

APPENDIX-1

CONSIDERATION FOR DEVELOPMENT
COST SHARING

APPENDIX—2

BENEFIT-COST STREAM

APPENDIX-3

INTERSECTION PLAN AT INTERSECTION
OF JALAN KEBUN TEH
WITH JALAN DATO JAAFAR—JALAN ABAD

APPENDIX-1

CONSIDERATION FOR DEVELOPMENT COST SHARING

1. Preface

There exists the problem of cost sharing between the Government and private developers for the construction or provision of such public amenities and infrastructures as roads, water supply, sewerage and community facilities such as school in large scale developments. The survey however focuses on the aspect of cost sharing for road construction. A total of four projects roads are examine under this survey, however as the Johor Bahru-Pasir Gudang Southern Link is the planned major route that passes through a number of large scale development areas, it is taken up as a representative case for further discussion.

2 .Development and Administrative Policies in the State of Johore.

The progressing urban development in Malaysia is also centered around residential development. The latter involves basically two administrative or planning procedures. One of which is the Site Development Control. Its

definition and specific principles are spelled out in the Town and Country Planning Act 172, 1976. Its actual enforcement, however, is under the authority of the State Department of Town and Country Planning. Furthermore, there are in fact some slight differences in the guidelines for development control between states in Malaysia. For the State of Johore, contents of the conditions for development are shown in Table I-1. These serve as guidelines for development control and developers are advised to meet these requirements.

The second procedure is the earthwork and building plan control. This stage involved an examination on those approved plans on whether they satisfy the requirements for Building By-law and various basic infrastructures. In addition, this stage may sometimes regarded as an administrative advisory procedure in overcoming any problems that may have arisen in obtaining development control approval.

TABLE I-1 PLANNING AND IMPLEMENTATION REQUIREMENT FOR PRIVATE HOUSING DEVELOPMENT IN JOHOR STATE

	To Government	Site Provision	Building and/or Facility Construction	Monetary Payment		To Government	Site Provision	Building and/or Facility Construction	Monetary Payment
1 Infrastructure					1 Social Facilities				
a Roads	IN	O	O	X	a Kindergarten		O	X	X
	OUT	Δ	Δ	X	Nursery School		O	X	X
b Bridges	IN	O	O	X	b Schools	Primary	O	X	X
	OUT	X	X	X	Secondary		O	X	X
c Interchanges (Grade Sep)	IN	O	O	X	c Hospital		O	X	X
	OUT	Δ	Δ	X	Clinic		O	X	X
d Water (Piping Reservoir	IN	O	O	X	d Parks	Children P	O	O	X
	OUT	Δ	Δ	X	Neighborhood P		O	O	X
e Power (Lining Station)	IN	O	O	X	e Sports	Ground	O	O	X
	OUT	X	X	O	Facilities		O	O	X
f Sewerage (Piping Flood)	IN	O	O	X	f Shops	Market	O	X	X
	OUT	X	X	O	Shops		O	O	X
g Telephone (Lining)	IN	O	X	O	g Religious	Mosque	O	X	X
	OUT	X	X	X	Graveyard		O	X	X
h					h Parking		O	O	X

O Required of private developers.
 Δ Access roads of which are required of private developers.
 X To be provided by the public authority in principle.

3. Consideration of private share of development cost in the Johor Bahru-Pasir Gudang Southern Link.

In considering the share of development cost between different parties, there are three basic guiding principles, namely the effectors share principle, the users share principle and the benefitors share principle. The share formulation can also be classified into three types, share for construction, share for expenditure and share for site. In the State of Johore, as shown in Table 1-1 above, the provision of roads, bridges and interchanges within the development area is the sole responsibility of the developers. Those which are beyond the development area are also required of the developers if these facilities are deemed necessary for access to the said development area.^{*1} With these principles in mind and considering that the Johor Bahru-Pasir Gudang Southern Link is providing a high degree of

public service, it is recommended that the site though should be provided by the developers, the road construction cost however should be borne by the public sector. Site and construction cost for bridges are to be borne entirely by the developers.^{*2} As the housing development areas are rather large, Grade-Separated interchanges are seen as a necessity for managing the large traffic volume accessing to these development areas. Furthermore, the main benefitors of these interchanges are but the residents themselves. Therefore, as in previous cases, it is appropriate that the site and construction of these interchanges on the Southern Link within the development areas are to be provided by the developers.^{*3}

*1 These recommendations are actually implemented in the case of Kota Putri Residential Development.

*2 The possibility of toll collection from the users for Tebrau Bridge is under study presently (refer to the Main Volume).

