



YAYASAN PERGURUAN "CIKINI"  
INSTITUT  
SAINS DAN TEKNOLOGI  
NASIONAL

5-13  
FAKULTAS TEKNIK SIPIL  
DAN PERENCANAAN  
JURUSAN TEKNIK SIPIL

PENUGASAN  
No : 22-06/PM/LM/VI/96

Ketua Program Studi Teknik Sipil, Fakultas Teknik Sipil dan Perencanaan Institut Sains dan Teknologi Nasional Jakarta menugaskan kepada :

Ir. Idrus, MSc                      Staff Jurusan Teknik Sipil

Untuk melakukan pekerjaan Penyelidikan Tanah sebagai bentuk kegiatan :  
**Pengabdian Pada Masyarakat pada :**

Nama Pekerjaan        : Penyelidikan Tanah GRAHA BINTARO  
Lokasi                    : Bintaro Jaya  
Pemberi Tugas         : PT. Karya Supra Politeknik

Dengan jadwal pelaksanaan pekerjaan selama 20 hari kerja ( 160Jam), 4 hari di lapangan dan 16 hari di Laboratorium

Kepada Ir. Idrus MSc diberikan kepercayaan penuh untuk melakukan pekerjaan Pengabdian Pada Masyarakat tersebut dan bertanggung jawab atas segala sesuatu mengenai pekerjaan tersebut

Kepada pelaksana tugas ini akan diberikan honorarium sesuai dengan ketentuan yang berlaku di Laboratorium Mekanika Tanah Institut Sains dan Teknologi Nasional.

Penugasan ini berlaku sejak dikeluarkan sampai dengan berakhirnya jangka waktu penyusunan Laporan Akhir (Final Report) diterima oleh pemberi kerja dengan baik.

Jakarta, 22 Juni 1996  
Kaprodik Teknik Sipil

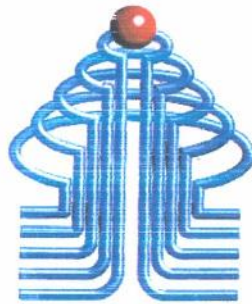


Ir. Ari Mulyo Diah Utami MT  
NIP : 01.83332

Tembusan :

1. Dekan FTSP-ISTN ( sbg laporan )
2. Ka. Lab. Mekanika Tanah ISTN
3. Arsip

**LEMBAR PENGESAHAN  
PENGABDIAN PADA MASYARAKAT**



**ISTN**

**PENYELIDIKAN TANAH GRAHA BINTARO  
Lokasi : Bintaro Jaya**

Oleh :  
Idrus Ir, M.Sc

Mengetahui :  
Ketua Jurusan Teknik Sipil



Ir. Arimulyo Diah Utami, M.T

**Program Studi Teknik Sipil  
Institut Sain dan Teknologi Nasional  
Jakarta 1996**

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**KARYA SUPRA POLATEKNIK**

**SURAT PERJANJIAN KERJASAMA**

No: 21-06.1/KSP/XI/96

Pada hari ini, Jum'at tanggal Dua Puluh Satu bulan Juni tahun Seribu Sembilan Ratus Sembilan Puluh Enam (21-06-1996) yang bertanda tangan dibawah ini :

N a m a : PT. Karya Supra Polateknik  
Selanjutnya disebut **PIHAK PERTAMA.**

N a m a : Ir. Idrus MSc  
Jabatan : Kepala Laboratorium Mekanika Tanah ISTN  
Selanjutnya disebut **PIHAK KEDUA.**

Kedua belah pihak telah sepakat untuk melakukan kerjasama dalam melakukan pekerjaan Penyelidikan Tanah (Soil Investigation) pada :

Proyek : Graha Bintaro  
Lokasi : Bintaro Jaya, Jakarta Selatan

Demikian surat perjanjian kerja sama ini kami buat dengan sebenar-benarnya.

Jakarta, 21 Juni 1996

PIHAK KEDUA

Laboratorium Mekanika Tanah ISTN

PIHAK PERTAMA

PT. Karya Supra Polateknik

104/96  
bf

# FINAL REPORT

## SOIL INVESTIGATION

PROJECT : GRAHA BINTARO

LOCATION : BINTARO JAYA, JAKARTA SELATAN

### I. PENDAHULUAN

Sehubungan dengan permohonan yang kami terima untuk melakukan pekerjaan penyelidikan tanah pada proyek : GRAHA BINTARO , di Bintaro Jaya , Jakarta Selatan, maka kami dari PT. KARYA SUPRA POLA TEKNIK Jakarta yang bekerja sama dengan Laboratorium Mekanika Tanah I.S.T.N Jakarta akan melaporkan hasil pekerjaan penyelidikan tanah tersebut dalam bentuk Final Report.

Pekerjaan dilapangan telah kami laksanakan mulai dari tanggal 27 Juni 1996 hingga 4 juli 1996, berupa pekerjaan 4 (empat) titik pekerjaan Sondir kapasitas 2,5 tonf dan 4 (empat) titik pekerjaan Bor dalam masing – masing kedalaman hingga 20.00 meter.

Penyelidikan tanah ini dimaksudkan untuk mengetahui sifat – sifat indeks tanah , sifat kuat geser tanah, sifat kompresibilitas tanah, serta untuk mengetahui konsistensi lapisan tanah hingga lapisan tanah keras yang ditunjukkan dengan tahanan ujung konus  $> 100 \text{ kg/cm}^2$  atau pada nilai N – SPT ( N – Value) lebih besar dari 30.

Hasil parameter tanah yang diperoleh dimaksudkan untuk menghitung kemampuan daya pondasi yang akan dipakai.

*PT. Karya Supra Pola Teknik In Ass. With Soil Mechanics Laboratory of I.S.T.N Jakarta*

21/6

## II. PELAKSANAAN DI LAPANGAN

Pelaksanaan penyelidikan tanah di lapangan pada proyek ini meliputi :

1. CPT test (sondir) kapasitas 2,5 tonf
2. Deep boring (Bor dalam)
3. Undisturbed sampling (pengambilan contoh tanah tidak terganggu)
4. Standard Penetration Test (SPT)

### 2.1. Peralatan

- a. 1 (satu) alat CPT / sondir kapasitas 2,5 tonf, menggunakan biconus dengan maksimum kedalaman pengujian hingga 30 meter.
- b. 1 (satu) alat bor dalam lengkap dengan thin walled sampler (tabung contoh) dengan diameter 75 mm panjang 60 cm serta tebal tabung 2.00 mm
- c. 1 (satu) unit alat SPT lengkap
- d. 1 (satu) unit alat pompa air

### 2.2. Metode Pelaksanaan

#### 1. CPT ( Sondir )

Konus yang digunakan adalah frictioncone (biconnus) dengan suatu luas penampang 10 cm<sup>2</sup>, luas selimut geser 150 cm<sup>2</sup>.

Sondir dilakukan secara terus menerus dengan interval 20 cm kedalaman (penetrasi) sampai menunjukkan tahanan ujung konus & geser maksimum sebesar 250 kg/cm<sup>2</sup>. Atau sampai kedalaman maksimum sedalam 30 meter.

Data yang disajikan dalam percobaan ini adalah nilai tahanan ujung konus dan total friksi serta ratio antara lokal friksi terhadap tahanan ujung konus ( $f/q_c$ ) dari tiap kedalaman 20 cm sampai kedalaman maksimum dari kapasitas alat sondir yang dipakai atau sampai maksimum kedalaman 30 meter.

## 2. Boring

Peneboran dilakukan terus menerus dengan cara Rotary Core Drilling dengan menggunakan Single Core Barrel.

Deskripsi tanah secara visual dilakukan terus menerus sepanjang lubang pengeboran. Semua contoh tanah hasil coring disimpan dalam kantong plastik tertutup, lengkap dengan keterangannya.

Untuk mengatasi kelongsoran yang terjadi selama pengeboran dilaksanakan, maka adakalanya digunakan casing (pipa pelindung) dengan diameter 100 mm.

## 3. Undisturbed Sampling

Pengambilan contoh tanah tidak terganggu / asli dilakukan dengan menggunakan "Shellby Type Thin walled Sampler" dan dilakukan sesuai dengan persyaratan

prosedur percobaan dari ASTM D. 1587.

Tabung yang sudah tersi tanah akan ditutup kedua ujungnya dengan campuran parafin ditambah damar dan dimasukkan kedalam kantong plastik lengkap dengan keterangannya, kemudian disimpan, dihindari kemungkinan terjadinya benturan– benturan atau tumbukan serta panas sinar matahari secara langsung. kemudian contoh tanah tersebut dikirim ke Laboratorium Mekanika Tanah I.S.T.N Jakarta.

#### **4. Standard Penetration Test**

Percobaan Standard penetration test dilakukan untuk mengetahui konsistensi dari lapisan tanah yang berbutir kasar maupun yang berbutir halus.

Pengujian SPT ini mengacu pada standard pengujian dari ASTM D.1586, dengan kriteria sebagai berikut :

- . Berat Hammer yang digunakan 63.50 kgf
- . Tinggi jatuh bebas hammer sejarak 76 cm.

Nilai N–SPT dibaca hingga total penetrasi sebesar 45 cm.

Nilai N–SPT yang dipakai adalah pada penetrasi 30 cm terakhir.



### 2.3. Jumlah dan Hasil Penyelidikan

CPT Test sebanyak 4 (empat) titik.

Titik	Tahanan Korus 100 kg/cm <sup>2</sup>	Total Friction kg/cm'	M.A.T meter
S-1	11.60 m	1200	5.40
S-2	8.80 m	1200	4.80
S-3	8.80 m	1000	7.80
S-4	9.60 m	700	7.80

Depth Boring sebanyak 4 (empat) titik.

Titik Bor	Kedalaman (m)	SPT	UD-S
DB-1	20.00	10	4
DB-2	20.00	10	4
DB-3	20.00	10	4
DB-4	20.00	10	4

### III. PENELITIAN DI LABORATORIUM

Penelitian di Laboratorium meliputi contoh tanah :

Undisturbed sample, yang berasal dari Thin Walled Tube Sampler dilakukan penelitian :

Soil Properties yang meliputi : Index properties, shear strength properties, compressibility properties

Disturbed sample, dari contoh tanah yang terganggu dilakukan deskripsi tanah secara visual.

Penelitian dari contoh tanah tidak terganggu (undisturbed sample) dilakukan sesuai dengan persyaratan prosedur percobaan dari ASTM (American Standard for Testing Material), yang meliputi :

Penentuan kadar air tanah asli (wn)

Penentuan berat isi tanah

Penentuan berat isi tanah kering

Penentuan berat isi jenis

Penentuan konsistensi tanah (Atterberg limits)

Sieve analysis dan Hydrometer analysis

Consolidation test

Shear Strength by triaxial test (UU test)

## Jenis dan Jumlah Pengujian di Laboratorium

Jenis pengujian	Jumlah	Sampel
1. Index properties	16 titik	UD-S
2. Grainsize distribution	16 titik	UD-S
3. Atterberg limit	16 titik	UD-S
4. Consolidation	16 titik	UD-S
5. Triaxial UU Test	16 titik	UD-S

Keterangan :

UD-S : Undisturbed sample

## IV. KESIMPULAN DAN REKOMENDASI

### 4.1 Kondisi Lapisan Tanah

Dari pengujian bor dalam sebanyak 4 (empat) titik dan pengujian Cone Penetration Test sebanyak 4 (empat) titik, dapat dijelaskan kondisi lapisan tanah sebagai berikut:

- a. Dari permukaan tanah hingga kedalaman -5.00 meter dijumpai suatu lapisan lempung kelanauan berwarna coklat kemerahan dengan konsistensi sedang dan berplastisitas tinggi. Pada titik-titik DB-1 dan DB-3 di kedalaman -5.00 meter konsistensi lapisan tanah lunak. (soft)

- b. Pada kedalaman  $-5.00$  meter hingga kedalaman  $-10.00$  meter dijumpai suatu lapisan Lanau kelepungan berwarna coklat bercampur abu-abu dengan konsistensi kaku sampai keras. Lapisan tanah dengan konsistensi keras, ditemui pada kedalaman  $-9.00$  meter, khusus pada daerah disekitar DB-1 pada  $-12.00$  meter.
- c. Lapisan tanah lanau keras (cemented), atau Lanau kepasiran dijumpai pada titik DB-4 dan DB-1 pada kedalaman antara  $-10.00$  meter sampai dengan  $-16.00$  meter.
- d. Lapisan pasir sangat padat ditemui pada titik-titik DB-2 dan DB-3 pada kedalaman antara  $10.00 - 12.00$  meter hingga  $12.00 - 14.00$  meter
- e. Lapisan lanau kepasiran atau pasir kelanauan dengan konsistensi very stiff sampai keras / padat, ditemui pada kedalaman antara  $-14.00$  meter sampai dengan akhir pengeboran ( $-20.00$  meter)
- f. Muka air tanah pada saat pengeboran dilakukan ditemui pada kedalaman antara  $-3.40$  sampai dengan  $-3.60$  meter dari permukaan tanah rata-rata.

## 4.2. Rekomendasi

Dari kondisi lapisan tanah seperti dijelaskan diatas, dapat kami sarankan alternatif penggunaan pondasi sebagai berikut :

### 4.2.1. Pondasi Tiang :

Dapat digunakan dengan ketentuan sebagai berikut :

- a. Kedalaman pemancangan hingga end bearing, atau final set maksimum 2 cm pada 10 (sepuluh) pukulan hammer terakhir.
- b. Daya dukung tiang dapat diperhitungkan dengan berbagai formula yang lazim digunakan.

Daya dukung ultimate aksial pondasi tiang, diperoleh dari mobilisasi daya dukung ujung , dan daya dukung dari selimut tiang.

$$Q_u = Q_p + Q_s$$

dimana :  $Q_u$  = Daya dukung aksial ultimate

$Q_p$  = Daya dukung ujung tiang (end bearing)

$Q_s$  = Daya dukung selimut tiang (friction resistance)

Untuk tanah kohesif :

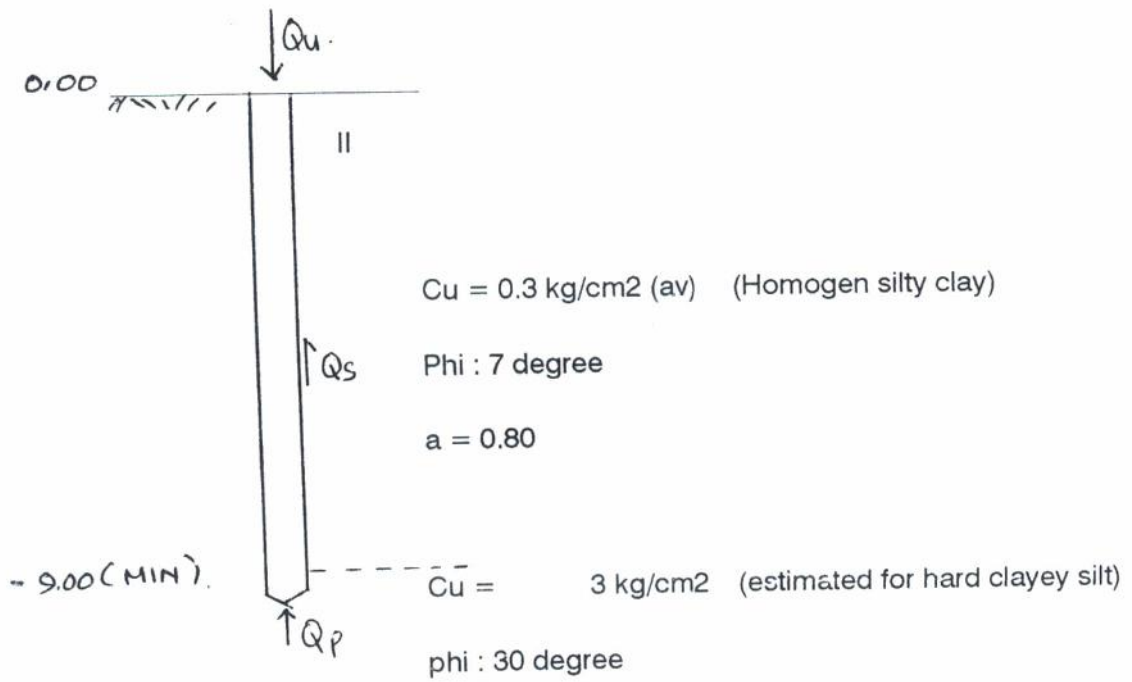
$$Q_p = A_p \cdot C_u \cdot N_c' \text{ (Meyerhoff)}$$

$$Q_p = A_p \cdot (1.3 C \cdot N_c + q) \text{ (Terzaghi)}$$

$$Q_p = N_c \cdot C_u \cdot A_p \text{ (Tomlinson)}$$

$$Q_s = L_b \cdot (q' + 2C) \cdot A_p \text{ (Vijayvergiya \& Facht)}$$

$$Q_s = a \cdot C_u \cdot A_s \text{ (Tomlinson)}$$



Ukuran Tiang	B Cm	$A_p$ $\text{cm}^2$	L Cm	$Q_p$ ton	$Q_s$ ton	$Q_u$ ton	$Q_a$ $Q_s/SF \text{ (ton)}$
20 x 20 cm	20	400	900	48	17.28	65.28	26.112
25 x 25 cm	25	625	900	75	21.6	96.6	38.64
30 x 30 cm	30	900	900	108	25.92	133.92	53.568

Keterangan :  $Q_a$  = Daya dukung aksial yang diizinkan

Dari Hasil Uji CPT test, formula sederhana  $P_a = (q_c \cdot A_p) / 3 + (T_f \cdot S) / 5$

Data CPT :  $q_c$  : 100  $\text{kg/cm}^2$   $T_f$  : 700  $\text{kg/cm}^2$

Ukuran Tiang	B Cm	$A_p$ $\text{cm}^2$	L Cm	$P_a$ ton
20 x 20 cm	20	400	900	24.53
25 x 25 cm	25	625	900	34.83
30 x 30 cm	30	900	900	46.80

Keterangan :

$P_a$  : Gaya Aksial Tekan yang diizinkan

## Settlement pada tiang

### Untuk Friction Pile :

$$S = P \cdot I_f / E_s \cdot d$$

dimana : S = penurunan tiang

P = Gaya aksial pada tiang

$$I_f = I_o \cdot R_k \cdot R_h \cdot R_v$$

$I_o$  = faktor pengaruh penurunan tiang

$R_k$  = faktor koreksi untuk tiang compressible

$R_h$  = faktor koreksi unt. lapisan pada kedalaman terbatas

$R_v$  = faktor koreksi untuk poisson ratio

$E_s$  = modulus elastisitas tanah

d = diameter (lebar) tiang

### Untuk bearing pile

$$S = P \cdot I_c / E_s \cdot d$$

dimana : S = penurunan tiang

P = Gaya aksial pada tiang

$$I_c = I_o \cdot R_k \cdot R_b \cdot R_v$$

$I_o$ ,  $R_k$ ,  $R_v$  sama seperti friction pile

$R_b$  = faktor koreksi unt. kekakuan lapisan pendukung

#### 4.2.2. Pondasi Dangkal

Nc	6.49
Nq	1.57
Ng	0.45

#### Pondasi Setempat

B (lebar) m	D (dalam) m	Cu t/m <sup>2</sup>	Phi degree	g' t/m <sup>3</sup>	qa (izin) t/m <sup>2</sup>
1	1	2	5	1.6	6.56
1.25	1.25	2	5	1.6	6.79
1.5	1.5	2	5	1.6	7.02
2	2	2	5	1.6	7.49



Dengan ketentuan sebagai berikut :

- a. Kedalaman pondasi antara 1.00 meter hingga 2.00 meter
- b. Lebar pondasi antara 1.00 meter hingga 2.00 meter
- c. Pada dasar pondasi dipadatkan sirtu setebal 15 cm
- d. Daya dukung izin untuk pondasi setempat berkisar antara 6.56 sampai dengan 7.49 t/m<sup>2</sup>.
- e. Perlu diperhitungkan settlement akibat proses konsolidasi hingga kedalaman minimal  $2B$ , dimana  $B$  adalah lebar pondasi yang dipakai.

LABORATORIUM MEKANIKA TANAH I.S.T.N

Kepala

( Ir. Idrus M.Sc )

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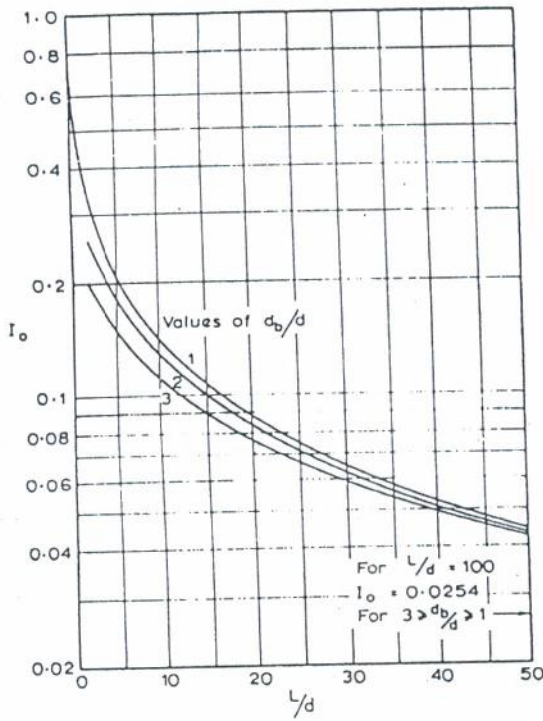


FIGURE 5.18 Settlement-influence factor,  $I_0$ .

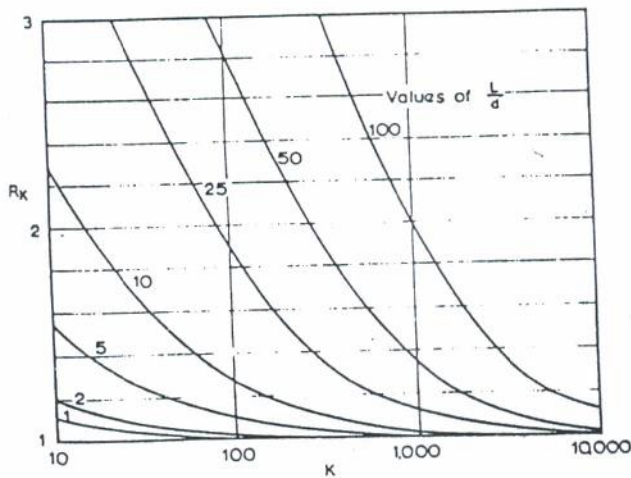


FIGURE 5.19 Compressibility correction factor for settlement,  $R_K$ .

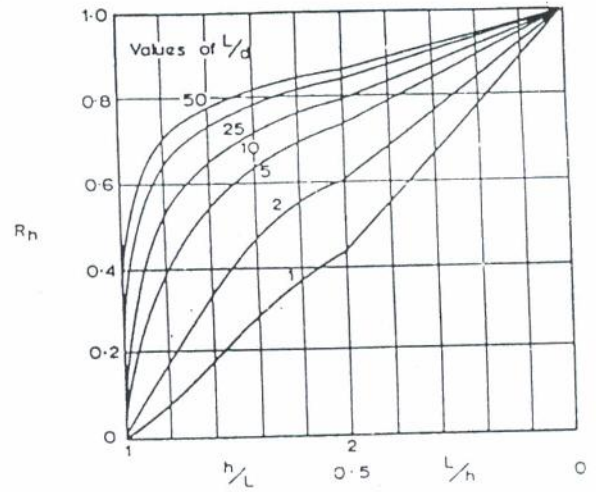


FIGURE 5.20 Depth correction factor for settlement,  $R_h$ .

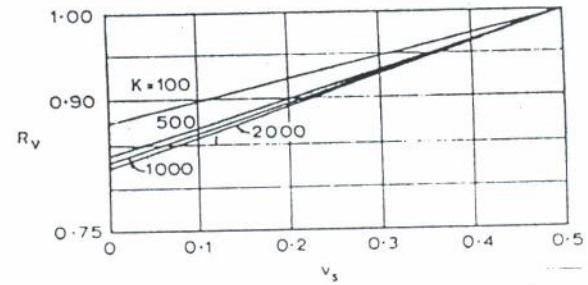


FIGURE 5.21 Poisson's ratio correction factor for settlement,  $R_v$ .

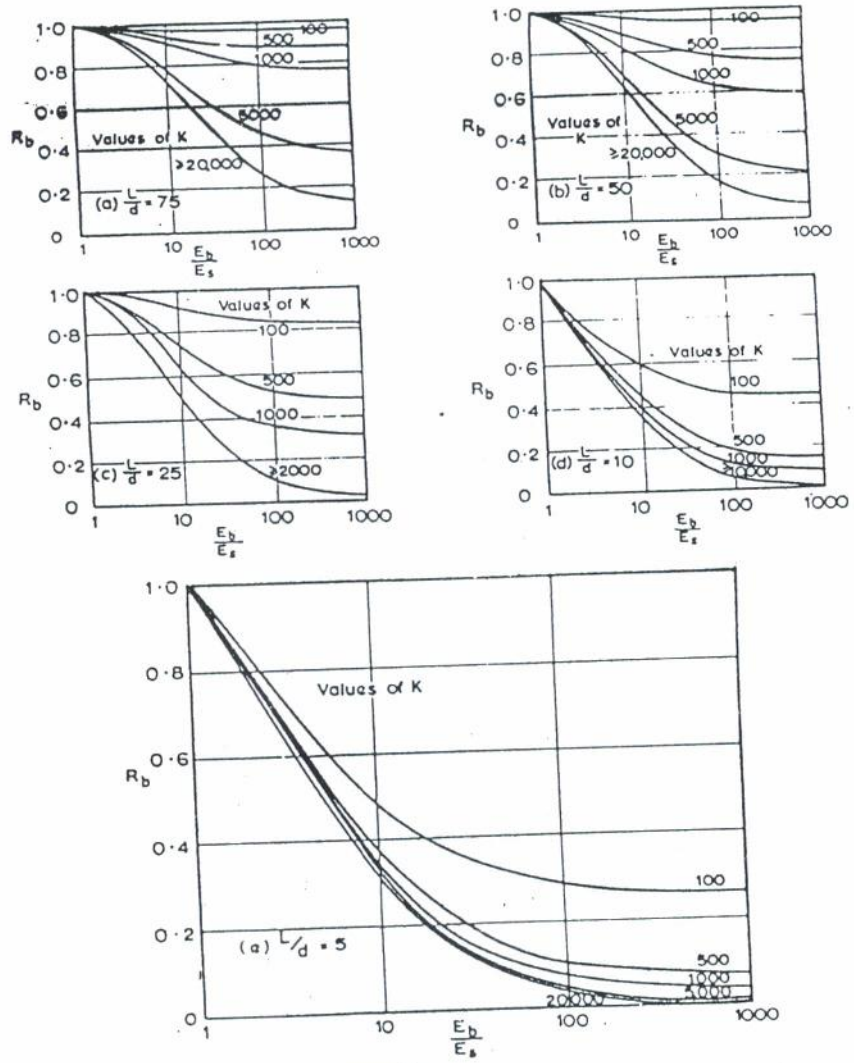


FIGURE 5.22 Base modulus correction factor for settlement,  $R_b$ .



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### BORING LOG

page : 1

<b>OBJECT</b>	GRAHA BINTARO	<b>Started</b>	June 27 th 1996	<b>Drawn by</b>	Abdurachman Mr	<b>Bore Hole Number</b>  DB-1
<b>LOCATION</b>	Bintaro , Jakarta Selatan	<b>Finished</b>	June 28 th 1996	<b>Checked by</b>	Faozi Buldan Ir Mr	
<b>TOTAL DEPTH</b>	20.00 meter	<b>Tested by</b>	Masdra Mr.	<b>Approved by</b>		
<b>ELEVATION</b>	0.00 meter	<b>Av. GWT</b>	- 3.40 m	<b>Date</b>	July 1996	

No	Depth	Elev.	Thickness	Soil	Soil Classification	Description	Sample	Standard Penetration Test (N Value)													
								Number of Blows													
								Every 15 cm	30 Cm	10	20	30	40	50	60						
1	1	0.00	4.00 m	[Clay]	CH	SILTY CLAY, reddish brown, medium consistency with high silt fraction	U.1.50-2.00														
2	2																				
3	3																				
4	4																				
5	5	3.00 m	[Clay]	OH-MH	CLAYEY SILT, reddish brown mottled grey, soft consistency	U.5.50-6.00	U.5.50-6.00														
6	6																				
7	7																				
8	8	7.00 m	[Clay]	CH	SILTY CLAY, light grey mottled brown, stiff consistency	U.7.50-8.00	U.7.50-8.00														
9	9																				
10	10																				
11	11																				
12	12																				
13	13																				
14	14																				
15	15	4.00 m	[Silt]	ML-OL	FINE SANDY SILT, dark brown, hard consistency	U.15.50-16.00	U.15.50-16.00														
16	16																				
17	17																				
18	18																				
19	19	1.50 m	[Sand]	SM	SILTY SAND, black, very dense consistency																
20	20	0.50 m	[Clay]	CH	CLAYEY SILT, Blueish grey, hard consistency																

end of boring

#### EMARKS

Clay	[Clay]	Organic	~~~~~
Silt	[Silt]	Gravel	*****
Sand	[Sand]	Rock	■

Type of Dilling Machine : YBM- YSO-1



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### BORING LOG

page : 1

OBJECT LOCATION TOTAL DEPTH ELEVATION	GRAHA BINTARO	Started June 29 th 1996	Drawn by Abdurachman Mr	Bore Hole Number  DB-2
	Bintaro , Jakarta Selatan	Finished June 30 th 1996	Checked by Faozi Buidan Ir Mr	
	20.00 meter	Tested by Masdra Mr.	Approved by	
	0.00 meter	Av. GWT - 3.60 m	Date July 1996	

No	Depth	Elev.	Thickness	Soil	Soil Clas- sification	Description	Sample	Standard Penetration Test (N Value)												
								Number of Blows												
								Every 15 cm	30 Cm	10	20	30	40	50	60					
1	1	0.00	6.00 m		CH	SILTY CLAY, reddish brown, medium consistency with high silt fraction	U.1.50-2.00	4	4	8										
2	2																			
3	3							mottled light grey	U.3.50-4.00	3	4	7								
4	4																			
5	5							colour brown, mottled light grey flocculated clay	U.5.50-6.00	3	4	7								
6	6																			
7	7	1.50 m	1.50 m		MH-OH	CLAYEY SILT, brown mottled yellow, medium consistency	U.7.50-8.00	4	4	8										
8	8																			
9	9	2.50 m	2.50 m		CH	SILTY CLAY, brownish light grey, medium consistency	U.7.50-8.00	10.15												
10	10										10.25	+50	50+							
11	11	2.00 m	2.00 m		SP	CEMENTED SAND, brown, very dense consistency		22	28	50										
12	12																			
13	13		6.00 m		ML-OL	SANDY COARSE SILT, brown, very hard consistency		14.15												
14	14										14.32	40	+10	50+						
15	15																			
16	16								hard consistency		12	23	35							
17	17																			
18	18										11	18	29							
19	19	1.50 m	1.50 m		OH	CLAYEY SILT, brown, very stiff consistency														
20	20	0.50 m							CH	SILTY CLAY, Blueish grey, very stiff consistency		12	13	25						

end of boring

#### REMARKS

Clay		Organic	
Silt		Gravel	
Sand		Rock	

Type of Drilling Machine : YBM- YSO-1

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## BORING LOG

<b>PROJECT</b> GRAHA BINTARO Bintaro, Jakarta Selatan <b>DEPTH</b> 20.00 meter <b>LOCATION</b> 0.00 meter	<b>Started</b> July 1st 1996 <b>Finished</b> July 2nd 1996 <b>Tested by</b> Masdra Mr. <b>Av. GWT</b> - 3.50 m	<b>Drawn by</b> Abdurachman Mr <b>Checked by</b> Faozi Buldan Ir Mr <b>Approved by</b> <b>Date</b> July 1996	<b>Bore Hole Number</b> DB-3
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No	Depth	Elev.	Thickness	Soil	Soil Classification	Description	Sample	Standard Penetration Test (N Value)															
								Number of Blows															
								Every 15 cm	30 Cm	10	20	30	40	50	60								
1	1	0.00	5.00 m	[Clay]	CH	SILTY CLAY, reddish brown, medium consistency high silt fraction	U.1.50-2.00	3	3	6													
2	2																						
3	3																						
4	4										soft consistency colour reddish brown mottled light grey	U.3.50-4.00	2	2	4								
5	5																						
6	6		5.00 m	[Clay]	MH-OH	CLAYEY COARSE SILT, brown, very stiff consistency colour brown with white point and mottled light grey	U.5.50-6.00	8	11	19													
7	7																						
8	8									colou yellowish light grey	U.7.50-8.00	8.15											
9	9									colour light brown, very hard consistency		10.00											
10	10											10.12	+50		50+								
11	11		2.00 m	[Clay]	MH-OH	CEMENTED COARSE SILT, brown, very hard consistency		12.15															
12	12											12.30	+50		50+								
13	13		2.00 m	[Sand]	SP	CEMENTED FINE SAND, dark grey, very dense consistency																	
14	14											27	23		50								
15	15		5.50 m	[Sand]	SM	SILTY VERY FINE SAND, dark grey, hard consistency  very hard consistency		16.15															
16	16											16.35	40	+10		50+							
17	17																						
18	18										hard consistency												
19	19												20.15										
20	20		0.50 m	[Clay]	CH	SILTY CLAY, grey and blue, very hard consistency		20.37	25	+25		50+											

REMARKS

end of boring

Clay	[Symbol]	Organic	~~~~~
Silt	[Symbol]	Gravel	*****
Sand	[Symbol]	Rock	[Symbol]

Type of Drillig Machine : YBM- YSO-1

KARYA SUPRA POLATEKNIK PT, In Associate With  
 SOIL MECHANICS LABC.RATORY OF I.S.T.N JAKARTA

**BORING LOG**

page : 1

OBJECT LOCATION TOTAL DEPTH ELEVATION	GRAHA BINTARO	Started July 3rd 1996	Drawn by Abdurachman Mr	Bore Hole Number  DB-4
	Bintaro, Jakarta Selatan	Finished July 4th 1996	Checked by Faozi Buidan Ir Mr	
	20.00 meter	Tested by Masdra Mr.	Approved by	
	0.00 meter	Av. GWT - 3.60	Date July 1996	

No	Depth	Elev.	Thickness	Soil	Soil Clas-sification	Description	Sample	Standard Penetration Test (N Value)											
								Number of Blows											
								Every 15 cm	30 Cm	10	20	30	40	50	60				
1	1	0.00	5.00 m	[Pattern]	CH	SILTY CLAY, reddiah brown, medium consistency high silt fraction	U.1.50-2.00												
2	2											3	4	7					
3	3																		
4	4												2	3	5				
5	5																		
6	6	5.00 r.n	5.00 m	[Pattern]	MH-OH	CALYCY SILT, light grey mottled red medium consistency	U.5.50-6.00												
7	7													3	4	7			
8	8																		
9	9																		
10	10																		
11	11	6.00 m	6.00 m	[Pattern]	MH-OH	CLAYEY COARSE SILT, brown, very hard consistency  cemented	U.7.50-8.00												
12	12																		
13	13																		
14	14																		
15	15																		
16	16																		
17	17	3.50 m	3.50 m	[Pattern]	SM	SILTY VERY FINE SAND, dark grey, hard consistency													
18	18																		
19	19																		
20	20																		
20	20	0.50 m	0.50 m	[Pattern]	CH	SILTY CLAY, grey mottled blue, hard consistency		18	24	42									

REMARKS

end of boring

Clay	[Pattern]	Organic	~~~~~
Silt	[Pattern]	Gravel	*****
Sand	[Pattern]	Rock	[Pattern]

Type of Drilling Machine : YBM- YSO-1

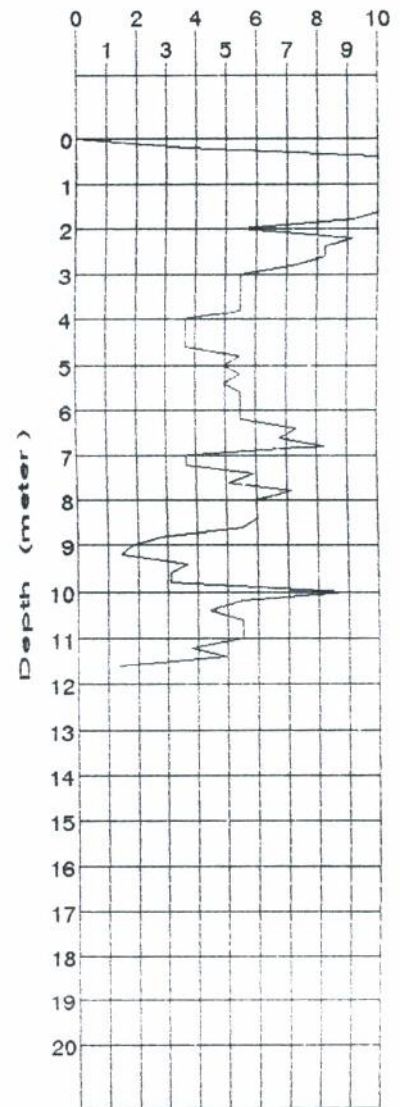
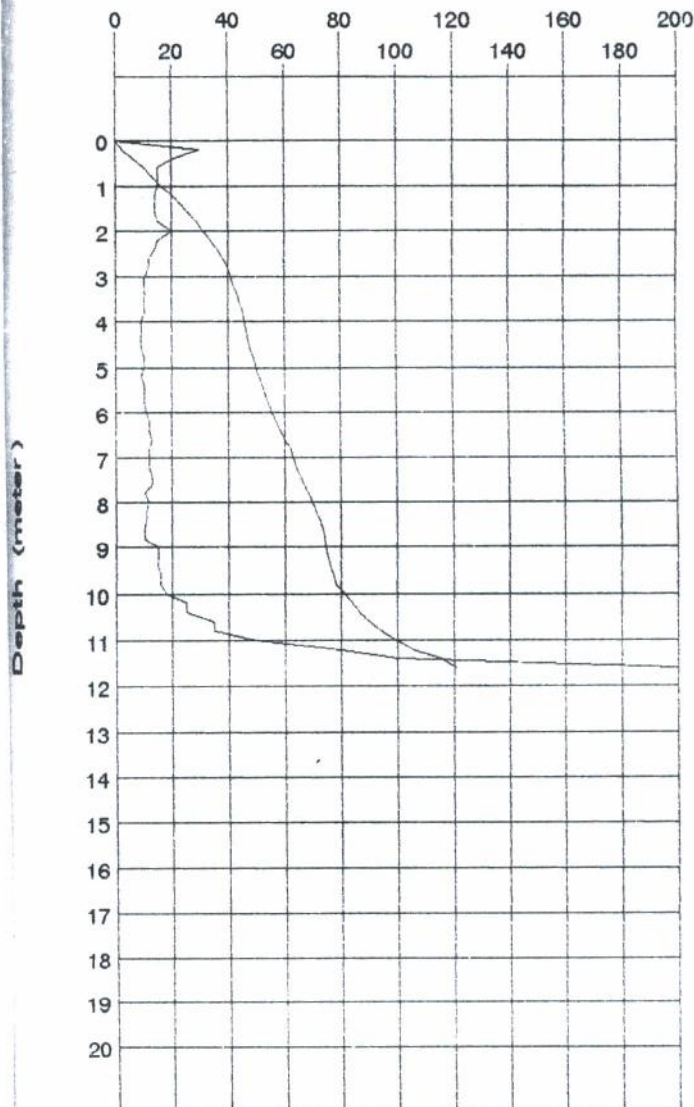


### CONE PENETRATION TEST

C.P.T NO	: S 1	Coordinate	
PROJECT	: Graha Bintaro	North	-----
LOCATION	: Pondok Kacang Timur	East	-----
Date of test	: JUN. 30th. 1996	Elevation (m)	-----
Tested by	: Sarman Mr.	G.W.L (m)	5.40
Checked by	: Ir. Atjep Sudarjanto Mr.		

