TABEL NO.IV.5.

PROYEKSI RATIO JUMLAH KENDARAAN BERMOTOR DENGAN JUMLAH PENDUDUK
KOTAMADYA DATI II SEMARANG . DARI TAHUN 1981 s/d TAHUN 2000 .

No.	TAHUN	JUMLAH PENDUDUK	Ratio Jumlah Kendaraan Bermotor dengan Jumlah Penduduk .																			
			Angkutan Penumpang Motor Roda 4 (Empat).												Kendaraan Roda Dua (Spd.motor)		Truck/ Pick Up.		Jumlah			
			PRIBADI						UMUM										Kendaraan roda empat .		Seluruh Kendaraan Bermotor.	
			Sedan Pribadi		Jeep .		Jumlah .		Mobil penump.		Bus Kapsite/ Sedang		Mini Bus		Jumlah.							
			Jumlah	Ratio	Jumlah	Ratio	Jumlah	Ratio	Jumlah	Ratio	Jumlah	Ratio	Jumlah	Ratio	Jumlah	Ratio	Jumlah	Ratio	Jumlah	Ratio	Jumlah	Ratio
1.	1981	1 020 469	7237	141	7800	131	15 037	68	1986	514	312	3271	7974	128	10 272	99	61 724	17	13 098	78	38 407	27	100 121	10
2.	1982	1 050 637	7341	132	8365	125	15 706	64	2064	509	345	3045	8700	121	11 109	95	66 146	16	14 323	73	41 738	25	107 684	10
3.	1983	1 072 324	8019	134	8447	127	16 466	65	2105	509	360	2979	9169	117	11 634	92	78 353	14	15 436	69	43 536	25	121 595	9
4.	1984	1 086 198	8042	135	8471	129	16 513	66	2117	513	375	2897	9629	113	12 121	90	89 751	12	16 418	66	45 052	24	134 803	8
5.	1985	1 109 008	8337	133	8697	128	17 034	65	2161	513	397	2793	10214	109	12 772	87	100 216	11.	17 610	63	47 416	23	147 832	8
6.	1986	1 132 297	8543	131	8929	127	17 572	64	2206	513	420	2696	10835	106	13 461	84	111 901	10	18 838	60	49 921	23	161 822	7
7.	1987	1 156 075	8760	129	9167	126	18 127	64	2252	513	444	2603	11494	101	14 190	81	124 949	9	20 260	57	52 577	22	177 526	7
8.	1988	1 180 352	9289	127	9412	125	18 701	63	2299	513	470	2511	12193	97	14 962	79	139 518	8	21 731	54	55 334	21	194 912	6
9.	1989	1 205 133	9630	125	9663	125	19 293	62	2347	513	497	2425	12934	93	15 778	76	155 796	8	23 309	52	58 380	21	214 166	6
10.	1990	1 230 446	9983	123	9921	124	19 904	62	2396	514	526	2339	13720	90	16 642	74	173 950	7	25 001	49	61 547	20	235 497	5
11.	1991	1 256 285	10349	121	10186	123	20 535	61	2446	514	556	2260	14554	86	17 556	72	196 233	6	26 816	47	64 907	19	259 140	5
12.	1992	1 282 666	10729	120	10458	123	21 187	61	2497	514	588	2181	15439	83	18 524	69	215 831	6	28 763	45	68 474	19	285 355	4
13.	1993	1 309 602	11123	119	10737	122	21 860	60	2549	514	622	2105	16378	80	19 545	67	242 169	5	30 651	42	72 260	18	314 423	4
14.	1994	1 337 103	11531	116	11024	121	22 555	59	2603	514	658	2032	17374	77	20 635	65	270 406	5	33 091	40	76 281	18	346 687	4
15.	1995	1 365 182	11954	114	11318	121	23 272	59	2658	514	696	1961	18430	74	21 784	64	301 935	5	35 433	38	80 549	17	382 484	4
16.	1996	1 393 850	12392	112	11620	120	24 012	58	2714	514	736	1894	19551	71	23 001	61	337 141	4	38 070	37	85 083	16	422 224	3
17.	1997	1 423 120	12845	110	11933	119	24 778	57	2771	514	779	1827	20740	69	24 290	59	376 452	4	40 833	35	84 899	16	465 351	3
18.	1998	1 453 005	13317	109	12249	119	25 566	57	2829	514	824	1763	22001	66	25 654	57	420 346	3	43 738	33	95 018	15	515 564	3
19.	1999	1 483 518	13805	107	12576	118	26 382	56	2888	514	872	1701	23339	64	27 099	55	469 358	3	46 978	32	100459	15	569 817	3
20.	2000	1 514 671	14313	106	12912	117	27 225	56	2949	514	923	1641	24758	61	28 630	54	524 403	3	50 389	30	106244	14	630 853	2
Perkembangan rata-rata:		2,10%	3,67 %		2,67 %		3,17 %		2,1 %		5,8 %		6,08 %		4,65 %		11,66 %		7,26 %		10,48 %		10,20 %	

Sumber data : Tabel NO. II.8 dan NO. II.1

LAPORAN HASIL PENYELIDIKAN TANAH
DI P.T. SILIWANGI PLAZA
SEMARANG

PENDAHULUAN

Penyelidikan tanah dilaksanakan terdiri atas 2 titik Boring dan 9 titik Sondir.

Dengan menggunakan alat Boor tangan jenis Auger, kedalaman yang dapat dicapai -7.00 meter.

Dengan menggunakan alat Sondir jenis Dutch Cone Penetrometer berkapasitas 2,5 ton, kedalaman yang dapat dicapai berkisar antara -16.00 meter sampai -22,5 meter.

Samples hasil Boring ditest di Laboratorium untuk mengetahui physical properties & Engineering properties tanah yang bersangkutan. Selanjutnya harap periksa lampiran.

HASIL BORING.

Bagian atas tanahnya berupa jenis clay lunak. Makin kebawah clay mengandung pasir/silt, sedang keadaannya tetap lunak, tidak compact.

Kadang-kadang tanahnya mengandung kulit kerang.

Keadaan tanah yang lunak ini dapat dilihat pada hasil direct shear test, yaitu harga C dan ϕ - nya sangat kecil.

HASIL SONDIR.

Secara umum dapat dikatakan bahwa Conus resistance sangat kecil, yaitu berkisar $\pm$ 5 kg/cm^2.

Sampai kedalaman -13.00 meter Conus resistancenya baru agak besar, kemungkinan disini tanahnya sudah compact atau berupa pasir.

Nilai friction pada bagian atas juga kecil sekali. Hal tersebut disebabkan karena tanahnya tidak compact.

SARAN-SARAN/KESIMPULAN

A. Besarnya safe bearing capacity sebagai berikut :

- Pada kedalaman -1.00 m = 0,1 kg/cm2
- Pada kedalaman -2.00 m = 0,1 kg/cm2
- Pada kedalaman -3.00 m = 0,1 kg/cm2
- Pada kedalaman -4.00 m = 0,2 kg/cm2
- Pada kedalaman -5.00 m = 0,2 kg/cm2
- Pada kedalaman -6.00 m = 0,3 kg/cm2
- Pada kedalaman -7.00 m = 0,3 kg/cm2

B. Berhubung .....

B. Berhubung dengan keadaan tanah yang jelek, maka kami sarankan sebagai berikut ;

Diadakan penggalian sedalam - 3.00 meter, kemudian diisi sirtu - (campuran pasir kasar + kerikil/kricak), setebal 1.00 meter .

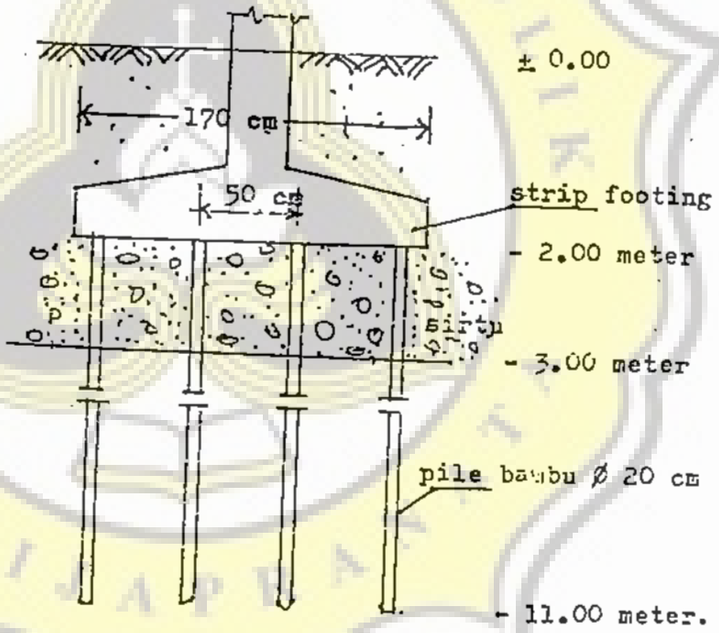
Kemudian dipasang pile dari bambu berdiameter 20 cm, ditanam masuk sampai kedalaman - 11.00 meter dari permukaan tanah asli atau - 9.00 meter dari permukaan sirtu .

Jarak antara masing-masing pile bambu - 0.50 meter .

Diatas pile bambu baru dipasang strip footing .

Dengan lebar strip footing = 1.70 meter, maka untuk setiap meter - panjang strip footing dapat menahan beban sebesar = 20 ton. Harga ini belum dikurangi berat sendiri footing .

Pada strip footing ini hendaknya diperhitungkan perataan beban - oleh Sloof .



C. Pada harga diatas sudah dimasukkan faktor of safety = 3.00 .

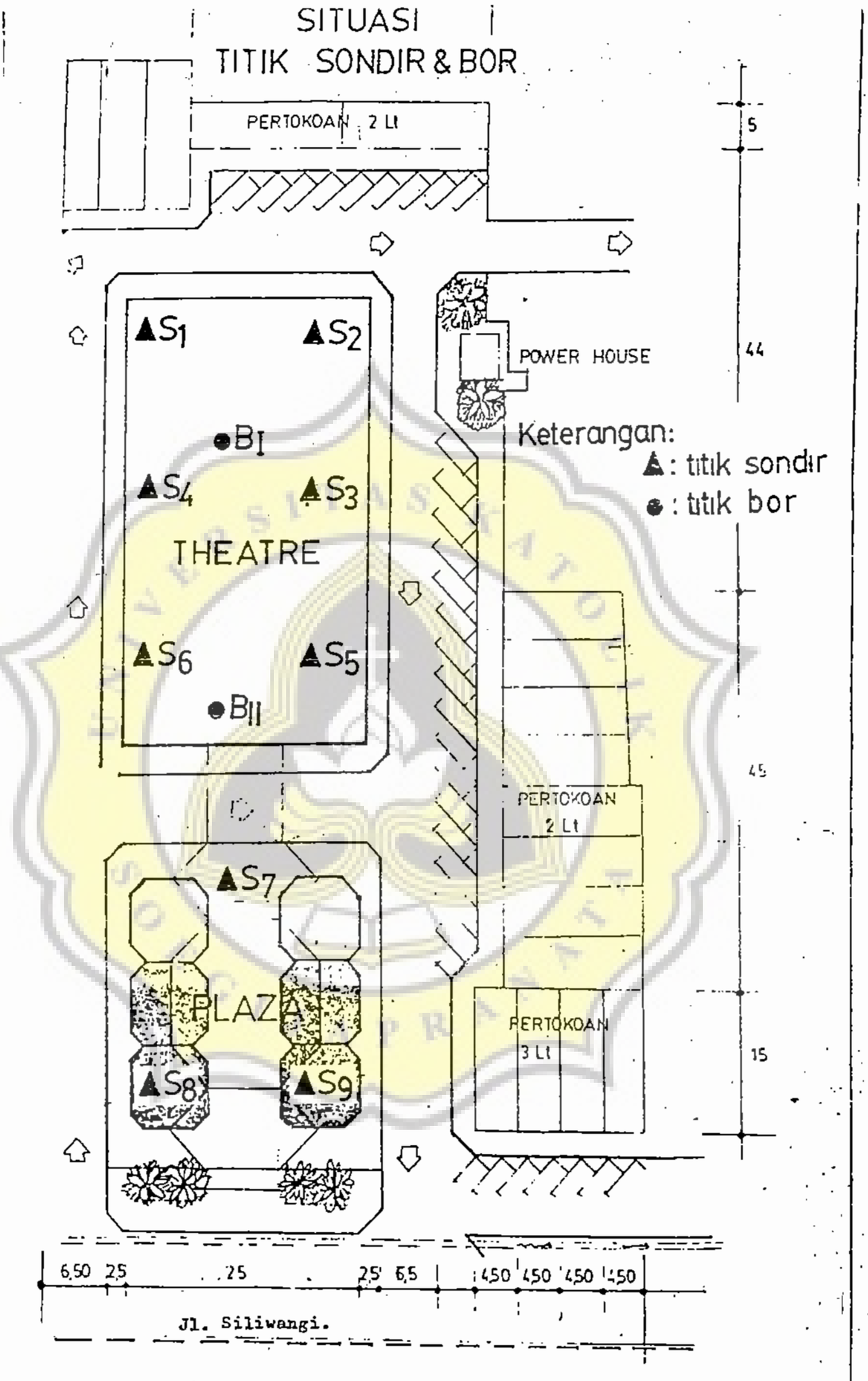
Semarang, 6 Oktober 1983

Laboratorium Mekanika Tanah

Fakultas Teknik U N D I P

K e p a l a ,

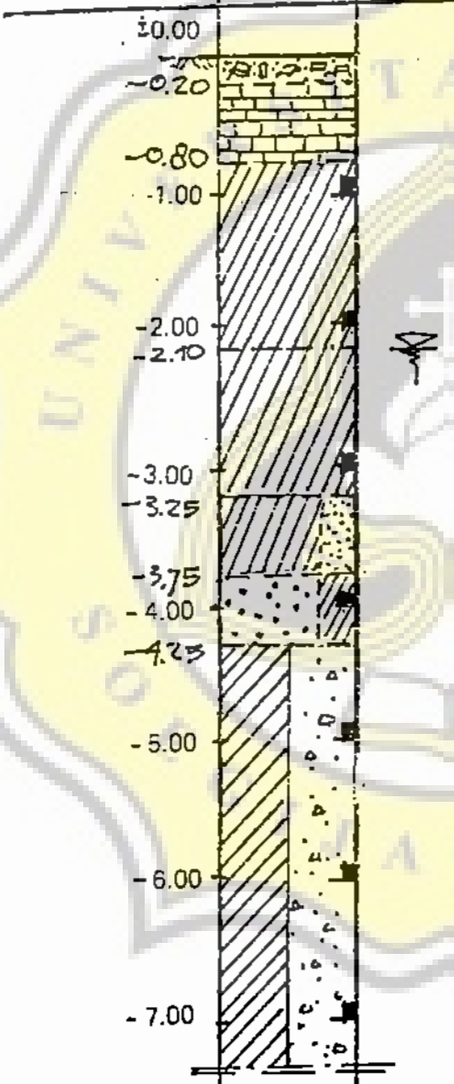
Ir. Suyanto Budiharso .


SITUASI
TITIK SONDIR & BOR
PERTOKOAN 2 Lt
POWER HOUSE
S1
S2
S3
S4
S5
S6
S7
S8
S9
B I
B II
THEATRE
PLAZA
PERTOKOAN
2 Lt
PERTOKOAN
3 Lt
Keterangan:
▲: titik sondir
●: titik bor
5
44
45
15
6,50 2,5 25 25 6,5 4,50 4,50 4,50 4,50
Jl. Siliwangi.

SOIL MECHANIC LABORATORY
ENGINEERING FACULTY
DIPONEGORO UNIVERSITY

SOIL PROFIL

Project : P.T. Siliwengi Plaza
Location : Jalan Jendral Sudirman Semarang.
Sample Code : B.I
Date : 16 September 1983.



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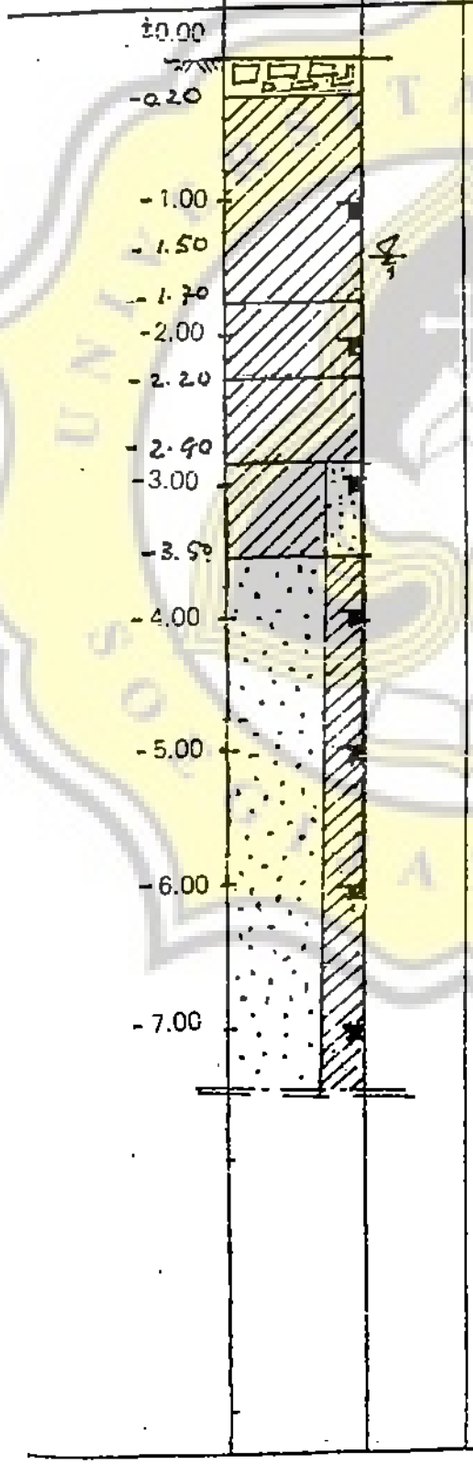
ENGINEERING FACULTY
DIPONEGORO UNIVERSITY

SOIL PROFIL

Project : P.T. Siliwangi Plaza
Location : Jalan Jendral Sudirman - Semarang.
Sample Code : B.II.
Date : 16 September 1983.



Soil Description

Pasangan batu merah.

Lempung (coklat abu-abu)

Lempung (abu-abu sedikit coklat)

Lempung lunak (abu-abu muda)

Lempung bercampur pasir halus
(abu - abu muda)

Pasir kasar mengandung lumpur campur kulit-kerang (abu-abu tua)

Pasir halus bercampur lumpur
(abu-abu tua).

Pasir halus bercampur lempung
(abu-abu tua)

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Technical Faculty
Diponegoro University

SOIL TEST

Location : PT. SILIWANGI PLAZA SEMARANG

No:	Boring No:	Sample Code	Depth. (m)	Water Content (W) %	Specific gravity of solid (Gs.)	Density			Porosity (n) %	Void ratio (e)	Coefficient of permeability (k) cm/sec.
						Bulk density (ρb) gr/cm^3	Dry density (ρd) gr/cm^3	Wet density (ρw) gr/cm^3			
1	I	B I	1.00	40,57	2,5648	1,7669	1,2569	-	50,99	1,0405	-
2			2.00	55,83	2,5945	1,6512	1,0596	-	59,16	1,4486	-
3			3.00	58,07	2,6521	1,6846	1,0657	-	59,82	1,5395	-
4			4.00	26,04	2,9830	2,1159	1,6788	-	43,72	0,7769	-
5			5.00	49,44	2,7667	1,7461	1,1684	-	57,77	1,3684	-
6			6.00	40,23	2,8322	1,8564	1,3238	-	53,26	1,1392	-
7			7.00	40,69	2,7752	1,8337	1,3034	-	53,03	1,1290	-
8	II	B II	1.00	40,76	2,2923	1,6681	1,1850	-	48,30	0,9846	-
9			2.00	58,49	2,6451	1,6458	1,0384	-	60,74	1,5474	-
10			3.00	29,77	2,7969	1,9807	1,5263	-	45,43	0,8329	-

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Technical Faculty
Diponegoro University

SOIL TEST

Location : PT.SILIWANGI PLAZA SEMARANG.

