

DAFTAR PUSTAKA

- Cachim, P. B. 2009. Mechanical Properties of Brick Aggregate Concrete. *Construction and Building Materials*. 23: 1292-1297.
- Hachemi, S., Khattab, M., Benzetta, M. 2022. The Effects of Recycled Brick and Water/Cement Ratios on the Physical and Mechanical Performance of Recycled Aggregates Concrete. *Innovative Infrastructure Solutions*. 7:270.
- Mahure, N. V., Vijh, G. K., Sharma, P., Sivakumar, N., Ratnam, M. 2011. Correlation Between Pulse Velocity and Compressive Strength of Concrete. *International Journal of Earth Sciences and Engineering*. 4(6): 871-874.
- Mohammed, A. A. 2020. Compressive Strength-Ultrasonic Pulse Velocity Relationship of Concrete Containing Plastic Waste. *IOP Conference Series: Materials Science and Engineering*. 9-10 September 2020, Duhok, Iraq. pp. 1-10.
- Mulyono, T. 2006. *Teknologi Beton*. Yogyakarta: Penerbit Andi.
- Murdock, L.J. dan Brook, K.M. 2003. *Bahan dan Praktek Beton*. Jakarta: Erlangga.
- Nematzadeh, M., Dashti, J., Ganjavi, B. 2018. Optimizing Compressive Behaviour of Concrete Containing Fine Recycled Refractory Brick Aggregate together with Calcium Aluminate Cement and Polyvinyl Alcohol Fibers Exposed to Acidic Environment. *Construction and Building Materials*. 164: 837-849.
- SNI 2847 2019. (2019). *Persyaratan Beton Struktural untuk Bangunan Gedung dan Penjelasan*. Badan Standardisasi Nasional.
- SNI 1969 2016. (2016). *Metode Uji Berat Jenis dan Penyerapan Air Agregat Kasar*. Badan Standardisasi Nasional.
- SNI 1970 2016. (2016). *Metode Uji Berat Jenis dan Penyerapan Air Agregat Halus*. Badan Standardisasi Nasional.
- SNI ASTM C597 2012. (2012). *Metode Uji Kecepatan Rambat Gelombang melalui Beton*. Badan Standardisasi Nasional.
- SNI 1974 2011. (2011). *Cara Uji Kuat Tekan Beton dengan Benda Uji Silinder*. Badan Standardisasi Nasional.
- SNI 2493 2011. (2011). *Tata Cara Pembuatan dan Perawatan Benda Uji Beton di Laboratorium*. Badan Standardisasi Nasional.
- SNI 1972:2008. (2008). *Cara Uji Slump Beton*. Badan Standardisasi Nasional.
- SNI 15 2049 2004. (2004). *Semen Portland*. Badan Standardisasi Nasional.
- Tjokrodimuljo. 2007. *Teknologi Beton*. Yogyakarta: Biro Penerbit.

Lampiran 1. Dokumentasi Penyiapan Material



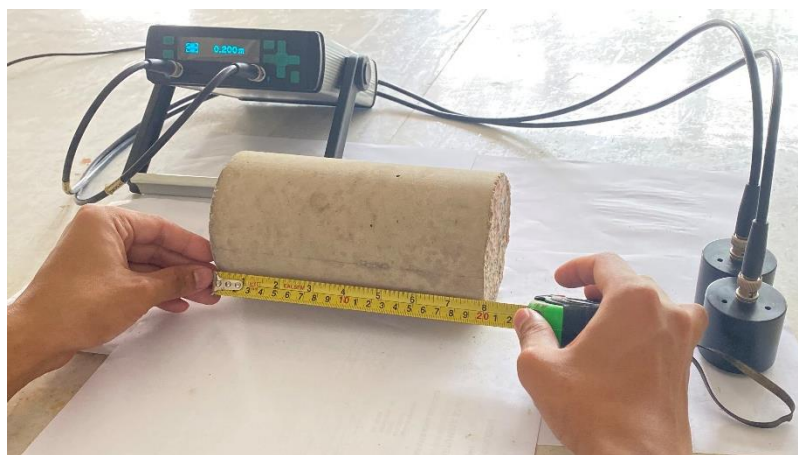
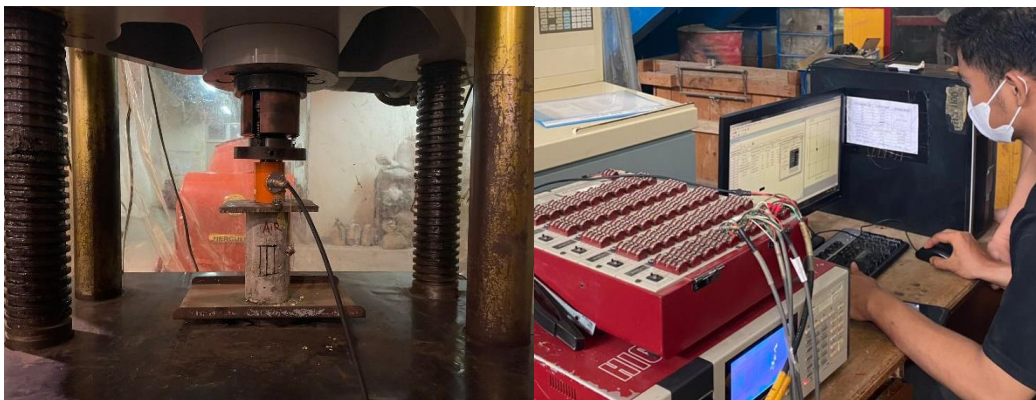
Lampiran 2. Dokumentasi Pembuatan Benda Uji



