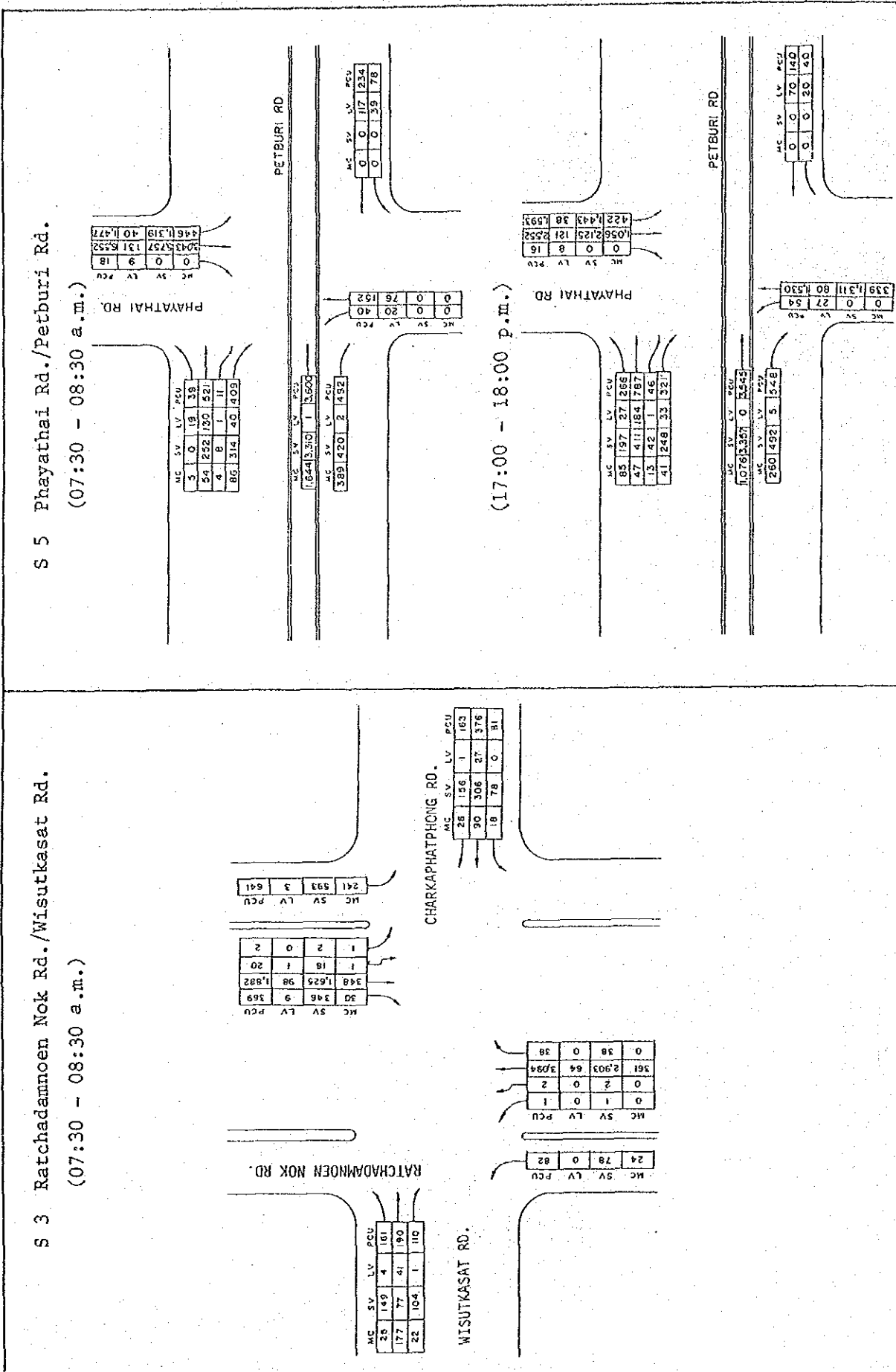
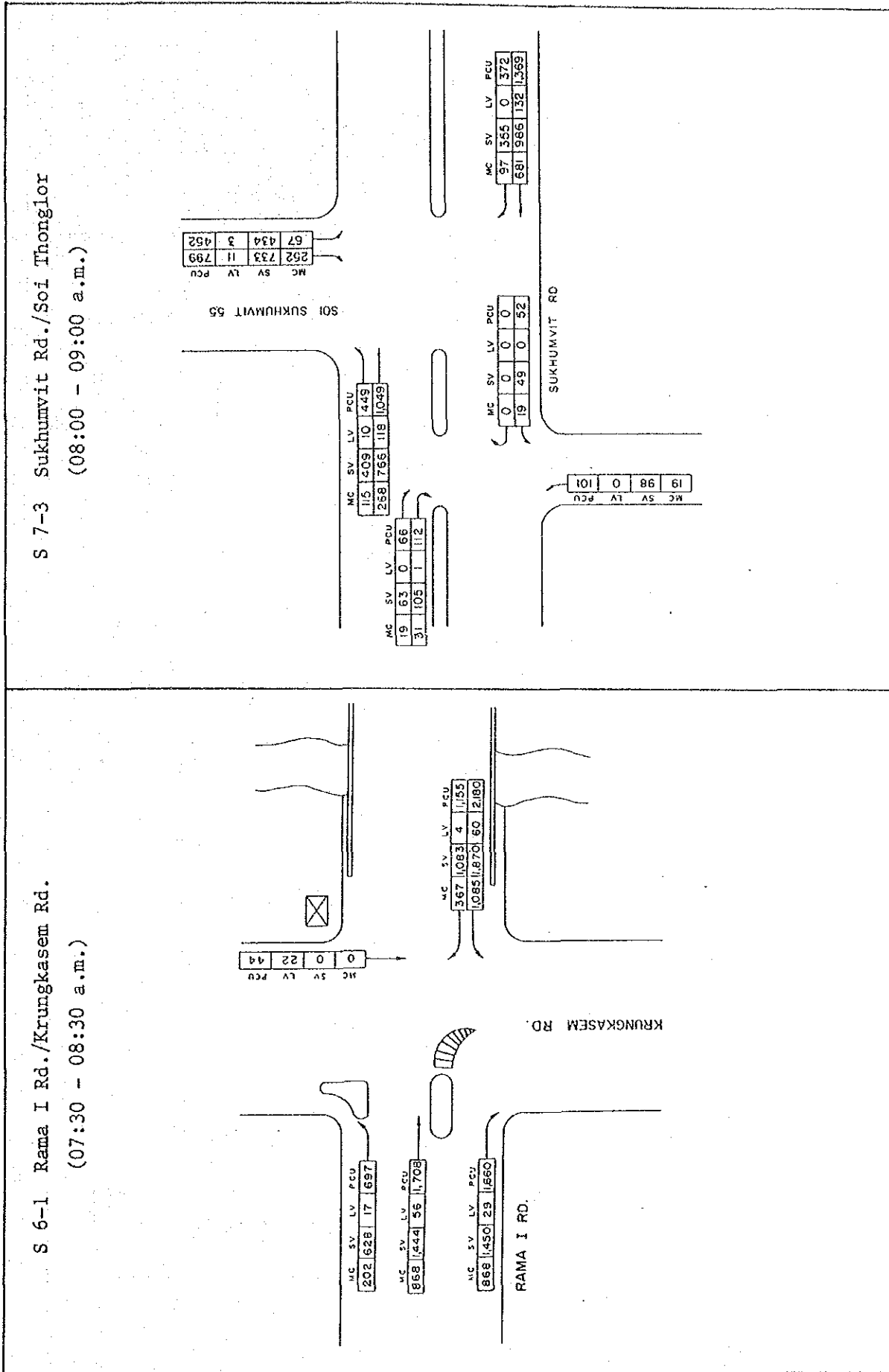


