6	17.897	70.85	0.16	0.543	2.21E-05	1.95	
	6587	84.27	7.08	0.532	106.44	31.456	29.6	17.819	79.77	0.17	0.536	1.88E-05	2.30	
	6715	92.82	7.47	0.526	115.86	32.775	28.3	17.743	88.55	0.16	0.529	1.74E-05	2.49	
	6843	100.91	7.90	0.519	125.05	34.395	27.5	17.662	96.87	0.15	0.522	1.76E-05	2.57	
	6971	109.05	8.32	0.512	134.62	36.473	27.1	17.580	104.98	0.15	0.515	1.65E-05	2.78	
	7099	117.36	8.75	0.505	144.43	38.639	26.8	17.498	113.20	0.14	0.508	1.55E-05	2.92	
	7227	126.01	9.14	0.498	154.25	40.360	26.2	17.423	121.68	0.13	0.502	1.35E-05	3.00	
UE	7355	135.08	9.55	0.492	164.79	42.481	25.8	17.345	130.54	0.14	0.495	1.32E-05	3.30	
	7483	144.27	9.96	0.485	175.23	44.328	25.3	17.266	139.68		0.488			
	7491	144.66	10.01	0.484	175.77	44.534	25.3	17.256	144.47		0.484			
	7493	144.66	10.01	0.484	175.67	44.398	25.3	17.256	144.66		0.484			
	7909	140.58	10.44	0.477	147.08	9.652	6.6	17.174	142.62		0.481			
	8325	113.81	10.24	0.480	109.21	-6.958	-6.4	17.212	127.19		0.479			
	8741	87.40	9.84	0.487	80.61	-10.402	-12.9	17.289	100.60		0.484			
	9157	65.93	9.33	0.495	59.35	-10.133	-17.1	17.387	76.67		0.491			
US	9573	49.72	8.67	0.506	43.16	-10.202	-23.6	17.514	57.83		0.501			
	9989	37.48	7.95	0.518	30.84	-10.471	-34.0	17.651	43.60	0.27	0.512	2.65E-05	1.36	
	10405	27.80	7.17	0.531	21.19	-10.657	-50.3	17.802	32.64	0.22	0.525	2.87E-05	2.20	
	10821	20.41	6.32	0.545	13.92	-10.782	-77.4	17.964	24.10	0.18	0.538	3.05E-05	2.64	
	11237	14.63	5.44	0.559	8.42	-10.854	-128.9	18.132	17.52	0.15	0.552	3.10E-05	2.97	
UE	11653	9.90	4.56	0.574	4.24	-10.891	-257.0	18.301	12.26	0.14	0.567	3.08E-05	3.43	
	11659	9.89	4.53	0.574	4.23	-10.891	-257.6	18.307	9.89		0.574			

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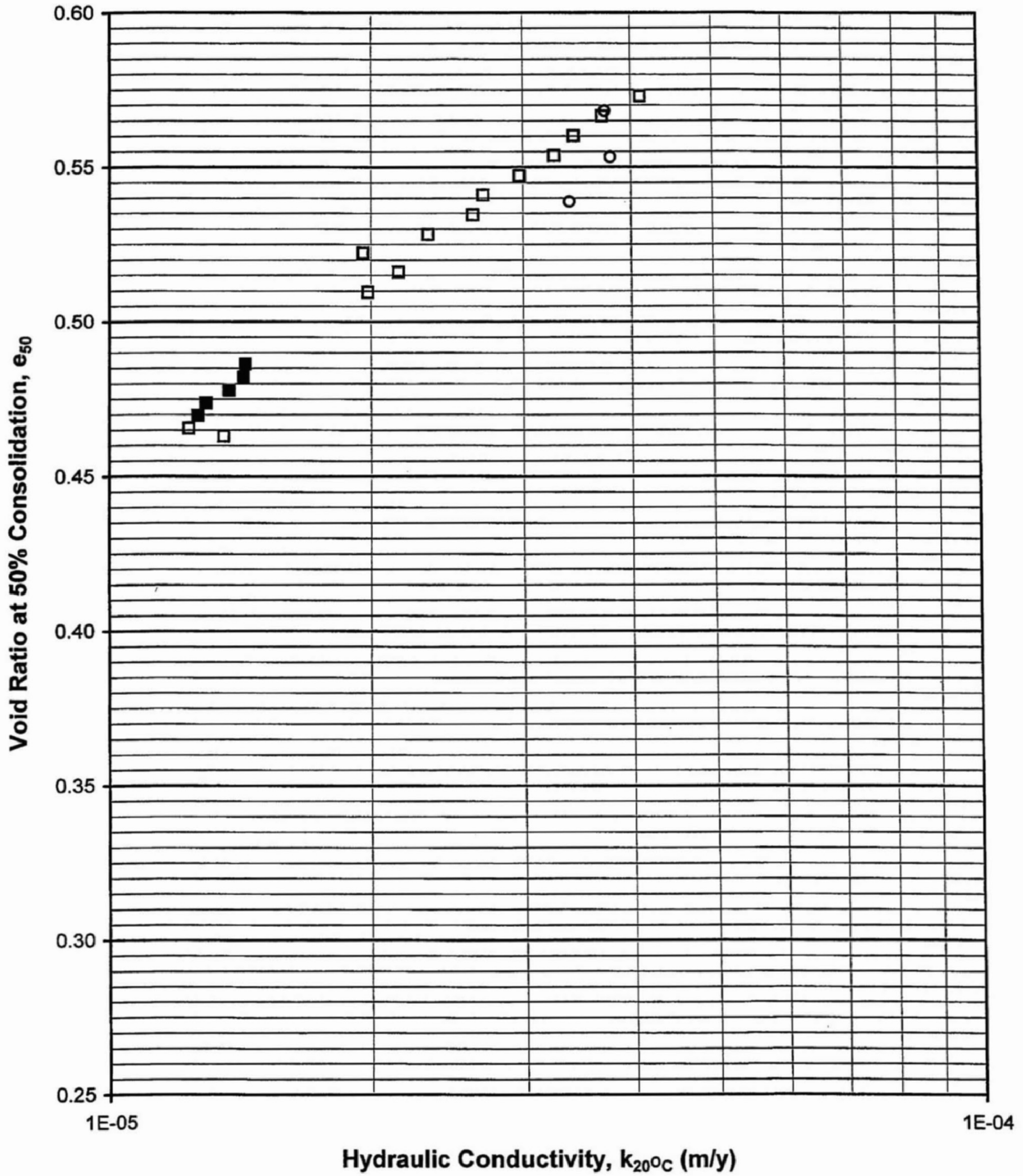
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DCN# EXE808



