

## LAMPIRAN

### Lampiran 1. Persiapan Bekisting



### Lampiran 2. Penimbangan Bekisting



### Lampiran 3. Pengecoran Benda Uji



#### Lampiran 4. Penimbangan Berat Basah Beton



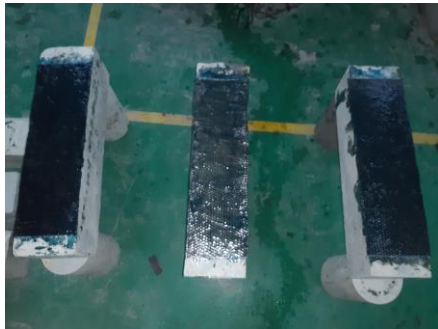
#### Lampiran 5. Perawatan Beton



#### Lampiran 6. Proses Laminasi CFRP



**Lampiran 7. Proses Pengeringan Benda Uji dengan Penambahan FRP**



**Lampiran 8. Pengujian Kuat Lentur dan Kuat Tekan**



**Lampiran 9. Hasil Pengujian**



a. Balok polos



b. Balok dengan CFRP bawah



c. Balok dengan CFRP U

### Lampiran 10. Grafik Uji Kuat Lentur Balok dan Kuat Tekan Silinder S1 dan S2

7/13/2020

#### TA PERKUATAN BALOK DENGAN FRP TA-BK A (16/04/2020)

UNI EN 12390-3

#### Data

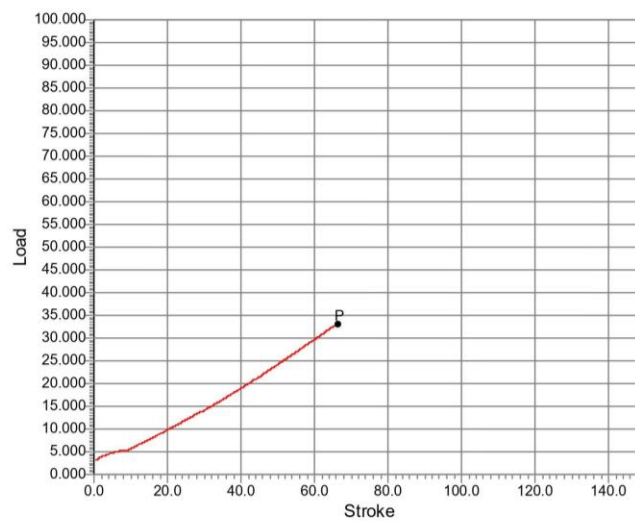
Date : 7/13/2020  
Laboratory : unissula

#### Specimen

Type : Flexion  
Width : 150  
Thickness : 150  
Upper knives : 150  
Lower knives : 450  
Section : 7500

#### Speed

Test 500 /s



#### Results

1	Section :	S	7500	
1	Maximum load :	P	33.05746	kN
1	Strength :	R	4.407661	MPa

Operator : Alfian

Responsible : Dr. Ir. H. Sumirin, MS

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**TA PERKUATAN BALOK DENGAN FRP**  
**TA-BK B (16/04/2020)**

7/13/2020

UNI EN 12390-3

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**Data**

Date : 7/13/2020  
Laboratory : unissula

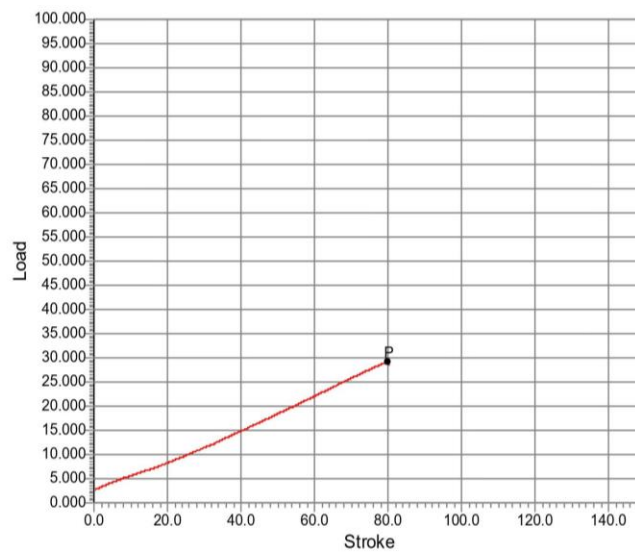
**Specimen**

Type : Flexion  
Width : 150  
Thickness : 150  
Upper knives : 150  
Lower knives : 450  
Section : 7500

