



PENUGASAN
No : 15-09/PM/LM/IX/2013

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 JALUR PIPA BEJI
Lokasi : Lenteng Agung, Jakarta Selatan
Pemberi Tugas : Bapak. Ruki Ardiyanto

Dengan jadwal pelaksanaan pekerjaan selama 15 hari (120 jam) , 5 hari dilapangan dan 10 hari di Laboratorium

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

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

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

Jakarta, 15 September 2013
Ketua Prodi Teknik Sipil



Ir. Marsiano 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 JALUR PIPA BEJI
Lokasi : Lenteng Agung, Jakarta Selatan

Oleh :
Idrus Ir, M.Sc

Mengetahui :
Ketua Jurusan Teknik Sipil



Ir. Marsiano MT

Program Studi Teknik Sipil
Institut Sain dan Teknologi Nasional
Jakarta 2013

FINAL REPORT

SOIL INVESTIGATION

PROJECT : JALUR PIPA BEJI

**LOCATION/SITE : Lenteng Agung
Jakarta Selatan**



ISTN *Soil Mechanics Laboratory*
2013



Jakarta , 04 Oktober 2013

No : 04-10.1/FR/LM/X/2013

KEPADA YTH.

Bp. Ruki Ardiyanto

Perihal : Laporan akhir penyelidikan tanah Proyek Pipa Beji, Jakarta Selatan

Dengan hormat,

Bersama ini kami sampaikan hasil Final Report Penyelidikan Tanah pada Proyek Pipa Beji, Jakarta Selatan.

Penyelidikan tanah ini terdiri dari Penyelidikan tanah di lapangan yang terdiri dari :

- 5 (lima) titik Shallow Bored (dengan UD sampling)
- serta penyelidikan di Laboratorium, berupa uji index properties dan mechanical properties (sedang dalam proses).

Hasil lengkap dalam bentuk laporan akhir dapat dilihat dalam laporan berikut.

Atas kerjasamanya kami ucapkan terima kasih

LABORATORIUM MEKANIKA TANAH ISTN

Direktur



(Idrus Muhammad Ir. M.Sc)
Reg LPJK No: 1.2.500.2.31.09.03.000007

FINAL REPORT
SOIL INVESTIGATION
Proyek : Pipa Beji
Lokasi : Lenteng Agung
Jakarta Selatan

I. PENDAHULUAN :

Sehubungan dengan permohonan dari Bp. Ruki Ardiyanto kepada Laboratorium Mekanika Tanah ISTN untuk melakukan pekerjaan penyelidikan tanah pada rencana proyek Pipa Beji, Jakarta Selatan maka kami akan melaporkan pekerjaan tersebut dalam Final Report (Laporan Akhir) dari hasil pekerjaan pengujian hand boring pada pekerjaan tersebut.

Pekerjaan dilapangan telah kami laksanakan pada tanggal 16 – 22 September 2013.

Jumlah titik pengujian yang dilakukan :

- 5 (lima) titik Shallow boring dengan pengambilan undisturb sample Pada laporan akhir ini meliputi hasil penyelidikan lapangan guna mengetahui mechanical properties dan physical properties. Dari pengujian hand boring didapat informasi tentang kondisi lapisan tanah (konsistensi tanah) secara visual.

II. PENYELIDIKAN DI LAPANGAN.

Pelaksanaan penyelidikan dilapangan pada proyek ini meliputi :

- Shallow Boring dengan pengambilan undisturb sample

2.1. Peralatan :

1 (satu) set mesin hand boring.

2.2. Metode Pelaksanaan.

Shallow Boring

Pengeboran dilaksanakan dengan rotary core drilling, dengan menggunakan mata bor iwan.

Deskripsi tanah secara visual dilakukan secara terus menerus sepanjang lubang pengeboran.

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

Undisturbed Sampling

Pengambilan contoh tanah tidak terganggu / asli (Undisturbed sampler) dapat dilaksanakan dengan menggunakan "Shelby Type Thin Walled Tube Samplers" dan dilakukan sesuai dengan persyaratan prosedur percobaan dari ASTM D1587.

Tabung yang sudah terisi contoh tanah akan ditutup kedua ujungnya dengan campuran paraffin ditambah damar 2-3%, dimasukkan kedalam kantong plastic lengkap dengan keterangannya, kemudian disimpan dan dihindarkan dari kemungkinan terjadinya benturan-benturan atau tumbukan serta panas sinar matahari secara langsung. Kemudian contoh tanah tersebut dikirim ke laboratorium.

2.3. Jumlah dan Hasil Penyelidikan .

- Shallow Boring sebanyak 5 (lima) titik.

Titik	Kedalaman (m)	Undisturb Sample	Muka Air Tanah (m)	Lokasi
HB-1	-5.00	-3.00 sd. -3.50	--	Lenteng Agung
HB-2	-5.00	-3.00 sd. -3.50	--	Halte Busway
HB-3	-5.00	-3.00 sd. -3.50	--	Jl. Harsono RM
HB-4	-5.00	-3.00 sd. -3.50	--	Lenteng Agung 2
HB-5	-5.00	-3.00 sd. -3.50	--	Jl. Al Hidayah

III . KESIMPULAN :

3.1. Kondisi lapisan tanah.

Dari hasil pengujian Shallow Boring sebanyak 2 (dua) titik pengujian (HB-1 & HB-2), secara umum kondisi lapisan tanah seperti berikut :

- Dari permukaan tanah hingga kedalaman -4,00 meter dijumpai lapisan tanah lempung dengan konsistensi sedang sampai kaku.
- Pada kedalaman -4,00 meter sampai dengan -5,00 meter dijumpai lapisan tanah lempung kelanauan dengan konsistensi sedang.
- Muka air tanah tidak dijumpai pada saat pengujian dilakukan.

Dari hasil pengujian Shallow Boring sebanyak 3 (tiga) titik pengujian (HB-3, HB-4 & HB-5), secara umum kondisi lapisan tanah seperti berikut :

HB-3 Cilandak (Jl. Harsono RM)

- Dari permukaan tanah hingga kedalaman -0,50 meter dijumpai lapisan sirtu.
- Pada kedalaman -0,50 meter sampai dengan -2,00 meter dijumpai lapisan tanah lempung berwarna coklat.

- Pada kedalaman -2,00 meter sampai dengan -5,00 meter dijumpai lapisan tanah lempung berwarna merah.
- Muka air tanah tidak dijumpai pada saat pengujian dilakukan.

HB-4 Universitas Pancasila (Lenteng Agung 2)

- Dari permukaan tanah hingga kedalaman -0,50 meter dijumpai lapisan tanah lempung kelanauan berwarna coklat kemerahan.
- Pada kedalaman -0,50 meter sampai dengan -1,50 meter dijumpai lapisan tanah lempung berwarna coklat kemerahan.
- Pada kedalaman -1,50 meter sampai dengan -5,00 meter dijumpai lapisan tanah lempung kelanauan berwarna merah kuning kecoklatan.
- Muka air tanah tidak dijumpai pada saat pengujian dilakukan.

HB-5 Universitas Indonesia (Jl. Al Hidayah)

- Dari permukaan tanah hingga kedalaman -5,00 meter dijumpai lapisan tanah lempung berwarna coklat dan merah.
- Muka air tanah tidak dijumpai pada saat pengujian dilakukan.

Jakarta, Oktober 2013

ISTN Soil Mechanics Laboratory

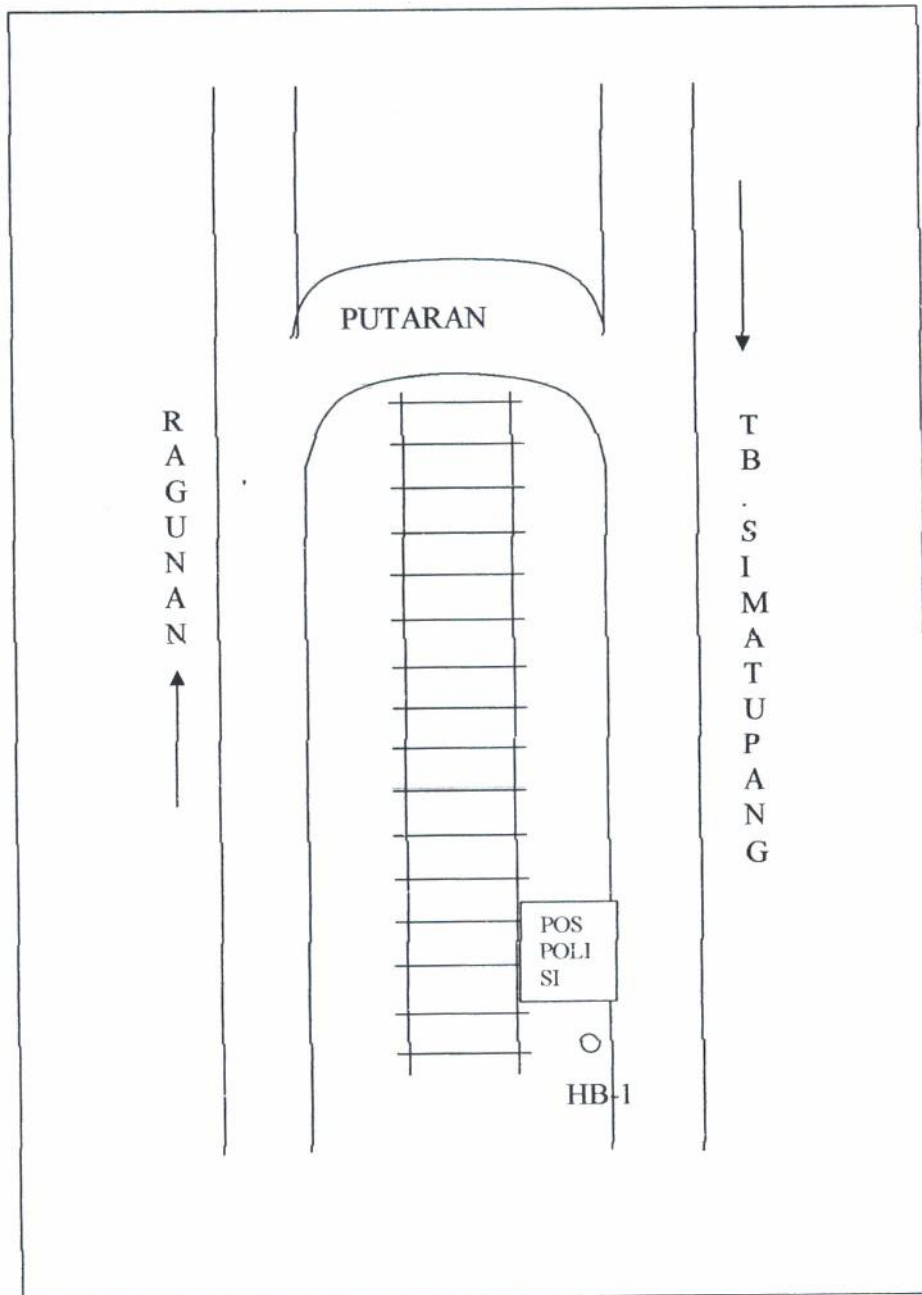
Director



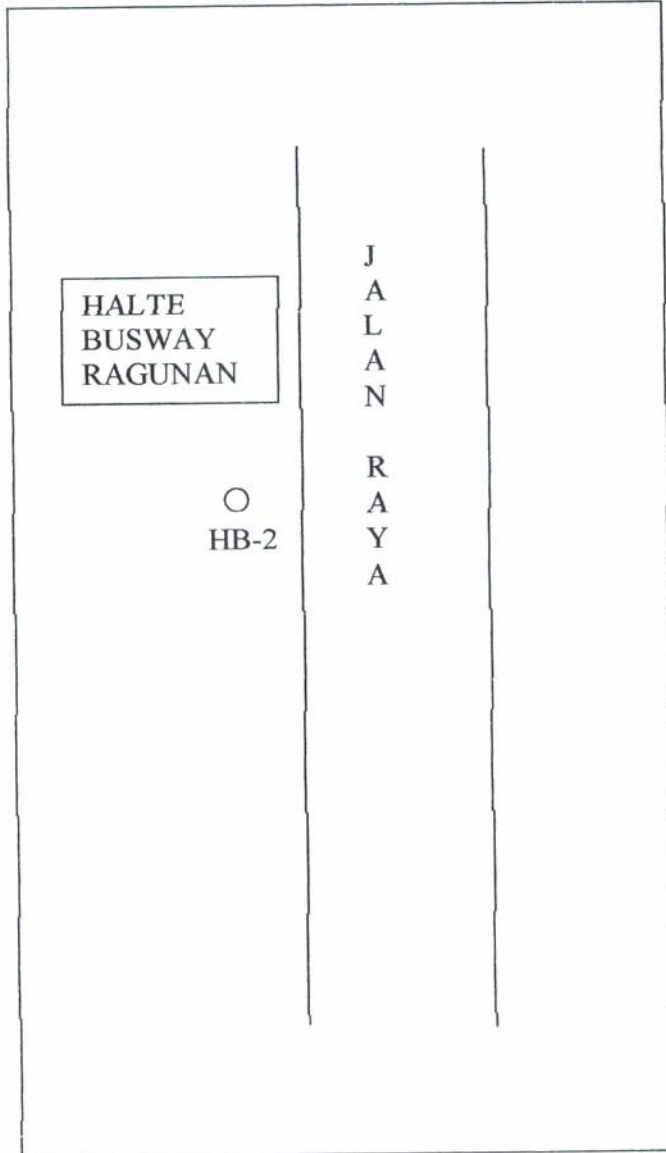
Ir. Idrus. M.Sc (Geotechnical Engineer)

