24) LD2-13-2

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TABLE SUMMARY OF SOIL TEST

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project** Standard: **ASTM**

Borehole No.			LD2-13-2							
Sample No.			HP-1	D-4	D-5	D-2 + D-3	D-2 + D-3+HP-1(10%)	D-2 + D-3+HP-1(20%)	D-3 + SPT-11	
Sample Depth			4.00m ~4.85m	12.00m ~12.80m	18.00m ~18.80m	6.50m ~9.90m	4.00m ~9.90m	4.00m ~9.90m	9.00m ~12.80m	
Condition of Sample			Undisturbed			Disturbed				
Natural Water Content		%	36.8	36.9	41.6	-	-	-	-	
Specific Gravity			2.74	2.74	2.71	2.67	2.67	2.68	2.69	
Wet Density		Mg/m^3	1.86	1.90	1.77	-	-	-	-	
Dry Density		Mg/m^3	1.36	1.39	1.25	-	-	-	-	
Natural Void Ratio			1.02	0.98	1.17	-	-	-	-	
Degree of Saturation		%	99	100	97	-	-	-	-	
Atterberg Limits	Liquid Limit,	%	37	40	29	- *7	- *7	- *7	- *7	
	Plastic Limit,	%	20	24	22	- *7	- *7	- *7	- *7	
	Plasticity Index,	%	17	16	7	- *7	- *7	- *7	- *7	
Grain Size Analysis	Gravel,	%	0	0	0	0	0	0	0	
	Sand,	%	27	2	27	80	80	80	68	
	Silt,	%	34	59	45	20	20	20	32	
	Clay & Colloid,	%	39	39	28					
	Max. diameter,	mm	0.425	0.850	2.00	4.75	4.75	4.75	4.75	
	Diam. at 60%	mm	0.022	0.014	0.041	0.29	0.29	0.30	0.17	
	Diam. at 10%	mm	-	-	-	-	-	-	-	
Visual soil description			Clay with Sand	Clay with Sand	Silty Clay with Sand	Silty Sand	Silty Sand	Silty Sand	Silty Sand	
Unified soil classification			CL	CL	CL-ML	-	-	-	-	
Triaxial compression test	Angle of Internal Friction	(^{0})	-	-	-	-	-	-	-	
	Cohesion Intercept, kPa		-	-	-	-	-	-	-	
	Condition of drainage		-	-	-	-	-	-	-	
	Angle of Internal Friction *2	(^{0})	-	-	-	39	37	40	36	
	Cohesion Intercept, kPa *2		-	-	-	0	0	0	0	
	Condition of drainage		-	-	-	CD*6	CD*6	CD*6	CD*6	
Consolidation Test	Preconsolidation Pressure,	kPa	-	-	- *3	-	-	-	-	
	Compression Index(Average)		-	-	0.19 *3	-	-	-	-	
	Pressure Range for Compression Index(kPa)		-	-	1600-3200	-	-	-	-	
	Swell index		-	-	0.030 *3	-	-	-	-	
Compaction Test *4	Maximum Dry Density, Mg/m^3		-	-	-	1.73 / 1.84 *5	1.87	1.90	1.84	
	Optimum Moisture Content , %		-	-	-	12.3 / 10.8 *5	12.0	11.6	12.8	
Unconfined Compression Strength (kPa)			-	-	58.3	-	-	-	-	
Strain at failure (%)			-	-	2.62	-	-	-	-	

Remarks : Atterberg Limits was tested on material at natural state except those with *1 which was tested on material passing through 0.425mm test sieve.

*2 : In terms of effective stress *3 : Specimen tested has higher density and lower water content(more sand content)

*4 : By using 2.5 kg Rammer *5 : By using 4.5 kg Rammer *6 : Specimens are prepared at 90% of Maximum dry density

*7 : Unable to test because sample contains lot of sand

Checked by : A. B. Tan

TABLE SUMMARY OF SOIL TEST (Site Laboratory)

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project** Standard: **ASTM**

Borehole No.			LD2-13-2							
Sample No.			SPT-4	D-1	D-2	SPT-5R	SPT-6R	D-3(Top)	D-3(Bot)	SPT-7
Sample Depth			5.00m ~5.45m	6.00m ~6.50m	6.50m ~7.00m	7.00m ~7.45m	8.00m ~8.45m	9.00m ~9.60m	9.60m ~9.90m	10.00m ~10.45m
Condition of Sample			Disturbed							
Atterberg Limits	Liquid Limit,	%	-	*3	*3	-	-	*3	*3	-
	Plastic Limit,	%	-	*3	*3	-	-	*3	*3	-
	Plasticity Index,	%	-	*3	*3	-	-	*3	*3	-
Grain Size Analysis	Gravel,	%	0	0	0	0	0	0	0	0
	Sand,	%	87	78	94	87	82	96	77	62
	Silt,	%	13	22	6	13	18	4	23	38
	Clay & Colloid,	%								
	Max. diameter,	mm	4.75	4.75	2.00	4.75	4.8	4.75	4.75	2.00
	Diam. at 60%	mm	0.25	0.25	0.26	0.30	0.24	0.36	0.16	0.14
	Diam. at 10%	mm	-	-	0.1080	-	-	0.157	-	-
Visual soil description			Silty Sand	Silty Sand	Silty Sand	Silty Sand	Silty Sand	Sand	Silty Sand	Silty Sand
Unified soil classification			-	-	-	-	-	-		-

Remarks : Atterberg Limits was tested on material at natural state except those with *1 which was tested on material passing through 0.425mm test sieve.

*2 : In terms of effective stress *3: Unable to test because samples contain lots of sand

Checked by :

Kiso-Jiban Consultants Co., Ltd.

TABLE SUMMARY OF SOIL TEST (Site Laboratory)

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project** Standard: **ASTM**

Borehole No.			LD2-13-2							
Sample No.			SPT-8	D-4	SPT-12	SPT-13	D-5	SPT-14		
Sample Depth			11.00m ~11.45m	12.00m ~12.80m	16.00m ~16.45m	17.00m ~17.45m	18.00m ~18.45m	19.00m ~19.45m		
Condition of Sample			Disturbed							
Atterberg Limits	Liquid Limit,	%	-	32	-	-	27	-		
	Plastic Limit,	%	-	20	-	-	18	-		
	Plasticity Index,	%	-	12	-	-	9	-		
Grain Size Analysis	Gravel,	%	0	0	0	0	-	0		
	Sand,	%	66	32	74	63	-	53		
	Silt,	%	34	68	26	37	-	47		
	Clay & Colloid,	%								
	Max. diameter,	mm	4.75	9.50	4.75	2.00	-	9.50		
	Diam. at 60%	mm	0.13	-	0.22	0.10	-	0.10		
	Diam. at 10%	mm	-	-	-	-	-	-		
Visual soil description			Silty Sand	Clay with Sand	Silty Sand	Silty Sand	Clay with Sand	Silty Sand		
Unified soil classification			-	CL	-	-	CL	-		

Remarks : Atterberg Limits was tested on material at natural state except those with *1 which was tested on material passing through 0.425mm test sieve.

*2 : In terms of effective stress *3: Unable to test because samples contain lots of sand

Checked by :

Kiso-Jiban Consultants Co., Ltd.

ATTERBERG LIMITS DETERMINATION

Project Name : Preparatory Survey on Matarbari USC Coral-fired Power Project Project No. : S27-14

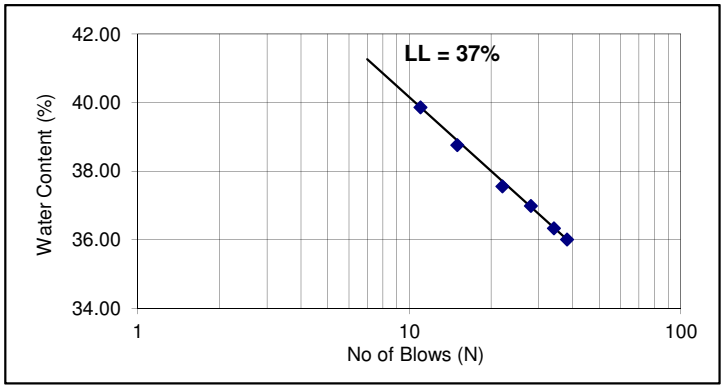
Standard : ASTM D4318-10 Date of Testing : 20.11.14

Tested By : Vasantha Checked By : A. B. Tan

Sample No. : LD2-13-2 HP-1 Depth : 4.00-4.85m

Remarks : Tested on material at natural state

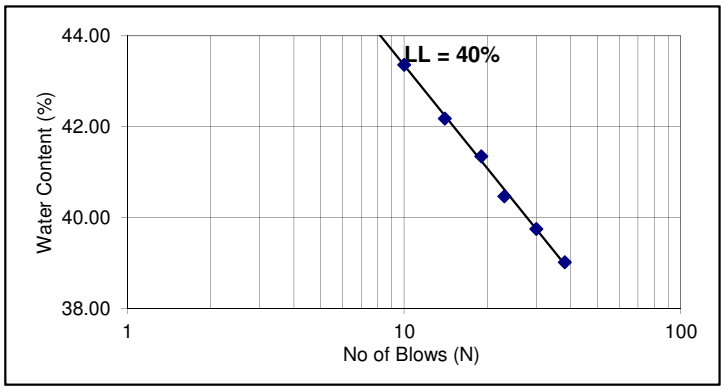
Liquid Limits Test		
Test No.	Blows	Wn
1	38	36.01
2	34	36.33
3	28	36.98
4	22	37.55
5	15	38.76
6	11	39.86
Liquid Limits %		**37**
Plastic Limits %		**20**
Plasticity Index		**17**



Sample No. : LD2-13-2 D-4 Depth : 12.00-12.80m

Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	38	39.01
2	30	39.74
3	23	40.46
4	19	41.35
5	14	42.17
6	10	43.36
Liquid Limits %		**40**
Plastic Limits %		**24**
Plasticity Index		**16**



ATTERBERG LIMITS DETERMINATION

Project Name : Preparatory Survey on Matarbari USC Coral-fired Power Project Project No. : S27-14

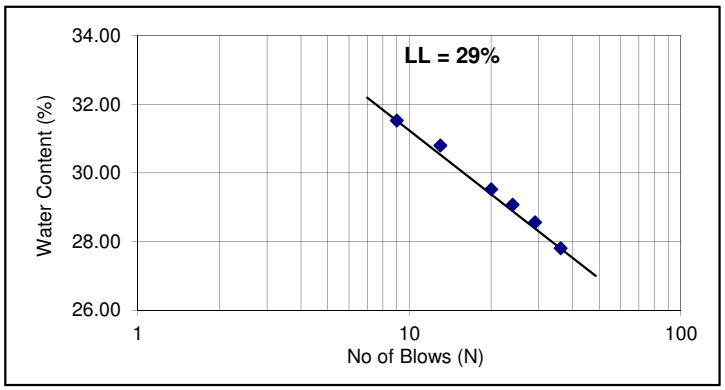
Standard : ASTM D4318-10 Date of Testing : 23.10.14

Tested By : Vasantha Checked By : A. B. Tan

Sample No. : LD2-13-2 D-5 Depth : 18.00-18.80m

Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	36	27.80
2	29	28.56
3	24	29.07
4	20	29.52
5	13	30.79
6	9	31.52
Liquid Limits %		**29**
Plastic Limits %		**22**
Plasticity Index		**7**



Kiso-Jiban Consultants Co Ltd
Singapore Branch

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **20.11.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

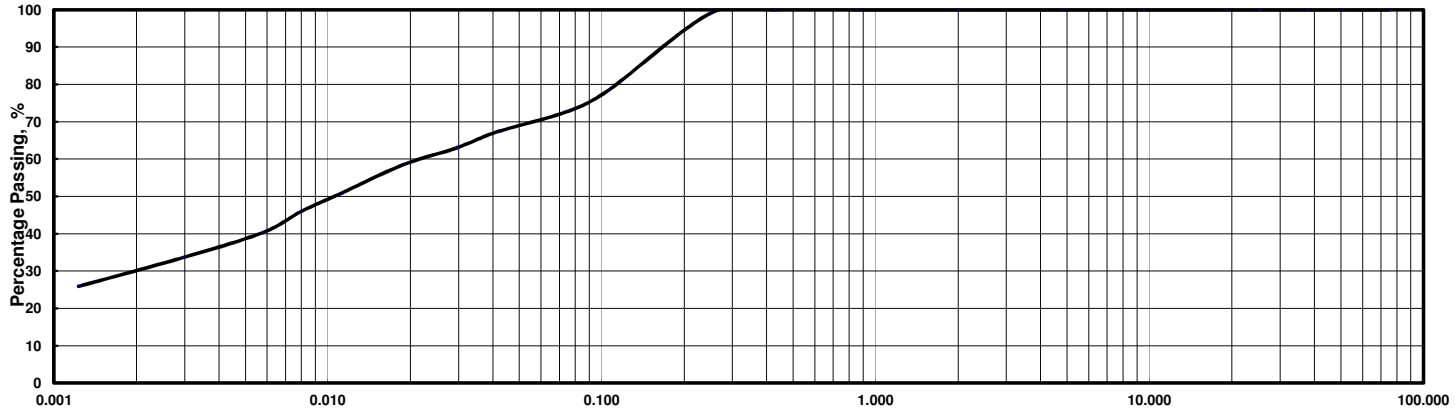
Sample No. : **LD2-13-2 HP-1** Depth : **4.00-4.85m** ( ) Specific Gravity : 2.74

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.1	78.5	72.7
Hydro.	Dia., mm	0.041	0.029	0.019	0.011	0.0080	0.0058	0.0029	0.0012							
	% Passing	67.2	62.9	58.5	50.8	46.1	40.3	33.6	25.9							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



Grain Diameter, mm

0.005		0.075	0.425		2.00	4.75	19.0		75.0
CLAY		FINE	MEDIUM		COARSE	FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	LD2-13-2 HP-1 4.00-4.85m		Sample No. Depth	LD2-13-2 HP-1 4.00-4.85m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.425 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.022 mm	
2.00 - 0.425 mm	0.0 %		Dia. at 30%	0.0020 mm	
0.425 - 0.075 mm	27.3 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	34.3 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	38.4 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	72.7 %				

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **20.11.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

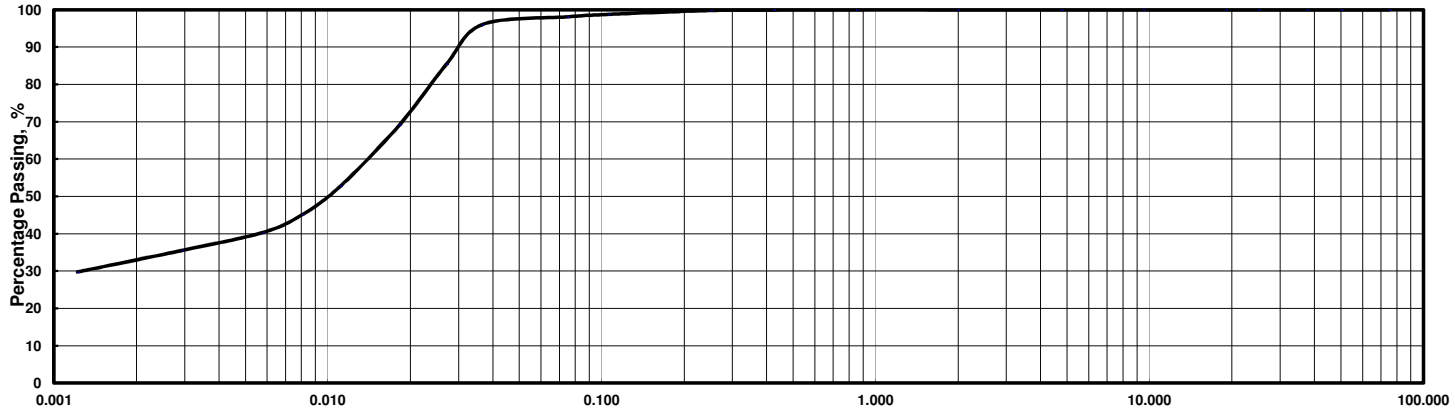
Sample No. : **LD2-13-2 D-4** Depth : **12.00-12.80m** ( ) Specific Gravity : 2.74

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.8	98.7	98.1
Hydro.	Dia., mm	0.037	0.027	0.018	0.011	0.0081	0.0058	0.0029	0.0012							
	% Passing	96.0	85.5	69.1	52.8	45.1	40.3	35.5	29.8							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



Grain Diameter, mm

0.005		0.075	0.425		2.00	4.75	19.0		75.0
CLAY		FINE	MEDIUM		COARSE	FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	LD2-13-2 D-4 12.00-12.80m		Sample No. Depth	LD2-13-2 D-4 12.00-12.80m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.850 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.014 mm	
2.00 - 0.425 mm	0.1 %		Dia. at 30%	0.0013 mm	
0.425 - 0.075 mm	1.8 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	59.1 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	39.0 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	98.1 %				

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **25.10.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

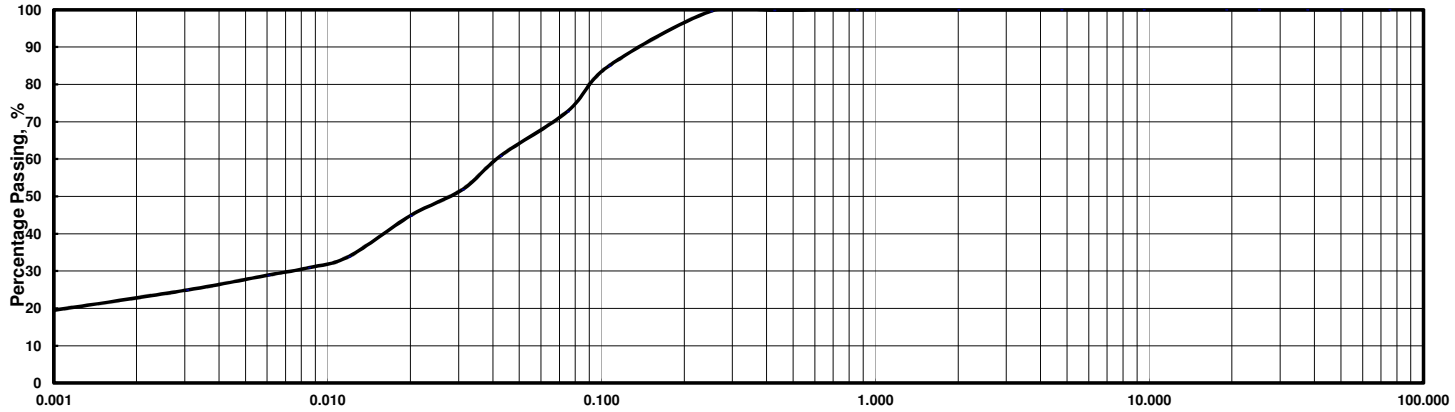
Sample No. : **LD2-13-2 D-5** Depth : **18.00-18.80m** ( ) Specific Gravity : 2.71

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.6	84.9	72.8
Hydro.	Dia., mm	0.043	0.031	0.020	0.012	0.0085	0.0060	0.0031	0.0009							
	% Passing	60.8	51.8	44.9	33.9	30.9	28.9	24.9	18.9							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



Grain Diameter, mm

0.005		0.075	0.425		2.00	4.75	19.0		75.0
CLAY		FINE	MEDIUM		COARSE	FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	LD2-13-2 D-5 18.00-18.80m		Sample No. Depth	LD2-13-2 D-5 18.00-18.80m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.041 mm	
2.00 - 0.425 mm	0.1 %		Dia. at 30%	0.0073 mm	
0.425 - 0.075 mm	27.1 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	45.2 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	27.5 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	72.8 %				

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **03.01.15** Tested By : **Motiur** Checked by : **A. B. Tan**

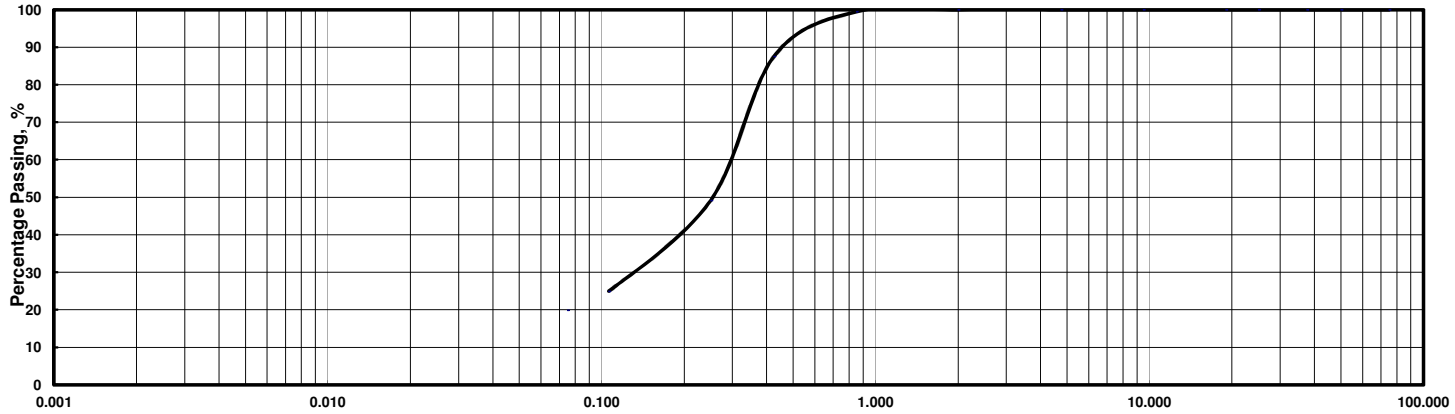
Sample No. : **LD2-13-2 D-2 + D-3** Depth : **6.50-9.90m** ( ) Specific Gravity : 2.67

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	87.5	49.2	25.0	19.9
Hydro.	Dia., mm															
	% Passing															

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



Grain Diameter, mm

0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM		COARSE	FINE		COARSE	
	SILT	SAND				GRAVEL			

Sample No. Depth	LD2-13-2 D-2 + D-3 6.50-9.90m			Sample No. Depth	LD2-13-2 D-2 + D-3 6.50-9.90m		
Larger than 4.75 mm	0.0	%		Max. Diameter	4.75	mm	
4.75 - 2.00 mm	0.0	%		Dia. at 60%	0.29	mm	
2.00 - 0.425 mm	12.5	%		Dia. at 30%	0.13	mm	
0.425 - 0.075 mm	67.6	%		Dia. at 10%	-	mm	
0.075 - 0.005 mm	19.9	%		Coeff. of Uniformity	-		
Smaller than 0.005 mm				Coeff. of Curvature	-		
2000um Sieve Passing	100.0	%					
425um Sieve Passing	99.5	%					
75um Sieve Passing	19.9	%					

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **03.01.15** Tested By : **Motiur** Checked by : **A. B. Tan**

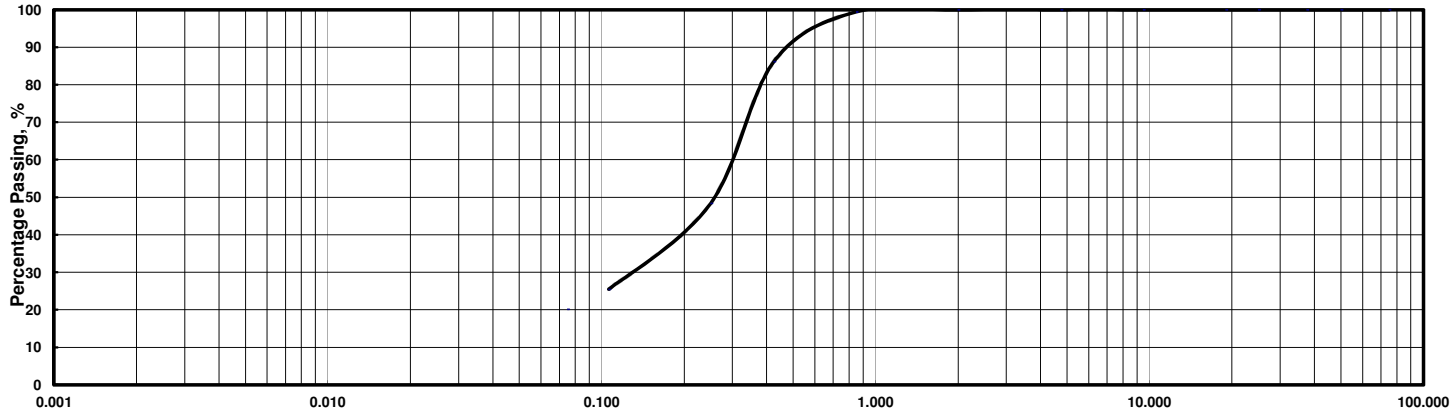
Sample No. : **LD2-13-2 D-2+D-3+HP-1(10%)** Depth : **4.00-9.90m** ( ) Specific Gravity : 2.67

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.4	86.2	48.4	25.5	20.2
Hydro.	Dia., mm															
	% Passing															

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



Grain Diameter, mm

0.005		0.075		0.425		2.00	4.75		19.0		75.0
CLAY			FINE	MEDIUM		COARSE		FINE		COARSE	
	SILT		SAND					GRAVEL			

Sample No. Depth	LD2-13-2 D-2+D-3+HP-1(10%) 4.00-9.90m			Sample No. Depth	LD2-13-2 D-2+D-3+HP-1(10%) 4.00-9.90m		
Larger than 4.75 mm	0.0	%		Max. Diameter	4.75	mm	
4.75 - 2.00 mm	0.0	%		Dia. at 60%	0.29	mm	
2.00 - 0.425 mm	13.8	%		Dia. at 30%	0.13	mm	
0.425 - 0.075 mm	66.0	%		Dia. at 10%	-	mm	
0.075 - 0.005 mm	20.2	%		Coeff. of Uniformity	-		
Smaller than 0.005 mm				Coeff. of Curvature	-		
2000um Sieve Passing	100.0	%					
425um Sieve Passing	99.4	%					
75um Sieve Passing	20.2	%					

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **03.01.15** Tested By : **Motiur** Checked by : **A. B. Tan**

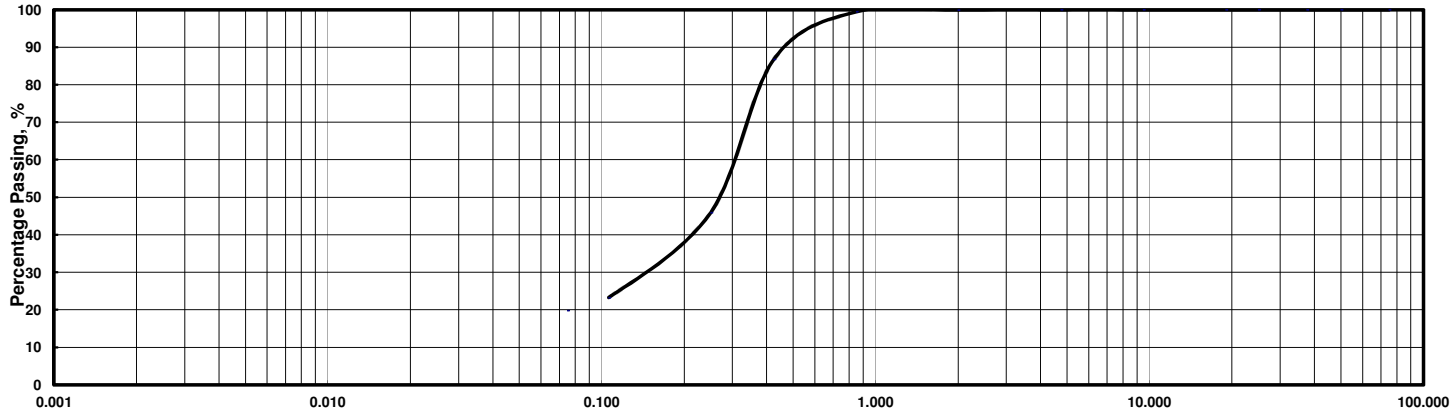
Sample No. : **LD2-13-2 D-2+D-3+HP-1(20%)** Depth : **4.00-9.90m** ( ) Specific Gravity : 2.68

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.5	86.8	45.9	23.3	19.9
Hydro.	Dia., mm															
	% Passing															

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



Grain Diameter, mm

0.005		0.075	0.425	2.00	4.75	19.0	75.0
CLAY		FINE	MEDIUM	COARSE	FINE	COARSE	
	SILT	SAND			GRAVEL		

Sample No. Depth	LD2-13-2 D-2+D-3+HP-1(20%) 4.00-9.90m		Sample No. Depth	LD2-13-2 D-2+D-3+HP-1(20%) 4.00-9.90m	
Larger than 4.75 mm	0.0	%	Max. Diameter	4.75	mm
4.75 - 2.00 mm	0.1	%	Dia. at 60%	0.30	mm
2.00 - 0.425 mm	13.2	%	Dia. at 30%	0.14	mm
0.425 - 0.075 mm	66.9	%	Dia. at 10%	-	mm
0.075 - 0.005 mm	19.9	%	Coeff. of Uniformity	-	
Smaller than 0.005 mm			Coeff. of Curvature	-	
2000um Sieve Passing	100.0	%			
425um Sieve Passing	99.5	%			
75um Sieve Passing	19.9	%			

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **03.01.15** Tested By : **Motiur** Checked by : **A. B. Tan**

Sample No. : **LD2-13-2 D-3+SPT-11** Depth : **9.00-12.80m** ( ) Specific Gravity : 2.69

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.6	94.0	73.8	40.9	32.5
Hydro.	Dia., mm															
	% Passing															

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves

Grain Diameter, mm

0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM		COARSE	FINE		COARSE	
	SILT	SAND				GRAVEL			

Sample No. Depth	LD2-13-2 D-3+SPT-11 9.00-12.80m		Sample No. Depth	LD2-13-2 D-3+SPT-11 9.00-12.80m	
Larger than 4.75 mm	0.0 %		Max. Diameter	4.75 mm	
4.75 - 2.00 mm	0.1 %		Dia. at 60%	0.17 mm	
2.00 - 0.425 mm	6.0 %		Dia. at 30%	- mm	
0.425 - 0.075 mm	61.5 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	32.5 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm			Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	99.6 %				
75um Sieve Passing	32.5 %				

UNCONFINED COMPRESSION TEST

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No. : S27-14

Standard : ASTM D2166-06

Date of Testing : 21.10.14

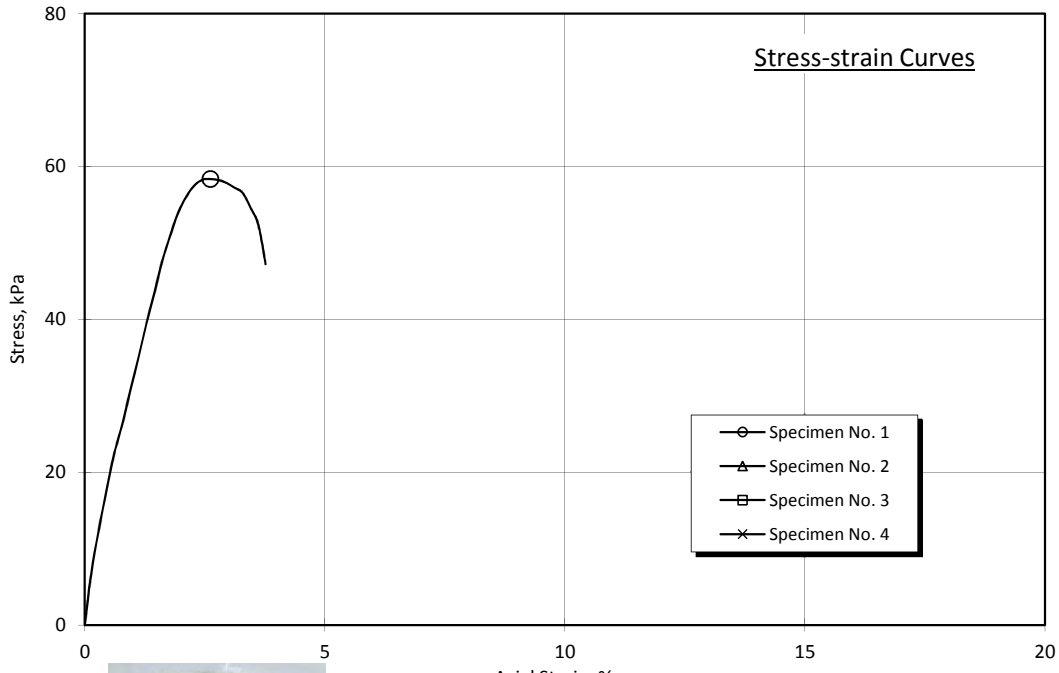
Borehole No.: LD2-13-2 Depth 18.00-18.80m

Tested by : Perera

Sample No. : D-5 Strain Rate 1.00 %/min

Checked by : A. B. Tan

Specimen No.	Condition of Sample	Size of Specimen (mm)		Natural Water Content	Bulk Density	Dy Density	Unconfined Compressive Strength	Shear Strength	Coefficient of Deformation	Corrected Initial Strain	Strain at Failure
		Height	Diameter	(%)	(Mg/m3)	(Mg/m3)	(kPa)	(kPa)	E50 (kPa)	(%)	(%)
1	Undisturbed	99.80	50.00	41.6	1.76	1.24	58.3	29.2	3270	N/A	2.62



After shearing (Spec. 1)

After shearing (Spec. 2)

After shearing (Spec. 3)

Remarks : - [Strain at failure]=[Recorded strain at failure] - [Corrected Initial Strain]

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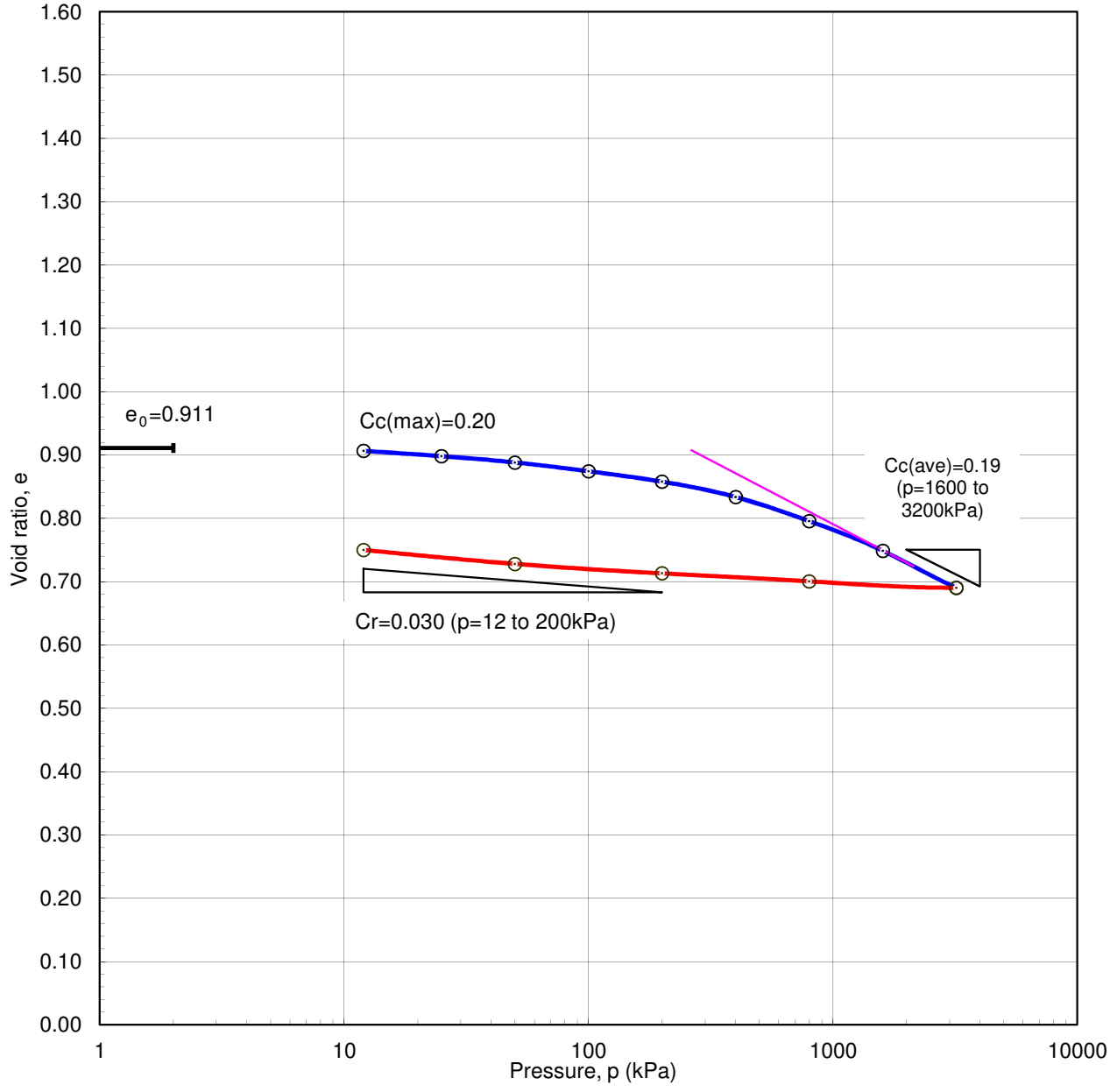
Singapore Branch

CONSOLIDATION TEST (e-log p curves)

Preparatory Survey on Matarbari USC Coal-fired Power

Project :	Project			Borehole No. :	LD2-13-2
Project No.:	S27-14	Tested by :	Lim	Sample No. :	D-5
Soil Type :	Silty Clay with Sand	Checked by :	A. B. Tan	Depth of Sample :	18.00-18.80 m

Sample No.	Depth of sample (m)	Initial void ratio e_o	Preconsolidation Pressure, p_c (kPa)	Compression Index Cc		Swell Index Cr	Unload-reload-Compression Index Cur
D-5	18.00-18.80	0.911	-	0.20 (max)	0.19(average)	0.030 (average)	N/A



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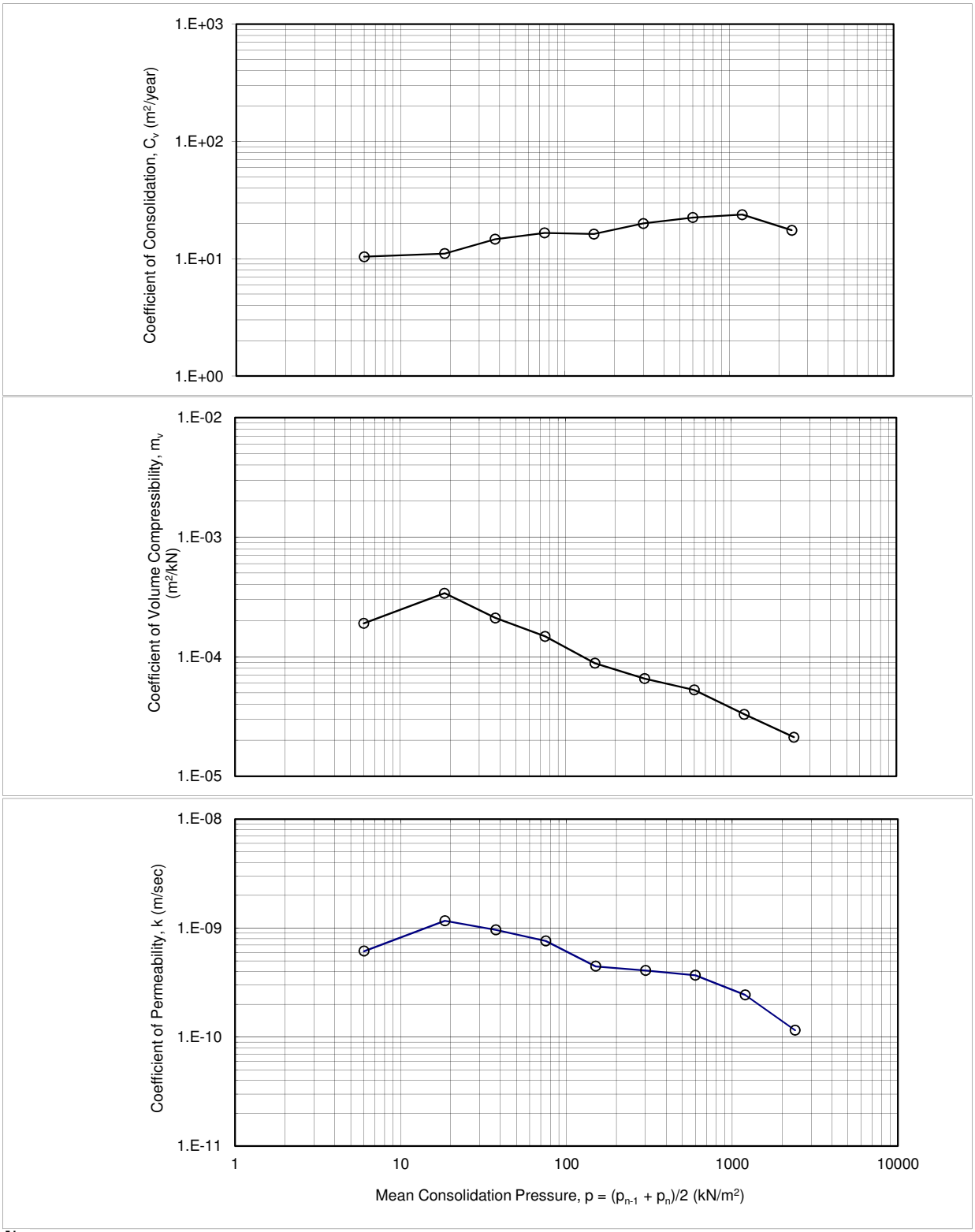
Consolidation Test (p - $\overline{cv}$, mv , k curves)

Project	:	Preparatory Survey on Matarbari USC Coal-fired Power Project		Borehole No.	: LD2-13-2
Project No.	:	S27-14		Sample No.	: D-5
Date of testing	:	8-Oct-14	Tested by : Lim	Depth of Sample	: 18.00-18.80 m



KISO-JIBAN CONSULTANTS CO., LTD.

PROJECT NAME : Preparatory Survey on Matarbari USC Coal-fired Power Project
PROJECT NO. : S27-14

BOREHOLE NO. : LD2-13-2
TESTING STANDARD : ASTM D2435-11
DATE : 8-Oct-14

SAMPLE NO. : D-5
INITIAL HEIGHT OF SPECIMEN : 18.000 mm
NO. OF LOADING STEP : 9

DEPTH : 18.00-18.80 m
DIAMETER OF SPECIMEN : 53.900 mm
SPECIFIC GRAVITY : 2.71

TESTER NO. : 16
DRY WEIGHT OF SPECIMEN : 58.270 grams
SOLID HEIGHT OF SPECIMEN : 9.420 mm

INITIAL MOISTURE CONTENT : 30.7 %
BULK DENSITY : 1.87 Mg/m^3

METHOD OF TIME FITTING USED : SQUARE ROOT TIME CURVE - FITTING METHOD
LABORATORY TEMPERATURE : 23.0 ^{o}C

PRESSURE kN/m^2	PRESSURE INCREMENT kN/m^2	CHANGE IN HEIGHT *E-2 mm	HEIGHT mm	AVERAGE HEIGHT mm	STRAIN %	MV m^2/kN	VOLUME RATIO	VOID RATIO
0.000			18.000				1.911	0.911
	12.000	4.1		17.980	0.23	1.90E-04		
12.000			17.959				1.906	0.906
	13.000	7.9		17.920	0.44	3.39E-04		
25.000			17.880				1.898	0.898
	25.000	9.4		17.833	0.53	2.11E-04		
50.000			17.786				1.888	0.888
	50.000	13.1		17.721	0.74	1.48E-04		
100.000			17.655				1.874	0.874
	100.000	15.5		17.578	0.88	8.82E-05		
200.000			17.500				1.858	0.858
	200.000	22.8		17.386	1.31	6.56E-05		
400.000			17.272				1.834	0.834
	400.000	36.0		17.092	2.11	5.27E-05		
800.000			16.912				1.795	0.795
	800.000	44.0		16.692	2.64	3.29E-05		
1600.000			16.472				1.749	0.749
	1600.000	54.9		16.198	3.39	2.12E-05		
3200.000			15.923				1.690	0.690

PRESSURE kN/m^2	AVERAGE PRESSURE kN/m^2	T90 min	CV m^2/sec	CV m^2/day	CV $m^2/year$	PRIMARY COMPRESSION *E-2 mm	PRIMARY COMPRESSION RATIO	COEFFICIENT OF PERMEABILITY m/sec
0.000								
	6.000	3.23	3.29E-07	2.84E-02	1.04E+01	0.5	0.132	6.13E-10
12.000								
	18.500	3.01	3.50E-07	3.03E-02	1.10E+01	0.9	0.109	1.17E-09
25.000								
	37.500	2.25	4.65E-07	4.01E-02	1.46E+01	1.1	0.113	9.61E-10
50.000								
	75.000	1.96	5.26E-07	4.54E-02	1.66E+01	1.2	0.091	7.63E-10
100.000								
	150.000	1.97	5.15E-07	4.45E-02	1.62E+01	1.8	0.115	4.46E-10
200.000								
	300.000	1.57	6.33E-07	5.47E-02	2.00E+01	2.2	0.095	4.07E-10
400.000								
	600.000	1.35	7.12E-07	6.15E-02	2.25E+01	3.7	0.104	3.68E-10
800.000								
	1200.000	1.22	7.53E-07	6.50E-02	2.37E+01	4.9	0.112	2.43E-10
1600.000								
	2400.000	1.55	5.55E-07	4.79E-02	1.75E+01	8.5	0.154	1.15E-10
3200.000								

REBOUND

P	800.000	200.000	50.000	12.000
H	16.018	16.136	16.277	16.485
E	0.700	0.713	0.728	0.750

Summary of Consolidated Drained Triaxial Compression Test

Project No.: S27-14		Project :Preparatory Survey on Matarbari USC Coral-fired Power Project					
Date Tested : 29.11.14		Tested by : Perera		Checked by : A. B. Tan			
Borehole No.: LD2-13-2		Sample No.: D-2 + D-3		Depth : 6.50-9.90m			
Specimen Condition : Undisturbed		Test Method : ASTM D7181-11					
Soil Description : Silty Sand		Ave. Diameter : 50.0mm		Ave. Height : 100.0mm			
Specimen No.			1	2	3	4	
Initial Condition	Wet Density,	Mg/m^3	-	-	-		
	Water Content,	%	-	-	-		
	Dry Density	Mg/m^3	1.56	1.56	1.56		
Saturation Stage	Saturated PWP,	kPa	500	500	500		
	Final Cell Pressure,	kPa	540	570	600		
	B-value		0.96	0.95	0.96		
Consolidation Stage	Cell Pressure	kPa	540	570	600		
	Back Pressure	kPa	500	500	500		
	Initial PWP,	kPa	529	557	586		
	Final PWP	kPa	500	500	500		
Consolidation Parameter	Volume Change,	%	0.04	0.04	0.06		
	Coefficient of Consolidation Cv,	m^2/year	530	295	317		
	Coefficient of Volume Compressibility mvi,	m^2/MN	0.010	0.006	0.006		
Compression Stage	Cell Pressure	kPa	540	570	600		
	Back Pressure	kPa	500	500	500		
	Effective Cell Pressure	kPa	40	70	100		
	Shearing Speed	mm/min	0.015	0.015	0.015		
Failure Conditions	Peak Deviator Stress $(\sigma_1-\sigma_3)f$,	kPa	125	256	328		
	Excess PWP at $(\sigma_1-\sigma_3)f$	kPa	N/A	N/A	N/A		
	Volumetric Strain at $(\sigma_1-\sigma_3)f$	(%)	-0.57	-0.77	-0.61		
	Strain at $(\sigma_1-\sigma_3)f$	(%)	12.95	4.93	6.39		
Shear Strength Parameters	ϕ_d = 39 Degree c_d = 0 kPa		Mode of Failure 1 2 3 4 				

Remarks :

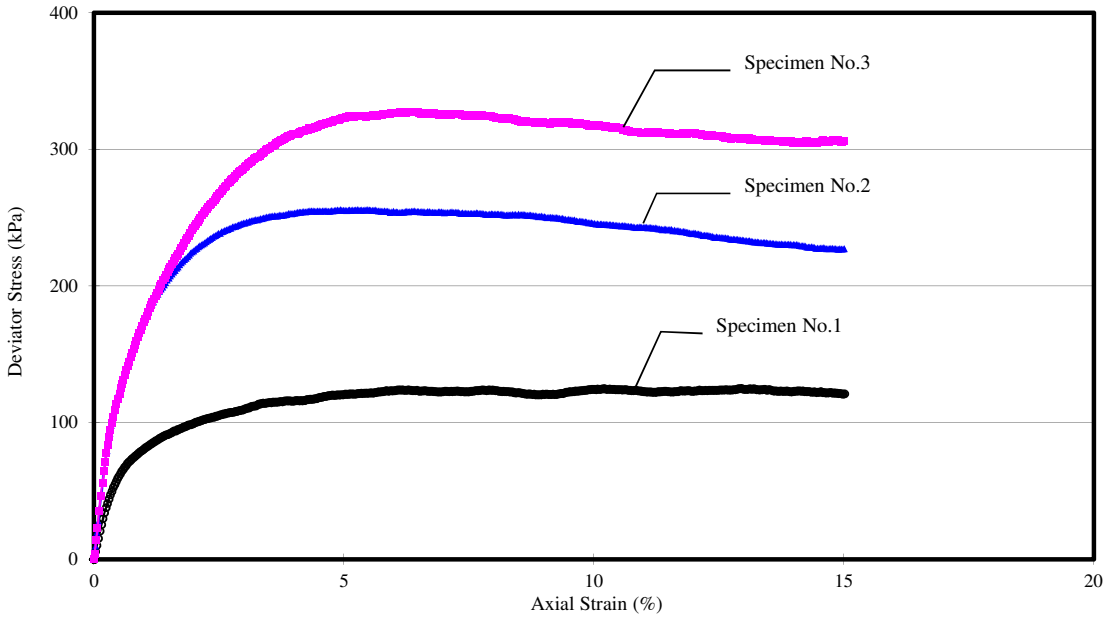
Specimens are prepared at 90% of Maximum dry density (from compaction Test) = $1.56 Mg/m^3$

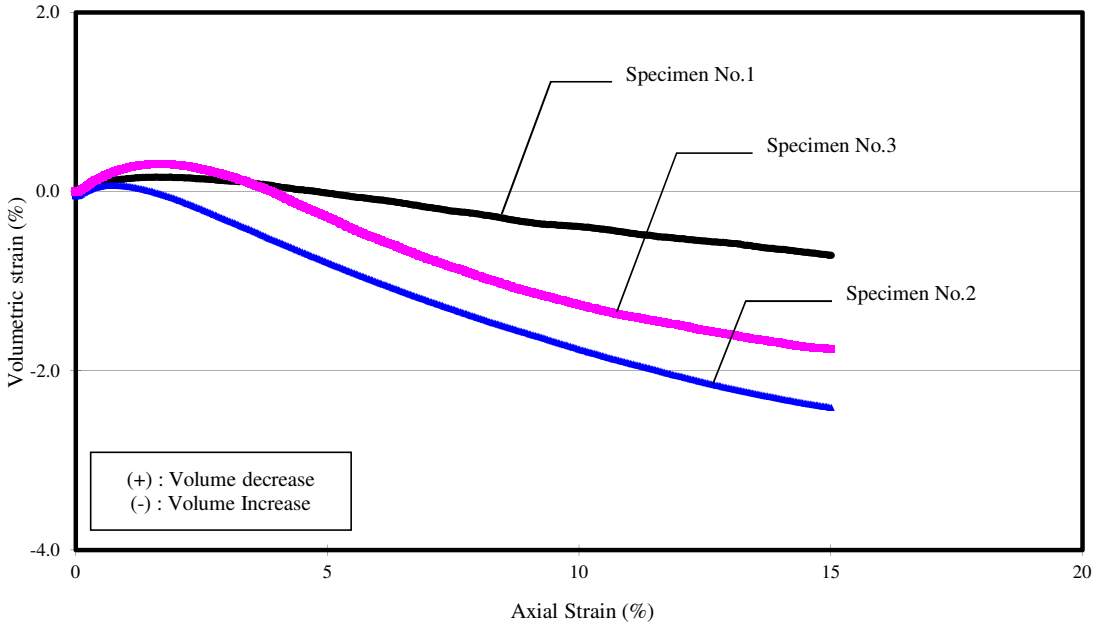
Consolidated Drained Triaxial Compression Test

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No.: S27-14 Sample No.: D-2 + D-3 Soil Type: Silty Sand

Borehole No.: LD2-13-2 Depth : 6.50-9.90m





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Consolidated Drained Triaxial Compression Test
With Pore water Pressure Measurement

- Mohr' s Circle (In terms of Total Stress at Peak Deviator Stress) -

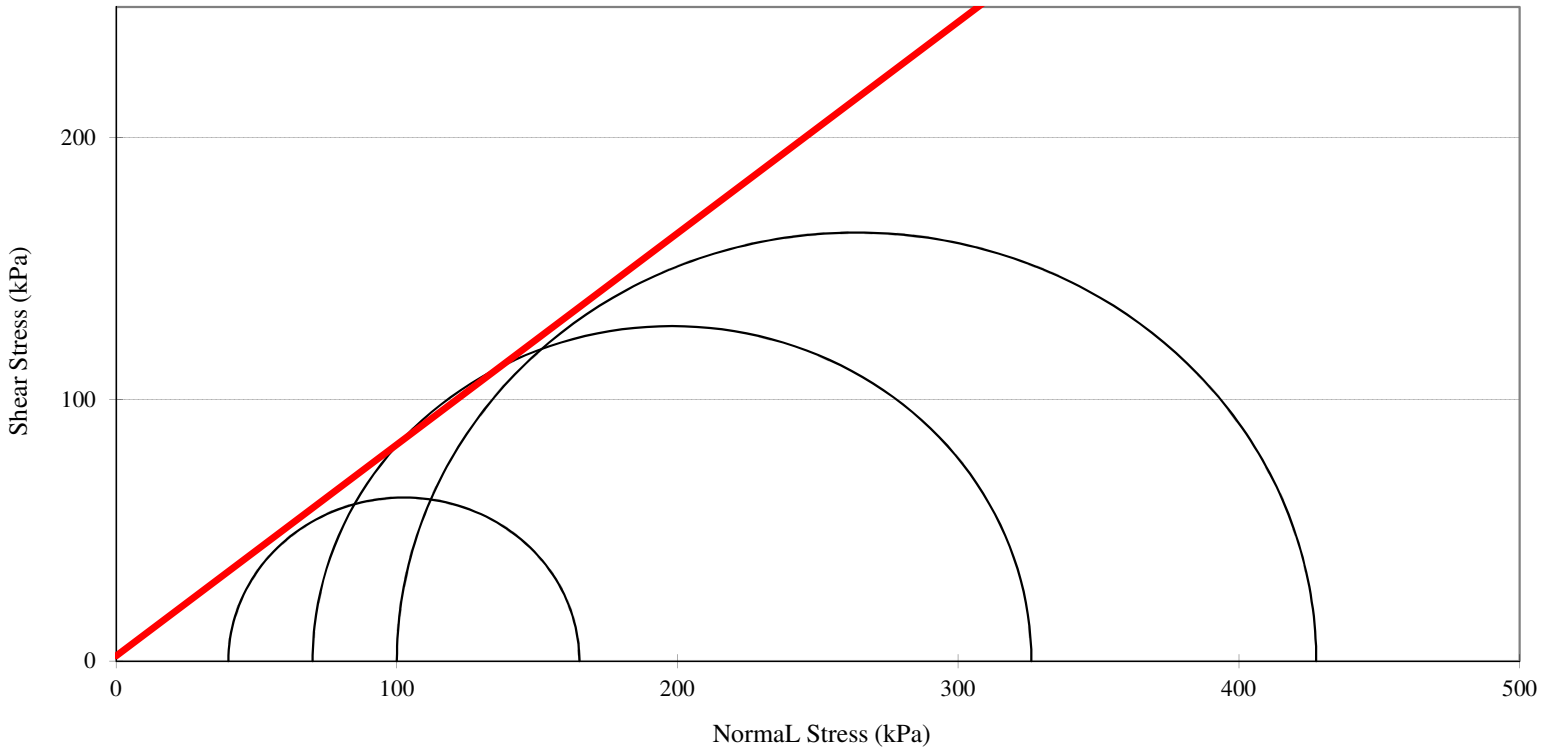
Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No. : S27-14

Borehole No. : LD2-13-2 Soil Type: Silty Sand

Sample No. : D-2 + D-3 Depth : 6.50-9.90m

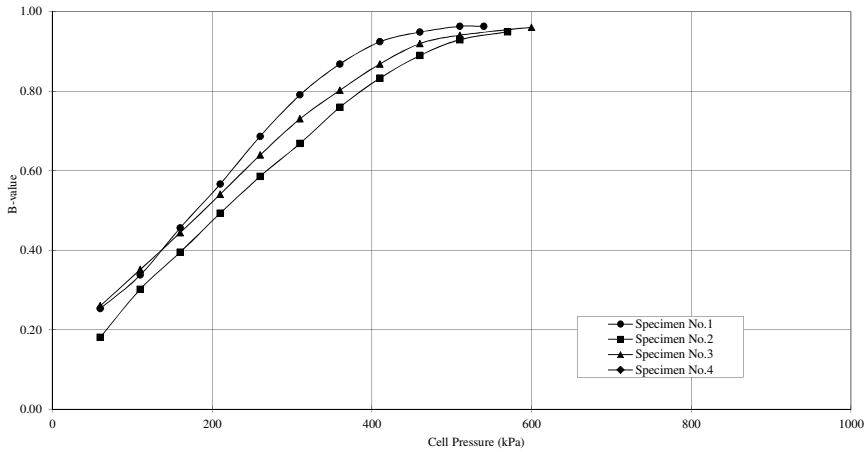
Angle of Internal Friction,	ϕ_d	39 deg
Cohesion,	c_d	0 kPa



Consolidated Drained Triaxial Compression Test
With Porewater Pressure Measurement
- B-value Check -

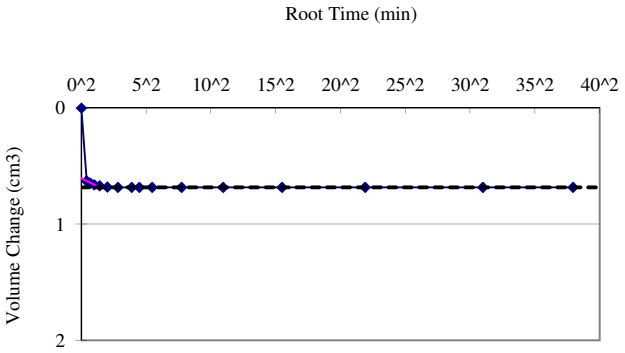
Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14
Borehole No.: LD2-13-2 Depth : 6.50-9.90m
Sample No.: D-2 + D-3 Soil Type: Silty Sand

		Result of B-value Check							
		Specimen 1		Specimen 2		Specimen 3		Specimen 4	
		Initial	Final	Initial	Final	Initial	Final	Initial	Final
B-check Step.1	Cell Pressure (kPa)	30	60	30	60	30	60		
	P.W.P (kPa)	20	27.6	20	25.4	20	27.8		
	Back Pressure (kPa)	20		20		20			
	B-value	0.25		0.18		0.26			
B-check Step.2	Cell Pressure (kPa)	60	110	60	110	60	110		
	P.W.P (kPa)	50	66.9	50	65.1	50	67.6		
	Back Pressure (kPa)	50		50		50			
	B-value	0.34		0.30		0.35			
B-check Step.3	Cell Pressure (kPa)	110	160	110	160	110	160		
	P.W.P (kPa)	100	122.8	100	119.7	100	122.2		
	Back Pressure (kPa)	100		100		100			
	B-value	0.46		0.39		0.44			
B-check Step.4	Cell Pressure (kPa)	160	210	160	210	160	210		
	P.W.P (kPa)	150	178.3	150	174.6	150	177.0		
	Back Pressure (kPa)	150		150		150			
	B-value	0.57		0.49		0.54			
B-check Step.5	Cell Pressure (kPa)	210	260	210	260	210	260		
	P.W.P (kPa)	200	234.3	200	229.3	200	232.0		
	Back Pressure (kPa)	200		200		200			
	B-value	0.69		0.59		0.64			
B-check Step.6	Cell Pressure (kPa)	260	310	260	310	260	310		
	P.W.P (kPa)	250	289.5	250	283.4	250	286.5		
	Back Pressure (kPa)	250		250		250			
	B-value	0.79		0.67		0.73			
B-check Step.7	Cell Pressure (kPa)	310	360	310	360	310	360		
	P.W.P (kPa)	300	343.4	300	338.0	300	340.1		
	Back Pressure (kPa)	300		300		300			
	B-value	0.87		0.76		0.80			
B-check Step.8	Cell Pressure (kPa)	360	410	360	410	360	410		
	P.W.P (kPa)	350	396.2	350	391.6	350	393.4		
	Back Pressure (kPa)	350		350		350			
	B-value	0.92		0.83		0.87			
B-check Step.9	Cell Pressure (kPa)	410	460	410	460	410	460		
	P.W.P (kPa)	400	447.4	400	444.5	400	446.0		
	Back Pressure (kPa)	400		400		400			
	B-value	0.95		0.89		0.92			
B-check Step.10	Cell Pressure (kPa)	460	510	460	510	460	510		
	P.W.P (kPa)	450	498.1	450	496.5	450	497.0		
	Back Pressure (kPa)	450		450		450			
	B-value	0.96		0.93		0.94			
B-check Step.11	Cell Pressure (kPa)	510	540	510	570	510	600		
	P.W.P (kPa)	500	528.9	500	557.0	500	586.5		
	Back Pressure (kPa)	500		500		500			
	B-value	0.96		0.95		0.96			



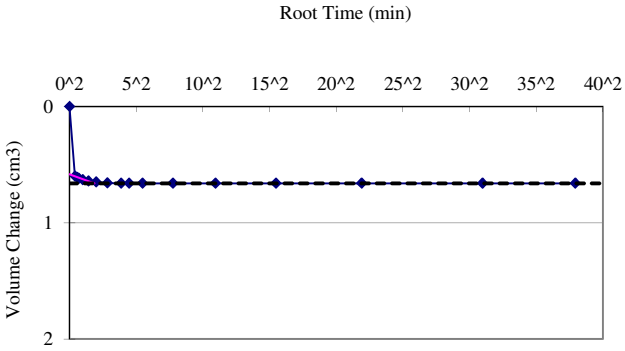
Consolidated Drained Triaxial Compression Test
With Porewater Pressure Measurement
- Volume Change versus Root Time in Consolidation Stages -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14 Borehole No.: LD2-13-2 Soil Type: Silty Sand
Sample No.: D-2 + D-3 Depth : 6.50-9.90m



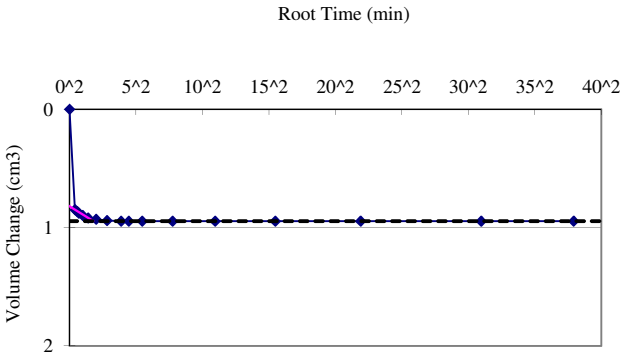
Specimen No.: 1

p' =	40	kPa
t100 =	1.9	min
Cv =	530	m^2/year
mvi=	0.010	m^2/MN



Specimen No.: 2

p' =	70	kPa
t100 =	3.5	min
Cv =	295	m^2/year
mvi=	0.006	m^2/MN



Specimen No.: 3

p' =	100	kPa
t100 =	3.2	min
Cv =	317	m^2/year
mvi=	0.006	m^2/MN

Summary of Consolidated Drained Triaxial Compression Test

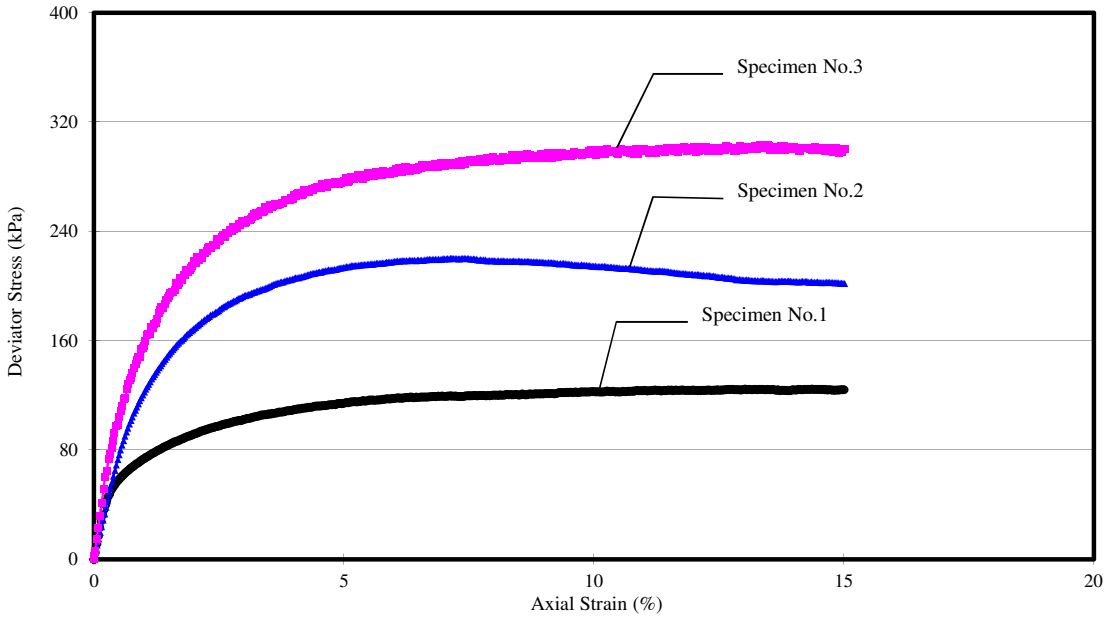
Project No.: S27-14		Project :Preparatory Survey on Matarbari USC Coral-fired Power Project					
Date Tested : 12.12.14		Tested by : Perera		Checked by : A. B. Tan			
Borehole No.: LD2-13-2		Sample No.:D-2 + D-3 + HP-1(10%)		Depth : 4.00-9.90m			
Specimen Condition : Undisturbed		Test Method : BS1377 : Part 8 : 1990 Method 8					
Soil Description : Silty Sand		Ave. Diameter : 50.0mm		Ave. Height : 100.0mm			
Specimen No.			1	2	3	4	
Initial Condition	Wet Density,	Mg/m^3	-	-	-		
	Water Content,	%	-	-	-		
	Dry Density	Mg/m^3	1.68	1.68	1.68		
Saturation Stage	Saturated PWP,	kPa	500	500	500		
	Final Cell Pressure,	kPa	540	570	600		
	B-value		0.96	0.97	0.96		
Consolidation Stage	Cell Pressure	kPa	540	570	600		
	Back Pressure	kPa	500	500	500		
	Initial PWP,	kPa	529	558	586		
	Final PWP	kPa	500	500	500		
Consolidation Parameter	Volume Change,	%	0.04	0.12	0.09		
	Coefficient of Consolidation Cv,	m^2/year	598	399	409		
	Coefficient of Volume Compressibility mvi,	m^2/MN	0.010	0.018	0.009		
Compression Stage	Cell Pressure	kPa	540	570	600		
	Back Pressure	kPa	500	500	500		
	Effective Cell Pressure	kPa	40	70	100		
	Shearing Speed	mm/min	0.015	0.015	0.015		
Failure Conditions	Peak Deviator Stress $(\sigma_1-\sigma_3)f$,	kPa	125	220	303		
	Excess PWP at $(\sigma_1-\sigma_3)f$	kPa	N/A	N/A	N/A		
	Volumetric Strain at $(\sigma_1-\sigma_3)f$	(%)	-0.71	-0.32	0.18		
	Strain at $(\sigma_1-\sigma_3)f$	(%)	13.03	7.16	13.32		
Shear Strength Parameters	ϕ_d = 37 Degree c_d = 0 kPa		Mode of Failure 1 2 3 4				

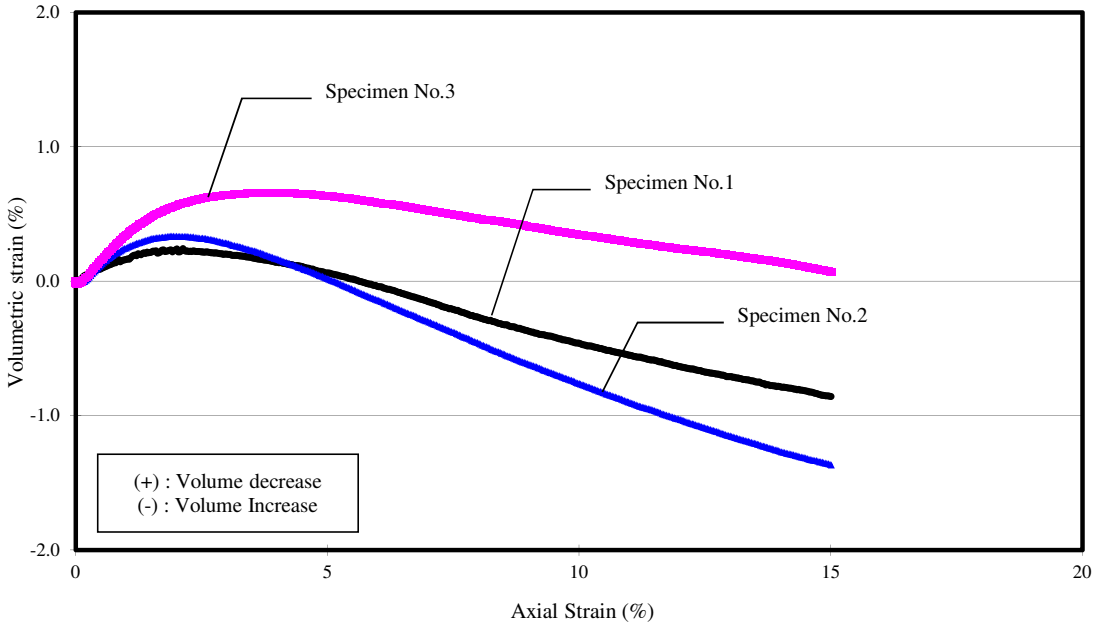
Remarks :

Specimens are prepared at 90% of Maximum dry density (from compaction Test) = $1.68 Mg/m^3$

Consolidated Drained Triaxial Compression Test

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14 Sample No.: D-2 + D-3 + HP-1(10%) Soil Type: Silty Sand
Borehole No.: LD2-13-2 Depth : 4.00-9.90m





Consolidated Drained Triaxial Compression Test
With Pore water Pressure Measurement

- Mohr' s Circle (In terms of Total Stress at Peak Deviator Stress) -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

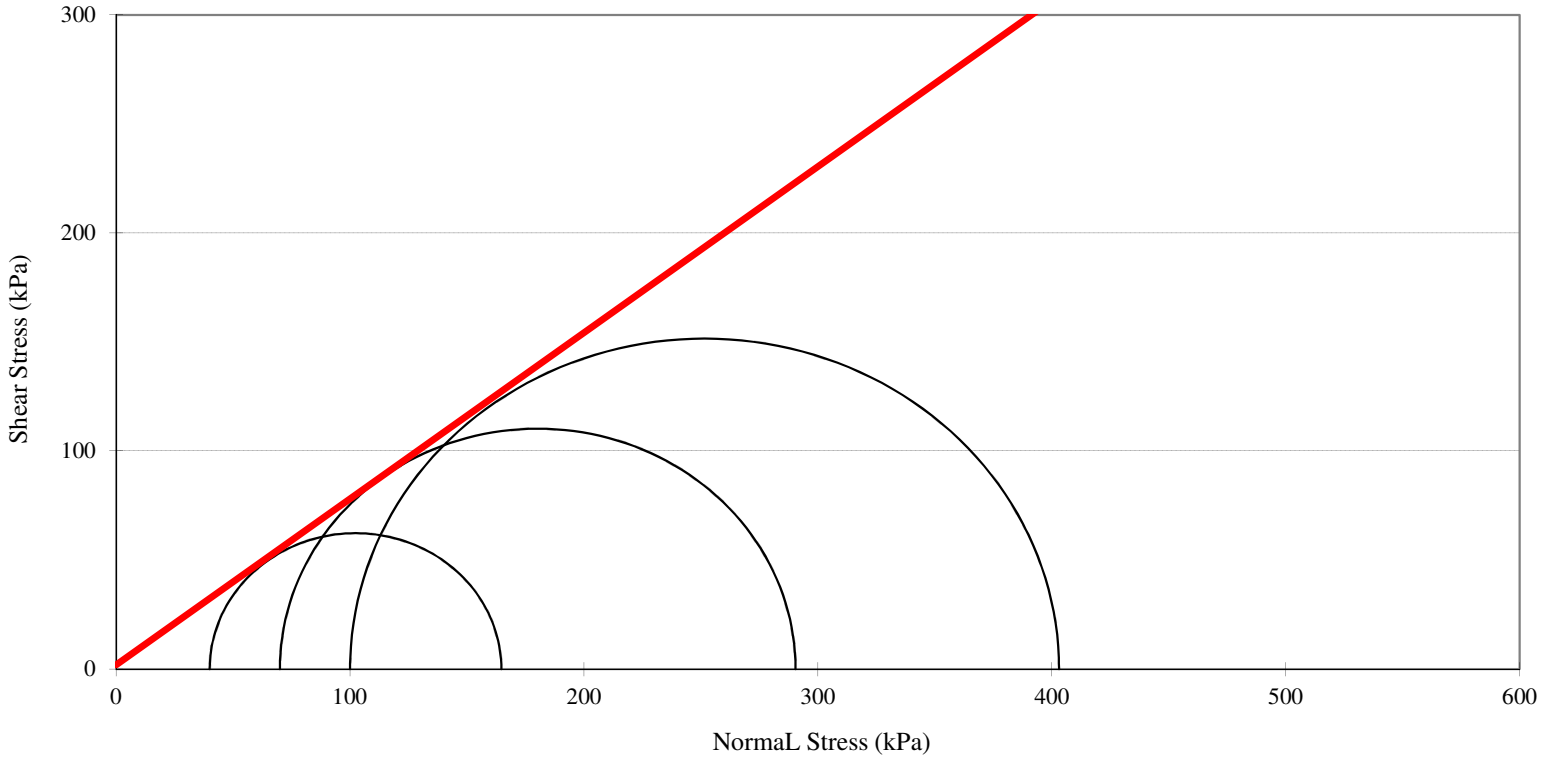
Project No. : S27-14

Borehole No. : #REF! Soil Type: Silty Sand

Sample No. : D-2 + D-3 + H Depth : 4.00-9.90m

Angle of Internal Friction, ϕ_d 37 deg

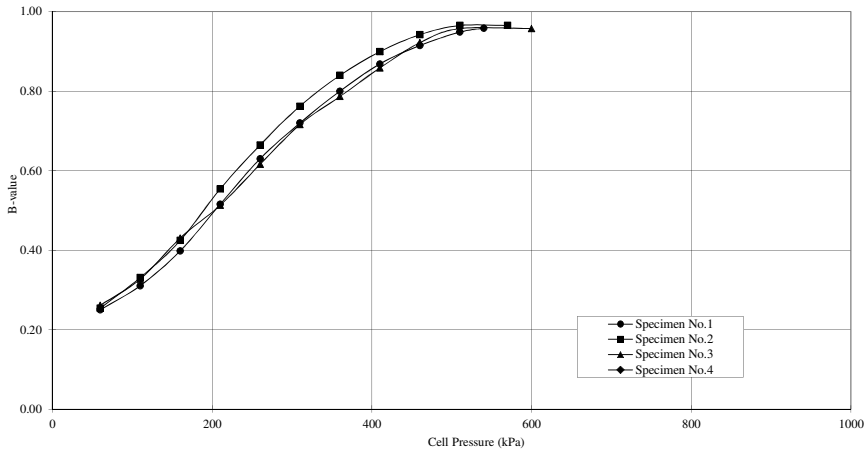
Cohesion, c_d 0 kPa



Consolidated Drained Triaxial Compression Test
With Porewater Pressure Measurement
- B-value Check -

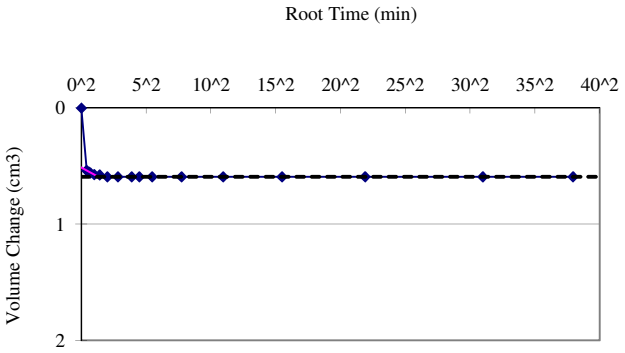
Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14
Borehole No.: LD2-13-2 Depth : 4.00-9.90m
Sample No.: D-2 + D-3 + HP-1(10%) Soil Type: Silty Sand

		Result of B-value Check							
		Specimen 1		Specimen 2		Specimen 3		Specimen 4	
		Initial	Final	Initial	Final	Initial	Final	Initial	Final
B-check Step.1	Cell Pressure (kPa)	30	60	30	60	30	60		
	P.W.P (kPa)	20	27.5	20	27.6	20	27.8		
	Back Pressure (kPa)	20		20		20			
	B-value	0.25		0.25		0.26			
B-check Step.2	Cell Pressure (kPa)	60	110	60	110	60	110		
	P.W.P (kPa)	50	65.5	50	66.6	50	66.4		
	Back Pressure (kPa)	50		50		50			
	B-value	0.31		0.33		0.33			
B-check Step.3	Cell Pressure (kPa)	110	160	110	160	110	160		
	P.W.P (kPa)	100	119.9	100	121.2	100	121.5		
	Back Pressure (kPa)	100		100		100			
	B-value	0.40		0.42		0.43			
B-check Step.4	Cell Pressure (kPa)	160	210	160	210	160	210		
	P.W.P (kPa)	150	175.8	150	177.7	150	175.6		
	Back Pressure (kPa)	150		150		150			
	B-value	0.52		0.55		0.51			
B-check Step.5	Cell Pressure (kPa)	210	260	210	260	210	260		
	P.W.P (kPa)	200	231.5	200	233.2	200	230.8		
	Back Pressure (kPa)	200		200		200			
	B-value	0.63		0.66		0.62			
B-check Step.6	Cell Pressure (kPa)	260	310	260	310	260	310		
	P.W.P (kPa)	250	286.0	250	288.1	250	285.8		
	Back Pressure (kPa)	250		250		250			
	B-value	0.72		0.76		0.72			
B-check Step.7	Cell Pressure (kPa)	310	360	310	360	310	360		
	P.W.P (kPa)	300	340.0	300	342.0	300	339.3		
	Back Pressure (kPa)	300		300		300			
	B-value	0.80		0.84		0.79			
B-check Step.8	Cell Pressure (kPa)	360	410	360	410	360	410		
	P.W.P (kPa)	350	393.4	350	395.0	350	392.9		
	Back Pressure (kPa)	350		350		350			
	B-value	0.87		0.90		0.86			
B-check Step.9	Cell Pressure (kPa)	410	460	410	460	410	460		
	P.W.P (kPa)	400	445.7	400	447.1	400	446.1		
	Back Pressure (kPa)	400		400		400			
	B-value	0.91		0.94		0.92			
B-check Step.10	Cell Pressure (kPa)	460	510	460	510	460	510		
	P.W.P (kPa)	450	497.4	450	498.3	450	497.9		
	Back Pressure (kPa)	450		450		450			
	B-value	0.95		0.97		0.96			
B-check Step.11	Cell Pressure (kPa)	510	540	510	570	510	600		
	P.W.P (kPa)	500	528.7	500	557.9	500	586.1		
	Back Pressure (kPa)	500		500		500			
	B-value	0.96		0.97		0.96			



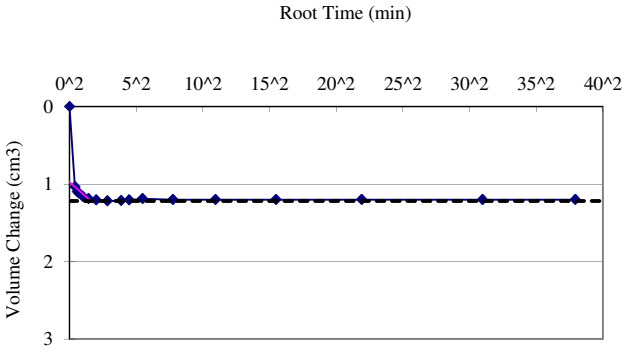
Consolidated Drained Triaxial Compression Test
With Porewater Pressure Measurement
- Volume Change versus Root Time in Consolidation Stages -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14 Borehole No.: LD2-13-2 Soil Type: Silty Sand
Sample No.: D-2 + D-3 + HP-1(10%) Depth : 4.00-9.90m



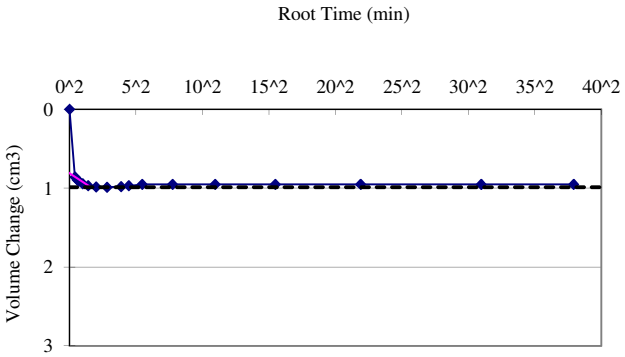
Specimen No.: 1

p' =	40	kPa
t100 =	1.7	min
Cv =	598	m^2/year
mvi=	0.010	m^2/MN



Specimen No.: 2

p' =	70	kPa
t100 =	2.6	min
Cv =	399	m^2/year
mvi=	0.018	m^2/MN



Specimen No.: 3

p' =	100	kPa
t100 =	2.5	min
Cv =	409	m^2/year
mvi=	0.009	m^2/MN

Summary of Consolidated Drained Triaxial Compression Test

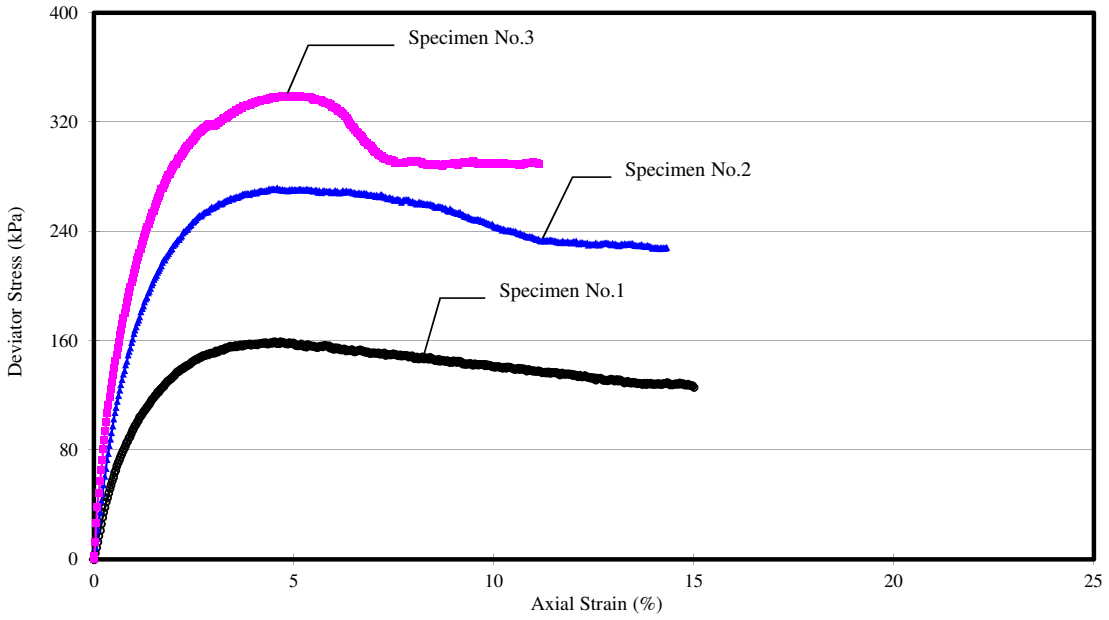
Project No.: S27-14		Project :Preparatory Survey on Matarbari USC Coral-fired Power Project					
Date Tested : 29.11.14		Tested by : Perera		Checked by : A. B. Tan			
Borehole No.: LD2-13-2		Sample No.:D-2 + D-3 + HP-1(20%)		Depth : 4.00-9.90m			
Specimen Condition : Undisturbed		Test Method : ASTM D7181-11					
Soil Description : Silty Sand		Ave. Diameter : 50.0mm		Ave. Height : 99.8mm			
Specimen No.			1	2	3	4	
Initial Condition	Wet Density,	Mg/m^3	-	-	-		
	Water Content,	%	-	-	-		
	Dry Density	Mg/m^3	1.71	1.71	1.71		
Saturation Stage	Saturated PWP,	kPa	500	500	500		
	Final Cell Pressure,	kPa	540	570	600		
	B-value		0.96	0.97	0.98		
Consolidation Stage	Cell Pressure	kPa	540	570	600		
	Back Pressure	kPa	500	500	500		
	Initial PWP,	kPa	529	558	588		
	Final PWP	kPa	500	500	500		
Consolidation Parameter	Volume Change,	%	0.18	0.05	0.46		
	Coefficient of Consolidation Cv,	m^2/year	709	496	700		
	Coefficient of Volume Compressibility mvi,	m^2/MN	0.045	0.008	0.046		
Compression Stage	Cell Pressure	kPa	540	570	600		
	Back Pressure	kPa	500	500	500		
	Effective Cell Pressure	kPa	40	70	100		
	Shearing Speed	mm/min	0.015	0.015	0.015		
Failure Conditions	Peak Deviator Stress $(\sigma_1-\sigma_3)f$,	kPa	159	272	339		
	Excess PWP at $(\sigma_1-\sigma_3)f$	kPa	N/A	N/A	N/A		
	Volumetric Strain at $(\sigma_1-\sigma_3)f$	(%)	-0.97	-0.51	-0.38		
	Strain at $(\sigma_1-\sigma_3)f$	(%)	4.67	4.59	5.09		
Shear Strength Parameters	ϕ_d = 40 Degree c_d = 0 kPa		Mode of Failure 1 2 3 4 				

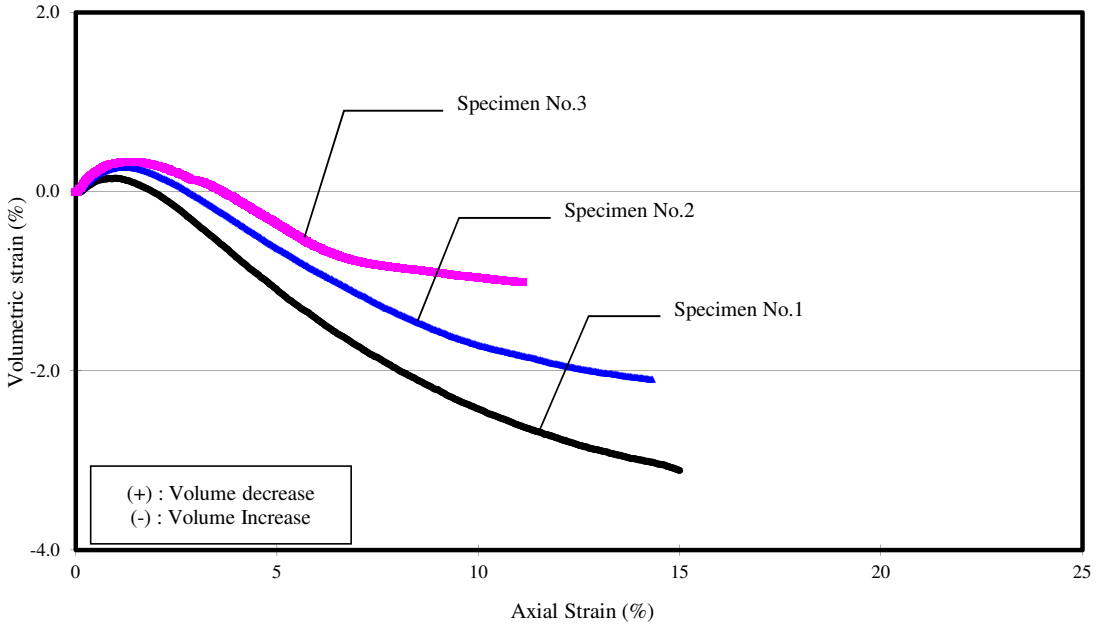
Remarks :

Specimens are prepared at 90% of Maximum dry density (from compaction Test) = 1.71Mg/m^3

Consolidated Drained Triaxial Compression Test

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14 Sample No.: D-2 + D-3 + HP-1(20%) Soil Type: Silty Sand
Borehole No.: LD2-13-2 Depth : 4.00-9.90m





Consolidated Drained Triaxial Compression Test
With Pore water Pressure Measurement

- Mohr' s Circle (In terms of Total Stress at Peak Deviator Stress) -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

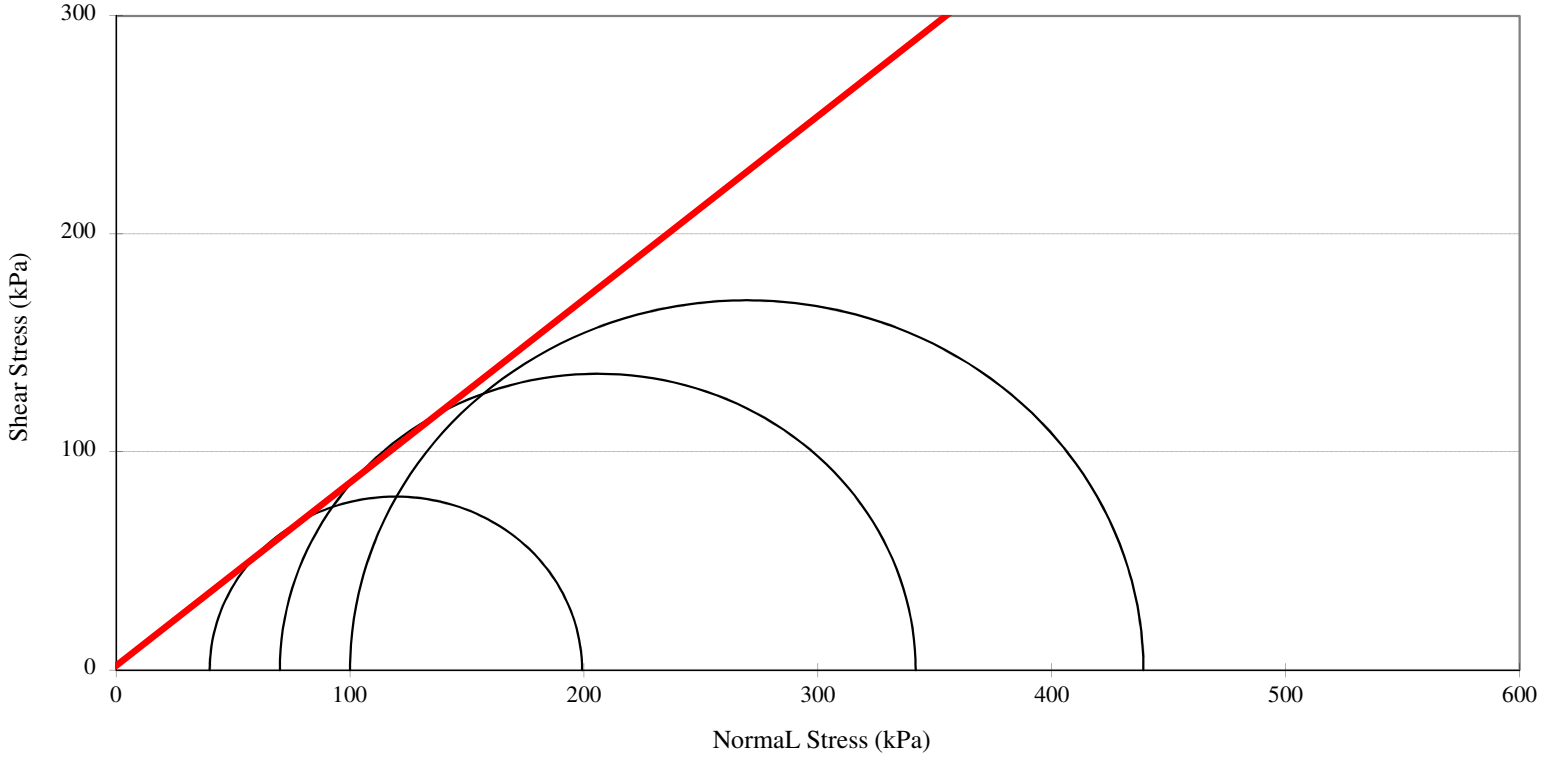
Project No. : S27-14

Borehole No. : LD2-13-2 Soil Type: Silty Sand

Sample No. : D-2 + D-3 + H Depth : 4.00-9.90m

Angle of Internal Friction, ϕ_d 40 deg

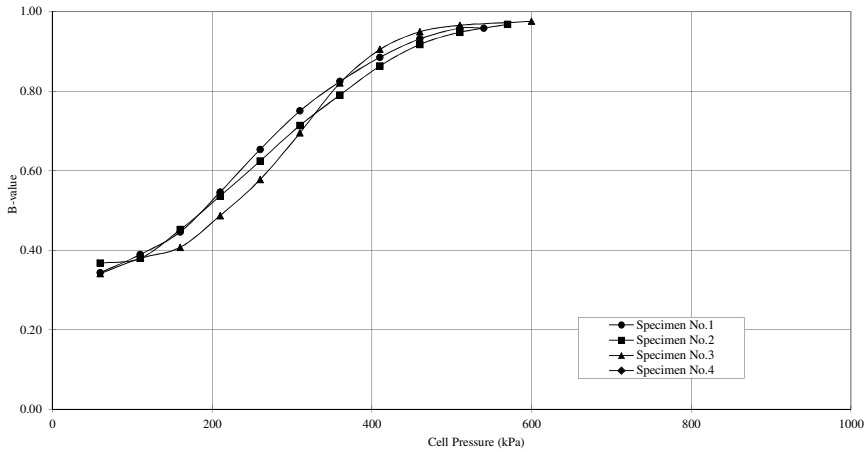
Cohesion, c_d 0 kPa



Consolidated Drained Triaxial Compression Test
With Porewater Pressure Measurement
- B-value Check -

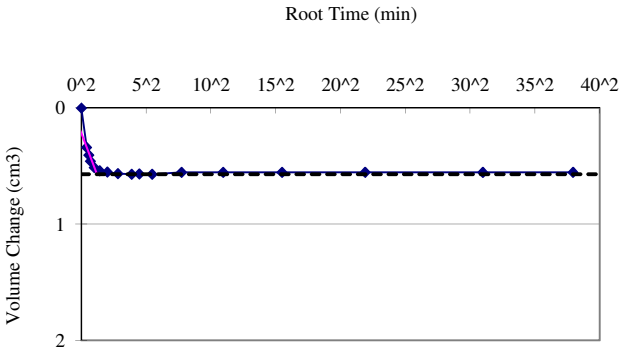
Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14
Borehole No.: LD2-13-2 Depth : 4.00-9.90m
Sample No.: D-2 + D-3 + HP-1(20%) Soil Type: Silty Sand

		Result of B-value Check							
		Specimen 1		Specimen 2		Specimen 3		Specimen 4	
		Initial	Final	Initial	Final	Initial	Final	Initial	Final
B-check Step.1	Cell Pressure (kPa)	30	60	30	60	30	60		
	P.W.P (kPa)	20	30.3	20	31.0	20	30.2		
	Back Pressure (kPa)	20		20		20			
	B-value	0.34		0.37		0.34			
B-check Step.2	Cell Pressure (kPa)	60	110	60	110	60	110		
	P.W.P (kPa)	50	69.5	50	69.0	50	69.0		
	Back Pressure (kPa)	50		50		50			
	B-value	0.39		0.38		0.38			
B-check Step.3	Cell Pressure (kPa)	110	160	110	160	110	160		
	P.W.P (kPa)	100	122.3	100	122.6	100	120.4		
	Back Pressure (kPa)	100		100		100			
	B-value	0.45		0.45		0.41			
B-check Step.4	Cell Pressure (kPa)	160	210	160	210	160	210		
	P.W.P (kPa)	150	177.3	150	176.8	150	174.3		
	Back Pressure (kPa)	150		150		150			
	B-value	0.55		0.54		0.49			
B-check Step.5	Cell Pressure (kPa)	210	260	210	260	210	260		
	P.W.P (kPa)	200	232.7	200	231.2	200	228.9		
	Back Pressure (kPa)	200		200		200			
	B-value	0.65		0.62		0.58			
B-check Step.6	Cell Pressure (kPa)	260	310	260	310	260	310		
	P.W.P (kPa)	250	287.5	250	285.7	250	284.8		
	Back Pressure (kPa)	250		250		250			
	B-value	0.75		0.71		0.70			
B-check Step.7	Cell Pressure (kPa)	310	360	310	360	310	360		
	P.W.P (kPa)	300	341.2	300	339.5	300	341.0		
	Back Pressure (kPa)	300		300		300			
	B-value	0.82		0.79		0.82			
B-check Step.8	Cell Pressure (kPa)	360	410	360	410	360	410		
	P.W.P (kPa)	350	394.3	350	393.2	350	395.2		
	Back Pressure (kPa)	350		350		350			
	B-value	0.89		0.86		0.90			
B-check Step.9	Cell Pressure (kPa)	410	460	410	460	410	460		
	P.W.P (kPa)	400	446.6	400	445.9	400	447.5		
	Back Pressure (kPa)	400		400		400			
	B-value	0.93		0.92		0.95			
B-check Step.10	Cell Pressure (kPa)	460	510	460	510	460	510		
	P.W.P (kPa)	450	497.9	450	497.4	450	498.3		
	Back Pressure (kPa)	450		450		450			
	B-value	0.96		0.95		0.97			
B-check Step.11	Cell Pressure (kPa)	510	540	510	570	510	600		
	P.W.P (kPa)	500	528.7	500	558.1	500	587.8		
	Back Pressure (kPa)	500		500		500			
	B-value	0.96		0.97		0.98			



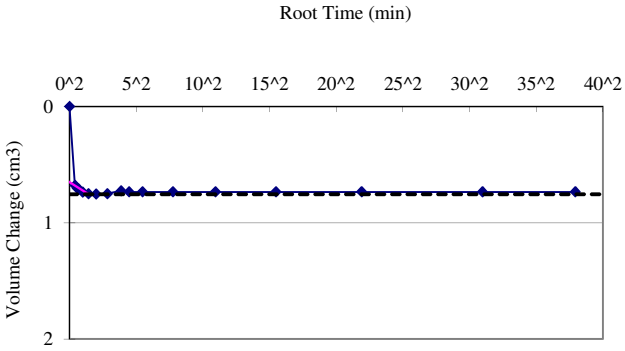
Consolidated Drained Triaxial Compression Test
With Porewater Pressure Measurement
- Volume Change versus Root Time in Consolidation Stages -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14 Borehole No.: LD2-13-2 Soil Type: Silty Sand
Sample No.: D-2 + D-3 + HP-1(20%) Depth : 4.00-9.90m



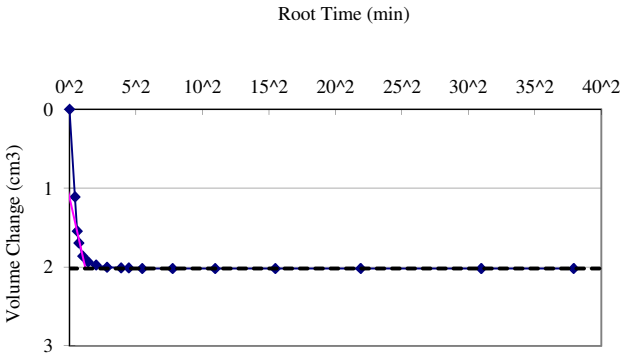
Specimen No.: 1

p' =	40	kPa
t100 =	1.5	min
Cv =	709	m^2/year
mvi=	0.045	m^2/MN



Specimen No.: 2

p' =	70	kPa
t100 =	2.1	min
Cv =	496	m^2/year
mvi=	0.008	m^2/MN



Specimen No.: 3

p' =	100	kPa
t100 =	1.5	min
Cv =	700	m^2/year
mvi=	0.046	m^2/MN

Summary of Consolidated Drained Triaxial Compression Test

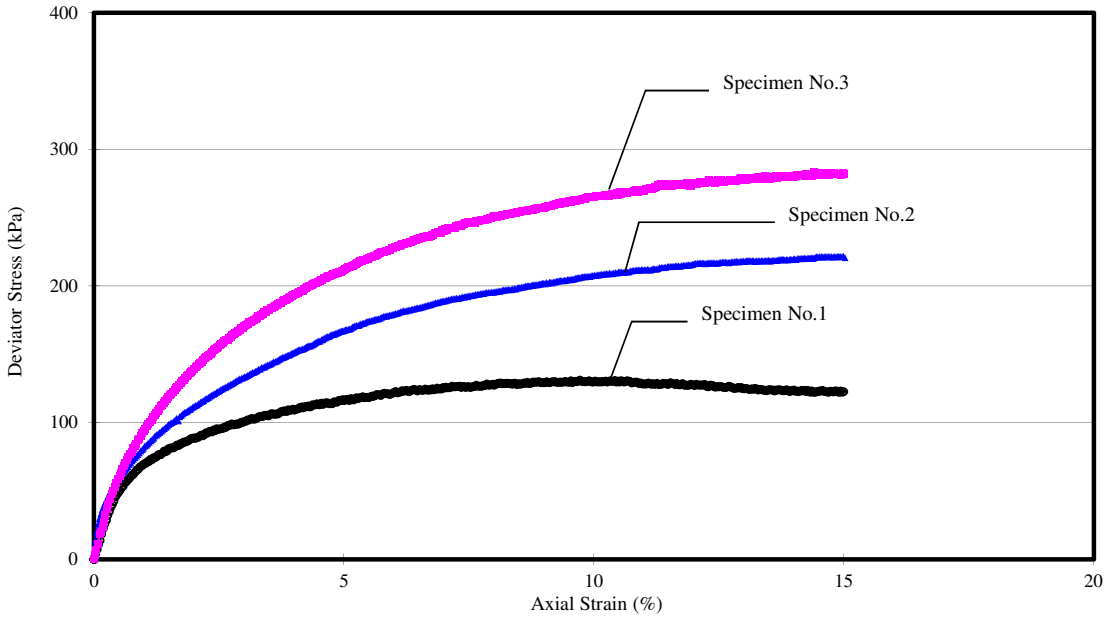
Project No.: S27-14		Project :Preparatory Survey on Matarbari USC Coral-fired Power Project					
Date Tested : 02.12.14		Tested by : Perera		Checked by : A. B. Tan			
Borehole No.: LD2-13-2		Sample No.: D-3 + SPT-11		Depth : 9.00-12.80m			
Specimen Condition : Undisturbed		Test Method : ASTM D7181-11					
Soil Description : Silty Sand		Ave. Diameter : 50.0mm		Ave. Height : 100.0mm			
Specimen No.			1	2	3	4	
Initial Condition	Wet Density,	Mg/m^3	-	-	-		
	Water Content,	%	-	-	-		
	Dry Density	Mg/m^3	1.66	1.66	1.66		
Saturation Stage	Saturated PWP,	kPa	500	500	500		
	Final Cell Pressure,	kPa	540	570	600		
	B-value		0.96	0.96	0.97		
Consolidation Stage	Cell Pressure	kPa	540	570	600		
	Back Pressure	kPa	500	500	500		
	Initial PWP,	kPa	529	558	587		
	Final PWP	kPa	500	500	500		
Consolidation Parameter	Volume Change,	%	0.14	0.22	0.29		
	Coefficient of Consolidation Cv,	m^2/year	749	676	265		
	Coefficient of Volume Compressibility mvi,	m^2/MN	0.035	0.031	0.029		
Compression Stage	Cell Pressure	kPa	540	570	600		
	Back Pressure	kPa	500	500	500		
	Effective Cell Pressure	kPa	40	70	100		
	Shearing Speed	mm/min	0.015	0.015	0.015		
Failure Conditions	Peak Deviator Stress $(\sigma_1-\sigma_3)f$,	kPa	131	222	284		
	Excess PWP at $(\sigma_1-\sigma_3)f$	kPa	N/A	N/A	N/A		
	Volumetric Strain at $(\sigma_1-\sigma_3)f$	(%)	0.64	2.79	2.54		
	Strain at $(\sigma_1-\sigma_3)f$	(%)	9.72	14.90	14.40		
Shear Strength Parameters	ϕ_d = 36 Degree c_d = 0 kPa		Mode of Failure 1 2 3 4 				
Remarks : Specimens are prepared at 90% of Maximum dry density (from compaction Test) = 1.66Mg/m^3							

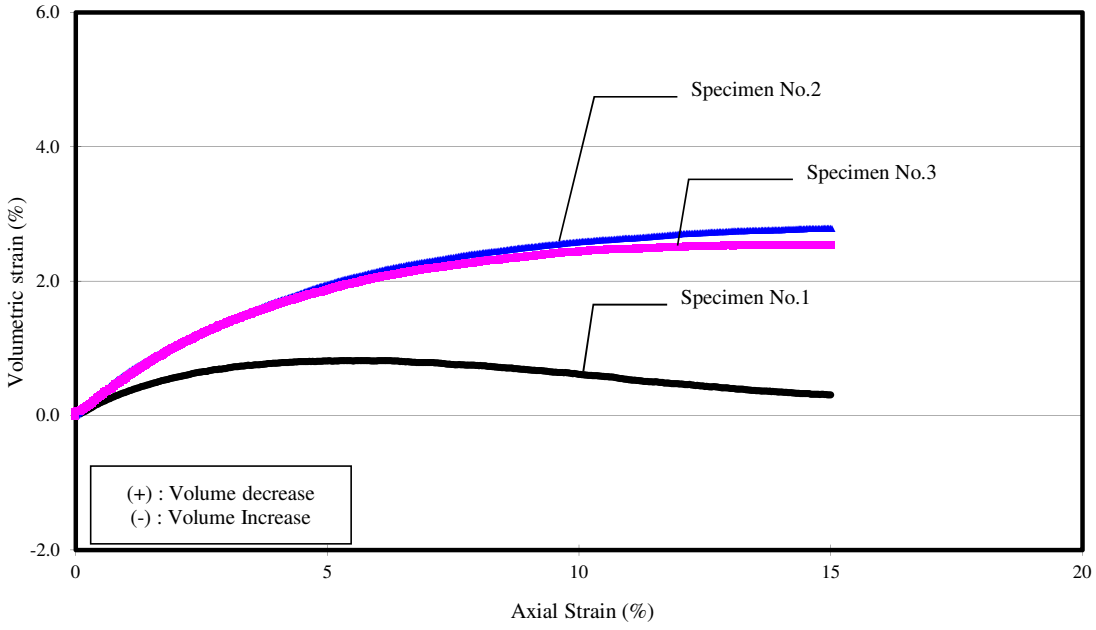
Consolidated Drained Triaxial Compression Test

