

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

Project Number: 0411-08-1686
Task Number: NA

Test Station No.: 7G
Specific Gravity: 2.710

File Name: B-2359_UD5b

Type Test: SDSS

Specimen: ☒ "Undisturbed"; ☐ Reconstituted; ☐ Remolded

Calculations Corr. for Salt (dissolved solids): ☒ No or, ☐ Yes, with concentration = _____ ppm

Consolidation Stress Summary and Loading Summary

Test Stage:	Max. Stress	Pre-Shear	Post Cyclic	☒ Static Strain Rate = <u>NA</u> (%/hr or)
Nominal Vertical Stress, σ'_v (ksf)	<u>NA</u>	<u>5.04</u>	<u>NA</u>	Cyclic Rate (Hz): <u>0.1</u> ; <u>1</u> ; Other =
Axial/Vertical Force, $P_{v,n}$ (lbf)	<u>NA</u>	<u>NA</u>	<u>NA</u>	During/End of Loading
Horizontal Force, $P_{h,n}$ (lbf)	<u>NA</u>	<u>0</u>	<u>NA</u>	Change in Height, $\Delta H_{L,n}$ (mm)
Nominal OCR	<u>NA</u>	<u>NA</u>	<u>NA</u>	Change in Vol., $\Delta V_{L,n}$ (cm ³)
$t_{c,1}$ (ON, days, hrs)	<u>NA</u>	<u>1.13 days</u>	<u>NA</u>	Post Cy. Displ. Reset to Null Position: ☒ Yes; ☐ No
Undrained ambient stress applied: with Delta shear force (lbf) = <u>NA</u> & Duration (min) = <u>NA</u> & Delta disp., $\Delta d_{h,ua}$ (mm) = <u>NA</u>				

Trimmed Specimen (TS) - Initial Water Contents over Saturation (%):

	Top, $W_{o,1}$	Bottom, $W_{o,2}$	Sides, $W_{o,3}$	Avg., $W_{o,avg}$	Select., $W_{o,s}$	Back Cal.
W_o	<u>23.43</u>	<u>22.80</u>	<u>22.73</u>	<u>22.99</u>	<u>22.99</u>	<u>25.16</u>
S_o	<u>97.5</u>	<u>96.1</u>	<u>96.0</u>	<u>96.5</u>	<u>96.5</u>	<u>101.1</u>
Measured final mass of moist soil, M_{lat} (g)						<u>131.66</u>
Final mass of moist soil corrected for excess dry soil, $M_{lat,c}$ (g)						<u>131.66</u>

Calculated Mass of Dry Soil (g)

Initial Selected Water Content (%)	<u>22.99</u>
Initial, $M_{d,o}$	<u>106.72</u>
Final, $M_{d,at}$	<u>104.88</u>
Selected, M_d	<u>105.80</u>

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 $\sigma'_{v,max}$	During Rebound to $\sigma'_{v,c}$	Specimen Unloaded After Test To
Stress Units (ksf)	<u>5.040</u>	<u>NA</u>	<u>NA</u>
Sign Convention: (+) ΔV out & ΔH down; (-) ΔV in & ΔH up			
Delta Def. Read., $\Delta d_{ar,n}$ (mm)	<u>0.301</u>		
Total Equip. Comp., $\Sigma \Delta d_{afc}$ (mm)	<u>0.000</u>		
Corr. Total Def. $\Delta H_{c,n}$ (mm)	<u>0.301</u>		
ΔV_n using A_o - spec. (cm ³)	<u>1.05</u>		
ΔV_n using $A_{c,n}$ - app. (cm ³)	<u>1.05</u>		
ΔV_n using burette meas. (cm ³)	<u>-0.10</u>		
Selected ΔV_n (cm ³)	<u>1.05</u>	<u>NA</u>	<u>NA</u> = ΔV_{UL}
After Test WC Corr. for ΔV during Shear & Unloading, $W_{at,c}$ (%)			<u>NA</u>

Calculation of ΔV_c by Different Procedures

By Selected Volumes	By Change in Mass
ΔV_c (cm ³)	$\sim M_{t,o} - (M_{lat,c} + \Delta V_L + \Delta V_{UL})$
<u>1.05</u>	
By Cal. Height & App. Area	ΔV_c (cm ³)
ΔV_c (cm ³)	<u>-0.40</u>
<u>1.05</u>	
By Cal. Ht. & Init. Spec. Area	By Saturation = 100% and Spec. Unloaded to 0 Stress
ΔV_c (cm ³)	ΔV_c (cm ³)
<u>1.05</u>	<u>NA</u>

Back Cal. Water Content During Consol. -

Based on the Consolidation Conclusions Given Below

Assumed Saturation (%)	<u>100.00</u>
Back Cal. WC before Loading, $W_{c,bc}$ (%)	<u>23.35</u>
Back Cal. WC at Max. Stress, $W_{cmax,bc}$ (%)	<u>NA</u>

Consolidation & Preshear Conclusions	ΔV_c (cm ³) = <u>1.05</u>	ΔH_c (mm) = <u>0.301</u>	$\varepsilon_{a,c}$ (%) = <u>1.62</u>	$\Delta V_{c,max}$ (cm ³) = <u>NA</u>
	V_c (cm ³) = <u>63.86</u>	H_c (mm) = <u>18.299</u>	$\varepsilon_{v,c}$ (%) = <u>1.62</u>	$\varepsilon_{ac,max}$ (%) = <u>NA</u>
	A_c (cm ²) = <u>34.90</u>	$\Delta \gamma_c$ (mm) = <u>NA</u>	γ_c (%) = <u>NA</u>	Preshear: γ_{ua} (%) = <u>NA</u>

Summary of Specimen Physical Properties:

Specific Gravity: $G_s = 2.710$ Measured	Height (mm)	Volume (cm ³)	Area (cm ²)	Water Content (%)	Total Unit Weight (pcf)	Dry Unit Weight (pcf)	Saturation (%)	Void Ratio, e
Condition:								
Initial (as trimmed)	<u>18.600</u>	<u>64.91</u>	<u>34.90</u>	<u>24.1</u>	<u>126.2</u>	<u>101.7</u>	<u>98.8</u>	<u>0.663</u>
After to $\sigma'_{v,c}$	<u>18.299</u>	<u>63.86</u>	<u>34.90</u>	<u>23.4</u>	<u>127.6</u>	<u>103.4</u>	<u>100.0</u>	<u>0.636</u>
Consol.: to $\sigma'_{v,max}$	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

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

Remarks: t95 for max stress = 2.1 min

Project Number: 0411-08-1686 Test Type: SDSS Test Sta. No.: 7G File Name: B-2359_UD5b
 Project Name: Exelon (Victoria) Task No.: NA Test No.: NA Test Series for: NA

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

Type Consolidation:	☒ K_0 at:	☒ Incremental CRS	☐ Anisotropic at:	☐ Inclined Stress Path, $K_{c,DSS}$	☐ Used Automated System	Remarks:
Loading Conditions:	☒ Static	☒ Strain	☐ Creep	☒ Const. Vol./Ht	☒ Without - Water	☐ Cyclic (Hz)
	☐ Dynamic	☐ Stress	☐ Post Cyclic	☐ Drained	☐ With - Bath	Rate: ☐ 0.1; ☐ 1; Other:

Summary of Specimen Physical Properties										
Specific Gravity: G _s = 2.710 Measured	Height (mm)	Volume (cm ³)	Area (cm ²)	Water Content (%)	Unit Weight		Saturation (%)	LL PL PI	-200 %	Void Ratio e
Condition:					Total (pcf)	Dry (pcf)				
Initial	18.60	64.91	34.90	24.06	126.2	101.7	98.8	65	93.4	0.663
After to σ' _{v,c}	18.30	63.86	34.90	23.35	127.6	103.4	100.0	18	NA	0.636
Consol.: to σ' _{vc,max}	NA	NA	NA	NA	NA	NA	NA	47	NA	NA

Consolidation Stress Summary and Loading Summary										
Item	Unit	Max. Stress	Pre-Shear	Post Cyclic	X	Static Strain Rate = 4.8 %/hr.				
Vert. Consol. Stress, $\sigma'_{v,c}$	(ksf)	NA	5.054	NA		Cyclic Rate (Hz):		0.1;		1; Other =
Induced OCR:	-	NA	NA	NA		During/End of Loading		Static		Cyclic
Axial Strain during Consol., $\epsilon_{a,c}$	%	NA	1.62	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., $\epsilon_{h,c}$	%	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, $\epsilon_{h,ua}$	%	NA	NA	NA		at end of cyclic loading, $\sigma'_{v,c,r} =$ NA (ksf)				

Weight Top Cap, etc., M_{tc} (lb): 1.16	Data Normalization: ☒ Yes ☐ No Value: 5.054 (ksf)
Data corr. for M_{tc} : ☒ Yes; ☐ No	Plattens with Pins: ☐ Yes; ☒ No
Wire Reinforced Membrane, Model:	Data corr. for Membr. strength
☒ Regular Membrane with Rings	☐ Yes ☒ No
☒ 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

