JAPAN INTERNATIONAL COOPERATION AGENCY

DEPARTMENT OF HIGHWAYS
MINISTRY OF TRANSPORT AND COMMUNICATIONS
KINGDOM OF THAILAND

FEASIBILITY STUDY ON THE INTER-CITY TOLL MOTORWAY PROJECTS IN THE KINGDOM OF THAILAND

FINAL REPORT

VOLUME III
APPENDICES

MARCH 1995

KATAHIRA & ENGINEERS INTERNATIONAL
NIPPON KOEI CO., LTD.
KOKUSAI KOGYO CO., LTD.

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ABBREVIATIONS

AADT	:	Annual Average Daily Traffic
AASHTO	:	American Association State Highway and Transportation Officials
AC	:	Asphalt Concrete
ADB	:	Asian Development Bank
ADT	:	Average Daily Traffic
Alinment	:	Alignment
AR	:	Alternative Route
ASB	:	Amber Security Beacon
AVC	:	Automatic Vehicle Classification Unit
B-C	:	Ban Pong-Cha Am, B/C
BMR	:	Bangkok Metropolitan
BOD	:	Biochemical Oxygen Demand
BOT	:	Built-Operate-and-Transfer
B/S	:	Bus Stop
BT	:	Build-and-Transfer
CBR	:	California Bearing Ratio
CCTV	:	Closed-circuit Television
cd/m^2	:	Candle per Square Meter
CL	:	Climbing Lane
CL	:	Silty Clay
CO	:	Carbon Monoxide
CRF	:	Conversion Ratio of Fare Burden
C/V	:	Capacity/Design Traffic Volume
DAC	:	Development Assistance Committee
dBA	:	Decibel
DDG	:	Deputy Director General
DDHV	:	Directional Design Hour Volume
DG	:	Director General
DHV	:	Directional Hour Volume
DO	:	Dissolved Oxygen
DOH	:	Department of Highways
DTV	:	Daily Traffic Volume
EB	:	Passenger Car Equivalent for Buses
EE	:	Environmental Examination
EIA	:	Environmental Impact Assessment
EIRR	:	Economic Internal Rate of Return
ET	:	Passenger Car Equivalent for Trucks
ETA	:	Expressway and Rapid Transit Authority of Thailand
FHWA	:	Federal Highway Administration (USA)
FIO	:	Forest Industry Organization
FIRR	:	Financial Internal Rate of Return
GDP	:	Gross Domestic Product
GOT	:	Government of Thailand
GPP	:	Gross Provincial Product
GRP	:	Gross Regional Product
HB	:	Heavy Bus

HCM	:	Highway Capacity Manual
HT	:	Heavy Truck
I/C	:	Interchange
ICMA	:	Inter-City Motorway Authority
IEE	:	Initial Environmental Examination
IFC	:	International Finance Corporation
IHV	:	Interchange Hour Volume
ILI	:	International Financial Institution
IRR	:	Internal Rate of Return
J/C	:	Junction
JHPC	:	Japan Highway Public Corporation
JICA	:	Japan International Cooperation Agency
k.p.h	:	Kilometer per Hour, Kmph
LB	:	Light Bus
LCB	:	Lane Closure Barrier
LCL	:	Lane Controller
L-D	:	Lampang-Doi Saket, L/D
Ldn	:	Day-Night Sound Level
Leq	:	Equivalent Sound Level
$Leq_{(24)}$	:	24-Hour Equivalent Sound Level
$Leq_{(h)}$	:	1-Hour Equivalent Sound Level
LOS	:	Level of Service
LT	:	Light Truck
LTD	:	Land Transport Department
LTL	:	Lane Traffic Light
MB	:	Medium Truck
MC	:	Motorcycle
mg/m^3	:	Milligram per Cubic Meter
MH	:	Silt
MOAC	:	Ministry of Agriculture and Cooperatives
MOC	:	Ministry of Construction in Japan
MOSTE	:	Ministry of Science, Technology and Environment
MOTC	:	Ministry of Transport and Communications
MPa	:	1 MPa = 9.8 kgf/cm^2
m.p.h	:	Mile per Hour
MSF	:	Maximum Service Flow Rate
MT	:	Medium Truck
NATM	:	New Austrian Tunneling Method
NEB	:	National Environment Board
NESDB	:	National Economic and Social Development Board
NO_2	:	Nitrogen Dioxide
NOx	:	Oxides of Nitrogen
NPV	:	Net Present Value
OBRM	:	Outer Bangkok Ring Motorway
OBRR	:	Outer Bangkok Ring Road
OD	:	Origin-Destination
ODA	:	Official Development Assistance
OECF	:	Overseas Economic Cooperation Fund of Japan
OEPP	:	Office of Environmental Policy and Planning, MOSTE (Thailand)

OTL	:	Overhead Traffic Light
O&M	:	Operation and Maintenance
Pb	:	Lead
PC	:	Passenger Car
PCC	:	Portland Cement Concrete
pcphpl	:	Passenger Car per Hour per Lane
PCU	:	Passenger Car Unit
PH	:	Planed Hight
PIARC	:	Permanent International Association of Road Congresses
PP	:	Pick-up (passenger)
PU	:	Pick-up
R/A	:	Rest Area
R&D	:	Research and Development
ROW	:	Right of Ways
RPR	:	Receipt Printer
Rt.	:	Route number of National Highway
S/A	:	Service Area
SC	:	Clayey Sand
SFL	:	Service Flow Rate per Lane
SL	:	Spring Line
SM	:	Silty Sand
SO_2	:	Sulfur Dioxide
SPC	:	Station Processor
SRT	:	State Railway of Thailand
SS	:	Suspended Solid
STA	:	Station
TC	:	Tricycle (with engine)
TCT	:	Toll Collector Terminal
TEV	:	Time Evaluation Value
TFT	:	Toll Fare Indication
TM	:	Toll Motorway
TMC	:	Toll Monitor Console
TSP	:	Total Suspended Particles
ug/m^3	:	Microgram per Cubic Meter
USEPA	:	United States Environmental Protection Agency
V/C Ratio	:	Volume Capacity Ratio
veh/day	:	Vehicle per Day
VOC	:	Vehicle Operating Costs
vph	:	Vehicle per Hour

CHAPTER 2

SOCIO-ECONOMIC FRAMEWORK

APPENDIX 2.1-1 POPULATION BY CHANGWAT IN THAILAND (1/2)

