Defence Research and Development Canada
Recherche et développement pour la défense Canada

DRDC Suffield Soil Laboratory Program

Triaxial Test Results – Onager Site

J. Barchard and A. Kupper
AMEC Earth & Environmental Limited

Contract Scientific Authority: S.L. Hlady
Defence R&D Canada – Suffield

Contract Report
DRDC Suffield CR 2004-138
January 2004

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14. ABSTRACT

AMEC Earth & Environmental Limited (AMEC) was retained by Defence Research & Development Canada (DRDC) Suffield to carry out laboratory testing on soil samples from prairie soil samples from the Mine Effects Site near Building 148 on the Experimental Proving Ground at DRDC Suffield. AMEC's geotechnical laboratory in Edmonton, Alberta received three large, bag soil samples in late October 2003 for DRDC's Piston, Onager East and Onager West sites. The following laboratory tests were requested by DRDC 1. · Determination of water content of soil samples 2. · Preparation of compacted samples in range of natural water contents 3. · Consolidation tests using ASTM D2435 on two samples; and 4. · Triaxial undrained tests (CUP) using ASTM D4767 on three samples. A typical range of natural water contents of 13 to 19 percent was provided to AMEC by DRDC Suffield for similar soil at these sites. For testing, compacted samples were prepared at water contents within the natural water content range, with target water contents of approximately 15 percent. Results are provided according to American Standard Testing Methods (ASTM) standards where applicable. Results for the bulleted items 1-3 are provided in CR 2004-112, DRDC Soil Laboratory Program - Progress Report Piston and Onager Sites.

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DRDC Suffield Soil Laboratory Program

Triaxial Test Results – Onager Site

J. Barchard and A. Kupper
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Edmonton, AB
Canada T6E 5M4

Contract Number: W7702-03-R527

Contract Scientific Authority: S.L. Hlady (403-544-4727)

Defence R&D Canada – Suffield

Contract Report

DRDC Suffield CR 2004-138

January 2004

Abstract

AMEC Earth & Environmental Limited (AMEC) was retained by Defence Research & Development Canada (DRDC) Suffield to carry out laboratory testing on soil samples from prairie soil samples from the Mine Effects Site near Building 148 on the Experimental Proving Ground at DRDC Suffield. AMEC's geotechnical laboratory in Edmonton, Alberta received three large, bag soil samples in late October 2003 for DRDC's Piston, Onager East and Onager West sites.

The following laboratory tests were requested by DRDC:

1. · Determination of water content of soil samples;
2. · Preparation of compacted samples in range of natural water contents;
3. · Consolidation tests using ASTM D2435 on two samples; and
4. · Triaxial undrained tests (CUP) using ASTM D4767 on three samples.

A typical range of natural water contents of 13 to 19 percent was provided to AMEC by DRDC Suffield for similar soil at these sites. For testing, compacted samples were prepared at water contents within the natural water content range, with target water contents of approximately 15 percent.

Results are provided according to American Standard Testing Methods (ASTM) standards where applicable. Results for the bulleted items 1-3 are provided in CR 2004-112, DRDC Soil Laboratory Program – Progress Report Piston and Onager Sites.

29 January 2004
BX02777

Defence R&D Canada - Suffield
PO Box 4000, Stn Main
Medicine Hat, AB T1A 8K6

Attention: Ms. Sheri Hlady, Defence Scientist

Dear Ms. Hlady**,**

Re: DRDC - Suffield
Soil Laboratory Program
Triaxial Test Results - Onager Site

1.0 INTRODUCTION

AMEC Earth & Environmental Limited (AMEC) was retained by Defence Research & Development Canada (DRDC) Suffield to carry out laboratory testing on soil samples from research sites at or near their Suffield operation. A progress report and results for the testing completed to December 2003 was provided in the AMEC letter "DRDC – Suffield Soil Laboratory Program – Progress Report Piston and Onager Sites" on 10 December 2003. At that time, the triaxial tests were in progress. The final results of the triaxial tests are presented herein.

2.0 LABORATORY TEST PROGRAM

AMEC's geotechnical laboratory in Edmonton, Alberta received three large, bag soil samples in late October 2003 for DRDC's Piston, Onager East and Onager West sites. The following laboratory tests were requested by DRDC:

- Determination of water content of soil samples;
- Preparation of compacted samples in range of natural water contents;
- Consolidation tests using ASTM D2435 on two samples; and
- Triaxial undrained tests (CUP) using ASTM D4767 on three samples.

All testing, excluding the triaxial tests, was completed and reported in December 2003.

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3.0 TRIAXIAL TEST PROGRAM

Triaxial undrained tests (CUP) were performed according to American Standard Testing Methods (ASTM) D4767-95, at effective stresses of 500, 1000 and 1500 kPa. Three samples from the Onager West site were compacted and prepared at water contents within the natural water content range (13 to 19 percent), with a target water content of approximately 15 percent as requested by DRDC. Results are attached and are provided according to the ASTM standard.

4.0 CLOSURE

We trust this document meets your current needs. If there were further testing required or that you would like to discuss, AMEC would be pleased to assist DRDC.

Should you have any questions or comments please contact the undersigned.

Respectfully submitted,

AMEC Earth & Environmental Limited

Ja'net Barchard, M.Sc., EIT

Angela Kupper, Ph.D., P.Eng
Senior Geotechnical Engineer

TRIAXIAL TEST - LABORATORY TEST RESULTS
ASTM D4767-95

PROJECT No.	BX02777	DATE	05-Dec-03	
CLIENT	DRDC	PROJECT LOCATION	Onager Site	
LAB No.		TEST TYPE	CUP	
BOREHOLE No.	Onager West	SAMPLE No.	1	
DEPTH		EFFECTIVE STRESS	500.0	kPa
PROJECT MANAGER	AGK / JMB	SAMPLE TYPE	Compacted to 100% SPDD	
SOIL DESCRIPTION	Clay, silty, sandy, roots, brown.			

Initial Sample Height	99.432	mm	Initial Water Content	14.6	%
Initial Sample Diameter	50.49	mm	Initial Bulk Density	1841	kg/m^3
Initial Sample Area	20.02	cm^2	Initial Dry Density	1606	kg/m^3
Initial Sample Volume	199.08	cm^3	Initial Void Ratio	0.67	
			Specific Gravity	2.68	assumed
Pre-Shear Cell Pressure	1034	kPa	Effective Consolidation Pressure	469	kPa
Pre-Shear Back Pressure	565	kPa	Pore Pressure Parameter B	0.94	
			Time to 50 % Primary Consolidation	11.8	min
Pre-Shear Sample Height	98.546	mm	Pre-Shear Water Content	21.7	%
Pre-Shear Sample Diameter	49.362	mm	Pre-Shear Bulk Density	2062.7	kg/m^3
Pre-Shear Sample Area	19.14	cm^2	Pre-Shear Dry Density	1695.2	kg/m^3
Pre-Shear Sample Volume	188.59	cm^3	Pre-Shear Void Ratio	0.58	
Pre-Shear Height Change	0.887	mm	Pre-Shear Volume Change	-10.49	cm^3

SAMPLE DATA	Initial	Pre-Shear	Post-Shear	Unit
Wet Weight of Sample	366.500	389.000	389.000	g
Dry Weight of Sample	319.700	319.700	319.700	g
Volume of Sample	199.08	188.59	188.59	cm^3
Volume of Solids	119.29	119.29	119.29	cm^3
Volume of Voids	79.79	69.30	69.30	cm^3
Volume of Pore Water	46.80	69.30	69.30	cm^3
Void Ratio	0.67	0.58	0.58	
Saturation	0.59	1.00	1.00	
Bulk Density	1841.0	2062.7	2062.7	kg/m^3
Dry Density	1605.9	1695.2	1695.2	kg/m^3
Moisture Content	14.6	21.7	21.7	%
Change in Volume		-10.5		cm^3

FAILURE MODE: Bulge

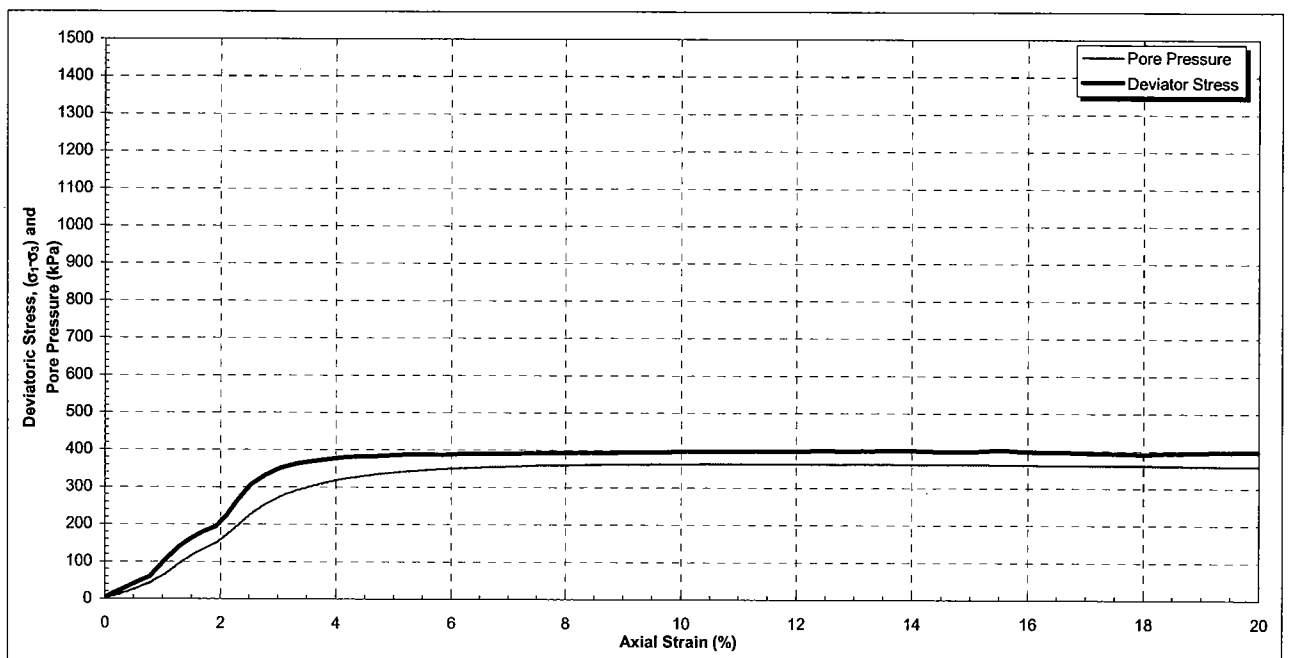
COMMENTS:
SPDD = Specified Proctor Dry Density
Water content determined from weight of entire specimen.
Wet Method use for sample saturation.
Method A used to calculate pre-shear sample area.
Correction for filter paper strips (assuming 50% covered) and for membrane used in effective stress calculations.
Strain rate = 0.018 %/min.

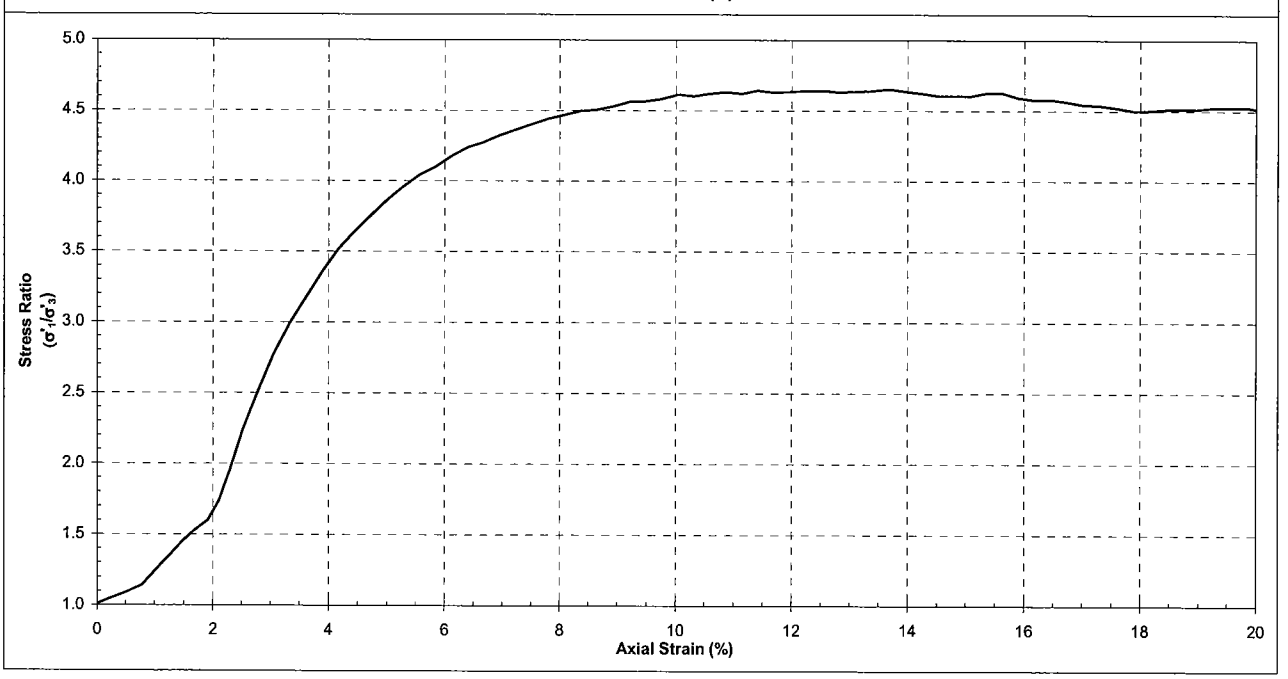
TRIAXIAL TEST - LABORATORY TEST RESULTS

PROJECT No.	BX02777	DATE ORDERED	
CLIENT	DRDC	PROJECT LOCATION	Onager Site
LAB No.		TEST TYPE	CUP
BOREHOLE No.	Onager West	SAMPLE No.	1
DEPTH		EFFECTIVE STRESS	500.0 kPa
PROJECT ENGINEER	JMB	SAMPLE TYPE	Compacted to 100% SPDD

MAXIMUM DEVIATOR STRESS 401 kPa at 13.7 % Strain

SOIL DESCRIPTION Clay, silty, sandy, roots, brown.



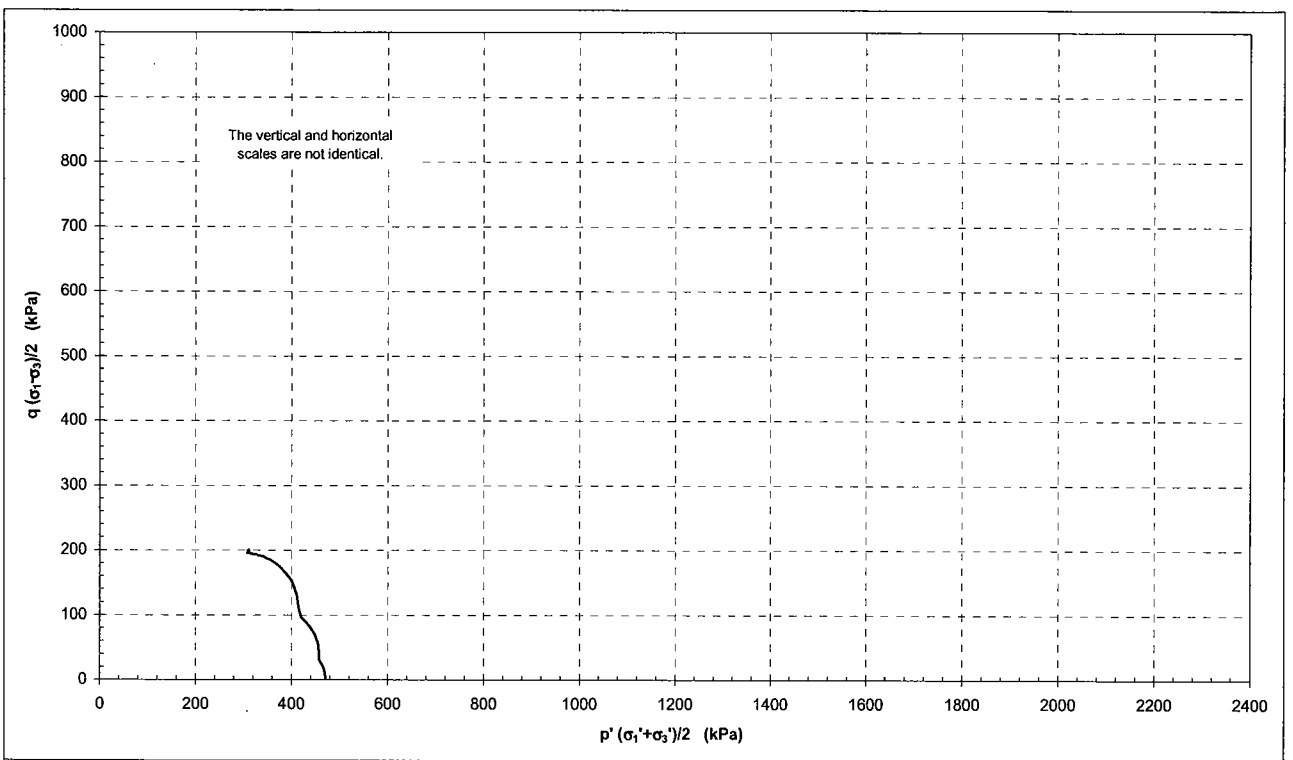


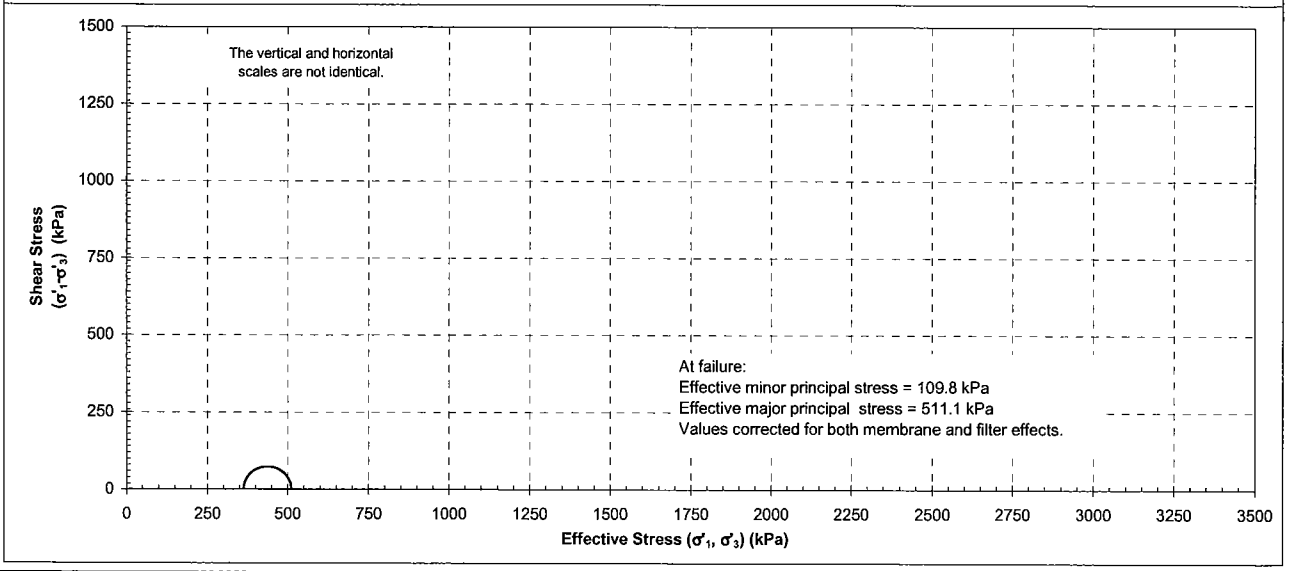
TRIAXIAL TEST - LABORATORY TEST RESULTS

PROJECT No.	BX02777	DATE ORDERED	
CLIENT	DRDC	PROJECT LOCATION	Onager Site
LAB No.		TEST TYPE	CUP
BOREHOLE No.	Onager West	SAMPLE No.	1
DEPTH		EFFECTIVE STRESS	500.0 kPa
PROJECT ENGINEER	JMB	SAMPLE TYPE	Compacted to 100% SPDD

MAXIMUM DEVIATOR STRESS 401 kPa at 13.7 % Strain

SOIL DESCRIPTION Clay, silty, sandy, roots, brown.

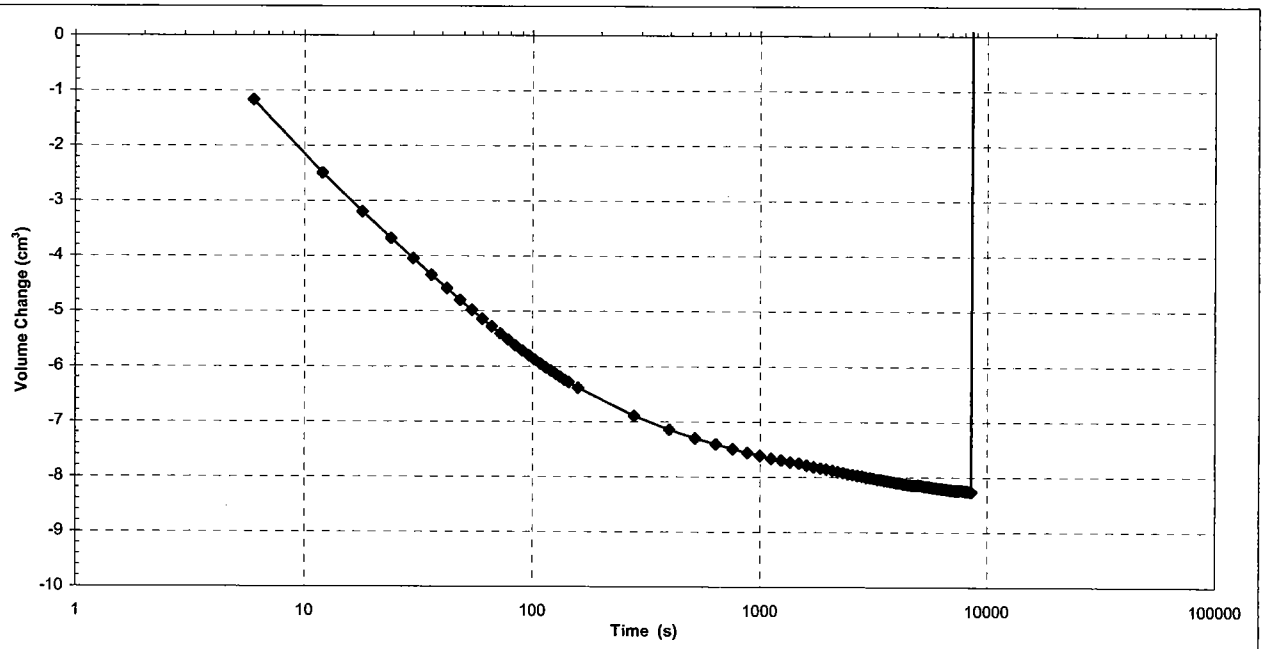


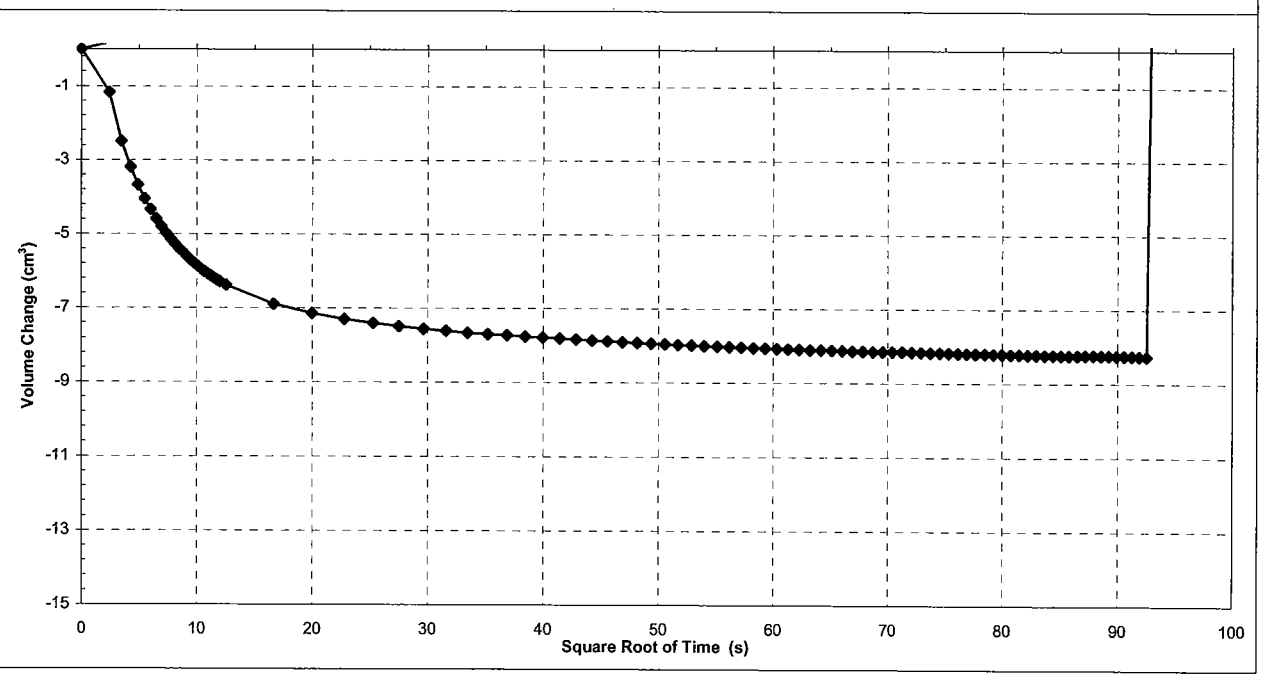


TRIAXIAL TEST - LABORATORY TEST RESULTS
CONSOLIDATION STAGE

PROJECT No.	BX02777	DATE	
CLIENT	DRDC	PROJECT LOCATION	Onager Site
LAB No.		TEST TYPE	CUP
BOREHOLE No.	Onager West	SAMPLE No.	1
DEPTH		EFFECTIVE STRESS	500.0 psi
PROJECT MANAGER	AGK / JMB	SAMPLE TYPE	Compacted to 100% SPDD

SOIL DESCRIPTION Clay, silty, sandy, roots, brown.





