

LAMPIRAN

Lampiran 1 Hasil Pengujian dan analisis data LWD

Tabel 1. Hasil Pengujian dan Analisis Data LWD Level 1

Titik	Beban (Kg)	d ₀ (mikro)	d ₁ (mikro)	d ₂ (mikro)	E _{LWD} Alat (MPa)	E _{LWD} Analisis (MPa)
1	1243	1031.7	730.7	30.8	45	44.970
	1243	821.4	99.1	13.1	56	56.484
	1243	694.2	128.2	9.3	67	66.833
	1243	585	123.1	11	79	79.295
	1243	584.4	126.4	10.3	79	79.390
2	1243	859.9	292.8	26	54	53.955
	1243	402	128.3	15.5	162	115.412
	1243	445.8	134.4	16.6	104	104.073
	1243	494.2	157.9	12.4	94	93.880
	1243	426.8	139.3	16.3	109	108.706
3	1243	744	347.6	28.6	62	62.360
	1243	640	162.2	18	72	72.493
	1243	734	159.2	16.4	63	63.209
	1243	639.3	195.4	15.1	72	72.573
	1243	635.5	167.9	18.4	73	73.007
4	1243	780.8	317.6	1.6	59	59.421
	1243	699.5	325.1	1.7	66	66.327
	1243	624.4	335.7	1.4	74	74.304
	1243	649.3	344.5	1	71	71.455
	1243	783.5	459.6	2.3	59	59.216
5	1243	917.7	614.5	2.7	50	50.557
	1243	477.5	237.7	0.9	97	97.164
	1243	523.9	251.9	1.7	88	88.558
	1243	467.6	288.8	0.9	99	99.221
	1243	444.6	266.8	1.5	104	104.354
6	1243	718.1	519.3	3.2	65	64.609
	1243	495.1	183.8	18.6	94	93.710
	1243	452.1	237.3	19.5	102	102.623
	1243	570.8	210.2	19.4	81	81.282
	1243	512.6	251.9	20.6	90	90.511

Tabel 2. Hasil Pengujian dan Analisis Data LWD Level 1 (lanjutan)

Titik	Beban (Kg)	d ₀ (mikro)	d ₁ (mikro)	d ₂ (mikro)	E _{LWD} Alat (MPa)	E _{LWD} Analisis (MPa)
7	1243	727	418.3	25.4	64	63.818
	1243	673.7	119.1	16.5	69	68.867
	1243	728.4	222.3	14.6	64	63.695
	1243	728.2	272.5	16.2	64	63.713
	1243	745.7	322.5	18.2	62	62.218
8	1243	836.5	457.4	32.8	55	55.464
	1243	754.8	203.3	14.1	61	61.468
	1243	748.6	160.4	15.9	62	61.977
	1243	803.3	117.4	14.3	58	57.756
	1243	910	199.6	15	51	50.984
9	1243	805.1	403.8	26.4	58	57.627
	1243	535.7	129.1	11.7	86	86.608
	1243	429.9	165.3	13.1	108	107.922
	1243	338.2	137.9	17.5	137	137.184
	1243	432	124.9	19.1	107	107.397
10	1243	666.6	260.9	29	69	69.601
	1243	364.9	126.9	0.5	127	127.146
	1243	381.1	133.1	0.8	122	121.742
	1243	346.6	136.1	0.7	134	133.860
	1243	358	137.7	1.3	129	129.597
11	1243	706.5	349.2	2	66	65.670
	1243	371.9	137.9	11.9	125	124.753
	1243	383.2	141.1	15.1	121	121.074
	1243	383.5	134.7	11.4	121	120.980
	1243	286.3	66.5	12.7	162	162.053
12	1243	584.6	310.4	40	79	79.363
	1243	368.1	153	13.8	126	126.041
	1243	372.6	156.6	12.3	124	124.519
	1243	402.8	141	16	115	115.183
	1243	357.7	155.4	17.4	129	129.706
13	1243	684	408.8	34	68	67.830
	1243	577.8	96.9	11.9	80	80.297
	1243	400.1	104	13.5	116	115.960
	1243	438.4	124.7	10.4	106	105.830
	1243	433.3	134.3	12.6	107	107.075

Tabel 3. Hasil Pengujian dan Analisis Data LWD Level 1 (Lanjutan)

