CHAPTER 9 IMPLEMENTATION PROGRAM

CHAPTER 9 IMPLEMENTATION PROGRAM

9.1 Project Outline

9.1.1 Recommended Project

The main purpose of this chapter is to identify the implementation program for construction of the recommended projects taking into account the available financial resources of the Indonesian Government, investment requirements and construction timing of the recommended projects.

The recommended projects consist of:
(1) Long Term Project , Stage I (1989 - 1994)
(2) Long Term Project , Stage II (1995 - 2009)
(3) Short Term Project (1989 - 1994)

Long Term Project is proposed as a highway development project and mainly consists of the existing road improvement projects, while Short Term Project is proposed as a traffic management improvement project and mainly consists of intersection improvement projects, road rehabilitation projects, and pedestrian facilities improvement projects.

Outline of these projects are described in the following section.

9.1.2 Project Outline

As mentioned in previous section, the recommended projects consist of long term (Stage I, Stage II) and short term projects. Each recommended project consists of such projects as follows:

1) Long Term Project, Stage I (Highway Development Project)

a) Inner Ring Road Construction
b) Jl. Gowa Jaya (Urip Sumoharjo) Widening
c) Jl. Gowa Raya (St. Alauddin) Widening
d) Industrial Estate Access Road Construction
e) Jl. Toll (Prof. Dr. Ir. Sutami) Widening

2) Long Term Project, Stage II
(Highway Development Project)

a) Inner Ring Road Widening
b) Middle Ring Road Construction
c) Outer Ring Road Construction
e) South Radial Road Construction
f) Jl. Gowa Jaya (Urip Sumoharjo) Widening

3) Short Term Project (Traffic Management Project)

a) Intersection Improvement
b) Road Rehabilitation
c) Pedestrian Facilities Improvement
d) Bus Facility Improvement
e) Becak Transport Improvement
f) Traffic Regulation Improvement

The outline of these projects is listed in Table 9.1.1.

9.1.3 Necessity of Project

This section describes necessity of the recommended projects.
Each recommended project is required by the following reasons:

1) Long Term (Stage I) Project

a) If existing road improvement or new road construction were not carried out before 1994, traffic congestion on major roads would be very serious.
b) The capacity of the existing road network would be insufficient in 1994 due to development of the rural areas.
c) This project is economically and technically feasible.

2) Long Term (Stage II) Project

a) If new road construction or existing road improvement were not carried out before 2009, congestion degree will increase to 1.49 and average speed will decrease to 20 Km/h.
This situation shows that the existing rood network will not be able to accommodate increased traffic volume in 2009.
b) In order to encourage the regional development and the economic activities in Ujung Pandang, this project is needed.
c) This project is economically and technically feasible.

3) Short Term Project

a) The necessity of this project is as follows:
- To decrease traffic accidents
- To secure smooth traffic flow
- To increase traffic capacity
b) This project is economically and technically feasible.

Table 9.1.1 Outline of Recommended Projects

	Project Description	Size Length (km) Location	Road Classification	No. of lane	Construction Type
Long Term (Stage I) Project	Inner Ring Road Construction Project	(9.95)			
	1) Northern: from Makassar port to Jl. Timumbu	2.90	Primary Arterial	4	New Const.
	2) Middle : from Jl. timumbu to Int. of Jl. Gowa Jaya	2.85	Road	4	New Const.
	3) Southern: from Int. of Jl. Gowa Jaya to Int. of Jl. Gowa Raya	4.20		4	Widening
	Jl. Gowa Jaya Widening Project	(27.00)			
	1) Inner : from Int. of Jl. Sudirman to UNHAS	10.20	Primary Arterial	4	Widening
	2) Outer : from UNHAS to Maros	16.80	Road	4	Widening
	Jl. Gowa Raya Widening Project	(6.55)			
	1) Inner : from Int. of Jl. Veteran to Int. of Jl. A. Pettarani	1.45	Primary Arterial	4	Widening
	2) Outer : from Int. of Jl. A. Pettarani to Sungguminasa	5.10	Road	4	Widening
	Industrial Estate Access Road Construction Project	3.25	Secondary Arterial	2	New Const.
	1) Northern: from Jl. Toll to Int. of Jl. Gowa Jaya		Road		
	Jl. Toll Widening Project	11.50	Primary	4	Widening
	form Int. of Inner Ring Rd. to Int. of Jl. Gowa Jaya		Arterinl Road		
Long Term (Stage II) Project	Inner Ring Road Widening Project	2.90	Primary Arterial	4	Widening
	1) Northern: from Makassar port to Jl. tinumbu		Road		
	Middle Ring Road Construction Project	(12.92)		2	New Const.
	1) Northern: from Jl. Toll to Int. of Jl. Gowa Jaya	5.85	Secondary Arterial		
	2) Middle : from Int. of Jl. Gowa Jaya to Kp. Borong	2.67	Road	4	New Const.
	3) Soughern: from Kp. Borong to Int. of Jl. Gowa Raya	4.40		4	New Const.
	Outer Ring Road Construction Project	(13.85)			
	1) Middle : from Int. of Jl. Gowa Jaya to Kp. Nipa-Nipa	6.90	Secondary Arterial	2	New Const.
	2) Southern: from Kp. Nipa-Nipa to Int. of Jl. Gowa Raya	6.95	Road	4	New Const.
	Center Radial Road Construction Project	(8.75)			
	1) Inner : from Jl. Veteran to Int. of Middle Ring Road	5.10	Secondary Arterial	4	New Const.
	2) Outer : from Int. of Middle Ring Road to Int. of Outer Ring Road	3.65	Road	4	New Const.
	South Radial Road Construction Project from Int. of Jl. Veteran to Barombong	5.71	Secondary Arterial Road	4	New Const.
	Jl. Gowa Jaya Widening Project	10.20	Primary	6	Widening
	1) Inner : from Int. of J. Sudirman to UNHAS		Arterial Road		
Short Term Project	Intersection Improvement Project	19 locations			
	Pedestrian Facilities Improvement Project	29 routes			
	Road Rehabilitation Project (Pavement)	14 routes	-	-	-
	Bus Facilities Improvement Project	196 locations			
	Becak Transport Improvement Project	2 routes			
	Traffic Regulation Improvement Project	4 locations			

9.2 Construction Schedule and Fund Requirement

9.2.1 Construction Schedule

1) Long Term Project (Highway Development Project)

The construction schedule of these projects is arranged based on the following basic consideration items:

a) To keep in balance with the future traffic demand
b) To meet the housing or industrial development schedule
c) To formulate the road network configuration according to functions and characteristics of the roads
d) To consider the economic condition

Taking into account the basic consideration items above mentioned, the construction schedule of each road section (segment) is formulated as shown in Fig. 9.2.1.

2) Short Term Project (Traffic Management Project)

Short Term Project requires an immediate implementation as described in previous chapter. So, all the short term projects should be completed based on the planning policy and strategies, and characteristics of the projects.

The construction schedule of the short term projects shall be continuously proceeded one by one at the earliest possible time.

The construction schedule of the short term projects is shown in Fig. 9.2.1.

9.2.2 Fund Requirements

In this section, the necessary fund for implementation of the recommended projects is described. The total necessary fund is 183,235 Million Rupiah as described in Chapter 8.

Necessary fund for each project in each fiscal year is listed in Table 9.2.1.

Furthermore, for the purpose of decision making, two (2) alternative fund requirements are examined in this Report Appendix A.P-1.

Project Name		4th 5th Five Year Plan						6th Five Year Plan					7th Five Year Plan					8th Five Year Plan				
		89	90	91	92	93	94	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09
Highway Development Project (Stage I)	1) Inner ring Rd. Const. 2) Jl. Gowa Jaya Widening 3) Jl. Gowa Raya Widening 4) Industrial Estate Access Rd. Const. 5) Jl. Toll Widening	Segment 1,2,3(4-lanes)																				
		Segment 13,14(4-lanes)																				
		Segment 15,16(4-lanes)																				
		Segment 7(2-lanes)																				
		Segment 17(4-lanes)																				
Highway Development Project (Stage II)	1) Inner Ring Rd. Widening (2 to 4 lanes) 2) Middle Ring Rd. Const. 3) Outer Ring Rd. Const. 4) Center Radial Rd. Const. 5) South Radial Rd. Const. 6) Jl. Gowa Jaya Widening (4 to 6 lanes)										Segment 1 (4-lanes)											
								Segment 5,6(4-lanes)										Segment 4(2-lanes)				
															Segment 8,9 (2,4-lanes)							
								Segment 10(4-lanes)					Segment 11 (4-lanes)									
																		Segment 12(2-lanes)				
														Segment 13 (6-lanes)				Segment 13 (grade separation: 3 sites)				
Traffic Management Project	1) Intersection Improvement 2) Pedestrian facilities Improvement 3) Road Rehabilitation 4) Bus Facility Improvement 5) Becak Transport Improvement 6) Traffic Regulation Improvement																					

Fig. 9.2.1 Construction Schedule

Table 9.2.1 Requisite Fund for Recommended Project

Unit: Million Rupiah
1988 Prices

	Project Name	4th 89	5th Five Year Plan 90	91	92	93	94	6th Five Year Plan 95	96	97	98	99	7th Five Year Plan 2000	01	02	03	04	8th Five Year Plan 05	06	07	08	09	Total
Highway Development Project (Stage I)	1) Inner ring Rd. Const.		388.4	895.9	3,120.7	3,697.7	3,741.3																11,844
	2) Jl. Cowa Jaya Widening	418	3,130.2	5,007.4	2,918.4	2,918.4	4,377.6																18,770
	3) Jl. Cowa Raya Widening			85.2	1,297.6	2,388.6	2,388.6																1,160
	4) Industrial Estate Access Rd. Const.	233.4	700.2	700.2	700.2																		2,334
	5) Jl. Toll Widening	1,928.7	1,928.7	3,857.4	5,786.1	5,786.1																	19,287
Highway Development Project (Stage II)	1) Inner Ring Rd. Widening (2 to 4 lanes)										973	1,000											1,973
	2) Middle Ring Rd. Const.							634.3	1,268.6	2,015.9	4,144.8	5,752.4							764	2,292	2,292	2,292	21,456
	3) Outer Ring Rd. Const.														7,055.4	6,285.3	7,610.3						20,951
	4) Center Radial Rd. Const.							1,102.6	2,205.2	3,307.8	4,410.4	1,901	1,901	3,802									18,630
	5) South Radial Rd. Const.																	5,559.6	5,559.6	5,559.6	5,559.6	5,559.6	27,798
	6) Jl. Cowa Jaya Widening (4 to 6 lanes)													1,279.6	5,118.8	6,398				3,315	3,315	3,315	22,741
	Sub - Total	2,580.1	6,147.5	10,546.1	13,823	14,790.8	10,507.5	1,736.9	3,473.8	5,323.7	9,528.2	8,653.4	1,901	5,081.6	12,173.8	12,683.3	7,610.3	5,559.6	6,323.6	11,166.6	11,166.6	11,166.6	171,944
Traffic Management Project	1) Intersection Improvement	472.2	198.3	185.7	193.7	96.1																	1,146
	2) Pedestrian facilities Improvement	1,445.6	839	755	885.6	783	251.8																4,960
	3) Road Rehabilitation	602.7	457.6	382	465.8	134.9																	2,043
	4) Bus Facility Improvement	155	140.5	128.1	110.2	120.2	189																843
	5) Becak Transport Improvement	112																					112
	6) Traffic Regulation Improvement	32	43			722	1,445																2,242
	Sub - Total	2,819.5	1,678.4	1,450.8	1,655.3	1,856.2	1,885.8																11,346
	Total	5,399.6	7,825.9	11,996.9	15,478.3	16,647.0	12,393.3	1,736.9	3,473.8	5,323.7	9,528.2	8,653.4	1,901	5,081.6	12,173.8	12,683.3	7,610.3	5,559.6	6,323.6	11,166.6	11,166.6	11,166.6	
Five Year Plan Total		5,399.6	64,341.4					28,716					39,450					45,383					
																		Total 183,290					

Highway Development Project (Stage I) : 58,395
Highway Development Project (Stage II): 113,549
Traffic Management Project : 11,346

