社会開発協力部報告書

No. 8

インドネシア共和国

ジャカルタ湾岸道路計画調査

報告書

資料編

昭和56年11月

国際協力事業団

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Appendix 3.1 ZONE DIVISION MAPS AND ZONE CODE LIST

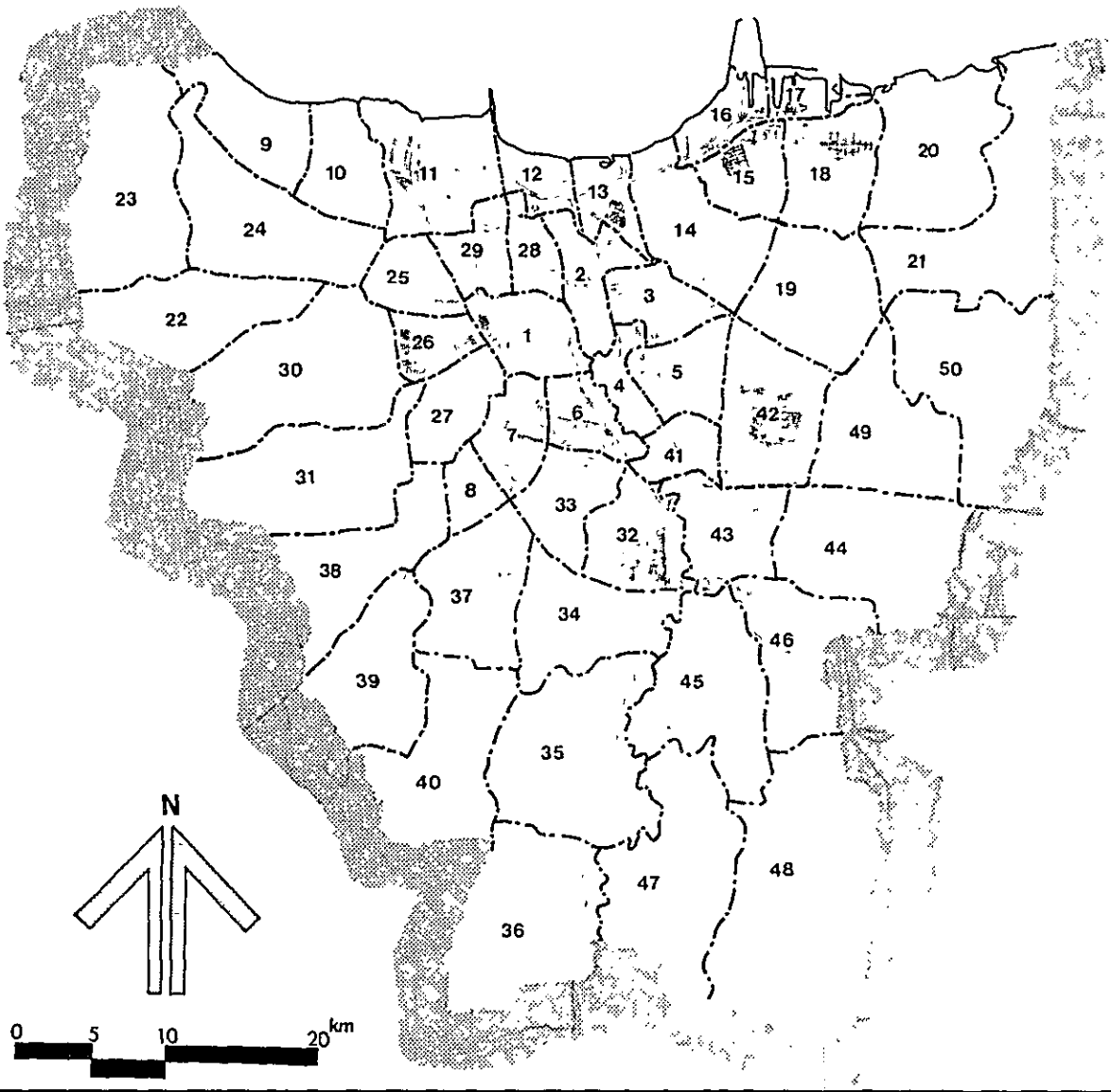
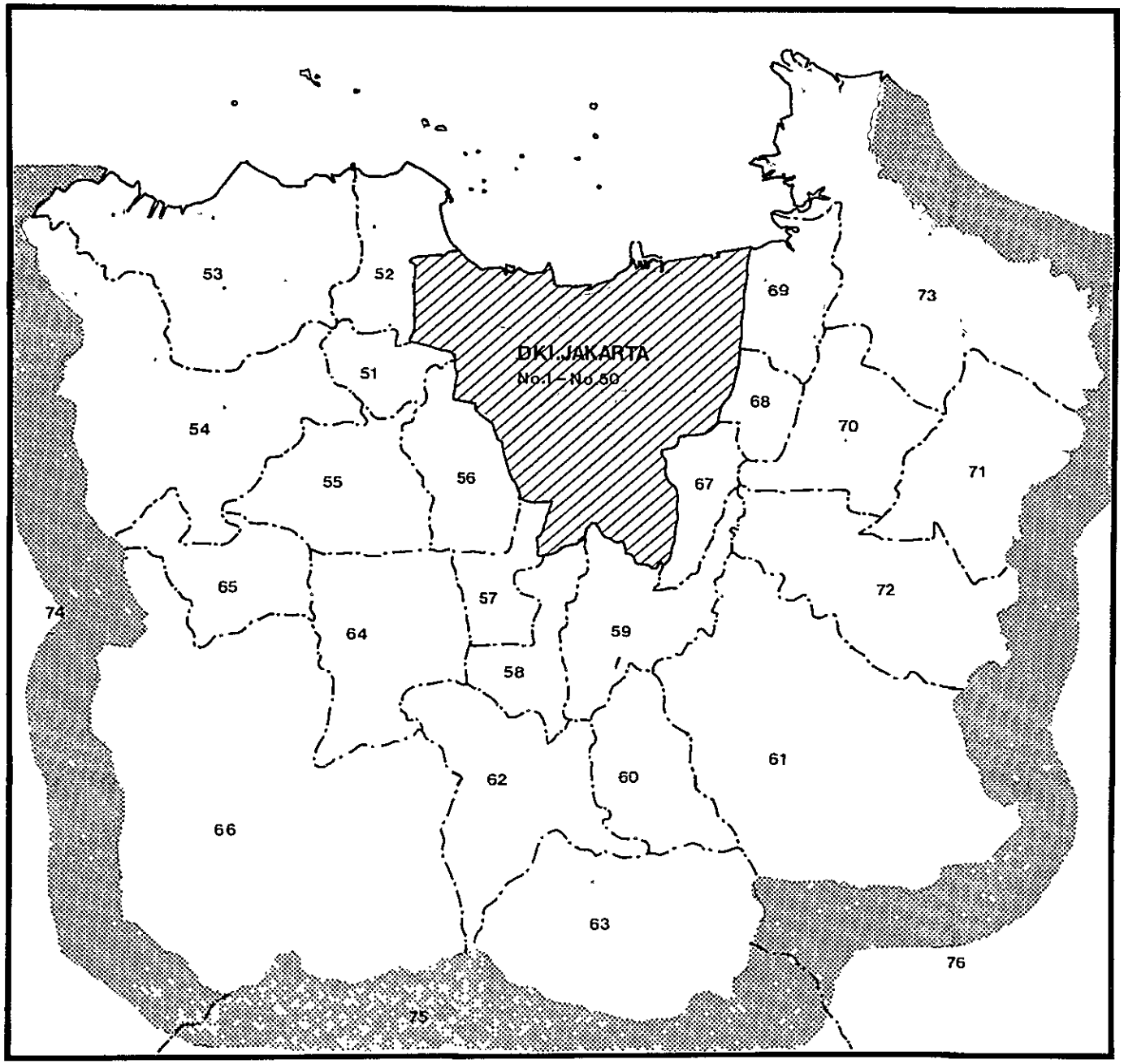


Fig. 3.5 ZONE DIVISION IN DKI JAKARTA

Legend : —·—·— : Zone Boundary
Zone No.1-No.50

JAKARTA HARBOUR ROAD PROJECT



ZONE DIVISION IN BOTABEK AREA

Legend :

—·—·— Zone Boundary
Zone No.51 – No.73

JAKARTA HARBOUR ROAD PROJECT

Zone		Kodya/Kabupaten		Kecamatan		Kelurahan	
NO.	Name	NO.	Name	NO.	Name	NO.	Name
1.	GAMBIR	11	Central Jakarta	1	GAMBIR	01	Cideng
						02	Duri Pulau
						03	Petojo Utara
						04	Petojo Selatan
						05	Kebun Kelapa
						06	Gambir
2	SAWAH BESAR			2	Sawah Besar	01	Mangga Dua Selatan
						02	Karang Anyar
						03	Kartini
						04	Pasar Baru
						05	Gn.Sahari Utara
3	KEMAYORAN			3	Kemayoran	01	Gn.Sahari Selatan
						02	Kemayoran
						03	Kebon Kosong
						04	Serdang
						05	Harapan Mulya
4	SENEN			4	Senen	01	Senen
						02	Kwitang
						03	Kenari
						04	Kramat
						05	Paseban
						06	Bungur

Zone		Kodya/Kabupaten		Kecamatan		Kelurahan	
NO.	Name	NO.	Name	NO.	Name	NO.	Name
5	CEMPAKA PUTIH	11	Central Jakarta	5	Cempaka Putih	01	Tanah Tinggi
						02	Johar Baru
						03	Galur
						04	Kampung Rawa
						05	Rawa Sari
						06	Cempaka Putih Barat
						07	Cempaka Putih Timur
6	MENTENG			6	Menteng	01	Kebon Sirih
						02	Gondang Dia
						03	Cikini
						04	Menteng
						05	Pegangsaan
7	KEBON MELATI			7	Tanah Abang	01	Kampung Bali
						02	Kebon Kacang
						03	Kebon Melati
						04	Petamburan
						05	Karet Tengsin
						06	Bendungan Hilir
8	GELORA					07	Gelora
9	KAMAL MUARA	1 2	North Jakarta	1	Penjaringan	01	Kamal Muara
10	KAPUK MUARA					02	Kapuk Muara
11	PEJAGALAN					03	Pejagalan

Zone		Kodya/Kabupaten		Kecamatan		Kelurahan	
NO.	Name	NO.	Name	NO.	Name	NO.	Name
11	PEJAGALAN	1 2	North Jakarta	1	Penjaringan	04	Penjaringan
						05	Muara Angke
12	MANGGA DUA UTARA					06	Mangga Dua Utara
13	PADEMANGAN					07	Pademangan Barat
						08	Pademangan Timur
14	SUNTER			2	Tanjung Priok	01	Sunter
15	PEPANGGO					02	Pepanggo
						03	Sungai Bambu
						04	Kebon Bawang
16	TANJUNG PRIOK					05	Tanjung Priok
17	KOJA			3	Koja	01	Koja Utara
						02	Koja Selatan
18	T U G U					03	Lagoa
						04	T u g u
						05	Rawabadak
19	PEGANGSAAN DUA					06	Kelapa Gading
						07	Pegangsaan Dua
20	S E M P E R			4	Cilincing	01	Kali Baru
						02	Cilincing
						03	Semper
21	SUKAPURA					04	Marunda
						05	Sukapura

Zone		Kodya/Kabupaten		Kecamatan		Kelurahan	
No.	Name of Zone	NO.	Name	NO.	Name	NO.	Name
22	SEMANAN	1 3	West Jakarta	1	Cengkareng	01	Semanan
						02	Duri Kosambi
						03	Rawa Buaya
23	PEGADUNGAN					04	Kamal
						05	Tegal Alur
						06	Pegadungan
						07	Kali Deres
24	CENGKARENG					08	Cengkareng
						09	Kapuk
						10	Kedaung Kali Angke
25	JELAMBAR			2	Grogol Petamburan.	01	Grogol
						02	Jelambar
26	TOMANG					03	Tanjung Duren
						04	Tomang
27	PALMERAH					05	Jati Pulo
						06	Kota Bambu
						07	S l i p i
						08	Palmerah
28	TAMAN SARI			3	Taman Sari	01	Pinangsia
						02	Mangga Besar
						03	Tangki
						04	Glodok

Zone		Kodya/Kabupaten		Kecamatan		Kelurahan	
NO.	Name	NO.	Name	NO.	Name	NO.	Name
28	TAMAN SARI	13	West Jakarta	3	Taman Sari	05	Keagungan
						06	Krukut
						07	Taman Sari
						08	Maphar
29	TAMBORA			4	Tambora	01	Pekojan
						02	Malaka
						03	Tambora
						04	Jembatan Lima
						05	Angke
						06	Jembatan Besi
						07	Krendang
						08	Tanah Sareal
						09	D u r i
						10	Kali Baru
30	KEMBANGAN			5	Kebon Jeruk	01	Kembangan
						02	Kedoya
						03	D u r i
						04	Meruya Ilir
31	KEBON JERUK					05	Meruya Udik
						06	Joglo
						07	Srengseng
						08	Kebon Jeruk
						09	Sukabumi Ilir

Zone		Kodya/Kabupaten		Kecamatan		Kelurahan	
NO.	Name	NO.	Name	NO.	Name	NO.	Name
31	KEBON JERUK	13	West Jakarta	5	Kebon Jeruk	10	Kelapa Dua
						11	Sukabumi Udik
32	TEBET	1 4	South Jakarta	1	Tebet	01	Menteng Dalam
						02	Tebet Barat
						03	Tebet Timur
						04	Kebon Baru
						05	Bukit Duri
						06	Manggarai Selatan
						07	Manggarai
33	SETIA BUDI			2	Setia Budi	01	Setia Budi
						02	Guntur
						03	K a r e t
						04	Karet Semanggi
						05	Karet Kuningan
						06	Kuningan Timur
						07	Pasar Manggis
						08	Menteng Atas
34	MAMPANG PRAPATAN			3	Mampang Prapat-an	01	Kuningan Barat
						02	Mampang Prapatan
						03	Pela Mampang
						04	Tegal Parang
						05	Bangka

Zone		Kodya/Kabupaten		Kecamatan		Kelurahan	
NO.	Name	NO.	Name	NO.	Name	NO.	Name
34	MAMPANG PRAPATAN	1 4	South Jakarta	3	Mampang Prapatan	06	Pancoran
						07	Duren Tiga
						08	Kali Bata
						09	Cikoko
						10	Pegadegan
						11	Rawa Jati
35	PEJATEN			4	Pasar Minggu	01	Pejaten
						02	Pasar Minggu
						03	Tanjung Barat
						04	Jati Padang
						05	Ragunan
						06	Cilandak
36	SRENGSENG SAWAH					07	Jaga Karsa
						08	Lenteng Agung
						09	Srengseng Sawah
						10	Ciganjur
37	KEBAYORAN BARU			5	Kebayoran Baru	01	Senayan
						02	Rawa Barat
						03	Selong
						04	Gunung
						05	Kramat Pela
						06	Melawai

Zone		Kodya/Kabupaten		Kecamatan		Kelurahan	
NO.	Name	NO.	Name	NO.	Name	NO.	Name
37	KEBAYORAN BARU	14	South Jakarta	5	Kebayoran Baru	07	Petogogan
						08	P u l o
						09	Gandaria Utara
						10	Cipete Utara
38	GROGOL UTARA			6	Kebayoran Lama	01	Grogol Utara
						02	Grogol Selatan
						03	Cipulir
						04	Petukangan Utara
						05	Petukangan Selatan
						06	Ulujami
						07	Pesanggrahan
39	KEBAYORAN LAMA					08	Kebayoran Lama
						09	Pondok Pinang
						10	Bintaro
40	CILANDAK			7	Cilandak	01	Gandaria Selatan
						02	Cipete Selatan
						03	Cilandak
						04	Lebak Bulus
						05	Pondok Labu
41	MATRAMAN	15	East Jakarta	1	Matraman	01	Kebon Manggis
						02	Pal Meriam
						03	Kayu Manis

Zone		Kodya/Kabupaten		Kecamatan		Kelurahan	
NO.	Name	NO.	Name	NO.	Name	NO.	Name
41	MATRAMAN	15	East Jakarta	1	Matraman	04	Utan Kayu
						05	Pisangan Barat
42	PULO GADUNG			2	Pulo Gadung	01	Kayu Putih
						02	Jati Rawa Mangun
						03	Pisangan Timur
						04	Cipinang
						05	Pulo Gadung
						06	Jati Negara Kaum
43	CIPINANG BESAR			3	Jati Negara	01	Kampung Melayu
						02	Bali Mester
						03	Bidara Cina
						04	Cipinang Cempedak
						05	Rawa Bangke
						06	Cipinang Muara
						07	Cipinang Besar
44	KLENDER					08	Pondok BAMBU
						09	Klender
						10	Duren Sawit
						11	Malaka
						12	Pondok Kelapa
45	CILILITAN			4	Kramat Jati	01	Cawang
						02	Cililitan

Zone		Kodya / Kabupaten		Kecamatan		Kelurahan	
NO.	Name	NO.	Name	NO.	Name	NO.	Name
45	CILILITAN	1 5	East Jakarta	4	Kramat Jati	03	Kramat Jati
						04	Kebon Pala
						05	Batu Ampar
						06	Bale Kambang
						07	Makasar
						08	Kampung Tengah
						09	D u k u h
46	HALIM PERDANA KUSUMA					10	Cipinang Melayu
						11	Halim Perdana Kusuma
47	GEDONG			5	Pasar Rebo	01	Gedong
						02	Rambutan
						03	Susukan
						04	Ciracas
						05	Cijantung
						06	Baru
						07	Kali Sari
						08	Pekayon
48	LUBANG BUAYA					09	Lubang Buaya
						10	C e g e r
						11	Bambu Apus
						12	Setu
						13	Cipayung

Zone		Kodya/Kabupaten		Kecamatan		Kelurahan	
NO.	Name	NO.	Name	No.	Name	NO.	Name
48	LUBANG BUAYA	15	East Jakarta	5	Pasar Rebo	14	Kelapa Dua Wetan
						15	Munjul
						16	Cilangkap
						17	Cibubur
						18	Pondok Ranggon
49	Penggilingan			6	Cakung	01	Rawa Terate
						02	Jati Negara
						03	Penggilingan
50	CAKUNG					04	Cakung
						05	Ujung Menteng
						06	Pulo Gebang

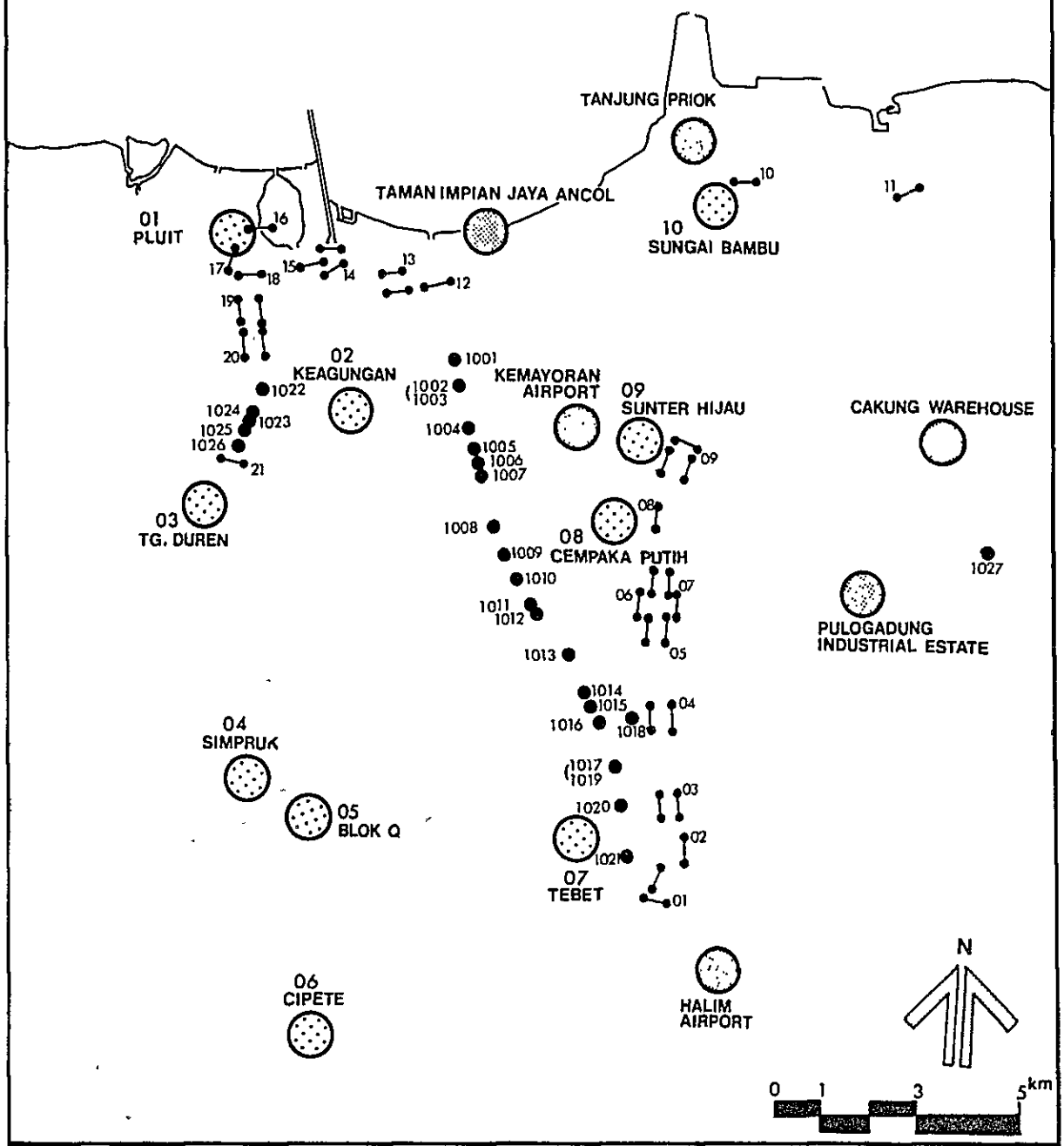
Zone		Kodya/Kabupaten		Kecamatan	
NO.	Name	NO.	Name	NO.	Name
51	Tangerang	21	Tangerang	101	Tangerang
52	Teluknaga			102	Batuceper
				103	Teluknaga
53	Mauk			104	Sepatan
				105	Mauk
				106	Rajeg
				107	Kronjo
				108	Pasar Kamis
54	Cikupa			109	Kresek
				110	Balaraja
				111	Tigaraksa
				112	Cikupa
				113	Curug
55	Serpong			114	Serpong
				115	Legok
56	Ciputat			116	Ciputat
				117	Ciledug
57	Sawangan	22	Bogor	201	Sawangan
58	Depok			202	Depok
59	Cibinong			203	Cibinong
				204	Cimanggis
				205	Gunung Putri

Zone		Kodya/Kabupaten		Kecamatan	
NO.	Name	NO.	Name	NO.	Name
60	Citeureup	22	Bogor	206	Citeureup
61	Cileungsi			207	Jongol
				208	Cariu
				209	Cileungsi
62	Bogor			210	Bogor
				211	Ciomas
				212	Semplak
				213	Kedung Halang
63	Ciawi			214	Cisarua
				215	Ciawi
				216	Cijeruk
64	Rumpin			217	Parung
				218	Gunung Sindur
				219	Rumpin
65	Parung Panjang			220	Parung Panjang
66	Leuwiliang			221	Ciampea
				222	Cibungbulang
				223	Leuwiliang
				224	Cigudeg
				225	Jasinga
67	Pondok Gede	23	Bekasi	301	Pondok Gede

Zone		Kodya/Kabupaten		Kecamatan	
NO.	Name	NO.	Name	NO.	Name
68	Bekasi	23	Bekasi	302	Bekasi
69	Babelan			303	Talmajaya
				304	Babelan
70	Tambun			305	Tambun
				306	Cibutung
71	Cikarang			307	Cikarang
				308	Lemahabang
72	Setu			309	Setu
				310	Cibarusa
73	Sukatani			311	Cabangbungin
				312	Sukatani
				313	Pebayuran
74	West Java -1	31	Serang		
			Pandeglang		
			Rangkasbitung		
75	West Java -2	32	Sukabumi		
			Cianjur		
			Bandung		
			Garut		
			Tasikmalaya		
			Ciamis		
			Majarengka		

Zone		Kodya/Kabupaten		Kecamatan	
NO.	Name	NO.	Name	NO.	Name
75	West Java-2		Kuningan Sumedang		
76	West Java-3	33	Karawang Purwakarta Subang Indramayu Cirebon		
77	Central Java	34			
78	East Java	35			
79	South Sumatra	36			
80	Out of Java ISlands	37			

Appendix 3.2 LOCATIONS AND RESULTS OF TRAFFIC COUNT SURVEY



TRAFFIC SURVEY LOCATIONS

Legend :

- ● Traffic Count Survey
- Road Side O-D & T-C Survey
- Facility O-D & T-C Survey
- Home Interview Survey

JAKARTA HARBOUR ROAD PROJECT

(Unit: Vehicle)

Station No.	Name of Street	Hours	Motor-cycle.	For Passengers				for Cargoes			Total	Total Exclud-ing. Motor-cycle.
				Sedan St.Wagon Jeep	Oplet Pick-up Combi	Micro Bus Bus	Total	Pick-up Micro Truck	Truck Trailer	Total		
1001	Jl.Tangerang Jakarta	6:00 - 18:00	7.490	5.492	1.696	542	7.730	1.308	892	2.200	17.420	9.930
		7:00 - 9:00	1.054	636	93	105	834	227	107	334	2.222	1.168
	Jl.. Industri	6:00 - 18.00	7.849	4.618	933	676	6.227	1.131	334	1.465	15 541	3.692
		7:00 - 9:00	1.772	861	137	121	1.119	184	60	244	3.135	1.363
1002	Jl. Mangga Besar	6:00 - 18:00	17.621	14.190	3.583	546	18.319	2.199	794	2.993	38.933	21.312
		7:00 - 9:00	3.580	2.274	716	103	3.093	152	56	208	6.881	3.301
1003	Jl. Gunung Sahari	6:00 - 18:00	3.057	2.479	553	36	3.068	444	68	512	6.637	3.580
		7:00 - 9:00	413	454	70	7	531	44	9	53	997	584
1004	Jl. H. Samanhudi	6:00 - 18:00	11.534	12.084	5.242	403	17.729	1.551	256	1.807	31.070	19.536
		7:00 - 9:00	3.273	2.112	376	56	2.544	251	19	270	6.087	2.814
	Jl. Angkasa	6:00 - 18:00	20.782	30.528	4.003	1.240	35.771	3.718	1.355	5.073	61.626	40.844
		7:00 - 9:00	3.818	4.609	658	176	5.443	398	53	451	9.712	5.894
1005	Jl. Dr. Sutomo	6:00 - 18:00	14.965	25.638	2.963	844	29.445	2.678	870	3.548	47.958	32.993
		7:00 - 9:00	2.423	3.707	370	143	4.220	258	42	300	6.943	4.520
	Kemayoran Airport	6:00 - 18:00	8.895	10.544	1.849	807	13.200	1.845	532	2.377	24.472	15.577
		7:00 - 9:00	1.569	1.706	359	174	2.239	217	29	246	4.054	2.485
1006	Jl. Budi Utomo	6:00 - 18:00	5.163	5.025	1.793	390	7.208	723	299	1.022	13.393	8.230
		7:00 - 9:00	1.524	1.015	212	130	1.357	83	74	157	3.038	1.514
1007	Jl. Dr. Wahidin	6:00 - 18:00	20.817	19.605	7.170	3.190	29.965	3.594	642	4.236	55.018	34.201
		7:00 - 9:00	5.329	4.549	1.310	577	6.436	444	86	530	12.295	6.966
1008	Jl. Kramat Raya	18:00 - 6:00	10.822	12.625	2.714	1.098	16.437	1.826	379	2.205	29.464	18.642
	Jl. Kwitang	18:00 - 6:00	8.158	9.411	1.742	731	11.884	1.341	221	1.562	21.604	13.446
	Jl. Prapatan	6:00 - 6:00	16.666	18.811	2.975	478	22.264	2.529	372	2.901	41 831	25.165
		7:00 - 9:00	1.742	1.917	374	71	2.362	269	30	299	4.403	2.661
	Jl. Senen Raya	8:00 - 6:00	8.725	9.096	3.041	1.460	13.597	1.774	972	2.746	25.068	16.343
		7:00 - 9:00	1.583	1.404	444	205	2.053	217	113	330	3.966	2.383
	Jl. Pasar Senen	6:00 - 6:00	21.907	23.631	6.202	4.624	34.457	4.832	1.624	6 456	62 820	40.913
		7:00 - 9:00	2.851	2.826	710	631	4.167	505	153	658	7 676	4.825
	Jl. Kramat Bunder	18·00 - 6:00	5.427	6.265	1.433	715	8.413	872	314	1.186	15 026	9.599
1009	Jl. Kramat Pulo	6:00 - 18:00	4.685	3.106	714	124	3.944	691	53	738	9.367	4.682
		7:00 - 9.00	1.157	691	135	23	849	37	6	43	2.049	892
1010	Jl. Raden Saleh Raya	6:00 - 18.00	5.538	7.652	1.252	91	8.995	750	63	813	15.346	9.808
		7:00 - 9:00	1.661	2.069	353	40	3.462	191	8	199	4.322	2.661

(Unit: Vehicle)

Station No.	Name of Street	Hours	Motor Cycle	for Passenger: Sedan St.Wagon Jeep	for Passenger: Oplet Pick-Up Combi	for Passenger: Micro Bus, Bus	for Passenger: Total	for Cargoes: Pick-Up Micro Truck	for Cargoes: Truck Trailer	for Cargoes: Total	Total	Total Excluding Motor Cycle
1011	Jl. Salembah Tengah	6:00 - 18:00	5.161	4.522	1.066	76	5.664	268	59	327	11.152	5.991
		7:00 - 9:00	567	759	162	18	939	63	2	65	1.571	1.004
1012	Jl. Diponegoro	6:00 - 18:00	11.948	18.628	2.329	1.795	22.752	1669	241	1.910	36.610	24.662
		7:00 - 9:00	2.076	3.516	369	346	4.231	273	13	286	6.593	4.517
1013	Jl. Tegalan	6:00 - 18:00	2.541	710	150	-	860	14	2	16	3.417	876
		7:00 - 9:00	486	107	42	-	149	14	2	16	651	165
1014	Jl. Slamet Riyadi	6:00 - 18:00	6.781	5.459	1.231	1.031	7.721	965	251	1.216	15.718	8.937
		7:00 - 9:00	1.442	1.014	246	195	1.455	190	34	224	3.121	1.679
1015	Jl. Matraman Raya	6:00 - 18:00	14.873	12.109	10.352	2.747	25.208	5.620	1.028	6.648	46.729	31.856
		7:00 - 9:00	1.525	2.015	1.468	377	3.860	863	109	972	6.357	4.832
1016	Jl. Bukit Duri	6:00 - 18:00	3.010	1.491	469	635	2.595	570	102	672	6.277	3.267
		7:00 - 9:00	582	299	113	111	583	69	20	89	1.185	603
1017	Jl. Melayu Besar	6:00 - 18:00	5.943	5.648	777	546	6.971	1.112	267	1.379	14.293	8.350
		7:00 - 9:00	1.238	1.165	80	84	1.329	221	36	257	2.824	1.586
1018	Jl. Bekasi	6:00 - 18:00	13.802	8.262	5.599	2.274	16.135	2.343	701	3.044	32.981	19.179
		7:00 - 9:00	3.124	1.802	1.111	410	3.323	292	144	436	6.883	3.759
1019	Jl. Raya Jatinegara Barat	6:00 - 18:00	12.111	11.806	10.063	3.805	25.674	3.438	546	3.984	38.611	26.500
		7:00 - 9:00	2.589	2.166	1.587	694	4.447	766	60	826	7.862	5.273
	Jl. Raya Jatinegara	6:00 - 18:00	10.375	11.876	9.107	3.612	24.595	3.677	673	4.350	39.320	28.945
		7:00 - 9:00	1.656	1.755	1.685	684	4.124	770	111	881	6.661	5.005
	Jl. Otto Iskandar-dinata.	6:00 - 18:00	17.072	18.450	10.274	1.773	30.497	4.481	1.043	5.524	53.093	36.021
		7:00 - 9:00	3.269	3.107	1.900	334	5.341	802	151	953	9.563	6.294
1020	Jl. Otista 3	6:00 - 18:00	5.843	6.377	1.912	102	8.391	550	276	826	15.065	9.217
		7:00 - 9:00	1.530	1.362	339	27	1.728	127	53	180	3.438	1.908
1021	Jl. Cawang Baru	6:00 - 18:00	1.579	483	177	1	661	91	30	121	2.361	782
		7:00 - 9:00	352	88	37	-	125	11	1	12	489	137
1022	Jl. Dr. Semeru Raya	6:00 - 18:00	1.601	714	223	7	944	356	53	409	2.954	1.353
		7:00 - 9:00	327	118	43	-	161	56	3	59	547	220
1023	Jl. Dr. Semeru 1	6:00 - 18:00	4.153	2.518	832	381	3.731	372	388	760	8.644	4.491
		7:00 - 9.00	973	572	239	82	893	72	56	128	1.994	1.021
1024	Jl. Prof.Dr. Latu-meten.	6:00 - 18:00	3.969	2.513	947	3	3.463	865	196	1.061	8.493	4.524
		7.00 - 9:00	1.042	539	141	1	681	208	51	259	1.982	940
1025	Jl. Latumeten 2	6:00 - 18:00	3.141	1.425	484	10	1.919	436	119	555	5.615	2.474
		7:00 - 9:00	584	287	92	-	379	85	14	99	1.062	478
1026	Jl. Jembatan 3	6:00 - 18:00	2.087	1.137	233	31	1.401	319	76	395	3.883	1.796
		7:00 - 9:00	581	280	20	-	300	78	6	84	765	384
1027	Jl. Cakung Cilin-cing.	6:00 - 18:00	1.198	1.399	214	193	1.806	573	1.355	1.928	4.932	3.734
		7:00 - 9:00	284	348	37	43	428	87	141	228	940	656
	Jl. Bekasi	6:00 - 18:00	5.643	4.759	4.158	2.034	10.951	3.582	8.123	11.705	28.299	22.656
		7:00 - 9:00	1.457	896	922	348	2.166	594	1.213	1.807	5.430	3.973

(Unit: Vehicle)

