

PANTAS DRILLING SDN. BHD.

**KERJA - KERJA PENYIASATAN TANAH BAGI
PEMBINAAN MASJID BANDAR TASIK KESUMA DI
ATAS LOT PT11747, DAERAH HULU LANGAT
MUKIM BERANANG, SELANGOR DARUL EHSAN**

DECEMBER 2020

CLIENT:

**JAWATANKUASA PEMBINAAN
MASJID BANDAR TASIK KESUMA
D/A NO. 7, JALAN KESUMA 7/1,
BANDAR TASIK KESUMA
43700 BERANANG, SELANGOR
TEL NO: 03-86053673,
EMEL: info@masjidkesuma.com.my**

CONSULTANT:

**Z&SR ARCHITECTURAL
VENTURES SDN BHD
JALAN BANDAR MELAWATI,
TAMAN MELAWATI,
53100 KUALA LUMPUR,
SELANGOR**

CONTRACTOR:

**PANTAS DRILLING SDN. BHD.
LOT 454, JALAN 6
KAMPUNG MELAYU
SUBANG TAMBAHAN
40150 SHAH ALAM
SELANGOR
EMEL : pantasdrillingsdnbhd
@gmail.com**

DRILLING & SOIL INVESTIGATION SPECIALIST

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**KERJA - KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR
TASIK KESUMA DI ATAS LOT PT11747, DAERAH HULU LANGAT MUKIM
BERANANG, SELANGOR DARUL EHSAN**

1.0 INTRODUCTION

1.1 General

This report presents the results of the soil investigation carried out for the above project. The soil investigation works were conducted for* **MASJID BANDAR TASIK KESUMA (4)** nos. of deep borehole and **(5)** nos. of mackintosh probe was conducted at the proposed site on **29th November until 5th December 2020**. The locations of deep borehole are shown on the site plan in **Appendix E**.

1.2 Purpose

Purpose of conducting this project was:

- a. To obtain geotechnical information at the site so as to provide data in the evaluation subsequent construction of the proposed structural foundation.
- b. To obtain disturbed and undisturbed soil samples for the visual examination and laboratory testing to determine the physical and engineering parameters of the subsoil.
- c. To measure the ground water table at the site.
- d. To measure the fluctuation of ground water tables.

1.3 Scope of Works

The scope of work consists of the following:

- a. Carried out standard penetration test and also obtain disturbed soil samples for visual examination and laboratory testing.
- b. Measure the ground water table during the period of investigation.
- c. Performed laboratory tests on selected soil samples to evaluate the engineering parameters of the subsoil encountered.
- d. Collect undisturbed (UD) samples to evaluate the structural properties of the soil in its natural conditions. On the other hand, to get soil strength of the soft ground.

2.0 FIELD EXPLORATION

2.1 Boring:

Field exploration was carried out using multi speed rotary spindle type boring machine and accessories. The borehole was drilled by local trained drillers under technical supervision of our supervisor and according to specification and instruction given. Steel Casing HW size 114.33mm O.D and NW 88.9mm O.D. and were used to prevent the collapse of the borehole walls. The boreholes were washed bored by circulating water from drilling pump and soil samples were collected for visual examination and laboratory testing. Termination criteria: 2015 consecutive times SPTN 50.

2.2 Standard Penetration Test (S.P.T):

Standard Penetration Test was carried out 1.5 meter depth intervals in both cohesive and cohesion less soils. A split spoon of 50.8mm diameter was driven into soil by using a 63.64kg self-tripping hammer falling freely from 76.2cm height. The number of blows for the beginning 150mm was recorded for reference and the following 300mm penetration was recorded as the N-value (blows counts) of the soil strata encountered which indicate the relative density of non-cohesive soil as consistency of cohesive soil. Boring should be terminated after 15 consecutive SPT exceeds 50, or 5 consecutive SPT exceeds 30 if the borehole depth also exceeds 60m.

Records of SPT result are included in the borehole log as shown in **Appendix A.**

2.3 Soil Sampling:

2.4.1 Disturbed sample

Representative disturbed soil samples extruded from the split spoon samplers were sealed in glass jars or polyethylene-bag for visual examination.

2.4.2 Undisturbed Sampling

The depth to the bottom of the casing shall be recorded on the borehole logs. When an uncompleted hole is left overnight or for any other substantial period of time, no samples shall be taken until the hole has been advanced by a minimum of 300mm from the previous depth. In soft soils a head of water shall be maintained in the casing to minimize heave of the borehole

2.4 Ground Water Level Measurement:

The measurement of ground water level in the boreholes was measured with a deep meter. The water level in each borehole was recorded after the completion of the boreholes. The depths of the borehole and the casing were also recorded. One liter water sample was bailed out from each bore hole with non-corrosive bucket and pour into plastic container.

The ground water levels record is included in bore log as shown in **Appendix A**.

2.5 Mackintosh Probe:

Mackintosh probe equipments is consisted of 12.7mm diameter spring steel rod, a cone and a hammer. The length of the steel rod is 1.22m and the rods are connected by screw couplings. A hardened steel cone of 25.44mm diameter and 600 shape was screwed into the lowest rod. The cone together with the rod was driven into the ground by a 4.5kg hammer falling through a fixed height of 305mm. The resistance of the soil was measured by total the total number of blows required every 305mm penetration

Records of Mackintosh Probe result are included in the Mackintosh Probe log as shown in **Appendix B.**

3.0 LABORATORY TESTING

The following laboratory tests were carried out on selected soil samples:

3.1 Soil Classification Tests

- a. Moisture Content
- b. Liquid Limit
- c. Plastic Limit
- d. Plasticity Index
- e. Linear shrinkage
- f. Specific Gravity
- g. Particle size distribution for coarse-grained soil
- h. Particle size distribution for fine-grained soil
- i. Bulk/Dry Density

3.2 Soil Chemical Test:

- a. Organic Matters
- b. Total Sulphate Content
- c. Sulphate content for ground water sample
- d. pH

3.3 Soil Strength Test:

- a. Consolidated undrained triaxial test

The results of laboratory tests are shown in **Appendix C**.

**APPENDIX A:
BOREHOLE LOG**

**KERJA - KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID
BANDAR TASIK KESUMA DI ATAS LOT PT11747, DAERAH HULU
LANGAT MUKIM BERANANG, SELANGOR DARUL EHSAN**

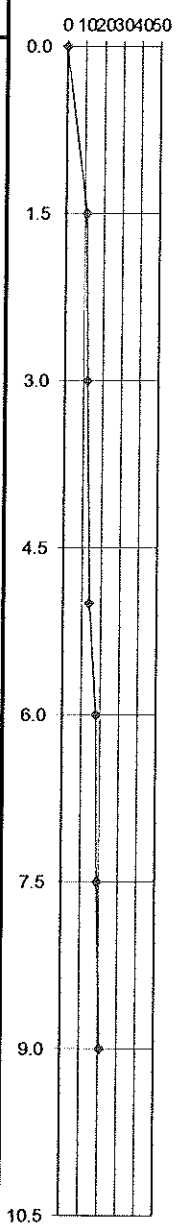
SUMMARY BOREHOLE

NO	BOREHOLE NO (BH)	DATE	FINAL DEPTH (m)	FINAL WATER LEVEL (m)
1.	BH 1	29-30/11/2020	36.30	4.50
2.	BH 2	1-2/12/2020	30.25	6.00
3.	BH 3	4-5/12/2020	27.18	5.80
4.	BH 4	3-4/12/2020	30.25	6.00

PROJECT	KERJA - KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR TASIK KESUMA DI ATAS LOT PT11747, DAERAH HULU LANGAT MUKIM BERANANG, SELANGOR DARUL EHSAN			
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Borehole No	BH 1	Reduced Level	0.000	Supervisor	SHAHRUL
Sheet No	1 of 4	Type of Drill	ROTARY WASH BORING	Date	29-30/11/2020

DEPTH (metre)	DESCRIPTION OF SOIL CONSISTENCY, COLOUR RELATIVE DENSITY, GRAIN SIZE, TEXTURE ETC.	LEGEND	SAMPLE								R/r %	SPT Plot	
			DEPTH OF LAYERS (metre)	SAMPLE NO.	Field Test (SPT)								
					75 mm	75 mm	75 mm	75 mm	75 mm	75 mm			
0.00	Top soil: Yellowish brown sandy SILT with traces of rootlets		0.30	D1									
1.00	Medium dense yellowish brown silty SAND		1.50	P1	1	2	2	3	3	3	11	60%	
2.00			1.95	D2									
3.00	Medium dense yellowish brown silty SAND		3.00	P2	2	3	3	3	3	3	12	90%	
4.00			3.45	D3									
5.00	Medium dense yellowish brown silty SAND		4.50	UD1								100	
6.00			5.00	P3	2	3	3	4	3	4	14	90%	
7.00	Medium dense yellowish brown SAND and silt with traces of gravel		6.00	P4	2	3	4	4	5	5	18	80%	
8.00			6.45	D5									
9.00	Medium dense yellowish brown SAND and silt with traces of gravel		7.50	P5	2	3	4	5	6	4	19	80%	
10.00			7.95	D6									
	Medium dense yellowish brown SAND and silt with traces of gravel		9.00	P6	3	4	4	5	6	6	21	60%	
			9.45	D7									



<p>NOTES:</p> <ul style="list-style-type: none"> P = Standard Penetration Test (SPT) D = Disturbed sample N = SPT Result R/r = Recovery ratio VS = Vane Shear Test USS = Ultimate Shear Strength SS = Shear Sensivity UD = 50 mm dia. undisturbed sample P = 50mm dia. undisturbed piston sample M = Mazier Sample W = Water sample C = Core sample (Rock) RQD = Rock Quality Designation (%) WL = Water level BSCS = British Standard Classification System 	<p>LEGEND:</p> <ul style="list-style-type: none"> CLAY SILT SAND GRAVEL PEAT GRANITE SANDSTONE
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REMARKS	30/11/2020 1900HR W/L=4.50m NW=36.00m 1/12/2020 0800HR W/L=4.50m
Cohesive Soil	(N) 0 2 4 8 15 30 soft soft medium stiff very stiff hard
Non Cohesive Soil	(N) 0 10 30 50 very loose loose medium dense dense very dense
<ul style="list-style-type: none"> DISTURBED (D) UNDISTURBED (UD) SPT (P) CORING (C) 	<p>SHAHRUL Supervisor (Site Investigation)</p>

PROJECT	KERJA - KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR TASIK KESUMA DI ATAS LOT PT11747, DAERAH HULU LANGAT MUKIM BERANANG, SELANGOR DARUL EHSAN			
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Borehole No	BH 1	Reduced Level	0.000	Supervisor	SHAHRUL
Sheet No	2 of 4	Type of Drill	ROTARY WASH BORING	Date	29-30/11/2020

DEPTH (metre)	DESCRIPTION OF SOIL CONSISTENCY, COLOUR RELATIVE DENSITY, GRAIN SIZE, TEXTURE ETC.	LEGEND	DEPTH OF LAYERS (metre)	SAMPLE NO.	Field Test (SPT)							R/r %	SPT Plot
					75 mm	75 mm	75 mm	75 mm	75 mm	75 mm	NO. OF BLOWS (N)		
11.00	Medium dense yellowish brown SAND and silt with traces of gravel		10.50 10.95	P7 D8	3	4	5	5	5	5	20	50%	
12.00	Medium dense yellowish brown SAND and silt with traces of gravel		12.00 12.45	P8 D9	1	2	3	4	3	4	14	60%	
13.00													
14.00	Medium dense yellowish brown SAND and silt with traces of gravel		13.50 13.95	P9 D10	1	2	3	3	3	3	12	60%	
15.00	Medium dense yellowish brown SAND and silt with traces of gravel		15.00 15.45	P10 D11	1	2	3	3	3	3	12	70%	
16.00													
17.00	Medium dense yellowish brown SAND and silt with traces of gravel		16.50 16.95	P11 D12	1	2	2	3	3	3	11	60%	
18.00	Medium dense yellowish brown SAND and silt with traces of gravel		18.00 18.45	P12 D13	1	2	3	3	4	4	14	60%	
19.00													
20.00	Medium dense yellowish brown SAND and silt with traces of gravel		19.50 19.95	P13 D14	2	3	3	3	3	5	14	60%	

NOTES: P = Standard Penetration Test (SPT) D = Disturbed sample N = SPT Result R/r = Recovery ratio VS = Vane Shear Test USS = Ultimate Shear Strength SS = Shear Sensivity UD = 50 mm dia. undisturbed sample P = 50mm dia. undisturbed piston sample M = Mazier Sample W = Water sample C = Core sample (Rock) RQD = Rock Quality Designation (%) WL = Water level BSCS = British Standard Classification System	LEGEND: CLAY SILT SAND GRAVEL PEAT GRANITE SANDSTONE	REMARKS	30/11/2020 1900HR W/L=4.50m NW=36.00m 1/12/2020 0800HR W/L=4.50m
		Cohesive Soil	0 2 4 8 15 30 (N) very soft soft medium stiff stiff very stiff hard
		Non Cohesive Soil	0 10 30 50 (N) very loose loose medium dense dense very dense
DISTURBED (D) UNDISTURBED(UD) SPT(P) CORING (C)		SHAHRUL Supervisor (Site Investigation)	

PROJECT **KERJA - KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR TASIK KESUMA DI ATAS LOT PT11747, DAERAH HULU LANGAT MUKIM BERANANG, SELANGOR DARUL EHSAN**

Borehole No BH 1 **Reduced Level** 0.000 **Supervisor** SHAHRUL
Sheet No 3 of 4 **Type of Drill** ROTARY WASH BORING **Date** 29-30/11/2020

DEPTH (metre)	DESCRIPTION OF SOIL CONSISTENCY, COLOUR RELATIVE DENSITY, GRAIN SIZE, TEXTURE ETC.	DESCRIPTORS	LEGEND	DEPTH OF LAYERS (metre)	SAMPLE NO.	SAMPLE						NO. OF BLOWS (N)	R/r %	SPT Plot
						Field Test (SPT)								
						75 mm	75 mm	75 mm	75 mm	75 mm	75 mm			
21.00	Medium dense yellowish brown SAND and silt	[Symbol]	[Symbol]	21.00	P14	2	3	4	4	5	5	18	50%	
				21.45	D15									
22.00	Medium dense yellowish brown SAND and silt	[Symbol]	[Symbol]	22.50	P15	2	3	3	4	4	6	17	60%	
				22.95	D16									
23.00	Medium dense yellowish brown SAND and silt	[Symbol]	[Symbol]	24.00	P16	2	3	3	4	5	6	18	40%	
				24.45	D17									
24.00	Medium dense yellowish brown SAND and silt	[Symbol]	[Symbol]	25.50	P17	2	3	4	4	5	6	19	40%	
				25.95	D18									
25.00	Medium dense yellowish brown SAND and silt	[Symbol]	[Symbol]	27.00	P18	2	3	3	5	5	6	19	70%	
				27.45	D19									
26.00	Medium dense yellowish brown SAND and silt	[Symbol]	[Symbol]	28.50	P19	3	4	7	6	8	10	31	80%	
				28.95	D20									
27.00	Medium dense yellowish brown SAND and silt	[Symbol]	[Symbol]	30.00	P20	7	10	15	17	18/2.0	50/17.0	40%		
				30.32	D21									
28.00	Very dense yellowish brown SAND and silt	[Symbol]	[Symbol]											
29.00														
30.00	Very dense yellowish brown SAND and silt	[Symbol]	[Symbol]											
31.00														

NOTES:
P = Standard Penetration Test (SPT)
D = Disturbed sample
N = SPT Result
R/r = Recovery ratio
VS = Vane Shear Test
USS = Ultimate Shear Strength
SS = Shear Sensivity
UD = 50 mm dia. undisturbed sample
P = 50mm dia. undisturbed piston sample
M = Mazier Sample
W = Water sample
C = Core sample (Rock)
RQD = Rock Quality Designation (%)
WL = Water level
BSCS = British Standard Classification System

LEGEND:
[Symbol] CLAY
[Symbol] SILT
[Symbol] SAND
[Symbol] GRAVEL
[Symbol] PEAT
[Symbol] SHALE

REMARKS 30/11/2020 1900HR W/L=4.50m NW=36.00m
1/12/2020 0800HR W/L=4.50m

Cohesive Soil (N) 0 2 4 8 15 30
soft soft medium stiff very stiff hard

Non Cohesive Soil (N) 0 10 30 50
very loose loose medium dense dense very dense

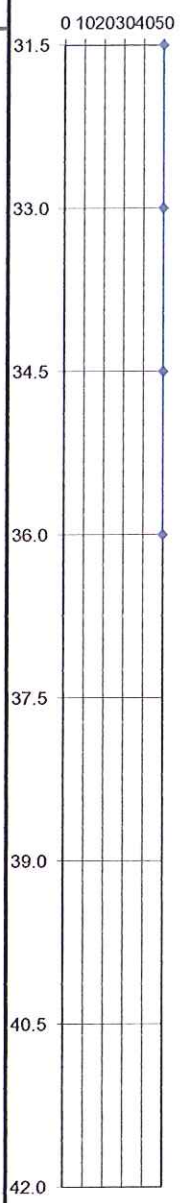
Legend for Disturbance:
[Symbol] DISTURBED (D) [Symbol] UNDISTURBED (UD)
[Symbol] SPT (P) [Symbol] CORING (C)

Supervisor: SHAHRUL
(Site Investigation)