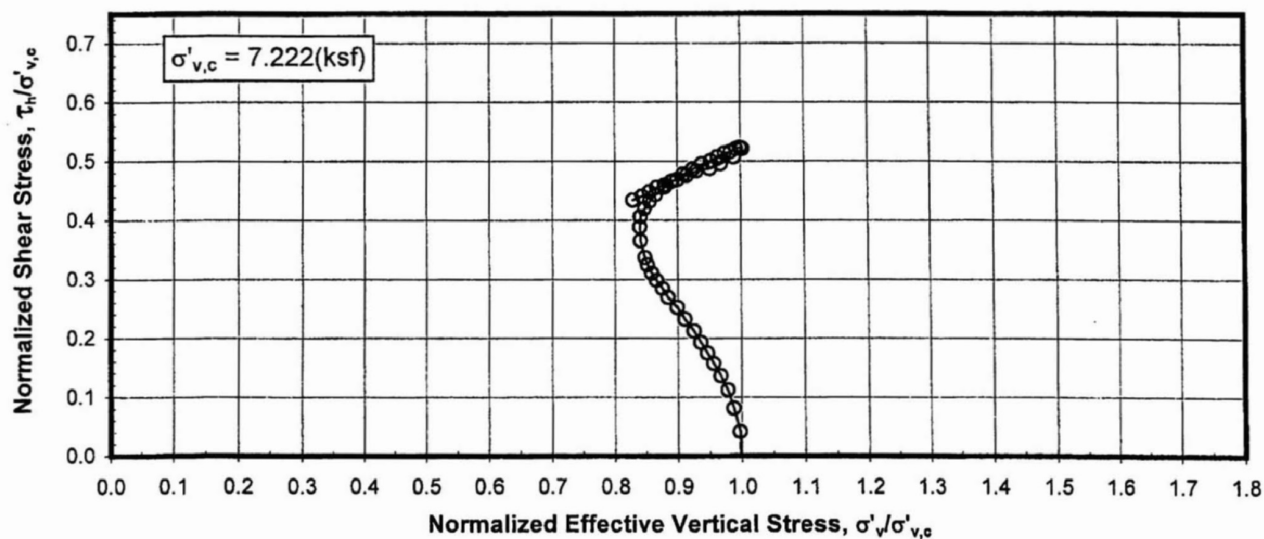
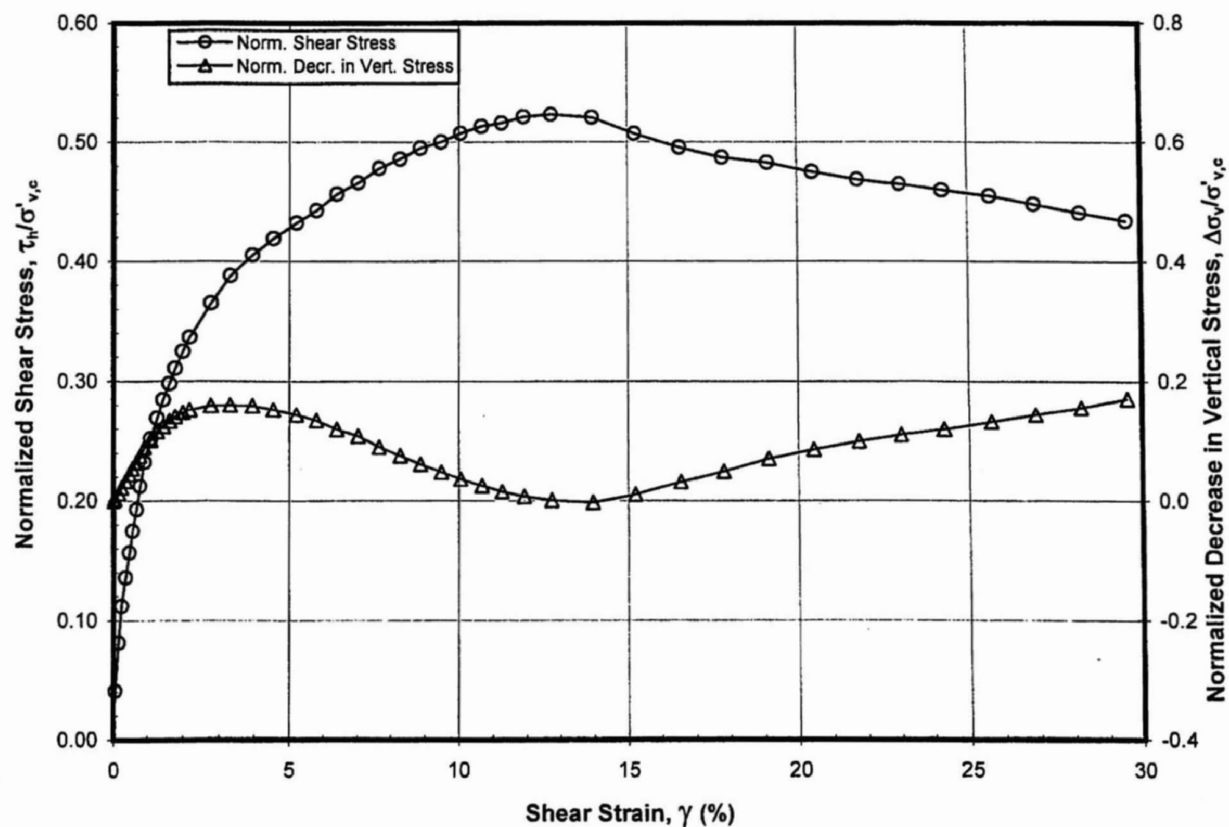
Final Visual Description and Remarks: Pale Brown Fat CLAY (CH)

Loading Summary						
	τ_h (ksf)	γ (%)	σ'_v (ksf)	τ_h / σ'_v -	$\Delta \sigma'_v / \sigma'_{v,c}$ -	$C_v / \sigma'_{v,c}$ -
at Peak Shear Stress	2.384	8.76	5.188	0.459	-0.027	0.472
at Maximum Strain	2.035	29.17	5.324	0.382	-0.053	-

Boring No.: B-2359UD

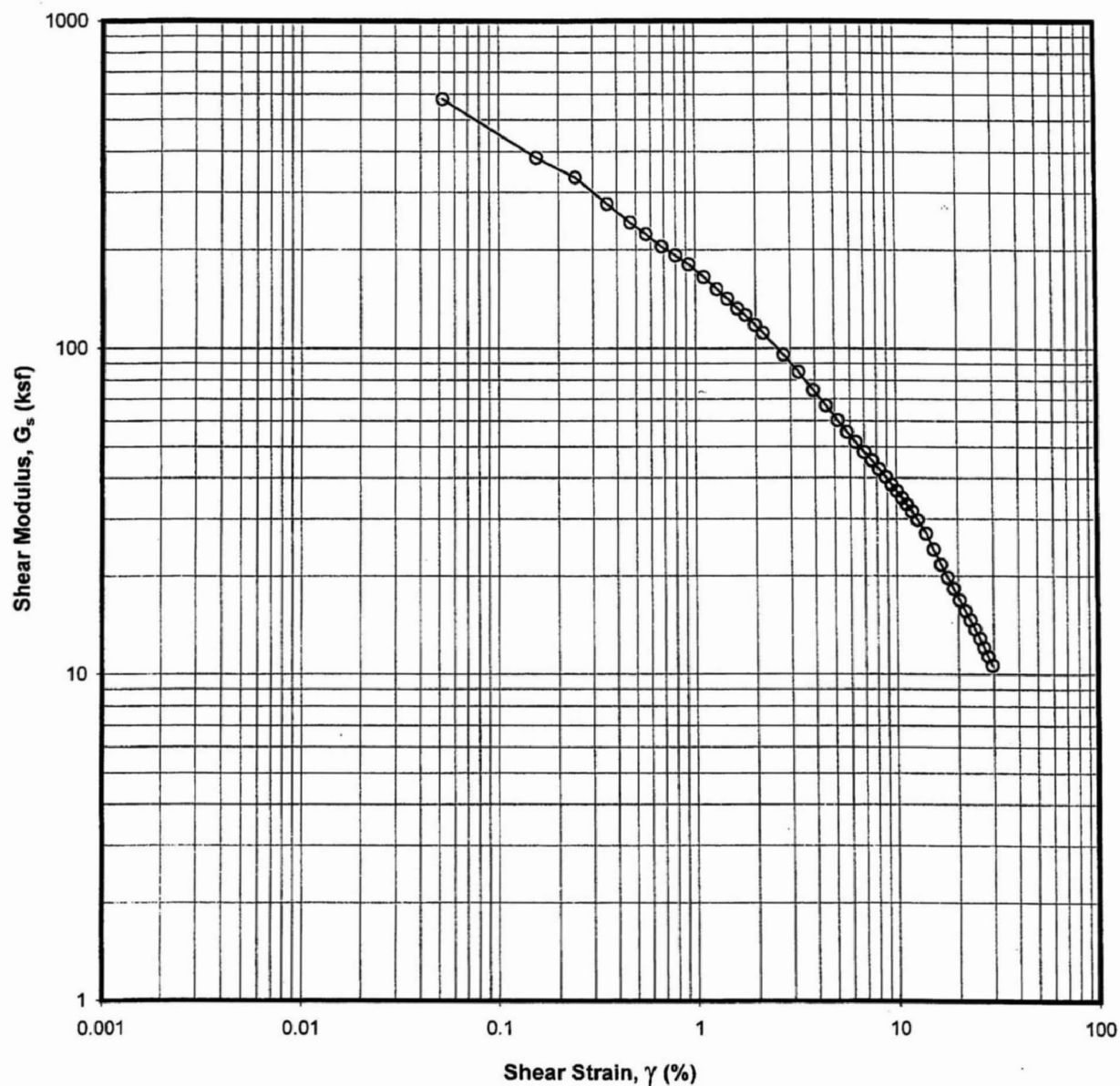
Sample No.: UD-5B

Elapsed Time (min)	Shear Strain γ (%)	Shear Stress τ_h (ksf)	Effective Vertical Stress σ'_v (ksf)	Calculated 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	-0.006	5.054	0.000	-	-	-0.001	1.000	0.000	-0.07
2.5	0.01	0.042	5.062	-0.008	431.703	559.329	0.008	1.002	-0.002	0.48
5.0	0.04	0.231	5.115	-0.060	613.036	472.363	0.046	1.012	-0.012	2.59
7.5	0.13	0.459	5.123	-0.068	366.158	243.215	0.091	1.014	-0.014	5.12
10.0	0.21	0.643	5.122	-0.067	312.778	185.250	0.127	1.013	-0.013	7.16
12.5	0.31	0.784	5.088	-0.034	257.524	130.513	0.155	1.007	-0.007	8.76
15.0	0.41	0.905	5.045	0.009	222.996	119.925	0.179	0.998	0.002	10.17
17.5	0.52	1.036	4.989	0.065	201.556	116.927	0.205	0.987	0.013	11.73
20.0	0.63	1.169	4.921	0.134	185.259	106.682	0.231	0.974	0.026	13.36
22.5	0.76	1.292	4.848	0.206	171.409	94.005	0.256	0.959	0.041	14.92
25.0	0.89	1.412	4.768	0.287	158.664	81.482	0.279	0.943	0.057	16.49
27.5	1.04	1.518	4.684	0.370	147.232	64.873	0.300	0.927	0.073	17.96
30.0	1.20	1.608	4.597	0.457	134.550	48.797	0.318	0.910	0.090	19.28
32.5	1.37	1.681	4.508	0.546	123.111	38.506	0.333	0.892	0.108	20.45
35.0	1.56	1.745	4.434	0.620	112.368	28.442	0.345	0.877	0.123	21.49
37.5	1.75	1.788	4.388	0.666	102.806	21.723	0.354	0.868	0.132	22.17
40.0	1.93	1.826	4.369	0.685	95.012	19.952	0.361	0.864	0.136	22.68
42.5	2.10	1.860	4.357	0.697	88.686	17.163	0.368	0.862	0.138	23.11
50.0	2.71	1.950	4.329	0.725	72.293	13.981	0.386	0.856	0.144	24.25
57.5	3.31	2.028	4.381	0.673	61.531	12.522	0.401	0.867	0.133	24.83
65.0	3.90	2.100	4.450	0.605	53.991	10.905	0.415	0.880	0.120	25.26
72.5	4.50	2.158	4.525	0.530	48.055	9.811	0.427	0.895	0.105	25.50
80.0	5.10	2.217	4.642	0.412	43.600	9.038	0.439	0.918	0.082	25.53
87.5	5.69	2.265	4.729	0.325	39.927	8.960	0.448	0.936	0.064	25.59
95.0	6.28	2.323	4.844	0.211	37.097	7.469	0.460	0.958	0.042	25.62
102.5	6.92	2.356	4.957	0.097	34.127	3.769	0.466	0.981	0.019	25.42
110.0	7.53	2.370	5.030	0.024	31.568	2.193	0.469	0.995	0.005	25.23
117.5	8.16	2.383	5.126	-0.071	29.269	1.053	0.472	1.014	-0.014	24.94
125.0	8.76	2.384	5.188	-0.134	27.272	0.001	0.472	1.027	-0.027	24.68
132.5	9.39	2.383	5.255	-0.201	25.441	-0.946	0.472	1.040	-0.040	24.40
140.0	10.00	2.372	5.323	-0.269	23.793	-2.241	0.469	1.053	-0.053	24.02
147.5	10.60	2.356	5.379	-0.325	22.282	-2.624	0.466	1.064	-0.064	23.66
155.0	11.26	2.339	5.426	-0.371	20.836	-2.429	0.463	1.073	-0.073	23.32
162.5	11.89	2.325	5.452	-0.398	19.597	-2.525	0.460	1.079	-0.079	23.09
172.4	12.75	2.301	5.486	-0.432	18.094	-2.914	0.455	1.085	-0.085	22.75
187.4	14.02	2.262	5.533	-0.478	16.173	-4.085	0.448	1.095	-0.095	22.24
202.4	15.33	2.195	5.542	-0.488	14.362	-5.137	0.434	1.097	-0.097	21.61
217.4	16.60	2.130	5.541	-0.487	12.866	-4.879	0.421	1.096	-0.096	21.02
232.4	17.86	2.072	5.538	-0.484	11.631	-4.097	0.410	1.096	-0.096	20.51
247.4	19.13	2.026	5.532	-0.478	10.620	-3.649	0.401	1.094	-0.094	20.12
262.4	20.38	1.980	5.504	-0.449	9.744	-3.471	0.392	1.089	-0.089	19.79
277.4	21.64	1.939	5.472	-0.418	8.989	-1.244	0.384	1.083	-0.083	19.51
292.3	22.94	1.949	5.465	-0.411	8.523	2.034	0.386	1.081	-0.081	19.63
307.3	24.16	1.989	5.427	-0.373	8.260	3.095	0.394	1.074	-0.074	20.13
322.3	25.41	2.025	5.413	-0.359	7.994	1.843	0.401	1.071	-0.071	20.51
337.3	26.71	2.036	5.373	-0.319	7.644	0.134	0.403	1.063	-0.063	20.75
352.3	27.96	2.029	5.350	-0.296	7.280	-0.037	0.401	1.059	-0.059	20.77
367.3	29.17	2.035	5.324	-0.269	6.996	0.468	0.403	1.053	-0.053	20.92