1-D CONSOLIDATION TEST: CRS
 Sample No. UD-5A - Depth 40.0 - 41.7 ft
 Boring B-2359UD

□ - Loading with solid symbols indicating
 ○ - Unloading (Final) reloading increments



1-D CONSOLIDATION TEST: CRS
 Sample No. UD-5A - Depth 40.0 - 41.7 ft
 Boring B-2359UD

ONE - DIMENSIONAL CONSOLIDATION TEST: Specimen Setup / Take Down

Project Number: 0411-08-1686 Test Station No.: CRS-8 File Name: B-2359_UD5a
 Task No.: NA Specific Gravity, G_s: 2.710 Meas. ; Assumed Ring No.: 8
 Project Name: Exelon (Victoria) Assig. Remarks: _____ Ring Area, A_r (cm²) = 31.686
 TEST TYPE: 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

<input checked="" type="checkbox"/> Tube	<input type="checkbox"/> Field Extruded	<input type="checkbox"/> Liner	<input type="checkbox"/> Remolded	<input type="checkbox"/> Tamping	<input type="checkbox"/> Constant Effort:	Blows/Tamps per Layer = _____
Boring No.:	<u>B-2359UD</u>	<input type="checkbox"/> LPC Core		<input type="checkbox"/> Impact/Rammer	Rammer Wgt. (lb)= _____	No. Layers = _____
Sample No.:	<u>UD-5</u>	Composite No.:	_____	<input type="checkbox"/> Pluviated:	Tamper Force (lb)= _____	Drop (in.) = _____
Depth (ft):	<u>40.0 - 41.7</u>	Specimen No.:	<u>A</u>	<input type="checkbox"/> Kneading	<input type="checkbox"/> Undercompaction:	U _{ni} (%) = _____ Dia. (in.) = _____
<input checked="" type="checkbox"/> Spec. Selection by X-ray;	<input checked="" type="checkbox"/> Geomarine Sample				Ref. Effort= _____	% Comp. = _____ ± Opt.= _____

Water Content (W);	Initial - Trimming Location			Final, W _{at} (see below)	Soil and Ring Masses	Initial	Final
	Top (W1)	Bottom (W2)	Sides (W3)		Mass Moist Soil + Ring (g)	339.87	340.16
Container No.	522	678	912	1109	Mass Ring (g)	214.27	
Mass Moist Soil + Container (g)	113.06	129.78	109.43	67.39	Mass Moist Soil, M _{t,lo} or M _{t,at} (g)	125.60	125.89
Mass Dry Soil + Container (g)	100.03	114.67	97.39	61.13	EXCESS DRY SOIL (soil not incl. in final mass above)		
Mass Container (g)	30.24	32.04	31.72	31.81	Container No.	5042	
WATER CONTENT (%)	18.67	18.29	18.33	21.35	Mass Dry Soil + Container (g)	31.06	
Avg. Initial Water Content, W ₄ (%)	18.43	Final W _{at} : <input checked="" type="checkbox"/> Slice ;		Whole Spec.	Mass Container (g)	30.98	
See attached data sheet(s) for additional water contents					Mass Excess Dry Soil, M _{d,es} (g)	0.08	

