E-12

YAYASAN PERGURUAN "CIKINI"
INSTITUT
SAINS DAN TEKNOLOGI
NASIONAL
I S T N

FAKULTAS TEKNIK SIPIL
DAN PERENCANAAN
JURUSAN TEKNIK SIPIL

PENUGASAN

No : 01-05/PM/LM/V/1996

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 STO TELKOM
Lokasi	:	Desa Sukasari , Rumpin, Jawa Barat
Pemberi Tugas	:	PT. Mutiara Reksa Teknik

Dengan jadwal pelaksanaan pekerjaan selama 20 hari kerja (160Jam), 3 hari di lapangan dan 18hari 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, 01 May 1996
Kaprodi 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 STO Telkom
Lokasi : Desa Sukasari, Rumpin, Jawa Barat

Oleh :
Idrus Ir, M.Sc

Mengetahui :
Ketua Jurusan Teknik Sipil

Ir. Arimulyo Diah Utami, M.T

Program Studi Teknik Sipil
Institut Sain dan Teknologi Nasonal

Jakarta 1996

MUTIARA REKSA TEKNIK
Jl. Kyai Maja 1 Ged. Bridge Centre
JAKARTA 12120; DKI JAKARTA

MUTIARA

SURAT PERJANJIAN KERJASAMA

No: 30-04.1/MRT/IV/96

Pada hari ini, Selasa tanggal Tiga Puluh bulan April tahun Seribu Sembilan Ratus Sembilan Puluh Enam (30-04-1996) yang bertanda tangan dibawah ini :

N a m a : **PT. Mutiara Reksa Teknik**

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 : S.T.O Telkom

Lokasi : Suka Sari, Rumpin, Jawa Barat

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

Jakarta, 30 April 1996

PIHAK KEDUA	PIHAK PERTAMA
Laboratorium Mekanika Tanah ISTN	PT. Mutiara Reksa Teknik

SOIL INVESTIGATION

FINAL REPORT

PROJECT : S.T.O TELKOM

LOCATION : DS. SUKA SARI, RUMPIN, JAWA BARAT

SOIL MECHANICS LABORATORY
NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY
I.S.T.N – JAKARTA

SOIL MECHANICS LABORATORY
NATIONAL INSTITUTE OF SIENCE AND TECHNOLOGY
KAMPUS ISTN BHUMI SRENGSENG TELP. 7270092
FAX. 7270090, JAKARTA

DAFTAR ISI.

SOIL MECHANICS LABORATORY
NATIONAL INSTITUTE OF SIENCE AND TECHNOLOGY
KAMPUS ISTN BHUMI SRENGSENG TELP. 7270092
FAX. 7270090, JAKARTA

25-05.1/FR/LM/V/96

FINAL REPORT

SOIL INVESTIGATION

PROYEK : S.T.O TELKOM

LOKASI : DS. SUKA SARI , RUMPIN , JAWA BARAT

I. PENDAHULUAN

Sehubungan permohonan penyelidikan tanah pada Proyek S.T.O TELKOM di Desa Suka Sari, Rumpin, Jawa Barat oleh PT. MUTIARA REKSA TEKNIK Jakarta kepada Laboratorium Mekanika Tanah I.S.T.N Jakarta , maka kami akan melaporkan hasil pekerjaan yang telah kami lakukan berupa pekerjaan lapangan dan laboratorium dalam bentuk Final Report.

Pekerjaan lapangan berupa pekerjaan Sondir (Cone Penetration Test) kapasitas 2,5 ton sebanyak 6 titik dan pekerjaan Bor Dangkal sebanyak 3 titik.

Pelaksanaan pekerjaan dilapangan telah kami laksanakan pada tanggal 6 - 7 Mei 1996.

Penyelidikan tanah ini dimaksudkan untuk mengetahui kondisi lapisan tanah hingga lapisan tanah keras dengan nilai Konus > 100 Kg/cm2 serta kemampuan daya dukungnya untuk memikul beban bangunan.

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II. PENYELIDIKAN DI LAPANGAN.

Pelaksanaan penyelidikan di lapangan pada provek ini meliputi :

-. CPT (sondir) kapasitas 2.50 tonf
-. Shallow Boring (bor dangkal)
-. Undisturbed Sampling (pengambilan contoh tanah tidak terganggu)

2.1. Peralatan.

a. 1 (satu) mesin CPT (sondir) kapasitas 2.50 tonf lengkap.
b. 1 (satu) unit alat bor dangkal lengkap dengan mata bor Iwan serta Thin Walled Sampler (Tabung contoh) dengan diameter 75 mm panjang 60 cm serta tebal 2.00 mm.

2.2. Metode Pelaksanaan.

a. CPT (sondir)

Konus yang digunakan adalah frictioncone (biconus) dengan suatu luas penampang 10 cm2, luas selimut geser 150 cm2 dan luas penampang 10 cm2.

Sondir dilakukan secara terus menerus dengan interval 20 cm kedalaman (penetrasi) sampai menunjukkan jumlah tahanan konus dan geser maksimum 250 kg/cm2 atau sampai kedalaman maksimum sebesar 30.0 meter.

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Data yang disajikan dalam percobaan ini adalah nilai tahanan konus (ujung) , ratio antara friction / conus resistance dan total friksi dari tiap kedalaman sampai kedalaman maksimum dari kapasitas alat sondir yang dipakai.

b. Shallow Boring.

Pengeboran dilakukan dengan cara Roraty Core Drilling dengan menggunakan Bored Iwan. Diskripsi tanah secara visual dilakukan terus menerus sepanjang lubang pengeboran. Semua contoh tanah hasil coring disimpan didalam kantong plastik tertutup, lengkap dengan keterangannya.

c. Undisturbed Sampling.

Pengambilan contoh tanah tak terganggu / asli dilakan dengan menggunakan Bored Iwan. dalam keadaan kering dan adakalanya dibutuhkan air.

Deskripsi tanah secara visual dilakukan terus menerus sepanjang lubang pengeboran.

Semua contoh tanah hasil coring disimpan dalam kantong plastik tertutup, lengkap dengan keterangannya.

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2.3 Jumlah dan Hasil Penvelidikan

- Jumlah Pengujian C.P.T (sondir) sebanyak 6 titik.

Titik	Elevasi (m)	Qc> 100 kg/cm2 ,kedalaman (m)	M.A.T (m)	Tf kg/cm'
S-1	0.00	16.80	-16.00	2000
S-2	0.00	17.60	-16.40	2000
S-3	0.00	18.20	-16.80	>2000
S-4	0.00	16.20	-16.20	2000
S-5	0.00	19.00	-16.00	>2000
S-6	0.00	18.40	-----	>2000

Bor dangkal sebanyak 3 (tiga) titik

No: Bor	Elevasi	Kedalaman (meter)	Sampel U.D
B-1	0.00	-2.95	2
B-2	0.00	-2.95	2
B-1	0.00	-2.95	2

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III. PENELITIAN DI LABORATORIUM.

Penelitian di Laboratorium meliputi kondisi contoh tanah :

-. Undisturbed Sample.

Yang berasal dari Thin Walled Tube Sampler dilakukan penelitian Index Properties dan Mechanical Properties

-. Disturbed Sample.

Dari contoh tanah yang terganggu dilakukan deskripsi tanah secara visual.

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

1. Penentuan kadar air asli (Wn)
2. Penentuan berat isi tanah (γn)
3. Penentuan berat isi kering (γd)
4. Penentuan specific gravity (Gs)
5. Atterberg limits
6. Grained Sizes and hydrometer analysis.
7. Uji konsolidasi test (Oedometer test)
8. Traxial UU Test

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Jenis dan Jumlah Penguiian di Laboratorium :

	Jenis Penguiian	Jumlah	Sampel
1.	Index Properties	6 titik	Undisturbed
2.	Grained sizes Distribution	6 titik	Undisturbed
3.	Atterberg limit	6 titik	Undisturbed
4	Consolidasi	6 titik	Undisturbed
5.	Triaxial UU Test	6 titik	Undisturbed

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IV. KESIMPULAN DAN REKOMENDASI

4.1 Kondisi Lapisan Tanah.

Dari hasil pengujian CPT test dan Bor Dangkal pada lokasi pekerjaan. dapat diterangkan kondisi lapisan tanah sebagai berikut :

-. Secara umum kondisi lapisan tanah sama (homogen) dimana tanah lempung kelanauan dengan konsistensi sedang ditemui dari permukaan tanah hingga -2.00 meter.

Lapisan lempung kelanaun dengan konsistensi stiff to very stiff dijumpai dari -2.00 meter sampai kedalaman -14.00 meter.

Lapisan tanah keras yang ditunjukkan dengan tahanan ujung konus > 200 kg/cm2 ditemui pada kedalaman antara 16.20 s/d 19.00 meter.

Total friction hingga kedalaman maksimum didapat sebesar 2000 kg/cm' (cukup besar).

Muka air tanah yang diprediksi dari jejak pembasahan stang sondir ditemui pada kedalaman -16.00 meter dari permukaan tanah rata-rata.

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4.2 Rekomendasi

Dari kondisi lapisan tanah seperti dijelaskan diatas, maka kami sarankan pemilihan pondasi sebagai berikut :

1. Pondasi Dangkal.(untuk bangunan s/d 2 lantai)

   Dengan ketentuan sebagai berikut :

   -. kedalaman pondasi -1.00 meter s/d 1.50 meter

   -. lebar pondasi 1.20 meter s/d 1.50 meter.

   -. daya dukung keseimbangan yang diizinkan adalah sbb:

      a. Pondasi Setempat

         σ all = 0.55 kg/cm2.

      b. Pondasi menerus

         σ all = 0.50 kg/cm2

   Catatan : perlu diperhitungkan settlement akibat proses konsolidasi sampai kedalaman 3 B, dimana B adalah lebar pondasi yang dipakai.

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2. Pondasi Pancang Pracetak, (bangunan 3 lantai atau lebih)

Dengan ketentuan sebagai berikut :

-. Kedalaman Pemancangan hingga kedalaman -15.00 meter s/d 17.00 meter atau.

Pemancangan sampai dengan final set maksimum 1.00 - 2.00 cm / 10 pukulan hammer terakhir.

-. Dapat digunakan tiang pancang dengan ukuran :

28 x 28 x 28 cm , P all = 27.50 tonf

20 x 20 cm , P all = 27.50 tonf

30 x 30 cm , P all = 55 tonf

40 x 40 cm , P all = 75 tonf

-. Dalam satu kelompok tiang, dapat dilakukan pemancangan dengan ketentuan jarak antara satu tiang ke tiang lainnya sebesar 3 D. dimana D adalah diameter pondasi yang dipakai.

LABORATORIUM MEKANIKA TANAH I.S.T.N

Kepala

(Ir. Idrus MSc)

Geotechnical Engineer

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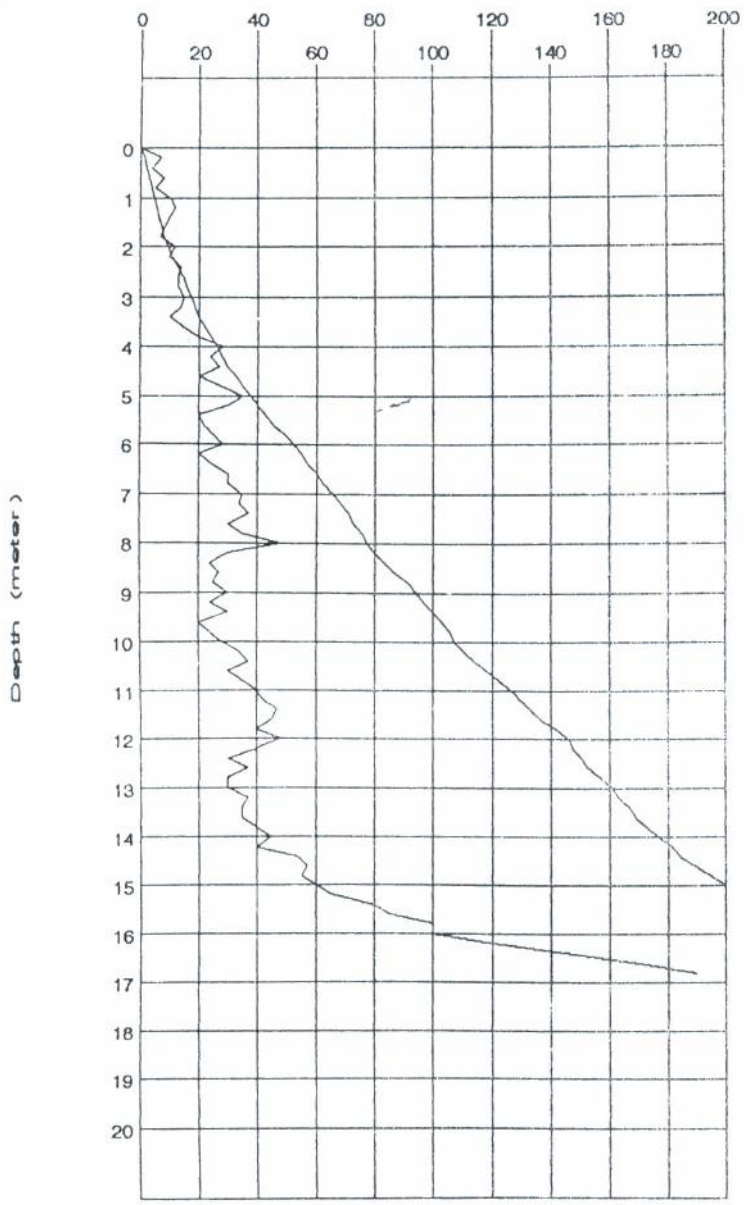
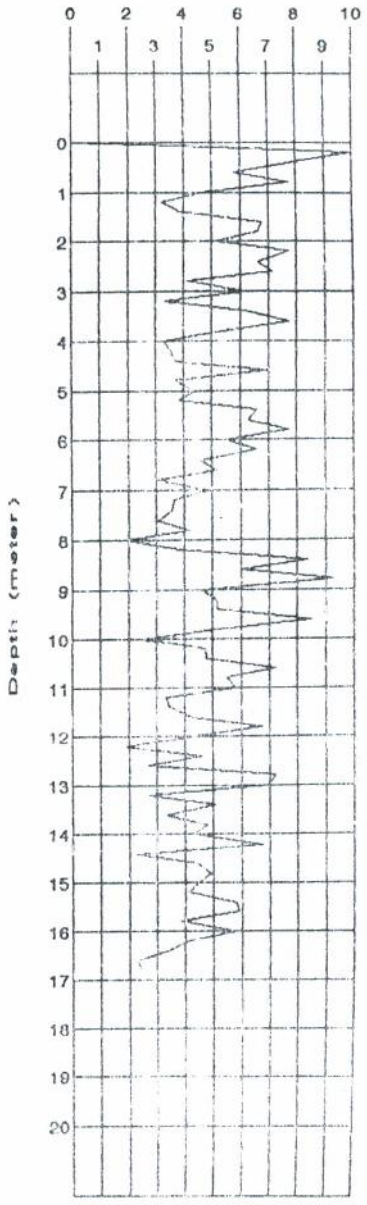
CONE PENETRATION TEST

SONDIR No.	: S 1.	D1. qonus	3.45	DATE OF TESTED :	MEI 07th.1996.
		D2. jacket	3.60		
PROJECT	: STO TELKOM	H. jacket	15.00	TESTED BY	: NEAN Mr.
		Ratio (R)	18.15		
LOCATION	: DESA SUKA SARI	Elevation (– meter)		CHECKED BY	: MA.ONTOWIRYO
	RUMPIN –JABAR.	G.W.L (– meter)	16.00		

Qc (Kg/cm ^ 2) and Tf (Kg/cm' x 10)



Friction / Qonus Resistance (%)



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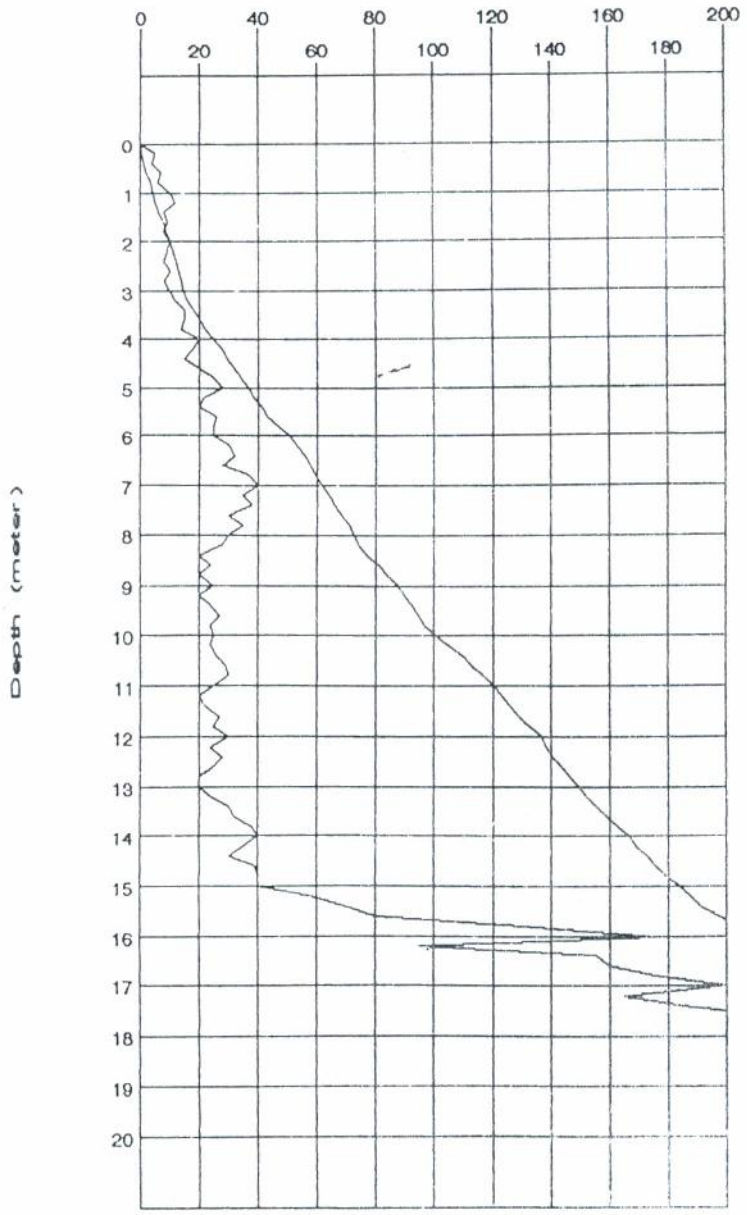
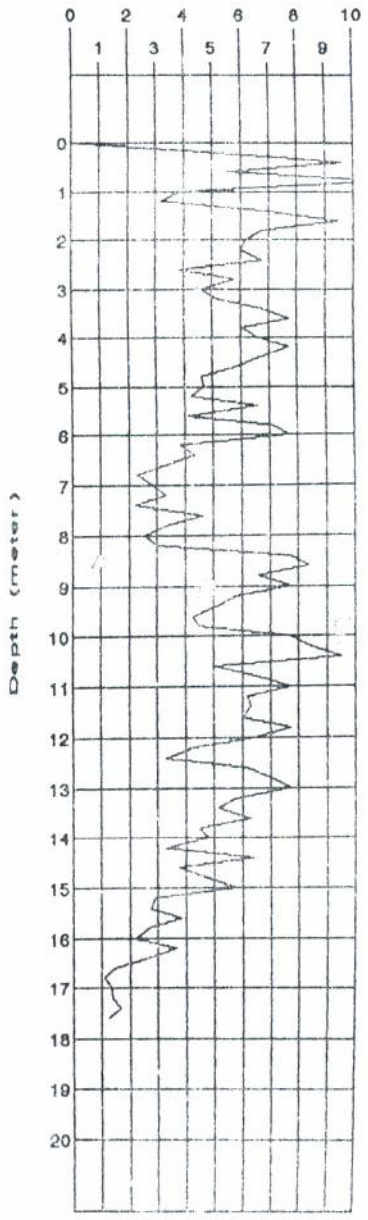
CONE PENETRATION TEST

