

**ANNEX-2 Major Undertakings by Each Government**

Relevant works	Japan	Swaziland
1. Land acquisition		•
2. Site preparation		•
3. Construction of facility components	•	
4. Installation of incidental facilities		
(1) Site fence and gate installation		•
(2) Power distribution work		
a. Bring power lines to the border of the site with transformer installation		•
b. Laying power lines within the site	•	
(3) Water supply and Drainage work		
a. Laying pipes from the city water pipe to the site border		•
b. Water supply and drainage facilities within the site	•	
c. Water drainage works outside the site		•
(4) Propane gas line work in science laboratories	•	
5. Procurement of furniture and equipments		
(1) Furniture procurement		
a. Furniture for normal classrooms and science rooms	•	
b. Furniture for Administration building, multipurpose rooms A & B, teacher's housing		•
(2) Equipment and apparatus for experiments/practical training		
a. Equipment and apparatus for science experiments		•
b. Practical training equipment for Agriculture and home economics (for Multi-purpose room A)		•
c. Equipment for kitchen		•
(3) Computers for ICT training (for Multi-purpose room B)		•
6. Environmental Impact Assessment		•
7. Bank fees according to B/A		•
8. All expenses needed for project implementation not covered by the Grant Aid		•
9. Ensuring that custom duties, internal taxes and other fiscal levies with respect to the purchase of the Components (all products and services necessary for the implementation of the Project) be exempted		•

**Remarks:**

**1) Works required to be done before starting the construction**

- Land acquisition & Site preparation
- Bring power lines to the border of the site
- Environmental assessment application fee and report creation

**2) Works required to be done during the construction**

- Installation of Site fence and gate installation
- Laying pipes from the city water pipe to the site border and water drainage works outside the site

**3) Works required to be done after the completion of the construction**

- Furniture procurement (Administration building, multipurpose rooms A & B, teacher housing)
- Equipment and apparatus for science experiments, agriculture, home-economics, personal computers (depending on the school curriculum of each schools)

ANNEX-3 The Details of the Obligation of the Government of Swaziland

Site Name	District	Components								1. Water Supply				2. Power Supply				Teacher & Staff	
		Classroom	Science Lab	Multi-purpose Room A	Multi-purpose Room B	Administration	Student Toilet	Teacher House	Description	Estimate (E)	Description	Estimate (E)	Fence/ Gate (E)	Furniture (E)	Equipment (E)	PC (E)	Environmental Impact Assessment (E)		
1 Mkhansane	Lubombo	7	1	1	1	1	1	7	4	Existing water pipe in the front road	0	New power line from nearest grid system.	230,000	75,000	130,000	13,000	42,500	21,500	Principal + 13 teachers+ 17 g staff
2 Makhondweni	Lubombo	7	1	1	1	1	1	7	4	Existing water pipe in the front road	0	Existing power line in the site	0	75,000	130,000	13,000	42,500	21,500	Principal + 13 teachers+ 17 g staff
3 Mystane	Lubombo	7	1	1	1	1	1	7	4	New water pipe connection about 120M	60,000	New power line connection about 80M	70,000	75,000	130,000	13,000	42,500	21,500	Principal + 13 teachers+ 17 g staff
4 Mhlambeni	Manzini	8	1	1	1	1	1	8	4	Existing water pipe in the front road	0	Existing power line in the front road	0	75,000	130,000	13,000	42,500	21,500	Principal + 14 teachers+ 18 g staff
5 Mliba	Manzini	8	1	1	1	1	1	8	4	New water pipe connection about 330M	150,000	New power line connection about 330M	100,000	75,000	130,000	13,000	42,500	21,500	Principal + 14 teachers+ 18 g staff
6 Mandulo	Manzini	9	1	1	1	1	1	9	4	Existing water pipe in the site	0	Existing power line in the site	0	79,000	131,000	13,000	42,500	21,500	Principal + 16 teachers+ 20 g staff
7 Mlambo	Shiselweni	9	1	1	1	1	1	9	4	New water pipe from nearest water source	80,000	New power line from nearest grid system.	150,000	78,000	131,000	13,000	42,500	21,500	Principal + 16 teachers+ 20 g staff
8 Mlakeni	Shiselweni	9	1	1	1	1	1	9	4	Existing water pipe in the front road	0	Existing power line at adjacent site. Connection to the site.	60,000	79,000	131,000	13,000	42,500	21,500	Principal + 16 teachers+ 20 g staff
9 Hawane-F.R.	Ihohho	9	1	1	1	1	1	9	4	New water pipe from nearest water source	100,000	New power line from nearest grid system.	100,000	79,000	131,000	13,000	42,500	21,500	Principal + 16 teachers+ 20 g staff
10 Etfontini	Ihohho	9	1	1	1	1	1	9	4	New water pipe from nearest water source	50,000	Existing power line in the front road	0	78,000	131,000	13,000	42,500	21,500	Principal + 16 teachers+ 20 g staff
11 Ibhiehlale	Ihohho	7	1	1	1	1	1	7	4	Existing agricultural water pipe in front road. Confirm the possibility of usage.	0	New power line from nearest grid system.	60,000	75,000	130,000	13,000	42,500	21,500	Principal + 13 teachers+ 17 g staff
12 Mantabeni	Ihohho	8	1	1	1	1	1	8	4	New water pipe from nearest water source	60,000	New power line from nearest grid system.	150,000	75,000	130,000	13,000	42,500	21,500	Principal + 14 teachers+ 18 g staff
合計		97	12	12	12	12	12	97	48		500,000		920,000	1,585,000	156,000	510,000	255,000	222	

\* Power Supply: Power line specification to be provided ASBP in order to determine requirement of transformer.  
 \*\* Water Supply: The amount of water supply to be provided for school operation.  
 \*\*\* Water & Power: Estimated cost for water and power supply.  
 \*\*\*\* Estimated cost is guideline only. Required work shall be done with the expense of government of Swaziland.



(Confidential)

ANNEX-4 Project cost estimation

**Initial Cost Estimation of the Project**

The provisional cost of the Project is estimated as below in accordance with the estimation conditions in (3) below. The cost would be further examined by the Government of Japan for the approval of the Grant.

**(1) Costs to be borne by the Government of Japan**

**Total Cost: Approx. 1,141.7 million yen**

Item		Cost (million yen)	
Facilities	Construction	871.2	896.9
	Furniture	25.7	
Procurement Agent			81.3
Consultant Service			157.2
Others (lawyer's fee)			6.3
Total			1,141.7

**(2) Costs to be borne by the Government of Swaziland**

**Total Cost: Approx. 4,959,000 emalangeni**

ITEMS	DESCRIPTION	COST (E)
1. Infrastructure/ External Work		
(1) Fence & Gate	School Fence(Average 600m/site), Gate installation	920,000
(2) Power supply	Connection from grid to site	2,023,000
(3) Water Supply	Connect from existing water source to the site	500,000
2. Procurement for furniture & equipment		
(1) Furniture	Administration Block/ Teacher's house/ Multipurpose LAB A&B	1,565,000
(2) Equipment	①Science Lab Equipment ②Agricultural/ Home Economy Equipment ③Kitchen Equipment	156,000
(3) Computer	Total 96 computers (8/school)	510,000
3. Environmental Impact Assessment	Permit/ Report Fee	258,000
4. B/A Bank Charge	Bank Charge for account	100,000
	Total	6,032,000

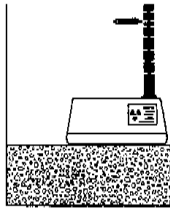
**(3) Conditions of cost estimation**

- Month & Year of estimation : August 2010
- Exchange rate : 1 lilangeni (emalangeni) = 13.11 yen
- Cost estimation is based on the Grant Aid Project System of the Government of Japan.

資料5. 参考資料・入手資料リスト

番号	名称	形態	原本・コピー	発行機関	発行年	備考
A-1	TEACHING SERVICE COMMISSION: END OF YEAR REPORT	図書	原本	MOET	2009	
A-2	THE GOVERNMENT OF THE KINGDOM OF SWAZILAND: ESTIMATES FOR THE YEARS FROM 1 <sup>ST</sup> APRIL 2010 TO 31 <sup>ST</sup> MARCH 2013	図書	原本	Ministry of Finance	2010	
A-3	NATIONAL DEVELOPMENT PLAN 2009/10 – 2011/12	図書	原本	MOEPD	2009	
A-4	UNITE FOR CHILDREN, UNITE AGAINST AIDS (set)	図書	原本	UNICEF Finance	2008/2009	
A-5	SWAZILAND REVIEW: An overview of the Kingdom of Swaziland's Economy 2009	図書	原本	SWAZI REVIEW OF COMMERCE AND INDUSTRY	2009	
A-6	SWAZILAND REVIEW: An overview of the Kingdom of Swaziland's Economy 2010	図書	原本	SWAZI REVIEW OF COMMERCE AND INDUSTRY	2009	
A-7	Performance Report: Second Quarter Performance Report 2009/2010	図書	原本	MOET	2009	
A-8	Performance Report: Annual Performance Report 2009/2010	図書	原本	MOET	2010	
A-9	EMIS Survey Report: 16 <sup>th</sup> Day Survey 2009	図書	原本	MOET	2009	
A-10	SCHOOL LISTS 2010	図書	原本	MOET	2009	
A-11	EDUCATION AND TRAINING SECTOR DEVELOPMENT PLAN (SECTION OF NATIONAL DEVELOPMENT PLAN)	図書	コピー	MOEPD	2009	
A-12	National Policy Statement on Education 1999	図書	コピー	MOET	1999	
A-13	Swaziland: Education, Training and Skills Development for Shared Growth and Competitiveness	図書	コピー	MOET	2009	
A-14	YINGCAMU(PRSAP): TOWARDS SHARED GROWTH & EMPOWERMENT	図書	コピー	MOEPD	2006	
A-15	Kingdom of Swaziland: Towards a Strategic Plan for the Education Sector	図書	コピー	WB/MOET	2010	
A-16	Draft Policy for Information and Communication Technology in Education	図書	コピー	MOET	2010	
A-17	SUPPORT TO EDUCATION AND TRAINING(SET) PROGRAMME IN SWAZILAND	図書	コピー	EU	2009	

A-18	Report on the Implementation of Capital Projects for the Ministry of Education and Training	図書	コピー	MPCU	2009	
A-19	SCHOOL GUIDE REGULATION PROCEDURES	図書	コピー	MOET	1978	
A-20	FINAL CONSTITUTION OF SCHOOL COMMITTEES	図書	コピー	MOET	1982	
A-21	Syllabus(Junior): Home Economics, Science, English Language, Literature in English, Agriculture, History, Design and Technology, Religious Education, SiSwati, Mathematics & Additional Mathematics, Business Studies, Geography, Development Studies, Information and Communication Technology	図書	原本/ コピー	NCC	2011- 2012	
A-22	Syllabus(Senior): Geography, Additional Mathematics, Development Studies, Dutch/French/German/Spanish, Information and Communication Technology, Combined Science, Mathematics, Literature in English, Religious Education, Economics, First Language SiSwati, Business Studies, History, Design and Technology, SiSwati as a Second Language, Accounting, Biology, Physical Science, Agriculture, Food and Nutrition, Fashion and Fabrics, English Language	図書	原本/ コピー	NCC	2011- 2014	
A-23	Performance Report: 1st Quarter Performance Report 2010/20110	図書	原本	MOET	2010	
A-24	The Education System in Swaziland	図書	原本	WB	2010	
A-25	Final Report : Towards the Formulation of a National Policy for Science, Technology and Innovation for the Kingdom of Swaziland	図書	コピー	MOET/UNIC EF	2009	
A-26	Annual Report 2008: Support to Education and Training Program in Swaziland	図書	コピー	GOPA Consultant	2010	
A-27	Free Primary Education Handbook (Draft Copy for Discussion)	図書	コピー	MOET	2008	
A-28	School Post Allocation : 1985-1986	図書	コピー	MOET	1984	
A-29	Draft Policy for Information and Communication Technology in Education	図書	コピー	MOET	2010	
A-30	Support to Education and Training (SET) Program in Swaziland: Short Activity Report on PE4 Implementation Report no.2	図書	コピー	EU	2009	
A-31	4 Regions :School ID, Name, Enrolment, Staff, Rural/Urban	図書	コピー	MOET	2009	



# Laboratory Equipment Supplies

## Conversion factors

### SI units

In these conversion tables, SI units are shown in bold blue type.