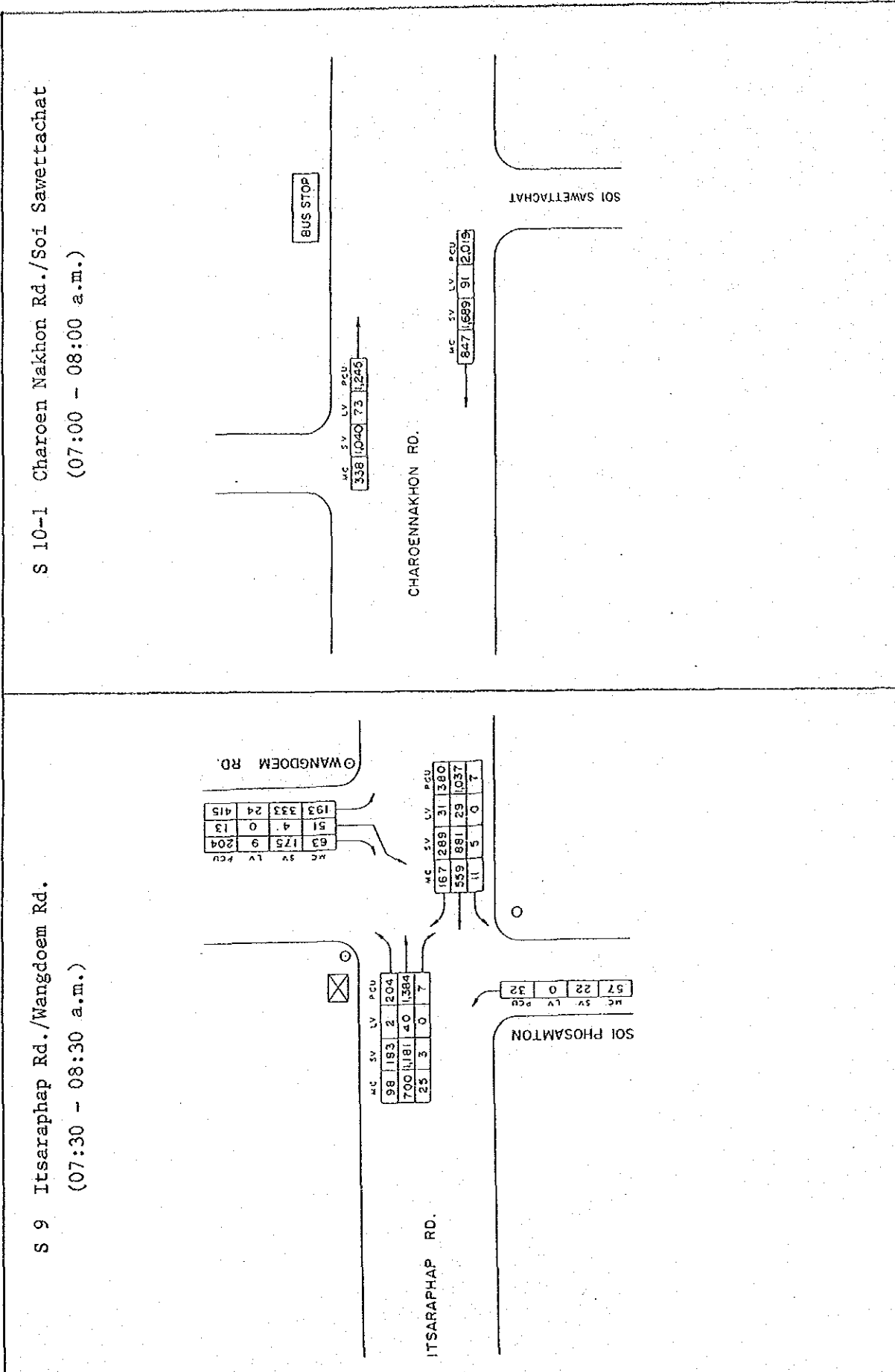
Traffic Volume at Intersection (Peak Hour) for S 1, S 2-1



Traffic Volume at Intersection (Peak Hour) for S 3, S 5

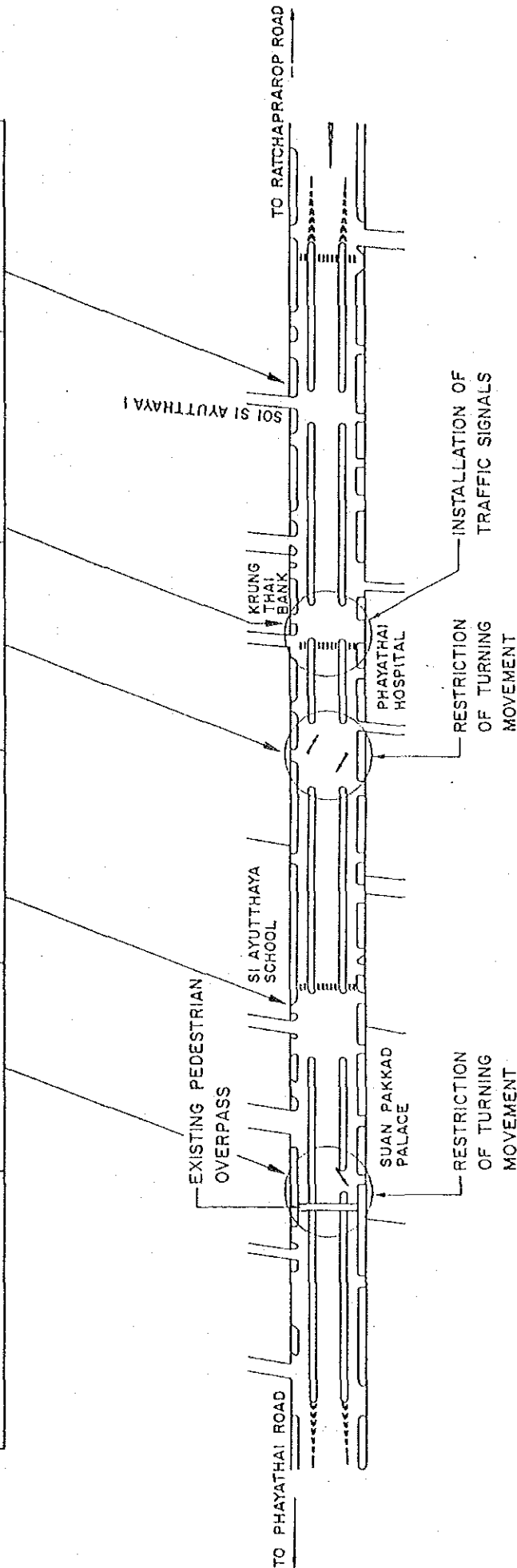


Traffic Volume at Intersection (Peak Hour) for S 6-1, S 7-3



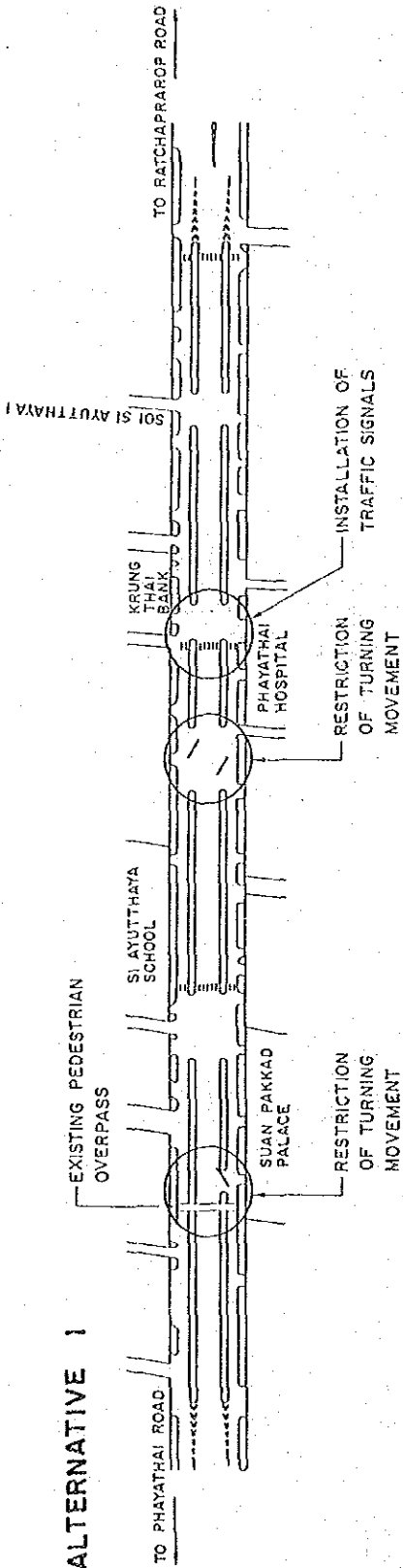
Traffic Volume at Intersection (Peak Hour) for S 9, S 10-1