TRIAXIAL TEST - SHEAR TEST DATA SHEET
CALCULATION SHEET

PROJECT No.	BX02777	TEST TYPE	CUP
SAMPLE No.	1	SAMPLE TYPE	Compacted to 100% SPDD
PROJECT ENGINEER	JMB	DATE ORDERED	

SOIL DESCRIPTION: Clay, silty, sandy, roots, brown.

Vertical Displc. (mm)	Axial Strain (%)	Axial Load (kg)	Corrected Area (cm2)	σ 1-σ 3 (kPa)	Membrane Correction $\sigma_m=4E_mt_e/d$ (kPa)	Correction for Filter Paper Strips Assuming 50% covered	Corrected for Membrane and Filter Paper σ 1-σ 3 (kPa)	σ 1 corrected (kPa)	σ 3 (kPa)	Pore pressure (kPa)	Δ Pore pressure response (kPa)
0	0	0	19.13744	0	0	0	0	1034.505	1034.505	565.3713	0
0	0	0.758815	19.13744	3.889745	0	0	3.889745	1038.536	1034.646	566.0124	0.641011
0.243134	0.246722	4.401127	19.18477	22.50486	0.016419	0.094965	22.39347	1058.097	1035.704	577.693	12.32165
0.514872	0.522471	8.195202	19.23795	41.78976	0.03477	0.201103	41.55389	1077.469	1035.915	591.9377	26.56633
0.772308	0.783706	11.83751	19.2886	60.20447	0.052154	0.301654	59.85066	1095.625	1035.774	607.8205	42.44915
1.044046	1.059455	21.24682	19.34236	107.759	0.070505	0.407792	107.2807	1143.196	1035.915	633.7458	68.37446
1.258576	1.277151	27.4691	19.38501	139.0104	0.084992	0.491585	138.4339	1176.534	1038.1	658.8877	93.51632
1.458804	1.480334	32.02199	19.42499	161.7173	0.098514	0.569791	161.049	1198.937	1037.888	679.5425	114.1711
1.659032	1.683517	35.66431	19.46514	179.7402	0.112035	0.647998	178.9802	1216.869	1037.888	697.4908	132.1194
1.887864	1.915726	38.5478	19.51122	193.8136	0.127488	0.737377	192.9487	1230.908	1037.959	714.798	149.4267
2.07379	2.104396	44.61832	19.54882	223.9039	0.140044	0.769815	222.994	1261.799	1038.805	736.1651	170.7937
2.259716	2.293066	52.81352	19.58657	264.5183	0.1526	0.769815	263.5959	1302.542	1038.946	760.5947	195.2233
2.488548	2.525275	61.46402	19.63323	307.113	0.168053	0.769815	306.1751	1345.473	1039.298	792.5028	227.1314
2.745984	2.786511	66.77572	19.68599	332.7594	0.185437	0.769815	331.8041	1371.243	1039.439	819.2828	253.9114
3.00342	3.047746	70.87332	19.73903	352.2297	0.202822	0.769815	351.257	1390.555	1039.298	840.5073	275.136
3.28946	3.338008	73.45329	19.79831	363.9588	0.222139	0.769815	362.9668	1401.983	1039.016	856.8887	291.5174
3.5755	3.628269	75.12269	19.85794	371.1128	0.241455	0.769815	370.1016	1409.188	1039.087	869.7089	304.3376
3.832936	3.889505	76.33679	19.91191	376.0884	0.25884	0.769815	375.0597	1414.287	1039.228	879.9651	314.5938
4.104674	4.165253	77.55089	19.96921	380.9737	0.27719	0.769815	379.9267	1419.154	1039.228	888.1558	322.7844
4.390714	4.455515	78.30971	20.02987	383.5363	0.296507	0.769815	382.47	1421.345	1038.875	894.3522	328.9809
4.662452	4.731263	78.765	20.08785	384.6528	0.314857	0.769815	383.5681	1422.443	1038.875	899.7652	334.3939
4.93419	5.007012	79.52381	20.14616	387.2344	0.333208	0.769815	386.1314	1425.077	1038.946	904.3235	338.9522
5.205928	5.28276	79.9791	20.20481	388.3209	0.351559	0.769815	387.1995	1425.863	1038.664	907.8847	342.5133
5.477666	5.558508	80.43439	20.2638	389.3945	0.369909	0.769815	388.2548	1426.778	1038.523	910.8761	345.5047
5.749404	5.834257	80.43439	20.32314	388.2576	0.38826	0.769815	387.0995	1425.834	1038.734	913.7962	348.4249
6.035444	6.124518	81.19321	20.38598	390.7123	0.407576	0.769815	389.5349	1428.551	1039.016	916.3603	350.9889
6.307182	6.400267	81.64849	20.44604	391.7491	0.425927	0.769815	390.5534	1429.217	1038.664	918.0696	352.6983
6.57892	6.676015	81.64849	20.50645	390.595	0.444277	0.769815	389.3809	1427.763	1038.382	919.4229	354.0515
6.850658	6.951764	82.10378	20.56722	391.6125	0.462628	0.769815	390.38	1428.691	1038.311	920.8473	355.476
7.122396	7.227512	82.40731	20.62835	391.8954	0.480978	0.769815	390.6446	1429.167	1038.523	922.343	356.9717
7.394134	7.503261	82.8626	20.68985	392.8893	0.499329	0.769815	391.6201	1430.425	1038.805	923.6251	358.2537
7.680174	7.793522	83.31789	20.75498	393.8083	0.518645	0.769815	392.5199	1431.043	1038.523	924.4085	359.0372
7.951912	8.069271	83.62141	20.81724	394.061	0.536996	0.769815	392.7542	1430.854	1038.1	924.7646	359.3933
8.237952	8.359532	84.0767	20.88317	394.9555	0.556312	0.769815	393.6294	1431.8	1038.17	925.5481	360.1767
8.50969	8.635281	84.0767	20.9462	393.7671	0.574663	0.769815	392.4226	1430.734	1038.311	926.3315	360.9602
8.781428	8.911029	84.53199	21.00961	394.7045	0.593014	0.769815	393.3417	1431.865	1038.523	927.0438	361.6724
9.067468	9.201291	85.29081	21.07677	396.9786	0.61233	0.769815	395.5965	1433.908	1038.311	927.2574	361.8861
9.339206	9.477039	85.29081	21.14098	395.773	0.630681	0.769815	394.3725	1432.472	1038.1	927.4711	362.0998
9.610944	9.752788	85.7461	21.20557	396.6737	0.649031	0.769815	395.2548	1433.778	1038.523	928.1833	362.812
9.896984	10.04305	86.50491	21.274	398.8969	0.668348	0.769815	397.4588	1435.77	1038.311	928.3258	362.9544
10.16872	10.3188	86.50491	21.33941	397.6742	0.686698	0.769815	396.2177	1434.67	1038.452	928.4682	363.0969
10.44046	10.59455	86.9602	21.40522	398.538	0.705049	0.769815	397.0632	1435.656	1038.593	928.8956	363.5242
10.7122	10.87029	87.41549	21.47145	399.389	0.723399	0.769815	397.8958	1436.56	1038.664	929.1093	363.7379
10.98394	11.14604	87.41549	21.53808	398.1534	0.74175	0.769815	396.6418	1435.447	1038.805	929.2517	363.8804
11.24137	11.40728	88.1743	21.60159	400.4288	0.759135	0.769815	398.8998	1437.423	1038.523	929.038	363.6667
11.52741	11.69754	88.1743	21.6726	399.1168	0.778451	0.769815	397.5686	1435.95	1038.382	928.8244	363.453
11.79915	11.97329	88.62959	21.74049	399.9249	0.796802	0.769815	398.3583	1437.093	1038.734	929.1093	363.7379
12.07089	12.24904	88.93312	21.80881	400.0374	0.815152	0.769815	398.4525	1437.046	1038.593	929.1093	363.7379
12.35693	12.5393	89.38841	21.88118	400.7554	0.834469	0.769815	399.1511	1437.322	1038.17	928.6107	363.2393
12.62867	12.81505	89.38841	21.95039	399.4919	0.852819	0.769815	397.8692	1436.04	1038.17	928.6107	363.2393
12.91471	13.10531	89.8437	22.02371	400.1899	0.872136	0.769815	398.5479	1437	1038.452	928.8244	363.453
13.18644	13.38106	90.29899	22.09382	400.9415	0.890486	0.769815	399.2812	1437.663	1038.382	928.6819	363.3106

TRIAXIAL TEST - SHEAR TEST DATA SHEET
CALCULATION SHEET

PROJECT No.	BX02777	TEST TYPE	CUP
SAMPLE No.	1	SAMPLE TYPE	Compacted to 100% SPDD
PROJECT ENGINEER	JMB	DATE ORDERED	

SOIL DESCRIPTION: Clay, silty, sandy, roots, brown.

Vertical Displc. (mm)	Axial Strain (%)	Axial Load (kg)	Corrected Area (cm2)	σ 1-σ 3 (kPa)	Membrane Correction $\sigma_m=4E_mt_c/d$ (kPa)	Correction for Filter Paper Strips Assuming 50% covered	Corrected for Membrane and Filter Paper σ 1-σ 3 (kPa)	σ_1 corrected (kPa)	σ 3 (kPa)	Pore pressure (kPa)	Δ Pore pressure response (kPa)
13.47248	13.67132	91.0578	22.16811	402.9559	0.909803	0.769815	401.2762	1439.306	1038.029	928.1833	362.812
13.74422	13.94707	91.0578	22.23915	401.6688	0.928153	0.769815	399.9708	1437.93	1037.959	928.0409	362.6696
14.01596	14.22282	91.0578	22.31064	400.3816	0.946504	0.769815	398.6653	1436.695	1038.029	928.0409	362.6696
14.302	14.51308	91.0578	22.38639	399.0268	0.96582	0.769815	397.2912	1435.603	1038.311	928.1833	362.812
14.57374	14.78883	91.51309	22.45884	399.7284	0.984171	0.769815	397.9744	1436.497	1038.523	928.1833	362.812
14.84548	15.06457	91.81662	22.53175	399.7563	1.002521	0.769815	397.984	1436.225	1038.241	927.8272	362.4559
15.11721	15.34032	92.72719	22.60514	402.4102	1.020872	0.769815	400.6195	1438.508	1037.888	927.3287	361.9573
15.38895	15.61607	93.18248	22.67901	403.0689	1.039222	0.769815	401.2598	1439.078	1037.818	927.1862	361.8149
15.66069	15.89182	92.72719	22.75336	399.7888	1.057573	0.769815	397.9614	1435.779	1037.818	927.0438	361.6724
15.93243	16.16757	92.72719	22.8282	398.478	1.075924	0.769815	396.6323	1434.38	1037.748	926.9013	361.53
16.21847	16.45783	93.18248	22.90752	399.0481	1.09524	0.769815	397.183	1434.86	1037.677	926.6877	361.3163
16.49021	16.73358	93.18248	22.98338	397.731	1.113591	0.769815	395.8476	1433.525	1037.677	926.6164	361.2451
16.77625	17.02384	93.18248	23.06378	396.3445	1.132907	0.769815	394.4418	1432.189	1037.748	926.4028	361.0314
17.04798	17.29959	93.48601	23.14068	396.3141	1.151258	0.769815	394.393	1432.07	1037.677	926.2603	360.889
17.31972	17.57534	93.48601	23.2181	394.9927	1.169608	0.769815	393.0532	1430.66	1037.607	926.0466	360.6753
17.60576	17.8656	93.48601	23.30015	393.6017	1.188925	0.769815	391.6429	1429.743	1038.1	926.2603	360.889
17.8775	18.14135	93.9413	23.37864	394.1907	1.207275	0.769815	392.2136	1430.173	1037.959	925.9754	360.6041
18.16354	18.43161	94.70011	23.46183	395.9657	1.226592	0.769815	393.9693	1431.646	1037.677	925.4769	360.1055
18.43528	18.70736	95.1554	23.54141	396.5244	1.244942	0.769815	394.5096	1431.905	1037.395	925.1207	359.7494
18.72132	18.99762	95.61069	23.62577	396.999	1.264259	0.769815	394.965	1432.008	1037.043	924.6222	359.2508
18.99306	19.27337	96.36951	23.70647	398.7876	1.282609	0.769815	396.7352	1433.496	1036.761	924.1948	358.8235
19.26479	19.54911	96.82479	23.78773	399.3031	1.30096	0.769815	397.2323	1433.852	1036.62	923.9099	358.5386
19.53653	19.82486	97.28008	23.86954	399.8056	1.31931	0.769815	397.7165	1434.054	1036.338	923.5538	358.1825
19.82257	20.11512	97.28008	23.95627	398.3582	1.338627	0.769815	396.2497	1432.517	1036.267	923.2689	357.8976
20.09431	20.39087	97.28008	24.03925	396.9831	1.356977	0.769815	394.8563	1430.983	1036.126	922.984	357.6127
20.38035	20.68113	97.58361	24.12722	396.7698	1.376294	0.769815	394.6237	1430.468	1035.845	922.6279	357.2566
20.65209	20.95688	98.0389	24.21139	397.2352	1.394644	0.769815	395.0707	1430.704	1035.633	922.343	356.9717
20.93813	21.24714	98.0389	24.30063	395.7765	1.413961	0.769815	393.5927	1429.437	1035.845	922.343	356.9717
21.20987	21.52289	98.49419	24.38601	396.2222	1.432311	0.769815	394.0201	1429.794	1035.774	922.2006	356.8292
21.4816	21.79864	98.79771	24.472	396.0467	1.450662	0.769815	393.8262	1429.389	1035.563	921.8445	356.4731
21.49591	21.81315	98.79771	24.47654	395.9732	1.451628	0.769815	393.7518	1429.314	1035.563	921.9157	356.5443

TRIAXIAL TEST - LABORATORY TEST RESULTS
ASTM D4767-95

PROJECT No.	BX02777	DATE		
CLIENT	DRDC	PROJECT LOCATION	Onager Site	
LAB No.		TEST TYPE	CUP	
BOREHOLE No.	Onager West	SAMPLE No.	2	
DEPTH		EFFECTIVE STRESS	1000.0	kPa
PROJECT MANAGER	AGK / JMB	SAMPLE TYPE	Compacted to 100% SPDD	
SOIL DESCRIPTION	Clay, silty, sandy, roots, brown.			

Initial Sample Height	99.957	mm	Initial Water Content	18.3	%
Initial Sample Diameter	50.52	mm	Initial Bulk Density	1887	kg/m^3
Initial Sample Area	20.05	cm^2	Initial Dry Density	1596	kg/m^3
Initial Sample Volume	200.37	cm^3	Initial Void Ratio	0.68	
			Specific Gravity	2.68	assumed
Pre-Shear Cell Pressure	1555	kPa	Effective Consolidation Pressure	958	kPa
Pre-Shear Back Pressure	597	kPa	Pore Pressure Parameter B	0.92	
			Time to 50 % Primary Consolidation	13.8	min
Pre-Shear Sample Height	97.497	mm	Pre-Shear Water Content	21.7	%
Pre-Shear Sample Diameter	49.627	mm	Pre-Shear Bulk Density	2062.7	kg/m^3
Pre-Shear Sample Area	19.34	cm^2	Pre-Shear Dry Density	1695.2	kg/m^3
Pre-Shear Sample Volume	188.59	cm^3	Pre-Shear Void Ratio	0.58	
Pre-Shear Height Change	2.417	mm	Pre-Shear Volume Change	-11.78	cm^3

SAMPLE DATA	Initial	Pre-Shear	Post-Shear	Unit
Wet Weight of Sample	378.200	389.000	389.000	g
Dry Weight of Sample	319.700	319.700	319.700	g
Volume of Sample	200.37	188.59	188.59	cm^3
Volume of Solids	119.29	119.29	119.29	cm^3
Volume of Voids	81.08	69.30	69.30	cm^3
Volume of Pore Water	58.50	69.30	69.30	cm^3
Void Ratio	0.68	0.58	0.58	
Saturation	0.72	1.00	1.00	
Bulk Density	1887.5	2062.7	2062.7	kg/m^3
Dry Density	1595.5	1695.2	1695.2	kg/m^3
Moisture Content	18.3	21.7	21.7	%
Change in Volume		-11.8		cm^3

FAILURE MODE: Bulge

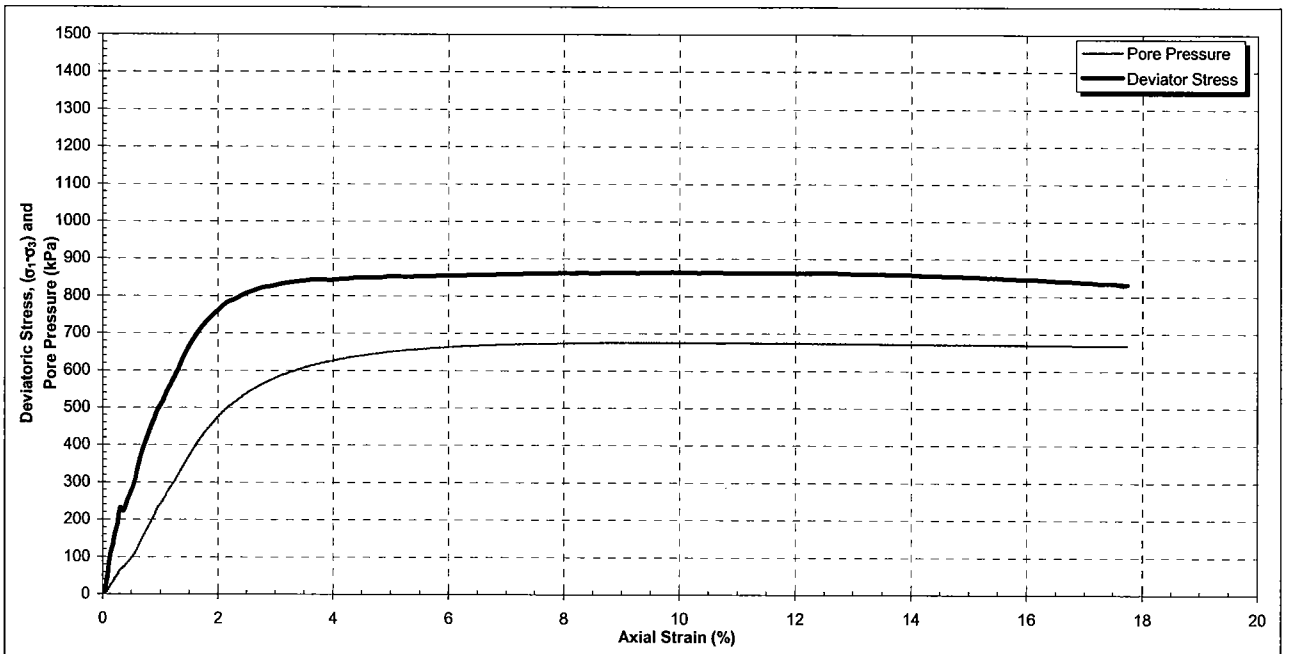
COMMENTS:
SPDD = Specified Proctor Dry Density
Water content determined from weight of entire specimen.
Wet Method use for sample saturation.
Method A used to calculate pre-shear sample area.
Correction for filter paper strips (assuming 50% covered) and for membrane used in effective stress calculations.
Strain rate = 0.018 %/min.