SONDIR No.	: S 2.	D1. qonus	3.45	DATE OF TESTED :	MEI 06th.1996.
		D2. jaoket	3.60		
PROJECT	: STO TELKOM	H. jaoket	15.00	TESTED BY	: NEAN Mr.
		Ratio (Fr)	18.15		
LOCATION	: DESA SUKA SARI	Elevation (– meter)		CHECKED BY	: MA.ONTOWIRYO
	RUMPIN –JABAR.	G.W.L (– meter)	16.40		

Qc (Kg/cm ^ 2) and Tf (Kg/cm' x 10)



Friction / Qonus Reaistance (%)



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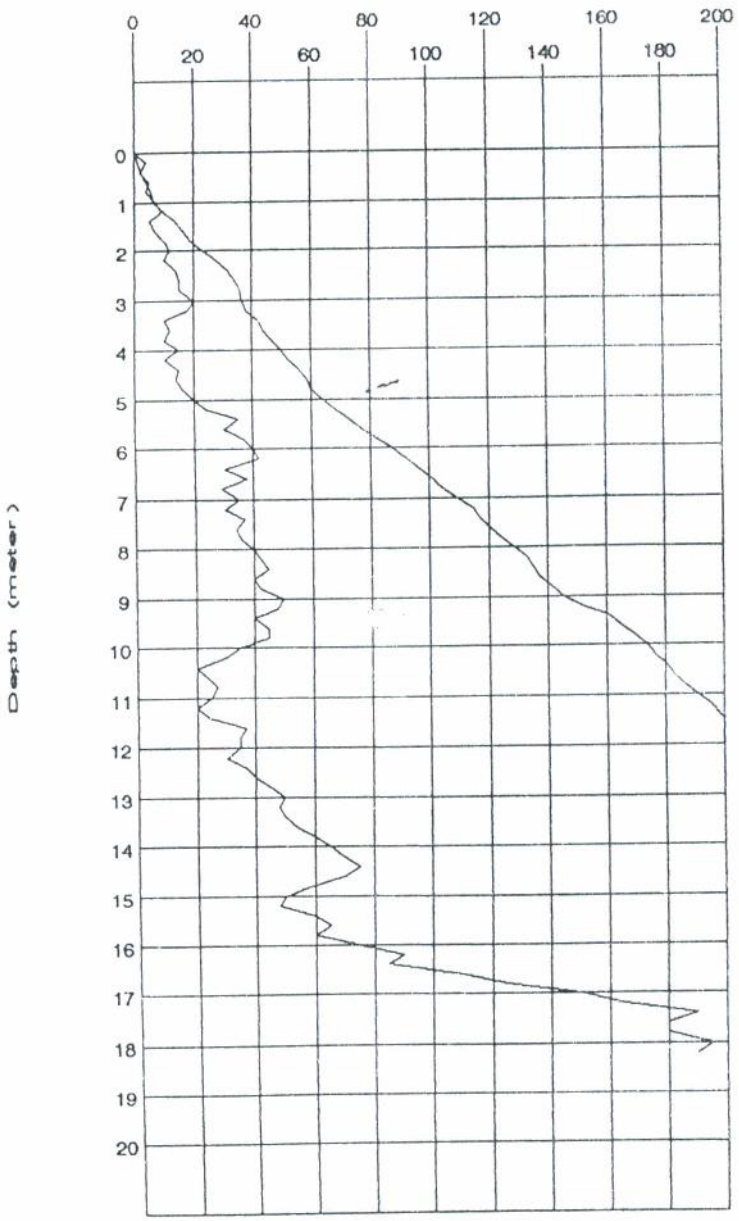
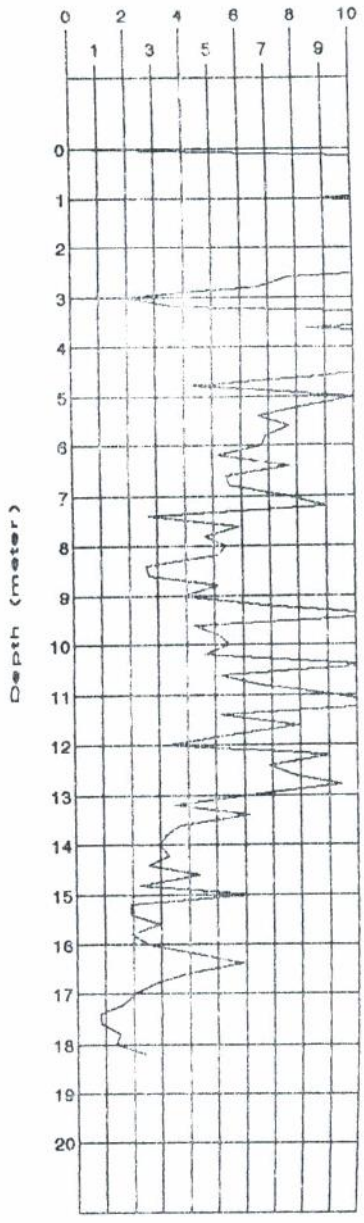
CONE PENETRATION TEST

SONDIR No.	: S 3.	D1. qonus	3.45	DATE OF TESTED	: MEI 06th.1996.
PROJECT	: STO TELKOM	D2. jaoket	3.60	TESTED BY	: NEAN Mr.
LOCATION	: DESA SUKA SARI RUMPIN – JABAR.	H. jaoket	15.00	CHECKED BY	: MA.ONTOWIRYO
		Ratio (R)	18.15		
		Elevation (– meter)			
		G.W.L (– meter)	16.60		

Qc (Kg/cm^2) and Tf (Kg/cm' x 10)



Friction / Qonus Resistance (%)



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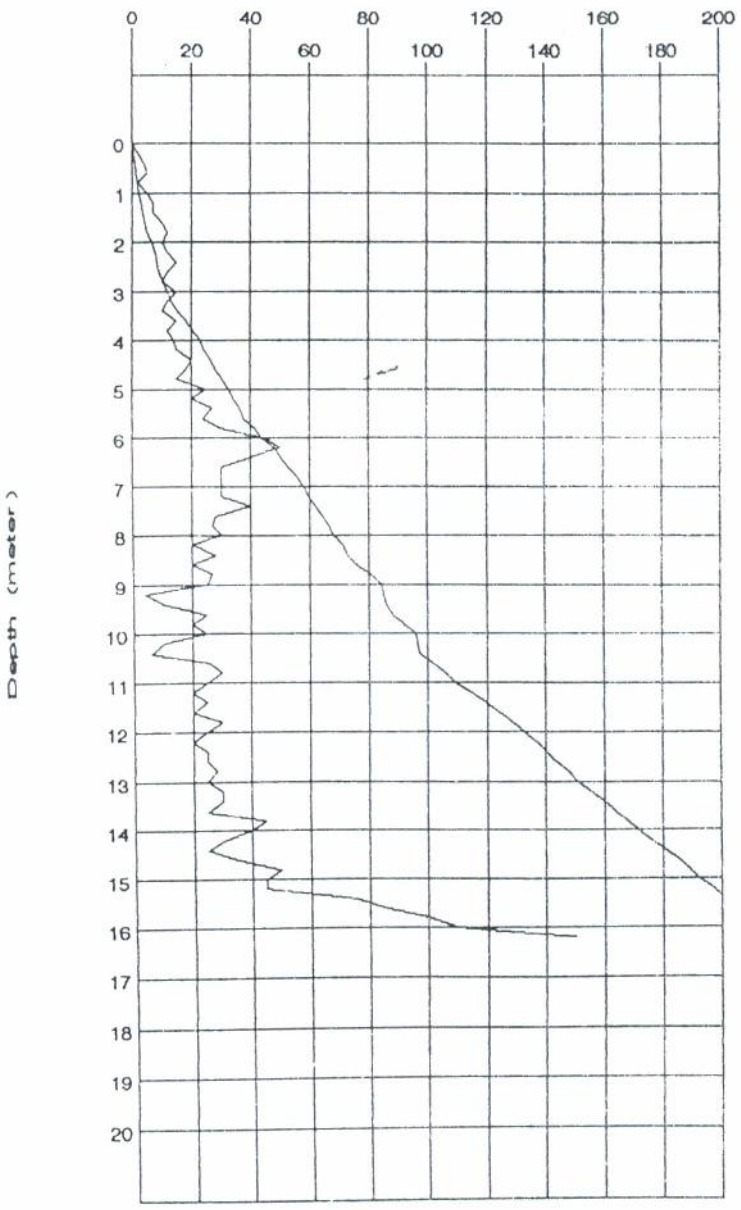
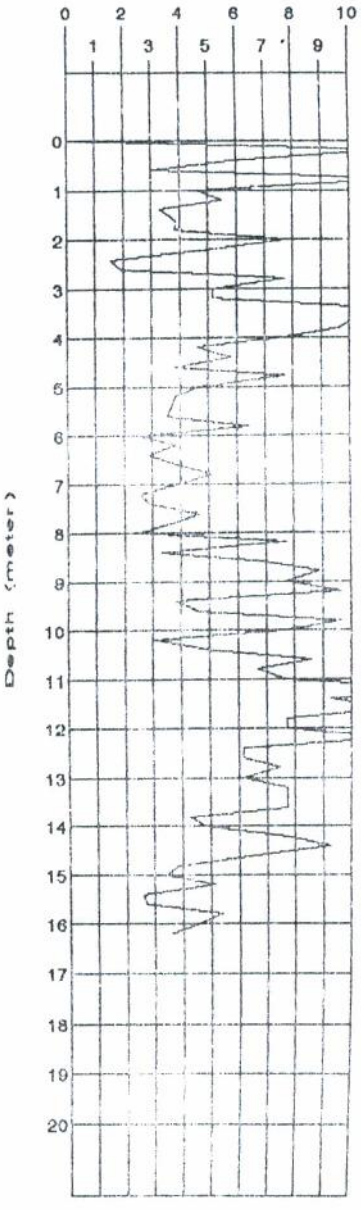
CONE PENETRATION TEST

SONDIR No.	: S4.	D1. qonus	3.45	DATE OF TESTED :	MEI 06th.1996.
		D2. jacket	3.60		
PROJECT	: STO TELKOM	H. jacket	15.00	TESTED BY	: NEAN Mr.
		Ratio (R)	18.15		
LOCATION	: DESA SUKA SARI	Elevation (– meter)		CHECKED BY	: MA.ONTOWIRYO
	RUMPIN –JABAR.	G.W.L (– meter)	16.20		

Qc (Kg/cm^2) and Tf (Kg/cm' x 10)



Friction / Qonus Resistance (%)



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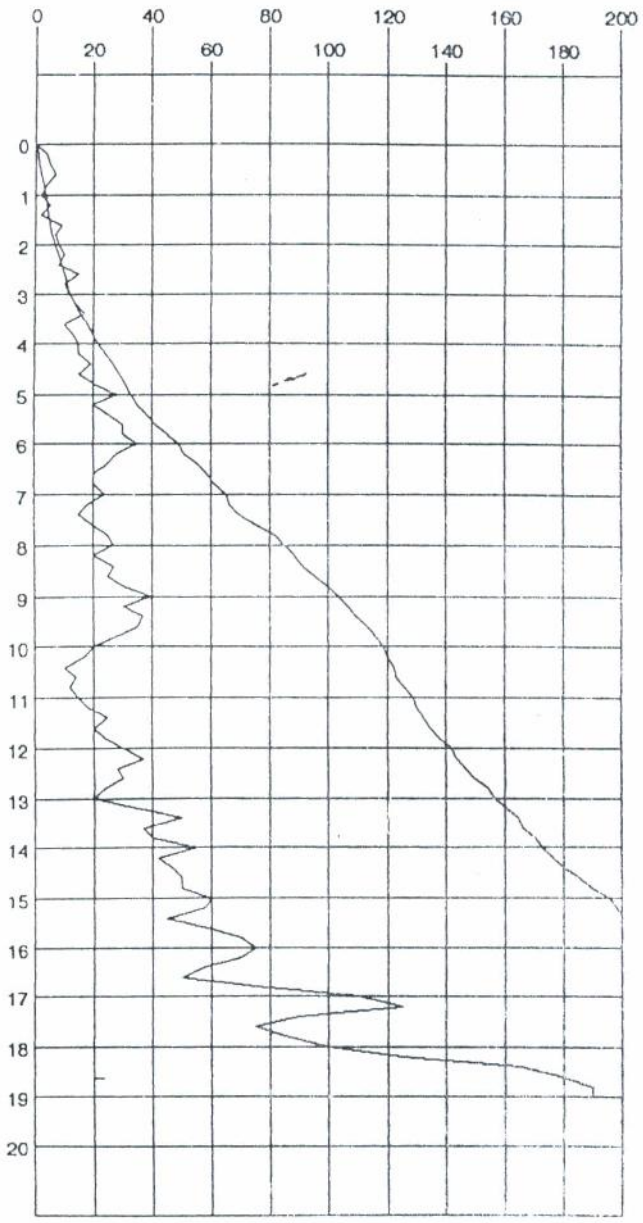
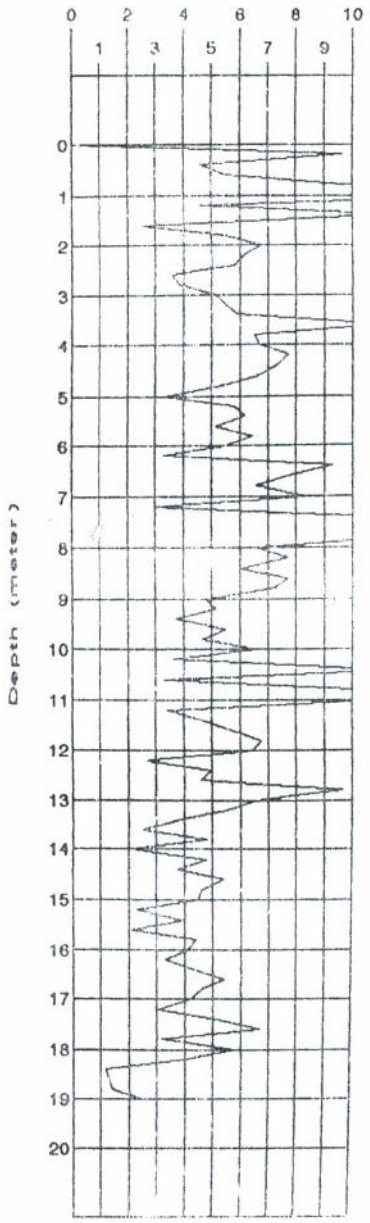
CONE PENETRATION TEST

SONDIR No.	: S5.	D1. qonus.	3.45	DATE OF TESTED :	MEI 07th.1996.
		D2. jaoket	3.60		
PROJECT	: STO TELKOM	H. jaoket	15.00	TESTED BY	: NEAN Mr.
		Ratio (R)	18.15		
LOCATION	: DESA SUKA SARI	Elevation (– meter)		CHECKED BY	: MA.ONTOWIRYO
	RUMPIN – JABAR.	G.W.L (– meter)	16.00		

Qc (Kg/cm ^ 2) and Tf (Kg/cm' x 10)



Friction / Qonus Resistance (%)