PROJECT	KERJA - KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR TASIK KESUMA DI ATAS LOT PT11747, DAERAH HULU LANGAT MUKIM BERANANG, SELANGOR DARUL EHSAN			
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Borehole No	BH 1	Reduced Level		Supervisor	SHAHRUL
Sheet No	4 of 4	Type of Drill	ROTARY WASH BORING	Date	29-30/11/2020

DEPTH (metre)	DESCRIPTION OF SOIL CONSISTENCY, COLOUR RELATIVE DENSITY, GRAIN SIZE, TEXTURE ETC.	DESCRIPTORS	LEGEND	DEPTH OF LAYERS (metre)	SAMPLE NO.	SAMPLE						NO. OF BLOWS (N)	R/r %	SPT Plot
						75 mm	75 mm	75 mm	75 mm	75 mm	75 mm			
32.00	Very dense yellowish brown SAND and silt	[Symbol]	[Symbol]	31.50	P21	5	8	13	19	18/	50/	90%	31.5	
				31.82	D22					2.0	17.0			
33.00	Very dense yellowish brown SAND and silt	[Symbol]	[Symbol]	33.00	P22	6	9	17	17	16/	50/	60%	33.0	
				33.32	D23					2.0	17.0			
34.00	Very dense yellowish brown SAND and silt	[Symbol]	[Symbol]	34.50	P23	7	8	15	18	17/	50/	90%	34.5	
35.00				34.83	D24					3.0	18.0			
36.00	Very dense yellowish brown SAND and silt	[Symbol]	[Symbol]	36.00	P24	6	11	25	25/	50/	60%	36.0		
				36.30	D25					7.5			15.0	
37.00	END OF BOREHOLE AT DEPTH 36.30m													
38.00														
39.00														
40.00														
41.00														



NOTES:
 P = Standard Penetration Test (SPT)
 D = Disturbed sample
 N = SPT Result
 R/r = Recovery ratio
 VS = Vane Shear Test
 USS = Ultimate Shear Strength
 SS = Shear Sensivity
 UD = 50 mm dia. undisturbed sample
 P = 50mm dia. undisturbed piston sample
 M = Mazier Sample
 W = Water sample
 C = Core sample (Rock)
 RQD = Rock Quality Designation (%)
 WL = Water level
 BSCS = British Standard Classification System

LEGEND:

[Symbol]	CLAY
[Symbol]	SILT
[Symbol]	SAND
[Symbol]	GRAVEL
[Symbol]	PEAT
[Symbol]	GRANITE

REMARKS	30/11/2020 1900HR W/L=4.50m NW=36.00m 1/12/2020 0800HR W/L=4.50m
Cohesive Soil	(N) 0 2 4 8 15 30 very soft soft medium stiff very stiff hard
Non Cohesive Soil	(N) 0 4 10 30 50 very loose loose medium dense dense very dense
Legend	[Symbol] DISTURBED (D) [Symbol] UNDISTURBED(UD) [Symbol] SPT(P) [Symbol] CORING (C)
SHAHRUL Supervisor (Site Investigation)	

PROJECT	KERJA - KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR TASIK KESUMA DI ATAS LOT PT11747, DAERAH HULU LANGAT MUKIM BERANANG, SELANGOR DARUL EHSAN				
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Borehole No	BH 2	Reduced Level	0.000	Supervisor	SHAHRUL
Sheet No	1 of 3	Type of Drill	ROTARY WASH BORING	Date	1-2/12/2020

DEPTH (metre)	DESCRIPTION OF SOIL CONSISTENCY, COLOUR RELATIVE DENSITY, GRAIN SIZE, TEXTURE ETC.	DESCRIPTORS	LEGEND	DEPTH OF LAYERS (metre)	SAMPLE NO.	SAMPLE							R/r %	SPT Plot
						Field Test (SPT)								
						75 mm	75 mm	75 mm	75 mm	75 mm	75 mm	NO. OF BLOWS (N)		
0.00	Top soil: Yellowish brown sandy SILT with traces of rootlets			0.30	D1									
1.00	Medium stiff to stiff yellowish brown sandy SILT			1.50	P1	0	1	1	2	2	3	8	80%	
2.00			1.95	D2										
3.00	Stiff yellowish brown sandy SILT			3.00	P2	1	1	1	2	3	3	9	90%	
4.00			3.45	D3										
5.00	Stiff yellowish brown sandy SILT			4.50	UD1								100	
6.00			5.00	P3	1	1	2	3	3	4	12	60%		
7.00	Medium dense yellowish brown SAND and silt			5.45	D4									
8.00			6.00	P4	1	2	3	4	4	4	15	80%		
9.00	Medium dense yellowish brown SAND and silt			6.45	D5									
10.00			7.50	P5	1	2	3	4	4	4	15	60%		
	Very stiff yellowish brown sandy SILT			7.95	D6									
			9.00	P6	2	2	3	4	5	5	17	70%		
				9.45	D7									

<p>NOTES:</p> <ul style="list-style-type: none"> P = Standard Penetration Test (SPT) D = Disturbed sample N = SPT Result R/r = Recovery ratio VS = Vane Shear Test USS = Ultimate Shear Strength SS = Shear Sensivity UD = 50 mm dia. undisturbed sample P = 50mm dia. undisturbed piston sample M = Mazier Sample W = Water sample C = Core sample (Rock) RQD = Rock Quality Designation (%) WL = Water level BSCS = British Standard Classification System 	<p>LEGEND:</p> <ul style="list-style-type: none"> CLAY SILT SAND GRAVEL PEAT GRANITE SANDSTONE 	<p>REMARKS</p> <p>2/12/2020 1900HR W/L=6.00m NW=30.00m 3/12/2020 0800HR W/L=6.00m</p>	
		<p>Cohesive Soil</p> <p>(N) 0 2 4 8 15 30</p> <p>very soft soft medium stiff very stiff hard</p>	
		<p>Non Cohesive Soil</p> <p>(N) 0 10 30 50</p> <p>very loose loose medium dense dense very dense</p>	
		<p> <input type="checkbox"/> DISTURBED (D) <input type="checkbox"/> UNDISTURBED(UD) <input type="checkbox"/> SPT(P) <input type="checkbox"/> CORING (C) </p>	

PROJECT	KERJA - KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR TASIK KESUMA DI ATAS LOT PT11747, DAERAH HULU LANGAT MUKIM BERANANG, SELANGOR DARUL EHSAN			
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Borehole No	BH 2	Reduced Level	0.000	Supervisor	SHAHRUL
Sheet No	2 of 3	Type of Drill	ROTARY WASH BORING	Date	1-2/12/2020

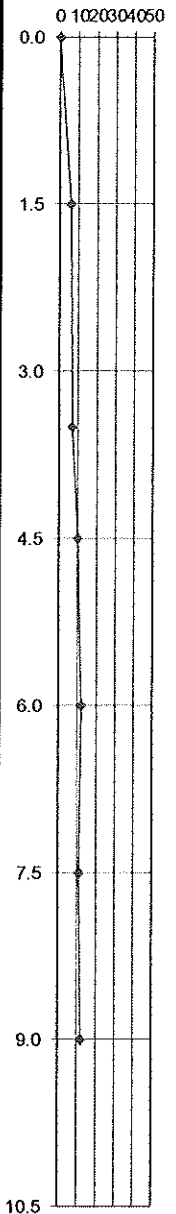
DEPTH (metre)	DESCRIPTION OF SOIL CONSISTENCY, COLOUR RELATIVE DENSITY, GRAIN SIZE, TEXTURE ETC.	LEGEND	DEPTH OF LAYERS (metre)	SAMPLE NO.	Field Test (SPT)							R/r %	SPT Plot
					75 mm	75 mm	75 mm	75 mm	75 mm	75 mm	NO. OF BLOWS (N)		
11.00	Very stiff yellowish brown sandy SILT 11.50m		10.50 10.95	P7 D8	2	3	4	3	4	5	16	90%	
12.00	Medium dense yellowish brown SAND and silt		12.00 12.45	P8 D9	2	3	3	4	3	5	15	90%	
13.00	Medium dense yellowish brown SAND and silt		13.50 13.95	P9 D10	2	3	3	4	4	5	16	90%	
14.00	Medium dense yellowish brown SAND and silt		15.00 15.45	P10 D11	2	3	3	4	4	5	16	60%	
15.00	Medium dense yellowish brown SAND and silt		16.50 16.95	P11 D12	1	2	3	4	4	6	17	70%	
16.00	Medium dense yellowish brown SAND and silt		18.00 18.45	P12 D13	2	3	4	3	5	6	18	60%	
17.00	Medium dense yellowish brown SAND and silt		19.50 19.95	P13 D14	2	3	3	3	5	5	16	70%	
18.00	Medium dense chalky white SAND and silt												
19.00	Medium dense chalky white SAND and silt												
20.00	Medium dense chalky white SAND and silt												

NOTES: P = Standard Penetration Test (SPT) D = Disturbed sample N = SPT Result R/r = Recovery ratio VS = Vane Shear Test USS = Ultimate Shear Strength SS = Shear Sensivity UD = 50 mm dia. undisturbed sample P = 50mm dia. undisturbed piston sample M = Mazier Sample W = Water sample C = Core sample (Rock) RQD = Rock Quality Designation (%) WL = Water level BSCS = British Standard Classification System	LEGEND: CLAY SILT SAND GRAVEL PEAT GRANITE SANDSTONE	REMARKS 2/12/2020 1900HR W/L=6.00m NW=30.00m 3/12/2020 0800HR W/L=6.00m
Cohesive Soil		
Non Cohesive Soil		
DISTURBED (D) UNDISTURBED (UD) SPT (P)	CORING (C)	SHAHRUL Supervisor (Site Investigation)

PROJECT	KERJA - KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR TASIK KESUMA DI ATAS LOT PT11747, DAERAH HULU LANGAT MUKIM BERANANG, SELANGOR DARUL EHSAN			
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Borehole No	BH 3	Reduced Level	0.000	Supervisor	SHAHRUL
Sheet No	1 of 3	Type of Drill	ROTARY WASH BORING	Date	4-5/12/2020

DEPTH (metre)	DESCRIPTION OF SOIL CONSISTENCY, COLOUR RELATIVE DENSITY, GRAIN SIZE, TEXTURE ETC.	DESCRIPTORS	LEGEND	DEPTH OF LAYERS (metre)	SAMPLE NO.	SAMPLE							R/r %	SPT Plot	
						Field Test (SPT)									
						75 mm	75 mm	75 mm	75 mm	75 mm	75 mm	NO. OF BLOWS (N)			
0.00	Top soil: Yellowish brown sandy SILT			0.30	D1										
1.00	Medium stiff yellowish brown sandy SILT			1.50	P1	1	1	1	2	1	2	6	60%		
2.00				1.95	D2										
3.00	Medium stiff yellowish brown sandy SILT			3.00	UD1								100%		
4.00				3.50	P2	1	1	2	1	2	2	7	70%		
4.00				3.95	D3										
5.00	Loose to medium dense yellowish brown silty SAND with traces of gravel			4.50	P3	1	1	2	3	2	3	10	70%		
6.00				4.95	D4										
6.00	Medium dense yellowish brown silty SAND with traces of gravel			6.00	P4	1	2	3	2	3	4	12	80%		
7.00				6.45	D5										
8.00	Medium dense yellowish brown silty SAND with traces of gravel			7.50	P5	1	2	2	3	3	3	11	80%		
9.00				7.95	D6										
9.00	Medium dense yellowish brown silty SAND with traces of gravel			9.00	P6	1	2	3	2	3	4	12	80%		
10.00				9.45	D7										



NOTES:
 P = Standard Penetration Test (SPT)
 D = Disturbed sample
 N = SPT Result
 R/r = Recovery ratio
 VS = Vane Shear Test
 USS = Ultimate Shear Strength
 SS = Shear Sensivity
 UD = 50 mm dia. undisturbed sample
 P = 50mm dia. undisturbed piston sample
 M = Mazier Sample
 W = Water sample
 C = Core sample (Rock)
 RQD = Rock Quality Designation (%)
 WL = Water level
 BSCS = British Standard Classification System

LEGEND:
 CLAY
 SILT
 SAND
 GRAVEL
 PEAT
 GRANITE
 SANDSTONE

REMARKS	5/12/2020 1900HR W/L=5.80m NW=27.00m 6/12/2020 0800HR W/L=5.80m	
Cohesive Soil		
Non Cohesive Soil		
DISTURBED (D) UNDISTURBED(UD) SPT(P) CORING (C)	SHAHRUL Supervisor (Site Investigation)	

PROJECT	KERJA - KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR TASIK KESUMA DI ATAS LOT PT11747, DAERAH HULU LANGAT MUKIM BERANANG, SELANGOR DARUL EHSAN			
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Borehole No	BH 3	Reduced Level	0.000	Supervisor	SHAHRUL
Sheet No	2 of 3	Type of Drill	ROTARY WASH BORING	Date	4-5/12/2020

DEPTH (metre)	DESCRIPTION OF SOIL CONSISTENCY, COLOUR RELATIVE DENSITY, GRAIN SIZE, TEXTURE ETC.	DESCRIPTORS	LEGEND	DEPTH OF LAYERS (metre)	SAMPLE NO.	Field Test (SPT)						R/r %	SPT Plot	
						75 mm	75 mm	75 mm	75 mm	75 mm	75 mm			NO. OF BLOWS (N)
11.00	Loose to medium dense yellowish brown silty SAND with traces of gravel			10.50	P7	1	1	2	3	2	3	10	60%	
				10.95	D8									
12.00	Loose yellowish brown silty SAND			12.00	P8	1	1	1	2	2	3	8	60%	
				12.45	D9									
13.00	13.00m													
14.00	Stiff yellowish brown sandy SILT													
	13.50	P9	1	1	2	2	3	2	9	70%				
	13.95	D10												
15.00	Stiff yellowish brown sandy SILT			15.00	P10	1	2	2	3	3	4	12	70%	
				15.45	D11									
16.00	16.00m													
17.00	Medium dense yellowish brown silty SAND													
	16.50	P11	2	3	3	4	4	5	16	80%				
	16.95	D12												
18.00	Medium dense yellowish brown silty SAND			18.00	P12	2	3	5	7	7	9	28	50%	
				18.45	D13									
19.00	Medium dense yellowish brown silty SAND			19.50	P13	3	5	7	4	8	10	29	50%	
20.00				19.95	D14									

NOTES: P = Standard Penetration Test (SPT) D = Disturbed sample N = SPT Result R/r = Recovery ratio VS = Vane Shear Test USS = Ultimate Shear Strength SS = Shear Sensivity UD = 50 mm dia. undisturbed sample P = 50mm dia. undisturbed piston sample M = Mazier Sample W = Water sample C = Core sample (Rock) RQD = Rock Quality Designation (%) WL = Water level BSCS = British Standard Classification System	LEGEND: CLAY SILT SAND GRAVEL PEAT GRANITE SANDSTONE	REMARKS	5/12/2020 1900HR W/L=5.80m NW=27.00m 6/12/2020 0800HR W/L=5.80m
		Cohesive Soil	(N) 0 2 4 8 15 30 soft soft medium silt stiff very stiff hard
		Non Cohesive Soil	(N) 0 4 10 30 50 very loose loose medium dense dense very dense
		DISTURBED (D) UNDISTURBED (UD) SPT (P) CORING (C)	SHAHRUL Supervisor (Site Investigation)

PROJECT		KERJA - KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR TASIK KESUMA DI ATAS LOT PT11747, DAERAH HULU LANGAT MUKIM BERANANG, SELANGOR DARUL EHSAN													
Borehole No	BH 3	Reduced Level	0.000			Supervisor	SHAHRUL								
Sheet No	3 of 3	Type of Drill	ROTARY WASH BORING			Date	4-5/12/2020								
DEPTH (metre)	DESCRIPTION OF SOIL CONSISTENCY, COLOUR RELATIVE DENSITY, GRAIN SIZE, TEXTURE ETC.	DESCRIPTORS	LEGEND	SAMPLE							R/r %	SPT Plot			
				DEPTH OF LAYERS (metre)	SAMPLE NO.	Field Test (SPT)									
				75 mm	75 mm	75 mm	75 mm	75 mm	75 mm	NO. OF BLOWS (B)					
21.00	Very dense yellowish brown SAND and silt			21.00	P14	5	7	11	17	22/2.0	50/17.0	60%	21.0		
22.00	Very dense yellowish brown SAND and silt			22.50	P15	7	10	16	24	10/1.0	50/16.0	60%	22.5		
23.00															
24.00	Very dense yellowish brown SAND and silt			24.00	P16	8	12	50/4.0		50/4.0	50%	24.0			
25.00															
26.00	Very dense yellowish brown SAND and silt			25.50	P17	7	9	50/4.0		50/4.0	50%	25.5			
27.00															
27.00	Very dense yellowish brown SAND and silt			27.00	P18	9	10	50/3.0		50/3.0	60%	27.0			
27.18	END OF BOREHOLE AT DEPTH 27.18m			27.18	D19										
28.00													28.5		
29.00															
30.00													30.0		
31.00															
NOTES: P = Standard Penetration Test (SPT) D = Disturbed sample N = SPT Result R/r = Recovery ratio VS = Vane Shear Test USS = Ultimate Shear Strength SS = Shear Sensivity UD = 50 mm dia. undisturbed sample P = 50mm dia. undisturbed piston sample M = Mazier Sample W = Water sample C = Core sample (Rock) RQD = Rock Quality Designation (%) WL = Water level BSCS = British Standard Classification System				LEGEND: CLAY SILT SAND GRAVEL PEAT SHALE				REMARKS 5/12/2020 1900HR W/L=5.80m NW=27.00m 6/12/2020 0800HR W/L=5.80m				SPT Plot 0 1020304050			
Cohesive Soil 0 2 4 8 15 30 (N) very soft soft medium stiff very stiff hard				Non Cohesive Soil 0 4 10 30 50 (N) very loose loose medium dense dense very dense				SHAHRUL Supervisor (Site Investigation)							

