5. Survey of Natural Conditions

(1) Geological Survey

(2) Topographic Survey

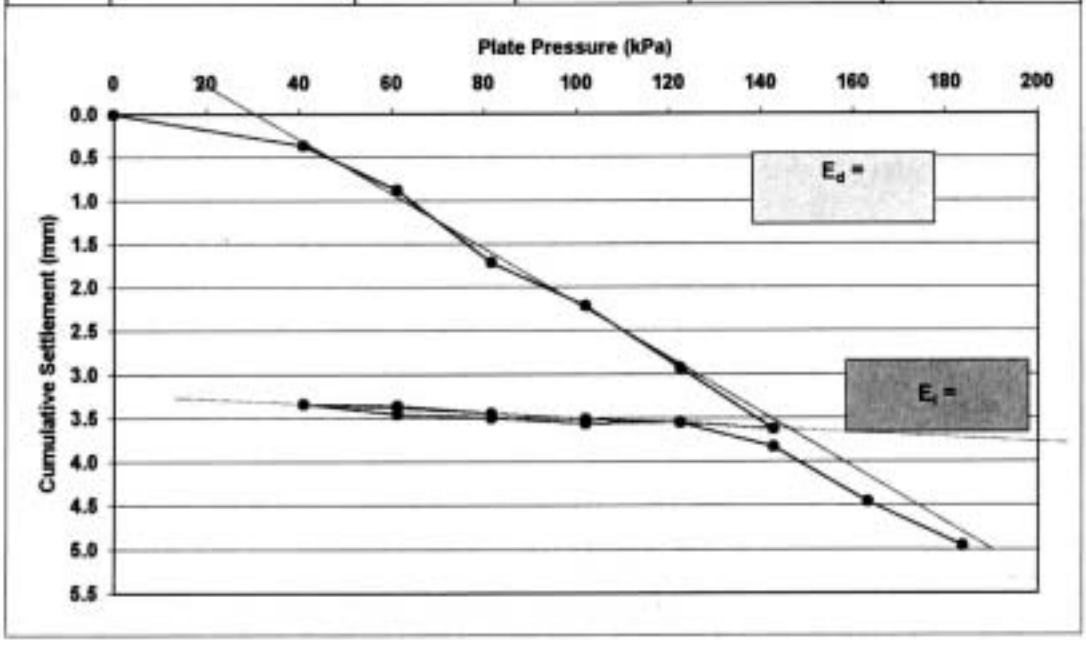
5. Survey of Natural Conditions

(1) Geological Survey

TEST 1

Plate Diameter = 300mm	PLT1	TP1	1.5M

GAUGE (MPa)	READING (mm)	DEFLECTION (mm)			PLATE PRESSURE (MPa)
		TOTAL	SINGLE PLATE	CUMULATIVE	
0	18.65	0.000	0.000	0.000	0
2	17.93	0.720	0.360	0.360	41
3	16.9	1.030	0.515	0.875	61
4	15.23	1.670	0.835	1.710	82
5	14.23	1.000	0.500	2.210	102
6	12.8	1.430	0.715	2.925	122
7	11.4	1.400	0.700	3.625	143
6	11.56	-0.160	-0.080	3.545	122
5	11.54	0.020	0.010	3.555	102
4	11.67	-0.130	-0.065	3.490	82
3	11.75	-0.080	-0.040	3.450	61
2	11.98	-0.230	-0.115	3.335	41
3	11.94	0.040	0.020	3.355	61
4	11.76	0.180	0.090	3.445	82
5	11.63	0.130	0.065	3.510	102
6	11.55	0.080	0.040	3.550	122
7	11	0.550	0.275	3.825	143
8	9.75	1.250	0.625	4.450	163
9	8.75	1.000	0.500	4.950	184



PROJECT: PROJEK:	Proposed Improvements at the Xai-Xai Teachers Training Institute	TRAIL HOLE: TOETSGAT: 1	SHEET No: Vel Nr: 1
SITE: TERREIN:	Xai-Xai Teachers Training Institute	LOGGED BY: BESKRYF: FJB	DATE: DATUM: 28 March 2003
CLIENT: KLIENT:	Yamashita Sekkei Inc / DSM Consulting Engineers	LOCATION: POSISIE:	25° 03' 11,9" S 33° 41' 16,7" E