Where SI units differ from technical metric units, the conversions are given for both.

The following list details the main SI units and their symbols which are used throughout these tables.

Length:	metre,	m
Area:	square metre,	m <sup>2</sup>
Volume:	cubic metre,	m <sup>3</sup>
Mass:	kilogram,	kg
Density:	kilograms per cubic metre,	kg/m <sup>3</sup>
Force:	newton,	N
Pressure, stress:	pascal,	Pa (N/m <sup>2</sup> )
Viscosity, dynamic:	pascal second	Pa s
Viscosity, kinematic:	square metre per second	m <sup>2</sup> /s
Energy:	joule	J
Power:	watt	W (J/s)

### Length

1 km	0.621371 mile
1 m	1.09361 yd 3.2808 ft
1 cm	0.393701 in
1 mm	0.03937 in
1 μm	39.3701 μin
1 mile	<b>1.60934 km</b>
1 yd	<b>0.9144 m</b>
1 ft	<b>0.3048 m</b>
1 in	<b>25.4 mm</b>
1 milli-in (thou)	<b>25.4 μm</b>
1 μin	<b>0.0254 μm</b>

### Volume, capacity

1 m <sup>3</sup>	1.30795 yd <sup>3</sup>
1 dm <sup>3</sup> (litre)	0.03531 ft <sup>3</sup> 0.21997 imp gal 1.7605 pint 0.2642 US gal
1 cm <sup>3</sup> (ml)	0.06102 in <sup>3</sup> 0.0352 fl oz
1 litre (dm <sup>3</sup> )	0.21997 imp gal 1.7605 pint
1 ml (cm <sup>3</sup> )	0.0352 fl oz
1 yd <sup>3</sup>	<b>0.76455 m<sup>3</sup></b>
1 ft <sup>3</sup>	<b>28.3168 dm<sup>3</sup></b>
1 in <sup>3</sup>	<b>16.3871 cm<sup>3</sup></b>
1 imp gal	<b>4.54609 dm<sup>3</sup></b>
1 US gal	<b>3.78541 dm<sup>3</sup></b>
1 pint	<b>0.56826 dm<sup>3</sup></b>
1 fl oz	<b>28.4131 cm<sup>3</sup></b>

### Area

1 km <sup>2</sup> (100 hectares)	247.105 acres
1 hectare (ha)	2.47105 acres <b>10000 m<sup>2</sup></b>
1 m <sup>2</sup>	1.19599 yd <sup>2</sup>
1 cm <sup>2</sup>	0.155 in <sup>2</sup>
1 mm <sup>2</sup>	0.00155 in <sup>2</sup>
1 mile <sup>2</sup>	<b>2.58999 km<sup>2</sup></b>
1 acre (4840 yd <sup>2</sup> )	<b>4046.86 m<sup>2</sup></b> <b>0.404686 ha</b>
1 yd <sup>2</sup>	<b>0.836127 m<sup>2</sup></b>
1 ft <sup>2</sup>	<b>0.092903 m<sup>2</sup></b>
1 in <sup>2</sup>	<b>645.16 mm<sup>2</sup></b>

### Mass

1 tonne	<b>1000 kg</b> 0.98420 ton 2204.62 lb
1 kg	0.01968 cwt 2.20462 lb
1 g	0.03527 oz
1 ton	<b>1016.05 kg</b> 1.01605 tonne
1 cwt	<b>50.8023 kg</b>
1 lb	<b>0.45359 kg</b>
1 oz	<b>28.349 g</b>

### Density

1 kg/m <sup>3</sup>	1.686 lb.yd <sup>3</sup> 0.06243 lb ft <sup>3</sup>
1 g/cm <sup>3</sup>	62.4280 lb ft <sup>3</sup>
1 ton/yd <sup>3</sup>	<b>1328.94 kg/m<sup>3</sup></b>
1 lb./ft <sup>3</sup>	<b>0.593 kg/m<sup>3</sup></b>
1 lb./in <sup>3</sup>	<b>16.0185 kg/m<sup>3</sup></b>
1 lb/in <sup>3</sup>	<b>27.6799 g/cm<sup>3</sup></b>

### Force

1 N	0.10197 kgf 0.22481 lbf
1 kN	101.971 kgf 224.809 lbf
1 kgf (kilopond)	<b>9.80665 N</b> 2.20462 lbf
1 dyn	<b>10<sup>-5</sup> N</b> 0.224809 x 10 <sup>-8</sup> lbf
1 lbf	<b>4.44822 N</b> 0.45359 kgf
1 tonf	<b>9.96402 kN</b> 1016.05 kgf

### Power

1 hp (horse power)	<b>745.700 W (J/s)</b>
1 ft lbf/s	<b>1.35582 W</b>

### Pressure, stress

1 Pa (N/m <sup>2</sup> )	0.01 mbar 0.000145 lbf/in <sup>2</sup>
1 kPa (kN/m <sup>2</sup> )	0.01 kgf/cm <sup>2</sup> 10 mbar <b>20.885 lbf/ft<sup>2</sup></b> 0.2953 in Hg
1 kgf/cm <sup>2</sup>	<b>98.0665 kPa</b> 14.223 lbf/in <sup>2</sup>
1 bar	<b>100 kPa</b> 14.5038 lbf/in <sup>2</sup>
1 mbar	<b>100 Pa</b> 2.0885 lbf/ft <sup>2</sup>
1 atm	<b>101.325 kPa</b> 14.6959 lbf/in <sup>2</sup>
1 mm Hg (torr)	<b>133.322 Pa</b> 0.01934 lbf/in <sup>2</sup>
1 mm H <sub>2</sub> O	<b>9.80665 Pa</b> 0.001422 lbf/in <sup>2</sup>
1 lbf/in <sup>2</sup>	<b>6.89476 kPa</b> 0.07031 kgf/cm <sup>2</sup> 68.9476 mbar
1 lbf/ft <sup>2</sup>	<b>47.8803 Pa</b> 0.4788 mbar
1 tonf/ft <sup>2</sup>	<b>107.252 kPa</b> 1.094 kgf/cm <sup>2</sup>
1 in Hg	<b>3.38639 kPa</b> 0.491 lbf/in <sup>2</sup>
1 ft H <sub>2</sub> O	<b>2.98907 kPa</b> 0.030 kgf/cm <sup>2</sup> 22.3997 mm Hg

### Viscosity, dynamic

1 Pa s (Ns/m <sup>2</sup> )	0.0208854 lbf s/ft <sup>2</sup>
1 cP (centipoise)	2.08854 x 10 <sup>-5</sup> lbf s/ft <sup>2</sup>
	<b>0.001 Pa s</b>
1 lbf s/ft <sup>2</sup>	<b>47.8803 Pa s</b>
1 lb/ft s	1488.16 cP 1.48816 kg/m s

### Viscosity, kinematic

1 m <sup>2</sup> /s	10.7639 ft <sup>2</sup> /s
1 cSt (centistokes)	5.58001 in <sup>2</sup> /h <b>1 mm<sup>2</sup>/s</b> <b>10<sup>-6</sup> m<sup>2</sup>/s</b>
1 ft <sup>2</sup> /h	<b>0.092903 m<sup>2</sup>/h</b> 25.8064 cSt
1 in <sup>2</sup> /s	<b>645.16 mm<sup>2</sup>/s</b> 645.16 cSt

### Energy

1 MJ	0.277778 kWh
1 J	0.737562 ft lbf
1 kgf m	<b>9.80665 J</b> 7.23301 ft lbf
1 therm	<b>105.506 MJ</b>
1 kWh	<b>3.6 MJ</b>
1 Btu (British thermal unit)	<b>1.05506 kJ</b>

## METHOD ST6

### MEASUREMENT OF THE *IN SITU* STRENGTH OF SOILS BY THE DYNAMIC CONE PENETROMETER (DCP)

#### 1 SCOPE

This method describes the determination of the rate of penetration of the Dynamic Cone Penetrometer (DCP) into a natural or compacted material by virtue of the built-in sliding hammer. The penetration rate is inversely proportional to the resistance of the ground to the penetration of the cone of the DCP and may be related, *inter alia*, to the *in situ* CBR or soil density (see 5.1).

#### 2 APPARATUS

- 2.1 Dynamic Cone Penetrometer as illustrated in Figure ST6/1 with the appropriate spanners, spare cones, rods, etc. (see 5.2).
- 2.2 A pick or hand auger.
- 2.3 A spade.
- 2.4 A measuring tape, 2 m long.
- 2.5 Traffic cones, warning signs and flags as required.

#### 3 METHOD

Assemble the DCP as shown in Figure ST6/1 ensuring that the parts are fitting properly and that the hammer can slide freely. Place the tip of the cone on the site to be tested (see 5.2). Hold the DCP vertically and by means of the hammer knock the cone into the surface up to the zero mark, which is the parallel-sided shoulder portion ( $\pm 3$  mm wide) just above the cone-shaped tip.

Attach the measuring rod to the DCP and zero the sliding scale.

While holding the DCP vertically, lift the hammer as far as it can go and allow it to fall freely and strike the anvil, driving the cone into the ground surface.

The penetration can be read off after each blow of the hammer or after as many blows as are practical or required for the purpose of the test (see 5.3). Record the penetration (to the nearest 1 mm) and the number of blows on Form ST6/1 or a similar form (see 5.4).

On completion of the test, the DCP is extracted by ramming the hammer against the upper stop – usually after the measuring scale has been detached to prevent damage (see 5.5).

The strength of layers deeper than the reach of the DCP can be measured by removing some or all of the overlying material with a pick and spade or using a hand auger. At the start of the test the depth below the original datum level of the material to be tested is measured, using a tape measure, and recorded.

#### 4 CALCULATIONS

- 4.1 The DCP penetration depths in mm are plotted against the number of blows on Form ST6/1 and a penetration curve is drawn, the angle of which is the penetration rate, known as the "DCP number" (DN) in mm/blow. A consistent slope angle thus indicates a consistent DN for that particular zone.