PROJECT	KERJA - KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR TASIK KESUMA DI ATAS LOT PT11747, DAERAH HULU LANGAT MUKIM BERANANG, SELANGOR DARUL EHSAN				
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Borehole No	BH 4	Reduced Level	0.000	Supervisor	SHAHRUL
Sheet No	1 of 3	Type of Drill	ROTARY WASH BORING	Date	3-4/12/2020

DEPTH (metre)	DESCRIPTION OF SOIL CONSISTENCY, COLOUR RELATIVE DENSITY, GRAIN SIZE, TEXTURE ETC.	DESCRIPTIONS	LEGEND	DEPTH OF LAYERS (metre)	SAMPLE NO.	SAMPLE							R/r %	SPT Plot
						Field Test (SPT)								
						75 mm	75 mm	75 mm	75 mm	75 mm	75 mm	NO. OF BLOWS (N)		
0.00	Top soil: Yellowish brown sandy SILT with traces of rootlets			0.30	D1									
1.00				1.50	P1	0	1	1	2	2	3	8	60%	
2.00				1.95	D2									
3.00				3.00	UD1								100	
4.00				3.50	P2	1	2	2	3	2	3	10	70%	
5.00				3.95	D3									
6.00				4.50	P3	1	1	2	3	2	2	9	70%	
7.00				5.00	D4									
8.00				6.00	P4	1	2	3	2	3	4	12	80%	
9.00				6.45	D5									
10.00				7.50	P5	1	2	2	3	5	4	14	90%	
				7.95	D6									
				9.00	P6	1	2	3	2	4	5	14	80%	
				9.45	D7									

NOTES: P = Standard Penetration Test (SPT) D = Disturbed sample N = SPT Result R/r = Recovery ratio VS = Vane Shear Test USS = Ultimate Shear Strength SS = Shear Sensivity UD = 50 mm dia. undisturbed sample P = 50mm dia. undisturbed piston sample M = Mazler Sample W = Water sample C = Core sample (Rock) RQD = Rock Quality Designation (%) WL = Water level BSCS = British Standard Classification System	LEGEND: CLAY SILT SAND GRAVEL PEAT GRANITE SANDSTONE	REMARKS	4/12/2020 1900HR W/L=6.00m NW=30.00m 5/12/2020 0800HR W/L=6.00m
		Cohesive Soil	0 2 4 8 15 30 (N) very soft soft medium stiff very stiff hard
		Non Cohesive Soil	0 1 10 30 50 (N) very loose loose medium dense dense very dense
		DISTURBED (D) UNDISTURBED (UD) SPT (P) CORING (C)	SHAHRUL Supervisor (Site Investigation)

PROJECT		KERJA - KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR TASIK KESUMA DI ATAS LOT PT11747, DAERAH HULU LANGAT MUKIM BERANANG, SELANGOR DARUL EHSAN												
Borehole No	BH 4	Reduced Level	0.000				Supervisor	SHAHRUL						
Sheet No	2 of 3	Type of Drill	ROTARY WASH BORING				Date	3-4/12/2020						
DEPTH (metre)	DESCRIPTION OF SOIL CONSISTENCY, COLOUR RELATIVE DENSITY, GRAIN SIZE, TEXTURE ETC.	DESCRIPTORS	LEGEND	DEPTH OF LAYERS (metre)	SAMPLE NO.	Field Test (SPT)							R/r %	SPT Plot
						75 mm	75 mm	75 mm	75 mm	75 mm	75 mm	NO. OF BLOWS (N)		
11.00	Medium dense yellowish brown silty SAND			10.50 10.95	P7 D8	1	2	3	4	4	3	14	90%	
12.00	Medium stiff to stiff yellowish brown sandy SILT			12.00 12.45	P8 D9	1	1	2	1	2	3	8	80%	
13.00														
14.00	Stiff yellowish brown sandy SILT			13.50 13.95	P9 D10	1	1	2	2	3	3	10	70%	
15.00	Stiff yellowish brown sandy SILT			15.00 15.45	P10 D11	1	2	2	3	3	5	13	60%	
16.00														
17.00	Medium dense yellowish brown silty SAND			16.50 16.95	P11 D12	1	2	3	3	4	6	16	70%	
18.00	Medium dense yellowish brown silty SAND			18.00 18.45	P12 D13	1	2	3	4	4	6	17	60%	
19.00														
20.00	Medium dense yellowish brown silty SAND			19.50 19.95	P13 D14	2	3	3	5	5	6	19	40%	

NOTES:

- P = Standard Penetration Test (SPT)
- D = Disturbed sample
- N = SPT Result
- R/r = Recovery ratio
- VS = Vane Shear Test
- USS = Ultimate Shear Strength
- SS = Shear Sensivity
- UD = 50 mm dia. undisturbed sample
- P = 50mm dia. undisturbed piston sample
- M = Mazier Sample
- W = Water sample
- C = Core sample (Rock)
- RQD = Rock Quality Designation (%)
- WL = Water level
- BSCS = British Standard Classification System

LEGEND:

- CLAY
- SILT
- SAND
- GRAVEL
- PEAT
- GRANITE
- SANDSTONE

REMARKS

4/12/2020 1900HR W/L=6.00m NW=30.00m
5/12/2020 0800HR W/L=6.00m

Cohesive Soil



Non Cohesive Soil



- DISTURBED (D)
- UNDISTURBED(UD)
- SPT(P)
- CORING (C)

SHAHRUL
Supervisor
(Site Investigation)

PROJECT		KERJA - KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR TASIK KESUMA DI ATAS LOT PT11747, DAERAH HULU LANGAT MUKIM BERANANG, SELANGOR DARUL EHSAN													
Borehole No	BH 4	Reduced Level	0.000				Supervisor	SHAHRUL							
Sheet No	3 of 3	Type of Drill	ROTARY WASH BORING				Date	3-4/12/2020							
DEPTH (metre)	DESCRIPTION OF SOIL CONSISTENCY, COLOUR RELATIVE DENSITY, GRAIN SIZE, TEXTURE ETC.	DESCRIPTORS	LEGEND	SAMPLE										R/r %	SPT Plot
				DEPTH OF LAYERS (metre)	SAMPLE NO.	Field Test (SPT)						NO. OF BLOWS (N)			
				75 mm	75 mm	75 mm	75 mm	75 mm	75 mm	75 mm	NO. OF BLOWS (N)				
21.00	Medium dense yellowish brown silty SAND			21.00	P14	2	3	4	5	7	6	22	40%		
21.45				21.45	D15										
22.00															
22.50	Medium dense yellowish brown silty SAND			22.50	P15	2	4	6	5	7	8	26	50%		
22.95				22.95	D16										
23.00															
24.00	Very dense yellowish brown SAND and silt			24.00	P16	6	11	20	20	10/2.0 cm		50/17.0 cm	30%		
24.32				24.32	D17										
25.00															
25.50	Very dense yellowish brown SAND and silt			25.50	P17	4	10	18	19	13/3.0 cm		50/18.0 cm	30%		
25.83				25.83	D18										
26.00															
27.00	Very dense yellowish brown SAND and silt			27.00	P18	7	9	17	17	16/2.0 cm		50/17.0 cm	60%		
27.32				27.32	D19										
28.00															
28.50	Very dense yellowish brown SAND and silt			28.50	P19	6	10	23	27/2.5 cm			50/10.0 cm	40%		
28.75				28.75	D20										
29.00															
30.00	Very dense yellowish brown SAND and silt			30.00	P20	7	11	25	25/2.5 cm			50/10.0 cm	60%		
30.25	END OF BOREHOLE AT DEPTH 30.25m			30.25	D21										
31.00															

NOTES:
 P = Standard Penetration Test (SPT)
 D = Disturbed sample
 N = SPT Result
 R/r = Recovery ratio
 VS = Vane Shear Test
 USS = Ultimate Shear Strength
 SS = Shear Sensivity
 UD = 50 mm dia. undisturbed sample
 P = 50mm dia. undisturbed piston sample
 M = Mazier Sample
 W = Water sample
 C = Core sample (Rock)
 RQD = Rock Quality Designation (%)
 WL = Water level
 BSCS = British Standard Classification System

LEGEND:

- CLAY
- SILT
- SAND
- GRAVEL
- PEAT
- SHALE

REMARKS 4/12/2020 1900HR W/L=6.00m NW=30.00m
 5/12/2020 0800HR W/L=6.00m

Cohesive Soil (N) 0 2 4 8 15 30 hard
 soft medium stiff very stiff

Non Cohesive Soil (N) 0 10 30 50
 very loose loose medium dense dense very dense

Legend:
 DISTURBED (D) UNDISTURBED (UD)
 SPT (P) CORING (C)

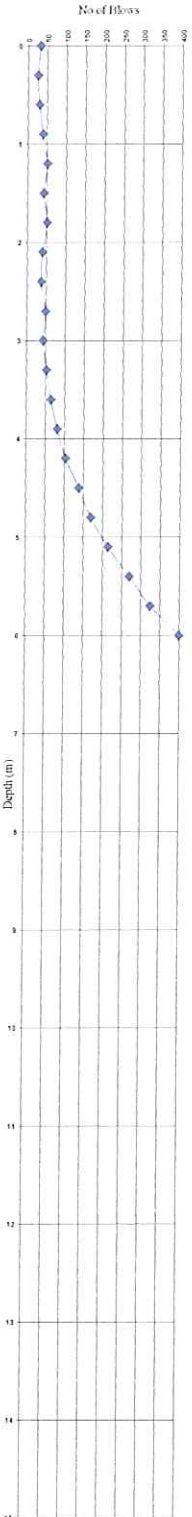
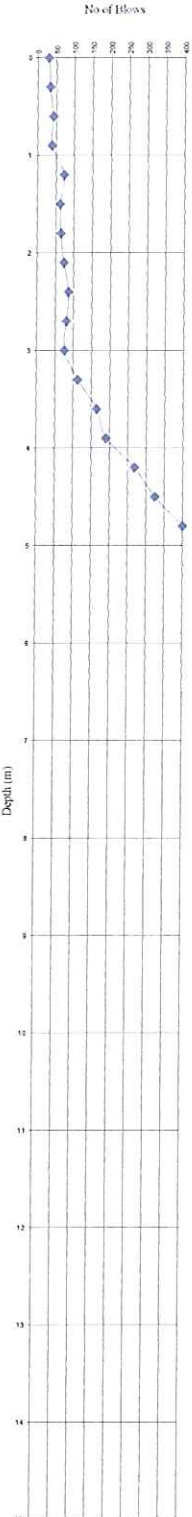
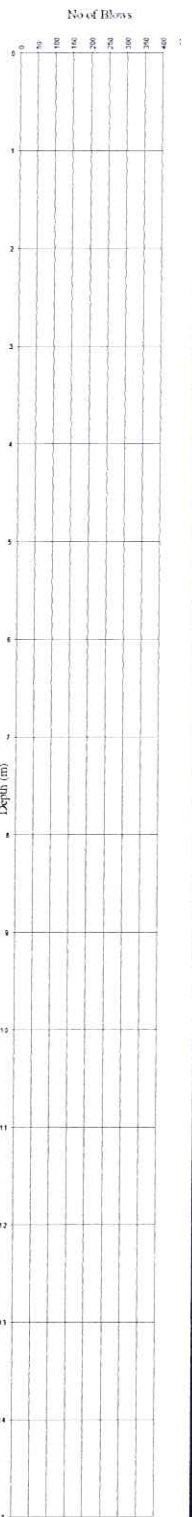
SHAHRUL
 Supervisor
 (Site Investigation)

**APPENDIX B:
MACKINTOSH PROBE LOG**

**KERJA - KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR
TASIK KESUMA DI ATAS LOT PT11747, DAERAH HULU LANGAT MUKIM
BERANANG, SELANGOR DARUL EHSAN**

SUMMARY MACKINTOSH PROBE

NO	MACKINTOSH PROBE NO (MP)	DATE	FINAL DEPTH (m)
1.	MP 1	30.11.2020	5.61
2.	MP 2	5.12.2020	6.66
3.	MP 3	5.12.2020	7.08
4.	MP 4	5.12.2020	6.21
5.	MP 5	30.11.2020	4.98

Project :	KERJA - KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR TASIK KESUMA DI ATAS LOT PT11747, DAERAH HULU LANGAT MUKIM BERANANG, SELANGOR DARUL EHSAN					
Position No.	MP-4			MP-5		
R/ Level (m)						
Date	5/12/2020			30/11/2020		
Depth (m)	No of Blows		No of Blows		No of Blows	
0.0 - 0.3	32		30			
0.3 - 0.6	26		34			
0.6 - 0.9	30		42			
0.9 - 1.2	39		39			
1.2 - 1.5	51		72			
1.5 - 1.8	42		62			
1.8 - 2.1	51		64			
2.1 - 2.4	40		73			
2.4 - 2.7	37		86			
2.7 - 3.0	49		81			
3.0 - 3.3	43		76			
3.3 - 3.6	52		113			
3.6 - 3.9	64		165			
3.9 - 4.2	81		191			
4.2 - 4.5	103		269			
4.5 - 4.8	138		324			
4.8 - 5.1	169		400/ 18cm			
5.1 - 5.4	214					
5.4 - 5.7	270					
5.7 - 6.0	325					
6.0 - 6.3	400/ 21cm					
6.3 - 6.6						
6.6 - 6.9						
6.9 - 7.2						
7.2 - 7.5						
7.5 - 7.8						
7.8 - 8.1						
8.1 - 8.4						
8.4 - 8.7						
8.7 - 9.0						
9.0 - 9.3						
9.3 - 9.6						
9.6 - 9.9						
9.9 - 10.2						
10.2 - 10.5						
10.5 - 10.8						
10.8 - 11.1						
11.1 - 11.4						
11.4 - 11.7						
11.7 - 12.0						
12.0 - 12.3						
12.3 - 12.6						
12.6 - 12.9						
12.9 - 13.2						
13.2 - 13.5						
13.5 - 13.8						
13.8 - 14.1						
14.1 - 14.4						
14.4 - 14.7						
14.7 - 15.0						
Final Depth	6.21		4.98			

Nota : R.L. perlu diberi untuk setiap lokasi proba J.K.R.

Penyelia: SHAHRUL

Project : **KERJA - KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR TASIK KESUMA DI ATAS LOT PT11747, DAERAH HULU LANGAT MUKIM BERANANG, SELANGOR DARUL EHSAN**

Position No. R/ Level (m)	MP-1		MP-2		MP-3	
Date	30/11/2020		5/12/2020		5/12/2020	
Depth (m)	No of Blows	No of Blows	No of Blows	No of Blows	No of Blows	No of Blows
0.0 - 0.3	39	31	31	47	47	
0.3 - 0.6	37	37	37	50	50	
0.6 - 0.9	40	32	32	47	47	
0.9 - 1.2	43	40	40	34	34	
1.2 - 1.5	45	37	37	39	39	
1.5 - 1.8	48	31	31	43	43	
1.8 - 2.1	55	39	39	57	57	
2.1 - 2.4	63	47	47	49	49	
2.4 - 2.7	61	42	42	42	42	
2.7 - 3.0	59	39	39	31	31	
3.0 - 3.3	65	57	57	39	39	
3.3 - 3.6	87	70	70	47	47	
3.6 - 3.9	114	81	81	59	59	
3.9 - 4.2	139	87	87	72	72	
4.2 - 4.5	131	114	114	60	60	
4.5 - 4.8	173	137	137	79	79	
4.8 - 5.1	249	160	160	97	97	
5.1 - 5.4	320	171	171	124	124	
5.4 - 5.7	400/ 21cm	207	207	150	150	
5.7 - 6.0		214	214	176	176	
6.0 - 6.3		269	269	214	214	
6.3 - 6.6		307	307	269	269	
6.6 - 6.9		400/ 24cm	400/ 24cm	316	316	
6.9 - 7.2				400/ 18cm	400/ 18cm	
7.2 - 7.5						
7.5 - 7.8						
7.8 - 8.1						
8.1 - 8.4						
8.4 - 8.7						
8.7 - 9.0						
9.0 - 9.3						
9.3 - 9.6						
9.6 - 9.9						
9.9 - 10.2						
10.2 - 10.5						
10.5 - 10.8						
10.8 - 11.1						
11.1 - 11.4						
11.4 - 11.7						
11.7 - 12.0						
12.0 - 12.3						
12.3 - 12.6						
12.6 - 12.9						
12.9 - 13.2						
13.2 - 13.5						
13.5 - 13.8						
13.8 - 14.1						
14.1 - 14.4						
14.4 - 14.7						
14.7 - 15.0						
Final Depth	5.61	6.66	7.08			

Nota : R.L. perlu diberi untuk setiap lokasi proba J.K.R.

Penyelia: SHAHRUL

**APPENDIX C:
LABORATORY TEST**

IDEAL ENGINEERING LABORATORY SDN. BHD.