*3 Site development control approval for many development projects within the said area in question have already been approved, any further administrative advisory procedure can only be applied at the next stage of earthwork and building control inspection. At this latter stage, the

amount of construction share is approximately as M\$570/unit. Accounting out for low cost housing, this amount is increased to M\$1400/unit, approximately 1.5% of the total selling price for each housing unit (see Table 2). Nevertheless, to what extent can this cost sharing be carried out by the developers is a prime administrative implementation problem, one which would in fact become an important factor for effecting future administrative advisory procedures and the development capabilities of private developers.

TABLE 1-2 CONSTRUCTION COST OF INTERCHANGE AND ITS COST SHARING

	Area (ha.)	Housing Units	Construction cost of In- terchanges (M\$'000)	Cost sharing per housing unit (M\$)
Permas Jaya	511	11,440	6,920	605
Kota Putri	649	15,160	5,702	376
Gunang Hijau	352	5,670	4,847	855
Pasir Gudang	380	37,300	21,951	855
Total	1,892	69,570	39,420	567

APPENDIX-2

BENEFIT-COST STREAM

TABLE II-1 BENEFIT-COST STREAM
OF JOHOR BAHRU-PASIR GUDANG SOUTHERN LINK (4-LANE)

DISCOUNTED RATE		0.12		
B / C RATIO		3.24		
N.P.W		187319		
I.R.R		0.329		
YEAR	UNDISCOUNTED COST	UNDISCOUNTED BENEFIT	DISCOUNTED COST	DISCOUNTED BENEFIT
1 1993	0	0	0	0
2 1984	0	0	0	0
3 1985	2889	0	2303	0
4 1986	31859	0	36912	0
5 1987	30943	0	19665	0
6 1988	40283	0	22858	0
7 1989	429	50257	217	25462
8 1990	429	54449	194	24630
9 1991	429	58968	173	23816
10 1992	429	63863	155	23030
11 1993	429	69163	138	22269
12 1994	429	69163	123	19883
13 1995	429	69163	110	17752
14 1996	429	69163	98	15850
15 1997	429	69163	88	14152
16 1998	429	69163	78	12636
17 1999	429	69163	70	11262
18 2000	429	69163	62	10073
19 2001	429	69163	56	8994
20 2002	429	69163	50	8030
21 2003	429	69163	44	7170
22 2004	429	69163	40	6402
23 2005	429	69163	35	5716
24 2006	429	69163	32	5103
25 2007	429	69163	28	4557
26 2008	429	69163	25	4068
		* TOTAL *	134554	1334145
		UNDISCOUNTED COST	134554	
		UNDISCOUNTED BENEFIT		1334145
		DISCOUNTED COST	83356	
		DISCOUNTED BENEFIT		270875

UNIT : 1000 \$

TABLE II-2 BENEFIT COST STREAM
OF JOHOR BAHRU-PASIR GUDANG SOUTHERN LINK (4-LANE)

DISCOUNTED RATE		0.12		
B / C RATIO		3.08		
N.P.W		287185		
I.R.R		0.282		
YEAR	UNDISCOUNTED COST	UNDISCOUNTED BENEFIT	DISCOUNTED COST	DISCOUNTED BENEFIT
1 1983	0	0	0	0
2 1984	0	0	0	0
3 1985	5052	0	4027	0
4 1986	76273	0	54290	0
5 1987	56005	0	35502	0
6 1988	72338	0	41047	0
7 1989	692	58944	351	28663
8 1990	692	63836	313	28876
9 1991	692	69134	279	27922
10 1992	692	74872	250	27000
11 1993	692	81087	223	26108
12 1994	692	87817	199	25245
13 1995	692	95105	178	24411
14 1996	692	103000	159	23605
15 1997	692	111548	142	22825
16 1998	692	120808	126	22071
17 1999	692	130835	113	21342
18 2000	692	141684	101	20637
19 2001	692	153454	90	19955
20 2002	692	166191	80	19296
21 2003	692	179985	72	18658
22 2004	692	179985	64	18059
23 2005	692	179985	57	17474
24 2006	692	179985	51	16911
25 2007	692	179985	46	16358
26 2008	692	179985	41	15817
		* TOTAL *	223508	2538235
		UNDISCOUNTED COST	223508	
		UNDISCOUNTED BENEFIT		2538235
		DISCOUNTED COST	137889	
		DISCOUNTED BENEFIT		425074

UNIT : 1000 \$

TABLE II-4 BENEFIT COST STREAM OF CAUSEWAY TRAFFIC DISPERSAL SCHEME (LONG-TERM)