Special methods  
Draft TMH6, Pretoria, South Africa, 1984

19

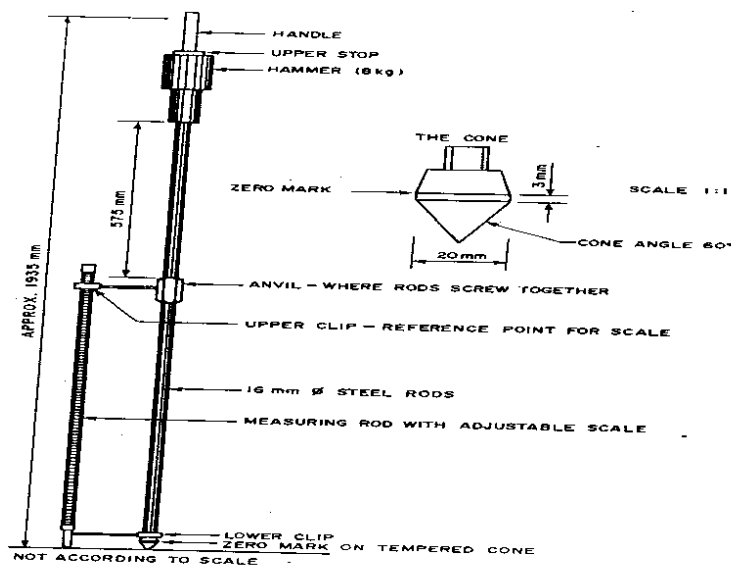
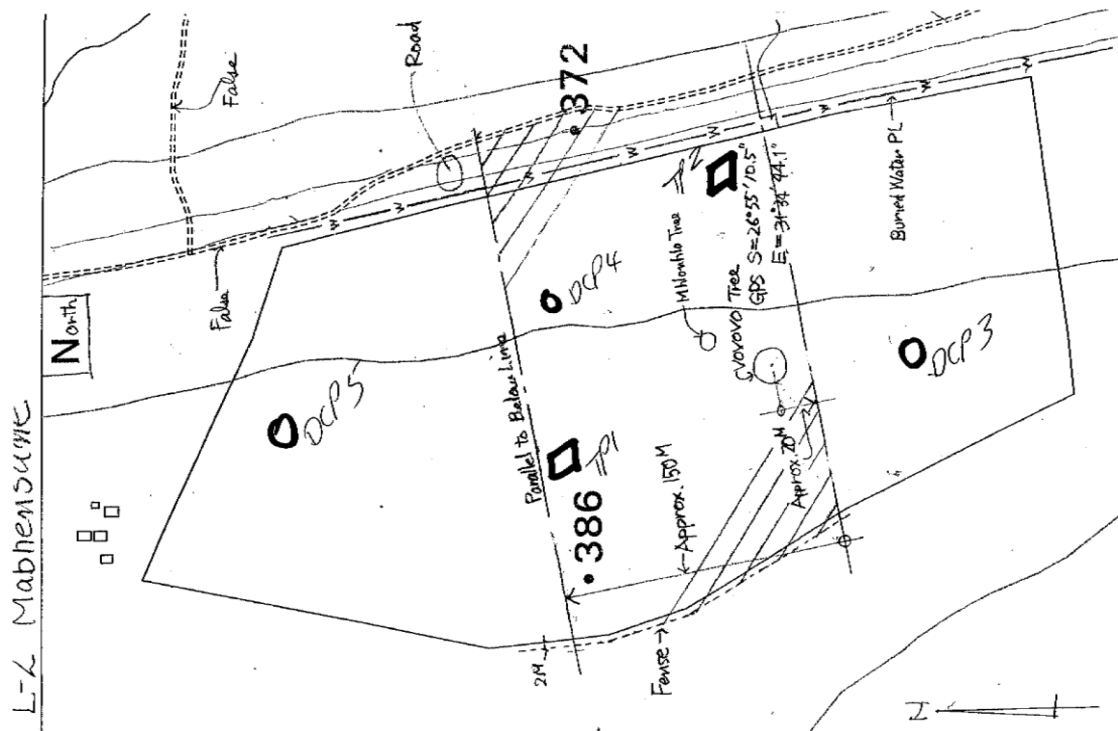


FIGURE ST6/1 THE DYNAMIC CONE PENETROMETER

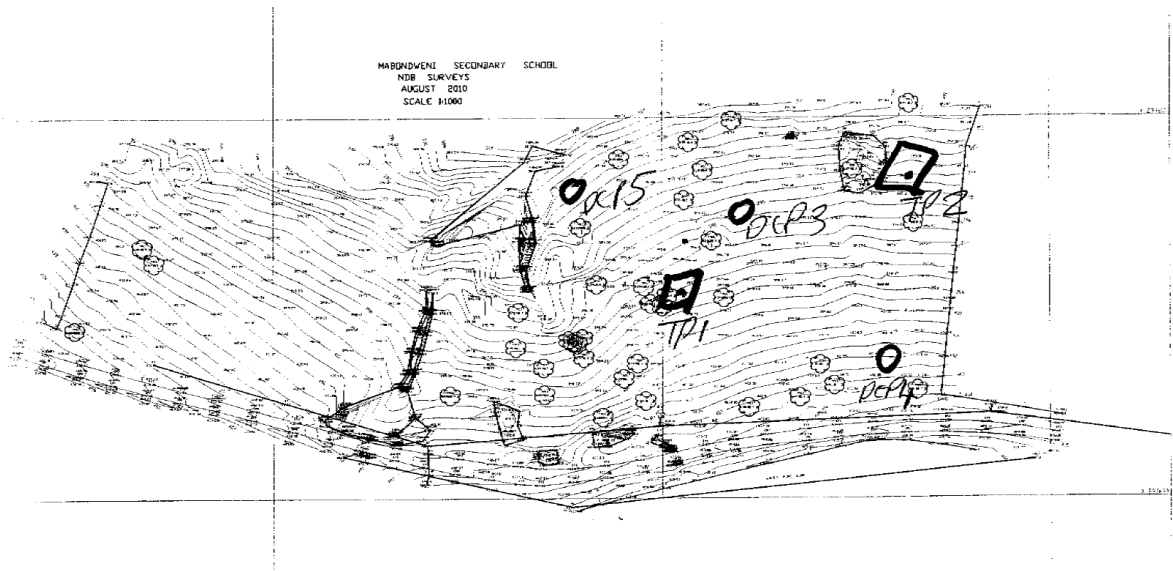
Special methods  
Draft TMH6, Pretoria, South Africa, 1984

各サイト測量地点

1 マブヘンサネ

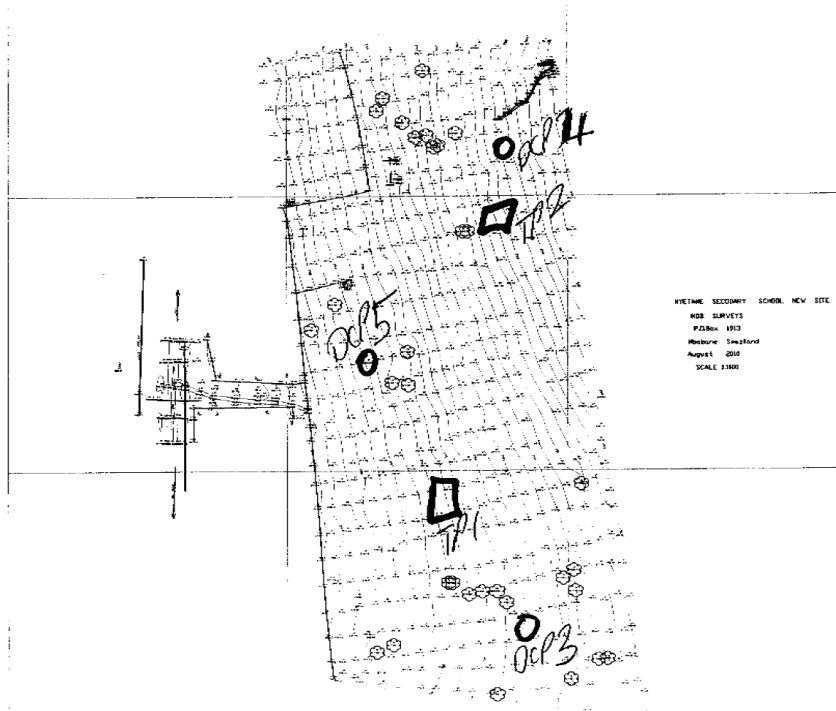


2 マボンドウェニ

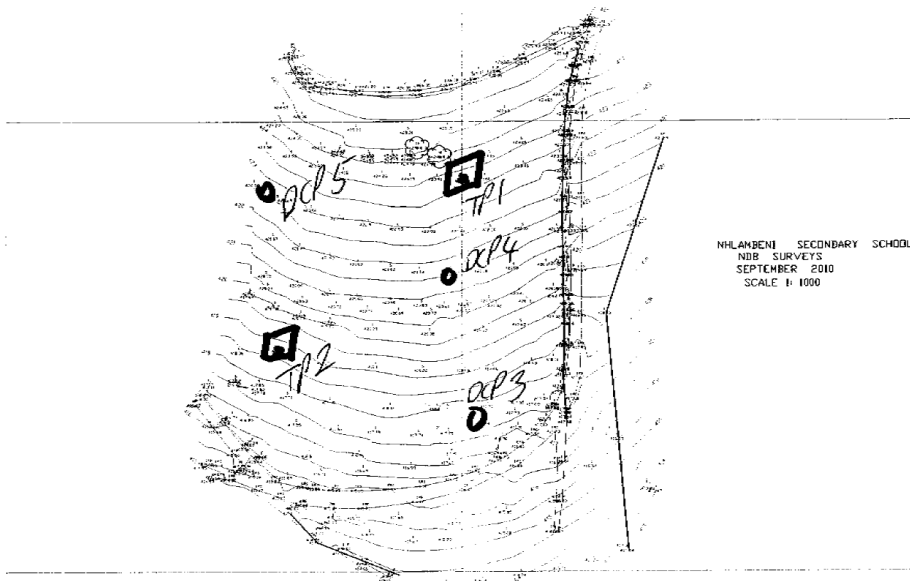




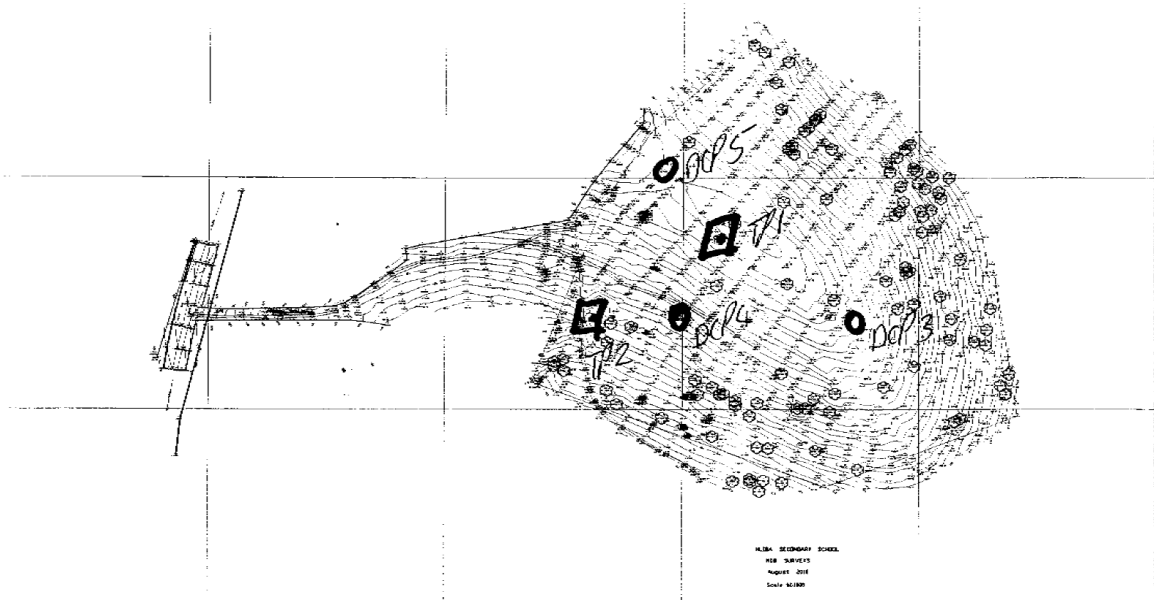
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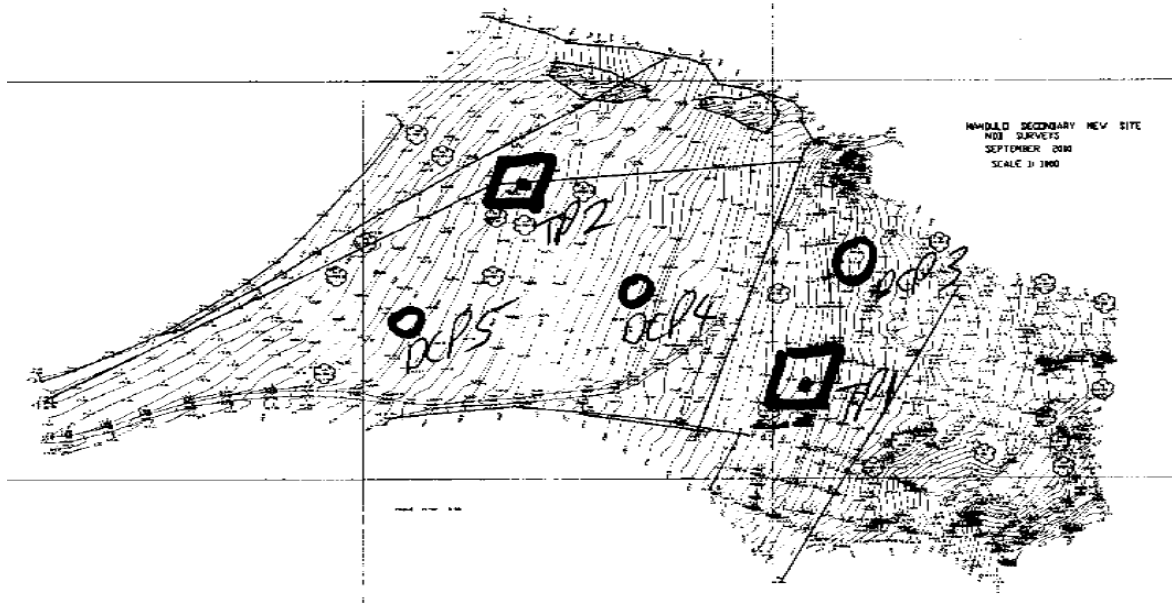
4ヌシャンベニ