Lampiran 3. Dokumentasi Perawatan Benda Uji



Lampiran 4. Dokumentasi Pengujian Benda Uji



Lampiran 5. Hasil Pengujian Kuat Tekan

No.	Nama Sampel	Tanggal Pengecoran	Tanggal Pengujian	Kode Sampel	Nilai Slump (cm)	Kuat Tekan Rencana (MPa)	Kuat Tekan Umur 7 Hari (MPa)	Kuat Tekan Rata-Rata Umur 7 Hari (MPa)	Kuat Tekan Umur 28 Hari (MPa)	Kuat Tekan Rata-Rata Umur 28 Hari (MPa)
1	Normal 1						13.54		25.28	
2	Normal 2			N 21	18.5		13.10	13.52	19.76	21.50
3	Normal 3						13.91		19.45	
4	15 RB 1						10.62		20.55	
5	15 RB 2	4-Oct-22	11-Oct-22	15 RB 21	19.0		12.15	13.07	20.64	20.59
6	15 RB 3						16.45		20.59	
7	30 RB 1					21	11.35		19.00	
8	30 RB 2			30 RB 21	21.9		13.60	11.86	20.21	19.61
9	30 RB 3						10.64		19.61	
10	50 RB 1						10.11		17.52	
11	50 RB 2			50 RB 21	23.0		9.79	10.03	18.53	17.17
12	50 RB 3						10.19		15.46	
13	Normal 1						12.96		26.28	
14	Normal 2	6-Oct-22	13-Oct-22	N 25	21.2		16.27	15.91	21.12	23.89
15	Normal 3						18.50		24.28	
16	15 RB 1						16.86		24.26	
17	15 RB 2			15 RB 25	20.0		18.02	17.75	24.43	25.54
18	15 RB 3						18.37		27.93	
19	30 RB 1						13.49		22.71	
20	30 RB 2			30 RB 25	22.5	25	14.02	14.19	23.03	22.33
21	30 RB 3						15.06		21.25	
22	50 RB 1						13.27		18.47	
23	50 RB 2	11-Oct-22	18-Oct-22	50 RB 25	23.0		10.80	11.77	16.33	17.95
24	50 RB 3						11.23		19.06	
25	100 RB 1						6.81		13.25	
26	100 RB 2			100 RB 25	22.4		6.98	6.92	10.88	12.10
27	100 RB 3						6.99		12.17	
28	Normal 1						11.08		14.22	
29	Normal 2			N2 21	19.0		14.55	13.10	13.29	14.36
30	Normal 3						13.66		15.56	
31	15 RBF 1						18.03		16.65	
32	15 RBF 2	20-Oct-22	27-Oct-22	15 RBF 21	19.5		18.59	18.03	15.37	16.42
33	15 RBF 3					21	17.47		17.25	
34	30 RBF 1						12.04		15.93	
35	30 RBF 2			30 RBF 21	21.0		15.75	14.44	15.25	15.56
36	30 RBF 3						15.52		15.50	
37	50 RBF 1	25-Oct-22	1-Nov-22	50 RBF 21	20.5		12.63	13.56	14.46	14.47
38	50 RBF 2						15.41		14.96	