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**Speed**

Test 500 /s

**Results**

1	Section :	S	7500	
1	Maximum load :	P	29.037598	kN
1	Strength :	R	3.87168	MPa

Operator : Alfian

Responsible : Dr. Ir. H. Sumirin, MS

**TA PERKUATAN BALOK DENGAN FRP**  
**TA-BK (C) (16/4/2020)**

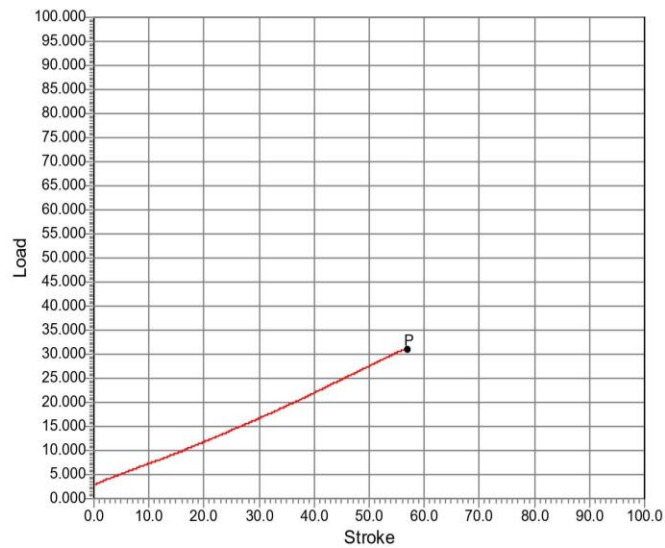
7/13/2020

UNI EN 12390-3

Data		Specimen	
Date :	7/13/2020	Type :	Flexion
Laboratory :	unissula	Width :	150
		Thickness :	150
		Upper knives :	150
		Lower knives :	450
		Section :	7500

**Speed**

Test                      500                      /s

**Results**

1	Section :	S	7500	
1	Maximum load :	P	31.023883	kN
1	Strength :	R	4.136518	MPa

Operator : Alfian

Responsible : Dr. Ir. H. Sumirin, MS

**TA PERKUATAN BALOK DENGAN FRP**  
**TA BT(A) / (16/4/2020) (FRP U)**

7/13/2020

UNI EN 12390-3

**Data**

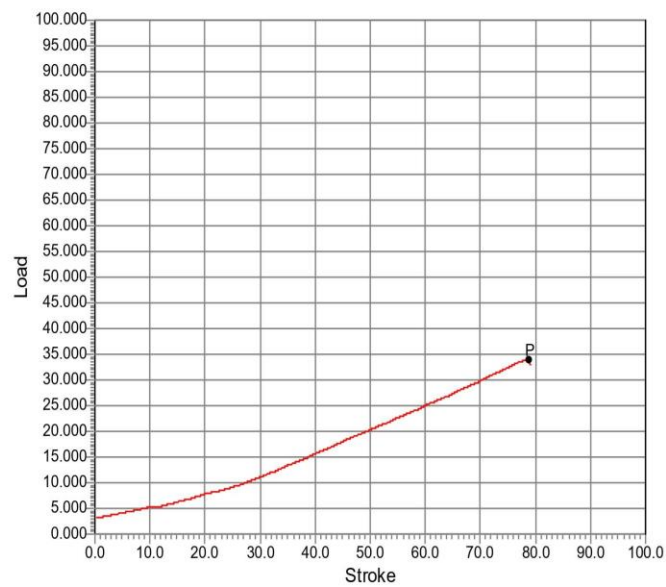
Date : 7/13/2020  
 Laboratory : unissula

**Specimen**

Type : Flexion  
 Width : 150  
 Thickness : 150  
 Upper knives : 150  
 Lower knives : 450  
 Section : 7500

