WATER CONTENT (w)
KADAR AIR

Project : Penelitian

Location : Gunungpati

Depth : 50 cm

Description of soil : Lempung

Container No.	A	B	C
Weight Con. + Wet Soil (gr)	87,7	60,7	72,3
Weight Con. + Dry Soil (gr)	74,2	52	61,7
Weight of Container (gr)	9,7	9,7	9,7
Weight of Dry Soil (gr)	64,5	42,3	52
Weight of Water (gr)	13,5	8,7	11
Water Content (%)	20,93	20,57	21,15
Average (%)	20,88		

LABORATORIUM MEKANIKA TANAH
FAKULTAS TEKNIK JURUSAN SIPIL
UNIKA SOEGIJAPRANATA SEMARANG

WATER CONTENT (w)
KADAR AIR

Project : Penelitian

Location : Gunungpati

Depth : 50 cm

Description of soil : Lempung + kapur 3 %

Container No.	A	B	C
Weight Con. + Wet Soil (gr)	61,3	62	61,8
Weight Con. + Dry Soil (gr)	53	53,7	53,6
Weight of Container (gr)	9,5	10,3	10,3
Weight of Dry Soil (gr)	43,5	43,4	43,3
Weight of Water (gr)	8,3	8,3	8,2
Water Content (%)	19,08	19,12	18,94
Average (%)	19,05		

LABORATORIUM MEKANIKA TANAH
FAKULTAS TEKNIK JURUSAN SIPIL
UNIKA SOEGIJAPRANATA SEMARANG

WATER CONTENT (w)
KADAR AIR

Project : Penelitian

Location : Gunungpati

Depth : 50 cm

Description of soil : Lempung + kapur 6 %

Container No.	A	B	C
Weight Con. – Wet Soil (gr)	67,7	65,1	65,1
Weight Con. – Dry Soil (gr)	56,2	56,7	56,6
Weight of Container (gr)	10,2	10,6	10,6
Weight of Dry Soil (gr)	4,6	46,1	45
Weight of Water (gr)	8,5	8,4	8,5
Water Content (%)	18,48	18,22	18,88
Average (%)		18,53	

LABORATORIUM MEKANIKA TANAH
FAKULTAS TEKNIK JURUSAN SIPIL
UNIKA SOEGIJAPRANATA SEMARANG

WATER CONTENT (w)
KADAR AIR

Project : Penelitian

Location : Gunungpati

Depth : 50 cm

Description of soil : Lempung + kapur 9 %

Container No.	A	B	C
Weight Con. + Wet Soil (gr)	68	65,4	65,8
Weight Con. + Dry Soil (gr)	59,8	56,9	57,4
Weight of Container (gr)	11,8	9,6	9,8
Weight of Dry Soil (gr)	48	47,3	47,6
Weight of Water (gr)	8,2	8,5	8,4
Water Content (%)	17,08	17,97	17,65
Average (%)	17,57		

LABORATORIUM MEKANIKA TANAH
FAKULTAS TEKNIK JURUSAN SIPIL
UNIKA SOEGIJAPRANATA SEMARANG

WATER CONTENT (w)
KADAR AIR

Project : Penelitian

Location : Gunungpati

Depth : 50 cm

Description of soil : Lempung + kapur 12 %

Container No.	A	B	C
Weight Con. + Wet Soil (gr)	82,5	78,2	88,2
Weight Con. + Dry Soil (gr)	75	70,3	80,6
Weight of Container (gr)	29,5	25,2	35,2
Weight of Dry Soil (gr)	45,5	45,1	45,4
Weight of Water (gr)	7,5	7,9	7,6
Water Content (%)	16,48	17,52	16,74
Average (%)		16,91	

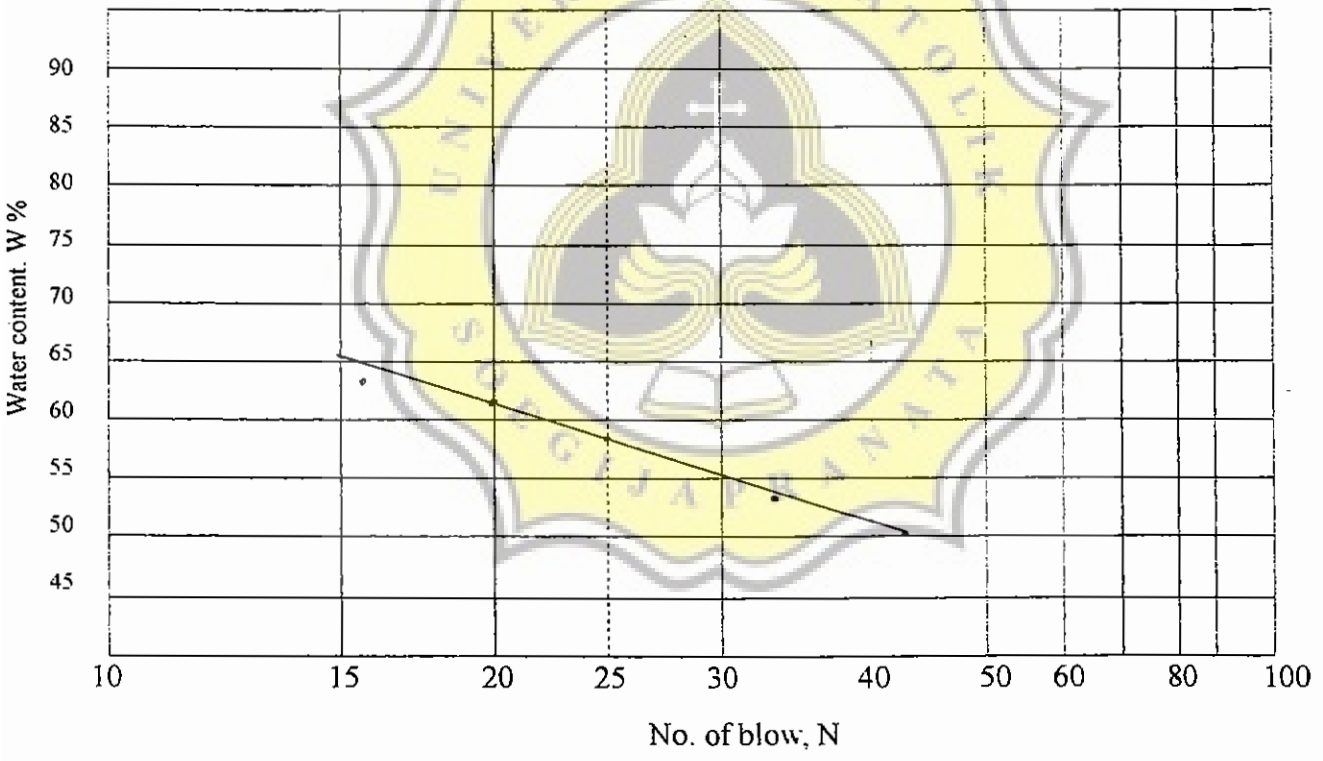
LABORATORIUM MEKANIKA TANAH
FAKULTAS TEKNIK JURUSAN SIPIL
UNIKA SOEGIJAPRANATA SEMARANG

ATTERBERG LIMITS DETERMINATION

Project : Penelitian
Location of Project : Gunungpati
Description of Soil : Lempung
Depth of Sample : 50 cm
Tested By : Sadtata & Cahyadi

Liquid Limit Determination

Can No.	1A	2A	3A	4A
Wt. Of Wet Soil + Can (gr)	8,4	11.1	11.3	10,4
Wt. Of Dry Soil + Can (gr)	7	8.7	9	8,5
Wt. Of Can (gr)	4,8	4.8	4.7	4,7
Wt. Of Dry Soil (gr)	2,2	3.9	4.3	3,8
Wt. Of Moisture (gr)	1,4	2.4	2.3	1,9
Water Content, w %	63,36	61.5	53,49	50
No. of blows, N	16	20	37	42



Liquid limit = 58,1

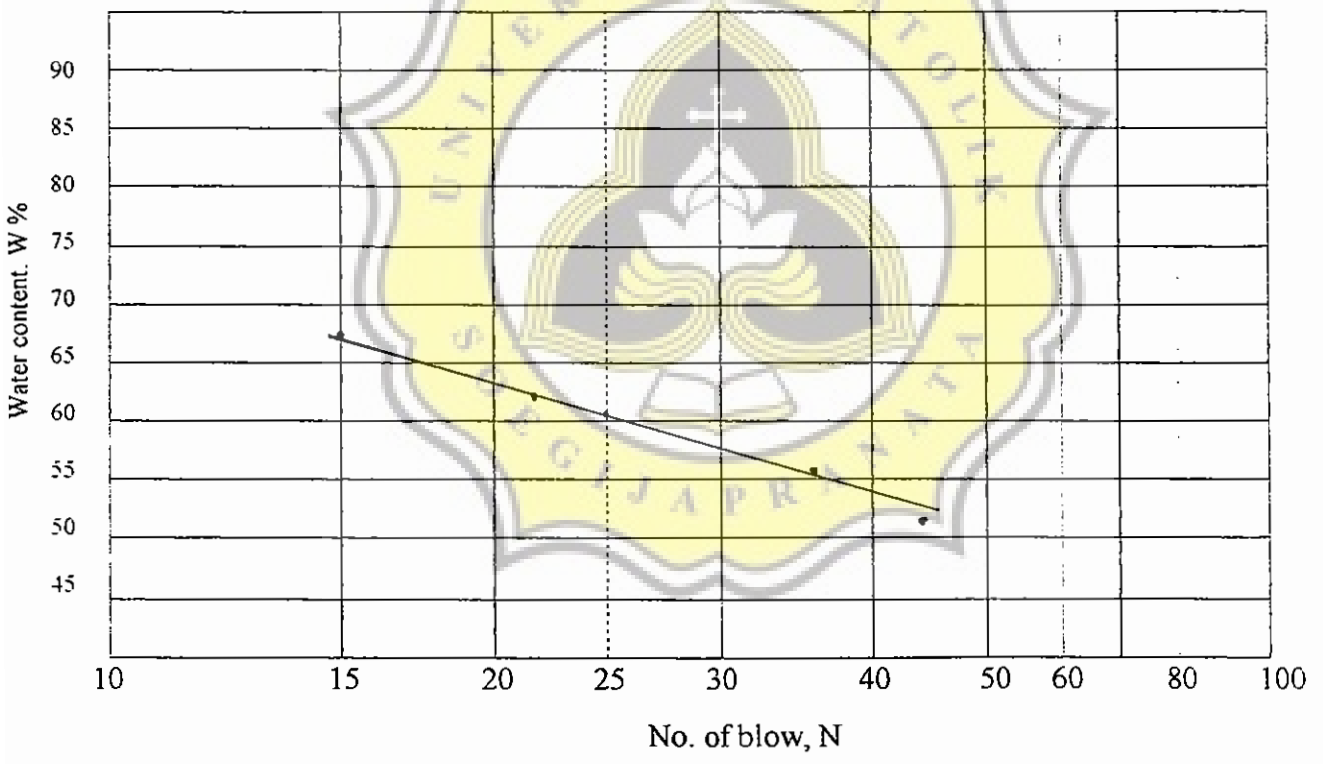
LABORATORIUM MEKANIKA TANAH
FAKULTAS TEKNIK JURUSAN SIPIL
UNIKA SOEGIJAPRANATA SEMARANG

ATTERBERG LIMITS DETERMINATION

Project : Penelitian
Location of Project : Gunungpati
Description of Soil : Lempung + kapur 3 %
Depth of Sample : 50 cm
Tested By : Sadtata & Cahyadi

Liquid Limit Determination

Can No.	1B	2B	3B	4B
Wt. Of Wet Soil + Can (gr)	8,3	9,9	10,4	10,1
Wt. Of Dry Soil + Can (gr)	6,8	7,9	8,4	8,3
Wt. Of Can (gr)	4,8	4,7	4,8	4,8
Wt. Of Dry Soil (gr)	2,1	3,2	3,6	3,5
Wt. Of Moisture (gr)	1,4	2	2	1,8
Water Content, w %	66,67	62,5	55,56	51,43
No. of blows, N	15	22	36	44



