



**PENGUJIAN PENELITIAN TUGAS AKHIR**  
**AGREGAT HALUS**

JenisPengujian :Pemeriksaan gradasi besar butiran agregat halus

Bahan :Pasir

Asal :Sungai Progo

Diperiksa : 10 Februari 2018

Tabel 1 Hasil pemeriksaan gradasi butiran agregat halus

Ukura n	Lubang Ayakan (mm)	Berat Tertahan (gram)	Persen Berat Tertahan (%)	Persen berat Tertahan Komulatif (%)	Persen Berat Lolos Komulatif (%)
No.4	4,8	0	0,00	0,00	100,000
No.8	2,4	20	2,00	2,00	98,00
No.16	1,2	80	8,00	10,00	90,00
No.30	0,6	225	22,50	32,50	67,50
No.50	0,3	260	26,00	58,50	41,50
No.10 0	0,15	325	32,50	91,00	9,00
Pan		90	9,00	100,000	0.00
Total		1000	100,000	294,00	

Analisis hitungan:

a. Contoh saringan no.8

Persen berat teratahan:

$$\begin{aligned} &= \frac{\text{BeratTertahan}}{\text{Total}} \times 100\% \\ &= \frac{20}{1000} \times 100\% \\ &= 2\% \end{aligned}$$

b. Contoh saringan no.8

Persen berat tertahan komulatif:

$$\begin{aligned} &= \text{Persen berat tertahan no.4} + \text{Persen berat tertahan no.8} \\ &= 0,00 + 2 = 2\% \end{aligned}$$

c. Komulatif contoh saringan no.8

Persen berat lolos komulatif:

$$= 100 - \text{Persen berat tertahan}$$



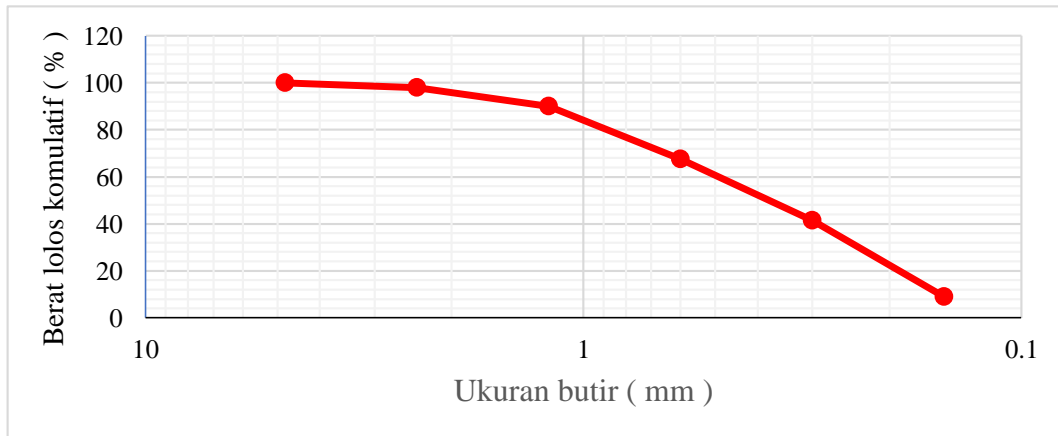
$$= 100 - 2 = 98 \%$$

d. Modulus halus butir (MHB)

$$= \text{jumlah berat tertahan kumulatif} / 100$$

$$= 294,00/100 = 2,94\%$$

Berdasarkan hasil pengujian gradasi pasir yang dilakukan di Laboratorium Teknik Sipil Universitas Muhammadiyah Yogyakarta didapatkan hasil berdasarkan tabel grafik kekasaran pasir masuk pada daerah 2 dengan nilai Modulus Halus Butir (MHB) adalah 2,94 %.



Grafik ASTM hubungan ukuran saringan dengan persen lolos saringan



**PENGUJIAN PENELITIAN TUGAS AKHIR**  
**AGREGAT HALUS**

Jenis Pengujian :Pemeriksaan kadar air agregat halus

Bahan :Pasir

Asal :Sungai Progo

Diperiksa : 08 Februari 2018 s/d 09 Februari 2018

Tabel 1 Hasil pemeriksaan kadar air agregat halus

Uraian	Benda Uji			
	Satuan	A1	A2	A3
Berat wadah (W1)	gram	130	130	125
Berat wadah + Berat isi pasir (W2)	gram	1130	1130	1125
Berat wadah + Berat isi pasir keluar oven (W3)	gram	1050	1055	1045
Berat air (W4)	gram	80	75	80
Kadar air	%	8,696	8,108	8,696
Rata-rata	%	8,500		

Analisis hitungan:

a. Berat air =  $W2 - W3$

Contoh benda uji 1 =  $1130 - 1050$

= 80 gr

b. Kadar Air =  $\frac{W4}{W3 - W1} \times 100\%$

Contoh benda uji 1 =  $\frac{80}{1050 - 130} \times 100\%$

= 8,696%

c. Kadar air rata-rata =  $\frac{KA1 + KA2 + KA3}{3}$

=  $\frac{8,696 + 8,108 + 8,696}{3}$

= 8,5%



**PENGUJIAN PENELITIAN TUGAS AKHIR**  
**AGREGAT HALUS**

Jenis Pengujian :Pemeriksaan berat jenis dan penyerapan air agregat halus

Bahan :Pasir

Asal :Sungai Progo

Diperiksa : 09 Februari 2018 s/d 12 Februari 2018

Tabel 1 Data pemeriksaan berat jenis agregat halus

Uraian	Benda Uji			
	Satuan	C6	D1	C2
Berat piknometer isi pasir dan air (Bt)	gram	964,2	983	955
Berat pasir setelah kering (Bk)	gram	456,4	455,1	463,9
Berat piknometer isi air (B)	gram	662,6	687,9	653
Berat pasir keadaan jenuh kering muka (ssd)	gram	500	500	500
Berat cawan	gram	124	122	121

Tabel 2 Hasil pemeriksaan berat jenis agregat halus

Uraian	Benda Uji				Rata-rata
	Satuan	C6	D1	C2	
Berat jenis curah	gram	2,300	2,221	2,343	2,288
Berat jenis jenuh kering muka	gram	2,520	2,440	2,525	2,495
Berat jenis tampak	gram	2,948	2,844	2,865	2,886
Penyerapan air agregat halus	gram	0,096	0,099	0,078	0,091
Berat jenis kering muka rata-rata	gram	500			

Analisis hitungan:

a. Berat jenis curah 
$$= \frac{Bk}{B+SSD-Bt}$$

Contoh benda uji 1 
$$= \frac{456,4}{662,6+500-964,2}$$
  
$$= 2,300 \text{ gr}$$

b. Berat jenis jenuh kering muka 
$$= \frac{500}{B+SSD-Bt}$$

Contoh benda uji 1 
$$= \frac{500}{662,6+500-964,2}$$



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$$= 2,520 \text{ gr}$$

c. Berat jenis tampak  $= \frac{Bk}{B+Bk-Bt}$

Contoh benda uji 1  $= \frac{456,4}{662,6+456,4-964,2}$   
 $= 2,948 \text{ gr}$

d. Penyerapan air agregat halus  $= \frac{SSD-Bk}{Bk} \times 100\%$

Contoh benda uji 1  $= \frac{500-456,4}{456,4} \times 100\%$   
 $= 0,096 \text{ gr}$

e. Berat jenis jenuh kering muka rata-rata  $= \frac{SSD_1 + SSD_2 + SSD_3}{3}$

$$= \frac{2,520+2,440+2,525}{3}$$
$$= 2,495$$



**PENGUJIAN PENELITIAN TUGAS AKHIR**  
**AGREGAT HALUS**

Jenis Pengujian :Pemeriksaan berat satuan agregat halus

Bahan : Pasir

Asal : Sungai Progo

Diperiksa : 7 Februari 2018

Tabel 1 Hasil pemeriksaan berat satuan agregat halus

Uraian	Satuan	Benda Uji		
		A	B	C
Berat bejana kosong (B1)	gr	10300	10900	11000
Berat bejana kosong + Pasir (B2)	gr	18150	19100	19150
Berat satuan (Bsat)	gr/cm <sup>3</sup>	1,480	1,546	1,536
Berat satuan rata-rata	gr/cm <sup>3</sup>	1,520		

Analisis hitungan:

a. Bejan:  $d = 15 \text{ cm}$   
 $h = 30 \text{ cm}$

b. Volume bejana kosong  $= \frac{1}{4} \pi r^2 t$   
 $= \frac{1}{4} \pi x 15^2 x 30$   
 $= 5301 \text{ cm}^3$

c. Berat satuan ( $B_{sat}$ )  $= \frac{B_2 - B_1}{\text{Volume}}$   
Contoh benda uji 1  $= \frac{18150 - 10300}{5301}$   
 $= 1,480 \text{ gr/m}^3$

d. Berat satuan rata-rata  $= \frac{B_{1sat} + B_{2sat} + B_{3sat}}{3}$   
 $= \frac{1,480 + 1,546 + 1,536}{3}$   
 $= 1,520 \text{ gr/m}^3$



**PENGUJIAN PENELITIAN TUGAS AKHIR**  
**AGREGAT HALUS**

Jenis Pengujian :Pemeriksaan kadar lumpur agregat halus

Bahan : Pasir

Asal : Sungai Progo

Diperiksa : 07 Februari 2018 s/d 08 Februari 2018

Tabel 1 Hasil pemeriksaan kadar lumpur agregat halus

Uraian	Satuan	Benda Uji		
		D9	D2	D4
Berat wadah + Pasir setelah di oven pertama(B1)	Gr	1000	1000	1000
Berat wadah + Pasir setelah di oven kedua(B2)	Gr	960	975	976
Kandungan air (B3 = B1-B2)	Gr	40	25	24
Kadar lumpur	%	4,00	2,50	2,40
Rata-rata	%	2,97		

Analisis hitungan:

a. Kandungan air =  $B1 - B2$

Contoh benda uji 1 =  $1000 - 960$   
= 40 gr

b. Kadar lumpur =  $\frac{B1-B2}{B3} \times 100\%$

Contoh benda uji 1 =  $\frac{1000-960}{40} \times 100\%$   
= 4,00%

c. Rata-rata kadar lumpur =  $\frac{KL1+KL2+KL3}{3} \times 100\%$

=  $\frac{4,00+2,50+2,40}{3} \times 100\%$   
= 2,97%



**PENGUJIAN PENELITIAN TUGAS AKHIR**  
**AGREGAT KASAR**

Jenis Pengujian : Pemeriksaan berat jenis dan penyerapan air agregat kasar  
Bahan : Kerikil  
Asal : Clereng  
Diperiksa : 14 Februari 2018 s/d 15 Februari 2018

Tabel 1 Hasil pemeriksaan berat jenis dan penyerapan air agregat kasar

Uraian	Satuan	Benda Uji		
		Bj1	Bj2	Bj3
Berat kerikil setelah dikeringkan (Bk)	gram	5000	5000	5000
Berat kerikil dibawah air (Ba)	gram	3071	3055	3040
Berat kerikil keadaan jenuh (Bj)	gram	5124	5103	5088

Tabel 1 Hasil pemeriksaan berat jenis dan penyerapan air agregat kasar

Uraian	Satuan	Benda Uji			Rata-rata
		Bj1	Bj2	Bj3	
Berat jenis curah	Gram	2,435	2,441	2,441	2,439
Berat jenis kering muka	Gram	2,496	2,492	2,484	2,491
Berat jenis tampak	Gram	2,592	2,571	2,551	2,571
Penyerapan air agregat kasar	%	2,48	2,06	1,76	2,1
Berat kerikil jenuh rata-rata		5105			
Penyerapan air agregat kasar		2,1			

Analisis hitungan:

$$a. \text{ Berat jenis curah} = \frac{Bk}{Bj - Ba}$$

$$\begin{aligned} \text{Contoh benda uji 1} &= \frac{5000}{5124 - 3071} \\ &= 2,435 \text{ gr} \end{aligned}$$

$$b. \text{ Berat jenis jenuh kering muka} = \frac{Bj}{Bj - Ba}$$

$$\begin{aligned} \text{Contoh benda uji 1} &= \frac{5124}{5124 - 3071} \end{aligned}$$





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$= 2,496 \text{ gr}$

c. Berat jenis tampak  $= \frac{Bk}{Bk - Ba}$

Contoh benda uji 1  $= \frac{5000}{5000 - 3071}$

$= 2,592 \text{ gr}$

d. Penyerapan air agregat kasar  $= \frac{Bj - Bk}{Bk} \times 100\%$

Contoh benda uji 1  $= \frac{5124 - 5000}{5000} \times 100\%$

$= 2,48\%$

e. Berat jenis jenuh  $= \frac{B_{\text{jenis 1}} + B_{\text{jenis 2}} + B_{\text{jenis 3}}}{3}$

Kering muka rata-rata  $= \frac{2,496 + 2,492 + 2,484}{3}$

$= 2,491$

f. Penyerpan air rata-rata AK  $= \frac{P_{\text{air AK 1}} + P_{\text{air AK 2}} + P_{\text{air AK 3}}}{3}$

Contoh benda uji 1  $= \frac{2,48 + 2,06 + 1,76}{3}$

$= 2,1$



**PENGUJIAN PENELITIAN TUGAS AKHIR**  
**AGREGAT KASAR**

Jenis Pengujian :Pemeriksaan berat satuan agregat kasar

Bahan :Kerikil

Asal : Clereng

Diperiksa : 12 Februari 2018

Tabel 1 Hasil pemeriksaan berat satuan agregat kasar

Uraian	Satuan	Benda Uji		
		A	B	C
Berat bejana kosong (B1)	gr	10300	10900	11000
Berat bejana kosong + Kerikil	gr	18200	19200	19250
Berat satuan	gr/cm <sup>3</sup>	1,489	1,564	1,555
Rata-rata	gr/cm <sup>3</sup>	1,536		

Analisis hitungan:

a. Bejana:  $d = 15 \text{ cm}$   
 $h = 30 \text{ cm}$

b. Volume bejana kosong  $= \frac{1}{4} \pi r^2 t$   
 $= \frac{1}{4} \pi \times 15^2 \times 30$   
 $= 5301 \text{ cm}^3$

c. Berat satuan ( $B_{sat}$ )  $= \frac{B_2 - B_1}{\text{Volume}}$   
Contoh benda uji 1  $= \frac{18200 - 10300}{5301}$   
 $= 1,489 \text{ gr/m}^3$

d. Berat satuan rata-rata  $= \frac{B_{1sat} + B_{2sat} + B_{3sat}}{3}$   
 $= \frac{1,489 + 1,564 + 1,555}{3}$   
 $= 1,536 \text{ gr/m}^3$



**PENGUJIAN PENELITIAN TUGAS AKHIR**  
**AGREGAT KASAR**

Jenis Pengujian :Pemeriksaan kadar lumpur agregat kasar

Bahan : Kerikil

Asal : Clereng

Diperiksa : 12 Februari 2018 s/d 13 Februari 2018

Tabel 1 Pemeriksaan kadar lumpur agregat kasar

Uraian	Satuan	Benda Uji		
		S1	S2	S3
Berat wadah + Pasir setelah di oven pertama (B1)	gram	5225	5220	5215
Berat wadah + Pasir setelah di oven kedua (B2)	gram	4340	4380	4550
Kandungan air (B3 = B1 – B2)	gram	885	840	665
Kadar lumpur	%	16,94	16,09	12,75
Rata-rata	%	15,260		