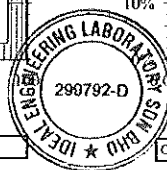
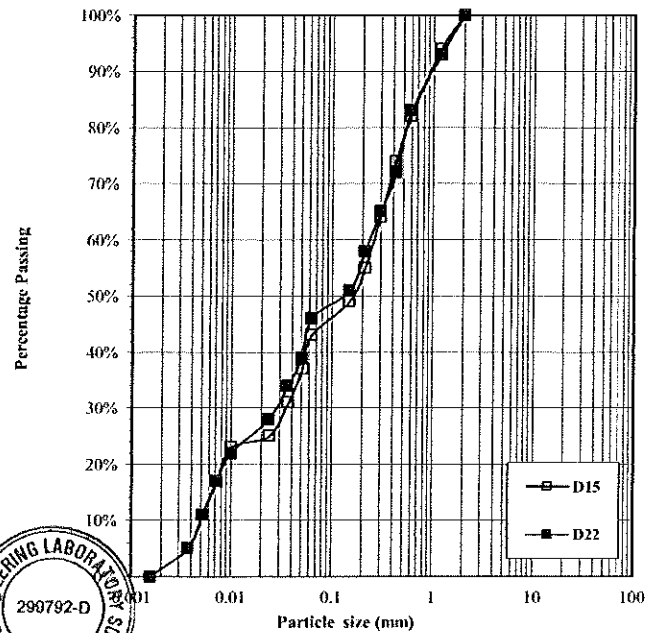
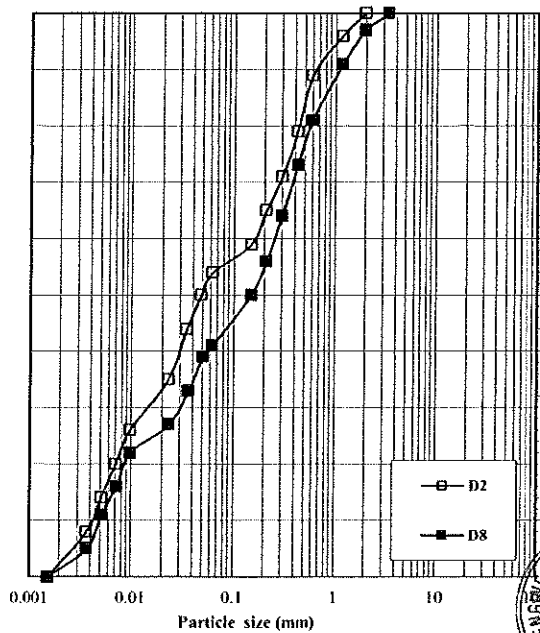
PARTICLE SIZE DISTRIBUTION

Date : 14-12-2020

PROJEK : KERJA-KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR TASIK KESUMA DI ATAS
 LOT PT11747, DAERAH HULU LANGAT, MUKIM BERANANG, SELANGOR DARUL EHSAN.

BORE HOLE NO:		BH1	BH1	BH1	BH1
DEPTH: (M)		1.50	10.50	21.00	31.50
SAMPLE NO:		D2	D8	D15	D22
1	Clay 0.002mm %	3	2	2	2
2	Silt 0.002-0.063mm %	51	39	41	44
3	Sand 0.063-2mm %	46	56	57	54
4	Gravel %	0	3	0	0
Particle Size Distribution for Sieve Analysis Test (% Passing)					
	63 mm				
	50 mm				
	37.5 mm				
	28 mm				
	20 mm				
	14 mm				
	10 mm				
	6.3 mm				
	5 mm				
	3.35 mm		100		
	2 mm	100	97	100	100
	1.18 mm	96	91	94	93
	0.6 mm	89	81	82	83
	0.425 mm	79	73	74	72
	0.3 mm	71	64	64	65
	0.212 mm	65	56	55	58
	0.15 mm	59	50	49	51
	0.063 mm	54	41	43	46

Particle Diameter (mm) for Hydrometer Test					Particle Size Distribution for Hydrometer Test (% Passing)			
Particle Size (mm)	SAMPLE NO:				SAMPLE NO:			
	D2	D8	D15	D22	D2	D8	D15	D22
	0.0485	0.0505	0.0512	0.0505	50	39	37	39
	0.0352	0.0367	0.0371	0.0367	44	33	31	34
	0.0232	0.0238	0.0240	0.0238	35	27	25	28
	0.0098	0.0099	0.0099	0.0099	26	22	23	22
	0.0071	0.0072	0.0072	0.0072	20	16	17	17
	0.0051	0.0052	0.0052	0.0052	14	11	11	11
0.0037	0.0037	0.0037	0.0037	8	5	5	5	
0.0016	0.0016	0.0016	0.0016	0	0	0	0	



CLAY	SILT	SAND	GRAVEL	CLAY	SILT	SAND	GRAVEL
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IDEAL ENGINEERING LABORATORY SDN. BHD.

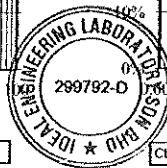
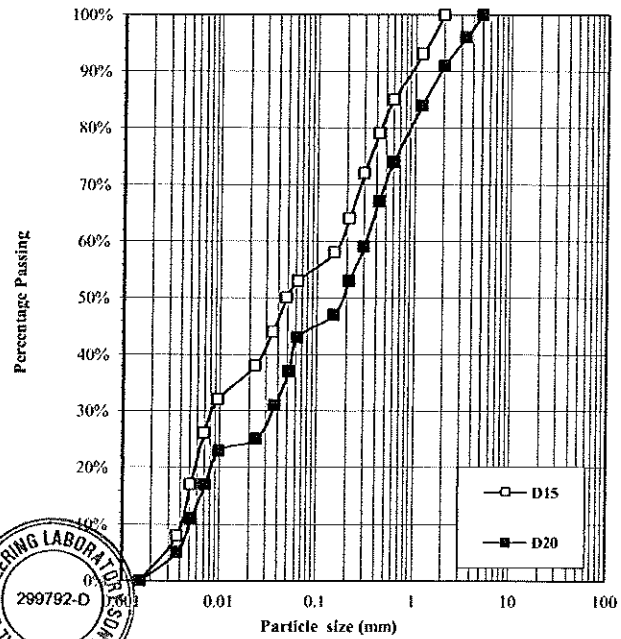
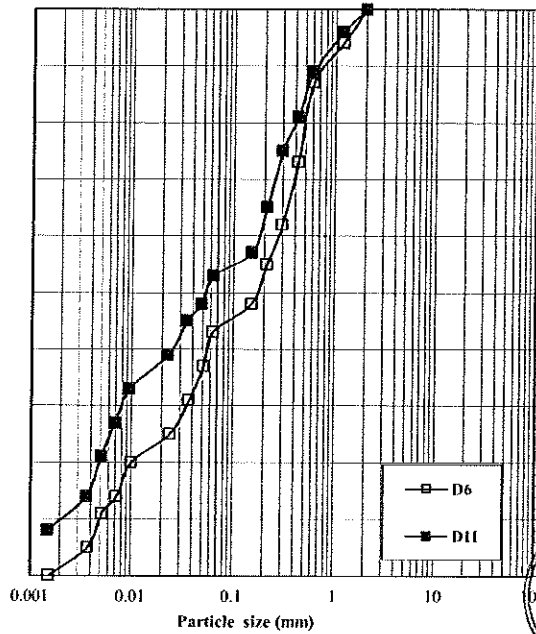
PARTICLE SIZE DISTRIBUTION

Date : 14-12-2020

PROJEK : KERJA-KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR TASIK KESUMA DI ATAS
LOT PT11747, DAERAH HULU LANGAT, MUKIM BERANANG, SELANGOR DARUL EHSAN.

BORE HOLE NO:		BH2	BH2	BH2	BH2
DEPTH: (M)		7.50	15.00	21.00	28.50
SAMPLE NO:		D6	D11	D15	D20
1	Clay 0.002mm	2	10	3	2
2	Silt 0.002-0.063mm	41	43	50	41
3	Sand 0.063-2mm	57	47	47	48
4	Gravel	0	0	0	9
Particle Size Distribution (% Passing)	63 mm				
	50 mm				
	37.5 mm				
	28 mm				
	20 mm				
	14 mm				
	10 mm				
	6.3 mm				
	5 mm				100
	3.35 mm				96
	2 mm	100	100	100	91
	1.18 mm	94	96	93	84
	0.6 mm	87	89	85	74
0.425 mm	73	81	79	67	
0.3 mm	62	75	72	59	
0.212 mm	55	65	64	53	
0.15 mm	48	57	58	47	
0.063 mm	43	53	53	43	

Particle Diameter (mm) for Hydrometer Test					Particle Size Distribution for Hydrometer Test (% Passing)			
Particle Size (mm)	SAMPLE NO:				SAMPLE NO:			
	D6	D11	D15	D20	D6	D11	D15	D20
	0.0512	0.0492	0.0485	0.0512	37	48	50	37
	0.0371	0.0352	0.0352	0.0371	31	45	44	31
	0.0240	0.0229	0.0229	0.0240	25	39	38	25
	0.0100	0.0096	0.0096	0.0099	20	33	32	23
	0.0073	0.0069	0.0069	0.0072	14	27	26	17
	0.0052	0.0050	0.0051	0.0052	11	21	17	11
	0.0037	0.0036	0.0037	0.0037	5	14	8	5
0.0016	0.0015	0.0016	0.0016	0	8	0	0	



CLAY	SILT	SAND	GRAVEL
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CLAY	SILT	SAND	GRAVEL
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IDEAL ENGINEERING LABORATORY SDN. BHD.

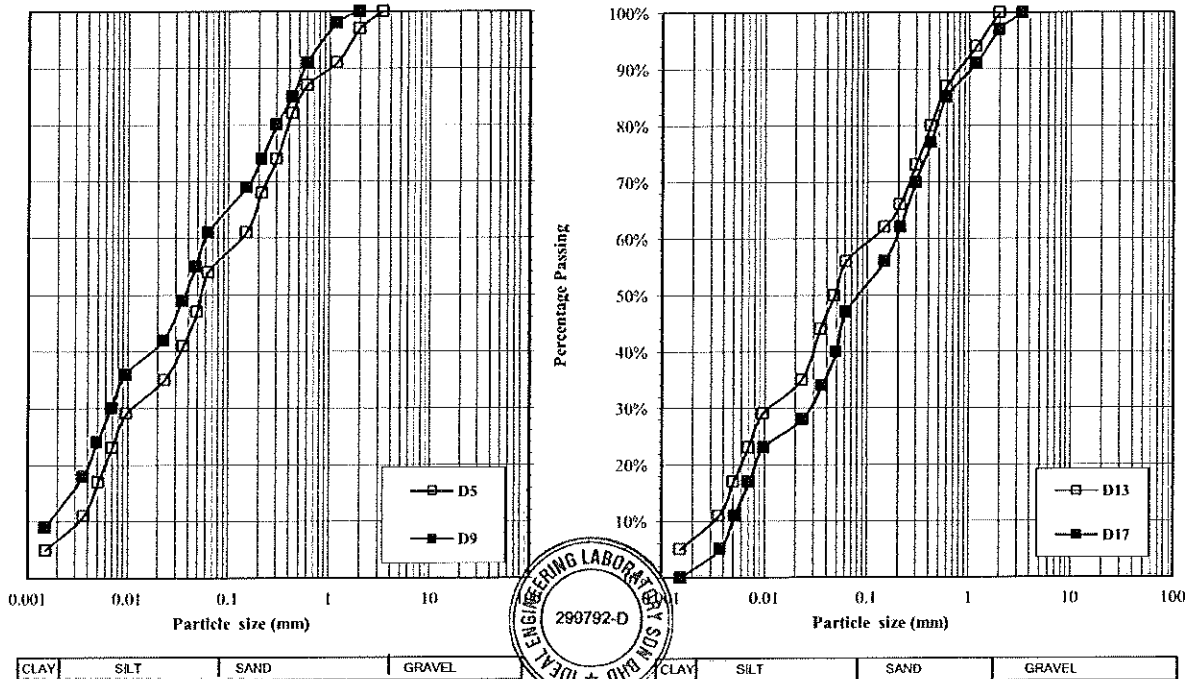
PARTICLE SIZE DISTRIBUTION

Date : 14-12-2020

PROJEK : KERJA-KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR TASIK KESUMA DI ATAS
LOT PTH1747, DAERAH HULU LANGAT, MUKIM BERANANG, SELANGOR DARUL EHSAN.

BORE HOLE NO:		BH3	BH3	BH3	BH3
DEPTH: (M)		6.00	12.00	18.00	24.00
SAMPLE NO:		D5	D9	D13	D17
1	Clay 0.002mm	7	12	7	2
2	Silt 0.002-0.063mm	47	49	49	45
3	Sand 0.063-2mm	43	39	44	50
4	Gravel	3	0	0	3
Particle Size Distribution (% Passing)					
	63 mm				
	50 mm				
	37.5 mm				
	28 mm				
	20 mm				
	14 mm				
	10 mm				
	6.3 mm				
	5 mm				
	3.35 mm	100			100
	2 mm	97	100	100	97
	1.18 mm	91	98	94	91
	0.6 mm	87	91	87	85
	0.425 mm	82	85	80	77
	0.3 mm	74	80	73	70
	0.212 mm	68	74	66	62
	0.15 mm	61	69	62	56
	0.063 mm	54	61	56	47

Particle Diameter (mm) for Hydrometer Test					Particle Size Distribution for Hydrometer Test (% Passing)				
SAMPLE NO:					SAMPLE NO:				
	D5	D9	D13	D17	D5	D9	D13	D17	
Particle Size (mm)	0.0492	0.0478	0.0485	0.0505	47	55	50	40	
	0.0357	0.0348	0.0352	0.0367	41	49	44	34	
	0.0232	0.0226	0.0232	0.0238	35	42	35	28	
	0.0097	0.0095	0.0097	0.0099	29	36	29	23	
	0.0070	0.0069	0.0070	0.0072	23	30	23	17	
	0.0051	0.0050	0.0051	0.0052	17	24	17	11	
	0.0037	0.0036	0.0037	0.0037	11	18	11	5	
	0.0015	0.0015	0.0015	0.0016	5	9	5	0	



IDEAL ENGINEERING LABORATORY SDN. BHD.

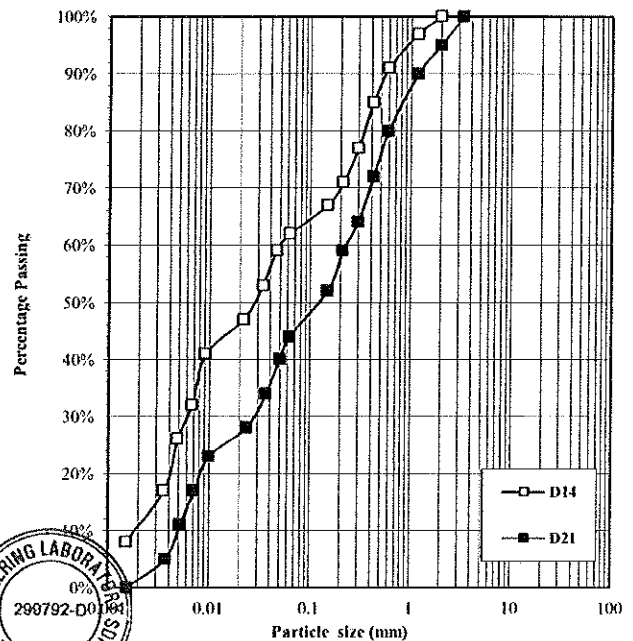
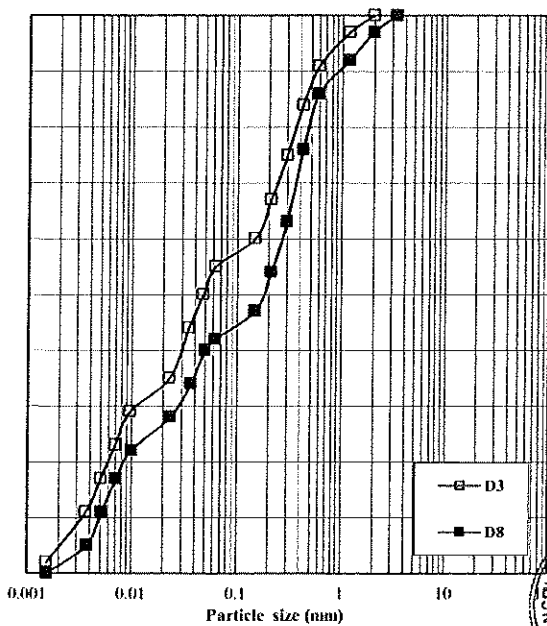
PARTICLE SIZE DISTRIBUTION

Date : 14-12-2020

PROJEK : KERJA-KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR TASIK KESUMA DI ATAS
LOT PT11747, DAERAH HULU LANGAT, MUKIM BERANANG, SELANGOR DARUL EHSAN.