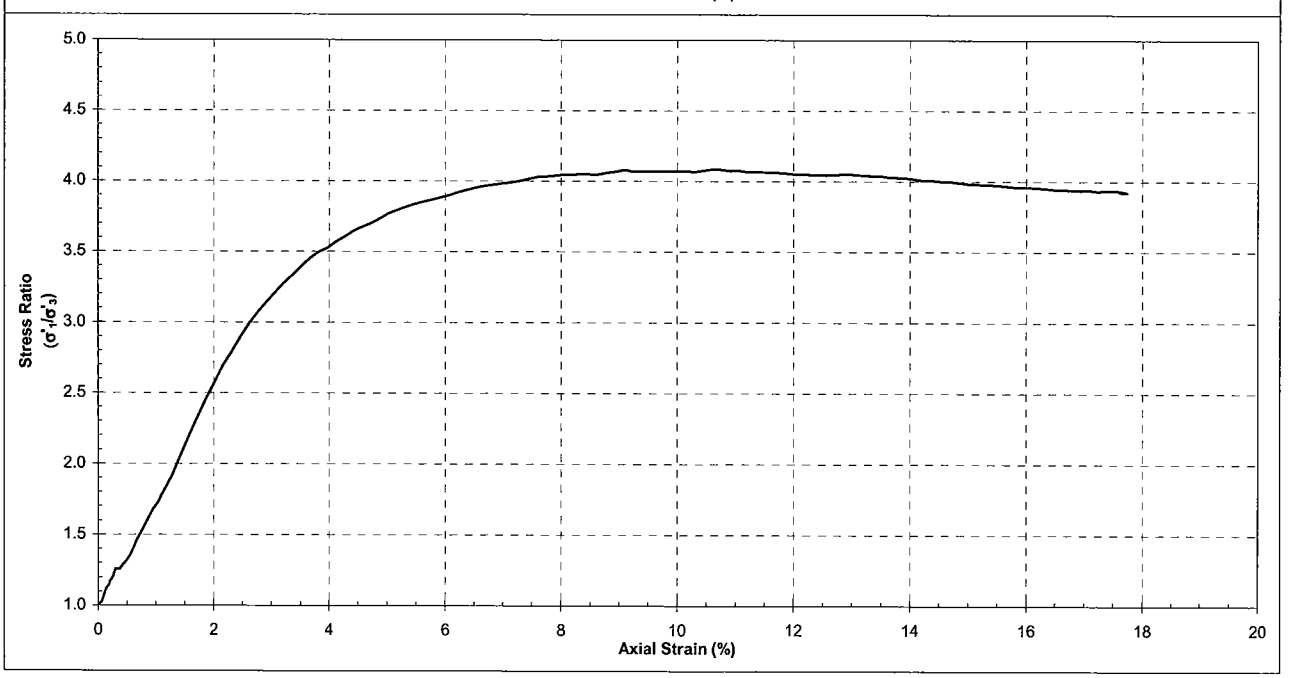
TRIAXIAL TEST - LABORATORY TEST RESULTS

PROJECT No.	BX02777	DATE ORDERED	
CLIENT	DRDC	PROJECT LOCATION	Onager Site
LAB No.		TEST TYPE	CUP
BOREHOLE No.	Onager West	SAMPLE No.	2
DEPTH		EFFECTIVE STRESS	1000.0 kPa
PROJECT ENGINEER	JMB	SAMPLE TYPE	Compacted to 100% SPDD

MAXIMUM DEVIATOR STRESS 864 kPa at 10.0 % Strain

SOIL DESCRIPTION Clay, silty, sandy, roots, brown.



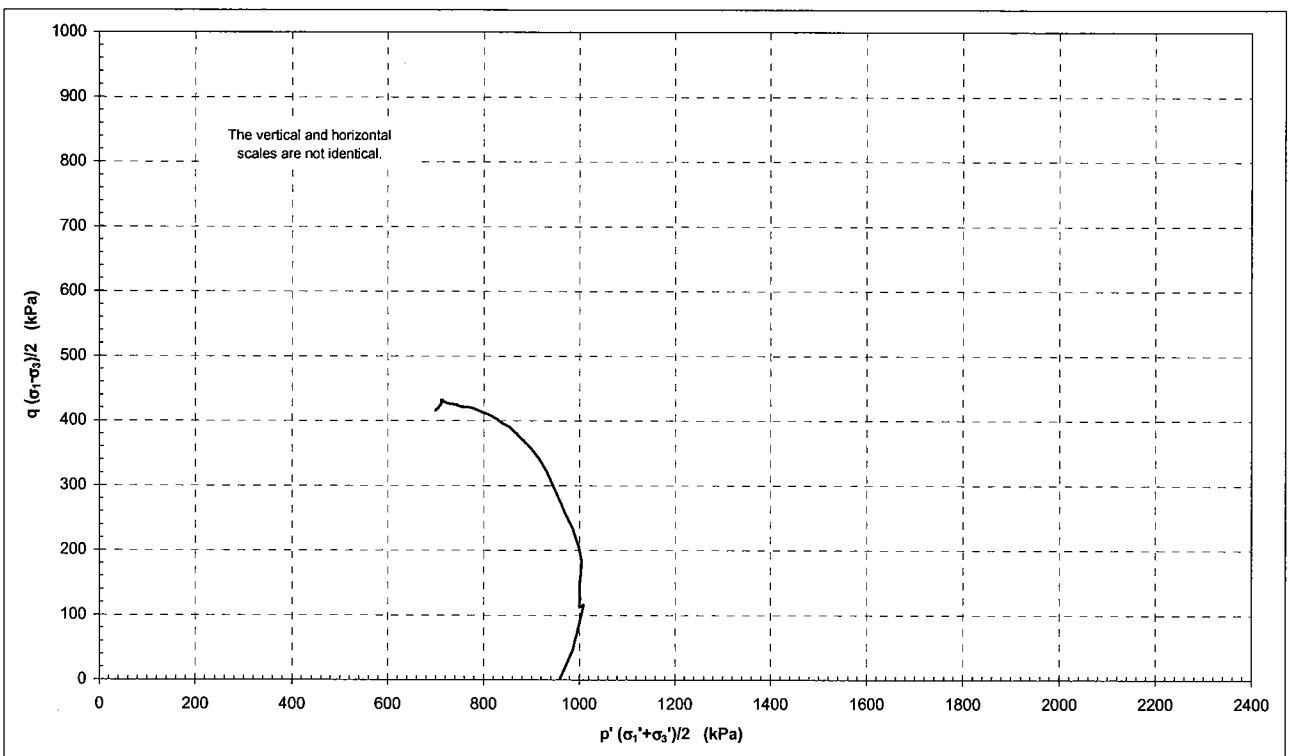


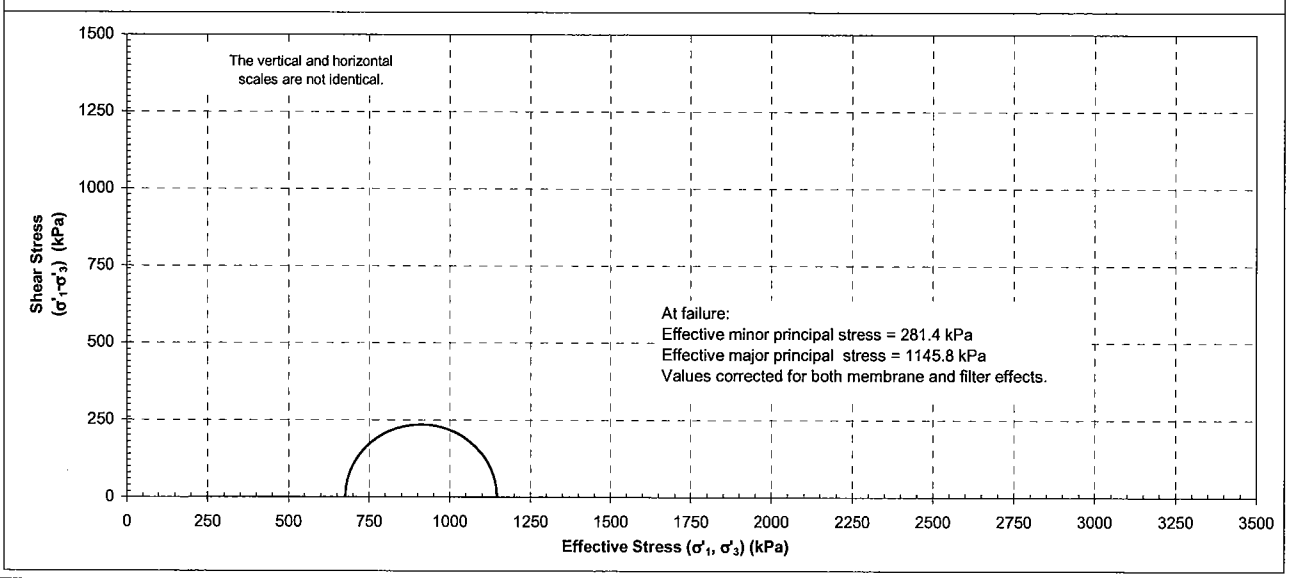
TRIAXIAL TEST - LABORATORY TEST RESULTS

PROJECT No.	BX02777	DATE ORDERED	
CLIENT	DRDC	PROJECT LOCATION	Onager Site
LAB No.		TEST TYPE	CUP
BOREHOLE No.	Onager West	SAMPLE No.	2
DEPTH		EFFECTIVE STRESS	1000.0 kPa
PROJECT ENGINEER	JMB	SAMPLE TYPE	Compacted to 100% SPDD

MAXIMUM DEVIATOR STRESS 864 kPa at 10.0 % Strain

SOIL DESCRIPTION Clay, silty, sandy, roots, brown.

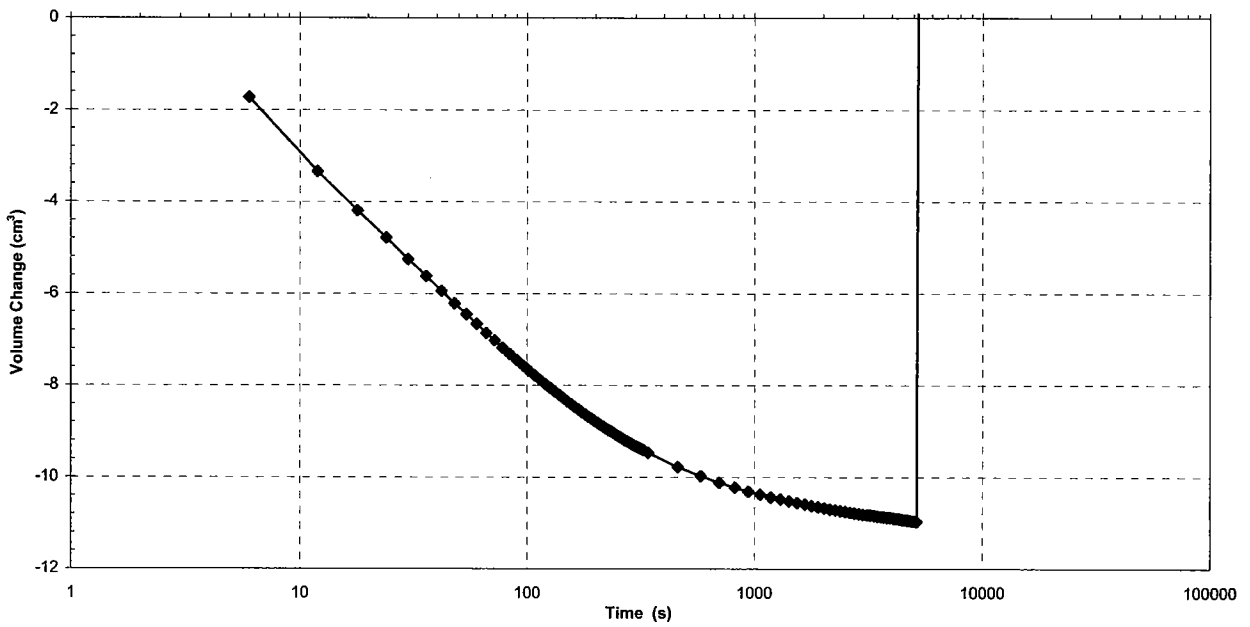


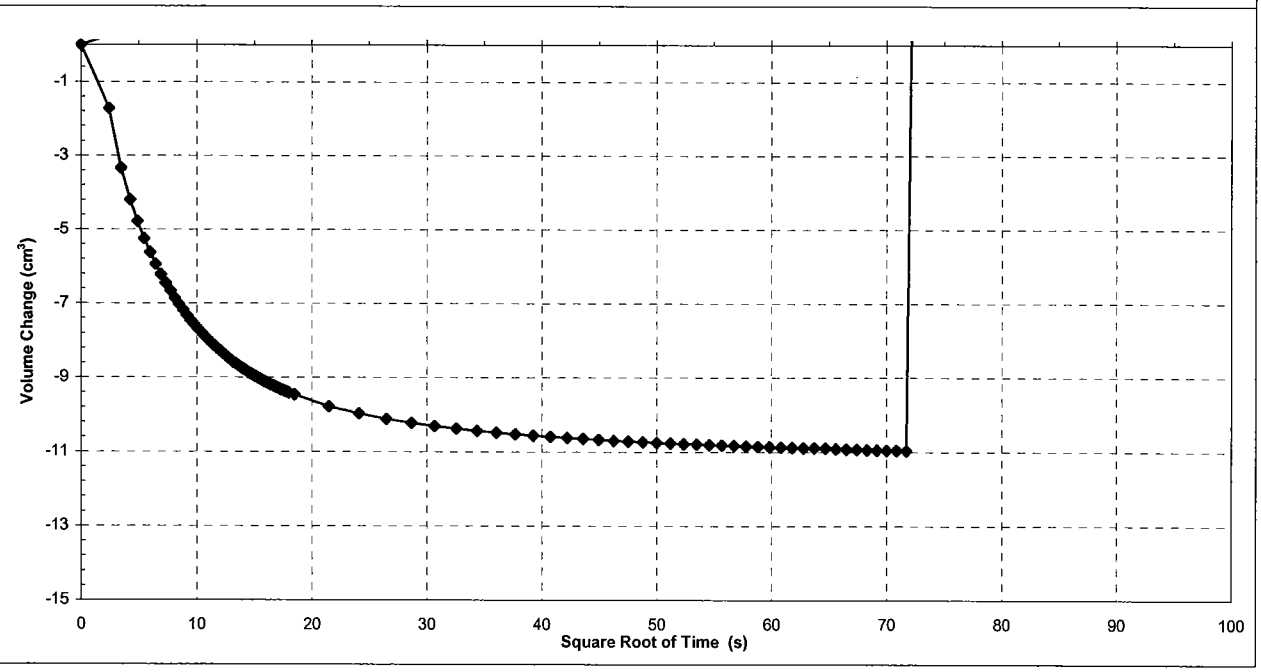


TRIAXIAL TEST - LABORATORY TEST RESULTS
CONSOLIDATION STAGE

PROJECT No.	BX02777	DATE	
CLIENT	DRDC	PROJECT LOCATION	Onager Site
LAB No.		TEST TYPE	CUP
BOREHOLE No.	Onager West	SAMPLE No.	2
DEPTH		EFFECTIVE STRESS	1000.0 psi
PROJECT MANAGER	AGK / JMB	SAMPLE TYPE	Compacted to 100% SPDD

SOIL DESCRIPTION Clay, silty, sandy, roots, brown.





TRIAXIAL TEST - SHEAR TEST DATA SHEET
CALCULATION SHEET

PROJECT No.	BX02777	TEST TYPE	CUP
SAMPLE No.	2	SAMPLE TYPE	Compacted to 100% SPDD
PROJECT ENGINEER	JMB	DATE ORDERED	

SOIL DESCRIPTION: Clay, silty, sandy, roots, brown.

Vertical Displc. (mm)	Axial Strain (%)	Axial Load (kg)	Corrected Area (cm2)	σ 1-σ 3 (kPa)	Membrane Correction $\sigma_m=4E_m\varepsilon/d$ (kPa)	Correction for Filter Paper Strips Assuming 50% covered	Corrected for Membrane and Filter Paper σ 1-σ 3 (kPa)	σ 1 corrected (kPa)	σ 3 (kPa)	Pore pressure (kPa)	Δ Pore pressure response (kPa)
0	0	0	19.34319	0	0	0	0	1555.313	1555.313	597.137	0
0.057208	0.058676	5.311705	19.35455	26.92278	0.003902	0.022465	26.89642	1582.527	1555.63	602.1938	5.056861
0.114416	0.117353	17.60451	19.36592	89.17741	0.007805	0.044929	89.12468	1645.178	1556.054	615.0141	17.87707
0.128718	0.132022	20.94329	19.36876	106.0748	0.00878	0.050545	106.0155	1661.804	1555.789	620.0709	22.93393
0.157322	0.16136	24.13032	19.37445	122.1807	0.010732	0.061778	122.1082	1677.58	1555.472	625.4127	28.27569
0.185926	0.190698	27.4691	19.38015	139.0453	0.012683	0.07301	138.9596	1694.59	1555.63	630.8969	33.75989
0.200228	0.205368	30.80789	19.383	155.923	0.013658	0.078626	155.8307	1711.461	1555.63	636.7372	39.60021
0.228832	0.234706	33.99491	19.3887	172.0023	0.01561	0.089858	171.8969	1727.95	1556.054	642.7912	45.6542
0.257436	0.264044	37.78899	19.3944	191.1428	0.017561	0.10109	191.0241	1746.813	1555.789	648.9164	51.77941
0.271738	0.278713	41.4313	19.39725	209.5354	0.018537	0.106707	209.4101	1764.723	1555.313	654.6855	57.54851
0.300342	0.308051	45.98419	19.40296	232.4928	0.020488	0.117939	232.3544	1787.667	1555.313	662.5201	65.38308
0.35755	0.366728	44.3148	19.41439	223.9206	0.02439	0.140403	223.7558	1780.497	1556.741	669.3575	72.22053
0.42906	0.440073	50.53708	19.42869	255.1735	0.029268	0.168484	254.9758	1811.188	1556.212	681.8928	84.75585
0.486268	0.49875	54.93821	19.44015	277.2324	0.033171	0.190949	277.0083	1833.062	1556.054	694.1433	97.00627
0.543476	0.557426	59.94639	19.45162	302.3265	0.037073	0.213413	302.0761	1857.389	1555.313	705.6102	108.4732
0.600684	0.616103	67.23101	19.4631	338.8649	0.040975	0.235878	338.588	1894.483	1555.895	721.4218	124.2848
0.657892	0.674779	74.6674	19.4746	376.1244	0.044878	0.258342	375.8211	1932.298	1556.477	740.937	143.8
0.729402	0.748125	81.19321	19.48899	408.695	0.049756	0.286423	408.3588	1964.994	1556.635	762.0192	164.8822
0.800912	0.82147	87.41549	19.5034	439.6904	0.054634	0.314504	439.3213	1996.062	1556.741	783.8847	186.7478
0.872422	0.894816	93.63777	19.51784	470.6395	0.059512	0.342584	470.2374	2027.455	1557.217	806.7475	209.6105
0.92963	0.953492	98.49419	19.5294	494.7556	0.063414	0.365049	494.3271	2052.073	1557.746	827.6871	230.5501
1.015442	1.041507	103.0471	19.54677	517.1657	0.069268	0.398746	516.6976	2074.761	1558.064	846.7038	249.5668
1.07265	1.100183	107.9035	19.55837	541.2176	0.073171	0.42121	540.7232	2099.051	1558.328	865.8629	268.7259
1.101254	1.129522	109.5729	19.56417	549.4278	0.075122	0.432443	548.9203	2107.248	1558.328	872.7003	275.5633
1.244274	1.276213	118.6787	19.59324	594.2038	0.084878	0.488604	593.6303	2151.853	1558.222	908.8106	311.6736
1.387294	1.422904	128.5433	19.6224	642.6378	0.094634	0.544765	641.9984	2200.644	1558.646	947.7698	350.6328
1.530314	1.569595	137.042	19.65164	684.1067	0.10439	0.600927	683.4014	2242.311	1558.91	985.5182	388.3812
1.673334	1.716286	143.7196	19.68097	716.3716	0.114146	0.657088	715.6004	2274.51	1558.91	1019.278	422.1411
1.816354	1.862977	149.0313	19.71039	741.7391	0.123902	0.71325	740.902	2299.971	1559.069	1048.551	451.4139
1.959374	2.009668	153.5842	19.7399	763.2566	0.133658	0.765709	762.3572	2321.267	1558.91	1073.906	476.7694
2.102394	2.156359	157.6818	19.76949	782.4471	0.143414	0.765709	781.538	2339.284	1557.746	1096.057	498.9199
2.259716	2.317719	160.11	19.80215	793.1861	0.154146	0.765709	792.2662	2349.007	1556.741	1115.145	518.0078
2.402736	2.464411	162.9935	19.83193	806.2583	0.163902	0.765709	805.3287	2361.805	1556.477	1131.953	534.8165
2.545756	2.611102	164.9664	19.8618	814.7903	0.173658	0.765709	813.8509	2370.169	1556.318	1146.626	549.4885
2.688776	2.757793	166.6358	19.89176	821.7959	0.183414	0.765709	820.8468	2377.165	1556.318	1159.659	562.5224
2.846098	2.919153	167.8499	19.92483	826.4099	0.194146	0.765709	825.4501	2382.085	1556.635	1171.055	573.9182
2.989118	3.065844	169.064	19.95498	831.1298	0.203902	0.765709	830.1602	2387.219	1557.059	1181.24	584.1031
3.132138	3.212535	170.2781	19.98522	835.8316	0.213658	0.765709	834.8523	2392.07	1557.217	1190.143	593.006
3.28946	3.373895	171.1887	20.0186	838.9004	0.22439	0.765709	837.9103	2394.81	1556.9	1198.049	600.9118
3.43248	3.520587	171.9475	20.04903	841.3397	0.234146	0.765709	840.3399	2396.552	1556.212	1205.171	608.0342
3.5755	3.667278	172.8581	20.07956	844.5092	0.243902	0.765709	843.4996	2398.812	1555.313	1211.296	614.1594
3.71852	3.813969	173.1616	20.11019	844.7039	0.253658	0.765709	843.6845	2399.156	1555.472	1217.137	619.9997
3.875842	3.975329	173.1616	20.14398	843.2868	0.26439	0.765709	842.2567	2398.046	1555.789	1222.407	625.2702
4.018862	4.12202	174.0722	20.1748	846.4263	0.274146	0.765709	845.3864	2401.175	1555.789	1227.108	629.971
4.161882	4.268711	174.3757	20.20571	846.6049	0.283902	0.765709	845.5553	2401.45	1555.895	1231.381	634.2444
4.304902	4.415402	175.2863	20.23672	849.7217	0.293658	0.765709	848.6624	2404.716	1556.054	1235.299	638.1617
4.462224	4.576763	175.7416	20.27094	850.4906	0.304389	0.765709	849.4205	2405.897	1556.477	1238.86	641.7228

TRIAXIAL TEST - SHEAR TEST DATA SHEET
CALCULATION SHEET

PROJECT No.	BX02777	TEST TYPE	CUP
SAMPLE No.	2	SAMPLE TYPE	Compacted to 100% SPDD
PROJECT ENGINEER	JMB	DATE ORDERED	

SOIL DESCRIPTION: Clay, silty, sandy, roots, brown.