Legend Legende	Depth Diepte m	SOIL PROFILE - GRONDPROFIEL	Sample Monster
		Moist, light brown, very loose, intact, fine ***SAND***. Reworked æolian sand. Roots are present in the upper 300mm of the soil horizon.	
	0,80	Moist, light red brown, very loose, intact, fine ***SAND***. Reworked æolian sand.	● Lab no 8150
	1,50		

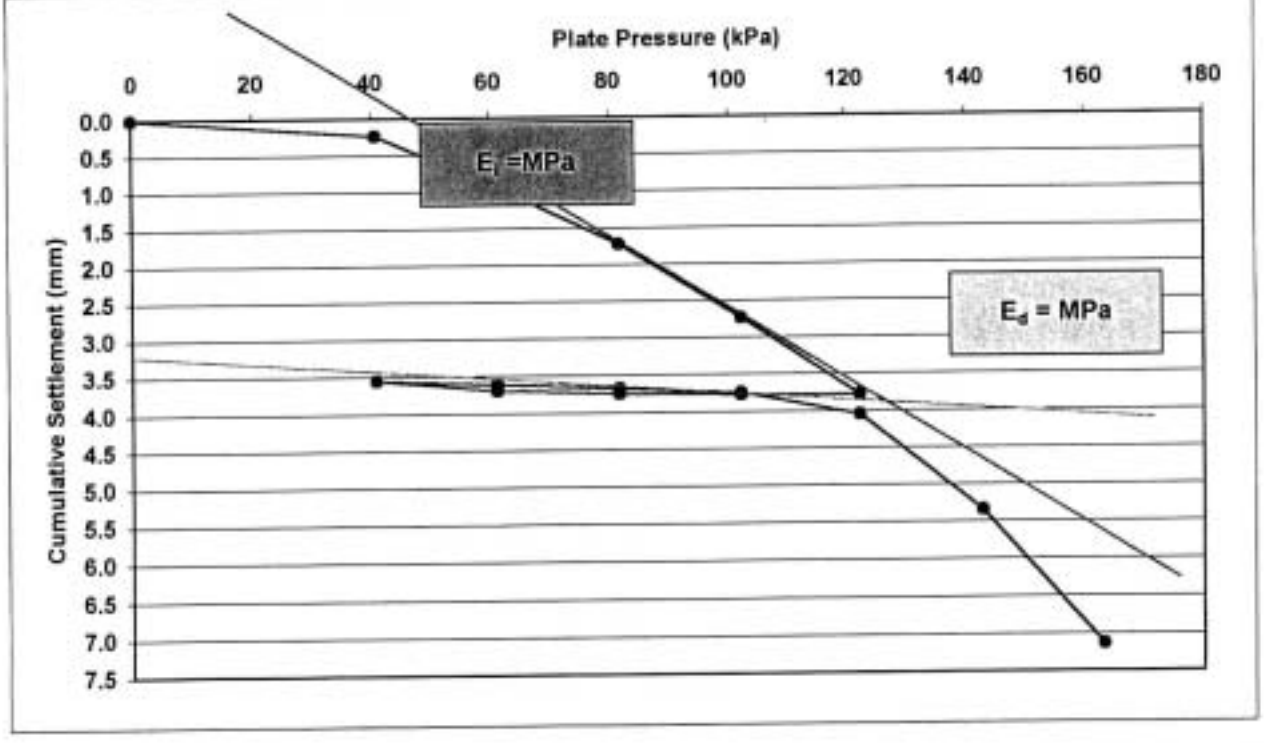
Water encountered / Water teëgekom	Contractor: NVE Industrial Kontrakteur: Electrical	NOTES / NOTAS
Water level / Watervlak	Date Drilled: 4 March 2003 Datum Geboor:	1 Refusal of excavation not encountered. 2 Natural seepage water not encountered. 3 Test pit collapses from the surface. 4 Seepage test not completed due to test pit collapse.
Bottom of hole / Bodem van gat	Machine: JCB 3CX Masjien:	
Approximate material change / Benaderde materiaalverandering	Hole diameter: 700mm Gat deursnee:	
Disturbed sample / Versteurde monster	Water depth: Watervlak:	
Undisturbed sample / Onversteurde monster		
C Consolidation sample / Konsolidasie monster		
I Indicator tests		