No Reg :1.2.500.2.31.09.03.000007

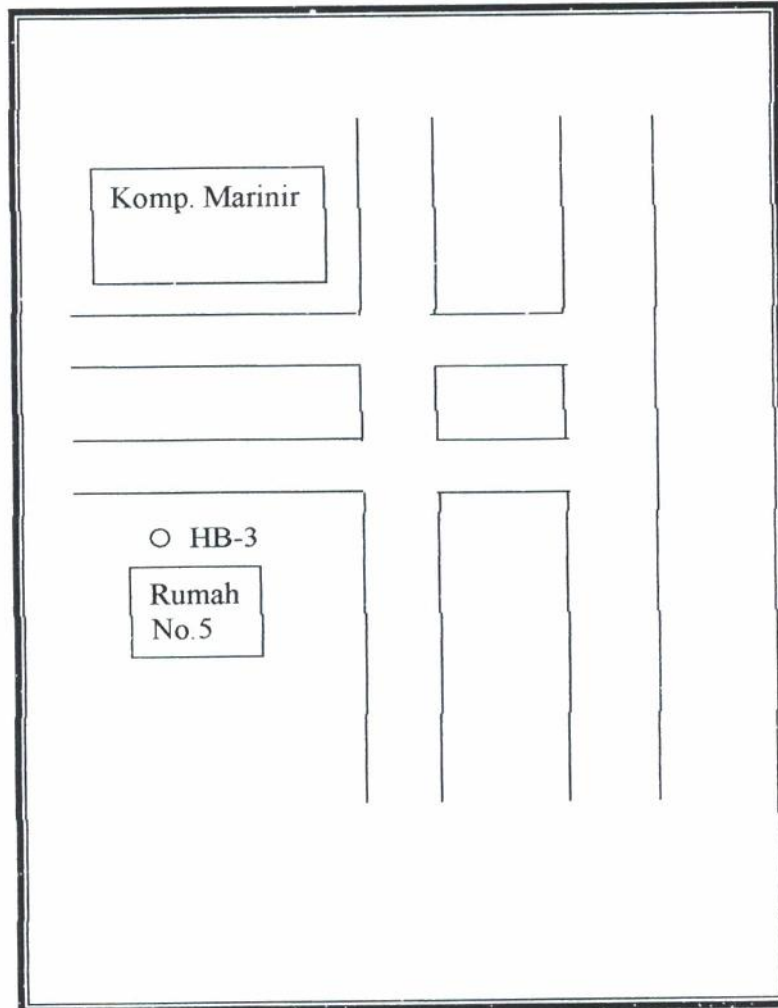
LAY-OUT TITIK HAND BORING
SITE : PIPA BEJI, RAGUNAN
JAKARTA SELATAN



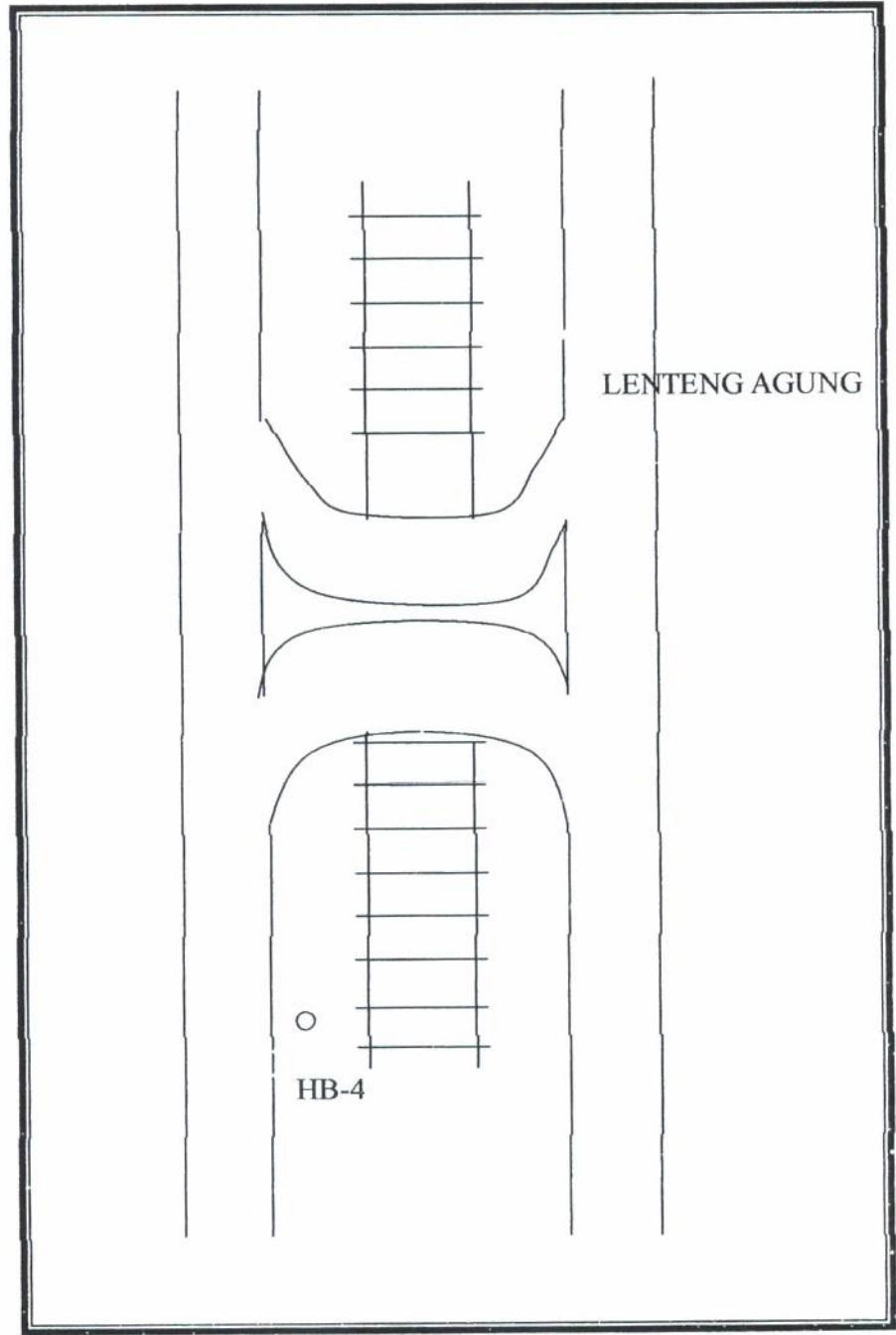
LAY-OUT TITIK HAND BORING
SITE : PIPA BEJI, RAGUNAN
JAKARTA SELATAN



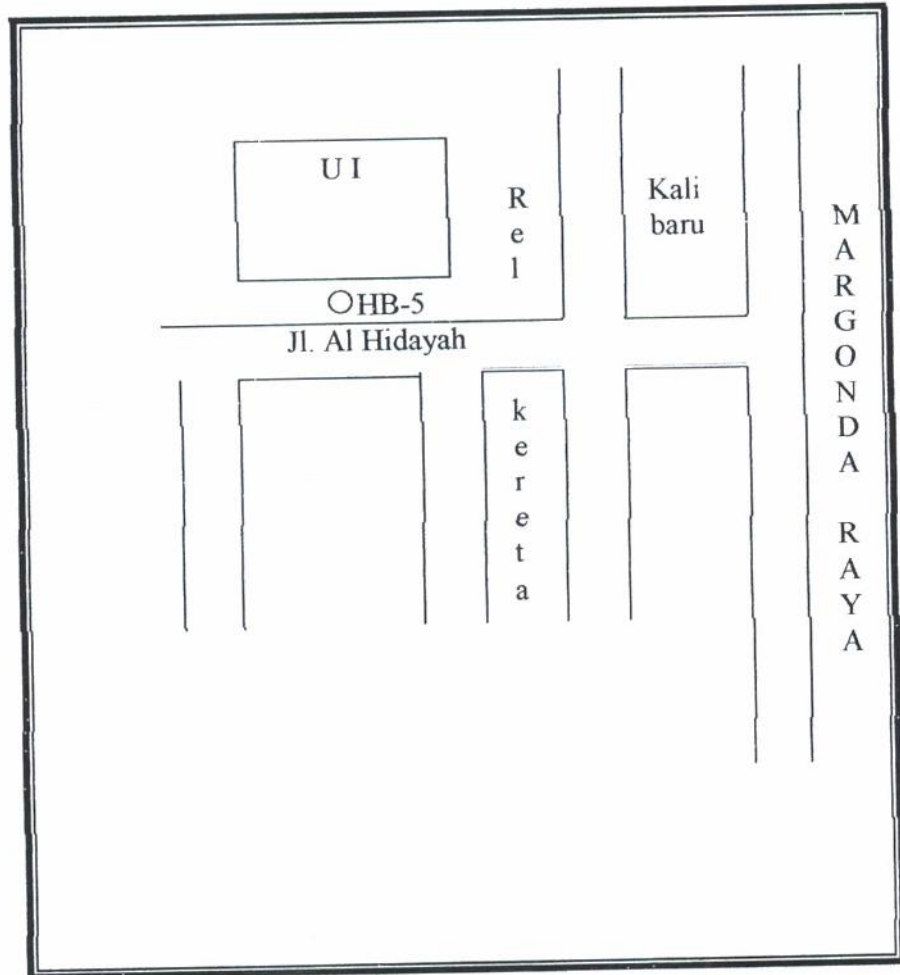
LAY-OUT TITIK HAND BORING
SITE : PIPA BEJI, CILANDAK
JL. HARSONO RM



LAY-OUT TITIK HAND BORING
SITE : PIPA BEJI, PANCASILA
LENTENG AGUNG 2



LAY-OUT TITIK HAND BORING
SITE : PIPA BEJI, UNIVERSITAS INDONESIA
JL. AL HIDAYAH



BOR LOG

PROJECT Pipa Beji, Ragunan		Bored Hole No: HB-1	Elevation 0.000	G.W.L	Date of Tested 16 Sep 2013
LOCATION Lenteng Agung, Jaksel					
D E P T H	L O G	USCS	DESCRIPTION	U.D Sample Depth(m)	N-S.P.T
0.00			CLAY, Brown Coloured, stiff consistency		
-1.00			Red Coloured		
-2.00		CH	medium consistency		
-3.00				3.00 - 3.50	
-4.00					
-5.00		CH	SILTY CLAY, Red Coloured, medium consistency		
			End of Boring		

REMARKS :

	Clay
\ \ \ \ \	Silt
: : : : :	Sand
o o o	Gravel
v v v v	Organic matter

BOR LOG

PROJECT Pipa Beji, Ragunan		Bored Hole No: HB-2	Elevation 0.000	G.W.L	Date of Tested 16 Sep 2013
LOCATION Perempatan Ragunan, Halte Busway					
D E P (m) T H	L O G	USCS	DESCRIPTION	U.D Sample Depth(m)	N-S.P.T
0.00			CLAY, Brown Coloured, stiff consistency		
-1.00					
-2.00		CH	Red Coloured, medium consistency		
-3.00				3.00 - 3.50	
-4.00					
-5.00		CH	SILTY CLAY, Whitish Red Coloured, medium consistency		
			Red Coloured		
			End of Boring		

REMARKS :

	Clay
\ \ \ \ \	Silt
: : : : :	Sand
o o o	Gravel
v v v v	Organic matter

BOR LOG

PROJECT Pipa Beji			Bored Hole No: HB-3	Elevation 0.000	G.W.L	Date of Tested 22 Sep 2013
LOCATION Cilandak Jl. Harsono RM						
D E P (m) T H	L O G	USCS	DESCRIPTION	U.D Sample Depth(m)	N-S.P.T	
0.00			SIRTU			
-1.00			CLAY, Brown Coloured			
-2.00		CH	Reddish Brown Coloured			
-3.00			Brownish Red Coloured			
-4.00			Red Coloured	3.00 - 3.50		
-5.00			End of Boring			

REMARKS :

	Clay
\ \ \ \ \	Silt
: : : : :	Sand
o o o	Gravel
v v v v	Organic matter

LABORATORY TESTING RESULTS

Project	Pipa Beji						
Location	Lenteug Agung, Jakarta Selatan						
ITEM OF TEST	PARAMETER	Unit	HB-1 3.00 - 3.50	HB-2 3.00 - 3.50	HB-3 3.00 - 3.50	HB-4 3.00 - 3.50	HB-5 3.00 - 3.50
INDEX PROPERTIES							
Water Content (Wn)		%	40.000	43.820	24.963	28.457	52.750
Unit Weight of Soil (Y)		gr/cm ³	1.672	1.585	1.765	1.659	1.523
Unit Weight of Dry Soil (yd)		gr/cm ³	1.194	1.102	1.412	1.291	0.997
Specific Gravity		-	2.337	2.221	2.485	2.485	2.327
Void Ratio (e)		-	0.957	1.015	0.760	0.924	1.334
Porosity (n)		-	0.489	0.504	0.432	0.480	0.572
Degree of Saturation (Sr)		%	97.696	95.892	81.671	76.502	92.017
Liquid Limit (LL)		%	67.655	104.375	83.575	73.050	135.925
Plastic Limit (PL)		%	52.091	48.837	45.492	35.533	52.941
Plasticity Index (PI)		%	15.564	55.538	38.083	37.517	82.984
GRAINED SIZE DISTRIBUTION							
Gravel		%	0.90	0.00	0.00	0.00	5.05
Sand		%	5.00	1.55	30.40	5.12	6.00
Silt		%	14.10	19.95	35.60	18.88	17.95
Clay		%	80.00	78.50	34.00	76.00	71.00
Organic Matter		%	-	-	-	-	-
SHEAR STRENGTH PARAMETER							
Unconfined Compression Test							
Ultimate Axial Strength (qu)		Kg/cm ²	-	-	-	-	-
Cohesion Undrained (Cu)		Kg/cm ²	-	-	-	-	-
Sensitivity (St)		-	-	-	-	-	-
Direct Shear Test							
Cohesion Undrained (Cu)		Kg/cm ²	1.165	1.266	-	-	-
Angle of Internal Friction (Ø)		Degree	10.864	15.742	-	-	-
Triaxial UU Test							
Cohesion Undrained (Cu)		Kg/cm ²	-	-	0.254	0.275	0.334
Angle of Internal Friction (Ø)		Degree	-	-	13.260	9.824	12.737
Triaxial CU Test							
Cohesion Undrained Total (Cu)		kPa	-	-	-	-	-
Angle of Internal Friction Total (Ø)		Degree	-	-	-	-	-
Cohesion Undrained Eff. (Cu')		kPa	-	-	-	-	-
Angle of Internal Friction Eff. (Ø')		Degree	-	-	-	-	-
COMPRESSIBILITY							
Preconsolidation Pressure (Pc)		Kg/cm ²	1.75	1.90	1.37	1.18	1.98
Compression Index (Cc)		-	0.245	0.300	0.250	0.195	0.445
Coef. Of Consolidation (Cv) (...x10 ⁻³)		Cm ² /sec	1.67	0.75	1.13	0.92	0.84
Rebound Index (Cr)		-	0.04	0.05	0.04	0.03	0.05



LABORATORIUM MEKANIKA TANAH

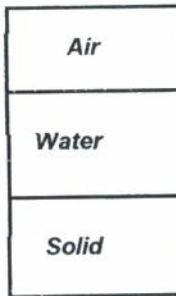
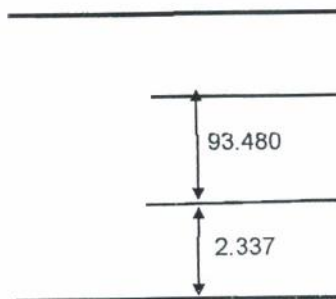
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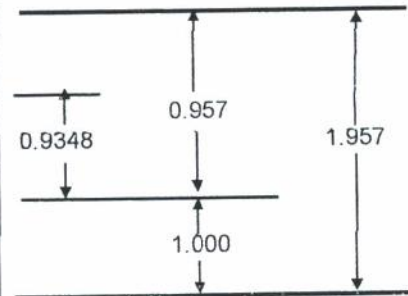
INDEX PROPERTIES TEST

PROJECT	Pipa Beji	A.S.T.M STANDARD FOR	Water Content of Soil Unit Weight of Soil Specific Gravity of Soil
LOCATION	Lenteng Agung, Jaksel	TESTED BY	Budi D.
BOR HOLE NO	HB-1	CHECKED BY	Singgih S.
DEPTH	3.00 - 3.50 m	DATE OF TESTED	September 2013

Weight



Volume



Unit Weight of Sample (in gr/cm ³)	1.672
Water Content of Sample (%)	40.000
Specific Gravity of Soil Sample	2.337
Unit Weight of Water (γ _w , in grm/cm ³)	1.000
Saturated Unit Weight of Soil (γ _{sat} , in grm/cm ³)	1.683

Void Ratio (e)	0.957
Porosity (n)	0.489
Dry Unit Weight (γ _d)	1.194
Degree of Saturation (S _r)	97.696



LABORATORIUM MEKANIKA TANAH

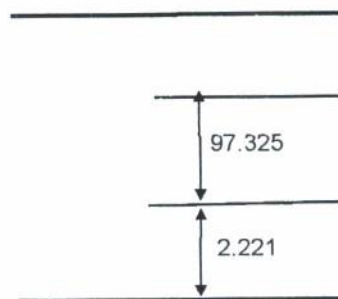
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INDEX PROPERTIES TEST

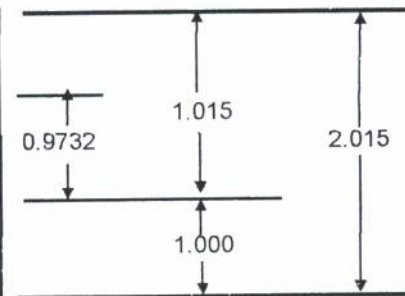
PROJECT	Pipa Beji	A.S.T.M STANDARD FOR	Water Content of Soil Unit Weight of Soil Specific Gravity of Soil
LOCATION	Perempatan Ragunan, Jaksel	TESTED BY	Budi D.
BOR HOLE NO	HB-2	CHECKED BY	Singgih S.
DEPTH	3.00 - 3.50 m	DATE OF TESTED	September 2013

Weight



<i>Air</i>
<i>Water</i>
<i>Solid</i>

Volume



Unit Weight of Sample (in gr/cm ³)	1.585
Water Content of Sample (%)	43.820
Specific Gravity of Soil Sample	2.221
Unit Weight of Water (γ _w , in grm/cm ³)	1.000
Saturated Unit Weight of Soil (γ _{sat} , in grm/cm ³)	1.606

Void Ratio (e)	1.015
Porosity (n)	0.504
Dry Unit Weight (γ _d)	1.102
Degree of Saturation (S _r)	95.892



LABORATORIUM MEKANIKA TANAH

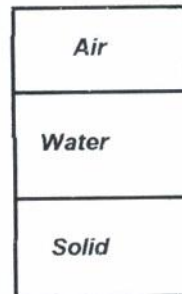
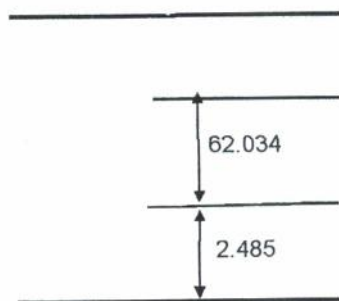
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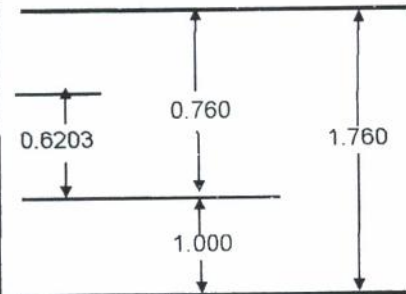
INDEX PROPERTIES TEST

PROJECT	Pipa Beji	A.S.T.M STANDARD FOR	Water Content of Soil Unit Weight of Soil Specific Gravity of Soil
LOCATION	Jl. Harsono RM, Cilandak	TESTED BY	Budi D.
BOR HOLE NO	HB-3	CHECKED BY	Singgih S.
DEPTH	3.00 - 3.50 m	DATE OF TESTED	September 2013

Weight



Volume



Unit Weight of Sample (in gr/cm ³)	1.765
Water Content of Sample (%)	24.963
Specific Gravity of Soil Sample	2.485
Unit Weight of Water (γ_w , in grm/cm ³)	1.000
Saturated Unit Weight of Soil (γ_{sat} , in grm/cm ³)	1.844

Void Ratio (e)	0.760
Porosity (n)	0.432
Dry Unit Weight (γ_d)	1.412
Degree of Saturation (Sr)	81.671



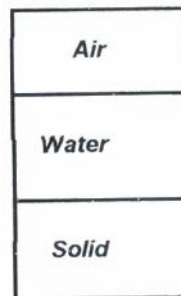
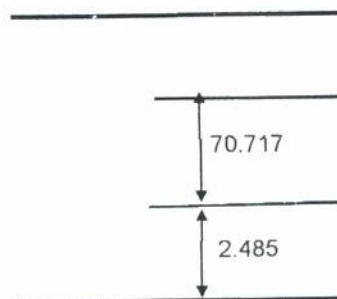
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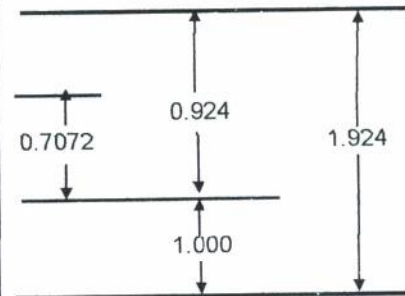
INDEX PROPERTIES TEST

PROJECT	Pipa Beji	A.S.T.M STANDARD FOR	Water Content of Soil Unit Weight of Soil Specific Gravity of Soil
LOCATION	Jl. Lenteng Agung 2	TESTED BY	Budi D.
BOR HOLE NO	HB-4	CHECKED BY	Singgih S.
DEPTH	3.00 - 3.50 m	DATE OF TESTED	September 2013

Weight



Volume



Unit Weight of Sample (in gr/cm ³)	1.659
Water Content of Sample (%)	28.457
Specific Gravity of Soil Sample	2.485
Unit Weight of Water (γ _w , in grm/cm ³)	1.000
Saturated Unit Weight of Soil (γ _{sat} , in grm/cm ³)	1.772

Void Ratio (e)	0.924
Porosity (n)	0.480
Dry Unit Weight (γ _d)	1.291
Degree of Saturation (S _r)	76.502



LABORATORIUM MEKANIKA TANAH

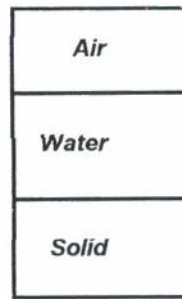
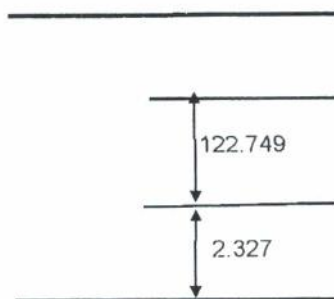
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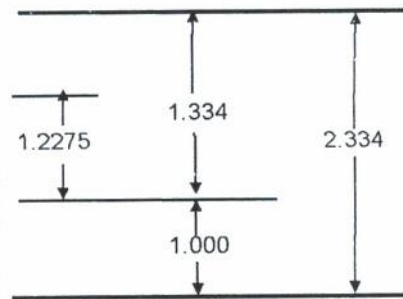
INDEX PROPERTIES TEST

PROJECT	Pipa Beji	A.S.T.M STANDARD FOR	Water Content of Soil Unit Weight of Soil Specific Gravity of Soil
LOCATION	Jl. Al Hidayah	TESTED BY	Budi D.
BOR HOLE NO	HB-5	CHECKED BY	Singgih S.
DEPTH	3.00 - 3.50 m	DATE OF TESTED	September 2013