Changwat	Population (1,000 persons)					Annual Growth Rate (%)				Density in 1992 (persons per sq km)
	1976	1981	1986	1991	1992	1976-1981	1981-1986	1986-1991	1991-1992	
NORTHEASTERN	14,793	16,394	18,552	20,045	20,059	2.1	2.5	1.6	0.1	118.8
BURIRAM	1,024	1,160	1,331	1,459	1,417	2.5	2.8	1.9	-2.9	137.3
CHAIYAPHUM	786	871	972	1,073	1,086	2.1	2.2	2.0	1.2	85.0
KALASIN	707	772	836	906	925	1.8	1.6	1.6	2.2	133.2
KHON KAEN	1,239	1,385	1,618	1,695	1,663	2.2	3.2	0.9	-1.9	152.7
LOEI	404	463	519	559	595	2.8	2.3	1.5	6.5	52.1
MAHA SARAKHAM	713	771	857	909	869	1.6	2.1	1.2	-4.4	164.2
MUKDAHAN	-	-	272	293	299			1.5	2.0	69.0
NAKHON PHANOM	703	770	597	644	650	1.8	2.4	1.5	0.9	117.9
NAKHON RATCHASIMA	1,779	1,950	2,266	2,404	2,467	1.9	3.0	1.2	2.6	120.4
NONG KHAI	576	689	774	892	837	3.6	2.4	2.9	-6.2	114.1
ROI ET	1,007	1,076	1,167	1,241	1,239	1.3	1.6	1.2	-0.2	149.3
SAKHON NAKHON	724	789	906	988	1,014	1.7	2.8	1.8	2.6	105.6
SI SA KET	1,002	1,103	1,237	1,358	1,336	1.9	2.3	1.9	-1.7	151.1
SURIN	940	1,065	1,217	1,294	1,341	2.5	2.7	1.2	3.7	165.1
UBON RATCHATHANI	1,428	1,590	1,776	1,961	1,945	2.2	2.2	2.0	-0.8	102.9
UDON THANI	1,331	1,475	1,710	1,835	1,846	2.1	3.0	1.4	0.6	118.4
YASOTHON	430	464	497	533	528	1.5	1.4	1.4	-0.9	126.9
NORTHERN	9,048	9,714	10,490	11,022	11,683	1.4	1.5	1.0	6.0	68.9
KAMPHAENG PHET	499	574	628	677	731	2.8	1.8	1.5	8.1	85.0
CHAING RAI	1,312	936	987	1,048	1,229	-6.5	1.1	1.2	17.3	105.3
CHIANG MAI	1,100	1,180	1,296	1,386	1,531	1.4	1.9	1.3	10.5	76.1
TAK	254	284	327	359	426	2.3	2.8	1.9	18.7	25.9
NAKHON SAWAN	935	989	1,053	1,092	1,094	1.1	1.3	0.7	0.2	114.0
NAN	360	385	423	455	458	1.3	1.9	1.5	0.5	39.9
PHICHIT	535	536	543	506	587	0.0	0.3	-1.4	16.0	129.6
PHITSANULOK	675	714	747	795	842	1.1	0.9	1.3	5.9	77.8
PHETCHABUN	716	798	909	964	996	2.2	2.6	1.2	3.4	78.6
PHARE	418	451	479	494	494	1.5	1.2	0.6	-0.1	75.5
MAE HONG SON	119	135	160	176	207	2.5	3.3	2.0	17.6	16.3
LAMPANG	643	665	745	778	776	0.7	2.3	0.9	-0.2	61.9
LAMPHUN	340	356	402	418	398	1.0	2.5	0.8	-4.9	88.3
SUKHOTHAI	505	539	572	596	607	1.3	1.2	0.8	1.8	92.0
UTTARADIT	403	437	446	463	476	1.7	0.4	0.8	2.7	60.7
PHAYAO	-	468	485	507	513		0.7	0.9	1.1	80.9
UTHAI THANI	232	267	289	308	319	2.8	1.6	1.3	3.5	47.3
SOUTHERN	5,330	5,935	6,608	7,208	7,402	2.2	2.2	1.8	2.7	104.7
CHUMPHON	305	337	366	403	416	2.1	1.7	1.9	3.3	69.2
KRABI	191	225	266	304	311	3.4	3.4	2.7	2.5	66.1
NAKHON SI THAMMARAT	1,165	1,279	1,367	1,437	1,477	1.9	1.3	1.0	2.8	148.6
NARATHIWAT	406	452	512	578	577	2.2	2.5	2.5	-0.2	128.8
PATTANI	415	465	498	546	541	2.3	1.4	1.9	-0.9	278.9
PHANG NGA	157	179	199	215	218	2.6	2.2	1.5	1.3	52.2
PHATTHALUNG	383	416	436	466	475	1.7	0.9	1.3	1.9	138.6
PHUKET	121	136	150	175	189	2.5	2.0	3.1	7.9	347.1
RANONG	74	86	102	121	131	3.2	3.5	3.4	8.2	39.7
SATUN	147	169	202	227	231	2.8	3.6	2.3	1.7	93.0
SONGKHLA	778	868	1,024	1,097	1,130	2.2	3.4	1.4	3.0	152.8
SURATTHANI	553	605	687	751	791	1.8	2.6	1.8	5.3	61.4
TRANG	392	435	477	527	540	2.1	1.8	2.0	2.5	109.8
YALA	245	281	322	363	376	2.8	2.8	2.4	3.6	83.1

APPENDIX 2.1-1 POPULATION BY CHANGWAT IN THAILAND (2/2)

Changwat	Population (1,000 persons)					Annual Growth Rate (%)				Density in 1992 (persons per sq km)
	1976	1981	1986	1991	1992	1976-1981	1981-1986	1986-1991	1991-1992	
EASTERN	2,622	2,945	3,418	3,740	3,739	2.3	3.0	1.8	0.0	102.4
CHACHOENGSAO	455	498	541	590	593	1.8	1.7	1.7	0.6	110.9
CHON BURI	669	738	836	925	928	2.0	2.5	2.0	0.3	212.6
TRAT	122	140	176	201	202	2.8	4.6	2.7	0.1	71.5
NAKHON NAYOK	194	202	215	230	230	0.9	1.2	1.4	0.0	108.5
PRACHIN BURI	564	649	816	888	893	2.8	4.7	1.7	0.6	74.7
RAYONG	330	377	431	460	438	2.7	2.7	1.3	-4.8	123.2
CHANTHABURI	288	340	404	446	455	3.4	3.5	2.0	2.0	71.8
WESTERN	2,604	2,866	3,146	3,337	3,424	1.9	1.9	1.2	2.6	79.5
KANCHANABURI	448	545	634	709	724	4.0	3.1	2.3	2.2	37.2
PRACHUAP KHIRI KHAN	344	381	406	431	451	2.1	1.2	1.2	4.8	70.9
PHETCHABURI	345	372	412	431	439	1.5	2.1	0.9	1.8	70.5
RATCHABURI	597	654	692	727	777	1.8	1.1	1.0	6.8	149.5
SAMUT SONGKHRAM	192	198	205	206	207	0.5	0.8	0.1	0.2	496.0
SUPHAN BURI	677	717	798	834	826	1.1	2.2	0.9	-1.0	154.1
CENTRAL	2,417	2,557	2,724	2,854	2,822	1.1	1.3	0.9	-1.1	170.1
CHAI NAT	322	332	343	358	339	0.6	0.7	0.8	-5.1	137.4
PHRA NAKHON SI AYUTTHAYA	607	627	664	691	693	0.6	1.2	0.8	0.3	271.1
SARABURI	445	475	504	540	546	1.3	1.2	1.4	1.1	152.7
LOP BURI	596	662	720	754	738	2.1	1.7	0.9	-2.0	119.1
SING BURI	198	204	219	231	221	0.6	1.4	1.1	-4.3	269.2
ANGTHOING	247	257	274	281	284	0.7	1.3	0.5	1.2	293.4
BMR	6,400	7,465	8,031	8,702	8,661	3.1	1.5	1.6	-0.5	1,116.4
BANGKOK METROPOLITAN	4,545	5,331	5,469	5,621	5,562	3.2	0.5	0.5	-1.0	3,553.6
NONTHABURI	347	404	526	703	699	3.1	5.4	6.0	-0.6	1,122.8
PATHUM THANI	296	332	402	466	485	2.4	3.9	3.0	4.0	317.6
SAMUT PRAKAN	449	557	690	882	872	4.4	4.4	5.0	-1.2	868.2
SAMUT SAKHON	245	271	328	365	373	2.0	3.9	2.2	2.0	427.1
NAKHON PATHOM	519	570	618	664	671	1.9	1.6	1.5	1.1	309.6
WHOLE KINGDOM	43,213	47,875	52,969	56,907	57,789	2.1	2.0	1.4	1.5	112.6

Source : Registration Division, Department of Local Administration, Ministry of Interior

APPENDIX 2.1-2 GPP AT CURRENT MARKET PRICES

(1/2)

(Unit : Million Baht)