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No.: S27-14 Sample No.: D-3 + SPT-11 Soil Type: Silty Sand

Borehole No.: LD2-13-2 Depth : 9.00-12.80m m





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Consolidated Drained Triaxial Compression Test
With Pore water Pressure Measurement

- Mohr' s Circle (In terms of Total Stress at Peak Deviator Stress) -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

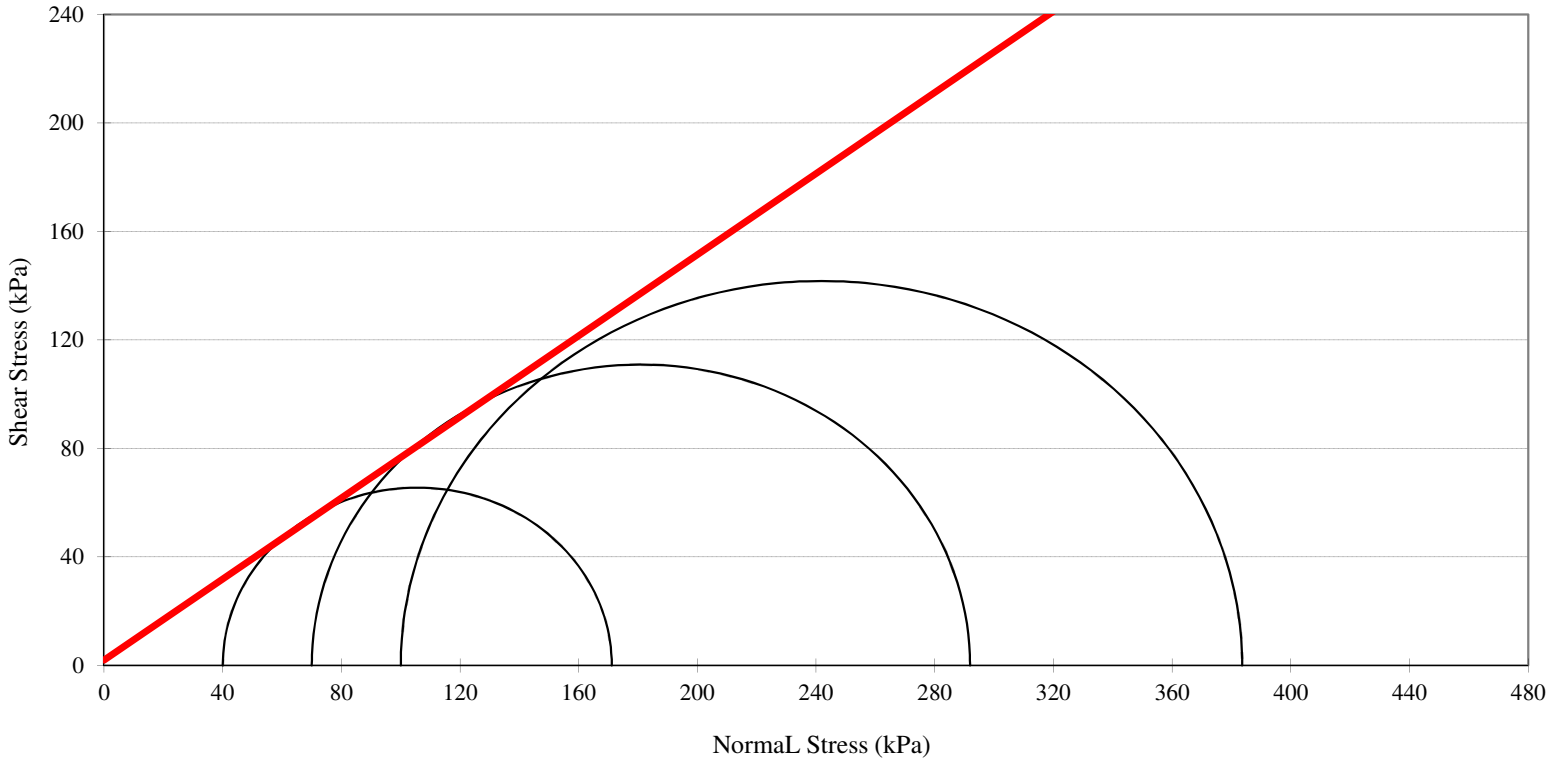
Project No. : S27-14

Borehole No. : LD2-13-2 Soil Type: Silty Sand

Sample No. : D-3 + SPT-11 Depth : 9.00-12.80m

Angle of Internal Friction, ϕ_d 37 deg

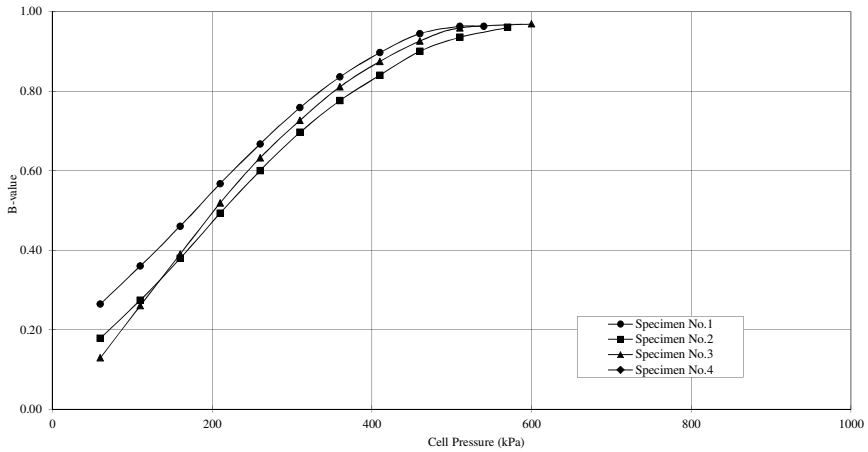
Cohesion, c_d 0 kPa



Consolidated Drained Triaxial Compression Test
With Porewater Pressure Measurement
- B-value Check -

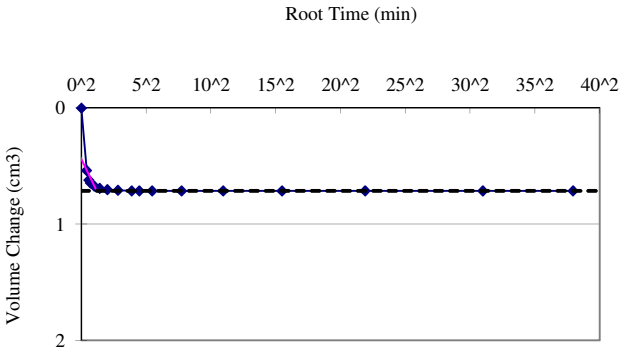
Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14
Borehole No.: LD2-13-2 Depth : 9.00-12.80m
Sample No.: D-3 + SPT-11 Soil Type: Silty Sand

		Result of B-value Check							
		Specimen 1		Specimen 2		Specimen 3		Specimen 4	
		Initial	Final	Initial	Final	Initial	Final	Initial	Final
B-check Step.1	Cell Pressure (kPa)	30	60	30	60	30	60		
	P.W.P (kPa)	20	27.9	20	25.3	20	23.9		
	Back Pressure (kPa)	20		20		20			
	B-value	0.26		0.18		0.13			
B-check Step.2	Cell Pressure (kPa)	60	110	60	110	60	110		
	P.W.P (kPa)	50	68.0	50	63.7	50	63.0		
	Back Pressure (kPa)	50		50		50			
	B-value	0.36		0.27		0.26			
B-check Step.3	Cell Pressure (kPa)	110	160	110	160	110	160		
	P.W.P (kPa)	100	123.0	100	119.0	100	119.5		
	Back Pressure (kPa)	100		100		100			
	B-value	0.46		0.38		0.39			
B-check Step.4	Cell Pressure (kPa)	160	210	160	210	160	210		
	P.W.P (kPa)	150	178.4	150	174.6	150	175.9		
	Back Pressure (kPa)	150		150		150			
	B-value	0.57		0.49		0.52			
B-check Step.5	Cell Pressure (kPa)	210	260	210	260	210	260		
	P.W.P (kPa)	200	233.4	200	230.0	200	231.6		
	Back Pressure (kPa)	200		200		200			
	B-value	0.67		0.60		0.63			
B-check Step.6	Cell Pressure (kPa)	260	310	260	310	260	310		
	P.W.P (kPa)	250	287.9	250	284.8	250	286.3		
	Back Pressure (kPa)	250		250		250			
	B-value	0.76		0.70		0.73			
B-check Step.7	Cell Pressure (kPa)	310	360	310	360	310	360		
	P.W.P (kPa)	300	341.8	300	338.8	300	340.5		
	Back Pressure (kPa)	300		300		300			
	B-value	0.84		0.78		0.81			
B-check Step.8	Cell Pressure (kPa)	360	410	360	410	360	410		
	P.W.P (kPa)	350	394.8	350	392.0	350	393.7		
	Back Pressure (kPa)	350		350		350			
	B-value	0.90		0.84		0.87			
B-check Step.9	Cell Pressure (kPa)	410	460	410	460	410	460		
	P.W.P (kPa)	400	447.2	400	445.0	400	446.3		
	Back Pressure (kPa)	400		400		400			
	B-value	0.94		0.90		0.93			
B-check Step.10	Cell Pressure (kPa)	460	510	460	510	460	510		
	P.W.P (kPa)	450	498.1	450	496.8	450	497.9		
	Back Pressure (kPa)	450		450		450			
	B-value	0.96		0.94		0.96			
B-check Step.11	Cell Pressure (kPa)	510	540	510	570	510	600		
	P.W.P (kPa)	500	528.9	500	557.6	500	587.2		
	Back Pressure (kPa)	500		500		500			
	B-value	0.96		0.96		0.97			



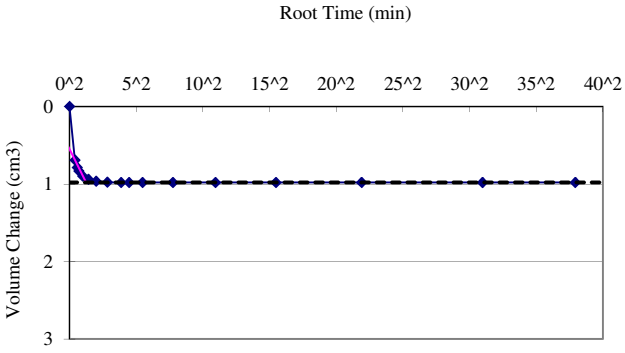
Consolidated Drained Triaxial Compression Test
With Porewater Pressure Measurement
- Volume Change versus Root Time in Consolidation Stages -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14 Borehole No.: LD2-13-2 Soil Type: Silty Sand
Sample No.: D-3 + SPT-11 Depth : 9.00-12.80m



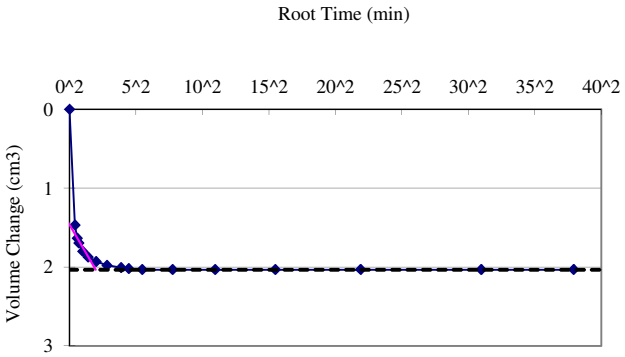
Specimen No.: 1

p' =	40	kPa
t100 =	1.4	min
Cv =	749	m^2/year
mvi=	0.035	m^2/MN



Specimen No.: 2

p' =	70	kPa
t100 =	1.5	min
Cv =	676	m^2/year
mvi=	0.031	m^2/MN



Specimen No.: 3

p' =	100	kPa
t100 =	3.9	min
Cv =	265	m^2/year
mvi=	0.029	m^2/MN

RESULT OF COMPACTION TEST

Project Name : Preparatory Survey on Matarbari USC Coral-fired Power Project **Checked by :** A. B. Tan

Project No. : S27-14 **Site Location :** Bangladesh

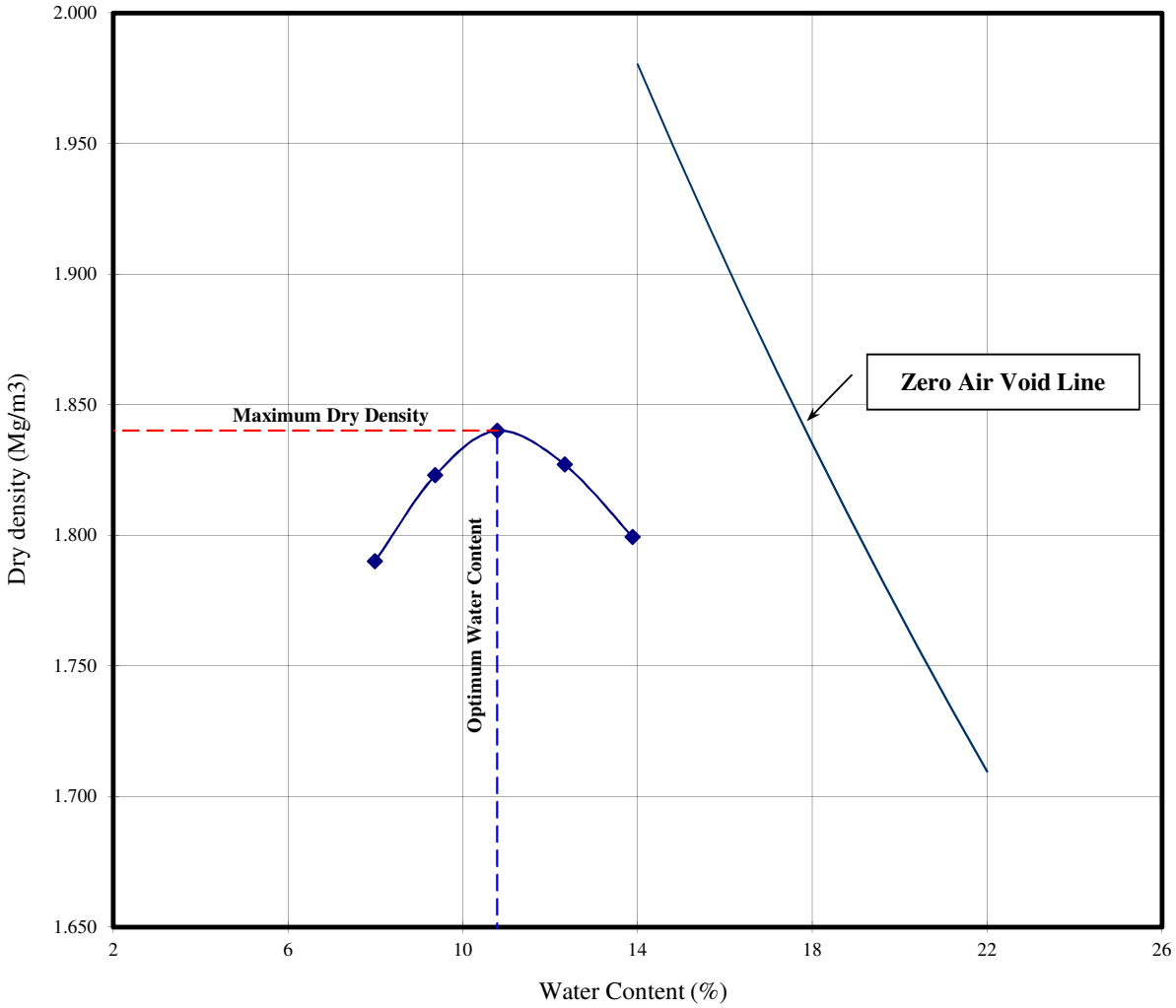
Sampling Date : - **Date of Testing :** 24-Oct-14 **Tested by :** Perera/Bala

Sample No. : LD2-13-2 D-2 + D-3 (6.50-9.90m) **Ref. No.** -

Soil Type :	Silty Sand	**Standared : ASTM D1557-09**			**Weight of Rammer :**	4.5 kg
Specific Gravity :	2.74(Assumed)	**Mold**	**Diameter :**	10.11 cm	**Drop Height :**	45.7 cm
Natural Water Content :	N.A.		**Height :**	11.69 cm	**No.of layers :**	5
Water Content after Dried :	N.A.		**Volume :**	938 cm3	**No. of blows / layers :**	25

Specimen No.	1	2	3	4	5	6	7	8
Water Content (%)	8.0	9.4	10.8	12.3	13.9			
Wet Density (Mg/m3)	1.933	1.994	2.038	2.052	2.049			
Dry Density (Mg/m3)	1.790	1.823	1.840	1.827	1.799			

Maximum Dry Density	**1.840 Mg/m3**
Optimum Water Content	**10.8 %**



RESULT OF COMPACTION TEST

Project Name : Preparatory Survey on Matarbari USC Coral-fired Power Project **Checked by :** A. B. Tan

Project No. : S27-14 **Site Location :** Bangladesh

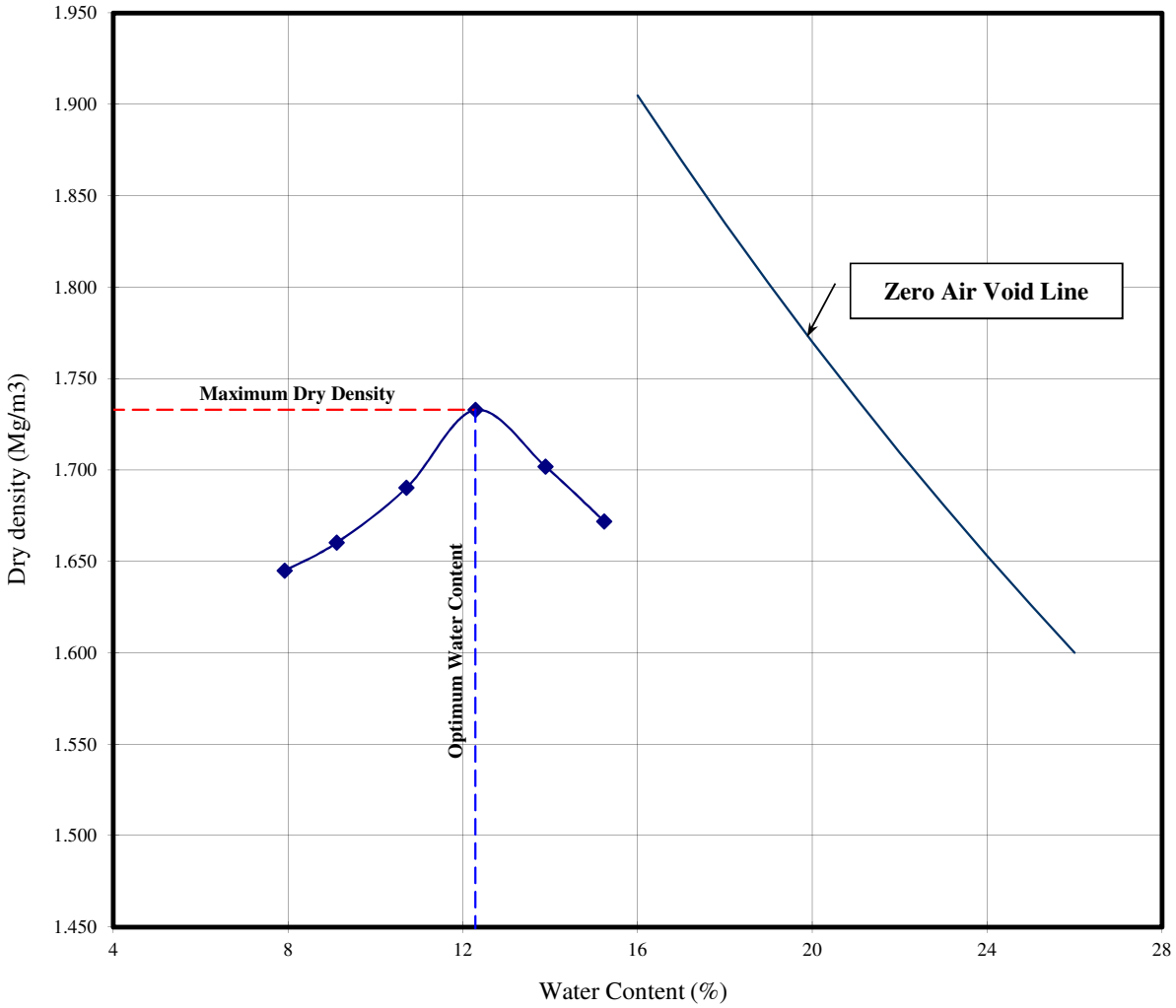
Sampling Date : - **Date of Testing :** 17-Oct-14 **Tested by :** Perera/Bala

Sample No. : LD2-13-2 D-2 + D-3 (6.50-9.90m) **Ref. No.** -

Soil Type :	Silty Sand	**Standared : ASTM D698-07**			**Weight of Rammer :**	2.5 kg
Specific Gravity :	2.74(Assumed)	**Mold**	**Diameter :**	10.11 cm	**Drop Height :**	30.5 cm
Natural Water Content :	N.A.		**Height :**	11.69 cm	**No.of layers :**	3
Water Content after Dried :	N.A.		**Volume :**	938 cm3	**No. of blows / layers :**	25

Specimen No.	1	2	3	4	5	6	7	8
Water Content (%)	7.9	9.1	10.7	12.3	13.9	15.2		
Wet Density (Mg/m3)	1.775	1.812	1.871	1.946	1.938	1.927		
Dry Density (Mg/m3)	1.645	1.660	1.690	1.733	1.702	1.672		

Maximum Dry Density	**1.733 Mg/m3**
Optimum Water Content	**12.3 %**



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RESULT OF COMPACTION TEST

Project Name : Preparatory Survey on Matarbari USC Coral-fired Power Project **Checked by :** A. B. Tan

Project No. : S27-14 **Site Location :** Bangladesh

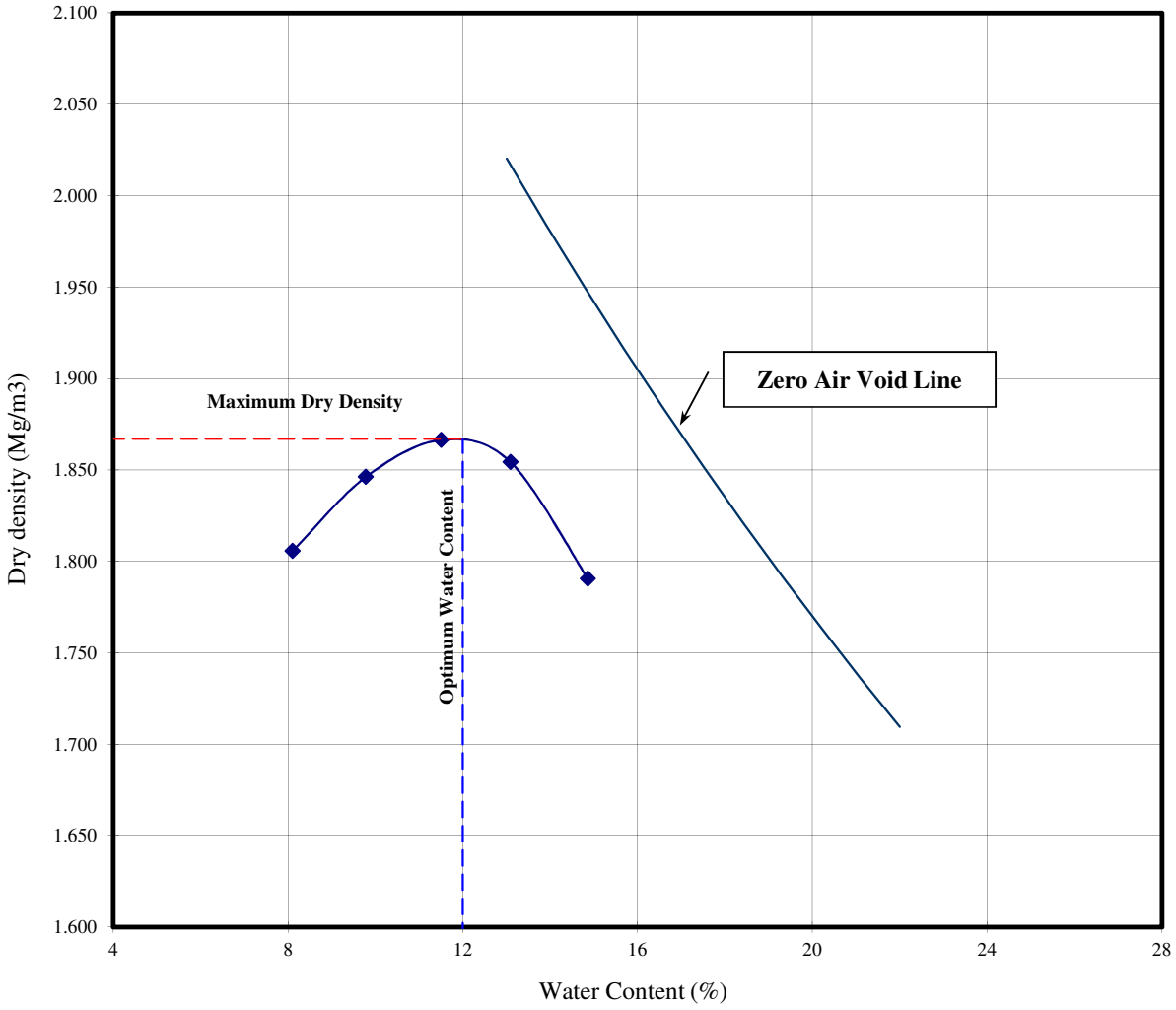
Sampling Date : - **Date of Testing :** 10-Dec-14 **Tested by :** Perera/Bala

Sample No. : LD2-13-2 **Ref. No.** -

Soil Type :	Silty Sand	**Standared : ASTM D698-07**		**Weight of Rammer :**	2.5 kg
Specific Gravity :	2.74(Assumed)	**Mold**	**Diameter :** 10.11 cm	**Drop Height :**	30.5 cm
Natural Water Content :	N.A.		**Height :** 11.69 cm	**No.of layers :**	3
Water Content after Dried :	N.A.		**Volume :** 938 cm3	**No. of blows / layers :**	25

Specimen No.	1	2	3	4	5	6	7	8
Water Content (%)	8.1	9.8	11.5	13.1	14.9			
Wet Density (Mg/m3)	1.952	2.027	2.081	2.097	2.057			
Dry Density (Mg/m3)	1.806	1.846	1.866	1.854	1.791			

Maximum Dry Density	**1.867 Mg/m3**
Optimum Water Content	**12.0 %**



400

RESULT OF COMPACTION TEST

Project Name : Preparatory Survey on Matarbari USC Coral-fired Power Project **Checked by :** A. B. Tan

Project No. : S27-14 **Site Location :** Bangladesh

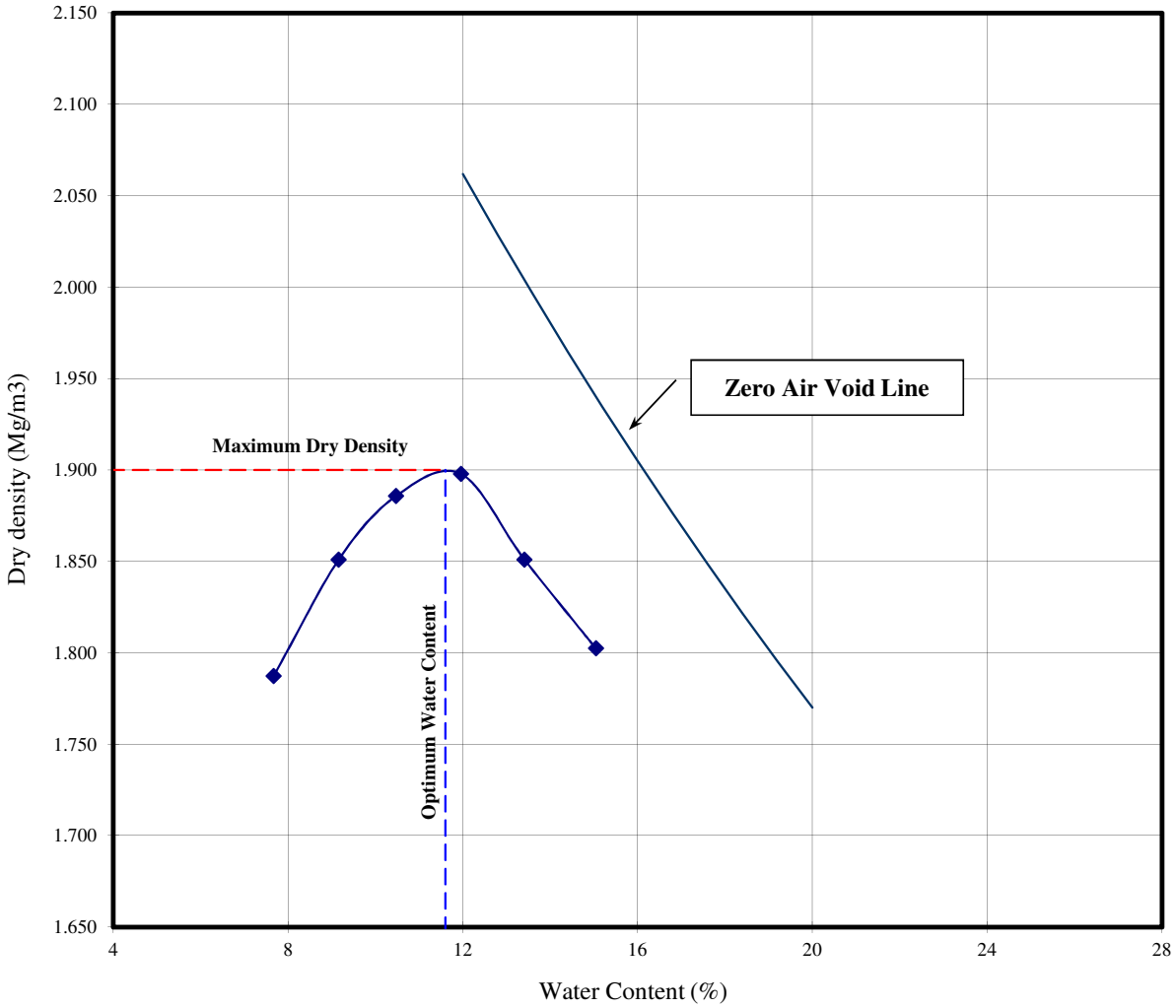
Sampling Date : - **Date of Testing :** 18-Oct-14 **Tested by :** Perera/Bala

Sample No. : LD2-13-2 D-2 + D-3 + HP-1(20%) (4.00-9.90m) **Ref. No.** -

Soil Type :	Silty Sand	**Standared : ASTM D698-07**		**Weight of Rammer :**	2.5 kg
Specific Gravity :	2.74(Assumed)	**Mold**	**Diameter :** 10.11 cm	**Drop Height :**	30.5 cm
Natural Water Content :	N.A.		**Height :** 11.69 cm	**No.of layers :**	3
Water Content after Dried :	N.A.		**Volume :** 938 cm3	**No. of blows / layers :**	25

Specimen No.	1	2	3	4	5	6	7	8
Water Content (%)	7.7	9.2	10.5	12.0	13.4	15.0		
Wet Density (Mg/m3)	1.924	2.020	2.083	2.125	2.099	2.074		
Dry Density (Mg/m3)	1.787	1.851	1.886	1.898	1.851	1.802		

Maximum Dry Density	**1.900 Mg/m3**
Optimum Water Content	**11.6 %**



RESULT OF COMPACTION TEST

Project Name : Preparatory Survey on Matarbari USC Coral-fired Power Project **Checked by :** A. B. Tan

Project No. : S27-14 **Site Location :** Bangladesh

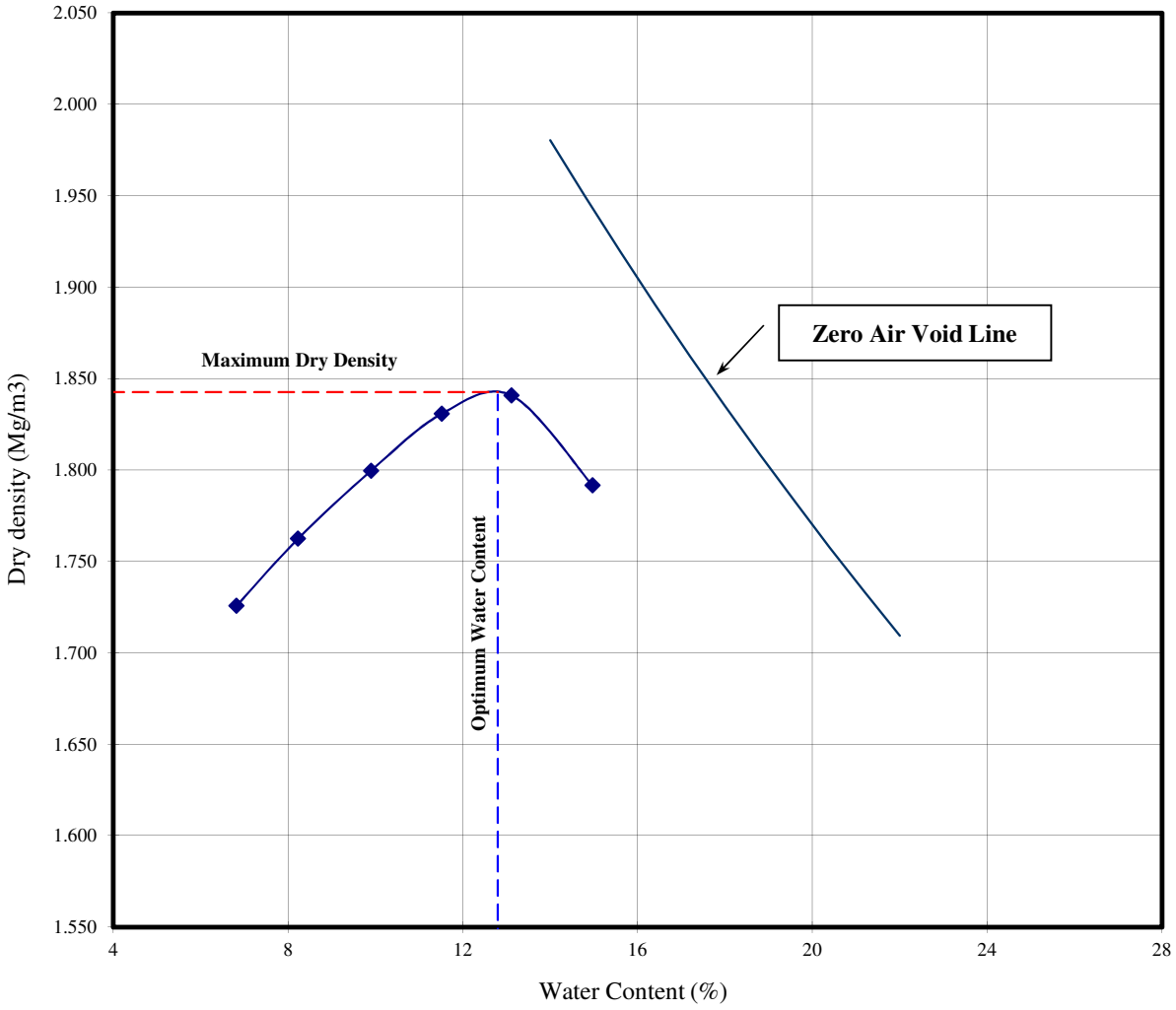
Sampling Date : - **Date of Testing :** 23-Oct-14 **Tested by :** Perera/Bala

Sample No. : LD2-13-2 D-3 + SPT-11 (9.00-12.80m) **Ref. No.** -

Soil Type :	Silty Sand	**Standared : ASTM D698-07**		**Weight of Rammer :**	2.5 kg
Specific Gravity :	2.74(Assumed)	**Mold**	**Diameter :** 10.11 cm	**Drop Height :**	30.5 cm
Natural Water Content :	N.A.		**Height :** 11.69 cm	**No.of layers :**	3
Water Content after Dried :	N.A.		**Volume :** 938 cm3	**No. of blows / layers :**	25

Specimen No.	1	2	3	4	5	6	7	8
Water Content (%)	6.8	8.2	9.9	11.5	13.1	15.0		
Wet Density (Mg/m3)	1.843	1.907	1.978	2.042	2.082	2.060		
Dry Density (Mg/m3)	1.726	1.762	1.800	1.831	1.841	1.792		

Maximum Dry Density	**1.843 Mg/m3**
Optimum Water Content	**12.8 %**



GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

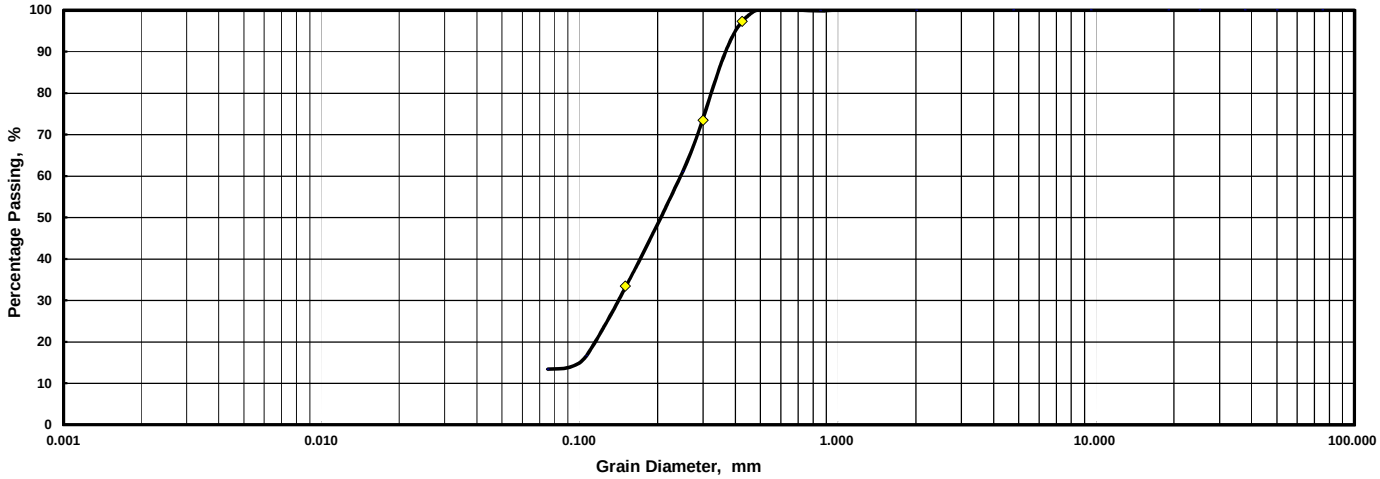
Location : **LD2-13-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/9/16** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-4** Depth : **5.00-5.45m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	97.3	61.0	16.6	13.4
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.8	39.9	85.3	88.6
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.7	39.0	83.4	86.6

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. / Depth	SPT-4 / 5.00-5.45m			Sample No. / Depth	SPT-4 / 5.00-5.45m		
Larger than 4.75 mm	0.0	%		Max. Diameter	4.75	mm	
4.75 - 2.00 mm	0.0	%		Dia. at 60%	0.25	mm	
2.00 - 0.425 mm	2.7	%		Dia. at 50%	0.20	mm	
0.425 - 0.075 mm	83.9	%		Dia. at 30%	0.14	mm	
0.075 - 0.005 mm	13.4	%		Dia. at 10%		mm	
Smaller than 0.005 mm				Coeff. of Uniformity			
2000um Sieve Passing	100.0	%		Coeff. of Curvature			
425um Sieve Passing	97.3	%					
75um Sieve Passing	13.4	%					

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

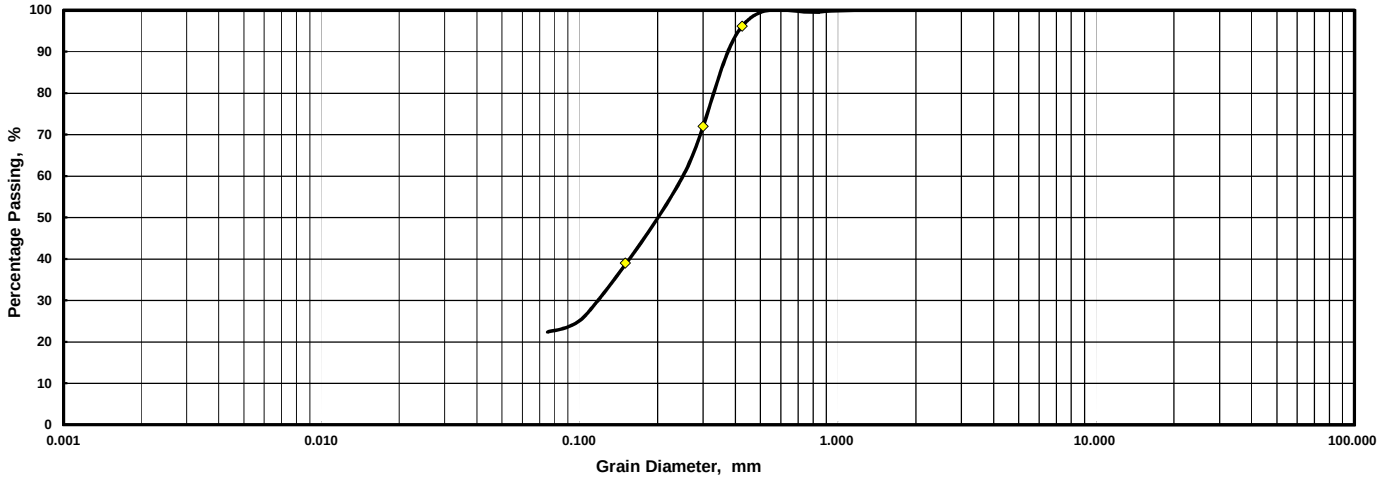
Location : **LD2-13-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/9/19** Tested By : **Sadamoto** Checked by :

Sample No. : **D-1** Depth : **6.00-6.50m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.6	96.2	59.8	26.7	22.4
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.9	41.0	74.8	79.2
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.8	40.2	73.3	77.6

Grain Size Distribution Curves



0.005	0.075	0.425	2.00	4.75	19.0	75.0
CLAY		FINE	MEDIUM	COARSE	FINE	COARSE
	SILT	SAND			GRAVEL	

Sample No. / Depth	D-1 6.00-6.50m		Sample No. / Depth	D-1 6.00-6.50m	
Larger than 4.75 mm	0.0	%	Max. Diameter	4.75	mm
4.75 - 2.00 mm	0.0	%	Dia. at 60%	0.25	mm
2.00 - 0.425 mm	3.8	%	Dia. at 50%	0.19	mm
0.425 - 0.075 mm	73.8	%	Dia. at 30%	0.12	mm
0.075 - 0.005 mm	22.4	%	Dia. at 10%		mm
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	100.0	%	Coeff. of Curvature		
425um Sieve Passing	96.2	%			
75um Sieve Passing	22.4	%			

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

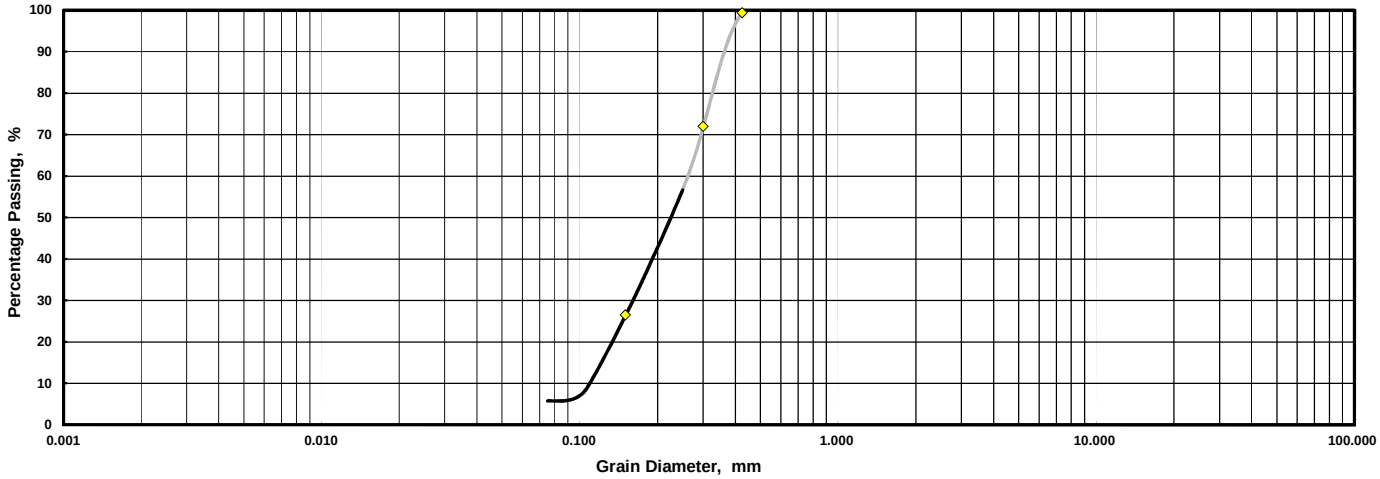
Location : **LD2-13-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/9/19** Tested By : **Sadamoto** Checked by :

Sample No. : **D-2** Depth : **6.50-7.00m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.4	56.6	8.7	5.7
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	43.5	91.5	94.5
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	43.4	91.3	94.3

Grain Size Distribution Curves



0.005	0.075	0.425	2.00	4.75	19.0	75.0
CLAY		FINE	MEDIUM	COARSE	FINE	COARSE
	SILT	SAND			GRAVEL	

Sample No. Depth	D-2 6.50-7.00m		Sample No. Depth	D-2 6.50-7.00m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.26 mm	
2.00 - 0.425 mm	0.6 %		Dia. at 50%	0.22 mm	
0.425 - 0.075 mm	93.6 %		Dia. at 30%	0.16 mm	
0.075 - 0.005 mm	5.7 %		Dia. at 10%	0.108 mm	
Smaller than 0.005 mm			Coeff. of Uniformity	2.40	
2000um Sieve Passing	100.0 %		Coeff. of Curvature	0.85	
425um Sieve Passing	99.4 %				
75um Sieve Passing	5.7 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

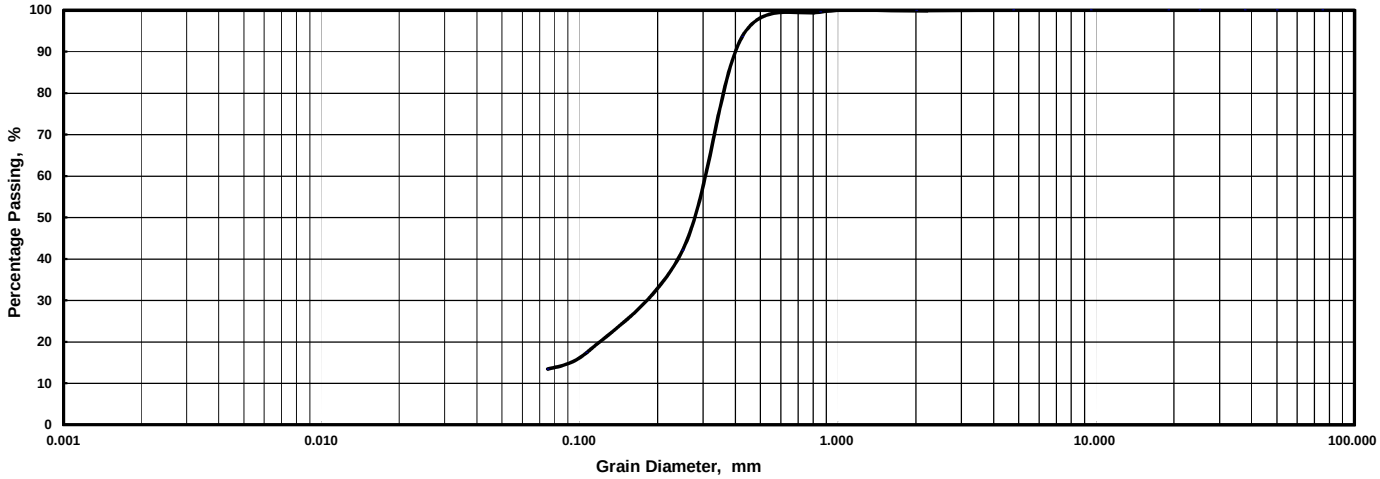
Location : **LD 2-13-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/9/16** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-5R** Depth : **7.00-7.45m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	99.5	93.6	42.1	17.4	13.4
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	7.1	64.7	92.4	96.8
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	6.4	57.9	82.6	86.6

Grain Size Distribution Curves



	0.005	0.075	0.425	2.00	4.75	19.0	75.0
CLAY		FINE	MEDIUM	COARSE	FINE	COARSE	
	SILT	SAND			GRAVEL		

Sample No. / Depth	SPT-5R 7.00-7.45m		Sample No. / Depth	SPT-5R 7.00-7.45m	
Larger than 4.75 mm	0.0 %		Max. Diameter	4.75 mm	
4.75 - 2.00 mm	0.2 %		Dia. at 60%	0.30 mm	
2.00 - 0.425 mm	6.2 %		Dia. at 50%	0.27 mm	
0.425 - 0.075 mm	80.2 %		Dia. at 30%	0.16 mm	
0.075 - 0.005 mm	13.4 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	99.8 %		Coeff. of Curvature		
425um Sieve Passing	93.6 %				
75um Sieve Passing	13.4 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

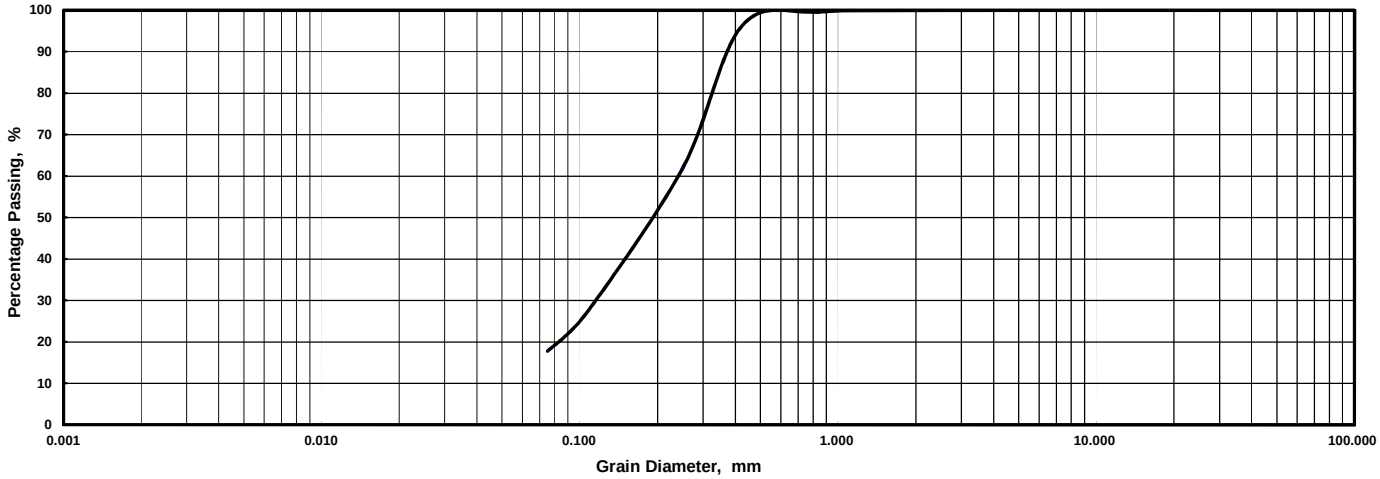
Location : **LD 2-13-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/9/16** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-6R** Depth : **8.00-8.45m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.6	96.3	61.9	27.0	17.8
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	4.0	41.0	78.6	88.5
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	3.7	38.1	73.0	82.2

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY			FINE	MEDIUM	COARSE	FINE		COARSE	
	SILT		SAND			GRAVEL			

Sample No. / Depth	SPT-6R 8.00-8.45m			Sample No. / Depth	SPT-6R 8.00-8.45m		
Larger than 4.75 mm	0.0	%		Max. Diameter	4.75	mm	
4.75 - 2.00 mm	0.1	%		Dia. at 60%	0.24	mm	
2.00 - 0.425 mm	3.6	%		Dia. at 50%	0.19	mm	
0.425 - 0.075 mm	78.5	%		Dia. at 30%	0.11	mm	
0.075 - 0.005 mm	17.8	%		Dia. at 10%		mm	
Smaller than 0.005 mm				Coeff. of Uniformity			
2000um Sieve Passing	99.9	%		Coeff. of Curvature			
425um Sieve Passing	96.3	%					
75um Sieve Passing	17.8	%					

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

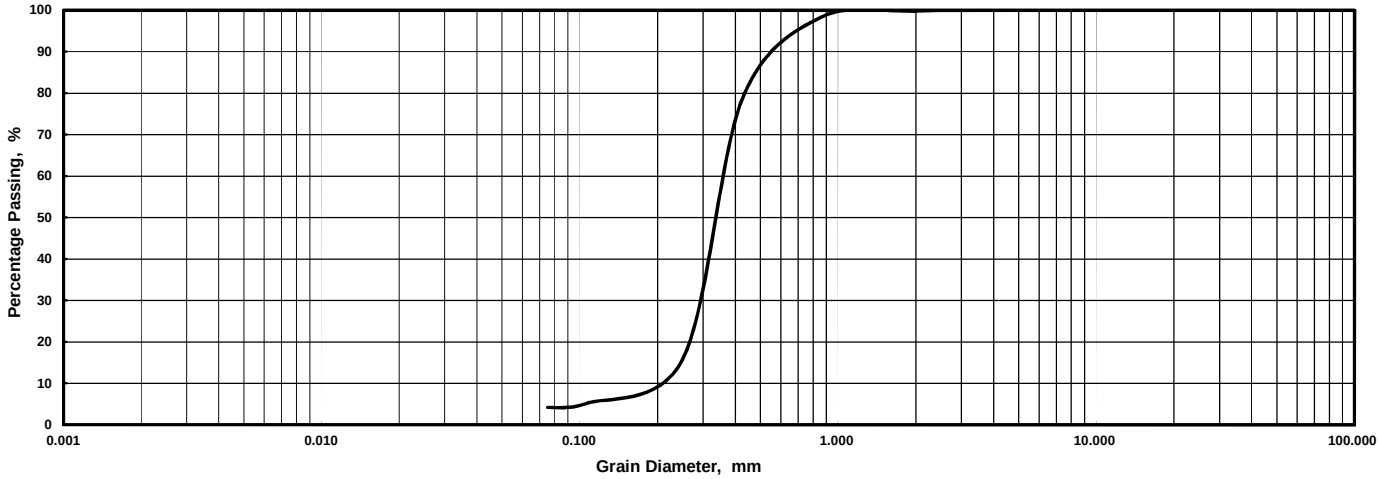
Location : **LD2-13-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/9/19** Tested By : **Sadamoto** Checked by :

Sample No. : **D-3** Depth : **9.00-9.60m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	98.2	78.5	15.8	5.1	4.2
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.0	23.2	91.1	102.6	103.6
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.8	21.5	84.2	94.9	95.8

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75	19.0		75.0
CLAY			FINE	MEDIUM	COARSE	FINE	COARSE		
	SILT		SAND			GRAVEL			

Sample No. / Depth	D-3 9.00-9.60m		Sample No. / Depth	D-3 9.00-9.60m	
Larger than 4.75 mm	0.0 %		Max. Diameter	4.75 mm	
4.75 - 2.00 mm	0.2 %		Dia. at 60%	0.36 mm	
2.00 - 0.425 mm	21.3 %		Dia. at 50%	0.33 mm	
0.425 - 0.075 mm	74.3 %		Dia. at 30%	0.28 mm	
0.075 - 0.005 mm	4.2 %		Dia. at 10%	0.157 mm	
Smaller than 0.005 mm			Coeff. of Uniformity	2.32	
2000um Sieve Passing	99.8 %		Coeff. of Curvature	1.40	
425um Sieve Passing	78.5 %				
75um Sieve Passing	4.2 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

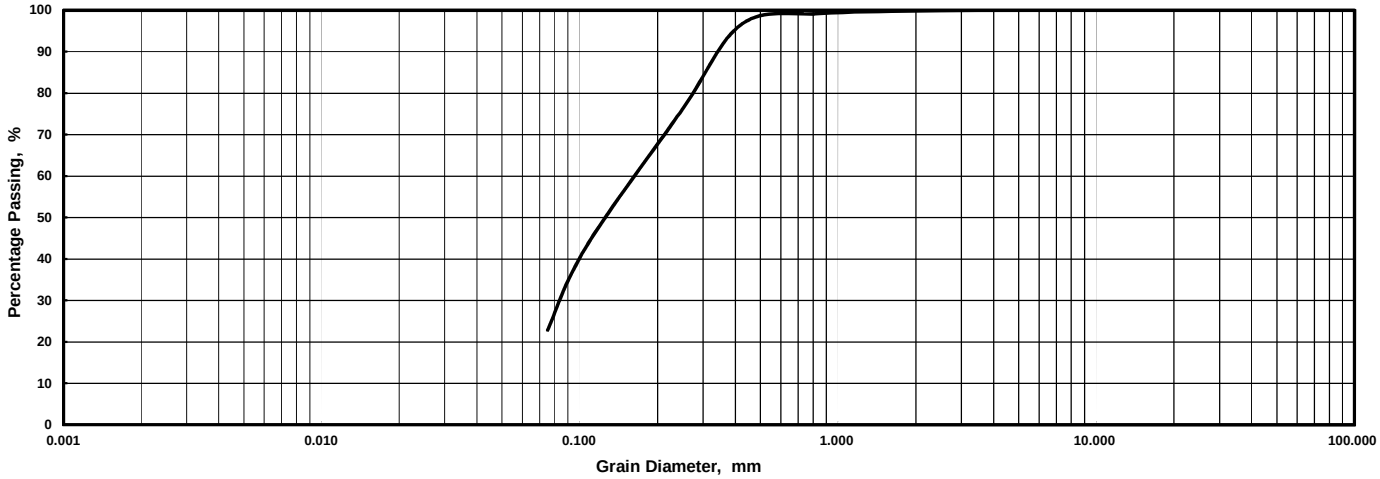
Location : **LD2-13-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/9/19** Tested By : **Sadamoto** Checked by :

Sample No. : **D-3** Depth : **9.60-9.90m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	99.2	96.7	76.2	43.1	22.8
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	3.1	22.7	54.2	73.4
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	3.3	23.8	56.9	77.2

Grain Size Distribution Curves



0.005	0.075	0.425	2.00	4.75	19.0	75.0
CLAY		FINE	MEDIUM	COARSE	FINE	COARSE
	SILT	SAND			GRAVEL	

Sample No. Depth	D-3 9.60-9.90m		Sample No. Depth	D-3 9.60-9.90m	
Larger than 4.75 mm	0.0 %		Max. Diameter	4.75 mm	
4.75 - 2.00 mm	0.2 %		Dia. at 60%	0.16 mm	
2.00 - 0.425 mm	3.1 %		Dia. at 50%	0.13 mm	
0.425 - 0.075 mm	73.9 %		Dia. at 30%	0.08 mm	
0.075 - 0.005 mm	22.8 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	99.8 %		Coeff. of Curvature		
425um Sieve Passing	96.7 %				
75um Sieve Passing	22.8 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

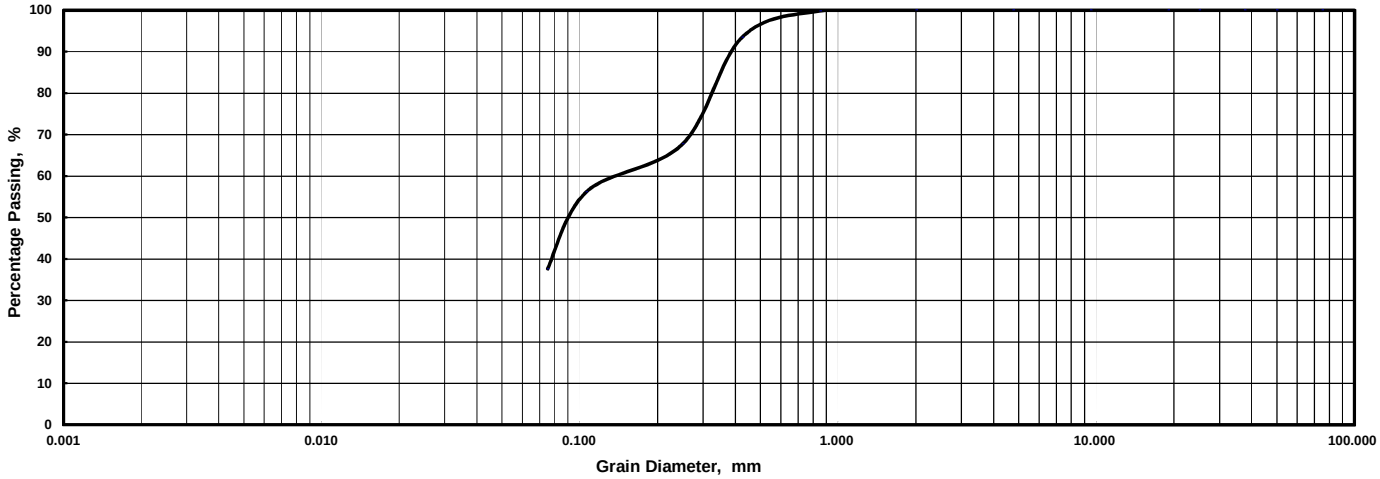
Location : **LD 2-13-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/9/16** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-7** Depth : **10.00-10.45m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	93.5	67.7	56.2	37.6
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	7.0	34.5	46.8	66.7
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	6.5	32.3	43.8	62.4

Grain Size Distribution Curves



0.005	0.075	0.425	2.00	4.75	19.0	75.0
CLAY		FINE	MEDIUM	COARSE	FINE	COARSE
	SILT	SAND			GRAVEL	

Sample No. Depth	SPT-7 10.00-10.45m		Sample No. Depth	SPT-7 10.00-10.45m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.14 mm	
2.00 - 0.425 mm	6.5 %		Dia. at 50%	0.09 mm	
0.425 - 0.075 mm	55.9 %		Dia. at 30%	mm	
0.075 - 0.005 mm	37.6 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	100.0 %		Coeff. of Curvature		
425um Sieve Passing	93.5 %				
75um Sieve Passing	37.6 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

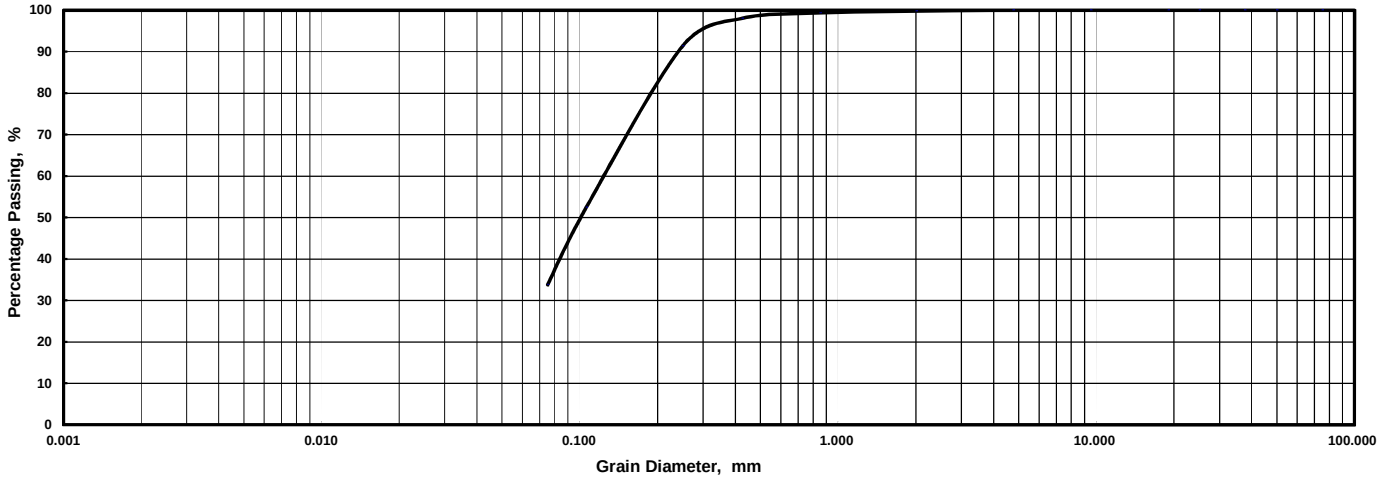
Location : **LD 2-13-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/9/16** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-8** Depth : **11.00-11.45m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	99.3	98.0	91.4	52.5	33.8
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	1.6	6.9	37.9	52.9
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.7	2.0	8.6	47.5	66.2

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY			FINE	MEDIUM	COARSE	FINE		COARSE	
	SILT		SAND			GRAVEL			

Sample No. / Depth	SPT-8 / 11.00-11.45m			Sample No. / Depth	SPT-8 / 11.00-11.45m		
Larger than 4.75 mm	0.0	%		Max. Diameter	4.75	mm	
4.75 - 2.00 mm	0.2	%		Dia. at 60%	0.13	mm	
2.00 - 0.425 mm	1.7	%		Dia. at 50%	0.10	mm	
0.425 - 0.075 mm	64.3	%		Dia. at 30%		mm	
0.075 - 0.005 mm	33.8	%		Dia. at 10%		mm	
Smaller than 0.005 mm				Coeff. of Uniformity			
2000um Sieve Passing	99.8	%		Coeff. of Curvature			
425um Sieve Passing	98.0	%					
75um Sieve Passing	33.8	%					

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

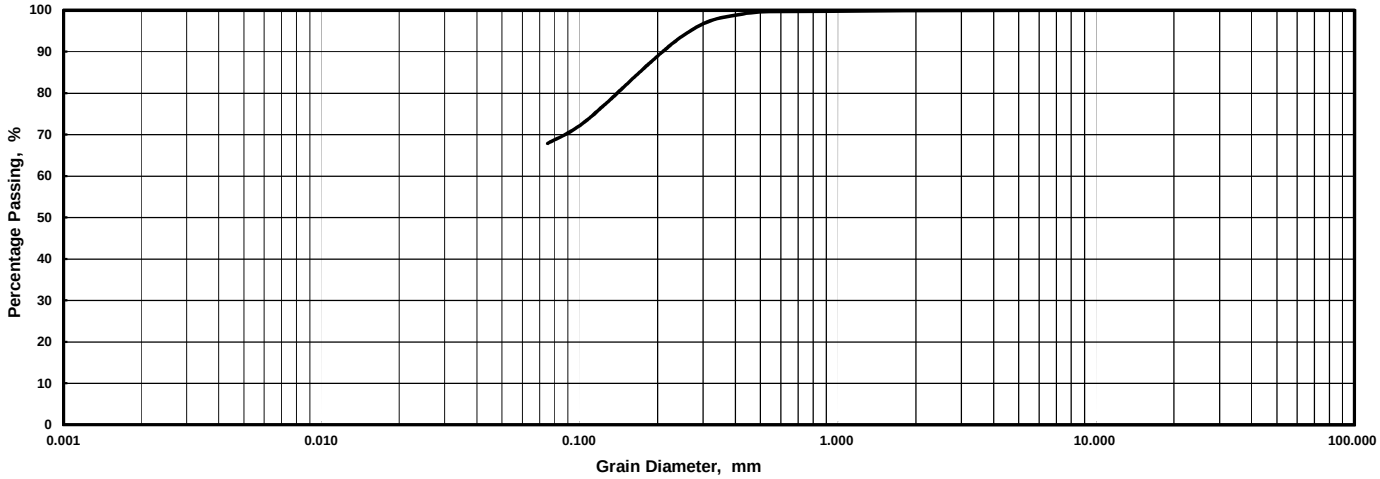
Location : **LD2-13-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/9/26** Tested By : **Sadamoto** Checked by :

Sample No. : **D-4** Depth : **12.00-12.80m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.9	99.7	99.1	93.8	73.4	67.9
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.9	6.0	26.0	31.4
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.9	6.2	26.6	32.1

Grain Size Distribution Curves



0.005	0.075	0.425	2.00	4.75	19.0	75.0
CLAY		FINE / MEDIUM / COARSE			FINE / COARSE	
	SILT	SAND			GRAVEL	

Sample No. Depth	D-4 12.00-12.80m		Sample No. Depth	D-4 12.00-12.80m	
Larger than 4.75 mm	0.1 %		Max. Diameter	9.50 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	mm	
2.00 - 0.425 mm	0.8 %		Dia. at 50%	mm	
0.425 - 0.075 mm	31.2 %		Dia. at 30%	mm	
0.075 - 0.005 mm	67.9 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	99.9 %		Coeff. of Curvature		
425um Sieve Passing	99.1 %				
75um Sieve Passing	67.9 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

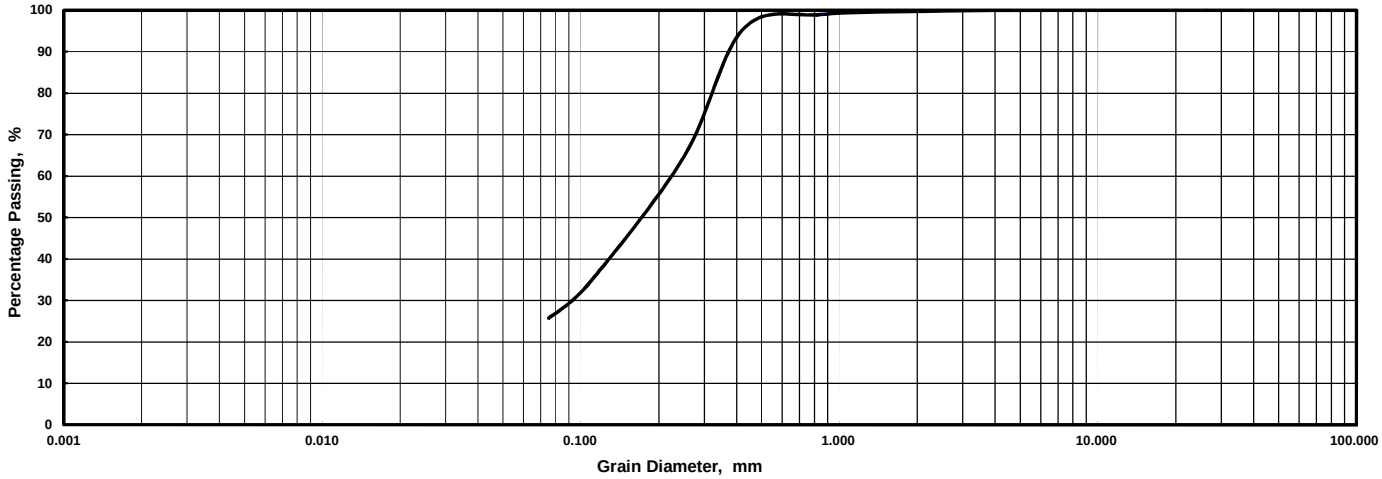
Location : **LD 2-13-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/9/16** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-12** Depth : **16.00-16.45m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.7	99.0	95.5	64.6	33.7	25.7
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.0	4.5	35.1	65.8	73.7
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.0	4.5	35.4	66.3	74.3

Grain Size Distribution Curves



0.005	0.075	0.425	2.00	4.75	19.0	75.0
CLAY		FINE	MEDIUM	COARSE	FINE	COARSE
	SILT	SAND			GRAVEL	

Sample No. / Depth	SPT-12 16.00-16.45m		Sample No. / Depth	SPT-12 16.00-16.45m	
Larger than 4.75 mm	0.0 %		Max. Diameter	4.75 mm	
4.75 - 2.00 mm	0.3 %		Dia. at 60%	0.22 mm	
2.00 - 0.425 mm	4.2 %		Dia. at 50%	0.17 mm	
0.425 - 0.075 mm	69.8 %		Dia. at 30%	0.09 mm	
0.075 - 0.005 mm	25.7 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	99.7 %		Coeff. of Curvature		
425um Sieve Passing	95.5 %				
75um Sieve Passing	25.7 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

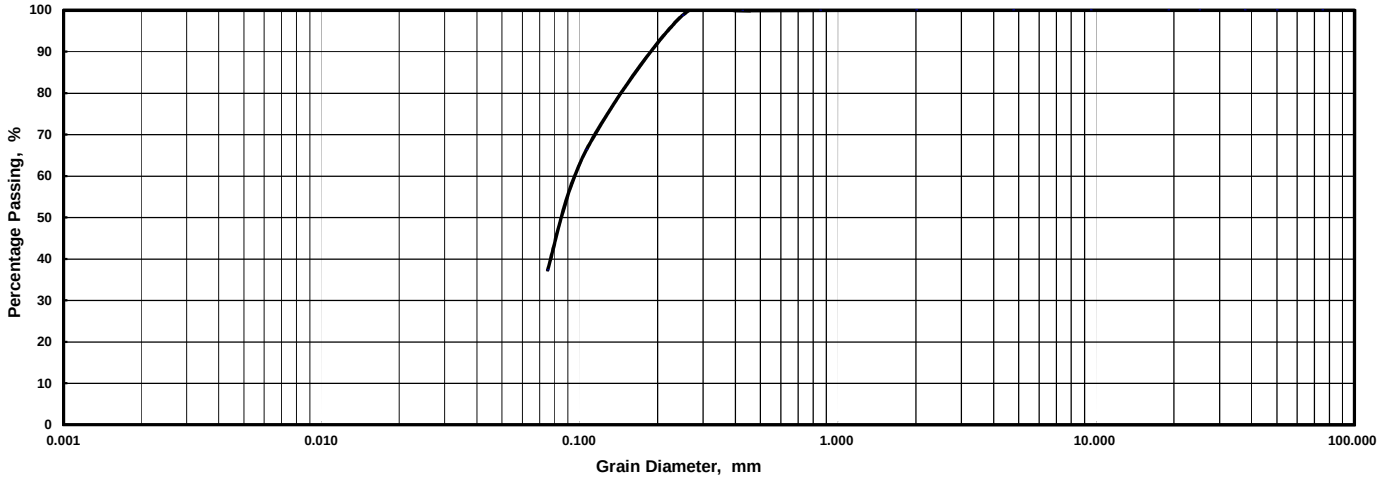
Location : **LD 2-13-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/9/16** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-13** Depth : **17.00-17.45m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.8	98.8	66.3	37.3
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.3	35.4	65.9
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.2	33.7	62.7

Grain Size Distribution Curves



0.005	0.075	0.425	2.00	4.75	19.0	75.0
CLAY		FINE	MEDIUM	COARSE	FINE	COARSE
	SILT	SAND			GRAVEL	

Sample No. Depth	SPT-13 17.00-17.45m		Sample No. Depth	SPT-13 17.00-17.45m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.10 mm	
2.00 - 0.425 mm	0.2 %		Dia. at 50%	0.09 mm	
0.425 - 0.075 mm	62.5 %		Dia. at 30%	mm	
0.075 - 0.005 mm	37.3 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	100.0 %		Coeff. of Curvature		
425um Sieve Passing	99.8 %				
75um Sieve Passing	37.3 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

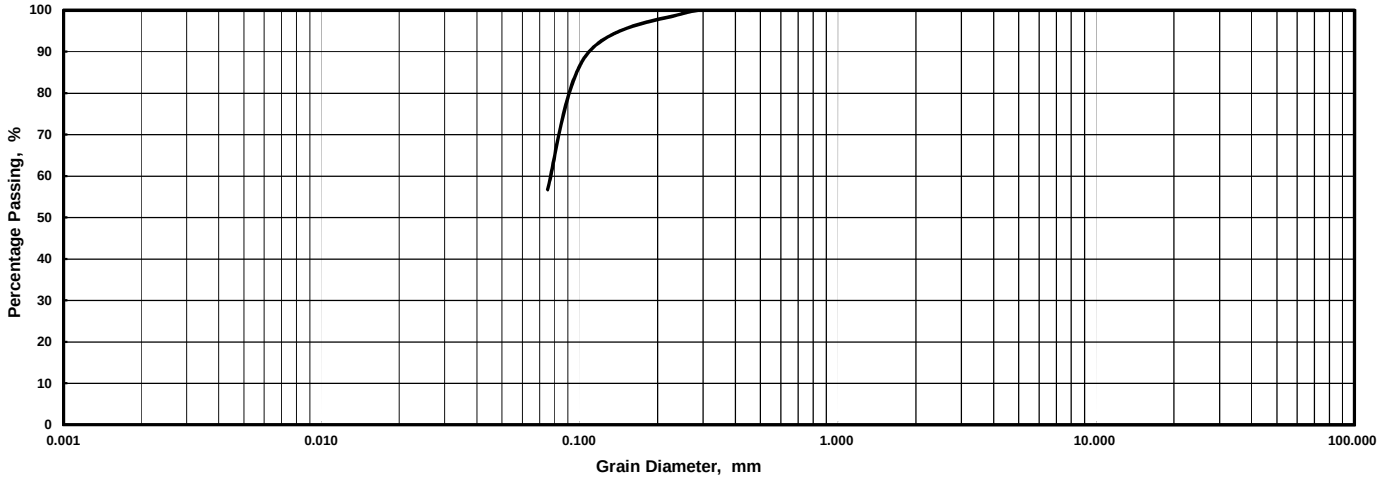
Location : **LD2-13-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/9/26** Tested By : **Sadamoto** Checked by :

Sample No. : **D-5** Depth : **18.00-18.80m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.2	89.2	56.7
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	8.6	34.4
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	10.8	43.3

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75	19.0		75.0
CLAY			FINE	MEDIUM	COARSE		FINE	COARSE	
	SILT		SAND				GRAVEL		

Sample No. Depth	D-5 18.00-18.80m		Sample No. Depth	D-5 18.00-18.80m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.08 mm	
2.00 - 0.425 mm	0.0 %		Dia. at 50%	mm	
0.425 - 0.075 mm	43.3 %		Dia. at 30%	mm	
0.075 - 0.005 mm	56.7 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	100.0 %		Coeff. of Curvature		
425um Sieve Passing	100.0 %				
75um Sieve Passing	56.7 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

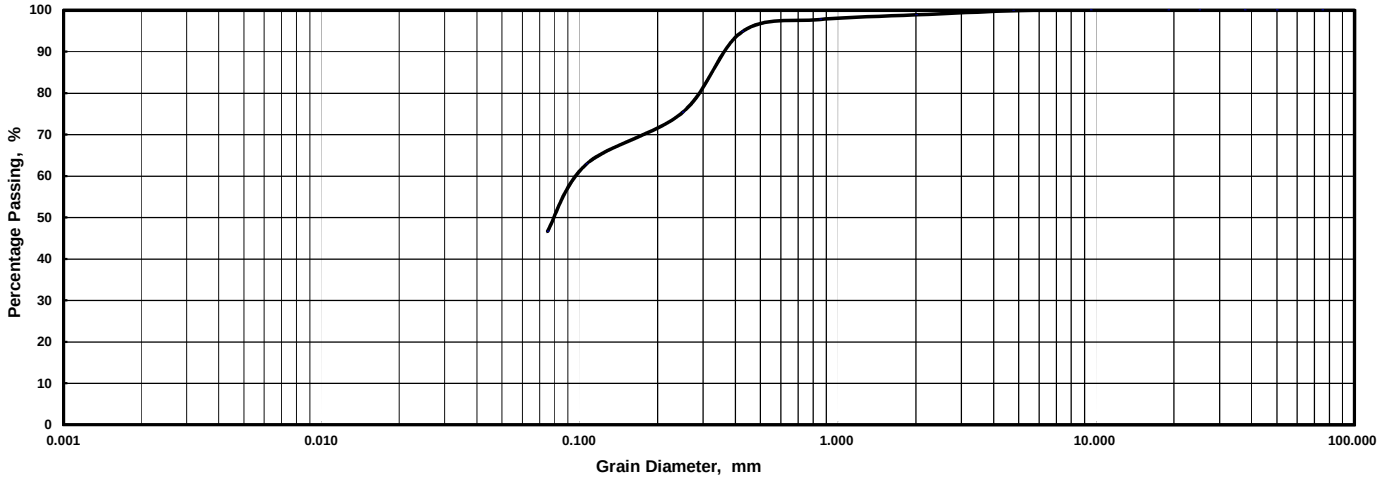
Location : **LD 2-13-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/9/16** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-14** Depth : **19.00-19.45m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	99.9	98.9	97.8	94.8	75.4	62.9	46.7
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.3	2.6	5.9	28.1	42.3	60.8
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.1	2.2	5.2	24.6	37.1	53.3

Grain Size Distribution Curves



0.005	0.075	0.425	2.00	4.75	19.0	75.0
CLAY		FINE / MEDIUM / COARSE			FINE / COARSE	
	SILT	SAND			GRAVEL	

Sample No. / Depth	SPT-14 19.00-19.45m		Sample No. / Depth	SPT-14 19.00-19.45m	
Larger than 4.75 mm	0.1 %		Max. Diameter	9.50 mm	
4.75 - 2.00 mm	1.0 %		Dia. at 60%	0.10 mm	
2.00 - 0.425 mm	4.1 %		Dia. at 50%	0.08 mm	
0.425 - 0.075 mm	48.1 %		Dia. at 30%	mm	
0.075 - 0.005 mm	46.7 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	98.9 %		Coeff. of Curvature		
425um Sieve Passing	94.8 %				
75um Sieve Passing	46.7 %				

25) LD2-13-3

TABLE SUMMARY OF SOIL TEST

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project** Standard: **ASTM**

Borehole No.			LD2-13-3							
Sample No.			D-1	D-2	HP-1	D-3	D-4	D-5	D-6	HP-2
Sample Depth			3.00m ~3.80m	6.00m ~6.80m	9.00m ~9.80m	12.00m ~12.45m	12.50m ~13.40m	15.50m ~16.40m	18.50m ~19.40m	21.50m ~22.40m
Condition of Sample			Disturbed		Undisturbed	Disturbed				
Natural Water Content		%	22.5	24.9	38.9	16.1	20.4	27.7	28.6	33.4
Specific Gravity			2.69	2.72	2.75	2.68	2.69	2.69	2.71	2.72
Wet Density		Mg/m^3	2.03	-	1.83	-	-	1.89	1.75	1.88
Dry Density		Mg/m^3	1.66	-	1.32	-	-	1.48	1.36	1.41
Natural Void Ratio			0.62	-	1.09	-	-	0.82	0.99	0.94
Degree of Saturation		%	97	-	98	-	-	91	79	97
Atterberg Limits	Liquid Limit,	%	- *3	- *3	41	- *3	- *3	- *3	29	40
	Plastic Limit,	%	- *3	- *3	24	- *3	- *3	- *3	23	20
	Plasticity Index,	%	- *3	- *3	17	- *3	- *3	- *3	6	20
Grain Size Analysis	Gravel,	%	0	0	0	0	0	0	0	0
	Sand,	%	72	62	5	81	72	53	28	13
	Silt,	%	9	17	52	7	10	24	49	46
	Clay & Colloid,	%	19	21	43	12	18	23	23	41
	Max. diameter,	mm	2.00	0.850	0.850	2.00	4.75	0.850	0.850	0.850
	Diam. at 60%	mm	0.16	0.13	0.012	0.25	0.28	0.11	0.056	0.013
	Diam. at 10%	mm	-	-		0.0014	-	-	-	-
Visual soil description			Clayey Sand	Clayey Sand	Clay	Clayey Sand	Clayey Sand	Clayey Sand	Silt with Sand	Clay with Sand
Unified soil classification			-	-	CL	-	-	-	ML	CL
Triaxial compression test	Angle of Internal Friction	(^{0})	-	-	-	-	-	-	-	-
	Cohesion Intercept, kPa		-	-	-	-	-	-	-	-
	Condition of drainage		-	-	-	-	-	-	-	-
	Angle of Internal Friction *2	(^{0})	35	-	-	38	-	-	-	-
	Cohesion Intercept, kPa *2		0	-	-	0	-	-	-	-
	Condition of drainage		CD*4	-	-	CD*4	-	-	-	-
Consolidation Test	Preconsolidation Pressure,	kPa	-	-	-	-	-	-	-	-
	Compression Index(Average)		-	-	-	-	-	-	-	-
	Pressure Range for Compression Index(kPa)		-	-	-	-	-	-	-	-
	Swell index		-	-	-	-	-	-	-	-
Compaction Test *4	Maximum Dry Density, Mg/m^3		1.72	-	-	1.78	-	-	-	-
	Optimum Moisture Content , %		14.6	-	-	13.5	-	-	-	-
Unconfined Compression Strength (kPa)			-	-	-	-	-	-	-	-
Strain at failure (%)			-	-	-	-	-	-	-	-

Remarks : Atterberg Limits was tested on material at natural state except those with *1 which was tested on material passing through 0.425mm test sieve.

*2 : In terms of effective stress *3 : Unable to test because sample contains lot of sand

*4 : Samples are prepared at 90% of Maximum dry density

Checked by : A. B. Tan

Kiso-Jiban Consultants Co., Ltd.

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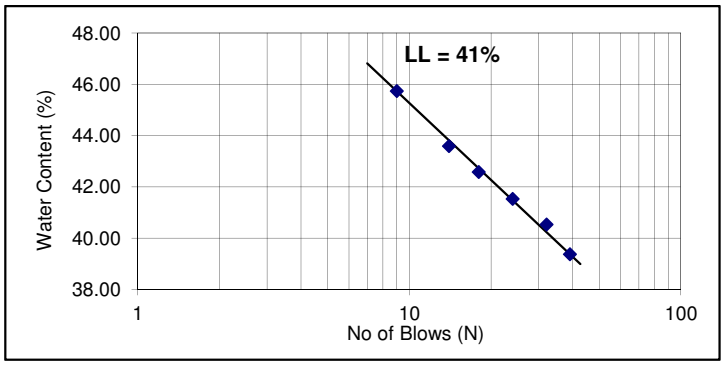
ATTERBERG LIMITS DETERMINATION

Project Name : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No. : S27-14
Standard : ASTM D4318-10
Date of Testing : 06.12.14
Tested By : Vasantha
Checked By : A. B. Tan

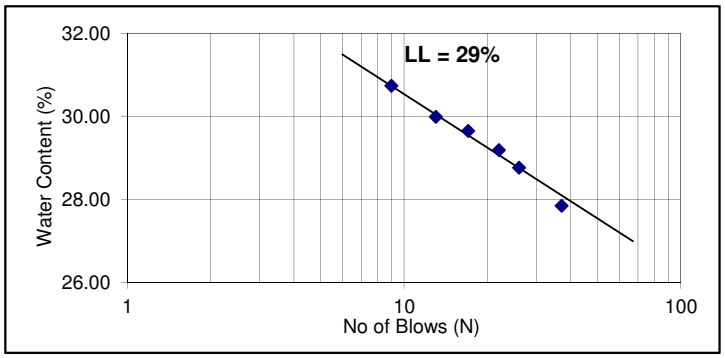
Sample No. : LD2-13-3 HP-1
Depth : 9.00-9.80m
Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	39	39.38
2	32	40.54
3	24	41.53
4	18	42.58
5	14	43.60
6	9	45.73
Liquid Limits %		**41**
Plastic Limits %		**24**
Plasticity Index		**17**



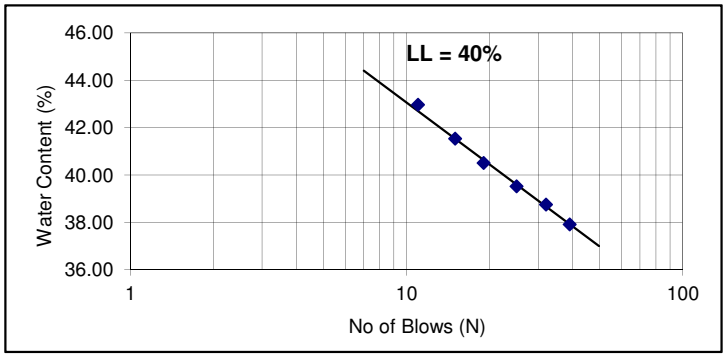
Sample No. : LD2-13-3 D-6
Depth : 18.50-19.40m
Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	37	27.85
2	26	28.76
3	22	29.19
4	17	29.65
5	13	29.99
6	9	30.74
Liquid Limits %		**29**
Plastic Limits %		**23**
Plasticity Index		**6**



Sample No. : LD2-13-3 D-7
Depth : 21.50-22.40m
Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	39	37.92
2	32	38.75
3	25	39.52
4	19	40.51
5	15	41.53
6	11	42.97
Liquid Limits %		**40**
Plastic Limits %		**20**
Plasticity Index		**20**



Kiso-Jiban Consultants Co Ltd
Singapore Branch

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **03.12.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

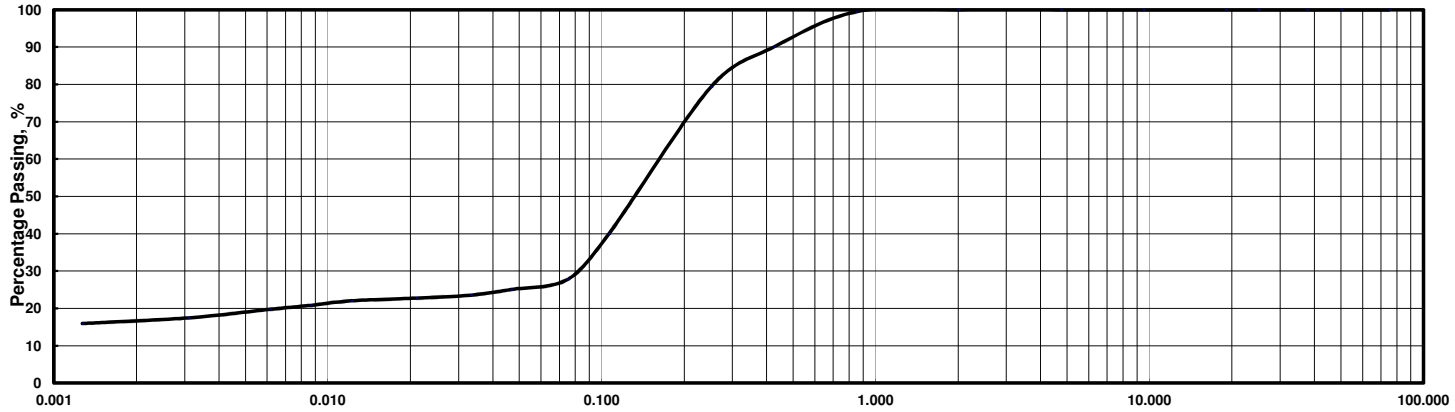
Sample No. : **LD2-13-3 D-1** Depth : **3.00-3.80m** ( ) Specific Gravity : 2.69

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	90.0	79.2	39.9	27.7
Hydro.	Dia., mm	0.047	0.033	0.021	0.012	0.0086	0.0061	0.0031	0.0013							
	% Passing	25.1	23.5	22.8	22.0	20.8	19.7	17.5	15.9							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



Grain Diameter, mm

0.005		0.075	0.425		2.00	4.75	19.0		75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	LD2-13-3 D-1 3.00-3.80m		Sample No. Depth	LD2-13-3 D-1 3.00-3.80m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.16 mm	
2.00 - 0.425 mm	10.0 %		Dia. at 30%	0.080 mm	
0.425 - 0.075 mm	62.3 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	8.8 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	18.9 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	99.5 %				
75um Sieve Passing	27.7 %				

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **03.12.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

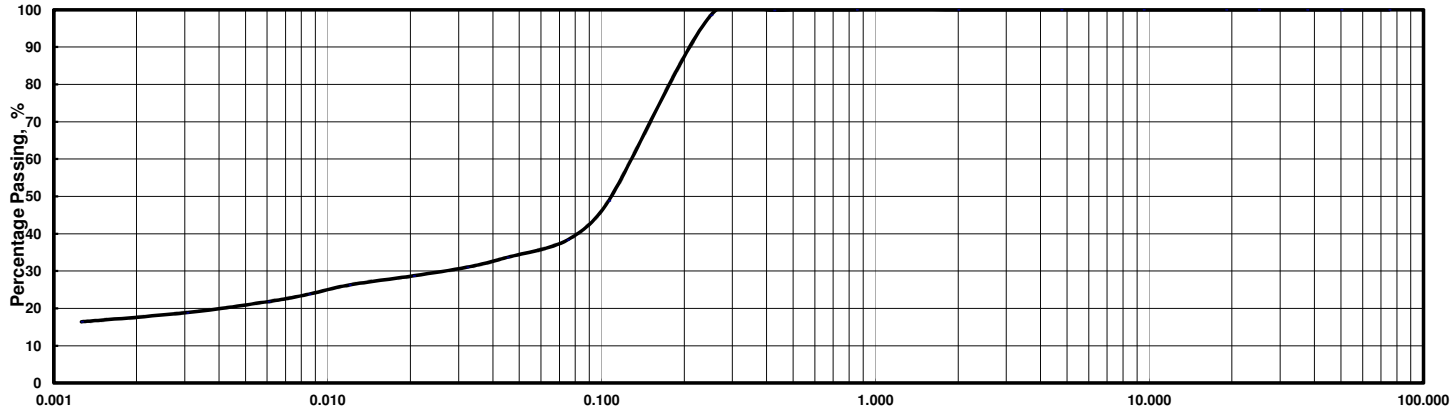
Sample No. : **LD2-13-3 D-2** Depth : **6.00-6.80m** ( ) Specific Gravity : 2.72

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	98.5	48.9	38.4
Hydro.	Dia., mm	0.045	0.032	0.021	0.012	0.0085	0.0061	0.0031	0.0013							
	% Passing	33.7	31.0	28.7	26.3	23.8	21.8	18.9	16.4							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



Grain Diameter, mm

0.005		0.075	0.425		2.00	4.75	19.0		75.0
CLAY		FINE	MEDIUM		COARSE	FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	LD2-13-3 D-2 6.00-6.80m		Sample No. Depth	LD2-13-3 D-2 6.00-6.80m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.850 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.13 mm	
2.00 - 0.425 mm	0.2 %		Dia. at 30%	0.026 mm	
0.425 - 0.075 mm	61.5 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	17.6 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	20.8 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	38.4 %				

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **03.12.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

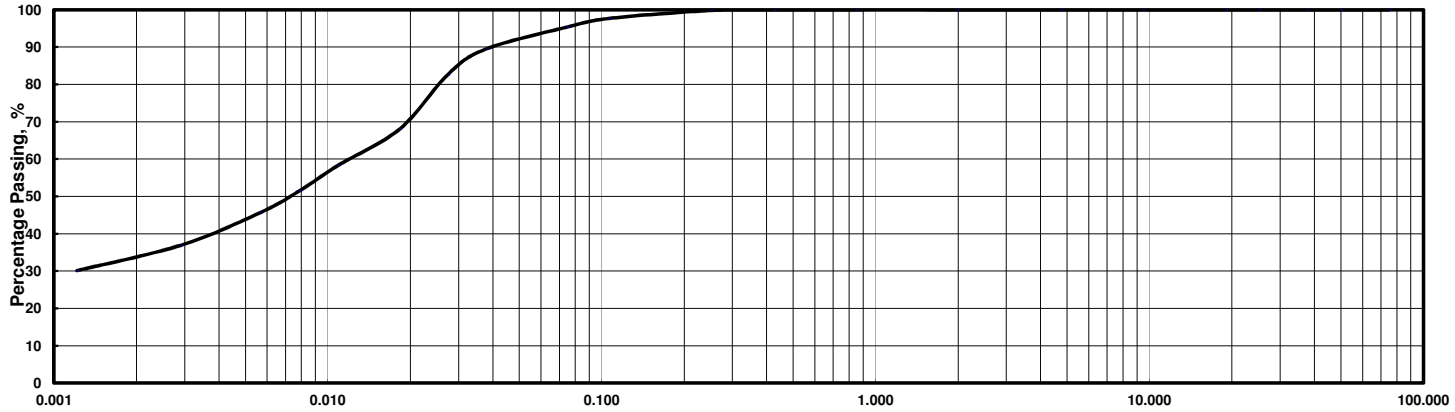
Sample No. : **LD2-13-3 HP-1** Depth : **9.00-9.80m** ( ) Specific Gravity : 2.75

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.8	97.6	95.4
Hydro.	Dia., mm	0.038	0.027	0.018	0.011	0.0079	0.0057	0.0029	0.0012							
	% Passing	89.4	82.6	68.1	58.3	51.5	45.7	36.9	30.1							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



Grain Diameter, mm

0.005		0.075	0.425		2.00	4.75	19.0		75.0
CLAY		FINE	MEDIUM		COARSE	FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	LD2-13-3 HP-1 9.00-9.80m		Sample No. Depth	LD2-13-3 HP-1 9.00-9.80m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.850 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.012 mm	
2.00 - 0.425 mm	0.1 %		Dia. at 30%	- mm	
0.425 - 0.075 mm	4.5 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	51.8 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	43.5 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	95.4 %				

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **04.12.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

Sample No. : **LD2-13-3 D-3** Depth : **12.00-12.45m** ( ) Specific Gravity : 2.68

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.1	95.3	59.4	24.7	19.1
Hydro.	Dia., mm	0.047	0.033	0.021	0.012	0.0087	0.0062	0.0031	0.0013							
	% Passing	17.6	16.5	15.9	15.4	14.3	12.6	11.5	9.9							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves

Grain Diameter, mm

0.005		0.075	0.425		2.00	4.75	19.0		75.0
CLAY		FINE	MEDIUM		COARSE	FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	LD2-13-3 D-3 12.00-12.45m		Sample No. Depth	LD2-13-3 D-3 12.00-12.45m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.25 mm	
2.00 - 0.425 mm	4.7 %		Dia. at 30%	0.12 mm	
0.425 - 0.075 mm	76.1 %		Dia. at 10%	0.0014 mm	
0.075 - 0.005 mm	6.9 %		Coeff. of Uniformity	180	
Smaller than 0.005 mm	12.2 %		Coeff. of Curvature	41.4	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	99.1 %				
75um Sieve Passing	19.1 %				

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **04.12.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

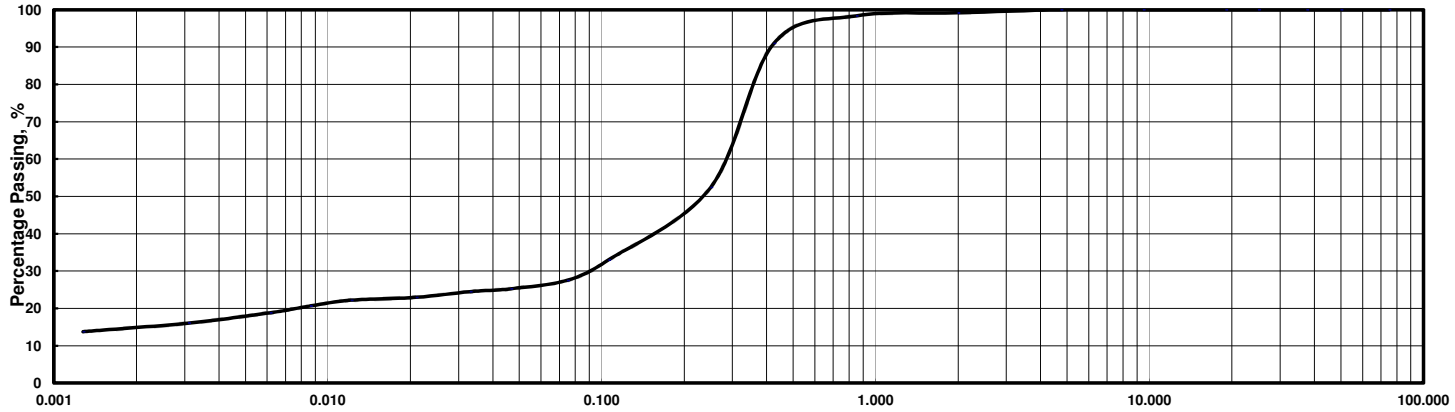
Sample No. : **LD2-13-3 D-4** Depth : **12.50-13.40m** ( ) Specific Gravity : 2.69

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.2	98.3	91.0	52.4	33.0	27.5
Hydro.	Dia., mm	0.047	0.033	0.021	0.012	0.0086	0.0061	0.0031	0.0013							
	% Passing	25.3	24.5	23.0	22.2	20.7	18.8	16.1	13.8							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



Grain Diameter, mm

0.005		0.075	0.425		2.00	4.75	19.0		75.0
CLAY		FINE	MEDIUM		COARSE	FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	LD2-13-3 D-4 12.50-13.40m		Sample No. Depth	LD2-13-3 D-4 12.50-13.40m	
Larger than 4.75 mm	0.0 %		Max. Diameter	4.75 mm	
4.75 - 2.00 mm	0.8 %		Dia. at 60%	0.28 mm	
2.00 - 0.425 mm	8.2 %		Dia. at 30%	0.088 mm	
0.425 - 0.075 mm	63.4 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	9.8 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	17.8 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	98.3 %				
75um Sieve Passing	27.5 %				

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **05.12.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

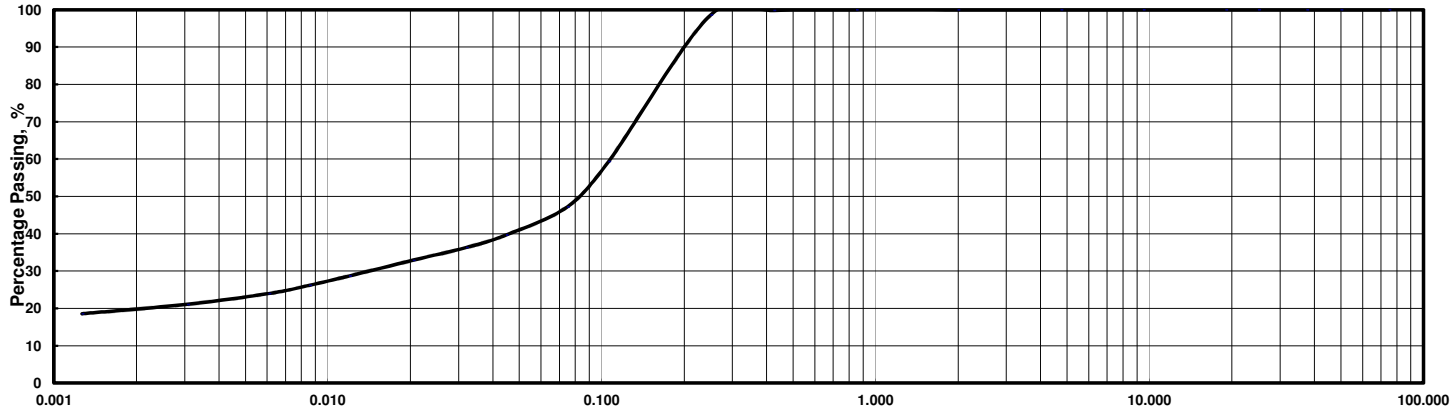
Sample No. : **LD2-13-3 D-5** Depth : **15.50-16.40m** ( ) Specific Gravity : 2.69

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	98.6	59.4	47.2
Hydro.	Dia., mm	0.045	0.032	0.021	0.012	0.0086	0.0061	0.0031	0.0013							
	% Passing	39.7	36.3	32.9	28.7	26.2	24.0	21.1	18.6							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



Grain Diameter, mm

0.005		0.075	0.425		2.00	4.75	19.0		75.0
CLAY		FINE	MEDIUM		COARSE	FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	LD2-13-3 D-5 15.50-16.40m		Sample No. Depth	LD2-13-3 D-5 15.00-16.40m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.850 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.11 mm	
2.00 - 0.425 mm	0.2 %		Dia. at 30%	0.014 mm	
0.425 - 0.075 mm	52.6 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	24.3 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	22.9 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	47.2 %				

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **05.12.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

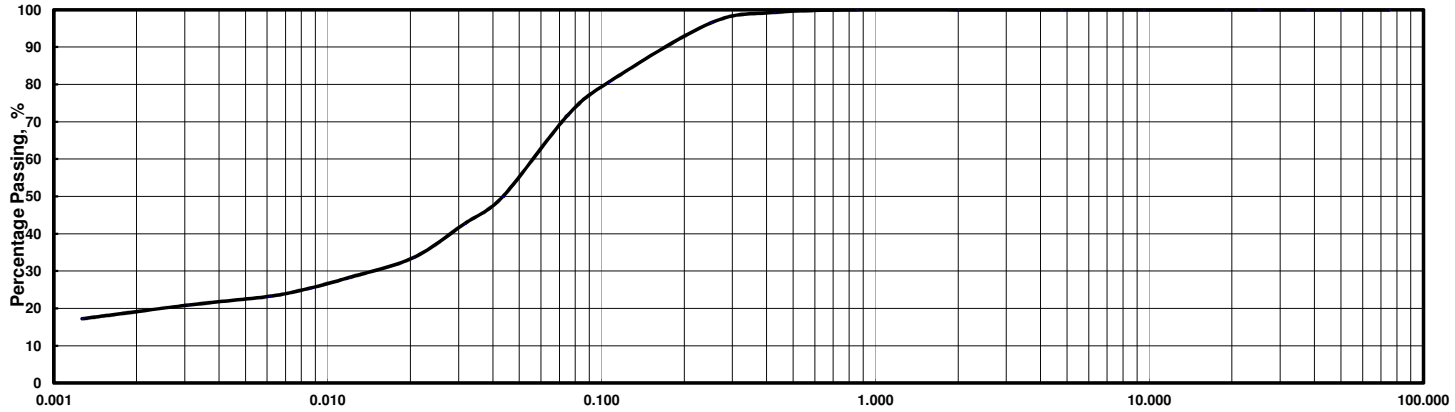
Sample No. : **LD2-13-3 D-6** Depth : **18.50-19.40m** ( ) Specific Gravity : 2.71

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.2	96.5	80.6	71.7
Hydro.	Dia., mm	0.043	0.031	0.020	0.012	0.0086	0.0061	0.0031	0.0013							
	% Passing	49.9	42.6	33.6	28.3	25.4	23.2	20.9	17.2							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



Grain Diameter, mm

0.005	0.075	0.425	2.00	4.75	19.0	75.0
CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	
	SILT	SAND		GRAVEL		

Sample No. Depth	LD2-13-3 D-6 18.50-19.40m		Sample No. Depth	LD2-13-3 D-6 18.50-19.40m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.850 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.056 mm	
2.00 - 0.425 mm	0.8 %		Dia. at 30%	0.014 mm	
0.425 - 0.075 mm	27.5 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	49.3 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	22.4 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	71.7 %				

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **05.12.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

