

The background features a large, light gray watermark of the Universitas Islam Indonesia logo. The logo is a shield-shaped emblem with a central minaret and an open book. The text "UNIVERSITAS ISLAM INDONESIA" is written around the perimeter of the shield, and there is Arabic calligraphy at the bottom. The word "LAMPIRAN" is superimposed on the center of the logo.

**LAMPIRAN**

Dengan nilai GI sebesar 14 tanah termasuk kelompok A-7-6 (14) yang termasuk material berlempung dengan penilaian sebagai tanah dasar sedang sampai buruk.

## 5.2. Sifat Mekanik Tanah dengan Stabilisasi Serbuk Kulit Kerang

Pengujian sifat fisik dan sifat mekanik tanah meliputi Uji Konsistensi tanah, Uji Tekan Bebas (UCS), dan Uji Triaxial (UU). Hasil Pengujian yang telah dilakukan terhadap tanah stabilisasi seperti terlihat pada Tabel 5.2. berikut :

Tabel 5.2. Hasil Pengujian terhadap Tanah Stabilisasi

Parameter Pengujian Terhadap Sifat Mekanis Tanah	Kadar Serbuk Kulit Kerang (%)						
	0	2	4	6	8	10	12
a. Konsistensi tanah							
1. Batas cair (%)	52,33	49,37	37,91	34,71	32,70	31,83	30,06
2. Batas plastis (%)	29,36	28,38	24,65	24,22	24,04	23,63	23,15
3. Indeks Plastisitas (%)	22,97	20,99	13,26	10,49	8,65	8,20	6,91
a. Tekan Bebas							
1. $q_u$ (kg / cm <sup>2</sup> )	2,80	3,16	3,24	2,89	2,88	2,85	2,83
2. $c$ ( kg / cm <sup>2</sup> )	1,18	1,42	1,51	1,35	1,30	1,29	1,23
3. Sudut Geser dalam ( ° )	10	6	4	4	6	6	8
b. Triaxial (UU)							
1. Tegangan ( $\sigma_1$ )	10,64	13,24	17,58	12,66	12,49	11,67	11,01
2. Sudur Geser ( $\phi$ )	28,84	33,34	36,86	32,17	31,77	30,78	29,24
3. Kohesi (kg / cm <sup>2</sup> )	1,44	1,70	2,33	1,68	1,67	1,55	1,52

Berdasarkan hasil pengujian batas konsistensi yang dilakukan didapat nilai batas cair 40,22 %, batas plastis 24,65 % sehingga Indeks Plastisitas sebesar 13,26 %. Menurut Atterberg (1911), tanah tersebut tanah kurus dengan plastisitas sedang (7 – 17 %).

Menurut Skempton (1953) mendefinisikan parameter  $A = PI / C$  dengan  $PI = 13,26\%$ ,  $C = 28,6\%$  diperoleh nilai  $A = 0,46$  dengan  $C$  adalah persentase berat dari fraksi ukuran lempung tanah yang diuji merupakan fungsi dari macam

## PENGUJIAN BERAT JENIS AGREGAT

**PROYEK** : Tugas Akhir  
**LOKASI** : Kebumen  
**SAMPEL** : 1

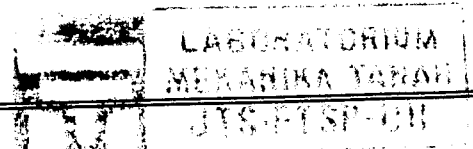
### AGREGAT KASAR (tertahan # 10)

A	Berat benda uji kering oven		
B	Berat benda uji kering permukaan jenuh		
C	Berat benda uji dalam air		
*	Berat jenis kering oven (SG)		
*	Berat jenis kering permukaan jenuh (SSD)		
*	Berat jenis semu (Apperen)		
*	Penyerapan (Absorsi)		

### AGREGAT HALUS (lolos #10)

		1	2
1	No pengujian		
2	Berat Picknometer (W1)	20,00	34,20
3	Berat Picknometer + tanah kering (W2)	50,25	48,36
4	Berat Picknometer + tanah + air (W3)	78,56	87,50
5	Berat Picknometer + air (W4)	58,50	79,50
6	Temperatur (to)	26,50	26,50
7	Berat tanah kering (Wt)	30,25	14,16
8	$A = Wt + W4$	88,75	93,66
9	$I = A - W3$	10,19	6,16
10	Berat Jenis tanah, $G_s = Wt / I$	2,97	2,30
12	Berat jenis rata-rata		2,634

**LABORATORIUM MEKANIKA TANAH**  
**JURUSAN TEKNIK SIPIL FTSP**  
**UNIVERSITAS ISLAM INDONESIA**





**LABORATORIUM MEKANIKA TANAH**  
**FAKULTAS TEKNIK SIPIL DAN PERENCANAAN UII**

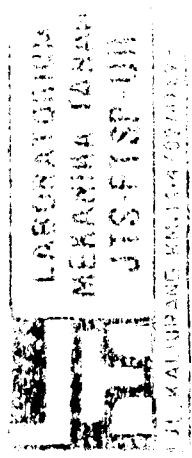
Jl. Kaliurang KM. 14,4 Telp. (0274) 895042 Yogyakarta 55584.

**PENGUJIAN BATAS SUSUT TANAH**

PROYEK : Tugas Akhir  
 Asal Sampe : Kebumen  
 NO Sampel : 1. Tanah Asli

DIKERJAKAN : Akhyar / Danny  
 TANGGAL : 18 - 9 - 2003

	1	2	3	4
1 No Pengujian (kode sampel)	2,651	2,651	2,651	2,651
2 Berat jenis tanah	41,17	37,87	39,90	34,57
3 Berat Cawan Susut	69,90	67,40	68,20	58,60
4 Berat cawan susut + tanah basah	61,70	57,98	59,16	51,50
5 Berat cawan susut + tanah kering	8,20	9,42	9,04	7,10
6 Berat air	20,53	20,11	19,65	16,93
7 Berat tanah Kering	194,21	187,60	197,56	185,00
8 Berat air raksa yang terdesak tanah kering + gelas ukur	33,77	33,77	33,77	33,77
9 Berat gelas ukur	11,80	11,31	12,04	11,12
10 Volume tanah kering	$= (W_r - W_4) / 13,6$			
11 Batas Susut Tani	$SL (\%) = \frac{(V_o - W_o) - (1/G_s)}{V_o} \times 100\%$	19,74	19,83	24,81
12 Batas susut tanah rata-rata	19,79	19,57	19,44	19,89





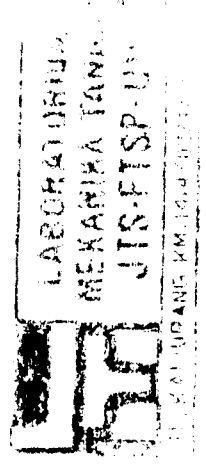
**LABORATORIUM MEKANIKA TANAH**  
**FAKULTAS TEKNIK SIPIL DAN PERENCANAAN UII**  
 Jl. Kaliurang KM. 14,4 Telp. (0274) 895042 Yogyakarta 55584.

PROYEK : Tugas Akhir  
 Asal Sampo : Kebumen  
 NO Sampel : 2. Tanah Campuran

DIKERJAKAN : Akhyar / Danny  
 TANGGAL : 18 - 9 - 2003

**PENGUJIAN BATAS SUSUT TANAH**

		2	4	6	8
1	No Pengujian (kode sampel)	2,651	2,651	2,651	2,651
2	Berat jenis tanah				
3	Berat Cawan Susut	42,56	38,45	39,45	35,19
4	Berat cawan susut + tanah basah	68,56	66,12	66,53	58,60
5	Berat cawan susut + tanah kering	61,70	57,98	58,12	51,21
6	Berat air	6,86	8,14	8,41	7,39
7	Berat tanah Kering	19,14	19,53	18,67	16,02
8	Berat air raksa yang terdesak tanah kering + gelas ukur	195,21	189,00	189,65	186,00
9	Berat gelas ukur	33,77	33,77	33,77	33,77
10	Volume tanah kering	11,87	11,41	11,46	11,19
11	Batas Susut Tan: SL (%) = $\frac{(V_0 - V_1) \times 100}{V_0}$	24,30	20,72	23,67	32,15
12	Batas susut tanah rata-rata SL (%)	21,96	22,20	22,41	22,96







**LABORATORIUM MEKANIKA TANAH**  
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**UNCONFINED COMPRESSION TEST**

Project : Tugas Akhir  
 Location : Kebumen.  
 Sample No : 1. Tanah + Serbuk Klt. Kerang 0%

Date : 4 Oktober 2003  
 Tested by : Akhyar + Danny

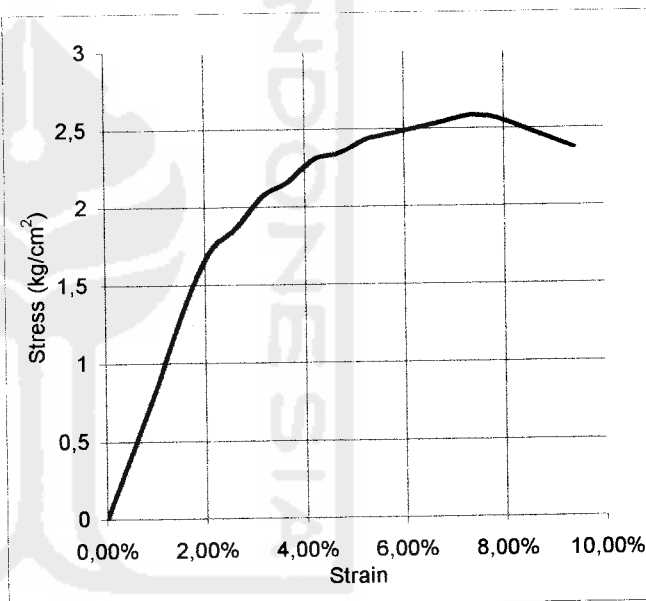
**Sample data**

diam (cm)	3,95
Area (cm <sup>2</sup> )	12,2542
Ht,Lo (cm)	7,65
Vol (cm <sup>3</sup> )	93,7444
Wt (gr)	164,2
Wet Unit wt (gr/cm <sup>3</sup> )	1,75157
Dry Unit wt (gr/cm <sup>3</sup> )	1,29913

Water Content	I	II
Wt Container (cup), gr	21,95	21,60
Wt of Cup + Wet soil, gr	105,15	128,30
Wt of Cup + Dry soil, gr	83,65	100,75
Water Content %	34,85	34,81
Average water content %	34,83	

LRC = 0,6692

Deformation dial rading (x 10 <sup>-2</sup> )	Load dial (unit)	Unit Strain (ΔL/Lo),	Total load on sample (kg)	Sample stress (kg/cm <sup>2</sup> )
0	0	0,00%	0	0
40	8	0,52%	5,3536	0,434595
80	16	1,05%	10,7072	0,864622
120	25	1,57%	16,73	1,343833
160	32	2,09%	21,4144	1,710969
200	35	2,61%	23,422	1,861379
240	39	3,14%	26,0988	2,062972
280	41	3,66%	27,4372	2,157058
320	44	4,18%	29,4448	2,302327
360	45	4,71%	30,114	2,341804
400	47	5,23%	31,4524	2,432463
440	48	5,75%	32,1216	2,470512
480	49	6,27%	32,7908	2,507989
520	50	6,80%	33,46	2,544896
560	51	7,32%	34,1292	2,581231
600	51	7,84%	34,1292	2,566668
640	50	8,37%	33,46	2,502064
680	49	8,89%	32,7908	2,438031
720	48	9,41%	32,1216	2,37457
760		9,93%	0	0
800		10,46%	0	0
840		10,98%	0	0
880		11,50%	0	0
920		12,03%	0	0



Angle Of Internal friction, Φ =	<b>20,0</b>	°
Cohesion =	<b>0,90</b>	kg/cm <sup>2</sup>

Checked by

Ir. H. A Halim Hasmar, MT

Tested by

Sugiyana



**LABORATORIUM MEKANIKA TANAH**  
**JURUSAN TEKNIK SIPIL-FTSP**  
**UNIVERSITAS ISLAM INDONESIA**

**UNCONFINED COMPRESSION TEST**

Project : Tugas Akhir  
 Location : Kebumen.  
 Sample No : 1. Tanah + Serbuk Klt. Kerang 0%

Date : 4 Oktober 2003  
 Tested by : Akhyar + Danny

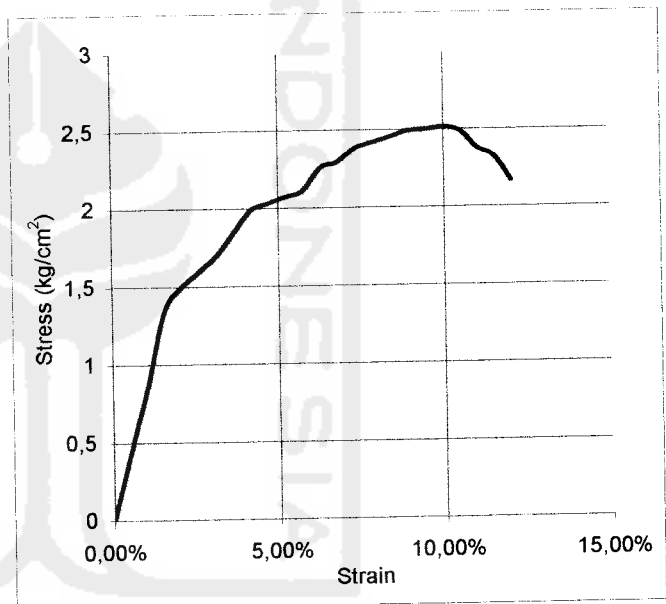
Sample data

diam (cm)	3,95
Area (cm <sup>2</sup> )	12,2542
Ht,Lo (cm)	7,65
Vol (cm <sup>3</sup> )	93,7444
Wt (gr)	164,2
Wet Unit wt (gr/cm <sup>3</sup> )	1,75157
Dry Unit wt (gr/cm <sup>3</sup> )	1,29913

Water Content	I	II
Wt Container (cup), gr	21,95	21,60
Wt of Cup + Wet soil, gr	105,15	128,30
Wt of Cup + Dry soil, gr	83,65	100,75
Water Content %	34,85	34,81
Average water content %	34,83	

LRC = 0,6692

Deformation dial rading (x 10 <sup>-2</sup> )	Load dial (unit)	Unit Strain (ΔL/Lo),	Total load on sample (kg)	Sample stress (kg/cm <sup>2</sup> )
0	0	0,00%	0	0
40	8	0,52%	5,3536	0,434595
80	16	1,05%	10,7072	0,864622
120	25	1,57%	16,73	1,343833
160	28	2,09%	18,7376	1,497098
200	30	2,61%	20,076	1,595467
240	32	3,14%	21,4144	1,692695
280	35	3,66%	23,422	1,841391
320	38	4,18%	25,4296	1,988374
360	39	4,71%	26,0988	2,029563
400	40	5,23%	26,768	2,070181
440	41	5,75%	27,4372	2,110229
480	44	6,27%	29,4448	2,252072
520	45	6,80%	30,114	2,290406
560	47	7,32%	31,4524	2,378781
600	48	7,84%	32,1216	2,415688
640	49	8,37%	32,7908	2,452023
680	50	8,89%	33,46	2,487787
720	50,5	9,41%	33,7946	2,498245
760	51	9,93%	34,1292	2,508418
800	51	10,46%	34,1292	2,493855
840	49	10,98%	32,7908	2,382065
880	48	11,50%	32,1216	2,319745
920	45	12,03%	30,114	2,161912