CHANGWAT	1981	(% share)	1986	(% share)	1989	(% share)
NORTHEASTERN						
KHON KAEN	11,617	1.5	16,224	1.5	25,513	1.4
UDON THANI	10,956	1.4	14,319	1.3	20,966	1.2
LOEI	4,268	0.6	5,568	0.5	8,397	0.5
NONG KHAI	4,473	0.6	7,587	0.7	10,972	0.6
MUKDAHAN	-	-	2,078	0.2	3,122	0.2
NAKHON PHANOM	4,613	0.6	4,546	0.4	6,724	0.4
SAKHON NAKHON	5,167	0.7	7,122	0.7	10,553	0.6
KALASIN	4,970	0.7	6,326	0.6	9,298	0.5
NAKHON RATCHASIMA	16,996	2.2	24,781	2.3	34,193	1.9
CHAIYAPHUM	5,158	0.7	8,712	0.8	12,730	0.7
YASOTHON	2,907	0.4	3,579	0.3	5,242	0.3
UBON RATCHATHANI	9,597	1.3	13,955	1.3	20,697	1.2
ROI ET	6,366	0.8	9,075	0.8	12,466	0.7
BURI RAM	7,124	0.9	10,047	0.9	14,915	0.8
SURIN	6,525	0.9	9,016	0.8	12,506	0.7
MAHA SARAKHAM	4,764	0.6	6,209	0.6	9,572	0.5
SI SA KET	6,005	0.8	8,417	0.8	12,008	0.7
NORTHERN						
CHIANG MAI	16,467	2.2	21,730	2.0	33,481	1.9
LAMPANG	7,980	1.0	11,301	1.0	15,905	0.9
UTTARADIT	4,509	0.6	5,997	0.5	9,458	0.5
MAE HONG SON	1,527	0.2	1,996	0.2	2,738	0.2
CHIANG RAI	8,839	1.2	11,263	1.0	17,165	1.0
PHRAE	3,795	0.5	4,912	0.4	7,014	0.4
LAMPHUN	3,358	0.4	4,077	0.4	6,503	0.4
NAN	3,176	0.4	4,046	0.4	5,829	0.3
PHAYAO	3,683	0.5	4,618	0.4	6,952	0.4
NAKHON SAWAN	10,966	1.4	14,214	1.3	22,639	1.3
PHITSANULOK	7,294	1.0	8,998	0.8	14,203	0.8
KAM PHAENG PHET	5,441	0.7	9,369	0.9	14,302	0.8
UTHAI THANI	3,225	0.4	3,844	0.4	5,337	0.3
SUKHOTHAI	5,765	0.8	6,935	0.6	9,816	0.6
TAK	3,347	0.4	5,398	0.5	7,798	0.4
PHICHIT	5,340	0.7	6,042	0.6	8,990	0.5
PHETCHABUN	7,701	1.0	9,288	0.8	14,797	0.8
SOUTHERN						
PHUKET	4,855	0.6	4,970	0.5	11,350	0.6
SURAT THANI	7,122	0.9	12,246	1.1	20,804	1.2
RANONG	3,529	0.5	3,543	0.3	4,916	0.3
PHANG NGA	8,005	1.1	5,533	0.5	7,393	0.4
KRABI	2,444	0.3	4,571	0.4	7,819	0.4
CHUMPHON	4,250	0.6	7,375	0.7	9,286	0.5
NAKHON SI THAMARAT	11,344	1.5	16,063	1.5	25,069	1.4
SONGHLA	12,037	1.6	19,202	1.8	26,447	1.5
SATUN	1,938	0.3	3,716	0.3	5,182	0.3
YALA	3,929	0.5	5,266	0.5	7,416	0.4
TRANG	5,716	0.8	7,469	0.7	11,042	0.6
NARATHIWAT	4,693	0.6	6,780	0.6	9,700	0.5
PHATTHALUNG	3,797	0.5	4,977	0.5	7,138	0.4
PATTANI	3,970	0.5	5,709	0.5	7,721	0.4

Source : Gross Regional and Provincial Products, Preliminary Series 1981-1989, NESDB

APPENDIX 2.1-2 GPP AT CURRENT MARKET PRICES

(Unit : Million Baht)

CHANGWAT	1981	(% share)	1986	(% share)	1989	(% share)
EASTERN						
CHON BURI	27,866	3.7	45,523	4.2	73,297	4.1
CHACHOENGSAO	7,483	1.0	15,636	1.4	29,191	1.6
RAYONG	7,063	0.9	12,023	1.1	17,142	1.0
TRAT	2,442	0.3	3,462	0.3	5,241	0.3
CHANTABURI	4,633	0.6	6,091	0.6	9,439	0.5
NAKHON NAYOK	2,186	0.3	2,799	0.3	4,285	0.2
PRACHIN BURI	6,769	0.9	9,334	0.9	14,031	0.8
WESTERN						
RATCHABURI	11,654	1.5	14,225	1.3	20,285	1.1
KANCHANABURI	13,346	1.8	16,503	1.5	24,088	1.4
PRACHUAP KHIRI KHAN	6,580	0.9	8,717	0.8	14,098	0.8
PETCHABURI	5,431	0.7	7,331	0.7	11,218	0.6
SUPHAN BURI	9,445	1.2	10,657	1.0	18,755	1.1
SAMUT SONGKHRAM	1,819	0.2	2,776	0.3	3,739	0.2
CENTRAL						
SARABURI	12,396	1.6	17,212	1.6	32,518	1.8
SINGBURI	3,217	0.4	3,279	0.3	5,085	0.3
CHAI NAT	4,792	0.6	5,505	0.5	8,246	0.5
ANG THONG	3,545	0.5	3,888	0.4	5,704	0.3
LOP BURI	8,581	1.1	9,912	0.9	14,857	0.8
PHRA NAKHON SRI AYUTHAYA	8,069	1.1	10,698	1.0	15,592	0.9
BMR						
BANGKOK METROPOLIS	248,182	32.6	369,194	33.7	628,033	35.4
SAMUT PRAKAN	31,591	4.2	45,596	4.2	99,981	5.6
PATHUM THANI	14,118	1.9	28,721	2.6	44,831	2.5
SAMUT SAKHON	6,707	0.9	16,167	1.5	24,370	1.4
NAKHON PATHOM	9,534	1.3	13,756	1.3	20,655	1.2
NONTHABURI	11,197	1.5	17,355	1.6	37,210	2.1
TOTAL	760,195	100.0	1,095,368	100.0	1,775,978	100.0

Source : Gross Regional and Provincial Products, Preliminary Series 1981-1989, NESDB

APPENDIX 2.1-3 GPP AT 1972 CONSTANT PRICES

(1/2)

(Unit : Million Baht)

CHANGWAT	1981	1986	1989	GROWTH RATE (% p.a.) 1981-1986	1986-1989
NORTHEASTERN					
KHON KAEN	5,102	6,599	8,822	5.3	6.0
UDON THANI	4,672	5,927	7,330	4.9	4.3
LOEI	1,885	2,370	2,825	4.7	3.6
NONG KHAI	1,952	3,235	3,968	10.6	4.2
MUKDAHAN		850	1,102		5.3
NAKHON PHANOM	2,022	1,870	2,404	-1.6	5.2
SAKHON NAKHON	2,205	2,919	3,675	5.8	4.7
KALASIN	2,171	2,591	3,292	3.6	4.9
NAKHON RATCHASIMA	8,226	10,321	12,496	4.6	3.9
CHAIYAPHUM	2,350	3,623	4,625	9.0	5.0
YASOTHON	1,233	1,480	1,828	3.7	4.3
UBON RATCHATHANI	4,241	5,780	7,153	6.4	4.4
ROI ET	2,654	3,710	4,382	6.9	3.4
BURI RAM	3,030	4,211	5,224	6.8	4.4
SURIN	2,826	3,717	4,335	5.6	3.1
MAHA SARAKHAM	2,069	2,530	3,406	4.1	6.1
SI SA KET	2,640	3,679	4,323	6.9	3.3
NORTHERN					
CHIANG MAI	7,194	8,888	11,231	4.3	4.8
LAMPANG	3,415	3,852	4,711	2.4	4.1
UTTARADIT	1,848	2,498	3,233	6.2	5.3
MAE HONG SON	599	779	911	5.4	3.2
CHIANG RAI	3,649	4,868	6,073	5.9	4.5
PHRAE	1,640	2,032	2,446	4.4	3.8
LAMPHUN	1,601	1,762	2,271	1.9	5.2
NAN	1,359	1,716	2,060	4.8	3.7
PHAYAO	1,490	1,961	2,479	5.6	4.8
NAKHON SAWAN	4,453	5,859	7,582	5.6	5.3
PHITSANULOK	2,998	3,751	4,849	4.6	5.3
KAM PHAENG PHET	2,147	3,279	4,350	8.8	5.8
UTHAI THANI	1,328	1,597	1,836	3.8	2.8
SUKHOTHAI	2,345	2,847	3,383	4.0	3.5
TAK	1,353	2,333	2,604	11.5	2.2
PHICHIT	2,154	2,514	3,063	3.1	4.0
PHETCHABUN	3,171	4,093	5,205	5.2	4.9
SOUTHERN					
PHUKET	1,740	1,998	3,355	2.8	10.9
SURAT THANI	2,982	4,736	7,071	9.7	8.3
RANONG	1,128	1,152	1,397	0.4	3.9
PHANG NGA	2,499	2,088	2,202	-3.5	1.1
KRABI	1,040	1,744	2,424	10.9	6.8
CHUMPHON	1,875	2,925	3,510	9.3	3.7
NAKHON SI THAMARAT	4,709	6,187	8,656	5.6	6.9
SONGHLA	5,028	7,085	8,497	7.1	3.7
SATUN	801	1,329	1,577	10.7	3.5
YALA	1,599	1,924	2,412	3.8	4.6
TRANG	2,209	2,736	3,466	4.4	4.8
NARATHIWAT	1,985	2,570	3,231	5.3	4.7
PHATTHALUNG	1,581	1,954	2,415	4.3	4.3
PATTANI	1,650	2,165	2,591	5.6	3.7

Source : Gross Regional and Provincial Products,Preliminary Series 1981-1989, NESDB

APPENDIX 2.1-3 GPP AT 1972 CONSTANT PRICES (2/2)

(Unit : Million Baht)

