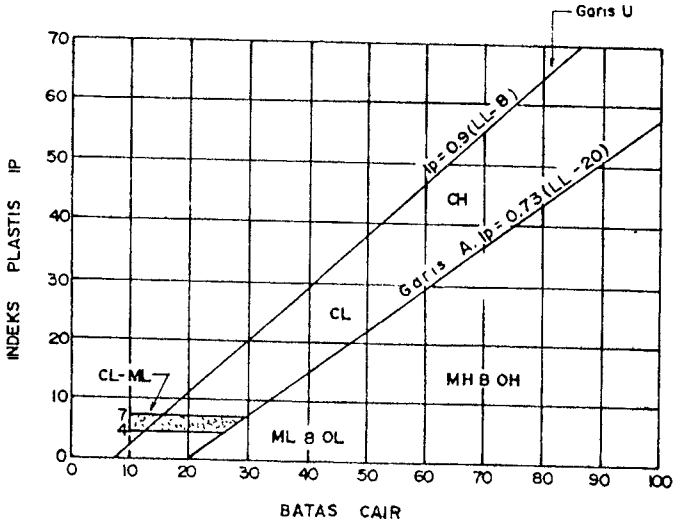
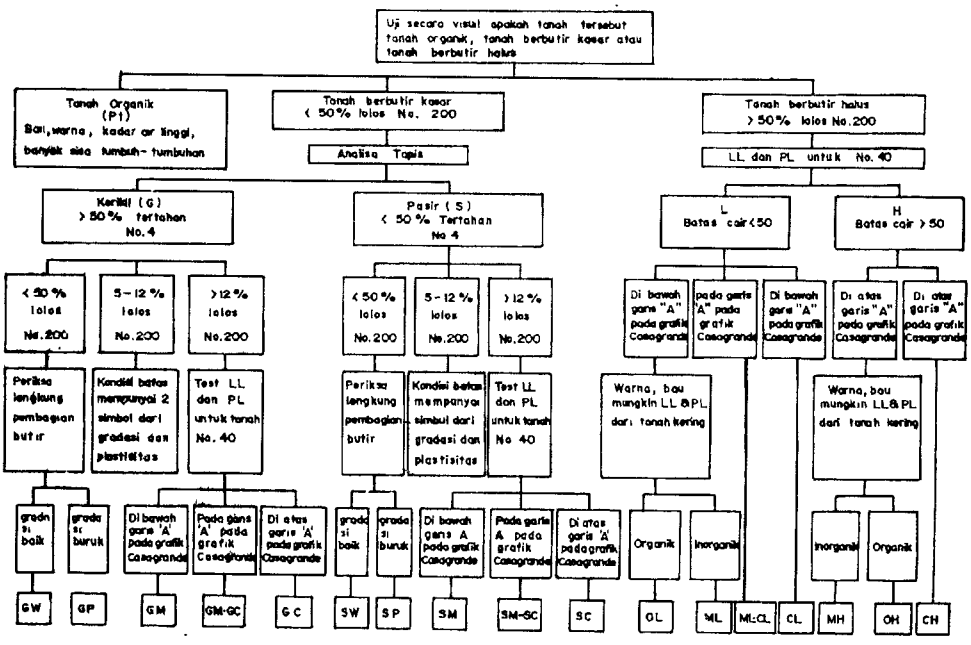
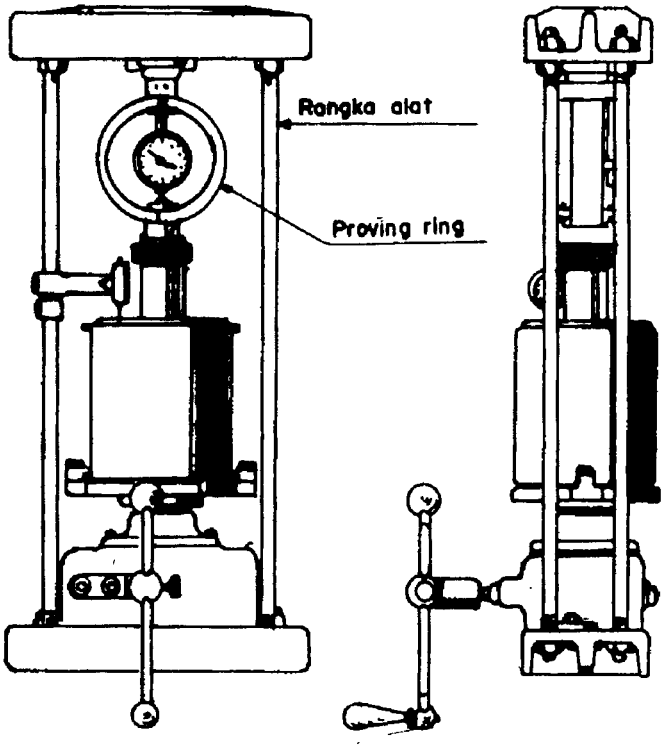
Lampiran



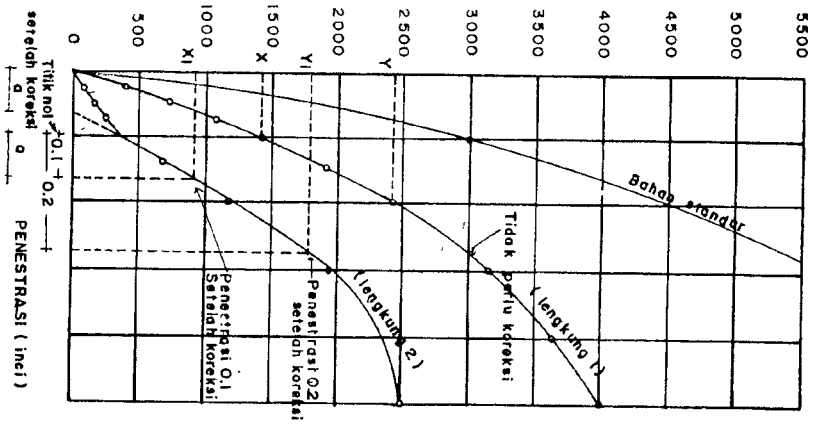
Gambar 3.13. Grafik Casagrande



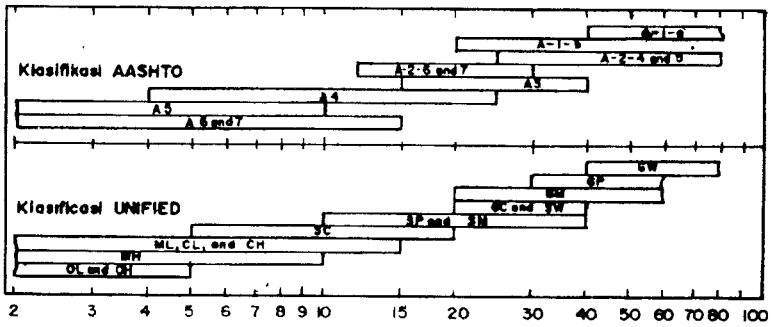
Gambar 3.14. Bagan Alir Klasifikasi Unified



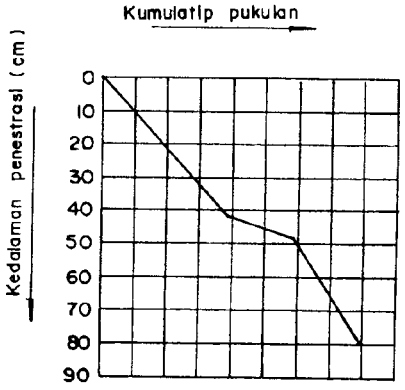
Gambar 3.15. Alat Pemeriksaan CBR di Laboratorium



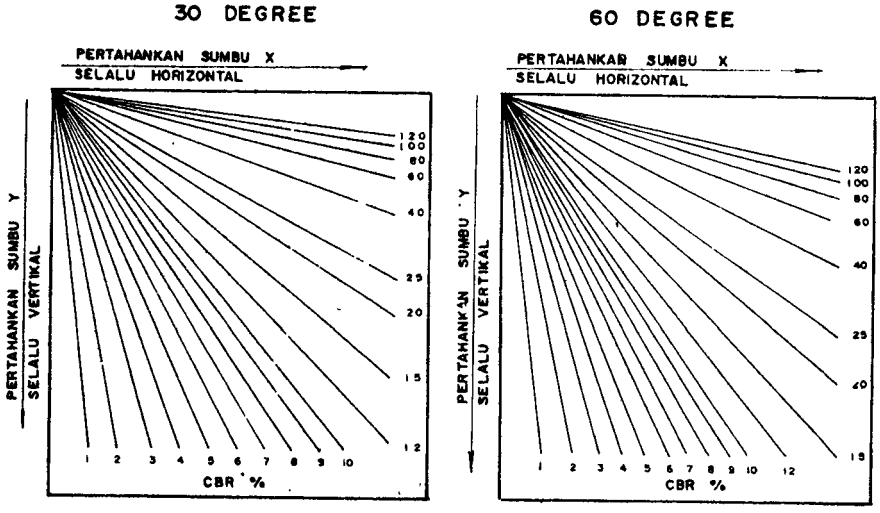
Gambar 3.16. Grafik Hubungan antara Beban dan Penetrasi pada Pemeriksaan CBR