EXISTING TURNING MOVEMENTS (Veh./Peck hour)	37	62 8	13 6	2 5	22 153	26 9	190 68
ESTIMATED TURNING MOVEMENTS AFTER CLOSING OUTER SEPARATORS (Veh./Peck hour)	60 50	40 40	20 140	20 140	30 10	70 190	10 5

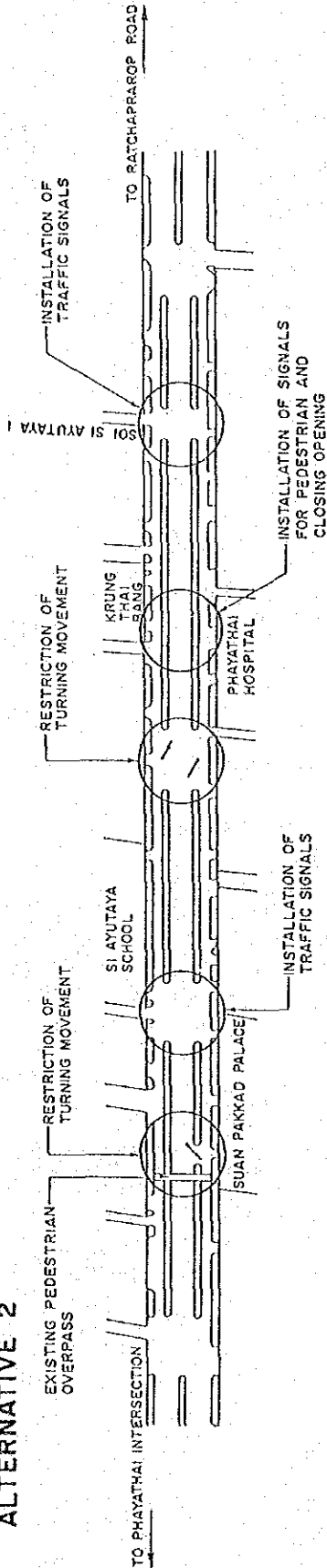


Effects on Turning Movements by Safety Measures on Si Ayutthaya Road

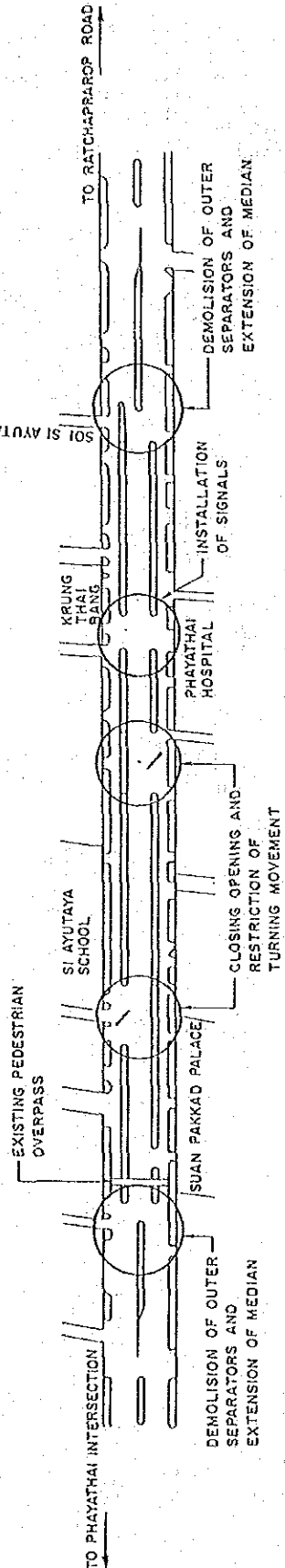
ALTERNATIVE 1



ALTERNATIVE 2

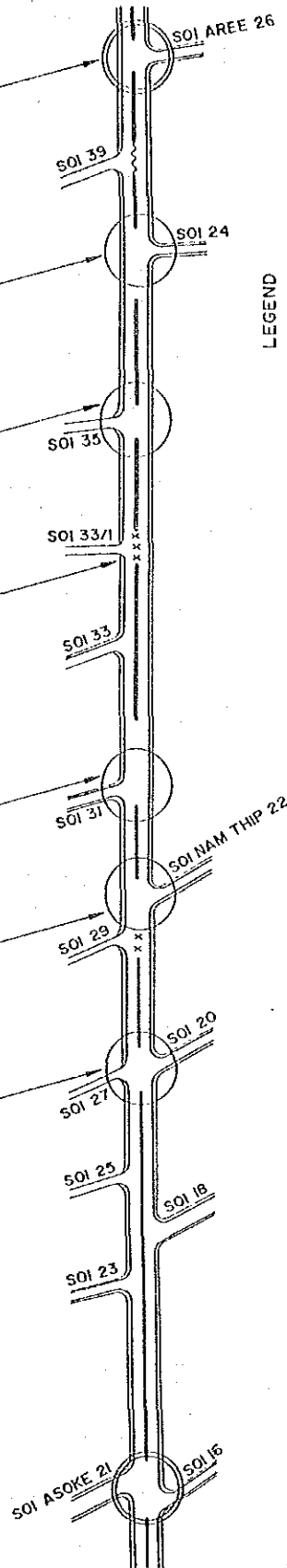


ALTERNATIVE 3





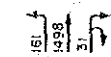
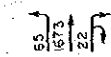





Alternatives for the Restriction of Turning Movements on Si Ayutthaya Road

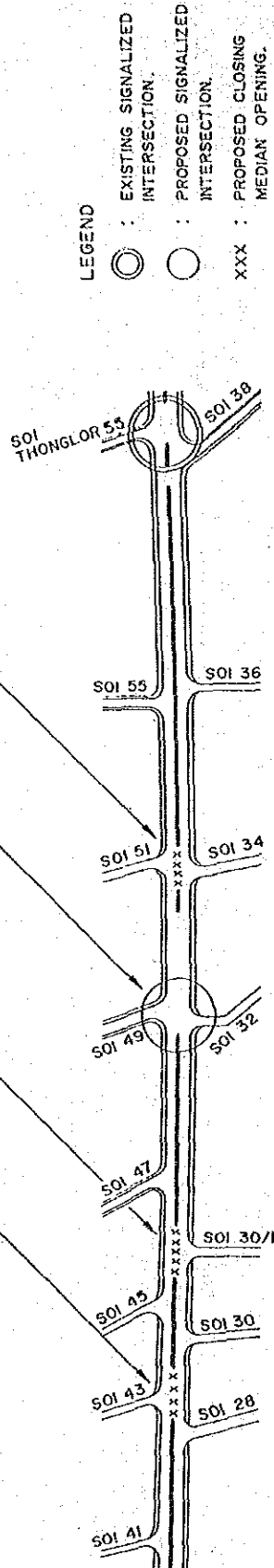
EXISTING TURNING MOVEMENTS (Veh./Peak hour)	13 1424 344	91 1424 50	13 1424 50	12 1415 83	21 1539 10	62 1539 11	1539 11	1071 453	639 400	1890 1890
ESTIMATED TURNING MOVEMENTS AFTER CLOSING OPENINGS (Veh./Peak hour)	10 1420 340	92 1420 50	10 1420 50	80 1420 30	20 1540 10	50 140	1540 10	1070 470	180 1890 190	1890 1890



LEGEND
 ○ : EXISTING SIGNALIZED INTERSECTION.
 ○ : PROPOSED SIGNALIZED INTERSECTION.
 xxx : PROPOSED CLOSING MEDIAN OPENING.