Liquid limit = 60,5

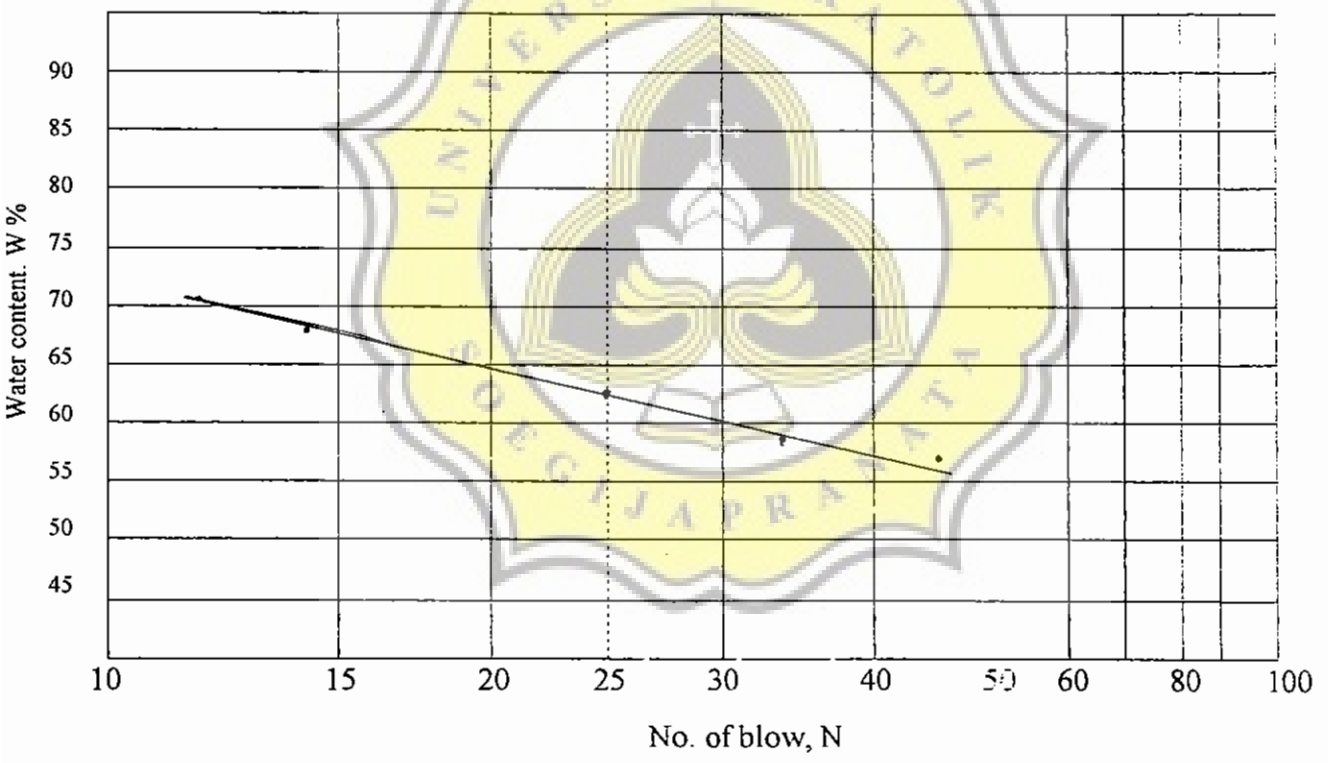
LABORATORIUM MEKANIKA TANAH
FAKULTAS TEKNIK JURUSAN SIPIL
UNIKA SOEGIJAPRANATA SEMARANG

ATTERBERG LIMITS DETERMINATION

Project : Penelitian
Location of Project : Gunungpati
Description of Soil : Lempung + kapur 6 %
Depth of Sample : 50 cm
Tested By : Sadtata & Cahyadi

Liquid Limit Determination

Can No.	1C	2C	3C	4C
Wt. Of Wet Soil + Can (gr)	13,4	8	8,2	10,3
Wt. Of Dry Soil + Can (gr)	9,8	6,7	6,9	8,3
Wt. Of Can (gr)	4,7	4,8	4,7	4,8
Wt. Of Dry Soil (gr)	5,1	1,9	2,2	3,5
Wt. Of Moisture (gr)	3,6	1,3	1,3	2
Water Content, w %	70,5	68,4	59,09	57,14
No. of blows, N	12	14	34	46



Liquid limit = 62,2

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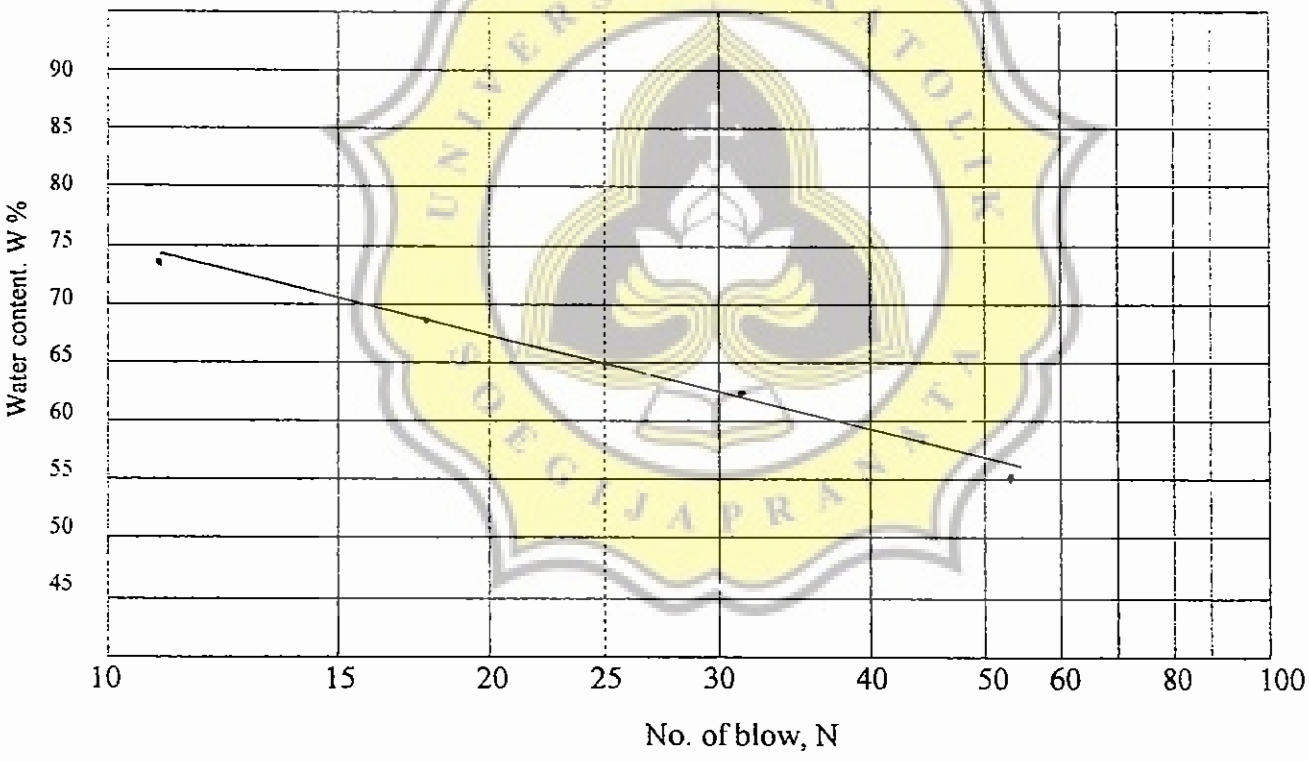
FAKULTAS TEKNIK JURUSAN SIPIL
UNIKA SOEGIJAPRANATA SEMARANG

ATTERBERG LIMITS DETERMINATION

Project : Penelitian
Location of Project : Gunungpati
Description of Soil : Lempung + kapur 9 %
Depth of Sample : 50 cm
Tested By : Sadtata & Cahyadi

Liquid Limit Determination

Can No.	1D	2D	3D	4D
Wt. Of Wet Soil + Can (gr)	10,2	12	9,9	11
Wt. Of Dry Soil + Can (gr)	7,9	9	7,9	8,8
Wt. Of Can (gr)	4,8	4,6	4,7	4,8
Wt. Of Dry Soil (gr)	3,1	4,4	3,2	4
Wt. Of Moisture (gr)	2,3	3	2	2,2
Water Content, w %	74,19	68,18	62,5	55
No. of blows, N	11	18	31	53



Liquid limit = 65

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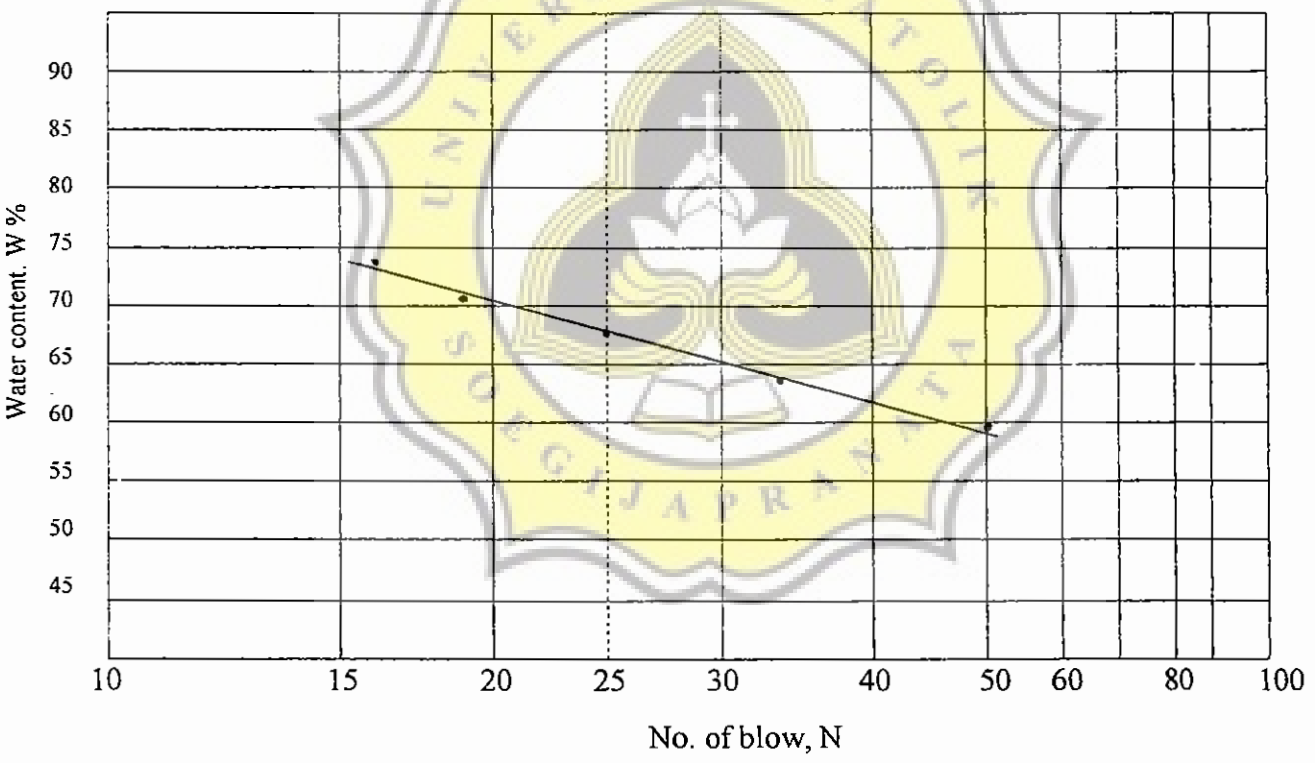
UNIKA SOEGIJAPRANATA SEMARANG

ATTERBERG LIMITS DETERMINATION

Project : Penelitian
Location of Project : Gunungpati
Description of Soil : Lempung + kapur 12 %
Depth of Sample : 50 cm
Tested By : Sadtata & Cahyadi

Liquid Limit Determination

Can No.	1E	2E	3E	4E
Wt. Of Wet Soil + Can (gr)	8,7	9,3	9,4	9
Wt. Of Dry Soil + Can (gr)	7	7,4	7,6	7,4
Wt. Of Can (gr)	4,7	4,7	4,8	4,7
Wt. Of Dry Soil (gr)	2,3	2,7	2,8	2,7
Wt. Of Moisture (gr)	1,7	1,9	1,8	1,6
Water Content, w %	73,91	70,37	64,28	59,26
No. of blows, N	16	19	33	50