Analisis hitungan:

a. Kandungan air =  $B1 - B2$

Contoh benda uji 1 =  $5225 - 4340$   
= 885 gr

b. Kadar lumpur =  $\frac{B1-B2}{B1} \times 100\%$

Contoh benda uji 1 =  $\frac{5225-4340}{5225} \times 100\%$   
= 13,20%

c. Rata-rata kadar lumpur =  $\frac{KL1+KL2+KL3}{3}$

=  $\frac{13,2+12,4+9,0}{3}$   
= 11,533%



**AGREGAT KASAR**

Jenis Pengujian : Pemeriksaan kadar air agregat kasar

Bahan : Kerikil

Asal : Clereng

Diperiksa : 12 Februari 2018 s/d 13 Februari 2018

Tabel 1 Pemeriksaan kadar air agregat kasar

Uraian	Satuan	Benda Uji		
		B1	B2	B3
Berat wadah (W1)	gram	121,2	123,7	121,5
Berat wadah + Kerikil (W2)	gram	1130,4	1133,5	1127,7
Berat wadah + Kerikil keluar dari oven (W3)	gram	1099	1099	1093
Berat air (W4)	gram	31,9	34,5	34,7
Kadar air	%	3,111	3,416	3,449
Rata-rata	%	3,325		

Analisis hitungan:

a. Berat air =  $W2 - W3$

Contoh benda uji 1 =  $1130,4 - 1099$

= 31,9 gr

b. Kadar air =  $\frac{W4}{W3 - W1} \times 100\%$

Contoh benda uji 1 =  $\frac{31,9}{1099 - 121,2} \times 100\%$

= 3,11%

c. Kadar air rata-rata =  $\frac{KA1 + KA2 + KA3}{3}$

=  $\frac{3,11 + 3,41 + 3,45}{3}$

= 3,325%



**PENGUJIAN PENELITIAN TUGAS AKHIR**  
**AGREGAT KASAR**

Jenis Pengujian :Pemeriksaan keausan agregat kasar

Bahan : Kerikil

Asal : Clereng

Diperiksa : 13 Februari 2018

Tabel 1Pemeriksaan keausan agregat kasar

Uraian	Satuan	Benda Uji		
		1	2	3
Berat sebelum masuk mesin (B1)	Gram	5000	5000	5000
Berat setelah masuk mesin (B2)	Gram	3149	3138	3199
Keausan	%	36,1	37,2	36,0
Keausan rata-rata	%	26,5		

Analisis hitungan:

a. Keausan  $= \frac{B1-B2}{B1} \times 100\%$

Contoh benda uji 1  $= \frac{5000-3149}{5000} \times 100\%$   
 $= 36,1\%$

b. Keausan rata-rata  $= \frac{Keausan1+Keausan2+Keausan3}{3}$

$= \frac{36,1+37,2+36,0}{3}$   
 $= 36,43\%$



**Alat pemeriksaan bahan susun beton:**



Gambar 1 Timbangan *Elektrikal*



Gambar 2 Timbangan dalam air



Gambar 3 Kaliper



Gambar 4 Elenmeyer



Gambar 5 Saringan ASTM



Gambar 6 Mesin *Los Angeles*

**Alat pembuatan benda uji:**



Gambar 7 *Mixer concrete*



Gambar 8 Silinder

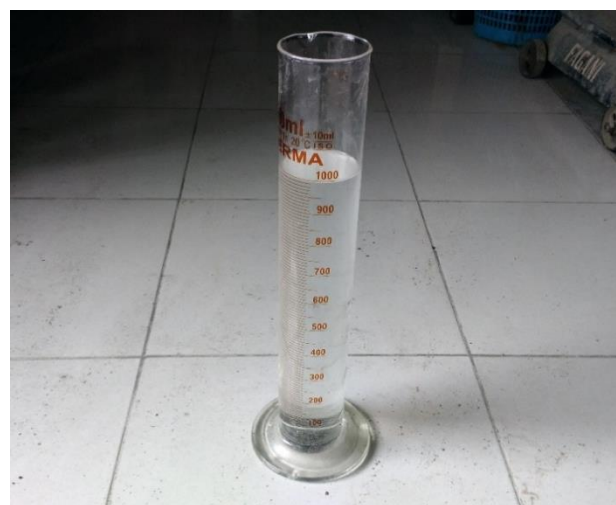




Gambar 9 Cetok dan mistar



Gambar 10 Nampan



Gambar 11 Gelas ukur 1000 ml



Gambar 12 Kerucut Abrams



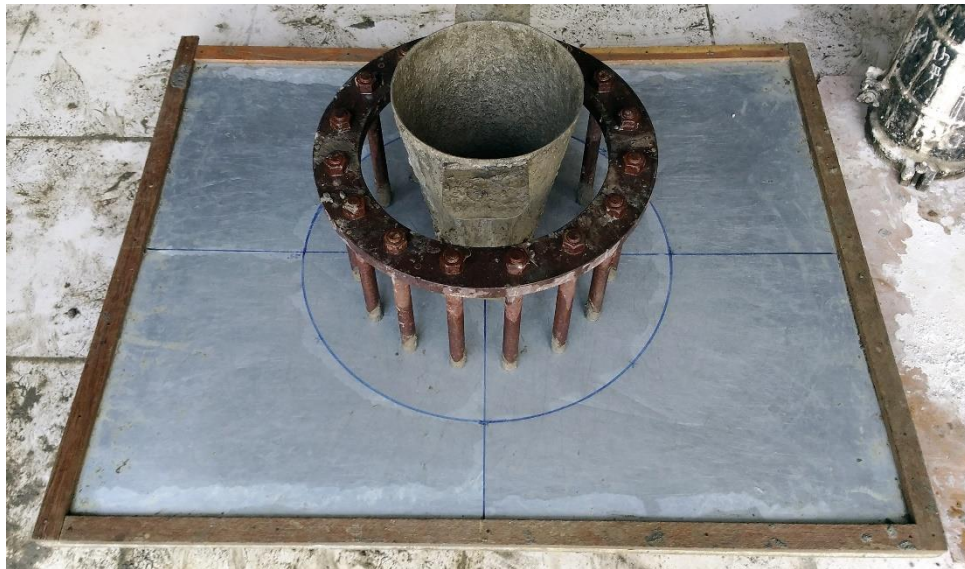
Gambar 13 Alat Pengujian T50



Gambar 14 Alat pengujian *V-Funnel*



Gambar 15 Alat pengujian *L-Box*



Gambar 16 Alat pengujian *J-Ring*



Gambar 17 *Compression Machine Test*



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**Bahan susun beton:**



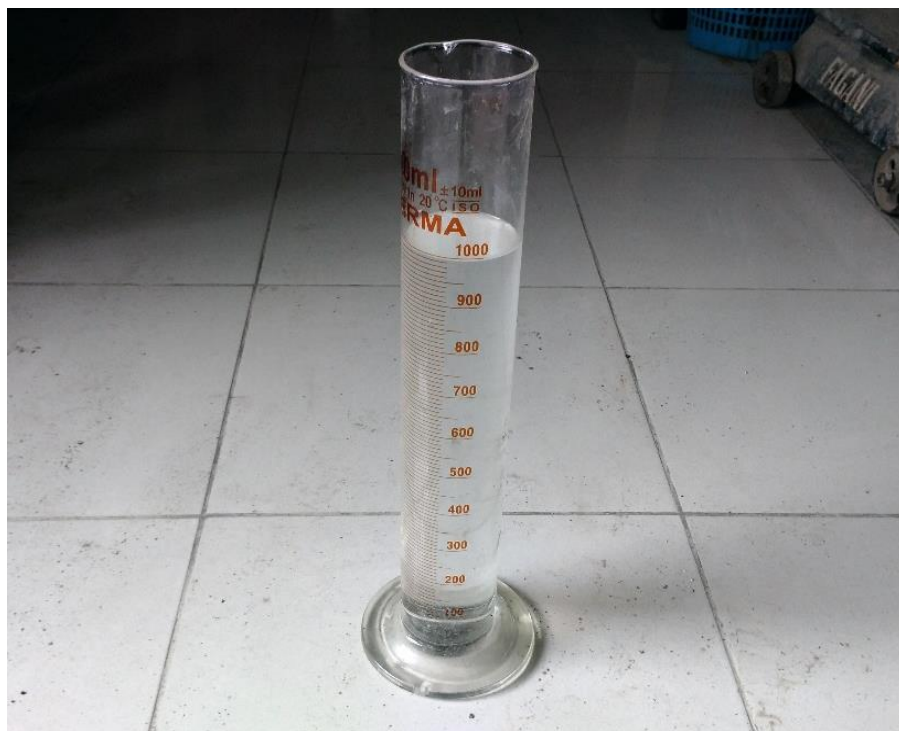
Gambar 18 Semen Gresik (PCC)



Gambar 19 Agregat halus (Pasir Progo)



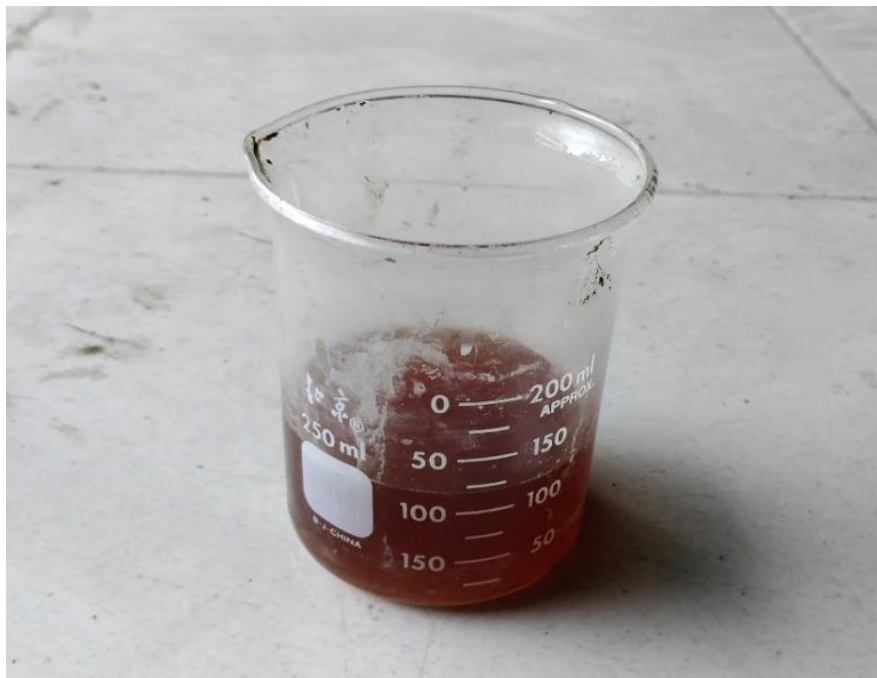
Gambar 20 Agregat kasar (kerikil)



Gambar 21 Air



Gambar 22 Kaolin



Gambar 23 Superplasticizer (*Viscocrete 1003*) merk Sika



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**Proses pengujian beton kondisi segar (*fresh properties*):**



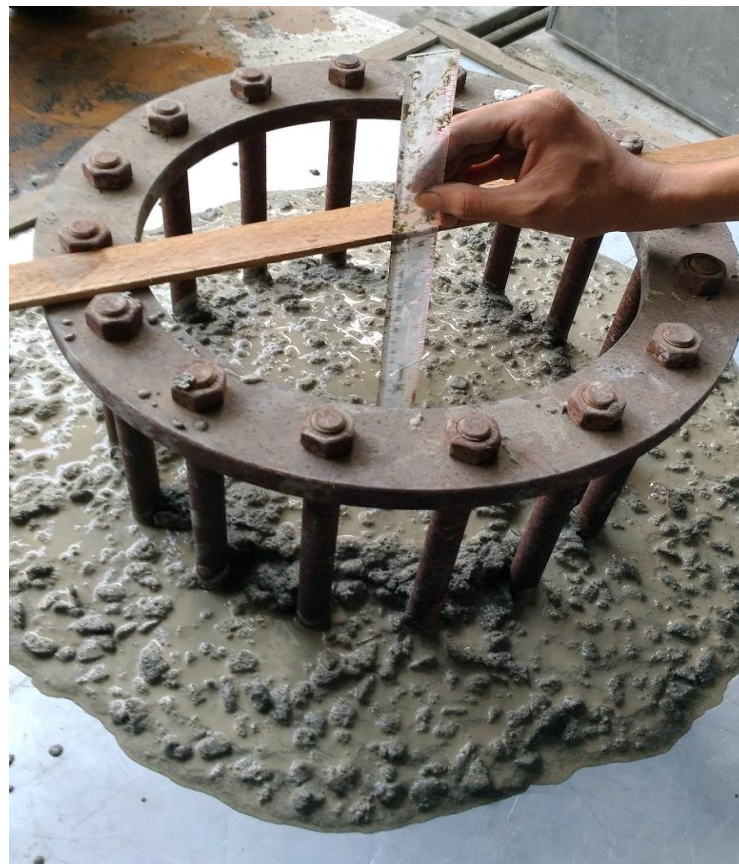
Gambar 24 Pengujian Meja Sebar (T50)



Gambar 25 Pengujian *L-Box*



Gambar 26 Pengujian *V-Funnel*



Gambar 27 Pengujian *J-Ring*





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**Proses pengujian kuat tekan:**



Gambar 28 Pengukuran diameter benda uji silinder



Gambar 29 pengukuran tinggi benda uji silinder



Gambar 30 Pengujian kuat tekan



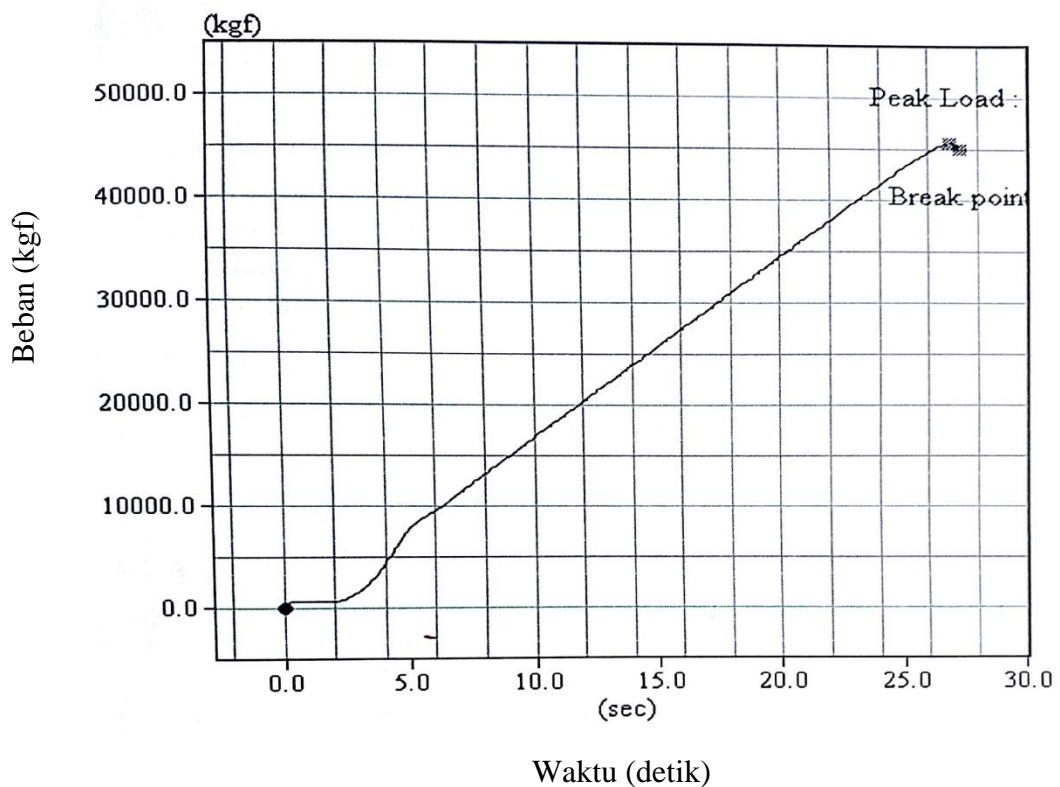
Gambar 31 Beton setelah dilakukan uji tekan