Station No.	Hours	Motor Cycle	for Passenger				for Cargoes			Total	Total Excluding. Motor Cycle
			Sedan StWagon Jeep	Oplet Pick-Up. Combi	Micro-Bus, B u s	Total	Pick-Up. Micro Truck	Truck Trailer	Total		
013	6:00~22:00	3.420	15.169	4.855	4.109	24.133	4.188	4.144	8.332	41.885	32.465
	7:00~9:00	1.991	2.621	748	554	3.923	304	537	1.141	7.055	5.064
014	6:00~22:00	13.353	27.892	7.212	2.091	34.195	5.563	3.915	9.478	57.026	43.673
	7:00~9:00	2.843	4.475	1.068	234	5.543	641	509	1.150	9.536	6.693
022	6:00~22:00	11.895	10.995	2.557	690	14.242	2.820	1.887	4.707	30.844	18.949
	7:00~9:00	1.998	1.465	312	91	1.868	269	262	531	4.397	2.399
032	6:00~22:00	2.881	2.246	685	24	2.955	402	482	884	3.720	3.839
	7:00~9:00	637	544	98	7	649	54	44	98	1.384	747
034	6:00~22:00	5.183	6.119	1.665	183	7.967	998	305	1.303	14.453	9.270
	7:00~9:00	870	872	270	33	1.175	137	24	161	2.206	1.336
042	6:00~6:00	18.215	10.473	7.403	2.735	20.617	5.443	2.421	7.964	46.796	28.581
	7:00~9:00	2.565	1.136	824	323	2.283	737	275	1.012	5.860	3.295
044	6:00~6:00	18.345	11.445	9.097	2.765	23.307	3.395	741	4.336	46.588	27.643
	7:00~9:00	3.114	1.491	1.342	378	3.211	315	86	401	6.726	3.612
052	6:00~22:00	8.418	9.853	1.389	872	12.114	1.227	165	1.392	21.924	13.506
	7:00~9:00	1.362	1.749	259	221	2.229	226	16	242	3.833	2.471
054	6:00~22:00	7.358	3.931	818	1.229	5.978	877	191	1.068	14.404	7.046
	7:00~9:00	1.383	614	150	190	954	102	20	122	2.459	1.076
062	6:00~6:00	19.022	28.078	4.903	2.453	35.434	3.617	2.576	6.193	60.649	41.627
	7:00~9:00	4.315	5.495	608	295	6.398	422	277	699	11.412	7.097
064	6:00~6:00	22.221	38.825	6.117	1.894	46.836	3.657	1.660	5.317	74.374	52.153
	7:00~9:00	5.146	7.380	912	254	8.546	515	196	711	14.403	9.257
072	6:00~22:00	4.134	3.002	863	192	4.057	542	208	750	8.941	4.807
	7:00~9:00	684	656	209	42	907	97	34	131	1.722	1.038
074	6:00~22:00	7.386	5.468	1.429	359	7.252	1.171	439	1.610	16.248	8.862
	7:00~9:00	1.266	879	267	57	1.203	227	68	295	2.764	1.498
084	6:00~22:00	3.479	5.558	800	295	6.653	804	238	1.042	11.174	7.695
	7:00~9:00	731	978	160	48	1.186	106	40	146	2.063	1.332

(Unit: Vehicle)

Station No.	Hours	Motor Cycle	for Passenger				for Cargoes			Total	Total Excluding Motor Cycle
			Sedan St.Wagon Jeep	Oplet Pick-Up. Combi	Micro-Bus, Bus	Total	Pick-Up. Micro Truck	Truck Trailer	Total		
091	6:00 ~ 6:00	12.484	22.077	5.092	3.173	30.342	5.040	8.166	13.206	66.032	43.548
	7:00 ~ 9:00	4.736	3.856	728	483	5.067	610	970	1.580	11.383	6.647
092	6:00 ~ 6:00	9.568	11.417	3.437	2.255	17.109	3.909	5.883	9.729	36.469	26.901
	7:00 ~ 9:00	1.672	1.520	318	238	2.076	416	424	840	4.588	2.916
094	6:00 ~ 6:00	20.505	28.321	6.878	4.795	39.992	6.642	4.763	11.405	71.902	51.397
	7:00 ~ 9:00	3.488	3.830	755	579	5.164	666	388	1.054	9.706	6.218
103	6:00 ~ 22:00	21.290	13.233	2.382	2.024	17.639	2.422	4.579	7.021	45.950	24.660
	7:00 ~ 9:00	3.990	2.138	381	292	2.811	285	675	960	7.761	3.771
111	6:00 ~ 22:00	3.549	1.446	2.098	398	3.942	1.831	2.728	4.559	12.050	8.501
	7:00 ~ 9:00	566	1.718	361	188	2.267	261	460	721	3.554	2.988
123	6:00 ~ 6:00	15.528	17.060	3.080	1.376	21.516	2.619	1.789	4.408	41.452	25.924
	7:00 ~ 9:00	2.959	2.419	585	307	3.311	357	285	642	6.912	3.953
131	6:00 ~ 6:00	5.663	4.982	1.501	116	6.599	1.536	3.267	4.803	17.065	11.402
	7:00 ~ 9:00	790	588	270	20	878	205	604	809	2.477	1.687
133	6:00 ~ 22:00	5.363	5.203	1.483	139	6.825	920	2.271	3.191	13.757	8.394
	7:00 ~ 9:00	813	1.424	214	28	1.666	66	268	334	2.813	2.000
141	6:00 ~ 22:00	7.264	3.591	4.299	474	8.364	1.740	3.699	5.439	21.067	13.803
	7:00 ~ 9:00	1.331	608	117	132	857	444	524	968	3.156	1.825
143	6:00 ~ 6:00	7.905	7.124	1.839	249	9.212	1.874	941	2.815	19.932	12.027
	7:00 ~ 9:00	1.519	1.014	367	44	1.425	187	105	292	3.236	1.717
153	6:00 ~ 6:00	7.869	4.061	945	211	5.218	2.210	2.964	5.174	18.261	10.392
	7:00 ~ 9:00	1.488	866	163	40	1.069	331	555	886	3.443	1.955
161	6:00 ~ 22:00	5.229	7.519	1.120	74	8.713	1.411	474	1.885	15.827	10.598
	7:00 ~ 9:00	980	1.351	224	13	1.578	256	60	316	2.874	1.894
174	6:00 ~ 22:00	3.311	3.440	714	157	4.311	853	825	1.678	9.300	5.989
	7:00 ~ 9:00	548	695	103	10	808	178	115	293	1.649	1.101
183	6:00 ~ 22:00	7.903	7.284	1.350	632	9.266	2.410	1.996	4.406	21.575	13.672
	7:00 ~ 9:00	1.683	1.135	225	92	1.452	276	375	651	3.786	2.103

(Unit: Vehicle)

Station No.	Hours	Motor Cycle	for Passenger				for Cargoes			Total	Total Excluding Motor Cycle
			Sedan St.Wagon Jeep	Oplet Pick-Up. Combi	Micro-Bus, Bus	Total	Pick-Up. Micro Truck	Truck Trailer	Total		
192	6:00 ~ 22:00	14.680	9.825	3.723	552	14.100	3.701	4.686	8.387	37.167	22.487
	7:00 ~ 9:00	3.001	1.816	653	97	2.566	412	529	941	6.508	3.507
194	6:00 ~ 22:00	8.080	2.884	1.480	239	4.603	1.645	1.349	2.994	15.677	7.597
	7:00 ~ 9:00	1.360	480	240	39	759	218	203	421	2.540	1.180
202	6:00 ~ 22:00	12.061	3.859	1.904	263	6.026	2.567	1.129	3.696	21.783	9.722
	7:00 ~ 9:00	2.275	641	362	43	1.046	325	117	442	3.763	1.488
204	6:00 ~ 22:00	11.543	4.114	2.233	351	6.698	3.742	2.115	5.857	24.098	12.555
	7:00 ~ 9:00	1.668	528	358	61	947	392	231	623	3.238	1.570
213	6:00 ~ 22:00	14.149	12.669	4.889	1.480	19.068	3.681	2.470	6.151	39.368	25.219
	7:00 ~ 9:00	2.857	1.663	783	324	2.770	366	347	713	6.340	3.483

Note: Station No. 213

Direction No. : (1 ... North, 2 ... East, 3 ... South, 4 ... West)

Station No. on Map

Appendix 3.3 QUESTIONNAIRE FOR OD SURVEY

3.3.1 Questionnaire for Roadside OD Survey

DAPAT DIKIRIM
TANPA PERANGKO
IZIN
NO.004/KIRB/80

KARTU BALASAN

Kepada :
Kepala Kantor Pos / Giro Besar I
Jakarta Pusat.

Serahkan Kepada :

Sub. Dit. Perencanaan Jalan Kota
Dit. Bipran - Dit. Jen. Bina Marga
Jl.Raden Patah No. 2
Kebayoran Baru, JAKARTA SELATAN

Survey ini diselenggarakan dalam rangka pembinaan jalan. Pembinaan ini adalah demi kepentingan anda juga. Anda dimohon untuk melengkapi dan mengirimkan kembali kartu ini. Nama anda tak perlu dicantumkan, ongkos perangko akan dibayar Bina Marga kemudian.

PETUNJUK

1. Lingkarilah angka jawaban yang anda berikan. Untuk pertanyaan No. 3 & 6
2. Yang dimaksud perjalanan disini adalah perjalanan antara 2 tempat perhentian.
3. Khusus untuk pertanyaan No. 5, jawab setelah kesibukan anda hari ini berakhir.
4. Apabila selama minggu survey Anda mendapat lebih dari satu (1) kartu, isi dan lengkapilah setiap kartu yang anda terima.
5. Setelah kartu ini diisi, lepaskan bagian yang telah Anda isi dan segera poskan pada kotak pos yang terdekat tanpa diberi perangko

Jam	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21

2

	No. P
1) Asal Perjalanan	013
Jalan/No	014
	022
Kelurahan/desa	032
	034
Kecamatan	042
Kota/Kab	044
2) Tujuan perjalanan	052
Jalan/NO	054
Kelurahan/desa	062
	064
Kecamatan	072
Kota/Kab	074
3) Maksud perjalanan: 1 Dari rumah ke kantor; 2 Kesekolah/kuliah; 3. Berbelanja; 4 Rapat bekerja; 5 Sosial/rekreasi; 6 Pulang ke rumah; 7 Mengantar barang; 8 Lain lain	084
4) Jumlah penumpang + supir [ ] orang	091
5) Berapa kali perjalanan yang dilakukan kendaraan pada hari ini [ ] kali	092
Pertanyaan-pertanyaan berikut ini hanya untuk Anda yang mendapat kartu berwarna biru atau hijau	094
6) Jenis barang yang dibawa	103
1 Produksi pertanian perikanan kehutanan; 7 Produksi besi dan baja	111
2 Makanan minuman tembakau; 8. Pupuk	123
3 Pakaian sepatu meubel alat alat rumah tangga; 9 Bahan bakar,minyak pelumas	131
4 Tekstil benang tenunan; 10 Produksi minyak lainnya	133
5 Semen, bahan bangunan lain; 11 Produk industri lainnya	141
6. Mainan anak anak mesin mesin peralatan transport; 12 Kosong	143
7) Perkiraan berat barang yang anda bawa (dalam ton) [ ] ton	183
Terima kasih atas bantuan Anda POSKANLAH KARTU INI SEKARANG JUGA	161
	174
	183
	197
	194
	202
	204
	213

3.3.2 Questionnaire for Home Interview Survey

DEPARTEMEN PEKERJAAN UMUM
DIT JEN BINA MARGA – DIT BINA PROGRAM JALAN
SUB DIREKTORAT PERENCANAAN JALAN KOTA

I

HOME INTERVIEW SURVEY

Survey ini diselenggarakan dengan tujuan untuk mendapatkan informasi mengenai perjalanan di daerah perumahan ini. Rumah Saudara merupakan salah satu rumah yang terpilih dari sekian banyak rumah yang akan dikunjungi, untuk mana dimohon keterangannya.

Saudara dimohon untuk menjawab dengan lengkap pertanyaan pertanyaan yang tercantum dalam 2 lembar formulir I dan II

- Bagian A memuat pertanyaan-pertanyaan mengenai keadaan penghuni/keluarga. Bagian A diisi oleh Kepala Keluarga atau Wakilnya

  Bagian B mengenai keterangan pribadi, ditujukan untuk anggota keluarga yang telah berusia di atas 6 tahun

- Bagian C mengenai keterangan perjalanan, juga untuk anggota keluarga yang telah berusia di atas 6 tahun

Petugas survey akan kembali ketempat Saudara pada

Tanggal

Hari

Antara jam dan jam

untuk mengambil formulir yang telah Saudara lengkapi dan juga untuk memberikan keterangan/petunjuk apabila Saudara mengalami kesulitan dalam mengisi/memberikan jawaban

Atas perhatian serta partisipasi Saudara dalam survey ini kami ucapkan terima kasih

Jakarta November 1980
Direktur Bina Program Jalan
Kasbi Du Perencanaan Jalan Kota

Ir. Wiyoto Wiyono MSc
NIP 110012959

A DATA MENGENAI PENGHUNI/RUMAH TANGGA

Dijawab oleh Kepala Keluarga atau Wakilnya

1 Alamat Rumah Jalan/no
Kelurahan/desa
Kecamatan
Wilayah

2 Jumlah penghuni tetap termasuk yang tinggal lebih dari 2 bulan (termasuk pembantu rumah tangga) [ ] orang

3 Jumlah penghuni yang telah berusia diatas 6 tahun [ ] orang

4 Jumlah penghuni yang telah bekerja [ ] orang

5 Jumlah penghuni yang masih terdaftar mengikuti pendidikan/kursus

1) SLP	[ ] orang	3) Perguruan Tinggi/Akademi	[ ] orang
2) SLA	[ ] orang	4) Kursus	[ ] orang

6 Jumlah kendaraan tetap di rumah

1) Sedan/jeep	[ ] buah	3) Sepeda motor/scooter	[ ] buah
2) Colt/combi	[ ] buah	4) Lain lain (Sebutkan)	[ ] buah

7 Jumlah biaya operasi dan pemeliharaan kendaraan-kendaraan di atas per bulan adalah [ ] Ribu rupiah

CATATAN UNTUK SURVEYOR

Waktu berkunjung Jam Tanggal Sample No [ ]

Nama Penghuni

Alamat Jl/no Kelurahan/desa

Kecamatan Wilayah

Jadwal waktu kunjungan berikutnya

Kunjungan Kedua Jam Tanggal

Kunjungan Ketiga Jam Tanggal

Jumlah formulir I & II yang diberikan kepada penghuni lembar

Nama Surveyor

SURAT PERNYATAAN

(Diisi oleh Penghuni, untuk dikembalikan pada petugas setelah diisi)

Yang bertanda tangan di bawah ini

Nama

Alamat Jl/no

Kelurahan/desa

Kecamatan Wilayah

Menyatakan bahwa telah menyerahkan formulir isian yang telah lengkap/terisi kepada petugas survey

Nama

Pada tanggal Jam

Sebanyak lembar formulir I & II

Yang membuat pernyataan

( )

DEPARTEMEN PEKERJAAN UMUM
DIT JEN BINA MARGA DIT BINA PROGRAM JALAN
SUB DIREKTORAT PERENCANAAN JALAN KOTA

II

B KETERANGAN PRIBADI

Untuk Penghuni yang telah berusia di atas 6 tahun

KEDUDUKAN DALAM RUMAH TANGGA (lingkari jawaban yang benar)	JENIS KELAMIN (lingkari jawaban yang benar)	UMUR	PEKERJAAN (lingkari jawaban yang benar)	TEMPAT KERJA (lingkari jawaban yang benar)	ALAMAT TEMPAT KERJA (tulis selengkapnya)
1 Suami 2 Istri 3 Anak 4 Tamu (yang tinggal > 2 bulan) 5 Pembantu 6 Lain-lain (sebutkan)	1 Pria 2 Wanita	Tahun	1 Tidak bekerja 2 Usaha di Rumah 3 Pegawai Kantor 4 Pegawai keliling 5 Pelajar 6 Mahasiswa 7 Sopir 8 Pembantu Rumah Tangga 9 Buruh 10 Lain lain (sebutkan)	1 Tempat tinggal 2 Hotel/asrama 3 Kantor 4 Pasar/toko 5 Industri 6 Sekolah 7 Rekreasi 8 Bengkel 9 Proyek bangunan 10 Rumah sakit 11 Lain lain (sebutkan)	Jl/no Kelurahan/desa Kecamatan Wilayah

C DATA PERJALANAN

Untuk penghuni yang telah berusia di atas 6 tahun
Dijawab menurut keadaan perjalanan tanggal ..... Hari

	ALAMAT TUJUAN (tulis selengkapnya)	WAKTU BERANGKAT (jam)	KENDARAAN YANG DIGUNAKAN (bila lebih dari 1 jawaban, pilihlah satu yang utama dan lingkari)	SEBAGAI APA ? (lingkari jawaban yang benar)	MAKSUD PERJALANAN (bila lebih dari 1 jawaban, pilihlah satu yang utama dan lingkari)
TUJUAN KE 1	Jl/no Kelurahan/desa Kecamatan Wilayah	jam	1 Naik sepeda/jalan kaki 2 Becak 3 Helicak/bemo/bajaj 4 Oplet/Colt/bus/mi crolet 5 Taxi 6 Sepeda motor/scoter 7 Sedan/jeep/st wagon 8 Truk 9 Kereta Api	1 Pengemudi 2 Penumpang	1 Bekerja 2 Pulang 3 Sekolah/kuliah/kursus 4 Berbelanja 5 Bussiness 6 Berobat 7 Berkunjung 8 Rekreasi/Sosial 9 Mengemudi 10 Mengantar barang 11 Lain-lain (sebutkan)
TUJUAN KE 2	Jl/no Kelurahan/desa Kecamatan Wilayah	jam	1 Naik sepeda/jalan kaki 2 Becak 3 Helicak/bemo/bajaj 4 Oplet/Colt/bus/mi crolet 5 Taxi 6 Sepeda motor/scoter 7 Sedan/jeep/st wagon 8 Truk 9 Kereta Api	1 Pengemudi 2 Penumpang	1 Bekerja 2 Pulang 3 Sekolah/kuliah/kursus 4 Berbelanja 5 Bussiness 6 Berobat 7 Berkunjung 8 Rekreasi/Sosial 9 Mengemudi 10 Mengantar barang 11 Lain lain (sebutkan)
TUJUAN KE 3	Jl/no Kelurahan/desa Kecamatan Wilayah	jam	1 Naik sepeda/jalan kaki 2 Becak 3 Helicak/bemo/bajaj 4 Oplet/Colt/bus/mi-crolet 5 Taxi 6 Sepeda motor/scoter 7 Sedan/jeep/st wagon 8 Truk 9 Kereta Api	1 Pengemudi 2 Penumpang	1 Bekerja 2 Pulang 3 Sekolah/kuliah/kursus 4 Berbelanja 5 Bussiness 6 Berobat 7 Berkunjung 8 Rekreasi/Sosial 9 Mengemudi 10 Mengantar barang 11 Lain-lain (sebutkan)
TUJUAN KE 4	Jl/no Kelurahan/desa Kecamatan Wilayah	jam	1 Naik sepeda/jalan kaki 2 Becak 3 Helicak/bemo/bajaj 4 Oplet/Colt/bus/mi crolet 5 Taxi 6 Sepeda motor/scoter 7 Sedan/jeep/st wagon 8 Truk 9 Kereta Api	1 Pengemudi 2 Penumpang	1 Bekerja 2 Pulang 3 Sekolah/kuliah/kursus 4 Berbelanja 5 Bussiness 6 Berobat 7 Berkunjung 8 Rekreasi/Sosial 9 Mengemudi 10 Mengantar barang 11 Lain lain (sebutkan)
TUJUAN KE 5	Jl/no Kelurahan/desa Kecamatan Wilayah	jam	1 Naik sepeda/jalan kaki 2 Becak 3 Helicak/bemo/bajaj 4 Oplet/Colt/bus/mi crolet 5 Taxi 6 Sepeda motor/scoter 7 Sedan/jeep/st wagon 8 Truk 9 Kereta Api	1 Pengemudi 2 Penumpang	1 Bekerja 2 Pulang 3 Sekolah/kuliah/kursus 4 Berbelanja 5 Bussiness 6 Berobat 7 Berkunjung 8 Rekreasi/Sosial 9 Mengemudi 10 Mengantar barang 11 Lain-lain (sebutkan)

3.3.3 Questinnaire for Major Facilities Survey

- Ancol, Halim and Kemayoran -

Postcard Sample:

A	-	Ancol Recreation Center	(Green card)
B	-	Halim Airport	(yellow card)
C	-	Kemayoran Airport	(white card)

TANPA PERANGKO
IZIN
NO.004/KIRB/80

KARTU BALASAN

Kepada :
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Sub. Dit. Perencanaan Jalan Kota
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Jl.Raden Patah No. 2
Kebayoran Baru, JAKARTA SELATAN

Survey ini diselenggarakan dalam rangka pembinaan jalan. Pembinaan ini adalah demi kepentingan Anda juga. Anda dimohon untuk melengkapi dan mengirimkan kembali kartu ini. Nama Anda tak perlu dicantumkan, ongkos perangko akan dibayar Bina Marga kemudian.

PETUNJUK

1. Pertanyaan-pertanyaan dibawah ini ditujukan hanya untuk anda yang akan masuk ke Ancol.
2. Lingkarilah angka jawaban yang anda berikan untuk pertanyaan No.2
3. Apabila anda mendapat lebih dari satu (1) kartu, isi dan lengkapilah setiap kartu yang anda terima. Poskan semua pada Kotak Pos terdekat tanpa perangko.

Jam	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	A

1. Asal Perjalanan

Jalan/no. .....
Kelurahan/desa. .....
Kecamatan .....
Kota/Kab .....

2. Maksud perjalanan ke Ancol

1. Dari rumah ke kantor
2. Berbelanja
3. Rapat/bekerja
4. Rekreasi
5. Mengantar Barang
6. Lain - lain

3. Jumlah penumpang + supir = [ ] orang

Terima kasih atas bantuan Anda POSKANLAH KARTU INI SEKARANG JUGA.

Survey ini diselenggarakan dalam rangka pembinaan jalan. Pembinaan ini adalah demi kepentingan Anda juga. Anda dimohon untuk melengkapi dan mengirimkan kembali kartu ini. Nama Anda tak perlu dicantumkan, ongkos perangko akan dibayar Bina Marga kemudian.

PETUNJUK.

1. Pertanyaan-pertanyaan ini diajukan hanya untuk Anda yang keluar dari Pelabuhan Udara Halim Perdanakusumah.
2. Lingkarilah angka jawaban yang Anda berikan untuk jawaban nomor 2).
3. Point 2). 1. ditujukan untuk orang asing yang berkujung ke Indonesia.
4. Khusus untuk orang asing,pertanyaan no.1) bisa hanya dijawab dengan nama dan alamat hotel saja.
5. Khusus pertanyaan no.4) dijawab setelah kesibukan Anda hari ini berakhir.
6. Apabila Anda mendapat lebih dari 1 kartu isi dan lengkapilah semuanya, lepaskan bagian yang telah Anda isi dan segera poskan pada kotak pos terdekat tanpa diberi perangko.

Jam	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

1). TUJUAN PERJALANAN :

Jalan/no. .....

Kelurahan/desa .....

Kecamatan .....

Kota/Kabupaten .....

2). Maksud kedatangan Anda Di Pelud Halim :

1. Berkunjung ke Indonesia.
2. Kembali ke Indonesia
3. Berjumpa dengan tamu di Halim
4. Mengantar keberangkatan seseorang
5. Rapat/bekerja di Halim
6. Mengantar barang.
7. Lain-lain.

3). Jumlah Penumpang + Supir = ☐

4). Berapa kali datang ke Pelabuhan Udara Halim pada hari ini. ☐

Terima kasih atas bantuan Anda

POSKANLAH KARTU INI SEKARANG JUGA.

Survey ini diselenggarakan dalam rangka pembinaan jalan. Pembinaan ini adalah demi kepentingan Anda juga. Anda dimohon untuk melengkapi dan mengirimkan kembali kartu ini. Nama Anda tak perlu dicantumkan, ongkos perangko akan dibayar Bina Marga kemudian.

PETUNJUK

1. Pertanyaan- pertanyaan ini diajukan hanya untuk Anda yang keluar dari Pelabuhan Udara Kemayoran.
2. Lingkarilah angka jawaban yang Anda berikan untuk pertanyaan nomor 2).
3. Khusus untuk pertanyaan no.4) dijawab setelah kesibukan Anda hari ini berakhir.
4. Apabila Anda mendapat lebih dari 1 kartu isi dan lengkapilah setiap kartu yang Anda terima.
5. Setelah kartu ini diisi, lepaskan bagian yang telah Anda isi dan segera poskan pada kotak pos terdekat tanpa diberi perangko.

Jam	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

1). TUJUAN PERJALANAN :

Jalan/no . ...

Kelurahan/desa .. ..

Kecamatan .. ..

Kota/Kabupaten . . ..

2) Maksud kedatangan Anda di-Pel-ud Kemayoran :

1. Berkunjung ke Jakarta
2. Kembali ke Jakarta.
3. Berjumpa dengan tamu di Kemayoran.
4. Mengantar keberangkatan seseorang.
5. Rapat/bekerja di Kemayoran.
6. Mengantar barang.
7. Lain-lain

3). Jumlah Penumpang + Supir. = ☐

4) Berapa kali datang ke Pelabuhan Udara Kemayoran pada hari ini. ☐

Terima kasih atas bantuan Anda

POSKANLAH KARTU INI SEKARANG JUGA.

3.3.4 Questionnaire for Major Facilities Survey

Cakung Warehouse, Pulo Gadung Industrial Estate, Weigh Bridge & Tanjung Priok Port

L O K A S I : .....

Jam																Jenis Kendaraan				
6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	A	B	C	D	E

1) Asal Perjalanan:

Jalan/No. .....

Kelurahan/desa .....

Kecamatan .....

Kota/Kabupaten .....

2) Tujuan Perjalanan:

Jalan/No. .....

Kelurahan/desa .....

Kecamatan .....

Kota/Kabupaten .....

3) Berapa ton kapasitas kendaraan ini ? [ ] ton.

4) Berapa ton jumlah barang yang dimuat ? [ ] ton.

5) Jenis barang apa yang Anda bawa dalam kendaraan ini ?

1. Produksi Pertanian, Perikanan, Kehutanan.
2. Makanan, minuman, tembakau.
3. Pakaian, sepatu, meubel, alat-alat rumah tangga.
4. Tekstil, benang tenunan.
5. Semen, bahan bangunan lain.
6. Mainan anak-anak, mesin-mesin, peralatan transport.
7. Produksi besi dan baha
8. Pupuk
9. Bahan bakar, minyak pelumas.
10. Produk minyak lainnya.
11. Produk industri lainnya.

6) Berapa jumlah penumpang + supir dalam kendaraan ini ? [ ] orang.

7) Berapa kali/hari rata-rata kendaraan ini lewat disini ? [ ] kali.

8) Apakah perjalanan kendaraan ini langsung menuju ketempat tujuan akhir ?

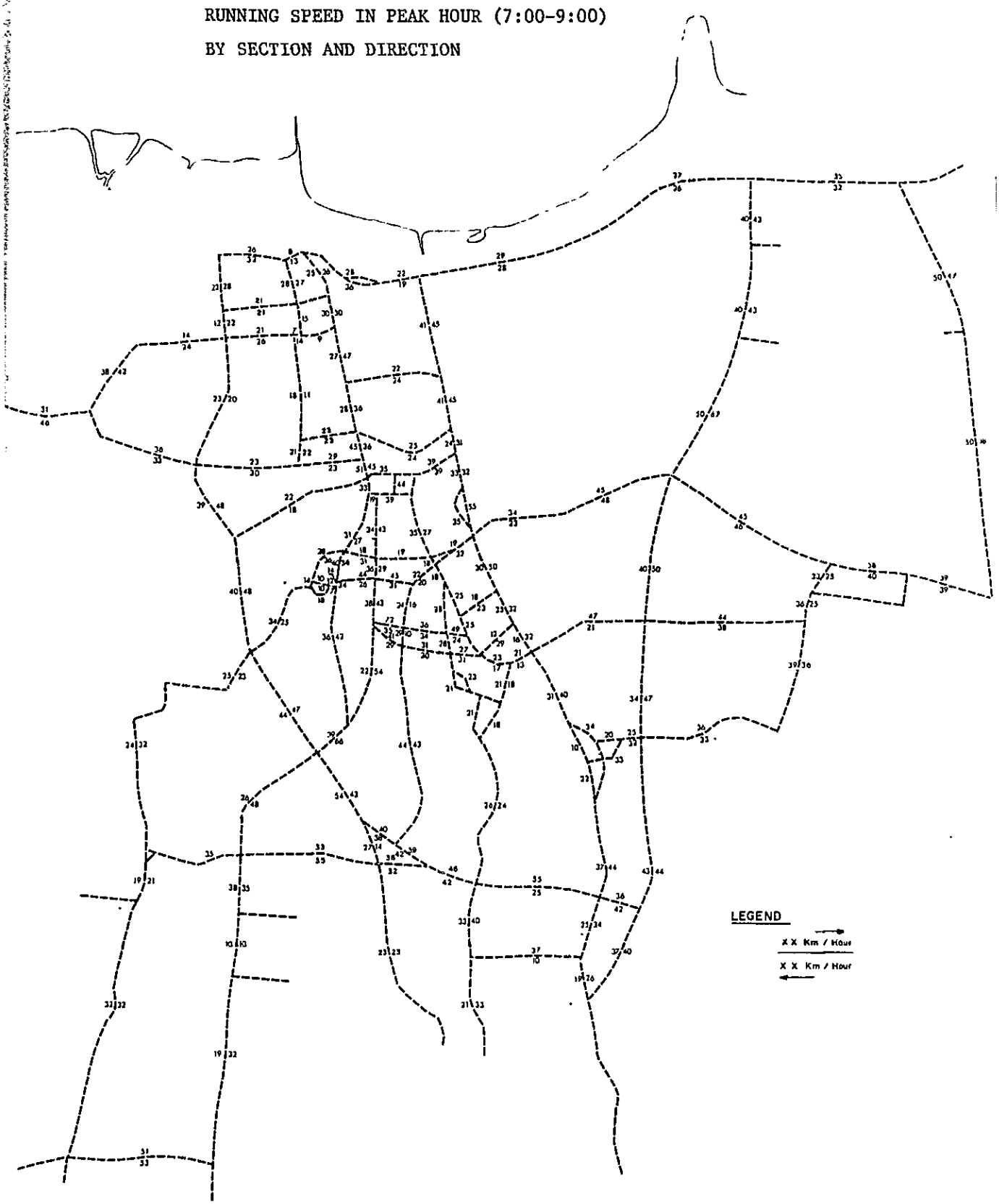
1. Ya. 2. Tidak.

9) Kalau tidak, berapa tempat yang disinggahi kendaraan ini sebelum sampai ke tempat tujuan? [ ] tempat.

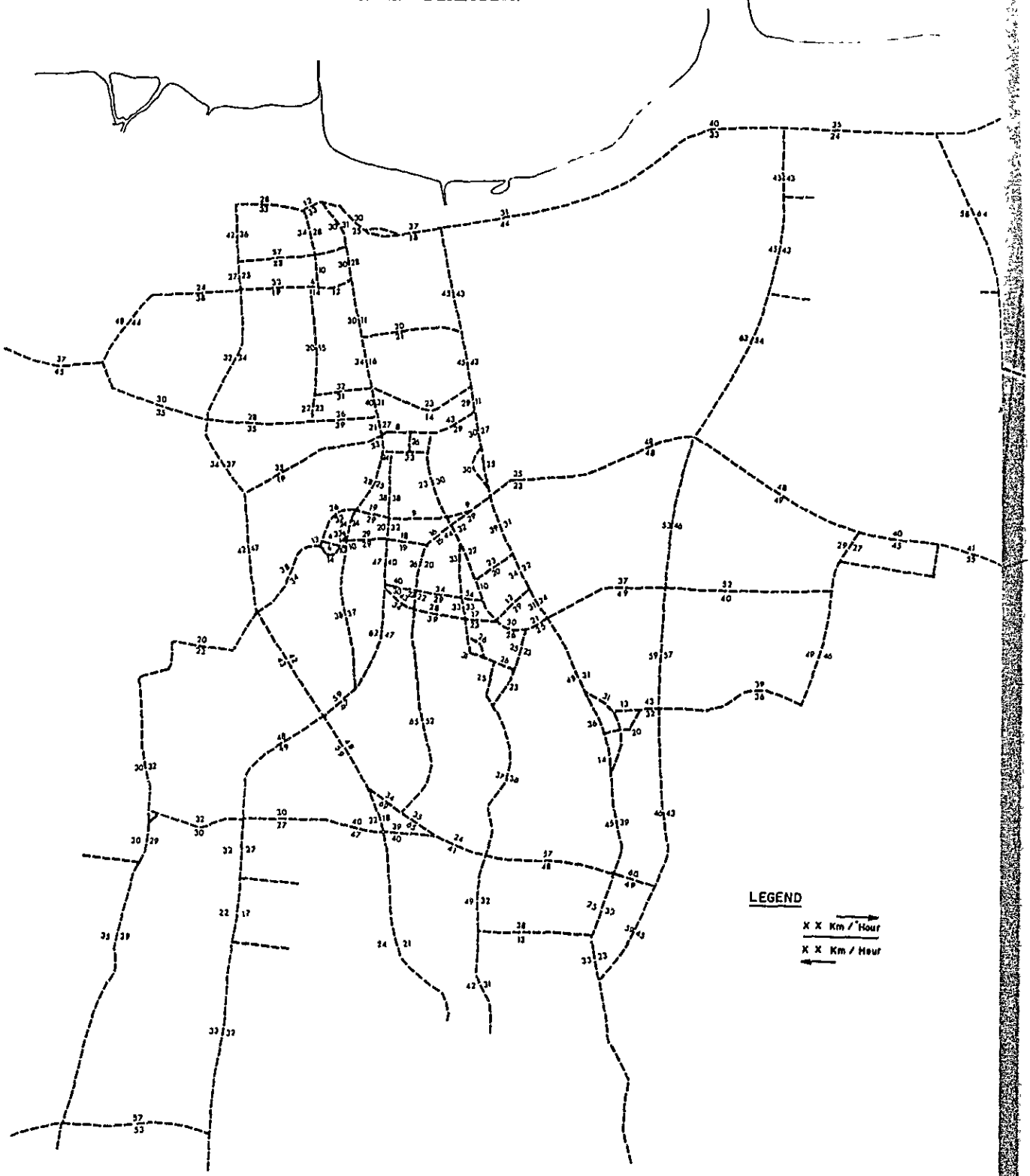
Appendix 3.4 RESULT OF RUNNING SPEED AND DELAY SURVEY

DATE	HOUR BAND	TIME	DISTANCE	Reason for Stopping							TOTAL STOPPING TIME
				1	2	3	4	5	6	7	
I	7-9	12402"	96.8	315"/12x	0	24"/2x	167"/14x	0	390"/3x	176"/13x	1072"
	12-14	10775"	96.5	385"/12x	0	17"/1x	52"/6x	169"/2x	0	415"/13x	1038"
II	7-9	8703"	59.1	495"/18x	0	310"/13x	359/9x	0	0	348"/8x	1512"
	12-14	7325"	59.1	514"/21x	0	6"/1x	52"/3x	0	0	24"/4x	596"
III	7-9	9174"	77.5	1430"/36x	40"/1x	95"/6x	61"/4x	0	13"/1x	51"/2x	1690"
	12-14	8409"	77.5	1240"/39x	14"/1x	10"/2x	47"/4x	0	0	0	1311"
IV	7-9	6070"	39	872"/28x	0	7"/1x	6"/1x	0	0	148"/4x	1033"
	12-14	5586"	41.1	798"/28	3"/1x	72"/5x	50"/4x	17"/1x	0	16"/1x	956"
TOTAL		68415"	546.6	6049"/194x	57"/3x	541"/31x	794"/45x	186"/3x	403"/4x	1178"/45x	9208"
TOTAL	7-9	36322"	272.4	3112/94x	40/1x	436/22x	593/28x	0	403"/4x	723/27x	5307"
	12-14	32093"	274.2	2937/100x	17/2x	105/9x	201/17x	186/3x	0	455/18x	3901"

