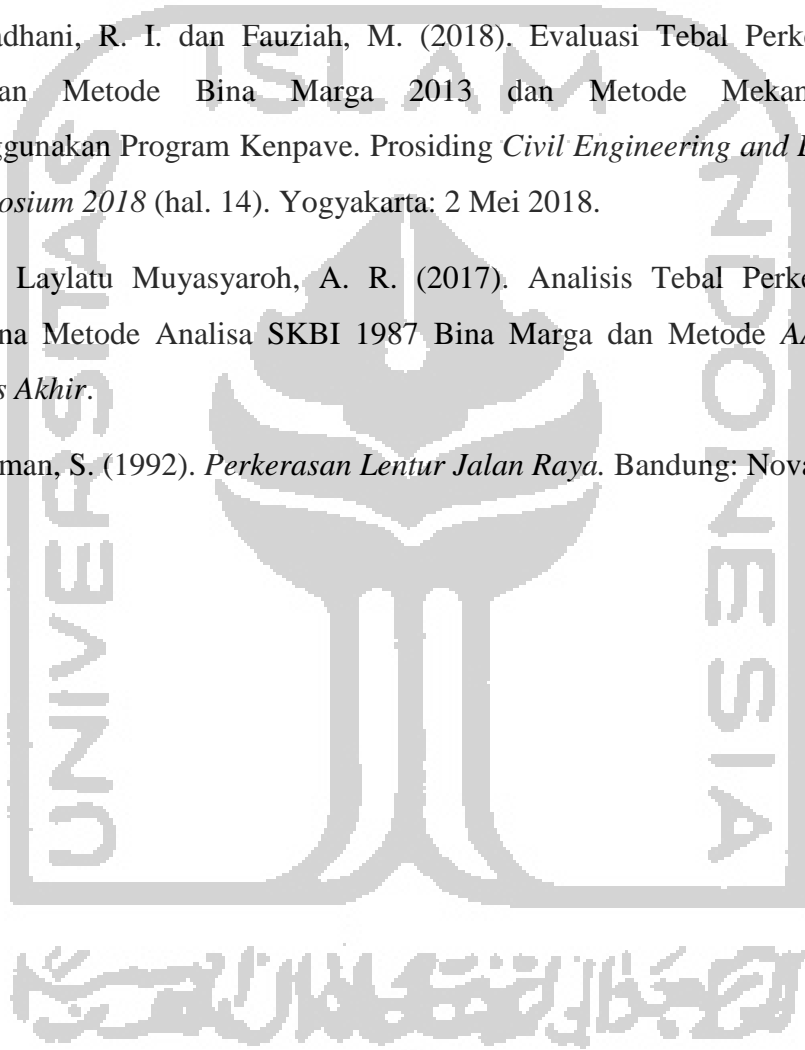


Officials, A. A. (1993). *AASHTO Guide for Design of Pavement Structures*. Washington D.C: American Association of State Highway and Transportation Officials.

Ramadhani, R. I. dan Fauziah, M. (2018). Evaluasi Tebal Perkerasan Lentur Dengan Metode Bina Marga 2013 dan Metode Mekanistik–Empirik Menggunakan Program Kenpave. Prosiding *Civil Engineering and Environmental Symposium 2018* (hal. 14). Yogyakarta: 2 Mei 2018.

Sisqa Laylatu Muyasyaroh, A. R. (2017). Analisis Tebal Perkerasan Lentur Dengan Metode Analisa SKBI 1987 Bina Marga dan Metode AASHTO 1993. *Tugas Akhir*.

Sukirman, S. (1992). *Perkerasan Lentur Jalan Raya*. Bandung: Nova.





