



YAYASAN PERGURUAN "CIKINI"
INSTITUT
SAINS DAN TEKNOLOGI
NASIONAL

8
t-7
FAKULTAS TEKNIK SIPIL
DAN PERENCANAAN
JURUSAN TEKNIK SIPIL

PENUGASAN
No : 20-07/PM/LM/VII/95

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

Ir. Idrus, MSc Staff Jurusan Teknik Sipil

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

Nama Pekerjaan : Penyelidikan Tanah Perencanaan jalan Penghubung Poros
Lokasi : Tongo I-SP2, dan Tongo II
Pemberi Tugas : PT. TRISIGMA PATRIA

Dengan jadwal pelaksanaan pekerjaan selama 20 hari kerja (160Jam), di Laboratorium

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

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

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

Jakarta, 20 Juli 1995
Kaprosdi Teknik Sipil



Ir. Ari Mulyo Diah Utami MT
NIP : 01.83332

Tembusan :

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

LEMBAR PENGESAHAN PENGABDIAN PADA MASYARAKAT



PENYELIDIKAN TANAH PERENCANAAN JALAN PENGHUBUNG POROS Lokasi : Tongo I-SP2 dan Tongo II

Oleh :
Idrus Ir, M.Sc

Mengetahui :
Ketua Jurusan Teknik Sipil



Ir. Arimulyo Diah Utami, M.T

Program Studi Teknik Sipil
Institut Sain dan Teknologi Nasional
Jakarta 1995

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY



1. The reaction of the catalyst with the substrate is reversible and exothermic.

2. The rate-determining step is the conversion of the catalyst to the active species.

3. The active species is a high-valent metal-oxo complex.

4. The active species reacts with the substrate to form the product and regenerate the catalyst.

5. The overall reaction is exothermic and irreversible.

6. The reaction is first-order in the substrate and zero-order in the catalyst.

SURAT PERJANJIAN KERJASAMA

No: 17-07.1/TP/VII/95

Kami yang bertanda tangan di bawah ini :

I. N a m a : **PT. Trisigma Patria**

Selanjutnya disebut **PIHAK PERTAMA.**

II. N a m a : **Ir. Idrus MSc**

Jabatan : **Kepala Laboratorium Mekanika Tanah ISTN**

Selanjutnya disebut **PIHAK KEDUA.**

Pihak Pertama telah sepakat untuk menunjuk Pihak Kedua dalam melakukan pengujian Soil Investigasi pada :

Proyek : Perencanaan Jalan Penghubung Poros

Lokasi : Tongo-I SP2 Tongo-II

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

Jakarta, 17 Juli 1995

PIHAK KEDUA



Laboratorium Mekanika Tanah ISTN

PIHAK PERTAMA



PT. Trisigma Patria



WAF
6/1/95

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

Jakarta , 4 Agustus 1995

No : 04-08.1/FR/LM/VII/95
 Lamp : 1 (satu) berkas
 Hal : laporan pengujian laboratorium Mekanika Tanah
 Pekerjaan Perencanaan Jalan Penghubung Poros

Kepada Yth,
 PT. TRISIGMA PATRIA
 di
 Jakarta.

Dengan hormat,

Sehubungan permohonan dari PT. TRISIGMA PATRIA Jakarta kepada Laboratorium Mekanika Tanah I.S.T.N Jakarta, maka kami akan melaporkan hasil pekerjaan yang telah kami lakukan sebagai berikut :

1. Lingkup pekerjaan meliputi :
 - Pengujian dari sampel tanah dari Proyek Perencanaan Jalan Penghubung Poros
 - Lokasi : Tongo I SP-2, Tongo II.
2. Jumlah sampel sebanyak 6 (enam) sampel undisturbed dari STA 0+00, STA 4+00, STA 10+00, STA 15+00, STA 25+00 dan STA 30+00 serta 4 (empat) sampel disturbed untuk pekerjaan pemadatan dan CBR laboratorium sebanyak 4 sampel dari STA 6, 7, 8 dan 9. Jenis Pengujian :
 - Atterberg limits 6 sampel
 - Grain size distribution 6 sampel
 - Unconfined Compression Test 6 sampel
 - Pemadatan standard 4 sampel
 - CBR laboratorium (soaked dan unsoaked) 4 sampel.
3. Dari hasil pengujian yang telah dilakukan dapat kami simpulkan bahwa jenis tanah merupakan lempung dengan plastisitas tinggi (CH) , serta memiliki sifat ekspansif .
4. Dari contoh tanah disturbed dapat disimpulkan bahwa jenis tanah tersebut kurang baik untuk digunakan sebagai material subgrade. (CBR < 5%)
5. Kami sarankan agar dilakukan perbaikan tanah dengan melakukan pencampuran dengan material yang lain seperti kapur atau tanah dengan gradasi yang kasar.

Hasil lengkap dari pengujian tersebut dapat dilihat pada lampiran berikut.

Demikianlah laporan ini kami buat dengan sebenar-benarnya, atas kerjasamanya diucapkan terima kasih.

Hormat kami,
 LABORATORIUM MEKANIKA TANAH I.S.T.N
 Kepala

(Ir. Idrus M.Sc)

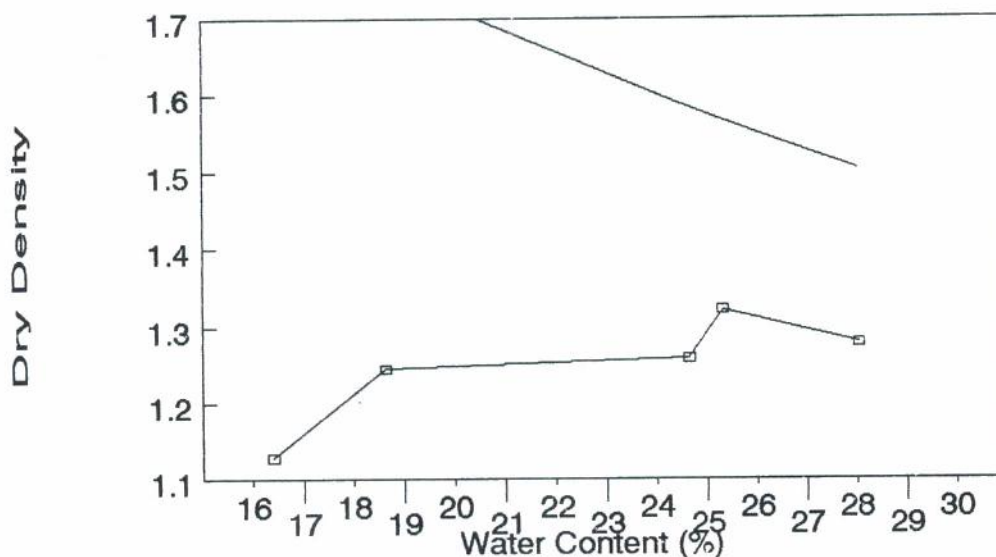
 Geotechnical Engineer

4/8

COMPACTION TEST

Project : PERENCANAAN JALAN – PENGHUBUNG POROS Location : TONGO I SP2 – TONGO II STA 6 4+9000		Date of Test : JULY 21 1995 Samples code : SOIL Type of Test : STANDART PROCTOR Tested by : Kamin J. Checked by : NANA S				
No	Items	Samples				
		1	2	3	4	5
1	Weight of mold (gr)	1898	1898	1898	1898	1898
2	Weight of mold + soil (gr)	3296	3470	3568	3661	3641
3	Weight of compacted soil (gr)	1398	1572	1670	1763	1743
4	Volume of mold (cm ³)	1064.5	1064.5	1064.5	1064.5	1064.5
5	Unit weight of soil (gr/cm ³)	1.313	1.477	1.569	1.656	1.637
6	Weight of container (gr)	19.69	33.76	19.92	35.29	19.69
7	Weight of con + wet soil (gr)	119.69	133.76	119.92	135.29	119.69
8	Weight of con + dry soil (gr)	105.6	118.05	100.02	115.08	97.8
9	Weight of dry soil (gr)	85.91	84.29	80.76	79.79	78.11
10	Weight of water (gr)	14.09	15.71	19.90	20.21	21.89
11	Water content (%)	16.40	18.64	24.64	25.33	28.02
12	Dry density (gr/cm ³)	1.13	1.24	1.26	1.32	1.28
13	Void ratio	1.14	0.92	0.86	0.77	0.81
14	Dry density in Sr=100%	1.82	1.75	1.58	1.57	1.50

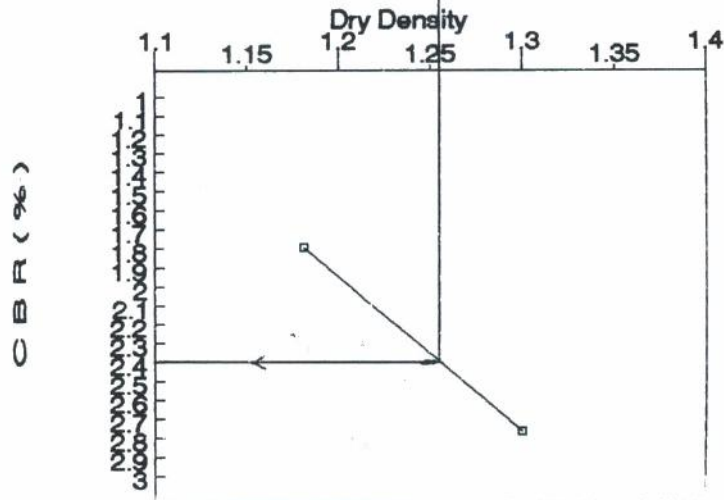
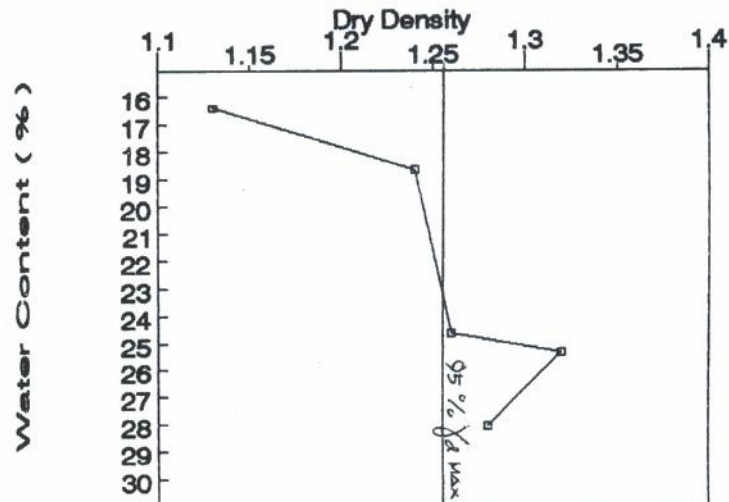
Compaction Curve



LABORATORIUM MEKANIKA TANAH
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INSTITUT SAINS DAN TEKNOLOGI NASIONAL - JAKARTA
 Kampus ISTN Bhumi Srengseng Teip. 7270092, Fax. 7270090

C.B.R DESIGN BY A.A.S.H.T.O METHODE

Project	PERENCANAAN JALAN – PENGHUBUNG POROS.	
Location	TONGO I SP2 – TONGO II Sta 64+900	
Sample	SOIL.	
Proctor Test	STANDART PROCTOR	
Type of Test	SOAKED TEST	
C.B.R DESIGN		Tested by Kamin j.
100 % Dry Density Max.	2.760 %	Checked by RAHARDJO S
95 % Dry Density Max.	2.400 %	

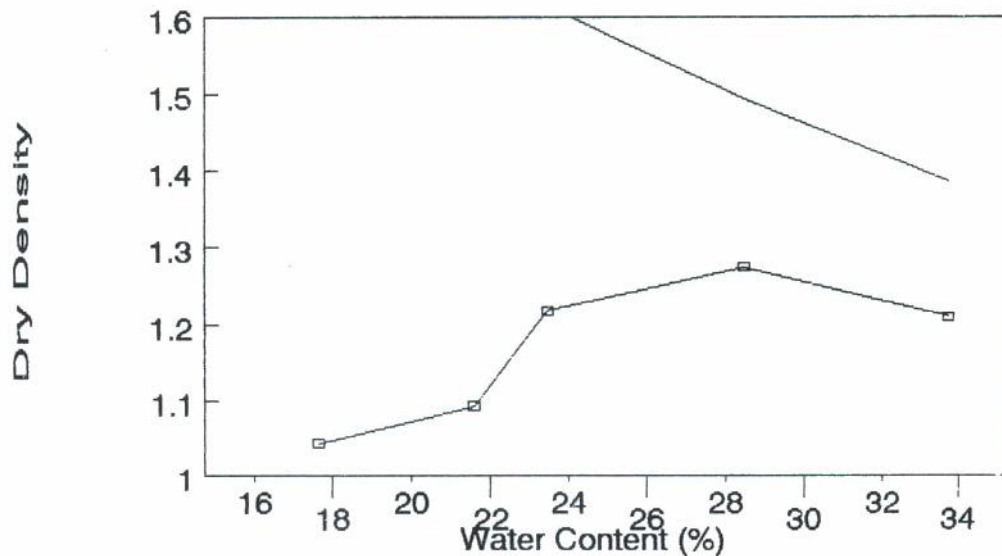


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COMPACTION TEST

Project : PERENCANAAN JALAN – PENGHUBUNG POROS Location : TONGO I SP2 – TONGO II STA 7 10+9000		Date of Test : JULY 21 1995 Samples code : SOIL Type of Test : STANDART PROCTOR Tested by : Kamin J. Checked by : NANA S					
No	Items	Samples					
		1	2	3	4	5	6
1	Weight of mold (gr)	1898	1898	1898	1898	1898	
2	Weight of mold + soil (gr)	3204	3312	3498	3641	3619	
3	Weight of compacted soil (gr)	1306	1414	1600	1743	1721	
4	Volume of mold (cm ³)	1064.5	1064.5	1064.5	1064.5	1064.5	
5	Unit weight of soil (gr/cm ³)	1.227	1.328	1.503	1.637	1.617	
6	Weight of container (gr)	12.00	20.50	19.00	25.00	15.20	
7	Weight of con + wet soil (gr)	112.00	120.50	119.00	125.00	115.20	
8	Weight of con + dry soil (gr)	97	102.74	100	102.84	90.01	
9	Weight of dry soil (gr)	85.00	82.24	81.00	77.84	74.81	
10	Weight of water (gr)	15.00	17.76	19.00	22.16	25.19	
11	Water content (%)	17.65	21.60	23.46	28.47	33.67	
12	Dry density (gr/cm ³)	1.04	1.09	1.22	1.27	1.21	
13	Void ratio	1.31	1.17	0.93	0.81	0.88	
14	Dry density in Sr=100%	1.78	1.67	1.62	1.49	1.39	