Vertical Displc. (mm)	Axial Strain (%)	Axial Load (kg)	Corrected Area (cm2)	σ 1-σ 3 (kPa)	Membrane Correction $\sigma_m=4E_m\varepsilon/d$ (kPa)	Correction for Filter Paper Strips Assuming 50% covered	Corrected for Membrane and Filter Paper σ 1-σ 3 (kPa)	σ 1 corrected (kPa)	σ 3 (kPa)	Pore pressure (kPa)	Δ Pore pressure response (kPa)
4.605244	4.723454	176.0451	20.30215	850.6498	0.314145	0.765709	849.57	2406.311	1556.741	1242.065	644.9279
4.748264	4.870145	176.5004	20.33346	851.5367	0.323902	0.765709	850.4471	2406.659	1556.212	1244.843	647.7056
4.891284	5.016836	177.2592	20.36486	853.8789	0.333658	0.765709	852.7796	2408.41	1555.63	1247.478	650.3409
5.034304	5.163527	177.2592	20.39636	852.5602	0.343414	0.765709	851.4511	2406.076	1554.625	1249.615	652.4776
5.191626	5.324887	177.7145	20.43112	853.2957	0.354145	0.765709	852.1758	2406.642	1554.467	1251.822	654.6855
5.334646	5.471578	178.1698	20.46283	854.1563	0.363901	0.765709	853.0267	2407.811	1554.784	1254.03	656.8934
5.477666	5.618269	178.4733	20.49463	854.2836	0.373658	0.765709	853.1443	2408.351	1555.207	1255.953	658.8165
5.634988	5.77963	178.9286	20.52973	854.9987	0.384389	0.765709	853.8486	2409.32	1555.472	1257.734	660.597
5.778008	5.926321	179.3839	20.56174	855.8397	0.394145	0.765709	854.6799	2410.469	1555.789	1259.301	662.1639
5.921028	6.073012	179.8392	20.59386	856.674	0.403901	0.765709	855.5044	2411.293	1555.789	1260.725	663.5884
6.064048	6.219703	180.1427	20.62607	856.7797	0.413657	0.765709	855.6003	2410.807	1555.207	1262.007	664.8704
6.22137	6.381063	180.598	20.66162	857.4672	0.424389	0.765709	856.2771	2410.744	1554.467	1262.933	665.7963
6.36439	6.527754	181.0533	20.69405	858.2819	0.434145	0.765709	857.082	2411.284	1554.202	1263.859	666.7222
6.50741	6.674445	181.3568	20.72657	858.3716	0.443901	0.765709	857.1619	2411.364	1554.202	1264.999	667.8618
6.664732	6.835806	181.8121	20.76247	859.0386	0.454633	0.765709	857.8183	2412.285	1554.467	1265.996	668.8589
6.807752	6.982497	182.2674	20.79521	859.8338	0.464389	0.765709	858.6037	2413.388	1554.784	1266.922	669.7849
6.950772	7.129188	182.7227	20.82806	860.6222	0.474145	0.765709	859.3824	2414.589	1555.207	1267.705	670.5683
7.108094	7.290548	183.0262	20.86431	860.554	0.484877	0.765709	859.3035	2414.087	1554.784	1268.346	671.2093
7.251114	7.437239	183.4815	20.89738	861.3297	0.494633	0.765709	860.0694	2414.271	1554.202	1268.845	671.7079
7.394134	7.58393	183.9368	20.93055	862.0986	0.504389	0.765709	860.8285	2414.184	1553.356	1269.13	671.9928
7.551456	7.74529	184.2403	20.96716	862.0135	0.515121	0.765709	860.7327	2414.194	1553.461	1269.7	672.5626
7.694476	7.891982	184.6956	21.00055	862.7696	0.524877	0.765709	861.479	2415.099	1553.62	1270.198	673.0611
7.837496	8.038673	185.1509	21.03405	863.519	0.534633	0.765709	862.2186	2415.997	1553.779	1270.697	673.5597
7.980516	8.185364	185.1509	21.06765	862.1416	0.544389	0.765709	860.8315	2414.716	1553.885	1271.053	673.9158
8.137838	8.346724	185.9097	21.10474	864.1535	0.55512	0.765709	862.8327	2417.035	1554.202	1271.551	674.4144
8.280858	8.493415	185.9097	21.13858	862.7705	0.564877	0.765709	861.4399	2415.906	1554.467	1271.836	674.6993
8.423878	8.640106	186.365	21.17252	863.4969	0.574633	0.765709	862.1566	2417.046	1554.89	1272.121	674.9842
8.566898	8.786797	186.8203	21.20657	864.2166	0.584389	0.765709	862.8665	2417.174	1554.308	1272.264	675.1266
8.72422	8.948158	187.1238	21.24415	864.0893	0.59512	0.765709	862.7285	2416.19	1553.461	1272.335	675.1978
8.86724	9.094849	187.5791	21.27843	864.7962	0.604876	0.765709	863.4257	2415.882	1552.456	1272.192	675.0554
9.01026	9.24154	187.5791	21.31282	863.4007	0.614632	0.765709	862.0204	2415.482	1553.461	1272.62	675.4827
9.15328	9.388231	188.0344	21.34733	864.0975	0.624389	0.765709	862.7074	2416.486	1553.779	1272.762	675.6252
9.310602	9.549591	188.3379	21.38541	863.9511	0.63512	0.765709	862.5502	2416.329	1553.779	1272.833	675.6964
9.453622	9.696282	188.7932	21.42015	864.6351	0.644876	0.765709	863.2245	2417.003	1553.779	1272.62	675.4827
9.596642	9.842973	189.2485	21.455	865.3123	0.654632	0.765709	863.8919	2417.671	1553.779	1272.62	675.4827
9.753964	10.00433	189.7038	21.49347	865.8416	0.665364	0.765709	864.4105	2418.454	1554.043	1272.62	675.4827
9.896984	10.15102	190.0073	21.52856	865.8134	0.67512	0.765709	864.3725	2418.68	1554.308	1272.762	675.6252
10.04	10.29772	190.0073	21.56376	864.3998	0.684876	0.765709	862.9492	2416.993	1554.043	1272.691	675.5539
10.18302	10.44441	190.4626	21.59909	865.0541	0.694632	0.765709	863.5938	2416.949	1553.356	1272.548	675.4115
10.34035	10.60577	190.9179	21.63807	865.5596	0.705364	0.765709	864.0885	2416.439	1552.351	1272.121	674.9842
10.48337	10.75246	190.9179	21.67364	864.1393	0.71512	0.765709	862.6584	2414.586	1551.927	1272.05	674.9129
10.64069	10.91382	191.2214	21.7129	863.9482	0.725852	0.765709	862.4567	2415.336	1552.88	1272.264	675.1266
10.78371	11.06051	191.6767	21.74871	864.5793	0.735608	0.765709	863.078	2415.957	1552.88	1272.192	675.0554
10.92673	11.2072	191.6767	21.78464	863.1533	0.745364	0.765709	861.6422	2414.68	1553.038	1272.121	674.9842
11.08405	11.36856	192.132	21.8243	863.6312	0.756095	0.765709	862.1094	2415.148	1553.038	1271.979	674.8417
11.22707	11.51525	192.4355	21.86048	863.5639	0.765852	0.765709	862.0324	2415.229	1553.197	1271.836	674.6993
11.37009	11.66194	192.8908	21.89678	864.1721	0.775608	0.765709	862.6307	2416.092	1553.461	1271.836	674.6993

TRIAXIAL TEST - SHEAR TEST DATA SHEET
CALCULATION SHEET

PROJECT No.	BX02777	TEST TYPE	CUP
SAMPLE No.	2	SAMPLE TYPE	Compacted to 100% SPDD
PROJECT ENGINEER	JMB	DATE ORDERED	

SOIL DESCRIPTION: Clay, silty, sandy, roots, brown.

Vertical Displc. (mm)	Axial Strain (%)	Axial Load (kg)	Corrected Area (cm2)	σ_1-σ_3 (kPa)	Membrane Correction σ_m=4E_mtε/d (kPa)	Correction for Filter Paper Strips Assuming 50% covered	Corrected for Membrane and Filter Paper σ_1-σ_3 (kPa)	σ_1 corrected (kPa)	σ_3 (kPa)	Pore pressure (kPa)	Δ Pore pressure response (kPa)
11.52741	11.8233	193.3461	21.93685	864.6296	0.786339	0.765709	863.0775	2416.856	1553.779	1271.694	674.5568
11.67043	11.96999	193.3461	21.9734	863.1912	0.796095	0.765709	861.6294	2415.408	1553.779	1271.551	674.4144
11.81345	12.11669	193.8014	22.01008	863.782	0.805851	0.765709	862.2105	2416.095	1553.885	1271.409	674.2719
11.95647	12.26338	194.1049	22.04688	863.6908	0.815608	0.765709	862.1095	2416.153	1554.043	1271.266	674.1295
12.11379	12.42474	194.5602	22.0875	864.1245	0.826339	0.765709	862.5324	2416.734	1554.202	1271.053	673.9158
12.25681	12.57143	195.0155	22.12456	864.6958	0.836095	0.765709	863.094	2417.296	1554.202	1270.839	673.7021
12.39983	12.71812	195.0155	22.16175	863.245	0.845851	0.765709	861.6334	2415.095	1553.461	1270.625	673.4885
12.55716	12.87948	195.319	22.20279	862.9902	0.856583	0.765709	861.3679	2413.824	1552.456	1270.269	673.1324
12.70018	13.02617	195.319	22.24024	861.5371	0.866339	0.765709	859.905	2411.832	1551.927	1269.842	672.705
12.8432	13.17286	195.7743	22.27781	862.0889	0.876095	0.765709	860.447	2413.062	1552.615	1269.913	672.7762
12.98622	13.31955	195.7743	22.31552	860.6324	0.885851	0.765709	858.9808	2411.437	1552.456	1269.771	672.6338
13.14354	13.48091	196.2296	22.35714	861.028	0.896583	0.765709	859.3657	2411.716	1552.351	1269.557	672.4201
13.28656	13.6276	196.2296	22.39511	859.5682	0.906339	0.765709	857.8961	2410.511	1552.615	1269.415	672.2777
13.42958	13.77429	196.6848	22.43321	860.0993	0.916095	0.765709	858.4175	2411.032	1552.615	1269.13	671.9928
13.5726	13.92099	196.9884	22.47143	859.9611	0.925851	0.765709	858.2695	2410.885	1552.615	1268.987	671.8503
13.71562	14.06768	196.9884	22.50979	858.4956	0.935607	0.765709	856.7943	2409.832	1553.038	1268.987	671.8503
13.85864	14.21437	196.9884	22.54829	857.0301	0.945363	0.765709	855.319	2408.516	1553.197	1268.774	671.6367
14.01596	14.37573	197.4437	22.59078	857.3951	0.956095	0.765709	855.6733	2408.87	1553.197	1268.702	671.5654
14.15898	14.52242	197.4437	22.62955	855.9263	0.965851	0.765709	854.1947	2407.392	1553.197	1268.56	671.423
14.302	14.66911	197.899	22.66845	856.4277	0.975607	0.765709	854.6864	2408.042	1553.356	1268.418	671.2805
14.44502	14.8158	197.899	22.70749	854.9554	0.985363	0.765709	853.2043	2406.666	1553.461	1268.275	671.1381
14.60234	14.97716	197.899	22.75058	853.3359	0.996095	0.765709	851.5741	2405.036	1553.461	1268.133	670.9957
14.74536	15.12385	198.2025	22.7899	853.1702	1.005851	0.765709	851.3986	2404.86	1553.461	1267.99	670.8532
14.88838	15.27054	198.2025	22.82936	851.6956	1.015607	0.765709	849.9143	2403.27	1553.356	1267.848	670.7108
15.0457	15.4319	198.6578	22.87292	852.0264	1.026339	0.765709	850.2343	2403.59	1553.356	1267.705	670.5683
15.18872	15.5786	198.6578	22.91266	850.5484	1.036095	0.765709	848.7466	2401.944	1553.197	1267.492	670.3546
15.33174	15.72529	198.6578	22.95254	849.0705	1.045851	0.765709	847.259	2400.456	1553.197	1267.349	670.2122
15.48907	15.88665	198.6578	22.99657	847.4448	1.056582	0.765709	845.6225	2398.661	1553.038	1267.136	669.9985
15.63209	16.03334	199.1131	23.03675	847.9057	1.066339	0.765709	846.0737	2398.847	1552.774	1266.993	669.8561
15.77511	16.18003	199.1131	23.07707	846.4244	1.076095	0.765709	844.5826	2397.198	1552.615	1266.851	669.7136
15.93243	16.34139	199.1131	23.12158	844.795	1.086826	0.765709	842.9424	2395.293	1552.351	1266.708	669.5712
16.07545	16.48808	199.1131	23.16219	843.3137	1.096582	0.765709	841.4514	2393.802	1552.351	1266.566	669.4287
16.21847	16.63477	199.4166	23.20295	843.1156	1.106338	0.765709	841.2436	2393.277	1552.033	1266.352	669.2151
16.36149	16.78146	199.4166	23.24385	841.6321	1.116095	0.765709	839.7503	2391.678	1551.927	1266.21	669.0726
16.51881	16.94282	199.4166	23.289	840.0001	1.126826	0.765709	838.1076	2389.559	1551.451	1266.067	668.9302
16.66183	17.08951	199.8719	23.33021	840.431	1.136582	0.765709	838.5287	2389.557	1551.028	1265.853	668.7165
16.80485	17.23621	199.4166	23.37156	837.033	1.146338	0.765709	835.121	2385.726	1550.605	1265.711	668.5741
16.96217	17.39757	199.8719	23.41721	837.3084	1.15707	0.765709	835.3856	2385.409	1550.023	1265.64	668.5028
17.10519	17.54426	199.8719	23.45887	835.8215	1.166826	0.765709	833.8889	2383.647	1549.758	1265.569	668.4316
17.1481	17.58826	199.8719	23.4714	835.3754	1.169753	0.765709	833.4399	2382.934	1549.494	1265.426	668.2892
17.1481	17.58826	199.8719	23.4714	835.3754	1.169753	0.765709	833.4399	2383.04	1549.6	1265.426	668.2892
17.1624	17.60293	199.8719	23.47558	835.2267	1.170729	0.765709	833.2902	2382.784	1549.494	1265.426	668.2892
17.1624	17.60293	199.8719	23.47558	835.2267	1.170729	0.765709	833.2902	2382.784	1549.494	1265.426	668.2892
17.1624	17.60293	199.8719	23.47558	835.2267	1.170729	0.765709	833.2902	2382.784	1549.494	1265.426	668.2892
17.1624	17.60293	199.8719	23.47558	835.2267	1.170729	0.765709	833.2902	2382.784	1549.494	1265.355	668.2179
17.1624	17.60293	199.8719	23.47558	835.2267	1.170729	0.765709	833.2902	2382.784	1549.494	1265.355	668.2179
17.1767	17.6176	199.4166	23.47976	833.1758	1.171704	0.765709	831.2383	2380.732	1549.494	1265.426	668.2892

TRIAXIAL TEST - SHEAR TEST DATA SHEET
CALCULATION SHEET

PROJECT No.	BX02777	TEST TYPE	CUP
SAMPLE No.	2	SAMPLE TYPE	Compacted to 100% SPDD
PROJECT ENGINEER	JMB	DATE ORDERED	

SOIL DESCRIPTION: Clay, silty, sandy, roots, brown.

Vertical Displc. (mm)	Axial Strain (%)	Axial Load (kg)	Corrected Area (cm2)	σ 1-σ 3 (kPa)	Membrane Correction $\sigma_m=4E_m t\varepsilon/d$ (kPa)	Correction for Filter Paper Strips Assuming 50% covered	Corrected for Membrane and Filter Paper σ 1-σ 3 (kPa)	σ_1 corrected (kPa)	σ 3 (kPa)	Pore pressure (kPa)	Δ Pore pressure response (kPa)
17.1767	17.6176	199.4166	23.47976	833.1758	1.171704	0.765709	831.2383	2380.732	1549.494	1265.355	668.2179
17.1767	17.6176	199.8719	23.47976	835.078	1.171704	0.765709	833.1406	2382.634	1549.494	1265.426	668.2892
17.1767	17.6176	199.8719	23.47976	835.078	1.171704	0.765709	833.1406	2382.634	1549.494	1265.426	668.2892
17.1767	17.6176	199.8719	23.47976	835.078	1.171704	0.765709	833.1406	2382.634	1549.494	1265.426	668.2892
17.1767	17.6176	199.8719	23.47976	835.078	1.171704	0.765709	833.1406	2382.634	1549.494	1265.426	668.2892
17.1767	17.6176	199.4166	23.47976	833.1758	1.171704	0.765709	831.2383	2380.732	1549.494	1265.426	668.2892
17.191	17.63227	199.4166	23.48394	833.0274	1.17268	0.765709	831.089	2380.583	1549.494	1265.426	668.2892
17.191	17.63227	199.4166	23.48394	833.0274	1.17268	0.765709	831.089	2380.689	1549.6	1265.497	668.3604
17.191	17.63227	199.4166	23.48394	833.0274	1.17268	0.765709	831.089	2380.583	1549.494	1265.426	668.2892
17.191	17.63227	199.8719	23.48394	834.9293	1.17268	0.765709	832.9909	2382.591	1549.6	1265.426	668.2892
17.20531	17.64694	199.4166	23.48812	832.879	1.173655	0.765709	830.9397	2380.434	1549.494	1265.426	668.2892
17.20531	17.64694	199.4166	23.48812	832.879	1.173655	0.765709	830.9397	2380.434	1549.494	1265.426	668.2892
17.20531	17.64694	199.8719	23.48812	834.7806	1.173655	0.765709	832.8412	2382.441	1549.6	1265.426	668.2892
17.20531	17.64694	199.4166	23.48812	832.879	1.173655	0.765709	830.9397	2380.539	1549.6	1265.426	668.2892
17.20531	17.64694	199.4166	23.48812	832.879	1.173655	0.765709	830.9397	2380.539	1549.6	1265.426	668.2892
17.21961	17.66161	199.4166	23.49231	832.7307	1.174631	0.765709	830.7903	2380.39	1549.6	1265.426	668.2892
17.21961	17.66161	199.4166	23.49231	832.7307	1.174631	0.765709	830.7903	2380.549	1549.758	1265.497	668.3604
17.21961	17.66161	199.4166	23.49231	832.7307	1.174631	0.765709	830.7903	2380.549	1549.758	1265.497	668.3604
17.26251	17.70562	199.8719	23.50487	834.1858	1.177558	0.765709	832.2425	2382.265	1550.023	1265.569	668.4316
17.29112	17.73495	199.8719	23.51325	833.8884	1.179509	0.765709	831.9432	2382.284	1550.34	1265.569	668.4316

TRIAXIAL TEST - LABORATORY TEST RESULTS
ASTM D4767-95

PROJECT No.	BX02777	DATE		
CLIENT	DRDC	PROJECT LOCATION	Onager Site	
LAB No.		TEST TYPE	CUP	
BOREHOLE No.	Onager West	SAMPLE No.	3	
DEPTH		EFFECTIVE STRESS	1500.0	kPa
PROJECT MANAGER	AGK / JMB	SAMPLE TYPE	Compacted to 100% SPDD	
SOIL DESCRIPTION	Clay, silty, sandy, roots, brown.			

Initial Sample Height	97.528	mm	Initial Water Content	17.1	%
Initial Sample Diameter	50.41	mm	Initial Bulk Density	1832	kg/m^3
Initial Sample Area	19.96	cm^2	Initial Dry Density	1564	kg/m^3
Initial Sample Volume	194.63	cm^3	Initial Void Ratio	0.71	
			Specific Gravity	2.68	assumed
Pre-Shear Cell Pressure	1999	kPa	Effective Consolidation Pressure	1512	kPa
Pre-Shear Back Pressure	487	kPa	Pore Pressure Parameter B	0.93	
			Time to 50 % Primary Consolidation	16.0	min
Pre-Shear Sample Height	97.027	mm	Pre-Shear Water Content	19.8	%
Pre-Shear Sample Diameter	47.768	mm	Pre-Shear Bulk Density	2097.4	kg/m^3
Pre-Shear Sample Area	17.92	cm^2	Pre-Shear Dry Density	1750.6	kg/m^3
Pre-Shear Sample Volume	173.88	cm^3	Pre-Shear Void Ratio	0.53	
Pre-Shear Height Change	2.417	mm	Pre-Shear Volume Change	-20.75	cm^3

SAMPLE DATA	Initial	Pre-Shear	Post-Shear	Unit
Wet Weight of Sample	356.600	364.700	364.700	g
Dry Weight of Sample	304.400	304.400	304.400	g
Volume of Sample	194.63	173.88	173.88	cm^3
Volume of Solids	113.58	113.58	113.58	cm^3
Volume of Voids	81.05	60.30	60.30	cm^3
Volume of Pore Water	52.20	60.30	60.30	cm^3
Void Ratio	0.71	0.53	0.53	
Saturation	0.64	1.00	1.00	
Bulk Density	1832.2	2097.4	2097.4	kg/m^3
Dry Density	1564.0	1750.6	1750.6	kg/m^3
Moisture Content	17.1	19.8	19.8	%
Change in Volume		-20.7		cm^3

FAILURE MODE: Bulge

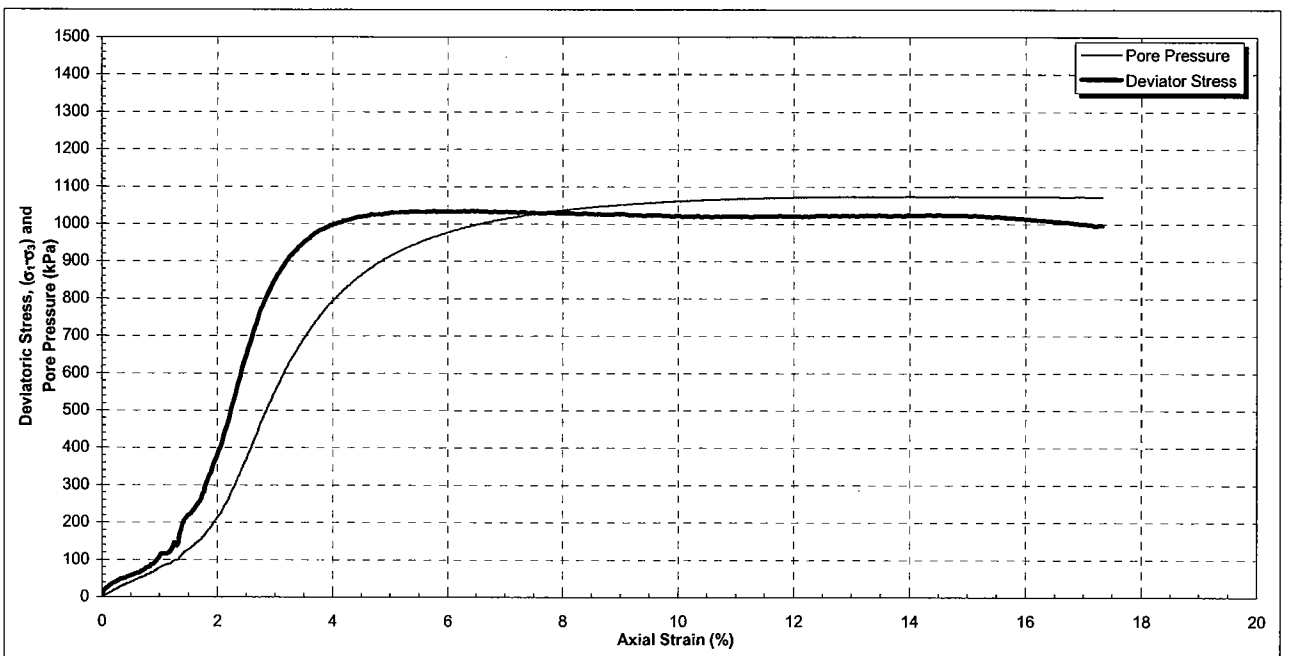
COMMENTS:
SPDD = Specified Proctor Dry Density
Water content determined from weight of entire specimen.
Wet Method use for sample saturation.
Method A used to calculate pre-shear sample area.
Correction for filter paper strips (assuming 50% covered) and for membrane used in effective stress calculations.
Strain rate = 0.022 %/min.