Qc (Kg/cm<sup>2</sup>) and Tf (Kg/cm' x 10)

Friction/Qonus Resistance (%)





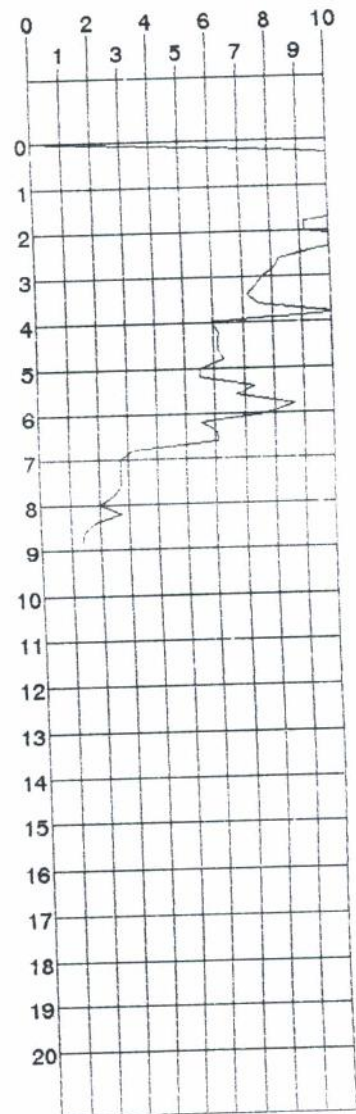
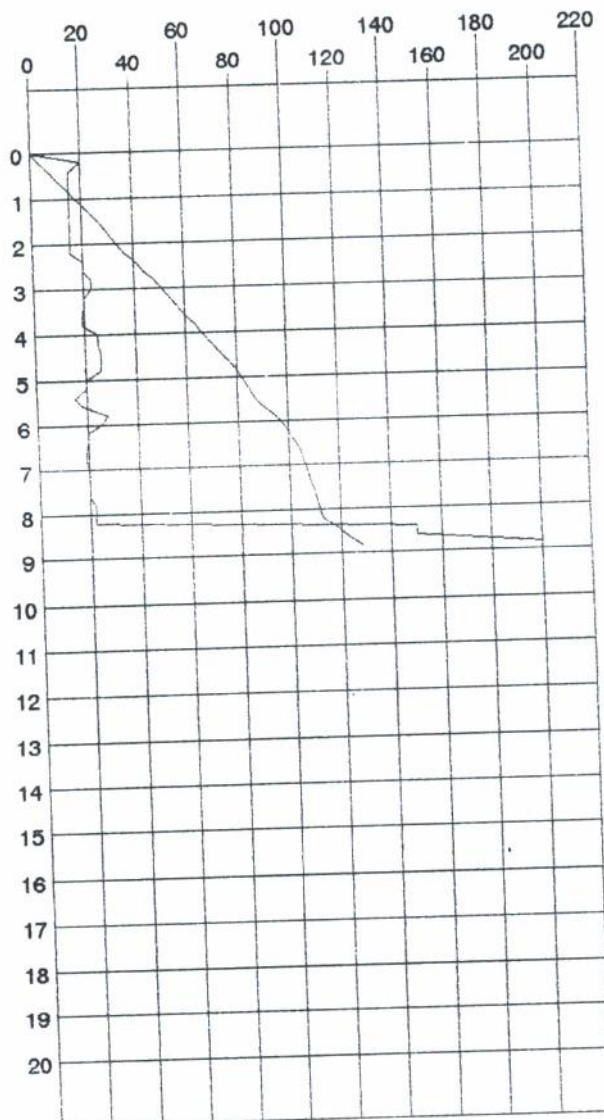


### CONE PENETRATION TEST

C.P.T NO	: S 2	Coordinate	
PROJECT	: Graha Bintaro	North	-----
LOCATION	: Pondok Kacang Timur	East	-----
Date of test	: JUN. 30th. 1996	Elevation (m)	-----
Tested by	: Sarman Mr.	G.W.L (m)	4.60
Checked by	: Ir. Atjep Sudarjanto Mr.		

Qc (Kg/cm<sup>2</sup>) and Tf (Kg/cm<sup>2</sup> x 10)

Friction/Conus Resistance (%)



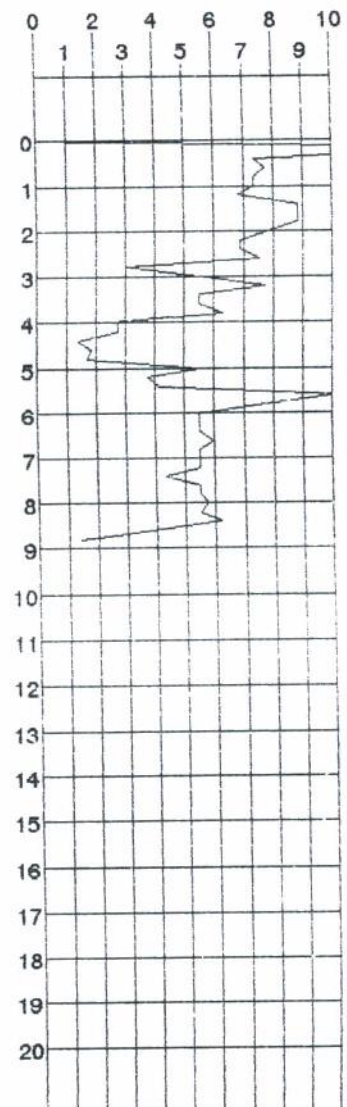
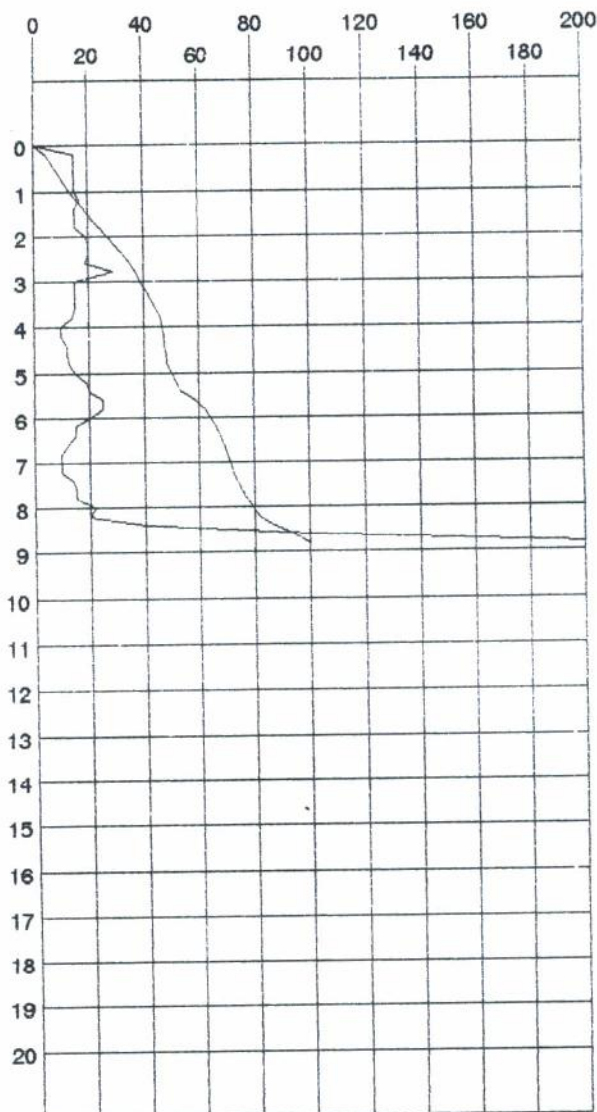


## CONE PENETRATION TEST

C.P.T NO	: 83	Coordinate	
PROJECT	: Graha Bintaro	North	-----
LOCATION	: Pondok Kaoang Timur	East	-----
Date of test	: JUN. 30th. 1996	Elevation (m)	-----
Tested by	: Sarman Mr.	G.W.L (m)	7.80
Checked by	: Ir. Atiep Sudarianto Mr.		

Qc (Kg/cm<sup>2</sup>) and Tf (Kg/cm<sup>2</sup> x 10)

Friction/Conus Resistance (%)



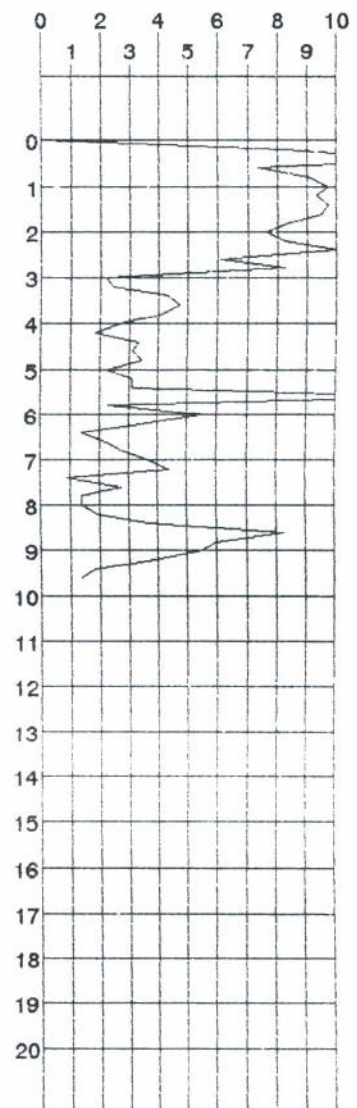
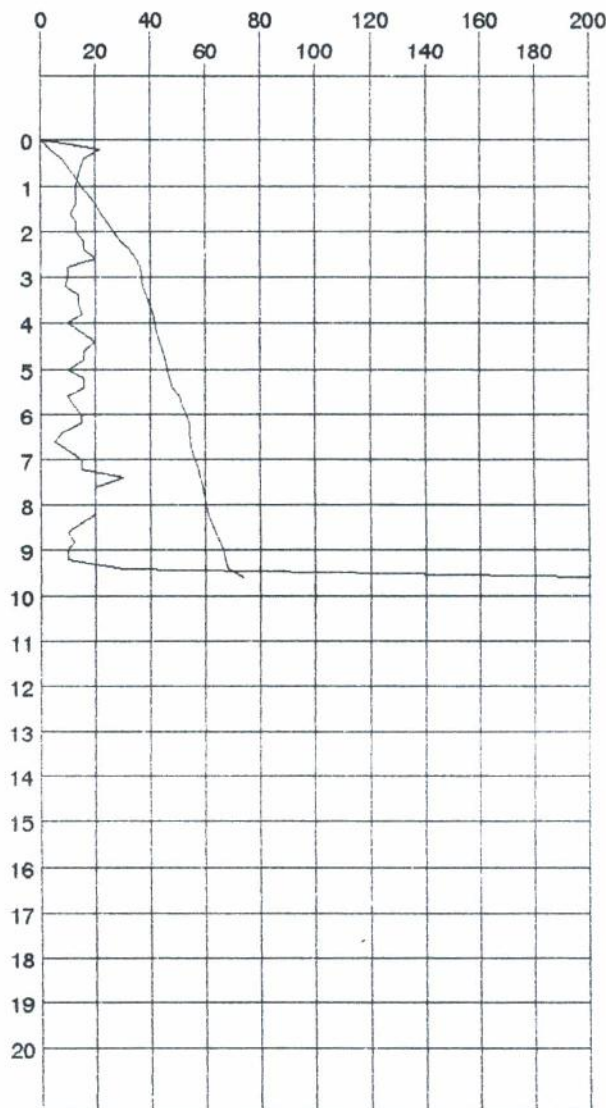


### CONE PENETRATION TEST

C.P.T NO	: S 4.	Coordinate	
PROJECT	: Graha Bintaro	North	-----
LOCATION	: Pondok Kacang Timur	East	-----
Date of test	: JUN. 30th. 1996	Elevation (m)	-----
Tested by	: Sarman Mr.	G.W.L (m)	7.80
Checked by	: Ir. Atiep Sudarianto Mr.		

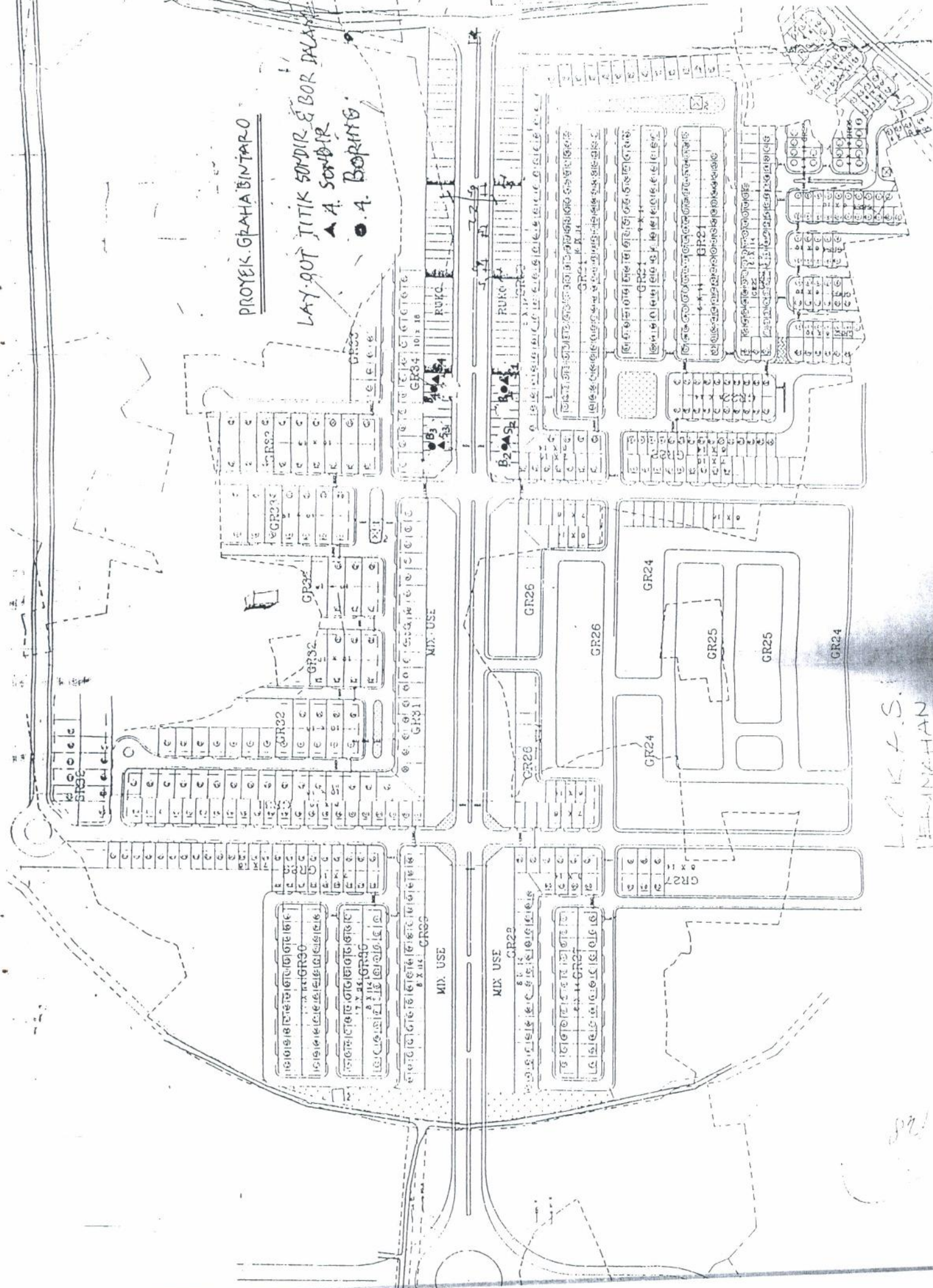
Qc (Kg/cm<sup>2</sup>) and Tf (Kg/cm<sup>2</sup> x 10)

Friction/Conus Resistance (%)



PROYEK GRAHA BINTARO

LAY-OUT JITIK SONDIR & BOR DALAN  
▲ A. SONDIR  
● A. BORING



L. C. K. A. S.  
P. H. A. N.

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LABORATORY TESTING RESULTS

PROJECT GRAHA BINTARO  
 LOCATION PONDOK KACANG TIMUR - BINTARO  
 BORING B - 1 & B - 2.

Sample Depth meter	Sample Type U/D	Class cation	W <sub>n</sub> (%)	g wet 1/m <sup>3</sup>	g dry 1/m <sup>3</sup>	G <sub>s</sub>	e	S <sub>r</sub>	INDEX PROPERTIES					SHEAR STRENGTH PARAMETERS					COMPRESSIBILITY			
									SL	PL	LL	P	Grain Size Sieve	Hydro kg/cm <sup>2</sup>	Cu/Cu kg/cm <sup>2</sup>	Phi / Phi degree	q-ult	St	Cc	Cv	C <sub>r</sub>	
B-1 1,50-2,00	U	OH-MH	55,37	1,61	1,02	2,52	1,48	94,40	25,55	50	100,41	50,41	4	96	0,70	6,5	---	---	---	0,711	0,00768	0,031
2,50-3,00	U	CL	24,88	1,98	1,40	2,47	0,76	80,59	16,83	24,08	48,51	24,42	10	90	0,24	5	---	---	---	0,975	0,006993	0,042
5,50-6,00	U	CH	45,58	1,70	1,17	2,50	1,14	99,88	17,18	36,84	101,27	64,43	20	80	0,18	7	---	---	---	1,138	0,007168	0,046
7,50-8,00	U	OH-MH	52,97	1,63	1,07	2,47	1,32	98,27	24,18	44,68	89,79	45,1	4	96	0,74	5	---	---	---	0,758	0,00599	0,180
B-2 1,50-2,00	U	CH-MH	41,70	1,73	1,20	2,56	1,14	93,63	25,67	49,33	97,85	46,52	8	92	0,62	13	---	---	---	0,839	0,006183	0,027
2,50-3,00	U	CH-MH	50,76	1,66	1,09	2,51	1,29	98,51	29,16	54,08	98,39	44,31	6	94	0,62	8	---	---	---	0,435	0,008438	0,05
5,50-6,00	U	CH-MH	81,01	1,48	0,80	2,49	2,11	95,67	53,27	50,97	68,1	7,31	4	96	0,4	5	---	---	---	0,691	0,00693	0,03
7,50-8,00	U	CH-MH	55,77	1,68	1,01	2,34	1,31	99,29	24,11	46,51	95,87	49,86	1	99	0,58	4	---	---	---	1,32	0,006455	0,031



LABORATORY TESTING RESULTS

PROJECT GRAHA BINTARO  
 LOCATION PONDOK PINANG TIMUR - BINTARO  
 BORING B - 3 & B-4

Sample Depth meter	Sample Type U/D	Classifi- cation	INDEX PROPERTIES										SHEAR STRENGTH PARAMETERS				COMPRESSIBILITY				
			Wn (%)	g wet t/m <sup>3</sup>	g dry t/m <sup>3</sup>	Gs	e	St	SL	PL	LL	P	Grain Size Sieve	Hydro kg/cm <sup>2</sup>	Cu/Cu kg/cm <sup>2</sup>	Phi / Phi degrees	q-ult	St	Cc	Cv cm <sup>2</sup> /sec	Cr
B-3 1,50-2,00 3,50-4,00 5,50-6,00 7,50-8,00	U	OH-MH	47,170	1,73	1,16	2,670	1,30	97,04	19,55	37,8	89,04	51,24	7	93	1,24	4,5	---	---	0,633	0,009974	0,047
	U	OH-MH	55,900	1,64	1,02	2,650	1,60	92,68	17,72	29,59	67,08	37,49	9	91	0,20	15,5	---	---	0,698	0,001007	0,046
	U	OH-MH	52,600	1,61	1,02	2,500	1,45	90,97	22,93	48,98	109,79	60,8	31	69	0,23	6	---	---	1,34	0,005207	0,032
	U	OH-MH	73,820	1,57	0,90	2,700	2,01	99,24	32,39	50,54	79,27	28,73	6	94	0,24	10	---	---	1,342	0,00739	0,030
B-4 1,50-2,00 3,50-4,00 5,50-6,00 7,50-8,00	U	CH	42,170	1,77	1,22	2,670	1,18	95,29	18,18	36,72	93,5	56,78	9	91	0,92	7,5	---	---	1,966	0,00639	0,055
	U	CH-MH	63,750	1,59	0,96	2,590	1,68	98,03	26,07	41,81	73,54	31,73	19	81	0,28	8	---	---	0,0737	0,001011	0,062
	U	CH	73,600	1,54	0,88	2,600	1,95	98,13	10,86	19,05	67,51	48,46	7	93	0,22	14	---	---	1,52	0,00592	0,051
	U	CH	67,840	1,58	0,92	2,570	1,80	96,81	14,26	31,28	101,59	70,31	5	95	0,46	7	---	---	1,067	0,00673	0,085



## Weight–Volume Relationship of Unsaturated Soil


Boring No: GRAHA BINTARO		Date of Tested : JULI 6th 1996			
Depth : B.1(150 – 200)CM		Checked By : FAUZIE B. Ir			
Input Data					
Unit Weight		1.58	gr/cm <sup>3</sup>		
Water Content		55.37	%		
Specific Gravity		2.52			
Unit Weight of Water		1.00	gr/cm <sup>3</sup>		
Volume (Cm <sup>3</sup> )		Weight (Grm)			
Vt= 2.48	Vv= 1.48	Va= 0.08		Wa= 0.00	Wt= 3.92
		Vw= 1.40		Ww= 1.40	
	Vs= 1.00	Ws= 2.52			
Void ratio (e)		1.48			
Degree of saturation (Sr)		94.40 %			
Porosity		0.60			
Dry unit weight		1.02 gr/cm <sup>3</sup>			
Saturated unit weight		1.61 gr/cm <sup>3</sup>			

## Weight–Volume Relationship of Unsaturated Soil

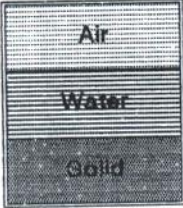
Boring No: GRAHA BINTARO		Date of Tested : JULI 6th 1996			
Depth : B.1(350 – 400)cm		Checked By : FAUZIE B. Ir			
Input Data					
Unit Weight		1.75	gr/cm <sup>3</sup>		
Water Content		24.88	%		
Specific Gravity		2.47			
Unit Weight of Water		1.00	gr/cm <sup>3</sup>		
Volume (Cm <sup>3</sup> )		Weight (Grm)			
Vt= 1.76	Vv= 0.76	Va= 0.15		Wa= 0.00	Wt= 3.08
		Vw= 0.61		Ww= 0.61	
	Vs= 1.00	Ws= 2.47			
Void ratio (e)		0.76			
Degree of saturation (Sr)		80.59 %			
Porosity		0.43			
Dry unit weight		1.40 gr/cm <sup>3</sup>			
Saturated unit weight		1.83 gr/cm <sup>3</sup>			



## Weight-Volume Relationship of Unsaturated Soil

Boring No: GRAHA BINTARO		Date of Tested : JULI 6th 1996		
Depth : B.1(550 - 600)CM		Checked By : FAUZIE B. Ir		
Input Data				
Unit Weight		1.70	gr/cm <sup>3</sup>	
Water Content		45.58	%	
Specific Gravity		2.50		
Unit Weight of Water		1.00	gr/cm <sup>3</sup>	
Volume (Cm <sup>3</sup> )		Weight (Grm)		
Vt= 2.14	Vv= 1.14	Va= 0.00		
		Vw= 1.14		Wa= 0.00
	Vs= 1.00			Ww= 1.14
			Ws= 2.50	
		Wt= 3.64		
Void ratio (e)		1.14		
Degree of saturation (Sr)		99.88 %		
Porosity		0.53		
Dry unit weight		1.17 gr/cm <sup>3</sup>		
Saturated unit weight		1.70 gr/cm <sup>3</sup>		


## Weight-Volume Relationship of Unsaturated Soil

Boring No: GRAHA BINTARO		Date of Tested : JULI 6th 1996		
Depth : B.1(750 - 800)CM		Checked By : FAUZIE B. Ir		
Input Data				
Unit Weight		1.63	gr/cm <sup>3</sup>	
Water Content		52.97	%	
Specific Gravity		2.47		
Unit Weight of Water		1.00	gr/cm <sup>3</sup>	
Volume (Cm <sup>3</sup> )		Weight (Grm)		
Vt= 2.32	Vv= 1.32	Va= 0.01		
		Vw= 1.31		Wa= 0.00
	Vs= 1.00			Ww= 1.31
			Ws= 2.47	
		Wt= 3.78		
Void ratio (e)		1.32		
Degree of saturation (Sr)		99.27 %		
Porosity		0.57		
Dry unit weight		1.07 gr/cm <sup>3</sup>		
Saturated unit weight		1.63 gr/cm <sup>3</sup>		

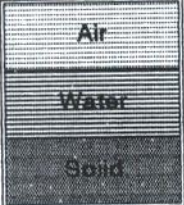




## Weight-Volume Relationship of Unsaturated Soil

Boring No: GRAHA BINTARO		Date of Tested : JULI 6th 1996			
Depth : B.2(150 - 200)CM		Checked By : FAUZIE B. Ir			
Input Data					
Unit Weight	1.70	gr/cm <sup>3</sup>			
Water Content	41.70	%			
Specific Gravity	2.56				
Unit Weight of Water	1.00	gr/cm <sup>3</sup>			
Volume (Cm <sup>3</sup> )		Weight (Grm)			
V <sub>t</sub> = 2.14	V <sub>v</sub> = 1.14	V <sub>a</sub> = 0.07		W <sub>a</sub> = 0.00	W <sub>t</sub> = 3.63
		V <sub>w</sub> = 1.07		W <sub>w</sub> = 1.07	
	V <sub>s</sub> = 1.00	W <sub>s</sub> = 2.56			
Void ratio (e)		1.14			
Degree of saturation (Sr)		93.63 %			
Porosity		0.53			
Dry unit weight		1.20 gr/cm <sup>3</sup>			
Saturated unit weight		1.73 gr/cm <sup>3</sup>			

## Weight-Volume Relationship of Unsaturated Soil

Boring No: GRAHA BINTARO		Date of Tested : JULI 6th 1996			
Depth : B.2(350 - 400)CM		Checked By : FAUZIE B. Ir			
Input Data					
Unit Weight	1.65	gr/cm <sup>3</sup>			
Water Content	50.76	%			
Specific Gravity	2.51				
Unit Weight of Water	1.00	gr/cm <sup>3</sup>			
Volume (Cm <sup>3</sup> )		Weight (Grm)			
V <sub>t</sub> = 2.29	V <sub>v</sub> = 1.29	V <sub>a</sub> = 0.02		W <sub>a</sub> = 0.00	W <sub>t</sub> = 3.78
		V <sub>w</sub> = 1.27		W <sub>w</sub> = 1.27	
	V <sub>s</sub> = 1.00	W <sub>s</sub> = 2.51			
Void ratio (e)		1.29			
Degree of saturation (Sr)		98.51 %			
Porosity		0.56			
Dry unit weight		1.09 gr/cm <sup>3</sup>			
Saturated unit weight		1.66 gr/cm <sup>3</sup>			





### Weight-Volume Relationship of Unsaturated Soil

Proyek	GRAHA BINTARO	Date of test	JULI 6th 1996		
Depth	: B.3(150 - 200)CM	Tested By	: FAUZIE.B		
<b>Input Data</b>					
Unit Weight	1.710	gr/cm <sup>3</sup>			
Water Content	47.170	%			
Specific Gravity	2.670				
Unit Weight of Water	1.000	gr/cm <sup>3</sup>			
<b>Volume (Cm<sup>3</sup>)</b>		<b>Weight (Grm)</b>			
Vt = 2.30	Vv = 1.30	Va = 0.04		Wa = 0.00	Wt = 3.93
		Vw = 1.26		Ww = 1.26	
	Vs = 1.00	Ws = 2.67			
Void ratio (e)		1.30			
Degree of saturation (Sr)		97.04 %			
Porosity		0.56			
Dry unit weight		1.16 gr/cm <sup>3</sup>			
Saturated unit weight		1.73 gr/cm <sup>3</sup>			

### Weight-Volume Relationship of Unsaturated Soil

PROYEK	: GRAHA BINTARO	Date of Tested	: JULI 6th 1996		
Depth	: B.3 (350 - 400)CM	Tested By	: FAUZIE.B		
<b>Input Data</b>					
Unit Weight	1.590	gr/cm <sup>3</sup>			
Water Content	55.900	%			
Specific Gravity	2.650				
Unit Weight of Water	1.000	gr/cm <sup>3</sup>			
<b>Volume (Cm<sup>3</sup>)</b>		<b>Weight (Grm)</b>			
Vt = 2.60	Vv = 1.60	Va = 0.12		Wa = 0.00	Wt = 4.13
		Vw = 1.48		Ww = 1.48	
	Vs = 1.00	Ws = 2.65			
Void ratio (e)		1.60			
Degree of saturation (Sr)		92.68 %			
Porosity		0.62			
Dry unit weight		1.02 gr/cm <sup>3</sup>			
Saturated unit weight		1.64 gr/cm <sup>3</sup>			



### Weight– Volume Relationship of Unsaturated Soil

Proyek	GRAHA BINTARO	Date of test	JULI 6th 1996		
Depth	: B.3(550 – 600)CM	Tested By	: FAUZIE.B		
<b>Input Data</b>					
Unit Weight		1.560	gr/cm <sup>3</sup>		
Water Content		52.600	%		
Specific Gravity		2.500			
Unit Weight of Water		1.000	gr/cm <sup>3</sup>		
<b>Volume (Cm<sup>3</sup>)</b>		<b>Weight (Grm)</b>			
Vt= 2.45	Vv= 1.45	Va= 0.13		Wa= 0.00	Wt= 3.82
		Vw= 1.32		Ww= 1.32	
	Vs= 1.00	Ws= 2.50			
Void ratio (e)		1.45			
Degree of saturation (Sr)		90.97 %			
Porosity		0.59			
Dry unit weight		1.02 gr/cm <sup>3</sup>			
Saturated unit weight		1.61 gr/cm <sup>3</sup>			

### Weight– Volume Relationship of Unsaturated Soil

PROYEK	: GRAHA BINTARO	Date of Tested	: JULI 0th 1996		
Depth	: B.3 (750 – 800)CM	Tested By	: FAUZIE.B		
<b>Input Data</b>					
Unit Weight		1.560	gr/cm <sup>3</sup>		
Water Content		73.820	%		
Specific Gravity		2.700			
Unit Weight of Water		1.000	gr/cm <sup>3</sup>		
<b>Volume (Cm<sup>3</sup>)</b>		<b>Weight (Grm)</b>			
Vt= 3.01	Vv= 2.01	Va= 0.02		Wa= 0.00	Wt= 4.69
		Vw= 1.99		Ww= 1.99	
	Vs= 1.00	Ws= 2.70			
Void ratio (e)		2.01			
Degree of saturation (Sr)		99.24 %			
Porosity		0.67			
Dry unit weight		0.90 gr/cm <sup>3</sup>			
Saturated unit weight		1.57 gr/cm <sup>3</sup>			