Liquid limit = 67,5

LABORATORIUM MEKANIKA TANAH
FAKULTAS TEKNIK JURUSAN SIPIL
UNIKA SOEGIJAPRANATA SEMARANG

ATTERBERG LIMITS DETERMINATION

Project : Penelitian

Location of Project : Gunungpati

Description of Soil : Lempung + Kapur 3 %

Depth of Sample : 50 cm

Tested By : Sadtata & Cahyadi

Plastic Limit Determination

Can No.	F	G	H	I	J
Wt. Of Wet Soil + Can (gr)	6,1	6,4	7,6	6,9	7,4
Wt. Of Dry Soil + Can (gr)	5,7	5,9	6,9	6,4	6,7
Wt. Of Can (gr)	4,7	4,8	4,8	4,7	4,8
Wt. Of Dry Soil (gr)	1	1,1	2,1	1,7	1,9
Wt. Of Moisture (gr)	0,4	0,5	0,7	0,5	0,7
Water Content, w %	40	45,45	33,33	29,41	36,84

Liquid Limit = 60,5

Plastic Limit = 37,01

Plasticity Index = 23,49

LABORATORIUM MEKANIKA TANAH
FAKULTAS TEKNIK JURUSAN SIPIL
UNIKA SOEGIJAPRANATA SEMARANG

ATTERBERG LIMITS DETERMINATION

Project : Penelitian

Location of Project : Gunungpati

Description of Soil : Lempung + Kapur 6 %

Depth of Sample : 50 cm

Tested By : Sadtata & Cahyadi

Plastic Limit Determination

Can No.	A	B	C	D	E
Wt. Of Wet Soil + Can (gr)	5,7	6,1	5,5	6,1	6
Wt. Of Dry Soil + Can (gr)	5,4	5,7	5,3	5,7	5,6
Wt. Of Can (gr)	4,6	4,6	4,7	4,8	4,7
Wt. Of Dry Soil (gr)	0,8	1,1	0,6	0,9	0,9
Wt. Of Moisture (gr)	0,3	0,4	0,2	0,4	0,4
Water Content, w %	37,5	36,36	33,33	44,44	44,44

Plastic Limit = 62,2

Plastic Limit = 39,21

Plasticity Index = 22,99

LABORATORIUM MEKANIKA TANAH
FAKULTAS TEKNIK JURUSAN SIPIL
UNIKA SOEGIJAPRANATA SEMARANG

ATTERBERG LIMITS DETERMINATION

Project : Penelitian

Location of Project : Gunungpati

Description of Soil : Lempung + Kapur 9 %

Depth of Sample : 50 cm

Tested By : Sadtata & Cahyadi

Plastic Limit Determination

Can No.	F	G	H	I	J
Wt. Of Wet Soil + Can (gr)	5,7	7,1	5,7	7,5	7,2
Wt. Of Dry Soil + Can (gr)	5,4	6,4	5,3	6,7	6,4
Wt. Of Can (gr)	4,7	4,8	4,6	4,7	4,6
Wt. Of Dry Soil (gr)	0,7	1,6	0,7	2	1,8
Wt. Of Moisture (gr)	0,3	0,7	0,4	0,8	0,8
Water Content, w %	42,86	43,75	57,71	40	44,44

Liquid Limit = 65,0

Plastic Limit = 45,75

Plasticity Index = 19,25

LABORATORIUM MEKANIKA TANAH
FAKULTAS TEKNIK JURUSAN SIPIL
UNIKA SOEGIJAPRANATA SEMARANG

ATTERBERG LIMITS DETERMINATION

Project : Penelitian

Location of Project : Gunungpati

Description of Soil : Lempung – Kapur 12 %

Depth of Sample : 50 cm

Tested By : Sadtata & Cahyadi

Plastic Limit Determination

Can No.	A	B	C	D	E
Wt. Of Wet Soil + Can (gr)	6,1	7,9	6,8	6,1	7,5
Wt. Of Dry Soil + Can (gr)	5,6	7	6,1	5,6	6,6
Wt. Of Can (gr)	4,7	4,6	4,7	4,7	4,8
Wt. Of Dry Soil (gr)	0,9	2,4	1,4	0,9	1,8
Wt. Of Moisture (gr)	0,5	0,9	0,7	0,5	0,9
Water Content, w %	55,56	37,5	50	55,56	50

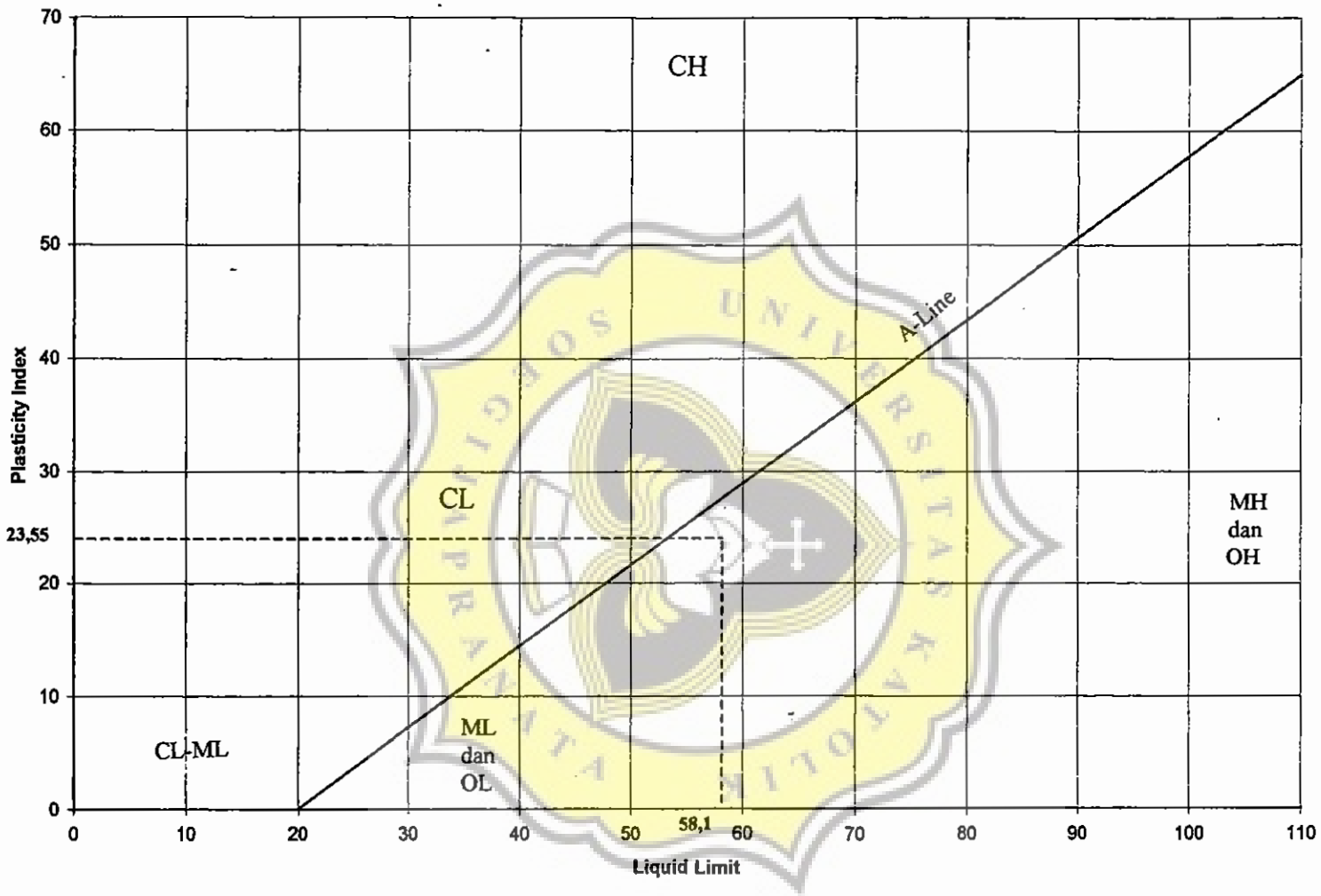
Liquid Limit = 67,5

Plastic Limit = 49,72

Plasticity Index = 17,78

LABORATORIUM MEKANIKA TANAH
FAKULTAS TEKNIK JURUSAN SIPIL
UNIKA SOEGIJAPRANATA SEMARANG

Atterberg Limits and Indices



HURUF I : M = Lanau (Silt)
C = Lempung (Clay)
O = Organik

HURUF II : L = Batas Cair Rendah (Low LL)
H = Batas Cair Tinggi (High LL)

KESIMPULAN : Termasuk tanah lempung kelanauan.

LABORATORIUM MEKANIKA TANAH
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UNIKA SOEGIJAPRANATA SEMARANG

LABORATORIUM MEKANIKA TANAH

UNIVERSITAS KATOLIK SOEGIJAPRANATA

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Telp. (024) 316142 – 441555 (Hunting)
Fax. (024) 415429 E-Mail : unika @ semarang.wasantara.net.id Po. Box. 8033/SM
Badan Hukum : Yayasan Sandjojo

COMPACTION TEST

Project : Penelitian

Location of Project : Gunungpati

Description of Soil : Lempung

Depth of Sampel : 50 cm

Tested By : Sadtata &Cahyadi

Assumed water content	200 cc	300 cc	400 cc	500 cc	600 cc	700 cc
Water content, (%)	27,63	34,22	37,91	40,46	51,37	52,37
Wt. of soil + mold, (gr)	3061	3215	3420	3438	3430	3357
Wt. of mold, (gr)	1750	1750	1750	1750	1750	1750
Vol. of mold, (cm3)	917,166	917,166	917,166	917,166	917,166	917,166
Wt. of soil in mold, (gr)	1311	1465	1670	1688	1680	1607
Wet density, (gr/cm3)	1,43	1,60	1,82	1,84	1,83	1,75
Dry density, (gr/cm3)	1,12	1,19	1,32	1,31	1,21	1,15

LABORATORIUM MEKANIKA TANAH

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Badan Hukum : Yayasan Sandjojo

COMPACTION TEST

Project : Penelitian

Location of Project : Gunungpati

Description of Soil : Lempung + kapur 6 %

Depth of Sampel : 50 cm

Tested By : Sadtata &Cahyadi

Assumed water content	200 cc	300 cc	400 cc	500 cc	600 cc	700 cc
Water content, (%)	28,55	32,22	36,36	42,03	45,12	53,11
Wt. of soil + mold, (gr)	3105	3225	3325	3355	3300	3280
Wt. of mold, (gr)	1750	1750	1750	1750	1750	1750
Vol. of mold, (cm3)	917,166	917,166	917,166	917,166	917,166	917,166
Wt. of soil in mold, (gr)	1355	1475	1575	1605	1550	1530
Wet density, (gr/cm3)	1,48	1,61	1,72	1,75	1,69	1,67
Dry density, (gr/cm3)	1,15	1,22	1,26	1,23	1,17	1,09

LABORATORIUM MEKANIKA TANAH

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Badan Hukum : Yayasan Sandjojo

COMPACTION TEST

Project : Penelitian

Location of Project : Gunungpati

Description of Soil : Lempung + kapur 12 %

Depth of Sampel : 50 cm

Tested By : Sadtata &Cahyadi

Assumed water content	200 cc	300 cc	400 cc	500 cc	600 cc	700 cc
Water content, (%)	25,05	27,55	31,82	35,99	44,68	46,89
Wt. of soil + mold, (gr)	2989	3060	3189	3284	3250	3192
Wt. of mold, (gr)	1750	1750	1750	1750	1750	1750
Vol. of mold, (cm3)	917,166	917,166	917,166	917,166	917,166	917,166
Wt. of soil in mold, (gr)	1239	1310	1439	1534	1500	1442
Wet density, (gr/cm3)	1,35	1,43	1,57	1,67	1,64	1,57
Dry density, (gr/cm3)	1,08	1,12	1,19	1,23	1,13	1,07