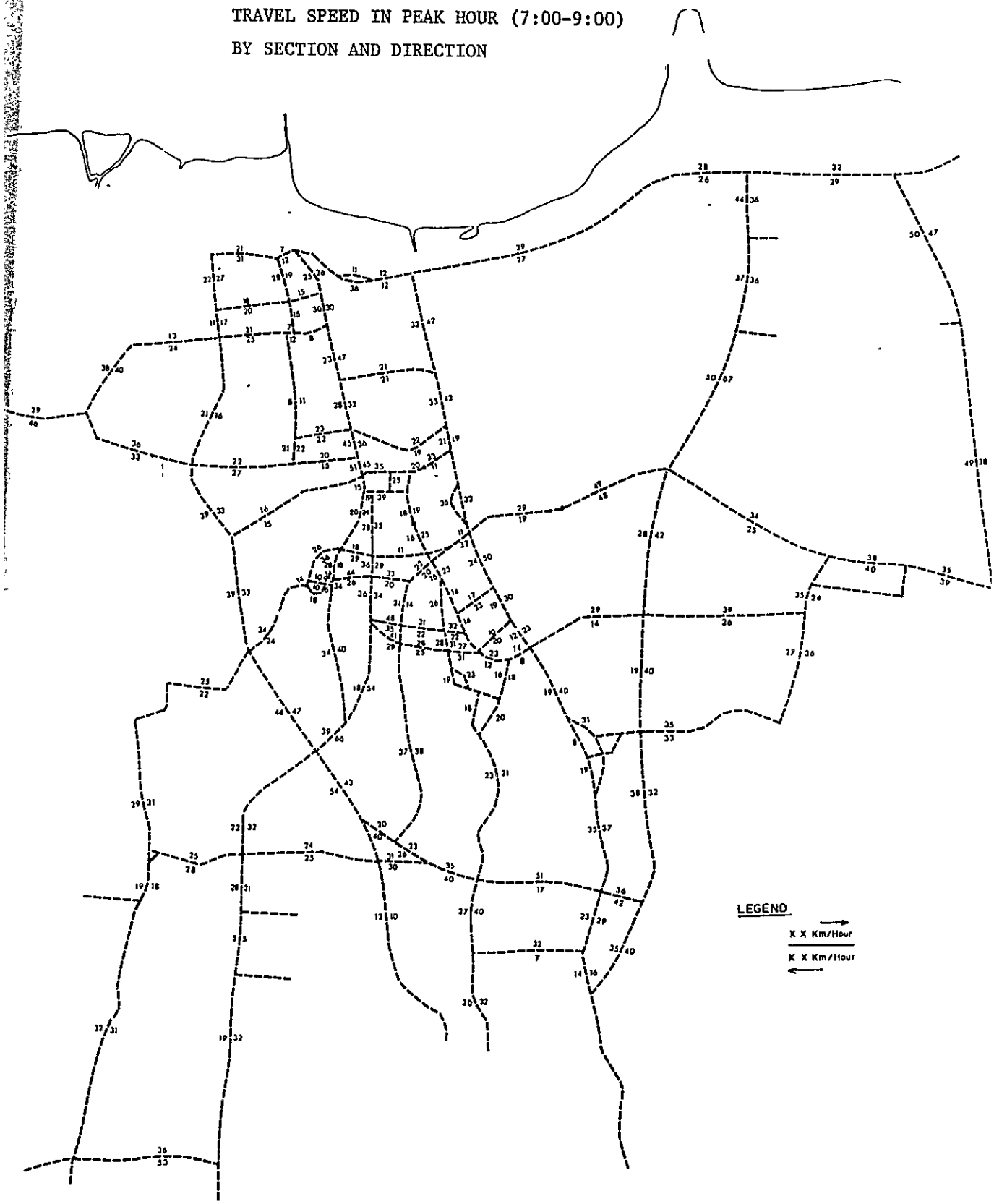
RUNNING SPEED IN PEAK HOUR (7:00-9:00)
BY SECTION AND DIRECTION



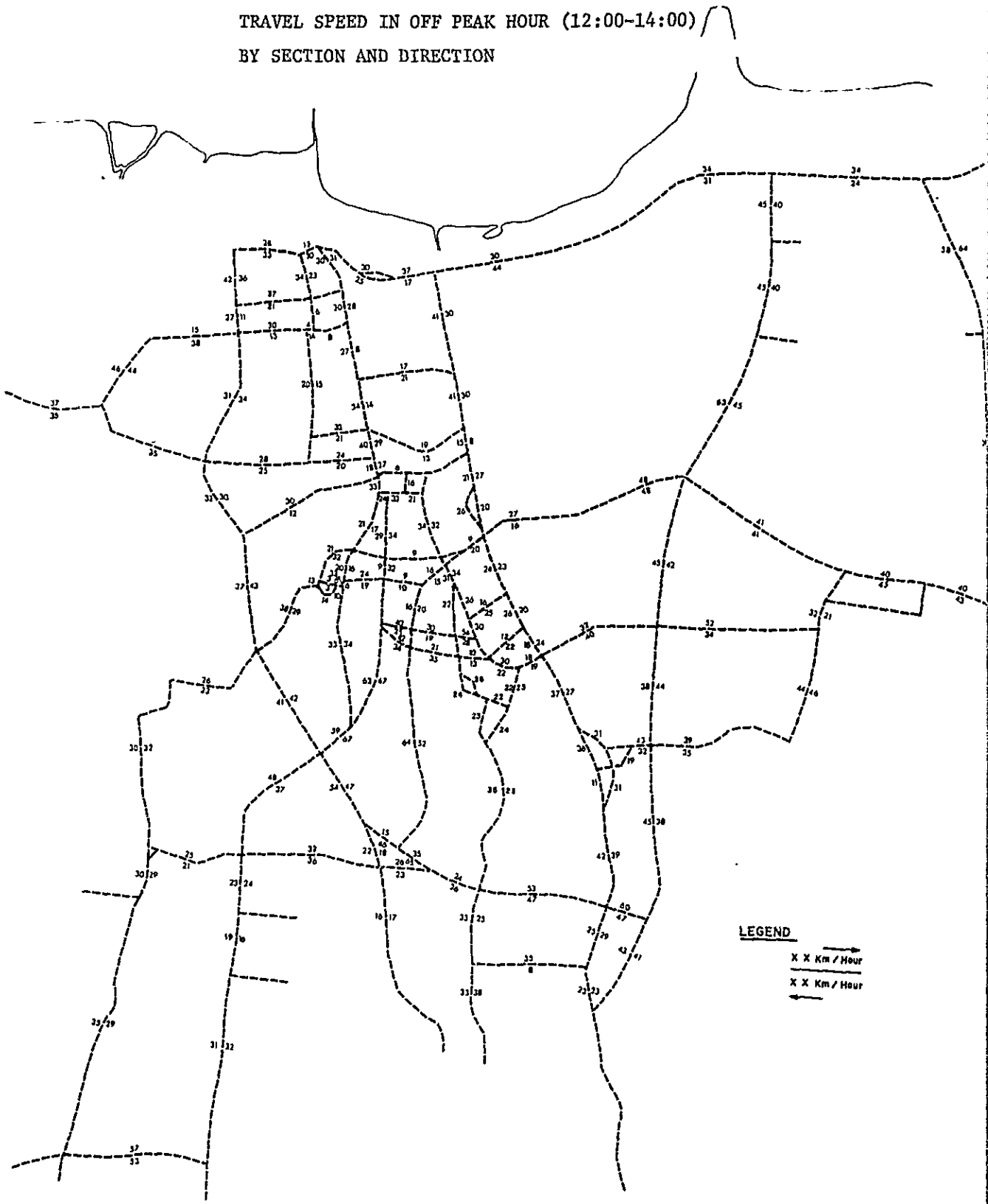
RUNNING SPEED IN OFF PEAK HOUR (12:00-14:00)
BY SECTION AND DIRECTION



TRAVEL SPEED IN PEAK HOUR (7:00-9:00)
BY SECTION AND DIRECTION



TRAVEL SPEED IN OFF PEAK HOUR (12:00-14:00)
BY SECTION AND DIRECTION



Appendix 4.1 TRAFFIC FORECASTS OF JAKARTA AIRPORT CENGKARENG

Some considerable forecasts for the traffic demand of Jakarta Airport Cengkareng quoted from the assessment report of "Jakarta Airport Cengkareng" published in the year of 1977 are shown below.

4.1.1 Passenger Forecast

Table 4.1.1 Forecasts of Overall Passenger Traffic

(in thousands of passengers, arrival + departure)

	1976	1980	1985	1990	2000
International traffic	964.5	1,548	2,488	3,742	7,780
Average annual growth rate	12.6%	10.0%	8.5%	7.6%	
Domestic traffic	2,067.0	3,690	6,480	10,400	23,600
Average annual growth rate	15.6%	11.9%	9.9%	8.5%	
T o t a l	3,031.5	5,238	8,968	14,142	31,380
Average annual growth rate	14.7%	11.4%	9.5%	8.3%	

Table 4.1.2 Forecasts of Freight Traffic at Jakarta

(Unit: ton)

YEAR	INTERNATIONAL TRAFFIC			DOMESTIC TRAFFIC			TOTAL ARR. + DEP.
	ARRIVAL	DEPARTURE	TOTAL	ARRIVAL	DEPARTURE	TOTAL	
1976	12,846	3,265	16,113	4,855	16,676	21,531	37,644
1980	18,800	4,700	23,500	10,900	34,800	45,700	71,200
1985	30,000	8,700	38,700	25,700	69,400	95,100	133,800
1990	47,000	15,300	62,300	47,300	127,900	175,200	237,500
2000	104,000	43,500	147,500	178,800	332,000	510,800	658,300

4.1.2 Main Traffic

International and domestic mail traffic are estimated as shown below:

Table 4.1.3 Forecasts of Mail Traffic at Jakarta

(Unit: ton)

YEAR	INTERNATIONAL TRAFFIC			DOMESTIC TRAFFIC			TOTAL ARR. + DEP.
	ARRIVAL	DEPARTURE	TOTAL	ARRIVAL	DEPARTURE	TOTAL	
1976	n.a.	n.a.	1,667	495	1,309	1,973	3,640
1980	1,500	1,000	2,500	1,100	2,600	3,700	6,200
1985	2,600	1,800	4,400	2,300	5,100	7,400	11,800
1990	4,400	3,000	7,400	4,400	9,300	13,700	21,100
2000	11,400	7,600	19,000	13,600	25,200	38,800	57,800

4.1.3 Airport Employee Population

Number of employees required for the Jakarta Airport Cengkareng has been estimated based on the estimated future air passengers and freight volume. These are:

Year 1990	26,000 employees
Year 2000	54,000 employees

Among the above employees, the following are considered to work during a typical day:

Year 1990	19,000 employees
Year 2000	40,000 employees

4.1.4 Peak Hour Passenger Traffic

Peak hour passenger traffic for both international and domestic passengers are estimated eventually as shown in Table 4.4.

4.1.5 Ground Traffic

The estimations of ground traffic volume in the daily average flow and in the hourly peak flow are shown in Table 4.5. and Table 4.6 respectively.

Table 4.1.4 40th Peak Hour of Passenger Traffic

	1976	1980	1985	1990	2000
International Passenger Traffic					
Arrival + Departure	900	1,200	1,500	1,900	2,900
Arrival	650	850	1,100	1,300	1,900
Departure	450	600	850	1,100	1,700
Domestic Passengers Traffic					
Arrival + Departure	1,300	2,000	2,900	4,100	7,300
Arrival	800	1,200	1,700	2,400	4,100
Departure	1,000	1,500	2,100	2,900	5,000
International and Domestic Passengers Traffic					
Arrival + Departure	1,700	2,500	3,600	5,000	8,700

Table 4.1.5 Daily Average Flow (Direction City – Airport)

TYPE OF TRAFFIC	TRAFFIC VOLUME (PASSENGERS)	MEANS OF TRANSPORT	USE RATE	PASS/ VEHICLE	P.C.U./ VEHICLE	FLOW (P.C.U.)
DOMESTIC PASSENGERS						
- Departure	32,329	Taxi	25%	1.5	1	5,388
		Private Car Short Term	35%	1.5	1	7,543
		Private Car Long Term	10%	1.1	1	2,939
		Bus	25%	45	3.5	629
		Others	5%	30	3	162
- Arrival	32,329	Taxi	25%/2	1.5	1	2,694
		Private Car Short Term	35%	1.5	1	7,543
INTERNATIONAL PASSENGERS						
- Departure	10,658	Taxi	25%	1.5	1	1,776
		Private Car Short Term	20%	1.5	1	1,421
		Private Car Long Term	5%	1.1	1	484
		Bus	35%	45	3.5	290
		Others	15%	30	3	160
- Arrival	10,658	Taxi	25%/2	1.5	1	888
		Private Car Short Term	20%	1.5	1	1,421
TOTAL (U.V.P.)						33,338

Table 4.1.6 Hourly Peak Flow (Direction City – Airport)

TYPE OF TRAFFIC	TRAFFIC VOLUME (PASSENGERS)	MEANS OF TRANSPORT	USE RATE	PASS/ VEHICLE	P.C.U./ VEHICLE	FLOW (P.C.U.)
DOMESTIC PASSENGERS						
- Departure	5,000	Taxi	25%	1.5	1	833
		Private Car Short Term	35%	1.5	1	1.167
		Private Car Long Term	10%	1.1	1	455
		Bus	25%	45	3.5	97
		Others	5%	30	3	25
- Arrival	2,300	Taxi) Bus) Others)				
		Private Car short Term	35%	1.5	3	537
INTERNATIONAL PASSENGERS						
- Departure	600	Taxi	25%	1.5	1	100
		Private Car Short Term	20%	1.5	1	80
		Private Car Short Term	5%	1.1	1	27
		Bus	35%	45	3.5	16
		Others	15%	30	3	9
- Arrival	600	Private Car Short Term	20%	1.5	1	80
TOTAL (P.C.U.)						3,426

Table 4.1.7 Fish Transportation at Pasar Ikan by Category

(ton)

ITEMS	URGENT DEVELOPMENT PLAN 1983		SHORT TERM DEVELOPMENT PLAN 1993		LONG TERM DEVELOPMENT PLAN 2003	
	YEARLY	DAILY	YEARLY	DAILY	YEARLY	DAILY
a. Total Demand in Terms of Fresh Fish	180,000	493	290,000	795	360,000	986
b. Total Demand in Terms of Fish Category	120,000	328	193,000	528	240,000	657
1. Salted & Dried Fish	30,000	82	48,000	132	60,000	164
2. Fresh Fish	90,000	246	145,000	396	180,000	493
c. Fish Transportation	120,000	328	193,000	528	240,000	657
c-1 : By Ship	103,200	282	167,700	459	209,300	574
1. Salted & Dried Fish by Carrier	30,000	82	48,000	132	60,000	164
2. Fresh Fish by Fishing Boat	53,200	146	75,000	205	75,000	205
3. Fresh Fish by Carrier	20,000	55	44,700	122	74,300	204
c-2 : By Truck	16,800	46	25,300	132	30,700	493
1. Sea Fish	13,300	37	21,800	60	27,200	75
2. Fresh Water Fish	3,500	9	3,500	9	3,500	9

Appendix 6.1 ESTIMATION OF PASSENGERS BY MASS TRANSIT

6.1.1 Railway Passengers in 1980

A railway station OD table was established by PJKA by utilizing the records of ticket sales. In order to make use of this OD table, it was rearranged to an OD table with eighty zones in accordance with the methodology of this study. In rearranging from station to zone, the following factors are taken into consideration:

a. Location of railway station.
b. Road distance between railway station and zone centroid.
c. Density of population in each zone.

6.1.2 Bus Passengers in 1980

Procedure for estimating bus trips is as shown in Fig.A.6.1.and described below:

a. Calculate traffic volume by bus at every screen line by utilizing the results of traffic survey.

b. By referring to the results of Roadside OD Survey and bus routes, determine how to allocate the bus trips at every screen line to each super zone.

c. Calculate bus vehicle OD table among super zones.

d. By referring to the results of bus survey and data obtained from DLLAJR, determine average passengers per bus. Then calculate bus passenger OD table for the above-mentioned super zones.

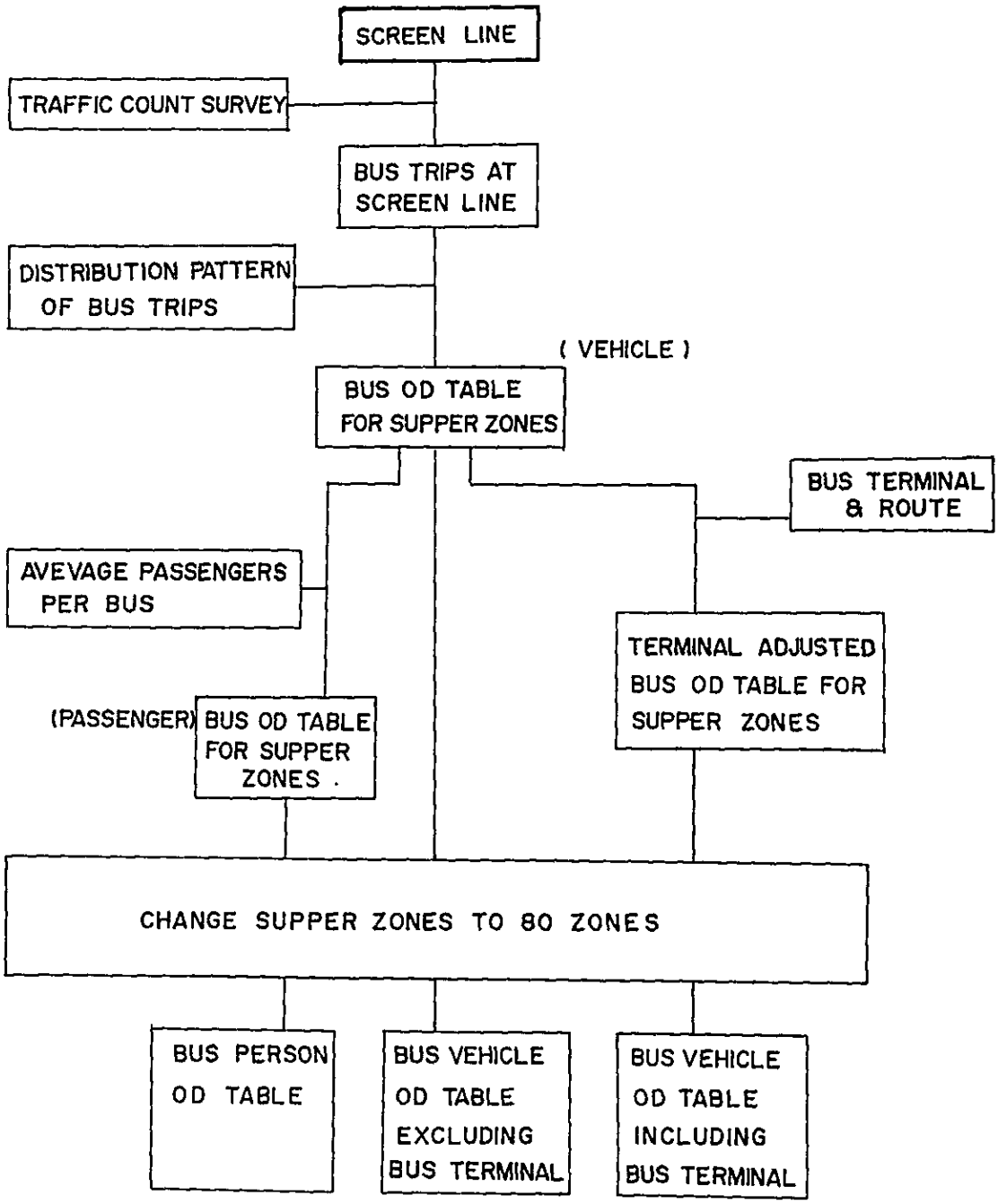
e. Take bus terminal and route into consideration, and establish another bus vehicle OD table for super zone.

f. Change OD table for super zones (c.d. and e.) to OD table for eighty traffic zones.

g. Output at this stage:

- Bus vehicle OD table (not considered bus terminal system)
- Bus vehicle OD table adjusted by bus terminal system
- Bus passenger OD table

Fig. 6.1.1 Estimating Flow of Bus Trips



6.1.3 Estimation of Passengers by Mass Transit

Considering the present situation of Jabotabek Area and the situations of other countries, a framework of future share of mass transit was established as shown in Table A.6.1.1. In all day, share of mass transit was estimated to be increased to 65 percent and 75 percent for DKI Jakarta and Outside DKI Jakarta respectively. In peak 2 hours, it was estimated to be 70 percent and 75 percent for each area respectively. By multiplying the estimated person trips by these percentage, the number of person trips by mass rransit was calculated as shown in Table 6.12 in the Text.

Table A.6.1.2 was assumed to separate person trips by railway from those by mass transit (railway and bus). As noted in the table, the percentage for the year 2000 was derived after calculated average person trips by railway of the year 1990 and 2010. The result was shown in Table 6.13 and 6.14 in the Text.

Table 6.1.1 Framework of Future Share of Mass Transit

Unit: Percent

		1980	1990	2000	2010
All Day	Jakarta	51.6	55	60	65
	Outside JKT	60.9	65	70	75
Peak 2 hours	Jakarta	54.3	60	65	70
	Outside JKT	60.4	65	70	75

Table 6.1.2 Framework of Railway Share in Mass Transit

Unit: Percent

		Jakarta		Outside Jakarta	
		Generated	Attracted	Generated	Attracted
Peak 2 hours	1990	15	20	50	27*
	2000	(22)	(27)	(58)	(36)
	2010	25	30	60	39*
Off peak	1990	10	10	30	29*
	2000	(17)	(17)	(39)	(36)
	2010	20	20	40	38*

Notes: 1) The percentage with mark "*" shows the result of calculation. Person trips by railway for these columns were calculated deducting person trips by railway attracted to Jakarta from total generated person trips by railway.

2) The percentage with mark "( )" shows the result of calucu-lation, too. Person trips by railway for these lines were calculated by averaging the person trips byu railway of the year 1990 and 2010.

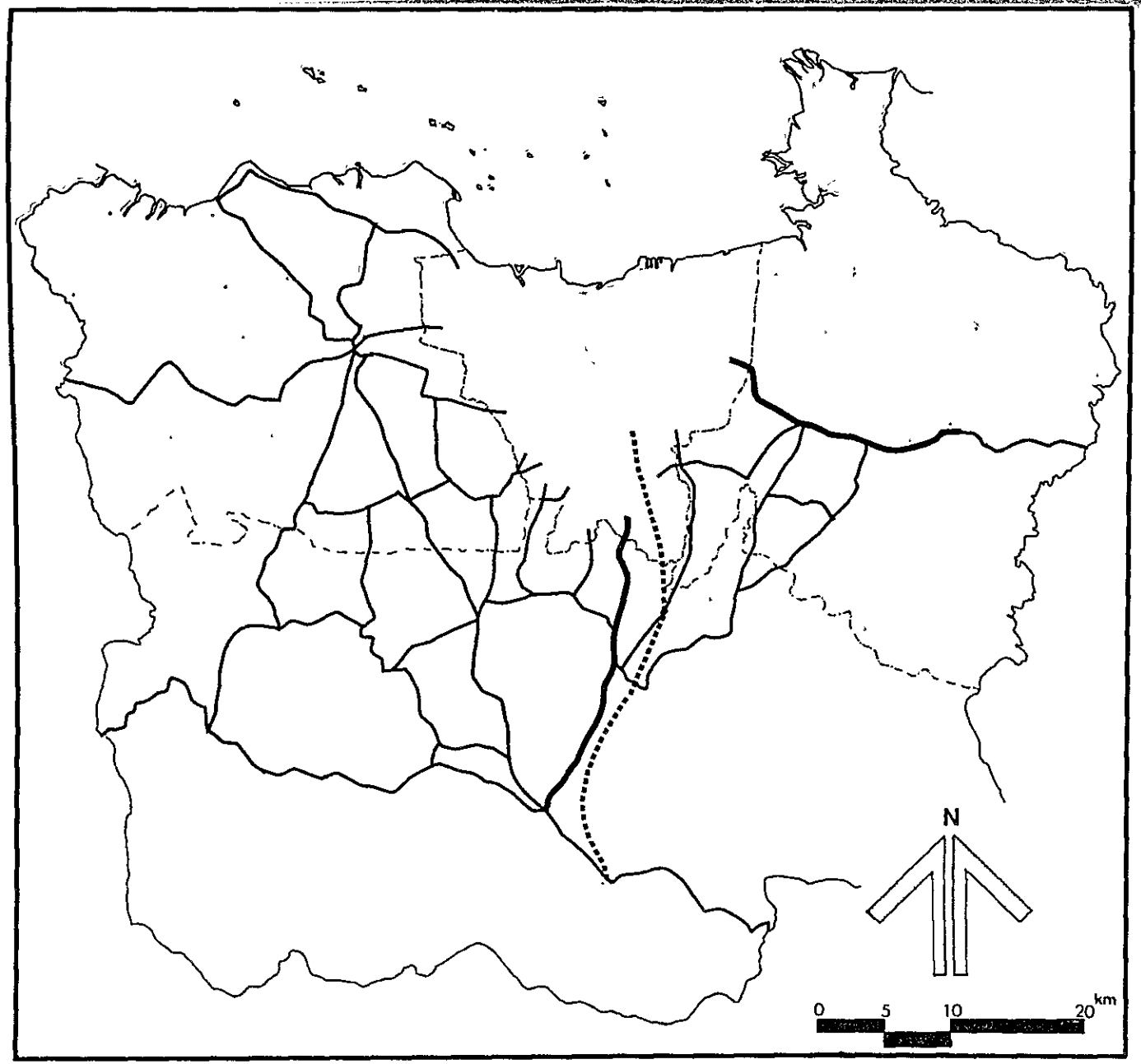
Appendix 6.2 ROAD NETWORK FOR TRAFFIC ASSIGNMENT

App. 6.2.(1) DKI JAKARTA ARTERIAL ROAD NETWORK – 1980

Legend :

- : 2-Lane / 2-Lane + Space
- : 4-Lane / 4-Lane + Space
- : 6-Lane & over
- : Tollway

JAKARTA HARBOUR ROAD PROJECT



App. 6.2.(2) BOTABEK NETWORK CONDITIONS ARTERIAL ROAD-1980

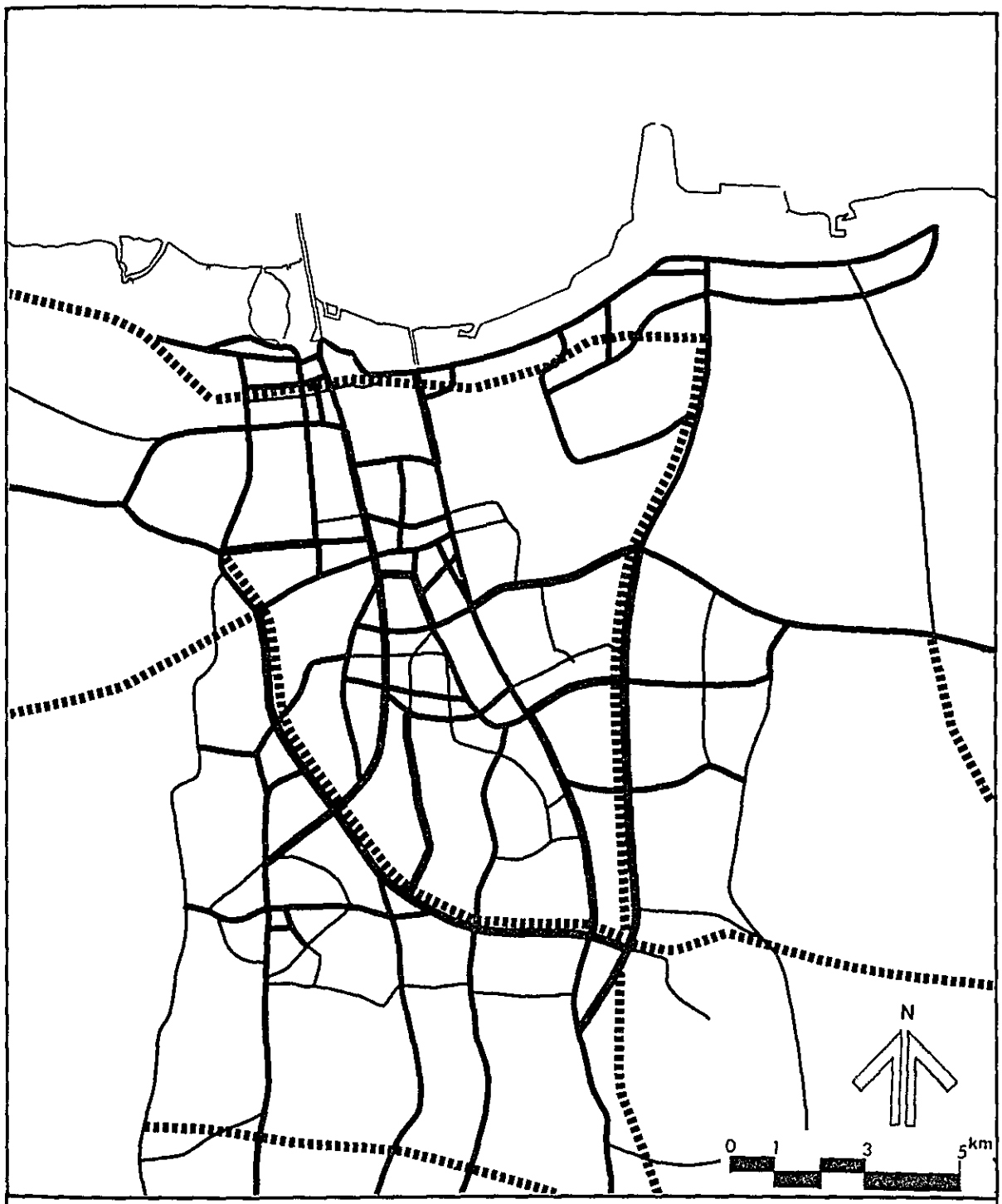
Legend :

——— :
- 2-Lane
- 2-Lane + Space

▬▬ :
- 4-Lane
- 4-Lane + Space

····· :
Tollway

JAKARTA HARBOUR ROAD PROJECT

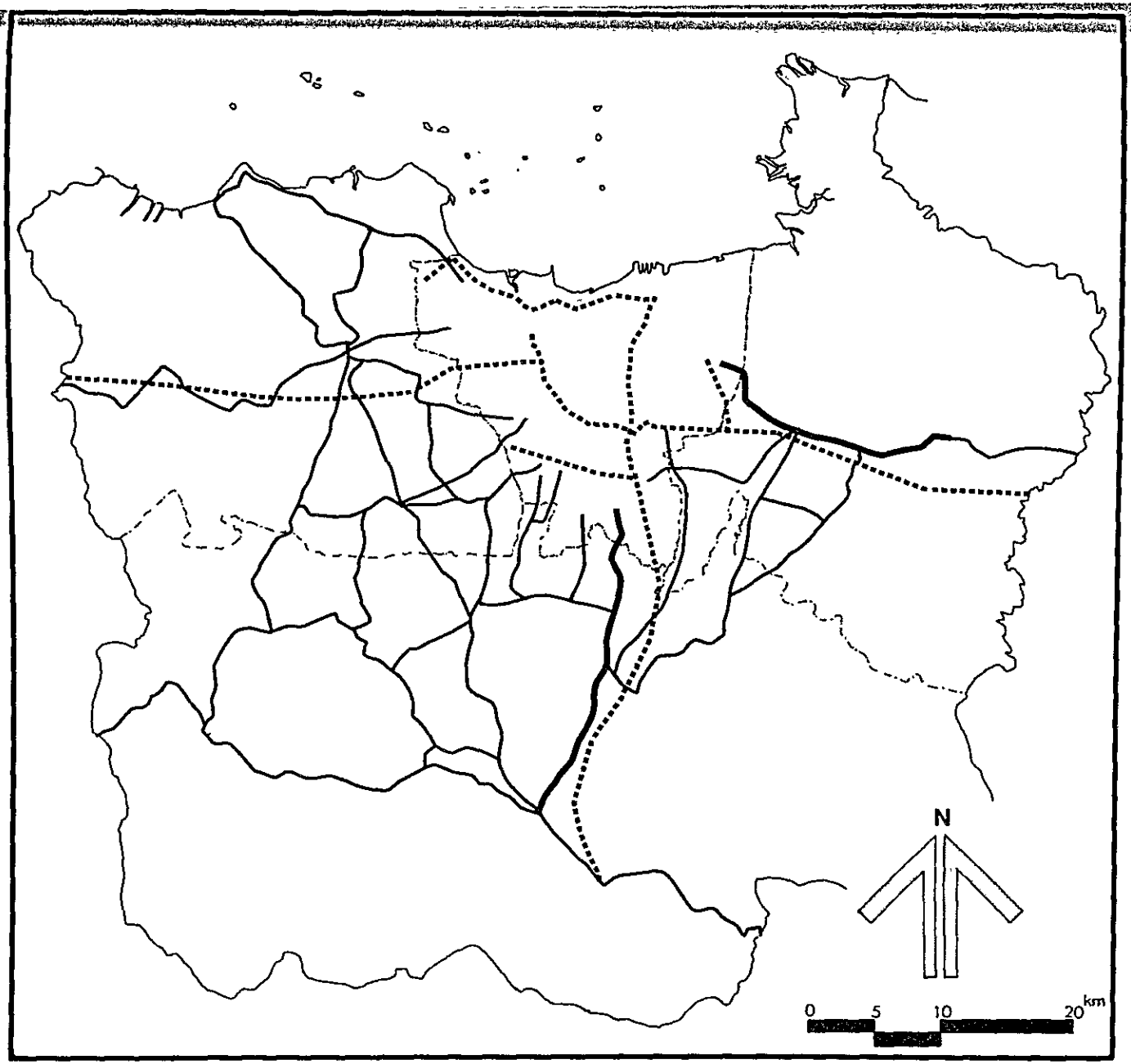


App. 6.2.(3) DKI JAKARTA ARTERIAL ROAD NETWORK – 1990

Legend :

- : 2-Lane / 2-Lane + Space
- : 4-Lane / 4-Lane + Space
- : 6-Lane & over
- : Tollway

JAKARTA HARBOUR ROAD PROJECT



App. 6.2.(4) BOTABEK NETWORK CONDITIONS ARTERIAL ROAD-1990

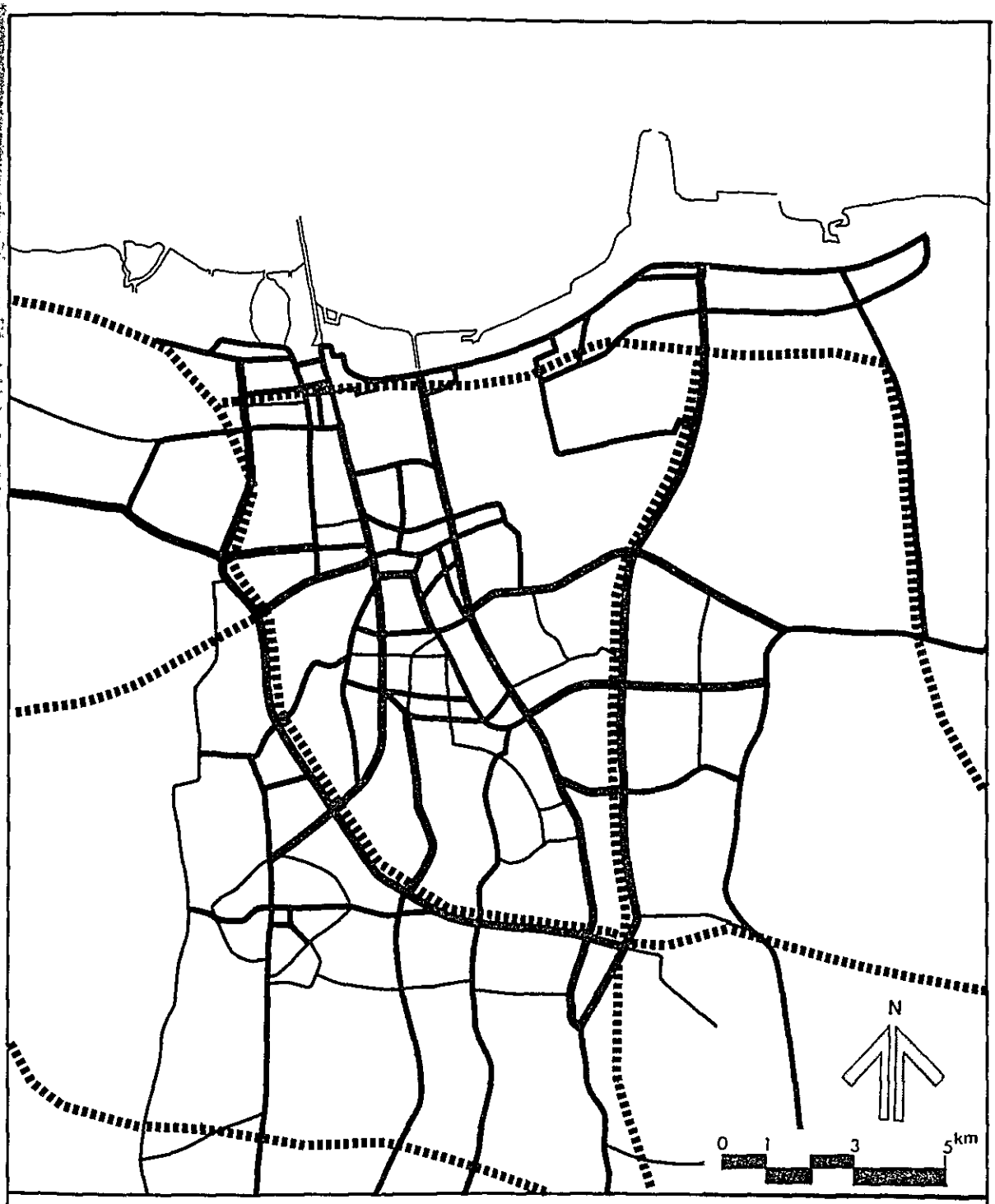
Legend :