### Weight – Volume Relationship of Unsaturated Soil

Proyek	GRAHA BINTARO	Date of test	JULI 6th 1996	
Depth	: B.4(150 – 200)CM	Tested By	: FAUZIE.B	
<b>Input Data</b>				
Unit Weight	1.740	gr/cm <sup>3</sup>		
Water Content	42.170	%		
Specific Gravity	2.670			
Unit Weight of Water	1.000	gr/cm <sup>3</sup>		
<b>Volume (Cm<sup>3</sup>)</b>		<b>Weight (Grm)</b>		
V <sub>t</sub> = 2.18	V <sub>v</sub> = 1.18	V <sub>a</sub> = 0.06	Wa = 0.00	W <sub>t</sub> = 3.80
		V <sub>w</sub> = 1.13	W <sub>w</sub> = 1.13	
	V <sub>s</sub> = 1.00	Ws = 2.67		
Void ratio (e)		1.18		
Degree of saturation (Sr)		95.29 %		
Porosity		0.54		
Dry unit weight		1.22 gr/cm <sup>3</sup>		
Saturated unit weight		1.77 gr/cm <sup>3</sup>		

### Weight – Volume Relationship of Unsaturated Soil

PROYEK	: GRAHA BINTARO	Date of Tested	: JULI 6th 1996	
Depth	: B.4 (350 – 400)CM	Tested By	: FAUZIE.B	
<b>Input Data</b>				
Unit Weight	1.580	gr/cm <sup>3</sup>		
Water Content	63.750	%		
Specific Gravity	2.590			
Unit Weight of Water	1.000	gr/cm <sup>3</sup>		
<b>Volume (Cm<sup>3</sup>)</b>		<b>Weight (Grm)</b>		
V <sub>t</sub> = 2.68	V <sub>v</sub> = 1.68	V <sub>a</sub> = 0.03	Wa = 0.00	W <sub>t</sub> = 4.24
		V <sub>w</sub> = 1.65	W <sub>w</sub> = 1.65	
	V <sub>s</sub> = 1.00	Ws = 2.59		
Void ratio (e)		1.68		
Degree of saturation (Sr)		98.03 %		
Porosity		0.63		
Dry unit weight		0.96 gr/cm <sup>3</sup>		
Saturated unit weight		1.59 gr/cm <sup>3</sup>		



### Weight– Volume Relationship of Unsaturated Soil

Proyek	GRAHA BINTARO	Date of test	JULI 6th 1996		
Depth	: B.4(550 – 600)CM	Tested By	: FAUZIE.B		
<b>Input Data</b>					
Unit Weight	1.530	gr/cm <sup>3</sup>			
Water Content	73.600	%			
Specific Gravity	2.600				
Unit Weight of Water	1.000	gr/cm <sup>3</sup>			
<b>Volume (Cm<sup>3</sup>)</b>		<b>Weight (Grm)</b>			
Vt= 2.95	Vv= 1.95	Va= 0.04		Wa= 0.00	Wt= 4.51
		Vw= 1.91		Ww= 1.91	
	Vs= 1.00	Ws= 2.60			
Void ratio (e)		1.95			
Degree of saturation (Sr)		98.13 %			
Porosity		0.66			
Dry unit weight		0.88 gr/cm <sup>3</sup>			
Saturated unit weight		1.54 gr/cm <sup>3</sup>			

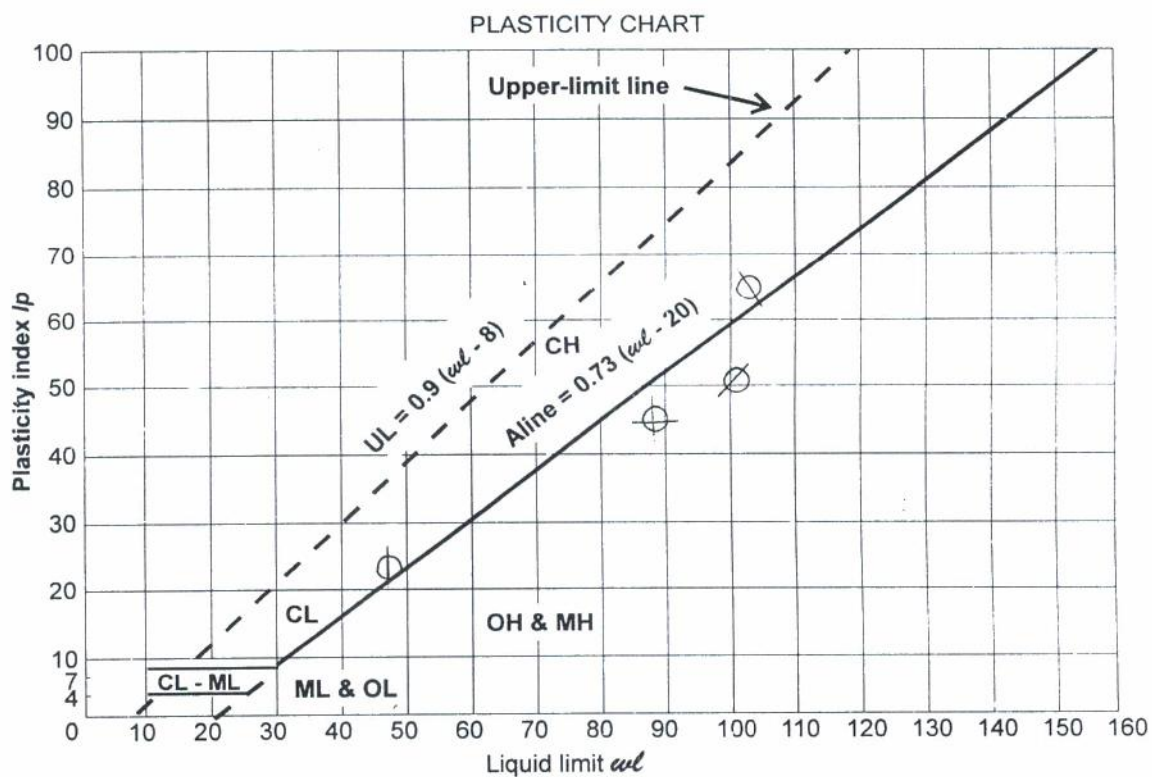
### Weight– Volume Relationship of Unsaturated Soil

PROYEK	GRAHA BINTARO	Date of Tested	JULI 6th 1996		
Depth	: B.4 (750 – 800)CM	Tested By	: FAUZIE.B		
<b>Input Data</b>					
Unit Weight	1.540	gr/cm <sup>3</sup>			
Water Content	67.840	%			
Specific Gravity	2.570				
Unit Weight of Water	1.000	gr/cm <sup>3</sup>			
<b>Volume (Cm<sup>3</sup>)</b>		<b>Weight (Grm)</b>			
Vt= 2.80	Vv= 1.80	Va= 0.06		Wa= 0.00	Wt= 4.31
		Vw= 1.74		Ww= 1.74	
	Vs= 1.00	Ws= 2.57			
Void ratio (e)		1.80			
Degree of saturation (Sr)		96.81 %			
Porosity		0.64			
Dry unit weight		0.92 gr/cm <sup>3</sup>			
Saturated unit weight		1.56 gr/cm <sup>3</sup>			

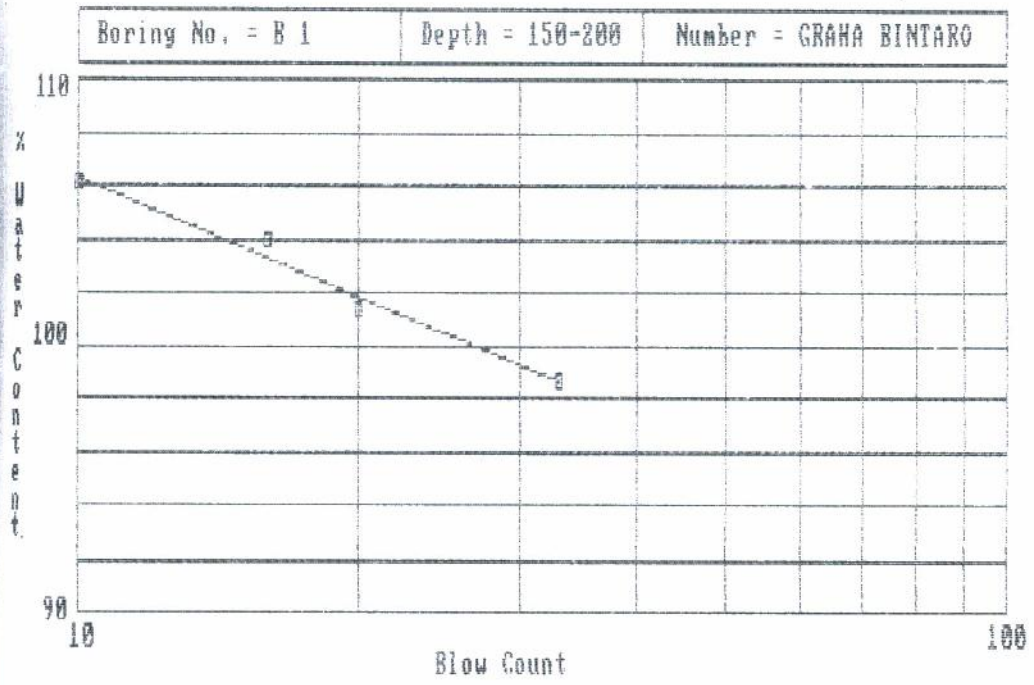


### SOIL CLASSIFICATION

Project : Graha Bintaro  
 Location : Pondok Kacang Timur, Bintaro.  
 Test By : Ir. S Hanny E  
 Date of Test : Juli 1996 .

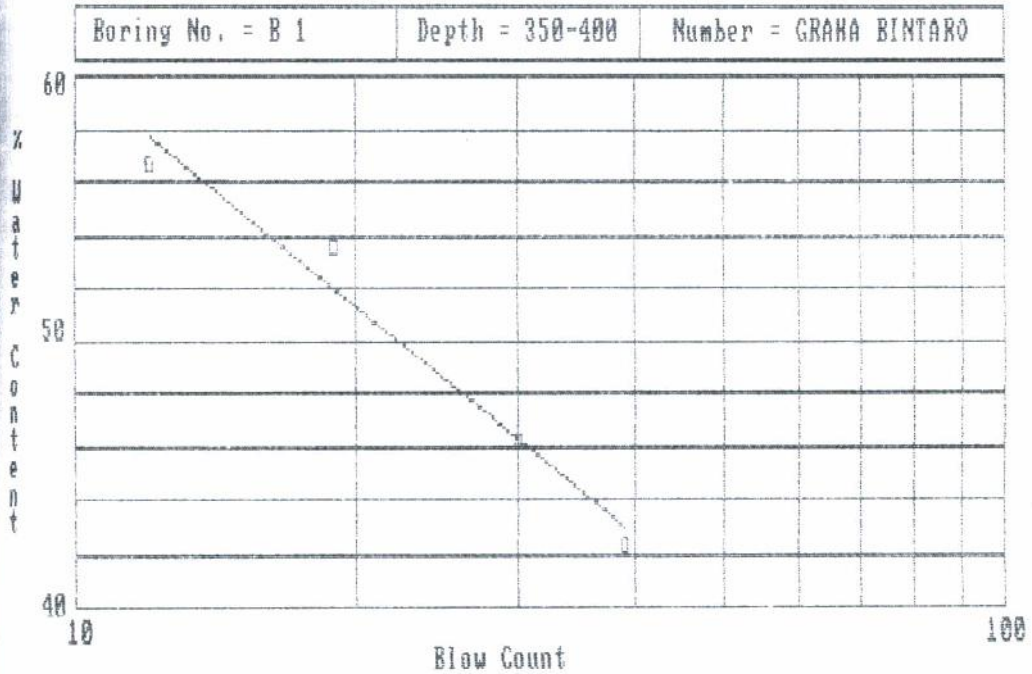


Boring No.	Depth ( M )	Symbol	WL (%)	WP (%)	IP (%)	Unified Classification
B - 1	150 - 200	⊗	100,41	50	50,41	OH & MH
	350 - 400	⊕	48,51	24,09	24,42	CL
	550 - 600	⊗	101,27	36,84	64,43	CH
	750 - 800	⊕	89,79	44,69	45,1	OH & MH

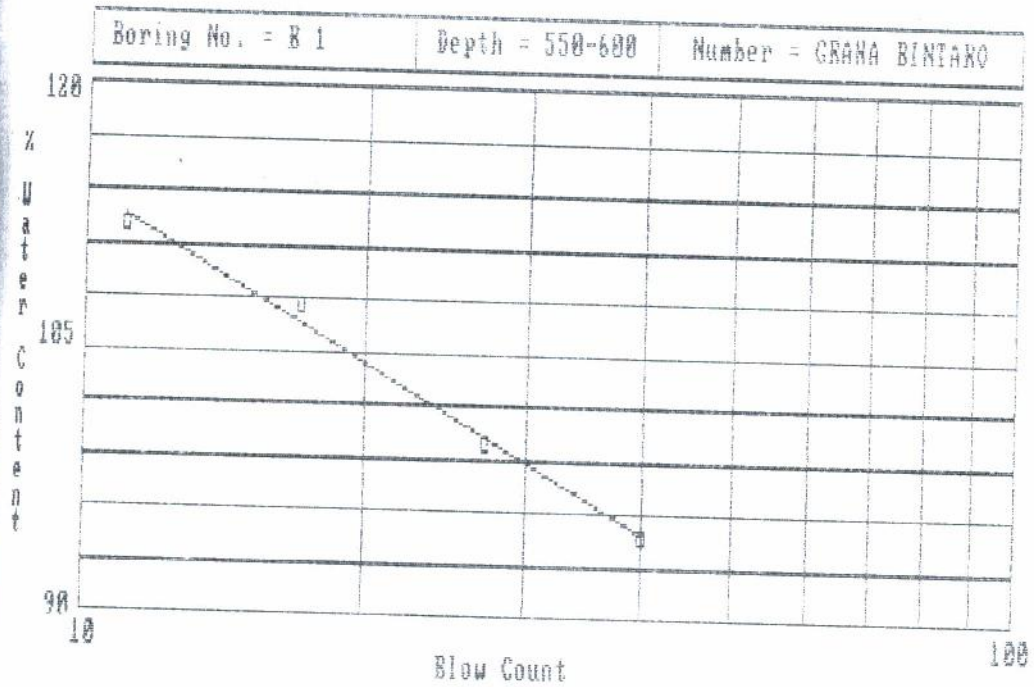


Sample no.	1	2	3	4				
% Water content	98.68	101.29	103.93	106.11				
Blow count	33	20	16	10				
Regression equation					Coefficient of determination			
W = -14.7566 * logN + 121.0348					R <sup>2</sup> = .9754    ** Excellent Test			
Liquid limit = 100.41					Flow index = -14.76			
Input plastic limit = 50					Toughness index = -3.42			
Plasticity index = 50.41					Shrinkage limit = 25.55			
Input natural water content = 55.37					Liquidity index = .11			
Boring No. = B 1			Depth = 150-200		Number = GRAHA BINTARO			

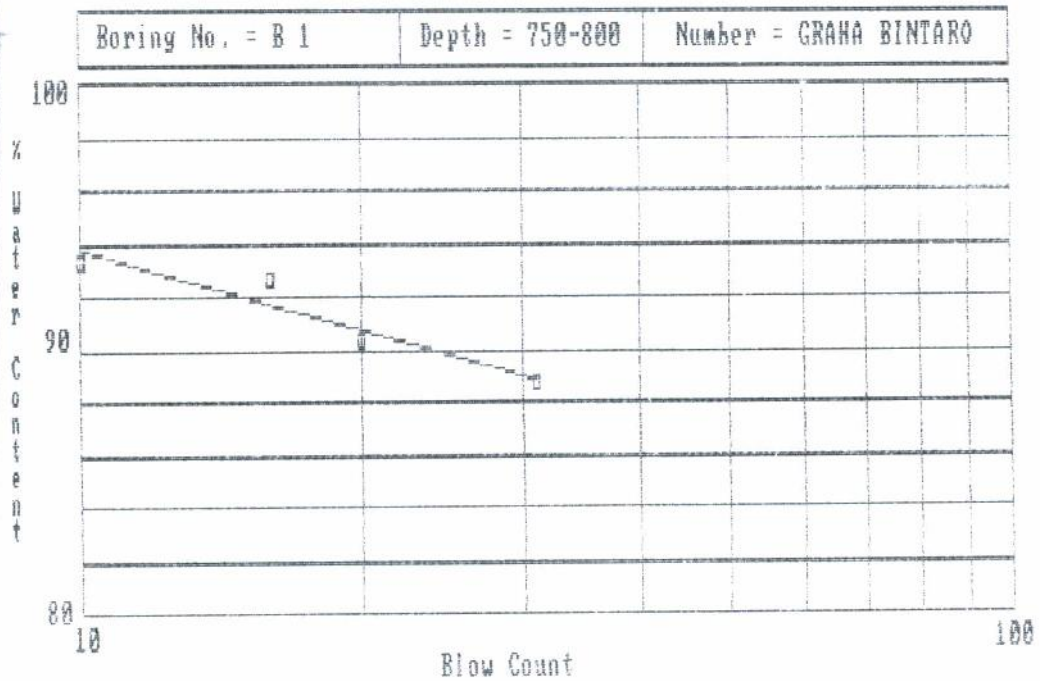




Sample no.	1	2	3	4				
% Water content	42.36	46.19	56.71	53.54				
Blow count	39	30	12	19				
Regression equation					Coefficient of determination			
W = -28.7709 * logM + 88.7278					R <sup>2</sup> = .9702      ** Excellent Test			
Liquid limit = 40.51					Flow index = -28.77			
Input plastic limit = 24.09					Toughness index = -.85			
Plasticity index = 24.42					Shrinkage limit = 16.83			
Input natural water content = 24.80					Liquidity index = .83			
Boring No. = B 1			Depth = 350-400		Number = GRAHA BINTARO			



Sample no.	1	2	3	4				
% Water content	111.97	107.67	99.83	94.69				
Blow count	11	17	27	40				
Regression equation					Coefficient of determination			
$U = -31.7134 * \log N + 145.6029$					$R^2 = .9906$ ** Excellent Test			
Liquid limit = 101.27					Flow index = -31.71			
Input plastic limit = 36.84					Toughness index = -2.03			
Plasticity index = 64.43					Shrinkage limit = 17.10			
Input natural water content = 56.586					Liquidity index = .31			
Boring No. = B 1			Depth = 550-600		Number = GRAHA BINTARO			

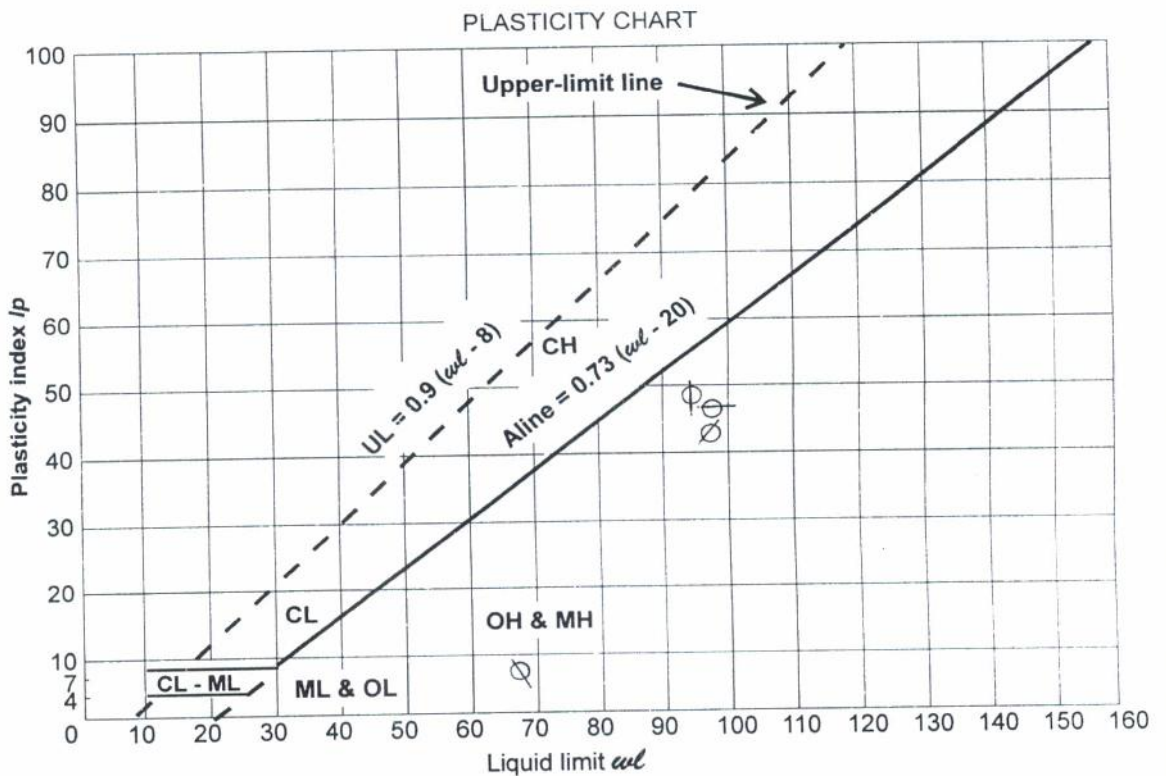


Sample no.	1	2	3	4				
% Water content	88.72	90.33	92.68	93.31				
Blow count	31	20	16	10				
Regression equation					Coefficient of determination			
$W = -9.8752 * \log N + 103.5961$					$R^2 = .9036$ ** Excellent Test			
Liquid limit = 89.79					Flow index = -9.88			
Input plastic limit = 44.69					Toughness index = -4.57			
Plasticity index = 45.1					Shrinkage limit = 24.16			
Input natural water content = 52.97					Liquidity index = .18			
Boring No. = B 1			Depth = 750-800		Number = GRAHA BINTARO			



**SOIL CLASSIFICATION**

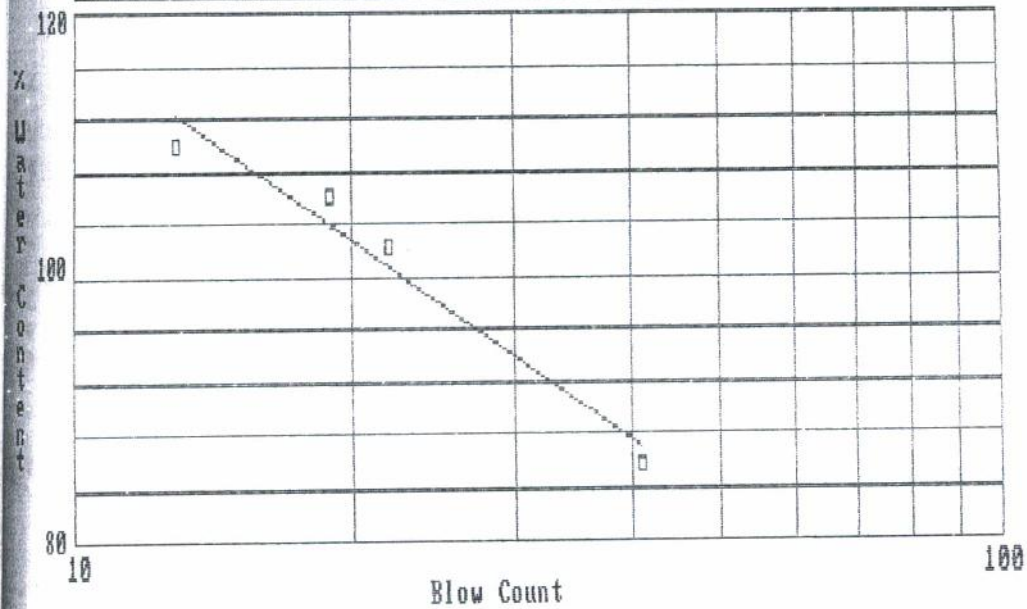
Project : Grha Bintaro  
 Location : Pd. Kacang Timut , Bintaro  
 Test By : Ir. S Hanny E  
 Date of Test : Juli 1996 .



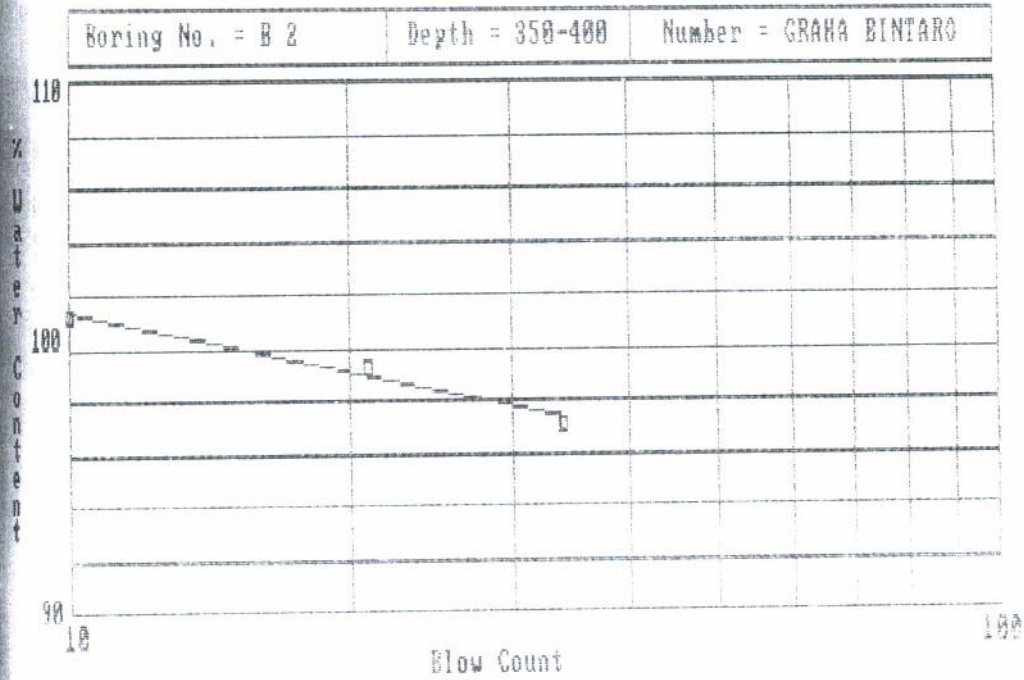
Boring No.	Depth ( M )	Symbol	WL (%)	WP (%)	IP (%)	Unified Classification
B - 2	150 - 200	⊘	97,85	49,33	48,52	OH & MH
	350 - 400	⊘	98,39	54,08	44,31	OH & MH
	550 - 600	⊘	68,1	60,97	7,31	OH & MH
	750 - 800	⊘	95,87	46,51	49,36	OH & MH



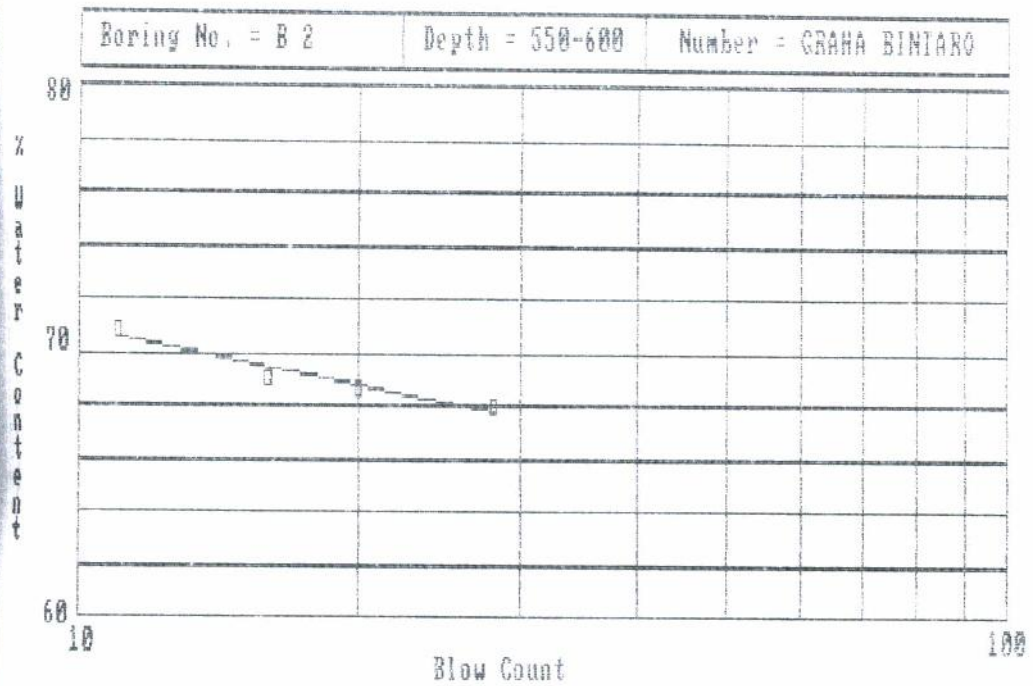
Boring No. = B 2	Depth = 150-200	Number = GRAHA BINTARO
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Sample no.	1	2	3	4				
% Water content	85.65	102.11	105.97	110.00				
Blow count	41	22	19	13				
Regression equation					Coefficient of determination			
$W = -50.4823 * \log N + 168.4253$					$R^2 = .9616$ ** Excellent Test			
Liquid limit = 97.85					Flow index = -50.48			
Input plastic limit = 49.33					Toughness index = -.96			
Plasticity index = 48.52					Shrinkage limit = 25.67			
Input natural water content = 41.707					Liquidity index = -.16			
Boring No. = B 2			Depth = 150-200		Number = GRAHA BINTARO			



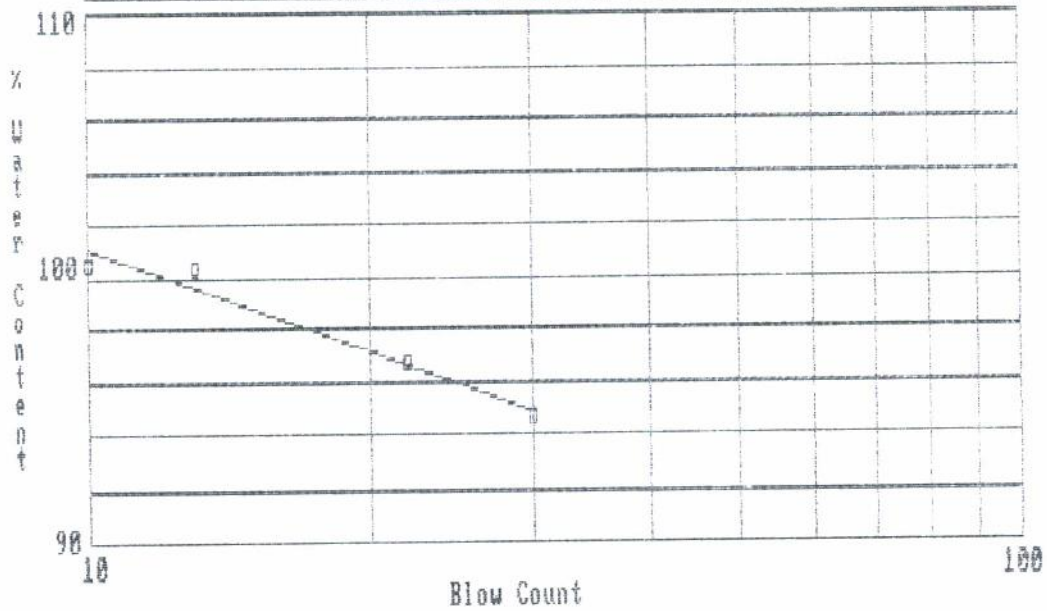
Sample no.	1	2	3				
% Water content	97.16	99.35	101.20				
Blow count	34	21	10				
Regression equation				Coefficient of determination			
$U = -7.4453 * \log N + 108.8004$				$R^2 = .9706$ ** Excellent Test			
Liquid limit = 98.39				Flow index = -7.45			
Input plastic limit = 54.88				Toughness index = -5.95			
Plasticity index = 44.31				Shrinkage limit = 29.16			
Input natural water content = 50.764				Liquidity index = -.07			
Boring No. = B 2			Depth = 350-400		Number = GRAHA BINTARO		



Sample no.	1	2	3	4				
% Water content	67.98	68.68	69.07	70.87				
Blow count	28	20	16	11				
Regression equation					Coefficient of determination			
U = -7.001 * logN + 77.89					R <sup>2</sup> = .9369    ** Excellent Test			
Liquid limit = 60.1					Flow index = -7			
Input plastic limit = 60.97					Toughness index = -1.02			
Plasticity index = 7.13					Shrinkage limit = 53.27			
Input natural water content = 81.013					Liquidity index = 2.01			
Boring No. = B 2			Depth = 550-600		Number = GRAHA BINTARO			



Boring No. = B 2	Depth = 750-800	Number = GRAHA BINTARO
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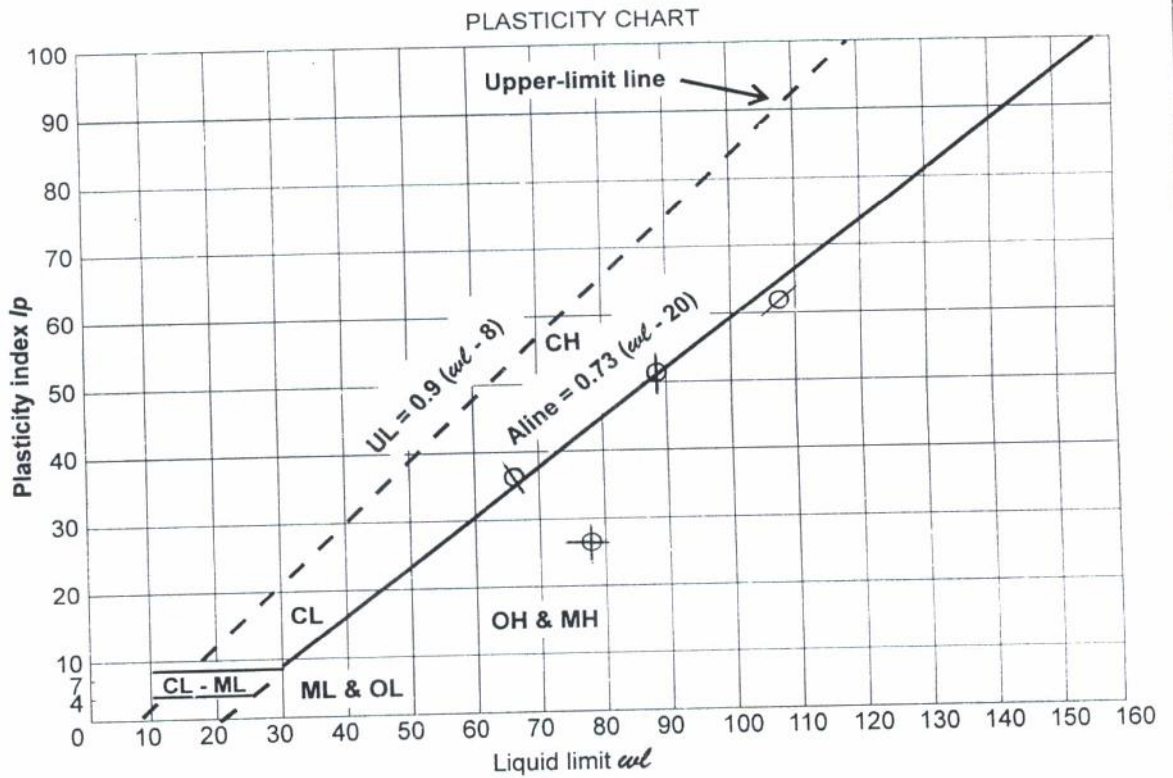
Sample no.	1	2	3	4				
% Water content	94.58	96.72	100.30	100.48				
Blow count	30	22	13	10				
Regression equation					Coefficient of determination			
$W = -13.0405 * \log N + 114.1047$					$R^2 = .9617$ ** Excellent Test			
Liquid limit = 95.87					Flow index = -13.84			
Input plastic limit = 46.51					Toughness index = -3.79			
Plasticity index = 49.36					Shrinkage limit = 24.11			
Input natural water content = 55.77					Liquidity index = .19			
Boring No. = B 2			Depth = 750-800		Number = GRAHA BINTARO			



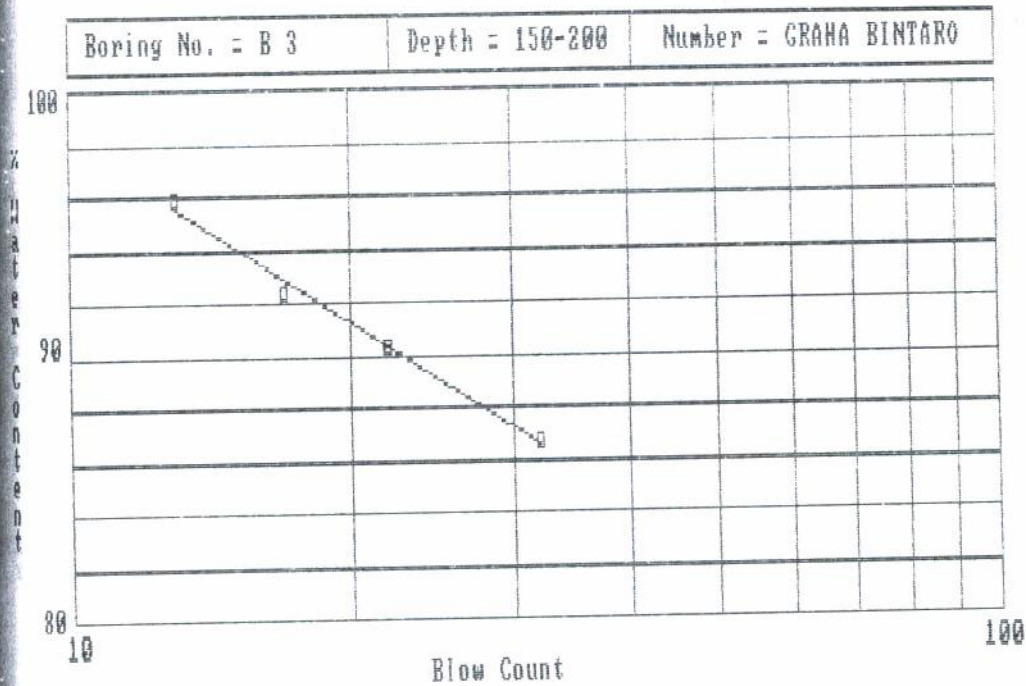


### SOIL CLASSIFICATION

Project : Graha Bintaro  
 Location : Pondok Kacang Timur- Bintaro.  
 Test By : Ir. S Hanny E  
 Date of Test : Juli 1996 .