9.3 Road Development Expenditure

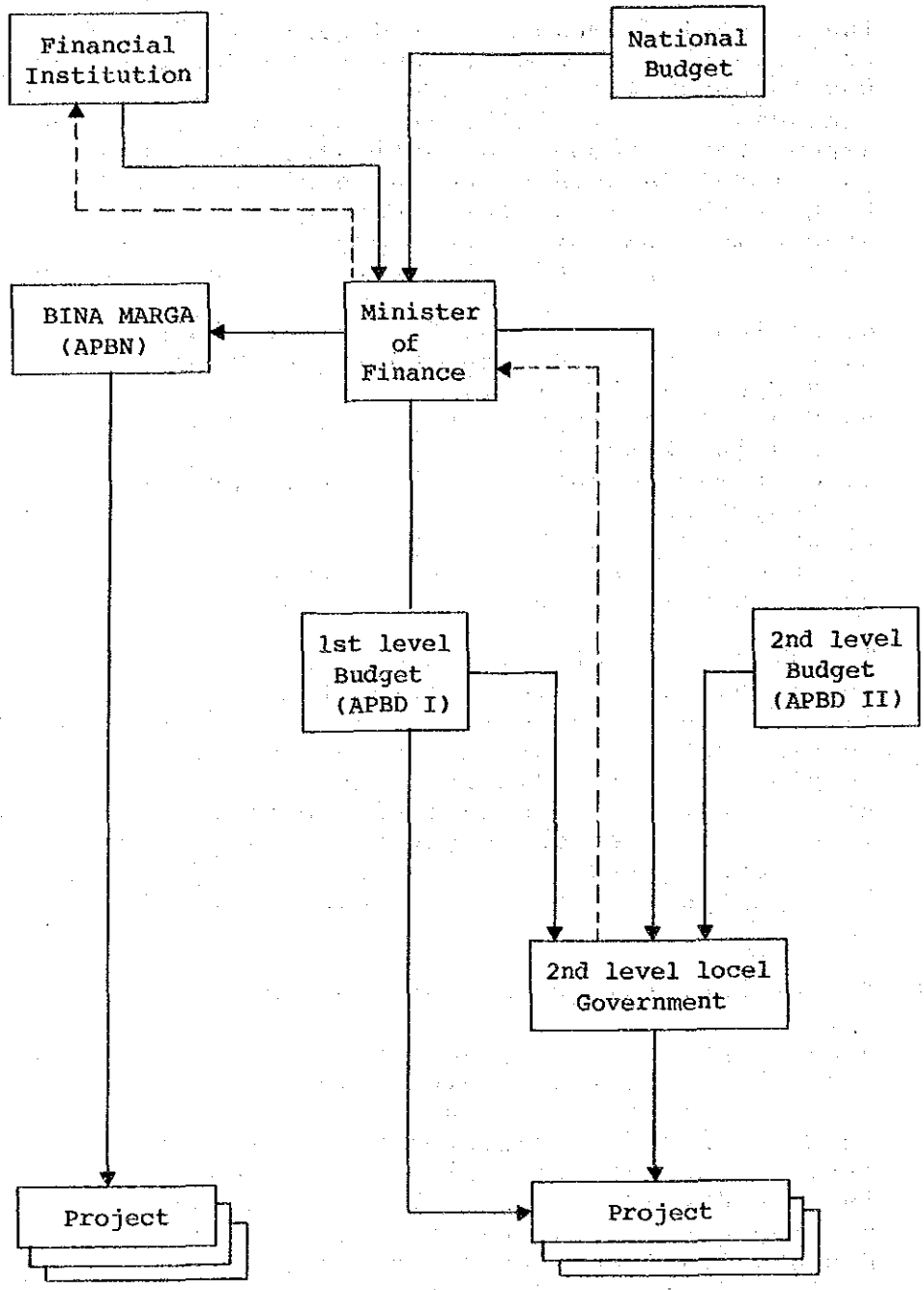
The fiscal framework in Indonesia is formed up by two (2) kinds of accounts, namely the Current Account and Development Account. Development of infrastructure including roads falls in the category of development expenditure accounts at national, provincial and municipal levels according to the administrative classification of the roads. The financial resources required for development/improvement and rehabilitation and maintenance of roads attribute to the following sources:

a) National Development Expenditure Budget (APBN)
b) Provincial and Municipal Development Expenditure Budget (APBD I & II)
c) Special Development Expenditure Budget (Inpres I, II & Jalan Kabupaten)
d) Overseas Grant and Loan for project and Program Assistance
e) Domestic Loan
f) Revenue from Government corporation (Jasa Marga)
g) Private Investment to Tall Road

The allocation of development expenditure comprises sectoral or departmental allocation mainly at national level, and the allocations according to administrative levels; national, provincial and municipal. The flow of development expenditure budget from the revenue source to the national treasury of the central government and then to each sector at national level (APBN), provincial government (APBD TK I) and municipal government (APBD TK II) and special budget is shown in Fig. 9.3.1.

9.3.1 Recent National Expenditure on Road

Statistics of development expenditure in the years 1986 and 1987 at national level reveal that the road and land transport is included in the communications and tourism sector and for development of this sub-sector expenditure accounts for 727.2 and 852.85 billion Rupiah in 1986 and 1987 respectively against the total national development expenditures of 8296.0 and 7756.6 bullion Rupiah. In 1986 expenditure on road accounts for 581.1 billion Rupiah and the land transport for 146.1 billion Rupiah respectively, which shares 7.0% and 1.8% of the total. In 1987 the expenditures on road and land transport account for 744.52 and 108.33 billion Rupiah with respective shares of 9.6% and 1.4%. It is to be noted that the development expenditures in recent years have remarkably fluctuated in ups and downs from the beginning of the 4th Five Year Development Plan period due to worsening of the international market for crude oil prices.



UJUNG PANDANG AREA
HIGHWAY DEVELOPMENT STUDY

Fig. 9.3.1 Financial Flow Chart Provincial and Municipal Urban Transport Project

JAPAN INTERNATIONAL COOPERATION AGENCY

In order to cope with the national revenue constraint, the government policy for development of social and industrial infrastructure has placed an emphasis on optimum utilization of the existing resources by proper rehabilitation and maintenance of the facilities, especially on road subsector. Eventually, larger share of road related budget has come to be allocated to rehabilitation and maintenance, instead of new construction and replacement of road facilities.

9.3.2 Provincial Development Expenditure

The development expenditures of South Sulawesi Province for the years 1979/80 to 1985/86 range from 3,900 to 18,900 million Rupiah as shown in Table 9.3.1 which reveals that there is a trend of increase in the recent years, however in this statistics there is no classification for the development expenditure for road. It is assumed that the majority of the provincial development budgets during these years were spent for road. As is the rase with the national budget, it is clearly seen that the share for rehabilitation and maintenance has rapidly increased in all sectors of infrastructure facilities.

9.3.3 Municipal Development Expenditure

Similar to the provincial development expenditure, there is no distinction nor classification for the expenditure on road. As shown in Table 9.3.2, municipal development expenditure for the years 1979/80 to 1985/86 with exception of 1982/83 reveal great fluctuation. With regard to the breakdown for communications and tourism sub-sector which shares the majority of total municipal development expenditure, budget for road and road related facilities account for almost 85 to 90% in this sub-sector for the years 1984/85 to 1988/89 as shown in Table 9.3.3, ranging from 1,260 to 3,000 million Rupiah.

Table 9.3.1 Provincial Development Expenditure Sulakesi Selatan, 1980/1981 - 1985/1986

Unit in million Rupiah

No.	Item	79/80	80/81	81/82	82/83	83/84	84/85	85/86
1.	Previous year deficit							
2.	Heavy repair and maintenance buildings, roads, bridges, irrigations, projects etc.	1,891.60	2,667.00	5,643.90	1,120.70	2,141.00	414.20	11,339.00
3.	New constructions buildings, roads, bridges, irrigations, projects etc.	1,058.60	487.10	546.90	3,860.30	1,710.30	7,879.80	3,119.00
4.	Capital expenditure machines, equipment, vehicles.	454.00	1,136.00	628.80	1,325.50	1,130.20	2,057.50	443.00
5.	Land purchasing					102.50	20.00	475.00
6.	Capital transfer to lower level government	147.10	964.00	592.00	900.20	386.30	436.10	281.00
7.	Other expenditures	321.30	4,025.30	2,384.60	3,689.60	1,734.60	6,330.80	3,242.00
	T O T A L	3,872.60	9,279.40	9,796.20	10,896.30	7,204.90	17,138.40	18,899.00

Table 9.3.2 Ujung Pandang Development Expenditure 1979 - 1986

Unit in million Rupiah

No.	Item	79/80	80/81	81/82	82/83	83/84	84/85	85/86
1.	Previous year deficit					-	-	-
2.	Heavy repair and maintenance on constructions, roads, bridge, irrigation etc.					344.04	1,336.70	267.55
3.	Constructions of new buildings, roads, bridges, irrigations, other projects etc.					789.15	504.73	132.34
4.	Capital expenditure on machines, equipments, vehicles etc.					367.28	285.79	127.56
5.	Capital transfer to lower level regions					-	-	-
6.	Economic	1,300.02	1,324.32	616.38				
7.	Social	1,050.64	1,481.50	504.70				
8.	Public	1,321.59	1,694.16	918.08				
9.	Loan payment	150.00	163.80	-				
7.	Other development expenditure					748.40	142.31	2,264.02
	T O T A L	3,822.25	4,663.78	2,039.16		2,248.87	2,269.52	2,877.39

Table 9.3.3 Communication and Tourist Expenditure Ujung Pandang Municipality

No.	Project Name	1984/1985	Comp. (%)	1985/1986	Growth rate(%)	Comp. (%)	1986/1987	Growth rate(%)	Comp. (%)	1987/1988	Growth rate(%)	Comp. (%)	1988/1989	Growth rate(%)	Comp. (%)
1	Road Construction	61.6	5.45	185.7	170.70	13.18	2.4	-98.70	0.11	245.2	101.16	7.92	635.3	159.92	24.25
2	Drainage/bridge	56.1	4.38	73.5	33.40	5.21	105.7	42.85	5.52	106.7	0.94	3.45	49.2	-53.88	1.87
3	Traffic Lights		0.39	-	-	-	-	-	-	-	-	-	-	-	-
4	Road name board		0.92	-	-	-	-	-	-	-	-	-	-	-	-
5	Vehicle		5.97	46	-38.74	3.26	-	-	-	-	-	-	-	-	-
6	INPRES DATI II Road	79.8	63.34	-	-		1,446.7		69.15	1,104.4	-23.66	35.71	1,373.3	24.34	52.42
7	INPRES for Road Subsidy	12.6	9.66	1,015.7	735.27	73.30	434.1	-57.26	20.75	1,489.8	243.19	48.17	-	-	-
8	URBAN III Road	12	9.85	-	-	-	-	-	-	-	-	-	-	-	-
9	Road Lighting	-	-	30	-	2.12	-	-	-	-	-	-	-	-	-
10	Road Signal	-	-	3.1	-	0.22	3.4	0.09	0.16	-	-	-	3.5	-	0.13
11	Tertiary Drainage	-	-	20.3	-	1.44	42.5	1.09	2.03	76.3	79.52	2.46	-	-	-
12	Floating bridge	-	-	1.5	-	0.10	-	-	-	-	-	-	-	-	-
13	Motor-boat	-	-	2.5	-	0.17	-	-	-	-	-	-	-	-	-
14	SSB Radio Com.Tower Antenne	-	-	30.5	-	2.16	-	-	-		-	-	1.5	-	0.0
15	Land Acquisition	-	-	-	-	-	38.2	-	1.82	69.9	82.98	2.26	550	686.83	21
16	Machine Equipments	-	-	-	-	-		-	0.91	-	-	-	-	-	-
17	Tourist Facilities	-	-	-	-	-	-	-	-	-	-	-	6.9	-	0.26
	T O T A L	1,257.8	99.96	1,408.8	900.63	99.72	2,092	-111.96	100.45	3,092.3	531.45	99.97	2,619.7	817.21	99.93

SOURCE: BAPPEDA TINGKAT II UJUNG PANDANG

9.4 Evaluation of Master Plant from financial Framework

The investment requirement for implementation of the Master Plan for Ujung Pandang Area Highway Development accounts for nearly 183.3 billion Rupiah from the year 1988/89, the last fiscal year of the 4th Five Year Plan period upto the year 2008/09. When the total investment amount is allocated to each Five Year Plan period according to the implementation schedule as presented in section 9.2, the development budget for 4th to 8th Five Year Plan periods are shown as follows and the details is presented in Table 9.4.1.