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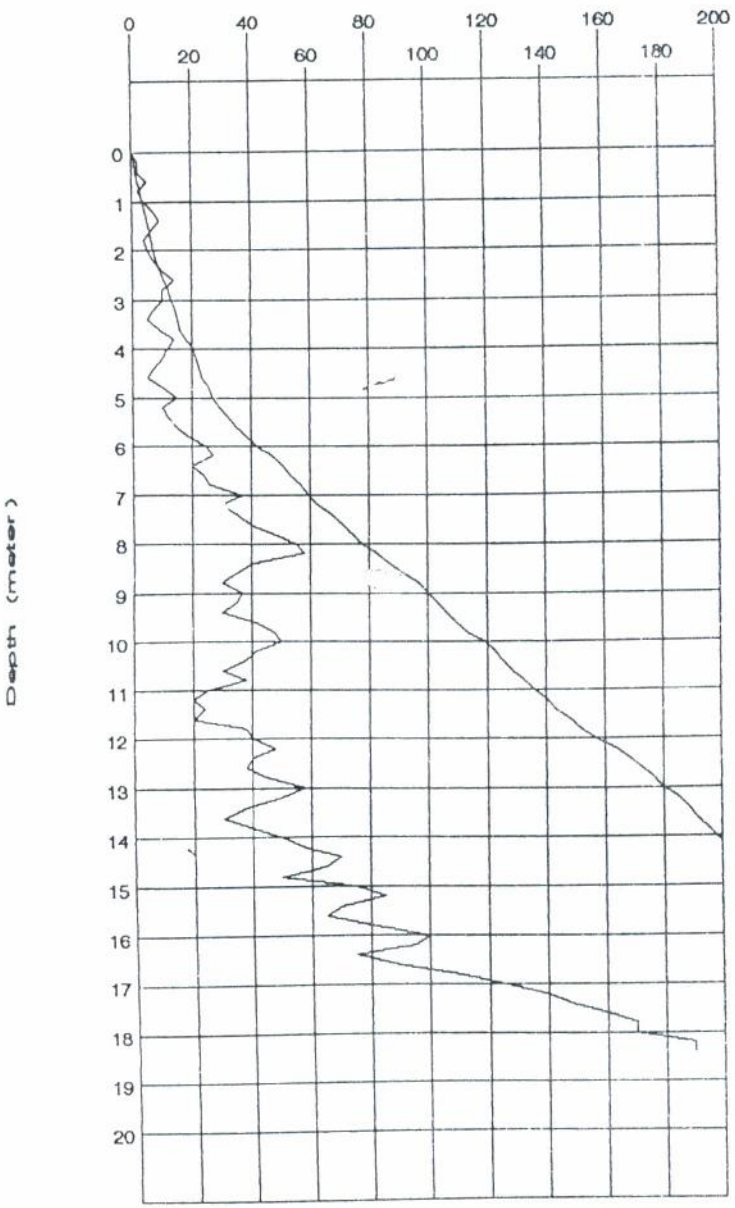
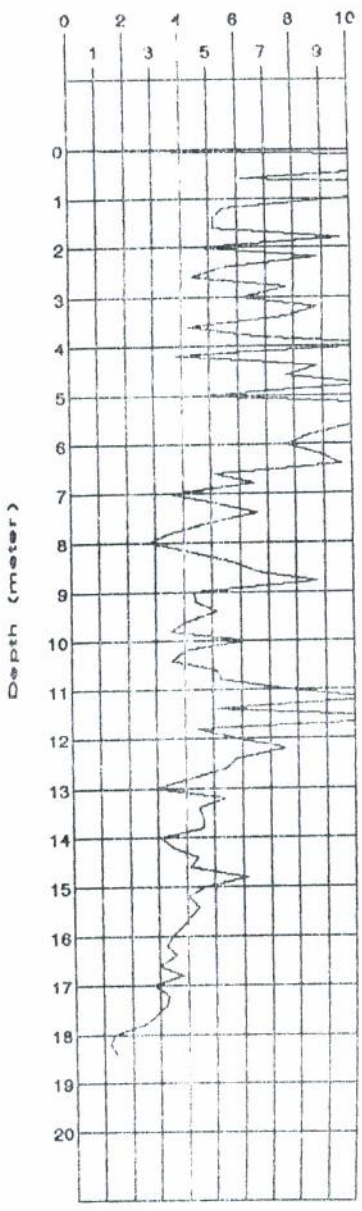
CONE PENETRATION TEST

SONDIR No.	: S6.	D1. qonus	3.45	DATE OF TESTED	: MEI 07th.1998.
PROJECT	: STO TELKOM	D2. jacket	3.60	TESTED BY	: NEAN Mr.
LOCATION	: DESA SUKA SARI RUMPIN –JABAR.	H. jacket	15.00	CHECKED BY	: MA.ONTOWIRYO
		Ratio (R)	18.15		
		Elevation (– meter)			
		G.W.L (– meter)			

Qc (Kg/cm^2) and Tf (Kg/cm' x 10)



Friction / Qonus Resistance (%)



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OF I.S.T.N JAKARTA

GEOLOGICAL BORING LOG

PROJECT	STO TELKOM.	Started MEI 07th. 1996	Drawn by ABDULRAHMAN	Bore Hole Number
LOCATION	DESA SUKA SARI. RUMPIN	Finished MEI 07th. 1996	Checked by RAHARDJO S	
		Tested by N E A N Mr	Approved by	
TOTAL DEPTH ELEVATION	2.95 M.	Av. GWT	Date MEI 13th. 1996	B – 1.

Scale	Depth	Elev.	Thickness	Soil Symbol	Soil Classification	Colour	In Place Observation	Density or Consistency	Sample	Standard Penetration Test (N Value) Number of Blows Every 15 cm	30 Cm	10	20	30	40	50	60
1																	
2	0.50	– 0.50															
3																	
4	1.00	– 1.00															
5									UDS								
6	1.45	– 1.45															
7						Coklat	Lempung kelanauan	Kaku sedang.									
8	2.00	– 2.00															
9																	
10	2.50	– 2.50															
11									UDS								
12	2.95	– 2.95															
13																	
14	3.50	– 3.50															
15																	
16	4.00	– 4.00															
17																	
18	4.50	– 4.50															
19																	

Clay		Gravel	
Silt		Rock	
Sand		Organic	

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OF I.S.T.N JAKARTA

GEOLOGICAL BORING LOG

PROJECT	STO TELKOM.	Started MEI 07th. 1998	Drawn by ABDULRAHMAN	Bore Hole Number
LOCATION	DEBA BUKA BARI. RUMPIN	Finished MEI 07th. 1998	Checked by RAHARDJO S	
		Tested by N E A N Mr	Approved by	
TOTAL DEPTH	2.95 M.	Av. GWT	Date MEI 13th. 1998	B – 2.
ELEVATION				

Scale	Depth	Elev.	Thickness	Soil Symbol	Soil Classification	Colour	In Place Observation	Density or Consistency	Sample	Standard Penetration Test (N Value) Number of Blows Every 15 cm	30 Cm	10	20	30	40	50	60
1																	
2	0.50	– 0.50															
3																	
4	1.00	– 1.00															
5									UDS								
6	1.45	– 1.45															
7						Coklat	Lempung kelanauan	Kaku sedang.									
8	2.00	– 2.00															
9																	
10	2.50	– 2.50															
11									UDS								
12	2.95	– 2.95															
13																	
14	3.50	– 3.50															
15																	
16	4.00	– 4.00															
17																	
18	4.50	– 4.50															
19																	

Clay		Gravel	
Silt		Rock	
Sand		Organic	

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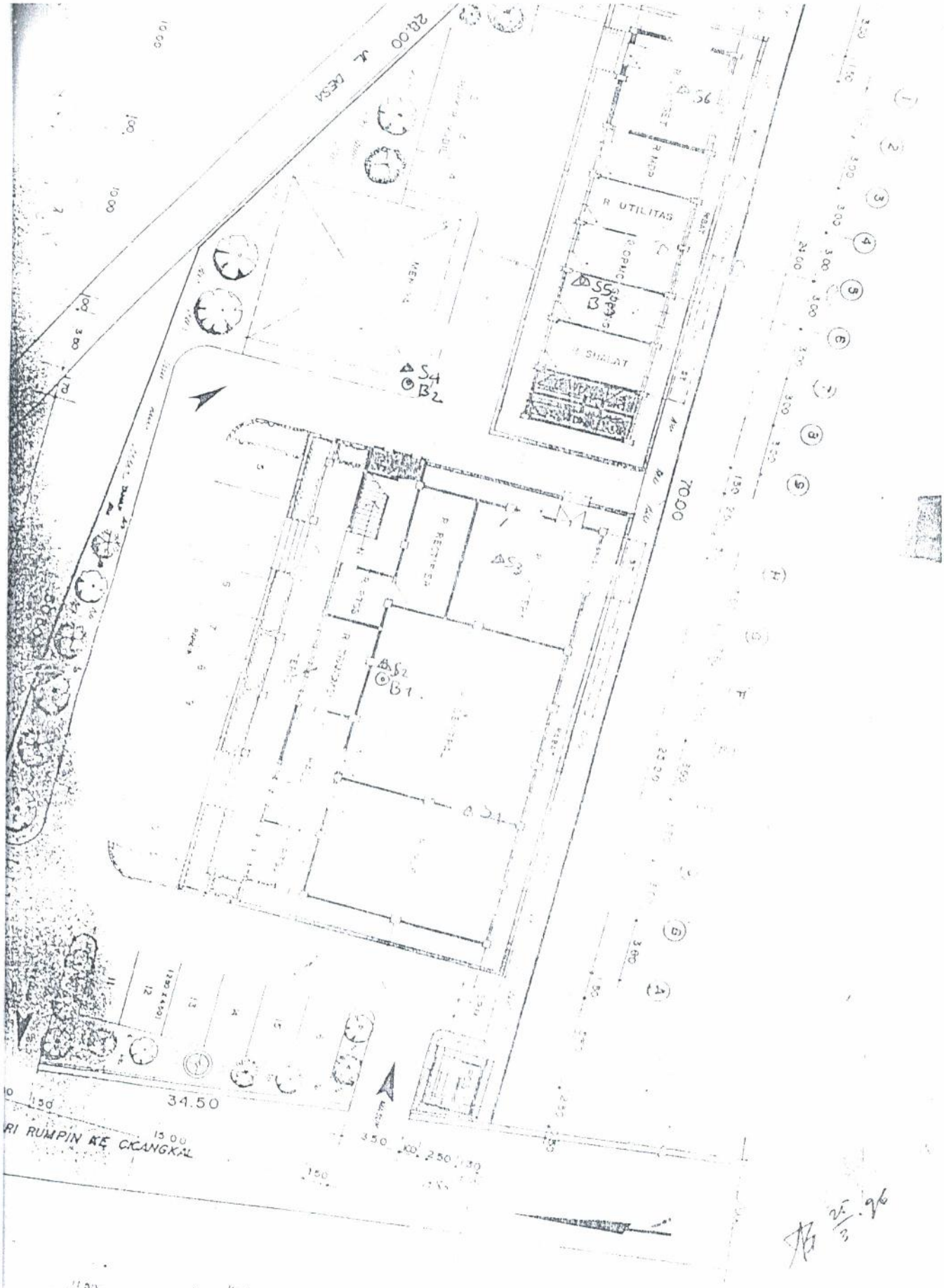
SOIL MECHANICS LABORATORY
OF I.S.T.N JAKARTA

GEOLOGICAL BORING LOG

PROJECT	STO TELKOM.	Started MEI 07th. 1996	Drawn by ABDULRAHMAN	Bore Hole Number
LOCATION	DESA SUKA SARI. RUMPIN	Finished MEI 07th. 1996	Checked by RAHARDJO S	
		Tested by N E A N Mr	Approved by	
TOTAL DEPTH	2.95 M.	Av. GWT	Date MEI 13th. 1996	B – 3.
ELEVATION				

Scale	Depth	Elev.	Thickness	Soil Symbol	Soil Classification	Colour	In Place Observation	Density or Consistency	Sample	Standard Penetration Test (N Value) Number of Blows Every 15 cm	30 Cm	10	20	30	40	50	60
1																	
2	0.50	– 0.50															
3																	
4	1.00	– 1.00															
5									UDS								
6	1.45	– 1.45															
7						Coklat	Lampung kelansuan	Kaku sedang.									
8	2.00	–2.00															
9																	
10	2.50	–2.50															
11									UDS								
12	2.95	–2.95															
13																	
14	3.50	–3.50															
15																	
16	4.00	– 4.00															
17																	
18	4.50	– 4.50															
19																	

Clay		Gravel	
Silt		Rock	
Sand		Organic	



BERANGKAT :
SONDIR
BORING

DENAH LOKASI

STO. TELKOM DESA SUKA SARI.
RUMPIN — JABAR. —

LABORATORY TESTING RESULTS

PROJECT STO TELKOM

LOCATION DESA SUKASARI – RUMPIN – JABAR

BORING B – 1 , B – 2 DAN B – 3 .

Sample Depth meter	Sample Type U/D	Classification	INDEX PROPERTIES													SHEAR STRENGTH PARAMETERS				COMPRESSIBILITY		
			Wn (%)	g wet t/m3	g dry t/m3	Gs	e	Sr	SL	PL	LL	PI	Grain Size Sieve	Grain Size Hydro	Cu / Cu' kg/cm2	Phi / Phi' degree	q-ult	St	Cc	Cv Cm2/sec	Cr
B-1																						
1,00-1,45	U	CH	56,37	1,64	1,02	2,68	1,64	92,36	15,56	32,44	94,91	62,47	6	94	0,40	11	----	----	0,86	0,00723	0,0344
2,50-2,95	U	CH	54,54	1,60	0,96	2,67	1,77	82,24	17,04	35,41	96,21	60,8	4	96	0,44	12,5	----	----	0,86	0,007568	0,036
B-2																						
1,00-1,45	U	OH-MH	47,12	1,64	1,04	2,61	1,51	81,46	25,18	46,85	92,18	45,36	4	96	0,42	10	----	----	1,526	0,001107	0,0522
2,50-2,95	U	OH-MH	45,59	1,62	0,99	2,65	1,68	67,19	24,97	47,51	95,2	47,69	9	91	0,46	10	----	----	1,513	0,009757	0,023
B-3																						
1,00-1,45	U	OH-MH	46,70	1,62	1,01	2,60	1,58	76,99	24,68	44,69	91,08	46,39	4	96	0,33	13,5	----	----	0,698	0,00978	0,0374
2,50-2,95	U	OH-MH	55,00	1,61	0,99	2,65	1,68	68,52	23,87	47,58	96,7	49,12	5	95	0,30	13	----	----	0,0823	0,001033	0,0[illegible]

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Weight–Volume Relationship of Unsaturated Soil

Boring No: TELKOM RUMPIN — Date of Tested : MEI 20 th 1996
Depth : B1 (100–145)CM — Checked By : FAUZIE

Input Data

Unit Weight	1.59	gr/cm3
Water Content	56.37	%
Specific Gravity	2.68	
Unit Weight of Water	1.00	gr/cm3

Volume (Cm3)				Weight (Grm)	
Vt= 2.64	Vv= 1.64	Va= 0.12	Air	Wa= 0.00	Wt= 4.18
		Vw= 1.51	Water	Ww= 1.51	
	Vs= 1.00		Solid	Ws= 2.68	

Void ratio (e)	1.64	
Degree of saturation (Sr)	92.36	%
Porosity	0.62	
Dry unit weight	1.02	gr/cm3
Saturated unit weight	1.64	gr/cm3

Weight–Volume Relationship of Unsaturated Soil

Boring No: TELKOM RUMPIN — Date of Tested : MEI 20 th 1996
Depth : B1(250–295) CM — Checked By : FAUZIE

Input Data

Unit Weight	1.49	gr/cm3
Water Content	54.54	%
Specific Gravity	2.67	
Unit Weight of Water	1.00	gr/cm3

Volume (Cm3)				Weight (Grm)	
Vt= 2.77	Vv= 1.77	Va= 0.32	Air	Wa= 0.00	Wt= 4.13
		Vw= 1.46	Water	Ww= 1.46	
	Vs= 1.00		Solid	Ws= 2.67	

Void ratio (e)	1.77	
Degree of saturation (Sr)	82.24	%
Porosity	0.64	
Dry unit weight	0.96	gr/cm3
Saturated unit weight	1.60	gr/cm3

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Weight–Volume Relationship of Unsaturated Soil

Boring No: TELKOM RUMPIN — Date of Tested : MEI 20 th 1996

Depth : B2 (100–145) CM — Checked By : FAUZIE

Input Data

Unit Weight	1.53	gr/cm3
Water Content	47.12	%
Specific Gravity	2.61	
Unit Weight of Water	1.00	gr/cm3

Volume (Cm3)				Weight (Grm)	
Vt= 2.51	Vv= 1.51	Va= 0.28	Air	Wa= 0.00	Wt= 3.84
		Vw= 1.23	Water	Ww= 1.23	
	Vs= 1.00		Solid	Ws= 2.61	

Void ratio (e)	1.51
Degree of saturation (Sr)	81.46 %
Porosity	0.60
Dry unit weight	1.04 gr/cm3
Saturated unit weight	1.64 gr/cm3

Weight–Volume Relationship of Unsaturated Soil

Boring No: TELKOM RUMPIN — Date of Tested : MEI 20 th 1996

Depth : B2 (250–295) CM — Checked By : FAUZIE

Input Data

Unit Weight	1.41	gr/cm3
Water Content	42.59	%
Specific Gravity	2.65	
Unit Weight of Water	1.00	gr/cm3

Volume (Cm3)				Weight (Grm)	
Vt= 2.68	Vv= 1.68	Va= 0.55	Air	Wa= 0.00	Wt= 3.78
		Vw= 1.13	Water	Ww= 1.13	
	Vs= 1.00		Solid	Ws= 2.65	

Void ratio (e)	1.68
Degree of saturation (Sr)	67.19 %
Porosity	0.63
Dry unit weight	0.99 gr/cm3
Saturated unit weight	1.62 gr/cm3

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Weight–Volume Relationship of Unsaturated Soil

Boring No: TELKOM RUMPIN — Date of Tested : MEI 20 th 1996

Depth : B3 (100–145) CM — Checked By : FAUZIE

Input Data

Unit Weight	1.48	gr/cm3
Water Content	46.70	%
Specific Gravity	2.60	
Unit Weight of Water	1.00	gr/cm3

Volume (Cm3)				Weight (Grm)		
Vt= 2.58	Vv= 1.58	Va= 0.36	Air	Wa= 0.00	Wt= 3.81	
		Vw= 1.21	Water	Ww= 1.21		
	Vs= 1.00		Solid	Ws= 2.60		

Void ratio (e)	1.58	
Degree of saturation (Sr)	76.99	%
Porosity	0.61	
Dry unit weight	1.01	gr/cm3
Saturated unit weight	1.62	gr/cm3