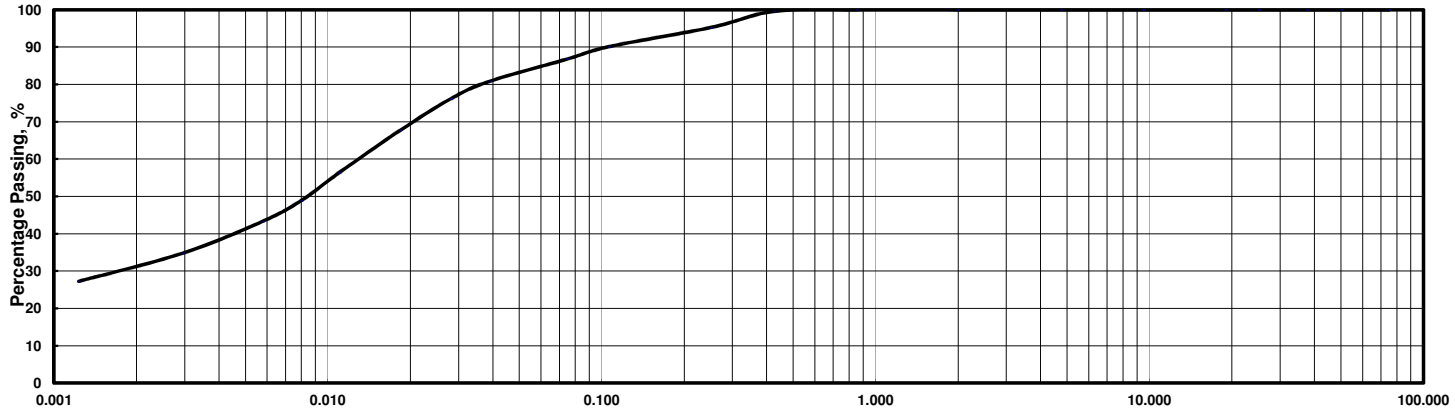
Sample No. : **LD2-13-3 D-7** Depth : **21.50-22.40m** ( ) Specific Gravity : 2.72

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	95.2	90.1	86.8
Hydro.	Dia., mm	0.039	0.028	0.018	0.011	0.0080	0.0057	0.0029	0.0012							
	% Passing	80.8	76.1	67.7	56.4	48.9	43.2	34.8	27.3							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



Grain Diameter, mm

0.005		0.075	0.425		2.00	4.75	19.0		75.0
CLAY		FINE	MEDIUM		COARSE	FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	LD2-13-3 D-7 21.50-22.40m		Sample No. Depth	LD2-13-3 D-7 21.50-22.40m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.850 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.013 mm	
2.00 - 0.425 mm	0.5 %		Dia. at 30%	0.0017 mm	
0.425 - 0.075 mm	12.7 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	45.8 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	41.0 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	86.8 %				

Summary of Consolidated Drained Triaxial Compression Test

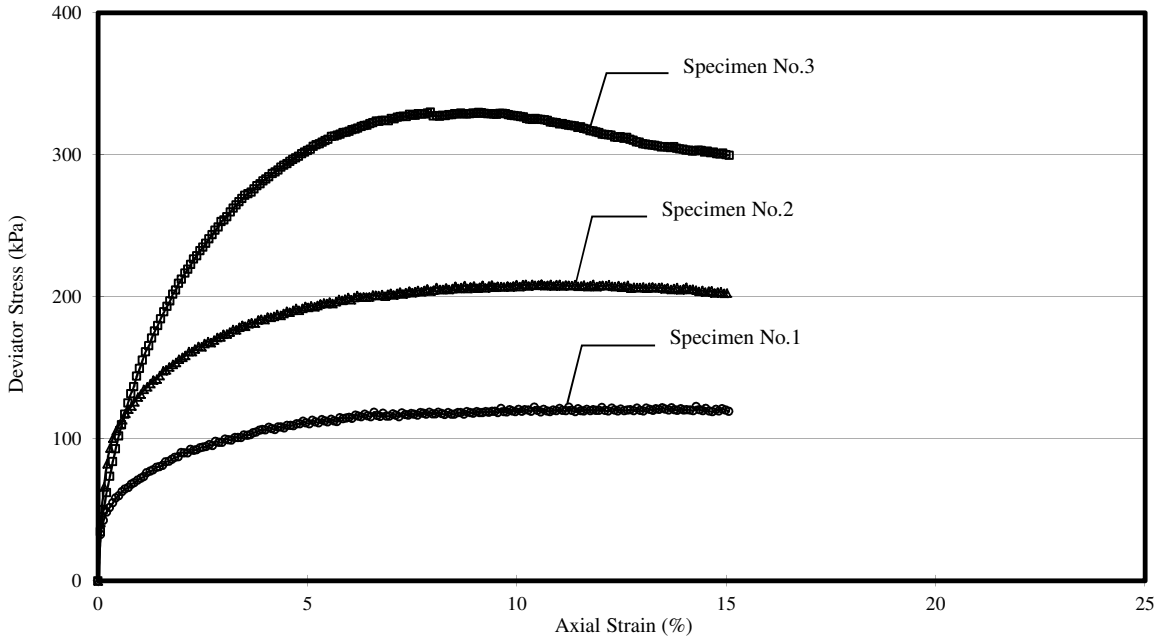
Project No.: S27-14		Project :Preparatory Survey on Matarbari USC Coral-fired Power Project					
Date Tested : 10.12.14		Tested by : Perera		Checked by : A. B. Tan			
Borehole No.: LD2-13-3		Sample No.:D-1		Depth :3.00-3.80m			
Specimen Condition : Remoulded		Test Method : ASTM D7181-11					
Soil Description : Clayey Sand		Ave. Diameter : 50.0mm		Ave. Height : 100.0mm			
Specimen No.			1	2	3	4	
Initial Condition	Wet Density,	Mg/m^3	-	-	-		
	Water Content,	%	-	-	-		
	Dry Density	Mg/m^3	1.55	1.55	1.55		
Saturation Stage	Saturated PWP,	kPa	200	200	200		
	Final Cell Pressure,	kPa	240	270	300		
	B-value		0.97	0.95	0.96		
Consolidation Stage	Cell Pressure	kPa	240	270	300		
	Back Pressure	kPa	200	200	200		
	Initial PWP,	kPa	227	256	374		
	Final PWP	kPa	200	200	200		
Consolidation Parameter	Volume Change,	%	0.29	0.36	0.58		
	Coefficient of Consolidation Cv,	$m^2/year$	137.49	58.90	62.38		
	Coefficient of Volume Compressibility mvi,	m^2/MN	0.07	0.05	0.06		
Compression Stage	Cell Pressure	kPa	240	270	300		
	Back Pressure	kPa	200	200	200		
	Effective Cell Pressure	kPa	40	70	100		
	Shearing Speed	mm/min	0.015	0.015	0.015		
Failure Conditions	Peak Deviator Stress $(\sigma_1-\sigma_3)f$,	kPa	123	209	330		
	Excess PWP at $(\sigma_1-\sigma_3)f$	kPa	N/A	N/A	N/A		
	Volumetric Strain at $(\sigma_1-\sigma_3)f$	(%)	-1.16	-1.29	0.05		
	Strain at $(\sigma_1-\sigma_3)f$	(%)	14.28	10.59	7.93		
Shear Strength Parameters	In terms of Effective Stress $\phi' = 38$ deg $c' = 0$ kPa		Mode of Failure 1 2 3 4 				
Remarks : Specimens are prepared at 90% of Maximum dry density (from compaction Test)= $1.55Mg/m^3$							

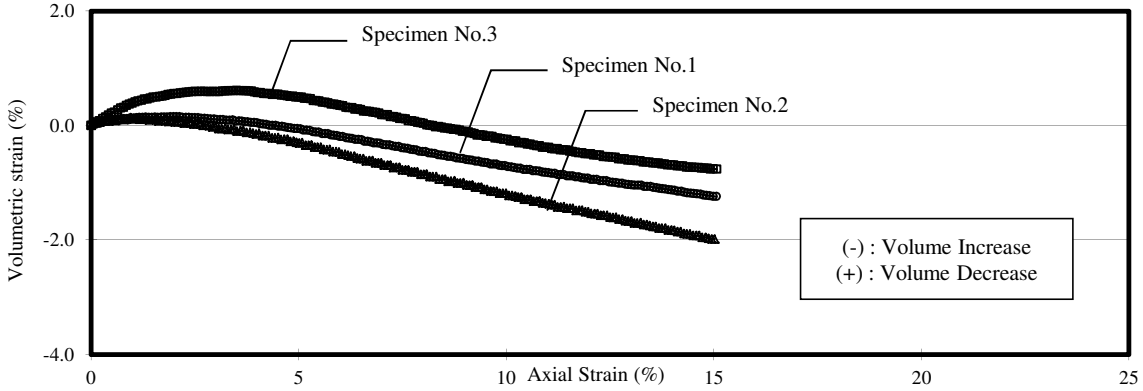
Consolidated Drained Triaxial Compression Test

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No.: S27-14 Sample No.: D-1 Soil Type: Clayey Sand

Borehole No.: LD2-13-3 Depth : 3.00-3.80m





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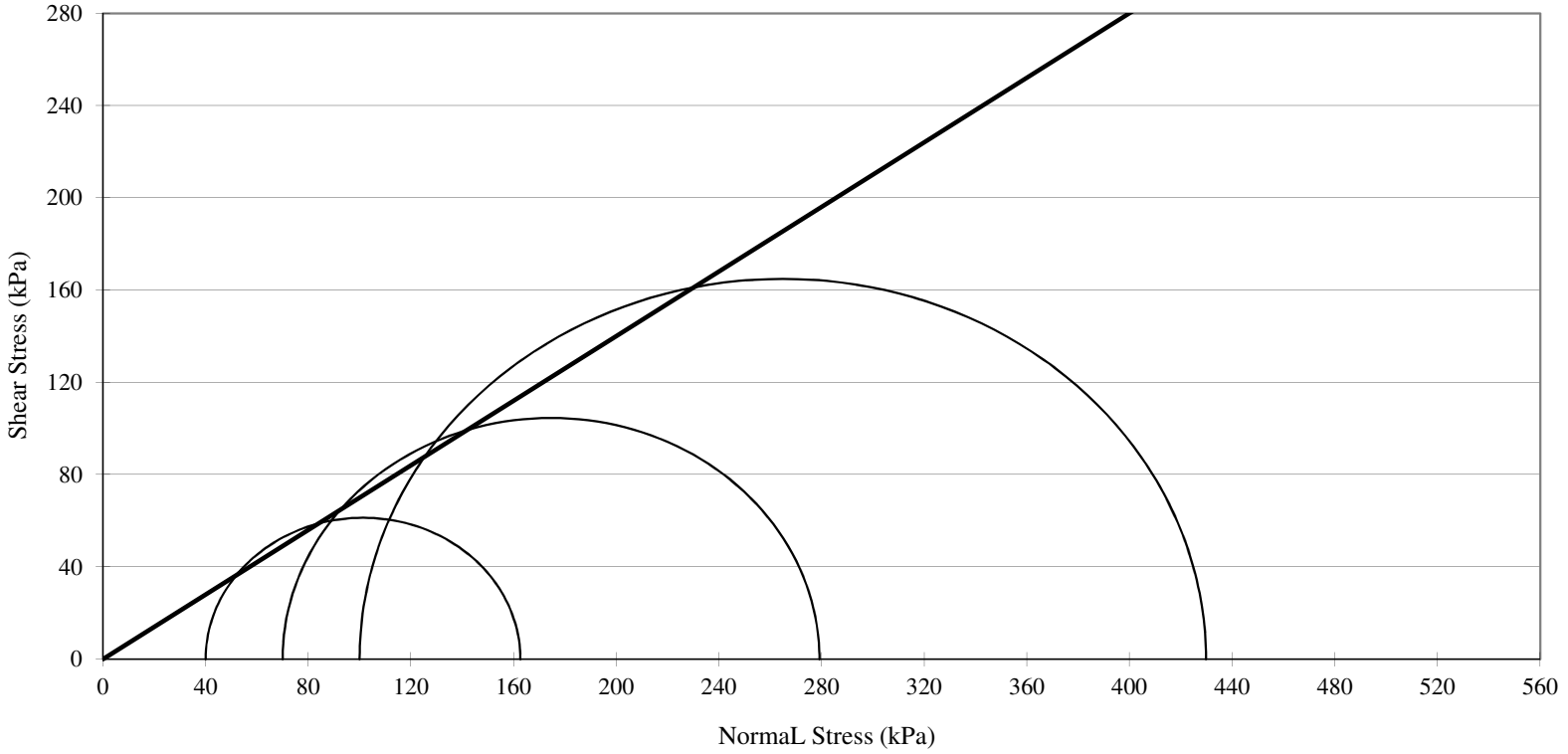
Consolidated Drained Triaxial Compression Test

- Mohr' s Circle (In terms of Total Stress) -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No. : S27-14

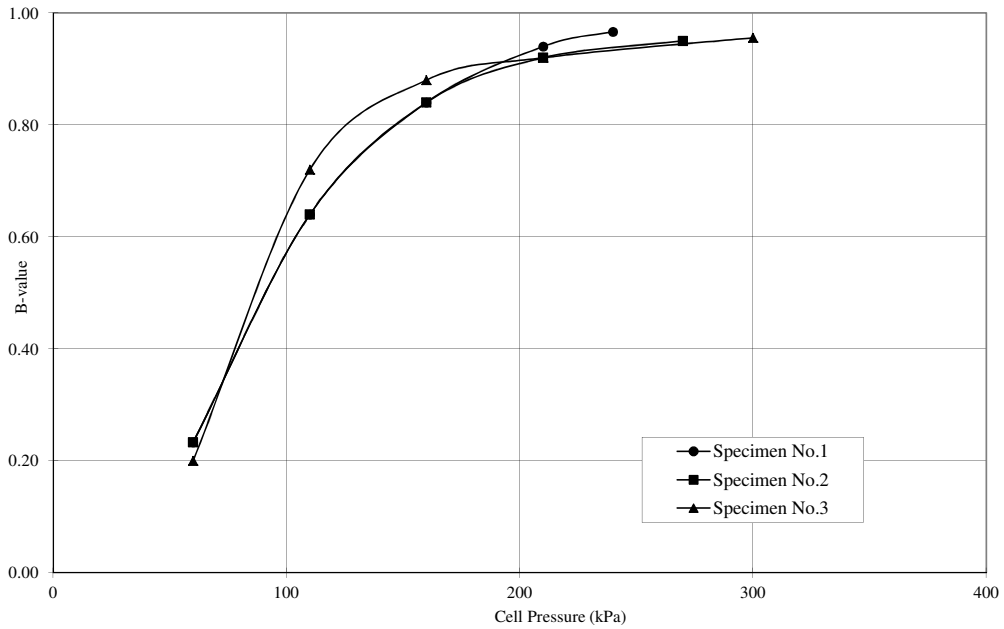
Borehole No. : LD2-13-3 Soil Type: Clayey Sand
Sample No. : D-1 Depth : 3.00-3.80m
Angle of Internal Friction, ϕ 35 deg
Cohesion, c 0 kPa



Consolidated Drained Triaxial Compression Test
With Porewater Pressure Measurement
- B-value Check -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14
Borehole No.: LD2-13-3 Depth : 3.00-3.80m
Sample No.: D-1 Soil Type: Clayey Sand

		Result of B-value Check					
		Specimen 1		Specimen 2		Specimen 3	
		Initial	Final	Initial	Final	Initial	Final
B-check Step.1	Cell Pressure (kPa)	30	60	30	60	30	60
	P.W.P (kPa)	20	27	20	27	20	26
	Back Pressure (kPa)	20		20		20	
	B-value	0.23		0.23		0.20	
B-check Step.2	Cell Pressure (kPa)	60	110	60	110	60	110
	P.W.P (kPa)	50	82	50	82	50	86
	Back Pressure (kPa)	50		50		50	
	B-value	0.64		0.64		0.72	
B-check Step.3	Cell Pressure (kPa)	110	160	110	160	110	160
	P.W.P (kPa)	100	142	100	142	100	144
	Back Pressure (kPa)	100		100		100	
	B-value	0.84		0.84		0.88	
B-check Step.4	Cell Pressure (kPa)	160	210	160	210	160	210
	P.W.P (kPa)	150	197	150	196	150	196
	Back Pressure (kPa)	150		150		150	
	B-value	0.94		0.92		0.92	
B-check Step.5	Cell Pressure (kPa)	210	240	210	270	210	300
	P.W.P (kPa)	200	229	200	257	200	286
	Back Pressure (kPa)	200		200		200	
	B-value	0.97		0.95		0.96	



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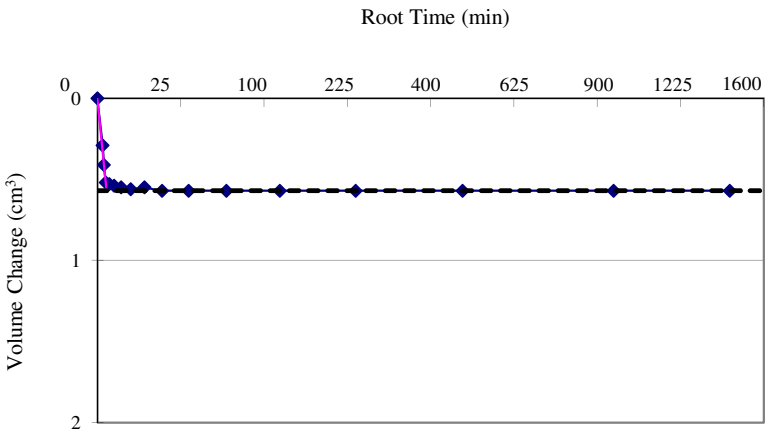
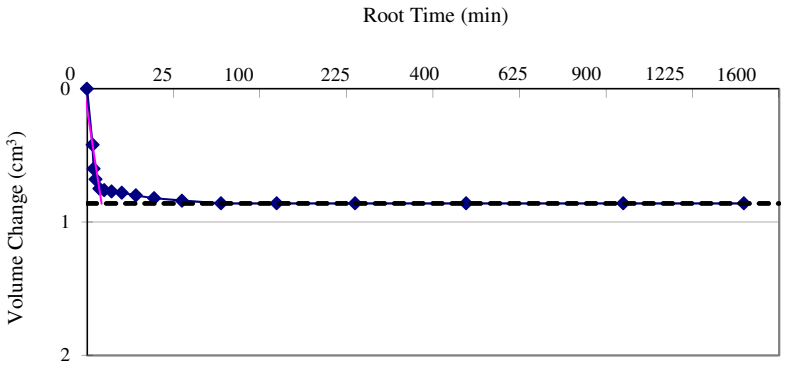
Consolidated Drained Triaxial Compression Test
With Porewater Pressure Measurement
- Volume Change versus Root Time in Consolidation Stages -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14 Sample No.: D-1 Soil Type: Clayey Sand
Borehole No.: LD2-13-3 Depth : 3.00-3.80m



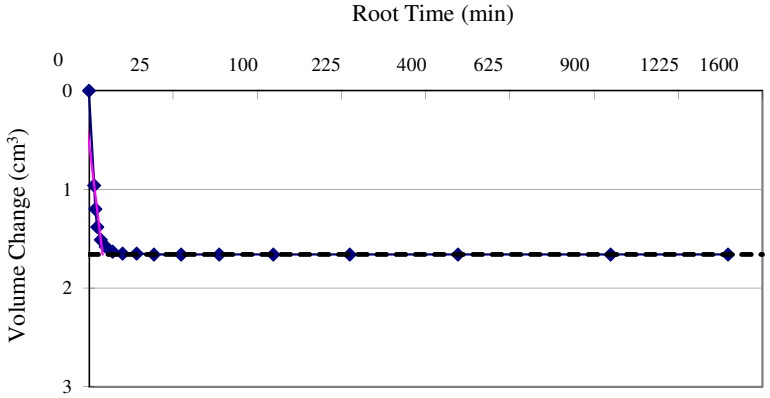
Specimen No.: 1

p' =	40	kPa
t100 =	0.3	min
Cv =	137.49	m^2/year
mvi=	0.07	m^2/MN



Specimen No.: 2

p' =	70	kPa
t100 =	0.7	min
Cv =	58.90	m^2/year
mvi=	0.05	m^2/MN



Specimen No.: 3

p' =	100	kPa
t100 =	0.7	min
Cv =	62.38	m^2/year
mvi=	0.06	m^2/MN

Summary of Consolidated Drained Triaxial Compression Test

Project No.: S27-14		Project :Preparatory Survey on Matarbari USC Coral-fired Power Project					
Date Tested : 13.12.14		Tested by : Perera		Checked by : A. B. Tan			
Borehole No.: LD2-13-3		Sample No.:D-3		Depth : 12.00-12.45m			
Specimen Condition : Remoulded		Test Method : ASTM D7181-11					
Soil Description : Clayey Sand		Ave. Diameter : 50.0mm		Ave. Height : 100.0mm			
Specimen No.			1	2	3	4	
Initial Condition	Wet Density,	Mg/m^3	-	-	-		
	Water Content,	%	-	-	-		
	Dry Density	Mg/m^3	1.61	1.61	1.61		
Saturation Stage	Saturated PWP,	kPa	500	500	500		
	Final Cell Pressure,	kPa	540	570	600		
	B-value		0.96	0.97	0.98		
Consolidation Stage	Cell Pressure	kPa	540	570	600		
	Back Pressure	kPa	500	500	500		
	Initial PWP,	kPa	529	558	588		
	Final PWP	kPa	500	500	500		
Consolidation Parameter	Volume Change,	%	0.04	0.08	0.09		
	Coefficient of Consolidation Cv,	m^2/year	719	395	655		
	Coefficient of Volume Compressibility mvi,	m^2/MN	0.011	0.011	0.009		
Compression Stage	Cell Pressure	kPa	540	570	600		
	Back Pressure	kPa	500	500	500		
	Effective Cell Pressure	kPa	40	70	100		
	Shearing Speed	mm/min	0.015	0.015	0.015		
Failure Conditions	Peak Deviator Stress $(\sigma_1-\sigma_3)f$,	kPa	139	228	330		
	Excess PWP at $(\sigma_1-\sigma_3)f$	kPa	N/A	N/A	N/A		
	Volumetric Strain at $(\sigma_1-\sigma_3)f$	(%)	-0.34	0.33	-0.95		
	Strain at $(\sigma_1-\sigma_3)f$	(%)	11.80	14.99	7.43		
Shear Strength Parameters	ϕ_d = 38 Degree c_d = 0 kPa		Mode of Failure 1 2 3 4 				

Remarks :

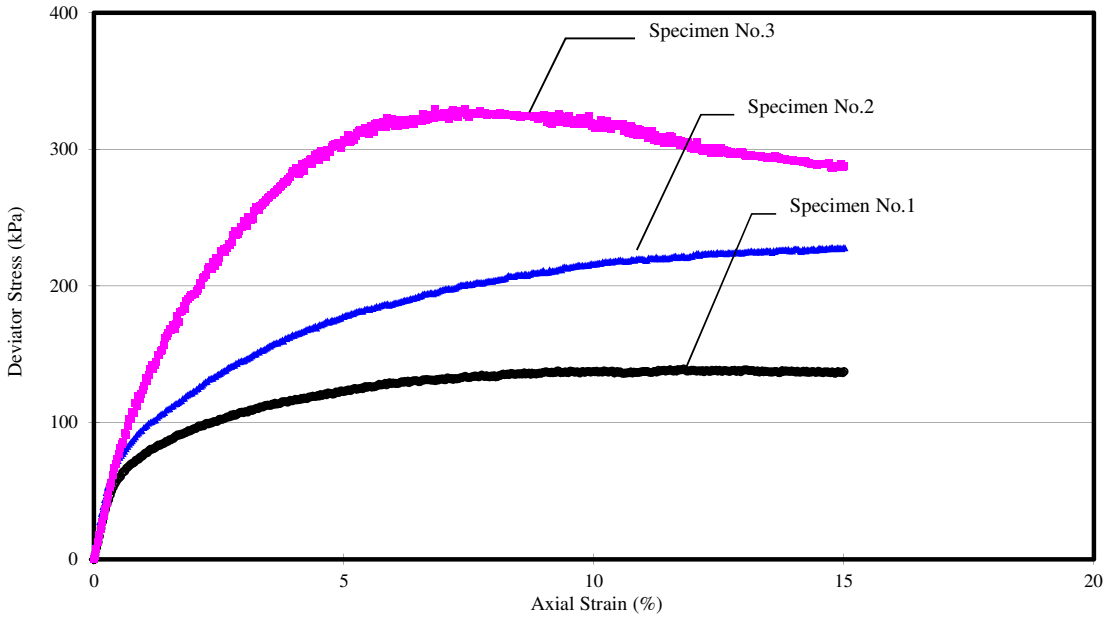
Specimens are prepared at 90% of Maximum dry density (from compaction Test)= 1.61 Mg/m^3

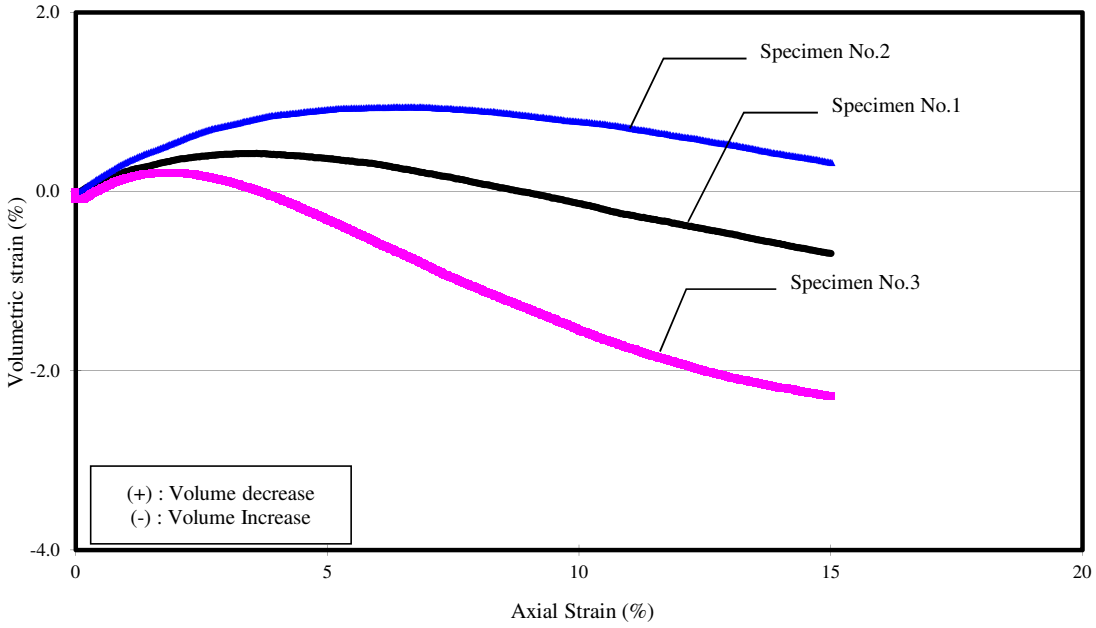
Consolidated Drained Triaxial Compression Test

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No.: S27-14 Sample No.: D-3 Soil Type: Clayey Sand

Borehole No.: LD2-13-3 Depth : 12.00-12.45m





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Consolidated Drained Triaxial Compression Test
With Pore water Pressure Measurement

- Mohr' s Circle (In terms of Total Stress at Peak Deviator Stress) -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

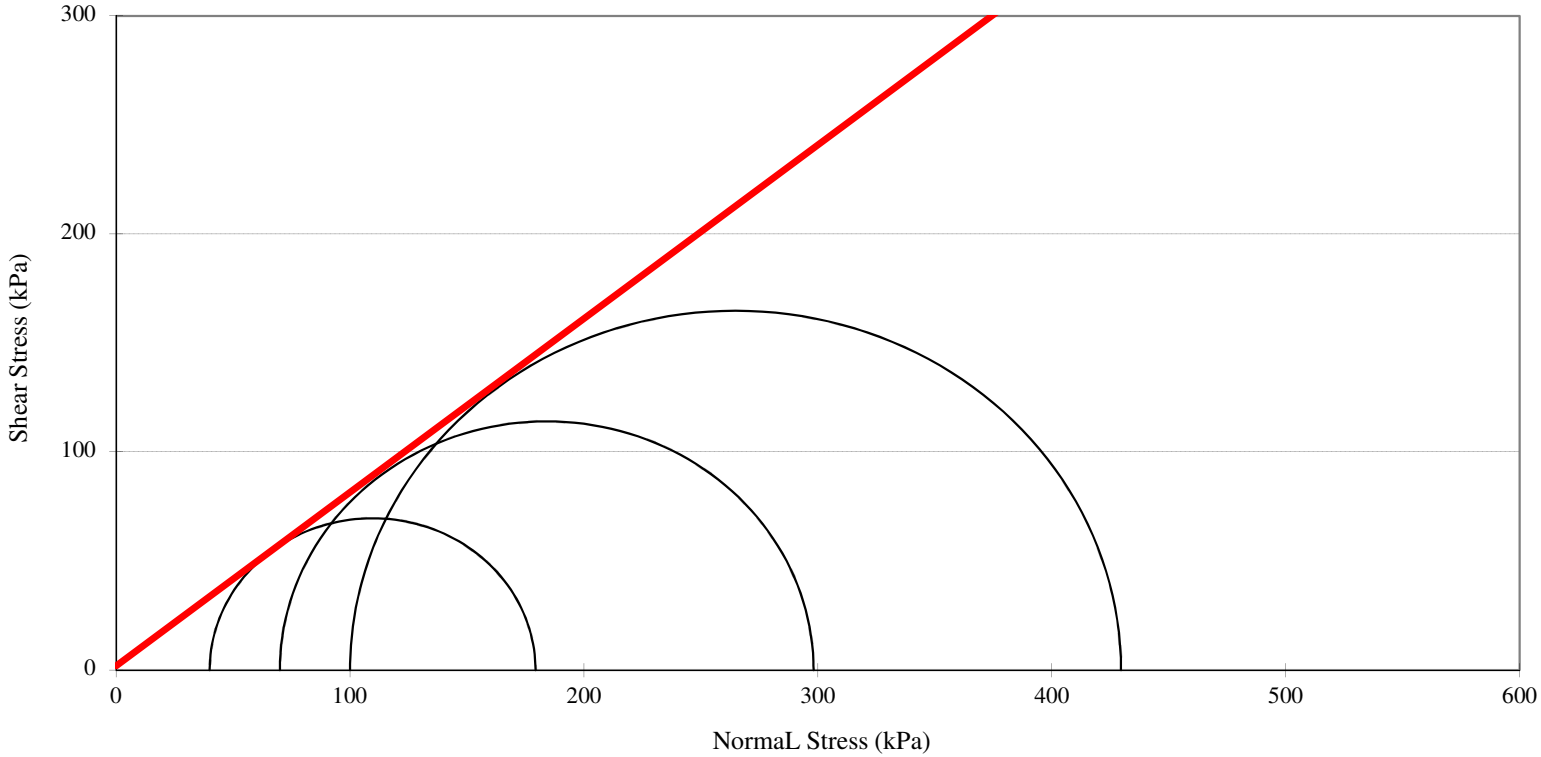
Project No. : S27-14

Borehole No. : LD2-13-3 Soil Type: Clayey Sand

Sample No. : D-3 Depth : 12.00-12.45m

Angle of Internal Friction, ϕ_d 39 deg

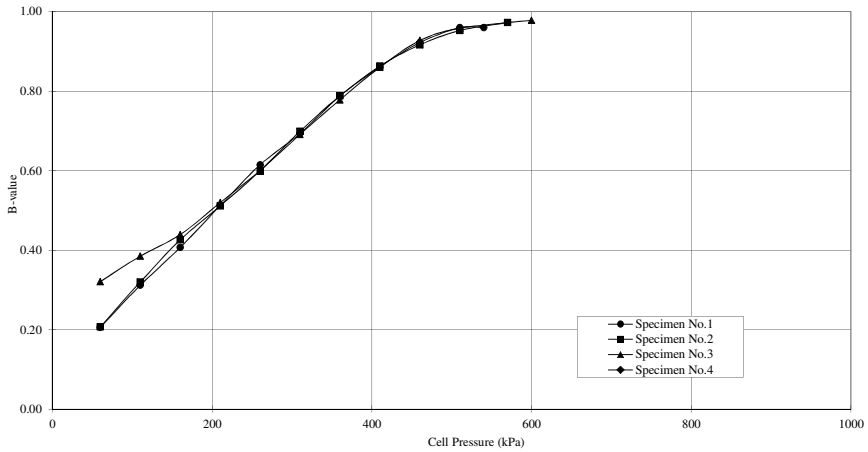
Cohesion, c_d 0 kPa



Consolidated Drained Triaxial Compression Test
With Porewater Pressure Measurement
- B-value Check -

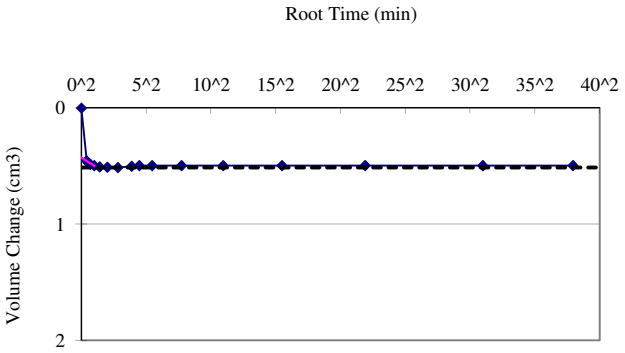
Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14
Borehole No.: LD2-13-3 Depth : 12.00-12.45m
Sample No.: D-3 Soil Type: Clayey Sand

		Result of B-value Check							
		Specimen 1		Specimen 2		Specimen 3		Specimen 4	
		Initial	Final	Initial	Final	Initial	Final	Initial	Final
B-check Step.1	Cell Pressure (kPa)	30	60	30	60	30	60		
	P.W.P (kPa)	20	26.2	20	26.2	20	29.6		
	Back Pressure (kPa)	20		20		20			
	B-value	0.21		0.21		0.32			
B-check Step.2	Cell Pressure (kPa)	60	110	60	110	60	110		
	P.W.P (kPa)	50	65.6	50	66.0	50	69.2		
	Back Pressure (kPa)	50		50		50			
	B-value	0.31		0.32		0.38			
B-check Step.3	Cell Pressure (kPa)	110	160	110	160	110	160		
	P.W.P (kPa)	100	120.4	100	121.3	100	122.0		
	Back Pressure (kPa)	100		100		100			
	B-value	0.41		0.43		0.44			
B-check Step.4	Cell Pressure (kPa)	160	210	160	210	160	210		
	P.W.P (kPa)	150	175.6	150	175.6	150	176.0		
	Back Pressure (kPa)	150		150		150			
	B-value	0.51		0.51		0.52			
B-check Step.5	Cell Pressure (kPa)	210	260	210	260	210	260		
	P.W.P (kPa)	200	230.7	200	230.0	200	230.0		
	Back Pressure (kPa)	200		200		200			
	B-value	0.61		0.60		0.60			
B-check Step.6	Cell Pressure (kPa)	260	310	260	310	260	310		
	P.W.P (kPa)	250	284.7	250	284.9	250	284.6		
	Back Pressure (kPa)	250		250		250			
	B-value	0.69		0.70		0.69			
B-check Step.7	Cell Pressure (kPa)	310	360	310	360	310	360		
	P.W.P (kPa)	300	339.4	300	339.4	300	338.9		
	Back Pressure (kPa)	300		300		300			
	B-value	0.79		0.79		0.78			
B-check Step.8	Cell Pressure (kPa)	360	410	360	410	360	410		
	P.W.P (kPa)	350	393.0	350	393.2	350	393.0		
	Back Pressure (kPa)	350		350		350			
	B-value	0.86		0.86		0.86			
B-check Step.9	Cell Pressure (kPa)	410	460	410	460	410	460		
	P.W.P (kPa)	400	446.1	400	445.8	400	446.4		
	Back Pressure (kPa)	400		400		400			
	B-value	0.92		0.92		0.93			
B-check Step.10	Cell Pressure (kPa)	460	510	460	510	460	510		
	P.W.P (kPa)	450	498.0	450	497.6	450	497.9		
	Back Pressure (kPa)	450		450		450			
	B-value	0.96		0.95		0.96			
B-check Step.11	Cell Pressure (kPa)	510	540	510	570	510	600		
	P.W.P (kPa)	500	528.8	500	558.3	500	588.0		
	Back Pressure (kPa)	500		500		500			
	B-value	0.96		0.97		0.98			



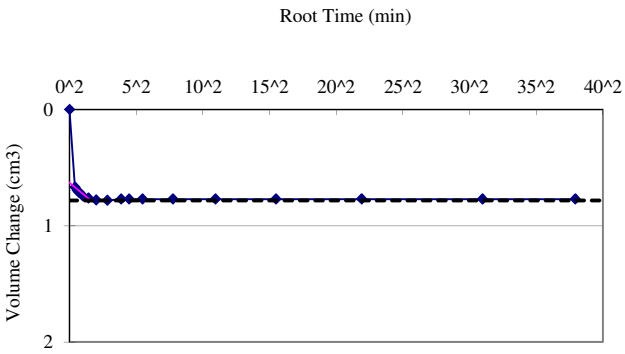
Consolidated Drained Triaxial Compression Test
With Porewater Pressure Measurement
- Volume Change versus Root Time in Consolidation Stages -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14 Borehole No.: LD2-13-3 Soil Type: Clayey Sand
Sample No.: D-3 Depth : 12.00-12.45m



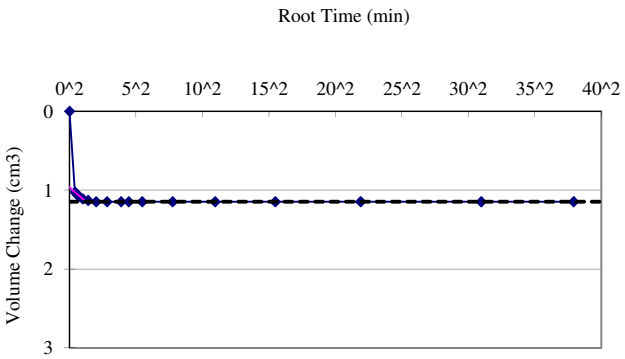
Specimen No.: 1

p' =	40	kPa
t100 =	1.4	min
Cv =	719	m^2/year
mvi=	0.011	m^2/MN



Specimen No.: 2

p' =	70	kPa
t100 =	2.6	min
Cv =	395	m^2/year
mvi=	0.011	m^2/MN



Specimen No.: 3

p' =	100	kPa
t100 =	1.6	min
Cv =	655	m^2/year
mvi=	0.009	m^2/MN

RESULT OF COMPACTION TEST

Project Name : Preparatory Survey on Matarbari USC Coral-fired Power Project **Checked by :** A. B. Tan

Project No. : S27-14 **Site Location :** Bangladesh

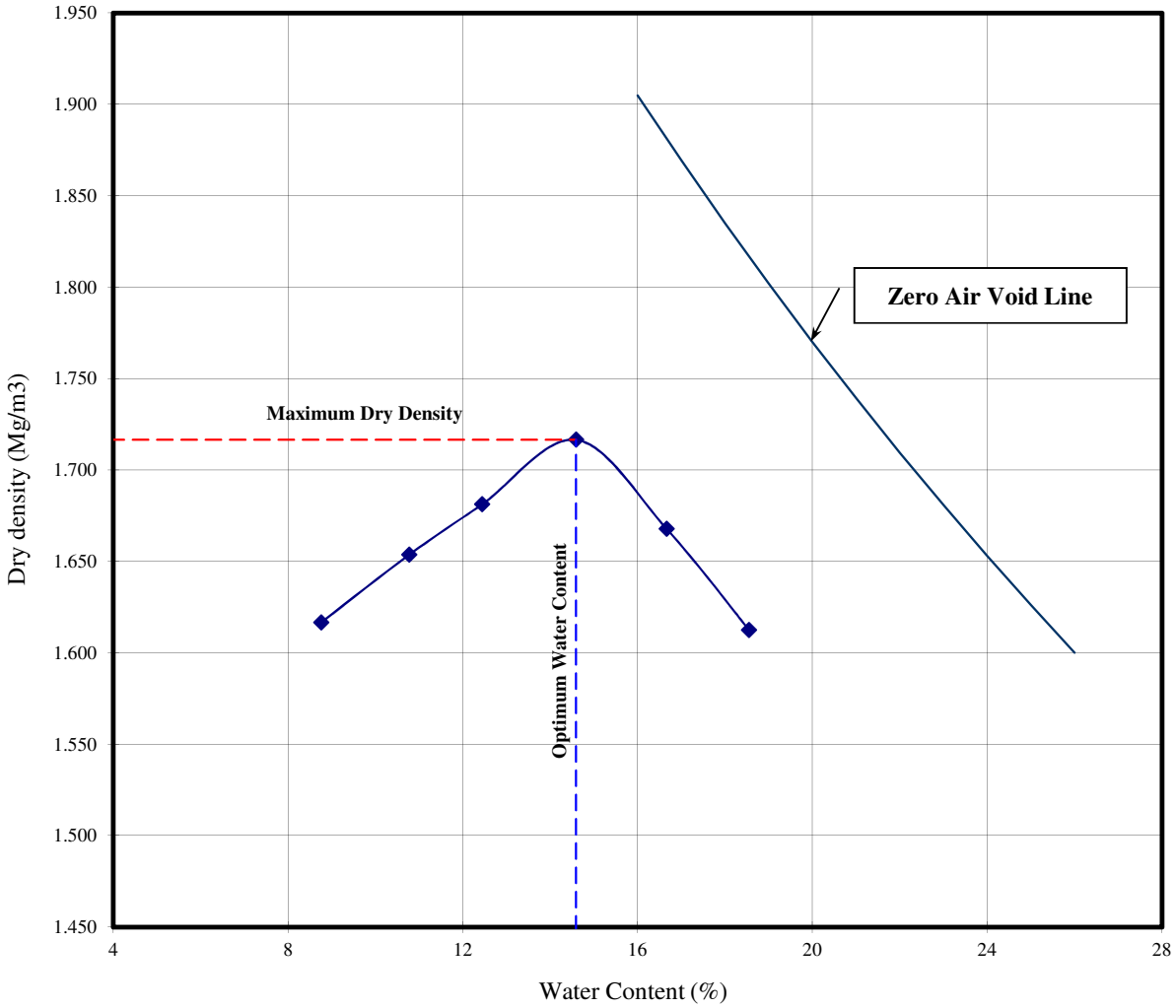
Sampling Date : - **Date of Testing :** 6-Dec-14 **Tested by :** Perera/Bala

Sample No. : LD2-13-3 D-1(3.00-3.80m) **Ref. No.** -

Soil Type :	Silty Sand	**Standared : ASTM D698-07**			**Weight of Rammer :**	2.5 kg
Specific Gravity :	2.74	**Mold**	**Diameter :**	10.11 cm	**Drop Height :**	30.5 cm
Natural Water Content :	N.A.		**Height :**	11.69 cm	**No.of layers :**	3
Water Content after Dried :	N.A.		**Volume :**	938 cm3	**No. of blows / layers :**	25

Specimen No.	1	2	3	4	5	6	7	8
Water Content (%)	8.8	10.8	12.4	14.6	16.7	18.5		
Wet Density (Mg/m3)	1.758	1.832	1.890	1.967	1.946	1.912		
Dry Density (Mg/m3)	1.617	1.654	1.681	1.717	1.668	1.613		

Maximum Dry Density	**1.717 Mg/m3**
Optimum Water Content	**14.6 %**



RESULT OF COMPACTION TEST

Project Name : Preparatory Survey on Matarbari USC Coral-fired Power Project **Checked by :** A. B. Tan

Project No. : S27-14 **Site Location :** Bangladesh

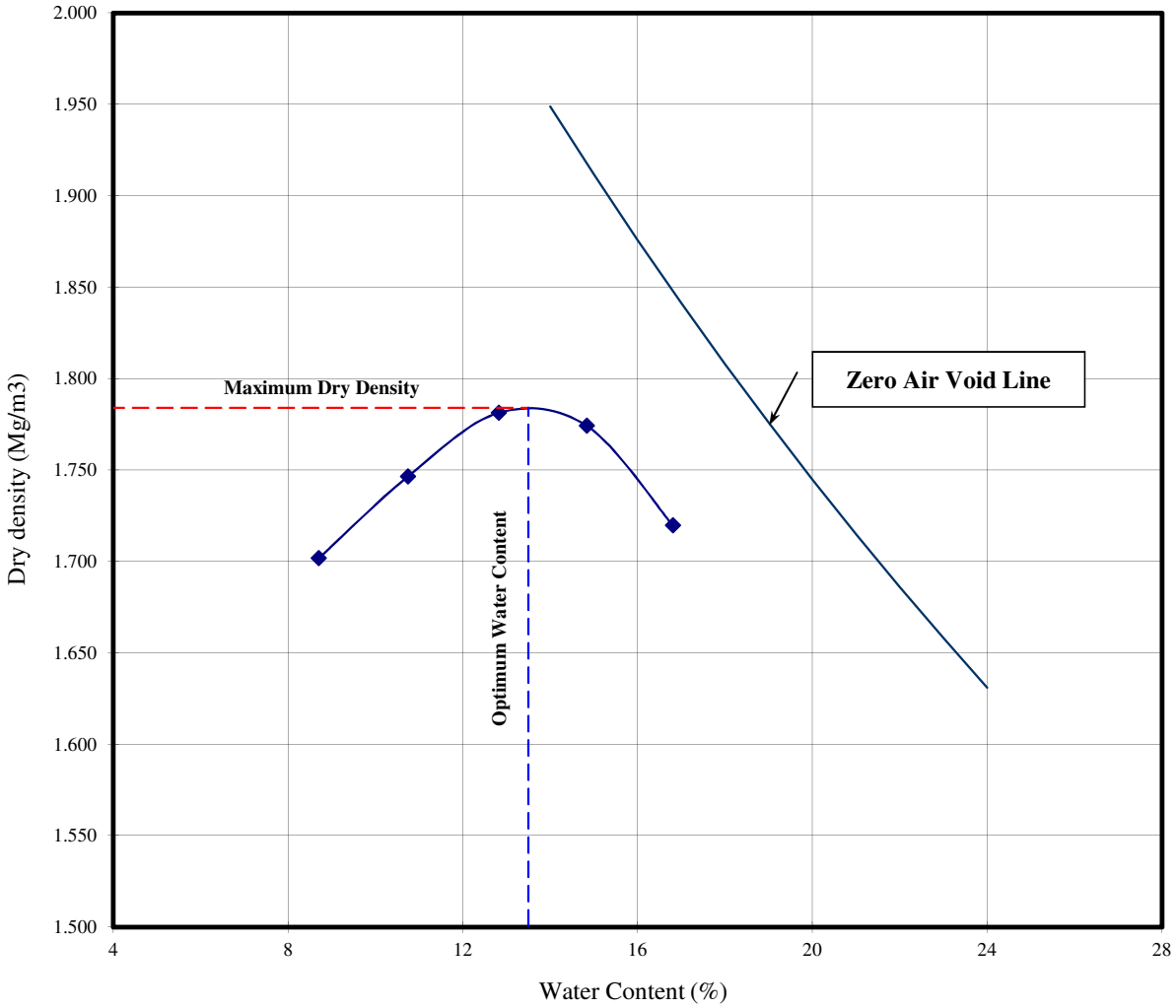
Sampling Date : - **Date of Testing :** 12-Dec-14 **Tested by :** Perera/Bala

Sample No. : LD2-13-3_D-3(12.00-12.45m) **Ref. No.** -

Soil Type :	Clayey Sand	**Standared : ASTM D698-07**		**Weight of Rammer :**	2.5 kg
Specific Gravity :	2.68	**Mold**	**Diameter :** 10.11 cm	**Drop Height :**	30.5 cm
Natural Water Content :	N.A.		**Height :** 11.69 cm	**No.of layers :**	3
Water Content after Dried :	N.A.		**Volume :** 938 cm3	**No. of blows / layers :**	25

Specimen No.	1	2	3	4	5	6	7	8
Water Content (%)	8.7	10.7	12.8	14.8	16.8			
Wet Density (Mg/m3)	1.850	1.934	2.010	2.037	2.009			
Dry Density (Mg/m3)	1.702	1.746	1.781	1.774	1.720			

Maximum Dry Density	**1.784 Mg/m3**
Optimum Water Content	**13.5 %**



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26) PP-14-1

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TABLE SUMMARY OF SOIL TEST

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project** Standard: **ASTM**

Borehole No.		PP-14-1								
Sample No.		HP-1	HP-2	HP-3	D-1					
Sample Depth		1.00m ~1.50m	2.00m ~2.75m	5.00m ~5.80m	8.00m ~8.80m					
Condition of Sample		Undisturbed								
Natural Water Content	%	34.4	49.7	26.5	24.1					
Specific Gravity		2.76	2.74	2.69	2.69					
Wet Density	Mg/m^3	1.78	1.73	1.90	1.93					
Dry Density	Mg/m^3	1.33	1.15	1.51	1.56					
Natural Void Ratio		1.08	1.38	0.79	0.73					
Degree of Saturation	%	88	99	91	89					
Atterberg Limits	Liquid Limit, %	51	57	- *3	- *3					
	Plastic Limit, %	25	27	- *3	- *3					
	Plasticity Index, %	26	30	- *3	- *3					
Grain Size Analysis	Gravel, %	0	0	0	0					
	Sand, %	2	1	56	58					
	Silt, %	36	41	18	18					
	Clay & Colloid, %	62	58	26	24					
	Max. diameter, mm	0.250	0.250	4.75	0.850					
	Diam. at 60% mm	0.0044	0.0056	0.12	0.15					
	Diam. at 10% mm	-	-	-	-					
Visual soil description		Clay	Clay	Clayey Sand	Clayey Sand					
Unified soil classification		CH	CH	-	-					
Triaxial compression test	Angle of Internal Friction (^{0})	-	-	-	-					
	Cohesion Intercept, kPa	-	-	-	-					
	Condition of drainage	-	-	-	-					
	Angle of Internal Friction *2 (^{0})	-	-	-	-					
	Cohesion Intercept, kPa *2	-	-	-	-					
	Condition of drainage	-	-	-	-					
Consolidation Test	Preconsolidation Pressure, kPa	-	-	-	-					
	Compression Index(Average)	-	-	-	-					
	Pressure Range for Compression Index(kPa)	-	-	-	-					
	Swell index	-	-	-	-					
Chemical Test	pH value	-	-	-	-					
	Total sulphate content as SO_3, %	-	-	-	-					
	Chloride content as Cl, %	-	-	-	-					
	Organic Matter content, %	-	-	-	-					
Unconfined Compression Strength (kPa)		-	-	-	-					
Strain at failure (%)		-	-	-	-					

Remarks : Atterberg Limits was tested on material at natural state except those with *1 which was tested on material passing through 0.425mm test sieve.

*2 : In terms of effective stress *3 : Specimen tested contains lots of sand

Checked by :

Kiso-Jiban Consultants Co., Ltd.

ATTERBERG LIMITS DETERMINATION

Project Name : Preparatory Survey on Matarbari USC Coral-fired Power Project Project No. : S27-14

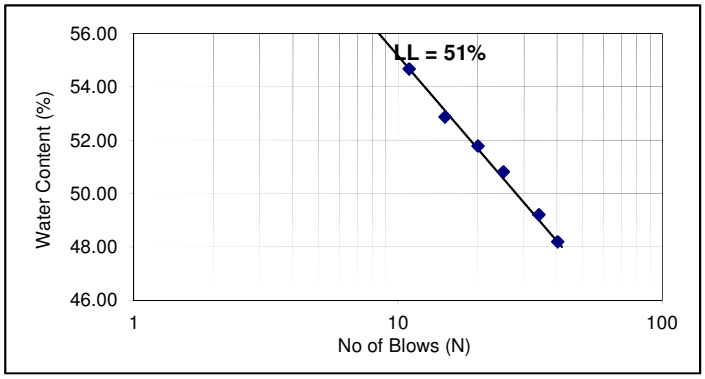
Standard : ASTM D4318-10 Date of Testing : 05.12.14

Tested By : Vasantha Checked By : A. B. Tan

Sample No. : PP-14-1 HP-1 Depth : 1.00-1.50m

Remarks : Tested on material at natural state

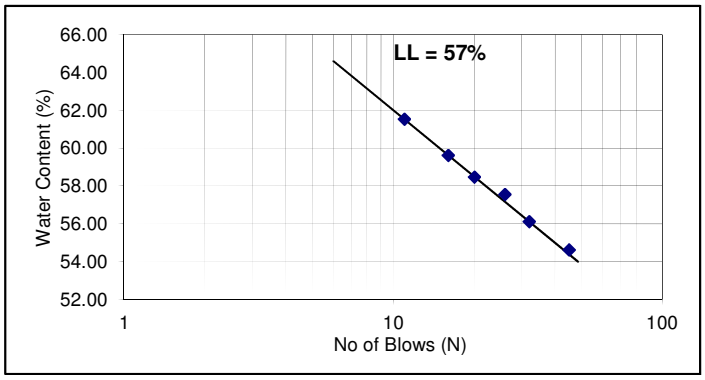
Liquid Limits Test		
Test No.	Blows	Wn
1	40	48.20
2	34	49.20
3	25	50.82
4	20	51.78
5	15	52.86
6	11	54.67
Liquid Limits %		**51**
Plastic Limits %		**25**
Plasticity Index		**26**



Sample No. : PP-14-1 HP-2 Depth : 2.00-2.75m

Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	45	54.63
2	32	56.11
3	26	57.55
4	20	58.47
5	16	59.63
6	11	61.52
Liquid Limits %		**57**
Plastic Limits %		**27**
Plasticity Index		**30**



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Singapore Branch

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GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **04.12.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

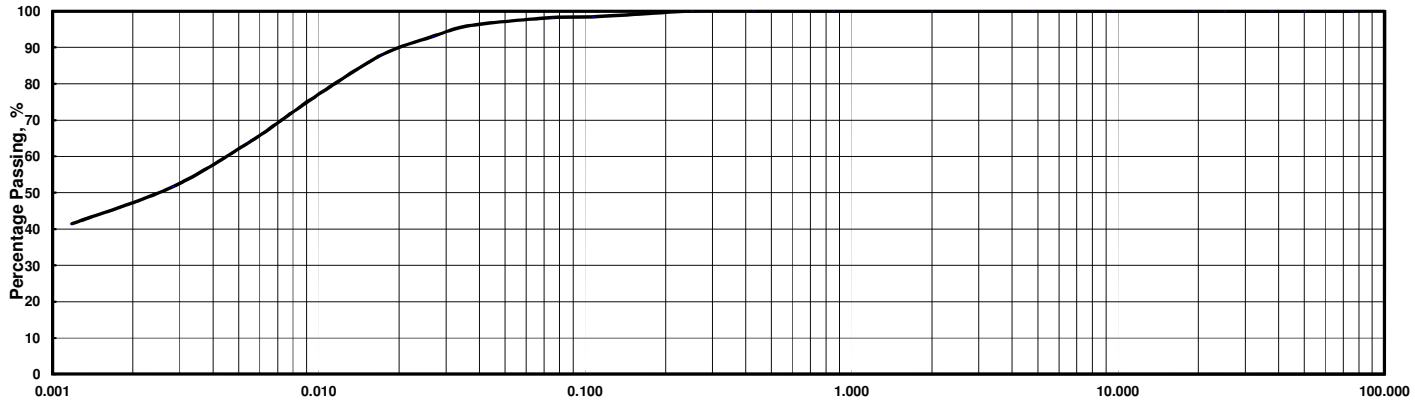
Sample No. : **PP-14-1 HP-1** Depth : **1.00-1.50m** ( ) Specific Gravity : 2.76

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.4	98.2
Hydro.	Dia., mm	0.037	0.027	0.017	0.010	0.0075	0.0054	0.0028	0.0012							
	% Passing	96.1	93.0	88.0	77.9	70.8	63.7	51.6	41.5							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP-14-1 HP-1 1.00-1.50m		Sample No. Depth	PP-14-1 HP-1 1.00-1.50m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.250 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.0044 mm	
2.00 - 0.425 mm	0.0 %		Dia. at 30%	- mm	
0.425 - 0.075 mm	1.8 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	36.5 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	61.8 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	98.2 %				

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GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **04.12.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

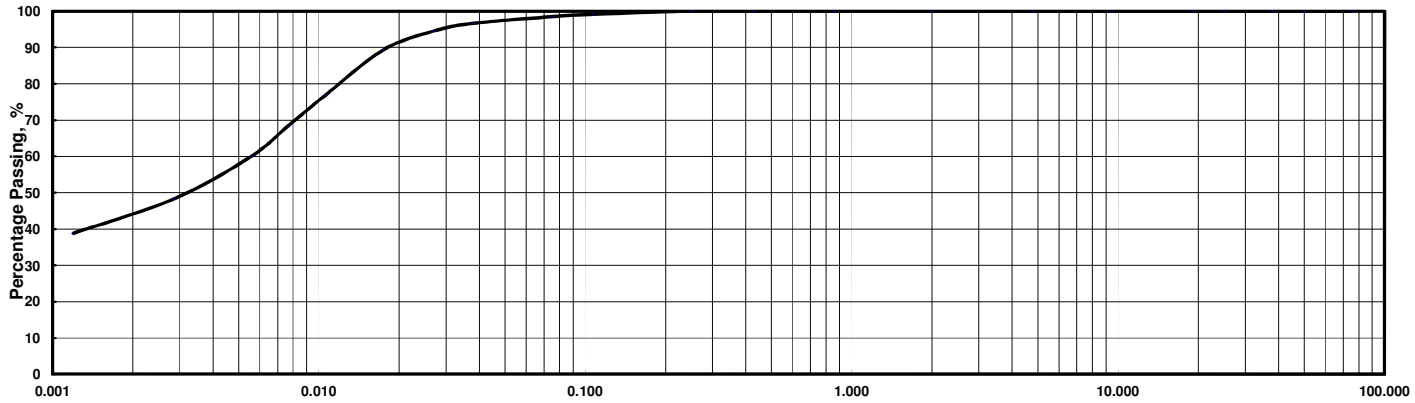
Sample No. : **PP-14-1 HP-2** Depth : **2.00-2.75m** ( ) Specific Gravity : 2.74

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.1	98.5
Hydro.	Dia., mm	0.038	0.027	0.017	0.010	0.0076	0.0055	0.0029	0.0012							
	% Passing	96.6	94.5	89.3	76.7	68.3	59.9	48.3	38.9							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP-14-1 HP-2 2.00-2.75m		Sample No. Depth	PP-14-1 HP-2 2.00-2.75m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.250 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.0056 mm	
2.00 - 0.425 mm	0.0 %		Dia. at 30%	- mm	
0.425 - 0.075 mm	1.5 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	40.9 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	57.6 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	98.5 %				

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GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **04.12.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

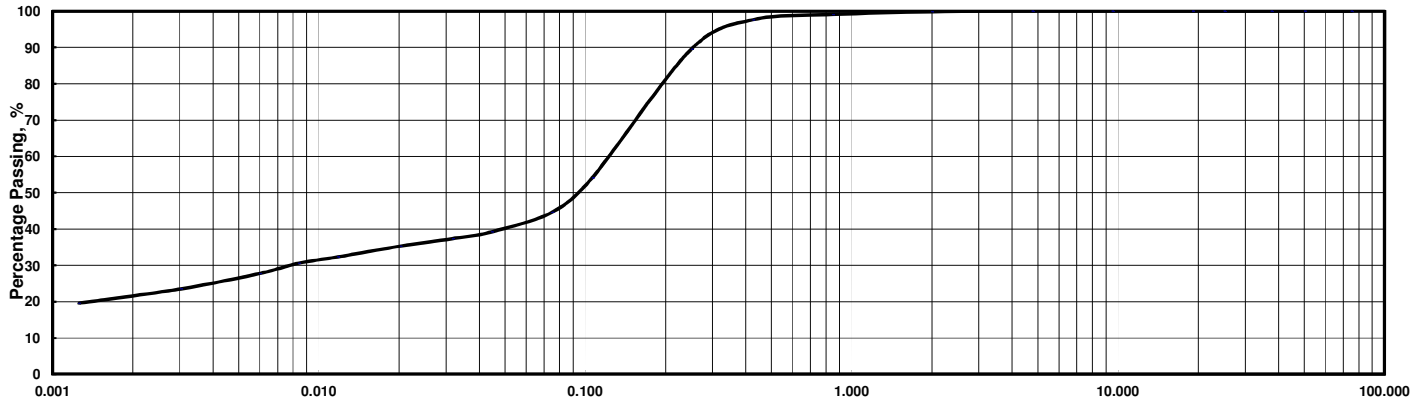
Sample No. : **PP-14-1 HP-3** Depth : **5.00-5.80m** ( ) Specific Gravity : 2.69

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	99.1	97.6	89.6	54.1	44.6
Hydro.	Dia., mm	0.044	0.032	0.020	0.012	0.0084	0.0060	0.0030	0.0013							
	% Passing	39.2	37.3	35.3	32.3	30.6	27.8	23.5	19.6							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP-14-1 HP-3 5.00-5.80m		Sample No. Depth	PP-14-1 HP-3 5.00-5.80m	
Larger than 4.75 mm	0.0 %		Max. Diameter	4.75 mm	
4.75 - 2.00 mm	0.2 %		Dia. at 60%	0.12 mm	
2.00 - 0.425 mm	2.2 %		Dia. at 30%	0.0078 mm	
0.425 - 0.075 mm	53.0 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	18.3 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	26.4 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	99.1 %				
75um Sieve Passing	44.6 %				

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GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **04.12.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

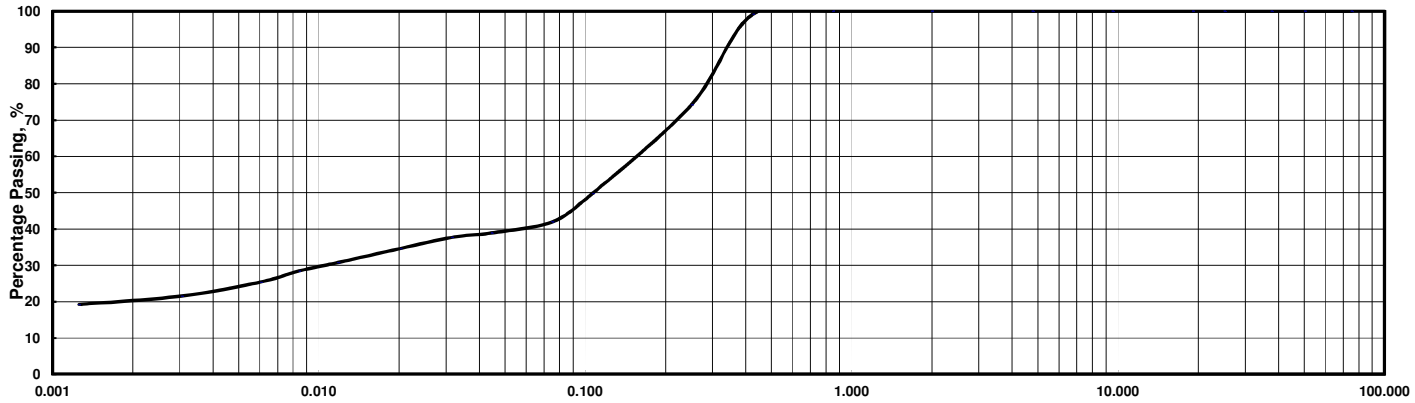
Sample No. : **PP-14-1 D-1** Depth : **8.00-8.80m** ( ) Specific Gravity : 2.69

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.1	74.2	49.7	42.0
Hydro.	Dia., mm	0.044	0.031	0.020	0.012	0.0084	0.0060	0.0030	0.0013							
	% Passing	38.9	37.7	34.6	30.8	28.5	25.4	21.5	19.2							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP-14-1 D-1 8.00-8.80m		Sample No. Depth	PP-14-1 D-1 8.00-8.80m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.850 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.15 mm	
2.00 - 0.425 mm	0.9 %		Dia. at 30%	0.011 mm	
0.425 - 0.075 mm	57.2 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	17.9 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	24.1 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	42.0 %				

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27) PP-14-2

TABLE SUMMARY OF SOIL TEST

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project** Standard: **ASTM**

Borehole No.			PP-14-2								
Sample No.			HP-1	HP-2	HP-3	D-1	D-2	D-3	D-4		
Sample Depth			3.00m ~3.70m	6.00m ~6.80m	9.00m ~9.90m	12.50m ~13.40m	16.00m ~16.80m	19.00m ~19.90m	22.00m ~22.50m		
Condition of Sample			Undisturbed								
Natural Water Content		%	39.8	38.6	36.1	23.2	33.2	32.1	26.6		
Specific Gravity			2.72	2.72	2.71	2.66	2.70	2.72	2.69		
Wet Density		Mg/m^3	1.83	1.84	1.87	-	1.84	1.89	1.88		
Dry Density		Mg/m^3	1.31	1.33	1.37	-	1.38	1.43	1.48		
Natural Void Ratio			1.08	1.05	0.97	-	0.96	0.90	0.82		
Degree of Saturation		%	100	100	100	-	94	97	88		
Atterberg Limits	Liquid Limit,	%	36	38	34	- *3	29	30	- *3		
	Plastic Limit,	%	22	23	21	- *3	22	21	- *3		
	Plasticity Index,	%	14	15	13	- *3	7	9	- *3		
Grain Size Analysis	Gravel,	%	0	0	0	0	0	0	0		
	Sand,	%	17	9	21	97	26	18	56		
	Silt,	%	43	50	43	3	49	53	21		
	Clay & Colloid,	%	40	41	36		25	29	23		
	Max. diameter,	mm	0.850	2.00	2.00	4.75	0.850	0.425	0.850		
	Diam. at 60%	mm	0.020	0.014	0.025	0.29	0.050	0.030	0.12		
	Diam. at 10%	mm	-	-	-	0.11	-	-	-		
Visual soil description			Clay with Sand	Clay	Clay with Sand	Sand	Silty.Clay with Sand	Clay with Sand	Clayey Sand		
Unified soil classification			CL	CL	CL	-	CL-ML	CL	-		
Triaxial compression test	Angle of Internal Friction	(^{0})	0	0	0	-	-	0	-		
	Cohesion Intercept, kPa		22	16	35	-	-	55	-		
	Condition of drainage		UU	UU	UU	-	-	UU	-		
	Angle of Internal Friction *2	(^{0})	-	-	-	-	-	-	-		
	Cohesion Intercept, kPa *2		-	-	-	-	-	-	-		
	Condition of drainage		-	-	-	-	-	-	-		
Consolidation Test	Preconsolidation Pressure,	kPa	75	75	380	-	-	-	-		
	Compression Index(Average)		0.38	0.38	0.27	-	-	0.19	-		
	Pressure Range for Compression Index(kPa)		200-1600	200-1600	800-3200	-	-	1600-3200	-		
	Swell index		0.10	0.10	0.064	-	-	0.038	-		
Chemical Test	pH value		-	-	-	-	-	-	-		
	Total sulphate content as SO_3,	%	-	-	-	-	-	-	-		
	Chloride content as Cl,	%	-	-	-	-	-	-	-		
	Organic Matter content,	%	-	-	-	-	-	-	-		
Unconfined Compression Strength (kPa)			17.1	19.5	258.1 *3	-	-	-	-		
Strain at failure (%)			15.13	9.9	15.21 *3	-	-	-	-		

Remarks : Atterberg Limits was tested on material at natural state except those with *1 which was tested on material passing through 0.425mm test sieve.

*2 : In terms of effective stress *3 : Specimen tested contains lots of sand

Checked by :

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TABLE SUMMARY OF SOIL TEST (Site Laboratory)

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project** Standard: **ASTM**

Borehole No.			PP-14-2							
Sample No.			SPT-8	D-1	SPT-9	SPT-10	D-2	SPT-11	SPT-12	D-3(Sp-1)
Sample Depth			11.00m ~11.45m	12.50m ~13.40m	14.00 ~14.45m	15.00m ~15.45m	16.00m ~16.85m	17.00m ~17.45m	18.00m ~18.45m	19.00m ~19.90m
Condition of Sample			Disturbed							
Atterberg Limits	Liquid Limit,	%	-	-	-	-	-	-	-	-
	Plastic Limit,	%	-	-	-	-	-	-	-	-
	Plasticity Index,	%	-	-	-	-	-	-	-	-
Grain Size Analysis	Gravel,	%	0	0	0	0	0	0	0	0
	Sand,	%	39	95	45	74	61	59	36	52
	Silt,	%	61	5	55	26	39	41	64	48
	Clay & Colloid,	%								
	Max. diameter,	mm	4.75	4.75	4.75	4.75	2.0	4.75	2.00	2.00
	Diam. at 60%	mm	-	0.28	0.12	0.21	0.10	0.09	-	0.11
	Diam. at 10%	mm	-	0.115	-	-	-	-	-	-
Visual soil description			Silty Sand	Sand	Sandy Silt	Silty Sand	Silty Sand	Silty Sand	Silty Clay	Silty Sand
Unified soil classification			-	-	-	-	-	-		-

Remarks : Atterberg Limits was tested on material at natural state except those with *1 which was tested on material passing through 0.425mm test sieve.

*2 : In terms of effective stress *3: Unable to test because samples contain lots of sand

Checked by :

Kiso-Jiban Consultants Co., Ltd.

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TABLE SUMMARY OF SOIL TEST (Site Laboratory)

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project** Standard: **ASTM**

Borehole No.			PP-14-2							
Sample No.			D-3(Sp-4)	SPT-13	SPT-14					
Sample Depth			19.00m ~19.90m	20.00m ~20.45m	21.00m ~21.45m					
Condition of Sample			Disturbed							
Atterberg Limits	Liquid Limit,	%	-	-	-					
	Plastic Limit,	%	-	-	-					
	Plasticity Index,	%	-	-	-					
Grain Size Analysis	Gravel,	%	0	0	0					
	Sand,	%	3	47	52					
	Silt,	%	97	53	48					
	Clay & Colloid,	%								
	Max. diameter,	mm	2.00	0.85	0.85					
	Diam. at 60%	mm	-	0.08	0.11					
	Diam. at 10%	mm	-	-	-					
Visual soil description			Silty Clay	Sandy Clay	Clayey Sand					
Unified soil classification			-	-	-					

Remarks : Atterberg Limits was tested on material at natural state except those with *1 which was tested on material passing through 0.425mm test sieve.

*2 : In terms of effective stress *3: Unable to test because samples contain lots of sand

Checked by :

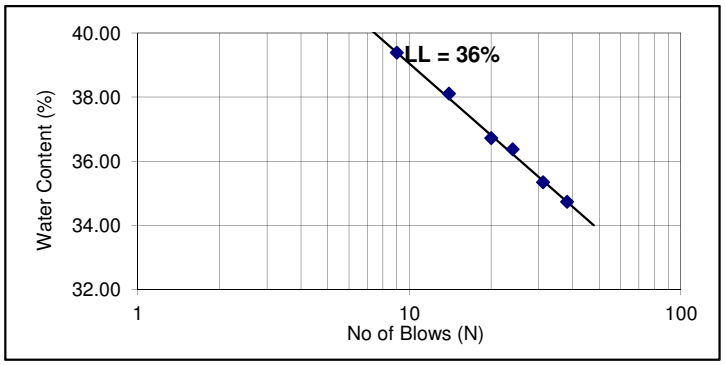
Kiso-Jiban Consultants Co., Ltd.

ATTERBERG LIMITS DETERMINATION

Project Name : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No. : S27-14
Standard : ASTM D4318-10
Date of Testing : 16.10.14
Tested By : Vasantha
Checked By : A. B. Tan

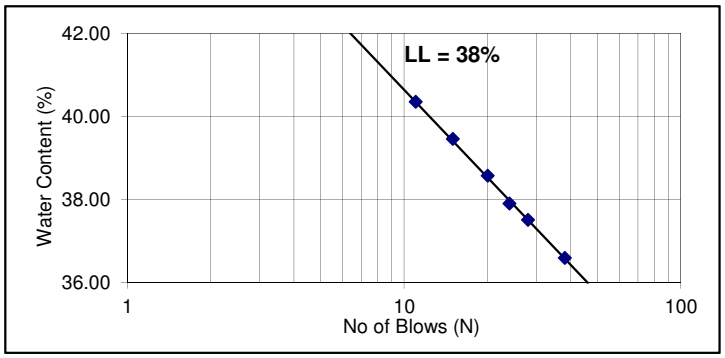
Sample No. : PP14-2 HP-1
Depth : 3.00-3.70m
Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	38	34.74
2	31	35.35
3	24	36.37
4	20	36.72
5	14	38.11
6	9	39.38
Liquid Limits %		**36**
Plastic Limits %		**22**
Plasticity Index		**14**



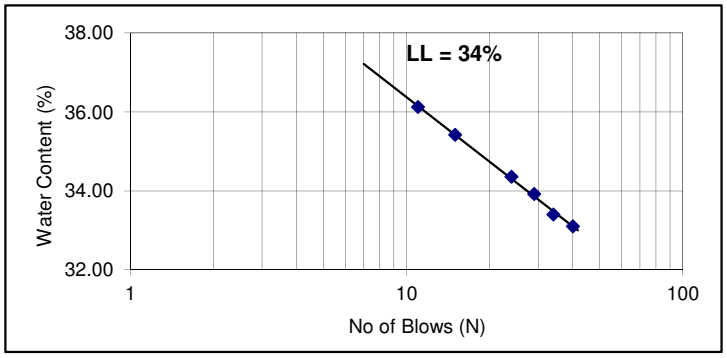
Sample No. : PP14-2 HP-2
Depth : 6.00-6.80m
Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	38	36.59
2	28	37.51
3	24	37.90
4	20	38.57
5	15	39.46
6	11	40.35
Liquid Limits %		**38**
Plastic Limits %		**23**
Plasticity Index		**15**



Sample No. : PP14-2 HP-3
Depth : 9.00-9.90m
Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	40	33.10
2	34	33.40
3	29	33.92
4	24	34.36
5	15	35.42
6	11	36.12
Liquid Limits %		**34**
Plastic Limits %		**21**
Plasticity Index		**13**



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ATTERBERG LIMITS DETERMINATION

Project Name : Preparatory Survey on Matarbari USC Coral-fired Power Project Project No. : S27-14

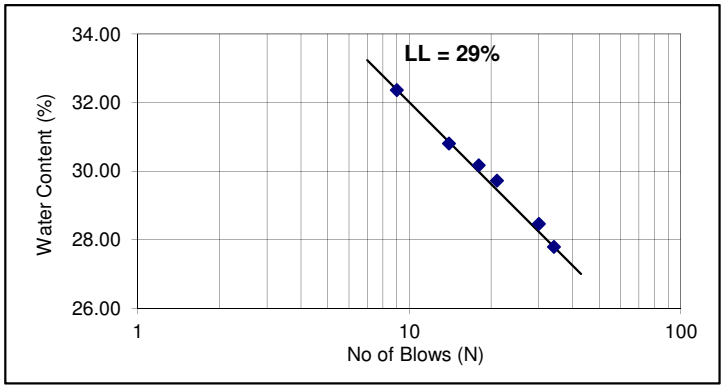
Standard : ASTM D4318-10 Date of Testing : 04.12.14

Tested By : Vasantha Checked By : A. B. Tan

Sample No. : PP14-2 D2 Depth : 16.00-16.80m

Remarks : Tested on material at natural state

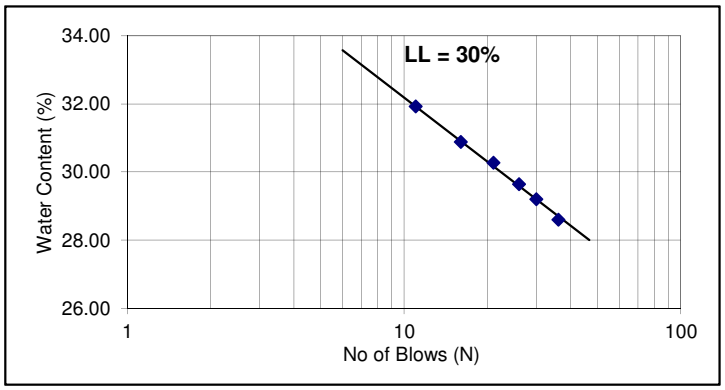
Liquid Limits Test		
Test No.	Blows	Wn
1	34	27.80
2	30	28.46
3	21	29.72
4	18	30.17
5	14	30.81
6	9	32.36
Liquid Limits %		**29**
Plastic Limits %		**22**
Plasticity Index		**7**



Sample No. : PP14-2 D3 Depth : 19.00-19.90m

Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	36	28.60
2	30	29.20
3	26	29.64
4	21	30.27
5	16	30.88
6	11	31.93
Liquid Limits %		**30**
Plastic Limits %		**21**
Plasticity Index		**9**



GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **18.11.14** Tested By : **Motiur** Checked by : **A. B. Tan**

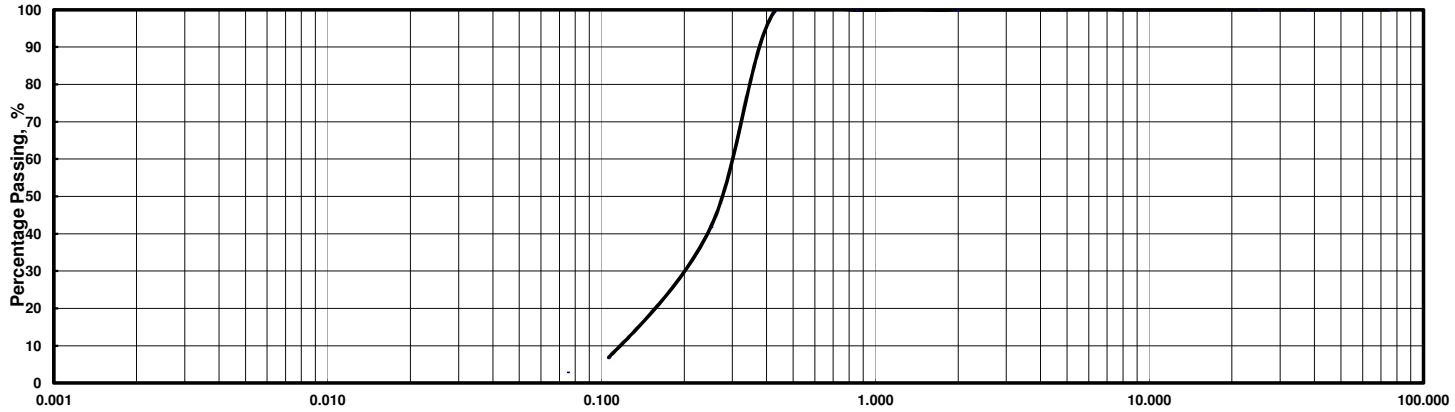
Sample No. : **PP-14-2 D-1** Depth : **12.50-13.40m** ( ) Specific Gravity : 2.66

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.9	99.3	41.7	6.9	2.9
Hydro.	Dia., mm															
	% Passing															

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



Grain Diameter, mm

0.005		0.075	0.425		2.00	4.75		19.0		75.0
CLAY		FINE	MEDIUM		COARSE	FINE		COARSE		
	SILT	SAND				GRAVEL				

Sample No. Depth	PP-14-2 D-1 12.50-13.40m		Sample No. Depth	PP-14-2 D-1 12.50-13.40m	
Larger than 4.75 mm	0.0 %		Max. Diameter	4.75 mm	
4.75 - 2.00 mm	0.1 %		Dia. at 60%	0.30 mm	
2.00 - 0.425 mm	0.6 %		Dia. at 30%	0.19 mm	
0.425 - 0.075 mm	96.4 %		Dia. at 10%	0.11 mm	
0.075 - 0.005 mm	2.9 %		Coeff. of Uniformity	2.58	
Smaller than 0.005 mm			Coeff. of Curvature	1.04	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	99.9 %				
75um Sieve Passing	2.9 %				

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **02.12.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

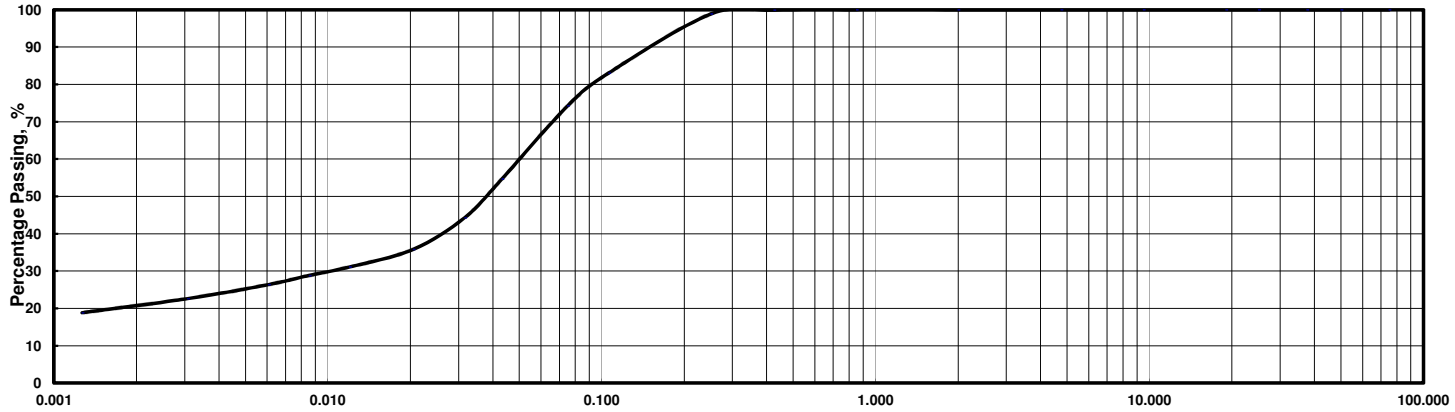
Sample No. : **PP14-2 D-2** Depth : **16.00-16.80m** ( ) Specific Gravity : 2.70

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	98.8	83.0	74.2
Hydro.	Dia., mm	0.043	0.032	0.020	0.012	0.0085	0.0061	0.0031	0.0013							
	% Passing	54.6	44.3	35.8	31.1	28.8	26.4	22.6	18.8							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



Grain Diameter, mm

0.005		0.075	0.425		2.00	4.75	19.0		75.0
CLAY		FINE	MEDIUM		COARSE	FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP14-2 D-2 16.00-16.80m		Sample No. Depth	PP14-2 D-2 16.00-16.80m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.850 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.050 mm	
2.00 - 0.425 mm	0.1 %		Dia. at 30%	0.010 mm	
0.425 - 0.075 mm	25.6 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	49.2 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	25.0 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	74.2 %				

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **04.12.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

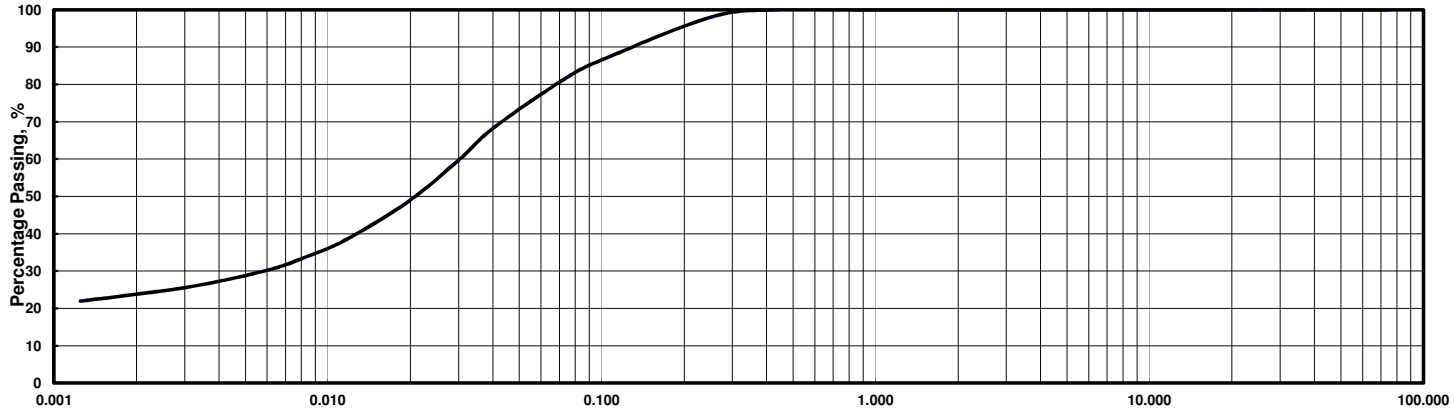
Sample No. : **PP-14-2 D-3** Depth : **19.00-19.90m** ( ) Specific Gravity : 2.72

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.0	87.3	82.0
Hydro.	Dia., mm	0.041	0.030	0.020	0.012	0.0083	0.0060	0.0030	0.0012							
	% Passing	68.6	59.4	48.5	38.4	33.8	30.2	25.6	21.9							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



Grain Diameter, mm

0.005		0.075	0.425		2.00	4.75	19.0		75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP-14-2 D-3 19.00-19.90m		Sample No. Depth	PP-14-2 D-3 19.00-19.90m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.425 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.030 mm	
2.00 - 0.425 mm	0.0 %		Dia. at 30%	0.0058 mm	
0.425 - 0.075 mm	18.0 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	53.3 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	28.7 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	82.0 %				

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **21.11.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

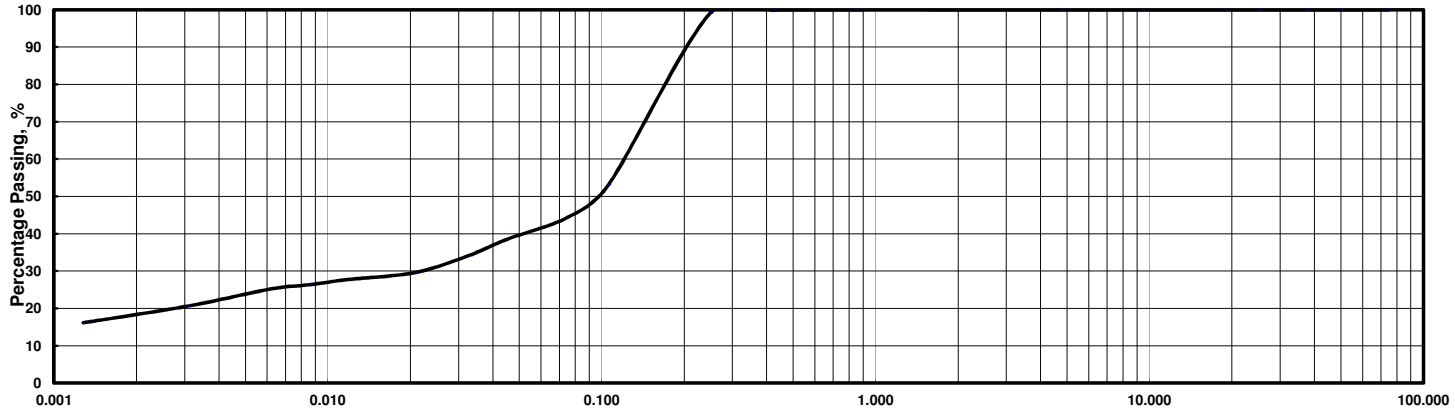
Sample No. : **PP-14-2 D-4** Depth : **22.00-22.50m** ( ) Specific Gravity : 2.69

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.2	53.2	44.4
Hydro.	Dia., mm	0.045	0.033	0.021	0.012	0.0086	0.0061	0.0031	0.0013							
	% Passing	38.6	34.1	29.6	27.8	26.4	25.1	20.6	16.1							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



Grain Diameter, mm

0.005		0.075	0.425		2.00	4.75	19.0		75.0
CLAY		FINE	MEDIUM		COARSE	FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP-14-2 D-4 22.00-22.50m		Sample No. Depth	PP-14-2 D-4 22.00-22.50m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.850 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.12 mm	
2.00 - 0.425 mm	0.1 %		Dia. at 30%	0.022 mm	
0.425 - 0.075 mm	55.6 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	20.9 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	23.5 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	44.4 %				

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **16.09.14** Tested By : **Htet Paing/Shariful** Checked by : **A. B. Tan**

Sample No. : **PP14-2 HP-1** Depth : **3.00-3.70m** ( ) Specific Gravity : 2.72

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.4	90.1	82.8
Hydro.	Dia., mm	0.040	0.029	0.019	0.011	0.0080	0.0057	0.0029	0.0012							
	% Passing	73.1	67.1	58.9	50.8	46.2	41.7	34.4	24.5							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves

Grain Diameter, mm

0.005		0.075	0.425		2.00	4.75	19.0		75.0
CLAY		FINE	MEDIUM		COARSE	FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP14-2 HP-1 3.00-3.70m		Sample No. Depth	PP14-2 HP-1 3.00-3.70m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.850 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.020 mm	
2.00 - 0.425 mm	0.1 %		Dia. at 30%	0.0020 mm	
0.425 - 0.075 mm	17.1 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	43.0 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	39.8 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	82.8 %				

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **16.09.14** Tested By : **Htet Paing/Shariful** Checked by : **A. B. Tan**

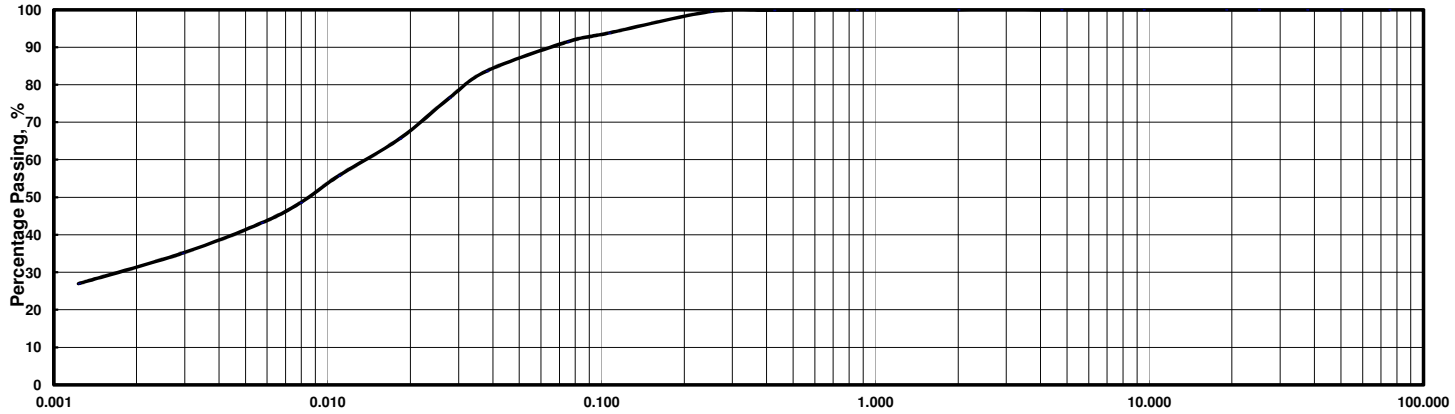
Sample No. : **PP14-2 HP-2** Depth : **6.00-6.80m** ( ) Specific Gravity : 2.72

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.9	99.5	93.8	91.4
Hydro.	Dia., mm	0.038	0.028	0.018	0.011	0.0079	0.0057	0.0029	0.0012							
	% Passing	83.6	76.4	65.6	55.8	48.6	43.2	35.1	27.0							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



Grain Diameter, mm

0.005		0.075	0.425		2.00	4.75	19.0		75.0
CLAY			FINE	MEDIUM	COARSE		FINE	COARSE	
	SILT		SAND				GRAVEL		

Sample No. Depth	PP14-2 HP-2 6.00-6.80m		Sample No. Depth	PP14-2 HP-2 6.00-6.80m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.014 mm	
2.00 - 0.425 mm	0.1 %		Dia. at 30%	0.0017 mm	
0.425 - 0.075 mm	8.4 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	50.4 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	41.1 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	99.9 %				
75um Sieve Passing	91.4 %				

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **16.09.14** Tested By : **Htet Paing/Shariful** Checked by : **A. B. Tan**

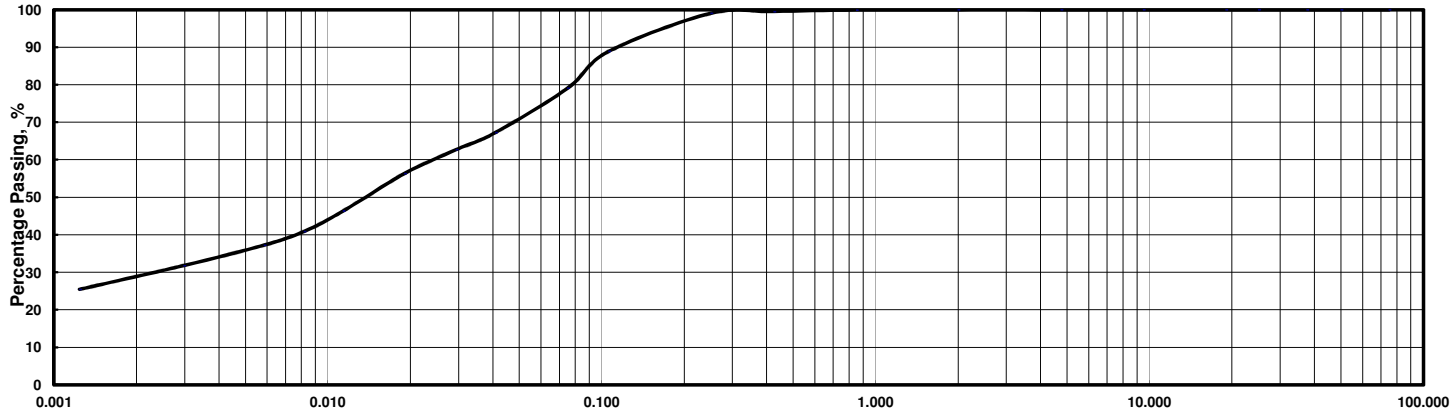
Sample No. : **PP14-2 HP-3** Depth : **9.00-9.90m** ( ) Specific Gravity : 2.71

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.5	99.0	88.9	79.1
Hydro.	Dia., mm	0.041	0.029	0.019	0.011	0.0082	0.0059	0.0030	0.0012							
	% Passing	67.2	62.7	56.3	46.3	40.9	37.3	31.8	25.4							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



Grain Diameter, mm

0.005	0.075	0.425	2.00	4.75	19.0	75.0
CLAY	FINE	MEDIUM	COARSE	FINE	COARSE	
	SILT	SAND		GRAVEL		

Sample No. Depth	PP14-2 HP-3 9.00-9.90m		Sample No. Depth	PP14-2 HP-3 9.00-9.90m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.025 mm	
2.00 - 0.425 mm	0.5 %		Dia. at 30%	0.0023 mm	
0.425 - 0.075 mm	20.5 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	43.4 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	35.6 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	99.9 %				
75um Sieve Passing	79.1 %				

UNCONFINED COMPRESSION TEST

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No. : S27-14

Standard : ASTM D2166-06

Date of Testing : 15.09.14

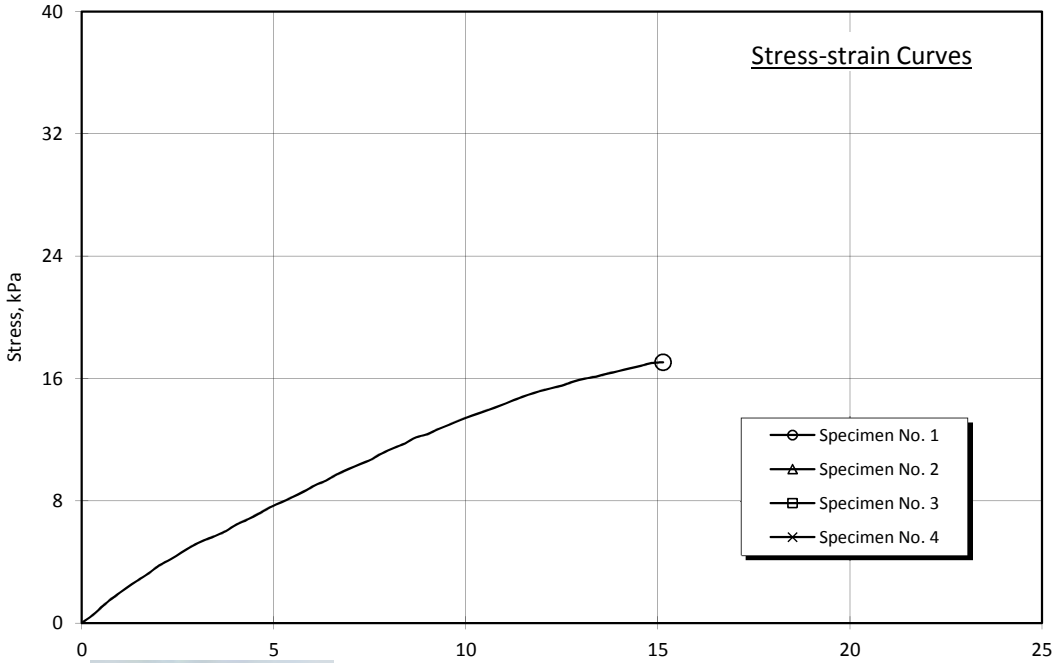
Borehole No.: PP-14-2 Depth 3.00-3.80m

Tested by : Perera

Sample No. : HP-1 Strain Rate 1.00 %/min

Checked by : A. B. Tan

Specimen No.	Condition of Sample	Size of Specimen (mm)		Natural Water Content	Bulk Density	Dy Density	Unconfined Compressive Strength	Shear Strength	Coefficient of Deformation	Corrected Initial Strain	Strain at Failure
		Height	Diameter	(%)	(Mg/m3)	(Mg/m3)	(kPa)	(kPa)	E50 (kPa)	(%)	(%)
1	Undisturbed	85.50	50.00	40.9	1.83	1.30	17.1	8.5	149	N/A	15.13



After shearing (Spec. 1)

After shearing (Spec. 2)

After shearing (Spec. 3)

Remarks : - [Strain at failure]=[Recorded strain at failure] - [Corrected Initial Strain]

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Singapore Branch

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UNCONFINED COMPRESSION TEST

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No. : S27-14

Standard : ASTM D2166-06

Date of Testing : 15.09.14

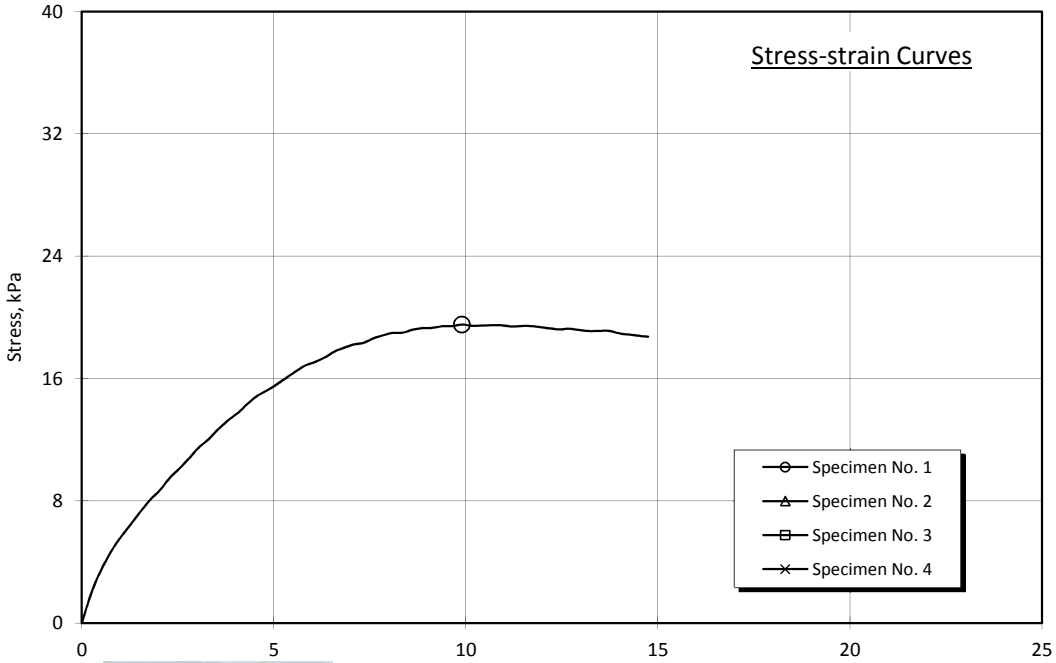
Borehole No.: PP14-2 Depth 6.00-6.80m

Tested by : Perera

Sample No. : HP-2 Strain Rate 1.00 %/min

Checked by : A. B. Tan

Specimen No.	Condition of Sample	Size of Specimen (mm)		Natural Water Content	Bulk Density	Dy Density	Unconfined Compressive Strength	Shear Strength	Coefficient of Deformation	Corrected Initial Strain	Strain at Failure
		Height	Diameter	(%)	(Mg/m3)	(Mg/m3)	(kPa)	(kPa)	E50 (kPa)	(%)	(%)
1	Undisturbed	97.80	50.00	34.1	1.87	1.39	19.5	9.8	406	N/A	9.90



After shearing (Spec. 1)

After shearing (Spec. 2)

After shearing (Spec. 3)

Remarks : - [Strain at failure]=[Recorded strain at failure] - [Corrected Initial Strain]

Kiso-Jiban Consultants Co Ltd
Singapore Branch

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UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No. : S27-14

Standard : ASTM D2850

Date of Testing : 15.09.14

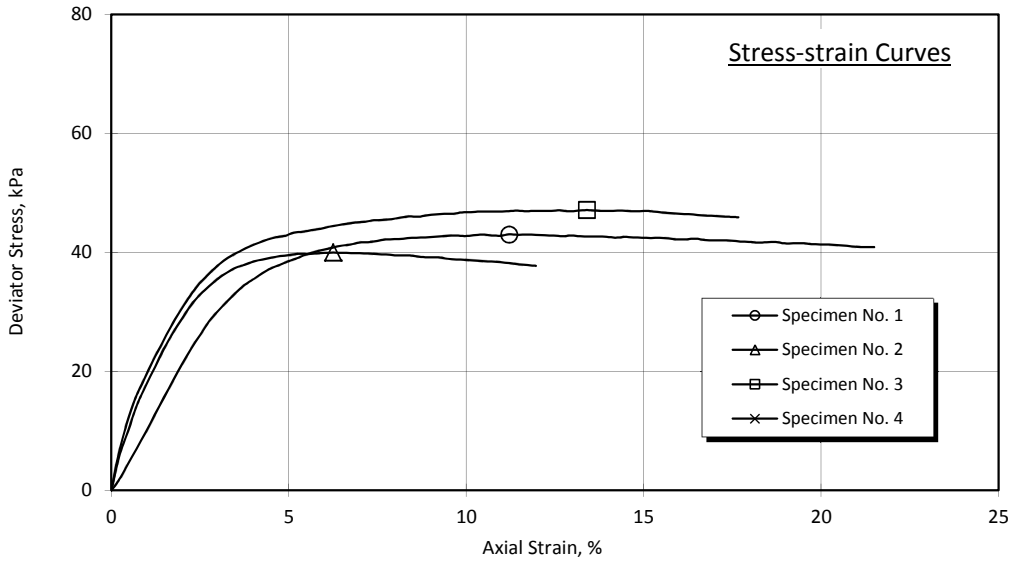
Borehole No.: PP-14-2 Depth : 3.00-3.70m

Tested by : Perera

Sample No. : HP-1 Strain Rate 1.00 %/min

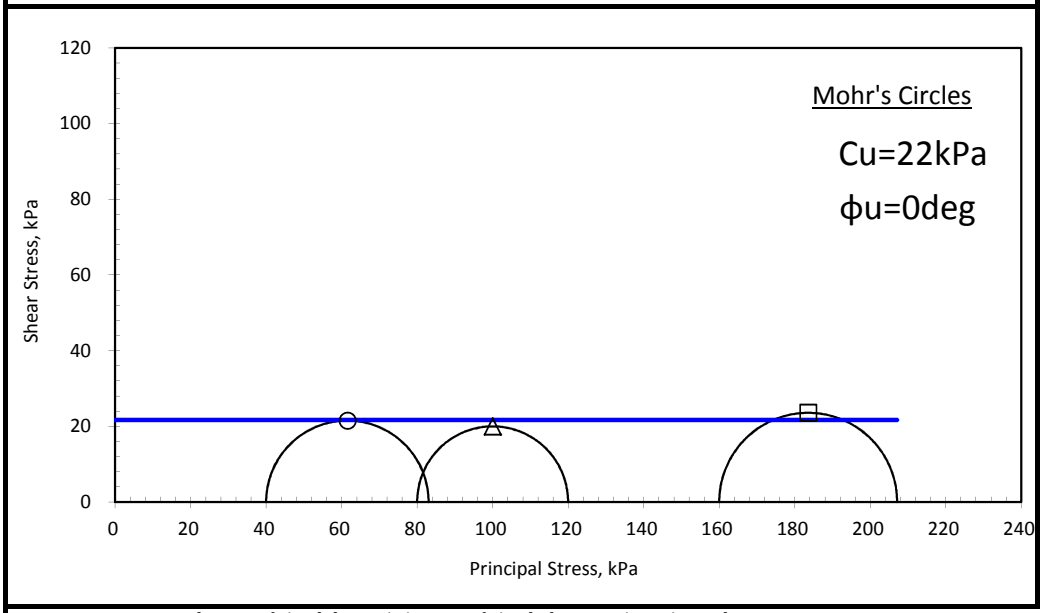
Checked by : A. B. Tan

Specimen No.	Condition of Sample	Size of Specimen (mm)		Natural Water Content	Bulk Density	Dy Density	Cell Pressure	Peak Deviator Stress	Modulus of Deformation	Corrected Initial Strain	Strain at Failure
		Height	Diameter	(%)	(Mg/m3)	(Mg/m3)	(kPa)	(kPa)	E50 (kPa)	(%)	(%)
1	Undisturbed	99.80	50.00	37.1	1.83	1.34	40	43.0	1064	N/A	11.20
2	Undisturbed	99.80	50.00	46.3	1.76	1.20	80	40.0	1715	N/A	6.25
3	Undisturbed	99.80	50.00	40.1	1.74	1.24	160	47.1	1774	N/A	13.40
4											




After shearing (Spec. 1)


After shearing (Spec. 2)




After shearing (Spec. 3)

After shearing (Spec. 4)

Remarks :
- [Strain at failure]=[Recorded strain at failure] - [Corrected Initial Strain]
- Latex membrane with 0.2mm in thickness is used.
- Membrane correction is carried out based on BS 1377 : 1990