No:	Boring No:	Sample Code	Depth. (m)	Water Content (W) %	Specific gravity of solid (Gs.)	Density			Porosity (n) %	Void ratio (e)	Coefficient of permeability (k) cm/sec.
						Bulk density (ρb) gr/cm^3	Dry density (ρd) gr/cm^3	Wet density (ρw) gr/cm^3			
11	II	B II	4.00	37,63	2,79969	1,8755	1,3627	-	51,28	1,0526	-
12			5.00	53.73	2,5394	1,6511	1,0740	-	57,71	1,3641	-
13			6.00	42,01	2,7699	1,8181	1,2802	-	53,78	1,1632	-
14			7.00	44,55	2,8321	1,8100	1,2522	-	55,79	1,2621	-

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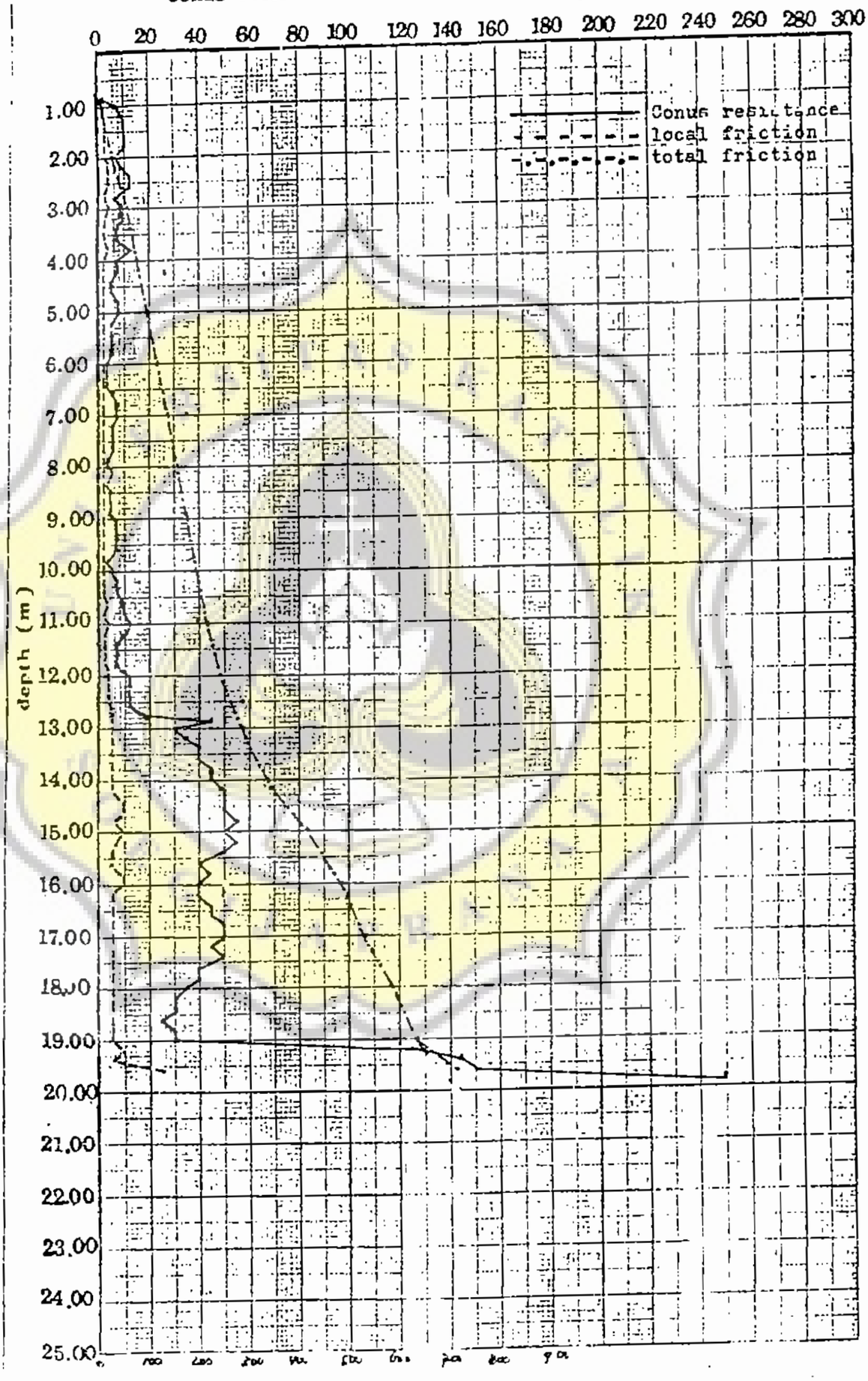
Faculty of Engineering
Diponegoro University

GRAPH OF SOUNDING

2,5 ton

Sounding No.: V
Location: PT.Siliwangi Plaza Semarang.
Date : 18-9-1983

conus resistance & local friction (kg/cm^2)



total friction (kg/cm^2)

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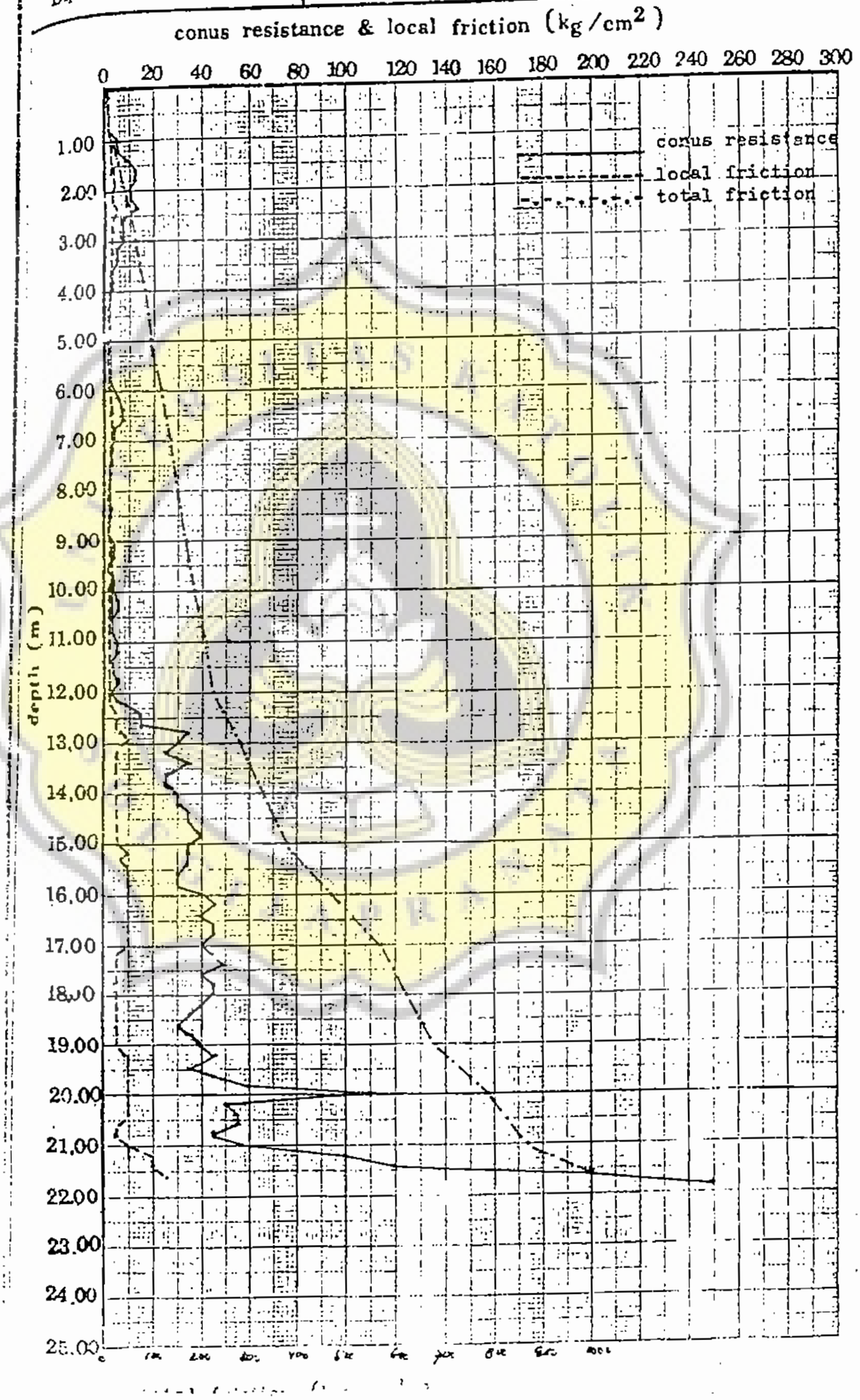
Diponegoro University

GRAPH OF SOUNDING

2,5 ton

Sounding No.: VI
Location: P.T. Siliwangi Plaza Semarang.
Date : 18 - 9 - 1983.



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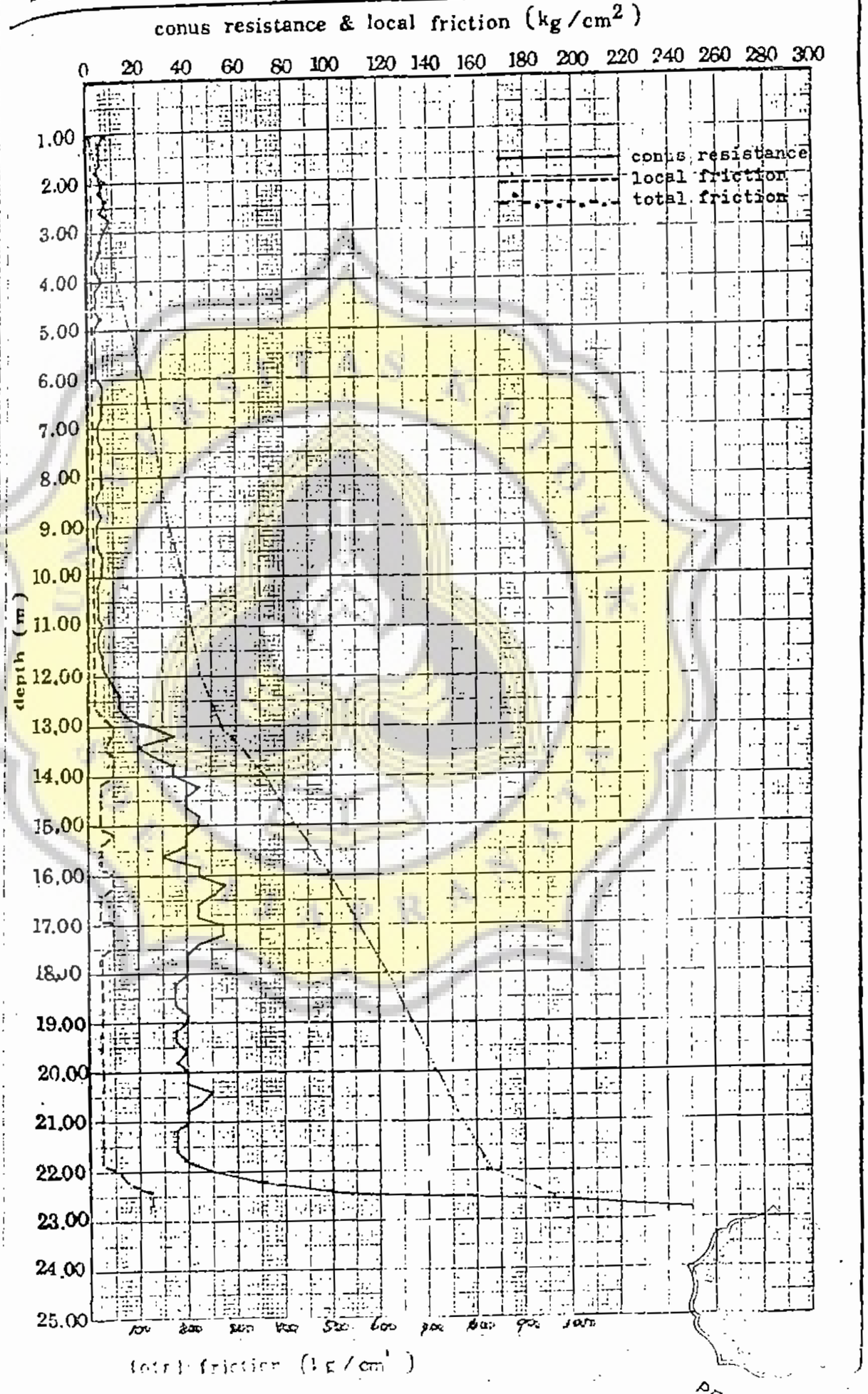
GRAPH OF SOUNDING

2,5 ton

Sounding No.: VII
Location: P.T. Siliwangi Plaza
Semarang.
Date : 19 - 9 - 1983



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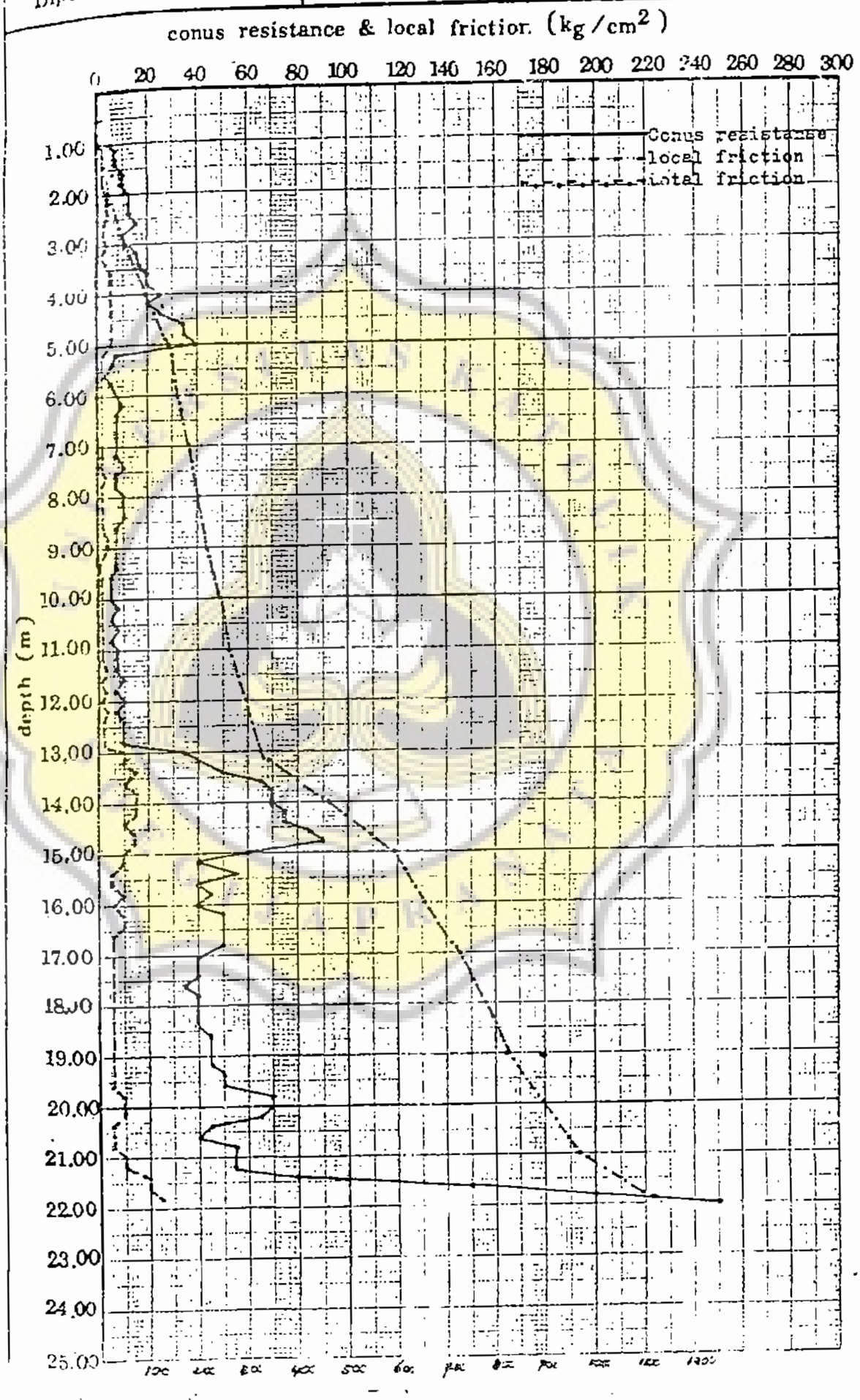
GRAPH OF SOUNDING

2,5 ton

Sounding No.: I
Location : Siliwangi Plaza
Semarang.
Date : 16-9-1983



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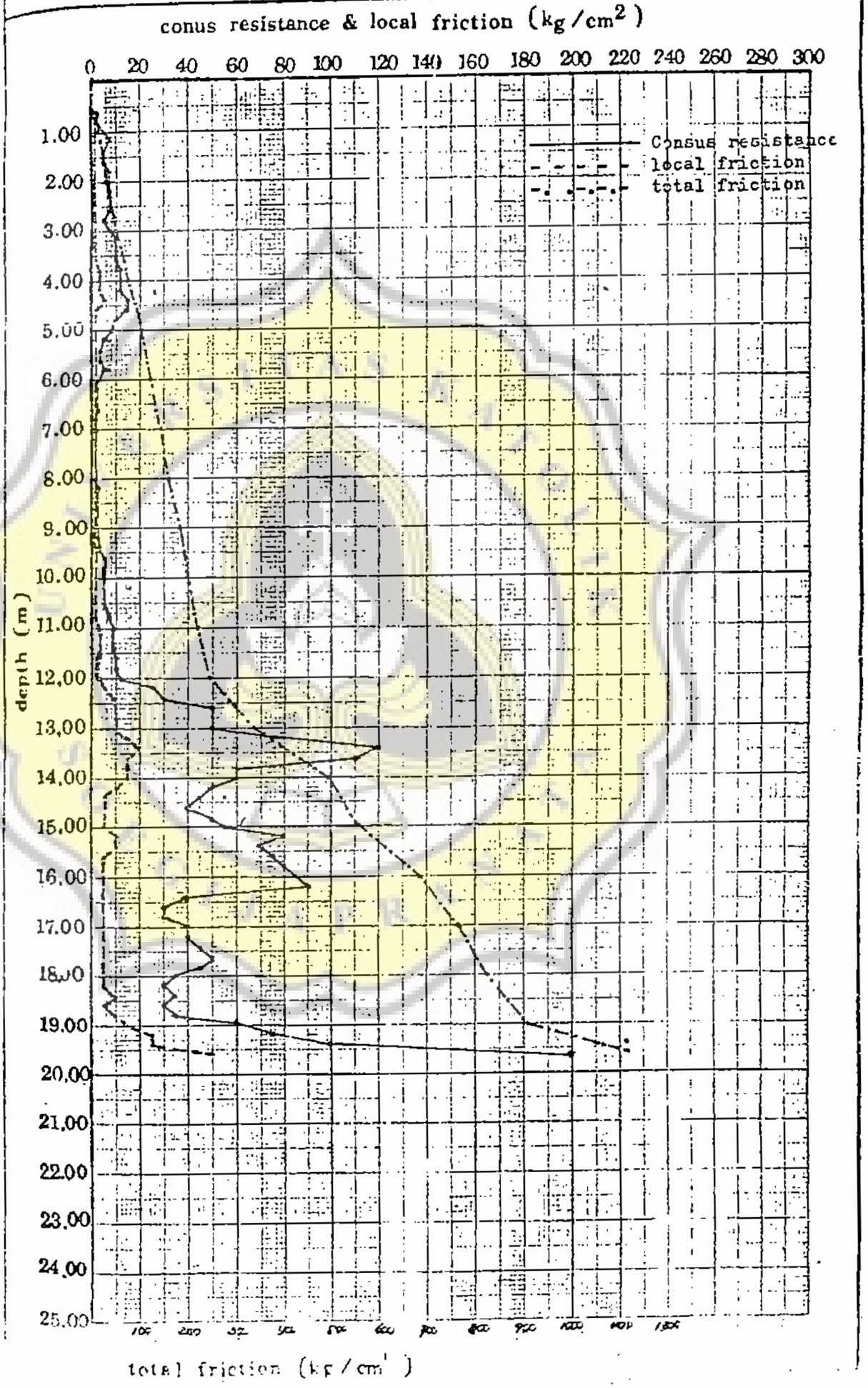
Diponegoro University