Titik	Beban (Kg)	d ₀ (mikro)	d ₁ (mikro)	d ₂ (mikro)	E _{LWD} Alat (MPa)	E _{LWD} Analisis (MPa)
14	1243	816.4	447.3	26	57	56.830
	1243	279.9	188.2	14.8	165	165.758
	1243	318	202.9	14.5	146	145.898
	1243	359.3	223.1	12.8	129	129.128
	1243	342.5	195.5	14	135	135.462
15	1243	667.7	390.4	29.1	69	69.486
	1243	320.7	199.5	13	144	144.670
	1243	306.6	173.2	16.5	151	151.323
	1243	315.7	189.6	17.5	147	146.961
	1243	310.8	131.1	17.9	149	149.278
16	1243	436.4	386.6	31	106	106.315
	1243	181.3	88.9	20	255	255.906
	1243	181.3	88.9	20	255	255.906
	1243	200.5	63.5	23.6	231	231.400
	1243	142.7	60.7	25.1	325	325.128
	Nilai Min				45.00	44.97
	Nilai Max				325.00	325.13
	Nilai rata-rata				102.33	101.93
	Standar Deviasi (SD)				50.12	49.77
	Varian				248.08	244.64
	Koef Varian (KV)				0.49	0.49
	Kovarian (Kov)					2.59

Tabel 4. Hasil Pengujian dan Analisis Data LWD Level 2

Titik	Beban (Kg)	d ₀ (mikro)	d ₁ (mikro)	d ₂ (mikro)	E _{LWD} Alat (MPa)	E _{LWD} Analisis (MPa)
1	1744	622.2	122.6	12.6	104	105.798
	1744	955.3	276.8	26.2	68	68.908
	1744	863.3	263.7	25.5	75	76.251
	1744	824	262	27	79	79.898
	1744	878.6	286.9	24.3	74	74.923
2	1744	336.1	108.6	17.3	193	195.857
	1744	644	305.2	30.2	101	102.217
	1744	741	249.9	31.4	88	88.836
	1744	654.5	324.3	32	99	100.577
	1744	697.7	329.3	24.6	93	94.350
3	1744	691.6	180.5	13.8	94	95.182
	1744	718.9	331.3	27.8	90	91.567
	1744	671	329	24.7	97	98.104
	1744	693	335.9	9	94	94.989
	1744	752.5	342.8	1.6	86	87.479
4	1744	661.9	418.3	2.7	98	99.453
	1744	807.4	448.5	3.5	80	81.530
	1744	839.5	598	2.8	77	78.413
	1744	892.1	692.8	2.8	73	73.790
	1744	910	624.6	2.9	71	72.338
5	1744	544.1	246.5	0.6	119	120.985
	1744	826.3	577.7	2.4	79	79.666
	1744	783	517.6	2.1	83	84.071
	1744	736.8	515	1.3	88	89.343
	1744	761	551.4	2.8	85	86.502
6	1744	580.8	242.9	18.5	112	113.340
	1744	656.4	364.1	34.9	99	100.286
	1744	749.7	427.2	37.1	87	87.805
	1744	610.7	398.2	37.1	106	107.791
	1744	656.1	373.2	36.9	99	100.332
7	1744	689.1	293.1	16.5	94	95.527
	1744	932	483.3	31.7	70	70.631
	1744	956.7	461.9	29.6	68	68.807
	1744	878.7	466.7	30.7	74	74.915
	1744	824.1	426.3	32.3	79	79.878

Tabel 5. Hasil pengujian analisis data LWD Level 2 (lanjutan)

Titik	Beban (Kg)	d ₀ (mikro)	d ₁ (mikro)	d ₂ (mikro)	E _{LWD} Alat (MPa)	E _{LWD} Analisis (MPa)
8	1744	755.1	153.1	17.7	86	87.177
	1744	826.2	335.8	23.5	79	79.675
	1744	738.8	346.2	26.9	88	89.101
	1744	744.1	403	25.8	87	88.466
	1744	823.9	403.3	27.8	79	79.898
9	1744	311.8	141.8	17.8	208	211.121
	1744	660.7	259.5	25.9	98	99.633
	1744	451.2	237.1	33.7	144	145.895
	1744	465.4	229.5	33.7	140	141.443
	1744	547.9	244.1	32.6	119	120.145
10	1744	337.4	139.9	0.6	193	195.103
	1744	643.7	274.8	1.6	101	102.265
	1744	578.5	312	1.9	112	113.790
	1744	599.2	310.9	1.5	108	109.859
	1744	612.7	334.8	1.7	106	107.439
11	1744	296.6	62.4	12	219	221.941
	1744	666	259.7	45	98	98.840
	1744	653.7	249	35.4	99	100.700
	1744	588.4	254.5	33.5	110	111.876
	1744	706.7	268.1	42.3	92	93.148
12	1744	362.3	161	14.1	179	181.694
	1744	862.1	434	25.8	75	76.357
	1744	751.3	434.9	25.4	86	87.618
	1744	616.4	346.1	38.3	105	106.794
	1744	671.8	394.2	34	97	97.987
13	1744	675	422.2	23.8	96	97.522
	1744	576.7	424.4	27.7	113	114.145
	1744	431.4	359.6	32.8	151	152.591
	1744	390.4	345.5	34.5	166	168.616
	1744	536.1	316.2	33.3	121	122.790
14	1744	387.5	225.1	11.3	168	169.878
	1744	631.1	374.8	30.1	103	104.306
	1744	755.9	409.4	21.7	86	87.085
	1744	793.2	396.5	21.4	82	82.990
	1744	713.4	362.7	26.2	91	92.273