CHANGWAT	1981	1986	1989	GROWTH RATE (% p.a.) 1981-1986	1986-1989
EASTERN					
CHON BURI	10,121	12,772	20,225	4.8	9.6
CHACHOENGSAO	3,110	5,034	7,755	10.1	9.0
RAYONG	2,633	3,854	4,966	7.9	5.2
TRAT	1,001	1,264	1,688	4.8	5.9
CHANTABURI	1,908	2,339	3,173	4.2	6.3
NAKHON NAYOK	900	1,146	1,462	5.0	5.0
PRACHIN BURI	2,904	4,002	4,951	6.6	4.3
WESTERN					
RATCHABURI	4,699	5,776	7,086	4.2	4.2
KANCHANABURI	4,837	6,711	8,073	6.8	3.8
PRACHUAP KHIRI KHAN	2,479	3,423	4,776	6.7	6.9
PETCHABURI	2,230	2,875	3,670	5.2	5.0
SUPHAN BURI	3,631	4,486	6,340	4.3	7.2
SAMUT SONGKHRAM	759	1,034	1,256	6.4	4.0
CENTRAL					
SARABURI	5,098	6,409	10,061	4.7	9.5
SINGBURI	1,335	1,384	1,737	0.7	4.7
CHAI NAT	1,933	2,278	2,719	3.3	3.6
ANG THONG	1,448	1,583	1,915	1.8	3.9
LOP BURI	3,641	4,141	5,123	2.6	4.3
PHRA NAKHON SRI AYUTHAYA	3,466	4,319	5,222	4.5	3.9
BMR					
BANGKOK METROPOLIS	107,298	134,510	202,219	4.6	8.5
SAMUT PRAKAN	12,940	16,211	28,728	4.6	12.1
PATHUM THANI	5,924	10,034	13,396	11.1	5.9
SAMUT SAKHON	2,821	5,820	7,721	15.6	5.8
NAKHON PATHOM	4,023	5,612	6,974	6.9	4.4
NONTHABURI	4,452	5,840	10,659	5.6	12.8
TOTAL	318,439	413,490	574,195	5.4	6.8

Source : Gross Regional and Provincial Products,Preliminary Series 1981-1989, NESDB

APPENDIX 2.1-4 GPP BY SECTOR AT CURRENT MARKET PRICES

(Unit : Million Baht)

Sector	1981	(% share)	1986	(% share)	1989	(% share)
CHIANG MAI						
Agriculture	4,050	24.6	4,329	19.9	6,428	19.2
Mining and Quarrying	398	2.4	459	2.1	731	2.2
Manufacturing	1,611	9.8	1,637	7.5	3,039	9.1
Construction	1,111	6.7	1,655	7.6	2,406	7.2
Electricity and Water Supply	140	0.9	503	2.3	670	2.0
Transportation and Communication	1,286	7.8	1,849	8.5	2,522	7.5
Wholesale and Retail Trade	3,175	19.3	3,310	15.2	5,089	15.2
Banking, Insurance and Real Estate	438	2.7	751	3.5	1,823	5.4
Ownership of Dwellings	628	3.8	1,061	4.9	1,325	4.0
Public Administration and Defence	923	5.6	1,488	6.8	1,886	5.6
Services	2,708	16.4	4,688	21.6	7,562	22.6
GPP	16,467	100.0	21,730	100.0	33,481	100.0
LAMPANG						
Agriculture	2,272	28.5	1,568	13.9	2,220	14.0
Mining and Quarrying	279	3.5	2,192	19.4	2,998	18.8
Manufacturing	519	6.5	324	2.9	637	4.0
Construction	652	8.2	958	8.5	1,447	9.1
Electricity and Water Supply	117	1.5	524	4.6	685	4.3
Transportation and Communication	636	8.0	877	7.8	883	5.6
Wholesale and Retail Trade	1,776	22.3	1,984	17.6	2,802	17.6
Banking, Insurance and Real Estate	145	1.8	279	2.5	639	4.0
Ownership of Dwellings	301	3.8	558	4.9	683	4.3
Public Administration and Defence	432	5.4	640	5.7	839	5.3
Services	851	10.7	1,397	12.4	2,072	13.0
GPP	7,980	100.0	11,301	100.0	15,905	100.0
LAMPHUN						
Agriculture	1,282	38.2	1,078	26.4	1,724	26.5
Mining and Quarrying	51	1.5	358	8.8	837	12.9
Manufacturing	95	2.8	106	2.6	300	4.6
Construction	120	3.6	183	4.5	284	4.4
Electricity and Water Supply	21	0.6	60	1.5	88	1.4
Transportation and Communication	304	9.1	250	6.1	312	4.8
Wholesale and Retail Trade	792	23.6	838	20.6	1,268	19.5
Banking, Insurance and Real Estate	60	1.8	114	2.8	257	4.0
Ownership of Dwellings	186	5.5	331	8.1	399	6.1
Public Administration and Defence	160	4.8	244	6.0	311	4.8
Services	286	8.5	516	12.7	724	11.1
GPP	3,358	100.0	4,077	100.0	6,503	100.0
RATCHABURI						
Agriculture	2,717	23.3	2,132	15.0	3,679	18.1
Mining and Quarrying	1,887	16.2	2,014	14.2	2,146	10.6
Manufacturing	1,954	16.8	2,933	20.6	4,668	23.0
Construction	241	2.1	425	3.0	525	2.6
Electricity and Water Supply	220	1.9	479	3.4	710	3.5
Transportation and Communication	678	5.8	968	6.8	936	4.6
Wholesale and Retail Trade	1,968	16.9	2,257	15.9	3,280	16.2
Banking, Insurance and Real Estate	278	2.4	367	2.6	804	4.0
Ownership of Dwellings	385	3.3	617	4.3	736	3.6
Public Administration and Defence	438	3.8	664	4.7	859	4.2
Services	888	7.6	1,369	9.6	1,941	9.6
GPP	11,654	100.0	14,225	100.0	20,285	100.0
PETCHABURI						
Agriculture	1,494	27.5	1,683	23.0	1,945	17.3
Mining and Quarrying	94	1.7	192	2.6	510	4.5
Manufacturing	671	12.3	818	11.2	1,041	9.3
Construction	186	3.4	393	5.4	1,170	10.4
Electricity and Water Supply	85	1.6	199	2.7	286	2.6
Transportation and Communication	461	8.5	708	9.7	898	8.0
Wholesale and Retail Trade	1,227	22.6	1,504	20.5	2,434	21.7
Banking, Insurance and Real Estate	125	2.3	212	2.9	526	4.7
Ownership of Dwellings	228	4.2	369	5.0	440	3.9
Public Administration and Defence	402	7.4	587	8.0	729	6.5
Services	459	8.4	667	9.1	1,237	11.0
GPP	5,431	100.0	7,331	100.0	11,218	100.0

Source : Gross Regional and Provincial Products, Preliminary Series 1981-1989, NESDB

APPENDIX 2.1-5 GPP BY SECTOR AT 1972 CONSTANT PRICES

(Unit : Million Baht)