Weight



Volume



Unit Weight of Sample (in gr/cm ³)	1.523
Water Content of Sample (%)	52.750
Specific Gravity of Soil Sample	2.327
Unit Weight of Water (γ _w , in grm/cm ³)	1.000
Saturated Unit Weight of Soil (γ _{sat} , in grm/cm ³)	1.569

Void Ratio (e)	1.334
Porosity (n)	0.572
Dry Unit Weight (γ _d)	0.997
Degree of Saturation (S _r)	92.017



LABORATORIUM MEKANIKA TANAH

INSTITUT SAINS DAN TEKNOLOGI NASIONAL

KAMPUS ISTN BHUMI SRENGSENG INDAH JALAN MOCH KAHI 2 JAGAKARSA - JAKARTA 12640
 TELPON. 021 98189554 FAX. 021 78893379

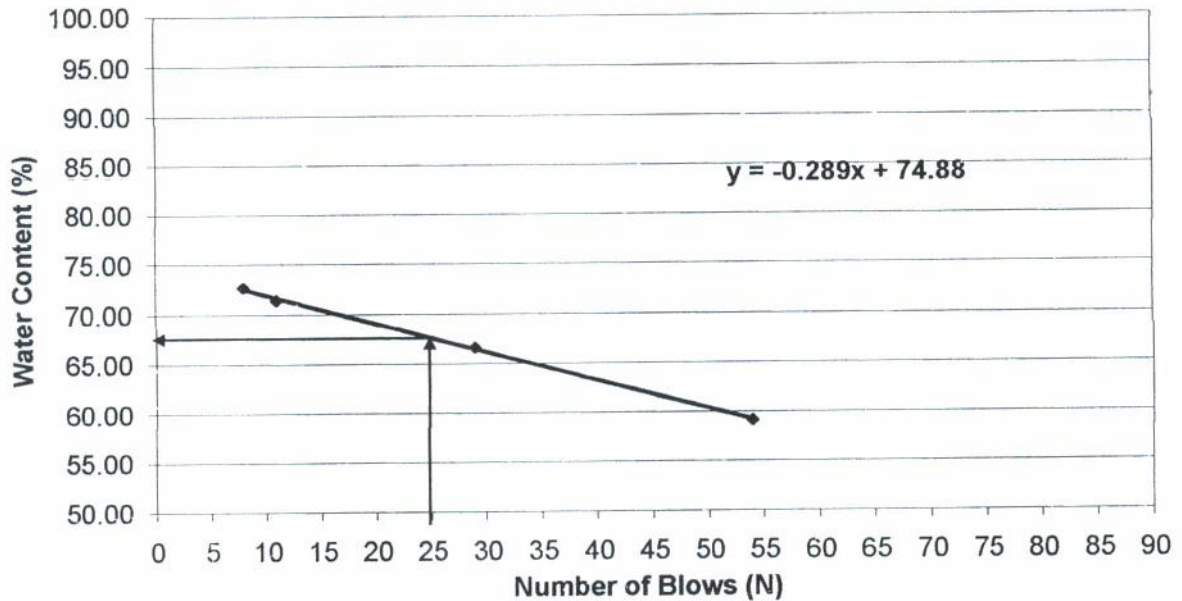
ATTEBERG LIMIT

PROJECT	Pipa Beji	A.S.T.M STANDARD FOR	Liquid Limit Plastic Limit Plasticity Index
LOCATION	Lenteng Agung, Jaksel 0	TESTED BY	Endri A.
BOR HOLE NO	HB-1	CHECKED BY	Singgih S.
DEPTH	3.00 - 3.1 m	DATE OF TESTED	September 2013

LIQUID LIMIT

PLASTIC LIMIT

No Of Can	Weight of Can	Weight of Can & Wet Soil	Weight of Can & Dry Soil	No of BLOW	Water Content (%)	No Of Can	Weight of Can	Weight of Can & Wet Soil	Weight of Can & Dry Soil	Water Content (%)
1	3.49	4.27	3.98	54	59.18	1	3.49	7.49	6.12	52.09
2	3.47	4.57	4.13	29	66.67	LIQUID LIMIT , LL (%)			67.66	
3	3.61	4.21	3.96	11	71.43	PLASTIC LIMIT , PL (%)			52.09	
4	3.58	4.53	4.13	8	72.73	PLASTICITY INDEX , PI, (%)			15.56	





LABORATORIUM MEKANIKA TANAH

INSTITUT SAINS DAN TEKNOLOGI NASIONAL

KAMPUS ISTN BHUMI SRENGSENG INDAH JALAN MOCH KAHFI 2 JAGAKARSA - JAKARTA 12640
 TELPON. 021 98189654 FAX. 021 78893379

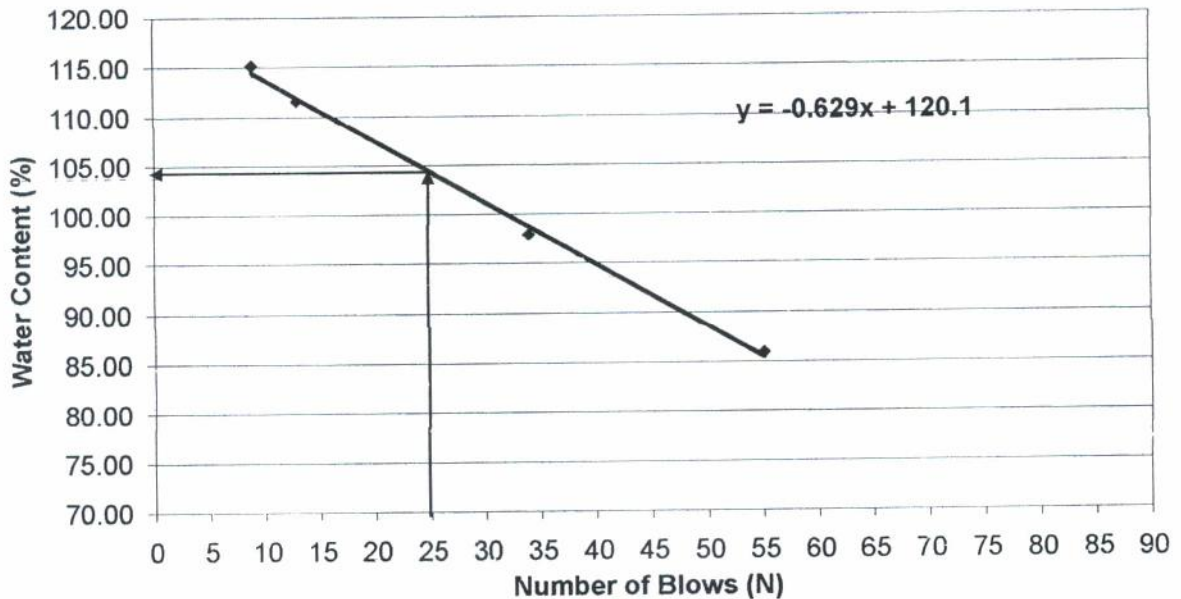
ATTERBERG LIMIT

PROJECT	Pipa Beji	A.S.T.M STANDARD FOR	Liquid Limit Plastic Limit Plasticity Index
LOCATION	Perempatan Ragunan, Jaksel 0	TESTED BY	Endri A.
BOR HOLE NO	HB-2	CHECKED BY	Singgih S.
DEPTH	3.00 - 3.5 m	DATE OF TESTED	September 2013

LIQUID LIMIT

PLASTIC LIMIT

No Of Can	Weight of Can	Weight of Can & Wet Soil	Weight of Can & Dry Soil	No of BLOW	Water Content (%)	No Of Can	Weight of Can	Weight of Can & Wet Soil	Weight of Can & Dry Soil	Water Content (%)
1	3.69	4.49	4.12	55	86.05	1	3.49	6.69	5.64	48.84
2	3.54	4.49	4.02	34	97.92	LIQUID LIMIT , LL (%)			104.38	
3	3.51	4.42	3.94	13	111.63	PLASTIC LIMIT , PL (%)			48.84	
4	3.53	4.52	3.99	9	115.22	PLASTICITY INDEX , PI, (%)			55.54	





LABORATORIUM MEKANIKA TANAH
INSTITUT SAINS DAN TEKNOLOGI NASIONAL

KAMPUS ISTN BHUMI SRENGSENG INDAH JALAN MOCH KAHFI 2 JAGAKARSA - JAKARTA 12640
 TELPON 021 98189554 FAX 021 78893379

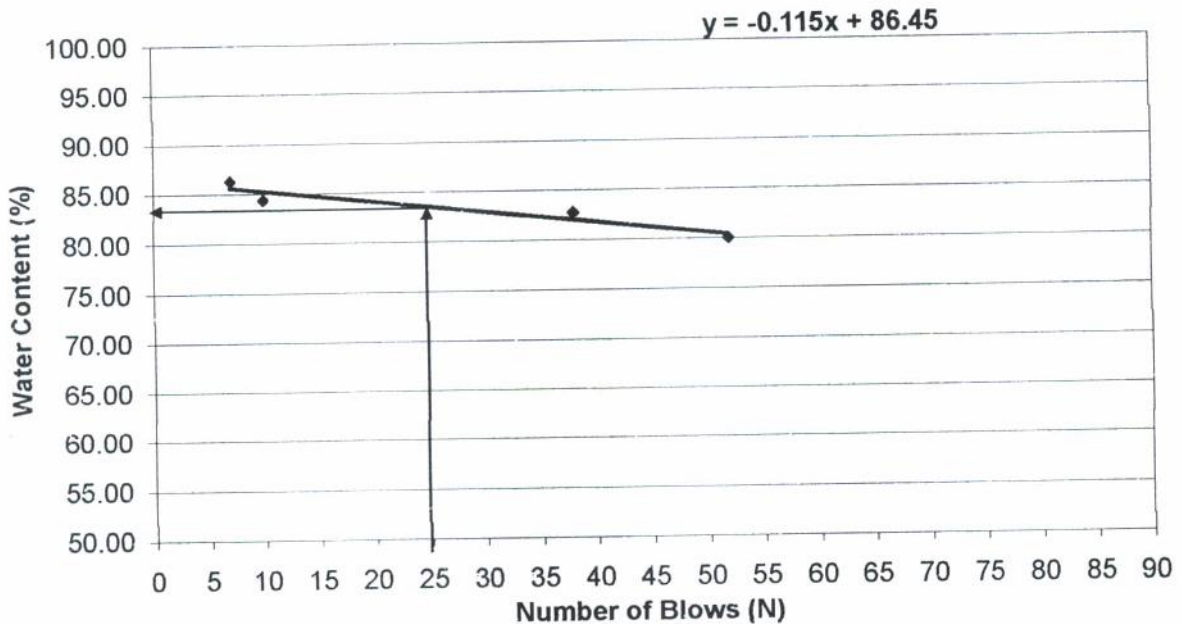
ATTERBERG LIMIT

PROJECT	Pipa Beji 0	A.S.T.M STANDARD FOR	Liquid Limit Plastic Limit Plasticity Index
LOCATION	Jl. Harsono RM, Cilandak 0	TESTED BY	Endri A.
BOR HOLE NO	HB-3	CHECKED BY	Singgih S.
DEPTH	3.00 - 3.1 m	DATE OF TESTED	September 2013

LIQUID LIMIT

PLASTIC LIMIT

No Of Can	Weight of Can	Weight of Can & Wet Soil	Weight of Can & Dry Soil	No of BLOW	Water Content (%)	No Of Can	Weight of Can	Weight of Can & Wet Soil	Weight of Can & Dry Soil	Water Content (%)
1	3.52	4.33	3.97	52	80.00	1	3.56	7.11	6	45.49
2	3.66	4.72	4.24	38	82.76	LIQUID LIMIT , LL (%)			83.58	
3	3.68	4.27	4	10	84.37	PLASTIC LIMIT , PL (%)			45.49	
4	3.56	4.51	4.07	7	86.27	PLASTICITY INDEX , PI , (%)			38.08	





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INSTITUT SAINS DAN TEKNOLOGI NASIONAL**

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TELPON. 021 98189554 FAX. 021 78893379

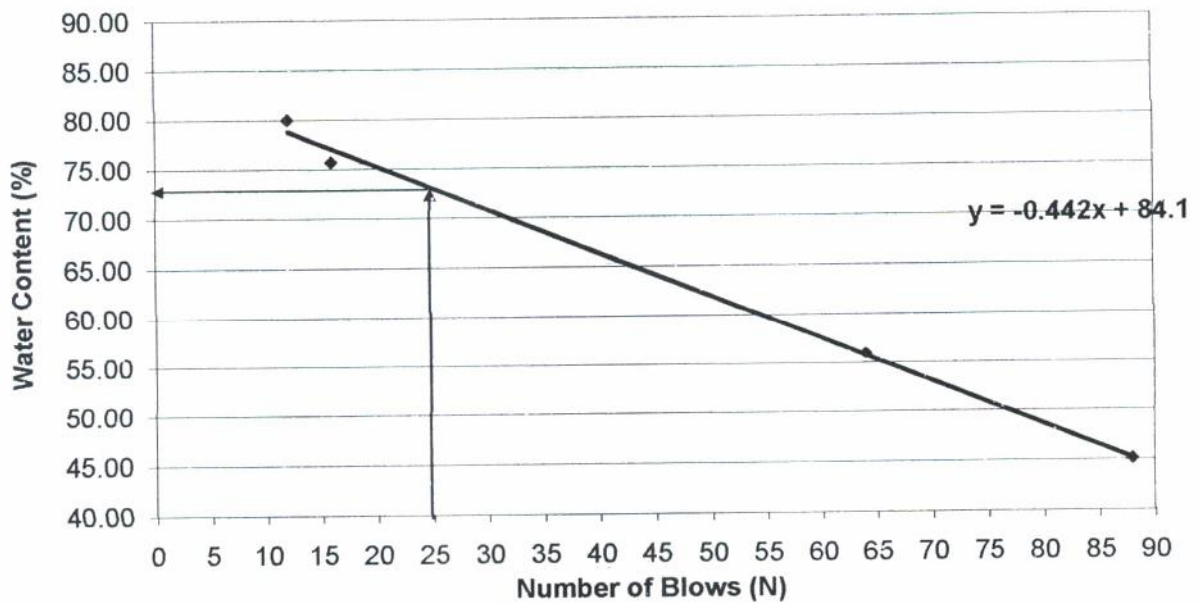
ATTERBERG LIMIT

PROJECT	Pipa Beji 0	A.S.T.M STANDARD FOR	Liquid Limit Plastic Limit Plasticity Index
LOCATION	Jl. Lenteng Agung 2 0	TESTED BY	Endri A.
BOR HOLE NO	HB-4	CHECKED BY	Singgih S.
DEPTH	3.00 - 3.4 m	DATE OF TESTED	September 2013

LIQUID LIMIT

PLASTIC LIMIT

No Of Can	Weight of Can	Weight of Can & Wet Soil	Weight of Can & Dry Soil	No of BLOW	Water Content (%)	No Of Can	Weight of Can	Weight of Can & Wet Soil	Weight of Can & Dry Soil	Water Content (%)
1	3.75	4.49	4.26	88	45.10	1	3.62	6.29	5.59	35.53
2	3.58	4.75	4.33	64	56.00	LIQUID LIMIT , LL (%)			73.05	
3	3.61	4.26	3.98	16	75.68	PLASTIC LIMIT , PL (%)			35.53	
4	3.57	4.65	4.17	12	80.00	PLASTICITY INDEX , PI , (%)			37.52	





LABORATORIUM MEKANIKA TANAH
INSTITUT SAINS DAN TEKNOLOGI NASIONAL

KAMPUS ISTN BHUMI SRENGSENG INDAH JALAN MOCH KAHFI 2 JAGAKARSA - JAKARTA 12640
 TELPON. 021 98189554 FAX . 021 78893379

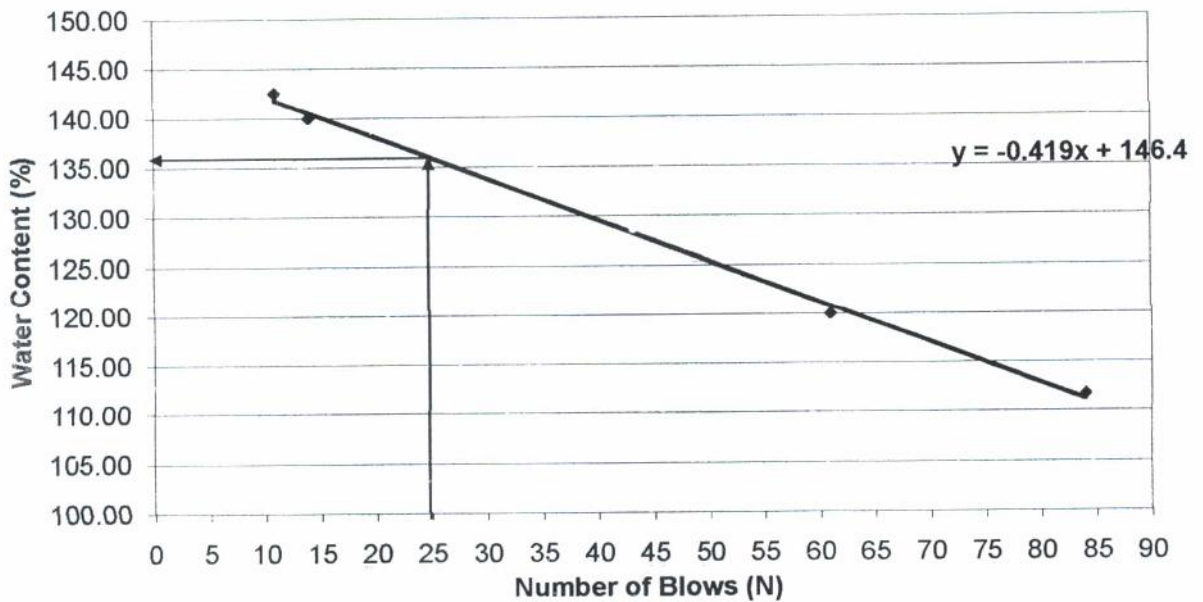
ATTERBERG LIMIT

PROJECT	Pipa Beji 0	A.S.T.M STANDARD FOR	Liquid Limit Plastic Limit Plasticity Index
LOCATION	Jl. Al Hidayah 0	TESTED BY	Endri A.
BOR HOLE NO	HB-5	CHECKED BY	Singgih S.
DEPTH	3.00 - 3.4 m	DATE OF TESTED	September 2013

LIQUID LIMIT

PLASTIC LIMIT

No Of Can	Weight of Can	Weight of Can & Wet Soil	Weight of Can & Dry Soil	No of BLOW	Water Content (%)	No Of Can	Weight of Can	Weight of Can & Wet Soil	Weight of Can & Dry Soil	Water Content (%)
1	3.52	4.24	3.86	84	111.76	1	3.64	7.54	6.19	52.94
2	3.51	4.72	4.06	61	120.00	LIQUID LIMIT , LL (%)			135.93	
3	3.62	4.34	3.92	14	140.00	PLASTIC LIMIT , PL (%)			52.94	
4	3.67	4.81	4.14	11	142.55	PLASTICITY INDEX , PI , (%)			82.98	