No.	Nama Sampel	Tanggal Pengecoran	Tanggal Pengujian	Kode Sampel	Nilai Slump (cm)	Kuat Tekan Rencana (MPa)	Kuat Tekan Umur 7 Hari (MPa)	Kuat Tekan Rata-Rata Umur 7 Hari (MPa)	Kuat Tekan Umur 28 Hari (MPa)	Kuat Tekan Rata-Rata Umur 28 Hari (MPa)
39	50 RBF 3						12.63		13.98	
40	15 RBS 1						13.92		13.77	
41	15 RBS 2			15 RBS 21	21.5		14.72	13.92	17.72	16.06
42	15 RBS 3						13.13		16.70	
43	30 RBS 1						14.91		15.49	
44	30 RBS 2			30 RBS 21	21.0		12.05	13.91	12.99	14.56
45	30 RBS 3						14.77		15.21	
46	50 RBS 1						13.09		17.28	
47	50 RBS 2			50 RBS 21	23.0		12.99	11.68	11.77	14.61
48	50 RBS 3						8.97		14.78	
49	15 RBF 1						14.61		22.35	
50	15 RBF 2	27-Oct-22	3-Nov-22	15 RBF 25	19.5		17.47	17.08	24.60	22.25
51	15 RBF 3						19.16		19.79	
52	30 RBF 1						15.40		21.19	
53	30 RBF 2			30 RBF 25	22.0		19.62	16.25	21.22	21.19
54	30 RBF 3						13.71		21.15	
55	50 RBF 1						11.39		21.09	
56	50 RBF 2			50 RBF 25	22.0		15.55	12.50	19.36	20.31
57	50 RBF 3						10.58		20.48	
58	15 RBS 1					25	16.82		25.24	
59	15 RBS 2	3-Nov-22	9-Nov-22	15 RBS 25	21.5		15.15	16.21	24.05	24.72
60	15 RBS 3						16.66		24.88	
61	30 RBS 1						17.14		21.42	
62	30 RBS 2			30 RBS 25	22.5		15.61	16.28	22.13	21.97
63	30 RBS 3						16.09		22.36	
64	50 RBS 1						9.07		21.42	
65	50 RBS 2	9-Nov-22	16-Nov-22	50 RBS 25	22.5		10.13	10.40	20.68	19.24
66	50 RBS 3						12.02		15.63	

Lampiran 6. Hasil Pengujian Ultrasonic *Ultrasonic Pulse Velocity (UPV)*

No.	Nama Sampel	Tanggal Pengecoran	Tanggal Pengujian	Kode Sampel	Nilai Slump (cm)	Kuat Tekan Rencana (MPa)	Kecepatan Gelombang Ultrasonik Umur 7 Hari (m/s)	Kecepatan Gelombang Ultrasonik Rata-Rata Umur 7 Hari (m/s)	Kecepatan Gelombang Ultrasonik Umur 28 Hari (m/s)	Kecepatan Gelombang Ultrasonik Rata-Rata Umur 28 Hari (m/s)
1	Normal 1						5141.67		5258.67	
2	Normal 2			N 21	18.5		5172.33	5139.00	5460.00	5368.44
3	Normal 3						5103.00		5386.67	
4	15 RB 1						5000.67		5263.33	
5	15 RB 2	4-Oct-22	11-Oct-22	15 RB 21	19.0		4922.00	5014.00	5254.00	5221.11
6	15 RB 3						5119.33		5146.00	
7	30 RB 1					21	4947.33		5076.33	
8	30 RB 2			30 RB 21	21.9		5059.67	4938.33	4890.00	4972.33
9	30 RB 3						4808.00		4950.67	
10	50 RB 1						4684.00		4967.33	
11	50 RB 2			50 RB 21	23.0		4743.00	4708.56	4698.67	4833.00
12	50 RB 3						4698.67		4833.00	
13	Normal 1						5272.33		5445.33	
14	Normal 2	6-Oct-22	13-Oct-22	N 25	21.2		5319.00	5256.11	5372.33	5407.67
15	Normal 3						5177.00		5405.33	
16	15 RB 1						5217.33		5490.00	
17	15 RB 2			15 RB 25	20.0		5217.33	5238.78	5459.33	5500.00
18	15 RB 3						5281.67		5550.67	
19	30 RB 1						5072.33		5309.67	
20	30 RB 2			30 RB 25	22.5	25	5291.00	5084.56	5208.67	5380.67
21	30 RB 3						4890.33		5623.67	
22	50 RB 1						4399.33		5018.33	
23	50 RB 2	11-Oct-22	18-Oct-22	50 RB 25	23.0		4552.67	4505.89	5072.00	5023.22
24	50 RB 3						4565.67		4979.33	
25	100 RB 1						3654.00		3937.33	
26	100 RB 2			100 RB 25	22.4		3540.00	3554.67	3901.33	3927.00
27	100 RB 3						3470.00		3942.33	
28	Normal 1						5405.33		5469.00	
29	Normal 2			N2 21	19.0		5277.00	5301.78	5499.67	5459.67
30	Normal 3						5223.00		5410.33	
31	15 RBF 1						4959.33		5185.00	
32	15 RBF 2	20-Oct-22	27-Oct-22	15 RBF 21	19.5	21	5038.33	5043.44	5286.67	5344.33
33	15 RBF 3						5132.67		5561.33	
34	30 RBF 1						4979.67		5059.00	
35	30 RBF 2			30 RBF 21	21.0		4940.00	5010.11	5177.00	5097.00
36	30 RBF 3						5110.67		5055.00	