Effects on Turning Movements by Safety Measures on Sukhumvit Road (1)

<p>EXISTING TURNING MOVEMENTS (Veh./ Peak hour)</p>									
<p>ESTIMATED TURNING MOVEMENTS AFTER CLOSING OPENINGS (Veh./ Peak hour)</p>									



Effects on Turning Movements by Safety Measures on Sukhumvit Road (2)

Appendix 5.5.1

Unit Cost for Remedy Works for Traffic Safety

Item	Unit	Cost (Baht)	Remark
Pavement Marking - Thermoplastic paint	m ²	260	
Traffic Sign - Post	pcs.	400	
- Warning sign board	pcs.	590	0.45 m x 0.45 m
- Regulatory sign board	pcs.	490	0.45 m x 0.45 m
Raised Pavement Marker - Chatter bar	pcs.	1,500	
Guard Fence - for pedestrian	m	900	Steel type
- for vehicle	m	1,500	Steel type
Traffic Signal - Post with arm	set	8,000	
- Conduit & cable	m	1,200	
- Display for vehicle	set	10,000	
- Display for pedestrian	set	7,000	
- Vehicle control board	set	220,000	
- Pedestrian control board	set	115,000	
Pedestrian Overpass - 1 span @ 22 m	set	1,230,000	Concrete bridge
- 2 span @ 18 m	set	1,710,000	Concrete bridge
Pavement - Cement concrete surface	m ²	480	Incl. Base & Subbase
- Asphalt surface	m ²	370	Incl. Base & Subbase
- Sidewalk	m	300	Interlock surface
Embankment	m ³	140	Compacted sand
Excavation	m ³	70	
Gutter	m	400	
Retaining wall H=2.2 m	m	15,000	
Lighting (Single arm)	set	50,000	
Demolition of concrete	m ²	100	Thickness >0.25 m
Bridge widening	m ²	8,000	
Land acquisition	m ²	3,750	Pracha Chuen Rd.

Required Maintenance for Safety Devices

Safety Devices	Durable Year	Required Maintenance
Pavement Marking	2 - years	replace every 2 years
Traffic Sign	7 - years	replace every 7 years
Delineater	10 - years	replace every 10 years
Raised Pavement Marker	10 - years	replace every 10 years
Guardfence	10 - years	2% of installation cost per annum
Street Lighting	10 - years	10% of installation cost per annum
Traffic Signal	10 - years	10% of installation cost per annum
Pedestrian Overpass	50 - years	3% of installation cost per annum
Median, Right-turn Lane, Sidewalk	-	-

Accident Reduction Rates by Safety Device (Mid-block Section)
 - Study in Japan -

Safety Devices	Data A			Data B			Data C			Data D		
	Before	After	Reduction Rate	Before	After	Reduction Rate	Before	After	Reduction Rate	Before	After	Reduction Rate
Traffic Signal for Pedestrian	-	-	-	1,170	587	50	-	-	-	136	85	38
Crosswalk	110	84	24	3,936	2,667	32	2,039	1,277	37	-	-	-
Overpass	70	33	53	-	-	-	439	203	54	137	96	30
Sidewalk	4	1	75	-	-	-	92	51	45	-	-	-
Guardence	1,337	541	60	-	-	-	5,037	2,976	41	-	-	-
Lighting	1,506	1,333	12	-	-	-	5,837	4,154	29	-	-	-
Curve Mirror	121	41	66	-	-	-	678	215	68	-	-	-
Median Island	4	1	75	-	-	-	3,422	2,765	19	-	-	-
Edge Line	106	78	26	-	-	-	337	242	28	67	38	43
Traffic Sign	-	-	-	2,616	2,278	13	259	113	56	-	-	-
Restriction of Parking	-	-	-	-	-	-	5,696	4,394	23	-	-	-
Restriction of Speed	-	-	-	-	-	-	1,533	1,211	21	-	-	-
Restriction of Overtaking	-	-	-	-	-	-	1,246	935	25	-	-	-

Accident Reduction Rates by Safety Device (Intersection)
- Study in Japan -

Safety Devices	Data A			Data B			Data C			Data D			Data E		
	Before	After	Reduction Rate	Before	After	Reduction Rate	Before	After	Reduction Rate	Before	After	Reduction Rate	Before	After	Reduction Rate
Traffic Signal	473	260	45	6,216	4,290	31	4,612	2,412	48	-	-	-	-	-	-
Lighting	-	-	-	-	-	-	-	-	-	48	30	38*	-	-	-
Channelization	109	57	48	-	-	-	-	-	-	-	-	-	-	-	-
Improvement of Skid Resistance	36	11	69	-	-	-	1,325	565	57	-	-	-	-	-	-
Stop Control	-	-	-	-	-	-	853	343	60	-	-	-	230	65	72

Note ; * Only vehicle vs. pedestrian

Reference;

- M. Koshi "Traffic Accident Reduction Policies by Safety Devices"

Traffic Engineering Vo.15 No.2

Data A 1966, Metropolitan Police Board

Data B 1967, Metropolitan Police Board

Data C 1964, Prime Minister Office

Data D Others

- Japan Traffic Engineering Society "Traffic Accident Reduction Policies on Roadway and Intersection", 1975

Data E 1973, Saitama Prefecture

Summary of Accident Reductions by Experimental Works

Improvement Type	Survey Area		Number of Accident		Number of Fatalities		Number of Injuries		Remarks	
	Route	Kilometer Post	Traffic Volume	Before	After	Reduction Rate	Before	After		Reduction Rate
Improvement of Lane Line Marking	1	48+000-49+000	9,600	5	3	0.40	0	0	-	Over Speed Limit; Before 2, After 0 Rear End Collision; Before 3, After 1
Improvement of a Sub-standard Curve by Visual Guidance	306	2+900-3+200	15,700	6	3	0.50	0	7	0.57	Over Speed Limit; Before 2, After 0 Off Carriageway; Before 3, After 1
Safeguard of Pedestrian	306	13+500-14+000	17,700	6	2	0.67	0	5	1.00	Vehicle VS Pedestrian; Before 2, After 0
Improvement of Turning Traffic by Signalization	336	Soi 39 Soi 53	34,600	31	16	0.48	0	5	0.60	Immediate Crossing; Before 8, After 3 Rear End Collision Before 12, After 17
Intersection Improvement by Channelization	1141	1+000-1+450	9,200	11	5	0.55	0	8	0.63	Over Speed Limit; Before 6, After 1 Off Carriageway; Before 6, After 1

Source : Final Report, January 1985, JICA
Traffic Safety Plan for Roads in the Kingdom of Thailand

Results of Before and After Survey
Concerned with Installation of Chatter-Bars
Conducted by DOH

Route	Kilometer Post	Before Installation (6 months)				After Installation (6 months)			
		No. of Accident	Fatality	Injury	No. of Accident	Fatality	Injury		
34	89 - 92	11	5	19	13	5	20		
34	93 - 97	23	2	32	11	4	7		
34	104 - 105	3	1	1	2	0	3		
34	111 - 113	2	0	1	0	0	0		
34	115 - 118	7	1	8	3	1	9		
Total		46	9	61	29(0.63)	10(1.11)	39(0.63)		

Source : Department of Highways

Note : Numbers in () are reduction rates.