# LAMPIRAN

### Lampiran 1 Data Lalu Lintas Bidang Bina Marga Dinas Permukiman Dan Prasarana Wilayah Propinsi DIY Tahun 2016

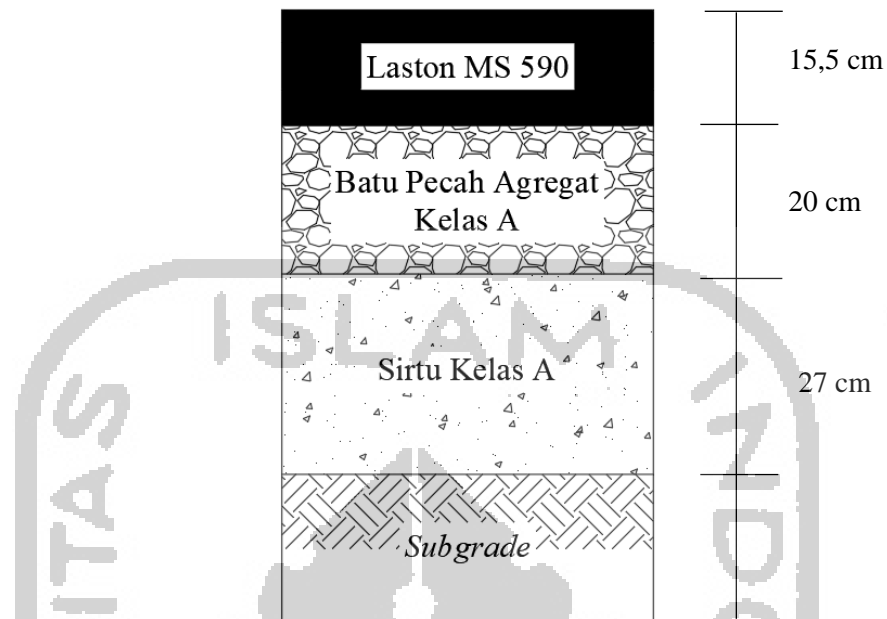
No.	Nama Ruas Jalan	Lama Waktu Survei jam	Golongan											Jumlah SMP/jam	LHR
			1	2	3	4	5a	5b	6	7a	7b	7c	8		
			Sepeda motor	Sedan, jeep	pick-up	micro truk	Bus Kecil	Bus Besar	Truk 2 sb	Truk 3 sb	Truk Gandeng	Truk semi trailer	Kendaraan tidak bermotor		
<b>II. KABUPATEN BANTUL</b>															
1	Yogyakarta-Bantul	40	102335	9749	2084	3021	1376	64	818	26	5	2	10510	1742,8375	41828,1
2	Bantul-Srandakan	40	57321	3548	1395	1871	856	3	2474	65	11	4	7770	1066,3375	25592,1
3	Jl. Katamsa (Bantul)	16	10668	871	342	666	18	9	925	15	3	1	1271	582,03125	13968,75
4	Jl. Kol. Sugiyono (Bantul)	16	9334	928	334	625	306	14	946	13	1	3	986	590,1875	14164,5
5	Jl. Pemuda (Bantul)	16	12997	1136	626	730	198	0	166	2	1	2	1414	580,59375	13934,25
6	Yogyakarta-Parangtritis	40	42524	5639	847	1515	1917	39	370	25	1	1	6003	858,2875	20598,9
7	Yogyakarta-Bibal (Yogyakarta-Panggang)	40	55510	7525	768	2261	2996	163	853	68	7	4	6403	1197,2375	28733,7
8	Dawung-Makam Imogiri	40	47952	2205	863	1800	1472	0	879	2	0	0	9378	846,6125	20318,7
9	Sedayu-Pandak	16	6371	180	100	183	9	2	512	4	0	0	2012	304,3125	7303,5
10	Srandakan-Kretek	16	5275	78	9	90	5	0	198	12	0	0	1160	209,3125	5023,5
11	Parangtritis-Batas Kabupaten Gunungkidul	16	2024	118	74	83	1	0	137	0	0	0	2	97,375	2337
12	Imogiri Timur-Barongan	40	2239	2145	1221	154	74	7	88	68	16	0	0	416,5	7368
13	Sampakan-Singosaren	16	8640	443	39	338	7	1	795	0	0	0	817	444,3125	10663,5
14	Palbapang-Samas	16	18209	1161	45	594	144	85	416	18	3	0	2388	786,09375	18866,25
<b>III. KABUPATEN KULONPROGO</b>															
1	Sentolo-Kalibawang-Klangon	16	4654	297	248	276	97	0	345	9	2	0	648	252,375	6057
2	Srandakan-Toyan	16	6136	485	341	424	90	4	520	7	0	0	1112	345,9375	8302,5
3	Milir-Dayakan-Wates	40	18283	1577	765	699	808	8	591	13	0	0	4055	374,45	8986,8
4	Jl. Katamsa (Wates)	40	33284	2297	333	845	33	3	128	5	0	0	8905	505,2625	12126,3
5	Jl. Diponegoro (Wates)	40	47696	4264	1435	1383	83	4	529	21	1	1	11586	777,65	18663,6
6	Jl. Sugiman (Wates)	40	20029	1605	867	716	402	2	240	6	0	3	3807	349,3375	8384,1
7	Yogyakarta-Ngapak (Yogyakarta-Nanggulan)	40	21481	1916	213	882	409	7	607	6	0	1	1411	403,0125	9672,3
8	Sentolo-Galur	16	4017	217	99	280	2	1	178	5	0	0	1063	185,84375	4460,25
9	Galur-Cogot	40	16138	869	278	551	58	0	218	2	0	0	5116	254,625	6111
10	Dekso-Samigaluh-Pagerharjo	16	2900	220	35	98	77	0	62	4	0	0	241	132,96875	3191,25
11	Kembang-Tegalsari	16	4668	189	191	242	22	0	146	0	0	0	578	199,0625	4777,5
12	Tegalsari-Siluwo (Temon)	16	3066	146	110	184	33	0	83	2	0	0	817	134,9375	3238,5
13	Sentolo-Pengasih-Waduk Sermo	16	8563	341	157	281	25	0	359	1	0	0	901	366,65625	8799,75