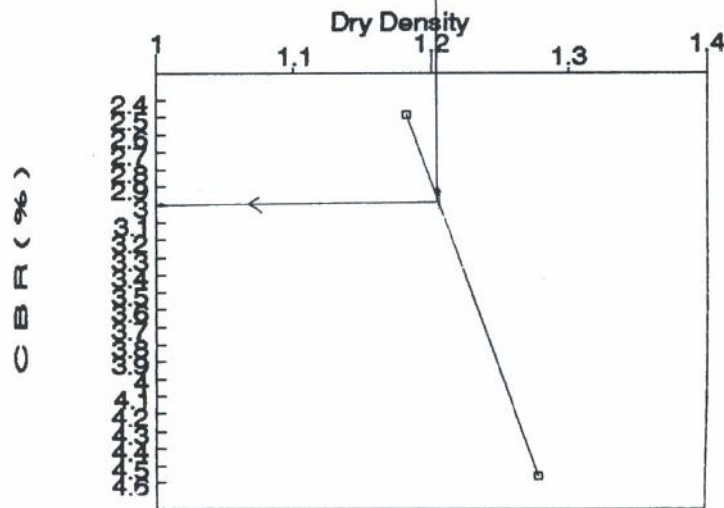
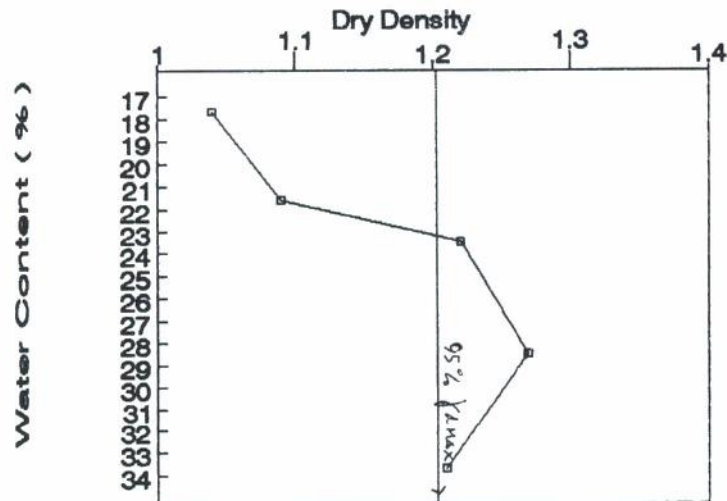
Compaction Curve



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C.B.R DESIGN BY A.A.S.H.T.O METHODE

Project	PERENCANAAN JALAN - PENGHUBUNG POROS.	
Location	TONGO I SP2 - TONGO II Sta 7 10+900	
Sample	SOIL.	
Proctor Test	STANDART PROCTOR	
Type of Test	SOAKED TEST	
C.B.R DESIGN		Tested by Kamin j.
100 % Dry Density Max.	4.555 %	Checked by RAHARDJO S
95 % Dry Density Max.	3.000 %	

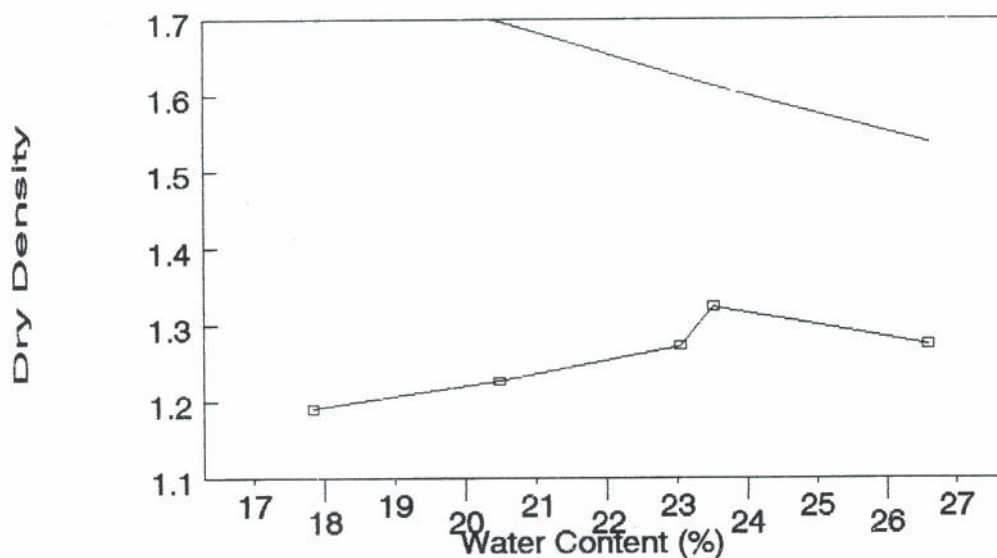


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COMPACTION TEST

Project : PERENCANAAN JALAN – PENGHUBUNG POROS Location : TONGO I SP2 – TONGO II STA 8 30+000		Date of Test : JULY 21 1995 Samples code : SOIL Type of Test : STANDART PROCTOR Tested by : Kamin J. Checked by : NANA S				
No	Items	Samples				
		1	2	3	4	5
1	Weight of mold (gr)	1898	1898	1898	1898	1898
2	Weight of mold + soil (gr)	3391	3471	3564	3637	3614
3	Weight of compacted soil (gr)	1493	1573	1666	1739	1716
4	Volume of mold (cm ³)	1064.5	1064.5	1064.5	1064.5	1064.5
5	Unit weight of soil (gr/cm ³)	1.403	1.478	1.565	1.634	1.612
6	Weight of container (gr)	15.50	19.80	18.65	21.35	25.31
7	Weight of con + wet soil (gr)	115.50	119.80	118.65	121.35	125.31
8	Weight of con + dry soil (gr)	100.36	102.8	99.92	102.24	104.31
9	Weight of dry soil (gr)	84.86	83.00	81.27	81.27	79.00
10	Weight of water (gr)	15.14	17.00	18.73	19.11	21.00
11	Water content (%)	17.84	20.48	23.05	23.51	26.58
12	Dry density (gr/cm ³)	1.19	1.23	1.27	1.32	1.27
13	Void ratio	1.02	0.94	0.85	0.78	0.83
14	Dry density in Sr=100%	1.78	1.70	1.63	1.61	1.54

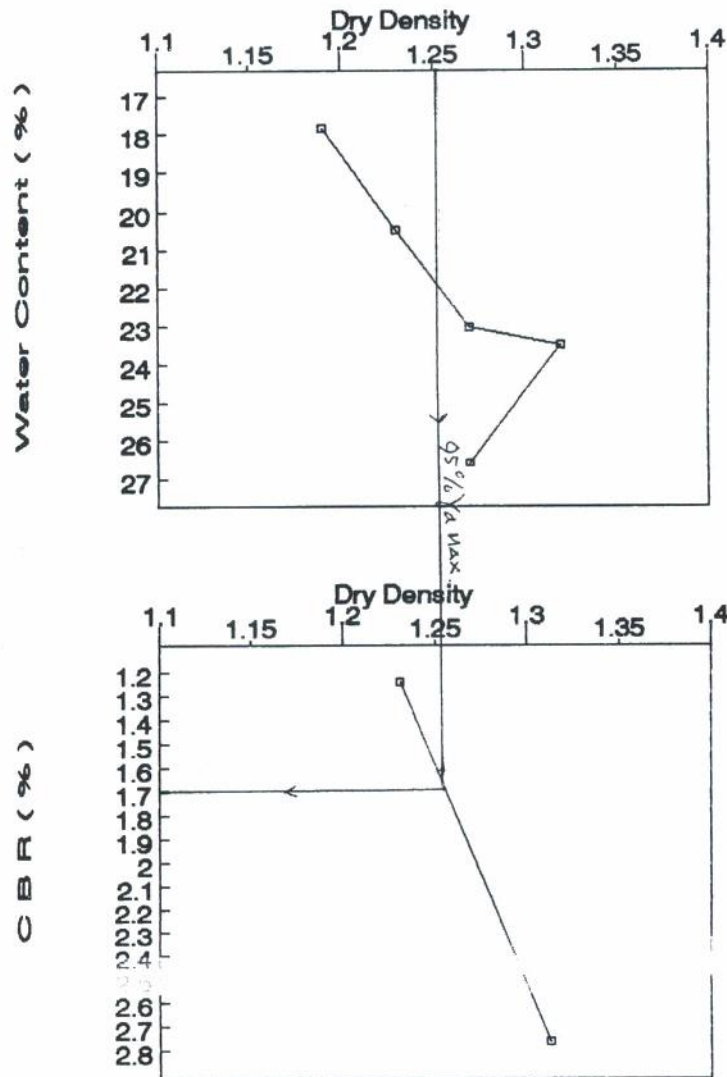
Compaction Curve



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C.B.R DESIGN BY A.A.S.H.T.O METHODE

Project	PERENCANAAN JALAN – PENGHUBUNG POROS.	
Location	TONGO I SP2 – TONGO II Sta 8 30+000	
Sample	SOIL.	
Proctor Test	STANDART PROCTOR	
Type of Test	SOAKED TEST	
C.B.R DESIGN		Tested by Kamin j.
100 % Dry Density Max.	2.760 %	Checked by RAHARDJO S
95 % Dry Density Max.	1.700 %	

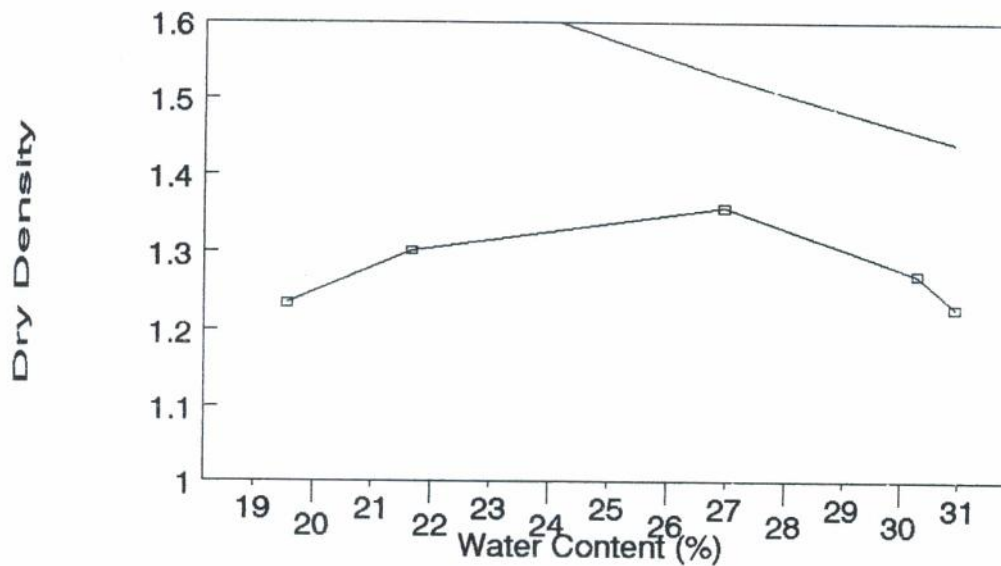


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 INSTITUT SAINS DAN TEKNOLOGI NASIONAL - JAKARTA
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COMPACTION TEST

Project : PERENCANAAN JALAN – PENGHUBUNG POROS Location : TONGO I SP2 – TONGO II STA 9 0+000		Date of Test : JULY 21 1995 Samples code : SOIL Type of Test : STANDART PROCTOR Tested by : Kamin J. Checked by : NANA S					
No	Items	Samples					
		1	2	3	4	5	6
1	Weight of mold (gr)	1898	1898	1898	1898	1898	1898
2	Weight of mold + soil (gr)	3469	3584	3733	3661	3610	
3	Weight of compacted soil (gr)	1571	1686	1835	1763	1712	
4	Volume of mold (cm ³)	1064.5	1064.5	1064.5	1064.5	1064.5	
5	Unit weight of soil (gr/cm ³)	1.476	1.584	1.724	1.656	1.608	
6	Weight of container (gr)	25.25	21.70	19.71	21.36	20.00	
7	Weight of con + wet soil (gr)	125.25	121.70	119.71	121.36	120.00	
8	Weight of con + dry soil (gr)	108.94	103.89	98.47	98.13	96.39	
9	Weight of dry soil (gr)	83.42	82.19	78.76	76.77	76.39	
10	Weight of water (gr)	16.31	17.81	21.24	23.23	23.61	
11	Water content (%)	19.55	21.67	26.97	30.26	30.91	
12	Dry density (gr/cm ³)	1.23	1.30	1.36	1.27	1.23	
13	Void ratio	0.93	0.82	0.71	0.81	0.87	
14	Dry density in Sr=100%	1.72	1.66	1.53	1.46	1.44	

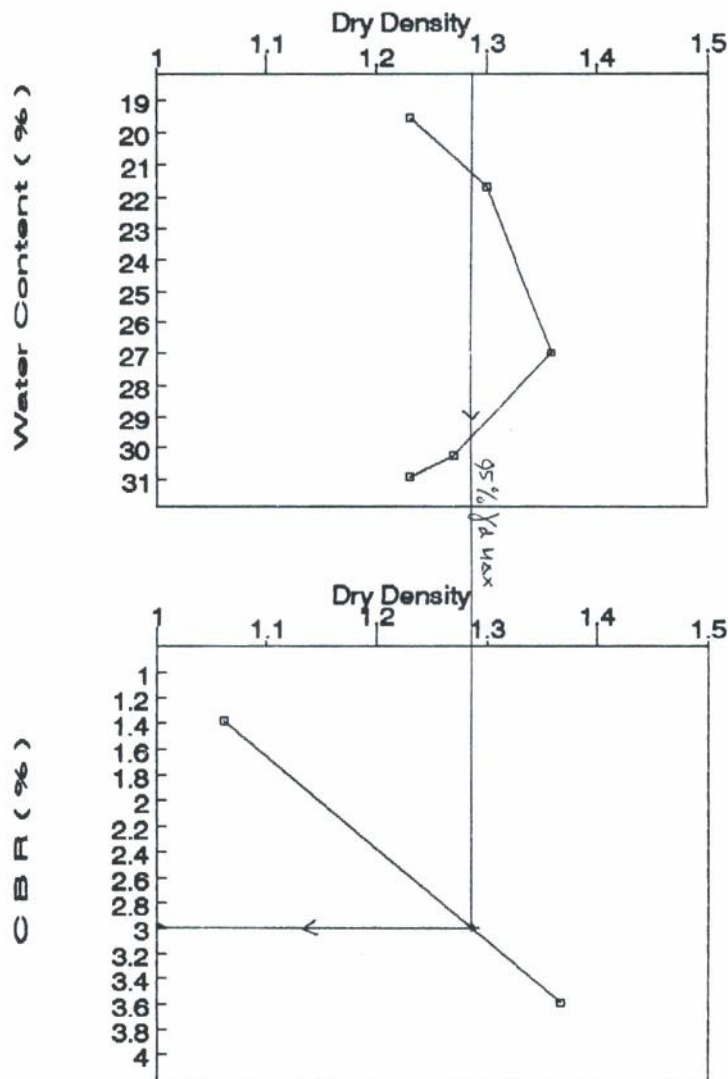
Compaction Curve



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C.B.R DESIGN BY A.A.S.H.T.O METHODE

Project	PERENCANAAN JALAN - PENGHUBUNG POROS.	
Location	TONGO I SP2 - TONGO II Sta 90+00	
Sample	SOIL	
Proctor Test	STANDART PROCTOR	
Type of Test	SOAKED TEST	
C.B.R DESIGN		Tested by Kamin j. Checked by RAHARDJO S
100 % Dry Density Max.	3.589 %	
95 % Dry Density Max.	3.000 %	



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CALIFORNIA BEARING RATIO LABORATORY TEST

PROJECT	PERENCANAAN JALAN - PENGHUBUNG POROS	DATE OF TESTED	AUGUST 2 1995
LOCATION	TONGO I SP 2 - TONGO II Sta 6 4+900.	TESTED BY	Mr. Karmin J.
TYPE OF MATERIAL	SOIL	CHECKED BY	Rehardjo S.
NO. OF SAMPLES		APPROVAL BY	
PROCTOR TEST	STANDART PROCTOR	CALIBRATION (Lbs/Div)	6.211
TYPE OF TEST	Un Soaked	STANDARD OF TESTED	A.A.S.H.T.O / A.S.T.M