Sector	1981	1986	1989	Growth Rate (% p.a.) 1981-1986	1986-1989
CHIANG MAI					
Agriculture	1,938	2,283	2,516	3.3	3.3
Mining and Quarrying	175	168	178	-0.7	1.9
Manufacturing	627	685	1,003	1.8	13.6
Construction	417	472	573	2.5	6.7
Electricity and Water Supply	89	245	293	22.4	6.2
Transportation and Communication	549	672	816	4.1	6.7
Wholesale and Retail Trade	1,272	1,308	1,884	0.6	12.9
Banking, Insurance and Real Estate	161	241	522	8.4	29.4
Ownership of Dwellings	336	401	460	3.6	4.7
Public Administration and Defence	467	654	695	7.0	2.0
Services	1,163	1,759	2,291	8.6	9.2
GPP	7,194	8,888	11,231	4.3	8.1
LAMPANG					
Agriculture	1,022	765	864	-5.6	4.2
Mining and Quarrying	142	386	482	22.0	7.7
Manufacturing	176	114	175	-8.3	15.4
Construction	244	273	347	2.3	8.3
Electricity and Water Supply	59	144	155	19.6	2.4
Transportation and Communication	250	268	280	1.4	1.5
Wholesale and Retail Trade	712	784	1,037	2.0	9.8
Banking, Insurance and Real Estate	53	89	155	10.9	20.0
Ownership of Dwellings	161	211	237	5.5	4.0
Public Administration and Defence	219	281	309	5.2	3.2
Services	377	537	671	7.4	7.7
GPP	3,415	3,852	4,711	2.4	6.9
LAMPHUN					
Agriculture	699	667	791	-0.9	5.9
Mining and Quarrying	43	72	148	10.9	26.9
Manufacturing	29	50	77	11.8	15.2
Construction	45	52	67	3.1	8.6
Electricity and Water Supply	14	31	40	17.5	9.2
Transportation and Communication	118	81	101	-7.3	7.6
Wholesale and Retail Trade	317	331	469	0.9	12.3
Banking, Insurance and Real Estate	22	37	74	10.5	26.3
Ownership of Dwellings	100	125	139	4.7	3.5
Public Administration and Defence	81	107	114	5.8	2.2
Services	133	208	251	9.3	6.4
GPP	1,601	1,762	2,271	1.9	8.8
RATCHABURI					
Agriculture	947	1,036	1,362	1.8	9.6
Mining and Quarrying	714	668	597	-1.3	-3.7
Manufacturing	817	1,308	1,669	9.9	8.5
Construction	90	121	125	6.1	0.9
Electricity and Water Supply	139	258	352	13.2	10.9
Transportation and Communication	261	285	268	1.8	-2.0
Wholesale and Retail Trade	789	892	1,214	2.5	10.8
Banking, Insurance and Real Estate	103	118	230	2.8	25.0
Ownership of Dwellings	206	249	283	3.8	4.4
Public Administration and Defence	221	292	316	5.7	2.7
Services	413	549	668	5.9	6.7
GPP	4,699	5,776	7,086	4.2	7.1
PETCHABURI					
Agriculture	608	845	712	6.8	-5.6
Mining and Quarrying	54	61	131	2.5	29.3
Manufacturing	188	216	294	2.8	10.9
Construction	70	112	279	9.9	35.6
Electricity and Water Supply	54	94	124	11.5	9.8
Transportation and Communication	177	206	247	3.1	6.3
Wholesale and Retail Trade	492	595	901	3.9	14.9
Banking, Insurance and Real Estate	46	68	151	8.2	30.4
Ownership of Dwellings	122	149	169	4.1	4.5
Public Administration and Defence	203	258	269	4.9	1.3
Services	217	272	393	4.6	13.0
GPP	2,230	2,875	3,670	5.2	8.5

Source : Gross Regional and Provincial Products, Preliminary Series 1981-1989, NESDB

APPENDIX 2.2-1 FUTURE POPULATION BY CHANGWAT

(1/2)

CHANGWAT	Population (1,000 persons)					Growth Rates (percent per annum)			
	1991	1996	2001	2011	2021	1991-1996	1996-2001	2001-2011	2011-2021
NORTHEASTERN	20,045	21,398	22,594	24,644	26,585	1.3	1.1	0.9	0.8
BURIRAM	1,459	1,575	1,680	1,860	2,030	1.5	1.3	1.0	0.9
CHAIYAPHUM	1,073	1,145	1,209	1,319	1,422	1.3	1.1	0.9	0.8
KALASIN	906	953	993	1,061	1,127	1.0	0.8	0.7	0.6
KHON KAEN	1,695	1,817	1,926	2,113	2,290	1.4	1.2	0.9	0.8
LOEI	559	599	634	694	751	1.4	1.1	0.9	0.8
MAHA SARAKHAM	909	958	1,000	1,070	1,137	1.0	0.9	0.7	0.6
MUKDAHAN	293	314	332	363	393	1.4	1.1	0.9	0.8
NAKHON PHANOM	644	682	715	770	824	1.1	0.9	0.8	0.7
NAKHON RATCHASIMA	2,404	2,574	2,724	2,983	3,227	1.4	1.1	0.9	0.8
NONG KHAI	892	970	1,041	1,164	1,279	1.7	1.4	1.1	0.9
ROI ET	1,241	1,295	1,340	1,415	1,487	0.8	0.7	0.5	0.5
SAKHON NAKHON	988	1,058	1,120	1,227	1,327	1.4	1.1	0.9	0.8
SI SA KET	1,358	1,448	1,527	1,663	1,792	1.3	1.1	0.9	0.7
SURIN	1,294	1,390	1,475	1,622	1,760	1.4	1.2	1.0	0.8
UBON RATCHATHANI	1,961	2,095	2,214	2,419	2,612	1.3	1.1	0.9	0.8
UDON THANI	1,835	1,970	2,091	2,298	2,494	1.4	1.2	1.0	0.8
YASOTHON	533	555	573	603	633	0.8	0.7	0.5	0.5
NORTHERN	11,022	11,471	11,857	12,501	13,089	0.8	0.7	0.5	0.5
KAMPHAENG PHET	677	718	755	818	876	1.2	1.0	0.8	0.7
CHAING RAI	1,048	1,081	1,109	1,153	1,193	0.6	0.5	0.4	0.3
CHIANG MAI	1,386	1,454	1,514	1,615	1,707	1.0	0.8	0.6	0.6
TAK	359	386	411	454	494	1.5	1.3	1.0	0.8
NAKHON SAWAN	1,092	1,122	1,147	1,185	1,221	0.5	0.4	0.3	0.3
NAN	455	478	497	531	561	1.0	0.8	0.7	0.6
PHICHIT	506	513	518	526	536	0.3	0.2	0.2	0.2
PHITSANULOK	795	816	833	859	883	0.5	0.4	0.3	0.3
PHETCHABUN	964	1,027	1,084	1,182	1,271	1.3	1.1	0.9	0.7
PHARE	494	508	520	539	556	0.6	0.5	0.4	0.3
MAE HONG SON	176	191	205	230	252	1.7	1.4	1.1	0.9
LAMPANG	778	811	839	887	930	0.8	0.7	0.6	0.5
LAMPHUN	418	439	457	488	516	1.0	0.8	0.7	0.6
SUKHOTHAI	596	613	627	649	670	0.6	0.5	0.3	0.3
UTTARADIT	463	471	476	483	489	0.3	0.2	0.1	0.1
PHAYAO	507	517	525	536	546	0.4	0.3	0.2	0.2
UTHAI THANI	308	325	340	366	389	1.1	0.9	0.7	0.6
SOUTHERN	7,208	7,759	8,251	9,102	9,917	1.5	1.2	1.0	0.9
CHUMPHON	403	431	455	498	538	1.3	1.1	0.9	0.8
KRABI	304	338	370	425	479	2.2	1.8	1.4	1.2
NAKHON SI THAMMARAT	1,437	1,510	1,573	1,677	1,777	1.0	0.8	0.6	0.6
NARATHIWAT	578	630	677	759	837	1.7	1.4	1.2	1.0
PATTANI	546	582	613	667	718	1.3	1.1	0.8	0.7
PHANG NGA	215	232	247	274	299	1.5	1.3	1.0	0.9
PHATTHALUNG	466	487	504	533	561	0.9	0.7	0.6	0.5
PHUKET	175	190	203	227	249	1.7	1.4	1.1	0.9
RANONG	121	135	149	173	195	2.3	1.9	1.5	1.2
SATUN	227	251	274	314	352	2.1	1.7	1.4	1.2
SONGKHLA	1,097	1,198	1,289	1,449	1,601	1.8	1.5	1.2	1.0
SURATTHANI	751	811	865	959	1,049	1.6	1.3	1.0	0.9
TRANG	527	566	601	661	719	1.4	1.2	1.0	0.8
YALA	363	398	431	488	543	1.9	1.6	1.3	1.1