Project : Penelitian

Location of Project : Gunungpati

Description of Soil : Lempung

Depth of Sampel : 50 cm Tested By : Sadtata & Cahyadi

LABORATORIUM MEKANIKA TANAH
FAKULTAS TEKNIK JURUSAN SIPIL
UNIKA SOEGIJAPRANATA SEMARANG

	200 cc		300 cc		400 cc	
	ATAS	BAWAH	ATAS	BAWAH	ATAS	BAWAH
Moisture Can No.	IA	IB	IIA	IIB	IIIA	IIIB
Wt. Of Can + Wet Soil (gr)	46,8	39,9	50	40,7	32,6	34,4
Wt. Of Can + Dry Soil (gr)	39,1	33,1	40,5	32,9	26,5	27,8
Wt. Of Water (gr)	7,7	6,8	9,5	7,8	6,1	6,6
Wt. Of Can (gr)	9,7	9,7	10,3	11,8	10,4	10,4
Wt. Of Dry Soil (gr)	29,4	23,4	30,2	21,1	16,1	17,4
Water Content (%)	26,19	29,06	31,46	36,97	37,89	37,93
Average (%)	27,63		34,22		37,91	

	500 cc		600 cc		700 cc	
	ATAS	BAWAH	ATAS	BAWAH	ATAS	BAWAH
Moisture Can No.	IVA	IVB	VA	VB	VIA	VIB
Wt. Of Can + Wet Soil (gr)	35,7	41,8	33,5	50,7	37,7	34,9
Wt. Of Can + Dry Soil (gr)	28,2	32,7	24,4	37,3	28,2	26
Wt. Of Water (gr)	7,5	9,1	9,1	13,4	9,5	8,9
Wt. Of Can (gr)	9,5	10,4	4,5	9,6	9,5	9,5
Wt. Of Dry Soil (gr)	18,7	22,3	19,9	27,7	18,7	16,5
Water Content (%)	40,11	40,81	47,06	48,38	50,8	53,94
Average (%)	40,46		47,06		52,37	

Project : Penelitian

Location of Project : Gunungpati

Description of Soil : Lempung + 6 %

Depth of Sampel : 50 cm Tested By : Sadtata & Cahyadi

LABORATORIUM MEKANIKA TANAH
FAKULTAS TEKNIK JURUSAN SIPIL
UNIKA SOEGIJAPRANATA SEMARANG

	200 cc		300 cc		400 cc	
	ATAS	BAWAH	ATAS	BAWAH	ATAS	BAWAH
Moisture Can No.	IA	IB	IIA	IIB	IIIA	IIIB
Wt. Of Can + Wet Soil (gr)	28,9	31,8	28,3	29,2	23,5	31,5
Wt. Of Can + Dry Soil (gr)	24,5	27,1	23,9	24,9	20	25,8
Wt. Of Water (gr)	4,4	4,7	4,4	4,3	3,5	5,7
Wt. Of Can (gr)	9,8	9,8	10,4	11,4	10,2	10,4
Wt. Of Dry Soil (gr)	14,7	17,3	13,5	13,5	9,8	15,4
Water Content (%)	29,93	27,17	32,59	31,85	35,71	37,01
Average (%)	28,55		32,22		36,36	

	500 cc		600 cc		700 cc	
	ATAS	BAWAH	ATAS	BAWAH	ATAS	BAWAH
Moisture Can No.	IVA	IVB	VA	VB	VIA	VIB
Wt. Of Can + Wet Soil (gr)	30,4	33,5	34,7	32,9	31,7	48,1
Wt. Of Can + Dry Soil (gr)	24,3	26,7	27,1	25,7	23,8	35,1
Wt. Of Water (gr)	6,1	6,8	7,6	7,2	7,9	13
Wt. Of Can (gr)	9,8	10,5	10,3	9,7	9,5	9,6
Wt. Of Dry Soil (gr)	14,5	16,2	16,8	16	14,3	25,5
Water Content (%)	42,07	41,98	45,24	45	55,24	50,98
Average (%)	42,03		45,12		53,11	

Project : Penelitian

Location of Project : Gunungpati

Description of Soil : Lempung + 12 %

Depth of Sampel : 50 cm Tested By : Sadtata & Cahyadi

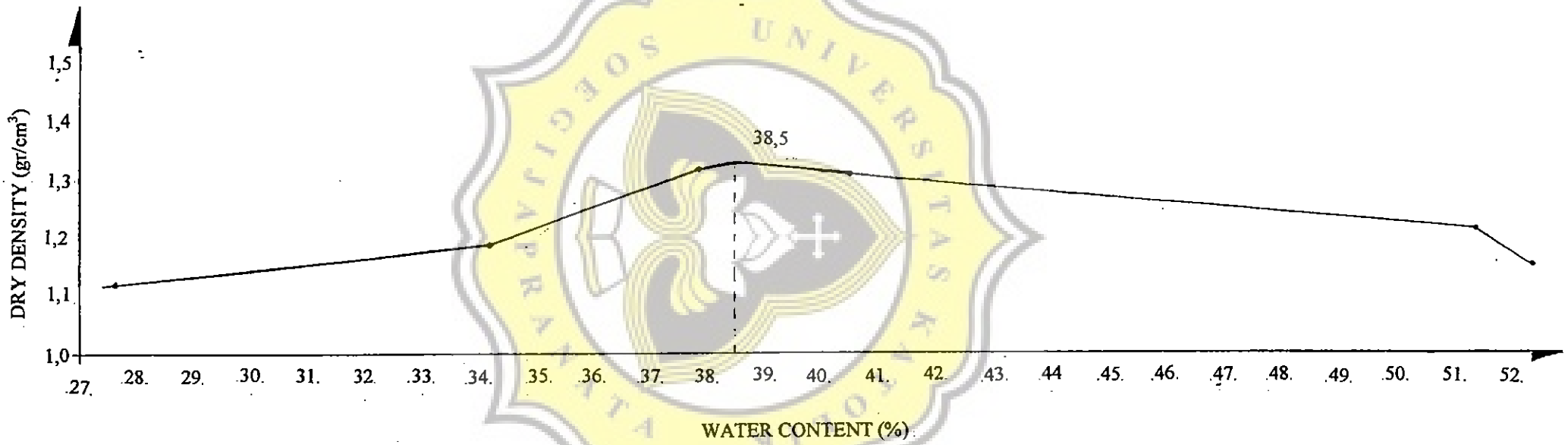
LABORATORIUM MEKANIKA TANAH
FAKULTAS TEKNIK JURUSAN SIPIL
UNIKA SOEGIJAPRANATA SEMARANG

	200 cc		300 cc		400 cc	
	ATAS	BAWAH	ATAS	BAWAH	ATAS	BAWAH
Moisture Can No.	IA	IB	IIA	IIB	IIIA	IIIB
Wt. Of Can + Wet Soil (gr)	34.5	30.2	21.9	26.3	22.5	29.4
Wt. Of Can + Dry Soil (gr)	28.5	25.1	18.2	21.8	18.3	23.3
Wt. Of Water (gr)	6	5.1	3.7	4.5	4.2	6.1
Wt. Of Can (gr)	4.7	4.6	4.9	5.3	4.6	4.8
Wt. Of Dry Soil (gr)	23.8	20.5	13.3	16.5	13.7	18.5
Water Content (%)	25.21	24.88	27.82	27.27	30.66	32.37
Average (%)	25.05		27.55		31.82	

	500 cc		600 cc		700 cc	
	ATAS	BAWAH	ATAS	BAWAH	ATAS	BAWAH
Moisture Can No.	IVA	IVB	VA	VB	VIA	VIB
Wt. Of Can + Wet Soil (gr)	24,6	30,2	35,7	31,7	38,5	43,3
Wt. Of Can + Dry Soil (gr)	19,4	23,4	26,1	23,3	27,6	31,1
Wt. Of Water (gr)	5,2	6,8	9,6	8,4	10,9	12,2
Wt. Of Can (gr)	4,8	4,7	4,5	4,6	4,6	4,8
Wt. Of Dry Soil (gr)	14,6	18,7	21,6	18,7	23	26,3
Water Content (%)	35,62	36,36	44,44	44,92	47,39	46,39
Average (%)	35,99		44,68		46,89	

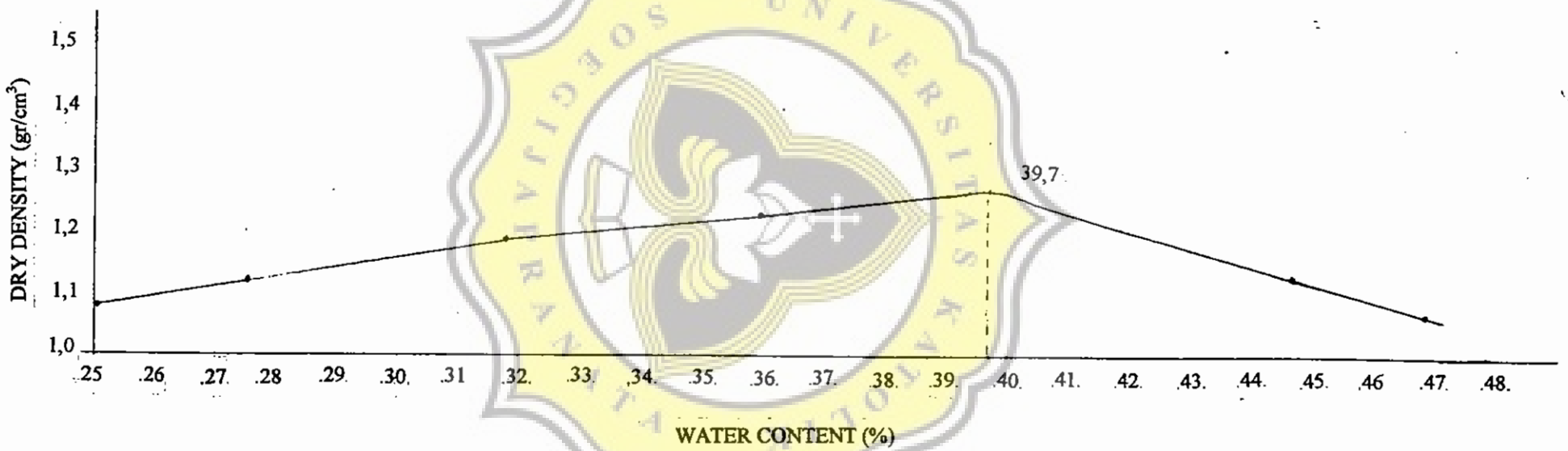
GRAFIK KADAR AIR OPTIMUM (OMC)

Lempung



GRAFIK KADAR AIR OPTIMUM (OMC)