4th Five Year Plan (1988/89)	5,400 million Rps.
5th Five Year Plan (1989/90-94/95)	64,340 million Rps.
6th Five Year Plan (1995/96-99/00)	28,720 million Rps.
7th Five Year Plan (2000/01-04/05)	39,450 million Rps.
8th Five Year Plan (2005/06-09/10)	45,390 million Rps.
Total	183,300 million Rps.

For the purpose of evaluation of the Master Plan from the viewpoint of financial framework, estimation of the development budget for transport sector in South Sulawesi was made in reference to correlations to GRDP, population and major road length, as well as review on the studies on NUDS and IUIDP.

Table 9.4.1 Financial Requirements for Ujung Pandang Highway Development, 1989 - 2009

(Unit: Rp. in million)

PLAN	TOTAL	4th 89	5th 90 - 94	6th 95 - 99	7th 2000-04	8th 05 - 09	Remarks
SHORT TERM	11,346	2,819.5	8,526.5	-	-	-	Traffic mgmt. projects
LONG TERM (Stage I)	58,395	2,580.1	55,814.9	-		-	Road network development projects
LONG TERM (Stage II)	113,549	-	-	28,716	39,450	45,383.0	ditto
LONG TERM TOTAL	171,944	2,580.1	55,841.9	28,716	39,450	45,383.0	
GRAND TOTAL	183,290	5,399.6	64,341.4	28,716	39,450	45,383.0	
(%)	100.0	2.95	35.10	15.67	21.52	24.76	

Source: JICA Study Team Estimate
Remarks: Estimation in 1988 prices

The review on the past record shows that gross domestic investment (GDI) in Indonesia ranges from 20 to 26 percent of GDP and about a half of GDI has been allocated to the national development expenditure. With an assumption of 20 percent of GDP being GDI and 51 percent of GDI for national development budget, and 12 percent of this budget is to be spent for transport sector, following Table 9.4.2 rough estimate on the South Sulawesi provincial development budget for transport sector can subsequently be made with correlations to GRDp, population and major road length.

Table 9.4.3 shows Comparison of Master Plan Budget to Provincial Transport Sector Development Budget.

Table 9.4.2 Estimated Transport Sector Development Budget, South Sulawesi

Unit: in Trillion Rupiah

	5th Plan	6th Plan	7th Plan	8th Plan
a. on GRDP (2.53%)	63.00	78.18	97.66	121.69
b. on Population (4.03%)	107.07	132.87	165.98	206.83
c. on Road length (5.36%)	133.46	165.62	206.90	257.82

Table 9.4.3 Comparison of Master Plan Budget to Provincial Transport Sector Development Budget

Unit: in Billion Rupiah

Plan Period	Estimated Provincial Budget	Master Plan Investment
4th Plan		5.4
5th Plan	63.0 - 133.5	64.3 (48.2-102.1%)
6th Plan	78.1 - 165.6	17.4 (10.5-21.9%)
7th Plan	97.7 - 206.9	50.8 (10.6-52.0%)
8th Plan	121.7 - 257.8	45.4 (17.6-37.3%)
Total	360.5 - 763.8	183.3 (23.3-49.3%)
		122.9)

Remarks: Master Plan Investment in 1988/89 for Rp. 5.4 Billion is excluded in percentage calculation in total raw.

It is to be noted that the implementation schedule worked out in this study has incorporated the following road development policies and strategies;

a) To alleviate and if possible eliminate the traffic bottlenecks meeting with the traffic demand and stimulate socio-economic activities in the area.
b) To incorporate the on-going projects planned and programmed by the governments at various levels.

Accordingly, it is necessary to improve the existing network on major arterial roads and traffic management facilities and devices by the end of 5th Five Year Plan period. Consequently, the investment amount to be allocated to this period should be strategically increased. Furthermore, as the government is strongly promoting participation of the private sector investment for road development, widening project of Jl. Toll is scheduled to be complete in the same period, in which case there will be considerable amount of reduction in the government budget for project implementation in this period.

When judging from the overall investment amount required for implementation of the Master Plan for Ujung Pandang Area Highway Development, against the provincial development budget for transport sector, the Master Plan investment amount accounts between 23.3 to 49.3 percent of provincial budget. As reviewed in the previous sections, the share of the budget for road and road related facilities well exceeds the half of the total, it can be said that the Master Plan investment budget is put fairly well in the financial framework of the development expenditure.

As a cross examination, comparative assessment of the Master Plan investment amount is made to the IUIDP Urban Road Investment Plan in Ujung Pandang Area for 1986-2000 in 1984 prices, as shown in Table 9.4.4. In IUIDP, the investment amount for just the urban roads in South Sulawesi accounts for 168.6 billion Rupiah for the period from 1986 to 2000 in 1984 prices, which is very close to the Master Plan investment amount in con-sideration of the price escalation. Therefore, this cross examination also proves that the Master Plan can be within the budgetary framework.

In addition, it should be noted that the investment amount during the period of the 5th 5 Year Development Plan is rather more than other period, mainly due to the necessity of large amount of initial investment for the plan.

Table 9.4.4 IUIDP Indicative Service Investment Plan Ujung Pandang Area, 1986 - 2000

(Unit: Rp. in Million in 1984 Prices)

	SERVICE	INDONESIA			SULAWESI			SULAWESI SELATAN		
		Am't	V %	h %	Am't	V %	h %	Am't	V %	h %
1.	URBAN ROAD	4,942,781	17.7	100.0	212,451	14.9	4.3	168,610	15.7	3.4
2.	WATER SUPPLY	2,749,777	9.8	100.0	101,025	7.1	3.7	42,173	3.0	1.5
3.	SANITATION	2,930,894	10.5	100.0	154,065	10.8	5.3	115,361	10.8	3.9
	1) Human Waste	958,124	3.4	100.0	39,788	2.8	4.2	36,022	3.4	3.8
	2) Solid Waste	461,583	1.7	100.0	24,101	1.7	5.2	18,755	1.7	4.1
	3) Drainage	1,511,187	5.4	100.0	90,176	6.3	6.0	60,584	5.7	4.0
4.	ELECTRICITY	14,125,585	50.5	100.0	733,298	51.4	5.2	589,636	55.0	4.2
5.	HEALTH	1,602,087	5.7	100.0	88,494	6.2	5.5	64,963	6.1	4.1
6.	EDUCATION	1,593,519	5.7	100.0	137,157	9.6	8.6	91,221	8.5	5.7
	TOTAL	27,944,643	100	100	1,426,490	100	5.3	1,071,964	100	3.8
	Per Capita	395,791			324,091			363,047		

Source: IUIDP & JICA Study Team Estimate

CHAPTER 10 REVIEW ON ORGANIZATION AND INSTITUTIONAL IMPROVEMENT

CHAPTER 10 REVIEW ON ORGANIZATION AND INSTITUTIONAL IMPROVEMENT

10.1 Introduction

The administrative efficiency of any of the organization depends upon carefully arranged organizational structure, well trained staffs and effective and timely coordinations among various governmental agencies concerned, which shall also be applied to road administration in Indonesia at various administrative levels.

In this study, a review has been made on the agencies directly related to road administration in Ujung Pandang Area which are responsible for implementation of the Master Plan drawn up for Highway Development in this area, in addition to routine road maintenance and rehabilitation. The objective of the review is to provide with useful comments and ideas to these agencies for their possible functional improvement and administrative efficiency together with human resources development of their staffs. For this purpose, the review was made from the following viewpoints;

(1) Organizational structure, functions and responsibilities, and staffing, and
(2) Possible improvement potentials and comments to them.

The concerned agencies reviewed are;

(1) Road Betterment Office (RBO), Bina Marga
(2) Provincial Department of Public Works (DPUP)
(3) Municipal Department of Public Works (DUP, Ujung Pandang)
(4) Provincial Planning & Development Board (BAPPEDA TK I)
(5) Municipal Planning & Development Board (BAPPEDA TK II)

10.2 Existing Organization and Functions on Road Administration

1) Road Betterment Office (RBO), Bina Marga

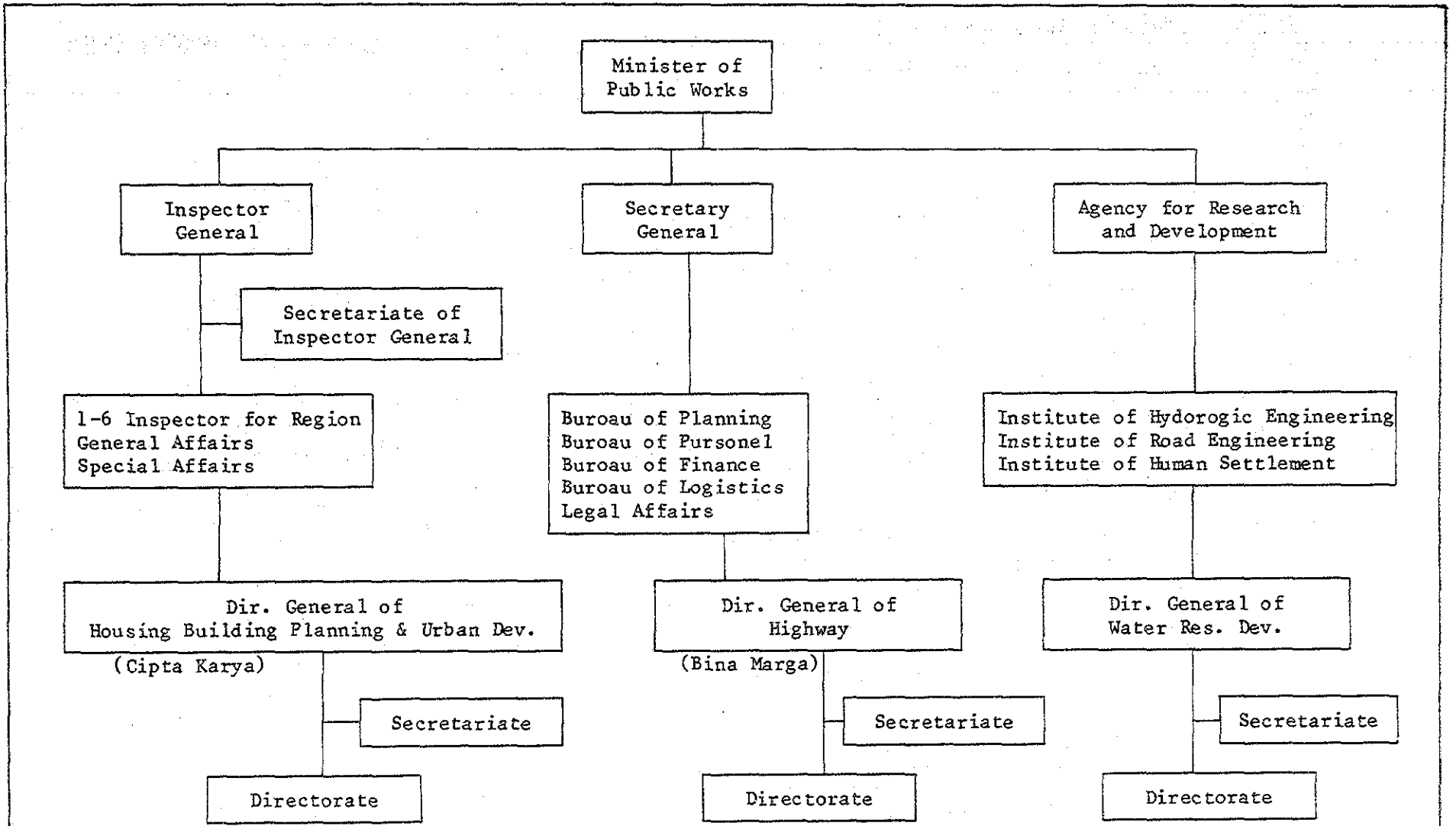
The road administration in Indonesia is in the responsibility of Directorate General of Highways (Bina Marga) of the Ministry of Public Works (DPU), and within the organization of Bina Marga the urban road are administered by Directorate of Urban Road Development. The organization charts of the Ministry of Public Works and Bina Marga are shown in Fig. 10.1.1 and 10.1.2.

In principle, development/improvement and rehabilitation/maintenance of the national and provincial roads are planned and authorized by Bina Marga, and are implemented by the Provincial Department of Public Works (DPUP).

There are six (6) regional offices of Bina Marga as Road Betterment Offices in the country, located in Ujung Pandang, Medan, Palembang, Bandung, Semarang and Banjarmasin. They are responsible for roads funded by the international financial institution like IBRD and ADB, etc., as well as for rendering technical assistance services to the Provincial Department of Public Works (DPUP).