Benefit/Cost Computation on Safety Plans (1)

(Unit : Cost, Benefit : Saht in million)

Road Segment No.	Year	Accident			Cost			Reduction Rate(%) (9)	Benefit (Saved)			Net Benefit (B-C)				
		No. (1)	Casualty (2)	Fatality (3)	Injury (4)	Inst. (5)	O/M (6)		Total (7)	PV (8)	Fatality (10)	Injury (11)	Prop.Dam. (12)	Total (13)	PV (14)	(15)
	1	8	5	0	5	1.002	1.002	50		(2.5)	0.225	0.08	0.305	0.305	0.305	
	2	8	5	0	5	-	0.061	50		(2.5)	0.225	0.08	0.305	0.290	0.305	
	3	8	5	0	5	-	0.143	50		(2.5)	0.225	0.08	0.305	0.275	0.305	
	4	8	5	0	5	-	0.061	50		(2.5)	0.225	0.08	0.305	0.262	0.305	
	5	8	5	0	5	-	0.142	50		(2.5)	0.225	0.08	0.305	0.248	0.305	
S 1	ST	40	25	0	25	1.002	1.410			(12.5)	1.125	0.40	1.525	1.380	0.023	1.02
Pracha	6	8	5	0	5	-	0.061	50		(2.5)	0.225	0.08	0.305	0.236	0.305	
Chuen	7	8	5	0	5	-	0.143	50		(2.5)	0.225	0.08	0.305	0.224	0.305	
Road	8	8	5	0	5	-	0.065	50		(2.5)	0.225	0.08	0.305	0.213	0.305	
	9	8	5	0	5	-	0.143	50		(2.5)	0.225	0.08	0.305	0.203	0.305	
	10	8	5	0	5	-	0.061	50		(2.5)	0.225	0.06	0.305	0.192	0.305	
ST	40	25	0	0	25	0	0.473			(12.5)	1.125	0.40	1.525	1.063		
Total	80	50	0	0	50	1.002	1.893			(25.0)	2.250	0.80	3.050	2.448	0.761	1.45

Source : JICA Team Estimation

Remarks 1. Nos. of accident and casualty are based on 1986 survey by JICA Team.

2. The costs and benefits are calculated at 1986 price.

3. Unit values of fatality, injury and property damage are;

1) fatality = £ 0.9 million

2) injury = £ 0.09 million

3) property damage = £ 0.02 million

4. Traffic volume is set at 1986 level.

5. Rate of Discount : 5% per annum

6. Number in () indicates the number of persons saved from fatality.

7. O/M means "Operation and Maintenance"

8. PV means " Present Value"

Benefit/Cost Computation on Safety Plans (2)

(Unit : Cost, Benefit : Baht in million)

Road Segment No.	Year	Accident				Cost			Reduction Rate(%) (9)	Fatality (10)	Benefit (Saved)			Net Benefit (B-C) (15)	B/C (16)		
		No. (1)	Casualty (2)	Fatality (3)	Injury (4)	Inst. (5)	O/M (6)	Total (7)			PV (8)	Injury (11)	Prop.Dam. (12)			Total (13)	PV (14)
	1	16	3	0	3	0.698	-	0.698	50	0	(1.5)	0.135	0.160	0.295	0.295		
	2	16	3	0	3	-	0.051	0.051	50	0	(1.5)	0.135	0.160	0.295	0.280		
	3	16	3	0	3	-	0.131	0.131	50	0	(1.5)	0.135	0.160	0.295	0.266		
	4	16	3	0	3	-	0.051	0.051	50	0	(1.5)	0.135	0.160	0.295	0.253		
S2-1	5	16	3	0	3	-	0.131	0.131	50	0	(1.5)	0.135	0.160	0.295	0.240		
Techa	ST	80	15	0	15	0.698	0.364	1.062		0	(7.5)	0.675	0.800	1.475	1.334	0.319	
Wanit	6	16	3	0	3	-	0.051	0.051	50	0	(1.5)	0.135	0.160	0.295	0.228		
Road	7	16	3	0	3	-	0.131	0.131	50	0	(1.5)	0.135	0.160	0.295	0.217		
	8	16	3	0	3	-	0.054	0.054	50	0	(1.5)	0.135	0.160	0.295	0.206		
	9	16	3	0	3	-	0.131	0.131	50	0	(1.5)	0.135	0.160	0.295	0.196		
	10	16	3	0	3	-	0.051	0.051	50	0	(1.5)	0.135	0.160	0.295	0.186		
ST	ST	80	15	0	15	0	0.418	0.418		0	(7.5)	0.675	0.800	1.475	1.033		
Total		160	30	0	30	0.698	0.782	1.480		0	(15.0)	1.350	1.600	0.295	2.367	1.060	1.81

Source : JICA Team Estimation

- Remarks
1. Nos. of accident and casualty are based on 1986 survey by JICA Team.
 2. The costs and benefits are calculated at 1986 price.
 3. Unit values of fatality, injury and property damage are:
 - 1) fatality = B 0.9 million
 - 2) injury = B 0.09 million
 - 3) property damage = B 0.02 million
 4. Traffic volume is set at 1986 level.
 5. Rate of Discount : 5% per annum
 6. Number in () indicates the number of persons saved from fatality.
 7. O/M means " Operation and Maintenance"
 8. PV means "Present Value"

Benefit/Cost Computation on Safety Plans (3)

(Unit : Cost, Benefit : Baht in million)

Road Segment No.	Year	Accident			Cost			Reduction Rate(%) (9)	Benefit (Saved)				Net Benefit (B-C) (15)	B/C (16)			
		No. (1)	Casualty (2)	Fatality (3)	Injury (4)	Inst. (5)	O/M (6)		Total (7)	PV (8)	Fatality (10)	Injury (11)			Prop.Dam. (12)	Total (13)	PV (14)
	1	14	13	2	11	0.753	-	0.753	0.753	50	(1) 0.900	(5.5) 0.495	0.140	1.535	1.535		
	2	14	13	2	11	-	0.033	0.033	0.031	50	(1) 0.900	(5.5) 0.495	0.140	1.535	1.458		
	3	14	13	2	11	-	0.100	0.100	0.090	50	(1) 0.900	(5.5) 0.495	0.140	1.535	1.385		
	4	14	13	2	11	-	0.033	0.033	0.028	50	(1) 0.900	(5.5) 0.495	0.140	1.535	1.316		
S2-2	5	14	13	2	11	-	0.100	0.100	0.081	50	(1) 0.900	(5.5) 0.495	0.140	1.535	1.250		
Techa	ST	70	65	10	55	0.753	0.266	1.019	0.983	-	(5) 4.500	(27.5) 2.475	0.700	7.675	6.944	5.961	
Wanit	6	14	13	2	11	-	0.033	0.033	0.026	50	(1) 0.900	(5.5) 0.495	0.140	1.535	1.188		
Road	7	14	13	2	11	-	0.100	0.100	0.074	50	(1) 0.900	(5.5) 0.495	0.140	1.535	1.128		
	8	14	13	2	11	-	0.044	0.044	0.031	50	(1) 0.900	(5.5) 0.495	0.140	1.535	1.072		
	9	14	13	2	11	-	0.100	0.100	0.066	50	(1) 0.900	(5.5) 0.495	0.140	1.535	1.018		
	10	14	13	2	11	-	0.033	0.033	0.021	50	(1) 0.900	(5.5) 0.495	0.140	1.535	0.967		
ST	70	65	10	55	0	0.308	0.308	0.308	0.218		(5) 4.500	(27.5) 2.475	0.700	7.675	5.368		
Total	140	130	20	110	0.753	0.576	1.327	1.201			(10) 9.000	(55.0) 4.950	1.400	15.350	12.312	11.111	10.25