Time minute	Penetra tion (In)	10 Blow/Layer		25 Blow/Layer		56 Blow/Layer	
		Prov.ring	Load (lbs)	Prov.ring	Load (lbs)	Prov.ring	Load (lbs)
0.00	0.0000	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.0125	5.00	31.05	0.00	0.00	21.00	130.43
0.50	0.0250	9.00	55.90	0.00	0.00	32.00	198.75
1.00	0.0500	14.00	88.95	0.00	0.00	54.00	335.39
1.50	0.0750	18.00	111.80	0.00	0.00	66.00	409.93
2.00	0.1000	22.00	136.64	0.00	0.00	78.00	494.46
3.00	0.1500	28.00	173.91	0.00	0.00	96.00	596.26
4.00	0.2000	34.00	211.17	0.00	0.00	108.00	670.79
6.00	0.3000	46.00	279.50	0.00	0.00	121.00	751.53
8.00	0.4000	56.00	347.82	0.00	0.00	131.00	813.64
10.00	0.5000	67.00	416.14	0.00	0.00	142.00	881.96

Water Content (%)

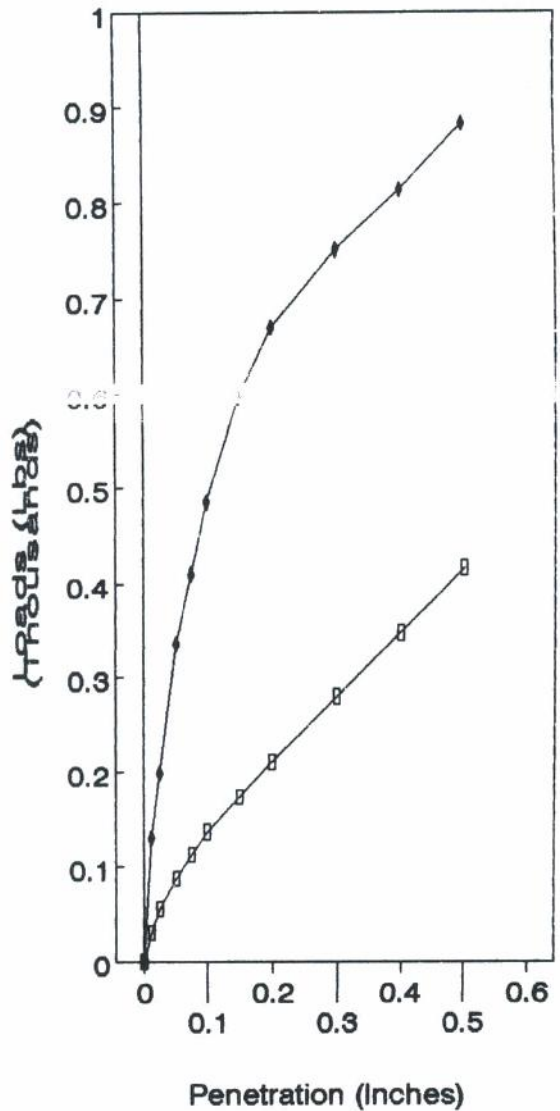
	Before	After
10 Blows/ layer	20.85	20.85
25 Blows/ layer	0	0
56 Blows/ layer	20.92	20.92

Dry Density (Gm/cm³)

	Before	After
10 B/L	1.199	1.199
25 B/L	0.000	0.000
56 B/L	1.324	1.324

C.B.R VALUE (%)

Number of Blow	Penetration		Swelling (%)
	0.1 inch	0.2 inch	
10 Blows/ layer	4.555	4.693	
25 Blows/ layer	0.000	0.000	
56 Blows/ layer	16.149	14.906	



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CALIFORNIA BEARING RATIO LABORATORY TEST

PROJECT	PERENCANAAN JALAN - PENGHUBUNG POROS	DATE OF TESTED	AUGUST 2 1995
LOCATION	TONGO I SP 2 - TONGO II Sta 5 4+900.	TESTED BY	Mr. Karmin J.
TYPE OF MATERIAL	SOIL	CHECKED BY	Rahardjo S.
NO. OF SAMPLES		APPROVAL BY	
PROCTOR TEST	STANDART PROCTOR	CALIBRATION (Lba/Div)	6.211
TYPE OF TEST	Soaked	STANDARD OF TESTED	A.A.S.H.T.O / A.S.T.M

Time minutes	Penetra ion (inc)	10 Blow/Layer		25 Blow/Layer		56 Blow/Layer	
		Prov.ring	Load (lba)	Prov.ring	Load (lba)	Prov.ring	Load (lba)
0.00	0.0000	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.0125	1.00	6.21	0.00	0.00	2.00	12.42
0.50	0.0250	2.00	12.42	0.00	0.00	3.00	18.63
1.00	0.0500	4.00	24.84	0.00	0.00	6.00	37.27
1.50	0.0750	6.00	37.27	0.00	0.00	9.00	55.90
2.00	0.1000	8.00	49.69	0.00	0.00	12.00	74.83
3.00	0.1500	11.00	68.32	0.00	0.00	16.00	99.39
4.00	0.2000	13.00	80.74	0.00	0.00	20.00	124.22
6.00	0.3000	15.00	93.17	0.00	0.00	26.00	161.49
8.00	0.4000	17.00	105.59	0.00	0.00	31.00	192.54
10.00	0.5000	18.00	111.80	0.00	0.00	35.00	217.39

Water Content (%)

	Before	After
10 Blows/ layer	20.88	40.49
25 Blows/ layer	0	0
56 Blows/ layer	20.82	36.91

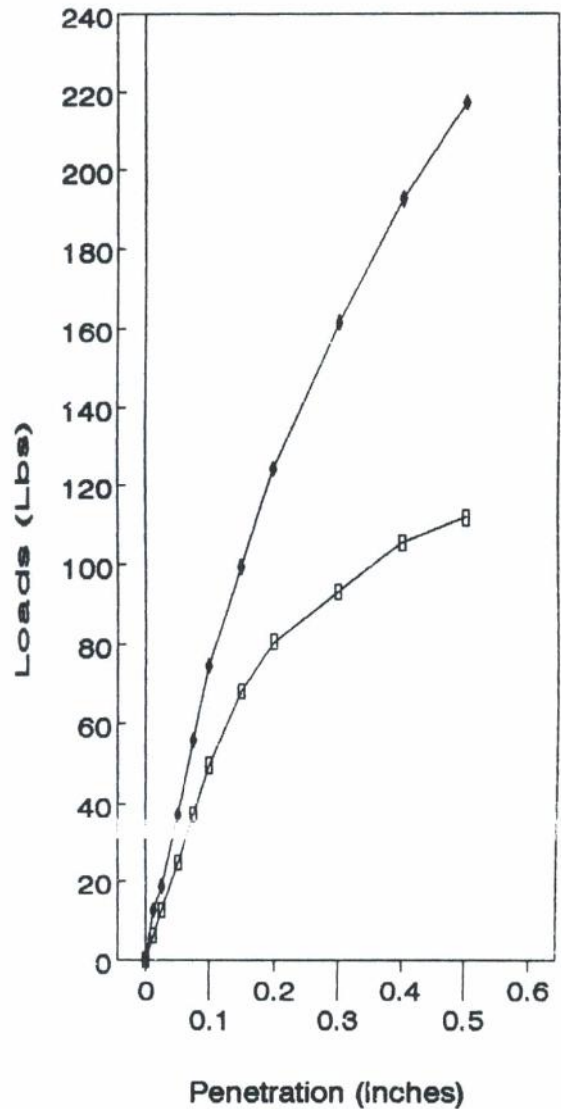
Dry Density (Grm/cm³)

	Before	After
10 B/L	1.199	1.181
25 B/L	0.000	0.000
56 B/L	1.324	1.300

U.C.C.R VALUE (%)

Number of Blow	Penetration		Swelling (%)
	0.1 inch	0.2 inch	
10 Blows/ layer	1.858	1.794	
25 Blows/ layer	0.000	0.000	
56 Blows/ layer	2.484	2.780	

Swelling = 1.12 %



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

CALIFORNIA BEARING RATIO LABORATORY TEST

PROJECT	PERENCANAAN JALAN - PENGHUBUNG POROS	DATE OF TESTED	AUGUST 2 1995
LOCATION	TONGO I BP 2 - TONGO II Sta 7 10+900.	TESTED BY	Mr. Karmin J.
TYPE OF MATERIAL	SOIL	CHECKED BY	Rahardjo S.
NO. OF SAMPLES		APPROVAL BY	
PROCTOR TEST	STANDART PROCTOR	CALIBRATION (Lbs/Div)	6.211
TYPE OF TEST	Un Soaked	STANDARD OF TESTED	A.A.S.H.T.O / A.S.T.M

Penetration Time (minutes)	Penetration (in)	10 Blow/Layer		25 Blow/Layer		56 Blow/Layer	
		Prov. ring	Load (lbs)	Prov. ring	Load (lbs)	Prov. ring	Load (lbs)
0.00	0.0000	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.0125	4.00	24.84	0.00	0.00	6.00	37.27
0.50	0.0250	7.00	43.48	0.00	0.00	12.00	74.53
1.00	0.0500	11.00	68.32	0.00	0.00	18.00	111.80
1.50	0.0750	14.00	86.95	0.00	0.00	23.00	142.85
2.00	0.1000	18.00	111.80	0.00	0.00	28.00	173.91
3.00	0.1500	24.00	149.06	0.00	0.00	36.00	223.60
4.00	0.2000	29.00	180.12	0.00	0.00	45.00	279.50
6.00	0.3000	39.00	242.23	0.00	0.00	61.00	378.87
8.00	0.4000	47.00	291.92	0.00	0.00	78.00	484.46
10.00	0.5000	57.00	354.03	0.00	0.00	91.00	565.20

Water Content (%)

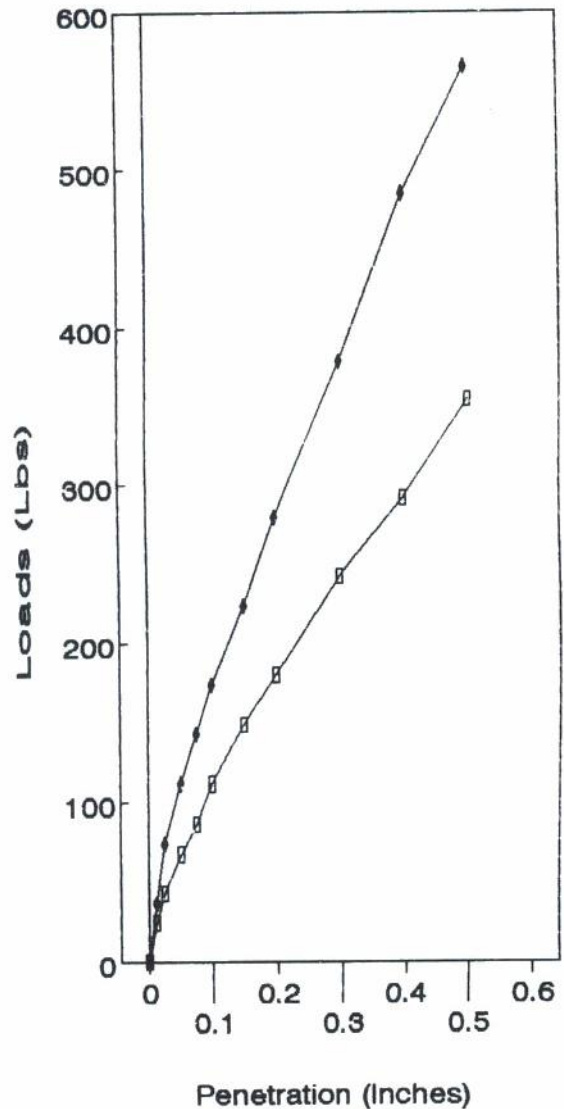
	Before	After
10 Blows/ layer	22.34	22.34
25 Blows/ layer	0	0
56 Blows/ layer	22.81	22.81

Dry Density (Gm/cm³)

	Before	After
10 B/L	1.286	1.286
25 B/L	0.000	0.000
56 B/L	1.348	1.348

C.S.B.R VALUE (%)

Number of Blow	Penetration		Swelling (%)
	0.1 inch	0.2 inch	
10 Blows/ layer	3.727	4.003	
25 Blows/ layer	0.000	0.000	
56 Blows/ layer	5.797	6.211	



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CALIFORNIA BEARING RATIO LABORATORY TEST

PROJECT	PERENCANAAN JALAN - PENGHUBUNG POROS	DATE OF TESTED	AUGUST 2 1995
LOCATION	TONGO I SP 2 - TONGO II Sta 7 10+900	TESTED BY	Mr. Kamin J.
TYPE OF MATERIAL	SOIL	CHECKED BY	Rahardjo S.
NO. OF SAMPLES		APPROVAL BY	
PROCTOR TEST	STANDART PROCTOR	CALIBRATION (Lbs/Dm)	6.211
TYPE OF TEST	Soaked	STANDARD OF TESTED	A.A.S.H.T.O / A.S.T.M

Time Minute	Penetra tion (inc)	10 Blow/Layer		25 Blow/Layer		56 Blow/Layer	
		Prov.ring	Load (lbs)	Prov.ring	Load (lbs)	Prov.ring	Load (lbs)
0.00	0.0000	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.0125	3.00	18.63	0.00	0.00	4.00	24.84
0.50	0.0250	5.00	31.06	0.00	0.00	7.00	43.48
1.00	0.0500	8.00	49.69	0.00	0.00	11.00	68.32
1.50	0.0750	10.00	62.11	0.00	0.00	15.00	93.17
2.00	0.1000	12.00	74.53	0.00	0.00	19.00	118.01
3.00	0.1500	14.00	86.95	0.00	0.00	27.00	167.70
4.00	0.2000	16.00	99.38	0.00	0.00	33.00	204.96
5.00	0.3000	18.00	111.80	0.00	0.00	46.00	279.50
8.00	0.4000	20.00	124.22	0.00	0.00	54.00	335.39
10.00	0.5000	22.00	136.64	0.00	0.00	61.00	378.87

Water Content (%)

	Before	After
10 Blows / layer	22.34	46.43
25 Blows / layer	0	0
56 Blows / layer	22.81	46.28