APPENDIX 2.2-1 FUTURE POPULATION BY CHANGWAT

CHANGWAT	Population (1,000 persons)					Growth Rates (percent per annum)			
	1991	1996	2001	2011	2021	1991-1996	1996-2001	2001-2011	2011-2021
EASTERN	3,740	4,027	4,282	4,724	5,147	1.5	1.2	1.0	0.9
CHACHOENGSAO	590	617	640	679	718	0.9	0.7	0.6	0.6
CHON BURI	925	990	1,047	1,145	1,240	1.4	1.1	0.9	0.8
TRAT	201	224	244	279	313	2.1	1.7	1.4	1.1
NAKHON NAYOK	230	237	242	251	260	0.6	0.4	0.3	0.4
PRACHIN BURI	888	979	1,062	1,206	1,343	2.0	1.6	1.3	1.1
RAYONG	460	493	522	572	621	1.4	1.2	0.9	0.8
CHANTHABURI	446	488	525	591	653	1.8	1.5	1.2	1.0
WESTERN	3,337	3,502	3,646	3,888	4,112	1.0	0.8	0.6	0.6
KANCHANABURI	709	777	838	946	1,044	1.9	1.5	1.2	1.0
PRACHUAP KHIRI KHAN	431	447	460	482	502	0.7	0.6	0.5	0.4
PHETCHABURI	431	450	467	494	520	0.9	0.7	0.6	0.5
RATCHABURI	727	752	771	802	831	0.7	0.5	0.4	0.4
SAMUT SONGKHRAM	206	206	209	214	219	0.0	0.3	0.2	0.3
SUPHAN BURI	834	870	900	950	996	0.9	0.7	0.5	0.5
CENTRAL	2,854	2,958	3,047	3,194	3,328	0.7	0.6	0.5	0.4
CHAI NAT	358	365	370	377	384	0.4	0.3	0.2	0.2
PHRA NAKHON SI AYUTTHAYA	691	710	725	749	771	0.5	0.4	0.3	0.3
SARABURI	540	563	583	617	648	0.8	0.7	0.6	0.5
LOP BURI	754	792	827	886	940	1.0	0.9	0.7	0.6
SING BURI	231	240	248	261	272	0.8	0.6	0.5	0.4
ANGTHOING	281	288	294	304	313	0.5	0.4	0.3	0.3
BMR	8,702	9,289	9,808	10,698	11,541	1.3	1.1	0.9	0.8
BANGKOK METROPOLITAN	5,621	5,845	6,032	6,335	6,631	0.8	0.6	0.5	0.5
NONTHABURI	703	815	919	1,104	1,275	3.0	2.4	1.9	1.5
PATHUM THANI	466	517	563	644	720	2.1	1.7	1.4	1.1
SAMUT PRAKAN	882	1,014	1,135	1,351	1,551	2.8	2.3	1.8	1.4
SAMUT SAKHON	365	401	433	489	542	1.9	1.6	1.2	1.0
NAKHON PATHOM	664	698	727	775	822	1.0	0.8	0.6	0.6

APPENDIX 2.2-2 FUTURE POPULATION BY AMPHOE

LAMPANG - DOI SAKET ROUTE

AMPHOE	Population (1,000 persons)					Growth Rates (percent per annum)			
	1991	1996	2001	2011	2021	1991-1996	1996-2001	2001-2011	2011-2021
CHIANG MAI	1385.9	1454.0	1514.0	1615.0	1707.0	1.0	0.8	0.6	0.6
MUANG CHIANG MAI	216.0	230.0	242.3	263.6	283.0	1.3	1.1	0.8	0.7
CHIANG DAO	52.7	55.9	58.7	63.5	67.9	1.2	1.0	0.8	0.7
CHOM THONG	90.6	95.2	99.1	105.9	112.0	1.0	0.8	0.7	0.6
DOI SAKET	63.7	65.8	67.6	70.4	73.1	0.7	0.5	0.4	0.4
FANG	83.6	85.6	87.1	89.4	91.7	0.5	0.4	0.3	0.2
HANG DONG	66.9	69.9	72.5	76.8	80.7	0.9	0.7	0.6	0.5
HOT	37.4	40.4	43.1	47.8	52.1	1.6	1.3	1.0	0.9
DOI TAO	26.8	29.8	32.5	37.4	41.7	2.1	1.8	1.4	1.1
MAE AI	52.9	57.8	62.3	70.1	77.2	1.8	1.5	1.2	1.0
MAE CHAEM	51.6	56.5	61.0	68.9	76.0	1.8	1.5	1.2	1.0
MAE RIM	69.6	72.3	74.6	78.4	81.9	0.8	0.6	0.5	0.4
MAE TAENG	66.1	67.8	69.2	71.3	73.3	0.5	0.4	0.3	0.3
OMKOI	30.4	33.2	35.8	40.2	44.2	1.8	1.5	1.2	1.0
PHRAO	50.3	51.2	51.9	52.9	53.8	0.4	0.3	0.2	0.2
SAMOENG	21.6	22.7	23.6	25.2	26.7	1.0	0.8	0.7	0.6
SAN KAMPHAENG	94.2	98.3	101.7	107.5	112.8	0.8	0.7	0.6	0.5
SAN PA THONG	78.8	78.8	79.8	80.6	81.1	0.0	0.2	0.1	0.1
SAN SAI	82.8	86.5	89.7	95.1	100.0	0.9	0.7	0.6	0.5
SARAPHI	74.8	78.2	81.1	86.1	90.6	0.9	0.7	0.6	0.5
K.A. WIANG HEANG	9.6	9.7	9.9	9.9	9.9	0.2	0.2	0.1	0.1
K.A. CHAI PRAKAN	34.5	36.6	38.5	41.8	44.7	1.2	1.0	0.8	0.7
K.A. MAE WANG	31.0	31.6	32.0	32.4	32.5	0.4	0.2	0.1	0.1
LAMPHUN	417.9	439.0	457.0	488.0	516.0	1.0	0.8	0.7	0.6
MUANG LAMPHUN	143.7	149.1	153.5	161.1	168.1	0.7	0.6	0.5	0.4
BAN HONG	46.0	47.2	48.0	49.0	49.7	0.5	0.3	0.2	0.1
LI	61.0	66.4	71.3	80.0	88.0	1.7	1.4	1.2	1.0
K.A. THUNG HUA CHANG	17.5	19.0	20.3	22.7	24.9	1.7	1.4	1.1	0.9
MAE THA	42.4	45.3	47.9	52.4	56.6	1.3	1.1	0.9	0.8
PA SANG	86.7	90.9	94.5	100.7	106.5	0.9	0.8	0.6	0.6
K. A. BAN THI	20.6	21.1	21.5	21.9	22.2	0.5	0.3	0.2	0.1
LAMPANG	777.8	811.0	839.0	887.0	930.0	0.8	0.7	0.6	0.5
MUANG LAMPANG	231.0	246.6	260.3	284.3	306.0	1.3	1.1	0.9	0.7
MAE MO	33.4	36.8	39.9	45.5	50.5	2.0	1.6	1.3	1.0
CHAE HOM	44.1	44.8	45.4	46.1	46.8	0.3	0.2	0.2	0.1
HANG CHAT	51.1	52.9	54.4	56.8	59.0	0.7	0.5	0.4	0.4
KO KHA	65.0	65.8	66.3	67.2	67.7	0.2	0.2	0.1	0.1
MAE PHRIK	17.0	17.4	17.8	18.4	18.9	0.5	0.4	0.3	0.3
MAE THA	68.8	69.3	69.5	69.6	69.6	0.2	0.1	0.0	0.0
NGAO	59.4	63.7	67.6	74.3	80.4	1.4	1.2	1.0	0.8
SOEM NGAM	31.8	32.2	32.5	32.9	33.2	0.3	0.2	0.1	0.1
SOP PRAP	28.1	28.5	28.7	29.0	29.3	0.3	0.2	0.1	0.1
THOEN	60.1	60.9	61.3	61.8	62.3	0.2	0.1	0.1	0.1
WANG NUA	54.8	58.3	61.5	66.9	71.8	1.3	1.0	0.9	0.7
MUANG PAN	33.2	33.6	33.9	34.3	34.6	0.2	0.2	0.1	0.1

APPENDIX 2.2-2 FUTURE POPULATION BY AMPHOE (2/2)

BAN PONG - CHA AM ROUTE

AMPHOE	Population (1,000 persons)					Growth Rates (percent per annum)			
	1991	1996	2001	2011	2021	1991-1996	1996-2001	2001-2011	2011-2021
RATCHABURI	727.2	751.0	771.0	802.0	831.0	0.6	0.5	0.4	0.4
MUANG RATCHABURI	174.3	181.8	188.4	199.1	209.0	0.9	0.7	0.6	0.5
BAN PONG	143.4	146.1	148.2	151.0	153.7	0.4	0.3	0.2	0.2
BANG PHAE	40.8	41.1	41.4	41.6	42.0	0.2	0.1	0.0	0.1
CHOM BUNG	50.1	53.6	56.7	62.0	66.9	1.3	1.1	0.9	0.8
SUAN PHUNG	40.4	42.8	44.7	47.4	49.5	1.2	0.9	0.6	0.4
DAMNOEN SADUAK	95.6	96.4	96.9	97.4	98.3	0.2	0.1	0.0	0.1
PAK THO	51.2	53.3	55.0	57.9	60.6	0.8	0.7	0.5	0.4
PHOTHARAM	120.3	124.6	128.4	134.2	139.7	0.7	0.6	0.4	0.4
WAT PHLENG	11.1	11.2	11.3	11.3	11.4	0.2	0.1	0.0	0.1
PHETCHABURI	430.8	450.0	467.0	494.0	520.0	0.9	0.7	0.6	0.5
MUANG PHETCHABURI	111.6	113.9	115.7	118.0	120.4	0.4	0.3	0.2	0.2
BAN LAEM	58.8	60.7	62.4	64.9	67.3	0.7	0.5	0.4	0.4
BAN LAT	50.0	51.8	53.3	55.6	57.8	0.7	0.6	0.4	0.4
CHA-AM	56.8	61.3	65.4	72.3	78.7	1.5	1.3	1.0	0.9
KHAO YOI	37.5	38.1	38.6	39.3	40.3	0.3	0.3	0.2	0.3
NONG YA PLONG	11.3	12.0	12.6	13.6	14.5	1.2	1.0	0.8	0.7
THA YANG	80.8	86.9	92.4	101.7	110.3	1.5	1.2	1.0	0.8
K.A. KAENG KRACHAN	24.0	25.4	26.7	28.7	30.7	1.1	1.0	0.8	0.7