DISCOUNTED RATE	0.12				
B / C RATIO	1.65				
N.P.W	41627				
I.R.R	0.190				
UNIT : 1000 \$					
YEAR	UNDISCOUNTED COST	UNDISCOUNTED BENEFIT	DISCOUNTED COST	DISCOUNTED BENEFIT	
1 1983	0	0	0	0	
2 1984	0	0	0	0	
3 1985	1942	0	1548	0	
4 1986	44566	0	31721	0	
5 1987	21801	0	13855	0	
6 1988	28080	0	15933	0	
7 1989	338	10303	171	9780	
8 1990	338	20365	153	9212	
9 1991	338	21485	137	8677	
10 1992	338	22607	122	8174	
11 1993	338	23013	109	7690	
12 1994	338	23520	97	7253	
13 1995	338	24016	87	6832	
14 1996	338	24500	77	6435	
15 1997	338	24975	69	6062	
16 1998	338	25445	62	5712	
17 1999	338	25905	55	5382	
18 2000	338	26365	49	5065	
19 2001	338	26825	44	4762	
20 2002	338	27285	39	4470	
21 2003	338	27745	35	4187	
22 2004	338	28205	31	3912	
23 2005	338	28665	28	3648	
24 2006	338	29125	25	3392	
25 2007	338	29585	22	3142	
26 2008	338	30045	20	2898	
* TOTAL *		UNDISCOUNTED COST	103149	UNDISCOUNTED BENEFIT	543158
* TOTAL *		DISCOUNTED COST	64490	DISCOUNTED BENEFIT	106117

TABLE II-3 BENEFIT COST STREAM OF CAUSEWAY TRAFFIC DISPERSAL SCHEME (SHORT-TERM)

DISCOUNTED RATE	0.12				
B / C RATIO	4.58				
N.P.W	34792				
I.R.R	0.435				
UNIT : 1000 \$					
YEAR	UNDISCOUNTED COST	UNDISCOUNTED BENEFIT	DISCOUNTED COST	DISCOUNTED BENEFIT	
1 1980	0	0	0	0	
2 1984	0	0	0	0	
3 1985	386	0	308	0	
4 1986	3890	0	2769	0	
5 1987	4559	0	2897	0	
6 1988	5805	0	3294	0	
7 1989	108	6025	55	4056	
8 1990	108	8773	49	3968	
9 1991	108	9591	44	3874	
10 1992	108	10485	39	3781	
11 1993	108	11463	35	3691	
12 1994	108	11463	31	3605	
13 1995	108	11463	28	3522	
14 1996	108	11463	25	3442	
15 1997	108	11463	22	3367	
16 1998	108	11463	20	3294	
17 1999	108	11463	18	3224	
18 2000	108	11463	16	3156	
19 2001	108	11463	14	3090	
20 2002	108	11463	13	3026	
21 2003	108	11463	11	2962	
22 2004	108	11463	10	2900	
23 2005	108	11463	9	2840	
24 2006	108	11463	8	2782	
25 2007	108	11463	7	2726	
26 2008	108	11463	6	2672	
* TOTAL *		UNDISCOUNTED COST	16800	UNDISCOUNTED BENEFIT	220282
* TOTAL *		DISCOUNTED COST	9726	DISCOUNTED BENEFIT	44517

TABLE II-5 BENEFIT COST STREAM OF TOLL EXPRESSWAY ACCESS

		DISCOUNTED RATE	B / C RATIO	N.P.W	I.R.R	UNIT : 1000 \$	
		0.12	0.90	-2983	0.106		
		UNDISCOUNTED		DISCOUNTED			
YEAR	COST	BENEFIT	COST	BENEFIT			
1 1983	0	0	0	0			
2 1984	0	0	0	0			
3 1985	1174	0	936	0			
4 1986	1431	0	1072	0			
5 1987	12339	0	7842	0			
6 1988	16136	0	9156	0			
7 1989	199	3978	101	2015			
8 1990	199	4417	90	1908			
9 1991	199	5142	80	2077			
10 1992	199	5349	72	2001			
11 1993	199	5987	64	1928			
12 1994	199	6460	57	1857			
13 1995	199	6970	51	1789			
14 1996	199	7521	46	1724			
15 1997	199	7521	41	1539			
16 1998	199	7521	36	1374			
17 1999	199	7521	32	1227			
18 2000	199	7521	29	1095			
19 2001	199	7521	26	978			
20 2002	199	7521	23	873			
21 2003	199	7521	21	786			
22 2004	199	7521	18	696			
23 2005	199	7521	16	622			
24 2006	199	7521	15	555			
25 2007	199	7521	13	491			
26 2008	199	7521	12	442			
		* TOTAL *					
UNDISCOUNTED COST		48000					
UNDISCOUNTED BENEFIT		130276					
DISCOUNTED COST		29049					
DISCOUNTED BENEFIT		26065					

TABLE II-6 BENEFIT COST STREAM OF INNER RING ROAD (4-LANE)