GRAPH OF SOUNDING

2,5 ton

Sounding No.: II
Location : Siliwangi Plaza
Semarang.
Date : 16-9-1983



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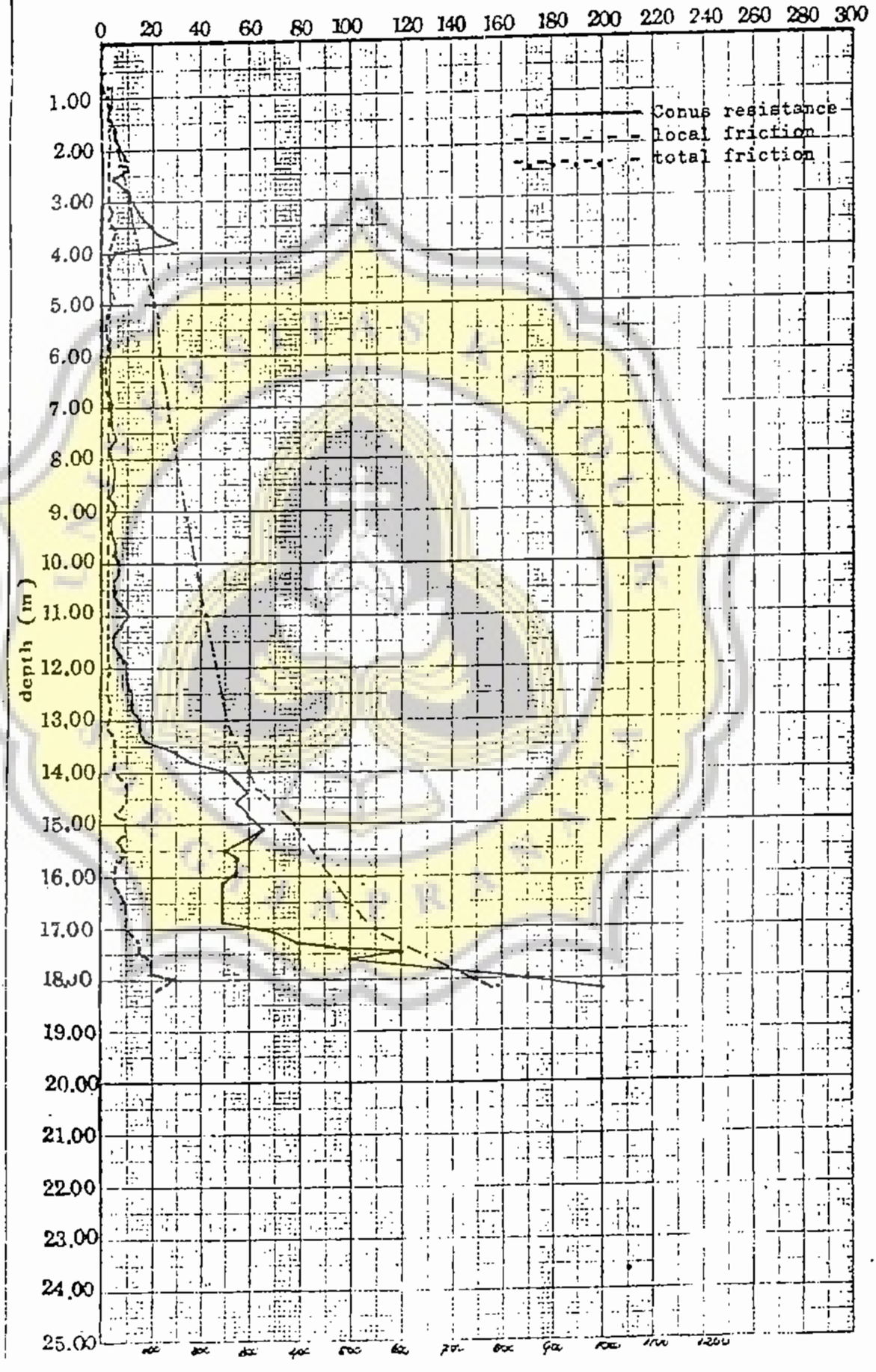
GRAPH OF SOUNDING

2,5 ton

Sounding No.: III
Location: PT. Siliwangi Plaza Semarang.
Date : 17-9-1983

conus resistance & local friction (kg/cm^2)



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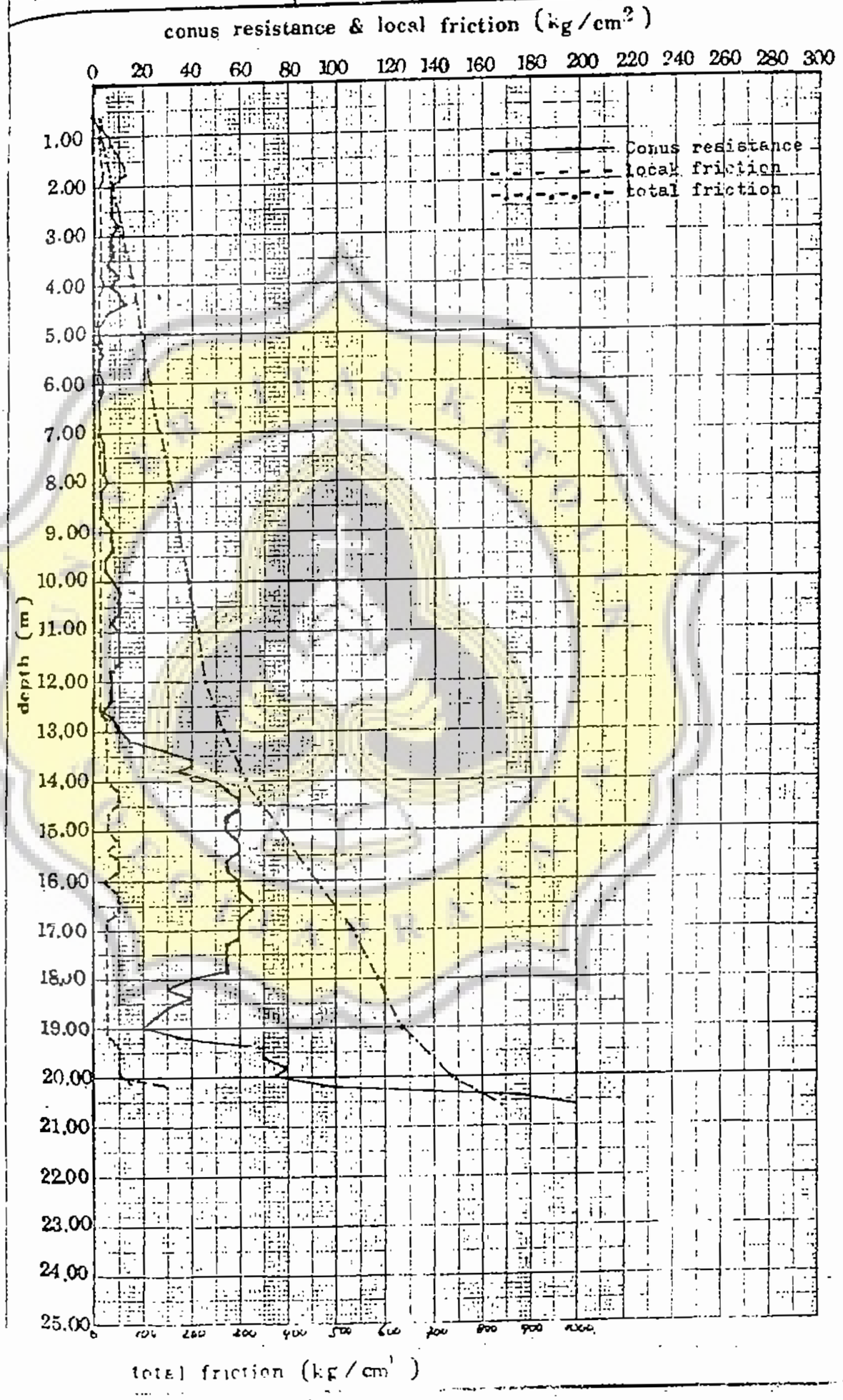
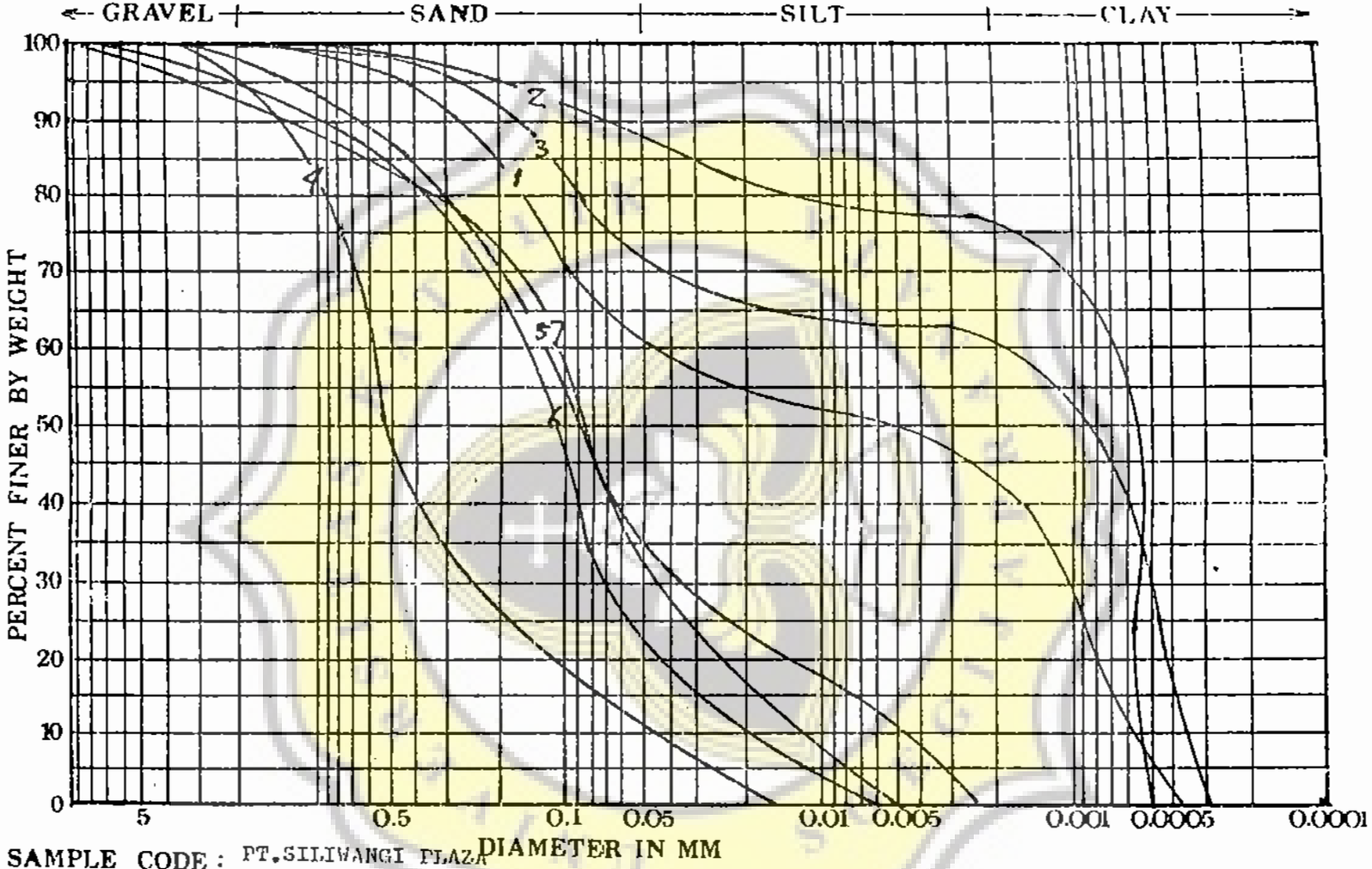
GRAPH OF SOUNDING

2.5 ton

Sounding No.: IV
Location: TP. Sidiwangi Plaza Semarang
Date : 17-9-1983



GRAIN SIZE ACCUMULATION CURVE

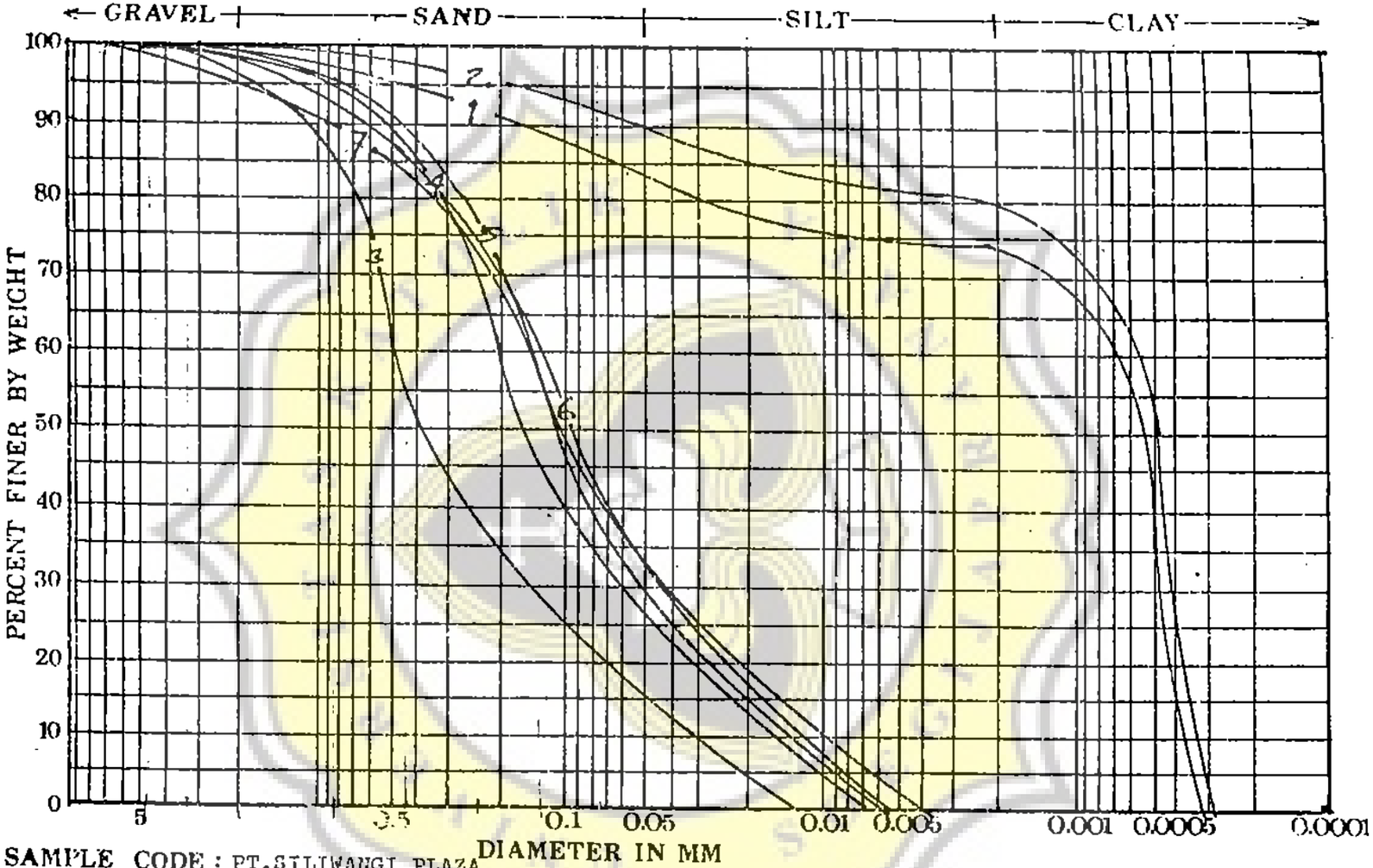


SAMPLE CODE : PT.SILIWANGI PLAZA

1 = B I.1.00
2 = B I.2.00
3 = B I.3.00
5 = B I.5.00
6 = B I.6.00

LABORATORIUM MEKANIKA TANAH
FAKULTAS TEKNIK BAGIAN SIPIL
UNIVERSITAS DIPONEGORO

GRAIN SIZE ACCUMULATION CURVE



SAMPLE CODE : PT.SILIWANGI PLAZA

1 = BII.1.00
2 = BII.2.00
3 = BII.3.00
5 = BII.5.00
6 = BII.6.00

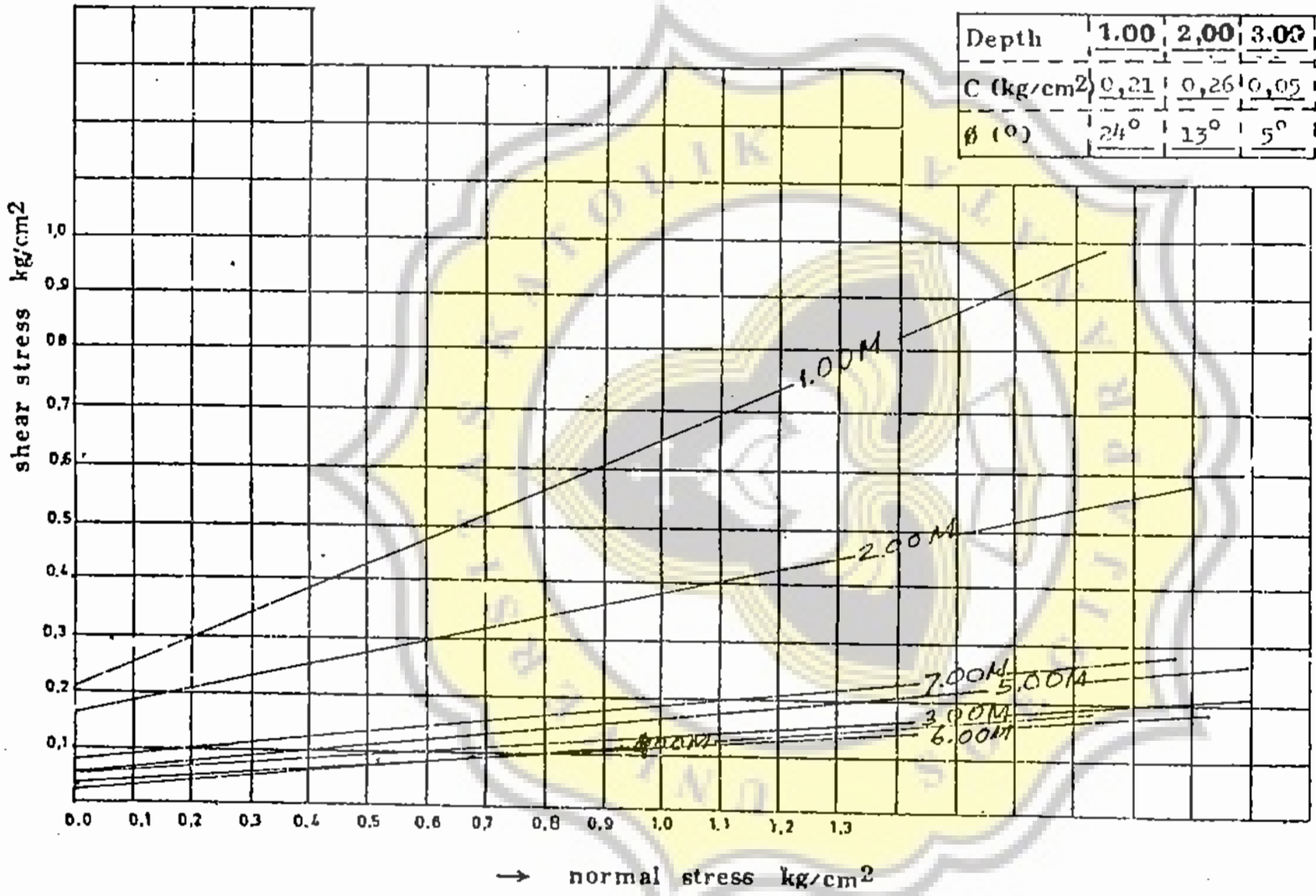
LABORATORIUM MEKANIKA TANAH
FAKULTAS TEKNIK BAGIAN SIPIL
UNIVERSITAS DIPONEGORO

Soil Mechanic Laboratory
Engineering Faculty
Diponegoro University

Boring No [illegible]
Project [illegible]
Location Semarang

DIRECT SHEAR TESTS

Depth	1.00	2,00	3.00	4.00	5,00	6.00	7.00
C (kg/cm2)	0,21	0,26	0,05	0,01	0,05	0,02	0,07
ϕ (°)	24°	13°	5°	36°	5°	6°	5°