No.	Nama Ruas Jalan	Lama Waktu Survei jam	Golongan											Jumlah SMP/jam	LHR
			1	2	3	4	5a	5b	6	7a	7b	7c	8		
			Sepeda motor	Sedan, jeep	pick-up	micro truk	Bus Kecil	Bus Besar	Truk 2 sb	Truk 3 sb	Truk Canggih	Truk semi trailer	Kendaraan tidak bermotor		
<b>IV</b>	<b>KABUPATEN GUNUNGKIDUL</b>														
1	Bibal-Panggang (Yogyakarta-Panggang)	16	1874	71	86	162	109	0	174	0	0	0	12	117,34375	2816,25
2	Panggang-Paliyan	16	2907	95	236	160	0	0	193	1	0	0	121	137,125	3291
3	Paliyan-Playen	40	11337	416	1541	544	0	3	335	0	0	7	1026	187,4	4497,6
4	Playen-Gading	40	8850	460	472	556	0	27	484	2	0	7	469	168,975	4055,4
5	Playen-Gedak	40	10518	749	1431	450	20	20	434	6	0	0	712	191,775	4602,6
6	Wonosari-Semin	40	17086	1433	1875	1076	22	96	610	16	0	2	131	324,35	7784,4
7	Jl. Sumarwi (Wonosari)	40	22509	1717	1883	1180	9	9	315	3	0	0	966	374,9375	8998,5
8	Jl. Pramuka (Wonosari)	40	26011	1695	2975	1058	24	5	516	5	0	1	799	428,5375	10284,9
9	Semin-Bulu	16	1702	132	247	31	104	6	95	1	0	0	78	95,78125	2298,75
10	Semin-Blimbing	16	1629	86	420	74	11	2	58	5	0	0	120	73	1752
11	Pandanan-Candirejo	16	2193	90	243	167	23	5	154	7	0	1	182	114,6875	2752,5
12	Ngeposari-Pecucak-Bedoyo	40	7273	655	703	535	71	8	1068	38	0	3	193	195,525	4692,6
13	Sumur-Tanggul-Semuluh	16	2673	97	225	90	2	1	283	8	0	0	144	141,4375	3394,5
14	Wonosari-Tepus	16	1724	59	274	125	0	0	161	0	0	0	53	90,53125	2172,75
15	Jl. Baron (Wonosari)	40	18131	847	3262	1354	63	262	1112	22	0	1	1263	376,475	9035,4
16	Mulo-Kemiri-Baron	16	1946	88	171	162	1	2	38	0	0	0	0	82,90625	1989,75
17	Sambipitu-Nglipar	16	2061	133	164	79	0	9	102	4	0	0	1	96,03125	2304,75
18	Nglipar-Semin	16	1555	74	202	70	0	4	61	0	0	1	2	68,0625	1633,5
19	Wonosari-Nglipar	16	3588	154	357	106	0	9	147	0	0	1	48	153,21875	3677,25
20	Jl. Satria (Wonosari)	40	34498	2504	1490	1233	2	5	179	4	0	0	753	536,6375	12879,3
21	Jl. Taman Bakti (Wonosari)	40	16364	717	1154	549	2	2	260	2	0	0	837	252,875	6069
22	Batas Kabupaten Bantul-Panggang	16	1376	32	73	64	0	0	59	0	0	0	6	58,21875	1397,25
23	Temanggung-Kemiri	16	751	18	184	38	0	0	80	0	0	0	1	39,46875	947,25
24	Baron-Tepus	16	695	38	25	142	3	2	31	0	0	0	0	38,65625	927,75
25	Tepus-Jepitu-Jerukwudel	16	965	15	121	37	0	0	40	2	0	0	2	40,03125	960,75
26	Jepitu-Wediombo	16	1054	8	7	25	0	0	61	0	0	0	1	44,53125	1068,75
27	Jerukwudel-Baran (Rongkop)	16	1259	28	228	106	0	0	95	0	0	0	7	62,5625	1501,5
28	Jerukwudel-Ngungap	16	614	5	144	41	0	0	64	0	0	0	34	32,0625	769,5
29	Jerukwudel-Sadeng	16	574	15	119	50	0	0	45	0	0	0	2	29,03125	696,75
30	Pandean-Playen	16	6240	232	59	295	2	0	198	0	0	0	863	259,1875	6220,5
			2572	70	107	162	0	0	126				271		
<b>V.</b>	<b>KABUPATEN SLEMAN</b>														
1	Yogyakarta-Kaliurang	40	125767	23873	6220	3740	225	181	1383	72	12	3	1799	2383,0125	57192,3
2	Prambanan-Piyungan	16	12676	1070	344	840	799	18	675	54	33	2	1764	765,875	18381
3	Yogyakarta-Ngapak (Yogyakarta-Nanggulan)	40	104658	9355	4210	3634	1558	114	778	51	19	5	5759	1793,125	43035
4	Prambanan-Pakem	16	9407	1123	330	518	105	9	296	1	1	0	188	461,25	11070
5	Tempel-Pakem	16	5808	657	540	575	103	2	252	5	0	0	206	315,28125	7566,75
6	Yogyakarta-Pulowatu	40	69425	14527	1821	3002	50	19	899	24	1	4	1366	1368,95	32854,8
7	Klangon-Tempel	16	7099	445	106	413	15	19	398	2	0	3	562	344,5	8268

Lampiran 2 Data Lalu Lintas Bidang Bina Marga Dinas Permukiman Dan Prasarana Wilayah Propinsi DIY Tahun 2017