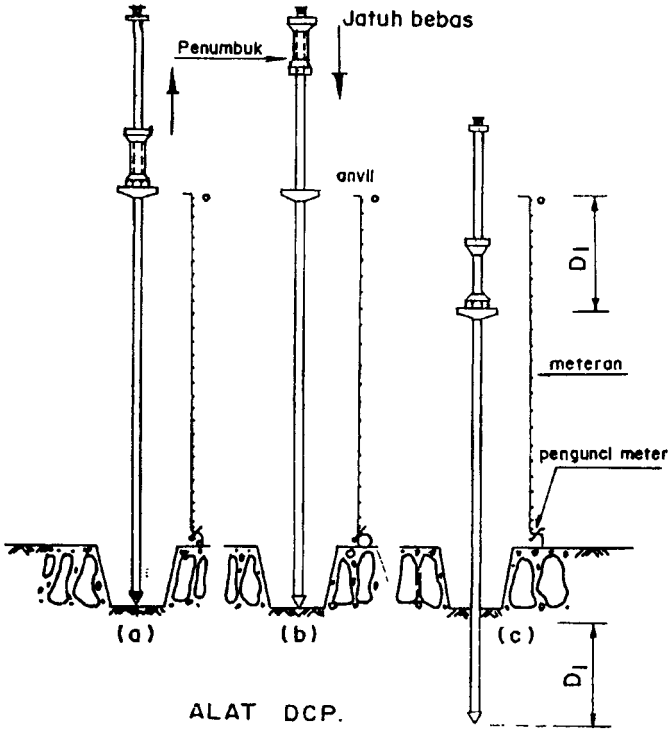
Gambar 3.17. Perkiraan Nilai CBR Berdasarkan Klasifikasi Tanah



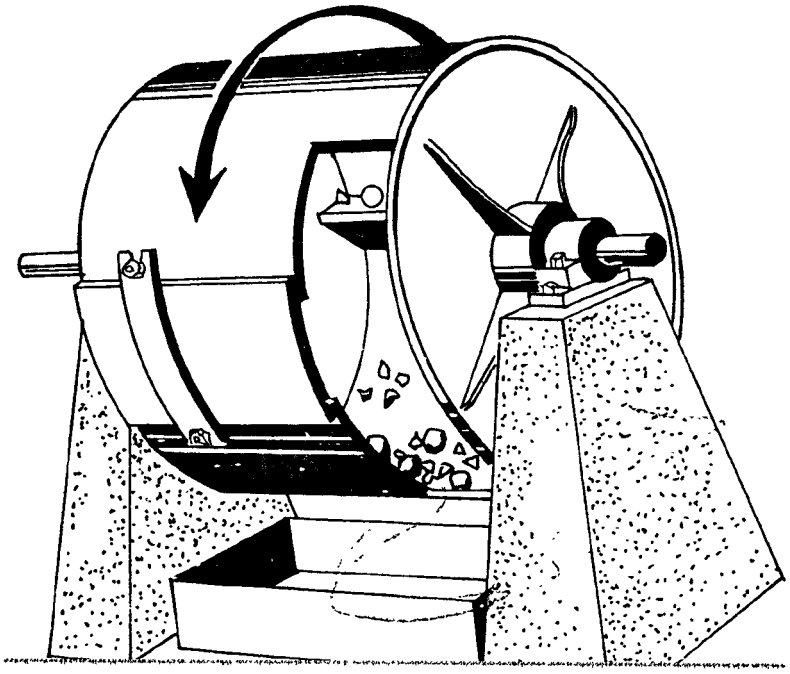
Gambar 3.18. Grafik Hasil Pemeriksaan DCP.



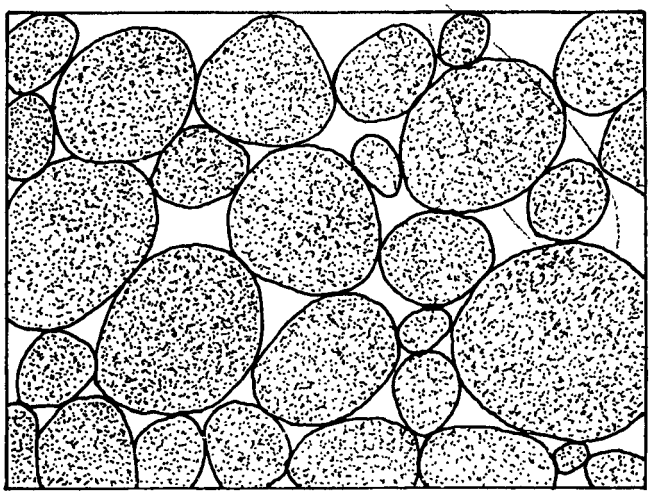
Gambar 3.19. Grafik Korelasi antara DCP dan CBR Lapangan



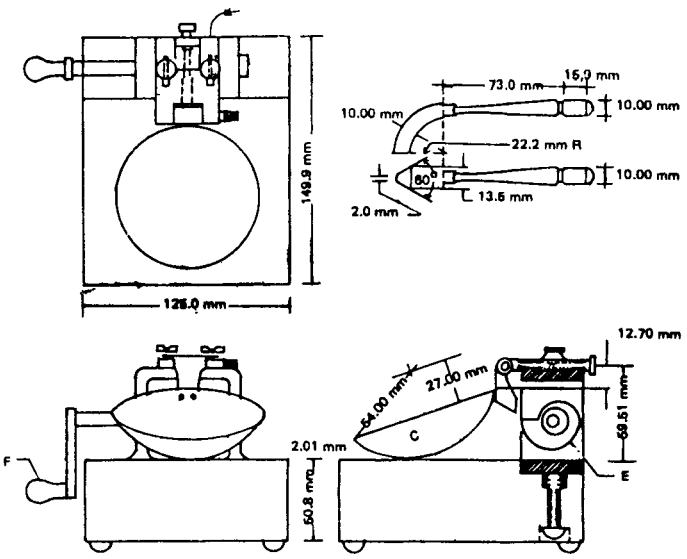
Gambar 3.20. Alat DCP (Dynamit Cone Penetrometer)



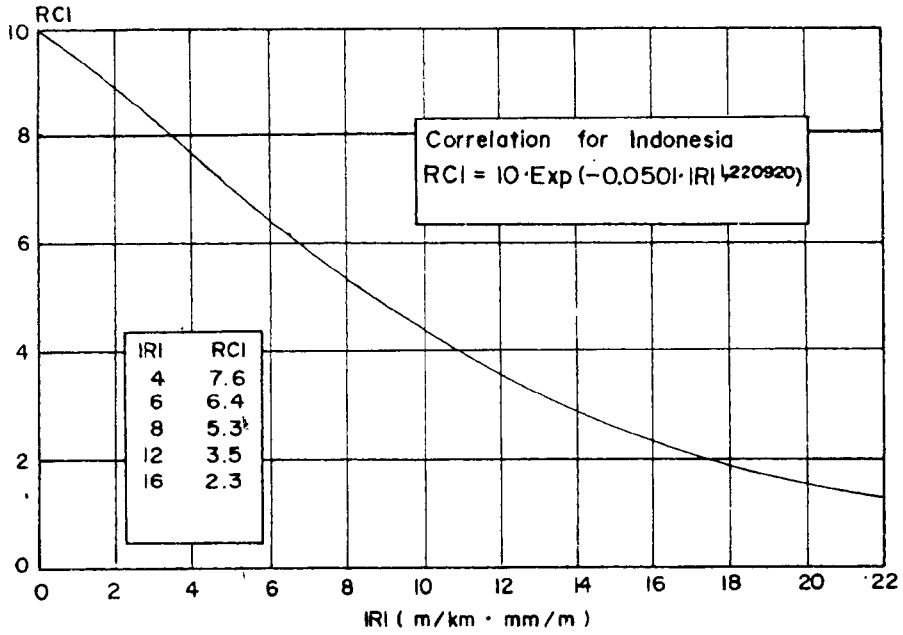
Gambar 3.21. Alat Percobaan AbrasiGambar



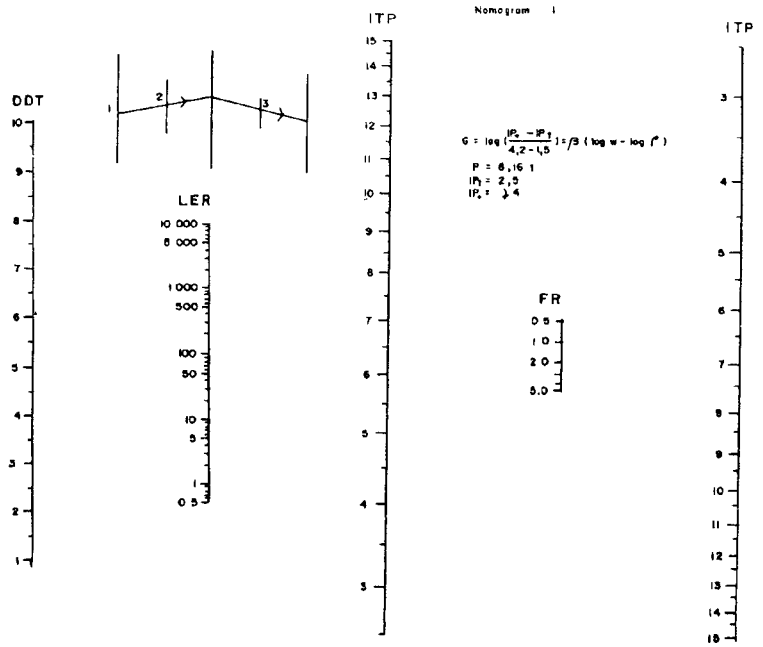
Gambar 3.22. Letak dan Susunan Partikel Agregat Berbentuk *Rounded*