2) Provincial Department of Public Works (DPUP)

DPUP, South Sulawesi is under direct supervision of the Governor of South Sulawesi and is responsible for the administrations of road, irrigation and city planning. The road is administered by Division Bina Marga which has approximately 1500 staffs with five (5) sections with line functions of plan & programming, road construction, bridge construction, maintenance and equipment & logistics, and a secretariat dealing with staff functions like personnel, finance and legal affairs. This Division Bina Marga has also branch and local offices in the province to deal with various road administrations at such local levels. The Division has dual functions to administer the provincial roads for their development/improvement and rehabilitation/maintenance as well as to act as RBO responsible for national road administration.

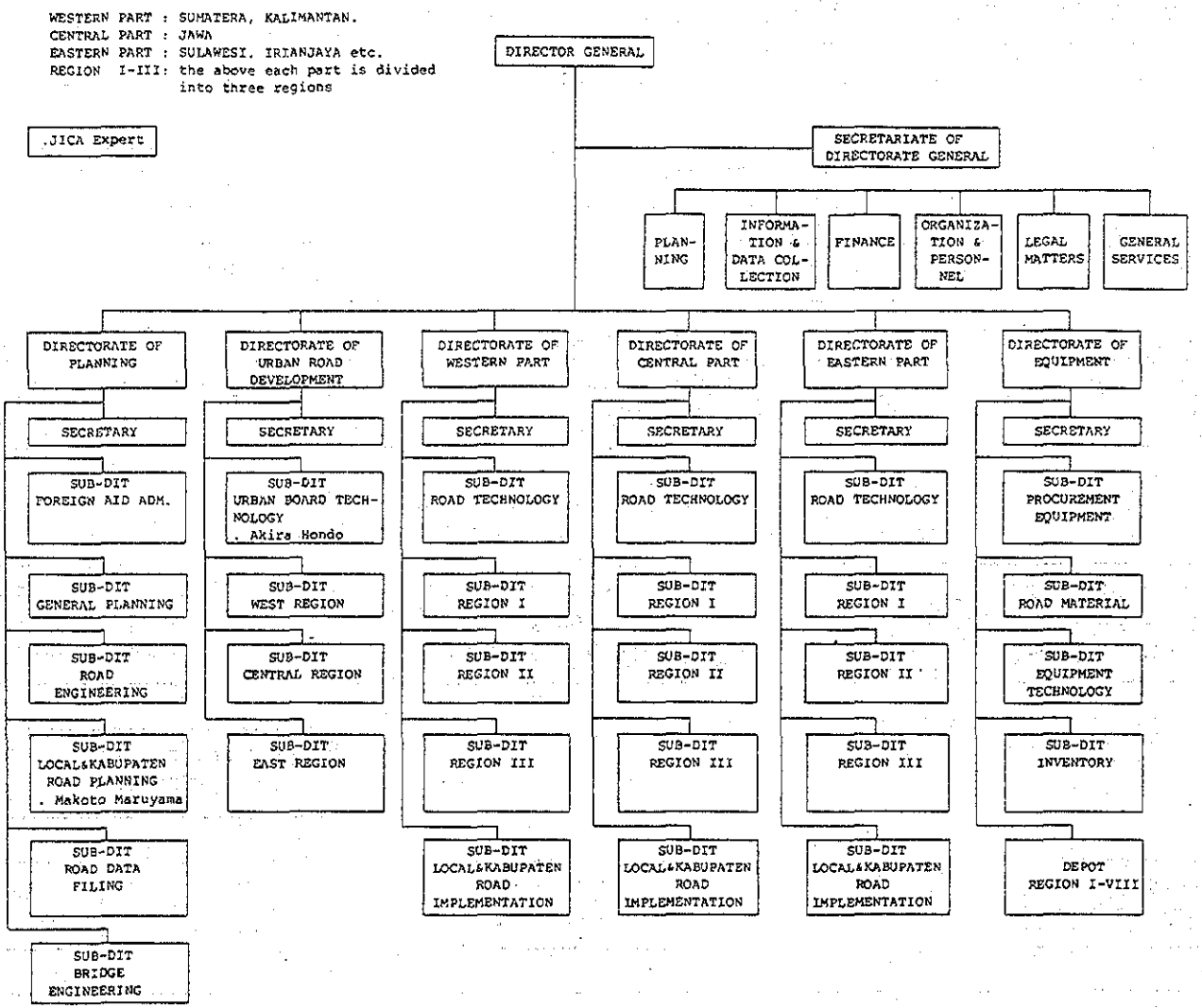


UJUNG PANDANG AREA HIGHWAY DEVELOPMENT STUDY

Fig. 10.1.1

Organization Chart of Ministry of Public Works

JAPAN INTERNATIONAL COOPERATION AGENCY



UJUNG PANDANG AREA HIGHWAY DEVELOPMENT STUDY	Fig. 10.1.2	Organization Chart of BINA MARGA
		JAPAN INTERNATIONAL COOPERATION AGENCY

3) Municipal Department of Public Works (DPU, Ujung Pandang)

DPU, Ujung Pandang has been in the process of reorganization to be divided into six (6) departments; Public Works for roads, drainage and irrigation, City Planning, Public Cleansing, Public Park and Cementery, Building Control and Fire. The new DPU, Ujung Pandang shall be under direct supervision of the Major and is responsible for Kotamadya roads for their development/improvement and rehabilitation/maintenance.

However, it seems that the clear-cut functions, responsibilities and staffing of this department has not yet been established so far under the provisions of Local Ordinance No. 8 of 1987 until it receives a Directive from the Ministry of Home Affairs in the form of a Guideline for the organizational structure and assigned responsibilities. It is revealed that DPU, Ujung Pandang has several vacant staff positions in the middle management level for construction, design and supervision of roads, bridges and drainages. Existing organization is shown in Fig. 10.1.3.

4) Provincial Planning & Development Board (BAPPEDA TK I)

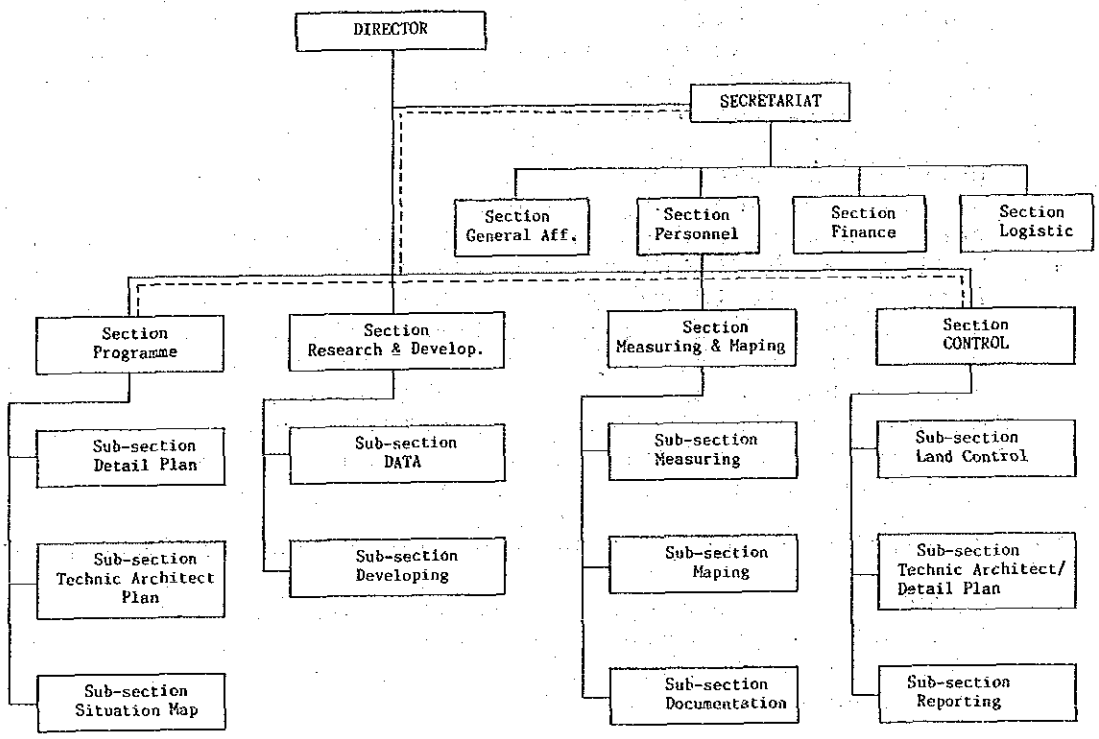
BAPPEDA TK I, South Sulawesi was established as the Type A Bappeda as described in Presidential Decree No. 17 of 1980, in accordance with the Ministry of Home Affairs Guideline No. 185 of 1980.

BAPPEDA TK I is responsible to the Governor for;
- providing policy recommendation on development planning, including drafting the basic pattern of development and the provincial five year development plan,
- formulating provincial budgets, in particular the budget for development expenditure, and
- coordination and monitoring of all the development activities in the province.

Within their responsibilities, BAPPEDA TK I review the plans and programs and their budgets on the provincial roads and monitor and evaluate the various road projects. The particular division in BAPPEDA TK I dealing with roads is Physical and Infrastructure Division. It is revealed that this Division needs appropriate number of road and traffic engineers.

5) Municipal Planning & Development Board (BAPPEDA TK II)

BAPPEDA TK II, Ujung Pandang was established at the same time with BAPPEDA TK I with the same Presidential Decree and Ministry of Home Affairs Guideline in 1980.



UJUNG PANDANG AREA HIGHWAY DEVELOPMENT STUDY	Fig. 10.1.3	Organization Chart of DPU, Ujung Pandang
	JAPAN INTERNATIONAL COOPERATION AGENCY	

BAPPEDA TK I, Ujung Pandang is responsible to the Mayor for the same functions and missions with BAPPEDA TK I at the municipal level.

Regarding Kotamadya and other local roads in the municipality, BAPPEDA TK II will act the same role as BAPPEDA TK I, on review of the plans and budget, and monitoring and evaluation of the projects on the roads within the jurisdiction of municipality. Similar to BAPPEDA TK I, Physical and Infrastructure Division in BAPPEDA TK II is dealing with roads, bridges and drainages.

6) Other Agencies

There are several other agencies concerned with implementation of the Master Plan for Ujung Pandang Area Highway Development. They are National Planning & Development Board, Ministry of Communications, in particular the Directorate General of Land Transport (DGLT), and its subordinate organizations of Provincial Department of Land Transport (PDLT) and Traffic and Road Transport Division (LLAJR), Directorate General of Housing and Building Planning and Urban Development (Cipta Karya) of Ministry of Public Works and Department of Police, etc., in addition to a public corporation, P.T. jasa Marga, a road corporation.

10.3 Institutional Requirements

For successful implementation of the Master Plan for Ujung Pandang Area Highway Development, following requirements are deemed necessary to be fulfilled.

1) The national road network development plan has to be desegregated so that its concept, policy and strategy can be applied to smaller or lower administrative authorities and translated into more operational plans. For this purpose, the nature and function of a hierarchical series of plans, extending from the national level down to a particular province and city shall be consistent and balanced.

2) The Master Plan can only be implemented if the necessary institutions exist, both in terms of organization and in terms of quality and quantity of personnel. In this context, the structure and functions of each administrative organization responsible for road, and the requirements for skilled manpower to support the administrative functions shall be reviewed at national, provincial and municipal levels.

3) The Master Plan, even though it is best designed, can not be implemented unless sufficient funds are available. Therefore, a series of financial policies, strategies and procedures related to the implementation of the road development and improvement shall be well formulated and disseminated to the provincial and municipal levels. At the same time, particular attention shall be paid to the issues of revenue generation and project funding by provincial and municipal governments.

4) It is required for every agency related to road development and improvement to establish and execute a continuous strategic planning and monitoring functions within each agency and also among the related agencies.

10.4 General Views

The successful achievement of the administrative efficiency will not be made in a day or overnight. It will require major shifts in thinking and attitude of the staffs and the organizational structures at all levels of government to comply with the rapidly changing socio-economic structure of the country and newly arising duties.

Some of the comments or ideas for such achievement derived from the review are presented as follows:

1) Strengthening Planning Capability

The fundamental of effective administration lies in the basic management principle of "plan, d and check" which shall be adhered in every function of road related agencies. It is further pointed out that effective and practical plan on road and road traffic management can only be worked out by the well prepared and rational data and information such as road inventory, traffic survey, traffic accident, etc.