Soil Height: Measurements (mm)				Soil Height: Calculations, (mm)		Initial	Final
Initial		Final		Height of Gauge Block, H _{gb} (1)		0.000	19.080
with Spec.	without Spec.	with Spec.	without Spec.	Reading on Gauge Block, d _{gb}		0.000	0.000
19.190	0.000	13.110	13.250	Avg. Reading on Soil, d _{soil}		19.176	13.096
19.160	0.000	13.060	13.200	Avg. Reading on Apparatus without Specimen, d _{app}		0.000	13.228
19.210	0.000	13.140	13.300	Soil Height, H = d _{soil} - d _{app} + H _{gb} - d _{gb}		19.176	18.948
19.170	0.000	13.120	13.230	Soil Height: Final by Dial Change During Test (mm)			
19.150	0.000	13.050	13.160				
				Initial Height, H _o		19.176	
Yes ; <input checked="" type="checkbox"/> No <input type="checkbox"/> X Yes ; <input type="checkbox"/> No <input type="checkbox"/> Require H _{gb} & d _{gb} ⁽¹⁾				Final (end of test) Corr. Total Spec. Deformation, ΔH _{c,r}		0.371	
Yes ; <input type="checkbox"/> No <input checked="" type="checkbox"/> X Yes ; <input type="checkbox"/> No <input type="checkbox"/> Filter Paper Included:				Final Calculated Height, H _{f,c} = H _o - ΔH _{c,r}		18.805	
(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.				Final Soil Height Measurement, H _{f,m}		18.948	
				Normalized Difference in %, (H _{f,c} - H _{f,m})/H _o		-0.75	

Estimated Initial Unit Weight		Soil Extruded During Loading	
Total, γ _{t,o} (pcf)= <u>129.05</u>	Dry, γ _{d,o} (pcf)= <u>108.96</u>	Container No.	_____
Filter Paper Used: <input checked="" type="checkbox"/> Whatman No. 54; <input type="checkbox"/> Other		Mass Dry Soil + Cont. (g)	NA
Incremental Test: Top & Bottom: <input type="checkbox"/> Yes ; <input type="checkbox"/> No		Mass Cont. (g)	NA
CRS Test: Top Only: <input checked="" type="checkbox"/> Yes ; <input type="checkbox"/> No		Dry Mass - Soil Extruded During Loading, M _{d,el} (g)	0.00

Photo taken of Sliced Test Specimen: Yes ; No

Final Visual Description: Pale Brown Fat CLAY (CH)

Trimming/Etc. Remarks: _____

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

Trim./Recon. By: JTG Setup By: JTG Prelim. Calc. By: DH Take Down By: JTG
 Date: 4/5/2008 Date: 4/5/2008 Final Calc. By: DH Date: 4/21/2008
 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-8 File Name: B-2359_UD5a
 Task No.: NA Specific Gravity, G_s : 2.710 Measured ; Assumed.
 Calculations Corrected for Salt (dissolved solids): 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. Dial	
1	Initial, Top, W1	18.67	105.84	91.5	96.0	98.2
2	" Bottom, W2	18.29	106.18	90.4	95.0	97.1
3	" Sides, W3	18.33	106.14	90.6	95.1	97.2
4	" Average, W4	18.43	106.05	90.8	95.4	97.5
5	" Back Calculated (1)	20.98	103.82 (3)	97.5	102.1	104.3
6	Final	21.35	103.82 (2)	97.5	102.1	104.3

Calculated Specific Gravity for Final Saturation = 100%:
 Used Cal. Routine No. 5 to obtain the mass of dry soil
 and final height by: Measurement; Dial Change.
 Back Cal. G_s = 2.742
 Avg. G_s (measured/assumed) & Back Cal. G_s = 2.726

Calculation Constant, K
 = (unit conversion) / $G_s \times \rho_w \times A_r$
 Estimated, K_e 0.11667
 Final Selected, K_f 0.11667

Calculated Mass Dry Soil for Final Saturation = 100%: using measured/assumed G_s
 and final height by: Measurement; Dial Change.
 Back Cal. Mass Dry Soil, (g) = 104.53
 Avg. Back Calculated and Measured Mass Dry Soil (g) = 104.18

Summary of Specimen Physical Properties							
Specific Gravity		Assumed		To make $S_r = 100\%$ at end of test.			
$G_s = 2.710$		<input checked="" type="checkbox"/> Measured		Avg. of measured/assumed G_s and G_s to make $S_r = 100\%$			
Mass Dry Soil, (g)	Initial: 103.82	<input checked="" type="checkbox"/>	From Cal. Routine No. <u>5</u>	Note: Routine #5 is based on final measurements.			
	Final (4): NA		Make $S_r = 100\%$, or;	Avg. of measured & make $S_r = 100\%$			
Initial Height (mm) = 19.18		<input checked="" type="checkbox"/>	Measured ;	Back Calculated Back-cal. Sat. (%) = NA			
Final Height (mm) = 18.95			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)
Initial	21.0		0.583		97.5		129.0
Final	21.3		0.564		102.1		108.0
							12.112
							NA
							From
							To (ksf)
							NA
							NA

Graphical Construction	σ'_p (ksf)	ϵ_a (%)	CR	RR	OCR	Liquid Limit (LL)	65	Minus 200 (%)
Casagrande Method	39.90	NA	0.155	0.070	7.8	Plastic Limit (PL)	18	93.4
Becker Method	NA	Becker minimum σ'_p (ksf):			NA	Plasticity Index (PI)	47	

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: DH Reviewed By: HP
 Date: 4/23/2008