Angle Of Internal friction, Φ =	<b>22,0</b> °
Cohesion =	<b>0,85</b> kg/cm <sup>2</sup>

Checked by

Ir. H. A Halim Hasmar, MT

Tested by

Akhyar + Danny





**LABORATORIUM MEKANIKA TANAH**  
**JURUSAN TEKNIK SIPIL-FTSP**  
**UNIVERSITAS ISLAM INDONESIA**

**UNCONFINED COMPRESSION TEST**

Project : Tugas Akhir  
 Location : Kebumen.  
 Sample No : 2. Tanah + Serbuk Klt. Kerang 0%

Date : 4 Oktober 2003  
 Tested by : Akhyar + Danny

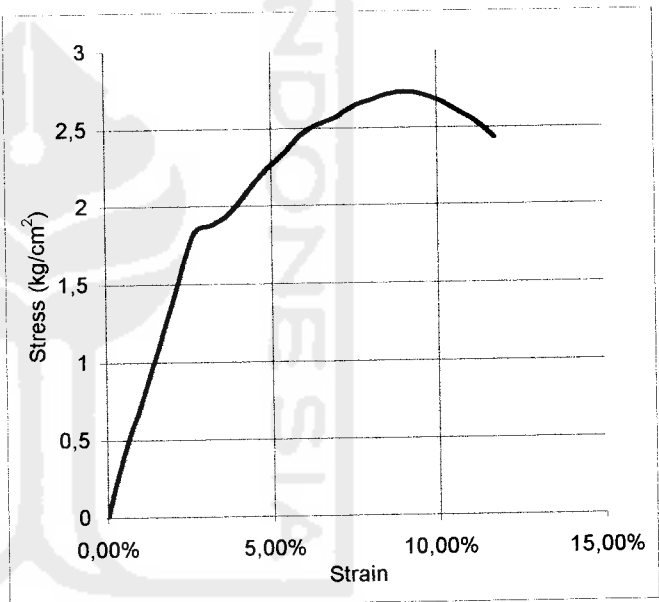
Sample data

diam (cm)	3,75
Area (cm <sup>2</sup> )	11,0447
Ht,Lo (cm)	7,5
Vol (cm <sup>3</sup> )	82,835
Wt (gr)	180,05
Wet Unit wt (gr/cm <sup>3</sup> )	2,1736
Dry Unit wt (gr/cm <sup>3</sup> )	1,61214

Water Content	I	II
Wt Container (cup), gr	21,95	21,60
Wt of Cup + Wet soil, gr	105,15	128,30
Wt of Cup + Dry soil, gr	83,65	100,75
Water Content %	34,85	34,81
Average water content %	34,83	

LRC = 0,6692

Deformation dial rading (x 10 <sup>-2</sup> )	Load dial (unit)	Unit Strain (ΔL/Lo)	Total load on sample (kg)	Sample stress (kg/cm <sup>2</sup> )
0	0	0,00%	0	0
40	7	0,53%	4,6844	0,42187
80	12,5	1,07%	8,365	0,749301
120	18,5	1,60%	12,3802	1,102987
160	25	2,13%	16,73	1,482444
200	31	2,67%	20,7452	1,828213
240	32	3,20%	21,4144	1,876847
280	33,5	3,73%	22,4182	1,953999
320	36	4,27%	24,0912	2,088186
360	38,5	4,80%	25,7642	2,220758
400	40,5	5,33%	27,1026	2,323034
440	43	5,87%	28,7756	2,452536
480	44,5	6,40%	29,7794	2,52371
520	45,5	6,93%	30,4486	2,565719
560	47	7,47%	31,4524	2,635115
600	48	8,00%	32,1216	2,67567
640	49	8,53%	32,7908	2,715579
680	49,5	9,07%	33,1254	2,727293
720	49,5	9,60%	33,1254	2,711297
760	49	10,13%	32,7908	2,668076
800	48	10,67%	32,1216	2,598115
840	47	11,20%	31,4524	2,528799
880	45,5	11,73%	30,4486	2,43339



Angle Of Internal friction, φ =	<b>10,0</b> °
Cohesion =	<b>1,14</b> kg/cm <sup>2</sup>

Checked by

*[Signature]*  
 Ir. H. A Halim Hasmar, MT

Tested by

Akhyar + Danny



**LABORATORIUM MEKANIKA TANAH**  
**JURUSAN TEKNIK SIPIL-FTSP**  
**UNIVERSITAS ISLAM INDONESIA**

**UNCONFINED COMPRESSION TEST**

Project : Tugas Akhir  
 Location : Kebumen.  
 Sample No : 3. Tanah + Serbuk Klt. Kerang 0%

Date : 4 Oktober 2003  
 Tested by : Akhyar + Danny

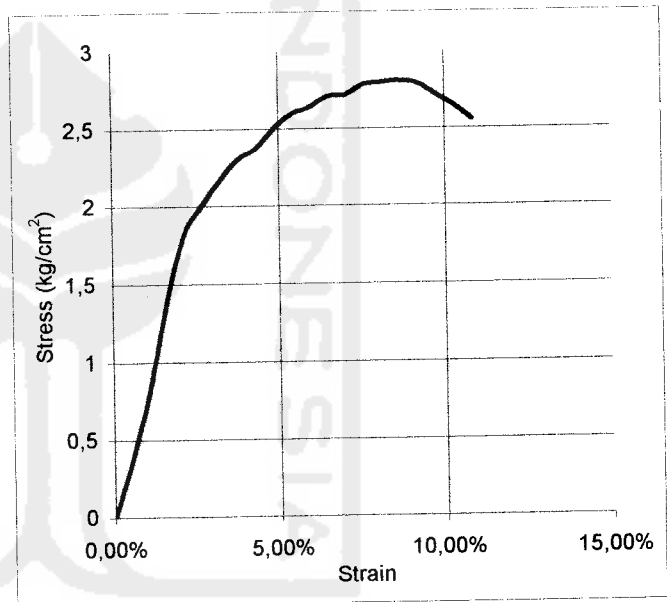
**Sample data**

diam (cm)	3,8
Area (cm <sup>2</sup> )	11,3411
Ht,Lo (cm)	7,4
Vol (cm <sup>3</sup> )	83,9245
Wt (gr)	165,8
Wet Unit wt (gr/cm <sup>3</sup> )	1,97559
Dry Unit wt (gr/cm <sup>3</sup> )	1,46528

Water Content	I	II
Wt Container (cup), gr	21,95	21,60
Wt of Cup + Wet soil, gr	105,15	128,30
Wt of Cup + Dry soil, gr	83,65	100,75
Water Content %	34,85	34,81
Average water content %	34,83	

LRC = 0,6692

Deformation dial rading (x 10 <sup>-2</sup> )	Load dial (unit)	Unit Strain (ΔL/Lo)	Total load on sample (kg)	Sample stress (kg/cm <sup>2</sup> )
0	0	0,00%	0	0
40	6,5	0,54%	4,3498	0,381468
80	14	1,08%	9,3688	0,817158
120	24	1,62%	16,0608	1,393188
160	31,5	2,16%	21,0798	1,818512
200	35	2,70%	23,422	2,009406
240	38	3,24%	25,4296	2,16952
280	40,5	3,78%	27,1026	2,299334
320	42	4,32%	28,1064	2,371099
360	44,5	4,86%	29,7794	2,498042
400	46,5	5,41%	31,1178	2,595483
440	47,5	5,95%	31,787	2,636149
480	49	6,49%	32,7908	2,703767
520	49,5	7,03%	33,1254	2,715569
560	51	7,57%	34,1292	2,781592
600	51,5	8,11%	34,4638	2,792436
640	52	8,65%	34,7984	2,802962
680	52	9,19%	34,7984	2,786376
720	51	9,73%	34,1292	2,716525
760	50	10,27%	33,46	2,647313
800	48,5	10,81%	32,4562	2,552424



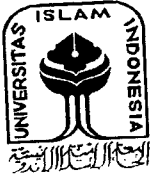
Angle Of Internal friction, φ =	<b>10,0</b> °
Cohesion =	<b>1,18</b> kg/cm <sup>2</sup>

Checked by

*(Signature)*  
 Ir. H. A Halim Hasmar, MT

Tested by

Akhyar + Danny



**LABORATORIUM MEKANIKA TANAH**  
**JURUSAN TEKNIK SIPIL-FTSP**  
**UNIVERSITAS ISLAM INDONESIA**

**UNCONFINED COMPRESSION TEST**

Project : Tugas Akhir  
 Location : Kebumen.  
 Sample No : 1. Tanah + Serbuk Kit. Kerang 2%

Date : 4 Oktober 2003  
 Tested by : Akhyar + Danny

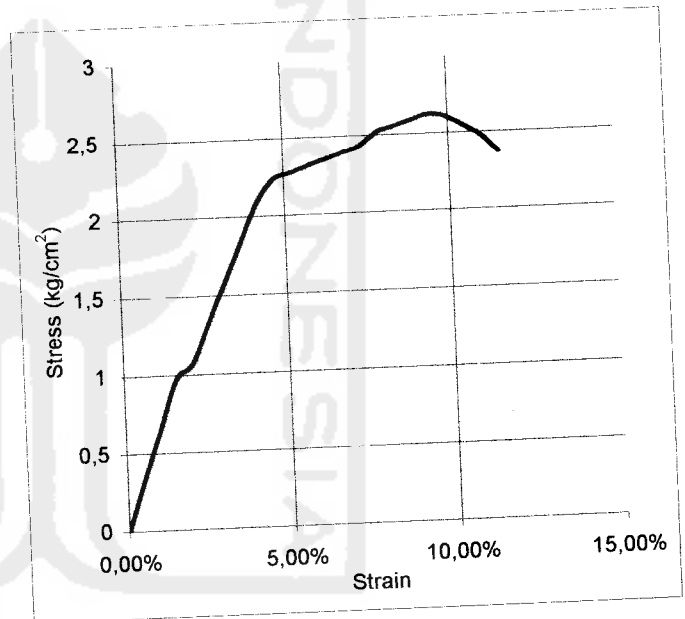
Sample data

diam (cm)	3,95
Area (cm <sup>2</sup> )	12,2542
Ht.Lo (cm)	7,65
Vol (cm <sup>3</sup> )	93,7444
Wt (gr)	164,9
Wet Unit wt (gr/cm <sup>3</sup> )	1,75904
Dry Unit wt (gr/cm <sup>3</sup> )	1,37458

Water Content	I	II
Wt Container (cup), gr	22,00	22,40
Wt of Cup + Wet soil, gr	50,70	49,40
Wt of Cup + Dry soil, gr	45,60	42,50
Water Content %	21,61	34,33
Average water content %	27,97	

LRC	0,6692
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Deformation dial rading (x 10 <sup>-2</sup> )	Load dial (unit)	Unit Strain (ΔL/Lo)	Total load on sample (kg)	Sample stress (kg/cm <sup>2</sup> )
0	0	0,00%	0	0
40	6	0,52%	4,0152	0,325947
80	12	1,05%	8,0304	0,648467
120	18	1,57%	12,0456	0,96756
160	20	2,09%	13,384	1,069356
200	25	2,61%	16,73	1,329556
240	30	3,14%	20,076	1,586901
280	35	3,66%	23,422	1,841391
320	40	4,18%	26,768	2,093025
360	43	4,71%	28,7756	2,237723
400	44	5,23%	29,4448	2,2772
440	45	5,75%	30,114	2,316105
480	46	6,27%	30,7832	2,354439
520	47	6,80%	31,4524	2,392202
560	48	7,32%	32,1216	2,429394
600	50	7,84%	33,46	2,516341
640	51	8,37%	34,1292	2,552105
680	52	8,89%	34,7984	2,587299
720	53	9,41%	35,4676	2,621921
760	53	9,93%	35,4676	2,606787
800	52	10,46%	34,7984	2,542754
840	51	10,98%	34,1292	2,479292
880	49	11,50%	32,7908	2,368073



Angle Of Internal friction, φ =	4,0 °
Cohesion =	1,22 kg/cm <sup>2</sup>

Checked by:

Ir. H. A Halim Hasmar, MT

Tested by

Akhyar + Danny



**LABORATORIUM MEKANIKA TANAH**  
**JURUSAN TEKNIK SIPIL-FTSP**  
**UNIVERSITAS ISLAM INDONESIA**

**UNCONFINED COMPRESSION TEST**

Project : Tugas Akhir  
 Location : Kebumen.  
 Sample No : 2. Tanah + Serbuk Klt. Kerang 2%

Date : 4 Oktober 2003  
 Tested by : Akhyar + Danny

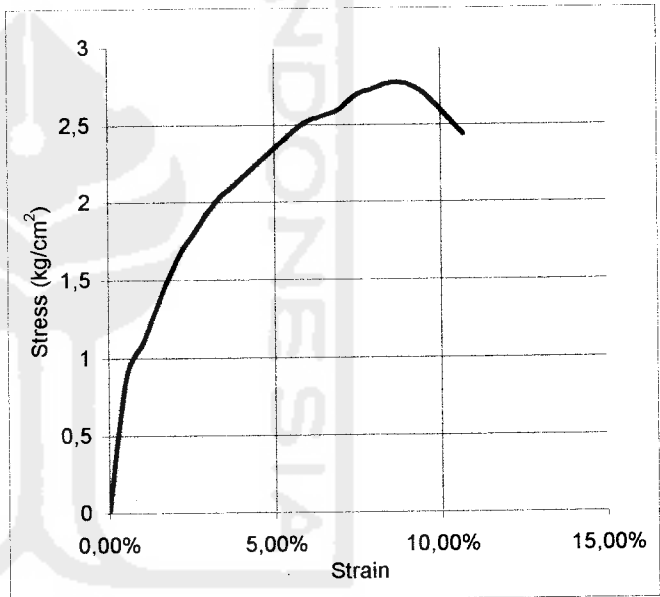
Sample data

diam (cm)	3,75
Area (cm <sup>2</sup> )	11,0447
Ht,Lo (cm)	7,5
Vol (cm <sup>3</sup> )	82,835
Wt (gr)	181,7
Wet Unit wt (gr/cm <sup>3</sup> )	2,19352
Dry Unit wt (gr/cm <sup>3</sup> )	1,7141

Water Content	I	II
Wt Container (cup), gr	22,00	22,40
Wt of Cup + Wet soil, gr	50,70	49,40
Wt of Cup + Dry soil, gr	45,60	42,50
Water Content %	21,61	34,33
Average water content %	27,97	

LRC = 0,6692

Deformation dial rading (x 10 <sup>-2</sup> )	Load dial (unit)	Unit Strain (ΔL/Lo)	Total load on sample (kg)	Sample stress (kg/cm <sup>2</sup> )
0	0	0,00%	0	0
40	14,5	0,53%	9,7034	0,873875
80	18,5	1,07%	12,3802	1,108965
120	23,5	1,60%	15,7262	1,401091
160	28	2,13%	18,7376	1,660337
200	31	2,67%	20,7452	1,828213
240	34	3,20%	22,7528	1,99415
280	36	3,73%	24,0912	2,099819
320	38	4,27%	25,4296	2,204196
360	40	4,80%	26,768	2,307281
400	42	5,33%	28,1064	2,409073
440	44	5,87%	29,4448	2,509572
480	45	6,40%	30,114	2,552066
520	46	6,93%	30,7832	2,593914
560	48	7,47%	32,1216	2,691181
600	49	8,00%	32,7908	2,731413
640	50	8,53%	33,46	2,770999
680	50	9,07%	33,46	2,754842
720	49	9,60%	32,7908	2,68391
760	47	10,13%	31,4524	2,559175
800	45	10,67%	30,114	2,435732