Laboratorium Jurusan Teknik Sipil  
 Universitas Muhammadiyah Yogyakarta

Concrete Testing

<b>Constrution Name</b>		<b>Silinder Beton</b>								
<b>Manufacturer</b>		<b>Hungta</b>								
<b>Contractor</b>		<b>UMY</b>								
<b>Customer</b>		<b>Lab. JTS. FT.UMY</b>								
<b>Test Date</b>		<b>03/23/2018</b>			<b>Report No.</b>			<b>A 7 S1%</b>		
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kg/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	177.19	45530	3654.7	257.0	2.0	250.0	1.0	7		



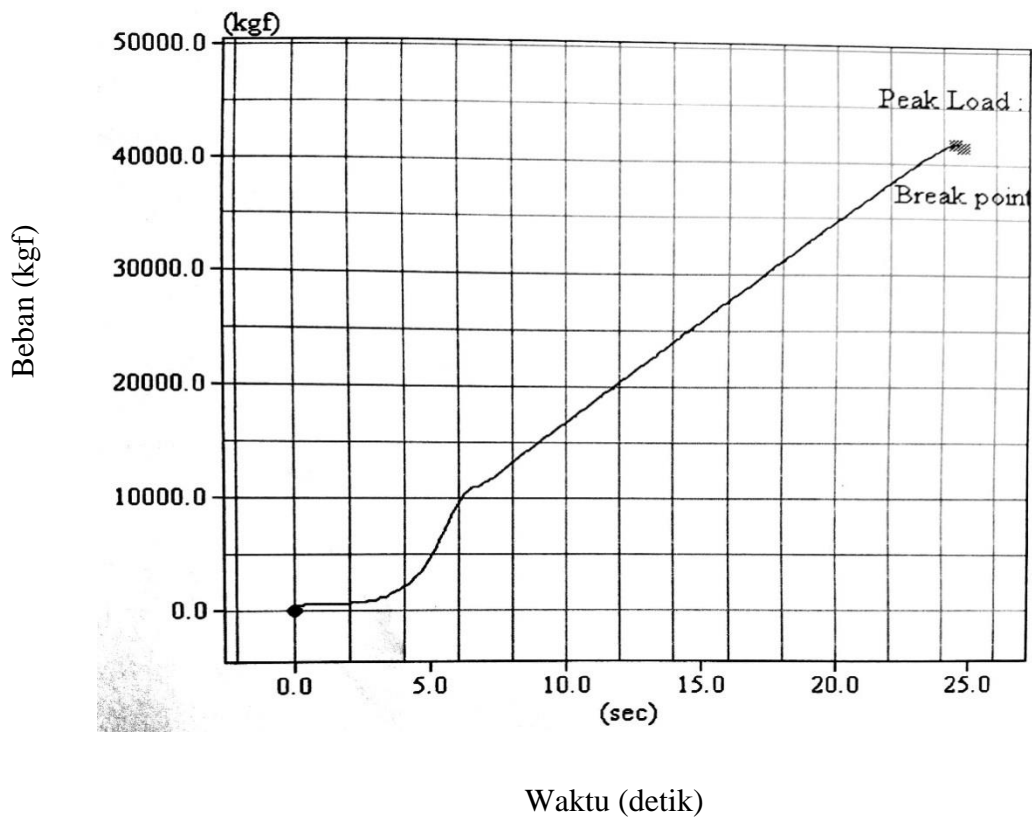
Gambar 1 Hubungan antara beban dan waktu benda uji A7S1%



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Concrete Testing

<b>Constrution Name</b>		<b>Silinder Beton</b>								
<b>Manufacturer</b>		<b>Hungta</b>								
<b>Contractor</b>		<b>UMY</b>								
<b>Customer</b>		<b>Lab. JTS. FT.UMY</b>								
<b>Test Date</b>		<b>3/23/2018</b>			<b>Report No.</b>			<b>B 7 S1%</b>		
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kgf/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	178.72	41650	3314.5	231.6	1.9	250.0	1.0	7		



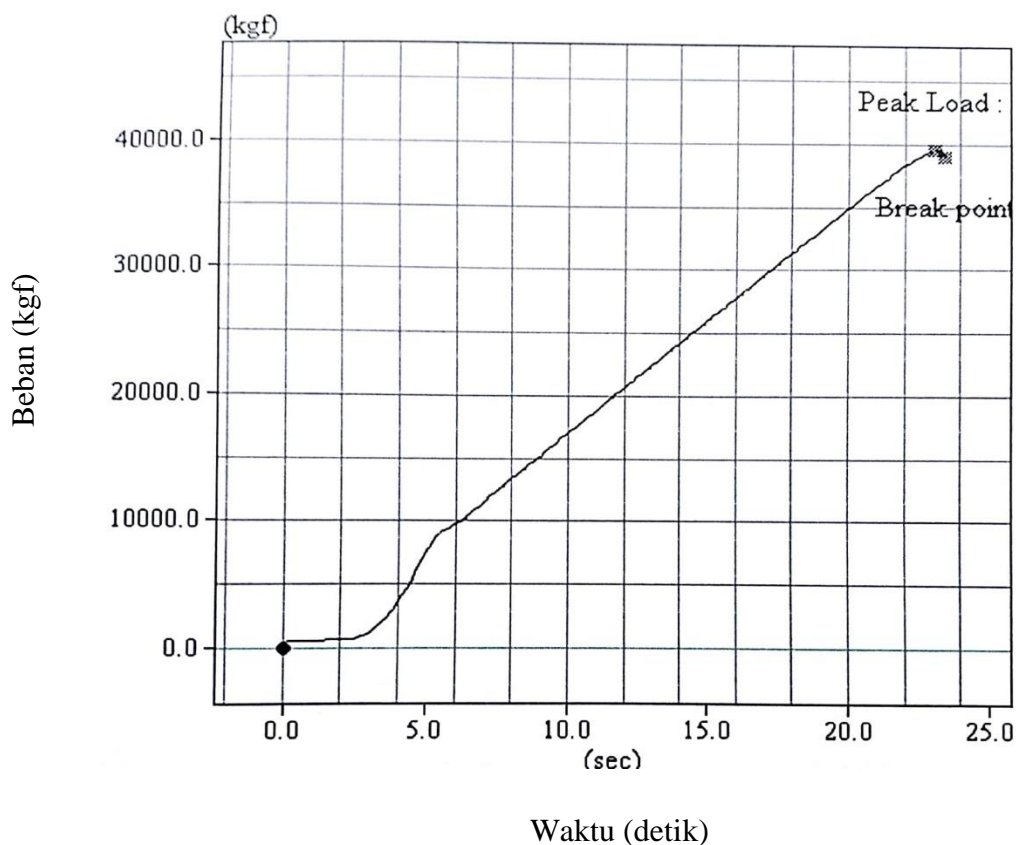
Gambar 2 Hubungan antara beban dan waktu benda uji B7S1%



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Concrete Testing

<b>Constrution Name</b>		<b>Silinder Beton</b>								
<b>Manufacturer</b>		<b>Hungta</b>								
<b>Contractor</b>		<b>UMY</b>								
<b>Customer</b>		<b>Lab. JTS. FT.UMY</b>								
<b>Test Date</b>		<b>3/23/2018</b>				<b>Report No.</b>			<b>C 7 S1%</b>	
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kgf/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	180.27	39530	3118.8	218.6	2.0	250.0	1.0	7		



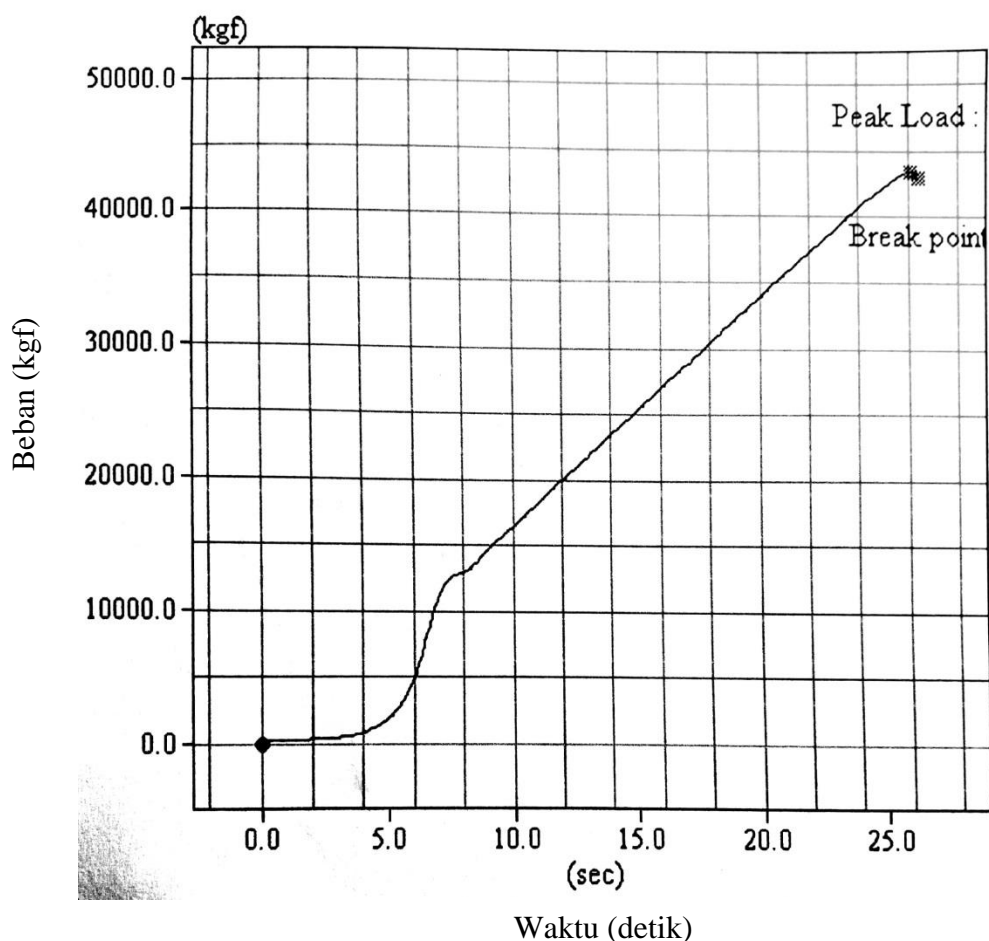
Gambar 3 Hubungan antara beban dan waktu benda uji C7S1%



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 Universitas Muhammadiyah Yogyakarta

**Concrete Testing**

<b>Constrution Name</b>		<b>Silinder Beton</b>								
<b>Manufacturer</b>		<b>Hungta</b>								
<b>Contractor</b>		<b>UMY</b>								
<b>Customer</b>		<b>Lab. JTS. FT.UMY</b>								
<b>Test Date</b>		<b>3/23/2018</b>			<b>Report No.</b>			<b>D 7 S 1.5 %</b>		
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kg/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	174.37	43390	3539.2	248.8	2.0	250.0	1.0	7		



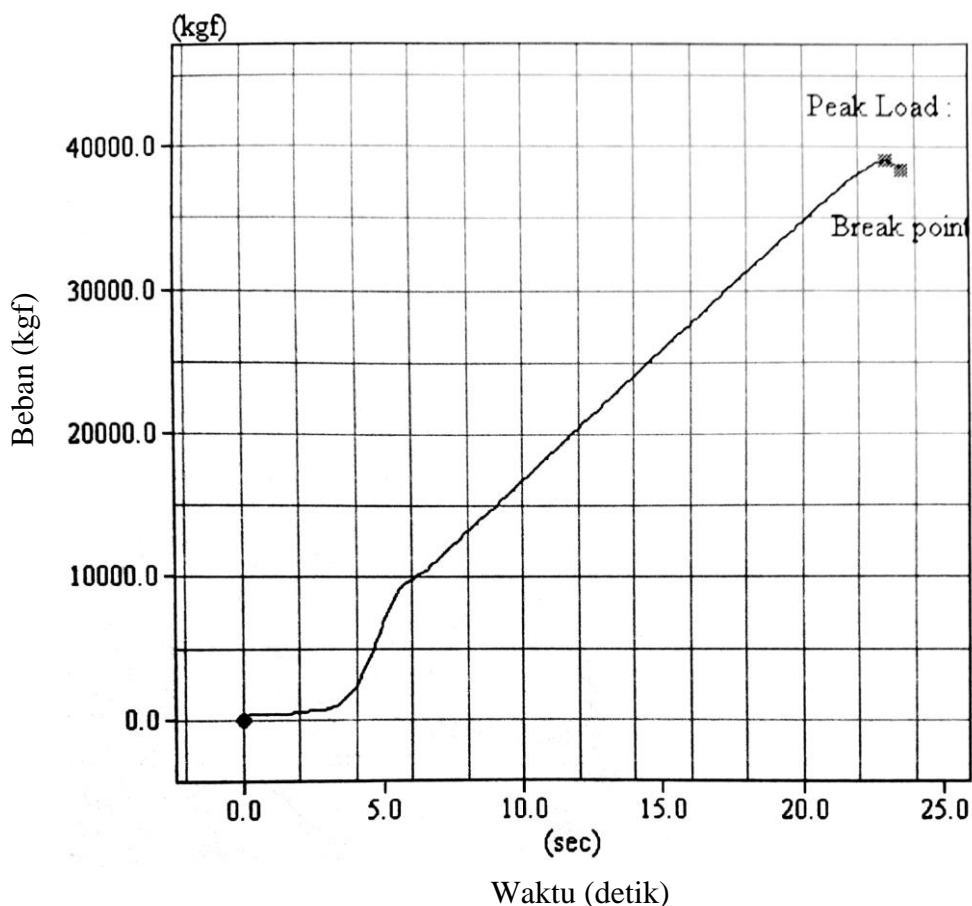
Gambar 4 Hubungan antara beban dan waktu benda uji D7S1,5%



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Universitas Muhammadiyah Yogyakarta

### Concrete Testing

<b>Construction Name</b>		<b>Silinder Beton</b>								
<b>Manufacturer</b>		<b>Hungta</b>								
<b>Contractor</b>		<b>UMY</b>								
<b>Customer</b>		<b>Lab. JTS. FT.UMY</b>								
<b>Test Date</b>		<b>3/23/2018</b>			<b>Report No.</b>			<b>E 7 S 1.5 %</b>		
<b>No.</b>	<b>Area (cm<sup>2</sup>)</b>	<b>Peak Force (Kg)</b>	<b>Compression Stress (psi)</b>	<b>Adjust Stress (Kg/cm<sup>2</sup>)</b>	<b>H/D Ratio</b>	<b>Design Stress</b>	<b>Adjust Ratio</b>	<b>Life</b>	<b>Break Style</b>	<b>Remark</b>
<b>1</b>	<b>180.27</b>	<b>39010</b>	<b>3077.8</b>	<b>216.0</b>	<b>2.0</b>	<b>250.0</b>	<b>1.0</b>	<b>7</b>		