——— :
- 2 - Lane
- 2 - Lane+Space

▬▬▬ :
- 4 - Lane
- 4 - Lane+Space

····· :
Tollway

JAKARTA HARBOUR ROAD PROJECT

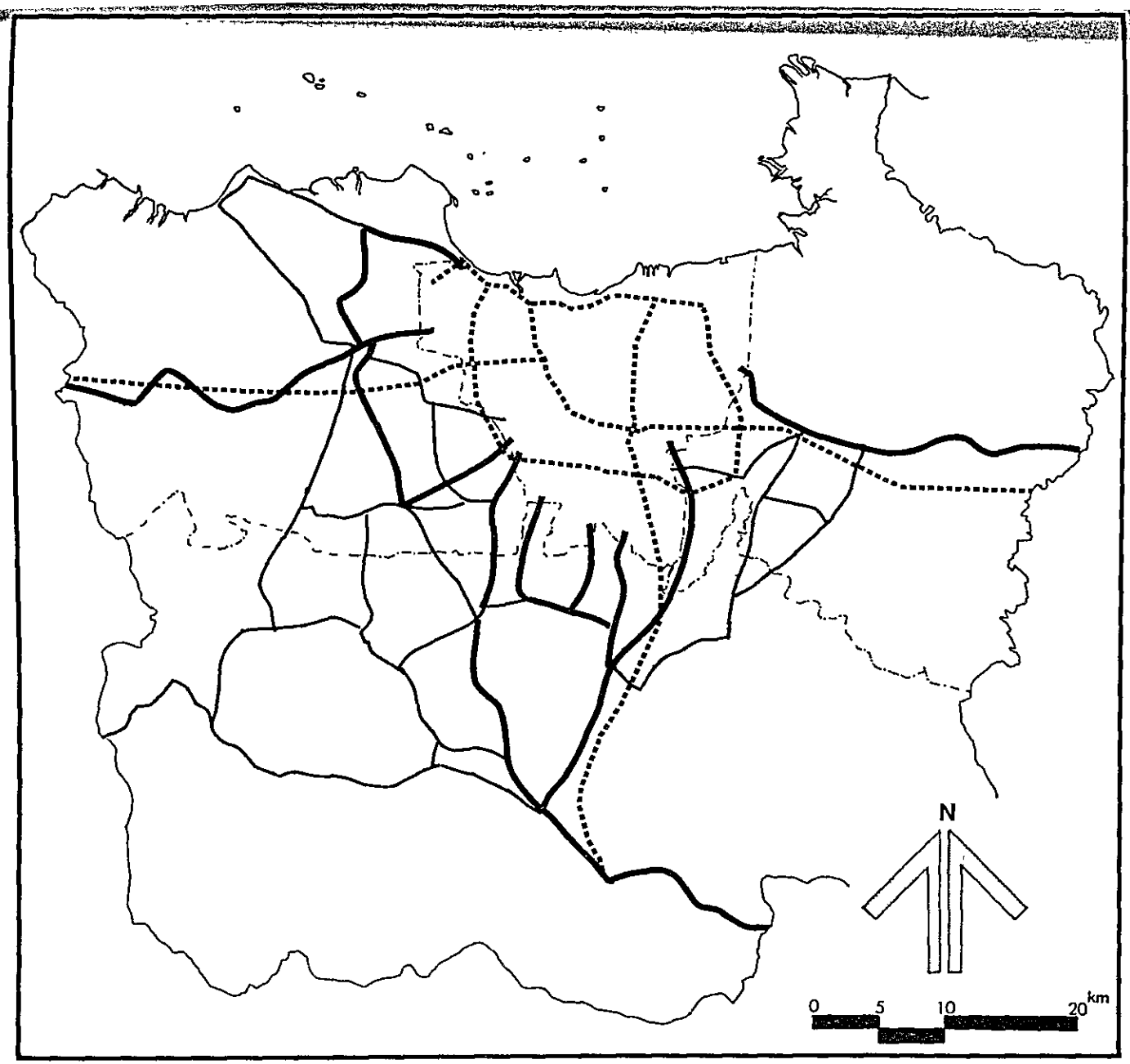


App. 6.2.(5) DKI JAKARTA ARTERIAL ROAD NETWORK – 2000, 2010

Legend :

- : 2-Lane / 2-Lane+Space
- : 4-Lane / 4-Lane+Space
- : 6-Lane &over
- : Tollway

JAKARTA HARBOUR ROAD PROJECT



App.6.2.(6) BOTABEK NETWORK CONDITIONS ARTERIAL ROAD – 2000/ 2010

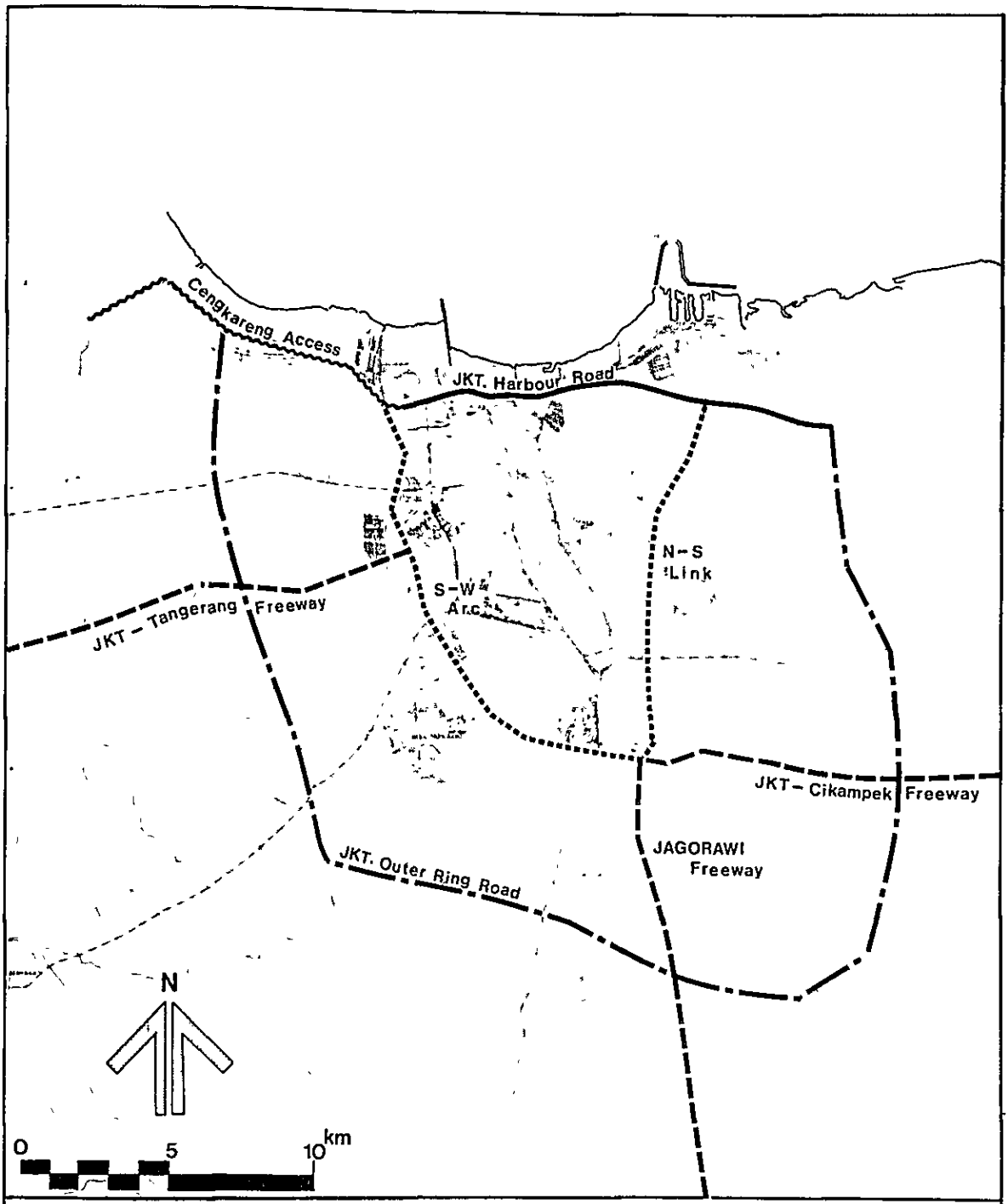
Legend :

——— :
- 2 - Lane
- 2 - Lane + Space

▬▬▬ :
- 4 - Lane
- 4 - Lane + Space

····· :
Tollway

JAKARTA HARBOUR ROAD PROJECT



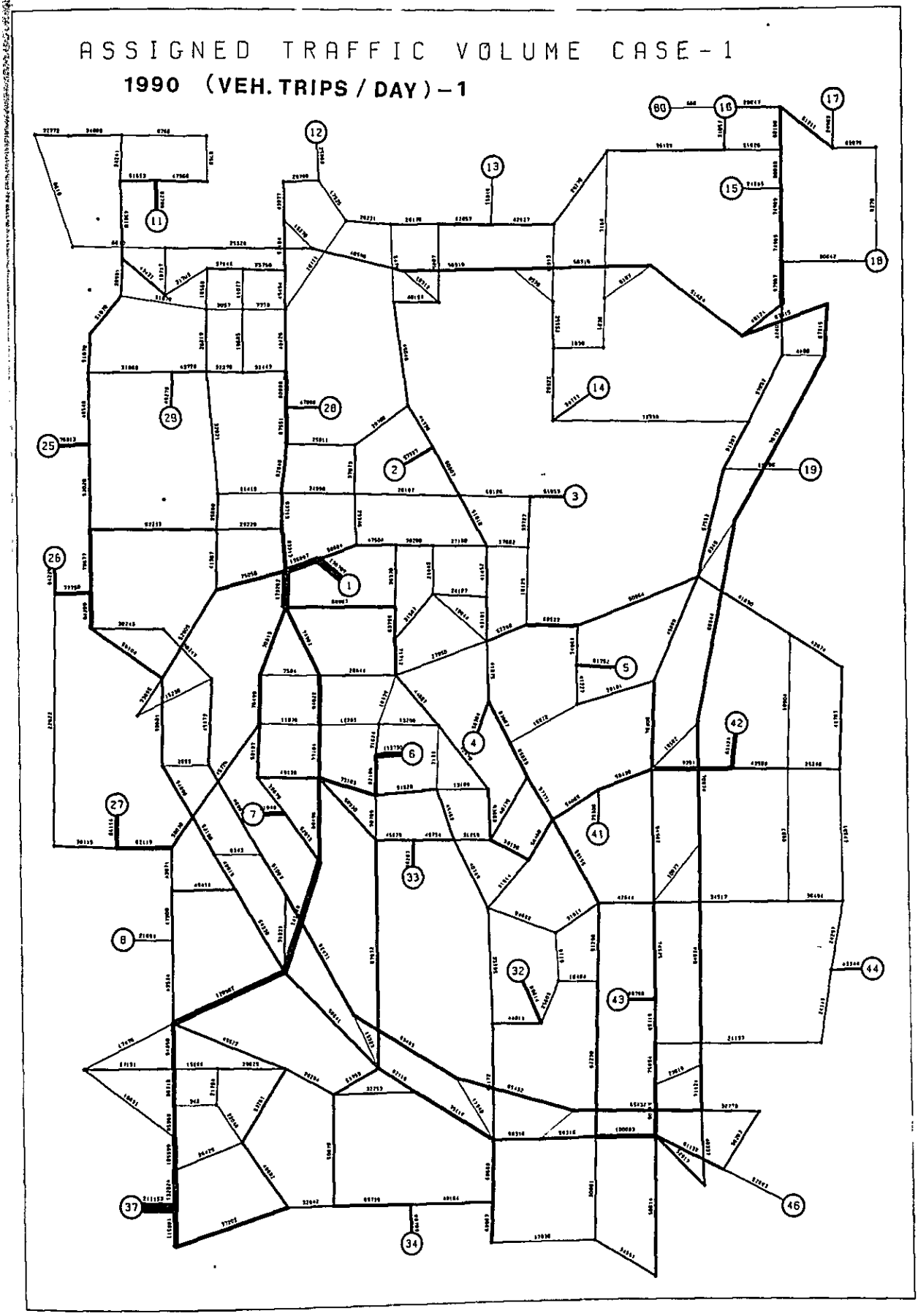
App.6.2.(7) JAKARTA-WEST JAVA TOLLWAY SYSTEM

Legend :

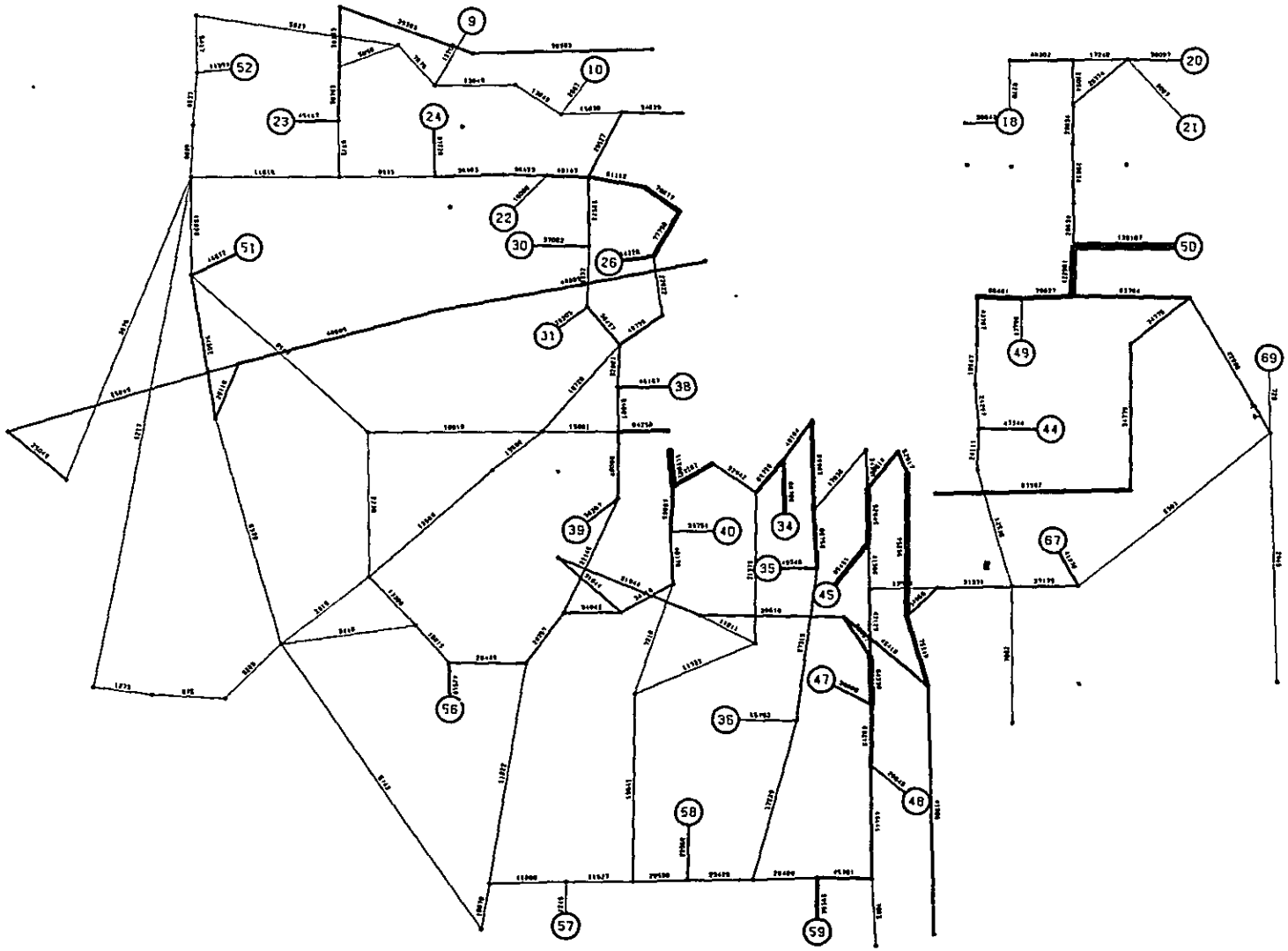
- Harbour Road
- Jakarta Ring Road
- Intra Urban Tollway
  South-West Arc, North-South Link
- Inter-Regional Freeway
  Jakarta-Cikampek Freeway
  Jagorawi Freeway
  Jakarta-Tangerang Freeway
- Cengkareng Access

JAKARTA HARBOUR ROAD PROJECT

Appendix 6.3 RESULTS OF TRAFFIC ASSIGNMENT



ASSIGNED TRAFFIC VOLUME CASE-1 1990 (VEH. TRIPS / DAY)-2



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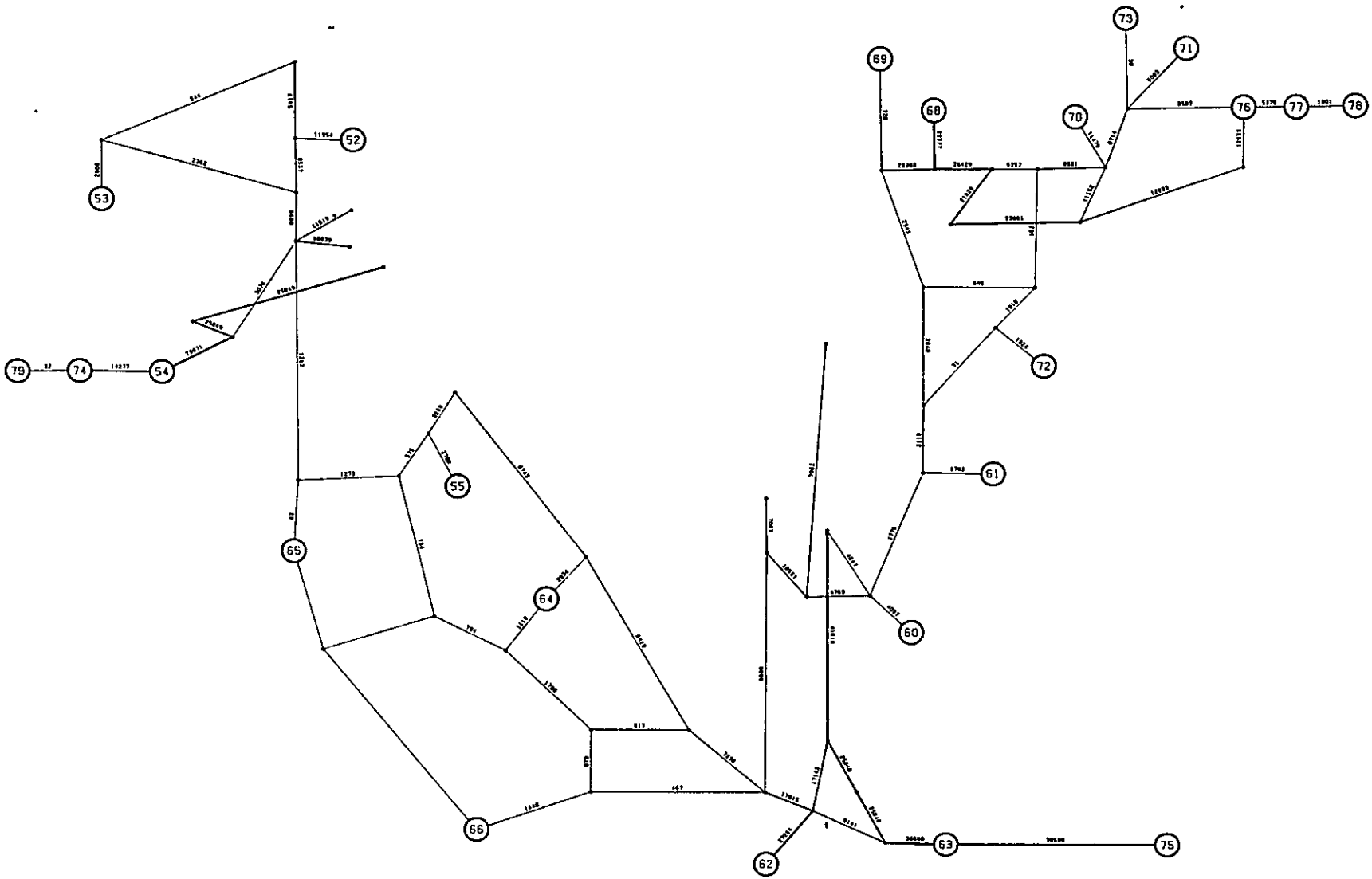
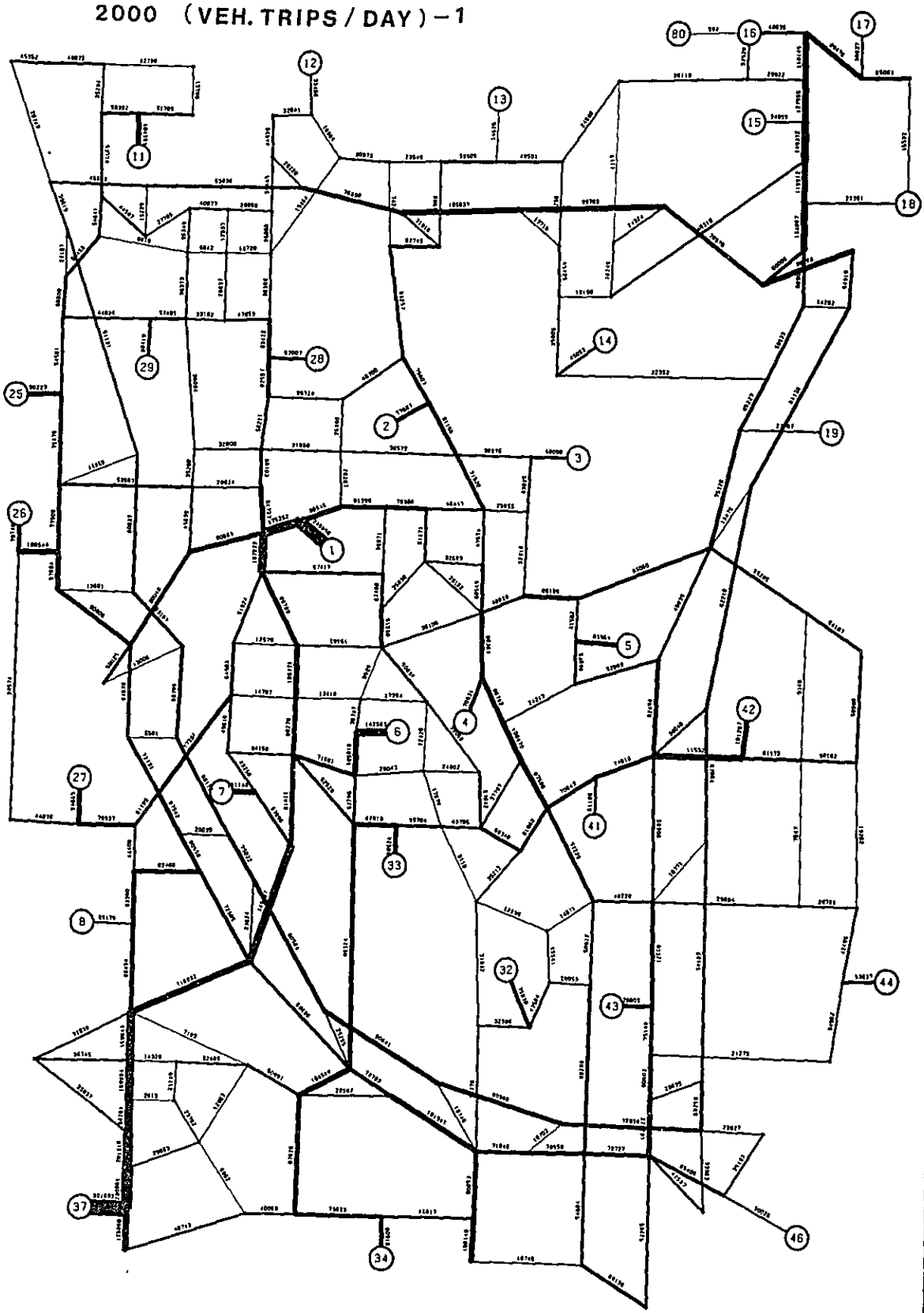


ASSIGNED TRAFFIC VOLUME CASE-1

2000 (VEH. TRIPS / DAY) -1



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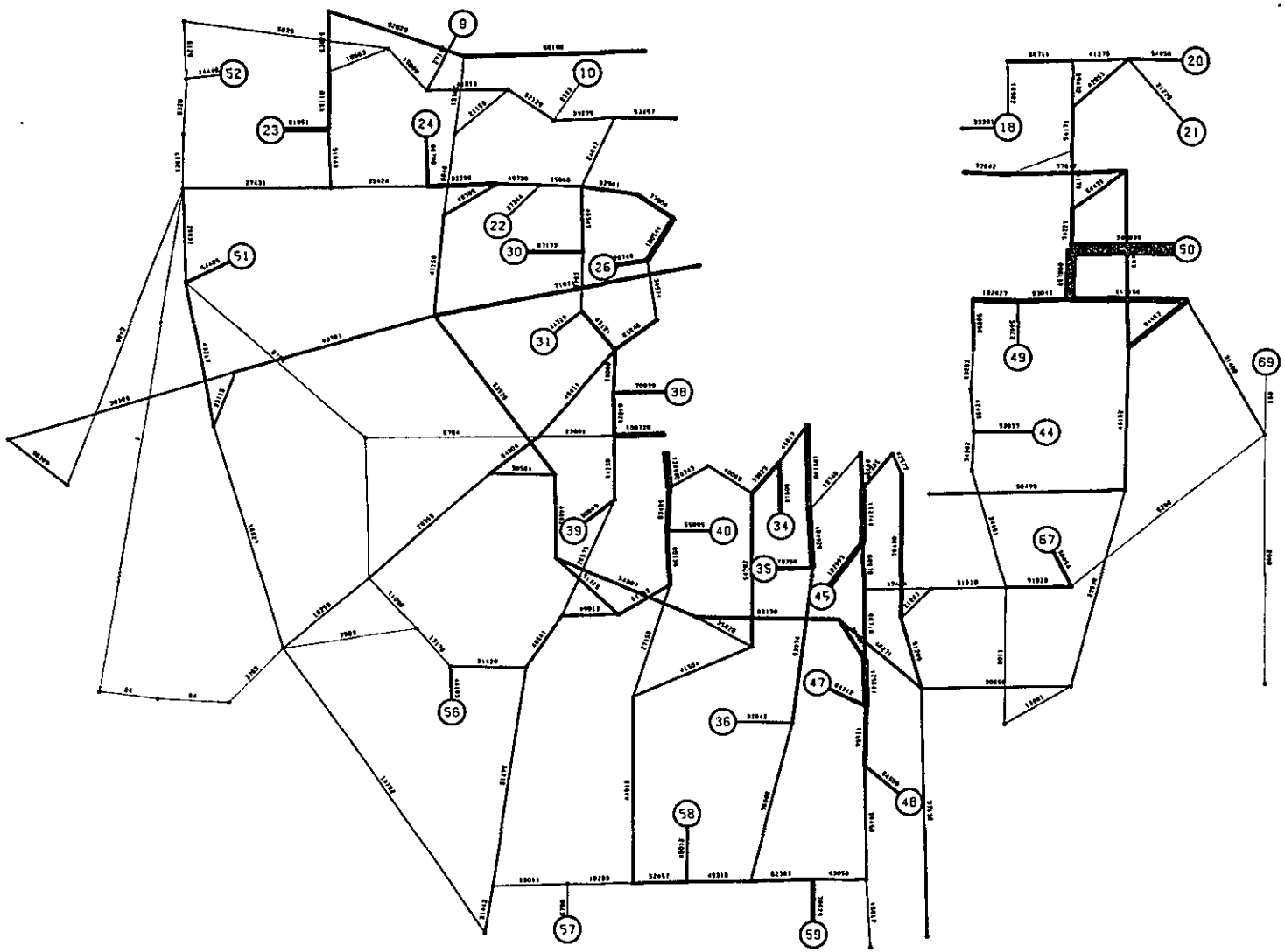
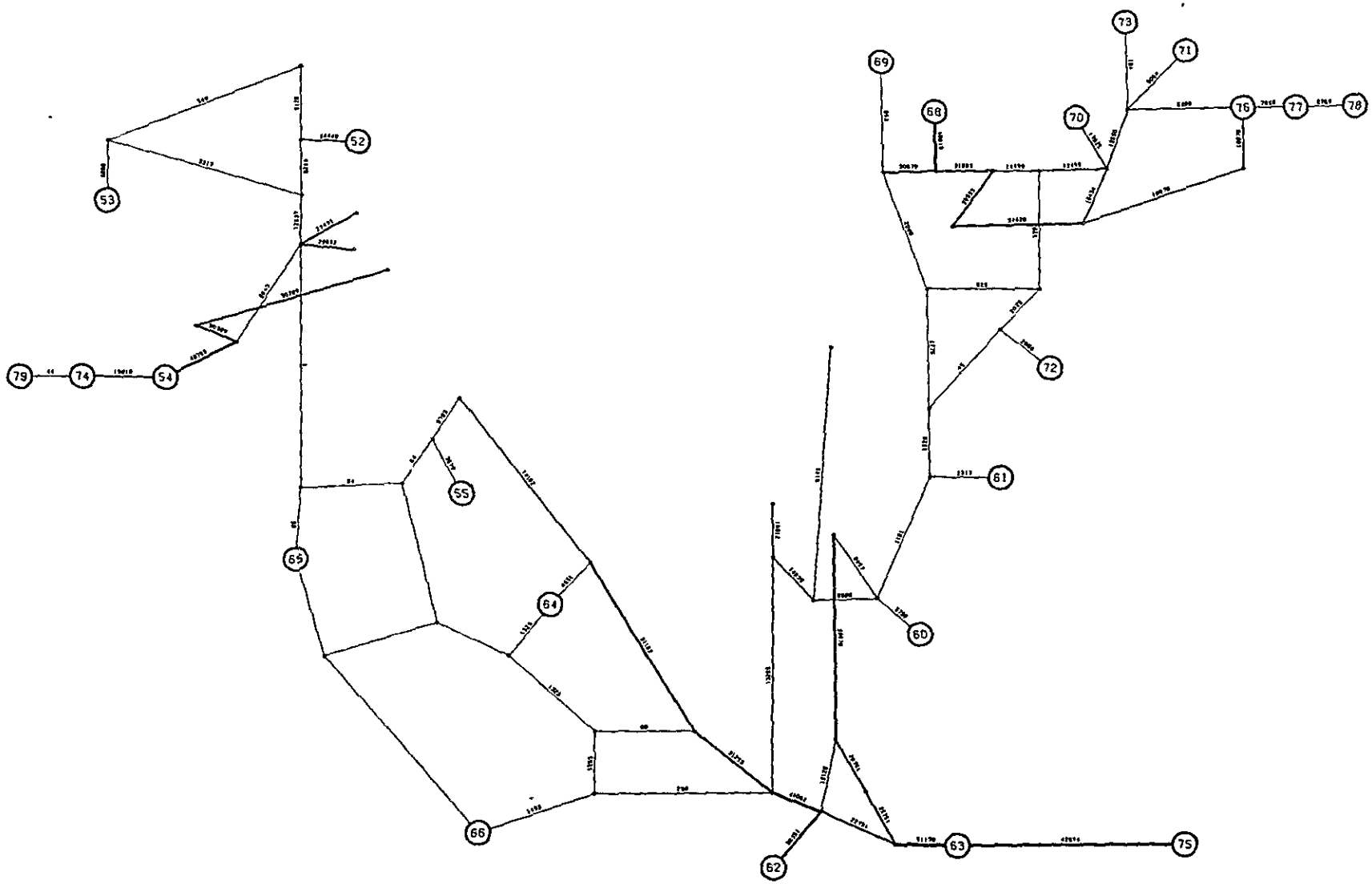
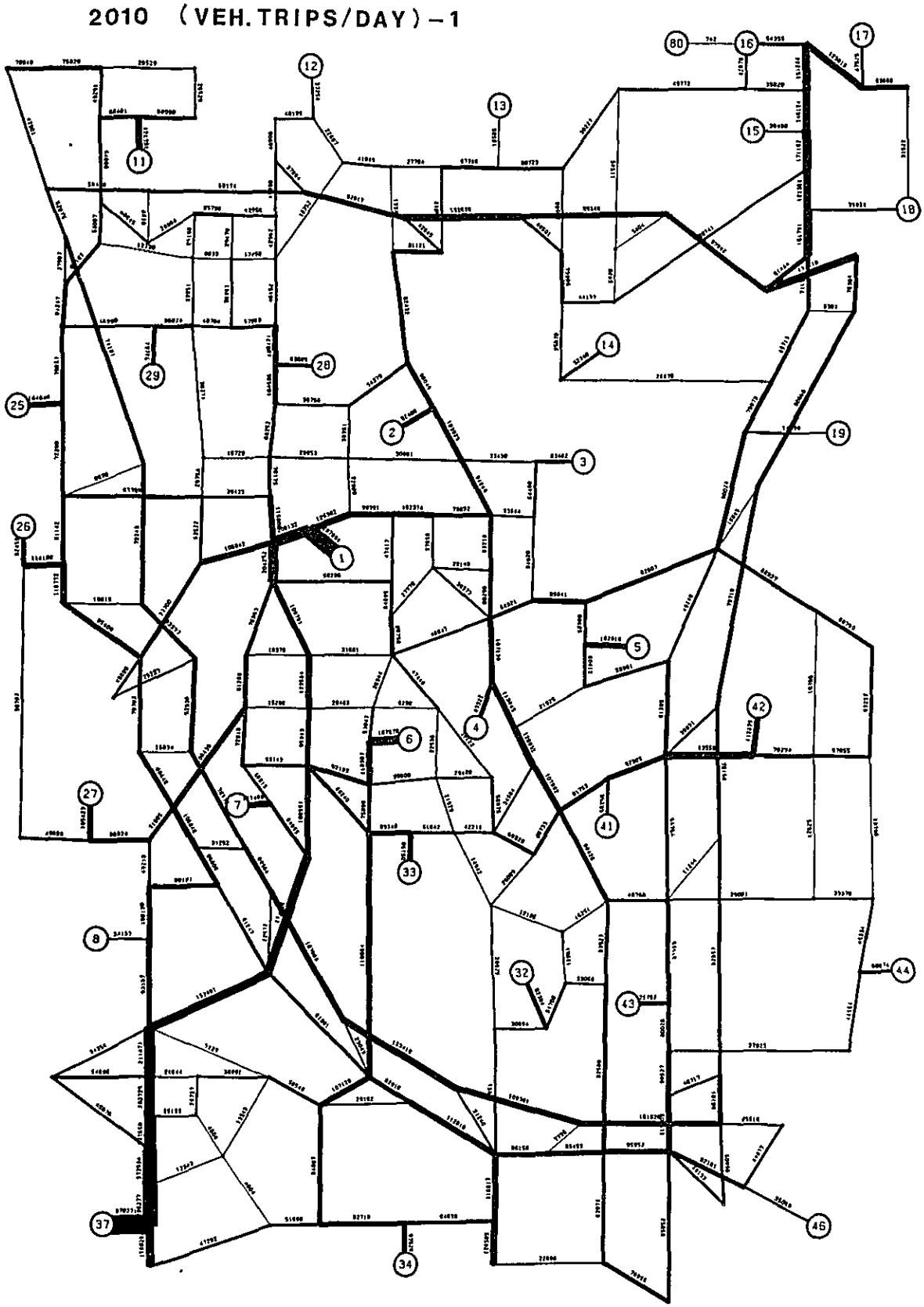