Angle Of Internal friction, φ =	<b>20,0</b> °
Cohesion =	<b>0,97</b> kg/cm <sup>2</sup>

Checked by

*[Signature]*  
 Ir. H. A Halim Hasmar, MT

Tested by

Akhyar + Danny



**LABORATORIUM MEKANIKA TANAH**  
**JURUSAN TEKNIK SIPIL-FTSP**  
**UNIVERSITAS ISLAM INDONESIA**

**UNCONFINED COMPRESSION TEST**

Project : Tugas Akhir  
 Location : Kebumen dan Cilacap  
 Sample No : 3. Tanah + Serbuk Klt. Kerang 2%

Date : 4 Oktober 2003  
 Tested by : Akhyar + Danny

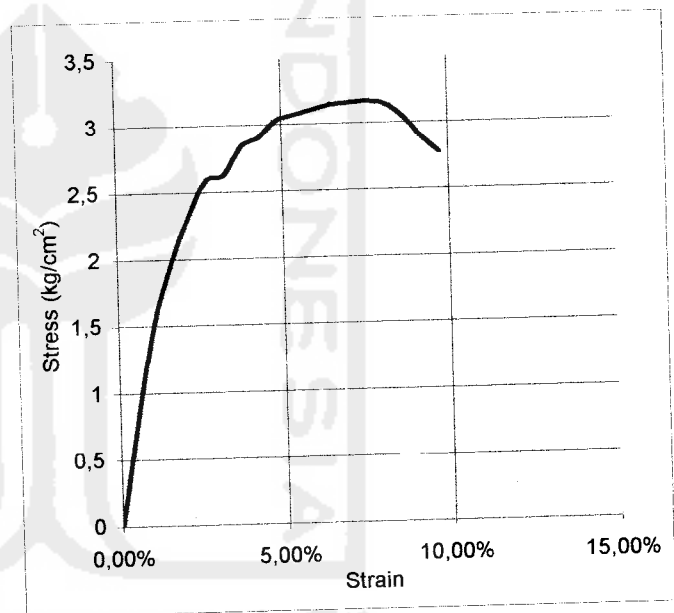
Sample data

diam (cm)	3,8
Area (cm <sup>2</sup> )	11,3411
Ht,Lo (cm)	7,4
Vol (cm <sup>3</sup> )	83,9245
Wt (gr)	165,8
Wet Unit wt (gr/cm <sup>3</sup> )	1,97559
Dry Unit wt (gr/cm <sup>3</sup> )	1,5438

Water Content	I	II
Wt Container (cup), gr	22,00	22,40
Wt of Cup + Wet soil, gr	50,70	49,40
Wt of Cup + Dry soil, gr	45,60	42,50
Water Content %	21,61	34,33
Average water content %	27,97	

LRC = 0,6692

Deformation dial rading (x 10 <sup>-2</sup> )	Load dial (unit)	Unit Strain (ΔL/Lo)	Total load on sample (kg)	Sample stress (kg/cm <sup>2</sup> )
0	0	0,00%	0	0
40	14	0,54%	9,3688	0,821624
80	26	1,08%	17,3992	1,51758
120	34	1,62%	22,7528	1,973683
160	40	2,16%	26,768	2,309222
200	45	2,70%	30,114	2,583522
240	46	3,24%	30,7832	2,626262
280	50	3,78%	33,46	2,838685
320	51,5	4,32%	34,4638	2,907419
360	54	4,86%	36,1368	3,031332
400	55	5,41%	36,806	3,069926
440	56	5,95%	37,4752	3,107881
480	57	6,49%	38,1444	3,145199
520	57,5	7,03%	38,479	3,154448
560	58	7,57%	38,8136	3,163379
600	58	8,11%	38,8136	3,14488
640	56,5	8,65%	37,8098	3,045526
680	54	9,19%	36,1368	2,893545
720	52	9,73%	34,7984	2,769791



Angle Of Internal friction, φ =	<b>6,0</b>	°
Cohesion =	<b>1,42</b>	kg/cm <sup>2</sup>

Checked by

*(Signature)*  
 Ir. H. A Halim Hasmar, MT

Tested by

Akhyar + Danny



**LABORATORIUM MEKANIKA TANAH**  
**JURUSAN TEKNIK SIPIL-FTSP**  
**UNIVERSITAS ISLAM INDONESIA**

**UNCONFINED COMPRESSION TEST**

Project : Tugas Akhir  
 Location : Kebumen.  
 Sample No : 1. Tanah + Serbuk Klt. Kerang 4%

Date : 4 Oktober 2003  
 Tested by : Akhyar + Danny

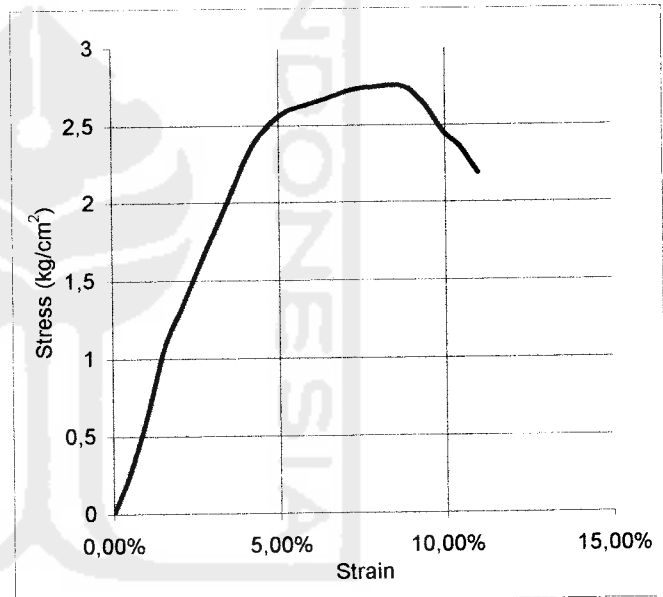
**Sample data**

diam (cm)	3,95
Area (cm <sup>2</sup> )	12,2542
Ht,Lo (cm)	7,65
Vol (cm <sup>3</sup> )	93,7444
Wt (gr)	167,5
Wet Unit wt (gr/cm <sup>3</sup> )	1,78677
Dry Unit wt (gr/cm <sup>3</sup> )	1,43856

Water Content		I	II
Wt Container (cup), gr		21,30	21,70
Wt of Cup + Wet soil, gr		60,60	54,00
Wt of Cup + Dry soil, gr		50,36	50,24
Water Content %		35,24	13,17
Average water content %		24,21	

LRC	0,6692
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Deformation dial rading (x 10 <sup>-2</sup> )	Load dial (unit)	Unit Strain (ΔL/Lo)	Total load on sample (kg)	Sample stress (kg/cm <sup>2</sup> )
0	0	0,00%	0	0
40	5	0,52%	3,346	0,271622
80	12	1,05%	8,0304	0,648467
120	20	1,57%	13,384	1,075067
160	25	2,09%	16,73	1,336695
200	30	2,61%	20,076	1,595467
240	35	3,14%	23,422	1,851385
280	40	3,66%	26,768	2,104447
320	45	4,18%	30,114	2,354653
360	48	4,71%	32,1216	2,497924
400	50	5,23%	33,46	2,587727
440	51	5,75%	34,1292	2,624919
480	52	6,27%	34,7984	2,66154
520	53	6,80%	35,4676	2,697589
560	54	7,32%	36,1368	2,733068
600	54,5	7,84%	36,4714	2,742812
640	55	8,37%	36,806	2,752271
680	55	8,89%	36,806	2,736566
720	53	9,41%	35,4676	2,621921
760	50	9,93%	33,46	2,459233
800	48	10,46%	32,1216	2,347158
840	45	10,98%	30,114	2,187611



Angle Of Internal friction, φ =	<b>6,0</b>	°
Cohesion =	<b>1,24</b>	kg/cm <sup>2</sup>

Checked by

Ir. H. A Halim Hasmar, MT

Tested by

Akhyar + Danny



**LABORATORIUM MEKANIKA TANAH**  
**JURUSAN TEKNIK SIPIL-FTSP**  
**UNIVERSITAS ISLAM INDONESIA**

**UNCONFINED COMPRESSION TEST**

Project : Tugas Akhir  
 Location : Kebumen.  
 Sample No : 2. Tanah + Serbuk Klt. Kerang 4%

Date : 4 Oktober 2003  
 Tested by : Akhyar + Danny

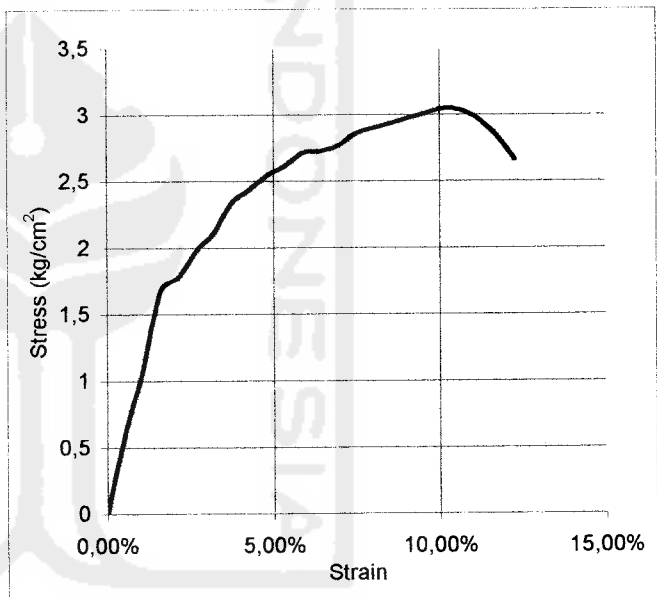
Sample data

diam (cm)	3,75
Area (cm <sup>2</sup> )	11,0447
Ht,Lo (cm)	7,5
Vol (cm <sup>3</sup> )	82,835
Wt (gr)	183,3
Wet Unit wt (gr/cm <sup>3</sup> )	2,21283
Dry Unit wt (gr/cm <sup>3</sup> )	1,78158

Water Content	I	II
Wt Container (cup), gr	21,30	21,70
Wt of Cup + Wet soil, gr	60,60	54,00
Wt of Cup + Dry soil, gr	50,36	50,24
Water Content %	35,24	13,17
Average water content %	24,21	

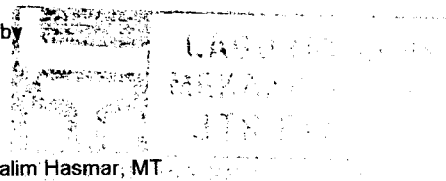
LRC = 0,6692

Deformation dial rading (x 10 <sup>-2</sup> )	Load dial (unit)	Unit Strain (ΔL/Lo)	Total load on sample (kg)	Sample stress (kg/cm <sup>2</sup> )
0	0	0,00%	0	0
40	10	0,53%	6,692	0,602672
80	18	1,07%	12,0456	1,078993
120	28	1,60%	18,7376	1,669386
160	30	2,13%	20,076	1,778933
200	33,5	2,67%	22,4182	1,97565
240	36	3,20%	24,0912	2,111453
280	40	3,73%	26,768	2,333133
320	42	4,27%	28,1064	2,436217
360	44	4,80%	29,4448	2,538009
400	45,5	5,33%	30,4486	2,609829
440	47,5	5,87%	31,787	2,709197
480	48	6,40%	32,1216	2,722204
520	49	6,93%	32,7908	2,763082
560	51	7,47%	34,1292	2,85938
600	52	8,00%	34,7984	2,898643
640	53	8,53%	35,4676	2,937259
680	54	9,07%	36,1368	2,975229
720	55	9,60%	36,806	3,012553
760	56	10,13%	37,4752	3,04923
800	56	10,67%	37,4752	3,031134
840	55	11,20%	36,806	2,959233
880	53	11,73%	35,4676	2,834498
920	50	12,27%	33,46	2,657897



Angle Of internal friction, φ =	<b>12,0</b>	<b>°</b>
Cohesion =	<b>1,23</b>	<b>kg/cm<sup>2</sup></b>

Checked by



Ir. H. A Halim Hasmar, MT

Tested by

Akhyar + Danny



**LABORATORIUM MEKANIKA TANAH**  
**JURUSAN TEKNIK SIPIL-FTSP**  
**UNIVERSITAS ISLAM INDONESIA**

**UNCONFINED COMPRESSION TEST**

Project : Tugas Akhir  
 Location : Kebumen dan Cilacap  
 Sample No : 3. Tanah + Serbuk Kit. Kerang 4%

Date : 4 Oktober 2003  
 Tested by : Akhyar + Danny

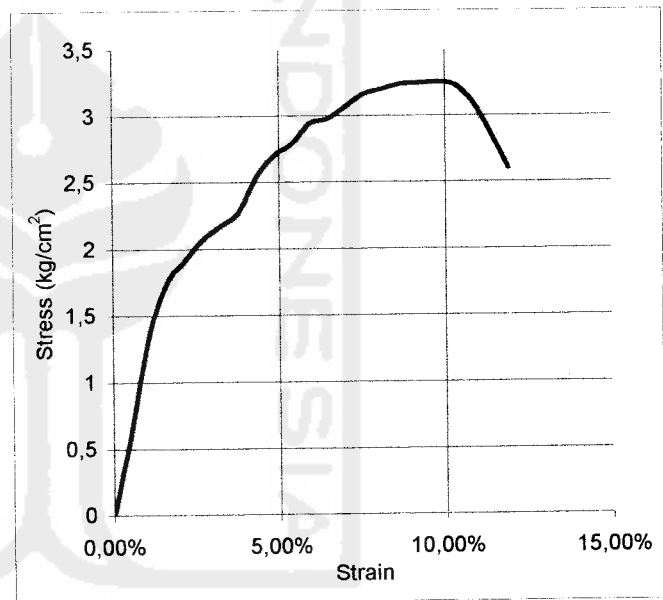
Sample data

diam (cm)	3,8
Area (cm <sup>2</sup> )	11,3411
Ht,Lo (cm)	7,4
Vol (cm <sup>3</sup> )	83,9245
Wt (gr)	168,1
Wet Unit wt (gr/cm <sup>3</sup> )	2,00299
Dry Unit wt (gr/cm <sup>3</sup> )	1,61264

Water Content		I	II
Wt Container (cup), gr		21,30	21,70
Wt of Cup + Wet soil, gr		60,60	54,00
Wt of Cup + Dry soil, gr		50,36	50,24
Water Content %		35,24	13,17
Average water content %		24,21	

