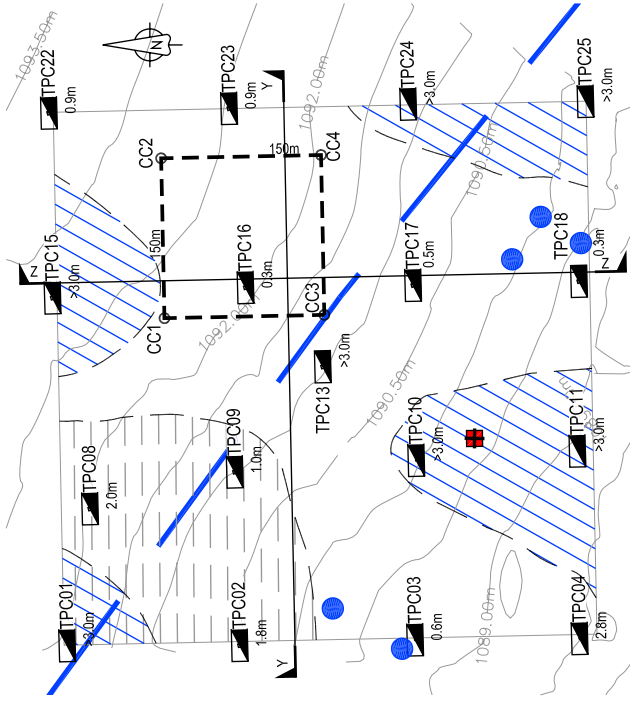


## APPENDIX C

### DRAWING J28199-C-001



PLAN  
SCALE 1:5 000

**LEGEND**

- HIGHLY EXPANSIVE CLAY
- DOLOMITE OUTCROP
- DOLOMITE BEDROCK <3m BELOW GROUND LEVEL
- DOLOMITE BEDROCK >3m BELOW GROUND LEVEL
- TEST PIT POSITION & DEPTH TO VERY SOFT ROCK OR BETTER
- MARKED GRAVE
- RECOMMENDED TERRACE POSITION
- LINEAMENT

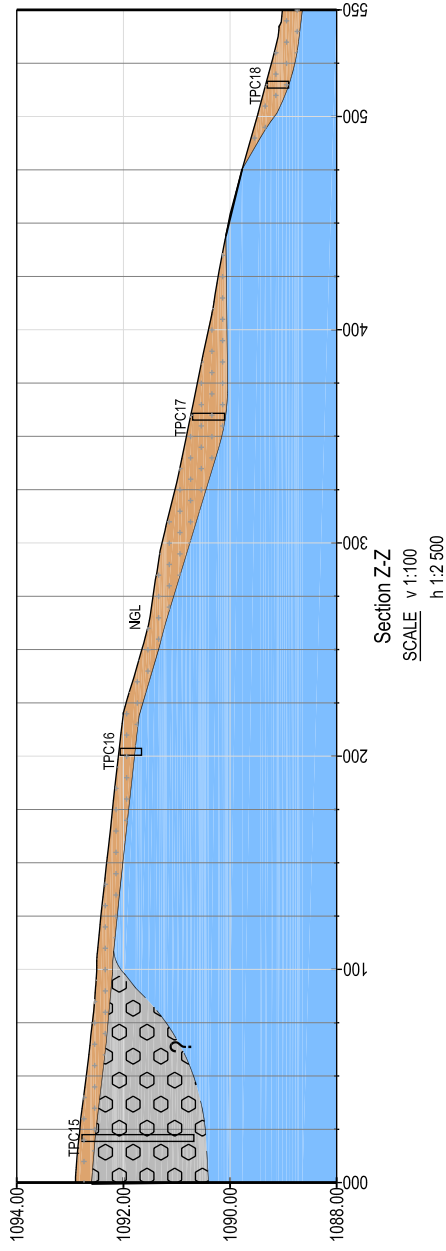
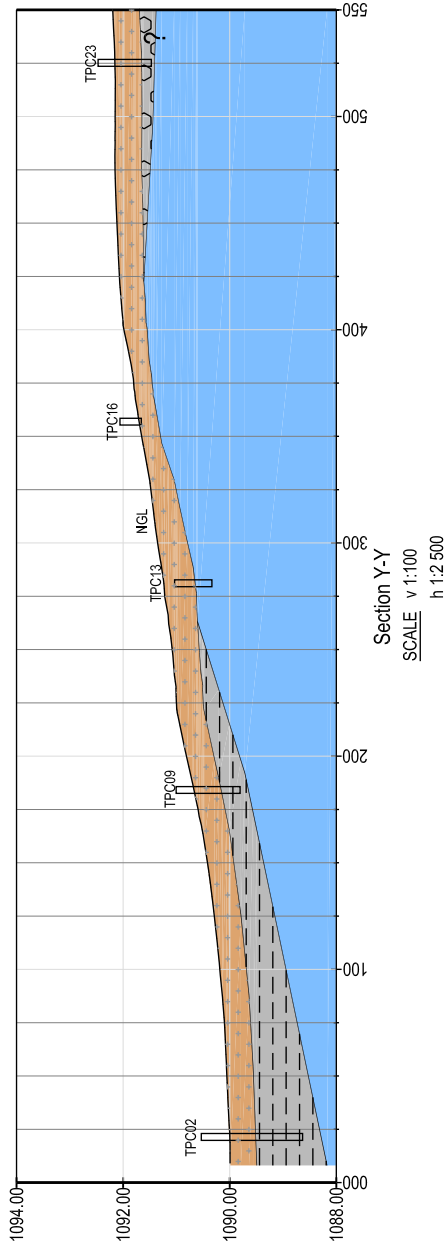
**SOIL/ROCK PROFILE**



**RECOMMENDED SITE POSITION**

Lo 27 (WGS 84 DATUM)

POINT	Y	X
CC1	+25 391.386	+2 755 172.029
CC2	+25 246.046	+2 755 209.127
CC3	+25 428.485	+2 755 317.369
CC4	+25 283.145	+2 755 354.467



PROJECT ESKOM - DWAAALBOOM SUBSTATION

DETAIL  
SITE C  
TEST PIT POSITIONS &  
SOIL/ROCK PROFILE CROSS SECTIONS

Approved By

Drawn By MLST

Designed By MR

Reviewed By

Scale 1:5 000

Date 20/08/2008

Project No. J28199

Dwg. No. C001

Rev. / 0



**GIBB**  
ENGINEERING & SCIENCE

This drawing is not to be used in whole, or part, other than for the intended purpose and project as defined on this drawing.

Refer to the contract for full terms and conditions.

## APPENDIX D

### DWAALBOOM PPC CEMENT QUARRY - LABORATORY DATA



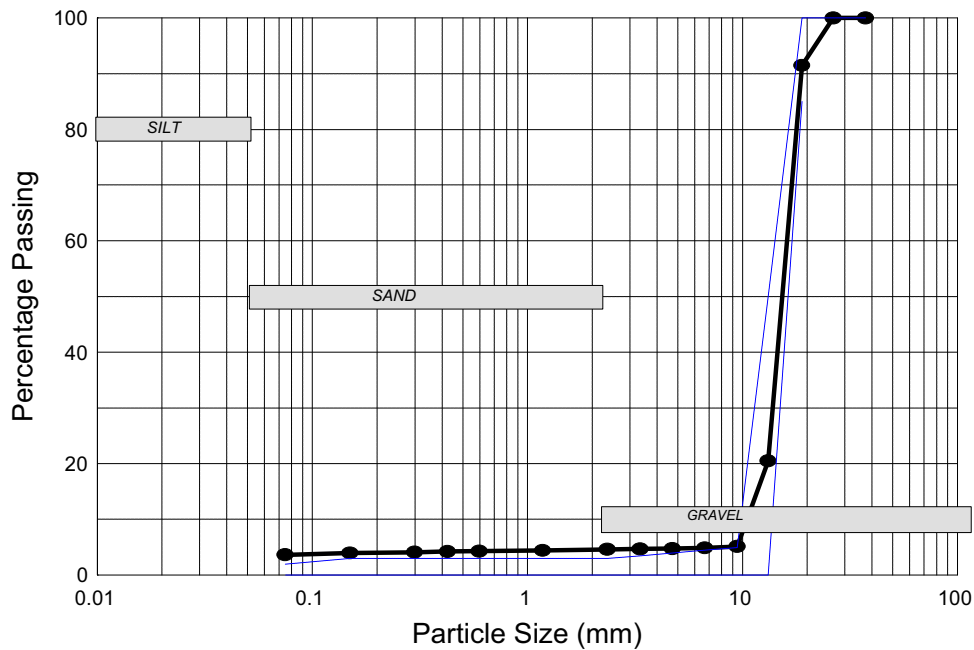
## GRADING ANALYSIS FOR 19mm CONCRETE AGGREGATE

Client	CONSULTAURI DESIGN		
Location	PPC - DWALBOOM ( 19mm STONE )		
Date	20 MARCH 2006	Test No	551
Job No	06134	Checked By	EB

### SIEVE ANALYSIS

Values are expressed as a percentage of the total sample

Sieve Size (mm)	Total Passing (%)
37.50	100.00
26.50	100.00
19.00	91.50
13.20	20.51
9.50	5.20
6.70	4.90
4.75	4.80
3.35	4.71
2.36	4.64
1.18	4.49
0.60	4.33
0.425	4.24
0.30	4.16
0.15	3.97
0.075	3.70





**GEO PRACTICA**

SOILS & MATERIALS TESTING  
P.O.BOX 227, MARAISBURG, 1700

TEL: (011) 674 1325  
FAX: (011) 674 4513  
e mail: lab@geopractica.co.za

## AGGREGATE CRUSHING VALUE

TMH 1 Method B1 - Non standard

Client	Consultauri Design		
Location	PPC Dwaalboom Expansion (19.0mm aggregate)		
Date	27 March 2006	Test No	552
Job No	06134	Checked By	EB

<b>Aggregate Crushing Value</b>
---------------------------------

29
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**GEO PRACTICA**

SOILS & MATERIALS TESTING  
P.O.BOX 227, MARAISBURG, 1700

TEL: (011) 674 1325  
FAX: (011) 674 4513  
e mail: lab@geopractica.co.za

## FLAKINESS INDEX

SABS Test Method 847

Client	Consultauri Design		
Location	PPC Dwaalboom Expansion (19.0mm aggregate)		
Date	27 March 2006	Test No	552(b)
Job No	06134	Checked By	EB

**Flakiness Index**

10



# GEO PRACTICA

SOILS & MATERIALS TESTING  
P.O.BOX 227, MARAISBURG, 1700

TEL: (011) 674 1325  
FAX: (011) 674 4513  
e mail: lab@geopractica.co.za

## 10% FACT

TMH 1 Method B2 - Non standard

Client	Consultauri Design		
Location	PPC Dwaalboom Expansion (19.0mm aggregate)		
Date	27 March 2006	Test No	553
Job No	06134	Checked By	EB

<b>10% FACT Value</b>
-----------------------

225kN
-------



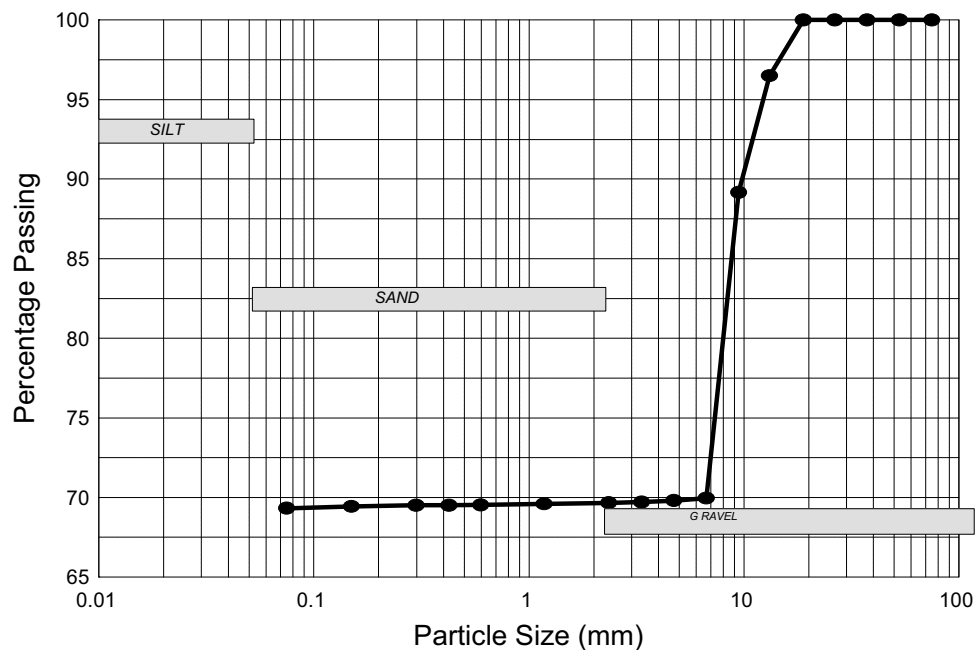
## GRADING ANALYSIS

Client	CONSULTAURI DESIGN		
Location	PPC - DWALBOOM ( 13.2mm STONE )		
Date	20 MARCH 2006	Test No	554
Job No	06134	Checked By	EB

## SIEVE ANALYSIS

Values are expressed as a percentage of the total sample

Sieve Size (mm)	Total Passing (%)
75.00	100.00
53.00	100.00
37.50	100.00
26.50	100.00
19.00	100.00
13.20	96.50
9.50	89.17
6.70	69.97
4.75	69.80
3.35	69.72
2.36	69.67
1.18	69.61
0.60	69.55
0.425	69.53
0.30	69.52
0.15	69.46
0.075	69.33







**GEO PRACTICA**

SOILS & MATERIALS TESTING  
P.O.BOX 227, MARAISBURG, 1700

TEL: (011) 674 1325  
FAX: (011) 674 4513  
e mail: lab@geopractica.co.za

## FLAKINESS INDEX

SABS Test Method 847

Client	Consultauri Design		
Location	PPC Dwaalboom Expansion (13.2mm aggregate)		
Date	27 March 2006	Test No	554(b)
Job No	06134	Checked By	EB

**Flakiness Index**

17



# GEO PRACTICA

SOILS & MATERIALS TESTING  
P.O.BOX 227, MARAISBURG, 1700

TEL: (011) 674 1325  
FAX: (011) 674 4513  
e mail: lab@geopractica.co.za

## 10% FACT

TMH 1 Method B2 - Non standard

Client	Consultauri Design		
Location	PPC Dwaalboom Expansion (13.2mm aggregate)		
Date	27 March 2006	Test No	556
Job No	06134	Checked By	EB

**10% FACT Value**

305kN



# GEO PRACTICA

SOILS & MATERIALS TESTING  
P.O.BOX 227, MARAISBURG, 1700

TEL: (011) 674 1325

FAX: (011) 674 4513

e mail: lab@geopractica.co.za

## GRADING ANALYSIS - FINE AGGREGATE FOR CONCRETE

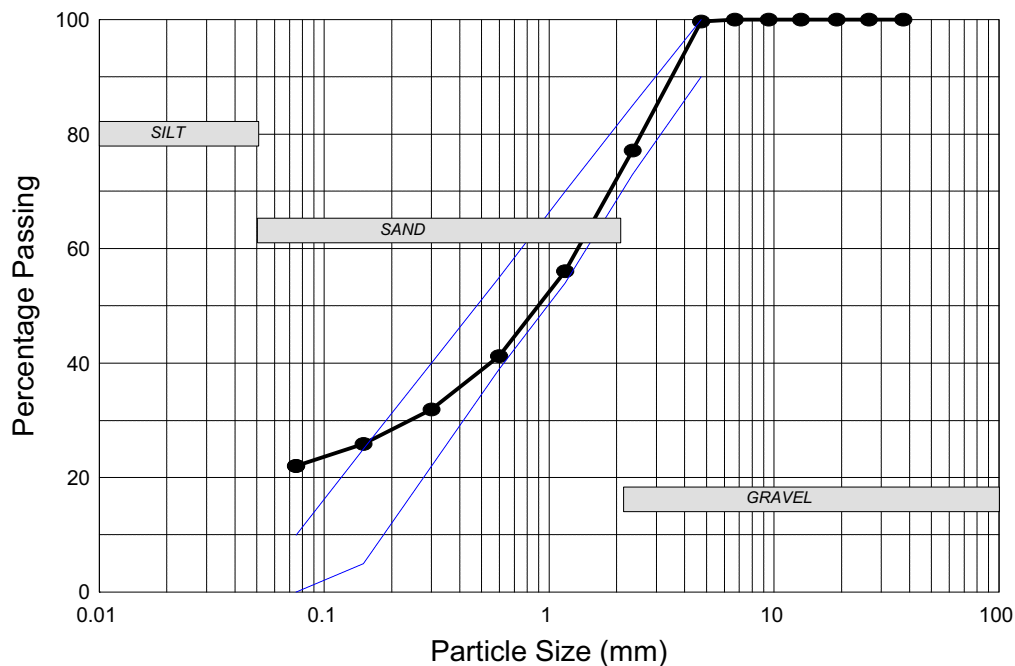
Client	CONSULTAURI DESIGN		
Location	PPC - DWALBOOM ( CRUSHER SAND )		
Date	20 MARCH 2006	Test No	558
Job No	06134	Checked By	EB

### SIEVE ANALYSIS

Values are expressed as a percentage of the total sample

Sieve Size (mm)	Total Passing (%)
37.50	100.00
26.50	100.00
19.00	100.00
13.20	100.00
9.50	100.00
6.70	100.00
4.75	99.72
2.360	77.18
1.180	56.06
0.600	41.23
0.30	31.98
0.15	25.90
0.075	22.09

Fineness Modulus
2.68



Programed Data

Revision No 1 (28/02/2001)



# ROADLAB

(PTY) LTD/(EDMS) BPK Reg. No. 65/08083/07  
VAT No. 4660115884

**42 YEARS. Est. 1965**

OUR REF. 95/66/0005/asp YOUR REF. DATE 2006/12/07

Concor Construction (Pty) Ltd  
P.O. Box 952  
Crown Mines  
2025

ATTENTION: Mr. Tristan Cowley

Dear Sir

**Test Report : DWAAALBOOM : AGGREGATE TEST RESULTS**

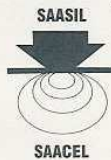
Please find the attached test results for the sample/s as submitted to and tested by Roadlab (PTY)Ltd. in Primrose, Germiston.  
The unambiguous description of the sample/s as received are as follows :

SAMPLE NO	1	1	2	REMARKS & NOTES
CONTAINER USED FOR SAMPLING	Plastic Bag	Plastic Bag	Plastic Bag	
MOISTURE CONDITION OF SAMPLE ON ARRIVAL	Dry	Dry	Dry	
HOLE NO. / KM OR CHAINAGE	Not Specified	Not Specified	Not Specified	
ROAD NO OR NAME	Dwaalboom	Dwaalboom	Dwaalboom	
LAYER TESTED / SAMPLED FROM	Stockpile 1	Stockpile 2	Stockpile 1	
DATE SAMPLED	2006/12/04	2006/12/04	2006/12/04	
DATE RECEIVED	2006/12/04	2006/12/04	2006/12/04	
CLIENTS MARKING	None	None	None	
DESCRIPTION OF SAMPLE (COLOUR & TYPE)	Dolomite 19mm	Dolomite 13mm	Dolomite 19mm	
NOMINAL SIZE OF STONE	19mm	13mm	19mm	
				MIN - MAX
Sieve size (mm) T/MH 1 B4	75.0			- -
	53.0			- -
	37.5			- -
	26.5			- -
	19.0	96		100 -
	13.2	29	100	98 -
	9.5	4	46	28 -
	6.7	3	2	1 -
	4.75	3	2	1 -
	2.36			- -
	1.18			- -
	0.600			- -
	0.300			- -
	0.150			- -
Dust / stof % 0.075	2.1	1.2	0.6	- -

FM	#	[B13]			
ACV (%)	#	[B1]		14.2	
10 % FACT (kN)	#	[B2]			
Flakiness Index	#	[B3]			
Organic Material (Y / N)	#	[B6]			
Loose Bulk Density	#	[B9]			
Compacted Bulk Density	#	[B9]			
Shrinkage (%)	#	[B10]			
Expansion (%)	#	[B10]			
Del. Subs (%)	#	[B12]			
Soluble salt (%)	#	[B16]			
Soluble Sulfates (%)	#	[B17]			
Ave. Least Dimcnson (mm)	#	[B18(a)]			
Sand Equivalent	#	[B19]			
Relative density	#	O 8108b			
pH	#	[A20]			
Chlorides (%)	#	[830]			
ARD (-4.75mm)	#	[833]	2.888		2.892
BRD (-4.75mm)	#	[835]	2.744		2.267
ARD (+4.75mm)	#	[837]		2.779	
BRD (+4.75mm)	#	[848]		2.722	
Mg2SO4 Soundns	#	[839]			
Alkali reactive (Y / N)	#				
Water absorption (%)	#	[843]	1.8	0.8	0.4

# - This is not a accredited test  
Kind Regards

Remarks :  
The samples were subjected to analysis according to SABS  
Sanas Accredited Laboratory - T 0296  
The results reported relate only to the sample tested  
Further use of the above information is not the responsibility or liability of Roadlab  
Documents may only be reproduced or published in their full context  
Compiled By : Miss Lucinda Seetal



FOR ROADLAB (PTY) LTD.

MANAGING DIRECTOR : D. BEEKHUIZEN  
DIRECTOR : R.D. MAHLAKOANE  
CONSULTANTS : H.C. THOMPSON, M. HUGHES, F.W.J. KOEN, J. SIMOES, A. BESTER



MASTERSAGGREGATEVAGG-SPEC T0296





OUR REF. 95/66/0005/asp

YOUR REF.