		DISCOUNTED RATE	B / C RATIO	N.P.W	I.R.R	UNIT : 1000 \$	
		0.12	1.87	37236	0.216		
		UNDISCOUNTED		DISCOUNTED			
YEAR	COST	BENEFIT	COST	BENEFIT			
1 1983	0	0	0	0			
2 1984	0	0	0	0			
3 1985	1117	0	890	0			
4 1986	34335	0	24439	0			
5 1987	12197	0	7751	0			
6 1988	15810	0	8971	0			
7 1989	144	16676	73	8449			
8 1990	144	17664	65	7990			
9 1991	144	18282	58	7384			
10 1992	144	18922	52	6823			
11 1993	144	19584	46	6306			
12 1994	144	19584	41	5836			
13 1995	144	19584	37	5427			
14 1996	144	19584	33	4988			
15 1997	144	19584	29	4607			
16 1998	144	19584	26	3578			
17 1999	144	19584	23	3195			
18 2000	144	19584	21	2852			
19 2001	144	19584	19	2547			
20 2002	144	19584	17	2274			
21 2003	144	19584	15	2030			
22 2004	144	19584	13	1813			
23 2005	144	19584	12	1618			
24 2006	144	19584	11	1445			
25 2007	144	19584	9	1290			
26 2008	144	19584	8	1152			
		* TOTAL *					
UNDISCOUNTED COST		66339					
UNDISCOUNTED BENEFIT		38488					
DISCOUNTED COST		42662					
DISCOUNTED BENEFIT		79898					

TABLE II-7 BENEFIT COST STREAM OF INNER RING ROAD (4- AND 6-LANE)

		DISCOUNTED RATE	0.12	
		B / C RATIO	1.73	
		N.P.W	43363	
		I.R.R	0.190	
		UNIT : 1000 \$		
YEAR	UNDISCOUNTED COST	UNDISCOUNTED BENEFIT	DISCOUNTED COST	DISCOUNTED BENEFIT
1 1983	0	0	0	0
2 1984	0	0	0	0
3 1985	1602	0	1277	0
4 1986	46574	0	33150	0
5 1987	17602	0	11186	0
6 1988	22783	0	12928	0
7 1989	160	19977	86	10121
8 1990	160	21332	76	9650
9 1991	160	22070	68	8917
10 1992	160	22851	61	8240
11 1993	160	23651	54	7615
12 1994	160	24479	47	7037
13 1995	160	25336	43	6503
14 1996	160	26222	39	6009
15 1997	160	27140	35	5553
16 1998	160	27140	31	4958
17 1999	160	27140	28	4427
18 2000	160	27140	25	3953
19 2001	160	27140	22	3520
20 2002	160	27140	20	3151
21 2003	160	27140	18	2814
22 2004	160	27140	16	2512
23 2005	160	27140	14	2243
24 2006	160	27140	12	2003
25 2007	160	27140	11	1788
26 2008	160	27140	10	1596
* TOTAL *				
UNDISCOUNTED COST	51941			
UNDISCOUNTED BENEFIT		51607		
DISCOUNTED COST	50258			
DISCOUNTED BENEFIT		10220		

APPENDIX-3

INTERSECTION PLAN AT INTERSECTION OF JALAN KEBUN TEH WITH JALAN DATO JAAFAR—JALAN ABAD

This plan aims at alleviating the congestion now existing in the morning and evening peak hours at the intersections of Jalan Kebun Teh with Jalan Larkin. As the results of the traffic survey and their analysis made, the following two (2) bottlenecks are identified. One is the Jalan Kebun Teh approach to Jalan Larkin and the right turning lane of Jalan Kebun Teh Eastbound approach at the intersection with Jalan Abad.

It seems obvious that the existence of the bottlenecks is due to the close location of the two (2) intersections which results in many conflict points in a relatively small area. Furthermore, Jalan Abad carries much more traffic than is expected on a feeder road.

In order to alleviate the congestion at those intersections, two (2) drastic improvement plans are proposed as a long term basis: One is to construct a short-cut road connecting Jalan Sulaiman to Jalan Dato Jaafar. The other is to construct a roundabout at those intersections. The both plans are illustrated in Figs III-1 and III-2.

These two (2) alternatives are evaluated by a comparative analysis of traffic, land acquisition and construction cost points of view, which are shown in Table III-1.

As the results of the comparative analysis, Plan 'A' is more preferable than Plan 'B' on the basis of a minimum cost performance.