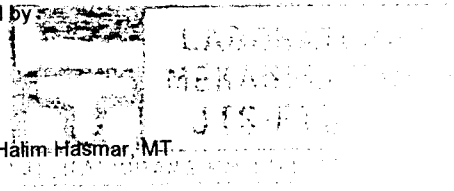
LRC = 0,6692

Deformation dial rading (x 10 <sup>-2</sup> )	Load dial (unit)	Unit Strain (ΔL/Lo)	Total load on sample (kg)	Sample stress (kg/cm <sup>2</sup> )
0	0	0,00%	0	0
40	11	0,54%	7,3612	0,645562
80	23	1,08%	15,3916	1,342475
120	30	1,62%	20,076	1,741485
160	33	2,16%	22,0836	1,905108
200	36	2,70%	24,0912	2,066818
240	38	3,24%	25,4296	2,16952
280	40	3,78%	26,768	2,270948
320	45	4,32%	30,114	2,540463
360	48	4,86%	32,1216	2,694518
400	50	5,41%	33,46	2,790842
440	53	5,95%	35,4676	2,941388
480	54	6,49%	36,1368	2,979662
520	56	7,03%	37,4752	3,072158
560	58	7,57%	38,8136	3,163379
600	59	8,11%	39,4828	3,199102
640	60	8,65%	40,152	3,234187
680	60,5	9,19%	40,4866	3,241842
720	61	9,73%	40,8212	3,249177
760	61	10,27%	40,8212	3,229721
800	59	10,81%	39,4828	3,105011
840	55	11,35%	36,806	2,876959
880	50	11,89%	33,46	2,59947



Angle Of Internal friction, $\Phi$ =	<b>4,0</b>	<b>°</b>
Cohesion =	<b>1,51</b>	<b>kg/cm<sup>2</sup></b>

Checked by:



Ir. H. A Halim Hasmar, MT

Tested by

Akhyar + Danny





**LABORATORIUM MEKANIKA TANAH**  
**JURUSAN TEKNIK SIPIL-FTSP**  
**UNIVERSITAS ISLAM INDONESIA**

**UNCONFINED COMPRESSION TEST**

Project : Tugas Akhir  
 Location : Kebumen dan Cilacap  
 Sample No : 1. Tanah + Serbuk Kit. Kerang 6%

Date : 4 Oktober 2003  
 Tested by : Akhyar + Danny

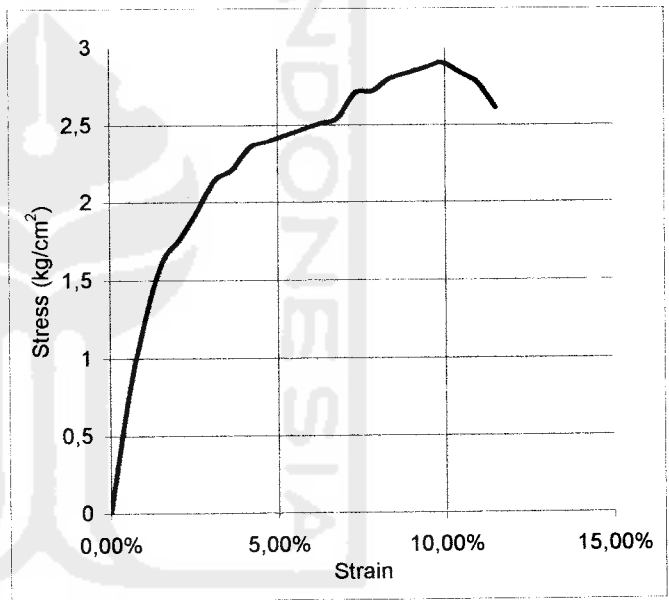
**Sample data**

diam (cm)	3,95
Area (cm <sup>2</sup> )	12,2542
Ht,Lo (cm)	7,65
Vol (cm <sup>3</sup> )	93,7444
Wt (gr)	166,5
Wet Unit wt (gr/cm <sup>3</sup> )	1,77611
Dry Unit wt (gr/cm <sup>3</sup> )	1,43705

Water Content		I	II
Wt Container (cup), gr		14,40	22,30
Wt of Cup + Wet soil, gr		46,80	56,40
Wt of Cup + Dry soil, gr		40,06	50,50
Water Content %		26,27	20,92
Average water content %		23,59	

LRC = 0,6692

Deformation dial rading (x 10 <sup>-2</sup> )	Load dial (unit)	Unit Strain (ΔL/Lo)	Total load on sample (kg)	Sample stress (kg/cm <sup>2</sup> )
0	0	0,00%	0	0
40	13	0,52%	8,6996	0,706217
80	23	1,05%	15,3916	1,242894
120	30	1,57%	20,076	1,6126
160	33	2,09%	22,0836	1,764437
200	36,5	2,61%	24,4258	1,941152
240	40,5	3,14%	27,1026	2,142317
280	42	3,66%	28,1064	2,209669
320	45	4,18%	30,114	2,354653
360	46	4,71%	30,7832	2,393844
400	47	5,23%	31,4524	2,432463
440	48	5,75%	32,1216	2,470512
480	49	6,27%	32,7908	2,507989
520	50	6,80%	33,46	2,544896
560	53,5	7,32%	35,8022	2,707762
600	54	7,84%	36,1368	2,717649
640	56	8,37%	37,4752	2,802312
680	57	8,89%	38,1444	2,836077
720	58	9,41%	38,8136	2,869272
760	59	9,93%	39,4828	2,901895
800	58	10,46%	38,8136	2,836149
840	57	10,98%	38,1444	2,770974
880	54	11,50%	36,1368	2,609714



Angle Of internal friction, φ =	<b>28,0</b> °
Cohesion =	<b>0,87</b> kg/cm <sup>2</sup>

Checked by

Ir. H. A Halim Hasmar, MT

Tested by

Akhyar + Danny



**LABORATORIUM MEKANIKA TANAH**  
**JURUSAN TEKNIK SIPIL-FTSP**  
**UNIVERSITAS ISLAM INDONESIA**

**UNCONFINED COMPRESSION TEST**

Project : Tugas Akhir  
 Location : Kebumen dan Cilacap  
 Sample No : 3. Tanah + Serbuk Kit. Kerang 6%

Date : 4 Oktober 2003  
 Tested by : Akhyar + Danny

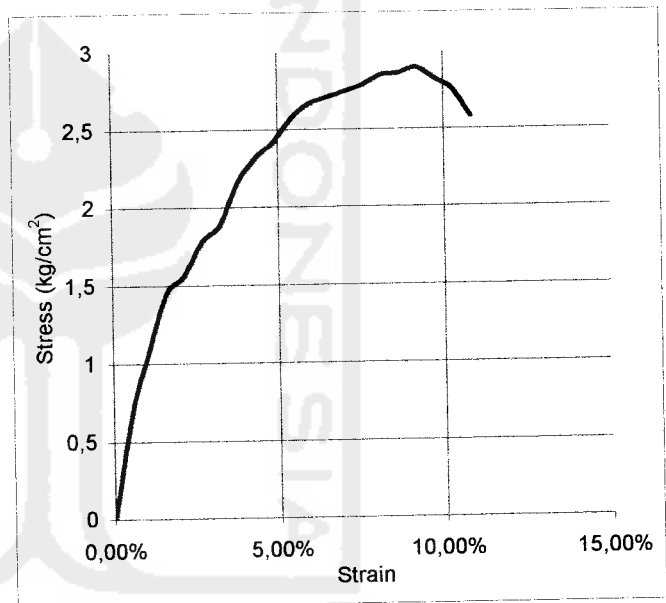
**Sample data**

diam (cm)	3,8
Area (cm <sup>2</sup> )	11,3411
Ht,Lo (cm)	7,4
Vol (cm <sup>3</sup> )	83,9245
Wt (gr)	166,9
Wet Unit wt (gr/cm <sup>3</sup> )	1,98869
Dry Unit wt (gr/cm <sup>3</sup> )	1,60905

Water Content		I	II
Wt Container (cup), gr		14,40	22,30
Wt of Cup + Wet soil, gr		46,80	56,40
Wt of Cup + Dry soil, gr		40,06	50,50
Water Content %		26,27	20,92
Average water content %		23,59	

LRC = 0,6692

Deformation dial rading (x 10 <sup>-2</sup> )	Load dial (unit)	Unit Strain (ΔL/Lo)	Total load on sample (kg)	Sample stress (kg/cm <sup>2</sup> )
0	0	0,00%	0	0
40	11,5	0,54%	7,6958	0,674905
80	18,5	1,08%	12,3802	1,079816
120	25	1,62%	16,73	1,451238
160	27	2,16%	18,0684	1,558725
200	31	2,70%	20,7452	1,77976
240	33	3,24%	22,0836	1,884057
280	38	3,78%	25,4296	2,1574
320	41	4,32%	27,4372	2,314644
360	43	4,86%	28,7756	2,413839
400	46	5,41%	30,7832	2,567574
440	48	5,95%	32,1216	2,663898
480	49	6,49%	32,7908	2,703767
520	50	7,03%	33,46	2,742999
560	51	7,57%	34,1292	2,781592
600	52,5	8,11%	35,133	2,846658
640	53	8,65%	35,4676	2,856865
680	54	9,19%	36,1368	2,893545
720	53	9,73%	35,4676	2,823056
760	52	10,27%	34,7984	2,753205
800	49	10,81%	32,7908	2,578738



Angle Of Internal friction, $\Phi$	=	<b>4,0</b>	<sup>o</sup>
Cohesion	=	<b>1,35</b>	kg/cm <sup>2</sup>

Checked by

*(Signature)*  
 Ir. H. A Halim Hasmar, MT

Tested by

Akhyar + Danny



**LABORATORIUM MEKANIKA TANAH**  
**JURUSAN TEKNIK SIPIL-FTSP**  
**UNIVERSITAS ISLAM INDONESIA**

**UNCONFINED COMPRESSION TEST**

Project : Tugas Akhir  
 Location : Kebumen dan Cilacap  
 Sample No : 1. Tanah + Serbuk Klt. Kerang 8%

Date : 4 Oktober 2003  
 Tested by : Akhyar + Danny

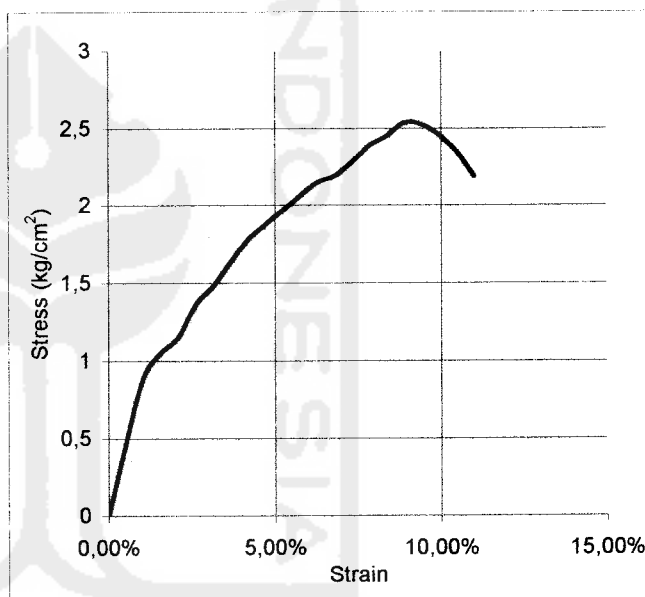
Sample data

diam (cm)	3,95
Area (cm <sup>2</sup> )	12,2542
Ht,Lo (cm)	7,65
Vol (cm <sup>3</sup> )	93,7444
Wt (gr)	165
Wet Unit wt (gr/cm <sup>3</sup> )	1,7601
Dry Unit wt (gr/cm <sup>3</sup> )	1,43869

Water Content		I	II
Wt Container (cup), gr		22,30	21,80
Wt of Cup + Wet soil, gr		56,60	57,80
Wt of Cup + Dry soil, gr		50,08	51,50
Water Content %		23,47	21,21
Average water content %		22,34	

LRC	0,6692
-----	--------

Deformation dial rading (x 10 <sup>-2</sup> )	Load dial (unit)	Unit Strain ( $\Delta L/L_0$ )	Total load on sample (kg)	Sample stress (kg/cm <sup>2</sup> )
0	0	0,00%	0	0
40	8,5	0,52%	5,6882	0,461758
80	16,5	1,05%	11,0418	0,891641
120	19,5	1,57%	13,0494	1,04819
160	21,5	2,09%	14,3878	1,149558
200	25,5	2,61%	17,0646	1,356147
240	28	3,14%	18,7376	1,481108
280	31	3,66%	20,7452	1,630946
320	34	4,18%	22,7528	1,779071
360	36	4,71%	24,0912	1,873443
400	38	5,23%	25,4296	1,966672
440	40	5,75%	26,768	2,05876
480	42	6,27%	28,1064	2,149705
520	43	6,80%	28,7756	2,18861
560	45	7,32%	30,114	2,277557
600	47,5	7,84%	31,787	2,390524
640	49	8,37%	32,7908	2,452023
680	51	8,89%	34,1292	2,537543
720	51	9,41%	34,1292	2,52298
760	50	9,93%	33,46	2,459233
800	48	10,46%	32,1216	2,347158
840	45	10,98%	30,114	2,187611



Angle Of Internal friction, $\phi$ =	12,0 °
Cohesion =	1,03 kg/cm <sup>2</sup>

Checked by

Ir. H. A Halim Hasmar, MT

Tested by

Akhyar + Danny



**LABORATORIUM MEKANIKA TANAH**  
**JURUSAN TEKNIK SIPIL-FTSP**  
**UNIVERSITAS ISLAM INDONESIA**

**UNCONFINED COMPRESSION TEST**

Project : Tugas Akhir  
 Location : Kebumen dan Cilacap  
 Sample No : 2. Tanah + Serbuk Klt. Kerang 8%

Date : 4 Oktober 2003  
 Tested by : Akhyar + Danny

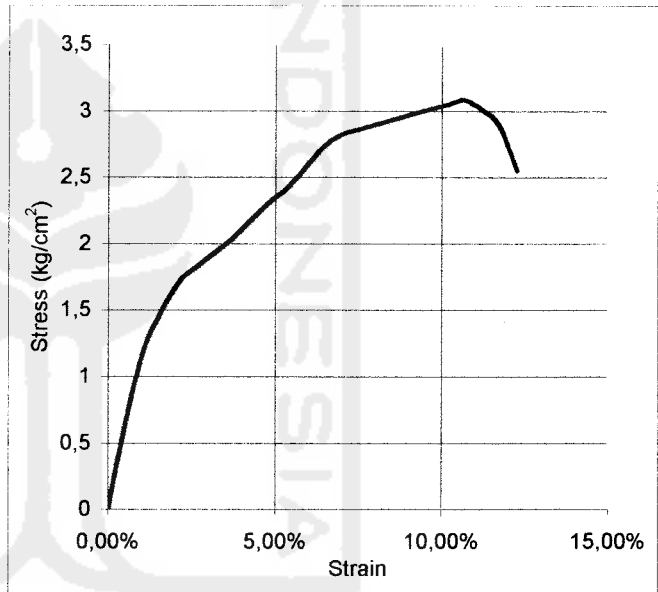
Sample data

diam (cm)	3,75
Area (cm <sup>2</sup> )	11,0447
Ht,Lo (cm)	7,5
Vol (cm <sup>3</sup> )	82,835
Wt (gr)	185
Wet Unit wt (gr/cm <sup>3</sup> )	2,23336
Dry Unit wt (gr/cm <sup>3</sup> )	1,82552

Water Content	I	II
Wt Container (cup), gr	22,30	21,80
Wt of Cup + Wet soil, gr	56,60	57,80
Wt of Cup + Dry soil, gr	50,08	51,50
Water Content %	23,47	21,21
Average water content %	22,34	

LRC	0,6692
-----	--------

Deformation dial rading (x 10 <sup>-2</sup> )	Load dial (unit)	Unit Strain ( $\Delta L/L_0$ )	Total load on sample (kg)	Sample stress (kg/cm <sup>2</sup> )
0	0	0,00%	0	0
40	11	0,53%	7,3612	0,662939
80	20	1,07%	13,384	1,198881
120	25	1,60%	16,73	1,490523
160	29	2,13%	19,4068	1,719635
200	31	2,67%	20,7452	1,828213
240	33	3,20%	22,0836	1,935498
280	35	3,73%	23,422	2,041491
320	37,5	4,27%	25,095	2,175194
360	40	4,80%	26,768	2,307281
400	42	5,33%	28,1064	2,409073
440	45	5,87%	30,114	2,566608
480	48	6,40%	32,1216	2,722204
520	50	6,93%	33,46	2,819471
560	51	7,47%	34,1292	2,85938
600	52	8,00%	34,7984	2,898643
640	53	8,53%	35,4676	2,937259
680	54	9,07%	36,1368	2,975229
720	55	9,60%	36,806	3,012553
760	56	10,13%	37,4752	3,04923
800	57	10,67%	38,1444	3,085261
840	56	11,20%	37,4752	3,013037
880	54	11,73%	36,1368	2,887979
920	48	12,27%	32,1216	2,551581



Angle Of Internal friction, $\phi$ =	<b>16,0</b> °
Cohesion =	<b>1,16</b> kg/cm <sup>2</sup>

Checked by



LABORATORIUM  
 MEKANISMA TANAH  
 JTS FTSP UII

Ir. H. A. Hajim Hasmar, M.T.