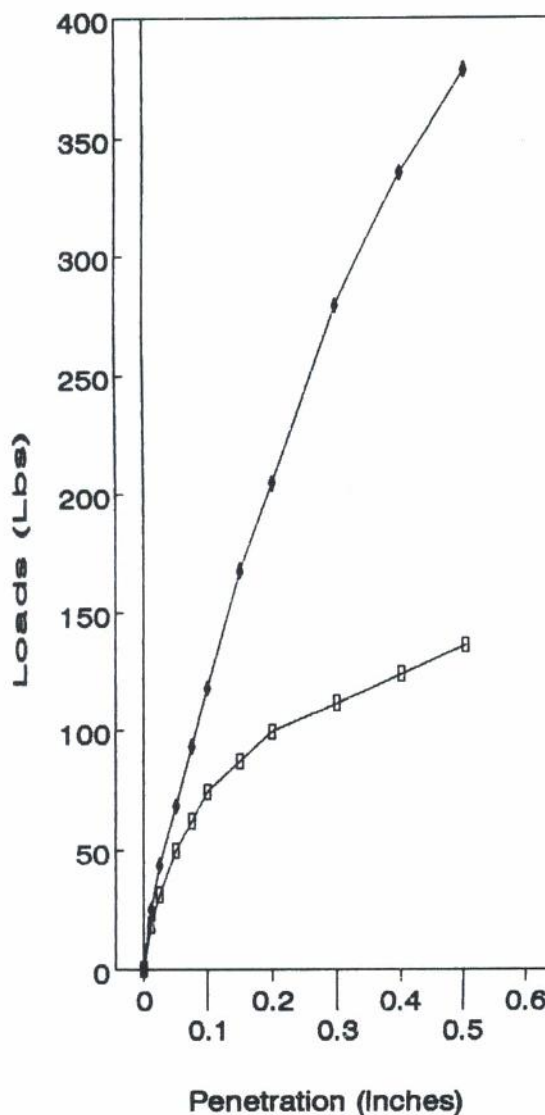
Dry Density (Gm/cm³)

	Before	After
10 B/L	1.286	1.182
25 B/L	0.000	0.000
56 B/L	1.348	1.278

B.R VALUE (%)

Number of Blow	Penetration		Swelling (%)
	0.1 inch	0.2 inch	
10 Blows / layer	2.484	2.208	
25 Blows / layer	0.000	0.000	
56 Blows / layer	3.834	4.555	

Swelling = 2.44 %



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CALIFORNIA BEARING RATIO LABORATORY TEST

PROJECT	PERENCANAAN JALAN - PENGHUBUNG POROS	DATE OF TESTED	AUGUST 2 1995
LOCATION	TONGO 1 SP 2 - TONGO 2 Sta 30+000.	TESTED BY	Mr. Karmin J.
TYPE OF MATERIAL	SOIL	CHECKED BY	Rahardjo S.
NO. OF SAMPLES		APPROVAL BY	
PROCTOR TEST	STANDART PROCTOR	CALIBRATION (Lbs/Div)	6.211
TYPE OF TEST	Un Soaked	STANDARD OF TESTED	A.A.S.H.T.O / A.S.T.M

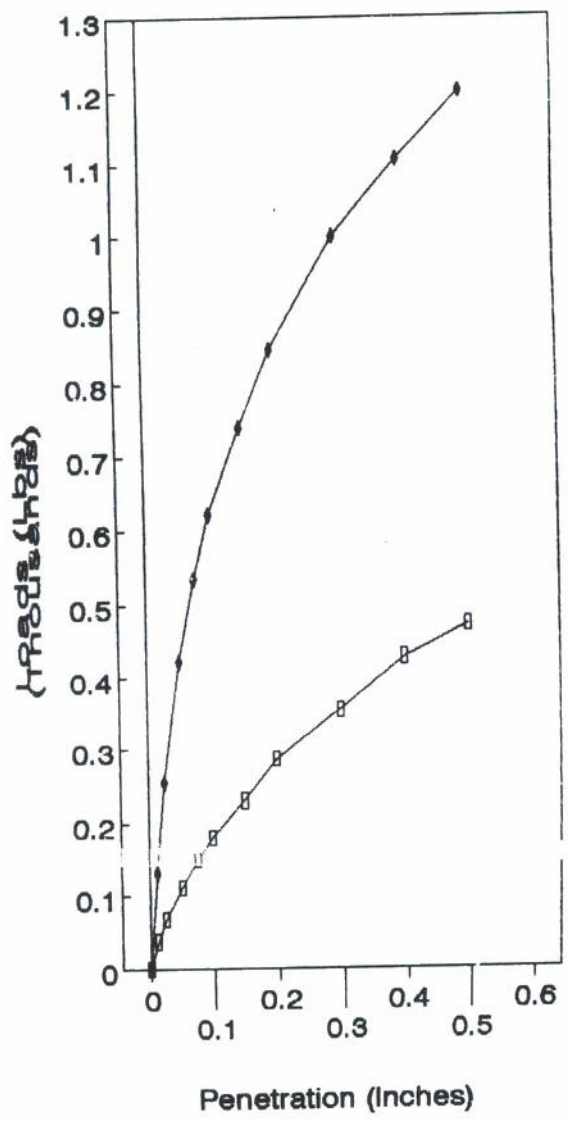
Time Minute	Penetra tion (inc)	10 Blow/Layer		25 Blow/Layer		56 Blow/Layer	
		Prov.ring	Load (lbs)	Prov.ring	Load (lbs)	Prov.ring	Load (lbs)
0.00	0.0000	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.0125	6.00	37.27	0.00	0.00	21.00	130.43
0.50	0.0250	11.00	68.32	0.00	0.00	41.00	254.65
1.00	0.0500	18.00	111.80	0.00	0.00	68.00	422.35
1.50	0.0750	24.00	146.06	0.00	0.00	96.00	594.15
2.00	0.1000	29.00	180.12	0.00	0.00	100.00	621.10
3.00	0.1500	37.00	229.81	0.00	0.00	119.00	739.11
4.00	0.2000	46.00	285.71	0.00	0.00	136.00	844.70
6.00	0.3000	67.00	364.03	0.00	0.00	161.00	999.97
8.00	0.4000	89.00	428.56	0.00	0.00	178.00	1,105.58
10.00	0.5000	76.00	472.04	0.00	0.00	193.00	1,198.72

Water Content (%)	Dry Density (Gm/cm ³)
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	Before	After
10 Blows/layer	23.52	23.52
25 Blows/layer	0	0
56 Blows/layer	23.75	23.75

	Before	After
10 B/L	1.275	1.275
25 B/L	0.000	0.000
56 B/L	1.337	1.337

C.B.R VALUE (%)			
Number of Blow	Penetration		Swelling (%)
	0.1 Inch	0.2 Inch	
10 Blows/layer	6.004	6.349	
25 Blows/layer	0.000	0.000	
56 Blows/layer	20.703	18.771	



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CALIFORNIA BEARING RATIO LABORATORY TEST

PROJECT	PERENCANAAN JALAN - PENGHUBUNG POROS	DATE OF TESTED	AUGUST 2 1995
LOCATION	TONGO I SP 2 - TONGO II Sta 30+000.	TESTED BY	Mr. Kamin J.
TYPE OF MATERIAL	SOIL	CHECKED BY	Pahardjo S.
NO. OF SAMPLES		APPROVAL BY	
PROCTOR TEST	STANDART PROCTOR	CALIBRATION (Lbs/Dm)	6.211
TYPE OF TEST	Soaked	STANDARD OF TESTED	A.A.S.H.T.O / A.S.T.M

Time (min)	Penetration (in)	10 Blow/Layer		25 Blow/Layer		56 Blow/Layer	
		Prov. ring	Load (lbs)	Prov. ring	Load (lbs)	Prov. ring	Load (lbs)
0.00	0.0000	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.0125	1.00	6.21	0.00	0.00	1.00	6.21
0.50	0.0250	2.00	12.42	0.00	0.00	3.00	18.63
1.00	0.0500	3.00	18.63	0.00	0.00	5.00	31.06
1.50	0.0750	4.00	24.84	0.00	0.00	8.00	49.69
2.00	0.1000	5.00	31.06	0.00	0.00	10.00	62.11
3.00	0.1500	7.00	43.46	0.00	0.00	15.00	93.17
4.00	0.2000	9.00	56.90	0.00	0.00	20.00	124.22
5.00	0.3000	11.00	68.32	0.00	0.00	28.00	173.91
8.00	0.4000	12.00	74.53	0.00	0.00	35.00	217.39
10.00	0.5000	13.00	80.74	0.00	0.00	41.00	254.65

Water Content (%)

	Before	After
10 Blows/layer	23.52	38.02
25 Blows/layer	0	0
56 Blows/layer	23.75	37.08

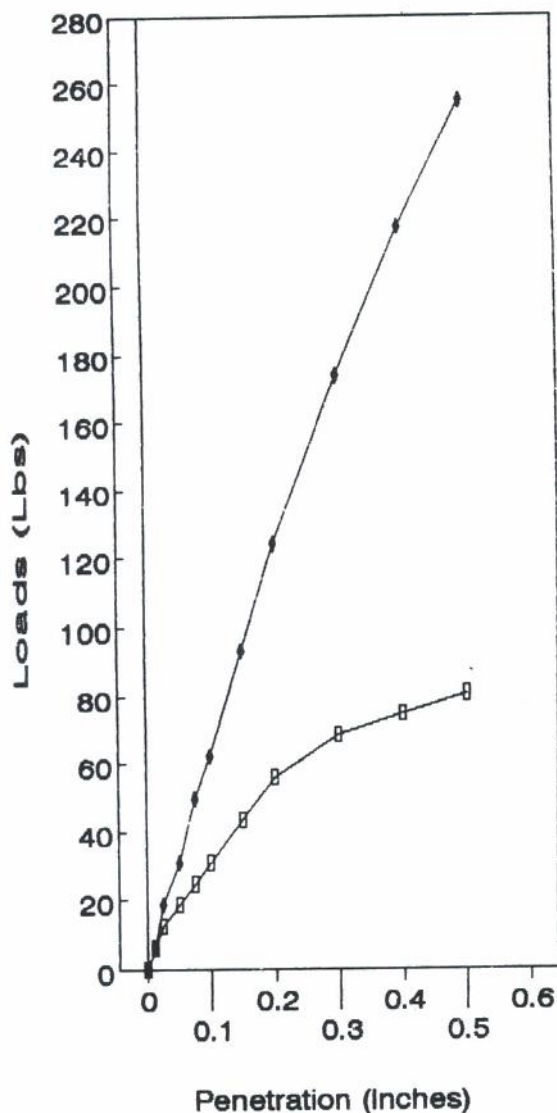
Dry Density (Gm/cm³)

	Before	After
10 B/L	1.275	1.231
25 B/L	0.000	0.000
56 B/L	1.337	1.313

MR (B.R VALUE) (%)

Number of Blow	Penetration		Swelling (%)
	0.1 inch	0.2 inch	
10 Blows/layer	1.035	1.242	
25 Blows/layer	0.000	0.000	
56 Blows/layer	2.070	2.780	

Swelling = 4.17 %



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CALIFORNIA BEARING RATIO LABORATORY TEST

PROJECT	PERENCANAAN JALAN - PENGHUBUNG POROS	DATE OF TESTED	AUGUST 2 1995
LOCATION	TONGO I SP 2 - TONGO II Sta 9 0+000.	TESTED BY	Mr. Kamin J.
TYPE OF MATERIAL	SOIL	CHECKED BY	Rahardjo S.
NO. OF SAMPLES		APPROVAL BY	
PROCTOR TEST	STANDART PROCTOR	CALIBRATION (Lbs/Dm)	6.211
TYPE OF TEST	Un Soaked	STANDARD OF TESTED	A.A.S.H.T.O / A.S.T.M

Time Penetration (in)	Penetra tion (inc)	10 Blow/Layer		25 Blow/Layer		56 Blow/Layer	
		Prov.ring	Load (lbs)	Prov.ring	Load (lbs)	Prov.ring	Load (lbs)
0.00	0.0000	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.0125	4.00	24.94	0.00	0.00	12.00	74.83
0.50	0.0250	7.00	43.48	0.00	0.00	21.00	149.05
1.00	0.0500	10.00	62.11	0.00	0.00	46.00	285.71
1.50	0.0750	14.00	86.96	0.00	0.00	66.00	403.72
2.00	0.1000	17.00	106.59	0.00	0.00	76.00	472.04
3.00	0.1500	23.00	142.85	0.00	0.00	91.00	565.20
4.00	0.2000	28.00	180.12	0.00	0.00	103.00	639.73
5.00	0.3000	40.00	248.44	0.00	0.00	126.00	776.38
6.00	0.4000	49.00	304.34	0.00	0.00	141.00	875.75
8.00	0.6000	59.00	366.46	0.00	0.00	166.00	968.92

Water Content (%)

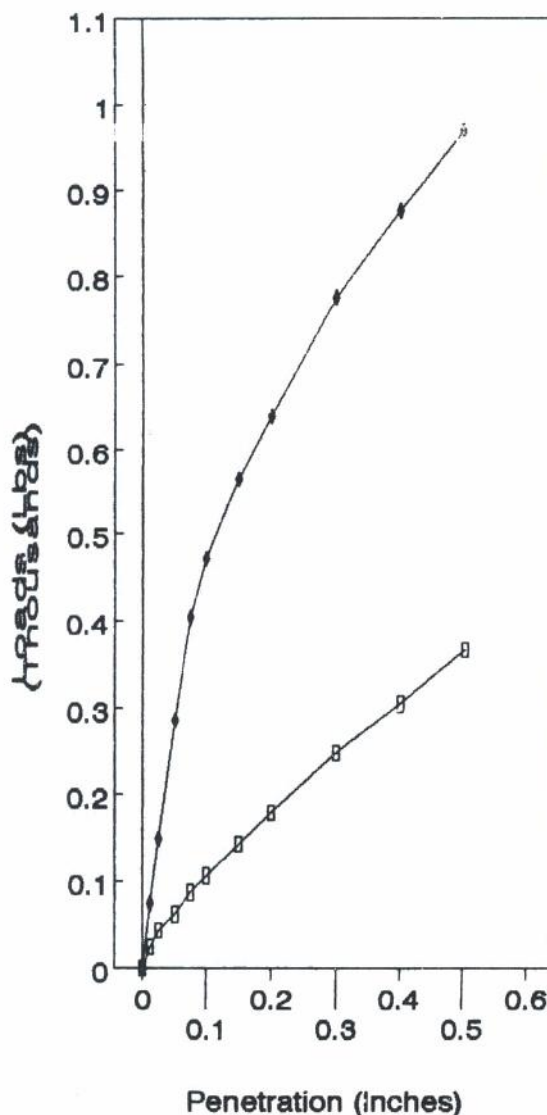
	Before	After
Blows/ layer	26.05	26.05
Blows/ layer	0	0
Blows/ layer	26.88	26.88

Dry Density (Gm/cm³)

	Before	After
10 B/L	1.080	1.080
25 B/L	0.000	0.000
56 B/L	1.472	1.472

B.R VALUE (%)

Number of Blow	Penetration		Swelling (%)
	0.1 inch	0.2 inch	
Blows/ layer	3.620	4.003	
Blows/ layer	0.000	0.000	
Blows/ layer	15.735	14.216	



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CALIFORNIA BEARING RATIO LABORATORY TEST

PROJECT	PERENCANAAN JALAN - PENGHUBUNG POROS	DATE OF TESTED	AUGUST 2 1995
LOCATION	TONGO I SP 2 - TONGO II Sta 9 0+000.	TESTED BY	Mr. Karmin J.
TYPE OF MATERIAL	SOIL	CHECKED BY	Rahardjo S.
NO. OF SAMPLES		APPROVAL BY	
TEST METHOD	STANDART PROCTOR	CALIBRATION (Lbs/Dm)	6.211
TYPE OF TEST	Soaked	STANDARD OF TESTED	A.A.S.H.T.O / A.S.T.M