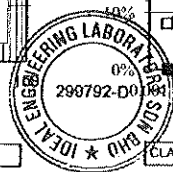
BORE HOLE NO:		BH4	BH4	BH4	BH4
DEPTH: (M)		3.50	10.50	19.50	30.00
	SAMPLE NO:	D3	D8	D14	D21
1	Clay 0.002mm	4	2	11	2
2	Silt 0.002-0.063mm	51	40	51	42
3	Sand 0.063-2mm	45	55	38	51
4	Gravel	0	3	0	5
Particle Size Distribution (% Passing)					
	63 mm				
	50 mm				
	37.5 mm				
	28 mm				
	20 mm				
	14 mm				
	10 mm				
	6.3 mm				
	5 mm				
	3.35 mm		100		100
	2 mm	100	97	100	95
	1.18 mm	97	92	97	90
	0.6 mm	91	86	91	80
	0.425 mm	84	76	85	72
	0.3 mm	75	63	77	64
	0.212 mm	67	54	71	59
	0.15 mm	60	47	67	52
	0.063 mm	55	42	62	44

Particle Diameter (mm) for Hydrometer Test					Particle Size Distribution for Hydrometer Test (% Passing)			
Particle Size (mm)	SAMPLE NO:				SAMPLE NO:			
	D3	D8	D14	D21	D3	D8	D14	D21
	0.0448	0.0448	0.0456	0.0445	50	40	59	40
	0.0328	0.0327	0.0336	0.0338	44	34	53	34
	0.0212	0.0212	0.0222	0.0222	35	28	47	28
	0.0089	0.0089	0.0094	0.0095	29	22	41	23
	0.0065	0.0065	0.0069	0.0070	23	17	32	17
	0.0046	0.0047	0.0050	0.0051	17	11	26	11
0.0034	0.0034	0.0037	0.0037	11	5	17	5	
0.0014	0.0014	0.0015	0.0015	2	0	8	0	






CLAY	SILT	SAND	GRAVEL
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CLAY	SILT	SAND	GRAVEL
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IDEAL ENGINEERING LABORATORY SDN. BHD.
CONSOLIDATION UNDRAINED TRIAXIAL COMPRESSION TEST

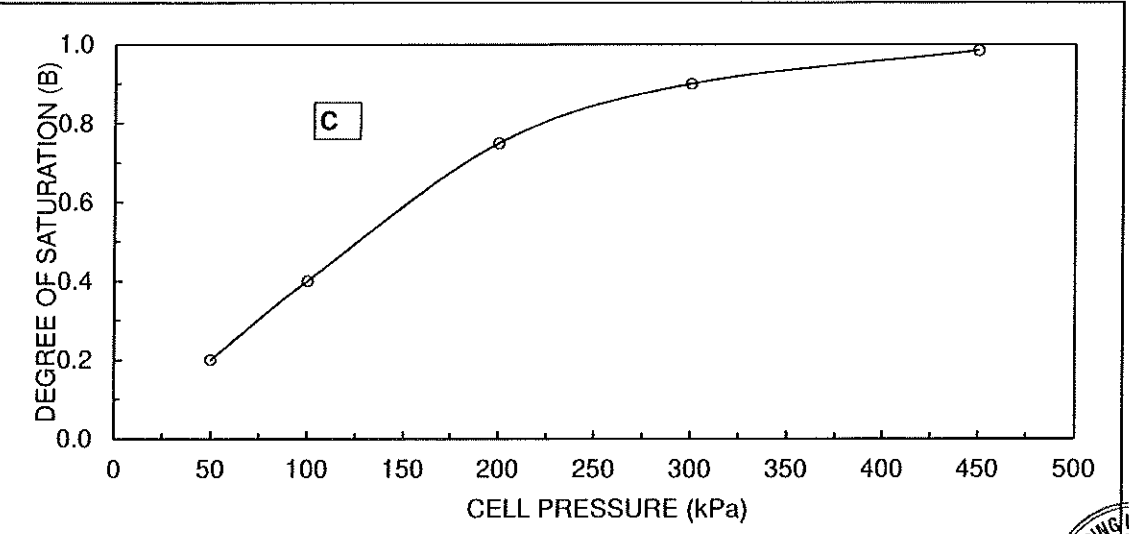
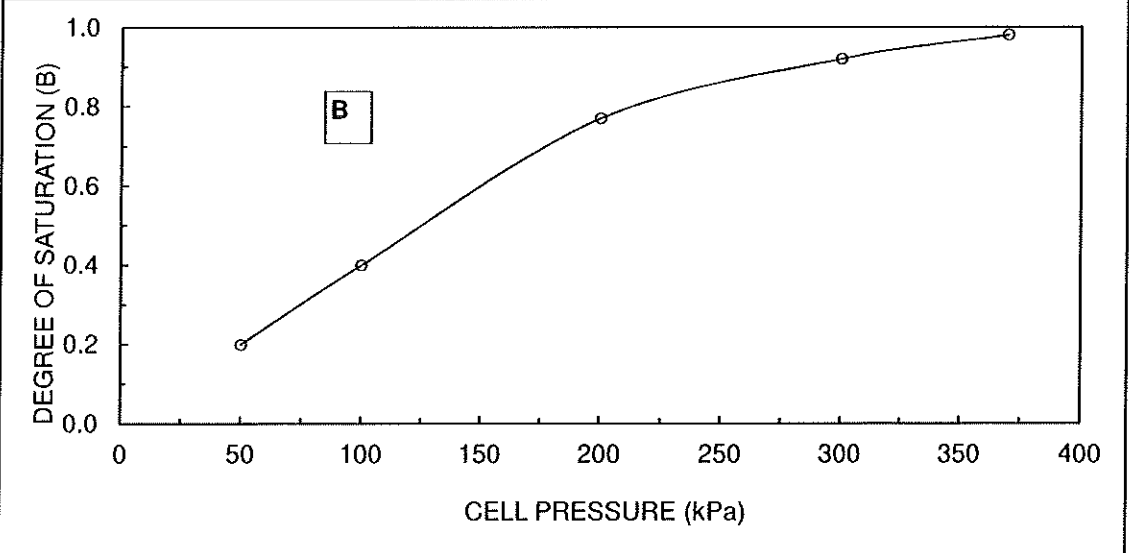
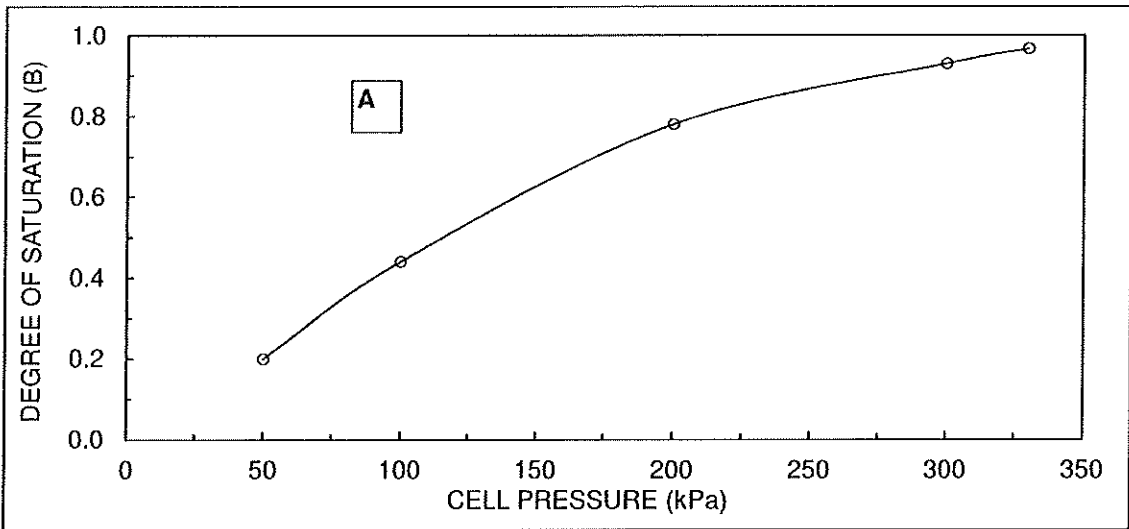
Project : Kerja-kerja Penyiasatan Tanah Bagi Pembinaan Masjid Bandar Tasik Kesuma Di Atas
 Lot PT11747, Daerah Hulu Langat, Mukim Beranang, Selangor Darul Ehsan.
 Soil Description : Sandy SILT of Intermediate Plasticity
 Borehole / Sample / Depth : BH-1 / UD1 / 4.50m Date : 17-12-2020

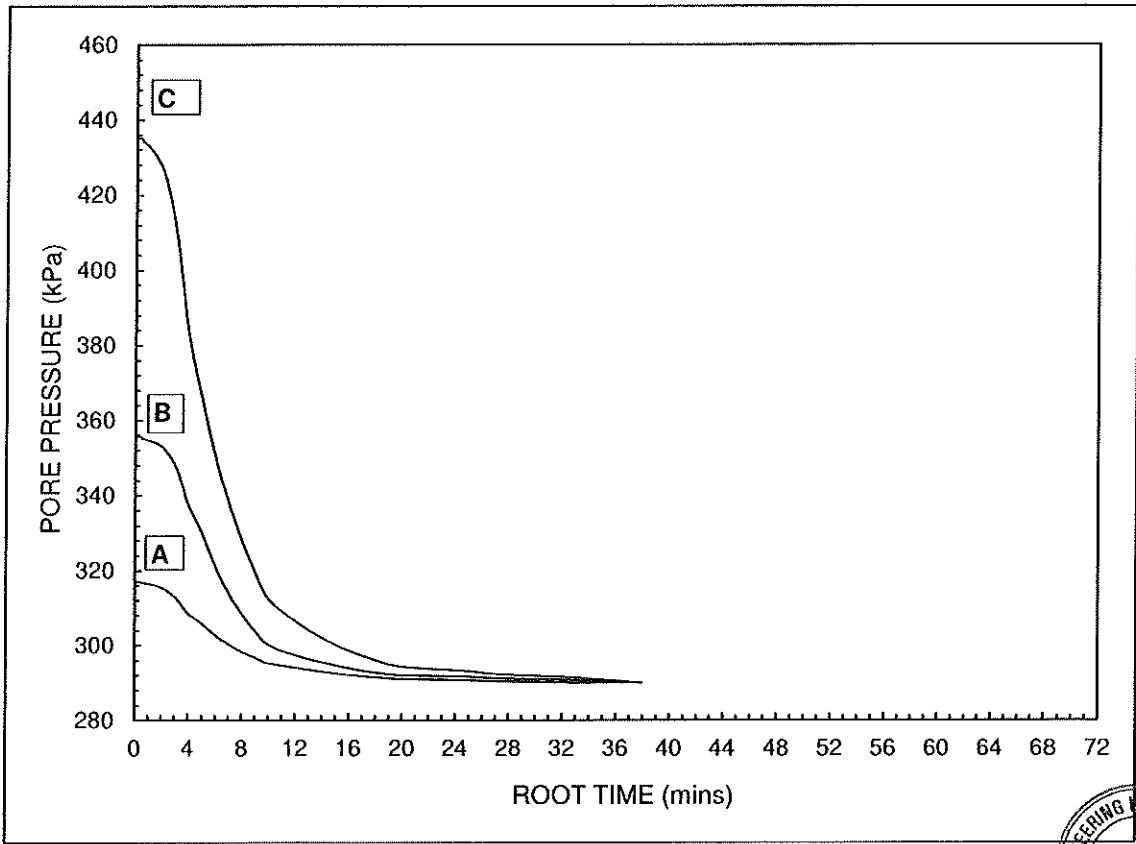
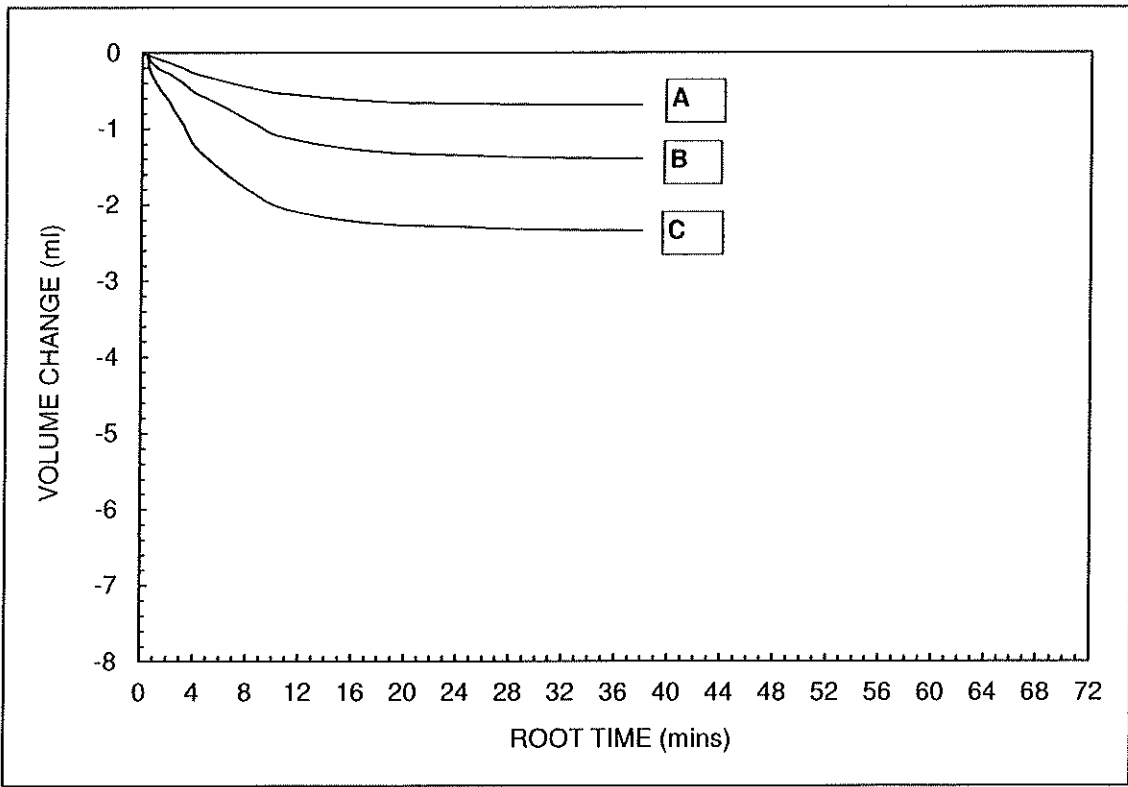
Sample / Stage No.		A	B	C
Specimen Diameter	(mm)	38.0	38.0	38.0
Specimen Height	(mm)	76.0	76.0	76.0
Drainage Conditions		DOE	DOE	DOE
Moisture Content	(%)	18.52	18.66	18.98
Bulk Density	(Mg/m ³)	1.972	1.977	1.985
Dry Density	(Mg/m ³)	1.664	1.666	1.668
Saturation Stage				
Initial Pore Pressure	(kPa)	288.0	287.2	287.6
Initial Back Pressure	(kPa)	290	290	290
Saturation Pressure	(kPa)	317.0	355.8	435.2
Initial Cell Pressure	(kPa)	300	300	300
Final Cell Pressure	(kPa)	330	370	450
Final P.W. Pressure Parameter	(Bf)	0.97	0.98	0.98
Consolidation Stage				
Cell Pressure	(kPa)	330	370	450
Final Pore Pressure	(kPa)	290	290	290
Effective Pressure	(kPa)	40	80	160
Volume Change	(ml)	0.7	1.4	2.3
t ₁₀₀	(min)	129.96	121.00	112.36
Coeff. of Consolidation, C _v	(m ² /yr)	18.36	19.71	21.23
Coeff. of Volume Comp, M _{vi}	(m ² /MN)	0.20	0.20	0.17
K (calculated)	(m/s)	1.13E-09	1.24E-09	1.12E-09
Shearing State		Conditions : Max. Stress Ratio		
		Rate of Deformation = 0.032mm/min		
Pore Pressure	(kPa)	13	43	102
Deviator Stress	(kPa)	100	124	178
Minor Principle Effective Stress	(kPa)	27	37	58
Major Principle Effective Stress	(kPa)	127	161	236
Strain	(%)	13.11	14.16	14.01
Stress Ratio		4.75	4.34	4.07
Final Moisture Content	(%)	21.08	21.18	21.51
Final Bulk Density	(Mg/m ³)	2.026	2.031	2.039
Failure Mode		IF	IF	IF
Total Stress Parameter :				
Cohesion	(kPa)	29		
Angle of Shearing Resistance	(Deg)	14		
Effective Stress Parameter :				
Cohesion	(kPa)	9		
Angle of Shearing Resistance	(Deg)	34		
Sample at Failure Sketch				
Mode of Failure	Specimen A : IF = Intermediate Failure	Specimen B : IF = Intermediate Failure	Specimen C : IF = Intermediate	