Tested by

Akhyar + Danny



**LABORATORIUM MEKANIKA TANAH**  
**JURUSAN TEKNIK SIPIL-FTSP**  
**UNIVERSITAS ISLAM INDONESIA**

**UNCONFINED COMPRESSION TEST**

Project : Tugas Akhir  
 Location : Kebumen dan Cilacap  
 Sample No : 3. Tanah + Serbuk Klt. Kerang 8%

Date : 4 Oktober 2003  
 Tested by : Akhyar + Danny

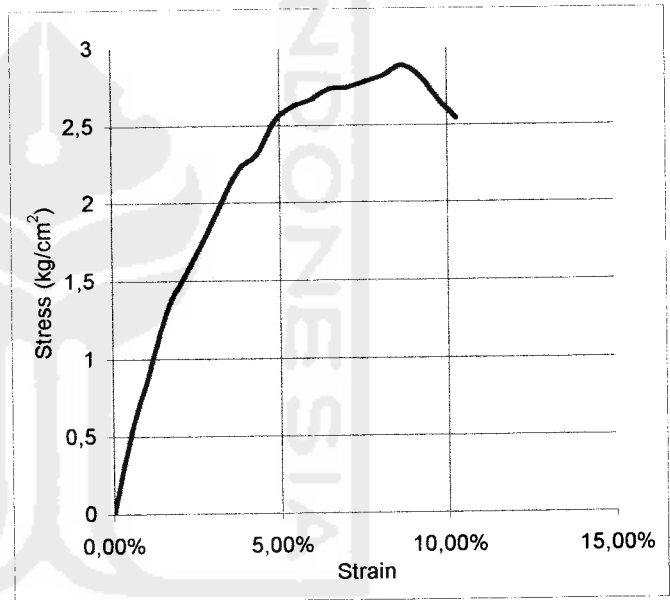
**Sample data**

diam (cm)	3,8
Area (cm <sup>2</sup> )	11,3411
Ht,Lo (cm)	7,4
Vol (cm <sup>3</sup> )	83,9245
Wt (gr)	165,4
Wet Unit wt (gr/cm <sup>3</sup> )	1,97082
Dry Unit wt (gr/cm <sup>3</sup> )	1,61092

Water Content	I	II
Wt Container (cup), gr	22,30	21,80
Wt of Cup + Wet soil, gr	56,60	57,80
Wt of Cup + Dry soil, gr	50,08	51,50
Water Content %	23,47	21,21
Average water content %	22,34	

LRC = 0,6692

Deformation dial rading (x 10 <sup>-2</sup> )	Load dial (unit)	Unit Strain (ΔL/Lo)	Total load on sample (kg)	Sample stress (kg/cm <sup>2</sup> )
0	0	0,00%	0	0
40	9	0,54%	6,0228	0,528187
80	15,5	1,08%	10,3726	0,904711
120	22,5	1,62%	15,057	1,306114
160	26,5	2,16%	17,7338	1,52986
200	30,5	2,70%	20,4106	1,751054
240	35	3,24%	23,422	1,998243
280	39	3,78%	26,0988	2,214174
320	41	4,32%	27,4372	2,314644
360	45	4,86%	30,114	2,52611
400	47	5,41%	31,4524	2,623391
440	48	5,95%	32,1216	2,663898
480	49,5	6,49%	33,1254	2,731357
520	50	7,03%	33,46	2,742999
560	51	7,57%	34,1292	2,781592
600	52	8,11%	34,7984	2,819547
640	53,5	8,65%	35,8022	2,883816
680	52,5	9,19%	35,133	2,813168
720	50	9,73%	33,46	2,66326
760	48	10,27%	32,1216	2,54142



Angle Of Internal friction, φ =	<b>6,0</b>	°
Cohesion =	<b>1,30</b>	kg/cm <sup>2</sup>

Checked by

**Ir. H. A Halim Hasmar, MT**  
 LABORATORIUM MEKANIKA TANAH  
 JURUSAN TEKNIK SIPIL-FTSP  
 UNIVERSITAS ISLAM INDONESIA

Tested by

**Akhyar + Danny**



**LABORATORIUM MEKANIKA TANAH**  
**JURUSAN TEKNIK SIPIL-FTSP**  
**UNIVERSITAS ISLAM INDONESIA**

**UNCONFINED COMPRESSION TEST**

Project : Tugas Akhir  
 Location : Kebumen dan Cilacap  
 Sample No : 1. Tanah + Serbuk Klt. Kerang 10%

Date : 4 Oktober 2003  
 Tested by : Akhyar + Danny

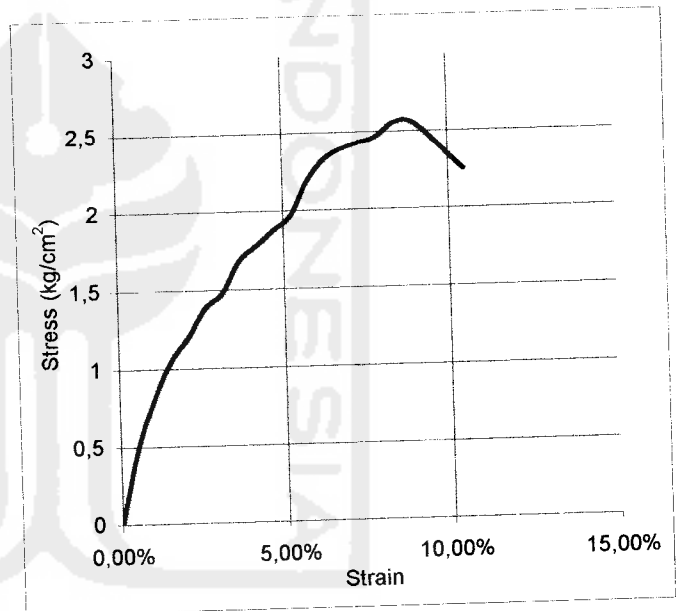
**Sample data**

diam (cm)	3,95
Area (cm <sup>2</sup> )	12,2542
Ht,Lo (cm)	7,65
Vol (cm <sup>3</sup> )	93,7444
Wt (gr)	171,5
Wet Unit wt (gr/cm <sup>3</sup> )	1,82944
Dry Unit wt (gr/cm <sup>3</sup> )	1,50865

Water Content	I	II
Wt Container (cup), gr	21,95	21,90
Wt of Cup + Wet soil, gr	55,00	53,80
Wt of Cup + Dry soil, gr	47,65	49,90
Water Content %	28,60	13,93
Average water content %	21,26	

LRC = 0,6692

Deformation dial rading (x 10 <sup>-2</sup> )	Load dial (unit)	Unit Strain (ΔL/Lo)	Total load on sample (kg)	Sample stress (kg/cm <sup>2</sup> )
0	0	0,00%	0	0
40	9	0,52%	6,0228	0,48892
80	15	1,05%	10,038	0,810583
120	19,5	1,57%	13,0494	1,04819
160	22,5	2,09%	15,057	1,203025
200	26	2,61%	17,3992	1,382738
240	28	3,14%	18,7376	1,481108
280	32	3,66%	21,4144	1,683557
320	34	4,18%	22,7528	1,779071
360	36	4,71%	24,0912	1,873443
400	38	5,23%	25,4296	1,966672
440	42,5	5,75%	28,441	2,187432
480	45,5	6,27%	30,4486	2,328847
520	47	6,80%	31,4524	2,392202
560	48	7,32%	32,1216	2,429394
600	49	7,84%	32,7908	2,466014
640	51	8,37%	34,1292	2,552105
680	51,5	8,89%	34,4638	2,562421
720	50	9,41%	33,46	2,47351
760	48	9,93%	32,1216	2,360864
800	46	10,46%	30,7832	2,249359



Angle Of Internal friction, φ =	<b>28,0 °</b>
Cohesion =	<b>0,77 kg/cm<sup>2</sup></b>

Checked by

Ir. H. A Halim, Hasmar, MT

Tested by

Akhyar + Danny



**LABORATORIUM MEKANIKA TANAH**  
**JURUSAN TEKNIK SIPIL-FTSP**  
**UNIVERSITAS ISLAM INDONESIA**

**UNCONFINED COMPRESSION TEST**

Project : Tugas Akhir  
 Location : Kebumen dan Cilacap  
 Sample No : 2. Tanah + Serbuk Klt. Kerang 10%

Date : 4 Oktober 2003  
 Tested by : Akhyar + Danny

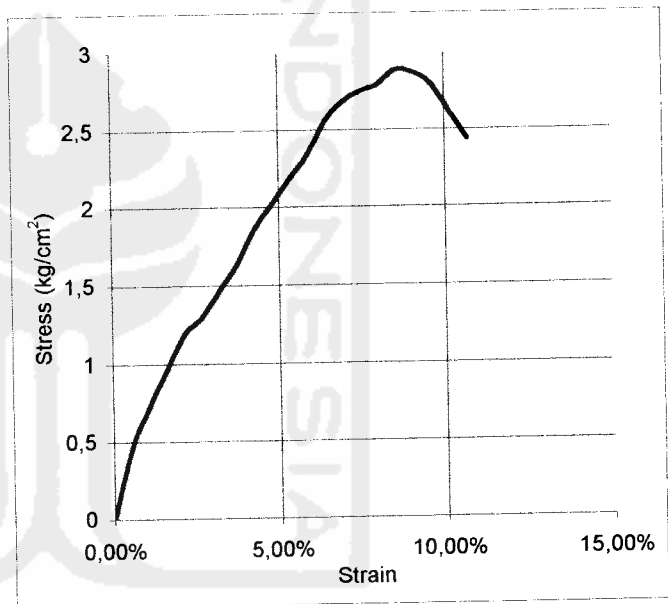
Sample data

diam (cm)	3,75
Area (cm <sup>2</sup> )	11,0447
Ht,Lo (cm)	7,5
Vol (cm <sup>3</sup> )	82,835
Wt (gr)	184
Wet Unit wt (gr/cm <sup>3</sup> )	2,22128
Dry Unit wt (gr/cm <sup>3</sup> )	1,83178

Water Content		I	II
Wt Container (cup), gr		21,95	21,90
Wt of Cup + Wet soil, gr		55,00	53,80
Wt of Cup + Dry soil, gr		47,65	49,90
Water Content %		28,60	13,93
Average water content %		21,26	

LRC	0,6692
-----	--------

Deformation dial rading (x 10 <sup>-2</sup> )	Load dial (unit)	Unit Strain (ΔL/Lo)	Total load on sample (kg)	Sample stress (kg/cm <sup>2</sup> )
0	0	0,00%	0	0
40	7,5	0,53%	5,019	0,452004
80	12	1,07%	8,0304	0,719329
120	16	1,60%	10,7072	0,953935
160	20	2,13%	13,384	1,185955
200	22	2,67%	14,7224	1,297442
240	25	3,20%	16,73	1,466287
280	28	3,73%	18,7376	1,633193
320	32	4,27%	21,4144	1,856165
360	35	4,80%	23,422	2,018871
400	38	5,33%	25,4296	2,179637
440	41	5,87%	27,4372	2,338465
480	45	6,40%	30,114	2,552066
520	47,5	6,93%	31,787	2,678498
560	49	7,47%	32,7908	2,747248
600	50	8,00%	33,46	2,787156
640	52	8,53%	34,7984	2,881839
680	52	9,07%	34,7984	2,865035
720	51	9,60%	34,1292	2,793458
760	48	10,13%	32,1216	2,613626
800	45	10,67%	30,114	2,435732



Angle Of Internal friction, φ =	38,0 °
Cohesion =	0,70 kg/cm <sup>2</sup>

Checked by

**Ir. H. A Halim Hasmar, MT**

Tested by

**Akhyar + Danny**



**LABORATORIUM MEKANIKA TANAH**  
**JURUSAN TEKNIK SIPIL-FTSP**  
**UNIVERSITAS ISLAM INDONESIA**

**UNCONFINED COMPRESSION TEST**

Project : Tugas Akhir  
 Location : Kebumen dan Cilacap  
 Sample No : 3. Tanah + Serbuk Klt. Kerang 10%

Date : 4 Oktober 2003  
 Tested by : Akhyar + Danny

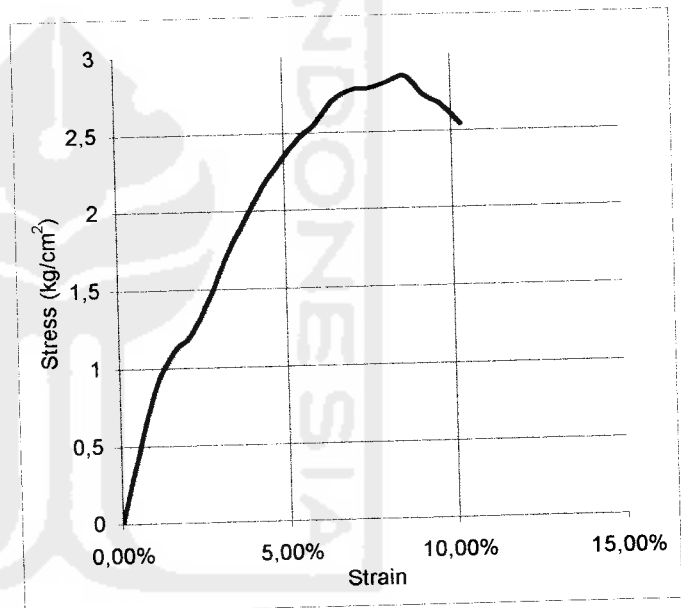
**Sample data**

diam (cm)	3,8
Area (cm <sup>2</sup> )	11,3411
Ht,Lo (cm)	7,4
Vol (cm <sup>3</sup> )	83,9245
Wt (gr)	172
Wet Unit wt (gr/cm <sup>3</sup> )	2,04946
Dry Unit wt (gr/cm <sup>3</sup> )	1,69008