Time (min)	Penetration (in)	10 Blow/Layer		25 Blow/Layer		56 Blow/Layer	
		Prov. ring	Load (lbs)	Prov. ring	Load (lbs)	Prov. ring	Load (lbs)
0.00	0.0000	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.0125	1.00	6.21	0.00	0.00	2.00	12.42
0.50	0.0250	2.00	12.42	0.00	0.00	5.00	31.05
1.00	0.0500	3.00	18.63	0.00	0.00	9.00	55.90
1.50	0.0750	4.50	27.96	0.00	0.00	13.00	80.74
2.00	0.1000	6.00	37.27	0.00	0.00	17.00	105.59
3.00	0.1500	8.00	49.69	0.00	0.00	22.00	136.64
4.00	0.2000	10.00	62.11	0.00	0.00	26.00	161.49
5.00	0.3000	13.00	80.74	0.00	0.00	31.00	192.64
8.00	0.4000	15.00	93.17	0.00	0.00	36.00	223.60
10.00	0.5000	17.00	105.59	0.00	0.00	41.00	254.65

Water Content (%)

Dry Density (Gm/cm³)

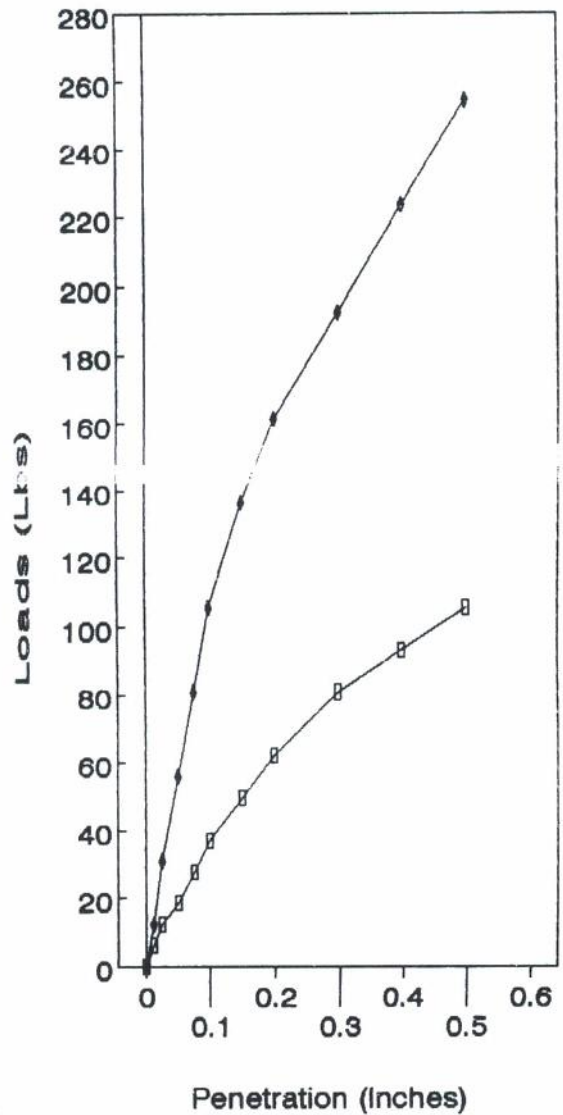
	Before	After
Blows/ layer	26.05	49.91
Blows/ layer	0	0
Blows/ layer	26.98	44.39

	Before	After
10 B/L	1.080	1.062
25 B/L	0.000	0.000
56 B/L	1.472	1.367

AV. C.B.R VALUE (%)

Number of Blow	Penetration		Swelling (%)
	0.1 inch	0.2 inch	
Blows/ layer	1.242	1.380	
Blows/ layer	0.000	0.000	
Blows/ layer	3.520	3.588	

Swelling = 2.904 %



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LABORATORY TESTING RESULTS

PROJECT : PERENCANAAN JALAN PENGHUBUNG POROS
 LOCATION : TONGO I SP-2 - TONGO II .
 BORING : S T A

SAMPLE DEPTH (m)	sample type U/D	classification symbol	INDEX PROPERTIES									
			W _n %	$\gamma_{m \text{ wet}}^{\text{dry}}$ t/m ³	G _s	e	S _r %	W _p %	W _L %	P _i %	GRAIN SIZE	
											SIEVE %	HYDRO %
STA 0+000	U		-	-	-	-	-	21,365	56,66	35,3	22	78
STA 4+000	U		-	-	-	-	-	25,897	100,28	75,18	7	93
STA 10+000	U		-	-	-	-	-	66,67	112,71	46,04	41	59
STA 15+000	U		-	-	-	-	-	38,075	8381	45,73	12	88
STA 25+000	U		-	-	-	-	-	22,96	104,75	81,79	22	78
STA 30+000	U		-	-	-	-	-	27,6	84,21	56,61	28	72



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LABORATORY TESTING RESULTS

PROJECT : PERENCANAAN JALAN PENGHUBUNG POROS
 LOCATION : TONGO I SP-2 - TONGO II .
 BORING : S T A .

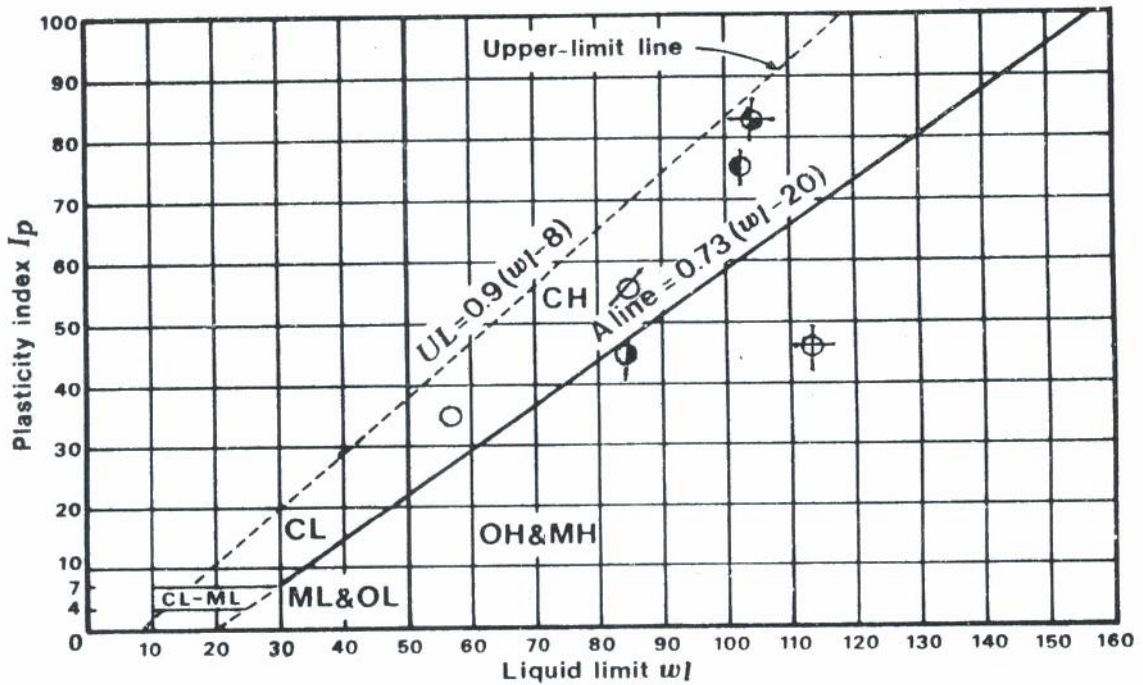
Sample Depth (m)	sample type		classifica- tion symbol	ENGINEERING PROPERTIES					
				Shear strength				Compressibility	
				C, C' (kg/cm ²)	ϕ, ϕ' (°)	q_{uu} (kg/cm ²)	S_t	C_c	C_v (cm ² /sec)
STA 0+000.	U		-	-	0,997	1,40	-	-	
STA 4 + 000	U		-	-	1,088	1,69	-	-	
STA 10+000	U		-	-	0,868	1,165	-	0	
STA 15+000	U		-	-	0,631	1,257	-	-	
STA 25+000	U		-	-	0,648	1,417	-	-	
STA 30+000	U		-	-	0,889	1,86	-	-	



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Project : Perencanaan Jl. Penghubung Poros .
Location : Tongo I SP2 - TONGO II .
Test By : Ir. S Hanny E .
Date of Test : Agustus 1995 .

PLASTICITY CHART

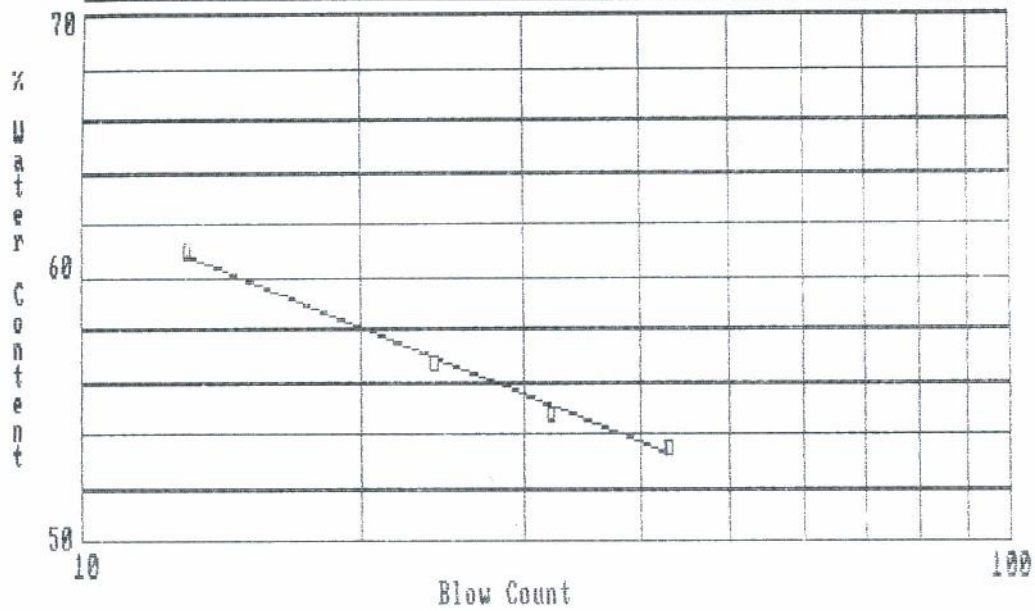


Boring No.	S T A	Symbol	WL (%)	WP (%)	IP (%)	Unified Classification
0 + 000		○	56,66	21,365	35,3	CH
4 + 000		●	100,28	25,897	75,18	CH
10 + 000		⊕	112,71	66,67	46,04	OH & MH
15 + 000		●	83,81	38,075	45,73	OH & MH
25 + 000		⊕	104,75	22,96	81,79	CH
30 + 000		⊗	84,21	27,6	56,61	CH



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Boring No. = STA 0+000 Depth = Number = TONGOI SP2-TONGOI1

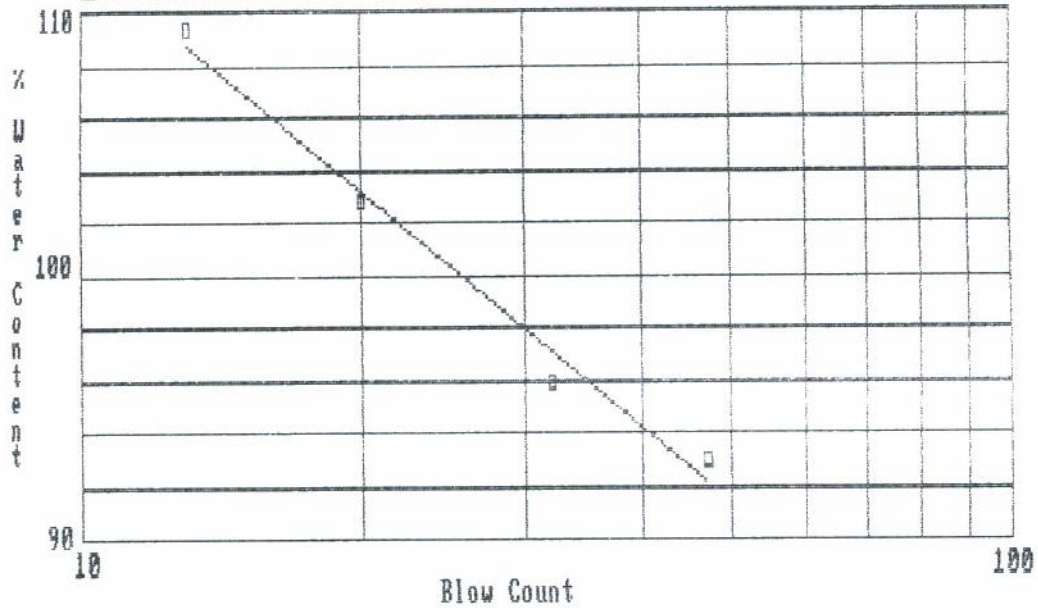


Sample no.	1	2	3	4				
% Water content	53.53	54.81	56.77	60.93				
Blow count	43	32	24	13				
Regression equation					Coefficient of determination			
$W = -14.5294 * \log N + 76.9727$					$R^2 = .9933$ ** Excellent Test			
Liquid limit = 56.66					Flow index = -14.53			
Input plastic limit = 21.365					Toughness index = -2.43			
Plasticity index = 35.3					Shrinkage limit = 13.44			
Input natural water content = ?					Liquidity index =			
Boring No. = STA 0 + 000			Depth =		Number = TONGOI SP2-TONGOI1			



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Boring No. = STA 4+000 Depth = Number = TONGOI SP2-TONGOII

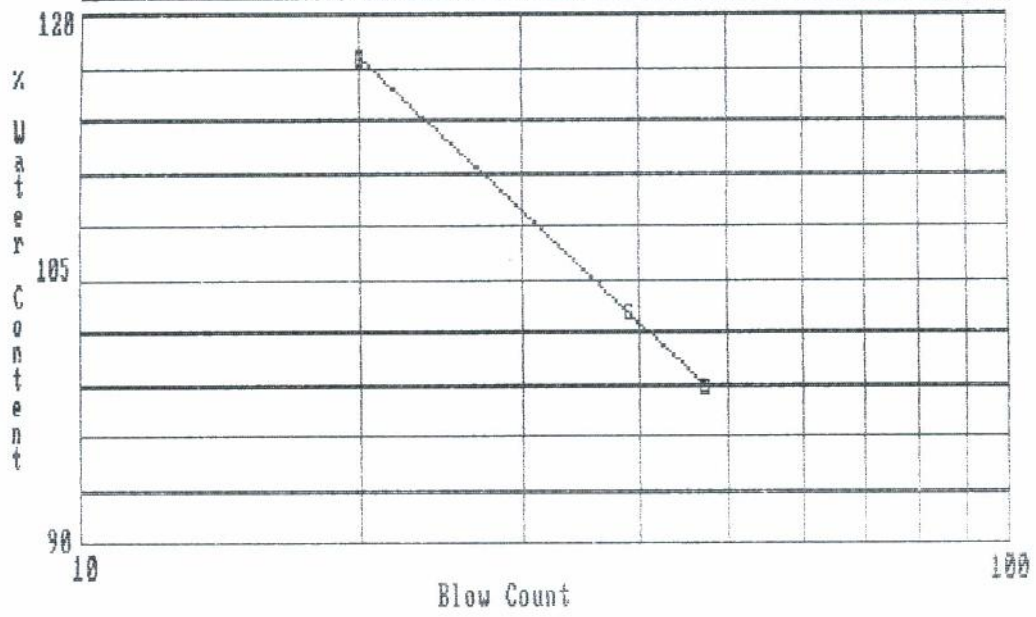


Sample no.	1	2	3	4				
% Water content	93.02	95.95	102.82	109.30				
Blow count	47	32	20	13				
Regression equation				Coefficient of determination				
$W = -29.7705 * \log N + 141.8932$				$R^2 = .984$ ** Excellent Test				
Liquid limit = 100.28				Flow index = -29.77				
Input plastic limit = 25.097				Toughness index = -2.53				
Plasticity index = 75.18				Shrinkage limit = 11.44				
Input natural water content = ?				Liquidity index =				
Boring No. = STA 4 + 000			Depth =		Number = TONGOI SP2-TONGOII			