Source : JICA Team Estimation

- Remarks
1. Nos. of accident and casualty are based on 1986 survey by JICA Team.
 2. The costs and benefits are calculated at 1986 price.
 3. Unit values of fatality, injury and property damage are;
 - 1) fatality = β 0.9 million
 - 2) injury = β 0.09 million
 - 3) property damage = β 0.02 million
 4. Traffic volume is set at 1986 level.
 5. Rate of Discount : 5% per annum
 6. Number in () indicates the number of persons saved from fatality.
 7. O/M means "Operation and Maintenance"
 8. PV means "Present Value"

Benefit/Cost Computation on Safety Plans (4)

(Unit : Cost, Benefit : Baht in million)

Road Segment No.	Year	Accident			Cost			Reduction Rate(%) (9)	Benefit (Saved)			Net Benefit (B-C) (15)	B/C (16)		
		No. (1)	Casualty (2)	Fatality (3)	Injury (4)	Inst. (5)	O/M (6)		Total (7)	PV (8)	Fatality (10)			Injury (11)	Prop.Dam. (12)
1	32	10	0	0	10	0.640	0.640	0.640	50	0	(5) 0.450	0.320	0.770	0.770	
2	32	10	0	0	10	-	0.026	0.026	50	0	(5) 0.450	0.320	0.770	0.732	
3	32	10	0	0	10	-	0.234	0.234	50	0	(5) 0.450	0.320	0.770	0.695	
4	32	10	0	0	10	-	0.026	0.026	50	0	(5) 0.450	0.320	0.770	0.660	
5	32	10	0	0	10	-	0.234	0.234	50	0	(5) 0.450	0.320	0.770	0.627	
S3	160	50	0	0	50	0.640	1.164	1.009	-	0	(25) 2.250	1.600	3.850	3.484	2.395
Rachadammoen	32	10	0	0	10	-	0.026	0.026	50	0	(5) 0.450	0.320	0.770	0.596	
Nok	32	10	0	0	10	-	0.234	0.234	50	0	(5) 0.450	0.320	0.770	0.566	
Road	32	10	0	0	10	-	0.030	0.030	50	0	(5) 0.450	0.320	0.770	0.538	
	32	10	0	0	10	-	0.234	0.234	50	0	(5) 0.450	0.320	0.770	0.571	
	32	10	0	0	10	-	0.026	0.026	50	0	(5) 0.450	0.320	0.770	0.485	
ST	160	50	0	0	50	0	0.550	0.550	-	0	(25) 2.250	1.600	3.850	2.696	
Total	320	100	0	0	100	0.640	1.074	1.714	-	0	(50) 4.500	3.200	7.700	6.180	4.19

Source : JICA Team Estimation

Remarks 1. Nos. of accident and casualty are based on 1986 survey by JICA Team.

2. The costs and benefits are calculated at 1986 price.

3. Unit values of fatality, injury and property damage are:

1) fatality = B 0.9 million

2) injury = B 0.09 million

3) property damage = B 0.02 million

4. Traffic volume is set at 1986 level.

5. Rate of Discount : 5% per annum

6. Number in () indicates the number of persons saved from fatality.

7. O/M means "Operation and Maintenance"

8. PV means "Present Value"

Benefit/Cost Computation on Safety Plans (5)

(Unit : Cost, Benefit : Baht in million)

Road Segment No.	Year	Accident			Cost			Reduction Rate (%) (9)	Fatality (10)	Benefit (Saved)			Net Benefit (B-C) (15)	B/C (16)			
		No. (1)	Casualty (2)	Fatality (3)	Injury (4)	Inst. (5)	O/M (6)			Total (7)	PV (8)	Injury (11)			Prop.Dam. (12)	Total (13)	PV (14)
	1	13	3	0	3	0.650	-	0.650	0.650	46	0	(1.4)	0.126	0.120	0.246	0.246	0.246
	2	13	3	0	3	-	0.043	0.043	0.041	46	0	(1.4)	0.126	0.120	0.246	0.234	0.234
	3	13	3	0	3	-	0.230	0.230	0.208	46	0	(1.4)	0.126	0.120	0.246	0.222	0.222
	4	13	3	0	3	-	0.043	0.043	0.037	46	0	(1.4)	0.126	0.120	0.246	0.211	0.211
S4	5	13	3	0	3	-	0.230	0.230	0.187	46	0	(1.4)	0.126	0.120	0.246	0.200	0.200
Si Ayut-thaya Road	ST	65	15	0	15	0.650	0.546	1.196	1.123	46	0	(7.0)	0.630	0.600	1.230	1.113	Δ0.010
	6	13	3	0	3	-	0.043	0.043	0.033	46	0	(1.4)	0.126	0.120	0.246	0.190	0.190
	7	13	3	0	3	-	0.230	0.230	0.169	46	0	(1.4)	0.126	0.120	0.246	0.181	0.181
	8	13	3	0	3	-	0.078	0.078	0.054	46	0	(1.4)	0.126	0.120	0.246	0.172	0.172
	9	13	3	0	3	-	0.230	0.230	0.153	46	0	(1.4)	0.126	0.120	0.246	0.163	0.163
	10	13	3	0	3	-	0.043	0.043	0.027	46	0	(1.4)	0.126	0.120	0.246	0.155	0.155
ST		65	15	0	15	0	0.624	0.624	0.436	46	0	(7.0)	0.630	0.600	1.230	0.861	0.861
Total		130	30	0	30	0.650	1.170	1.820	1.559		0	(14.0)	1.260	1.200	2.460	1.974	0.415

Source : JICA Team Estimation

- Remarks
1. Nos. of accident and casualty are based on 1986 survey by JICA Team.
 2. The costs and benefits are calculated at 1986 price.
 3. Unit values of fatality, injury and property damage are:
 1) fatality = ¥ 0.9 million
 2) injury = ¥ 0.09 million
 3) property damage = ¥ 0.02 million
 4. Traffic volume is set at 1986 level.
 5. Rate of Discount : 5% per annum
 6. Number in () indicates the number of persons saved from fatality.
 7. O/M means "Operation and Maintenance"
 8. PV means "Present Value"

Benefit/Cost Computation on Safety Plans (6)

(Unit : Cost, Benefit : Baht in million)

Road Segment No.	Accident				Cost			Reduction Rate(%) (9)	Benefit (Saved)				Net Benefit (B-C) (15)	B/C (16)		
	Year (1)	No. (2)	Casualty (3)	Fatality/Injury (4)	Inst. (5)	O/M (6)	Total (7)		PV (8)	Fatality (10)	Injury (11)	Prep.Dam. (12)			Total (13)	PV (14)
1	10	4	1	3	0.385	-	0.385	0.385	50	(0.5)	0.135	0.100	0.685	0.685		
2	10	4	1	3	-	0.009	0.009	0.009	50	(0.5)	0.135	0.100	0.685	0.651		
3	10	4	1	3	-	0.221	0.221	0.199	50	(0.5)	0.135	0.100	0.685	0.618		
4	10	4	1	3	-	0.009	0.009	0.008	50	(0.5)	0.135	0.100	0.685	0.587		
5	10	4	1	3	-	0.221	0.221	0.180	50	(0.5)	0.135	0.100	0.685	0.558		
ST	50	20	5	15	0.385	0.460	0.845	0.781		(2.5)	0.675	0.500	3.425	3.059	2.318	
Thai	6	10	4	1	3	-	0.009	0.007	50	(0.5)	0.135	0.100	0.685	0.530		
Road	7	10	4	1	3	-	0.221	0.162	50	(0.5)	0.135	0.100	0.685	0.504		
	8	10	4	1	3	-	0.013	0.009	50	(0.5)	0.135	0.100	0.685	0.479		
	9	10	4	1	3	-	0.221	0.147	50	(0.5)	0.135	0.100	0.685	0.454		
	10	10	4	1	3	-	0.009	0.006	50	(0.5)	0.135	0.100	0.685	0.432		
ST	50	20	5	15	0	0.473	0.473	0.331		(2.5)	0.675	0.500	3.425	2.398		
Total	100	40	10	30	0.385	0.933	1.318	1.112		(5.0)	1.350	1.000	6.850	5.497	4.94	