APPENDIX 2.2-3 GPP BY CHANGWAT AT 1988 CONSTANT PRICES

(Unit : Million Baht)

CHANGWAT	1991	1996	2001	2011	2021	GPP GROWTH RATES (% per annum) 1991-1996	1996-2001	2001-2011	2011-2021
NORTHEASTERN	276,781	368,224	490,747	868,383	1,522,722	5.9	5.9	5.9	5.8
KHON KAEN	30,323	40,219	53,548	96,417	172,956	5.8	5.9	6.1	6.0
UDON THANI	25,196	33,103	43,660	77,507	137,794	5.6	5.7	5.9	5.9
LOEI	9,489	12,117	15,606	26,300	44,701	5.0	5.2	5.4	5.4
NONG KHAI	13,324	17,176	22,228	38,177	65,476	5.2	5.3	5.6	5.5
MUKDAHAN	3,605	4,737	6,247	10,934	18,923	5.6	5.7	5.8	5.6
NAKHON PANOM	8,101	10,494	13,645	23,324	40,002	5.3	5.4	5.5	5.5
SAKON NAKHON	12,604	16,326	21,329	36,980	64,574	5.3	5.5	5.7	5.7
KALASIN	10,950	14,523	19,245	33,686	58,296	5.8	5.8	5.8	5.6
ROI ET	14,926	19,610	25,863	45,270	78,343	5.6	5.7	5.8	5.6
MAHA SARAKHAM	11,204	14,790	19,507	34,144	59,088	5.7	5.7	5.8	5.6
NAKHON RATCHASIMA	43,123	59,113	80,959	146,465	260,391	6.5	6.5	6.1	5.9
CHAIYAPHUM	15,581	20,960	28,172	49,311	84,571	6.1	6.1	5.8	5.5
YASOTHON	6,163	8,097	10,679	18,780	32,793	5.6	5.7	5.8	5.7
UBON RATCHATHANI	24,341	32,132	42,580	75,950	133,820	5.7	5.8	6.0	5.8
SI SA KET	14,754	19,477	25,688	44,962	77,810	5.7	5.7	5.8	5.6
BURIRAM	18,172	24,794	33,639	59,721	104,284	6.4	6.3	5.9	5.7
SURIN	14,926	20,556	28,153	50,455	88,899	6.6	6.5	6.0	5.8
NORTHERN	233,523	309,211	414,047	736,121	1,302,504	5.8	6.0	5.9	5.9
CHIANG MAI	39,885	54,784	76,021	140,819	261,458	6.6	6.8	6.4	6.4
LAMPANG	16,966	23,522	32,641	61,035	113,323	6.8	6.8	6.5	6.4
MAEHONGSORN	3,045	3,914	5,158	8,859	15,310	5.2	5.7	5.6	5.6
CHIANG RAI	20,583	26,589	35,035	61,327	108,878	5.3	5.7	5.8	5.9
PHRAE	8,123	10,745	14,360	25,497	44,861	5.8	6.0	5.9	5.8
LAMPHUN	7,642	10,061	13,446	23,986	42,968	5.7	6.0	6.0	6.0
NAN	6,803	8,830	11,579	19,985	34,227	5.4	5.6	5.6	5.5
PHAYAO	8,521	10,903	14,299	24,794	43,625	5.1	5.6	5.7	5.8
TAK	9,755	13,088	17,657	31,353	54,181	6.1	6.2	5.9	5.6
NAKONSAWAN	26,482	35,865	48,614	87,137	153,318	6.3	6.3	6.0	5.8
PHISANULOK	16,031	21,006	27,810	49,146	85,699	5.6	5.8	5.9	5.7
KAMPHAENGPHET	13,918	18,237	24,144	41,671	70,092	5.6	5.8	5.6	5.3
UTTARADIT	6,441	8,164	10,555	17,960	30,759	4.9	5.3	5.5	5.5
UTHAITHANI	11,223	14,705	19,376	33,760	57,819	5.6	5.7	5.7	5.5
SUKHOTHAI	10,472	13,918	18,513	32,717	56,539	5.9	5.9	5.9	5.6
PHICHIT	10,399	13,755	18,296	32,182	55,614	5.8	5.9	5.8	5.6
PETCHABUN	17,235	21,125	26,544	43,895	73,832	4.2	4.7	5.2	5.3
SOUTHERN	185,190	254,625	349,071	635,410	1,144,760	6.6	6.5	6.2	6.1
PHUKET	11,997	17,164	24,431	47,588	91,366	7.4	7.3	6.9	6.7
SURAT THANI	26,111	38,057	53,917	99,276	177,422	7.8	7.2	6.3	6.0
RANONG	5,091	7,249	10,270	19,178	35,210	7.3	7.2	6.4	6.3
PHANGNGA	8,368	11,860	16,415	29,382	51,574	7.2	6.7	6.0	5.8
KRABI	8,089	10,485	13,713	23,746	41,307	5.3	5.5	5.6	5.7
CHUMPHON	12,233	16,938	23,333	41,569	72,965	6.7	6.6	5.9	5.8
NAKHON SI THAMMARAT	31,095	45,742	65,108	121,014	218,223	8.0	7.3	6.4	6.1
TRANG	11,808	15,820	21,286	38,279	69,029	6.0	6.1	6.0	6.1
SONGKHLA	29,373	38,617	51,717	95,218	176,390	5.6	6.0	6.3	6.4
SATUN	5,195	6,606	8,559	14,611	25,189	4.9	5.3	5.5	5.6
YALA	8,264	10,711	14,142	25,075	44,813	5.3	5.7	5.9	6.0
PATTANI	8,843	11,516	15,205	27,087	48,409	5.4	5.7	5.9	6.0
NARATHIWAT	10,656	13,551	17,556	30,257	52,634	4.9	5.3	5.6	5.7
PHATTALUNG	8,068	10,309	13,419	23,127	40,231	5.0	5.4	5.6	5.7

APPENDIX 2.2-3 GPP BY CHANGWAT AT 1988 CONSTANT PRICES

(Unit : Million Baht)

CHANGWAT	1991	1996	2001	2011	2021	GPP GROWTH RATES (% per annum) 1991-1996	1996-2001	2001-2011	2011-2021
EASTERN	181,046	331,708	559,288	1,187,574	2,298,820	12.9	11.0	7.8	6.8
CHONBURI	84,889	166,463	286,373	618,757	1,190,857	14.4	11.5	8.0	6.8
CHACHOENGSAO	31,569	58,987	99,222	212,410	405,199	13.3	11.0	7.9	6.7
RAYONG	21,226	38,450	66,743	143,585	288,818	12.6	11.7	8.0	7.2
TRAT	7,100	12,804	22,526	46,049	91,008	12.5	12.0	7.4	7.0
CHANTHABURI	13,100	23,312	40,465	85,063	172,616	12.2	11.7	7.7	7.3
NAKHON NAYOK	5,207	7,073	9,810	18,435	34,857	6.3	6.8	6.5	6.6
PRACHIN BURI	17,955	24,619	34,148	63,275	115,465	6.5	6.8	6.4	6.2
WESTERN	112,865	169,514	246,925	468,891	852,400	8.5	7.8	6.6	6.2
RATCHABURI	26,923	42,605	63,774	123,991	230,544	9.6	8.4	6.9	6.4
KANCHANABURI	29,395	44,434	64,993	122,857	220,382	8.6	7.9	6.6	6.0
PRACHUP KHIRI KHAN	16,641	23,797	33,379	61,345	110,041	7.4	7.0	6.3	6.0
PHETCHABURI	13,293	19,546	28,194	54,051	101,403	8.0	7.6	6.7	6.5
SUPHANBURI	21,903	32,206	46,455	86,588	155,322	8.0	7.6	6.4	6.0
SAMUT SONGKHRAM	4,711	6,927	10,131	20,059	34,708	8.0	7.9	7.1	5.6
CENTRAL	98,902	147,178	218,396	428,531	807,531	8.3	8.2	7.0	6.5
SARABURI	39,864	66,066	104,969	214,990	409,662	10.6	9.7	7.4	6.7
SINGBURI	5,789	7,614	10,239	18,481	33,392	5.6	6.1	6.1	6.1
CHAINAT	8,974	11,419	14,855	25,696	44,804	4.9	5.4	5.6	5.7
ANG THONG	6,922	9,724	13,897	26,664	50,361	7.0	7.4	6.7	6.6
LOPBURI	17,982	23,319	30,771	54,501	96,739	5.3	5.7	5.9	5.9
AYUTTHAYA	19,370	29,036	43,665	88,199	172,572	8.4	8.5	7.3	6.9
BMR	1,019,942	1,546,038	2,294,150	4,586,380	8,798,906	8.7	8.2	7.2	6.7
BANGKOK	764,924	1,150,788	1,694,338	3,373,784	6,503,782	8.5	8.0	7.1	6.8
SAMUT PRAKARN	107,269	162,874	242,033	481,897	896,627	8.7	8.2	7.1	6.4
PATHUM THANI	52,376	85,553	135,574	282,770	540,305	10.3	9.6	7.6	6.7
SAMUT SAKHON	30,026	47,509	73,922	153,484	298,505	9.6	9.2	7.6	6.9
NAKHON PATHOM	26,121	40,027	60,588	120,642	230,518	8.9	8.6	7.1	6.7
NONTHABURI	39,227	59,287	87,695	173,803	329,168	8.6	8.1	7.1	6.6
WHOLE KINGDOM	2,108,249	3,126,498	4,572,624	8,911,290	16,727,643	8.2	7.9	6.9	6.5