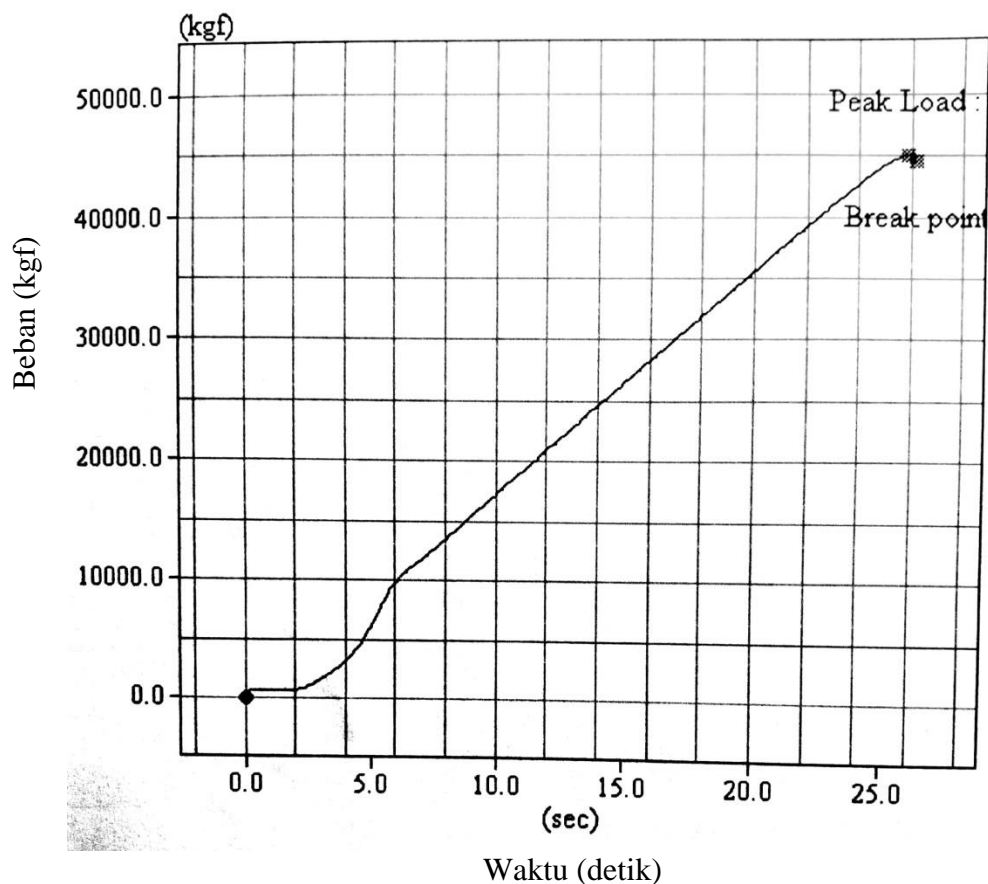
Gambar 5 Hubungan antara beban dan waktu benda uji E7S1,5%



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<b>Construstion Name</b>		<b>Silinder Beton</b>								
<b>Manufacturer</b>		<b>Hungta</b>								
<b>Contractor</b>		<b>UMY</b>								
<b>Customer</b>		<b>Lab. JTS. FT.UMY</b>								
<b>Test Date</b>		<b>3/23/2018</b>			<b>Report No.</b>			<b>F 7 S 1.5 %</b>		
<b>No.</b>	<b>Area (cm<sup>2</sup>)</b>	<b>Peak Force (Kg)</b>	<b>Compression Stress (psi)</b>	<b>Adjust Stress (Kg/cm<sup>2</sup>)</b>	<b>H/D Ratio</b>	<b>Design Stress</b>	<b>Adjust Ratio</b>	<b>Life</b>	<b>Break Style</b>	<b>Remark</b>
<b>1</b>	<b>183.61</b>	<b>44980</b>	<b>3484.1</b>	<b>244.0</b>	<b>2.0</b>	<b>250.0</b>	<b>1.0</b>	<b>7</b>		



Gambar 6 Hubungan antara beban dan waktu benda uji F7S1,5%





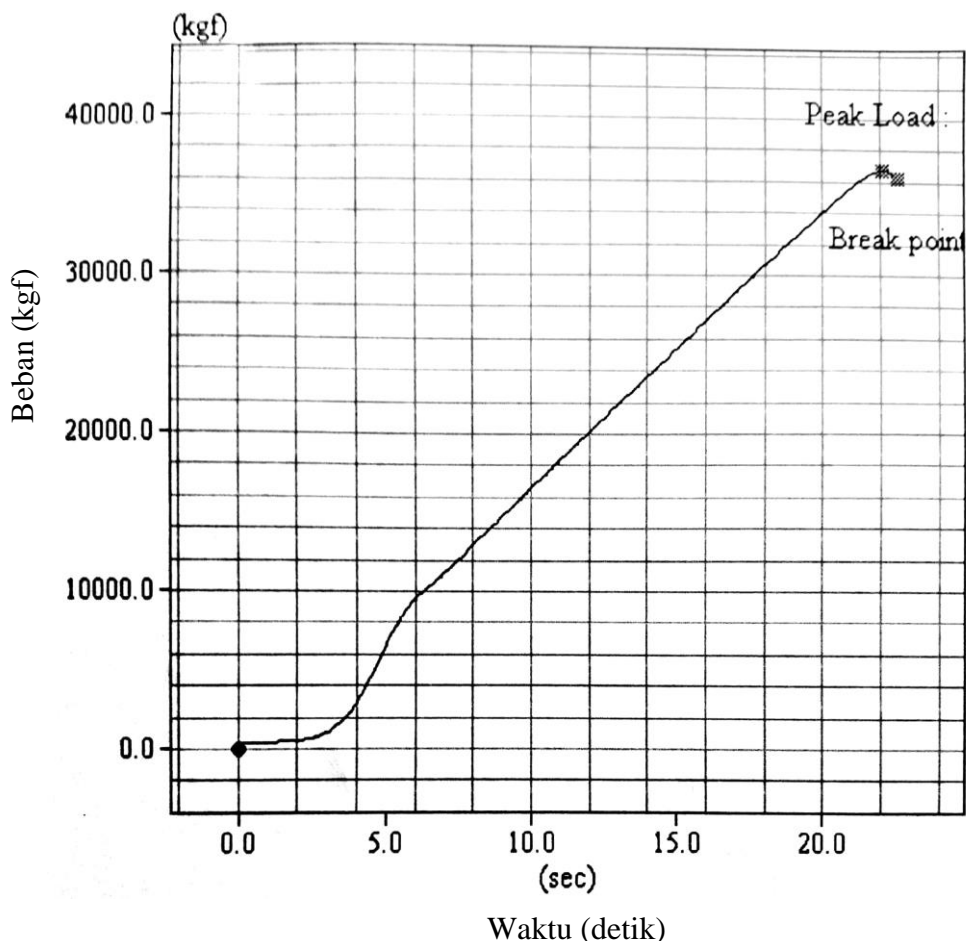
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**Concrete Testing**

<b>Construction Name</b>		<b>Silinder Beton</b>								
<b>Manufacturer</b>		<b>Hungta</b>								
<b>Contractor</b>		<b>UMY</b>								
<b>Customer</b>		<b>Lab. JTS. FT.UMY</b>								
<b>Test Date</b>		<b>3/23/2018</b>			<b>Report No.</b>			<b>G 7 S 2 %</b>		
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kg/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	176.71	36710	2954.6	206.5	1.9	250.0	1.0	7		



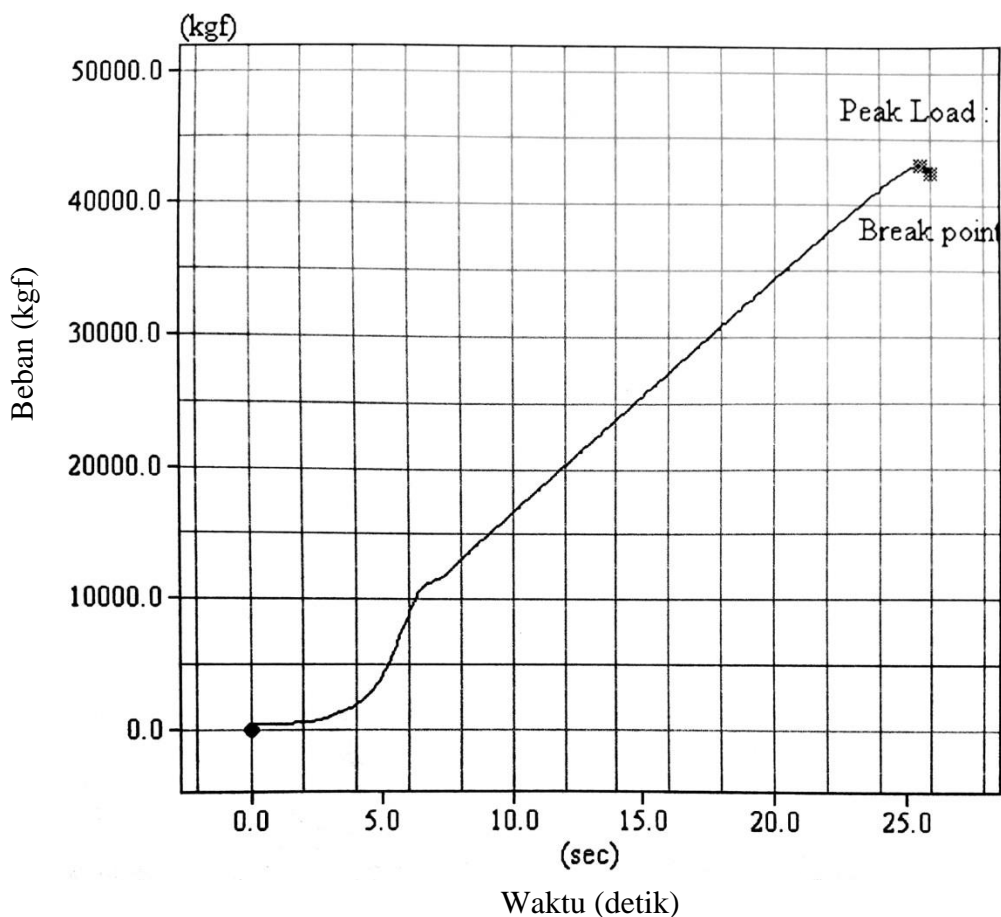
Gambar 7 Hubungan antara beban dan waktu benda uji G7S2%



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<b>Construction Name</b>		<b>Silinder Beton</b>								
<b>Manufacturer</b>		<b>Hungta</b>								
<b>Contractor</b>		<b>UMY</b>								
<b>Customer</b>		<b>Lab. JTS. FT.UMY</b>								
<b>Test Date</b>		<b>3/23/2018</b>			<b>Report No.</b>			<b>H 7 S 2 %</b>		
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kg/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	176.71	43010	3461.6	243.1	2.0	250.0	1.0	7		



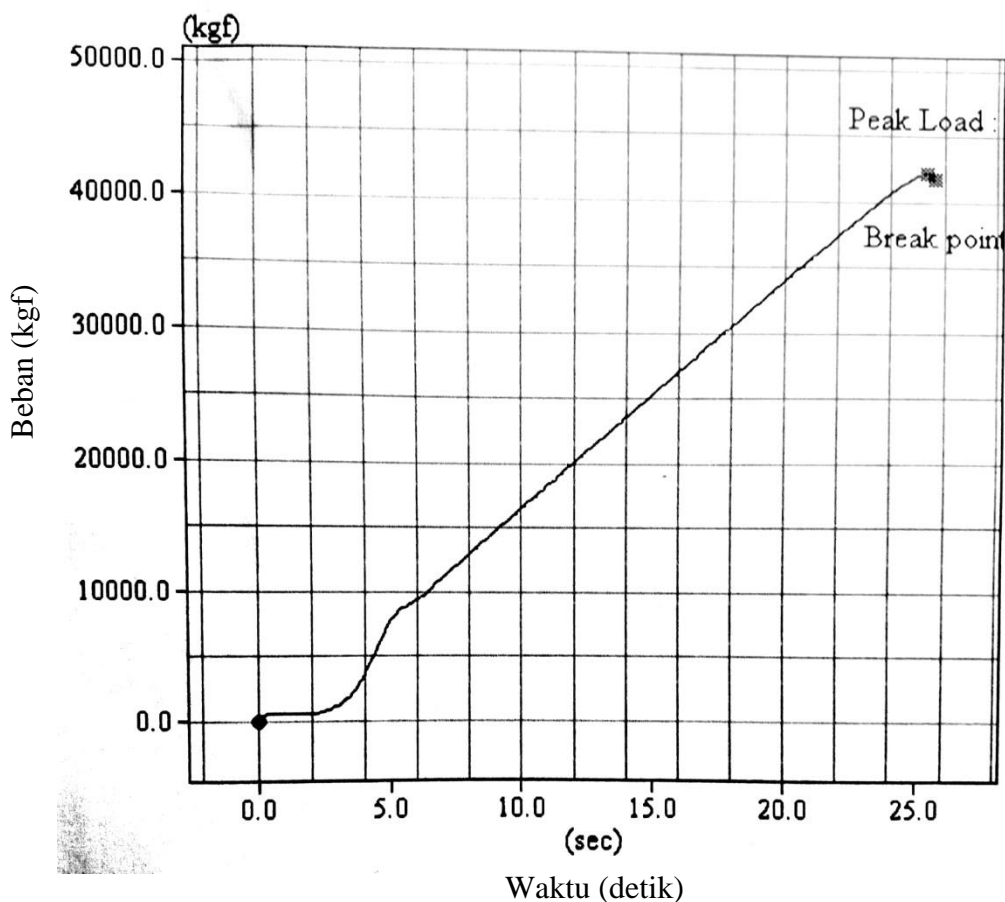
Gambar 8 Hubungan antara beban dan waktu bend uji H7S2%



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Concrete Testing

<b>Constrution Name</b>		<b>Silinder Beton</b>								
<b>Manufacturer</b>		<b>Hungta</b>								
<b>Contractor</b>		<b>UMY</b>								
<b>Customer</b>		<b>Lab. JTS. FT.UMY</b>								
<b>Test Date</b>		<b>3/23/2018</b>				<b>Report No.</b>		<b>I 7 S 2 %</b>		
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kg/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	175.54	42170	3416.8	240.5	2.0	250.0	1.0	7		



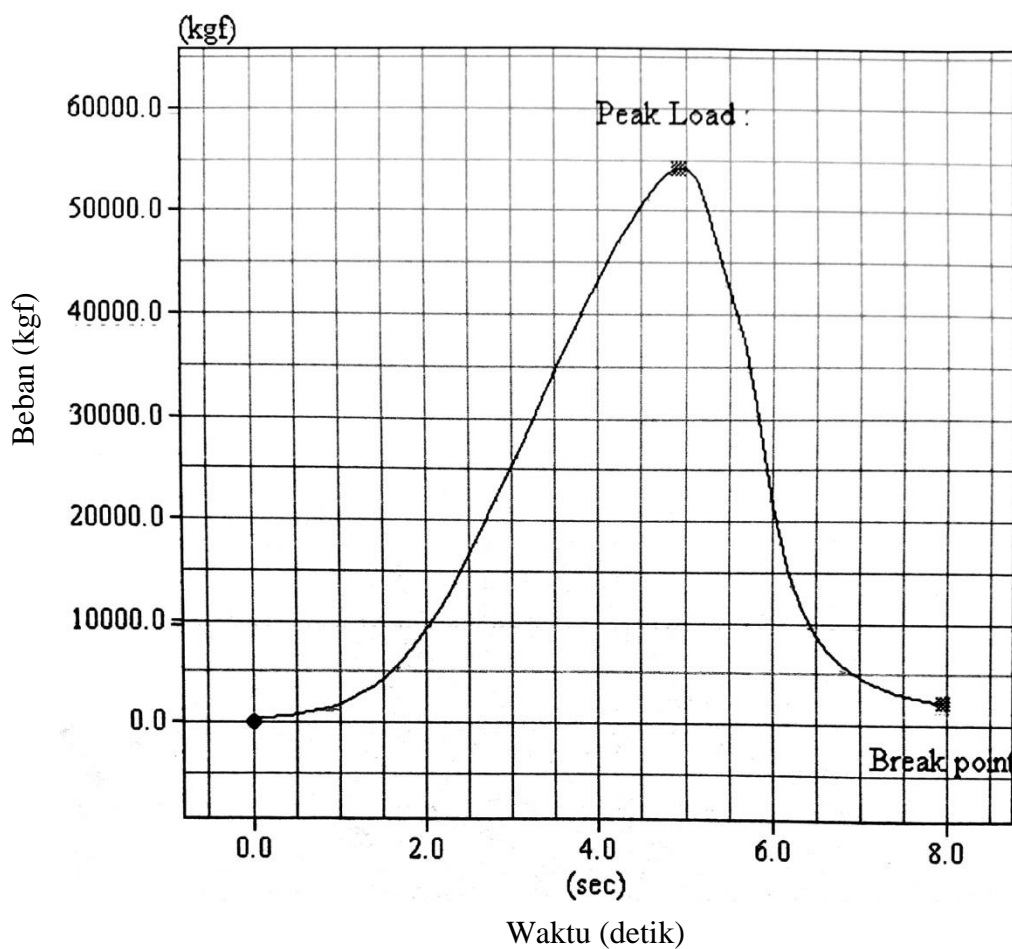
Gambar 9 Hubungan antara beban dan waktu benda uji I7S2%