STATIC DSS TEST
 K_0 Consolidation - OCR = NA
 Sample: UD-10B - Depth: 70.0 - 71.5 ft
 Boring B-2359UD

KAW 7/16/08



STATIC DSS TEST

K_o Consolidation - OCR = NA

Sample: UD-10B - Depth: 70.0 - 71.5 ft

Boring B-2359UD

KAW 7/16/08

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

Project Number: 0411-08-1686 Test Type: SDSS Sta. No.: 6G File Name: B-2359_UD10b
 Task No.: NA Assign, $\sigma'_{v,c}$ = 7.20 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: 2.720 ☒ Meas.; ☐ Assumed

☒ Tube	☐ Field Extruded	☐ Liner	☐ Remolded	☐ Tamping	☐ Constant Effort:	Blows/Tamps per Layer =
Boring No.: B-2359UD	☐ LPC Core			Impact/Rammer	Rammer Wgt. (lb) =	No. Layers =
Sample No.: UD-10	Compostite No.:			Pluviated:	Tamper Force (lb) =	Drop (in.) =
Depth (ft): 70.0 - 71.5	Specimen No.: B			Kneading	Undercompaction: U_{ni} (%) =	Dia. (in.) =
☐ Spec. Selection by X-ray;	☐ Geomarine Sample			Ref. Effort =	% Comp. =	$\pm$ Opt. =

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

Water Content (WC);	Initial - Trimming Location			Final, W_{at} (see below)	Soil and Ring Masses	
	Top ($W_{o,1}$)	Bottom ($W_{o,2}$)	Sides ($W_{o,3}$)		Initial	Final
Container No.	1152		4247	4096	Mass Moist Soil + Tare (g)	318.52
Mass Moist Soil + Cont. (g)	123.58		67.42	72.36	Mass Tare (g)	139.40
Mass Dry Soil + Container (g)	109.92		61.97	65.78	Mass Moist Soil, $M_{t,o}$ $M_{t,at}$ (g)	4.17
Mass Container (g)	32.38		30.13	30.61	Mass Moist Soil, $M_{t,o}$ $M_{t,at}$ (g)	135.14
WATER CONTENT (%)	17.62		17.12	18.71	Excess Dry Soil (soil not included in final mass above)	
Avg. Initial WC, $W_{o,avg}$ (%)	17.37		Final W_{at} : ☒ Slice ;	Whole Spec.	Container No.	
					Mass Dry Soil + Container (g)	
					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 #	
☒ 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 18.630	1-T NA		
2 18.480	2-M NA		
3 18.550	3-B NA		
4 18.550	1'-T NA	For Free Standing	
5 18.550	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) =	131.16
Dry, $\gamma_{d,o}$ (lb/ft ³) =	111.75

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				
$\sigma'_{v,c}$				
$\sigma'_{v,max}$				
☒ Regular Membrane with Ring Set No. 6			ID, Rings (mm)	
Thickness (mm):	Top: 0.62		=	67.08
☐ Single	Bottom: 0.63		Corr. for mem.	
☒ 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} =		526.0 g,	1.16	lbf
Data corr. for M_{tc} :	☒ Yes;	☐ No	Plattens with Pins:	☐ Yes; ☒ No

Final Visual Description: Mottled Light Gray and Yellowish Brown Fat CLAY (CH)

Other Remarks :

Trim./ Recon. By: HC

Setup By: HC

Take Down By: HC

Date: 3/24/2008

Date: 3/25/2008

Date: 3/27/2008

Prelim. Calc. By: HC

Final Calc. By: LF

Reviewed By: HP HP

Specimen Take Down: ☒ Spec. removed right after shearing

Remarks:

☐ Spec. unloaded to zero stress with access to water

KAN 7/16/08

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

Project Number: 0411-08-1686 Test Station No.: 6G File Name: B-2359_UD10b
 Task Number: NA Specific Gravity: 2.720 ☒ Measured; ☐ Assumed
 Type Test: SDSS Specimen: ☒ "Undisturbed"; ☐ Reconstituted; ☐ Remolded
 Calculations Corr. for Salt (dissolved solids): ☒ No or, ☐ Yes, with concentration = _____ ppm

Consolidation Stress Summary and Loading Summary									
Test Stage:	Max. Stress	Pre-Shear	Post Cyclic	☒	Static Strain Rate = <u>NA</u> (%/hr or)				
Nominal Vertical Stress, σ'_v (ksf)	<u>NA</u>	<u>7.2</u>	<u>NA</u>		Cyclic Rate (Hz):	<u>0.1</u>	<u>1</u>	Other =	
Axial/Vertical Force, $P_{v,n}$ (lbf)	<u>NA</u>	<u>NA</u>	<u>NA</u>		During/End of Loading		Static	Cyclic	
Horizontal Force, $P_{h,n}$ (lbf)	<u>NA</u>	<u>0</u>	<u>NA</u>		Change in Height, $\Delta H_{L,n}$ (mm)		<u>NA</u>	<u>NA</u>	
Nominal OCR	<u>NA</u>	<u>NA</u>	<u>NA</u>		Change in Vol., $\Delta V_{L,n}$ (cm ³)		<u>NA</u>	<u>NA</u>	
t_c (ON,days,hrs)	<u>NA</u>	<u>0.83 days</u>	<u>NA</u>		Post Cy.Displ. Reset to Null Position:		<u>Yes</u>	<u>No</u>	

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

Trimmed Specimen (TS) - Initial Water Contents over Saturation (%):					
	Top, $W_{o,1}$	Bottom, $W_{o,2}$	Sides, $W_{o,3}$	Avg., $W_{o,avg}$	Selct., $W_{o,s}$
W_o	<u>17.62</u>		<u>17.12</u>	<u>17.37</u>	<u>17.37</u>
S_o	<u>92.2</u>		<u>90.7</u>	<u>91.4</u>	<u>91.4</u>
Measured final mass of moist soil, $M_{t,at}$ (g)					<u>135.23</u>
Final mass of moist soil corrected for excess dry soil, $M_{t,at,c}$ (g)					<u>135.23</u>

Calculated Mass of Dry Soil (g)	
Initial Selected Water Content (%)	<u>17.37</u>
Initial, $M_{d,o}$	<u>115.14</u>
Final, $M_{d,at}$	<u>113.92</u>
Selected, M_d	<u>114.53</u>

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 $\sigma'_{v,max}$	During Rebound to $\sigma'_{v,c}$	Specimen Unloaded After Test To
Stress Units (ksf)	<u>7.200</u>	<u>NA</u>	<u>NA</u>
Sign Convention: (+) ΔV out & ΔH down; (-) ΔV in & ΔH up			
Delta Def. Read., $\Delta d_{ar,n}$ (mm)	<u>0.590</u>		
Total Equip. Comp., $\Sigma \Delta d_{afc}$ (mm)	<u>0.000</u>		
Corr. Total Def. $\Delta H_{c,n}$ (mm)	<u>0.590</u>		
ΔV_n using A_o - spec. (cm ³)	<u>2.05</u>		
ΔV_n using $A_{c,n}$ - app. (cm ³)	<u>2.05</u>		
ΔV_n using burette meas. (cm ³)	<u>-0.50</u>		
Selected ΔV_n (cm ³)	<u>2.05</u>	<u>NA</u>	<u>NA</u>
After Test WC Corr. for ΔV during Shear & Unloading, $W_{at,c}$ (%)			<u>NA</u>

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)	<u>2.05</u>	$\sim M_{t,o} - (M_{t,at,c} + \Delta V_L + \Delta V_{ul})$	
By Cal. Height & App. Area		ΔV_c (cm ³)	<u>-0.09</u>
ΔV_c (cm ³)	<u>2.05</u>	By Saturation = 100% and Spec. Unloaded to 0 Stress	
By Cal. Ht. & Init. Spec. Area		ΔV_c (cm ³)	<u>NA</u>
ΔV_c (cm ³)	<u>2.05</u>	ΔV_c (cm ³)	<u>NA</u>

Back Cal. Water Content During Consol. -

Based on the Consolidation Conclusions Given Below

Assumed Saturation (%)	<u>100.00</u>
Back Cal. WC before Loading, $W_{c,bc}$ (%)	<u>17.52</u>
Back Cal. WC at Max. Stress, $W_{cmax,bc}$ (%)	<u>NA</u>

Consolidation & Preshear Conclusions	ΔV_c (cm ³) =	<u>2.04</u>	ΔH_c (mm) =	<u>0.590</u>	$\epsilon_{a,c}$ (%) =	<u>3.18</u>	$\Delta V_{c,max}$ (cm ³) =	<u>NA</u>
	V_c (cm ³) =	<u>62.29</u>	H_c (mm) =	<u>17.960</u>	$\epsilon_{v,c}$ (%) =	<u>3.17</u>	$\epsilon_{ac,max}$ (%) =	<u>NA</u>
	A_c (cm ²) =	<u>34.68</u>	$\Delta \gamma_c$ (mm) =	<u>NA</u>	γ_c (%) =	<u>NA</u>	Preshear: γ_{us} (%) =	<u>NA</u>