Source : JICA Team Estimation

- Remarks
1. Nos. of accident and casualty are based on 1986 survey by JICA Team.
 2. The costs and benefits are calculated at 1986 price.
 3. Unit values of fatality, injury and property damage are:
 - 1) fatality = B 0.9 million
 - 2) injury = B 0.09 million
 - 3) property damage = B 0.02 million
 4. Traffic volume is set at 1986 level.
 5. Rate of Discount : 5% per annum
 6. Number in () indicates the number of persons saved from fatality.
 7. O/M means "Operation and Maintenance"
 8. PV means "Present Value"

Benefit/Cost Computation on Safety Plans (7)

(Unit : Cost, Benefit : Baht in million)

Road Segment No.	Year	Accident			Cost			Reduction Rate(%) (9)	Benefit (Saved)			Net Benefit (B-C) (15)	B/C (16)				
		No. (1)	Casualty (2)	Fatality (3)	Injury (4)	Inst. (5)	O/M (6)		Total (7)	PV (8)	Fatality (10)			Injury (11)	Prop.Dam. (12)	Total (13)	PV (14)
1	17	12	1	1	11	1,290	-	1,290	35	(0.4)	0.360	0.120	0.831	0.831	0.831		
2	17	12	1	-	11	-	0	0	35	(0.4)	0.360	0.120	0.831	0.789	0.831		
3	17	12	1	-	11	0.126	0.126	0.114	35	(0.4)	0.360	0.120	0.831	0.750	0.831		
4	17	12	1	-	11	0	0	0	35	(0.4)	0.360	0.120	0.831	0.712	0.831		
5	17	12	1	-	11	0.126	0.126	0.103	35	(0.4)	0.360	0.120	0.831	0.677	0.831		
ST	85	60	5	55	1,290	0.252	1,542	1,507	(2.0)	1.800	1.755	0.600	4.155	3.759	2.252		
6	17	12	1	-	11	0	0	0	35	(0.4)	0.360	0.120	0.831	0.643	0.831		
7	17	12	1	-	11	0.126	0.126	0.093	35	(0.4)	0.360	0.120	0.831	0.611	0.831		
8	17	12	1	-	11	0.001	0.001	0.001	35	(0.4)	0.360	0.120	0.831	0.580	0.831		
9	17	12	1	-	11	0.126	0.126	0.084	35	(0.4)	0.360	0.120	0.831	0.551	0.831		
10	17	12	1	-	11	0	0	0	35	(0.4)	0.360	0.120	0.831	0.524	0.831		
ST	85	60	5	55	0	0.253	0.253	0.178	(2.0)	1.800	1.755	0.600	4.155	2.909	2.252		
Total	170	120	10	110	1,290	0.505	1,795	1,685	(4.0)	3.600	3.510	1.200	8.310	6.668	4.983		
															3.96		

Source : JICA Team Estimation

- Remarks
1. Nos. of accident and casualty are based on 1986 survey by JICA Team.
 2. The costs and benefits are calculated at 1986 price.
 3. Unit values of fatality, injury and property damage are:
 - 1) fatality = ¥ 0.9 million
 - 2) injury = ¥ 0.09 million
 - 3) property damage = ¥ 0.02 million
 4. Traffic volume is set at 1986 level.
 5. Rate of Discount : 5% per annum
 6. Number in () indicates the number of persons saved from fatality.
 7. O/M means "Operation and Maintenance"
 8. pv means "Present Value"

Benefit/Cost Computation on Safety Plans (8)

(Unit : Cost, Benefit : Baht in million)

Road Segment No.	Year	Accident			Cost			Reduction Rate(%) (9)	Benefit (Saved)				Net Benefit (B-C) (15)	B/C (16)		
		No. (1)	Casualty (2)	Fatality (3)	Injury (4)	Inst. (5)	O/M (6)		Total (7)	PV (8)	Fatality (10)	Injury (11)			Prop.Dam. (12)	Total (13)
	1	157	62	5	57	14.759	-	14.759	37	(21.1)	1.899	1.162	4.771	4.771	4.771	
	2	157	62	5	57	-	0.883	0.883	37	(21.1)	1.899	1.162	4.771	4.532	4.532	
	3	157	62	5	57	-	1.920	1.920	37	(21.1)	1.899	1.162	4.771	4.306	4.306	
	4	157	62	5	57	-	0.883	0.883	37	(21.1)	1.899	1.162	4.771	4.091	4.091	
S7	5	157	62	5	57	-	1.920	1.920	37	(21.1)	1.899	1.162	4.771	3.886	3.886	
Sukhumvit Road	ST	785	310	25	285	14.759	5.606	20.365		(105.5)	9.495	5.810	23.855	21.586	1.934	
	6	157	62	5	57	-	0.883	0.883	37	(21.1)	1.899	1.162	4.771	3.692	3.692	
	7	157	62	5	57	-	1.920	1.920	37	(21.1)	1.899	1.162	4.771	3.507	3.507	
	8	157	62	5	57	-	0.896	0.896	37	(21.1)	1.899	1.162	4.771	3.332	3.332	
	9	157	62	5	57	-	1.920	1.920	37	(21.1)	1.899	1.162	4.771	3.165	3.165	
	10	157	62	5	57	-	0.883	0.883	37	(21.1)	1.899	1.162	4.771	3.007	3.007	
ST	ST	785	310	25	285	0	6.502	6.502		(105.5)	9.495	5.810	23.855	16.703	16.703	
Total	1570	620	50	570	14.759	12.108	26.867	24.202		(19.0)	17.100	11.620	47.710	38.289	14.087	1.58

Source : JICA Team Estimation

- Remarks
1. Nos. of accident and casualty are based on 1986 survey by JICA Team.
 2. The costs and benefits are calculated at 1986 price.
 3. Unit values of fatality, injury and property damage are;
 - 1) fatality = P 0.9 million
 - 2) injury = P 0.09 million
 - 3) property damage = P 0.02 million
 4. Traffic volume is set at 1986 level.
 5. Rate of Discount : 5% per annum
 6. Number in () indicates the number of persons saved from fatality.
 7. O/M means "Operation and Maintenance"
 8. PV means "Present Value"

Benefit/Cost Computation on Safety Plans (9)

(Unit : Cost, Benefit : Baht in Million)