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### Concrete Testing

<b>Construction Name</b>		<b>Silinder Beton</b>								
<b>Manufacturer</b>		<b>Hungta</b>								
<b>Contractor</b>		<b>UMY</b>								
<b>Customer</b>		<b>Lab. JTS. FT.UMY</b>								
<b>Test Date</b>		<b>04/02/2018</b>			<b>Report No.</b>			<b>A 14. S.1%</b>		
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kg/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	1748346	54130	0.4	0.0	0.0	300.0	0.6	14		



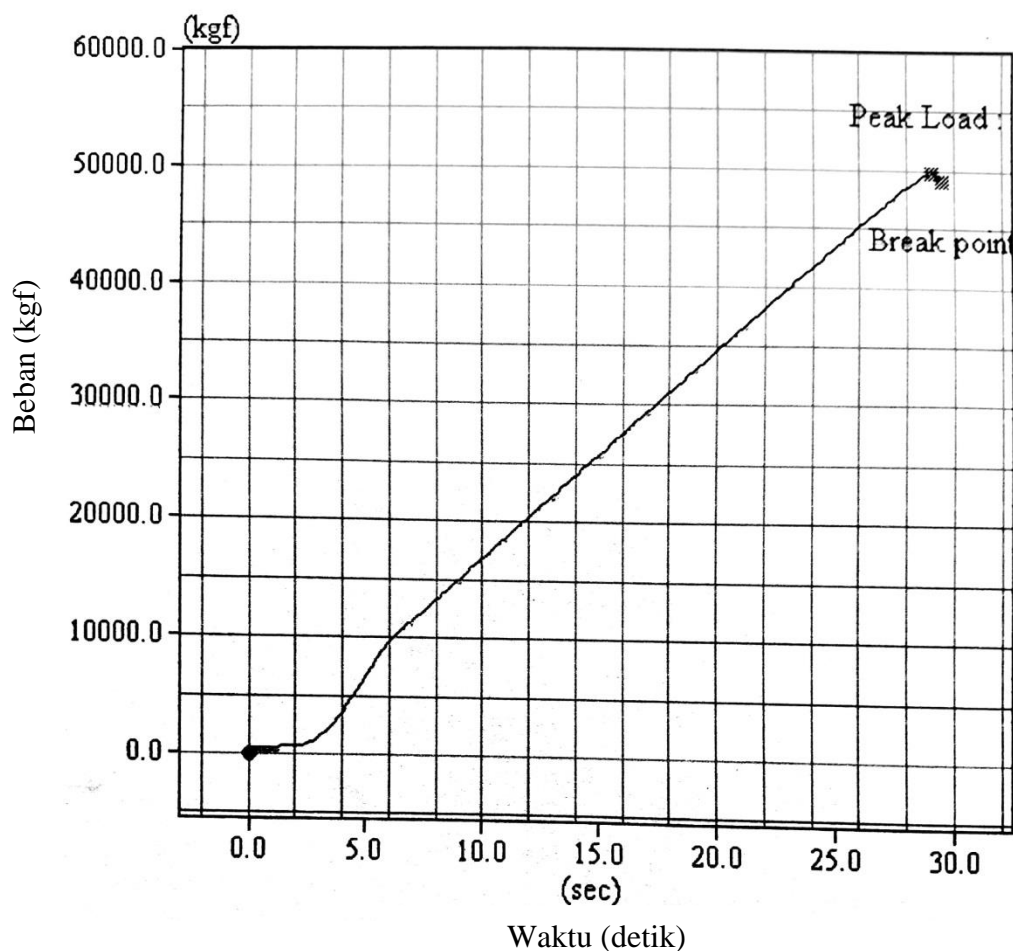
Gambar 10 Hubungan antara beban dan waktu benda uji A14S1%



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<b>Construstion Name</b>		<b>Silinder Beton</b>								
<b>Manufacturer</b>		<b>Hungta</b>								
<b>Contractor</b>		<b>UMY</b>								
<b>Customer</b>		<b>Lab. JTS. FT.UMY</b>								
<b>Test Date</b>		<b>04/02/2018</b>			<b>Report No.</b>			<b>B 14. S.1%</b>		
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kgf/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	177.19	49740	3992.6	280.4	2.0	300.0	1.0	14		



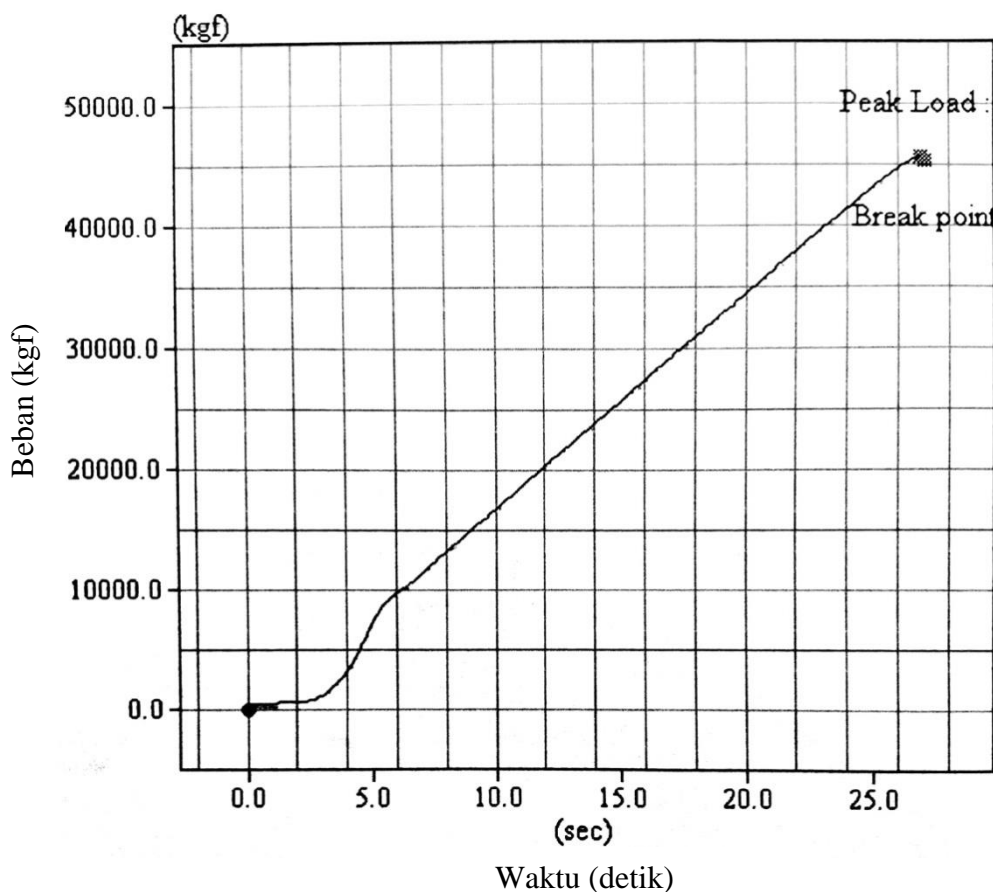
Gambar 11 Hubungan antara beban dan waktu benda uji B14S1%



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Concrete Testing

Constrution Name		Silinder Beton								
Manufacturer		Hungta								
Contractor		UMY								
Customer		Lab. JTS. FT.UMY								
Test Date		04/02/2018			Report No.			C 14. S.1%		
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kg/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	176.71	45530	3664.4	257.4	2.0	300.0	1.0	14		



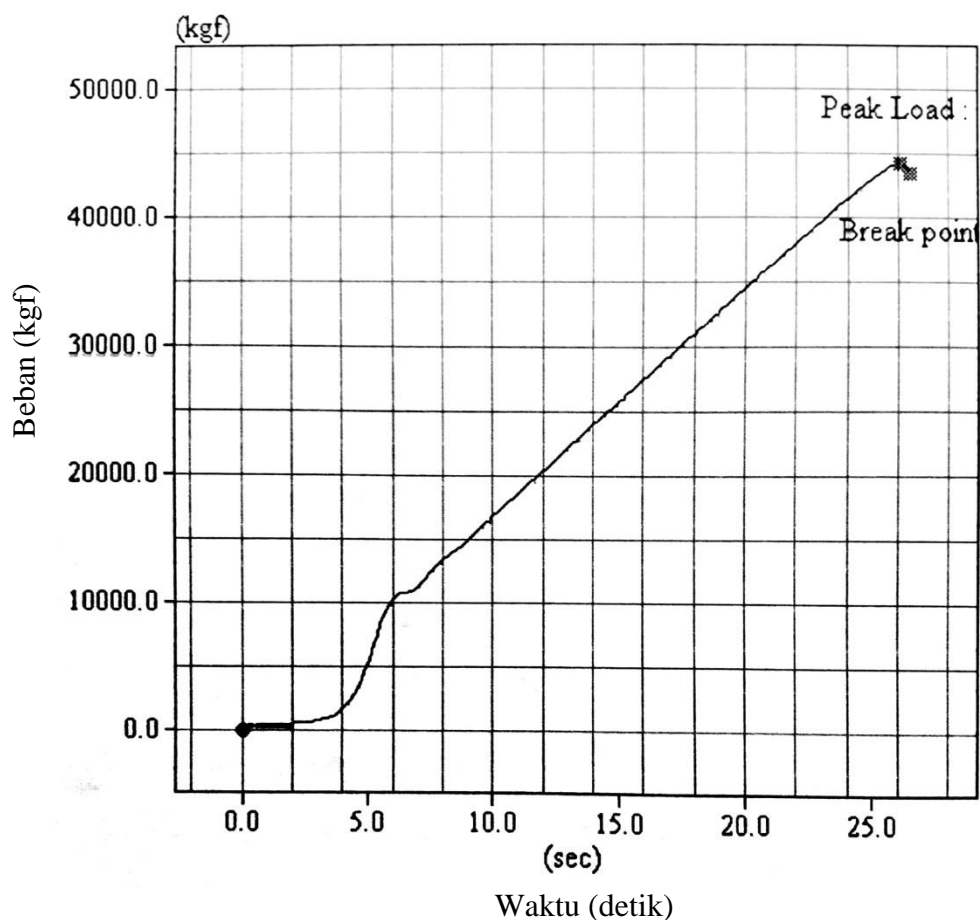
Gambar 12 Hubungan antara beban dan waktu benda uji C14S1%



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### Concrete Testing

Construsion Name		Silinder Beton								
Manufacturer		Hungta								
Contractor		UMY								
Customer		Lab. JTS. FT.UMY								
Test Date		04/02/2018			Report No.			D 14. S.1.5 %		
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kg/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	177.66	44230	3540.9	248.7	2.0	300.0	1.0	14		



Gambar 13 Hubungan antara beban dan waktu benda uji D14S1,5%



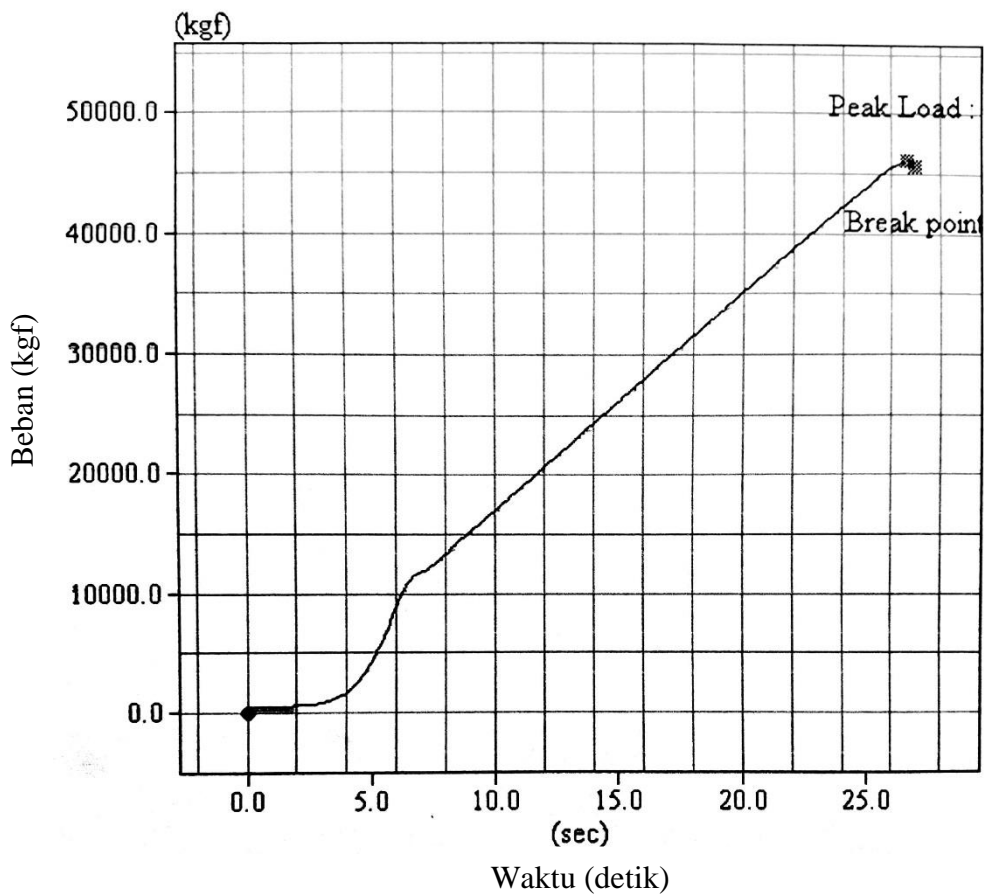
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<b>Contractor</b>		<b>UMY</b>								
<b>Customer</b>		<b>Lab. JTS. FT.UMY</b>								
<b>Test Date</b>		<b>04/02/2018</b>			<b>Report No.</b>			<b>E 14. S.1.5 %</b>		
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kgf/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	180.50	46070	3630.0	254.2	2.0	300.0	1.0	14		