Water Content	I	II
Wt Container (cup), gr	21,95	21,90
Wt of Cup + Wet soil, gr	55,00	53,80
Wt of Cup + Dry soil, gr	47,65	49,90
Water Content %	28,60	13,93
Average water content %	21,26	

LRC = 0,6692

Deformation dial rading (x 10 <sup>-2</sup> )	Load dial (unit)	Unit Strain (ΔL/Lo)	Total load on sample (kg)	Sample stress (kg/cm <sup>2</sup> )
0	0	0,00%	0	0
40	8	0,54%	5,3536	0,469499
80	15	1,08%	10,038	0,875527
120	19	1,62%	12,7148	1,102941
160	21	2,16%	14,0532	1,212342
200	25	2,70%	16,73	1,43529
240	30	3,24%	20,076	1,712779
280	34	3,78%	22,7528	1,930306
320	38	4,32%	25,4296	2,14528
360	41	4,86%	27,4372	2,301567
400	44	5,41%	29,4448	2,455941
440	46	5,95%	30,7832	2,552902
480	49	6,49%	32,7908	2,703767
520	50,5	7,03%	33,7946	2,770429
560	51	7,57%	34,1292	2,781592
600	52	8,11%	34,7984	2,819547
640	53	8,65%	35,4676	2,856865
680	51	9,19%	34,1292	2,732792
720	50	9,73%	33,46	2,66326
760	48	10,27%	32,1216	2,54142



Angle Of Internal friction, φ =	6,0 °
Cohesion =	1,29 kg/cm <sup>2</sup>

Checked by

Ir. H. A Halim Hasmar, MT

Tested by

Akhyar + Danny





**LABORATORIUM MEKANIKA TANAH**  
**JURUSAN TEKNIK SIPIL-FTSP**  
**UNIVERSITAS ISLAM INDONESIA**

**UNCONFINED COMPRESSION TEST**

Project : Tugas Akhir  
 Location : Kebumen.  
 Sample No : 2. Tanah + Serbuk Kit. Kerang 12%

Date : 4 Oktober 2003  
 Tested by : Akhyar + Danny

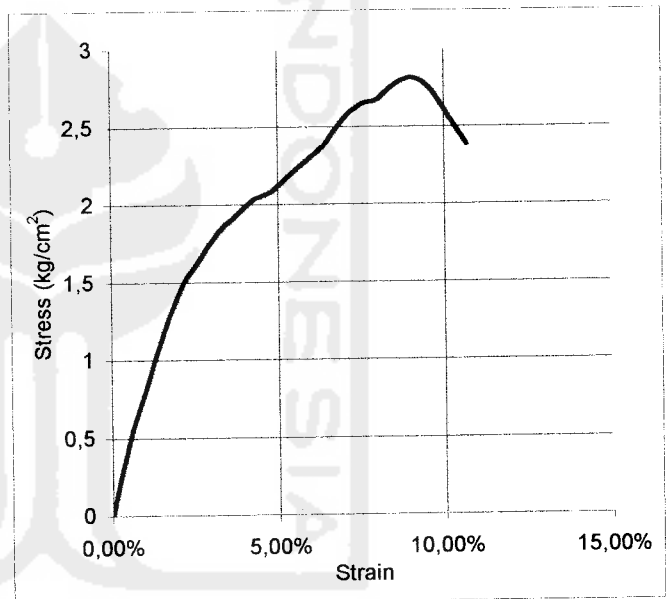
Sample data

diam (cm)	3,75
Area (cm <sup>2</sup> )	11,0447
Ht,Lo (cm)	7,5
Vol (cm <sup>3</sup> )	82,835
Wt (gr)	183
Wet Unit wt (gr/cm <sup>3</sup> )	2,20921
Dry Unit wt (gr/cm <sup>3</sup> )	1,83627

Water Content	I	II
Wt Container (cup), gr	21,95	21,90
Wt of Cup + Wet soil, gr	53,50	54,90
Wt of Cup + Dry soil, gr	47,65	49,90
Water Content %	22,76	17,86
Average water content %	20,31	

LRC = 0,6692

Deformation dial rading (x 10 <sup>-2</sup> )	Load dial (unit)	Unit Strain (ΔL/Lo)	Total load on sample (kg)	Sample stress (kg/cm <sup>2</sup> )
0	0	0,00%	0	0
40	8	0,53%	5,3536	0,482138
80	14	1,07%	9,3688	0,839217
120	20	1,60%	13,384	1,192418
160	25	2,13%	16,73	1,482444
200	28	2,67%	18,7376	1,651289
240	31	3,20%	20,7452	1,818195
280	33	3,73%	22,0836	1,924834
320	35	4,27%	23,422	2,030181
360	36	4,80%	24,0912	2,076553
400	38	5,33%	25,4296	2,179637
440	40	5,87%	26,768	2,281429
480	42	6,40%	28,1064	2,381928
520	45	6,93%	30,114	2,537524
560	47	7,47%	31,4524	2,635115
600	48	8,00%	32,1216	2,67567
640	50	8,53%	33,46	2,770999
680	51	9,07%	34,1292	2,809938
720	50	9,60%	33,46	2,738684
760	47	10,13%	31,4524	2,559175
800	44	10,67%	29,4448	2,381605



Angle Of Internal friction, φ =	40,0 °
Cohesion =	0,66 kg/cm <sup>2</sup>

Checked by

Ir. H. A Halim Hasmar, MT

Tested by

Akhyar + Danny



**LABORATORIUM MEKANIKA TANAH**  
**JURUSAN TEKNIK SIPIL-FTSP**  
**UNIVERSITAS ISLAM INDONESIA**

**UNCONFINED COMPRESSION TEST**

Project : Tugas Akhir  
 Location : Kebumen dan Cilacap  
 Sample No : 3. Tanah + Serbuk Klt. Kerang 12%

Date : 4 Oktober 2003  
 Tested by : Akhyar + Danny

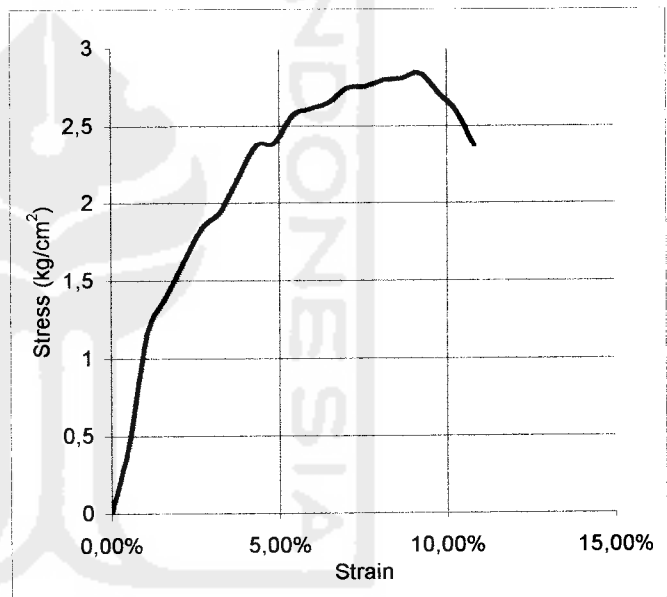
Sample data

diam (cm)	3,8
Area (cm <sup>2</sup> )	11,3411
Ht,Lo (cm)	7,4
Vol (cm <sup>3</sup> )	83,9245
Wt (gr)	171,05
Wet Unit wt (gr/cm <sup>3</sup> )	2,03814
Dry Unit wt (gr/cm <sup>3</sup> )	1,69408

Water Content		I	II
Wt Container (cup), gr		21,95	21,90
Wt of Cup + Wet soil, gr		53,50	54,90
Wt of Cup + Dry soil, gr		47,65	49,90
Water Content %		22,76	17,86
Average water content %		20,31	

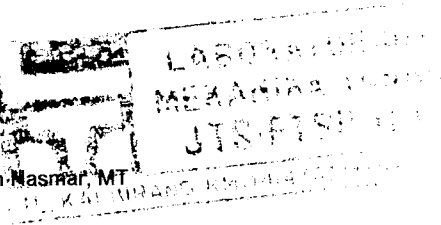
LRC = 0,6692

Deformation dial rading (x 10 <sup>-2</sup> )	Load dial (unit)	Unit Strain (ΔL/L <sub>0</sub> )	Total load on sample (kg)	Sample stress (kg/cm <sup>2</sup> )
0	0	0,00%	0	0
40	8	0,54%	5,3536	0,469499
80	20	1,08%	13,384	1,167369
120	24	1,62%	16,0608	1,393188
160	28	2,16%	18,7376	1,616455
200	32	2,70%	21,4144	1,837171
240	34	3,24%	22,7528	1,94115
280	38	3,78%	25,4296	2,1574
320	42	4,32%	28,1064	2,371099
360	42,5	4,86%	28,441	2,385771
400	46	5,41%	30,7832	2,567574
440	47	5,95%	31,4524	2,6084
480	48	6,49%	32,1216	2,648588
520	50	7,03%	33,46	2,742999
560	50,5	7,57%	33,7946	2,754321
600	51,5	8,11%	34,4638	2,792436
640	52	8,65%	34,7984	2,802962
680	53	9,19%	35,4676	2,83996
720	51	9,73%	34,1292	2,716525
760	49	10,27%	32,7908	2,594366
800	45	10,81%	30,114	2,368228



Angle Of Internal friction, φ =	<b>8,0</b> °
Cohesion =	<b>1,23</b> kg/cm <sup>2</sup>

Checked by



Ir. H. A Halim Nasmar, MT

Tested by

Akhyar + Danny



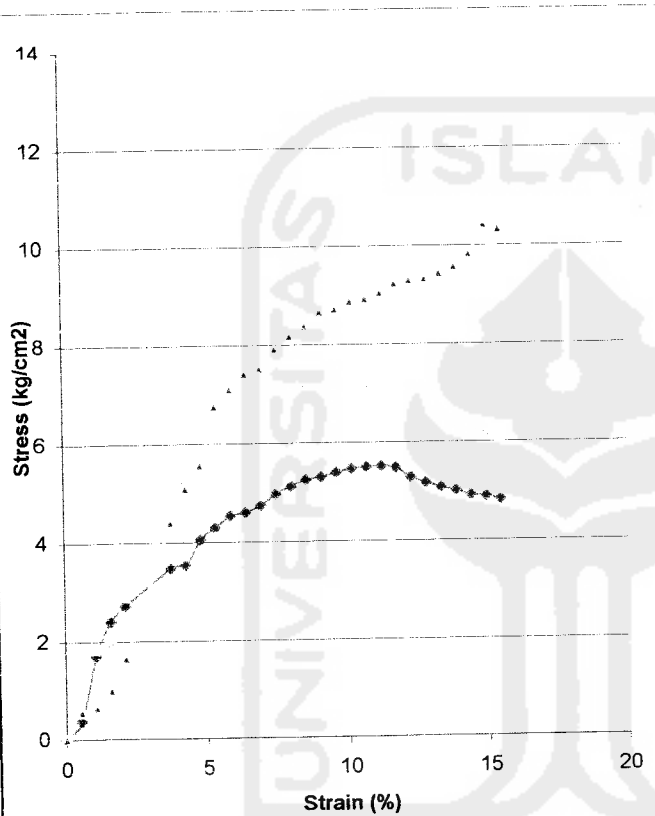
**LABORATORIUM MEKANIKA TANAH**  
**FAKULTAS TEKNIK SIPIL DAN PERENCANAAN**  
**UNIVERSITAS ISLAM INDONESIA**

Jl. Kaliurang KM. 14,4 Telp. (0274) 895042, 895707 fax 895330 Yogyakarta 55584.

**TRIAXIAL COMPRESSION TEST RESULT**  
**UNCONSOLIDATED UNDRAINED (TXUU)**

Project : TA  
 Location : Kebumen  
 Description of soil : Clay

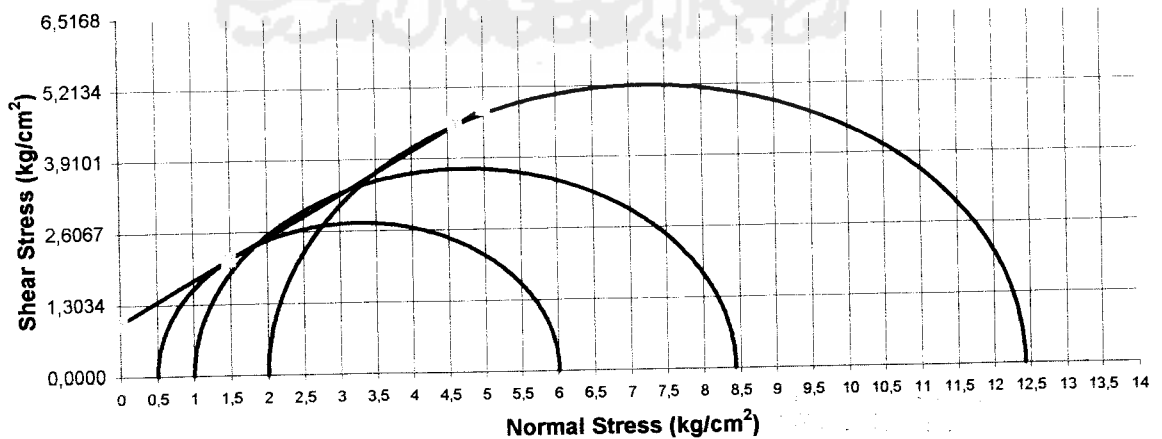
Sample No. : Undisturbed  
 Date : 10 Oktober 2003  
 Tested by : Team of Research



Piece No :	1	2	3
H cm	7,5	7,5	7,645
D cm	3,75	3,75	3,95
A cm <sup>2</sup>	11,04	11,04	12,25
V cm <sup>3</sup>	82,83	82,83	93,68
Wt gram	180,05	165,80	177,62
Water Content			
Wt Container (cup), gr	22,17	21,73	
Wt of Cup + Wet soil, gr	65,95	85,61	
Wt of Cup + Dry soil, gr	55,00	69,29	
Water Content %	33,35	34,31	
Average water content %	33,83		

$\gamma_d$ gram/cm <sup>3</sup>	2,173599	2,00157	1,895965
$\gamma_d$ gram/cm <sup>3</sup>	1,6241	1,495561	1,416653

$\sigma_3$	0,5	1	2
$\Delta\sigma = P/A$	5,50806	7,431771	10,42697
$\sigma_1 = \Delta\sigma + \sigma_3$	6,00806	8,431771	12,42697
$(\sigma_1 + \sigma_2)/2$	3,25403	4,715885	7,213487
$(\sigma_1 - \sigma_2)/2$	2,75403	3,715885	5,213487
Angle of shearing resistance (o)	37,60337		
Apperen cohesion (kg/cm <sup>2</sup> )	0,966911		





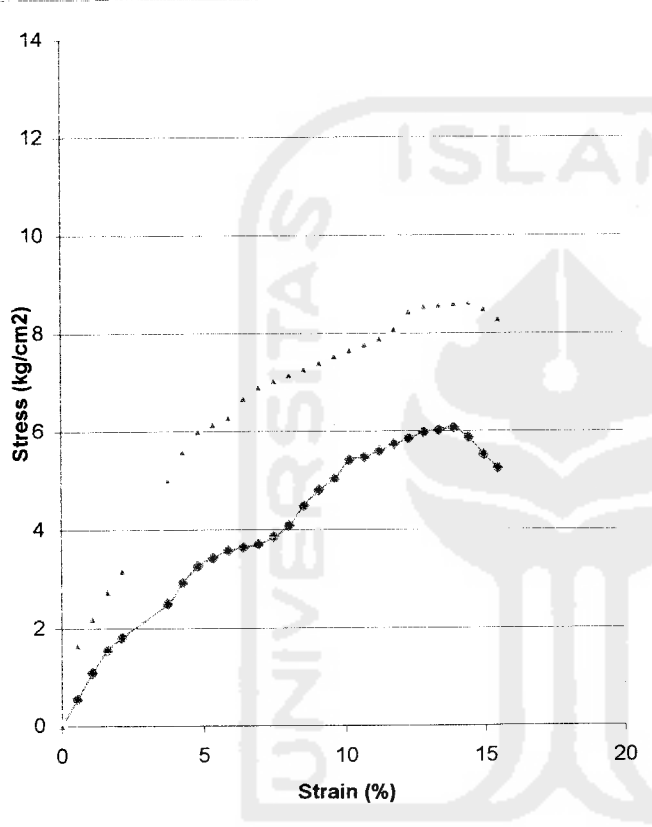
**LABORATORIUM MEKANIKA TANAH**  
**FAKULTAS TEKNIK SIPIL DAN PERENCANAAN**  
**UNIVERSITAS ISLAM INDONESIA**

Jl. Kaliurang KM. 14,4 Telp. (0274) 895042, 895707 fax 895330 Yogyakarta 55584.