In this respect, continuous and periodic collection, updating and analysis of road and road traffic data and information shall be strengthened at every level and function of the road related governmental agencies. Furthermore, practical realization of this MIS, whether application of computer or not, it is advisable for the top ranking officials to review and reorganize the management information system which can be compatible to other agencies concerned. It is to be emphasized that for optimum utilization of MIS, procurement of required hardware and software, and suitable number of road engineers who also have expertise of computer system engineering shall be reinforced in the organization.

2) Emphasis for Closer Coordination

In addition to strengthening of planning capability by rational and reliable data base on road and traffic, integrated planning and implementation of the Master Plan for Ujung Pandang Highway Development and also for routine maintenance of roads in the area, it is vital for all the agencies concerned to more closely and harmoniously cooperate and coordinate at various phases of project planning, programming, implementation and evaluation. This cooperation and coordination will surely lead to consensus and elimination of duplicated works as well as saving of restrained resources. For these purposes it is recommended to set up project-wise or program-wise task force by the representatives of

various agencies concerned which will keep periodic and timely discussions for consensus and specific functions assigned to each agency.

These coordination and cooperation among the agencies concerned are specially indispensable for implementation and operation of traffic management program.

Also, it is suggested that for a certain development or improvement program with a fairly large scale, it might be necessary to set up a project team within a agency from planning stage to the completion of such program.

3) Encouragement of Effective Training

For the purpose of upgrading and expansion of the capacity and capability of the staffs at the various agencies related to the Master Plan or the roads, and for effective motivation to the broader responsibilities being and to be assumed at present and in the future, it is very important to plan and execute various technical and managerial training programs for human resources development.

The training may be classified into two (2) types, one for in-house training mainly aimed at dissemination of the new method or procedure to be introduced in a certain agency, either in technical or managerial aspect, and the other for utilization or participation to the outside seminar or training course.

It is also advisable to formulate a certain criteria for selection of the staffs to participate, for appraisal of the training after attendance, and possibly for promotional opportunity for those attended and marked a good score.

4) Active Introduction of Office Automation Equipment

It is very effective for planning and evaluation purpose to fully utilize the advantage and efficiency of computer and other office automation equipment, either for the data processing, summation or analysis.

However, it is advisable at time of introduction of such machines and equipment to hire a suitable consultant for system analysis, design and programming, and for training of the personnel who will assume responsibility of operation and maintenance of the hardware and its softwares.

5) Manpower Reinforcement

Reinforcement of qualified engineers who have sufficient expertise on planning, programming, implementation and supervision of the various road and traffic projects and programs shall be strongly recommended at all the agencies reviewed for economical and effective realization of the Master Plan for Ujung Pandang Area Highway Development. It is also preferable for those engineers to have field experience on the various road and traffic management projects. With these engineers the existing personnel at the various Public Works Departments and Planning and Development Boards can be trained on the job and improve their capabilities through participation to the execution and realization of the Master Plan. Consequently, road administrative can be eventually attained.

APPENDIX

A.P.1 Examination of Alternative Implementation Program

A.P.1.1. General

The Future arterial road network configuration in Ujung Pandang Area as shown in Fig. A.P.1 is recommended as the most suitable highway development plan by the Study Team. The total cost required for this plan was estimated as Rp.183,290 million and the implementation program was formulated based on this highway development plan.

In this section, for the purpose of providing reference to the Indonesian Government for determination of actual implementation in accordance with available fund, two (2) alternative cases are examined.
They are:

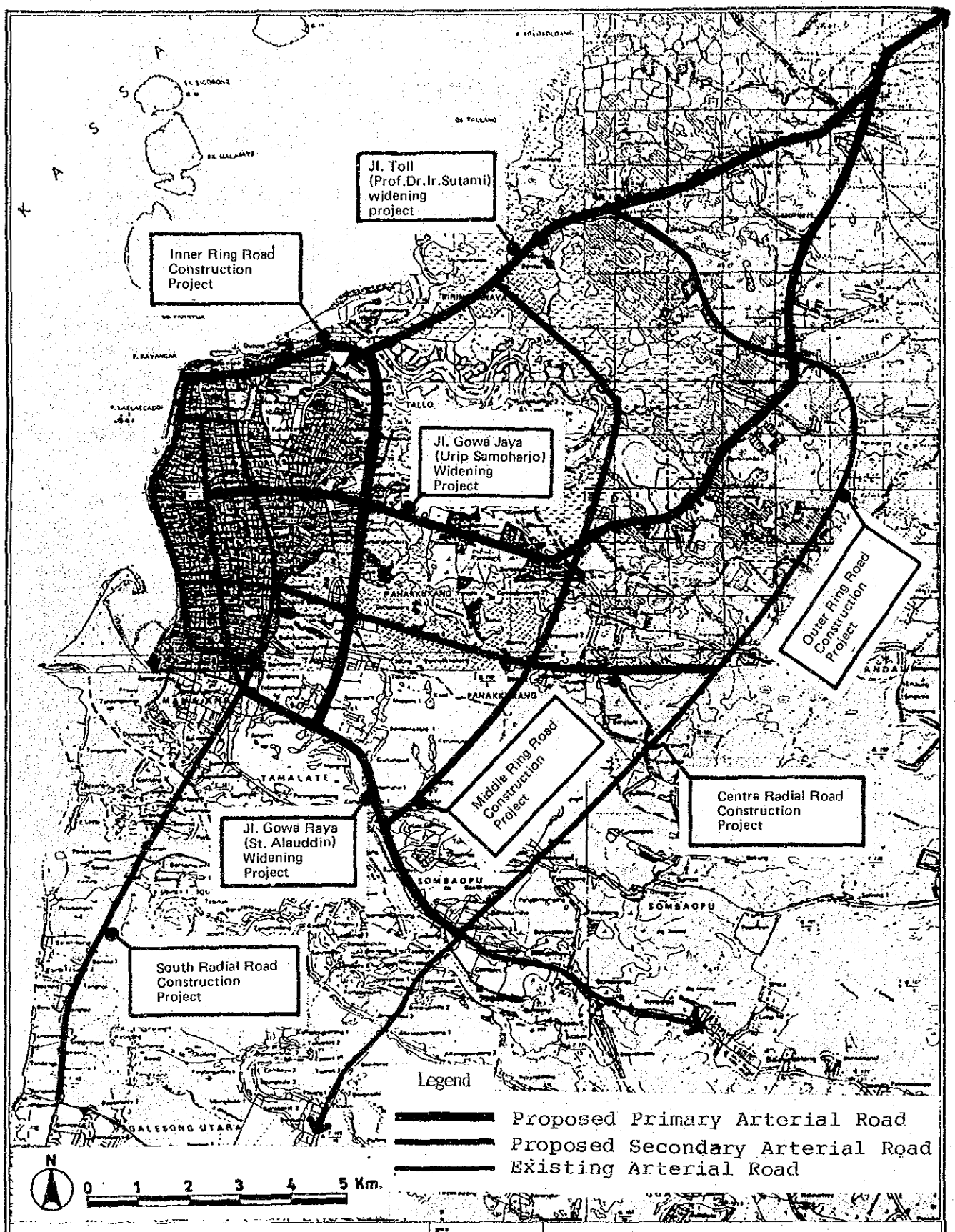
Case 50: The case where the budget availability is about 50 percent of the total cost of the plan.

Case 75: The case where the budget availability is about 75 percent of the total cost of the plan

A.P.1.2 Examination Factors

In this section, following factors are examined for evaluation of the two (2) alternative implementation programs, namely, Case 50 and Case 75.

a) Road network configuration
b) Future traffic volume in 2009
c) Construction schedule and required fund
d) Comparative analysis of congestion degree and running speed on major roads in Ujung Pandang Area among recommended plan proposed (Case F) by the Study Team and two alternatives.
e) Conclusion



UJUNG PANDANG AREA HIGHWAY DEVELOPMENT STUDY	Fig. A.P. 1	Proposed Road Network Configuration (2009) Case F
	JAPAN INTERNATIONAL COOPERATION AGENCY	

A.P.1.3. Road Network Configuration on Case 50 and Case 75

Based on the recommended road network configuration proposed by this Study and taking into account the following strategies, the road network configuration on Case 50 and Case 75 are worked out and identified as shown in Fig. A.P.2 and Fig. A.P.3.

a) In consideration of the importance and urgency of the recommended High Priority Projects to be completed by 1994 in the highway development plan stipulated in Chapter 8 of Main Volume, the road network configuration of Case 50 and Case 75 shall be assumed to be same.

b) The road network shall be developed in harmony and accordance with the industrial and housing development schedule.

- the Outer Ring Road may be implemented later
- the South Radial Road may be implemented later

c) The road network shall be developed to cope with and in accordance with the future traffic demand.

- the future traffic volume on the Outer Ring Road is fairly light in comparison with other recommended road rinks

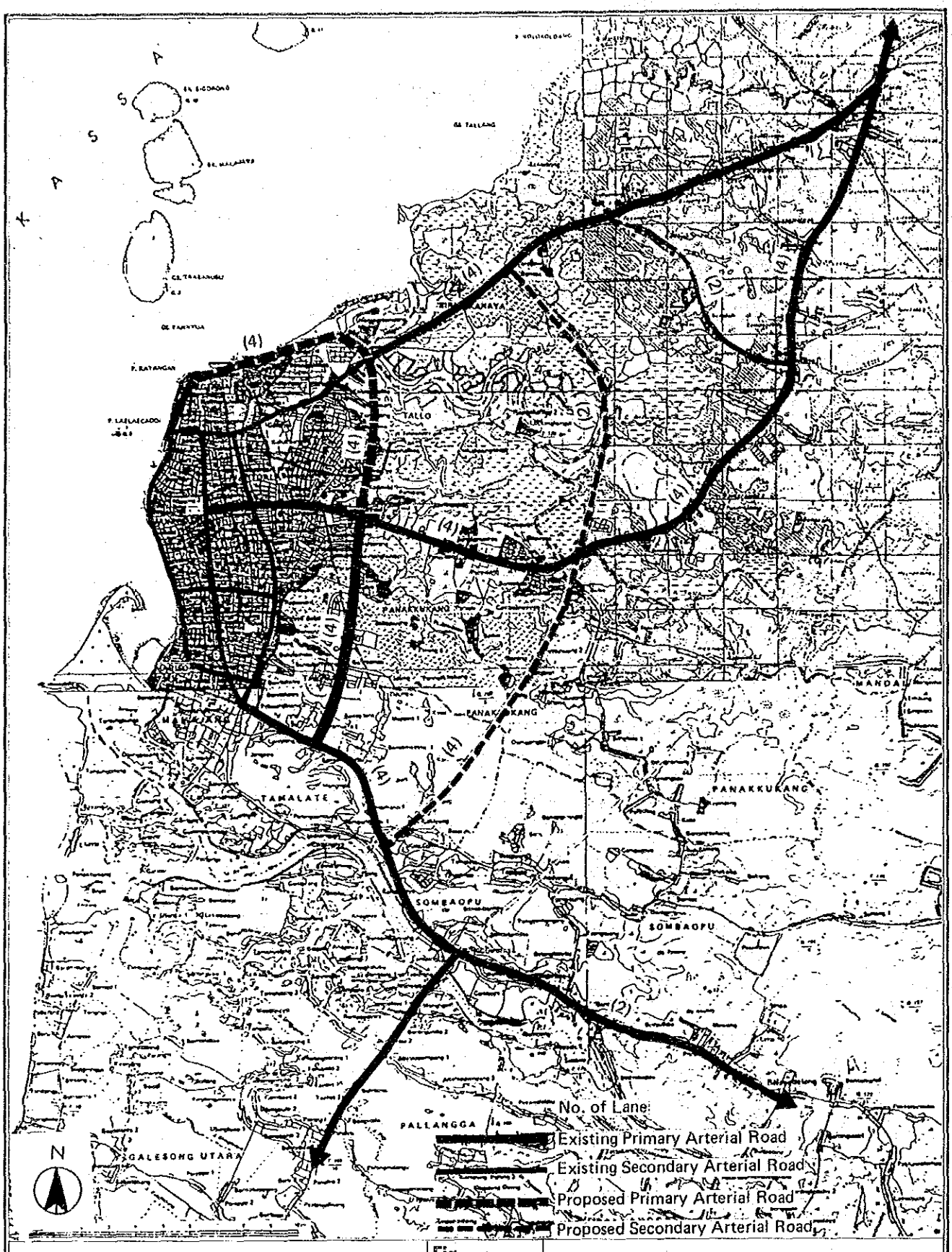
- the future traffic volume on the South Radial Road is fairly light in comparison with other recommended road rinks

d) The road network shall be developed in accordance with road classification such as primary arterial road and secondary arterial road defined by the Indonesian Government.