No.	Nama Ruas Jalan	Lama Waktu Survei jam	Golongan											Jumlah SMP/jam	LHR	
			1 Sepeda motor, sekuter, sepeda	2 Sedan, jeep dan station	3 pick-up-opelet, sub urban	4 micro truk dan mobil	5a Bus Kecil	5b Bus besar	6 Truk 2 sumbu	7a Truk 3 sumbu	7b Truk Gandeng	7c Truk semi trailer	8 Kendaraan tidak bermotor			
<b>II. KABUPATEN BANTUL</b>																
1	Yogyakarta-Bantul	40	102335	9749	2084	3021	1376	64	818	26	5	2	10510	1794,938	43078,5	
2	Bantul-Srandakan	40	57321	3548	1395	1871	856	3	2474	65	11	4	7770	1101,213	26429,1	
3	Jl. Katamso (Bantul)	16	10668	871	342	666	18	9	925	15	3	1	1271	603,4063	14481,75	
4	Jl. Kol. Sugiyono (Bantul)	16	9334	928	334	625	306	14	946	13	1	3	986	611,0625	14665,5	
5	Jl. Pemuda (Bantul)	16	12997	1136	626	730	198	0	166	2	1	2	1414	619,7188	14873,25	
6	Yogyakarta-Parangtritis	40	42524	5639	847	1515	1917	39	370	25	1	1	6003	879,4625	21107,1	
7	Yogyakarta-Bibal (Yogyakarta-Panggang)	40	55510	7525	768	2261	2996	163	853	68	7	4	6403	1216,438	29194,5	
8	Dawung-Makam Imogiri	40	47952	2205	863	1800	1472	0	879	2	0	0	9378	868,1875	20836,5	
9	Sedayu-Pandak	16	6371	180	100	183	9	2	512	4	0	0	2012	310,5625	7453,5	
10	Srandakan-Kretek	16	5275	78	9	90	5	0	198	12	0	0	1160	209,875	5037	
11	Parangtritis-Batas Kabupaten Gunungkidul	16	2024	118	74	83	1	0	137	0	0	0	2	102	2448	
12	Imogiri Timur-Barongan	40	2239	2145	1221	154	74	7	88	68	16	0	0	416,5	7368	
13	Sampakan-Singosaren	16	8640	443	39	338	7	1	795	0	0	0	817	446,75	10722	
14	Palbapang-Samas	16	18209	1161	45	594	144	85	416	18	3	0	2388	788,9063	18933,75	
<b>III. KABUPATEN KULONPROGO</b>																
1	Sentolo-Kalibawang-Klangon	16	4654	297	248	276	97	0	345	9	2	0	648	267,875	6429	
2	Srandakan-Toyan	16	6136	485	341	424	90	4	520	7	0	0	1112	367,25	8814	
3	Milir-Dayakan-Wates	40	18283	1577	765	699	808	8	591	13	0	0	4055	393,575	9445,8	
4	Jl. Katamso (Wates)	40	33284	2297	333	845	33	3	128	5	0	0	8905	513,5875	12326,1	
5	Jl. Diponegoro (Wates)	40	47696	4264	1435	1383	83	4	529	21	1	1	11586	813,525	19524,6	
6	Jl. Sugiman (Wates)	40	20029	1605	867	716	402	2	240	6	0	3	3807	371,0125	8904,3	
7	Yogyakarta-Ngapak (Yogyakarta-Nanggulan)	40	21481	1916	213	882	409	7	607	6	0	1	1411	408,3375	9800,1	
8	Sentolo-Galur	16	4017	217	99	280	2	1	178	5	0	0	1063	192,0313	4608,75	
9	Galur-Congot	40	16138	869	278	551	58	0	218	2	0	0	5116	261,575	6277,8	
10	Dekso-Samigaluh-Pagerharjo	16	2900	220	35	98	77	0	62	4	0	0	241	135,1563	3243,75	
11	Kembang-Tegalsari	16	4668	189	191	242	22	0	146	0	0	0	578	211	5064	
12	Tegalsari-Siluwo (Temon)	16	3066	146	110	184	33	0	83	2	0	0	817	141,8125	3403,5	
13	Sentolo-Pengasih-Waduk Sermo	16	8563	341	157	281	25	0	359	1	0	0	901	376,4688	9035,25	