TABLE III-1 COMPARISON OF ALTERNATIVE INTERSECTION PLANS

	Plan 'A'	Plan 'B'
Main Feature	<ul style="list-style-type: none"> • Construction of Grade-separated intersection • Construction of short-cut road • Signalized intersection treatment 	<ul style="list-style-type: none"> • Construction of Grade-separated intersection • Construction of roundabout • Non-signalized intersection treatment
Traffic Congestion at Intersections (based on 1983 traffic volume)	<ul style="list-style-type: none"> • Congestion at J. Larkin & J. Kebun Teh = 0.253 (Morning) = 0.284 (Evening) • Congestion at J. Kebun Teh & Short cut road = 0.356 (Morning) = 0.495 (Evening) 	<ul style="list-style-type: none"> • The most congested section = 0.344 (Morning) = 0.400 (Evening)
Area Required	1.5 has	3.4 has
Traffic Flow	Smooth traffic, but waiting at signaled intersections	Smooth traffic, but weaving traffic is expected
Construction Cost	M\$ 6,136,000	M\$ 10,256,000
Recommendation	More Recommendable	Recommendable

Note: Land Acquisition cost is included in the construction cost due to the governmental land. As the results of the comparative analysis, Plan 'A' is more preferable than Plan 'B' on the basis of a minimum cost criteria.

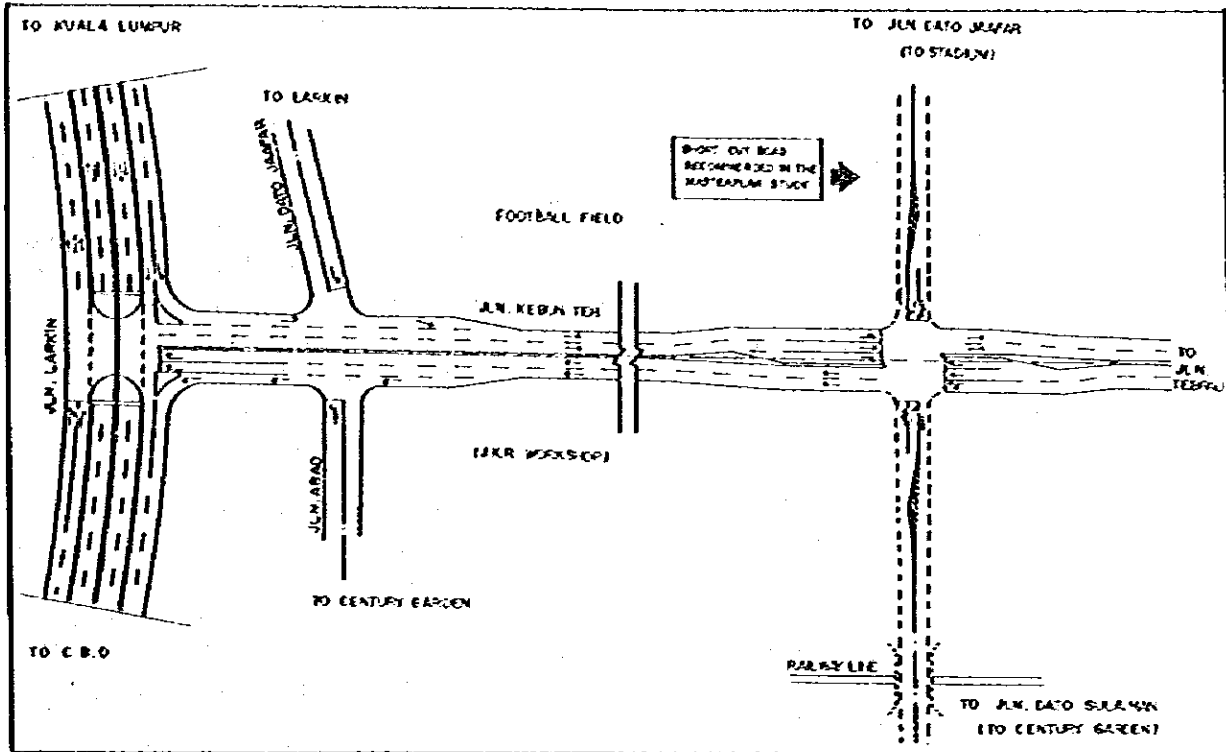


FIG. III-1 INTERSECTION IMPROVEMENT PLAN AT THE INTERSECTIONS OF JLN KEBUN TEH WITH JLN LARKIN AND JLN ABAD (PLAN 'A')