Lempung + kapur 12%



12 %

LABORATORIUM MEKANIKA TANAH
PEMERIKSAAN C.B.R.
C.B.R. TEST

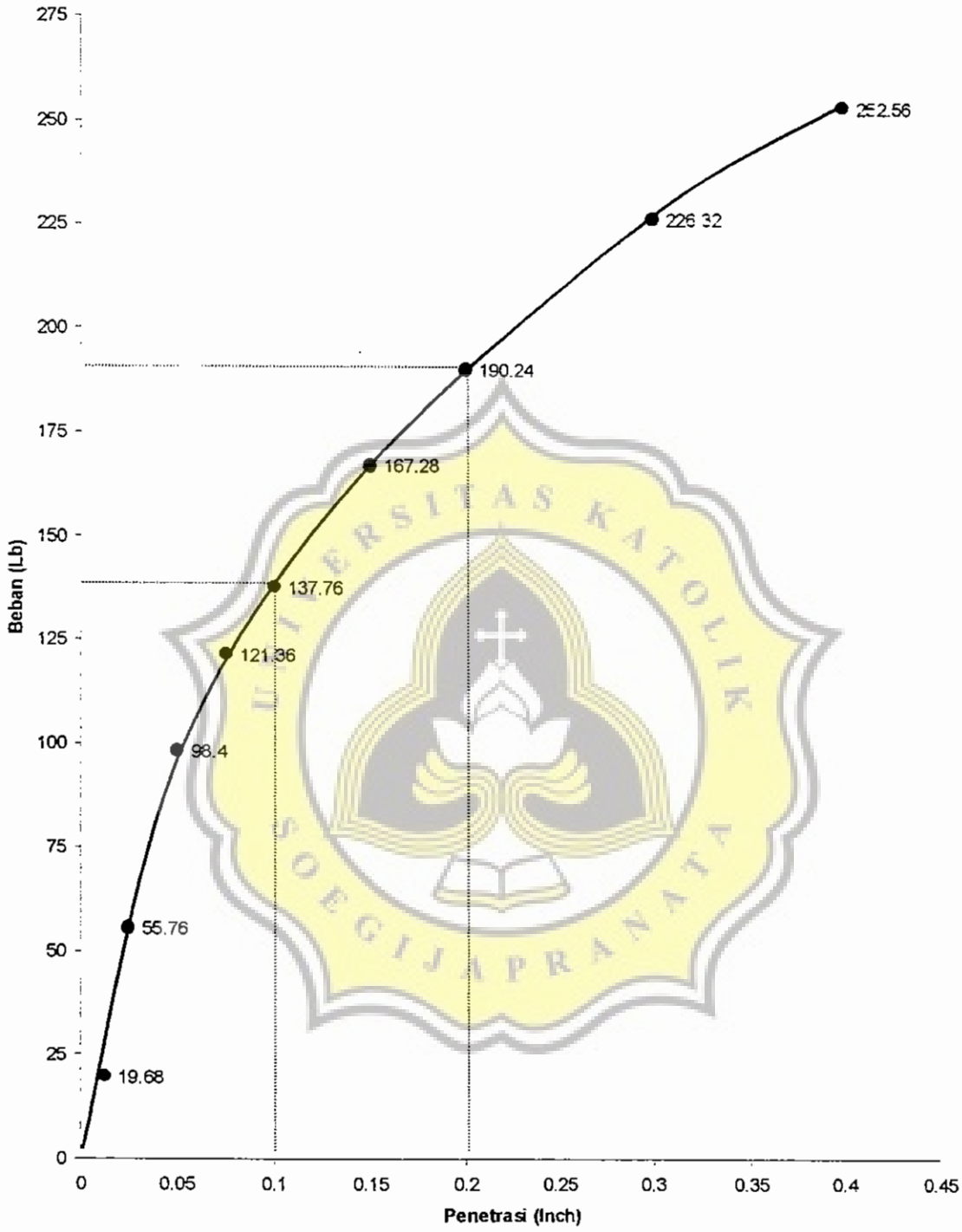
PROYEK : Penelitian
LOKASI : Gunungpati
KEDALAMAN : 50 Cm
JENIS TANAH : Lempung
JUMLAH PUKULAN : 10 x

PENETRASI Kalibrasi = 3,28 Lb

WAKTU (menit)	PENURUNAN (Inch)	PEMBACAAN ARLOJI		BEBAN (LB)	
0	0	ATAS	BAWAH	ATAS	BAWAH
½	0,0125	4	6	13,12	19,68
1	0.025	7	17	22,96	55,76
1	0.05	16	30	52,48	98,40
1 ½	0.075	24	37	78,72	121,36
2	0.10	31	42	101,68	137,76
3	0.15	40	51	131,20	167,28
4	0.20	46	58	150,88	190,24
6	0.30	55	69	180,4	226,32
8	0.40	63	77	206,64	252,56
10	0.50				

	ATAS		BAWAH	
TANAH BASAH + CAWAN (gr)	20	21,4	18,5	18,9
TANAH KERING + CAWAN (gr)	16,4	17,6	15,4	15,5
CAWAN (gr)	4,6	4,7	4,7	4,7
AIR (gr)	3,6	3,8	3,1	3,4
TANAH KERING (gr)	11,8	12,9	10,7	10,8
KADAR AIR (%)	29,98		30,23	
AVERAGE (%)	30,11			

CBR	HARGA CBR (%)	
	0,1"	0,2"
Atas	$\frac{\quad}{3 \times 1000} \times 100 =$	$\frac{\quad}{3 \times 1500} \times 100 =$
Bawah	$\frac{137,76}{3 \times 1000} \times 100 = 4,59$	$\frac{190,24}{3 \times 1500} \times 100 = 4,23$



Grafik nilai CBR tanah (10 pukulan)

LABORATORIUM MEKANIKA TANAH
PEMERIKSAAN C.B.R.
C.B.R. TEST

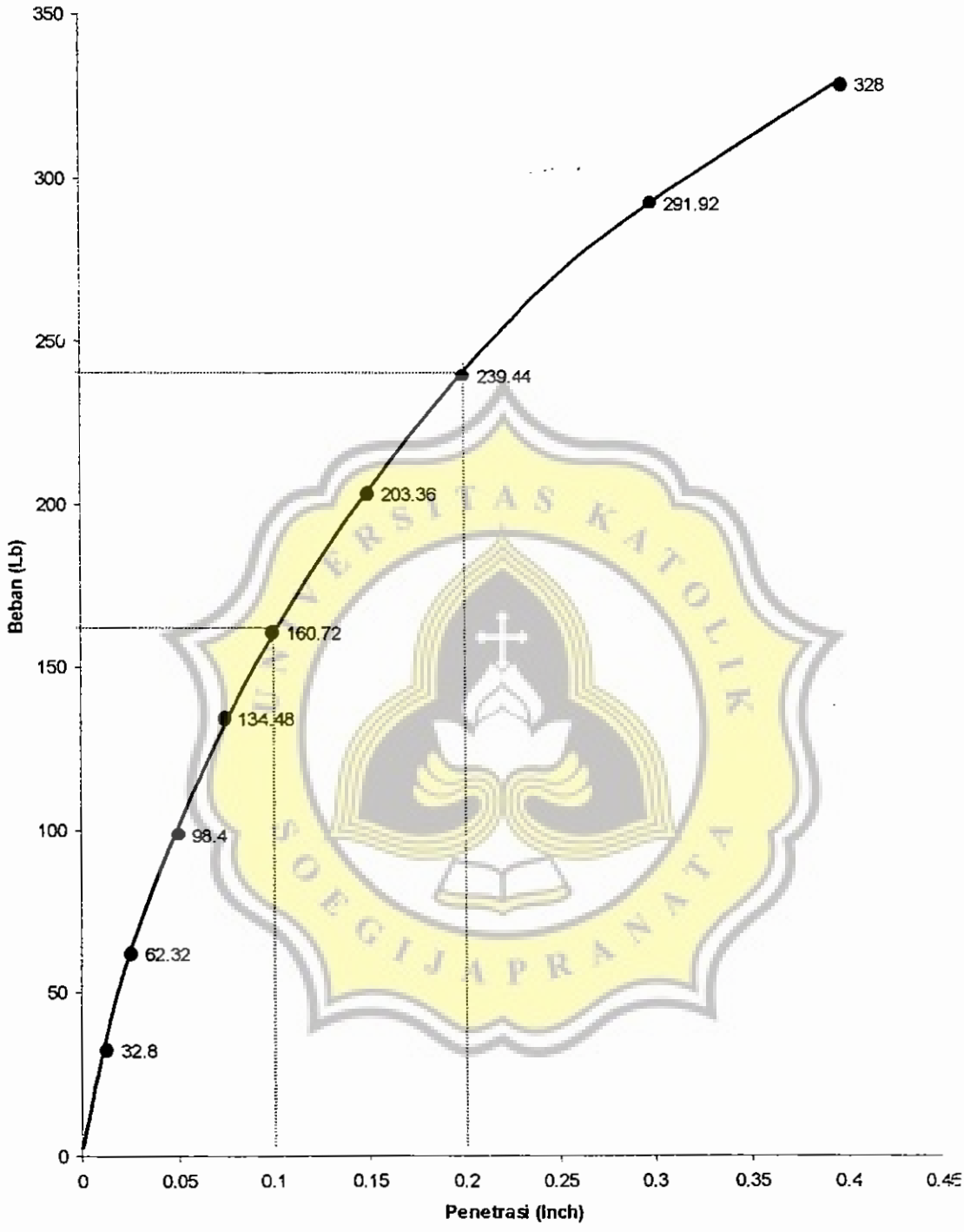
PROYEK : Penelitian
LOKASI : Gunungpati
KEDALAMAN : 50 Cm
JENIS TANAH : Lempung
JUMLAH PUKULAN : 25 x

PENETRASI Kalibrasi = 3,28 Lb

WAKTU (menit)	PENURUNAN (Inch)	PEMBACAAN ARLOJI		BEBAN (LB)	
0	0	ATAS	BAWAH	ATAS	BAWAH
½	0.0125	4	10	13.12	32.80
½	0.025	9	19	29.52	62,32
1	0.05	19	30	62.32	98.40
1 ½	0.075	30	41	98.40	134.48
2	0.10	39	49	127.92	160.72
3	0.15	53	63	173.84	203.36
4	0.20	64	73	209.92	239.44
6	0.30	82	89	268.96	291,92
8	0.40	93	100	305.04	328.00
10	0.50				

	ATAS		BAWAH	
TANAH BASAH + CAWAN (gr)	25,9	23,6	25,8	21
TANAH KERING + CAWAN (gr)	22,7	20,5	23,3	18,5
CAWAN (gr)	11,8	10,8	10,4	9,5
AIR (gr)	3,2	3,1	2,5	2,5
TANAH KERING (gr)	10,9	9,7	12,9	9
KADAR AIR (%)	30,66		25,58	
AVERAGE (%)	28,12			

CBR	HARGA CBR (%)	
	0,1"	0,2"
Atas	$\frac{\quad}{3 \times 1000} \times 100 =$	$\frac{\quad}{3 \times 1500} \times 100 =$
Bawah	$\frac{160,77}{3 \times 1000} \times 100 = 5,36$	$\frac{239,44}{3 \times 1500} \times 100 = 5,32$



Grafik nillai CBR tanah (25 pukulan)

LABORATORIUM MEKANIKA TANAH
PEMERIKSAAN C.B.R.
C.B.R. TEST

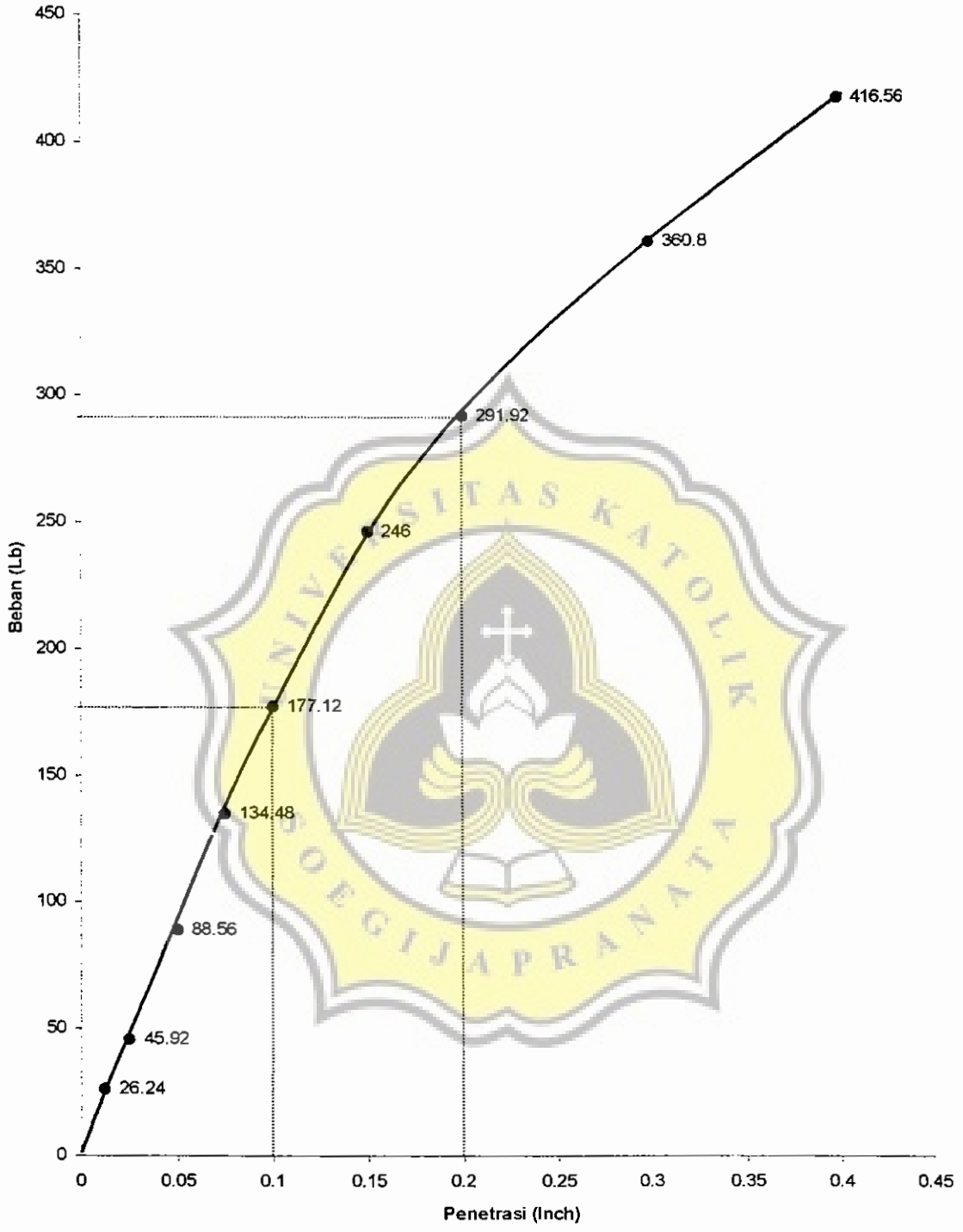
PROYEK : Penelitian
LOKASI : Gunungpati
KEDALAMAN : 50 Cm
JENIS TANAH : Lempung
JUMLAH PUKULAN : 56 x