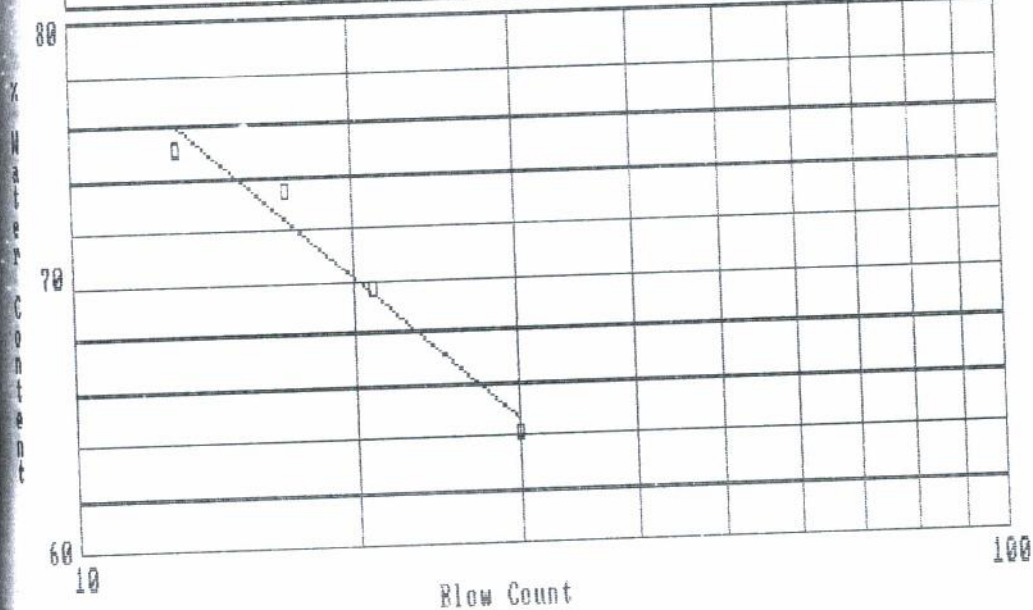
Boring No.	Depth ( M )	Symbol	WL (%)	WP (%)	IP (%)	Unified Classification
B-3	150 - 200	⊕	89,04	37,8	51,24	OH & MH
	350 - 400	⊗	67,08	29,59	37,49	OH & MH
	550 - 600	⊖	109,78	48,98	60,8	OH & MH
	750 - 800	⊕	79,27	50,54	28,73	OH & MH



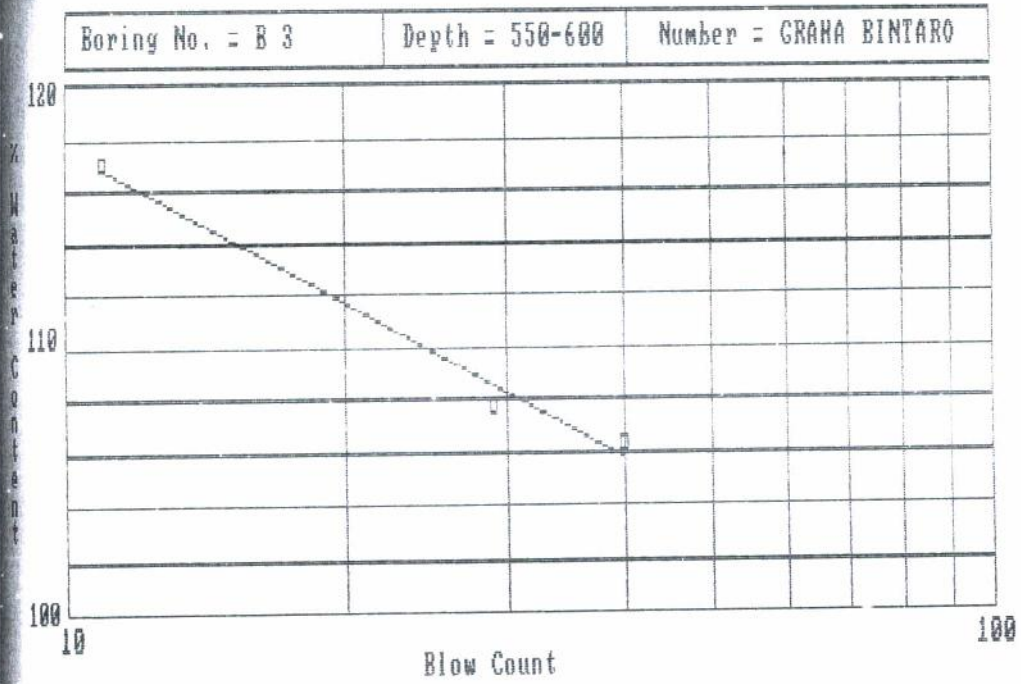
Sample no.	1	2	3	4				
% Water content	86.68	90.38	92.41	95.83				
Blow count	32	22	17	13				
Regression equation					Coefficient of determination			
W = -22.9055 * logN + 121.0555					R <sup>2</sup> = .993      ** Excellent Test			
Liquid limit = 89.04					Flow index = -22.91			
Input plastic limit = 37.9					Toughness index = -2.24			
Plasticity index = 51.24					Shrinkage limit = 19.55			
Input natural water content = 47.17					Liquidity index = .18			
Boring No. = B 3			Depth = 150-200		Number = GRAHA BINTARO			



Boring No. = B 3	Depth = 350-400	Number = GRAHA BINTARO
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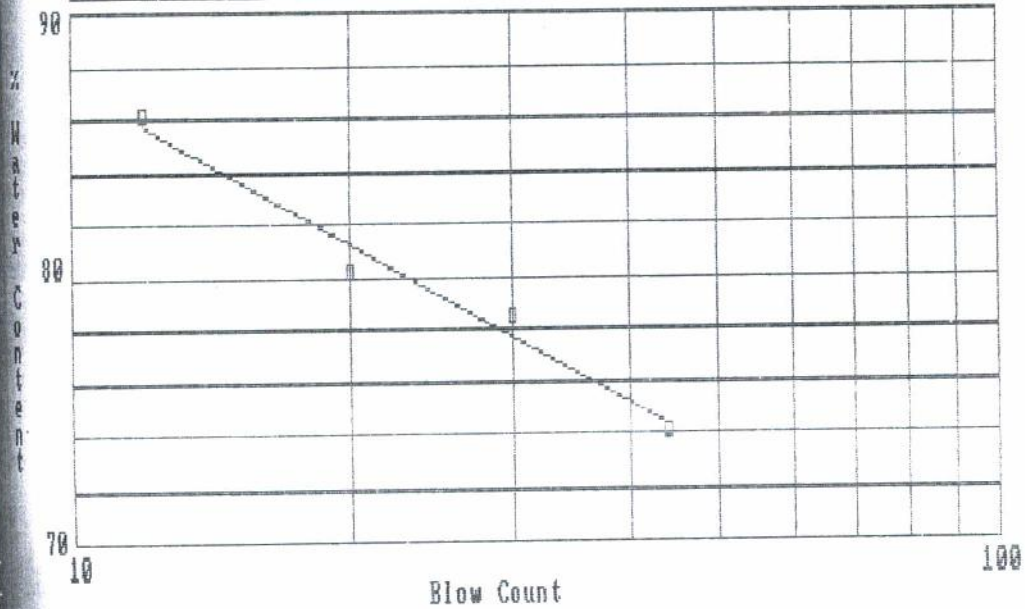
Sample no.	1	2	3	4				
% Water content	64.13	69.69	73.36	75.15				
Blow count	30	21	17	13				
Regression equation					Coefficient of determination			
$W = -31.2851 * \log N + 110.8147$					$R^2 = .9715$ ** Excellent Test			
Liquid limit = 67.08					Flow index = -31.29			
Input plastic limit = 29.59					Toughness index = -1.2			
Plasticity index = 37.49					Shrinkage limit = 17.72			
Input natural water content = 55.9					Liquidity index = .?			
Boring No. = B 3			Depth = 350-400		Number = GRAHA BINTARO			



Sample no.	1	2	3						
% Water content	106.32	107.76	116.99						
Blow count	40	29	11						
Regression equation					Coefficient of determination				
$W = -19.7864 * \log N + 137.3292$					$R^2 = .9863$ ** Excellent Test				
Liquid limit = 109.78					Flow index = -19.71				
Input plastic limit = 48.98					Toughness index = -3.09				
Plasticity index = 60.8					Shrinkage limit = 22.93				
Input natural water content = 52.6					Liquidity index = .06				
Boring No. = B 3			Depth = 550-600			Number = GRAHA BINTARO			



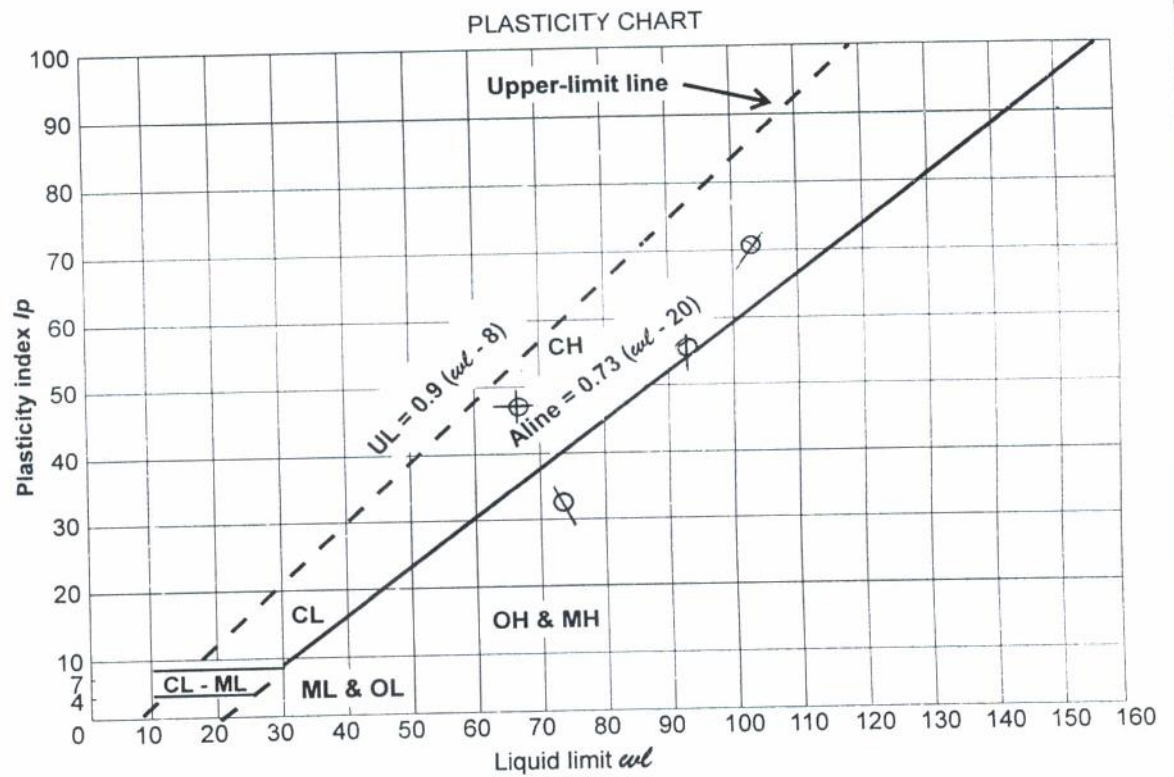
Boring No. = B 3	Depth = 750-800	Number = GRAHA BINTARO
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Sample no.	1	2	3	4				
% Water content	74.18	78.50	80.14	86.10				
Blow count	44	30	20	12				
Regression equation					Coefficient of determination			
$W = -20.1189 * \log N + 107.3997$					$R^2 = .9722$ ** Excellent Test			
Liquid limit = 79.27					Flow index = -20.12			
Input plastic limit = 50.54					Toughness index = -1.43			
Plasticity index = 28.73					Shrinkage limit = 32.39			
Input natural water content = 73.82					Liquidity index = .81			
Boring No. = B 3			Depth = 750-800		Number = GRAHA BINTARO			

### SOIL CLASSIFICATION

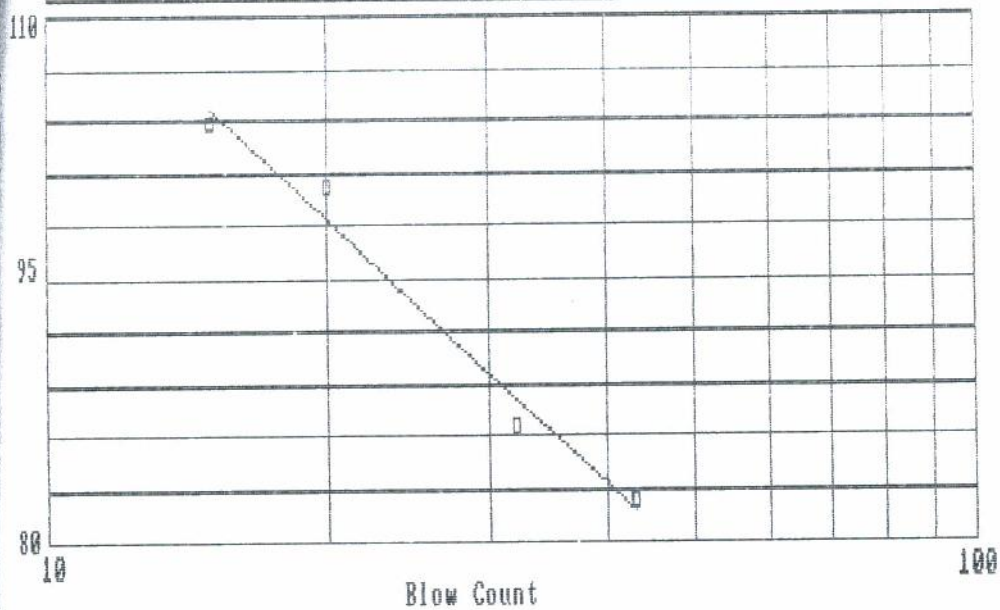
Project : Graha Bintaro  
 Location : Pd. Kacang Timur-Bintaro  
 Test By : Ir. S Hanny E .  
 Date of Test : Juli 1996 .



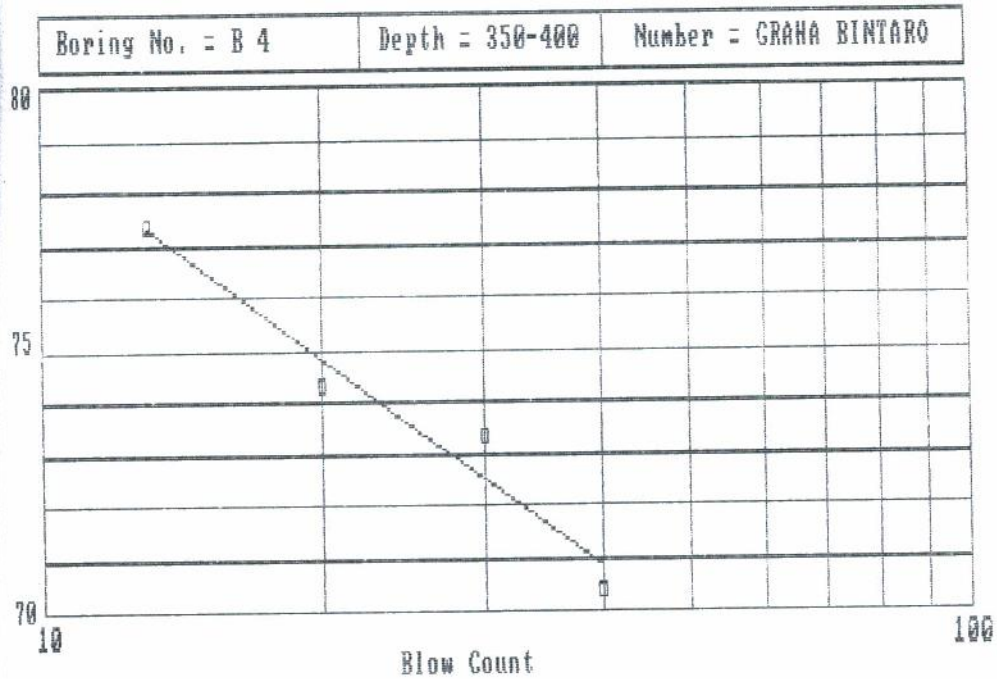
Boring No.	Depth ( M )	Symbol	WL (%)	WP (%)	IP (%)	Unified Classification
B - 4	150 - 200	⊕	93,5	36,72	56,78	CH
	350 - 400	⊗	73,54	41,81	31,73	OH & MH
	550 - 600	⊕	67,51	19,05	48,46	CH
	750 - 800	⊗	101,59	31,28	70,31	CH



Boring No. = B 4	Depth = 150-200	Number = GRAHA BINTARO
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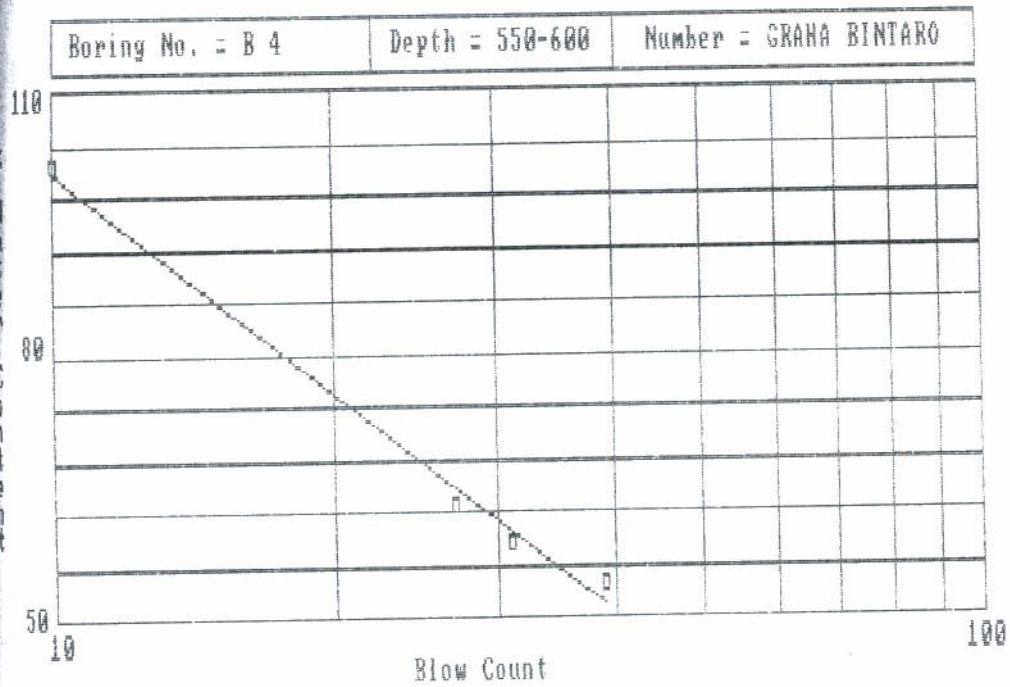


Sample no.	1	2	3	4				
% Water content	82.37	86.50	100.17	103.74				
Blow count	43	32	28	15				
Regression equation				Coefficient of determination				
$W = -50.0932 * \log N + 163.5244$				$R^2 = .9777$ ** Excellent Test				
Liquid limit = 93.5				Flow index = -50.09				
Input plastic limit = 36.72				Toughness index = -1.13				
Plasticity index = 56.78				Shrinkage limit = 18.18				
Input natural water content = 42.17				Liquidity index = .1				
Boring No. = B 4			Depth = 150-200		Number = GRAHA BINTARO			

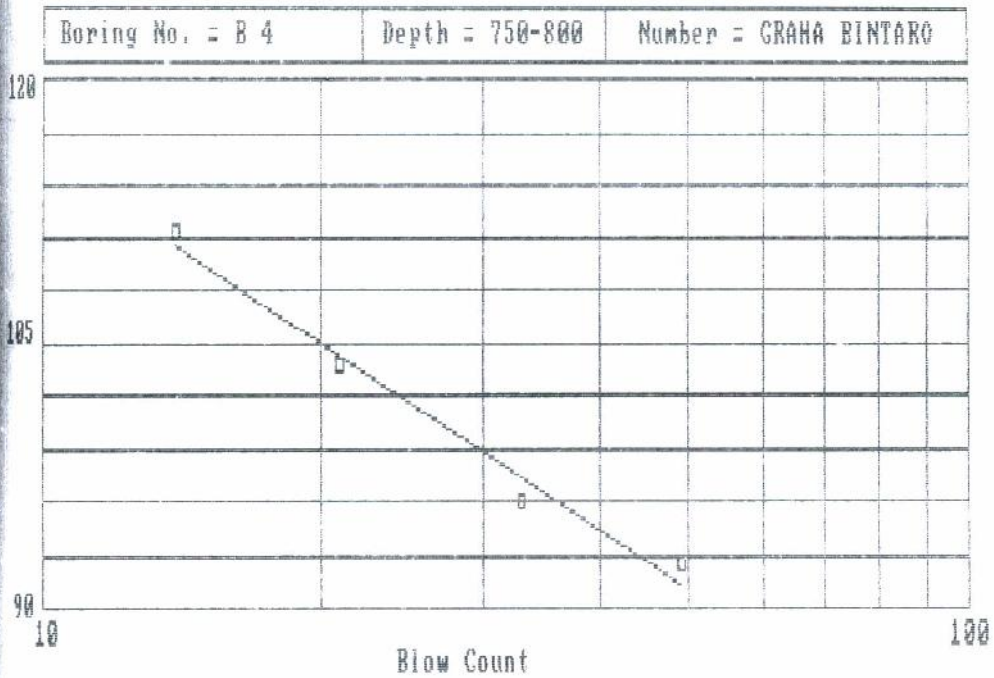


Sample no.	1	2	3	4				
% Water content	70.38	73.38	74.32	77.39				
Blow count	40	30	20	13				
Regression equation					Coefficient of determination			
W = -13.2273 * logN + 92.034					R <sup>2</sup> = .95      ** Excellent Test			
Liquid limit = 73.54					Flow index = -13.23			
Input plastic limit = 41.81					Toughness index = -2.4			
Plasticity index = 31.73					Shrinkage limit = 26.07			
Input natural water content = 63.75					Liquidity index = .69			
Boring No. = B 4			Depth = 350-400		Number = GRAHA BINTARO			





Sample no.	1	2	3	4				
% Water content	53.93	58.34	62.94	101.32				
Blow count	39	31	27	10				
Regression equation					Coefficient of determination			
W = -83.1375 * logN + 183.7325					R <sup>2</sup> = .9917      ** Excellent Test			
Liquid limit = 67.51					Flow index = -83.14			
Input plastic limit = 19.85					Toughness index = -.58			
Plasticity index = 48.46					Shrinkage limit = 10.86			
Input natural water content = 73.6					Liquidity index = 1.13			
Boring No. = B 4			Depth = 550-600		Number = GRAHA BINTARO			



Sample no.	1	2	3	4				
% Water content	92.45	95.95	103.76	111.21				
Blow count	49	33	21	14				
Regression equation					Coefficient of determination			
$W = -35.1174 * \log N + 150.6847$					$R^2 = .9805$ ** Excellent Test			
Liquid limit = 101.59					Flow index = -35.12			
Input plastic limit = 31.28					Toughness index = -2			
Plasticity index = 70.31					Shrinkage limit = 14.26			
Input natural water content = 67.84					Liquidity index = .52			
Boring No. = B 4			Depth = 750-800		Number = GRAHA BINTARO			







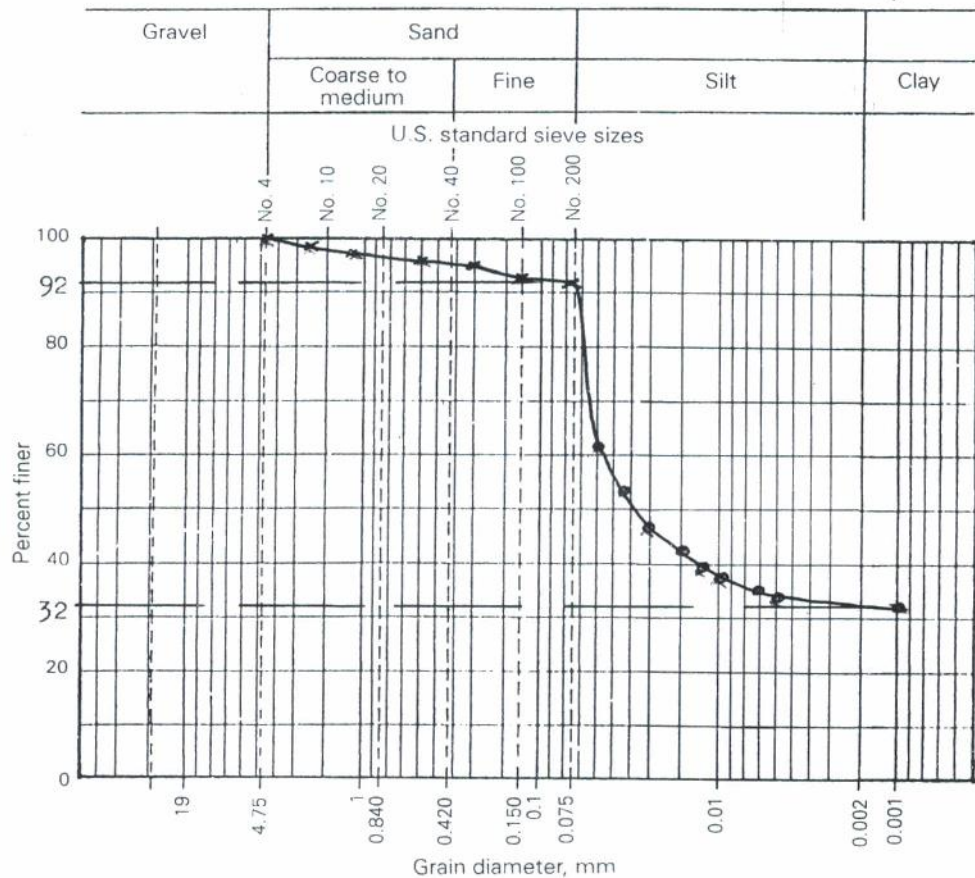




**LABORATORIUM MEKANIKA TANAH**  
**JURUSAN TEKNIK SIPIL - FTSP**  
**INSTITUT SAINS DAN TEKNOLOGI NASIONAL - JAKARTA**  
Kampus ISTN Bhumi Srengseng Telp. 7270092 Fax. 7270090

GRAIN SIZE DISTRIBUTION

Project Graha Bintaro Job No. \_\_\_\_\_  
Location of Project Pondok Kacang Tim. Boring No. B-2 Sample No. 1  
Description of Soil \_\_\_\_\_ Depth of Sample ( 250-200 ) cm .  
Tested By Ir. Rahardjo. S Date of Testing Juli 1996 .



Visual soil description \_\_\_\_\_

Soil classification \_\_\_\_\_ System Hydrometer and sieve analysis

Sand = 8 %.

Clay = 32 %.

Silt = 60 %.



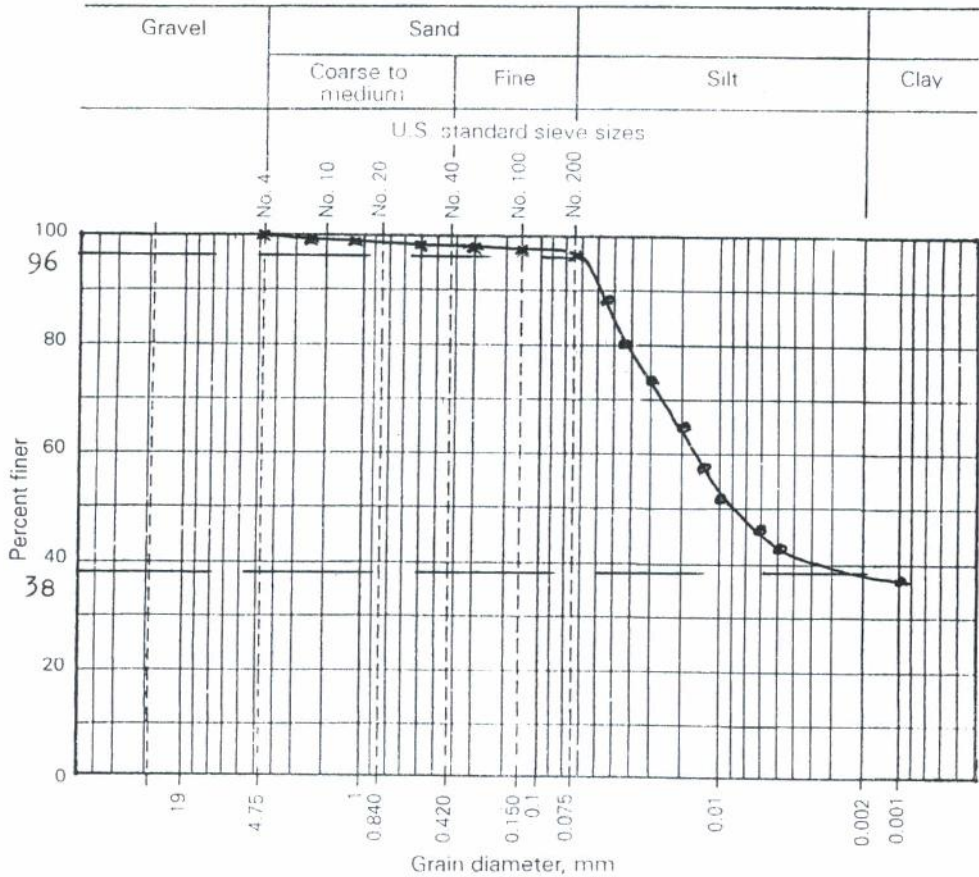




**LABORATORIUM MEKANIKA TANAH**  
**JURUSAN TEKNIK SIPIL - FTSP**  
**INSTITUT SAINS DAN TEKNOLOGI NASIONAL - JAKARTA**  
 Kampus ISTN Bhumi Srengseng Telp. 7270092 Fax. 7270090

GRAIN SIZE DISTRIBUTION

Project Graha Bintaro Job No. \_\_\_\_\_  
 Location of Project Pd Kacang Timur Boring No. B-2 Sample No. 3  
 Description of Soil \_\_\_\_\_ Depth of Sample ( 550-600 ) cm.  
 Tested By Ir. Rahardjo. S Date of Testing Juli, 1996 .



Visual soil description \_\_\_\_\_

Soil classification \_\_\_\_\_

System Hydrometer and sieve analysis

Sand = 4 %.

Clay = 38 %.

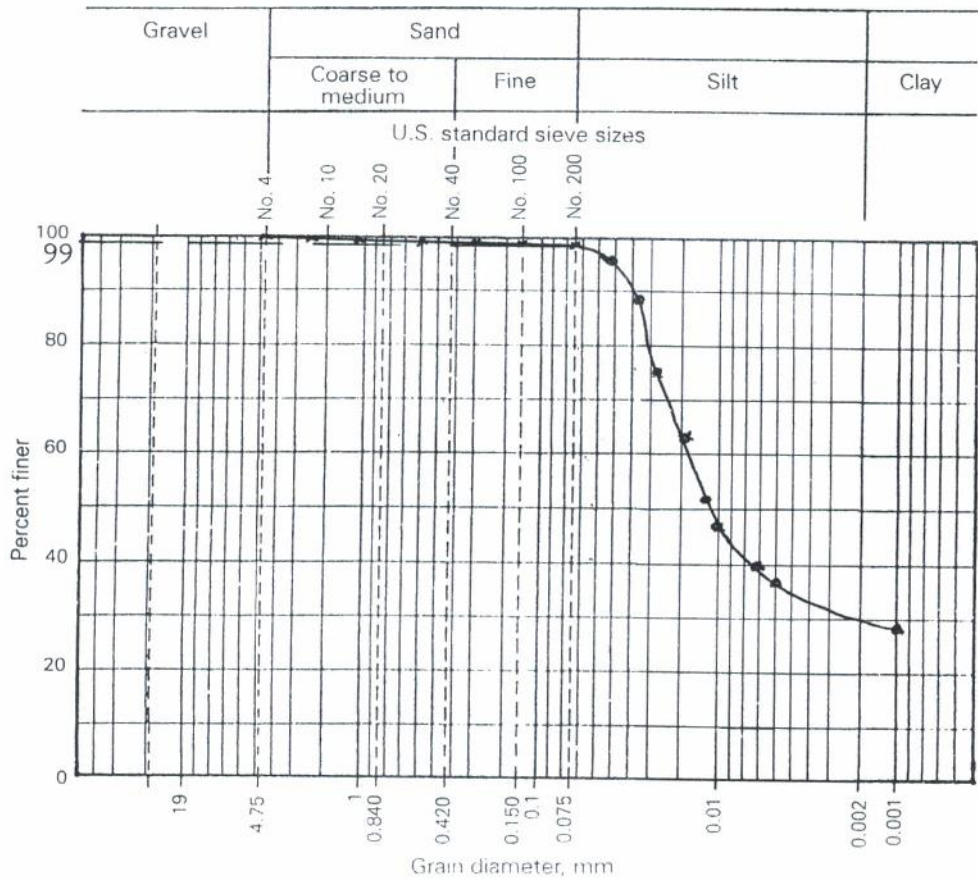
Silt = 58 %.