Weight–Volume Relationship of Unsaturated Soil

Boring No: TELKOM RUMPIN — Date of Tested : MEI 20 th 1996

Depth : B3 (250–295) CM — Checked By : FAUZIE

Input Data

Unit Weight	1.53	gr/cm3
Water Content	55.00	%
Specific Gravity	2.65	
Unit Weight of Water	1.00	gr/cm3

Volume (Cm3)				Weight (Grm)		
Vt= 2.68	Vv= 1.68	Va= 0.23	Air	Wa= 0.00	Wt= 4.11	
		Vw= 1.46	Water	Ww= 1.46		
	Vs= 1.00		Solid	Ws= 2.65		

Void ratio (e)	1.68	
Degree of saturation (Sr)	86.52	%
Porosity	0.63	
Dry unit weight	0.99	gr/cm3
Saturated unit weight	1.61	gr/cm3

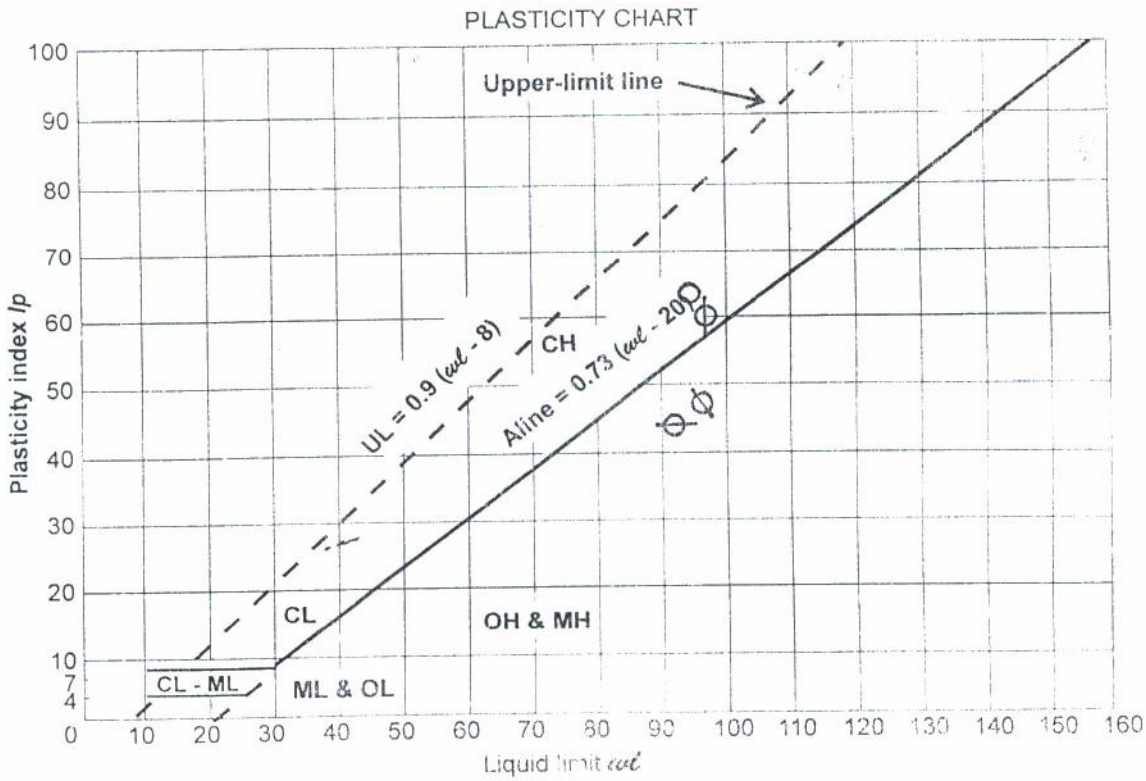
SOIL CLASSIFICATION

Project : STO Telkom

Location : Desa Sukasari - Rumpin .

Test By : Ir. S Hanny E .

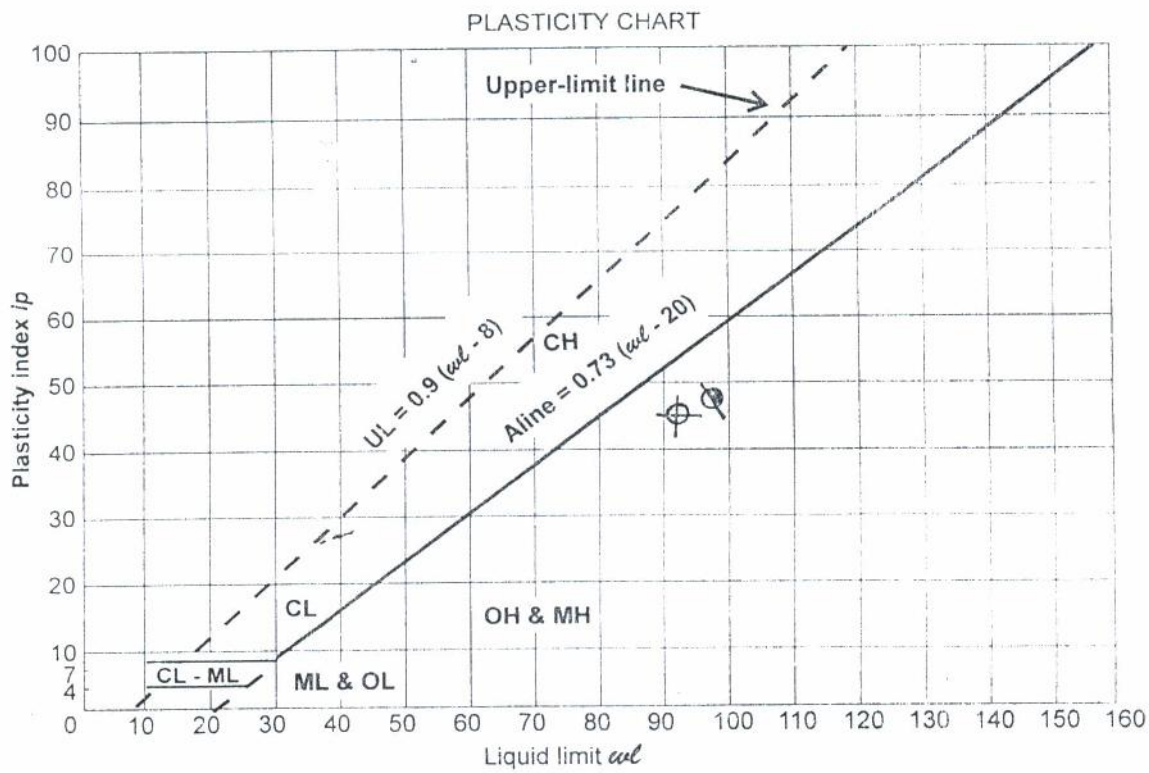
Date of Test : Mei 1996 .



Boring No.	Depth (M)	Symbol	WL (%)	WP (%)	IP (%)	Unified Classification
B - 1	100 - 145	O	94,91	32,44	62,47	CH
	250 - 295	ϕ	96,21	35,41	60,8	CH
B - 2	100 - 145	⊖	88,18	46,82	45,36	CH & MH
	250 - 295	⌀	95,2	47,51	47,69	CH & MH

SOIL CLASSIFICATION

Project : STO Telkom
Location : Desa Suka Sari-Rumpin.
Test By : Ir. S Hanny E
Date of Test : Mei 1996 .



Boring No.	Depth (M)	Symbol	WL (%)	WP (%)	IP (%)	Unified Classification
B - 3	100 - 145	⊕	91,08	44,69	46,39	OH & MH
	250 - 275	⊕	96,7	47,58	49,12	OH & MH

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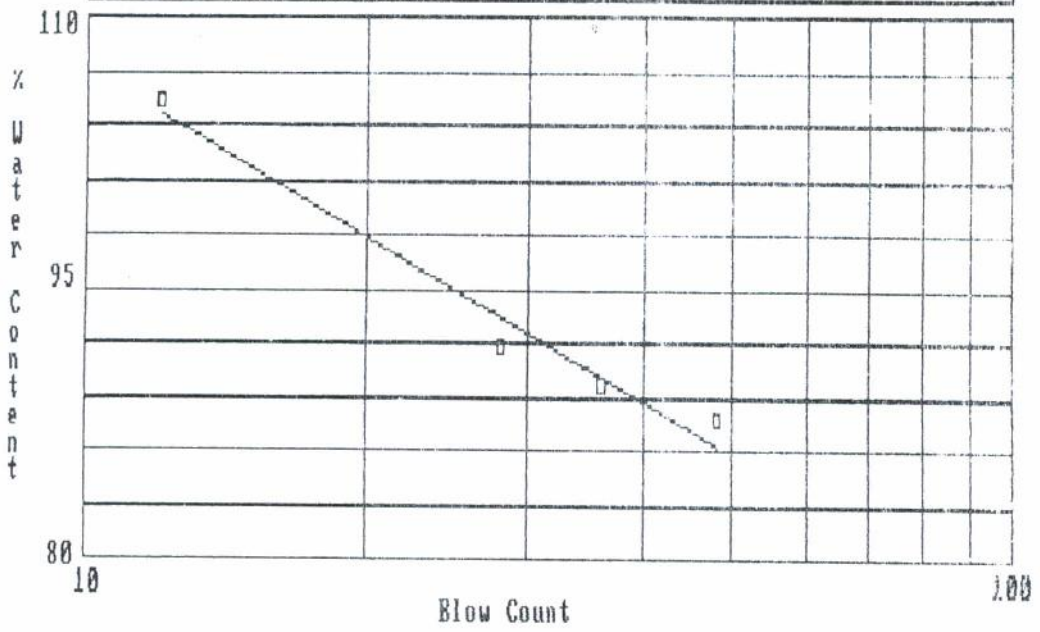
Boring No. = B 1	Depth = 100-145	Number = TELKOM RUMPIN



Sample no.	1	2	3	4					
% Water content	105.35	91.75	89.64	87.65					
Blow count	12	28	36	48					

Regression equation	Coefficient of determination
W =-30.4557 * logN + 137.4842	R^2 = .9723 ** Excellent Test
Liquid limit = 94.91	Flow index =-30.46
Input plastic limit = 32.44	Toughness index = -2.05
Plasticity index = 62.47	Shrinkage limit = 15.56
Input natural water content = 56.37	Liquidity index = .38
Boring No. = B 1	Depth = 100-145 Number = TELKOM RUMPIN

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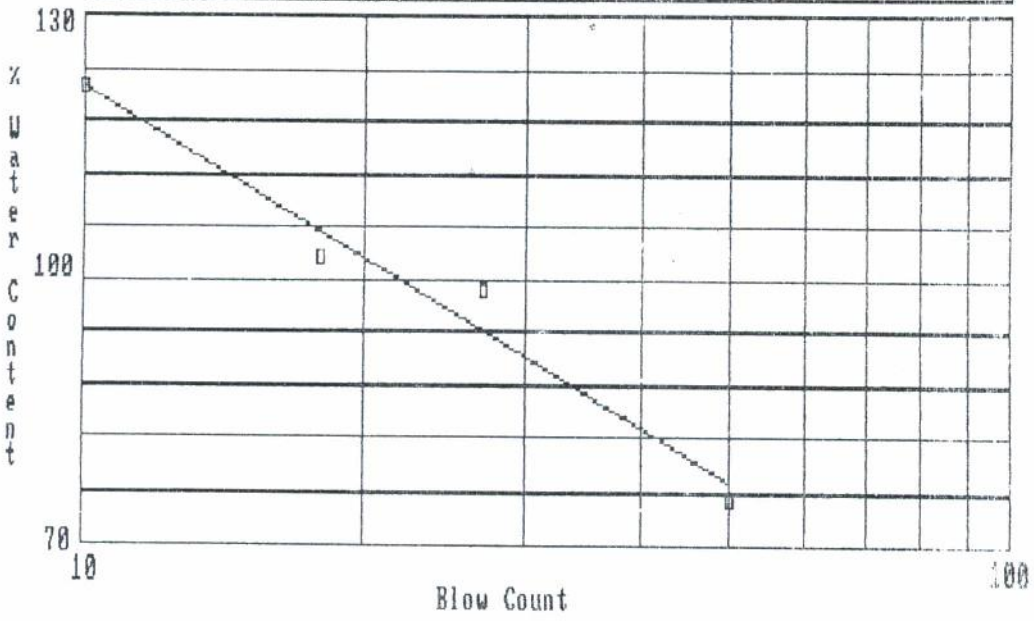
Boring No. = B 1	Depth = 250-295	Number = TELKOM RUMPIN



Sample no.	1	2	3	4					
% Water content	75.02	98.82	102.35	121.89					
Blow count	50	27	18	10					

Regression equation	Coefficient of determination
W =-64.2992 * logN + 186.0944	R^2 = .9682 ** Excellent Test
Liquid limit = 96.21	Flow index =-64.3
Input plastic limit = 35.41	Toughness index = -.95
Plasticity index = 60.8	Shrinkage limit = 17.04
Input natural water content = 54.54	Liquidity index = .31

Boring No. = B 1	Depth = 250-295	Number = TELKOM RUMPIN

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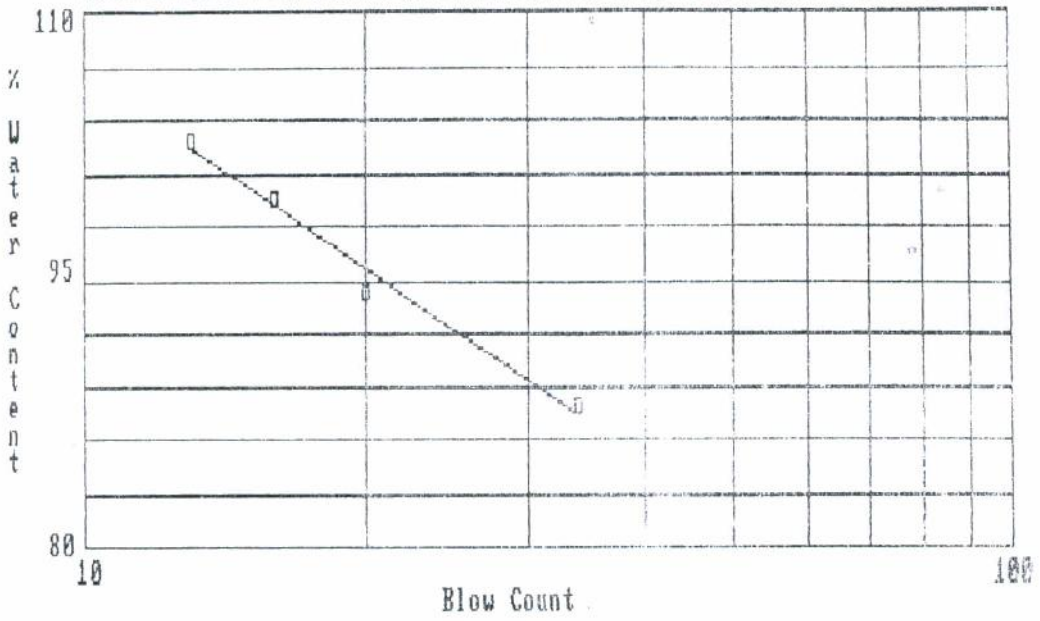
Boring No. = B 2	Depth = 100-145	Number = TELKOM RUMPIN



Sample no.	1	2	3	4					
% Water content	102.89	99.45	94.39	87.88					
Blow count	13	16	20	34					

Regression equation	Coefficient of determination
W =-36.0335 * logN + 142.5531	R^2 = .9827 ** Excellent Test
Liquid limit = 92.18	Flow index =-36.03
Input plastic limit = 46.82	Toughness index = -1.26
Plasticity index = 45.36	Shrinkage limit = 25.18
Input natural water content = 47.12	Liquidity index = .01
Boring No. = B 2	Depth = 100-145 Number = TELKOM RUMPIN

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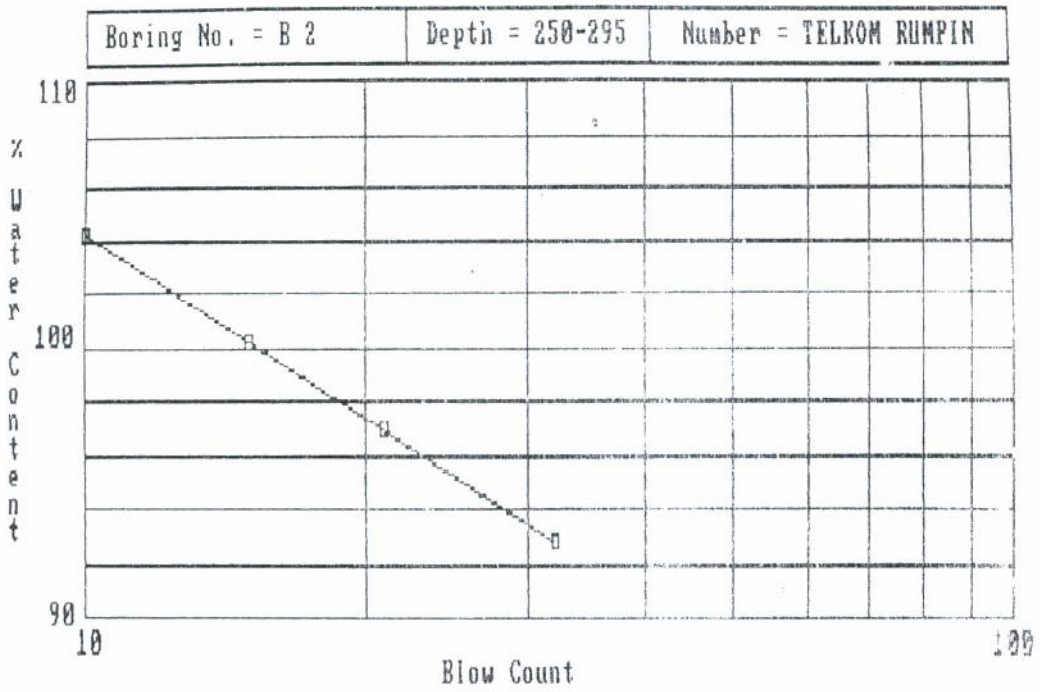