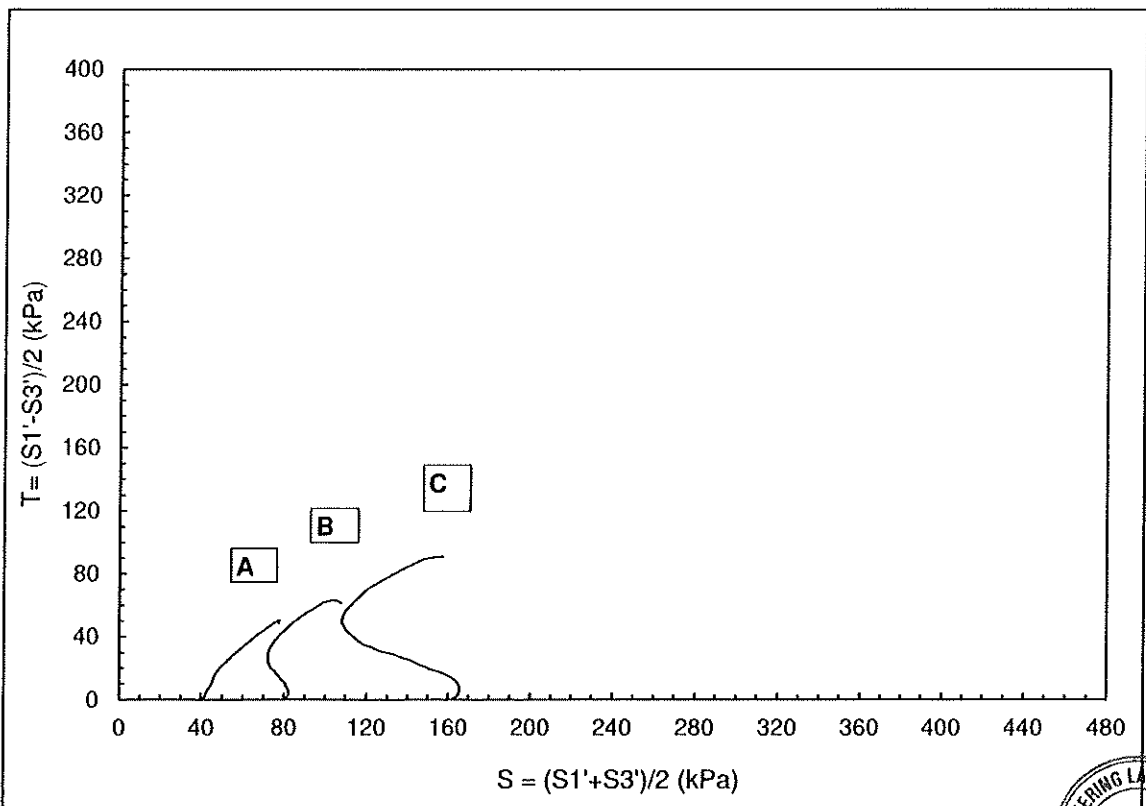
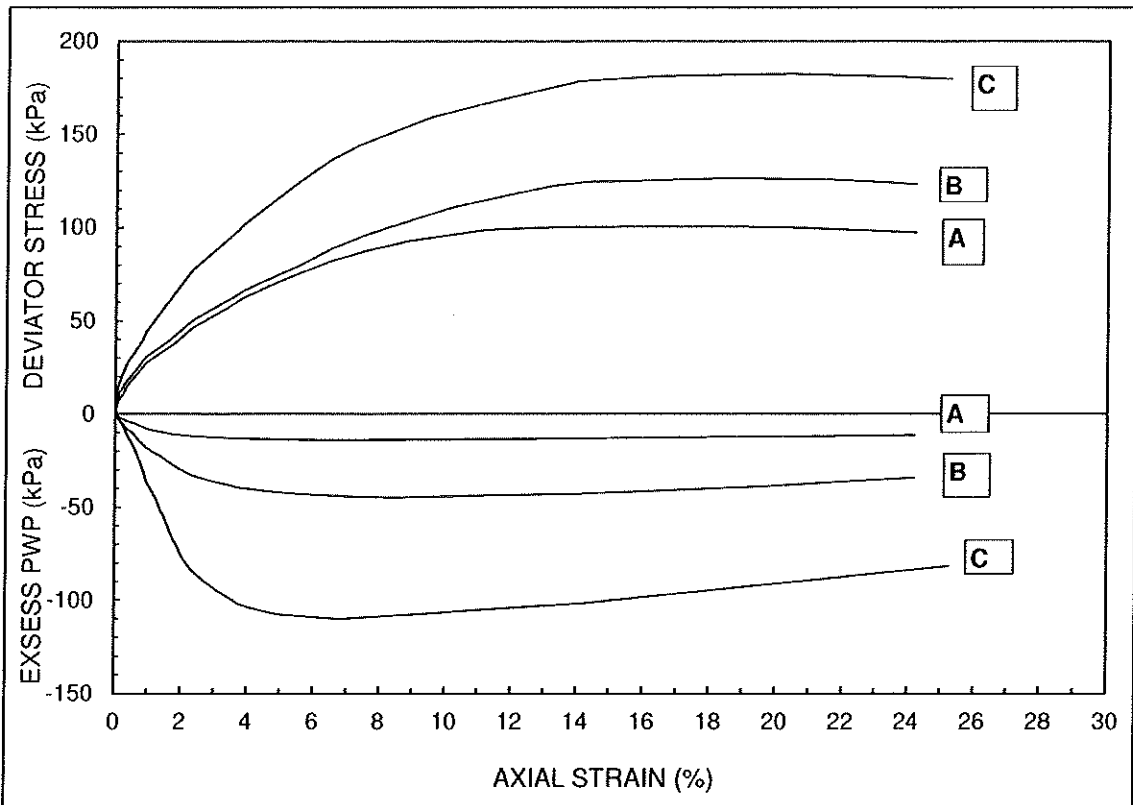
Note : DOE = Drainage One End Without Side Drains

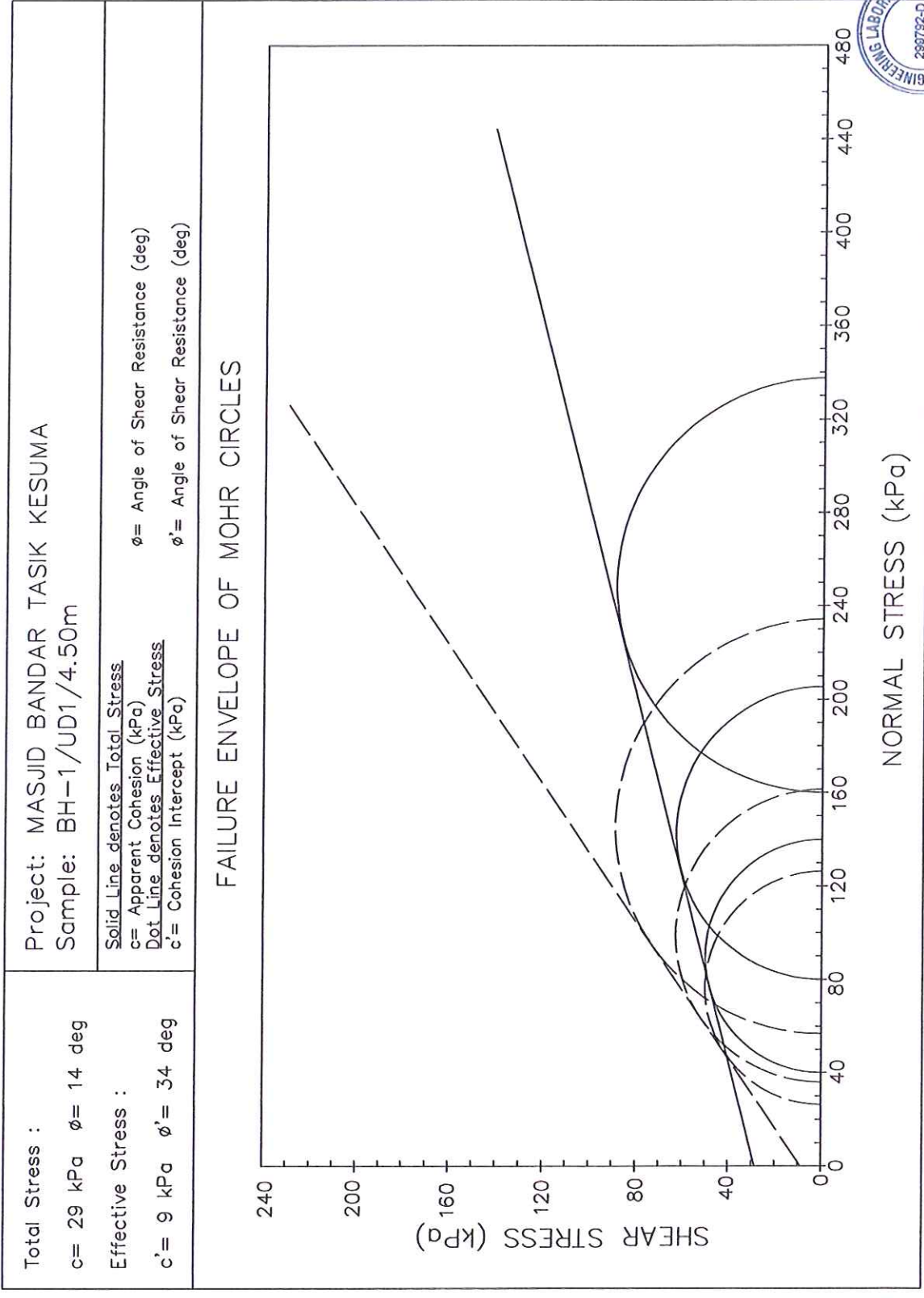


SAMPLE : BH-1 / UD1 / 4.50m












IDEAL ENGINEERING LABORATORY SDN. BHD.
CONSOLIDATION UNDRAINED TRIAXIAL COMPRESSION TEST

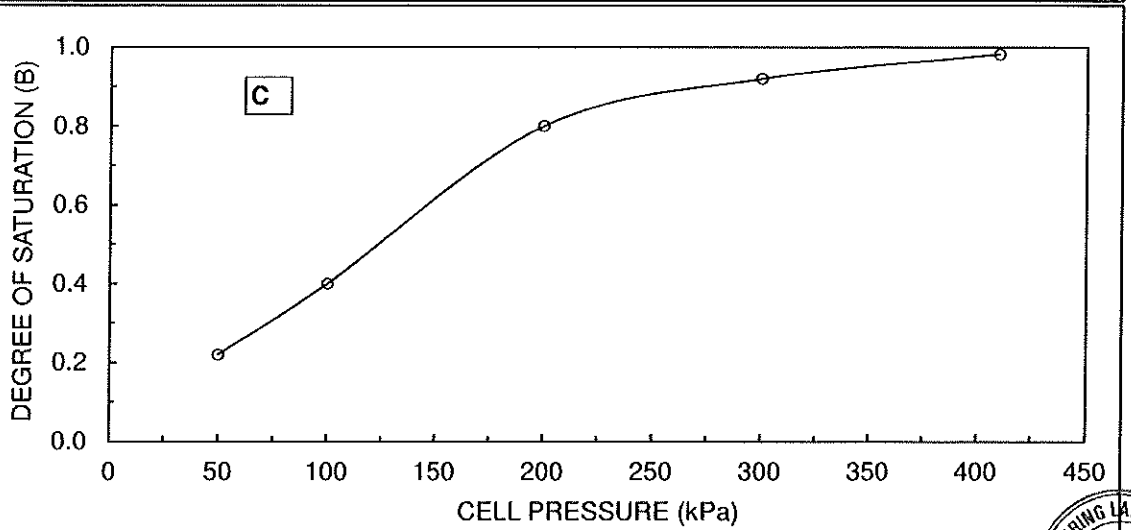
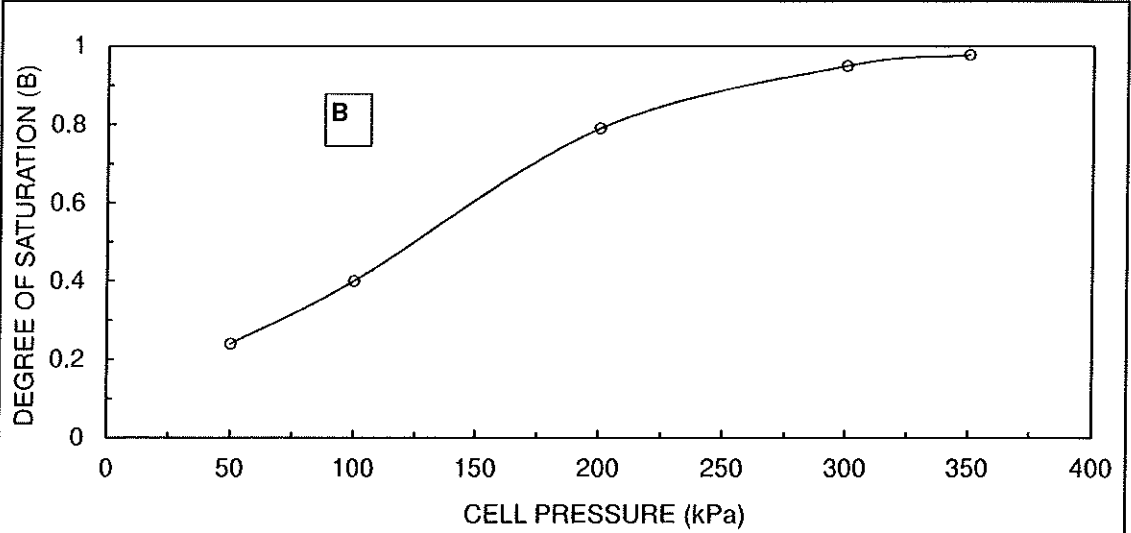
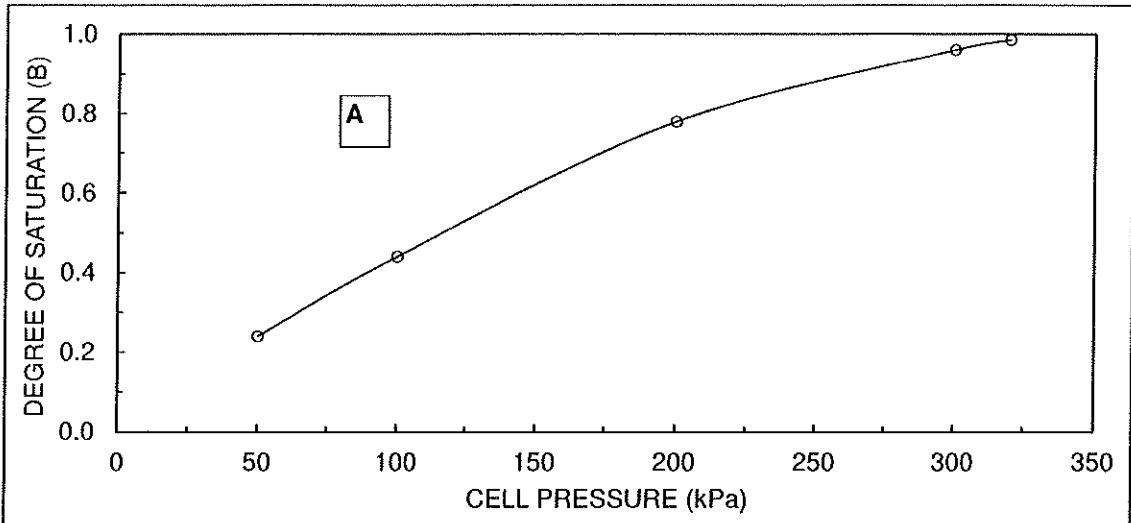
Project : Kerja-kerja Penyiasatan Tanah Bagi Pembinaan Masjid Bandar Tasik Kesuma Di Atas Lot PT11747, Daerah Hulu Langat, Mukim Beranang, Selangor Darul Ehsan.
 Soil Description : Sandy SILT of Intermediate Plasticity
 Borehole / Sample / Depth : BH-3 / UD1 / 3.00m Date : 17-12-2020