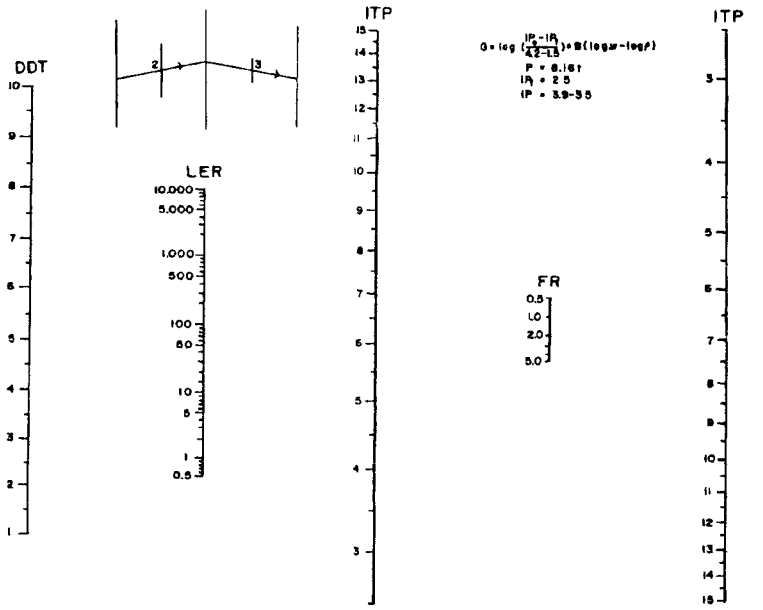
Gambar 3.23. Alat Pemeriksaan Batas Cair



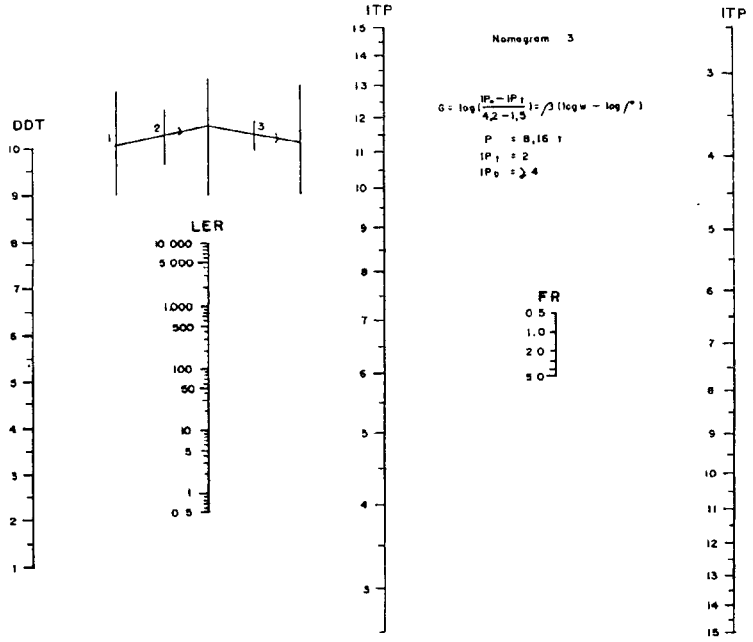
Gambar 4.2. Korelasi antara RCI dan IRI



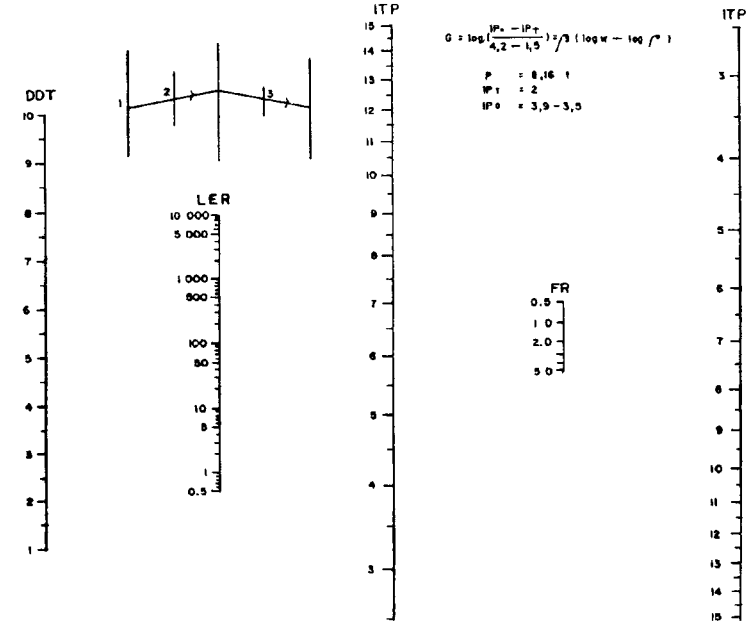
Gambar 5.7. Nomogram Untuk $Ip_t = 2.5$ dan $IP_0 =>> 4$



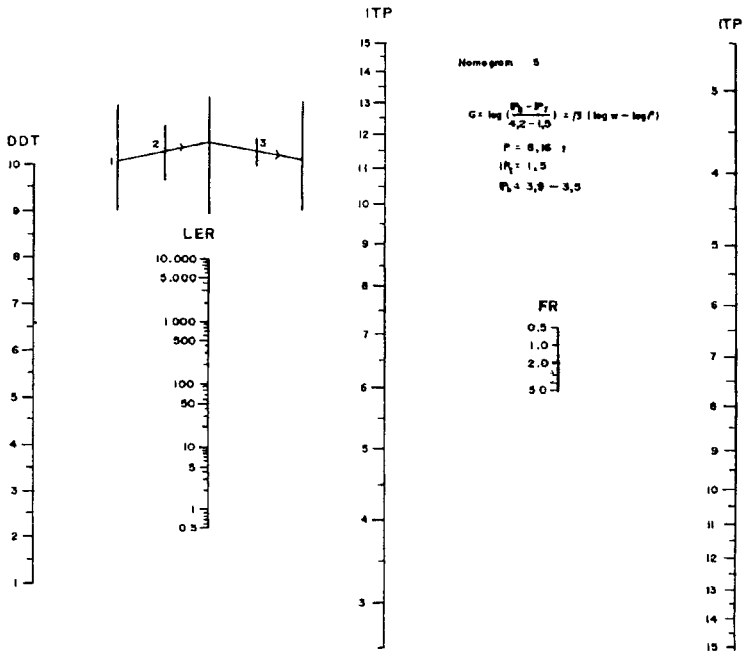
Gambar 5.8. Nomogram Untuk $Ip_t = 2.5$ dan $IP_0 = 3,9 - 3,5$



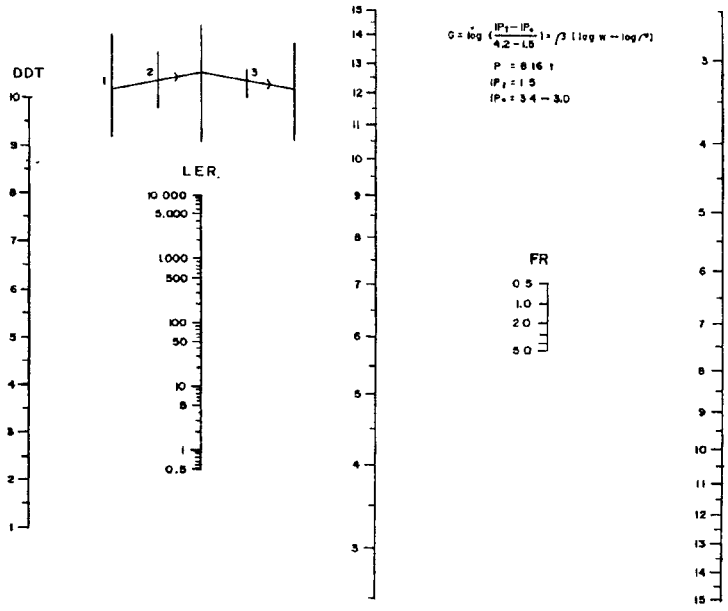
Gambar 5.9. Nomogram Untuk $Ip_t = 2.0$ dan $IP_0 =>> 4$