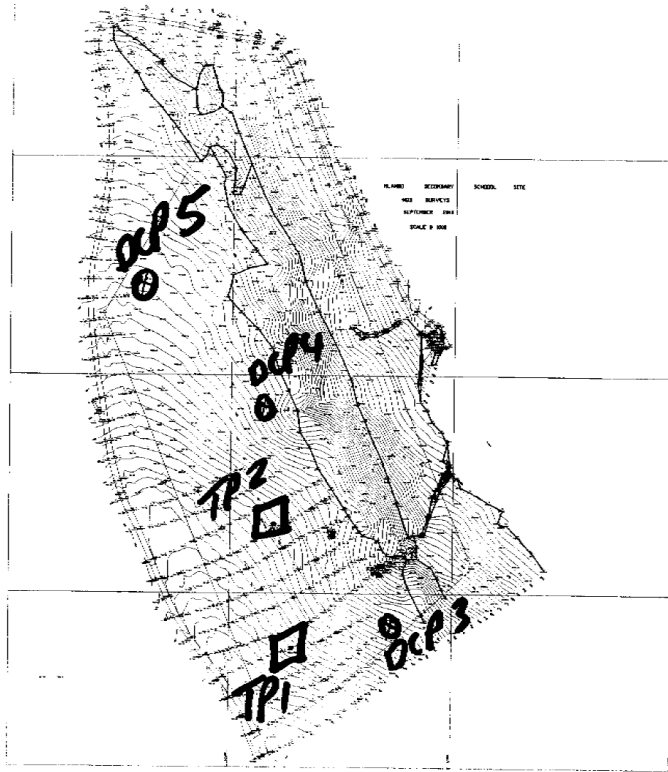
5ムリバ



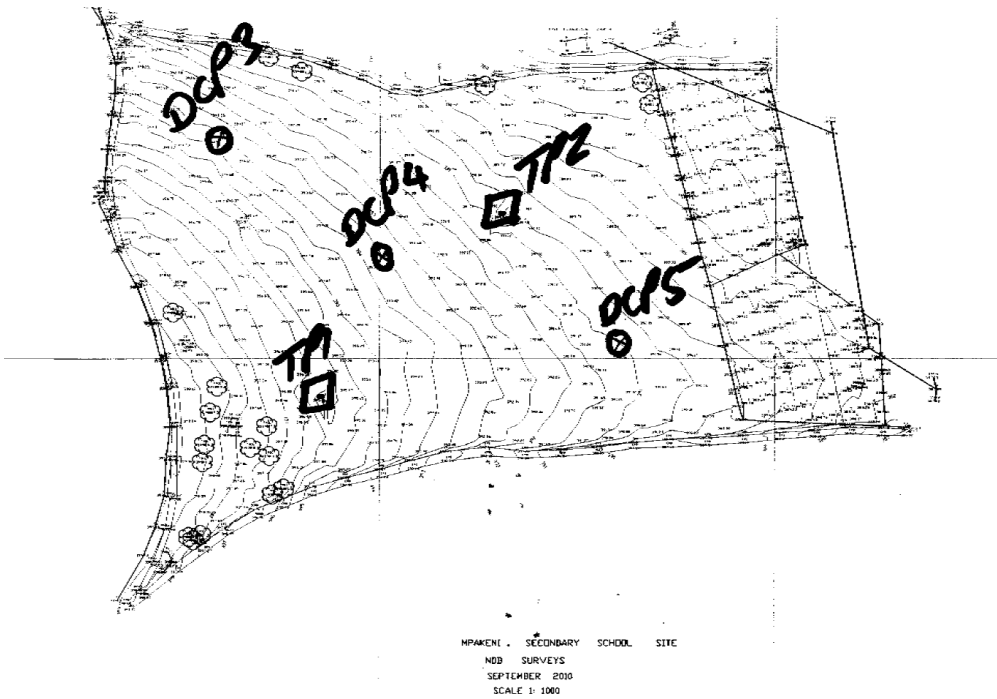
6マンドウロ



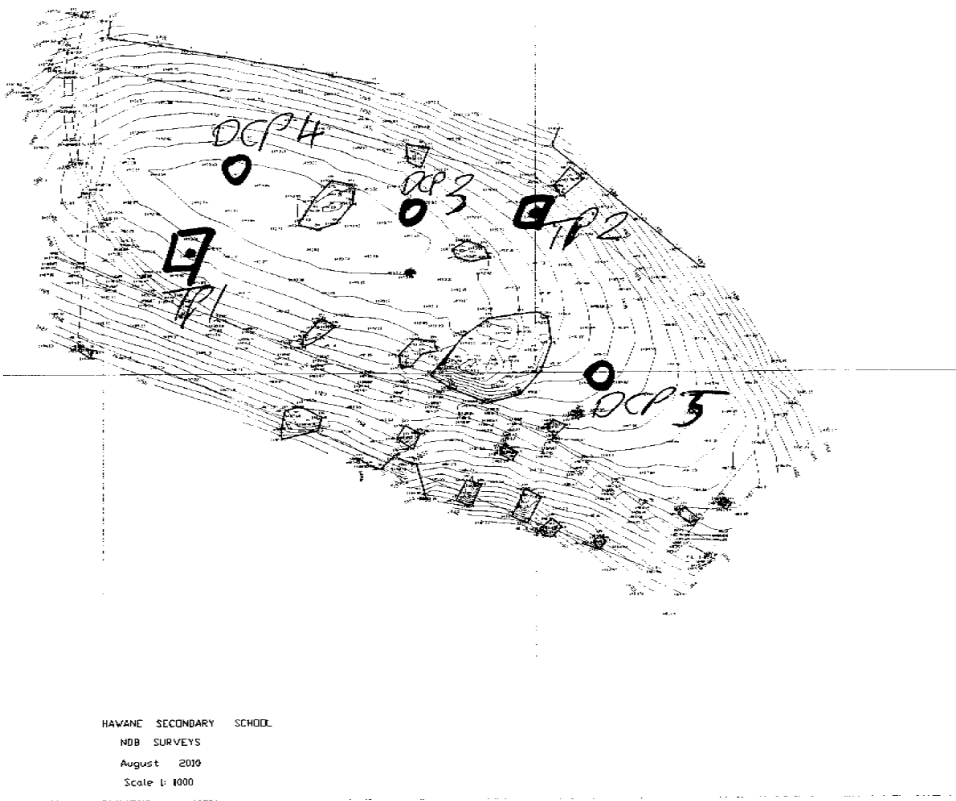
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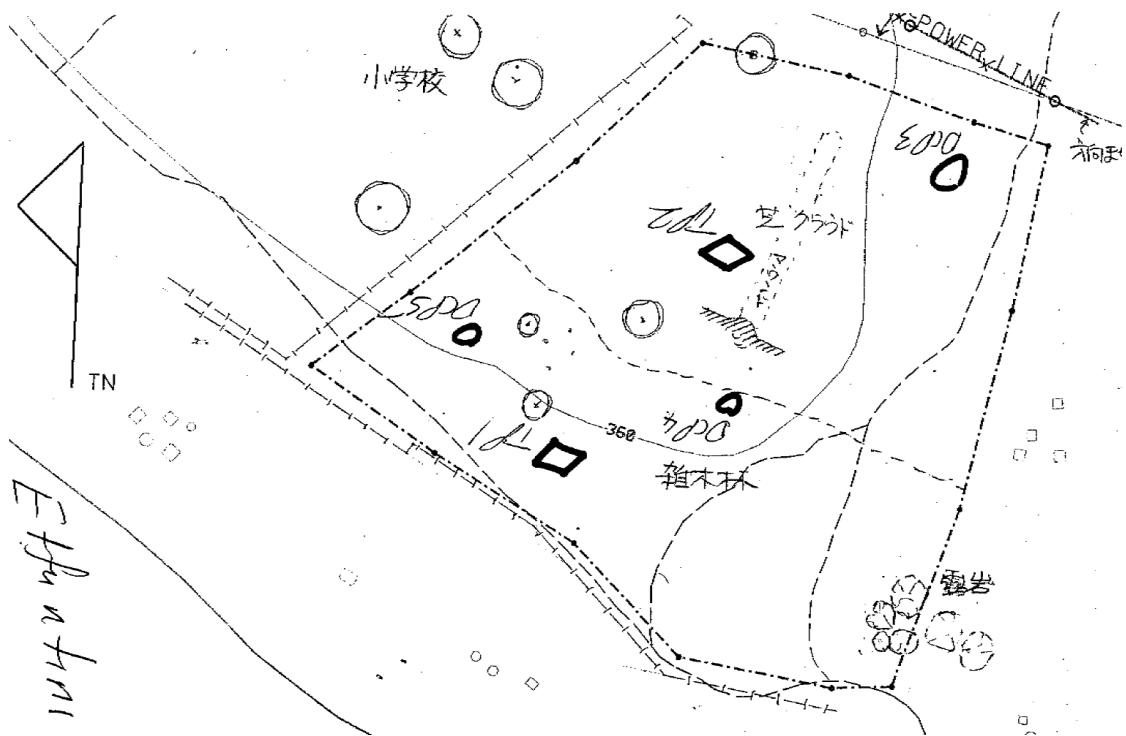
8ムパケーニ