Tabel 6. Hasil pengujian analisis data LWD Level 2 (lanjutan)

Titik	Beban (Kg)	d ₀ (mikro)	d ₁ (mikro)	d ₂ (mikro)	E _{LWD} Alat (MPa)	E _{LWD} Analisis (MPa)
15	1744	173.3	89.8	18.1	375	379.848
	1744	627.9	370.3	22.6	103	104.838
	1744	516.4	356.5	25.3	126	127.474
	1744	359.8	330.6	30.9	181	182.956
	1744	377.5	361.5	29.1	172	174.378
16	1744	209.4	61.9	21.6	310	314.363
	1744	531	178.2	37.1	122	123.969
	1744	569.3	178.3	45.3	114	115.629
	1744	380	177.9	38.9	171	173.231
	1744	411.3	182.4	43	158	160.048
	Nilai Min				68.00	68.81
	Nilai Max				375.00	379.85
	Nilai rata-rata				113.66	115.22
	Standar Deviasi (SD)				51.04	51.71
	Varian				257.24	264.01
	Koefisien Varian (KV)				0.45	0.45
	Kovarian (Kov)					2.90

Lampiran 2 Validitas dan Reliabilitas pada Hasil Pengujian dan Analisis LWD

Tabel 1. Validitas dan Reliabilitas pada Hasil Pengujian dan Analisis LWD Level 1

Titik	Level 1		r-hitung	r-tabel 5%	Keterangan
	Analisis (MPa)	Alat (MPa)			
1	44.97	45.00	0.99984	0.2199	valid
	56.48	56.00			
	66.83	67.00			
	79.30	79.00			
	79.39	79.00			
2	53.95	54.00	0.87962	0.2199	valid
	115.41	162.00			
	104.07	104.00			
	93.88	94.00			
	108.71	109.00			
3	62.36	62.00	0.99914	0.2199	valid
	72.49	72.00			
	63.21	63.00			
	72.57	72.00			
	73.01	73.00			
4	59.42	59.00	0.99991	0.2199	valid
	66.33	66.00			
	74.30	74.00			
	71.45	71.00			
	59.22	59.00			
5	50.56	50.00	0.99998	0.2199	valid
	97.16	97.00			
	88.56	88.00			
	99.22	99.00			
	104.35	104.00			
6	64.61	65.00	0.99968	0.2199	valid
	93.71	94.00			
	102.62	102.00			
	81.28	81.00			
	90.51	90.00			

Tabel 2. Validitas dan Reliabilitas pada Hasil Pengujian dan Analisis LWD
Level 1 (Lanjutan)

Titik	Level 1		r-hitung	r-tabel 5%	Keterangan
	Analisis (MPa)	Alat (MPa)			
7	63.82	64.00	0.996897379	0.2199	valid
	68.87	69.00			
	63.70	64.00			
	63.71	64.00			
	62.22	62.00			
8	55.46	55.00	0.997523956	0.2199	valid
	61.47	61.00			
	61.98	62.00			
	57.76	58.00			
	50.98	51.00			
9	57.63	58.00	0.99992574	0.2199	valid
	86.61	86.00			
	107.92	108.00			
	137.18	137.00			
	107.40	107.00			
10	69.60	69.00	0.999918357	0.2199	valid
	127.15	127.00			
	121.74	122.00			
	133.86	134.00			
	129.60	129.00			
11	65.67	66.00	0.999993406	0.2199	valid
	124.75	125.00			
	121.07	121.00			
	120.98	121.00			
	162.05	162.00			
12	79.36	79.00	0.999919472	0.2199	valid
	126.04	126.00			
	124.52	124.00			
	115.18	115.00			
	129.71	129.00			

Tabel 3. Validitas dan Reliabilitas pada Hasil Pengujian dan Analisis LWD
Level 1 (Lanjutan)