**LABORATORIUM MEKANIKA TANAH**  
**JURUSAN TEKNIK SIPIL - FTSP**  
**INSTITUT SAINS DAN TEKNOLOGI NASIONAL - JAKARTA**  
 Kampus ISTN Bhumi Srengseng Telp. 7270092 Fax. 7270090

GRAIN SIZE DISTRIBUTION

Project Graha Bintaro Job No. \_\_\_\_\_  
 Location of Project Pd. Kacang Timur Boring No. B-2 Sample No. 4  
 Description of Soil \_\_\_\_\_ Depth of Sample ( 750-800)cm.  
 Tested By Ir. Rahardjo. S Date of Testing Juli 1996 .



Visual soil description \_\_\_\_\_

Soil classification \_\_\_\_\_ System Hydrometer and sieve analysis

Sand = 1 %.  
 Silt = 69 %.  
 Clay = 30 %.

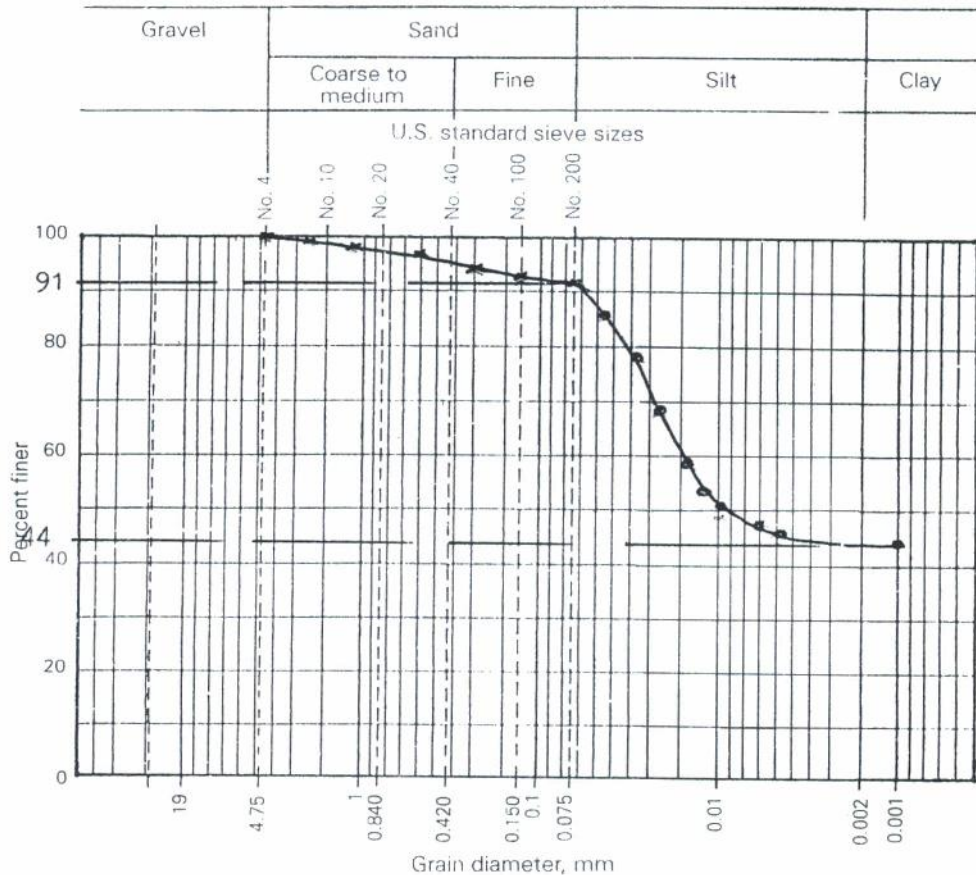




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GRAIN SIZE DISTRIBUTION

Project Graha Bintaro Job No. \_\_\_\_\_  
 Location of Project Pd. Kacang Timur Boring No. B - 5 Sample No. 2  
 Description of Soil \_\_\_\_\_ Depth of Sample ( 350-400 ) cm.  
 Tested By Ir. Rahardjo. S Date of Testing Juli 1996 .



Visual soil description \_\_\_\_\_

Soil classification \_\_\_\_\_

System Hydrometer and sieve analysis

Sand = 9 %.

Clay = 44 %.

Silt = 47 %.



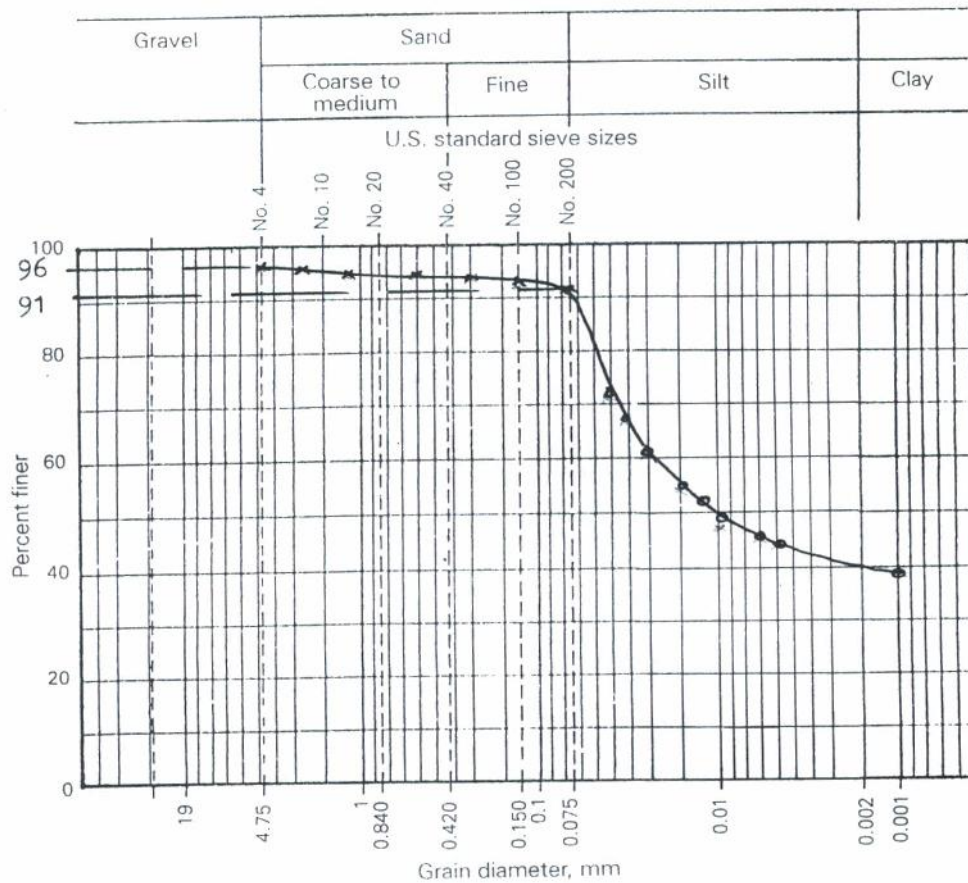




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GRAIN SIZE DISTRIBUTION

Project Graha Bintaro Job No. \_\_\_\_\_  
 Location of Project Pd Kacang Timur Boring No. B-4 Sample No. 1  
 Description of Soil \_\_\_\_\_ Depth of Sample ( 150-200 ) cm  
 Tested By Ir. Rahardjo. S Date of Testing Juli 1996 .



Visual soil description \_\_\_\_\_

Soil classification \_\_\_\_\_ System Hydrometer and sieve analysis

Gravel = 4 %.

Silt = 51 %.

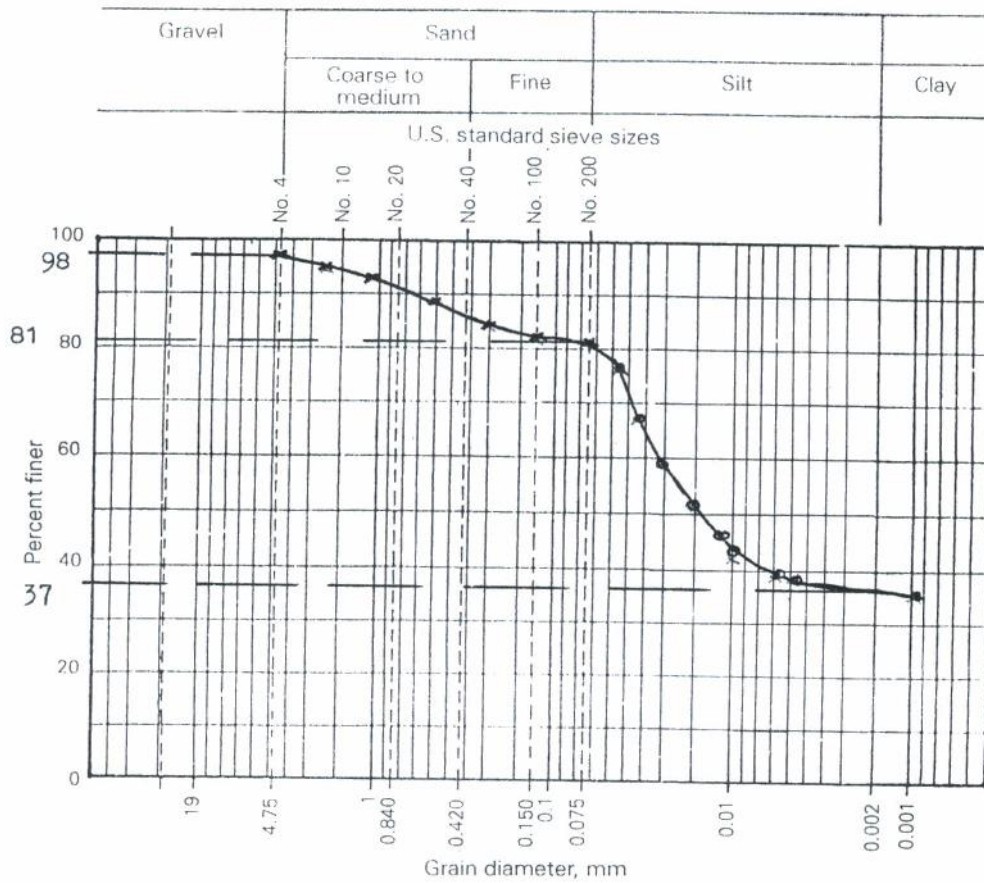
Sand = 5 %.

Clay = 40 %.



GRAIN SIZE DISTRIBUTION

Project Graha Bintaro Job No. \_\_\_\_\_  
 Location of Project Pd. Kacang Timur Boring No. B-4 Sample No. 2  
 Description of Soil \_\_\_\_\_ Depth of Sample ( 350-400 ) cm .  
 Tested By Ir. Rahardjo. S Date of Testing Juli 1996 .



Visual soil description \_\_\_\_\_

Soil classification \_\_\_\_\_  
 System Hydrometer and sieve analysis

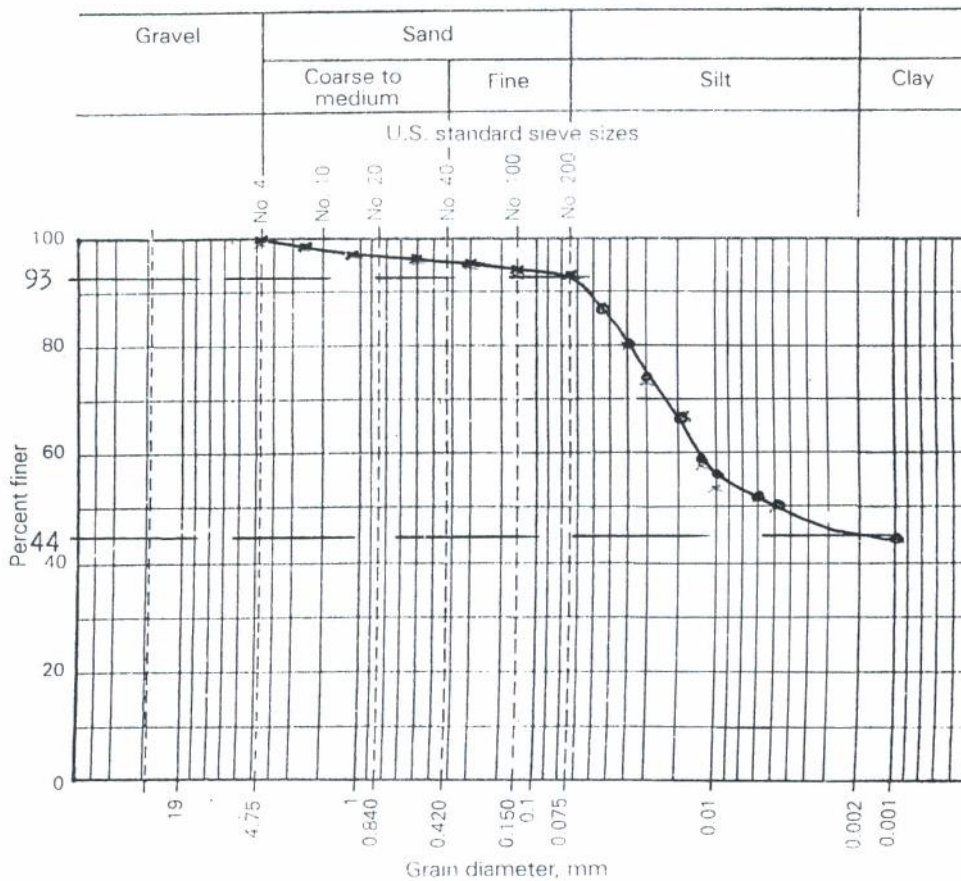
Gravel = 2 %                      Silt = 44 %  
 Sand = 17 %                      Clay = 37 %





GRAIN SIZE DISTRIBUTION

Project Graha Bintaro Job No. \_\_\_\_\_  
 Location of Project Pd. Kacang Timur Boring No. B-4 Sample No. 3  
 Description of Soil \_\_\_\_\_ Depth of Sample ( 550-600)cm  
 Tested By Ir. Rahardjo. S Date of Testing Juli 1996 .



Visual soil description \_\_\_\_\_

Soil classification \_\_\_\_\_ System Hydrometer and sieve analysis

Sand = 7 %.

Clay = 44 %.

Silt = 49 %.





## TRIAXIAL U.U TEST

Project	GRAHA BINTARO	Date of test	JULY. 5th. 1996.
Location	PONDOK KACANG TIMUR	Tested by	Amin Mr
Boring no	B 1	Checked by	NANA S
Depth	150 - 200 Cm	Approved by	

### Sample Data

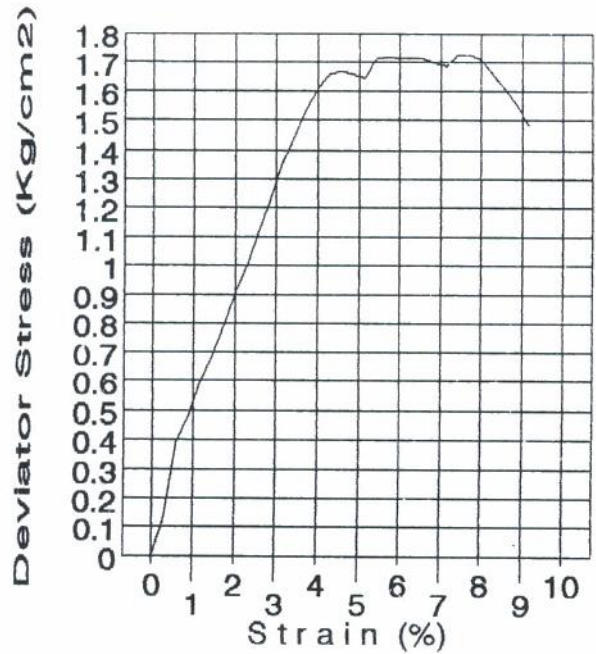
Diameter (cm)	3.50
Height (cm)	7.00
Wet density (gr/cm <sup>3</sup> )	1.64
Water content (%)	55.43
Dry density (gr/cm <sup>3</sup> )	1.05

Stress (kg/cm <sup>2</sup> )	Sample		
	I	II	III
3	0.30	0.60	0.90
Deviator	1.67	1.72	1.73
1	1.97	2.32	2.63
Pore water pressure	0.00	0.00	0.00

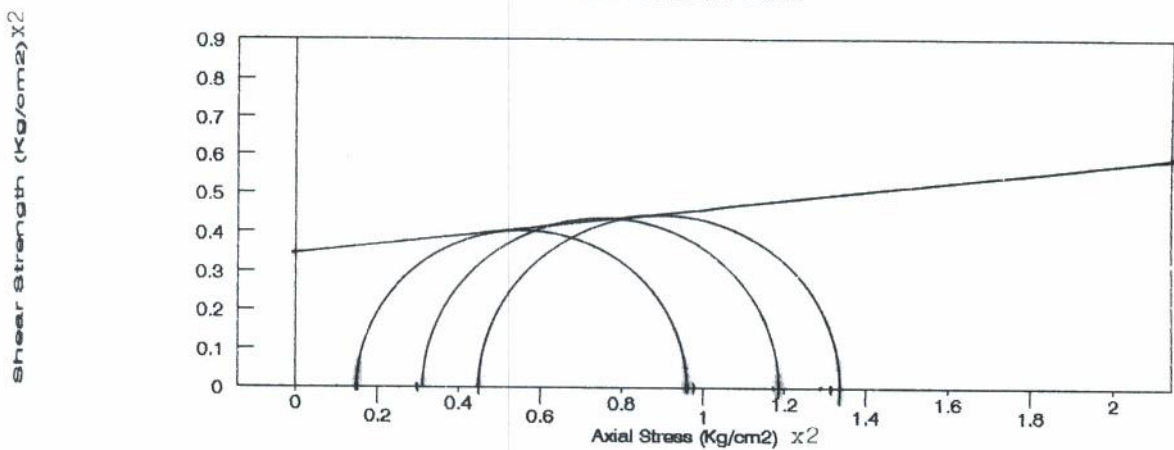
### Shear Strength Parameters

Cohesion Undrained (C <sub>u</sub> ), kg/cm <sup>2</sup>	0,70
Internal Angle Friction (Degree)	6,5°

### Stress - Strain Curve



### Mohr Coulomb Curve





## TRIAXIAL U.U TEST

Project	GRAHA BINTARO	Date of test	JULY. 5th. 1996.
Location	PONDOK KACANG TIMUR	Tested by	Amin Mr
Boring no	B 1	Checked by	NANA S
Depth	350 - 400 Cm	Approved by	

### Sample Data

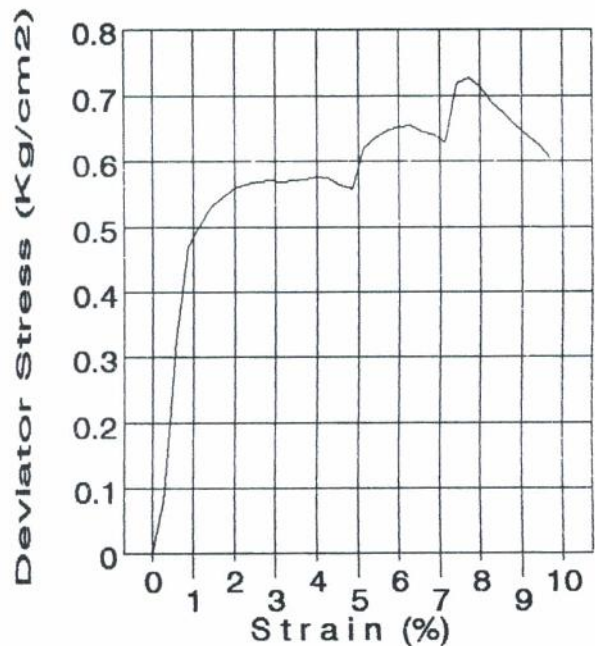
Diameter (cm)	3.50
Height (cm)	7.00
Wet density (gr/cm <sup>3</sup> )	1.60
Water content (%)	59.79
Dry density (gr/cm <sup>3</sup> )	1.00

Stress (kg/cm <sup>2</sup> )	Sample		
	I	II	III
3	0.40	0.80	1.20
Deviator	0.58	0.65	0.73
1	0.98	1.45	1.93
Pore water pressure	0.00	0.00	0.00

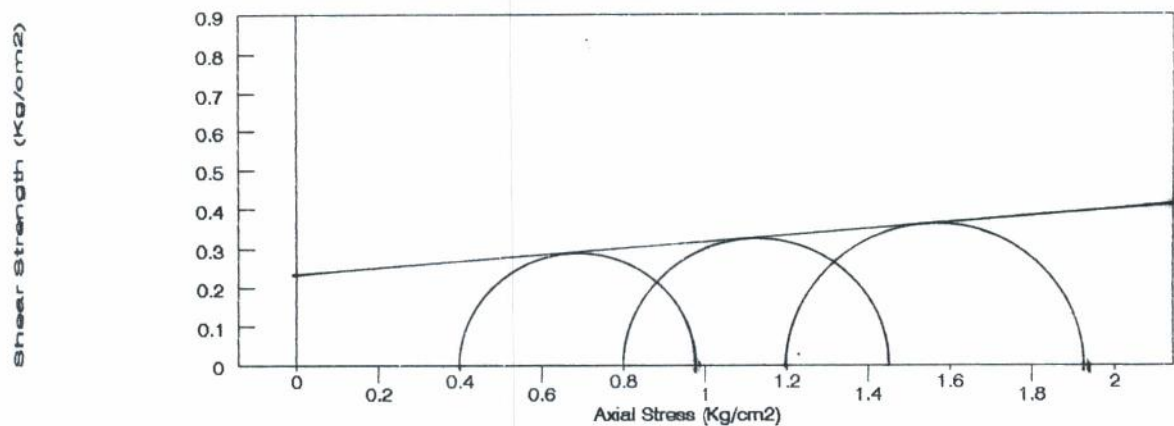
### Shear Strength Parameters

Cohesion Undrained (C <sub>u</sub> ), kg/cm <sup>2</sup>	0,24
Internal Angle Friction (Degree)	5°

### Stress-Strain Curve



### Mohr Coulomb Curve





## TRIAXIAL U.U TEST

Project	GRAHA BINTARO	Date of test	JULY. 5th. 1996.
Location	PONDOK KACANG TIMUR	Tested by	Amin Mr
Boring no	B 1	Checked by	NANA S
Depth	550 - 600 Cm	Approved by	

### Sample Data

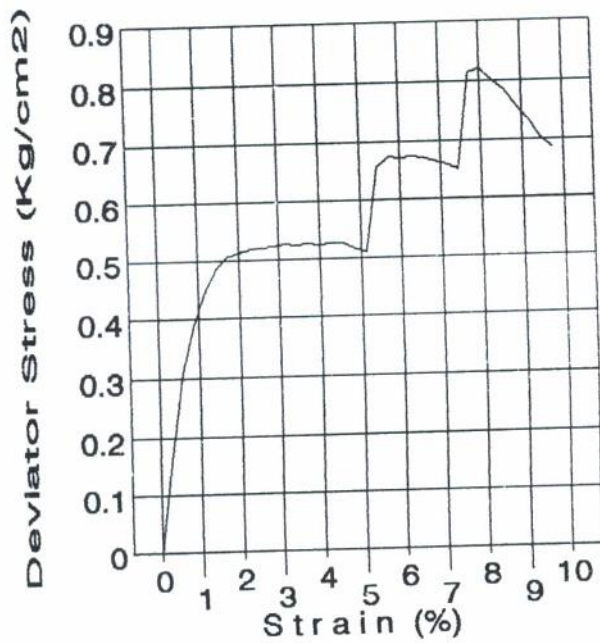
Diameter (cm)	3.50
Height (cm)	7.00
Wet density (gr/cm <sup>3</sup> )	1.85
Water content (%)	59.25
Dry density (gr/cm <sup>3</sup> )	1.04

Stress (kg/cm <sup>2</sup> )	Sample		
	I	II	III
3	0.50	1.00	1.50
Deviator	0.53	0.67	0.82
1	1.03	1.67	2.32
Pore water pressure	0.00	0.00	0.00

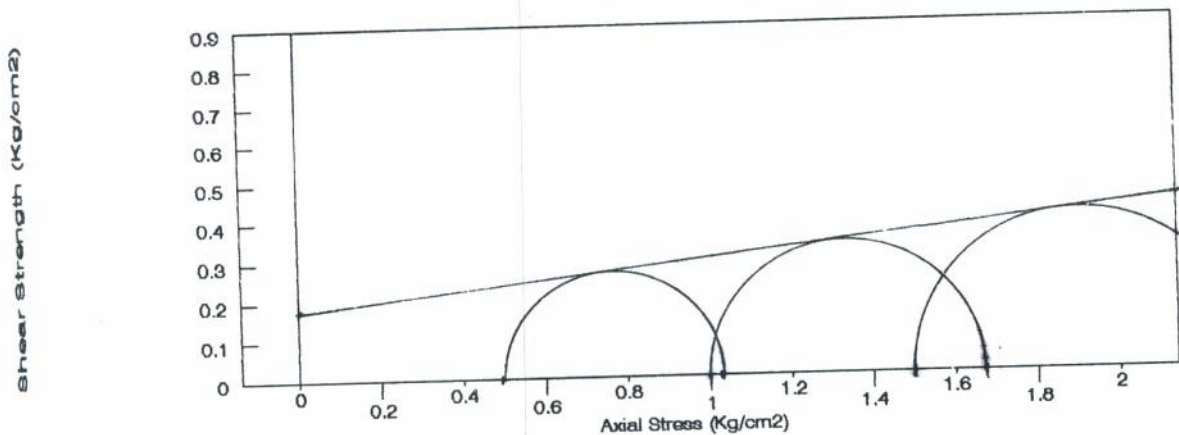
### Shear Strength Parameters

Cohesion Undrained (C <sub>u</sub> ), kg/cm <sup>2</sup>	0,18
Internal Angle Friction (Degree)	7

### Stress - Strain Curve



### Mohr Coulomb Curve





## TRIAXIAL U.U TEST

Project	GRAHA BINTARO	Date of test	JULY. 5th. 1996.
Location	PONDOK KACANG TIMUR	Tested by	Amin Mr
Boring no	B 1	Checked by	NANA S
Depth	750 - 800 Cm	Approved by	

### Sample Data

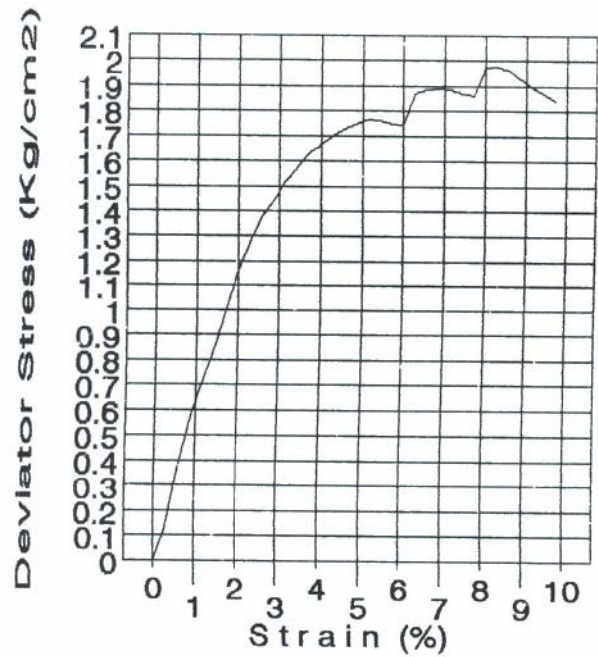
Diameter (cm)	3.50
Height (cm)	7.00
Wet density (gr/cm <sup>3</sup> )	1.61
Water content (%)	62.71
Dry density (gr/cm <sup>3</sup> )	0.99

Stress (kg/cm <sup>2</sup> )	Sample		
	I	II	III
σ	0.60	1.20	1.80
Deviator	1.77	1.89	1.96
1	2.37	3.09	3.76
Pore water pressure	0.00	0.00	0.00

### Shear Strength Parameters

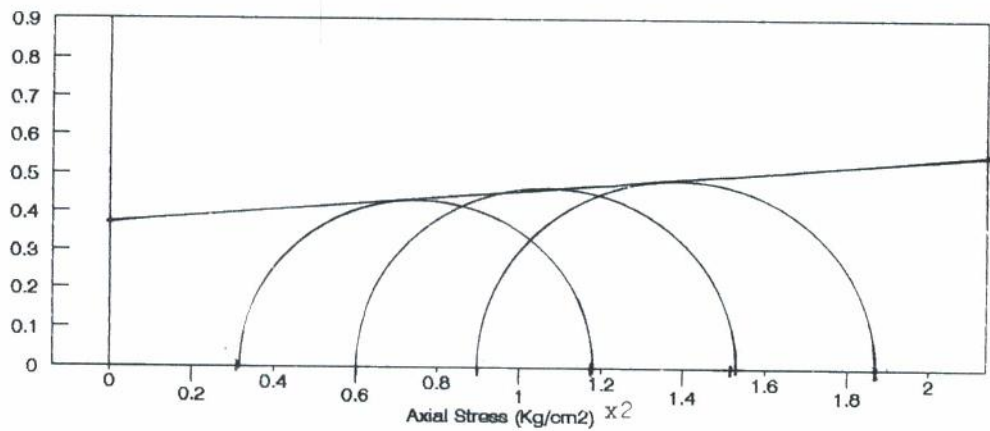
Cohesion Undrained (C <sub>u</sub> ), kg/cm <sup>2</sup>	0,74
Internal Angle Friction (Degree)	5°

### Stress-Strain Curve



### Mohr Coulomb Curve

Shear Strength (Kg/cm<sup>2</sup>)x2





## TRIAXIAL U.U TEST

Project	GRAHA BINTARO	Date of test	JULY. 5th. 1996.
Location	PONDOK KACANG TIMUR	Tested by	Amin Mr
Boring no	B 2	Checked by	NANA S
Depth	150 - 200 Cm	Approved by	

### Sample Data

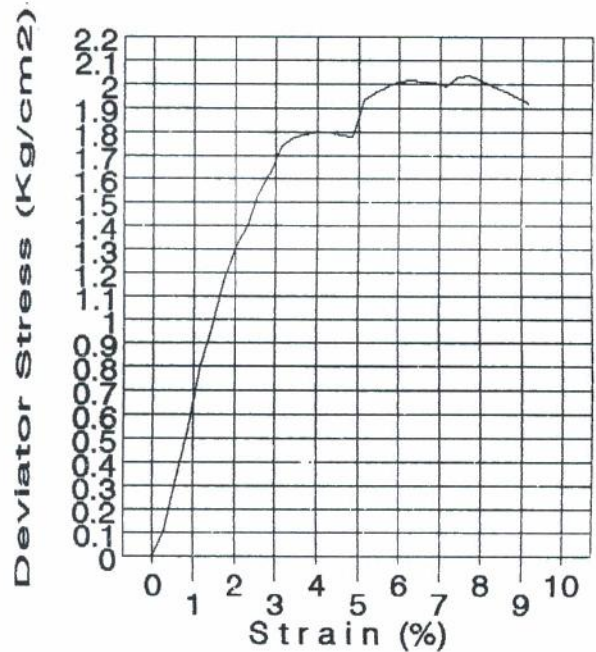
Diameter (cm)	3.50
Height (cm)	7.00
Wet density (gr/cm <sup>3</sup> )	1.69
Water content (%)	48.37
Dry density (gr/cm <sup>3</sup> )	1.14

Stress (kg/cm <sup>2</sup> )	Sample		
	I	II	III
3	0.30	0.60	0.90
Deviator	1.81	2.02	2.04
1	2.11	2.62	2.94
Pore water pressure	0.00	0.00	0.00

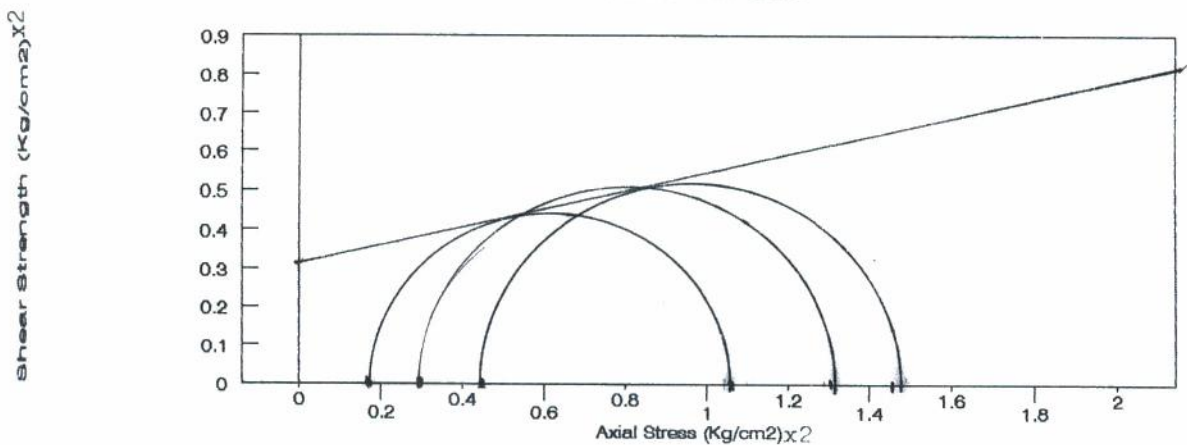
### Shear Strength Parameters

Cohesion Undrained (C <sub>u</sub> ), kg/cm <sup>2</sup>	0,62
Internal Angle Friction (Degree)	13°

### Stress - Strain Curve



### Mohr Coulomb Curve





## TRIAXIAL U.U TEST

Project	GRAHA BINTARO	Date of test	JULY. 5th. 1996.
Location	PONDOK KACANG TIMUR	Tested by	Amin Mr
Boring no	B 2	Checked by	NANA S
Depth	350 - 400 Cm	Approved by	