PENETRASI Kalibrasi = 3.28 Lb

WAKTU (menit)	PENURUNAN (Inch)	PEMBACAAN ARLOJI		BEBAN (LB)	
0	0	ATAS	BAWAH	ATAS	BAWAH
½	0,0125	5	8	16.40	26.24
½	0.025	10	14	32.80	45.92
1	0.05	18	27	59.04	88.56
1 ½	0.075	26	41	85.28	134.48
2	0.10	33	54	108.24	177,12
3	0.15	46	75	150.88	246,00
4	0,20	57	89	185.96	291,92
6	0,30	74	110	242.72	360,80
8	0,40	88	127	288.64	416,56
10	0,50				

	ATAS		BAWAH	
TANAH BASAH + CAWAN (gr)	24,6	17,4	19	21
TANAH KERING + CAWAN (gr)	19,9	15,5	15,5	17,1
CAWAN (gr)	4,7	4,8	4.7	4.6
AIR (gr)	4,7	1,9	3,5	3,9
TANAH KERING (gr)	15,2	10,7	10.8	12,9
KADAR AIR (%)	24,34		31,32	
AVERAGE (%)	27.83			

CBR	HARGA CBR (%)	
	0,1''	0,2''
Atas	$\frac{\quad}{3 \times 1000} \times 100 =$	$\frac{\quad}{3 \times 1500} \times 100 =$
Bawah	$\frac{177,12}{3 \times 1000} \times 100 = 5,90$	$\frac{291,92}{3 \times 1500} \times 100 = 6,47$



Grafik nilai CBR tanah (56 pukulan)

LABORATORIUM MEKANIKA TANAH
PEMERIKSAAN C.B.R.
C.B.R. TEST

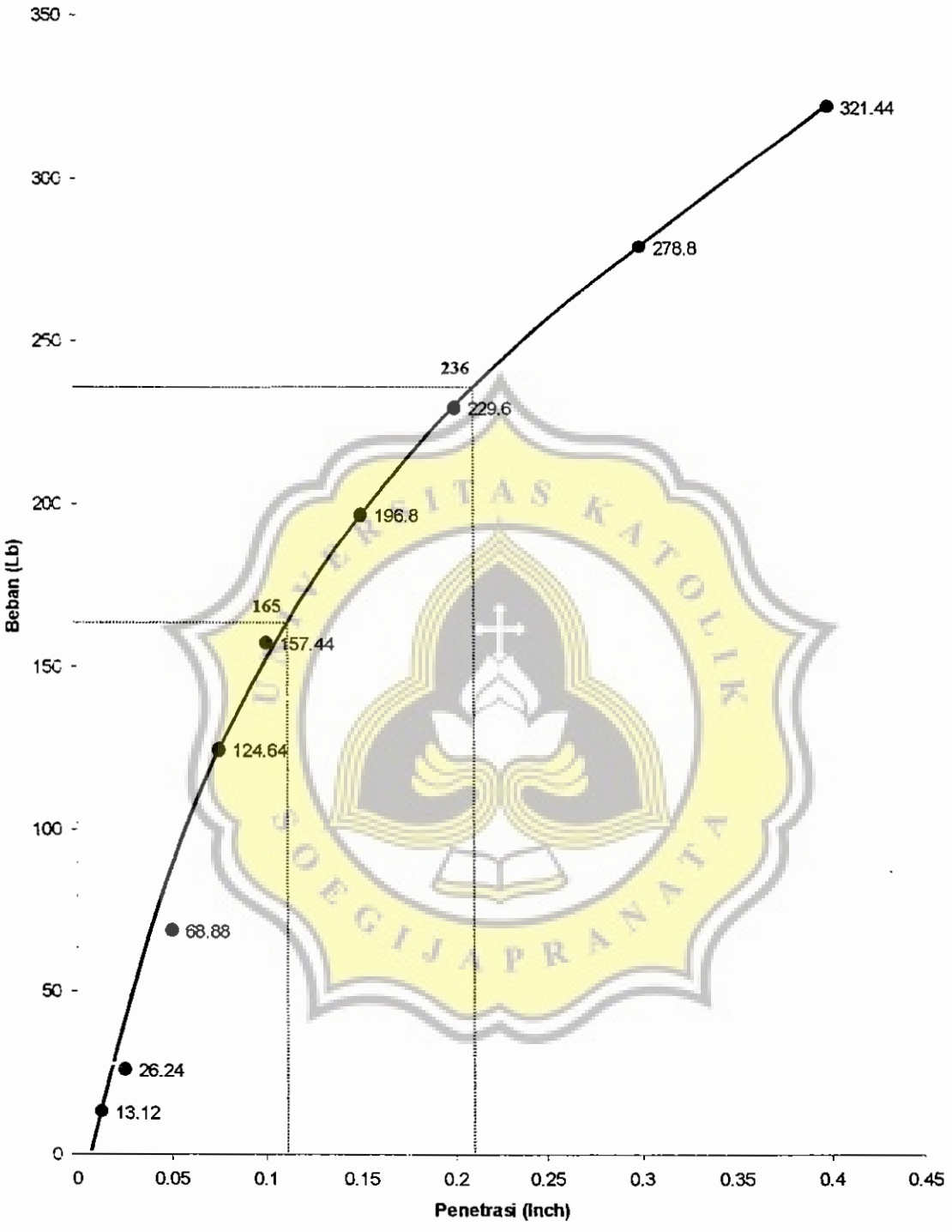
PROYEK : Penelitian
LOKASI : Gunungpati
KEDALAMAN : 50 Cm
JENIS TANAH : Lempung + Kapur 6 %
JUMLAH PUKULAN : 10 x

PENETRASI Kalibrasi = 3,28 Lb

WAKTU (menit)	PENURUNAN (Inch)	PEMBACAAN ARLOJI		BEBAN (LB)	
0	0	ATAS	BAWAH	ATAS	BAWAH
½	0,0125	4	4	13.12	13.12
½	0.025	7	8	22,96	26.24
1	0,05	17	21	55.76	68.88
1 ½	0,075	26	38	85,28	124.64
2	0,10	35	48	114.80	157.44
3	0,15	42	60	137.76	196.80
4	0,20	49	70	160.72	229.60
6	0,30	63	85	206.64	278.8
8	0,40	76	98	249.28	321.44
10	0,50				

	ATAS		BAWAH	
TANAH BASAH + CAWAN (gr)	26	19,6	25,4	19,8
TANAH KERING + CAWAN (gr)	22,2	17,1	22,1	17,6
CAWAN (gr)	10.4	9,5	11,8	10.4
AIR (gr)	3,8	2,5	3,3	2,2
TANAH KERING (gr)	11,8	7,6	10,3	7,2
KADAR AIR (%)	32.55		31.30	
AVERAGE (%)	31,93			

CBR	HARGA CBR (%)	
	0,1''	0,2''
Atas	$\frac{\quad}{3 \times 1000} \times 100 =$	$\frac{\quad}{3 \times 1500} \times 100 =$
Bawah	$\frac{165}{3 \times 1000} \times 100 = 5,5$	$\frac{236}{3 \times 1500} \times 100 = 5,24$



Grafik nilai CBR tanah + kapur 6% (10 pukulan)

LABORATORIUM MEKANIKA TANAH
PEMERIKSAAN C.B.R.
C.B.R. TEST

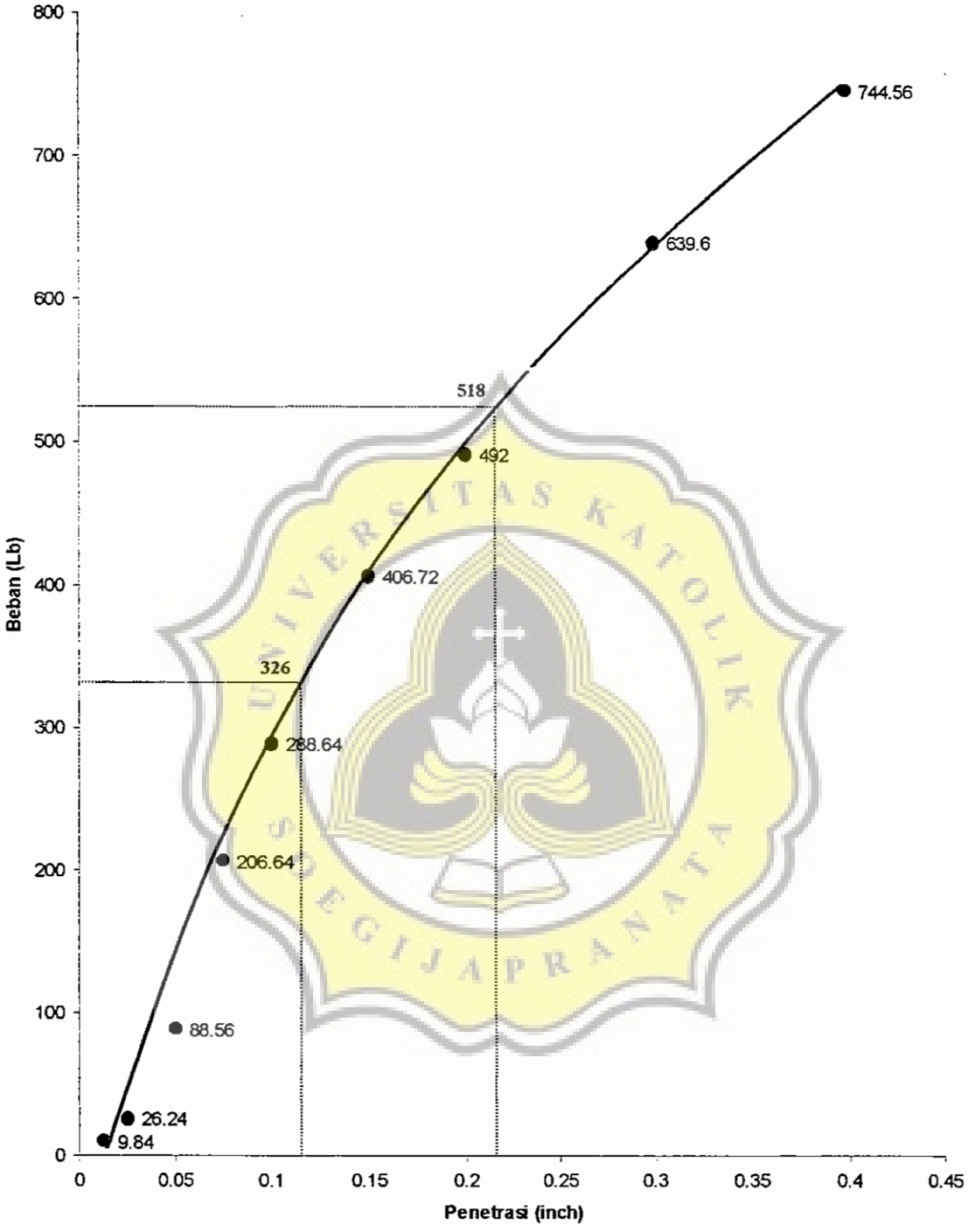
PROYEK : Penelitian
LOKASI : Gunungpati
KEDALAMAN : 50 Cm
JENIS TANAH : Lempung + Kapur 6 %
JUMLAH PUKULAN : 25 x