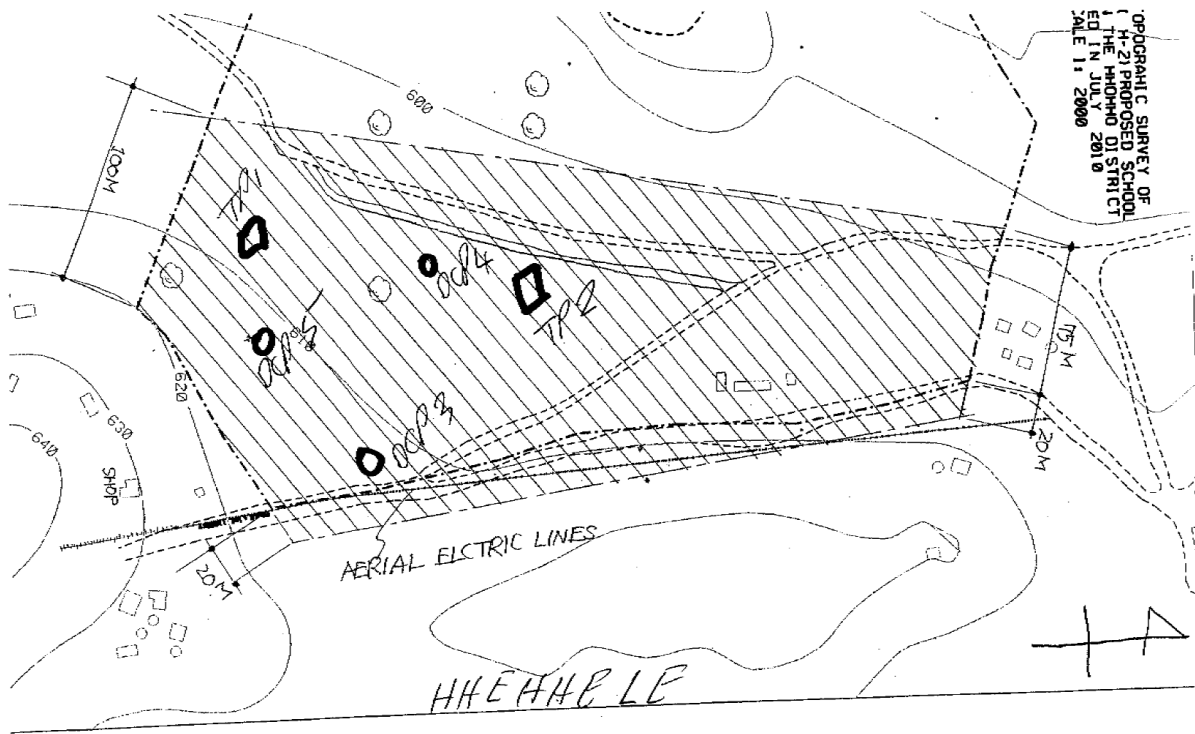
9 ハワネ



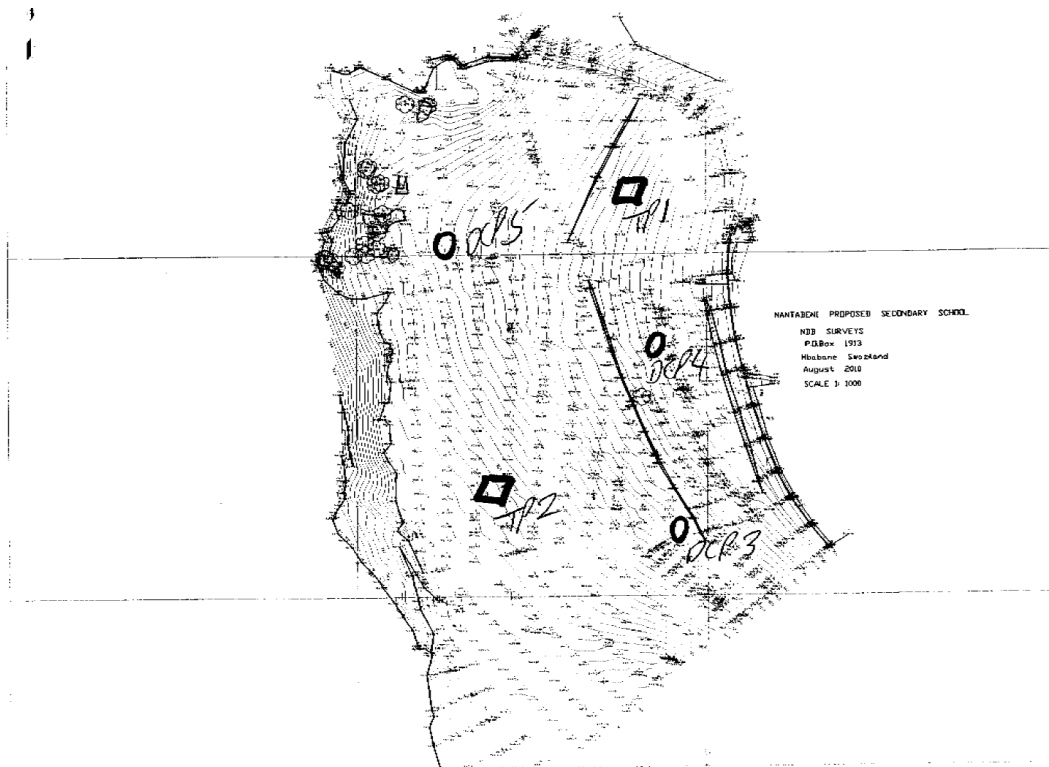
10 エトフンティニ



11 へれへれ



12 マンタベニ



地盤調查結果

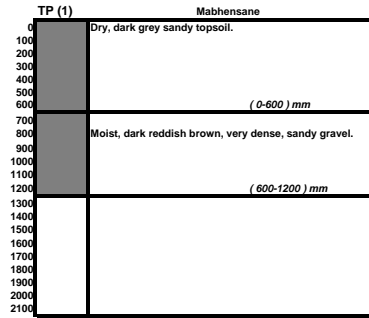
SOIL TESTING SERVICES							
P.O. BOX A233 SWAZI PLAZA MBABANE SWAZILAND TEL. 42227/41956				SWAZILAND (PTY) LTD		SOILS LABORATORY, NORTH STREET, MBABANE, SWAZILAND, FAX: 4042227	
<b>INDICATOR/CBR TEST REPORT</b>							
<b>PROJECT</b> SWAZILAND SECONDARY SCHOOLS		<b>CLIENT</b> FUKUNAGA ARCHITECS				<b>DATE</b> 2010/2/9	
<b>LABORATORY REFERENCE</b>		Hholehhele	Nyetane	Mpakeni	Mlambo	Nhlambeni	
<b>SAMPLE NUMBER</b>							
<b>POSITION</b>		TP (1)	TP (2)	TP (2)	TP (1)	TP (1)	
<b>DESCRIPTION</b>		0-1600 mm	300-900 mm	0-1500 mm	300-1400	240-1500	
<b>SIEVE ANALYSIS: PERCENTAGE PASSING</b>							
53.00							
37.50			100				
26.50			88				
19.00		100	83			100	
13.20		95	72	100	100	98	
4.75		88	40	100	95	85	
2.00	A	83	23	98	80	60	
0.425	B	74	17	87	54	38	
0.075	C	68	15	55	44	21	
<b>SOIL MORTAR ANALYSIS</b>							
COARSE SAND (2.0-0.425mm)		11	27	11	33	37	
COARSE FINE SAND (0.425-0.250mm)		2	3	13	5	12	
MEDIUM FINE SAND (0.250-0.150mm)		2	2	10	3	7	
FINE FINE SAND (0.150-0.050mm)		36	27	38	31	20	
SILT (0.050-0.005mm)		37	36	22	19	18	
CLAY (<0.005mm)		12	5	6	9	6	
<b>SOIL CONSTANTS (ATTERBERG LIMITS)</b>							
LIQUID LIMIT		53	65	29	45	24	
PLASTICITY INDEX		17	19	13	19	9	
LINEAR SHRINKAGE		9.9	14.7	8.8	7.8	4.0	
<b>G.M &amp; TRH 14 CLASSIFICATION</b>							
G.M	300-A+B+C	0.75	2.45	0.6	1.22	1.81	
	100						
<b>TRH 14 CLASSIFICATION</b>							
<b>C.B.R/UCS</b>							
100% COMPACTION		N/A	N/A	N/A	N/A	N/A	
98% COMPACTION		"	"	"	"	"	
97% COMPACTION		"	"	"	"	"	
95% COMPACTION		"	"	"	"	"	
93% COMPACTION		"	"	"	"	"	
90% COMPACTION		"	"	"	"	"	
<b>MAXIMUM DENSITY (KGS/M3)</b>		N/A	N/A	N/A	N/A	N/A	
<b>OPTIMUM MOISTURE CONTENT (%)</b>		"	"	"	"	"	
<b>NATURAL MOISTURE CONTENT (%)</b>		"	"	"	"	"	
<b>COMPACTION % SWELL %</b>		N/A	N/A	N/A	N/A	N/A	
<b>COMPACTION % SWELL %</b>		"	"	"	"	"	
<b>COMPACTION % SWELL %</b>		"	"	"	"	"	

For Soil Testing Services

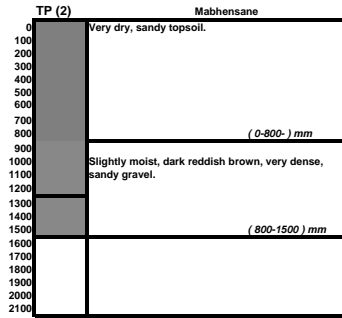


**FUKUNAGA ARCHITECTS-ENGINEERS**  
**SWAZILAND SECONDARY SCHOOLS PROJECT**  
**SOIL PROFILING**

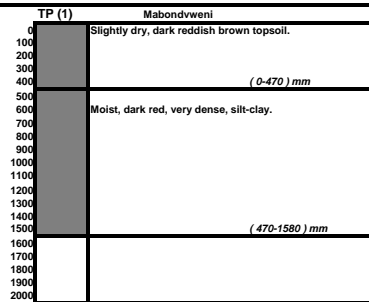
27/08/2010



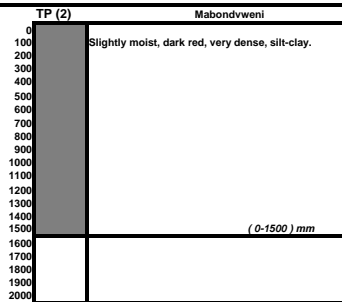
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(2) The hole was used for the foundation investigation.  
(3) There were no samples that were taken for the laboratory testing.  
(4) No water table encountered .



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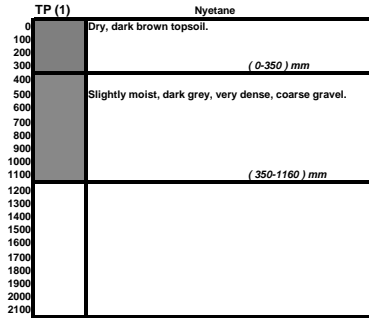
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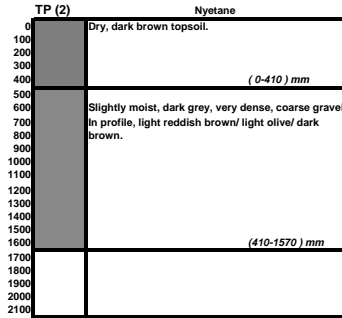
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**FUKUNAGA ARCHITECTS-ENGINEERS**  
**SWAZILAND SECONDARY SCHOOLS PROJECT**  
**SOIL PROFILING**

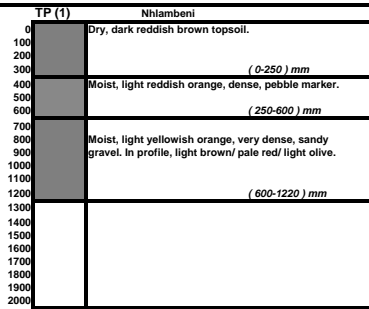
27/08/2010



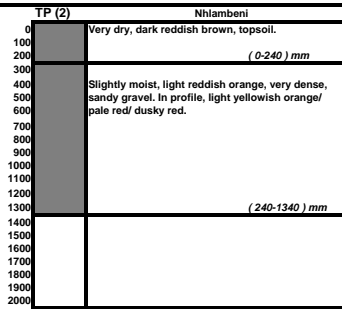
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**FUKUNAGA ARCHITECTS-ENGINEERS**  
**SWAZILAND SECONDARY SCHOOLS PROJECT**  
**SOIL PROFILING**

27/08/2010

TP (1) Mliba	
0	Dry, dark reddish brown, topsoil.
100	
200	
300	( 0-300 ) mm
400	Slightly moist, pale red, very dense, sandy gravel.
500	In profile, light brown/ dark grey/ light red.
600	
700	
800	
900	
1000	
1100	
1200	( 300-1200 ) mm
1300	
1400	
1500	
1600	
1700	
1800	
1900	
2000	
2100	

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(4) No water table encountered .