No.	Nama Ruas Jalan	Lama Waktu Survei jam	Golongan											Jumlah SMP/jam	LHR
			1	2	3	4	5a	5b	6	7a	7b	7c	8		
			Sepeda motor, sekuter, sepeda	Sedan, jeep dan station	pick-up-opelet, sub urban	micro truk dan mobil	Bus Kecil	Bus besar	Truk 2 sumbu	Truk 3 sumbu	Truk Gandeng	Truk semi trailer	Kendaraan tidak bermotor		
<b>IV</b>	<b>KABUPATEN GUNUNGKIDUL</b>														
1	Bibal-Panggang (Yogyakarta-Panggang)	16	1874	71	86	162	109	0	174	0	0	0	12	122,7188	2945,25
2	Panggang-Paliyan	16	2907	95	236	160	0	0	193	1	0	0	121	151,875	3645
3	Paliyan-Playen	40	11337	416	1541	544	0	3	335	0	0	7	1026	225,925	5422,2
4	Playen-Gading	40	8850	460	472	556	0	27	484	2	0	7	469	180,775	4338,6
5	Playen-Gledak	40	10518	749	1431	450	20	20	434	6	0	0	712	227,55	5461,2
6	Wonosari-Semin	40	17086	1433	1875	1076	22	96	610	16	0	2	131	371,225	8909,4
7	Jl. Sumarwi (Wonosari)	40	22509	1717	1883	1180	9	9	315	3	0	0	966	422,0125	10128,3
8	Jl. Pramuka (Wonosari)	40	26011	1695	2975	1058	24	5	516	5	0	1	799	502,9125	12069,9
9	Semin-Bulu	16	1702	132	247	31	104	6	95	1	0	0	78	111,2188	2669,25
10	Semin-Blimbing	16	1629	86	420	74	11	2	58	5	0	0	120	99,25	2382
11	Pandanan-Candirejo	16	2193	90	243	167	23	5	154	7	0	1	182	129,875	3117
12	Ngeposari-Pecucak-Bedoyo	40	7273	655	703	535	71	8	1068	38	0	3	193	213,1	5114,4
13	Sumur-Tanggul-Semuluh	16	2673	97	225	90	2	1	283	8	0	0	144	155,5	3732
14	Wonosari-Tepus	16	1724	59	274	125	0	0	161	0	0	0	53	107,6563	2583,75
15	Jl. Baron (Wonosari)	40	18131	847	3262	1354	63	262	1112	22	0	1	1263	458,025	10992,6
16	Mulo-Kemiri-Baron	16	1946	88	171	162	1	2	38	0	0	0	0	93,59375	2246,25
17	Sambipitu-Nglipar	16	2061	133	164	79	0	9	102	4	0	0	1	106,2813	2550,75
18	Nglipar-Semin	16	1555	74	202	70	0	4	61	0	0	1	2	80,6875	1936,5
19	Wonosari-Nglipar	16	3588	154	357	106	0	9	147	0	0	1	48	175,5313	4212,75
20	Jl. Satria (Wonosari)	40	34498	2504	1490	1233	2	5	179	4	0	0	753	573,8875	13773,3
21	Jl. Taman Bakti (Wonosari)	40	16364	717	1154	549	2	2	260	2	0	0	837	281,725	6761,4
22	Batas Kabupaten Bantul-Panggang	16	1376	32	73	64	0	0	59	0	0	0	6	62,78125	1506,75
23	Temanggung-Kemiri	16	751	18	184	38	0	0	80	0	0	0	1	50,96875	1223,25
24	Baron-Tepus	16	695	38	25	142	3	2	31	0	0	0	0	40,21875	965,25
25	Tepus-Jepitu-Jerukwudel	16	965	15	121	37	0	0	40	2	0	0	2	47,59375	1142,25
26	Jepitu-Wediombo	16	1054	8	7	25	0	0	61	0	0	0	1	44,96875	1079,25
27	Jerukwudel-Baran (Rongkop)	16	1259	28	228	106	0	0	95	0	0	0	7	76,8125	1843,5
28	Jerukwudel-Ngungap	16	614	5	144	41	0	0	64	0	0	0	34	41,0625	985,5
29	Jerukwudel-Sadeng	16	574	15	119	50	0	0	45	0	0	0	2	36,46875	875,25
30	Pandean-Playen	16	6240	232	59	295	2	0	198	0	0	0	863	262,875	6309
			2572	70	107	162	0	0	126				271		
<b>V.</b>	<b>KABUPATEN SLEMAN</b>														
1	Yogyakarta-Kaliurang	40	125767	23873	6220	3740	225	181	1383	72	12	3	1799	2538,513	60924,3
2	Prambanan-Piyungan	16	12676	1070	344	840	799	18	675	54	33	2	1764	787,375	18897
3	Yogyakarta-Ngapak (Yogyakarta-Nanggulan)	40	104658	9355	4210	3634	1558	114	778	51	19	5	5759	1898,375	45561
4	Prambanan-Pakem	16	9407	1123	330	518	105	9	296	1	1	0	188	481,875	11565
5	Tempel-Pakem	16	5808	657	540	575	103	2	252	5	0	0	206	349,0313	8376,75
6	Yogyakarta-Pulowatu	40	69425	14527	1821	3002	50	19	899	24	1	4	1366	1414,475	33947,4
7	Klangon-Tempel	16	7099	445	106	413	15	19	398	2	0	3	562	351,125	8427

**Lampiran 3 Gambar Lapis Tebal Perkerasan Bina Marga 1987**

Sumber : Bina Marga Dinas Permukiman dan Prasarana Wilayah Provinsi DIY ( 2016 )

Lampiran 4 Faktor Ekuivalen Beban Gandar untuk Perkerasan Lentur  
AASHTO (1993)

Table D.4. Axle Load Equivalency Factors for Flexible Pavements, Single Axles and  $p_t$  of 2.5

Axle Load (kips)	Pavement Structural Number (SN)					
	1	2	3	4	5	6
2	0004	0004	0003	0002	0002	0002
4	003	004	004	003	002	002
6	011	017	017	013	010	009
8	032	047	051	041	034	031
10	078	102	118	102	088	080
12	168	198	229	213	189	176
14	328	358	399	388	360	342
16	591	613	646	645	623	606
18	1 00	1 00	1 00	1 00	1 00	1 00
20	1 61	1 57	1 49	1 47	1 51	1 55
22	2 48	2 38	2 17	2 09	2 18	2 30
24	3 69	3 49	3 09	2 89	3 03	3 27
26	5 33	4 99	4 31	3 91	4 09	4 48
28	7 49	6 98	5 90	5 21	5 39	5 98
30	10 3	9 5	7 9	6 8	7 0	7 8
32	13 9	12 8	10 5	8 8	8 9	10 0
34	18 4	16 9	13 7	11 3	11 2	12 5
36	24 0	22 0	17 7	14 4	13 9	15 5
38	30 9	28 3	22 6	18 1	17 2	19 0
40	39 3	35 9	28 5	22 5	21 1	23 0
42	49 3	45 0	35 6	27 8	25 6	27 7
44	61 3	55 9	44 0	34 0	31 0	33 1
46	75 5	68 8	54 0	41 4	37 2	39 3
48	92 2	83 9	65 7	50 1	44 5	46 5
50	112	102	79	60	53	55