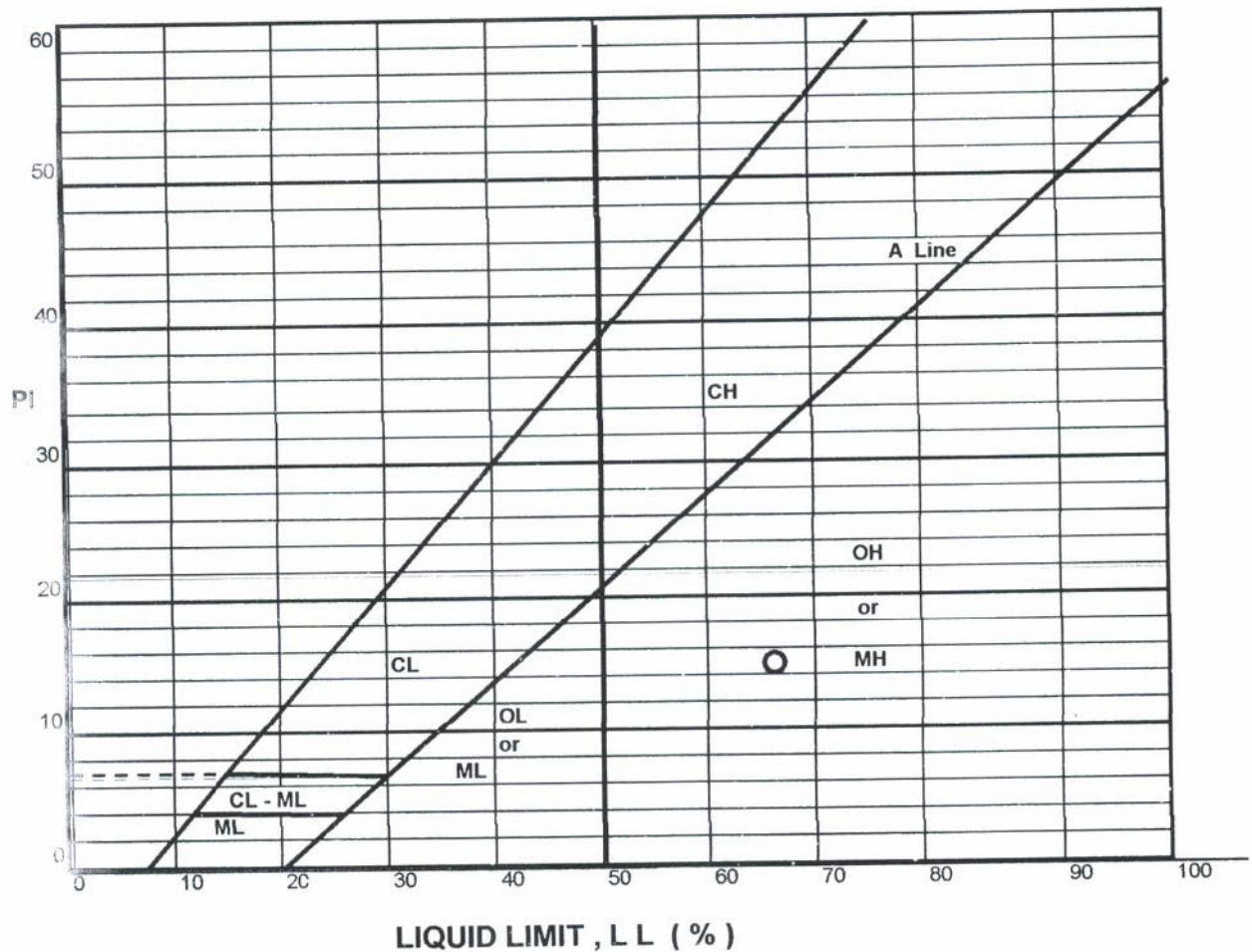




LABORATORIUM MEKANIKA TANAH
INSTITUT SAINS DAN TEKNOLOGI NASIONAL
 KAMPUS ISTN BHUMI SRENGSENG INDAH JALAN MOCH KAHFI 2 JAGAKARSA - JAKARTA 12640
 TELPON 021 93189564 FAX .021 78893379

PROJECT	Pipa Beji	A.S.T.M STANDARD FOR	SOIL CLASSIFICATION by U.S.C.S
LOCATION	Lenteng Agung, Jaksel 0	TESTED BY	Budi D.
BOR HOLE NO	HB-1	CHECKED BY	Singgih S.
DEPTH	3.00 - 3.5 m	DATE OF TESTED	September 2013

PLASTICITY CHART



SOIL CLASSIFICATION USING UNIFIED SOIL CLASSIFICATION SYSTEM

OH or MH

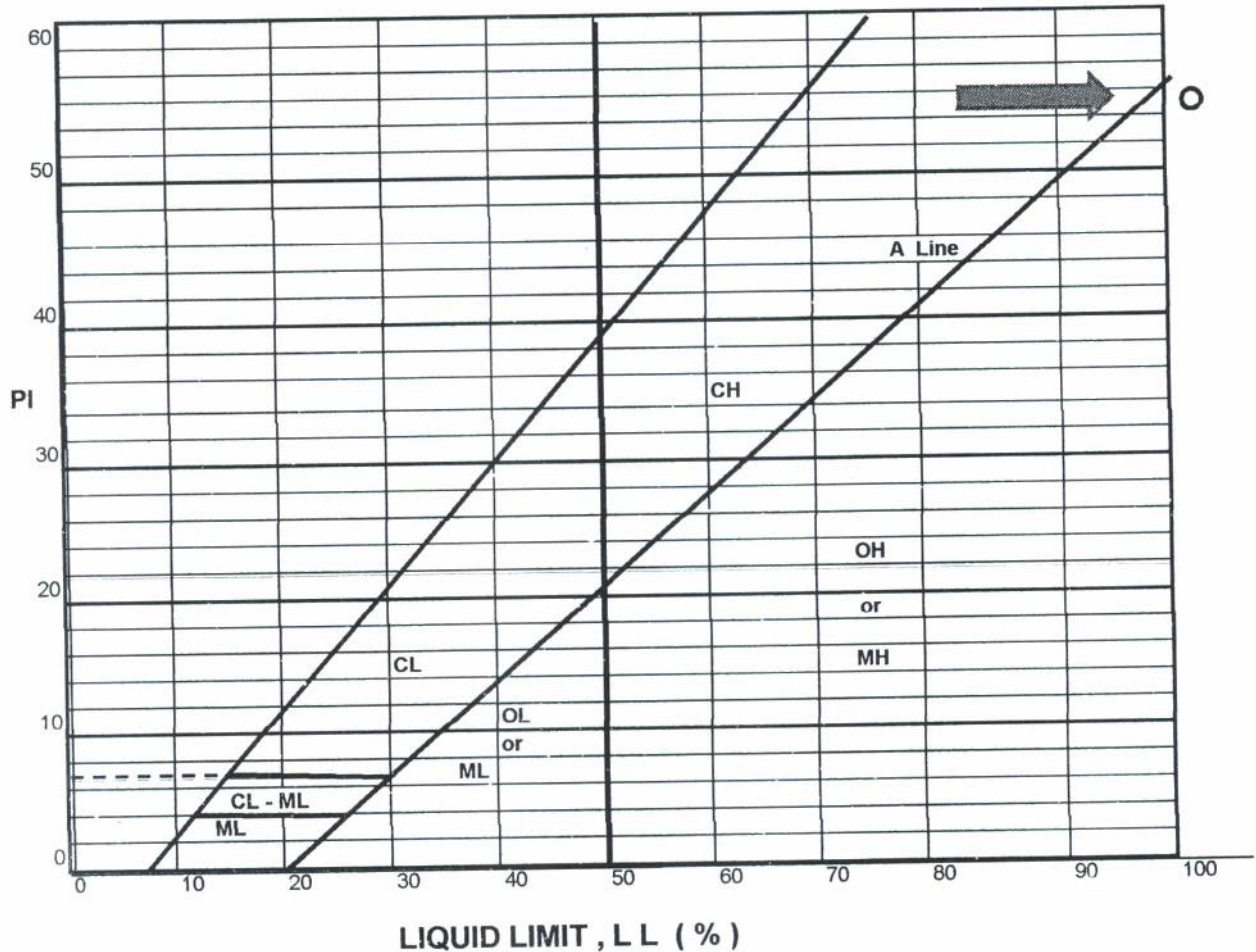


**LABORATORIUM MEKANIKA TANAH
INSTITUT SAINS DAN TEKNOLOGI NASIONAL**

KAMPUS ISTN BHUMI SRENGSENG INDAH JALAN MOCH KAHFI 2 JAGAKARSA - JAKARTA 12640
TELPON. 021 98189554 FAX . 021 78893379

PROJECT	Pipa Beji	A.S.T.M STANDARD FOR	SOIL CLASSIFICATION by U.S.C.S
LOCATION	Perempatan Ragunan, Jaksel 0	TESTED BY	Budi D.
BOR HOLE NO	HB-2	CHECKED BY	Singgih S.
DEPTH	3.00 - 3.5 m	DATE OF TESTED	September 2013

PLASTICITY CHART



SOIL CLASSIFICATION USING UNIFIED SOIL CLASSIFICATION SYSTEM

OH or MH

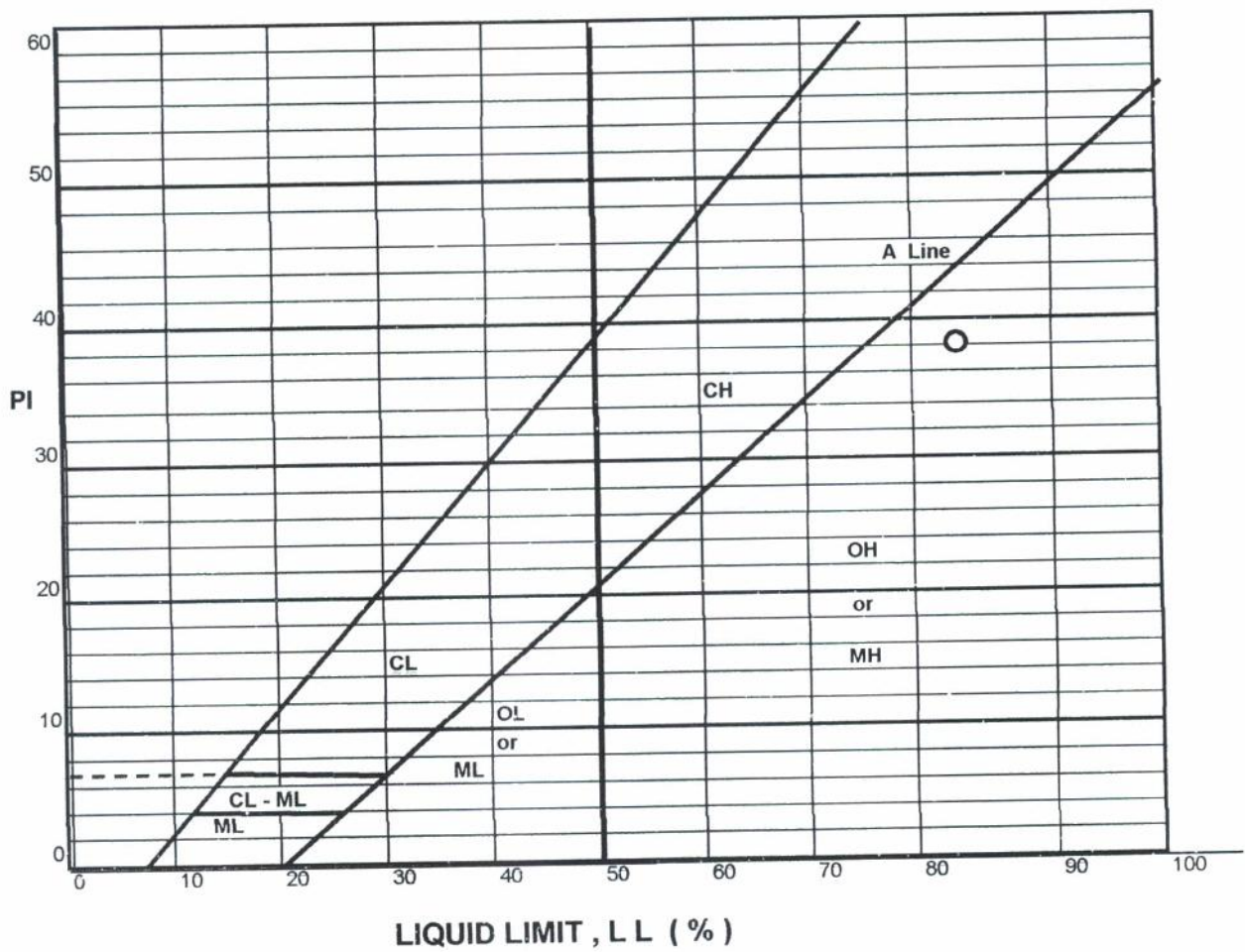


**LABORATORIUM MEKANIKA TANAH
INSTITUT SAINS DAN TEKNOLOGI NASIONAL**

KAMPUS ISTN BHUMI SRENGSENG INDAH JALAN MOCH KAHI 2 JAGAKARSA - JAKARTA 12640
TELPON. 021 98189554 FAX. 021 78893379

PROJECT	Pipa Beji 0	A.S.T.M STANDARD FOR	SOIL CLASSIFICATION by U.S.C.S
LOCATION	Jl. Harsono RM, Cilandak 0	TESTED BY	Budi D.
BOR HOLE NO	HB-3	CHECKED BY	Singgih S.
DEPTH	3.00 - 3.5 m	DATE OF TESTED	September 2013

PLASTICITY CHART



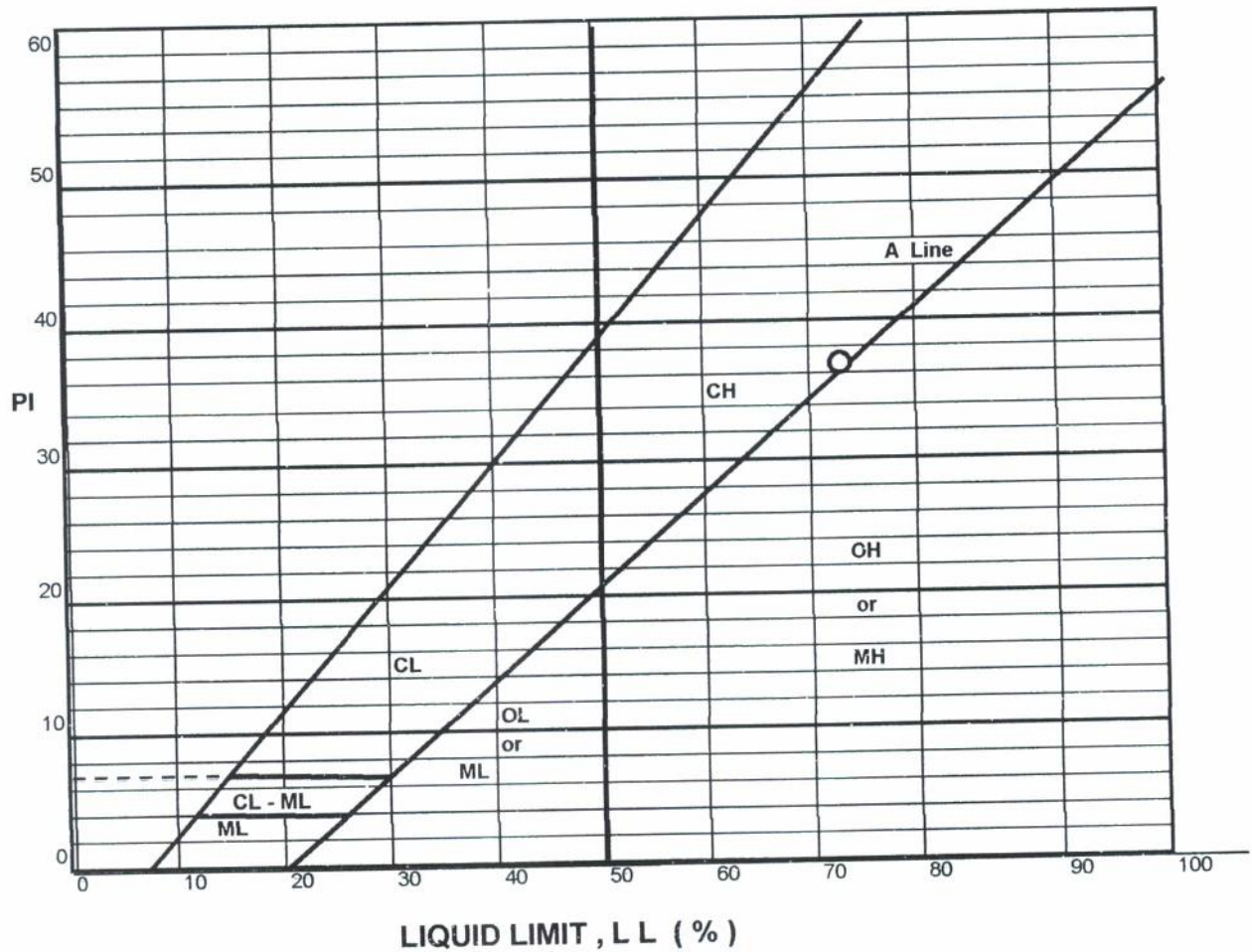
SOIL CLASSIFICATION USING UNIFIED SOIL CLASSIFICATION SYSTEM

OH or MH



PROJECT	Pipa Beji 0	A.S.T.M STANDARD FOR	SOIL CLASSIFICATION by U.S.C.S
LOCATION	Jl. Lenteng Agung 2 0	TESTED BY	Budi D.
BOR HOLE NO	HB-4	CHECKED BY	Singgih S.
DEPTH	3.00 - 3.5 m	DATE OF TESTED	September 2013