TP (2) Mliba	
0	Very dry, dark reddish brown, topsoil.
100	
200	
300	
400	
500	
600	( 0-600 ) mm
700	Moist, dark yellowish orange, very dense, sandy gravel. In profile, pale red/ dusky red/ light red/ light reddish orange.
800	
900	
1000	
1100	
1200	
1300	( 600-1480 ) mm
1400	
1500	
1600	
1700	
1800	
1900	
2000	
2100	

**NOTES:** (1) A hand-pick was used to excavate the hole.  
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(4) No water table encountered .

TP (1) Mandulo	
0	Dark brown topsoil.
100	
200	
300	( 0-300 ) mm
400	Moist, dark reddish brown, very dense, pebble marker
500	( 300-400 ) mm
600	Moist, dark red, very dense, intact, silt-clay, residual soil.
700	
800	
900	
1000	
1100	
1200	
1300	
1400	
1500	( 400-1500 ) mm
1600	
1700	
1800	
1900	
2000	

**NOTES:** (1) A hand-pick was used to excavate the hole.  
(2) The hole was used for the foundation investigation.  
(3) There were no samples that were taken for the laboratory testing.  
(4) No water table encountered .

TP (2) Mandulo	
0	Slightly moist, dark red, dense, intact silt-clay, Slightly wet with depth. Residual soil.
100	
200	
300	
400	
500	
600	
700	
800	
900	
1000	
1100	
1200	
1300	
1400	
1500	( 0-1500 ) mm
1600	
1700	
1800	
1900	
2000	

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(4) No water table encountered .

**FUKUNAGA ARCHITECTS-ENGINEERS**  
**SWAZILAND SECONDARY SCHOOLS PROJECT**  
**SOIL PROFILING**

27/08/2010

TP (1) Mlambo	
0	Dry, dark grey, topsoil.
100	
200	
300	( 0-300 ) mm
400	Slightly moist, dark red, very dense, sandy clay.
500	In profile, light yellowish orange/ pale red/ light reddish brown.
600	
700	
800	
900	
1000	
1100	
1200	
1300	
1400	( 300-1400 ) mm
1500	
1600	
1700	
1800	
1900	
2000	
2100	

**NOTES:** (1) A hand-pick was used to excavate the hole.  
(2) The hole was used for the foundation investigation.  
(3) A sample were taken for the laboratory testing.  
(4) No water table encountered .

TP (2) Mlambo	
0	Very dry, dark brown topsoil.
100	
200	
300	
400	( 0-350 ) mm
500	Slightly moist, dusky red, very dense, sandy clay.
600	In profile, light reddish brown/ pale red/ dark grey.
700	
800	
900	
1000	
1100	
1200	
1300	( 350-1270 ) mm
1400	
1500	
1600	
1700	
1800	
1900	
2000	
2100	

**NOTES:** (1) A hand-pick was used to excavate the hole.  
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(3) There were no samples that were taken for the laboratory testing.  
(4) No water table encountered .

TP (1) Mpakeni	
0	Dry, dark reddish brown sandy topsoil.
100	
200	( 0-280 ) mm
300	Slightly moist, dusky red, very dense, sandy clay.
400	
500	
600	
700	
800	
900	
1000	
1100	
1200	
1300	
1400	
1500	( 280-1500 ) mm
1600	
1700	
1800	
1900	
2000	

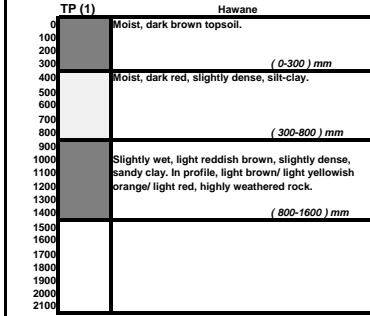
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(4) No water table encountered .

TP (2) Mpakeni	
0	Dry, dark reddish brown sandy topsoil.
100	
200	
300	( 0-310 ) mm
400	Moist, dusky red, very dense, sandy clay.
500	
600	
700	
800	
900	
1000	
1100	
1200	
1300	
1400	
1500	( 310-1500 ) mm
1600	
1700	
1800	
1900	
2000	
2100	

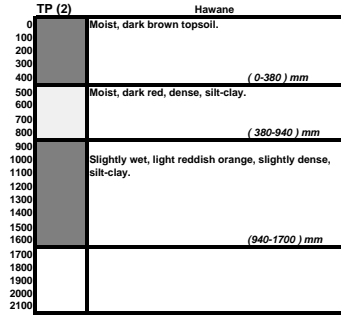
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**FUKUNAGA ARCHITECTS-ENGINEERS**  
**SWAZILAND SECONDARY SCHOOLS PROJECT**  
**SOIL PROFILING**

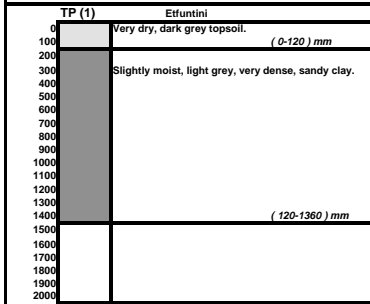
27/08/2010



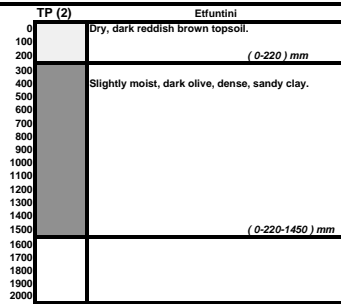
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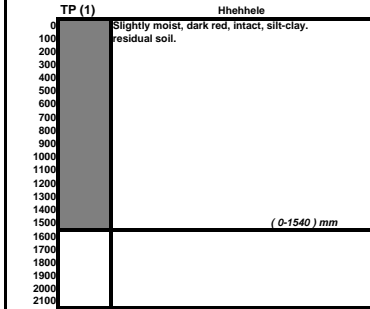
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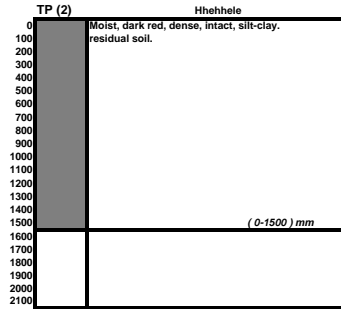
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**FUKUNAGA ARCHITECTS-ENGINEERS**  
**SWAZILAND SECONDARY SCHOOLS PROJECT**  
**SOIL PROFILING**

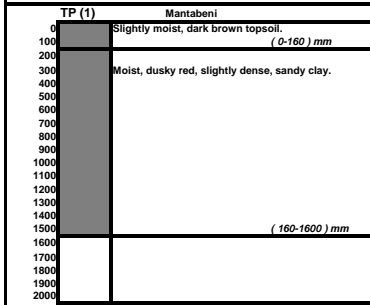
27/08/2010



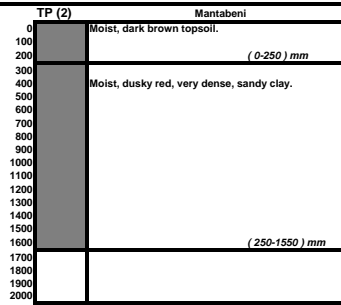
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**FUKUNAGA ARCHITECTS-ENGINEERS**  
**SWAZILAND SECONDARY SCHOOLS PROJECT**  
**DCP TEST RESULTS** NYETANE

26/08/2010

DCP (1) TP (1) 1160 mm BGL				DCP (2) TP (2) 1570 mm BGL				DCP (3) NGL			
Depth (mm)	No. Blows	mm/blows	kPa	Depth (mm)	No. Blows	mm/blows	kPa	Depth (mm)	No. Blows	mm/blows	kPa
0	0			0	0			0	0		
70	10	7	677	95	10	890	455	70	10	900	677
100	10	3	2039	135	10	800	1402	100	10	800	2039
105	10	1	20979	160	10	750	2585	125	20	760	6369
145	10	4	1402	185	10	700	2585	140	20	760	12379
200	10	6	927	205	10	670	3455	200	20	760	2039
220	10	2	3455	255	10	640	1049	235	20	760	4111
235	10	2	5024	275	10	600	3455	260	20	760	6369
245	10	1	8514	300	10	550	2585	285	20	760	6369
Refusal				335	10	470	1668	325	20	760	3455
				360	10	430	2585	340	20	760	12379
				380	10	380	3455	355	20	760	12379
				395	10	330	5024	Refusal			
				405	10	290	8514				
				425	10	220	3455				
				440	10	200	5024				
				460	10	180	3455				
				Refusal							

DCP (4) NGL				DCP (5) NGL			
Depth (mm)	No. Blows	mm/blows	kPa	Depth (mm)	No. Blows	mm/blows	kPa
0	0			0	0		
110	10	11	376	100	10	10	426
200	10	9	488	200	10	10	426
250	10	5	1049	240	10	4	1402
300	10	5	1049	265	10	3	2585
330	10	3	2039	280	10	2	5024
360	10	3	2039	300	10	2	3455
400	10	4	1402	315	15	1	8514
450	10	5	1049	330	20	1	12379
500	10	5	1049	350	10	2	3455
530	10	3	2039	355	10	1	20979
570	10	4	1402	Refusal			
620	10	5	1049				
670	10	5	1049				
710	10	4	1402				
780	10	7	677				
800	10	2	3455				
820	10	2	3455				
850	10	3	2039				
870	10	2	3455				
900	10	3	2039				
930	10	3	2039				
940	20	1	20979				
Refusal							

**FUKUNAGA ARCHITECTS-ENGINEERS**  
**SWAZILAND SECONDARY SCHOOLS PROJECT**  
**DCP TEST RESULTS** MABONDVWENI

26/08/2010

DCP (1) TP (1) 1580 mm BGL				DCP (2) TP (2) 1500 mm BGL				DCP (3) NGL			
Depth (mm)	No. Blows	mm/blows	kPa	Depth (mm)	No. Blows	mm/blows	kPa	Depth (mm)	No. Blows	mm/blows	kPa
0	0			0	0			0	0		
110	20	6	927	105	10	11	400	60	10	6	827
210	20	5	1049	175	10	7	677	110	10	5	1049
300	20	5	1203	235	10	6	827	150	10	4	1402
370	20	4	1668	300	10	7	746	225	10	8	619
430	20	3	2039	355	10	6	927	280	10	6	927
500	20	4	1668	385	10	3	2039	370	10	9	488
540	20	2	3455	415	10	3	2039	480	10	11	376
570	20	2	5024	440	10	3	2585	520	5	8	569
620	20	3	2585	475	10	4	1668	620	5	20	173
670	20	3	2585	500	10	3	2585	700	5	16	231
710	20	2	3455	515	10	2	5024	800	5	20	173
Refusal				530	10	2	5024	870	5	14	275
				565	10	4	1668	960	5	18	198
				575	10	1	8514	1000	5	8	569
				590	10	2	5024	1100	5	20	173
				600	10	1	8514	1200	5	20	173
				615	10	2	5024	1280	5	16	231
				625	10	1	8514	1345	5	13	303
				635	10	1	8514	1420	5	15	251
				640	10	1	20979	1480	5	12	336
				Refusal				1550	10	7	677
								1600	10	5	1049
								1635	10	4	1668
								1680	10	5	1203
								1720	10	4	1402
								1760	10	4	1402
								1800	10	4	1402