ASSIGNED TRAFFIC VOLUME CASE-1 2000 (VEH.TRIPS/DAY)-3

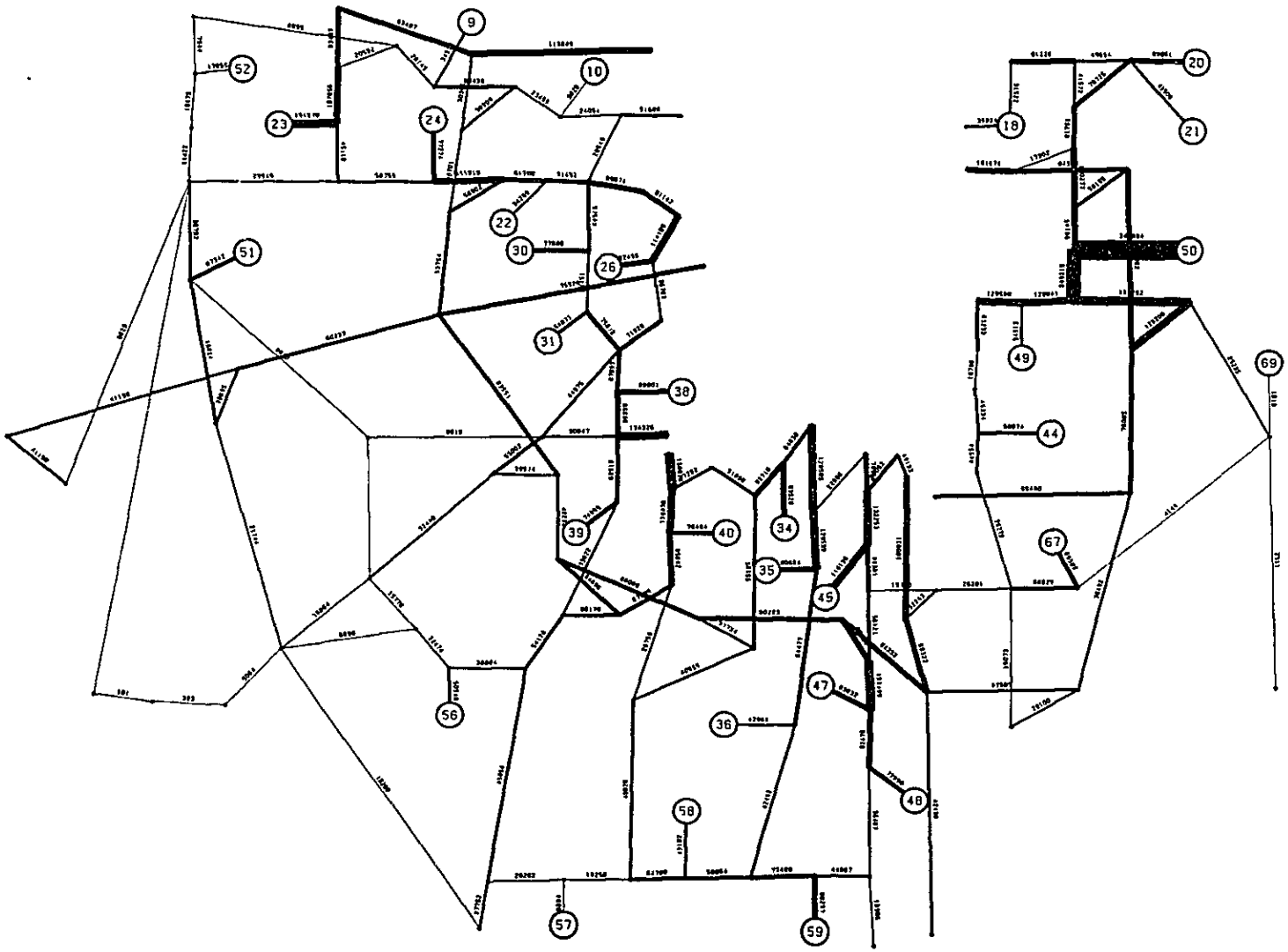


ASSIGNED TRAFFIC VOLUME CASE-1

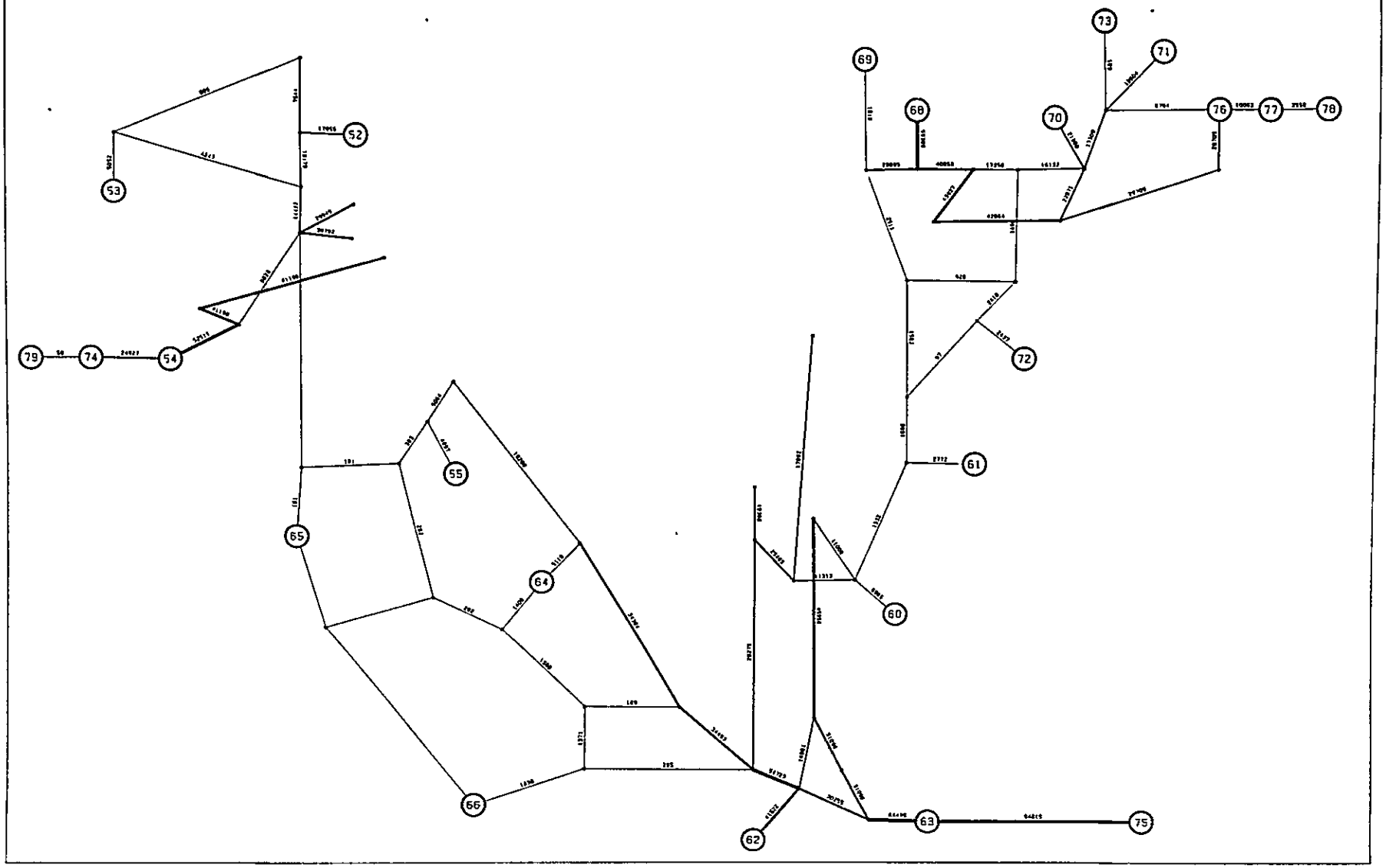
2010 (VEH.TRIPS/DAY)-1



ASSIGNED TRAFFIC VOLUME CASE-1 2010 (VEH.TRIPS/DAY)-2

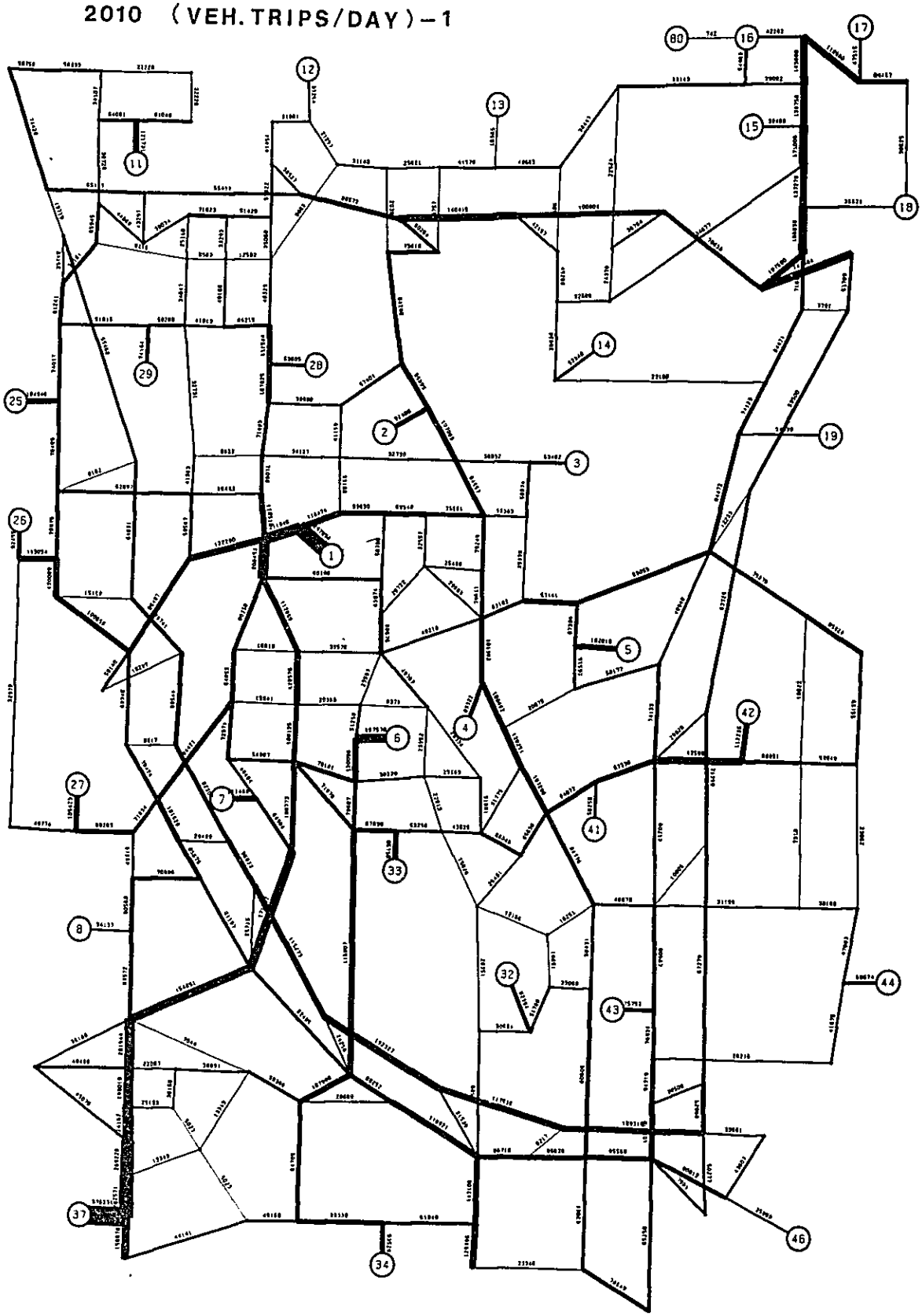


ASSIGNED TRAFFIC VOLUME CASE-1 **2010 (VEH.TRIPS/DAY)-3**



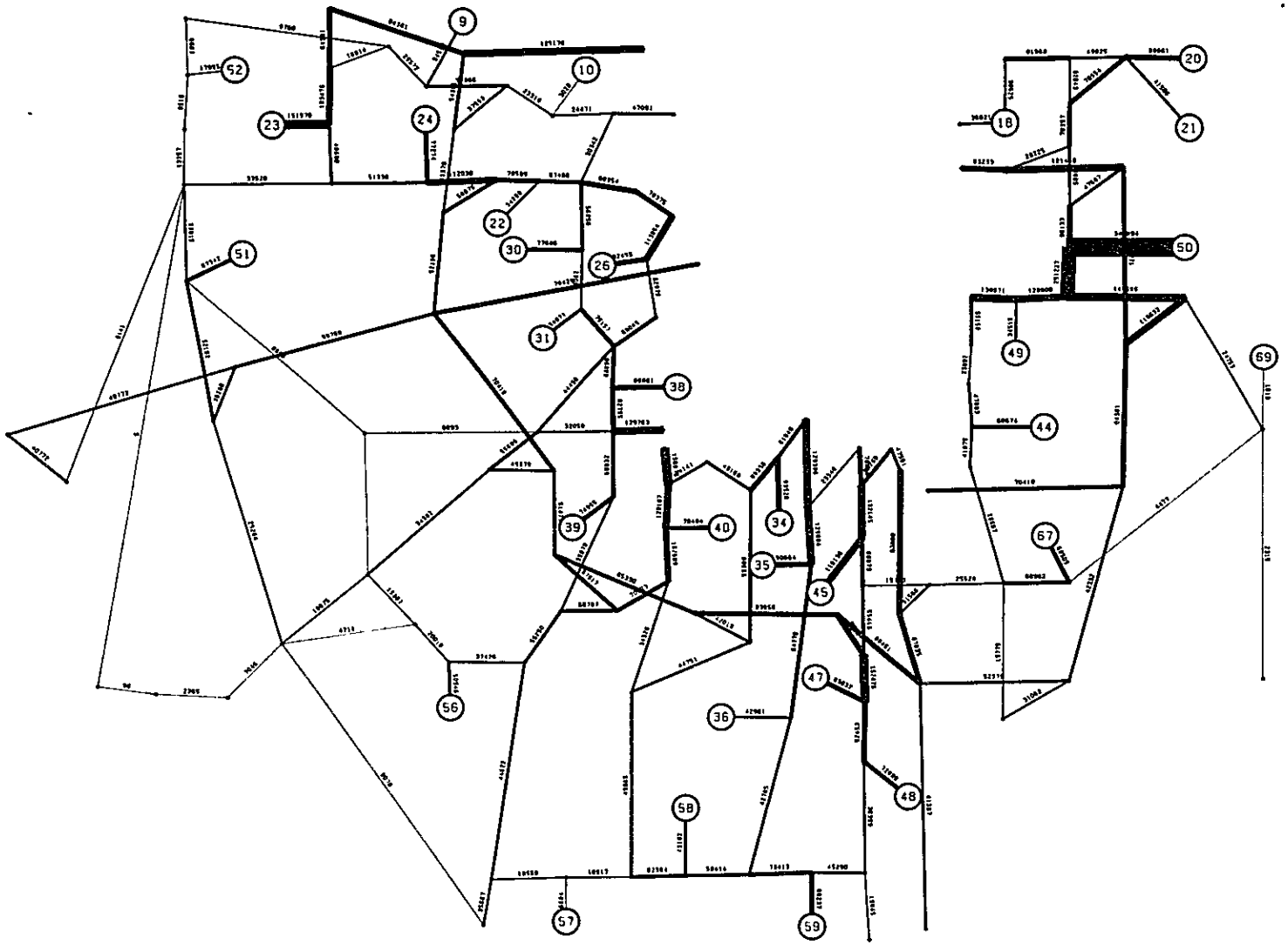
ASSIGNED TRAFFIC VOLUME CASE-2

2010 (VEH.TRIPS/DAY)-1



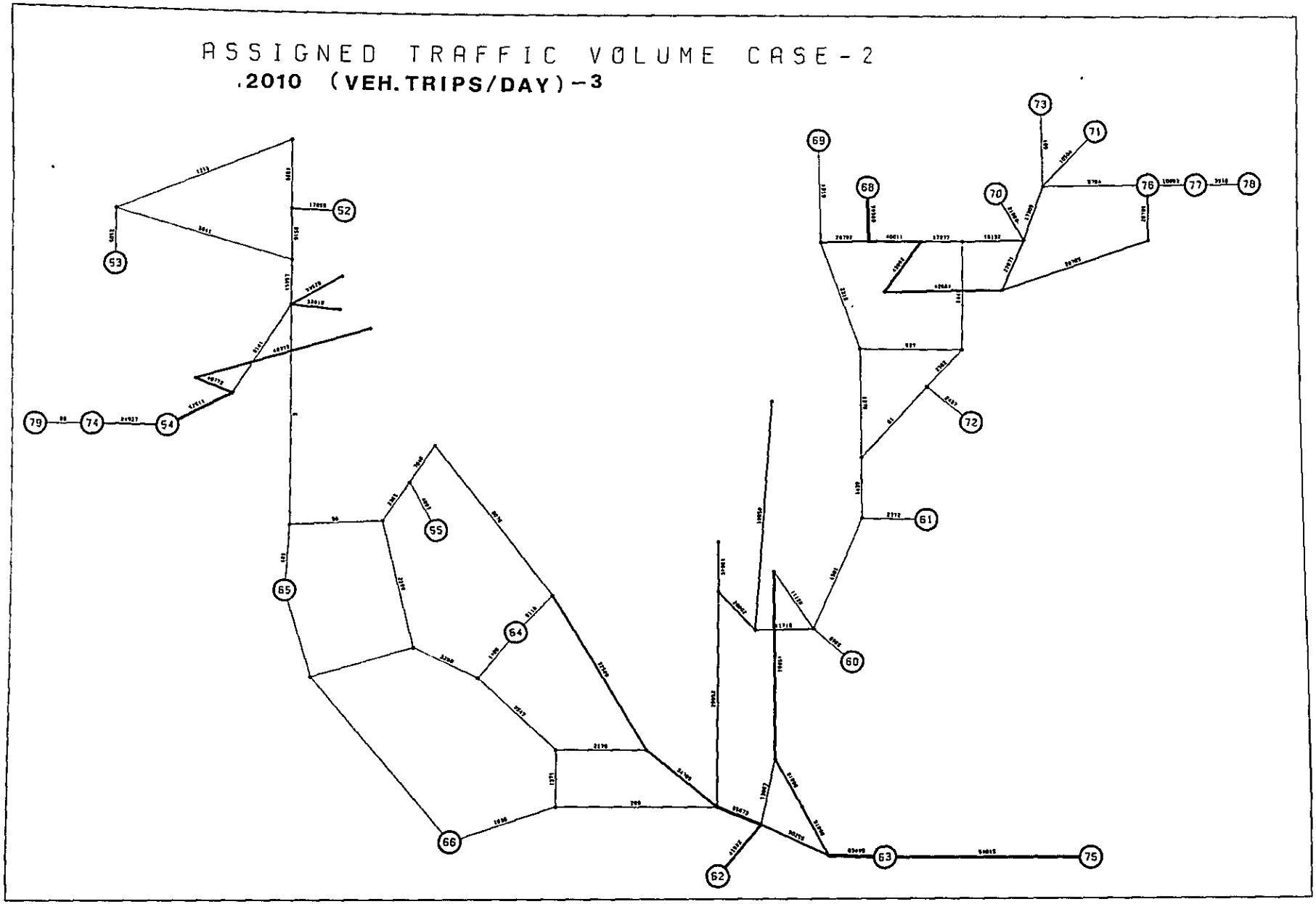
ASSIGNED TRAFFIC VOLUME CASE-2

2010 (VEH.TRIPS/DAY)-2



ASSIGNED TRAFFIC VOLUME CASE-2

.2010 (VEH.TRIPS/DAY)-3



Appendix 6.4 TRAFFIC DEMAND AT JAKARTA AIRPORT CENGKARENG

In order to estimate traffic demand at Jakarta Airport Cengkareng, reference was made to the assessment report, "Jakarta Airport Cengkareng, 1977."

In the assessment report, airport passenger in the year 1980 was estimated based on the data up to the year 1976. In this study, the data was revised to the year 1979 and airport passenger in the year 1980 was re-estimated. The difference between these two estimation amounted to 650 passengers per day. The difference was so small that the future estimation of the said report was adopted as a framework for this study.

Average annual growth rates of airport passengers were assumed to be 11.4 percent, 9.5 percent and 8.3% for the period 1980 - 1985, 1985 - 1990 and 1990 - 2000 respectively as shown in Table 6.4.1. In consideration of these growth rates, the annual growth rate for the period 2000 - 2010 was assumed to be 6.9 percent on the decreasing trend. According to the estimation made by Bina Marga, the annual growth rate adopted beyond the year 2000 was 7 percent for passenger car.

The estimated number of passengers is shown in Table 6.4.2.

As for the persons of other purposes, especially employees at the airport, it was assumed that because their housing would be constructed in the vicinity of the airport, the greater part of their trips would be intra-zonal trips.

The estimated person trips related to Jakarta Airport Cengkareng were distributed to traffic zones in accordance with the distribution pattern obtained by the survey at Halim and Kemayoran Airports.

Table 6.4.1 Forecast of Airport Passengers

Unit: 1,000 persons/year

	1980	1985	1990	2000	2010
International	1,486	2,488	3,742	7,780	14,742
Annual Growth Rate		10.9%	8.5%	7.6%	6.6%
Domestic	3,515	6,480	10,400	23,600	46,425
Annual Growth Rate		13.0%	9.9%	8.5%	7.0%
Total	5,001	8,968	14,142	31,380	61,167
Annual Growth Rate		12.4%	9.5%	8.3%	6.9%

Note: 1) For the year 1980, this figure shows total passengers of Halim and Kemayoran Airports.

Table 6.4.2 Forecast of Airport Users

		1980	1990	2000	2010
Annual (1,000 persons/ year)	Airport Passengers	5,001	14,142	31,380	61,167
	Visitors welcoming and sending-off	1,100	3,111	6,904	13,457
	Total	6,101	17,253	38,284	74,624
Daily (person/ day)	Airport Passengers	13,700	38,750	85,970	167,580
	Visitors welcoming and sending-off	3,010	8,520	18,920	36,870
	Total	16,710	47,270	104,890	204,450
Peak 2 Hours (person/ peak 2 hours)	Airport Passengers	1,343	3,797	8,425	16,423
	Visitors welcoming and sending-off	295	835	1,854	3,613
	Total	1,638	4,632	10,279	20,036

Notes:
1) For the year 1980, this figure shows total passengers of Halim and Kemayoran Airports.
2) This table shows total of passengers and visitors to and from Jakarta Airport Cengkareng in the year 1990, 2000 and 2010.
3) Visitors/Airport Passengers ratio is assumed to be 22.0 percent according to the assessment report.
4) Peak 2 hours/24 hours ratio is assumed to be 9.8 percent according to the result of the survey at Halim and Kemayoran Airports.

Appendix 6.5 FORECAST OF FUTURE TRUCK TRAFFIC

6.5.1 Existing Truck Traffic

Traffic surveys for truck flows in DKI Jakarta were carried out by the Study team in 1980 at selected roadsides, weigh bridges, and major traffic generating facilities such as Tg. Priok Port, Cakung custom-bonded warehouse and Pulogadung Industrial Estate.

Based on these surveys, vehicle O-D tables were established for the year 1980 and the truck traffic generated and attracted in DKI Jakarta was estimated to be 177,521 trips/day, excluding intra-zonal trips, as shown in Table 6.5.1.

Table 6.5.1 Truck Traffic Generated and Attracted in DKI Jakarta, 1980

(Unit: Veh. trips/day)

Origin \ Destination	DKI Jakarta	Outside JKT	Total
DKI Jakarta	124,956	25,108	150,064
Outside Jakarta	27,457	6,962	34,419
Total	152,413	32,070	184,483

Inbound and outbound truck cargoes related to DKI Jakarta are regulated to be measured at the weigh bridges located near the Jakarta boundary.

Based on data from DLLAJR (Road Traffic and Transport Bureau), the average traffic volume and truck weight are presented in Table 6.5.2.

Table 6.5.2 Truck Traffic through Weigh Bridges

Total Weight of Trucks* (ton/day)		Total Truck Volume (Veh./day)		Average Weight (Ton/Veh.)	
Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
47,281	22,453	9,248	4,140	5.113	5.423

Note: Trucks entering weigh bridges are carrying cargoes and the total weight of vehicle and cargo are measured. It is not necessary for empty trucks to be checked at the weigh bridges.

It is, therefore, considered that the inbound cargo tonnage is about double that of outbound cargo in 1980 and the average weight of truck with cargo is about 5 to 5.5 tons per truck.

6.5.2 Future Framework of Truck Traffic

(1) Tonnage of Loaded Trucks

Time trend data of inbound truck tonnage are obtained from DLLAJ-DKI Jakarta and these have been correlated to past development of the economy in DKI Jakarta by estimating a linear regression equation.

Table 6.5.3 Inbound Truck Tonnage and Economic Development in DKI Jakarta

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Inbound Truck Tonnage* (1000 ton)	764	889	1,234	1,764	2,601	2,623	3,259	4,291	4,479	6,790
GRDP** (Billion Rp.)	557	609	674	736	830	923	1,037	1,152	1,260	1,344

Sources: * DLLARJR-DKI Jakarta

** Regional Income of Jakarta, 1975 - 1979

The derived regression equation is as follows:

$$Y = 8.587X - 4741.1 \quad (r = 0.94)$$

where, Y : Inbound truck tonnage ($x10^3$ ton/yr.)

X : GRDP ($x\ 10^9$ Rp.)

The future growth rates of GRDP in DKI Jakarta are adopted from "JABOTABEK Metropolitan Development Planning, 1980" and the future inbound truck tonnage was estimated and is shown in Table 6.5.4.

However, the data from DLLAJR-DKI Jakarta do not necessarily cover all of the weigh bridges located on the outskirts of DKI Jakarta. Therefore, only the growth rates of inbound tonnage, which are calculated from the results of the regression equation, are applied to the survey result in 1980. Thus, future truck tonnage through weigh bridges has been estimated to be as shown in Table 6.5.4.

Table 6.5.4 Estimation of Future Inbound Truck Tonnage through Weigh Bridges

	1980	1990	2000	2010
X: GRDP (billion Rp.)	1,634	3,065	5,770	10,344
Y: Inbound truck tonnage (10^3 ton/yr)	9,290	21,578	44,439	84,084
Growth Rate (1980 = 1.00)	1.00	2.32	4.78	9.05
Inbound truck tonnage through W/B (ton/day)	47,281 *	109,820	226,169	427,941

Note: * Average daily tonnage of loaded trucks through weigh bridges are obtained by the traffic survey in 1980.

(2) Truck Traffic

An average weight of the inbound loaded trucks is estimated to be 5.113 ton/truck based on the 1980 traffic survey.

Assumptions are made for the future average weight of the inbound loaded trucks with reference to experience in Japan and considering future changes in the use of trucks, namely specialization in cargo transport, changes in truck size, transport efficiency, etc.

Furthermore, a percentage of loaded trucks in the total truck traffic is also considered because the rate of 33.7% of loaded trucks at present is rather low, due to the substitution of trucks for passenger cars for one reason and leakage of truck flows other than on weigh bridge routes and also the leakage of truck traffic generated between the Jakarta boundary and weigh bridges for other reasons.

Based on the above considerations, totals for future empty and loaded truck traffic have been estimated and the results are shown in Table 6.5.5.

Table 6.5.5 Estimation of Future Inbound Truck Traffic

	1980	1990	2000	2010
1) Inbound loaded trucks through W/B (ton/day)	47,281	109,820	226,169	427,941
2) Average weight of inbound loaded trucks (ton/truck)	5.1	6.5*	8.8*	12.0*
3) No. of inbound loaded trucks through W/B (veh./day)	9,248	16,895	25,701	35,700
4) Inbound truck traffic (veh./day)	27,457**	42,238	57,114	71,324
5) =(3)/(4) (%)	33.7	40.0*	45.0*	50.0*

Note: * Assumptions

** This is derived from the truck O-D table established for 1980.

Internal truck trips in DKI Jakarta were found from the O-D Survey to be 125,000 trips/day or 82 percent of the total attracted truck trips of 152,400 trips/day in 1980.

Assuming that the rate of internal trips remains unchanged, future truck trip attraction is estimated and a truck trip rate (trips/truck) is calculated based on the estimated future truck ownership as shown in Table 6.5.6.

Table 6.5.6 Future Truck Trip Attraction and Trip Rates

	1980	1990	2000	2010
Internal trips of DKI Jakarta (trips/day)	124,956 (82%)	192,418	260,186	324,920
Inter-regional trips (trips/day)	27,457 (18%)	42,238	57,114	71,324
Attracted (Generated) trips in DKI JKT (trips/day)	(150,064) 152,413 (100%)	234,656	317,300	396,244
Truck ownership in DKI JKT	68,520	104,110	139,790	172,600
Truck trip rates (Trips/truck)	2.21	2.25	2.27	2.29

6.5.3 Zonal Traffic Generation of Trucks

Future truck traffic generated and attracted by zone are estimated by the trip generation and attraction models. Explanatory variables adopted for the models are zonal population and jobs; and the parameters are estimated as follows:

Trip Generation Equation : $G = 0.59265 + 0.10331 \times J - 0.01604 \times P$ $(r = 0.870)$

Trip Attraction Equation : $A = 0.61157 + 0.10547 \times J - 0.01658 \times P$ $(r = 0.869)$

where, G : Generated truck trips/day by zone

A : Attracted truck trips/day by zone

J : Number of jobs by zone

P : Population by zone

Tg. Priok Port is one of the major facilities for truck trip generation and its master plan was established in 1975. A further study is now underway.

The future cargo tonnage handled at the Tg. Priok Port and its extension is estimated in the "Tanjung Priok Port Master Plan" and this has been updated based on the latest data derived from "Statistical Year-book of Jakarta, 1980". At the same time, the information from the Tg. Priok Port Authority disclosed that the Port is operating almost at full capacity (about 9 million tons) of cargo being handled at present.

The existing Tg. Priok Port falls in the traffic zone No. 16 and its extension falls in zone No. 20.

The future cargo volume handled at the Tg. Priok Port and its extension is considered as follows:

i) Tg. Priok Port is now at full capacity but the efficiency of cargo handling will be improved in future to increase the capacity at a rate of 2% p.a.

ii) The remaining cargo will be handled at the extension of the Port.

iii) The average truck load in Tg. Priok Port is assumed to be 3.6 ton/truck based on the O-D survey conducted at the Port in 1980.

iv) Peak ratios in the morning hours 7:00 to 9:00 for generated and attracted trucks in the Port are assumed to be 2.7% and 18.6% respectively based on the O-D survey result.

Thus, the future cargo tonnage and truck traffic related to the Tg. Pirok Port and its extension were estimated and are presented in Tables 6.5.7 though 6.5.9.

Table 6.5.7 Forecast of Future Cargo Traffic at Tg. Priok Port

(1,000 ton/year)

	1979 *	1980	1990	2000	2010
Total cargo handled	7,424.25 (100.0%)	8,315 (100.0%)	17,892 (100.0%)	29,623 (100.0%)	48,258 (100.0%)
Inbound cargo (cargo unloaded)	5,506.45 (74.2%)	6,205 (74.6%)	11,161 (62.4%)	15,144 (51.1%)	24,673 (51.1%)
Outbound cargo (Cargo loaded)	1,917.80 (25.8%)	2,110 (25.4%)	6,731 (37.6%)	14,479 (48.9%)	23,585 (48.9%)
Total growth rate (Annual growth rate)	1.00	1.12	2.41 (8.0%)	3.99 (5.2%)	6.50 (5.0%)
Outbound cargo growth rate (Annual growth rate)	1.00	1.10 (10.0%)	3.51 (12.3%)	7.55 (8.0%)	12.3 (5.0%)

Table 6.5.8 Forecast of Future Daily Cargo Traffic** at Tg. Priok Port

(1,000 ton/day)

Total cargo handled	24.75	27.72	59.64	98.74	160.86
Inbound Cargo	18.35	20.68	37.20	50.48	82.24
Outbound Cargo	6.40	7.04	22.44	48.26	78.62

* Source: "Statistical Yearbook of Jakarta, 1980", Jakarta Statistical Office.

Note ** Effective workday ratio is assumed to be 300 days per year.

Table 6.5.9 Estimated Future Truck Traffic at Tg. Priok Port

(Vehicle)

	Year	Tg. Priok Port (Zone No. 16)		Port Extension (Zone No. 20)	
		Generated	Attracted	Generated	Attracted
All day	1990	9,386	9,386	7,181	7,181
	2000	11,442	11,442	15,986	15,986
	2010	13,947	13,947	30,736	30,736
Peak 2-hour	1990	253	1,746	194	1,336
	2000	309	2,128	432	2,973
	2010	377	2,594	830	5,717

Future traffic generation by zone is estimated based on the following steps.

i) Future truck traffic generated and attracted in zones 16 and 20 are subtracted in advance from the future framework of truck traffic.

ii) The remaining framework is distributed to the zones other than zones 16 and 20 in proportion to the outputs calculated from the established traffic generation and attraction models.

6.5.4 Distributed Truck Traffic

In order to estimate future truck O-D tables, the present distribution pattern of Tg. Priok port traffic and that of other zonal traffic are separately applied and calculated by frator method.