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Boring No. = STA 10+000 Depth = Number = TONGOI SP2-TONGOII

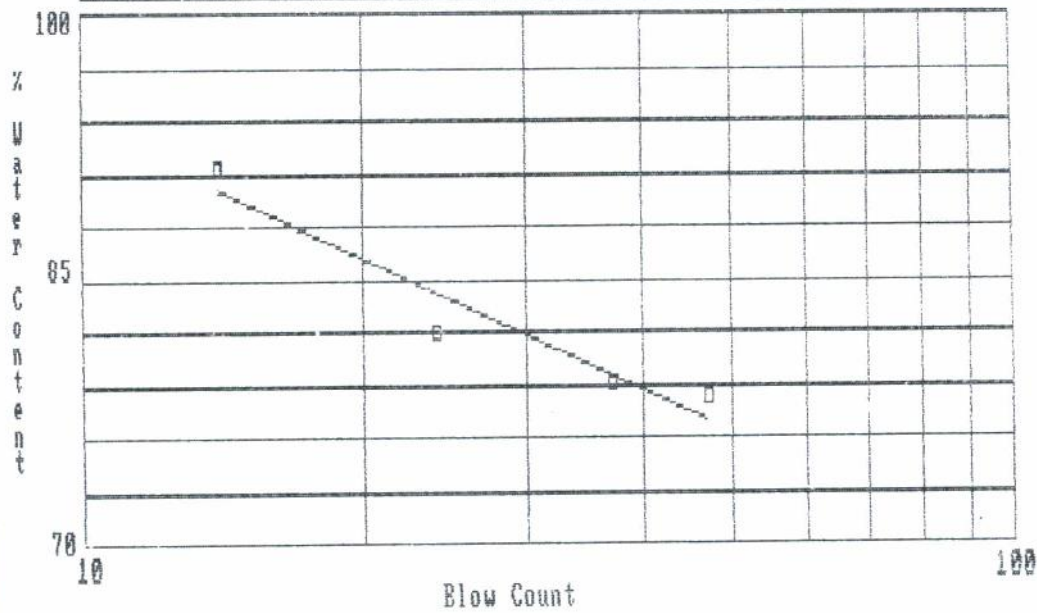


Sample no.	1	2	3				
% Water content	98.96	103.09	117.55				
Blow count	47	39	20				
Regression equation				Coefficient of determination			
$W = -50.0447 * \log N + 182.6729$				$R^2 = 1$ ** Excellent Test			
Liquid limit = 112.71				Flow index = -50.04			
Input plastic limit = 66.67				Toughness index = -.93			
Plasticity index = 46.04				Shrinkage limit = 34.99			
Input natural water content = ? ■				Liquidity index =			
Boring No. = STA 10 + 000			Depth =		Number = TONGOI SP2-TONGOII		



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Boring No. = STA₅₊₀₀₀ Depth = Number = TONGOI SP2-TONGOI

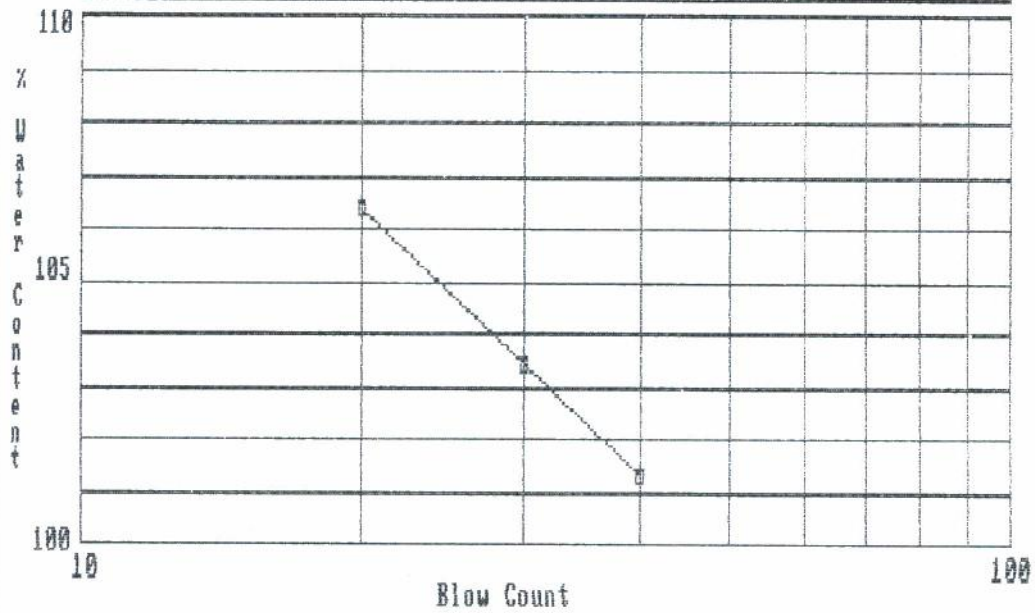


Sample no.	1	2	3	4					
% Water content	78.33	79.14	82.85	91.38					
Blow count	47	37	24	14					
Regression equation					Coefficient of determination				
$W = -24.8555 * \log N + 118.5562$					$R^2 = .9286$ ** Excellent Test				
Liquid limit = 83.81					Flow index = -24.86				
Input plastic limit = 38.875					Toughness index = -1.84				
Plasticity index = 45.73					Shrinkage limit = 28.69				
Input natural water content = ? ■					Liquidity index =				
Boring No. = STA 15 + 000			Depth =		Number = TONGOI SP2-TONGOI				



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Boring No. = STA25+000 Depth = Number = TONGOI SP2-TONGOII

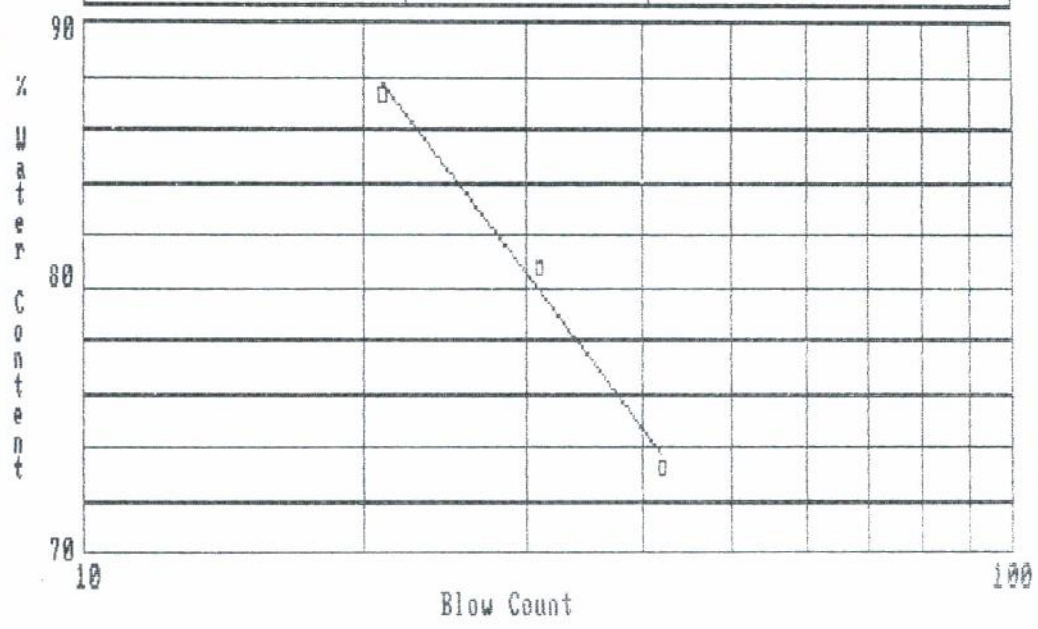


Sample no.	1	2	3						
% Water content	101.31	103.41	106.38						
Blow count	40	30	20						
Regression equation					Coefficient of determination				
$W = -16.8361 * \log N + 128.2829$					$R^2 = 1$ ** Excellent Test				
Liquid limit = 104.75					Flow index = -16.84				
Input plastic limit = 22.96					Toughness index = -4.86				
Plasticity index = 81.79					Shrinkage limit = 10.23				
Input natural water content = ? ■					Liquidity index =				
Boring No. = STA 25+000.			Depth =			Number = TONGOI SP2-TONGOII			



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Boring No. = STA30+000 Depth = Number = TONGOI SP2-TONGOII



Sample no.	1	2	3						
% Water content	73.26	80.73	87.34						
Blow count	42	31	21						
Regression equation					Coefficient of determination				
$W = -46.4194 * \log N + 149.099$					$R^2 = .9887$ ** Excellent Test				
Liquid limit = 84.21					Flow index = -46.42				
Input plastic limit = 27.6					Toughness index = -1.22				
Plasticity index = 56.61					Shrinkage limit = 14.89				
Input natural water content = ?					Liquidity index =				
Boring No. = STA 30+000			Depth =			Number = TONGOI SP2-TONGOII			



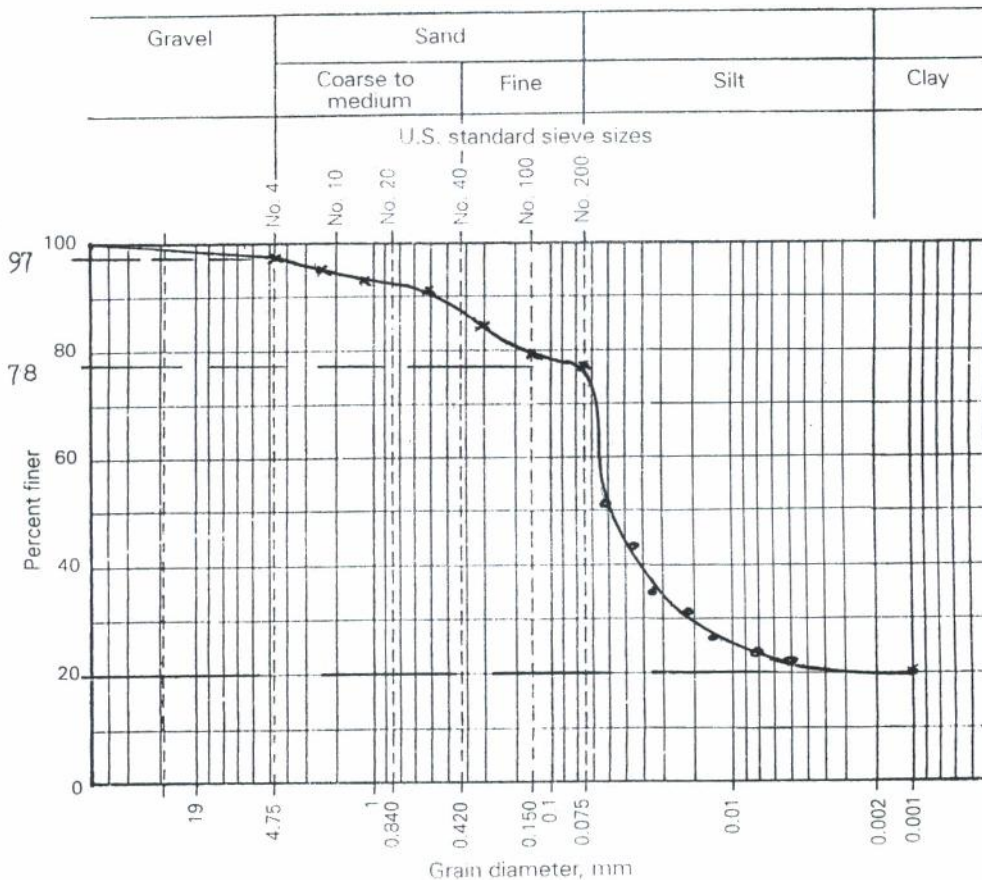
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GRAIN SIZE DISTRIBUTION

Project Perenc. Jl Penghubung Poros Job No. _____
 Location of Project Tongo I SP-2-Tongo II Boring No. _____ Sample No. Sta 0 + 00 .
 Description of Soil _____ Depth of Sample Sta 0 + 00 .
 Tested By Ir. Rahardjo S Date of Testing Juli 1995 .



Visual soil description _____

Soil classification _____

System Hydrometer & sieve analysis

Gravel = 3 %.

Silt = 58 %

Sand = 9 %.

Clay = 20 %.



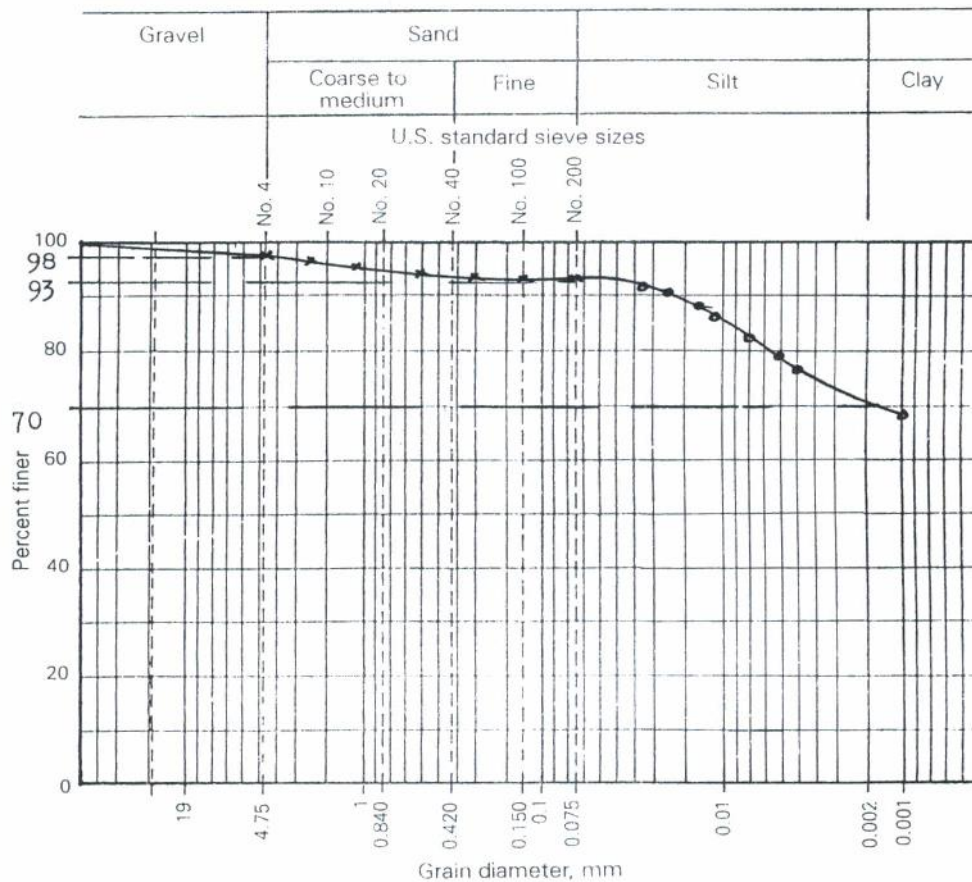
GRAIN SIZE DISTRIBUTION

Project Perenc.Jl Penghubung Poros. Job No. _____

Location of Project Tongo I SP2-Tongo II Boring No. _____ Sample No. Sta 4 + 000.