Sample no.	1	2	3	4					
% Water content	92.78	96.93	100.17	104.19					
Blow count	32	21	15	10					

Regression equation	Coefficient of determination
W =-22.55 * logN + 126.724	R^2 = 1 ** Excellent Test
Liquid limit = 95.2	Flow index =-22.55
Input plastic limit = 47.51	Toughness index = -2.11
Plasticity index = 47.69	Shrinkage limit = 24.97
Input natural water content = 42.59	Liquidity index = -.1

Boring No. = B 2	Depth = 250-295	Number = TELKOM RUMPIN

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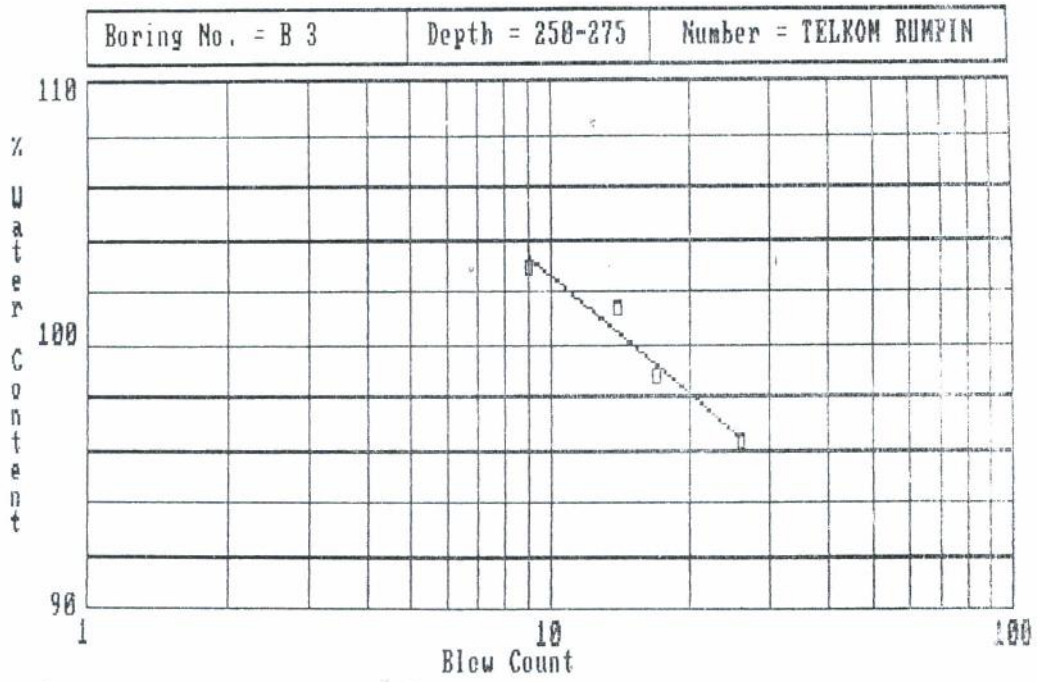

Sample no.	1	2	3	4					
% Water content	96.31	98.76	101.42	102.91					
Blow count	26	17	14	9					

Regression equation	Coefficient of determination
W =-14.8647 * logN + 117.4837	R^2 = .9487 ** Excellent Test
Liquid limit = 96.7	Flow index =-14.66
Input plastic limit = 47.58	Toughness index = -3.3
Plasticity index = 49.12	Shrinkage limit = 24.68
Input natural water content = 55	Liquidity index = .15

Boring No. = B 3	Depth = 250-275	Number = TELKOM RUMPIN

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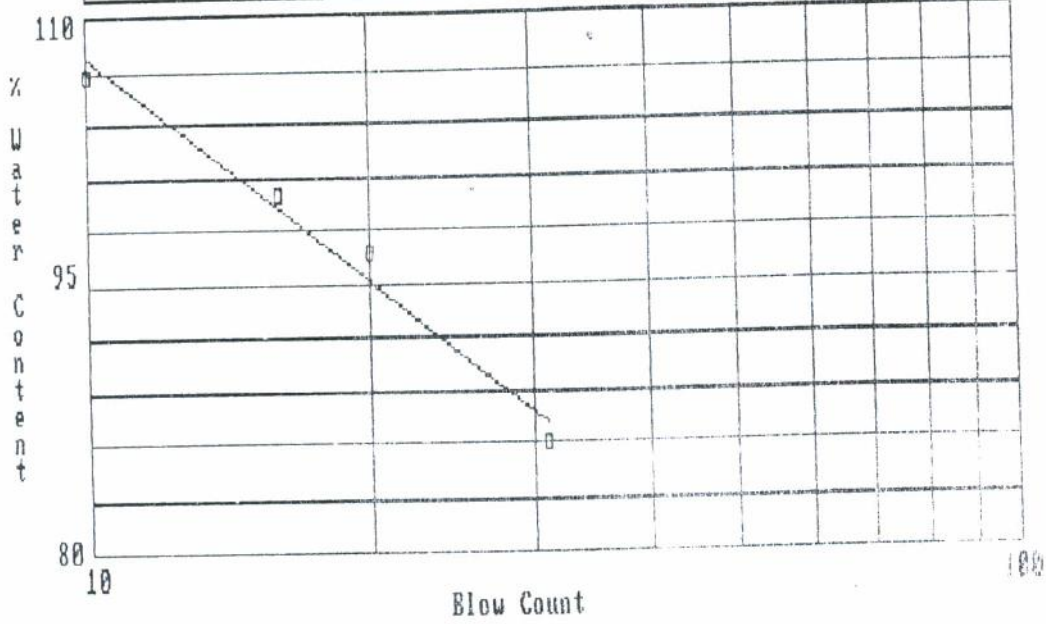
Boring No. = B 3	Depth = 100-145	Number = TELKOM RUMPIN



Sample no.	1	2	3	4					
% Water content	85.95	96.59	100.00	106.72					
Blow count	31	20	16	10					

Regression equation	Coefficient of determination
W =-41.8794 * logN + 149.6256	R^2 = .9765 ** Excellent Test
Liquid limit = 91.08	Flow index =-41.88
Input plastic limit = 44.695	Toughness index = -1.11
Plasticity index = 46.39	Shrinkage limit = 23.87
Input natural water content = 46.7	Liquidity index = .04

Boring No. = B 3	Depth = 100-145	Number = TELKOM RUMPIN

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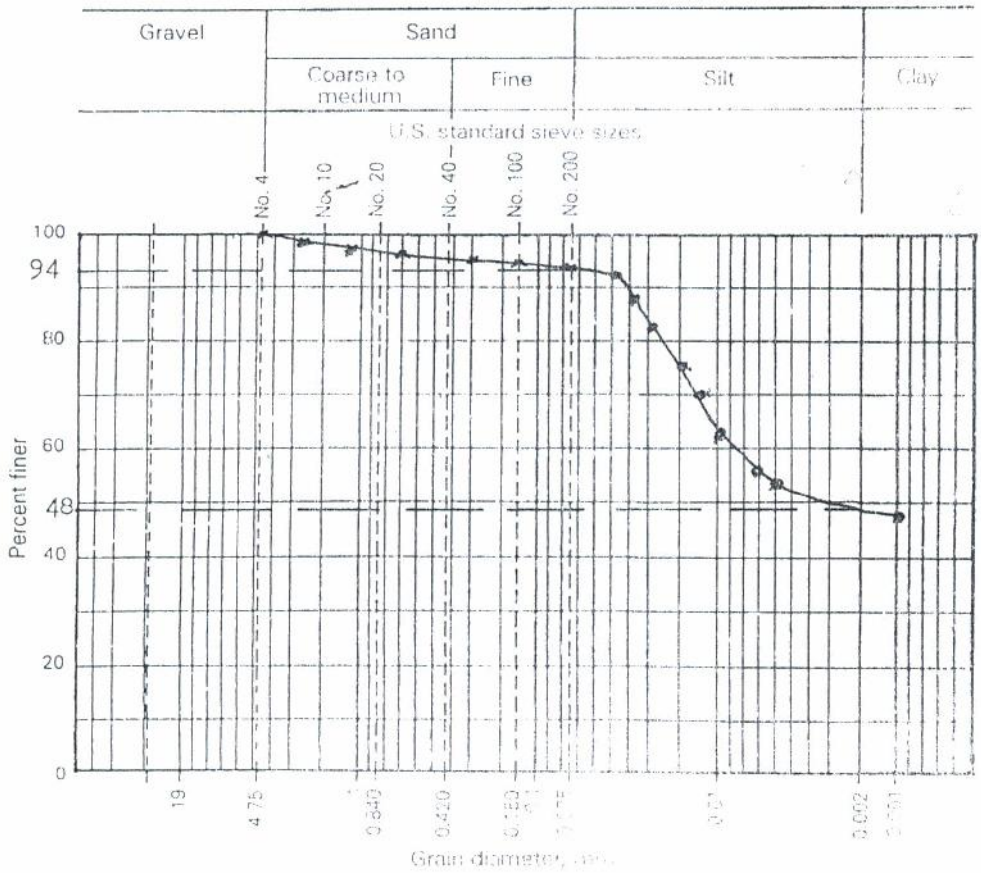
GRAIN SIZE DISTRIBUTION

Project STO Telkom, Job No. _____

Location of Project Desa Sukasari Rumpin-Jabar Boring No. B - 1 Sample No /1

Description of Soil _____ Depth of Sample (100 - 145

Tested By Ir. Rahardjo. S Date of Testing _____



Visual soil description _____

Soil classification _____ System Hydrometer and sieve analysis

Sand = 6 %. Clay = 48 %.

Silt = 46 %.

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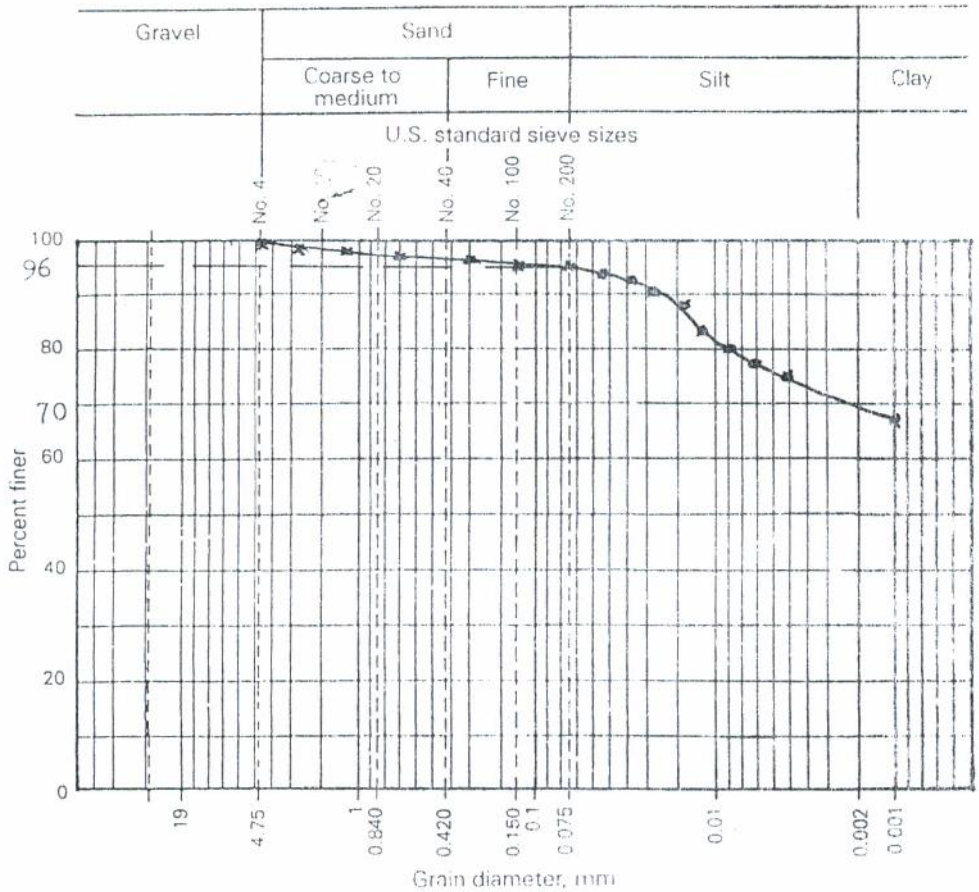
GRAIN SIZE DISTRIBUTION

Project: STO Telkom — Job No.:

Location of Project: Desa Sukasari — Boring No.: B-1 — Sample No.: 2

Description of Soil: — Depth of Sample: 250 - 295

Tested By: Ir. Rahardjo. S — Date of Testing: Mei 1996 .



Visual soil description:

Soil classification

System: Hydrometer and sieve analysis

Sand = 4 %. Clay = 70%.

Silt = 26 %.

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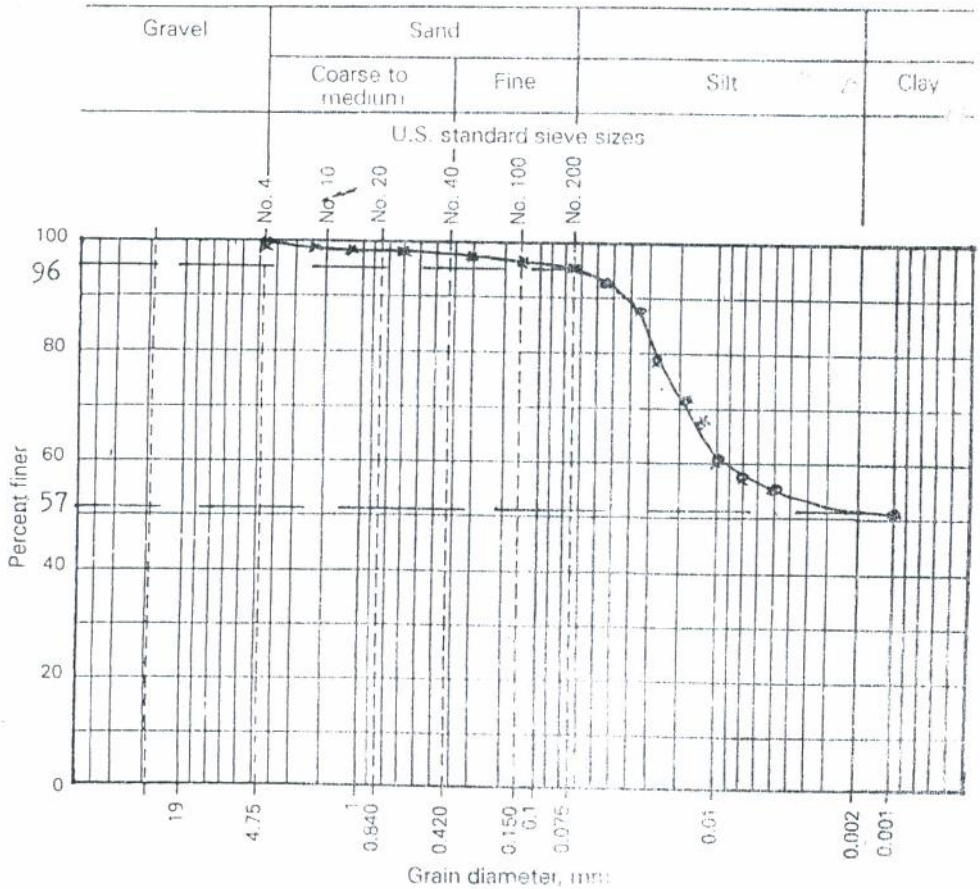
GRAIN SIZE DISTRIBUTION

Project STO Telkom — Job No

Location of Project Desa Sukasari Rumpin-Jabar — Boring No. B-2 — Sample No.

Description of Soil — Depth of Sample 100 - 145

Tested By Ir. Rahardjo. S — Date of Testing Mei 1996



Visual soil description

Soil classification

System Hydrometer and sieve analysis

Sand = 4 %. Clay - 51 %.

Silt = 45 %.

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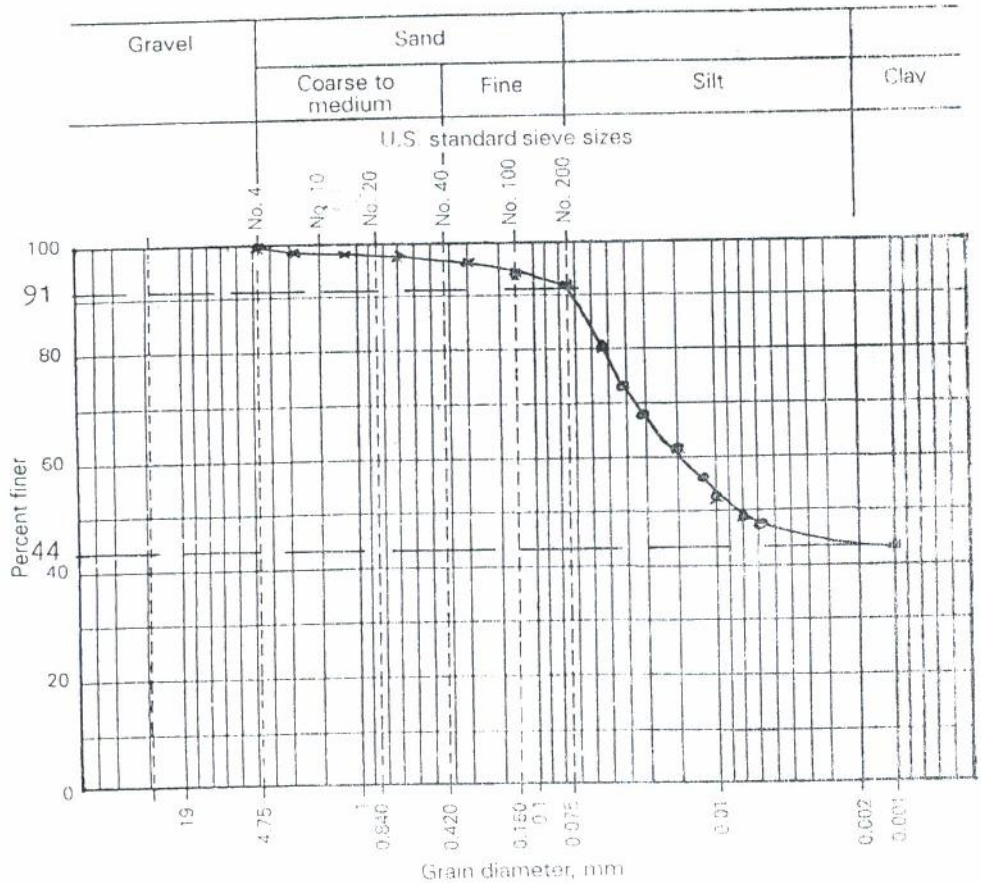
GRAIN SIZE DISTRIBUTION

Project: STO Telkom — Job No.:

Location of Project: Desa Sukasari Rumpin-Jabar . — Boring No.: B-2 — Sample No.: 3

Description of Soil: — Depth of Sample: 250 - 295

Tested By: Ir. Rahardjo. S — Date of Testing: Mei 1996 .