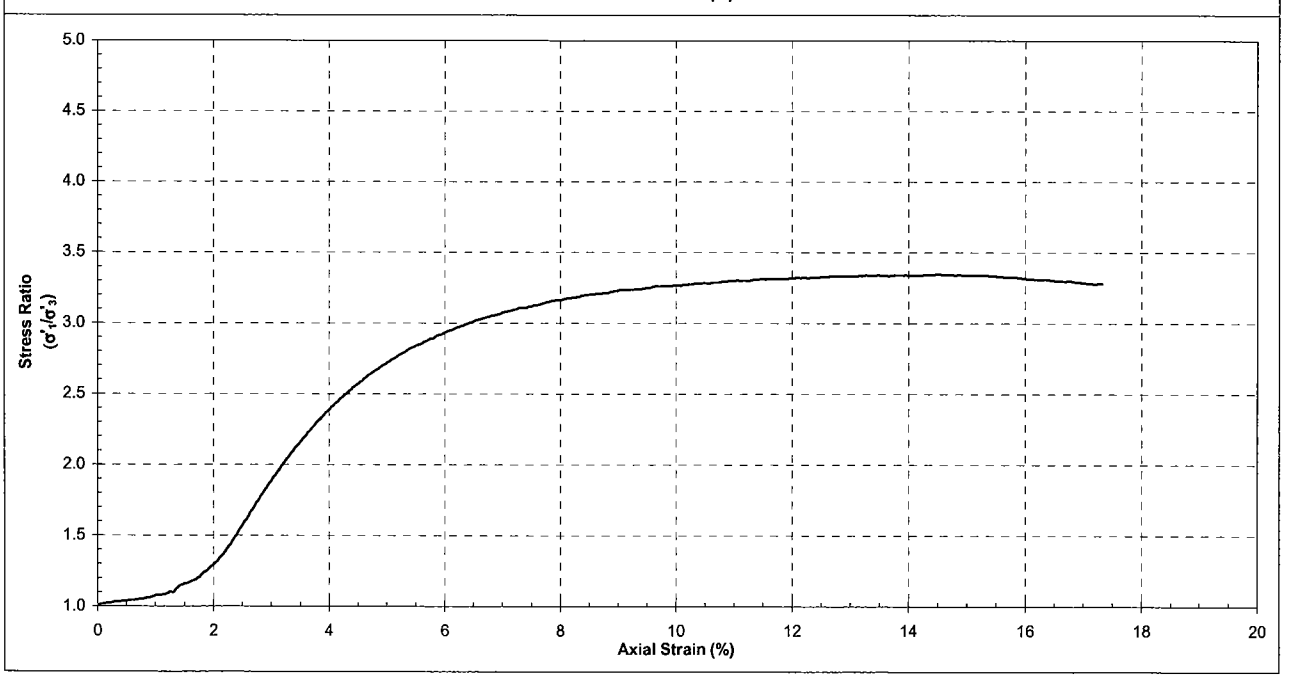
TRIAXIAL TEST - LABORATORY TEST RESULTS

PROJECT No.	BX02777	DATE ORDERED	
CLIENT	DRDC	PROJECT LOCATION	Onager Site
LAB No.		TEST TYPE	CUP
BOREHOLE No.	Onager West	SAMPLE No.	3
DEPTH		EFFECTIVE STRESS	1500.0 kPa
PROJECT ENGINEER	JMB	SAMPLE TYPE	Compacted to 100% SPDD

MAXIMUM DEVIATOR STRESS 1036 kPa at 6.4 % Strain

SOIL DESCRIPTION Clay, silty, sandy, roots, brown.



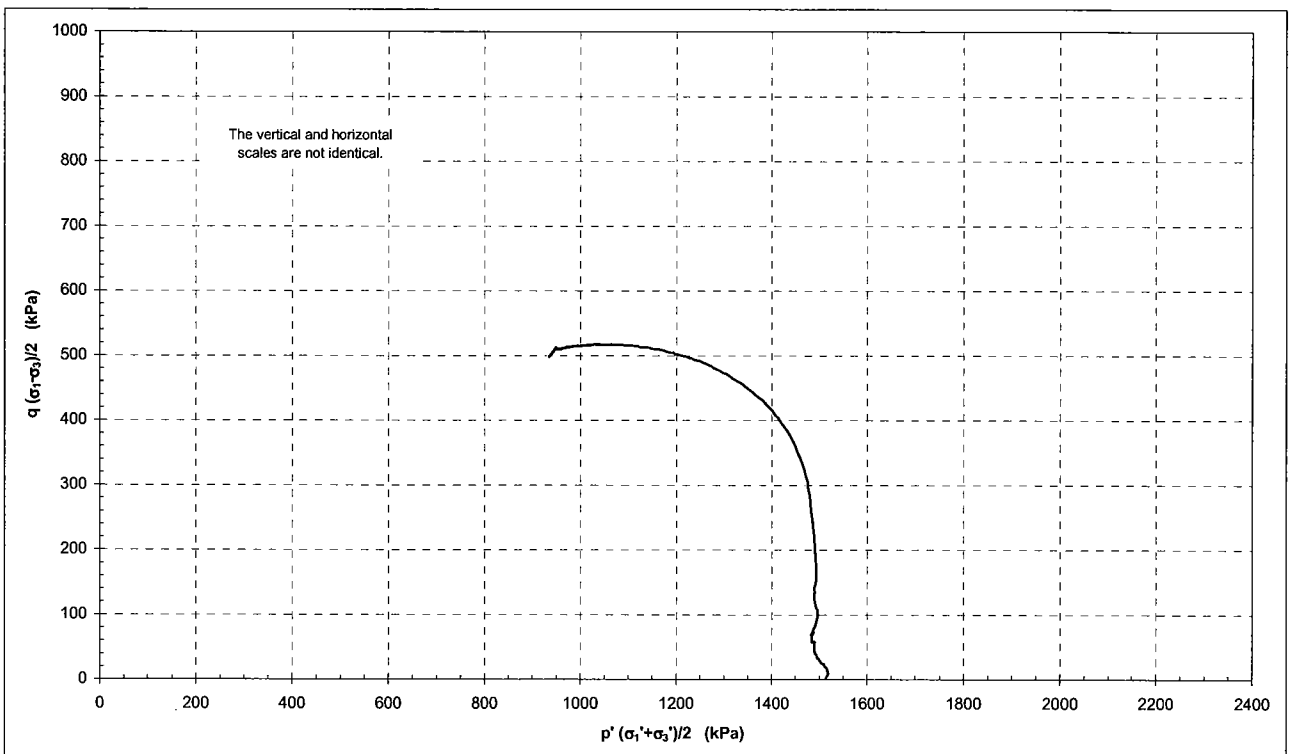


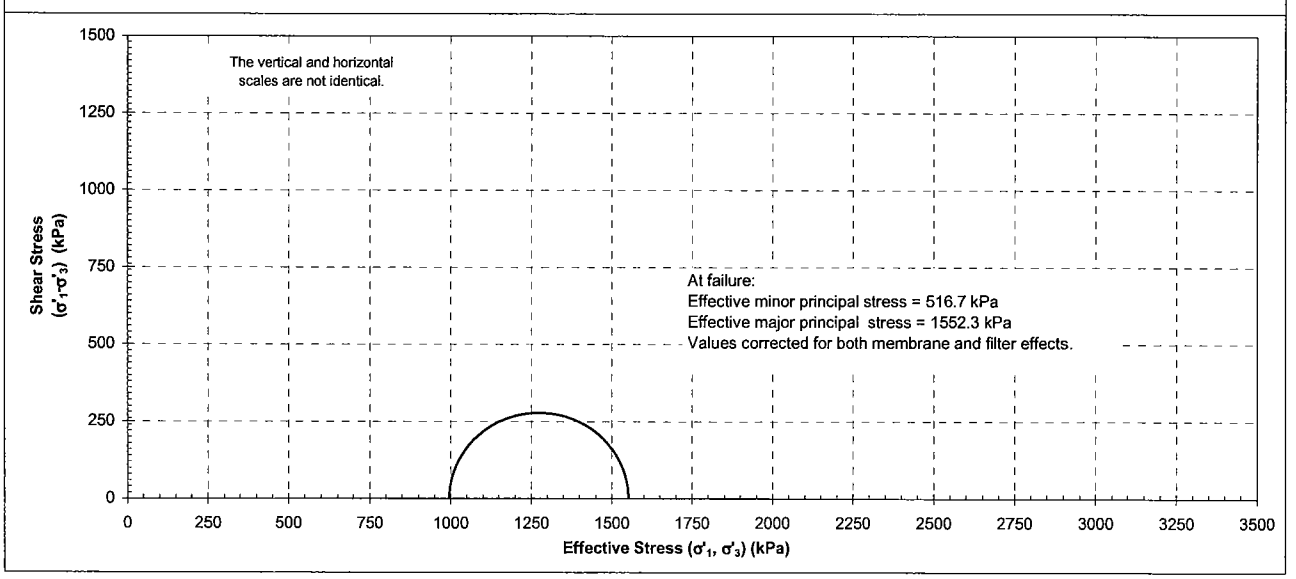
TRIAXIAL TEST - LABORATORY TEST RESULTS

PROJECT No.	BX02777	DATE ORDERED	
CLIENT	DRDC	PROJECT LOCATION	Onager Site
LAB No.		TEST TYPE	CUP
BOREHOLE No.	Onager West	SAMPLE No.	3
DEPTH		EFFECTIVE STRESS	1500.0 kPa
PROJECT ENGINEER	JMB	SAMPLE TYPE	Compacted to 100% SPDD

MAXIMUM DEVIATOR STRESS 1036 kPa at 6.4 % Strain

SOIL DESCRIPTION Clay, silty, sandy, roots, brown.

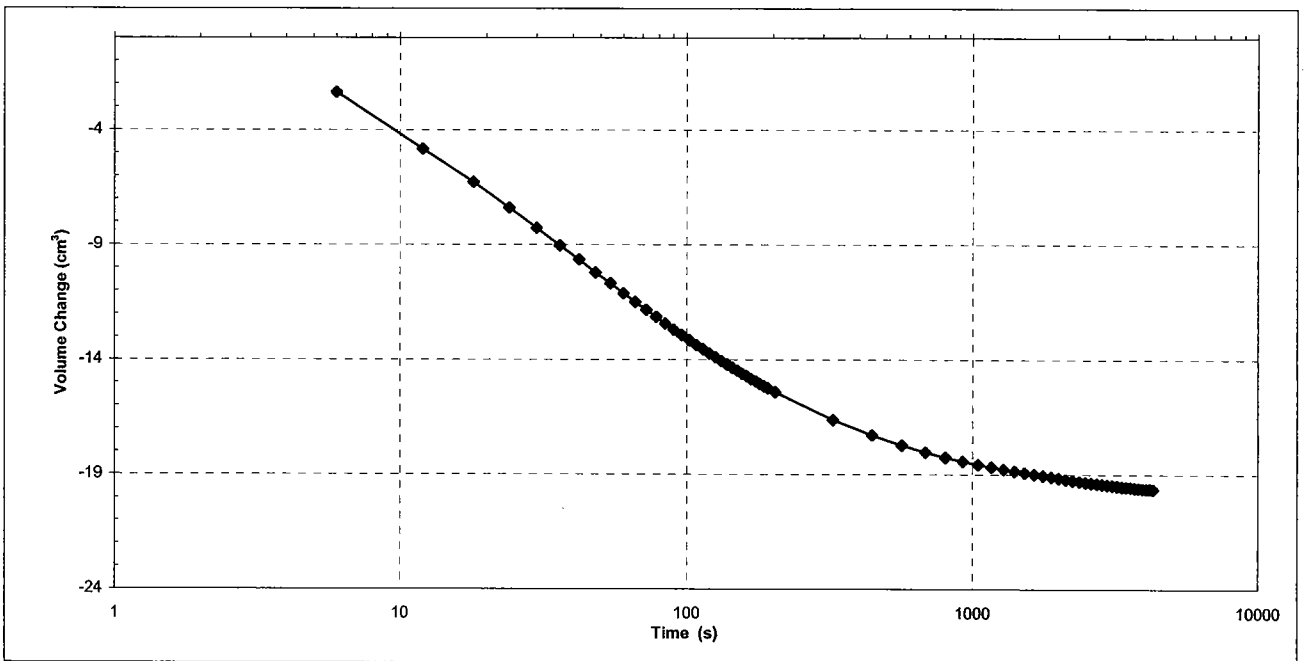


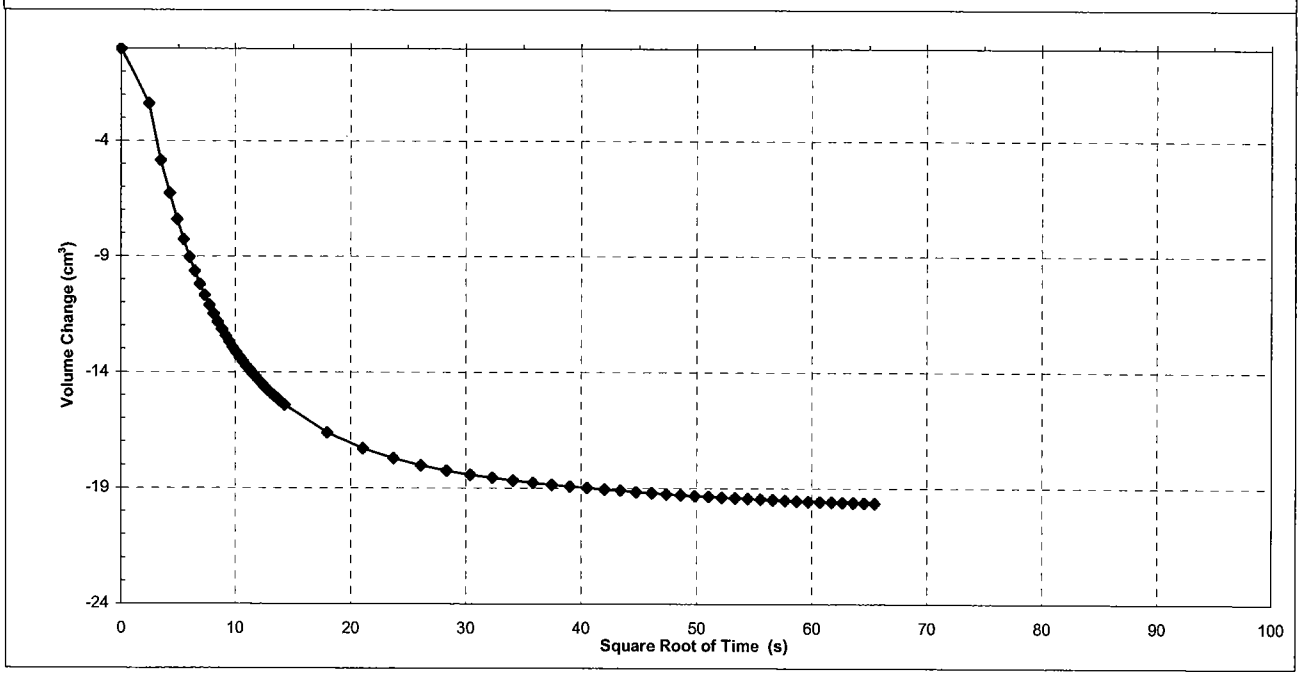


TRIAXIAL TEST - LABORATORY TEST RESULTS
CONSOLIDATION STAGE

PROJECT No.	BX02777	DATE	
CLIENT	DRDC	PROJECT LOCATION	Onager Site
LAB No.		TEST TYPE	CUP
BOREHOLE No.	Onager West	SAMPLE No.	3
DEPTH		EFFECTIVE STRESS	1500.0 psi
PROJECT MANAGER	AGK / JMB	SAMPLE TYPE	Compacted to 100% SPDD

SOIL DESCRIPTION Clay, silty, sandy, roots, brown.





TRIAXIAL TEST - SHEAR TEST DATA SHEET
CALCULATION SHEET

PROJECT No.	BX02777	TEST TYPE	CUP
SAMPLE No.	3	SAMPLE TYPE	Compacted to 100% SPDD
PROJECT ENGINEER	JMB	DATE ORDERED	

SOIL DESCRIPTION: Clay, silty, sandy, roots, brown.

Vertical Displc. (mm)	Axial Strain (%)	Axial Load (kg)	Corrected Area (cm2)	σ 1-σ 3 (kPa)	Membrane Correction $\sigma_m=4E_m t\varepsilon/d$ (kPa)	Correction for Filter Paper Strips Assuming 50% covered	Corrected for Membrane and Filter Paper σ 1-σ 3 (kPa)	σ_1 corrected (kPa)	σ 3 (kPa)	Pore pressure (kPa)	Δ Pore pressure response (kPa)
0	0	0.455289	17.92098	2.492266	0	0	2.492266	2001.054	1998.562	486.4914	0
0.028604	0.02948	3.338786	17.92627	18.27123	0.001965	0.011726	18.25754	2016.978	1998.721	489.0911	2.599654
0.057208	0.058961	4.097601	17.93156	22.41717	0.00393	0.023452	22.38978	2021.216	1998.827	492.2961	5.804707
0.100114	0.103181	5.008179	17.93949	27.38664	0.006878	0.041041	27.33872	2026.324	1998.985	495.5012	9.00976
0.128718	0.132662	5.766994	17.94479	31.52682	0.008843	0.052767	31.46521	2030.609	1999.144	498.635	12.14359
0.171624	0.176883	6.525809	17.95274	35.65929	0.01179	0.070356	35.57714	2034.721	1999.144	501.8401	15.34864
0.200228	0.206363	6.981098	17.95804	38.13588	0.013755	0.082082	38.04004	2037.025	1998.985	505.1164	18.62492
0.243134	0.250584	7.436387	17.966	40.605	0.016703	0.099671	40.48863	2039.315	1998.827	508.1077	21.6163
0.271738	0.280064	8.195202	17.97131	44.73514	0.018668	0.111397	44.60508	2043.167	1998.562	511.2416	24.75013
0.314644	0.324285	9.10578	17.97929	49.68367	0.021616	0.128986	49.53307	2047.936	1998.403	514.3042	27.81274
0.343248	0.353765	9.10578	17.98461	49.66898	0.023581	0.140712	49.50469	2047.749	1998.245	517.2956	30.80412
0.386154	0.397986	9.409306	17.99259	51.30184	0.026528	0.158301	51.11701	2049.52	1998.403	520.0733	33.58183
0.414758	0.427466	9.864595	17.99792	53.76826	0.028493	0.170027	53.56974	2052.132	1998.562	522.4236	35.93221
0.457664	0.471687	10.31988	18.00591	56.22489	0.031441	0.187616	56.00584	2054.727	1998.721	524.9165	38.42502
0.486268	0.501167	10.62341	18.01125	57.86142	0.033406	0.199342	57.62868	2056.455	1998.827	527.4093	40.91784
0.529174	0.545388	11.0787	18.01926	60.31438	0.036354	0.216931	60.0611	2059.205	1999.144	529.8309	43.33944
0.557778	0.574868	11.53399	18.0246	62.77444	0.038319	0.228658	62.50747	2061.757	1999.25	532.11	45.61859
0.600684	0.619089	11.98928	18.03262	65.22336	0.041266	0.246247	64.93585	2064.344	1999.408	534.3892	47.89774
0.629288	0.648569	11.98928	18.03797	65.20401	0.043231	0.257973	64.90281	2064.311	1999.408	536.5971	50.10566
0.657892	0.67805	12.74809	18.04333	69.31027	0.045196	0.269699	68.99538	2068.245	1999.25	538.8762	52.38481
0.700798	0.72227	13.20338	18.05136	71.75368	0.048144	0.287288	71.41825	2070.562	1999.144	541.0842	54.59274
0.729402	0.751751	13.9622	18.05672	75.85492	0.050109	0.299014	75.5058	2074.491	1998.985	543.3633	56.87188
0.743704	0.766491	14.41749	18.05941	78.31682	0.051092	0.304877	77.96085	2076.787	1998.827	545.5712	59.07981
0.78661	0.810712	14.87277	18.06746	80.75398	0.054039	0.322466	80.37748	2079.098	1998.721	547.6367	61.14529
0.815214	0.840192	15.1763	18.07283	82.37753	0.056004	0.334192	81.98734	2080.549	1998.562	549.7734	63.28199
0.829516	0.854932	16.08688	18.07552	87.3072	0.056987	0.340055	86.91016	2085.631	1998.721	551.9101	65.41869
0.872422	0.899153	16.3904	18.08358	88.91483	0.059934	0.357644	88.49725	2087.324	1998.827	553.9756	67.48417
0.886724	0.913893	16.84569	18.08627	91.3711	0.060917	0.363507	90.94667	2089.932	1998.985	556.0411	69.54965
0.915328	0.943374	17.60451	18.09165	95.4585	0.062882	0.375233	95.02039	2094.27	1999.25	558.1778	71.68635
0.92963	0.958114	18.51509	18.09435	100.3811	0.063865	0.381096	99.93611	2099.345	1999.408	560.2433	73.75183
0.958234	0.987594	19.2739	18.09973	104.4639	0.06583	0.392822	104.0053	2103.414	1999.408	562.4512	75.95976
0.972536	1.002334	20.18448	18.10243	109.383	0.066812	0.398685	108.9175	2108.167	1999.25	564.6591	78.16768
1.00114	1.031815	21.39858	18.10782	115.9279	0.068777	0.410411	115.4487	2114.698	1999.25	566.867	80.37561
1.015442	1.046555	21.70211	18.11052	117.5547	0.06976	0.416274	117.0687	2116.318	1999.25	568.9325	82.44109
1.058348	1.090776	21.70211	18.11862	117.5022	0.072707	0.433863	116.9956	2116.14	1999.144	570.998	84.50656
1.086952	1.120256	21.39858	18.12402	115.8243	0.074672	0.445589	115.304	2114.289	1998.985	572.8498	86.35837
1.129858	1.164477	22.1574	18.13213	119.8779	0.07762	0.463178	119.3371	2118.164	1998.827	574.9153	88.42385
1.158462	1.193957	23.06798	18.13754	124.7671	0.079585	0.474904	124.2126	2123.039	1998.827	576.9808	90.48933
1.172764	1.208697	23.82679	18.14024	128.8521	0.080568	0.480767	128.2908	2126.853	1998.562	578.8326	92.34114
1.187066	1.223438	24.58561	18.14295	132.9358	0.08155	0.48663	132.3676	2130.93	1998.562	580.8268	94.33539
1.201368	1.238178	25.95147	18.14566	140.3002	0.082533	0.492493	139.7252	2138.446	1998.721	582.6786	96.1872
1.21567	1.252918	27.16558	18.14837	146.842	0.083515	0.498356	146.2602	2145.087	1998.827	584.6017	98.11023
1.258576	1.297139	25.49618	18.1565	137.7565	0.086463	0.515945	137.1541	2136.298	1999.144	585.4563	98.96491
1.28718	1.326619	27.4691	18.16192	148.3719	0.088428	0.527671	147.7558	2147.164	1999.408	587.5218	101.0304
1.28718	1.326619	29.1385	18.16192	157.389	0.088428	0.527671	156.7729	2156.34	1999.567	589.5873	103.0959
1.301482	1.341359	30.80789	18.16464	166.3812	0.08941	0.533534	165.7583	2165.484	1999.726	591.7952	105.3038

TRIAXIAL TEST - SHEAR TEST DATA SHEET
CALCULATION SHEET

PROJECT No.	BX02777	TEST TYPE	CUP
SAMPLE No.	3	SAMPLE TYPE	Compacted to 100% SPDD
PROJECT ENGINEER	JMB	DATE ORDERED	

SOIL DESCRIPTION: Clay, silty, sandy, roots, brown.