Lampiran 4 Faktor Ekuivalen Beban Gandar untuk Perkerasan Lentur  
AASHTO (1993)

Table D.5. Axle Load Equivalency Factors for Flexible Pavements, Tandem Axles and  $p_v$  of 2.5

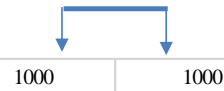





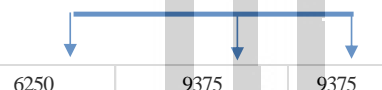
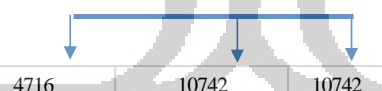

Axle Load (kips)	Pavement Structural Number (SN)					
	1	2	3	4	5	6
2	0001	0001	0001	0000	0000	0000
4	0005	0005	0004	0003	0003	0002
6	002	002	002	001	001	001
8	004	006	005	004	003	003
10	008	013	011	009	007	006
12	015	024	023	018	014	013
14	026	041	042	033	027	024
16	044	065	070	057	047	043
18	070	097	109	092	077	070
20	107	141	162	141	121	110
22	160	198	229	207	180	166
24	231	273	315	292	260	242
26	327	370	420	401	364	342
28	451	493	548	534	495	470
30	611	648	703	695	658	633
32	813	843	889	887	857	834
34	1 06	1 08	1 11	1 11	1 09	1 08
36	1 38	1 38	1 38	1 38	1 38	1 38
38	1 75	1 73	1 69	1 68	1 70	1 73
40	2 21	2 16	2 06	2 03	2 08	2 14
42	2 76	2 67	2 49	2 43	2 51	2 61
44	3 41	3 27	2 99	2 88	3 00	3 16
46	4 18	3 98	3 58	3 40	3 55	3 79
48	5 08	4 80	4 25	3 98	4 17	4 49
50	6 12	5 76	5 03	4 64	4 86	5 28
52	7 33	6 87	5 93	5 38	5 63	6 17
54	8 72	8 14	6 95	6 22	6 47	7 15
56	10 3	9 6	8 1	7 2	7 4	8 2
58	12 1	11 3	9 4	8 2	8 4	9 4
60	14 2	13 1	10 9	9 4	9 6	10 7
62	16 5	15 3	12 6	10 7	10 8	12 1
64	19 1	17 6	14 5	12 2	12 2	13 7
66	22 1	20 3	16 6	13 8	13 7	15 4
68	25 3	23 3	18 9	15 6	15 4	17 2
70	29 0	26 6	21 5	17 6	17 2	19 2
72	33 0	30 3	24 4	19 8	19 2	21 3
74	37 5	34 4	27 6	22 2	21 3	23 6
76	42 5	38 9	31 1	24 8	23 7	26 1
78	48 0	43 9	35 0	27 8	26 2	28 8
80	54 0	49 4	39 2	30 9	29 0	31 7
82	60 6	55 4	43 9	34 4	32 0	34 8
84	67 8	61 9	49 0	38 2	35 3	38 1
86	75 7	69 1	54 5	42 3	38 8	41 7
88	84 3	76 9	60 6	46 8	42 6	45 6
90	93 7	85 4	67 1	51 7	46 8	49 7

Lampiran 4 Faktor Ekuivalen Beban Gandar untuk Perkerasan Lentur  
AASHTO (1993)

Table D.6. Axle Load Equivalency Factors for Flexible Pavements, Triple Axles and  $p_t$  of 2.5

Axle Load (kips)	Pavement Structural Number (SN)					
	1	2	3	4	5	6
2	0000	0000	0000	0000	0000	0000
4	0002	0002	0002	0001	0001	0001
6	0006	0007	0005	0004	0003	0003
8	.001	002	001	001	001	001
10	.003	004	.003	002	002	002
12	005	007	006	004	003	003
14	008	012	010	008	006	006
16	012	019	.018	013	011	010
18	018	029	028	021	017	016
20	.027	.042	.042	032	027	.024
22	038	058	060	048	040	036
24	053	078	084	068	057	051
26	072	103	114	095	080	072
28	098	133	151	128	109	099
30	129	169	195	170	145	133
32	169	213	.247	220	191	175
34	219	266	308	281	246	228
36	279	329	379	352	313	292
38	352	403	461	436	393	368
40	439	491	554	533	487	459
42	543	594	661	644	597	567
44	666	714	781	769	723	692
46	811	854	918	911	868	838
48	979	1 015	1 072	1 069	1 033	1 005
50	1 17	1 20	1 24	1 25	1 22	1 20
52	1 40	1 41	1 44	1 44	1 43	1 41
54	1 66	1 66	1 66	1 66	1 66	1 66
56	1 95	1 93	1 90	1 90	1 91	1 93
58	2 29	2 25	2 17	2 16	2 20	2 24
60	2 67	2 60	2 48	2 44	2 51	2 58
62	3 09	3 00	2 82	2 76	2 85	2 95
64	3 57	3 44	3 19	3 10	3 22	3 36
66	4 11	3 94	3 61	3 47	3 62	3 81
68	4 71	4 49	4 06	3 88	4 05	4 30
70	5 38	5 11	4 57	4 32	4 52	4 84
72	6 12	5 79	5 13	4 80	5 03	5 41
74	6 93	6 54	5.74	5 32	5 57	6 04
76	7 84	7 37	6 41	5 88	6 15	6 71
78	8 83	8 28	7 14	6 49	6 78	7 43
80	9 92	9 28	7 95	7 15	7 45	8 21
82	11 1	10 4	8 8	7 9	8 2	9 0
84	12 4	11 6	9 8	8 6	8 9	9 9
86	13 8	12 9	10 8	9.5	9 8	10 9
88	15 4	14 3	11 9	10 4	10 6	11 9
90	17 1	15 8	13.2	11 3	11 6	12 9