DCP (4) NGL				DCP (5) NGL			
Depth (mm)	No. Blows	mm/blows	kPa	Depth (mm)	No. Blows	mm/blows	kPa
0	0			0	0		
125	10	13	318	135	5	27	117
220	10	10	455	210	5	15	251
360	10	14	275	280	5	14	275
535	10	18	206	335	5	11	376
700	10	17	222	435	10	10	426
840	10	14	275	535	10	10	426
1000	10	16	231	630	10	10	455
1070	10	7	677	730	10	10	426
1210	10	14	275	810	10	8	569
1320	10	11	376	880	10	7	677
1380	10	6	827	960	10	8	569
1420	10	4	1402	1150	10	19	185
1450	10	3	2039	1180	10	3	2039
				1200	10	2	3455
				1215	10	2	5024
				1235	10	2	3455
				Refusal			

**FUKUNAGA ARCHITECTS-ENGINEERS**  
**SWAZILAND SECONDARY SCHOOLS PROJECT**  
**DCP TEST RESULTS**

MABHENSANE

26/08/2010

**DCP (1)**

TP (1) 1200 mm BGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
Refusal Rocks			

**DCP (2)**

TP (2) 1500 mm BGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
100	10	10	426
135	10	4	1668
180	10	5	1203
185	10	1	20979
Refusal			

**DCP (3)**

NGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
100	10	10	426
175	10	8	619
250	10	8	619
325	10	8	619
400	10	8	619
470	10	7	677
580	10	11	376
680	10	10	426
710	10	3	2039
755	10	5	1203
820	10	7	746
870	10	5	1049
900	10	3	2039
920	10	2	3455
950	10	3	2039
955	10	1	20979
Refusal			

**DCP (4)**

NGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
270	5	54	47
400	5	26	123
460	5	12	336
500	5	8	569
560	10	6	827
630	10	7	677
670	10	4	1402
740	10	7	677
810	10	7	677
860	10	5	1049
930	10	7	677
1080	10	15	251
1130	10	5	1049
1150	10	2	3455
Refusal			

**DCP (5)**

NGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
100	5	20	173
200	5	20	173
270	5	14	275
350	5	16	231
430	5	16	231
500	5	14	275
530	5	6	827
570	5	8	569
670	10	10	426
740	10	7	677
820	10	8	569
840	10	2	3455
855	10	2	5024
860	10	1	20979
Refusal			

**FUKUNAGA ARCHITECTS-ENGINEERS**  
**SWAZILAND SECONDARY SCHOOLS PROJECT**  
**DCP TEST RESULTS**

MPAKENI

26/08/2010

**DCP (1)**

TP (1) 1500 mm BGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
130	10	13	303
315	10	19	191
420	10	11	400
480	10	6	827
620	10	14	275
735	10	12	355
820	10	9	526
970	10	15	251
1040	10	7	677
1100	10	6	827
1150	10	5	1049
1210	10	6	827
1260	10	5	1049
1320	10	6	827
1390	10	7	677
1450	10	6	827
1500	10	5	1049
1570	10	7	677
1630	10	6	827
1690	10	6	827
1730	10	4	1402
Refusal			

**DCP (2)**

TP (2) 1500 mm BGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
200	10	20	173
300	10	10	426
400	10	10	426
500	10	10	426
600	10	10	426
700	10	10	426
800	10	10	426
870	10	7	677
945	10	8	619
970	10	3	2585
Refusal			

**DCP (3)**

NGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
100	10	10	426
150	10	5	1049
180	10	3	2039
300	10	12	336
390	10	9	488
490	10	10	426
580	10	9	488
680	10	10	426
770	10	9	488
840	10	7	677
930	10	9	488
975	10	5	1203
980	10	1	20979
Refusal			

**DCP (4)**

NGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
100	10	10	426
170	10	7	677
240	10	7	677
290	10	5	1049
440	10	15	251
600	10	16	231
670	10	7	677
750	10	8	569
825	10	8	619
900	10	8	619
965	10	7	746
980	10	2	5024
1030	10	5	1049
1080	10	5	1049
1085	10	1	20979
Refusal			

**DCP (5)**

NGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
50	10	5	1049
100	10	5	1049
110	10	1	8514
Refusal			
1430	2	715	2

**FUKUNAGA ARCHITECTS-ENGINEERS**  
**SWAZILAND SECONDARY SCHOOLS PROJECT**  
**DCP TEST RESULTS**

MLAMBO

26/08/2010

**DCP (1)** TP (1) 1400 mm BGL

Depth (mm)	No. Blows	mm/blows	kPa
0	0		
130	5	26	123
200	5	14	275
235	5	7	677
275	5	8	569
335	5	12	336
385	5	10	426
430	5	9	488
470	5	8	569
510	5	8	569
520	5	2	3455
560	10	4	1402
600	10	4	1402
640	10	4	1402
685	10	5	1203
730	10	5	1203
810	10	8	569
850	10	4	1402
900	10	5	1049
905	10	1	20979
Refusal			

**DCP (2)** TP (2) 1270 mm BGL

Depth (mm)	No. Blows	mm/blows	kPa
0	0		
120	10	12	336
160	10	4	1402
230	10	7	677
Refusal			

**DCP (3)** NGL

Depth (mm)	No. Blows	mm/blows	kPa
0	0		
100	10	10	426
130	10	3	2039
240	10	11	376
Refusal			

**DCP (4)** NGL

Depth (mm)	No. Blows	mm/blows	kPa
0	0		
10	20	1	20979
100	20	5	1203
Refusal			

**DCP (5)** NGL

Depth (mm)	No. Blows	mm/blows	kPa
0	0		
80	10	8	569
130	10	5	1049
160	10	3	2039
170	10	1	8514
Refusal			

**FUKUNAGA ARCHITECTS-ENGINEERS**  
**SWAZILAND SECONDARY SCHOOLS PROJECT**  
**DCP TEST RESULTS**

MANDULO

26/08/2010

**DCP (1)** TP (1) 1200 mm BGL

Depth (mm)	No. Blows	mm/blows	kPa
0	0		
230	5	46	58
335	5	21	162
440	5	21	162
555	5	23	144
660	5	21	162
770	5	22	153
855	5	17	213
960	5	21	162
1020	5	12	336
1050	5	6	827
1080	5	6	827
1110	10	3	2039
1140	10	3	2039
1150	10	1	8514
Refusal			

**DCP (2)** TP (2) 1500 mm BGL

Depth (mm)	No. Blows	mm/blows	kPa
0	0		
200	5	40	70
360	5	32	94
480	5	24	136
570	5	18	198
640	5	14	275
690	5	10	426
730	5	8	569
765	5	7	677
800	5	7	677
840	5	8	569
875	5	7	677
910	5	7	677
945	5	7	677
1000	10	6	927
1060	10	6	827
1115	10	6	927
1170	10	6	927
1220	10	5	1049
1265	10	5	1203
1300	10	4	1668
1350	10	5	1049
1400	10	5	1049
Refusal			

**DCP (3)** NGL

Depth (mm)	No. Blows	mm/blows	kPa
0	0		
200	10	20	173
350	10	15	251
450	5	20	173
530	5	16	231
575	5	9	488
620	5	9	488
660	5	8	569
710	5	10	426
770	5	12	336
830	5	12	336
880	5	10	426
930	5	10	426
1000	5	14	275
1050	5	10	426
1140	5	18	198
1265	5	25	129
1370	5	21	162
1460	5	18	198
1550	5	18	198
1630	5	16	231
1710	5	16	231
1800	5	18	198
1880	5	16	231
1950	5	14	275
2000	2	25	129

**DCP (4)** NGL

Depth (mm)	No. Blows	mm/blows	kPa
0	0		
110	10	11	376
190	10	8	569
300	10	11	376
390	10	9	488
470	10	8	569
540	10	7	677
590	10	5	1049
650	10	6	827
720	10	7	677
780	10	6	827
860	10	8	569
920	10	6	827
1000	10	8	569
1090	10	9	488
1210	10	12	336
1360	10	15	251
1510	10	15	251
1650	10	14	275
1780	10	13	303
1900	10	12	336
2000	10	10	426

**DCP (5)** NGL

Depth (mm)	No. Blows	mm/blows	kPa
0	0		
120	10	12	336
205	10	9	526
275	10	7	677
375	10	10	426
470	10	10	455
570	10	10	426
650	10	8	569
740	10	9	488
850	10	11	376
950	10	10	426
1040	10	9	488
1210	10	17	213
1310	5	20	173
1410	5	20	173
1510	5	20	173
1590	5	16	231
1670	5	16	231
1740	5	14	275
1820	5	16	231
1880	5	12	336
1930	5	10	426
2000	4	18	206



**FUKUNAGA ARCHITECTS-ENGINEERS**  
**SWAZILAND SECONDARY SCHOOLS PROJECT**  
**DCP TEST RESULTS**

NHLAMBENI

26/08/2010

**DCP (1)** TP (1) 1220 mm BGL

Depth (mm)	No. Blows	mm/blows	kPa
0	0		
110	10	11	376
170	10	6	827
250	10	8	569
385	10	14	288
550	10	17	222
800	10	25	129
1050	10	25	129
1070	10	2	3455
Refusal			

**DCP (2)** TP (2) 1380 mm BGL

Depth (mm)	No. Blows	mm/blows	kPa
0	0		
250	10	25	129
465	10	22	157
Refusal			

**DCP (3)** NGL

Depth (mm)	No. Blows	mm/blows	kPa
0	0		
120	10	12	336
285	10	17	222
430	10	15	263
570	10	14	275
615	10	5	1203
Refusal			

**DCP (4)** NGL

Depth (mm)	No. Blows	mm/blows	kPa
0	0		
160	10	16	231
290	10	13	303
360	10	7	677
430	10	7	677
510	10	8	569
580	10	7	677
750	10	17	213
920	10	17	213
1000	10	8	569
1030	10	3	2039
1050	10	2	3455
1085	10	4	1668
Refusal			

**DCP (5)** NGL

Depth (mm)	No. Blows	mm/blows	kPa
0	0		
80	10	8	569
130	10	5	1049
210	10	8	569
340	10	13	303
430	10	9	488
550	10	12	336
670	10	12	336
710	10	4	1402
760	10	5	1049
815	10	6	927
860	10	5	1203
900	10	4	1402
910	10	1	8514
Refusal			

**FUKUNAGA ARCHITECTS-ENGINEERS**  
**SWAZILAND SECONDARY SCHOOLS PROJECT**  
**DCP TEST RESULTS**

MLIBA

26/08/2010

**DCP (1)** TP (1) 1200 mm BGL

Depth (mm)	No. Blows	mm/blows	kPa
0	0		
Refusal			
ROCKS			

**DCP (2)** TP (2) 1480 mm BGL

Depth (mm)	No. Blows	mm/blows	kPa
0	0		
110	10	11	376
160	10	5	1049
200	10	4	1402
245	10	5	1203
290	10	5	1203
330	10	4	1402
390	10	6	827
475	10	9	526
530	10	6	927
575	10	5	1203
610	10	4	1668
650	10	4	1402
690	10	4	1402
750	10	6	827
790	10	4	1402
820	10	3	2039
850	10	3	2039
Refusal			

**DCP (3)** NGL

Depth (mm)	No. Blows	mm/blows	kPa
0	0		
140	20	7	677
270	20	7	746
340	10	7	677
375	10	4	1668
400	10	3	2585
430	10	3	2039
460	10	3	2039
490	10	3	2039
510	10	2	3455
540	10	3	2039
580	10	4	1402
590	10	1	8514
Refusal			