ONE - DIMENSIONAL CONSOLIDATION TEST: CALCULATED CRS LOADING DATA

Project Number: 0411-08-1686 Test Station No.: CRS-8 File Name: B-2359_UD5a
 Task No.: NA Date; Start: 4/5/2008 Initial Height, H_o (mm): 19.18
 Project Name: Exelon (Victoria) Completed: 4/21/2008 Ring Area, A_r (cm²): 31.6861
 Test: Initial / Pressure Gauge Back Pressure, U_G (psi): 70 Undisturbed or ; Reconstituted - Specimen.
 Reference Values: Back Pressure, U_{b,BE} (psi): 71.45941 , V: 0.023465915 Piston Uplift, P_{up} (lbf): 35.12
 Back Pressure, U_{b,CS} (psi): 71.45654 , V: 0.023464961 Setup DT_{ref} (V): 0.001991837
 Displacement Transducer No.: DT-108 Calib. Factor (mm/V): 227.98906 Ch. No.: 2
 Pore Press. Transducer No.: PT-116 Calib. Factor (psi/V): 3007.15024 Ref. Zero (V): -0.000297 Ch. No.: 3
 Force Cell No.: FT-108 Calib. Factor (lbf/V): -156066.76 Ref. Zero (V): -0.000009 Ch. No.: 1

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: compression; or swell.
- (4) "App. Flex. Corr." values based on the apparatus calibration.

Data Management By: DH Reviewed By: HP

Remarks: _____

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, $\Delta d_{arc,n}$ (mm)	Corr. Total Specimen Deformation, $\Delta H_{c,n}$ (4) (mm)	Strain Rate, between n & n-1, $\Delta \epsilon_{ac,rate}$ (%/hr)
S	96	11 : 19 : 11		0.41		0.000			
BS	96	11 : 56 : 47		2.45		0.040	0.000	0.040	
BE	97	16 : 07 : 14		5.53	0.000	0.023	0.000	0.023	
CS	97	16 : 07 : 18	0	5.53	0.000	0.022	0.000	0.022	
	97	17 : 44 : 45	97	10.28	2.295	0.085	0.000	0.085	0.203
	97	20 : 21 : 21	254	12.38	3.802	0.127	0.000	0.127	0.083
US	98	01 : 21 : 23	554	15.88	5.247	0.206	0.000	0.206	0.082
	98	06 : 21 : 24	854	19.36	6.027	0.284	0.000	0.284	0.082
	98	11 : 21 : 27	1154	22.87	6.512	0.362	0.000	0.362	0.081
	98	16 : 21 : 29	1454	26.56	6.870	0.441	0.000	0.441	0.082
	98	21 : 21 : 31	1754	30.53	7.246	0.517	0.000	0.517	0.080
	99	02 : 21 : 32	2054	34.39	7.624	0.593	0.000	0.593	0.079
	99	07 : 21 : 34	2354	38.60	8.254	0.670	0.000	0.670	0.081
	99	12 : 21 : 37	2654	42.75	8.844	0.746	0.000	0.746	0.080
	99	17 : 21 : 38	2954	46.86	9.274	0.821	0.000	0.821	0.078
	99	22 : 21 : 41	3254	51.29	9.864	0.898	0.000	0.898	0.081
	100	03 : 21 : 43	3554	55.71	10.613	0.972	0.000	0.972	0.077
	100	08 : 21 : 44	3854	60.04	11.660	1.041	0.000	1.041	0.071
	100	13 : 21 : 45	4154	64.75	12.005	1.121	0.000	1.121	0.084
UE	100	18 : 21 : 47	4454	69.52	11.831	1.196	0.000	1.196	0.079
	100	23 : 21 : 49	4755	74.72	13.303	1.261	0.000	1.261	0.068
	101	04 : 21 : 50	5055	80.02	14.700	1.335	0.000	1.335	0.077
	101	09 : 21 : 52	5355	85.43	15.591	1.407	0.000	1.407	0.075
	101	14 : 21 : 54	5655	90.64	16.346	1.473	0.000	1.473	0.069