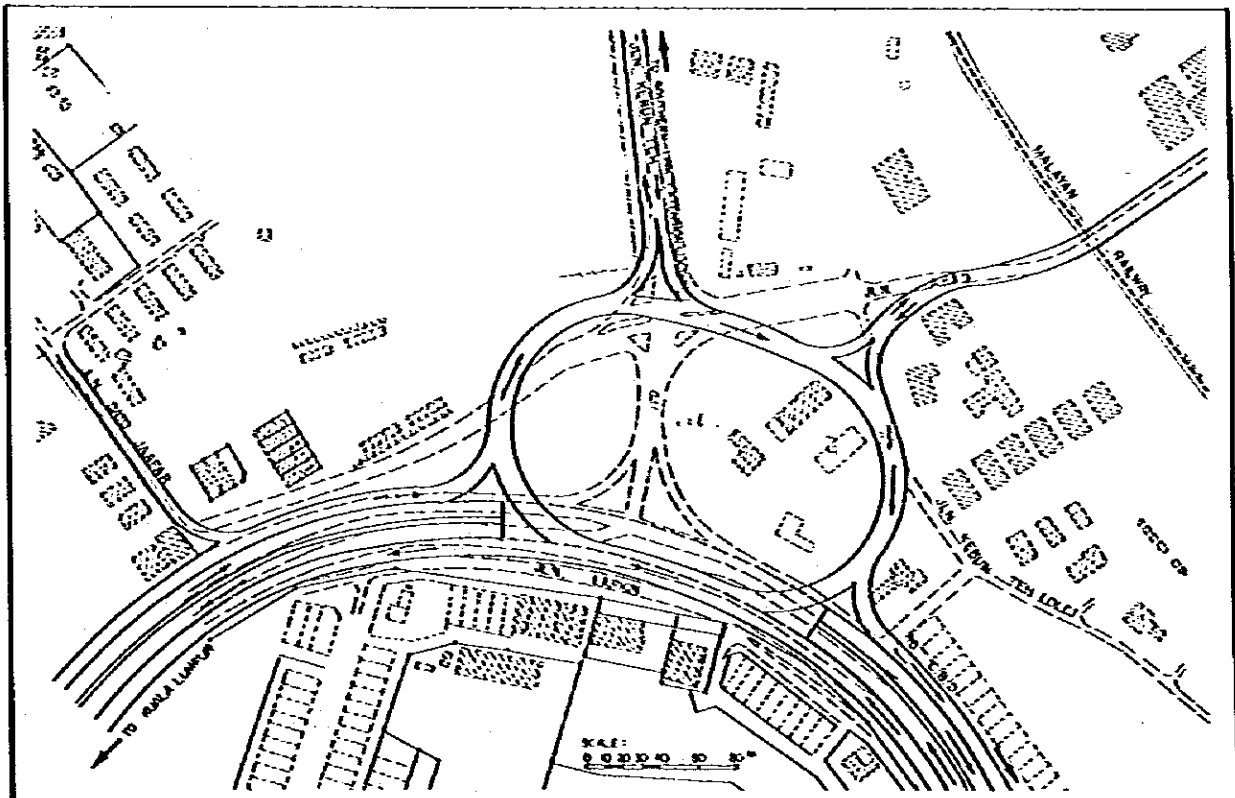


FIG. III-2 INTERSECTION IMPROVEMENT PLAN AT THE INTERSECTIONS OF JLN KEBUN TEH WITH JLN LARKIN AND JLN ABAD (PLAN 'B')

Immediate Action Plan

Based on the traffic flow analysis conducted at the three (3) intersections, counter measures, as an immediate action, can be cited as follows:

(1) Improvement Plan of Three (3) Intersections

The intersection treatment plan at the intersections of Jalan Larkin with Jalan Kebun Teh, Jalan Kebun Teh with Jalan Dato Jaafar-Jalan Abad and Jalan Abad with Jalan Kebun Teh (Old) is schematically illustrated in Fig. III-3.

Main features of the proposed intersection treatment are as follows:

- a. The approach to Jalan Larkin northbound be widened to accommodate two (2)-lanes for vehicles and a width of 1.5 meters for motor-cycles and after crossing Jalan Larkin, channelization of roadway should also be improved.
- b. Through lane on Jalan Larkin northbound be shifted to the west side to accommodate through traffic.
- c. Intersection of Jalan Abad with Jalan Kebun Teh (Old) be channelized and

right turning from Dato Jaafar to Jalan Kebun Teh (Old) be prohibited.

(2) Traffic Signal Phasing

As for traffic signal treatment, the following are proposed:

- a. The traffic signal at the intersection of Jalan Kebun Teh, Jalan Jaafar and Jalan Abad and the proposed traffic signal at that of Jalan Larkin and Jalan Kebun Teh must be coordinated.
- b. The phase timing plan of these traffic signals is shown in Fig. III-4.

(3) Construction of the connecting road between Jalan Beringin and Jalan Dato Sulaiman.

The construction of the connecting road between Jalan Beringin and Jalan Dato Sulaiman should be paved as soon as possible.

(4) Proposed Circulation Plan

The proposed circulation plan in the surrounding area of Jalan Kebun Teh is shown in Fig. III-5.