**TRIAXIAL COMPRESSION TEST RESULT**  
**UNCONSOLIDATED UNDRAINED (TXUU)**

Project : TA  
 Location : Kebumen  
 Description of soil : Clay

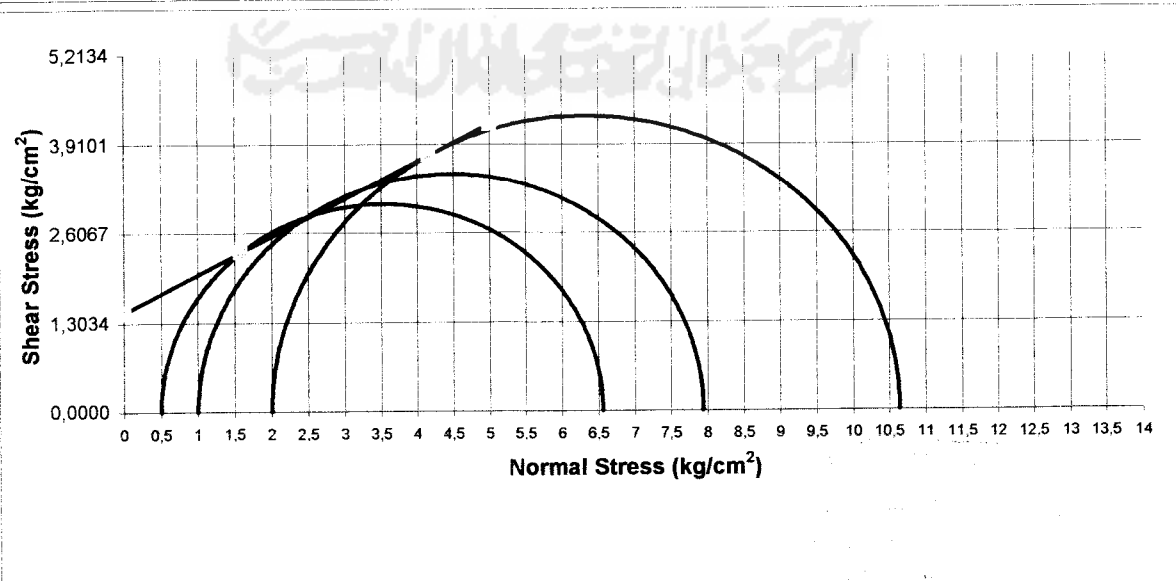
Sample No. : 1. Tanah Asli + 0% S.K.Kerang  
 Date : 10 Oktober 2003  
 Tested by : Akhyar dan Danny



Piece No :	1	2	3
H cm	7,5	7,5	7,645
D cm	3,75	3,75	3,95
A cm <sup>2</sup>	11,04	11,04	12,25
V cm <sup>3</sup>	82,83	82,83	93,68
Wt gram	180,05	165,80	177,62
Water Content			
Wt Container (cup), gr		21,95	21,60
Wt of Cup + Wet soil, gr		105,15	128,30
Wt of Cup + Dry soil, gr		83,65	100,75
Water Content %		34,85	34,81
Average water content %		34,83	

$\gamma_d$ gram/cm <sup>3</sup>	2,173599	2,00157	1,895965
$\gamma$ gram/cm <sup>3</sup>	1,612143	1,484551	1,406224

$\sigma_3$	0,5	1	2
$\Delta\sigma = P/A$	6,060323	6,937475	8,637959
$\sigma_1 = \Delta\sigma + \sigma_3$	6,560323	7,937475	10,63796
$(\sigma_1 + \sigma_2)/2$	3,530161	4,468737	6,31898
$(\sigma_1 - \sigma_2)/2$	3,030161	3,468737	4,31898
Angle of shearing resistance (o)			28,84005
Apperen cohesion (kg/cm <sup>2</sup> )			1,449859





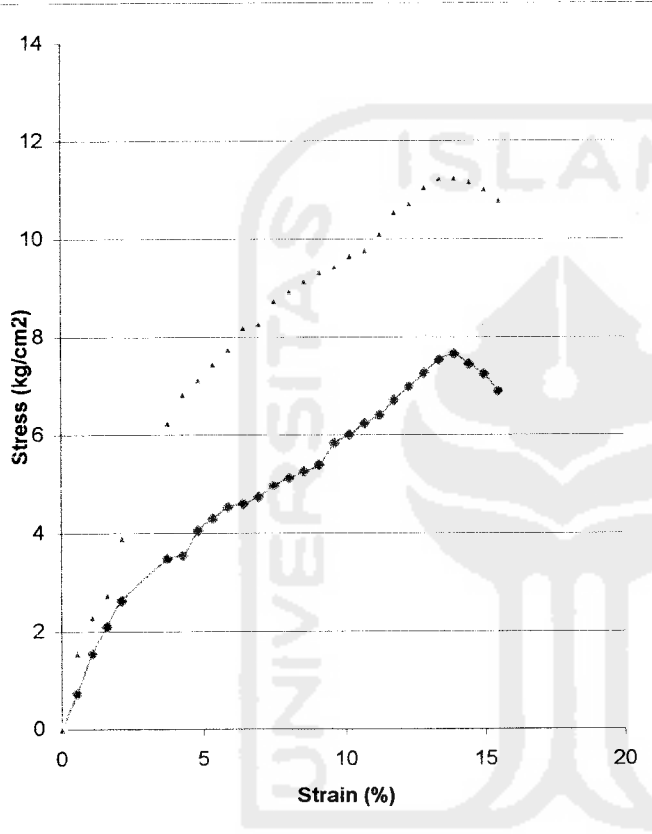
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**FAKULTAS TEKNIK SIPIL DAN PERENCANAAN**  
**UNIVERSITAS ISLAM INDONESIA**

Jl. Kaliurang KM. 14,4 Telp. (0274) 895042, 895707 fax 895330 Yogyakarta 55584.

**TRIAXIAL COMPRESSION TEST RESULT**  
**UNCONSOLIDATED UNDRAINED (TXUU)**

Project : TA  
 Location : Kebumen  
 Description of soil : Clay

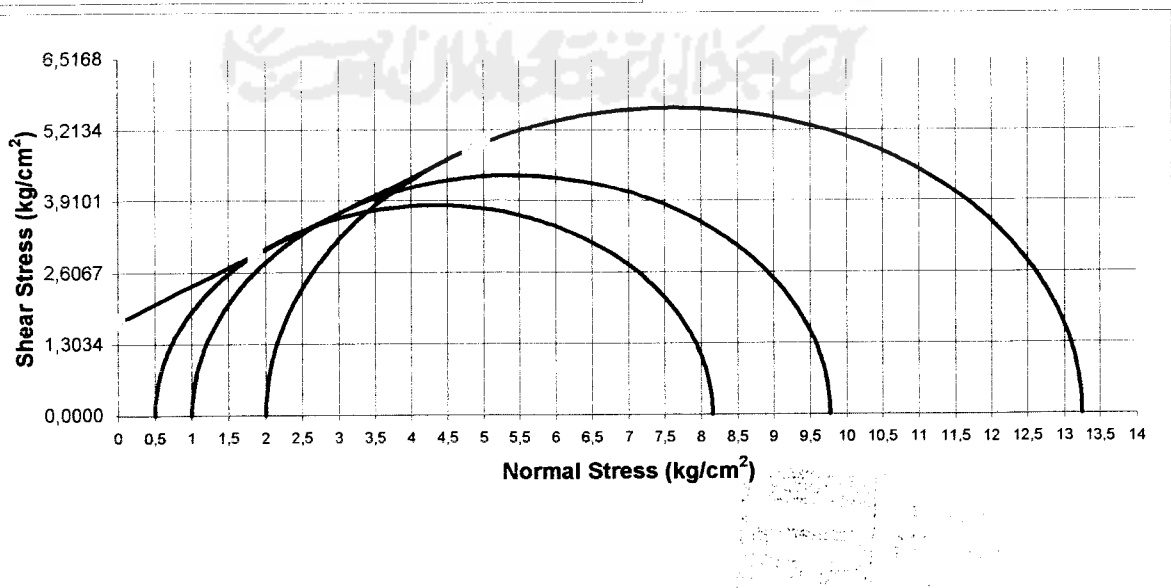
Sample No. : 2. Tanah Asli + 2% S.K.Kerang  
 Date : 10 Oktober 2003  
 Tested by : Akhyar dan Danny



Piece No :	1	2	3
H cm	7,5	7,5	7,645
D cm	3,75	3,75	3,95
A cm <sup>2</sup>	11,04	11,04	12,25
V cm <sup>3</sup>	82,83	82,83	93,68
Wt gram	180,05	165,80	177,62
Water Content			
Wt Container (cup), gr	22,00	22,40	
Wt of Cup + Wet soil, gr	50,70	49,40	
Wt of Cup + Dry soil, gr	45,60	42,50	
Water Content %	21,61	34,33	
Average water content %	27,97		

$\gamma_d$ gram/cm <sup>3</sup>	2,173599	2,00157	1,895965
$\gamma$ gram/cm <sup>3</sup>	1,698532	1,564102	1,481578

$\sigma_3$	0,5	1	2
$\Delta\sigma = P/A$	7,655144	8,77152	11,24349
$\sigma_1 = \Delta\sigma + \sigma_3$	8,155144	9,77152	13,24349
$(\sigma_1 + \sigma_2)/2$	4,327572	5,38576	7,621747
$(\sigma_1 - \sigma_2)/2$	3,827572	4,38576	5,621747
Angle of shearing resistance ( $\phi$ )	33,33928		
Apperen cohesion (kg/cm <sup>2</sup> )	1,703699		





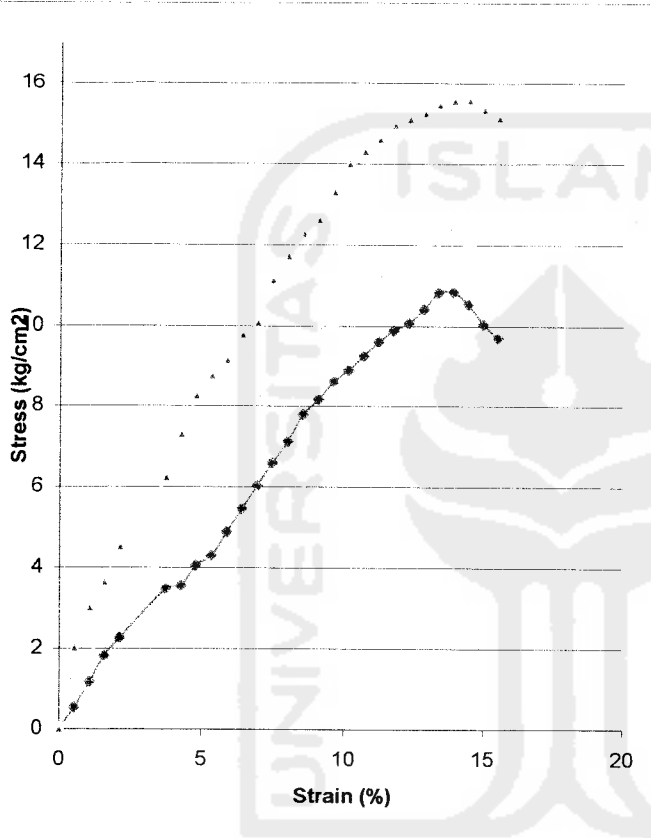
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**TRIAXIAL COMPRESSION TEST RESULT**  
**UNCONSOLIDATED UNDRAINED (TXUU)**

Project : TA  
 Location : Kebumen  
 Description of soil : Clay

Sample No. : 3. Tanah Asli + 4% S.K. Kerang  
 Date : 10 Oktober 2003  
 Tested by : Akhyar dan Danny



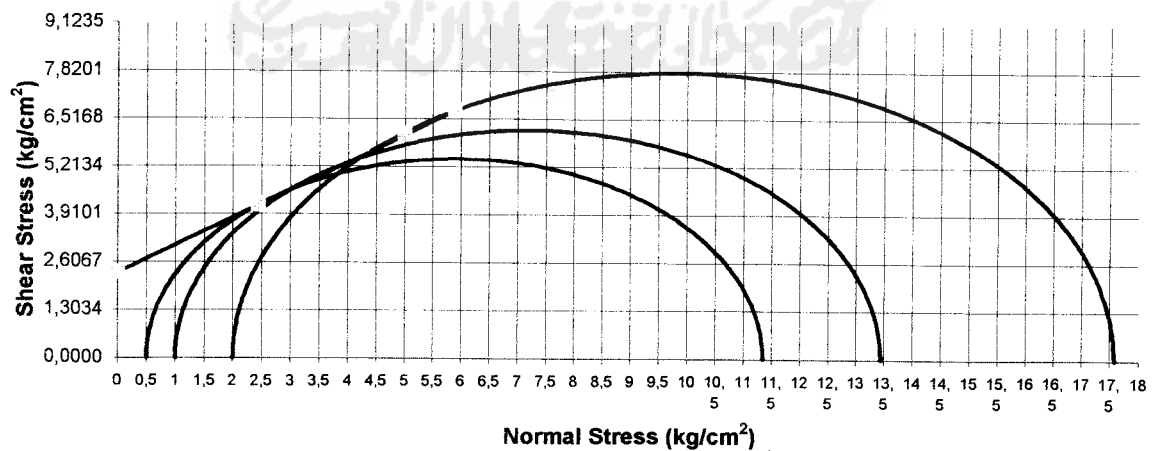
Piece No :	1	2	3
H cm	7,5	7,5	7,645
D cm	3,75	3,75	3,95
A cm <sup>2</sup>	11,04	11,04	12,25
V cm <sup>3</sup>	82,83	82,83	93,68
Wt gram	180,05	165,80	177,62