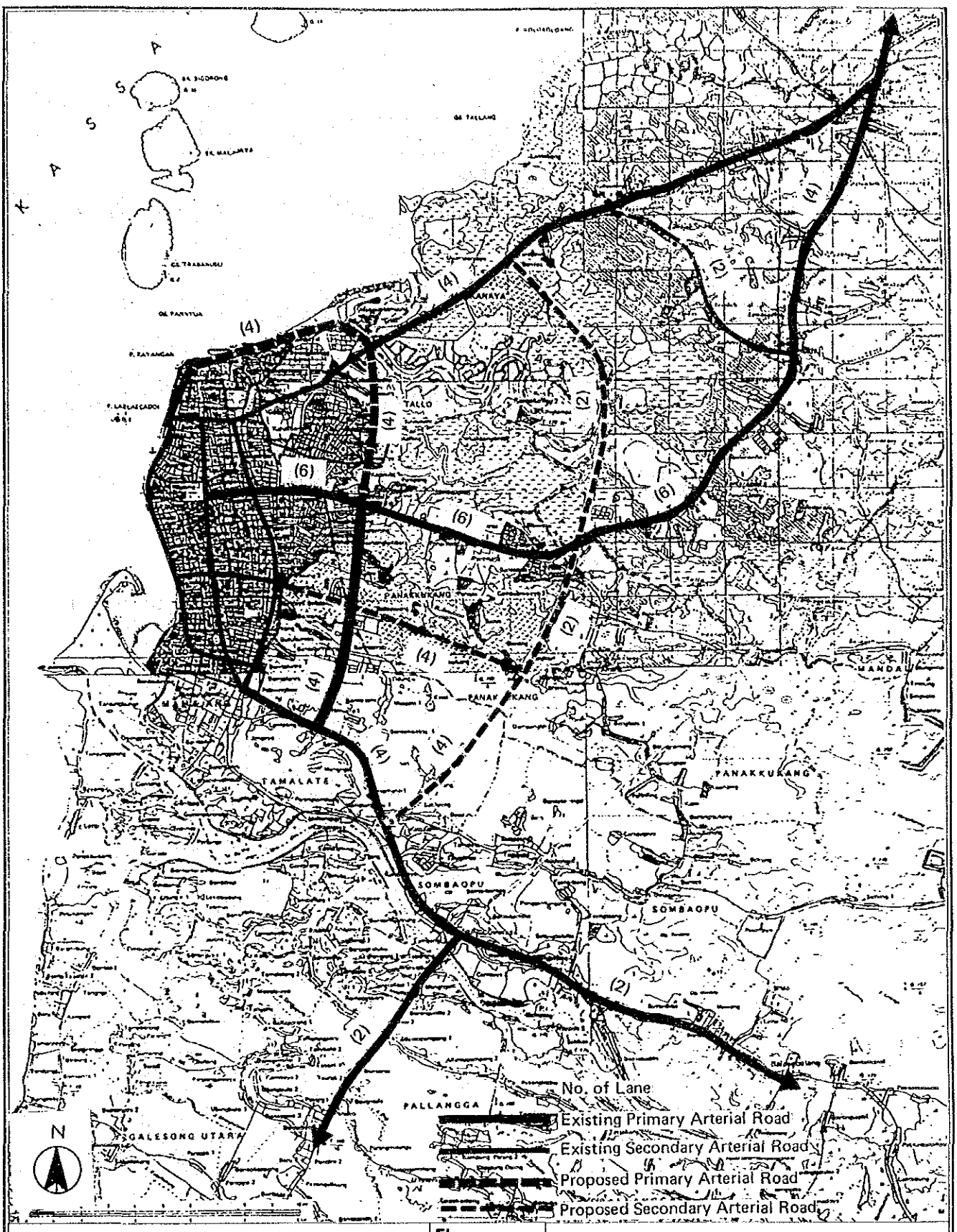
- the Outer Ring Road, South Radial Road, Central Radial Road and Middle Ring Road are classified as the secondary arterial road

- the Inner Ring Road is classified as the primary arterial road

e) In consideration of the existing and future housing development potentials and perspectives, the Ring Roads shall be developed in such an order as to firstly Inner Ring Road and secondary Middle Ring Road and thirdly Outer Ring Road.



UJUNG PANDANG AREA HIGHWAY DEVELOPMENT STUDY	Fig. A.P. 2	Road Network Configuration (2009) Case 50
		JAPAN INTERNATIONAL COOPERATION AGENCY



UJUNG PANDANG AREA
HIGHWAY DEVELOPMENT STUDY

Fig. A.P. 3 — Road Network Configuration (2009) Case 75

JAPAN INTERNATIONAL COOPERATION AGENCY

A.P.1.4 Future Traffic Volume on Each Case

The future traffic volumes in 2009 on road networks of Case 50 and Case 75 are forecasted as shown in Fig. A.P.4 to Fig. A.P.7 for examination of the future traffic conditions on each Case.

From results of the future traffic volume projection, followings are pointed out.

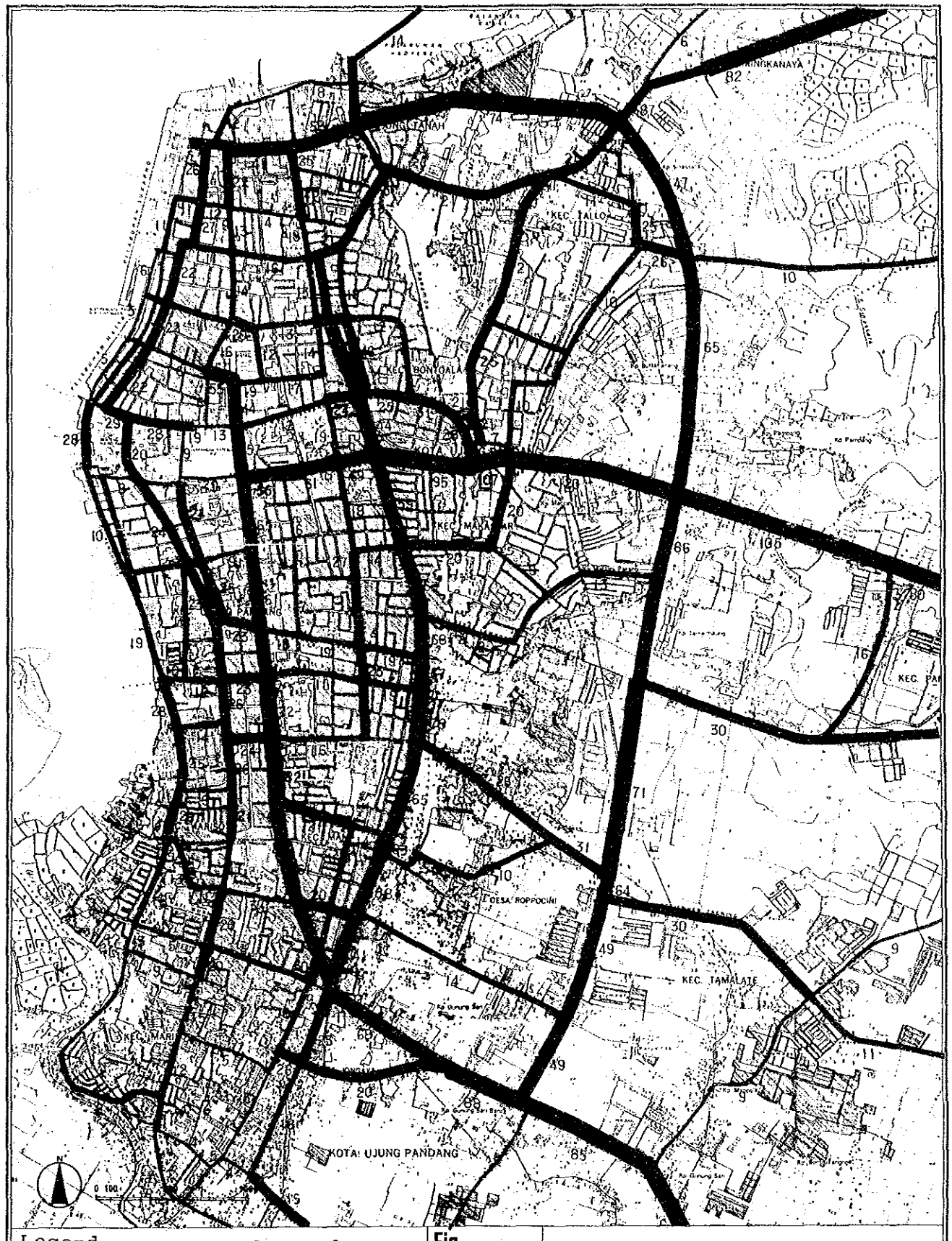
a) The traffic volume within Middle Ring Road on Jl. Gowa Jaya of Case 50 and Case 75 are forecasted as 78,000 pcu/day - 105,000 pcu/day and 87,000 pcu/day - 112,000 pcu/day respectively. Traffic volume on this section is remarkably increased.

b) The traffic volume on Jl. Gowa Raya of Case 50 and Case 75 are forecasted as 91,000 pcu/day. Traffic volume on this section is remarkably increased compare with Case F.

c) The traffic volume on Jl. Veteran and Inner Ring Road of Case 50 and Case 75 are also remarkably increased compare with Case F.

d) There is no changed the future traffic volume on Jl. Toll of Case 50 and Case 75 compare with Case F.

e) There is no changed the future traffic volume within existing urbanized area covered by Jl. Veteran on Case 50 and Case 75 compare with Case F.