PENETRASI Kalibrasi = 3.28 Lb

WAKTU (menit)	PENURUNAN (Inch)	PEMBACAAN ARLOJI		BEBAN (LB)	
0	0	ATAS	BAWAH	ATAS	BAWAH
½	0.0125	3	3	9,84	9,84
½	0.025	5	8	16,40	26,24
1	0.05	14	27	45,92	88,56
1 ½	0.075	27	63	88,56	206,64
2	0.10	43	88	141,04	288,64
3	0.15	78	124	255,84	406,72
4	0.20	101	150	331,28	492,00
6	0.30	140	195	459,20	639,60
8	0.40	177	227	580,56	744,56
10	0.50				

	ATAS		BAWAH	
TANAH BASAH + CAWAN (gr)	16,4	18,1	19	17,4
TANAH KERING + CAWAN (gr)	13,6	14,8	15,5	14,4
CAWAN (gr)	4,6	4,7	4,7	4,7
AIR (gr)	2,8	3,3	3,5	3
TANAH KERING (gr)	9	10,1	10,8	9,7
KADAR AIR (%)	31,89		31,67	
AVERAGE (%)	31,78			

CBR	HARGA CBR (%)	
	0,1''	0,2''
Atas	$\frac{\quad}{3 \times 1000} \times 100 =$	$\frac{\quad}{3 \times 1500} \times 100 =$
Bawah	$\frac{326}{3 \times 1000} \times 100 = 10,87$	$\frac{518}{3 \times 1500} \times 100 = 11,51$



Grafik nilai CBR tanah + kapur 6% (25 pukulan)

LABORATORIUM MEKANIKA TANAH
PEMERIKSAAN C.B.R.
C.B.R. TEST

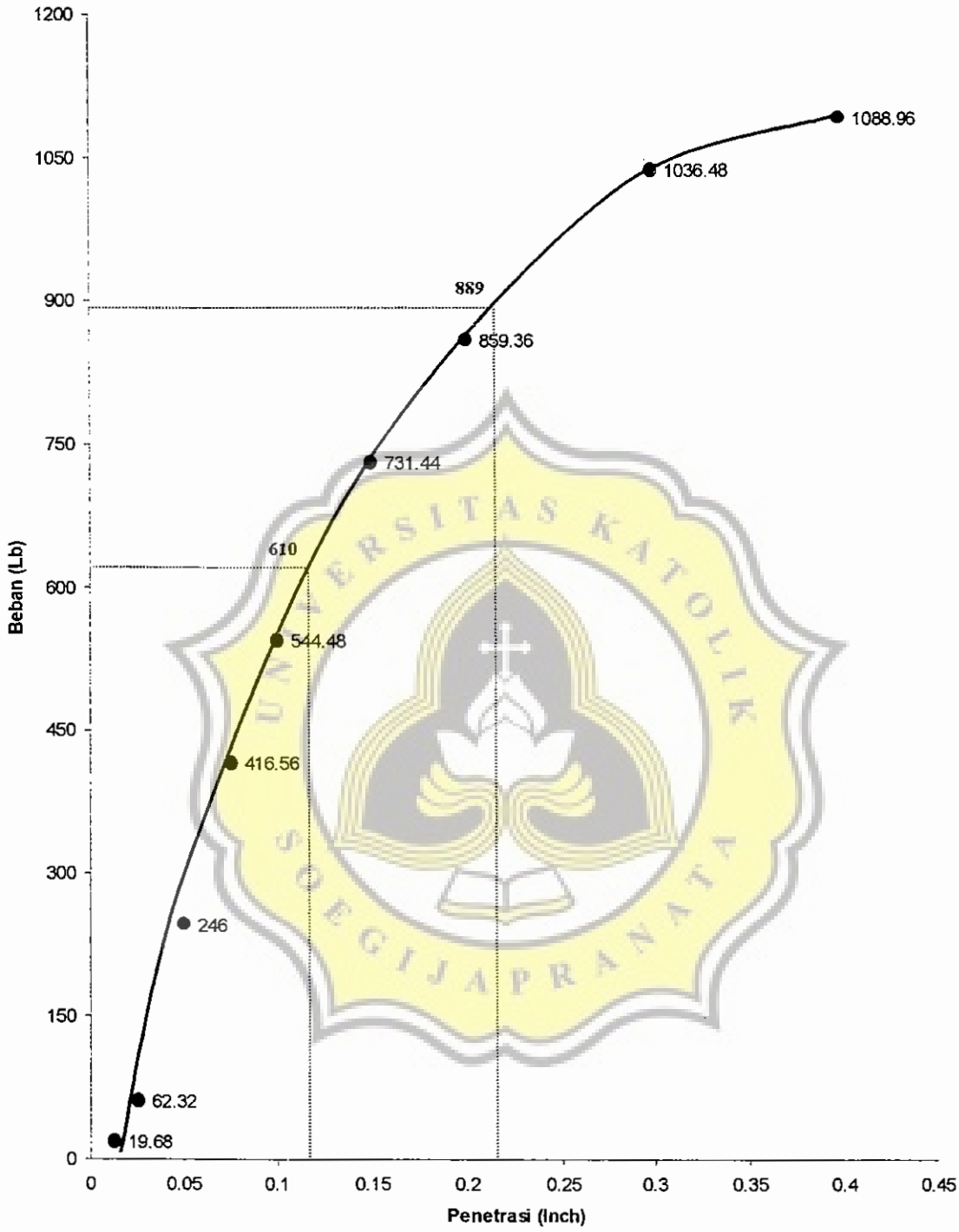
PROYEK : Penelitian
LOKASI : Gunungpati
KEDALAMAN : 50 Cm
JENIS TANAH : Lempung + Kapur 6 %
JUMLAH PUKULAN : 56 x

PENETRASI Kalibrasi = 3.28 Lb

WAKTU (menit)	PENURUNAN (Inch)	PEMBACAAN ARLOJI		BEBAN (LB)	
0	0	ATAS	BAWAH	ATAS	BAWAH
½	0,0125	9	6	29.52	19.68
½	0.025	22	19	72.16	62.32
1	0,05	54	75	177.12	246.00
1 ½	0,075	87	127	285.36	416.56
2	0,10	111	166	364,08	544.48
3	0,15	147	223	482.16	731.44
4	0,20	186	262	610,08	859.36
6	0,30	247	316	810,16	1036.48
8	0,40	289	332	947,92	1088.96
10	0,50				

	ATAS		BAWAH	
TANAH BASAH + CAWAN (gr)	23,9	18,5	17.6	17,3
TANAH KERING + CAWAN (gr)	19,4	15,3	14.5	14,4
CAWAN (gr)	4,7	4,6	4.7	4.7
AIR (gr)	4,5	3,2	3.1	2,9
TANAH KERING (gr)	14,5	10,2	9.8	9,7
KADAR AIR (%)	30.26		30.76	
AVERAGE (%)	30,51			

CBR	HARGA CBR (%)	
	0,1''	0,2''
Atas	——— x 100 = 3 x 1000	——— x 100 = 3 x 1500
Bawah	610 / 3 x 1000 x 100 = 20,33	889 / 3 x 1500 x 100 = 19,76



Grafik nilai CBR tanah + kapur 6% (56 pukulan)

LABORATORIUM MEKANIKA TANAH
PEMERIKSAAN C.B.R.
C.B.R. TEST

PROYEK : Penelitian
LOKASI : Gunungpati
KEDALAMAN : 50 Cm
JENIS TANAH : Lempung + Kapur 12 %
JUMLAH PUKULAN : 10 x

PENETRASI Kalibrasi = 3,28 Lb

WAKTU (menit)	PENURUNAN (Inch)	PEMBACAAN ARLOJI		BEBAN (LB)	
0	0	ATAS	BAWAH	ATAS	BAWAH
½	0,0125	2	4	6,56	13,12
½	0,025	5	9	16,40	29,52
1	0,05	13	22	42,64	72,16
1 ½	0,075	20	35	65,60	114,80
2	0,10	29	44	95,12	144,32
3	0,15	47	57	154,16	186,96
4	0,20	59	84	193,52	275,52
6	0,30	76	96	249,82	314,88
8	0,40	90	112	295,20	367,36
10	0,50				

	ATAS		BAWAH	
TANAH BASAH + CAWAN (gr)	21,6	20,1	26,5	24,7
TANAH KERING + CAWAN (gr)	17,3	16,2	21,1	19,7
CAWAN (gr)	4,6	4,7	4,8	4,7
AIR (gr)	4,3	3,9	5,4	5
TANAH KERING (gr)	12,7	11,5	16,3	15
KADAR AIR (%)	33,89		33,23	
AVERAGE (%)	33,56			

CBR	HARGA CBR (%)	
	0,1''	0,2''
Atas	$\frac{\quad}{3 \times 1000} \times 100 =$	$\frac{\quad}{3 \times 1500} \times 100 =$
Bawah	$\frac{157,5}{3 \times 1000} \times 100 = 5,25$	$\frac{252}{3 \times 1500} \times 100 = 5,6$

LABORATORIUM MEKANIKA TANAH
PEMERIKSAAN C.B.R.
C.B.R. TEST

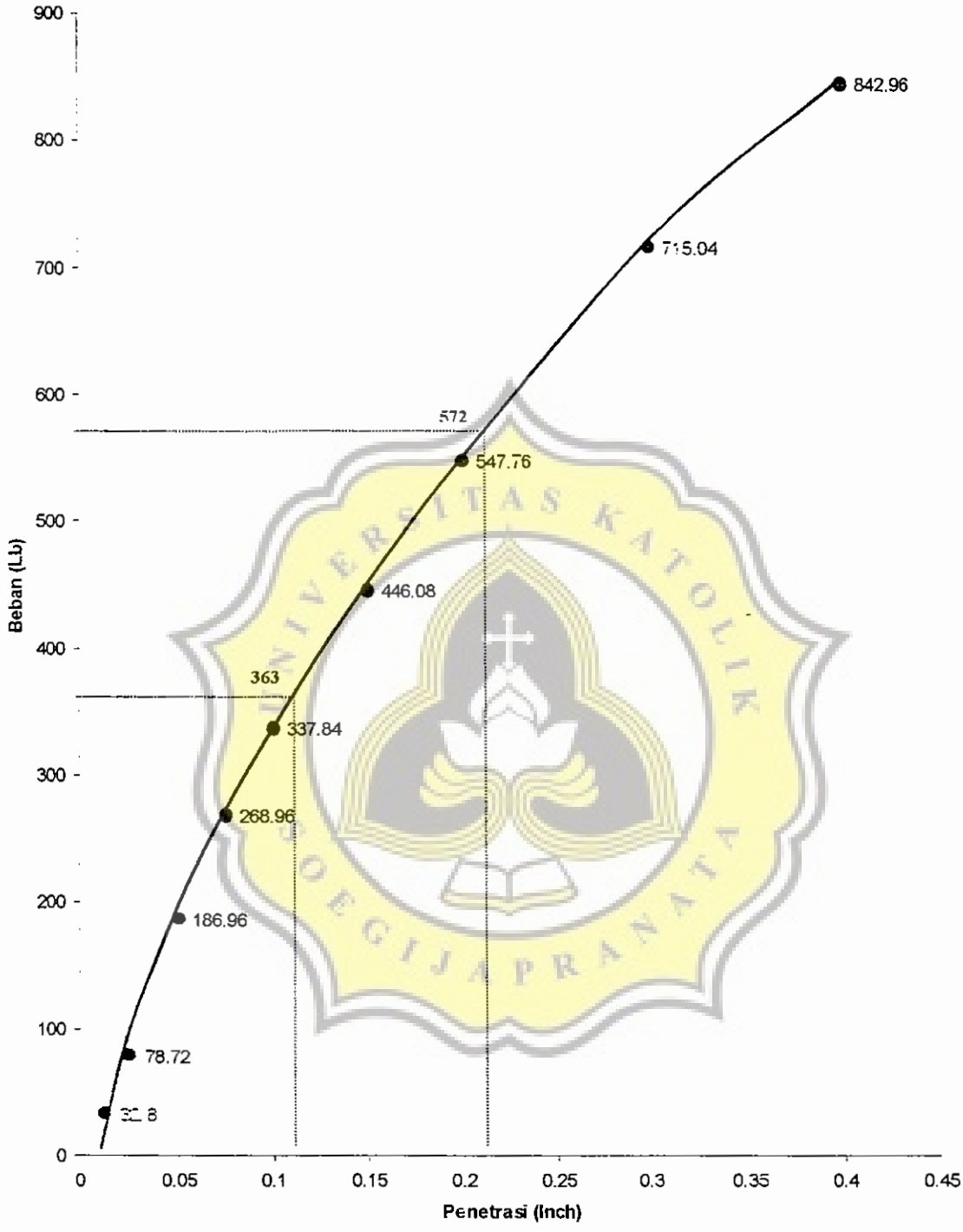
PROYEK : Penelitian
LOKASI : Gunungpati
KEDALAMAN : 50 Cm
JENIS TANAH : Lempung + Kapur 12 %
JUMLAH PUKULAN : 25 x