DATE

2006/12/07

Concor Construction (Pty) Ltd  
P.O. Box 952  
Crown Mines  
2025

ATTENTION: Mr. Tristan Cowley

Dear Sir

**Test Report : DWAAALBOOM : AGGREGATE TEST RESULTS**

Please find the attached test results for the sample/s as submitted to and tested by Roadlab (PTY)Ltd. in Primrose, Germiston. The unambiguous description of the sample/s as received are as follows :

SAMPLE NO	2	1	2	REMARKS & NOTES
CONTAINER USED FOR SAMPLING	Plastic Bag	Plastic Bag	Plastic Bag	
MOISTURE CONDITION OF SAMPLE ON ARRIVAL	Dry	Dry	Dry	
HOLE NO. / KM OR CHAINAGE	Not Specified	Not Specified	Not Specified	
ROAD NO OR NAME	Dwaalboom	Dwaalboom	Dwaalboom	
LAYER TESTED / SAMPLED FROM	Stockpile 2	Stockpile 3	Stockpile 3	
DATE SAMPLED	2006/12/04	2006/12/04	2006/12/04	
DATE RECEIVED	2006/12/04	2006/12/04	2006/12/04	
CLIENTS MARKING	None	None	None	
DESCRIPTION OF SAMPLE (COLOUR & TYPE)	Dolomite 13mm	Dolomite Crusher Sand	Dolomite Crusher Sand	
				SPECIFICATION
NOMINAL SIZE OF STONE	13mm	Crusher Sand	Crusher Sand	MIN - MAX
Sieve size (mm) TMH 1 B4	75.0			-
	53.0			-
	37.5			-
	26.5			-
	19.0			-
	13.2	100		
	9.5	55	100	
	6.7	16	100	100
	4.75	14	99	99
	2.36	11	70	71
	1.18	11	49	51
	0.600		38	41
	0.300		32	36
	0.150		29	33
Dust / stof % 0.075	9.7	27.3	31.3	-

FM	#	[B13]			
ACV (%)	#	[B1]			
10 % FACT (kN)	#	[B2]			
Flakiness Index	#	[B3]			
Organic Material (Y/N)	#	[B6]			
Loose Bulk Density	#	[B9]			
Compacted Bulk Density	#	[B9]			
Shrinkage (%)	#	[B10]			
Expansion (%)	#	[B10]			
Del. Subs (%)	#	[B12]			
Soluble salt (%)	#	[B16]			
Soluble Sulfates (%)	#	[B17]			
Ave. Least Dimension (mm)	#	[B18(a)]			
Sand Equivalent	#	[B19]	56.3	54.1	
Relative density	#	O 8108b			
pH	#	[A20]			
Chlorides (%)	#	[830]			
ARD (-4.75mm)	#	[833]			
BRD (-4.75mm)	#	[835]			
ARD (+4.75mm)	#	[837]	2.792	2.775	2.638
BRD (+4.75mm)	#	[848]	2.748	2.738	2.527
Mg2SO4 Soundns	#	[839]			
Alkali reactive (Y/N)	#				
Water absorption (%)	#	[843]	0.6	0.5	1.7

# - This is not a accredited test

Page 2/2

Kind Regards

Remarks :

The samples were subjected to analysis according to SABS  
Sanas Accredited Laboratory - T 0296

The results reported relate only to the sample tested

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Compiled By : Miss Lucinda Seetal

S A N A S



ACCREDITED LABORATORY

T0296



MANAGING DIRECTOR : D. BEEKHUIZEN

DIRECTOR : R.D. MAHLAKOANE

CONSULTANTS : H.C. THOMPSON, M. HUGHES, F.W.J. KOEN, J. SIMOES, A. BESTER

MASTERSAGGREGATEAGG-SPEL

## APPENDIX E

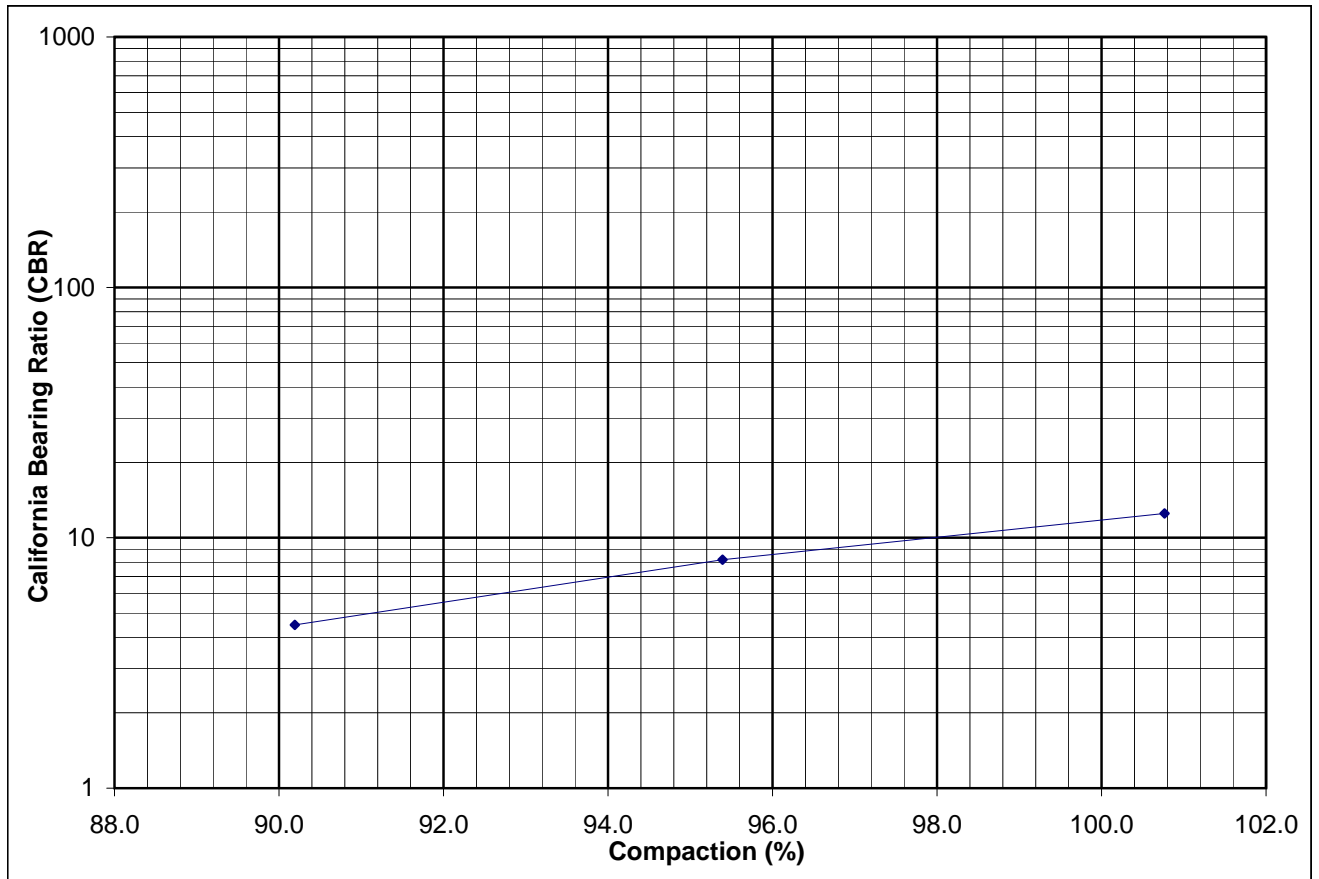
### CIVILAB LABORATORY TEST RESULTS

## California Bearing Ratio Results

Project:	DWAALBOOM		
Project No.:	1039/F76/10/2008	Date:	12 Nov 2008
Field Reference:	TP A 08 / 1	Lab. Sample Ref:	K639
Depth (m):	0.5 - 1.2	Remarks:	Untreated
Description:	FE - HILLWASH		

CBR at			Swell (%)	Final Moisture Content (%)	Mod AASHTO Data		CBR Compaction Data		
2.54 (mm)	5.08 (mm)	7.62 (mm)			Max Dry Density (kg/m <sup>3</sup> )	Optimum Moisture (%)	Dry Density (kg/m <sup>3</sup> )	Compaction (%)	Moisture Content (%)
12	10	9	1.0	19.5	1765	16.9	1779	100.8	16.8
8	7	6	1.6	21.8			1684	95.4	
4	4	4	1.5	25.2			1592	90.2	

Interpolated Data	Compaction	90%	93%	95%	98%	100%
	CBR	4.4	6.2	7.8	10.0	11.8



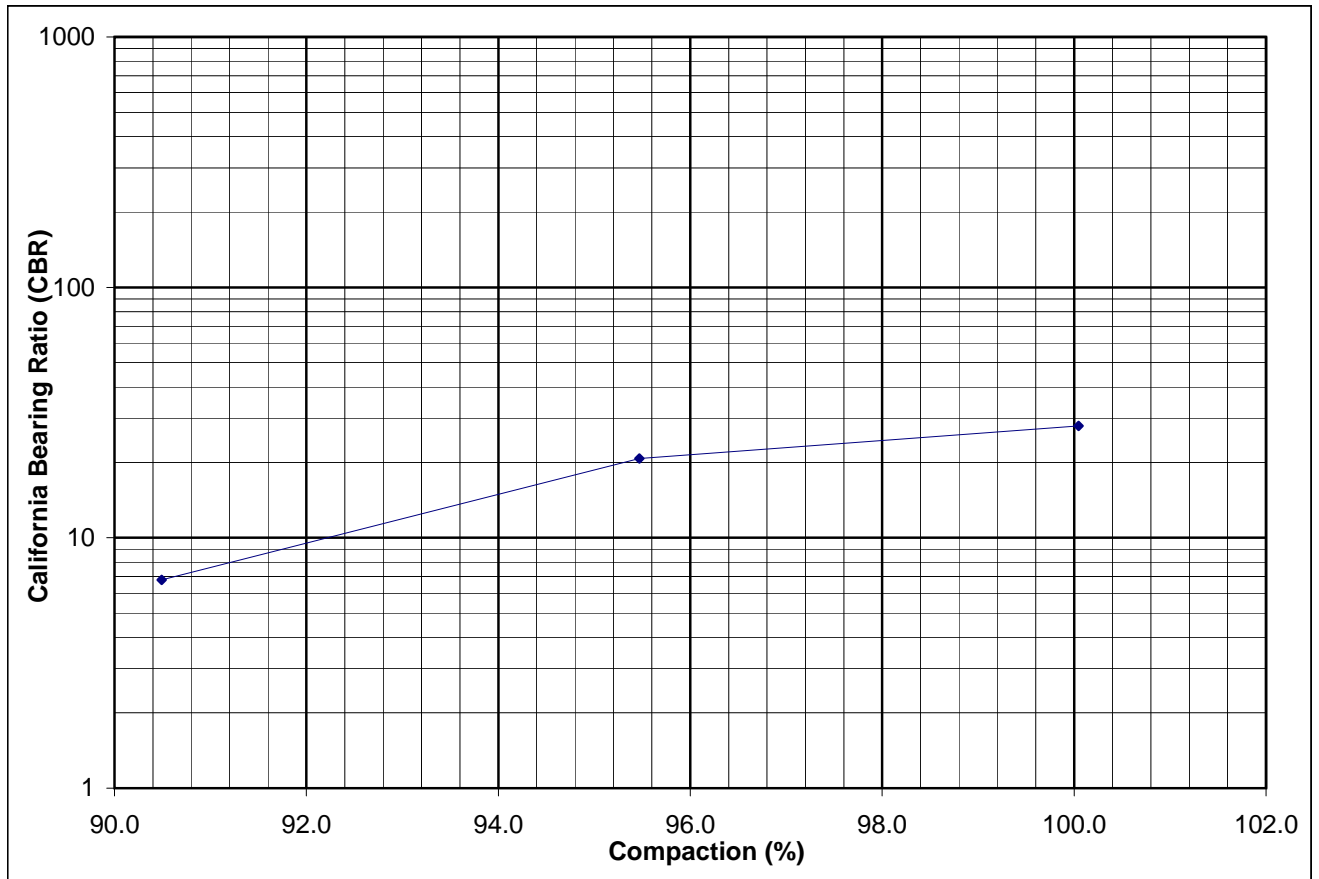
The samples were tested in accordance with Method A8 of TMH1 of 1990.  
The results reported relate only to the samples tested.  
Documents may only be reproduced or published in their full context.

## California Bearing Ratio Results

Project:	DWAALBOOM		
Project No.:	1039/F76/10/2008	Date:	12 Nov 2008
Field Reference:	TP A 10 / 1	Lab. Sample Ref:	K640
Depth (m):	1.0 - 1.4	Remarks:	Untreated
Description:	FE - HILLWASH		

CBR at			Swell (%)	Final Moisture Content (%)	Mod AASHTO Data		CBR Compaction Data		
2.54 (mm)	5.08 (mm)	7.62 (mm)			Max Dry Density (kg/m <sup>3</sup> )	Optimum Moisture (%)	Dry Density (kg/m <sup>3</sup> )	Compaction (%)	Moisture Content (%)
28	24	22	0.5	11.9	2068	10.2	2069	100.0	10.1
21	17	16	0.7	14.1			1974	95.5	
7	6	6	0.6	15.6			1871	90.5	

Interpolated Data	Compaction	90%	93%	95%	98%	100%
	CBR	6.1	11.9	18.7	24.5	27.9



The samples were tested in accordance with Method A8 of TMH1 of 1990.  
 The results reported relate only to the samples tested.  
 Documents may only be reproduced or published in their full context.

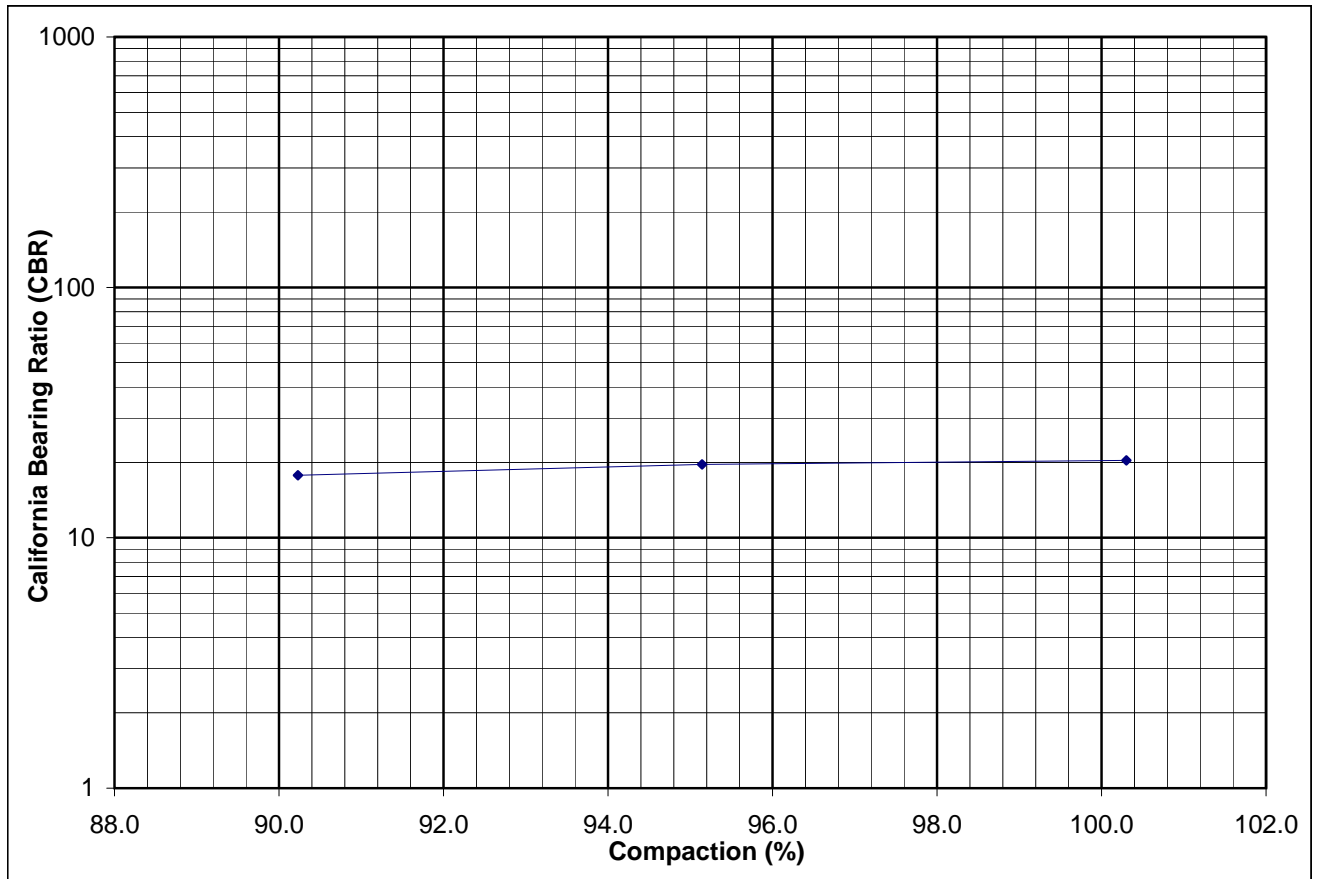


## California Bearing Ratio Results

Project:	DWAALBOOM		
Project No.:	1039/F76/10/2008	Date:	12 Nov 2008
Field Reference:	TP A 10 / 2	Lab. Sample Ref:	K641
Depth (m):	1.9	Remarks:	Untreated
Description:	CONGLOMERATE		

CBR at			Swell (%)	Final Moisture Content (%)	Mod AASHTO Data		CBR Compaction Data		
2.54 (mm)	5.08 (mm)	7.62 (mm)			Max Dry Density (kg/m <sup>3</sup> )	Optimum Moisture (%)	Dry Density (kg/m <sup>3</sup> )	Compaction (%)	Moisture Content (%)
20	19	18	0.2	9.4	2113	8.9	2119	100.3	8.8
20	19	17	0.3	12.9			2010	95.1	
18	17	15	0.3	18.2			1906	90.2	

Interpolated Data	Compaction	90%	93%	95%	98%	100%
	CBR	17.7	18.8	19.6	20.0	20.3



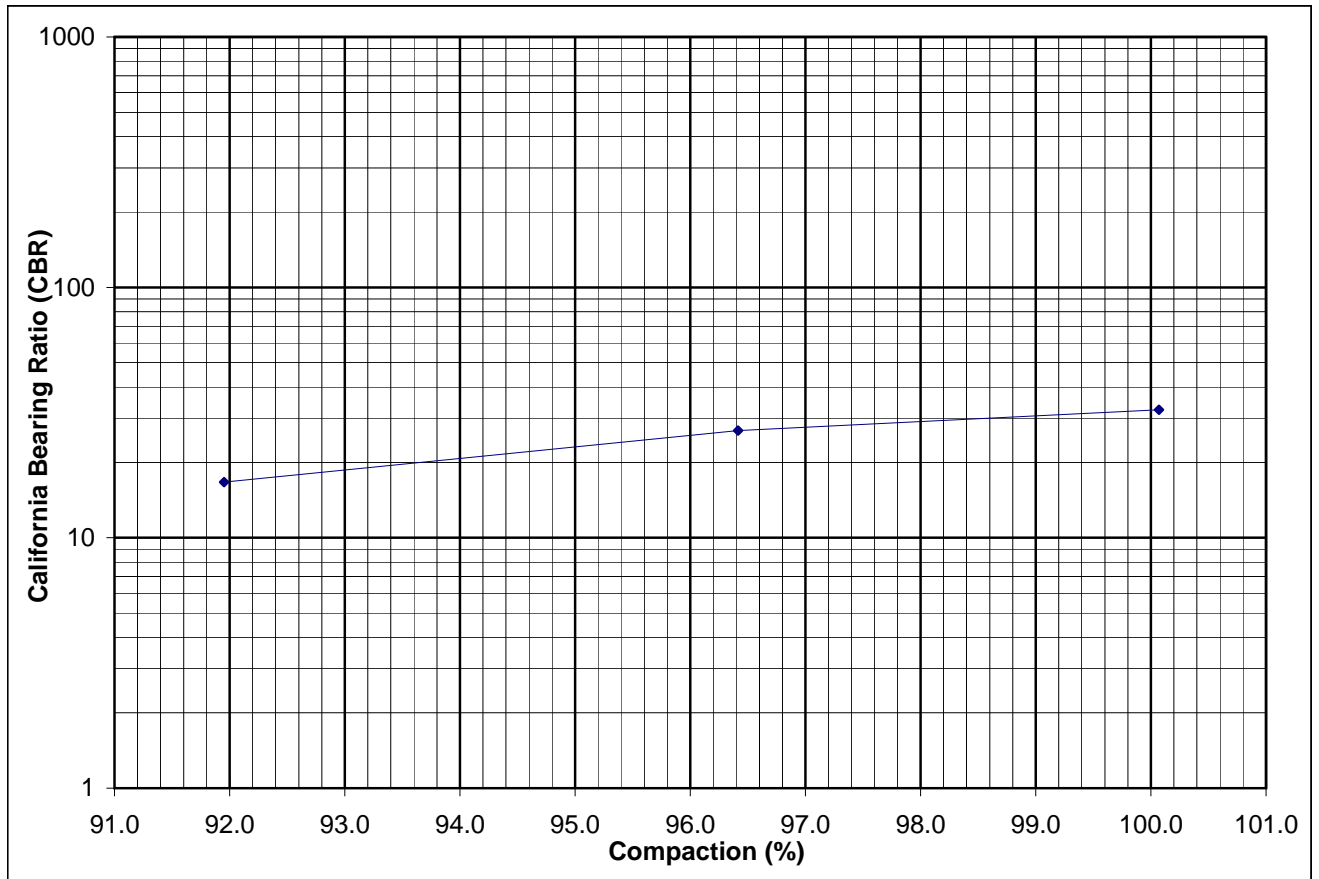
The samples were tested in accordance with Method A8 of TMH1 of 1990.  
 The results reported relate only to the samples tested.  
 Documents may only be reproduced or published in their full context.

## California Bearing Ratio Results

Project:	DWAALBOOM		
Project No.:	1039/F76/10/2008	Date:	7 Nov 2008
Field Reference:	TP A 16 / 1	Lab. Sample Ref:	K644
Depth (m):	1.4 - 2.0	Remarks:	Untreated
Description:	RE - SHALE		

CBR at			Swell (%)	Final Moisture Content (%)	Mod AASHTO Data		CBR Compaction Data		
2.54 (mm)	5.08 (mm)	7.62 (mm)			Max Dry Density (kg/m <sup>3</sup> )	Optimum Moisture (%)	Dry Density (kg/m <sup>3</sup> )	Compaction (%)	Moisture Content (%)
32	29	27	0.6	8.9	2218	7.2	2219	100.1	6.9
27	27	24	0.4	9.5			2138	96.4	
17	16	15	0.4	10.5			2039	92.0	

Interpolated Data	Compaction	90%	93%	95%	98%	100%
	CBR		13.6	18.7	23.1	29.1



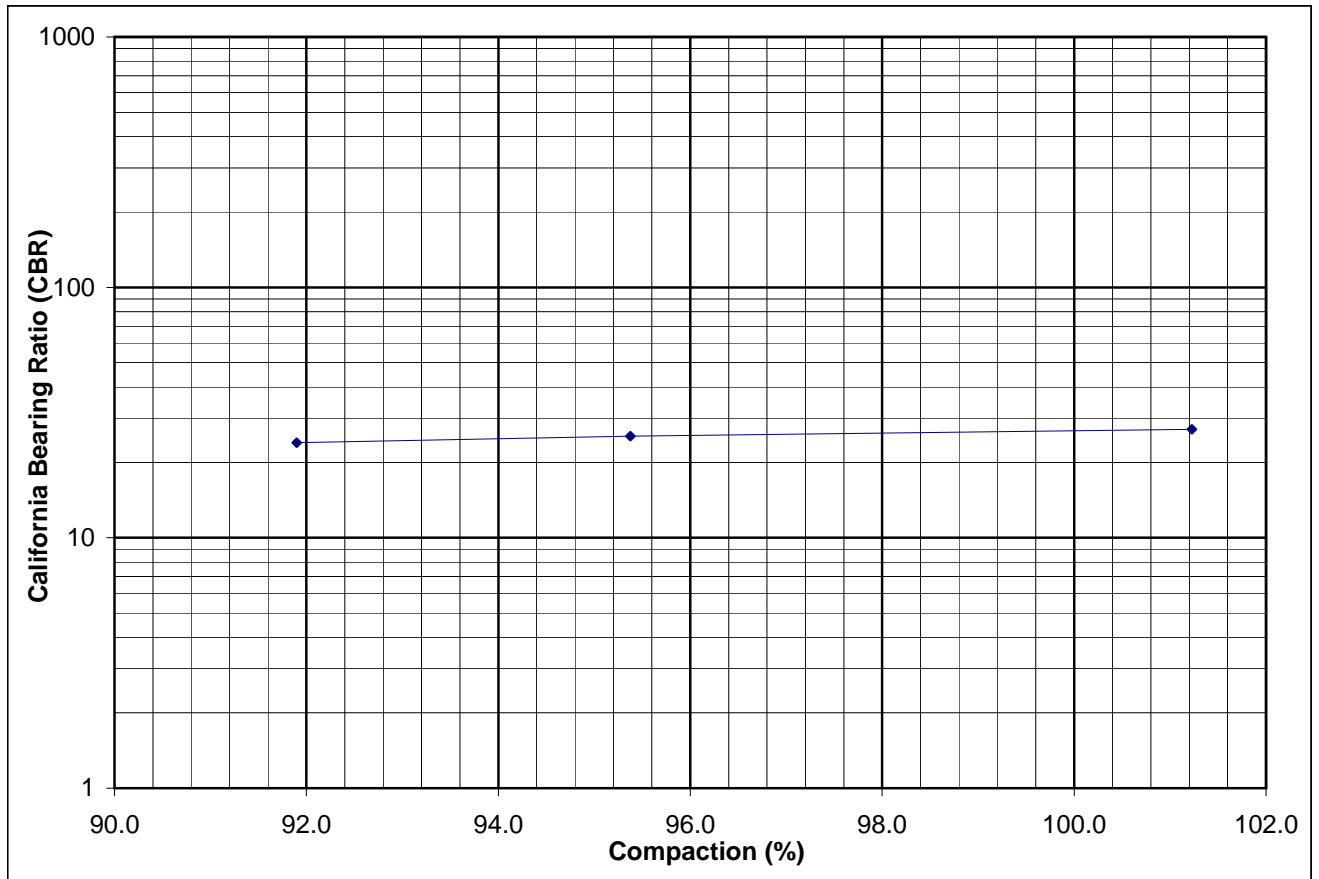
The samples were tested in accordance with Method A8 of TMH1 of 1990.  
 The results reported relate only to the samples tested.  
 Documents may only be reproduced or published in their full context.