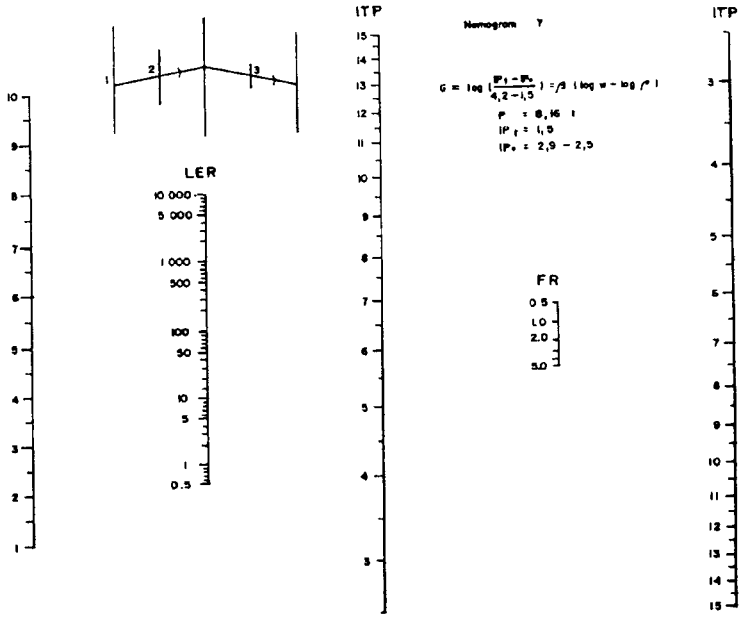
Gambar 5.10. Nomogram Untuk $Ip_t = 2.0$ dan $IP_0 = 3,9 - 3,5$



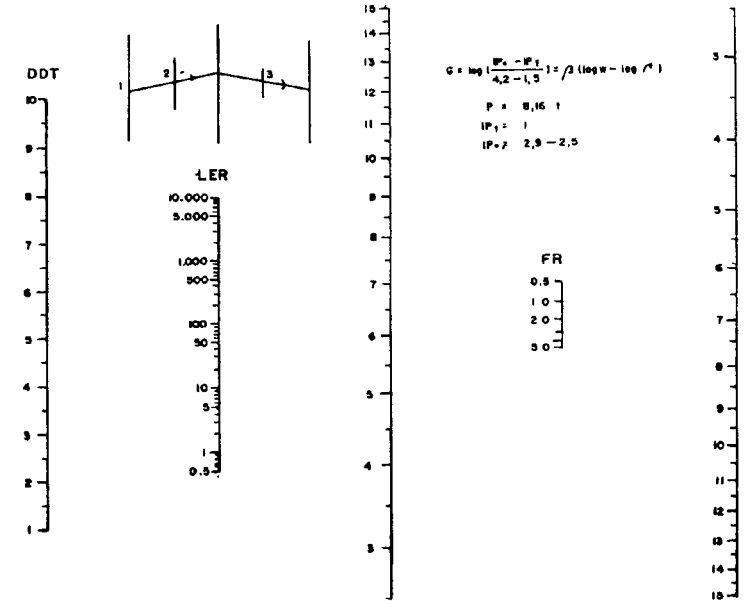
Gambar 5.11. Nomogram Untuk $Ip_t = 1,5$ dan $IP_0 = 3,9 - 3,5$



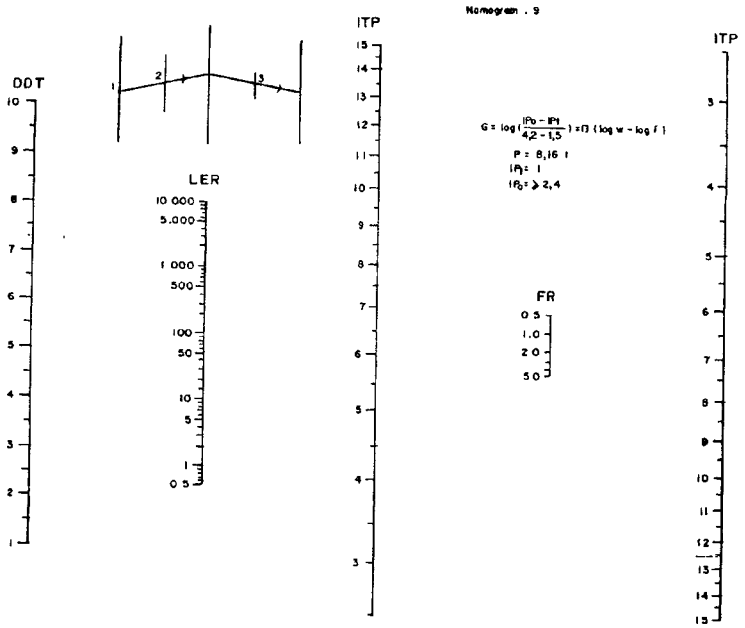
Gambar 5.12. Nomogram Untuk $Ip_t = 1,5$ dan $IP_0 = 3,4 - 3,0$



Gambar 5.13. Nomogram Untuk $Ip_t = 1,5$ dan $IP_0 = 2,9 - 2,5$



Gambar 5.14. Nomogram Untuk $Ip_t = 1,0$ dan $IP_0 = 2,9 - 2,5$



Gambar 5.15. Nomogram Untuk $Ip_t = 1,0$ dan $IP_0 = << 2,4$

Tabel 5.17.a. Erosion Factors-Doweled Joint, No Concrete Shoulders (Single Axle/ Tandem Axles)

Slab thick-ness in	k of subgrade-subbase, pci					
	50	100	200	300	500	700
4	3 74/3.83	3.73/3.79	3.72/3 75	3.71/3.73	3.70/3.70	3.68/3.67
4.5	3.59/3 70	3.57/3.65	3.56/3 61	3.55/3.58	3.54/3.55	3.52/3 53
5	3.45/3.58	3.43/3.52	3.42/3 48	3 41/3.45	3.40/3.42	3.38/3.40
5.5	3.33/3.47	3.31/3 41	3 29/3 36	3.28/3 33	3 27/3.30	3.26/3.28
6	3.22/3.38	3.19/3 31	3.18/3.26	3.17/3 23	3.15/3.20	3.14/3.17
6.5	3.11/3.29	3.09/3.22	3.07/3.16	3.06/3.13	3.05/3.10	3.03/3.07
7	3.02/3.21	2.99/3.14	2.97/3.08	2.96/3.05	2.95/3.01	2.94/2.98
7.5	2.93/3.14	2.91/3.06	2.88/3 00	2.87/2.97	2.86/2.93	2.84/2.90
8	2.85/3.07	2.82/2.99	2.80/2.93	2.79/2.89	2.77/2.85	2.76/2.82
8.5	2.77/3.01	2.74/2.93	2.72/2.86	2.71/2.82	2.69/2.78	2.68/2 75
9	2.70/2.96	2 67/2.87	2 65/2 80	2 63/2.76	2.62/2.71	2.61/2.68
9.5	2.63/2.90	2.60/2.81	2.58/2.74	2.56/2.70	2 55/2 65	2.54/2 62
10	2.56/2.85	2.54/2.76	2.51/2.68	2.50/2.64	2.48/2.59	2.47/2.56
10.5	2.50/2.81	2.47/2.71	2 45/2.63	2.44/2.59	2 42/2.54	2.41/2.51
11	2.44/2.76	2.42/2.67	2.39/2 58	2.38/2.54	2.36/2.49	2.35/2.45
11.5	2.38/2.72	2.36/2.62	2.33/2.54	2.32/2.49	2.30/2.44	2.29/2 40
12	2.33/2.68	2.30/2.58	2.28/2.49	2 26/2.44	2.25/2.39	2.23/2.36
12.5	2.28/2.64	2.25/2.54	2.23/2 45	2.21/2.40	2.19/2 35	2.18/2.31
13	2.23/2.61	2.20/2.50	2.18/2.41	2 16/2 36	2.14/2.30	2.13/2.27
13.5	2.18/2.57	2.15/2.47	2.13/2.37	2.11/2.32	2.09/2.26	2.08/2.23
14	2.13/2.54	2.11/2.43	2.08/2.34	2.07/2 29	2.05/2.23	2.03/2.19

Tabel 5.17.b. Erosion Factors-Aggregate Interlock Joint, No Concrete Shoulders (Single Axle/Tandem Axles)