SOIL KRAFT	SOIL PROFILE : TEST PIT 1	FIG A1

TEST 2

Plate Diameter =300mm	PLT2	TP2	1.5M

GAUGE (MPa)	READING (mm)	DEFLECTION (mm)			PLATE PRESSURE (MPa)
		TOTAL	SINGLE PLATE	CUMULATIVE	
0	19	0.000	0.000	0.000	0
2	18.54	0.460	0.230	0.230	41
3	17.15	1.390	0.695	0.925	61
4	15.55	1.600	0.800	1.725	82
5	13.55	2.000	1.000	2.725	102
6	11.45	2.100	1.050	3.775	122
5	11.47	-0.020	-0.010	3.765	102
4	11.52	-0.050	-0.025	3.740	82
3	11.61	-0.090	-0.045	3.695	61
2	11.91	-0.300	-0.150	3.545	41
3	11.79	0.120	0.060	3.605	61
4	11.65	0.140	0.070	3.675	82
5	11.52	0.130	0.065	3.740	102
6	10.91	0.610	0.305	4.045	122
7	8.33	2.580	1.290	5.335	143
8	4.75	3.580	1.790	7.125	163



PROJECT: PROJEK:	Proposed Improvements at the Xai-Xai Teachers Training Institute	TRAIL HOLE: TOETSGAT: 2	SHEET No: Vel Nr: 1
SITE: TERREIN:	Xai-Xai Teachers Training Institute	LOGGED BY: BESKRYF: FJB	DATE: DATUM: 28 March 2003
CLIENT: KLIENT:	Yamashita Sekkei Inc / DSM Consulting Engineers	LOCATION: POSISIE:	25° 03' 15,5" S 33° 41' 15,9" E

Legend Legende	Depth Diepte m	SOIL PROFILE - GRONDPROFIEL	Sample Monster
		Moist, light brown, very loose, intact, fine ***SAND***. Reworked æolian sand. Roots are present in the upper 300mm of the soil horizon.	
	0,70		
		Moist, light red brown, very loose, intact, fine ***SAND***. Reworked æolian sand.	Lab no 315-01 01
	1,50		

Water encountered Water teëgekom	
Water level Watervlak	
Bottom of hole Bodem van gat	
Approximate material change Benaderde materiaalverandering	
Disturbed sample Versteurde monster	
Undisturbed sample Onversteurde monster	
C Consolidation sample Konsolidasie monster	
I Indicator tests	

Contractor: Kontrakteur:	NVE Industrial Electrical
Date Drilled: Datum Geboor:	4 March 2003
Machine: Masjien:	JCB 3CX
Hole diameter: Gat deursnee:	700mm
Water depth: Watervlak:	

NOTES / NOTAS

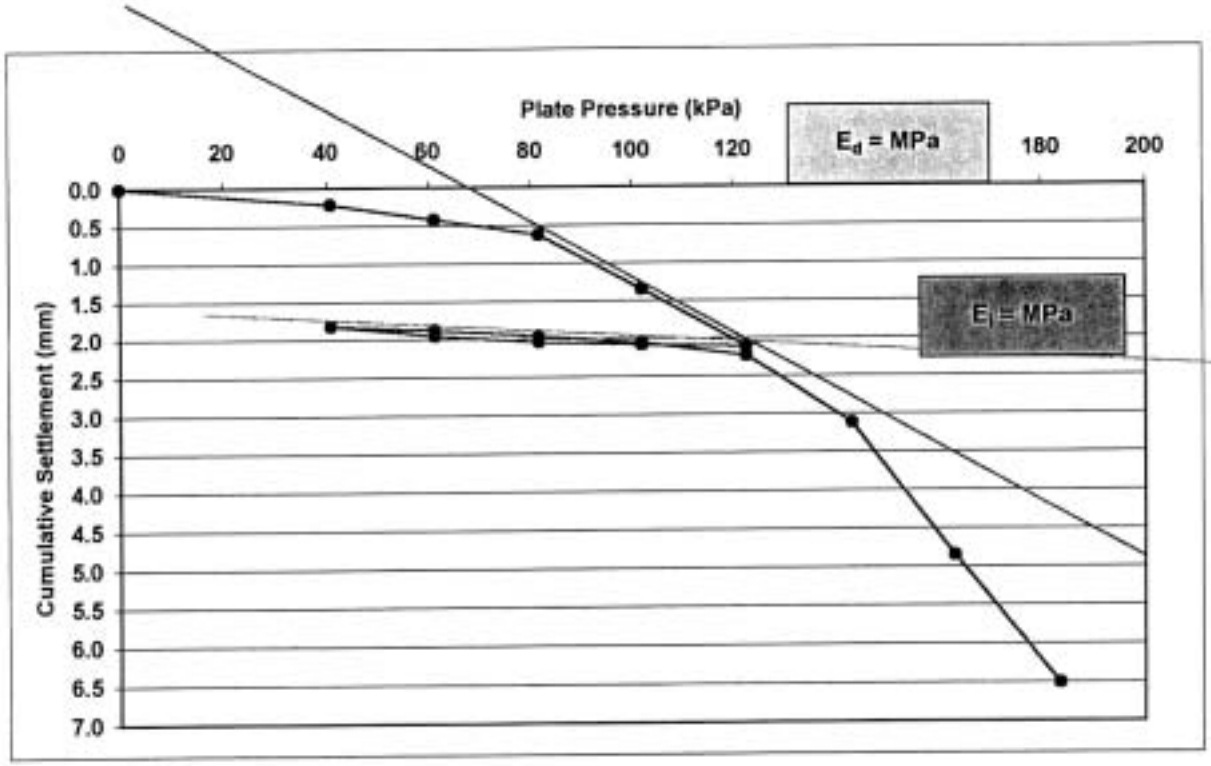
1 Refusal of excavation not encountered.
2 Natural seepage water not encountered.
3 Test pit collapses from the surface.
4 Seepage test not completed due to test pit collapse.