Summary of Specimen Physical Properties:								
Specific Gravity: $G_s = 2.720$ Measured	Height (mm)	Volume (cm ³)	Area (cm ²)	Water Content (%)	Total Unit Weight (pcf)	Dry Unit Weight (pcf)	Saturation (%)	Void Ratio, e
Condition:								
Initial (as trimmed)	<u>18.550</u>	<u>64.32</u>	<u>34.68</u>	<u>18.0</u>	<u>131.2</u>	<u>111.2</u>	<u>93.2</u>	<u>0.528</u>
After to $\sigma'_{v,c}$	<u>17.960</u>	<u>62.29</u>	<u>34.68</u>	<u>17.5</u>	<u>134.9</u>	<u>114.8</u>	<u>100.0</u>	<u>0.479</u>
Consol.: to $\sigma'_{v,max}$	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

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

Remarks: t95 for max stress = 7.1 min

Project Number: 0411-08-1686 Test Type: SDSS Test Sta. No.: 6G File Name: B-2359_UD10b
 Project Name: Exelon (Victoria) Task No.: NA Test No.: NA Test Series for: NA

☒ Tube	☐ Field Extruded	☐ Liner	☐ Remolded	☐ Tamping	☐ Constant Effort:	Blows/Tamps per Layer =
Boring No.: B-2359UD	☐ LPC Core			☐ Impact/Rammer	Rammer Wgt. (lb) =	No. Layers =
Sample No.: UD-10	Composite No.:			☐ Pluviated:	Tamper Force (lb) =	Drop (in.) =
Depth (ft): 70.0 - 71.5	Specimen No.: B			☐ Kneading	☐ Undercompaction:	U _{ni} (%) =
☐ Spec. Selection by X-ray;	☐ Geomarine Sample				Ref. Effort =	% Comp. = ± Opt. =

Type Consolidation:	☒ K _o at:	☒ Incremental CRS	☐ Anisotropic at:	☐ Inclined Stress Path, K _{c,DES}	☐ Used Automated System	Remarks:
Loading Conditions:	☒ Static	☒ Strain Stress	☐ Creep Post Cyclic	☒ Const. Vol./Ht Drained	☒ Without - Water Bath	☐ Cyclic (Hz) Rate: 0.1; 1; Other:

Summary of Specimen Physical Properties										
Specific Gravity: G _s = 2.720 Measured	Height (mm)	Volume (cm ³)	Area (cm ²)	Water Content (%)	Total Unit Weight (pcf)	Dry Unit Weight (pcf)	Saturation (%)	LL PL	-200 %	Void Ratio, e
Condition: Initial	18.55	64.32	34.68	18.00	131.2	111.2	93.2	95	96.0	0.528
After to σ' _{v,c}	17.96	62.29	34.68	17.52	134.9	114.8	100.0	34	NA	0.479
Consol.: to σ' _{vc,max}	NA	NA	NA	NA	NA	NA	NA	61	NA	NA

Consolidation Stress Summary and Loading Summary										
Item	Unit	Max. Stress	Pre-Shear	Post Cyclic	☒ Static Strain Rate = 4.7 %/hr.					
Vert. Consol. Stress, σ' _{v,c}	(ksf)	NA	7.222	NA	Cyclic Rate (Hz):	0.1;	1;	Other =		
Induced OCR:	-	NA	NA	NA	During/End of Loading		Static	Cyclic		
Axial Strain during Consol., ε _{ax,c}	%	NA	3.18	NA	Change in Height, ΔH _{L,n} (mm):		NA	NA		
Horiz. Consol. Stress, τ _{h,c}	(ksf)	NA	NA	NA	Change in Vol., ΔV _{L,n} (cm ³):		NA	NA		
Consol. Stress Ratio, τ _{h,c} / σ' _{v,c}	-	NA	NA	NA	Post Cy. Displ. Reset to Null Pos.:		Yes;	No		
Shear Strain during Consol., ε _{h,c}	%	NA	NA	NA	Number of Loading Cycles, N =		NA			
Undr. Ambient Shear Stress, τ _{h,amb}	(ksf)	NA	NA	NA	±τ _h =		NA (ksf)	±γ =		NA %
Undr. Ambient Shear Strain, ε _{h,amb}	%	NA	NA	NA	at end of cyclic loading, σ' _{vc,r} =		NA (ksf)			

Weight Top Cap, etc., M _{tc} (lb): 1.16	Data Normalization: ☒ Yes ☐ No	Value: 7.222 (ksf)
Data corr. for M _{tc} : ☒ Yes; ☐ No	Plattens with Pins: ☐ Yes; ☒ No	Using Effective Vertical Stress:
☐ Wire Reinforced Membrane, Model:	Data corr. for Membr. strength	☒ Pre-Shear Conditions ☐ Post-Cyclic Conditions
☒ Regular Membrane with Rings	☐ Yes ☒ 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

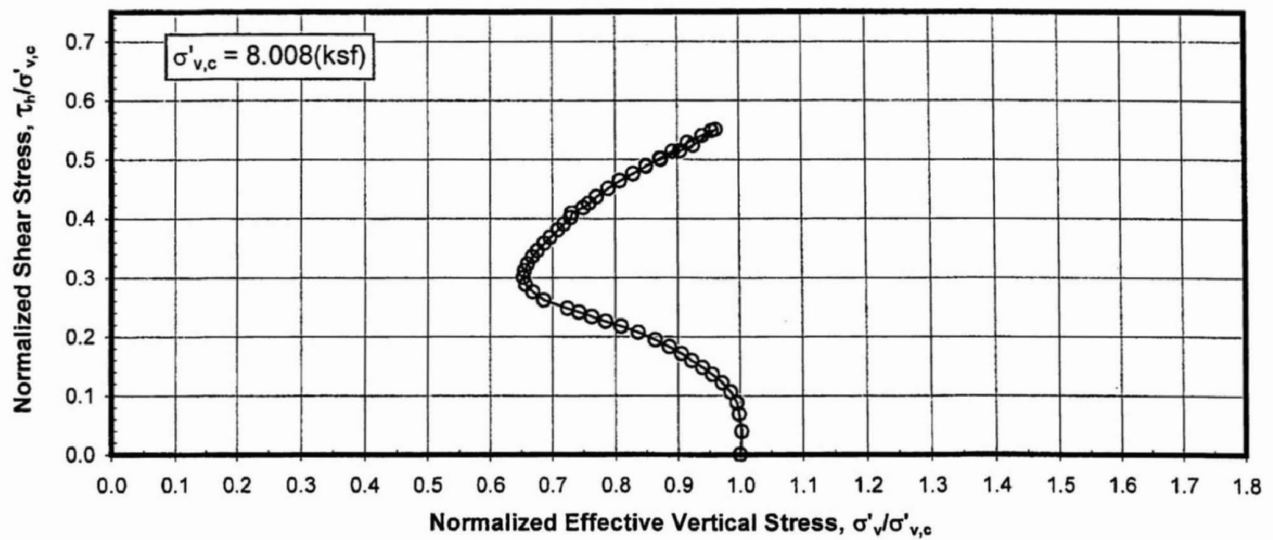
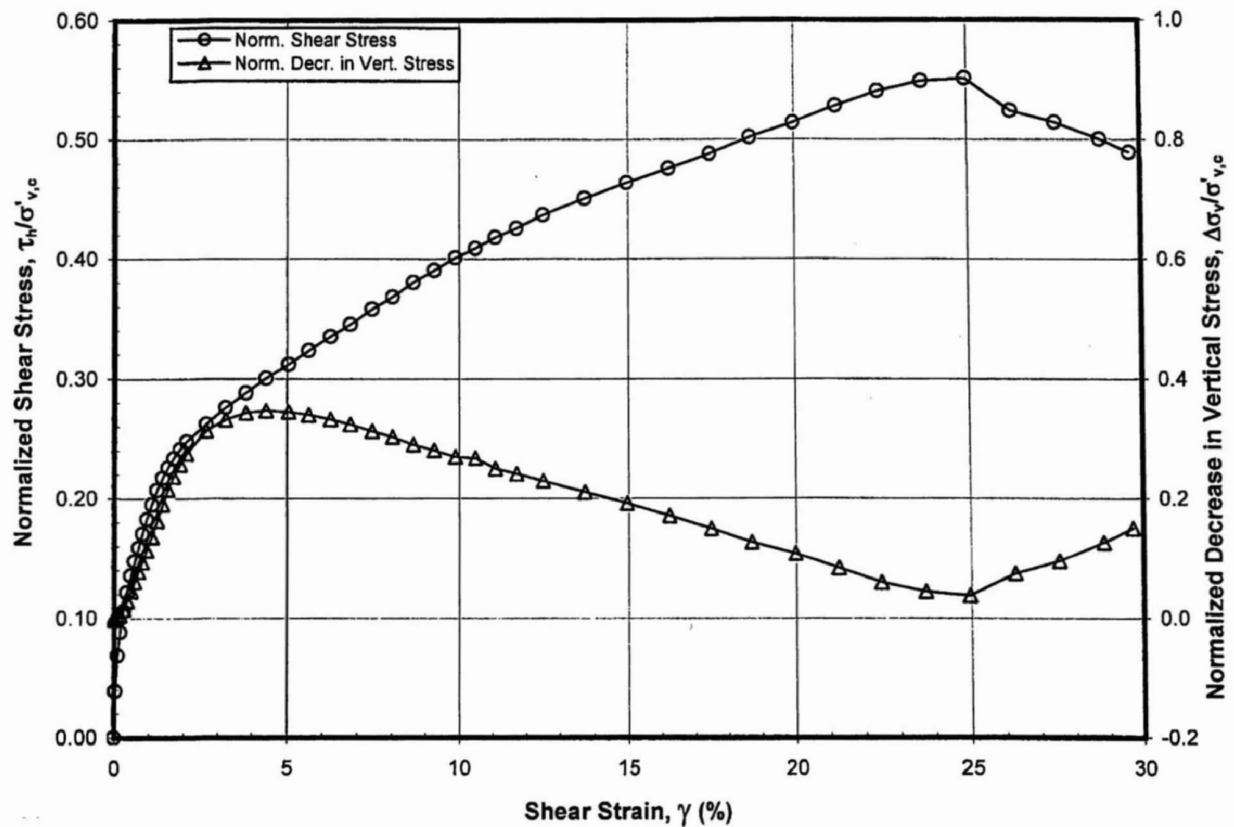
Final Visual Description and Remarks: Mottled Light Gray and Yellowish Brown Fat CLAY (CH)

Loading Summary						
	τ _h (ksf)	γ (%)	σ' _v (ksf)	τ _h /σ' _v	Δσ'/σ' _{v,c}	C _u /σ' _{v,c}
at Peak Shear Stress	3.777	12.74	7.218	0.523	0.001	0.523
at Maximum Strain	3.135	29.58	5.988	0.524	0.171	-