**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, $\Delta \epsilon_{ac,rate}$ (%/hr)
	101	15 : 04 : 31	5697	91.44	16.531	1.487	0.000	1.487	0.105
	101	15 : 21 : 54	5715	90.95	16.079	1.489	0.000	1.489	0.028
	102	04 : 51 : 59	6525	67.29	1.439	1.459	0.000	1.459	-0.012
	102	18 : 22 : 03	7335	51.99	-1.713	1.402	0.000	1.402	-0.022
	103	07 : 52 : 09	8145	40.83	-3.121	1.324	0.000	1.324	-0.030
US	103	21 : 22 : 14	8955	32.04	-4.380	1.237	0.000	1.237	-0.033
	104	10 : 52 : 19	9765	24.98	-5.037	1.145	0.000	1.145	-0.036
	105	00 : 22 : 23	10575	19.37	-5.486	1.045	0.000	1.045	-0.039
	105	13 : 52 : 28	11385	14.75	-5.789	0.942	0.000	0.942	-0.040
	106	03 : 22 : 34	12195	10.98	-5.868	0.832	0.000	0.832	-0.042
	106	16 : 52 : 41	13005	8.80	-5.584	0.734	0.000	0.734	-0.038
UE	107	06 : 22 : 46	13815	6.17	-5.462	0.618	0.000	0.618	-0.045
	107	06 : 52 : 46	13845	5.66	-5.543	0.611	0.000	0.611	-0.076
	107	10 : 52 : 48	14086	11.82	-3.807	0.661	0.000	0.661	0.065
	107	12 : 09 : 59	14163	16.40	-2.305	0.699	0.000	0.699	0.154
	107	13 : 30 : 01	14243	21.48	0.639	0.752	0.000	0.752	0.206
	107	14 : 50 : 03	14323	26.42	4.641	0.805	0.000	0.805	0.209
	107	16 : 10 : 04	14403	31.69	9.224	0.856	0.000	0.856	0.199
	107	17 : 30 : 05	14483	37.14	13.900	0.907	0.000	0.907	0.199
US	107	18 : 50 : 07	14563	42.55	18.232	0.958	0.000	0.958	0.198
	107	20 : 10 : 08	14643	48.07	22.227	1.008	0.000	1.008	0.198
	107	21 : 30 : 09	14723	53.38	25.840	1.059	0.000	1.059	0.198
	107	22 : 50 : 10	14803	58.78	29.122	1.108	0.000	1.108	0.192
	108	00 : 10 : 11	14883	64.29	32.041	1.158	0.000	1.158	0.195
	108	01 : 30 : 14	14963	69.96	34.523	1.208	0.000	1.208	0.194
	108	02 : 50 : 15	15043	75.43	36.672	1.258	0.000	1.258	0.194
	108	04 : 10 : 16	15123	81.09	38.726	1.311	0.000	1.311	0.210
	108	05 : 30 : 17	15203	86.81	40.454	1.362	0.000	1.362	0.198
	108	06 : 50 : 18	15283	92.48	41.799	1.411	0.000	1.411	0.193
	108	08 : 10 : 20	15363	98.52	42.948	1.460	0.000	1.460	0.192
	108	09 : 30 : 21	15443	104.57	43.920	1.511	0.000	1.511	0.198
	108	10 : 50 : 22	15523	110.28	44.436	1.561	0.000	1.561	0.196
	108	12 : 10 : 25	15603	116.20	45.152	1.610	0.000	1.610	0.189
	108	13 : 30 : 26	15683	122.25	46.154	1.658	0.000	1.658	0.190
	108	14 : 50 : 28	15763	128.15	46.971	1.707	0.000	1.707	0.191
UE	108	15 : 07 : 30	15780	129.35	47.088	1.719	0.000	1.719	0.214
	108	15 : 10 : 28	15783	129.01	46.846	1.721	0.000	1.721	0.202
	108	22 : 10 : 35	16203	85.46	7.889	1.699	0.000	1.699	-0.016
	109	05 : 10 : 45	16623	59.81	-0.699	1.616	0.000	1.616	-0.062
	109	12 : 10 : 53	17044	41.83	-4.540	1.501	0.000	1.501	-0.085
	109	19 : 11 : 02	17464	28.82	-6.682	1.369	0.000	1.369	-0.098
	110	02 : 11 : 10	17884	18.96	-8.001	1.218	0.000	1.218	-0.113

**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, $\Delta d_{af,c,n}$ (mm)	Corr. Total Specimen Deformation, $\Delta H_{c,n}$ (4) (mm)	Strain Rate, between n & n-1, $\Delta \epsilon_{ac,rate}$ (%/hr)
US	110	09 : 11 : 17	18304	11.99	-8.772	1.057	0.000	1.057	-0.119
	110	16 : 11 : 24	18724	6.70	-9.261	0.888	0.000	0.888	-0.126
	110	23 : 11 : 32	19144	3.48	-9.504	0.728	0.000	0.728	-0.119
	111	06 : 11 : 39	19564	1.18	-9.632	0.545	0.000	0.545	-0.136
UE	111	13 : 11 : 46	19984	0.32	-9.531	0.371	0.000	0.371	-0.130
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ONE - DIMENSIONAL CONSOLIDATION TEST: CRS LOADING RESULTS (Load Time - Deformation Properties)

Project Number: 0411-08-1686 Test Station No.: CRS-8 Undisturbed or ; Reconstituted - Specimen. File Name: B-2359_UD5
 Task No.: NA Date; Start: 4/5/2008 Back Pressure, $U_{b,CS}$ (psi): 71.5 Piston Uplift, P_{up} (lbf): 35.12
 Project Name: Exelon (Victoria) Completed: 4/21/2008 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: Pale Brown Fat CLAY (CH)
 Ring No.: 8 Area, A_r (cm²): 31.686 Solids Ht., H_s (mm): 12.112 Specific Gravity, $G_s =$ 2.710 Meas. ; Assumed
Initial: Height H_o : 19.18 Water 21.0 Void 0.583 Deg. of 97.5 Total Unit 129.0 Dry Unit 106.7
Final: (mm): H_f : 18.95 Content, w (%): 21.3 Ratio, e: 0.564 Sat., S (%): 102.1 Weight, γ_t (pcf): 130.9 Weight, γ_d (pcf): 108.0