SOIL KRAFT	**SOIL PROFILE : TEST PIT 2**	**FIG A2**

TEST 3

Plate Diameter = 300mm	PLT3	TP3	1.5

GAUGE (MPa)	READING (mm)	DEFLECTION (mm)			PLATE PRESSURE (MPa)
		TOTAL	SINGLE PLATE	CUMULATIVE	
0	19	0.000	0.000	0.000	0
2	18.58	0.420	0.210	0.210	41
3	18.17	0.410	0.205	0.415	61
4	17.75	0.420	0.210	0.625	82
5	16.3	1.450	0.725	1.350	102
6	14.8	1.500	0.750	2.100	122
5	14.85	-0.050	-0.025	2.075	102
4	14.92	-0.070	-0.035	2.040	82
3	15.1	-0.180	-0.090	1.950	61
2	15.37	-0.270	-0.135	1.815	41
3	15.25	0.120	0.060	1.875	61
4	15.09	0.160	0.080	1.955	82
5	14.9	0.190	0.095	2.050	102
6	14.55	0.350	0.175	2.225	122
7	12.78	1.770	0.885	3.110	143
8	9.3	3.480	1.740	4.850	163
9	6	3.300	1.650	6.500	184



PROJECT: PROJEK:	Proposed Improvements at the Xai-Xai Teachers Training Institute	TRAIL HOLE: TOETSGAT: 3	SHEET No: Vel Nr: 1
SITE: TERREIN:	Xai-Xai Teachers Training Institute	LOGGED BY: BESKRYF: FJB	DATE: DATUM: 28 March 2003
CLIENT: KLIENT:	Yamashita Sekkei Inc / DSM Consulting Engineers	LOCATION: POSISIE:	25° 03' 10,7" S 33° 41' 13,0" E

Legend Legende	Depth Diepte m	SOIL PROFILE - GRONDPROFIEL	Sample Monster
		Moist becoming lightly moist with depth, dark brown, very loose, intact, fine ***SAND***. Reworked æolian sand. Roots are present in the upper 300mm of the soil horizon.	● Lab no 8181
	1,00		
		Slightly moist, light brown, very loose, intact, fine ***SAND***. Reworked æolian sand.	
	1,30		
		Slightly moist, pale light brown, loose, intact, fine ***SAND***. Reworked æolian sand.	
	1,60		

▽	Water encountered Water teëgekom
▼	Water level Watervlak
⌴	Bottom of hole Bodem van gat
- - -	Approximate material change Benaderde materiaalverandering
●	Disturbed sample Versteurde monster
■	Undisturbed sample Onversteurde monster
C	Consolidation sample Konsolidasie monster
I	Indicator tests

Contractor: Kontrakteur:	NVE Industrial Electrical
Date Drilled: Datum Geboor:	4 March 2003
Machine: Masjien:	JCB 3CX
Hole diameter: Gat deursnee:	700mm
Water depth: Watervlak:	