**Speed**

Test 500 /s

**Results**

1	Section :	S	7500	
1	Maximum load :	P	33.956018	kN
1	Strength :	R	4.527469	MPa

Operator : Alfian

Responsible : Dr. Ir. H. Sumirin, MS

7/13/2020

**TA PERKUATAN BALOK DENGAN FRP  
TA-BT B LAP.BAWAH (16/04/2020)**

UNI EN 12390-3

**Data**

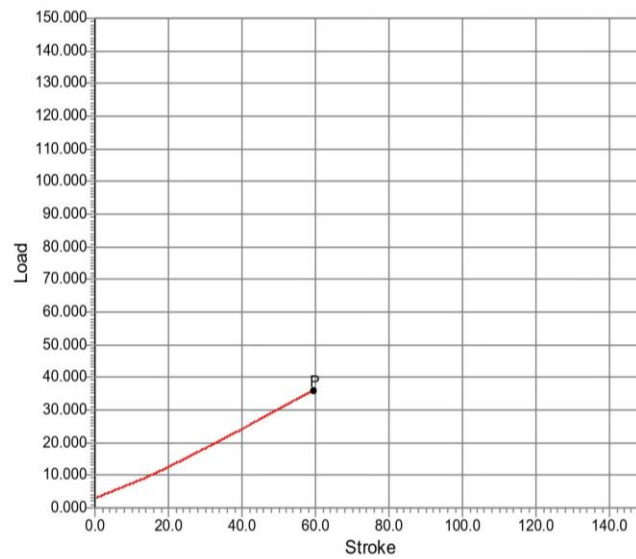
Date : 7/13/2020  
Laboratory : unissula

**Specimen**

Type : Flexion  
Width : 150  
Thickness : 150  
Upper knives : 150  
Lower knives : 450  
Section : 7500

**Speed**

Test 500 /s

**Results**

1	Section :	S	7500	
1	Maximum load :	P	35.800426	kN
1	Strength :	R	4.77339	MPa

Operator : Alfian

Responsible : Dr. Ir. H. Sumirin, MS



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**TA PERKUATAN BALOK DENGAN FRP**  
**TA-BT C LAP.U (16/04/2020)**

7/13/2020

UNI EN 12390-3

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**Data**

Date : 7/13/2020  
Laboratory : unissula

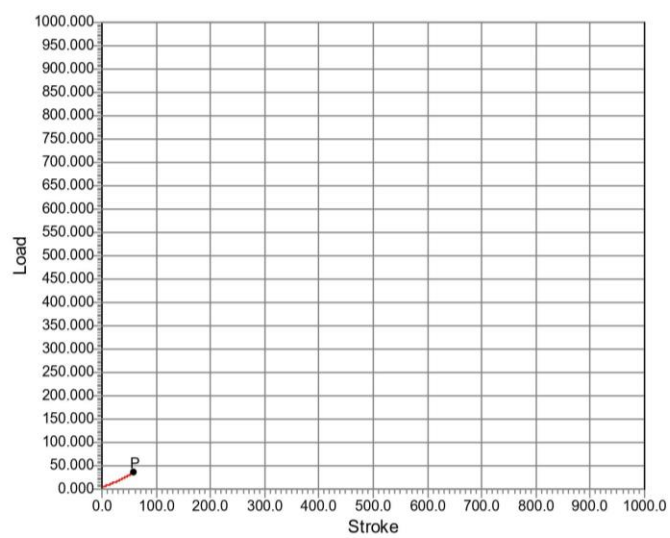
**Specimen**

Type : Flexion  
Width : 150  
Thickness : 150  
Upper knives : 150  
Lower knives : 450  
Section : 7500