Visual soil description: —

Soil classification — System: Hydrometer and sieve analysis

Sand = 9 %.

Clay = 44 %.

Silt = 47 %.

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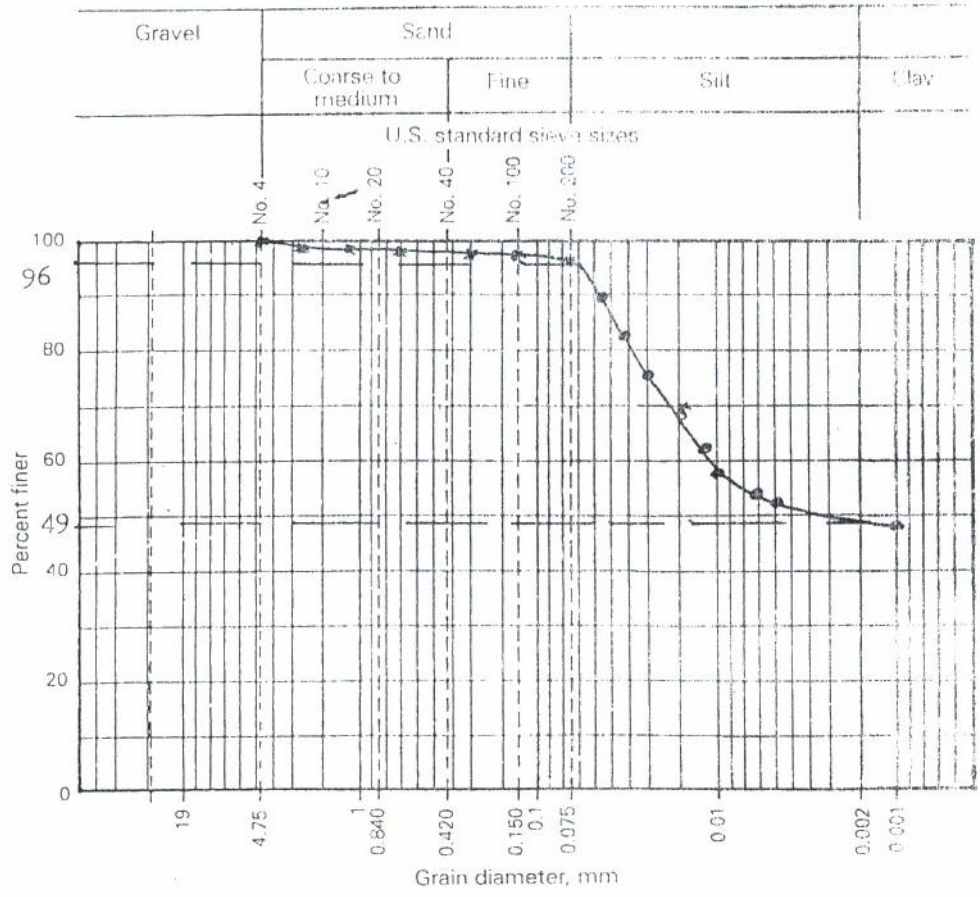
GRAIN SIZE DISTRIBUTION

Project STO Telkom — Job No. —

Location of Project Desa Sukasari Rumpin-Jabar . — Boring No. B - 3 — Sample No. 1

Description of Soil — Depth of Sample 100 - 145

Tested By Ir. Rahardjo. S — Date of Testing Mei 1996 .



Visual soil description —

Soil classification

System Hydrometer and sieve analysis

Sand = 4 %. Clay = 49 %.

Silt = 47 %.

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Kampus ISTN Bhumi Srengseng Telp. 7270092 Fax. 7270090

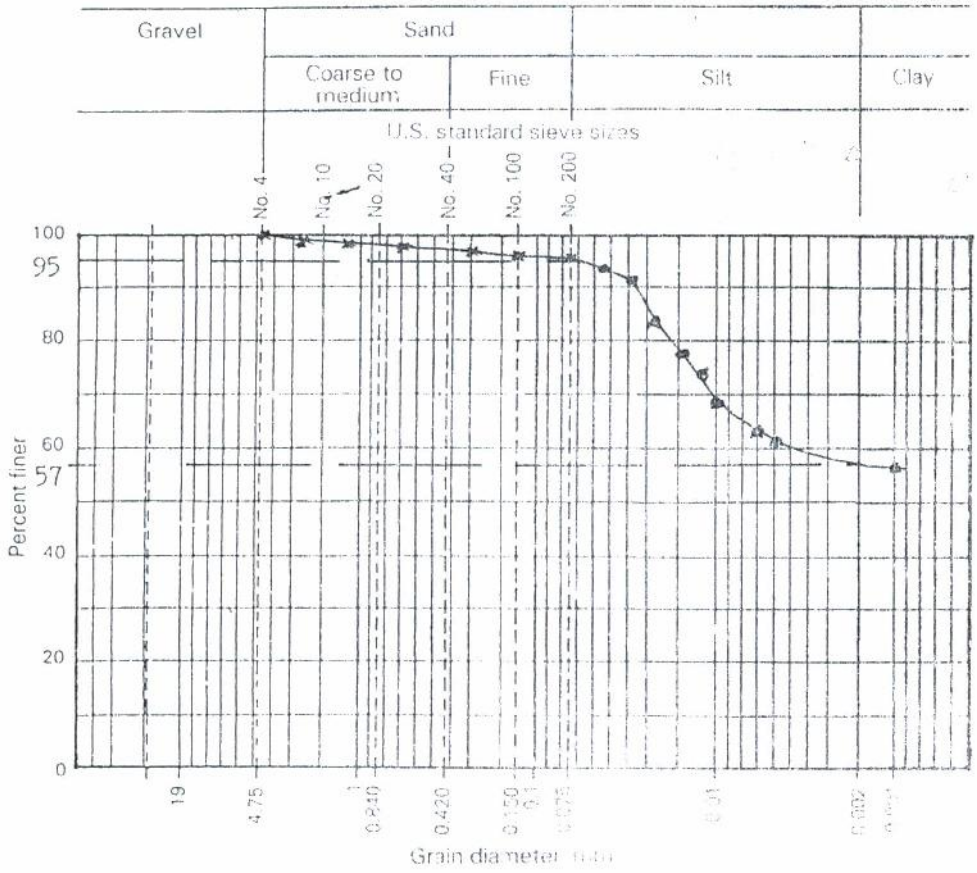
GRAIN SIZE DISTRIBUTION

Project STO Telkom — Job No

Location of Project Desa Sukasari — Boring No. P-3 — Sample No.

Description of Soil — Depth of Sample 250 - 295

Tested By Ir. Rahardjo. S — Date of Testing Mei 1996 .



Visual soil description

Soil classification

System Hydrometer and sieve analysis

Sand = 5 %.

Silt = 38 %.

Clay = 57 %.

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TRIAXIAL U.U TEST

Project	STO TELKOM.	Date of test	MAY. 20th. 1996
Location	DESA SUKA SARI. RUMPIN.	Tested by	Amin Mi
Boring no	B 1	Checked by	NANA S
Depth	100 – 145 CM.	Approved by	

Sample Data

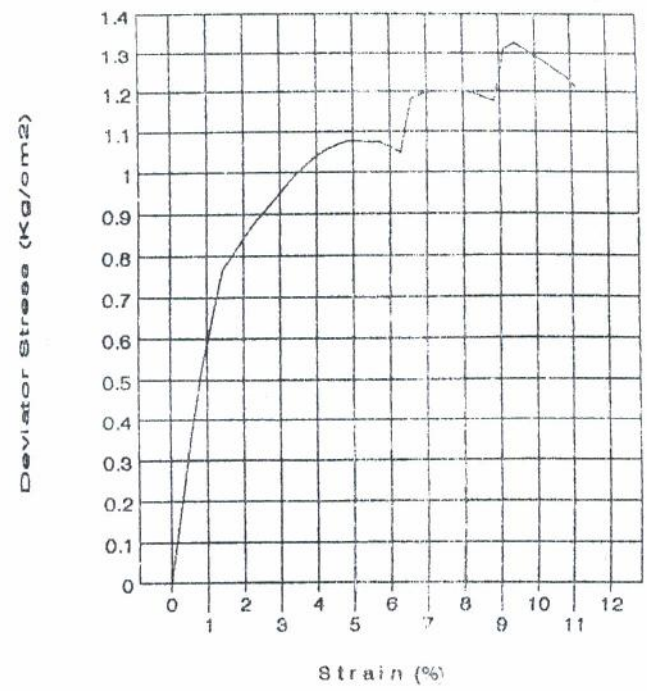
Diameter (cm)	3.50
Height (cm)	7.00
Wet density (gr/cm3)	1.71
Water content (%)	61.06
Dry density (gr/cm3)	1.06

Stress (kg/cm2)	Sample I	Sample II	Sample III
3	0.30	0.60	0.90
Deviator	1.08	1.20	1.33
1	1.38	1.80	2.23
Pore water pressure	0.00	0.00	0.00

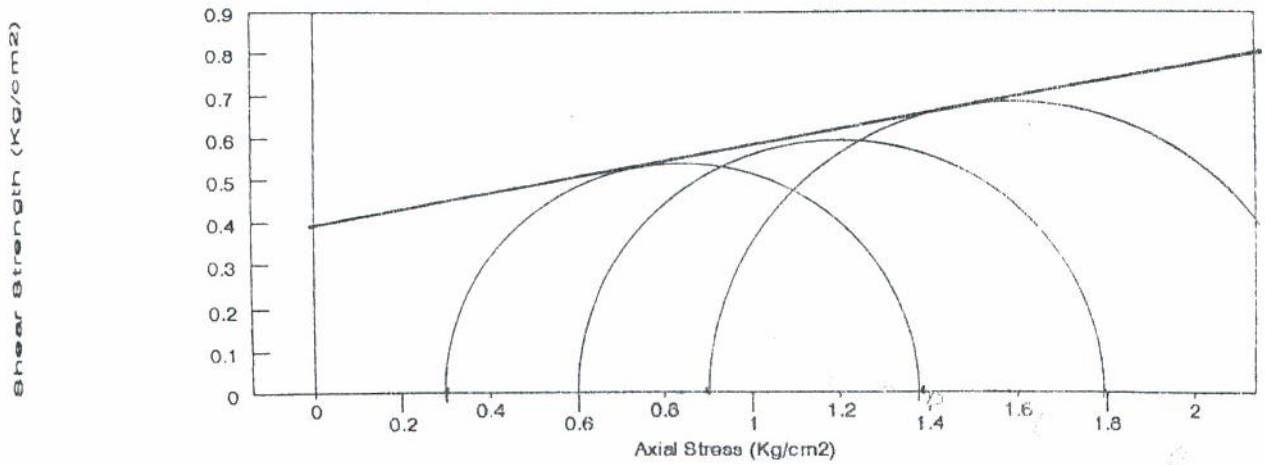
Shear Strength Parameters

Cohession Undrained (Cu), kg/cm2	0,40
Internal Angle Friction (Degree)	11°

Stress–Strain Curve



Mohr Coulomb Curve



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TRIAXIAL U.U TEST

Project	STO TELKOM.	Date of test	MAY. 20th. 1996
Location	DESA SUKA SARI. RUMPIN.	Tested by	Amin Mr
Boring no	B 1	Checked by	NANA S
Depth	250 – 295 CM.	Approved by	

Sample Data

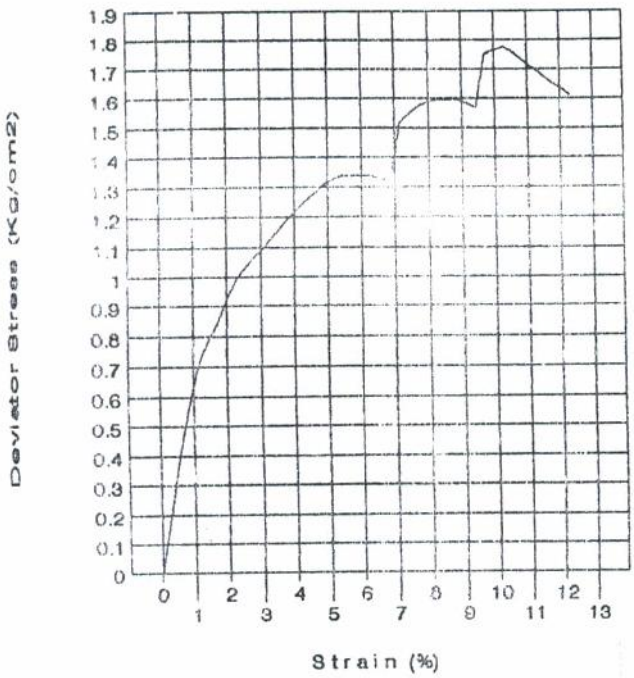
Diameter (cm)	3.50
Height (cm)	7.00
Wet density (gr/cm3)	1.71
Water content (%)	61.06
Dry density (gr/cm3)	1.06

Stress (kg/cm2)	Sample I	Sample II	Sample III
3	0.40	0.80	1.20
Deviator	1.34	1.60	1.78
1	1.74	2.40	2.98
Pore water pressure	0.00	0.00	0.00

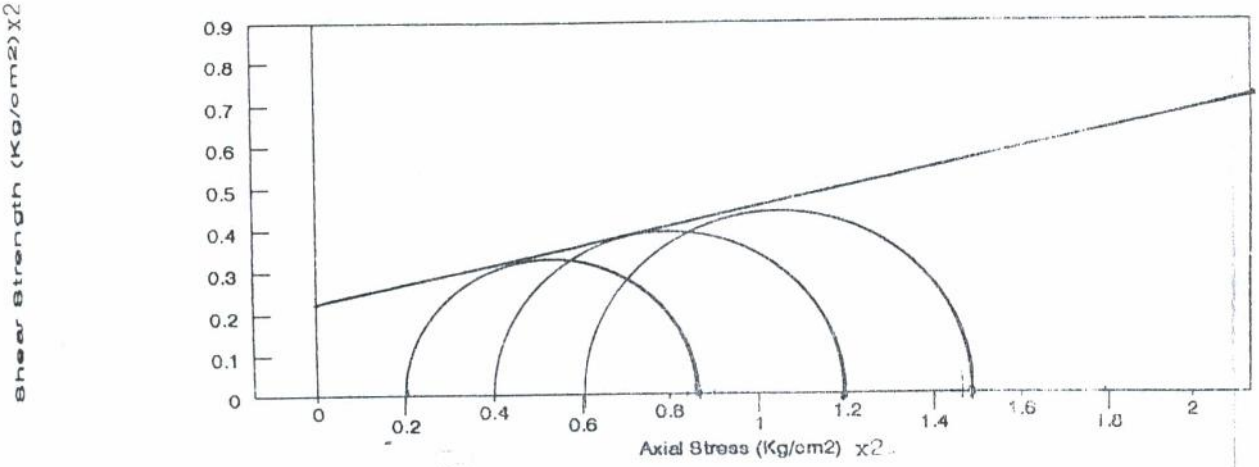
Shear Strength Parameters

Cohession Undrained (Cu), kg/cm2	0,44
Internal Angle Friction (Degree)	12,5°

Stress – Strain Curve



Mohr Coulomb Curve



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TRIAXIAL U.U TEST

Project	STO TELKOM.	Date of test	MAY. 20th. 1996
Location	DESA SUKA SARI. RUMPIN.	Tested by	Amin Mr
Boring no	B 2	Checked by	NANA S
Depth	100 – 145 CM.	Approved by	

Sample Data

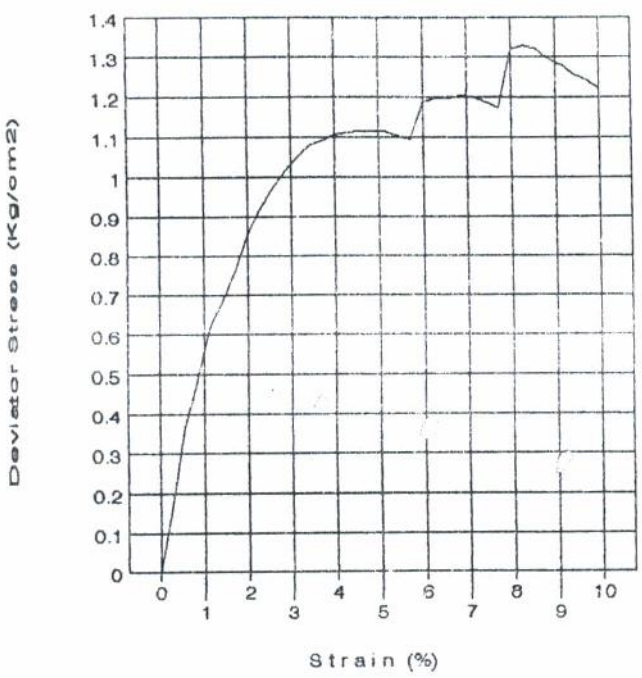
Diameter (cm)	3.50
Height (cm)	7.00
Wet density (gr/cm3)	1.39
Water content (%)	52.03
Dry density (gr/cm3)	0.91

Stress (kg/cm2)	Sample I	Sample II	Sample III
3	0.30	0.60	0.90
Deviator	1.12	1.21	1.33
1	1.42	1.81	2.23
Pore water pressure	0.00	0.00	0.00