Legend

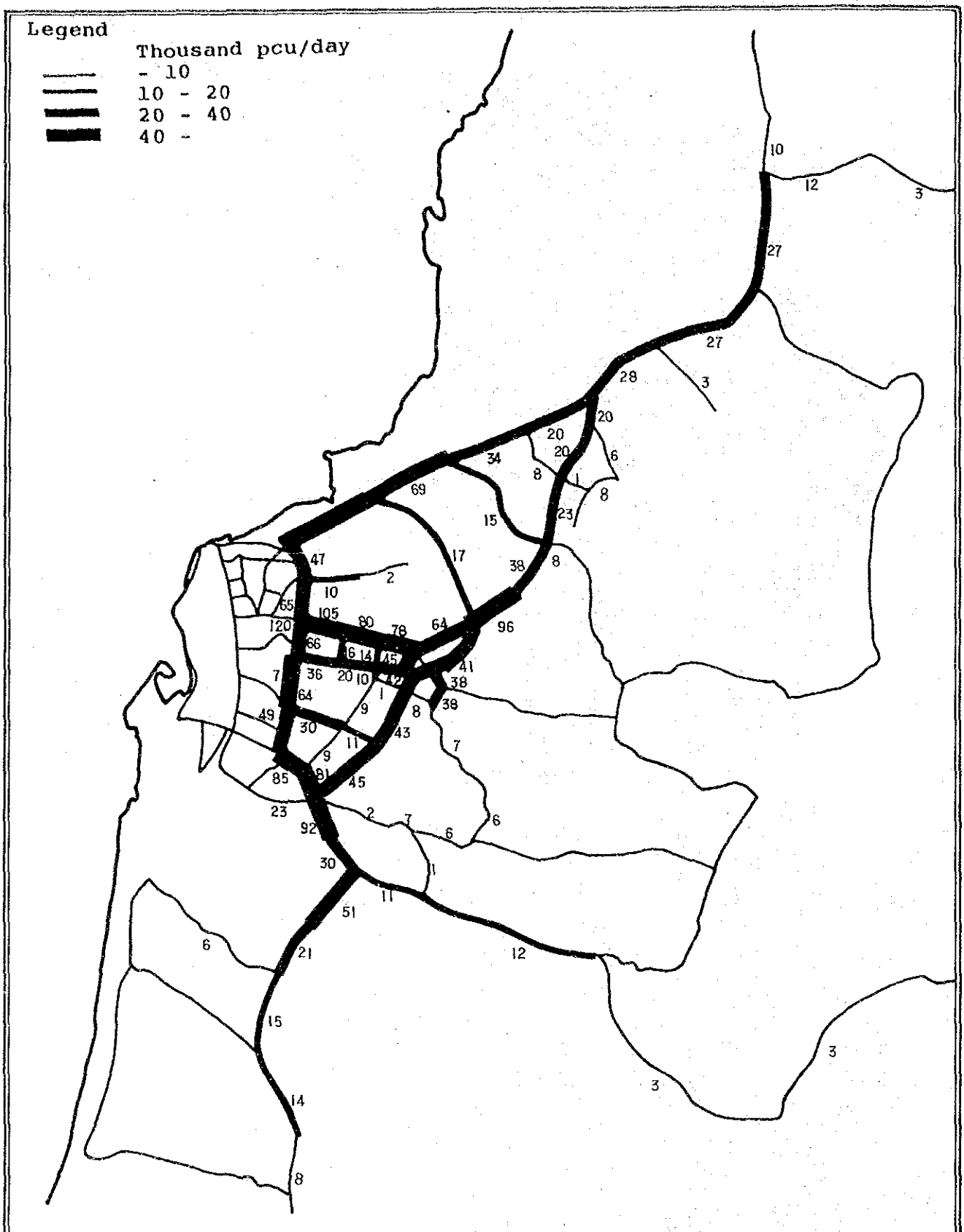
Thousand pcu/day

- \- 10
- 10 - 20
- 20 - 40
- 40 -

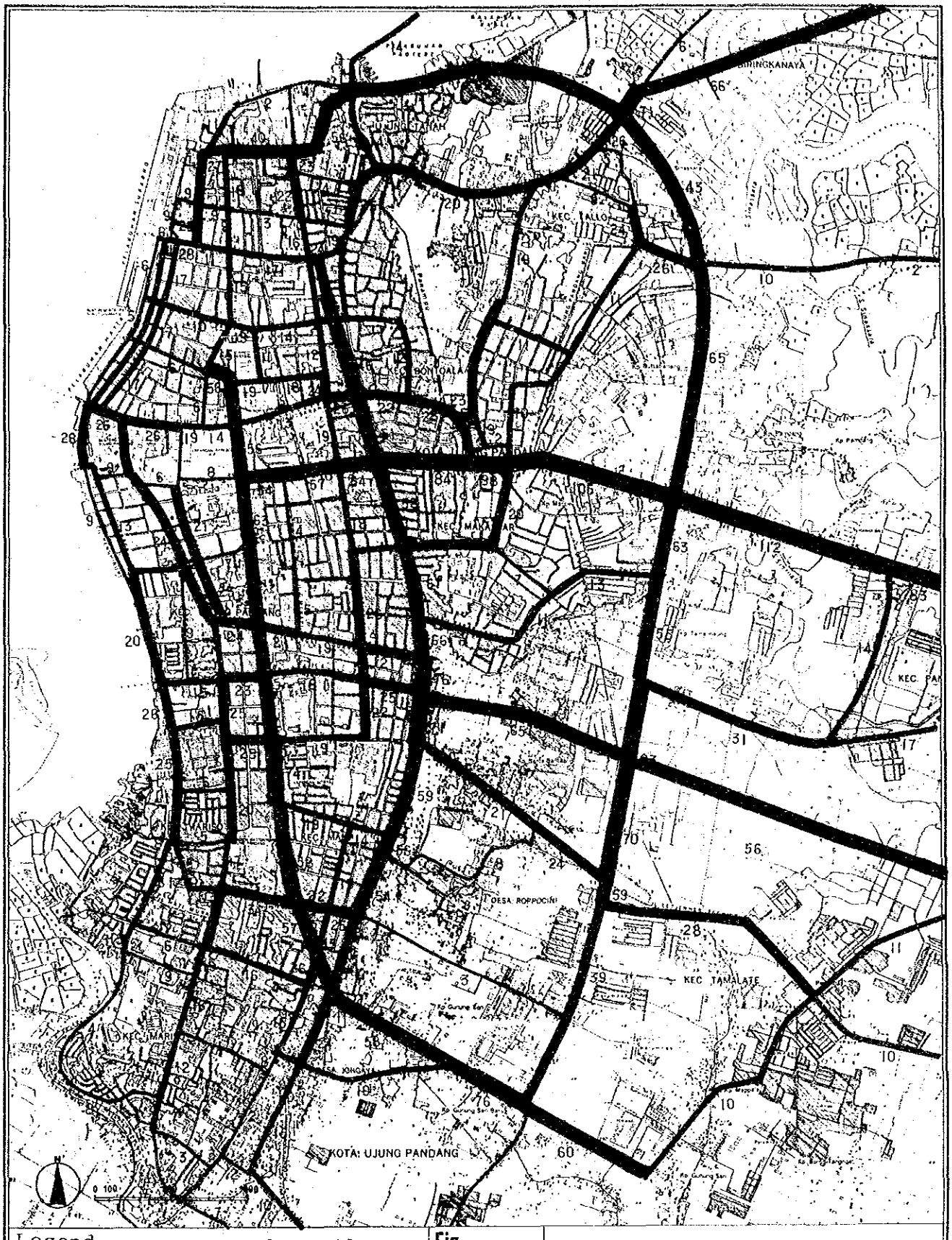
Fig. A.P. 4

Traffic Volume on Case 50 in Urbanized Area (2009)

JAPAN INTERNATIONAL COOPERATION AGENCY



UJUNG PANDANG AREA HIGHWAY DEVELOPMENT STUDY	Fig. A.P. 5	Traffic Volume on Case 50 in Rural Area (2009)
		JAPAN INTERNATIONAL COOPERATION AGENCY



Legend

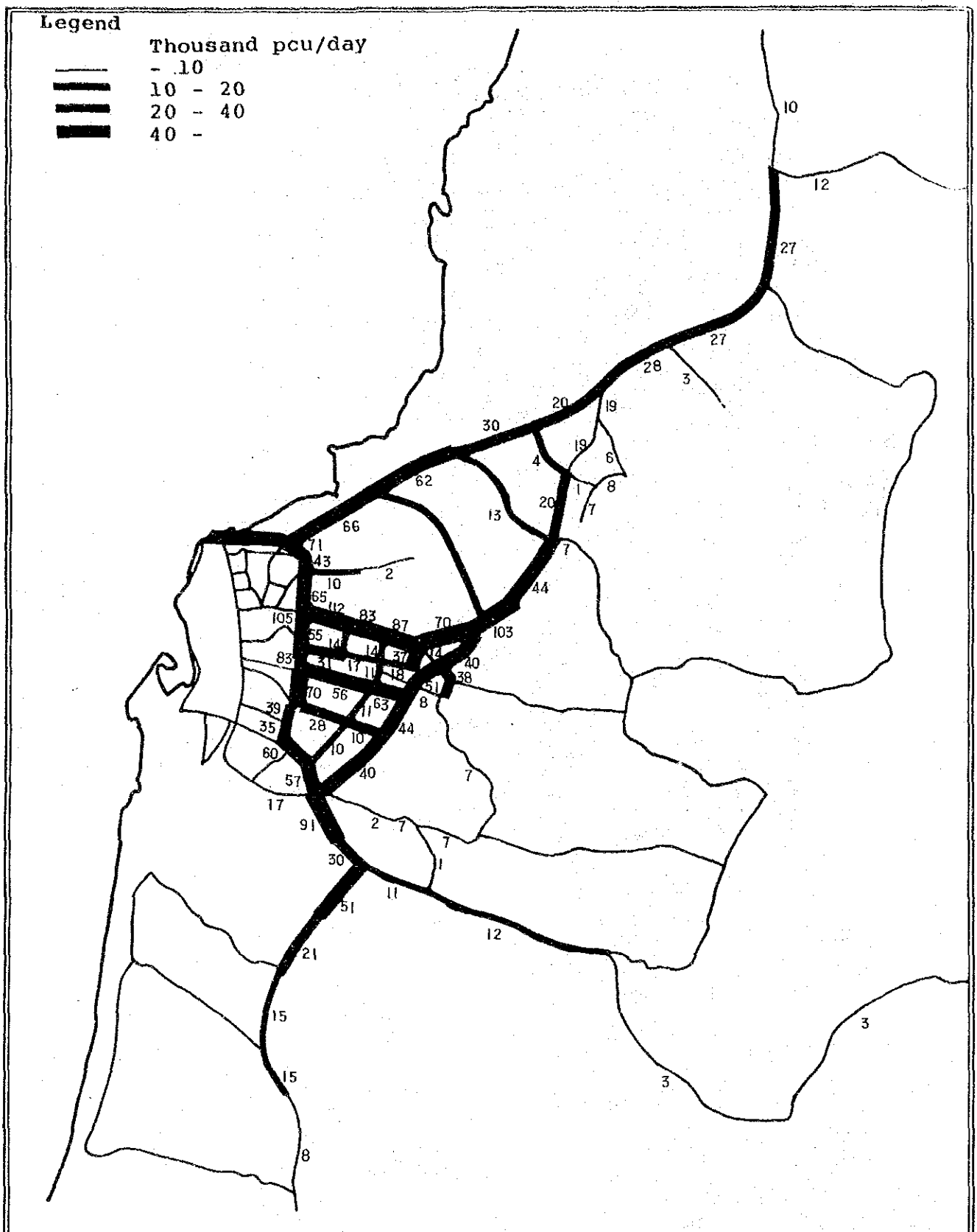
Thousand pcu/day

- \- 10
- 10 - 20
- 20 - 40
- 40 -

Fig. A.P. 6

Traffic Volume on Case 75 in Urbanized Area (2009)

JAPAN INTERNATIONAL COOPERATION AGENCY



UJUNG PANDANG AREA HIGHWAY DEVELOPMENT STUDY	Fig. A.P. 7	Traffic Volume on Case 75 in Rural Area (2009)
	JAPAN INTERNATIONAL COOPERATION AGENCY	

A.P.1.5 Construction Schedule and Project Cost

Based on the construction schedule and the total cost of the recommended highway development plan and following strategies, the construction schedules and the total costs of Case 50 and Case 75 are worked out as shown in Table A.P.1 and Table A.P.2 respectively.

1. Case 50

1) In considering of importance and urgency of recommended High Priority Projects, following projects should be implemented by year 1994.

   a) Inner Ring Road Construction Project (Port to Jl. Gowa Jaya)
   b) Jl. Gowa Jaya Widening Project (2 lanes to 4 lanes)
   c) Jl. Gowa Raya Widening Project (2 lanes to 4 lanes)
   d) Industrial Estate Access Road Construction Project
   e) Jl. Toll Widening Project (2 lanes to 4 lanes)
   f) Six (6) Traffic Management Projects

2) Accordance with housing development, Middle Ring Road (M.R.R.) should be implemented to order the importance section.

   a) Center Section of M.R.R. will be constructed by year 1999.
   b) Southern Section of M.R.R. will be constructed by year 2004.
   c) Northern Section of M.R.R. will be constructed by year 2009.

3) In considering of importance and future traffic demand, Inner Ring Road Widening (Jl. Gowa Jaya - Jl. Gowa Raya) will be developed by year 2001.

4) The total project cost of above mentioned projects are estimated as Rp. 93,170 million (50.8% of Original Plan)

2. Case 75

1) The construction schedule of Case 75 is identified based on Case 50.

2) The Center Radial Road will be constructed by year 1998 to solve the traffic congestion of Jl. Gowa Jaya and Jl. Gowa Raya.

3) The traffic volume on Jl. Gowa Jaya will be exceed the capacity (4 lanes road) by year 1994. So, the Jl. Gowa Jaya Widening Project (4 lanes to 6 lanes) will be constructed by year 2004 to solve the traffic congestion.

4) The total project cost of above mentioned projects are estimated as Rp. 126,937 million (69.3% of Original Plan)

A.P.1 Requisite Fund for Recommended Project (Case 50)

Unit: in Million Rp.