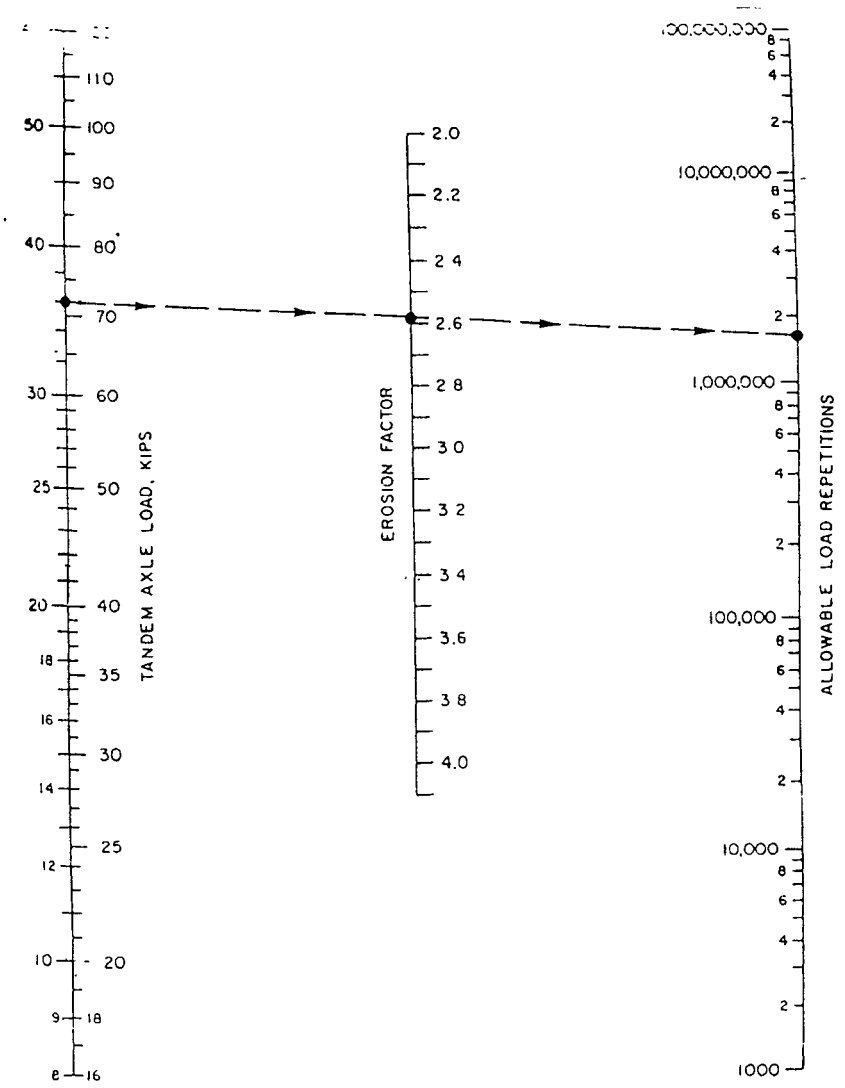
Slab thick-ness in	k of subgrade-subbase, pci					
	50	100	200	300	500	700
4	3.94/4.03	3.91/3.95	3.88/3.89	3.86/3.86	3.82/3 83	3.77/3.80
4.5	3 79/3.91	3.76/3.82	3 73/3.75	3.71/3.72	3 68/3.68	3.64/3.65
5	3 66/3.81	3 63/3.72	3.60/3 64	3.58/3.60	3.55/3 55	3.52/3.52
5.5	3 54/3.72	3.51/3.62	3.48/3.53	3.46/3.49	3.43/3.44	3.41/3.40
6	3 44/3.64	3 40/3.53	3.37/3.44	3.35/3 40	3.32/3.34	3.30/3.30
6.5	3.34/3.56	3.30/3.46	3.26/3.36	3.25/3.31	3.22/3.25	3.20/3.21
7	3.26/3.49	3.21/3.39	3.17/3.29	3.15/3.24	3.13/3.17	3.11/3.13
7 5	3.18/3.43	3.13/3.32	3 09/3.22	3.07/3 17	3 04/3.10	3.02/3.06
8	3.11/3.37	3.05/3 26	3.01/3 16	2.99/3.10	2 96/3 03	2 94/2.99
8.5	3.04/3.32	2.98/3.21	2.93/3.10	2.91/3 04	2.88/2 97	2 87/2.93
9	2.98/3.27	2.91/3.16	2.86/3 05	2.84/2 99	2.81/2.92	2.79/2.87
9.5	2.92/3.22	2.85/3.11	2.80/3 00	2 77/2.94	2.75/2.86	2.73/2 81
10	2.86/3.18	2.79/3.06	2.74/2.95	2.71/2 89	2 68/2.81	2.66/2.76
10.5	2.81/3.14	2.74/3.02	2.68/291	2.65/2.84	2.62/2.76	2.60/2.72
11	2.77/3.10	2.69/2.98	2.63/2.86	2.60/2 80	2 57/2 72	2.54/2.67
11.5	2 72/3.06	2.64/2.94	2.58/2.82	2.55/2.76	2.51/	2 49/2.63
12	2 68/3.03	2.60/2.90	2.53/2.78	2 50/2.72	2.46/2 64	2.44/2.59
12.5	2 64/2.99	2.55/2.87	2.48/2.75	2.45/2 68	2.41/2.60	2.39/2.55
13	2.60/2.96	2.51/2.83	2 44/2.71	2.40/2 65	2 36/2.56	2.34/2.51
13.5	2.56/2.93	2.47/2.80	2.40/2.68	2.36/2 61	2 32/2.53	2.30/2 48
14	2 53/2.90	2.44/2.77	2.36/2 65	2 32/2.58	2.28/2.50	2.25/2.44

Tabel 5.18.a. Erosion Factors-Doweled Joint, Concrete Shoulders (Single Axle/Tandem Axles)

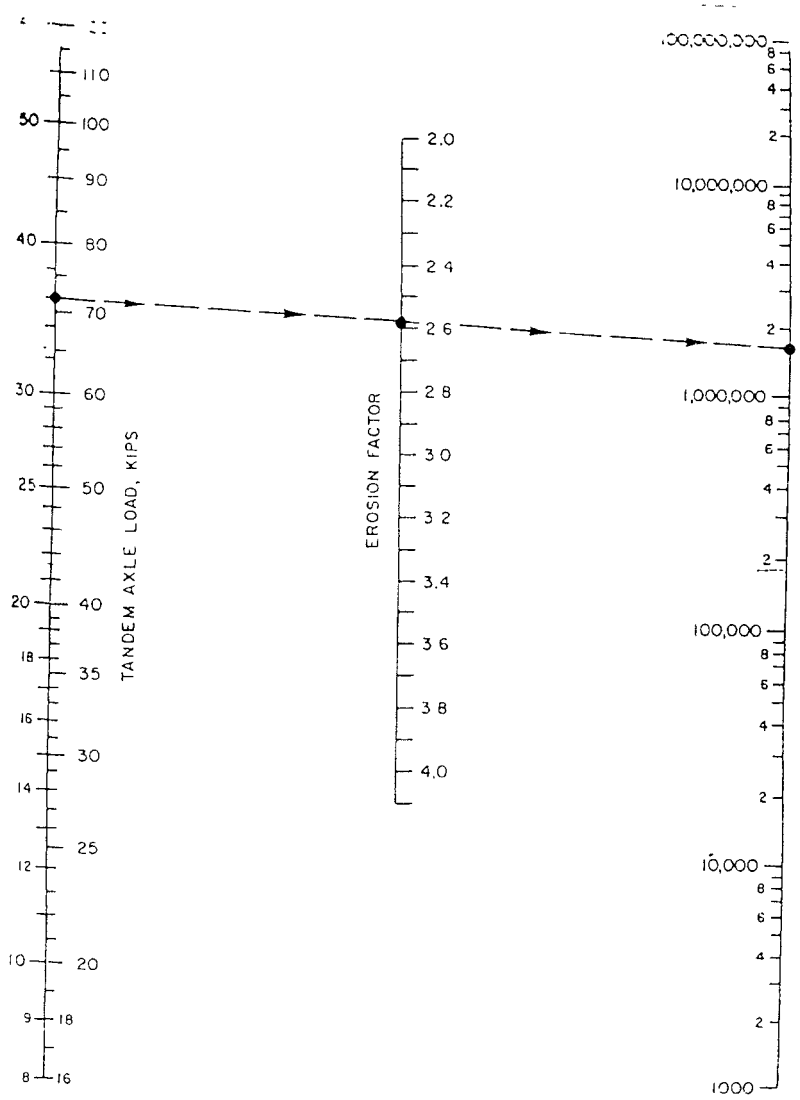
Slab thick-ness in	k of subgrade-subbase, pci					
	50	100	200	300	500	700
4	3.28/3.30	3.24/3.20	3.21/3.13	3.19/3.10	3.15/3.09	3.12/3.08
4.5	3.13/3.19	3.09/3.08	3.06/3 00	3.04/2.96	3.01/2.93	2.98/2.91
5	3.01/3.09	2.97/2.98	2.93/2.89	2.90/2.84	2.87/2.79	2.85/2.77
5,5	2.90/3.01	2.85/2.89	2.81/2.79	2.79/2.74	2.76/2.68	2.73/2.65
6	2.79/2.93	2.75/2.82	2.70/2.71	2.68/2.65	2.65/2.58	2.62/2.54
6.5	2.70/2.86	2.65/2.75	2.61/2.63	2.58/2.57	2.55/2.50	2.52/2.45
7	2.61/2.79	2.56/2.68	2.52/2.56	2.49/2.50	2.46/2.42	2.43/2.38
7.5	2.53/2.73	2.48/2.62	2.44/2.50	2.14/2.44	2.38/2.36	2.35/2.31
8	2.46/2.68	2.41/2.56	2.36/2.44	2.33/2.38	2.30/2.30	2.27/2.24
8.5	2.39/2.62	2.34/2.51	2.29/2.39	2.26/2.32	2.22/2.24	2.20/2.18
9	2.32/2.57	2.27/2.46	2.22/2.34	2.19/2.27	2.16/2.19	2.13/2.13
9.5	2.26/2.52	2.21/2.41	2.16/2.29	2.13/2.22	2.09/2.14	2.07/2.08
10	2.20/2.47	2.15/2.36	2.10/2.25	2.07/2.18	2.03/2.09	2.01/2.03
10.5	2.15/2.43	2.09/2.32	2.04/2.20	2.01/2.14	1.97/2.05	1.95/1.99
11	2.10/2.39	2.04/2.28	1.99/2.16	1.95/2.09	1.92/2.01	1.89/1.95
11.5	2.05/2.35	1.99/2.24	1.93/2.12	1.09/2.05	1.87/1.97	1.84/1.91
12	2.00/2.31	1.94/2.20	1.88/2.09	1.85/2.02	1.82/1.93	1.79/1.87
12.5	1.95/2.27	1.89/2.16	1.84/2.05	1.81/1.98	1.77/1.89	1.74/1.84
13	1.91/2.23	1.85/1.13	1.79/2.01	1.76/1.95	1.72/1.86	1.70/1.80
13.5	1.86/2.20	1.81/2.09	1.75/1.98	1.72/1.91	1.68/1.83	1.65/1.77
14	1.82/2.17	1.76/2.06	1.71/1.95	1.67/1.88	1.64/1.80	1.61/1.74