Description of Soil _____ Depth of Sample Sta 4 +0,00.

Tested By Ir. Rahardjo. S Date of Testing Juli 1995 .



Visual soil description _____

Soil classification _____

System Hydrometer and Sieve analysis

Gravel = 2 %.

Silt = 23 %.

Sand = 5 %.

Clay = 70 %.



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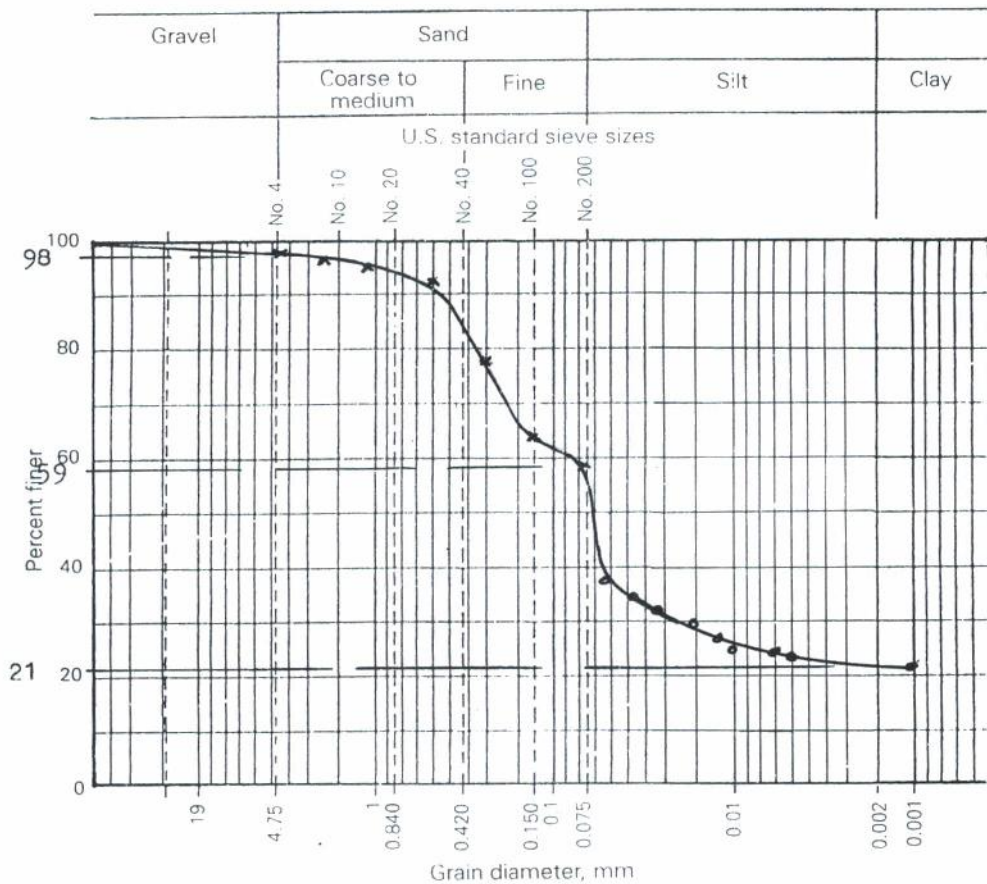
GRAIN SIZE DISTRIBUTION

Project Perenc. Jln. Penghubung Poros Job No. _____

Location of Project Tongo I SP2-Tongo II Boring No. _____ Sample No. Sta 10 + 00

Description of Soil _____ Depth of Sample Sta 10 + 00

Tested By Ir Raymond S Date of Testing Juli 1995



Visual soil description _____

Soil classification _____

System Hydrometer and Sieve analysis

Gravel = 2 %.

Silt = 38 %.

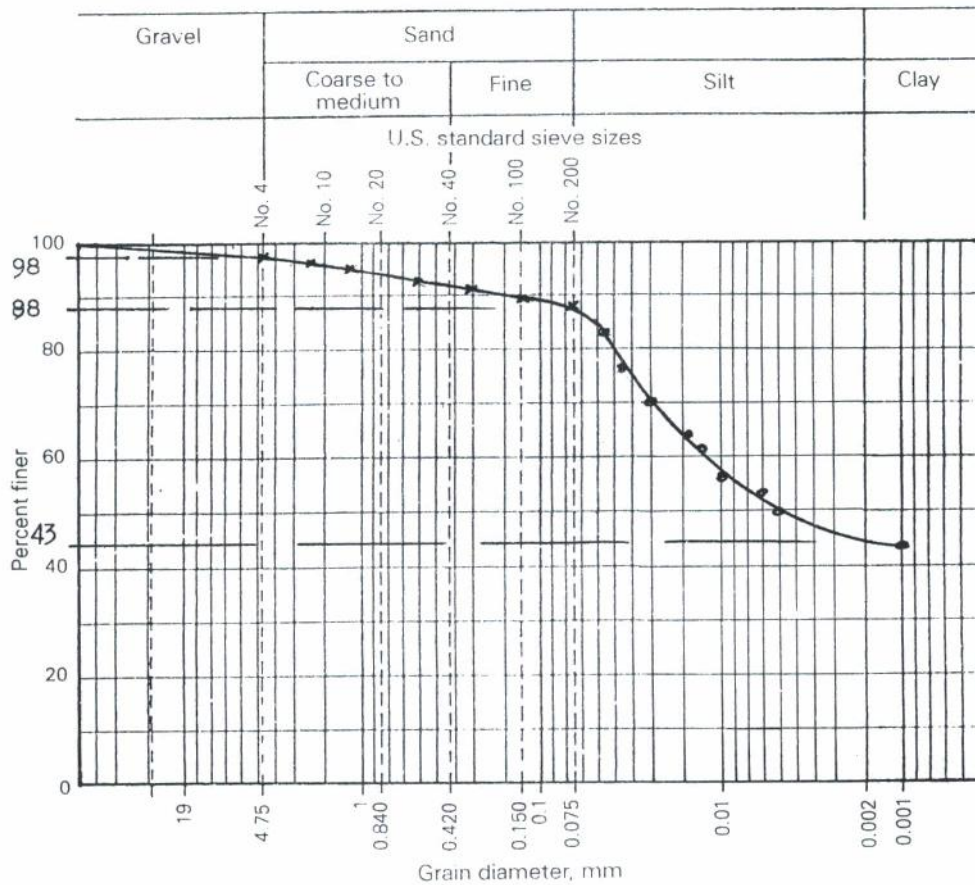
Sand = 39 %.

Clay = 21 %.



GRAIN SIZE DISTRIBUTION

Project Perenc. Jln Penghubung Poros Job No. _____
 Location of Project Tongo I SP2-Tongo II Boring No. _____ Sample No. Sta 15 + 000 .
 Description of Soil _____ Depth of Sample Sta 15 * 00 .
 Tested By Ir. Rahardjo S Date of Testing Juli 1995 .



Visual soil description _____

Soil classification _____ System Hydrometer & Sieve Analysis

Gravel = 2 % Silt = 45 %
 Sand = 10 % Clay = 43 %



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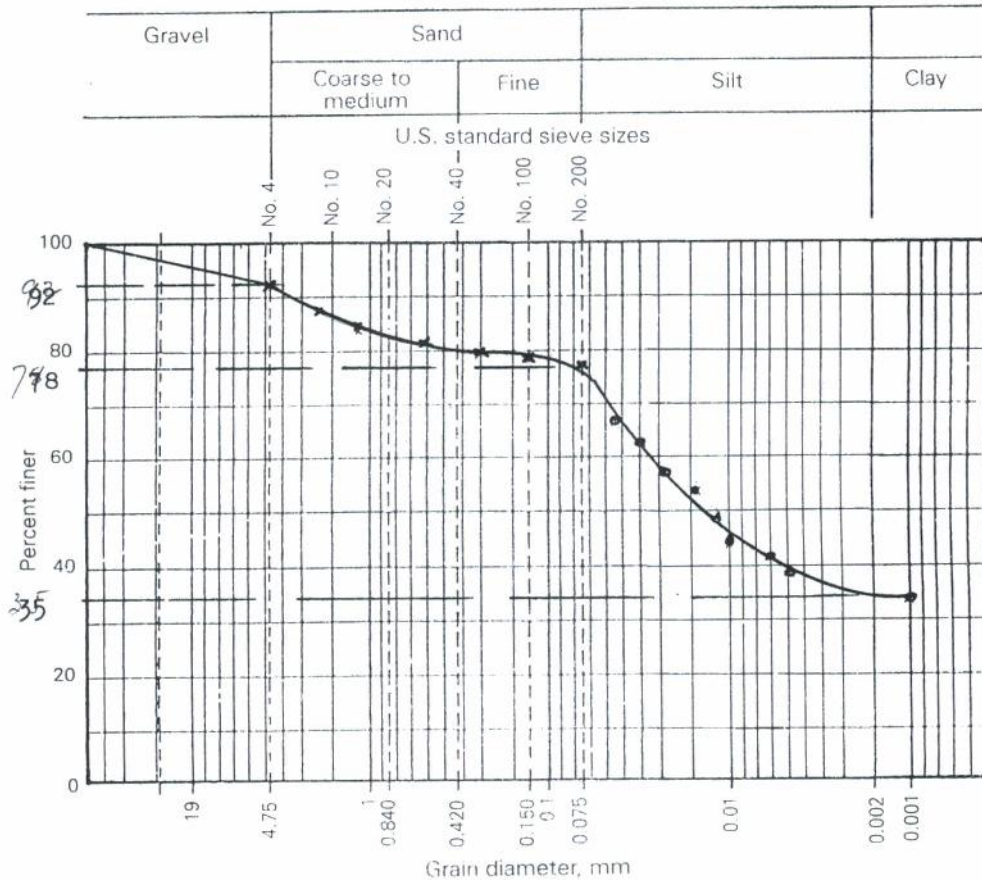
GRAIN SIZE DISTRIBUTION

Project Perenc. Jalan. Peng. Poros. Job No. _____

Location of Project Tongo I SP 2-Tongo II Boring No. _____ Sample No. Sta 25 + 000.

Description of Soil _____ Depth of Sample Sta 25 + 0

Tested By Ir. Rahardjo. S Date of Testing Juli 1995.



Visual soil description _____

Soil classification _____

System Hydrometer & Sieve Analysis

Gravel = 8 %.

Silt = 43 %.

Sand = 14 %.

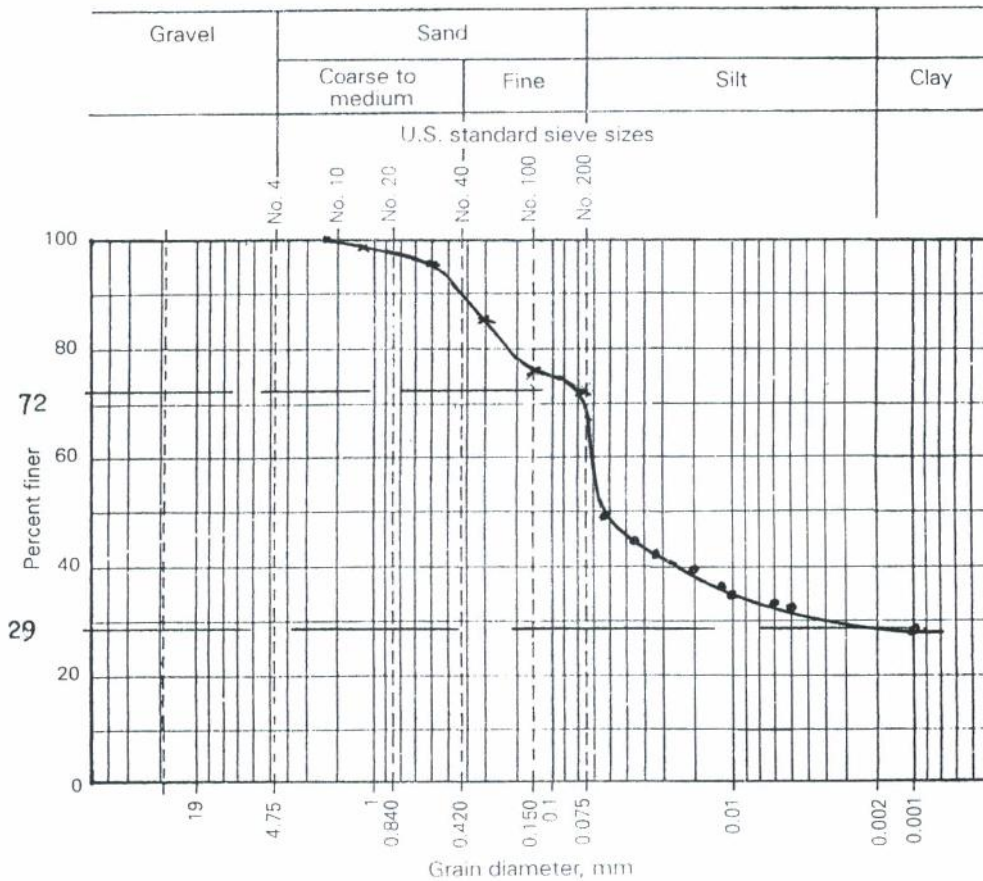
Clay = 35 %.



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GRAIN SIZE DISTRIBUTION

Project Perencanaan Jalan Peng, Poros. Job No. _____
Location of Project _____ Boring No. _____ Sample No. Sta 30 + 000.
Description of Soil _____ Depth of Sample Sta 30 + 00
Tested By Ir. Rahardjo. S Date of Testing Juli 1995.



Visual soil description _____

Soil classification _____ System Hydrometer & Sieve Analysis

Sand = 28 %.

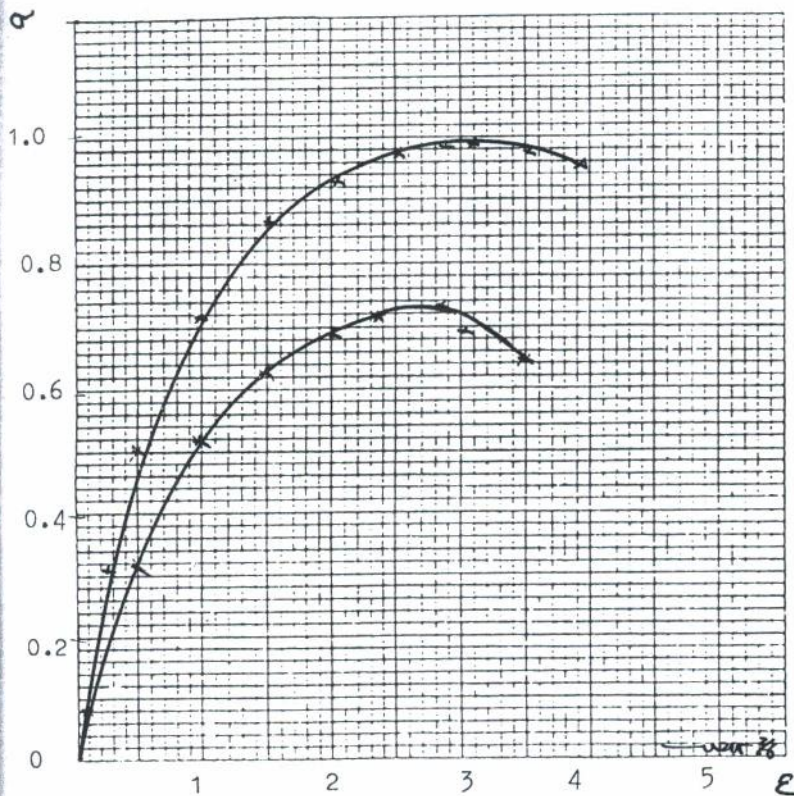
Clay = 29 %.