Gambar 14 Hubungan antara beban dan waktu benda uji E14S1,5%

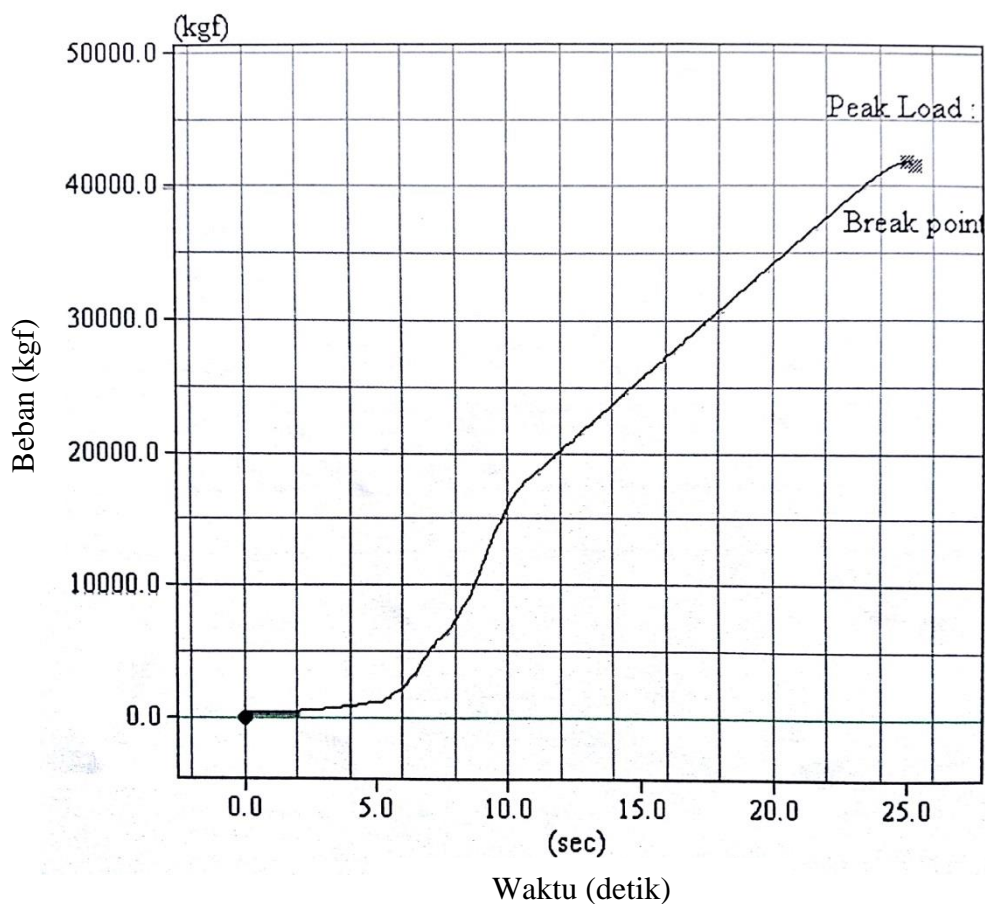




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<b>Manufacturer</b>		<b>Hungta</b>								
<b>Contractor</b>		<b>UMY</b>								
<b>Customer</b>		<b>Lab. JTS. FT.UMY</b>								
<b>Test Date</b>		<b>04/02/2018</b>			<b>Report No.</b>			<b>F 14. S.1.5 %</b>		
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kg/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	176.71	41790	3363.4	236.5	2.0	300.0	1.0	14		



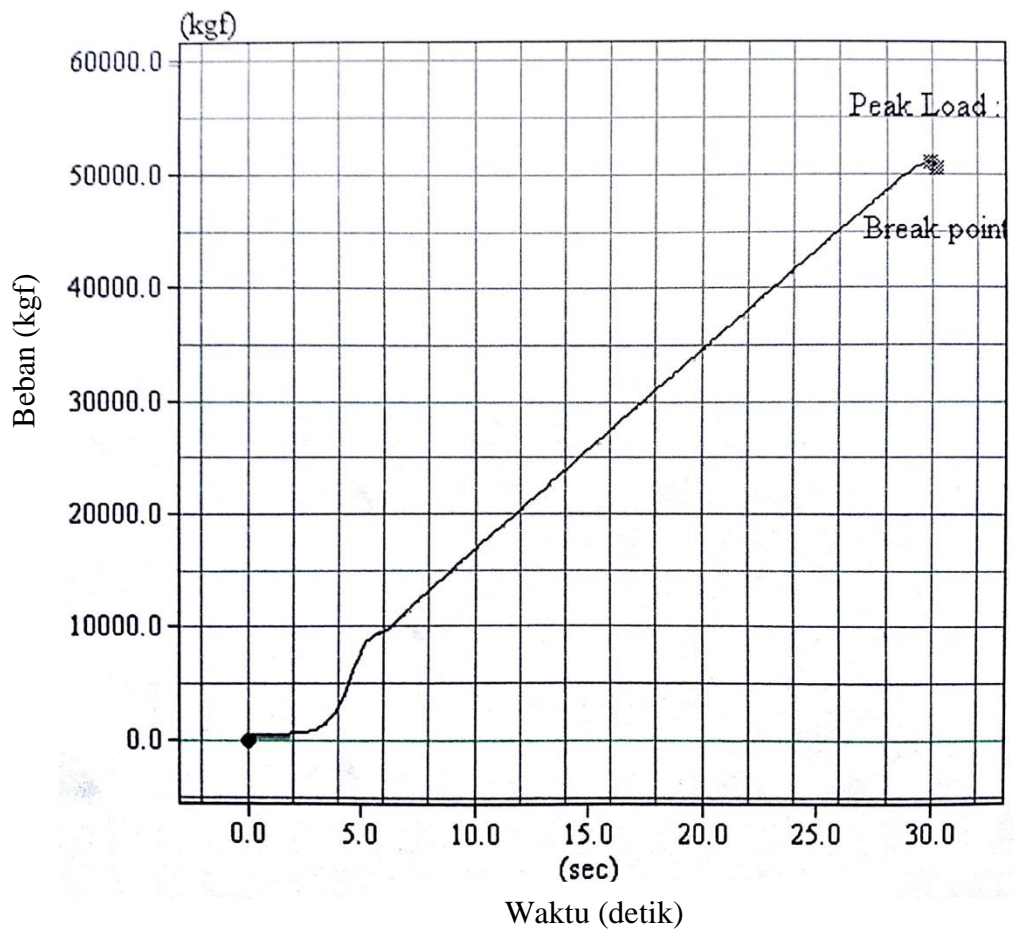
Gambar 15 Hubungan antara beban dan waktu benda uji F14S1,5%



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Construction Name		Silinder Beton								
Manufacturer		Hungta								
Contractor		UMY								
Customer		Lab. JTS. FT.UMY								
Test Date		04/02/2018			Report No.			G 14. S.2 %		
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kg/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	177.42	50990	4087.5	287.4	2.0	300.0	1.0	14		



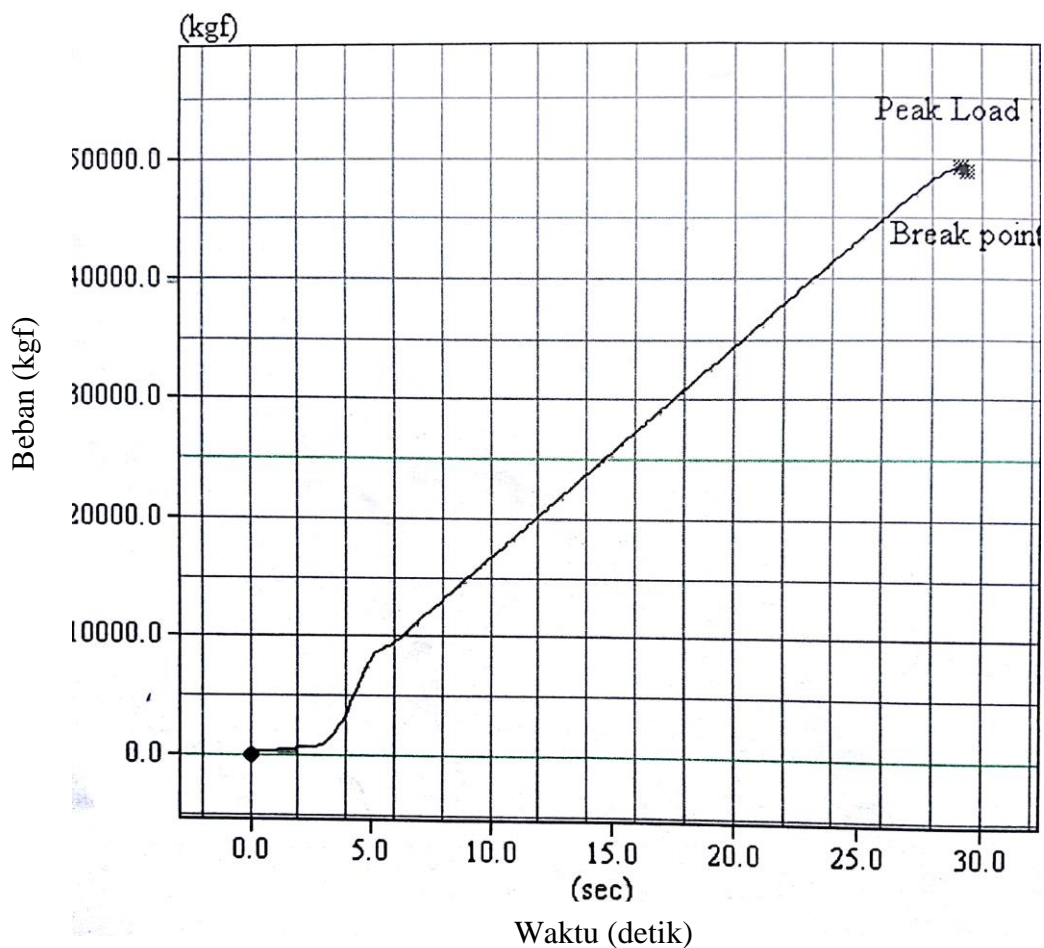
Gambar 16 Hubungan antara beban dan waktu benda uji G14S2%



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<b>Manufacturer</b>		<b>Hungta</b>								
<b>Contractor</b>		<b>UMY</b>								
<b>Customer</b>		<b>Lab. JTS. FT.UMY</b>								
<b>Test Date</b>		<b>04/02/2018</b>			<b>Report No.</b>			<b>H 14. S.2 %</b>		
<b>No.</b>	<b>Area (cm<sup>2</sup>)</b>	<b>Peak Force (Kg)</b>	<b>Compression Stress (psi)</b>	<b>Adjust Stress (Kg/cm<sup>2</sup>)</b>	<b>H/D Ratio</b>	<b>Design Stress</b>	<b>Adjust Ratio</b>	<b>Life</b>	<b>Break Style</b>	<b>Remark</b>
<b>1</b>	<b>176.71</b>	<b>49160</b>	<b>3956.6</b>	<b>278.2</b>	<b>2.0</b>	<b>300.0</b>	<b>1.0</b>	<b>14</b>		



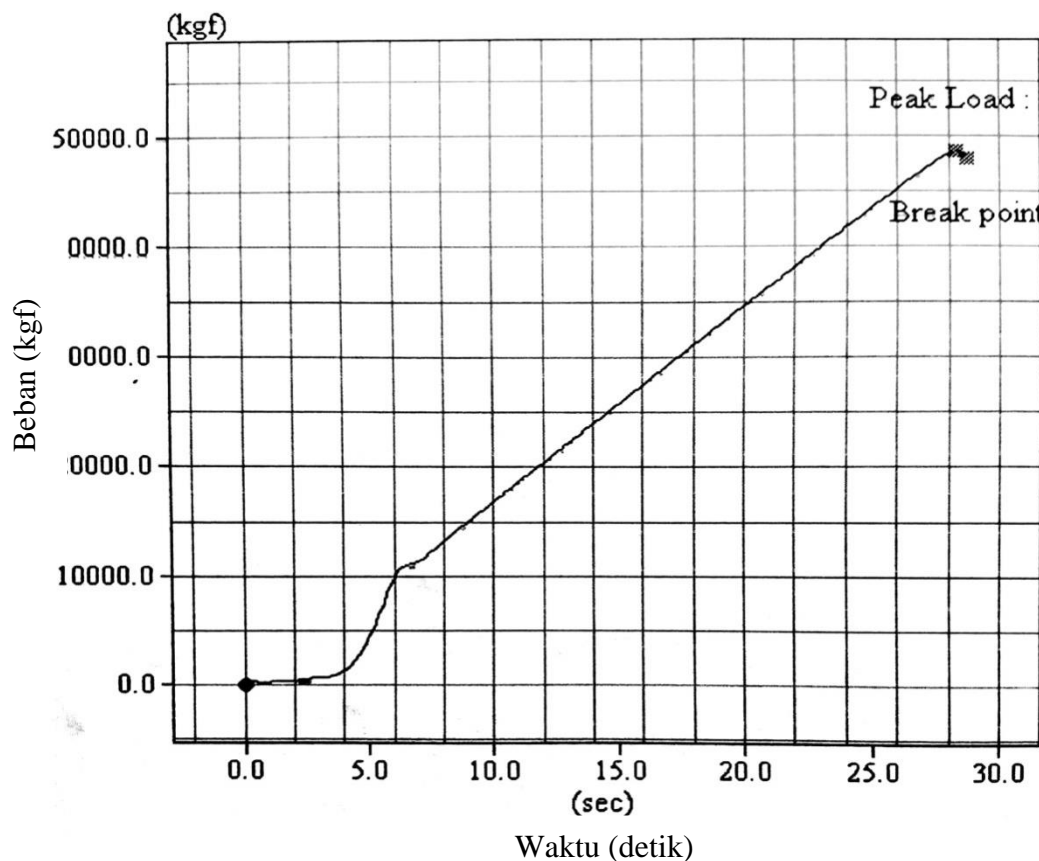
Gambar 17 Hubungan antara beban dan waktu benda uji H14S2%



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<b>Constrution Name</b>		<b>Silinder Beton</b>								
<b>Manufacturer</b>		<b>Hungta</b>								
<b>Contractor</b>		<b>UMY</b>								
<b>Customer</b>		<b>Lab. JTS. FT.UMY</b>								
<b>Test Date</b>		<b>04/02/2018</b>			<b>Report No.</b>			<b>I 14. S.2 %</b>		
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kgf/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	177.89	48510	3878.4	272.4	2.0	300.0	1.0	14		



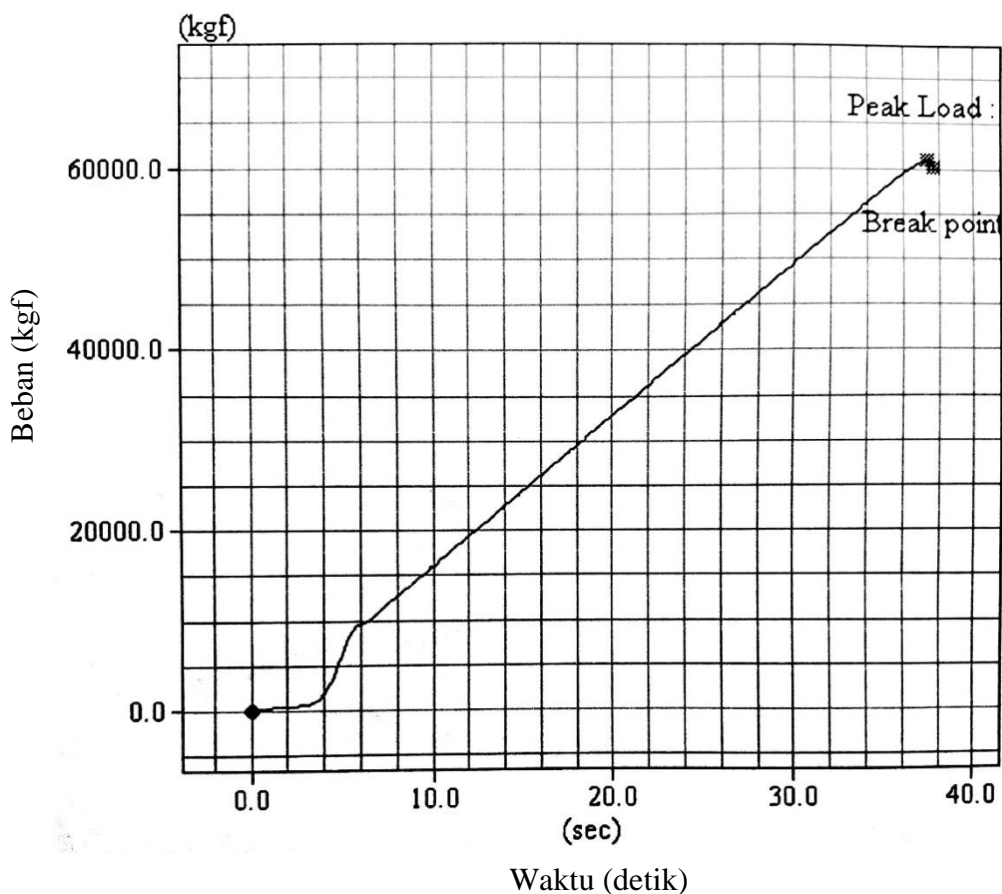
Gambar 18 Hubungan antara beban dan waktu benda uji I14S2%