No.	Nama Sampel	Tanggal Pengecoran	Tanggal Pengujian	Kode Sampel	Nilai Slump (cm)	Kuat Tekan Rencana (MPa)	Kecepatan Gelombang Ultrasonik Umur 7 Hari (m/s)	Kecepatan Gelombang Ultrasonik Rata-Rata Umur 7 Hari (m/s)	Kecepatan Gelombang Ultrasonik Umur 28 Hari (m/s)	Kecepatan Gelombang Ultrasonik Rata-Rata Umur 28 Hari (m/s)
37	50 RBF 1						4612.00		5185.67	
38	50 RBF 2			50 RBF 21	20.5		4731.67	4665.11	5132.67	5117.33
39	50 RBF 3						4651.67		5033.67	
40	15 RBS 1						5051.33		5405.33	
41	15 RBS 2	25-Oct-22	1-Nov-22	15 RBS 21	21.5		5231.00	5121.11	5203.67	5312.56
42	15 RBS 3						5081.00		5328.67	
43	30 RBS 1						4827.33		5055.00	
44	30 RBS 2			30 RBS 21	21.0		4930.00	4999.22	4954.33	5072.56
45	30 RBS 3						5240.33		5208.33	
46	50 RBS 1						4713.33		5012.67	
47	50 RBS 2			50 RBS 21	23.0		4402.00	4650.67	4992.00	4949.11
48	50 RBS 3						4836.67		4842.67	
49	15 RBF 1						5179.67		5376.33	
50	15 RBF 2	27-Oct-22	3-Nov-22	15 RBF 25	19.5		5089.00	5092.44	5309.67	5301.22
51	15 RBF 3						5008.67		5217.67	
52	30 RBF 1						4962.67		5204.00	
53	30 RBF 2			30 RBF 25	22.0		4943.67	4916.33	5124.00	5126.22
54	30 RBF 3						4842.67		5050.67	
55	50 RBF 1						4854.67		5592.00	
56	50 RBF 2			50 RBF 25	22.0		4576.67	4694.11	5396.00	5546.00
57	50 RBF 3						4651.00		5650.00	
58	15 RBS 1					25	5272.33		5592.00	
59	15 RBS 2	3-Nov-22	9-Nov-22	15 RBS 25	21.5		5296.00	5192.33	5396.00	5546.00
60	15 RBS 3						5008.67		5650.00	
61	30 RBS 1						5105.33		5426.00	
62	30 RBS 2			30 RBS 25	22.5		5260.33	5141.56	5181.67	5405.11
63	30 RBS 3						5059.00		5607.67	
64	50 RBS 1						4866.33		4942.00	
65	50 RBS 2	9-Nov-22	16-Nov-22	50 RBS 25	22.5		4770.33	4799.67	4931.33	4940.33
66	50 RBS 3						4762.33		4947.67	