Titik	Level 1		r-hitung	r-tabel 5%	Keterangan
	Analisis (MPa)	Alat (MPa)			
13	67.83	68.00	0.99995	0.2199	valid
	80.30	80.00			
	115.96	116.00			
	105.83	106.00			
	107.08	107.00			
14	56.83	57.00	0.99998	0.2199	valid
	165.76	165.00			
	145.90	146.00			
	129.13	129.00			
	135.46	135.00			
15	69.49	69.00	0.99998	0.2199	valid
	144.67	144.00			
	151.32	151.00			
	146.96	147.00			
	149.28	149.00			
16	106.31	106.00	0.99999	0.2199	valid
	255.91	255.00			
	255.91	255.00			
	231.40	231.00			
	325.13	325.00			
Nilai Min	44.97	45.00			
Nilai Max	325.13	325.00			
Nilai rata-rata	101.93	102.33			
Standar					
Deviasi	49.77286384	50.12157			
Koef Varian	0.48830572	0.489827			
Korelasi	0.994521835				
r-hitung	0.994521835			Hasil Reliabel	

Tabel 4. Validitas dan Reliabilitas pada Hasil Pengujian dan Analisis LWD Level 2

Titik	Level 2		r-hitung	r-tabel 5%	Keterangan
	Analisis (MPa)	Alat (MPa)			
1	105.80	104.00	0.99993	0.2199	valid
	68.91	68.00			
	76.25	75.00			
	79.90	79.00			
	74.92	74.00			
2	195.86	193.00	0.99999	0.2199	valid
	102.22	101.00			
	88.84	88.00			
	100.58	99.00			
	94.35	93.00			
3	95.18	94.00	0.99935	0.2199	valid
	91.57	90.00			
	98.10	97.00			
	94.99	94.00			
	87.48	86.00			
4	99.45	98.00	0.9997	0.2199	valid
	81.53	80.00			
	78.41	77.00			
	73.79	73.00			
	72.34	71.00			
5	120.98	119.00	0.99989	0.2199	valid
	79.67	79.00			
	84.07	83.00			
	89.34	88.00			
	86.50	85.00			
6	113.34	112.00	0.99971	0.2199	valid
	100.29	99.00			
	87.81	87.00			
	107.79	106.00			
	100.33	99.00			

Tabel 5. Validitas dan Reliabilitas pada Hasil Pengujian dan Analisis LWD
Level 2 (Lanjutan)

Titik	Level 1		r-hitung	r-tabel 5%	Keterangan
	Analisis (MPa)	Alat (MPa)			
7	95.53	94.00	0.9999426	0.2199	valid
	70.63	70.00			
	68.81	68.00			
	74.91	74.00			
	79.88	79.00			
8	87.18	86.00	0.999350981	0.2199	valid
	79.68	79.00			
	89.10	88.00			
	88.47	87.00			
	79.90	79.00			
9	211.12	208.00	0.999961892	0.2199	valid
	99.63	98.00			
	145.89	144.00			
	141.44	140.00			
	120.15	119.00			
10	195.10	193.00	0.999983427	0.2199	valid
	102.26	101.00			
	113.79	112.00			
	109.86	108.00			
	107.44	106.00			
11	221.94	219.00	0.999978005	0.2199	valid
	98.84	98.00			
	100.70	99.00			
	111.88	110.00			
	93.15	92.00			
12	181.69	179.00	0.999971583	0.2199	valid
	76.36	75.00			
	87.62	86.00			
	106.79	105.00			
	97.99	97.00			

Tabel 6. Validitas dan Reliabilitas pada Hasil Pengujian dan Analisis LWD
Level 2 (Lanjutan)

Titik	Level 1		r-hitung	r-tabel 5%	Keterangan
	Analisis (MPa)	Alat (MPa)			
13	97.52	96.00	0.999916548	0.2199	valid
	114.15	113.00			
	152.59	151.00			
	168.62	166.00			
	122.79	121.00			
14	169.88	168.00	0.728386691	0.2199	valid
	104.31	103.00			
	87.09	146.00			
	82.99	82.00			
	92.27	91.00			
15	379.85	375.00	0.999995531	0.2199	valid
	104.84	103.00			
	127.47	126.00			
	182.96	181.00			
	174.38	172.00			
16	314.36	310.00	0.999997669	0.2199	valid
	123.97	122.00			
	115.63	114.00			
	173.23	171.00			
	160.05	158.00			
Nilai Min	68.81	68.00			
Nilai Max	379.85	375.00			
Nilai rata-rata	115.22	114.41			
Standar Deviasi	51.7062303	51.0682576			
Koef Varian	0.44877869	0.44635202			
Korelasi r-hitung	0.991322324				
	0.991322324				Hasil Reliabel