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<b>Manufacturer</b>		<b>Hungta</b>								
<b>Contractor</b>		<b>UMY</b>								
<b>Customer</b>		<b>Lab. JTS. FT.UMY</b>								
<b>Test Date</b>		<b>4/13/2018</b>			<b>Report No.</b>			<b>A 28 S 1%</b>		
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kg/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	167.42	60920	5175.4	365.3	2.1	300.0	1.0	28		



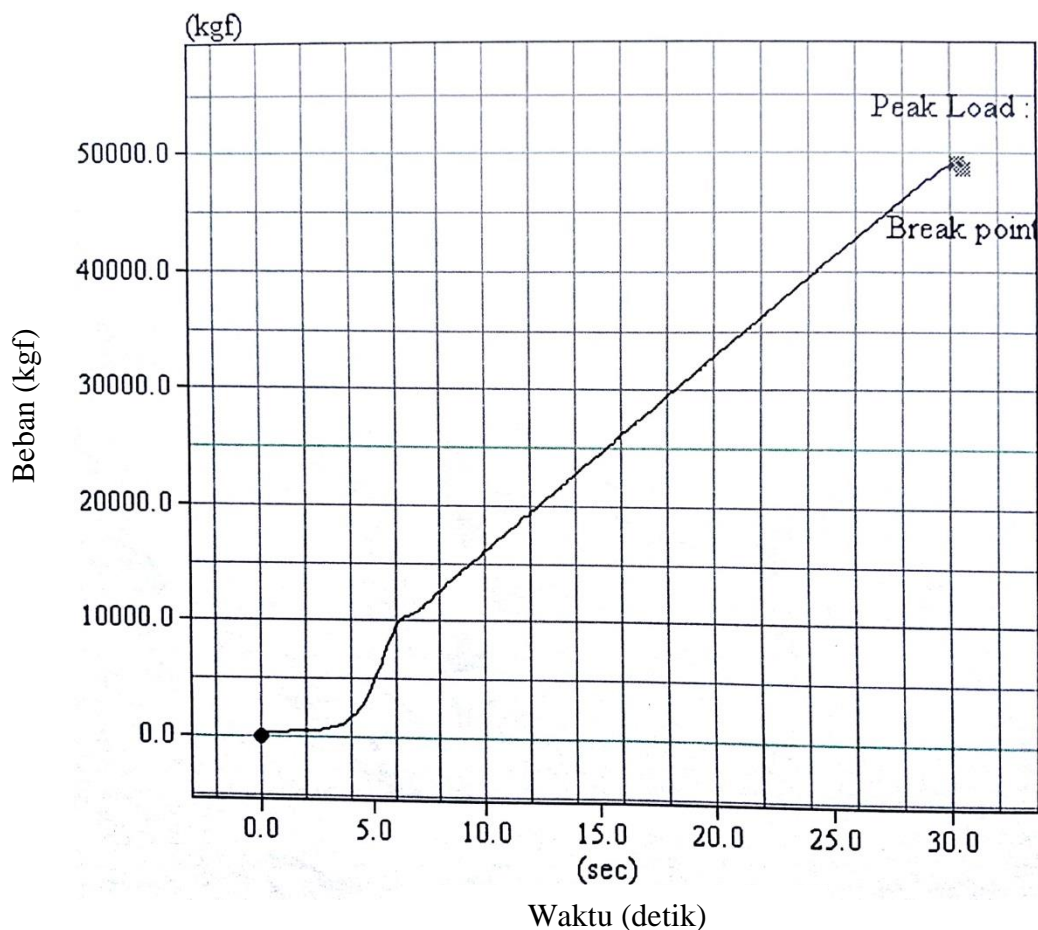
Gambar 19 Hubungan antara beban dan waktu benda uji A28S1%



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**Concrete Testing**

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<b>Manufacturer</b>		<b>Hungta</b>								
<b>Contractor</b>		<b>UMY</b>								
<b>Customer</b>		<b>Lab. JTS. FT.UMY</b>								
<b>Test Date</b>		<b>4/13/2018</b>			<b>Report No.</b>			<b>B 28 S 1%</b>		
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kgf/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	167.42	49150	4175.5	294.8	2.1	300.0	1.0	28		



Gambar 20 Hubungan antara beban dan waktu benda uji B28S1%



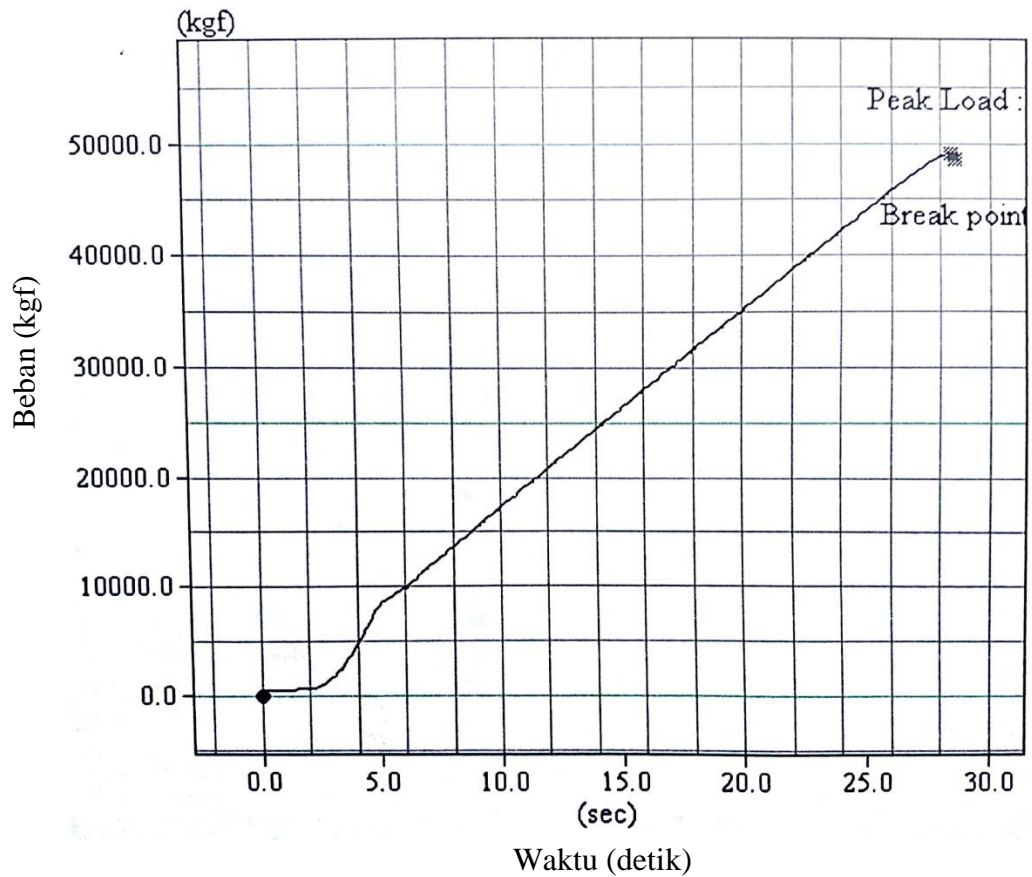
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<b>Construction Name</b>		<b>Silinder Beton</b>								
<b>Manufacturer</b>		<b>Hungta</b>								
<b>Contractor</b>		<b>UMY</b>								
<b>Customer</b>		<b>Lab. JTS. FT.UMY</b>								
<b>Test Date</b>		<b>4/13/2018</b>			<b>Report No.</b>			<b>C 28 S 1%</b>		
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kg/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	179.08	48990	3890.9	273.3	2.0	300.0	1.0	28		



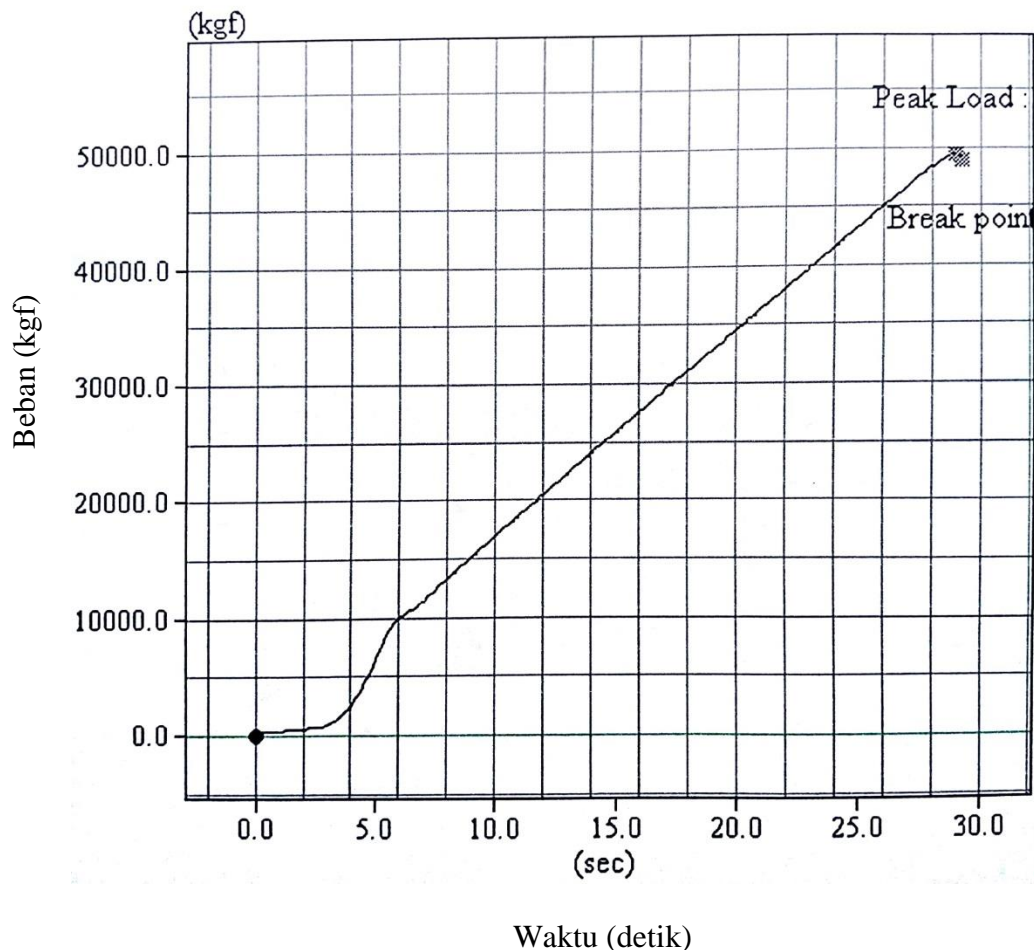
Gambar 21 Hubungan antara beban dan waktu benda uji C28S1%



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Concrete Testing

Constrution Name		Silinder Beton								
Manufacturer		Hungta								
Contractor		UMY								
Customer		Lab. JTS. FT.UMY								
Test Date		4/13/2018			Report No.			D 28 S 1.5%		
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kg/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	175.77	49340	3992.3	280.1	2.0	300.0	1.0	28		



Gambar 22 Hubungan antara beban dan waktu benda uji D28S1,5%





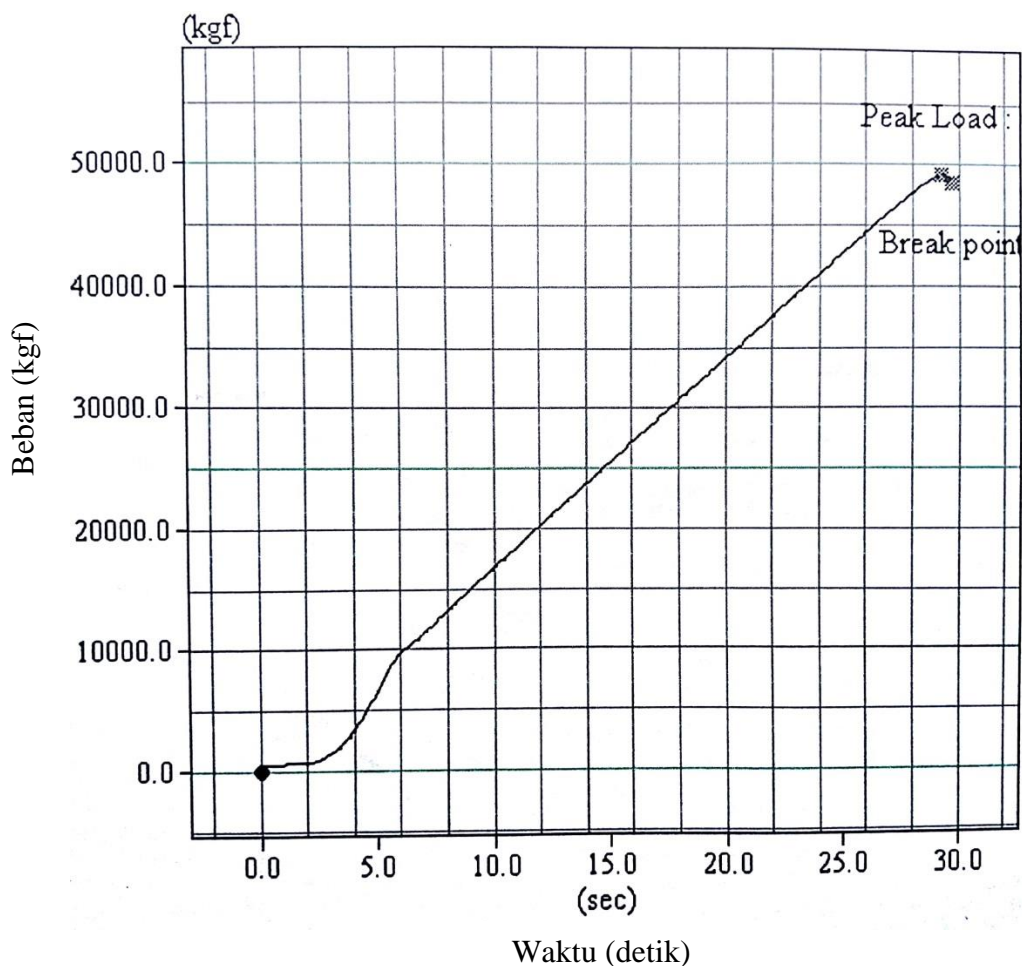
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**Concrete Testing**