## California Bearing Ratio Results

Project:	DWAALBOOM		
Project No.:	1039/F76/10/2008	Date:	11/11/2008
Field Reference:	TP B 1 / 1	Lab. Sample Ref:	K649
Depth (m):	0.2 - 1.3	Remarks:	Untreated
Description:	FE - HILLWASH		

CBR at			Swell (%)	Final Moisture Content (%)	Mod AASHTO Data		CBR Compaction Data		
2.54 (mm)	5.08 (mm)	7.62 (mm)			Max Dry Density (kg/m <sup>3</sup> )	Optimum Moisture (%)	Dry Density (kg/m <sup>3</sup> )	Compaction (%)	Moisture Content (%)
27	35	39	0.3	16.4	1938	14.6	1962	101.2	14.5
25	30	32	0.1	20.1			1848	95.4	
24	30	31	0.0	21.2			1781	91.9	

Interpolated Data	Compaction	90%	93%	95%	98%	100%
	CBR	23.2	24.4	25.3	26.2	26.7



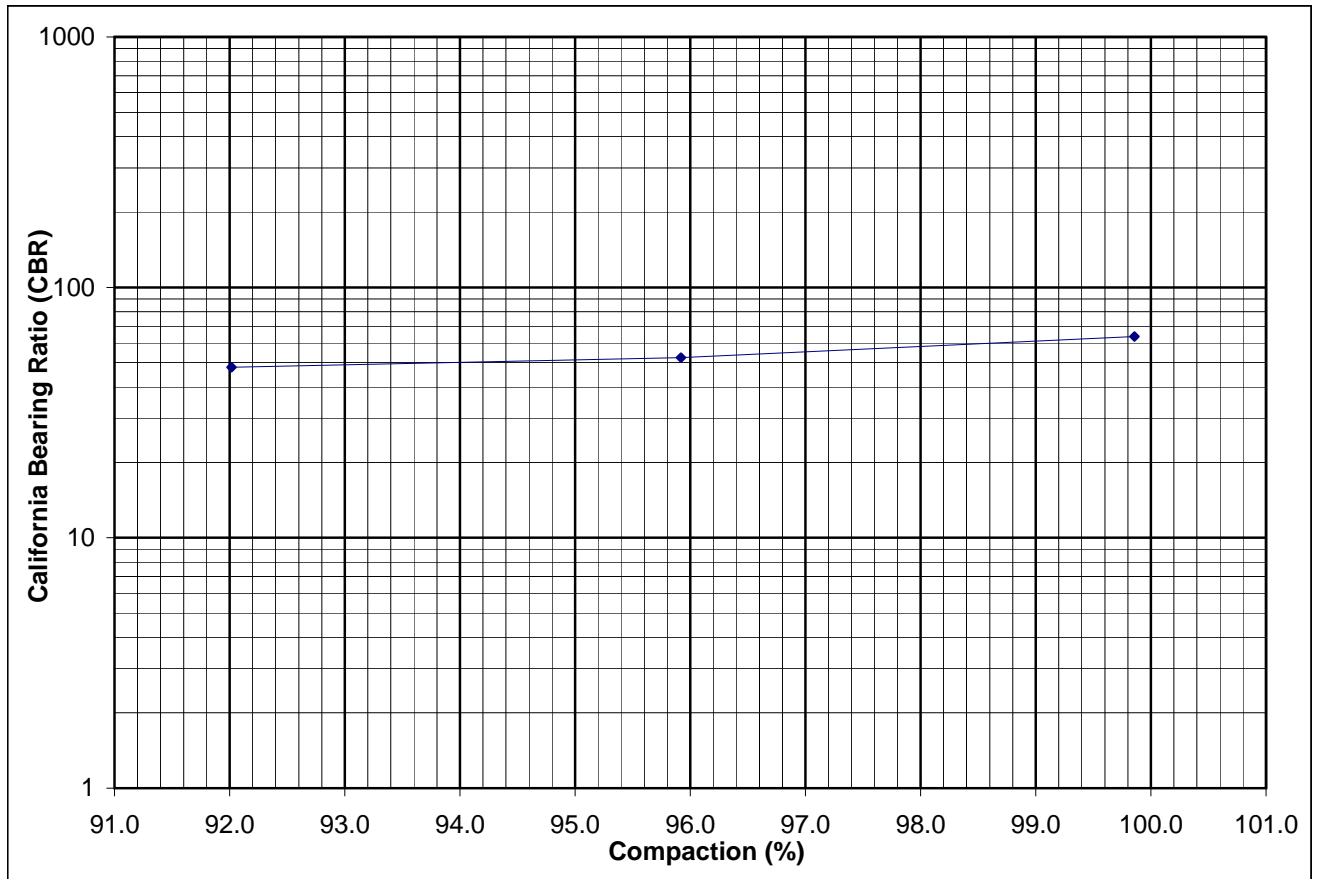
The samples were tested in accordance with Method A8 of TMH1 of 1990.  
 The results reported relate only to the samples tested.  
 Documents may only be reproduced or published in their full context.

## California Bearing Ratio Results

Project:	DWAALBOOM		
Project No.:	1039/F76/10/2008	Date:	11/11/2008
Field Reference:	TP B 15 / 1	Lab. Sample Ref:	K650
Depth (m):	0.0 - 0.8	Remarks:	Untreated
Description:	COLLUVIUM		

CBR at			Swell (%)	Final Moisture Content (%)	Mod AASHTO Data		CBR Compaction Data		
2.54 (mm)	5.08 (mm)	7.62 (mm)			Max Dry Density (kg/m <sup>3</sup> )	Optimum Moisture (%)	Dry Density (kg/m <sup>3</sup> )	Compaction (%)	Moisture Content (%)
64	90	106	0.1	8.4	2249	7.1	2245	99.9	7.2
52	72	87	0.0	9.2			2157	95.9	
48	54	54	0.0	10.5			2069	92.0	

Interpolated Data	Compaction	90%	93%	95%	98%	100%
	CBR	45.8	49.1	51.4	58.1	64.2



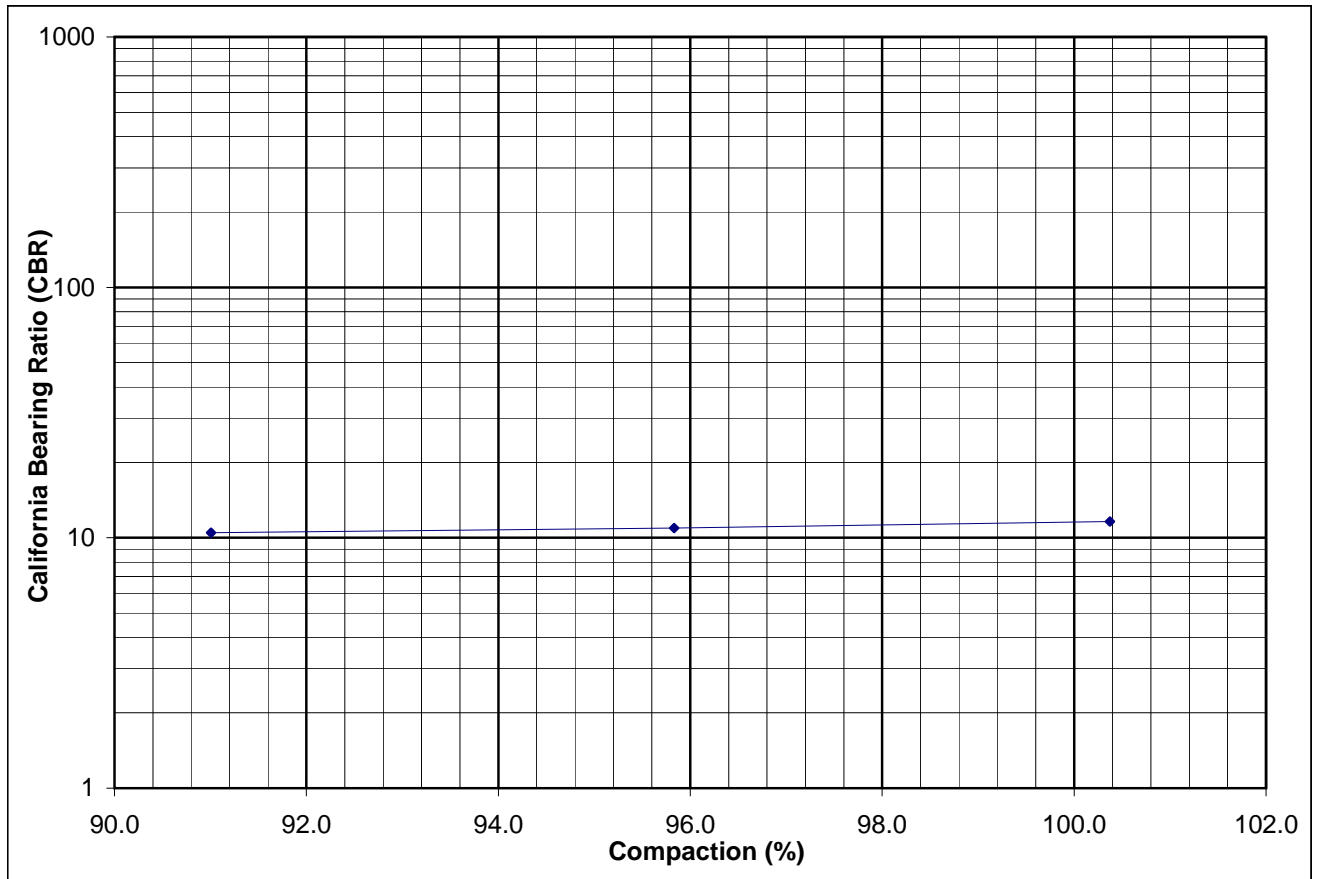
The samples were tested in accordance with Method A8 of TMH1 of 1990.  
 The results reported relate only to the samples tested.  
 Documents may only be reproduced or published in their full context.

## California Bearing Ratio Results

Project:	DWAALBOOM		
Project No.:	1039/F76/10/2008	Date:	12 Nov 2008
Field Reference:	TP B 23 / 1	Lab. Sample Ref:	K653
Depth (m):	0.3 - 1.3	Remarks:	Untreated
Description:	-		

CBR at			Swell (%)	Final Moisture Content (%)	Mod AASHTO Data		CBR Compaction Data		
2.54 (mm)	5.08 (mm)	7.62 (mm)			Max Dry Density (kg/m <sup>3</sup> )	Optimum Moisture (%)	Dry Density (kg/m <sup>3</sup> )	Com- paction (%)	Moisture Content (%)
12	11	10	0.0	16.2	1888	15.1	1895	100.4	15.1
11	11	10	0.2	17.6			1809	95.8	
10	11	9	0.3	20.0			1718	91.0	

Interpolated Data	Compaction	90%	93%	95%	98%	100%
	CBR	10.4	10.7	10.9	11.3	11.6



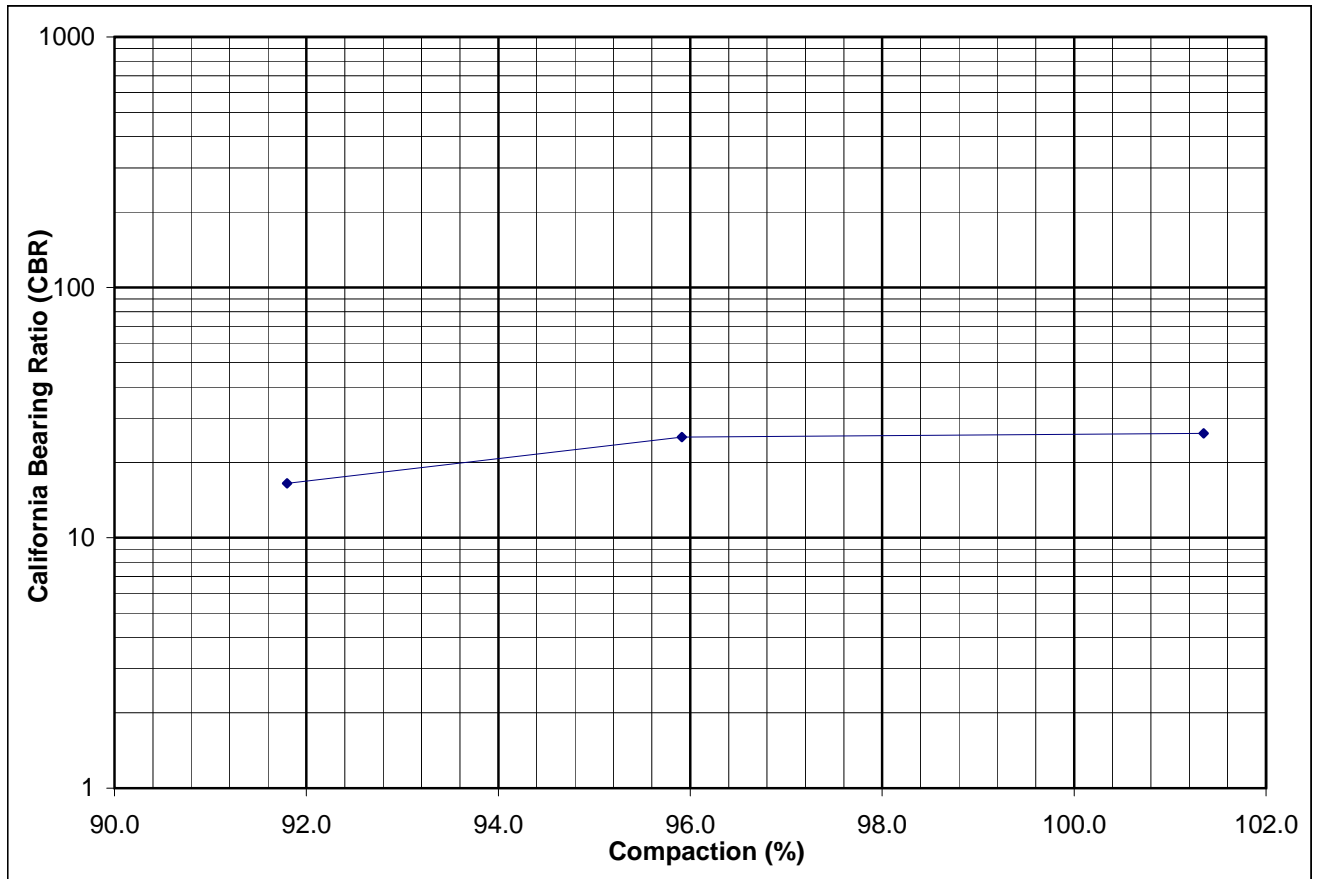
The samples were tested in accordance with Method A8 of TMH1 of 1990.  
 The results reported relate only to the samples tested.  
 Documents may only be reproduced or published in their full context.

## California Bearing Ratio Results

Project:	DWAALBOOM		
Project No.:	1039/F76/10/2008	Date:	11/11/2008
Field Reference:	TP B 23 / 2	Lab. Sample Ref:	K654
Depth (m):	1.3 - 2.5	Remarks:	Untreated
Description:	FE - HILLWASH		

CBR at			Swell (%)	Final Moisture Content (%)	Mod AASHTO Data		CBR Compaction Data		
2.54 (mm)	5.08 (mm)	7.62 (mm)			Max Dry Density (kg/m <sup>3</sup> )	Optimum Moisture (%)	Dry Density (kg/m <sup>3</sup> )	Compaction (%)	Moisture Content (%)
26	23	21	0.1	15.2	1966	13.8	1993	101.4	13.6
25	23	20	0.2	18.2			1886	95.9	
16	15	13	0.2	19.6			1805	91.8	

Interpolated Data	Compaction	90%	93%	95%	98%	100%
	CBR	13.7	18.7	22.9	25.6	25.9



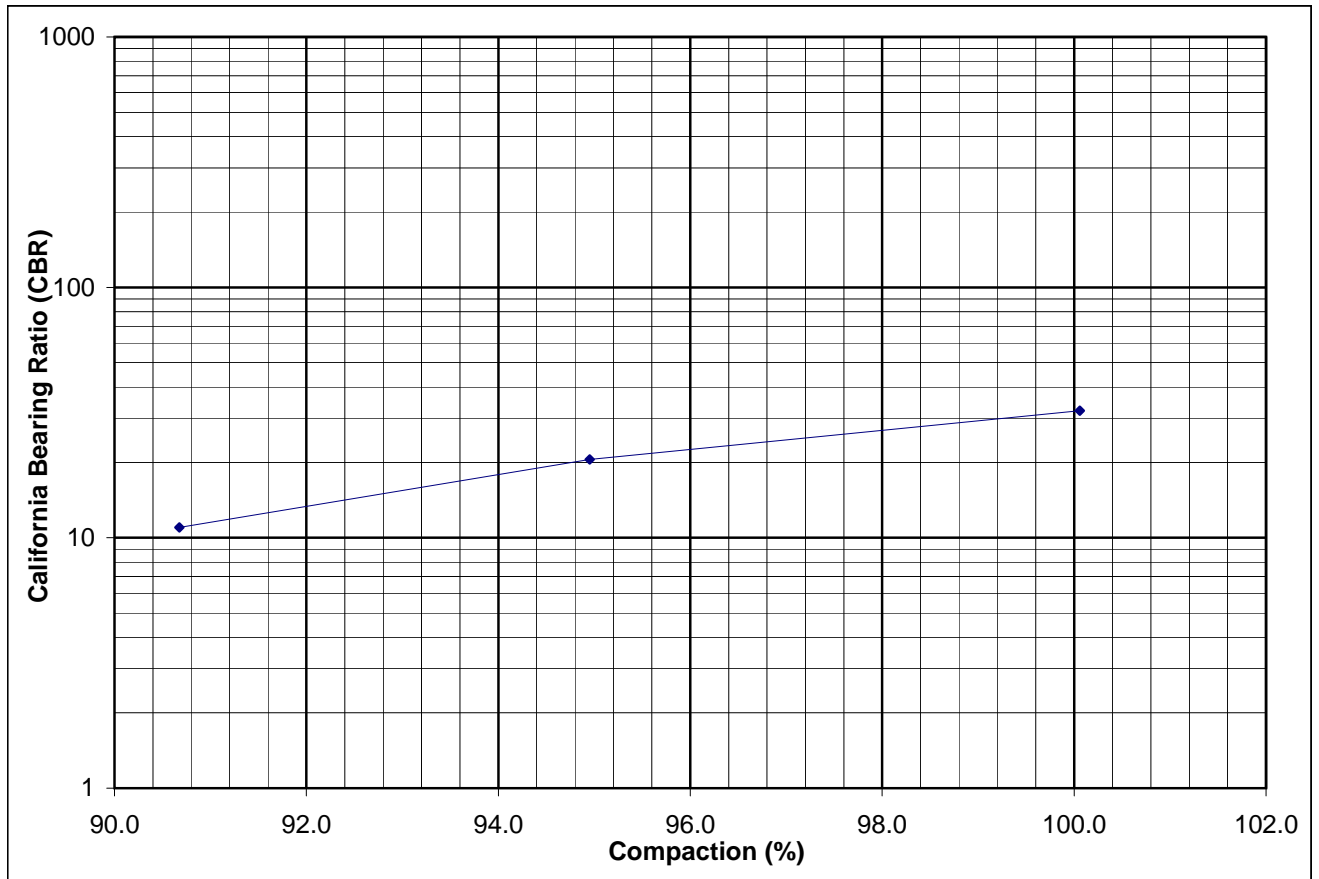
The samples were tested in accordance with Method A8 of TMH1 of 1990.  
The results reported relate only to the samples tested.  
Documents may only be reproduced or published in their full context.

## California Bearing Ratio Results

Project:	DWAALBOOM		
Project No.:	1039/F76/10/2008	Date:	12 Nov 2008
Field Reference:	TP C 24 / 1	Lab. Sample Ref:	K662
Depth (m):	0.9 - 2.5	Remarks:	Untreated
Description:	REWORKED RESIDUAL DOLOMITE		

CBR at			Swell (%)	Final Moisture Content (%)	Mod AASHTO Data		CBR Compaction Data		
2.54 (mm)	5.08 (mm)	7.62 (mm)			Max Dry Density (kg/m <sup>3</sup> )	Optimum Moisture (%)	Dry Density (kg/m <sup>3</sup> )	Com- paction (%)	Moisture Content (%)
32	35	35	0.2	8.0	2219	6.8	2220	100.1	6.9
21	18	16	0.4	8.4			2107	95.0	
11	11	11	0.4	10.8			2012	90.7	

Interpolated Data	Compaction	90%	93%	95%	98%	100%
	CBR	9.9	15.4	20.7	26.8	32.0

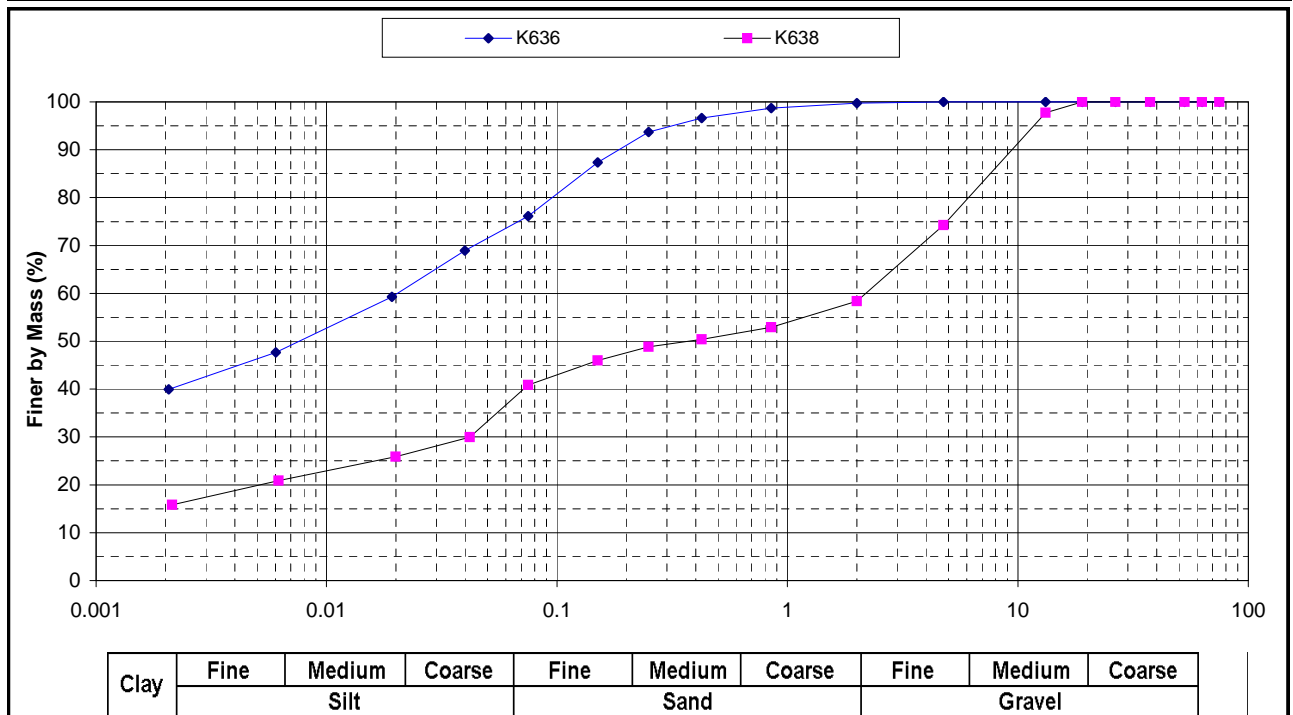


The samples were tested in accordance with Method A8 of TMH1 of 1990.  
 The results reported relate only to the samples tested.  
 Documents may only be reproduced or published in their full context.