Tabel 5.18.b. Erosion Factors-Aggregate Interlock Joints, Concrete Shoulders (Single Axle/Tandem Axles)

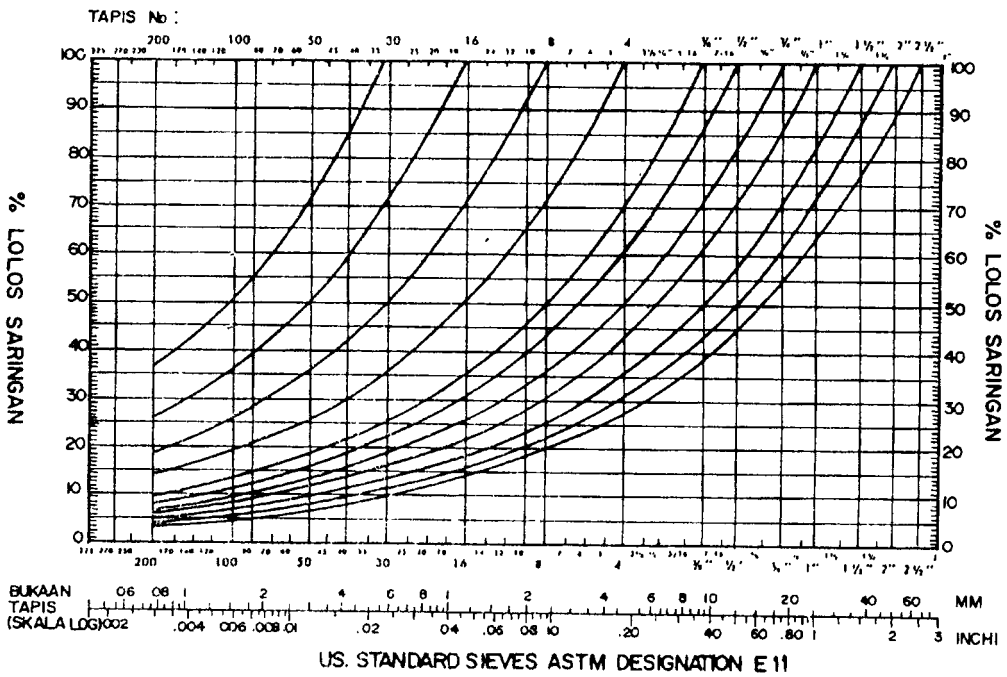
Slab thick-ness in	k of subgrade-subbase, pci					
	50	100	200	300	500	700
4	3.46/3.49	3.42/3.39	3.38/3.32	3.36/3.29	3.23/3.26	3.28/3.24
4.5	3.32/3.39	3.28/3.28	3.24/3.19	3.223.16	3.19/3.12	3.15/3.09
5	3.20/3.30	3.16/3.18	3.12/3.09	3.10/3.05	3.07/3.00	3.04/2.97
5.5	3.10/3.22	3 05/3.10	3.01/3.00	2.99/2.95	2.96/2.90	2.93/2.86
6	3.00/3.15	2.95/3 02	2.90/2.92	2.88/2.87	2.86/2.81	2.83/2.77
6.5	2.19/3.08	2.86/2.96	2.18/2.85	2.79/2.79	2.76/2.73	2.74/2.68
7	2.83/3.02	2.77/2.90	2.73/2.78	2.70/2.72	2.68/2.66	2.65/261
7.5	2.76/2.97	2.70/2.84	2.65/2.72	2.62/2.66	2.60/2.59	2.57/2.54
8	2.69/2.29	2.63/2.79	2.57/2.67	2.55/2.61	2.52/2.53	2.50/2.48
8.5	2.63/2.88	2.56/2 74	2.51/2.62	2.48/2.55	2.45/2.48	2.43/2.43
9	2.57/2.83	2.50/2.70	2.44/2.57	2.42/2.51	2.39/2.43	2.36/2.38
9.5	2.51/2.79	2.44/2.65	2.38/2.53	2.36/2.46	2.33/2.38	2.30/2.33
10	2.46/2.75	2.39/2.61	2.33/2.49	2.30/2.42	2.27/2.34	2.24/2.28
10.5	2.41/2.72	2.33/2.58	2.27/2.45	2.24/2.38	2.21/2.30	2.19/2.24
11	2.36/2.68	2.28/2.54	2.22/2.41	2.19/2.34	2.16/2.26	2.14/2.20
11.5	2.32/2.65	2.24/2.51	2.17/2.38	2.14/2.13	2.11/2.22	2.09/2.16
12	2.28/2.62	2.19/2.48	2.13/2.34	2.10/2.27	2.06/2.19	2.04/2.13
12.5	2.24/2.59	2.15/2.45	2.09/2.31	2.05/2.24	2.02/2.15	1.99/2.10
13	2.20/2.56	2.11/2.42	2.04/2.28	2.01/2.21	1.98/2.12	1.95/2.06
13.5	2.16/2.53	2.08/2.39	2.00/2.25	1.97/2.18	1.93/2.09	1.91/2.03
14	2.13/2.51	2.04/2.36	1.97/2.23	1.93/2.15	1.89/2.06	1.87/2.00



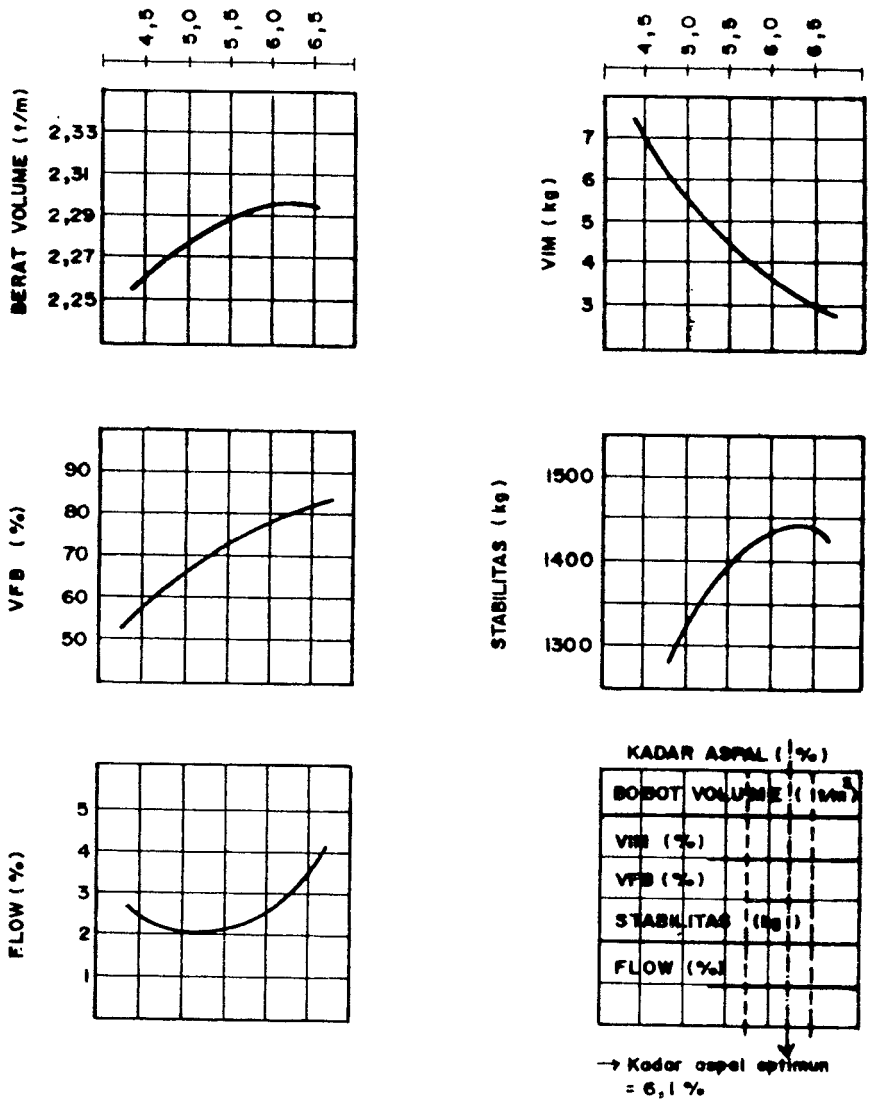
Gambar 5.23.a. Erosion Analysis Allowable Load Repetitions Based on Erotion Factors (Without Concrete Shoulder)