Silt = 43 %.



UNCONFINED COMPRESSION TEST A7

PROJECT	PERENCANAAN JALAN PENCHUBUNG	
LOCATION OF PROJECT	TONGO I SP.2 - TONGO II	
TESTED BY	WARINDRA	
DATE OF TESTED	AGUSTUS 1995	
SAMPLE No. / DEPTH OF SAMPLE	STA. 4 + 000	
	-	-
quu (Kg/Cm ²)	0,997	-
qur (Kg/Cm ²)	0,714	-
SENSITIVITY (St)	1,40	-
Cu (Kg/Cm ²)	0,50	-

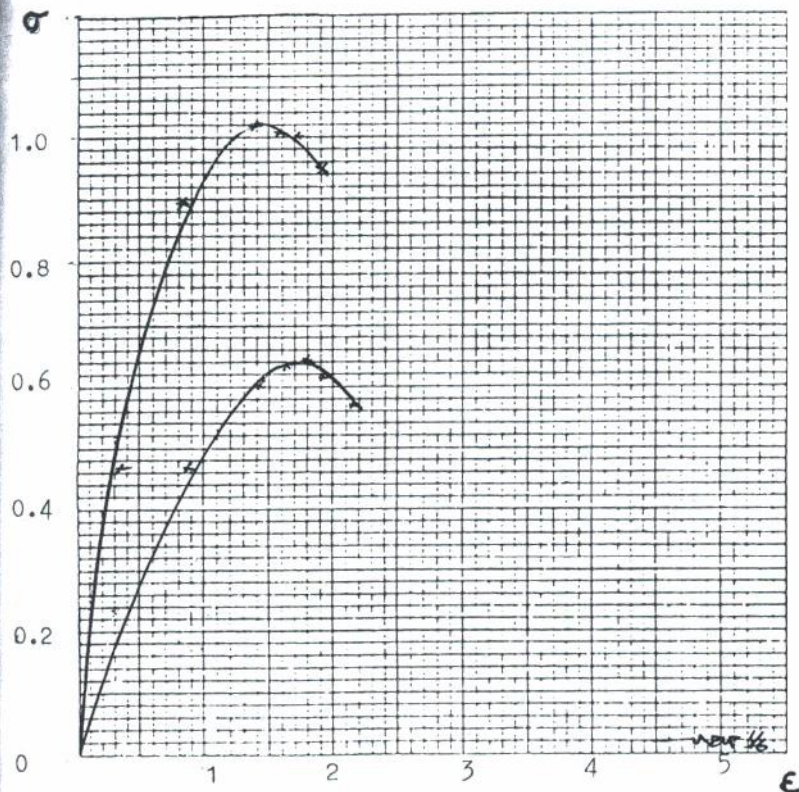


Kadar Air (W) % =
 B. Isi Kering =
 Diameter Contoh = 35 mm
 Tinggi Contoh = 70.5 mm



UNCONFINED COMPRESSION TEST A7

PROJECT	PERENC JALAN PENHUBUNG	
LOCATION OF PROJECT	TONGO I SP.2 - TONGO II	
TESTED BY	WARINDRA	
DATE OF TESTED	AGUSTUS 1995	
SAMPLE No. / DEPTH OF SAMPLE	STA. 0 + 000	
quu (Kg/Cm ²)	1.088	-
qur (Kg/Cm ²)	0,643	
SENSITIVITY (St)	1,69	-
Cu (Kg/Cm ²)	0,544	-

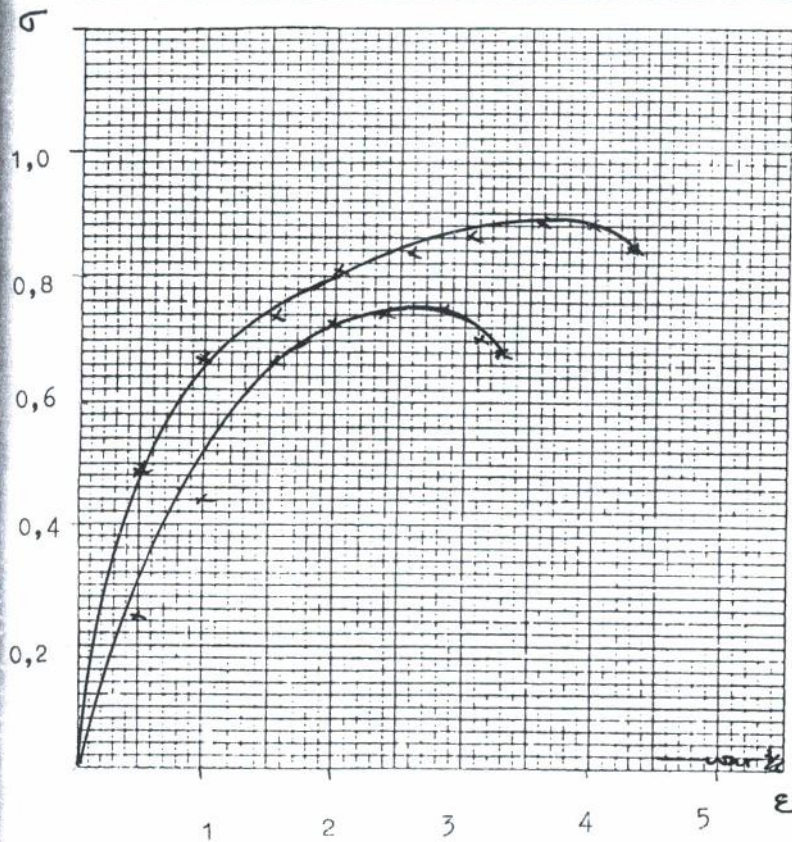


Kadar Air (W) % =
B. Isi Kering =
Diameter Contoh = 35 mm
Tinggi Contoh = 70 mm



UNCONFINED COMPRESSION TEST A7

PROJECT	Perenc. Jl. Penghubung Poros	
LOCATION OF PROJECT	Tongo I SP-2 - Tongo II .	
TESTED BY	Ir. Warindra .	
DATE OF TESTED	Agustus 1995	
SAMPLE No. / DEPTH OF SAMPLE	STA 10 + 000	
	-	-
qu (Kg/Cm ²)	0,868	-
qr (Kg/Cm ²)	0,745	-
SENSITIVITY (St)	1,165	-
Cu (Kg/Cm ²)	0,434	-

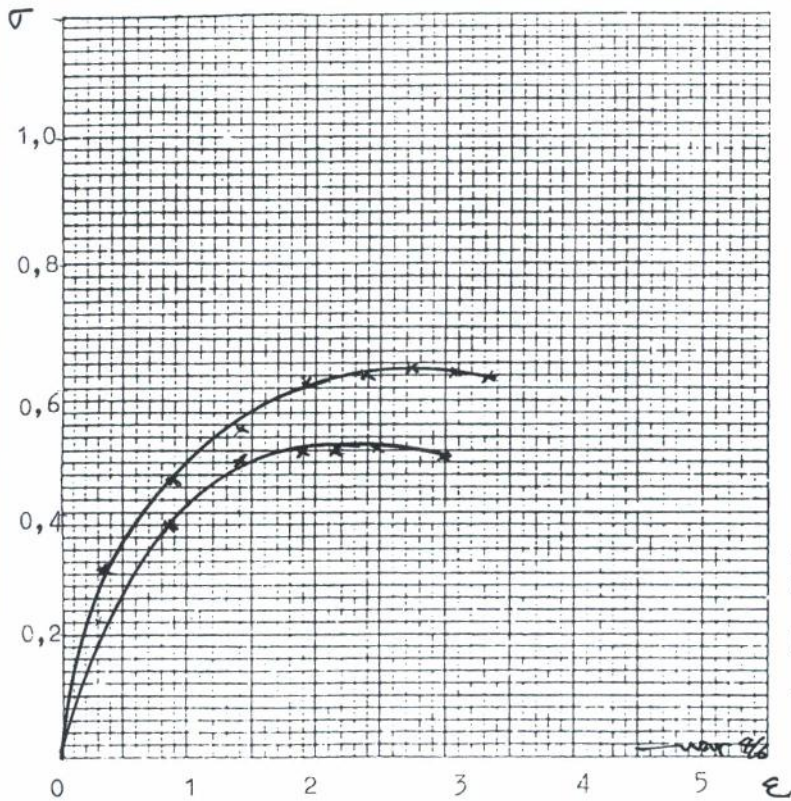


Kadar Air (W) % =
B. Isi Kering =
Diameter Contoh = 35 mm
Tinggi Contoh = 69,2 mm



UNCONFINED COMPRESSION TEST A7

PROJECT	Perenc. Jalan Penghubung Poros	
LOCATION OF PROJECT	Tongo I SP-2 = Tongo II	
TESTED BY	Ir. Warindra	
DATE OF TESTED	Agustus 1995	
SAMPLE No. / DEPTH OF SAMPLE	STA 15 + 000	
	-	-
quu (Kg/Cm ²)	0,631	-
qur (Kg/Cm ²)	0,502	-
SENSITIVITY (St)	1,257	-
Cu (Kg/Cm ²)	0,32	-

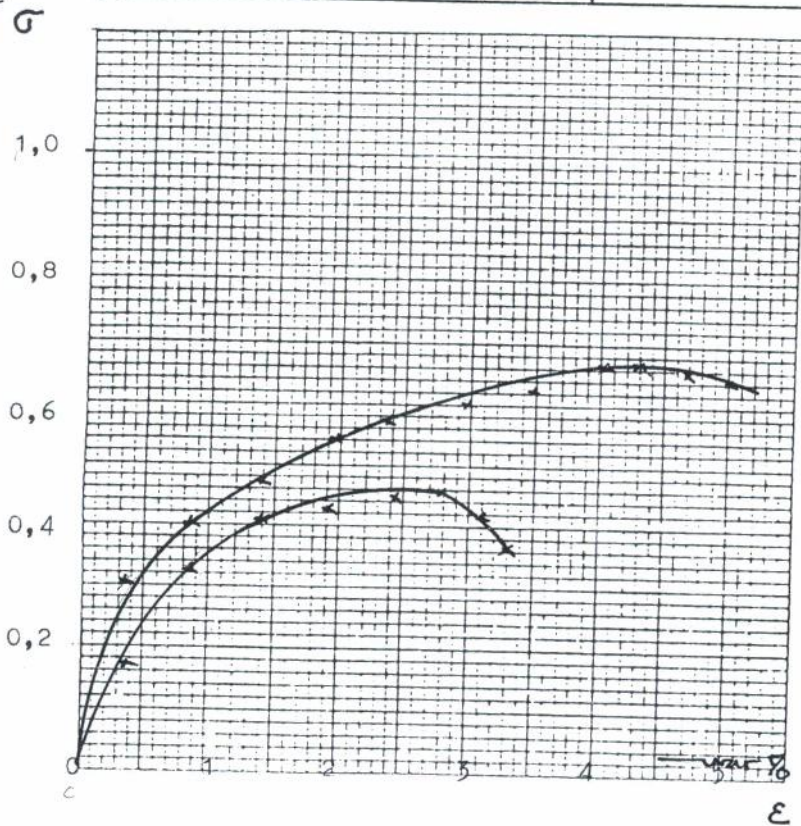


Kadar Air (W) % =
 B. Isi Kering =
 Diameter Contoh = 35 mm
 Tinggi Contoh = 70 mm .



UNCONFINED COMPRESSION TEST A7

PROJEK:	Perenc. Jalan. Penghubung Poros	
LOCATION OF PROJECT	Tongo I SP-2 = Tongo II .	
TESTED BY	Ir. Warindra	
DATE OF TESTED	Agustus 1995	
SAMPLE No. / DEPTH OF SAMPLE	STA 25 + 000	
	-	-
quu (Kg/Cm ²)	0,648	-
qur (Kg/Cm ²)	0,457	-
SENSITIVITY (St)	1,417	-
Cu (Kg/Cm ²)	0,324	-

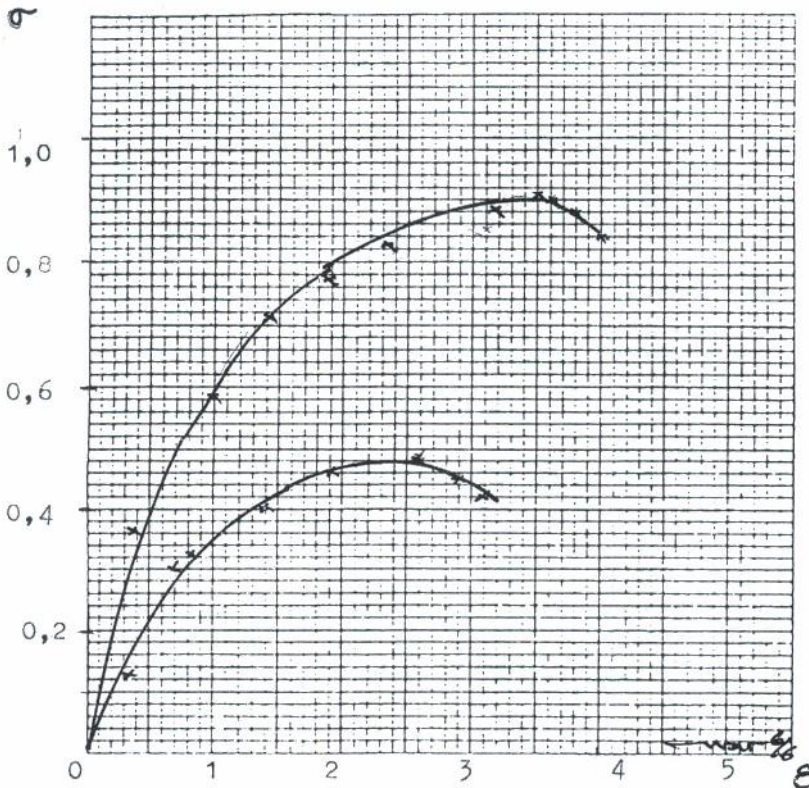


Kadar Air (W) % =
 B. Isi Kering =
 Diameter Contoh = 35 mm .
 Tinggi Contoh = 68,9 mm .



UNCONFINED COMPRESSION TEST A7

PROJECT	Perenc.Jalan Penghubung Poros	
LOCATION OF PROJECT	Tongo I SP-2 - Tongo II .	
TESTED BY	Ir. Warindra .	
DATE OF TESTED	Agustus 1995	
SAMPLE No. / DEPTH OF SAMPLE	STA 30 + 000 .	
quu (Kg/Cm ²)	0,889	
qur (Kg/Cm ²)	0,478	-
SENSITIVITY (St)	1,86	
Cu (Kg/Cm ²)	0,44	



Kadar Air (W) % =
B. Isi Kering =
Diameter Contoh: = 35 mm .
Tinggi Contoh = 69,5 mm