### Sample Data

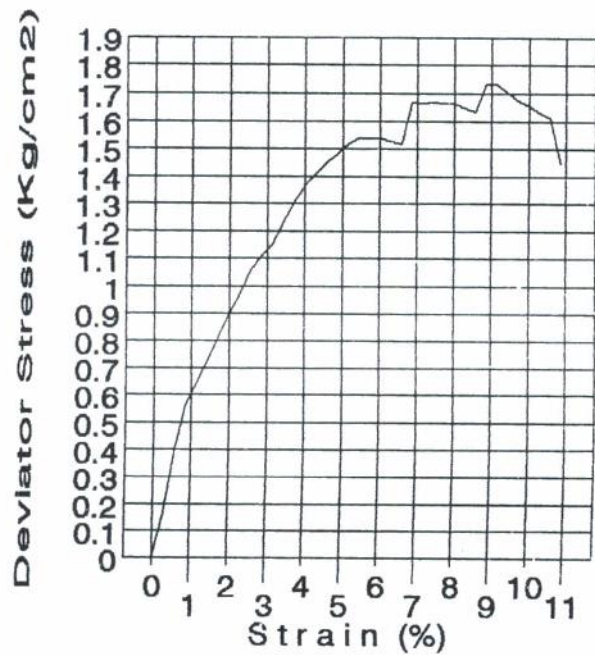
Diameter (cm)	3.50
Height (cm)	7.00
Wet density (gr/cm <sup>3</sup> )	1.67
Water content (%)	53.06
Dry density (gr/cm <sup>3</sup> )	1.09

Stress (kg/cm <sup>2</sup> )	Sample		
	I	II	III
3	0.40	0.80	1.20
Deviator	1.54	1.67	1.73
1	1.94	2.47	2.93
Pore water pressure	0.00	0.00	0.00

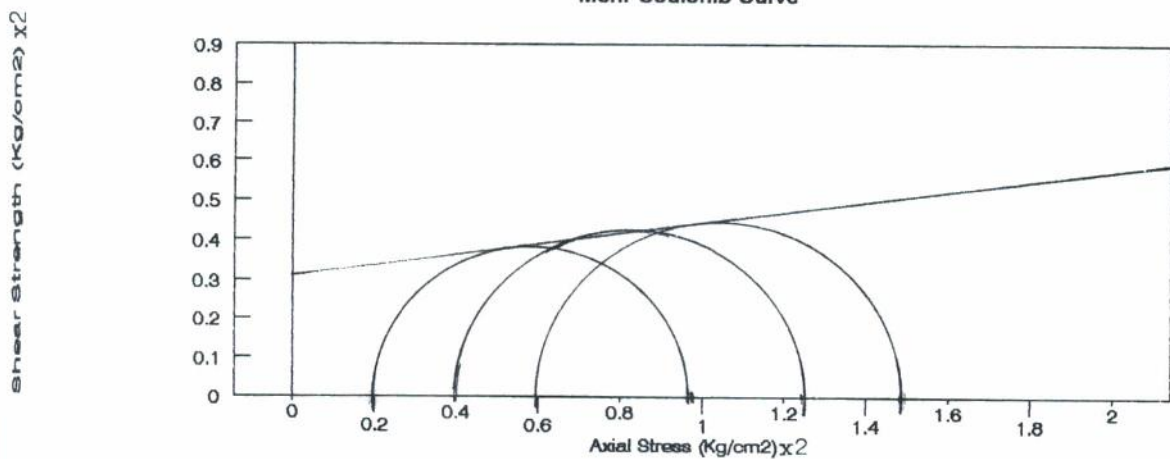
### Shear Strength Parameters

Cohesion Undrained (C <sub>u</sub> ), kg/cm <sup>2</sup>	0,62
Internal Angle Friction (Degree)	8°

### Stress-Strain Curve



### Mohr Coulomb Curve







## TRIAXIAL U.U TEST

Project	GRAHA BINTARO	Date of test	JULY. 5th. 1996.
Location	PONDOK KACANG TIMUR	Tested by	Amin Mr
Boring no	B 2	Checked by	NANA S
Depth	550 - 600 Cm	Approved by	

### Sample Data

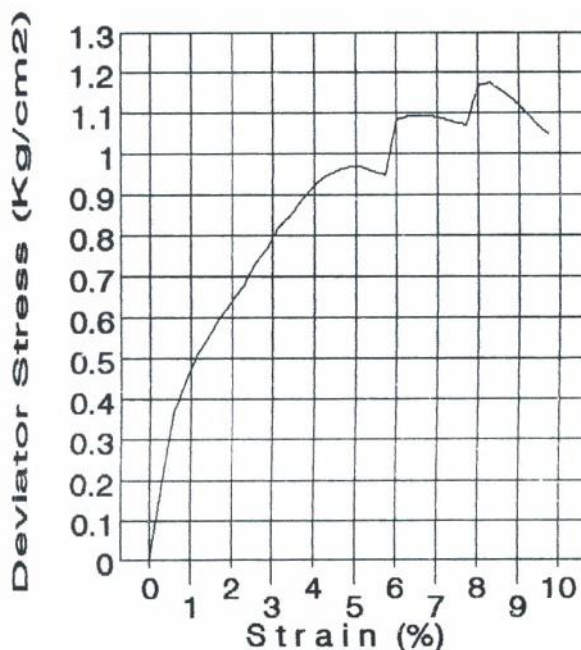
Diameter (cm)	3.50
Height (cm)	7.00
Wet density (gr/cm <sup>3</sup> )	1.63
Water content (%)	63.53
Dry density (gr/cm <sup>3</sup> )	0.99

Stress (kg/cm <sup>2</sup> )	Sample		
	I	II	III
3	0.50	1.00	1.50
Deviator	0.97	1.09	1.17
1	1.47	2.09	2.67
Pore water pressure	0.00	0.00	0.00

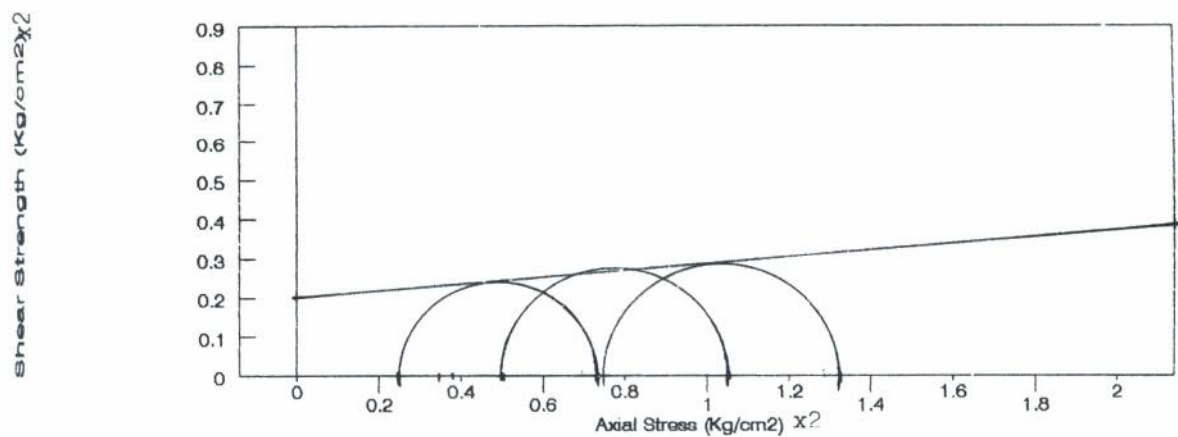
### Shear Strength Parameters

Cohesion Undrained (C <sub>u</sub> ), kg/cm <sup>2</sup>	0, 4
Internal Angle Friction (Degree)	5°

### Stress-Strain Curve



### Mohr Coulomb Curve





## TRIAXIAL U.U TEST

Project	GRAHA BINTARO	Date of test	JULY. 5th. 1996.
Location	PONDOK KACANG TIMUR	Tested by	Amin Mr
Boring no	B 2	Checked by	NANA S
Depth	750 - 800 Cm	Approved by	

### Sample Data

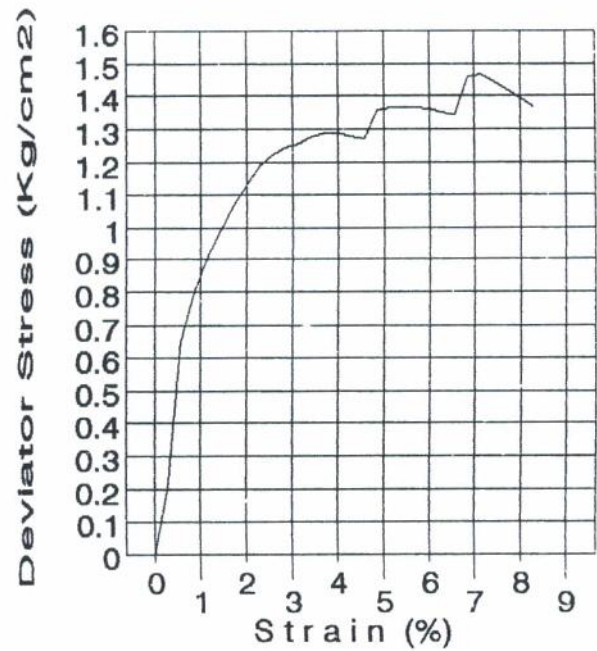
Diameter (cm)	3.50
Height (cm)	7.00
Wet density (gr/cm <sup>3</sup> )	1.52
Water content (%)	68.04
Dry density (gr/cm <sup>3</sup> )	0.90

Stress (kg/cm <sup>2</sup> )	Sample		
	I	II	III
3	0.60	1.20	1.80
Deviator	1.29	1.37	1.47
1	1.89	2.57	3.27
Pore water pressure	0.00	0.00	0.00

### Shear Strength Parameters

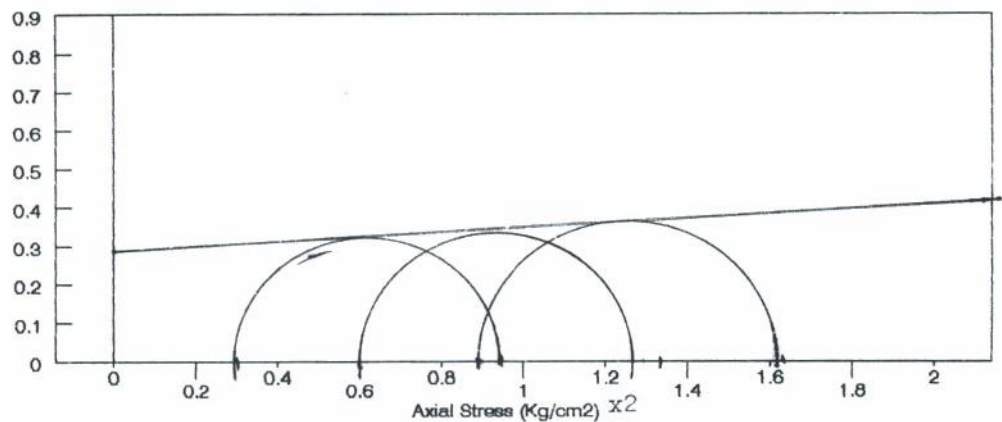
Cohesion Undrained (C <sub>u</sub> ), kg/cm <sup>2</sup>	0,58
Intamal Angle Friction (Degree)	4°

### Stress-Strain Curve



### Mohr Coulomb Curve

Shear Strength (Kg/cm<sup>2</sup>) x2





## TRIAXIAL U.U TEST

Project	GRAHA BINTARO	Date of test	JULY, 15th. 1996
Location	PONDOK KACANG TIMUR	Tested by	Amin Mr
Boring no	B 3	Checked by	NANA S
Depth	150 - 200 CM.	Approved by	

### Sample Data

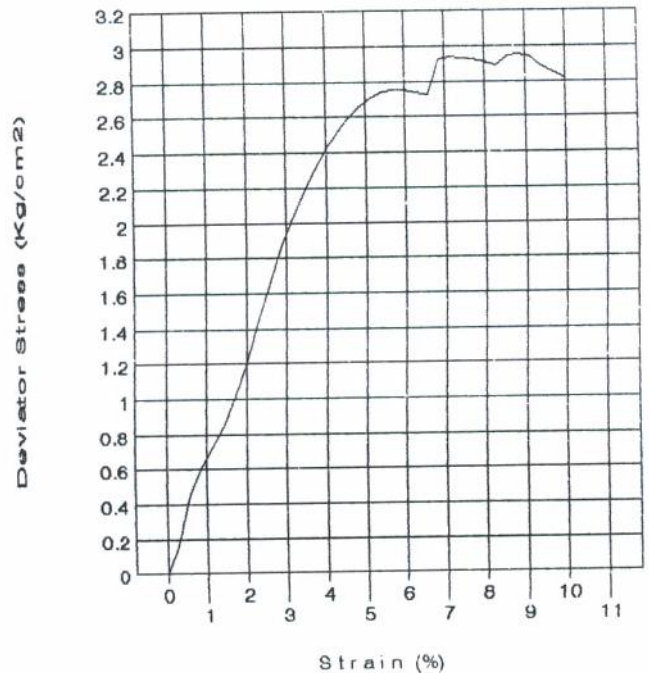
Diameter (cm)	3.50
Height (cm)	7.00
Wet density (gr/cm <sup>3</sup> )	1.69
Water content (%)	38.95
Dry density (gr/cm <sup>3</sup> )	1.22

Stress (kg/cm <sup>2</sup> )	Sample		
	I	II	III
3	0.50	1.00	1.50
Deviator	2.75	2.93	2.95
1	3.25	3.93	4.45
Pore water pressure	0.00	0.00	0.00

### Shear Strength Parameters

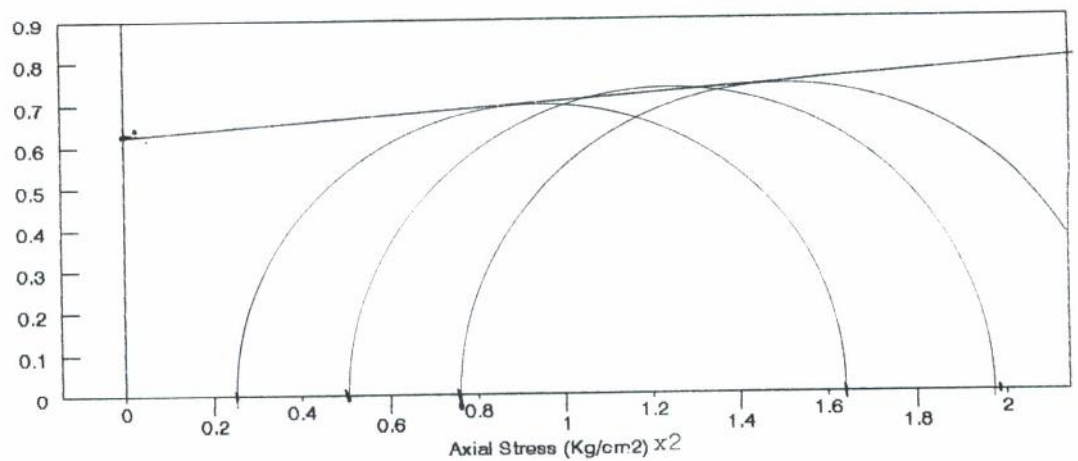
Cohesion Undrained (Cu), kg/cm <sup>2</sup>	1,24
Internal Angle Friction (Degree)	4,5°

### Stress-Strain Curve



### Mohr Coulomb Curve

shear strength (Kg/cm<sup>2</sup>)x2.





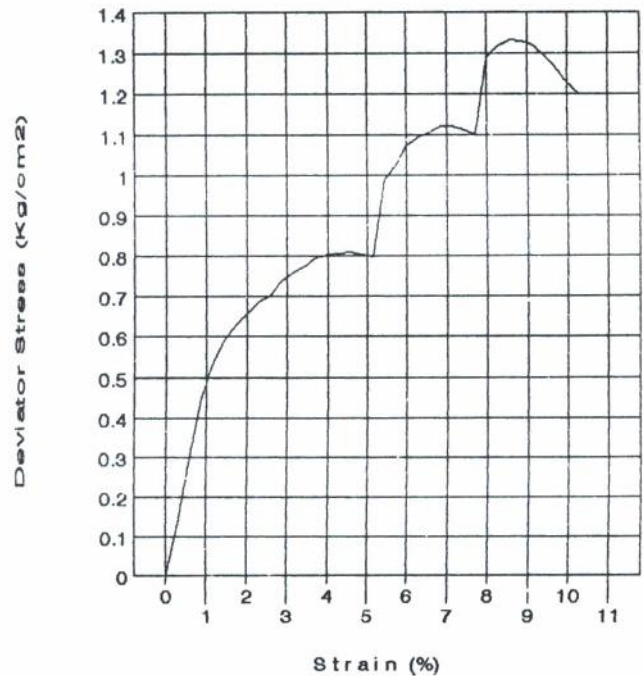
## TRIAXIAL U.U TEST

Project	GRAHA BINTARO	Date of test	JULY. 15th. 1996
Location	PONDOK KACANG TIMUR	Tested by	Amin Mr
Boring no	B 3	Checked by	NANA S
Depth	350 - 400 CM.	Approved by	

### Sample Data

Diameter (cm)	3.50
Height (cm)	7.00
Wet density (gr/cm <sup>3</sup> )	1.63
Water content (%)	51.72
Dry density (gr/cm <sup>3</sup> )	1.08

### Stress-Strain Curve



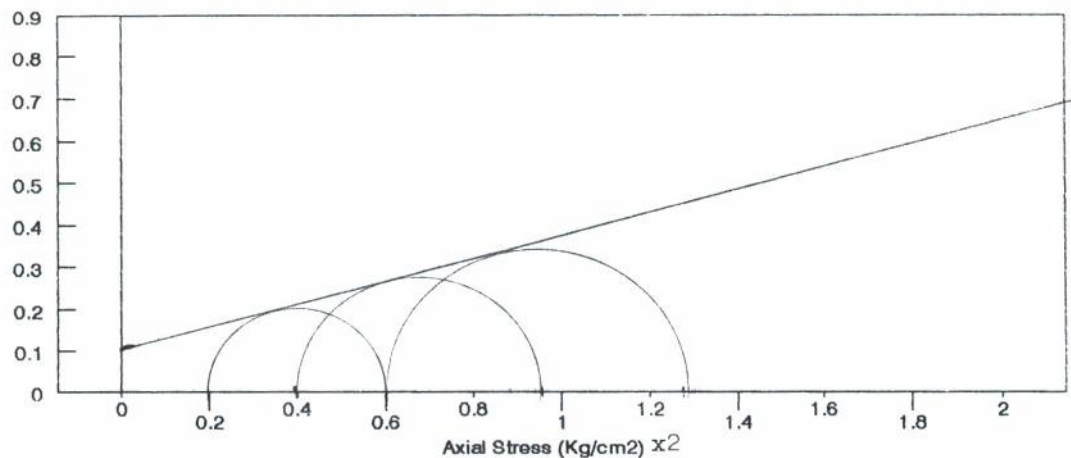
Stress (kg/cm <sup>2</sup> )	Sample		
	I	II	III
3	0.40	0.80	1.20
Deviator	0.80	1.12	1.38
1	1.20	1.92	2.53
Pore water pressure	0.00	0.00	0.00

### Shear Strength Parameters

Cohesion Undrained (Cu), kg/cm <sup>2</sup>	0,20
Internal Angle Friction (Degree)	15,5°

### Mohr Coulomb Curve

Shear Strength (Kg/cm<sup>2</sup>)x2.





## TRIAXIAL U.U TEST

Project	GRAHA BINTARO	Date of test	JULY. 15th. 1996
Location	PONDOK KACANG TIMUR	Tested by	Amin Mr
Boring no	B 4	Checked by	NANA S
Depth	550 - 600 CM.	Approved by	

### Sample Data

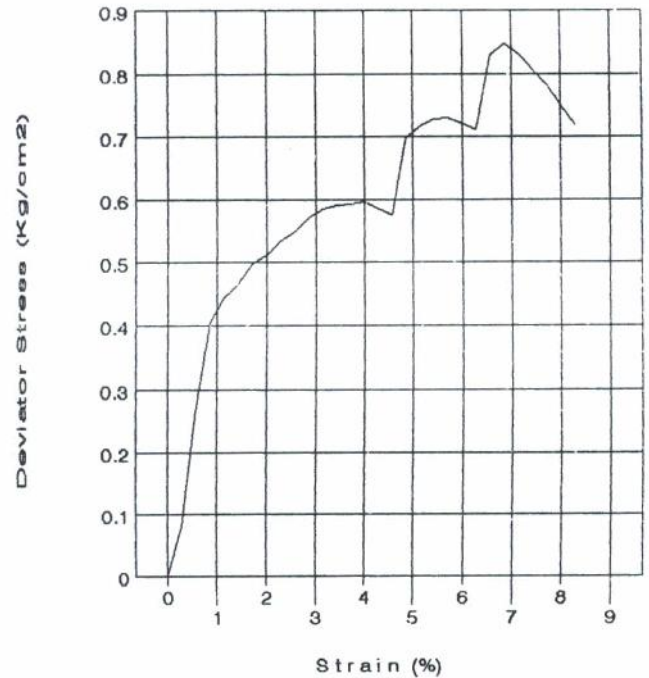
Diameter (cm)	3.50
Height (cm)	7.00
Wet density (gr/cm <sup>3</sup> )	1.44
Water content (%)	46.46
Dry density (gr/cm <sup>3</sup> )	0.98

Stress (kg/cm <sup>2</sup> )	Sample		
	I	II	III
3	0.50	1.00	1.50
Deviator	0.60	0.73	0.85
1	1.10	1.73	2.35
Pore water pressure	0.00	0.00	0.00

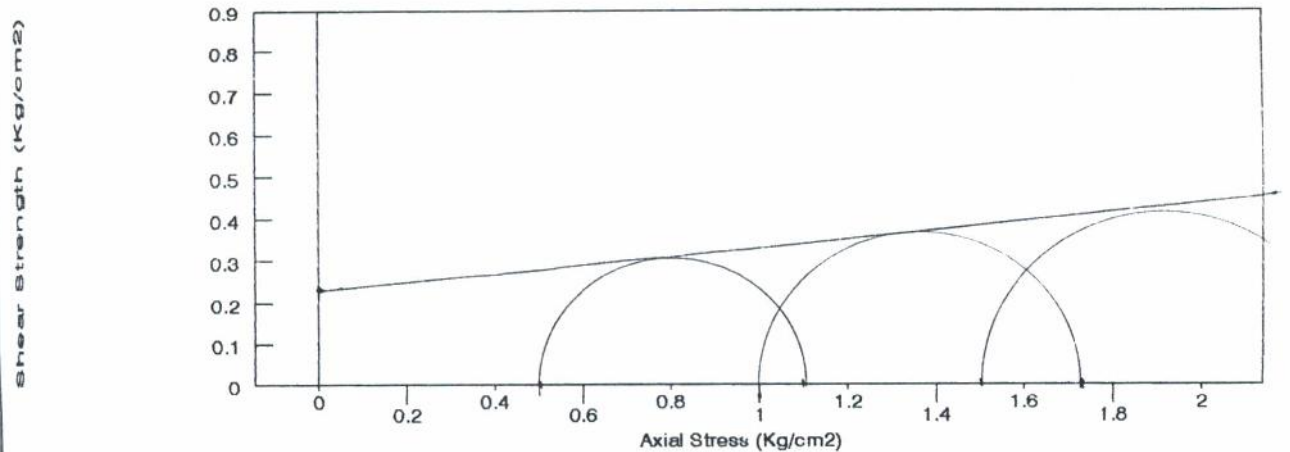
### Shear Strength Parameters

Cohesion Undrained (C <sub>u</sub> ), kg/cm <sup>2</sup>	0,23
Internal Angle Friction (Degree)	6°

Stress-Strain Curve



Mohr Coulomb Curve





## TRIAXIAL U.U TEST

Project	GRAHA BINTARO	Date of test	JULY. 15th. 1996
Location	PONDOK KACANG TIMUR	Tested by	Amin Mr
Boring no	B 3	Checked by	NANA S
Depth	750 - 800 CM.	Approved by	

### Sample Data

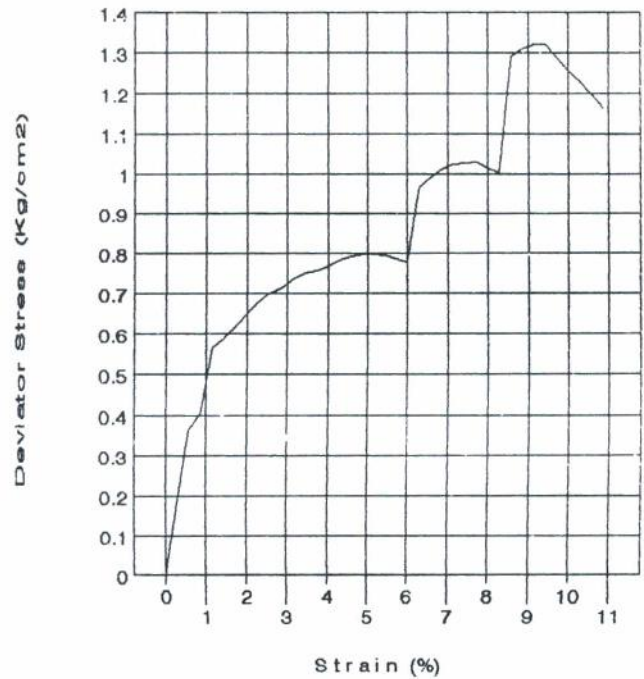
Diameter (cm)	3.50
Height (cm)	7.00
Wet density (gr/cm <sup>3</sup> )	1.49
Water content (%)	66.06
Dry density (gr/cm <sup>3</sup> )	0.90

Stress (kg/cm <sup>2</sup> )	Sample		
	I	II	III
3	0.60	1.20	1.80
Deviator	0.80	1.03	1.32
1	1.40	2.23	3.12
Pore water pressure	0.00	0.00	0.00

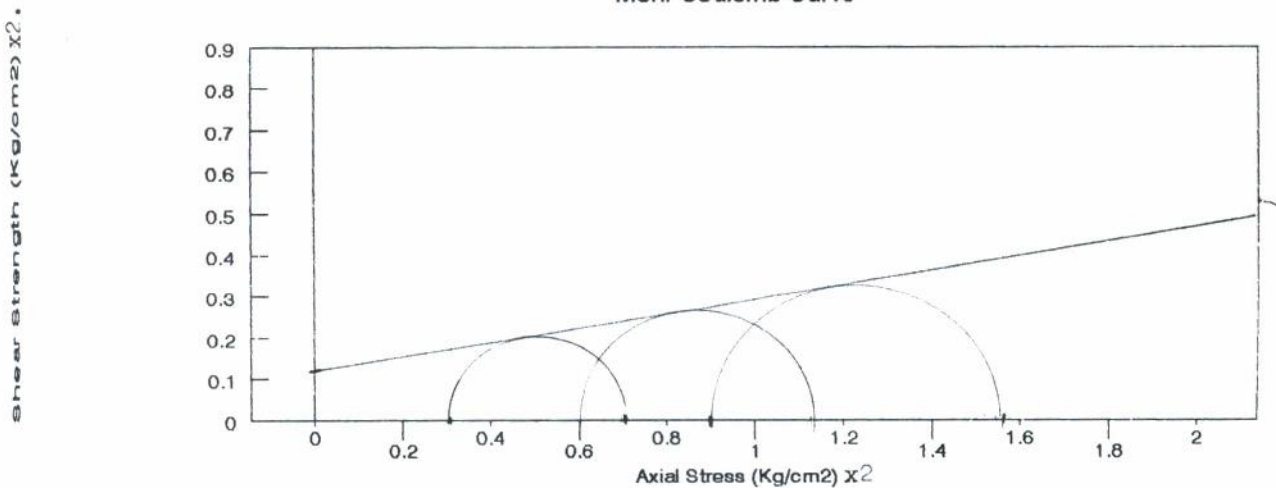
### Shear Strength Parameters

Cohesion Undrained (C <sub>u</sub> ), kg/cm <sup>2</sup>	0,24
Internal Angle Friction (Degree)	10°

### Stress-Strain Curve



### Mohr Coulomb Curve





## TRIAxIAL U.U TEST

Project	GRAHA BINTARO	Date of test	JULY. 15th. 1996
Location	PONDOK KACANG TIMUR	Tested by	Amin Mr
Boring no	B 4	Checked by	NANA S
Depth	150 - 200 CM.	Approved by	

### Sample Data

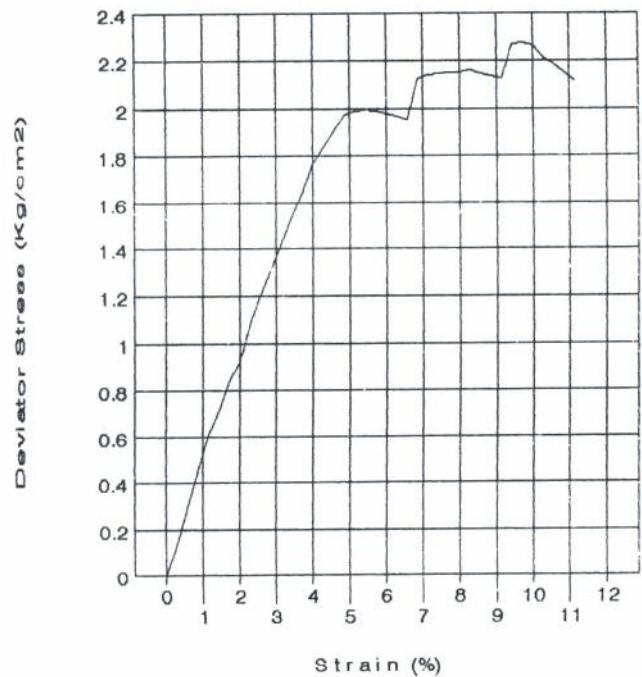
Diameter (cm)	3.50
Height (cm)	7.00
Wet density (gr/cm <sup>3</sup> )	1.65
Water content (%)	43.90
Dry density (gr/cm <sup>3</sup> )	1.14

Stress (kg/cm <sup>2</sup> )	Sample		
	I	II	III
3	0.30	0.60	0.90
Deviator	1.99	2.15	2.27
1	2.29	2.75	3.17
Pore water pressure	0.00	0.00	0.00

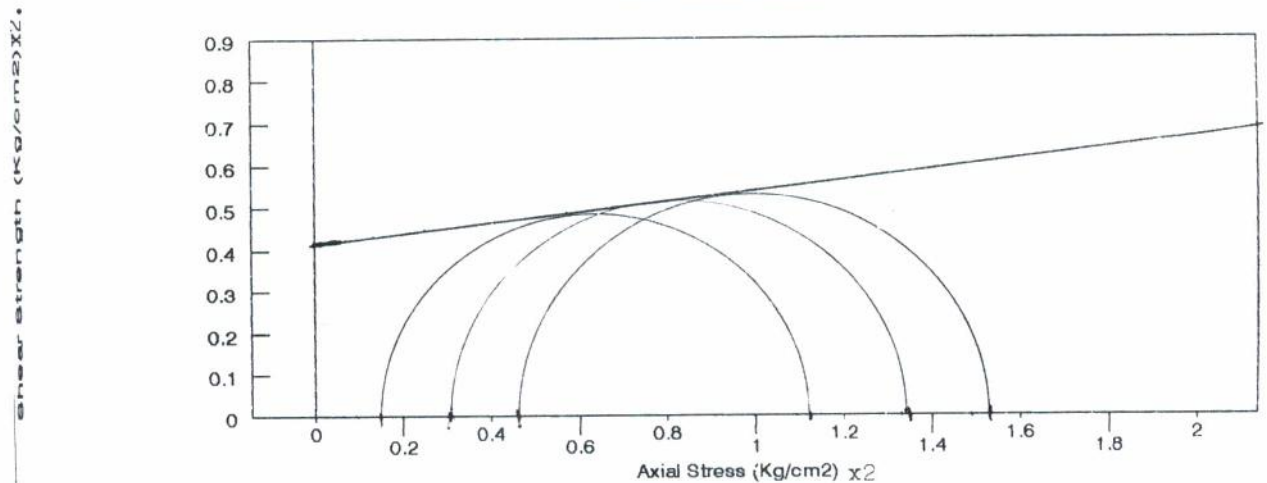
### Shear Strength Parameters

Cohesion Undrained (C <sub>u</sub> ), kg/cm <sup>2</sup>	0,82
Internal Angle Friction (Degree)	7,5°

**Stress-Strain Curve**



**Mohr Coulomb Curve**





## TRIAXIAL U.U TEST

Project	GRAHA BINTARO	Date of test	JULY, 15th, 1996
Location	PONDOK KACANG TIMUR	Tested by	Amin Mr
Boring no	B 4	Checked by	NANA S
Depth	350 - 400 CM.	Approved by	

### Sample Data

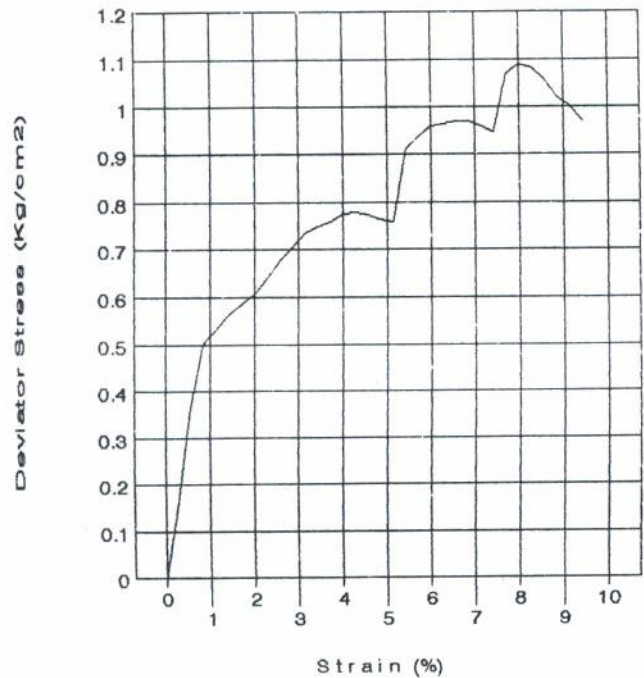
Diameter (cm)	3.50
Height (cm)	7.00
Wet density (gr/cm <sup>3</sup> )	1.59
Water content (%)	58.52
Dry density (gr/cm <sup>3</sup> )	1.00

Stress (kg/cm <sup>2</sup> )	Sample		
	I	II	III
3	0.40	0.80	1.20
Deviator	0.78	0.97	1.09
1	1.18	1.77	2.29
Pore water pressure	0.00	0.00	0.00

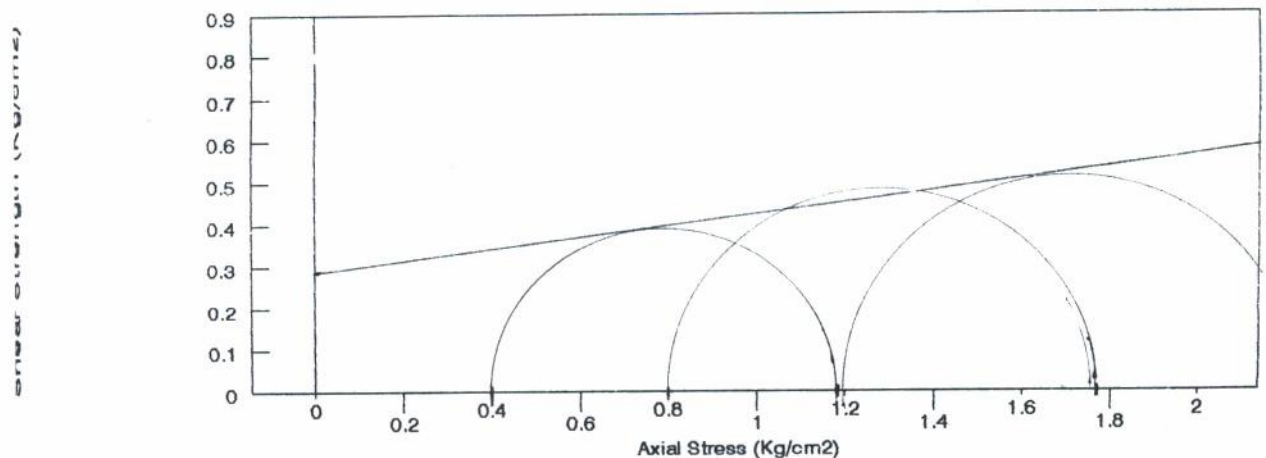
### Shear Strength Parameters

Cohesion Undrained (Cu), kg/cm <sup>2</sup>	0,28
Internal Angle Friction (Degree)	8°