- 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: DH Reviewed By: HP HP

Loading Info. (1)	Elapsed Time from Start of Loading, Δt_n (min)	Overall Effective Vertical Stress, $\sigma'_{v,n}$ (ksf)	Corrected Volumetric (Axial) Strain, $\epsilon_{v,n}$ ($\epsilon_{ac,n}$) $\Delta H_{c,n} / H_o$ (%)	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				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), $C_\alpha = \frac{\Delta d_{a,sc}}{H_o}$ ($\times 10^{-4}$)
									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)		
S					0.41				Data on given line represents average conditions between that line and the previous line of data.					
BS			0.21	0.580	2.45			19.136						
BE		5.53	0.12	0.581	5.53	0.000	0.0	19.153			0.581			
CS	0	5.53	0.11	0.581	5.53	0.000	0.0	19.154			0.581			
	97	8.69	0.44	0.576	10.28	2.295	22.3	19.091	7.11		0.579			
	254	9.70	0.66	0.573	12.38	3.802	30.7	19.049	9.19		0.574			
US	554	12.15	1.07	0.566	15.88	5.247	33.0	18.970	10.93		0.569			
	854	15.10	1.48	0.560	19.36	6.027	31.1	18.892	13.62		0.563		0.51	
	1154	18.30	1.89	0.553	22.87	6.512	28.5	18.814	16.70		0.557		0.95	
	1454	21.76	2.30	0.547	26.56	6.870	25.9	18.735	20.03	0.15	0.550	4.11E-05	1.42	
	1754	25.49	2.70	0.540	30.53	7.246	23.7	18.659	23.62	0.15	0.544	3.71E-05	1.96	
	2054	29.10	3.09	0.534	34.39	7.624	22.2	18.583	27.29	0.14	0.537	3.43E-05	2.29	
	2354	32.88	3.49	0.528	38.60	8.254	21.4	18.506	30.99	0.14	0.531	3.26E-05	2.82	
	2654	36.63	3.89	0.522	42.75	8.844	20.7	18.430	34.75	0.13	0.525	2.97E-05	3.03	
	2954	40.45	4.28	0.515	46.86	9.274	19.8	18.355	38.54	0.12	0.518	2.70E-05	3.25	
	3254	44.48	4.68	0.509	51.29	9.864	19.2	18.278	42.47	0.12	0.512	2.63E-05	3.75	
	3554	48.39	5.07	0.503	55.71	10.613	19.1	18.204	46.43	0.11	0.506	2.33E-05	3.89	

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

Loading Info. (1)	Elapsed Time from Start of Loading, Δt_n (min)	Overall Effective Vertical Stress, $\sigma'_{v,n}$ (ksf)	Corrected Volumetric (Axial) Strain, $\epsilon_{v,n}$ ($\epsilon_{ac,n}$) $\Delta H_{c,n} / H_o$ (%)	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				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), $C_\alpha = \frac{\Delta d_{s,c}}{H_o}$ ($\times 10^{-4}$)
									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)		
	3854	51.99	5.43	0.497	60.04	11.660	19.4	18.135	50.19	0.10	0.500	1.96E-05	3.85	
	4154	56.48	5.85	0.491	64.75	12.005	18.5	18.055	54.23	0.10	0.494	2.15E-05	4.32	
UE	4454	61.39	6.24	0.484	69.52	11.831	17.0	17.980	58.93	0.10	0.488	1.98E-05	4.73	
	4755	65.56	6.58	0.479	74.72	13.303	17.8	17.915	63.48		0.482			
	5055	69.89	6.96	0.473	80.02	14.700	18.4	17.841	67.73		0.476			
	5355	74.69	7.34	0.467	85.43	15.591	18.3	17.769	72.29		0.470			
	5655	79.38	7.68	0.462	90.64	16.346	18.0	17.703	77.04		0.464			
	5697	80.06	7.76	0.460	91.44	16.531	18.1	17.689	79.72		0.461			
	5715	79.89	7.76	0.460	90.95	16.079	17.7	17.687	79.97		0.460			
	6525	66.33	7.61	0.463	67.29	1.439	2.1	17.717	73.11		0.462			
	7335	53.13	7.31	0.467	51.99	-1.713	-3.3	17.774	59.73		0.465			
	8145	42.88	6.90	0.474	40.83	-3.121	-7.6	17.852	48.00		0.471			
US	8955	34.89	6.45	0.481	32.04	-4.380	-13.7	17.939	38.89		0.477			
	9765	28.23	5.97	0.489	24.98	-5.037	-20.2	18.031	31.56	0.17	0.485	2.14E-05	1.63	
	10575	22.87	5.45	0.497	19.37	-5.486	-28.3	18.131	25.55	0.13	0.493	2.07E-05	2.39	
	11385	18.39	4.91	0.505	14.75	-5.789	-39.2	18.234	20.63	0.10	0.501	2.00E-05	2.86	
	12195	14.60	4.34	0.514	10.98	-5.868	-53.5	18.344	16.50	0.09	0.510	2.05E-05	3.16	
	13005	12.21	3.83	0.523	8.80	-5.584	-63.4	18.442	13.41	0.05	0.519	1.88E-05	2.42	
UE	13815	9.42	3.23	0.532	6.17	-5.462	-88.5	18.558	10.81	0.07	0.527	2.28E-05	3.86	
	13845	8.93	3.19	0.533	5.66	-5.543	-97.9	18.565	9.17		0.532			
	14086	14.24	3.45	0.529	11.82	-3.807	-32.2	18.515	11.58		0.531			
	14163	17.90	3.65	0.525	16.40	-2.305	-14.1	18.477	16.07		0.527			
	14243	21.05	3.92	0.521	21.48	0.639	3.0	18.424	19.48		0.523			
	14323	23.23	4.20	0.517	26.42	4.641	17.6	18.371	22.14		0.519			
	14403	25.19	4.47	0.512	31.69	9.224	29.1	18.320	24.21		0.515			
	14483	27.17	4.73	0.508	37.14	13.900	37.4	18.269	26.18		0.510			
US	14563	29.31	4.99	0.504	42.55	18.232	42.8	18.218	28.24		0.506			
	14643	31.78	5.26	0.500	48.07	22.227	46.2	18.168	30.55		0.502		0.21	
	14723	34.33	5.52	0.496	53.38	25.840	48.4	18.117	33.06		0.498		0.33	
	14803	37.25	5.78	0.492	58.78	29.122	49.5	18.068	35.79		0.494		0.43	