**DCP (4)** NGL

Depth (mm)	No. Blows	mm/blows	kPa
0	0		
80	20	4	1402
170	20	5	1203
270	20	5	1049
380	20	6	927
450	10	7	677
550	10	10	426
700	10	15	251
810	10	11	376
850	5	8	569
890	5	8	569
930	5	8	569
1000	5	14	275
1080	5	16	231
1140	5	12	336
1220	5	16	231
1260	5	8	569
1300	5	8	569
1320	5	4	1402
1360	5	8	569
1400	5	8	569
1440	5	8	569
1460	5	4	1402
Refusal			

**DCP (5)** NGL

Depth (mm)	No. Blows	mm/blows	kPa
0	0		
120	10	12	336
200	10	8	569
270	10	7	677
390	10	12	336
440	5	10	426
490	5	10	426
530	5	9	569
580	5	10	426
640	5	12	336
700	5	12	336
780	5	16	231
860	5	16	231
940	5	16	231
1000	5	12	336
1010	5	2	3455
1180	5	34	87
1230	5	10	426
1280	5	10	426
1330	5	10	426
1400	5	14	275
1440	5	8	569
1530	5	18	198
1570	5	8	569
1600	5	6	827
1620	5	4	1402
1660	5	8	569
1700	5	8	569
1750	10	5	1049
1790	10	4	1402
1830	10	4	1402
1870	10	4	1402
1940	10	7	677
1960	10	2	3455
2000	7	6	882

**FUKUNAGA ARCHITECTS-ENGINEERS**  
**SWAZILAND SECONDARY SCHOOLS PROJECT**  
**DCP TEST RESULTS**

MANTABENI

26/08/2010

DCP (1)		TP (1)		1600 mm BGL	
Depth (mm)	No. Blows	mm/blows	kPa		
0	0				
160	2	80	28		
220	2	30	102		
245	2	13	318		
370	5	25	129		
460	5	18	198		
545	5	17	213		
615	5	14	275		
680	5	13	303		
740	5	12	336		
790	5	10	426		
870	5	16	231		
920	5	10	426		
965	5	9	488		
1025	5	12	336		
1080	5	11	376		
1125	5	9	488		
1215	10	9	488		
1305	10	9	488		
1400	10	10	455		
1490	10	9	488		
1560	10	7	677		
1630	10	7	677		
1690	10	6	827		
1750	10	6	827		
1800	10	5	1049		
1860	10	6	827		
1920	10	6	827		
1980	10	6	827		
2000	10	2	3455		

DCP (2)		TP (2)		1550 mm BGL	
Depth (mm)	No. Blows	mm/blows	kPa		
0	0				
180	2	90	24		
240	2	30	102		
300	2	30	102		
360	2	30	102		
380	2	10	426		
415	2	18	206		
450	2	18	206		
525	2	38	76		
580	5	11	376		
630	5	10	426		
680	5	10	426		
735	5	11	376		
780	5	9	488		
865	10	9	526		
950	10	9	526		
1030	10	8	569		
Refusal					

DCP (3)		NGL	
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
200	5	40	70
340	5	28	112
560	4	55	46
680	2	60	41
755	2	38	76
815	2	30	102
860	2	23	148
910	2	25	129
940	2	15	251
1040	5	20	173
1140	5	20	173
1210	5	14	275
1260	5	10	426
1310	5	10	426
1360	5	10	426
1400	5	8	569
1435	5	7	677
1480	5	9	488
1520	5	8	569
1560	5	8	569
1600	5	8	569
1635	5	7	677
1675	5	8	569
1705	5	6	827
1740	5	7	677
1775	5	7	677
1850	10	8	619
1905	10	6	827
1955	10	5	1049
2000	10	5	1203

DCP (4)		NGL	
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
110	5	22	153
310	5	40	70
350	5	8	569
430	2	40	70
510	2	40	70
580	2	35	83
630	2	25	129
670	2	20	173
760	5	18	198
850	5	18	198
910	5	12	336
975	5	13	303
1020	5	9	488
1070	5	10	426
1110	5	8	569
1140	5	6	827
1220	10	8	569
1290	10	7	677
1345	10	6	927
1410	10	7	746
1470	10	6	827
1535	10	7	746
1600	10	7	746
1665	10	7	746
1725	10	6	827
1800	10	8	619
1865	10	7	746
1925	10	6	827
2000	10	8	619

DCP (5)		NGL	
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
190	5	38	75
400	5	42	66
610	5	42	66
745	5	27	117
825	5	16	231
865	5	8	569
1000	10	14	298
1110	10	11	376
1190	10	8	569
1265	10	8	619
1340	10	8	619
Refusal			

**FUKUNAGA ARCHITECTS-ENGINEERS**

**SWAZILAND SECONDARY SCHOOLS PROJECT**

**DCP TEST RESULTS**

HAWANE

26/08/2010

DCP (1) TP (1) 1600 mm BGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
360	5	72	33
650	5	58	43
910	5	52	50
1120	5	42	66
1320	5	40	70
1380	2	30	102
1440	2	30	102
1500	2	30	102
1570	2	35	83
1610	2	20	173
1655	2	23	148
1710	2	28	114
1765	2	28	114
1810	2	23	148
1870	2	30	102
1900	2	15	251
1940	2	20	173
2000	2	30	102

DCP (2) TP (2) 1700 mm BGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
200	2	100	21
260	2	30	102
370	2	55	46
430	2	30	102
500	2	35	83
570	2	35	83
630	2	30	102
700	2	35	83
760	2	30	102
830	2	35	83
930	5	20	173
1060	5	26	123
1160	5	20	173
1260	5	20	173
1360	5	20	173
1460	5	20	173
1570	5	22	153
1700	2	65	37
1800	5	20	173
1900	5	20	173
2000	5	20	173

DCP (3) NGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
80	5	16	231
180	5	20	173
265	5	17	213
300	5	7	677
340	5	8	569
410	5	14	275
550	5	28	112
630	2	40	70
730	2	50	52
810	2	40	70
910	2	50	52
980	2	35	83
1070	2	45	60
1170	2	50	52
1260	2	45	60
1310	2	25	129
1360	2	25	129
1410	2	25	129
1470	2	30	102
1490	2	10	426
1560	2	35	83
1620	2	30	102
1670	2	25	129
1730	2	30	102
1790	2	30	102
1850	2	30	102
1900	2	25	129
1950	2	25	129
2000	2	25	129

DCP (4) NGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
110	5	22	153
190	5	16	231
250	5	12	336
300	5	10	426
340	5	8	569
410	5	14	275
510	5	20	173
630	5	24	136
780	5	30	102
900	5	24	136
1000	5	20	173
1080	5	16	231
1170	5	18	198
1260	5	18	198
1320	5	12	336
1400	5	16	231
1500	5	20	173
1570	5	14	275
1670	5	20	173
1820	5	30	102
1930	5	22	153
2000	5	14	275

DCP (5) NGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
110	5	22	153
180	5	14	275
240	5	12	336
310	5	14	275
400	5	18	198
500	5	20	173
600	5	20	173
760	5	32	94
870	2	55	46
950	2	40	70
1020	2	35	83
1110	2	45	60
1150	2	20	173
1200	2	25	129
1250	2	25	129
1300	2	25	129
1350	2	25	129
1385	2	18	206
1430	2	23	148
1470	2	20	173
1510	2	20	173
1560	2	25	129
1600	2	20	173
1650	2	25	129
1680	2	15	251
1730	2	25	129
1770	2	20	173
1810	2	20	173
1860	2	25	129
1940	2	40	70
1960	2	10	426
2000	2	20	173

**FUKUNAGA ARCHITECTS-ENGINEERS**

**SWAZILAND SECONDARY SCHOOLS PROJECT**

**DCP TEST RESULTS**

HHELEHHELE

26/08/2010

DCP (1) TP (1) 1540 mm BGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
200	2	100	21
365	2	83	27
415	2	25	129
540	2	63	39
660	2	60	41
770	2	55	46
850	2	40	70
955	2	53	49
1050	2	48	56
1155	2	53	49
1230	2	38	76
1320	2	45	60
1420	2	50	52
1510	2	45	60
1580	2	35	83
1650	2	35	83
1700	2	25	129
1760	2	30	102
1810	2	25	129
1850	2	20	173
1900	2	25	129
1950	2	25	129
2000	2	25	129

DCP (2) TP (2) 1500 mm BGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
380	2	190	9
600	2	110	19
685	2	43	65
800	2	58	44
890	2	45	60
1000	2	55	46
1085	2	43	65
1165	2	40	70
1225	2	30	102
1325	2	50	52
1410	2	43	65
1470	2	30	102
1530	2	30	102
1600	2	35	83
1665	2	33	92
1735	2	35	83
1800	2	33	92
1850	2	25	129
1900	2	25	129
1950	2	25	129
2000	2	25	129

DCP (3) NGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
160	5	32	94
250	5	18	198
330	5	16	231
440	5	22	153
540	5	20	173
675	5	27	117
835	5	32	94
900	2	33	92
930	2	15	251
980	2	25	129
1030	2	25	129
1070	2	20	173
1110	2	20	173
1150	2	20	173
1190	2	20	173
1215	5	5	1049
1250	5	7	677
1350	2	50	52
1400	2	25	129
1430	2	15	251
1470	2	20	173
1530	2	30	102
1535	2	3	2585
1555	5	4	1402
1610	5	11	376
1655	5	9	488
1700	5	9	488
1720	5	4	1402
1755	5	7	677
1800	5	9	488
1840	5	8	569
1920	5	16	231
2000	4	20	173

DCP (4) NGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
85	5	17	213
125	5	8	569
160	5	7	677
200	5	8	569
250	5	10	426
310	5	12	336
385	5	15	251
460	5	15	251
540	5	16	231
620	5	16	231
720	5	20	173
820	5	20	173
910	5	18	198
1010	5	20	173
1130	5	24	136
1230	5	20	173
1350	5	24	136
1440	5	18	198
1520	5	16	231
1630	5	22	153
1730	5	20	173
1810	5	16	231
1900	5	18	198
2000	5	20	173

DCP (5) NGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
220	5	44	62
310	5	18	198
420	5	22	153
530	5	22	153
625	2	48	56
700	2	38	76
765	2	33	92
820	2	28	114
865	2	23	148
910	2	23	148
960	2	25	129
1000	2	20	173
1050	5	10	426
1155	5	21	162
1280	5	25	129
1405	5	25	129
1460	5	11	376
1690	5	46	58
1790	5	20	173
1900	5	22	153
2000	5	20	173

**FUKUNAGA ARCHITECTS-ENGINEERS**

**SWAZILAND SECONDARY SCHOOLS PROJECT**

**DCP TEST RESULTS**

ETFUNTINI

26/08/2010

DCP (1) TP (1) 1360 mm BGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
145	10	15	263
220	10	8	619
Refusal			

DCP (2) TP (2) 1450 mm BGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
130	10	13	303
255	10	13	318
330	10	8	619
400	10	7	677
470	10	7	677
570	10	10	426
640	10	7	677
760	10	12	336
860	10	10	426
950	10	9	488
1020	10	7	677
1060	10	4	1402
1105	10	5	1203
1135	10	3	2039
1165	10	3	2039
1180	10	2	5024
1200	10	2	3455
1220	10	2	3455
Refusal			

DCP (3) NGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
180	10	18	198
290	10	11	376
470	5	36	80
580	2	55	46
730	2	75	31
860	2	65	37
970	2	55	46
1035	2	33	92
1105	5	14	275
1160	5	11	376
1200	5	8	569
1260	5	12	336
1300	5	8	569
1335	5	7	677
1370	5	7	677
1410	5	8	569
1455	5	9	488
1465	5	2	3455
Refusal			

DCP (4) NGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
20	20	1	8514
30	20	1	20979
Refusal			

DCP (5) NGL			
Depth (mm)	No. Blows	mm/blows	kPa
0	0		
100	20	5	1049
130	20	2	5024
140	20	1	20979
Refusal			