**Water Content**

Wt Container (cup), gr	21,30	21,70
Wt of Cup + Wet soil, gr	60,60	54,00
Wt of Cup + Dry soil, gr	50,36	50,24
Water Content %	35,24	13,17
Average water content %	24,21	

$\gamma_d$ gram/cm <sup>3</sup>	2,173599	2,00157	1,895965
$\gamma$ gram/cm <sup>3</sup>	1,749996	1,611493	1,526469

$\sigma_3$	0,5	1	2
$\Delta\sigma = P/A$	10,84479	12,43961	15,58003
$\sigma_1 = \Delta\sigma + \sigma_3$	11,34479	13,43961	17,58003
$(\sigma_1 + \sigma_2)/2$	5,922394	7,219805	9,790013
$(\sigma_1 - \sigma_2)/2$	5,422394	6,219805	7,790013
Angle of shearing resistance (o)	36,85939		
Apperen cohesion (kg/cm <sup>2</sup> )	2,326783		





**LABORATORIUM MEKANIKA TANAH**  
**FAKULTAS TEKNIK SIPIL DAN PERENCANAAN**  
**UNIVERSITAS ISLAM INDONESIA**

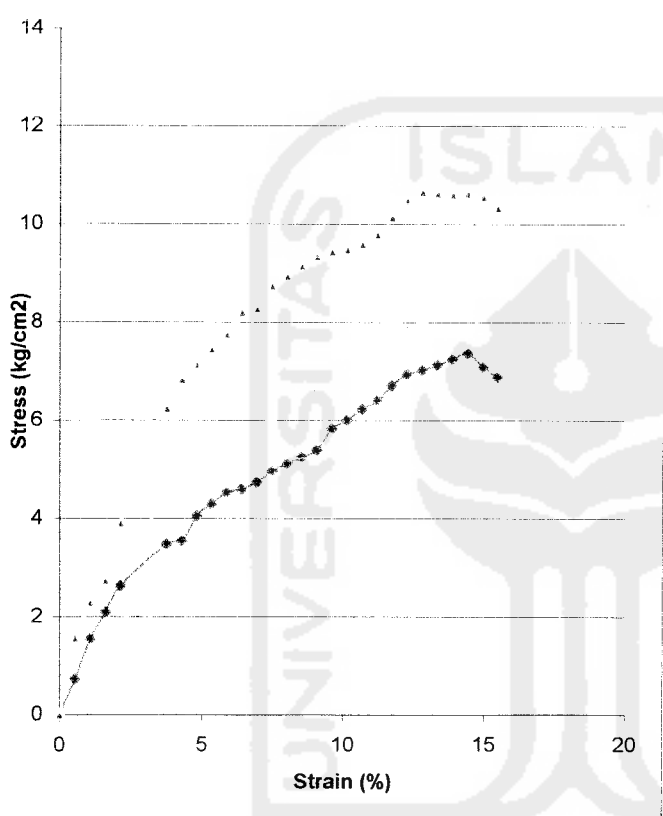
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**TRIAxIAL COMPRESSION TEST RESULT**  
**UNCONSOLIDATED UNDRAINED (TXUU)**

Project : TA  
 Location : Kebumen  
 Description of soil : Clay

Sample No. : 4. Tanah Asli + 6% S.K. Kerang  
 Date : 10 Oktober 2003  
 Tested by : Akhyar dan Danny

1.  
1:  
10  
Stress (kg/cm<sup>2</sup>)  
6  
4  
2  
0

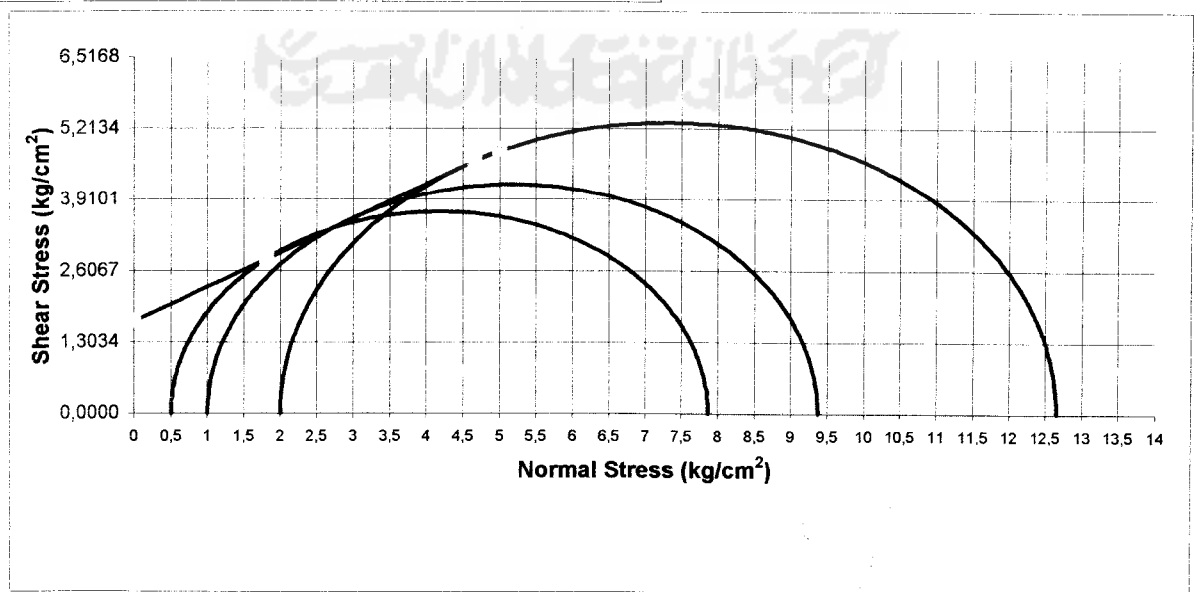


Piece No :	1	2	3
H cm	7,5	7,5	7,645
D cm	3,75	3,75	3,95
A cm <sup>2</sup>	11,04	11,04	12,25
V cm <sup>3</sup>	82,83	82,83	93,68
Wt gram	180,05	165,80	177,62
Water Content			
Wt Container (cup), gr	14,40	22,30	
Wt of Cup + Wet soil, gr	46,80	56,40	
Wt of Cup + Dry soil, gr	40,06	50,50	
Water Content %	26,27	20,92	
Average water content %	23,59		

$\gamma_d$ gram/cm <sup>3</sup>	2,173599	2,00157	1,895965
$\gamma$ gram/cm <sup>3</sup>	1,758657	1,619468	1,534023

$\sigma_3$	0,5	1	2
$\Delta\sigma = P/A$	7,370002	8,372814	10,65617
$\sigma_1 = \Delta\sigma + \sigma_3$	7,870002	9,372814	12,65617
$(\sigma_1 + \sigma_2)/2$	4,185001	5,186407	7,328087
$(\sigma_1 - \sigma_2)/2$	3,685001	4,186407	5,328087
Angle of shearing resistance (o)	32,17236		
Apperen cohesion (kg/cm <sup>2</sup> )	1,680295		

Shear Stress (kg/cm<sup>2</sup>)





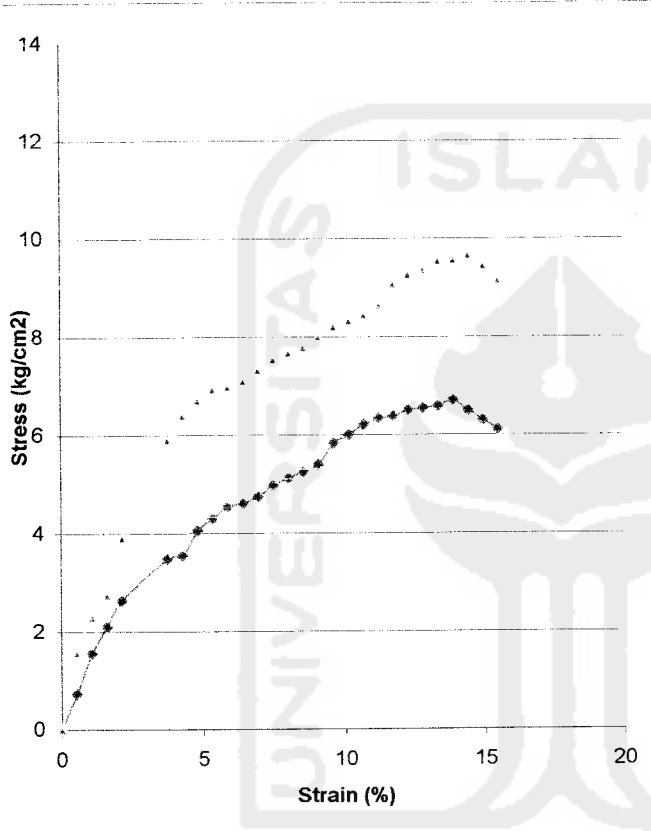
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**TRIAXIAL COMPRESSION TEST RESULT**  
**UNCONSOLIDATED UNDRAINED (TXUU)**

Project : TA  
 Location : Kebumen  
 Description of soil : Clay

Sample No. : 6. Tanah Asli + 10% S.K.Kerang  
 Date : 10 Oktober 2003  
 Tested by : Akhyar dan Danny



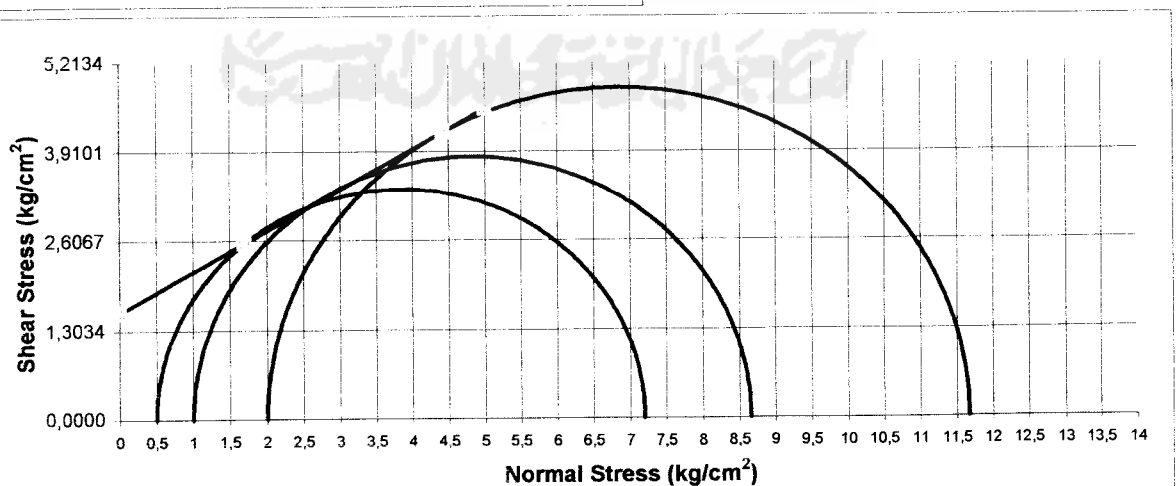
Piece No :	1	2	3
H cm	7,5	7,5	7,645
D cm	3,75	3,75	3,95
A cm <sup>2</sup>	11,04	11,04	12,25
V cm <sup>3</sup>	82,83	82,83	93,68
Wt gram	180,05	165,80	177,62

**Water Content**

Wt Container (cup), gr	21,95	21,90
Wt of Cup + Wet soil, gr	55,00	53,80
Wt of Cup + Dry soil, gr	47,65	49,90
Water Content %	28,60	13,93
Average water content %	21,26	

$\gamma_d$ gram/cm <sup>3</sup>	2,173599	2,00157	1,895965
$\gamma$ gram/cm <sup>3</sup>	1,792454	1,65059	1,563503

$\sigma_3$	0,5	1	2
$\Delta\sigma = P/A$	6,698251	7,655144	9,668175
$\sigma_1 = \Delta\sigma + \sigma_3$	7,198251	8,655144	11,66817
$(\sigma_1 + \sigma_2)/2$	3,849126	4,827572	6,834087
$(\sigma_1 - \sigma_2)/2$	3,349126	3,827572	4,834087
Angle of shearing resistance (o)	30,78452		
Apperen cohesion (kg/cm <sup>2</sup> )	1,554973		







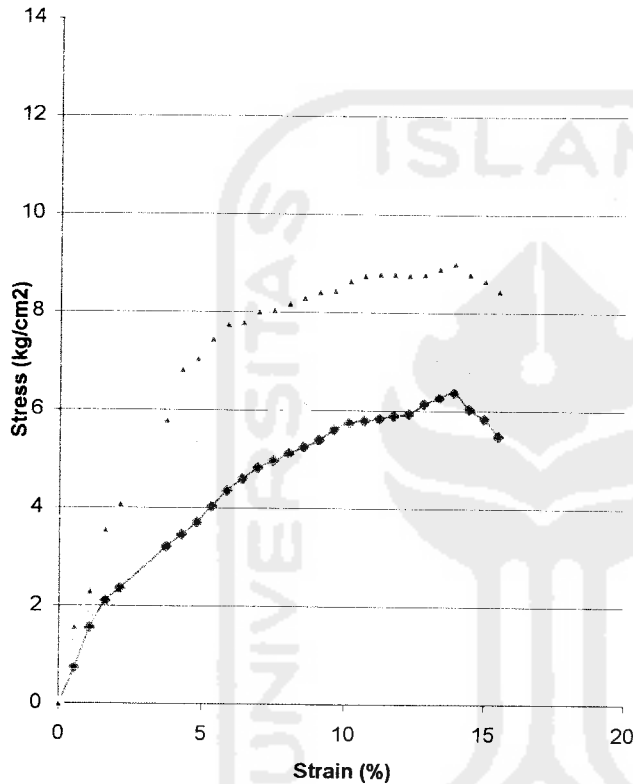
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**TRIAXIAL COMPRESSION TEST RESULT**  
**UNCONSOLIDATED UNDRAINED (TXUU)**

Project : TA  
 Location : Kebumen  
 Description of soil : Clay

Sample No. : 7. Tanah Asli + 12% S.K.Kerang  
 Date : 10 Oktober 2003  
 Tested by : Akhyar dan Danny



Piece No :	1	2	3
H cm	7,5	7,5	7,645
D cm	3,75	3,75	3,95
A cm <sup>2</sup>	11,04	11,04	12,25
V cm <sup>3</sup>	82,83	82,83	93,68
Wt gram	180,05	165,80	177,62

**Water Content**

Wt Container (cup), gr	21,95	21,90
Wt of Cup + Wet soil, gr	53,50	54,90
Wt of Cup + Dry soil, gr	47,65	49,90
Water Content %	22,76	17,86
Average water content %	20,31	

$\gamma_d$ gram/cm <sup>3</sup>	2,173599	2,00157	1,895965
$\gamma$ gram/cm <sup>3</sup>	1,806667	1,663679	1,575901

$\sigma_3$	0,5	1	2
$\Delta\sigma = P/A$	6,363339	7,176698	9,010743
$\sigma_1 = \Delta\sigma + \sigma_3$	6,863339	8,176698	11,01074
$(\sigma_1 + \sigma_2)/2$	3,681669	4,588349	6,505371
$(\sigma_1 - \sigma_2)/2$	3,181669	3,588349	4,505371
Angle of shearing resistance ( $\phi$ )	29,23915		
Apperen cohesion (kg/cm <sup>2</sup> )	1,521205		