### Stress - Strain Curve



### Mohr Coulomb Curve







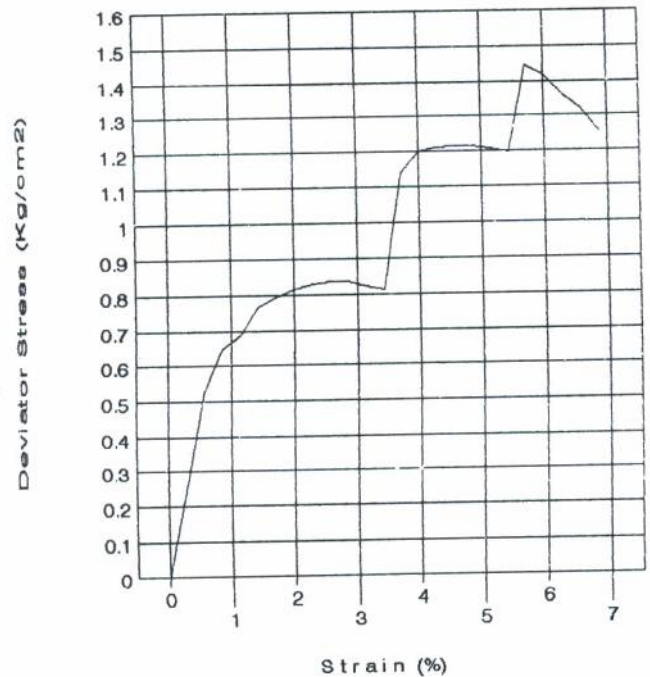
## TRIAXIAL U.U TEST

Project	GRAHA BINTARO	Date of test	JULY. 15th. 1996
Location	PONDOK KACANG TIMUR	Tested by	Amin Mr
Boring no	B 3	Checked by	NANA S
Depth	550 - 600 CM.	Approved by	

### Sample Data

Diameter (cm)	3.50
Height (cm)	7.00
Wet density (gr/cm <sup>3</sup> )	1.55
Water content (%)	103.12
Dry density (gr/cm <sup>3</sup> )	0.76

### Stress-Strain Curve

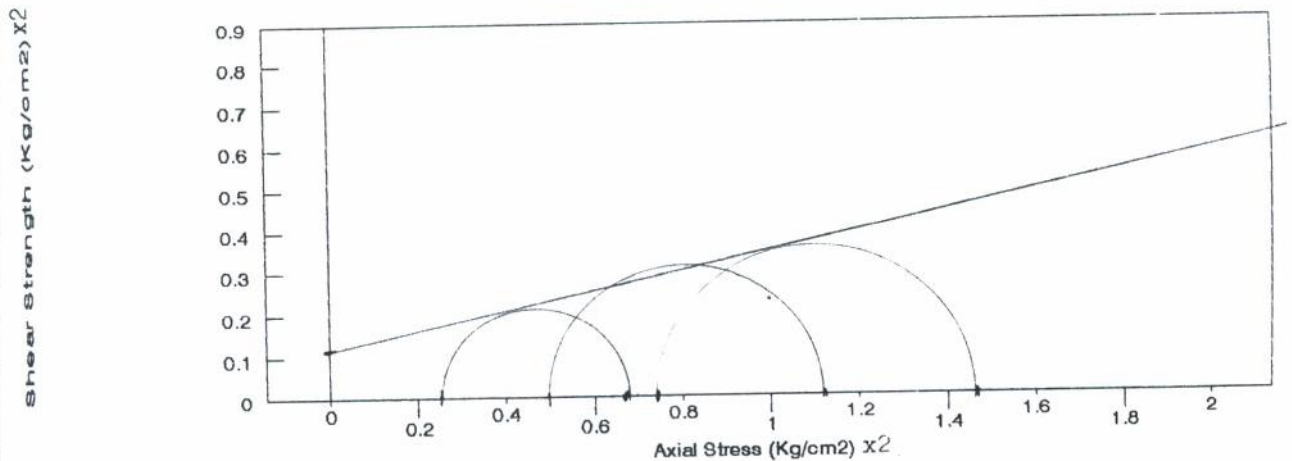


Stress (kg/cm <sup>2</sup> )	Sample		
	I	II	III
3	0.50	1.00	1.50
Deviator	0.84	1.22	1.45
1	1.34	2.22	2.95
Pore water pressure	0.00	0.00	0.00

### Shear Strength Parameters

Cohesion Undrained (Cu), kg/cm <sup>2</sup>	0,22
Internal Angle Friction (Degree)	14°

### Mohr Coulomb Curve





## TRIAXIAL U.U TEST

Project	GRAHA BINTARO	Date of test	JULY. 15th. 1996
Location	PONDOK KACANG TIMUR	Tested by	Amin Mr
Boring no	B 4	Checked by	NANA S
Depth	750 - 800 CM.	Approved by	

### Sample Data

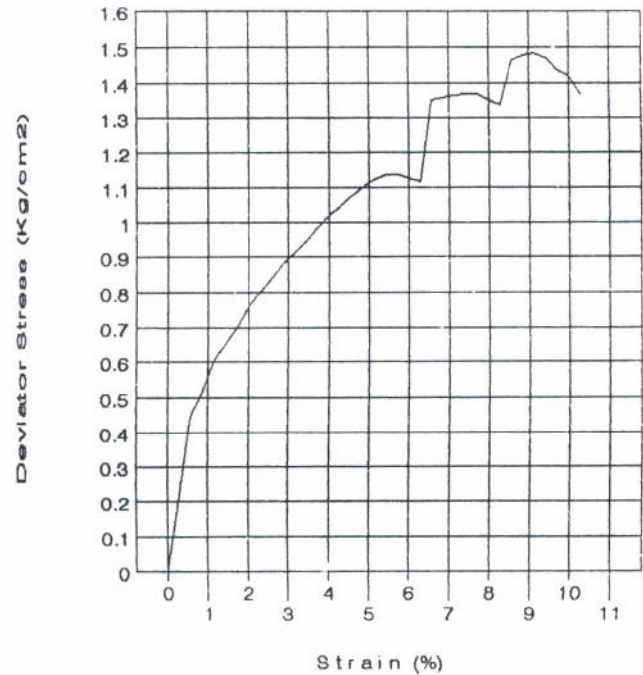
Diameter (cm)	3.50
Height (cm)	7.00
Wet density (gr/cm <sup>3</sup> )	1.56
Water content (%)	53.80
Dry density (gr/cm <sup>3</sup> )	1.02

Stress (kg/cm <sup>2</sup> )	Sample		
	I	II	III
3	0.60	1.20	1.80
Deviator	1.14	1.37	1.48
1	1.74	2.57	3.28
Pore water pressure	0.00	0.00	0.00

### Shear Strength Parameters

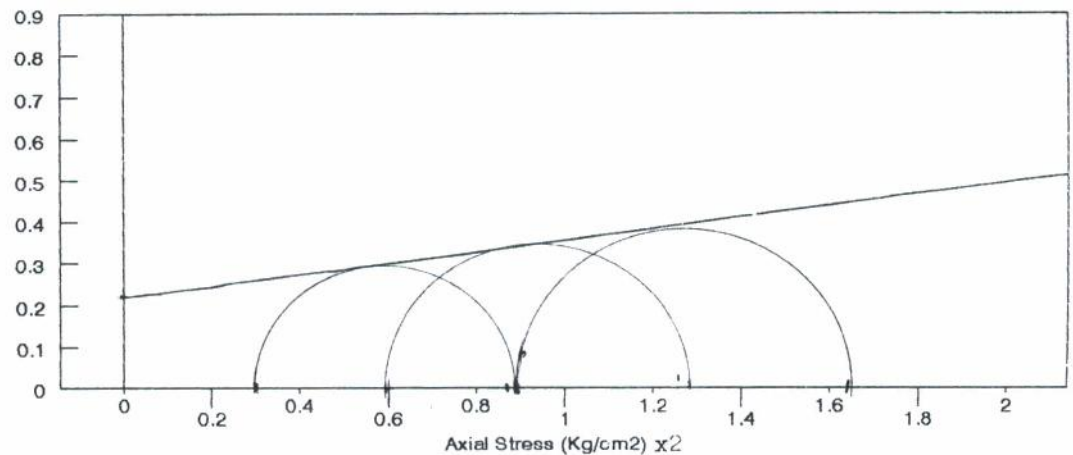
Cohesion Undrained (C <sub>u</sub> ), kg/cm <sup>2</sup>	0,46
Internal Angle Friction (Degree)	7°

### Stress-Strain Curve



### Mohr Coulomb Curve

Shear strength (Kg/cm<sup>2</sup>) x 2.

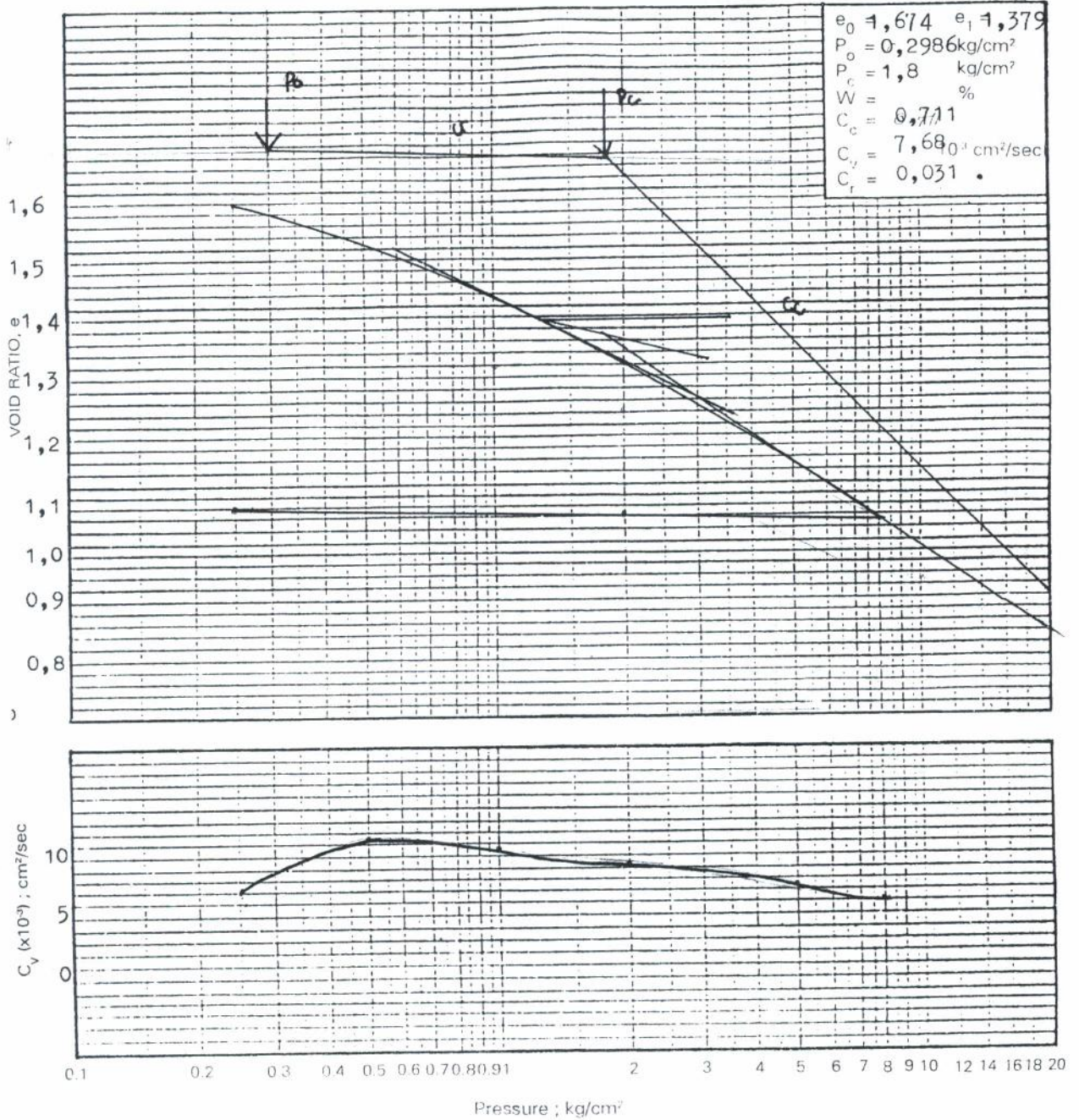




CONSOLIDATION TEST

Project : Graha Bintaro  
 Location : Pondok Kacang Timur  
 Boring no. : B - 1 .

Depth of Sample : 150 - 200 .  
 Date of test : Juli 1996 .  
 Test by : Rr Prihadini N

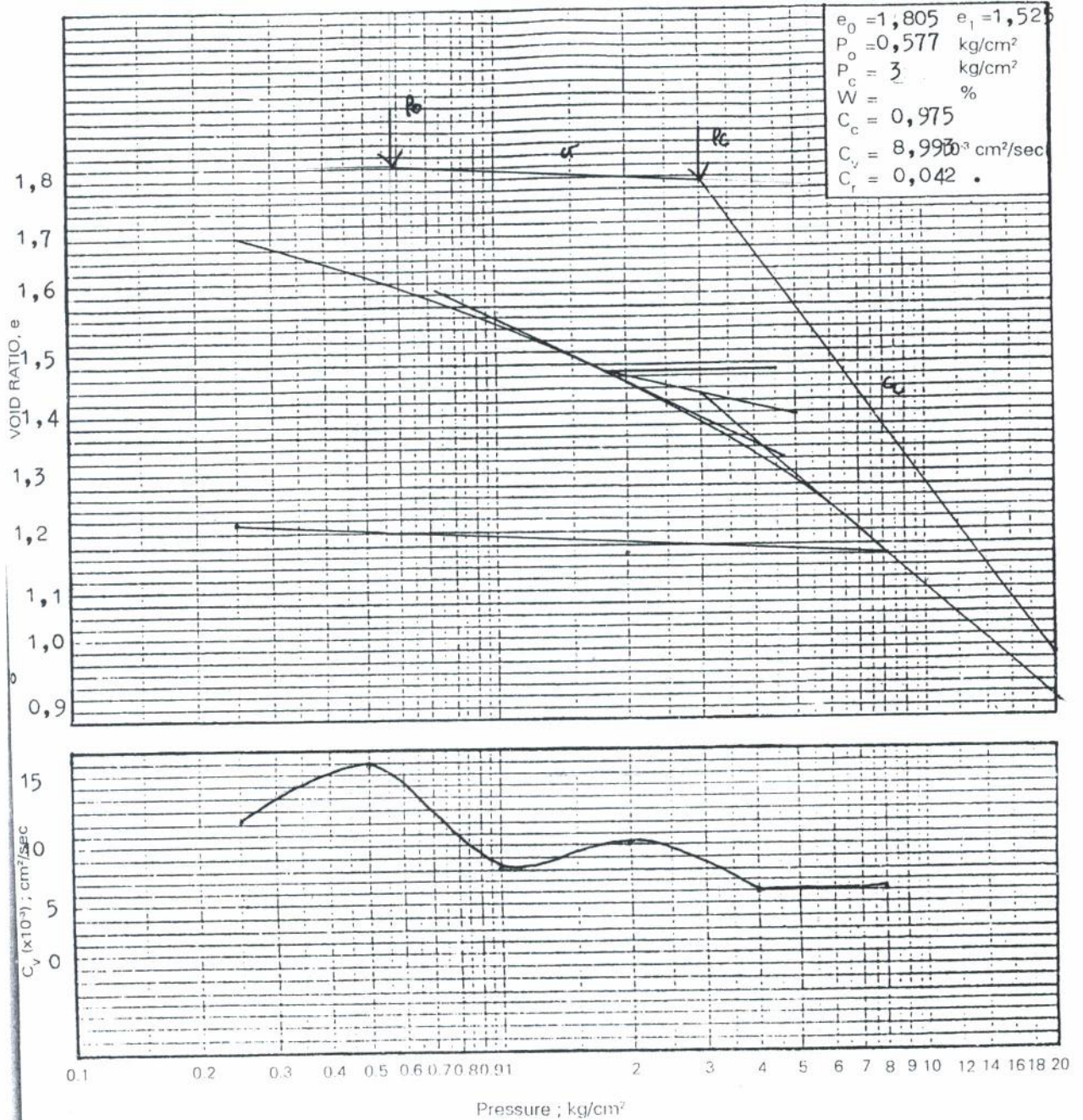




**CONSOLIDATION TEST**

Project : Graha Bintaro  
 Location : Pondok Kacang Timur  
 Boring no. : B - 1 .

Depth of Sample : 350 - 400 .  
 Date of test : Juli 1996 .  
 Test by : Rr Prihadini N



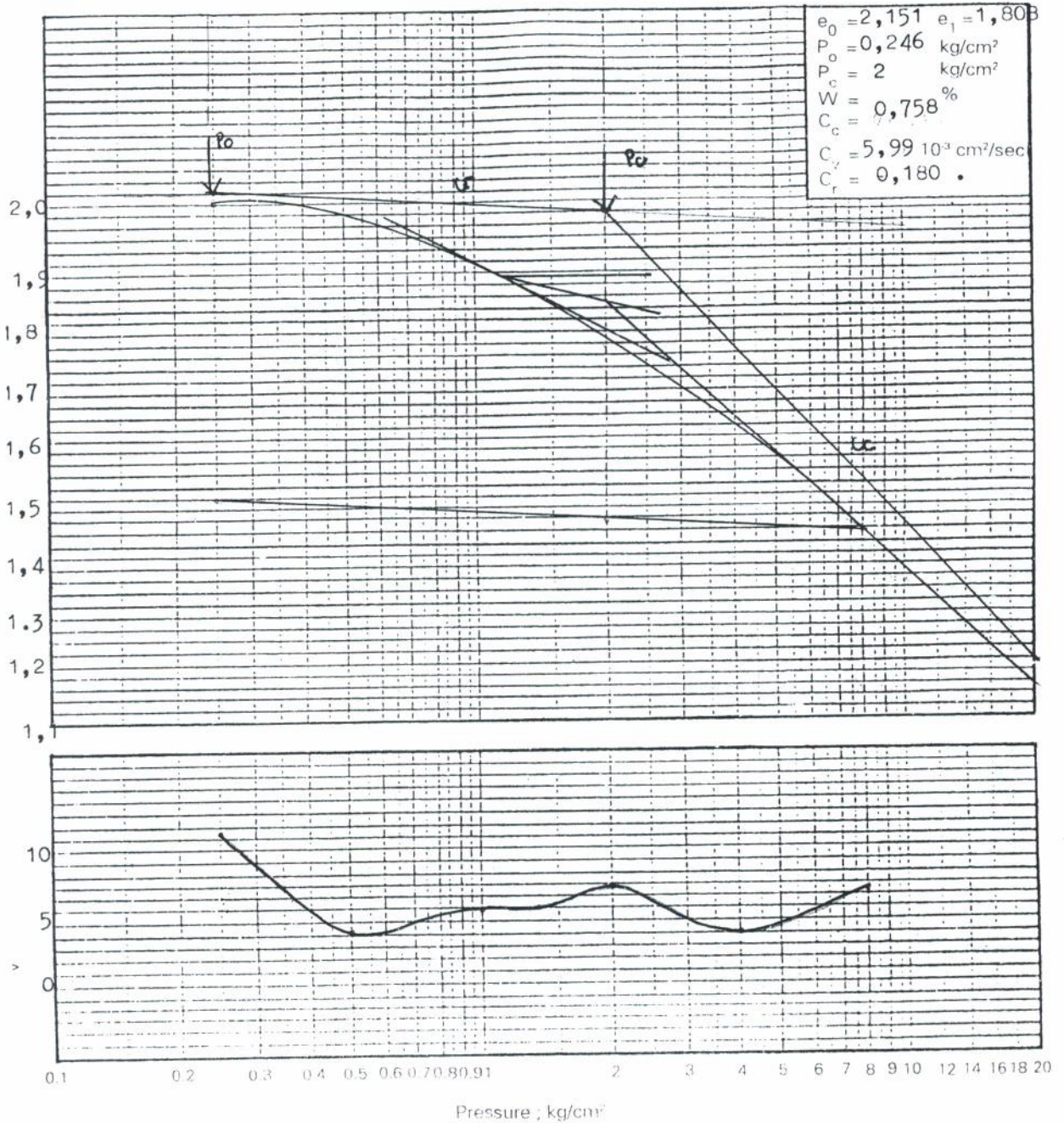




**CONSOLIDATION TEST**

Project : Graha Bintaro  
 Location : Pondok Kacang Timur .  
 Boring no. : B - 1 .

Depth of Sample : 750 - 800 .  
 Date of test : Juli 1996 .  
 Test by : Rr Prihadini N

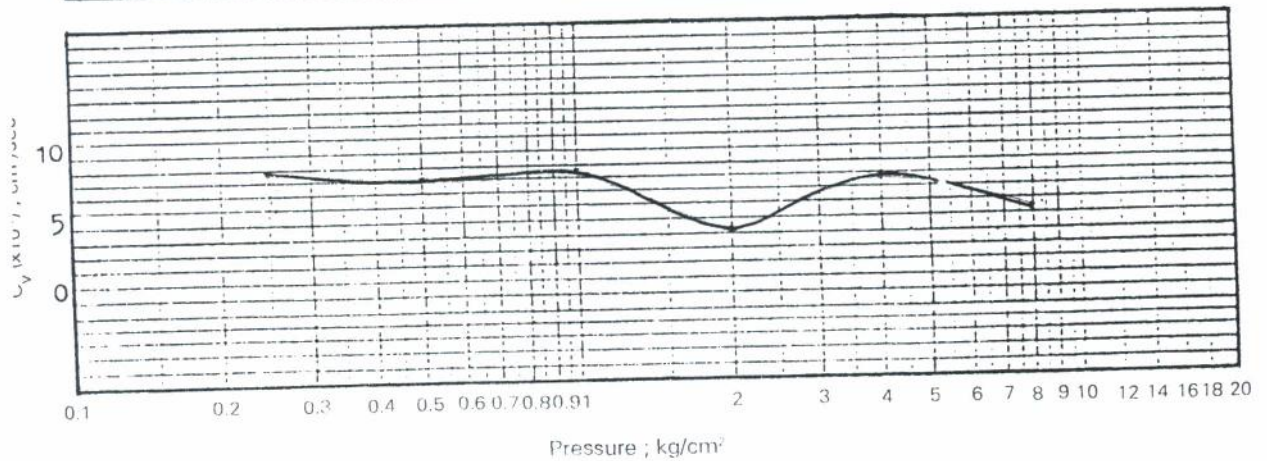
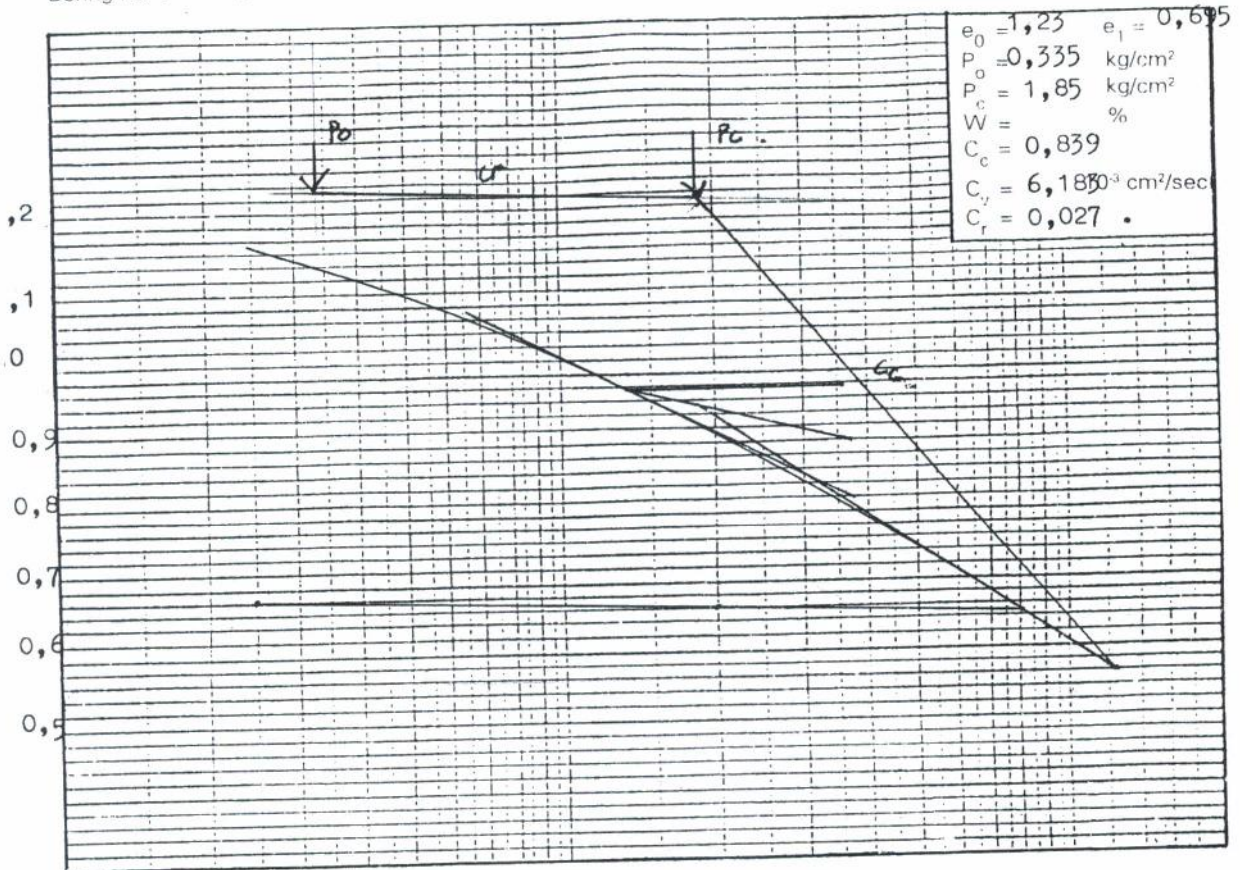




**CONSOLIDATION TEST**

Project : Graha Bintaro  
 Location : Pondok Kacang Timur  
 Boring no. : B - 2 . z

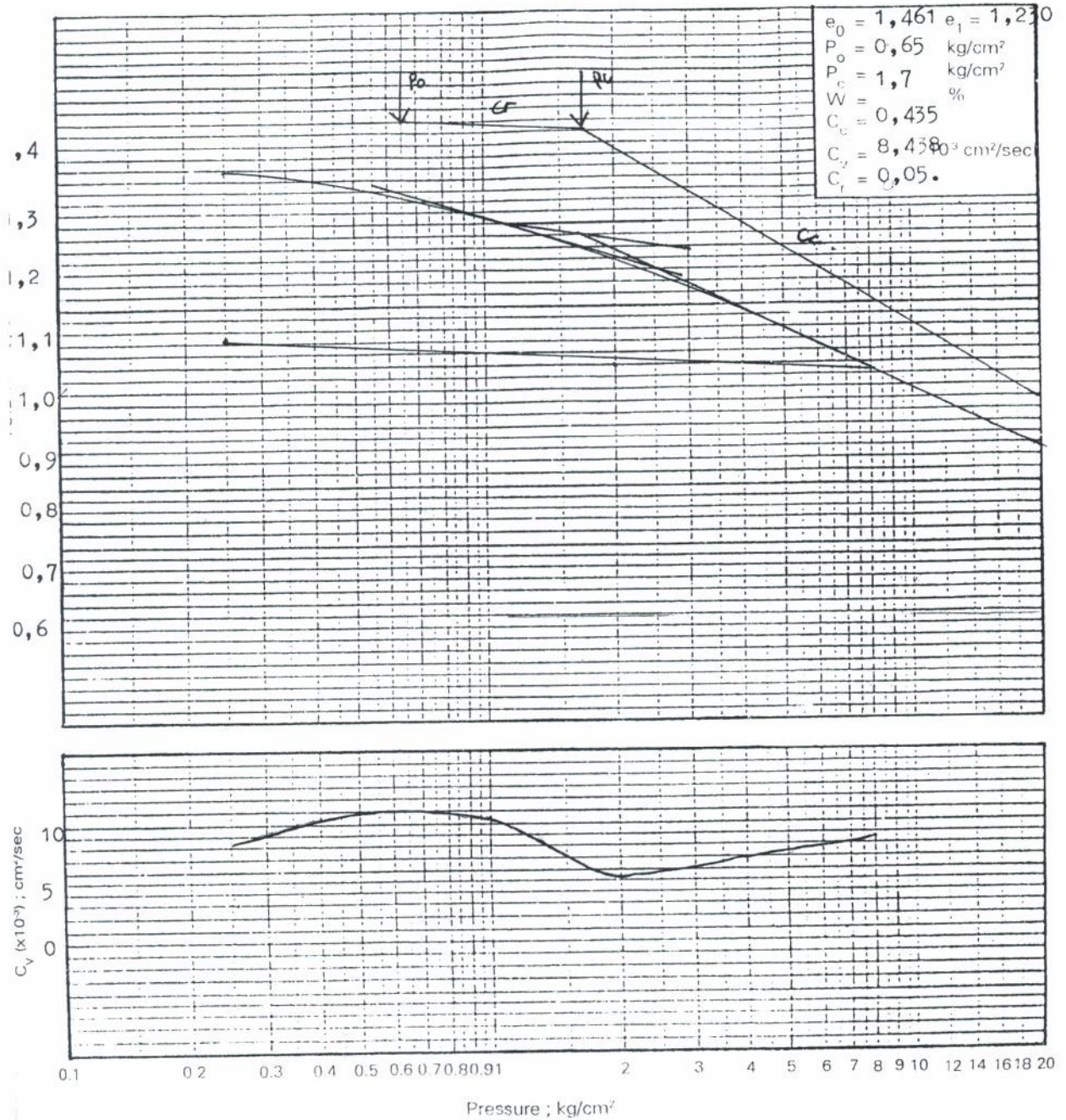
Depth of Sample : 150 - 200 .  
 Date of test : Juli 1996 .  
 Test by : Rr Prihadini N





CONSOLIDATION TEST

Project : GRAH BINTARO                      Depth of Sample : 350-400.  
 Location : Pondok Kacang Timur .              Date of test : Juli 1996 .  
 Boring no. : B - 2 .                              Test by : Rr Prihadini N





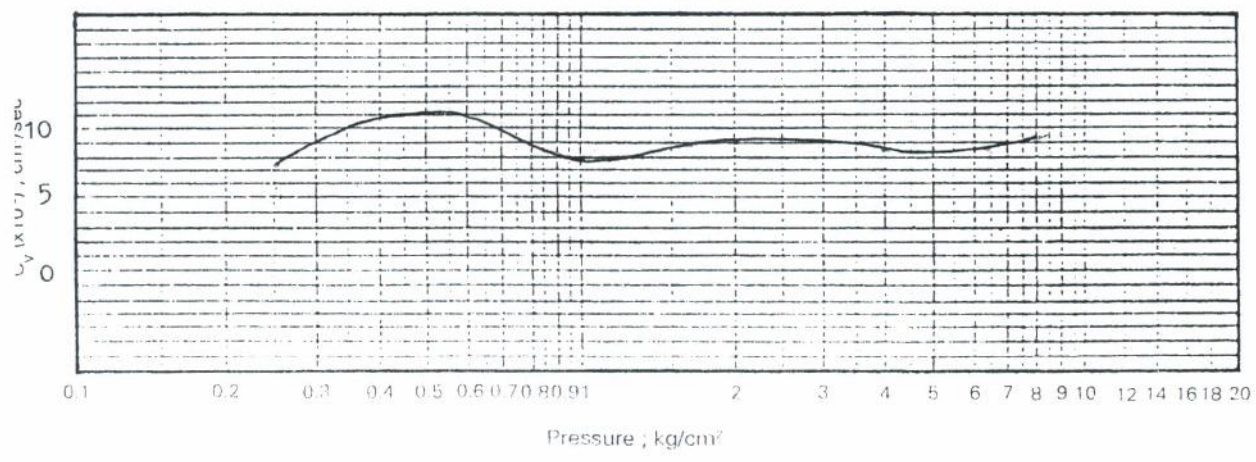
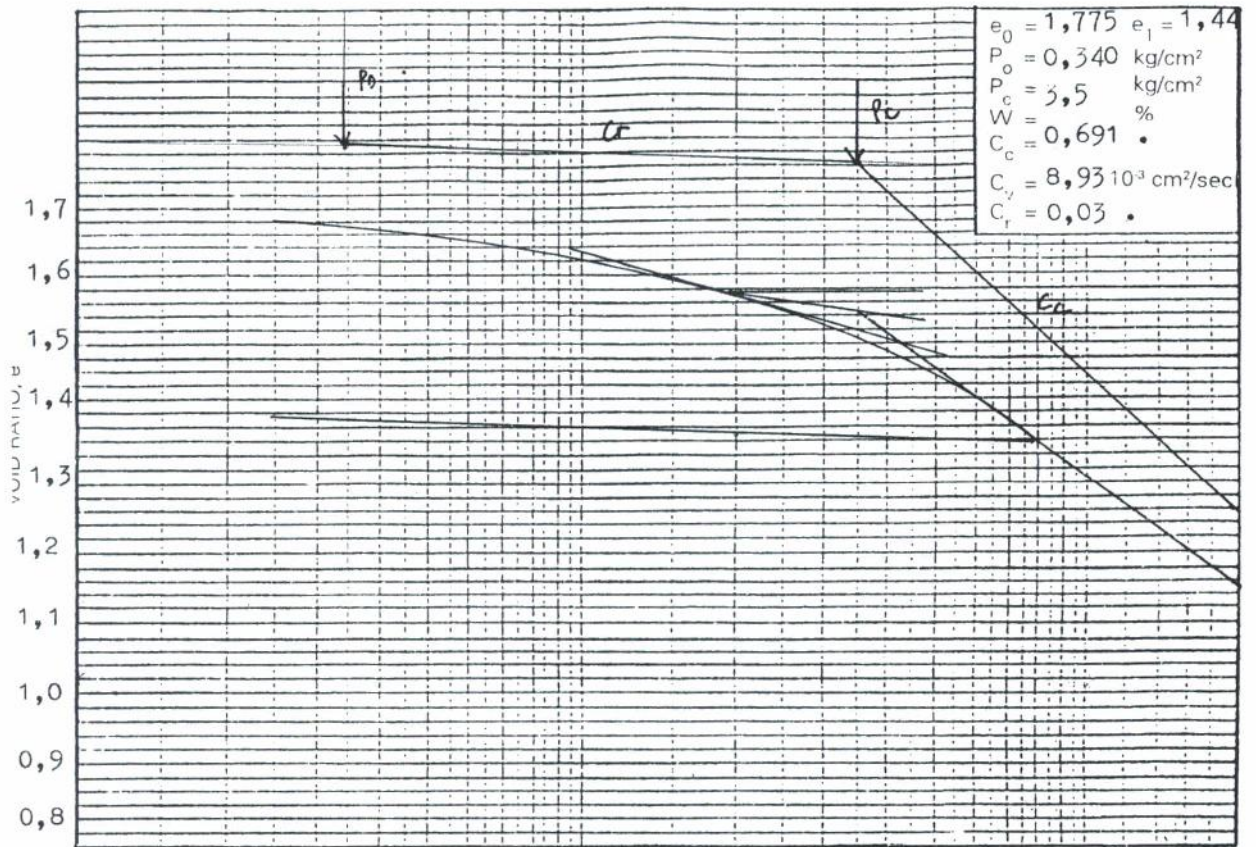


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 Kampus ISTN Bhumi Srengseng Telp. 7270092 Fax. 7270090

**CONSOLIDATION TEST**

Project : Graha Bintaro  
 Location : Pondok Kacang Timur .  
 Boring no. : B - 2 .