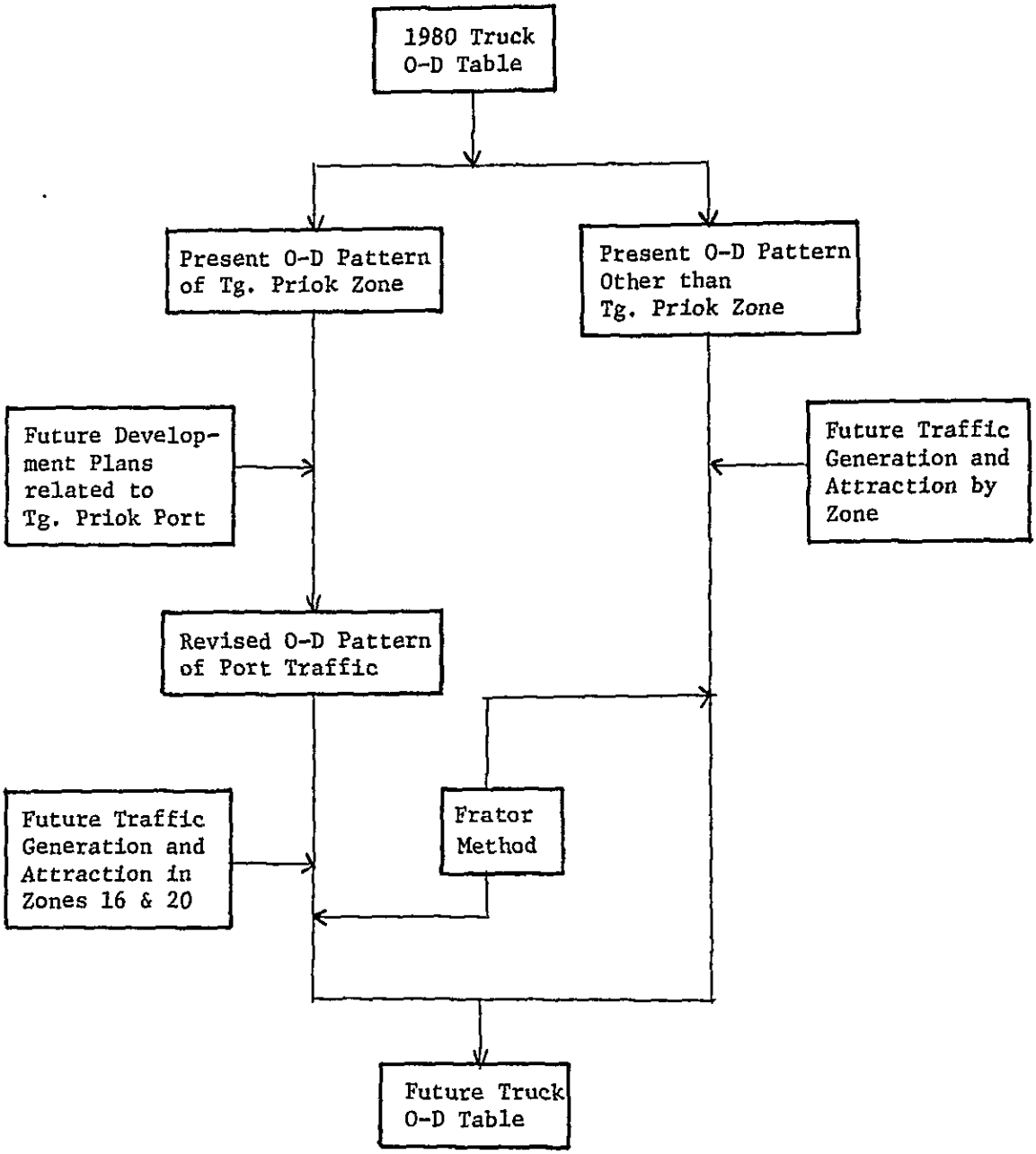
A method used for the estimation of future truck O-D tables is briefly explained in Fig. 6.5.1.

The present distribution pattern of the Tg. Priok Port traffic indicates a strong relationship with zone 11 (Pejagalan). However, there is a redevelopment scheme in this area to relocate the existing warehouses into Zone 14 (Sunter). Cakung Custom-bounded warehouse also its expansion plan. Thus, the present distribution pattern does not necessarily explain a drastic change in landuse.

Therefore, the present distribution pattern for the Tg. Priok Port traffic was revised with reference to future development plans.

Based on the revised distribution pattern of the Tg. Priok Port traffic and the present pattern of other zonal traffic, future truck O-D tables were estimated for both cases and then added together.

Fig. 6.5.1 Methodological Flow for the Estimation of Future Truck O–D Tables



Appendix 8.1 MIN. VERTICAL LENGTH/SUPERELEVATION

Fig. 8.1 Length of Crest Vertical Curve

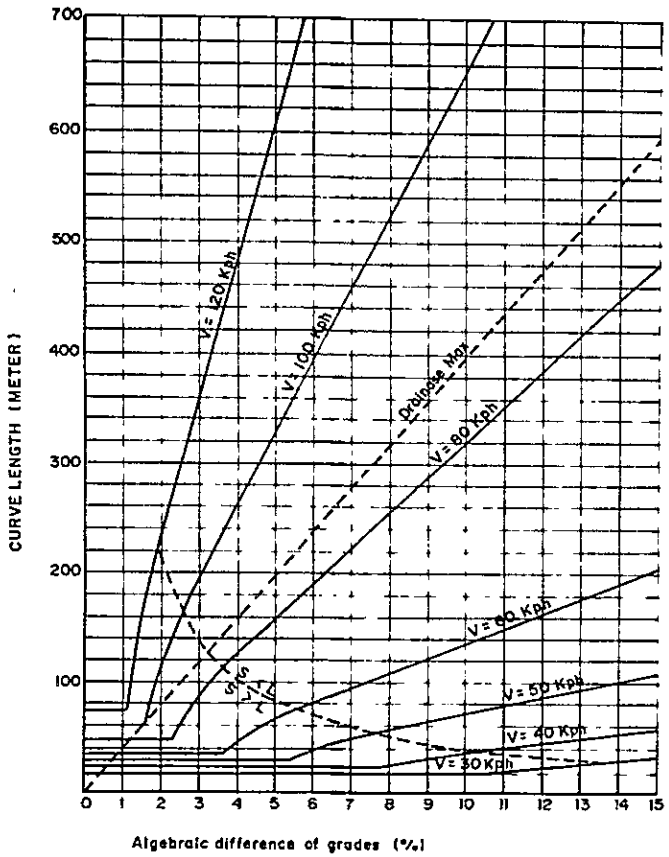


Fig. 8.2 Length of Sag Vertical Curve

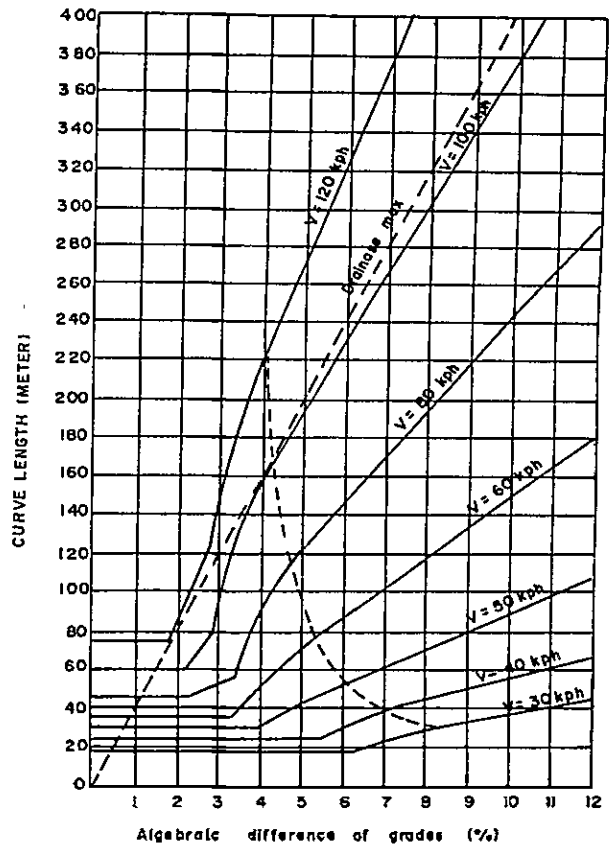
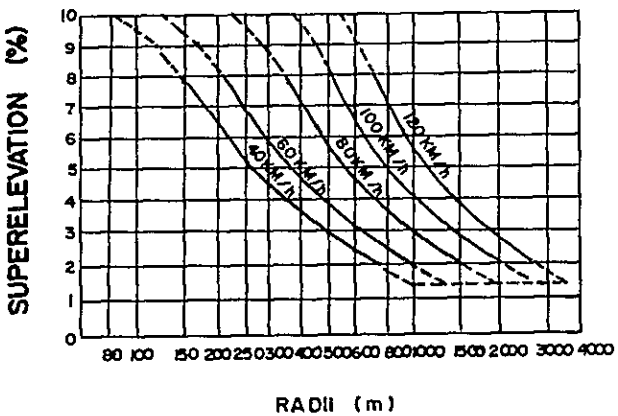


Fig. 8.3 Superelevation

DESIGN SPEED	80 KM/h	60 KM/h	50 KM/h	40 KM/h	SUPER EL
RADII (m)	230 ABOVE 280 UNDER	120 " 150 "	80 " 100 "	30 " 65 "	10%
	280 ABOVE 330 UNDER	150 " 190 "	100 " 130 "	65 " 80 "	9 %
	330 ABOVE 380 UNDER	190 " 230 "	130 " 160 "	80 " 100 "	8 %
	380 ABOVE 480 UNDER	230 " 270 "	160 " 200 "	100 " 130 "	7 %
	450 ABOVE 540 UNDER	270 " 330 "	200 " 240 "	130 " 160 "	6 %
	540 ABOVE 670 UNDER	330 " 420 "	240 " 310 "	160 " 210 "	5 %
	670 ABOVE 870 UNDER	420 " 560 "	310 " 410 "	210 " 280 "	4 %
	870 ABOVE 1240 UNDER	560 " 800 "	410 " 590 "	280 " 400 "	3 %
	1240 ABOVE 3.500 UNDER	800 " 2 000 "	590 " 1 300 "	400 " 800 "	2 %



Appendix 8.2 MATERIALS FOR STRUCTURES

1. Concrete

· Concrete is classified into the following five types.

Table 8.1 Concrete

Class	Minimum Compressive Stregnth σ ck (kg/cm^2)	Description
A	400	Cost in place concrete for pre-stressed concrete
B	350	Cast in place concrete for dia-phragms and deck slab (reinforced concrete)
C	250	Cast in place concrete for sub-structure and box-culvert (reinforced concrete).
D	150	Cast in place concrete (plain concrete)
E	100	Levelling concrete

Note: σ ck = Ultimate compressive strength of concrete as determined on a 15 cm cube at the age of 28 days.

2. Reinforced Bars

Type and Strength of reinforcing bars are as follows:

Table 8.2 Reinforcing Bar

Type	JIS G 3112		ASTM A 615	
	Destination	Yield Point km/mm^2	Destination	Yield Point km/mm^2
Round Bar	SR 24	24	Grade 40	28
Deformed Bar	SD 30	30	Grade 60	41

3. Prestressing Tendon

Type and minimum strength of prestressing tendon are as follows:

Table 8.3 Prestressing Tendon

Type	JIS STANDARD			ASTM STANDARD		
	Designation	Yield Point kg/mm^2	Tensile Strength km/mm^2	Designation	Yield Point kg/mm^2	Tensile Strength kg/mm^2
PC Wire	G 3536	136	155	A 421	132	165
PC Strand	G 3536 SWPR 7A	155	175	A 416 Grade 250	149	176
	G 3536 SWPR 7B	160	190	A 416 Grade 270	161	190
PC Bar	G 3109 Type A	80	105	A 722 Type I	89	100

4. Steel Pipe Pile

Class and minimum Strength of steel pipe piles are as follows:

Table 8.4 Steel Pipe Pile

Class	JIS A 5525			ASTM A 500		
	Designation	Yield Point kg/mm^2	Tensile Strength kg/mm^2	Designation	Yield Point kg/mm^2	Tensile Strength kg/mm^2
A	STK 41	24	41	Grade B	29	41
B	STK 50	32	50	Grade C	32	43

5. Structural Rolled Steel

Class and minimum strength of structual rolled steel are as follows:

Table 8.5 Structural Rolled Steel

	JIS STANDARD			ASTM STANDARD		
Class	Desig-nation	Yield Point kg/mm^2	Tensile Strength kg/mm^2	Disig-nation	Yield Point kg/mm^2	Tensile Strength kg/mm^2
A	G 3101 SS 41	24	41	A 36	25	41 - 56
	G 3106 SM 41			A 242		
	G 3114 SMA 41	22 - 25	41 - 52	A 440 A 441	28 - 35	42 - 49
B	G 3106 SM 50	30 - 33	50 - 62	A 588		
C	G 3106 SM 50Y G 3114 SMA 50	34 - 37	50 - 62	A 572 Grade 55	39	49
	G 3106 SM 53	34 - 37	53 - 65	A 572 Grade 60	42	53
D	G 3106 SM 58 G 3114 SM 58	44 - 47	58 - 73	A 572 Grade 65	46	56

Appendix 8.3 STUDY ON S–W ARC EXTENSION OF INTRA URBAN TOLLWAY

1. General

Alternative routes, for connecting the S-W Arc of Intra Urban Tollway to Harbour Road, are studied in this section. The connecting section, from the existing Grogol intersection to Harbour Road, would logically be located on Jl. Latumenten and Jl. Jembatan Tiga. However it has been agreed between the DKI Governer and the land owners that these existing streets will not be further widened within the next 10 to 15 years.

Under this circumstance alternative routes must be studied in the light of technical and economical aspects.

2. Selection of Alternative Routes

It was decided by Intra Urban Tollway Project, that the termination point of the present studies on the S-W Arc would be at the existing Grogol intersection.

A corridor for the route of the extension was therefore selected within the band from around Banjir Canal to Jl. Jembatan Tiga based on the existing development conditions.

In the corridor there are three rivers and one canal, Kali Grogol, Kali Duri, Muara Karang and Banjir Canal, running southeast to northwest. Two rivers, Kali Grogol and Kali Duri, are located parallel to Banjir Canal between Latumeten bridge and Jl. Teluk Gong.

The area are largely classified as mixed areas of housing and industry except for Kel. Grogol, which is used as a middle to high class residential area.

New residential complexes have been developed in Kel. Jalambar and Teluk Gong, located adjacent to the western side of Banjir Canal.

Some of the area around Kali Grogol is subject to flooding every year especially between Kali Grogol and Benjir Canal.

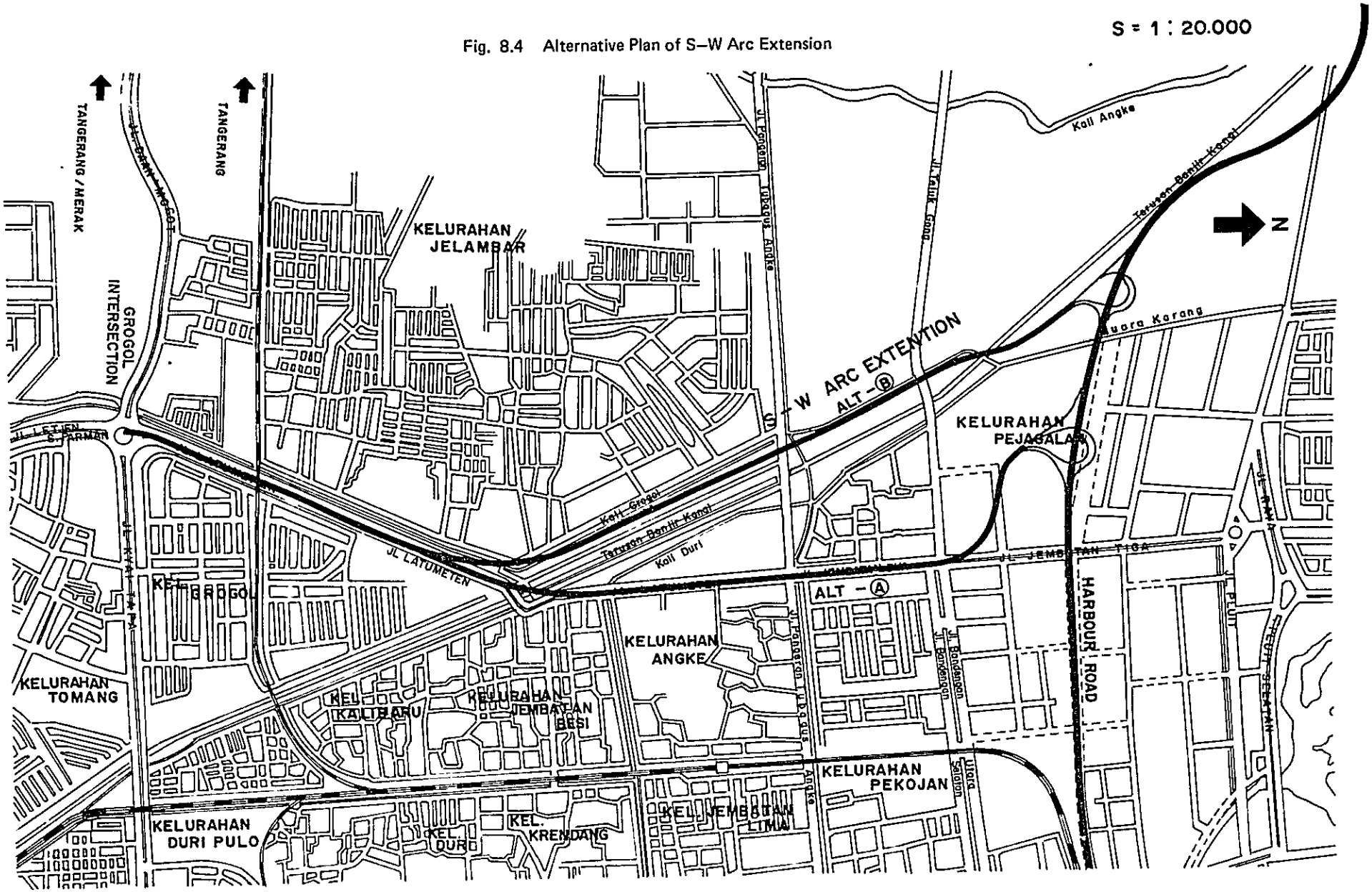
i) Selection of Alternative Routes

Alternative routes were selected based on the detailed site reconnaissance, aerial photographs and by using a 1/5000 scale map. The results are described below:

Alternative - A	Located on existing streets, Jl. Latumeten and Jembatan Tiga.
Alternative - B	Located between Banjir Canal and Kali Grogol.
Alternative - C	Located on the East Bank of Kali Duri.
Alternative - D	Located between Kali Duri and Banjir Canal.
Alternative - E	Located on the West Bank of Kali Grogol.

Fig. 8.4 Alternative Plan of S–W Arc Extension

S = 1 : 20.000



However, for all alternatives the route should be located on Jl. Latumetan, for the section between Grogol Intersection and Latumeten Bridge, for the following reasons:

- Starting point is fixed at Grogol Intersection,
- Area around Jl. Latumeten is densly developed.

Alternative - A and B are shown in Fig. 8.4.

ii) Basic Conditions for Comparison

The comparison of alternatives was made based on the following basic conditions.

- Number of Lanes

Based on the traffic forecast conducted in the feasibility study on Harbour Road, the required number of through-lanes is 4. 4 lanes are required for the toll road and 4 lanes for the arterial street. Number of ramp lanes for junction and interchange are as follows:

Junction rampway between Harbour Road and S-W Arc Extension of Intra Urban Tollway:-

East bound rampway	1 lane
West bound rampway	1 lane

- Design Speed

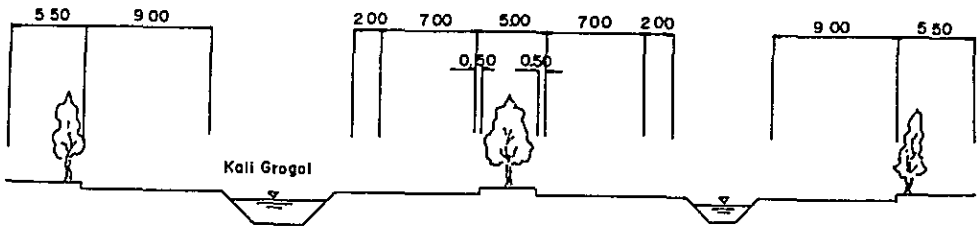
Access road (Extension of S-W Arc)	80 km/h
Junction rampway (without tollgates)	60 km/h
(with tollgates)	40 km/h

- Typical Cross-section

Typical cross-sections are adopted for each section as follows:

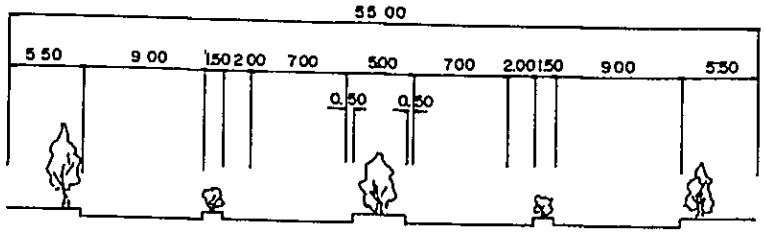
Alternative - A

1 Grogol Intersection - Latumeten Bridge



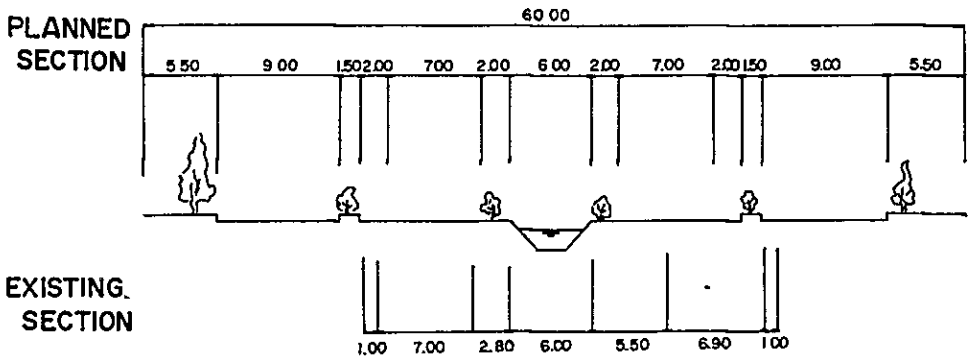
This typical cross-section was determined by the study discussed later.

2 Latumeten bridge ~ Jl. Pangrang



(Note : Existing Right Of Way is 40 to 45 meter)

3 Jl. Pangrang ~ Jl. Teluk Gong

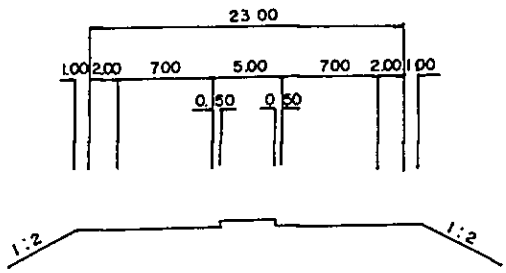


Alternative - B ~ E

1 Grogol Intersection ~ Latumeten bridge

The same typical cross-section as alternative - A is adopted.

2 Latumeten bridge ~ Junction with Harbour Road



- Maintenance of Existing Rivers and Canals

  Existing rivers and canals are maintained as far as possible so as to avoid any bad influence on the water flow.

- Relocation of Electric Transmission Line

  The relocation of the electric transmission line complies with DKI regulations, which require 60 meter width open space under the line.

iii) Study of Cross-Section to be Adopted for the Section between Grogol Intersection and Latumeten Bridge

The alingment was roughly fixed in Section i). In this Section the location of center line is discussed in relation to the adoption of the cross-section required.

In considering the planned cross-section for existing Jl. Latumeten, two alternatives were studied as follows:

Alternative - I Existing carriageway used for the planned tollway and new arterial streets located separately on the existing Jl. Dr. Susilo Raya and Jl. by expanding the existing width.

Alternative - II Adoption of planned cross-section on Jl. Latumeten by expanding eastwards from the edge of Kali Grogol.

The two cross-section plans mentioned above are shown in Figs. 8.5 and 8.6.

Alternative - I was selected based on the DKI street plan which shows that the northbound arterial street is scheduled to be located on the western bank of Kali Grogol.

Alternative - II was selected on the basis of maintaining the local traffic which exists on the western bank of Kali Grogol.

The local traffic in the west bank of Kali Grogol is operated as one-way in the case of Alternative - I , while the existing traffic operates as two-way.

Comparison of the two alternatives is made as following Table.

Furthermore, it is stressed that it is not possible to demolish the residential complex in Kel. Grogol.

According to the comparison made below, alternative - I is recommended for the section from Grogol Intersection to Latumeten Bridge.

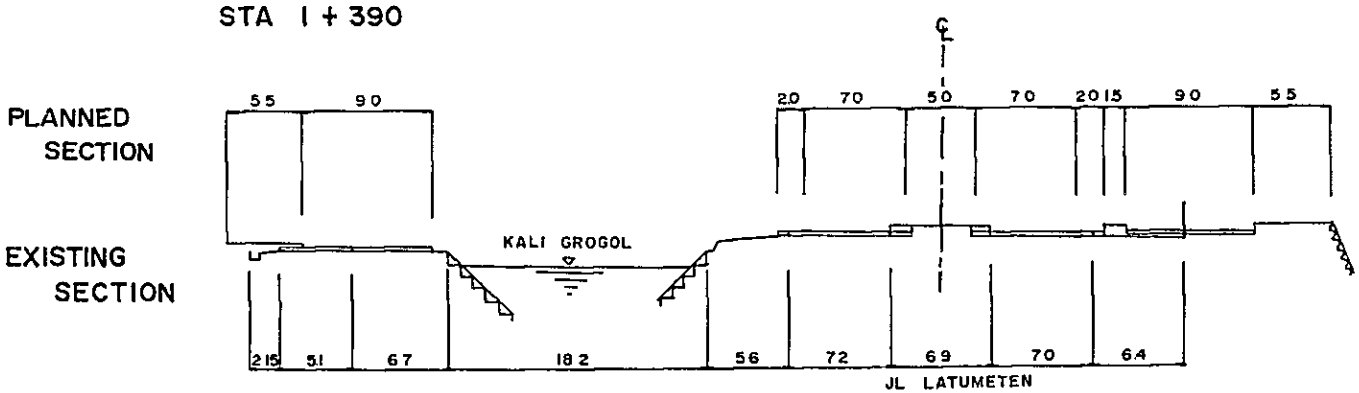
COMPARISON

Item \ Alternative	I	II
Right of Way	Additional land required for a arterial street located on the west bank of Kali Grogol. However this will be expanded by the DKI arterial street plan. No additional land is required for Jl. Dr. Susilo Raya portion beside Kel. Grogol.	Wider land acquisition (6 ~ 4 meter) for the section beside Kel. Grogol compared to Alternative - I
Ease of construction	Less problem for existing traffic because of using existing carriageway for tollway with minor expansion.	Bigger problem for existing traffic because of reconstruction of existing carriageway and wider new construction.
Cost	Comparatively cheap — Minor expansion of existing pavement — Smaller scale construction for new construction section. — 40 meter bridge required for north-bound arterial street to cross Kali Grogol — Less Compensation and land acquisition Cost.	Comparatively expensive — Bigger scale construction for relocation of existing carriageway — Bigger scale construction for new construction section — Bigger compensation and land acquisition cost

Fig. 8.5 Alternative Adoption of Cross Section

ALTERNATIVE – I S = 1 : 500

STA 1 + 390



STA 0 + 455

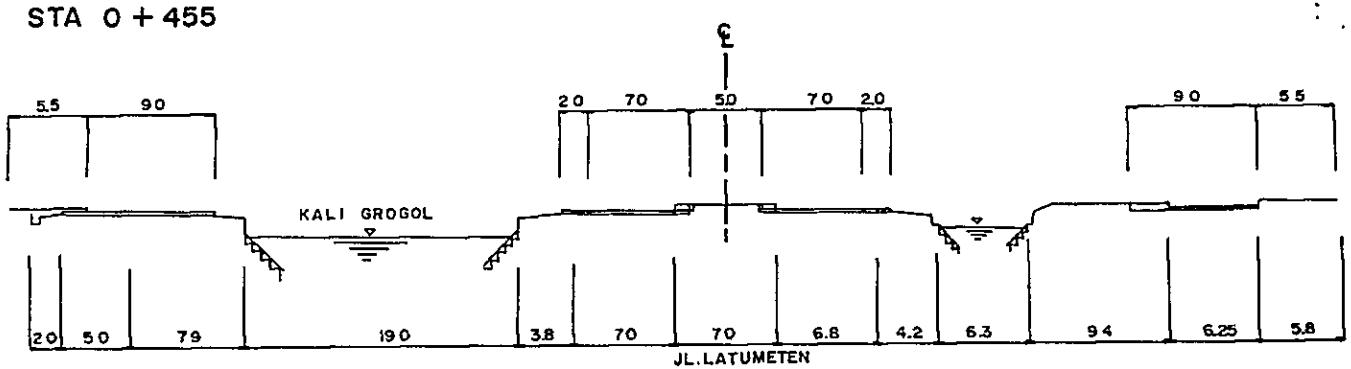
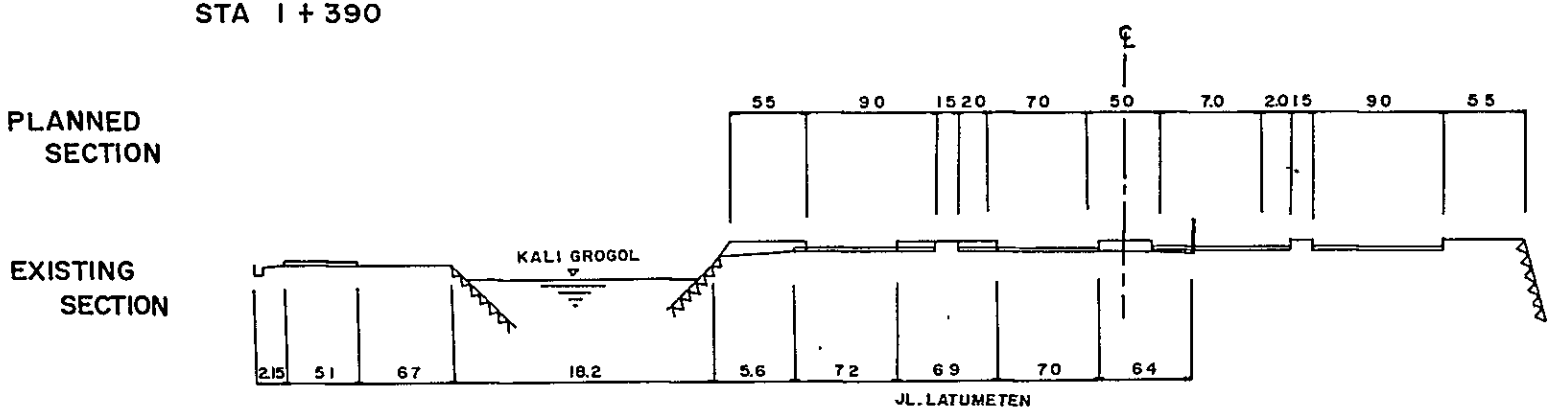


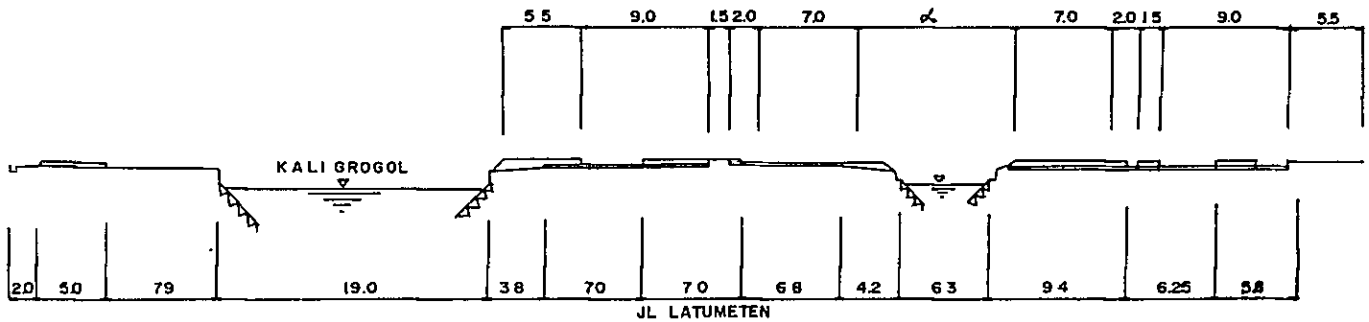
Fig. 8.6 Alternative Adoption of Cross Section

ALTERNATIVE – II S = 1 : 500

STA 1 + 390



STA 0 + 455



3. Comparison of Alternateives

The tollway junction of alternative - A is located between Jl. Jembatan Tiga and Kali Muara Karang, just south of Pluit industrial complex area.

The tollway junction of alternative - B - E is located between Kali Muara Karang and Banjir Canal.

Among the alternatives described in section i) alternative - C , D and E are no selected for the reasons described below.

- For alternative - C (located on the east bank of Kali Duri)

  The eastern area of Kali Duri has already been developed for mixed purpose. It is difficult to acquire land for the new road.

- For alternative - D (Located between Kali Duri and Banjir Canal)

  Between the two rivers mentioned above only about 20 meter width is available for the road. The construction cost is therefore very expensive due to the road being a viaduct type.

- For alternative - E (Located on the West bank of Kali Grogol)

  The eastern area of Kali Grogol also has already been developed for residential and industrial purpose. All these houses and industrial complex are legal and acquisition would be very difficult. Environmental problems will occur for the surrounding housing complex if this alternative is adopted.

Alternative - A & B are therefore studied in detail in the following section.

Comparison of Alternative - A & B

Table 8.6 shows the merits, demerits and construction cost for bridges. As a result of the above comparison, the following can be said:

- Construction cost of bridges of Alternative - A is 5 percent cheaper than Alternative - B .

- Compensation and land acquisition: Alternative - A has fewer facilities affected, but the unit cost per unit facility in higher than that of Alternative - B , due to higher percentage of shops, offices and industries.

- Alternative - B requires more space than Alternative - A , but the land acquisition cost of alternative - B is much chaper than that of Alternative - A , due to the land being fish ponds and unsuitable for housing.

Therefore, the total cost including land acquisition and compensation would not show a big difference between the two alternatives.

Advantages of alternative - B, which is located between Banjir Canal and Kali Grogol, are described below.

- Only temporary housing is affected by the route.

- Subject to flooding by Kali Grogol every year and therefore not suitable for housing.

- Existing houses are illegal due to the existence of electric transmission line.

Also it is not certain whether the land owners along alternative - A will agree to the expansion of the toll road after 10 or 15 years.

The team, therefore, finally recommends alternative - B on the basis that it will allow early realization of the project which is a vital portion of the tollway system in Jakarta.