Vertical Displc. (mm)	Axial Strain (%)	Axial Load (kg)	Corrected Area (cm2)	σ 1-σ 3 (kPa)	Membrane Correction $\sigma_m=4E_m t\varepsilon/d$ (kPa)	Correction for Filter Paper Strips Assuming 50% covered	Corrected for Membrane and Filter Paper σ 1-σ 3 (kPa)	σ_1 corrected (kPa)	σ 3 (kPa)	Pore pressure (kPa)	Δ Pore pressure response (kPa)
1.315784	1.3561	32.47728	18.16735	175.3707	0.090393	0.539397	174.7409	2174.308	1999.567	593.9319	107.4405
1.330086	1.37084	33.69139	18.17006	181.8995	0.091375	0.54526	181.2628	2180.83	1999.567	596.3535	109.8621
1.344388	1.38558	35.36078	18.17278	190.884	0.092358	0.551123	190.2405	2189.808	1999.567	598.9176	112.4261
1.35869	1.40032	36.57488	18.1755	197.4084	0.09334	0.556986	196.7581	2196.008	1999.25	601.5528	115.0614
1.372992	1.41506	37.78899	18.17822	203.9309	0.094323	0.562849	203.2737	2202.523	1999.25	604.3305	117.8391
1.387294	1.429801	38.5478	18.18093	207.9948	0.095306	0.568712	207.3308	2206.475	1999.144	607.3219	120.8305
1.4302	1.474021	39.91367	18.18909	215.2681	0.098253	0.586301	214.5835	2213.569	1998.985	610.3133	123.8219
1.444502	1.488761	40.67248	18.19182	219.3278	0.099236	0.592164	218.6364	2217.463	1998.827	613.5896	127.0982
1.487408	1.532982	41.4313	18.19998	223.3194	0.102183	0.609753	222.6075	2221.434	1998.827	617.0083	130.5169
1.516012	1.562462	42.34188	18.20544	228.1592	0.104148	0.621479	227.4336	2226.154	1998.721	620.6407	134.1493
1.544616	1.591943	43.55598	18.21089	234.6311	0.106113	0.633205	233.8918	2232.613	1998.721	624.4868	137.9953
1.57322	1.621423	44.77009	18.21635	241.0991	0.108078	0.644931	240.3461	2238.908	1998.562	628.5465	142.0551
1.601824	1.650904	45.98419	18.22181	247.5632	0.110044	0.656657	246.7965	2245.2	1998.403	632.7487	146.2573
1.64473	1.695124	47.65358	18.23	256.4353	0.112991	0.674247	255.6481	2253.893	1998.245	637.2358	150.7443
1.673334	1.724605	49.6265	18.23547	266.972	0.114956	0.685973	266.171	2264.416	1998.245	641.8653	155.3738
1.687636	1.739345	51.29589	18.23821	275.9113	0.115939	0.691836	275.1035	2273.507	1998.403	646.1387	159.6473
1.71624	1.768825	52.51	18.24368	282.357	0.117904	0.703562	281.5355	2280.098	1998.562	650.1984	163.707
1.730542	1.783566	55.08997	18.24642	296.1856	0.118886	0.709425	295.3573	2294.184	1998.827	654.9704	168.479
1.759146	1.813046	57.51818	18.2519	309.1478	0.120851	0.721151	308.3058	2307.45	1999.144	660.3834	173.8919
1.78775	1.842527	59.94639	18.25738	322.1021	0.122816	0.732877	321.2464	2320.655	1999.408	666.5798	180.0884
1.830656	1.886747	62.37459	18.26561	334.9983	0.125764	0.750466	334.1221	2333.53	1999.408	673.346	186.8546
1.85926	1.916228	65.25809	18.2711	350.3795	0.127729	0.762192	349.4896	2348.898	1999.408	680.5396	194.0482
1.887864	1.945708	67.6863	18.27659	363.3077	0.129694	0.773918	362.4041	2361.812	1999.408	688.018	201.5266
1.93077	1.989929	70.26627	18.28484	376.9856	0.132642	0.791507	376.0615	2375.47	1999.408	695.7814	209.29
1.959374	2.019409	73.14977	18.29034	392.3378	0.134607	0.795513	391.4077	2390.657	1999.25	703.9009	217.4094
2.00228	2.06363	76.03326	18.2986	407.6194	0.137554	0.795513	406.6863	2405.936	1999.25	712.3052	225.8138
2.030884	2.09311	79.22029	18.30411	424.5774	0.139519	0.795513	423.6423	2422.786	1999.144	721.2794	234.7879
2.059488	2.122591	82.55907	18.30962	442.3382	0.141485	0.795513	441.4012	2440.386	1998.985	730.6096	244.1182
2.102394	2.166811	85.7461	18.3179	459.2062	0.144432	0.795513	458.2663	2457.093	1998.827	740.4385	253.947
2.130998	2.196292	89.08488	18.32342	476.943	0.146397	0.795513	476.0011	2474.722	1998.721	750.6234	264.132
2.159602	2.225772	92.72719	18.32894	496.2936	0.148362	0.795513	495.3498	2493.912	1998.562	761.2357	274.7443
2.188206	2.255252	96.06598	18.33447	514.0084	0.150327	0.795513	513.0626	2511.625	1998.562	772.0617	285.5702
2.231112	2.299473	99.70829	18.34277	533.2555	0.153275	0.795513	532.3067	2531.027	1998.721	783.1013	296.6098
2.259716	2.328954	103.5024	18.34831	553.3798	0.15524	0.795513	552.4291	2551.414	1998.985	794.497	308.0056
2.28832	2.358434	107.1447	18.35385	572.6807	0.157205	0.795513	571.728	2570.872	1999.144	806.3201	319.8287
2.331226	2.402655	110.787	18.36216	591.8804	0.160153	0.795513	590.9247	2590.333	1999.408	818.5705	332.0791
2.35983	2.432135	114.8846	18.36771	613.5865	0.162118	0.795513	612.6288	2612.196	1999.567	830.9634	344.472
2.388434	2.461615	118.2234	18.37326	631.2278	0.164083	0.795513	630.2682	2629.994	1999.726	843.5699	357.0785
2.43134	2.505836	121.8657	18.3816	650.3801	0.16703	0.795513	649.4176	2649.143	1999.726	856.5326	370.0412
2.459944	2.535317	125.2045	18.38716	667.9967	0.168995	0.795513	667.0322	2666.758	1999.726	869.7089	383.2175
2.50285	2.579537	128.5433	18.3955	685.4988	0.171943	0.795513	684.5313	2684.257	1999.726	882.8853	396.3938
2.531454	2.609018	131.7303	18.40107	702.282	0.173908	0.795513	701.3126	2700.721	1999.408	896.0616	409.5702
2.560058	2.638498	135.0691	18.40664	719.8639	0.175873	0.795513	718.8925	2718.301	1999.408	909.3804	422.8889
2.602964	2.682719	138.4079	18.41501	737.3232	0.178821	0.795513	736.3489	2735.599	1999.25	922.8416	436.3502
2.631568	2.712199	141.2914	18.42059	752.4561	0.180786	0.795513	751.4798	2750.729	1999.25	936.0891	449.5977
2.660172	2.741679	144.1749	18.42617	767.5797	0.182751	0.795513	766.6014	2765.587	1998.985	949.2655	462.774

TRIAXIAL TEST - SHEAR TEST DATA SHEET
CALCULATION SHEET

PROJECT No.	BX02777	TEST TYPE	CUP
SAMPLE No.	3	SAMPLE TYPE	Compacted to 100% SPDD
PROJECT ENGINEER	JMB	DATE ORDERED	

SOIL DESCRIPTION: Clay, silty, sandy, roots, brown.

Vertical Displc. (mm)	Axial Strain (%)	Axial Load (kg)	Corrected Area (cm2)	σ 1-σ 3 (kPa)	Membrane Correction $\sigma_m=4E_m t\varepsilon/d$ (kPa)	Correction for Filter Paper Strips Assuming 50% covered	Corrected for Membrane and Filter Paper σ 1-σ 3 (kPa)	σ_1 corrected (kPa)	σ 3 (kPa)	Pore pressure (kPa)	Δ Pore pressure response (kPa)
2.703078	2.7859	146.6031	18.43455	780.1525	0.185698	0.795513	779.1712	2777.998	1998.827	962.2994	475.8079
2.731682	2.815381	149.0313	18.44014	792.8337	0.187663	0.795513	791.8506	2790.677	1998.827	975.262	488.7706
2.774588	2.859601	151.9148	18.44854	807.806	0.190611	0.795513	806.8198	2805.646	1998.827	988.1535	501.662
2.803192	2.889082	153.8877	18.45414	818.0486	0.192576	0.795513	817.0605	2815.887	1998.827	1000.689	514.1973
2.846098	2.933302	156.4677	18.46254	831.3847	0.195524	0.795513	830.3936	2829.379	1998.985	1013.224	526.7327
2.874702	2.962783	158.4406	18.46815	841.612	0.197489	0.795513	840.619	2839.869	1999.25	1025.688	539.1967
2.917608	3.007003	160.5653	18.47657	852.5093	0.200436	0.795513	851.5134	2850.922	1999.408	1037.867	551.376
2.946212	3.036484	162.5382	18.48219	862.7221	0.202401	0.795513	861.7242	2861.291	1999.567	1049.69	563.199
2.989118	3.080704	164.2076	18.49062	871.1854	0.205349	0.795513	870.1846	2869.752	1999.567	1061.371	574.8797
3.017722	3.110185	165.877	18.49625	879.7745	0.207314	0.795513	878.7717	2878.339	1999.567	1072.909	586.4179
3.060628	3.154405	167.5464	18.5047	888.2231	0.210262	0.795513	887.2173	2886.784	1999.567	1084.234	597.7424
3.089232	3.183886	169.2157	18.51033	896.8	0.212227	0.795513	895.7923	2895.201	1999.408	1095.202	608.7108
3.132138	3.228106	170.7334	18.51879	904.4298	0.215174	0.795513	903.4191	2902.828	1999.408	1105.957	619.4655
3.160742	3.257587	172.4028	18.52443	912.9949	0.217139	0.795513	911.9822	2911.232	1999.25	1116.498	630.0066
3.203648	3.301808	173.6169	18.5329	919.0042	0.220087	0.795513	917.9886	2917.132	1999.144	1126.754	640.2628
3.232252	3.331288	174.831	18.53856	925.1486	0.222052	0.795513	924.1311	2923.116	1998.985	1136.797	650.3053
3.275158	3.375509	176.0451	18.54704	931.1471	0.225	0.795513	930.1266	2928.953	1998.827	1146.554	660.0629
3.303762	3.404989	177.4109	18.5527	938.0852	0.226965	0.795513	937.0628	2935.783	1998.721	1156.169	669.678
3.346668	3.44921	178.6251	18.5612	944.0726	0.229912	0.795513	943.0472	2941.609	1998.562	1165.5	679.0083
3.375272	3.47869	179.3839	18.56687	947.7936	0.231877	0.795513	946.7662	2945.487	1998.721	1174.616	688.1249
3.418178	3.522911	180.598	18.57538	953.7713	0.234825	0.795513	952.741	2951.462	1998.721	1183.306	696.8141
3.446782	3.552391	181.5085	18.58105	958.2873	0.23679	0.795513	957.255	2956.082	1998.827	1191.995	705.5034
3.489688	3.596612	182.2674	18.58958	961.8523	0.239738	0.795513	960.8171	2959.802	1998.985	1200.47	713.979
3.518292	3.626092	183.4815	18.59526	967.9632	0.241703	0.795513	966.926	2966.07	1999.144	1208.732	722.2409
3.561198	3.670313	184.392	18.6038	972.3207	0.24465	0.795513	971.2805	2970.53	1999.25	1216.638	730.1467
3.589802	3.699793	185.1509	18.6095	976.0232	0.246615	0.795513	974.9811	2974.389	1999.408	1224.473	737.9813
3.632708	3.744014	185.9097	18.61804	979.5733	0.249563	0.795513	978.5282	2977.937	1999.408	1232.165	745.6734
3.661312	3.773494	186.8203	18.62375	984.0697	0.251528	0.795513	983.0227	2982.272	1999.25	1239.643	753.1518
3.704218	3.817715	187.2755	18.63231	986.0146	0.254476	0.795513	984.9646	2984.109	1999.144	1246.837	760.3454
3.732822	3.847195	187.5791	18.63802	987.31	0.256441	0.795513	986.258	2985.402	1999.144	1253.817	767.3253
3.775728	3.891416	188.4896	18.6466	991.6465	0.259388	0.795513	990.5916	2989.577	1998.985	1260.654	774.1627
3.804332	3.920896	188.7932	18.65232	992.9387	0.261353	0.795513	991.8818	2990.708	1998.827	1267.278	780.7865
3.847238	3.965117	189.7038	18.66091	997.2685	0.264301	0.795513	996.2087	2994.929	1998.721	1273.759	787.2679
3.890144	4.009338	190.0073	18.66951	998.4042	0.267249	0.795513	997.3415	2995.903	1998.562	1280.098	793.6067
3.918748	4.038818	190.4626	18.67524	1000.489	0.269214	0.795513	999.4245	2997.828	1998.403	1286.223	799.7319
3.961654	4.083039	190.9179	18.68385	1002.419	0.272161	0.795513	1001.351	2999.754	1998.403	1292.135	805.6435
3.990258	4.112519	191.3731	18.6896	1004.5	0.274126	0.795513	1003.431	3001.834	1998.403	1297.975	811.4838
4.033164	4.15674	191.6767	18.69822	1005.63	0.277074	0.795513	1004.557	3003.119	1998.562	1303.673	817.1817
4.061768	4.18622	192.5872	18.70397	1010.096	0.279039	0.795513	1009.022	3007.742	1998.721	1309.229	822.7371
4.104674	4.230441	192.5872	18.71261	1009.63	0.281986	0.795513	1008.552	3007.538	1998.985	1314.57	828.0789
4.133278	4.259921	192.8908	18.71837	1010.91	0.283952	0.795513	1009.83	3008.816	1998.985	1319.841	833.3494
4.176184	4.304142	193.3461	18.72702	1012.828	0.286899	0.795513	1011.746	3010.889	1999.144	1324.898	838.4063
4.204788	4.333622	193.8014	18.73279	1014.9	0.288864	0.795513	1013.816	3012.96	1999.144	1329.883	843.3919
4.247694	4.377843	194.2566	18.74145	1016.814	0.291812	0.795513	1015.727	3014.871	1999.144	1334.727	848.2351
4.276298	4.407323	194.5602	18.74723	1018.089	0.293777	0.795513	1017	3015.985	1998.985	1339.427	852.9358
4.319204	4.451544	195.0155	18.75591	1019.999	0.296724	0.795513	1018.907	3017.892	1998.985	1344.057	857.5653

TRIAXIAL TEST - SHEAR TEST DATA SHEET
CALCULATION SHEET

PROJECT No.	BX02777	TEST TYPE	CUP
SAMPLE No.	3	SAMPLE TYPE	Compacted to 100% SPDD
PROJECT ENGINEER	JMB	DATE ORDERED	

SOIL DESCRIPTION: Clay, silty, sandy, roots, brown.

Vertical Displc. (mm)	Axial Strain (%)	Axial Load (kg)	Corrected Area (cm2)	σ 1-σ 3 (kPa)	Membrane Correction $\sigma_m=4E_m t\varepsilon/d$ (kPa)	Correction for Filter Paper Strips Assuming 50% covered	Corrected for Membrane and Filter Paper σ 1-σ 3 (kPa)	σ_1 corrected (kPa)	σ 3 (kPa)	Pore pressure (kPa)	Δ Pore pressure response (kPa)
4.36211	4.495765	195.0155	18.76459	1019.527	0.299672	0.795513	1018.432	3017.259	1998.827	1348.544	862.0524
4.390714	4.525245	195.4707	18.77039	1021.592	0.301637	0.795513	1020.495	3019.321	1998.827	1352.888	866.397
4.43362	4.569466	195.4707	18.77909	1021.119	0.304585	0.795513	1020.019	3018.74	1998.721	1357.162	870.6705
4.462224	4.598946	195.7743	18.78489	1022.389	0.30655	0.795513	1021.286	3019.848	1998.562	1361.293	874.8014
4.50513	4.643167	196.2296	18.7936	1024.291	0.309497	0.795513	1023.186	3021.589	1998.403	1365.281	878.7899
4.533734	4.672647	196.6848	18.79941	1026.35	0.311462	0.795513	1025.243	3023.647	1998.403	1369.27	882.7784
4.57664	4.716868	196.6848	18.80814	1025.874	0.31441	0.795513	1024.764	3023.009	1998.245	1373.187	886.6957
4.605244	4.746348	196.6848	18.81396	1025.557	0.316375	0.795513	1024.445	3022.848	1998.403	1376.82	890.3281
4.64815	4.790569	196.9884	18.8227	1026.663	0.319323	0.795513	1025.548	3024.11	1998.562	1380.523	894.0317
4.676754	4.820049	196.9884	18.82853	1026.345	0.321288	0.795513	1025.228	3024.054	1998.827	1384.156	897.6641
4.71966	4.86427	196.9884	18.83728	1025.868	0.324235	0.795513	1024.748	3023.733	1998.985	1387.646	901.1541
4.748264	4.89375	197.4437	18.84312	1027.92	0.3262	0.795513	1026.799	3025.943	1999.144	1391.064	904.5728
4.79117	4.937971	197.899	18.85188	1029.812	0.329148	0.795513	1028.687	3027.831	1999.144	1394.412	907.9203
4.834076	4.982192	197.899	18.86066	1029.333	0.332096	0.795513	1028.205	3027.455	1999.25	1397.688	911.1966
4.86268	5.011672	198.3542	18.86651	1031.381	0.334061	0.795513	1030.251	3029.501	1999.25	1400.822	914.3304
4.905586	5.055893	198.3542	18.8753	1030.9	0.337008	0.795513	1029.768	3028.912	1999.144	1403.956	917.4642
4.93419	5.085373	198.6578	18.88116	1032.157	0.338973	0.795513	1031.023	3030.167	1999.144	1406.947	920.4556
4.977096	5.129594	198.6578	18.88996	1031.676	0.341921	0.795513	1030.539	3029.524	1998.985	1409.938	923.447
5.0057	5.159074	198.6578	18.89583	1031.356	0.343886	0.795513	1030.216	3029.202	1998.985	1412.787	926.2959
5.048606	5.203295	199.1131	18.90465	1033.238	0.346834	0.795513	1032.095	3030.922	1998.827	1415.636	929.1449
5.07721	5.232775	199.1131	18.91053	1032.916	0.348799	0.795513	1031.772	3030.598	1998.827	1418.343	931.8514
5.120116	5.276996	199.1131	18.91936	1032.434	0.351746	0.795513	1031.287	3030.008	1998.721	1421.049	934.5578
5.14872	5.306476	199.1131	18.92525	1032.113	0.353711	0.795513	1030.964	3029.526	1998.562	1423.685	937.1931
5.191626	5.350697	199.5683	18.93409	1033.99	0.356659	0.795513	1032.838	3031.241	1998.403	1426.32	939.8284
5.22023	5.380177	199.5683	18.93999	1033.668	0.358624	0.795513	1032.514	3030.917	1998.403	1428.813	942.3212
5.263136	5.424398	199.8719	18.94884	1034.756	0.361572	0.795513	1033.599	3032.002	1998.403	1431.377	944.8852
5.306042	5.468619	199.8719	18.95771	1034.272	0.364519	0.795513	1033.112	3031.674	1998.562	1433.727	947.2356
5.334646	5.498099	199.8719	18.96362	1033.95	0.366484	0.795513	1032.788	3031.508	1998.721	1436.149	949.6572
5.36325	5.52758	199.8719	18.96954	1033.627	0.368449	0.795513	1032.463	3031.448	1998.985	1438.57	952.0788
5.406156	5.5718	199.8719	18.97842	1033.143	0.371397	0.795513	1031.976	3031.12	1999.144	1440.849	954.3579
5.449062	5.616021	199.8719	18.98731	1032.66	0.374344	0.795513	1031.49	3030.634	1999.144	1443.057	956.5659
5.477666	5.645501	200.3272	18.99325	1034.689	0.37631	0.795513	1033.517	3032.766	1999.25	1445.194	958.7026
5.520572	5.689722	200.3272	19.00215	1034.204	0.379257	0.795513	1033.029	3032.279	1999.25	1447.331	960.8393
5.549176	5.719202	200.3272	19.00809	1033.88	0.381222	0.795513	1032.704	3031.848	1999.144	1449.467	962.976
5.592082	5.763423	200.7824	19.01701	1035.744	0.38417	0.795513	1034.564	3033.55	1998.985	1451.462	964.9702
5.634988	5.807644	200.3272	19.02594	1032.91	0.387117	0.795513	1031.728	3030.713	1998.985	1453.456	966.9645
5.663592	5.837124	200.7824	19.0319	1034.934	0.389082	0.795513	1033.749	3032.576	1998.827	1455.379	968.8875
5.692196	5.866604	200.7824	19.03786	1034.61	0.391047	0.795513	1033.423	3032.144	1998.721	1457.302	970.8106
5.735102	5.910825	200.7824	19.04681	1034.124	0.393995	0.795513	1032.934	3031.655	1998.721	1459.154	972.6624
5.778008	5.955046	200.7824	19.05576	1033.638	0.396943	0.795513	1032.445	3031.007	1998.562	1461.006	974.5142
5.806612	5.984526	201.086	19.06174	1034.876	0.398908	0.795513	1033.682	3032.085	1998.403	1462.786	976.2948
5.849518	6.028747	201.086	19.07071	1034.389	0.401855	0.795513	1033.192	3031.595	1998.403	1464.567	978.0753
5.878122	6.058227	201.086	19.07669	1034.065	0.40382	0.795513	1032.865	3031.11	1998.245	1466.347	979.8559
5.921028	6.102448	201.086	19.08568	1033.578	0.406768	0.795513	1032.376	3030.62	1998.245	1467.985	981.4941
5.949632	6.131928	201.086	19.09167	1033.253	0.408733	0.795513	1032.049	3030.453	1998.403	1469.695	983.2034
5.992538	6.176149	201.5413	19.10067	1035.105	0.411681	0.795513	1033.898	3032.46	1998.562	1471.404	984.9128

TRIAXIAL TEST - SHEAR TEST DATA SHEET
CALCULATION SHEET

PROJECT No.	BX02777	TEST TYPE	CUP
SAMPLE No.	3	SAMPLE TYPE	Compacted to 100% SPDD
PROJECT ENGINEER	JMB	DATE ORDERED	

SOIL DESCRIPTION: Clay, silty, sandy, roots, brown.