Portion Tested

UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No. : S27-14

Standard : ASTM D2850

Date of Testing : 15.09.14

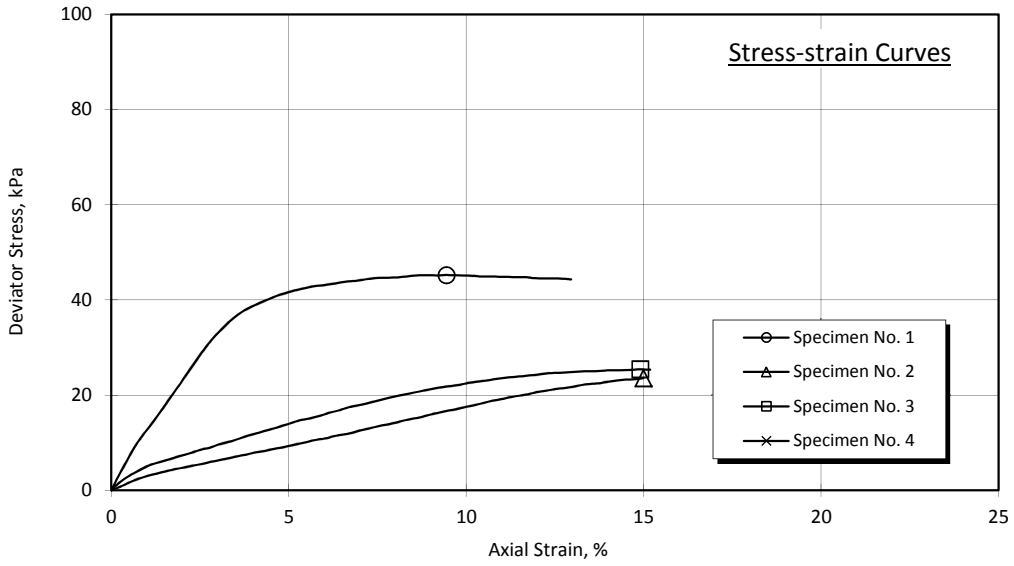
Borehole No.: PP-14-2 Depth : 6.00-6.80m

Tested by : Perera

Sample No. : HP-2 Strain Rate 1.00 %/min

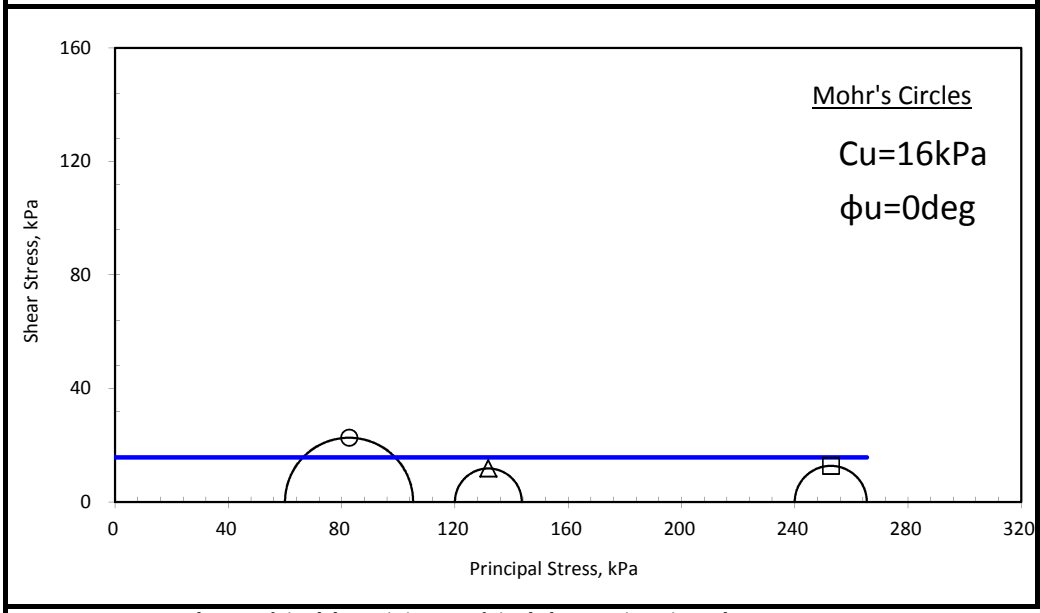
Checked by : A. B. Tan

Specimen No.	Condition of Sample	Size of Specimen (mm)		Natural Water Content	Bulk Density	Dy Density	Cell Pressure	Peak Deviator Stress	Modulus of Deformation	Corrected Initial Strain	Strain at Failure
		Height	Diameter	(%)	(Mg/m3)	(Mg/m3)	(kPa)	(kPa)	E50 (kPa)	(%)	(%)
1	Undisturbed	99.80	50.00	40.2	1.83	1.30	60	45.2	1154	N/A	9.44
2	Undisturbed	99.80	50.00	44.8	1.65	1.14	120	23.6	179	N/A	14.99
3	Undisturbed	88.20	50.00	39.5	1.87	1.34	240	25.4	287	N/A	14.90
4											




After shearing (Spec. 1)


After shearing (Spec. 2)

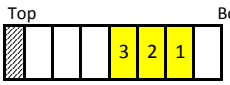



After shearing (Spec. 3)

After shearing (Spec. 4)

Remarks :
- [Strain at failure]=[Recorded strain at failure] - [Corrected Initial Strain]
- Latex membrane with 0.2mm in thickness is used.
- Membrane correction is carried out based on BS 1377 : 1990

Portion Tested



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UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No. : S27-14

Standard : ASTM D2850

Date of Testing : 15.09.14

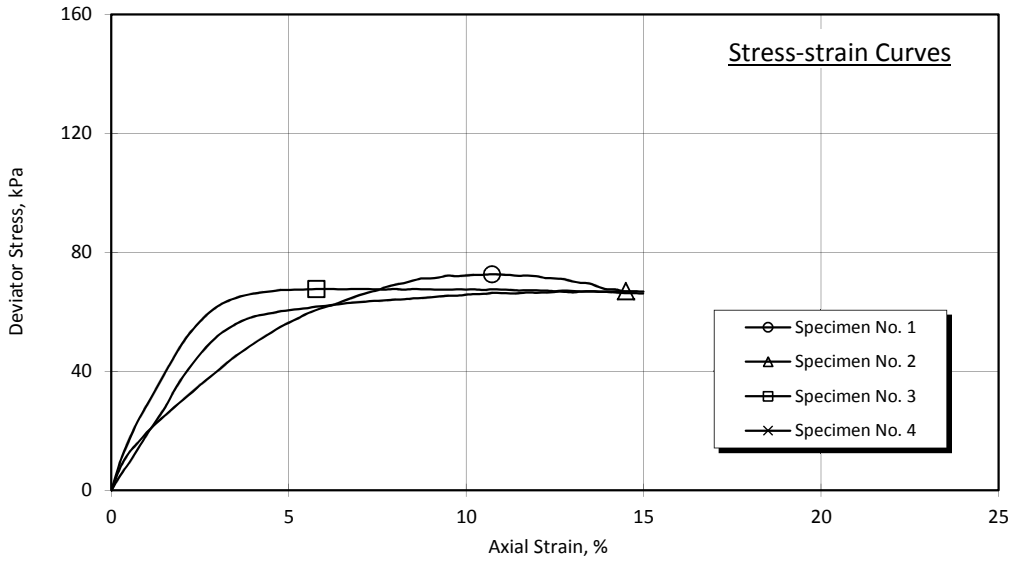
Borehole No.: PP-14-2 Depth : 9.00-9.90m

Tested by : Perera

Sample No. : HP-3 Strain Rate 1.00 %/min

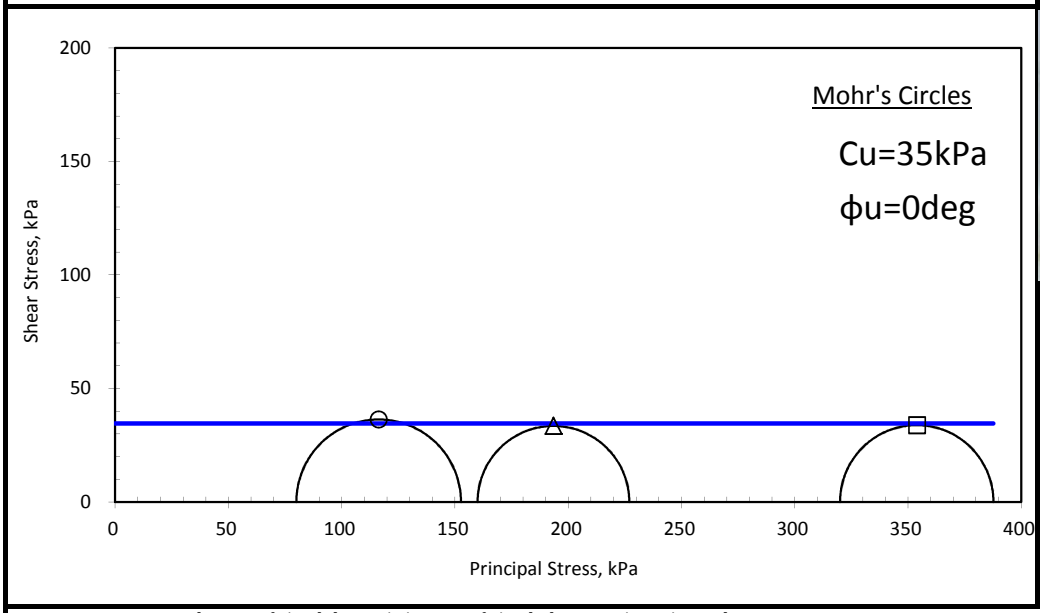
Checked by : A. B. Tan

Specimen No.	Condition of Sample	Size of Specimen (mm)		Natural Water Content	Bulk Density	Dy Density	Cell Pressure	Peak Deviator Stress	Modulus of Deformation	Corrected Initial Strain	Strain at Failure
		Height	Diameter	(%)	(Mg/m3)	(Mg/m3)	(kPa)	(kPa)	E50 (kPa)	(%)	(%)
1	Undisturbed	99.80	50.00	37.0	1.83	1.33	80	72.6	1400	N/A	10.72
2	Undisturbed	99.80	50.00	37.6	1.80	1.30	160	66.9	1895	N/A	14.50
3	Undisturbed	99.80	50.00	42.0	1.79	1.26	320	67.7	2717	N/A	5.77
4											




After shearing (Spec. 1)


After shearing (Spec. 2)

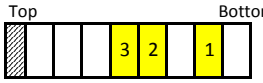



After shearing (Spec. 3)

After shearing (Spec. 4)

Remarks :
- [Strain at failure]=[Recorded strain at failure] - [Corrected Initial Strain]
- Latex membrane with 0.2mm in thickness is used.
- Membrane correction is carried out based on BS 1377 : 1990

Portion Tested



UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No. : S27-14

Standard : ASTM D2850-03a

Date of Testing : 01.12.14

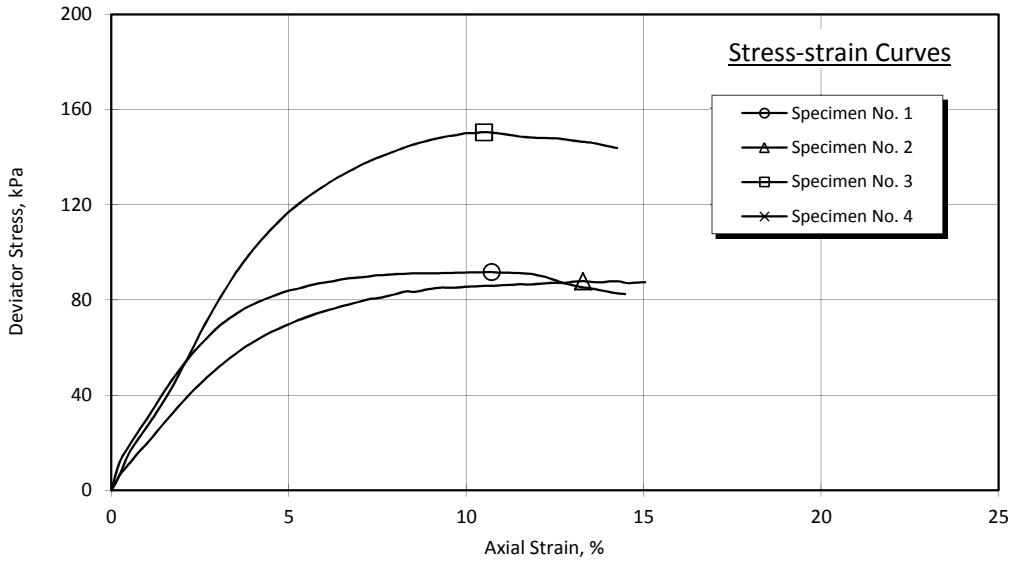
Borehole No.: PP-14-2 Depth : 19.00-19.90m

Tested by : Perera

Sample No. : D-3 Strain Rate 1.00 %/min

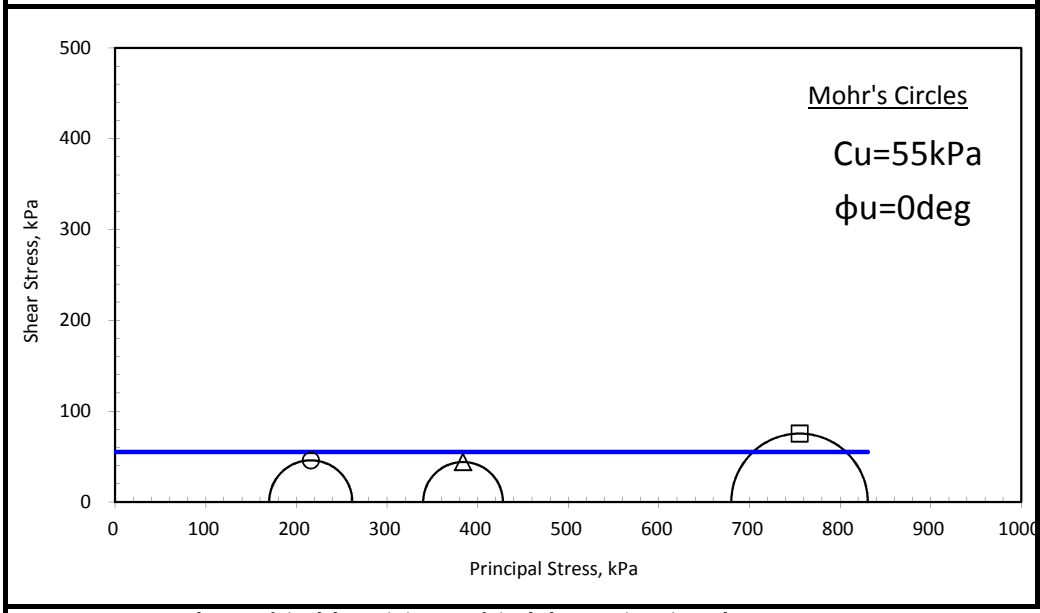
Checked by : A. B. Tan

Specimen No.	Condition of Sample	Size of Specimen (mm)		Natural Water Content	Bulk Density	Dy Density	Cell Pressure	Peak Deviator Stress	Modulus of Deformation	Corrected Initial Strain	Strain at Failure
		Height	Diameter	(%)	(Mg/m3)	(Mg/m3)	(kPa)	(kPa)	E50 (kPa)	(%)	(%)
1	Undisturbed	99.80	50.00	31.4	1.85	1.41	170	91.7	2720	N/A	10.71
2	Undisturbed	99.80	50.00	34.0	1.87	1.40	340	87.9	1796	N/A	13.29
3	Undisturbed	99.80	50.00	30.8	1.88	1.44	680	150.5	2647	N/A	10.49
4											




After shearing (Spec. 1)


After shearing (Spec. 2)

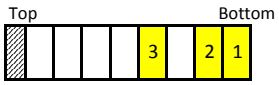



After shearing (Spec. 3)

After shearing (Spec. 4)

Remarks :
- [Strain at failure]=[Recorded strain at failure] - [Corrected Initial Strain]
- Latex membrane with 0.2mm in thickness is used.
- Membrane correction is carried out based on BS 1377 : 1990

Portion Tested



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Singapore Branch

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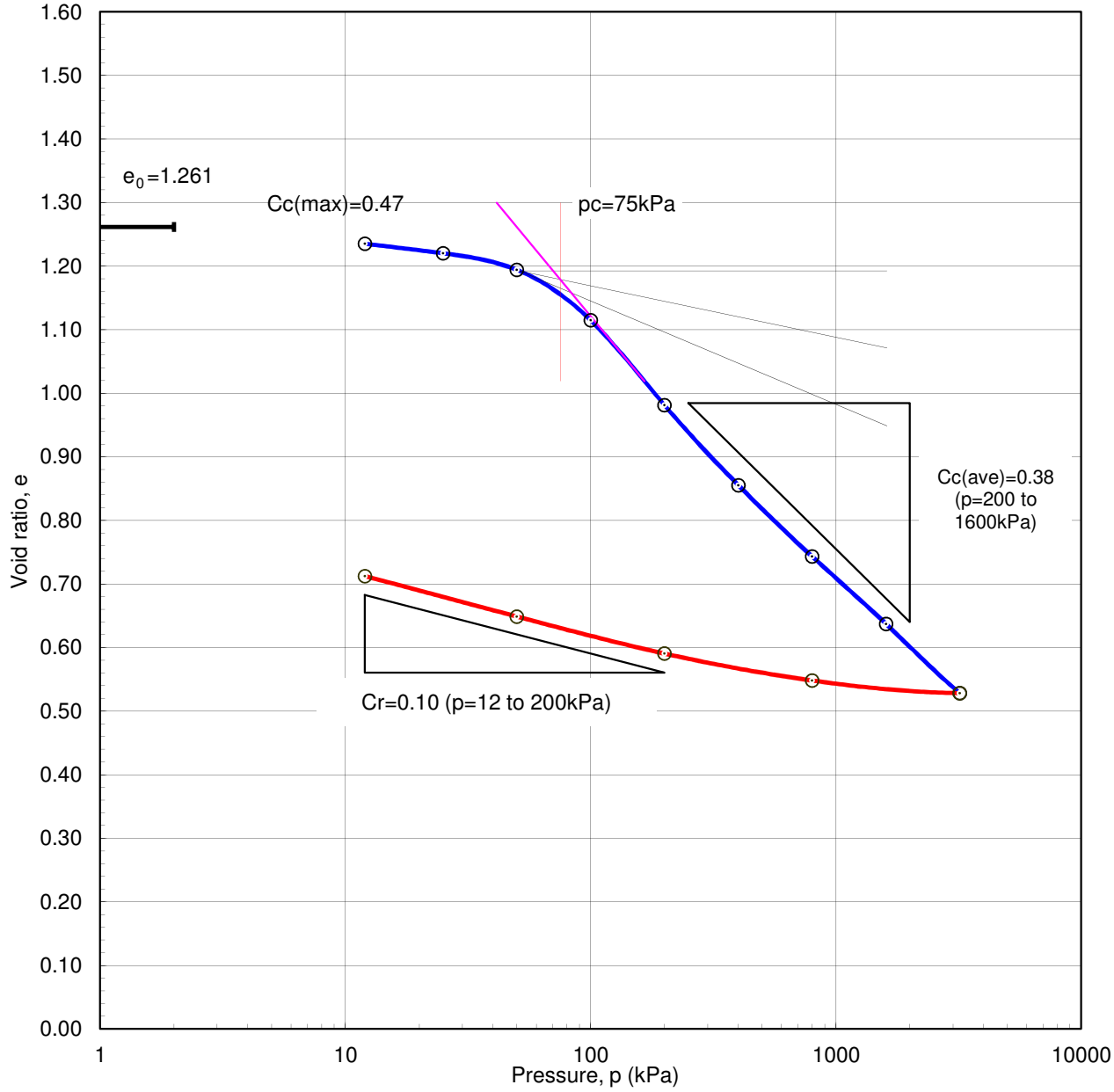
CONSOLIDATION TEST (e-log p curves)

Preparatory Survey on Matarbari USC Coal-fired Power

Project :	Project			Borehole No. :	PP14-2
Project No.:	S27-14	Tested by :	Lim	Sample No. :	HP-1
Soil Type :	Clay with Sand	Checked by :	A. B. Tan	Depth of Sample :	3.00-3.70 m

Sample No.	Depth of sample (m)	Initial void ratio e_o	Preconsolidation Pressure, p_c (kPa)	Compression Index Cc		Swell Index Cr	Unload-reload-Compression Index Cur
HP-1	3.00-3.70	1.261	75	0.47 (max)	0.38(average)	0.10 (average)	N/A



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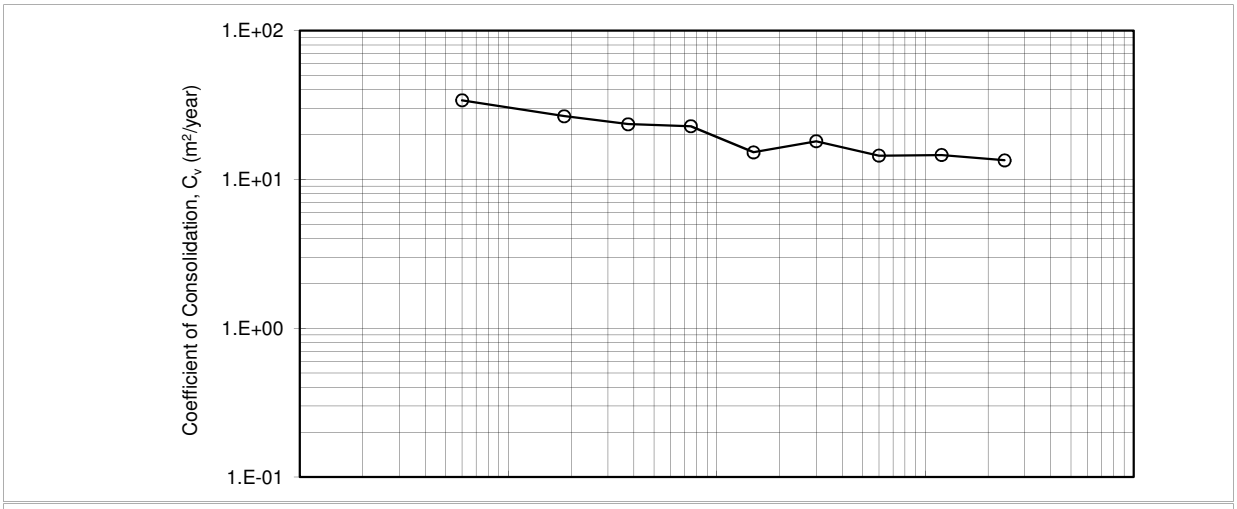
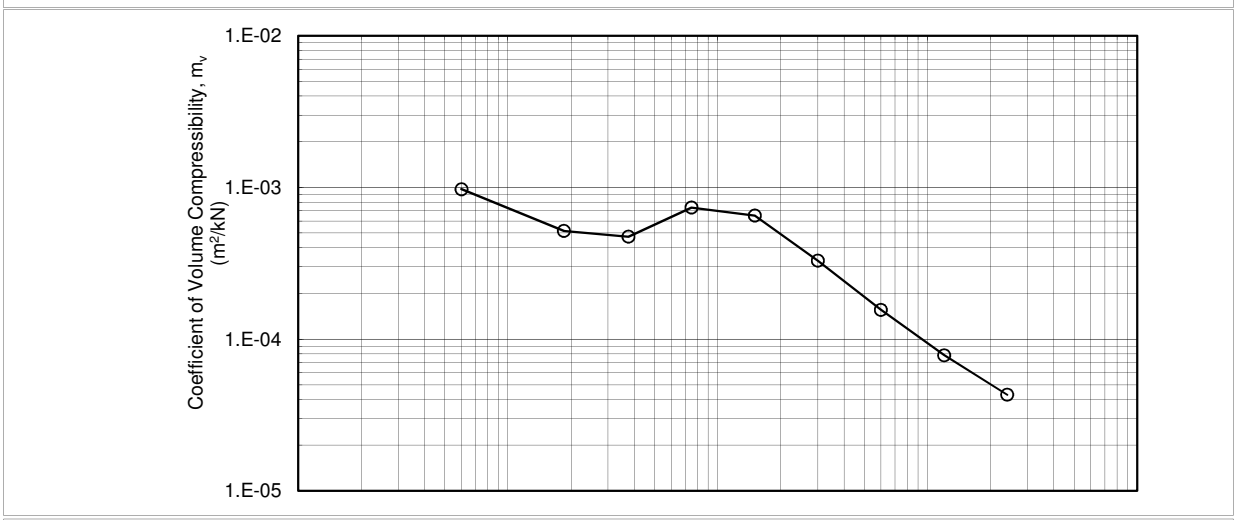
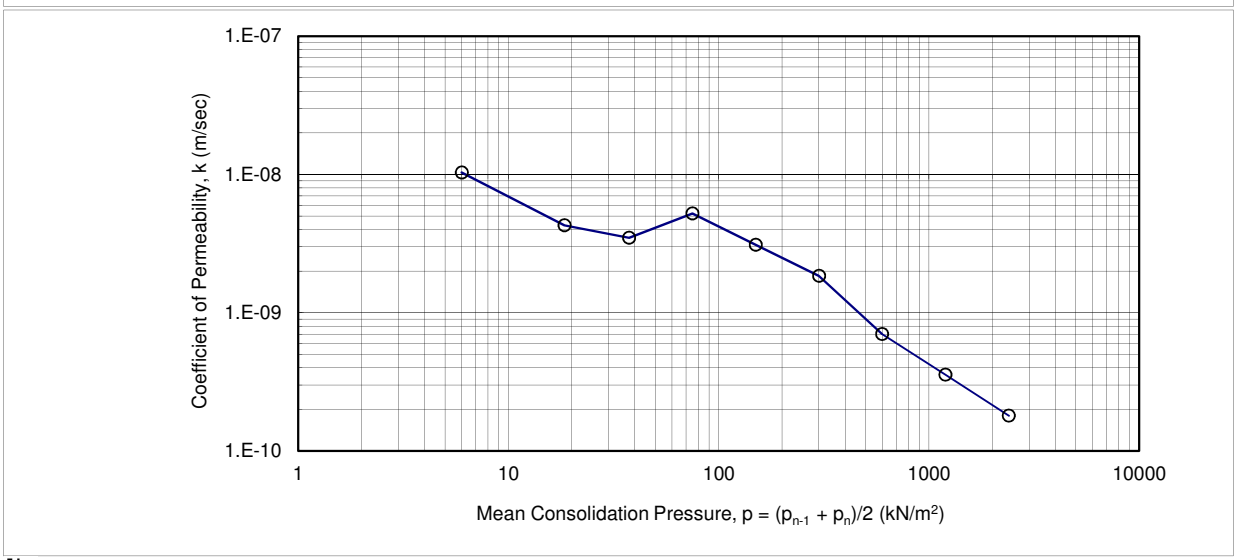
Consolidation Test (p - $\overline{cv}$, mv , k curves)

Project	:	Preparatory Survey on Matarbari USC Coal-fired Power Project		Borehole No. :	PP14-2
Project No.	:	S27-14		Sample No. :	HP-1
Date of testing	:	15-Sep-14	Tested by : Lim	Depth of Sample :	3.00-3.70 m







KISO-JIBAN CONSULTANTS CO., LTD.

PROJECT NAME : Preparatory Survey on Matarbari USC Coal-fired Power Project
PROJECT NO. : S27-14

BOREHOLE NO. : PP14-2
TESTING STANDARD : ASTM D2435-11
DATE : 15-Sep-14

SAMPLE NO. : HP-1
INITIAL HEIGHT OF SPECIMEN : 18.000 mm
NO. OF LOADING STEP : 9

DEPTH : 3.00-3.70 m
DIAMETER OF SPECIMEN : 53.900 mm
SPECIFIC GRAVITY : 2.72

TESTER NO. : 27
DRY WEIGHT OF SPECIMEN : 49.400 grams
SOLID HEIGHT OF SPECIMEN : 7.960 mm

INITIAL MOISTURE CONTENT : 45.1 %
BULK DENSITY : 1.75 Mg/m^3

METHOD OF TIME FITTING USED : SQUARE ROOT TIME CURVE - FITTING METHOD
LABORATORY TEMPERATURE : 23.0 ^{o}C

PRESSURE kN/m^2	PRESSURE INCREMENT kN/m^2	CHANGE IN HEIGHT *E-2 mm	HEIGHT mm	AVERAGE HEIGHT mm	STRAIN %	MV m^2/kN	VOLUME RATIO	VOID RATIO
0.000			18.000				2.261	1.261
	12.000	20.9		17.896	1.17	9.73E-04		
12.000			17.791				2.235	1.235
	13.000	11.9		17.732	0.67	5.16E-04		
25.000			17.672				2.220	1.220
	25.000	20.8		17.568	1.18	4.74E-04		
50.000			17.464				2.194	1.194
	50.000	63.1		17.149	3.68	7.36E-04		
100.000			16.833				2.115	1.115
	100.000	106.2		16.302	6.51	6.51E-04		
200.000			15.771				1.981	0.981
	200.000	100.3		15.270	6.57	3.28E-04		
400.000			14.768				1.855	0.855
	400.000	89.3		14.322	6.24	1.56E-04		
800.000			13.875				1.743	0.743
	800.000	84.3		13.454	6.27	7.83E-05		
1600.000			13.032				1.637	0.637
	1600.000	86.7		12.599	6.88	4.30E-05		
3200.000			12.165				1.528	0.528

PRESSURE kN/m^2	AVERAGE PRESSURE kN/m^2	T90 min	CV m^2/sec	CV m^2/day	CV $m^2/year$	PRIMARY COMPRESSION *E-2 mm	PRIMARY COMPRESSION RATIO	COEFFICIENT OF PERMEABILITY m/sec
0.000								
	6.000	0.98	1.08E-06	9.32E-02	3.40E+01	4.9	0.234	1.03E-08
12.000								
	18.500	1.22	8.45E-07	7.30E-02	2.66E+01	3.0	0.253	4.28E-09
25.000								
	37.500	1.36	7.47E-07	6.45E-02	2.36E+01	4.9	0.235	3.47E-09
50.000								
	75.000	1.34	7.23E-07	6.25E-02	2.28E+01	13.4	0.213	5.22E-09
100.000								
	150.000	1.81	4.83E-07	4.17E-02	1.52E+01	47.1	0.444	3.09E-09
200.000								
	300.000	1.34	5.72E-07	4.94E-02	1.80E+01	40.3	0.402	1.84E-09
400.000								
	600.000	1.47	4.58E-07	3.96E-02	1.44E+01	35.1	0.393	7.00E-10
800.000								
	1200.000	1.28	4.63E-07	4.00E-02	1.46E+01	32.2	0.382	3.56E-10
1600.000								
	2400.000	1.22	4.27E-07	3.69E-02	1.35E+01	30.3	0.350	1.80E-10
3200.000								

REBOUND

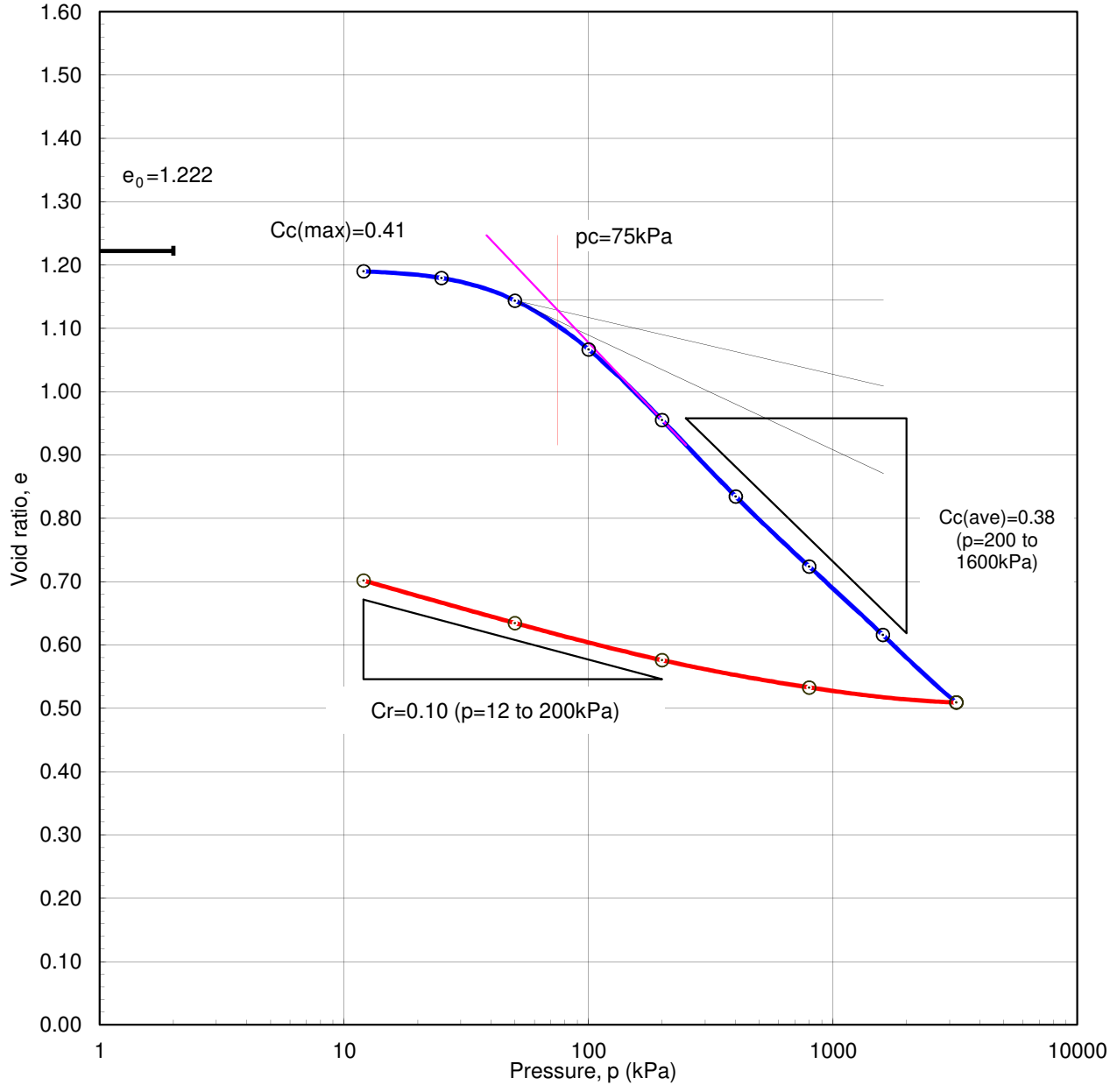
P	800.000	200.000	50.000	12.000
H	12.323	12.660	13.124	13.631
E	0.548	0.590	0.649	0.712

CONSOLIDATION TEST (e-log p curves)

Preparatory Survey on Matarbari USC Coal-fired Power

Project :	Project			Borehole No. :	PP14-2
Project No.:	S27-14	Tested by :	Lim	Sample No. :	HP-2
Soil Type :	Clay	Checked by :	A. B. Tan	Depth of Sample :	6.00-6.80 m

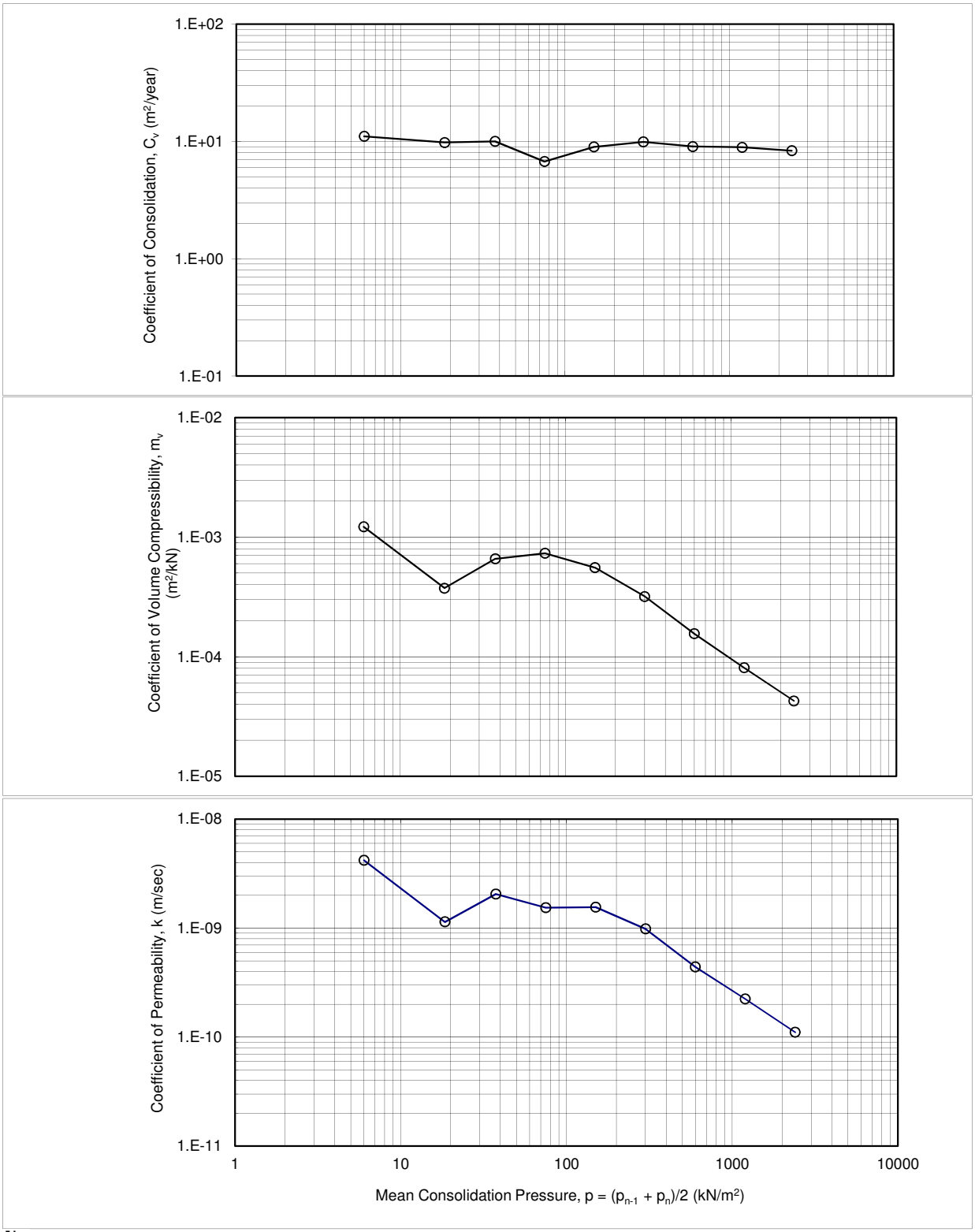
Sample No.	Depth of sample (m)	Initial void ratio e_o	Preconsolidation Pressure, p_c (kPa)	Compression Index Cc		Swell Index Cr	Unload-reload-Compression Index Cur
HP-2	6.00-6.80	1.222	75	0.41 (max)	0.38(average)	0.10 (average)	N/A



KISO-JIBAN CONSULTANTS CO., LTD.

Consolidation Test (p - $\overline{cv}$, mv , k curves)

	Preparatory Survey on Matarbari USC Coal-fired Power				
Project :	Project			Borehole No. :	PP14-2
Project No. :	S27-14			Sample No. :	HP-2
Date of testing :	15-Sep-14	Tested by :	Lim	Depth of Sample :	6.00-6.80 m



KISO-JIBAN CONSULTANTS CO., LTD.

PROJECT NAME : Preparatory Survey on Matarbari USC Coal-fired Power Project
PROJECT NO. : S27-14

BOREHOLE NO. : PP14-2
TESTING STANDARD : ASTM D2435-11
DATE : 15-Sep-14

SAMPLE NO. : HP-2
INITIAL HEIGHT OF SPECIMEN : 18.000 mm
NO. OF LOADING STEP : 9

DEPTH : 6.00-6.80 m
DIAMETER OF SPECIMEN : 53.900 mm
SPECIFIC GRAVITY : 2.72

TESTER NO. : 28
DRY WEIGHT OF SPECIMEN : 50.260 grams
SOLID HEIGHT OF SPECIMEN : 8.100 mm

INITIAL MOISTURE CONTENT : 41.7 %
BULK DENSITY : 1.77 Mg/m^3

METHOD OF TIME FITTING USED : SQUARE ROOT TIME CURVE - FITTING METHOD
LABORATORY TEMPERATURE : 23.0 ^{o}C

PRESSURE kN/m^2	PRESSURE INCREMENT kN/m^2	CHANGE IN HEIGHT *E-2 mm	HEIGHT mm	AVERAGE HEIGHT mm	STRAIN %	MV m^2/kN	VOLUME RATIO	VOID RATIO
0.000			18.000				2.222	1.222
	12.000	26.1		17.870	1.46	1.22E-03		
12.000			17.739				2.190	1.190
	13.000	8.6		17.696	0.49	3.74E-04		
25.000			17.653				2.179	1.179
	25.000	28.8		17.509	1.64	6.58E-04		
50.000			17.365				2.144	1.144
	50.000	62.4		17.053	3.66	7.32E-04		
100.000			16.741				2.067	1.067
	100.000	90.4		16.289	5.55	5.55E-04		
200.000			15.837				1.955	0.955
	200.000	97.8		15.348	6.37	3.19E-04		
400.000			14.859				1.834	0.834
	400.000	89.8		14.410	6.23	1.56E-04		
800.000			13.961				1.724	0.724
	800.000	87.4		13.524	6.46	8.08E-05		
1600.000			13.087				1.616	0.616
	1600.000	86.3		12.656	6.82	4.26E-05		
3200.000			12.224				1.509	0.509

PRESSURE kN/m^2	AVERAGE PRESSURE kN/m^2	T90 min	CV m^2/sec	CV m^2/day	CV $m^2/year$	PRIMARY COMPRESSION *E-2 mm	PRIMARY COMPRESSION RATIO	COEFFICIENT OF PERMEABILITY m/sec
0.000								
	6.000	2.99	3.51E-07	3.03E-02	1.11E+01	11.2	0.431	4.19E-09
12.000								
	18.500	3.31	3.11E-07	2.68E-02	9.79E+00	3.0	0.347	1.14E-09
25.000								
	37.500	3.17	3.18E-07	2.74E-02	1.00E+01	21.9	0.760	2.05E-09
50.000								
	75.000	4.47	2.14E-07	1.85E-02	6.74E+00	47.5	0.761	1.54E-09
100.000								
	150.000	3.06	2.85E-07	2.46E-02	8.99E+00	45.0	0.497	1.55E-09
200.000								
	300.000	2.46	3.14E-07	2.71E-02	9.90E+00	48.1	0.492	9.82E-10
400.000								
	600.000	2.38	2.87E-07	2.48E-02	9.06E+00	45.5	0.507	4.39E-10
800.000								
	1200.000	2.13	2.82E-07	2.44E-02	8.91E+00	43.3	0.495	2.24E-10
1600.000								
	2400.000	1.99	2.65E-07	2.29E-02	8.35E+00	42.4	0.492	1.11E-10
3200.000								

REBOUND

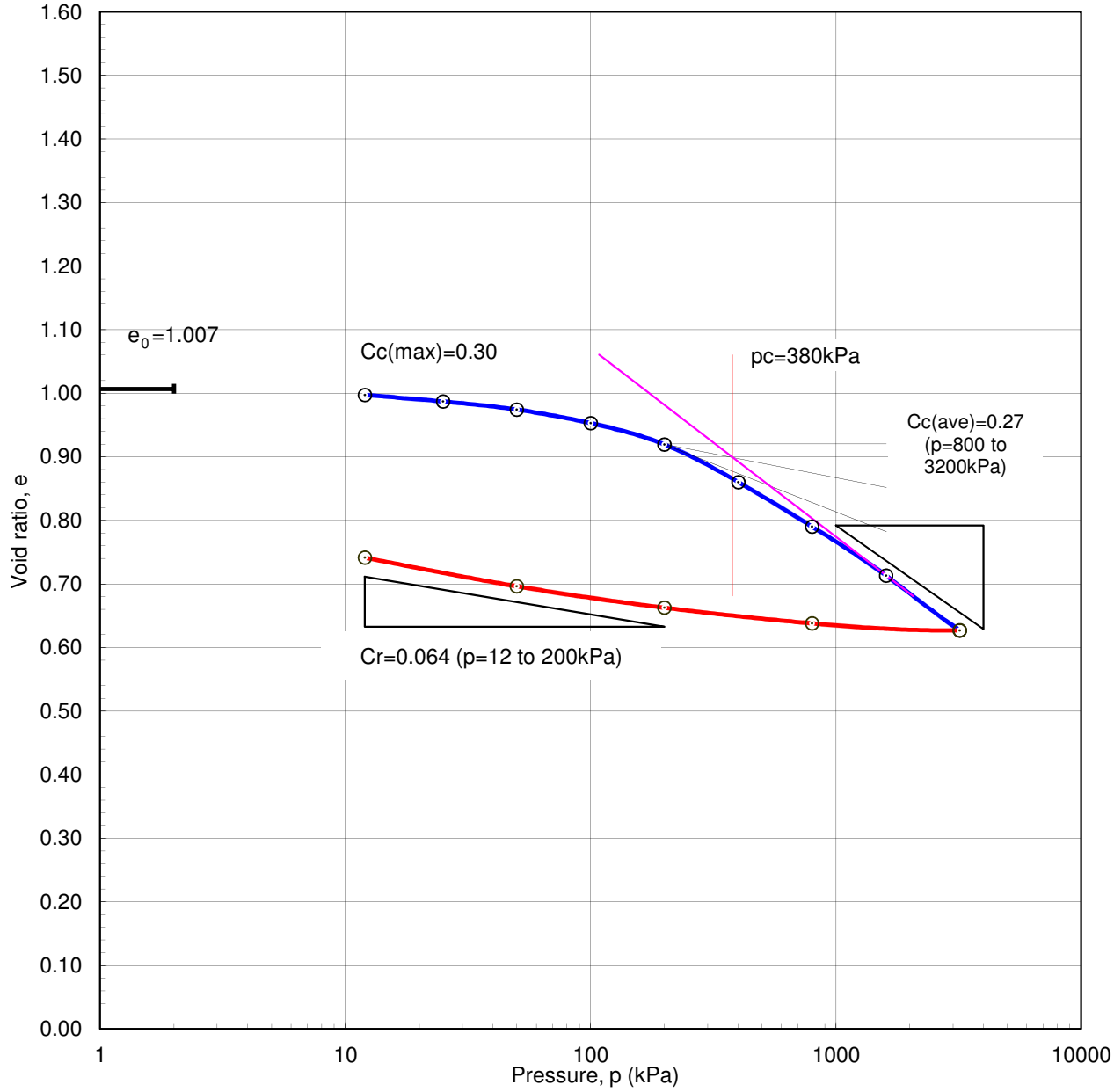
P	800.000	200.000	50.000	12.000
H	12.416	12.765	13.240	13.783
E	0.533	0.576	0.635	0.702

CONSOLIDATION TEST (e-log p curves)

Preparatory Survey on Matarbari USC Coal-fired Power

Project :	Project			Borehole No. :	PP14-2
Project No.:	S27-14	Tested by :	Lim	Sample No. :	HP-3
Soil Type :	Sandy Silt	Checked by :	A. B. Tan	Depth of Sample :	9.00-9.90 m

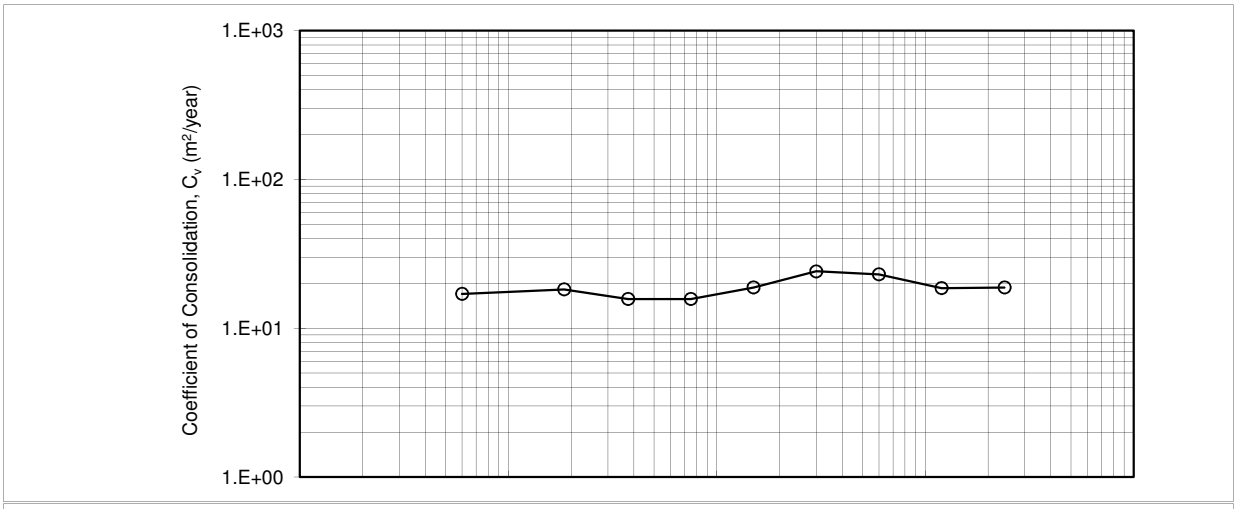
Sample No.	Depth of sample (m)	Initial void ratio e_o	Preconsolidation Pressure, p_c (kPa)	Compression Index Cc		Swell Index Cr	Unload-reload-Compression Index Cur
HP-3	9.00-9.90	1.007	380	0.30 (max)	0.27(average)	0.064 (average)	N/A

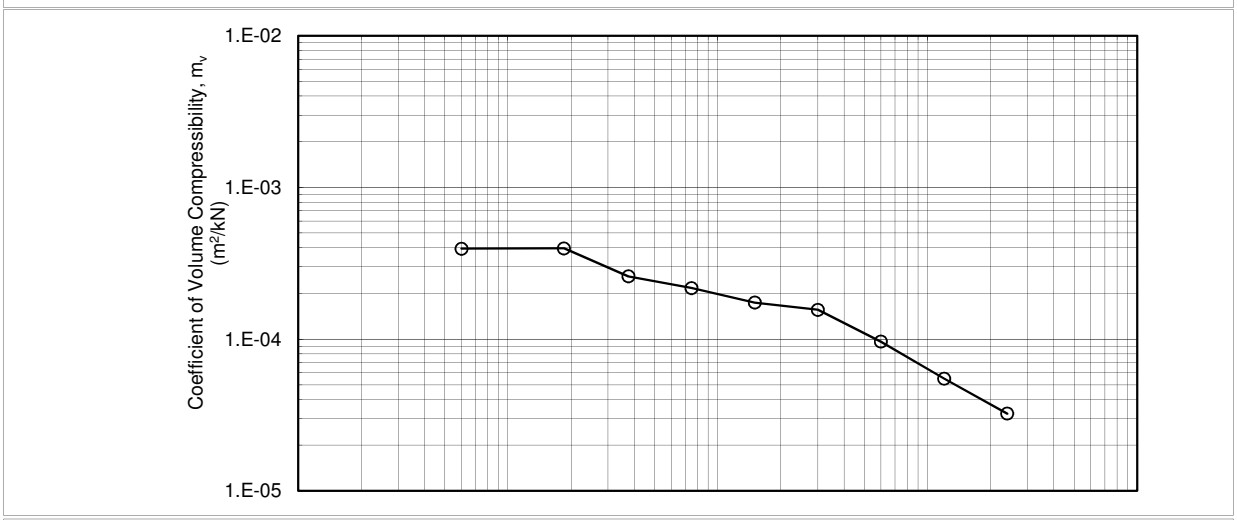


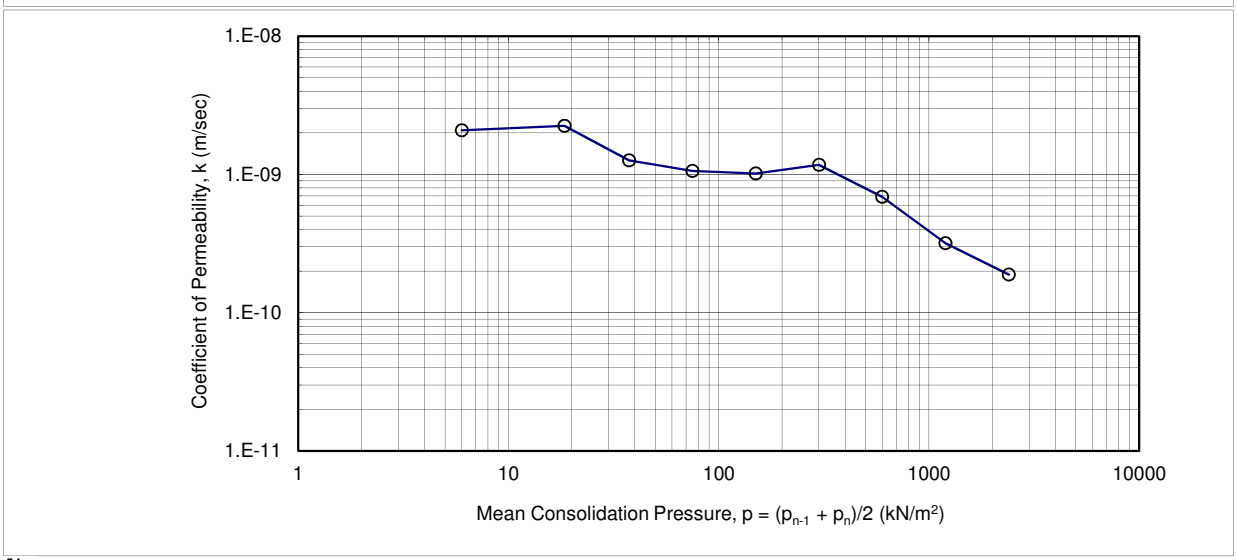
KISO-JIBAN CONSULTANTS CO., LTD.

Consolidation Test (p - $\overline{cv}$, mv , k curves)

Project	:	Preparatory Survey on Matarbari USC Coal-fired Power Project		Borehole No.	: PP14-2
Project No.	:	S27-14		Sample No.	: HP-3
Date of testing	:	15-Sep-14	Tested by : Lim	Depth of Sample	: 9.00-9.90 m







KISO-JIBAN CONSULTANTS CO., LTD.

PROJECT NAME : Preparatory Survey on Matarbari USC Coal-fired Power Project
PROJECT NO. : S27-14

BOREHOLE NO. : PP14-2
TESTING STANDARD : ASTM D2435-11
DATE : 15-Sep-14

SAMPLE NO. : HP-3
INITIAL HEIGHT OF SPECIMEN : 18.000 mm
NO. OF LOADING STEP : 9

DEPTH : 9.00-9.90 m
DIAMETER OF SPECIMEN : 53.900 mm
SPECIFIC GRAVITY : 2.71

TESTER NO. : 29
DRY WEIGHT OF SPECIMEN : 55.450 grams
SOLID HEIGHT OF SPECIMEN : 8.970 mm

INITIAL MOISTURE CONTENT : 36.0 %
BULK DENSITY : 1.84 Mg/m^3

METHOD OF TIME FITTING USED : SQUARE ROOT TIME CURVE - FITTING METHOD
LABORATORY TEMPERATURE : 23.0 ^{o}C

PRESSURE kN/m^2	PRESSURE INCREMENT kN/m^2	CHANGE IN HEIGHT *E-2 mm	HEIGHT mm	AVERAGE HEIGHT mm	STRAIN %	MV m^2/kN	VOLUME RATIO	VOID RATIO
0.000			18.000				2.007	1.007
	12.000	8.5		17.958	0.47	3.94E-04		
12.000			17.915				1.997	0.997
	13.000	9.2		17.869	0.51	3.96E-04		
25.000			17.823				1.987	0.987
	25.000	11.5		17.766	0.65	2.59E-04		
50.000			17.708				1.974	0.974
	50.000	19.1		17.613	1.08	2.17E-04		
100.000			17.517				1.953	0.953
	100.000	30.2		17.366	1.74	1.74E-04		
200.000			17.215				1.919	0.919
	200.000	52.9		16.951	3.12	1.56E-04		
400.000			16.686				1.860	0.860
	400.000	63.0		16.371	3.85	9.62E-05		
800.000			16.056				1.790	0.790
	800.000	68.9		15.712	4.39	5.48E-05		
1600.000			15.367				1.713	0.713
	1600.000	77.3		14.981	5.16	3.23E-05		
3200.000			14.594				1.627	0.627

PRESSURE kN/m^2	AVERAGE PRESSURE kN/m^2	T90 min	CV m^2/sec	CV m^2/day	CV $m^2/year$	PRIMARY COMPRESSION *E-2 mm	PRIMARY COMPRESSION RATIO	COEFFICIENT OF PERMEABILITY m/sec
0.000								
	6.000	1.97	5.39E-07	4.66E-02	1.70E+01	1.2	0.140	2.09E-09
12.000								
	18.500	1.81	5.78E-07	5.00E-02	1.82E+01	1.3	0.145	2.25E-09
25.000								
	37.500	2.08	4.98E-07	4.30E-02	1.57E+01	2.0	0.171	1.27E-09
50.000								
	75.000	2.05	4.98E-07	4.30E-02	1.57E+01	2.3	0.112	1.06E-09
100.000								
	150.000	1.67	5.95E-07	5.14E-02	1.88E+01	3.2	0.109	1.01E-09
200.000								
	300.000	1.23	7.65E-07	6.61E-02	2.41E+01	7.6	0.141	1.17E-09
400.000								
	600.000	1.21	7.29E-07	6.30E-02	2.30E+01	8.4	0.136	6.88E-10
800.000								
	1200.000	1.37	5.90E-07	5.10E-02	1.86E+01	9.0	0.130	3.17E-10
1600.000								
	2400.000	1.24	5.95E-07	5.14E-02	1.88E+01	8.8	0.114	1.88E-10
3200.000								

REBOUND

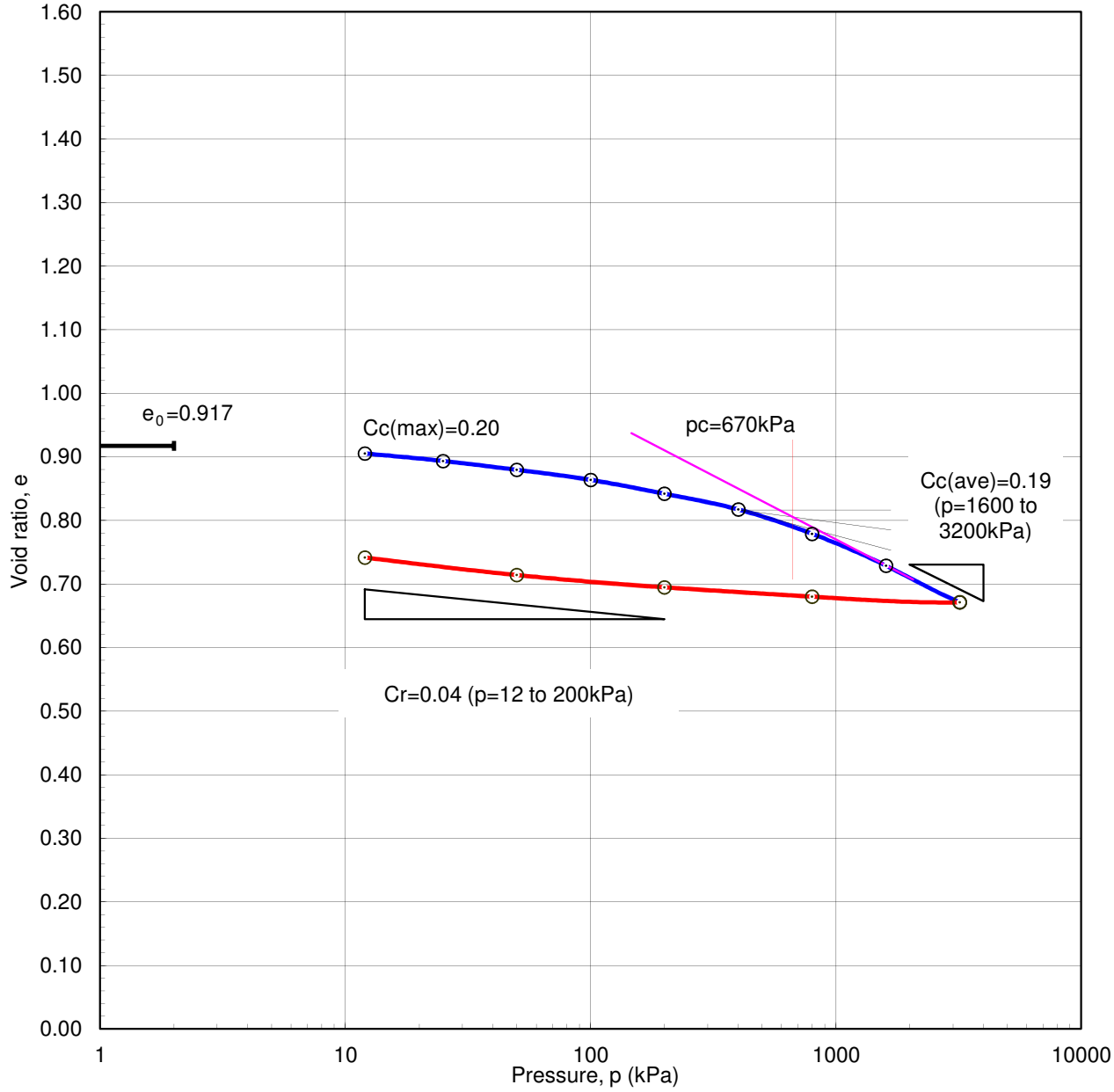
P	800.000	200.000	50.000	12.000
H	14.692	14.913	15.216	15.620
E	0.638	0.663	0.696	0.741

CONSOLIDATION TEST (e-log p curves)

Preparatory Survey on Matarbari USC Coal-fired Power

Project :	Project			Borehole No. :	PP14-2
Project No.:	S27-14	Tested by :	Lim	Sample No. :	D-3
Soil Type :	0	Checked by :	A. B. Tan	Depth of Sample :	19.00-19.90 m

Sample No.	Depth of sample (m)	Initial void ratio e_o	Preconsolidation Pressure, p_c (kPa)	Compression Index Cc		Swell Index Cr	Unload-reload-Compression Index Cur
D-3	19.00-19.90	0.917	670	0.20 (max)	0.19(average)	0.04 (average)	N/A



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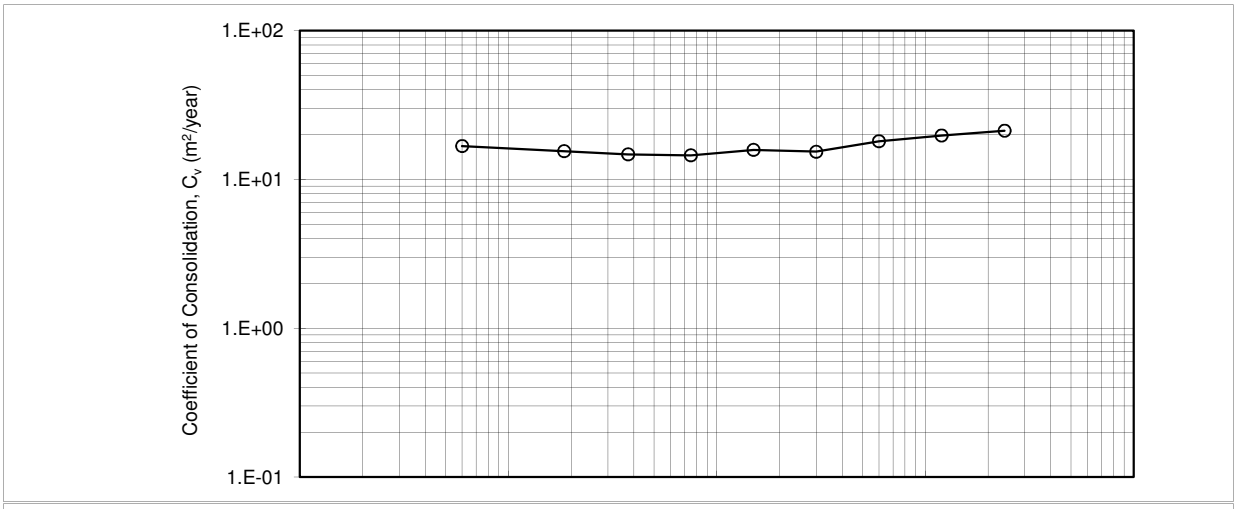
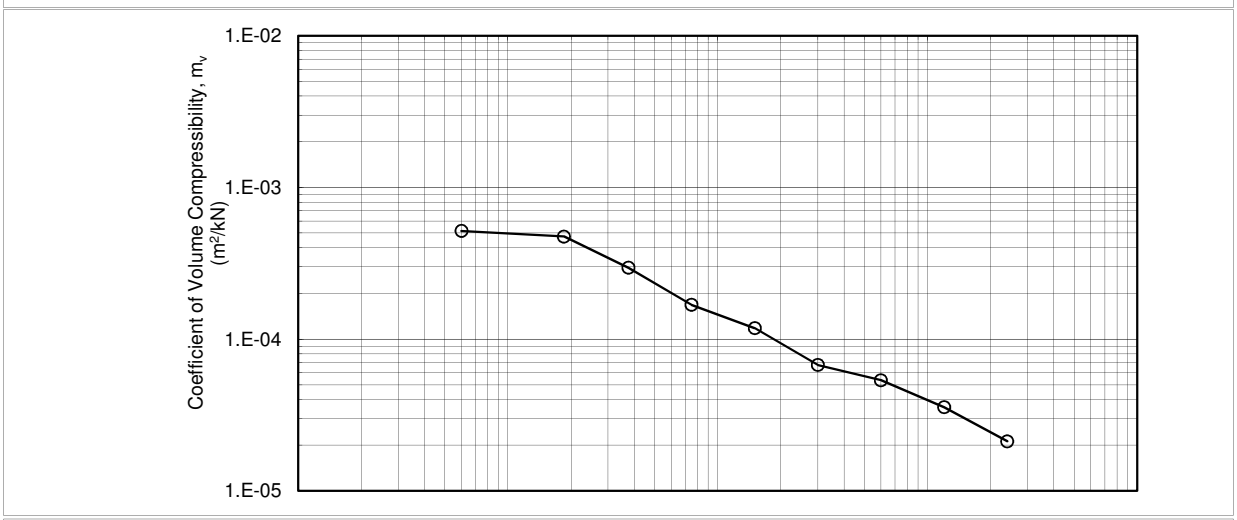
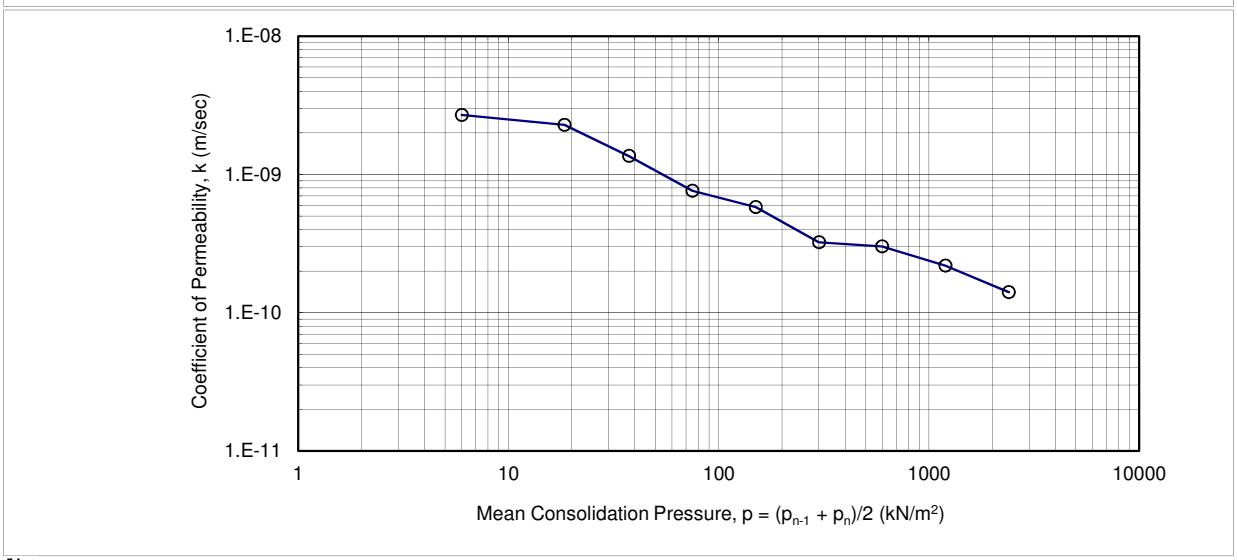
Consolidation Test (p - $\overline{cv}$, mv , k curves)

Project	:	Preparatory Survey on Matarbari USC Coal-fired Power Project		Borehole No. :	PP14-2
Project No.	:	S27-14		Sample No. :	D-3
Date of testing	:	26-Nov-14	Tested by : Lim	Depth of Sample :	19.00-19.90 m







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PROJECT NAME : Preparatory Survey on Matarbari USC Coal-fired Power Project
PROJECT NO. : S27-14

BOREHOLE NO. : PP14-2
TESTING STANDARD : ASTM D2435-11
DATE : 26-Nov-14

SAMPLE NO. : D-3
INITIAL HEIGHT OF SPECIMEN : 18.000 mm
NO. OF LOADING STEP : 9

DEPTH : 19.00-19.90 m
DIAMETER OF SPECIMEN : 53.900 mm
SPECIFIC GRAVITY : 2.72

TESTER NO. : 4
DRY WEIGHT OF SPECIMEN : 58.260 grams
SOLID HEIGHT OF SPECIMEN : 9.390 mm

INITIAL MOISTURE CONTENT : 33.9 %
BULK DENSITY : 1.91 Mg/m^3

METHOD OF TIME FITTING USED : SQUARE ROOT TIME CURVE - FITTING METHOD
LABORATORY TEMPERATURE : 23.0 ^{O}C

PRESSURE kN/m^2	PRESSURE INCREMENT kN/m^2	CHANGE IN HEIGHT *E-2 mm	HEIGHT mm	AVERAGE HEIGHT mm	STRAIN %	MV m^2/kN	VOLUME RATIO	VOID RATIO
0.000			18.000				1.917	0.917
	12.000	11.1		17.945	0.62	5.15E-04		
12.000			17.889				1.905	0.905
	13.000	11.0		17.834	0.62	4.74E-04		
25.000			17.779				1.893	0.893
	25.000	13.1		17.714	0.74	2.96E-04		
50.000			17.648				1.879	0.879
	50.000	14.8		17.574	0.84	1.68E-04		
100.000			17.500				1.864	0.864
	100.000	20.5		17.398	1.18	1.18E-04		
200.000			17.295				1.842	0.842
	200.000	23.2		17.179	1.35	6.75E-05		
400.000			17.063				1.817	0.817
	400.000	36.2		16.882	2.14	5.36E-05		
800.000			16.701				1.779	0.779
	800.000	46.9		16.467	2.85	3.56E-05		
1600.000			16.232				1.729	0.729
	1600.000	54.2		15.961	3.40	2.12E-05		
3200.000			15.690				1.671	0.671

PRESSURE kN/m^2	AVERAGE PRESSURE kN/m^2	T90 min	CV m^2/sec	CV m^2/day	CV $m^2/year$	PRIMARY COMPRESSION *E-2 mm	PRIMARY COMPRESSION RATIO	COEFFICIENT OF PERMEABILITY m/sec
0.000								
	6.000	1.99	5.32E-07	4.60E-02	1.68E+01	1.8	0.162	2.69E-09
12.000								
	18.500	2.13	4.91E-07	4.24E-02	1.55E+01	1.8	0.164	2.29E-09
25.000								
	37.500	2.20	4.68E-07	4.04E-02	1.48E+01	1.7	0.128	1.36E-09
50.000								
	75.000	2.20	4.61E-07	3.98E-02	1.45E+01	1.7	0.113	7.61E-10
100.000								
	150.000	1.98	5.01E-07	4.33E-02	1.58E+01	2.4	0.116	5.80E-10
200.000								
	300.000	1.99	4.88E-07	4.22E-02	1.54E+01	3.1	0.135	3.23E-10
400.000								
	600.000	1.64	5.72E-07	4.95E-02	1.81E+01	4.3	0.117	3.01E-10
800.000								
	1200.000	1.42	6.25E-07	5.40E-02	1.97E+01	4.7	0.100	2.18E-10
1600.000								
	2400.000	1.24	6.75E-07	5.83E-02	2.13E+01	5.8	0.107	1.41E-10
3200.000								

REBOUND

P	800.000	200.000	50.000	12.000
H	15.775	15.913	16.094	16.353
E	0.680	0.695	0.714	0.742

Summary of Consolidated Drained Triaxial Compression Test

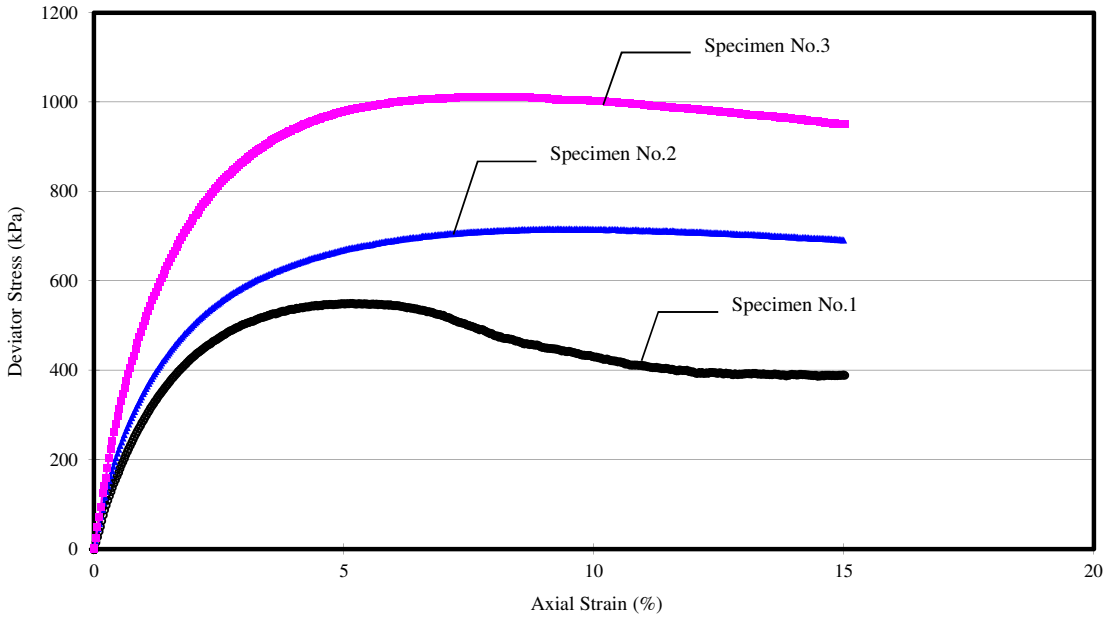
Project No.: S27-14		Project :Preparatory Survey on Matarbari USC Coral-fired Power Project					
Date Tested : 15.12.14		Tested by : Perera		Checked by : A. B. Tan			
Borehole No.: PP-14-2		Sample No.:D-1		Depth : 12.50-13.40m			
Specimen Condition : Remoulded		Test Method : ASTM D7181-11					
Soil Description : Sand		Ave. Diameter : 50.0mm		Ave. Height : 100.0mm			
Specimen No.			1	2	3	4	
Initial Condition	Wet Density,	Mg/m^3	1.85	1.85	1.85		
	Water Content,	%	35.8	35.8	35.8		
	Dry Density	Mg/m^3	1.36	1.36	1.36		
Saturation Stage	Saturated PWP,	kPa	500	500	500		
	Final Cell Pressure,	kPa	650	750	850		
	B-value		0.97	0.95	0.96		
Consolidation Stage	Cell Pressure	kPa	650	750	850		
	Back Pressure	kPa	500	500	500		
	Initial PWP,	kPa	635	729	827		
	Final PWP	kPa	500	500	500		
Consolidation Parameter	Volume Change,	%	0.22	0.26	0.39		
	Coefficient of Consolidation Cv,	m^2/year	408	270	248		
	Coefficient of Volume Compressibility mvi,	m^2/MN	0.014	0.010	0.011		
Compression Stage	Cell Pressure	kPa	650	750	850		
	Back Pressure	kPa	500	500	500		
	Effective Cell Pressure	kPa	150	250	350		
	Shearing Speed	mm/min	0.015	0.015	0.015		
Failure Conditions	Peak Deviator Stress $(\sigma_1-\sigma_3)f$,	kPa	550	717	1013		
	Excess PWP at $(\sigma_1-\sigma_3)f$	kPa	N/A	N/A	N/A		
	Volumetric Strain at $(\sigma_1-\sigma_3)f$	(%)	-0.94	-0.27	-0.63		
	Strain at $(\sigma_1-\sigma_3)f$	(%)	5.14	9.07	8.03		
Shear Strength Parameters	ϕ_d = 37 Degree c_d = 0 kPa		Mode of Failure 1 2 3 4 				
Remarks : Specimens are prepared at required saturated wet density = 1.85 Mg/m3							

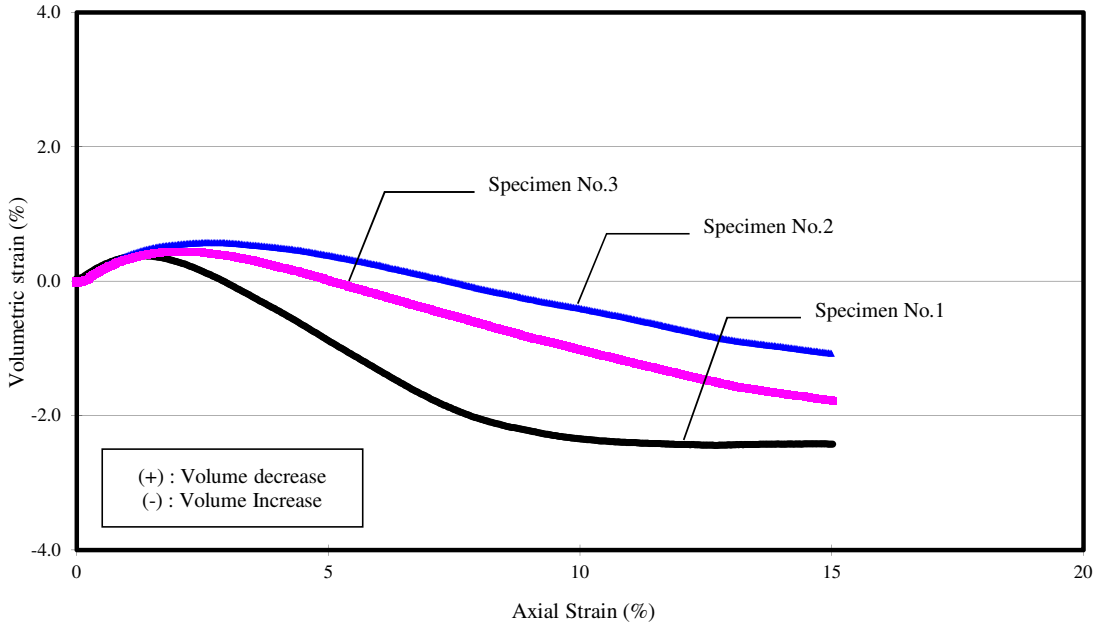
Consolidated Drained Triaxial Compression Test

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No.: S27-14 Sample No.: D-1 Soil Type: Sand

Borehole No.: PP-14-2 Depth : 12.50-13.40m





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Consolidated Drained Triaxial Compression Test
With Pore water Pressure Measurement

- Mohr' s Circle (In terms of Total Stress at Peak Deviator Stress) -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

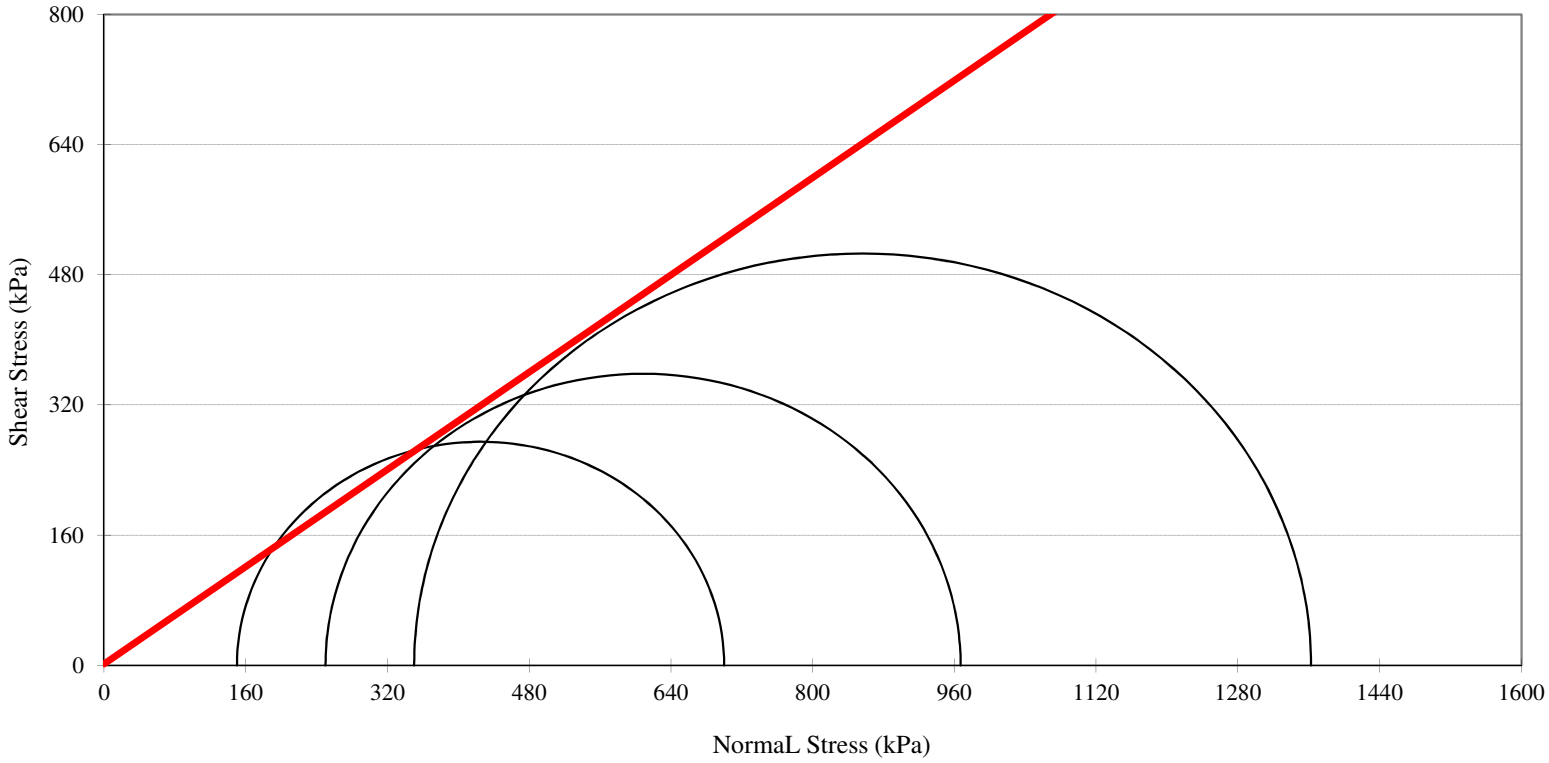
Project No. : S27-14

Borehole No. : PP-14-2 Soil Type: Sand

Sample No. : D-1 Depth : 12.50-13.40m

Angle of Internal Friction, ϕ_d 37 deg

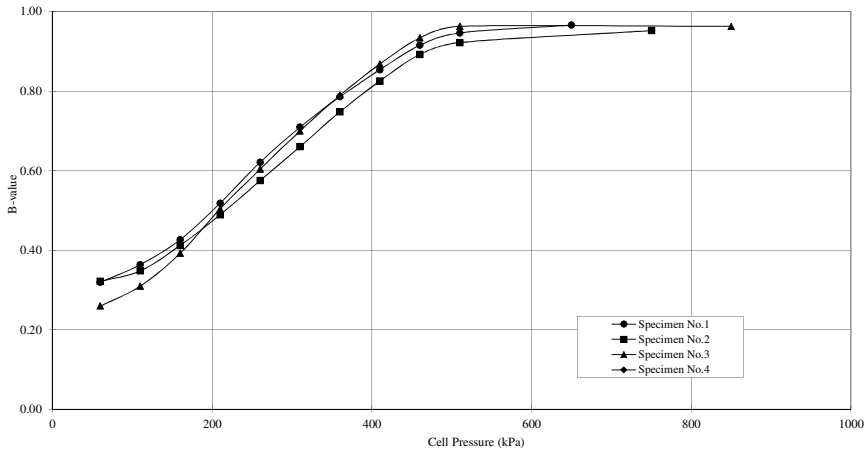
Cohesion, c_d 0 kPa



Consolidated Drained Triaxial Compression Test
With Porewater Pressure Measurement
- B-value Check -

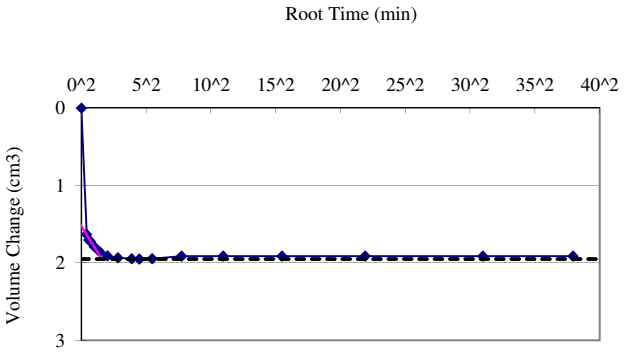
Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14
Borehole No.: PP-14-2 Depth : 12.50-13.40m
Sample No.: D-1 Soil Type: Sand

		Result of B-value Check							
		Specimen 1		Specimen 2		Specimen 3		Specimen 4	
		Initial	Final	Initial	Final	Initial	Final	Initial	Final
B-check Step.1	Cell Pressure (kPa)	30	60	30	60	30	60		
	P.W.P (kPa)	20	29.6	20	29.6	20	27.8		
	Back Pressure (kPa)	20		20		20			
	B-value	0.32		0.32		0.26			
B-check Step.2	Cell Pressure (kPa)	60	110	60	110	60	110		
	P.W.P (kPa)	50	68.2	50	67.4	50	65.5		
	Back Pressure (kPa)	50		50		50			
	B-value	0.36		0.35		0.31			
B-check Step.3	Cell Pressure (kPa)	110	160	110	160	110	160		
	P.W.P (kPa)	100	121.3	100	120.6	100	119.6		
	Back Pressure (kPa)	100		100		100			
	B-value	0.43		0.41		0.39			
B-check Step.4	Cell Pressure (kPa)	160	210	160	210	160	210		
	P.W.P (kPa)	150	175.9	150	174.5	150	175.2		
	Back Pressure (kPa)	150		150		150			
	B-value	0.52		0.49		0.50			
B-check Step.5	Cell Pressure (kPa)	210	260	210	260	210	260		
	P.W.P (kPa)	200	231.0	200	228.7	200	230.2		
	Back Pressure (kPa)	200		200		200			
	B-value	0.62		0.57		0.60			
B-check Step.6	Cell Pressure (kPa)	260	310	260	310	260	310		
	P.W.P (kPa)	250	285.5	250	283.0	250	285.0		
	Back Pressure (kPa)	250		250		250			
	B-value	0.71		0.66		0.70			
B-check Step.7	Cell Pressure (kPa)	310	360	310	360	310	360		
	P.W.P (kPa)	300	339.3	300	337.4	300	339.5		
	Back Pressure (kPa)	300		300		300			
	B-value	0.79		0.75		0.79			
B-check Step.8	Cell Pressure (kPa)	360	410	360	410	360	410		
	P.W.P (kPa)	350	392.7	350	391.3	350	393.4		
	Back Pressure (kPa)	350		350		350			
	B-value	0.85		0.83		0.87			
B-check Step.9	Cell Pressure (kPa)	410	460	410	460	410	460		
	P.W.P (kPa)	400	445.8	400	444.6	400	446.7		
	Back Pressure (kPa)	400		400		400			
	B-value	0.92		0.89		0.93			
B-check Step.10	Cell Pressure (kPa)	460	510	460	510	460	510		
	P.W.P (kPa)	450	497.3	450	496.1	450	498.1		
	Back Pressure (kPa)	450		450		450			
	B-value	0.95		0.92		0.96			
B-check Step.11	Cell Pressure (kPa)	510	650	510	750	510	850		
	P.W.P (kPa)	500	635.3	500	728.5	500	827.4		
	Back Pressure (kPa)	500		500		500			
	B-value	0.97		0.95		0.96			



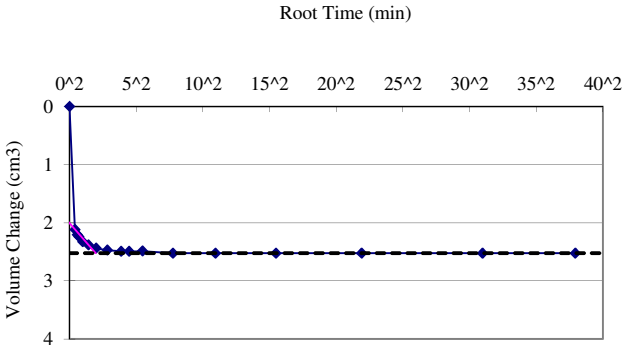
Consolidated Drained Triaxial Compression Test
With Porewater Pressure Measurement
- Volume Change versus Root Time in Consolidation Stages -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14 Borehole No.: PP-14-2 Soil Type: Sand
Sample No.: D-1 Depth : 12.50-13.40m



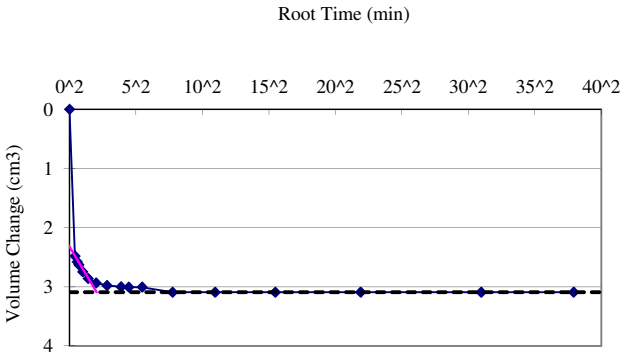
Specimen No.: 1

p' =	150	kPa
t100 =	2.5	min
Cv =	408	m^2/year
mvi=	0.014	m^2/MN



Specimen No.: 2

p' =	250	kPa
t100 =	3.8	min
Cv =	270	m^2/year
mvi=	0.010	m^2/MN



Specimen No.: 3

p' =	350	kPa
t100 =	4.1	min
Cv =	248	m^2/year
mvi=	0.011	m^2/MN

Summary of Consolidated Drained Triaxial Compression Test

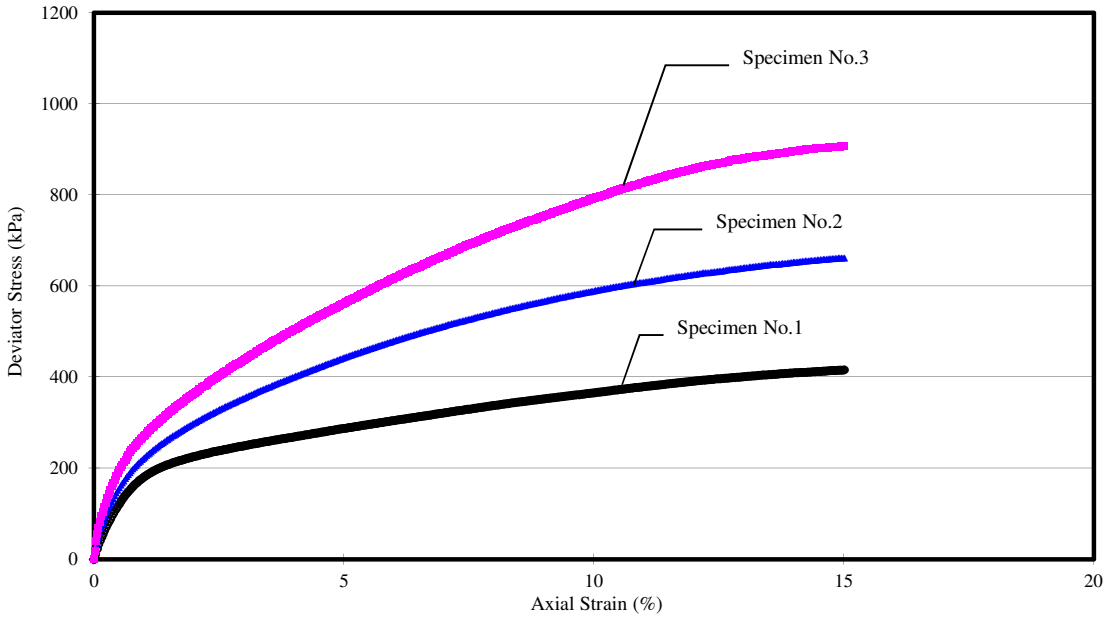
Project No.: S27-14		Project :Preparatory Survey on Matarbari USC Coral-fired Power Project					
Date Tested : 28.11.14		Tested by : Perera		Checked by : A. B. Tan			
Borehole No.: PP-14-2		Sample No.:D-2		Depth : 16.00-16.80m			
Specimen Condition : Undisturbed		Test Method : ASTM D7181-11					
Soil Description : Silty Clay with Sand		Ave. Diameter : 50.0mm		Ave. Height : 99.8mm			
Specimen No.			1	2	3	4	
Initial Condition	Wet Density,	Mg/m^3	1.83	1.83	1.84		
	Water Content,	%	31.5	35.2	33.0		
	Dry Density	Mg/m^3	1.39	1.35	1.35		
Saturation Stage	Saturated PWP,	kPa	500	500	500		
	Final Cell Pressure,	kPa	650	750	850		
	B-value		0.98	0.96	0.97		
Consolidation Stage	Cell Pressure	kPa	650	750	850		
	Back Pressure	kPa	500	500	500		
	Initial PWP,	kPa	637	731	831		
	Final PWP	kPa	500	500	500		
Consolidation Parameter	Volume Change,	%	1.49	1.40	2.21		
	Coefficient of Consolidation Cv,	m^2/year	602	693	650		
	Coefficient of Volume Compressibility mvi,	m^2/MN	0.099	0.056	0.063		
Compression Stage	Cell Pressure	kPa	650	750	850		
	Back Pressure	kPa	500	500	500		
	Effective Cell Pressure	kPa	150	250	350		
	Shearing Speed	mm/min	0.015	0.015	0.015		
Failure Conditions	Peak Deviator Stress $(\sigma_1-\sigma_3)f$,	kPa	416	662	907		
	Excess PWP at $(\sigma_1-\sigma_3)f$	kPa	N/A	N/A	N/A		
	Volumetric Strain at $(\sigma_1-\sigma_3)f$	(%)	5.73	5.29	5.69		
	Strain at $(\sigma_1-\sigma_3)f$	(%)	15.01	15.02	15.01		
Shear Strength Parameters	ϕ_d = 35 Degree c_d = 0 kPa		Mode of Failure 1 2 3 4 				
Remarks :							

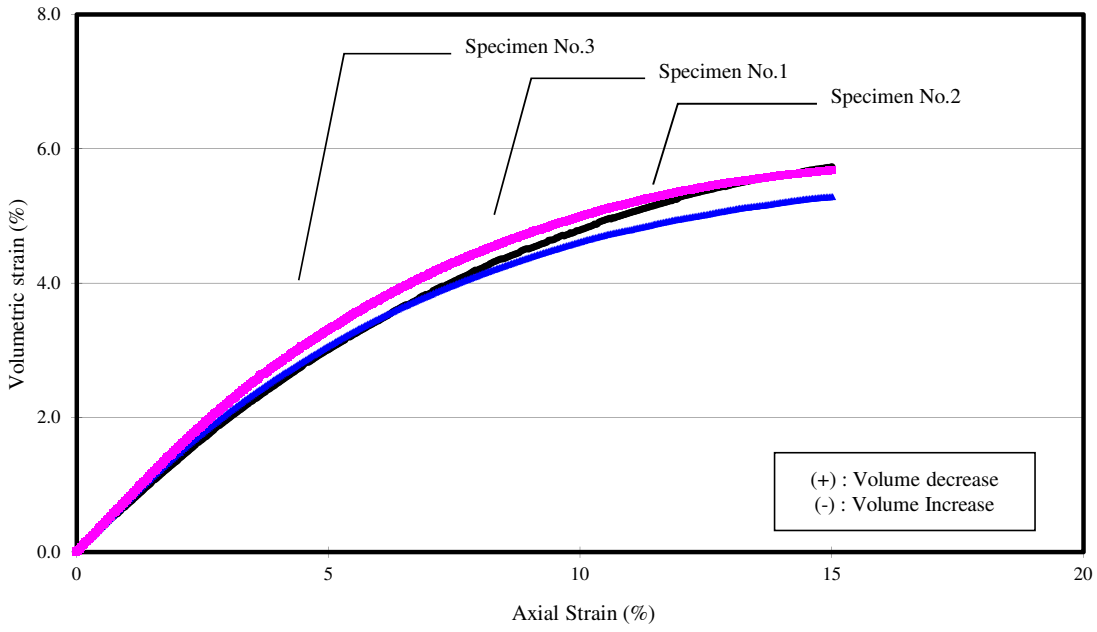
Consolidated Drained Triaxial Compression Test

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No.: S27-14 Sample No.: D-2 Soil Type: Silty Clay with Sand

Borehole No.: PP-14-2 Depth : 16.00-16.80mm





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Consolidated Drained Triaxial Compression Test
With Pore water Pressure Measurement

- Mohr' s Circle (In terms of Total Stress at Peak Deviator Stress) -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

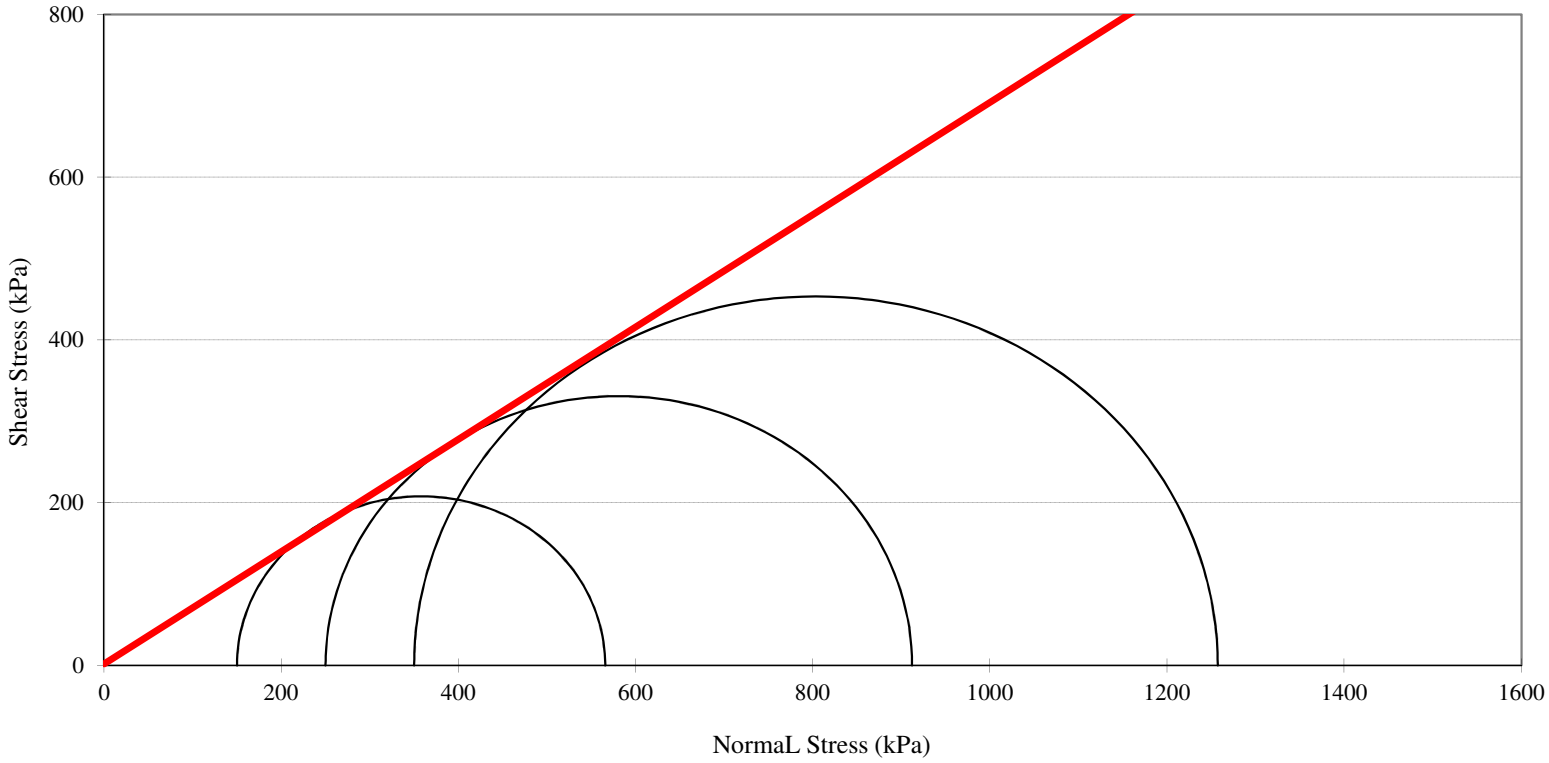
Project No. : S27-14

Borehole No. : PP-14-2 Soil Type: Silty Clay with Sand

Sample No. : D-2 Depth : 16.00-16.80m

Angle of Internal Friction, ϕ_d 35 deg

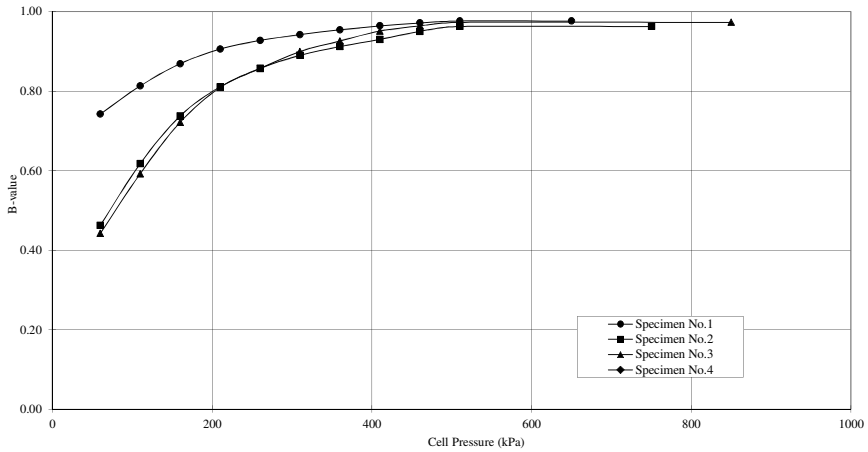
Cohesion, c_d 0 kPa



Consolidated Drained Triaxial Compression Test
With Porewater Pressure Measurement
- B-value Check -

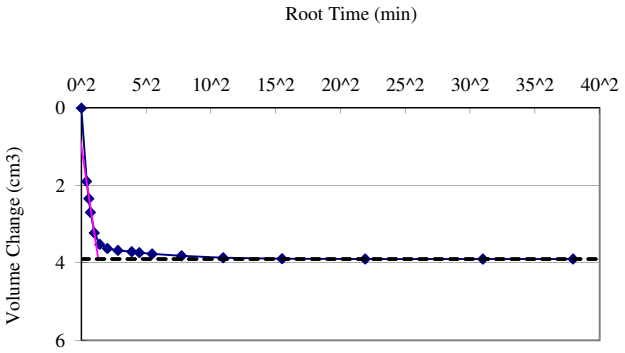
Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14
Borehole No.: PP-14-2 Depth : 16.00-16.80m
Sample No.: D-2 Soil Type: Silty Clay with Sand

		Result of B-value Check							
		Specimen 1		Specimen 2		Specimen 3		Specimen 4	
		Initial	Final	Initial	Final	Initial	Final	Initial	Final
B-check Step.1	Cell Pressure (kPa)	30	60	30	60	30	60		
	P.W.P (kPa)	20	42.3	20	33.9	20	33.3		
	Back Pressure (kPa)	20		20		20			
	B-value	0.74		0.46		0.44			
B-check Step.2	Cell Pressure (kPa)	60	110	60	110	60	110		
	P.W.P (kPa)	50	90.7	50	80.9	50	79.6		
	Back Pressure (kPa)	50		50		50			
	B-value	0.81		0.62		0.59			
B-check Step.3	Cell Pressure (kPa)	110	160	110	160	110	160		
	P.W.P (kPa)	100	143.4	100	136.9	100	136.1		
	Back Pressure (kPa)	100		100		100			
	B-value	0.87		0.74		0.72			
B-check Step.4	Cell Pressure (kPa)	160	210	160	210	160	210		
	P.W.P (kPa)	150	195.3	150	190.5	150	190.5		
	Back Pressure (kPa)	150		150		150			
	B-value	0.91		0.81		0.81			
B-check Step.5	Cell Pressure (kPa)	210	260	210	260	210	260		
	P.W.P (kPa)	200	246.4	200	242.9	200	242.8		
	Back Pressure (kPa)	200		200		200			
	B-value	0.93		0.86		0.86			
B-check Step.6	Cell Pressure (kPa)	260	310	260	310	260	310		
	P.W.P (kPa)	250	297.1	250	294.5	250	295.0		
	Back Pressure (kPa)	250		250		250			
	B-value	0.94		0.89		0.90			
B-check Step.7	Cell Pressure (kPa)	310	360	310	360	310	360		
	P.W.P (kPa)	300	347.7	300	345.6	300	346.3		
	Back Pressure (kPa)	300		300		300			
	B-value	0.95		0.91		0.93			
B-check Step.8	Cell Pressure (kPa)	360	410	360	410	360	410		
	P.W.P (kPa)	350	398.2	350	396.5	350	397.6		
	Back Pressure (kPa)	350		350		350			
	B-value	0.96		0.93		0.95			
B-check Step.9	Cell Pressure (kPa)	410	460	410	460	410	460		
	P.W.P (kPa)	400	448.6	400	447.5	400	448.2		
	Back Pressure (kPa)	400		400		400			
	B-value	0.97		0.95		0.96			
B-check Step.10	Cell Pressure (kPa)	460	510	460	510	460	510		
	P.W.P (kPa)	450	498.8	450	498.1	450	498.6		
	Back Pressure (kPa)	450		450		450			
	B-value	0.98		0.96		0.97			
B-check Step.11	Cell Pressure (kPa)	510	650	510	750	510	850		
	P.W.P (kPa)	500	636.7	500	731.0	500	830.8		
	Back Pressure (kPa)	500		500		500			
	B-value	0.98		0.96		0.97			



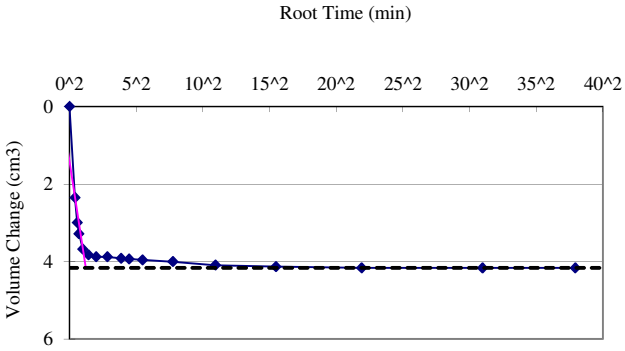
Consolidated Drained Triaxial Compression Test
With Porewater Pressure Measurement
- Volume Change versus Root Time in Consolidation Stages -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14 Borehole No.: PP-14-2 Soil Type: Silty Clay with Sand
Sample No.: D-2 Depth : 16.00-16.80m