Table 8.6 Comparison for Alternative S–W Arc Extension

Item / Alternative	Length of Road (Km)	Junction with Harbour Road	No, Length and Area of Bridges (No, M, M^2)	Affected Facilities	Problem on traffic treatment and Environment.	Construction Cost for Bridges (Million Rp)
A	STA 0+00 3+800 L = 3.8	Modified "Y" type	10 Nos L = 1,778 M A = 34,849 M^2	Nos Houses - - - 132 Shop & Office - - - 147 Factory & Warehouse --- 54 Cinema - - - - 2 Church - - - - 1 Electric Tower - - - - 1	Less problem on traffic treatment. Less environmental problem due to shop and industries along the road.	13,927
B	STA 0+00 4+00 L = 4.0	Modified "Y" type	11 Nos L = 1,893 M A = 35,844 M^2	Nos Houses - - - 470 Factory - - - 2 Electric Tower - - - - 2	Less problem on traffic treatment. Less environmental problem due to the road location between rivers.	14,848

Appendix 9.1 RESULT OF LABORATORY TEST

Fig. 9.1 Soil Map

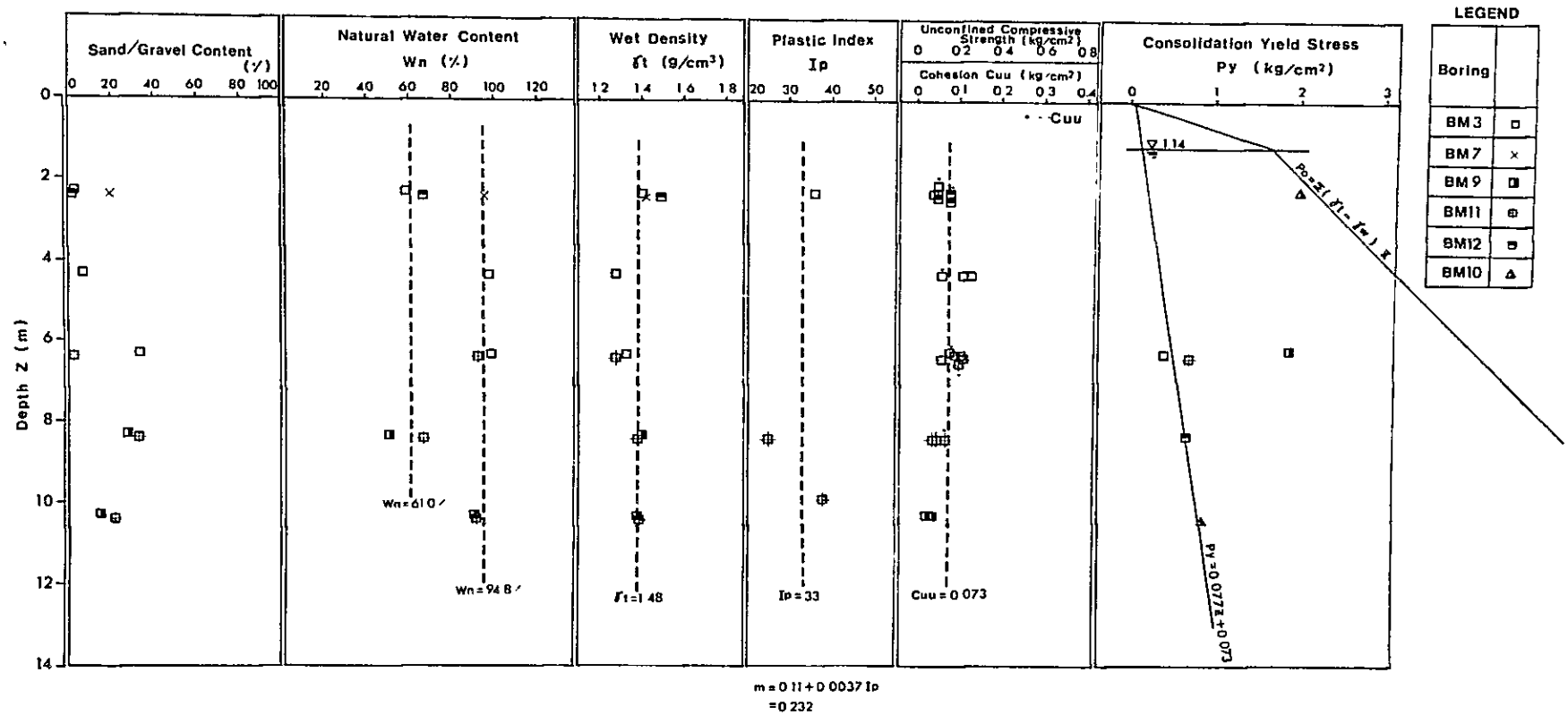


Fig. 9.2 e-log P Design Curve

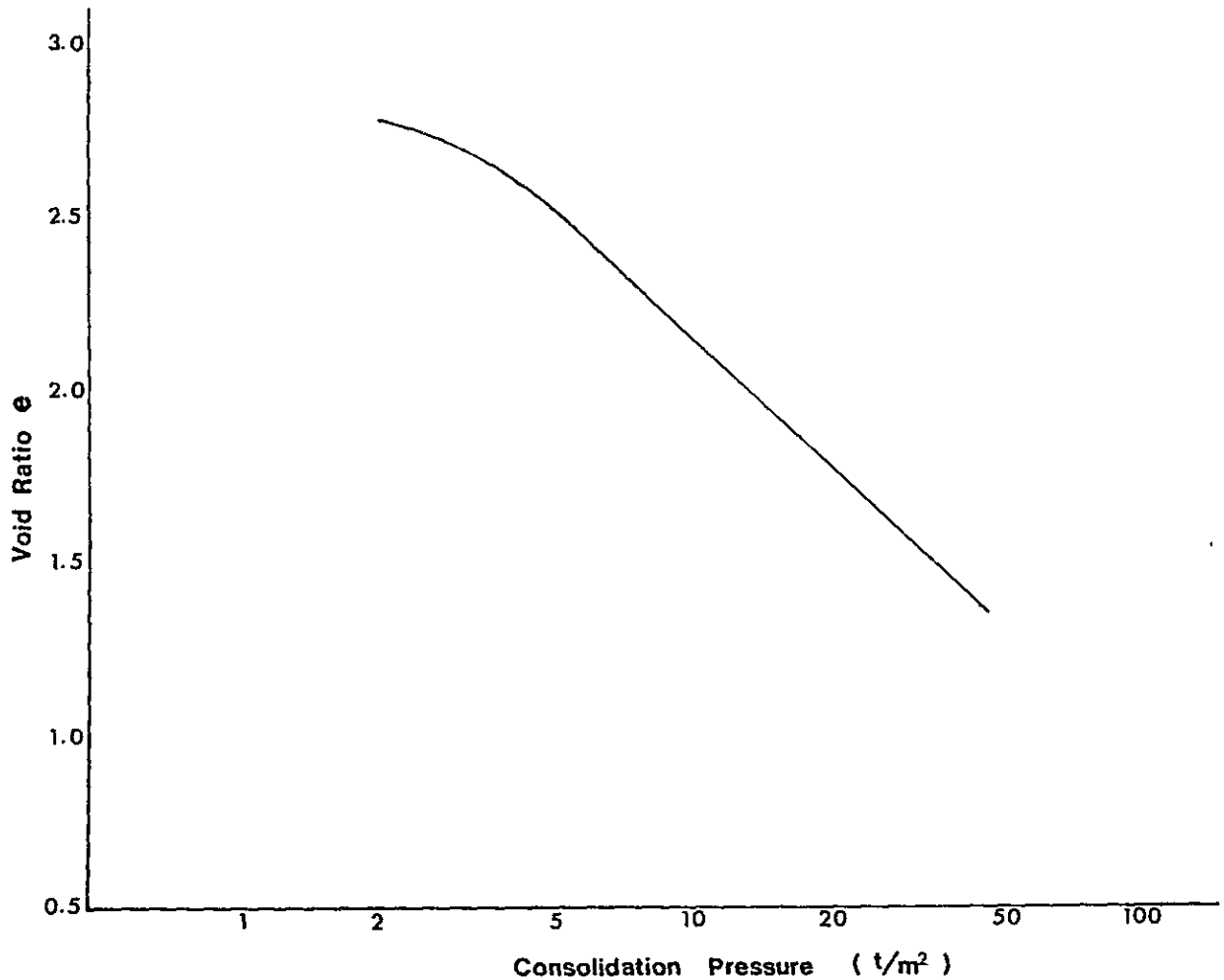
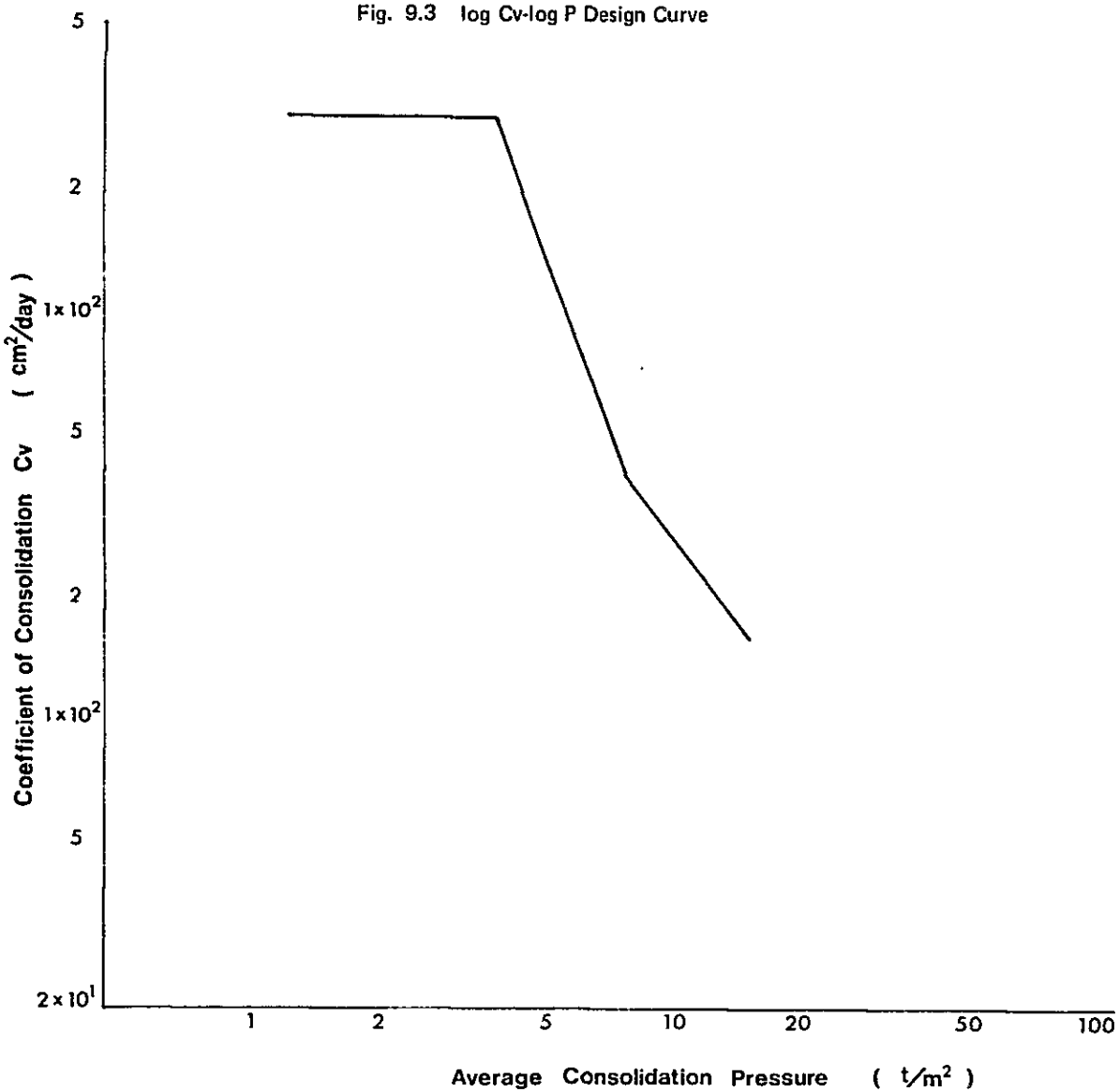


Fig. 9.3 log Cv-log P Design Curve



Appendix 9.2 HYDRAULIC STUDY

1. General

For DKI Jakarta, the "MASTERPLAN for DRAINAGE and FLOOD CONTROL OF JAKARTA' was established by the Ministry of Public Works and Electric Power, Directorate General of Water Resources Development, in December 1973. The basic principles and recommendations made by the Masterplan are also adopted for this Study.

The Masterplan are shown in Fig. 9.4.

2. Existing Situation

(1) Characteristics of Rain-fall in the Project Area

According to the "MASTERPLAN" the characteristics of rain fall are described as follows:

Average yearly rainfall varies from about 2,000 mm near the coast to about 4,000 mm in the mountains. The greater part (approx. 80%) of the yearly rainfall takes place during the wet season, generally from November 1 till May 31, with predominantly north-western winds. January generally is the wettest month with about 25% of the annual precipitation. The five months of the dry season, with predominantly north-eastern winds, are characterized by long dry spells, with the month of August on an average, receiving the minimum monthly rainfall (±3.5% of the yearly total).

The rainfall is characterized by high intensities and low occurrence probability, or in other words: heavy storms interspread with long dry periods even in the wet season. The very high rainfall intensities during thunderstroms often are sharply localized. It has been obserbed that rainfall is generally concentrated in the afternoons and evenings, with 60 to 80% falling from 14.00 till 21:00 hours at some stations.

(2) Hydrological Situation in the Project Area

Starting from Mt. Pangrunggo (3,019 m) in the southern range, the Ciliwung river and several other rivers flow into the Java Sea affecting the Project area.

According to the historical trend, once every two years a flood occurs, when rainfall exceeds 115 mm per day. It is considered that the reasons for the floods are as follows:

(a) Compared with the size of the catchment area and the rainfall volume, the discharge capacity of the rivers is small.

(b) River slopes are too flat and the rivers meander.

(c) Each river is effected by tidal rises in the river-mouth.

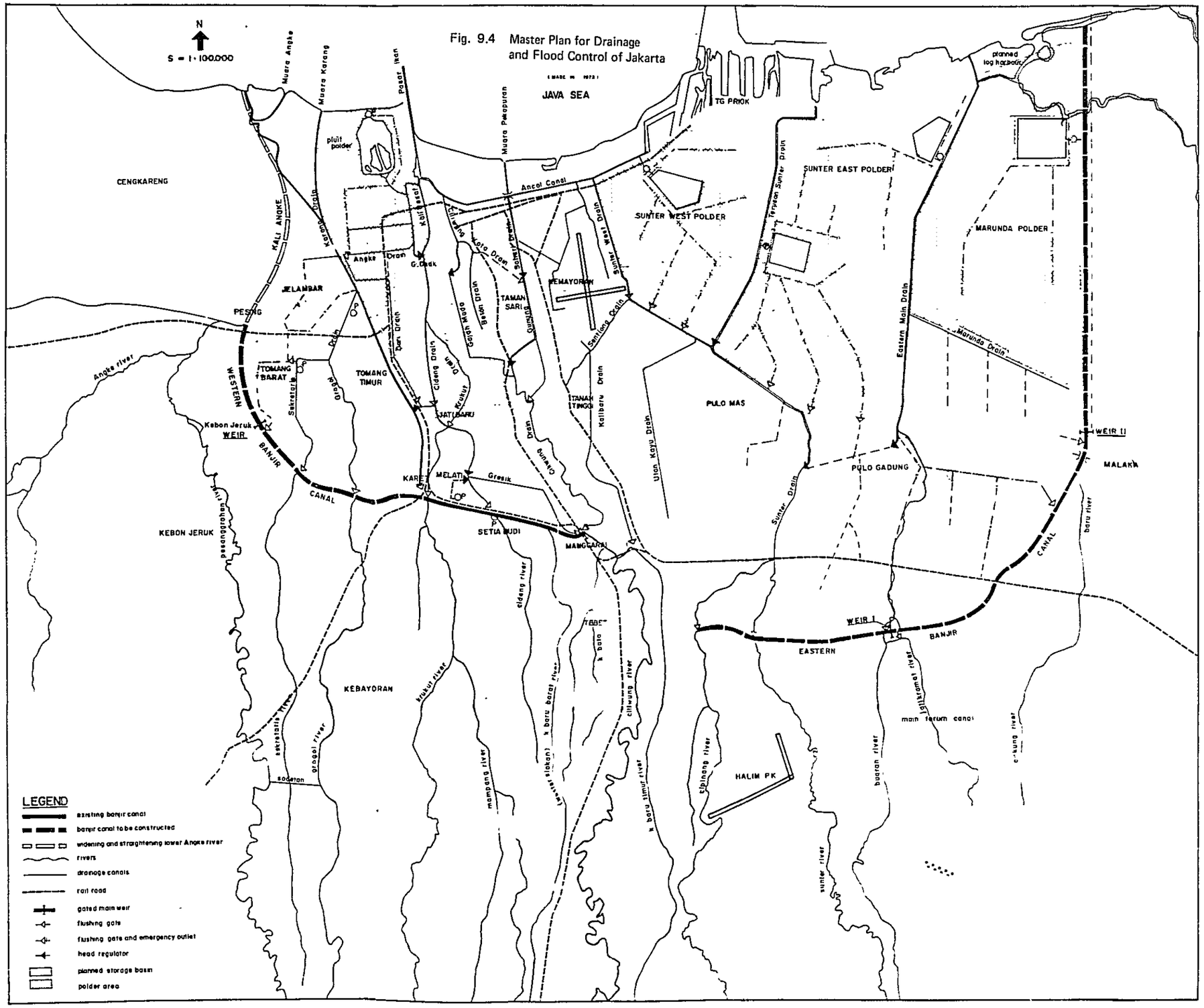


Fig. 9.4 Master Plan for Drainage and Flood Control of Jakarta

This flooding problem of DKI Jakarta is common in the river mouth in an alluvium plain. Related rivers and canals to the Project road are developed for banking improvement in the city area, but the discharge capacities are greatly hindered in the suburbs by the meandering nature of the rivers.

(3) Introduction of the Masterplan

The MASTERPLAN for DRAINAGE and FLOOD CONTROL of Jakarta introduced the following three principles on the solution of the problems of drainage and flood control in the city:

- Drain off the rainfall on the area itself;
- Prevent run-off from the hill to the south to flooding the city area, and
- In the dry season, prevent stagnation of the water in the open canals in the city.

Based on these principles the PLAN recommended as follows:

- Flood control is to be achieved by the construction of two canals (Western Banjir Canal and Eastern Banjir Canal) enclosing a large part of the city and collecting the floods of the rivers coming down from the hills. After collection, the floods will be diverted around the low-lying city and towards the Java Sea.
- For the urbanized area the following four countermeasures were recommended:
  - Extensive rehabilitation of the existing open canals;
  - Incorporation of the lower part of the existing Western Banjir Canal into the drainage system of Central and West Jakarta;
  - Construction of two more major evacuation drains for the eastern urban area, the Sunter West Drain and the Eastern Main Drain; and
  - Provision of polder area with pumping stations for the lowest parts.

Among the countermeasures, four polder projects were planned as follows:

- Pluit Polder
- Sunter West Polder
- Sunter East Polder
- Marunda Polder

The Progress of the Project

Since production of the PLAN, some revisions, further study and construction work have been made as described below:

- The Western Banjir Canal was cancelled due to the land acquisition problem. Instead of the canal, Cengkareng Flood Way was proposed and this is now under construction and due to open in 1982.

- The Pluit Polder is under construction and is expected to be completed by the end of 1981.

- A new Polder, Pademangan Polder, was proposed in February 1976.

- The Sunter West Polder is under construction as a part of the Sunter Development Project and is expected to be completed by 1985.

- The Eastern Main Drain is under construction.

Outline of Pademangan Polder

The area is subject to flooding every year due to lack of a drainage system. Due to this situation, a drainage plan for the area has been established by the Ministry of the Public Works and Electric Power, Directorate General of the Water Resources Development in February 1976.

The outline of the plan is as follows:

- Effective Volume 20,800 m^3
- Effective Depth 2 m
- Polders Area 10.4 ha
- Pumping station is located adjacent to the railway to Tg. Priok and water is drained to Ancol Canal.

Furthermore, the following are required for the Polder Project.

- The water reservoir should be located to the south of the Harbour Road to collect water and thus avoid inefficiency in using many pipes installed under the Harbour Road if the polder is located north of the road.

- The polder should be located in one area in order to promote drainage efficiency.

- It is necessary to avoid the creation of land which cannot be drained.

- Minimum length of drainage pipe between the polder pumping station and Ancol canal is desirable.

3. Effect on Local Flood

The water level raised up accompanied by the head loss in the upstream of box culvert is calculated for two standard conditions.

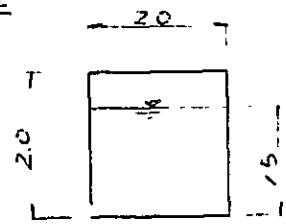
(1) Kali Angke - Muara Karang

Calculation of Existing Flood Level

H.H.W. of Java Sea	P.P. + 1.15
Discharge Volume	$Q = 5.7\ m^3/sec.$
Ground Slope	$i = 0.1\ \%$
Average Velocity	$V = 1/_n\ R^{2/3}\ I^{1/2}$
$n = 0.04,\ R = 1.0$	$= 0.791\ m/sec.$
Water Level raised up	$h = \frac{Q}{1{,}500 \times 0.791}$
	$= 0.005\ M$

Water Level Raised Up by Box Culvert

Box Culvert 2.0 x 2.0



Average Velocity	$V = 1/_n\ R^{2/3}\ I^{1/2}$
$n = 0.014,\ R^{2/3} = 0.712$	$= 1.61\ m^3/sec.$
Water Level raised up	$\Delta h = he + (\frac{V_2^2}{2g} - \frac{V_1^2}{2g})$
$he = fe\ \frac{V_2^2}{2g}\ ,\ fe = 0.1$	$he = 0.1 \times \frac{1.61^2}{2 \times 9.8} = 0.013$
	$\Delta h = 0.013 + 0.10$
	$i = 0.113$

In the case of water level at high water level of Java Sea, the total water level will raised up by 0.118 M.

(2) Kel. Tugu

Existing Flood Level

H.H.W. of Java Sea	P.P. + 1.5
Discharge Volume	$Q = 5.74\ m^3/sec.$
Ground Slope	$i = 0.1\ \%$
Average Velocity	$V = \frac{1}{n}\ R^{2/3}\ I^{1/2}$
	$= 0.791\ m/sec.$
Water Level Raised Up	$h = \frac{5.74}{1000 \times 0.791} = 0.007mm$

Water Level Raised Up by Box Culvert

Box Culvert	2.0 x 2.0
Average Velocity	V = 1.61 m/sec
Water Level Raised Up	he = 0.013
	Δh = 0.113 m

In the case of the water level at high water level of Java Sea, the total water level will be raised up by 0.120 m.

Appendix 9.3 COMPARISON OF ROAD STRUCTURE (IN KEL. PENJARINGAN)

The cost of road structures (embankment and bridges) in Kel. Penjaringan is compared as follows:

1. Conditions

- 4-lanes throughway (L = 1,375 m)
- Frontage roads excluded in the cost
- Items to be estimated in the cost

  Embankment - Sand pile, sand mat, embankment, pavement, bridge, box culverts and land acquisition compensation

  Bridge - Bridges and viaducts, land acquisition and compensation

- Unit cost estimated in the Project

2. Cost Estimation

Embakment	x 10^3 Rp.
Pavement	481,008
Embankment	980,278
Sand mat & sand pile	592,649
Box culvert 6 x 4 M	219,163
Bridge L = 15 M	79,950
Land acquisition & compensation	2,303,000
Total:	4,656,048

Bridges	
Superstructures	4,067,250
Substructures	3,261,500
Land acquisition & compensation	1,268,460
Total:	8,597,210

Appendix 9.4 ALTERNATIVE RECLAMATION PLAN FOR ANCOL CANAL

Cost Estimate (L = 1,837 m, STA 16 + 763 ∿ 18 + 600)
Unit Cost: F.C., L.C., Tax, Import Duty

1. Reclamation Plan

Work Item	Unit	Unit Cost	Quantity	Amount
Sand Pile	M	2,538	296,250	751,882,500.-
Sand Mat	M^3	7,181	117,800	845,921,800.-
Embankment	M^3	5,374	636,000	3,417,864,000.-
Masonry	M^2	23,330	360	8,398,800.-
Retaining Wall				
H = 3	M	1,523,000	1,000	1,523,000,000.-
H = 5	M	2,764,000	400	1,105,600,000.-
H = 6	M	3,497,000	580	2,028,260,000.-
Box 2.0x2.0	M	2,468,165	840	2,073,258,600.-
Pipe ϕ1,000	M	176,220	150	26,433,000.-
AC Surface	t	27,661	10,520	290,993,720.-
Bit Treated Base	t	19,306	24,650	475,892,900.-
Sub-base Course	M^3	8,730	12,440	108,601,200.-
Bridges (For 5 bridges including Kota East ramp bridges for Kota Drain)				2,045,704,000.-
Total				14,701,810,000.-

2. Continuous Bridge and Viaduct Plan

Viaduct, Bridges	15,899,929,000.-

Appendix 9.5 RELATED PROJECTS AND ROADS IN SUNTER

The outline of the related projects and roads is described as follows:

1. Sunter Development Project

Sunter development project is now under construction by DKI Jakarta, and the project is scheduled to be completed in 1985.

Upon completion, the Sunter area will become mainly a housing area with the exact land use being as follows:

Industrial & warehouse area	257
Housing & shopping area	565
Polder area	160
Public facilities (road, green) area	118
Total:	1,100 ha.

According to the plan, main access to the outside area is limited to two sides, the north and west end of the area. In the north of the area Jl. Baru Sunter is the only access road to Jl. Martadinata.

2. Jakarta Fair

Jakarta Fair is under planning for domestic and international exhibition in 1981.

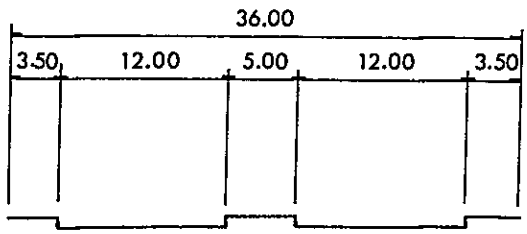
3. City Planning Road

The planning road will be located in the inland area parallel to Jl. Martadinata - Enggano - Cilincing Raya.

It will function as the second inland route from the shore line and serve the traffic from Cilincing to Ancol, as well as the local traffic.

Based on the DKI street plan the outline of the road is as follows:

- Rank of road : Minor arterial street Rank-F
- Number of lane : 6-lanes
- Typical cross section



4. Jl. Martadinata - Enggano

The street will be improved to a 4 to 6 lane carriageway. The carriageway may be provided separately on both banks of Ancol canal. The tentative plan is provided by the Team.

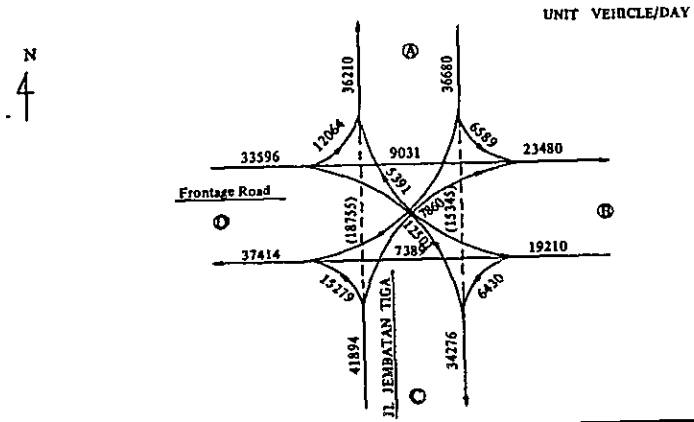
Appendix 9.6 TRAFFIC ANALYSIS FOR RELATED INTERSECTIONS

The traffic analysis for related intersections was conducted for the year of 2010 as follows. The alternative Pluit intersection with Jl. Jembatan Tiga paralleled with Harbour Road is also analyzed.

The analyzed intersections are listed in the Main Report.

Fig. 9.5 Alternative Pluit Intersection
(Frontage Road – Jl. Jembatan Tiga)

UNIT VEHICLE/DAY



	Traffic Phase	Traffic Volume Q (VEH/H)	Possible Capacity S (VEH/H)	Integrated Congestion Ratio P=Q/S	Phase Time (SEC)
1		Q_{BS} = 665 Q_{BL} = 579 Q_{DS} = 813 Q_{DL} = 1086	S_{BS} = 2 x 2000 = 4000 S_{BL} = 1 x 1800 = 1800 S_{DS} = 2 x 2000 = 4000 S_{DL} = 2 x 1800 = 3600	P_{BS} = 0.166 P_{BL} = 0.322 P_{DS} = 0.203* P_{DL} = 0.302	26 + 3
2		Q_{AR} = 1237 Q_{AL} = 593 Q_{CR} = 617 Q_{CL} = 1375	S_{AR} = 2 x 1800 = 3600 S_{AL} = 1 x 1800 = 1800 S_{CR} = 1 x 1800 = 1800 S_{CL} = 2 x 1800 = 3600	P_{AR} = 0.344 P_{AL} = 0.329 P_{CR} = 0.343 P_{CL} = 0.382*	48 + 3
3		Q_{BR} = 395 Q_{BL} = 579 Q_{DR} = 1035 Q_{DL} = 1086	S_{BR} = 1 x 1800 = 1800 S_{BL} = 1 x 1800 = 1800 S_{DR} = 2 x 1800 = 3600 S_{DL} = 2 x 1800 = 3600	P_{BR} = 0.219 P_{BL} = 0.322 P_{DR} = 0.288* P_{DL} = 0.302	37 + 3
4					
			TOTAL	0.873	120

LANE ARRANGEMENT

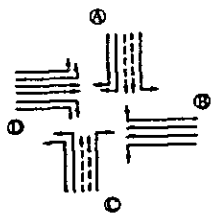
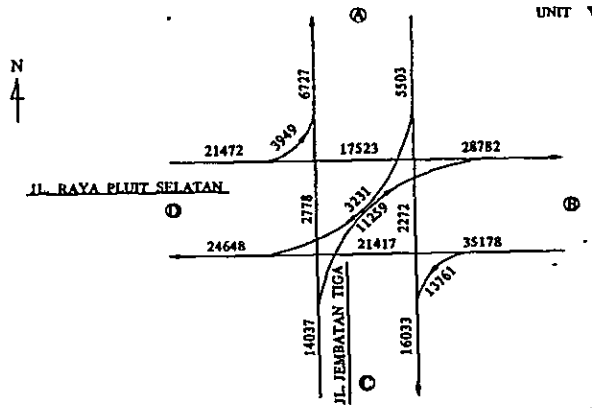


Fig. 9.6 Pluit Intersection
(Jl. Raya Pluit Selatan – Jl. Jembatan Tiga)

UNIT VEHICLE/DAY



	Traffic Phase	Traffic Volume Q (VEH/H)	Possible Capacity S (VEH/H)	Integrated Congestion Ratio P=Q/S	Phase Time (SEC)
1		Q_{BS} = 1928 Q_{BL} = 1238 Q_{DS} = 1577 Q_{DL} = 355	S_{BS} = 2 x 2000 = 4000 S_{BL} = 1 x 1800 = 1800 S_{DS} = 2 x 2000 = 4000 S_{DL} = 1 x 1800 = 1800	P_{BS} = 0.482* P_{BL} = 0.688 P_{DS} = 0.394 P_{DL} = 0.197	62 + 3
2		Q_{AS} = 204 Q_{CS} = 250	S_{AS} = 1 x 2000 = 2000 S_{CS} = 1 x 2000 = 2000	P_{AS} = 0.102 P_{CS} = 0.125*	16 + 3
3		Q_{AR} = 201 Q_{BL} = 1238 Q_{CR} = 923	S_{AR} = 1 x 1800 = 1800 S_{BL} = 1 x 1800 = 1800 S_{CR} = 2 x 1800 = 3600	P_{AR} = 0.112 P_{BL} = 0.688 P_{CR} = 0.256*	33 + 3
4					
			TOTAL	0.863	120

LANE ARRANGEMENT

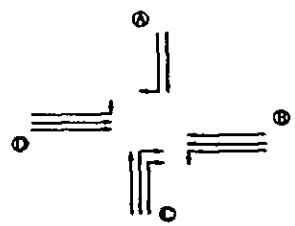
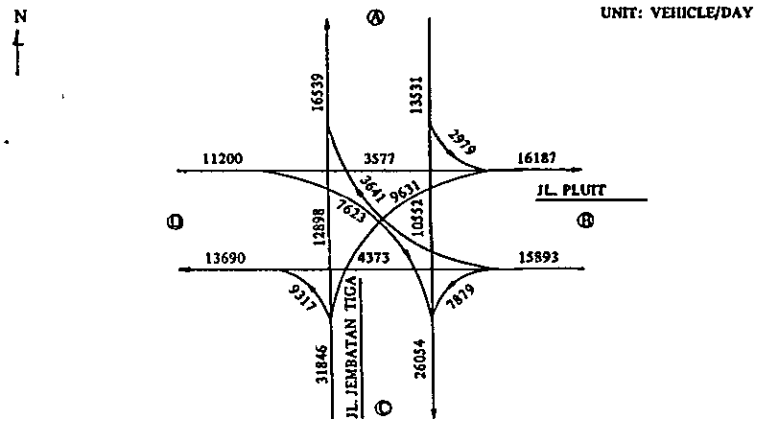
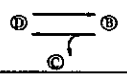
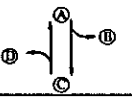
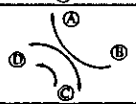
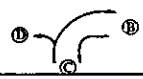


Fig. 9.7 Pluit Intersection (Jl. Pluit — Jl. Jembatan Tiga)



Traffic Phase		Traffic Volume Q (VEH/H)	Possible Capacity S (VEH/H)	Integrated Congestion Ratio P=Q/S	Phase Time (SEC)
1		Q_{BS} = 394 Q_{BL} = 709 Q_{DS} = 322	S_{BS} = 1 x 2000 = 2000 S_{BL} = 1 x 1800 = 1800 S_{DS} = 1 x 2000 = 2000	P_{BS} = 0.197* P_{BL} = 0.394 P_{DS} = 0.161	24 + 3
2		Q_{AS} = 950 Q_{AL} = 268 Q_{CS} = 1161 Q_{CL} = 839	S_{AS} = 2 x 2000 = 4000 S_{AL} = 1 x 1800 = 1800 S_{CS} = 2 x 2000 = 4000 S_{CL} = 1 x 1800 = 1800	P_{AS} = 0.238 P_{AL} = 0.149 P_{CS} = 0.290* P_{CL} = 0.466	36 + 3
3		Q_{BR} = 238 Q_{CL} = 839 Q_{DR} = 596	S_{BR} = 1 x 1800 = 1800 S_{CL} = 1 x 1800 = 1800 S_{DR} = 2 x 1800 = 3600	P_{BR} = 0.132 P_{CL} = 0.466 P_{DR} = 0.166*	21 + 3
4		Q_{BL} = 709 Q_{CR} = 777 Q_{CL} = 839	S_{BL} = 1 x 1800 = 1800 S_{CR} = 2 x 1800 = 3600 S_{CL} = 1 x 1800 = 1800	P_{BL} = 0.394 P_{CR} = 0.216* P_{CL} = 0.466	27 + 3
			TOTAL	0.869	120

LANE ARRANGEMENT

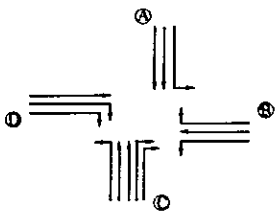
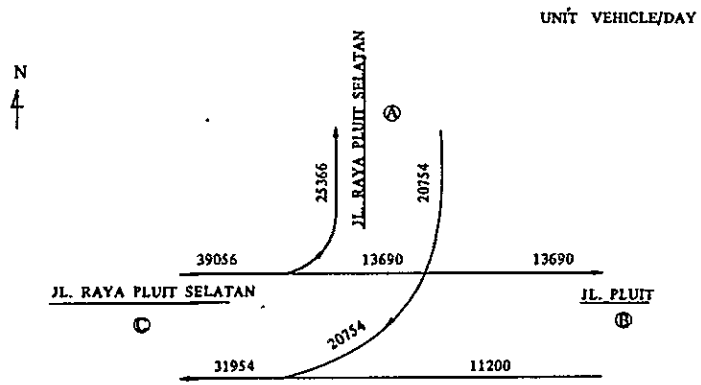
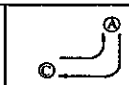


Fig. 9.8 Pluit Intersection (Jl. Raya Pluit Selatan — Jl. Pluit)



Traffic Phase		Traffic Volume Q (VEH/H)	Possible Capacity S (VEH/H)	Integrated Congestion Ratio P=Q/S	Phase Time (SEC)
1		Q_{AR} = 1868 Q_{CL} = 2283	S_{AR} = 2 x 1800 = 3600 S_{CL} = 2 x 1800 = 3600	P_{AR} = 0.519* P_{CL} = 0.634	46 + 3
2		Q_{BS} = 1008 Q_{CS} = 1232 Q_{CL} = 2283	S_{BS} = 2 x 2000 = 4000 S_{CS} = 2 x 2000 = 4000 S_{CL} = 2 x 1800 = 3600	P_{BS} = 0.252 P_{CS} = 0.308* P_{CL} = 0.634	28 + 3
3					
4					
			TOTAL	0.827	80