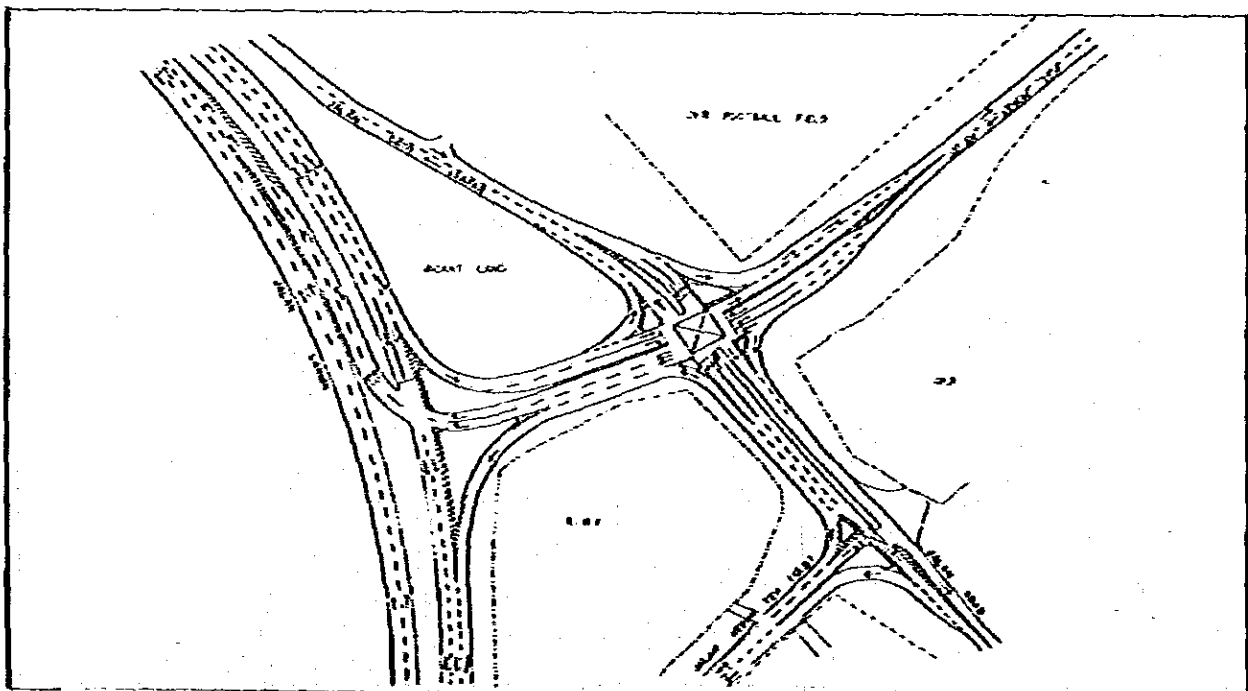


FIG. III-3 PROPOSED INTERSECTION IMPROVEMENT PLAN (IMMEDIATE ACTIONS)