PLASTICITY CHART



SOIL CLASSIFICATION USING UNIFIED SOIL CLASSIFICATION SYSTEM

CH

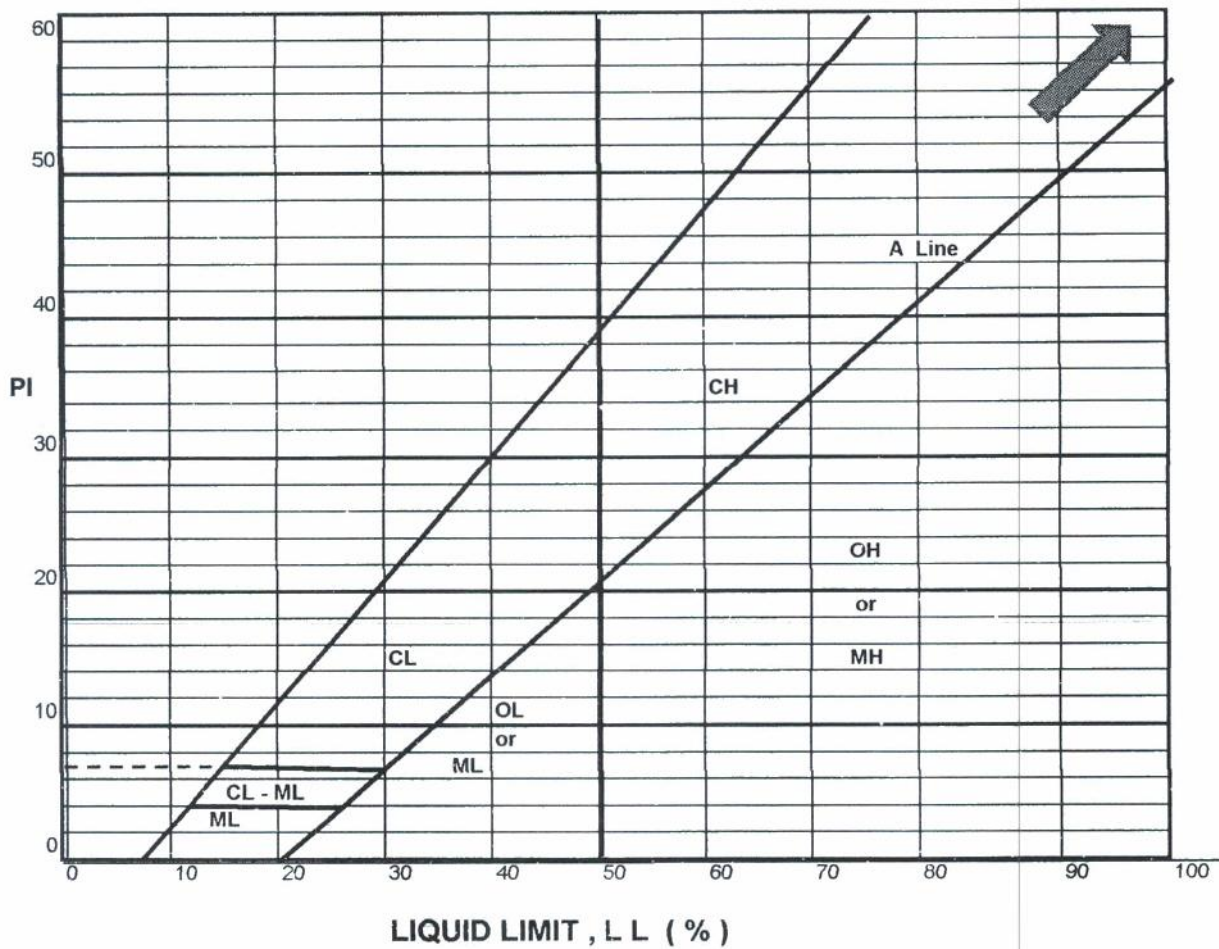


**LABORATORIUM MEKANIKA TANAH
INSTITUT SAINS DAN TEKNOLOGI NASIONAL**

KAMPUS ISTN BHUMI SRENGSENG INDAH JALAN MOCH KAHFI 2 JAGAKARSA - JAKARTA 12640
TELPON 021 98189554 FAX . 021 78893379

PROJECT	Pipa Beji 0	A.S.T.M STANDARD FOR	SOIL CLASSIFICATION by U.S.C.S
LOCATION	Jl. Al Hidayah 0	TESTED BY	Budi D.
BOR HOLE NO	HB-5	CHECKED BY	Singgih S.
DEPTH	3.00 - 3.5 m	DATE OF TESTED	September 2013

PLASTICITY CHART



SOIL CLASSIFICATION USING UNIFIED SOIL CLASSIFICATION SYSTEM

CH

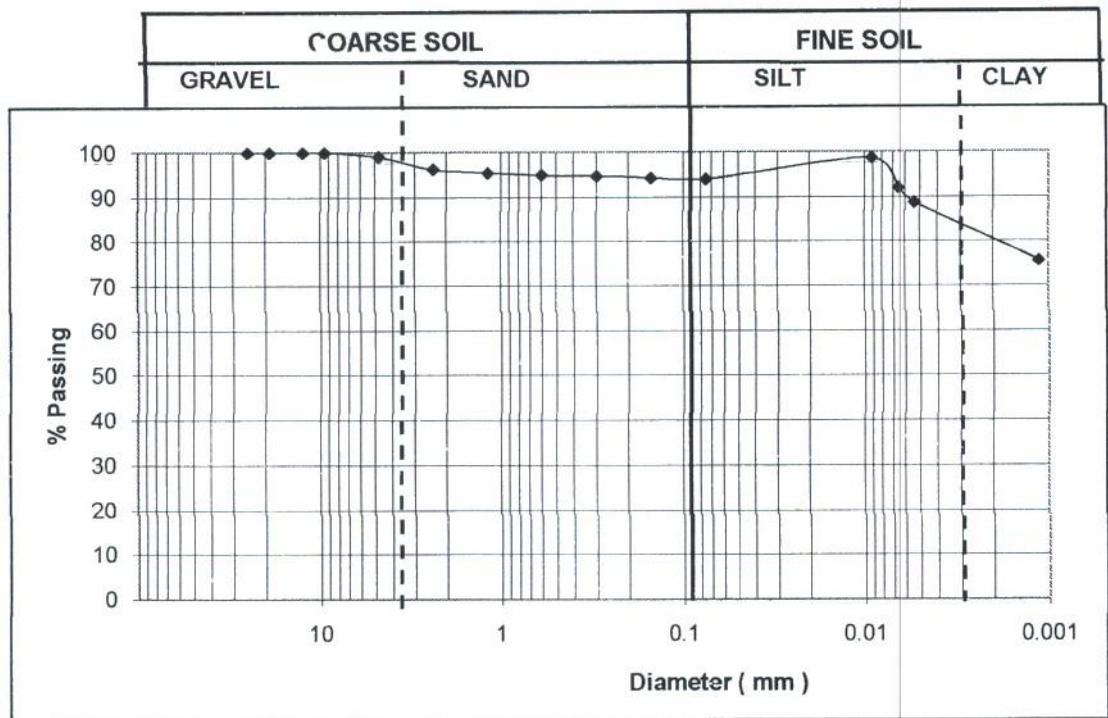


**LABORATORIUM MEKANIKA TANAH
INSTITUT SAINS DAN TEKNOLOGI NASIONAL**

KAMPUS ISTN BHUMI SRENGSENG INDAH JALAN MOCH KAHFI 2 JAGAKARSA – JAKARTA 12640
TELPON. 021 98189554 FAX . 021 78893379

GRAINED SIZE DISTRIBUTION

Project	Pipa Beji	Depth od Sample	3.00 - 3.50 meter
Location	Lenteng Agung, Jaksel	Date of Tested	September 2013
Bored No	HB-1	Checked by	Singih S.



PARTICLE FRACTION OF SOIL

GRAVEL	0.90	%
SAND	5.000	%
SILT	14.100	%
CLAY	80.00	%

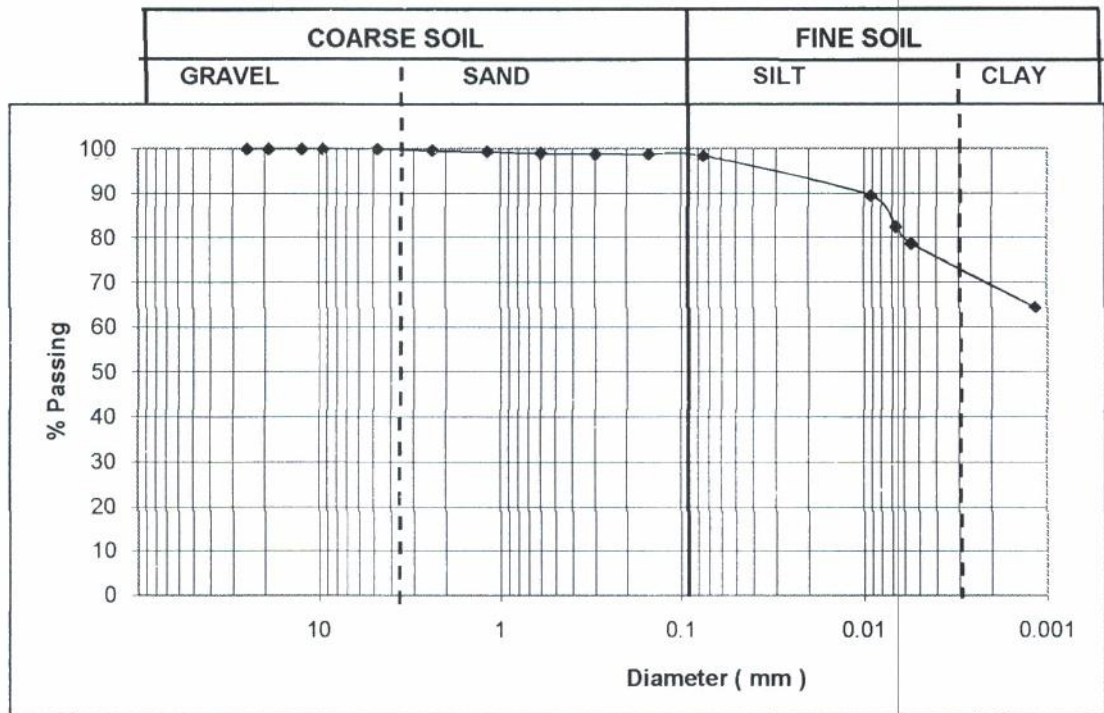


**LABORATORIUM MEKANIKA TANAH
INSTITUT SAINS DAN TEKNOLOGI NASIONAL**

KAMPUS ISTN BHUMI SRENGSENG INDAH JALAN MOCH KAHFI 2 JAGAKARSA - JAKARTA 12640
TELPON. 021 98189554 FAX . 021 78893379

GRAINED SIZE DISTRIBUTION

Project	Pipa Beji	Depth od Sample	3.00 - 3.50 meter
Location	Perempatan Ragunan, Jaksel	Date of Tested	September 2013
Bored No	HB-2	Checked by	Singgih S.



PARTICLE FRACTION OF SOIL

GRAVEL	0.00	%
SAND	1.550	%
SILT	19.950	%
CLAY	78.50	%

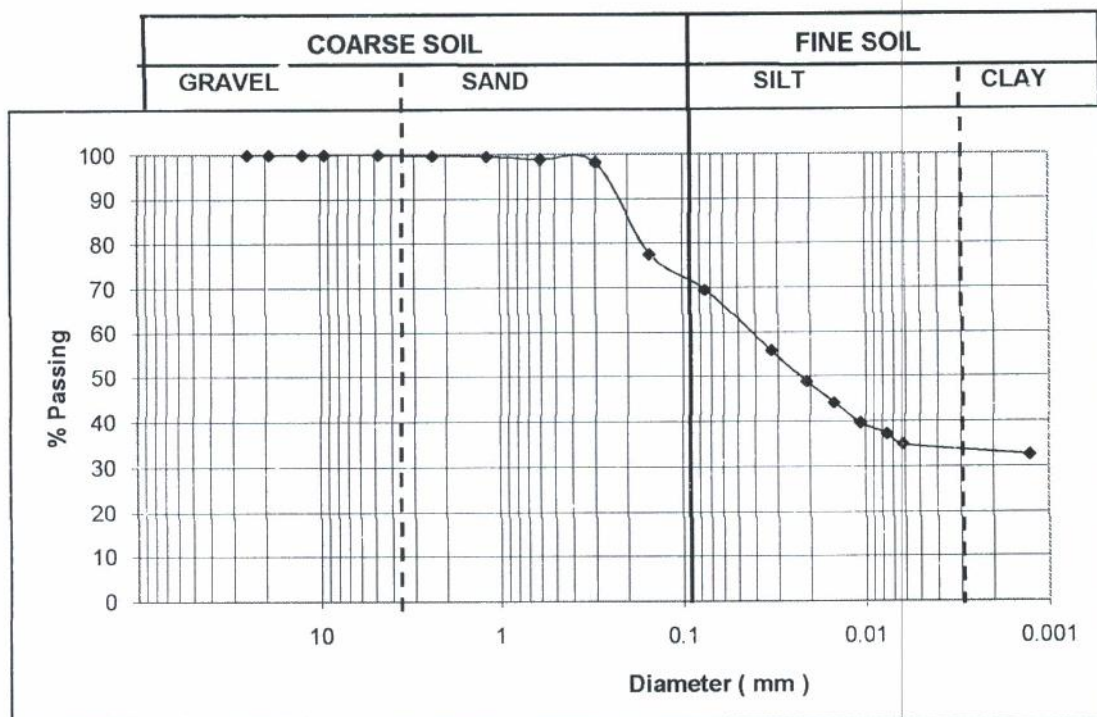


LABORATORIUM MEKANIKA TANAH
INSTITUT SAINS DAN TEKNOLOGI NASIONAL

KAMPUS ISTN BHUMI SRENGSENG INDAH JALAN MOCH KAHFI 2 JAGAKARSA - JAKARTA 12640
TELPON. 021 98189554 FAX . 021 78893379

GRAINED SIZE DISTRIBUTION

Project	Pipa Beji	Depth od Sample	3.00 - 3.50 meter
Location	Jl. Harsono RM, Cilandak	Date of Tested	September 2013
Bored No	HB-3	Checked by	Singgih S.



PARTICLE FRACTION OF SOIL

GRAVEL	0.00	%
SAND	30.400	%
SILT	35.600	%
CLAY	34.00	%

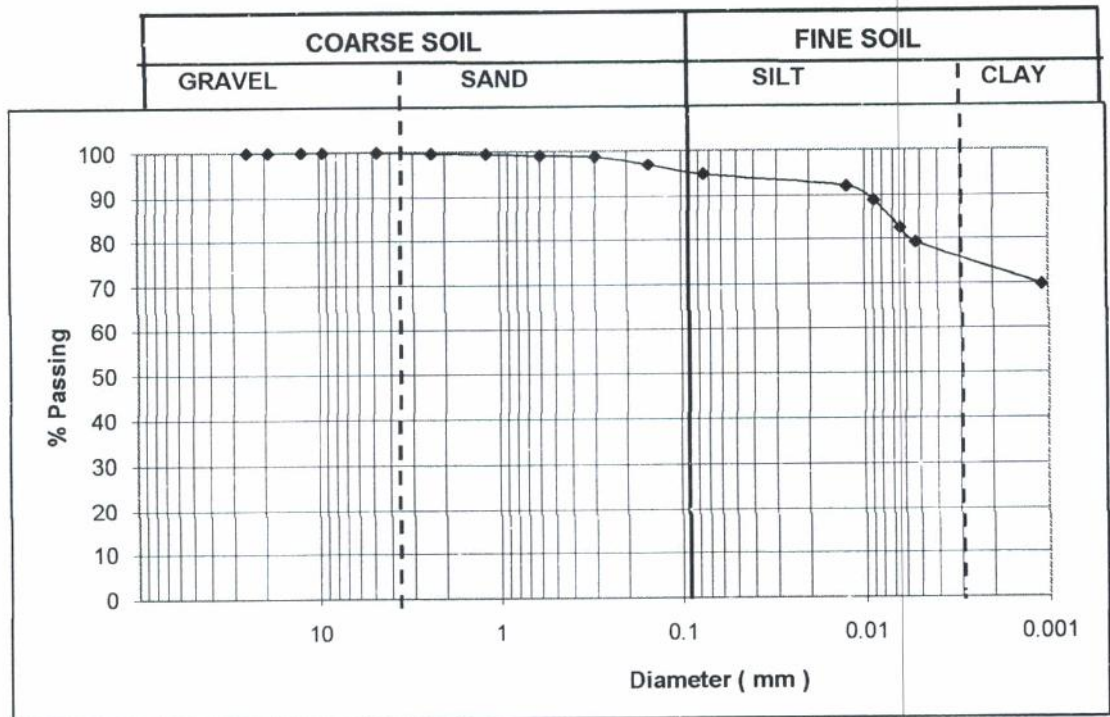


**LABORATORIUM MEKANIKA TANAH
INSTITUT SAINS DAN TEKNOLOGI NASIONAL**

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TELPON. 021 98189554 FAX . 021 78893379

GRAINED SIZE DISTRIBUTION

Project	Pipa Beji	Depth od Sample	3.00 - 3.50 meter
Location	Jl. Lenteng Agung 2	Date of Tested	September 2013
Bored No	HB-4	Checked by	Singgih S.



PARTICLE FRACTION OF SOIL

GRAVEL	0.00	%
SAND	5.120	%
SILT	18.880	%
CLAY	76.00	%

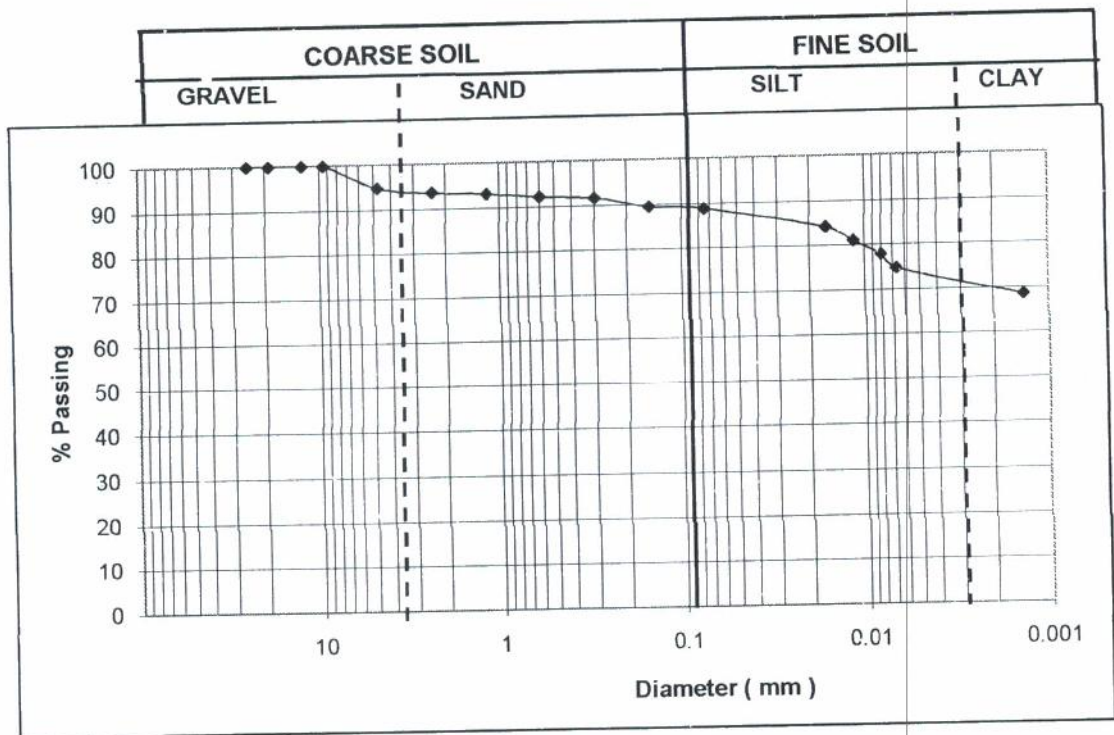


LABORATORIUM MEKANIKA TANAH
INSTITUT SAINS DAN TEKNOLOGI NASIONAL

KAMPUS ISTN BHUMI SRENGSENG INDAH JALAN MOCH KAHFI 2 JAGAKARSA - JAKARTA 12640
 TELPON. 021 98189554 FAX . 021 78893379

GRAINED SIZE DISTRIBUTION

Project	Pipa Beji	Depth od Sample	3.00 - 3.50 meter
Location	Jl. Al Hidayah	Date of Tested	September 2013
Bored No	HB-5	Checked by	Singgih S.