Vertical Displc. (mm)	Axial Strain (%)	Axial Load (kg)	Corrected Area (cm2)	σ 1-σ 3 (kPa)	Membrane Correction $\sigma_m=4E_m t\varepsilon/d$ (kPa)	Correction for Filter Paper Strips Assuming 50% covered	Corrected for Membrane and Filter Paper σ 1-σ 3 (kPa)	σ_1 corrected (kPa)	σ 3 (kPa)	Pore pressure (kPa)	Δ Pore pressure response (kPa)
6.021142	6.205629	201.5413	19.10667	1034.78	0.413646	0.795513	1033.571	3032.291	1998.721	1473.042	986.5509
6.064048	6.24985	201.5413	19.11568	1034.292	0.416593	0.795513	1033.08	3031.906	1998.827	1474.609	988.1178
6.106954	6.294071	201.9966	19.1247	1036.139	0.419541	0.795513	1034.924	3033.91	1998.985	1476.176	989.6848
6.135558	6.323551	201.5413	19.13072	1033.479	0.421506	0.795513	1032.262	3031.247	1998.985	1477.672	991.1804
6.178464	6.367772	201.9966	19.13976	1035.325	0.424454	0.795513	1034.105	3033.09	1998.985	1479.168	992.6761
6.207068	6.397252	201.9966	19.14579	1034.999	0.426419	0.795513	1033.777	3032.603	1998.827	1480.592	994.1006
6.249974	6.441473	202.4518	19.15484	1036.841	0.429366	0.795513	1035.616	3034.337	1998.721	1482.017	995.5251
6.278578	6.470953	201.9966	19.16087	1034.184	0.431331	0.795513	1032.957	3031.677	1998.721	1483.37	996.8783
6.321484	6.515174	202.4518	19.16994	1036.025	0.434279	0.795513	1034.795	3033.357	1998.562	1484.723	998.2316
6.350088	6.544654	202.4518	19.17598	1035.698	0.436244	0.795513	1034.466	3032.869	1998.403	1486.005	999.5136
6.392994	6.588875	202.4518	19.18506	1035.208	0.439192	0.795513	1033.973	3032.218	1998.245	1487.429	1000.938
6.4359	6.633096	202.4518	19.19415	1034.718	0.442139	0.795513	1033.48	3031.619	1998.139	1488.712	1002.22
6.464504	6.662576	202.4518	19.20021	1034.391	0.444104	0.795513	1033.151	3031.131	1997.98	1489.922	1003.431
6.50741	6.706797	202.4518	19.20931	1033.901	0.447052	0.795513	1032.658	3030.797	1998.139	1491.204	1004.713
6.536014	6.736277	202.4518	19.21538	1033.574	0.449017	0.795513	1032.33	3030.574	1998.245	1492.486	1005.995
6.57892	6.780498	202.4518	19.2245	1033.084	0.451964	0.795513	1031.837	3030.399	1998.562	1493.626	1007.134
6.607524	6.809978	202.7554	19.23058	1034.306	0.453929	0.795513	1033.056	3031.777	1998.721	1495.05	1008.559
6.65043	6.854199	202.7554	19.23971	1033.815	0.456877	0.795513	1032.563	3031.389	1998.827	1496.119	1009.627
6.693336	6.898419	202.7554	19.24885	1033.324	0.459825	0.795513	1032.069	3031.054	1998.985	1497.258	1010.767
6.72194	6.9279	202.7554	19.25495	1032.997	0.46179	0.795513	1031.74	3030.725	1998.985	1498.327	1011.835
6.764846	6.97212	202.7554	19.2641	1032.506	0.464737	0.795513	1031.246	3030.072	1998.827	1499.466	1012.975
6.79345	7.001601	203.2107	19.27021	1034.497	0.466702	0.795513	1033.235	3032.061	1998.827	1500.535	1014.043
6.836356	7.045821	203.2107	19.27937	1034.005	0.46965	0.795513	1032.74	3031.46	1998.721	1501.532	1015.04
6.86496	7.075302	203.2107	19.28549	1033.677	0.471615	0.795513	1032.41	3031.131	1998.721	1502.6	1016.109
6.907866	7.119523	203.2107	19.29467	1033.185	0.474563	0.795513	1031.915	3030.477	1998.562	1503.668	1017.177
6.950772	7.163743	203.2107	19.30386	1032.693	0.47751	0.795513	1031.42	3029.823	1998.403	1504.594	1018.103
6.979376	7.193224	203.2107	19.30999	1032.365	0.479475	0.795513	1031.09	3029.335	1998.245	1505.591	1019.1
7.022282	7.237444	203.2107	19.3192	1031.873	0.482423	0.795513	1030.595	3028.734	1998.139	1506.517	1020.026
7.065188	7.281665	203.6659	19.32841	1033.692	0.48537	0.795513	1032.411	3030.55	1998.139	1507.514	1021.023
7.093792	7.311145	203.6659	19.33456	1033.364	0.487336	0.795513	1032.081	3030.219	1998.139	1508.44	1021.949
7.122396	7.340626	203.6659	19.34071	1033.035	0.489301	0.795513	1031.75	3029.995	1998.245	1509.366	1022.875
7.165302	7.384846	203.2107	19.34995	1030.234	0.492248	0.795513	1028.946	3027.349	1998.403	1510.363	1023.872
7.208208	7.429067	203.2107	19.35919	1029.742	0.495196	0.795513	1028.451	3027.172	1998.721	1511.289	1024.798
7.236812	7.458547	203.6659	19.36536	1031.72	0.497161	0.795513	1030.428	3029.413	1998.985	1512.215	1025.724
7.279718	7.502768	203.6659	19.37461	1031.227	0.500108	0.795513	1029.932	3028.917	1998.985	1513.07	1026.578
7.308322	7.532248	203.6659	19.38079	1030.899	0.502074	0.795513	1029.601	3028.586	1998.985	1513.925	1027.433
7.351228	7.576469	203.6659	19.39006	1030.405	0.505021	0.795513	1029.105	3028.09	1998.985	1514.779	1028.288
7.394134	7.62069	203.6659	19.39935	1029.912	0.507969	0.795513	1028.609	3027.436	1998.827	1515.492	1029
7.422738	7.65017	203.6659	19.40554	1029.584	0.509934	0.795513	1028.278	3027.105	1998.827	1516.346	1029.855
7.465644	7.694391	203.9695	19.41484	1030.624	0.512881	0.795513	1029.316	3028.037	1998.721	1517.058	1030.567
7.494248	7.723871	203.9695	19.42104	1030.295	0.514846	0.795513	1028.985	3027.547	1998.562	1517.842	1031.35
7.537154	7.768092	204.4248	19.43035	1032.1	0.517794	0.795513	1030.787	3029.19	1998.403	1518.625	1032.134
7.58006	7.812312	204.4248	19.43967	1031.605	0.520742	0.795513	1030.289	3028.534	1998.245	1519.338	1032.846
7.608664	7.841793	204.4248	19.44589	1031.276	0.522707	0.795513	1029.957	3028.096	1998.139	1520.05	1033.558
7.65157	7.886014	204.4248	19.45522	1030.781	0.525654	0.795513	1029.46	3027.44	1997.98	1520.762	1034.271
7.680174	7.915494	204.4248	19.46145	1030.451	0.527619	0.795513	1029.128	3027.108	1997.98	1521.545	1035.054

TRIAXIAL TEST - SHEAR TEST DATA SHEET
CALCULATION SHEET

PROJECT No.	BX02777	TEST TYPE	CUP
SAMPLE No.	3	SAMPLE TYPE	Compacted to 100% SPDD
PROJECT ENGINEER	JMB	DATE ORDERED	

SOIL DESCRIPTION: Clay, silty, sandy, roots, brown.

Vertical Displc. (mm)	Axial Strain (%)	Axial Load (kg)	Corrected Area (cm2)	σ 1-σ 3 (kPa)	Membrane Correction $\sigma_m=4E_m t\varepsilon/d$ (kPa)	Correction for Filter Paper Strips Assuming 50% covered	Corrected for Membrane and Filter Paper σ 1-σ 3 (kPa)	σ_1 corrected (kPa)	σ 3 (kPa)	Pore pressure (kPa)	Δ Pore pressure response (kPa)
7.72308	7.959715	204.4248	19.4708	1029.956	0.530567	0.795513	1028.63	3026.769	1998.139	1522.187	1035.695
7.765986	8.003935	204.4248	19.48016	1029.461	0.533515	0.795513	1028.132	3026.377	1998.245	1522.828	1036.336
7.79459	8.033416	204.4248	19.48641	1029.131	0.53548	0.795513	1027.8	3026.362	1998.562	1523.611	1037.12
7.837496	8.077636	204.8801	19.49578	1030.927	0.538427	0.795513	1029.593	3028.314	1998.721	1524.394	1037.903
7.8661	8.107117	204.8801	19.50204	1030.597	0.540392	0.795513	1029.261	3028.087	1998.827	1525.035	1038.544
7.909006	8.151337	204.8801	19.51142	1030.101	0.54334	0.795513	1028.762	3027.588	1998.827	1525.676	1039.185
7.951912	8.195558	204.8801	19.52082	1029.605	0.546287	0.795513	1028.263	3027.09	1998.827	1526.389	1039.897
7.980516	8.225038	204.8801	19.52709	1029.274	0.548252	0.795513	1027.93	3026.757	1998.827	1527.03	1040.538
8.023422	8.269259	204.8801	19.53651	1028.778	0.5512	0.795513	1027.432	3026.152	1998.721	1527.599	1041.108
8.052026	8.29874	204.8801	19.54279	1028.448	0.553165	0.795513	1027.099	3025.661	1998.562	1528.169	1041.678
8.094932	8.34296	204.8801	19.55222	1027.952	0.556113	0.795513	1026.6	3025.003	1998.403	1528.739	1042.248
8.123536	8.372441	205.3353	19.55851	1029.905	0.558078	0.795513	1028.551	3026.954	1998.403	1529.38	1042.889
8.166442	8.416661	205.3353	19.56795	1029.408	0.561025	0.795513	1028.051	3026.296	1998.245	1529.879	1043.387
8.209348	8.460882	205.3353	19.5774	1028.911	0.563973	0.795513	1027.551	3025.531	1997.98	1530.448	1043.957
8.237952	8.490362	205.3353	19.58371	1028.579	0.565938	0.795513	1027.218	3025.198	1997.98	1531.018	1044.527
8.280858	8.534583	205.3353	19.59318	1028.082	0.568886	0.795513	1026.718	3024.539	1997.821	1531.588	1045.097
8.309462	8.564063	205.3353	19.5995	1027.751	0.570851	0.795513	1026.384	3024.365	1997.98	1532.229	1045.738
8.352368	8.608284	205.3353	19.60898	1027.254	0.573798	0.795513	1025.884	3024.023	1998.139	1532.728	1046.236
8.380972	8.637764	205.6389	19.61531	1028.44	0.575763	0.795513	1027.069	3025.472	1998.403	1533.297	1046.806
8.423878	8.681985	205.3353	19.62481	1026.425	0.578711	0.795513	1025.051	3023.613	1998.562	1533.867	1047.376
8.466784	8.726206	205.6389	19.63431	1027.445	0.581659	0.795513	1026.068	3024.788	1998.721	1534.366	1047.874
8.495388	8.755686	205.6389	19.64066	1027.113	0.583624	0.795513	1025.734	3024.455	1998.721	1534.793	1048.302
8.538294	8.799907	205.6389	19.65018	1026.615	0.586571	0.795513	1025.233	3023.954	1998.721	1535.292	1048.8
8.566898	8.829387	205.6389	19.65653	1026.283	0.588536	0.795513	1024.899	3023.62	1998.721	1535.79	1049.299
8.609804	8.873608	206.0942	19.66607	1028.057	0.591484	0.795513	1026.67	3025.232	1998.562	1536.289	1049.797
8.638408	8.903088	206.0942	19.67244	1027.724	0.593449	0.795513	1026.335	3024.738	1998.403	1536.645	1050.153
8.681314	8.947309	206.5494	19.68199	1029.494	0.596397	0.795513	1028.103	3026.347	1998.245	1537.072	1050.581
8.72422	8.991529	206.0942	19.69155	1026.726	0.599344	0.795513	1025.331	3023.47	1998.139	1537.571	1051.079
8.752824	9.02101	206.5494	19.69794	1028.661	0.601309	0.795513	1027.264	3025.244	1997.98	1538.069	1051.578
8.79573	9.065231	206.5494	19.70751	1028.161	0.604257	0.795513	1026.761	3024.583	1997.821	1538.497	1052.005
8.824334	9.094711	206.5494	19.71391	1027.828	0.606222	0.795513	1026.426	3024.142	1997.716	1538.853	1052.361
8.86724	9.138932	206.0942	19.7235	1025.063	0.609169	0.795513	1023.659	3021.374	1997.716	1539.351	1052.86
8.910146	9.183152	206.0942	19.7331	1024.564	0.612117	0.795513	1023.157	3020.978	1997.821	1539.779	1053.287
8.93875	9.212633	206.5494	19.73951	1026.495	0.614082	0.795513	1025.085	3023.065	1997.98	1540.277	1053.786
8.981656	9.256853	206.5494	19.74913	1025.995	0.61703	0.795513	1024.582	3022.827	1998.245	1540.633	1054.142
9.01026	9.286334	206.5494	19.75555	1025.661	0.618995	0.795513	1024.247	3022.65	1998.403	1541.061	1054.569
9.053166	9.330554	206.5494	19.76518	1025.161	0.621942	0.795513	1023.744	3022.306	1998.562	1541.559	1055.068
9.08177	9.360035	206.5494	19.77161	1024.828	0.623907	0.795513	1023.409	3021.971	1998.562	1541.915	1055.424
9.124676	9.404255	206.5494	19.78126	1024.328	0.626855	0.795513	1022.906	3021.468	1998.562	1542.2	1055.709
9.15328	9.433736	206.5494	19.7877	1023.995	0.62882	0.795513	1022.57	3020.974	1998.403	1542.628	1056.136
9.196186	9.477956	206.853	19.79737	1024.999	0.631768	0.795513	1023.571	3021.975	1998.403	1542.984	1056.492
9.239092	9.522177	206.853	19.80704	1024.498	0.634715	0.795513	1023.068	3021.312	1998.245	1543.34	1056.848
9.267696	9.551658	206.853	19.8135	1024.164	0.63668	0.795513	1022.732	3020.871	1998.139	1543.625	1057.133
9.310602	9.595878	207.3083	19.82319	1025.917	0.639628	0.795513	1024.481	3022.461	1997.98	1543.981	1057.489
9.339206	9.625359	207.3083	19.82966	1025.582	0.641593	0.795513	1024.145	3021.966	1997.821	1544.408	1057.917
9.382112	9.669579	207.3083	19.83937	1025.08	0.644541	0.795513	1023.64	3021.197	1997.557	1544.693	1058.202

TRIAXIAL TEST - SHEAR TEST DATA SHEET
CALCULATION SHEET

PROJECT No.	BX02777	TEST TYPE	CUP
SAMPLE No.	3	SAMPLE TYPE	Compacted to 100% SPDD
PROJECT ENGINEER	JMB	DATE ORDERED	

SOIL DESCRIPTION: Clay, silty, sandy, roots, brown.

Vertical Displc. (mm)	Axial Strain (%)	Axial Load (kg)	Corrected Area (cm2)	σ 1-σ 3 (kPa)	Membrane Correction $\sigma_m=4E_m t\varepsilon/d$ (kPa)	Correction for Filter Paper Strips Assuming 50% covered	Corrected for Membrane and Filter Paper σ 1-σ 3 (kPa)	σ_1 corrected (kPa)	σ 3 (kPa)	Pore pressure (kPa)	Δ Pore pressure response (kPa)
9.410716	9.69906	207.3083	19.84584	1024.746	0.646506	0.795513	1023.304	3020.86	1997.557	1544.978	1058.487
9.453622	9.74328	207.3083	19.85557	1024.244	0.649453	0.795513	1022.799	3020.356	1997.557	1545.334	1058.843
9.482226	9.772761	207.3083	19.86205	1023.909	0.651418	0.795513	1022.462	3020.019	1997.557	1545.761	1059.27
9.525132	9.816981	207.3083	19.87179	1023.407	0.654366	0.795513	1021.958	3019.673	1997.716	1546.118	1059.626
9.568038	9.861202	207.3083	19.88154	1022.906	0.657313	0.795513	1021.453	3019.274	1997.821	1546.402	1059.911
9.596642	9.890682	207.3083	19.88805	1022.571	0.659279	0.795513	1021.116	3019.255	1998.139	1546.83	1060.338
9.639548	9.934903	207.3083	19.89781	1022.069	0.662226	0.795513	1020.611	3019.015	1998.403	1547.043	1060.552
9.668152	9.964383	207.7635	19.90433	1023.979	0.664191	0.795513	1022.519	3020.922	1998.403	1547.4	1060.908
9.711058	10.0086	207.7635	19.91411	1023.476	0.667139	0.795513	1022.013	3020.416	1998.403	1547.613	1061.122
9.739662	10.03808	207.7635	19.92063	1023.14	0.669104	0.795513	1021.676	3020.079	1998.403	1547.898	1061.407
9.782568	10.08231	207.3083	19.93043	1020.396	0.672051	0.795513	1018.929	3017.174	1998.245	1548.183	1061.692
9.811172	10.11179	207.7635	19.93697	1022.302	0.674017	0.795513	1020.833	3018.971	1998.139	1548.468	1061.977
9.854078	10.15601	207.7635	19.94678	1021.799	0.676964	0.795513	1020.327	3018.307	1997.98	1548.682	1062.19
9.896984	10.20023	207.7635	19.9566	1021.296	0.679912	0.795513	1019.821	3017.642	1997.821	1548.967	1062.475
9.925588	10.22971	208.0671	19.96315	1022.453	0.681877	0.795513	1020.975	3018.797	1997.821	1549.18	1062.689
9.968494	10.27393	207.7635	19.97299	1020.458	0.684824	0.795513	1018.978	3016.693	1997.716	1549.465	1062.974
9.997098	10.30341	208.0671	19.97956	1021.613	0.686789	0.795513	1020.131	3017.688	1997.557	1549.75	1063.259
10.04	10.34763	208.5224	19.98941	1023.344	0.689737	0.795513	1021.859	3019.257	1997.398	1549.892	1063.401
10.08291	10.39185	208.0671	19.99928	1020.606	0.692685	0.795513	1019.118	3016.675	1997.557	1550.32	1063.828
10.11151	10.42133	208.0671	20.00586	1020.27	0.69465	0.795513	1018.78	3016.337	1997.557	1550.533	1064.042
10.15442	10.46555	208.5224	20.01574	1021.998	0.697597	0.795513	1020.505	3018.22	1997.716	1550.89	1064.398
10.18302	10.49503	208.5224	20.02233	1021.661	0.699562	0.795513	1020.166	3018.146	1997.98	1551.103	1064.612
10.22593	10.53925	208.5224	20.03223	1021.157	0.70251	0.795513	1019.659	3017.797	1998.139	1551.388	1064.897
10.25453	10.56873	208.5224	20.03883	1020.82	0.704475	0.795513	1019.32	3017.459	1998.139	1551.673	1065.182
10.29744	10.61295	208.5224	20.04875	1020.315	0.707423	0.795513	1018.812	3016.951	1998.139	1551.815	1065.324
10.32604	10.64243	208.9777	20.05536	1022.206	0.709388	0.795513	1020.701	3018.84	1998.139	1551.958	1065.466
10.36895	10.68665	208.9777	20.06529	1021.7	0.712335	0.795513	1020.192	3018.331	1998.139	1552.1	1065.609
10.41186	10.73087	208.9777	20.07523	1021.194	0.715283	0.795513	1019.683	3017.663	1997.98	1552.314	1065.823
10.44046	10.76035	208.9777	20.08186	1020.857	0.717248	0.795513	1019.344	3017.324	1997.98	1552.599	1066.107
10.48337	10.80458	209.4329	20.09182	1022.574	0.720195	0.795513	1021.058	3018.88	1997.821	1552.741	1066.25
10.51197	10.83406	209.4329	20.09846	1022.236	0.722161	0.795513	1020.718	3018.434	1997.716	1552.884	1066.392
10.55488	10.87828	209.4329	20.10843	1021.729	0.725108	0.795513	1020.208	3017.765	1997.557	1553.097	1066.606
10.58348	10.90776	209.4329	20.11509	1021.391	0.727073	0.795513	1019.869	3017.267	1997.398	1553.311	1066.82
10.62639	10.95198	209.7365	20.12508	1022.364	0.730021	0.795513	1020.838	3018.236	1997.398	1553.525	1067.033
10.65499	10.98146	209.7365	20.13174	1022.025	0.731986	0.795513	1020.498	3018.055	1997.557	1553.738	1067.247
10.6979	11.02568	209.7365	20.14175	1021.518	0.734933	0.795513	1019.987	3017.703	1997.716	1553.952	1067.461
10.7408	11.0699	210.1918	20.15176	1023.226	0.737881	0.795513	1021.693	3019.514	1997.821	1554.237	1067.746
10.76941	11.09938	209.7365	20.15844	1020.671	0.739846	0.795513	1019.136	3017.116	1997.98	1554.522	1068.03
10.81231	11.1436	210.1918	20.16848	1022.378	0.742794	0.795513	1020.84	3018.979	1998.139	1554.664	1068.173
10.84092	11.17308	210.1918	20.17517	1022.039	0.744759	0.795513	1020.499	3018.638	1998.139	1554.807	1068.315
10.88382	11.2173	210.1918	20.18522	1021.53	0.747706	0.795513	1019.987	3018.126	1998.139	1554.949	1068.458
10.92673	11.26152	210.1918	20.19528	1021.021	0.750654	0.795513	1019.475	3017.614	1998.139	1555.092	1068.6
10.95533	11.291	210.1918	20.20199	1020.682	0.752619	0.795513	1019.134	3017.114	1997.98	1555.163	1068.672
10.99824	11.33522	210.647	20.21207	1022.383	0.755567	0.795513	1020.832	3018.653	1997.821	1555.305	1068.814
11.02684	11.3647	210.647	20.21879	1022.043	0.757532	0.795513	1020.49	3018.206	1997.716	1555.519	1069.028
11.06975	11.40892	210.9506	20.22888	1023.005	0.760479	0.795513	1021.449	3019.006	1997.557	1555.59	1069.099

TRIAXIAL TEST - SHEAR TEST DATA SHEET
CALCULATION SHEET

PROJECT No.	BX02777	TEST TYPE	CUP
SAMPLE No.	3	SAMPLE TYPE	Compacted to 100% SPDD
PROJECT ENGINEER	JMB	DATE ORDERED	

SOIL DESCRIPTION: Clay, silty, sandy, roots, brown.