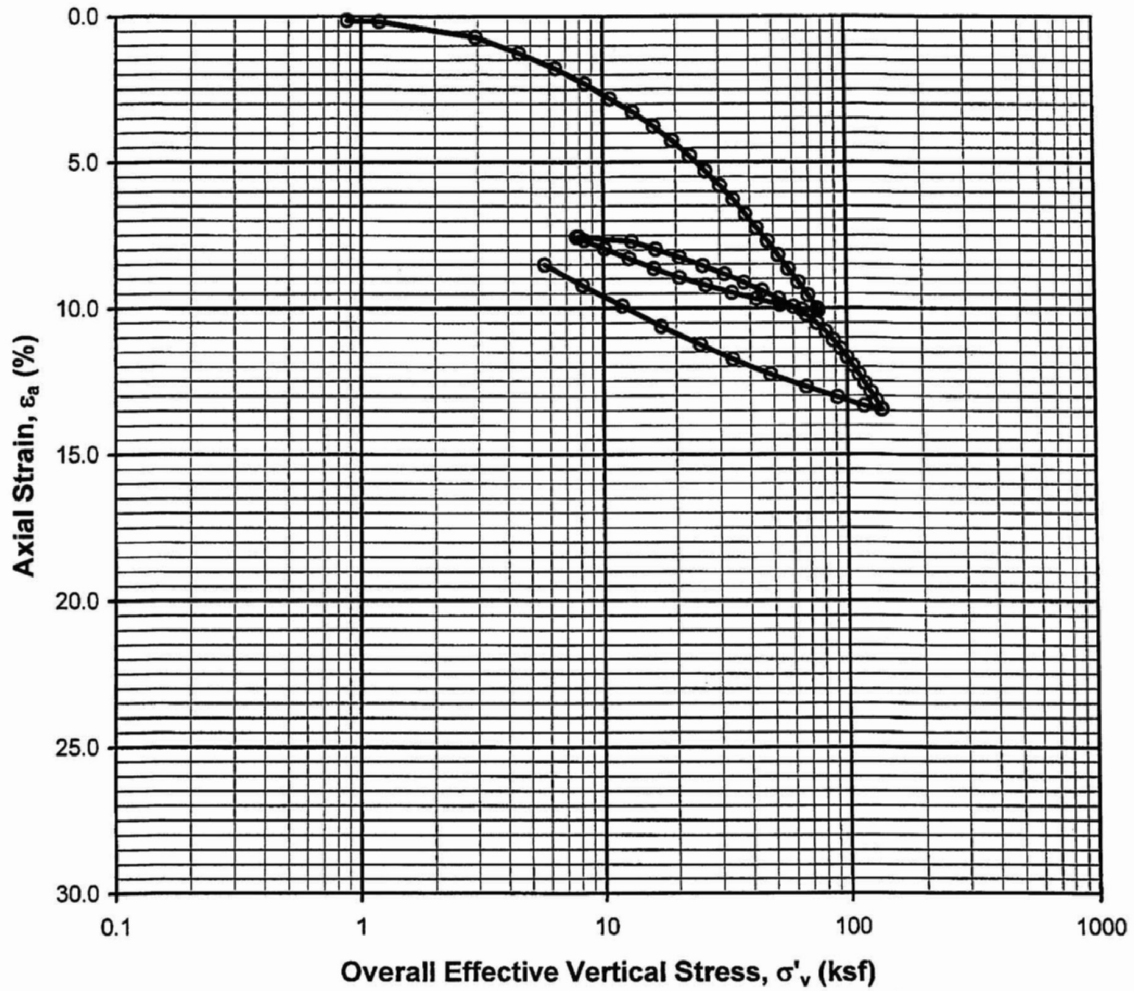
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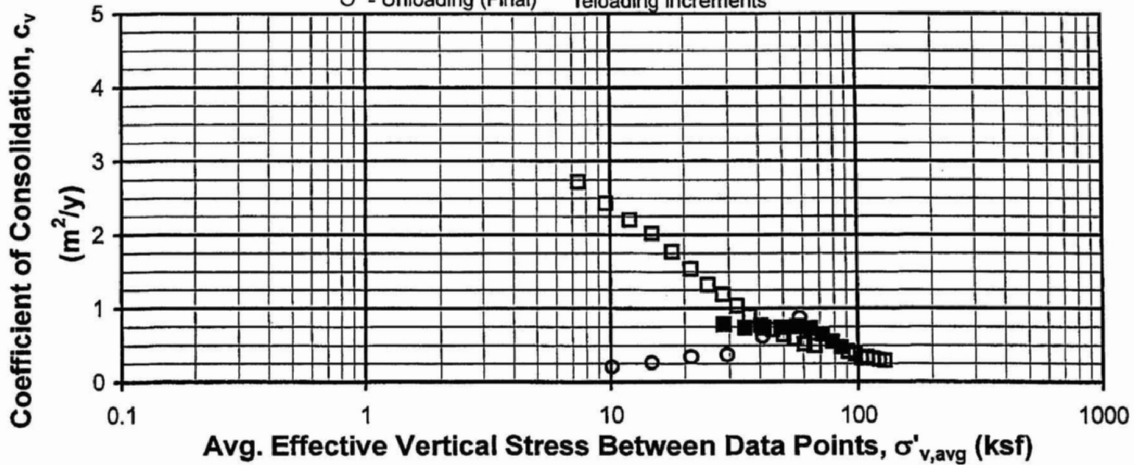
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ONE - DIMENSIONAL CONSOLIDATION TEST: CRS LOADING RESULTS (Load Time - Deformation Properties)