NOTES / NOTAS

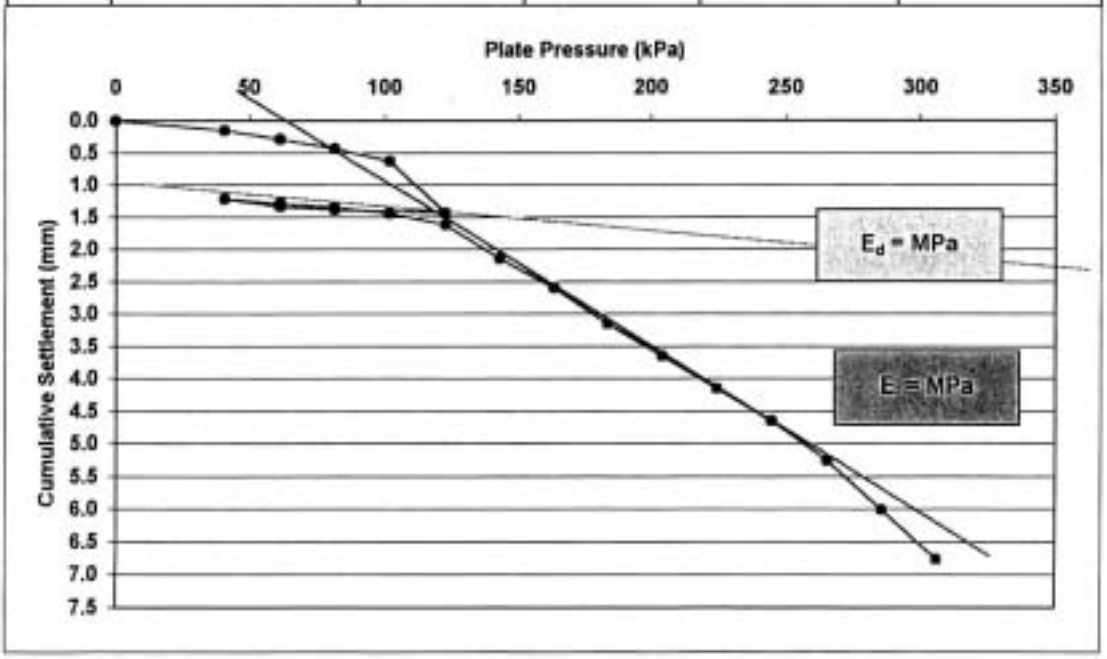
1 Refusal of excavation not encountered.
2 Natural seepage water not encountered.
3 Seepage rate in standard seepage test = 0,536mms^{-1}.

SOIL KRAFT	**SOIL PROFILE : TEST PIT 3**	**FIG A3**

TEST 4

Plate Diameter = 300mm	PLT4	TP4	1.5M

GAUGE (MPa)	READING (mm)	DEFLECTION (mm)			PLATE PRESSURE (MPa)
		TOTAL	SINGLE PLATE	CUMULATIVE	
0	19	0.000	0.000	0.000	0
2	18.71	0.290	0.145	0.145	41
3	18.43	0.280	0.140	0.285	61
4	18.14	0.290	0.145	0.430	82
5	17.75	0.390	0.195	0.625	102
6	16.15	1.600	0.800	1.425	122
4	16.25	-0.100	-0.050	1.375	82
3	16.35	-0.100	-0.050	1.325	61
2	16.57	-0.220	-0.110	1.215	41
3	16.43	0.140	0.070	1.285	61
4	16.33	0.100	0.050	1.335	82
5	16.12	0.210	0.105	1.440	102
6	15.78	0.340	0.170	1.610	122
7	14.73	1.050	0.525	2.135	143
8	13.81	0.920	0.460	2.595	163
9	12.72	1.090	0.545	3.140	184
10	11.72	1.000	0.500	3.640	204
11	10.72	1.000	0.500	4.140	225
12	9.72	1.000	0.500	4.640	245
13	8.5	1.220	0.610	5.250	265
14	7	1.500	0.750	6.000	286
15	5.5	1.500	0.750	6.750	306



PROJECT: PROJEK:	Proposed Improvements at the Xai-Xai Teachers Training Institute	TRAIL HOLE: TOETSGAT: 4	SHEET No: Vel Nr: 1
SITE: TERREIN:	Xai-Xai Teachers Training Institute	LOGGED BY: BESKRYF: FJB	DATE: DATUM: 28 March 2003
CLIENT: KLIENT:	Yamashita Sekkei Inc / DSM Consulting Engineers	LOCATION: POSISIE:	25° 03' 11,1" S 33° 41' 16,2" E