LANE ARRANGEMENT

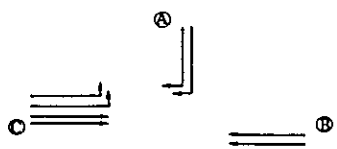
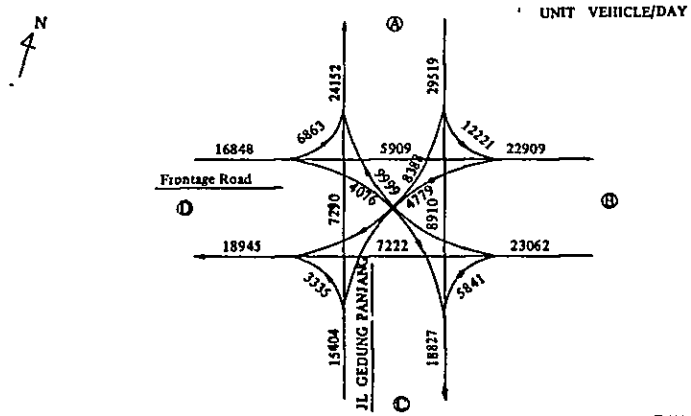
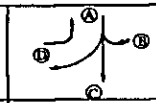
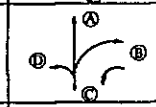
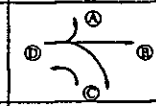
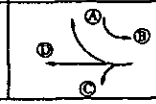


Fig. 9.9 Kota West Intersection (Frontage Road – Jl. Gedung Panjang)

UNIT VEHICLE/DAY



Traffic Phase		Traffic Volume Q (VEH/H)	Possible Capacity S (VEH/H)	Integrated Congestion Ratio P=Q/S	Phase Time (SEC)
1		Q_{AS} = 802 Q_{AR} = 665 Q_{AL} = 1100 Q_{DL} = 618	S_{AS} = 2 x 2000 = 4000 S_{AR} = 2 x 1800 = 3600 S_{AL} = 2 x 1800 = 3600 S_{DL} = 1 x 1800 = 1800	P_{AS} = 0.200* P_{AR} = 0.185 P_{AL} = 0.306 P_{DL} = 0.343	28 + 3
2		Q_{BL} = 526 Q_{CS} = 656 Q_{CR} = 340 Q_{CL} = 300	S_{BL} = 1 x 1800 = 1800 S_{CS} = 2 x 2000 = 4000 S_{CR} = 1 x 1800 = 1800 S_{CL} = 1 x 1800 = 1800	P_{BL} = 0.292 P_{CS} = 0.164 P_{CR} = 0.189* P_{CL} = 0.167	27 + 3
3		Q_{CL} = 300 Q_{DS} = 532 Q_{DR} = 277 Q_{DL} = 618	S_{CL} = 1 x 1800 = 1800 S_{DS} = 2 x 2000 = 4000 S_{DR} = 1 x 1800 = 1800 S_{DL} = 1 x 1800 = 1800	P_{CL} = 0.167 P_{DS} = 0.133 P_{DR} = 0.154* P_{DL} = 0.343	22 + 3
4		Q_{AL} = 1100 Q_{BS} = 650 Q_{BR} = 810 S_{BL} = 526	S_{AL} = 2 x 1800 = 3600 S_{BS} = 2 x 2000 = 4000 S_{BR} = 2 x 1800 = 3600 S_{BL} = 1 x 1800 = 1800	P_{AL} = 0.306 P_{BS} = 0.163 P_{BR} = 0.225* P_{BL} = 0.292	31 + 3
			TOTAL	0.768	120

LANE ARRANGEMENT

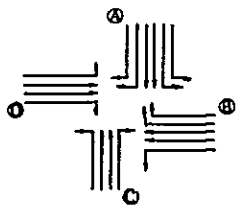
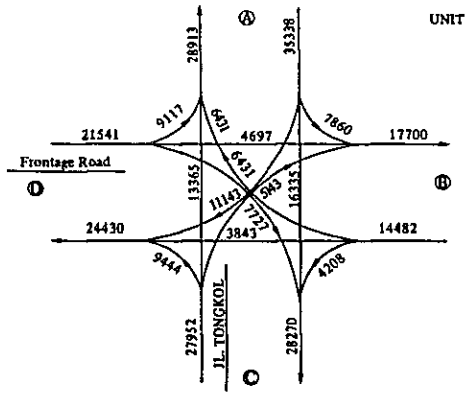
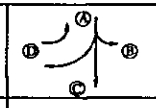
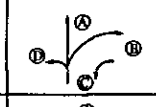
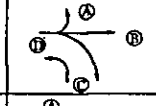
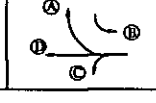


Fig. 9.10 Kota East Intersection (Frontage Road – Jl. Tongkol)

UNIT VEHICLE/DAY



Traffic Phase		Traffic Volume Q (VEH/H)	Possible Capacity S (VEH/H)	Integrated Congestion Ratio P=Q/S	Phase Time (SEC)
1		Q_{AS} = 1470 Q_{AR} = 913 Q_{AL} = 707 Q_{DL} = 821	S_{AS} = 3 x 2000 = 6000 S_{AR} = 2 x 1800 = 3600 S_{AL} = 2 x 1800 = 3600 S_{DL} = 2 x 1800 = 3600	P_{AS} = 0.245 P_{AR} = 0.254* P_{AL} = 0.196 P_{DL} = 0.228	32 + 3
2		Q_{BL} = 379 Q_{CS} = 1203 Q_{CR} = 373 Q_{CL} = 850	S_{BL} = 1 x 1800 = 1800 S_{CS} = 3 x 2000 = 6000 S_{CR} = 1 x 1800 = 1800 S_{CL} = 2 x 1800 = 3600	P_{BL} = 0.211 P_{CS} = 0.200 P_{CR} = 0.207* P_{CL} = 0.236	27 + 3
3		Q_{CL} = 850 Q_{DS} = 423 Q_{DR} = 605 Q_{DL} = 821	S_{CL} = 2 x 1800 = 3600 S_{DS} = 1 x 2000 = 2000 S_{DR} = 2 x 1800 = 3600 S_{DL} = 2 x 1800 = 3600	P_{CL} = 0.236 P_{DS} = 0.211* P_{DR} = 0.168 P_{DL} = 0.228	27 + 3
4		Q_{AL} = 707 Q_{BS} = 346 Q_{BR} = 489 Q_{BL} = 379	S_{AL} = 2 x 1800 = 3600 S_{BS} = 1 x 2000 = 2000 S_{BR} = 2 x 1800 = 3600 S_{BL} = 1 x 1800 = 1800	P_{AL} = 0.196 P_{BS} = 0.173* P_{BR} = 0.136 P_{BL} = 0.211	22 + 3
			TOTAL	0.845	120

LANE ARRANGEMENT

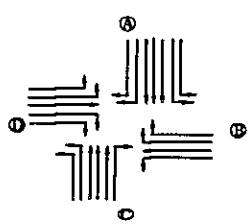
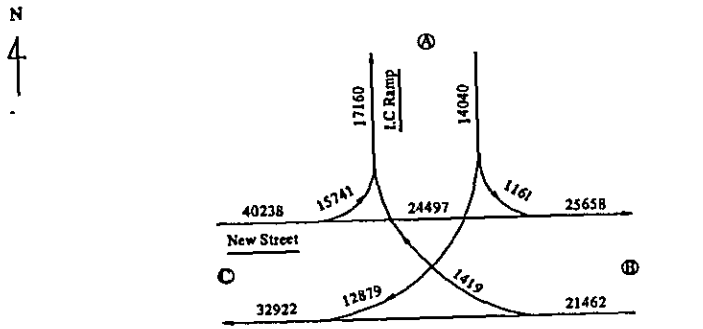


Fig. 9.11 Ancol Intersection
(New Street — I.C Ramp)

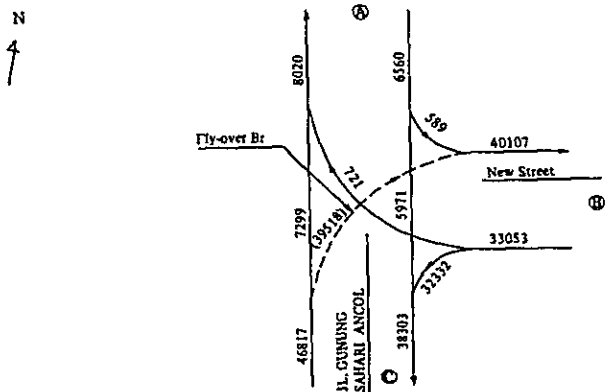
UNIT VEHICLE/DAY

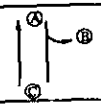
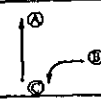


Traffic Phase		Traffic Volume Q (VEH/H)	Possible Capacity S (VEH/H)	Integrated Congestion Ratio P=Q/S	Phase Time (SEC)
1		Q_{BS} = 1804 Q_{CS} = 2205 Q_{CL} = 1417	S_{BS} = 2 x 2000 = 4000 S_{CS} = 2 x 2000 = 4000 S_{CL} = 1 x 1800 = 1800	P_{BS} = 0.451 P_{CS} = 0.551* P_{CL} = 0.787	68 + 3
2		Q_{AR} = 1159 Q_{AL} = 104 Q_{CL} = 1417	S_{AR} = 2 x 1800 = 3600 S_{AL} = 1 x 1800 = 1800 S_{CL} = 1 x 1800 = 1800	P_{AR} = 0.322* P_{AL} = 0.058 P_{CL} = 0.787	40 + 3
3		Q_{AL} = 104 Q_{BS} = 1804 Q_{BR} = 38	S_{AL} = 1 x 1800 = 1800 S_{BS} = 2 x 2000 = 4000 S_{BR} = 1 x 1800 = 1800	P_{AL} = 0.058 P_{BS} = 0.451 P_{BR} = 0.021*	3 + 3
4					
			TOTAL	0.894	120

LANE ARRANGEMENT

Fig. 9.12 Ancol Intersection
(New Street — Jl. Gunung Sahari Ancol)



Traffic Phase		Traffic Volume Q (VEH/H)	Possible Capacity S (VEH/H)	Integrated Congestion Ratio P=Q/S	Phase Time (SEC)
1		Q_{ASL} = 590 Q_{CS} = 657	S_{ASL} = 2 x 2000 x 0.955 = 3820 S_{CS} = 1 x 2000 = 2000	P_{ASL} = 0.154* P_{CS} = 0.329	11 + 3
2		Q_{BL} = 2910 Q_{CS} = 657	S_{BL} = 3 x 1800 = 5400 S_{CS} = 1 x 2000 = 2000	P_{BL} = 0.539 (0.503*) P_{CS} = 0.329	37 + 3
3		Q_{BR} = 65 Q_{BL} = 2910	S_{BR} = 1 x 1800 = 1800 S_{BL} = 3 x 1800 = 5400	P_{BR} = 0.036* P_{BL} = 0.539	3 + 3
4					
			TOTAL	0.693	60

LANE ARRANGEMENT

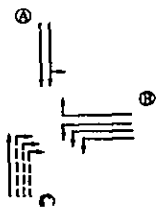
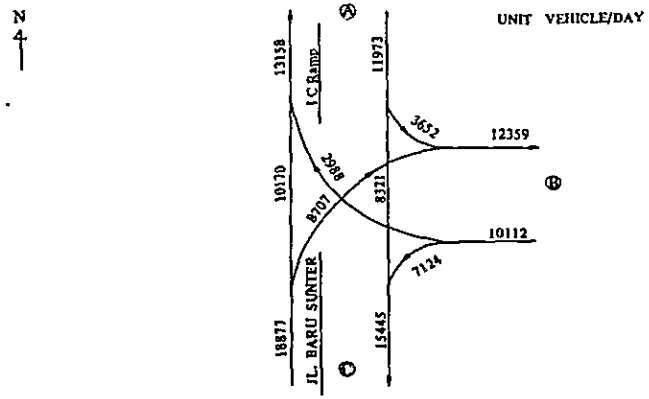


Fig. 9.13 Sunter West Intersection
(I.C Ramp – Jl. Baru Sunter)



	Traffic Phase	Traffic Volume Q (VEH/H)	Possible Capacity S (VEH/H)	Integrated Congestion Ratio P=Q/S	Phase Time (SEC)
1	Ⓐ Ⓑ Ⓒ	Q_{AS} = 749 Q_{AL} = 329 Q_{CS} = 915	S_{AS} = 1 x 2000 = 2000 S_{AL} = 1 x 1800 = 1800 S_{CS} = 1 x 2000 = 2000	P_{AS} = 0.375* P_{AL} = 0.183 P_{CS} = 0.458	48 + 3
2	Ⓐ Ⓑ Ⓒ	Q_{BL} = 641 Q_{CS} = 915 Q_{CR} = 694	S_{BL} = 1 x 1800 = 1800 S_{CS} = 1 x 2000 = 2000 S_{CR} = 1 x 1800 = 1800	P_{BL} = 0.356 P_{CS} = 0.458 P_{CR} = 0.386*	50 + 3
3	Ⓐ Ⓑ Ⓒ	Q_{BR} = 179 Q_{BL} = 641	S_{BR} = 1 x 1800 = 1800 S_{BL} = 1 x 1800 = 1800	P_{BR} = 0.099* P_{BL} = 0.356	13 + 3
4					
			TOTAL	0.860	120

LANE ARRANGEMENT

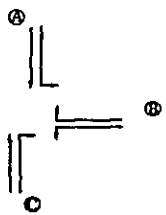
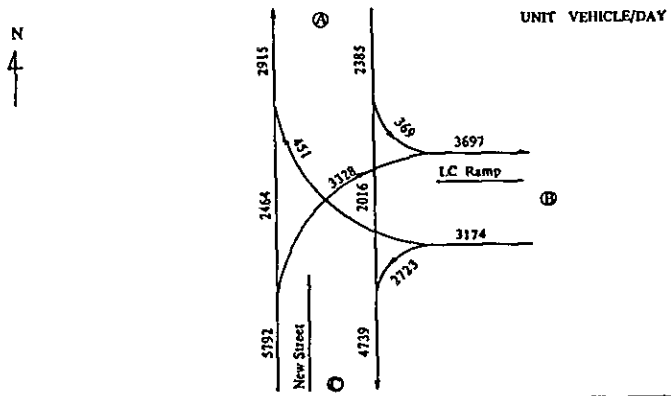


Fig. 9.14 Sunter East Intersection
(I.C Ramp – New Street)



	Traffic Phase	Traffic Volume Q (VEH/H)	Possible Capacity S (VEH/H)	Integrated Congestion Ratio P=Q/S	Phase Time (SEC)
1	Ⓐ Ⓑ Ⓒ	Q_{ASL} = 214	S_{ASL} = 1 x 2000 x 0.790 = 1580	P_{ASL} = 0.135*	18 + 3
2	Ⓐ Ⓑ Ⓒ	Q_{CSR} = 522	S_{CSR} = 1 x 2000 x 0.615 = 1230	P_{CSR} = 0.424*	55 + 3
3	Ⓐ Ⓑ Ⓒ	Q_{BRL} = 286	S_{BRL} = 1 x 2000 x 0.690 0.710 = 980	P_{BRL} = 0.292*	38 + 3
4					
			TOTAL	0.851	120

LANE ARRANGEMENT

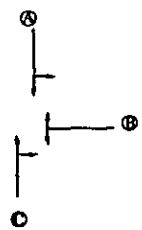
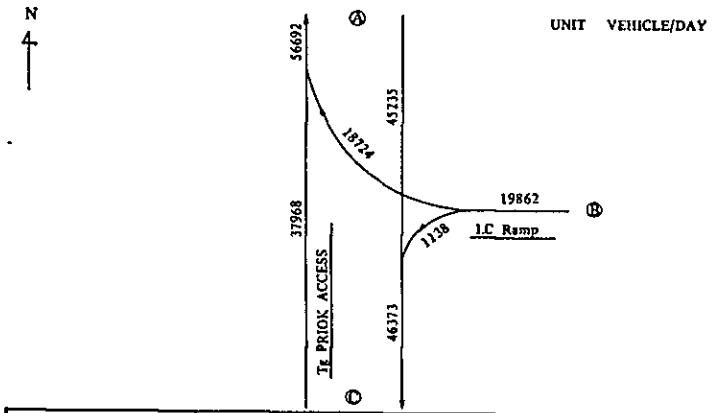


Fig. 9.15 Tg. Priok Intersection
(I.C Ramp – Tg. Priok Access)



	Traffic Phase	Traffic Volume Q (VEH/H)	Possible Capacity S (VEH/H)	Integrated Congestion Ratio P=Q/S	Phase Time (SEC)
1	Ⓐ Ⓒ	Q_{AS} = 4071 Q_{CS} = 3417	S_{AS} = 4 x 2000 = 8000 S_{CS} = 4 x 2000 = 8000	P_{AS} = 0.509* P_{CS} = 0 427	46 + 3
2	Ⓐ Ⓑ Ⓒ	Q_{BR} = 1685 Q_{BL} = 102	S_{BR} = 3 x 1800 = 5400 S_{BL} = 1 x 1800 = 1800	P_{BR} = 0 312* P_{BL} = 0 057	28 + 3
3					
4					
			TOTAL	0.821	80

LANE ARRANGEMENT

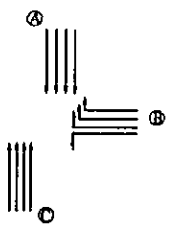
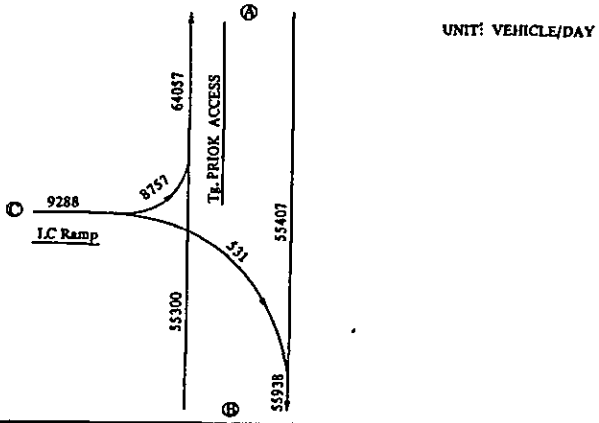


Fig. 9.16 Tg. Priok Intersection
(I.C Ramp – Tg. Priok Access)



	Traffic Phase	Traffic Volume Q (VEH/H)	Possible Capacity S (VEH/H)	Integrated Congestion Ratio P=Q/S	Phase Time (SEC)
1	Ⓐ Ⓑ	Q_{AS} = 4987 Q_{BS} = 4977	S_{AS} = 4 x 2000 = 8000 S_{BS} = 4 x 2000 = 8000	P_{AS} = 0 623* P_{BS} = 0 622	66 + 3
2	Ⓐ Ⓒ Ⓒ	Q_{CR} = 48 Q_{CL} = 788	S_{CR} = 1 x 1800 = 1800 S_{CL} = 2 x 1800 = 3600	P_{CR} = 0.017 P_{CL} = 0.219*	23 + 3
3					
4					
			TOTAL	0.842	95

LANE ARRANGEMENT

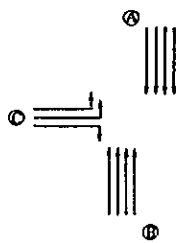
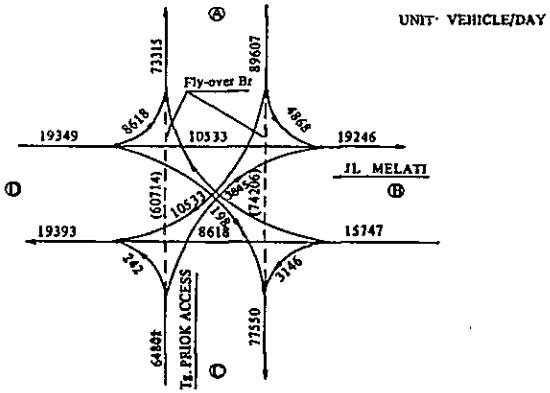


Fig. 9.17 Tg. Priok Access Intersection
(Tg. Priok Access – Jl. Melati)



	Traffic Phase	Traffic Volume Q (VEH/H)	Possible Capacity S (VEH/H)	Integrated Congestion Ratio P=Q/S	Phase Time (SEC)
1		Q_{AR} = 858 Q_{AL} = 438 Q_{CR} = 256 Q_{CL} = 22 Q_{DL} = 776	S_{AR} = 1 x 1800 = 1800 S_{AL} = 1 x 1800 = 1800 S_{CR} = 1 x 1800 = 1800 S_{CL} = 1 x 1800 = 1800 S_{DL} = 1 x 1800 = 1800	P_{AR} = 0.477* P_{AL} = 0.243 P_{CR} = 0.142 P_{CL} = 0.012 P_{DL} = 0.431	61 + 3
2		Q_{BS} = 776 Q_{BL} = 283 Q_{DS} = 948 Q_{DL} = 776	S_{BS} = 2 x 2000 = 4000 S_{BL} = 1 x 1800 = 1800 S_{DS} = 2 x 2000 = 4000 S_{DL} = 1 x 1800 = 1800	P_{BS} = 0.194 P_{BL} = 0.157 P_{DS} = 0.237* P_{DL} = 0.431	31 + 3
3		Q_{BR} = 268	S_{BR} = 1 x 1800 = 1800	P_{BR} = 0.149*	19 + 3
4					
			TOTAL	0.863	120

LANE ARRANGEMENT

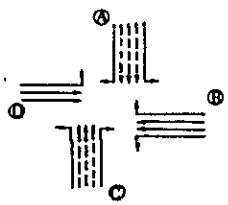
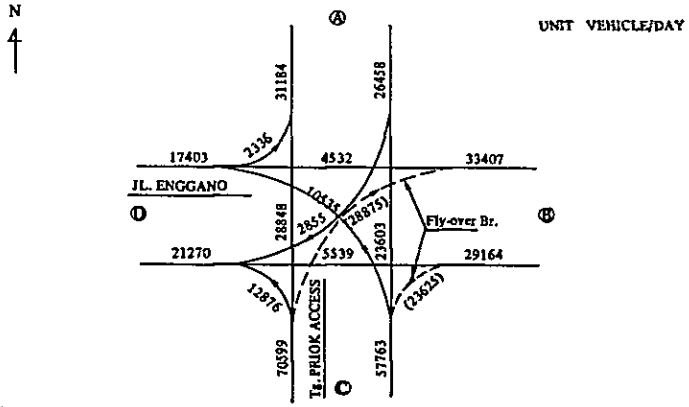
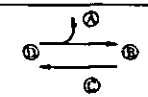
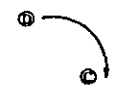


Fig. 9.18 Tg. Priok Access Intersection
(Tg. Priok Access – Jl. Enggano)



	Traffic Phase	Traffic Volume Q (VEH/H)	Possible Capacity S (VEH/H)	Integrated Congestion Ratio P=Q/S	Phase Time (SEC)
1		Q_{AS} = 2124 Q_{CS} = 2596 Q_{CL} = 1159	S_{AS} = 3 x 2000 = 6000 S_{CS} = 3 x 2000 = 6000 S_{CL} = 2 x 1800 = 3600	P_{AS} = 0.354 P_{CS} = 0.433* P_{CL} = 0.322	53 + 3
2		Q_{AR} = 167	S_{AR} = 1 x 1800 = 1800	P_{AR} = 0.093*	11 + 3
3		Q_{BS} = 499 Q_{DS} = 408 Q_{DL} = 210	S_{BS} = 2 x 2000 = 4000 S_{DS} = 2 x 2000 = 4000 S_{DL} = 1 x 1800 = 1800	P_{BS} = 0.125* P_{DS} = 0.102 P_{DL} = 0.117	15 + 3
4		Q_{DR} = 858	S_{DR} = 2 x 1800 = 3600	P_{DR} = 0.238*	29 + 3
			TOTAL	0.889	120

LANE ARRANGEMENT

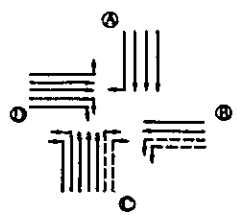
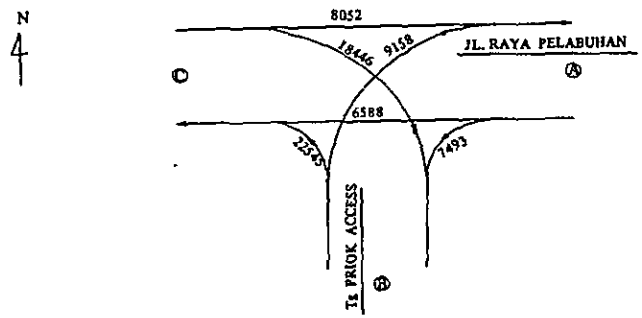
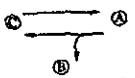
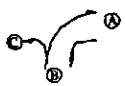


Fig. 9.19 Tg. Priok Access Intersection
(Tg. Priok Access – Jl. Raya Pelabuhan)

UNIT VEHICLE/DAY



Traffic Phase		Traffic Volume Q (VEH/H)	Possible Capacity S (VEH/H)	Integrated Congestion Ratio P=Q/S	Phase Time (SEC)
1		Q_{BL} = 2029 Q_{CS} = 725 Q_{CR} = 1570	S_{BL} = 2 x 1800 = 3600 S_{CS} = 2 x 2000 = 4000 S_{CR} = 2 x 1800 = 3600	P_{BL} = 0.564 P_{CS} = 0.181 P_{CR} = 0.436*	60 + 3
2		Q_{AS} = 593 Q_{AL} = 674 Q_{CS} = 725	S_{AS} = 2 x 2000 = 4000 S_{AL} = 1 x 1800 = 1800 S_{CS} = 2 x 2000 = 4000	P_{AS} = 0.148 P_{AL} = 0.374 (0.170*) P_{CS} = 0.181	23 + 3
3		Q_{AL} = 674 Q_{BR} = 734 Q_{BL} = 2029	S_{AL} = 1 x 1800 = 1800 S_{BR} = 2 x 1800 = 3600 S_{BL} = 2 x 1800 = 3600	P_{AL} = 0.374 P_{BR} = 0.204* P_{BL} = 0.564	28 + 3
4					
			TOTAL	0.810	120

LANE ARRANGEMENT

Appendix 9.7 COMPARISON FOR FLEXIBLE AND RIGID PAVEMENT

The cost for flexible and rigid pavement is compared by using the unit cost estimated in the Project. Import duty is excluded from the unit cost. The comparison was made for the Phase-1 construction.

Flexible Pavement

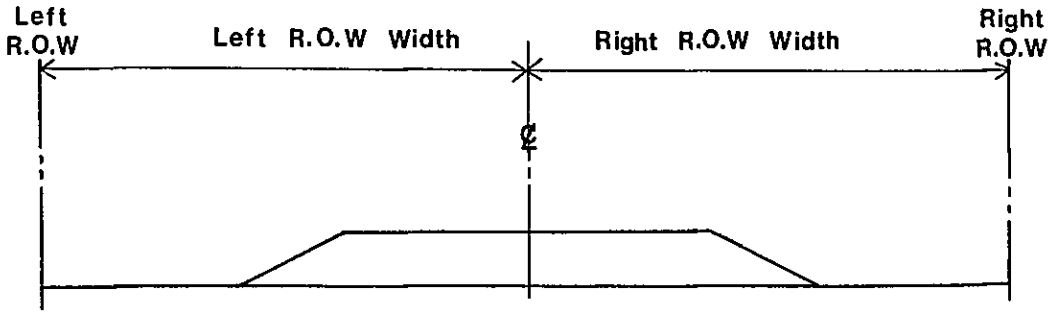
	Quantity	Unit Cost	Amount (Rp.)
As. Base Course (t = 5 cm)	0.102 t	26,681	2,721
As. Treated Base Course (t = 25 cm)	0.525 t	18,666	9,800
Ssndy Gravel Base Course (t = 25 cm)	0.25 M^3	8,541	2,135
Total:			14,656 Rp.

Rigid Pavement

Cement Concrete Slab (t = 25 cm)	1 M^2	13,315	13,315 M^2
Sandy Gravel Base Course	0.2 M^3	8,541	1,708
Total:			15,023 Rp.

Appendix 9.8 PRELIMINARY RIGHT-OF-WAY WIDTH

The preliminary right-of-way width was made by the station of 500 m pitches plus additional stations along the alignment of Harbour Road and Tg. Priok Access.



1. Harbour Road

Left R.O.W. Width(M)	Station	Right R.O.W. Width(M)	Left R.O.W. Width(M)	Station	Right R.O.W. Width (M)
34	14+600	34	50	23+0	50
32	15+00	32	35	+500	25
26	+500	26	37	24+0	37
30	16+0	37	29	+500	33
25	+500	25	38	25+0	41
42	17+0	25	33	+500	40
Ancol Canal	+500	Ancol Canal		Tg. Priok JC/IC	
27	19+300	40	36	27+0	42
	Ancol IC.		39	+500	45
25	20+0	25	30	28+0	30
26	+500	38	32	+500	35
26	21+0	37	36	29+0	35
45	+500	55	37	+500	37
20	22+0	34	28	30+0	29
22	+500	38	51	+500	36
				Cilincing JC/IC	

2. Tg. Priok Access

Left R.O.W. Width(M)	Station	Right R.O.W. Width(M)
32	0-450	32
	Tg. Priok JC/IC	
28.5	1+00	28.5
28.5	+800	28.5
35	2+0	35
34	+500	34
22	3+0	17

Appendix 9.9 ALTERNATIVE R.O.W. PLAN OF DKI JAKARTA

The tentative right-of-way plan was presented by DKI Jakarta. The study was therefore conducted to the extent on promoting traffic efficiency and service based on the right-of-way conditions shown on the DKI plan.

1. Principles of DKI Jakarta R.O.W. Plan

The DKI R.O.W. plan was made for the section between Kota and Cilincing. The alignment of the plan is the same as the alignment established in the Project except Ancol-Sunter area. The following is the principles of the plan.

- Frontage roads (so called arterial street) located on both sides of Harbour Road;

- Two interchanges with the arterial streets of Harbour Road and access to Ancol area;
  One located in Kemayoran Airport and the other connected Sunter with Jakarta Fair.

- A interchange between Jl. Melati and arterial street of Harbour Road; and

- Jl. Trobosan Gunung Sahari - Martadinata connected to the arterial street of Harbour Road, but not connected to Jl. Martadirata.

2. Studied Plan

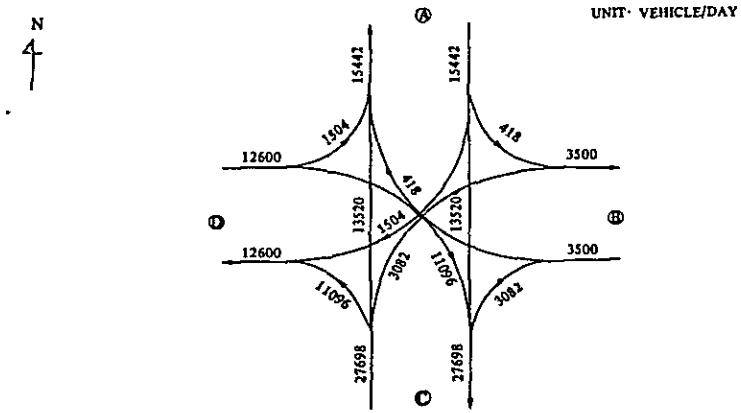
The interchanges in DKI plan lacks some access ramps of Sunter IC and Jl. Trobosan Gunung Sahari - Martadinata IC. (T.G.S.M.I.C.). These are listed below.

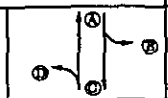
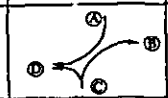
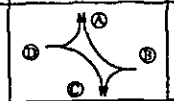
Sunter IC.	-	East/West bound ramps from Sunter/Jakarta Fair.
T.G.S.M.I.C.	-	West bound ramp from Jl. Gunung Sahari Ancol.

In order to attain full service the interchange type was revised base on the future traffic predicted in the Project as shown in Drawing attached on the back of this APPENDIX. The intersections at-grade was analized in Figs. 9.20 and 9.21.

The construction cost will not be big difference between this studied plan and the Project plan. The plan will be reviewed in the detailed design through discussion with relevant agencies.

Fig. 9.20 Sunter Interchange Ramp Intersection



Traffic Phase		Traffic Volume Q (VEH/H)	Possible Capacity S (VEH/H)	Integrated Congestion Ratio P=Q/S	Phase Time (SEC)
1		Q_{ASL} = 1255 Q_{CS} = 1217 Q_{CL} = 999	S_{ASL} = 2 x 2000 x 0.985 = 3940 S_{CS} = 2 x 2000 = 4000 S_{CL} = 1 x 1800 = 1800	P_{ASL} = 0.319* P_{CS} = 0.304 P_{CL} = 0.555	38 + 3
2		Q_{AR} = 135 Q_{CR} = 277 Q_{CL} = 999	S_{AR} = 1 x 1800 = 1800 S_{CR} = 1 x 1800 = 1800 S_{CL} = 1 x 1800 = 1800	P_{AR} = 0.075 P_{CR} = 0.154 P_{CL} = 0.555 (0.236*)	29 + 3
3		Q_{BR} = 38 Q_{BL} = 277 Q_{DR} = 999 Q_{DL} = 135	S_{BR} = 1 x 1800 = 1800 S_{BL} = 1 x 1800 = 1800 S_{DR} = 2 x 1800 = 3600 S_{DL} = 1 x 1800 = 1800	P_{BR} = 0.021 P_{BL} = 0.154 P_{DR} = 0.278* P_{DL} = 0.075	34 + 3
4					
			TOTAL	0.833	110

LANE ARRANGEMENT

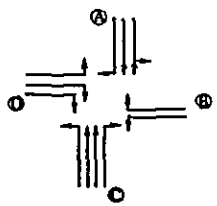
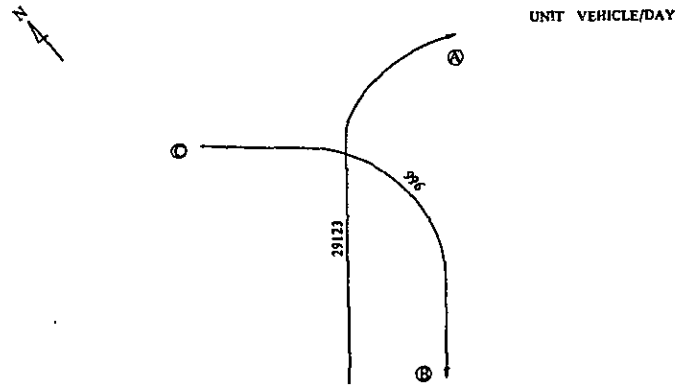
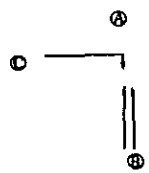


Fig. 9.21 Jl. Trobosan Gunung Sahari – Martadinata Ramp Intersection



Traffic Phase		Traffic Volume Q (VEH/H)	Possible Capacity S (VEH/H)	Integrated Congestion Ratio P=Q/S	Phase Time (SEC)
1		Q_{BS} = 2621	S_{BS} = 2 x 2000 = 4000	P_{BS} = 0.655*	50 + 3
2		Q_{CR} = 90	S_{CR} = 1 x 1800 = 1800	P_{CR} = 0.050*	4 + 3
3					
4					
			TOTAL	0.705	60

LANE ARRANGEMENT



Appendix 10.1 Major Materials Required for Phase—I Construction

Materials / Section	Sand	Gravel	Cobble	Crushed Stone	Embankment Borrow	Cement	Asphalt	Reinforc-ing Bar	Structural Steel	P.C. Steel
	M^3	M^3	M^3	M^3	M^3	TON	TON	TON	TON	TON
SECTION I	135,072	15,228	126	15,519	313,790	5,527	819	3,838	601	114
SECTION II	117,566	80,977	5	6,051	118,910	30,979	13,422	16,062	19,133	303
SECTION III	674,556	47,642	127	37,847	1,230,700	18,127	8,397	5,049	925	200
SECTION IV	627,665	97,522	810	73,103	1,473,020	37,850	17,961	11,824	4,344	341
TOTAL	1,554,859	241,369	1,068	132,520	3,136,420	92,483	40,599	36,773	25,003	958