Vertical Displc. (mm)	Axial Strain (%)	Axial Load (kg)	Corrected Area (cm2)	σ 1-σ 3 (kPa)	Membrane Correction $\sigma_m=4E_m t\varepsilon/d$ (kPa)	Correction for Filter Paper Strips Assuming 50% covered	Corrected for Membrane and Filter Paper σ 1-σ 3 (kPa)	σ_1 corrected (kPa)	σ 3 (kPa)	Pore pressure (kPa)	Δ Pore pressure response (kPa)
11.11265	11.45314	210.9506	20.23898	1022.495	0.763427	0.795513	1020.936	3018.334	1997.398	1555.733	1069.241
11.14126	11.48263	210.9506	20.24572	1022.154	0.765392	0.795513	1020.593	3017.886	1997.292	1555.875	1069.384
11.18416	11.52685	210.9506	20.25584	1021.644	0.76834	0.795513	1020.08	3017.372	1997.292	1556.089	1069.597
11.21277	11.55633	210.9506	20.26259	1021.303	0.770305	0.795513	1019.737	3017.136	1997.398	1556.231	1069.74
11.25567	11.60055	211.4059	20.27273	1022.996	0.773252	0.795513	1021.427	3018.984	1997.557	1556.303	1069.811
11.28428	11.63003	211.4059	20.27949	1022.654	0.775217	0.795513	1021.084	3018.905	1997.821	1556.516	1070.025
11.32718	11.67425	211.4059	20.28965	1022.143	0.778165	0.795513	1020.569	3018.39	1997.821	1556.73	1070.238
11.37009	11.71847	211.4059	20.29981	1021.631	0.781112	0.795513	1020.054	3018.193	1998.139	1556.944	1070.452
11.39869	11.74795	211.8611	20.30659	1023.489	0.783077	0.795513	1021.911	3020.05	1998.139	1556.944	1070.452
11.4416	11.79217	211.8611	20.31677	1022.976	0.786025	0.795513	1021.395	3019.534	1998.139	1557.015	1070.523
11.4702	11.82165	211.8611	20.32356	1022.635	0.78799	0.795513	1021.051	3019.19	1998.139	1557.086	1070.595
11.51311	11.86587	211.8611	20.33376	1022.122	0.790938	0.795513	1020.535	3018.674	1998.139	1557.228	1070.737
11.55602	11.91009	211.8611	20.34397	1021.609	0.793885	0.795513	1020.02	3017.841	1997.821	1557.3	1070.808
11.58462	11.93957	211.8611	20.35078	1021.267	0.79585	0.795513	1019.676	3017.497	1997.821	1557.442	1070.951
11.62753	11.98379	212.3164	20.361	1022.948	0.798798	0.795513	1021.353	3019.069	1997.716	1557.585	1071.093
11.65613	12.01327	212.3164	20.36782	1022.605	0.800763	0.795513	1021.009	3018.566	1997.557	1557.656	1071.164
11.69904	12.05749	212.3164	20.37807	1022.091	0.803711	0.795513	1020.492	3017.89	1997.398	1557.727	1071.236
11.72764	12.08697	212.3164	20.3849	1021.749	0.805676	0.795513	1020.147	3017.44	1997.292	1557.798	1071.307
11.77055	12.13119	212.3164	20.39516	1021.235	0.808623	0.795513	1019.63	3017.029	1997.398	1558.012	1071.52
11.79915	12.16068	212.3164	20.402	1020.892	0.810588	0.795513	1019.286	3016.843	1997.557	1558.154	1071.663
11.84206	12.2049	212.62	20.41228	1021.837	0.813536	0.795513	1020.228	3017.943	1997.716	1558.297	1071.805
11.88496	12.24912	212.62	20.42257	1021.322	0.816484	0.795513	1019.71	3017.69	1997.98	1558.439	1071.948
11.91357	12.2786	212.62	20.42943	1020.979	0.818449	0.795513	1019.365	3017.61	1998.245	1558.51	1072.019
11.95647	12.32282	213.0753	20.43973	1022.649	0.821396	0.795513	1021.033	3019.277	1998.245	1558.582	1072.09
11.98508	12.3523	213.0753	20.44661	1022.306	0.823361	0.795513	1020.687	3018.931	1998.245	1558.582	1072.09
12.02798	12.39652	213.5305	20.45693	1023.973	0.826309	0.795513	1022.351	3020.596	1998.245	1558.582	1072.09
12.07089	12.44074	213.5305	20.46726	1023.456	0.829256	0.795513	1021.831	3019.97	1998.139	1558.582	1072.09
12.09949	12.47022	213.5305	20.47415	1023.112	0.831222	0.795513	1021.485	3019.465	1997.98	1558.653	1072.161
12.1424	12.51444	213.8341	20.4845	1024.048	0.834169	0.795513	1022.419	3020.24	1997.821	1558.795	1072.304
12.171	12.54392	213.8341	20.49141	1023.703	0.836134	0.795513	1022.072	3019.787	1997.716	1558.795	1072.304
12.21391	12.58814	213.8341	20.50177	1023.186	0.839082	0.795513	1021.551	3019.267	1997.716	1558.867	1072.375
12.25681	12.63236	213.8341	20.51215	1022.668	0.842029	0.795513	1021.03	3018.587	1997.557	1559.009	1072.518
12.28542	12.66184	214.2894	20.51908	1024.5	0.843994	0.795513	1022.86	3020.153	1997.292	1559.08	1072.589
12.32832	12.70606	214.2894	20.52947	1023.981	0.846942	0.795513	1022.338	3019.631	1997.292	1559.151	1072.66
12.35693	12.73554	214.2894	20.53641	1023.635	0.848907	0.795513	1021.991	3019.283	1997.292	1559.223	1072.731
12.39983	12.77976	214.2894	20.54682	1023.116	0.851855	0.795513	1021.469	3018.867	1997.398	1559.223	1072.731
12.42844	12.80924	214.2894	20.55376	1022.771	0.85382	0.795513	1021.121	3018.678	1997.557	1559.365	1072.874
12.47134	12.85347	214.7446	20.56419	1024.424	0.856767	0.795513	1022.772	3020.487	1997.716	1559.436	1072.945
12.49995	12.88295	214.7446	20.57115	1024.077	0.858732	0.795513	1022.423	3020.244	1997.821	1559.508	1073.016
12.54285	12.92717	214.7446	20.5816	1023.557	0.86168	0.795513	1021.9	3019.722	1997.821	1559.508	1073.016
12.58576	12.97139	214.7446	20.59206	1023.038	0.864628	0.795513	1021.377	3019.199	1997.821	1559.508	1073.016
12.61436	13.00087	215.0482	20.59904	1024.137	0.866593	0.795513	1022.474	3020.455	1997.98	1559.508	1073.016
12.65727	13.04509	215.0482	20.60951	1023.616	0.86954	0.795513	1021.951	3019.772	1997.821	1559.508	1073.016
12.68587	13.07457	215.0482	20.6165	1023.269	0.871505	0.795513	1021.602	3019.318	1997.716	1559.508	1073.016
12.72878	13.11879	215.0482	20.62699	1022.748	0.874453	0.795513	1021.078	3018.635	1997.557	1559.579	1073.087
12.77169	13.16301	215.5035	20.6375	1024.392	0.877401	0.795513	1022.719	3020.117	1997.398	1559.579	1073.087

TRIAXIAL TEST - SHEAR TEST DATA SHEET
CALCULATION SHEET

PROJECT No.	BX02777	TEST TYPE	CUP
SAMPLE No.	3	SAMPLE TYPE	Compacted to 100% SPDD
PROJECT ENGINEER	JMB	DATE ORDERED	

SOIL DESCRIPTION: Clay, silty, sandy, roots, brown.

Vertical Displc. (mm)	Axial Strain (%)	Axial Load (kg)	Corrected Area (cm2)	σ 1-σ 3 (kPa)	Membrane Correction $\sigma_m=4E_m t\varepsilon/d$ (kPa)	Correction for Filter Paper Strips Assuming 50% covered	Corrected for Membrane and Filter Paper σ 1-σ 3 (kPa)	σ_1 corrected (kPa)	σ 3 (kPa)	Pore pressure (kPa)	Δ Pore pressure response (kPa)
12.80029	13.19249	215.5035	20.64451	1024.044	0.879366	0.795513	1022.369	3019.768	1997.398	1559.579	1073.087
12.8432	13.23671	215.5035	20.65503	1023.523	0.882313	0.795513	1021.845	3019.137	1997.292	1559.579	1073.087
12.8718	13.26619	215.9587	20.66205	1025.336	0.884278	0.795513	1023.657	3020.79	1997.134	1559.721	1073.23
12.91471	13.31041	215.9587	20.67259	1024.814	0.887226	0.795513	1023.131	3020.106	1996.975	1559.721	1073.23
12.95761	13.35463	215.9587	20.68314	1024.291	0.890173	0.795513	1022.605	3019.739	1997.134	1559.792	1073.301
12.98622	13.38411	215.9587	20.69018	1023.942	0.892138	0.795513	1022.255	3019.547	1997.292	1559.864	1073.372
13.02912	13.42833	215.9587	20.70075	1023.42	0.895086	0.795513	1021.729	3019.127	1997.398	1560.006	1073.515
13.05773	13.45781	216.414	20.7078	1025.228	0.897051	0.795513	1023.535	3021.092	1997.557	1560.077	1073.586
13.10063	13.50203	216.414	20.71839	1024.704	0.899999	0.795513	1023.009	3020.724	1997.716	1560.006	1073.515
13.12924	13.53151	216.414	20.72545	1024.355	0.901964	0.795513	1022.657	3020.373	1997.716	1559.935	1073.443
13.17214	13.57574	216.414	20.73605	1023.831	0.904911	0.795513	1022.131	3019.846	1997.716	1559.935	1073.443
13.20075	13.60522	216.414	20.74313	1023.482	0.906876	0.795513	1021.779	3019.336	1997.557	1559.935	1073.443
13.24365	13.64944	216.414	20.75375	1022.958	0.909824	0.795513	1021.253	3018.81	1997.557	1559.864	1073.372
13.28656	13.69366	216.7176	20.76439	1023.868	0.912772	0.795513	1022.16	3019.558	1997.398	1559.935	1073.443
13.31516	13.72314	216.7176	20.77148	1023.518	0.914737	0.795513	1021.808	3019.101	1997.292	1559.935	1073.443
13.35807	13.76736	217.1729	20.78213	1025.143	0.917684	0.795513	1023.43	3020.563	1997.134	1559.935	1073.443
13.38667	13.79684	217.1729	20.78924	1024.792	0.919649	0.795513	1023.077	3020.052	1996.975	1560.006	1073.515
13.42958	13.84106	217.1729	20.79991	1024.267	0.922597	0.795513	1022.549	3019.524	1996.975	1560.006	1073.515
13.45818	13.87054	217.1729	20.80703	1023.916	0.924562	0.795513	1022.196	3019.171	1996.975	1560.077	1073.586
13.50109	13.91476	217.1729	20.81772	1023.391	0.92751	0.795513	1021.668	3018.96	1997.292	1560.149	1073.657
13.52969	13.94424	217.6281	20.82485	1025.185	0.929475	0.795513	1023.46	3020.858	1997.398	1560.22	1073.728
13.5726	13.98846	217.6281	20.83556	1024.658	0.932422	0.795513	1022.93	3020.646	1997.716	1560.291	1073.8
13.6012	14.01794	217.9317	20.8427	1025.735	0.934387	0.795513	1024.006	3021.827	1997.821	1560.291	1073.8
13.64411	14.06216	217.9317	20.85342	1025.208	0.937335	0.795513	1023.475	3021.296	1997.821	1560.22	1073.728
13.68701	14.10638	217.9317	20.86416	1024.68	0.940283	0.795513	1022.945	3020.766	1997.821	1560.149	1073.657
13.71562	14.13586	217.9317	20.87132	1024.329	0.942248	0.795513	1022.591	3020.307	1997.716	1560.077	1073.586
13.75852	14.18008	218.387	20.88208	1025.94	0.945195	0.795513	1024.199	3021.756	1997.557	1560.077	1073.586
13.78713	14.20956	218.387	20.88925	1025.588	0.94716	0.795513	1023.845	3021.402	1997.557	1560.149	1073.657
13.83003	14.25379	218.387	20.90003	1025.059	0.950108	0.795513	1023.313	3020.712	1997.398	1560.077	1073.586
13.85864	14.28327	218.8422	20.90722	1026.843	0.952073	0.795513	1025.095	3022.493	1997.398	1560.149	1073.657
13.90154	14.32749	218.8422	20.91801	1026.313	0.95502	0.795513	1024.563	3021.855	1997.292	1560.077	1073.586
13.94445	14.37171	218.8422	20.92881	1025.783	0.957968	0.795513	1024.03	3021.164	1997.134	1560.077	1073.586
13.97305	14.40119	218.8422	20.93602	1025.43	0.959933	0.795513	1023.675	3020.65	1996.975	1560.077	1073.586
14.01596	14.44541	218.8422	20.94684	1024.9	0.962881	0.795513	1023.142	3019.958	1996.816	1560.077	1073.586
14.04456	14.47489	219.2975	20.95406	1026.679	0.964846	0.795513	1024.918	3021.735	1996.816	1560.077	1073.586
14.08747	14.51911	219.2975	20.9649	1026.148	0.967793	0.795513	1024.385	3021.095	1996.711	1560.077	1073.586
14.11607	14.54859	219.2975	20.97213	1025.794	0.969758	0.795513	1024.029	3020.581	1996.552	1560.006	1073.515
14.15898	14.59281	219.2975	20.98299	1025.263	0.972706	0.795513	1023.495	3019.888	1996.393	1560.006	1073.515
14.18758	14.62229	219.2975	20.99024	1024.909	0.974671	0.795513	1023.139	3019.532	1996.393	1560.006	1073.515
14.23049	14.66651	219.2975	21.00111	1024.378	0.977619	0.795513	1022.605	3019.157	1996.552	1560.149	1073.657
14.25909	14.69599	219.2975	21.00837	1024.025	0.979584	0.795513	1022.249	3019.066	1996.816	1560.22	1073.728
14.302	14.74021	219.6011	21.01927	1024.91	0.982531	0.795513	1023.132	3020.266	1997.134	1560.22	1073.728
14.3306	14.76969	219.6011	21.02654	1024.556	0.984496	0.795513	1022.776	3020.068	1997.292	1560.291	1073.8
14.37351	14.81391	219.6011	21.03745	1024.024	0.987444	0.795513	1022.241	3019.64	1997.398	1560.22	1073.728
14.41642	14.85813	220.0564	21.04838	1025.615	0.990392	0.795513	1023.829	3021.227	1997.398	1560.149	1073.657
14.44502	14.88761	220.0564	21.05567	1025.26	0.992357	0.795513	1023.472	3020.87	1997.398	1560.077	1073.586

TRIAXIAL TEST - SHEAR TEST DATA SHEET
CALCULATION SHEET

PROJECT No.	BX02777	TEST TYPE	CUP
SAMPLE No.	3	SAMPLE TYPE	Compacted to 100% SPDD
PROJECT ENGINEER	JMB	DATE ORDERED	

SOIL DESCRIPTION: Clay, silty, sandy, roots, brown.

Vertical Displc. (mm)	Axial Strain (%)	Axial Load (kg)	Corrected Area (cm2)	σ 1-σ 3 (kPa)	Membrane Correction $\sigma_m=4E_m t\varepsilon/d$ (kPa)	Correction for Filter Paper Strips Assuming 50% covered	Corrected for Membrane and Filter Paper σ 1-σ 3 (kPa)	σ_1 corrected (kPa)	σ 3 (kPa)	Pore pressure (kPa)	Δ Pore pressure response (kPa)
14.48793	14.93184	220.0564	21.06661	1024.727	0.995304	0.795513	1022.936	3020.229	1997.292	1560.006	1073.515
14.51653	14.96132	220.0564	21.07392	1024.372	0.997269	0.795513	1022.579	3019.713	1997.134	1560.077	1073.586
14.55944	15.00554	220.0564	21.08488	1023.839	1.000217	0.795513	1022.043	3019.177	1997.134	1560.077	1073.586
14.58804	15.03502	220.0564	21.0922	1023.484	1.002182	0.795513	1021.686	3018.661	1996.975	1560.006	1073.515
14.63095	15.07924	220.0564	21.10318	1022.951	1.00513	0.795513	1021.151	3018.126	1996.975	1559.935	1073.443
14.65955	15.10872	220.5116	21.11051	1024.712	1.007095	0.795513	1022.909	3019.726	1996.816	1559.935	1073.443
14.70246	15.15294	220.5116	21.12151	1024.178	1.010042	0.795513	1022.373	3019.083	1996.711	1560.006	1073.515
14.73106	15.18242	220.5116	21.12885	1023.822	1.012007	0.795513	1022.015	3018.567	1996.552	1559.935	1073.443
14.77397	15.22664	220.5116	21.13987	1023.289	1.014955	0.795513	1021.478	3017.871	1996.393	1559.792	1073.301
14.81687	15.27086	220.5116	21.15091	1022.755	1.017902	0.795513	1020.941	3017.334	1996.393	1559.792	1073.301
14.84548	15.30034	220.5116	21.15827	1022.399	1.019868	0.795513	1020.584	3016.871	1996.287	1559.792	1073.301
14.88838	15.34456	220.5116	21.16932	1021.865	1.022815	0.795513	1020.047	3016.334	1996.287	1559.864	1073.372
14.91699	15.37404	220.5116	21.1767	1021.509	1.02478	0.795513	1019.689	3016.241	1996.552	1559.864	1073.372
14.95989	15.41826	220.5116	21.18777	1020.975	1.027728	0.795513	1019.152	3015.863	1996.711	1560.006	1073.515
14.9885	15.44774	220.5116	21.19516	1020.62	1.029693	0.795513	1018.794	3015.769	1996.975	1560.006	1073.515
15.0314	15.49196	220.8152	21.20625	1021.49	1.03264	0.795513	1019.662	3016.796	1997.134	1560.077	1073.586
15.06001	15.52144	220.8152	21.21365	1021.134	1.034606	0.795513	1019.303	3016.596	1997.292	1559.864	1073.372
15.10291	15.56566	220.8152	21.22476	1020.599	1.037553	0.795513	1018.766	3016.058	1997.292	1559.792	1073.301
15.14582	15.60988	220.8152	21.23588	1020.065	1.040501	0.795513	1018.229	3015.362	1997.134	1559.792	1073.301
15.17442	15.63937	220.8152	21.2433	1019.708	1.042466	0.795513	1017.87	3015.004	1997.134	1559.721	1073.23
15.21733	15.68359	220.8152	21.25444	1019.174	1.045413	0.795513	1017.333	3014.149	1996.816	1559.721	1073.23
15.24593	15.71307	220.8152	21.26187	1018.817	1.047378	0.795513	1016.974	3013.685	1996.711	1559.579	1073.087
15.28884	15.75729	220.8152	21.27304	1018.283	1.050326	0.795513	1016.437	3012.989	1996.552	1559.579	1073.087
15.33174	15.80151	220.8152	21.28421	1017.748	1.053274	0.795513	1015.9	3012.451	1996.552	1559.579	1073.087
15.36035	15.83099	220.8152	21.29166	1017.392	1.055239	0.795513	1015.541	3012.093	1996.552	1559.579	1073.087
15.40325	15.87521	220.8152	21.30286	1016.857	1.058186	0.795513	1015.004	3011.714	1996.711	1559.721	1073.23
15.43186	15.90469	220.8152	21.31032	1016.501	1.060151	0.795513	1014.645	3011.462	1996.816	1559.721	1073.23
15.47476	15.94891	220.8152	21.32153	1015.967	1.063099	0.795513	1014.108	3011.242	1997.134	1559.792	1073.301
15.50337	15.97839	220.8152	21.32902	1015.61	1.065064	0.795513	1013.75	3011.042	1997.292	1559.721	1073.23
15.54627	16.02261	220.8152	21.34025	1015.076	1.068012	0.795513	1013.212	3010.769	1997.557	1559.65	1073.159
15.58918	16.06683	220.8152	21.35149	1014.541	1.070959	0.795513	1012.675	3010.073	1997.398	1559.579	1073.087
15.61778	16.09631	220.8152	21.35899	1014.185	1.072924	0.795513	1012.316	3009.609	1997.292	1559.579	1073.087
15.66069	16.14053	220.8152	21.37026	1013.65	1.075872	0.795513	1011.779	3008.913	1997.134	1559.508	1073.016
15.68929	16.17001	220.8152	21.37777	1013.294	1.077837	0.795513	1011.421	3008.396	1996.975	1559.436	1072.945
15.7322	16.21423	220.8152	21.38905	1012.76	1.080784	0.795513	1010.883	3007.7	1996.816	1559.365	1072.874
15.77511	16.25845	220.8152	21.40035	1012.225	1.083732	0.795513	1010.346	3007.056	1996.711	1559.436	1072.945
15.80371	16.28793	220.8152	21.40788	1011.869	1.085697	0.795513	1009.987	3006.381	1996.393	1559.436	1072.945
15.84662	16.33216	220.8152	21.4192	1011.334	1.088645	0.795513	1009.45	3005.843	1996.393	1559.365	1072.874
15.88952	16.37638	220.8152	21.43053	1010.8	1.091592	0.795513	1008.913	3005.464	1996.552	1559.436	1072.945
15.91813	16.40586	220.8152	21.43808	1010.443	1.093557	0.795513	1008.554	3005.265	1996.711	1559.579	1073.087
15.96103	16.45008	220.8152	21.44943	1009.909	1.096505	0.795513	1008.017	3004.992	1996.975	1559.579	1073.087
15.98964	16.47956	220.8152	21.457	1009.552	1.09847	0.795513	1007.658	3004.792	1997.134	1559.508	1073.016
16.03254	16.52378	220.8152	21.46837	1009.018	1.101418	0.795513	1007.121	3004.255	1997.134	1559.436	1072.945
16.06115	16.55326	220.8152	21.47595	1008.662	1.103383	0.795513	1006.763	3003.896	1997.134	1559.436	1072.945
16.10405	16.59748	220.8152	21.48734	1008.127	1.10633	0.795513	1006.225	3003.2	1996.975	1559.294	1072.802
16.14696	16.6417	220.8152	21.49874	1007.593	1.109278	0.795513	1005.688	3002.398	1996.711	1559.151	1072.66

TRIAXIAL TEST - SHEAR TEST DATA SHEET
CALCULATION SHEET

PROJECT No.	BX02777	TEST TYPE	CUP
SAMPLE No.	3	SAMPLE TYPE	Compacted to 100% SPDD
PROJECT ENGINEER	JMB	DATE ORDERED	

SOIL DESCRIPTION: Clay, silty, sandy, roots, brown.

Vertical Displc. (mm)	Axial Strain (%)	Axial Load (kg)	Corrected Area (cm2)	σ 1-σ 3 (kPa)	Membrane Correction $\sigma_m=4E_m t\varepsilon/d$ (kPa)	Correction for Filter Paper Strips Assuming 50% covered	Corrected for Membrane and Filter Paper σ 1-σ 3 (kPa)	σ_1 corrected (kPa)	σ 3 (kPa)	Pore pressure (kPa)	Δ Pore pressure response (kPa)
16.17556	16.67118	220.8152	21.50634	1007.236	1.111243	0.795513	1005.329	3001.881	1996.552	1559.151	1072.66
16.21847	16.7154	220.8152	21.51776	1006.702	1.114191	0.795513	1004.792	3001.185	1996.393	1559.223	1072.731
16.24707	16.74488	220.8152	21.52538	1006.345	1.116156	0.795513	1004.434	3000.562	1996.129	1559.223	1072.731
16.28998	16.7891	220.8152	21.53682	1005.811	1.119103	0.795513	1003.896	2999.866	1995.97	1559.08	1072.589
16.33288	16.83332	220.5116	21.54827	1003.894	1.122051	0.795513	1001.977	2998.106	1996.129	1559.223	1072.731
16.36149	16.8628	220.5116	21.55591	1003.539	1.124016	0.795513	1001.619	2997.906	1996.287	1559.365	1072.874
16.40439	16.90702	220.5116	21.56739	1003.005	1.126963	0.795513	1001.082	2997.475	1996.393	1559.436	1072.945
16.4473	16.95124	220.5116	21.57887	1002.471	1.129911	0.795513	1000.546	2997.256	1996.711	1559.436	1072.945
16.4759	16.98072	220.5116	21.58653	1002.115	1.131876	0.795513	1000.188	2997.004	1996.816	1559.436	1072.945
16.51881	17.02495	220.5116	21.59804	1001.581	1.134824	0.795513	999.6511	2996.467	1996.816	1559.294	1072.802
16.54741	17.05443	220.5116	21.60571	1001.226	1.136789	0.795513	999.2933	2996.004	1996.711	1559.223	1072.731
16.59032	17.09865	220.5116	21.61724	1000.692	1.139736	0.795513	998.7565	2995.308	1996.552	1559.223	1072.731
16.61892	17.12813	220.5116	21.62493	1000.336	1.141701	0.795513	998.3987	2994.792	1996.393	1559.151	1072.66
16.66183	17.17235	220.0564	21.63647	997.7379	1.144649	0.795513	995.7977	2992.085	1996.287	1559.151	1072.66
16.70474	17.21657	220.0564	21.64803	997.2052	1.147597	0.795513	995.2621	2991.391	1996.129	1559.223	1072.731
16.74764	17.26079	220.5116	21.6596	998.7346	1.150544	0.795513	996.7885	2992.758	1995.97	1559.151	1072.66
16.77625	17.29027	220.5116	21.66732	998.3787	1.152509	0.795513	996.4307	2992.559	1996.129	1559.223	1072.731
16.80485	17.31975	220.5116	21.67505	998.0229	1.154474	0.795513	996.0729	2992.36	1996.287	1559.294	1072.802

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AMEC Earth & Environmental Limited (AMEC) was retained by Defence Research & Development Canada (DRDC) Suffield to carry out laboratory testing on soil samples from prairie soil samples from the Mine Effects Site near Building 148 on the Experimental Proving Ground at DRDC Suffield. AMEC's geotechnical laboratory in Edmonton, Alberta received three large, bag soil samples in late October 2003 for DRDC's Piston, Onager East and Onager West sites.

The following laboratory tests were requested by DRDC:

1. · Determination of water content of soil samples;
2. · Preparation of compacted samples in range of natural water contents;
3. · Consolidation tests using ASTM D2435 on two samples; and
4. · Triaxial undrained tests (CUP) using ASTM D4767 on three samples.

A typical range of natural water contents of 13 to 19 percent was provided to AMEC by DRDC Suffield for similar soil at these sites. For testing, compacted samples were prepared at water contents within the natural water content range, with target water contents of approximately 15 percent.

Results are provided according to American Standard Testing Methods (ASTM) standards where applicable. Results for the bulleted items 1-3 are provided in CR 2004-112, DRDC Soil Laboratory Program – Progress Report Piston and Onager Sites.

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soil samples
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