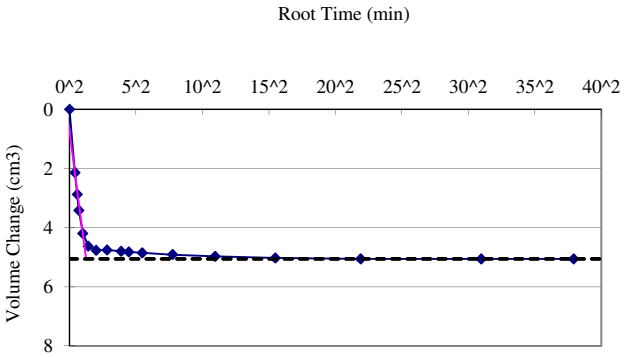
Specimen No.: 1

p' =	150	kPa
t100 =	1.7	min
Cv =	602	m^2/year
mvi=	0.099	m^2/MN



Specimen No.: 2

p' =	250	kPa
t100 =	1.5	min
Cv =	693	m^2/year
mvi=	0.056	m^2/MN



Specimen No.: 3

p' =	350	kPa
t100 =	1.6	min
Cv =	650	m^2/year
mvi=	0.063	m^2/MN

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

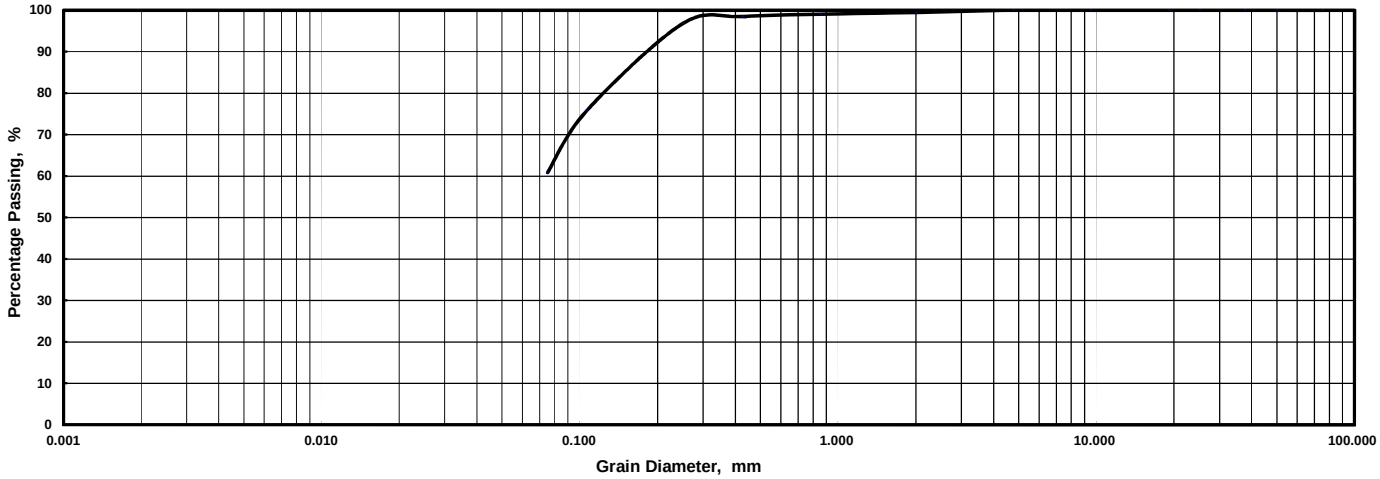
Location : **PP-14-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/11/21** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-8** Depth : **11.00-11.45 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.4	99.0	98.5	96.8	75.7	60.8
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.6	0.9	1.9	14.5	23.4
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.0	1.5	3.2	24.3	39.2

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY			FINE	MEDIUM	COARSE	FINE		COARSE	
	SILT		SAND			GRAVEL			

Sample No. / Depth	SPT-8 / 11.00-11.45 m		Sample No. / Depth	SPT-8 / 11.00-11.45 m	
Larger than 4.75 mm	0.0 %		Max. Diameter	4.75 mm	
4.75 - 2.00 mm	0.6 %		Dia. at 60%	mm	
2.00 - 0.425 mm	1.0 %		Dia. at 50%	mm	
0.425 - 0.075 mm	37.7 %		Dia. at 30%	mm	
0.075 - 0.005 mm	60.8 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	99.4 %		Coeff. of Curvature		
425um Sieve Passing	98.5 %				
75um Sieve Passing	60.8 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

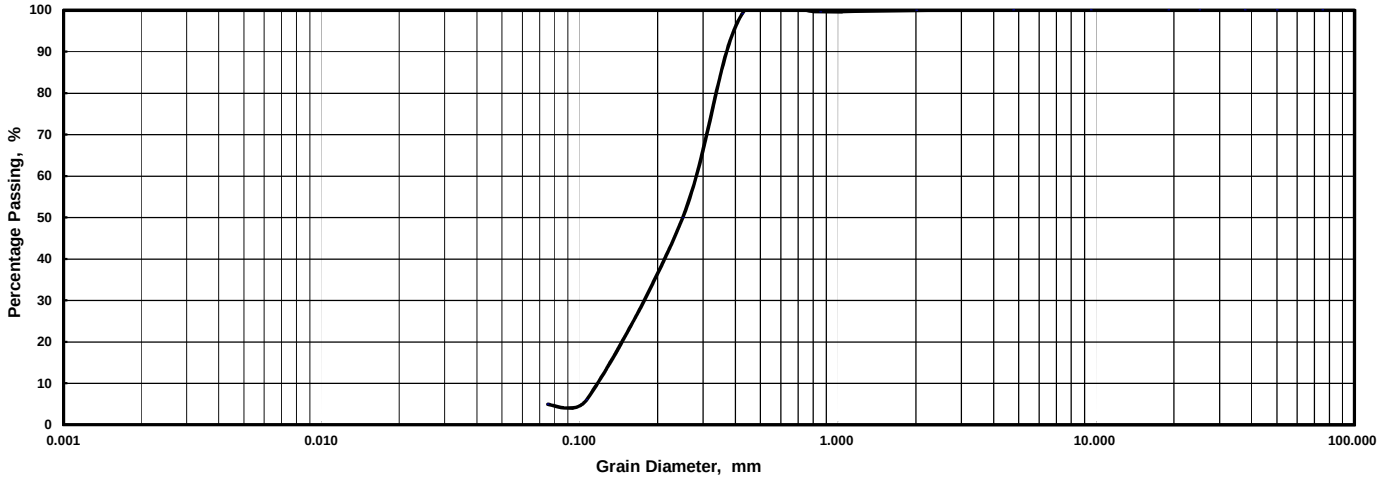
Location : **PP-14-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/11/19** Tested By : **Sadamoto** Checked by :

Sample No. : **D-1** Depth : **12.50-13.40 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.6	99.1	49.9	6.0	4.9
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.8	45.4	85.3	86.2
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.9	50.1	94.0	95.1

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY			FINE	MEDIUM	COARSE	FINE		COARSE	
	SILT		SAND			GRAVEL			

Sample No. Depth	D-1 12.50-13.40 m			Sample No. Depth	D-1 12.50-13.40 m		
Larger than 4.75 mm	0.0	%		Max. Diameter	4.75	mm	
4.75 - 2.00 mm	0.1	%		Dia. at 60%	0.28	mm	
2.00 - 0.425 mm	0.8	%		Dia. at 50%	0.25	mm	
0.425 - 0.075 mm	94.2	%		Dia. at 30%	0.17	mm	
0.075 - 0.005 mm	4.9	%		Dia. at 10%	0.115	mm	
Smaller than 0.005 mm				Coeff. of Uniformity	2.43		
2000um Sieve Passing	99.9	%		Coeff. of Curvature	0.90		
425um Sieve Passing	99.1	%					
75um Sieve Passing	4.9	%					

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

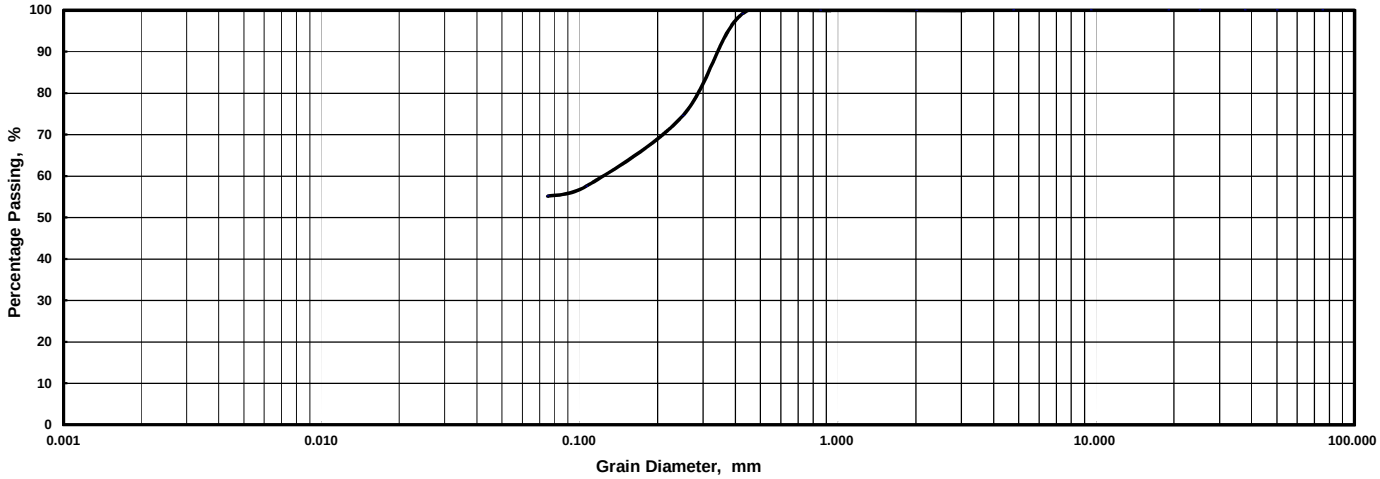
Location : **PP-14-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/11/19** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-9** Depth : **14.00-14.45 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.9	99.1	74.5	57.6	55.1
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.9	26.1	43.4	45.9
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.9	25.5	42.4	44.9

Grain Size Distribution Curves



0.005	0.075	0.425	2.00	4.75	19.0	75.0
CLAY		FINE / MEDIUM / COARSE			FINE / COARSE	
	SILT	SAND			GRAVEL	

Sample No. / Depth	SPT-9 14.00-14.45 m		Sample No. / Depth	SPT-9 14.00-14.45 m	
Larger than 4.75 mm	0.0 %		Max. Diameter	4.75 mm	
4.75 - 2.00 mm	0.1 %		Dia. at 60%	0.12 mm	
2.00 - 0.425 mm	0.8 %		Dia. at 50%	mm	
0.425 - 0.075 mm	44.0 %		Dia. at 30%	mm	
0.075 - 0.005 mm	55.1 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	99.9 %		Coeff. of Curvature		
425um Sieve Passing	99.1 %				
75um Sieve Passing	55.1 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

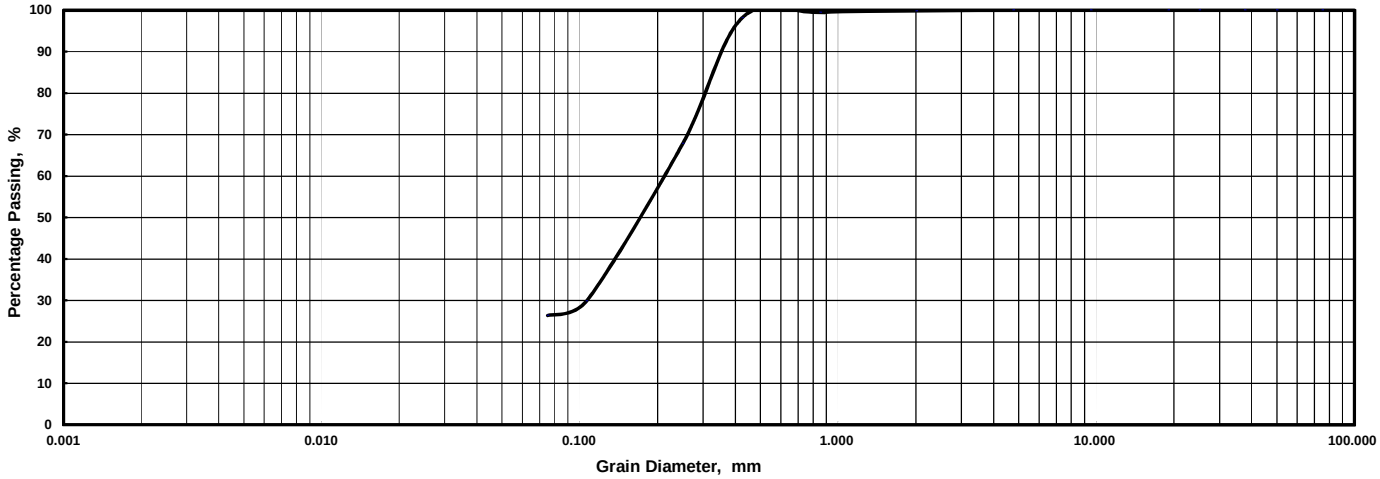
Location : **PP-14-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/11/19** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-10** Depth : **15.00-15.45 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	99.5	98.2	67.8	29.8	26.4
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	1.9	34.0	74.1	77.8
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	1.8	32.2	70.2	73.6

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	SPT-10 15.00-15.45 m		Sample No. Depth	SPT-10 15.00-15.45 m	
Larger than 4.75 mm	0.0 %		Max. Diameter	4.75 mm	
4.75 - 2.00 mm	0.2 %		Dia. at 60%	0.21 mm	
2.00 - 0.425 mm	1.7 %		Dia. at 50%	0.17 mm	
0.425 - 0.075 mm	71.8 %		Dia. at 30%	0.11 mm	
0.075 - 0.005 mm	26.4 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	99.8 %		Coeff. of Curvature		
425um Sieve Passing	98.2 %				
75um Sieve Passing	26.4 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

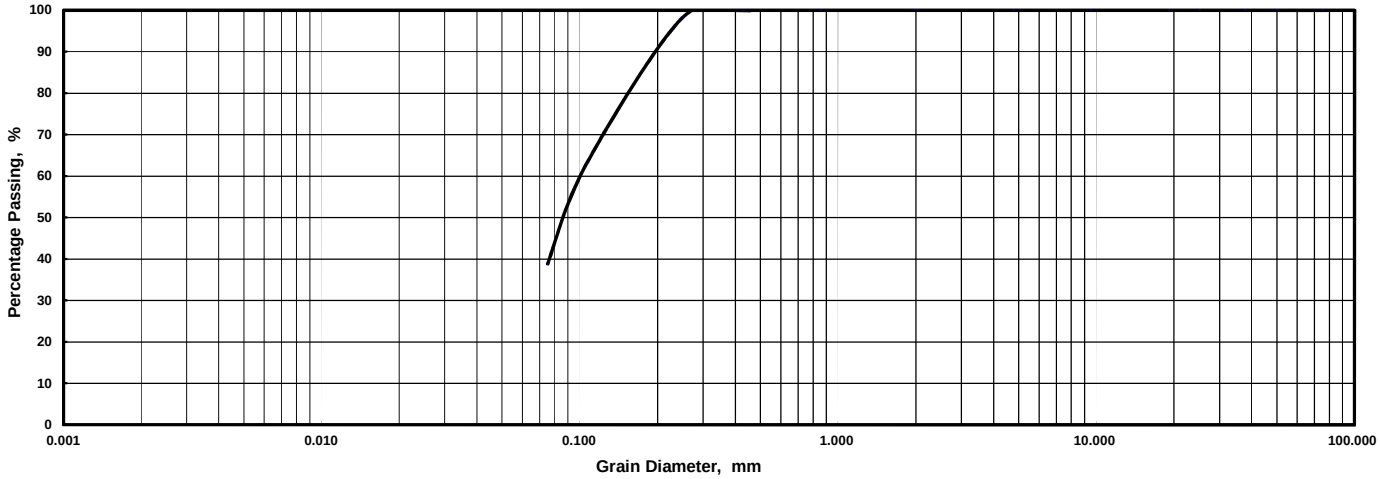
Location : **PP-14-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/10/27** Tested By : **Sadamoto** Checked by :

Sample No. : **D-2** Depth : **16.00 - 16.85 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	98.3	62.9	38.8
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.5	31.9	52.6
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.7	37.1	61.2

Grain Size Distribution Curves



0.005	0.075	0.425	2.00	4.75	19.0	75.0
CLAY		FINE	MEDIUM	COARSE	FINE	COARSE
	SILT	SAND			GRAVEL	

Sample No. / Depth	D-2 16.00 - 16.85 m		Sample No. / Depth	D-2 16.00 - 16.85 m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.10 mm	
2.00 - 0.425 mm	0.1 %		Dia. at 50%	0.09 mm	
0.425 - 0.075 mm	61.1 %		Dia. at 30%	mm	
0.075 - 0.005 mm	38.8 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	100.0 %		Coeff. of Curvature		
425um Sieve Passing	99.9 %				
75um Sieve Passing	38.8 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

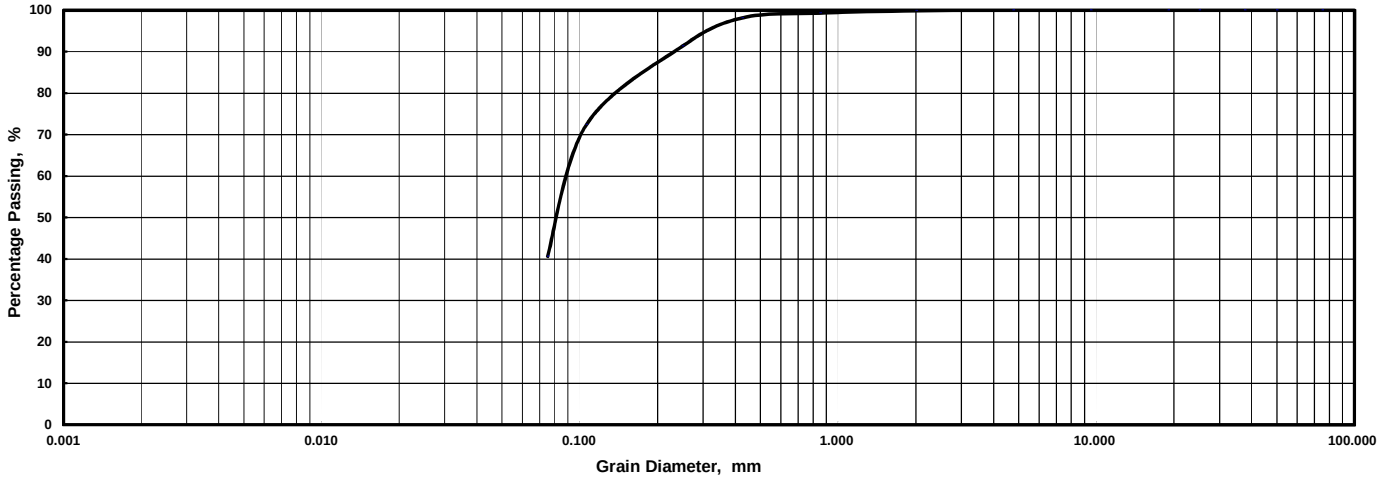
Location : **PP-14-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/11/19** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-11** Depth : **17.00-17.45 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.3	98.2	91.4	72.4	40.6
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	1.6	7.3	23.4	50.3
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7	1.8	8.6	27.6	59.4

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. / Depth	SPT-11 / 17.00-17.45 m		Sample No. / Depth	SPT-11 / 17.00-17.45 m	
Larger than 4.75 mm	0.0 %		Max. Diameter	4.75 mm	
4.75 - 2.00 mm	0.1 %		Dia. at 60%	0.09 mm	
2.00 - 0.425 mm	1.7 %		Dia. at 50%	0.08 mm	
0.425 - 0.075 mm	57.5 %		Dia. at 30%	mm	
0.075 - 0.005 mm	40.6 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	99.9 %		Coeff. of Curvature		
425um Sieve Passing	98.2 %				
75um Sieve Passing	40.6 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

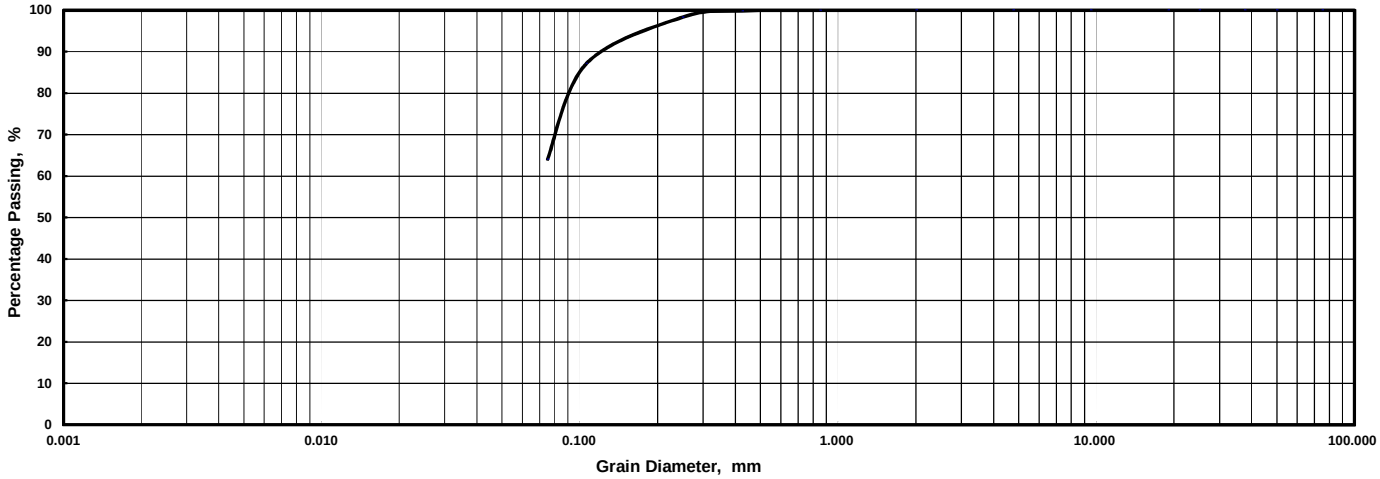
Location : **PP-14-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/11/21** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-12** Depth : **18.00-18.45 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	98.3	87.1	64.1
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0	7.7	21.5
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.7	12.9	35.9

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY			FINE	MEDIUM	COARSE	FINE		COARSE	
	SILT		SAND			GRAVEL			

Sample No. Depth	SPT-12 18.00-18.45 m		Sample No. Depth	SPT-12 18.00-18.45 m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	mm	
2.00 - 0.425 mm	0.2 %		Dia. at 50%	mm	
0.425 - 0.075 mm	35.8 %		Dia. at 30%	mm	
0.075 - 0.005 mm	64.1 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	100.0 %		Coeff. of Curvature		
425um Sieve Passing	99.8 %				
75um Sieve Passing	64.1 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

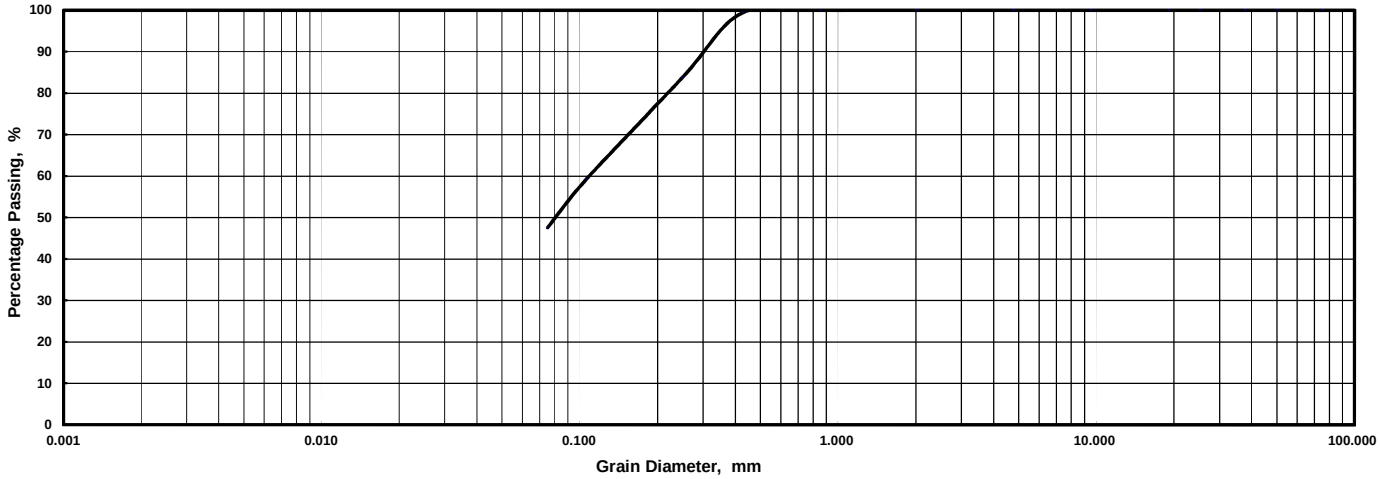
Location : **PP-14-2 (Sp-1)** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/10/27** Tested By : **Sadamoto** Checked by :

Sample No. : **D-3** Depth : **19.00 - 19.90 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.4	83.8	59.2	47.5
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	14.7	37.0	47.6
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	16.2	40.8	52.5

Grain Size Distribution Curves



0.005	0.075	0.425	2.00	4.75	19.0	75.0
CLAY		FINE / MEDIUM / COARSE			FINE / COARSE	
	SILT	SAND			GRAVEL	

Sample No. / Depth	D-3 19.00 - 19.90 m		Sample No. / Depth	D-3 19.00 - 19.90 m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.11 mm	
2.00 - 0.425 mm	0.6 %		Dia. at 50%	0.08 mm	
0.425 - 0.075 mm	51.8 %		Dia. at 30%	mm	
0.075 - 0.005 mm	47.5 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	100.0 %		Coeff. of Curvature		
425um Sieve Passing	99.4 %				
75um Sieve Passing	47.5 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

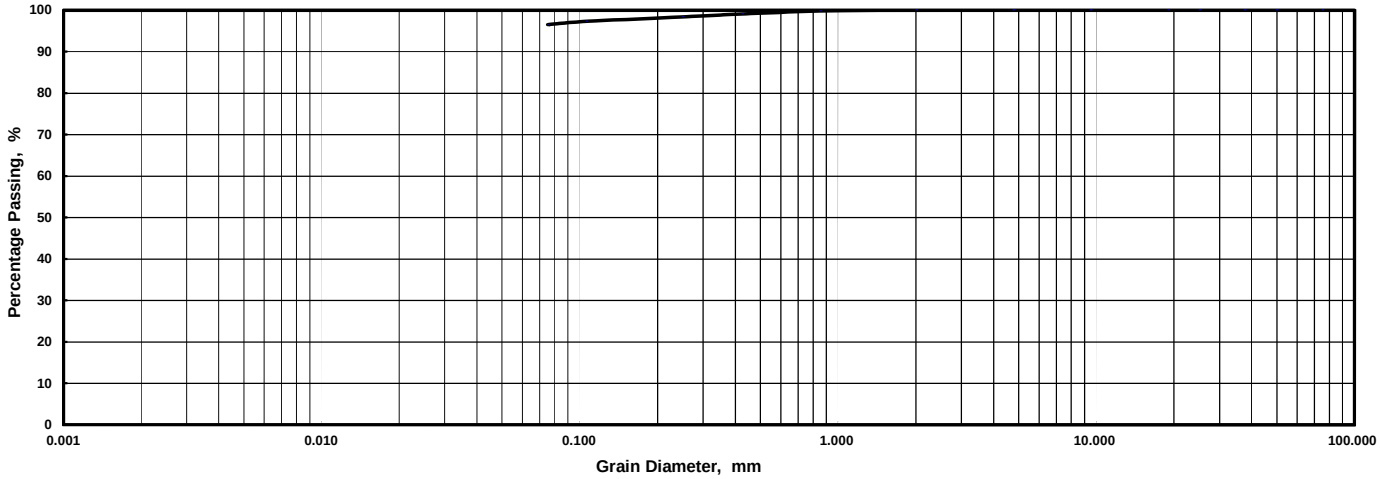
Location : **PP-14-2 (Sp-4)** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/10/27** Tested By : **Sadamoto** Checked by :

Sample No. : **D-3** Depth : **19.00 - 19.90 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	99.1	98.4	97.3	96.5
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.9	1.6	2.1
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.9	1.6	2.7	3.5

Grain Size Distribution Curves



0.005	0.075	0.425	2.00	4.75	19.0	75.0
CLAY		FINE / MEDIUM / COARSE			FINE / COARSE	
	SILT	SAND			GRAVEL	

Sample No. / Depth	D-3 19.00 - 19.90 m		Sample No. / Depth	D-3 19.00 - 19.90 m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	mm	
2.00 - 0.425 mm	0.9 %		Dia. at 50%	mm	
0.425 - 0.075 mm	2.6 %		Dia. at 30%	mm	
0.075 - 0.005 mm	96.5 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	100.0 %		Coeff. of Curvature		
425um Sieve Passing	99.1 %				
75um Sieve Passing	96.5 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

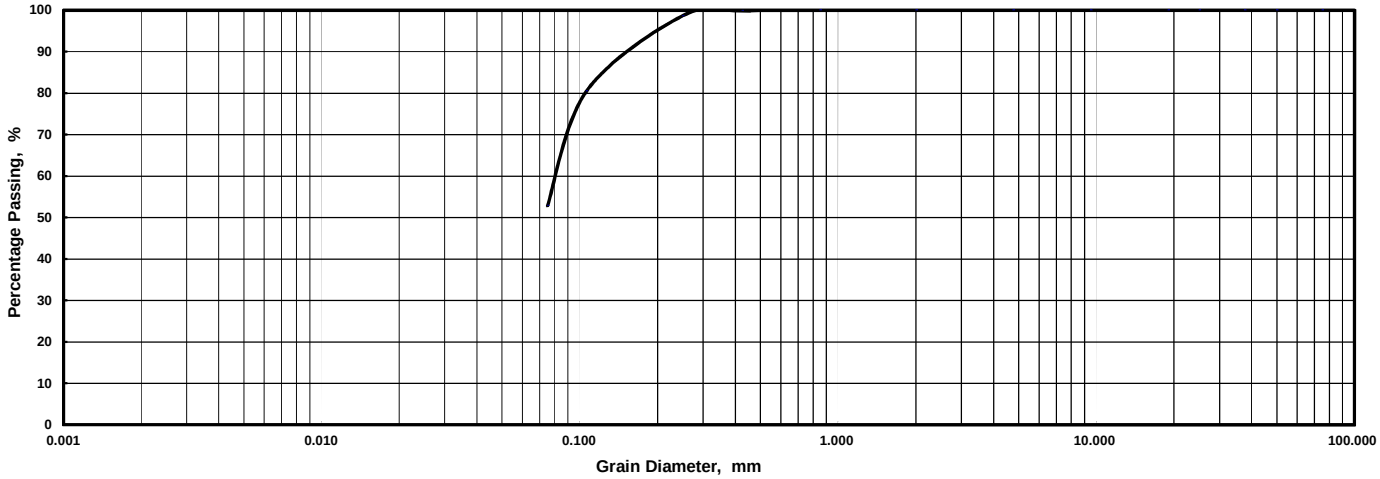
Location : **PP-14-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/11/21** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-13** Depth : **20.00-20.45 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	98.7	80.5	52.8
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	11.5	27.7
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.3	19.5	47.2

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	SPT-13 20.00-20.45 m		Sample No. Depth	SPT-13 20.00-20.45 m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.85 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.08 mm	
2.00 - 0.425 mm	0.1 %		Dia. at 50%	mm	
0.425 - 0.075 mm	47.0 %		Dia. at 30%	mm	
0.075 - 0.005 mm	52.8 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	100.0 %		Coeff. of Curvature		
425um Sieve Passing	99.9 %				
75um Sieve Passing	52.8 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

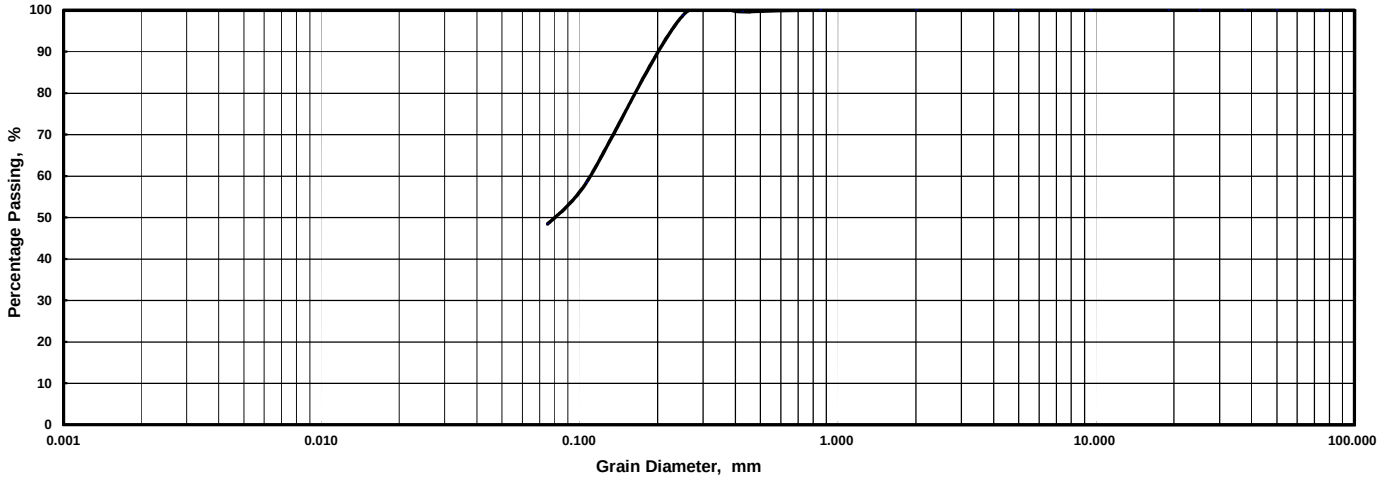
Location : **PP-14-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/11/21** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-14** Depth : **21.00-21.45 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.6	98.7	58.5	48.4
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.9	27.3	33.9
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.3	41.5	51.6

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75	19.0	75.0
CLAY		FINE	MEDIUM	COARSE	FINE		COARSE	
	SILT	SAND			GRAVEL			

Sample No. Depth	SPT-14 21.00-21.45 m		Sample No. Depth	SPT-14 21.00-21.45 m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.85 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.11 mm	
2.00 - 0.425 mm	0.4 %		Dia. at 50%	0.08 mm	
0.425 - 0.075 mm	51.2 %		Dia. at 30%	mm	
0.075 - 0.005 mm	48.4 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	100.0 %		Coeff. of Curvature		
425um Sieve Passing	99.6 %				
75um Sieve Passing	48.4 %				

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TABLE SUMMARY OF SOIL TEST

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project** Standard: **ASTM**

Borehole No.		PP-14-3								
Sample No.		HP-1	HP-2	HP-3	HP-4	HP-5	HP-6			
Sample Depth		1.00m ~1.80m	4.00m ~4.80m	7.00m ~7.80m	10.00m ~10.70m	13.00m ~13.90m	16.00m ~16.90m			
Condition of Sample		Undisturbed								
Natural Water Content	%	77.6	48.0	38.5	31.6	33.0	32.0			
Specific Gravity		2.68	2.74	2.72	2.72	2.74	2.73			
Wet Density	Mg/m^3	1.62	1.75	1.85	1.90	1.86	1.84			
Dry Density	Mg/m^3	0.91	1.18	1.34	1.45	1.40	1.40			
Natural Void Ratio		1.93	1.32	1.03	0.88	0.96	0.95			
Degree of Saturation	%	100	100	100	98	95	92			
Atterberg Limits	Liquid Limit, %	80	52	41	33	33	32			
	Plastic Limit, %	36	26	21	19	20	18			
	Plasticity Index, %	44	26	20	14	13	14			
Grain Size Analysis	Gravel, %	0	0	0	0	0	0			
	Sand, %	6	4	16	33	17	26			
	Silt, %	33	44	41	36	45	37			
	Clay & Colloid, %	61	52	43	31	38	37			
	Max. diameter, mm	2.00	0.250	0.425	0.425	0.850	0.850			
	Diam. at 60% mm	0.0046	0.0073	0.017	0.053	0.028	0.031			
	Diam. at 10% mm	-	-	-	-	-	-			
Visual soil description		Clay	Clay	Clay with Sand	Sandy Clay	Clay with Sand	Clay with Sand			
Unified soil classification		CH	CH	CL	CL	CL	CL			
Triaxial compression test	Angle of Internal Friction (^{0})	-	-	-	-	-	-			
	Cohesion Intercept, kPa	-	-	-	-	-	-			
	Condition of drainage	-	-	-	-	-	-			
	Angle of Internal Friction *2 (^{0})	-	-	-	-	-	-			
	Cohesion Intercept, kPa *2	-	-	-	-	-	-			
	Condition of drainage	-	-	-	-	-	-			
Consolidation Test	Preconsolidation Pressure, kPa	-	-	-		-	-			
	Compression Index(Average)	-	-	-		-	-			
	Pressure Range for Compression Index(kPa)	-	-	-		-	-			
	Swell index	-	-	-		-	-			
Chemical Test	pH value	-	-	-	-	-	-			
	Total sulphate content as SO_3, %	-	-	-	-	-	-			
	Chloride content as Cl, %	-	-	-	-	-	-			
	Organic Matter content, %	-	-	-	-	-	-			
Unconfined Compression Strength (kPa)		-	-	-	-	-	-			
Strain at failure (%)		-	-	-	-	-	-			

Remarks : Atterberg Limits was tested on material at natural state except those with *1 which was tested on material passing through 0.425mm test sieve.

*2 : In terms of effective stress

Checked by : A. B. Tan

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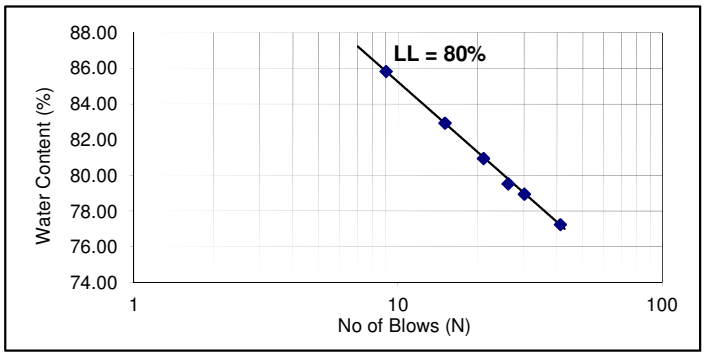
ATTERBERG LIMITS DETERMINATION

Project Name : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No. : S27-14
Standard : ASTM D4318-10
Date of Testing : 05.12.14
Tested By : Vasantha
Checked By : A. B. Tan

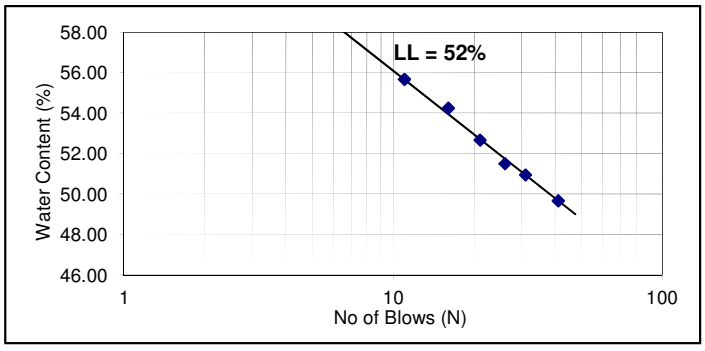
Sample No. : PP-14-3 HP-1
Depth : 1.00-1.80m
Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	41	77.23
2	30	78.95
3	26	79.53
4	21	80.93
5	15	82.93
6	9	85.82
Liquid Limits %		**80**
Plastic Limits %		**36**
Plasticity Index		**44**



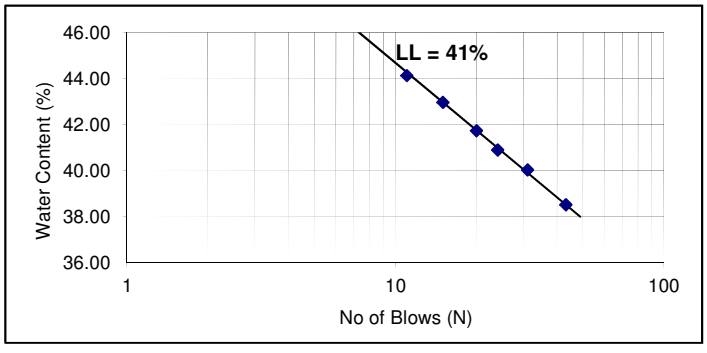
Sample No. : PP-14-3 HP-2
Depth : 4.00-4.80m
Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	41	49.67
2	31	50.94
3	26	51.49
4	21	52.66
5	16	54.23
6	11	55.66
Liquid Limits %		**52**
Plastic Limits %		**26**
Plasticity Index		**26**



Sample No. : PP-14-3 HP-3
Depth : 7.00-7.80m
Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	43	38.53
2	31	40.04
3	24	40.90
4	20	41.74
5	15	42.97
6	11	44.13
Liquid Limits %		**41**
Plastic Limits %		**21**
Plasticity Index		**20**



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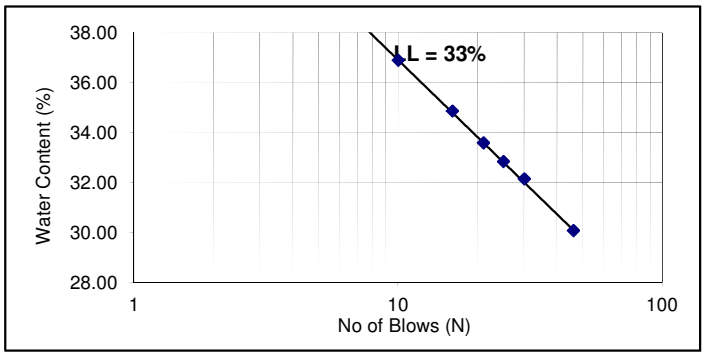
ATTERBERG LIMITS DETERMINATION

Project Name : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No. : S27-14
Standard : ASTM D4318-10
Date of Testing : 08.12.14
Tested By : Vasantha
Checked By : A. B. Tan

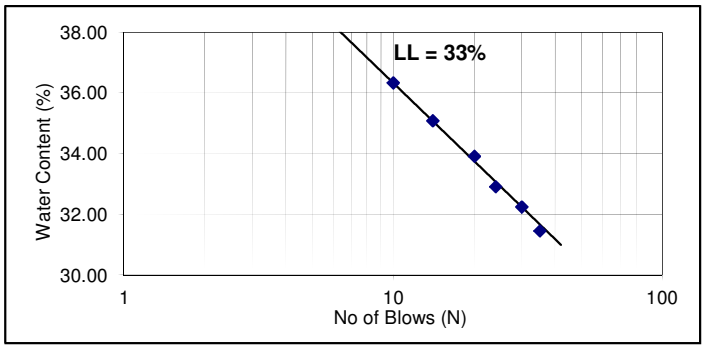
Sample No. : PP-14-3 HP-4
Depth : 10.00-10.70m
Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	46	30.08
2	30	32.14
3	25	32.84
4	21	33.59
5	16	34.87
6	10	36.90
Liquid Limits %		**33**
Plastic Limits %		**19**
Plasticity Index		**14**



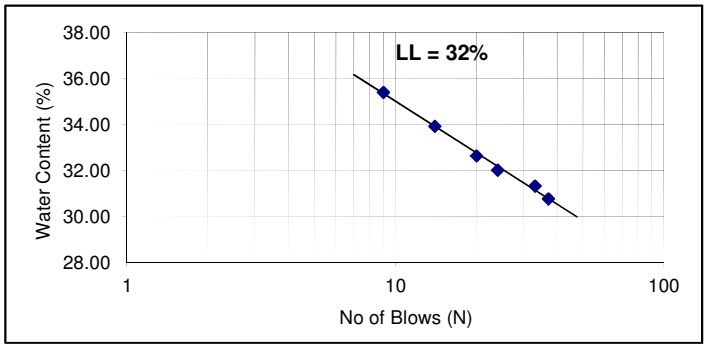
Sample No. : PP-14-3 HP-5
Depth : 13.00-13.90m
Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	35	31.45
2	30	32.24
3	24	32.91
4	20	33.92
5	14	35.08
6	10	36.33
Liquid Limits %		**33**
Plastic Limits %		**20**
Plasticity Index		**13**



Sample No. : PP-14-3 HP-6
Depth : 16.00-16.90m
Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	37	30.78
2	33	31.34
3	24	32.02
4	20	32.65
5	14	33.92
6	9	35.41
Liquid Limits %		**32**
Plastic Limits %		**18**
Plasticity Index		**14**



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Singapore Branch

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **04.12.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

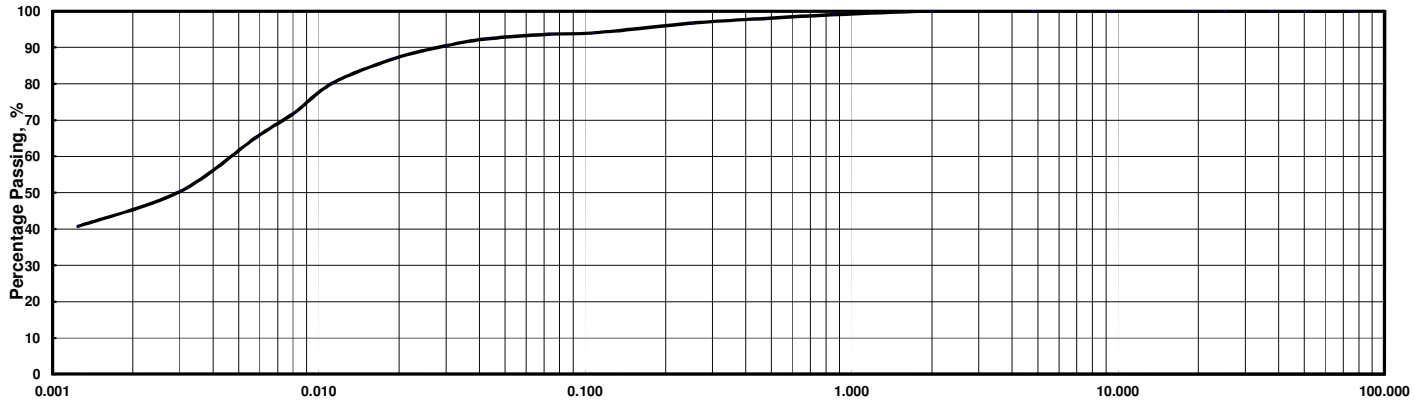
Sample No. : **PP-14-3 HP-1** Depth : **1.00-1.80m** ( ) Specific Gravity : 2.68

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.0	97.8	96.6	94.0	93.6
Hydro.	Dia., mm	0.042	0.030	0.019	0.011	0.0081	0.0058	0.0030	0.0012							
	% Passing	92.3	90.4	86.9	80.1	72.0	65.2	50.2	40.7							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP-14-3 HP-1 1.00-1.80m		Sample No. Depth	PP-14-3 HP-1 1.00-1.80m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.0046 mm	
2.00 - 0.425 mm	2.2 %		Dia. at 30%	- mm	
0.425 - 0.075 mm	4.2 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	32.7 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	61.0 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	99.0 %				
75um Sieve Passing	93.6 %				

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GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **04.12.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

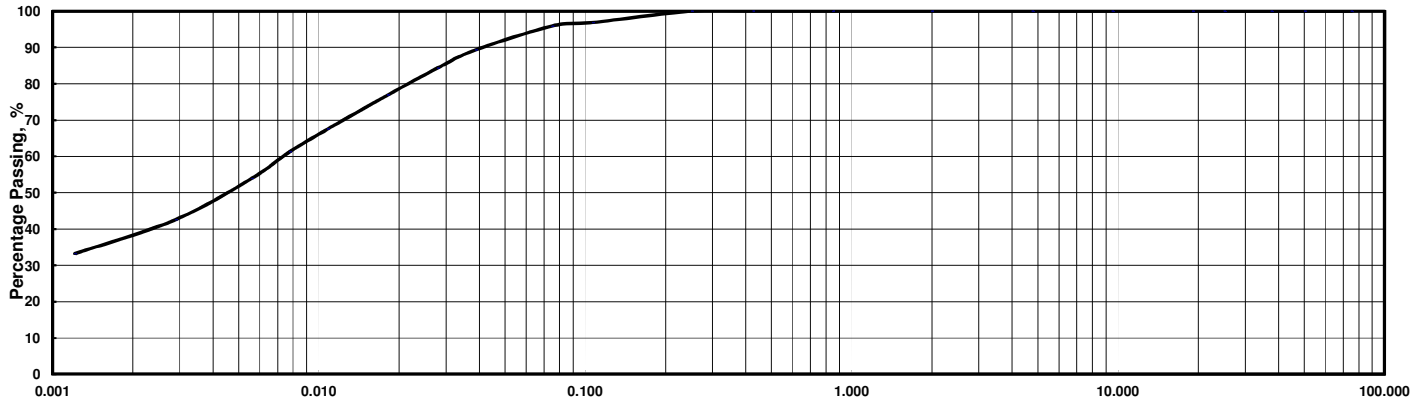
Sample No. : **PP-14-3 HP-2** Depth : **4.00-4.80m** ( ) Specific Gravity : 2.74

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	96.8	95.9
Hydro.	Dia., mm	0.039	0.028	0.018	0.011	0.0077	0.0056	0.0029	0.0012							
	% Passing	89.3	84.3	76.8	67.5	61.3	54.0	42.6	33.2							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP-14-3 HP-2 4.00-4.80m		Sample No. Depth	PP-14-3 HP-2 4.00-4.80m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.250 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.0073 mm	
2.00 - 0.425 mm	0.0 %		Dia. at 30%	- mm	
0.425 - 0.075 mm	4.1 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	44.4 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	51.5 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	95.9 %				

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GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **04.12.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

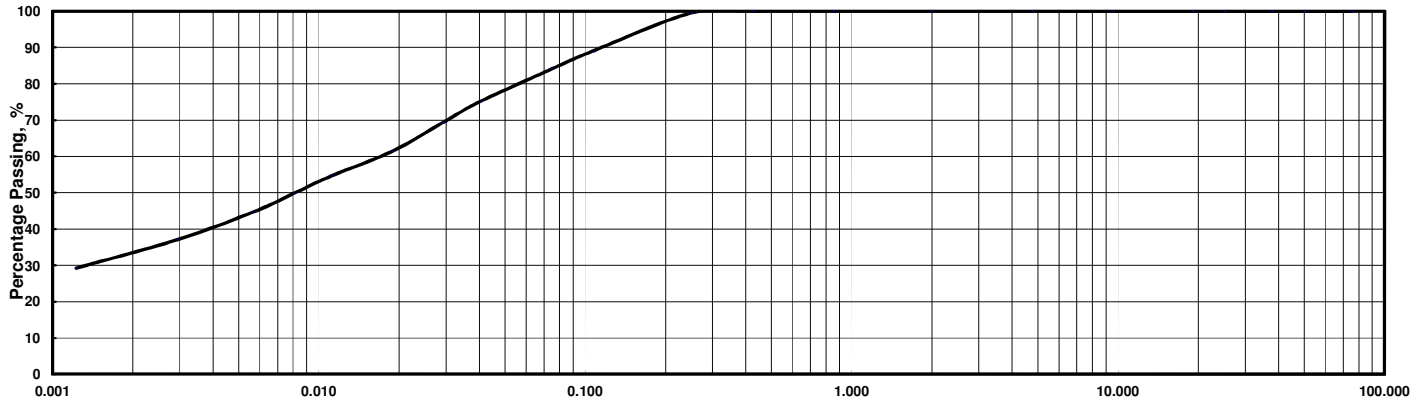
Sample No. : **PP-14-3 HP-3** Depth : **7.00-7.80m** ( ) Specific Gravity : 2.72

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	88.9	84.1
Hydro.	Dia., mm	0.040	0.029	0.019	0.011	0.0080	0.0057	0.0029	0.0012							
	% Passing	75.1	69.3	61.5	54.6	49.8	44.9	37.1	29.3							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP-14-3 HP-3 7.00-7.80m		Sample No. Depth	PP-14-3 HP-3 7.00-7.80m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.425 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.017 mm	
2.00 - 0.425 mm	0.0 %		Dia. at 30%	0.0013 mm	
0.425 - 0.075 mm	15.9 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	41.3 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	42.8 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	84.1 %				

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GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **04.12.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

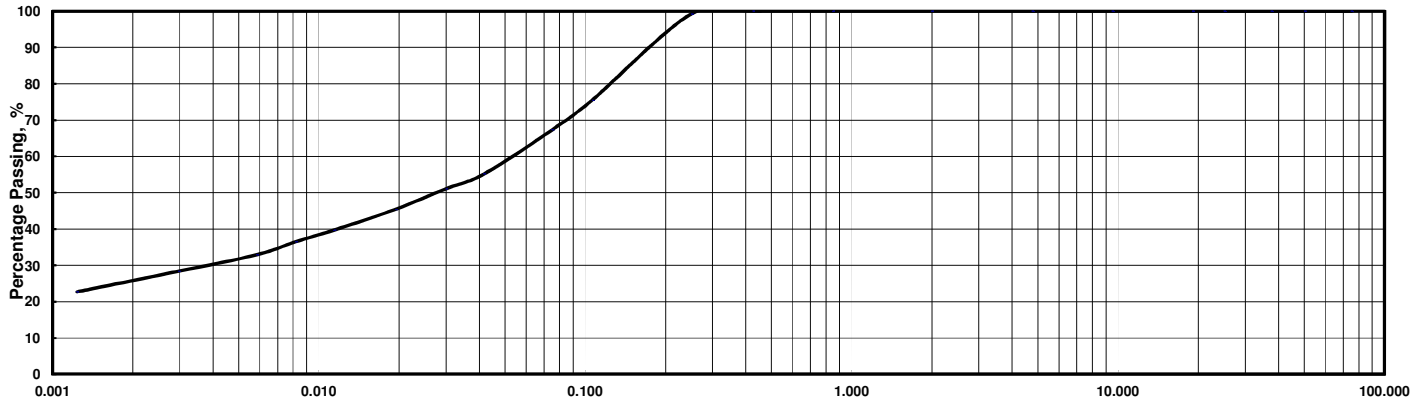
Sample No. : **PP-14-3 HP-4** Depth : **10.00-10.70m** ( ) Specific Gravity : 2.72

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.2	75.5	67.3
Hydro.	Dia., mm	0.042	0.030	0.019	0.011	0.0082	0.0058	0.0030	0.0012							
	% Passing	55.1	51.1	45.4	39.7	36.5	32.9	28.4	22.7							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP-14-3 HP-4 10.00-10.70m		Sample No. Depth	PP-14-3 HP-4 10.00-10.70m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.425 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.053 mm	
2.00 - 0.425 mm	0.0 %		Dia. at 30%	0.0038 mm	
0.425 - 0.075 mm	32.7 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	35.7 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	31.6 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	67.3 %				

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GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **05.12.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

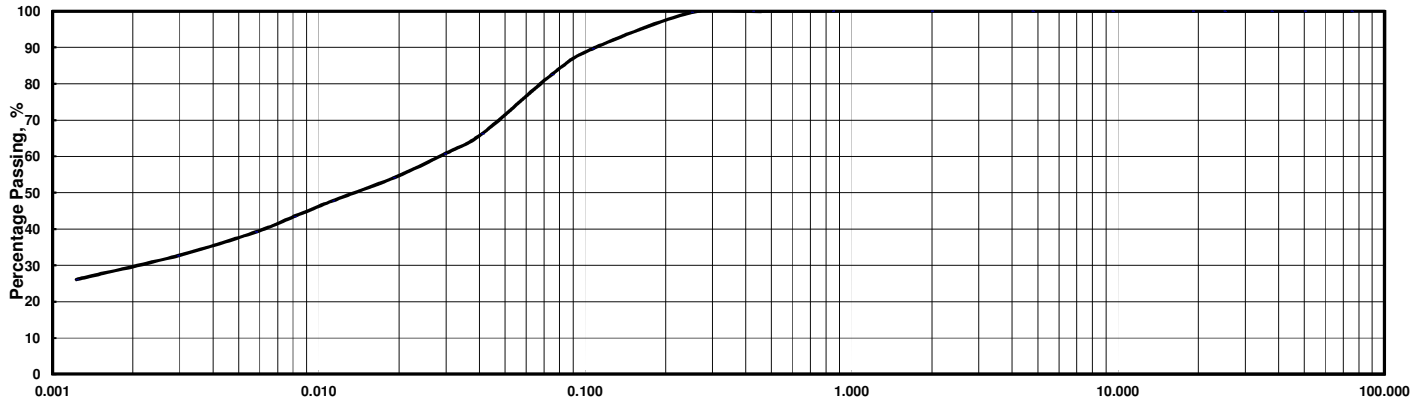
Sample No. : **PP-14-3 HP-5** Depth : **13.00-13.90m** ( ) Specific Gravity : 2.74

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.6	89.6	82.6
Hydro.	Dia., mm	0.041	0.030	0.019	0.011	0.0081	0.0058	0.0030	0.0012							
	% Passing	66.3	60.7	54.1	47.8	43.5	39.2	32.7	26.1							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP-14-3 HP-5 13.00-13.90m		Sample No. Depth	PP-14-3 HP-5 13.00-13.90m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.850 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.028 mm	
2.00 - 0.425 mm	0.1 %		Dia. at 30%	0.0021 mm	
0.425 - 0.075 mm	17.3 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	45.3 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	37.4 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	82.6 %				

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GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **05.12.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

Sample No. : **PP-14-3 HP-6** Depth : **16.00-16.90m** ( ) Specific Gravity : 2.73

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.4	89.8	79.0	73.7
Hydro.	Dia., mm	0.041	0.030	0.019	0.011	0.0081	0.0058	0.0030	0.0012							
	% Passing	64.0	59.3	52.7	46.1	42.4	38.6	33.0	25.4							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves

0.005		0.075	0.425		2.00	4.75	19.0	
CLAY	SILT	FINE	MEDIUM	COARSE		FINE	COARSE	
		SAND				GRAVEL		

Sample No. Depth	PP-14-3 HP-6 16.00-16.90m		Sample No. Depth	PP-14-3 HP-6 16.00-16.90m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.850 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.031 mm	
2.00 - 0.425 mm	1.6 %		Dia. at 30%	0.0021 mm	
0.425 - 0.075 mm	24.7 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	36.7 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	37.0 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	73.7 %				

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29) PP-17-1

TABLE SUMMARY OF SOIL TEST

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project** Standard: **ASTM**

Borehole No.		PP-17-1								
Sample No.		HP-1	HP-2	HP-3	D-1					
Sample Depth		2.00m ~2.85m	5.00m ~5.85m	8.00m ~8.85m	15.00m ~15.85m					
Condition of Sample		Undisturbed			Disturbed					
Natural Water Content	%	51.1	42.6	33.4	29.9					
Specific Gravity		2.76	2.74	2.72	2.72					
Wet Density	Mg/m^3	1.71	1.81	1.89	1.87					
Dry Density	Mg/m^3	1.13	1.27	1.42	1.44					
Natural Void Ratio		1.44	1.16	0.92	0.89					
Degree of Saturation	%	98	100	99	91					
Atterberg Limits	Liquid Limit, %	62	40	30	30					
	Plastic Limit, %	29	22	19	18					
	Plasticity Index, %	33	18	11	12					
Grain Size Analysis	Gravel, %	0	0	0	0					
	Sand, %	2	2	27	22					
	Silt, %	40	54	39	46					
	Clay & Colloid, %	58	44	34	32					
	Max. diameter, mm	2.00	2.00	2.00	2.00					
	Diam. at 60% mm	0.0054	0.021	0.038	0.036					
	Diam. at 10% mm	-	-	-	-					
Visual soil description		Clay	Clay	Clay with Sand.	Clay with Sand.					
Unified soil classification		CH	CL	CL	CL					
Triaxial compression test	Angle of Internal Friction (^{0})	0	0	0	-					
	Cohesion Intercept, kPa	16	13	51	-					
	Condition of drainage	UU	UU	UU	-					
	Angle of Internal Friction *2 (^{0})	40	40	-	-					
	Cohesion Intercept, kPa *2	0	0	-	-					
	Condition of drainage	$\overline{CU}$	$\overline{CU}$	-	-					
Consolidation Test	Preconsolidation Pressure, kPa	61	79	-	-					
	Compression Index(Average)	0.39	0.35	0.21	0.22					
	Pressure Range for Compression Index(kPa)	200-1600	200-1600	1600-3200	1600-3200					
	Swell index	0.12	0.083	0.039	0.058					
Chemical Test	pH value	-	-	-	-					
	Total sulphate content as SO_3, %	-	-	-	-					
	Chloride content as Cl, %	-	-	-	-					
	Organic Matter content, %	-	-	-	-					
Unconfined Compression Strength (kPa)		-	-	-	-					
Strain at failure (%)		-	-	-	-					

Remarks : Atterberg Limits was tested on material at natural state except those with *1 which was tested on material passing through 0.425mm test sieve.

*2 : In terms of effective stress

Checked by :

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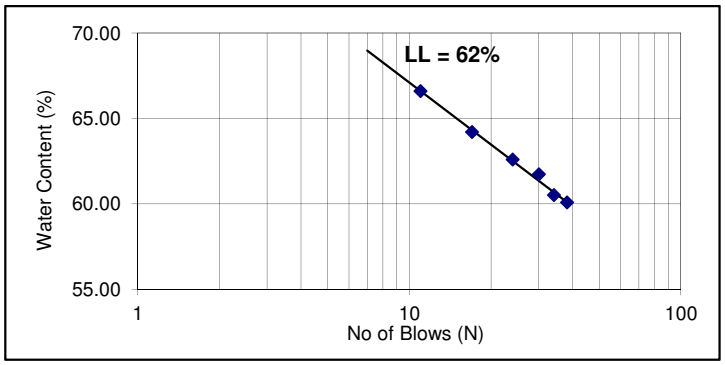
ATTERBERG LIMITS DETERMINATION

Project Name : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No. : S27-14
Standard : ASTM D4318-10
Date of Testing : 17.10.14
Tested By : Vasantha
Checked By : A. B. Tan

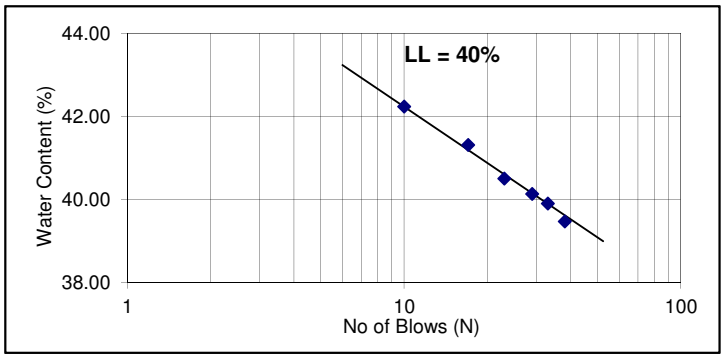
Sample No. : PP17-1 HP-1
Depth : 2.00-2.85m
Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	38	60.10
2	34	60.53
3	30	61.73
4	24	62.59
5	17	64.21
6	11	66.60
Liquid Limits %		**62**
Plastic Limits %		**29**
Plasticity Index		**33**



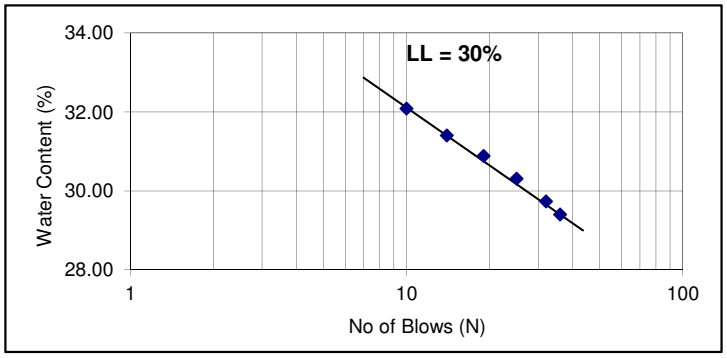
Sample No. : PP17-1 HP-2
Depth : 5.00-5.85m
Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	38	39.47
2	33	39.90
3	29	40.13
4	23	40.51
5	17	41.31
6	10	42.24
Liquid Limits %		**40**
Plastic Limits %		**22**
Plasticity Index		**18**



Sample No. : PP17-1 HP-3
Depth : 8.00-8.85m
Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	36	29.41
2	32	29.73
3	25	30.31
4	19	30.88
5	14	31.40
6	10	32.09
Liquid Limits %		**30**
Plastic Limits %		**19**
Plasticity Index		**11**



Kiso-Jiban Consultants Co Ltd
Singapore Branch

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ATTERBERG LIMITS DETERMINATION

Project Name : Preparatory Survey on Matarbari USC Coral-fired Power Project Project No. : S27-14

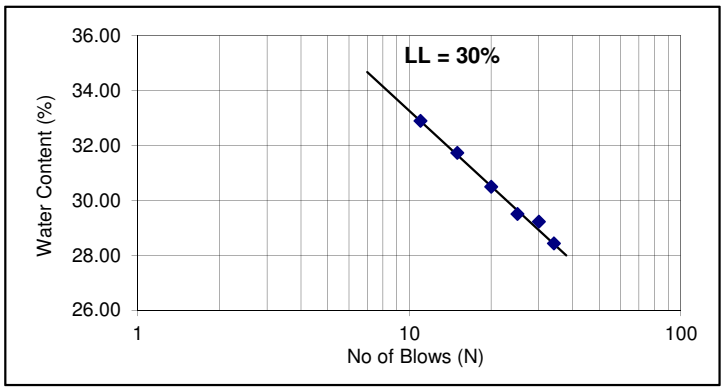
Standard : ASTM D4318-10 Date of Testing : 03.12.14

Tested By : Vasantha Checked By : A. B. Tan

Sample No. : PP-17-1 D-1 Depth : 15.00-15.85m

Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	34	28.43
2	30	29.22
3	25	29.49
4	20	30.49
5	15	31.72
6	11	32.89
Liquid Limits %		**30**
Plastic Limits %		**18**
Plasticity Index		**12**



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Singapore Branch

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GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **13.10.14** Tested By : **Htet Paing/Motiur** Checked by : **A. B. Tan**

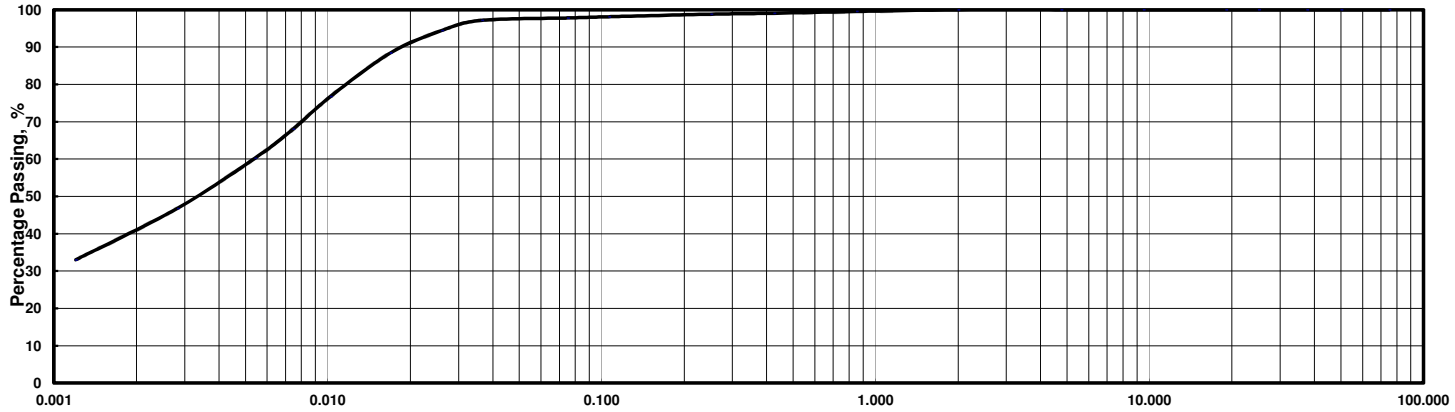
Sample No. : **PP17-1 HP-1** Depth : **2.00-2.85m** ( ) Specific Gravity : 2.76

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	99.0	98.8	98.1	97.8
Hydro.	Dia., mm	0.036	0.026	0.017	0.010	0.0075	0.0054	0.0028	0.0012							
	% Passing	97.1	94.4	88.4	76.7	68.0	60.2	46.8	33.0							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



Grain Diameter, mm

0.005		0.075	0.425		2.00	4.75	19.0		75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP17-1 HP-1 2.00-2.85m		Sample No. Depth	PP17-1 HP-1 2.00-2.85m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.0054 mm	
2.00 - 0.425 mm	1.0 %		Dia. at 30%	- mm	
0.425 - 0.075 mm	1.3 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	39.7 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	58.1 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	99.5 %				
75um Sieve Passing	97.8 %				

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **13.10.14** Tested By : **Htet Paing/Motiur** Checked by : **A. B. Tan**

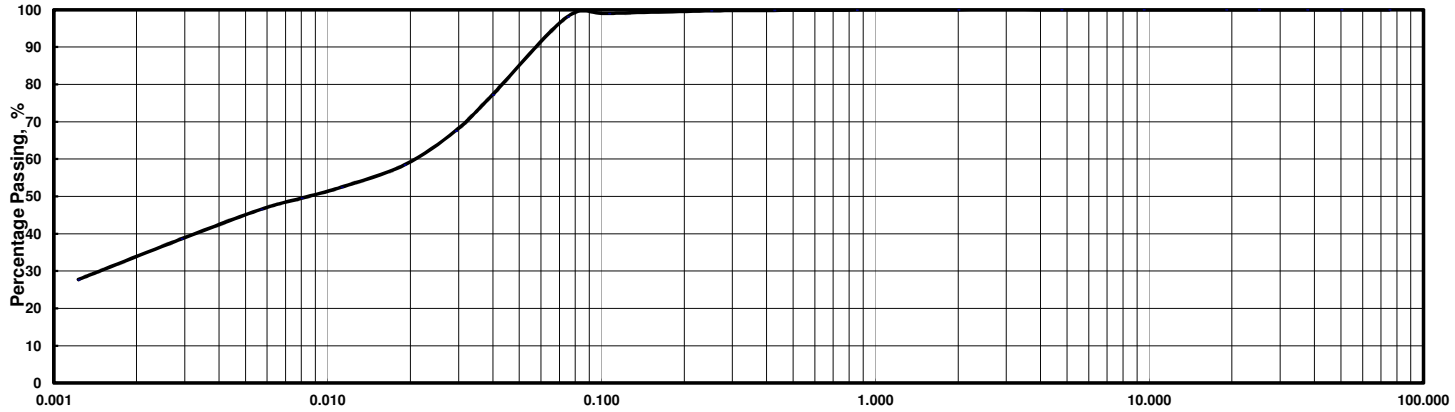
Sample No. : **PP17-1 HP-2** Depth : **5.00-5.85m** ( ) Specific Gravity : 2.74

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.8	99.7	99.0	98.1
Hydro.	Dia., mm	0.040	0.029	0.019	0.011	0.0080	0.0057	0.0029	0.0012							
	% Passing	77.2	67.5	58.4	52.5	49.5	46.5	38.6	27.7							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



Grain Diameter, mm

0.005		0.075	0.425		2.00	4.75	19.0		75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP17-1 HP-2 5.00-5.85m		Sample No. Depth	PP17-1 HP-2 5.00-5.85m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.021 mm	
2.00 - 0.425 mm	0.2 %		Dia. at 30%	0.0015 mm	
0.425 - 0.075 mm	1.7 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	53.6 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	44.5 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	99.9 %				
75um Sieve Passing	98.1 %				

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **13.10.14** Tested By : **Htet Paing/Motiur** Checked by : **A. B. Tan**

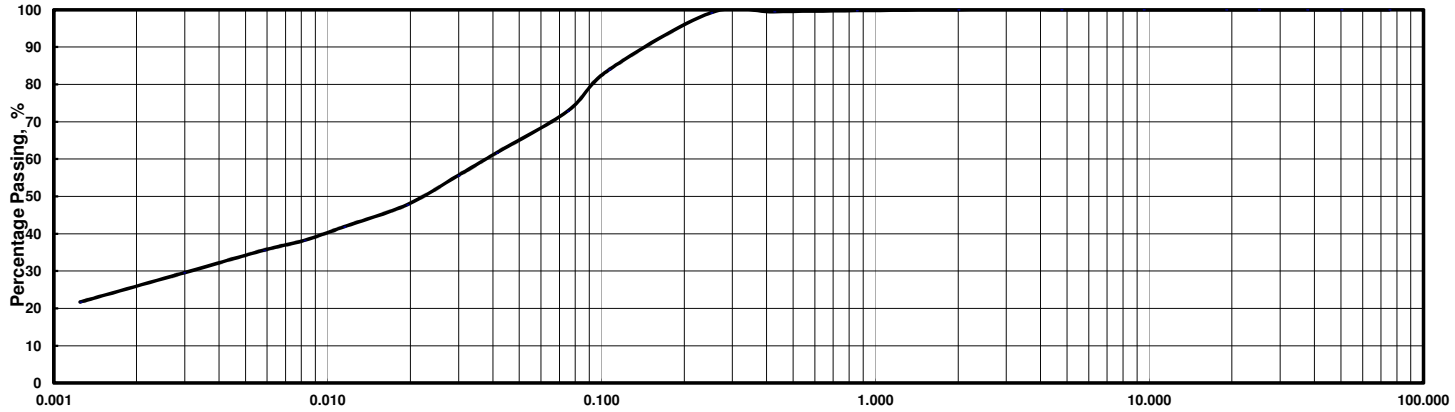
Sample No. : **PP17-1 HP-3** Depth : **8.00-8.85m** ( ) Specific Gravity : 2.72

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	99.5	99.2	83.9	72.8
Hydro.	Dia., mm	0.041	0.030	0.019	0.011	0.0082	0.0058	0.0030	0.0012							
	% Passing	61.6	55.6	47.8	41.8	38.2	35.6	29.5	21.7							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



Grain Diameter, mm

0.005		0.075		0.425		2.00	4.75		19.0		75.0
CLAY			FINE	MEDIUM	COARSE		FINE	COARSE			
	SILT		SAND				GRAVEL				

Sample No. Depth	PP17-1 HP-3 8.00-8.85m		Sample No. Depth	PP17-1 HP-3 8.00-8.85m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.038 mm	
2.00 - 0.425 mm	0.5 %		Dia. at 30%	0.0031 mm	
0.425 - 0.075 mm	26.6 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	39.0 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	33.8 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	99.8 %				
75um Sieve Passing	72.8 %				

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **29.11.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

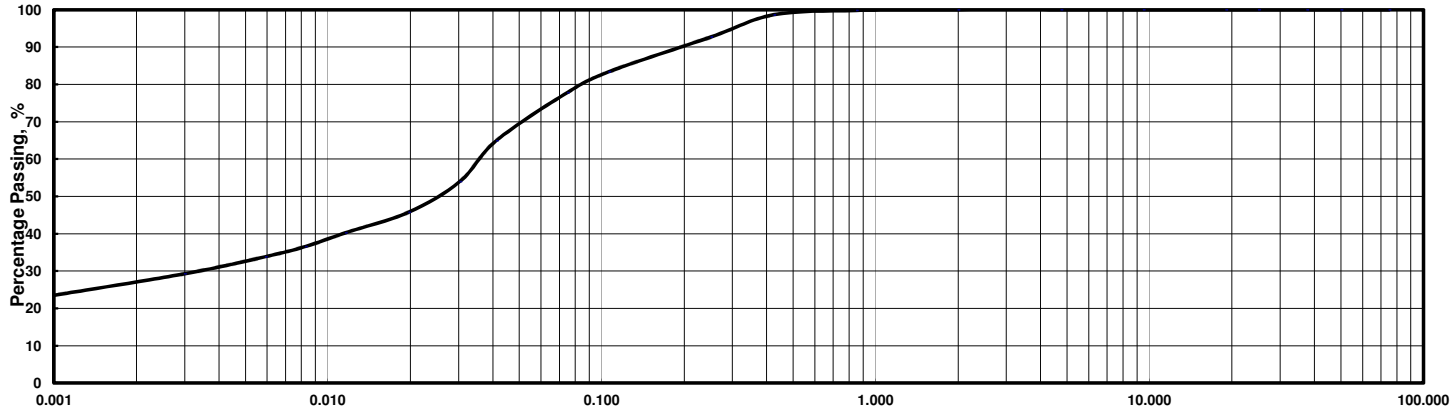
Sample No. : **PP-17-1 D-1** Depth : **15.00-15.85m** ( ) Specific Gravity : 2.72

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	98.6	92.7	83.4	77.8
Hydro.	Dia., mm	0.041	0.030	0.020	0.012	0.0083	0.0059	0.0030	0.0009							
	% Passing	64.9	54.0	45.7	40.2	36.6	33.8	29.3	22.9							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



Grain Diameter, mm

0.005		0.075	0.425		2.00	4.75	19.0		75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP-17-1 D-1 15.00-15.85m		Sample No. Depth	PP-17-1 D-1 15.00-15.85m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.036 mm	
2.00 - 0.425 mm	1.4 %		Dia. at 30%	0.0033 mm	
0.425 - 0.075 mm	20.8 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	45.4 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	32.4 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	99.8 %				
75um Sieve Passing	77.8 %				

UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No. : S27.14

Standard : ASTM D2850-03a

Date of Testing : 08.10.14

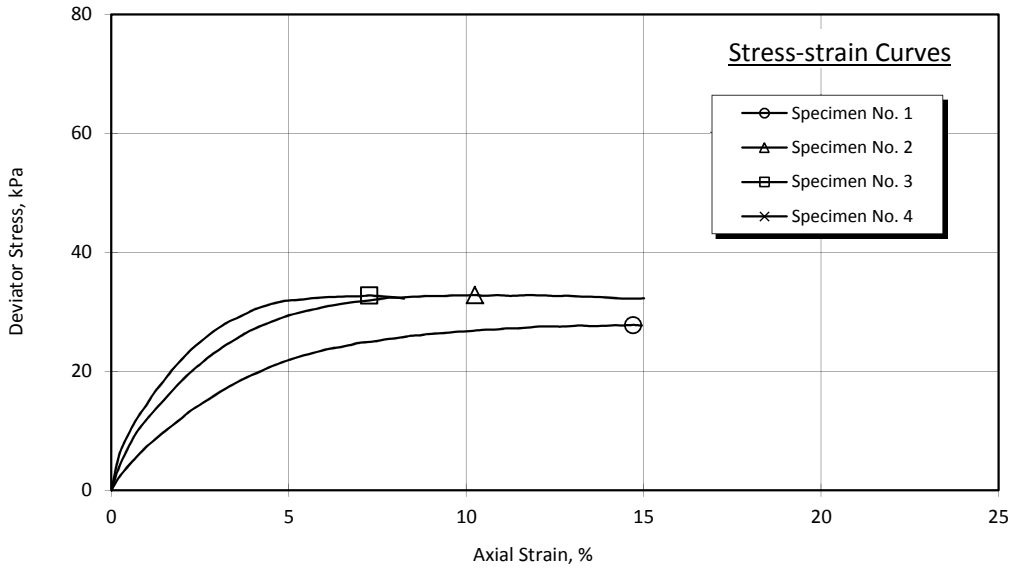
Borehole No.: PP-17-1 Depth : 2.00-2.85m

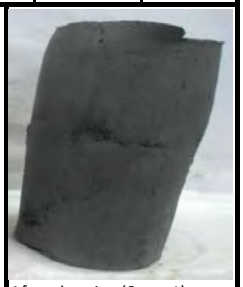
Tested by : Perera

Sample No. : HP-1 Strain Rate 1.00 %/min

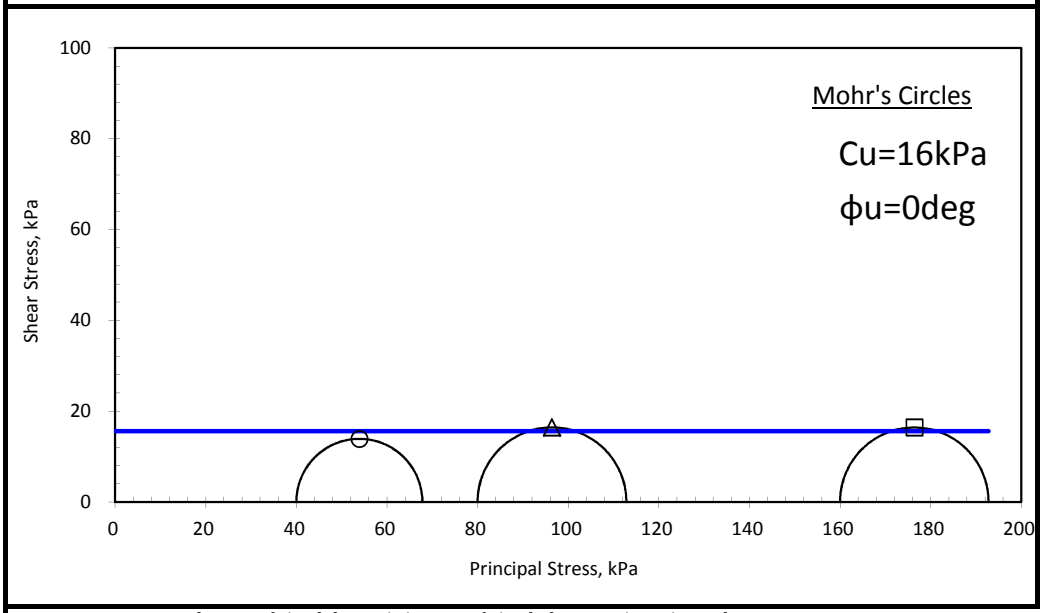
Checked by : A. B. Tan

Specimen No.	Condition of Sample	Size of Specimen (mm)		Natural Water Content	Bulk Density	Dy Density	Cell Pressure	Peak Deviator Stress	Modulus of Deformation	Corrected Initial Strain	Strain at Failure
		Height	Diameter	(%)	(Mg/m3)	(Mg/m3)	(kPa)	(kPa)	E50 (kPa)	(%)	(%)
1	Undisturbed	99.80	50.00	48.9	1.73	1.16	40	27.8	587	N/A	14.70
2	Undisturbed	99.80	50.00	49.6	1.71	1.15	80	32.8	985	N/A	10.24
3	Undisturbed	99.80	50.00	54.7	1.66	1.08	160	32.8	1358	N/A	7.25
4											

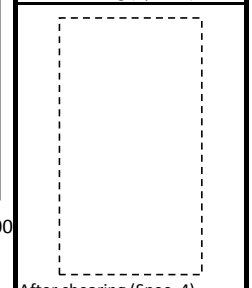



After shearing (Spec. 1)


After shearing (Spec. 2)



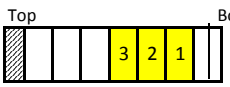

After shearing (Spec. 3)


After shearing (Spec. 4)

Remarks : - [Strain at failure]=[Recorded strain at failure] - [Corrected Initial Strain]

- Latex membrane with 0.2mm in thickness is used.
- Membrane correction is carried out based on BS 1377 : 1990

Portion Tested



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UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No. : S27-14

Standard : ASTM D2850-03a

Date of Testing : 08.10.14

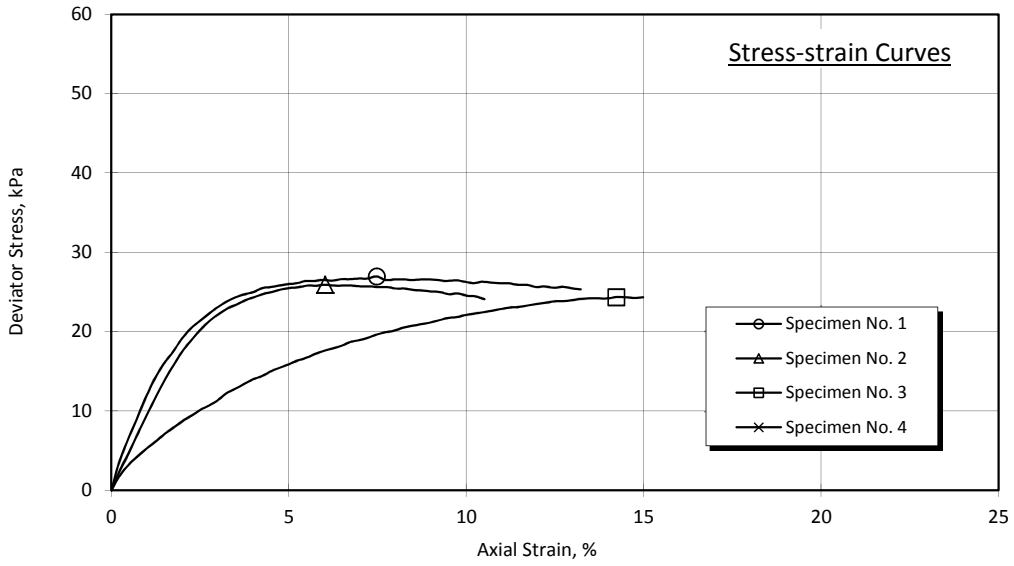
Borehole No.: PP-17-1 Depth : 5.00-5.85m

Tested by : Perera

Sample No. : HP-2 Strain Rate 1.00 %/min

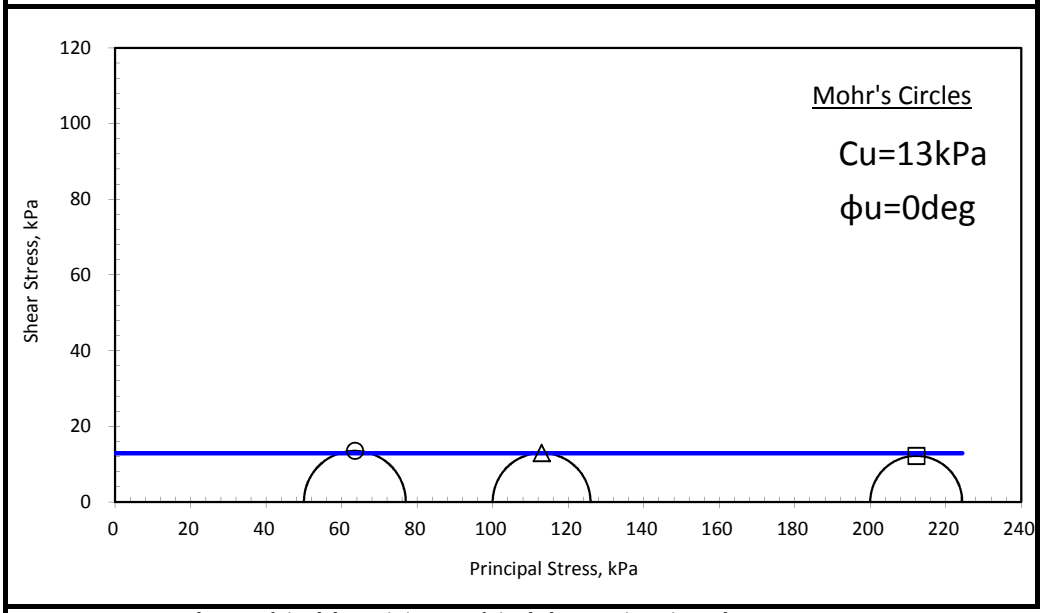
Checked by : A. B. Tan

Specimen No.	Condition of Sample	Size of Specimen (mm)		Natural Water Content	Bulk Density	Dy Density	Cell Pressure	Peak Deviator Stress	Modulus of Deformation	Corrected Initial Strain	Strain at Failure
		Height	Diameter	(%)	(Mg/m3)	(Mg/m3)	(kPa)	(kPa)	E50 (kPa)	(%)	(%)
1	Undisturbed	99.80	50.00	45.1	1.79	1.23	50	27.0	1164	N/A	7.47
2	Undisturbed	99.80	50.00	42.9	1.76	1.23	100	25.9	932	N/A	6.02
3	Undisturbed	99.90	50.10	43.0	1.83	1.28	200	24.4	378	N/A	14.22
4											




After shearing (Spec. 1)


After shearing (Spec. 2)

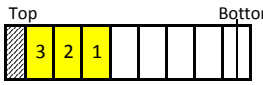



After shearing (Spec. 3)

After shearing (Spec. 4)

Remarks :
- [Strain at failure]=[Recorded strain at failure] - [Corrected Initial Strain]
- Latex membrane with 0.2mm in thickness is used.
- Membrane correction is carried out based on BS 1377 : 1990

Portion Tested



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UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No. : S27-14

Standard : ASTM D2850-03a

Date of Testing : 08.10.14

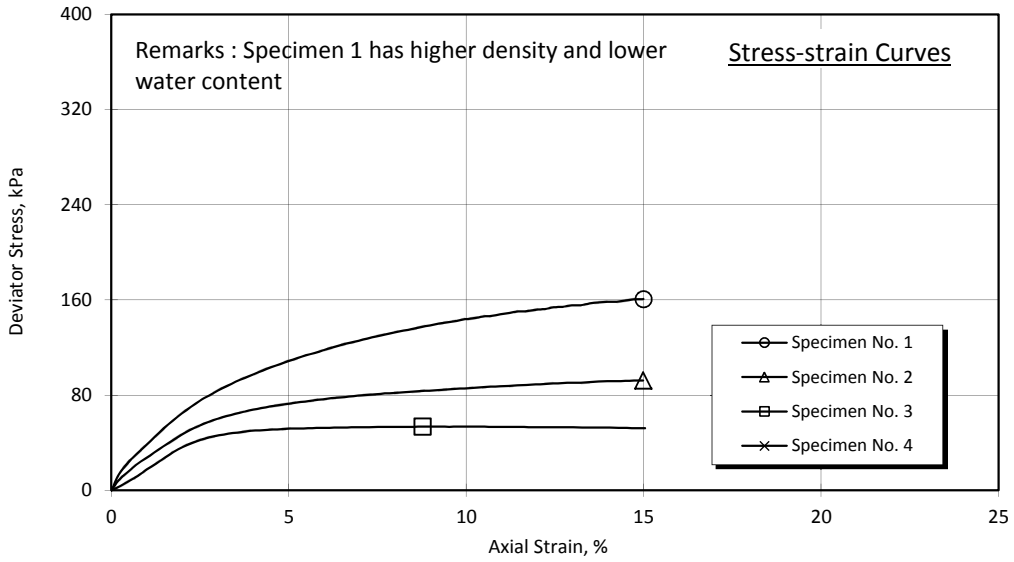
Borehole No.: PP-17-1 Depth : 8.00-8.85m

Tested by : Perera

Sample No. : HP-3 Strain Rate 1.00 %/min

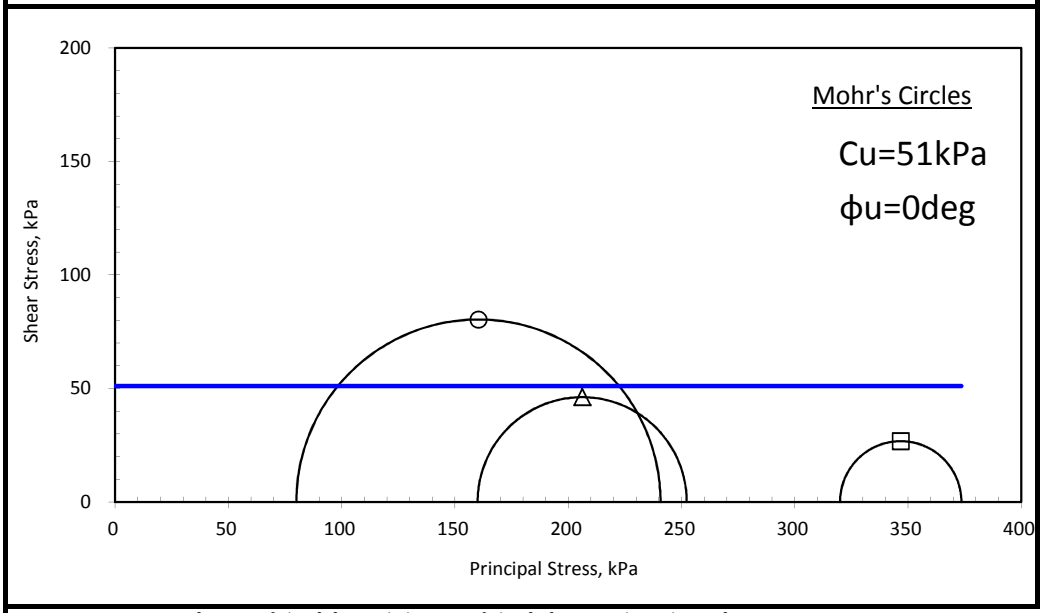
Checked by : A. B. Tan

Specimen No.	Condition of Sample	Size of Specimen (mm)		Natural Water Content	Bulk Density	Dy Density	Cell Pressure	Peak Deviator Stress	Modulus of Deformation	Corrected Initial Strain	Strain at Failure
		Height	Diameter	(%)	(Mg/m3)	(Mg/m3)	(kPa)	(kPa)	E50 (kPa)	(%)	(%)
1	Undisturbed	99.80	50.00	29.9	1.89	1.46	80	160.7	2881	N/A	14.99
2	Undisturbed	99.80	50.00	32.7	1.87	1.41	160	92.3	2371	N/A	14.98
3	Undisturbed	99.80	50.00	37.6	1.81	1.32	320	53.5	1817	N/A	8.77
4											




After shearing (Spec. 1)


After shearing (Spec. 2)

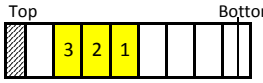



After shearing (Spec. 3)

After shearing (Spec. 4)

Remarks :
- [Strain at failure]=[Recorded strain at failure] - [Corrected Initial Strain]
- Latex membrane with 0.2mm in thickness is used.
- Membrane correction is carried out based on BS 1377 : 1990

Portion Tested



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Summary of Consolidated Undrained Triaxial Compression Test
With Porewater Pressure Measurement

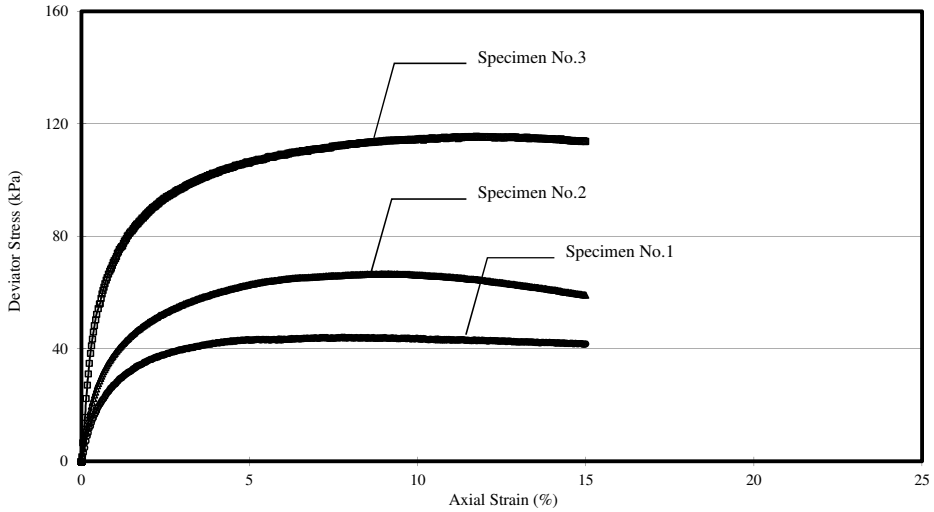
Project No.: S27-14		Project :Preparatory Survey on Matarbari USC Coral-fired Power Project					
Date Tested : 10.10.14		Tested by : Perera		Checked by : A. B. Tan			
Borehole No : PP17-1		Sample No.:HP-1		Depth :2.00-2.85m			
Specimen Condition : Undisturbed		Test Method : ASTM D4767-11					
Soil Description : Clay		Ave. Diameter : 50.0mm		Ave. Height : 99.8mm			
Specimen No.			1	2	3		
Initial Condition	Wet Density,	Mg/m^3	1.67	1.66	1.63		
	Water Content,	%	51.3	51.5	55.0		
	Dry Density	Mg/m^3	1.10	1.09	1.05		
Saturation Stage	Saturated PWP,	kPa	500	500	500		
	Final Cell Pressure,	kPa	540	580	660		
	B-value		0.95	0.95	0.98		
Consolidation	Cell Pressure	kPa	540	580	660		
	Back Pressure	kPa	500	500	500		
	Initial PWP,	kPa	529	567	646		
	Final PWP	kPa	500	500	500		
Consolidation Parameter	Total Volume Change,	%	1.74	5.42	11.66		
	Coefficient of Consolidation Cv,	$m^2/year$	1.45	0.28	0.32		
	Coefficient of Volume Compressibility mvi,	m^2/MN	0.43	0.68	0.73		
Compression Stage	Cell Pressure	kPa	540	580	660		
	Back Pressure	kPa	500	500	500		
	Effective Cell Pressure	kPa	40	80	160		
	Shearing Speed	mm/min	0.03	0.03	0.03		
Failure Conditions	Peak Deviator Stress $(\sigma_1-\sigma_3)f$,	kPa	44	67	116		
	Excess PWP at $(\sigma_1-\sigma_3)f$	kPa	25	63	128		
	A-Coefficient		0.56	0.95	1.11		
	Strain at $(\sigma_1-\sigma_3)f$	(%)	7.81	8.94	11.74		
	Effective Principal Stress Ratio		3.89	4.99	4.62		
Final Conditions	Wet Density,	Mg/m^3	1.75	1.75	1.78		
	Water Content,	%	49.1	49.2	45.5		
Shear Strength Parameters	In terms of Effective Stress ϕ' = 40 Degree c ' = 0 kPa		Mode of Failure 1 2 3 4 				
Remarks :							

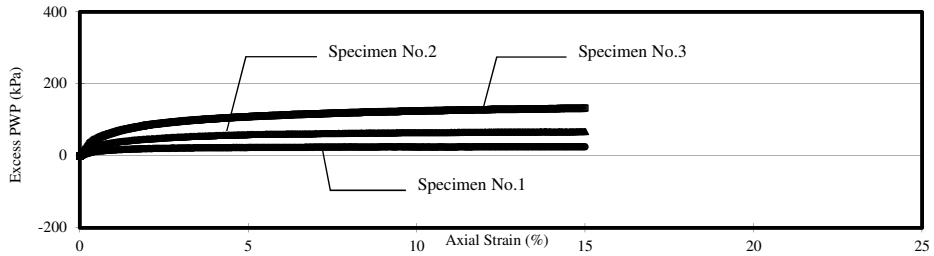
Consolidated Undrained Triaxial Compression Test
With Porewater Pressure Measurement

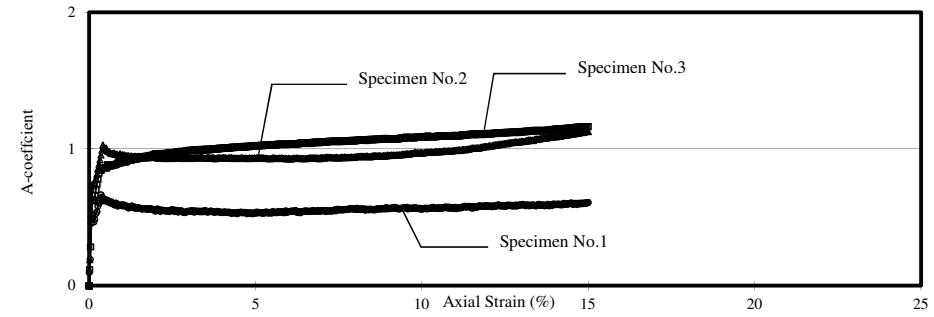
Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

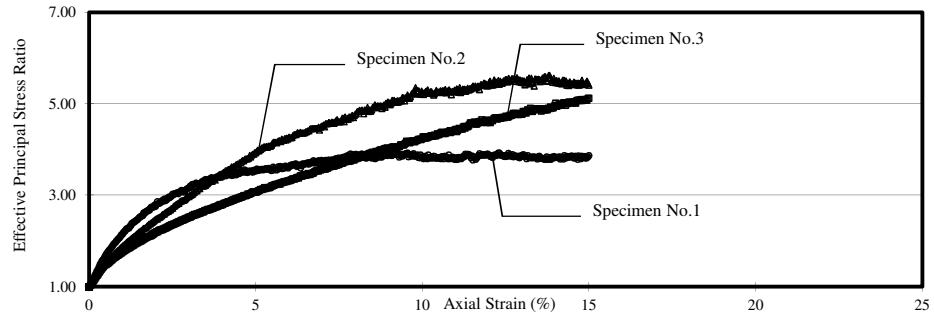
Project No.: S27-14 Sample No.: HP-1 Soil Type: Clay

Borehole No.: PP17-1 Depth :2.00-2.85m





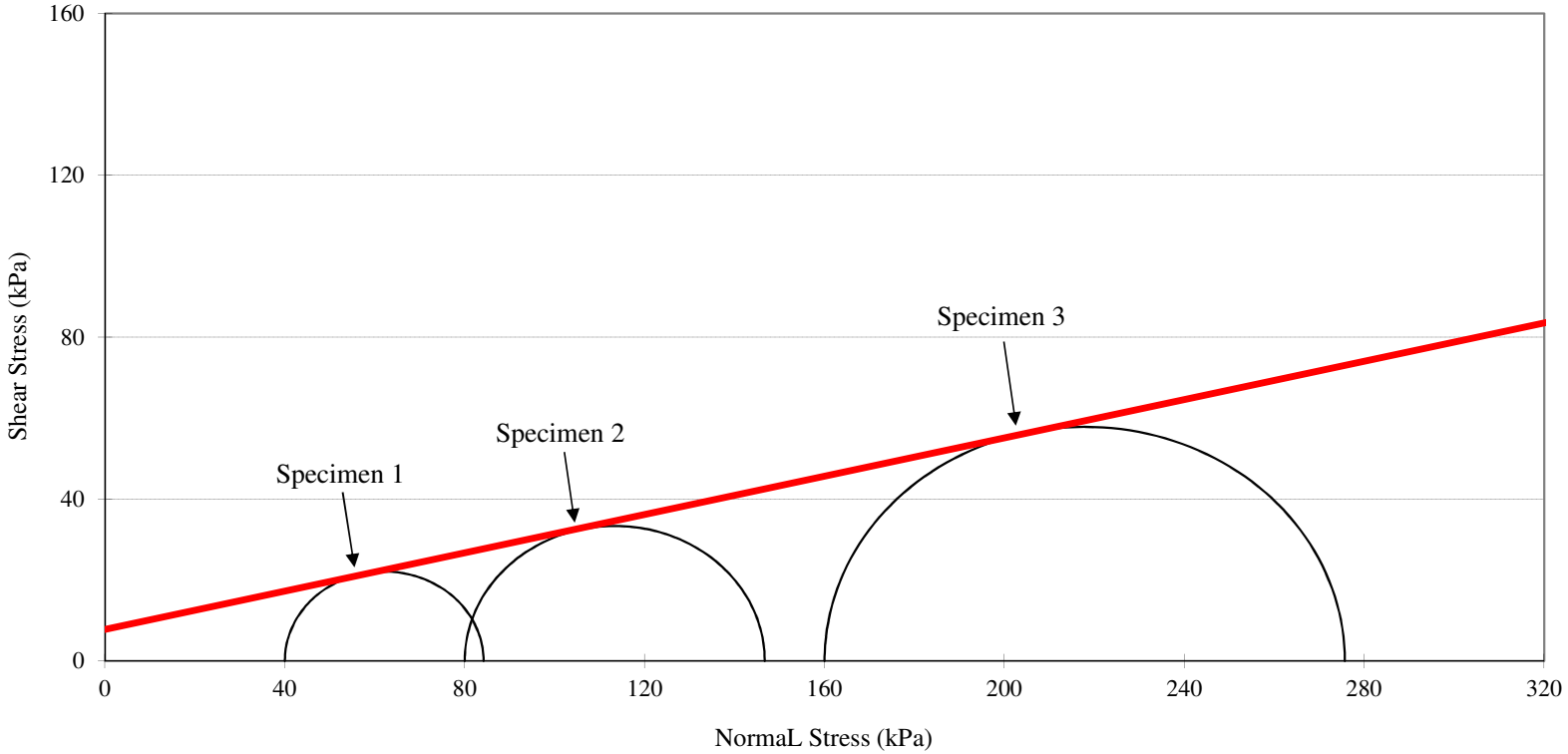




Consolidated Undrained Triaxial Compression Test
With Pore water Pressure Measurement
- Mohr' s Circle (In terms of Total Stress) -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No. : S27-14

Borehole No.: PP17-1 Soil Type: Clay
Sample No. : HP-1 Depth :2.00-2.85m
Angle of Internal Friction, ϕ 13 deg
Cohesion, c 8 kPa



Consolidated Undrained Triaxial Compression Test
With Pore water Pressure Measurement