Legend Legende	Depth Diepte m	SOIL PROFILE - GRONDPROFIEL	Sample Monster
		Moist, light red brown, very loose, intact, fine ***SAND***. Reworked æolian sand.	
	0,70	Dry, light red brown, loose, intact, fine ***SAND***. Reworked æolian sand.	Lab no 213.01
	1,50		

Water encountered Water teëgekom	Contractor: NVE Industrial Kontrakteur: Electrical	NOTES / NOTAS
Water level Watervlak	Date Drilled: 5 March 2003 Datum Geboor:	1 Refusal of excavation not encountered. 2 Natural seepage water not encountered. 3 Seepage rate in standard seepage test = 0,382mms^{-1}.
Bottom of hole Bodem van gat	Machine: JCB 3CX Masjien:	
Approximate material change Benaderde materiaalverandering	Hole diameter: 700mm Gat deursnee:	
Disturbed sample Versteurde monster	Water depth: Watervlak:	
Undisturbed sample Onversteurde monster		
C Consolidation sample Konsolideer monster		
I Indicator tests		

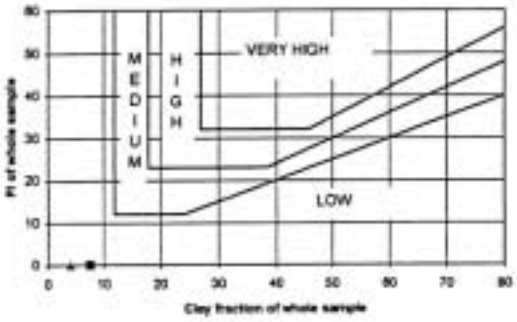
SOIL KRAFT	SOIL PROFILE : TEST PIT 4	FIG A4

PARTICLE SIZE ANALYSIS

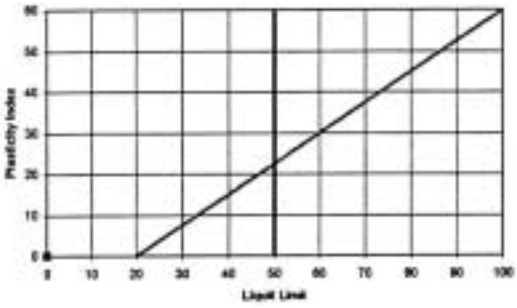
Sample / Hole No.	06150	06151
Depth (m)	0.80-1.50	0-1.00
Position	TP1	TP3
Material Description	LIGHT R/B CLAYEY SAND	DARK BROWN CLAYEY SAND
Moisture (%)		
SCREEN ANALYSIS (% PASSING)		
63.0 mm	100	100
53.0 mm	100	100
37.5 mm	100	100
26.5 mm	100	100
19.0 mm	100	100
13.2 mm	100	100
4.75 mm	100	100
2.00 mm	100	99
0.425 mm	76	66
0.075 mm	13	9
HYDROMETER ANALYSIS		
0.040 mm	10	6
0.027 mm	9	5
0.013 mm	9	5
0.005 mm	9	5
0.002 mm	8	4
% Clay	8	4
% Silt	4	4
% Sand	88	91
% Gravel	0	1
ATTERBERG LIMITS		
Liquid Limit		
Plasticity Index	SP	SP
Linear Shrinkage	0.5	0.5
Grading Modulus	1.11	1.26
Classification	A-2-4(0)	A-3(0)
Unified Classification	SC	SP & SC
Chart Reference	■—■—■	▲—▲—▲