PARTICLE FRACTION OF SOIL

GRAVEL	5.05	%
SAND	6.000	%
SILT	17.950	%
CLAY	71.00	%



**LABORATORIUM MEKANIKA TANAH
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TELPON. 021 98189554 FAX . 021 78893379

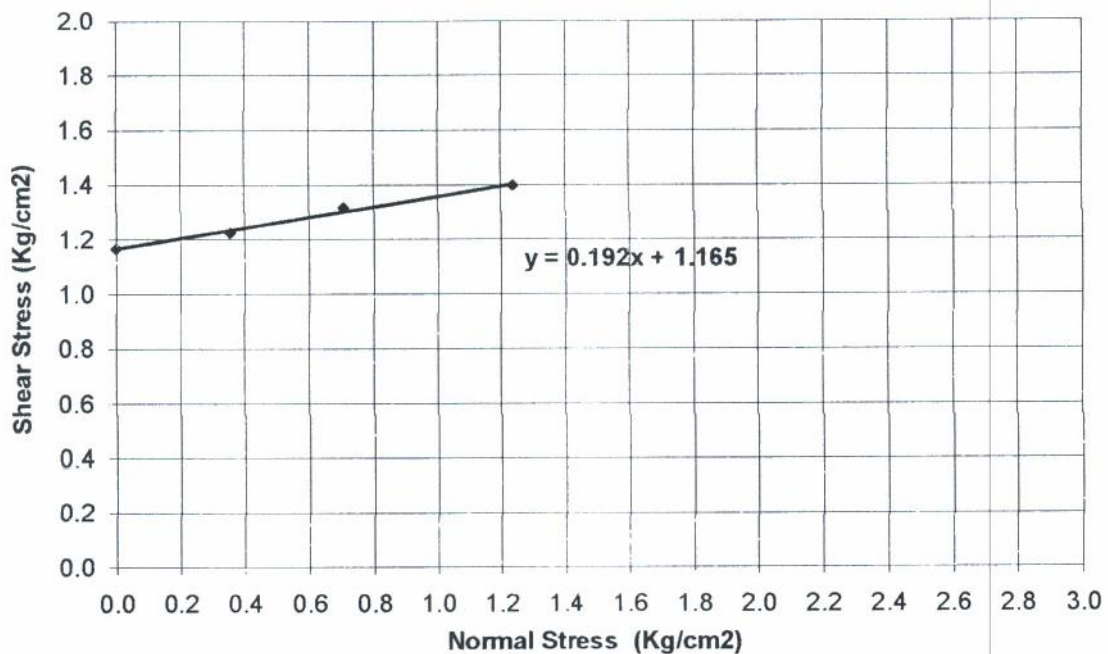
DIRECT SHEAR TEST

PROJECT	Pipa Beji	A.S.T.M STANDARD	
		Proving Ring Calibration	0.37586 kg/div
LOCATION	Lenteng Agung, Jaksel 0	TESTED BY	Budi D.
BOR HOLE NO	HB-1 Undisturb	CHECKED BY	Singgih S.
DEPTH	3.00 - 3.5 m	DATE OF TESTED	September 2013

No Sample	Dia of Sample cm	Height of Sample cm	Normal Loading kg	Max Dial Vertical div	Max Dial Lateral div	Vertical Strain %	Lateral Strain %	Load Proving Ring div	Normal Stress kg/cm ²	Shear Stress kg/cm ²
1	6	2	1	71	260	3.550	4.333	92	0.354	1.22
2	6	2	2	89	360	4.450	6.000	99	0.708	1.32
3	6	2	3.5	126	460	6.300	7.667	105	1.238	1.40

SHEAR STRENGTH PARAMETER	
Cohesion Undrained (C_u)	1.17 kg/cm ²
Internal Angle Friction (Φ_u)	10.9 Degree

SAMPLE PROPERTIES (UNDISTURBED)	
Weight of wet sample	94.5 gm
Weight of dry sample	67.5 gm
Water Content	40.00 %
Bulk Density	1.671975 gm/cm ³





**LABORATORIUM MEKANIKA TANAH
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KAMPUS ISTN BHUMI SRENGSENG INDAH JALAN MOCH KAHFI 2 JAGAKARSA - JAKARTA 12640
TELPON. 021 98189554 FAX . 021 78893379

DIRECT SHEAR TEST

PROJECT	Pipa Beji	A.S.T.M STANDARD	
		Proving Ring Calibration	0.37586 kg/div
LOCATION	Perempatan Ragunan, Jaksel 0	TESTED BY	Budi D.
BOR HOLE NO	HB-2 Undisturb	CHECKED BY	Singgih S.
DEPTH	3.00 - 3.5 m	DATE OF TESTED	September 2013

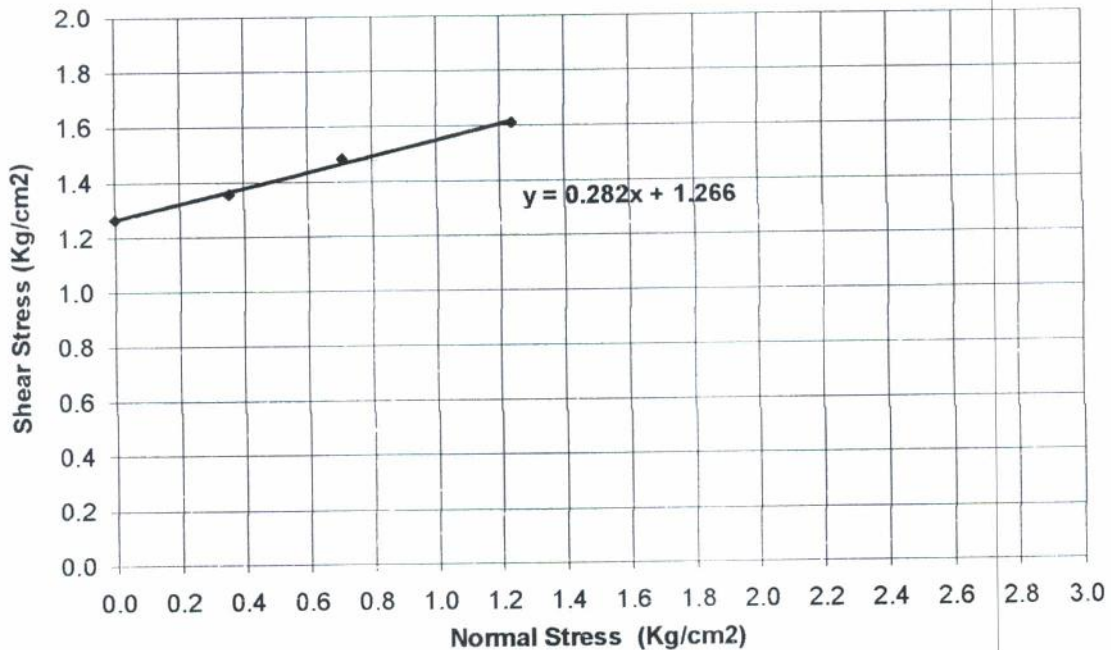
No Sample	Dia of Sample cm	Height of Sample cm	Normal Loading kg	Max Dial Vertical div	Max Dial Lateral div	Vertical Strain %	Lateral Strain %	Load Proving Ring div	Normal Stress kg/cm ²	Shear Stress kg/cm ²
1	6	2	1	12.5	240	0.625	4.000	102	0.354	1.36
2	6	2	2	68	340	3.400	5.667	111.5	0.708	1.48
3	6	2	3.5	97	440	4.850	7.333	121	1.238	1.61

SHEAR STRENGTH PARAMETER

Cohesion Undrained (C_u)	1.27 kg/cm ²
Internal Angle Friction (Φ_u)	15.7 Degree

SAMPLE PROPERTIES (UNDISTURBED)

Weight of wet sample	89.6 gm
Weight of dry sample	62.3 gm
Water Content	43.82 %
Bulk Density	1.58528 gm/cm ³

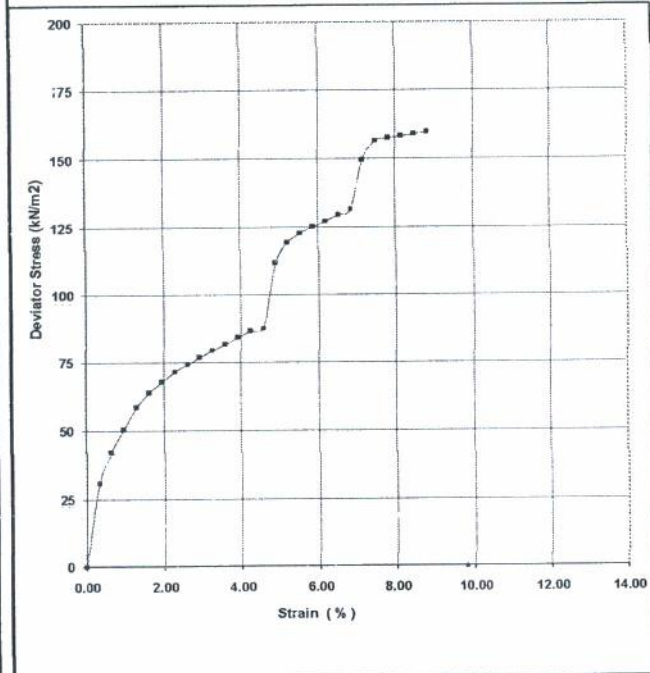




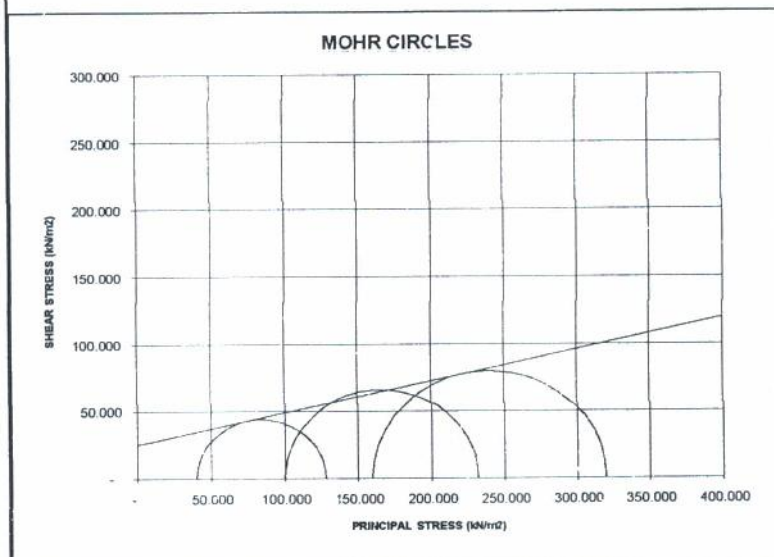
UU - TRIAXIAL COMPRESSION TEST

Location : Jl. Harsono RM, Cilandak
 Sample : HB-3
 Depth : 3.00 - 3.51 m

Sample type : Undisturbed
 Soil description : OH or MH
 Sample no. : 1
 UU Type of Tested : Multy Stage



SPECIMEN		1	2	3
INITIAL	Height of Sample	cm 7.670	7.670	7.670
	Dia of Sample	cm 3.700	3.700	3.700
	Wet Soil	145.47	145.470	145.470
	Dry Soil	116.41	116.410	116.410
INITIAL	Wet / Bulk density	gm/m³ 1.76	1.765	1.765
	Moisture content	% 24.96	24.963	24.963
	Dry density	gm/m³ 1.41	1.412	1.412



MODE OF FAILURE :

A

B

C



STRENGTH PARAMETERS

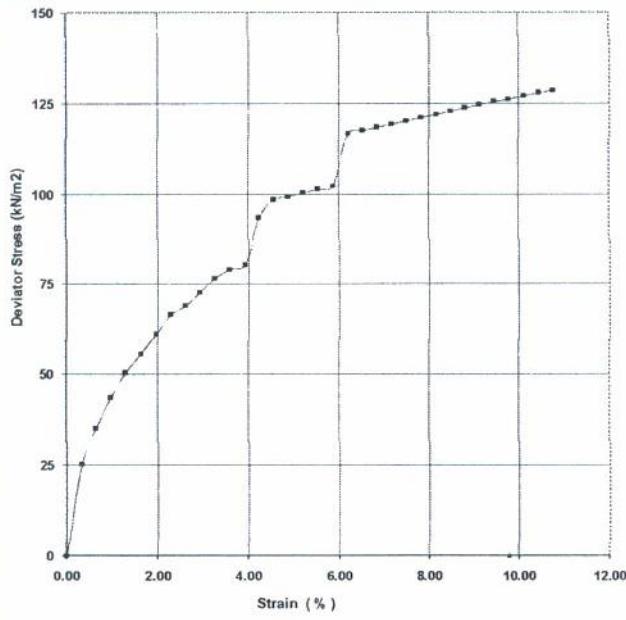
C	kN/m²	25.39
φ	°	13.3 Degree



UU - TRIAXIAL COMPRESSION TEST

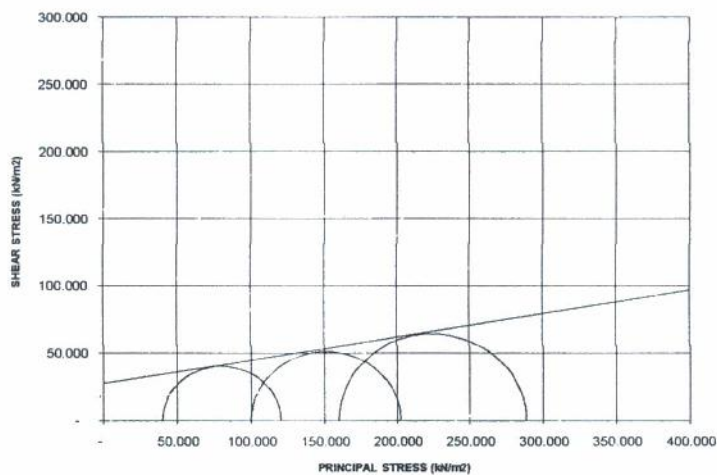
Location : Jl. Lenteng Agung 2
 Sample : HB-4
 Depth : 3.00 - 3.51 m

Sample type : Undisturbed
 Soil description : CH
 Sample no. : 1
 UU Type of Tested : Multy Stage

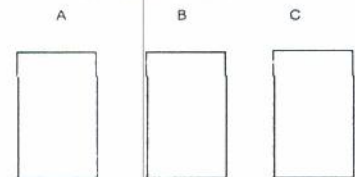


SPECIMEN		1	2	3
INITIAL	Height of Sample cm	7.670	7.670	7.670
	Dia of Sample cm	3.700	3.700	3.700
	Wet Soil	136.73	136.730	136.730
	Dry Soil	106.44	106.440	106.440
	Wet / Bulk density gm/m³	1.66	1.659	1.659
	Moisture content %	28.46	28.457	28.457
	Dry density gm/m³	1.29	1.291	1.291

MOHR CIRCLES



MODE OF FAILURE :



STRENGTH PARAMETERS

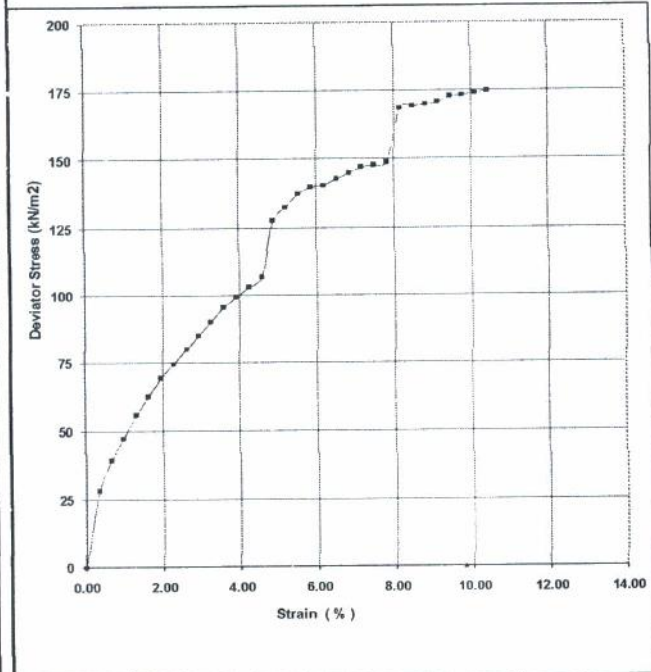
C	kN/m²	27.49
φ	°	9.8 Degree



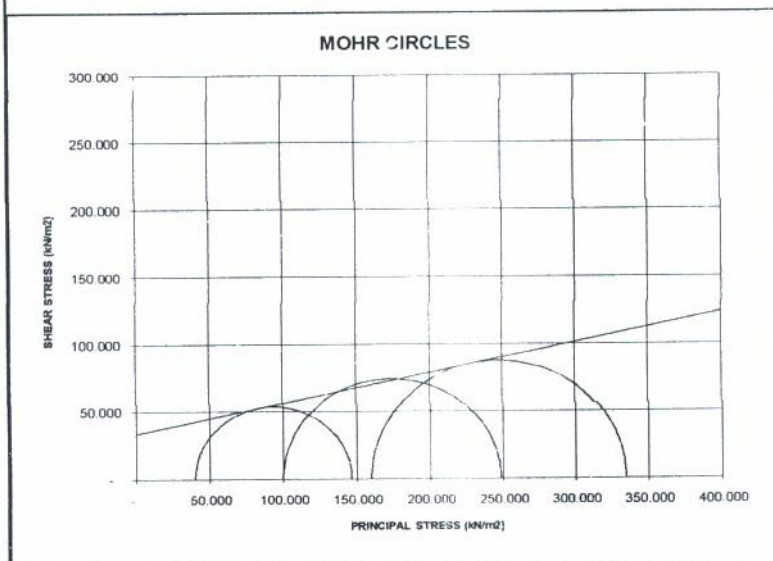
UU - TRIAXIAL COMPRESSION TEST

Location : Jl. Al Hidayah
 Sample : HB-5
 Depth : 3.00 - 3.51 m

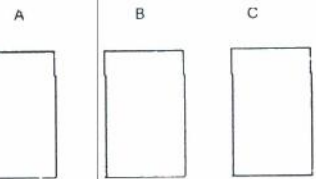
Sample type : Undisturbed
 Soil description : CH
 Sample no. : 1
 UU Type of Tested : Multy Stage