### Lampiran 5 Angka Ekuivalen Eksisting Bina Marga 1987

Golongan		Konfigurasi Sumbu			Total berat	Angka Ekuivalen
1 dan 2				2000	0,00045	
	1000	1000				
3				7710	0,16188	
	2621,4	5088,6				
4				8300	0,21741	
	2822	5478				
5A				9000	0,30057	
	3060	5940				
5B				9000	0,30057	
	3060	5940				
6A				18200	5,02641	
	6188	12012				
6B				25000	2,74157	
	6250	9375	9375			
7A				26200	4,24393	
	4716	10742	10742			
7B				31400	4,92829	
	5338	10990	7536	7536		

## Lampiran 6 Hasil Analisis *KENLAYER* pada Perkerasan Eksisting

INPUT FILE NAME -E:\KENPAVE\KENPAVE\ta\bm 87.DAT

NUMBER OF PROBLEMS TO BE SOLVED = 1

TITLE -Bina arga 87

MATL = 1 FOR LINEAR ELASTIC LAYERED SYSTEM

NDAMA = 0, SO DAMAGE ANALYSIS WILL NOT BE PERFORMED

NUMBER OF PERIODS PER YEAR (NPY) = 1

NUMBER OF LOAD GROUPS (NLG) = 1

TOLERANCE FOR INTEGRATION (DEL) -- = 0.001

NUMBER OF LAYERS (NL)----- = 4

NUMBER OF Z COORDINATES (NZ)----- = 5

LIMIT OF INTEGRATION CYCLES (ICL)- = 80

COMPUTING CODE (NSTD)----- = 9

SYSTEM OF UNITS (NUNIT)----- = 1

Length and displacement in cm, stress and modulus in kPa

unit weight in kN/m<sup>3</sup>, and temperature in C

THICKNESSES OF LAYERS (TH) ARE : 35.5 30 27

POISSON'S RATIOS OF LAYERS (PR) ARE : 0.4 0.35 0.4 0.45

VERTICAL COORDINATES OF POINTS (ZC) ARE: 0 35.4997 35.5 91.9997 92

ALL INTERFACES ARE FULLY BONDED

FOR PERIOD NO. 1 LAYER NO. AND MODULUS ARE : 1 1.100E+06 2 1.600E+06

3 1.600E+06 4 5.680E+04

LOAD GROUP NO. 1 HAS 2 CONTACT AREAS

CONTACT RADIUS (CR)----- = 11

CONTACT PRESSURE (CP)----- = 550

NO. OF POINTS AT WHICH RESULTS ARE DESIRED (NPT)-- = 3

WHEEL SPACING ALONG X-AXIS (XW)----- = 0

WHEEL SPACING ALONG Y-AXIS (YW)----- = 33

RESPONSE PT. NO. AND (XPT, YPT) ARE: 1 0.000 0.000 2 0.000 10.000

3 0.000 16.500

PERIOD NO. 1 LOAD GROUP NO. 1

POINT NO.	VERTICAL DISPL.	VERTICAL PRINCIPAL STRAIN	VERTICAL PRINCIPAL STRESS	MAJOR PRINCIPAL STRESS	MINOR PRINCIPAL STRESS	INTERMEDIATE STRESS
1	0.00000	-0.02311	550.000	563.337	524.968	526.708
	(STRAIN)	8.168E-05	1.297E-04	1.297E-04	8.086E-05	8.308E-05
1	35.49970	0.01731	89.593	95.587	28.818	31.155
	(STRAIN)	-1.989E-05	5.746E-05	6.509E-05	-1.989E-05	-1.691E-05
1	35.50000	0.01731	89.592	95.585	28.818	31.155
	(STRAIN)	-1.989E-05	5.746E-05	6.509E-05	-1.989E-05	-1.691E-05
1	91.99970	0.01568	4.093	4.099	-60.961	-58.077
	(STRAIN)	-2.461E-05	3.232E-05	3.232E-05	-2.461E-05	-2.208E-05
1	92.00000	0.01568	4.093	4.099	-60.962	-58.077
	(STRAIN)	-2.461E-05	3.232E-05	3.232E-05	-2.461E-05	-2.208E-05
2	0.00000	0.02105	550.000	306.446	288.879	301.324
	(STRAIN)	4.162E-05	6.400E-05	6.397E-05	4.161E-05	5.745E-05
2	35.49970	0.01753	94.908	95.466	30.115	39.985
	(STRAIN)	-2.188E-05	6.059E-05	6.130E-05	-2.188E-05	-9.316E-06
2	35.50000	0.01753	94.907	95.465	30.115	39.985
	(STRAIN)	-2.188E-05	6.059E-05	6.130E-05	-2.188E-05	-9.316E-06
2	91.99970	0.01578	4.204	4.205	-62.999	-61.057
	(STRAIN)	-2.516E-05	3.364E-05	3.364E-05	-2.516E-05	-2.346E-05
2	92.00000	0.01578	4.204	4.205	-62.999	-61.058