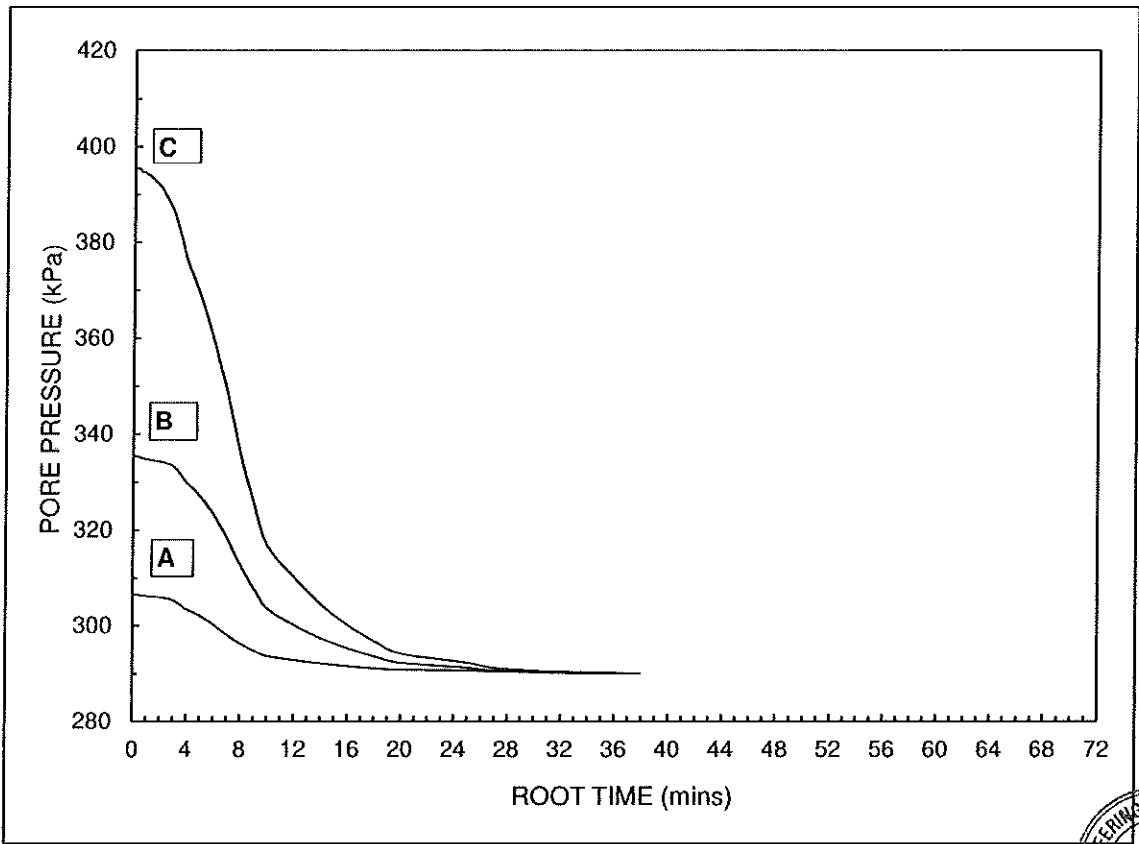
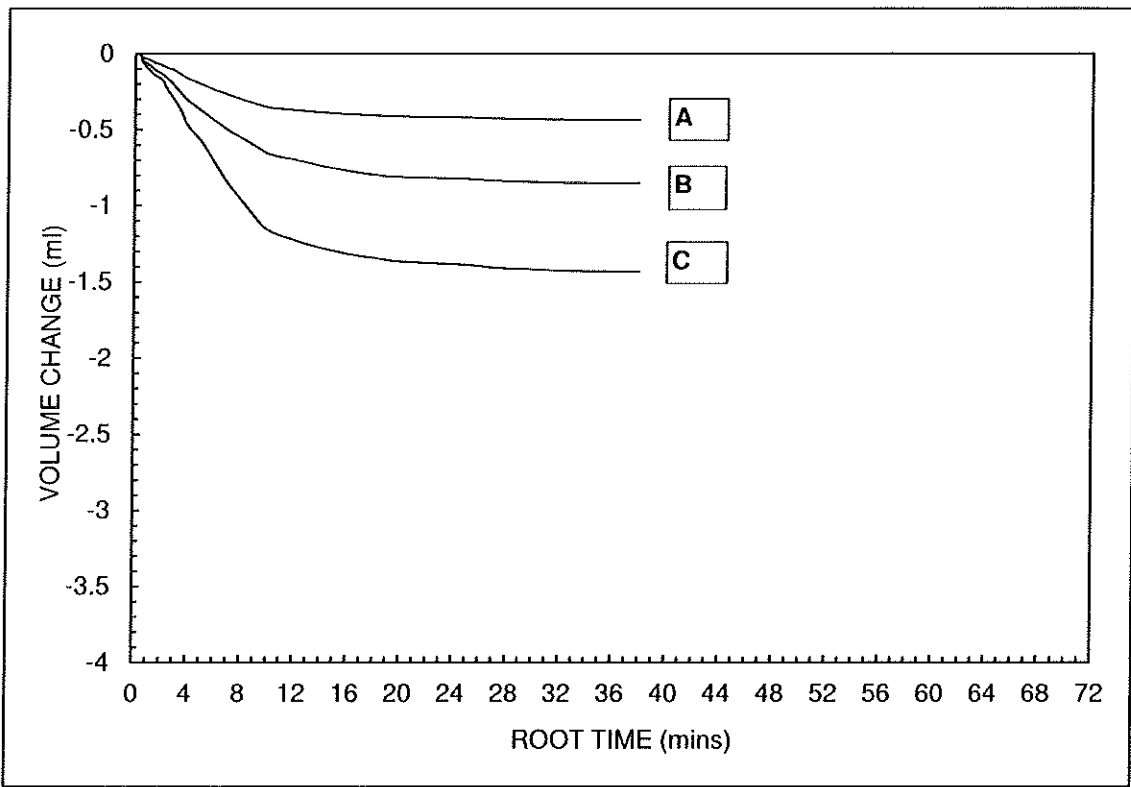
Sample / Stage No.		A	B	C
Specimen Diameter	(mm)	38.0	38.0	38.0
Specimen Height	(mm)	76.0	76.0	76.0
Drainage Conditions		DOE	DOE	DOE
Moisture Content	(%)	18.25	18.70	19.36
Bulk Density	(Mg/m3)	1.942	1.958	1.962
Dry Density	(Mg/m3)	1.642	1.650	1.644
Saturation Stage				
Initial Pore Pressure	(kPa)	286.8	286.5	287.5
Initial Back Pressure	(kPa)	290	290	290
Saturation Pressure	(kPa)	306.5	335.4	395.5
Initial Cell Pressure	(kPa)	300	300	300
Final Cell Pressure	(kPa)	320	350	410
Final P.W. Pressure Parameter	(Bf)	0.98	0.98	0.98
Consolidation Stage				
Cell Pressure	(kPa)	320	350	410
Final Pore Pressure	(kPa)	290	290	290
Effective Pressure	(kPa)	30	60	120
Volume Change	(ml)	0.4	0.9	1.4
t100	(min)	121.00	116.64	112.36
Coeff. of Consolidation, Cv	(m2/yr)	19.71	20.45	21.23
Coeff. of Volume Comp, Mvi	(m2/MN)	0.17	0.17	0.14
K (calculated)	(m/s)	1.03E-09	1.05E-09	9.13E-10
Shearing State		Conditions : Max. Stress Ratio		
		Rate of Deformation = 0.032mm/min		
Pore Pressure	(kPa)	8	31	76
Deviator Stress	(kPa)	82	102	142
Minor Principle Effective Stress	(kPa)	22	29	44
Major Principle Effective Stress	(kPa)	104	131	186
Strain	(%)	11.86	12.09	12.09
Stress Ratio		4.80	4.47	4.19
Final Moisture Content	(%)	20.81	21.24	21.96
Final Bulk Density	(Mg/m3)	1.997	2.012	2.019
Failure Mode		IF	IF	IF
Total Stress Parameter :				
Cohesion	(kPa)	24		
Angle of Shearing Resistance	(Deg)	15		
Effective Stress Parameter :				
Cohesion	(kPa)	7		
Angle of Shearing Resistance	(Deg)	34		
Sample at Failure Sketch				
Mode of Failure	Specimen A : IF = Intermediate Failure	Specimen B : IF = Intermediate Failure	Specimen C : IF = Intermediate Failure	

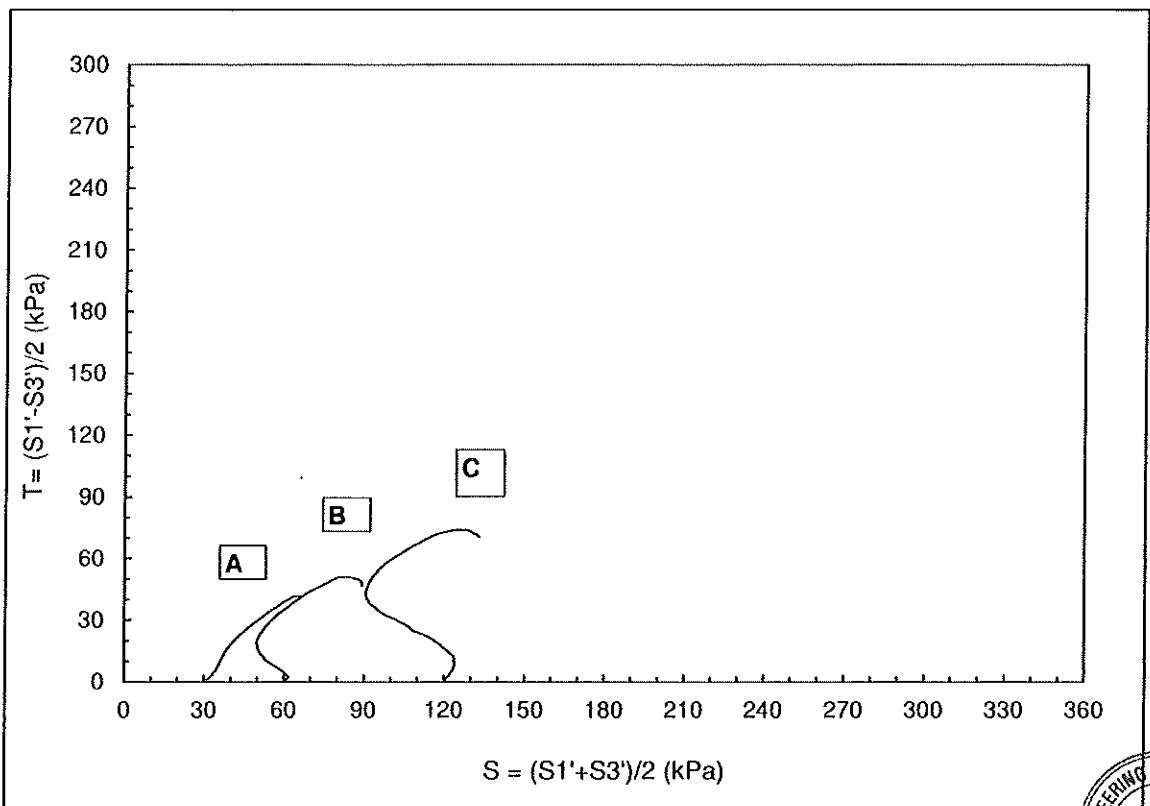
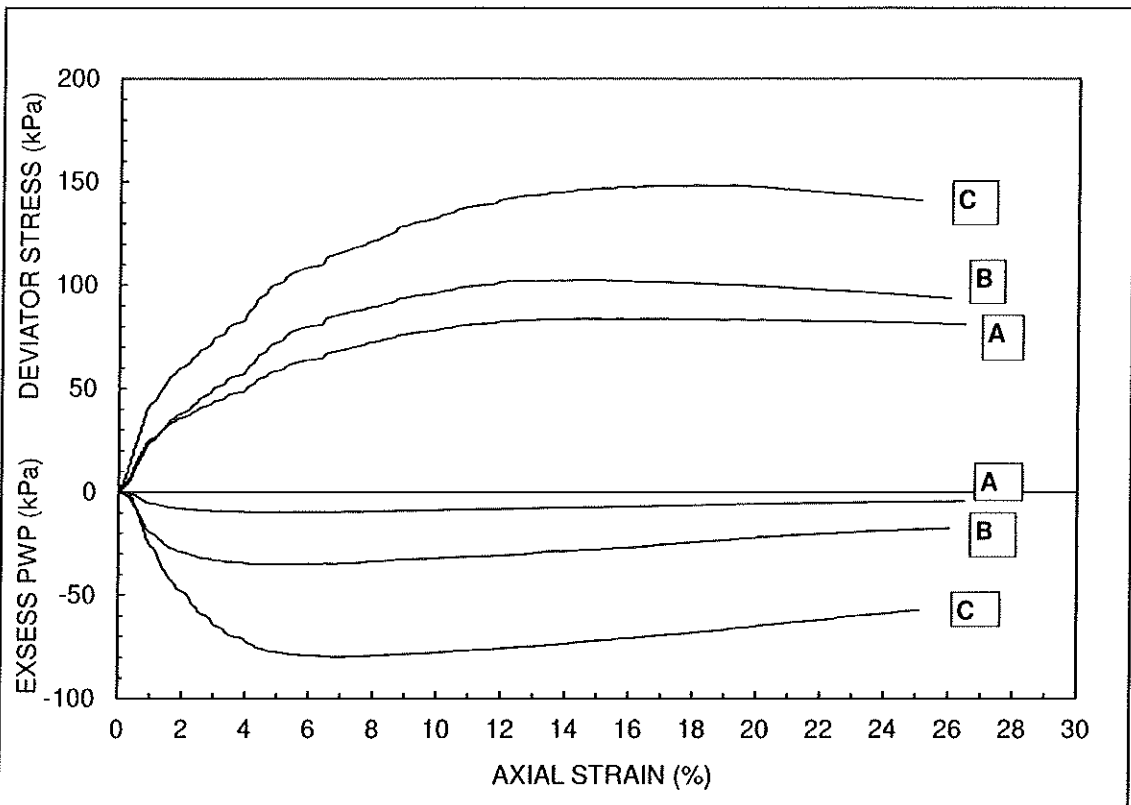
Note : DOE = Drainage One End Without Side Drains



SAMPLE : BH-3 / UD1 / 3.00m

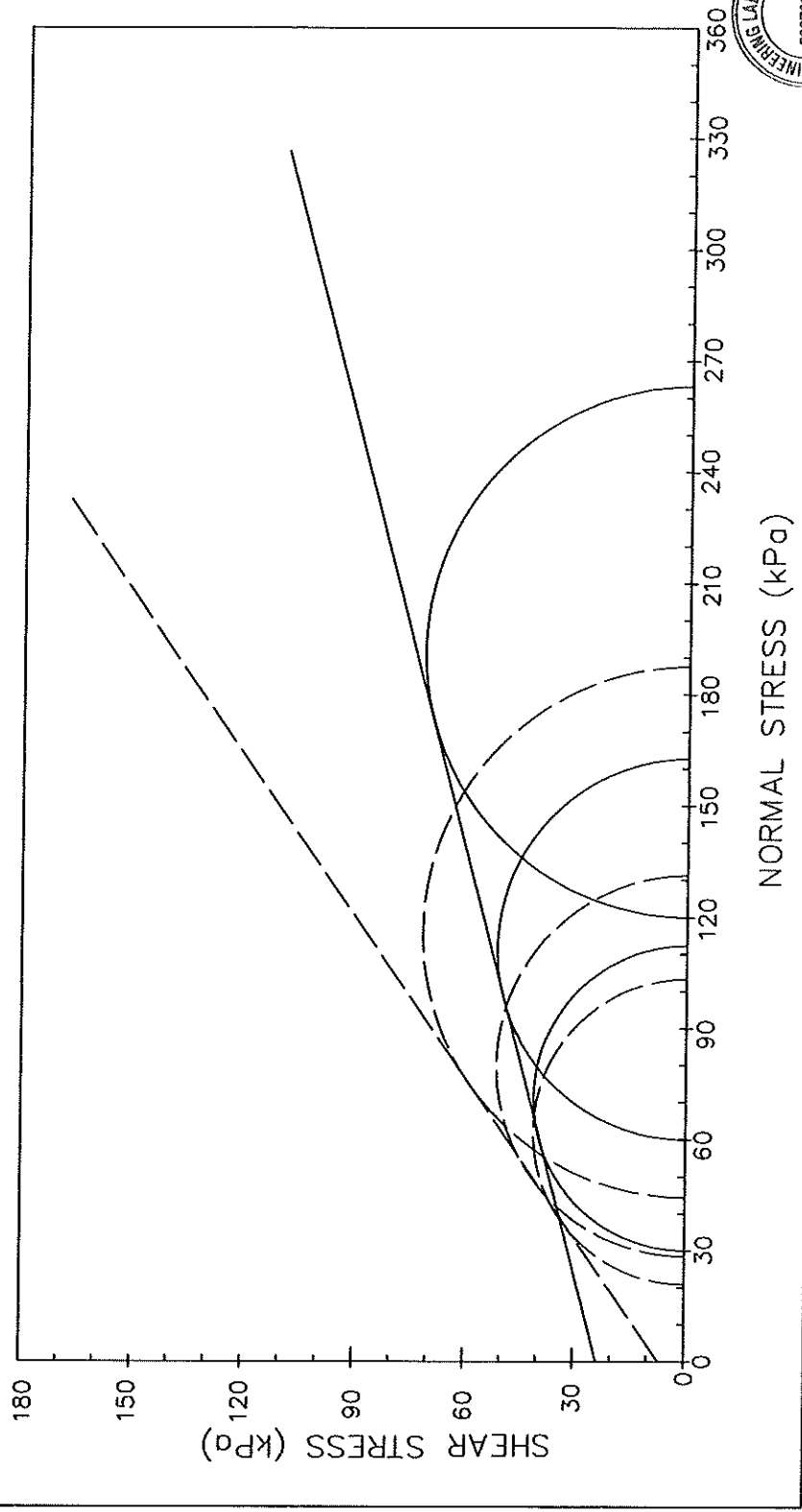






<p>Total Stress :</p> <p>$c = 24 \text{ kPa}$ $\phi = 15 \text{ deg}$</p>	<p>Project: MASJID BANDAR TASIK KESUMA</p> <p>Sample: BH-3/UD1/3.00m</p>
<p>Effective Stress :</p> <p>$c' = 7 \text{ kPa}$ $\phi' = 34 \text{ deg}$</p>	<p><u>Solid Line denotes Total Stress</u></p> <p>$c =$ Apparent Cohesion (kPa) $\phi =$ Angle of Shear Resistance (deg)</p> <p><u>Dot Line denotes Effective Stress</u></p> <p>$c' =$ Cohesion Intercept (kPa) $\phi' =$ Angle of Shear Resistance (deg)</p>