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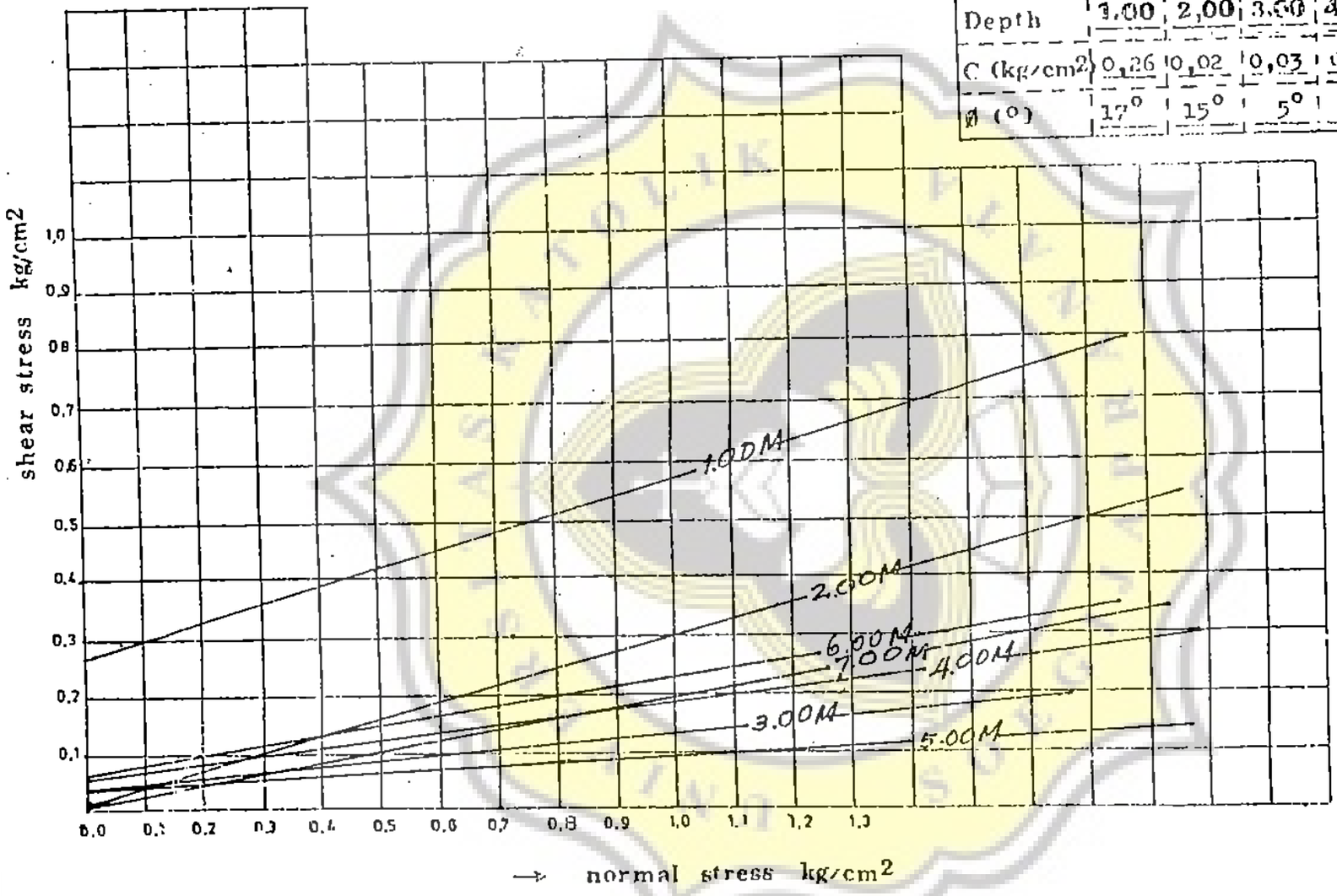
Borine No B.II.
Project P.T. Sriwangi, Plasa
Location Semarang

DIRECT SHEAR TESTS

Depth	1,00	2,00	3,00	4,00	5,00	6,00	7,00
C (kg/cm²)	0,26	0,02	0,03	0,04	0,03	0,065	0,012
ø (°)	17°	15°	5°	9°	5°	12°	10°



CONSOLIDATION TEST

PROJECT SILIWANGI PLAZA DATE OF TESTING

LOCATION SEMARANG TESTED BY

SAMPLE NO. B.I Depth -3.10

Sample condition: Room temperature (°C ~ °C) | Tester No. | No.

Nature of sample			Specimen				
Soil classification	-		Section area A cm²	31,156	Initial water content w_0 %	58,07
Soil gravity G_s	2,6521		Initial height h_0 cm	2,00	Initial volume ratio f_0	2,2212
Liquid limit w_L %	-		Dry weight W_s g	74,40	Initial void ratio e_0	1,5395
Plastic limit w_P %	-		Height of substance h_s cm	0,9004	Initial degree of saturation S_{r_0} %	-

Load step	Pressure p kg/cm²	Pressure Δp kg/cm²	Consolidation volume Δd (10^{-2}cm)	Height of specimen h cm	Average height of specimen $\bar{h}$ cm	Compressive strain $\Delta\varepsilon$ %	Coefficient of volume compression m_v cm²/kg $\times 10^{-2}$	Volume ratio f	Void ratio e
0	0,00			2,00				2,2212	1,2212
		0,32	181,40		1,9093	9,50	29,687		
1	0,32			1,8186				2,0198	1,0198
		0,32	78,0		1,7796	4,383	13,697		
2	0,64			1,7406				1,9331	0,9331
		0,64	97,90		1,6916	5,789	9,045		
3	1,28			1,6427				1,8244	0,8244
		1,29	97,50		1,5939	6,17	4,742		
4	2,57			1,5452				1,7161	0,7161
		2,565	102,80		1,0733	9,596	3,741		
5	5,135			1,4424				1,6019	0,6019
		4,49	-41,70		1,4632	-2,849	-0,6347		
6	0,64			1,4841				1,6483	0,6483
		0,32	-15,0		1,4916	-1,006	-3,1437		
7	0,32			1,4991				1,6649	0,6649
		0,32	-39,10		1,5286	-3,866	-12,08		
8	0,00			1,5582				1,7306	0,7306
9									

Calculation formula

$$h_s = \frac{W_s}{G_s \cdot \gamma_w \cdot A}$$

$$\Delta\varepsilon = \frac{\Delta d}{h}$$

$$m_v = \frac{\Delta\varepsilon\ (\%)}{\Delta p} \cdot \frac{1}{100}$$

$$f = \frac{h}{h_s}$$

$$e = f - 1$$

$$S_{r_0} = \frac{G_s \cdot w_0}{e_0}$$

$$\bar{p} = \sqrt{p_0 \cdot p_1}$$

$\sqrt{t}$ method

$$c_v = \frac{0.848\left(\frac{\bar{h}}{2}\right)^2}{t_{90}}$$

Curve rule method

$$c_v = \frac{0.197\left(\frac{\bar{h}}{2}\right)^2}{t_{50}}$$

$$c_v = \frac{\Delta d'}{\Delta d} \cdot c_v$$

$$k = \frac{c_v \cdot m_v \cdot \gamma_w}{1000}$$

Load step	Pressure p kg/cm²	Pressure $\bar{p}$ kg/cm²	$0.848\left(\frac{\bar{h}}{2}\right)^2$ / $0.197\left(\frac{\bar{h}}{2}\right)^2$	t_{90} min / t_{50}	c_v cm²/min	Initial consolidation volume Δd (10^{-2}cm)	Unit consolidation ratio $\frac{\Delta d'}{\Delta d}$	Coefficient of consolidation c_v cm²/min	Coefficient of permeability k cm/min
0	0,00								
		0,00	0,7728	30,25	0,0255	161,10	0,8881	0,0226	0,6723
1	0,32								
		0,453	0,6714	16,61	0,0404	41,10	0,5269	0,0213	0,2917
2	0,64								
		0,905	0,6065	2,89	0,2099	35,60	0,3636	0,0763	0,1904
3	1,28								
		1,814	0,5386	4,203	0,1281	47,80	0,4403	0,0628	0,2980
4	2,57								
		3,033	0,2433	7,89	0,0334	48,90	0,4757	0,0158	0,0594
5	5,135								
6	0,64								
7	0,32								
8	0,00								

Remarks:

m - 5.

Coefficient of compression C_c

Yield stress of consolidation P_c kg/cm²

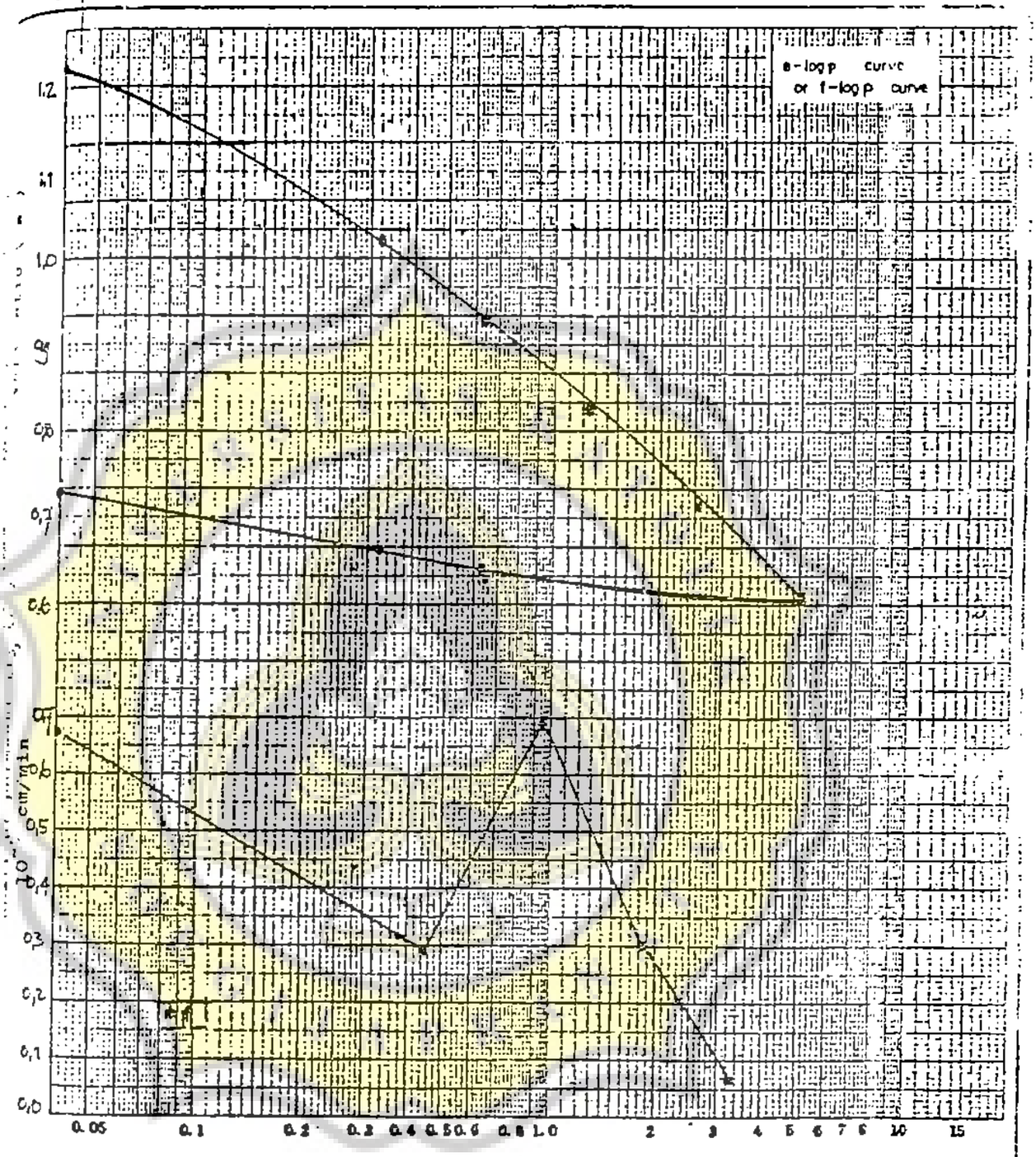
		Md.		Job No.
		Dr.		
CALCULATION DATA		Ch.		

CONSOLIDATION TEST

PROJECT SILIWANGI PLAZA DATE OF TESTING

LOCATION SEMARANG. TESTED BY

BORING NO. I -3,00



Sample No.	Depth	Liquid limit w_L %	Initial volume ratio f_o	Initial void ratio e_o	Coefficient of compression C_c	Yield stress of consolidation p_c kg/cm²	Sign.
B1	- 3,00 M	-	2,2212	1,1395	1,2866		
					0,4815		
					0,0486		

		Md.			Job No.
		Dr.			
	e-or f- log p REPORT 8	Ch.			

CONSOLIDATION TEST

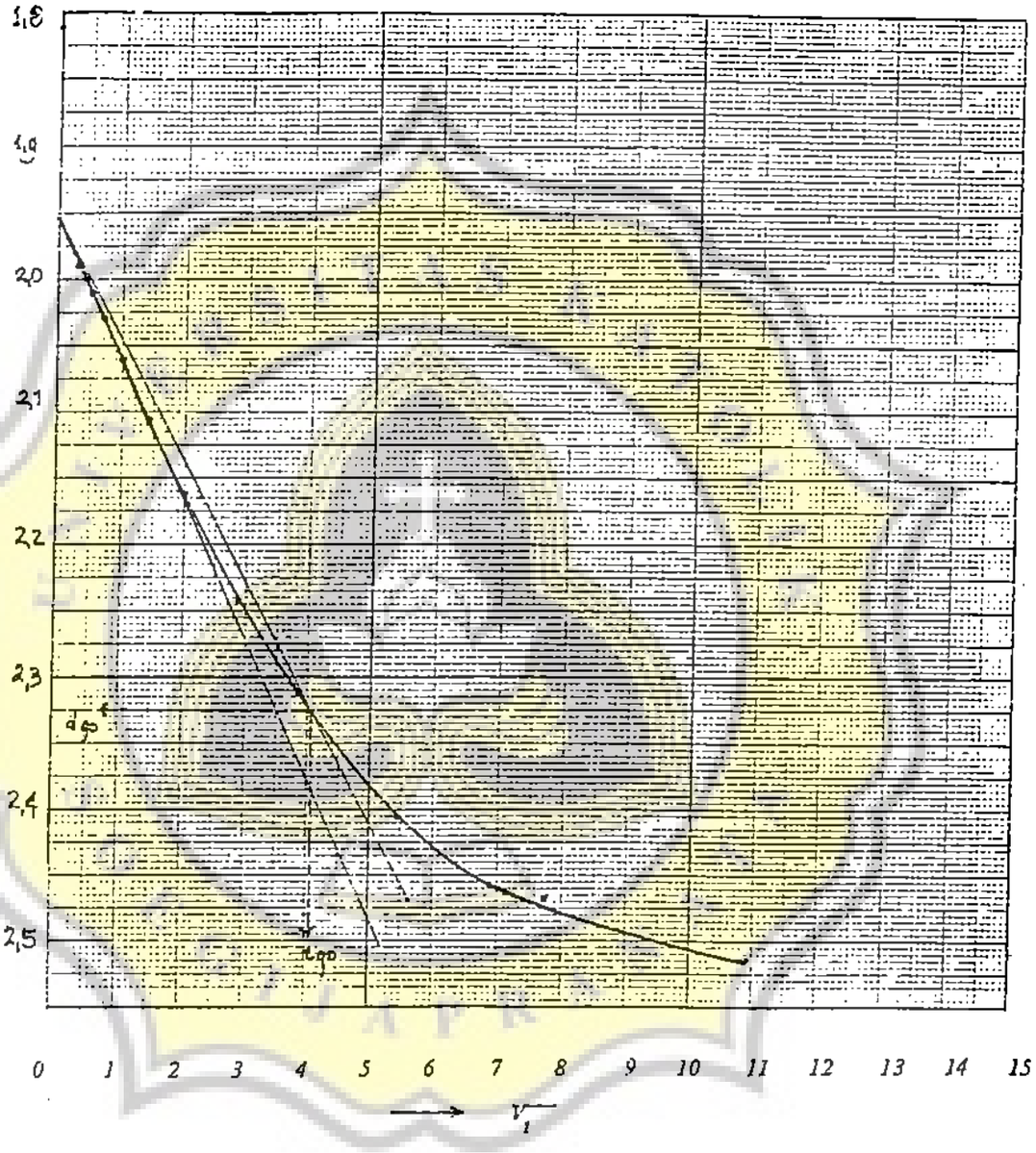
(V_t Curve)

Project SILIWANGI PLAZA

Location SEMARANG

Sample No. B.I Depth -3.00 Date of testing

Soil Description Tested by



Load Step	2 kg		
Consolidation pressure kg/cm2	0,64		
Initial value (di)	1,8140		
Compensated initial value (do)	1,9550		
d 90	2,3250		
Final value df	2,5940		
t90	16,61		
Δd = 10/9 (do-d90)	0,411		