Loading Info. (1)	Elapsed Time from Start of Loading, Δt_n (min)	Overall Effective Vertical Stress, $\sigma'_{v,n}$ (ksf)	Corrected Volumetric (Axial) Strain, $\epsilon_{v,n}$ ($\epsilon_{ac,n}$), $\Delta H_{c,n} / H_o$ (%)	Overall Void Ratio, e_n	Total Vertical Stress, $\sigma_{v,n}$ (ksf)	Excess Pore-Water Pressure, $\Delta U_n (2)$ (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				Steady State Ratio, $SSR_n = \frac{C_v \cdot \epsilon_n \cdot UCF}{T_v \cdot (H_{c,avg})^2}$	Rate of Secondary Comp. (3), $C_{\alpha} = \frac{\Delta d_{s,sc}}{H_o}$ ($\times 10^{-4}$)
									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)		
	14883	40.59	6.04	0.488	64.29	32.041	49.8	18.018	38.92		0.490		0.52	
	14963	44.45	6.30	0.483	69.96	34.523	49.4	17.968	42.52		0.486		0.62	
	15043	48.39	6.56	0.479	75.43	36.672	48.6	17.918	46.42		0.481		0.67	
	15123	52.60	6.84	0.475	81.09	38.726	47.8	17.865	50.49		0.477		0.77	
	15203	57.14	7.10	0.471	86.81	40.454	46.6	17.814	54.87		0.473		0.86	
	15283	61.93	7.36	0.467	92.48	41.799	45.2	17.765	59.53		0.469		0.93	
	15363	67.26	7.62	0.463	98.52	42.948	43.6	17.716	64.59	0.11	0.465	1.43E-05	1.08	
	15443	72.73	7.88	0.458	104.57	43.920	42.0	17.665	69.99	0.11	0.461	1.42E-05	1.18	
	15523	78.20	8.14	0.454	110.28	44.436	40.3	17.615	75.46	0.10	0.456	1.37E-05	1.20	
	15603	83.71	8.39	0.450	116.20	45.152	38.9	17.566	80.95	0.11	0.452	1.28E-05	1.35	
	15683	89.13	8.65	0.446	122.25	46.154	37.8	17.518	86.42	0.11	0.448	1.26E-05	1.47	
	15763	94.52	8.90	0.442	128.15	46.971	36.7	17.469	91.82	0.10	0.444	1.23E-05	1.52	
UE	15780	95.66	8.96	0.441	129.35	47.088	36.4	17.457	95.09	0.10	0.442	1.35E-05	1.47	
	15783	95.50	8.97	0.441	129.01	46.846	36.3	17.455	95.58		0.441			
	16203	80.12	8.86	0.443	85.46	7.889	9.2	17.477	87.81		0.442			
	16623	60.27	8.43	0.450	59.81	-0.699	-1.2	17.560	70.20		0.446			
	17044	44.80	7.83	0.459	41.83	-4.540	-10.9	17.675	52.54		0.455			
	17464	33.12	7.14	0.470	28.82	-6.682	-23.2	17.807	38.96		0.465			
	17884	23.98	6.35	0.483	18.96	-8.001	-42.2	17.958	28.55		0.476			
US	18304	17.29	5.51	0.496	11.99	-8.772	-73.2	18.119	20.63		0.489			
	18724	11.95	4.63	0.510	6.70	-9.261	-138.2	18.288	14.62		0.503		0.86	
	19144	8.37	3.80	0.523	3.48	-9.504	-273.4	18.448	10.16	0.13	0.516	3.39E-05	1.26	
	19564	5.16	2.84	0.538	1.18	-9.632	-817.2	18.631	6.77	0.14	0.531	3.79E-05	1.99	
UE	19984	3.14	1.93	0.553	0.32	-9.531	-2986.4	18.805	4.15	0.11	0.545	3.74E-05	1.99	



□ - Loading with solid symbols indicating
 ○ - Unloading (Final) reloading increments



1-D CONSOLIDATION TEST: CRS
 Sample No. UD-10A - Depth 70.0 - 71.5 ft
 Boring B-2359UD