Boring No.: B-2359UD

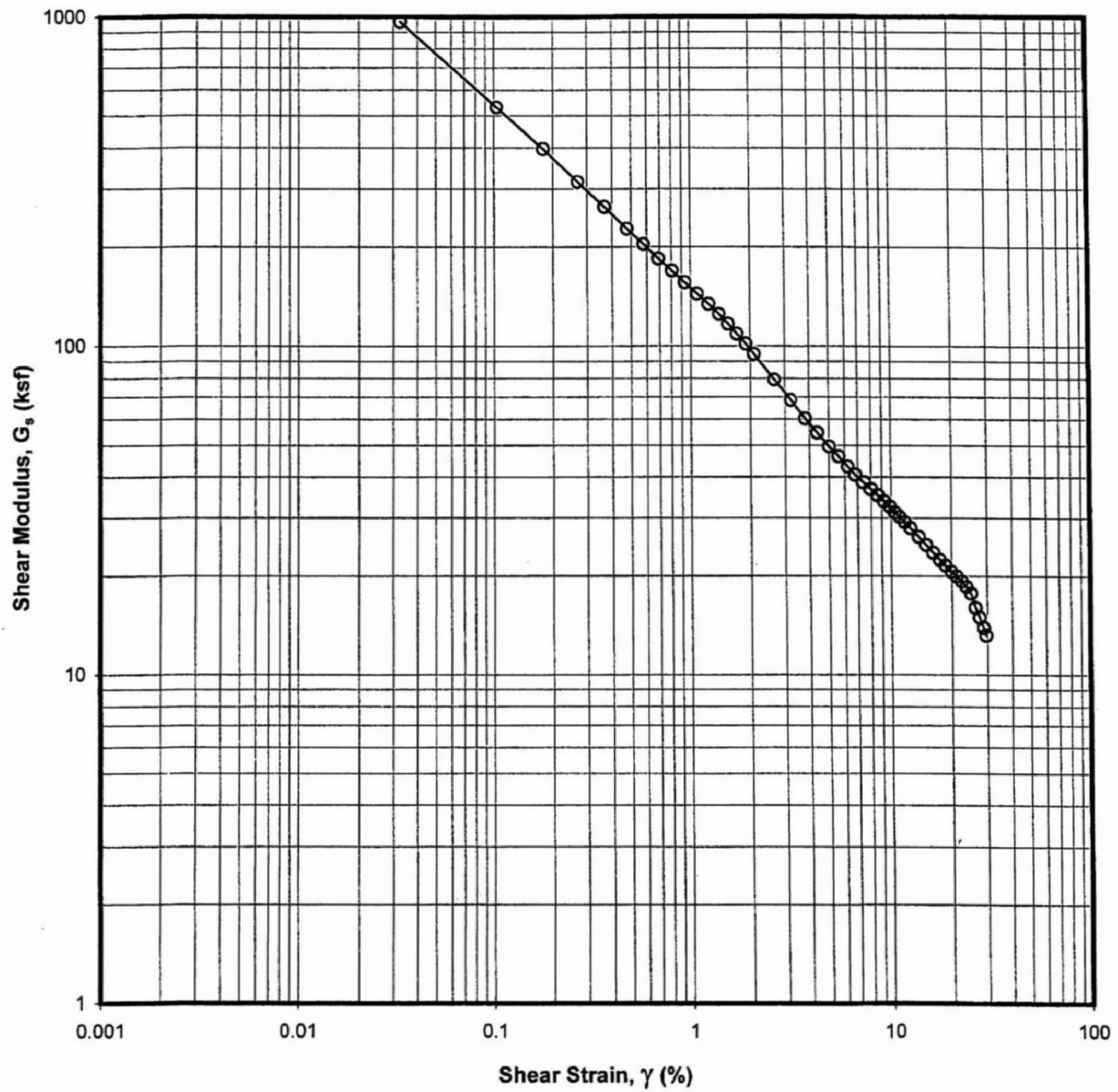
Sample No.: UD-10B

Elapsed Time (min)	Shear Strain γ (%)	Shear Stress τ_h (ksf)	Effective Vertical Stress σ'_v (ksf)	Calculated 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'_{oss} (°)
0.0	0.00	-0.005	7.222	0.000	-	-	-0.001	1.000	0.000	-0.04
2.5	-0.01	-0.007	7.211	0.011	-	-	-0.001	0.998	0.002	-0.05
5.1	0.05	0.297	7.204	0.019	578.161	395.791	0.041	0.997	0.003	2.36
7.6	0.15	0.588	7.133	0.089	382.500	265.254	0.081	0.988	0.012	4.71
10.2	0.24	0.809	7.066	0.157	332.920	199.658	0.112	0.978	0.022	6.54
12.7	0.36	0.980	6.986	0.236	276.024	143.688	0.136	0.967	0.033	7.98
15.3	0.47	1.132	6.901	0.321	242.248	133.528	0.157	0.956	0.044	9.32
17.8	0.57	1.262	6.831	0.391	223.053	121.560	0.175	0.946	0.054	10.47
20.4	0.68	1.392	6.757	0.465	204.056	116.248	0.193	0.936	0.064	11.64
22.9	0.80	1.533	6.681	0.541	192.019	116.031	0.212	0.925	0.075	12.92
25.5	0.93	1.676	6.578	0.644	180.763	96.463	0.232	0.911	0.089	14.30
28.0	1.10	1.819	6.493	0.729	165.152	75.439	0.252	0.899	0.101	15.65
30.6	1.28	1.943	6.389	0.833	151.673	67.348	0.269	0.885	0.115	16.91
33.1	1.45	2.054	6.326	0.896	141.703	59.940	0.284	0.876	0.124	17.98
35.7	1.63	2.151	6.261	0.961	132.072	57.497	0.298	0.867	0.133	18.96
38.2	1.78	2.243	6.206	1.016	126.003	54.139	0.311	0.859	0.141	19.87
40.8	2.00	2.345	6.158	1.064	117.611	46.598	0.325	0.853	0.147	20.85
43.3	2.19	2.432	6.126	1.096	111.330	40.601	0.337	0.848	0.152	21.65
51.0	2.77	2.638	6.075	1.147	95.425	32.664	0.365	0.841	0.159	23.47
58.6	3.32	2.802	6.069	1.153	84.566	24.978	0.388	0.840	0.160	24.78
66.3	3.95	2.929	6.076	1.146	74.290	18.340	0.406	0.841	0.159	25.73
73.9	4.55	3.028	6.122	1.100	66.669	15.416	0.419	0.848	0.152	26.32
81.5	5.21	3.122	6.185	1.037	60.034	13.627	0.432	0.856	0.144	26.79
89.2	5.79	3.198	6.254	0.968	55.273	14.573	0.443	0.866	0.134	27.09
96.8	6.40	3.296	6.359	0.863	51.573	13.592	0.456	0.881	0.119	27.40
104.5	7.02	3.365	6.444	0.778	47.989	12.585	0.466	0.892	0.108	27.57
112.1	7.65	3.453	6.571	0.651	45.211	11.418	0.478	0.910	0.090	27.72
119.7	8.29	3.509	6.677	0.545	42.387	9.875	0.486	0.925	0.075	27.72
127.4	8.88	3.574	6.782	0.440	40.306	8.534	0.495	0.939	0.061	27.79
135.0	9.49	3.611	6.878	0.344	38.094	7.606	0.500	0.952	0.048	27.70
142.7	10.06	3.664	6.961	0.261	36.448	7.885	0.507	0.964	0.036	27.76
150.3	10.69	3.705	7.041	0.181	34.695	5.064	0.513	0.975	0.025	27.75
158.0	11.27	3.726	7.115	0.107	33.089	4.591	0.516	0.985	0.015	27.64
165.6	11.93	3.762	7.174	0.048	31.587	3.723	0.521	0.993	0.007	27.68
175.8	12.74	3.777	7.218	0.004	29.676	0.179	0.523	0.999	0.001	27.62
191.1	13.96	3.760	7.248	-0.026	26.962	-4.623	0.521	1.004	-0.004	27.42
206.3	15.23	3.661	7.149	0.073	24.075	-7.017	0.507	0.990	0.010	27.12
221.6	16.55	3.578	6.997	0.225	21.642	-5.462	0.495	0.969	0.031	27.09
236.9	17.81	3.519	6.868	0.354	19.781	-3.509	0.487	0.951	0.049	27.13
252.2	19.13	3.488	6.714	0.508	18.255	-3.307	0.483	0.930	0.070	27.45
267.5	20.45	3.432	6.605	0.617	16.809	-3.846	0.475	0.915	0.085	27.46
282.7	21.77	3.387	6.502	0.720	15.577	-2.662	0.469	0.900	0.100	27.52
298.0	23.03	3.358	6.427	0.795	14.601	-2.601	0.465	0.890	0.110	27.59
313.3	24.31	3.321	6.360	0.862	13.682	-2.741	0.460	0.881	0.119	27.57
328.6	25.64	3.286	6.267	0.955	12.833	-3.283	0.455	0.868	0.132	27.67
343.9	26.90	3.236	6.184	1.038	12.048	-3.984	0.448	0.856	0.144	27.63
359.2	28.21	3.184	6.094	1.128	11.304	-3.787	0.441	0.844	0.156	27.59
374.4	29.58	3.135	5.988	1.234	10.615	-3.581	0.434	0.829	0.171	27.64



STATIC DSS TEST
 K_0 Consolidation - OCR = NA
 Sample: UD-12B - Depth: 80.0 - 81.7 ft
 Boring B-2359UD

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STATIC DSS TEST
 K_0 Consolidation - OCR = NA
 Sample: UD-12B - Depth: 80.0 - 81.7 ft
 Boring B-2359UD

KAW 7/16/08

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

Project Number: 0411-08-1686 Test Type: SDSS Sta. No.: 9G File Name: B-2359_UD12b
 Task No.: NA Assign, $\sigma'_{v,c}$ = 7.92 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: 2.660 ☒ Meas.; ☐ Assumed

☒ Tube	☐ Field Extruded	☐ Liner	☐ Remolded	☐ Tamping	☐ Constant Effort:	Blows/Tamps per Layer =
Boring No.: B-2359UD	☐ LPC Core			Impact/Rammer	Rammer Wgt.(lb)=	No. Layers =
Sample No.: UD-12	Composite No.:			Pluviated:	Tamper Force (lb)=	Drop (in.) =
Depth (ft): 80.0 - 81.7	Specimen No.: B			Kneading	Undercompaction: U_{ni} (%) =	Dia. (in.) =
☐ Spec. Selection by X-ray;	☐ Geomarine Sample				Ref. Effort=	% Comp. = $\pm$ Opt.=

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

Water Content (WC);	Initial - Trimming Location			Final, W_{at} (see below)	Soil and Ring Masses	Initial	Final
	Top ($W_{o,1}$)	Bottom ($W_{o,2}$)	Sides ($W_{o,3}$)		Mass Moist Soil + Tare (g)		
Container No.	110	999	4229	917	Mass Tare (g)	312.56	133.29
Mass Moist Soil + Cont. (g)	159.69	89.36	80.06	69.16	Mass Moist Soil, $M_{t,o}$ $M_{t,at}$ (g)	183.65	4.19
Mass Dry Soil + Container (g)	138.75	80.07	71.98	62.46	Excess Dry Soil (soil not included in final mass above)		
Mass Container (g)	31.02	32.10	30.30	31.91	Container No.		
WATER CONTENT (%)	19.44	19.37	19.39	21.93	Mass Dry Soil + Container (g)		
Avg. Initial WC, $W_{o,avg}$ (%)	19.40	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 #	
☒ Trimming Ring for NGI Apparatus		Small-ring ID #	
$H_{s,t}$ (mm):	18.65	$A_{s,t}$ (cm ²):	34.68
$D_{s,t}$ (mm):	66.45	$V_{s,t}$ (cm ³):	64.67
Remarks:			
☐ Free Standing by Wire Saw Lathe or Reconstituted Spec. (mm)			
Height (H_T)	Diameter (D_o)	Remarks:	
1 18.670	1-T NA	For Free Standing or Reconstituted Spec.:	
2 18.600	2-M NA		
3 18.680	3-B NA		
4 18.610	1'-T NA		
5 18.630	2'-M NA		
Avg.	3'-B NA	A_{tr} (cm ²):	NA
= 18.650	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)=	124.44
Dry, $\gamma_{d,o}$ (lb/ft ³)=	104.23