CONSOLIDATION TEST

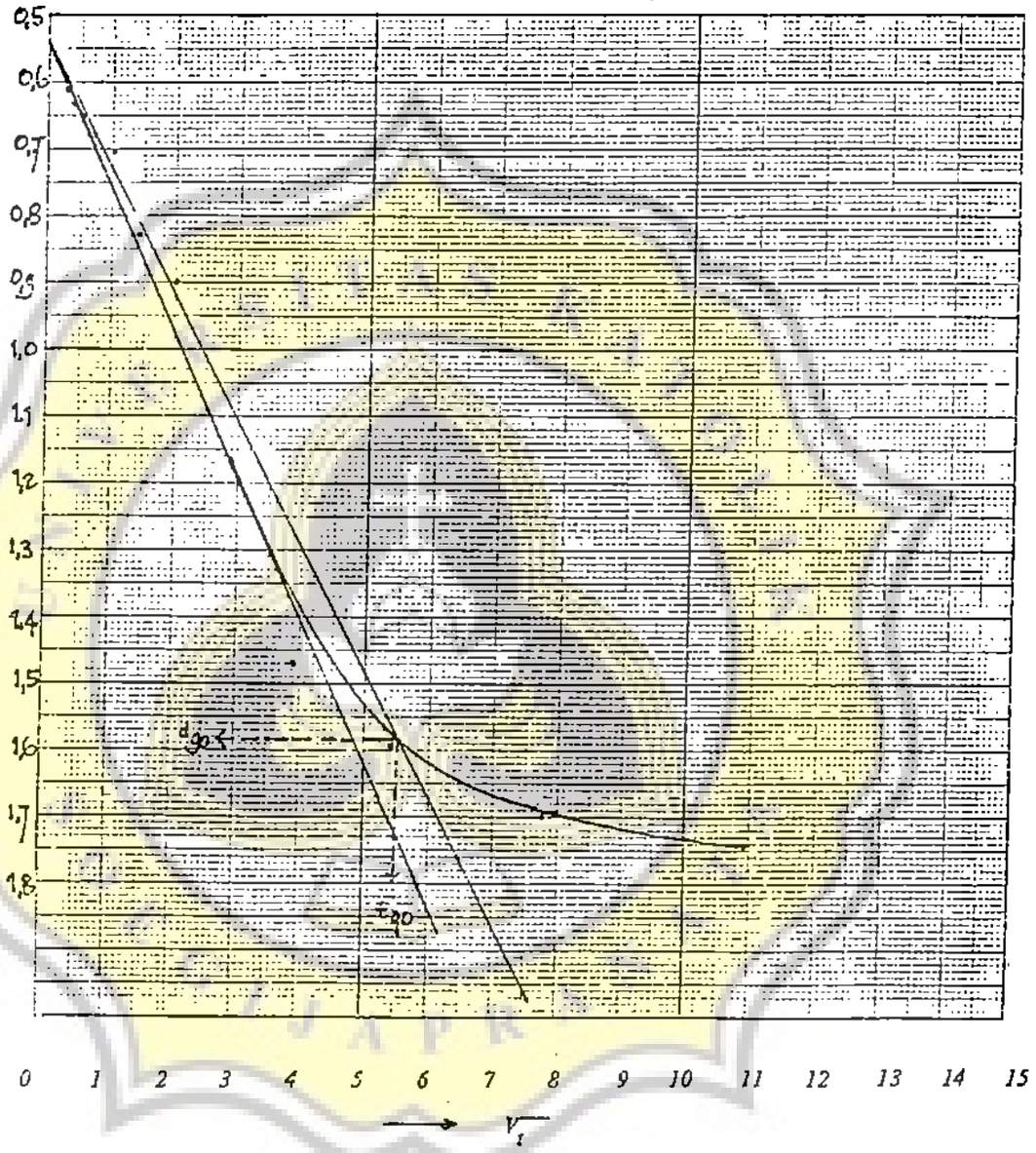
(V_t Curve)

Project SILIWANGI PLAZA

Location SEMARANG

Sample No. B.I Depth 1-3.00 Date of testing

Soil Description Tested by



Load Step	1 kg		
Consolidation pressure kg/cm2	0,32		
Initial value (di)	0,000		
Compensated initial value (do)	0,540		
d 90	1,585		
Final value df	1,8140		
t90	30,25		
△ d' = 10/9 (do-d90)	1,011		

CONSOL DATION TEST

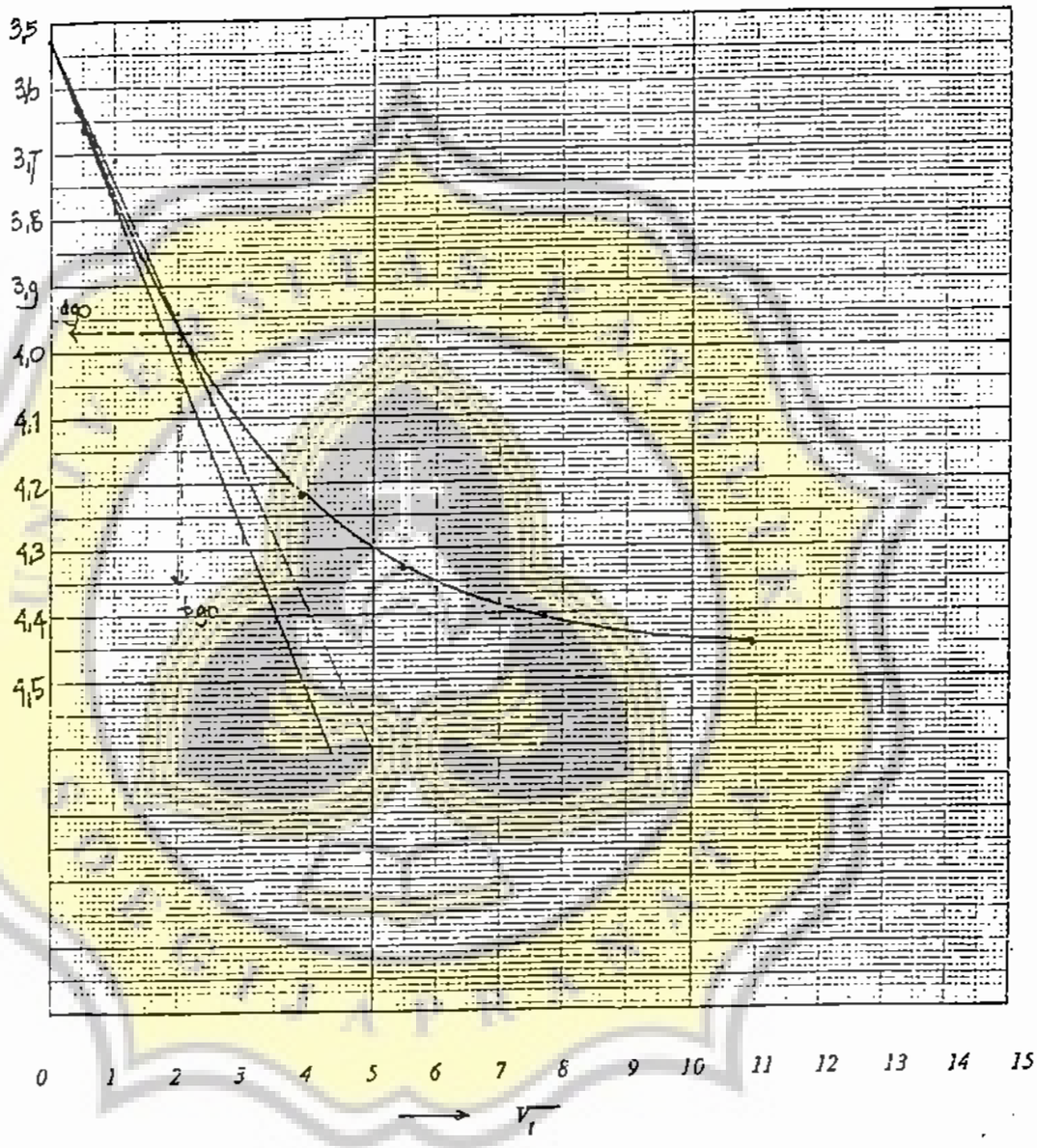
($\sqrt{t}$ Curve)

Project SILIWANGI PLAZA

Location SEMARANG

Sample No. B.I Depth -3.00 Date of testing

Soil Description Tested by



Load Step	8 kg		
Consolidation pressure kg/cm2	2,57		
Initial value (di)	3,5730		
Compensated initial value (do)	3,540		
d 90	3,970		
Final value df	4,5480		
t90	4,203		
△ d' = 10/9 (do-d90)	0,478		

CONSOLIDATION TEST

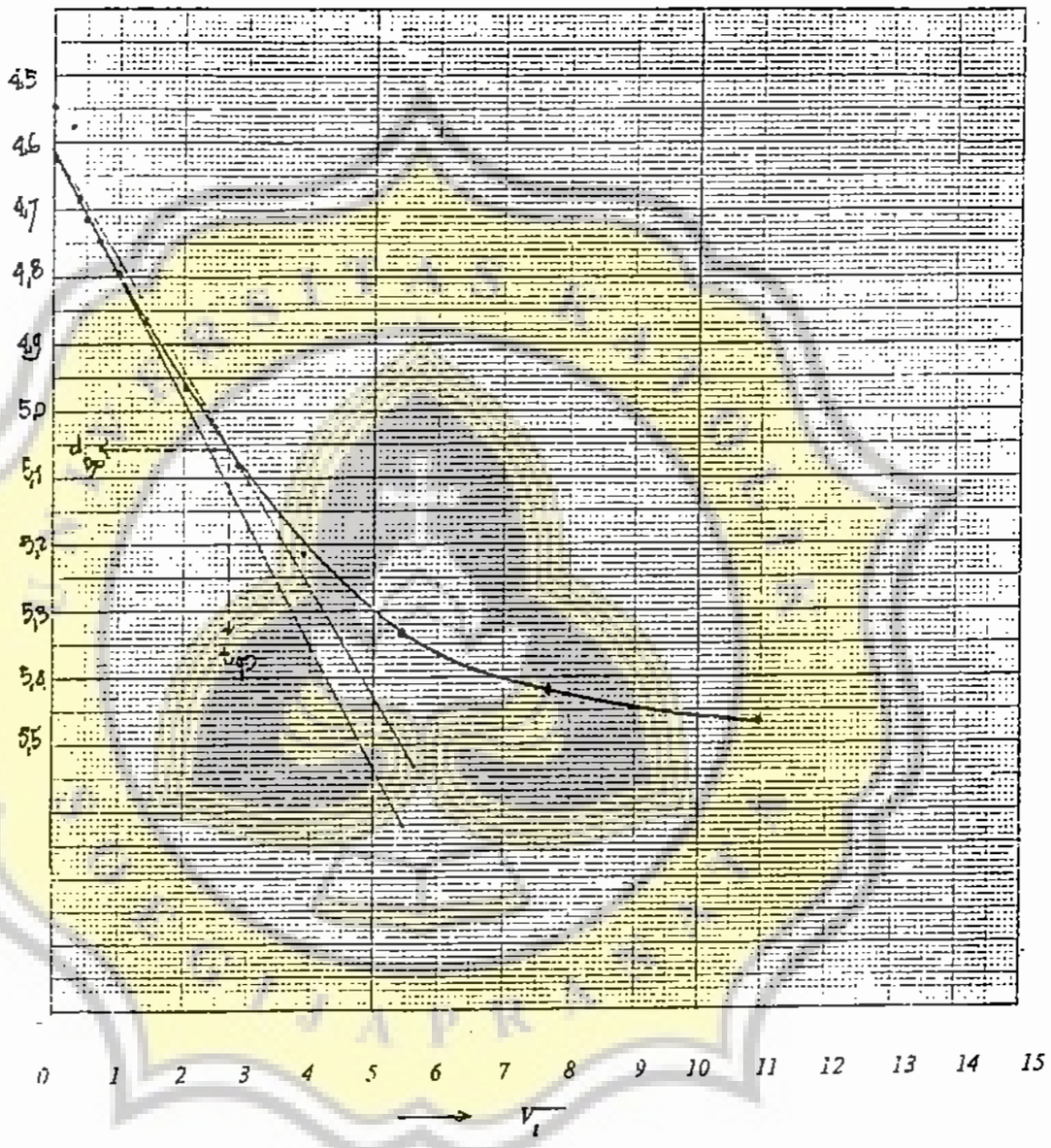
(V_t Curve)

Project SILIWANGI PLAZA

Location SEMARANG

Sample No. B.I Depth -3.00 Date of testing

Soil Description Tested by



Load Step	1.6 kg		
Consolidation pressure kg/cm2	5		
Initial value (di)	4,5480		
Compensated initial value (do)	4,6150		
d 90	5,0550		
Final value df	5,5760		
t90	7,29		
$\Delta d' = 10/9 (do-d90)$	0,489		

CONSOLIDATION TEST

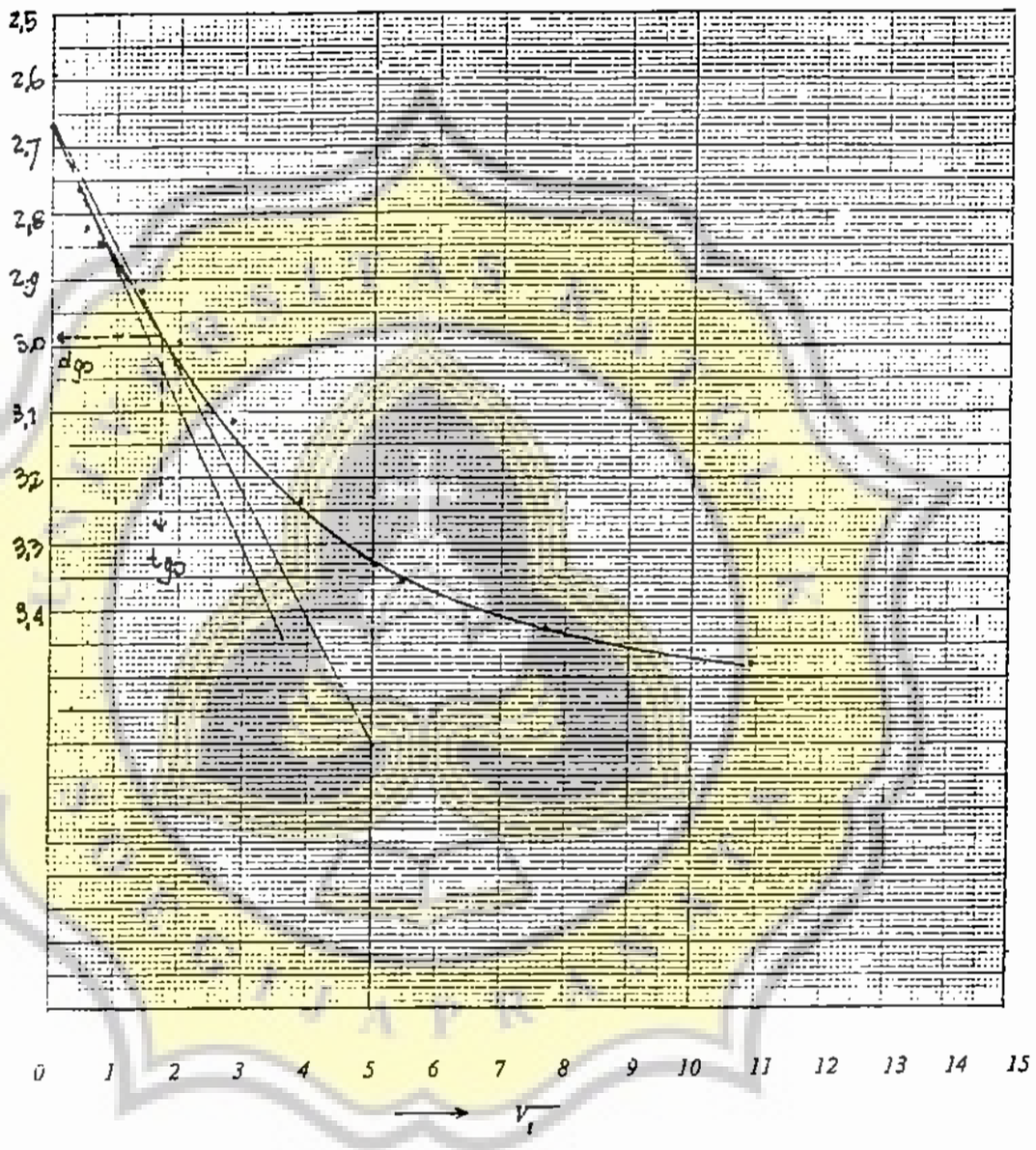
(V_t Curv.)

Project SILIWANGI PLAZA

Location SEMARANG

Sample No. B.I Depth -3.00 Date of testing

Soil Description Tested by



Load Step	4 kg		
Consolidation pressure kg/cm2	1,28		
Initial value (di)	2,5940		
Compensated initial value (do)	2,6650		
d 90	2,9850		
Final value df	3,5730		
t90	2,890		
△ d' = 10/9 (do-d90)	0,356		

CONSOLIDATION TEST

PROJECT SILIWANGI PLAZA DATE OF TESTING

LOCATION SEMARANG TESTED BY

SAMPLE NO B.I Depth -5.00

Sample condition Room temperature (°C ~ °C) Tester No. No.

Nature of soil

Soil classification	
Soil gravity G_s	2,7667
Liquid limit w_L %	-
Plastic limit w_P %	-

Specimen

Section area	A cm²	31,157
Initial height	h_0 cm	2,00
Dry weight	W_s g	87,90
Height of substance	h_s cm	1,0197

Initial water content w_0 %	
Initial volume ratio f_0	
Initial void ratio e_0	
Initial degree of saturation S_{r_0} %	

Load step	Pressure p kg/cm²	Pressure Δp kg/cm²	Consolidation volume Δd (10^{-2}cm)	Height of specimen h cm	Average height of specimen $\bar{h}$ cm	Compressive strain ε %	Coefficient of volume compression m_v cm²/kg $\times 10^{-2}$	Volume ratio f	Void ratio e
0	0,00			2,00				1,9609	0,9609
		0,32	101,20		1,9494	5,191	16,222		
1	0,32			1,8988				1,8617	0,8617
		0,32	42,30		1,8776	2,253	7,040		
2	0,64			1,8565				1,8202	0,8202
		0,64	57,90		1,8276	3,168	4,95		
3	1,28			1,7986				1,7635	0,7635
		1,29	61,70		1,7651	3,458	2,678		
4	2,57			1,7375				1,7036	0,7036
		2,565	70,70		1,7025	4,117	1,605		
5	5,135			1,6674				1,6348	0,6348
		4,445	-21,30		1,6780	-1,263	-0,281		
6	0,64			1,6886				1,6656	0,6556
		0,32	-10,50		1,6939	-0,619	-1,934		
7	0,32			1,6991				1,6659	0,6660
		0,32	-51,00		1,7251	-3,008	-9,400		
8	0,00			1,7510				1,7168	0,7168
9									

Load step	Pressure p kg/cm²	Pressure $\bar{p}$ kg/cm²	$0.848\left(\frac{\bar{h}}{2}\right)^2$ / $0.197\left(\frac{\bar{h}}{2}\right)^2$	t_{90} min / t_{50}	c_v cm²/min	Initial consolidation volume Δd (10^{-2}cm)	Unit of consolidation ratio $\frac{\Delta d'}{\Delta d}$	Coefficient of consolidation c_v cm²/min	Coefficient of permeability k cm/min
0	0,00								
		0,00	0,6056	86,49	0,0093	78,72	0,7778	0,007226	0,1176
1	0,32								
		0,453	0,7674	5,76	0,1298	12,78	0,3021	0,03922	0,2759
2	0,64								
		0,90	0,4937	10,89	0,0695	35,60	0,4421	0,03799	0,09885
3	1,28								
		1,814	0,663	10	0,0647	35,11	0,5000	0,032423	0,06446
4	2,57								
		3,633	0,6145	8,923	0,0692	61,1	0,8776	0,054404	0,08677
5	5,135								
C									
7									
8									
9									

Calculation formula

$$h_s = \frac{W_s}{G_s \cdot \gamma_w \cdot A}$$

$$\Delta\varepsilon = \frac{\Delta d}{h}$$

$$m_v = \frac{\Delta\varepsilon\,(\%)}{\Delta p} \cdot \frac{1}{100}$$

$$f = \frac{h}{h_s}$$

$$e = f - 1$$

$$S_{r_0} = \frac{G_s \cdot w_0}{e_0}$$

$$\bar{p} = \sqrt{p_0 \cdot p_{n-1}}$$

$\sqrt{t}$ Method

$$c_v = \frac{0.848\left(\frac{\bar{h}}{2}\right)^2}{t_{90}}$$

Curve rule method

$$c_v = \frac{0.197\left(\frac{\bar{h}}{2}\right)^2}{t_{50}}$$

$$c_v = \frac{\Delta d'}{\Delta d} \cdot c_v'$$

$$k = \frac{c_v \cdot m_v \cdot \gamma_w}{1.000}$$

Remarks:

p_0 = 5.