SPECIMEN		1	2	3
INITIAL	Height of Sample cm	7.670	7.670	7.670
	Dia of Sample cm	3.700	3.700	3.700
	Wet Soil	125.53	125.530	125.530
	Dry Soil	82.18	82.180	82.180
	Wet / Bulk density gm/m ³	1.52	1.523	1.523
	Moisture content %	52.75	52.750	52.750
	Dry density gm/m ³	1.00	0.997	0.997



MODE OF FAILURE :



STRENGTH PARAMETERS

C	kN/m ²	33.44
φ	o	12.7 Degree



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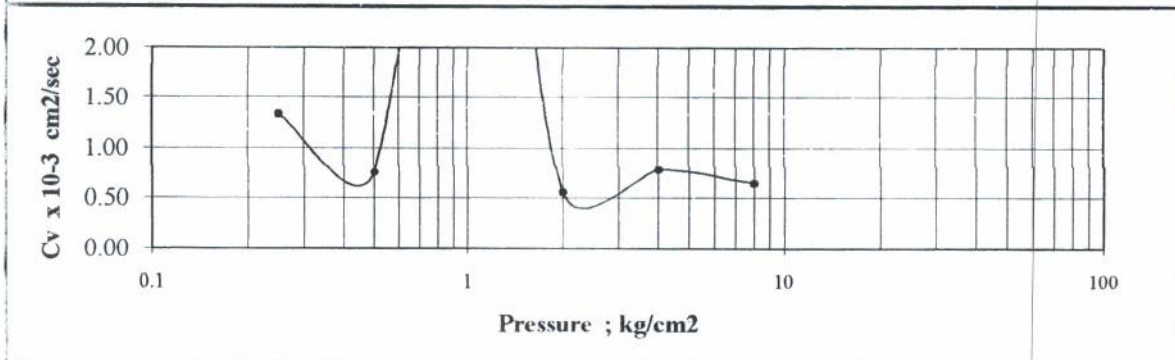
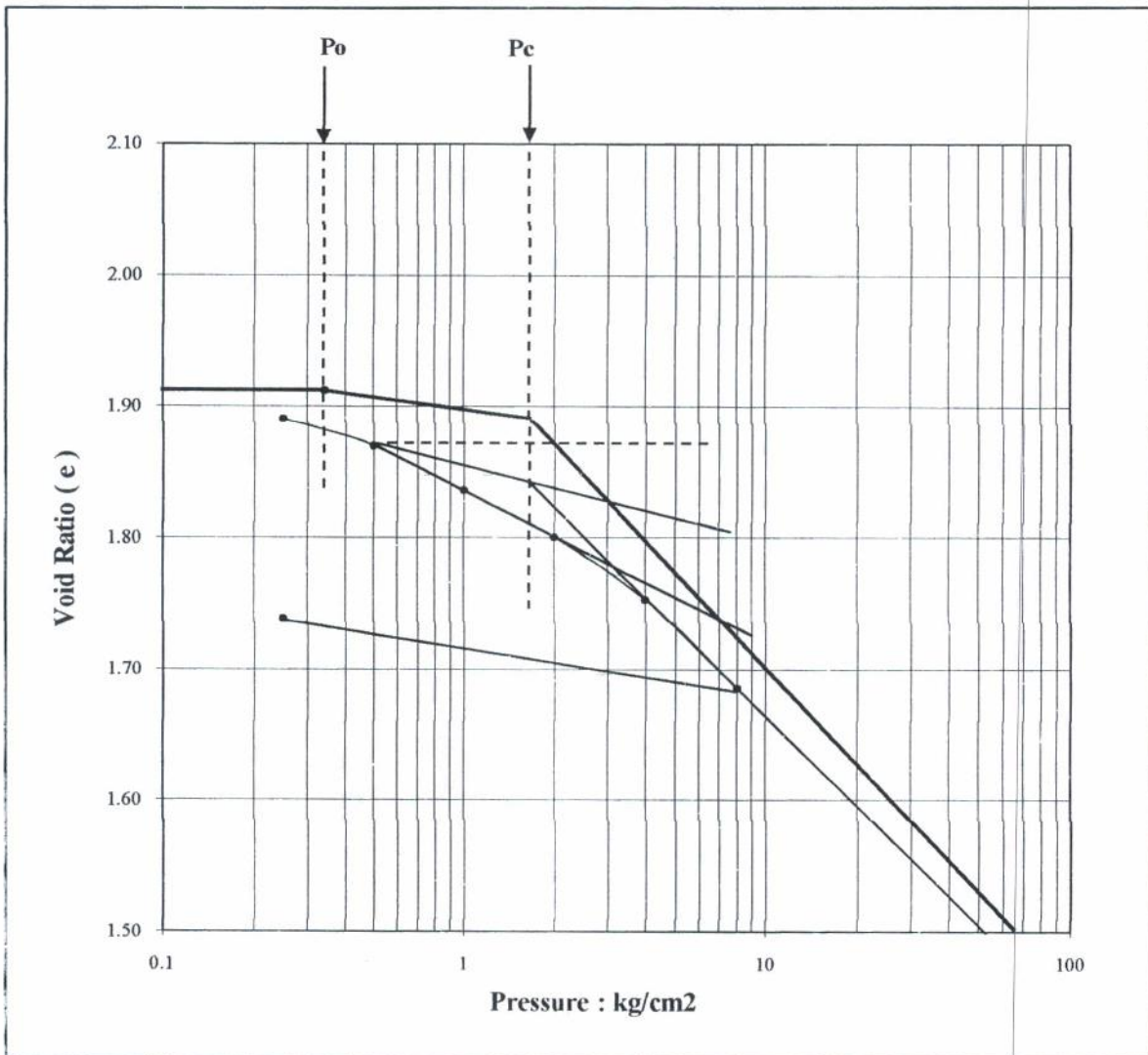
KAMPUS ISTN BHUMI SRENGSENG INDAH JALAN MOCH KAHFI 2 JAGAKARSA - JAKARTA 12640
TELPON. 021 98189554 FAX. 021 78893379

CONSOLIDATION TEST

Project : Pipa Beji	Depth of Sample : 3.00 - 3.50 meter
Location : Lenteng Agung, Jaksel	Date of Tested : September 2013
No. Bor : HB-1	Tested by : Endri A.

eo =	1.912
Po =	0.342 kg/cm ²
Pc =	1.75 kg/cm ²
w =	42.09 %

Cc =	0.245
Cv =	1.67 x 10 ⁻³ cm ² / sec
Cr =	0.040





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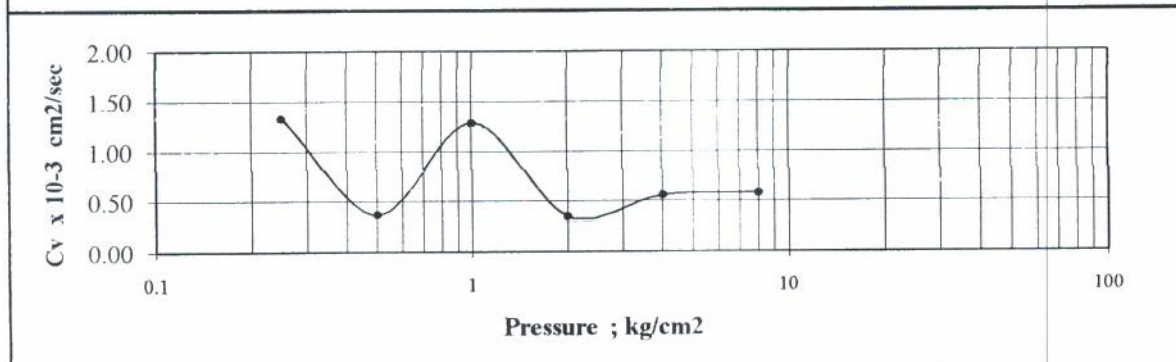
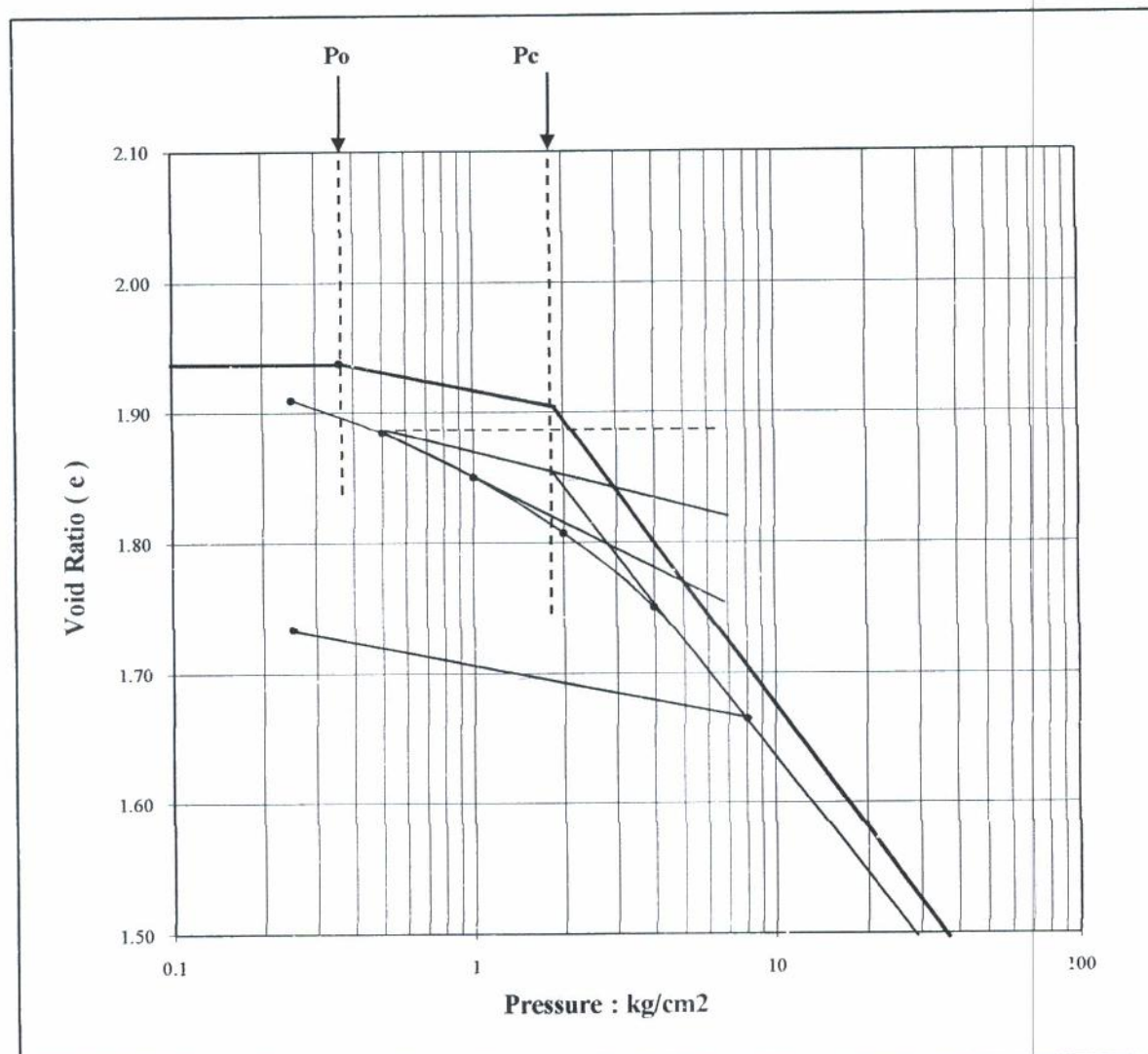
KAMPUS ISTN BHUMI SRENGSENG INDAH JALAN MOCH KAHFI 2 JAGAKARSA - JAKARTA 12640
 TELPON. 021 98189554 FAX. 021 78893379

CONSOLIDATION TEST

Project : Pipa Beji	Depth of Sample : 3.00 - 3.50 meter
Location : Perempatan Ragunan, Jaksel	Date of Tested : September 2013
No. Bor : HB-2	Tested by : Endri A.

eo =	1.938
Po =	0.360 kg/cm ²
Pc =	1.90 kg/cm ²
w =	58.87 %

Cc =	0.300
Cv =	0.75 x 10 ⁻³ cm ² / sec
Cr =	0.055





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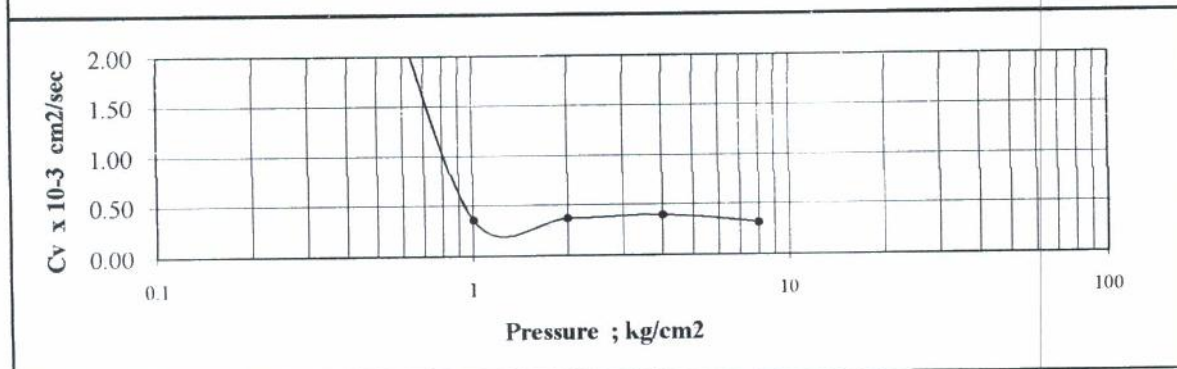
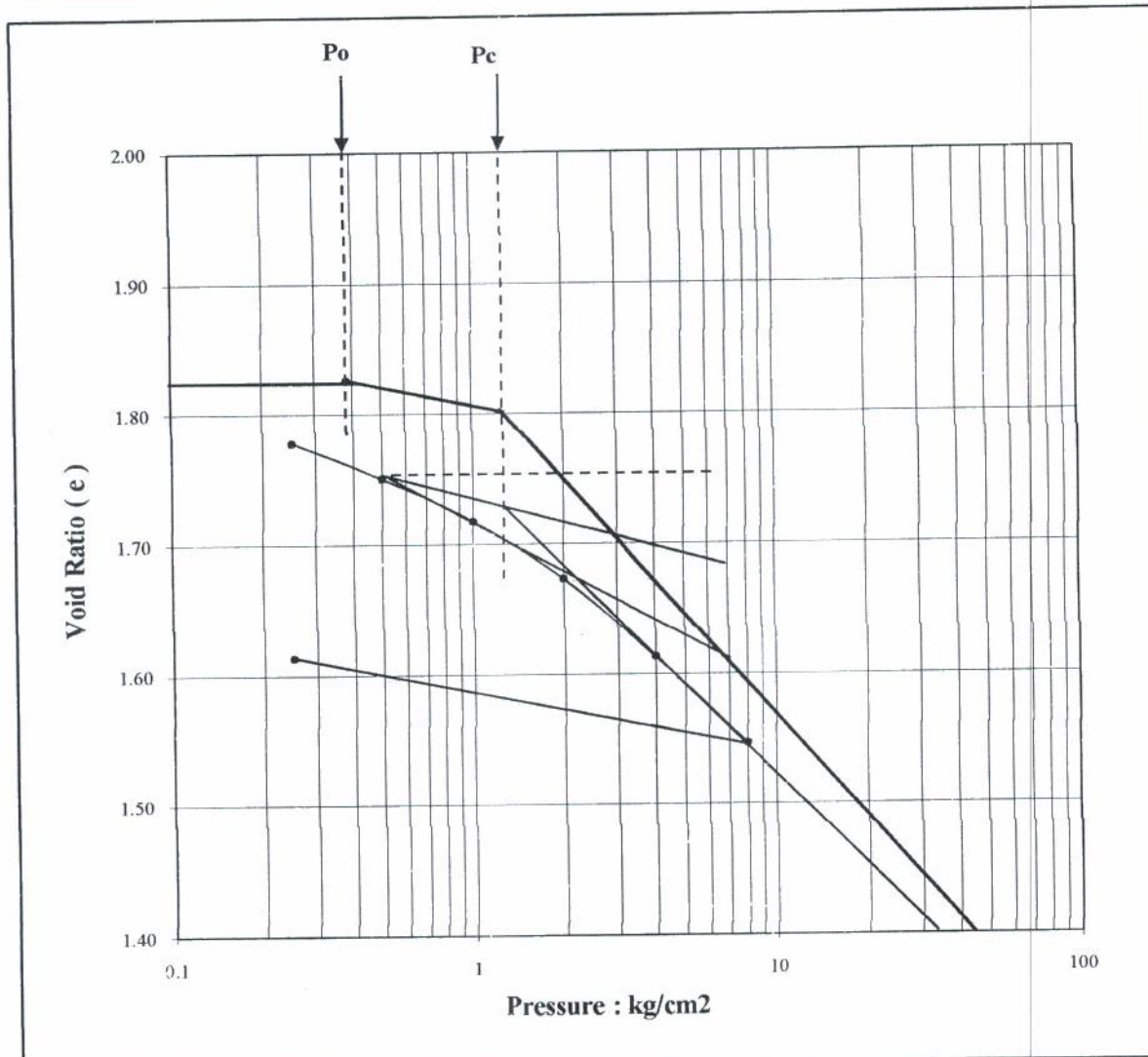
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TELPON. 021 98189554 FAX. 021 78893379

CONSOLIDATION TEST

Project : Pipa Beji	Depth of Sample : 3.00 - 3.50 meter
Location : Jl. Harsono RM, Cilandak	Date of Tested September 2013
No. Bor : HB-3	Tested by Endri A.