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**Speed**

Test 500 kN/s

**Results**

1	Section :	S	7500	
1	Maximum load :	P	35.091038	kN
1	Strength :	R	4.678805	MPa

Operator : Alfian

Responsible : Dr. Ir. H. Sumirin, MS

**TA PERKUATAN BALOK DENGAN FRP**  
**TA-BT D LAP.BAWAH (16/04/2020)**

7/13/2020

UNI EN 12390-3

**Data**

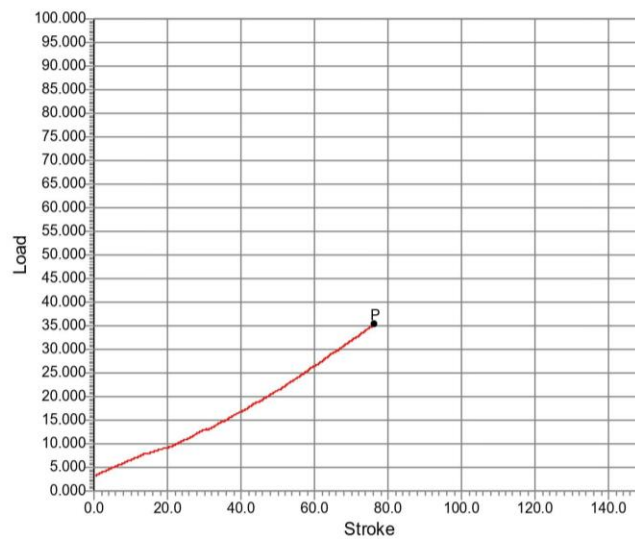
Date : 7/13/2020  
 Laboratory : unissula

**Specimen**

Type : Flexion  
 Width : 150  
 Thickness : 150  
 Upper knives : 150  
 Lower knives : 450  
 Section : 7500

**Speed**

Test 500 /s

**Results**

1	Section :	S	7500	
1	Maximum load :	P	35.232916	kN
1	Strength :	R	4.697722	MPa

Operator : Alfian

Responsible : Dr. Ir. H. Sumirin, MS

7/13/2020

**TA PERKUATAN BALOK DENGAN FRP**  
**TA-BT E LAP.BAWAH (16/04/2020)**

UNI EN 12390-3

**Data**

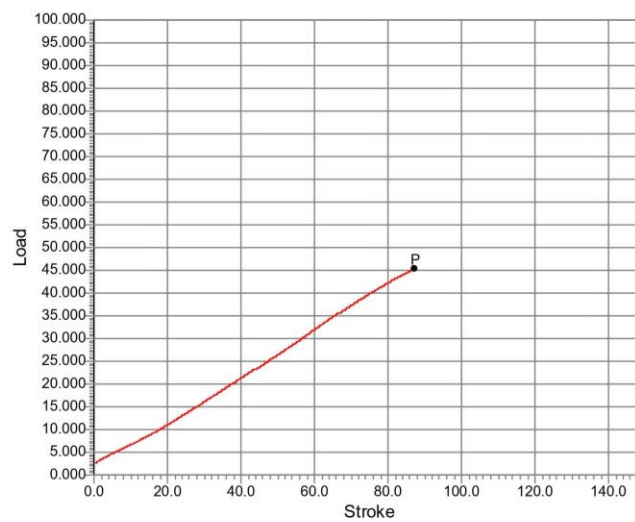
Date : 7/13/2020  
 Laboratory : unissula

**Specimen**

Type : Flexion  
 Width : 150  
 Thickness : 150  
 Upper knives : 150  
 Lower knives : 450  
 Section : 7500

**Speed**

Test 500 /s

**Results**

1	Section :	S	7500	
1	Maximum load :	P	45.258926	kN
1	Strength :	R	6.034524	MPa

Operator : Alfian

Responsible : Dr. Ir. H. Sumirin, MS

7/13/2020

**TA PERKUATAN BALOK DENGAN FRP**  
**TA-BT F LAP.U (16/04/2020)**

UNI EN 12390-3

**Data**

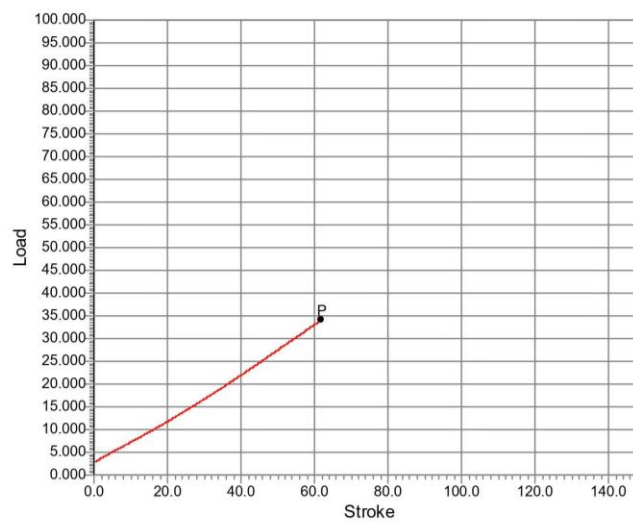
Date : 7/13/2020  
 Laboratory : unissula