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				
$\sigma'_{v,c}$				
$\sigma'_{v,max}$				
☒ Regular Membrane with Ring Set No. 9	ID, Rings (mm)			
Thickness (mm):	Top: 0.58		= 67.04	
☐ Single	Bottom: 0.59		Corr. for mem.	
☒ Double	Membr. Thick. = 0.29		= 66.450	
Area Ring with mem., A_o (cm ²)=		34.68	; (in ²)= 5.375	
Mass Top Cap, etc., M_{tc} =		528.7 g	1.17 lbf	
Data corr. for M_{tc} :	☒ Yes;	☐ No	Plattens with Pins:	☐ Yes; ☒ No

Final Visual Description: Pale Brown Clayey SAND (SC)

Other Remarks :

Trim./ Recon. By: HC
 Date: 3/31/2008
 Prelim. Calc. By: HC

Setup By: HC
 Date: 3/31/2008
 Final Calc. By: LF

Take Down By: HC
 Date: 4/2/2008
 Reviewed By: HP **HP**

Specimen Take Down: ☒ Spec. removed right after shearing
☐ Spec. unloaded to zero stress with access to water

Remarks:

KAW 7/16/08

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

Project Number: 0411-08-1686
Task Number: NA

Test Station No.: 9G
Specific Gravity: 2.660

File Name: B-2359_UD12b

Type Test: SDSS

Specimen: ☒ "Undisturbed"; ☐ Reconstituted; ☐ Remolded

Calculations Corr. for Salt (dissolved solids): ☒ No or, ☐ Yes, with concentration = ppm

Consolidation Stress Summary and Loading Summary									
Test Stage:	Max. Stress	Pre-Shear	Post Cyclic	☒	Static Strain Rate =	NA (%/hr or)			
Nominal Vertical Stress, $\sigma'_{v,n}$ (ksf)	NA	7.92	NA		Cyclic Rate (Hz):	0.1;	1;	Other =	
Axial/Vertical Force, $P_{v,n}$ (lbf)	NA	NA	NA		During/End of Loading		Static	Cyclic	
Horizontal Force, $P_{h,n}$ (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	0.72 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) - Initial Water Contents over Saturation (%):					
Top, $W_{o,1}$	Bottom, $W_{o,2}$	Sides, $W_{o,3}$	Avg., $W_{o,avg}$	Selet., $W_{o,s}$	Back Cal.
W_o 19.44	19.37	19.39	19.40	19.40	21.75
S_o 87.5	87.3	87.4	87.4	87.4	93.1
Measured final mass of moist soil, M_{lat} (g)					129.10
Final mass of moist soil corrected for excess dry soil, $M_{lat,c}$ (g)					129.10

Calculated Mass of Dry Soil (g)	
Initial Selected Water Content (%)	19.40
Initial, $M_{d,o}$	107.96
Final, $M_{d,at}$	105.88
Selected, M_d	106.92

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)	7.920	NA	NA
Sign Convention: (+) ΔV out & ΔH down; (-) ΔV in & ΔH up			
Delta Def. Read., $\Delta d_{ar,n}$ (mm)	0.523		
Total Equip. Comp., $\Sigma \Delta d_{afc}$ (mm)	0.000		
Corr. Total Def. $\Delta H_{c,n}$ (mm)	0.523		
ΔV_n using A_o - spec. (cm ³)	1.81		
ΔV_n using $A_{c,n}$ - app. (cm ³)	1.81		
ΔV_n using burette meas. (cm ³)	-0.70		
Selected ΔV_n (cm ³)	1.81	NA	NA = ΔV_{ul}
After Test WC Corr. for ΔV during Shear & Unloading, $W_{a,tc}$ (%)			NA

Calculation of ΔV_c by Different Procedures

By Selected Volumes		By Change in Mass	
ΔV_c (cm ³)	1.81	$\sim M_{t,c} - (M_{lat,c} + \Delta V_L + \Delta V_{ul})$	
By Cal. Height & App. Area		ΔV_c (cm ³)	-0.19
ΔV_c (cm ³)	1.81	By Saturation = 100% and Spec. Unloaded to 0 Stress	
By Cal. Ht. & Init. Spec. Area		ΔV_c (cm ³)	NA
ΔV_c (cm ³)	1.81		

Back Cal. Water Content During Consol. -

Based on the Consolidation Conclusions Given Below

Assumed Saturation (%)	100.00
Back Cal. WC before Loading, $W_{c,bc}$ (%)	21.10
Back Cal. WC at Max. Stress, $W_{cmax,bc}$ (%)	NA

Consolidation & Preshear Conclusions	ΔV_c (cm ³) =	1.81	ΔH_c (mm) =	0.523	$\epsilon_{a,c}$ (%) =	2.80	$\Delta V_{c,max}$ (cm ³) = NA $\epsilon_{ac,max}$ (%) = NA Preshear: γ_{ua} (%) = NA
	V_c (cm ³) =	62.86	H_c (mm) =	18.127	$\epsilon_{v,c}$ (%) =	2.79	
	A_c (cm ²) =	34.68	$\Delta \gamma_c$ (mm) =	NA	γ_c (%) =	NA	

Summary of Specimen Physical Properties:

Specific Gravity: $G_s = 2.660$ Measured	Height (mm)	Volume (cm ³)	Area (cm ²)	Water Content (%)	Total Unit Weight (pcf)	Dry Unit Weight (pcf)	Saturation (%)	Void Ratio, e
Condition:								
Initial (as trimmed)	18.650	64.67	34.68	20.6	124.4	103.2	90.3	0.609
After to $\sigma'_{v,c}$	18.127	62.86	34.68	21.1	128.6	106.2	100.0	0.564
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

Remarks: t95 for max stress = 6.1 min

Project Number: 0411-08-1686 Test Type: SDSS Test Sta. No.: 9G File Name: B-2359_UD12b
 Project Name: Exelon (Victoria) Task No.: NA Test No.: NA Test Series for: NA

☒ Tube	☐ Field Extruded	☐ Liner	☐ Remolded	☐ Tamping	Constant Effort:	Blows/Tamps per Layer =
Boring No.: B-2359UD	☐ LPC Core			☐ Impact/Rammer	Rammer Wgt. (lb) =	No. Layers =
Sample No.: UD-12	Composite No.:			☐ Pluviated:	Tamper Force (lb) =	Drop (in.) =
Depth (ft): 80.0 - 81.7	Specimen No.: B			☐ Kneading	Undercompaction: U_{ni} (%) =	Dia. (in.) =
☐ Spec. Selection by X-ray;	☐ Geomarine Sample				Ref. Effort =	% Comp. = $\pm$ Opt. =

Type Consolidation:	☒ K_0 at:	☒ Incremental CRS	☐ Anisotropic at:	☐ Inclined Stress Path, $K_{c,DSS}$	☐ Used Automated System	Remarks:
Loading Conditions:	☒ Static	☒ Strain Stress	☐ Creep Post Cyclic	☒ Const. Vol./Ht Drained	☒ Without - Water With - Bath	☐ Cyclic (Hz) Rate: 0.1; ☐ Strain 1; Other:

Summary of Specimen Physical Properties

Specific Gravity: $G_s = 2.660$ Measured	Height (mm)	Volume (cm ³)	Area (cm ²)	Water Content (%)	Unit Weight		Saturation (%)	LL PL	-200 %	Void Ratio, e
Condition:					Total (pcf)	Dry (pcf)		PI		
Initial	18.65	64.67	34.68	20.57	124.4	103.2	90.3	26	38.8	0.609
After to $\sigma'_{v,c}$	18.13	62.86	34.68	21.10	128.6	106.2	100.0	14	NA	0.564
Consol.: to $\sigma'_{vc,max}$	NA	NA	NA	NA	NA	NA	NA	12	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	8.008	NA	Cyclic Rate (Hz): 0.1; 1; Other =					
Induced OCR:	-	NA	NA	NA	During/End of Loading					
Axial Strain during Consol., $\epsilon_{ax,c}$	%	NA	2.80	NA	Change in Height, $\Delta H_{L,n}$ (mm):					
Horiz. Consol. Stress, $\tau_{h,c}$	(ksf)	NA	NA	NA	Change in Vol., $\Delta V_{L,n}$ (cm ³):					
Consol. Stress Ratio, $\tau_{h,c} / \sigma'_{v,c}$	-	NA	NA	NA	Post Cy. Displ. Reset to Null Pos.:					
Shear Strain during Consol., $\epsilon_{h,c}$	%	NA	NA	NA	Number of Loading Cycles, N = NA					
Undr. Ambient Shear Stress, $\tau_{h,amb}$	(ksf)	NA	NA	NA	$\pm \tau_h =$ NA (ksf) $\pm \gamma =$ NA %					
Undr. Ambient Shear Strain, $\epsilon_{h,amb}$	%	NA	NA	NA	at end of cyclic loading, $\sigma'_{vc,r} =$ NA (ksf)					

Weight Top Cap, etc., M_{tc} (lb): 1.17	Data Normalization: ☒ Yes ☐ No Value: 8.008 (ksf)
Data corr. for M_{tc} : ☒ Yes; ☐ No	Plattens with Pins: ☐ Yes; ☒ No
Wire Reinforced Membrane, Model:	Data corr. for Membr. strength: ☒ Yes ☐ No
☒ Regular Membrane with Rings	☒ 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: Pale Brown Clayey SAND (SC)