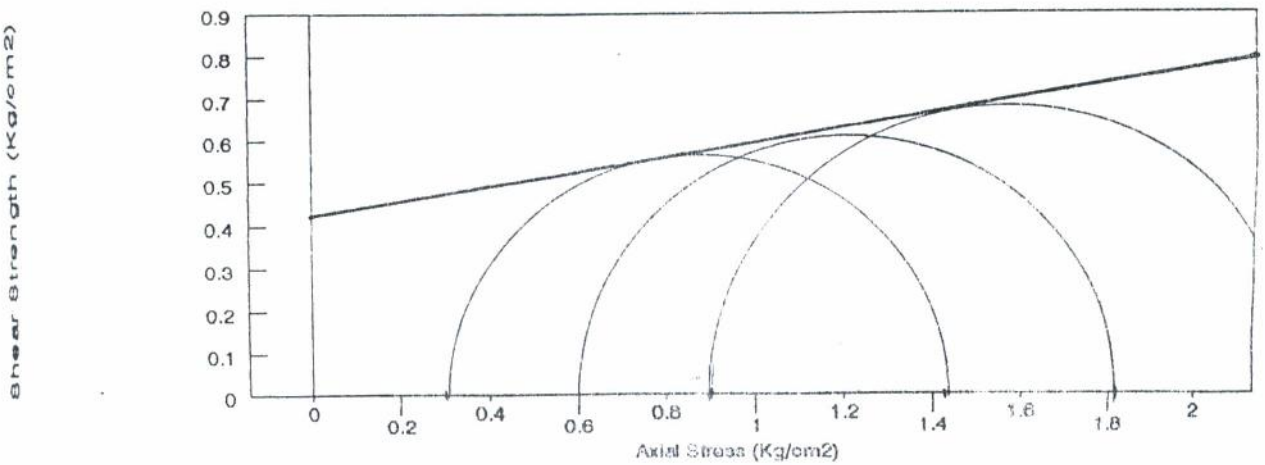
Shear Strength Parameters

Cohession Undrained (Cu), kg/cm2	0,42
Internal Angle Friction (Degree)	10^{o}

Stress–Strain Curve



Mohr Coulomb Curve



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FAX. 7270093, JAKARTA

TRIAXIAL U.U TEST

Project	STO TELKOM.	Date of test	MAY. 20th. 1996
Location	DESA SUKA SARI. RUMPIN.	Tested by	Amin Mr
Boring no	B 2	Checked by	NANA S
Depth	250 – 295 CM.	Approved by	

Sample Data

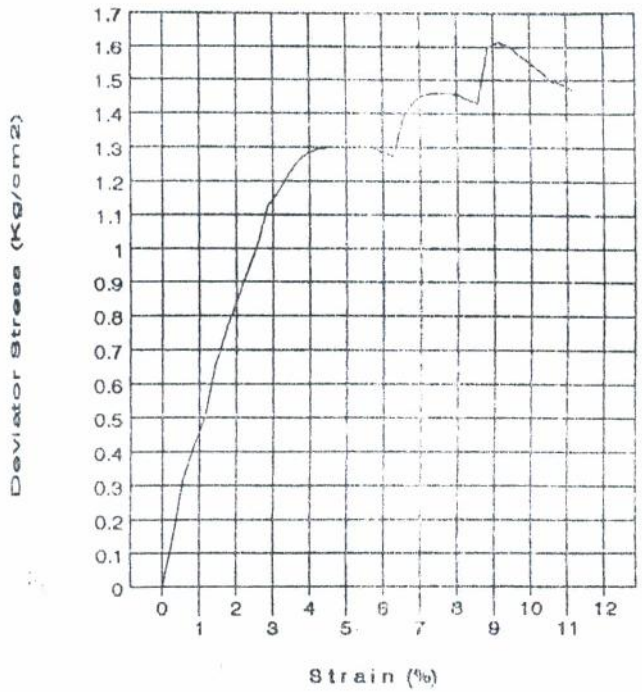
Diameter (cm)	3.50
Height (cm)	7.00
Wet density (gr/cm3)	1.45
Water content (%)	45.47
Dry density (gr/cm3)	1.00

Stress (kg/cm2)	Sample I	Sample II	Sample III
3	0.40	0.80	1.20
Deviator	1.30	1.46	1.62
1	1.70	2.26	2.82
Pore water pressure	0.00	0.00	0.00

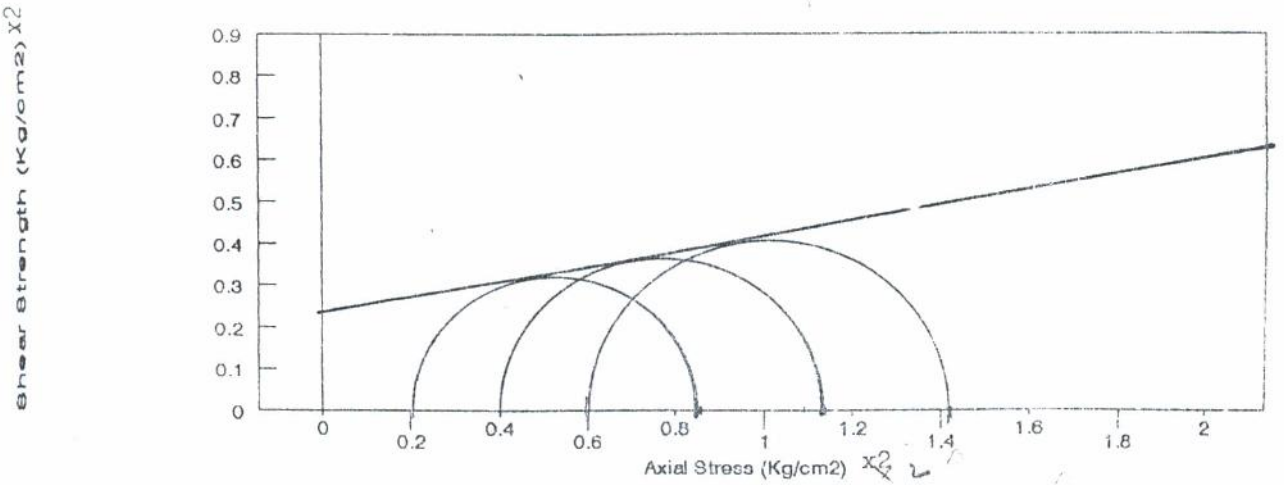
Shear Strength Parameters

Cohesion Undrained (Cu), kg/cm2	0,46
Internal Angle Friction (Degree)	10^{o}

Stress – Strain Curve



Mohr Coulomb Curve



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TRIAXIAL U.U TEST

Project	STO TELKOM.	Date of test	MAY. 20th. 1996
Location	DESA SUKA SARI. RUMPIN.	Tested by	Amin Mr
Boring no	B 3	Checked by	NANA S
Depth	100 – 145 CM.	Approved by	

Sample Data

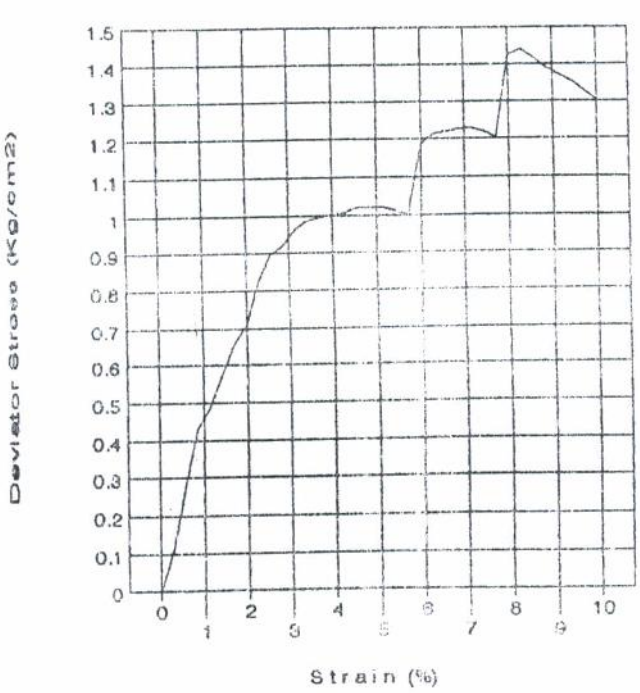
Diameter (cm)	3.50
Height (cm)	7.00
Wet density (gr/cm3)	1.43
Water content (%)	39.02
Dry density (gr/cm3)	1.03

Stress (kg/cm2)	Sample I	Sample II	Sample III
3	0.30	0.60	0.90
Deviator	1.02	1.23	1.44
1	1.32	1.83	2.34
Pore water pressure	0.00	0.00	0.00

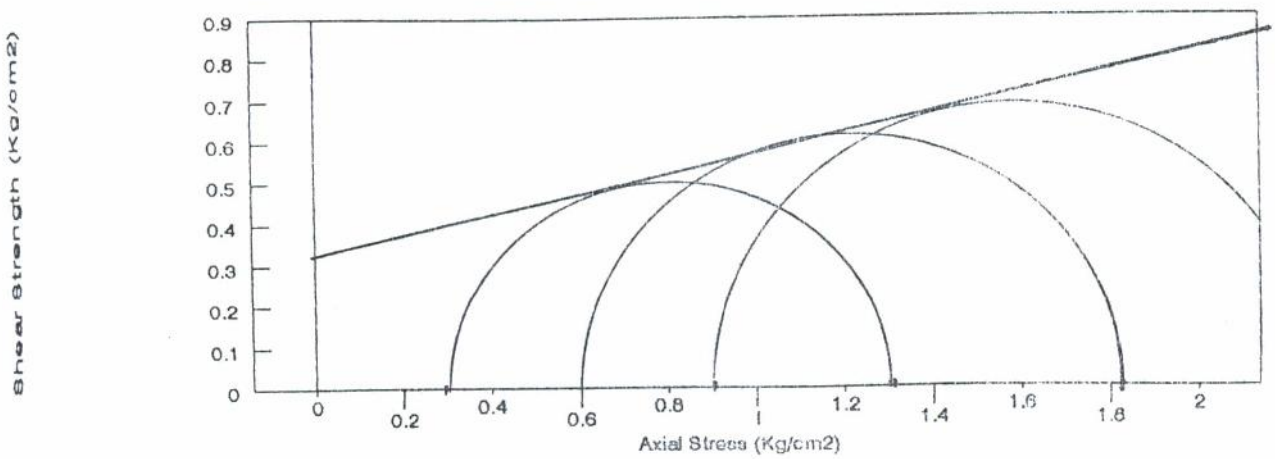
Shear Strength Parameters

Cohesion Undrained (Cu), kg/cm2	0,33
Internal Angle Friction (Degree)	13,5°

Stress – Strain Curve



Mohr Coulomb Curve



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TRIAXIAL U.U TEST

Project	STO TELKOM.	Date of test	MAY. 20th. 1996
Location	DESA SUKA SARI. RUMPIN.	Tested by	Amin Mr
Boring no	B 3	Checked by	NANA S
Depth	250 – 295 CM.	Approved by	

Sample Data

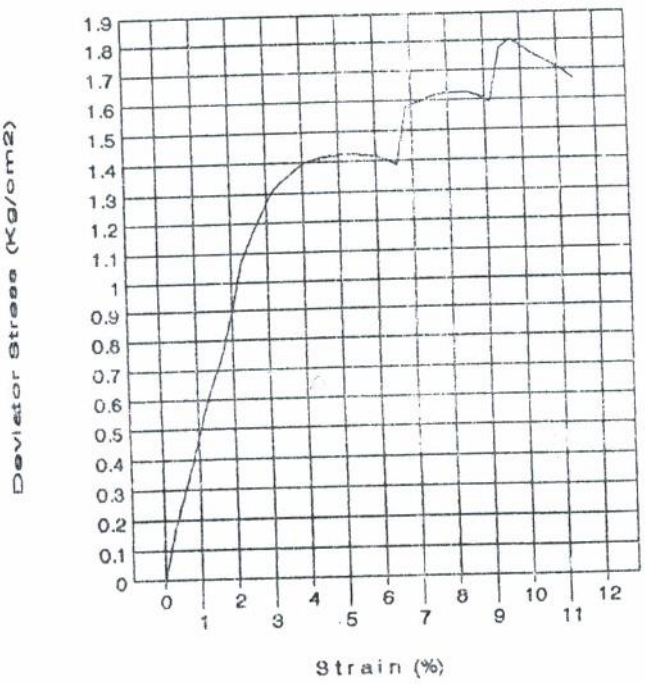
Diameter (cm)	3.50
Height (cm)	7.00
Wet density (gr/cm3)	1.51
Water content (%)	46.47
Dry density (gr/cm3)	1.03

Stress (kg/cm2)	Sample I	Sample II	Sample III
3	0.40	0.80	1.20
Deviator	1.43	1.63	1.81
1	1.83	2.43	3.01
Pore water pressure	0.00	0.00	0.00

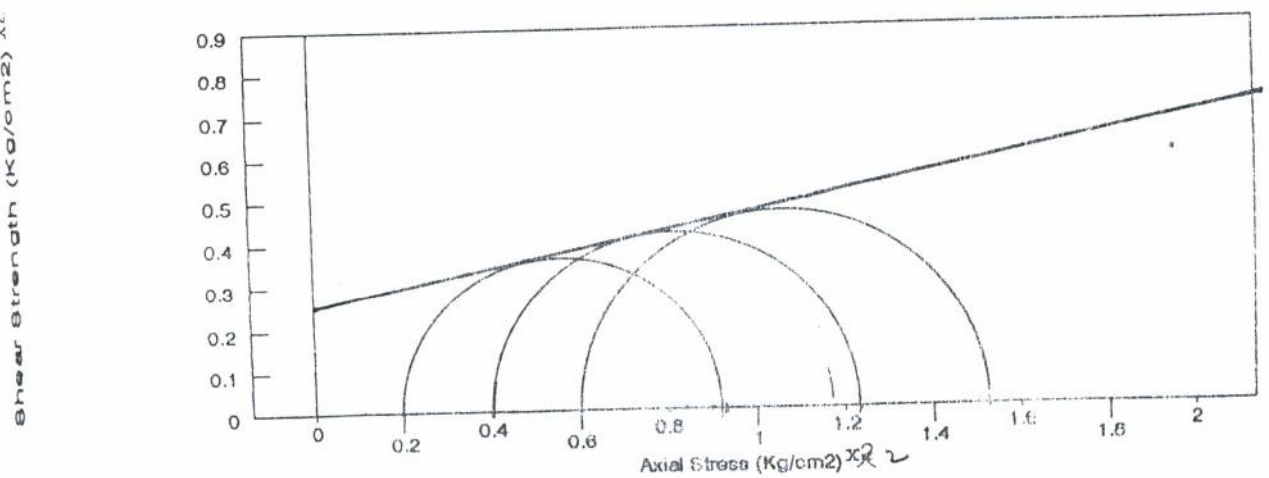
Shear Strength Parameters

Cohession Undrained (Cu), kg/cm2	0,50
Internal Angle Friction (Degree)	13°

Stress – Strain Curve



Mohr Coulomb Curve



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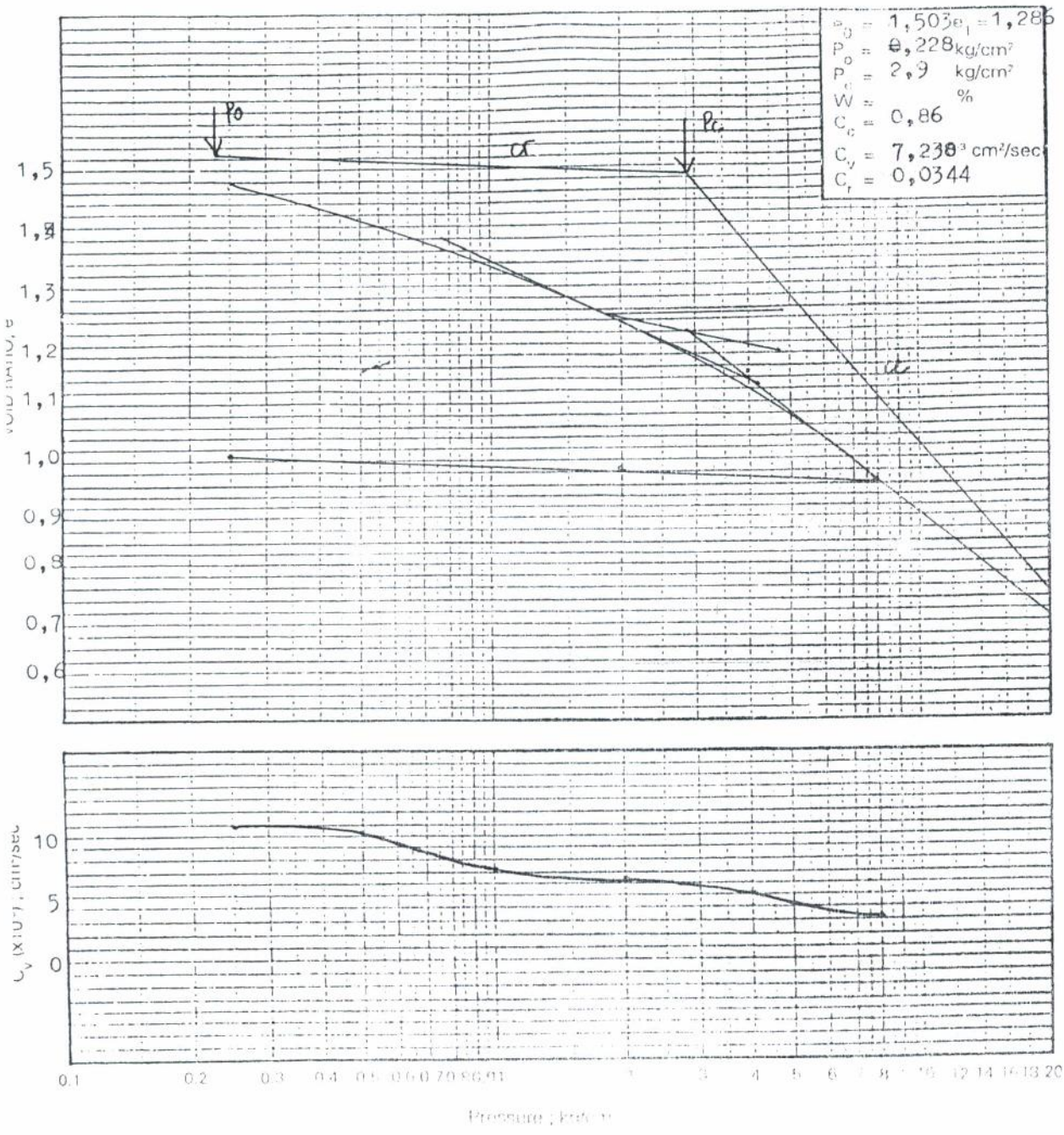
CONSOLIDATION TEST