## Foundation Indicator Test Data

Project	DWAALBOOM		
Project No.	1039/F76/10/2008	Date	21 November 2008

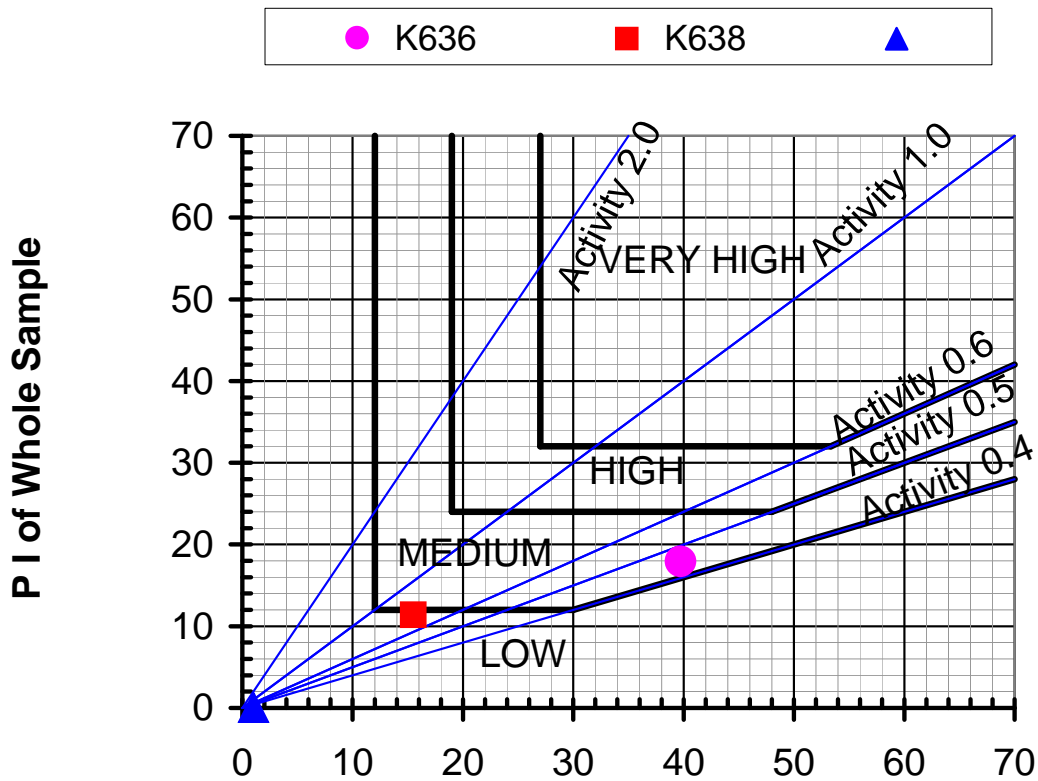
Sample No.	K636	K638		Sample No.	K636	K638	
Field Ref. No.	TPA 01 / 1	TPA 01 / 3		%Gravel	0	42	
Depth	0.3	1.6		%Sand	26	22	
Sieve size	%Passing	% Passing	% Passing	%Silt	34	21	
75.00	100	100		%Clay	40	16	
63.00	100	100		NMC %	21.5	21.4	
53.00	100	100		Liquid Limit	36	42	
37.50	100	100		Plasticity Index	19	23	
26.50	100	100		Linear Shrink.	11.	13.	
19.00	100	100		Overall P.I.	18	11	
13.20	100	98		Grading Modulus	0.28	1.50	
4.75	100	74		H.R.B.	A-6 (11)	A-7-6 (4)	
2.00	100	58		Unified	CL	SC	
0.85	99	53		Weston swell (%) at 1 kPa	0.8	0.1	
0.425	97	50		Analysis as per method D422 of ASTM of 1985 The results reported relate only to the samples tested. Documents may only be reproduced or published in their full context.			
0.25	94	49					
0.15	87	46					
0.075	76	41					
0.04	69	30					
0.02	60	26					
0.006	48	21					
0.002	40	16					



Remarks:



## Activity Diagram After D H van der Merwe



### Clay Fraction of Whole Sample (% < 2 micron)

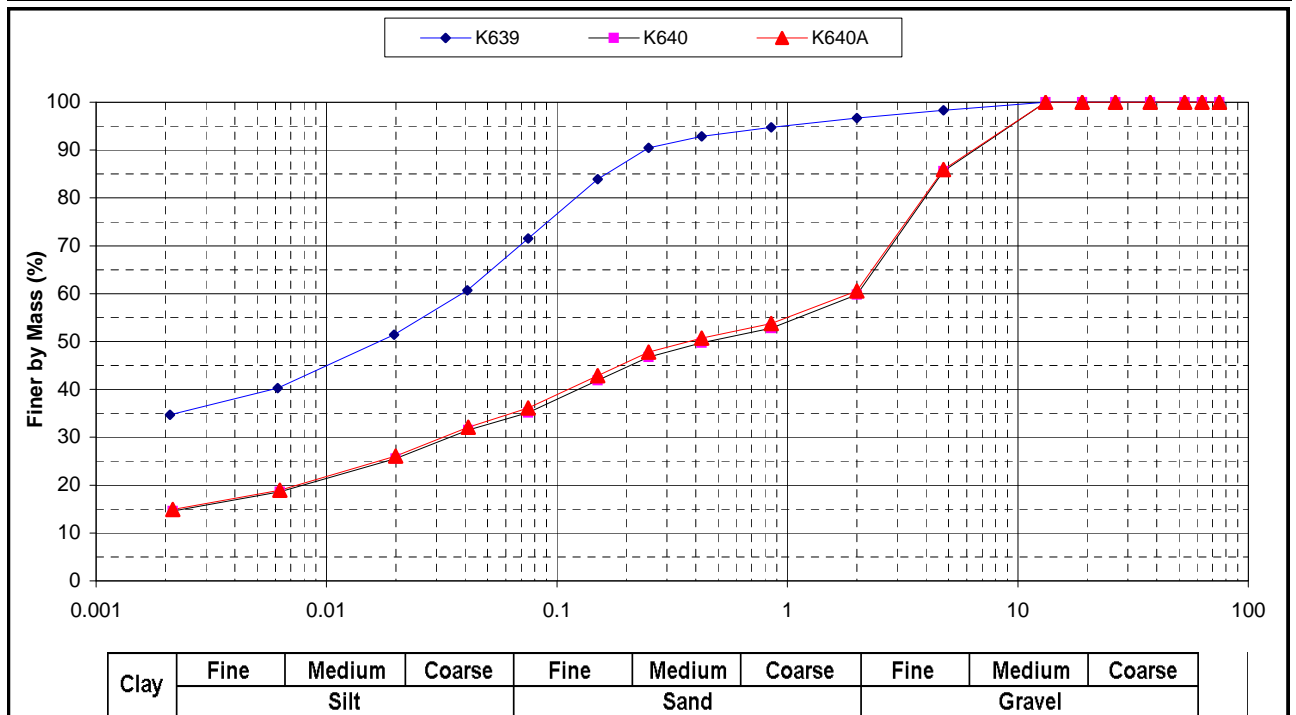
**Plotted Values:**

Sample	Clay Frac	PI
K636	39.7	17.9
K638	15.5	11.4

## Foundation Indicator Test Data

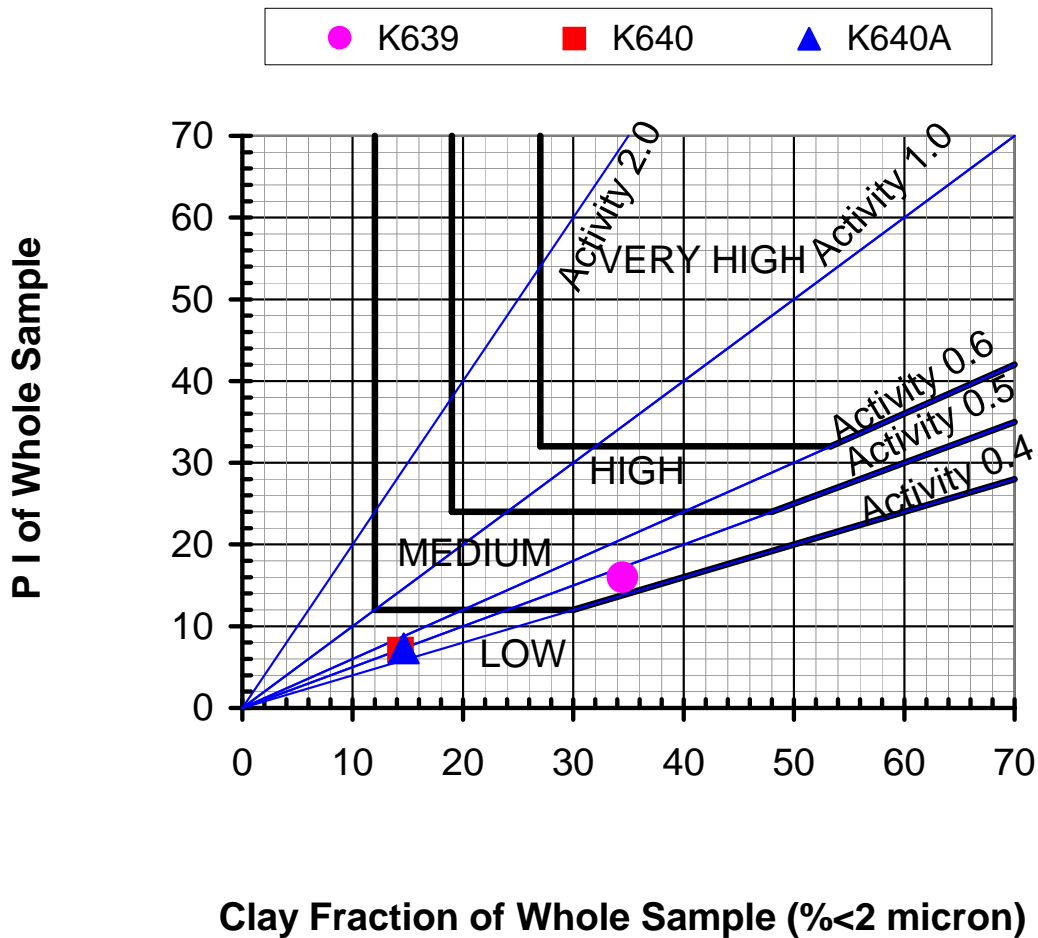
Project	DWAALBOOM		
Project No.	1039/F76/10/2008	Date	21 November 2008

Sample No.	K639	K640	K640A	Sample No.	K639	K640	K640A
Field Ref. No.	TPA 08 / 1	TPA 10 / 1	TPA 10 / 1	%Gravel	3	40	39
Depth	0.5 - 1.2	1.0 - 1.4	1.0 - 1.4	%Sand	29	26	26
Sieve size	%Passing	% Passing	% Passing	%Silt	33	19	20
75.00	100	100	100	%Clay	34	14	15
63.00	100	100	100	NMC %	Not Tested	Not Tested	Not Tested
53.00	100	100	100	Liquid Limit	34	29	30
37.50	100	100	100	Plasticity Index	17	14	14
26.50	100	100	100	Linear Shrink.	8.	6.	6.
19.00	100	100	100	Overall P.I.	16	7	7
13.20	100	100	100	Grading Modulus	0.39	1.55	1.53
4.75	98	86	86	H.R.B.	A-6 (10)	A-6 (1)	A-6 (1)
2.00	97	60	61	Unified	CL	SC	SC
0.85	95	53	54	Weston swell (%) at 1 kPa			
0.425	93	50	51	Analysis as per method D422 of ASTM of 1985 The results reported relate only to the samples tested. Documents may only be reproduced or published in their full context.			
0.25	90	47	48				
0.15	84	42	43				
0.075	72	35	36				
0.04	60	31	32				
0.02	52	26	26				
0.006	40	18	19				
0.002	34	14	15				



Remarks:

## Activity Diagram After D H van der Merwe



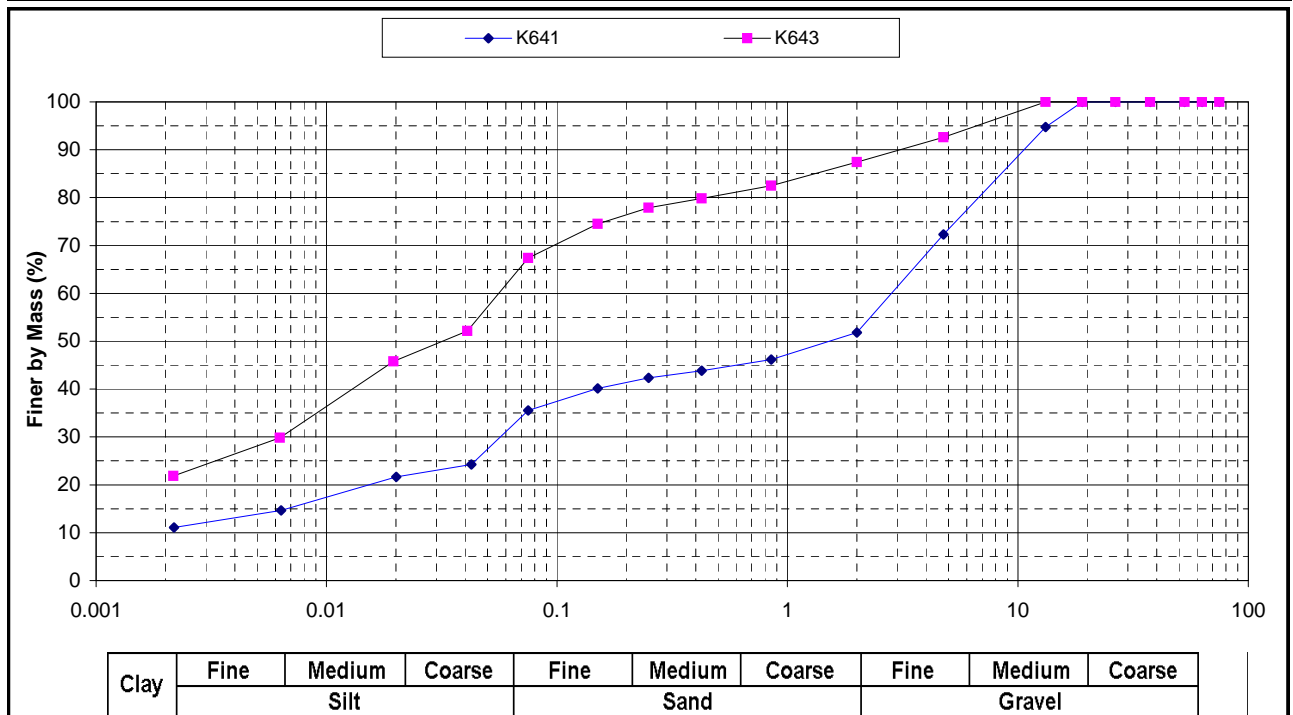
**Plotted Values:**

Sample	Clay Frac	PI
K639	34.5	16.0
K640	14.3	7.1
K640A	14.6	7.3

## Foundation Indicator Test Data

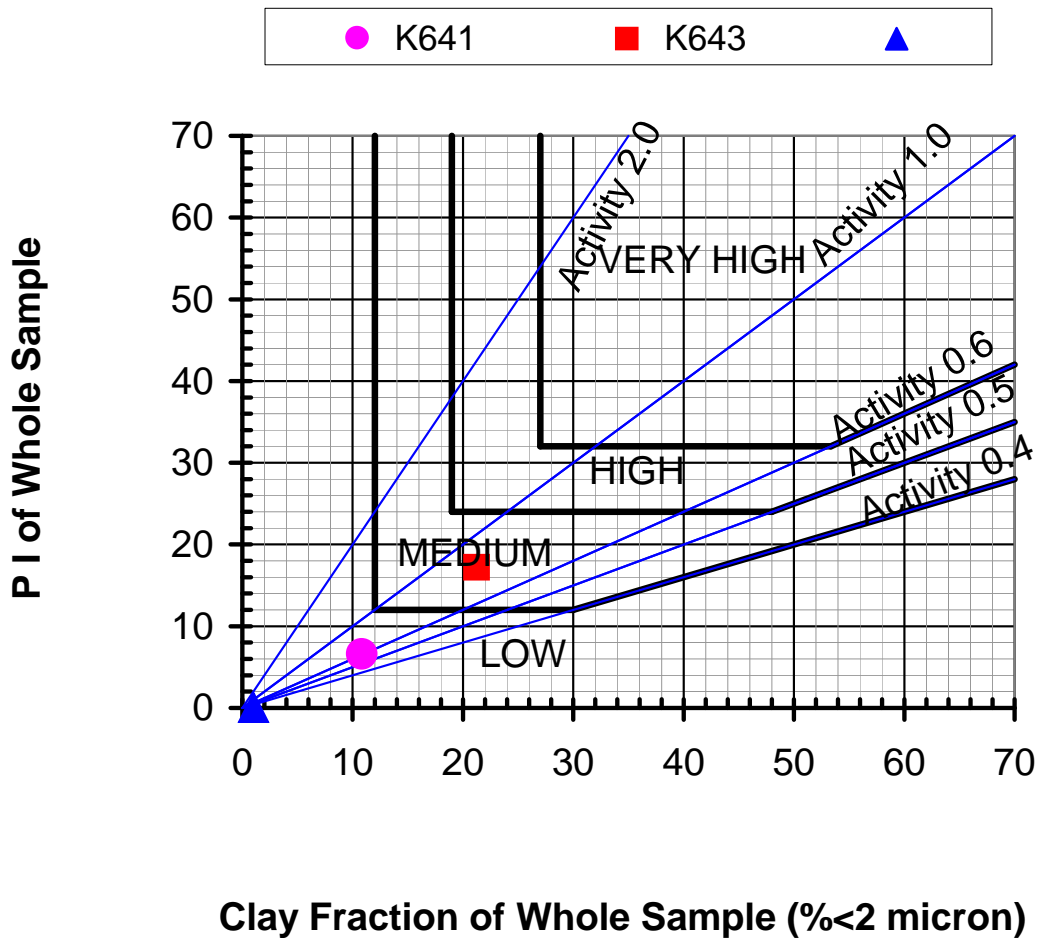
Project	DWAALBOOM		
Project No.	1039/F76/10/2008	Date	21 November 2008

Sample No.	K641	K643		Sample No.	K641	K643	
Field Ref. No.	TPA 10 / 2	TPA 15 / 2		%Gravel	48	13	
Depth	4.1 - 1.9	2		%Sand	21	26	
Sieve size	%Passing	% Passing	% Passing	%Silt	20	41	
75.00	100	100		%Clay	11	21	
63.00	100	100		NMC %	Not Tested	12.9	
53.00	100	100		Liquid Limit	31	39	
37.50	100	100		Plasticity Index	15	22	
26.50	100	100		Linear Shrink.	9.5	12.5	
19.00	100	100		Overall P.I.	7	17	
13.20	95	100		Grading Modulus	1.69	0.65	
4.75	72	93		H.R.B.	A-6 (1)	A-6 (11)	
2.00	52	87		Unified	SC	CL	
0.85	46	83		Weston swell (%) at 1 kPa		1.9	
0.425	44	80		Analysis as per method D422 of ASTM of 1985 The results reported relate only to the samples tested. Documents may only be reproduced or published in their full context.			
0.25	42	78					
0.15	40	75					
0.075	36	67					
0.04	24	52					
0.02	22	46					
0.006	14	29					
0.002	11	21					



Remarks:

## Activity Diagram After D H van der Merwe



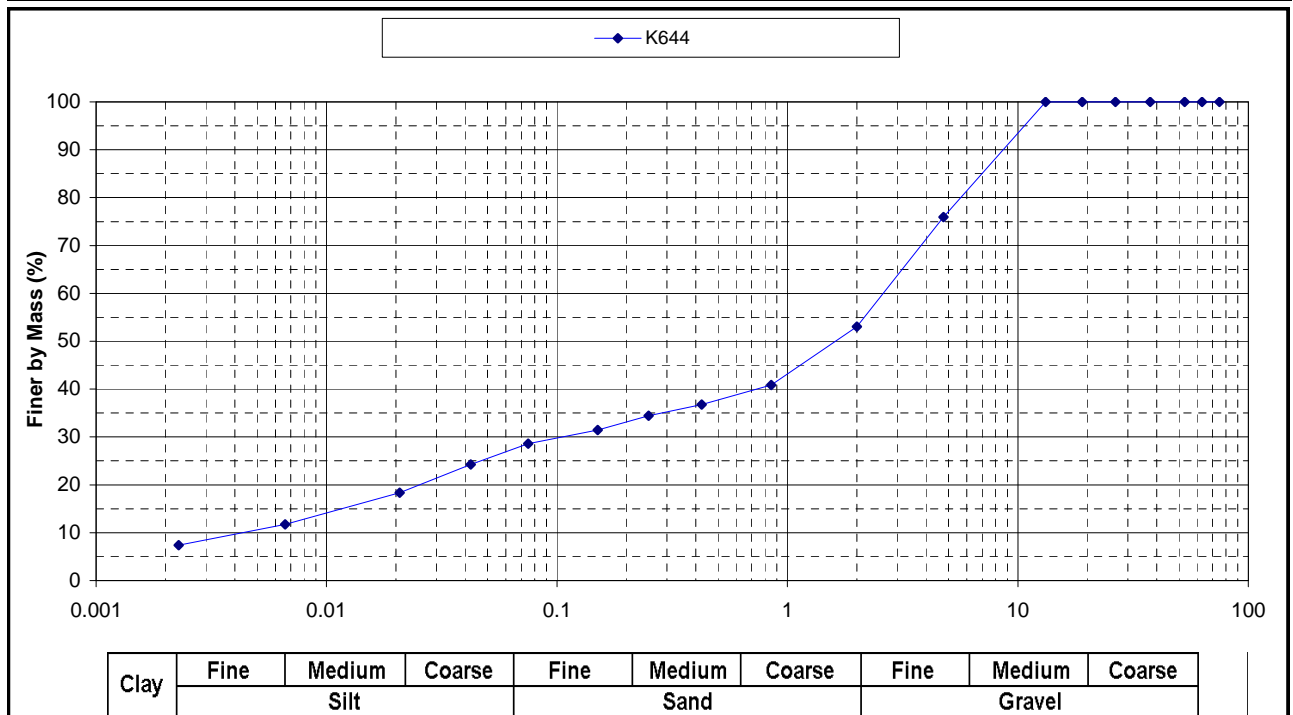
**Plotted Values:**

Sample	Clay Frac	PI
K641	10.8	6.6
K643	21.3	17.2

## Foundation Indicator Test Data

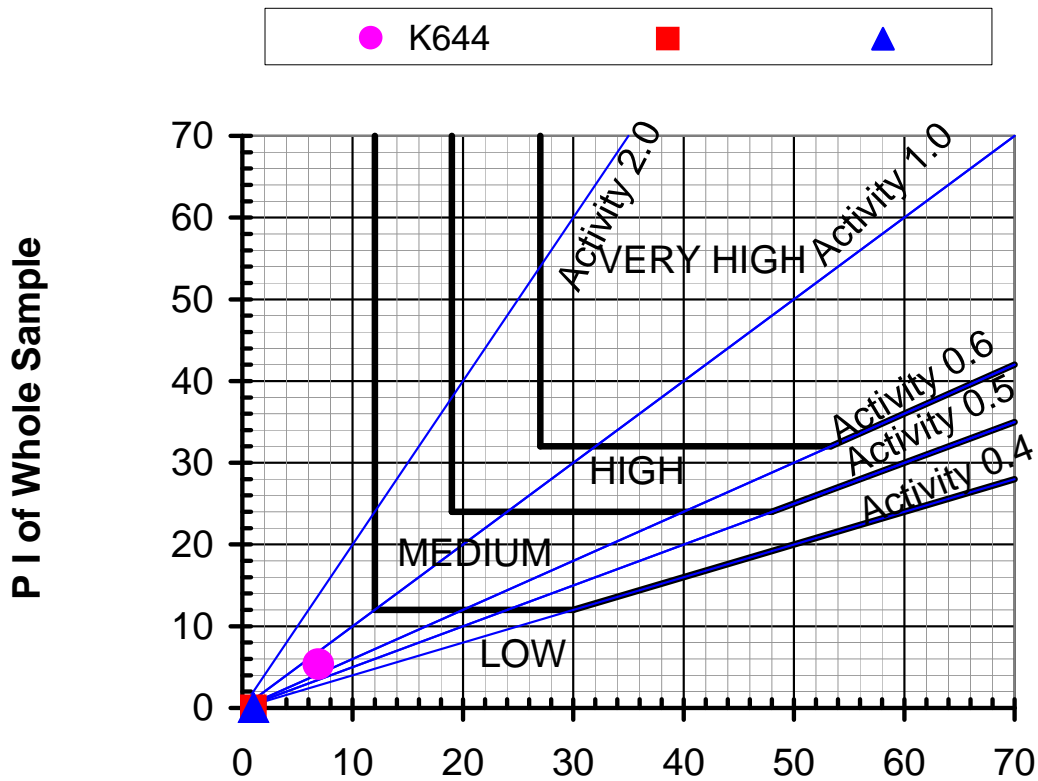
Project	DWAALBOOM		
Project No.	1039/F76/10/2008	Date	21 November 2008

Sample No.	K644			Sample No.	K644		
Field Ref. No.	TPA 16 / 1			%Gravel	47		
Depth	1.4 - 2.0			%Sand	26		
Sieve size	%Passing	% Passing	% Passing	%Silt	20		
75.00	100			%Clay	7		
63.00	100			NMC %	Not Tested		
53.00	100			Liquid Limit	32		
37.50	100			Plasticity Index	15		
26.50	100			Linear Shrink.	8.		
19.00	100			Overall P.I.	5		
13.20	100			Grading Modulus	1.82		
4.75	76			H.R.B.	A-2-6 (1)		
2.00	53			Unified	SC		
0.85	41			Weston swell (%) at 1 kPa			
0.425	37			Analysis as per method D422 of ASTM of 1985 The results reported relate only to the samples tested. Documents may only be reproduced or published in their full context.			
0.25	34						
0.15	31						
0.075	29						
0.04	24						
0.02	18						
0.006	11						
0.002	7						



Remarks:

## Activity Diagram After D H van der Merwe



### Clay Fraction of Whole Sample (% < 2 micron)

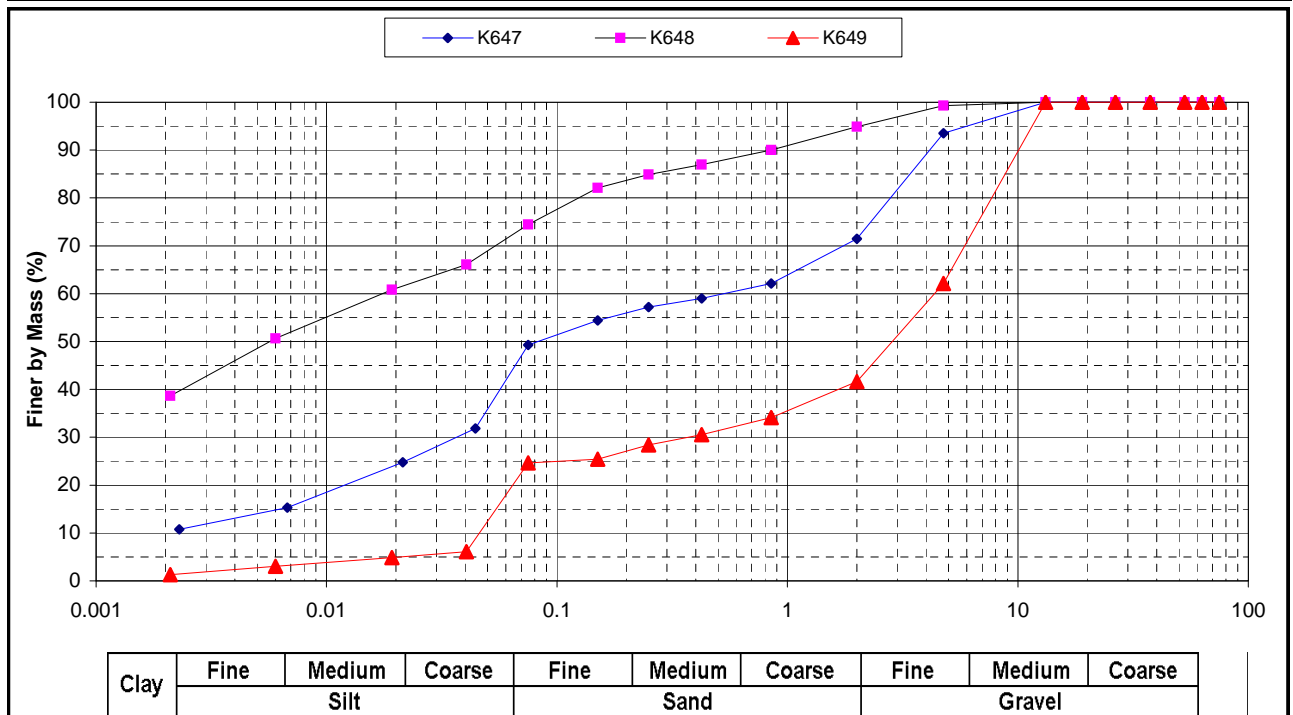
**Plotted Values:**

Sample	Clay Frac	PI
K644	6.9	5.4

## Foundation Indicator Test Data

Project	DWAALBOOM		
Project No.	1039/F76/10/2008	Date	21 November 2008

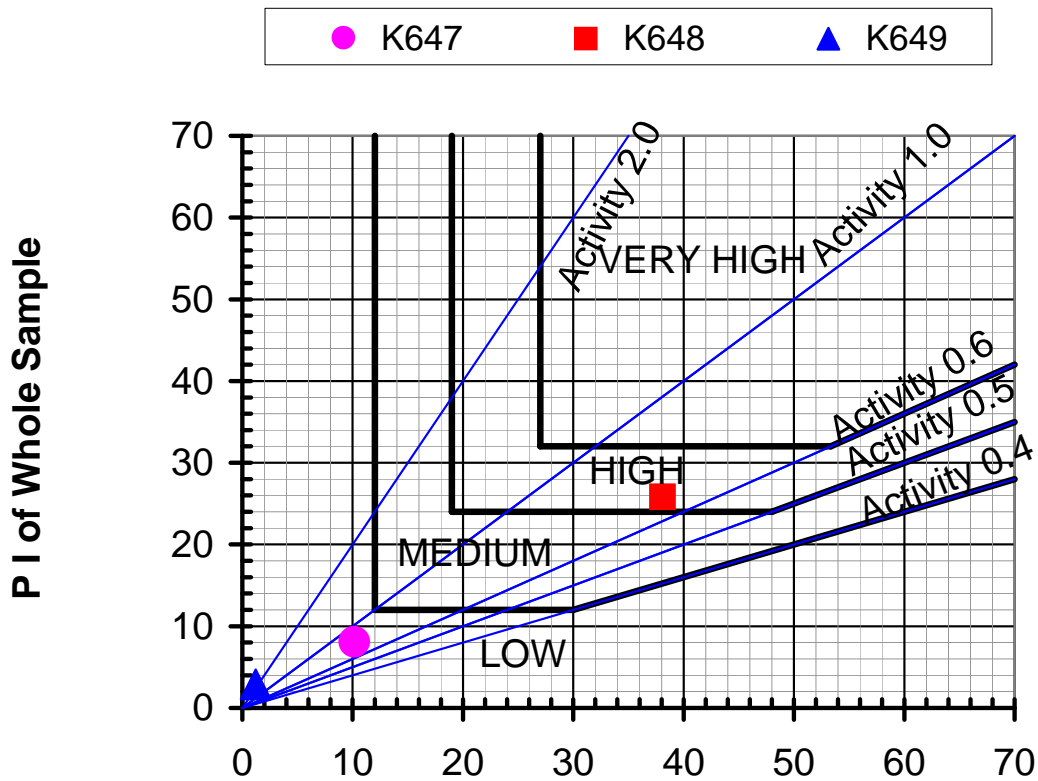
Sample No.	K647	K648	K649	Sample No.	K647	K648	K649
Field Ref. No.	TPA 17 / 3	TPA 22 / 1	TPB 1 / 1	%Gravel	29	5	58
Depth	1.8	1	0.2 - 1.3	%Sand	30	23	24
Sieve size	%Passing	% Passing	% Passing	%Silt	32	33	17
75.00	100	100	100	%Clay	10	38	1
63.00	100	100	100	NMC %	7.7	Not Tested	Not Tested
53.00	100	100	100	Liquid Limit	30	53	24
37.50	100	100	100	Plasticity Index	14	30	9
26.50	100	100	100	Linear Shrink.	7.	16.	4.
19.00	100	100	100	Overall P.I.	8	26	3
13.20	100	100	100	Grading Modulus	1.20	0.44	2.03
4.75	94	99	62	H.R.B.	A-6 (4)	A-7-6 (18)	A-2-4 (0)
2.00	71	95	42	Unified	SC	CH	GC
0.85	62	90	34	Weston swell (%) at 1 kPa	0.6		
0.425	59	87	31	Analysis as per method D422 of ASTM of 1985 The results reported relate only to the samples tested. Documents may only be reproduced or published in their full context.			
0.25	57	85	28				
0.15	54	82	25				
0.075	49	74	25				
0.04	31	66	6				
0.02	24	61	5				
0.006	14	51	3				
0.002	10	38	1				



Remarks:



## Activity Diagram After D H van der Merwe



### Clay Fraction of Whole Sample (%<2 micron)

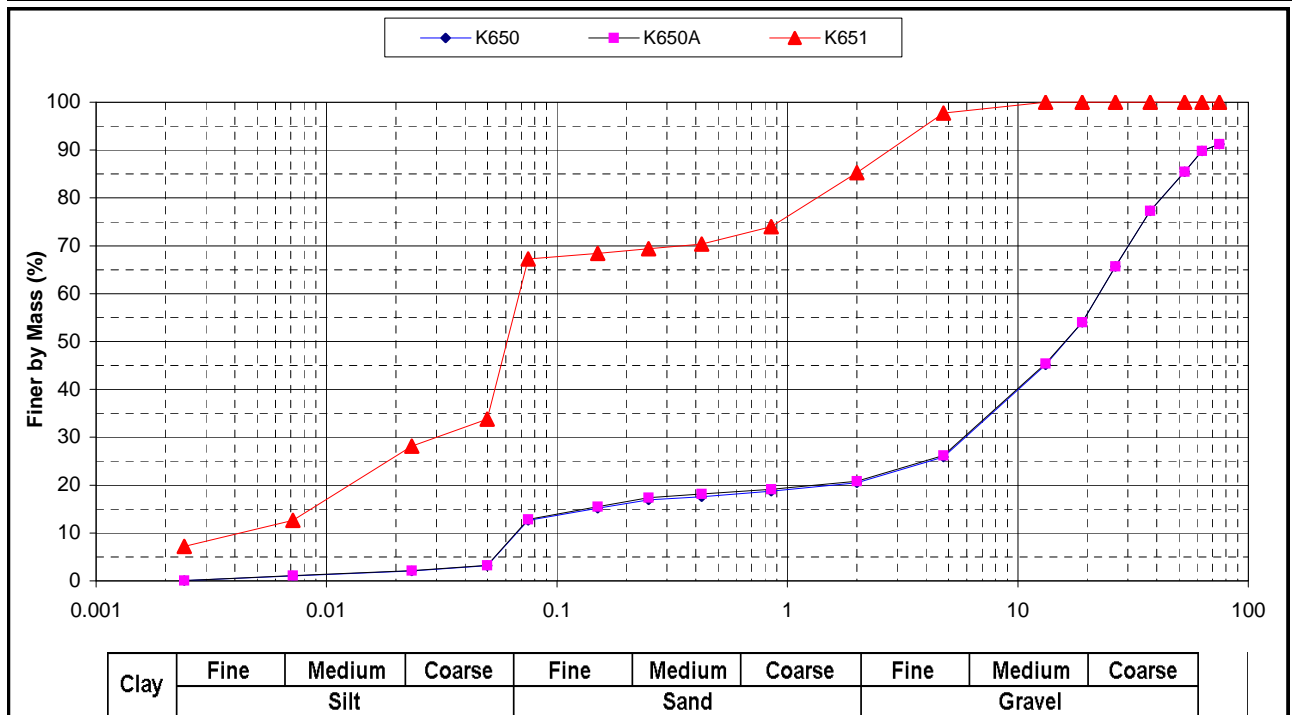
**Plotted Values:**

Sample	Clay Frac	PI
K647	10.2	8.1
K648	38.1	25.8
K649	1.2	2.9

## Foundation Indicator Test Data

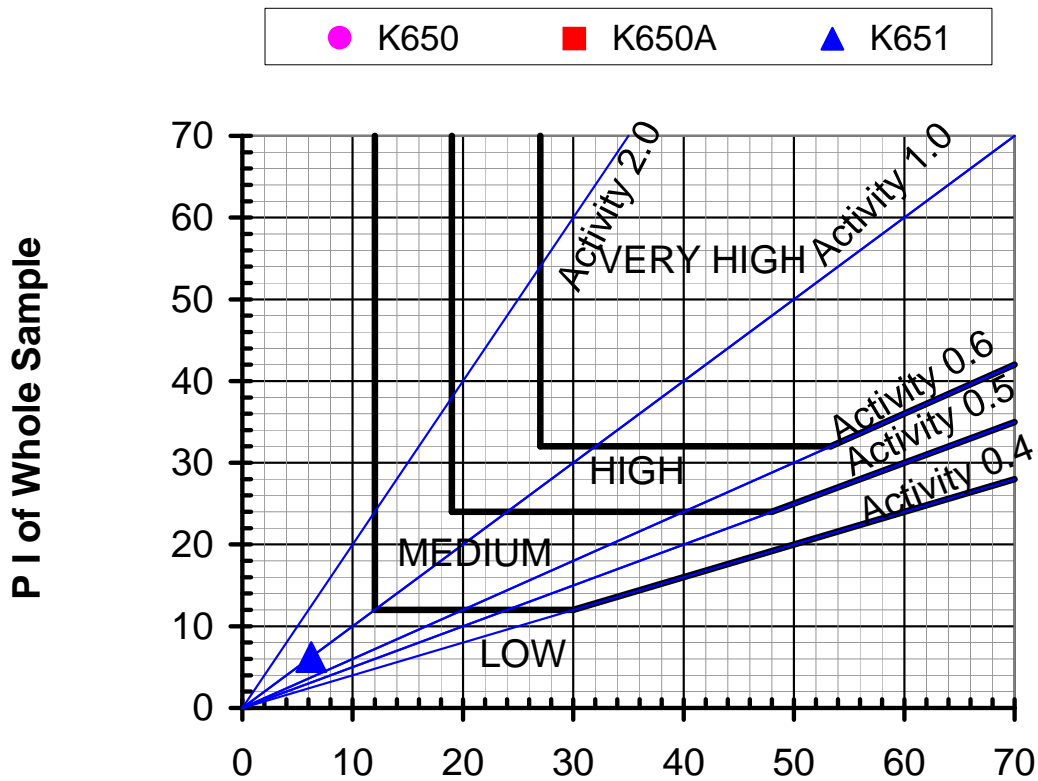
Project	DWAALBOOM		
Project No.	1039/F76/10/2008	Date	21 November 2008

Sample No.	K650	K650A	K651	Sample No.	K650	K650A	K651
Field Ref. No.	TPB 15 / 1	TPB 15 / 1	TPB 18 / 1	%Gravel	80	79	15
Depth	0.0 - 0.8	0.0 - 0.8	1.5	%Sand	13	13	36
Sieve size	%Passing	% Passing	% Passing	%Silt	8	8	43
75.00	91	91	100	%Clay	0	0	6
63.00	90	90	100	NMC %	Not Tested	Not Tested	16.3
53.00	85	85	100	Liquid Limit	21	21	29
37.50	77	77	100	Plasticity Index	6	6	9
26.50	66	66	100	Linear Shrink.	3.	3.	5.
19.00	54	54	100	Overall P.I.	1	1	6
13.20	45	45	100	Grading Modulus	2.49	2.48	0.77
4.75	26	26	98	H.R.B.	A-1-a (0)	A-1-a (0)	A-4 (6)
2.00	20	21	85	Unified	GC-GM	GC-GM	CL
0.85	19	19	74	Weston swell (%) at 1 kPa			0.2
0.425	18	18	70	Analysis as per method D422 of ASTM of 1985 The results reported relate only to the samples tested. Documents may only be reproduced or published in their full context.			
0.25	17	17	69				
0.15	15	16	68				
0.075	13	13	67				
0.04	3	3	33				
0.02	2	2	28				
0.006	1	1	11				
0.002	0	0	6				



Remarks:

## Activity Diagram After D H van der Merwe



### Clay Fraction of Whole Sample (%<2 micron)

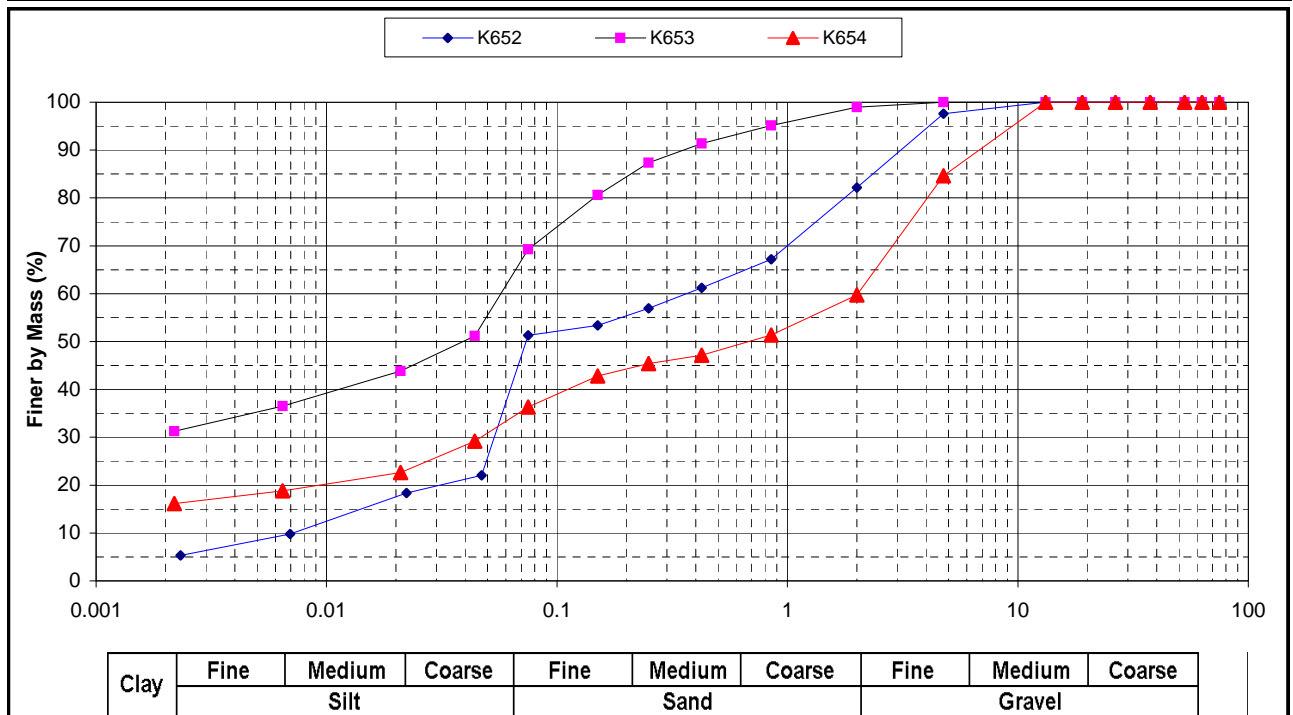
**Plotted Values:**

Sample	Clay Frac	PI
K650	-0.1	1.0
K650A	-0.1	1.1
K651	6.2	6.2

## Foundation Indicator Test Data

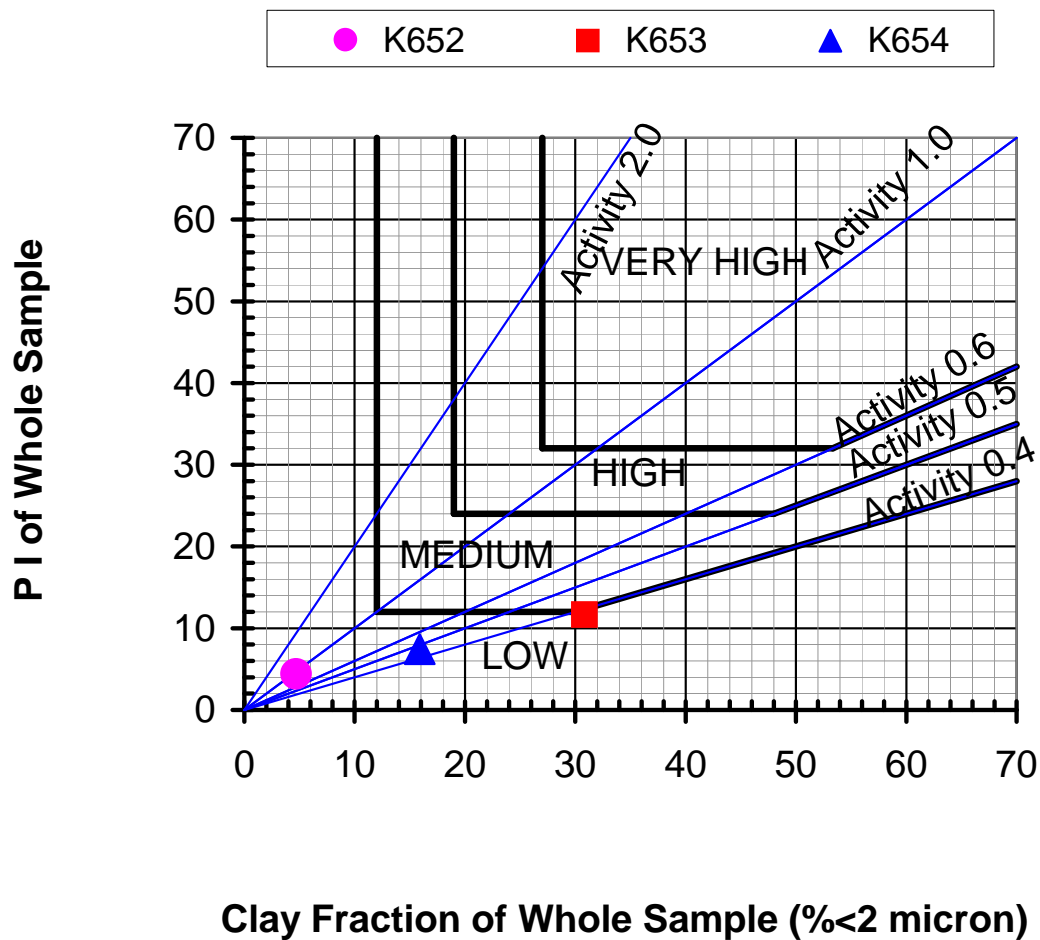
Project	DWAALBOOM		
Project No.	1039/F76/10/2008	Date	21 November 2008

Sample No.	K652	K653	K654	Sample No.	K652	K653	K654
Field Ref. No.	TPB 18 / 2	TPB 23 / 1	TPB 23 / 2	%Gravel	18	1	40
Depth	2.5	0.3 - 1.3	1.3 - 2.5	%Sand	45	37	26
Sieve size	%Passing	% Passing	% Passing	%Silt	33	31	17
75.00	100	100	100	%Clay	5	31	16
63.00	100	100	100	NMC %	17.3	Not Tested	Not Tested
53.00	100	100	100	Liquid Limit	30	29	32
37.50	100	100	100	Plasticity Index	7	13	16
26.50	100	100	100	Linear Shrink.	4.	7.5	9.5
19.00	100	100	100	Overall P.I.	4	12	7
13.20	100	100	100	Grading Modulus	1.05	0.40	1.57
4.75	98	100	85	H.R.B.	A-4 (3)	A-6 (8)	A-6 (1)
2.00	82	99	60	Unified	CL	CL	SC
0.85	67	95	51	Weston swell (%) at 1 kPa	0.1		
0.425	61	91	47	Analysis as per method D422 of ASTM of 1985 The results reported relate only to the samples tested. Documents may only be reproduced or published in their full context.			
0.25	57	87	45				
0.15	53	81	43				
0.075	51	69	36				
0.04	21	50	29				
0.02	18	43	22				
0.006	9	36	19				
0.002	5	31	16				



Remarks:

## Activity Diagram After D H van der Merwe



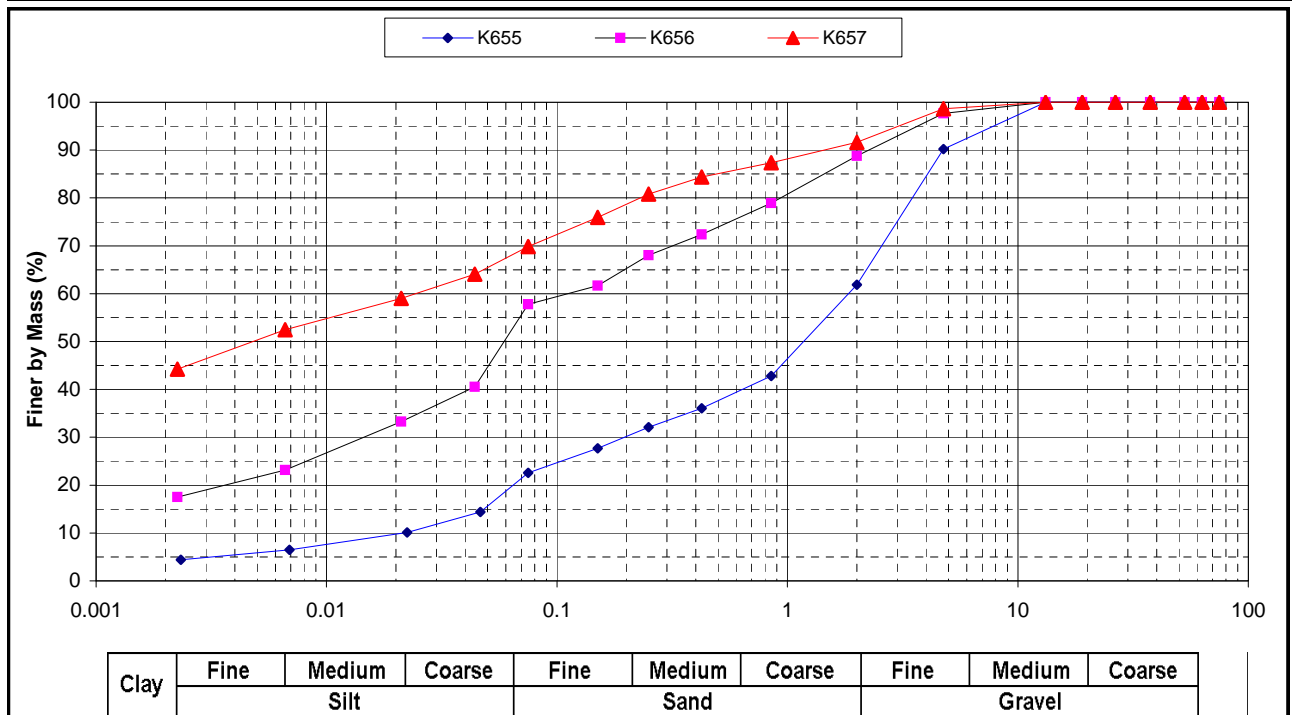
**Plotted Values:**

Sample	Clay Frac	PI
K652	4.7	4.4
K653	30.8	11.7
K654	15.9	7.5

## Foundation Indicator Test Data

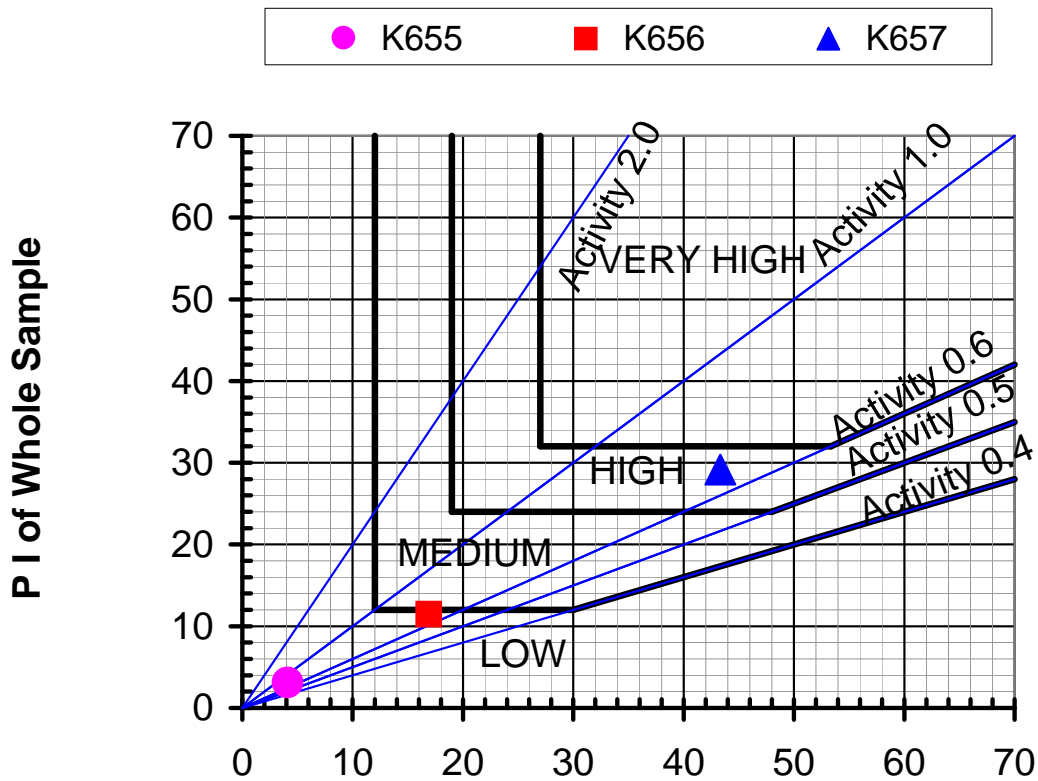
Project	DWAALBOOM		
Project No.	1039/F76/10/2008	Date	21 November 2008

Sample No.	K655	K656	K657	Sample No.	K655	K656	K657
Field Ref. No.	TP B 3 / 1	TP B 4 / 1	TP C 09 / 1	%Gravel	38	11	8
Depth	1.4	2.5	0.7	%Sand	43	38	24
Sieve size	%Passing	% Passing	% Passing	%Silt	15	34	24
75.00	100	100	100	%Clay	4	17	43
63.00	100	100	100	NMC %	22.5	8.7	Not Tested
53.00	100	100	100	Liquid Limit	27	34	60
37.50	100	100	100	Plasticity Index	9	16	35
26.50	100	100	100	Linear Shrink.	5.5	9.	17.
19.00	100	100	100	Overall P.I.	3	11	29
13.20	100	100	100	Grading Modulus	1.79	0.81	0.54
4.75	90	98	99	H.R.B.	A-2-4 (0)	A-6 (7)	A-7-6 (18)
2.00	62	89	92	Unified	SC	CL	CH
0.85	43	79	87	Weston swell (%) at 1 kPa	0.0	1.7	
0.425	36	72	84	Analysis as per method D422 of ASTM of 1985 The results reported relate only to the samples tested. Documents may only be reproduced or published in their full context.			
0.25	32	68	81				
0.15	28	62	76				
0.075	23	58	70				
0.04	14	40	64				
0.02	9	33	59				
0.006	6	22	53				
0.002	4	17	44				



Remarks:

## Activity Diagram After D H van der Merwe



### Clay Fraction of Whole Sample (%<2 micron)

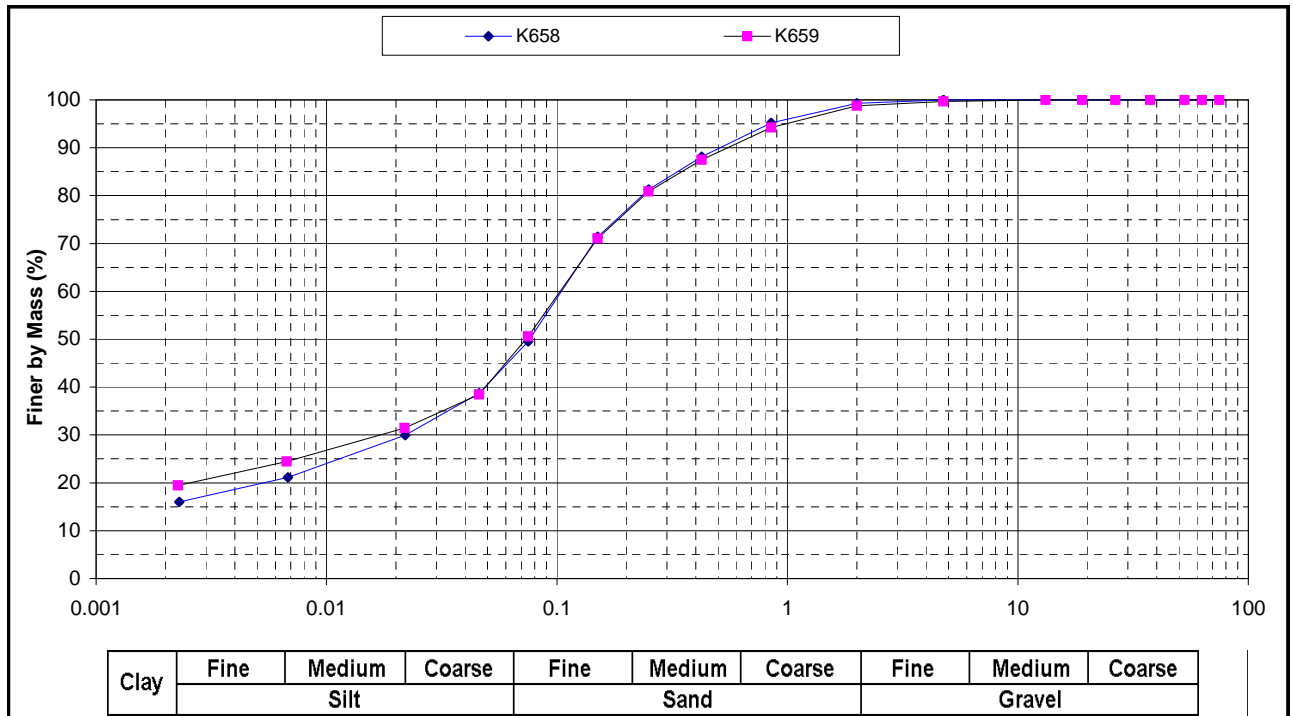
**Plotted Values:**

Sample	Clay Frac	PI
K655	4.1	3.1
K656	16.9	11.5
K657	43.3	29.2

## Foundation Indicator Test Data

Project	DWAALBOOM		
Project No.	1039/F76/10/2008	Date	21 November 2008

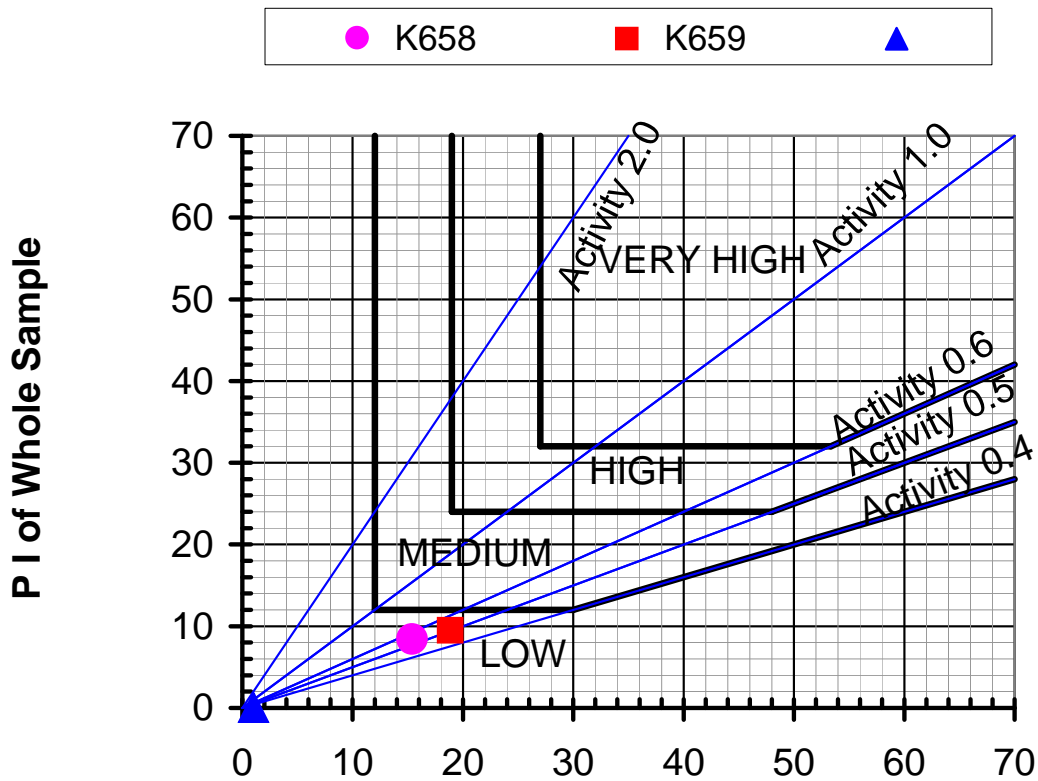
Sample No.	K658	K659		Sample No.	K658	K659	
Field Ref. No.	TP C 11 / 1	TP C 11 / 2		%Gravel	1	1	
Depth	0.2	0.5		%Sand	55	54	
Sieve size	%Passing	% Passing	% Passing	%Silt	29	26	
75.00	100	100		%Clay	15	19	
63.00	100	100		NMC %	7.1	16.2	
53.00	100	100		Liquid Limit	24	25	
37.50	100	100		Plasticity Index	10	11	
26.50	100	100		Linear Shrink.	6.5	6.5	
19.00	100	100		Overall P.I.	8	10	
13.20	100	100		Grading Modulus	0.63	0.63	
4.75	100	100		H.R.B.	A-4 (3)	A-6 (3)	
2.00	99	99		Unified	SC	CL	
0.85	95	94		Weston swell (%) at 1 kPa	1.4	0.3	
0.425	88	88		Analysis as per method D422 of ASTM of 1985 The results reported relate only to the samples tested. Documents may only be reproduced or published in their full context.			
0.25	81	81					
0.15	71	71					
0.075	50	51					
0.04	37	37					
0.02	29	31					
0.006	20	24					
0.002	15	19					



Remarks:



## Activity Diagram After D H van der Merwe



### Clay Fraction of Whole Sample (% < 2 micron)

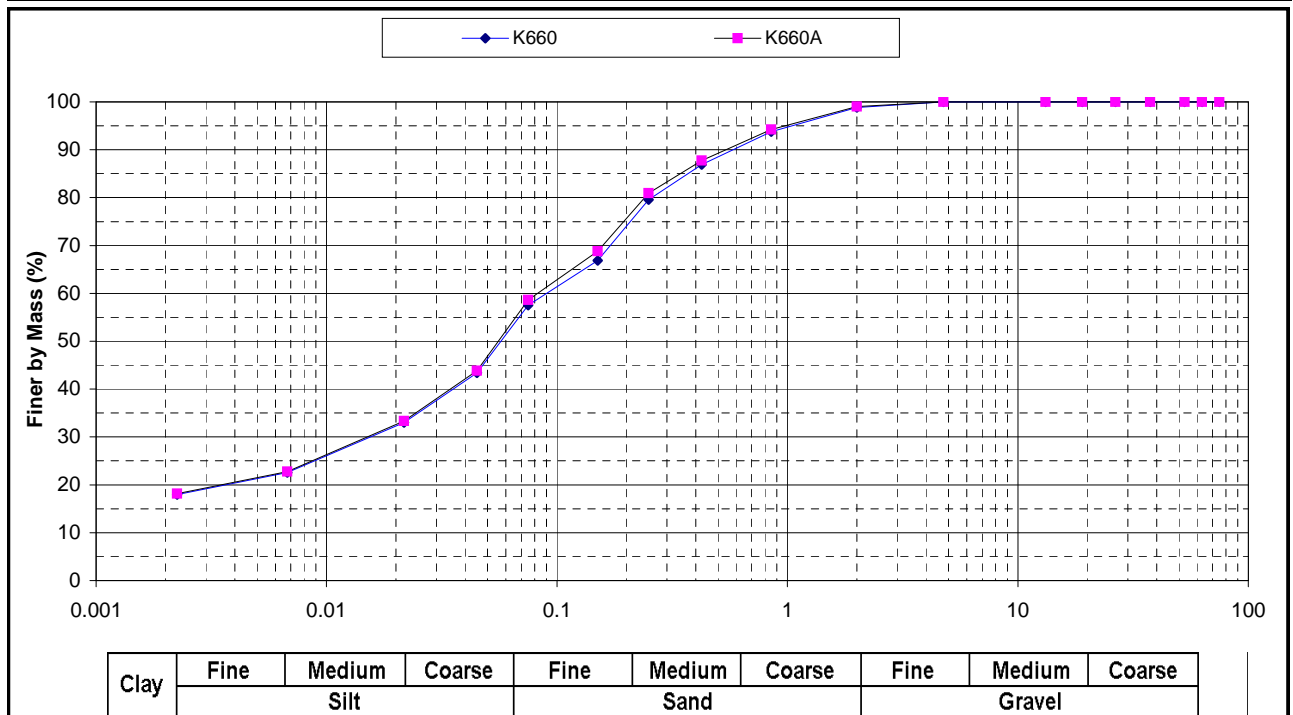
**Plotted Values:**

Sample	Clay Frac	PI
K658	15.4	8.4
K659	18.8	9.5

## Foundation Indicator Test Data

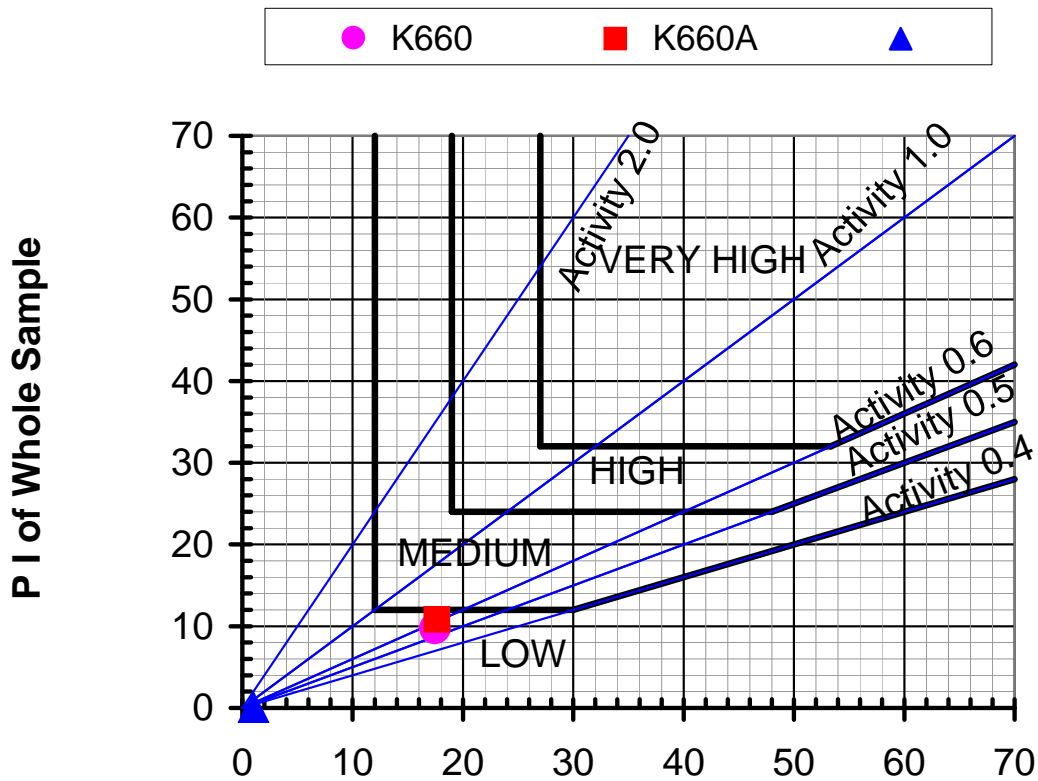
Project	DWAALBOOM		
Project No.	1039/F76/10/2008	Date	21 November 2008

Sample No.	K660	K660A		Sample No.	K660	K660A	
Field Ref. No.	TP C 13 / 1	TP C 13 / 1		%Gravel	1	1	
Depth	0.2	0.2		%Sand	47	47	
Sieve size	%Passing	% Passing	% Passing	%Silt	34	35	
75.00	100	100		%Clay	17	18	
63.00	100	100		NMC %	5.6	Not Tested	
53.00	100	100		Liquid Limit	24	25	
37.50	100	100		Plasticity Index	11	12	
26.50	100	100		Linear Shrink.	6.	7.	
19.00	100	100		Overall P.I.	10	11	
13.20	100	100		Grading Modulus	0.57	0.55	
4.75	100	100		H.R.B.	A-6 (5)	A-6 (6)	
2.00	99	99		Unified	CL	CL	
0.85	94	94		Weston swell (%) at 1 kPa	2.5		
0.425	87	88		Analysis as per method D422 of ASTM of 1985 The results reported relate only to the samples tested. Documents may only be reproduced or published in their full context.			
0.25	80	81					
0.15	67	69					
0.075	58	59					
0.04	42	42					
0.02	32	32					
0.006	22	22					
0.002	17	18					



Remarks:

## Activity Diagram After D H van der Merwe



### Clay Fraction of Whole Sample (% < 2 micron)

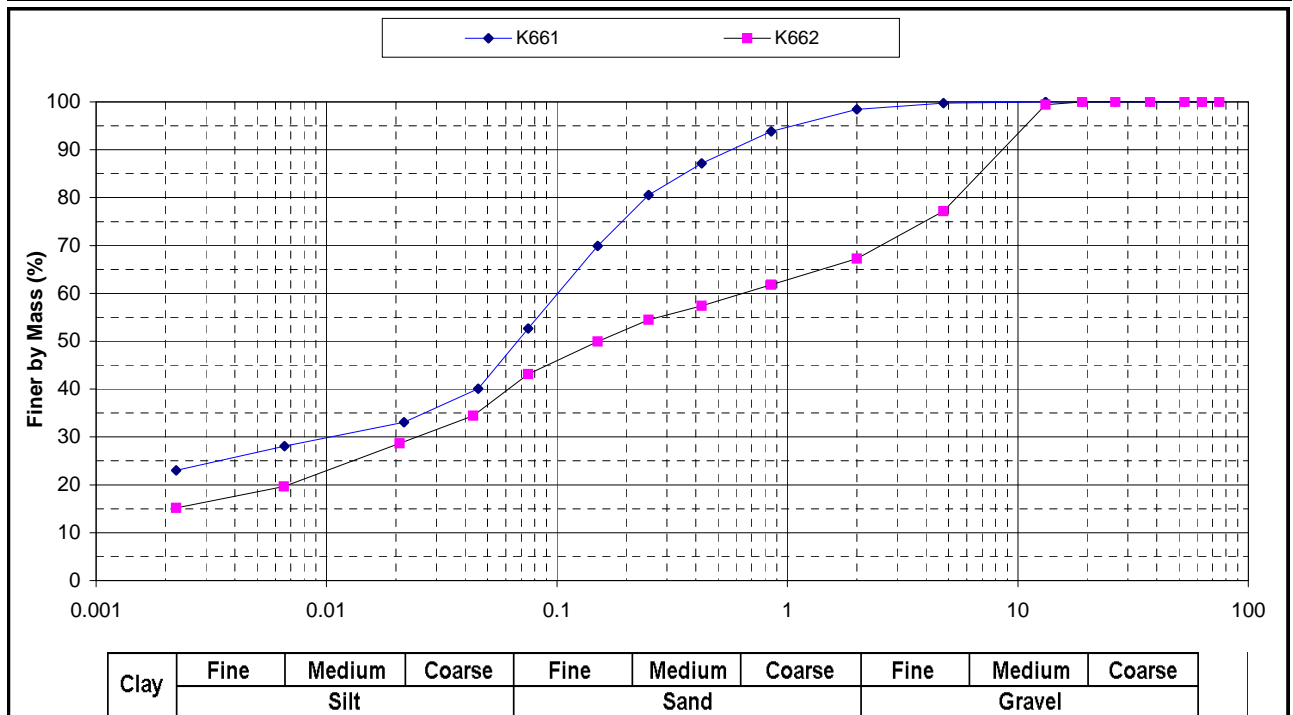
**Plotted Values:**

Sample	Clay Frac	PI
K660	17.5	9.7
K660A	17.6	10.8

## Foundation Indicator Test Data

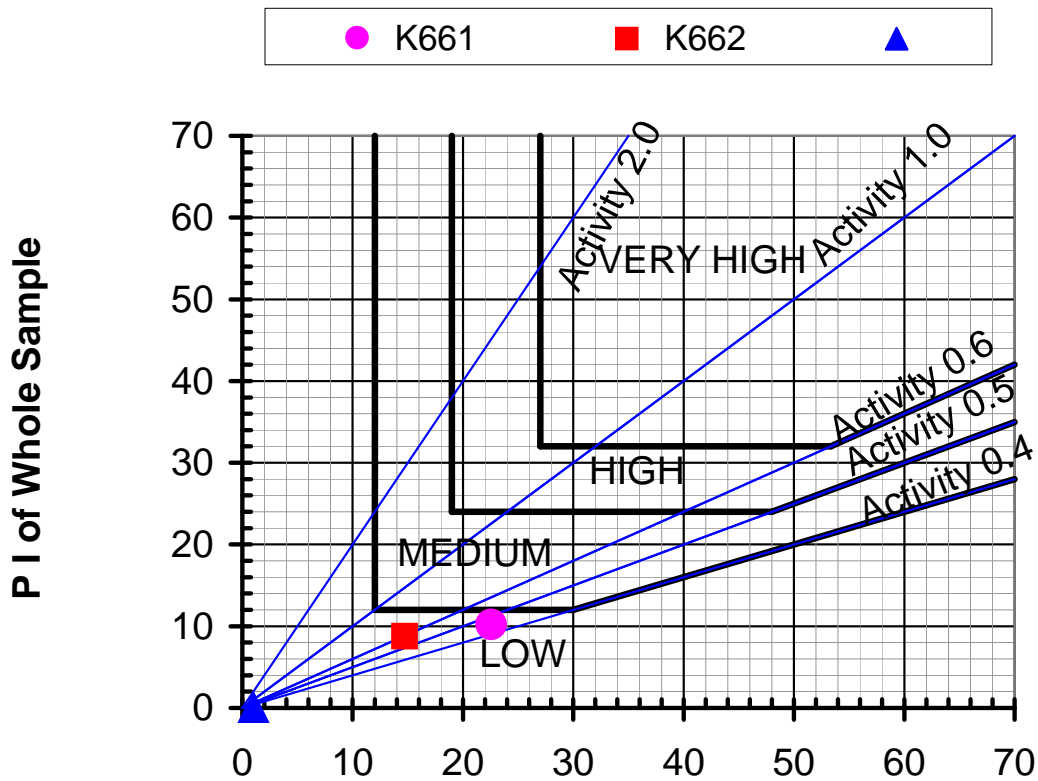
Project	DWAALBOOM		
Project No.	1039/F76/10/2008	Date	14 November 2008