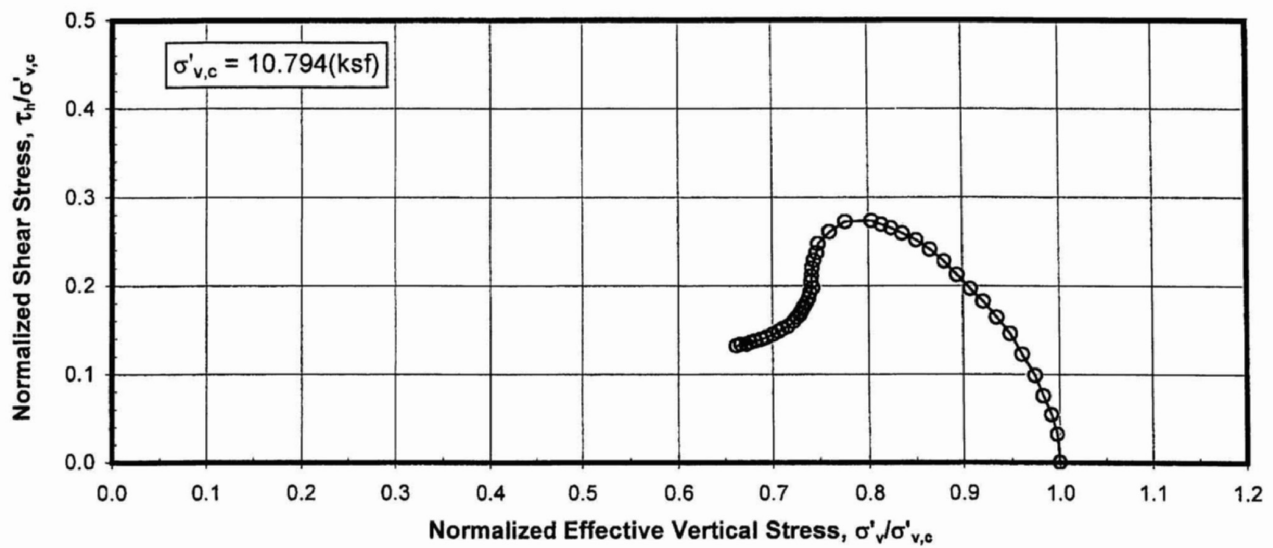
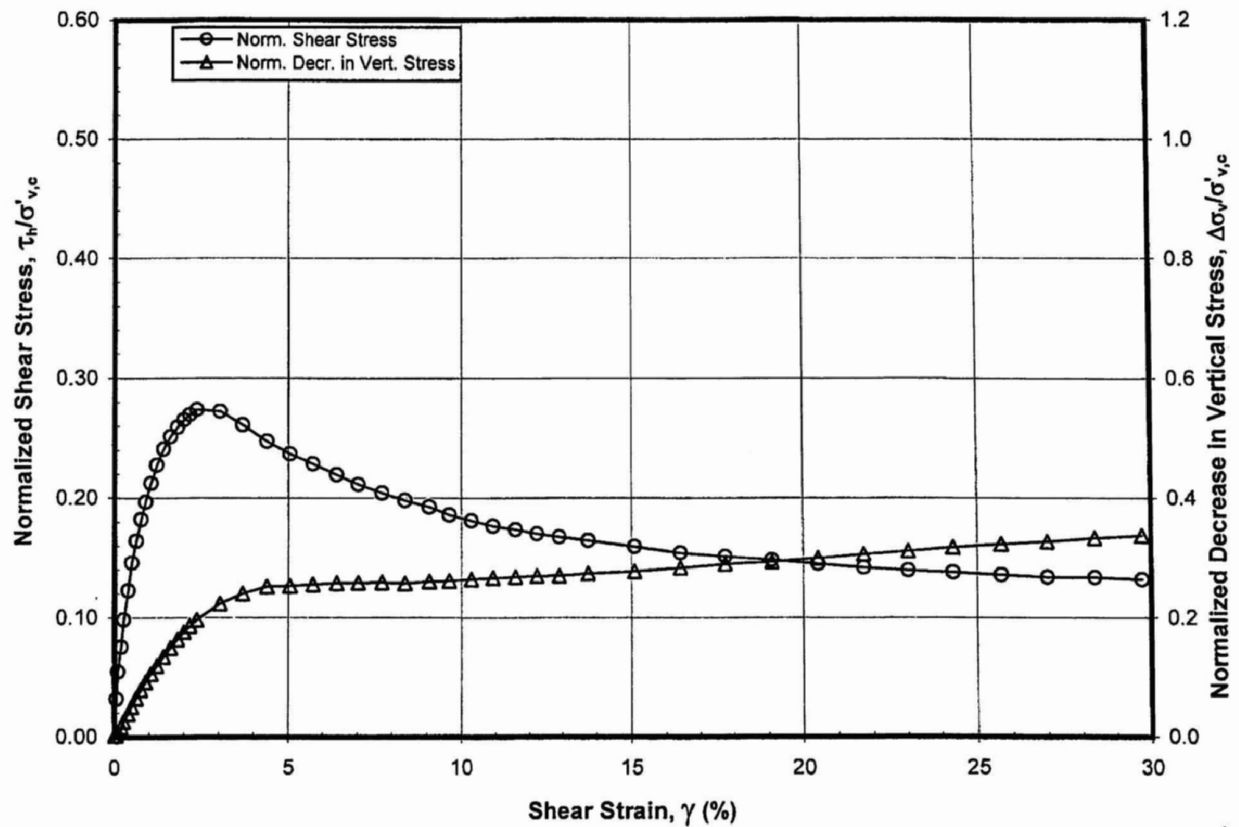
Loading Summary

	τ_h (ksf)	γ (%)	σ'_v (ksf)	τ_h / σ'_v	$\Delta \sigma'_v / \sigma'_{v,c}$	$C_v / \sigma'_{v,c}$
at Peak Shear Stress	4.414	24.96	7.704	0.573	0.038	0.551
at Maximum Strain	3.918	29.70	6.807	0.576	0.150	-

Boring No.: B-2359UD

Sample No.: UD-12B

Elapsed Time (min)	Shear Strain γ (%)	Shear Stress τ_h (ksf)	Effective Vertical Stress σ'_v (ksf)	Calculated 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	8.008	0.000	-	-	0.000	1.000	0.000	0.00
2.5	0.03	0.314	8.026	-0.019	963.698	648.008	0.039	1.002	-0.002	2.24
5.1	0.10	0.551	7.993	0.014	530.798	270.891	0.069	0.998	0.002	3.94
7.6	0.18	0.707	7.965	0.043	396.482	182.010	0.088	0.995	0.005	5.07
10.1	0.27	0.847	7.889	0.118	315.217	141.238	0.106	0.985	0.015	6.13
12.6	0.37	0.974	7.779	0.229	264.601	114.690	0.122	0.971	0.029	7.14
15.2	0.48	1.086	7.647	0.361	226.985	98.244	0.136	0.955	0.045	8.08
17.7	0.58	1.183	7.520	0.487	203.862	88.010	0.148	0.939	0.061	8.94
20.2	0.69	1.272	7.385	0.623	184.160	80.712	0.159	0.922	0.078	9.78
22.8	0.81	1.367	7.256	0.752	169.089	76.963	0.171	0.906	0.094	10.67
25.3	0.94	1.462	7.099	0.909	155.925	70.704	0.183	0.887	0.113	11.64
27.8	1.08	1.560	6.918	1.089	144.213	65.838	0.195	0.864	0.136	12.70
30.3	1.23	1.657	6.700	1.307	134.295	57.609	0.207	0.837	0.163	13.89
32.8	1.39	1.739	6.483	1.525	124.829	47.606	0.217	0.810	0.190	15.01
35.4	1.55	1.807	6.286	1.721	116.636	40.439	0.226	0.785	0.215	16.04
37.9	1.72	1.869	6.112	1.896	108.876	35.436	0.233	0.763	0.237	17.01
40.4	1.90	1.932	5.952	2.056	101.508	29.730	0.241	0.743	0.257	17.99
43.0	2.10	1.982	5.804	2.204	94.534	23.217	0.248	0.725	0.275	18.85
50.5	2.65	2.097	5.498	2.510	79.068	20.127	0.262	0.687	0.313	20.88
58.1	3.23	2.209	5.352	2.656	68.477	17.880	0.276	0.668	0.332	22.43
65.7	3.83	2.307	5.262	2.746	60.241	16.594	0.288	0.657	0.343	23.68
73.3	4.41	2.405	5.232	2.776	54.573	15.728	0.300	0.653	0.347	24.69
80.8	5.05	2.498	5.250	2.758	49.503	15.200	0.312	0.656	0.344	25.45
88.4	5.62	2.588	5.289	2.719	46.099	15.488	0.323	0.661	0.339	26.07
96.0	6.25	2.683	5.349	2.659	42.962	14.799	0.335	0.668	0.332	26.64
103.6	6.82	2.766	5.416	2.592	40.592	15.294	0.345	0.676	0.324	27.06
111.1	7.45	2.868	5.505	2.502	38.507	15.102	0.358	0.687	0.313	27.52
118.7	8.03	2.951	5.582	2.425	36.730	14.928	0.368	0.697	0.303	27.86
126.3	8.65	3.048	5.684	2.324	35.226	14.352	0.381	0.710	0.290	28.20
133.9	9.27	3.128	5.761	2.246	33.750	13.321	0.391	0.719	0.281	28.50
141.4	9.88	3.212	5.849	2.159	32.499	12.204	0.401	0.730	0.270	28.77
149.0	10.49	3.277	5.865	2.143	31.238	11.378	0.409	0.732	0.268	29.20
156.6	11.08	3.348	6.008	2.000	30.213	10.866	0.418	0.750	0.250	29.13
164.2	11.71	3.409	6.076	1.932	29.116	10.412	0.426	0.759	0.241	29.30
174.3	12.51	3.498	6.172	1.835	27.961	10.136	0.437	0.771	0.229	29.54
189.4	13.73	3.610	6.321	1.687	26.293	8.819	0.451	0.789	0.211	29.73
204.5	14.96	3.714	6.470	1.538	24.826	8.055	0.464	0.808	0.192	29.86
219.7	16.23	3.811	6.639	1.369	23.488	7.758	0.476	0.829	0.171	29.86
234.8	17.47	3.909	6.807	1.200	22.377	8.327	0.488	0.850	0.150	29.86
250.0	18.70	4.016	6.991	1.017	21.486	8.234	0.502	0.873	0.127	29.88
265.1	19.98	4.115	7.148	0.860	20.601	8.393	0.514	0.893	0.107	29.93
280.3	21.23	4.229	7.340	0.688	19.919	8.558	0.528	0.917	0.083	29.95
295.4	22.47	4.328	7.530	0.478	19.267	6.688	0.540	0.940	0.060	29.89
310.6	23.72	4.395	7.653	0.354	18.534	3.434	0.549	0.956	0.044	29.87
325.7	24.96	4.414	7.704	0.304	17.686	-7.622	0.551	0.962	0.038	29.81
340.9	26.25	4.197	7.413	0.595	15.990	-11.537	0.524	0.926	0.074	29.52
356.0	27.52	4.117	7.242	0.765	14.966	-7.358	0.514	0.904	0.096	29.62
371.2	28.82	4.007	6.996	1.012	13.905	-9.310	0.500	0.874	0.126	29.80
381.3	29.70	3.918	6.807	1.201	13.195	-10.222	0.489	0.850	0.150	29.93