**Specimen**

Type : Flexion  
 Width : 150  
 Thickness : 150  
 Upper knives : 150  
 Lower knives : 450  
 Section : 7500

**Speed**

Test 500 /s

**Results**

1	Section :	S	7500	
1	Maximum load :	P	34.00331	kN
1	Strength :	R	4.533775	MPa

Operator : Alfian

Responsible : Dr. Ir. H. Sumirin, MS

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**TA PERKUATAN BALOK DENGAN FRP**

7/13/2020

**S1 K-400 (16/4/2020)**UNI EN 12390-3

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**Data**

Date : 7/13/2020  
Laboratory : unissula

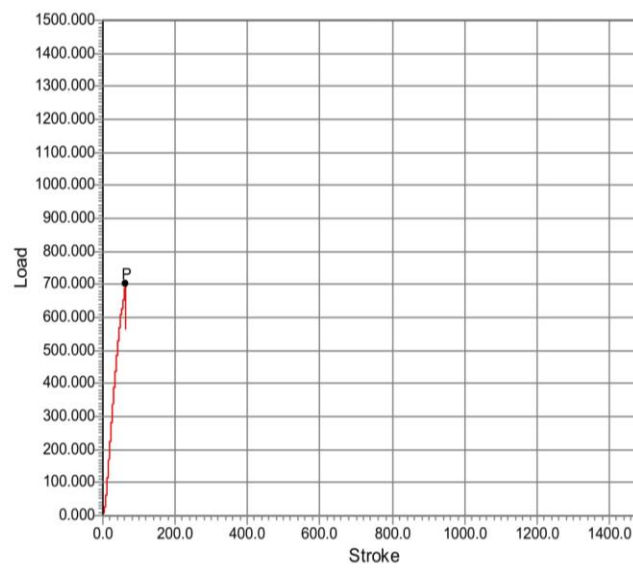
**Specimen**

Type : Cylinder  
Diameter : 150 mm  
Height : 300 mm  
Section : 17671.459 mm<sup>2</sup>

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**Speed**

Test 500 /s

**Results**

1	Section :	S	17671.458676	mm <sup>2</sup>
1	Maximum load :	P	702.273231	kN
1	Strength :	R	39.740536	MPa

Operator : Alfian

Responsible : Dr. Ir. H. Sumirin, MS

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**TA PERKUATAN BALOK DENGAN FRP**

7/13/2020

**S2 K-400 (16/4/2020)**

UNI EN 12390-3

**Data**

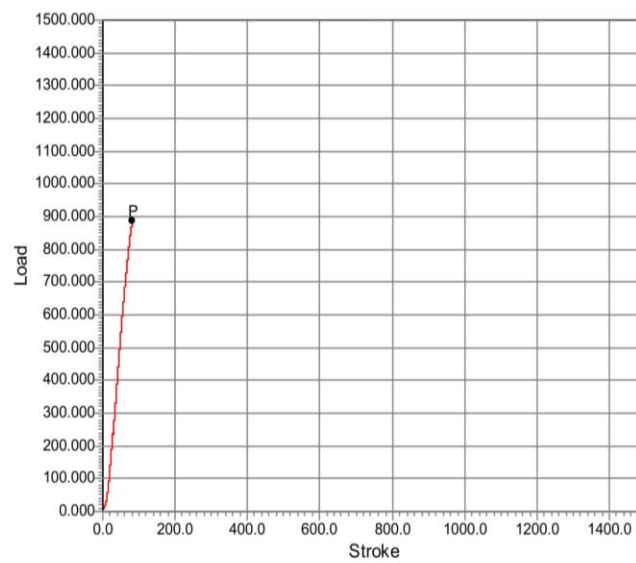
Date : 7/13/2020  
Laboratory : unissula

**Specimen**

Type : Cylinder  
Diameter : 150 mm  
Height : 300 mm  
Section : 17671.459 mm<sup>2</sup>

**Speed**

Test 500 /s

**Results**

1	Section :	S	17671.458676	mm <sup>2</sup>
1	Maximum load :	P	884.773317	
1	Strength :	R	50.067928	MPa

Operator : Alfian

Responsible : Dr. Ir. H. Sumirin, MS