Sample No.	K661	K662		Sample No.	K661	K662	
Field Ref. No.	TP C 13 / 2	TP C 24 / 1		%Gravel	2	33	
Depth	0.5	0.9 - 2.5		%Sand	51	28	
Sieve size	%Passing	% Passing	% Passing	%Silt	24	25	
75.00	100	100		%Clay	23	15	
63.00	100	100		NMC %	10.3	Not Tested	
53.00	100	100		Liquid Limit	26	31	
37.50	100	100		Plasticity Index	12	15	
26.50	100	100		Linear Shrink.	6.	7.	
19.00	100	100		Overall P.I.	10	9	
13.20	100	99		Grading Modulus	0.62	1.32	
4.75	100	77		H.R.B.	A-6 (4)	A-6 (3)	
2.00	98	67		Unified	CL	SC	
0.85	94	62		Weston swell (%) at 1 kPa	0.9		
0.425	87	57		Analysis as per method D422 of ASTM of 1985 The results reported relate only to the samples tested. Documents may only be reproduced or published in their full context.			
0.25	81	55					
0.15	70	50					
0.075	53	43					
0.04	39	34					
0.02	32	28					
0.006	28	19					
0.002	23	15					



Remarks:

## Activity Diagram After D H van der Merwe



### Clay Fraction of Whole Sample (% < 2 micron)

**Plotted Values:**

Sample	Clay Frac	PI
K661	22.6	10.2
K662	14.7	8.8

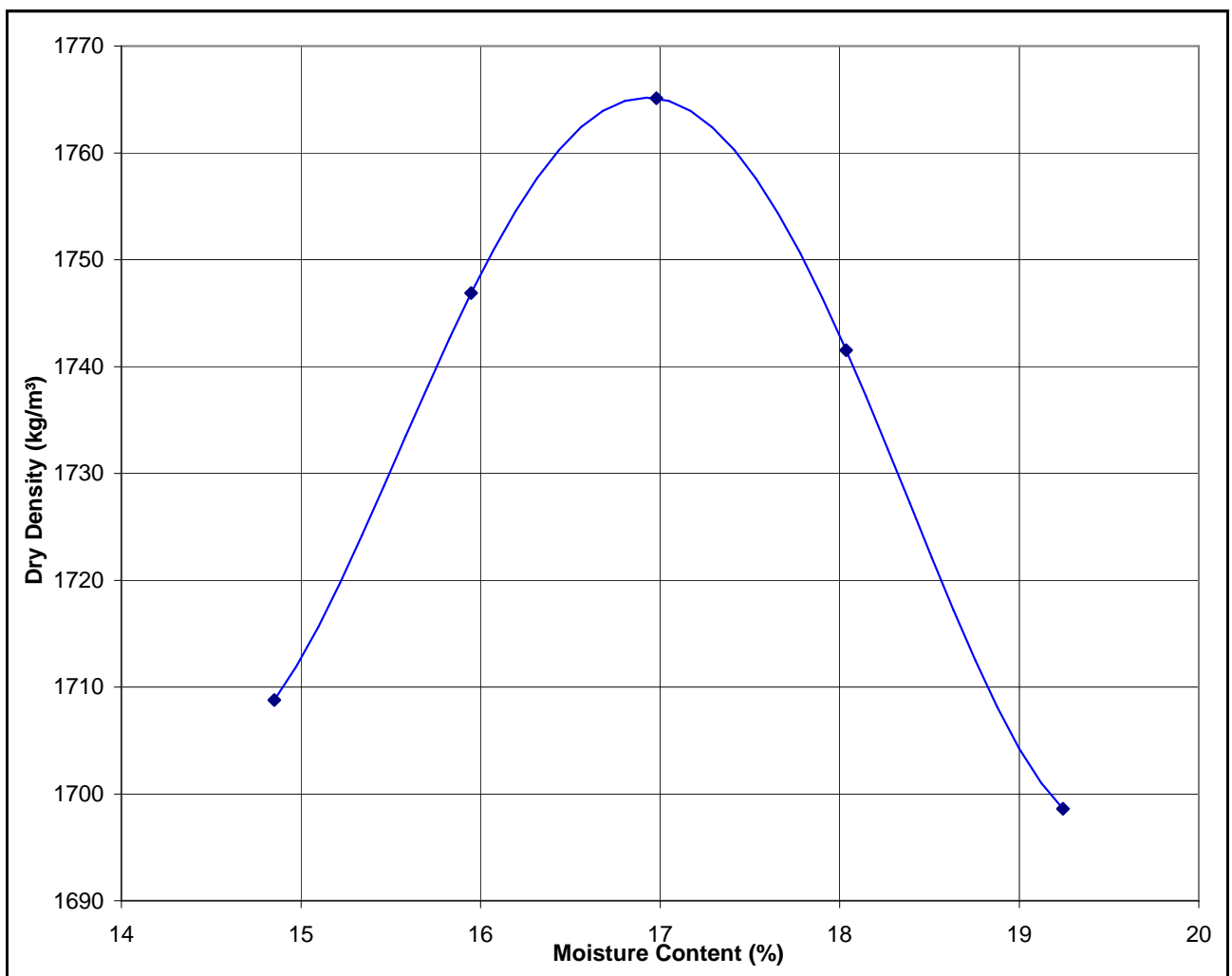
## Moisture Density Relationship

Project:	DWAALBOOM		
Project No.:	1039/F76/10/2008	Date:	30 October 2008
Field Reference:	TP A 08 / 1	Laboratory Ref.:	K639
Depth (m):	0.5 - 1.2	Remarks:	Untreated
Description:	FE - HILLWASH		

**Compactive Effort: Mod. AASHTO**

Percent Water Content (%):	17.0	18.0	15.9	14.9	19.2				
Dry Density (kg/m <sup>3</sup> ):	1765	1742	1747	1709	1699				

<b>Maximum Dry Density:</b>	<b>1765 kg/m<sup>3</sup></b>	<b>Optimum Moisture Content:</b>	<b>16.9 %</b>
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Analysis according to Method A7 of TMH1 of 1986.  
The results relate only to the samples tested.  
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Remarks:

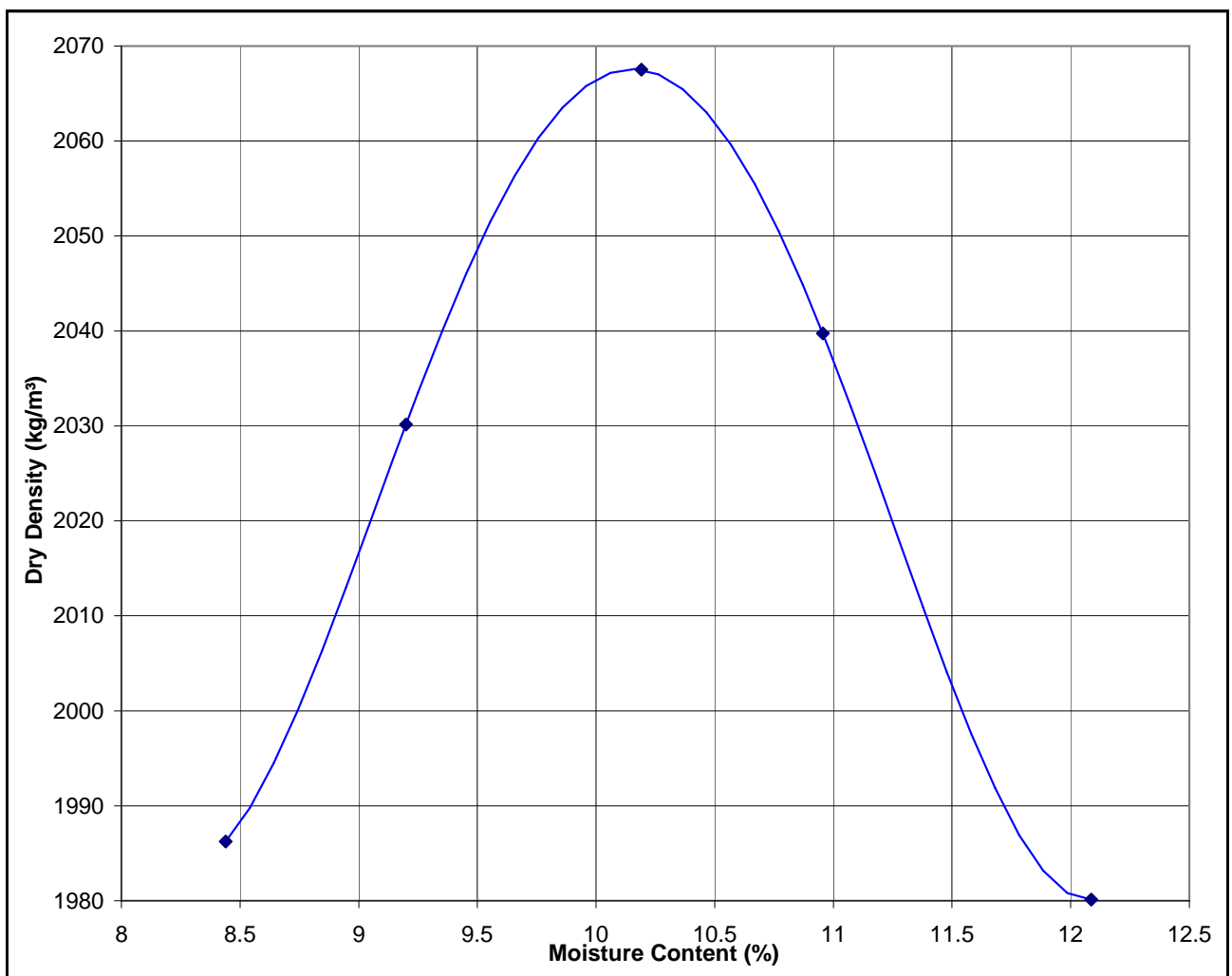
## Moisture Density Relationship

Project:	DWAALBOOM		
Project No.:	1039/F76/10/2008	Date:	30 October 2008
Field Reference:	TP A 10 / 1	Laboratory Ref.:	K640
Depth (m):	1.0 - 1.4	Remarks:	Untreated
Description:	FE - HILLWASH		

**Compactive Effort: Mod. AASHTO**

Percent Water Content (%):	10.2	11.0	9.2	8.4	12.1				
Dry Density (kg/m <sup>3</sup> ):	2068	2040	2030	1986	1980				

<b>Maximum Dry Density:</b>	<b>2068 kg/m<sup>3</sup></b>	<b>Optimum Moisture Content:</b>	<b>10.2 %</b>
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Analysis according to Method A7 of TMH1 of 1986.  
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Remarks:

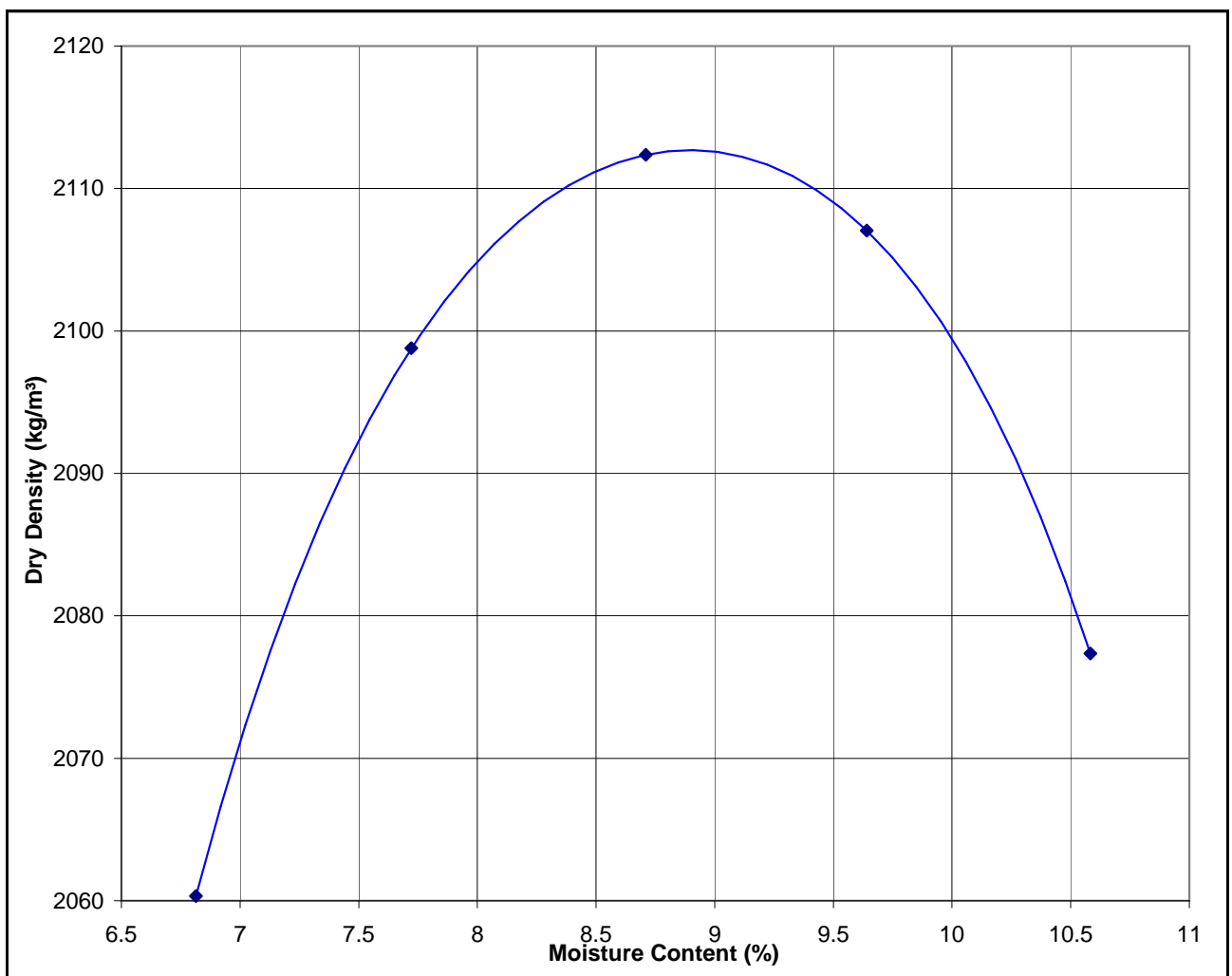
## Moisture Density Relationship

Project:	DWAALBOOM		
Project No.:	1039/F76/10/2008	Date:	30 October 2008
Field Reference:	TP A 10 / 2	Laboratory Ref.:	K641
Depth (m):	1.9	Remarks:	Untreated
Description:	CONGLOMERATE		

**Compactive Effort: Mod. AASHTO**

Percent Water Content (%):	9.6	10.6	8.7	7.7	6.8				
Dry Density (kg/m <sup>3</sup> ):	2107	2077	2112	2099	2060				

<b>Maximum Dry Density:</b>	<b>2113 kg/m<sup>3</sup></b>	<b>Optimum Moisture Content:</b>	<b>8.9 %</b>
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Analysis according to Method A7 of TMH1 of 1986.  
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Remarks:



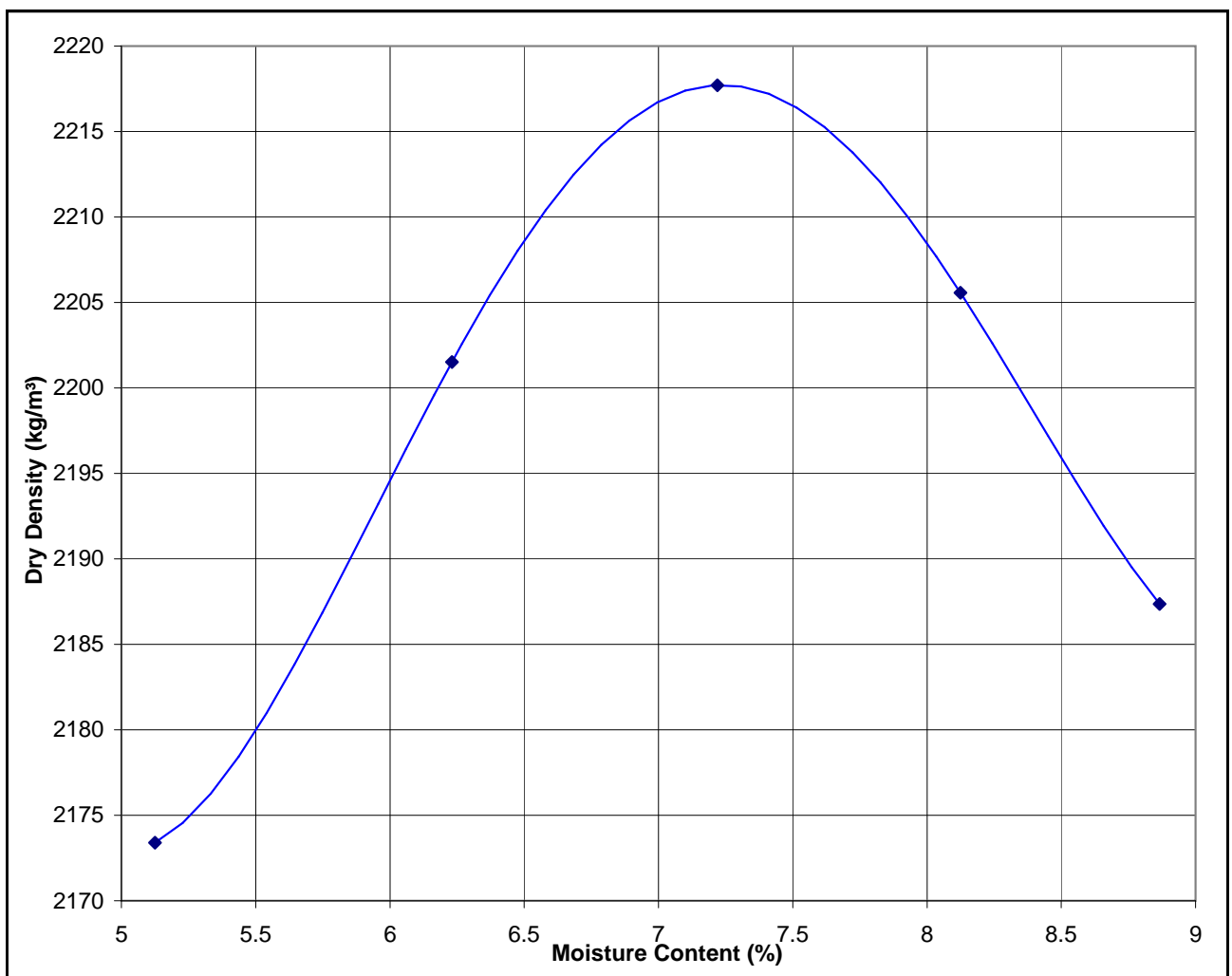
## Moisture Density Relationship

Project:	DWAALBOOM		
Project No.:	1039/F76/10/2008	Date:	30 October 2008
Field Reference:	TP A 16 / 1	Laboratory Ref.:	K644
Depth (m):	1.4 - 2.0	Remarks:	Untreated
Description:	RE - SHALE		

**Compactive Effort: Mod. AASHTO**

Percent Water Content (%):	8.1	8.9	7.2	6.2	5.1				
Dry Density (kg/m <sup>3</sup> ):	2206	2187	2218	2202	2173				

<b>Maximum Dry Density:</b>	<b>2218 kg/m<sup>3</sup></b>	<b>Optimum Moisture Content:</b>	<b>7.2 %</b>
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Analysis according to Method A7 of TMH1 of 1986.  
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Remarks:

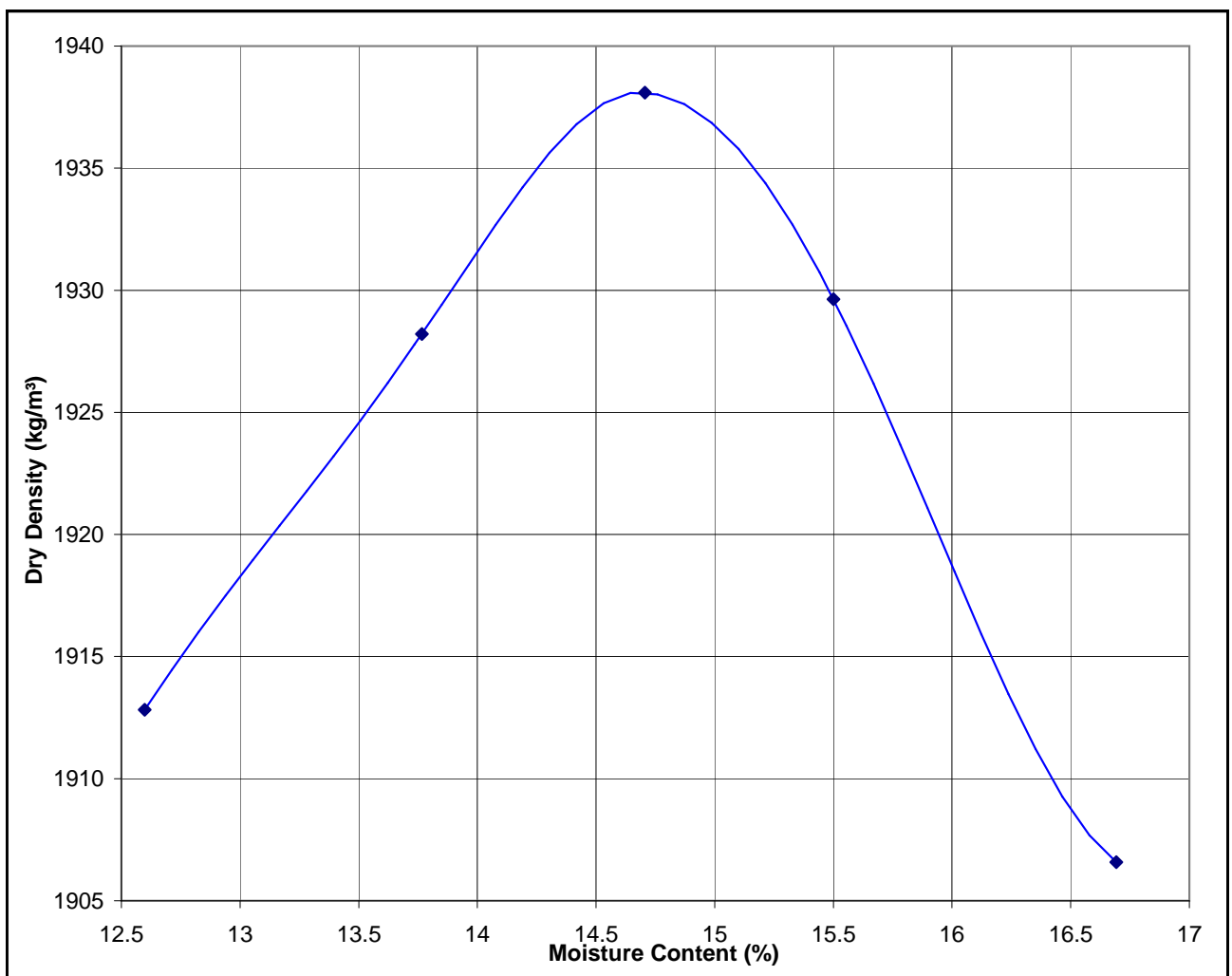
## Moisture Density Relationship

Project:	DWAALBOOM		
Project No.:	1039/F76/10/2008	Date:	30 October 2008
Field Reference:	TP B 1 / 1	Laboratory Ref.:	K649
Depth (m):	0.2 - 1.3	Remarks:	Untreated
Description:	FE - HILLWASH		

**Compactive Effort: Mod. AASHTO**

Percent Water Content (%):	13.8	12.6	14.7	15.5	16.7				
Dry Density (kg/m <sup>3</sup> ):	1931	1915	1941	1932	1909				

<b>Maximum Dry Density:</b>	<b>1938 kg/m<sup>3</sup></b>	<b>Optimum Moisture Content:</b>	<b>14.6 %</b>
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Analysis according to Method A7 of TMH1 of 1986.  
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Remarks:

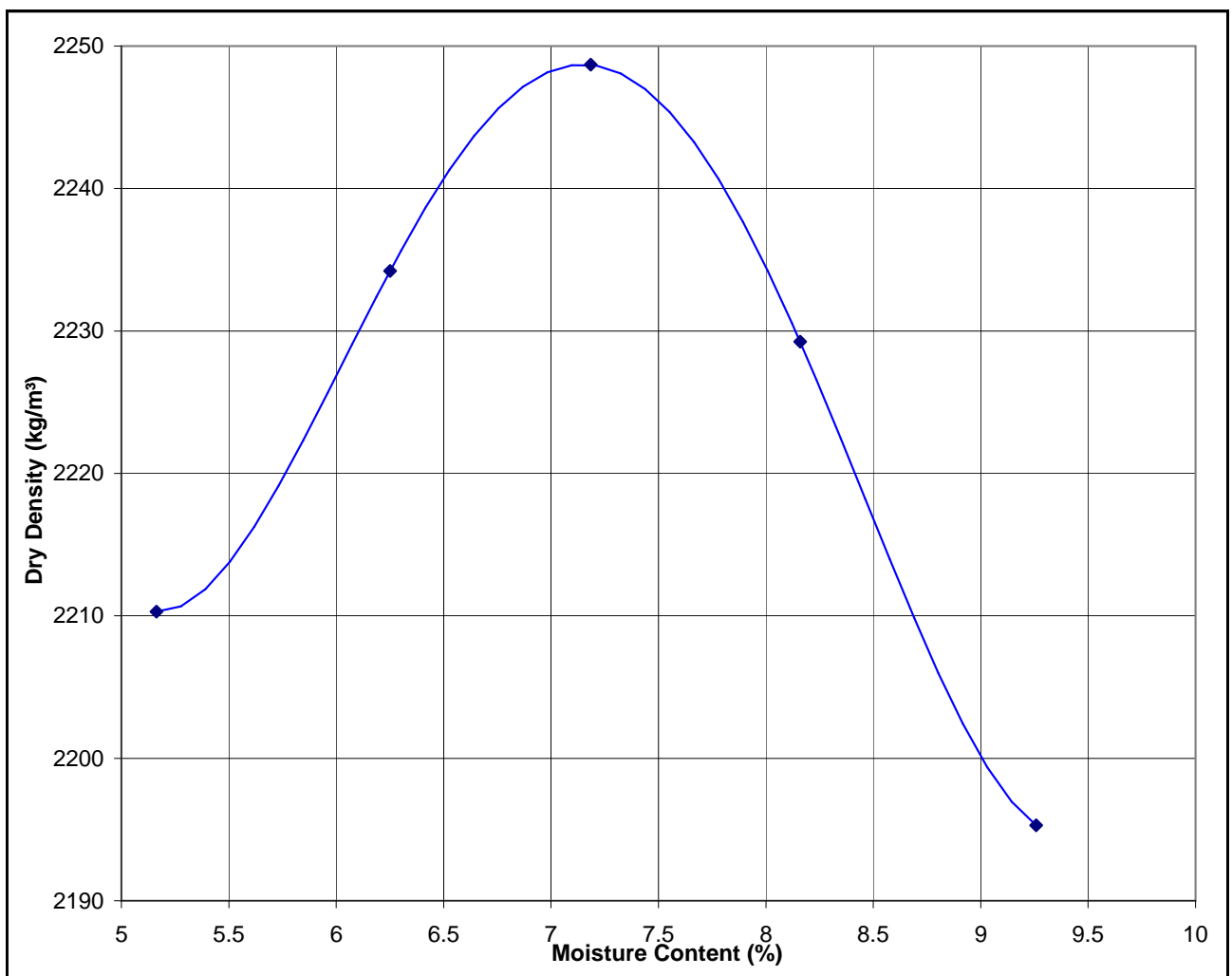
## Moisture Density Relationship

Project:	DWAALBOOM		
Project No.:	1039/F76/10/2008	Date:	30 October 2008
Field Reference:	TP B 15 / 1	Laboratory Ref.:	K650
Depth (m):	0.0 - 0.8	Remarks:	Untreated
Description:	COLLUVIUM		

**Compactive Effort: Mod. AASHTO**

Percent Water Content (%):	6.3	7.2	8.2	5.2	9.3				
Dry Density (kg/m <sup>3</sup> ):	2239	2253	2234	2215	2200				

<b>Maximum Dry Density:</b>	<b>2249 kg/m<sup>3</sup></b>	<b>Optimum Moisture Content:</b>	<b>7.1 %</b>
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Analysis according to Method A7 of TMH1 of 1986.  
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Remarks:

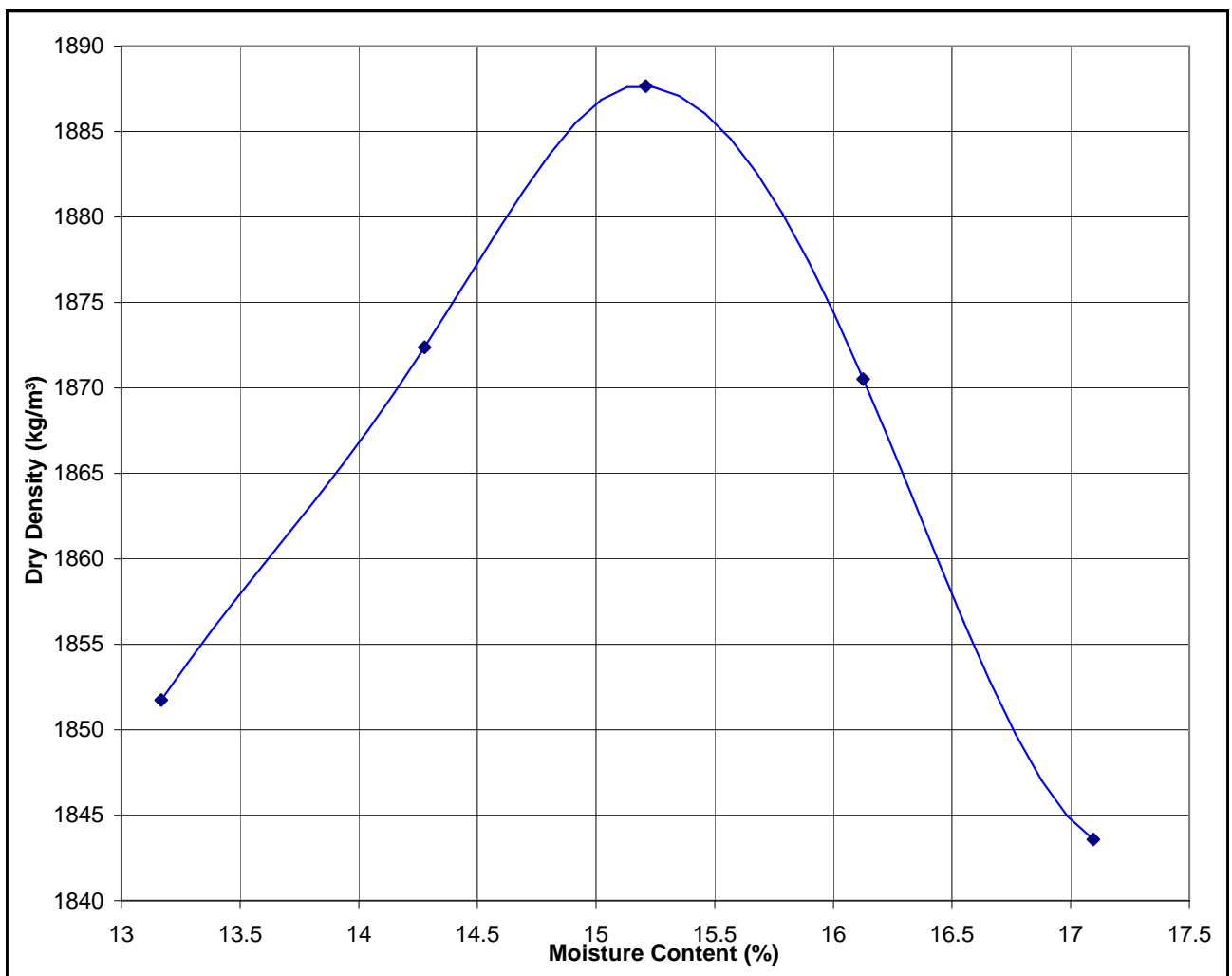
## Moisture Density Relationship

Project:	DWAALBOOM		
Project No.:	1039/F76/10/2008	Date:	29 October 2008
Field Reference:	TP B 23 / 1	Laboratory Ref.:	K653
Depth (m):	0.3 - 1.3	Remarks:	Untreated
Description:	-		

**Compactive Effort: Mod. AASHTO**

Percent Water Content (%):	14.3	15.2	16.1	13.2	17.1				
Dry Density (kg/m <sup>3</sup> ):	1871	1886	1869	1850	1842				

<b>Maximum Dry Density:</b>	<b>1888 kg/m<sup>3</sup></b>	<b>Optimum Moisture Content:</b>	<b>15.1 %</b>
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Analysis according to Method A7 of TMH1 of 1986.  
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Remarks:

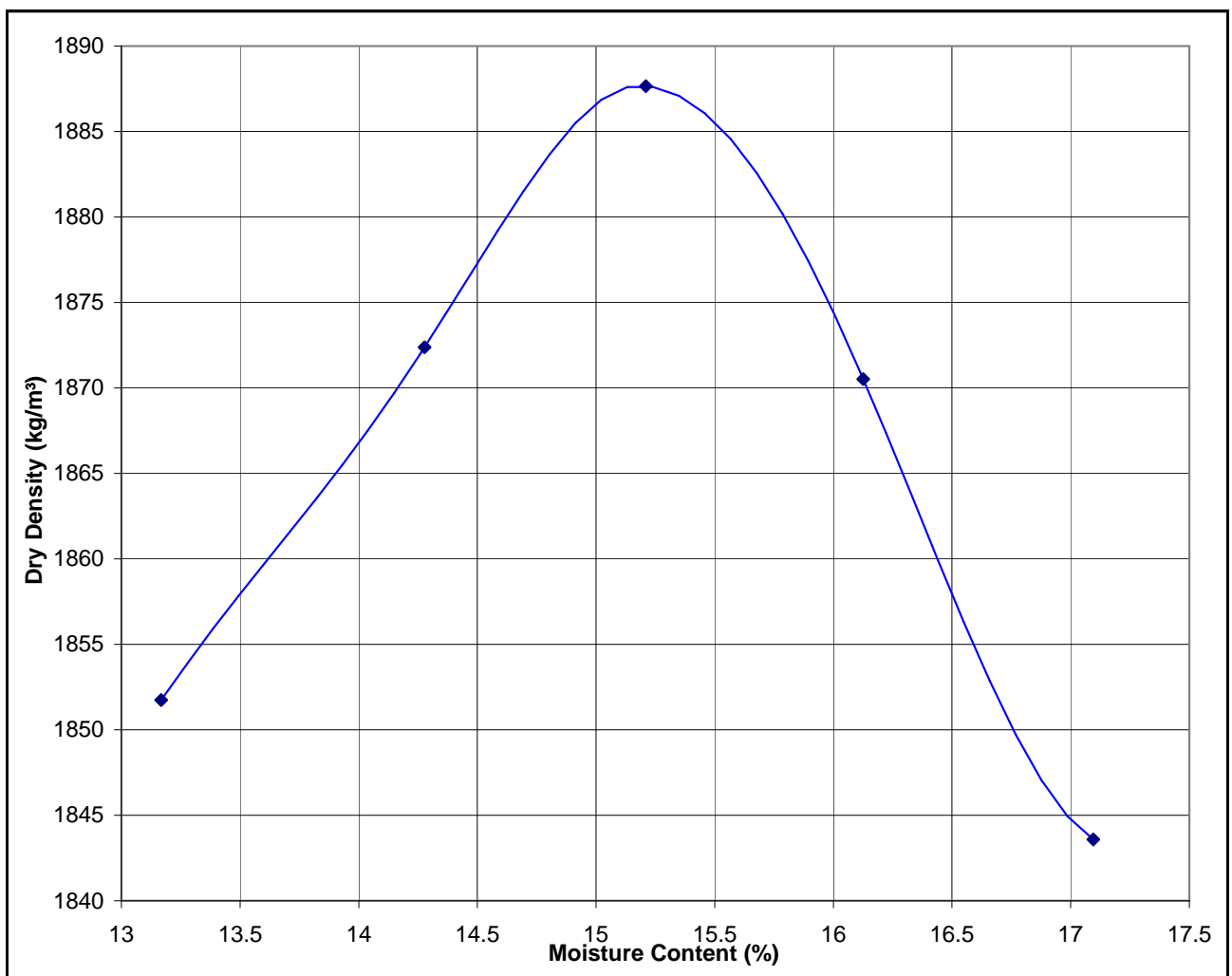
## Moisture Density Relationship

Project:	DWAALBOOM		
Project No.:	1039/F76/10/2008	Date:	29 October 2008
Field Reference:	TP B 23 / 1	Laboratory Ref.:	K653
Depth (m):	0.3 - 1.3	Remarks:	Untreated
Description:	-		

**Compactive Effort: Mod. AASHTO**

Percent Water Content (%):	14.3	15.2	16.1	13.2	17.1				
Dry Density (kg/m <sup>3</sup> ):	1871	1886	1869	1850	1842				

<b>Maximum Dry Density:</b>	<b>1888 kg/m<sup>3</sup></b>	<b>Optimum Moisture Content:</b>	<b>15.1 %</b>
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Analysis according to Method A7 of TMH1 of 1986.  
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Remarks:

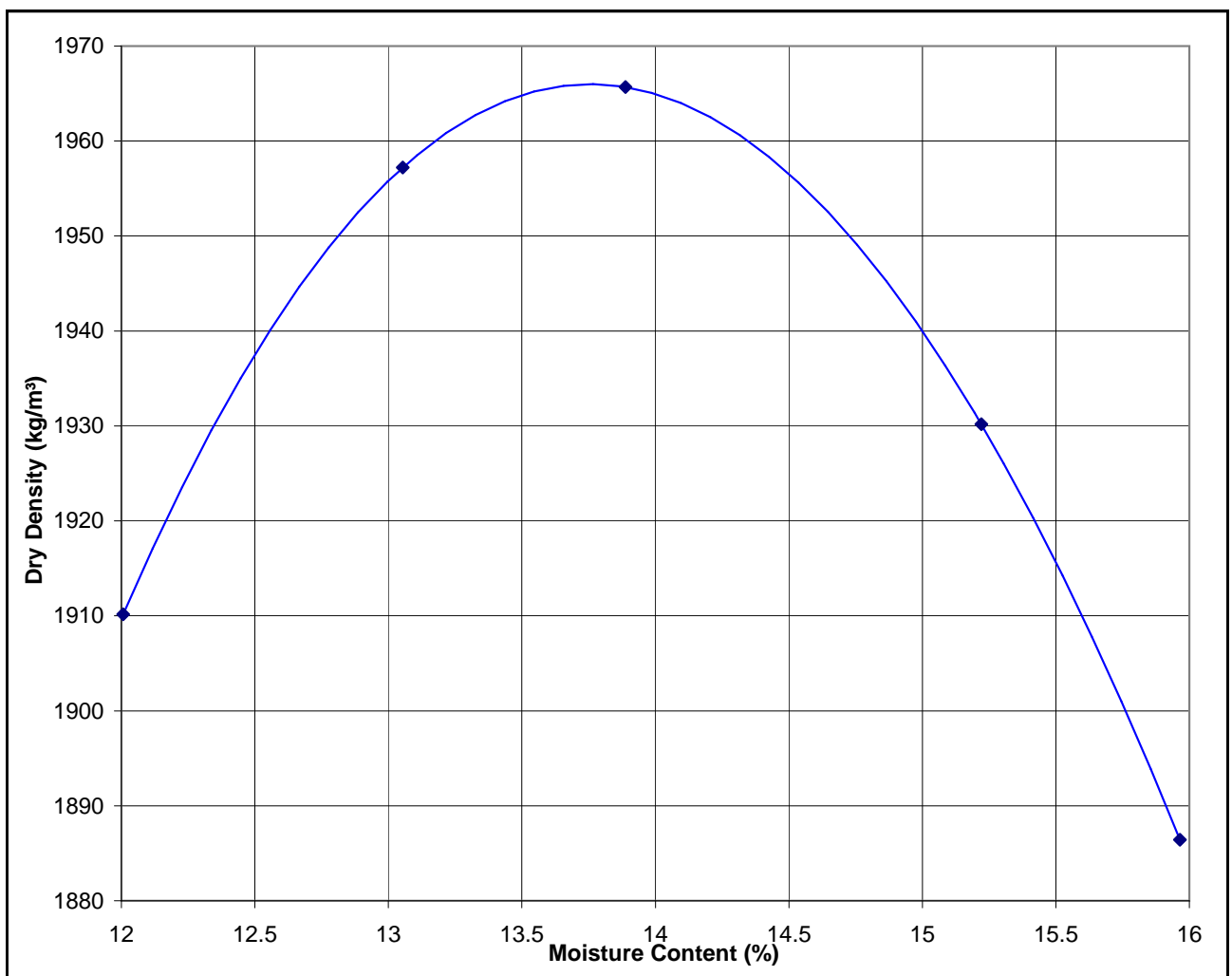
## Moisture Density Relationship

Project:	DWAALBOOM		
Project No.:	1039/F76/10/2008	Date:	30 October 2008
Field Reference:	TP B 23 / 2	Laboratory Ref.:	K654
Depth (m):	1.3 - 2.5	Remarks:	Untreated
Description:	FE - HILLWASH		

**Compactive Effort: Mod. AASHTO**

Percent Water Content (%):	13.9	15.2	13.1	12.0	16.0				
Dry Density (kg/m <sup>3</sup> ):	1968	1933	1960	1913	1889				

<b>Maximum Dry Density:</b>	<b>1966 kg/m<sup>3</sup></b>	<b>Optimum Moisture Content:</b>	<b>13.8 %</b>
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Analysis according to Method A7 of TMH1 of 1986.  
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Remarks:

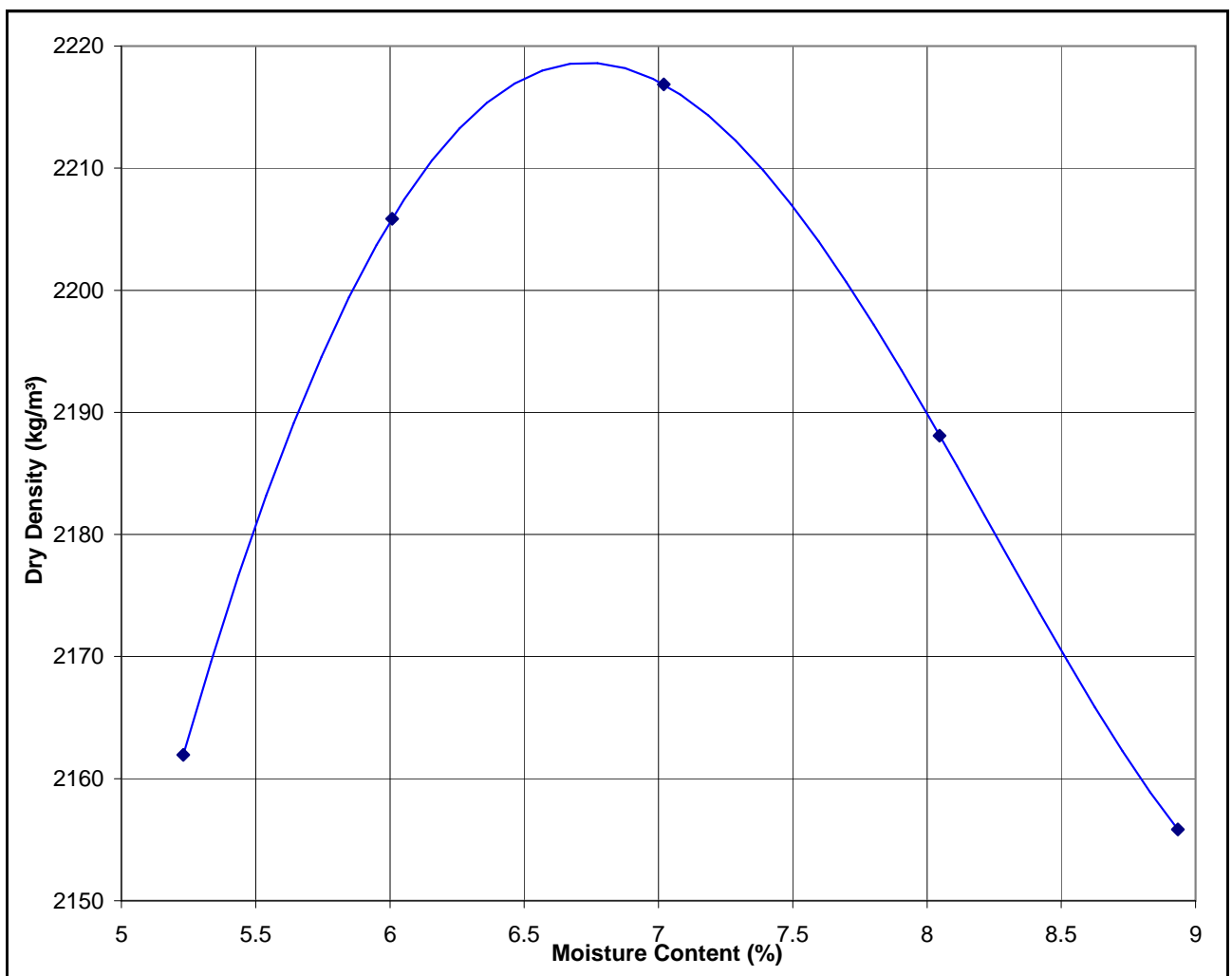
## Moisture Density Relationship

Project:	DWAALBOOM		
Project No.:	1039/F76/10/2008	Date:	30 October 2008
Field Reference:	TP C 24 / 1	Laboratory Ref.:	K662
Depth (m):	0.9 - 2.5	Remarks:	Untreated
Description:	REWORKED RESIDUAL DOLOMITE		

**Compactive Effort: Mod. AASHTO**

Percent Water Content (%):	8.0	8.9	7.0	6.0	5.2				
Dry Density (kg/m <sup>3</sup> ):	2188	2156	2217	2206	2162				

<b>Maximum Dry Density:</b>	<b>2219 kg/m<sup>3</sup></b>	<b>Optimum Moisture Content:</b>	<b>6.8 %</b>
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Analysis according to Method A7 of TMH1 of 1986.  
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Remarks:





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# Civilab

Civil Engineering Testing Laboratories

## Consolidation Tests

Project:	DWAALBOOM						Test 1
Project No.:	1039/F76/10/2008			Sample No.:	K657		
Borehole No:	TP C 09 / 1			Depth:	0.7		
Date Received:	21/10/2008			Date Tested:	17/11/2008		
Remarks:	An undisturbed sample soaked @ 100kPa. Swell: 1.67%						
Machine No.	19	Ring No.	C4	Height (mm)	19.98	Diameter (mm)	71.28

### Masses for Water Content Determination (g)

Wet Sample and Ring		Dry Sample and Ring	Ring Only	Water Content	
Before Test	After Test			Before Test	After Test
226.5	233.4	199.1	76.21	22.3%	27.9%

Pre-Determined Particle Specific Gravity | 2.683

### Initial Parameters

Void Ratio	0.7407	Degree of Saturation (%)	80.8	Dry Density (Kg/m3)	1541
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Effect. Stress (kPa)	10	50	100	100	200	400	800	1600	400	100	0	
Dial Correction (u)	0	29	53	53	80	115	149	200	115	53	0	
HH:MM:SS	√Minutes	Dial Readings in Microns								Initial Dial Reading		13276
00:00:00	0.00	13276										
00:35:00	5.92				13022							
01:00:00	7.75	13274	13073	12946	13075							
02:00:00	10.95				13150				11395	11603		
03:00:00	13.42				13177							
04:00:00	15.49				13192							
05:00:00	17.32				13252							
08:00:00	21.91				13269							
24:00:00	37.95				13278	13244		11963	11127			
26:00:00	39.50				13278							
48:00:00	53.67						12746					
End of Primary Cons		13274	13073	12946	13278	13244	12746	11963	11127	11395	11603	
Number of Readings:		2	1	1	9	1	1	1	1	1	1	0

## Relative Density

Project : DWAALBOOM	
Project No. : 1039/F76/10/2008	Date : 24/11/2008

Lab. Sample Ref.	Field Sample Ref.	Depth (m)	Specific Gravity
K636	TPA01/1	0.3	2.805
K638	TPA01/3	1.6	2.855
K643	TPA15/2	2.0	2.837
K647	TPA17/3	1.8	2.836
K648	TPA22/1	1.0	2.816
K651	TPB18/1	1.5	2.905
K652	TPB18/2	2.5	2.851
K655	TPB3/1	1.4	2.829
K656	TPB4/1	2.5	2.815
K657	TPC09/1	0.7	2.683
K658	TPC11/1	0.2	2.765
K659	TPC11/2	0.5	2.747
K660	TPC13/1	0.2	2.764
K661	TPC13/2	0.5	2.837

Remarks:

Results reported relate only to the samples tested.

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