Depth of Sample : 550 - 600 .  
 Date of test : Juli 1996 .  
 Test by : Rr. Prihadini N

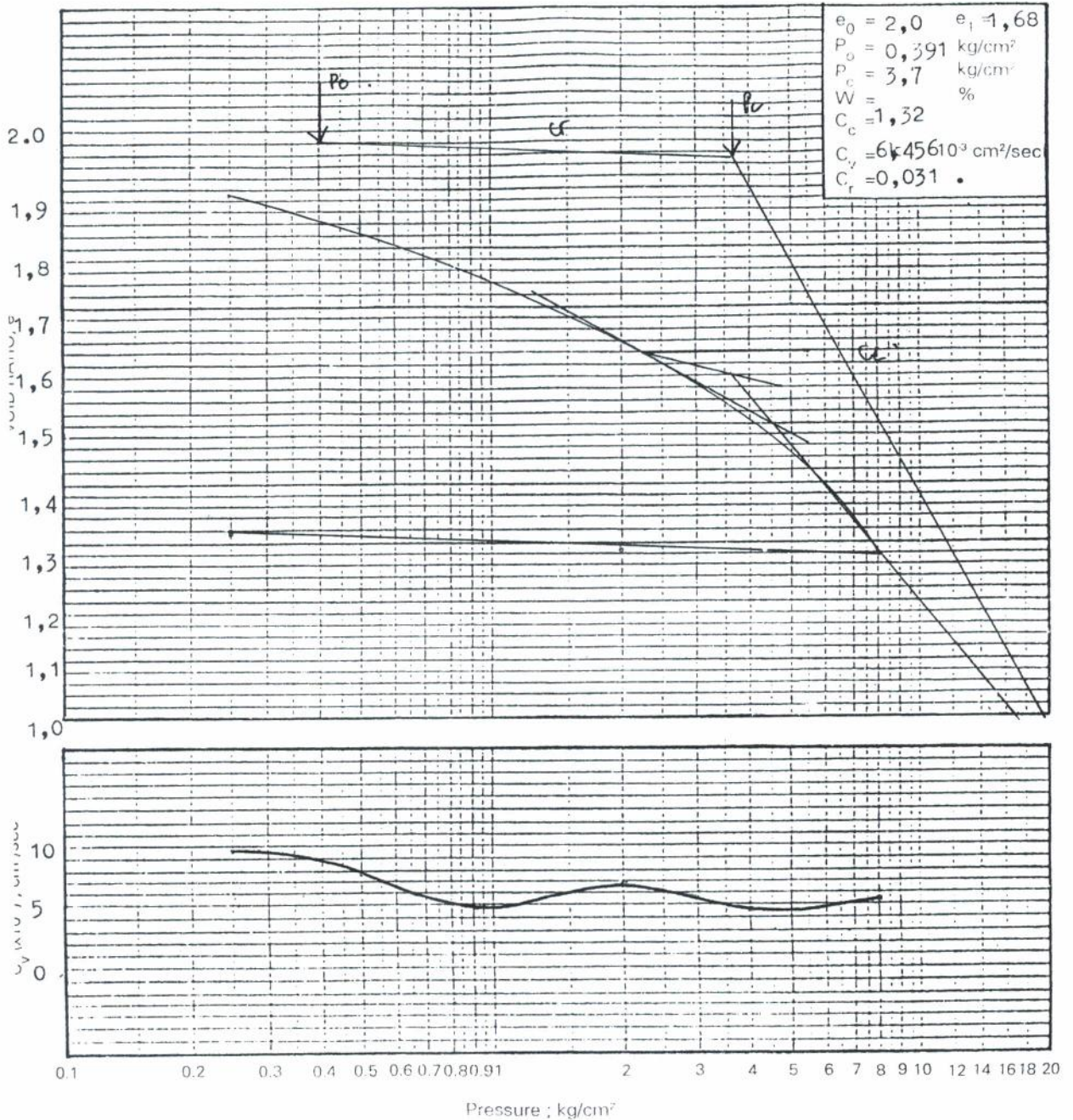




CONSOLIDATION TEST

Project : Graha Bintaro  
 Location : Pondok Kacang Timur .  
 Boring no. : B - 2 .

Depth of Sample : 750-800 .  
 Date of test : Juli 1996 .  
 Test by : Rr Prihadini N

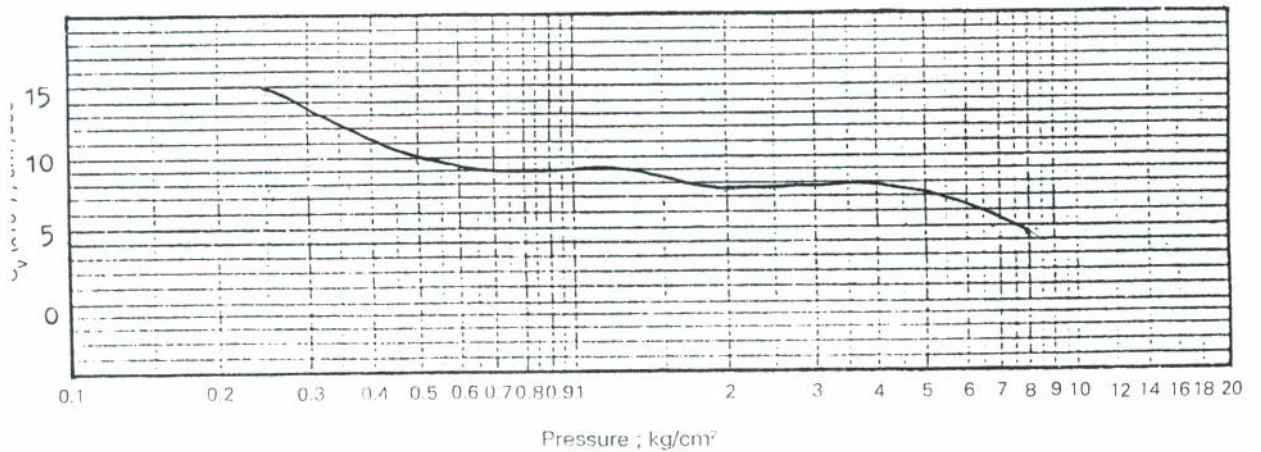
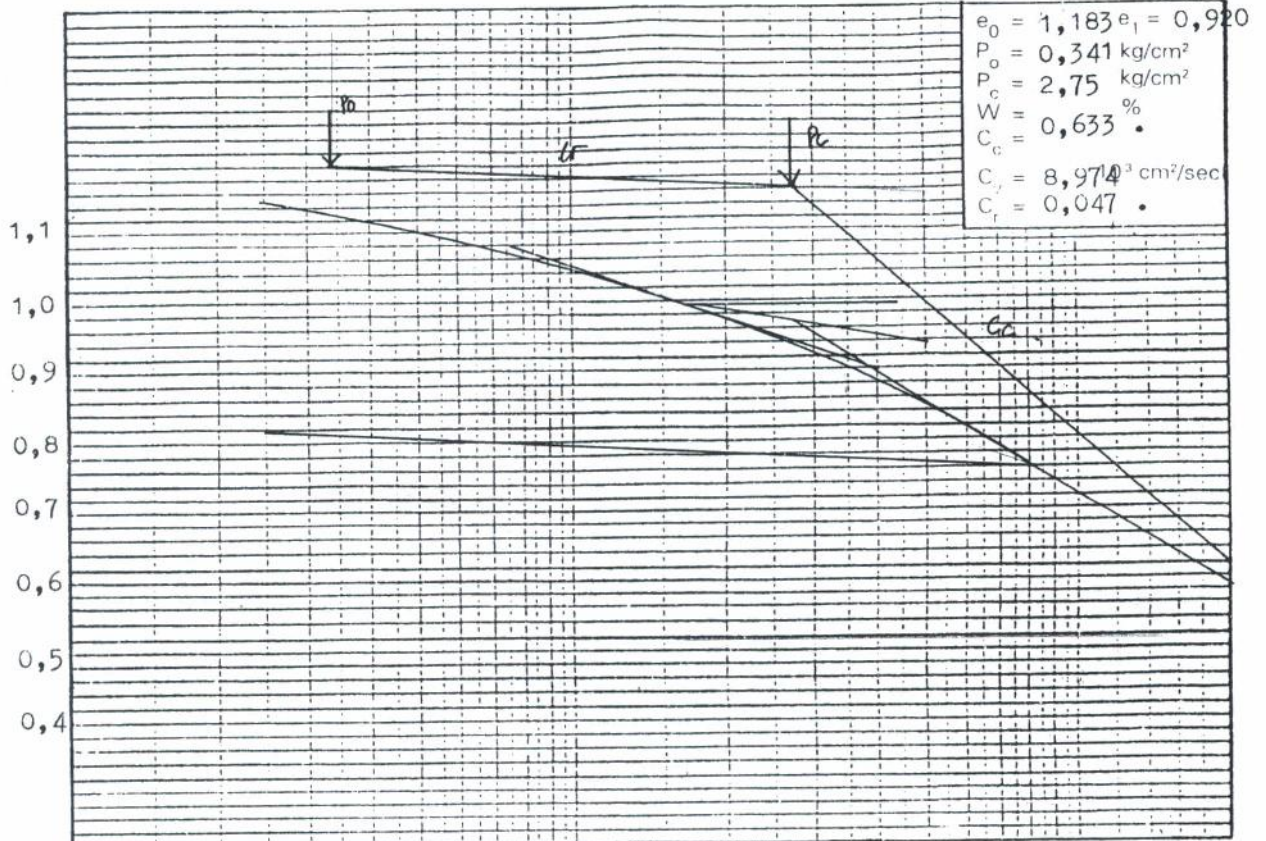




**CONSOLIDATION TEST**

Project : Graha Bintaro  
 Location : Pondok Kacang Timur .  
 Boring no. : B - 3 .

Depth of Sample : 150 - 200 .  
 Date of test : Juli 1996 .  
 Test by : Rr Prihadini N

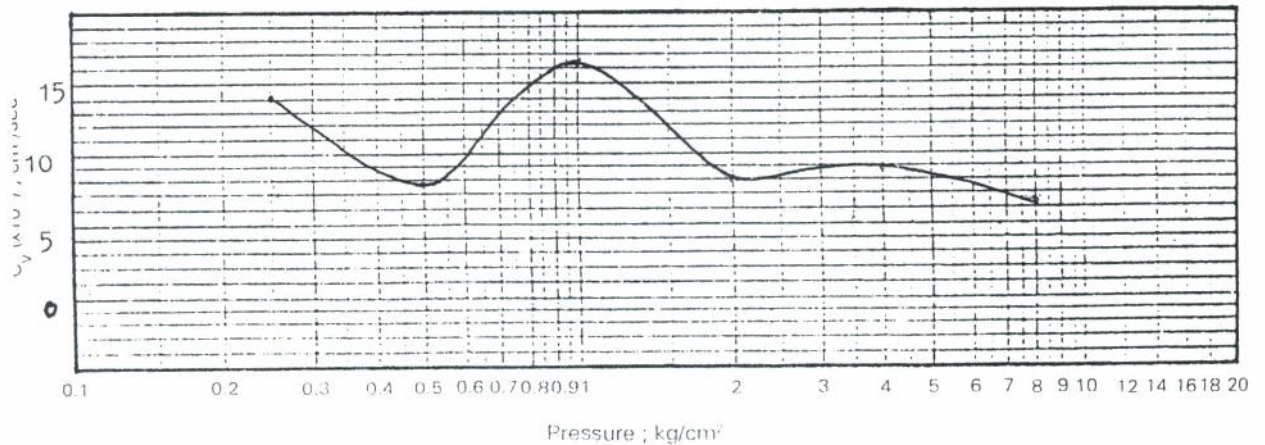
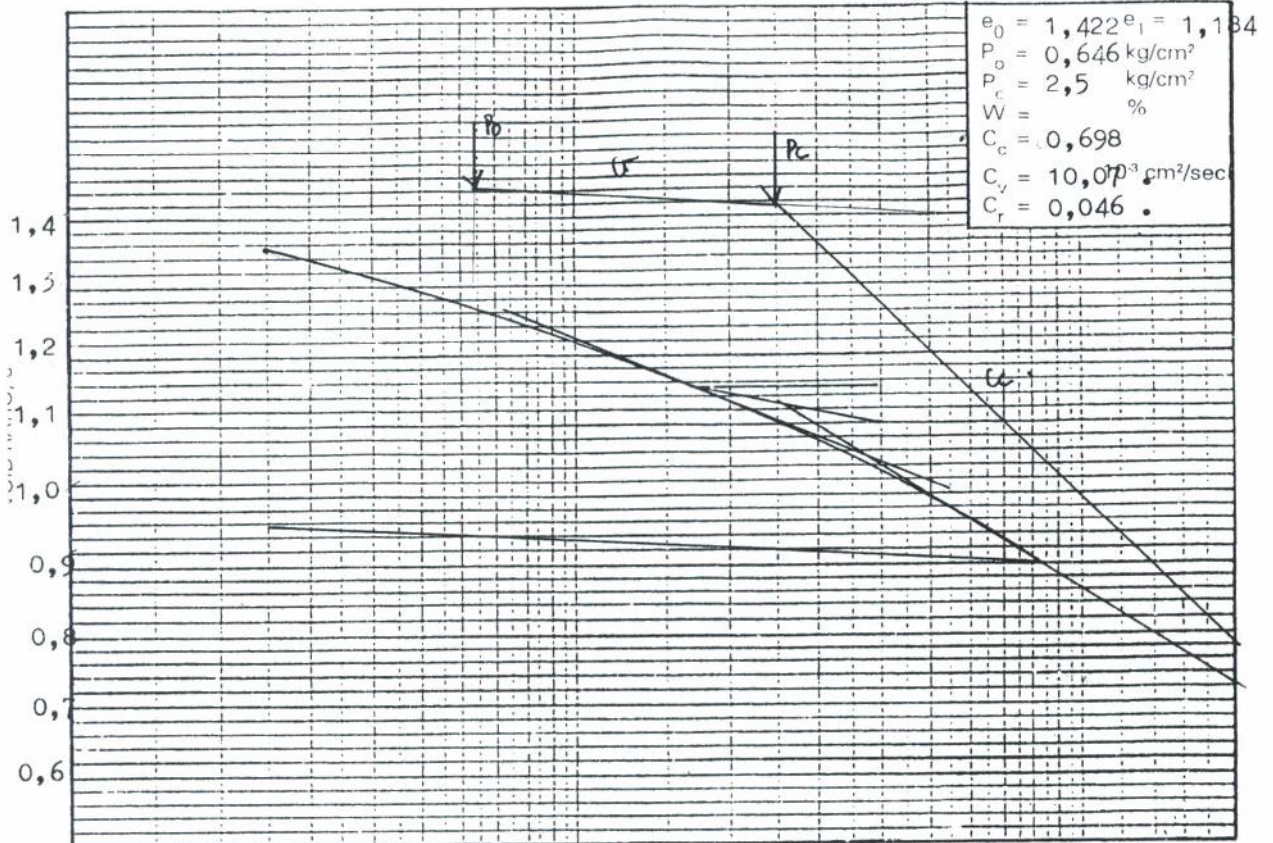




**CONSOLIDATION TEST**

Project : Graha Bintaro  
 Location : Pondok Kacang Timur .  
 Boring no. : B - 3 .

Depth of Sample : 350-400 .  
 Date of test : Juli 1996 .  
 Test by : Rr Prihadini N

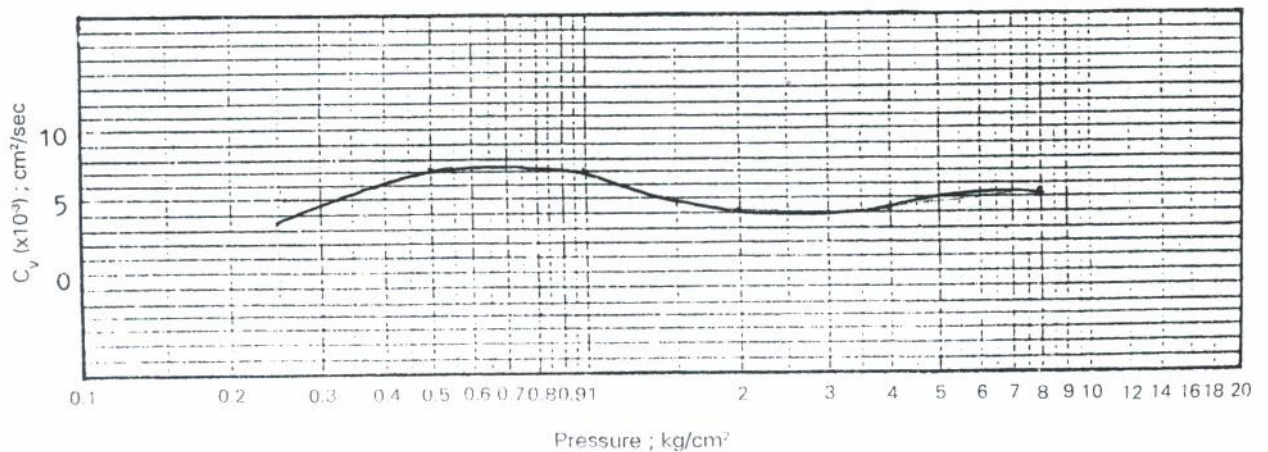
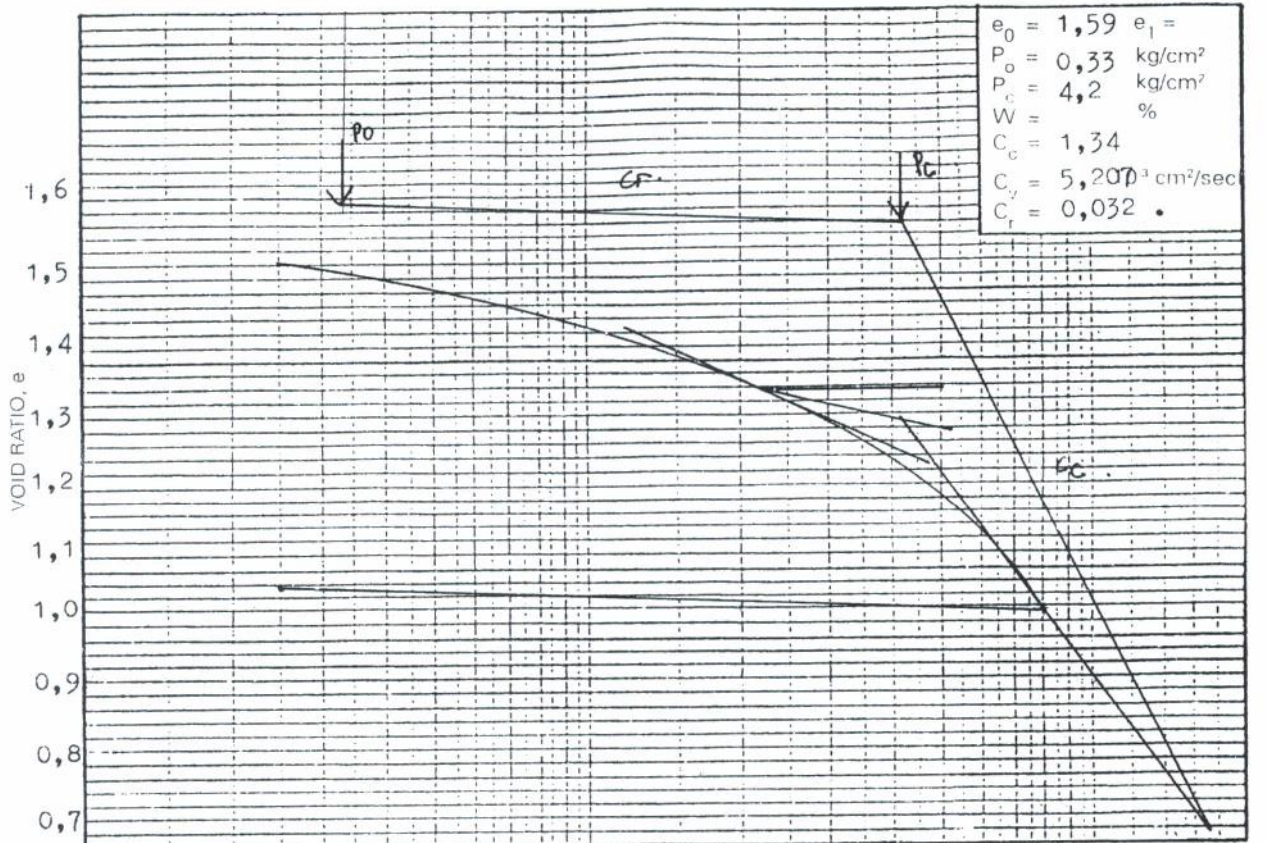




**CONSOLIDATION TEST**

Project : Graha Bintaro  
 Location : Pondok Kacang Timur  
 Boring no. : B - 3 .

Depth of Sample : 550-600 .  
 Date of test : Juli 1996 .  
 Test by : Rr Prihadini N

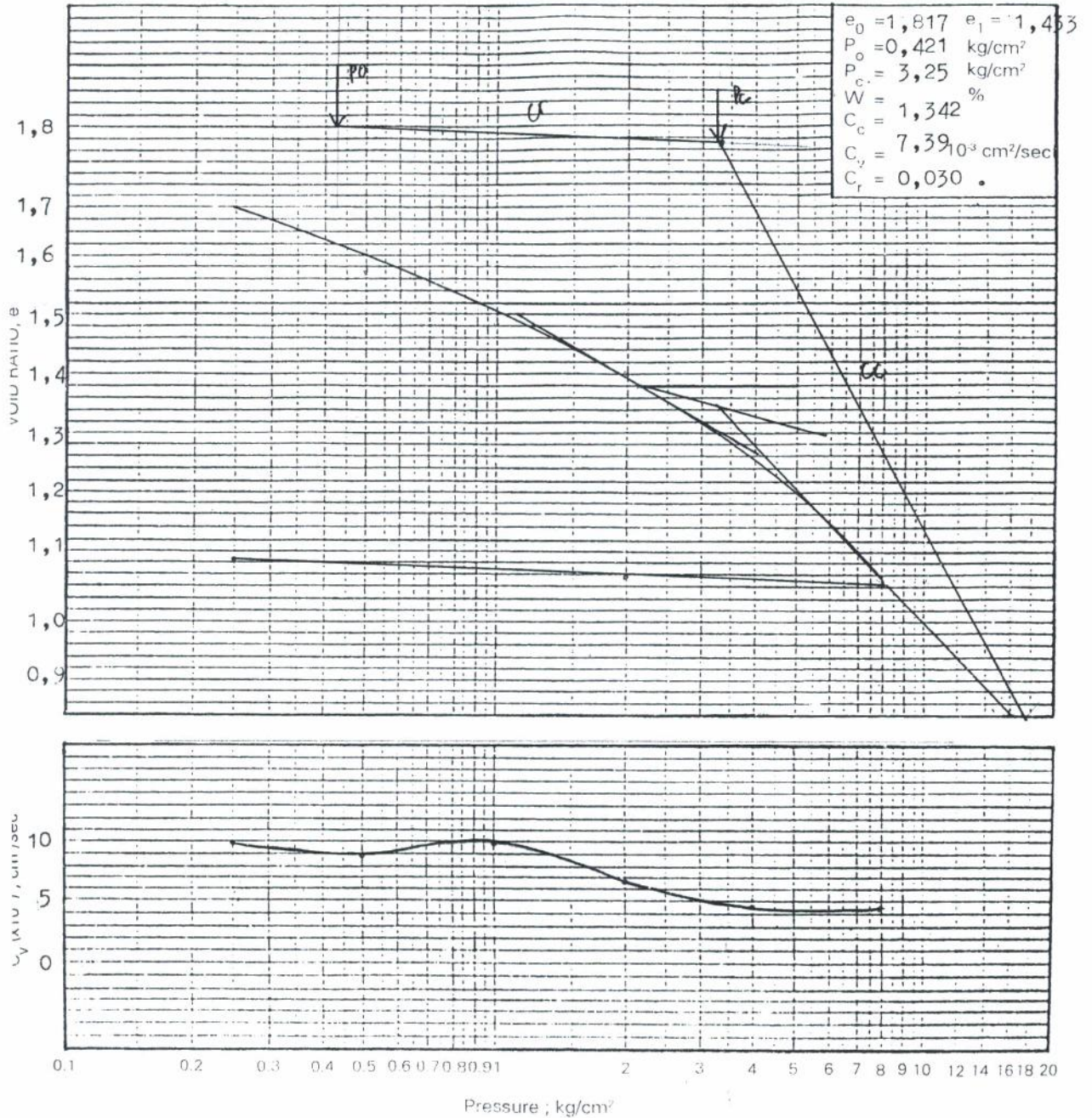




**CONSOLIDATION TEST**

Project : Graha Bintaro  
 Location : Pondok Kacang Timur  
 Boring no. : B - 3 .

Depth of Sample : 750-800.  
 Date of test : Juli 1996 .  
 Test by : Rr +rihadini N



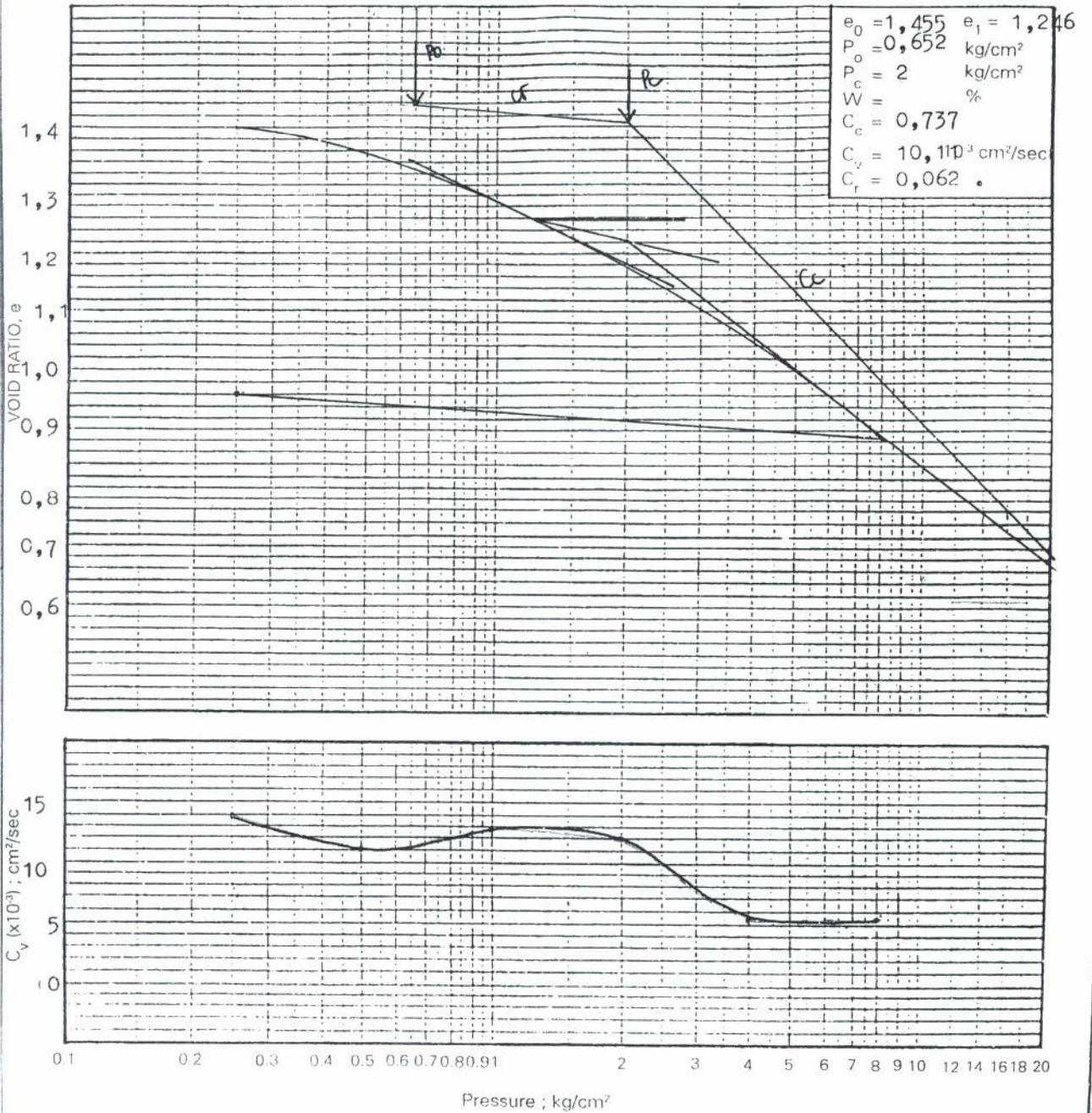




CONSOLIDATION TEST

Project : Graha Bintaro  
 Location : Pondok Kacang Timur  
 Boring no. : B - 4 .

Depth of Sample : 350-400 .  
 Date of test : Juli 1996 .  
 Test by : Rr Prihadini N

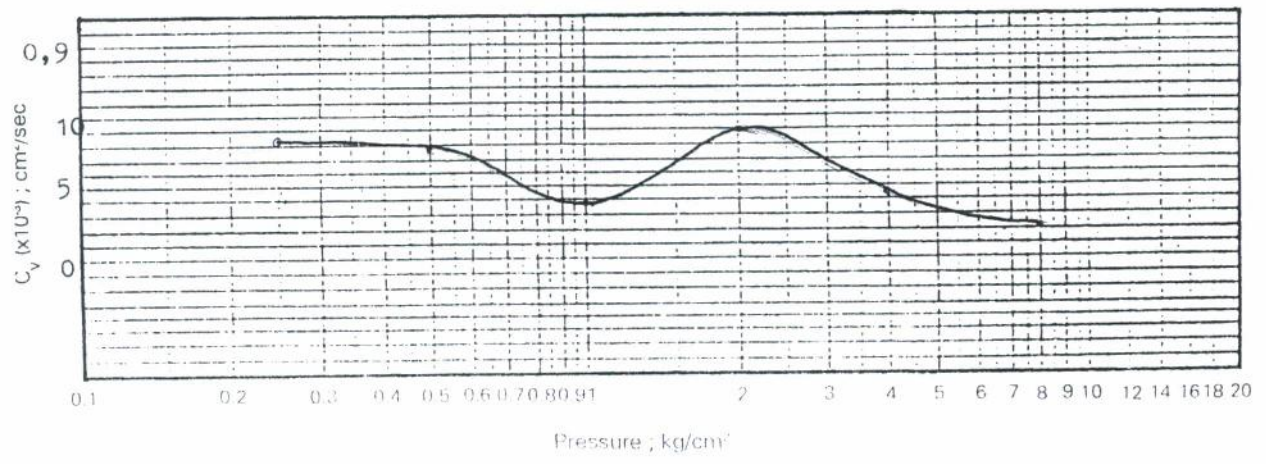
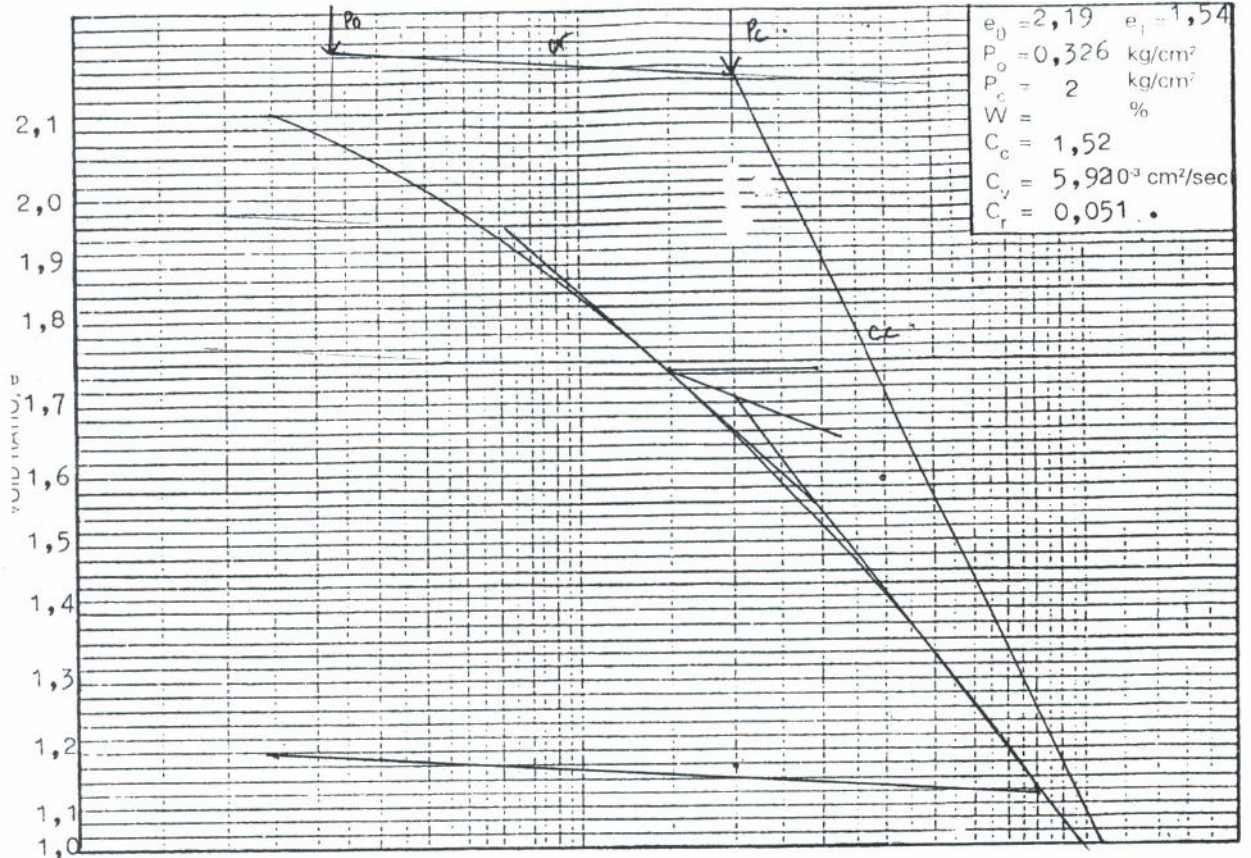






CONSOLIDATION TEST

Project : Graha Bintaro  
 Location : Pondok Kacang Timur  
 Boring no. : B - 4 .  
 Depth of Sample : 550-600.  
 Date of test : Juli 1996 .  
 Test by : Rr Prihadini N





CONSOLIDATION TEST

Project : Graha Bintaro  
 Location : Pondok Kacang Timur .  
 Boring no. : B - 4 .

Depth of Sample : 750-800 .  
 Date of test : Juli 1996 .  
 Test by : Rr Prihadini N .