<b>Construstion Name</b>		<b>Silinder Beton</b>								
<b>Manufacturer</b>		<b>Hungta</b>								
<b>Contractor</b>		<b>UMY</b>								
<b>Customer</b>		<b>Lab. JTS. FT.UMY</b>								
<b>Test Date</b>		<b>4/13/2018</b>			<b>Report No.</b>			<b>E 28 S 1.5%</b>		
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kg/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	173.66	49140	4024.4	283.2	2.0	300.0	1.0	28		



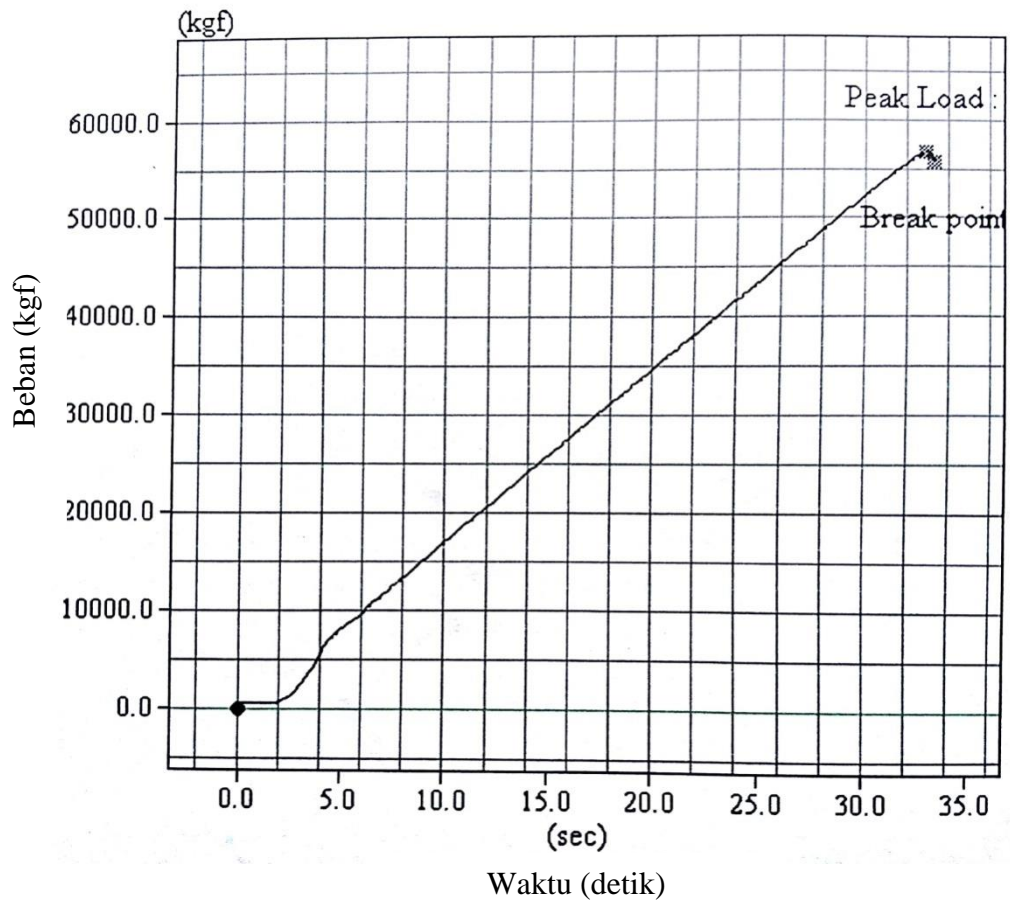
Gambar 23 Hubungan antara beban dan waktu benda uji E28S1,5%



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<b>Construction Name</b>		<b>Silinder Beton</b>								
<b>Manufacturer</b>		<b>Hungta</b>								
<b>Contractor</b>		<b>UMY</b>								
<b>Customer</b>		<b>Lab. JTS. FT.UMY</b>								
<b>Test Date</b>		<b>4/13/2018</b>			<b>Report No.</b>			<b>F 28 S 1.5%</b>		
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kg/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	176.71	56640	4558.6	301.3	1.3	350.0	0.9			



Gambar 24 Hubungan antara beban dan waktu benda uji F28S1,5%



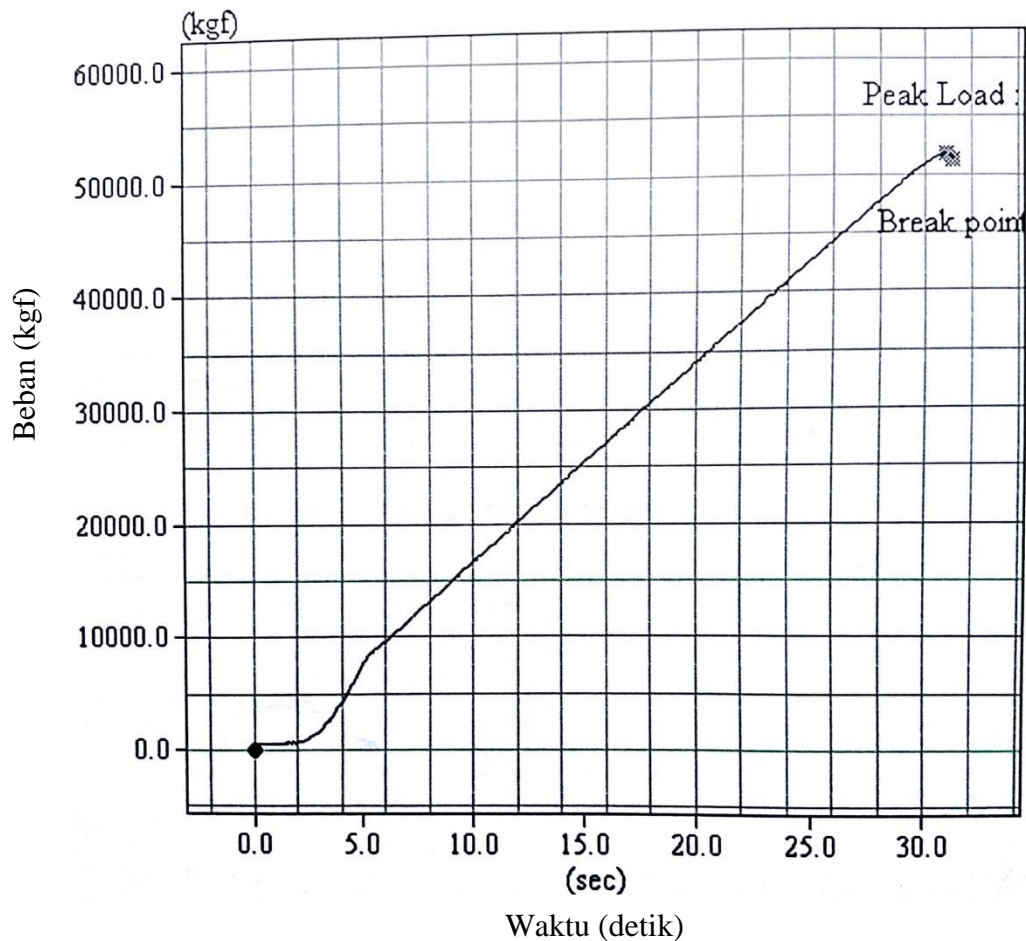
**UNIVERSITAS MUHAMMADIYAH YOGYAKARTA**  
**Fakultas Teknik Program Studi S-1 Teknik Sipil**  
**Laboratorium Teknologi Bahan Kontruksi**

Jl. Lingkar Selatan, Tamantirto, Kasihan, Bantul, D.I.Yogyakarta 55183  
 Telp.+ 62-274-387656 (Hunting), Fax.0274-387646

**Laboratorium Jurusan Teknik Sipil**  
**Universitas Muhammadiyah Yogyakarta**

**Concrete Testing**

<b>Construction Name</b>		<b>Silinder Beton</b>								
<b>Manufacturer</b>		<b>Hungta</b>								
<b>Contractor</b>		<b>UMY</b>								
<b>Customer</b>		<b>Lab. JTS. FT.UMY</b>								
<b>Test Date</b>		<b>4/13/2018</b>			<b>Report No.</b>			<b>G 28 S 2%</b>		
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kgf/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	173.43	51730	4242.3	298.6	2.0	300.0	1.0	28		



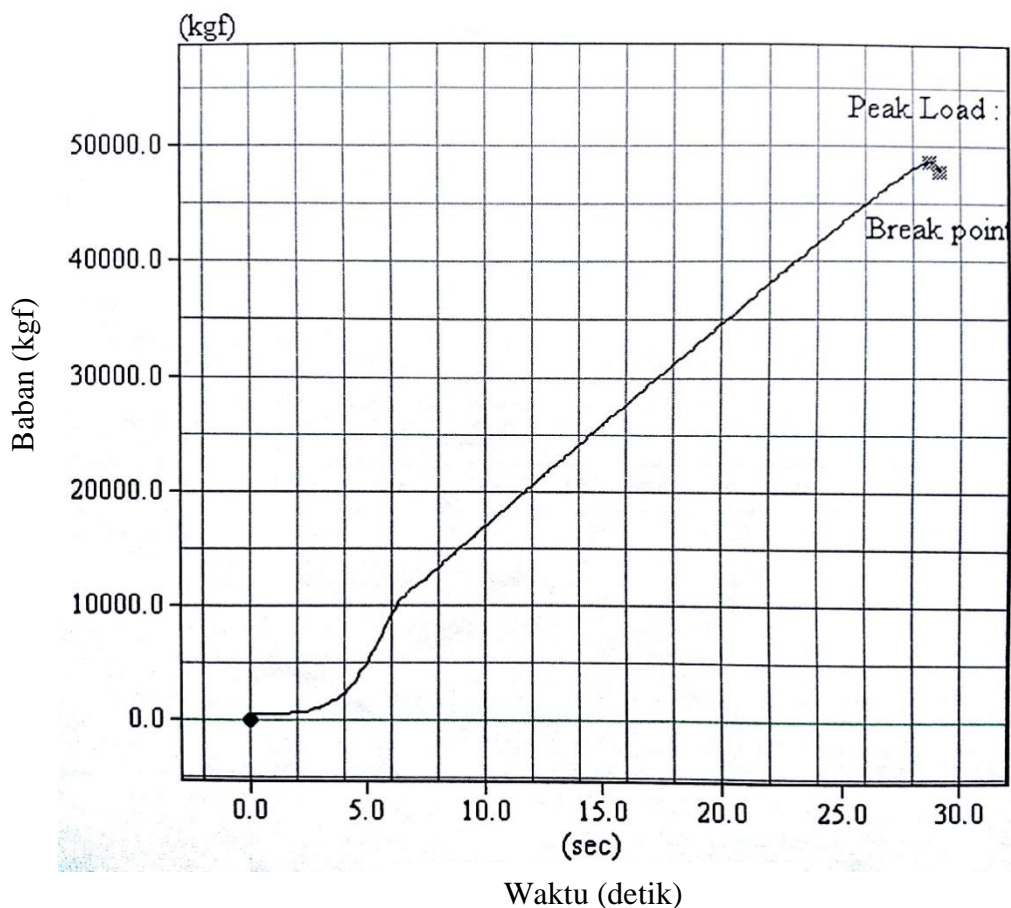
Gambar 25 Hubungan antara beban dan waktu benda uji G28S2%



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**Concrete Testing**

<b>Construction Name</b>		<b>Silinder Beton</b>								
<b>Manufacturer</b>		<b>Hungta</b>								
<b>Contractor</b>		<b>UMY</b>								
<b>Customer</b>		<b>Lab. JTS. FT.UMY</b>								
<b>Test Date</b>		<b>4/13/2018</b>			<b>Report No.</b>			<b>H 28 S 2%</b>		
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kg/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	176.24	48610	3922.8	275.5	2.0	300.0	1.0	28		



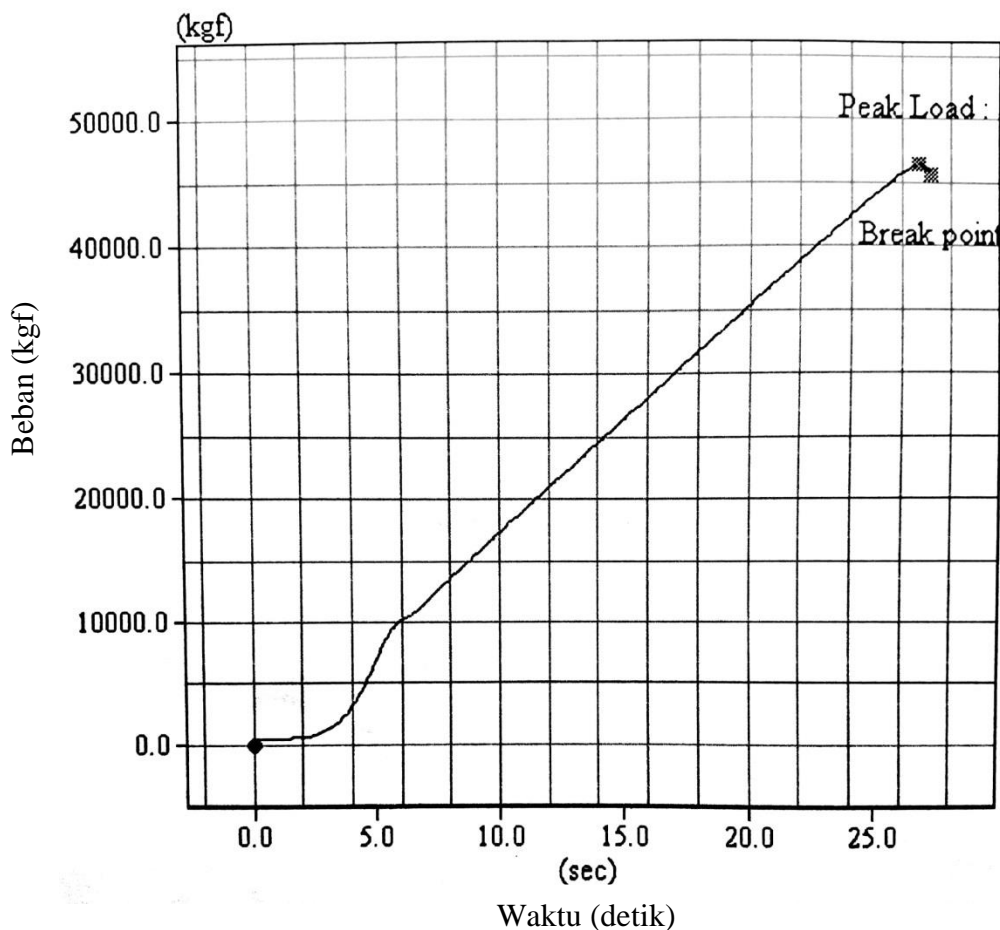
Gambar 26 Hubungan antara beban dan waktu benda uji H28S2%



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 Universitas Muhammadiyah Yogyakarta

**Concrete Testing**

<b>Construction Name</b>		<b>Silinder Beton</b>								
<b>Manufacturer</b>		<b>Hungta</b>								
<b>Contractor</b>		<b>UMY</b>								
<b>Customer</b>		<b>Lab. JTS. FT.UMY</b>								
<b>Test Date</b>		<b>4/13/2018</b>			<b>Report No.</b>			<b>I 28 S 2%</b>		
No.	Area (cm <sup>2</sup> )	Peak Force (Kg)	Compression Stress (psi)	Adjust Stress (Kgf/cm <sup>2</sup> )	H/D Ratio	Design Stress	Adjust Ratio	Life	Break Style	Remark
1	179.79	46380	3669.0	258.0	2.0	300.0	1.0	28		



Gambar 27 Hubungan antara beban dan waktu benda uji I28S2%