- Mohr' s Circle (In terms of Effective Stress at Peak Deviator Stress)-

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

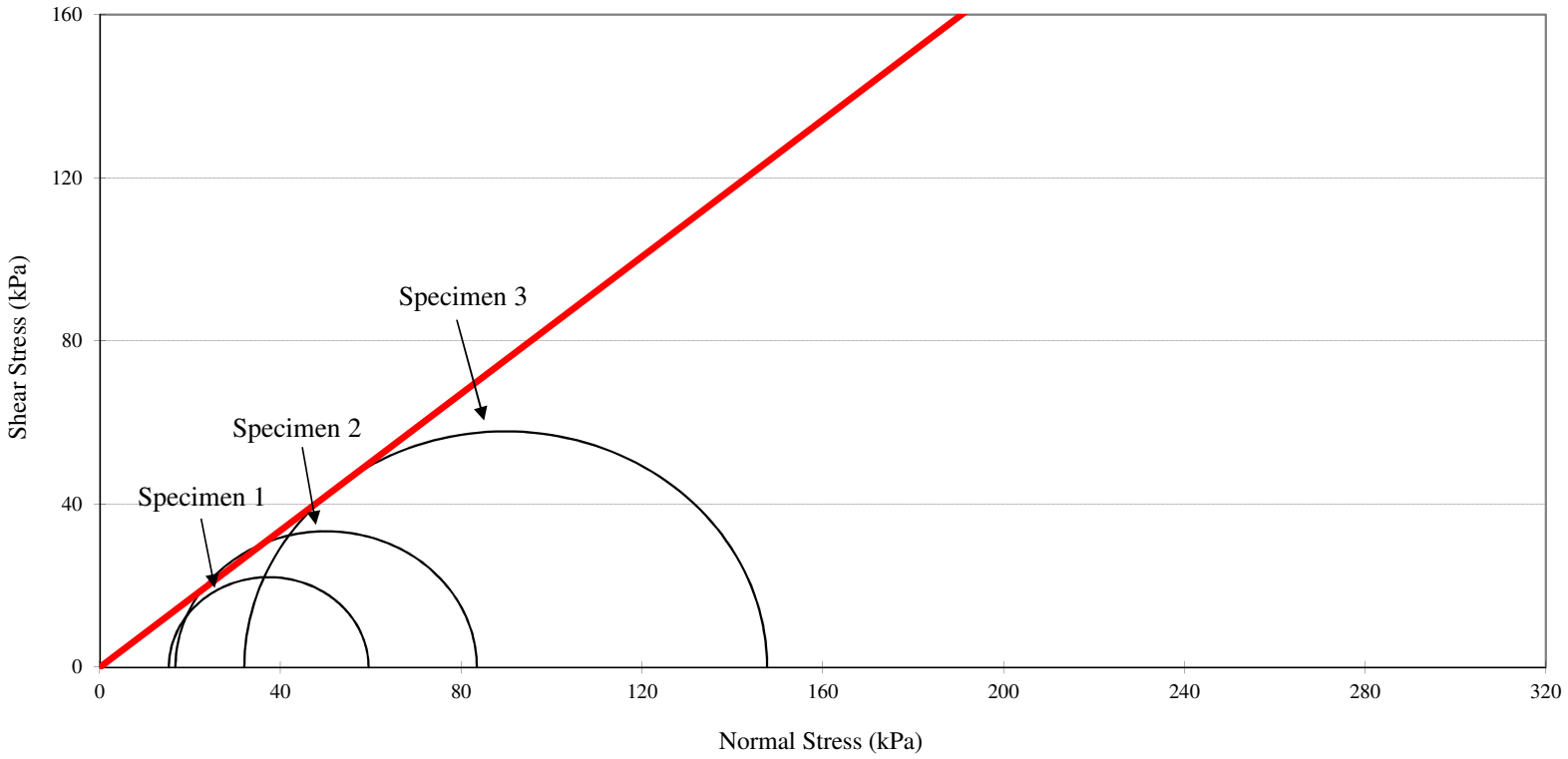
Project No. : S27-14

Borehole No.: PP17-1 Soil Type: Clay

Sample No. : HP-1 Depth :2.00-2.85m

Angle of Internal Friction, ϕ' 40 deg

Cohesion, c' 0 kPa



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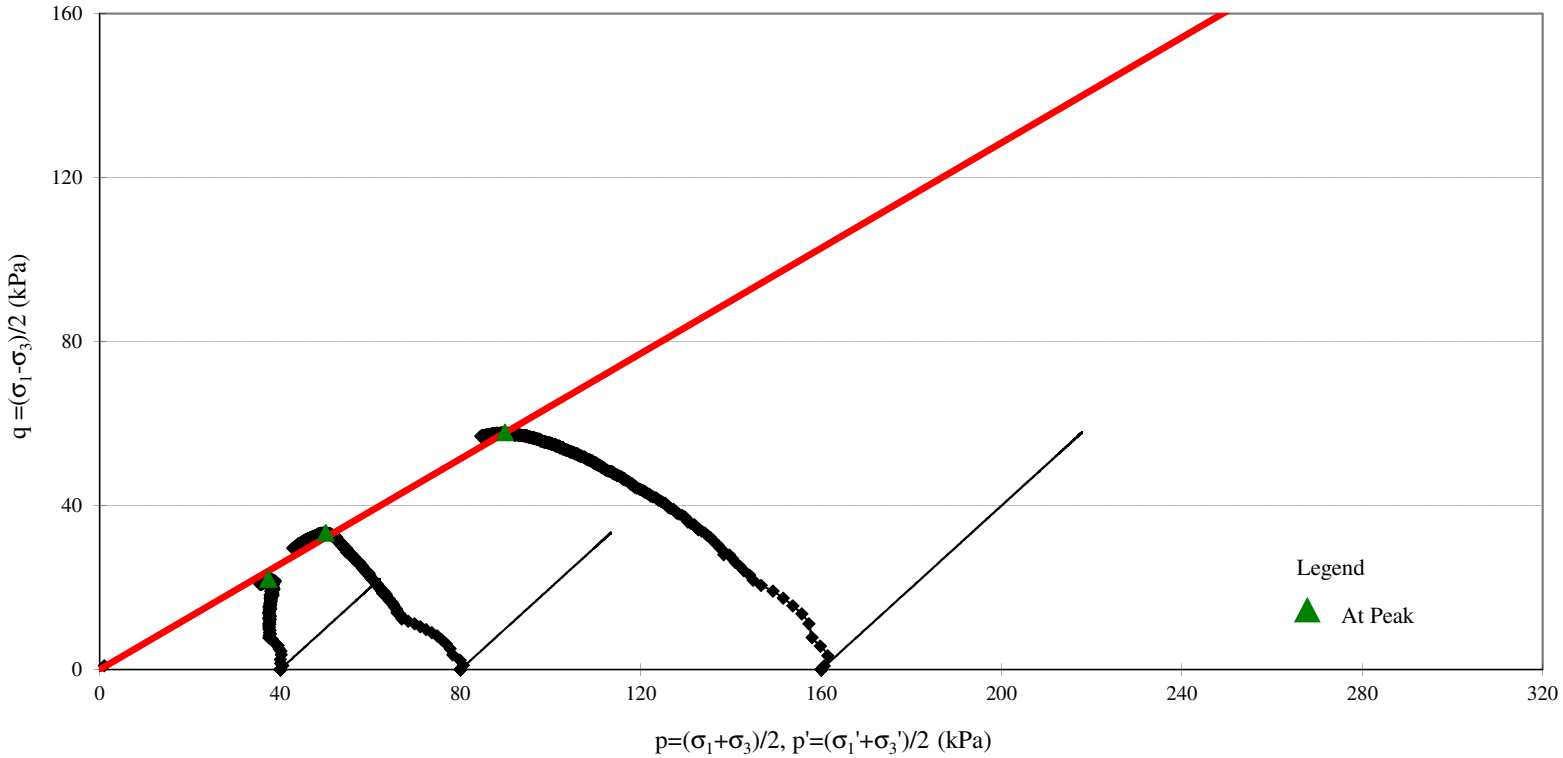
Consolidated Undrained Triaxial Compression Test
With Pore water Pressure Measurement
- Stress Path -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No. : S27-14

Borehole No.: PP17-1
Sample No. : HP-1

Soil Type: Clay
Depth :2.00-2.85m

α'	33	deg
a'	0	kPa



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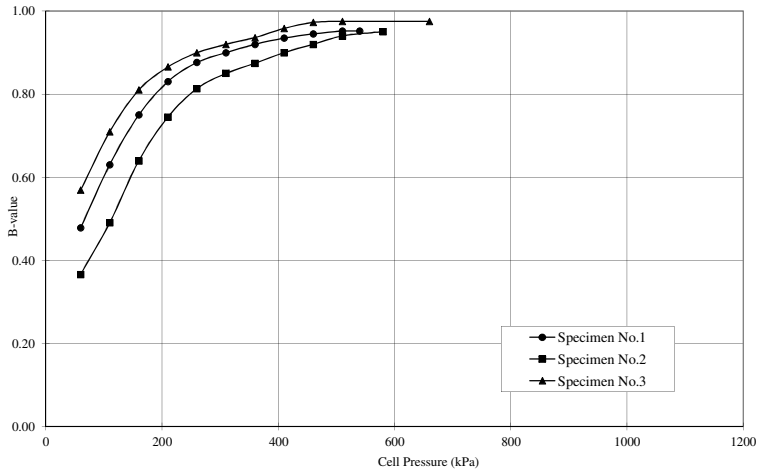
Consolidated Undrained Triaxial Compression Test
With Porewater Pressure Measurement
- B-value Check -

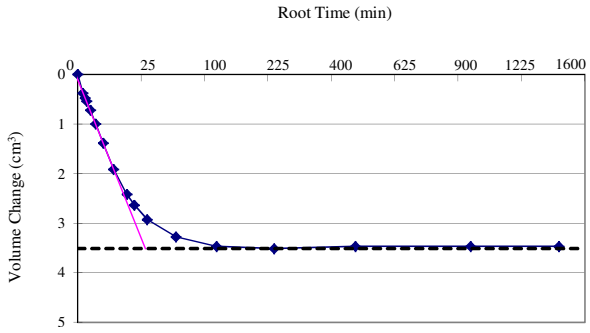
Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14
Borehole No.: PP17-1 Depth : 2.00-2.85m
Sample No.: HP-1 Soil Type: Clay

		Result of B-value Check					
		Specimen 1		Specimen 2		Specimen 3	
		Initial	Final	Initial	Final	Initial	Final
B-check Step.1	Cell Pressure (kPa)	30	60	30	60	30	60
	P.W.P (kPa)	20	34.4	20	31.0	20	37.1
	Back Pressure (kPa)	20		20		20	
	B-value	0.48		0.37		0.57	
B-check Step.2	Cell Pressure (kPa)	60	110	60	110	60	110
	P.W.P (kPa)	50	81.5	50	74.5	50	85.5
	Back Pressure (kPa)	50		50		50	
	B-value	0.63		0.49		0.71	
B-check Step.3	Cell Pressure (kPa)	110	160	110	160	110	160
	P.W.P (kPa)	100	137.5	100	132.0	100	140.5
	Back Pressure (kPa)	100		100		100	
	B-value	0.75		0.64		0.81	
B-check Step.4	Cell Pressure (kPa)	160	210	160	210	160	210
	P.W.P (kPa)	150	191.5	150	187.2	150	193.3
	Back Pressure (kPa)	150		150		150	
	B-value	0.83		0.74		0.87	
B-check Step.5	Cell Pressure (kPa)	210	260	210	260	210	260
	P.W.P (kPa)	200	243.8	200	240.7	200	245.0
	Back Pressure (kPa)	200		200		200	
	B-value	0.88		0.81		0.90	
B-check Step.6	Cell Pressure (kPa)	260	310	260	310	260	310
	P.W.P (kPa)	250	295.0	250	292.5	250	296.0
	Back Pressure (kPa)	250		250		250	
	B-value	0.90		0.85		0.92	
B-check Step.7	Cell Pressure (kPa)	310	360	310	360	310	360
	P.W.P (kPa)	300	346.0	300	343.7	300	346.8
	Back Pressure (kPa)	300		300		300	
	B-value	0.92		0.87		0.94	
B-check Step.8	Cell Pressure (kPa)	360	410	360	410	360	410
	P.W.P (kPa)	350	396.8	350	395.0	350	397.9
	Back Pressure (kPa)	350		350		350	
	B-value	0.94		0.90		0.96	
B-check Step.9	Cell Pressure (kPa)	410	460	410	460	410	460
	P.W.P (kPa)	400	447.3	400	446.0	400	448.6
	Back Pressure (kPa)	400		400		400	
	B-value	0.95		0.92		0.97	
B-check Step.10	Cell Pressure (kPa)	460	510	460	510	460	510
	P.W.P (kPa)	450	497.6	450	497.0	450	498.8
	Back Pressure (kPa)	450		450		450	
	B-value	0.95		0.94		0.98	
B-check Step.11	Cell Pressure (kPa)	510	540	510	580	510	660
	P.W.P (kPa)	500	528.6	500	566.5	500	646.3
	Back Pressure (kPa)	500		500		500	
	B-value	0.95		0.95		0.98	

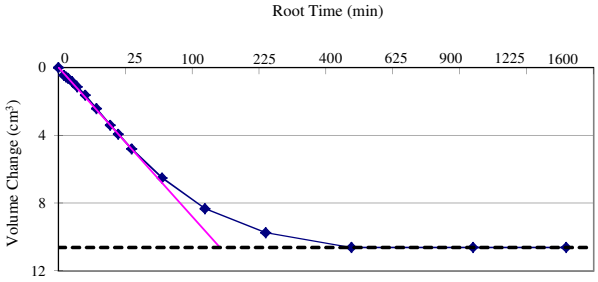


Consolidated Undrained Triaxial Compression Test
With Porewater Pressure Measurement
- Volume Change versus Root Time in Consolidation Stages

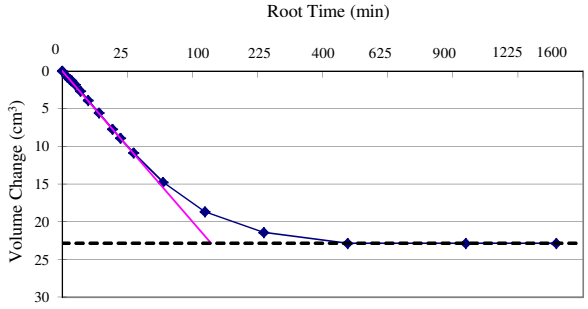
Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14 Sample No.: HP-1 Soil Type: Clay
Borehole No.: PP17-1 Depth : 2.00-2.85m



Specimen No.: 1
p' = 40 kPa
t100 = 28.5 min
Cv = 1.45 m^2/year
mvi= 0.43 m^2/MN



Specimen No.: 2
p' = 80 kPa
t100 = 146.3 min
Cv = 0.28 m^2/year
mvi= 0.68 m^2/MN



Specimen No.: 3
p' = 160 kPa
t100 = 131.1 min
Cv = 0.32 m^2/year
mvi= 0.73 m^2/MN

Summary of Consolidated Undrained Triaxial Compression Test
With Porewater Pressure Measurement

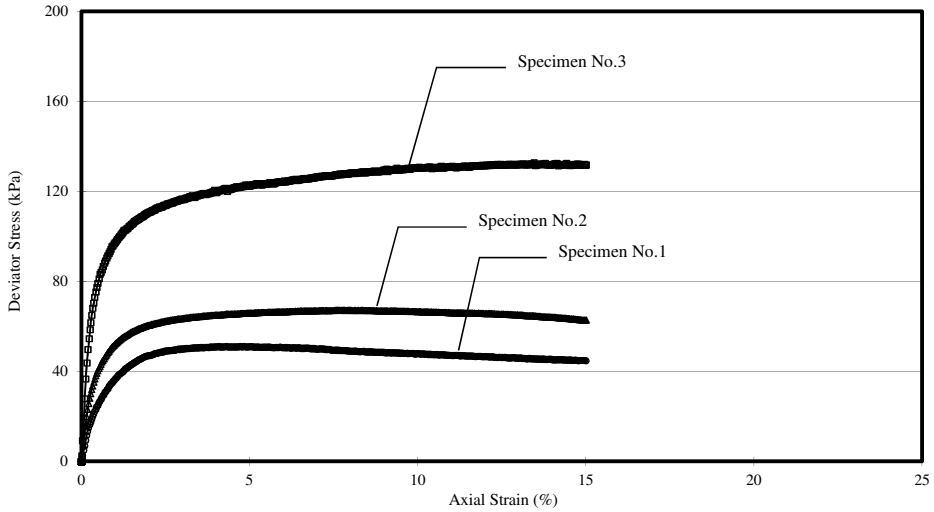
Project No.: S27-14		Project :Preparatory Survey on Matarbari USC Coral-fired Power Project					
Date Tested : 13.10.14		Tested by : Perera		Checked by : A. B. Tan			
Borehole No : PP17-1		Sample No.:HP-2		Depth :5.00-5.85m			
Specimen Condition : Undisturbed		Test Method : ASTM D4767-11					
Soil Description : Clay		Ave. Diameter : 50.0mm		Ave. Height : 100.0mm			
Specimen No.			1	2	3		
Initial Condition	Wet Density,	Mg/m^3	1.76	1.78	1.84		
	Water Content,	%	45.8	46.5	39.4		
	Dry Density	Mg/m^3	1.21	1.21	1.32		
Saturation Stage	Saturated PWP,	kPa	500	500	500		
	Final Cell Pressure,	kPa	540	580	660		
	B-value		0.98	0.95	0.95		
Consolidation	Cell Pressure	kPa	540	580	660		
	Back Pressure	kPa	500	500	500		
	Initial PWP,	kPa	529	567	643		
	Final PWP	kPa	500	500	500		
Consolidation Parameter	Total Volume Change,	%	1.60	4.18	6.67		
	Coefficient of Consolidation Cv,	$m^2/year$	1.75	0.65	1.20		
	Coefficient of Volume Compressibility mvi,	m^2/MN	0.40	0.52	0.42		
Compression Stage	Cell Pressure	kPa	540	580	660		
	Back Pressure	kPa	500	500	500		
	Effective Cell Pressure	kPa	40	80	160		
	Shearing Speed	mm/min	0.03	0.03	0.03		
Failure Conditions	Peak Deviator Stress $(\sigma_1-\sigma_3)f$,	kPa	51	67	133		
	Excess PWP at $(\sigma_1-\sigma_3)f$	kPa	23	60	125		
	A-Coefficient		0.44	0.89	0.94		
	Strain at $(\sigma_1-\sigma_3)f$	(%)	4.73	8.36	13.46		
	Effective Principal Stress Ratio		3.94	4.31	4.78		
Final Conditions	Wet Density,	Mg/m^3	1.77	1.81	1.89		
	Water Content,	%	46.2	42.4	34.9		
Shear Strength Parameters	In terms of Effective Stress ϕ' = 40 Degree c ' = 0 kPa		Mode of Failure 1 2 3 4 				
Remarks : Soecimen 3 has higher density and lower water content							

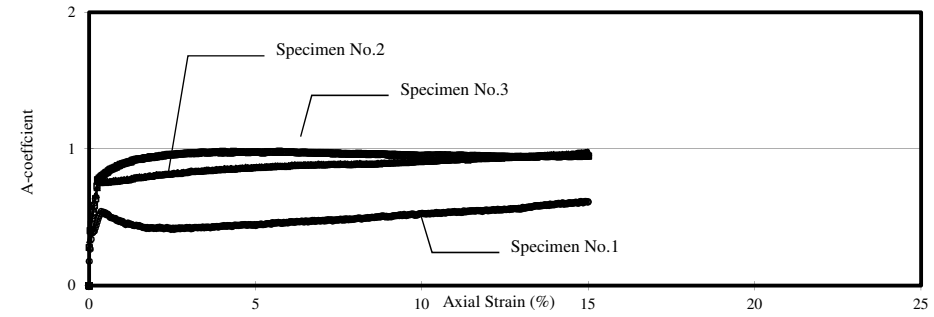
Consolidated Undrained Triaxial Compression Test
With Porewater Pressure Measurement

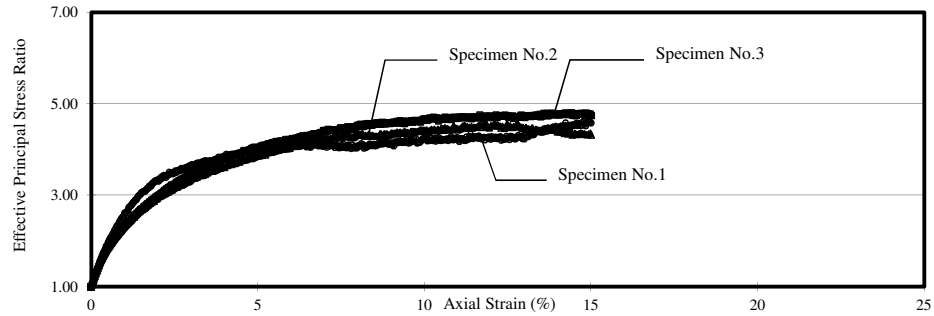
Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No.: S27-14 Sample No.: HP-2 Soil Type: Clay

Borehole No.: PP17-1 Depth :5.00-5.85m



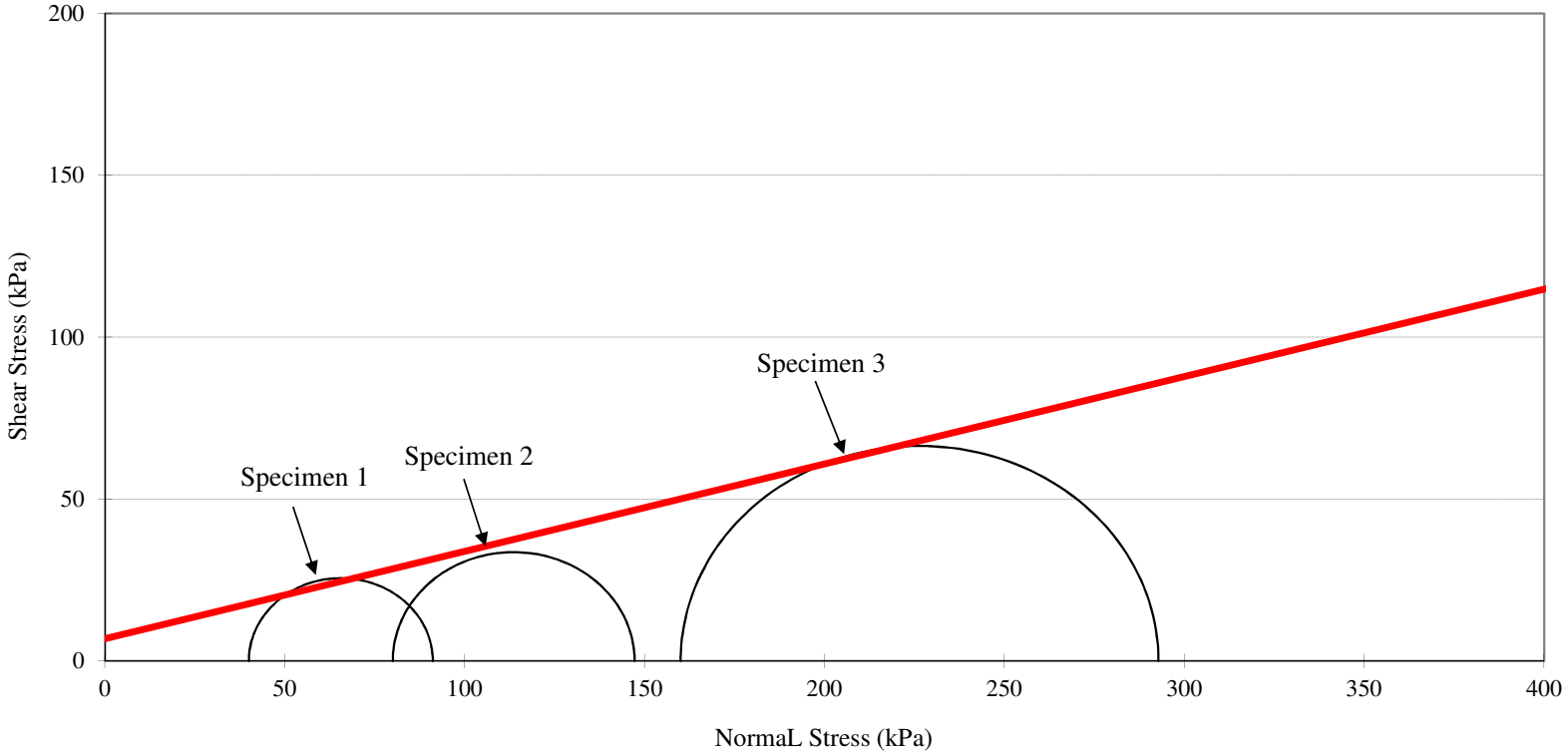




Consolidated Undrained Triaxial Compression Test
With Pore water Pressure Measurement
- Mohr' s Circle (In terms of Total Stress) -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No. : S27-14

Borehole No.: PP17-1 Soil Type: Clay
Sample No. : HP-2 Depth :5.00-5.85m
Angle of Internal Friction, ϕ 15 deg
Cohesion, c 7 kPa



Consolidated Undrained Triaxial Compression Test
With Pore water Pressure Measurement

- Mohr' s Circle (In terms of Effective Stress at Peak Deviator Stress)-

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

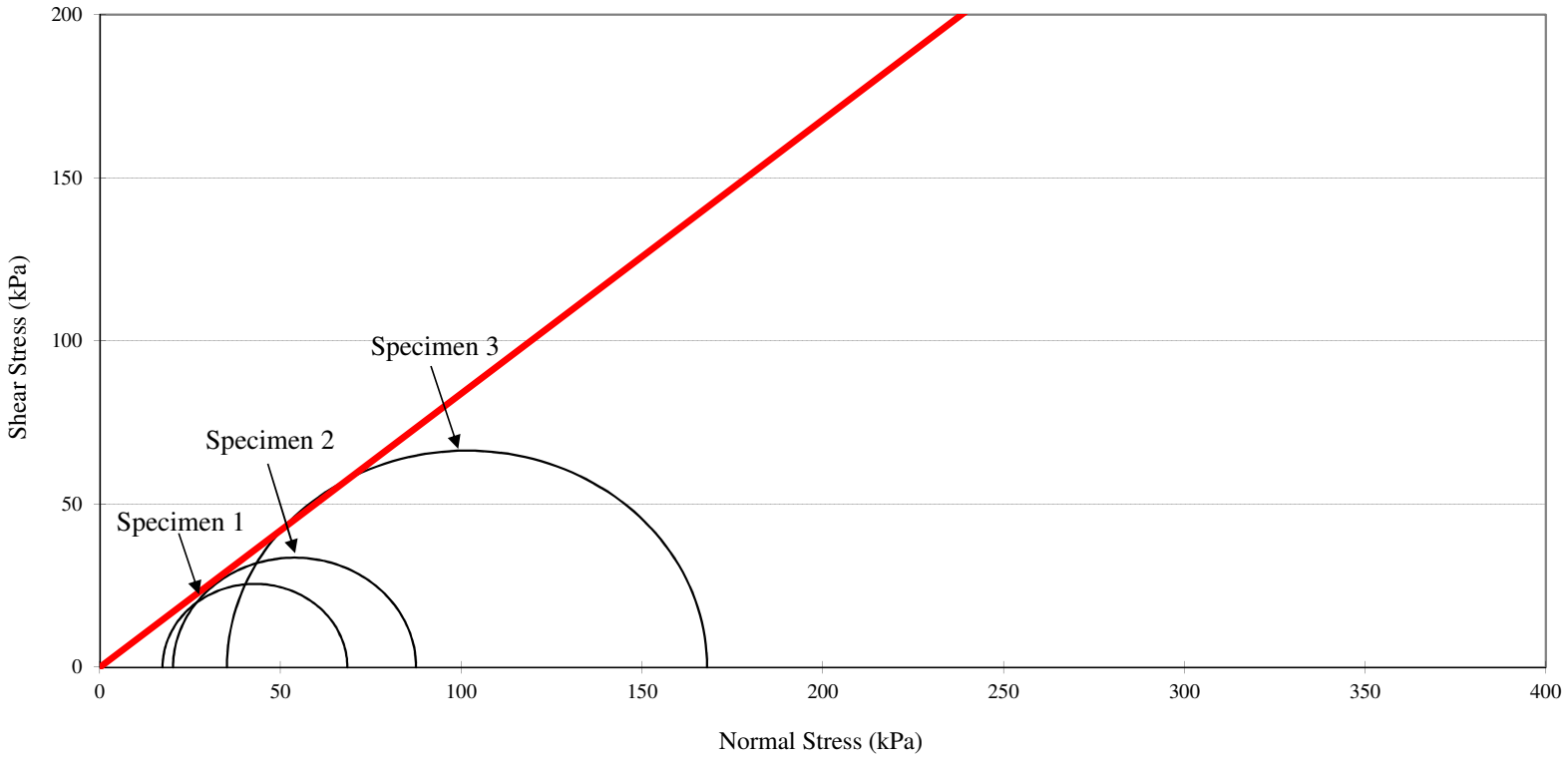
Project No. : S27-14

Borehole No.: PP17-1 Soil Type: Clay

Sample No. : HP-2 Depth :5.00-5.85m

Angle of Internal Friction, ϕ' 40 deg

Cohesion, c' 0 kPa



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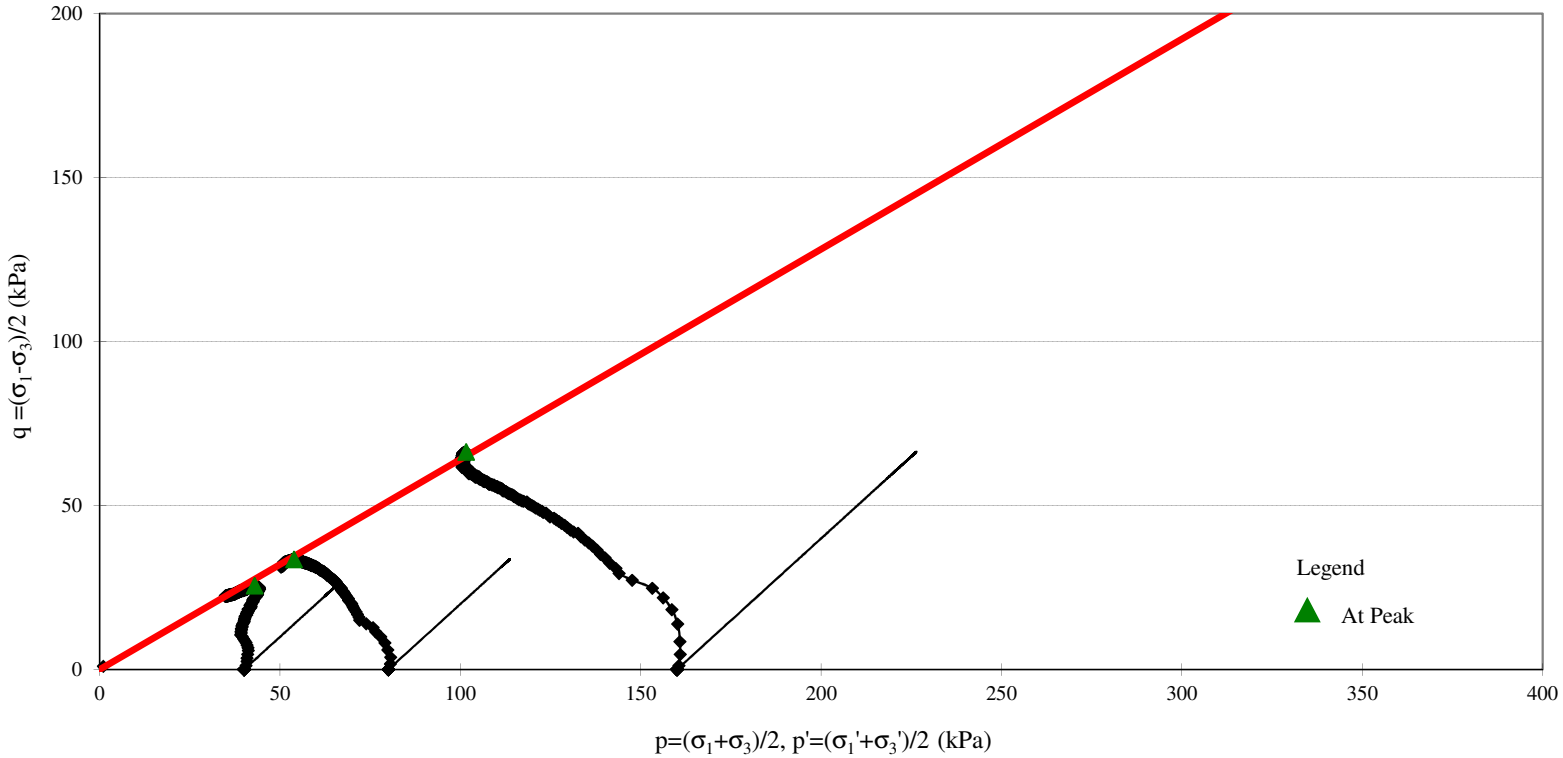
Consolidated Undrained Triaxial Compression Test
With Pore water Pressure Measurement
- Stress Path -

Borehole No.: PP17-1 Soil Type: Clay

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project Sample No. : HP-2 Depth :5.00-5.85m

Project No. : S27-14

α'	33	deg
a'	0	kPa



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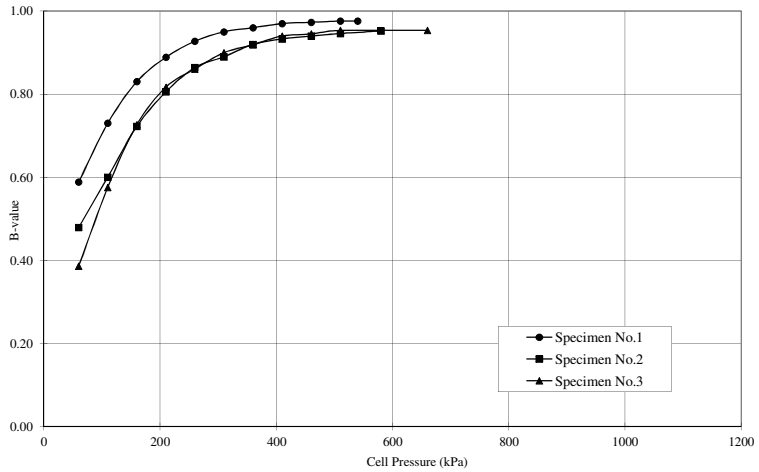
Consolidated Undrained Triaxial Compression Test
With Porewater Pressure Measurement
- B-value Check -

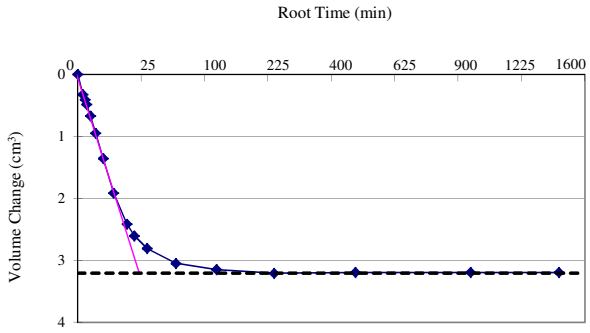
Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14
Borehole No.: PP17-1 Depth : 5.00-5.85m
Sample No.: HP-2 Soil Type: Clay

		Result of B-value Check					
		Specimen 1		Specimen 2		Specimen 3	
		Initial	Final	Initial	Final	Initial	Final
B-check Step.1	Cell Pressure (kPa)	30	60	30	60	30	60
	P.W.P (kPa)	20	37.6	20	34.4	20	31.6
	Back Pressure (kPa)	20		20		20	
	B-value	0.59		0.48		0.39	
B-check Step.2	Cell Pressure (kPa)	60	110	60	110	60	110
	P.W.P (kPa)	50	86.5	50	80.0	50	78.8
	Back Pressure (kPa)	50		50		50	
	B-value	0.73		0.60		0.58	
B-check Step.3	Cell Pressure (kPa)	110	160	110	160	110	160
	P.W.P (kPa)	100	141.5	100	136.1	100	136.3
	Back Pressure (kPa)	100		100		100	
	B-value	0.83		0.72		0.73	
B-check Step.4	Cell Pressure (kPa)	160	210	160	210	160	210
	P.W.P (kPa)	150	194.4	150	190.3	150	190.8
	Back Pressure (kPa)	150		150		150	
	B-value	0.89		0.81		0.82	
B-check Step.5	Cell Pressure (kPa)	210	260	210	260	210	260
	P.W.P (kPa)	200	246.4	200	243.2	200	243.0
	Back Pressure (kPa)	200		200		200	
	B-value	0.93		0.86		0.86	
B-check Step.6	Cell Pressure (kPa)	260	310	260	310	260	310
	P.W.P (kPa)	250	297.5	250	294.5	250	295.0
	Back Pressure (kPa)	250		250		250	
	B-value	0.95		0.89		0.90	
B-check Step.7	Cell Pressure (kPa)	310	360	310	360	310	360
	P.W.P (kPa)	300	348.0	300	346.0	300	346.0
	Back Pressure (kPa)	300		300		300	
	B-value	0.96		0.92		0.92	
B-check Step.8	Cell Pressure (kPa)	360	410	360	410	360	410
	P.W.P (kPa)	350	398.5	350	396.6	350	397.0
	Back Pressure (kPa)	350		350		350	
	B-value	0.97		0.93		0.94	
B-check Step.9	Cell Pressure (kPa)	410	460	410	460	410	460
	P.W.P (kPa)	400	448.7	400	447.0	400	447.3
	Back Pressure (kPa)	400		400		400	
	B-value	0.97		0.94		0.95	
B-check Step.10	Cell Pressure (kPa)	460	510	460	510	460	510
	P.W.P (kPa)	450	498.8	450	497.3	450	497.7
	Back Pressure (kPa)	450		450		450	
	B-value	0.98		0.95		0.95	
B-check Step.11	Cell Pressure (kPa)	510	540	510	580	510	660
	P.W.P (kPa)	500	529.3	500	566.7	500	643.0
	Back Pressure (kPa)	500		500		500	
	B-value	0.98		0.95		0.95	

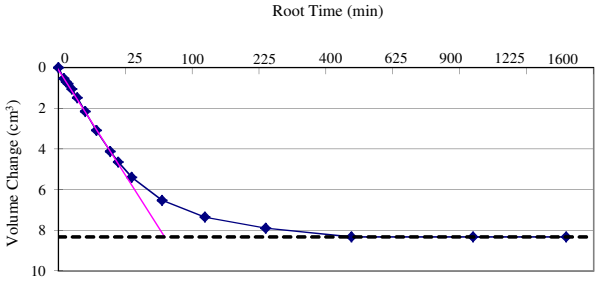


Consolidated Undrained Triaxial Compression Test
With Porewater Pressure Measurement
- Volume Change versus Root Time in Consolidation Stages

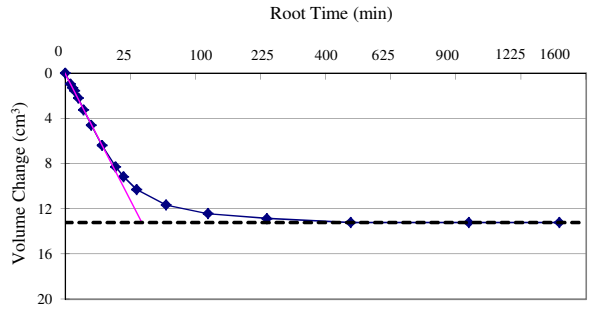
Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14 Sample No.: HP-2 Soil Type: Clay
Borehole No.: PP17-1 Depth : 5.00-5.85m



Specimen No.: 1
p' = 40 kPa
t100 = 23.5 min
Cv = 1.75 m^2/year
mvi= 0.40 m^2/MN



Specimen No.: 2
p' = 80 kPa
t100 = 63.2 min
Cv = 0.65 m^2/year
mvi= 0.52 m^2/MN



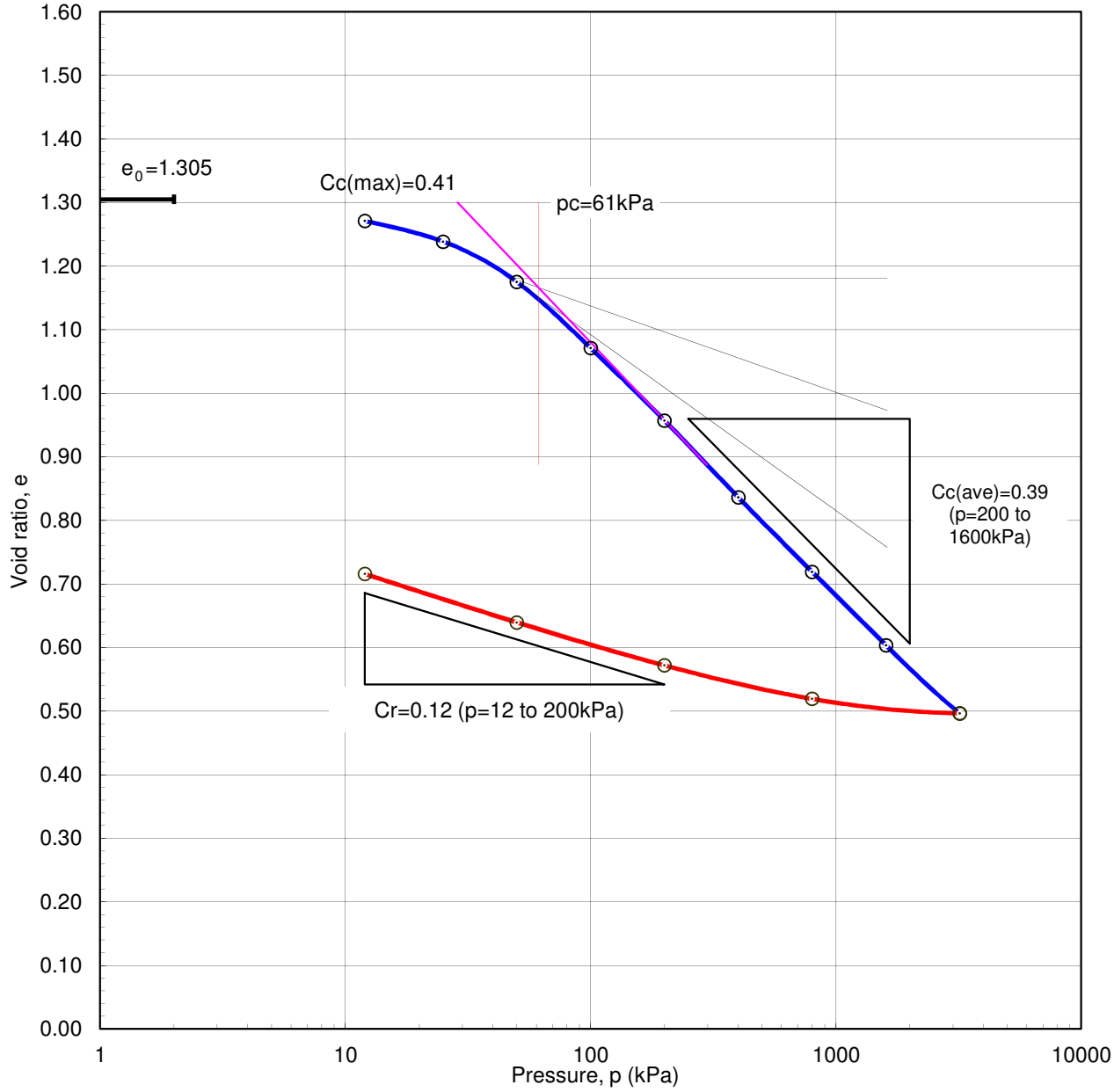
Specimen No.: 3
p' = 160 kPa
t100 = 34.6 min
Cv = 1.20 m^2/year
mvi= 0.42 m^2/MN

CONSOLIDATION TEST (e-log p curves)

Preparatory Survey on Matarbari USC Coal-fired Power

Project :	Project			Borehole No. :	PP17-1
Project No.:	S27-14	Tested by :	Lim	Sample No. :	HP-1
Soil Type :	Clay	Checked by :	A. B. Tan	Depth of Sample :	2.00-2.85 m

Sample No.	Depth of sample (m)	Initial void ratio e_o	Preconsolidation Pressure, p_c (kPa)	Compression Index Cc		Swell Index Cr	Unload-reload-Compression Index Cur
HP-1	2.00-2.85	1.305	61	0.41 (max)	0.39(average)	0.12 (average)	N/A



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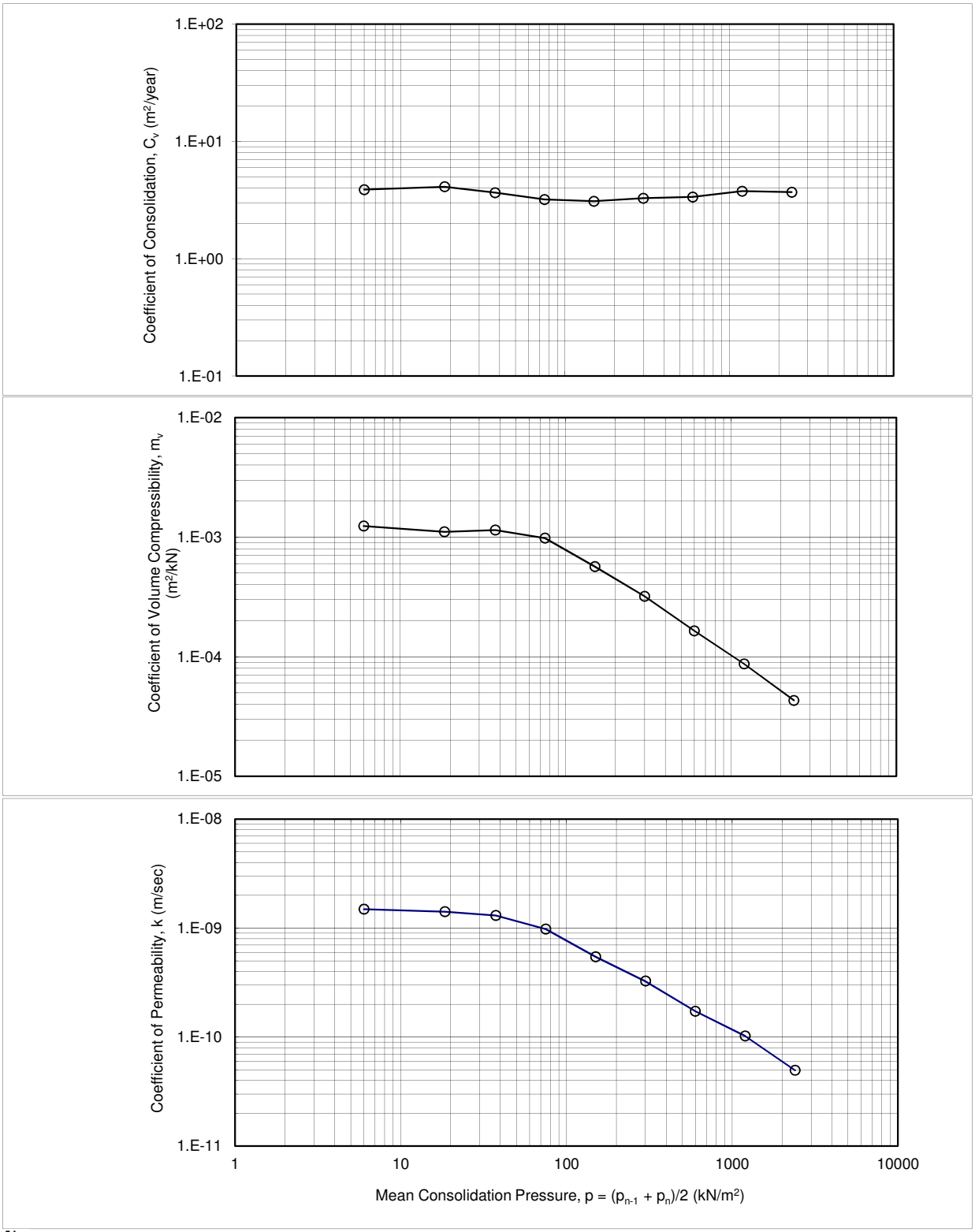
Consolidation Test (p - $\overline{cv}$, mv , k curves)

Project	:	Preparatory Survey on Matarbari USC Coal-fired Power Project		Borehole No.	: PP17-1
Project No.	:	S27-14		Sample No.	: HP-1
Date of testing	:	26-Sep-14	Tested by : Lim	Depth of Sample	: 2.00-2.85 m



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PROJECT NAME : Preparatory Survey on Matarbari USC Coal-fired Power Project
PROJECT NO. : S27-14

BOREHOLE NO. : PP17-1
TESTING STANDARD : ASTM D2435-11
DATE : 26-Sep-14

SAMPLE NO. : HP-1
INITIAL HEIGHT OF SPECIMEN : 18.000 mm
NO. OF LOADING STEP : 9

DEPTH : 2.00-2.85 m
DIAMETER OF SPECIMEN : 53.900 mm
SPECIFIC GRAVITY : 2.76

TESTER NO. : 29
DRY WEIGHT OF SPECIMEN : 49.190 grams
SOLID HEIGHT OF SPECIMEN : 7.810 mm

INITIAL MOISTURE CONTENT : 46.5 %
BULK DENSITY : 1.77 Mg/m^3

METHOD OF TIME FITTING USED : SQUARE ROOT TIME CURVE - FITTING METHOD
LABORATORY TEMPERATURE : 23.0 ^{o}C

PRESSURE kN/m^2	PRESSURE INCREMENT kN/m^2	CHANGE IN HEIGHT *E-2 mm	HEIGHT mm	AVERAGE HEIGHT mm	STRAIN %	MV m^2/kN	VOLUME RATIO	VOID RATIO
0.000			18.000				2.305	1.305
	12.000	26.5		17.868	1.48	1.24E-03		
12.000			17.735				2.271	1.271
	13.000	25.3		17.609	1.44	1.11E-03		
25.000			17.482				2.238	1.238
	25.000	49.4		17.235	2.87	1.15E-03		
50.000			16.988				2.175	1.175
	50.000	81.4		16.581	4.91	9.82E-04		
100.000			16.174				2.071	1.071
	100.000	88.9		15.730	5.65	5.65E-04		
200.000			15.285				1.957	0.957
	200.000	94.5		14.813	6.38	3.19E-04		
400.000			14.340				1.836	0.836
	400.000	91.4		13.883	6.58	1.65E-04		
800.000			13.426				1.719	0.719
	800.000	90.3		12.975	6.96	8.70E-05		
1600.000			12.523				1.603	0.603
	1600.000	83.5		12.106	6.90	4.31E-05		
3200.000			11.688				1.497	0.497

PRESSURE kN/m^2	AVERAGE PRESSURE kN/m^2	T90 min	CV m^2/sec	CV m^2/day	CV $m^2/year$	PRIMARY COMPRESSION *E-2 mm	PRIMARY COMPRESSION RATIO	COEFFICIENT OF PERMEABILITY m/sec
0.000								
	6.000	8.53	1.23E-07	1.06E-02	3.88E+00	16.6	0.627	1.49E-09
12.000								
	18.500	7.82	1.30E-07	1.13E-02	4.11E+00	14.6	0.577	1.41E-09
25.000								
	37.500	8.43	1.16E-07	1.00E-02	3.65E+00	29.5	0.598	1.30E-09
50.000								
	75.000	8.90	1.02E-07	8.77E-03	3.20E+00	54.6	0.671	9.78E-10
100.000								
	150.000	8.29	9.81E-08	8.48E-03	3.09E+00	57.8	0.650	5.44E-10
200.000								
	300.000	6.93	1.04E-07	8.98E-03	3.28E+00	61.2	0.647	3.25E-10
400.000								
	600.000	5.94	1.07E-07	9.21E-03	3.36E+00	58.5	0.641	1.72E-10
800.000								
	1200.000	4.63	1.19E-07	1.03E-02	3.77E+00	52.9	0.586	1.02E-10
1600.000								
	2400.000	4.11	1.17E-07	1.01E-02	3.69E+00	49.3	0.590	4.95E-11
3200.000								

REBOUND

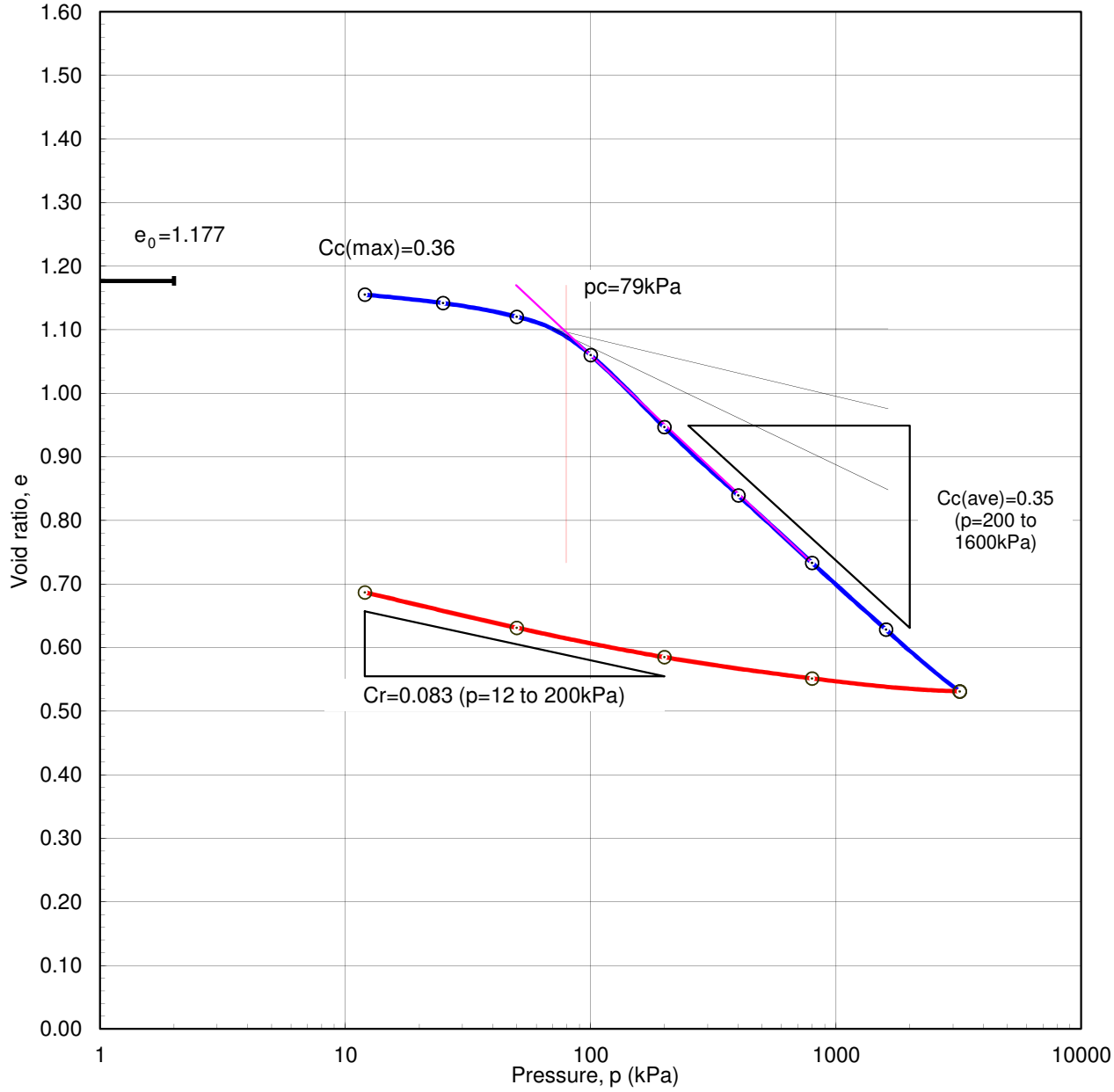
P	800.000	200.000	50.000	12.000
H	11.865	12.276	12.804	13.399
E	0.519	0.572	0.639	0.716

CONSOLIDATION TEST (e-log p curves)

Preparatory Survey on Matarbari USC Coal-fired Power

Project :	Project			Borehole No. :	PP17-1
Project No.:	S27-14	Tested by :	Lim	Sample No. :	HP-2
Soil Type :	Clay	Checked by :	A. B. Tan	Depth of Sample :	5.00-5.85 m

Sample No.	Depth of sample (m)	Initial void ratio e_o	Preconsolidation Pressure, p_c (kPa)	Compression Index Cc		Swell Index Cr	Unload-reload-Compression Index Cur
HP-2	5.00-5.85	1.177	79	0.36 (max)	0.35(average)	0.083 (average)	N/A



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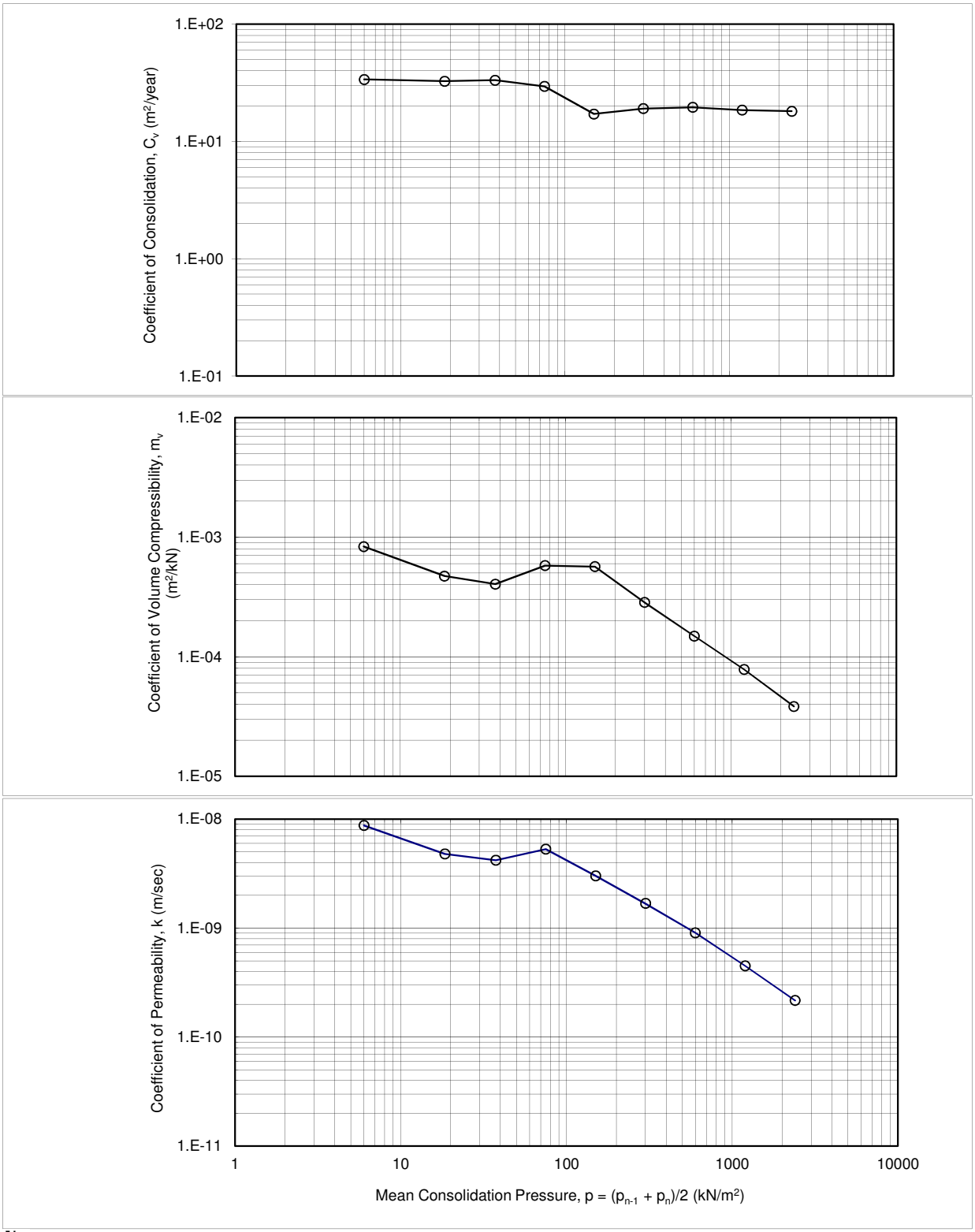
Consolidation Test (p - $\overline{cv}$, mv , k curves)

Project	:	Preparatory Survey on Matarbari USC Coal-fired Power Project		Borehole No.	: PP17-1
Project No.	:	S27-14		Sample No.	: HP-2
Date of testing	:	26-Sep-14	Tested by : Lim	Depth of Sample	: 5.00-5.85 m



KISO-JIBAN CONSULTANTS CO., LTD.

PROJECT NAME : Preparatory Survey on Matarbari USC Coal-fired Power Project
PROJECT NO. : S27-14

BOREHOLE NO. : PP17-1
TESTING STANDARD : ASTM D2435-11
DATE : 26-Sep-14

SAMPLE NO. : HP-2
INITIAL HEIGHT OF SPECIMEN : 18.000 mm
NO. OF LOADING STEP : 9

DEPTH : 5.00-5.85 m
DIAMETER OF SPECIMEN : 53.900 mm
SPECIFIC GRAVITY : 2.74

TESTER NO. : 28
DRY WEIGHT OF SPECIMEN : 51.690 grams
SOLID HEIGHT OF SPECIMEN : 8.270 mm

INITIAL MOISTURE CONTENT : 41.7 %
BULK DENSITY : 1.80 Mg/m^3

METHOD OF TIME FITTING USED : SQUARE ROOT TIME CURVE - FITTING METHOD
LABORATORY TEMPERATURE : 23.0 ^{O}C

PRESSURE kN/m^2	PRESSURE INCREMENT kN/m^2	CHANGE IN HEIGHT *E-2 mm	HEIGHT mm	AVERAGE HEIGHT mm	STRAIN %	MV m^2/kN	VOLUME RATIO	VOID RATIO
0.000			18.000				2.177	1.177
	12.000	17.9		17.911	1.00	8.33E-04		
12.000			17.821				2.155	1.155
	13.000	10.9		17.767	0.61	4.72E-04		
25.000			17.712				2.142	1.142
	25.000	17.8		17.623	1.01	4.04E-04		
50.000			17.534				2.120	1.120
	50.000	49.9		17.285	2.89	5.77E-04		
100.000			17.035				2.060	1.060
	100.000	93.7		16.567	5.66	5.66E-04		
200.000			16.098				1.947	0.947
	200.000	88.8		15.654	5.67	2.84E-04		
400.000			15.210				1.839	0.839
	400.000	87.8		14.771	5.94	1.49E-04		
800.000			14.332				1.733	0.733
	800.000	86.8		13.898	6.25	7.81E-05		
1600.000			13.464				1.628	0.628
	1600.000	80.2		13.063	6.14	3.84E-05		
3200.000			12.662				1.531	0.531

PRESSURE kN/m^2	AVERAGE PRESSURE kN/m^2	T90 min	CV m^2/sec	CV m^2/day	CV $m^2/year$	PRIMARY COMPRESSION *E-2 mm	PRIMARY COMPRESSION RATIO	COEFFICIENT OF PERMEABILITY m/sec
0.000								
	6.000	0.98	1.07E-06	9.26E-02	3.38E+01	5.4	0.301	8.75E-09
12.000								
	18.500	1.00	1.04E-06	8.94E-02	3.26E+01	3.0	0.272	4.79E-09
25.000								
	37.500	0.97	1.06E-06	9.12E-02	3.33E+01	3.6	0.205	4.19E-09
50.000								
	75.000	1.05	9.35E-07	8.08E-02	2.95E+01	11.4	0.228	5.29E-09
100.000								
	150.000	1.66	5.43E-07	4.70E-02	1.71E+01	43.3	0.462	3.02E-09
200.000								
	300.000	1.33	6.04E-07	5.22E-02	1.90E+01	38.2	0.431	1.68E-09
400.000								
	600.000	1.16	6.20E-07	5.36E-02	1.96E+01	33.7	0.384	9.04E-10
800.000								
	1200.000	1.08	5.87E-07	5.07E-02	1.85E+01	31.1	0.358	4.49E-10
1600.000								
	2400.000	0.98	5.74E-07	4.96E-02	1.81E+01	27.4	0.341	2.16E-10
3200.000								

REBOUND

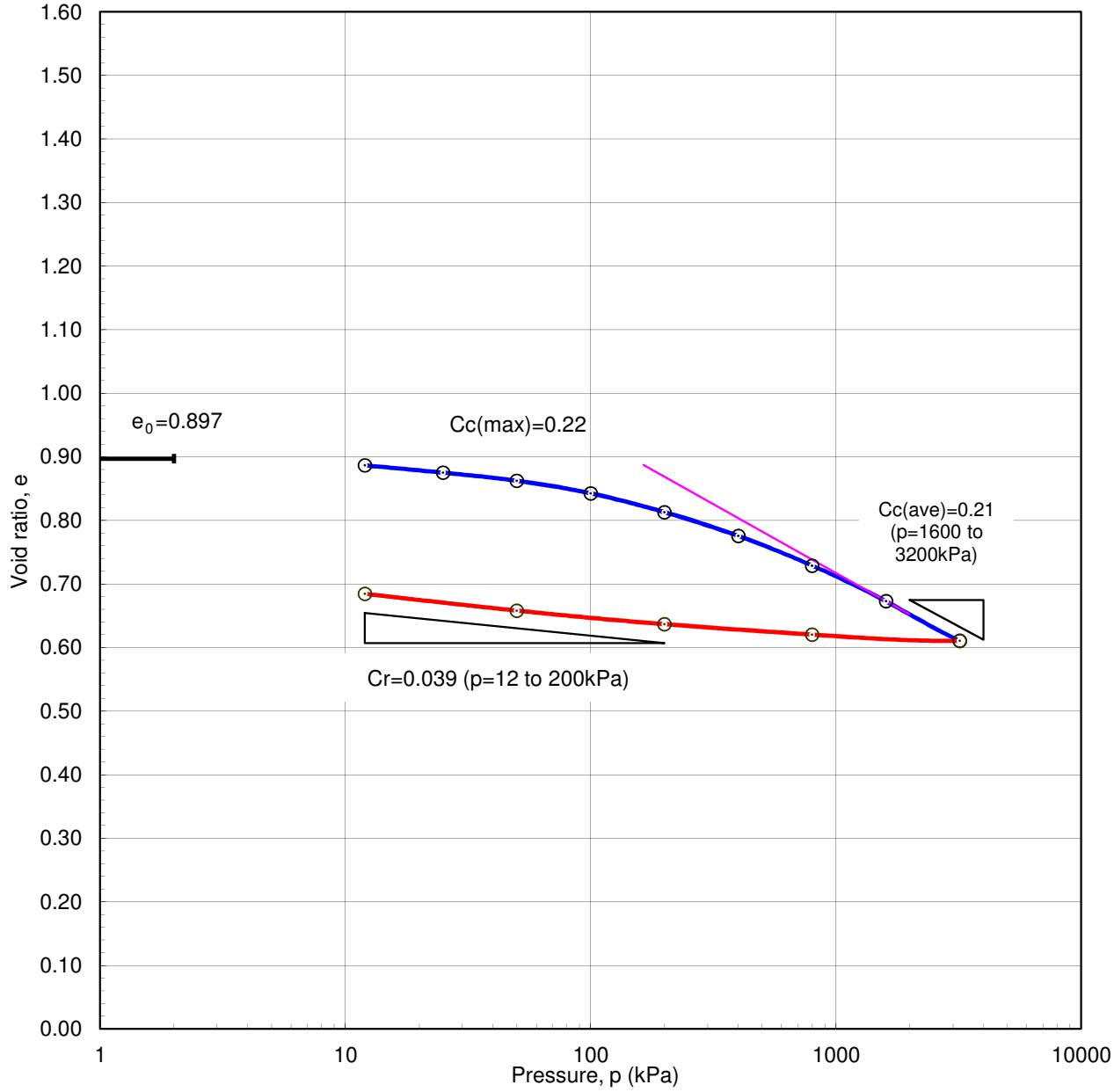
P	800.000	200.000	50.000	12.000
H	12.830	13.106	13.489	13.950
E	0.551	0.585	0.631	0.687

CONSOLIDATION TEST (e-log p curves)

Preparatory Survey on Matarbari USC Coal-fired Power

Project :	Project			Borehole No. :	PP17-1
Project No.:	S27-14	Tested by :	Lim	Sample No. :	HP-3
Soil Type :	Clay with Sand	Checked by :	A. B. Tan	Depth of Sample :	8.00-8.85 m

Sample No.	Depth of sample (m)	Initial void ratio e_o	Preconsolidation Pressure, p_c (kPa)	Compression Index Cc		Swell Index Cr	Unload-reload-Compression Index Cur
HP-3	8.00-8.85	0.897	-	0.22 (max)	0.21(average)	0.039 (average)	N/A



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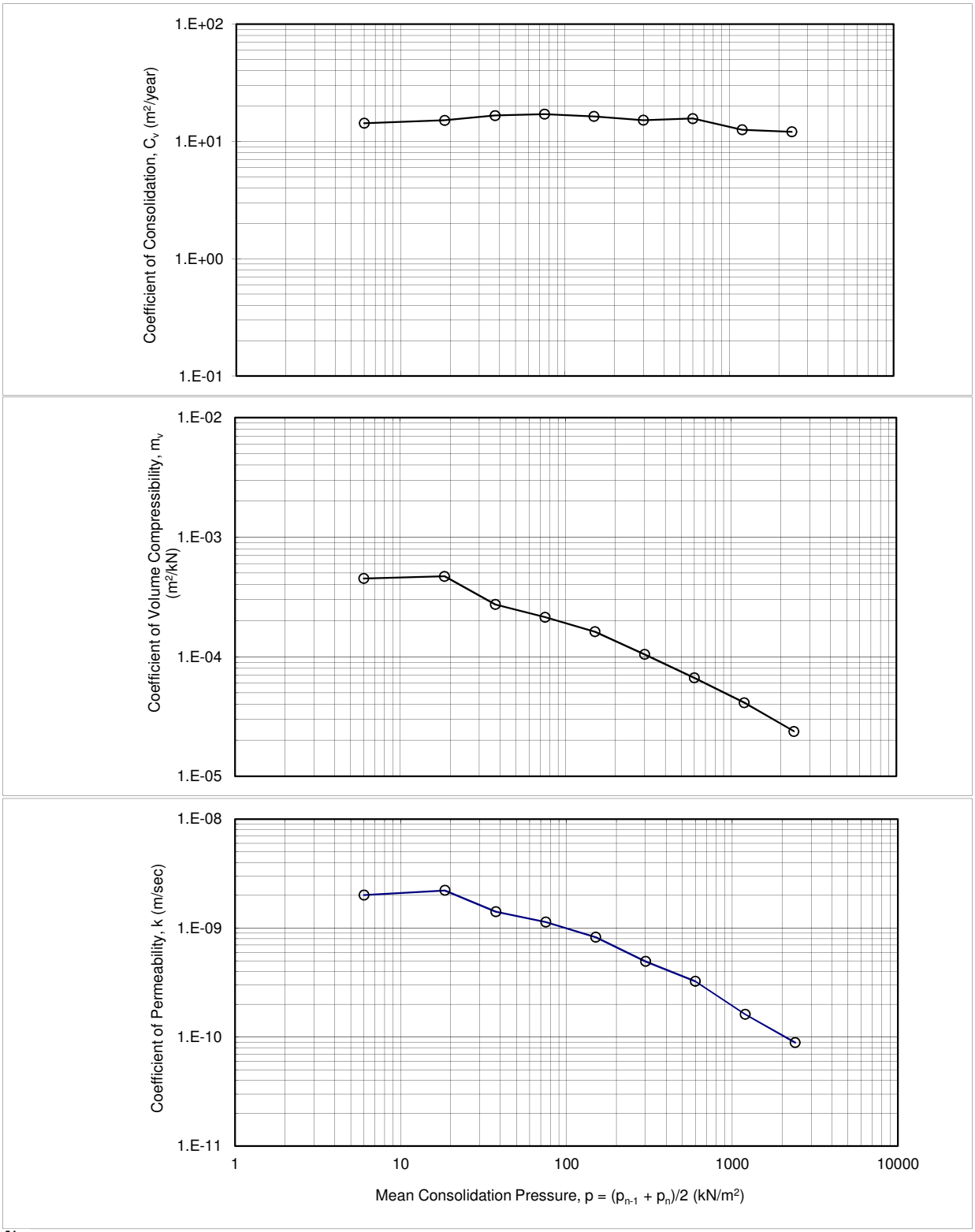
Consolidation Test (p - $\overline{cv}$, mv , k curves)

	Preparatory Survey on Matarbari USC Coal-fired Power				
Project :	Project			Borehole No. :	PP17-1
Project No. :	S27-14			Sample No. :	HP-3
Date of testing :	26-Sep-14	Tested by :	Lim	Depth of Sample :	8.00-8.85 m



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PROJECT NAME : Preparatory Survey on Matarbari USC Coal-fired Power Project
PROJECT NO. : S27-14

BOREHOLE NO. : PP17-1
TESTING STANDARD : ASTM D2435
DATE : 26-Sep-14

SAMPLE NO. : HP-3
INITIAL HEIGHT OF SPECIMEN : 18.000 mm
NO. OF LOADING STEP : 9

DEPTH : 8.00-8.85 m
DIAMETER OF SPECIMEN : 53.900 mm
SPECIFIC GRAVITY : 2.72

TESTER NO. : 27
DRY WEIGHT OF SPECIMEN : 58.880 grams
SOLID HEIGHT OF SPECIMEN : 9.490 mm

INITIAL MOISTURE CONTENT : 32.0 %
BULK DENSITY : 1.89 Mg/m^3

METHOD OF TIME FITTING USED : SQUARE ROOT TIME CURVE - FITTING METHOD
LABORATORY TEMPERATURE : 23.0 ^{o}C

PRESSURE kN/m^2	PRESSURE INCREMENT kN/m^2	CHANGE IN HEIGHT *E-2 mm	HEIGHT mm	AVERAGE HEIGHT mm	STRAIN %	MV m^2/kN	VOLUME RATIO	VOID RATIO
0.000			18.000				1.897	0.897
	12.000	9.7		17.952	0.54	4.50E-04		
12.000			17.903				1.887	0.887
	13.000	10.9		17.849	0.61	4.70E-04		
25.000			17.794				1.875	0.875
	25.000	12.1		17.734	0.68	2.73E-04		
50.000			17.673				1.862	0.862
	50.000	18.8		17.579	1.07	2.14E-04		
100.000			17.485				1.842	0.842
	100.000	28.1		17.345	1.62	1.62E-04		
200.000			17.204				1.813	0.813
	200.000	35.6		17.026	2.09	1.05E-04		
400.000			16.848				1.775	0.775
	400.000	44.2		16.627	2.66	6.65E-05		
800.000			16.406				1.729	0.729
	800.000	53.2		16.140	3.30	4.12E-05		
1600.000			15.874				1.673	0.673
	1600.000	59.1		15.579	3.79	2.37E-05		
3200.000			15.283				1.610	0.610

PRESSURE kN/m^2	AVERAGE PRESSURE kN/m^2	T90 min	CV m^2/sec	CV m^2/day	CV $m^2/year$	PRIMARY COMPRESSION *E-2 mm	PRIMARY COMPRESSION RATIO	COEFFICIENT OF PERMEABILITY m/sec
0.000								
	6.000	2.33	4.54E-07	3.92E-02	1.43E+01	1.7	0.178	2.01E-09
12.000								
	18.500	2.18	4.81E-07	4.15E-02	1.52E+01	1.3	0.123	2.22E-09
25.000								
	37.500	1.96	5.28E-07	4.56E-02	1.67E+01	1.0	0.093	1.41E-09
50.000								
	75.000	1.87	5.42E-07	4.68E-02	1.71E+01	2.5	0.141	1.14E-09
100.000								
	150.000	1.91	5.18E-07	4.48E-02	1.63E+01	4.4	0.147	8.24E-10
200.000								
	300.000	1.98	4.81E-07	4.16E-02	1.52E+01	5.2	0.147	4.94E-10
400.000								
	600.000	1.83	4.97E-07	4.29E-02	1.57E+01	5.3	0.121	3.24E-10
800.000								
	1200.000	2.14	3.99E-07	3.45E-02	1.26E+01	6.5	0.122	1.61E-10
1600.000								
	2400.000	2.08	3.83E-07	3.31E-02	1.21E+01	7.1	0.121	8.91E-11
3200.000								

REBOUND

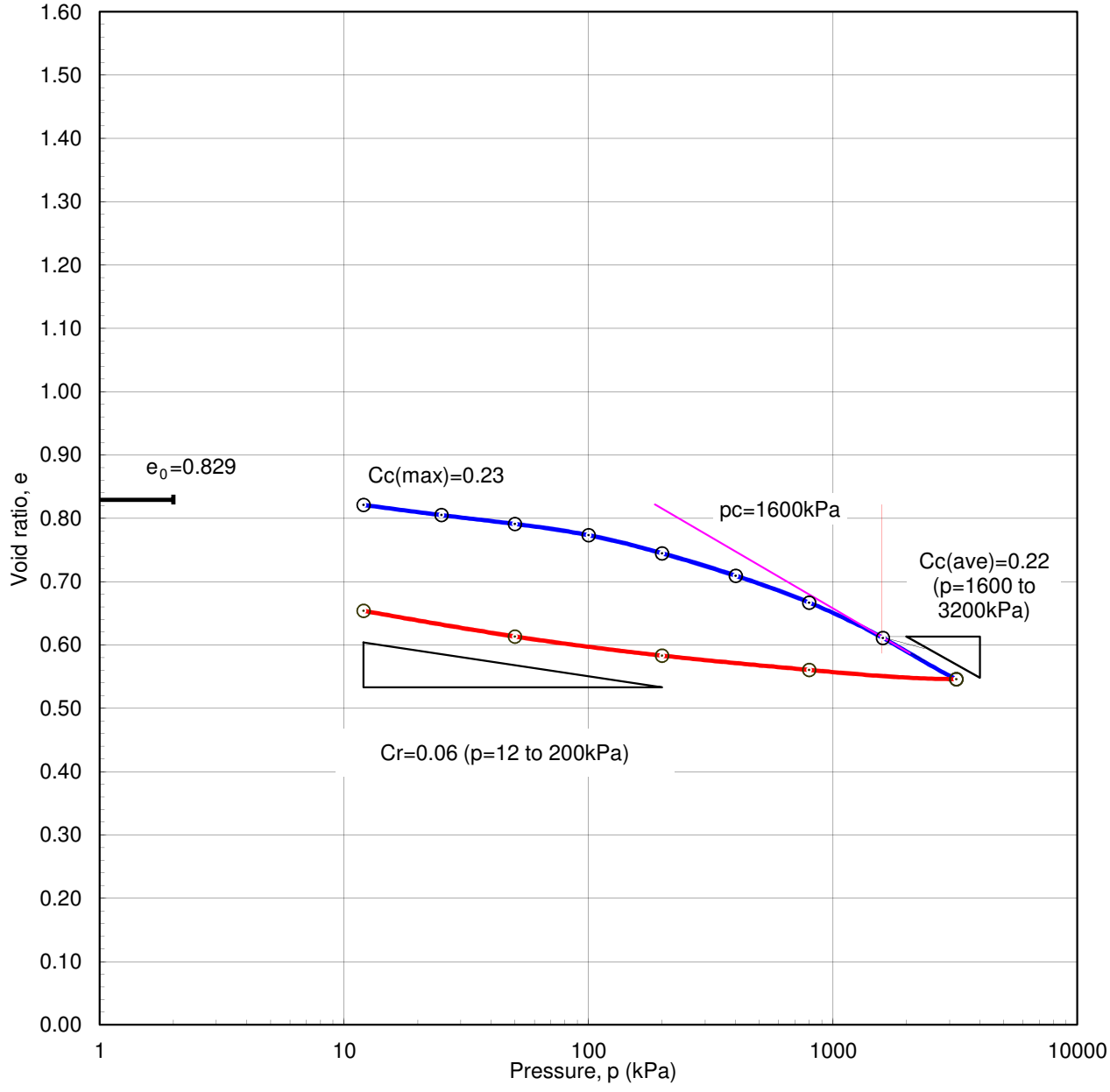
P	800.000	200.000	50.000	12.000
H	15.377	15.532	15.735	15.985
E	0.620	0.637	0.658	0.684

CONSOLIDATION TEST (e-log p curves)

Preparatory Survey on Matarbari USC Coal-fired Power

Project :	Project			Borehole No. :	PP17-1
Project No.:	S27-14	Tested by :	Lim	Sample No. :	D-1
Soil Type :	0	Checked by :	A. B. Tan	Depth of Sample :	15.00-15.85 m

Sample No.	Depth of sample (m)	Initial void ratio e_o	Preconsolidation Pressure, p_c (kPa)	Compression Index Cc		Swell Index Cr	Unload-reload-Compression Index Cur
D-1	15.00-15.85	0.829	1600	0.23 (max)	0.22(average)	0.06 (average)	N/A



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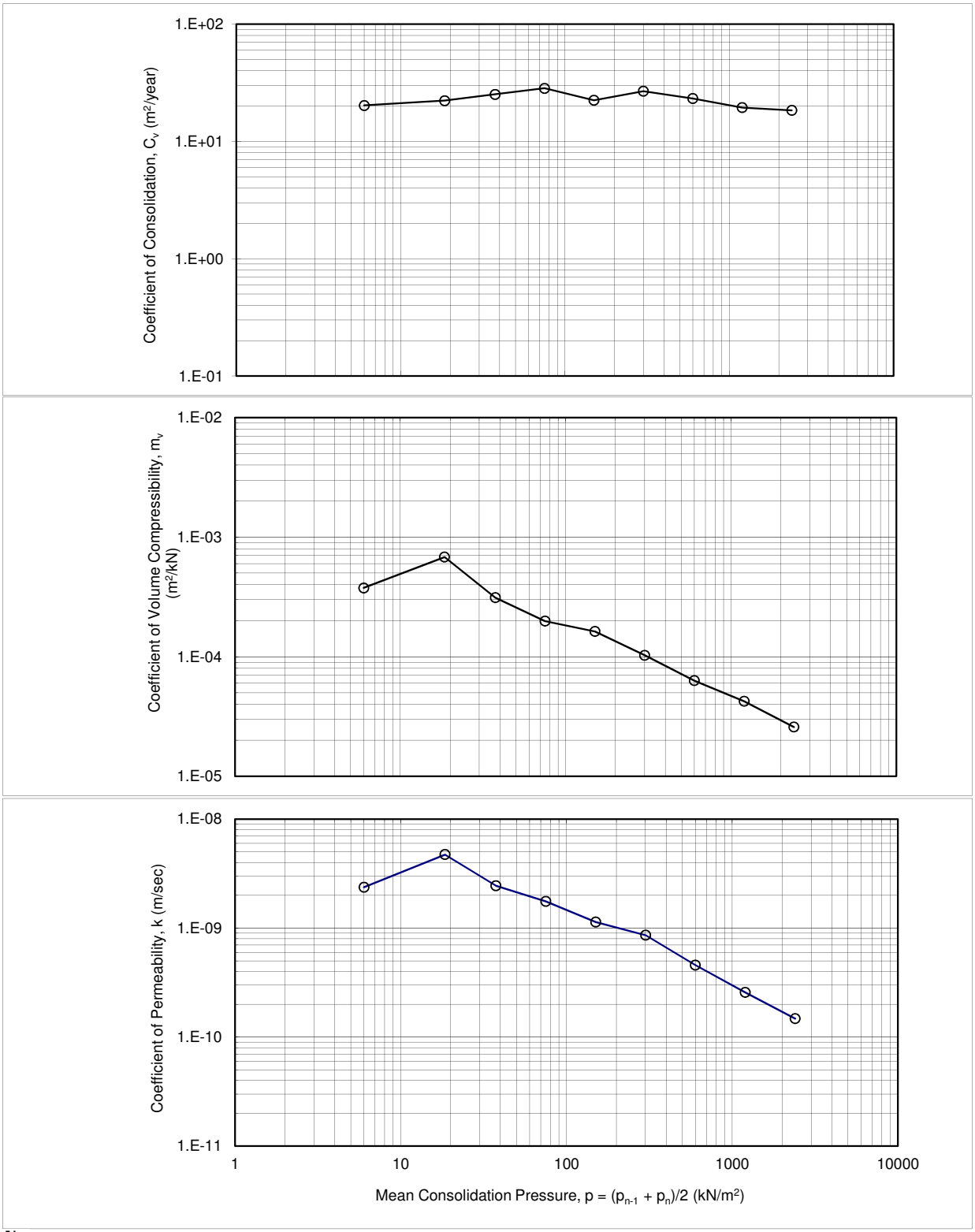
Consolidation Test (p - $\overline{cv}$, mv , k curves)

	Preparatory Survey on Matarbari USC Coal-fired Power				
Project :	Project			Borehole No. :	PP17-1
Project No. :	S27-14			Sample No. :	D-1
Date of testing :	8-Dec-14	Tested by :	Lim	Depth of Sample :	15.00-15.85 m



KISO-JIBAN CONSULTANTS CO., LTD.

PROJECT NAME : Preparatory Survey on Matarbari USC Coal-fired Power Project
PROJECT NO. : S27-14

BOREHOLE NO. : PP17-1
TESTING STANDARD : ASTM D2435-11
DATE : 8-Dec-14

SAMPLE NO. : D-1
INITIAL HEIGHT OF SPECIMEN : 18.000 mm
NO. OF LOADING STEP : 9

DEPTH : 15.00-15.85 m
DIAMETER OF SPECIMEN : 53.900 mm
SPECIFIC GRAVITY : 2.71

TESTER NO. : 17
DRY WEIGHT OF SPECIMEN : 60.850 grams
SOLID HEIGHT OF SPECIMEN : 9.840 mm

INITIAL MOISTURE CONTENT : 27.3 %
BULK DENSITY : 1.93 Mg/m^3

METHOD OF TIME FITTING USED : SQUARE ROOT TIME CURVE - FITTING METHOD
LABORATORY TEMPERATURE : 23.0 ^{O}C

PRESSURE kN/m^2	PRESSURE INCREMENT kN/m^2	CHANGE IN HEIGHT *E-2 mm	HEIGHT mm	AVERAGE HEIGHT mm	STRAIN %	MV m^2/kN	VOLUME RATIO	VOID RATIO
0.000			18.000				1.829	0.829
	12.000	8.1		17.960	0.45	3.76E-04		
12.000			17.919				1.821	0.821
	13.000	15.8		17.840	0.89	6.81E-04		
25.000			17.761				1.805	0.805
	25.000	13.8		17.692	0.78	3.12E-04		
50.000			17.623				1.791	0.791
	50.000	17.4		17.536	0.99	1.98E-04		
100.000			17.449				1.773	0.773
	100.000	28.1		17.309	1.62	1.62E-04		
200.000			17.168				1.745	0.745
	200.000	34.9		16.994	2.05	1.03E-04		
400.000			16.819				1.709	0.709
	400.000	41.9		16.610	2.52	6.31E-05		
800.000			16.400				1.667	0.667
	800.000	54.7		16.127	3.39	4.24E-05		
1600.000			15.853				1.611	0.611
	1600.000	64.1		15.533	4.13	2.58E-05		
3200.000			15.212				1.546	0.546

PRESSURE kN/m^2	AVERAGE PRESSURE kN/m^2	T90 min	CV m^2/sec	CV m^2/day	CV $m^2/year$	PRIMARY COMPRESSION *E-2 mm	PRIMARY COMPRESSION RATIO	COEFFICIENT OF PERMEABILITY m/sec
0.000								
	6.000	1.65	6.43E-07	5.56E-02	2.03E+01	2.0	0.250	2.37E-09
12.000								
	18.500	1.48	7.07E-07	6.11E-02	2.23E+01	3.2	0.202	4.73E-09
25.000								
	37.500	1.29	7.99E-07	6.91E-02	2.52E+01	2.1	0.149	2.45E-09
50.000								
	75.000	1.12	9.01E-07	7.78E-02	2.84E+01	2.6	0.150	1.75E-09
100.000								
	150.000	1.38	7.13E-07	6.16E-02	2.25E+01	3.2	0.114	1.14E-09
200.000								
	300.000	1.11	8.52E-07	7.36E-02	2.69E+01	4.5	0.128	8.59E-10
400.000								
	600.000	1.23	7.37E-07	6.37E-02	2.33E+01	6.3	0.150	4.56E-10
800.000								
	1200.000	1.39	6.17E-07	5.33E-02	1.95E+01	7.9	0.144	2.57E-10
1600.000								
	2400.000	1.36	5.83E-07	5.04E-02	1.84E+01	9.8	0.153	1.48E-10
3200.000								

REBOUND

P	800.000	200.000	50.000	12.000
H	15.355	15.578	15.875	16.273
E	0.560	0.583	0.613	0.654

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30) PP-21-1

TABLE SUMMARY OF SOIL TEST

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project** Standard: **ASTM**

Borehole No.			PP-21-1								
Sample No.			HP-1	HP-2	HP-3	D-1					
Sample Depth			1.00m ~1.65m	3.00m ~3.85m	6.00m ~6.83m	11.00m ~11.85m					
Condition of Sample			Undisturbed			Disturbed					
Natural Water Content		%	38.8	51.8	55.2	33.1					
Specific Gravity			2.75	2.76	2.77	2.73					
Wet Density		Mg/m^3	1.83	1.71	1.71	1.82					
Dry Density		Mg/m^3	1.31	1.13	1.10	1.37					
Natural Void Ratio			1.09	1.45	1.51	1.00					
Degree of Saturation		%	98	99	100	91					
Atterberg Limits	Liquid Limit,	%	47	57	57	32					
	Plastic Limit,	%	23	27	27	18					
	Plasticity Index,	%	24	30	30	14					
Grain Size Analysis	Gravel,	%	0	0	0	0					
	Sand,	%	3	1	3	39					
	Silt,	%	43	32	35	25					
	Clay & Colloid,	%	54	67	62	36					
	Max. diameter,	mm	0.425	0.106	0.425	2.00					
	Diam. at 60%	mm	0.0066	0.0035	0.0045	0.067					
	Diam. at 10%	mm	-	-	-	-					
Visual soil description			Clay	Clay	Clay	Sandy Clay					
Unified soil classification			CL	CH	CH	CL					
Triaxial compression test	Angle of Internal Friction	(^{0})	-	0	0	-					
	Cohesion Intercept, kPa		-	13	22	-					
	Condition of drainage		-	UU	UU	-					
	Angle of Internal Friction *2	(^{0})	34	-	-	32					
	Cohesion Intercept, kPa *2		0	-	-	0					
	Condition of drainage		$\overline{CU}$	-	-	CD*3					
Consolidation Test	Preconsolidation Pressure,	kPa	63	60	-	-					
	Compression Index(Average)		0.35	0.44	-	-					
	Pressure Range for Compression Index(kPa)		200-1600	200-1600	-	-					
	Swell index		0.10	0.14	-	-					
Chemical Test	pH value		-	-	-	-					
	Total sulphate content as SO_3,	%	-	-	-	-					
	Chloride content as Cl,	%	-	-	-	-					
	Organic Matter content,	%	-	-	-	-					
Unconfined Compression Strength (kPa)			-	-	-	-					
Strain at failure (%)			-	-	-	-					

Remarks : Atterberg Limits was tested on material at natural state except those with *1 which was tested on material passing through 0.425mm test sieve.

*2 : In terms of effective stress *3 : Samples are prepared at required saturated wet density

Checked by : A. B. Tan

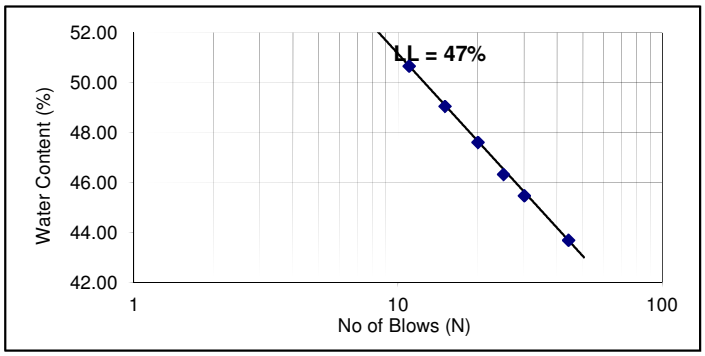
Kiso-Jiban Consultants Co., Ltd.

ATTERBERG LIMITS DETERMINATION

Project Name : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No. : S27-14
Standard : ASTM D4318-10
Date of Testing : 22.11.14
Tested By : Vasantha
Checked By : A. B. Tan

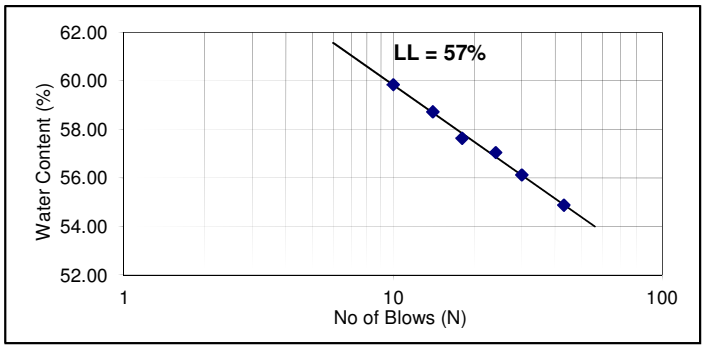
Sample No. : PP-21-1 HP-1
Depth : 1.00-1.65m
Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	44	43.69
2	30	45.47
3	25	46.32
4	20	47.60
5	15	49.05
6	11	50.66
Liquid Limits %		**47**
Plastic Limits %		**23**
Plasticity Index		**24**



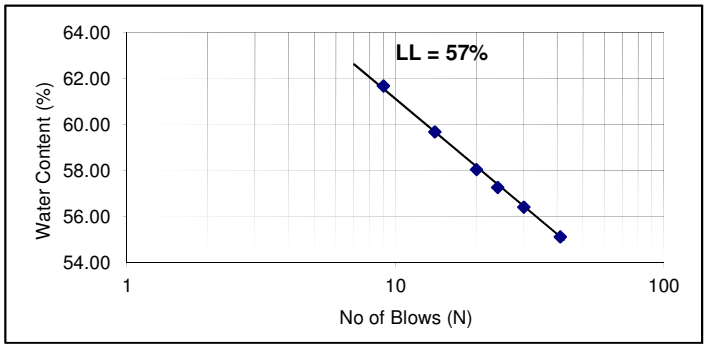
Sample No. : PP-21-1 HP-2
Depth : 3.00-3.85m
Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	43	54.87
2	30	56.12
3	24	57.04
4	18	57.63
5	14	58.72
6	10	59.84
Liquid Limits %		**57**
Plastic Limits %		**27**
Plasticity Index		**30**



Sample No. : PP-21-1 HP-3
Depth : 6.00-6.83m
Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	41	55.13
2	30	56.41
3	24	57.29
4	20	58.05
5	14	59.68
6	9	61.68
Liquid Limits %		**57**
Plastic Limits %		**27**
Plasticity Index		**30**



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Singapore Branch

ATTERBERG LIMITS DETERMINATION

Project Name : Preparatory Survey on Matarbari USC Coral-fired Power Project Project No. : S27-14

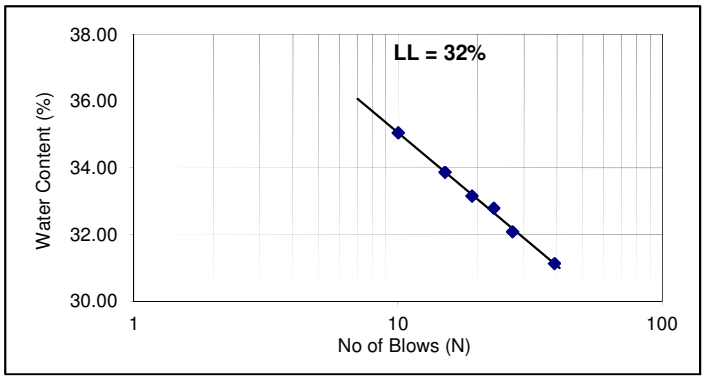
Standard : ASTM D4318-10 Date of Testing : 01.12.14

Tested By : Vasantha Checked By : A. B. Tan

Sample No. : PP-21-1 D-1 Depth : 11.00-11.85m

Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	39	31.13
2	27	32.09
3	23	32.79
4	19	33.15
5	15	33.86
6	10	35.05
Liquid Limits %		**32**
Plastic Limits %		**18**
Plasticity Index		**14**



Kiso-Jiban Consultants Co Ltd
Singapore Branch

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **24.11.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

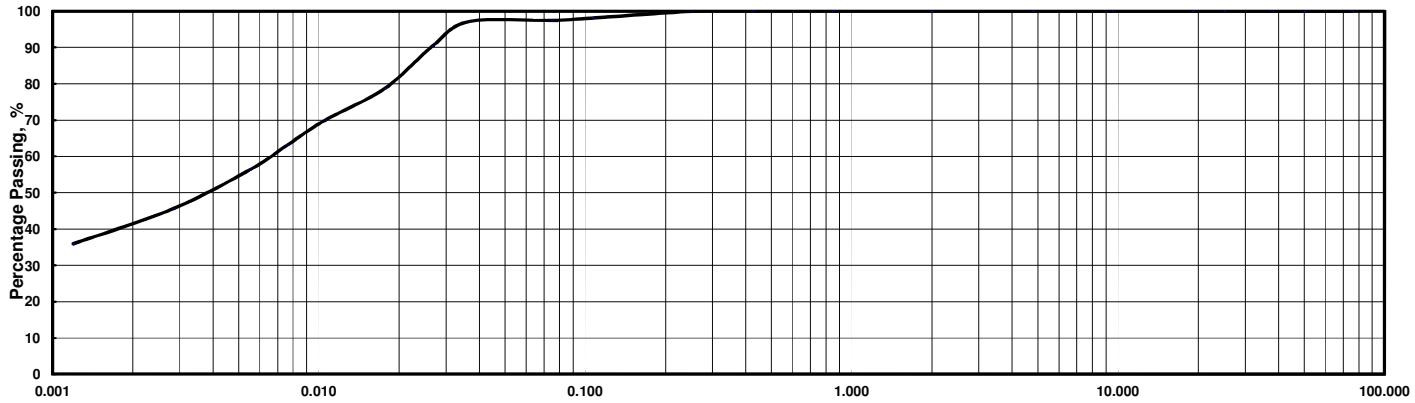
Sample No. : **PP-21-1 HP-1** Depth : **1.00-1.65m** ( ) Specific Gravity : 2.75

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	98.1	97.4
Hydro.	Dia., mm	0.037	0.027	0.018	0.011	0.0076	0.0055	0.0028	0.0012							
	% Passing	97.1	90.3	78.7	69.9	63.1	56.3	45.7	35.9							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75	19.0		75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP-21-1 HP-1 1.00-1.65m		Sample No. Depth	PP-21-1 HP-1 1.00-1.65m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.425 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.0066 mm	
2.00 - 0.425 mm	0.0 %		Dia. at 30%	- mm	
0.425 - 0.075 mm	2.6 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	43.1 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	54.3 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	97.4 %				

Kiso-Jiban Consultants Co., Ltd.

GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **24.11.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

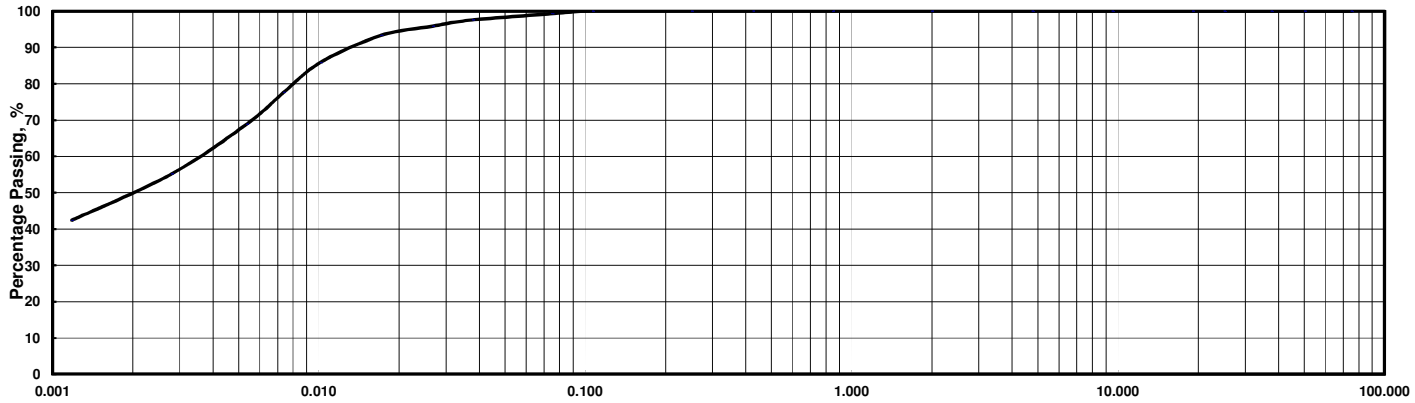
Sample No. : **PP-21-1 HP-2** Depth : **3.00-3.85m** ( ) Specific Gravity : 2.76

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.3
Hydro.	Dia., mm	0.038	0.027	0.017	0.010	0.0074	0.0054	0.0028	0.0012							
	% Passing	97.6	95.9	93.3	85.9	77.6	68.9	55.1	42.4							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP-21-1 HP-2 3.00-3.85m		Sample No. Depth	PP-21-1 HP-2 3.00-3.85m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.106 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.0035 mm	
2.00 - 0.425 mm	0.0 %		Dia. at 30%	- mm	
0.425 - 0.075 mm	0.7 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	32.3 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	67.0 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	99.3 %				

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GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **24.11.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

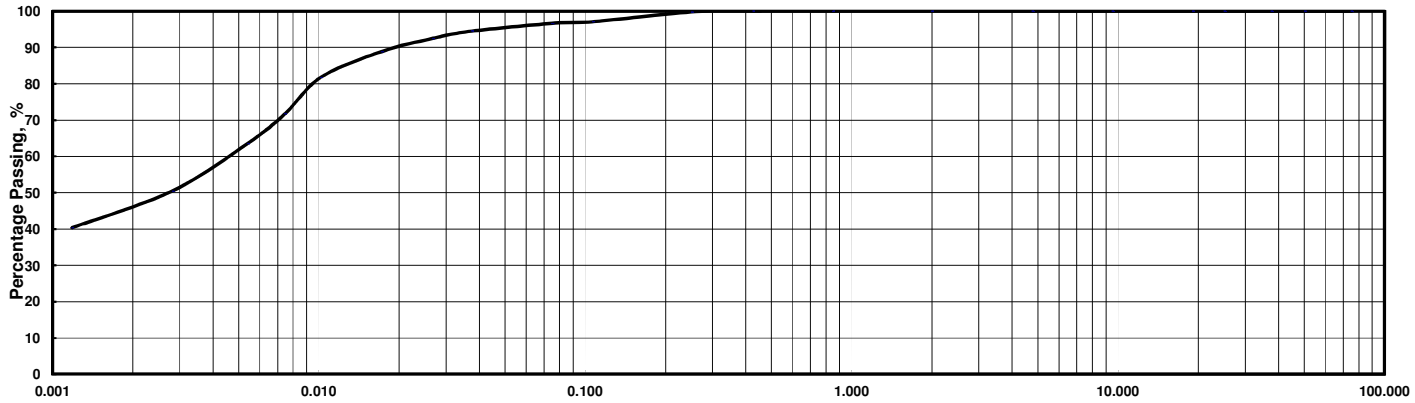
Sample No. : **PP-21-1 HP-3** Depth : **6.00-6.85m** ( ) Specific Gravity : 2.77

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	97.0	96.6
Hydro.	Dia., mm	0.037	0.027	0.017	0.010	0.0074	0.0054	0.0028	0.0012							
	% Passing	94.5	92.5	88.8	81.8	71.7	63.6	50.5	40.4							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP-21-1 HP-3 6.00-6.85m		Sample No. Depth	PP-21-1 HP-3 6.00-6.85m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.425 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.0045 mm	
2.00 - 0.425 mm	0.0 %		Dia. at 30%	- mm	
0.425 - 0.075 mm	3.4 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	35.1 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	61.5 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	96.6 %				

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GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **28.11.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

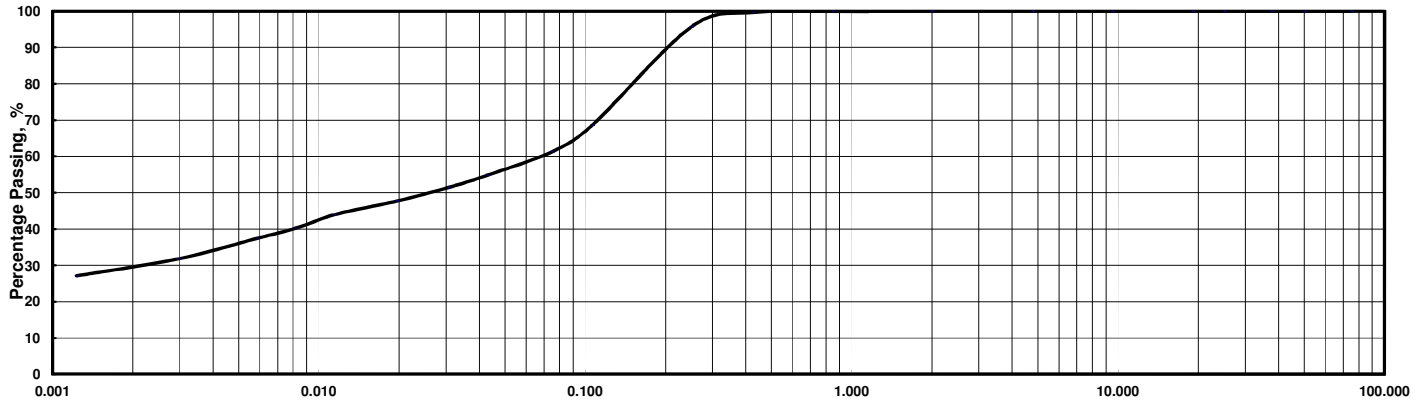
Sample No. : **PP-21-1 D-1** Depth : **11.00-11.85m** ( ) Specific Gravity : 2.73

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.6	95.7	68.5	61.3
Hydro.	Dia., mm	0.043	0.031	0.020	0.011	0.0082	0.0058	0.0030	0.0012							
	% Passing	54.8	51.4	47.7	44.0	40.2	37.4	31.8	27.1							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



0.005	0.075	0.425	2.00	4.75	19.0	75.0
CLAY		FINE	MEDIUM	COARSE	FINE	COARSE
	SILT	SAND			GRAVEL	

Sample No. Depth	PP-21-1 D-1 11.00-11.85m		Sample No. Depth	PP-21-1 D-1 11.00-11.85m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.067 mm	
2.00 - 0.425 mm	0.4 %		Dia. at 30%	0.0021 mm	
0.425 - 0.075 mm	38.3 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	25.5 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	35.8 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	99.9 %				
75um Sieve Passing	61.3 %				

UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No. : S27-14

Standard : ASTM D2850-03a

Date of Testing : 20.11.14

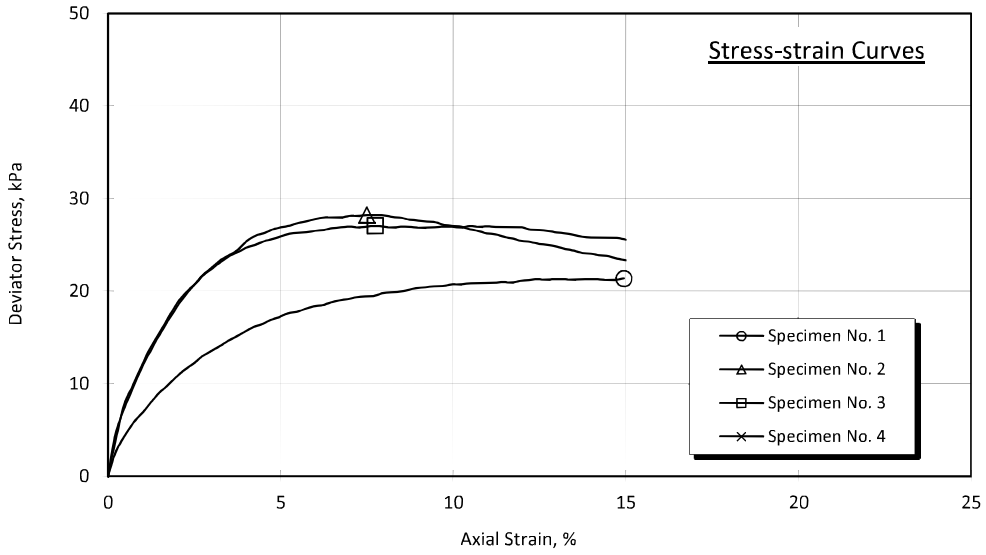
Borehole No.: PP-21-1 Depth 3.00-3.85m

Tested by : Perera

Sample No. : HP-2 Strain Rate 1.00 %/min

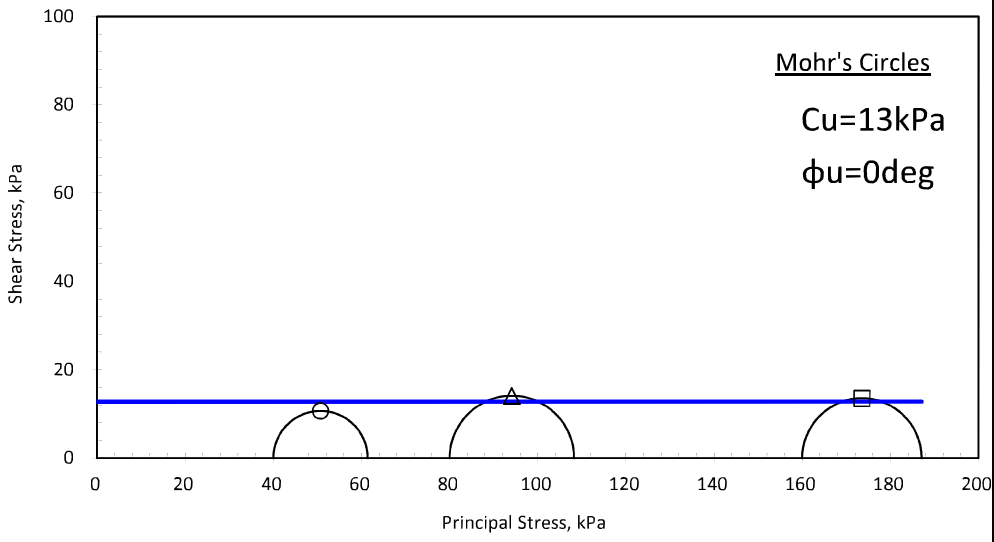
Checked by : A. B. Tan

Specimen No.	Condition of Sample	Size of Specimen (mm)		Natural Water Content	Bulk Density	Dy Density	Cell Pressure	Peak Deviator Stress	Modulus of Deformation	Corrected Initial Strain	Strain at Failure
		Height	Diameter	(%)	(Mg/m3)	(Mg/m3)	(kPa)	(kPa)	E50 (kPa)	(%)	(%)
1	Undisturbed	99.80	50.00	53.5	1.69	1.10	40	21.4	545	N/A	14.94
2	Undisturbed	99.80	50.00	52.5	1.71	1.12	80	28.2	1074	N/A	7.49
3	Undisturbed	99.80	50.00	51.6	1.70	1.12	160	27.1	1145	N/A	7.74
4											




After shearing (Spec. 1)


After shearing (Spec. 2)




After shearing (Spec. 3)

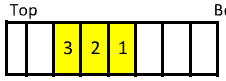
After shearing (Spec. 4)

Remarks :

- [Strain at failure]=[Recorded strain at failure] - [Corrected Initial Strain]
- Latex membrane with 0.2mm in thickness is used.
- Membrane correction is carried out based on BS 1377 : 1990

Portion Tested

Top Bottom



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Singapore Branch

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UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No. : S27-14

Standard : ASTM D2850-03a

Date of Testing : 20.11.14

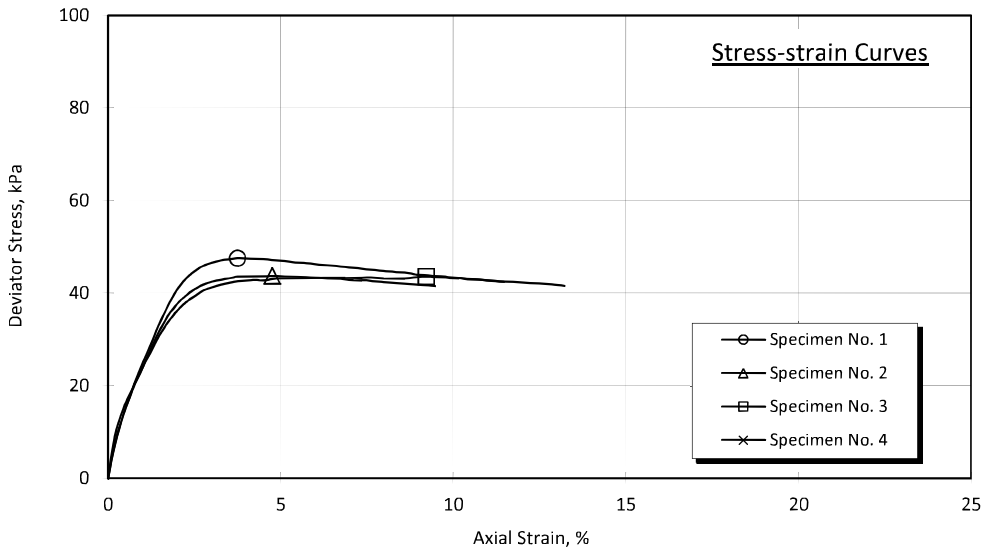
Borehole No.: PP-21-1 Depth :6.00-6.83m

Tested by : Perera

Sample No. : HP-3 Strain Rate 1.00 %/min

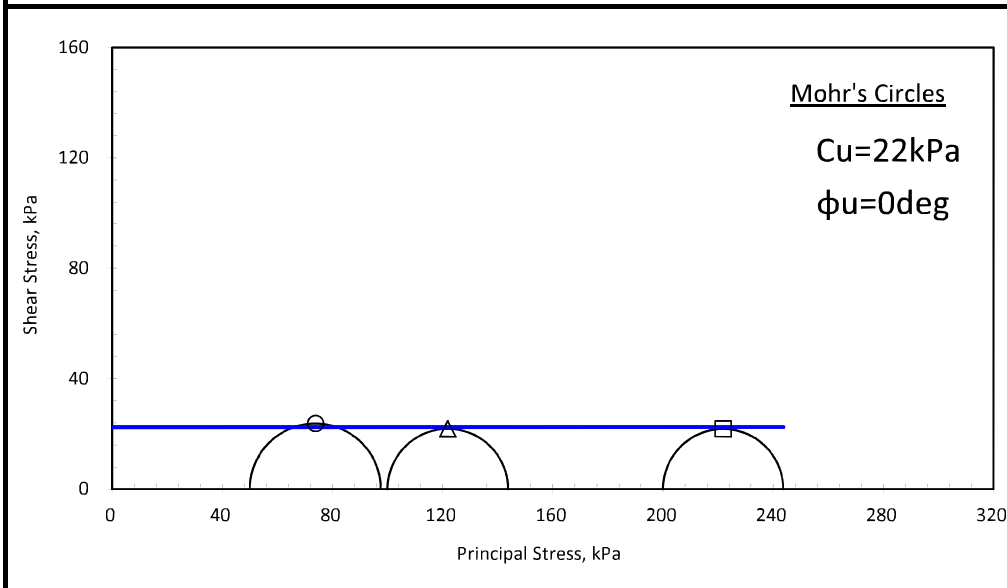
Checked by : A. B. Tan

Specimen No.	Condition of Sample	Size of Specimen (mm)		Natural Water Content	Bulk Density	Dy Density	Cell Pressure	Peak Deviator Stress	Modulus of Deformation	Corrected Initial Strain	Strain at Failure
		Height	Diameter	(%)	(Mg/m3)	(Mg/m3)	(kPa)	(kPa)	E50 (kPa)	(%)	(%)
1	Undisturbed	99.80	50.00	55.8	1.68	1.08	50	47.5	2533	N/A	3.75
2	Undisturbed	99.80	50.00	54.5	1.68	1.09	100	43.7	2502	N/A	4.75
3	Undisturbed	99.80	50.00	55.8	1.67	1.07	200	43.6	2542	N/A	9.22
4											




After shearing (Spec. 1)


After shearing (Spec. 2)

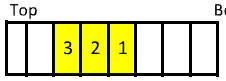



After shearing (Spec. 3)

After shearing (Spec. 4)

Remarks :
- [Strain at failure]=[Recorded strain at failure] - [Corrected Initial Strain]
- Latex membrane with 0.2mm in thickness is used.
- Membrane correction is carried out based on BS 1377 : 1990

Portion Tested



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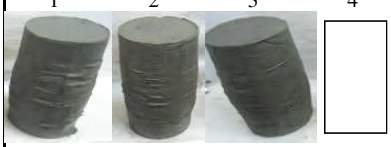
Summary of Consolidated Undrained Triaxial Compression Test
With Porewater Pressure Measurement

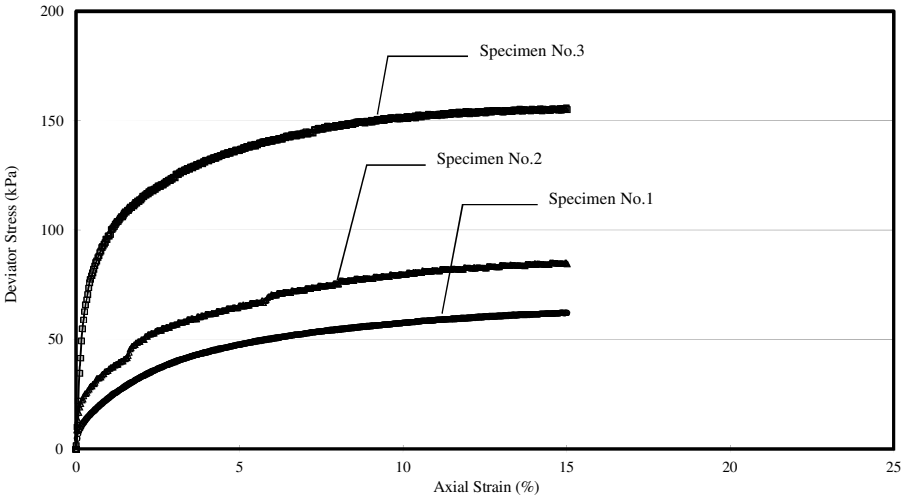
Project No.: S27-14		Project :Preparatory Survey on Matarbari USC Coral-fired Power Project					
Date Tested : 20.11.14		Tested by : Rahim		Checked by : A. B. Tan			
Borehole No : PP-21-1		Sample No.:HP-1		Depth :1.00-1.65m			
Specimen Condition : Undisturbed		Test Method : ASTM D4767-11					
Soil Description : Clay		Ave. Diameter : 50.0mm		Ave. Height : 100.0mm			
Specimen No.			1	2	3		
Initial Condition	Wet Density,	Mg/m^3	1.87	1.84	1.81		
	Water Content,	%	39.0	39.5	40.6		
	Dry Density	Mg/m^3	1.35	1.32	1.29		
Saturation Stage	Saturated PWP,	kPa	500	500	500		
	Final Cell Pressure,	kPa	540	580	660		
	B-value		0.99	1.00	0.98		
Consolidation	Cell Pressure	kPa	540	580	660		
	Back Pressure	kPa	500	500	500		
	Initial PWP,	kPa	530	570	648		
	Final PWP	kPa	500	500	500		
Consolidation Parameter	Total Volume Change,	%	2.59	5.30	9.06		
	Coefficient of Consolidation Cv,	m^2/year	1.35	0.74	0.54		
	Coefficient of Volume Compressibility mvi,	m^2/MN	0.65	0.66	0.57		
Compression Stage	Cell Pressure	kPa	540	580	660		
	Back Pressure	kPa	500	500	500		
	Effective Cell Pressure	kPa	40	80	160		
	Shearing Speed	mm/min	0.03	0.03	0.03		
Failure Conditions	Peak Deviator Stress $(\sigma_1-\sigma_3)f$,	kPa	62	85	156		
	Excess PWP at $(\sigma_1-\sigma_3)f$	kPa	7	35	109		
	A-Coefficient		0.11	0.41	0.70		
	Strain at $(\sigma_1-\sigma_3)f$	(%)	15.01	14.50	14.99		
	Effective Principal Stress Ratio		2.87	2.88	4.04		
Final Conditions	Wet Density,	Mg/m^3	1.86	1.89	1.91		
	Water Content,	%	37.4	35.1	33.7		
Shear Strength Parameters	In terms of Effective Stress $\phi' = 34$ Degree $c' = 0$ kPa		Mode of Failure 1 2 3 4 				
Remarks :							

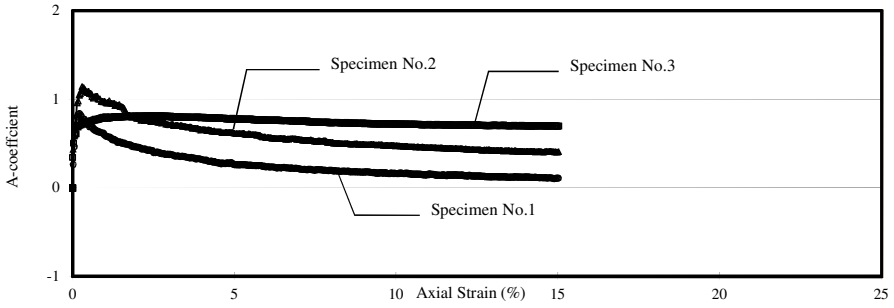
Consolidated Undrained Triaxial Compression Test
With Porewater Pressure Measurement

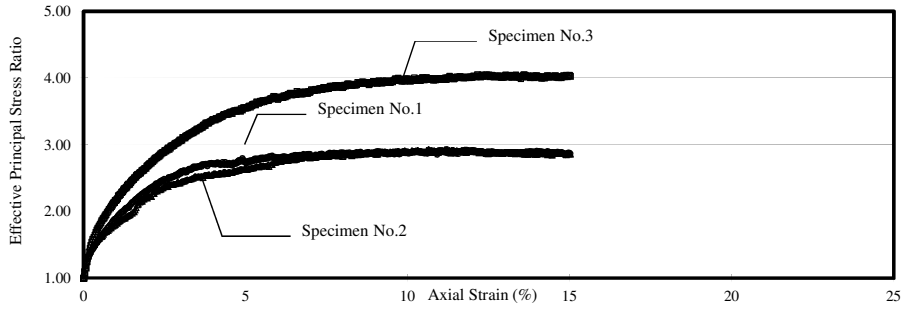
Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No.: S27-14 Sample No.: HP-1 Soil Type: Clay

Borehole No.: PP-21-1 Depth :1.00-1.65m







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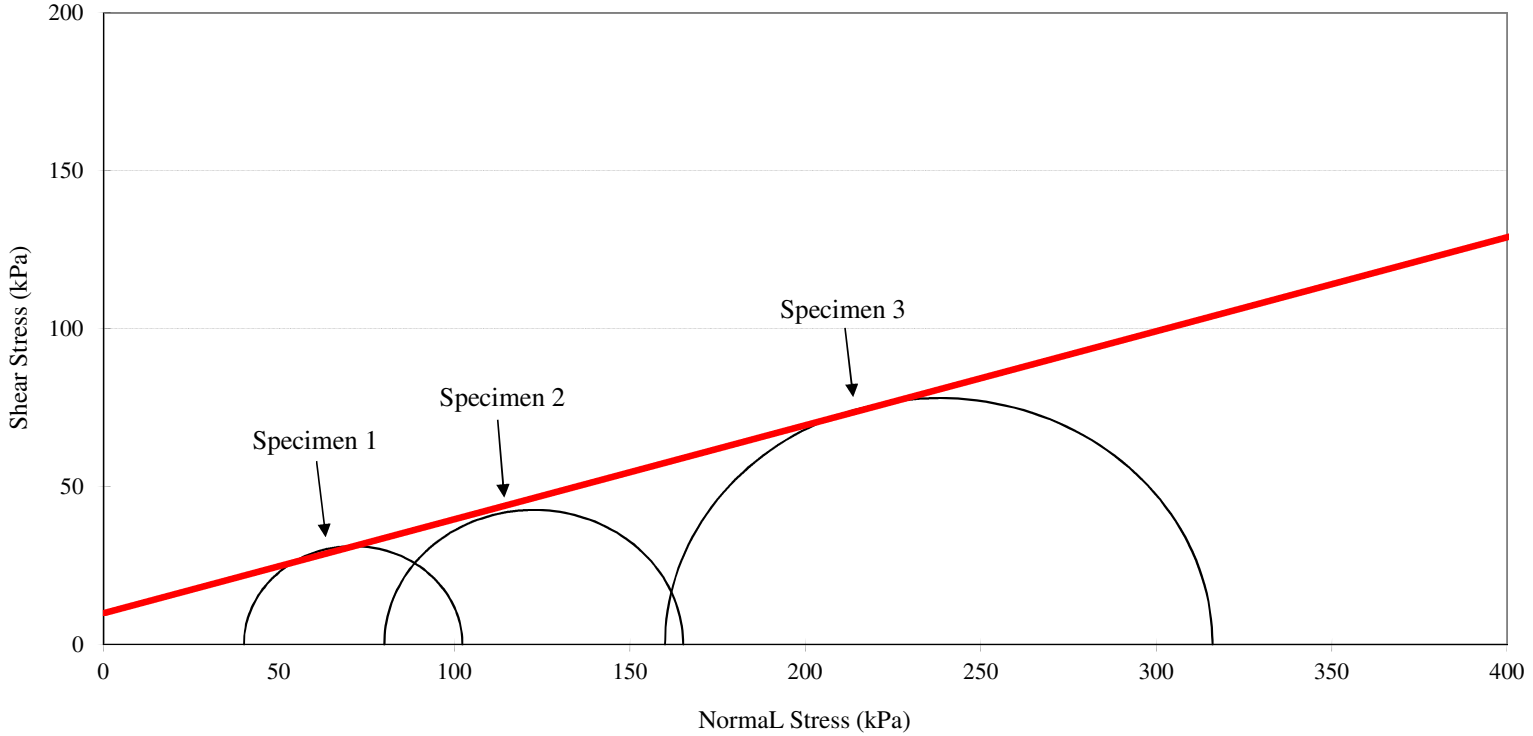
Consolidated Undrained Triaxial Compression Test
With Pore water Pressure Measurement
- Mohr' s Circle (In terms of Total Stress) -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No. : S27-14

Borehole No.: PP-21-1 Soil Type: Clay
Sample No. : HP-1 Depth :1.00-1.65m
Angle of Internal Friction, ϕ 17 deg
Cohesion, c 10 kPa



Consolidated Undrained Triaxial Compression Test
With Pore water Pressure Measurement

- Mohr' s Circle (In terms of Effective Stress at Peak Deviator Stress)-

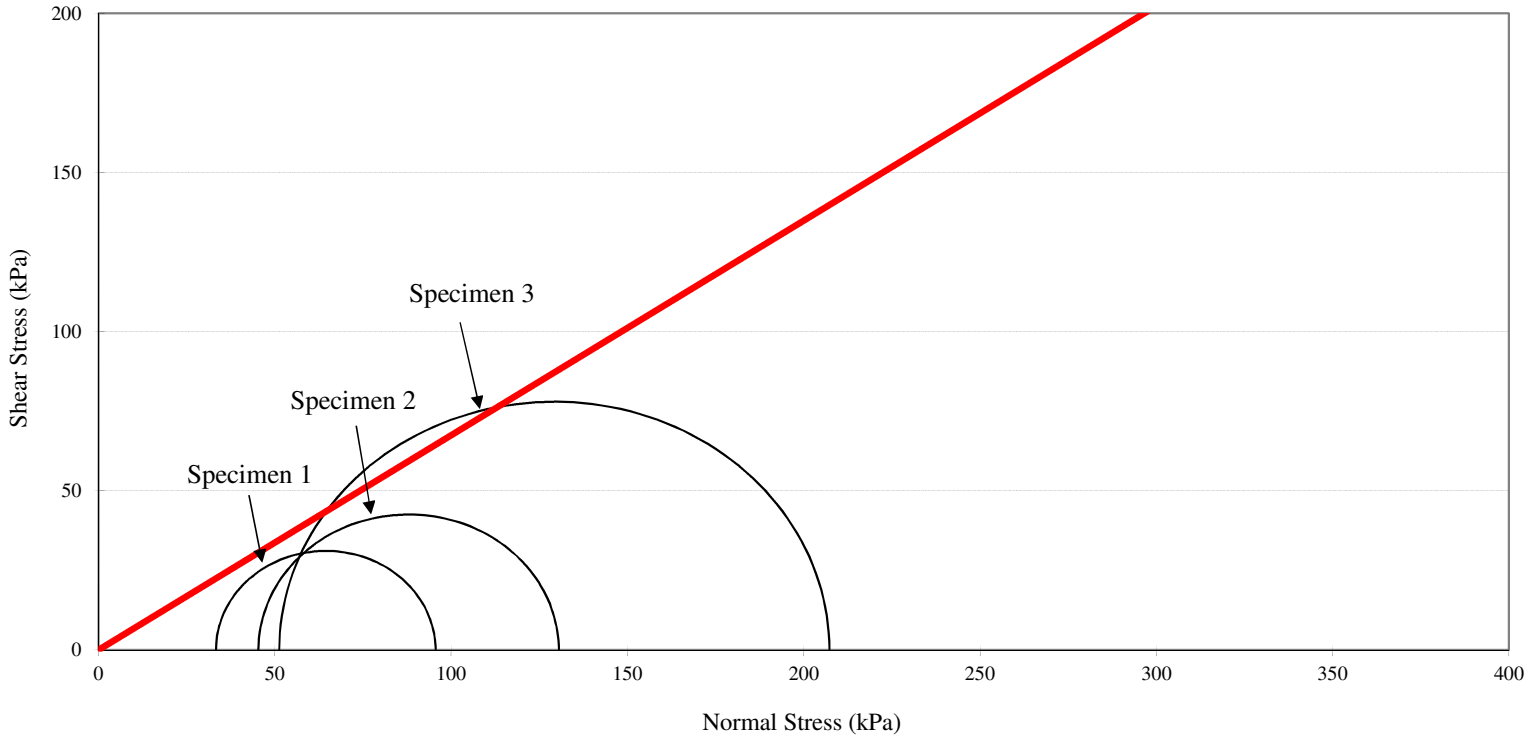
Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No. : S27-14

Borehole No.: PP-21-1 Soil Type: Clay

Sample No. : HP-1 Depth :1.00-1.65m

Angle of Internal Friction,	ϕ'	34	deg
Cohesion,	c'	0	kPa



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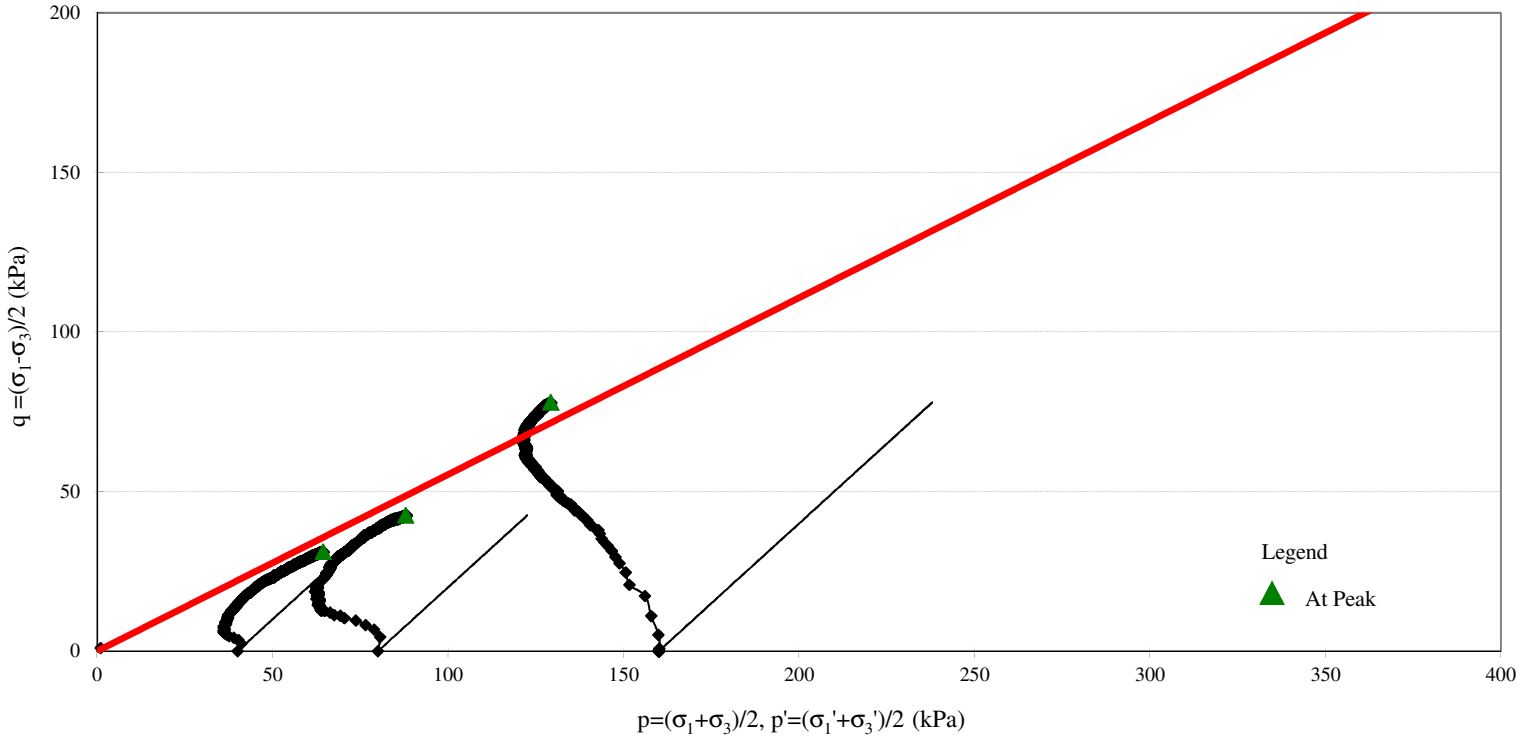
Consolidated Undrained Triaxial Compression Test
With Pore water Pressure Measurement
- Stress Path -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No. : S27-14

Borehole No.: PP-21-1 Soil Type: Clay
Sample No. : HP-1 Depth :1.00-1.65m

α'	29	deg
a'	0	kPa



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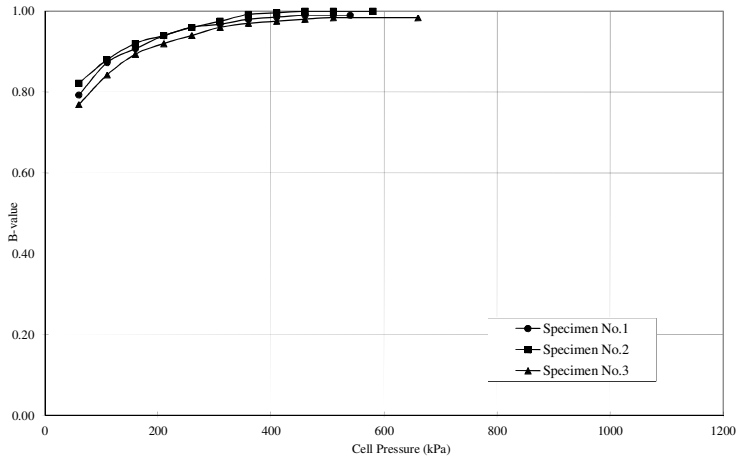
Consolidated Undrained Triaxial Compression Test
With Porewater Pressure Measurement
- B-value Check -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14
Borehole No.: PP-21-1 Depth : 1.00-1.65m
Sample No.: HP-1 Soil Type: Clay

		Result of B-value Check					
		Specimen 1		Specimen 2		Specimen 3	
		Initial	Final	Initial	Final	Initial	Final
B-check Step.1	Cell Pressure (kPa)	30	60	30	60	30	60
	P.W.P (kPa)	20	43.8	20	44.7	20	43.1
	Back Pressure (kPa)	20		20		20	
	B-value	0.79		0.82		0.77	
B-check Step.2	Cell Pressure (kPa)	60	110	60	110	60	110
	P.W.P (kPa)	50	93.6	50	94.0	50	92.1
	Back Pressure (kPa)	50		50		50	
	B-value	0.87		0.88		0.84	
B-check Step.3	Cell Pressure (kPa)	110	160	110	160	110	160
	P.W.P (kPa)	100	145.4	100	146.0	100	144.7
	Back Pressure (kPa)	100		100		100	
	B-value	0.91		0.92		0.89	
B-check Step.4	Cell Pressure (kPa)	160	210	160	210	160	210
	P.W.P (kPa)	150	196.9	150	197.0	150	196.0
	Back Pressure (kPa)	150		150		150	
	B-value	0.94		0.94		0.92	
B-check Step.5	Cell Pressure (kPa)	210	260	210	260	210	260
	P.W.P (kPa)	200	248.0	200	248.0	200	247.0
	Back Pressure (kPa)	200		200		200	
	B-value	0.96		0.96		0.94	
B-check Step.6	Cell Pressure (kPa)	260	310	260	310	260	310
	P.W.P (kPa)	250	298.4	250	298.8	250	298.0
	Back Pressure (kPa)	250		250		250	
	B-value	0.97		0.98		0.96	
B-check Step.7	Cell Pressure (kPa)	310	360	310	360	310	360
	P.W.P (kPa)	300	349.0	300	349.6	300	348.5
	Back Pressure (kPa)	300		300		300	
	B-value	0.98		0.99		0.97	
B-check Step.8	Cell Pressure (kPa)	360	410	360	410	360	410
	P.W.P (kPa)	350	399.3	350	399.8	350	398.8
	Back Pressure (kPa)	350		350		350	
	B-value	0.99		1.00		0.98	
B-check Step.9	Cell Pressure (kPa)	410	460	410	460	410	460
	P.W.P (kPa)	400	449.5	400	450.0	400	449.0
	Back Pressure (kPa)	400		400		400	
	B-value	0.99		1.00		0.98	
B-check Step.10	Cell Pressure (kPa)	460	510	460	510	460	510
	P.W.P (kPa)	450	499.5	450	500.0	450	499.2
	Back Pressure (kPa)	450		450		450	
	B-value	0.99		1.00		0.98	
B-check Step.11	Cell Pressure (kPa)	510	540	510	580	510	660
	P.W.P (kPa)	500	529.7	500	570.0	500	647.5
	Back Pressure (kPa)	500		500		500	
	B-value	0.99		1.00		0.98	



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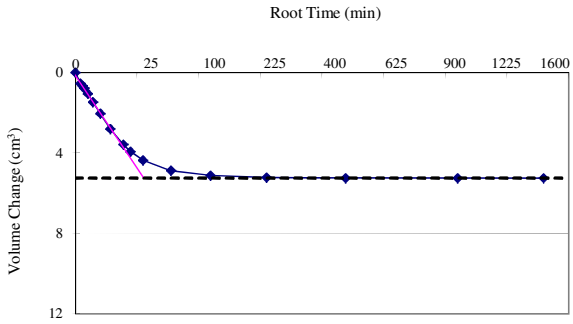
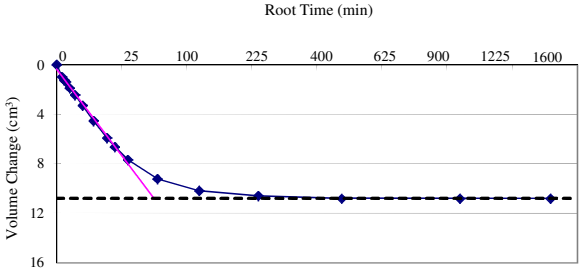
Consolidated Undrained Triaxial Compression Test
With Porewater Pressure Measurement
- Volume Change versus Root Time in Consolidation Stages

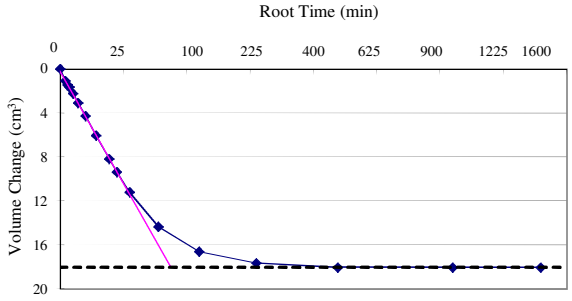
Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14 Sample No.: HP-1 Soil Type: Clay
Borehole No.: PP-21-1 Depth : 1.00-1.65m



Specimen No.: 1
p' = 40 kPa
t100 = 30.5 min
Cv = 1.35 m^2/year
mvi= 0.65 m^2/MN



Specimen No.: 2
p' = 80 kPa
t100 = 55.7 min
Cv = 0.74 m^2/year
mvi= 0.66 m^2/MN



Specimen No.: 3
p' = 160 kPa
t100 = 76.4 min
Cv = 0.54 m^2/year
mvi= 0.57 m^2/MN

CONSOLIDATION TEST (e-log p curves)

Preparatory Survey on Matarbari USC Coal-fired Power

Project : Project

Project No.: S27-14 Tested by : Lim

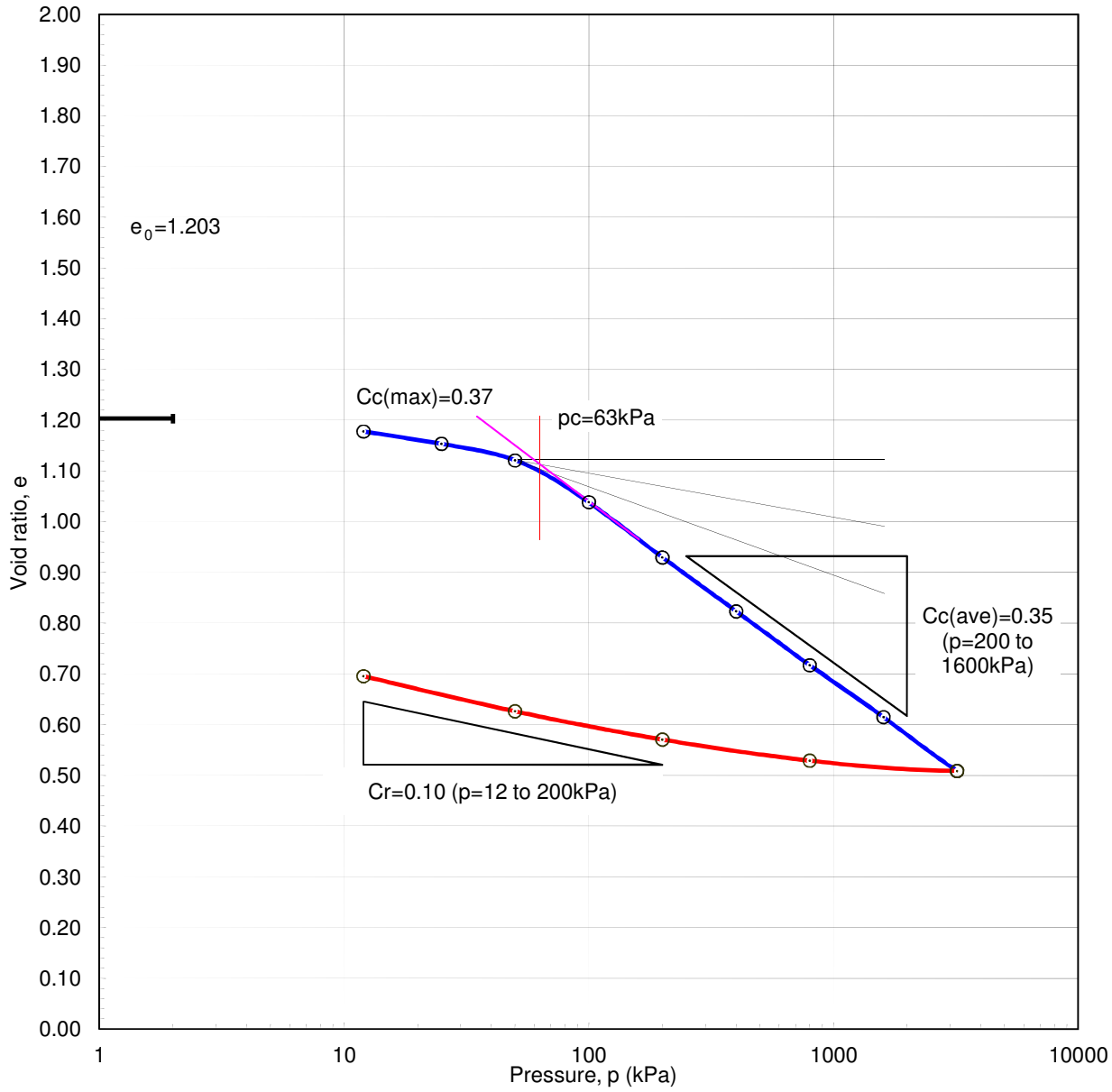
Soil Type : Clay Checked by : A. B. Tan

Borehole No. : PP-21-1

Sample No. : HP-1

Depth of Sample : 1.00-1.65 m

Sample No.	Depth of sample (m)	Initial void ratio e_o	Preconsolidation Pressure, p_c (kPa)	Compression Index Cc		Swell Index Cr	Unload-reload-Compression Index Cur
HP-1	1.00-1.65	1.203	63	0.37 (max)	0.35(average)	0.10 (average)	N/A



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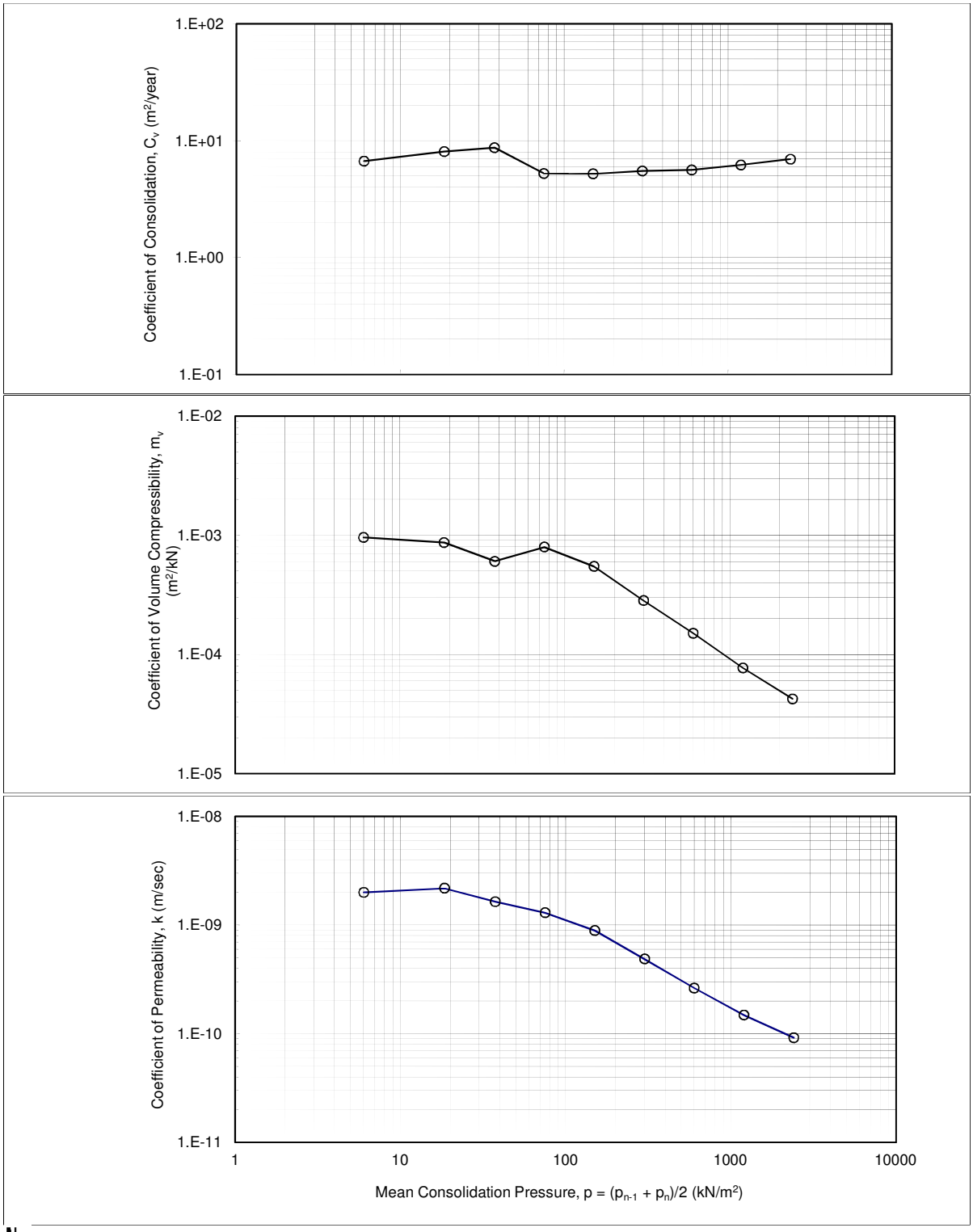
Consolidation Test (p - $\overline{cv}$, mv , k curves)

Project	:	Preparatory Survey on Matarbari USC Coal-fired Power Project		Borehole No.	: PP-21-1
Project No.	:	S27-14		Sample No.	: HP-1
Date of testing	:	20-Nov-14	Tested by : Lim	Depth of Sample	: 1.00-1.65 m



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PROJECT NAME : Preparatory Survey on Matarbari USC Coal-fired Power Project
PROJECT NO. : S27-14
BOREHOLE NO. : PP-21-1
TESTING STANDARD : ASTM D2435-11
DATE : 20-Nov-14
SAMPLE NO. : HP-1
INITIAL HEIGHT OF SPECIMEN : 18.000 mm
NO. OF LOADING STEP : 9
DEPTH : 1.00-1.65 m
DIAMETER OF SPECIMEN : 53.900 mm
SPECIFIC GRAVITY : 2.75
TESTER NO. : 20
DRY WEIGHT OF SPECIMEN : 51.250 grams
SOLID HEIGHT OF SPECIMEN : 8.170 mm
INITIAL MOISTURE CONTENT : 42.3 %
BULK DENSITY : 1.79 Mg/m^3
METHOD OF TIME FITTING USED : SQUARE ROOT TIME CURVE - FITTING METHOD
LABORATORY TEMPERATURE : 23.0 ^{o}C

PRESSURE kN/m^2	PRESSURE INCREMENT kN/m^2	CHANGE IN HEIGHT *E-2 mm	HEIGHT mm	AVERAGE HEIGHT mm	STRAIN %	MV m^2/kN	VOLUME RATIO	VOID RATIO
0.000			18.000				2.203	1.203
	12.000	20.6		17.897	1.15	9.59E-04		
12.000			17.794				2.178	1.178
	13.000	20.0		17.694	1.13	8.69E-04		
25.000			17.594				2.153	1.153
	25.000	26.4		17.462	1.51	6.05E-04		
50.000			17.330				2.121	1.121
	50.000	67.7		16.992	3.98	7.97E-04		
100.000			16.653				2.038	1.038
	100.000	88.7		16.210	5.47	5.47E-04		
200.000			15.766				1.930	0.930
	200.000	86.7		15.333	5.65	2.83E-04		
400.000			14.899				1.824	0.824
	400.000	86.9		14.465	6.01	1.50E-04		
800.000			14.030				1.717	0.717
	800.000	83.7		13.612	6.15	7.69E-05		
1600.000			13.193				1.615	0.615
	1600.000	86.5		12.761	6.78	4.24E-05		
3200.000			12.328				1.509	0.509

PRESSURE kN/m^2	AVERAGE PRESSURE kN/m^2	T90 min	CV m^2/sec	CV m^2/day	CV $m^2/year$	PRIMARY COMPRESSION *E-2 mm	PRIMARY COMPRESSION RATIO	COEFFICIENT OF PERMEABILITY m/sec
0.000								
	6.000	4.97	2.12E-07	1.83E-02	6.68E+00	12.5	0.607	1.99E-09
12.000								
	18.500	4.02	2.56E-07	2.21E-02	8.07E+00	13.6	0.647	2.18E-09
25.000								
	37.500	3.62	2.77E-07	2.39E-02	8.73E+00	10.2	0.477	1.64E-09
50.000								
	75.000	5.71	1.66E-07	1.44E-02	5.24E+00	44.9	0.626	1.30E-09
100.000								
	150.000	5.22	1.65E-07	1.43E-02	5.21E+00	54.1	0.610	8.87E-10
200.000								
	300.000	4.41	1.75E-07	1.51E-02	5.52E+00	51.0	0.588	4.86E-10
400.000								
	600.000	3.86	1.78E-07	1.54E-02	5.62E+00	51.8	0.597	2.63E-10
800.000								
	1200.000	3.09	1.97E-07	1.70E-02	6.20E+00	47.8	0.571	1.48E-10
1600.000								
	2400.000	2.42	2.21E-07	1.91E-02	6.96E+00	46.0	0.532	9.17E-11
3200.000								

REBOUND

P	800.000	200.000	50.000	12.000
H	12.494	12.833	13.288	13.855
E	0.529	0.571	0.626	0.696

CONSOLIDATION TEST (e-log p curves)

Preparatory Survey on Matarbari USC Coal-fired Power

Project : Project

Project No.: S27-14 Tested by : Lim

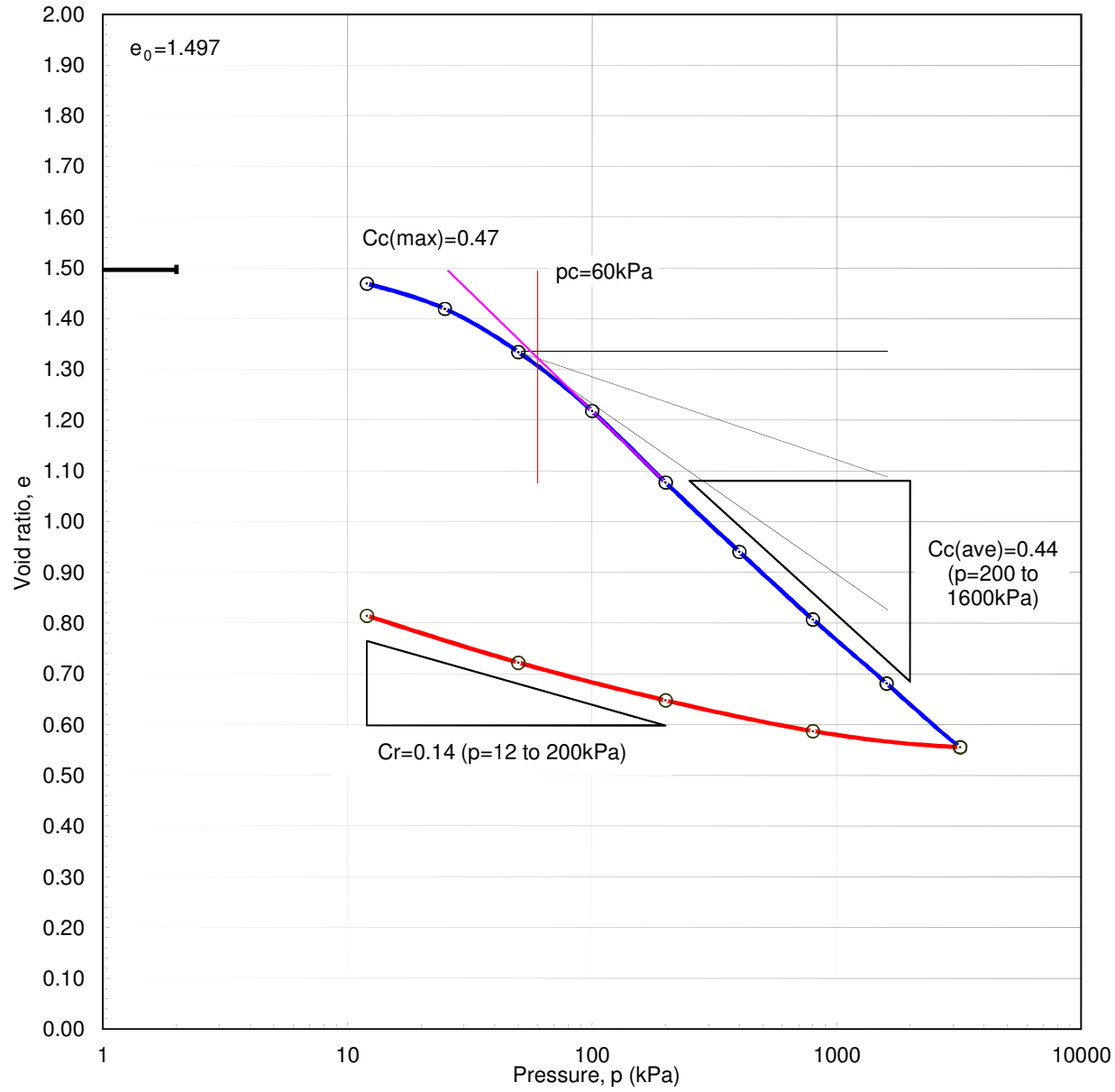
Soil Type : Clay Checked by : A. B. Tan

Borehole No. : PP-21-1

Sample No. : HP-2

Depth of Sample : 3.00-3.85 m

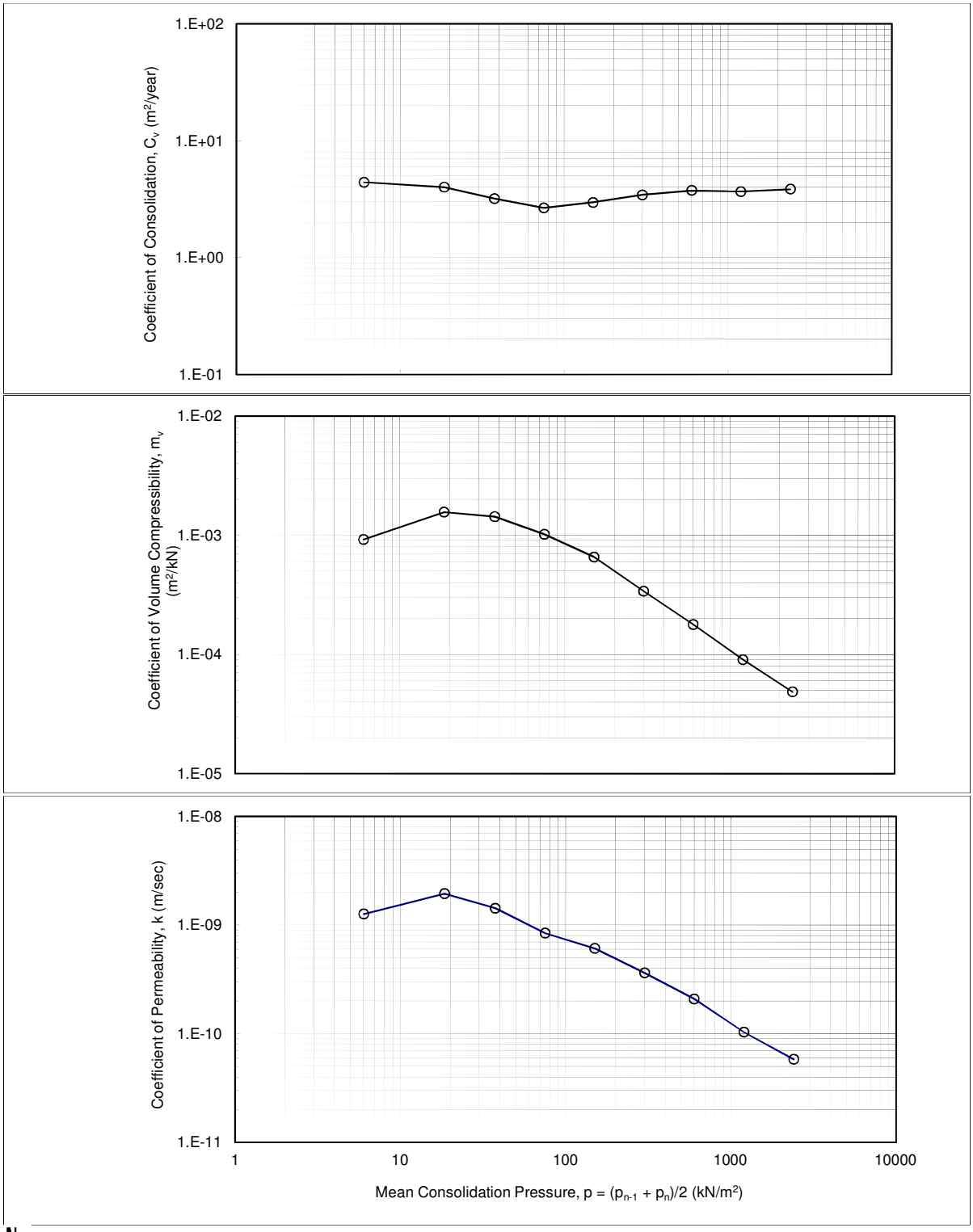
Sample No.	Depth of sample (m)	Initial void ratio e_o	Preconsolidation Pressure, p_c (kPa)	Compression Index Cc		Swell Index Cr	Unload-reload-Compression Index Cur
HP-2	3.00-3.85	1.497	60	0.47 (max)	0.44(average)	0.14 (average)	N/A



KISO-JIBAN CONSULTANTS CO., LTD.

Consolidation Test (p - $\overline{cv}$, mv , k curves)

Project	:	Preparatory Survey on Matarbari USC Coal-fired Power Project		Borehole No. :	PP-21-1
Project No.	:	S27-14		Sample No. :	HP-2
Date of testing	:	20-Nov-14	Tested by : Lim	Depth of Sample :	3.00-3.85 m



KISO-JIBAN CONSULTANTS CO., LTD.

PROJECT NAME : Preparatory Survey on Matarbari USC Coal-fired Power Project
PROJECT NO. : S27-14
BOREHOLE NO. : PP-21-1
TESTING STANDARD : ASTM D2435-11
DATE : 20-Nov-14
SAMPLE NO. : HP-2
INITIAL HEIGHT OF SPECIMEN : 18.000 mm
NO. OF LOADING STEP : 9
DEPTH : 3.00-3.85 m
DIAMETER OF SPECIMEN : 53.900 mm
SPECIFIC GRAVITY : 2.76
TESTER NO. : 19
DRY WEIGHT OF SPECIMEN : 45.430 grams
SOLID HEIGHT OF SPECIMEN : 7.210 mm
INITIAL MOISTURE CONTENT : 52.4 %
BULK DENSITY : 1.71 Mg/m^3
METHOD OF TIME FITTING USED : SQUARE ROOT TIME CURVE - FITTING METHOD
LABORATORY TEMPERATURE : 23.0 ^oC

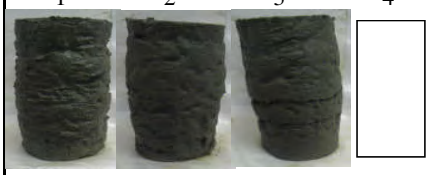
PRESSURE kN/m^2	PRESSURE INCREMENT kN/m^2	CHANGE IN HEIGHT *E-2 mm	HEIGHT mm	AVERAGE HEIGHT mm	STRAIN %	MV m^2/kN	VOLUME RATIO	VOID RATIO
0.000			18.000				2.497	1.497
	12.000	19.8		17.901	1.11	9.22E-04		
12.000			17.802				2.469	1.469
	13.000	35.8		17.623	2.03	1.56E-03		
25.000			17.444				2.419	1.419
	25.000	61.4		17.137	3.58	1.43E-03		
50.000			16.830				2.334	1.334
	50.000	83.7		16.412	5.10	1.02E-03		
100.000			15.993				2.218	1.218
	100.000	101.7		15.485	6.57	6.57E-04		
200.000			14.976				2.077	1.077
	200.000	98.3		14.485	6.79	3.39E-04		
400.000			13.993				1.941	0.941
	400.000	96.3		13.512	7.13	1.78E-04		
800.000			13.030				1.807	0.807
	800.000	90.8		12.576	7.22	9.03E-05		
1600.000			12.122				1.681	0.681
	1600.000	90.5		11.670	7.76	4.85E-05		
3200.000			11.217				1.556	0.556

PRESSURE kN/m^2	AVERAGE PRESSURE kN/m^2	T90 min	CV m^2/sec	CV m^2/day	CV $m^2/year$	PRIMARY COMPRESSION *E-2 mm	PRIMARY COMPRESSION RATIO	COEFFICIENT OF PERMEABILITY m/sec
0.000								
	6.000	7.53	1.40E-07	1.21E-02	4.41E+00	10.9	0.548	1.26E-09
12.000								
	18.500	8.04	1.27E-07	1.10E-02	4.00E+00	22.0	0.613	1.95E-09
25.000								
	37.500	9.52	1.01E-07	8.76E-03	3.20E+00	37.5	0.611	1.42E-09
50.000								
	75.000	10.50	8.43E-08	7.28E-03	2.66E+00	52.2	0.623	8.44E-10
100.000								
	150.000	8.36	9.43E-08	8.14E-03	2.97E+00	66.6	0.655	6.07E-10
200.000								
	300.000	6.31	1.09E-07	9.44E-03	3.44E+00	62.3	0.634	3.64E-10
400.000								
	600.000	5.04	1.19E-07	1.03E-02	3.76E+00	61.2	0.636	2.08E-10
800.000								
	1200.000	4.46	1.16E-07	1.01E-02	3.67E+00	56.9	0.627	1.03E-10
1600.000								
	2400.000	3.66	1.22E-07	1.06E-02	3.86E+00	54.6	0.603	5.81E-11
3200.000								

REBOUND

P	800.000	200.000	50.000	12.000
H	11.446	11.882	12.419	13.085
E	0.588	0.648	0.722	0.815

Summary of Consolidated Drained Triaxial Compression Test

Project No.: S27-14		Project :Preparatory Survey on Matarbari USC Coral-fired Power Project					
Date Tested : 14.12.14		Tested by : Perera		Checked by : A. B. Tan			
Borehole No.: PP-21-1		Sample No.:D-1		Depth : 11.00-11.85m			
Specimen Condition : Remoulded		Test Method : ASTM D7181-11					
Soil Description : Sandy Clay		Ave. Diameter : 50.0mm		Ave. Height : 100.0mm			
Specimen No.			1	2	3	4	
Initial Condition	Wet Density,	Mg/m^3	1.80	1.80	1.80		
	Water Content,	%	42.6	42.6	42.6		
	Dry Density	Mg/m^3	1.26	1.26	1.26		
Saturation Stage	Saturated PWP,	kPa	500	500	500		
	Final Cell Pressure,	kPa	650	750	850		
	B-value		0.98	0.95	0.96		
Consolidation Stage	Cell Pressure	kPa	650	750	850		
	Back Pressure	kPa	500	500	500		
	Initial PWP,	kPa	637	728	825		
	Final PWP	kPa	500	500	500		
Consolidation Parameter	Volume Change,	%	2.38	2.60	3.34		
	Coefficient of Consolidation Cv,	m^2/year	491	245	237		
	Coefficient of Volume Compressibility mvi,	m^2/MN	0.159	0.104	0.095		
Compression Stage	Cell Pressure	kPa	650	750	850		
	Back Pressure	kPa	500	500	500		
	Effective Cell Pressure	kPa	150	250	350		
	Shearing Speed	mm/min	0.015	0.015	0.015		
Failure Conditions	Peak Deviator Stress $(\sigma_1-\sigma_3)f$,	kPa	314	547	825		
	Excess PWP at $(\sigma_1-\sigma_3)f$	kPa	N/A	N/A	N/A		
	Volumetric Strain at $(\sigma_1-\sigma_3)f$	(%)	4.64	4.47	3.86		
	Strain at $(\sigma_1-\sigma_3)f$	(%)	15.02	14.99	14.71		
Shear Strength Parameters	ϕ_d = 32 Degree c_d = 0 kPa		Mode of Failure 1 2 3 4 				
Remarks : Specimens are prepared at required saturated wet density = 1.80 Mg/m3							

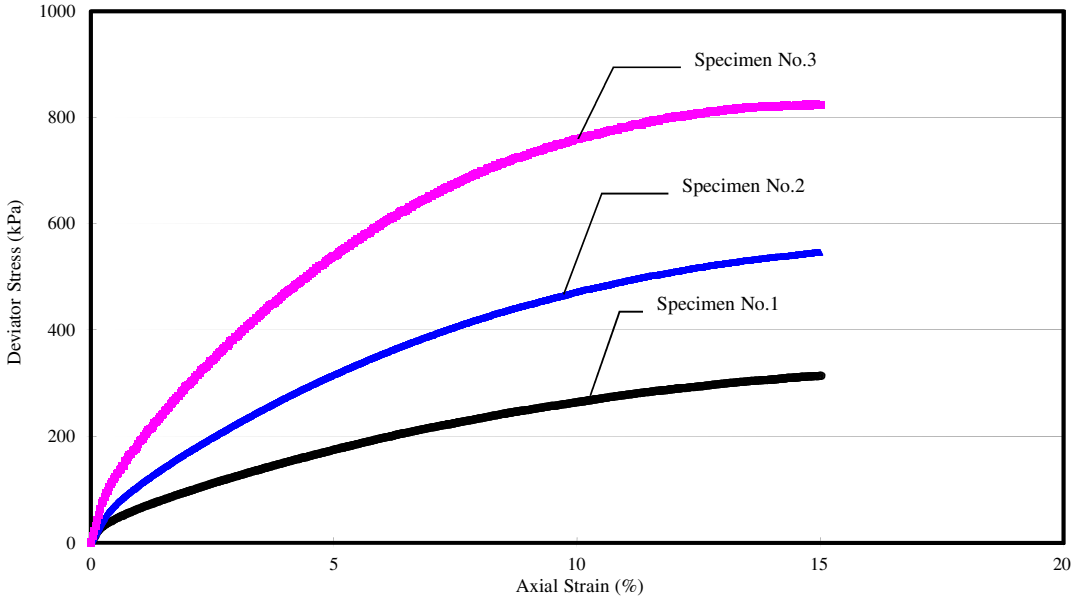
Form Lab/MECH/CU3(a) Revision 2 Kiso-Jiban Consultants Co., Ltd.

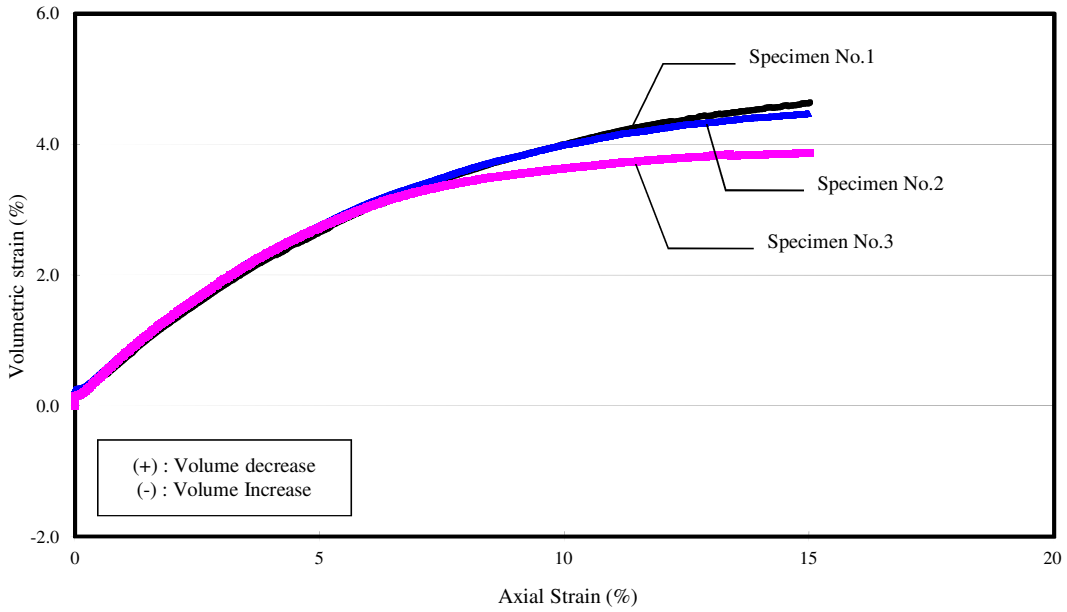
Consolidated Drained Triaxial Compression Test

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No.: S27-14 Sample No.: D-1 Soil Type: Sandy Clay

Borehole No.: PP-21-1 Depth : 11.00-11.85m





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Consolidated Drained Triaxial Compression Test
With Pore water Pressure Measurement

- Mohr' s Circle (In terms of Total Stress at Peak Deviator Stress) -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

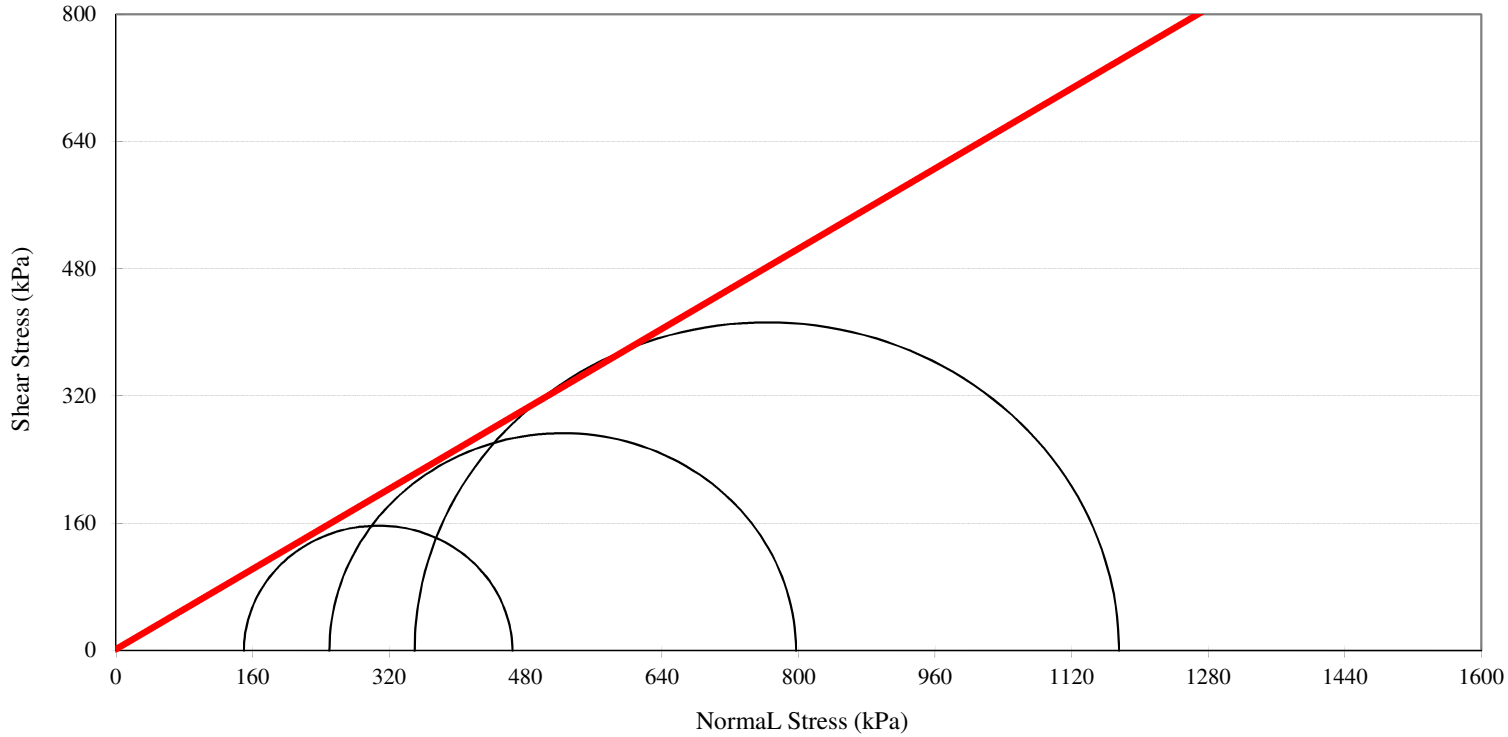
Project No. : S27-14

Borehole No. : PP-21-1 Soil Type: Sandy Clay

Sample No. : D-1 Depth : 11.00-11.85m

Angle of Internal Friction, ϕ_d 32 deg

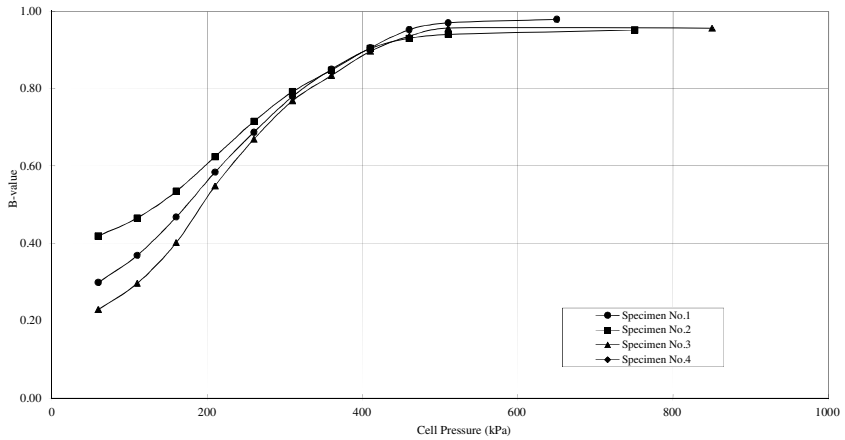
Cohesion, c_d 0 kPa



Consolidated Drained Triaxial Compression Test
With Porewater Pressure Measurement
- B-value Check -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14
Borehole No.: PP-21-1 Depth : 11.00-11.85m
Sample No.: D-1 Soil Type: Sandy Clay

		Result of B-value Check							
		Specimen 1		Specimen 2		Specimen 3		Specimen 4	
		Initial	Final	Initial	Final	Initial	Final	Initial	Final
B-check Step.1	Cell Pressure (kPa)	30	60	30	60	30	60		
	P.W.P (kPa)	20	29.0	20	32.6	20	26.9		
	Back Pressure (kPa)	20		20		20			
	B-value	0.30		0.42		0.23			
B-check Step.2	Cell Pressure (kPa)	60	110	60	110	60	110		
	P.W.P (kPa)	50	68.5	50	73.3	50	64.8		
	Back Pressure (kPa)	50		50		50			
	B-value	0.37		0.47		0.30			
B-check Step.3	Cell Pressure (kPa)	110	160	110	160	110	160		
	P.W.P (kPa)	100	123.4	100	126.7	100	120.1		
	Back Pressure (kPa)	100		100		100			
	B-value	0.47		0.53		0.40			
B-check Step.4	Cell Pressure (kPa)	160	210	160	210	160	210		
	P.W.P (kPa)	150	179.2	150	181.2	150	177.4		
	Back Pressure (kPa)	150		150		150			
	B-value	0.58		0.62		0.55			
B-check Step.5	Cell Pressure (kPa)	210	260	210	260	210	260		
	P.W.P (kPa)	200	234.4	200	235.8	200	233.5		
	Back Pressure (kPa)	200		200		200			
	B-value	0.69		0.72		0.67			
B-check Step.6	Cell Pressure (kPa)	260	310	260	310	260	310		
	P.W.P (kPa)	250	289.0	250	289.6	250	288.4		
	Back Pressure (kPa)	250		250		250			
	B-value	0.78		0.79		0.77			
B-check Step.7	Cell Pressure (kPa)	310	360	310	360	310	360		
	P.W.P (kPa)	300	342.5	300	342.4	300	341.7		
	Back Pressure (kPa)	300		300		300			
	B-value	0.85		0.85		0.83			
B-check Step.8	Cell Pressure (kPa)	360	410	360	410	360	410		
	P.W.P (kPa)	350	395.3	350	395.2	350	394.8		
	Back Pressure (kPa)	350		350		350			
	B-value	0.91		0.90		0.90			
B-check Step.9	Cell Pressure (kPa)	410	460	410	460	410	460		
	P.W.P (kPa)	400	447.6	400	446.5	400	446.8		
	Back Pressure (kPa)	400		400		400			
	B-value	0.95		0.93		0.94			
B-check Step.10	Cell Pressure (kPa)	460	510	460	510	460	510		
	P.W.P (kPa)	450	498.5	450	497.0	450	497.8		
	Back Pressure (kPa)	450		450		450			
	B-value	0.97		0.94		0.96			
B-check Step.11	Cell Pressure (kPa)	510	650	510	750	510	850		
	P.W.P (kPa)	500	637.0	500	728.4	500	825.1		
	Back Pressure (kPa)	500		500		500			
	B-value	0.98		0.95		0.96			



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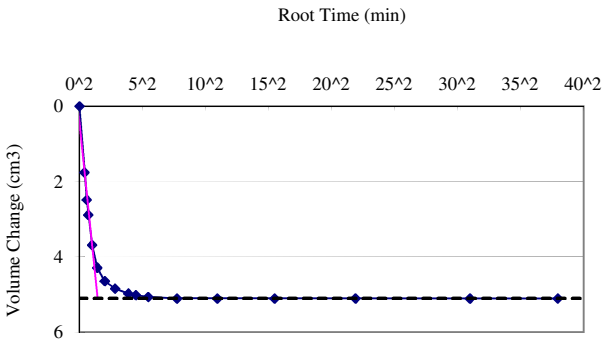
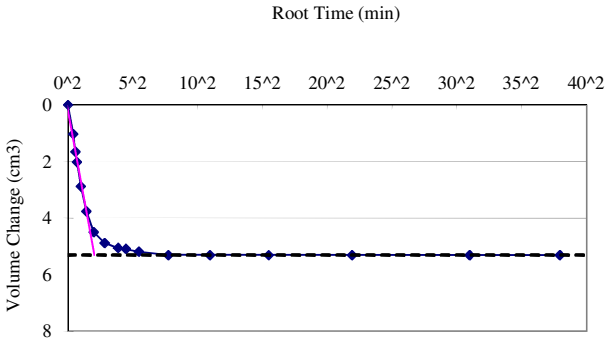
Consolidated Drained Triaxial Compression Test
With Porewater Pressure Measurement
- Volume Change versus Root Time in Consolidation Stages -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14 Borehole No.: PP-21-1 Soil Type: Sandy Clay
Sample No.: D-1 Depth : 11.00-11.85m



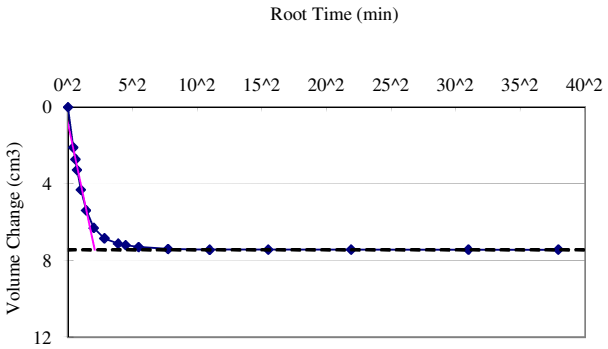
Specimen No.: 1

p' =	150	kPa
t100 =	2.1	min
Cv =	491	m^2/year
mvi=	0.159	m^2/MN



Specimen No.: 2

p' =	250	kPa
t100 =	4.1	min
Cv =	245	m^2/year
mvi=	0.104	m^2/MN



Specimen No.: 3

p' =	350	kPa
t100 =	4.2	min
Cv =	237	m^2/year
mvi=	0.095	m^2/MN

31) PP-21-2

TABLE SUMMARY OF SOIL TEST

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project** Standard: **ASTM**

Borehole No.		PP-21-2								
Sample No.		HP-1	HP-2	D-1	D-2	D-3	HP-3			
Sample Depth		2.00m ~2.85m	5.00m ~5.85m	8.00m ~8.85m	11.00m ~11.85m	14.00m ~14.85m	17.00m ~17.20m			
Condition of Sample		Undisturbed								
Natural Water Content	%	30.5	30.6	27.4	25.7	31.1	23.1			
Specific Gravity		2.73	2.73	2.69	2.69	2.70	2.73			
Wet Density	Mg/m^3	1.94	1.93	1.89	-	1.85	1.96			
Dry Density	Mg/m^3	1.49	1.48	1.48	-	1.41	1.59			
Natural Void Ratio		0.84	0.85	0.81	-	0.91	0.72			
Degree of Saturation	%	100	99	91	-	92	88			
Atterberg Limits	Liquid Limit, %	30	30	- *3	- *3	- *3	43			
	Plastic Limit, %	22	21	- *3	- *3	- *3	22			
	Plasticity Index, %	8	9	- *3	- *3	- *3	21			
Grain Size Analysis	Gravel, %	0	0	0	0	0	0			
	Sand, %	17	23	76	69	42	13			
	Silt, %	55	46	9	11	27	59			
	Clay & Colloid, %	28	31	15	20	31	28			
	Max. diameter, mm	0.850	0.850	0.425	0.425	0.850	2.00			
	Diam. at 60% mm	0.040	0.047	0.13	0.15	0.083	0.024			
	Diam. at 10% mm	-	-	-	-	-	-			
Visual soil description		Silty Clay	Silty Clay	Clayey Sand	Clayey Sand	Sandy Clay	Silty Clay			
Unified soil classification		CL	CL	-	-	-	-			
Triaxial compression test	Angle of Internal Friction (^{0})	0	0	-	-	-	-			
	Cohesion Intercept, kPa	47	44	-	-	-	-			
	Condition of drainage	UU	UU	-	-	-	-			
	Angle of Internal Friction *2 (^{0})	-	37	-	-	-	-			
	Cohesion Intercept, kPa *2	-	0	-	-	-	-			
	Condition of drainage	-	$\overline{CU}$	-	-	-	-			
Consolidation Test	Preconsolidation Pressure, kPa	260	-	-	-	-	-			
	Compression Index(Average)	0.22	0.18	-	-	-	-			
	Pressure Range for Compression Index(kPa)	800-3200	1600-3200	-	-	-	-			
	Swell index	0.040	0.029	-	-	-	-			
Chemical Test	pH value	-	-	-	-	-	-			
	Total sulphate content as SO_3, %	-	-	-	-	-	-			
	Chloride content as Cl, %	-	-	-	-	-	-			
	Organic Matter content, %	-	-	-	-	-	-			
Unconfined Compression Strength (kPa)		-	-	-	-	-	453.9			
Strain at failure (%)		-	-	-	-	-	2.41			

Remarks : Atterberg Limits was tested on material at natural state except those with *1 which was tested on material passing through 0.425mm test sieve.

*2 : In terms of effective stress *3 : Unable to test because sample contains lot of sand

Checked by : A. B. Tan

Kiso-Jiban Consultants Co., Ltd.

TABLE SUMMARY OF SOIL TEST (Site Laboratory)

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project** Standard: **ASTM**

Borehole No.			PP-21-2							
Sample No.			SPT-26	SPT-27	SPT-28	SPT-29	SPT-30	SPT-31	SPT-32	SPT-33
Sample Depth			31.00m ~31.45m	32.00m ~32.45m	33.00m ~33.45m	34.00m ~34.34m	35.00m ~35.36m	36.00m ~36.38m	37.00m ~37.35m	38.00m ~38.31m
Condition of Sample			Disturbed							
Atterberg Limits	Liquid Limit,	%	-	-	-	-	-	-	-	-
	Plastic Limit,	%	-	-	-	-	-	-	-	-
	Plasticity Index,	%	-	-	-	-	-	-	-	-
Grain Size Analysis	Gravel,	%	0	0	0	0	0	0	0	0
	Sand,	%	10	81	64	80	4	14	69	73
	Silt,	%	90	19	36	20	96	86	31	27
	Clay & Colloid,	%								
	Max. diameter,	mm	4.75	2.00	2.00	4.75	2.0	4.75	4.75	2.00
	Diam. at 60%	mm	-	0.17	0.14	0.18	-	-	0.11	0.10
	Diam. at 10%	mm	-	-	-	-	-	-	-	-
Visual soil description			Silt	Silty Sand	Silty Sand	Silty Sand	Silt	Sandy Silt	Silty Sand	Silty Sand
Unified soil classification			-	-	-	-	-	-		-

Remarks : Atterberg Limits was tested on material at natural state except those with *1 which was tested on material passing through 0.425mm test sieve.

*2 : In terms of effective stress *3: Unable to test because samples contain lots of sand

Checked by :

Kiso-Jiban Consultants Co., Ltd.

TABLE SUMMARY OF SOIL TEST (Site Laboratory)

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project** Standard: **ASTM**

Borehole No.			PP-21-2							
Sample No.			SPT-34	SPT-35	SPT-36	SPT-37	SPT-38	SPT-39		
Sample Depth			40.00m ~40.33m	42.00m ~42.33m	44.00m ~44.30m	46.00m ~46.20m	48.00m ~48.29m	50.00m ~50.20m		
Condition of Sample			Disturbed							
Atterberg Limits	Liquid Limit,	%	-	-	-	-	-	-		
	Plastic Limit,	%	-	-	-	-	-	-		
	Plasticity Index,	%	-	-	-	-	-	-		
Grain Size Analysis	Gravel,	%	0	0	0	0	0	0		
	Sand,	%	84	75	49	75	89	84		
	Silt,	%	16	25	51	25	11	16		
	Clay & Colloid,	%								
	Max. diameter,	mm	4.75	2.00	4.75	2.00	2.00	2.00		
	Diam. at 60%	mm	0.17	0.10	0.08	0.17	0.29	0.17		
	Diam. at 10%	mm	-	-	-	-	-	-		
Visual soil description			Silty Sand	Silty Sand	Sandy Silt	Silty Sand	Silty Sand	Silty Sand		
Unified soil classification			-	-	-					

Remarks : Atterberg Limits was tested on material at natural state except those with *1 which was tested on material passing through 0.425mm test sieve.

*2 : In terms of effective stress *3: Unable to test because samples contain lots of sand

Checked by :

Kiso-Jiban Consultants Co., Ltd.

ATTERBERG LIMITS DETERMINATION

Project Name : Preparatory Survey on Matarbari USC Coral-fired Power Project Project No. : S27-14

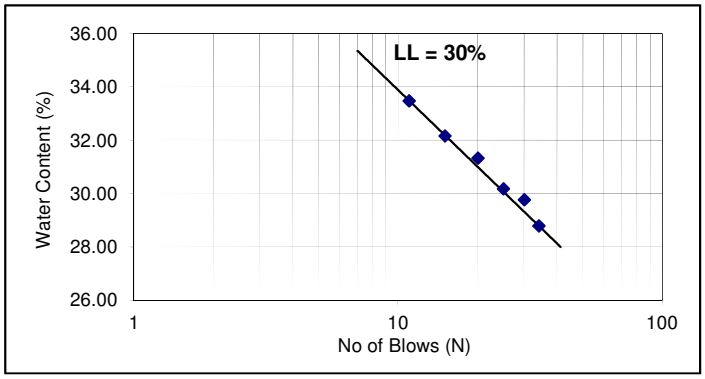
Standard : ASTM D4318-10 Date of Testing : 24.10.14

Tested By : Vasantha Checked By : A. B. Tan

Sample No. : PP-21-2 HP-1 Depth : 2.00-2.85m

Remarks : Tested on material at natural state

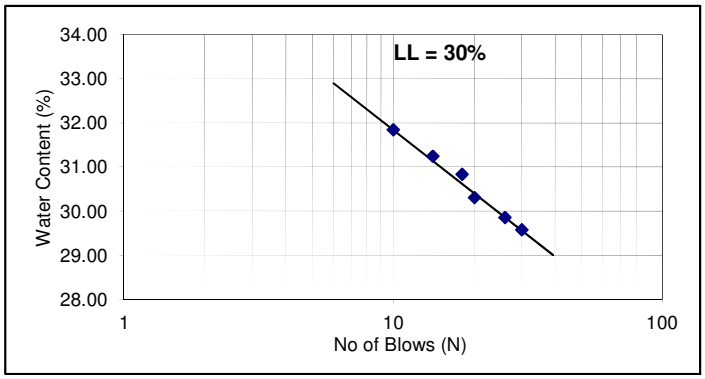
Liquid Limits Test		
Test No.	Blows	Wn
1	34	28.79
2	30	29.77
3	25	30.18
4	20	31.32
5	15	32.16
6	11	33.47
Liquid Limits %		**30**
Plastic Limits %		**22**
Plasticity Index		**8**



Sample No. : PP-21-2 HP-2 Depth : 5.00-5.85m

Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	30	29.58
2	26	29.85
3	20	30.31
4	18	30.84
5	14	31.24
6	10	31.84
Liquid Limits %		**30**
Plastic Limits %		**21**
Plasticity Index		**9**



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ATTERBERG LIMITS DETERMINATION

Project Name : Preparatory Survey on Matarbari USC Coral-fired Power Project Project No. : S27-14

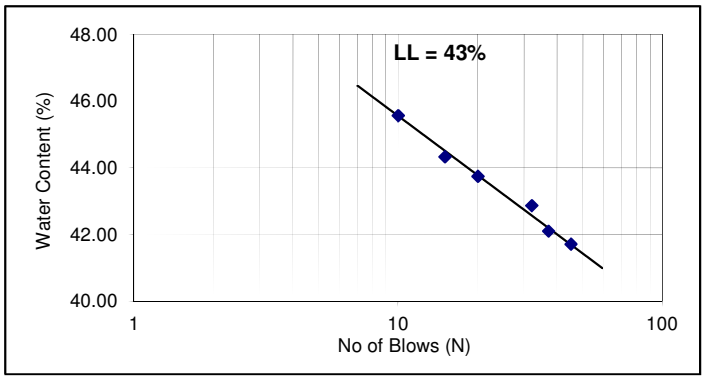
Standard : ASTM D4318-10 Date of Testing : 21.11.14

Tested By : Vasantha Checked By : A. B. Tan

Sample No. : PP-21-2 HP-3 Depth : 17.00-17.20m

Remarks : Tested on material at natural state

Liquid Limits Test		
Test No.	Blows	Wn
1	45	41.71
2	37	42.10
3	32	42.87
4	20	43.74
5	15	44.33
6	10	45.56
Liquid Limits %		**43**
Plastic Limits %		**22**
Plasticity Index		**21**



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Singapore Branch

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GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **25.10.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

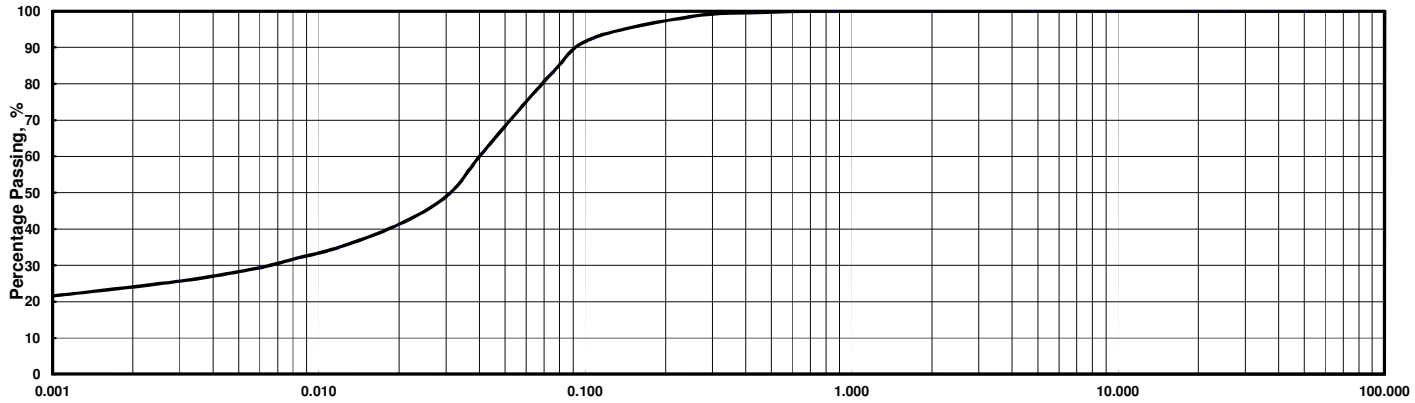
Sample No. : **PP-21-2 HP-1** Depth : **2.00-2.85m** ( ) Specific Gravity : 2.73

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.6	98.5	92.5	83.0
Hydro.	Dia., mm	0.042	0.031	0.020	0.012	0.0084	0.0060	0.0030	0.0009							
	% Passing	61.4	49.5	41.3	34.8	32.1	29.3	25.7	21.1							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP-21-2 HP-1 2.00-2.85m		Sample No. Depth	PP-21-2 HP-1 2.00-2.85m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.850 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.040 mm	
2.00 - 0.425 mm	0.4 %		Dia. at 30%	0.0065 mm	
0.425 - 0.075 mm	16.6 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	54.8 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	28.1 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	83.0 %				

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GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **21.11.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

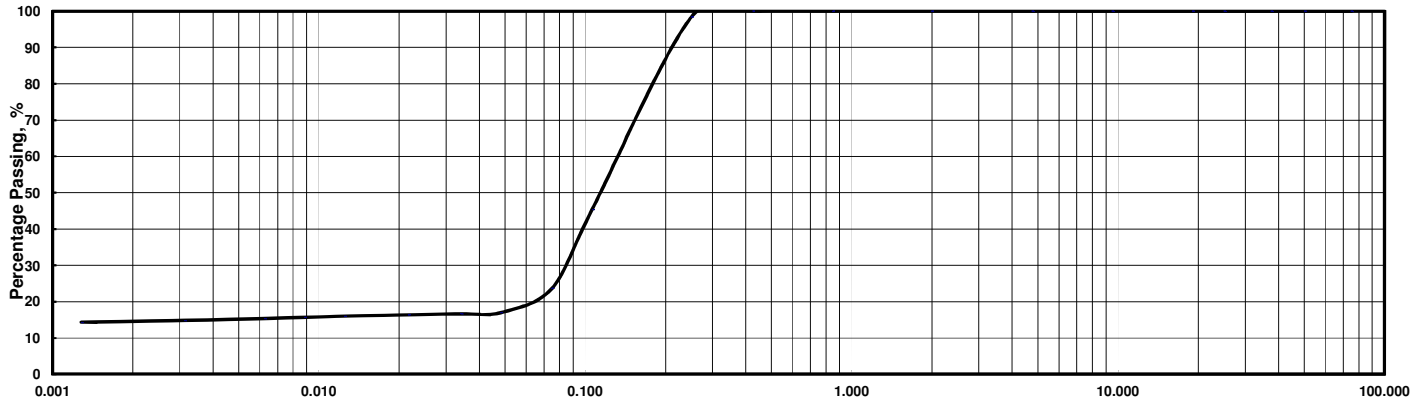
Sample No. : **PP-21-2 D-1** Depth : **8.00-8.85m** ( ) Specific Gravity : 2.69

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.4	45.4	23.7
Hydro.	Dia., mm	0.048	0.034	0.022	0.012	0.0088	0.0063	0.0031	0.0013							
	% Passing	17.0	16.7	16.3	16.0	15.7	15.3	14.8	14.3							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP-21-2 D-1 8.00-8.85m		Sample No. Depth	PP-21-2 D-1 8.00-8.85m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.425 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.13 mm	
2.00 - 0.425 mm	0.0 %		Dia. at 30%	0.083 mm	
0.425 - 0.075 mm	76.3 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	8.6 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	15.1 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	23.7 %				

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GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **25.10.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

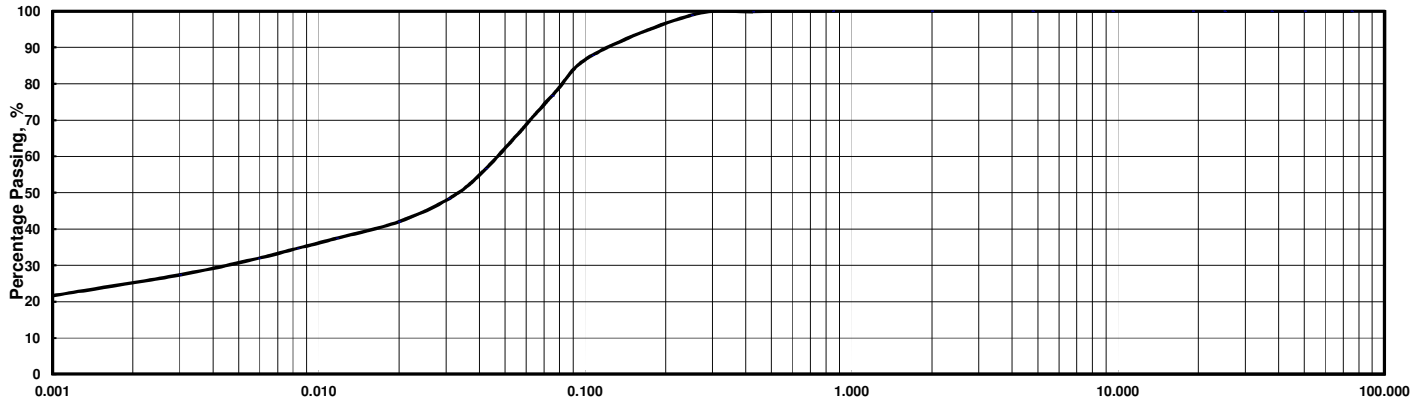
Sample No. : **PP21-2 HP-2** Depth : **5.00-5.85m** ( ) Specific Gravity : 2.73

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	98.9	87.8	76.7
Hydro.	Dia., mm	0.042	0.031	0.020	0.012	0.0083	0.0059	0.0030	0.0009							
	% Passing	56.6	48.4	42.0	37.4	34.7	32.0	27.4	21.0							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP21-2 HP-2 5.00-5.85m		Sample No. Depth	PP21-2 HP-2 5.00-5.85m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.850 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.047 mm	
2.00 - 0.425 mm	0.2 %		Dia. at 30%	0.0044 mm	
0.425 - 0.075 mm	23.1 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	46.2 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	30.5 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	76.7 %				

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GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **21.11.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

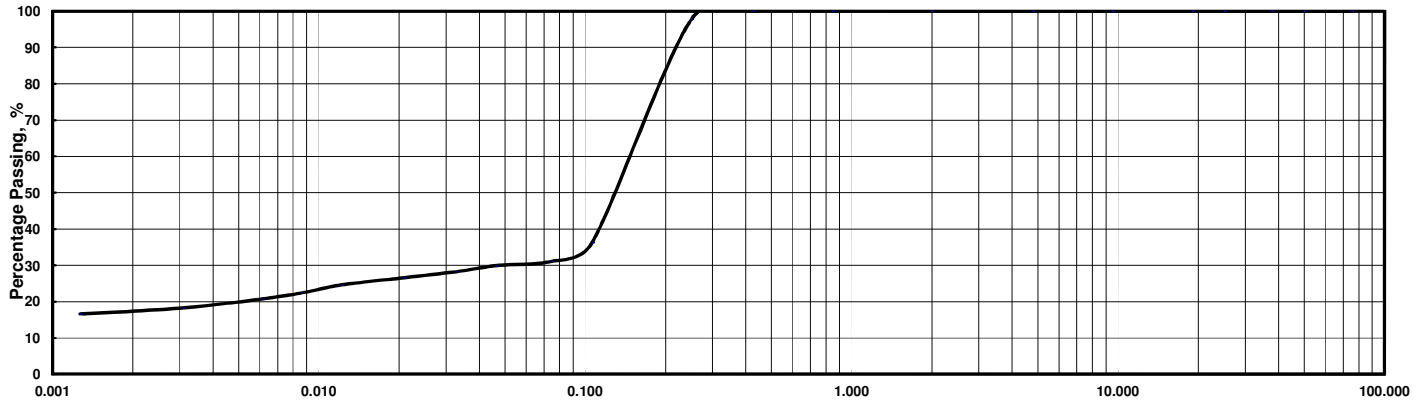
Sample No. : **PP-21-2 D-2** Depth : **11.00-11.85m** ( ) Specific Gravity : 2.69

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.8	36.3	31.1
Hydro.	Dia., mm	0.046	0.033	0.021	0.012	0.0086	0.0061	0.0031	0.0013							
	% Passing	29.9	28.3	26.6	24.6	22.4	20.8	18.3	16.6							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP-21-2 D-2 11.00-11.85m		Sample No. Depth	PP-21-2 D-2 11.00-11.85m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.425 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.15 mm	
2.00 - 0.425 mm	0.0 %		Dia. at 30%	0.048 mm	
0.425 - 0.075 mm	68.9 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	11.3 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	19.8 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	31.1 %				

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GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **21.11.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

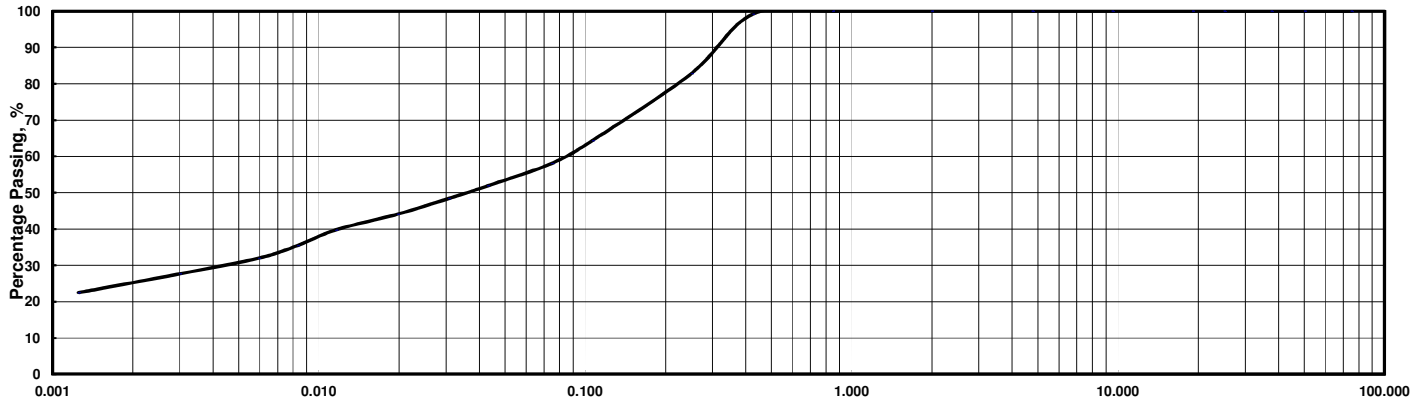
Sample No. : **PP-21-2 D-3** Depth : **14.00-14.85m** ( ) Specific Gravity : 2.70

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.2	82.8	64.3	58.1
Hydro.	Dia., mm	0.043	0.031	0.020	0.012	0.0083	0.0059	0.0030	0.0012							
	% Passing	51.9	48.4	44.1	39.8	35.5	32.0	27.7	22.5							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP-21-2 D-3 14.00-14.85m		Sample No. Depth	PP-21-2 D-3 14.00-14.85m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.850 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.083 mm	
2.00 - 0.425 mm	0.8 %		Dia. at 30%	0.0043 mm	
0.425 - 0.075 mm	41.0 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	27.5 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	30.6 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	58.1 %				

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GRAIN SIZE DISTRIBUTION

Project : **Preparatory Survey on Matarbari USC Coral-fired Power Project**

Location of Project : Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **20.11.14** Tested By : **Htin/Motiur** Checked by : **A. B. Tan**

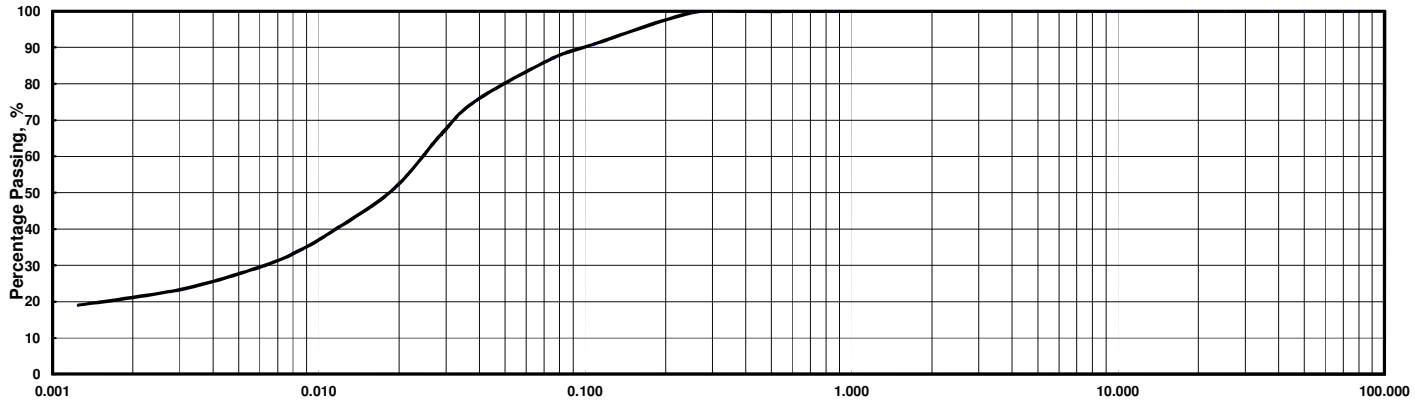
Sample No. : **PP-21-2 HP-3** Depth : **17.00-17.20m** ( ) Specific Gravity : 2.73

Sieve	Dia., mm			75.0	50.0	37.5	25.0	19.0	9.50	4.75	2.00	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.5	90.7	86.9
Hydro.	Dia., mm	0.039	0.028	0.019	0.011	0.0083	0.0059	0.0030	0.0012							
	% Passing	75.3	65.8	51.0	39.8	33.7	29.4	23.4	19.0							

Sample No. : Depth : ( ) Specific Gravity :

Sieve	Dia., mm															
	% Passing															
Hydro.	Dia., mm															
	% Passing															

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM	COARSE		FINE	COARSE		
	SILT	SAND				GRAVEL			

Sample No. Depth	PP-21-2 HP-3 17.00-17.20m		Sample No. Depth	PP-21-2 HP-3 17.00-17.20m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.024 mm	
2.00 - 0.425 mm	0.1 %		Dia. at 30%	0.0062 mm	
0.425 - 0.075 mm	12.9 %		Dia. at 10%	- mm	
0.075 - 0.005 mm	59.4 %		Coeff. of Uniformity	-	
Smaller than 0.005 mm	27.5 %		Coeff. of Curvature	-	
2000um Sieve Passing	100.0 %				
425um Sieve Passing	100.0 %				
75um Sieve Passing	86.9 %				

Kiso-Jiban Consultants Co., Ltd.