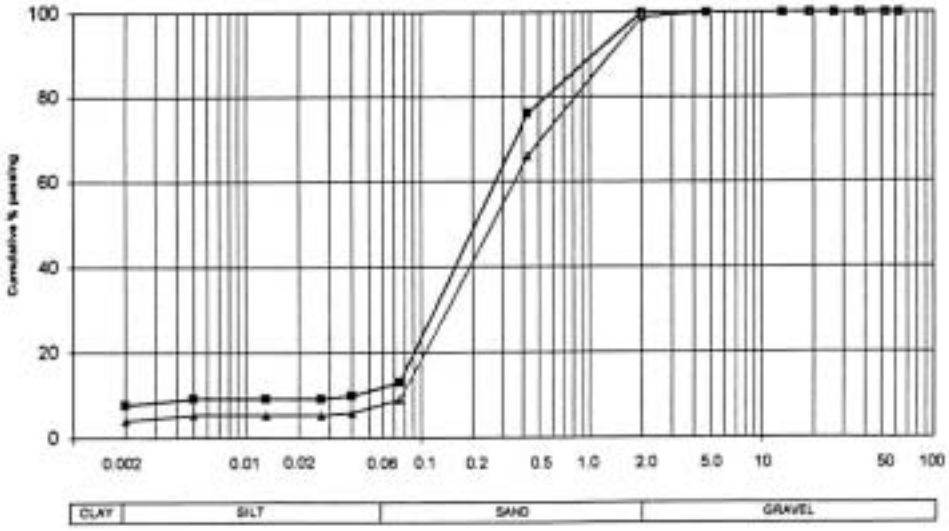
PROJECT : XAI-XAI
JOB NR. : S03-215
DATE : 2003-03-06

POTENTIAL EXPANSIVENESS



PLASTICITY CHART





SOILLAB (PTY) LTD
Reg No 1971/00112/07
230 Albertus Street
La Montagne
Tel (012) 481-3999
P O Box 72928
Lynnwood Ridge 0040
Fax (012) 481-3812

CLIENT : SOILKRAFT

PROJECT : XAI-XAI

PROJECT NO. : S03-215

DATE : 2003-03-16

PERMEABILITY ON UNDISTURBED SAMPLES

Sample No.	Depth (m)	Initial dry density (kg/m^3)	Initial moisture content (%)	Head of water (cm)	Coefficient of permeability (cm/s)
TP2	1.5	1535	6.9	51.0	3.083×10^{-3}
TP4	0.7-1.5	1469	3.2	51.0	2.295×10^{-3}

215-01 - 1 -

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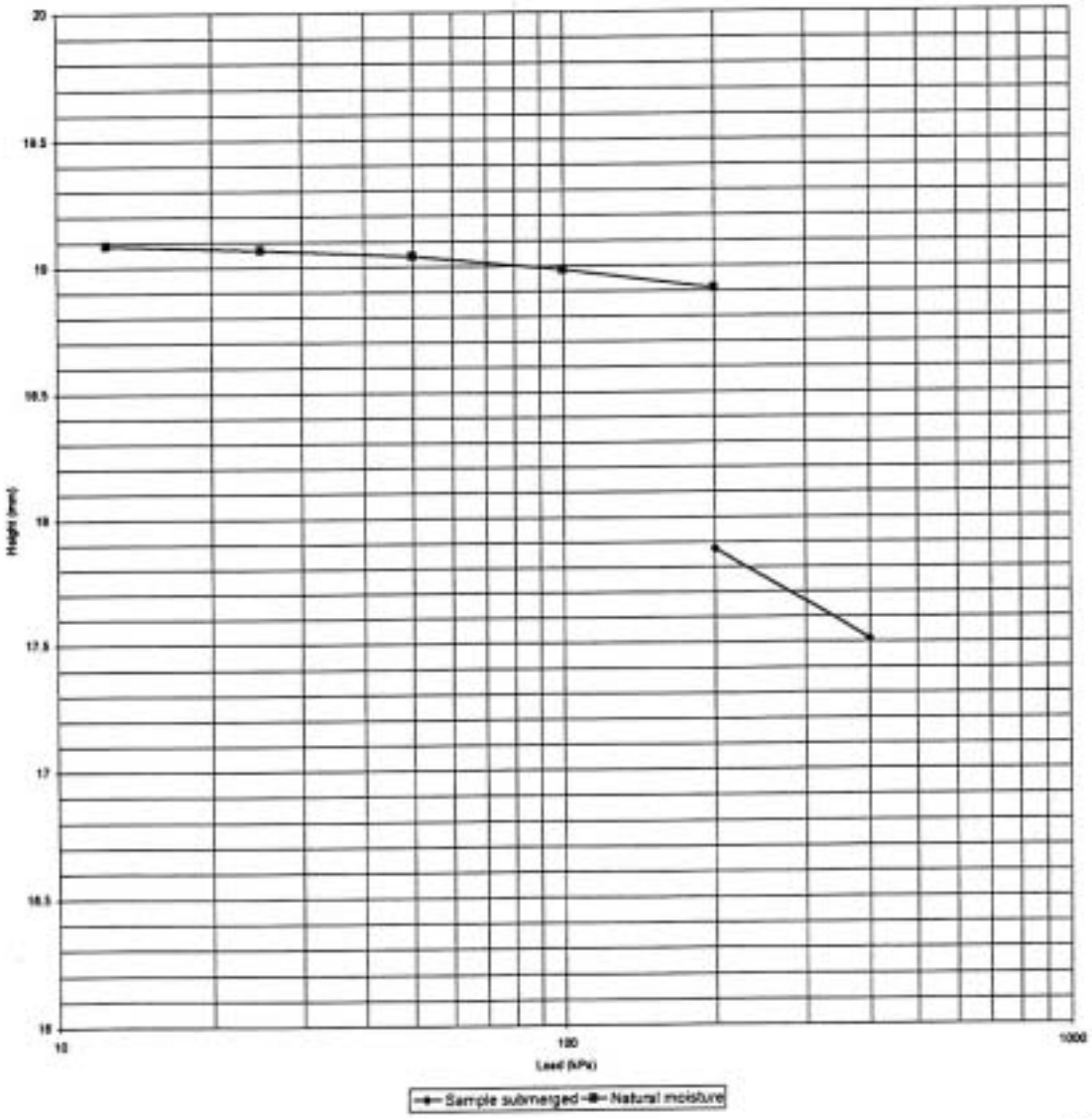
COLLAPSE POTENTIAL