Coefficient of compression C_c

Yield stress of consolidation p_c kg/cm²

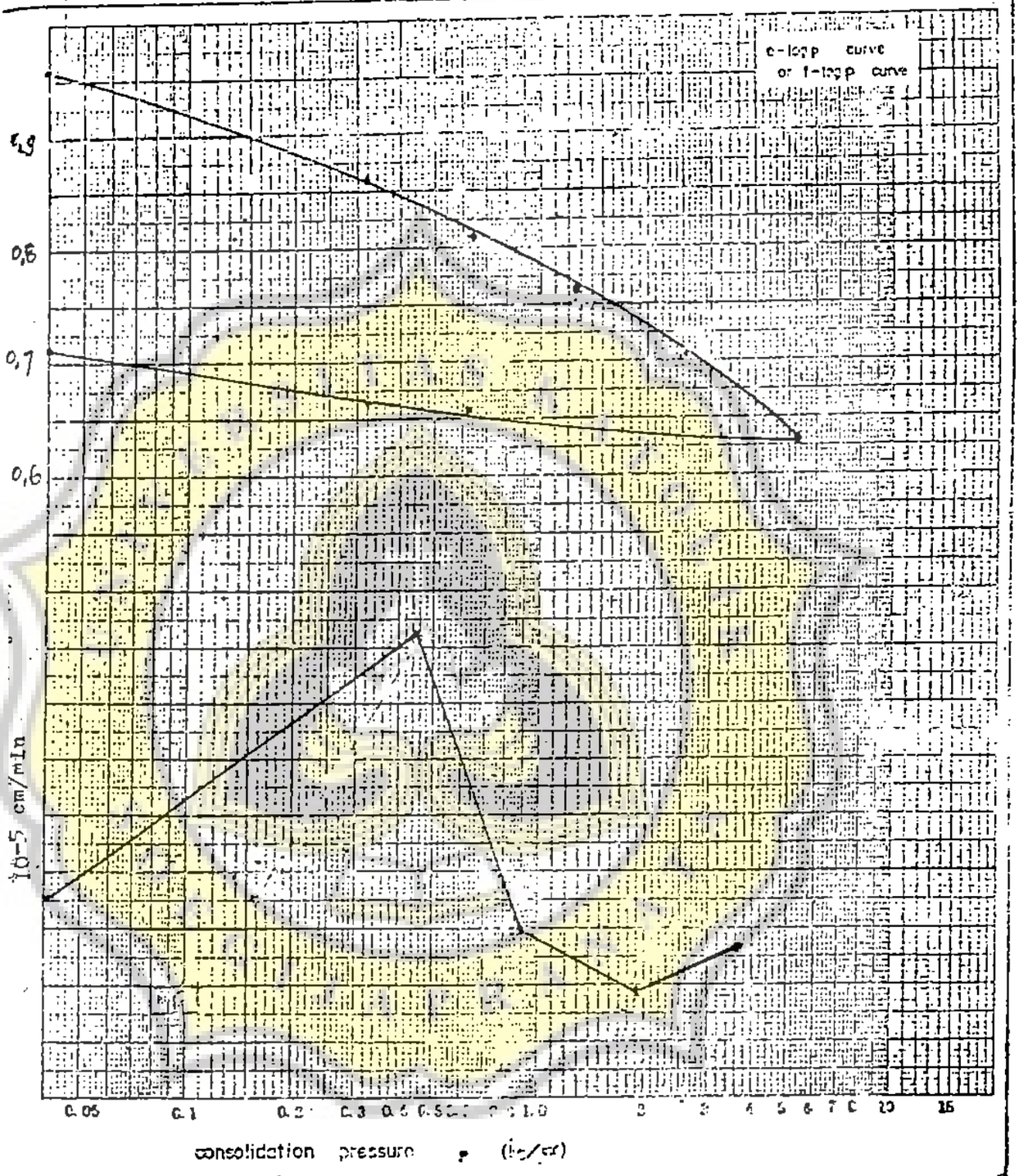
		Md.	Job No.
		Dr.	
CALCULATION DATA		Ch.	

CONSOLIDATION TEST

PROJECT SILIWANGI PLAZA — DATE OF TESTING

LOCATION SEMARANG — TESTED BY

BORING NO. I. -5.00



mple No.	Depth	Liquid limit w_L %	Water volume ratio	Initial void ratio e_o	Coefficient of compression C_c	Yield stress of consolidation p_c kg/cm²	Sign
P1.	5,00	–	1,960g	1,3684	0,9482		
					0,5242		
					0,6508		

		M.A.			Job No.
		Dr.			
	e-log f-log p REPORT	Ch.			

CONSOLIDATION TEST

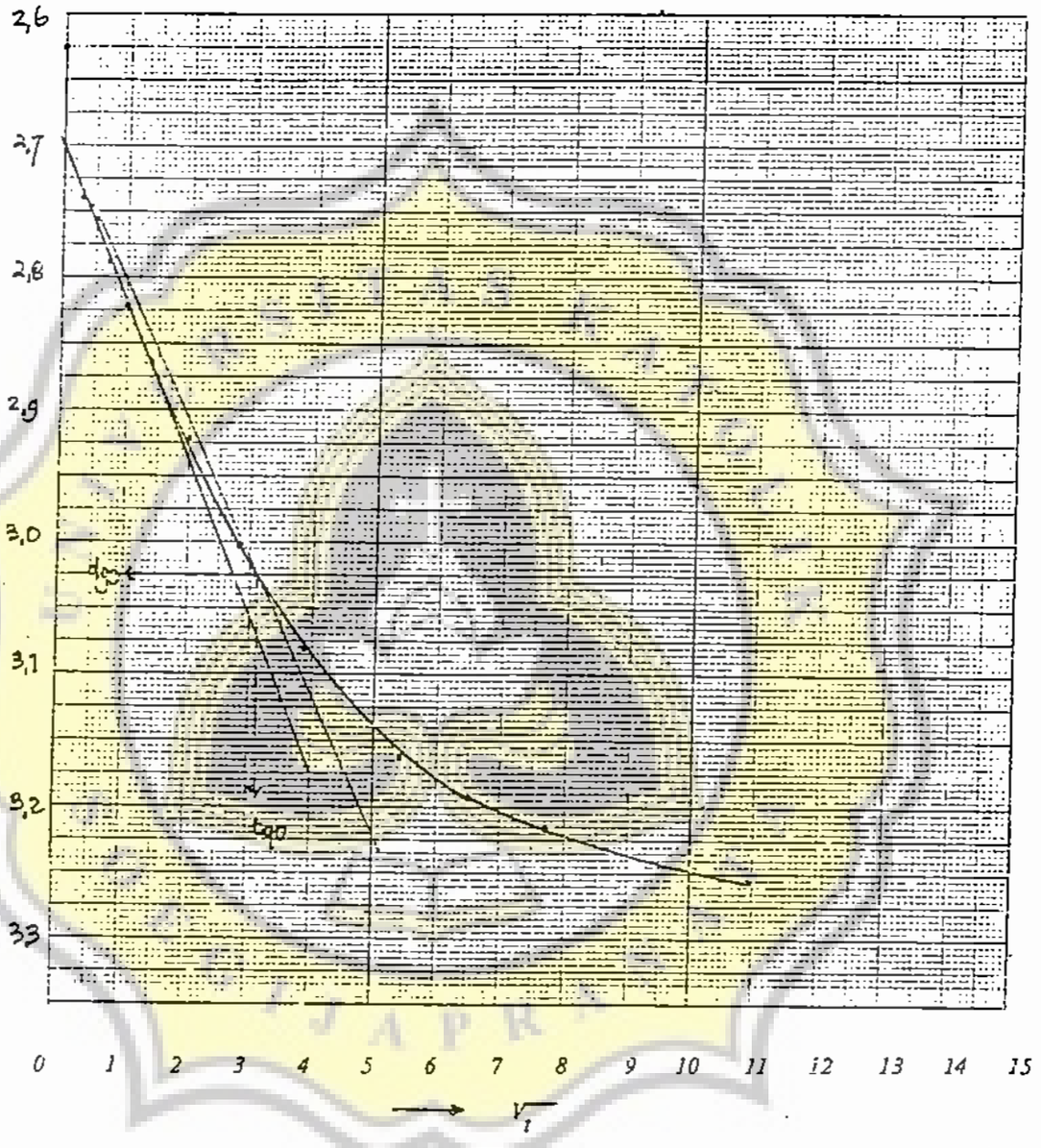
(V_t Curve)

Project SILIWANGI PLAZA

Location SEMARANG

Sample No. B.I Depth -5.00 Date of testing

Soil Description Tested by



Load Step	16 kg		
Consolidation pressure kg/cm2	5,035		
Initial value (di)	2,6250		
Compensated initial value (do)	2,700		
d 90	3,250		
Final value df	3,3260		
t90	9,923		
Δ d' = 10/9 (do-d90)	0,611		

CONSOLIDATION TEST

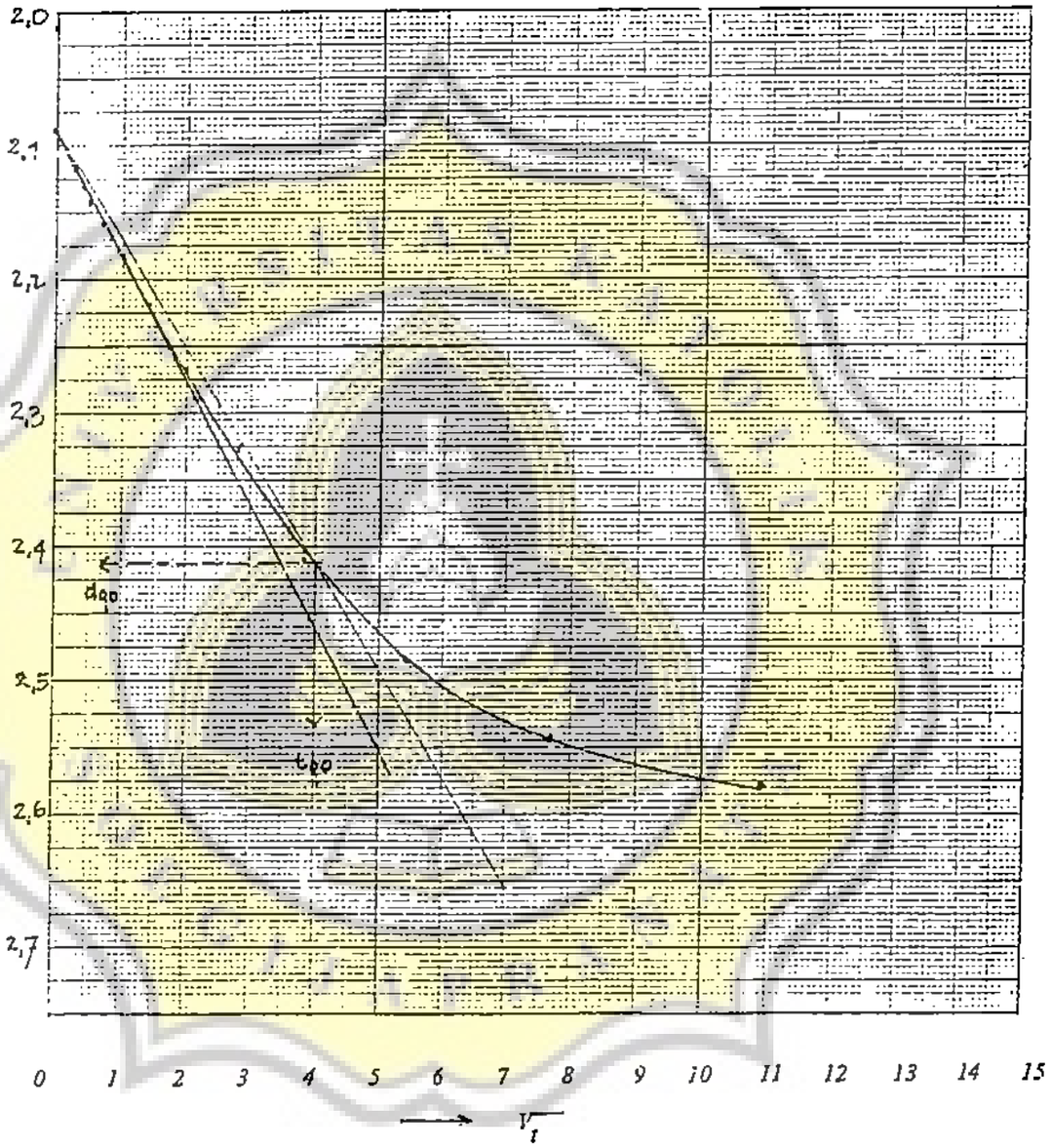
(V_t Curve)

Project SILIWANGI PLAZA

Location SEMARANG

Sample No. B.I Depth -5.00 Date of testing

Soil Description Tested by



Load Step	8kg		
Consolidation pressure kg/cm2	2,56		
Initial value (di)	2,0140		
Compensated initial value (do)	2,0875		
d 90	2,4125		
Final value df	2,6250		
t90	16		
Δ d' = 10% (do-d90)	0,3911		

CONSOLIDATION TEST

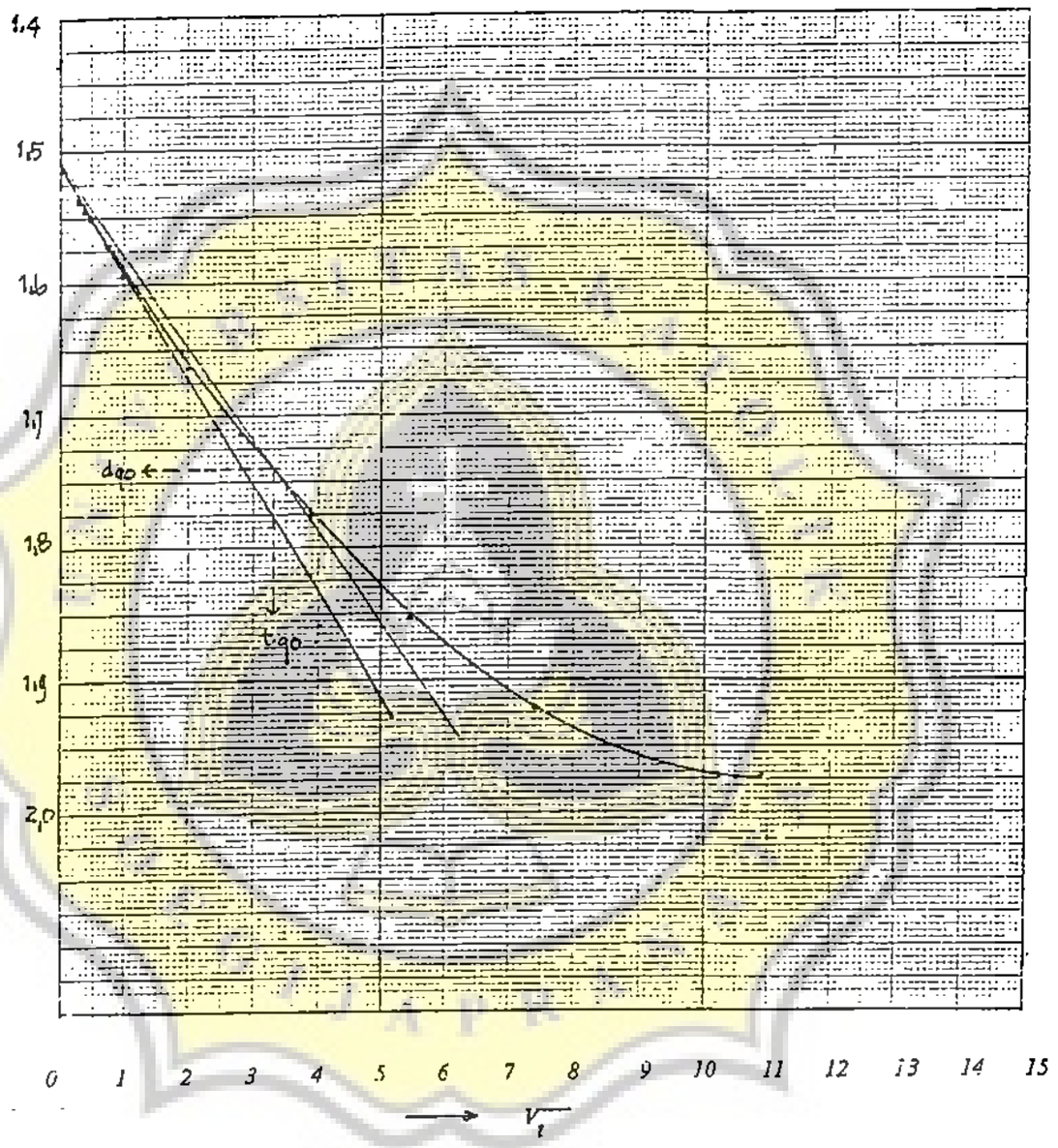
(V_t Curve)

Project Siliwangi Plaza

Location Semarang

Sample No. B.I Depth -5.00 Date of testing

Soil Description Tested by



Load Step	4 kg		
Consolidation pressure kg/cm2	1,28		
Initial value (di)	1,4350		
Compensated initial value (do)	1,510		
d 90	1,740		
Final value df	2,0140		
t90	10,89		
△ d' = 10/9 (do-d90)	0,256		

CONSOLIDATION TEST

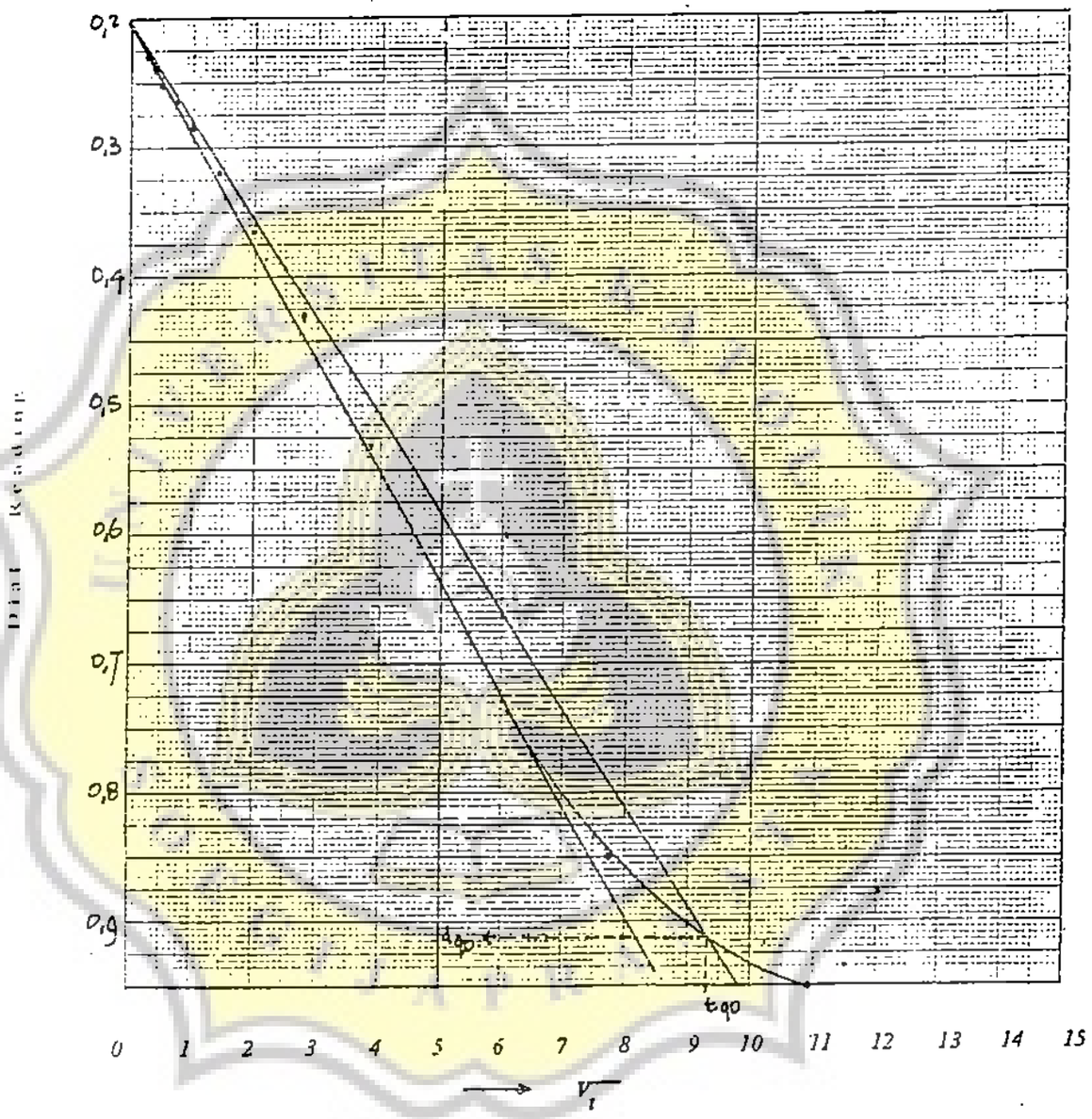
(V_t Curve)