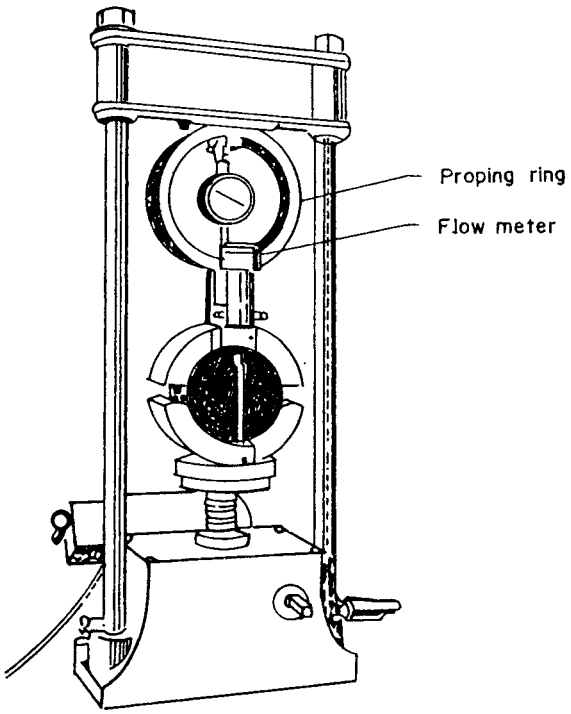
Gambar 5.23.b. Erosion Analysis Allowable Load Repetitions Based on Erosion Factors (Without Concrete Shoulder)



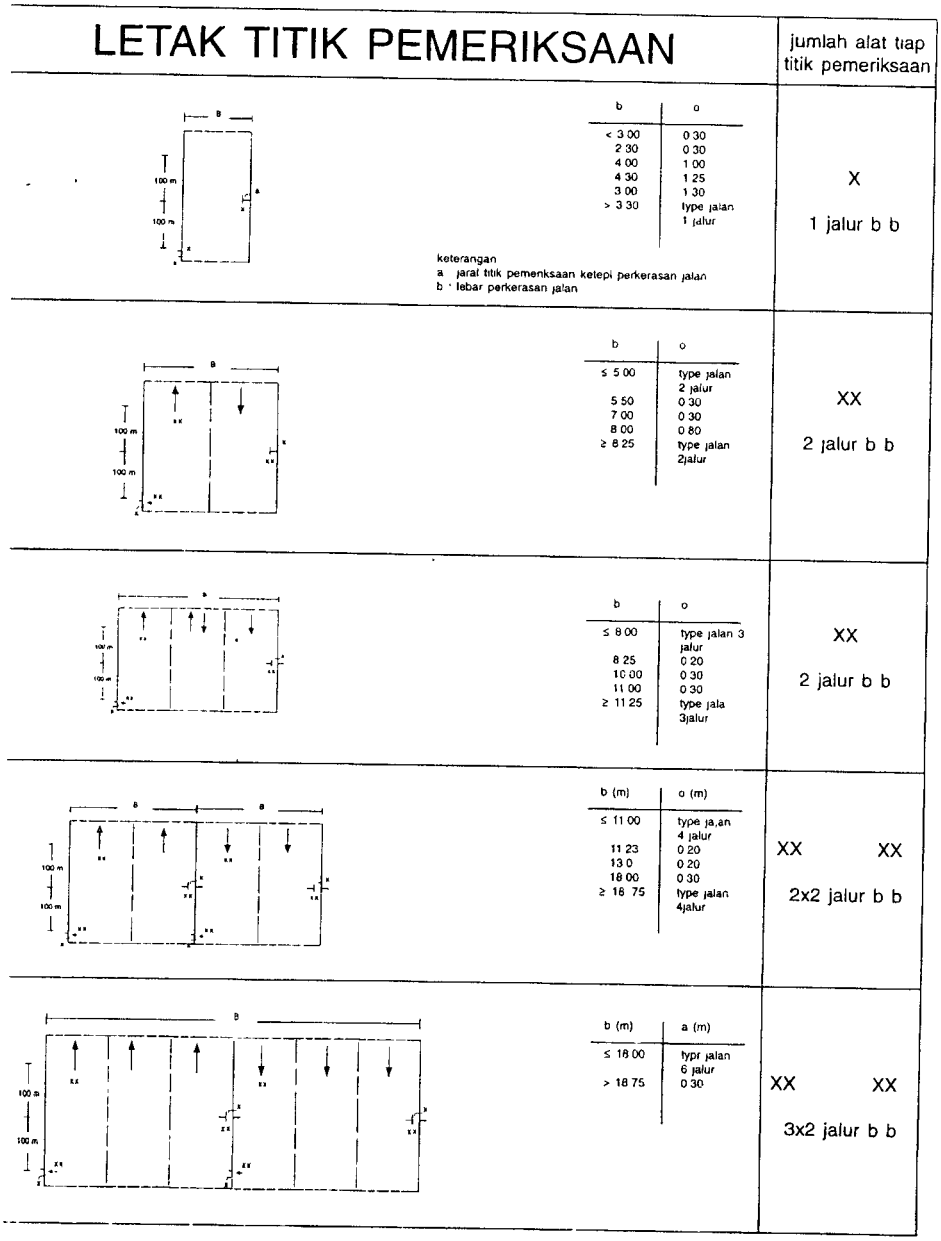
Gambar 6.5. Lengkung Fuller



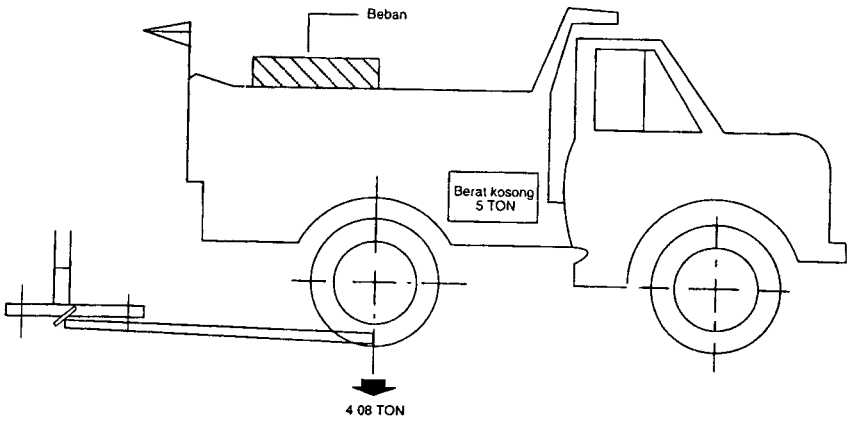
Gambar 6.6. Grafik Hasil Pemeriksaan Marshall pada "Mix Design"



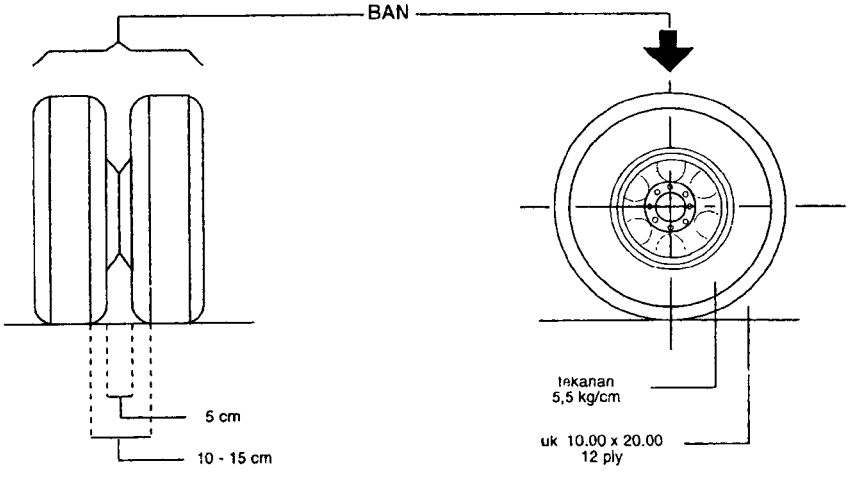
Gambar 6.7. Alat Marshall



Gambar 7.3. Letak Titik Pemeriksaan

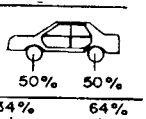
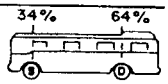
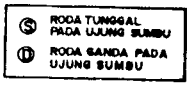
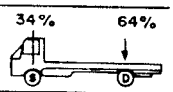
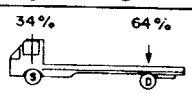
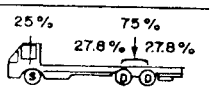
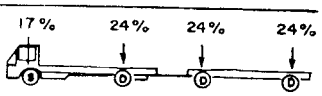
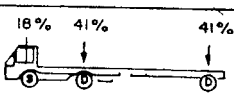
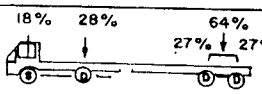


Gambar 7.4. Spesifikasi Truck Standar



Gambar 7.5. Roda Belakang Truck Standar

Daftar 7.1. Unit Equivalen 8,160 ton Beban As Tunggal (UE 18 KSAL)