Road Segment No.	Year	Accident			Cost			Reduction Rate(%) (9)	Benefit (Saved)			Net Benefit (B-C) (15)	B/C (16)				
		No. (1)	Casualty (2)	Fatality (3)	Injury (4)	Inst. (5)	O/M (6)		Total (7)	PV (8)	Fatality (10)			Injury (11)	Prop.Dam. (12)	Total (13)	PV (14)
	1	118	69	4	65	18.486	-	18.486	40	(1.6)	1.440	(26.0)	2.340	0.944	4.724	4.724	4.724
	2	118	69	4	65	-	0.543	0.516	40	(1.6)	1.440	(26.0)	2.340	0.944	4.724	4.448	4.448
	3	118	69	4	65	-	0.543	0.543	40	(1.6)	1.440	(26.0)	2.340	0.944	4.274	4.263	4.263
	4	118	69	4	65	-	0.543	0.543	40	(1.6)	1.440	(26.0)	2.340	0.944	4.724	4.050	4.050
S 8	5	118	69	4	65	-	0.543	0.543	40	(1.6)	1.440	(26.0)	2.340	0.944	4.724	3.848	3.848
Rama	ST	590	345	20	325	18.486	2.172	20.658	40	(8.0)	7.200	(130.0)	11.700	4.720	23.620	21.373	0.973
IV	6	118	69	4	65	-	0.543	0.543	40	(1.6)	1.440	(26.0)	2.340	0.944	4.724	3.655	3.655
Road	7	118	69	4	65	-	0.543	0.543	40	(1.6)	1.440	(26.0)	2.340	0.944	4.724	3.473	3.473
	8	118	69	4	65	-	0.543	0.543	40	(1.6)	1.440	(26.0)	2.340	0.944	4.724	3.299	3.299
	9	118	69	4	65	-	0.543	0.543	40	(1.6)	1.440	(26.0)	2.340	0.944	4.724	3.134	3.134
	10	118	69	4	65	-	0.543	0.543	40	(1.6)	1.440	(26.0)	2.340	0.944	4.724	2.977	2.977
ST	ST	590	345	20	325	0	2.715	2.715	40	(8.0)	7.200	(130.0)	11.700	4.720	23.620	16.538	1.70
Total	1180	690	40	650	18.486	4.887	23.373	22.300		(16.0)	14.400	(260.0)	23.400	9.440	47.240	37.911	15.611

Source : JICA Team Estimation

Remarks 1. Nos. of accident and casualty are based on 1986 survey by JICA Team.

2. The costs and benefits are calculated at 1986 price.

3. Unit values of fatality, injury and property damage are:

1) fatality = 20.9 million

2) injury = 0.09 million

3) property damage = 0.02 million

4. Traffic volume is set at 1986 level.

5. Rate of Discount : 5% per annum

6. Number in () indicates the number of persons saved from fatality.

7. O/M means "Operation and Maintenance"

8. PV means "Present Value"

Benefit/Cost Computation on Safety Plans (10)

(Unit : Cost, Benefit : Baht in million)

Road Segment No.	Accident			Cost				Reduction Rate (%) (9)	Benefit (Saved)				Net Benefit (B-C) (15)	B/C (16)	
	No. (1)	Casualty (2)	Fatality (3)	Injury (4)	Inst. (5)	O/M (6)	Total (7)		PV (8)	Fatality (10)	Injury (11)	Prop. Dam. (12)			Total (13)
1	15	15	2	13	0.739	-	0.739	0.739	50	(1.0) 0.900	(6.5) 0.585	0.150	1.635	1.635	
2	15	15	2	13	-	0.019	0.019	0.018	50	(1.0) 0.900	(6.5) 0.585	0.150	1.635	1.553	
3	15	15	2	13	-	0.095	0.095	0.086	50	(1.0) 0.900	(6.5) 0.585	0.150	1.635	1.476	
4	15	15	2	13	-	0.019	0.019	0.016	50	(1.0) 0.900	(6.5) 0.585	0.150	1.635	1.402	
5	15	15	2	13	-	0.095	0.095	0.077	50	(1.0) 0.900	(6.5) 0.585	0.150	1.635	1.332	
ST	75	75	10	65	0.739	0.228	0.967	0.936		(5.0) 4.500	(32.5) 2.925	0.750	8.175	7.398	6.462
Itsara-	6	15	2	13	-	0.019	0.019	0.015	50	(1.0) 0.900	(6.5) 0.585	0.150	1.635	1.265	
Phap	7	15	2	13	-	0.095	0.095	0.070	50	(1.0) 0.900	(6.5) 0.585	0.150	1.635	1.202	
Road	8	15	2	13	-	0.023	0.023	0.016	50	(1.0) 0.900	(6.5) 0.585	0.150	1.635	1.142	
	9	15	2	13	-	0.095	0.095	0.063	50	(1.0) 0.900	(6.5) 0.585	0.150	1.635	1.085	
	10	15	2	13	-	0.019	0.019	0.012	50	(1.0) 0.900	(6.5) 0.585	0.150	1.635	1.033	
ST	75	75	10	65	0	0.251	0.251	0.176		(5.0) 4.500	(32.5) 2.925	0.750	8.175	5.727	
Total	150	150	20	130	0.739	0.479	1.218	1.112		(10.0) 9.000	(65.0) 5.850	1.500	16.350	13.125	11.80

Source : JICA Team Estimation

- Remarks
1. Nos. of accident and casualty are based on 1986 survey by JICA Team.
 2. The costs and benefits are calculated at 1986 price.
 3. Unit values of fatality, injury and property damage are:
 - 1) fatality = ¥ 0.9 million
 - 2) injury = ¥ 0.09 million
 - 3) property damage = ¥ 0.02 million
 4. Traffic volume is set at 1986 level.
 5. Rate of Discount : 5% per annum
 6. Number in () indicates the number of persons saved from fatality.
 7. O/M means "Operation and Maintenance"
 8. PV means "Present Value"

Benefit/Cost Computation on Safety Plans (11)

(Unit : Cost, Benefit : Babt in million)

Road Segment No.	Year	Accident				Cost				Reduction Rate(%) (9)	Benefit (Saved)				Net Benefit (B-C) (15)	B/C (16)		
		No. (1)	Casualty (2)	Fatality (3)	Injury (4)	Inst. (5)	O/M (6)	Total (7)	PV (8)		Fatality (10)	Injury (11)	Prop.Dam. (12)	Total (13)			PV (14)	
1	24	19	1	1	18	2.250	-	2.250	2.250	55	(0.6)	0.540	(9.9)	0.891	0.264	1.695	1.695	
2	24	19	1	1	18	-	0.051	0.051	0.048	55	(0.6)	0.540	(9.9)	0.891	0.264	1.695	1.610	
3	24	19	1	1	18	-	0.085	0.085	0.077	55	(0.6)	0.540	(9.9)	0.891	0.264	1.695	1.530	
4	24	19	1	1	18	-	0.051	0.051	0.044	55	(0.6)	0.540	(9.9)	0.891	0.264	1.695	1.453	
5	24	19	1	1	18	-	0.085	0.085	0.069	55	(0.6)	0.540	(9.9)	0.891	0.264	1.695	1.386	
Charoeng	ST	120	95	5	90	2.250	0.272	2.522	2.488		(3.0)	2.700	(44.5)	4.455	1.320	8.475	7.669	
6	24	19	1	1	18	-	0.051	0.051	0.039	55	(0.6)	0.540	(9.9)	0.891	0.264	1.695	1.312	
7	24	19	1	1	18	-	0.085	0.085	0.062	55	(0.6)	0.540	(9.9)	0.891	0.264	1.695	1.246	
8	24	19	1	1	18	-	0.063	0.063	0.044	55	(0.6)	0.540	(9.9)	0.891	0.264	1.695	1.184	
9	24	19	1	1	18	-	0.085	0.085	0.055	55	(0.6)	0.540	(9.9)	0.891	0.264	1.695	1.124	
10	24	19	1	1	18	-	0.051	0.051	0.032	55	(0.6)	0.540	(9.9)	0.891	0.264	1.695	1.068	
ST	120	95	5	90			0.335	0.335	0.233		(3.0)	2.700	(44.5)	4.455	1.320	8.475	5.934	
Total	240	190	10	180	2.250	0.607	2.857	2.721			(6.0)	54.000	(99.0)	44.550	2.640	16.950	13.603	5.00

Source : JICA Team Estimation

- Remarks
1. Nos. of accident and casualty are based on 1986 survey by JICA Team.
 2. The costs and benefits are calculated at 1986 price.
 3. Unit values of fatality, injury and property damage are:
 - 1) fatality = ¥ 0.9 million
 - 2) injury = ¥ 0.09 million
 - 3) property damage = ¥ 0.02 million
 4. Traffic volume is set at 1986 level.
 5. Rate of Discount : 5% per annum
 6. Number in () indicates the number of persons saved from fatality.
 7. O/M means "Operation and Maintenance"
 8. PV means "Present Value"

JICA