eo =	1.826
Po =	0.383 kg/cm ²
Pc =	1.37 kg/cm ²
w =	45.33 %

Cc =	0.250
Cv =	1.13 x 10 ⁻³ cm ² / sec
Cr =	0.045





**LABORATORIUM MEKANIKA TANAH
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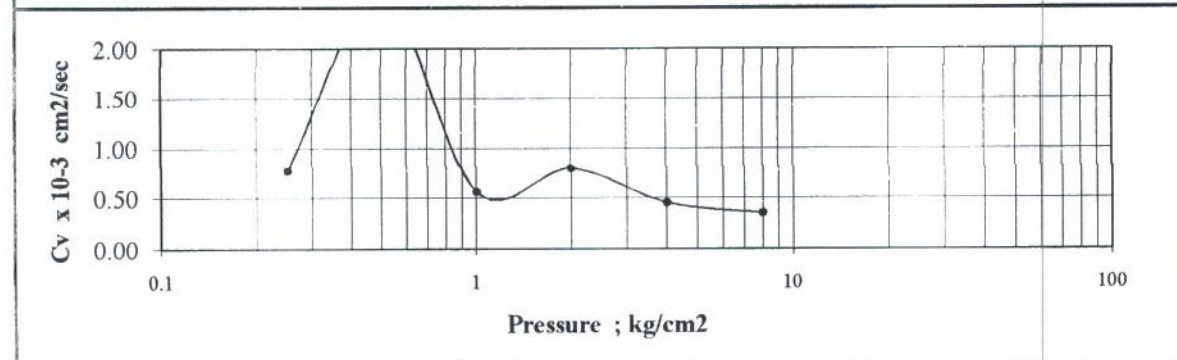
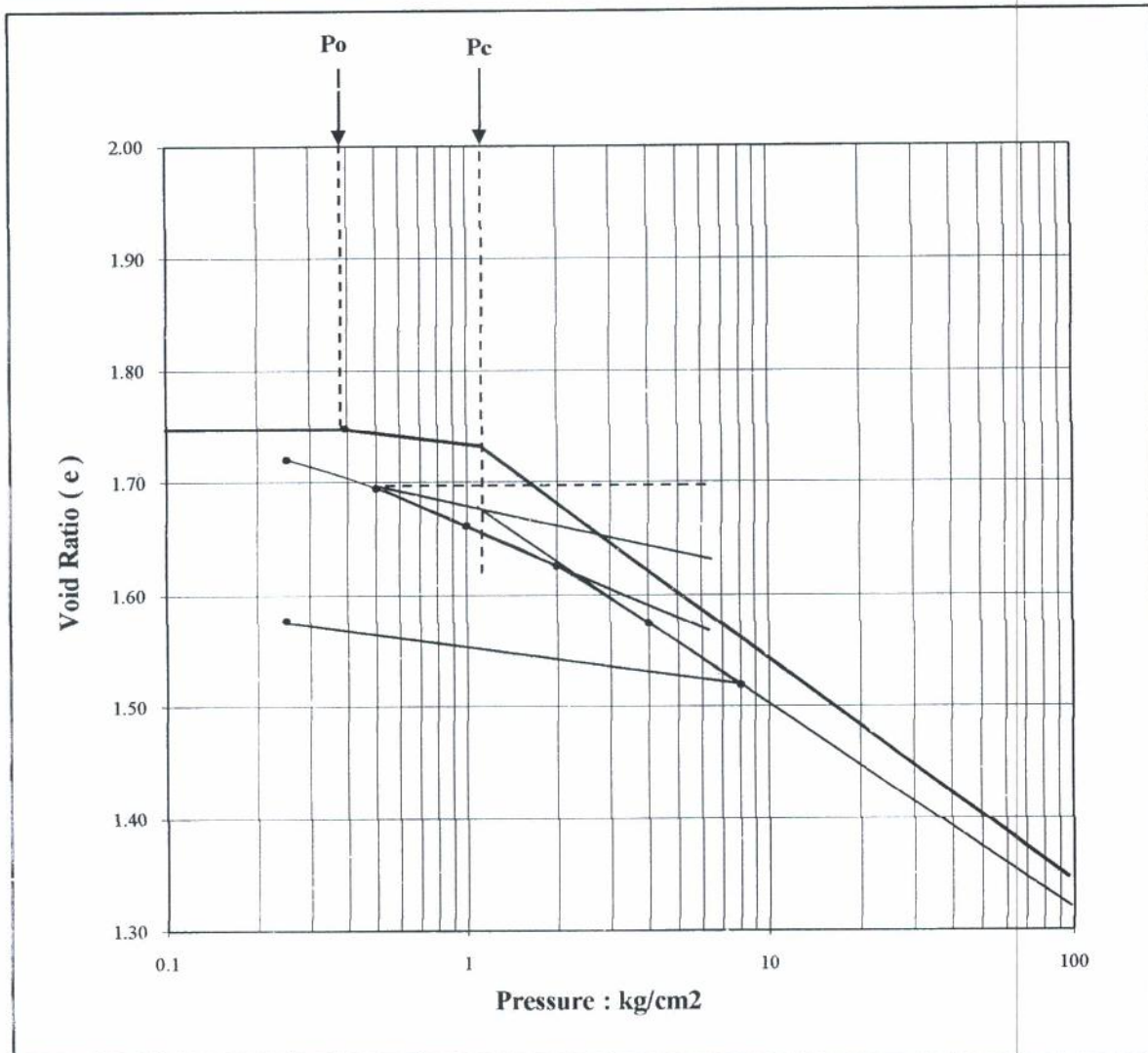
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TELPON. 021 98189554 FAX. 021 78893379

CONSOLIDATION TEST

Project : Pipa Beji	Depth of Sample : 3.00 - 3.50 meter
Location : Jl. Lenteng Agung 2	Date of Tested September 2013
No. Bor : HB-4	Tested by Endri A.

eo =	1.748
Po =	0.390 kg/cm ²
Pc =	1.18 kg/cm ²
w =	43.68 %

Cc =	0.195
Cv =	0.92 x 10 ⁻³ cm ² / sec
Cr =	0.035





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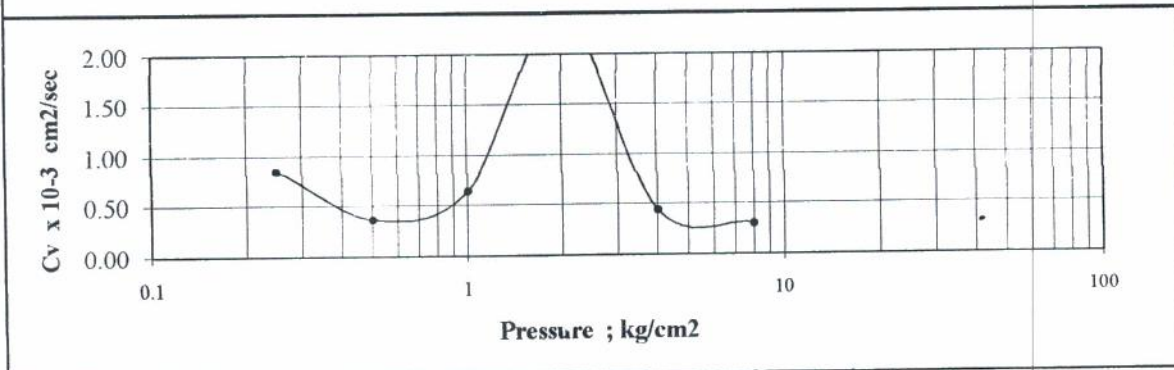
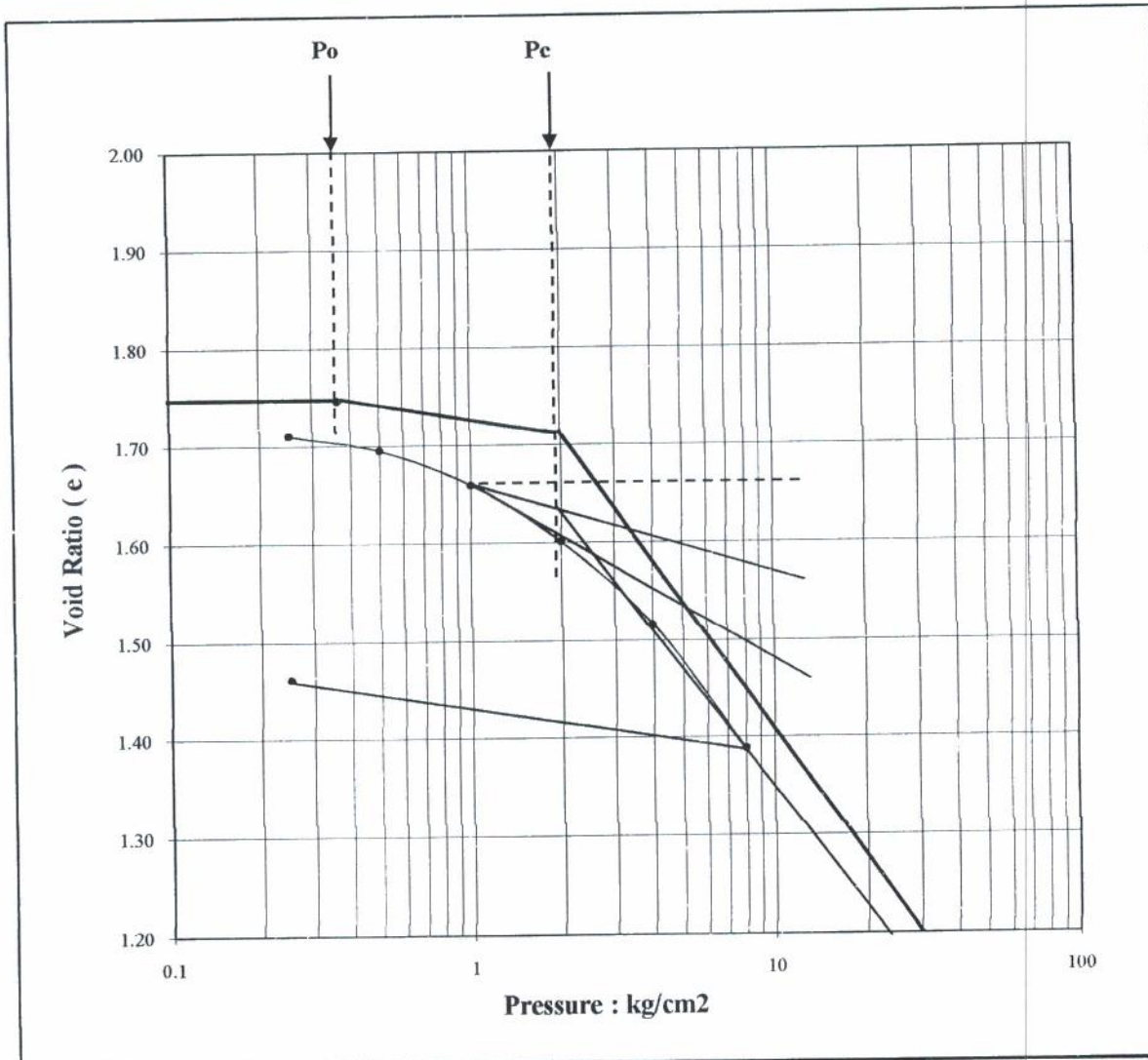
KAMPUS ISTN BHUMI SRENGSENG INDAH JALAN MOCH KAHFI 2 JAGAKARSA - JAKARTA 12640
TELPON. 021 98189554 FAX. 021 78893379

CONSOLIDATION TEST

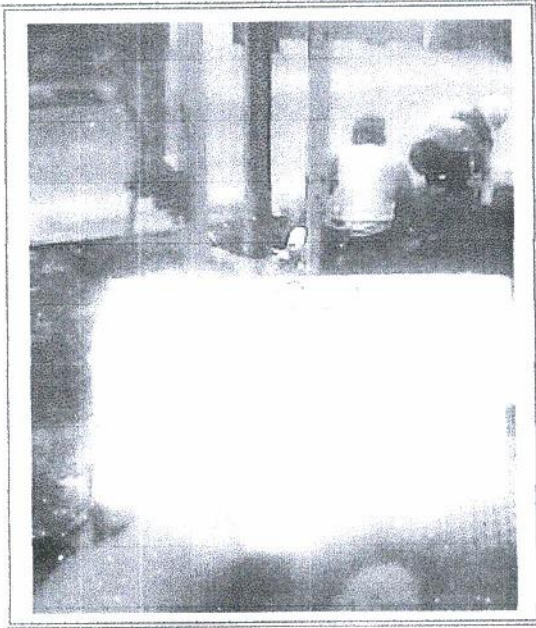
Project : Pipa Beji	Depth of Sample : 3.00 - 3.50 meter
Location : Jl. Al Hidayah	Date of Tested September 2013
No. Bor : HB-5	Tested by Endri A.

$e_0 =$	1.747
$P_0 =$	0.363 kg/cm ²
$P_c =$	1.98 kg/cm ²
$w =$	42.83 %

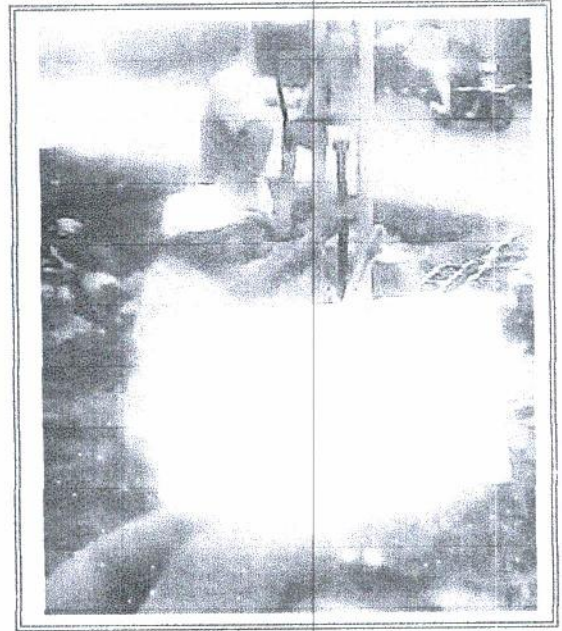
$C_c =$	0.445
$C_v =$	0.84 x 10 ⁻³ cm ² / sec
$C_r =$	0.050



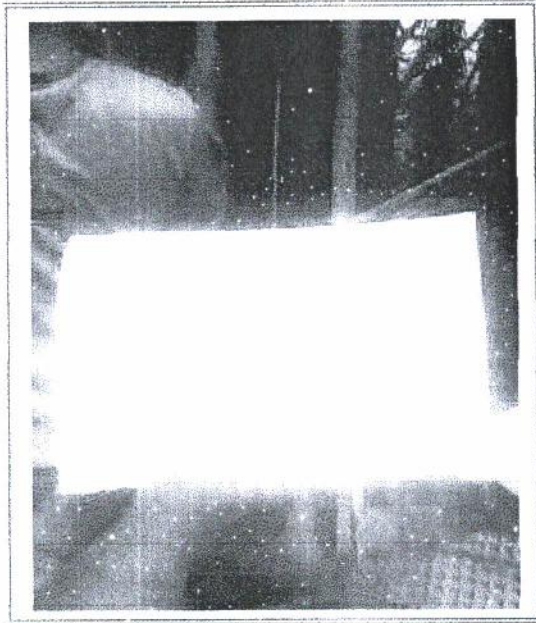
Dokumentasi Hand Bor : Pipa Beji, Ragunan
Jakarta Selatan



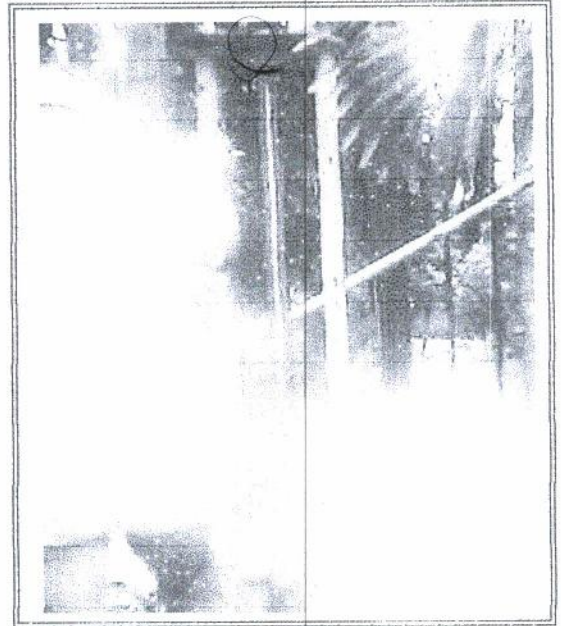
HB-1



HB-1

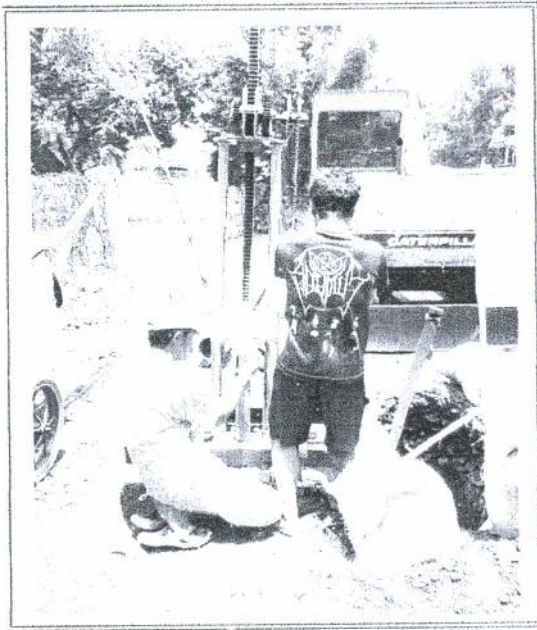


HB-2



HB-2

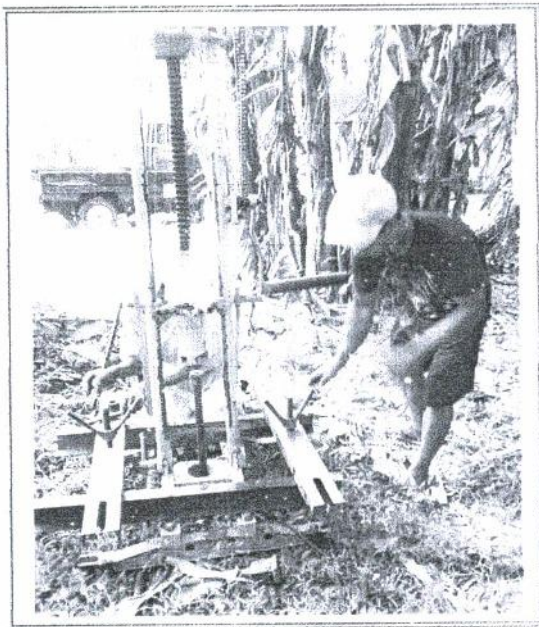
Dokumentasi Hand Bor : Pipa Beji
Cilandak, Universitas Pancasila dan Universitas Indonesia



HB-3



HB-4



HB-5