Project SILIWANGI PLAZA

Location SEMARANG

Sample No. B.I Depth -5.00 Date of testing

Soil Description Tested by



Load Step	1 kg		
Consolidation pressure kg/cm2	0,32		
Initial value (di)	0,000		
Compensated initial value (do)	0,204		
d 90	0,9125		
Final value df	1,0120		
t90	86,49		
Δ d' = 10/9 (do-d90)	0,7272		

CONSOLIDATION TEST

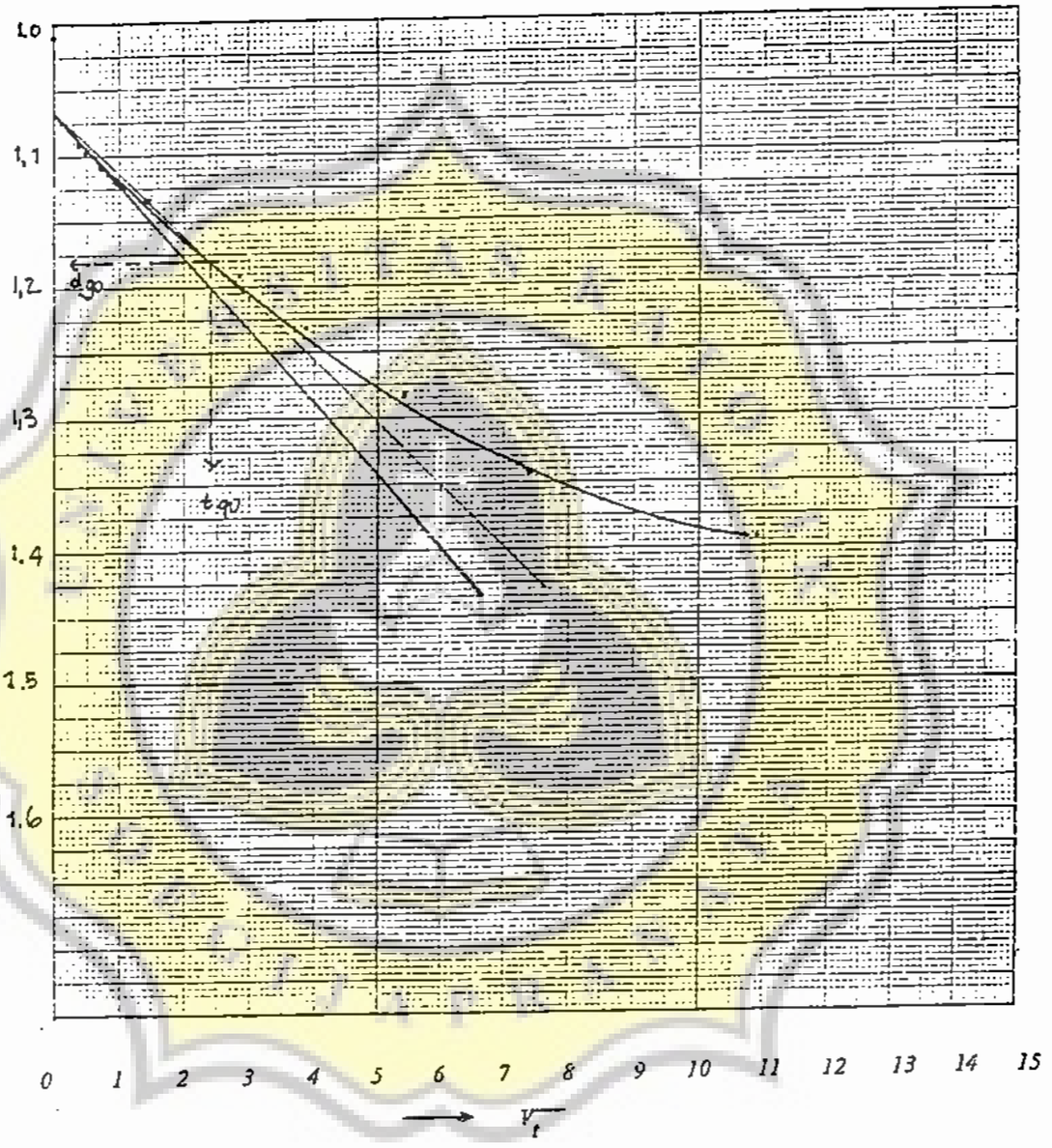
(V_t Curve)

Project SILIWANGI PLAZA

Location SEMARANG

Sample No. B.I Depth -5.00 Date of testing

Soil Description Tested by



Load Step	2 kg		
Consolidation pressure kg/cm2	0,64		
Initial value (di)	1,012		
Compensated initial value (do)	1,0650		
d 90	1,180		
Final value df	1,4350		
t90	5,76		
Δ d' = 10,9 (do-d90)	0,1273		

CONSOLIDATION TEST

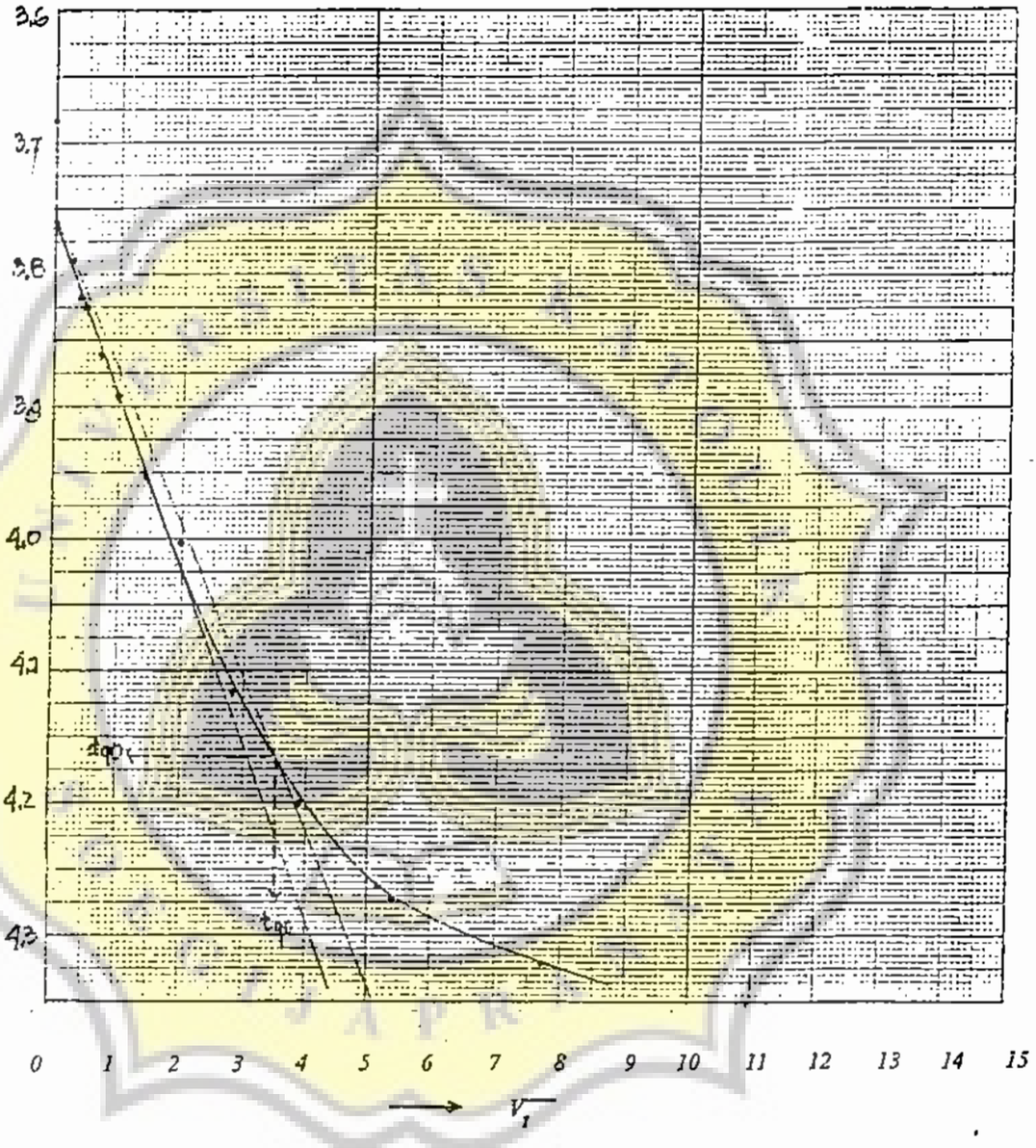
(V_t Curve)

Project SILIWANGI PLAZA

Location SEMARANG

Sample No. B. 1 Depth 7.00 Date of testing

Soil Description Tested by



Load Step	16kg		
Consolidation pressure kg/cm2	5,135		
Initial value (di)	3,6540		
Compensated initial value (do)	3,760		
d 90	4,1650		
Final value df	4,4340		
t90	12,603		
△ d' = 10/9 (do-d90)	0,45		

CONSOLIDATION TEST

PROJECT SILIWANGI PLAZA DATE OF TESTING

LOCATION SEMARANG TESTED BY

SAMPLE NO B.I Depth -7.00

Sample condition | Room temperature (°C – °C) | Tester No. | No.

Nature of soil

Soil classification		
Soil gravity G_s	2,7752.	
Liquid limit w_L %	-	
Plastic limit w_p %	-	

Specimen

Section area A cm²	31,157	
Initial height h_0 cm	2,00	
Dry weight W_s g	78.05.	
Height of substance h_s cm	0,9027	

Initial water content w_0 %	40,69	
Initial volume ratio f_0	2,2155	
Initial void ratio e_0	1,1290	
Initial degree of saturation S_{r0} %	-	

Load step	Pressure P kg/cm²	Pressure ΔP kg/cm²	Consolidation volume Δd (10^{-2} cm)	Height of specimen h cm	Average height of specimen $\bar{h}$ cm	Compressive strain $\Delta\varepsilon$ %	Coefficient of volume compression m_v cm²/kg	Volume ratio f	Void ratio e
0	0,00			2,00 .				2,2155	1,2155
		0,32.	185,10 .		1,9074	9,704	30,325		
1	0,32			1,8149				2,0705	1,0705
		0,32	48,80		1,7905	2,7255	8,5172		
2	0,64			1,7561				1,9565	0,9565
		0,64	65,70		1,7335	3,7900	5,9218		
3	1,28			1,7009				1,8842	0,8842
		1,28	69,30		1,6663	4,1590	3,2240		
4	2,57			1,6316.				1,8075	0,8075
		2,565	74,50		1,5944	4,6728	1,8433		
5	5,135			1,5571				1,7249	0,7249
		4,495	- 20,60		1,5674	- 1,3123	0,2924		
6	0,64			1,5777				1,7478	0,7478
		0,32	- 9,80		1,5826	- 0,5192	1,935		
7	0,32			1,5875				1,7586	0,7586
		0,32	- 50,20 .		1,6126 .	- 3,1191	9,747 .		
8	0,00 .			1,6378 .				1,8143 .	0,8143
9									

Load step	Pressure P kg/cm²	Pressure $\bar{P}$ kg/cm²	$0.848\left(\frac{A}{2}\right)^2$ / $0.197\left(\frac{A}{2}\right)^2$	t_{50} min / t_{90}	C_v cm²/min	Initial consolidation volume $\Delta d'$ (10^{-2} cm)	Initial consolidation ratio $\frac{\Delta d'}{\Delta d}$	Coefficient of consolidation C_v cm²/min	Coefficient of permeability k cm/min
	0,00								
		0,00	0,7713	2,1523	0,1396	18,32	0,0969	0,013826	1,1696
	0,32								
		0,453	0,5917	29,16	0,02603	31,70	0,62959	0,016909	1,4402
	0,64								
		0,905	0,6376	21,16	0,0301	42,80	0,65145	0,019609	1,1612
	1,28								
		1,814	0,5859	18,48	0,0317	44,40	0,64069	0,020310	0,6548
	2,57								
		3,633	0,5389	12,00	0,0427	45.	0,650403	0,025790	0,8754
	5,135								

Calculation formula

$$A_0 = \frac{W_s}{G_s \cdot \gamma_w \cdot A}$$

$$\Delta\varepsilon = \frac{\Delta d}{h}$$

$$m_v = \frac{\Delta\varepsilon\,(\%)}{\Delta P} \cdot \frac{1}{100}$$

$$f = \frac{h}{h_s}$$

$$e = f - 1$$

$$S_r = \frac{G_s \cdot w_0}{e_0}$$

$$k = \sqrt{P_0 \cdot P_{0.5}}$$

$\sqrt{t}$ method

$$C_v = \frac{0.848\left(\frac{A}{2}\right)^2}{t_{50}}$$

Curve rule method

$$C_v = \frac{0.197\left(\frac{A}{2}\right)^2}{t_{50}}$$

$$C_v = \frac{\Delta d'}{\Delta d} \cdot C_v'$$

$$k = \frac{C_v \cdot m_v \cdot \gamma_w}{1.000}$$

Remarks:

x 10⁻⁶ .

Coefficient of compression C_c

Yield stress of consolidation P_c kg/cm²

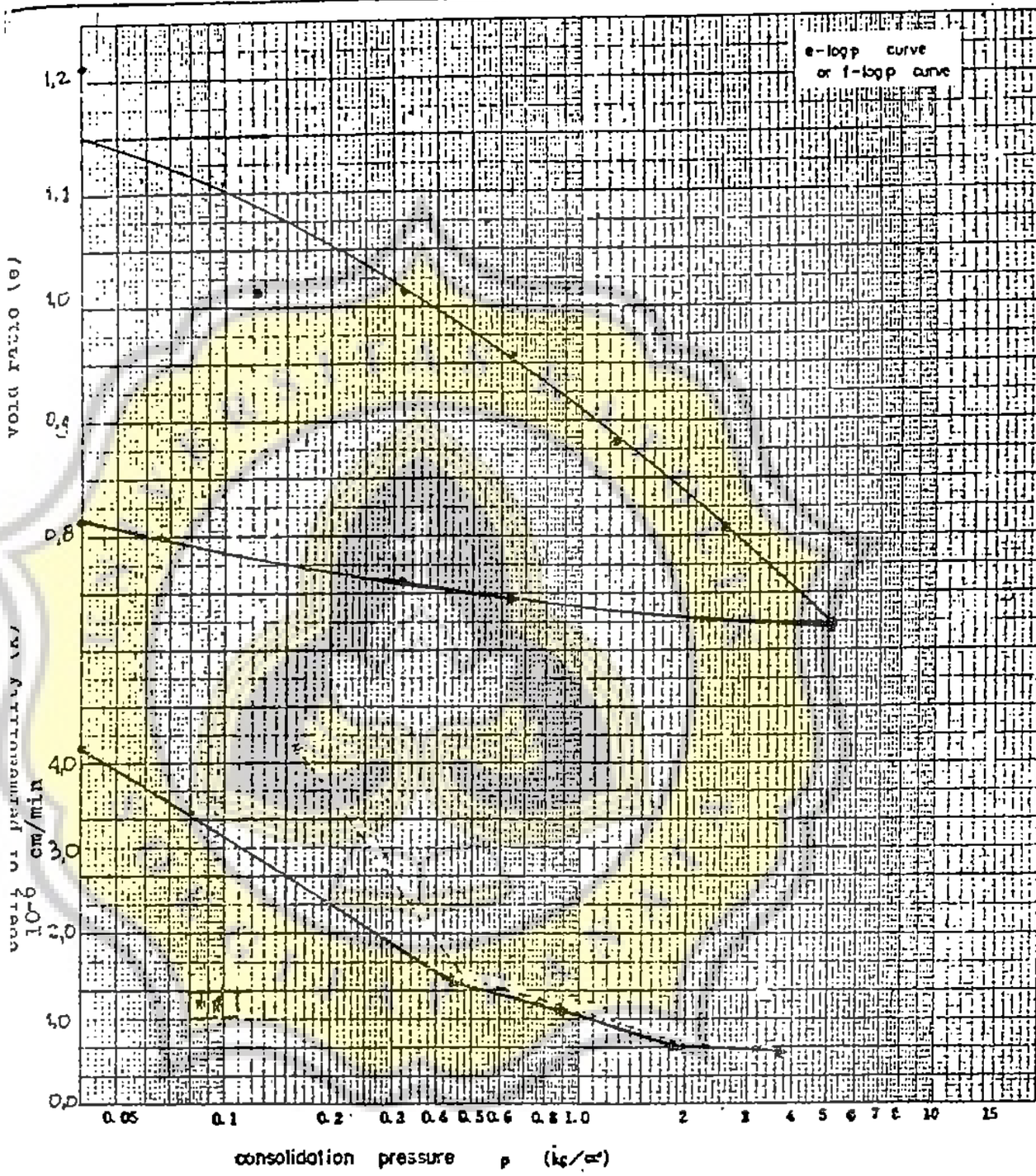
		M.d.	Job No.
		Dr.	
CALCULATION DATA		Ch.	

CONSOLIDATION TEST

PROJECT SILIWANGI PLAZA — DATE OF TESTING

LOCATION SEMARANG — TESTED BY

BORING NO. I -7.00



Sample No.	Depth	Liquid limit w_L %	Initial volume ratio f_o	Initial void ratio e_o	Coefficient of compression f_c	Yield stress of consolidation p_y kg/cm²	Sign
No B 1	- 7.00 m.	-	2,2455	1,1290.	1,2792.		
No					0,6424.		
No					0,7576.		
No							

		M.C.			Job No.
		Dr.			
	e-or f-log p REPORTS	Ch.			

CONSOLIDATION TEST

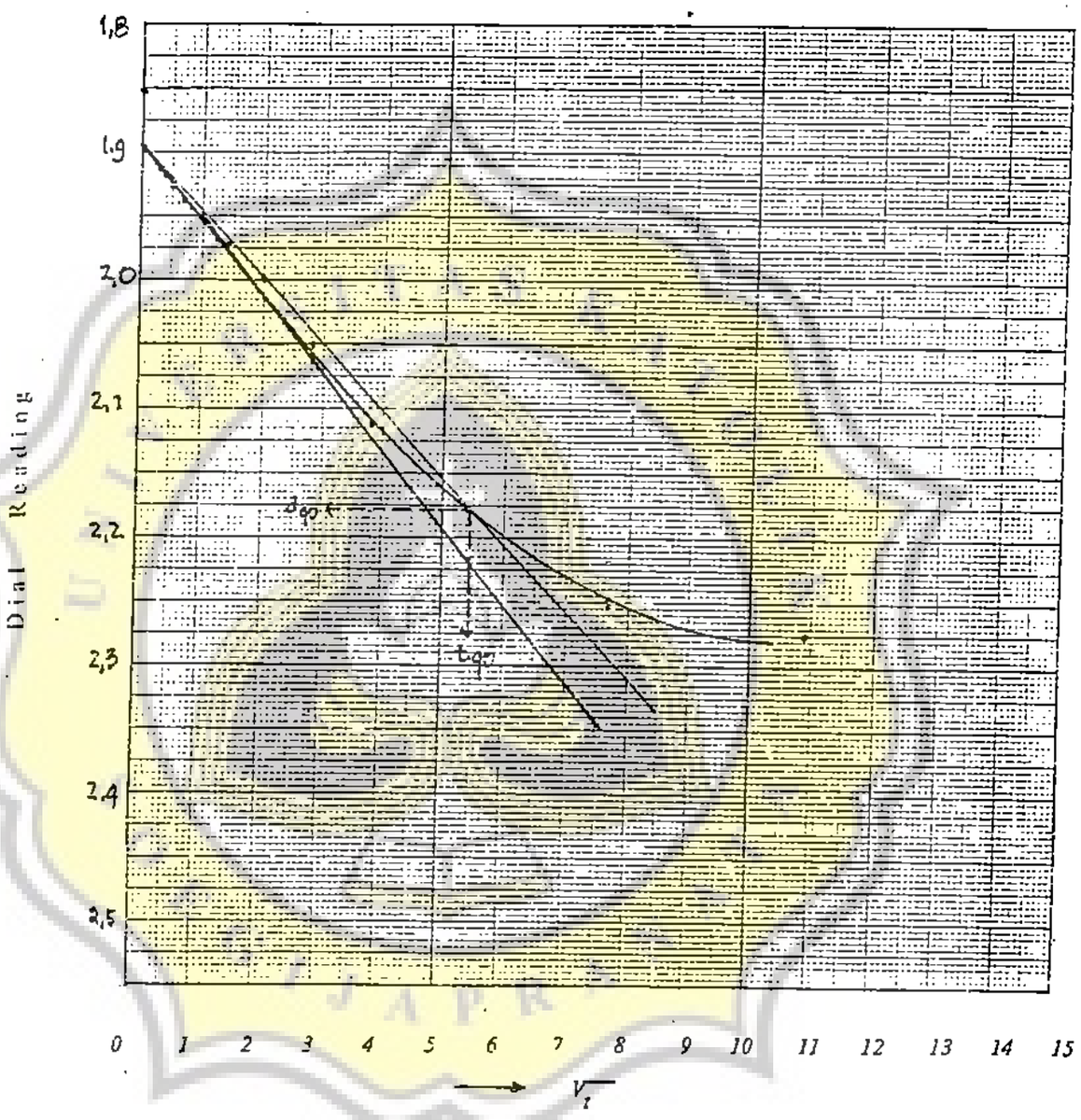
(V_t Curve)

Project SILIWANGI PLAZA

Location SEMARANG.