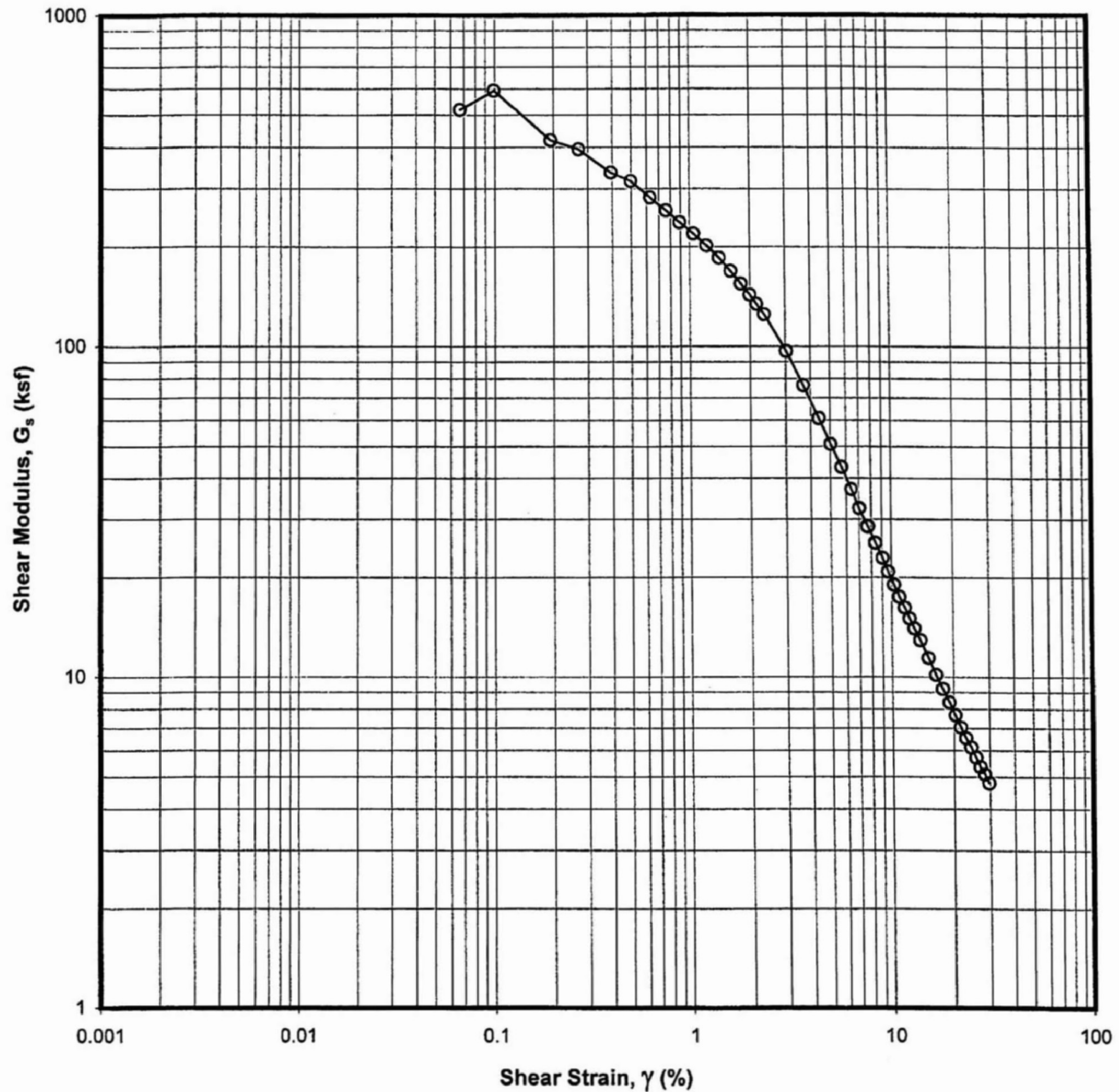
STATIC DSS TEST

K_o Consolidation - OCR = NA

Sample: UD-20B - Depth: 120.0 - 121.7 ft

Boring B-2359UD

KAW 7/16/08



STATIC DSS TEST

K_o Consolidation - OCR = NA

Sample: UD-20B - Depth: 120.0 - 121.7 ft

Boring B-2359UD

KAW 7/16/08

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

Project Number: 0411-08-1686 Test Type: SDSS Sta. No.: 6G File Name: B-2359_UD20b
 Task No.: NA Assign, $\sigma'_{v,c}$ = 10.80 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: 2.720 ☒ Meas.; ☐ Assumed

☒ Tube	☐ Field Extruded	☐ Liner	☐ Remolded	☐ Tamping	Constant Effort:	Blows/Tamps per Layer =
Boring No.: B-2359UD	☐ LPC Core			Impact/Rammer	Rammer Wgt. (lb) =	No. Layers =
Sample No.: UD-20	Composite No.:			Pluviated:	Tamper Force (lb) =	Drop (in.) =
Depth (ft): 120.0 - 121.7	Specimen No.: B			Kneading	Undercompaction: U_{nl} (%) =	Dia. (in.) =
☐ Spec. Selection by X-ray;	☐ Geomarine Sample				Ref. Effort =	% Comp. = $\pm$ Opt. =

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

Water Content (WC);		Initial - Trimming Location			Final, W _{at} (see below)	Soil and Ring Masses		Initial	Final
		Top (W _{o,1})	Bottom (W _{o,2})	Sides (W _{o,3})		Mass Moist Soil + Tare (g)	300.73	119.28	
Container No.		191	771	4072	139	Mass Tare (g)	183.38	4.37	
Mass Moist Soil + Cont. (g)		48.80	101.92	58.17	71.63	Mass Moist Soil, M _{t,o} M _{t,at} (g)	117.35	114.91	
Mass Dry Soil + Container (g)		44.05	83.19	50.61	60.86	Excess Dry Soil (soil not included in final mass above)			
Mass Container (g)		30.75	31.54	30.12	30.12	Container No.			
WATER CONTENT (%)		35.71	36.26	36.90	35.04	Mass Dry Soil + Container (g)			
Avg. Initial WC, W _{o,avg} (%)		36.29	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 #	
☒ Trimming Ring for NGI Apparatus		Small-ring ID #	
$H_{s,t}$ (mm):	18.68	$A_{s,t}$ (cm ²):	34.68
$D_{s,t}$ (mm):	66.45	$V_{s,t}$ (cm ³):	64.76
Remarks:			
Free Standing by Wire Saw Lathe or Reconstituted Spec. (mm)			
Height (H_w)	Diameter (D_o)	Remarks:	
1 18.720	1-T NA	For Free Standing or Reconstituted Spec.:	
2 18.660	2-M NA		
3 18.680	3-B NA		
4 18.650	1'-T NA		
5 18.650	2'-M NA		
Avg.	3'-B NA	A_{tr} (cm ²):	NA
= 18.675	Avg NA	V_{tr} (cm ³):	NA

Note: NA indicates not applicable.

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

Estimated Initial Unit Weight	
Total, $\gamma_{t,o}$ (lb/ft ³) =	113.13
Dry, $\gamma_{d,o}$ (lb/ft ³) =	83.01

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				
$\sigma'_{v,c}$				
$\sigma'_{v,max}$				
☒ Regular Membrane with Ring Set No. 6	ID, Rings (mm)			
Thickness (mm):	Top: 0.62	= 67.09		
Single	Bottom: 0.65	Corr. for mem.		
☒ 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} =		526.0 g,	1.16	lb
Data corr. for M_{tc} :	☒ Yes;	☐ No	Plattens with Pins:	☐ Yes; ☒ No

Final Visual Description: Light Gray Fat CLAY (CH)

Other Remarks :

Trim./ Recon. By: HC
 Date: 3/30/2008
 Prelim. Calc. By: HC

Setup By: HC
 Date: 3/31/2008
 Final Calc. By: LF

Take Down By: HC
 Date: 4/1/2008
 Reviewed By: HP MP

Specimen Take Down: ☒ Spec. removed right after shearing
☐ Spec. unloaded to zero stress with access to water

KAW 7/16/08

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

Project Number: 0411-08-1686

Test Station No.: 6G

File Name: B-2359_UD20b

Task Number: NA

Specific Gravity: 2.720

☒ Measured; ☐ Assumed

Type Test: SDSS

 Specimen: ☒ "Undisturbed"; ☐ Reconstituted; ☐ Remolded

 Calculations Corr. for Salt (dissolved solids): ☒ No or, ☐ Yes, with concentration = ppm

Consolidation Stress Summary and Loading Summary

Test Stage:	Max. Stress	Pre-Shear	Post Cyclic	X	Static Strain Rate =	NA	(%/hr or)
Nominal Vertical Stress, σ'_v (ksf)	NA	10.8	NA		Cyclic Rate (Hz):	0.1;	1; Other =
Axial/Vertical Force, $P_{v,n}$ (lbf)	NA	NA	NA		During/End of Loading		
Horizontal Force, $P_{h,n}$ (lbf)	NA	0	NA		Change in Height, $\Delta H_{L,n}$ (mm)		
Nominal OCR	NA	NA	NA		Change in Vol., $\Delta V_{L,n}$ (cm ³)		
t_c (ON,days,hrs)	NA	0.87 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) - Initial Water Contents over Saturation (%):

	Top, $W_{o,1}$	Bottom, $W_{o,2}$	Sides, $W_{o,3}$	Avg., $W_{o,avg}$	Select., $W_{o,s}$	Back Cal.
W_o	35.71	36.26	36.90	36.29	36.29	37.90
S_o	94.0	94.7	95.5	94.7	94.7	96.7

 Measured final mass of moist soil, M_{lat} (g) 114.91

 Final mass of moist soil corrected for excess dry soil, M_{latc} (g) 114.91

Calculated Mass of Dry Soil (g)

Initial Selected Water Content (%)	36.29
Initial, $M_{d,o}$	86.10
Final, $M_{d,at}$	85.10
Selected, M_d	85.60

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 $\sigma'_{v,max}$	During Rebound to $\sigma'_{v,c}$	Specimen Unloaded After Test To
Stress Units (ksf)	10.800	NA	NA
Sign Convention: (+) ΔV out & ΔH down; (-) ΔV in & ΔH up			
Delta Def. Read., $\Delta d_{ar,n}$ (mm)	1.110		
Total Equip. Comp., $\Sigma \Delta d_{afc}$ (mm)	0.000		
Corr. Total Def. $\Delta H_{c,n}$ (mm)	1.110		
ΔV_n using A_o - spec. (cm ³)	3.85		
ΔV_n using $A_{c,n}$ - app. (cm ³)	3.85		
ΔV_n using burette meas. (cm ³)	1.90		
Selected ΔV_n (cm ³)	3.85	NA	NA = ΔV_{ul}
After Test WC Corr. for ΔV during Shear & Unloading, W_{atc} (%)			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) 3.85	$\sim M_{t,o} - (M_{lat,c} + \Delta V_L + \Delta V_{ul})$
By Cal. Height & App. Area	ΔV_c (cm ³) 2.44
ΔV_c (cm ³) 3.85	By Saturation = 100% and Spec. Unloaded to 0 Stress
By Cal. Ht. & Init. Spec. Area	ΔV_c (cm ³) NA
ΔV_c (cm ³) 3.85	

Back Cal. Water Content During Consol. -

Based on the Consolidation Conclusions Given Below

Assumed Saturation (%)	100.00
Back Cal. WC before Loading, $W_{c,bc}$ (%)	34.27
Back Cal. WC at Max. Stress, $W_{c,max,bc}$ (%)	NA

Consolidation & Preshear Conclusions	ΔV_c (cm ³) = 3.84	ΔH_c (mm) = 1.110	$\epsilon_{a,c}$ (%) = 5.94	$\Delta V_{c,max}$ (cm ³) = NA
	V_c (cm ³) = 60.92	H_c (mm) = 17.565	$\epsilon_{v,c}$ (%) = 5.93	$\epsilon_{ac,max}$ (%) = 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: $G_s = 2.720$ Measured	Height (mm)	Volume (cm ³)	Area (cm ²)	Water Content (%)	Total Unit Weight (pcf)	Dry Unit Weight (pcf)	Saturation (%)	Void Ratio, e
Condition:								
Initial (as trimmed)	18.675	64.76	34.68	37.1	113.1	82.5	95.7	1.058
After to $\sigma'_{v,c}$	17.565	60.92	34.68	34.3	117.8	87.7	100.0	0.935
Consol.: to $\sigma'_{v,max}$	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 = 26.4 min