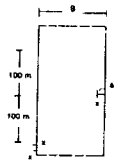
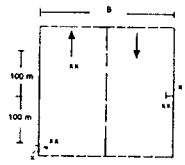
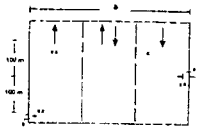
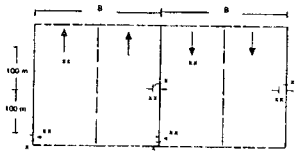
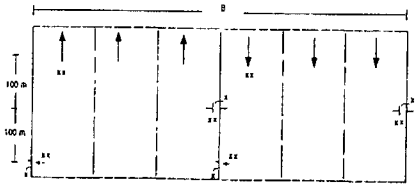
KONFIGURASI SUMBU & TIPE	BERAT KOSONG (ton)	BEBAN MUATAN MAKSIMUM (ton)	BERAT TOTAL MAKSIMUM (ton)	UE 18 KSAL KOSONG	UE 18 KSAL MAKSIMUM	
1.1 HP	1,5	0,5	2,0	0,0001	0,0004	
1.2 BUS	3	6	9	0,0037	0,3006	 
1.2L TRUCK	2,3	6	8,3	0,0013	0,2174	
1.2H TRUCK	4,2	14	18,2	0,0143	5,0264	
1.22 TRUCK	5	20	25	0,0044	2,7416	
1.2+2.2 TRAILER	6,4	25	31,4	0,0085	4,9283	
1.2-2 TRAILER	6,2	20	26,2	0,0192	6,1179	
1.2-22 TRAILER	10	32	42	0,0327	10,183	

Daftar 7.2. Faktor Hubungan Antara Umur Rencana dengan Perkembangan Lalu Lintas

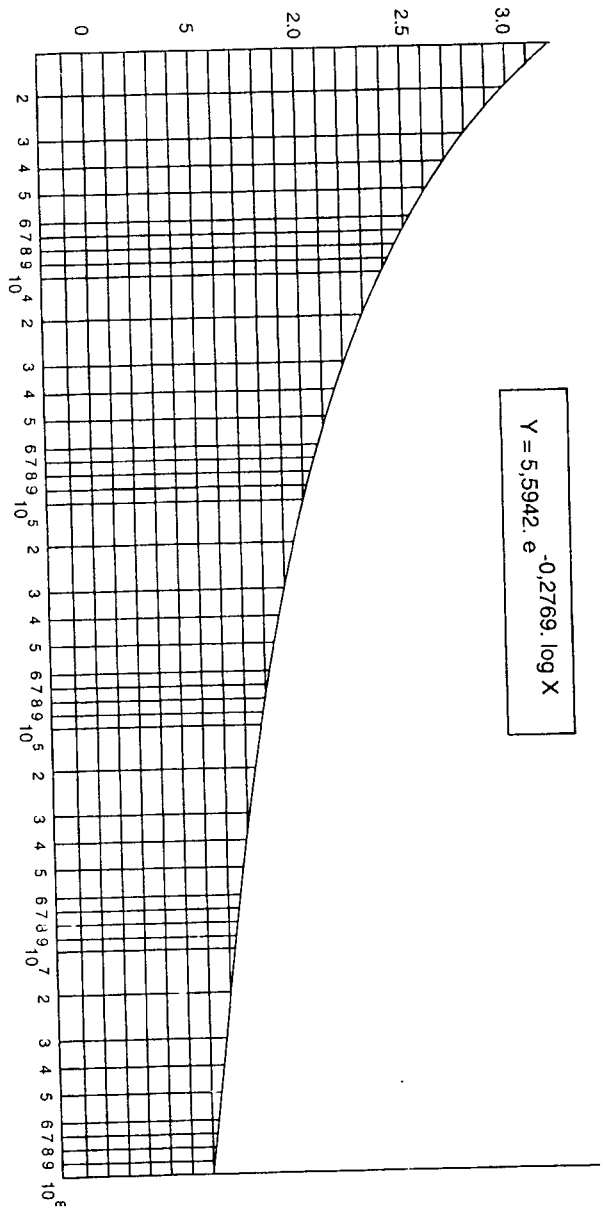
R% / n tahun	2%	4%	5%	6%	8%	10%
1 tahun	1,01	1,02	1,02	1,03	1.04	1,05
2 tahun	2,04	2,08	2,10	2,12	2,16	2,21
3 tahun	3,09	3,18	3,23	2,30	3,38	3,48
4 tahun	4,16	4,33	4,42	4,51	4,69	4,87
5 tahun	5,25	5,53	5,66	5,80	6,10	6,41
6 tahun	6,37	6,77	6,97	7,18	7,63	8,10
7 tahun	7,51	8,06	8,35	8,65	9,28	9,96
8 tahun	8,70	9,51	9,62	10,20	11,05	12,00
9 tahun	9,85	10,79	11,30	11,84	12,99	14,26
10 tahun	11,05	12,25	12,90	13,60	15,05	16,73
15 tahun	17,45	20,25	22,15	23,90	28,30	33,36
20 tahun	24,55	30,40	33,90	37,95	47,70	60,20

$$N = {}^{1}/_{2} \left\{ L + (L + R)^{n} + 2 (L + R) \frac{(L + R)^{n-1}}{R} - 1 \right\}$$

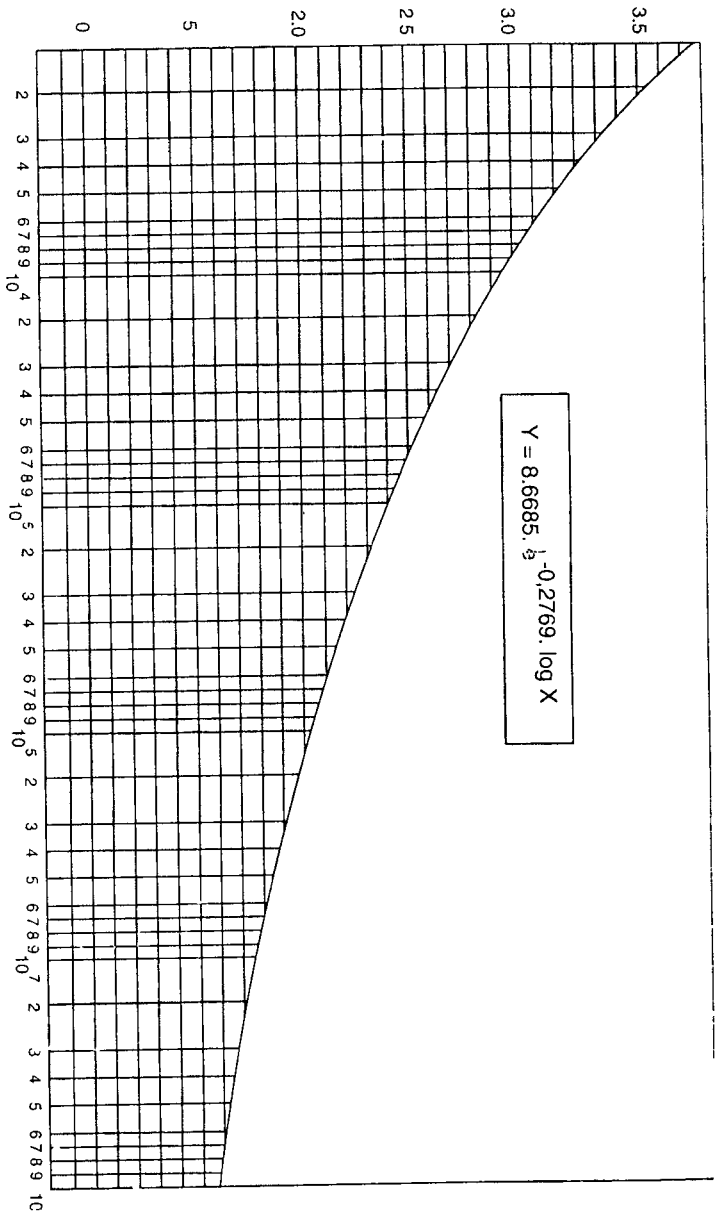
Daftar 7.3. Faktor Konversi Kekuatan Relatif Konstruksi Perkerasan

LETAK TITIK PEMERIKSAAN		jumlah alat tiap titik pemeriksaan
	b | o < 3 00 | 0 30 2 30 | 0 30 4 00 | 1 00 4 30 | 1 25 3 00 | 1 30 > 3 30 | type jalan 1 jalur keterangan : a jaral titik pemenksaan ketepi perkerasan jalan b lebar perkerasan jalan	X 1 jalur b b
	b | o ≤ 5 00 | type jalan 2 jalur 5 50 | 0 30 7 00 | 0 30 8 00 | 0 80 ≥ 8 25 | type jalan 2jalur	XX 2 jalur b b
	b | o ≤ 8 00 | type jalan 3 jalur 8 25 | 0 20 10 00 | 0 30 11 00 | 0 30 ≥ 11 25 | type jala 3jalur	XX 2 jalur b b
	b (m) | o (m) ≤ 11 00 | type ja,an 4 jalur 11 23 | 0.20 13 0 | 0 20 18 00 | 0 30 ≥ 18 75 | type jalan 4jalur	XX XX 2x2 jalur b b
	b (m) | a (m) ≤ 18 00 | typr jalan 6 jalur > 18 75 | 0 30	XX XX 3x2 jalur b b

Grafik 7.1. AE 18 KSAL (Operasi)



Grafik. 7.1.a. AE 18 KSAL (Operasi)



Grafik 7.2. Lendutan Sebelum Lapis Tambahan (= D) mm