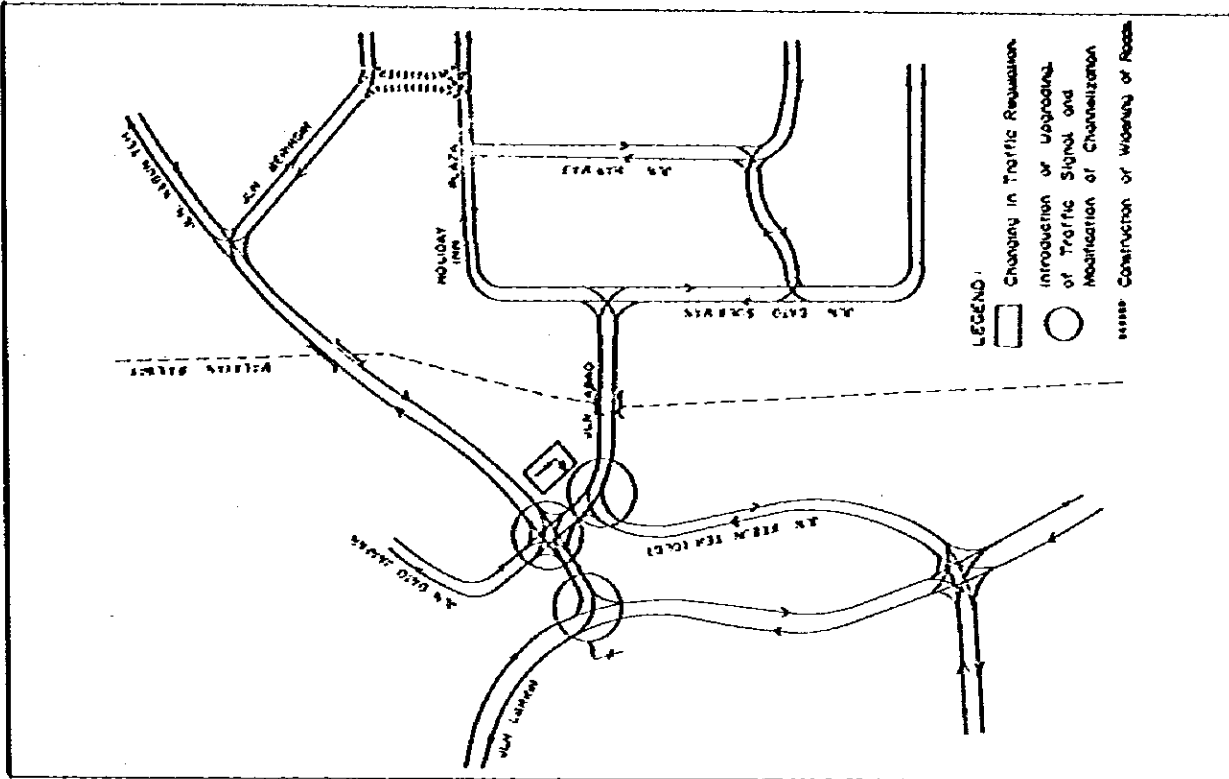


FIG. III-5 PROPOSED CIRCULATION PLAN (SHORT TERM PLAN)

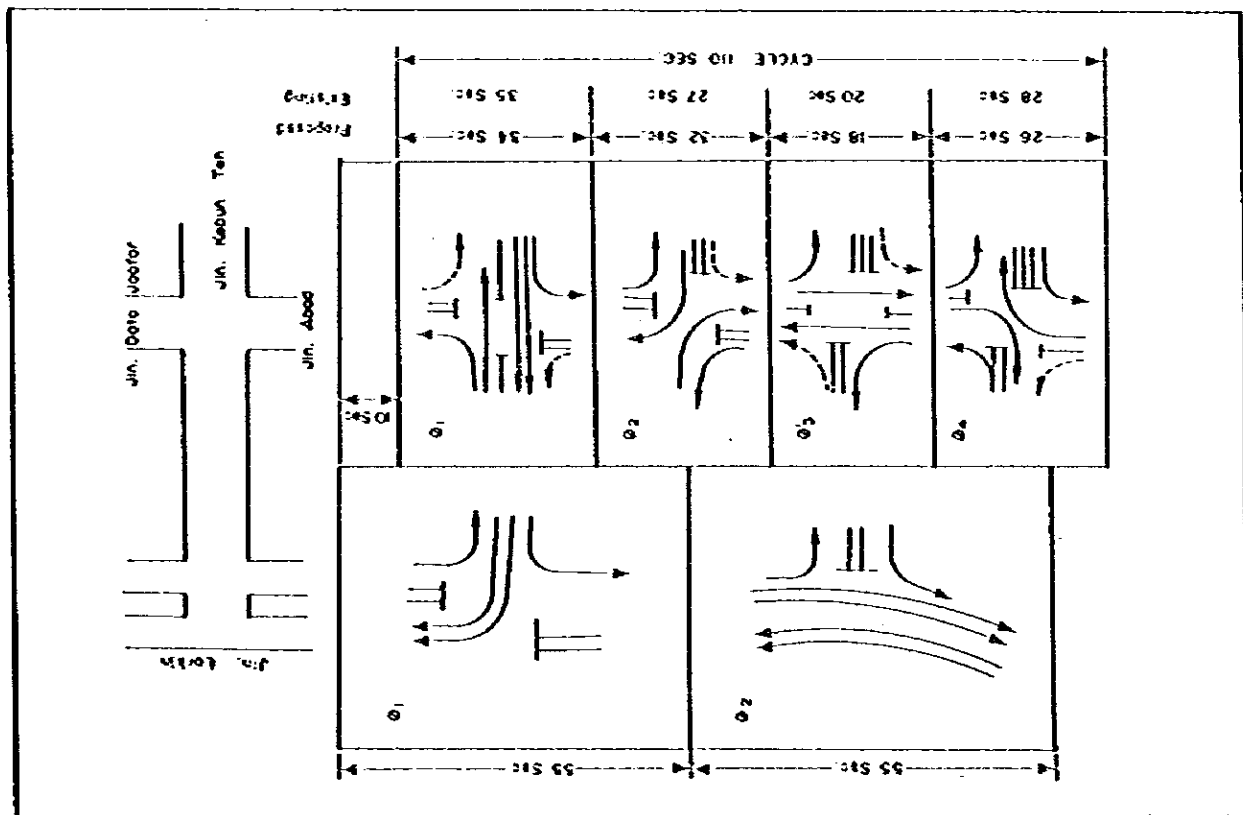


FIG. III-4 PROPOSED PHASE TIMING PLAN

JICA