Sample No. B.I Depth 2.00 Date of testing

Soil Description Tested by



Load Step	2 kg		
Consolidation pressure kg/cm2	0,64		
Initial value (di)	1,8510		
Compensated initial value (do)	1,8950		
d 90	2,180		
Final value df	2,3390		
t90	29,16		
△ d' = 10/9 (do-d90)	0,317		

CONSOLIDATION TEST

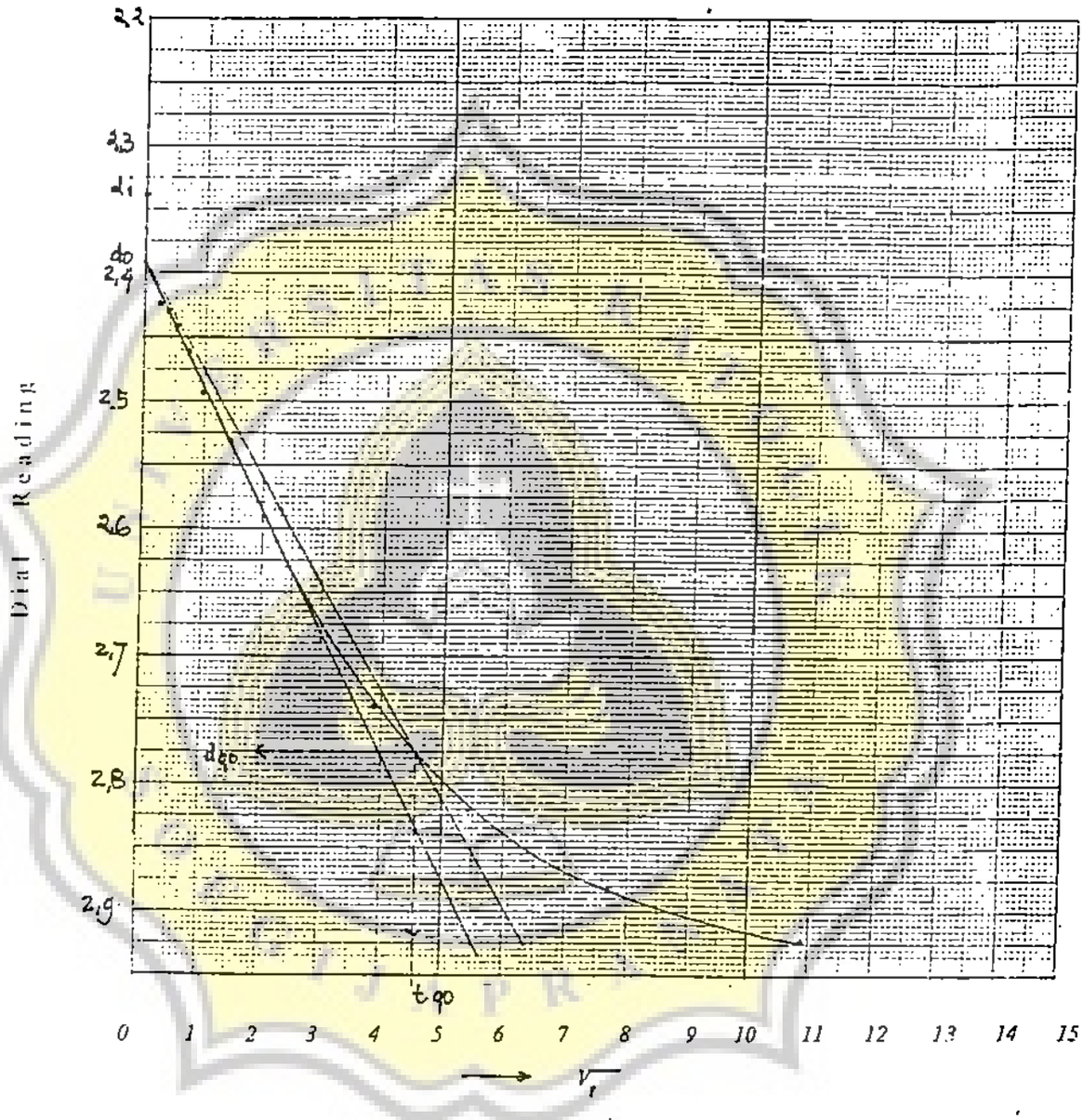
(V_t Curve)

Project SILIWANGI PLAZA

Location SEMARANG.

Sample No. B. I Depth 7.00 Date of testing

Soil Description Tested by



Load Step	4 kg		
Consolidation pressure kg/cm2	1,28		
Initial value (di)	2,3390		
Compensated initial value (do)	2,390		
d 90	2,775		
Final value df	2,9960		
t90	21,16		
△ d' = 10/9 (do-d90)	0,428		

CONSOLIDATION TEST

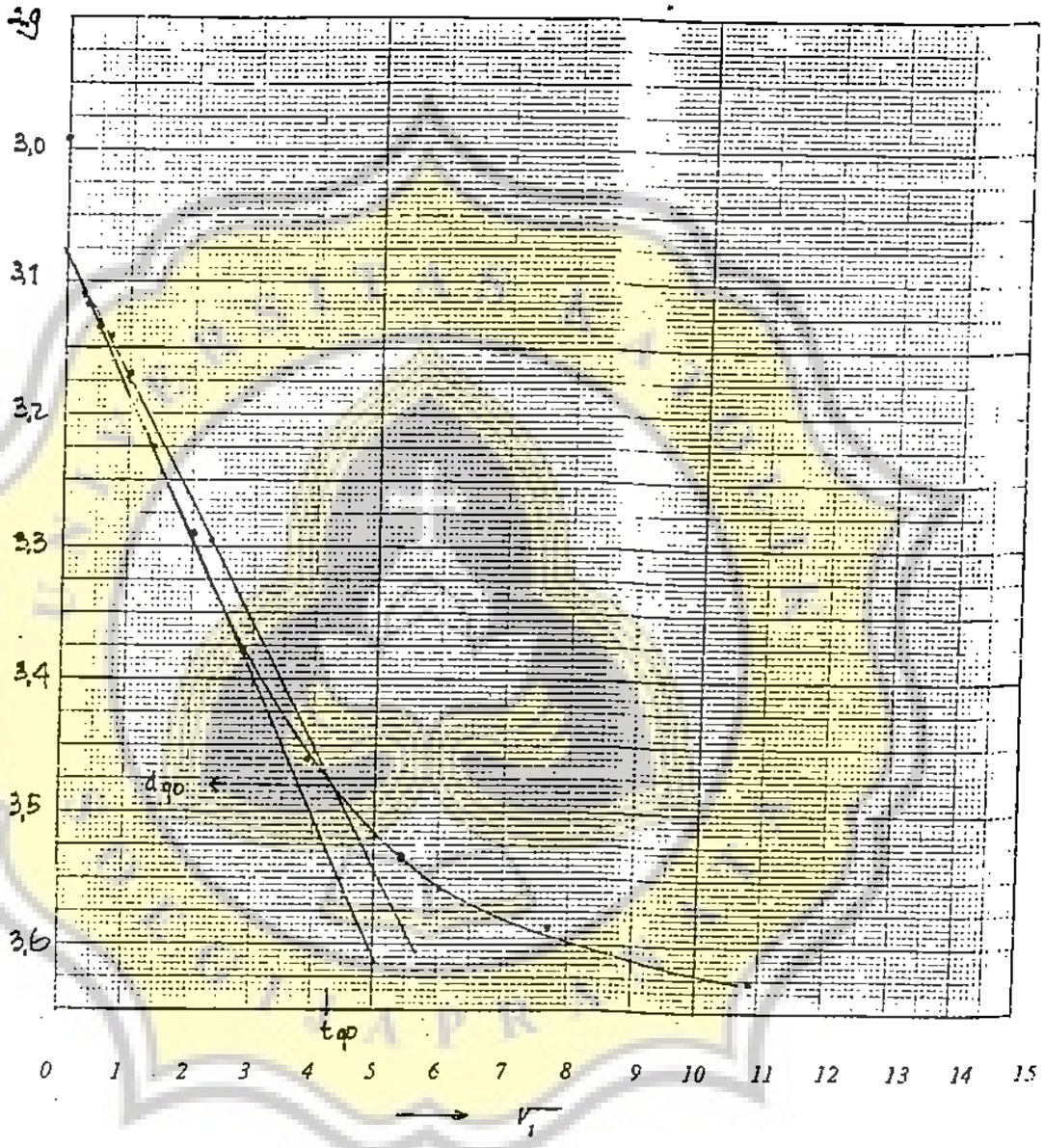
(V_t Curve)

Project SILIWANGI PLAZA

Location SEMARANG

Sample No. B.I Depth 7.0C Date of testing

Soil Description Tested by



Load Step	8 kg		
Consolidation pressure kg/cm2	2,57		
Initial value (di)	2,9960		
Compensated initial value (do)	3,080		
d 90	3,480		
Final value df	3,6890		
t90	18,49		
Δ d' = 10/9 (Do-d90)	0,444		

CONSOLIDATION - TEST

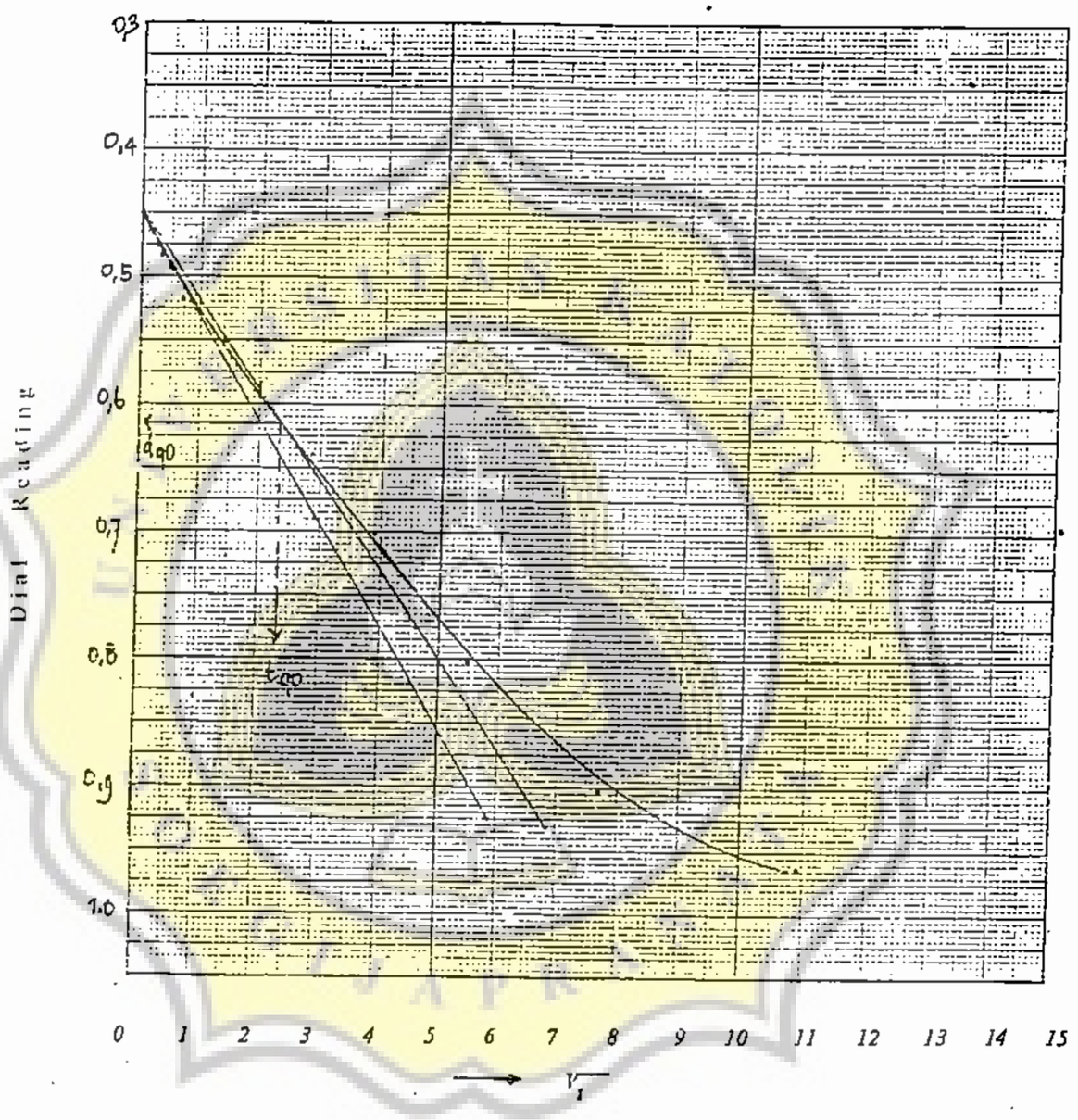
(V_t Curve)

Project SILIWANGI PLAZA

Location SEMARANG.

Sample No. B. I Depth 7.00 Date of testing

Soil Description Tested by



Load Step	1kg		
Consolidation pressure kg/cm2	0,32		
Initial value (di)	0,000		
Compensated initial value (do)	0,450		
d 90	0,6150		
Final value df	1,6378		
t90	5,523		
△ d' = 10/9 (do-d90)	0,1833		

DEPARTEMEN PEKERJAAN UMUM
DIREKTORAT JENDERAL BINA MARGA

FORMULIR PLR-T04
LEMBAR KE.....DARI.....

FORMULIR HIMPUNAN PERHITUNGAN LALU LINTAS SELAMA 24 JAM (FORMULIR LAPANGAN)

NO. PROPINSI
NAMA PROPINSI : JAWA TENGAH
KLAS / NO. POS
LOKASI POS
TANGGAL : 01 (HARI) 12 (BULAN) 88 (TAHUN)

ARAH LALU LINTAS
DARI :
dan KE : SAMARANG

HARI KERJA

GOLONGAN	1	2	3	4	5	6	7	8
JAM	SEPEDA MOTOR SEKUTER SEPEDA KUMBANG DAN RODA 3	SEDAN, JEEP DAN STATION WAGON	OPLET, PICKUP-OPLET, SUBURBAN COMBI & MINIBUS	MICRO TRUK	BUS	TRUK 2 SUMBU	TRUK 3 SUMBU ATAU LEBIH, GANDENGAN TRAILER	KENDARAAN TIDAK BERMOTOR & SEPEDA
06 - 07	481		552	49	86	136	58	274
07 - 08	883		971	98	148	272	103	394
08 - 09	962		1104	87	171	256	115	547
09 - 10	770		994	78	137	217	92	288
10 - 11	577		662	59	103	163	69	279
11 - 12	577		662	59	103	163	69	279
12 - 13	577		662	59	103	163	69	279
13 - 14	577		662	59	103	163	69	279
14 - 15	770		994	78	137	217	92	288
15 - 16	754		1130	81	157	242	112	526
16 - 17	860		1145	67	161	269	98	404
17 - 18	688		916	65	123	215	90	323
18 - 19	516		687	41	97	161	67	226
19 - 20	344		687	32	65	108	45	154
20 - 21	258		458	24	48	81	37	71
21 - 22	172		286	16	32	54	22	61
22 - 23	86		114	8	16	24	11	41
23 - 24	48		57	4	8	12	6	21
24 - 01	20		55	5	9	14	6	13
01 - 02	20		55	5	9	14	6	13
02 - 03	20		55	5	9	14	6	13
03 - 04	20		55	5	9	14	6	13
04 - 05	77		88	8	14	22	9	14
05 - 06	241		276	25	43	68	29	137
TOTAL	10.298		13.327	1.025	1.891	3.062	1.298	4.987

CATATAN :

Data tersebut di atas kami survey di jalan Siliwangi, arah kendaraan dari dan ke Semarang.

PENGAWAS:

(.....)

21 OKT. 1987 APT

DEPARTEMEN PEKERJAAN UMUM
DIREKTORAT JENDERAL BINA MARGA

FORMULIR PLR-T04
LEMBAR KE.....DARI.....

FORMULIR HIMPUNAN PERHITUNGAN LALU LINTAS SELAMA 24 JAM (FORMULIR LAPANGAN)

NO. PROPINSI
NAMA PROPINSI : JAWA TENGAH
KLAS / NO. POS
LOKASI POS
TANGGAL : 02 (HARI) 12 (BULAN) 88 (TAHUN)
ARAH LALU LINTAS
DARI :
dan KE : SEMARANG
HARI KERJA

GOLONGAN	1	2	3	4	5	6	7	8
JAM	SEPEDA MOTOR SEKUTER SEPEDA KUMBANG DAN RODA 3	SEDAN, JEEP DAN STATION WAGON	OPLET, PICKUP, OPLET, SUBURBAN COMBI & MINIBUS	MICROTRUK	BUS	TRUK 2 SUMBU	TRUK 3 SUMBU ATAU LEBIH, GANDENGAN TRAILER	KENDARAAN TIDAK BERMOTOR & SEPEDA
06 - 07	467	540	540	48	72	129	49	257
07 - 08	827		963	98	136	256	98	385
08 - 09	948		1089	85	167	234	112	527
09 - 10	757		984	69	126	198	86	277
10 - 11	545		647	49	101	158	67	267
11 - 12	545		647	49	101	158	67	267
12 - 13	545		647	49	101	158	67	267
13 - 14	545		647	49	101	158	67	267
14 - 15	757		984	69	126	198	86	277
15 - 16	746		1129	76	155	239	109	521
16 - 17	857		1142	75	170	258	110	420
17 - 18	678		921	66	118	198	97	310
18 - 19	489		675	40	96	157	65	215
19 - 20	335		679	28	58	99	51	140
20 - 21	261		443	22	38	76	35	65
21 - 22	159		267	14	25	52	24	54
22 - 23	73		101	7	13	27	12	38
23 - 24	46		56	4	8	12	6	21
24 - 01	20		55	5	9	14	6	13
01 - 02	20		55	5	9	14	6	13
02 - 03	20		55	5	9	14	6	13
03 - 04	20		55	5	9	14	6	13
04 - 05	77		88	8	14	22	9	14
05 - 06	241		276	25	43	68	29	137
TOTAL	9.978		13.145	950	1.806	2.911	1.276	4.778

CATATAN : Data tersebut di atas kami survey di jalan Siliwangi, arah kendaraan dari dan ke Semarang.

PENGAWAS:

(.....)

21 OKT. 1987 APY