	Project Name	4th	5th Five Year Plan					6th Five Year Plan					7th Five Year Plan					8th Five Year Plan				
		89	90	91	92	93	94	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09
Highway Development	Stage I																					
	a. Inner Ring Rd. Const.		388.4	895.9	3,120.7	3,697.7	3,741.3															
	b. Jl. Gowa Jaya Widening	418	3,130.2	5,007.4	2,918.4	2,918.4	4,377.6															
	c. Jl. Gowa Raya Widening			85.2	1,297.6	2,388.6	2,388.6															
	d. Industrial Estate Access Rd. Const.	233.4	700.2	700.2	700.2																	
	e. Jl. Toll Widening	1,928.7	1,928.7	3,857.4	5,786.1	5,786.1																
	Stage II																					
	a. Inner Ring Rd. Widening (2 to 4 lanes)												973	1,000								
	b. Middle Ring Rd. Const.							634.3	1,268.6	1,268.6	1,902.9	1,268.6			747.3	2,241.9	4,483.8		764	2,292	2,292	2,292
	Sub-total	2,580.1	6,147.5	10,546.1	13,823	14,790.8	10,507.5	634.3	1,268.6	1,268.6	1,902.9	1,268.6	973	1,000	747.3	2,241.9	4,483.8	0	764	2,292	2,292	2,292
Traffic Management Project	a. Intersection Improvement	472.2	198.3	185.7	193.7	96.1																
	b. Pedestrian Facilities Improvement	1,445.6	839	755	885.6	783	251.8															
	c. Road Rehabilitation	602.7	457.6	382	465.8	134.9																
	d. Bus Facility Improvement	155	140.5	128.1	110.2	120.2	189															
	e. Becak Transport Improvement	112																				
	f. Traffic Regulation Improvement	32	43			722	1,445															
	Sub-total	2,819.5	1,678.4	1,450.8	1,655.3	1,856.2	1,885.8															
Total		5,399.6	7,825.9	11,996.9	15,478.3	16,647.0	12,393.3	634.3	1,268.6	1,268.6	1,902.9	1,268.6	973	1,000	747.3	2,241.9	4,483.8	0	764	2,292	2,292	2,292
Five Year Plan Total		5,399.6	64,341.4					6,343					9,446					7,640				
			Highway Development Project (Stage I) : 58,395 Highway Development Project (Stage II): 23,429 Traffic Management Project : 11,346															Total	93,170			

A.P.2 Requisite Fund for Recommended Project (Case 75)

Unit: in Million Rp.

	Project Name	4th	5th Five Year Plan					6th Five Year Plan					7th Five Year Plan					8th Five Year Plan				
		89	90	91	92	93	94	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09
Highway Development	Stage I																					
	a. Inner Ring Rd. Const.		388.4	895.9	3,120.7	3,697.7	3,741.3															
	b. Jl. Gowa Jaya Widening	418	3,130.2	5,007.4	2,918.4	2,918.4	4,377.6															
	c. Jl. Gowa Raya Widening			85.2	1,297.6	2,388.6	2,388.6															
	d. Industrial Estate Access Rd. Const.	233.4	700.2	700.2	700.2																	
	e. Jl. Toll Widening	1,928.7	1,928.7	3,857.4	5,786.1	5,786.1																
	Stage II																					
	a. Inner Ring Rd. Widening (2 to 4 lanes)												973	1,000								
	b. Middle Ring Rd. Const.							634.3	1,268.6	1,268.6	1,902.9	1,268.6			747.3	2,241.9	4,483.8		764	2,292	2,292	2,292
	c. Center Radial Rd. Const.							1,102.6	2,205.2	3,307.8	4,420.4											
	d. Jl. Gowa Jaya Widening (4 to 6 lanes)													1,279.6	5,118.4	6,398				3,315	3,315	3,315
	Sub-total	2,580.1	6,147.5	10,546.1	13,823	14,790.8	10,507.5	1,736.9	3,473.8	4,576.4	6,313.3	1,268.6	973	2,279.6	5,865.7	8,639.9	4,483.8	0	764	5,607	5,607	5,607
Traffic Management Project	a. Intersection Improvement	472.2	198.3	185.7	193.7	96.1																
	b. Pedestrian Facilities Improvement	1,445.6	839	755	885.6	783	251.8															
	c. Road Rehabilitation	602.7	457.6	382	465.8	134.9																
	d. Bus Facility Improvement	155	140.5	128.1	110.2	120.2	189															
	e. Becak Transport Improvement	112																				
	f. Traffic Regulation Improvement	32	43			722	1,445															
	Sub-total	2,819.5	1,678.4	1,450.8	1,655.3	1,856.2	1,885.8															
Total		5,399.6	7,825.9	11,996.9	15,478.3	16,647.0	12,393.3	1,736.9	3,473.8	4,576.4	6,313.3	1,268.6	973	2,279.6	5,865.7	8,639.9	4,483.8	0	764	5,607	5,607	5,607
Five Year Plan Total		5,399.6	64,341.4					17,369					22,242					17,585				
			Highway Development Project (Stage I) : 58,395 Highway Development Project (Stage II): 57,196 Traffic Management Project : 11,346															Total 126,937				

A.P.1.6 Comparative Analysis

The following traffic conditions among the original highway development plan (Case F), Case 50 and Case 75 are compared with and the results are shown in Table A.P.3. whose comparison factors are follows.

a) Average congestion degree on the total road network on each Case
b) Average running speed of the total road network on each Case
c) Congestion degree at selected road sections on each Case
d) Running speed at selected road sections on each Case

The road section are stipulated in Fig. A.P.8.

From above mentioned table and figures, followings are pointed out.

a) The average congestion degree based on total road network of Case F, Case 50 and Case 74 are 0.88, 1.06 and 0.98 respectively.

b) The average running speed based on total road network of Case F, Case 50 and Case 75 are 26.00 km/h, 23.00 km/h and 24.02 km/h respectively.

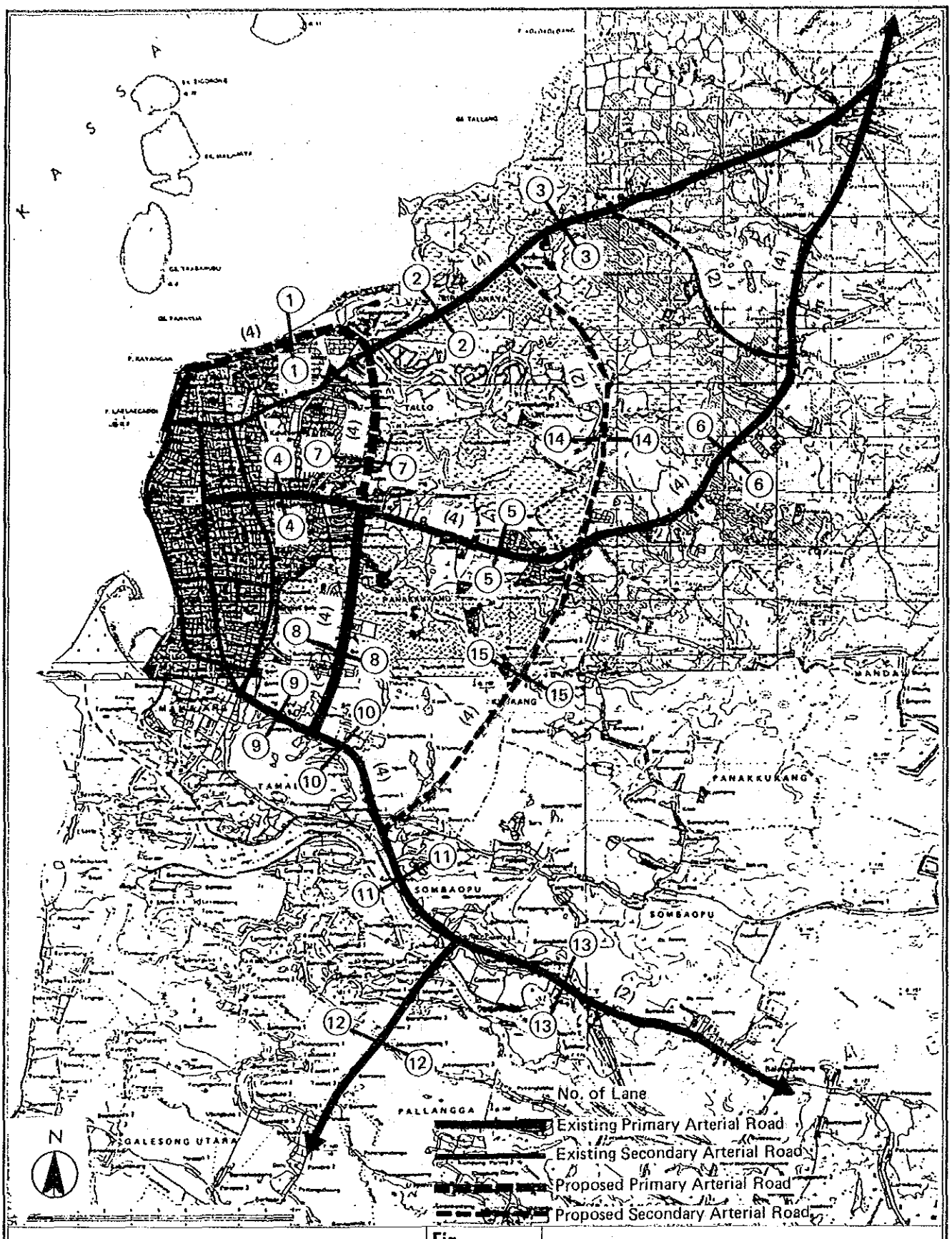
c) There are remarkable changed of traffic congestion degree among Case F, Case 50 and Case 74.

d) The congestion degree on the most major trunk roads of Case 50 and Case 75 in Ujung Pandang City are exceeded to be 1.0. Especially, future traffic volume are concentrated on Jl. Gowa Jaya and Jl. Gowa Raya.

Table A.P.3 Comparison Table

Items		Case F	Case 50	Case 75
Project Cost (Million Rp.)		183,285	93,165	126,932
Average Congestion Degree		0.88	1.06	0.98
Average Running Speed (km/h)		26.00	23.00	24.02
Congestion Degree	Section	-	-	-
	1	0.970	1.233	1.029
	2	1.050	1.367*	1.100
	3	0.433	0.567	0.500
	4	1.097	1.980*	1.167*
	5	0.958	1.667*	1.208*
	6	0.617	0.633	0.783
	7	1.017	1.083	1.083
	8	0.967	1.100	1.050
	9	0.933	1.467*	1.208*
	10	0.706	1.417*	1.000*
	11	0.814	1.533*	1.516*
	12	1.000	1.400*	1.400*
	13	0.800	0.800	0.800
	14	0.800	1.133*	1.133*
	15	0.583	0.750	0.733
Running Speed	1	41.01	15.00	36.38
	2	10.00	10.00	10.00
	3	31.02	23.37	26.91
	4	31.02	23.37	26.91
	5	26.30	12.00	15.50
	6	41.09	40.68	37.67
	7	36.99	29.57	30.45
	8	35.28	23.18	33.73
	9	14.44	12.00	12.00
	10	18.89	12.00	13.55
	11	40.00	11.34	11.52
	12	34.11	12.00	15.00
	13	28.83	29.10	29.65
	14	45.00	21.20	26.13
	15	53.90	49.32	49.16

* : High increasing section compare with Case F.



UJUNG PANDANG AREA HIGHWAY DEVELOPMENT STUDY	Fig. A.P. 8	Location of Road Section
	JAPAN INTERNATIONAL COOPERATION AGENCY	

A.P.7 Conclusion

The comparative analysis for two (2) alternative cases, Case 50 and Case 75 where budget allocations are assumed to be about 50 and 75 percents of the originally recommended highway development plan (Case F) in Ujung Pandang Area has resulted in the following conclusion.

a) The average running speeds of the total road networks of the three (3) cases, the originally recommended highway development plan, Case 50 and Case 75 are calculated to be 26.00 km/hr, 23.00 km/hr, and 24.02 km/hr respectively. There is not so much difference in the average running speed among the three cases, however, the average congestion degree of Case 50 exceeds 1.0 and that of Case 75 also reveals the value close to 1.0, which means that almost all the roads on the network would suffer chronical traffic congestion.

b) The comparison of the congestion degrees at many of the major road sections reveals that the degrees exceed 1.0 and some of them over 1.5 on both cases of Case 50 and Case 75.

c) The most congested area on the highway road networks of Case 50 and Case 75 concentrated along Jl. Gowa Jaya and Jl. Gowa Raya. The congestion degree on both roads are exceed 1.5.

Judging from above findings, the total road length and area of the road networks of both Case 50 and Case 75 shows absolute shortage, and greatly hinder normal urban functions and activities.

It is again to be pointed out that the Study Team proposed the plan for highway network development as the minimum requirement. Therefore, in order to activate and promote harmonized urban socio-economic functions in Ujung Pandang Area, it is strongly requested that the proposed original highway development plan (Case F) shall be promptly implemented.

UJUNG PANDANG AREA
HIGHWAY DEVELOPMENT STUDY

FINAL REPORT

MAIN VOLUME

March 1989