PENETRASI Kalibrasi = 3,28 Lb

WAKTU (menit)	PENURUNAN (Inch)	PEMBACAAN ARLOJI		BEBAN (LB)	
0	0	ATAS	BAWAH	ATAS	BAWAH
½	0,0125	3	10	9.84	32.80
½	0.025	5	24	16.40	78.72
1	0.05	12	57	39.36	186.96
1 ½	0.075	26	82	85.28	268.96
2	0.10	44	103	144.32	337.84
3	0.15	91	136	298.48	446.08
4	0.20	128	167	419.84	547.76
6	0.30	183	218	600.24	715.04
8	0.40	227	257	744.56	842.96
10	0.50				

	ATAS		BAWAH	
TANAH BASAH + CAWAN (gr)	14,6	16	19.3	25,7
TANAH KERING + CAWAN (gr)	12,1	13,2	15.6	20,1
CAWAN (gr)	4,7	4,7	4.6	4.7
AIR (gr)	2,5	2,8	3.7	5,6
TANAH KERING (gr)	7,4	8,5	11	15,4
KADAR AIR (%)	33,36		35,00	
AVERAGE (%)	34,18			

CBR	HARGA CBR (%)	
	0,1''	0,2''
Atas	$\frac{\quad}{3 \times 1000} \times 100 =$	$\frac{\quad}{3 \times 1500} \times 100 =$
Bawah	$\frac{363}{3 \times 1000} \times 100 = 12,1$	$\frac{572}{3 \times 1500} \times 100 = 12,7$



Grafik nilai CBR tanah + kapur 12% (25 pukulan)

LABORATORIUM MEKANIKA TANAH
PEMERIKSAAN C.B.R.
C.B.R. TEST

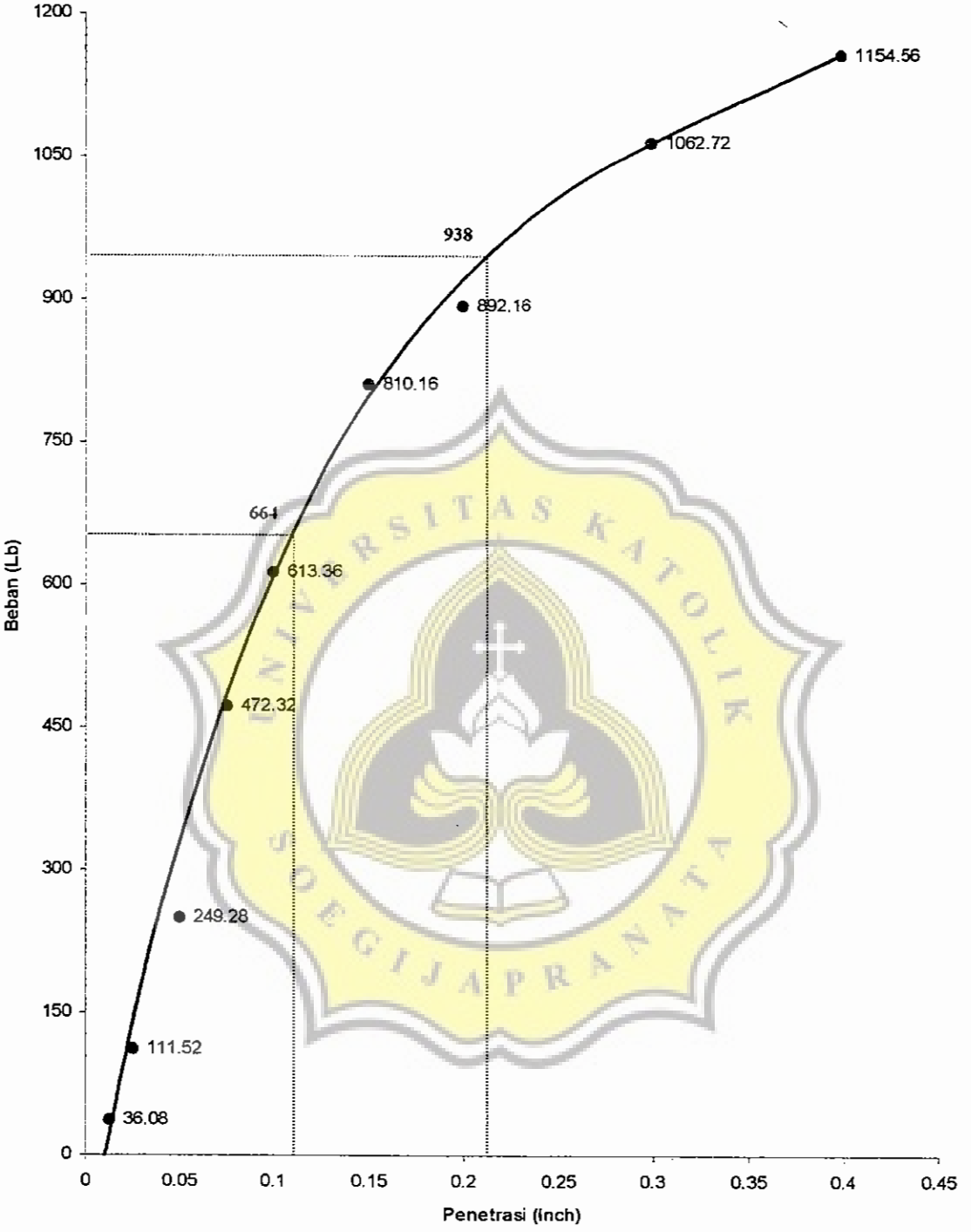
PROYEK : Penelitian
LOKASI : Gunungpati
KEDALAMAN : 50 Cm
JENIS TANAH : Lempung + Kapur 12 %
JUMLAH PUKULAN : 56 x

PENETRASI Kalibrasi = 3,28 Lb

WAKTU (menit)	PENURUNAN (Inch)	PEMBACAAN ARLOJI		BEBAN (LB)	
0	0	ATAS	BAWAH	ATAS	BAWAH
½	0.0125	4	11	13,12	36,08
½	0.025	10	34	32,80	111,52
1	0.05	23	76	75,44	249,28
1 ½	0.075	54	144	177,12	472,32
2	0.10	96	187	314,88	613,36
3	0.15	171	247	560,88	810,16
4	0.20	239	272	783,92	892,16
6	0,30	270	324	885,60	1062,72
8	0,40	310	352	1016,80	1154,56
10	0,50				

	ATAS		BAWAH	
TANAH BASAH + CAWAN (gr)	35	30,3	26,9	32,2
TANAH KERING + CAWAN (gr)	29,4	25,5	22,8	26,7
CAWAN (gr)	11,8	10,4	10,4	9,5
AIR (gr)	5,6	4,8	4,7	5,5
TANAH KERING (gr)	17,6	15,1	12,4	17,2
KADAR AIR (%)	31,8		32,52	
AVERAGE (%)	32,16			

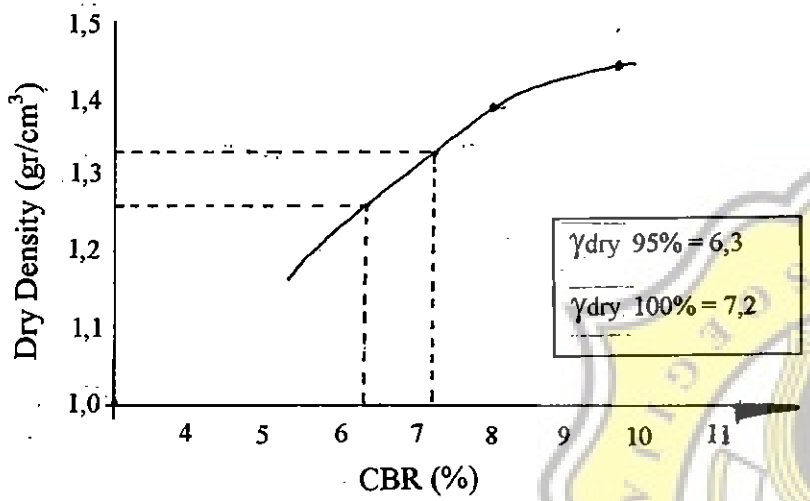
CBR	HARGA CBR (%)	
	0,1''	0,2''
Atas	$\frac{\quad}{3 \times 1000} \times 100 =$	$\frac{\quad}{3 \times 1500} \times 100 =$
Bawah	$\frac{664}{3 \times 1000} \times 100 = 22,13$	$\frac{938}{3 \times 1500} \times 100 = 20,84$



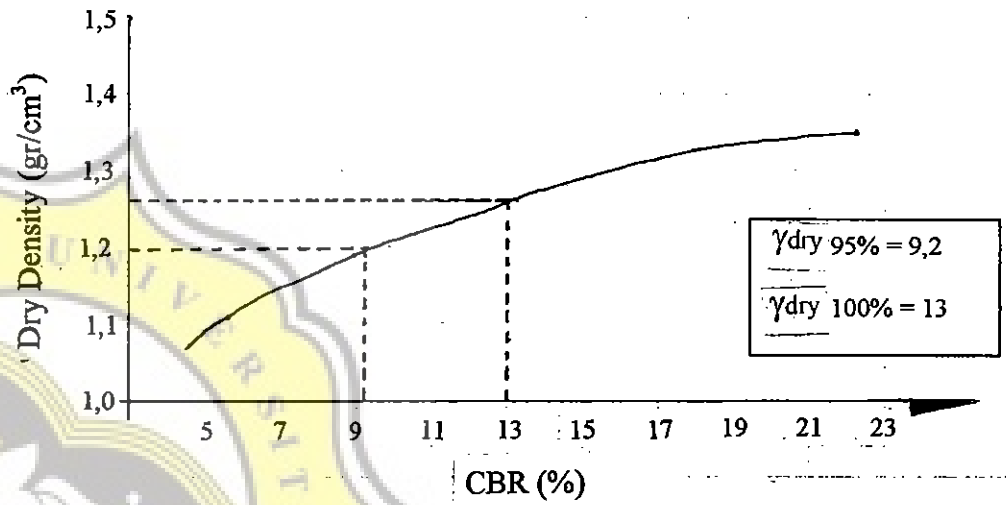
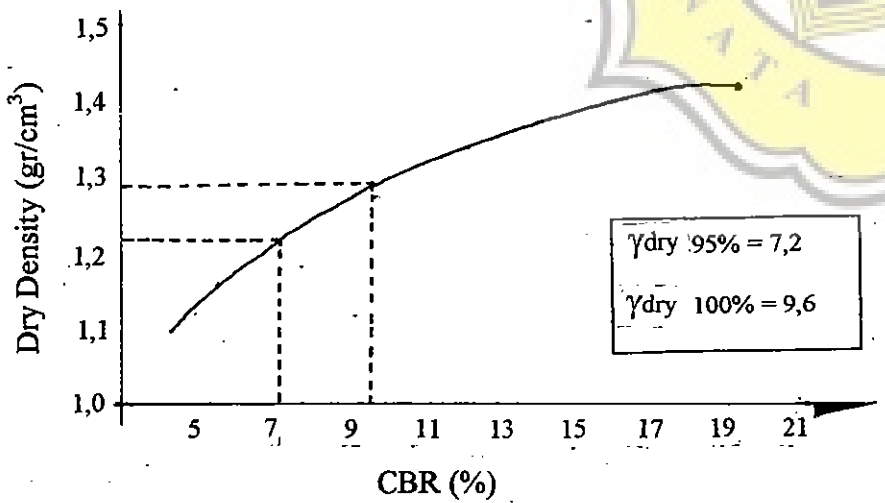
Grafik nilai CBR tanah + kapur 12% (56 pukulan)

GRAFIK PROSENTASE NILAI CBR

Lempung



Lempung + kapur 12%



Lempung + kapur 6%