UNCONFINED COMPRESSION TEST

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No. : S27-14

Standard : ASTM D2166-06

Date of Testing : 17.11.14

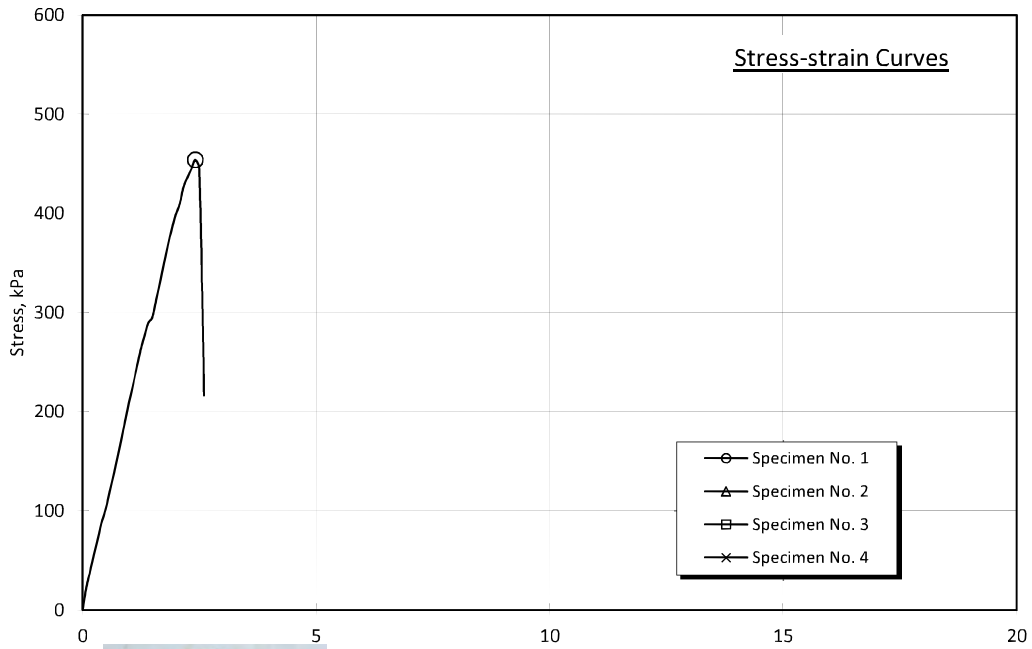
Borehole No.: PP-21-2 Depth 17.00-17.20m

Tested by : Perera

Sample No. : HP-3 Strain Rate 1.00 %/min

Checked by : A. B. Tan

Specimen No.	Condition of Sample	Size of Specimen (mm)		Natural Water Content	Bulk Density	Dy Density	Unconfined Compressive Strength	Shear Strength	Coefficient of Deformation	Corrected Initial Strain	Strain at Failure
		Height	Diameter	(%)	(Mg/m3)	(Mg/m3)	(kPa)	(kPa)	E50 (kPa)	(%)	(%)
1	Undisturbed	99.80	50.00	26.0	1.99	1.58	453.9	226.9	21033	N/A	2.41



After shearing (Spec. 1)

After shearing (Spec. 2)

After shearing (Spec. 3)

Remarks : - [Strain at failure]=[Recorded strain at failure] - [Corrected Initial Strain]

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Singapore Branch

UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No. : S27-14

Standard : ASTM D2850-03a

Date of Testing : 23.10.14

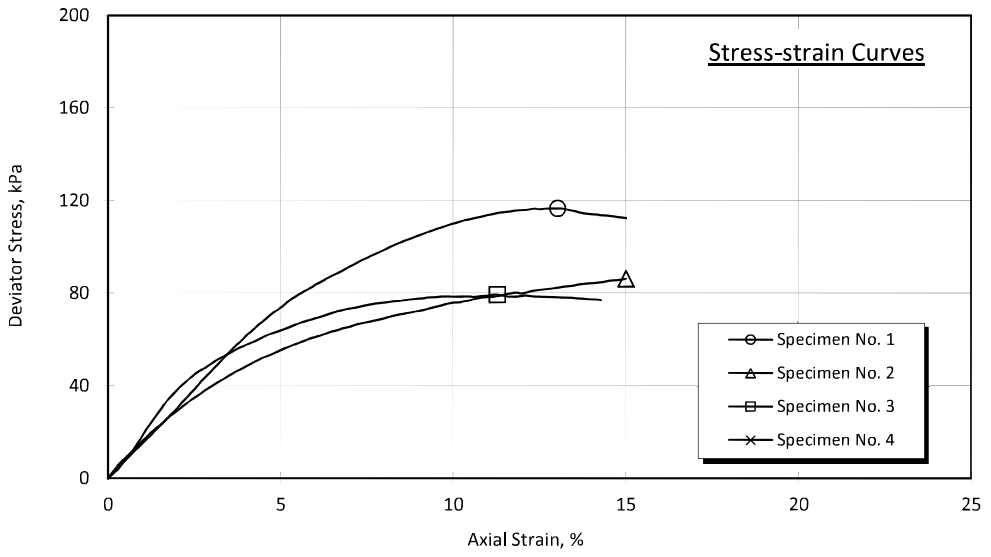
Borehole No.: PP-21-2 Depth 2.00-2.85m

Tested by : Perera

Sample No. : HP-1 Strain Rate 1.00 %/min

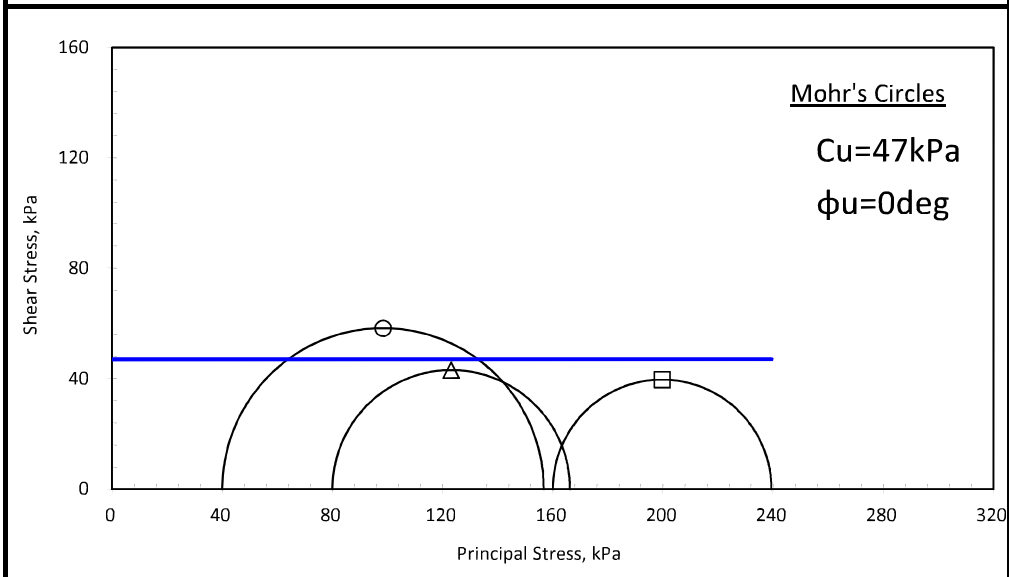
Checked by : A. B. Tan

Specimen No.	Condition of Sample	Size of Specimen (mm)		Natural Water Content	Bulk Density	Dy Density	Cell Pressure	Peak Deviator Stress	Modulus of Deformation	Corrected Initial Strain	Strain at Failure
		Height	Diameter	(%)	(Mg/m3)	(Mg/m3)	(kPa)	(kPa)	E50 (kPa)	(%)	(%)
1	Undisturbed	99.80	50.00	27.2	1.94	1.52	40	116.6	1546	N/A	13.02
2	Undisturbed	99.80	50.00	30.1	1.90	1.46	80	86.2	1284	N/A	15.00
3	Undisturbed	99.80	50.00	30.4	1.89	1.45	160	79.3	1897	N/A	11.27
4											




After shearing (Spec. 1)


After shearing (Spec. 2)

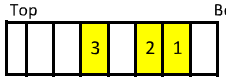



After shearing (Spec. 3)

After shearing (Spec. 4)

Remarks :
- [Strain at failure]=[Recorded strain at failure] - [Corrected Initial Strain]
- Latex membrane with 0.2mm in thickness is used.
- Membrane correction is carried out based on BS 1377 : 1990

Portion Tested



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Singapore Branch

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UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No. : S27-14

Standard : ASTM D2850-03a

Date of Testing : 23.10.14

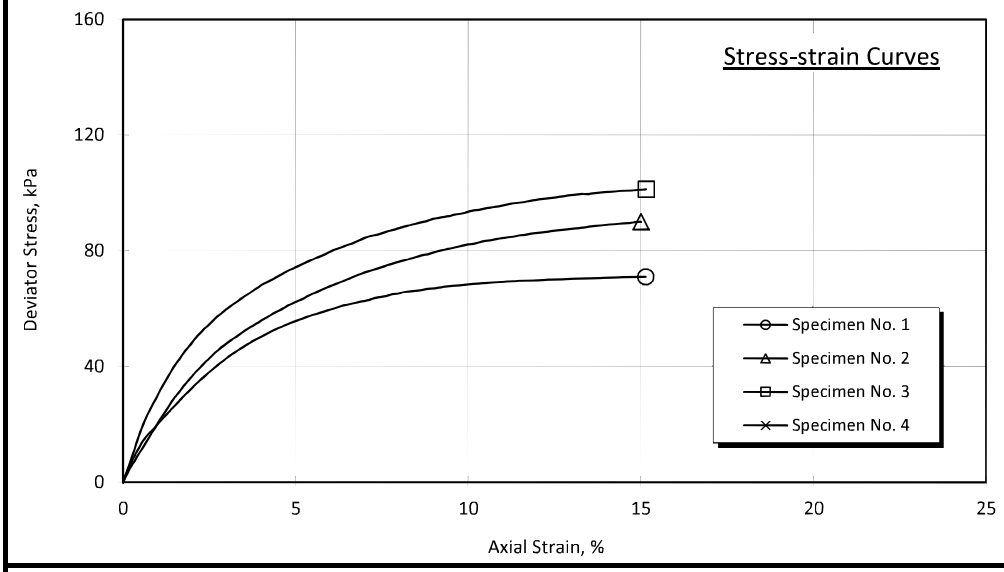
Borehole No.: PP-21-2 Depth 5.00-5.85m

Tested by : Perera

Sample No. : HP-2 Strain Rate 1.00 %/min

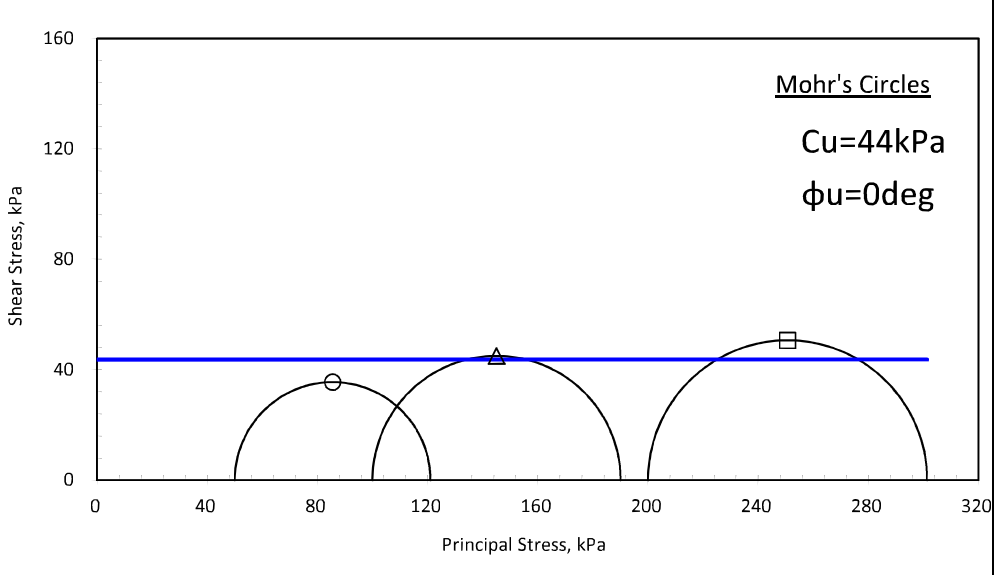
Checked by : A. B. Tan

Specimen No.	Condition of Sample	Size of Specimen (mm)		Natural Water Content	Bulk Density	Dy Density	Cell Pressure	Peak Deviator Stress	Modulus of Deformation	Corrected Initial Strain	Strain at Failure
		Height	Diameter	(%)	(Mg/m3)	(Mg/m3)	(kPa)	(kPa)	E50 (kPa)	(%)	(%)
1	Undisturbed	99.80	50.00	31.4	1.85	1.41	50	71.0	1578	N/A	15.14
2	Undisturbed	99.80	50.00	30.9	1.86	1.42	100	90.0	1674	N/A	15.00
3	Undisturbed	99.80	50.00	29.6	1.89	1.46	200	101.3	2346	N/A	15.15
4											




After shearing (Spec. 1)


After shearing (Spec. 2)



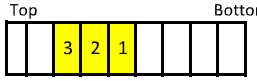

After shearing (Spec. 3)

After shearing (Spec. 4)

Remarks :
- [Strain at failure]=[Recorded strain at failure] - [Corrected Initial Strain]
- Latex membrane with 0.2mm in thickness is used.
- Membrane correction is carried out based on BS 1377 : 1990

Portion Tested

Top Bottom



Kiso-Jiban Consultants Co Ltd
Singapore Branch

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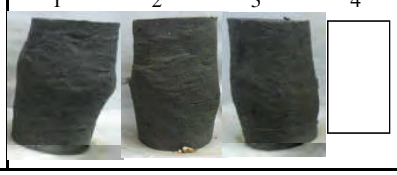
Summary of Consolidated Undrained Triaxial Compression Test
With Porewater Pressure Measurement

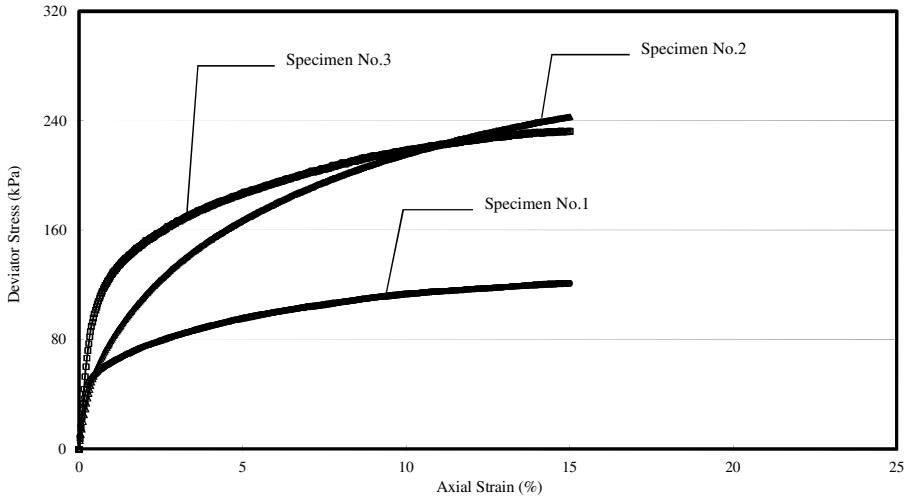
Project No.: S27-14		Project :Preparatory Survey on Matarbari USC Coral-fired Power Project					
Date Tested : 23.10.14		Tested by : Perera		Checked by : A. B. Tan			
Borehole No : PP-21-2		Sample No.:HP-2		Depth :5.00-5.85m			
Specimen Condition : Undisturbed		Test Method : ASTM D4767-11					
Soil Description : Clay with Sand		Ave. Diameter : 50.0mm		Ave. Height : 99.8mm			
Specimen No.			1	2	3		
Initial Condition	Wet Density,	Mg/m^3	1.87	1.92	1.92		
	Water Content,	%	28.3	27.6	28.2		
	Dry Density	Mg/m^3	1.45	1.51	1.50		
Saturation Stage	Saturated PWP,	kPa	500	500	500		
	Final Cell Pressure,	kPa	540	580	660		
	B-value		0.96	0.95	0.97		
Consolidation	Cell Pressure	kPa	540	580	660		
	Back Pressure	kPa	500	500	500		
	Initial PWP,	kPa	529	566	645		
	Final PWP	kPa	500	500	500		
Consolidation Parameter	Total Volume Change,	%	0.48	0.87	1.42		
	Coefficient of Consolidation Cv,	m^2/year	24.31	19.41	11.33		
	Coefficient of Volume Compressibility mvi,	m^2/MN	0.12	0.11	0.09		
Compression Stage	Cell Pressure	kPa	540	580	660		
	Back Pressure	kPa	500	500	500		
	Effective Cell Pressure	kPa	40	80	160		
	Shearing Speed	mm/min	0.03	0.03	0.03		
Failure Conditions	Peak Deviator Stress $(\sigma_1-\sigma_3)f$,	kPa	121	243	233		
	Excess PWP at $(\sigma_1-\sigma_3)f$	kPa	0	-2	88		
	A-Coefficient		0.00	-0.01	0.38		
	Strain at $(\sigma_1-\sigma_3)f$	(%)	14.94	15.01	14.73		
	Effective Principal Stress Ratio		4.05	3.96	4.21		
Final Conditions	Wet Density,	Mg/m^3	1.94	1.99	2.00		
	Water Content,	%	31.1	27.5	26.5		
Shear Strength Parameters	In terms of Effective Stress $\phi' = 37$ Degree $c' = 0$ kPa		Mode of Failure 1 2 3 4 				
Remarks :							

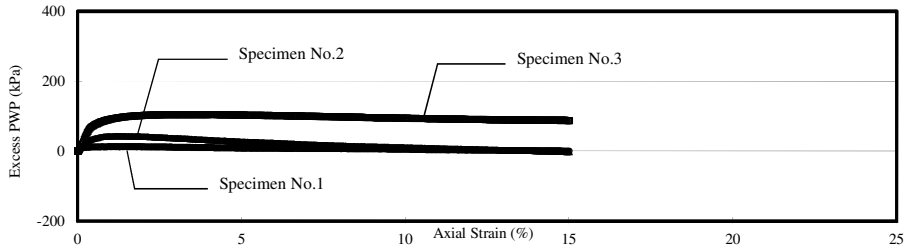
Consolidated Undrained Triaxial Compression Test
With Porewater Pressure Measurement

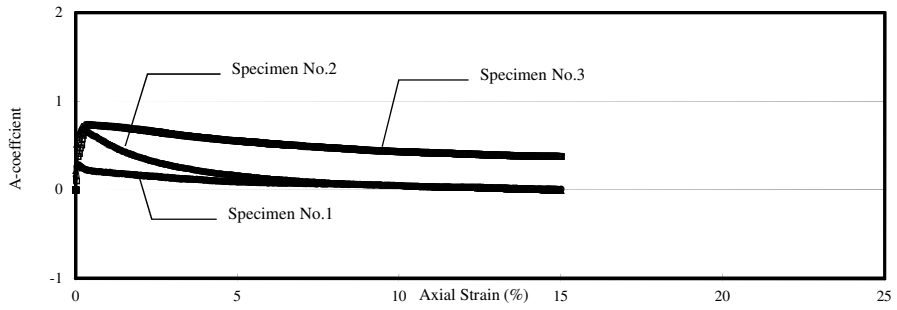
Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No.: S27-14 Sample No.: HP-2 Soil Type: Clay with Sand

Borehole No.: PP-21-2 Depth :5.00-5.85m







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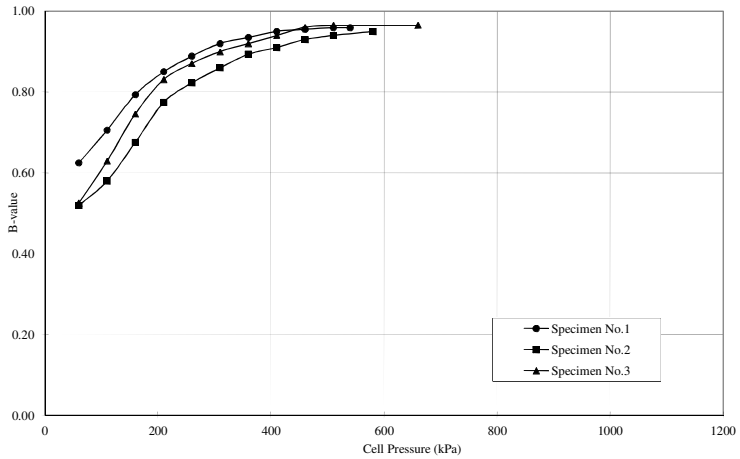
Consolidated Undrained Triaxial Compression Test
With Porewater Pressure Measurement
- B-value Check -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14
Borehole No.: PP-21-2 Depth : 5.00-5.85m
Sample No.: HP-2 Soil Type: Clay with Sand

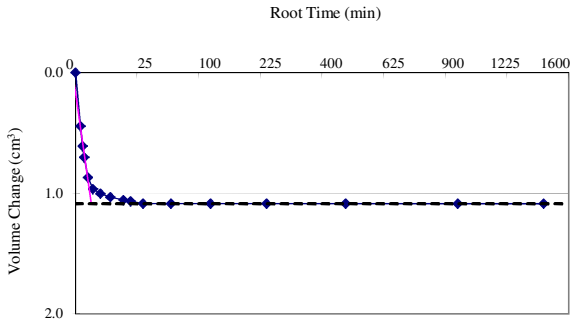
		Result of B-value Check					
		Specimen 1		Specimen 2		Specimen 3	
		Initial	Final	Initial	Final	Initial	Final
B-check Step.1	Cell Pressure (kPa)	30	60	30	60	30	60
	P.W.P (kPa)	20	38.8	20	35.6	20	35.8
	Back Pressure (kPa)	20		20		20	
	B-value	0.63		0.52		0.53	
B-check Step.2	Cell Pressure (kPa)	60	110	60	110	60	110
	P.W.P (kPa)	50	85.3	50	79.0	50	81.5
	Back Pressure (kPa)	50		50		50	
	B-value	0.71		0.58		0.63	
B-check Step.3	Cell Pressure (kPa)	110	160	110	160	110	160
	P.W.P (kPa)	100	139.7	100	133.8	100	137.3
	Back Pressure (kPa)	100		100		100	
	B-value	0.79		0.68		0.75	
B-check Step.4	Cell Pressure (kPa)	160	210	160	210	160	210
	P.W.P (kPa)	150	192.5	150	188.7	150	191.5
	Back Pressure (kPa)	150		150		150	
	B-value	0.85		0.77		0.83	
B-check Step.5	Cell Pressure (kPa)	210	260	210	260	210	260
	P.W.P (kPa)	200	244.4	200	241.1	200	243.5
	Back Pressure (kPa)	200		200		200	
	B-value	0.89		0.82		0.87	
B-check Step.6	Cell Pressure (kPa)	260	310	260	310	260	310
	P.W.P (kPa)	250	296.0	250	293.0	250	295.0
	Back Pressure (kPa)	250		250		250	
	B-value	0.92		0.86		0.90	
B-check Step.7	Cell Pressure (kPa)	310	360	310	360	310	360
	P.W.P (kPa)	300	346.8	300	344.7	300	346.0
	Back Pressure (kPa)	300		300		300	
	B-value	0.94		0.89		0.92	
B-check Step.8	Cell Pressure (kPa)	360	410	360	410	360	410
	P.W.P (kPa)	350	397.5	350	395.5	350	397.0
	Back Pressure (kPa)	350		350		350	
	B-value	0.95		0.91		0.94	
B-check Step.9	Cell Pressure (kPa)	410	460	410	460	410	460
	P.W.P (kPa)	400	447.8	400	446.5	400	448.0
	Back Pressure (kPa)	400		400		400	
	B-value	0.96		0.93		0.96	
B-check Step.10	Cell Pressure (kPa)	460	510	460	510	460	510
	P.W.P (kPa)	450	498.0	450	497.0	450	498.3
	Back Pressure (kPa)	450		450		450	
	B-value	0.96		0.94		0.97	
B-check Step.11	Cell Pressure (kPa)	510	540	510	580	510	660
	P.W.P (kPa)	500	528.8	500	566.5	500	644.8
	Back Pressure (kPa)	500		500		500	
	B-value	0.96		0.95		0.97	



Consultants Co., Ltd.

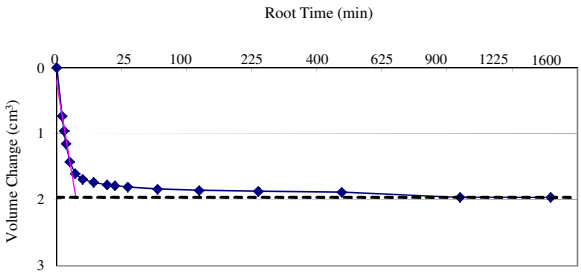
Consolidated Undrained Triaxial Compression Test
With Porewater Pressure Measurement
- Volume Change versus Root Time in Consolidation Stages

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14 Sample No.: HP-2 Soil Type: Clay with Sand
Borehole No.: PP-21-2 Depth : 5.00-5.85m



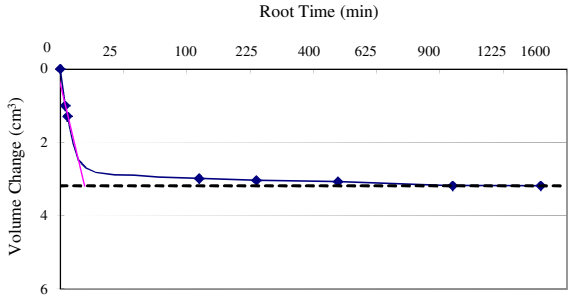
Specimen No.: 1

p' =	40	kPa
t100 =	1.7	min
Cv =	24.31	m^2/year
mvi=	0.12	m^2/MN



Specimen No.: 2

p' =	80	kPa
t100 =	2.1	min
Cv =	19.41	m^2/year
mvi=	0.11	m^2/MN



Specimen No.: 3

p' =	160	kPa
t100 =	3.6	min
Cv =	11.33	m^2/year
mvi=	0.09	m^2/MN

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CONSOLIDATION TEST (e-log p curves)

Preparatory Survey on Matarbari USC Coal-fired Power

Project : Project

Project No.: S27-14 Tested by : Lim

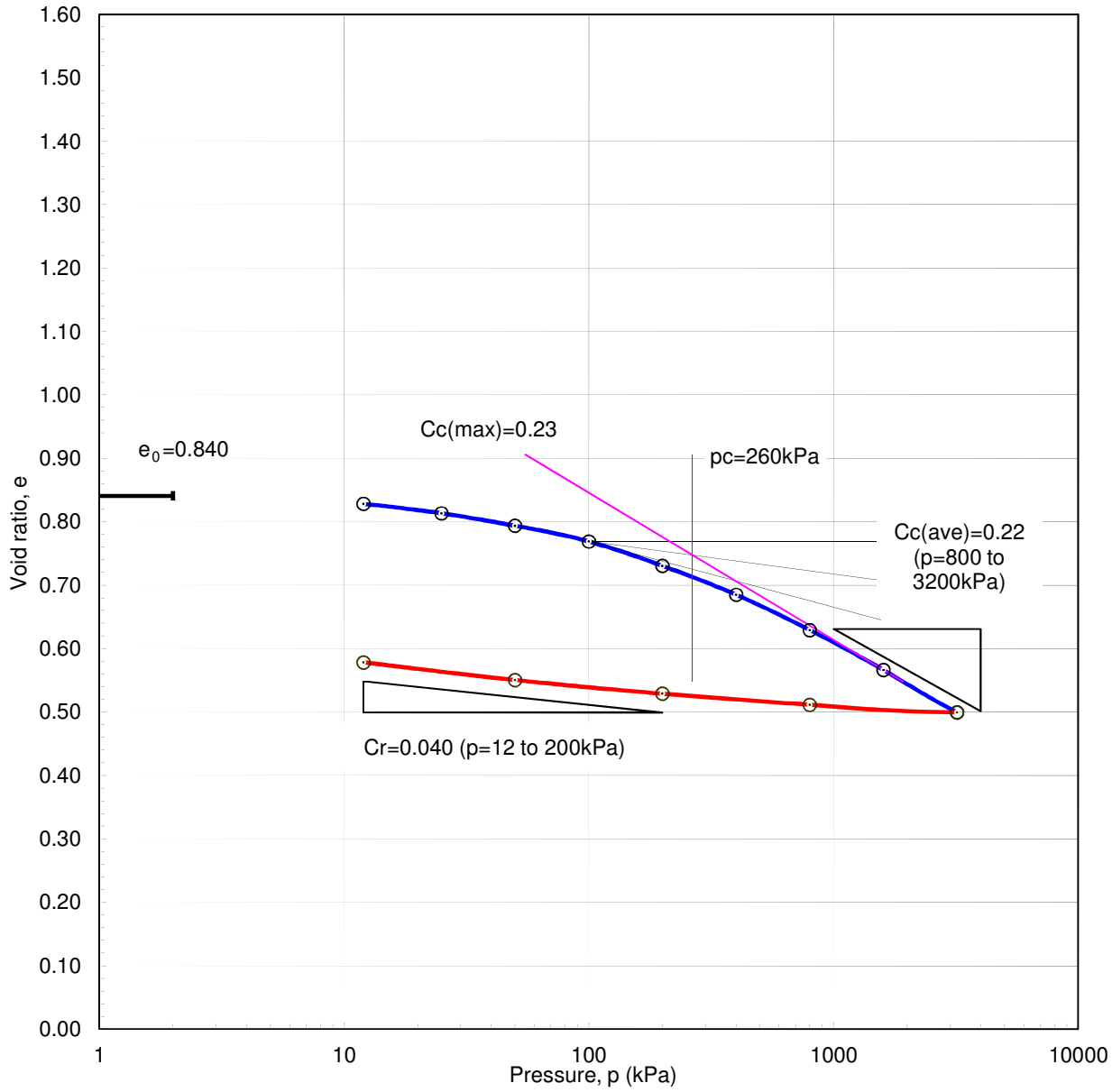
Soil Type : Clay with Sand Checked by : A. B. Tan

Borehole No. : PP-21-2

Sample No. : HP-1

Depth of Sample : 2.00-2.85 m

Sample No.	Depth of sample (m)	Initial void ratio e_o	Preconsolidation Pressure, p_c (kPa)	Compression Index Cc		Swell Index Cr	Unload-reload-Compression Index Cur
HP-1	2.00-2.85	0.840	260	0.23 (max)	0.22(average)	0.040 (average)	N/A



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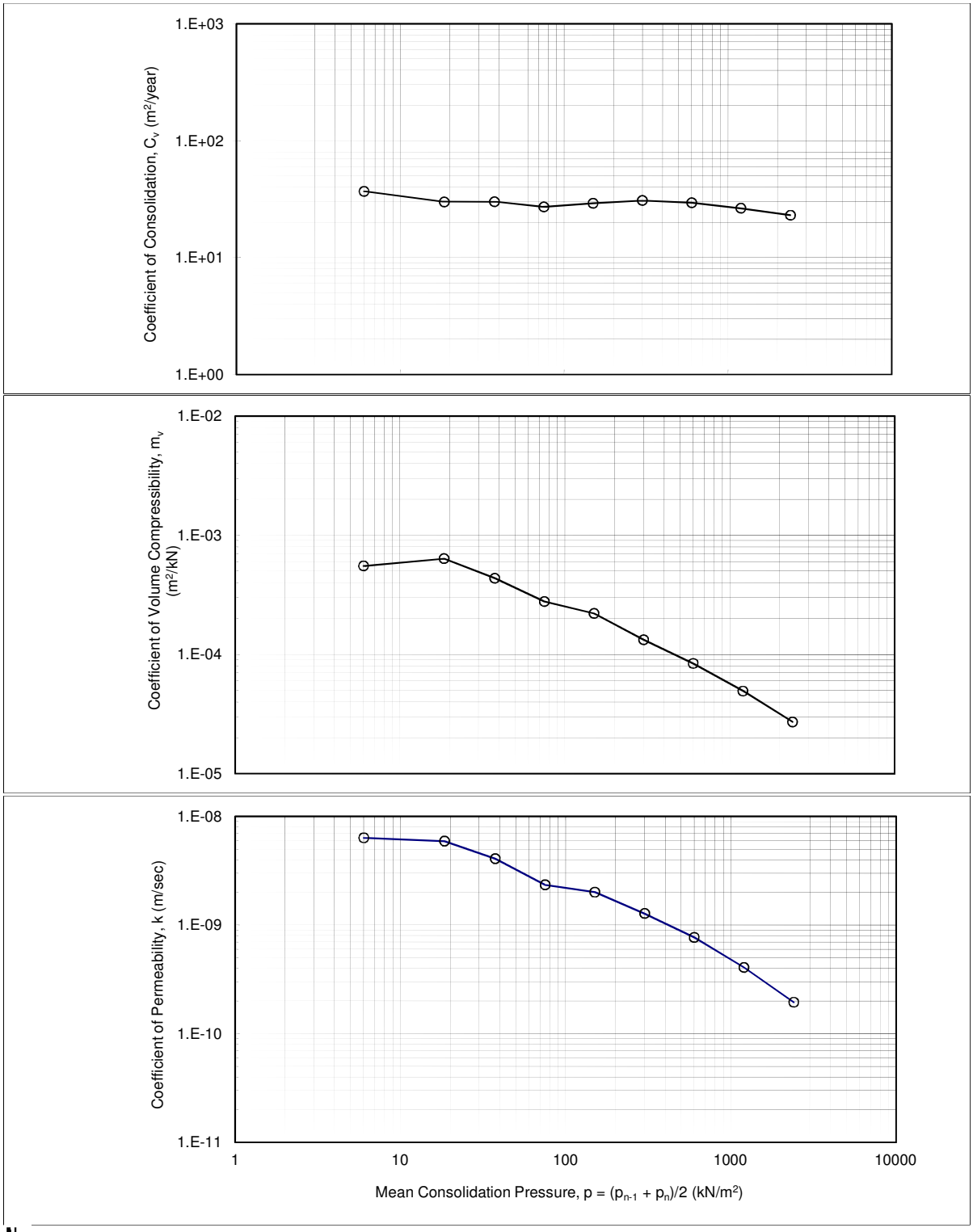
Consolidation Test (p - $\overline{cv}$, mv , k curves)

Project	:	Preparatory Survey on Matarbari USC Coal-fired Power Project		Borehole No.	: PP-21-2
Project No.	:	S27-14		Sample No.	: HP-1
Date of testing	:	17-Oct-14	Tested by : Lim	Depth of Sample	: 2.00-2.85 m



KISO-JIBAN CONSULTANTS CO., LTD.

PROJECT NAME : Preparatory Survey on Matarbari USC Coal-fired Power Project
PROJECT NO. : S27-14
BOREHOLE NO. : PP-21-2
TESTING STANDARD : ASTM D2435-11
DATE : 17-Oct-14
SAMPLE NO. : HP-1
INITIAL HEIGHT OF SPECIMEN : 18.000 mm
NO. OF LOADING STEP : 9
DEPTH : 2.00-2.85 m
DIAMETER OF SPECIMEN : 53.900 mm
SPECIFIC GRAVITY : 2.73
TESTER NO. : 19
DRY WEIGHT OF SPECIMEN : 60.920 grams
SOLID HEIGHT OF SPECIMEN : 9.780 mm
INITIAL MOISTURE CONTENT : 29.9 %
BULK DENSITY : 1.94 Mg/m^3
METHOD OF TIME FITTING USED : SQUARE ROOT TIME CURVE - FITTING METHOD
LABORATORY TEMPERATURE : 23.0 ^{o}C

PRESSURE kN/m^2	PRESSURE INCREMENT kN/m^2	CHANGE IN HEIGHT *E-2 mm	HEIGHT mm	AVERAGE HEIGHT mm	STRAIN %	MV m^2/kN	VOLUME RATIO	VOID RATIO
0.000			18.000				1.840	0.840
	12.000	11.9		17.941	0.66	5.53E-04		
12.000			17.881				1.828	0.828
	13.000	14.7		17.808	0.83	6.35E-04		
25.000			17.734				1.813	0.813
	25.000	19.2		17.638	1.09	4.35E-04		
50.000			17.542				1.794	0.794
	50.000	24.2		17.421	1.39	2.78E-04		
100.000			17.300				1.769	0.769
	100.000	37.8		17.111	2.21	2.21E-04		
200.000			16.922				1.730	0.730
	200.000	44.4		16.700	2.66	1.33E-04		
400.000			16.478				1.685	0.685
	400.000	54.4		16.206	3.36	8.39E-05		
800.000			15.934				1.629	0.629
	800.000	61.7		15.626	3.95	4.94E-05		
1600.000			15.317				1.566	0.566
	1600.000	65.1		14.992	4.34	2.71E-05		
3200.000			14.666				1.500	0.500

PRESSURE kN/m^2	AVERAGE PRESSURE kN/m^2	T90 min	CV m^2/sec	CV m^2/day	CV $m^2/year$	PRIMARY COMPRESSION *E-2 mm	PRIMARY COMPRESSION RATIO	COEFFICIENT OF PERMEABILITY m/sec
0.000								
	6.000	0.90	1.17E-06	1.01E-01	3.69E+01	4.0	0.336	6.35E-09
12.000								
	18.500	1.09	9.52E-07	8.22E-02	3.00E+01	4.4	0.299	5.93E-09
25.000								
	37.500	1.07	9.55E-07	8.26E-02	3.01E+01	4.6	0.240	4.08E-09
50.000								
	75.000	1.16	8.60E-07	7.43E-02	2.71E+01	6.7	0.275	2.34E-09
100.000								
	150.000	1.04	9.26E-07	8.00E-02	2.92E+01	11.3	0.292	2.01E-09
200.000								
	300.000	0.94	9.78E-07	8.45E-02	3.08E+01	12.0	0.276	1.28E-09
400.000								
	600.000	0.92	9.34E-07	8.07E-02	2.95E+01	13.8	0.253	7.69E-10
800.000								
	1200.000	0.96	8.39E-07	7.25E-02	2.65E+01	12.8	0.208	4.06E-10
1600.000								
	2400.000	1.01	7.32E-07	6.33E-02	2.31E+01	12.4	0.191	1.95E-10
3200.000								

REBOUND

P	800.000	200.000	50.000	12.000
H	14.781	14.953	15.164	15.437
E	0.511	0.529	0.551	0.578

CONSOLIDATION TEST (e-log p curves)

Preparatory Survey on Matarbari USC Coal-fired Power

Project : Project

Project No.: S27-14 Tested by : Lim

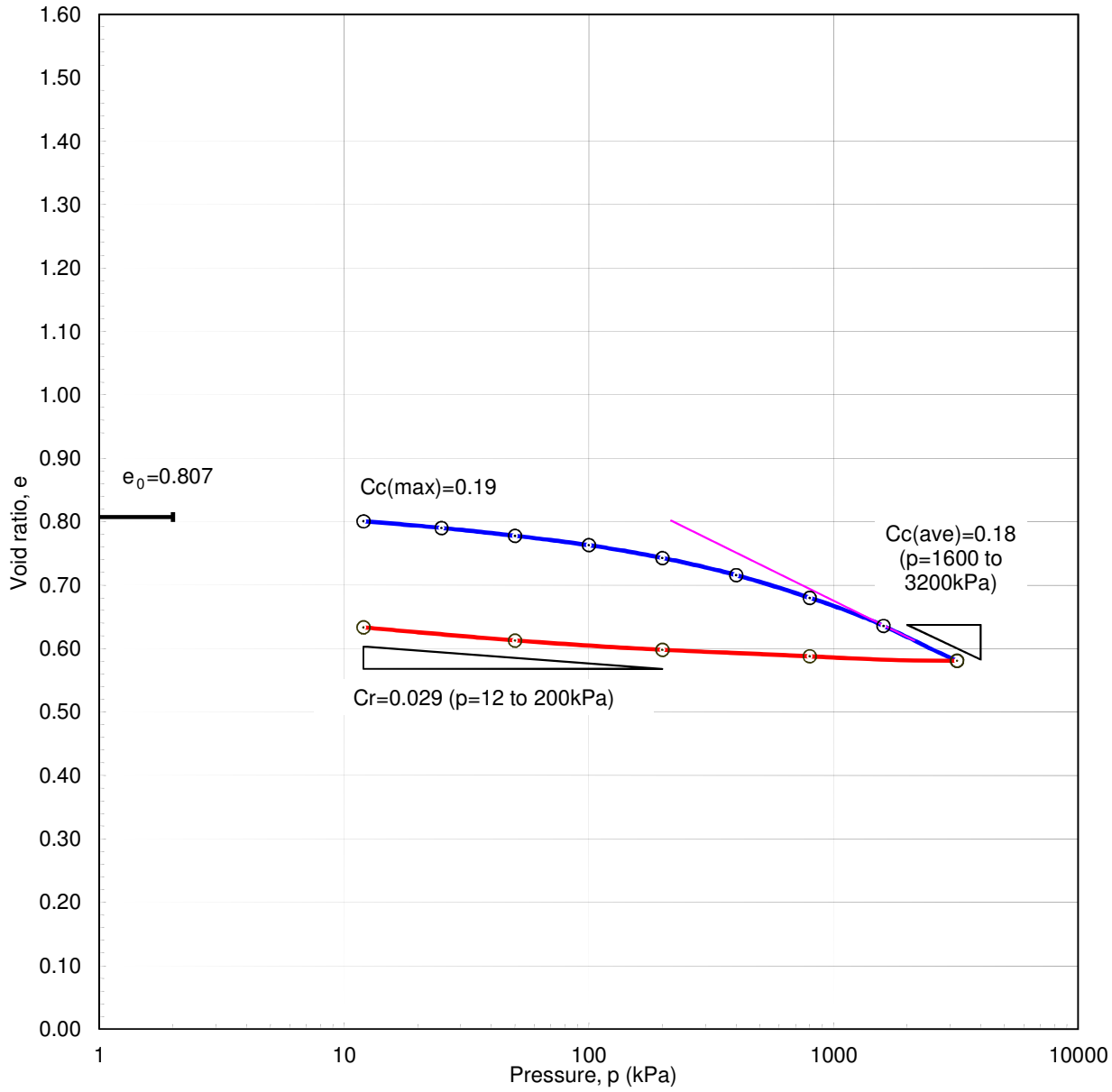
Soil Type : Clay with Sand Checked by : A. B. Tan

Borehole No. : PP21-2

Sample No. : HP-2

Depth of Sample : 5.00-5.85 m

Sample No.	Depth of sample (m)	Initial void ratio e_o	Preconsolidation Pressure, p_c (kPa)	Compression Index Cc		Swell Index Cr	Unload-reload-Compression Index Cur
HP-2	5.00-5.85	0.807	-	0.19 (max)	0.18(average)	0.029 (average)	N/A



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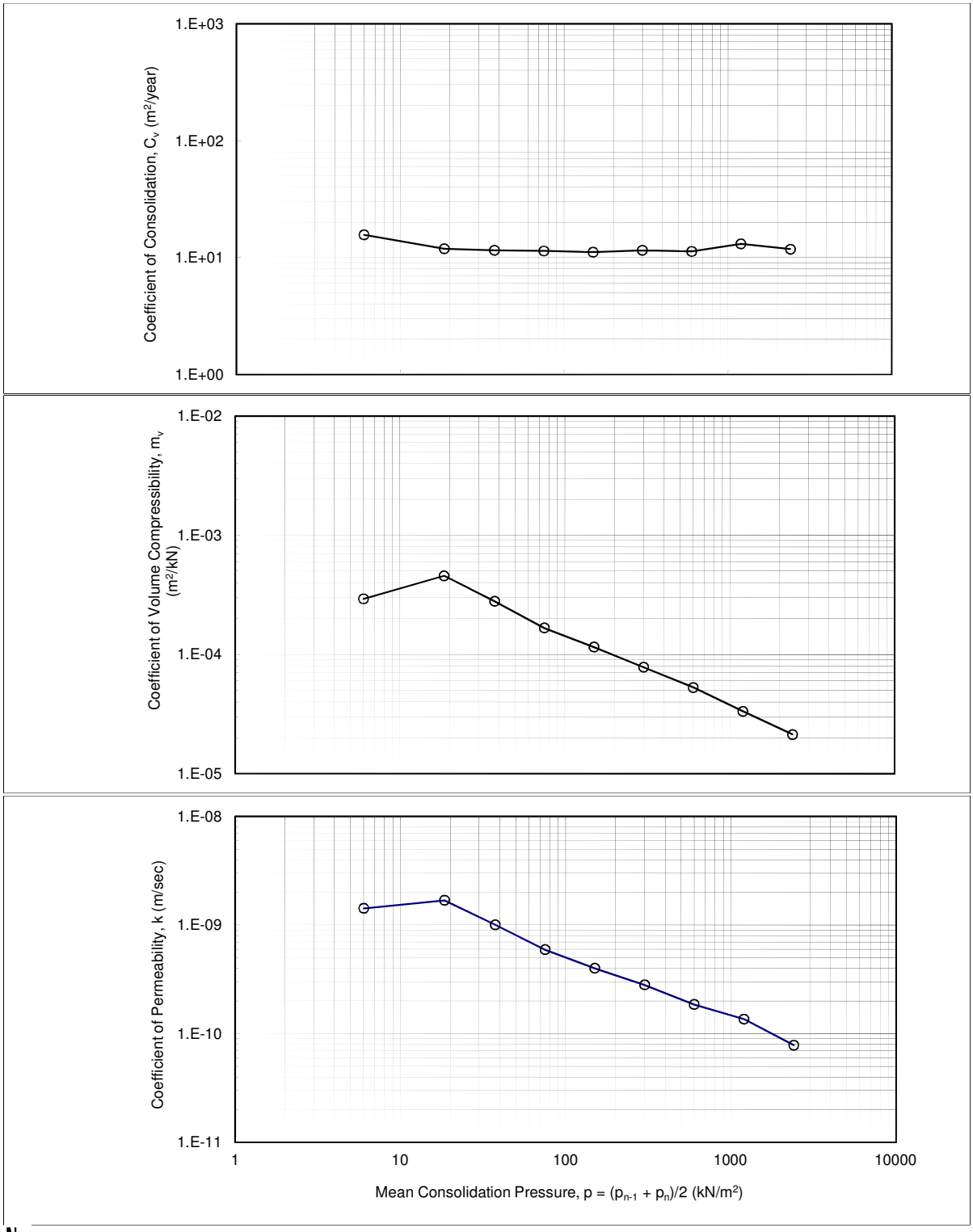
Consolidation Test (p - $\overline{cv}$, mv , k curves)

Project	:	Preparatory Survey on Matarbari USC Coal-fired Power Project		Borehole No. :	PP21-2
Project No.	:	S27-14		Sample No. :	HP-2
Date of testing	:	17-Oct-14	Tested by : Lim	Depth of Sample :	5.00-5.85 m



KISO-JIBAN CONSULTANTS CO., LTD.

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PROJECT NAME : Preparatory Survey on Matarbari USC Coal-fired Power Project
PROJECT NO. : S27-14
BOREHOLE NO. : PP21-2
TESTING STANDARD : ASTM D2435-11
DATE : 17-Oct-14
SAMPLE NO. : HP-2
INITIAL HEIGHT OF SPECIMEN : 18.000 mm
NO. OF LOADING STEP : 9
DEPTH : 5.00-5.85 m
DIAMETER OF SPECIMEN : 53.900 mm
SPECIFIC GRAVITY : 2.73
TESTER NO. : 20
DRY WEIGHT OF SPECIMEN : 62.060 grams
SOLID HEIGHT OF SPECIMEN : 9.960 mm
INITIAL MOISTURE CONTENT : 28.2 %
BULK DENSITY : 1.93 Mg/m^3
METHOD OF TIME FITTING USED : SQUARE ROOT TIME CURVE - FITTING METHOD
LABORATORY TEMPERATURE : 23.0 ^{o}C

PRESSURE kN/m^2	PRESSURE INCREMENT kN/m^2	CHANGE IN HEIGHT *E-2 mm	HEIGHT mm	AVERAGE HEIGHT mm	STRAIN %	MV m^2/kN	VOLUME RATIO	VOID RATIO
0.000			18.000				1.807	0.807
	12.000	6.3		17.969	0.35	2.92E-04		
12.000			17.937				1.801	0.801
	13.000	10.6		17.884	0.59	4.56E-04		
25.000			17.831				1.790	0.790
	25.000	12.4		17.769	0.70	2.79E-04		
50.000			17.707				1.778	0.778
	50.000	14.7		17.634	0.83	1.67E-04		
100.000			17.560				1.763	0.763
	100.000	20.1		17.460	1.15	1.15E-04		
200.000			17.359				1.743	0.743
	200.000	26.9		17.225	1.56	7.81E-05		
400.000			17.090				1.716	0.716
	400.000	35.7		16.912	2.11	5.28E-05		
800.000			16.733				1.680	0.680
	800.000	44.0		16.513	2.66	3.33E-05		
1600.000			16.293				1.636	0.636
	1600.000	54.6		16.020	3.41	2.13E-05		
3200.000			15.747				1.581	0.581

PRESSURE kN/m^2	AVERAGE PRESSURE kN/m^2	T90 min	CV m^2/sec	CV m^2/day	CV $m^2/year$	PRIMARY COMPRESSION *E-2 mm	PRIMARY COMPRESSION RATIO	COEFFICIENT OF PERMEABILITY m/sec
0.000								
	6.000	2.14	4.97E-07	4.29E-02	1.57E+01	1.2	0.183	1.42E-09
12.000								
	18.500	2.78	3.78E-07	3.26E-02	1.19E+01	2.1	0.194	1.69E-09
25.000								
	37.500	2.83	3.66E-07	3.17E-02	1.16E+01	1.7	0.134	1.00E-09
50.000								
	75.000	2.83	3.62E-07	3.12E-02	1.14E+01	1.7	0.131	5.91E-10
100.000								
	150.000	2.84	3.53E-07	3.05E-02	1.11E+01	2.9	0.132	3.99E-10
200.000								
	300.000	2.66	3.67E-07	3.17E-02	1.16E+01	4.1	0.154	2.81E-10
400.000								
	600.000	2.62	3.58E-07	3.10E-02	1.13E+01	4.8	0.135	1.86E-10
800.000								
	1200.000	2.15	4.16E-07	3.60E-02	1.31E+01	6.6	0.151	1.36E-10
1600.000								
	2400.000	2.25	3.74E-07	3.23E-02	1.18E+01	7.0	0.128	7.82E-11
3200.000								

REBOUND

P	800.000	200.000	50.000	12.000
H	15.814	15.917	16.065	16.269
E	0.588	0.598	0.613	0.633

Summary of Consolidated Drained Triaxial Compression Test

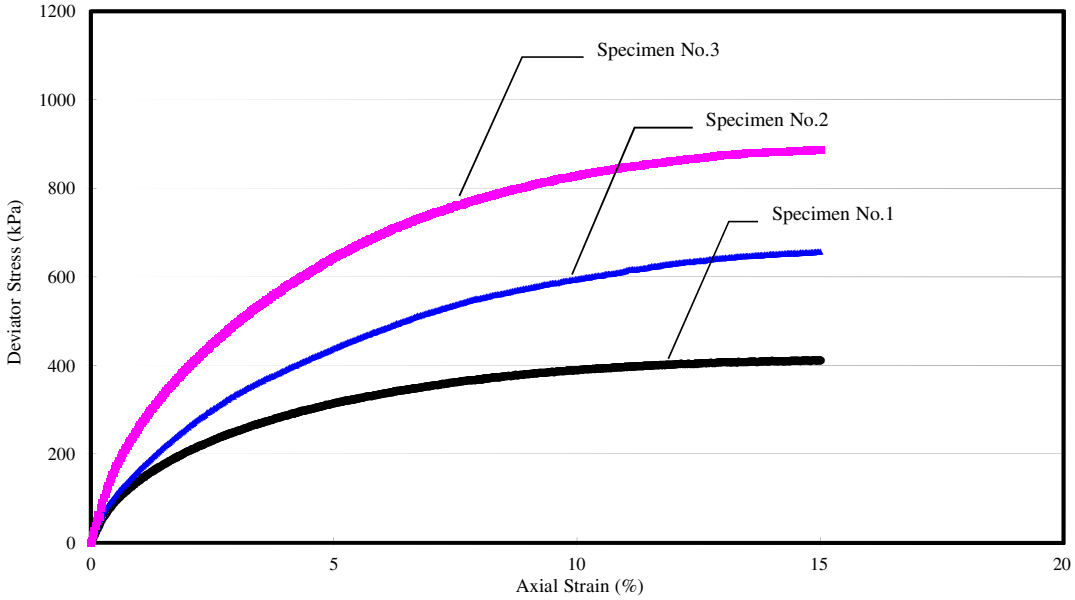
Project No.: S27-14		Project :Preparatory Survey on Matarbari USC Coral-fired Power Project					
Date Tested : 14.12.14		Tested by : Perera		Checked by : A. B. Tan			
Borehole No.: PP-21-2		Sample No.:D-2		Depth : 11.00-11.85m			
Specimen Condition : Remoulded		Test Method : ASTM D7181-11					
Soil Description : Clayey Sand		Ave. Diameter : 50.0mm		Ave. Height : 100.0mm			
Specimen No.			1	2	3	4	
Initial Condition	Wet Density,	Mg/m^3	1.90	1.90	1.90		
	Water Content,	%	32.6	32.6	32.6		
	Dry Density	Mg/m^3	1.43	1.43	1.43		
Saturation Stage	Saturated PWP,	kPa	500	500	500		
	Final Cell Pressure,	kPa	650	750	850		
	B-value		0.95	0.97	0.96		
Consolidation Stage	Cell Pressure	kPa	650	750	850		
	Back Pressure	kPa	500	500	500		
	Initial PWP,	kPa	633	732	826		
	Final PWP	kPa	500	500	500		
Consolidation Parameter	Volume Change,	%	0.21	0.83	0.50		
	Coefficient of Consolidation Cv,	m^2/year	393	459	246		
	Coefficient of Volume Compressibility mvi,	m^2/MN	0.014	0.033	0.014		
Compression Stage	Cell Pressure	kPa	650	750	850		
	Back Pressure	kPa	500	500	500		
	Effective Cell Pressure	kPa	150	250	350		
	Shearing Speed	mm/min	0.015	0.015	0.015		
Failure Conditions	Peak Deviator Stress $(\sigma_1-\sigma_3)f$,	kPa	412	658	887		
	Excess PWP at $(\sigma_1-\sigma_3)f$	kPa	N/A	N/A	N/A		
	Volumetric Strain at $(\sigma_1-\sigma_3)f$	(%)	2.24	3.53	2.60		
	Strain at $(\sigma_1-\sigma_3)f$	(%)	14.85	15.00	14.96		
Shear Strength Parameters	ϕ_d = 34 Degree c_d = 0 kPa		Mode of Failure 1 2 3 4 				
Remarks : Specimens are prepared at required saturated wet density = 1.90 Mg/m3							

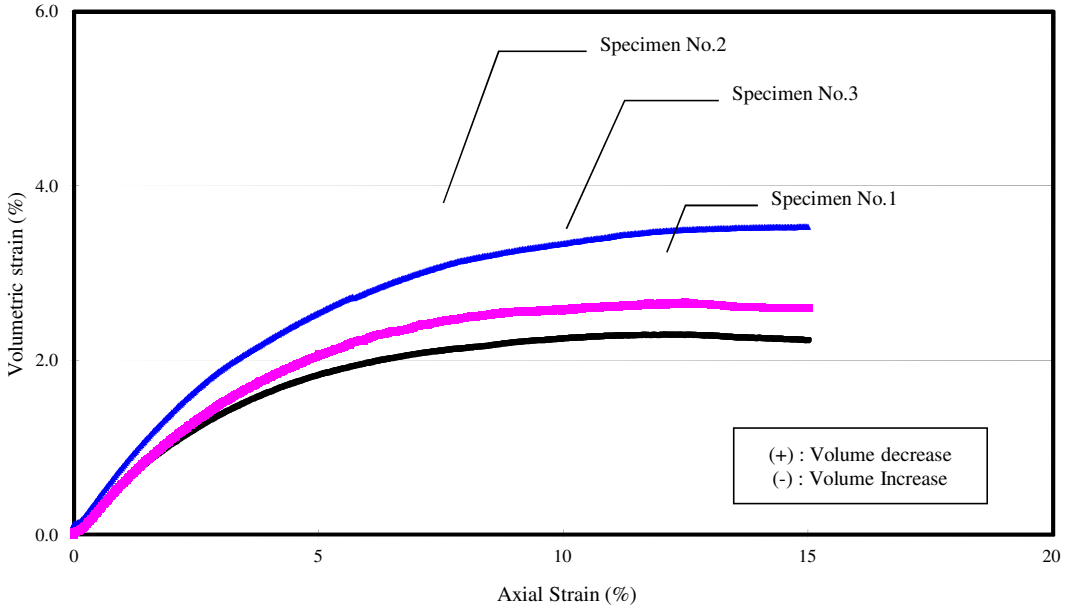
Consolidated Drained Triaxial Compression Test

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

Project No.: S27-14 Sample No.: D-2 Soil Type: Clayey Sand

Borehole No.: PP-21-2 Depth : 11.00-11.85mm





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Consolidated Drained Triaxial Compression Test
With Pore water Pressure Measurement

- Mohr' s Circle (In terms of Total Stress at Peak Deviator Stress) -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project

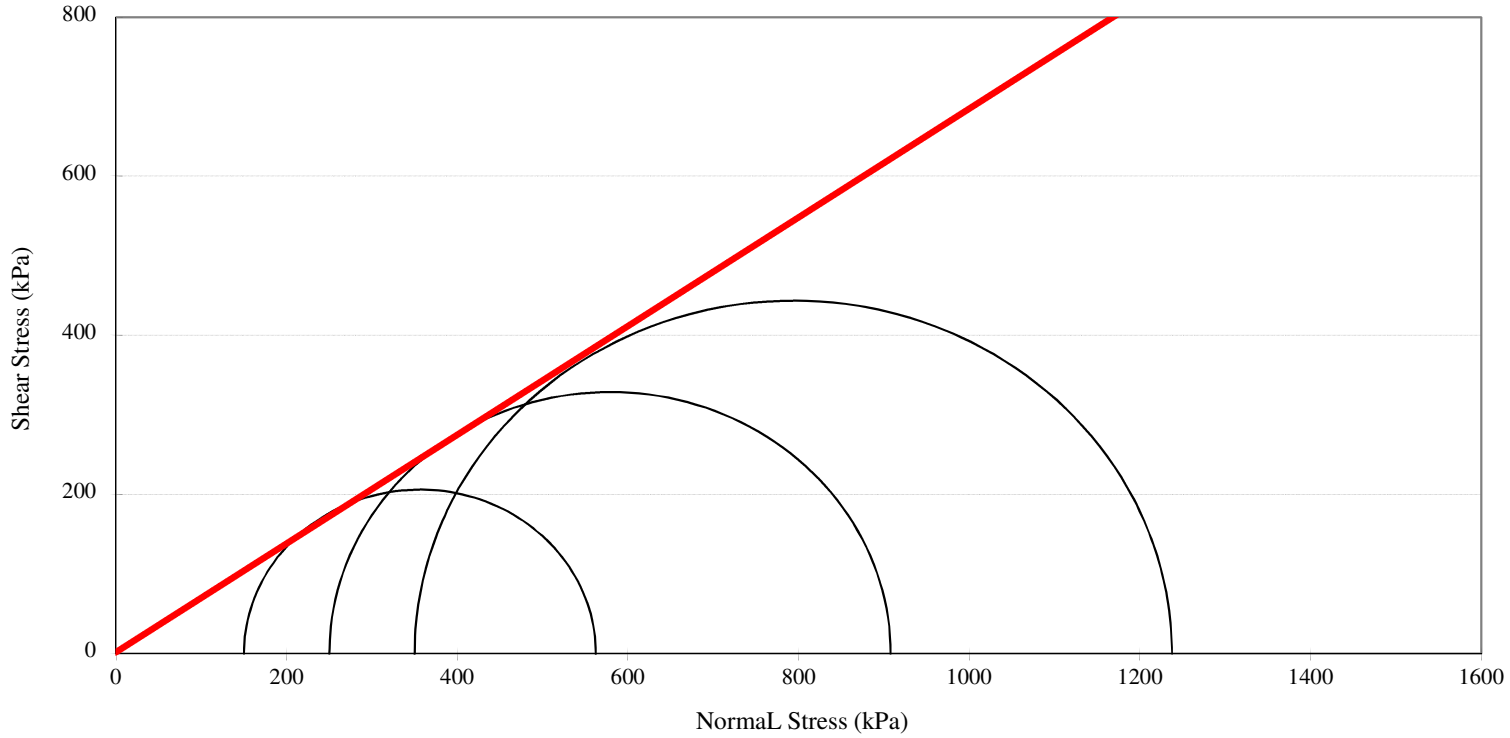
Project No. : S27-14

Borehole No. : PP-21-2 Soil Type: Clayey Sand

Sample No. : D-2 Depth : 11.00-11.85m

Angle of Internal Friction, ϕ_d 34 deg

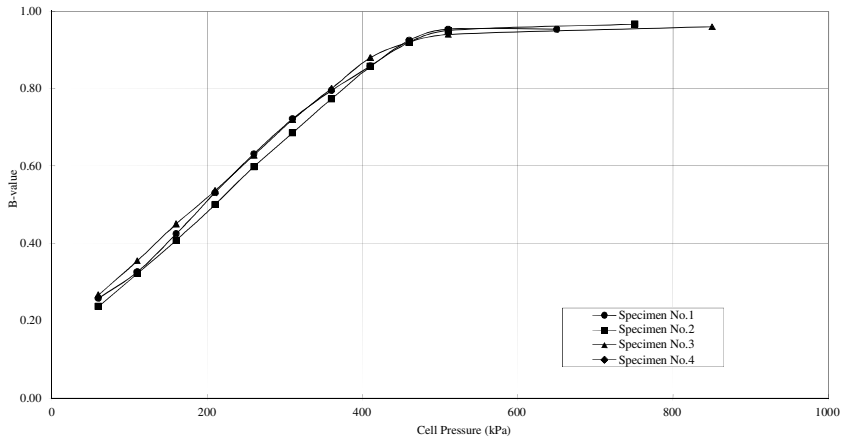
Cohesion, c_d 0 kPa



Consolidated Drained Triaxial Compression Test
With Porewater Pressure Measurement
- B-value Check -

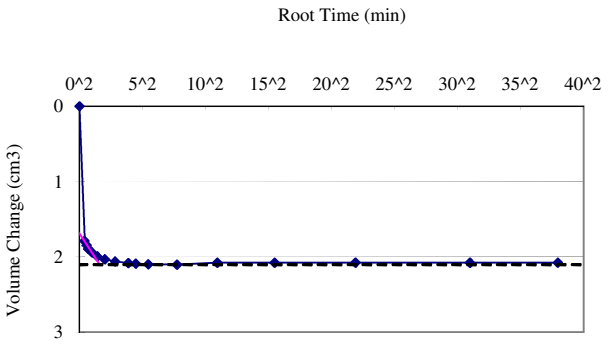
Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14
Borehole No.: PP-21-2 Depth : 11.00-11.85m
Sample No.: D-2 Soil Type: Clayey Sand

		Result of B-value Check							
		Specimen 1		Specimen 2		Specimen 3		Specimen 4	
		Initial	Final	Initial	Final	Initial	Final	Initial	Final
B-check Step.1	Cell Pressure (kPa)	30	60	30	60	30	60		
	P.W.P (kPa)	20	27.7	20	27.1	20	28.0		
	Back Pressure (kPa)	20		20		20			
	B-value	0.26		0.24		0.27			
B-check Step.2	Cell Pressure (kPa)	60	110	60	110	60	110		
	P.W.P (kPa)	50	66.3	50	66.1	50	67.7		
	Back Pressure (kPa)	50		50		50			
	B-value	0.33		0.32		0.35			
B-check Step.3	Cell Pressure (kPa)	110	160	110	160	110	160		
	P.W.P (kPa)	100	121.2	100	120.4	100	122.5		
	Back Pressure (kPa)	100		100		100			
	B-value	0.42		0.41		0.45			
B-check Step.4	Cell Pressure (kPa)	160	210	160	210	160	210		
	P.W.P (kPa)	150	176.6	150	175.0	150	176.8		
	Back Pressure (kPa)	150		150		150			
	B-value	0.53		0.50		0.54			
B-check Step.5	Cell Pressure (kPa)	210	260	210	260	210	260		
	P.W.P (kPa)	200	231.6	200	229.9	200	231.4		
	Back Pressure (kPa)	200		200		200			
	B-value	0.63		0.60		0.63			
B-check Step.6	Cell Pressure (kPa)	260	310	260	310	260	310		
	P.W.P (kPa)	250	286.1	250	284.3	250	286.0		
	Back Pressure (kPa)	250		250		250			
	B-value	0.72		0.69		0.72			
B-check Step.7	Cell Pressure (kPa)	310	360	310	360	310	360		
	P.W.P (kPa)	300	339.8	300	338.7	300	340.0		
	Back Pressure (kPa)	300		300		300			
	B-value	0.80		0.77		0.80			
B-check Step.8	Cell Pressure (kPa)	360	410	360	410	360	410		
	P.W.P (kPa)	350	392.9	350	392.9	350	394.0		
	Back Pressure (kPa)	350		350		350			
	B-value	0.86		0.86		0.88			
B-check Step.9	Cell Pressure (kPa)	410	460	410	460	410	460		
	P.W.P (kPa)	400	446.2	400	446.0	400	446.0		
	Back Pressure (kPa)	400		400		400			
	B-value	0.92		0.92		0.92			
B-check Step.10	Cell Pressure (kPa)	460	510	460	510	460	510		
	P.W.P (kPa)	450	497.7	450	497.5	450	497.0		
	Back Pressure (kPa)	450		450		450			
	B-value	0.95		0.95		0.94			
B-check Step.11	Cell Pressure (kPa)	510	650	510	750	510	850		
	P.W.P (kPa)	500	633.5	500	732.1	500	826.3		
	Back Pressure (kPa)	500		500		500			
	B-value	0.95		0.97		0.96			



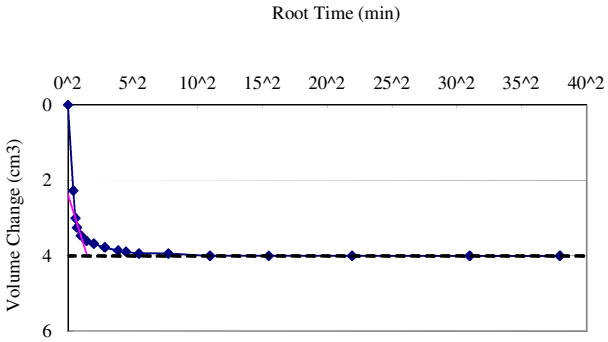
Consolidated Drained Triaxial Compression Test
With Porewater Pressure Measurement
- Volume Change versus Root Time in Consolidation Stages -

Project : Preparatory Survey on Matarbari USC Coral-fired Power Project
Project No.: S27-14 Sample No.: D-2 Soil Type: Clayey Sand



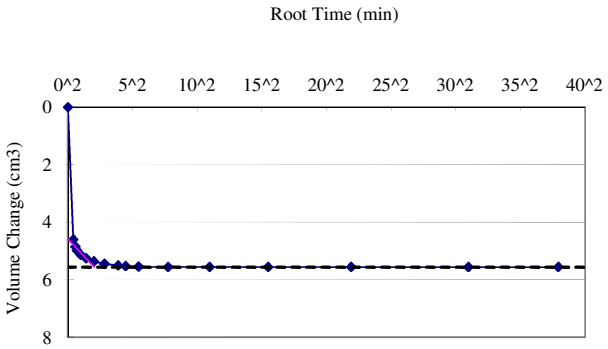
Specimen No.: 1

p' =	150	kPa
t100 =	2.6	min
Cv =	393	m^2/year
mvi=	0.014	m^2/MN



Specimen No.: 2

p' =	250	kPa
t100 =	2.2	min
Cv =	459	m^2/year
mvi=	0.033	m^2/MN



Specimen No.: 3

p' =	350	kPa
t100 =	4.2	min
Cv =	246	m^2/year
mvi=	0.014	m^2/MN

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

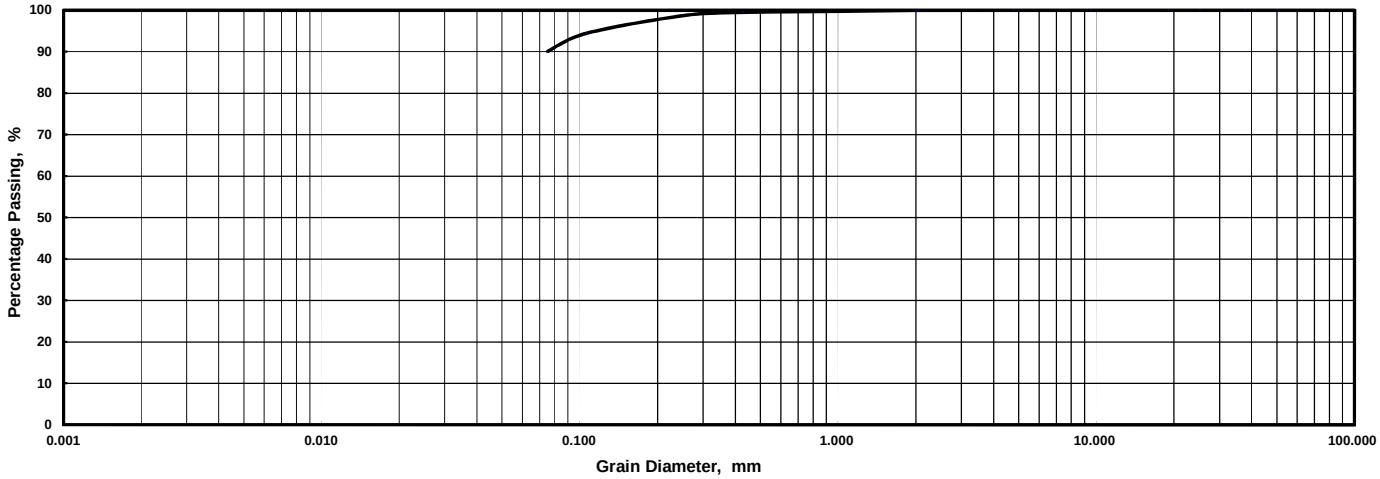
Location : **PP-21-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/11/19** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-26** Depth : **31.00-31.41 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.7	99.5	98.7	94.4	90.1
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	1.1	4.5	8.0
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	1.3	5.6	9.9

Grain Size Distribution Curves



0.005	0.075	0.425	2.00	4.75	19.0	75.0
CLAY		FINE / MEDIUM / COARSE			FINE / COARSE	
	SILT	SAND			GRAVEL	

Sample No. / Depth	SPT-26 / 31.00-31.41 m		Sample No. / Depth	SPT-26 / 31.00-31.41 m	
Larger than 4.75 mm	0.0 %		Max. Diameter	4.75 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	mm	
2.00 - 0.425 mm	0.5 %		Dia. at 50%	mm	
0.425 - 0.075 mm	9.4 %		Dia. at 30%	mm	
0.075 - 0.005 mm	90.1 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	100.0 %		Coeff. of Curvature		
425um Sieve Passing	99.5 %				
75um Sieve Passing	90.1 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

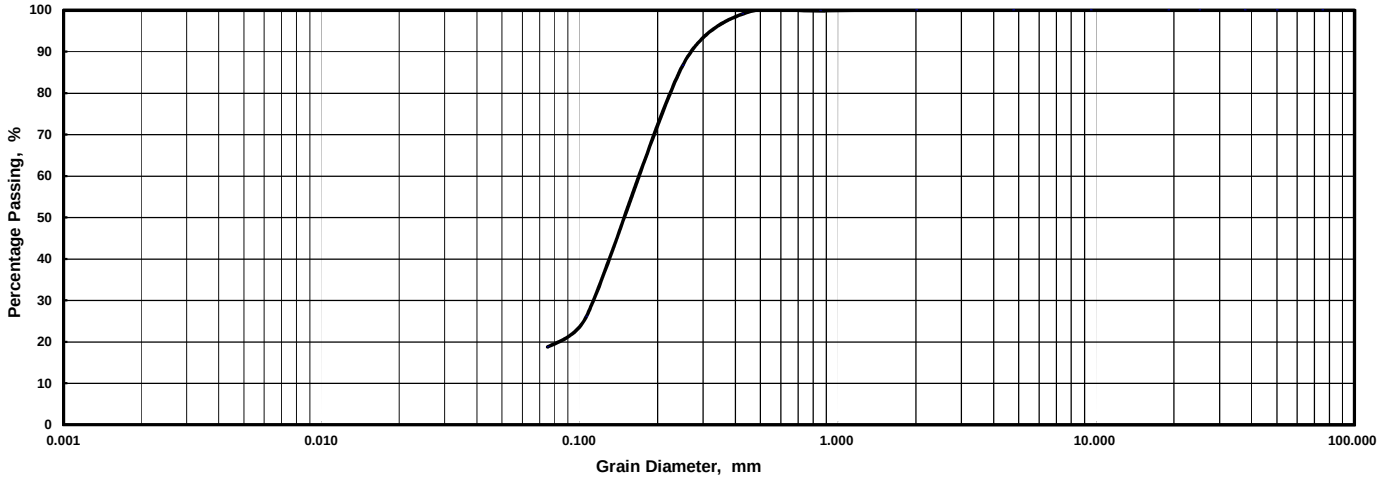
Location : **PP-21-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/11/19** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-27** Depth : **32.00-32.45 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	99.1	86.6	26.1	18.8
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7	10.2	56.5	62.1
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.9	13.4	73.9	81.2

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY		FINE	MEDIUM	COARSE	FINE		COARSE		
	SILT	SAND			GRAVEL				

Sample No. Depth	SPT-27 32.00-32.45 m		Sample No. Depth	SPT-27 32.00-32.45 m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.17 mm	
2.00 - 0.425 mm	0.9 %		Dia. at 50%	0.15 mm	
0.425 - 0.075 mm	80.3 %		Dia. at 30%	0.11 mm	
0.075 - 0.005 mm	18.8 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	100.0 %		Coeff. of Curvature		
425um Sieve Passing	99.1 %				
75um Sieve Passing	18.8 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

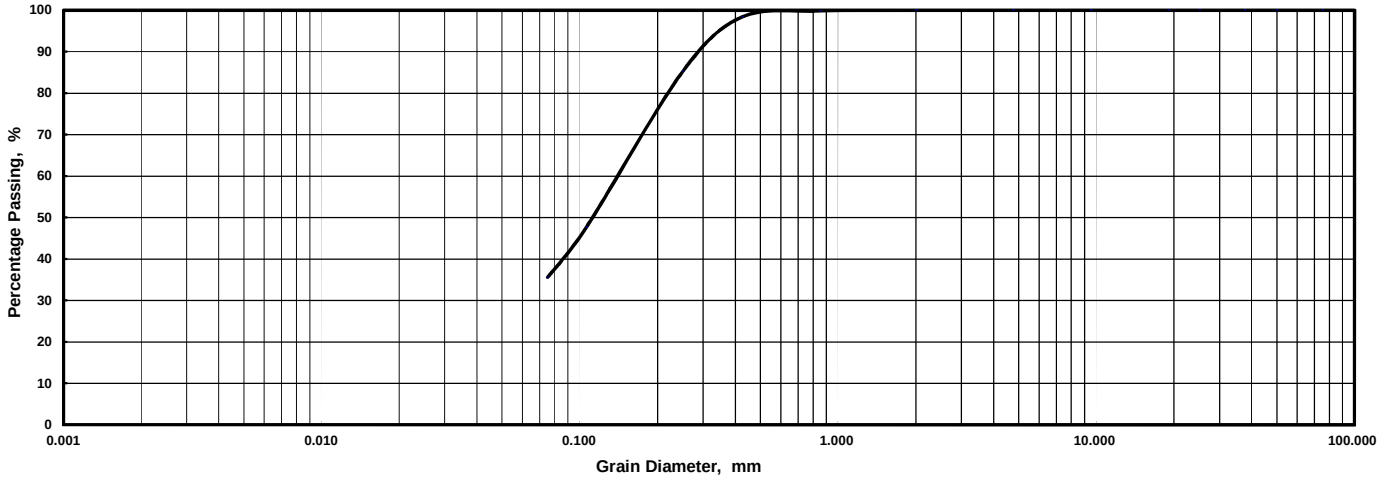
Location : **PP-21-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/11/19** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-28** Depth : **33.00-33.45 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	98.4	85.2	47.7	35.6
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0	9.5	33.6	41.4
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.6	14.8	52.3	64.4

Grain Size Distribution Curves



0.005	0.075	0.425	2.00	4.75	19.0	75.0
CLAY		FINE / MEDIUM / COARSE			FINE / COARSE	
	SILT	SAND			GRAVEL	

Sample No. / Depth	SPT-28 33.00-33.45 m		Sample No. / Depth	SPT-28 33.00-33.45 m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.14 mm	
2.00 - 0.425 mm	1.6 %		Dia. at 50%	0.11 mm	
0.425 - 0.075 mm	62.8 %		Dia. at 30%	mm	
0.075 - 0.005 mm	35.6 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	100.0 %		Coeff. of Curvature		
425um Sieve Passing	98.4 %				
75um Sieve Passing	35.6 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

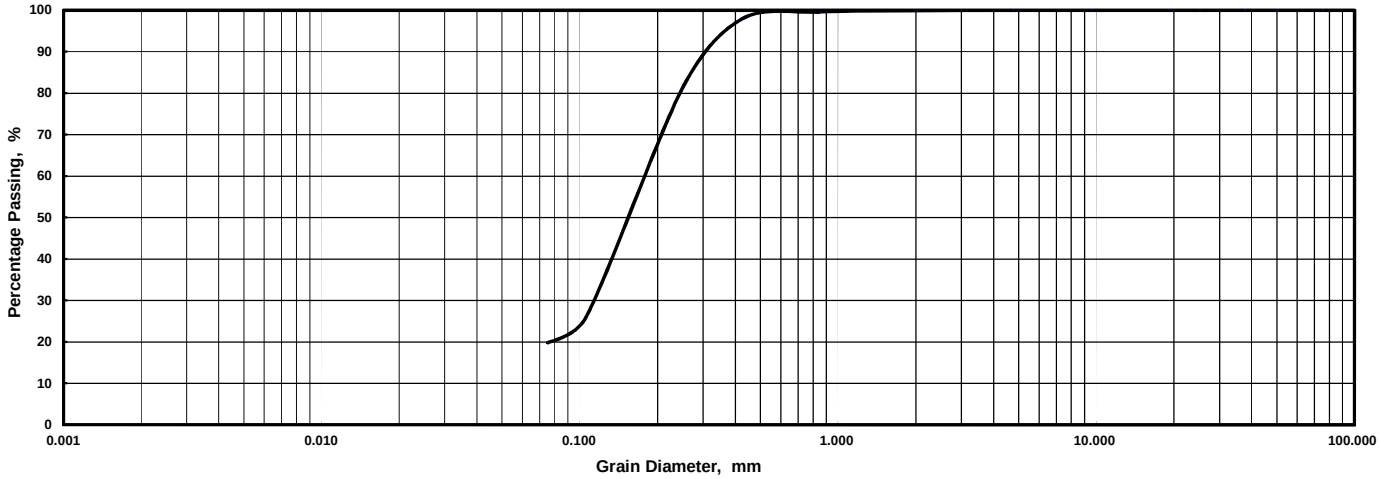
Location : **PP-21-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/11/19** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-29** Depth : **34.00-34.34 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.6	97.9	81.3	26.1	19.8
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	1.5	13.5	53.5	58.0
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	2.1	18.7	73.9	80.2

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY			FINE	MEDIUM	COARSE	FINE		COARSE	
	SILT		SAND			GRAVEL			

Sample No. Depth	SPT-29 34.00-34.34 m		Sample No. Depth	SPT-29 34.00-34.34 m	
Larger than 4.75 mm	0.0 %		Max. Diameter	4.75 mm	
4.75 - 2.00 mm	0.1 %		Dia. at 60%	0.18 mm	
2.00 - 0.425 mm	2.0 %		Dia. at 50%	0.15 mm	
0.425 - 0.075 mm	78.2 %		Dia. at 30%	0.11 mm	
0.075 - 0.005 mm	19.8 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	99.9 %		Coeff. of Curvature		
425um Sieve Passing	97.9 %				
75um Sieve Passing	19.8 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

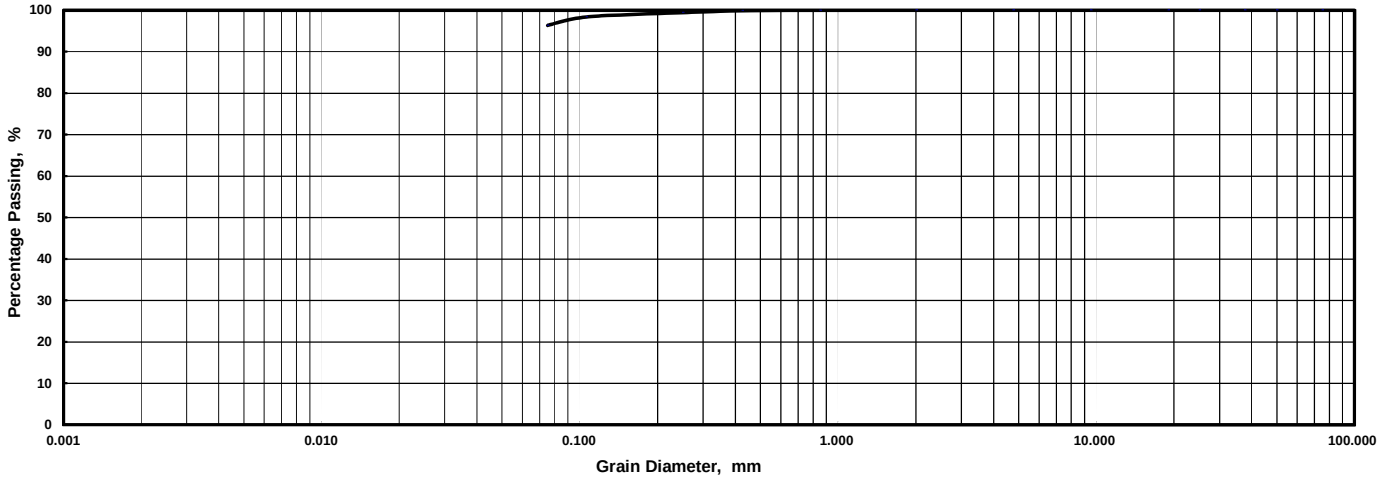
Location : **PP-21-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/11/19** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-30** Depth : **35.00-35.36 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.4	98.4	96.3
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	1.0	2.3
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	1.6	3.7

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75	19.0	75.0
CLAY		FINE	MEDIUM	COARSE	FINE		COARSE	
	SILT	SAND			GRAVEL			

Sample No. / Depth	SPT-30 / 35.00-35.36 m		Sample No. / Depth	SPT-30 / 35.00-35.36 m	
Larger than 4.75 mm	0.0	%	Max. Diameter	2.00	mm
4.75 - 2.00 mm	0.0	%	Dia. at 60%		mm
2.00 - 0.425 mm	0.1	%	Dia. at 50%		mm
0.425 - 0.075 mm	3.5	%	Dia. at 30%		mm
0.075 - 0.005 mm	96.3	%	Dia. at 10%		mm
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	100.0	%	Coeff. of Curvature		
425um Sieve Passing	99.9	%			
75um Sieve Passing	96.3	%			

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

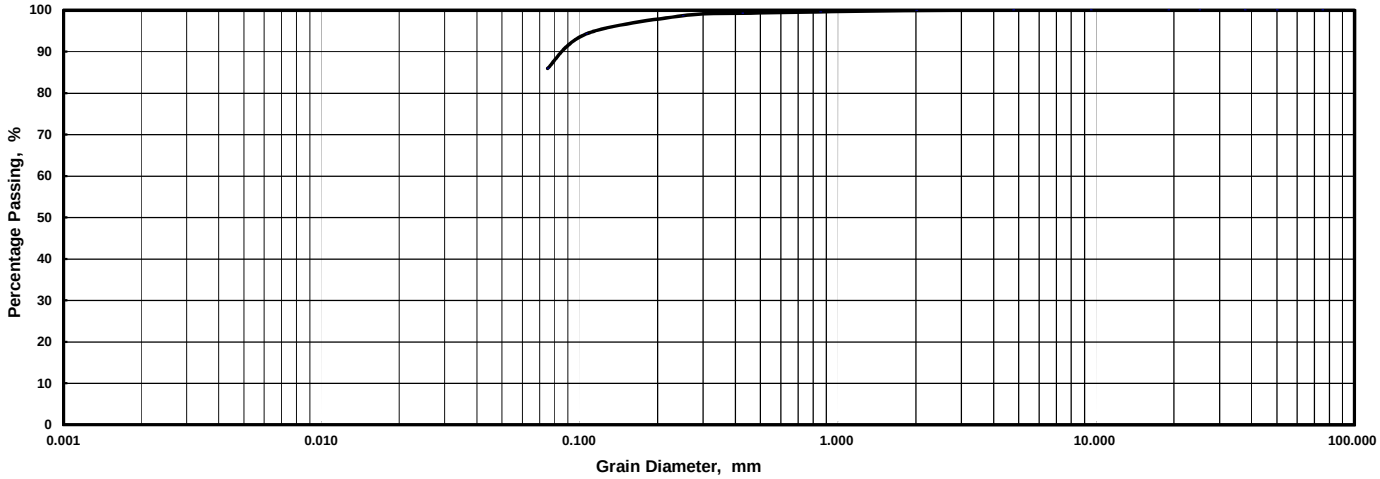
Location : **PP-21-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/11/19** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-31** Depth : **36.00-36.38 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.6	99.2	98.7	94.3	86.0
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.9	3.8	9.5
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.8	1.3	5.7	14.0

Grain Size Distribution Curves



0.005	0.075	0.425	2.00	4.75	19.0	75.0
CLAY		FINE	MEDIUM	COARSE	FINE	COARSE
	SILT	SAND			GRAVEL	

Sample No. / Depth	SPT-31 / 36.00-36.38 m		Sample No. / Depth	SPT-31 / 36.00-36.38 m	
Larger than 4.75 mm	0.0	%	Max. Diameter	4.75	mm
4.75 - 2.00 mm	0.1	%	Dia. at 60%		mm
2.00 - 0.425 mm	0.7	%	Dia. at 50%		mm
0.425 - 0.075 mm	13.3	%	Dia. at 30%		mm
0.075 - 0.005 mm	86.0	%	Dia. at 10%		mm
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	99.9	%	Coeff. of Curvature		
425um Sieve Passing	99.2	%			
75um Sieve Passing	86.0	%			

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

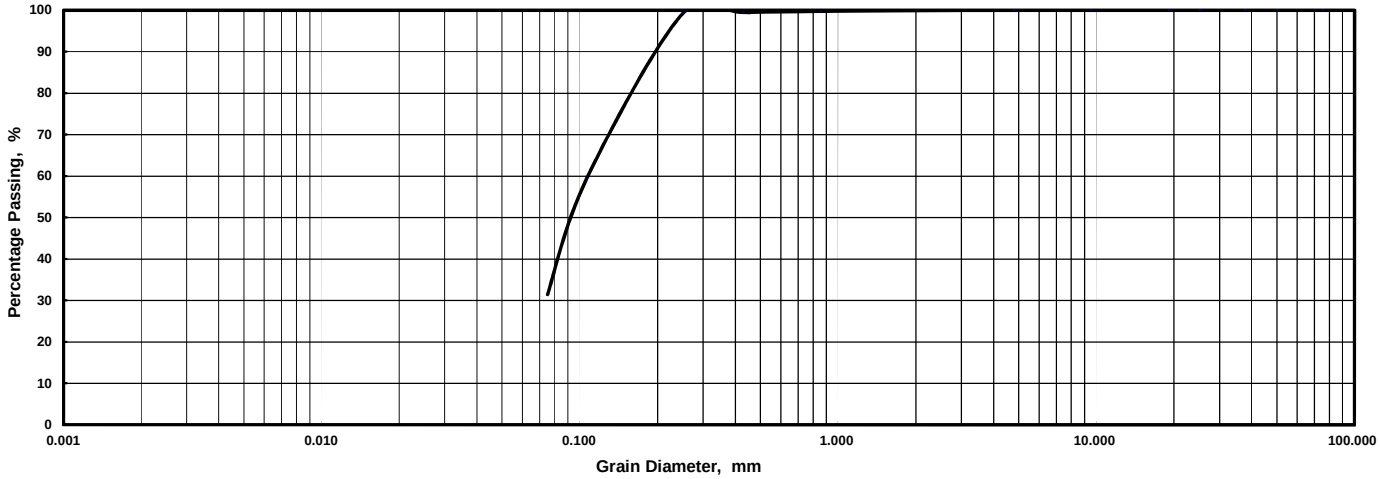
Location : **PP-21-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/11/19** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-32** Depth : **37.00-37.35 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.7	99.5	99.2	59.2	31.4
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.6	30.2	50.8
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.8	40.8	68.6

Grain Size Distribution Curves



0.005	0.075	0.425	2.00	4.75	19.0	75.0
CLAY		FINE / MEDIUM / COARSE			FINE / COARSE	
	SILT	SAND			GRAVEL	

Sample No. / Depth	SPT-32 / 37.00-37.35 m		Sample No. / Depth	SPT-32 / 37.00-37.35 m	
Larger than 4.75 mm	0.0 %		Max. Diameter	4.75 mm	
4.75 - 2.00 mm	0.1 %		Dia. at 60%	0.11 mm	
2.00 - 0.425 mm	0.4 %		Dia. at 50%	0.09 mm	
0.425 - 0.075 mm	68.0 %		Dia. at 30%	mm	
0.075 - 0.005 mm	31.4 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	99.9 %		Coeff. of Curvature		
425um Sieve Passing	99.5 %				
75um Sieve Passing	31.4 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

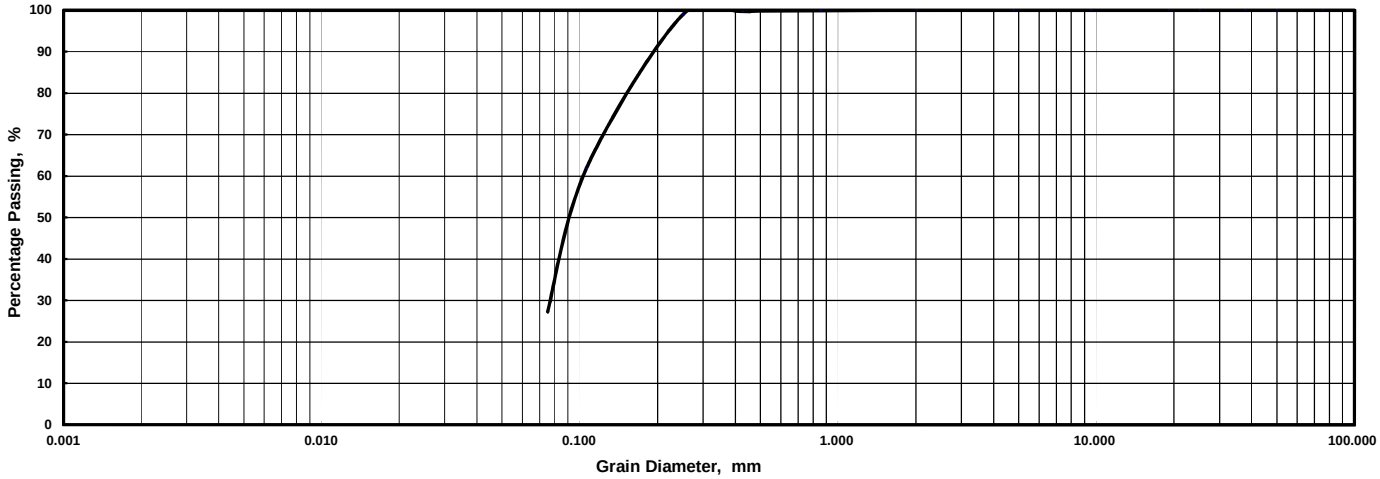
Location : **PP-21-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/11/19** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-33** Depth : **38.00-38.31 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.7	98.9	61.9	27.2
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.8	28.3	54.1
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	1.1	38.1	72.8

Grain Size Distribution Curves



0.005	0.075	0.425	2.00	4.75	19.0	75.0
CLAY		FINE / MEDIUM / COARSE			FINE / COARSE	
	SILT	SAND			GRAVEL	

Sample No. / Depth	SPT-33 / 38.00-38.31 m		Sample No. / Depth	SPT-33 / 38.00-38.31 m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.10 mm	
2.00 - 0.425 mm	0.3 %		Dia. at 50%	0.09 mm	
0.425 - 0.075 mm	72.5 %		Dia. at 30%	0.08 mm	
0.075 - 0.005 mm	27.2 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	100.0 %		Coeff. of Curvature		
425um Sieve Passing	99.7 %				
75um Sieve Passing	27.2 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

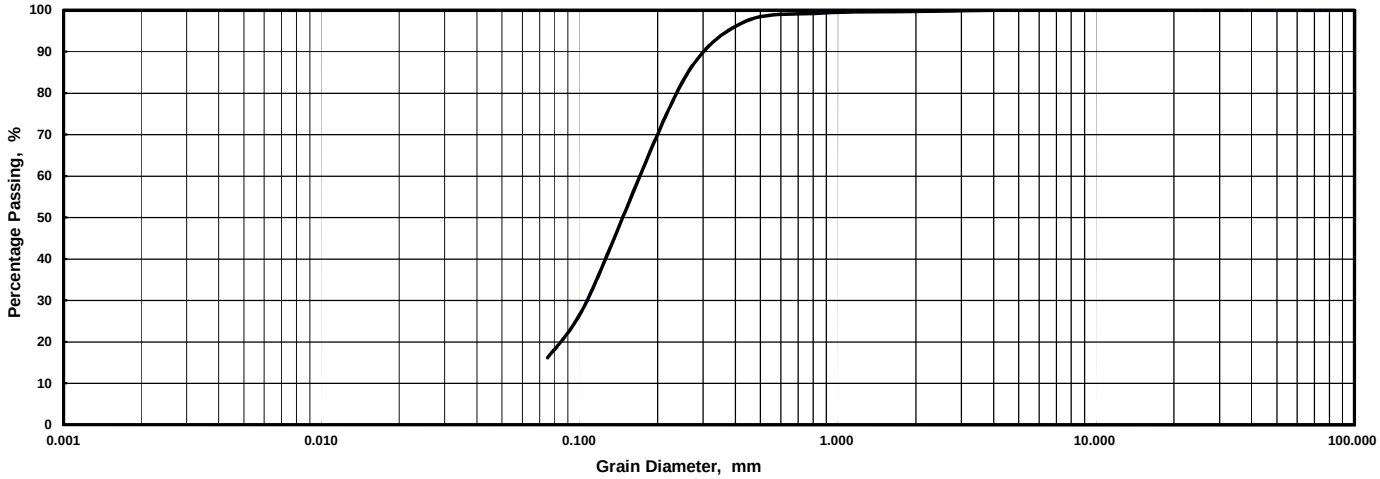
Location : **PP-21-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/11/19** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-34** Depth : **40.00-40.33 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.7	99.3	97.0	82.8	29.6	16.2
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	2.1	11.7	47.9	57.0
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.7	3.0	17.2	70.4	83.8

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY			FINE	MEDIUM	COARSE	FINE		COARSE	
	SILT		SAND			GRAVEL			

Sample No. Depth	SPT-34 40.00-40.33 m		Sample No. Depth	SPT-34 40.00-40.33 m	
Larger than 4.75 mm	0.0 %		Max. Diameter	0.00 mm	
4.75 - 2.00 mm	0.3 %		Dia. at 60%	0.17 mm	
2.00 - 0.425 mm	2.7 %		Dia. at 50%	0.15 mm	
0.425 - 0.075 mm	80.8 %		Dia. at 30%	0.11 mm	
0.075 - 0.005 mm	16.2 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	99.7 %		Coeff. of Curvature		
425um Sieve Passing	97.0 %				
75um Sieve Passing	16.2 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

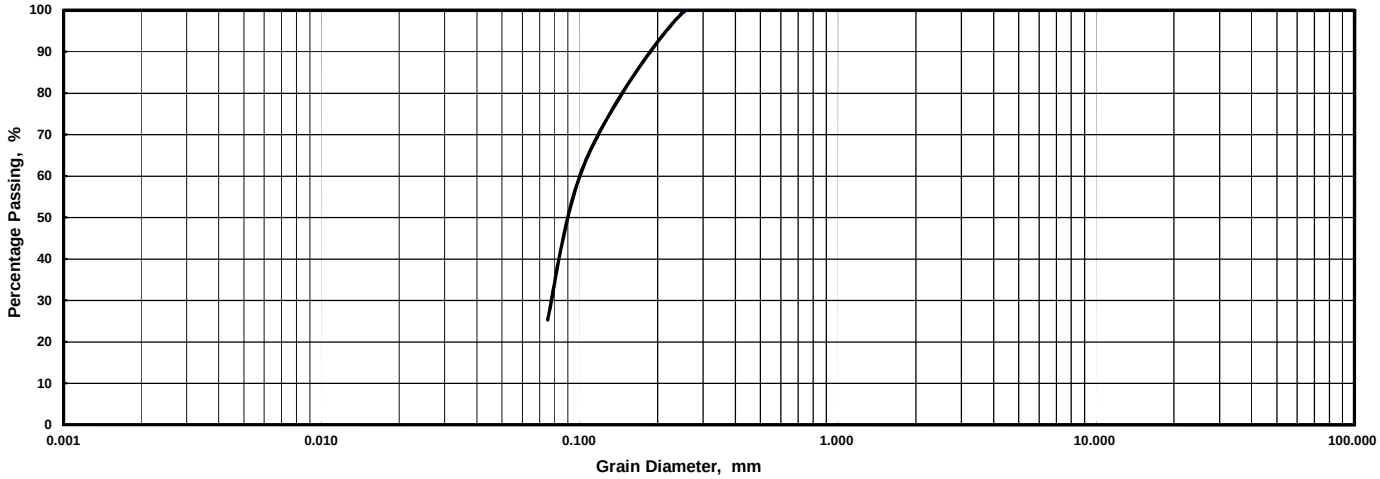
Location : **PP-21-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/11/21** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-35** Depth : **42.00-42.33 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.4	64.1	25.3
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	22.6	47.0
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	35.9	74.7

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75		19.0	75.0
CLAY			FINE	MEDIUM	COARSE	FINE		COARSE	
	SILT		SAND			GRAVEL			

Sample No. Depth	SPT-35 42.00-42.33 m		Sample No. Depth	SPT-35 42.00-42.33 m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.10 mm	
2.00 - 0.425 mm	0.0 %		Dia. at 50%	0.09 mm	
0.425 - 0.075 mm	74.6 %		Dia. at 30%	0.08 mm	
0.075 - 0.005 mm	25.3 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	100.0 %		Coeff. of Curvature		
425um Sieve Passing	100.0 %				
75um Sieve Passing	25.3 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

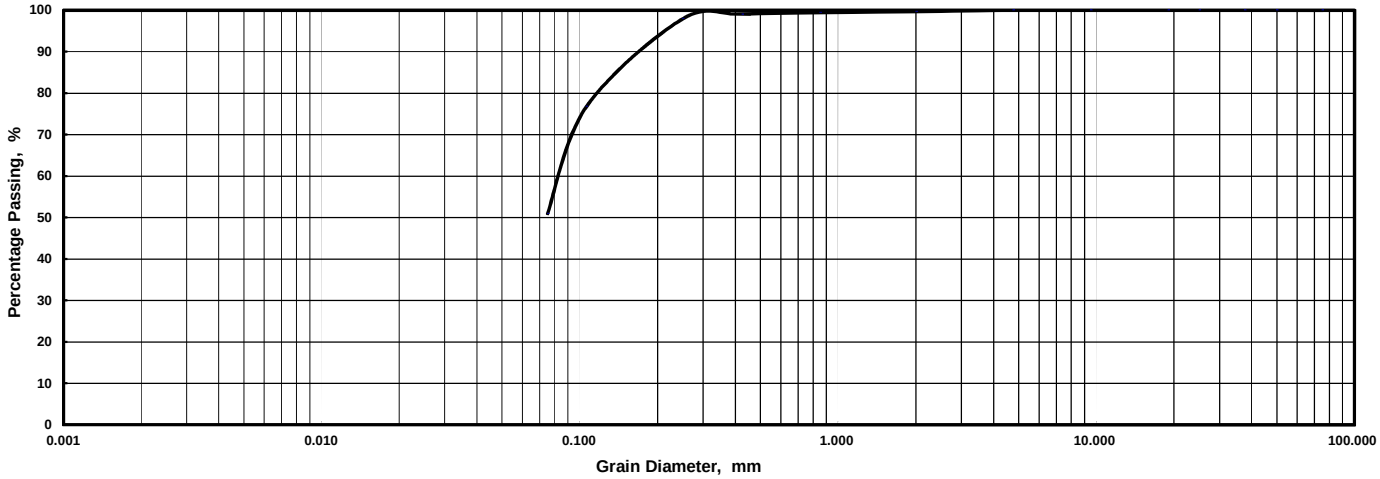
Location : **PP-21-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/11/21** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-36** Depth : **44.00-44.30 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.7	99.4	99.0	97.9	76.8	50.9
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.6	7.0	14.8
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.6	1.0	2.1	23.2	49.1

Grain Size Distribution Curves



0.005		0.075	0.425		2.00	4.75	19.0	75.0
CLAY		FINE	MEDIUM	COARSE	FINE		COARSE	
	SILT	SAND			GRAVEL			

Sample No. Depth	SPT-36 44.00-44.30 m		Sample No. Depth	SPT-36 44.00-44.30 m	
Larger than 4.75 mm	0.0 %		Max. Diameter	4.75 mm	
4.75 - 2.00 mm	0.3 %		Dia. at 60%	0.08 mm	
2.00 - 0.425 mm	0.6 %		Dia. at 50%	mm	
0.425 - 0.075 mm	48.1 %		Dia. at 30%	mm	
0.075 - 0.005 mm	50.9 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	99.7 %		Coeff. of Curvature		
425um Sieve Passing	99.0 %				
75um Sieve Passing	50.9 %				

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GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

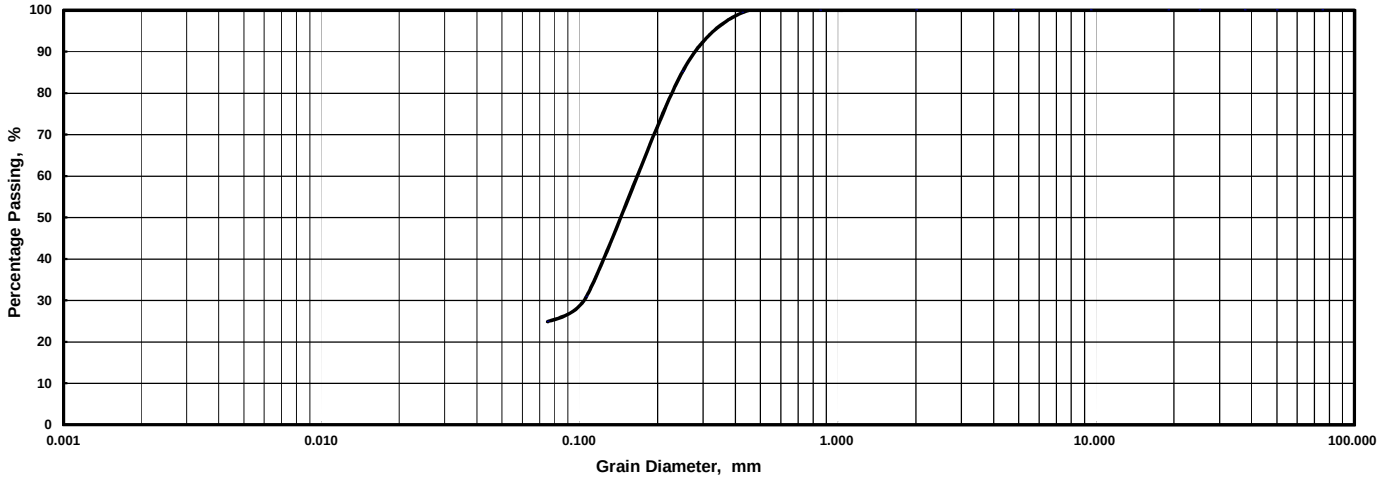
Location : **PP-21-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/11/21** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-37** Depth : **46.00-46.20 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.4	85.2	30.9	24.9
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	9.9	46.5	50.5
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	14.8	69.1	75.1

Grain Size Distribution Curves



0.005	0.075	0.425	2.00	4.75	19.0	75.0
CLAY	SILT	FINE / MEDIUM / COARSE	SAND	FINE	COARSE	GRAVEL

Sample No. Depth	SPT-37 46.00-46.20 m		Sample No. Depth	SPT-37 46.00-46.20 m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.17 mm	
2.00 - 0.425 mm	0.6 %		Dia. at 50%	0.14 mm	
0.425 - 0.075 mm	74.6 %		Dia. at 30%	0.10 mm	
0.075 - 0.005 mm	24.9 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	100.0 %		Coeff. of Curvature		
425um Sieve Passing	99.4 %				
75um Sieve Passing	24.9 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

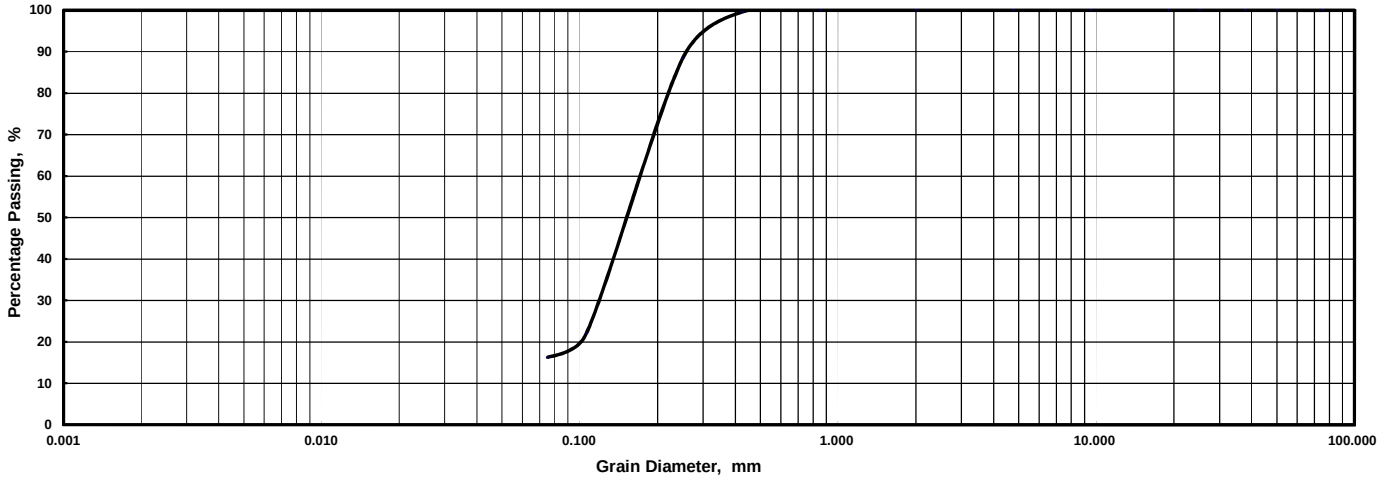
Location : **PP-21-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/11/21** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-38** Depth : **48.00-48.29 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.6	88.4	22.0	16.2
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	9.0	60.3	64.7
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	11.6	78.0	83.8

Grain Size Distribution Curves



0.005	0.075	0.425	2.00	4.75	19.0	75.0
CLAY		FINE	MEDIUM	COARSE	FINE	COARSE
	SILT	SAND			GRAVEL	

Sample No. Depth	SPT-38 48.00-48.29 m		Sample No. Depth	SPT-38 48.00-48.29 m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.17 mm	
2.00 - 0.425 mm	0.4 %		Dia. at 50%	0.15 mm	
0.425 - 0.075 mm	83.3 %		Dia. at 30%	0.12 mm	
0.075 - 0.005 mm	16.2 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	100.0 %		Coeff. of Curvature		
425um Sieve Passing	99.6 %				
75um Sieve Passing	16.2 %				

GRAIN SIZE DISTRIBUTION

Project : **PS on Matarbari USC Coal-fired Power Project**

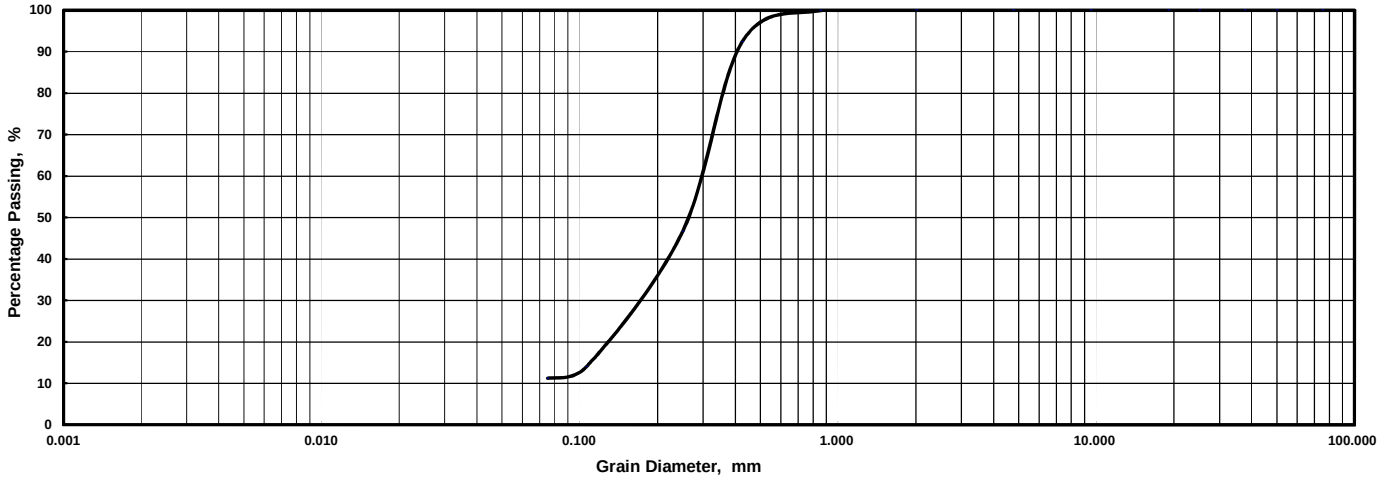
Location : **PP-21-2** Project No. : **S27-14**

Tested Method : **ASTM D422-63** Date of Testing : **2014/11/21** Tested By : **Sadamoto** Checked by :

Sample No. : **SPT-39** Depth : **50.00- 50.20 m** ( ) Particle Density, Mg/m^3 : -

Sieve	Dia., mm	75.0	50.00	37.50	25.00	19.00	9.50	4.75	2.000	0.850	0.425	0.250	0.106	0.075
	% Passing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	92.4	46.6	14.0	11.2
Retained Mass, g		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	5.1	35.7	57.5	59.4
Cumulative % Retained		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	7.6	53.4	86.0	88.8

Grain Size Distribution Curves



	0.005	0.075	0.425	2.00	4.75	19.0	75.0	
CLAY		FINE	MEDIUM	COARSE	FINE	COARSE		
	SILT	SAND			GRAVEL			

Sample No. / Depth	SPT-39 / 50.00- 50.20 m		Sample No. / Depth	SPT-39 / 50.00- 50.20 m	
Larger than 4.75 mm	0.0 %		Max. Diameter	2.00 mm	
4.75 - 2.00 mm	0.0 %		Dia. at 60%	0.29 mm	
2.00 - 0.425 mm	7.6 %		Dia. at 50%	0.26 mm	
0.425 - 0.075 mm	81.2 %		Dia. at 30%	0.16 mm	
0.075 - 0.005 mm	11.2 %		Dia. at 10%	mm	
Smaller than 0.005 mm			Coeff. of Uniformity		
2000um Sieve Passing	100.0 %		Coeff. of Curvature		
425um Sieve Passing	92.4 %				
75um Sieve Passing	11.2 %				