Project	: STO Telkom	Depth of Sample	: 100 - 145 .
Location	: Desa Sukasari-Rumpin Jabar.	Date of test	: Mei 1996 .
Boring no.	: B - 1 .	Test by	: Rr Prihadini N



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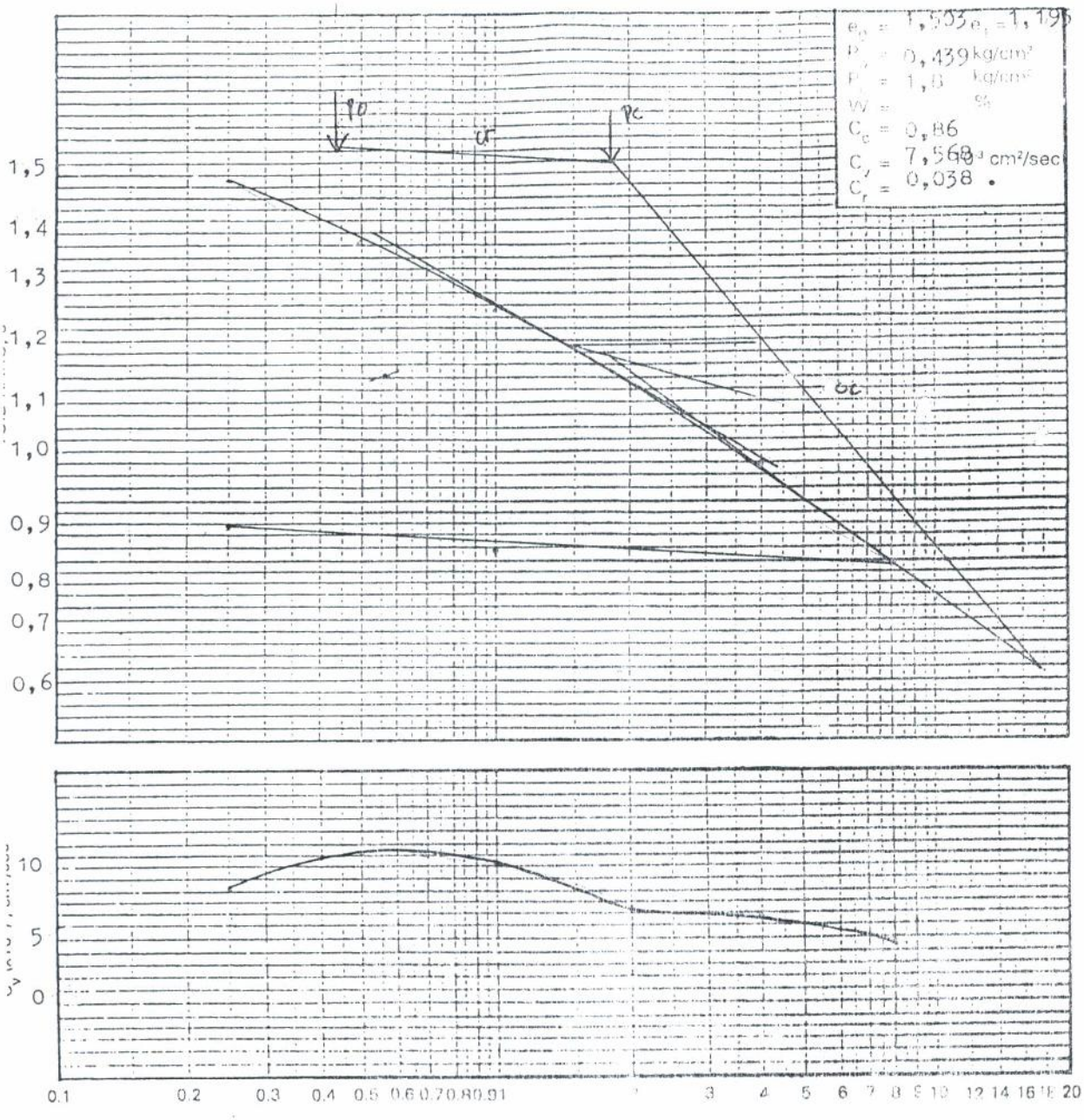
CONSOLIDATION TEST

Project	: STO Telkom	Depth of Sample	: 250 - 295
Location	: Desa Sukasari Rumpin,Jabar .	Date of test	: Mei 1996 .
Boring no.	: B - 1 .	Test by	: Rr Prihadini N



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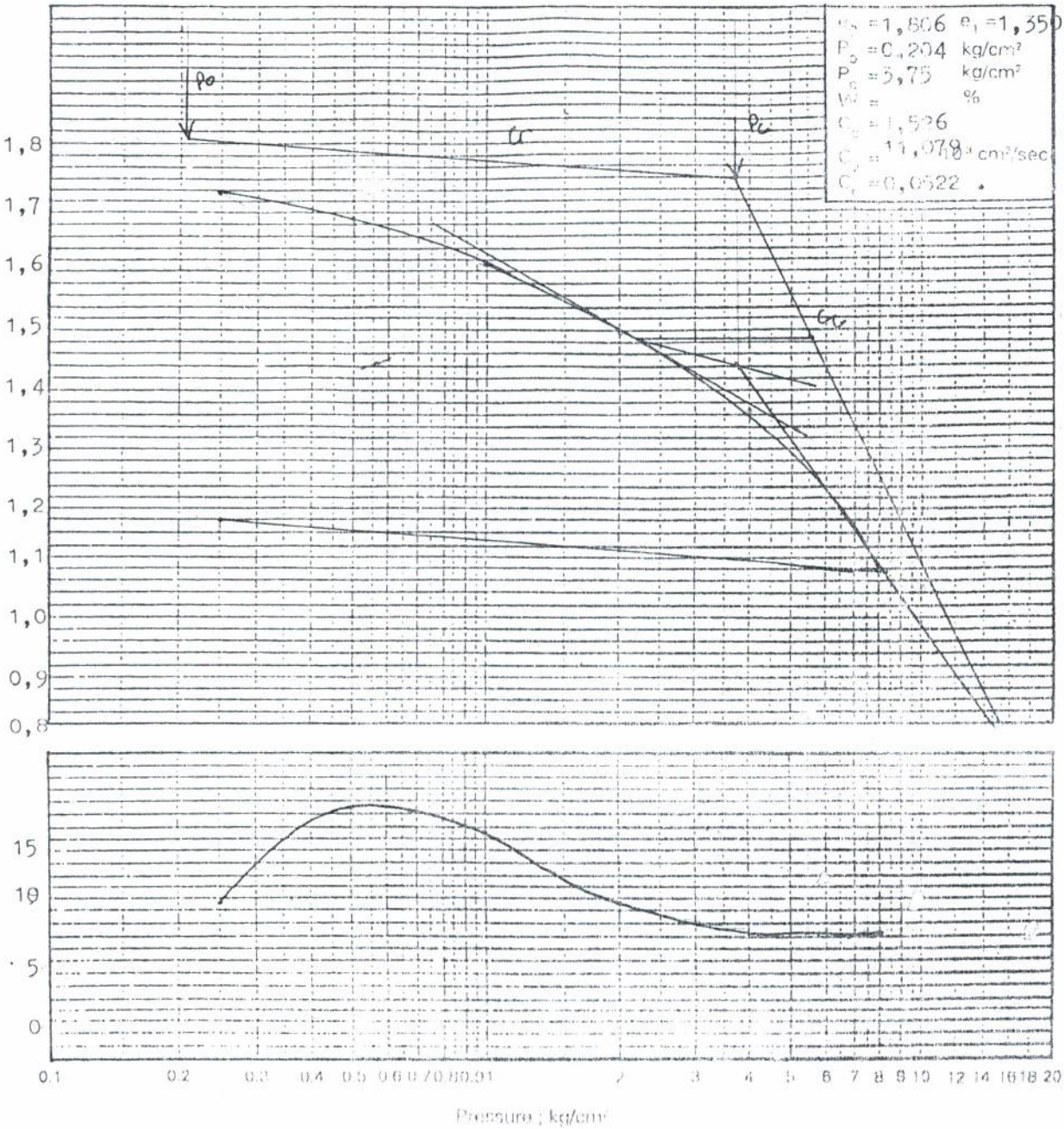
CONSOLIDATION TEST

Project : STO Telkom
Location : Desa Sukasari-Jabar.
Boring no. : B - 2 .

Depth of Sample : 10[illegible] .
Date of test : Ma[illegible] 199[illegible] .
Test by : Rr Prihadini N

e_o = 1,806 e_1 = 1,350
P_o = 0,204 kg/cm²
P_c = 3,75 kg/cm²
W = %
C_c = 1,526
C_v = 11,078 10^{-3} cm²/sec
C_c = 0,0522 .



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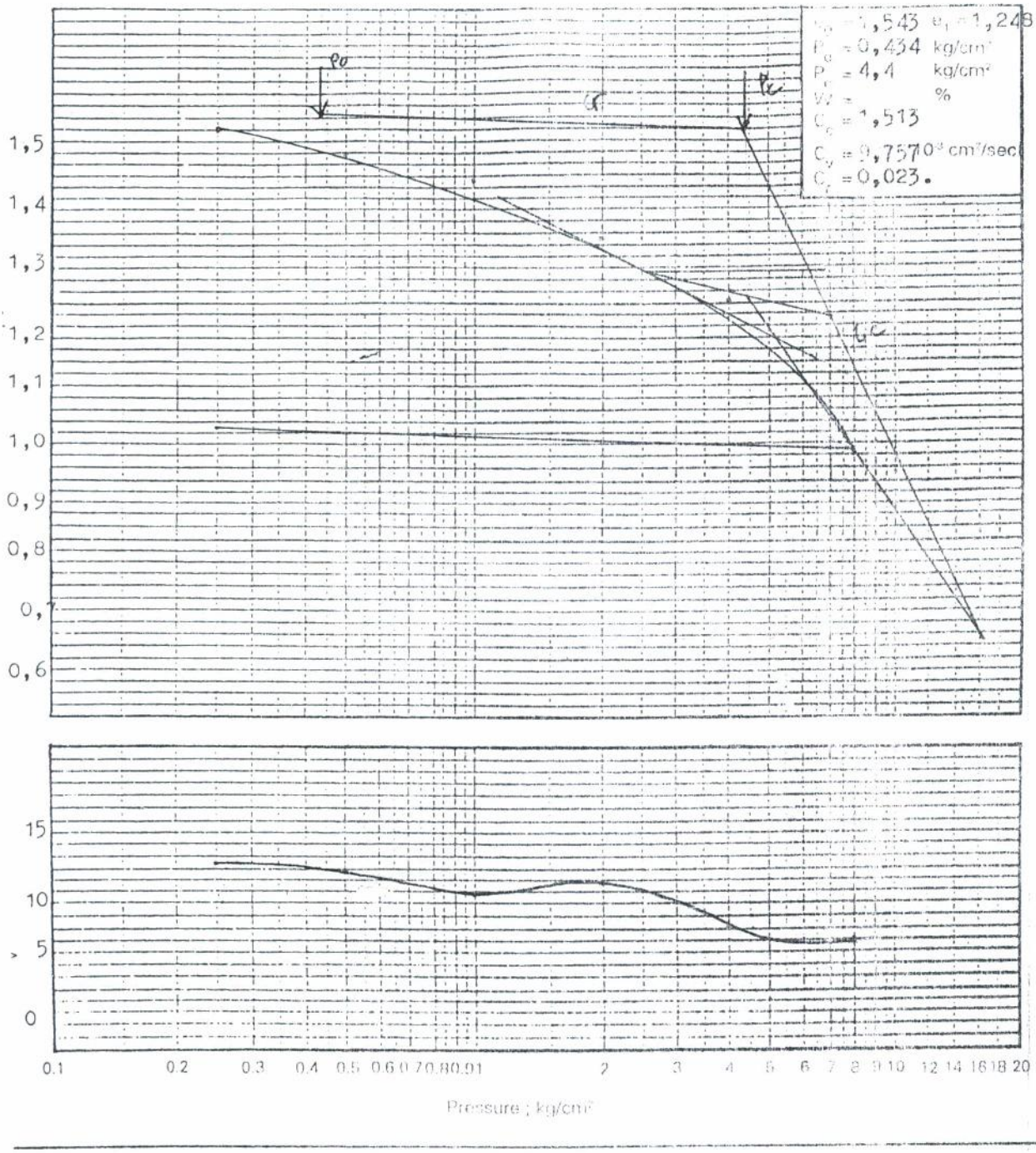
CONSOLIDATION TEST

Project :	STO Telkom	Depth of Sample :	250 - 295 .
Location :	Desa Sukasari Rumpin-Jabar	Date of test :	Mei 1996 .
Boring no :	B - 2 .	Test by :	Ir Pribadini N



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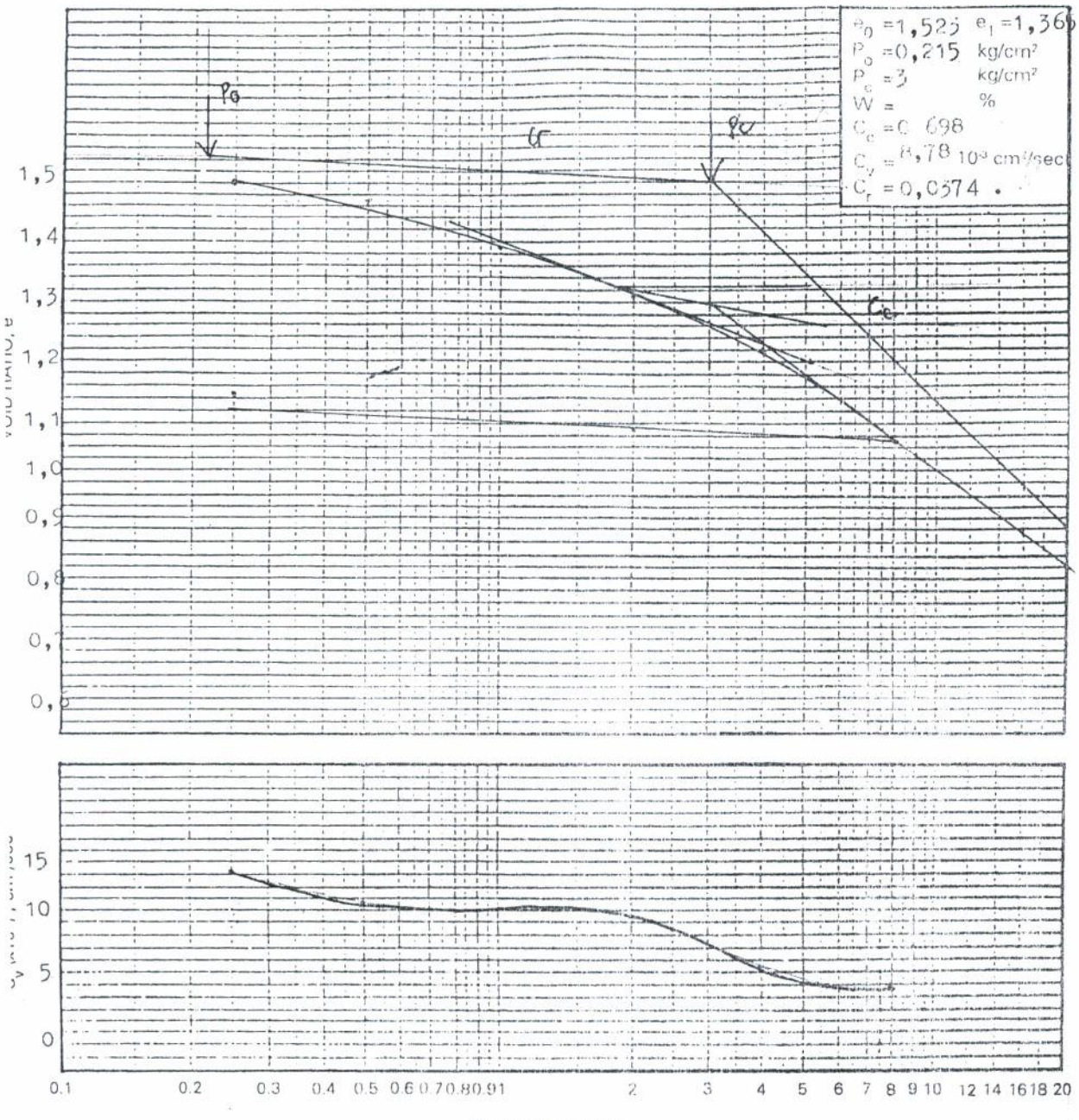
CONSOLIDATION TEST

Project :	STO Telkom	Depth of Sample :	100 – 140 .
Location :	Desa Sukasari-Rumpin,Jabar.	Date of test :	Mei 1996 .
Boring no. :	B – 3 .	Test by :	Rr Prihadini N

e_0 =1,525 e_1 =1,366
P_o =0,215 kg/cm²
P_c =3 kg/cm²
W = %
C_c =0,098
C_v = 8,78 10^{-3} cm²/sec
C_r = 0,0374 .



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CONSOLIDATION TEST

Project : STO Telkom
Location : Desa Sukasari-Rumpin, Jabar.
Boring no. : B - 3 .

Depth of Sample : 250 - 295 .
Date of test : Mei 1996 .
Test by : Ir Prasadini N .