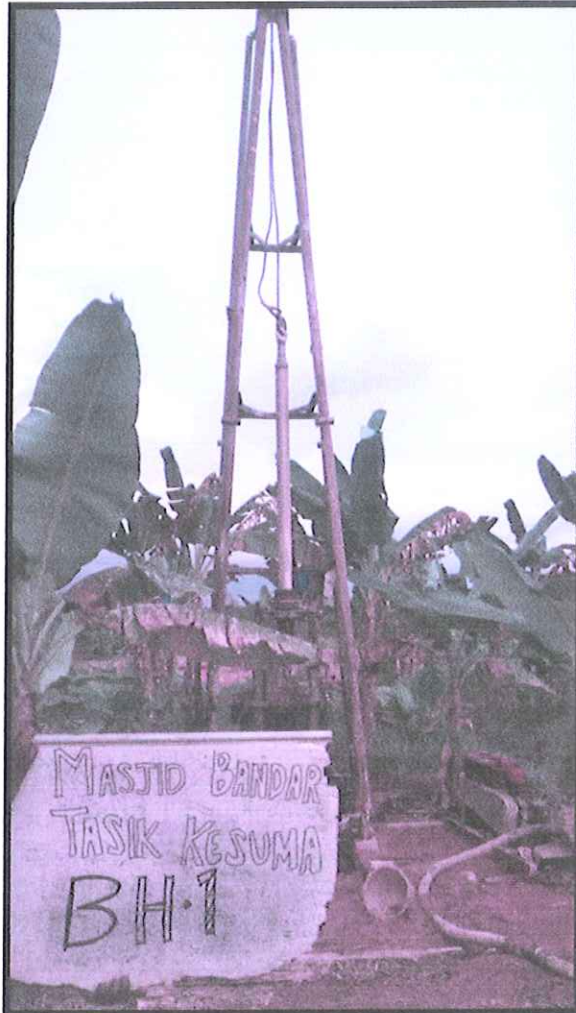
FAILURE ENVELOPE OF MOHR CIRCLES



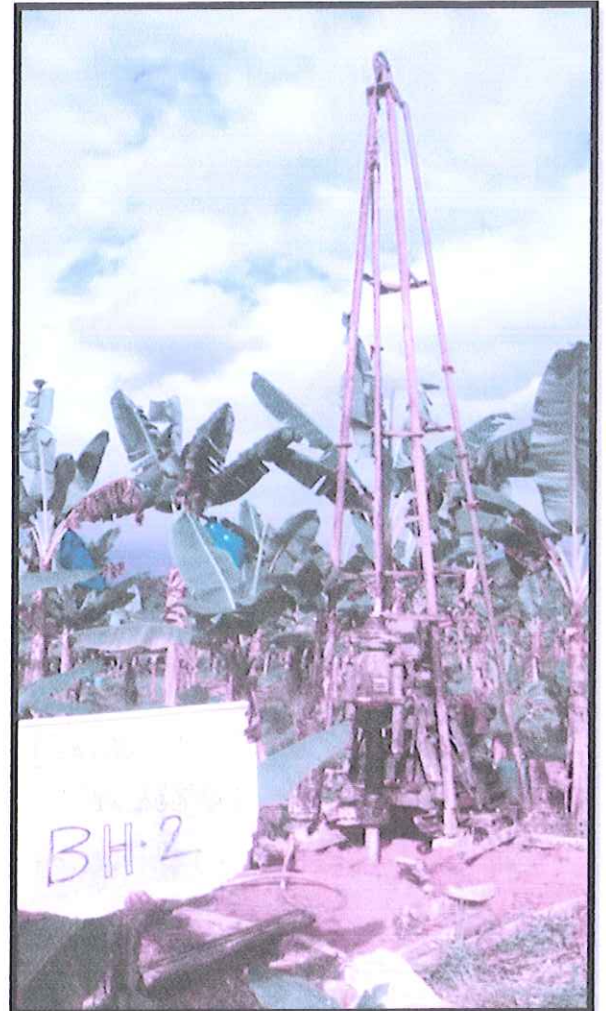
**APPENDIX D:
PHOTOGRAPH**

**KERJA - KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID
BANDAR TASIK KESUMA DI ATAS LOT PT11747, DAERAH HULU
LANGAT MUKIM BERANANG, SELANGOR DARUL EHSAN**

BORING MACHINE AT BOREHOLE POSITION



**DRILLING OPERATION BH 1
TERMINATION DEPTH: 36.30m**



**DRILLING OPERATION BH 2
TERMINATION DEPTH: 30.25m**

**KERJA - KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID
BANDAR TASIK KESUMA DI ATAS LOT PT11747, DAERAH HULU
LANGAT MUKIM BERANANG, SELANGOR DARUL EHSAN**

BORING MACHINE AT BOREHOLE POSITION



**DRILLING OPERATION BH 3
TERMINATION DEPTH: 27.18m**



**DRILLING OPERATION BH 4
TERMINATION DEPTH: 30.25m**

**KERJA - KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR
TASIK KESUMA DI ATAS LOT PT11747, DAERAH HULU LANGAT MUKIM
BERANANG, SELANGOR DARUL EHSAN**

MACKINTOSH PROBE



Carry out Mackintosh Probe at MP 1



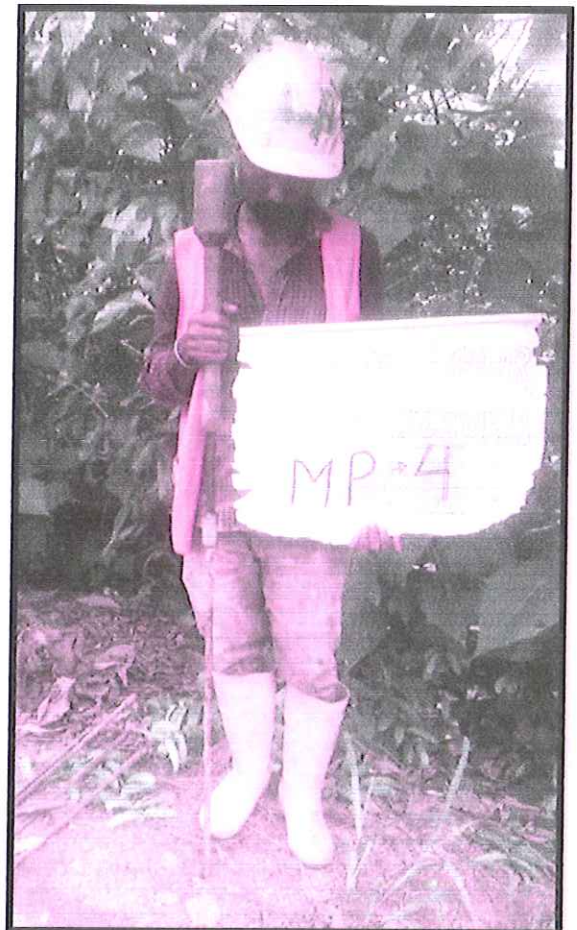
Carry out Mackintosh Probe at MP 2

**KERJA - KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR
TASIK KESUMA DI ATAS LOT PT11747, DAERAH HULU LANGAT MUKIM
BERANANG, SELANGOR DARUL EHSAN**

MACKINTOSH PROBE



Carry out Mackintosh Probe at MP 3



Carry out Mackintosh Probe at MP 4

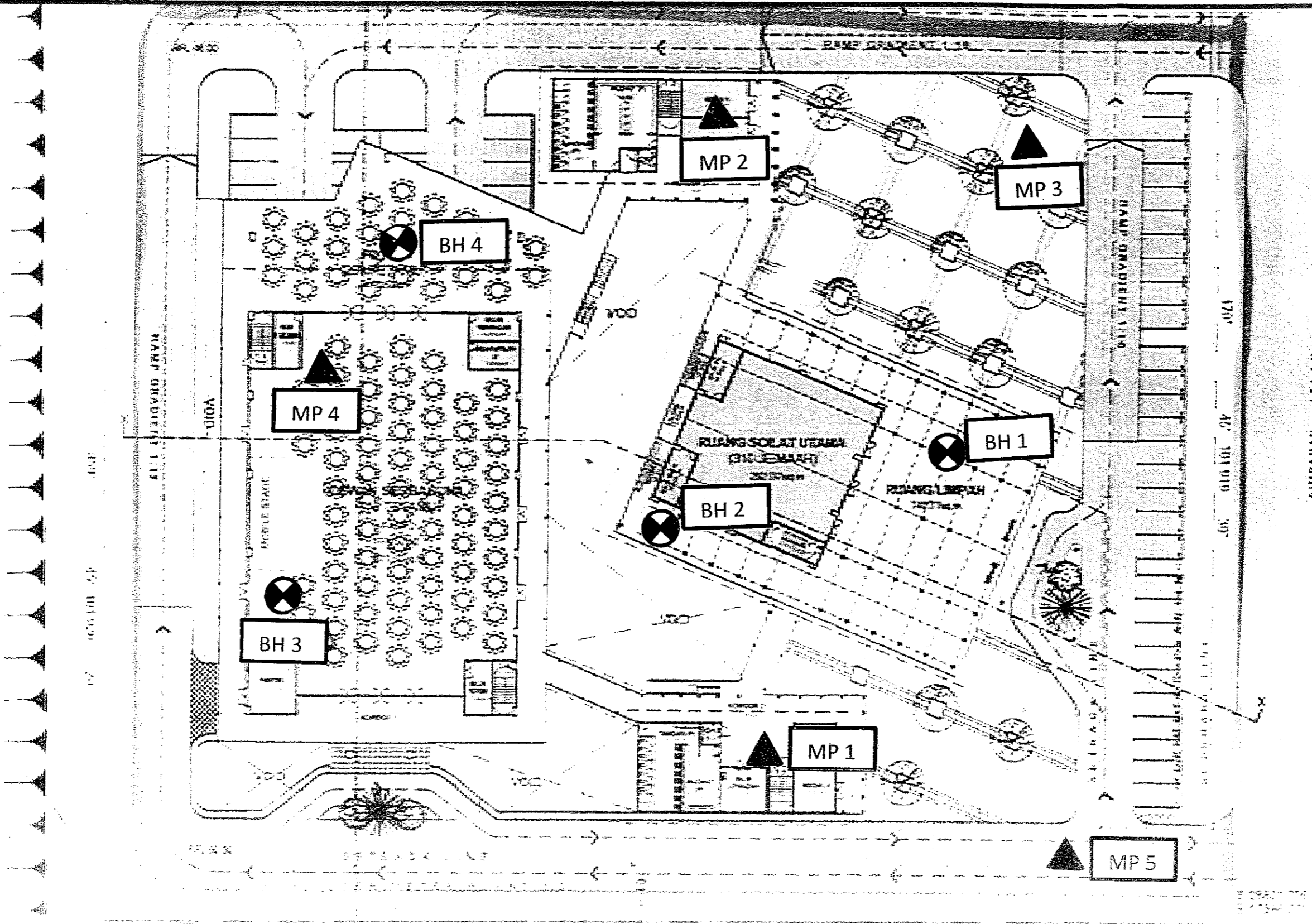
**KERJA - KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR
TASIK KESUMA DI ATAS LOT PT11747, DAERAH HULU LANGAT MUKIM
BERANANG, SELANGOR DARUL EHSAN**

MACKINTOSH PROBE





APPENDIX E:
SITE PLAN

KERJA - KERJA PENYIASATAN TANAH BAGI PEMBINAAN MASJID BANDAR TASIK KESUMA DI ATAS
LOT PT11747, DAERAH HULU LANGAT MUKIM BERANANG, SELANGOR DARUL EHSAN

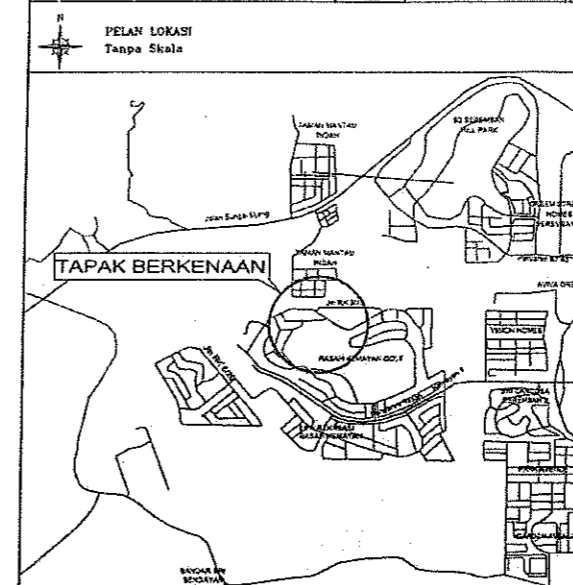
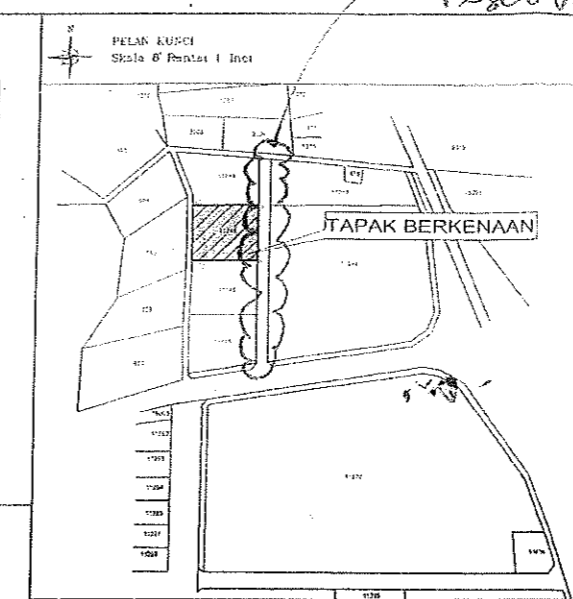
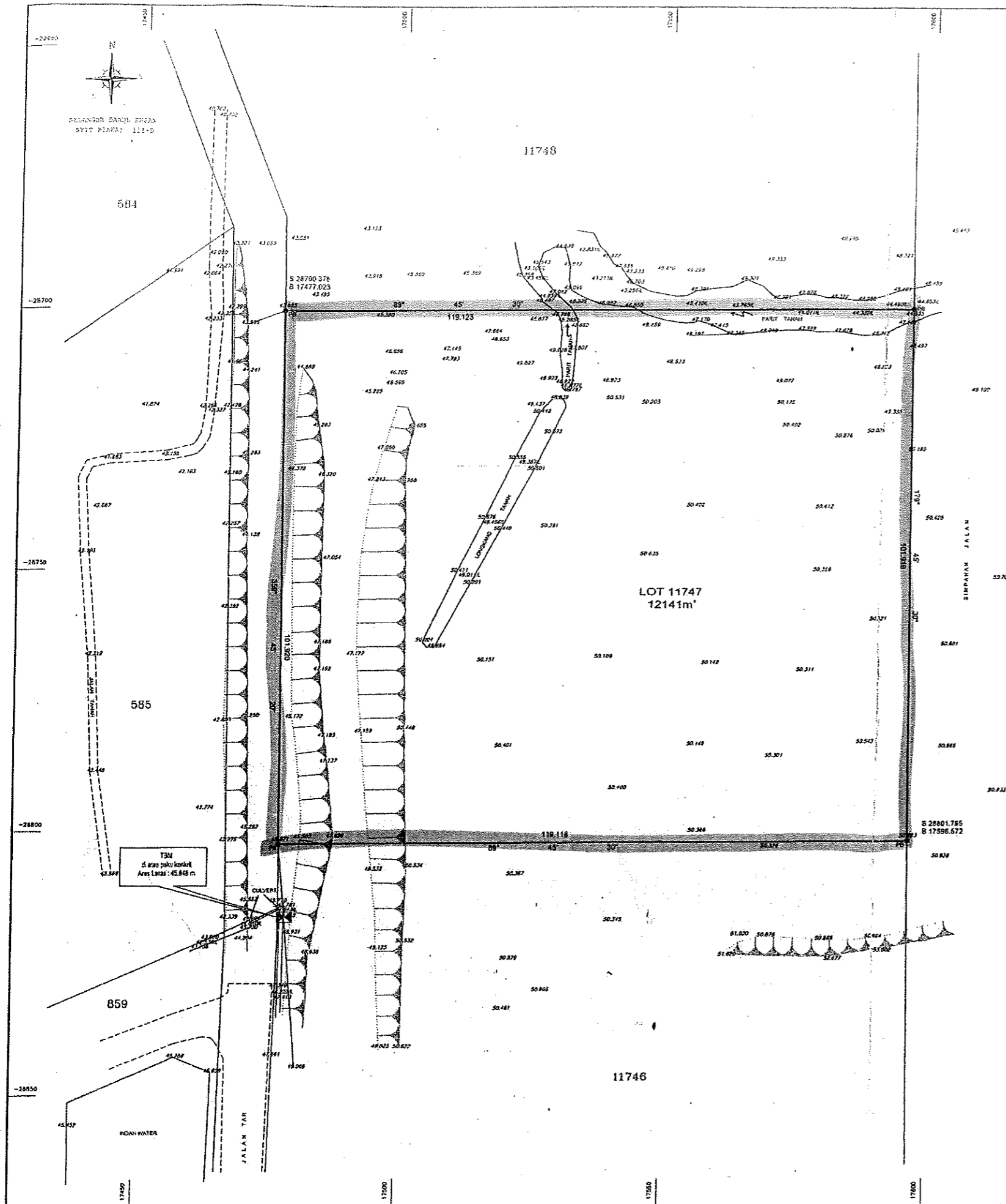


UPPER GROUND FLOOR PLAN

LEGEND

-  BOREHOLE
-  MACKINTOSH PROBE

*to check status land
reserve & how to get dep to
build*



TABUK :-
PELAN UKURAN DEMARKASI, BUTIRAN DAN ARAS
BAGI CADANGAN PEMBINAAN MASJID
BANDAR TASIK KESUMA
DI ATAS LOT 11747
DAERAH ULU LANGAT, MUKIM BERANANG
SELANGOR DARUL EHSAN

DATE	DESCRIPTION OF AMENDMENT	REV

AMENDMENTS			
SURVEYED BY	SAPUL	PLOT SCALE	1:400
DRAWN BY	HAZAM	DATE	11 SEPTEMBER 2015
CHECKED BY	JOHARI	SIZE	A1

PETUNJUK :-

- LOT 11747
KELUASAN 12141m²
- TANDA ASAS SEHENTARA (TAS)
- PAIP BARU
- JALAN TARIK
- INVERT LEVEL
- CUTTING

NOTA :-

- * Semua ukuran dalam bentuk meter
- * Asas dengan alat: benamiran topografi atau GPS
- * Uraian detail dan benamiran pada land sedari: & PA 11187