(STRAIN) -2.516E-05 3.364E-05 3.364E-05 -2.516E-05 -2.346E-05

3 0.00000 0.01846 0.000 115.716 104.745 114.543

(STRAIN) 2.394E-05 1.149E-05 2.545E-05 1.149E-05 2.396E-05

3 35.49970 0.01756 94.855 94.855 30.243 41.516

(STRAIN) -2.210E-05 6.014E-05 6.014E-05 -2.210E-05 -7.749E-06

3 35.50000 0.01756 94.854 94.854 30.244 41.516

(STRAIN) -2.209E-05 6.014E-05 6.014E-05 -2.209E-05 -7.749E-06

3 91.99970 0.01578 4.269 4.269 -63.856 -62.095

(STRAIN) -2.545E-05 3.416E-05 3.416E-05 -2.545E-05 -2.391E-05

3 92.00000 0.01578 4.269 4.269 -63.856 -62.096

(STRAIN) -2.545E-05 3.416E-05 3.416E-05 -2.545E-05 -2.391E-05

POINT VERTICAL NORMAL X NORMAL Y SHEAR XY SHEAR YZ SHEAR XZ  
STRESS STRESS STRESS STRESS STRESS

NO. COORDINATE (STRAIN) (STRAIN) (STRAIN) (STRAIN) (STRAIN)

1 0.00000 5.260E+02 5.256E+02 0.000E+00 4.394E-08 0.000E+00

(STRAIN) 8.224E-05 8.168E-05 0.000E+00 1.119E-13 0.000E+00

1 35.49970 2.882E+01 3.715E+01 0.000E+00 -1.871E+01 0.000E+00

(STRAIN) -1.989E-05 -9.287E-06 0.000E+00 -4.764E-05 0.000E+00

1 35.50000 2.882E+01 3.715E+01 0.000E+00 -1.871E+01 0.000E+00

(STRAIN) -1.989E-05 -9.287E-06 0.000E+00 -4.764E-05 0.000E+00

1 91.99970 -6.096E+01 -5.807E+01 0.000E+00 -6.065E-01 0.000E+00

(STRAIN) -2.461E-05 -2.208E-05 0.000E+00 -1.061E-06 0.000E+00

1 92.00000 -6.096E+01 -5.807E+01 0.000E+00 -6.064E-01 0.000E+00

(STRAIN) -2.461E-05 -2.208E-05 0.000E+00 -1.061E-06 0.000E+00

2 0.00000 3.013E+02 2.889E+02 0.000E+00 1.225E-06 0.000E+00

(STRAIN) 5.740E-05 4.162E-05 0.000E+00 3.118E-12 0.000E+00

2 35.49970 3.011E+01 4.054E+01 0.000E+00 -5.534E+00 0.000E+00

(STRAIN) -2.188E-05 -8.606E-06 0.000E+00 -1.409E-05 0.000E+00

2	35.50000	3.012E+01	4.054E+01	0.000E+00	-5.534E+00	0.000E+00
	(STRAIN)	-2.188E-05	-8.606E-06	0.000E+00	-1.409E-05	0.000E+00
2	91.99970	-6.300E+01	-6.106E+01	0.000E+00	-2.493E-01	0.000E+00
	(STRAIN)	-2.516E-05	-2.346E-05	0.000E+00	-4.363E-07	0.000E+00
2	92.00000	-6.300E+01	-6.106E+01	0.000E+00	-2.493E-01	0.000E+00
	(STRAIN)	-2.516E-05	-2.346E-05	0.000E+00	-4.362E-07	0.000E+00
3	0.00000	1.157E+02	1.145E+02	0.000E+00	0.000E+00	0.000E+00
	(STRAIN)	2.547E-05	2.394E-05	0.000E+00	0.000E+00	0.000E+00
3	35.49970	3.024E+01	4.152E+01	0.000E+00	0.000E+00	0.000E+00
	(STRAIN)	-2.210E-05	-7.749E-06	0.000E+00	0.000E+00	0.000E+00
3	35.50000	3.024E+01	4.152E+01	0.000E+00	0.000E+00	0.000E+00
	(STRAIN)	-2.209E-05	-7.749E-06	0.000E+00	0.000E+00	0.000E+00
3	91.99970	-6.386E+01	-6.210E+01	0.000E+00	0.000E+00	0.000E+00
	(STRAIN)	-2.545E-05	-2.391E-05	0.000E+00	0.000E+00	0.000E+00
3	92.00000	-6.386E+01	-6.210E+01	0.000E+00	0.000E+00	0.000E+00
	(STRAIN)	-2.545E-05	-2.391E-05	0.000E+00	0.000E+00	0.000E+00

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