PROJECT:	XAI - XAI	INITIAL DRY DENSITY (kg/m³)	1582
SAMPLE NR.	TP4	INITIAL MOISTURE (%)	4.1
DEPTH (m):	0.7 - 1.5	MOISTURE AFTER TEST (%)	18.2
INITIAL HEIGHT OF SAMPLE (mm)	19.1	RELATIVE DENSITY	2.644
SAMPLE CONDITION	UNDISTURBED	INITIAL VOID RATIO	0.671
		VOID RATIO AFTER SOAKING	0.563
		% COLLAPSE	5.43

LOAD (kPa)	0	12.5	25	50	100	200	W	400
HEIGHT (mm)	19.100	19.086	19.068	19.040	18.986	18.910	17.872	17.514
VOID RATIO	0.671	0.670	0.668	0.666	0.661	0.654	0.563	0.532



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CONTROL LIST

SYSTEM : UTM 36 SOUTH
DATUM : MEAN SEA LEVEL

NAME	EASTING	NORTHING	HEIGHT	DESCRIPTION
MHP1	569409.56	7228987.13	49.45	12mm Iron peg
MHP2	569403.73	7228981.60	49.01	Center of concrete block
MHP3	569383.46	7229102.89	47.95	12mm Iron peg
MHP4	569343.06	7228963.86	45.21	12mm Iron peg
MHP5	569423.12	7229078.92	48.80	12mm Iron peg
MHP6	569478.35	7229075.01	42.60	12mm Iron peg
MHP9	569528.38	7228882.55	44.90	12mm Iron peg
MHP10	569209.19	7229064.54	44.57	12mm Iron peg
MHP11	569193.21	7228908.24	44.69	12mm Iron peg
MHP12	569212.35	7228815.33	44.20	12mm Iron peg
MHP14	569635.28	7228697.04	49.28	12mm Iron peg
MHP13	569517.04	7228679.04	48.84	12mm Iron peg
MHP15	569479.34	7228740.91	45.28	12mm Iron peg
MHP16	569511.50	7229186.98	33.72	12mm Iron peg
MHP8	569410.56	7228874.91	49.11	12mm Iron peg

PROJECT TITLE: THE PROJECT FOR RECONSTRUCTION OF XAI-XAI PRIMARY TEACHER TRAINING CENTER IN THE REPUBLIC OF MOZAMBIQUE	CLIENT: MINISTRY OF EDUCATION	APPROVED:	NOTE:	DWG. TITLE: TOPOGRAPHIC SURVEY MAP	DWG. NO: A-00 (31)
	CONSULTANT: YAMASHITA SEKKEI INC. ARCHITECTS, ENGINEERS & CONSULTANTS. MINAMI-OHI, SHINAGAWA-KU, TOKYO, JAPAN	ARCHITECT:		SCALE: 1 : 1 000	ARCHITECTURAL DRAWING