CHAPTER 3

TRAFFIC DEMAND FORECAST

APPENDIX 3.1-1 TRAFFIC SURVEY FORMS

Classified Counting Survey Form

FEASIBILITY STUDY ON THE INTER-CITY TOLL MOTORWAY PROJECT - THAILAND 1993

CLASSIFIED TRAFFIC COUNT SUMMARY SHEET

STATION NUMBER ☐ HIGHWAY NUMBER ☐☐☐ CHANGWAT FROM: ☐☐☐ TO: ☐☐☐ DATE Month ☐☐ Day ☐☐

	Tricycle	Motor-cycle	Passenger Car & Taxi	Light Bus	Medium Bus	Heavy Bus	Pick-up Truck	4-Wheel Truck	6-Wheel Truck	10-Wheel Truck	Others (with engine)
06:00-06:15											
06:15-06:30											
06:30-06:45											
06:45-07:00											
07:00-07:15											
07:15-07:30											
07:30-07:45											
07:45-08:00											
08:00-08:15											
08:15-08:30											
08:30-08:45											
08:45-09:00											
09:00-09:15											
09:15-09:30											
09:30-09:45											
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16:00-16:15											
16:15-16:30											
16:30-16:45											
16:45-17:00											
17:00-17:15											
17:15-17:30											
17:30-18:45											
17:45-18:00											

OD Roadside Interview Form

FEASIBILITY STUDY ON THE INTER-CITY TOLL MOTORWAY PROJECT - THAILAND 1993

OD ROADSIDE INTERVIEW

INTERVIEWER'S NAME: DIRECTION Page /

STATION NO. | HIGHWAY NO. | CHANGWAT: | FROM: TO: | DATE Mo. Day | BEGINNING HOUR (06-17)

VEHICLE TYPE	VEH. DATA			TRIP DATA							COMMODITY TYPE
	TYPE	CAPACITY TON	CAPACITY PRSN	ORIGIN	DESTINATION	PURPOSE	NO. OF PRSN	TRUCK ASST	TRUCK COMMODITY WT	TRUCK COMMODITY TYPE	
1 Passenger Car & Taxi				Amphoe / Changwat	Amphoe / Changwat	① Work or Business ② Private ③ Tour ④ Other			① Empty ② 1/4F ③ 1/2F ④ 3/4F ⑤ Full		① Agriculture Products (Rice, Timber, Firewood, Vegetable and Fruit, Cassava, Maize, Sugar, Bean, Animal, Fish, etc.) ② Construction Products (Sand and Gravel, Cement and Products, Construction Materials, Steel, etc.) ③ Manufacture Products (Petroleum Products, Minerals, Jute and Products, Beverages, Grocery, Fertilizer and Animal Feed, Household Appliances, etc.) ④ All others
2 Light Bus											
3 Medium Bus				Amphoe / Changwat	Amphoe / Changwat	① Work or Business ② Private ③ Tour ④ Other			① Empty ② 1/4F ③ 1/2F ④ 3/4F ⑤ Full		
4 Heavy Bus											
5 Pick-up passengers				Amphoe / Changwat	Amphoe / Changwat	① Work or Business ② Private ③ Tour ④ Other			① Empty ② 1/4F ③ 1/2F ④ 3/4F ⑤ Full		
6 Pick-up cargo											
7 4-wheel truck				Amphoe / Changwat	Amphoe / Changwat	① Work or Business ② Private ③ Tour ④ Other			① Empty ② 1/4F ③ 1/2F ④ 3/4F ⑤ Full		
8 6-wheel truck											
9 10-wheel truck				Amphoe / Changwat	Amphoe / Changwat	① Work or Business ② Private ③ Tour ④ Other			① Empty ② 1/4F ③ 1/2F ④ 3/4F ⑤ Full		

THE INTER-CITY TOLL MOTORWAY PROJECT

INTERVIEWER 'S NAME: _____ Page ____ / ____

STATION No. | HIGHWAY No. | From: _____ To: _____ | DATE Mo. Day | BEGINNING HR 6 - 18

ชนิดของยานพาหนะ	ข้อมูลของยานพาหนะ: ชนิด (ยี่ห้อ)	ความยาว: ฟุต	ความยาว: ซม	จุดต้นทาง	จุดปลายทาง	วัตถุประสงค์	จำนวนผู้โดยสาร	รถบรรทุก: จำนวนผู้ช่วย	รถบรรทุก: ชนิดของสินค้า น้ำหนัก	รถบรรทุก: ชนิดของสินค้า ชนิด	ชนิดของสินค้า
1 รถเก๋งหรือรถ				จังหวัด _____ อำเภอ _____	จังหวัด _____ อำเภอ _____	1 งาน หรือธุรกิจ 2 ส่วนตัว 3 ท่องเที่ยว 4 อื่น ๆ			1 ว่าง 2 1/4 3 1/2 4 3/4 5 เต็ม		1.สินค้าพวกการเกษตร การประมง เช่น ข้าว ถั่ว มันสำปะหลัง ปลา ไม้ น้ำตาล ผลไม้ 2.วัสดุ และอุปกรณ์การก่อสร้าง เช่น ทราย ปูน หิน ยาง 3.สินค้าอุตสาหกรรม และแปรรูป เช่น น้ำมัน พัดกากาม อาหารสัตว์ เครื่องใช้ในบ้าน 4.อื่นๆ
2 รถบัสขนาดเล็ก				จังหวัด _____ อำเภอ _____	จังหวัด _____ อำเภอ _____	1 งาน หรือธุรกิจ 2 ส่วนตัว 3 ท่องเที่ยว 4 อื่น ๆ			1 ว่าง 2 1/4 3 1/2 4 3/4 5 เต็ม		
3 รถบัสขนาดกลาง				จังหวัด _____ อำเภอ _____	จังหวัด _____ อำเภอ _____	1 งาน หรือธุรกิจ 2 ส่วนตัว 3 ท่องเที่ยว 4 อื่น ๆ			1 ว่าง 2 1/4 3 1/2 4 3/4 5 เต็ม		
4 รถบัสขนาดใหญ่				จังหวัด _____ อำเภอ _____	จังหวัด _____ อำเภอ _____	1 งาน หรือธุรกิจ 2 ส่วนตัว 3 ท่องเที่ยว 4 อื่น ๆ			1 ว่าง 2 1/4 3 1/2 4 3/4 5 เต็ม		
5 รถปิคอัพโดยสาร				จังหวัด _____ อำเภอ _____	จังหวัด _____ อำเภอ _____	1 งาน หรือธุรกิจ 2 ส่วนตัว 3 ท่องเที่ยว 4 อื่น ๆ			1 ว่าง 2 1/4 3 1/2 4 3/4 5 เต็ม		
6 รถปิคอัพบรรทุกสินค้า				จังหวัด _____ อำเภอ _____	จังหวัด _____ อำเภอ _____	1 งาน หรือธุรกิจ 2 ส่วนตัว 3 ท่องเที่ยว 4 อื่น ๆ			1 ว่าง 2 1/4 3 1/2 4 3/4 5 เต็ม		
7 รถบรรทุก 4 ล้อ				จังหวัด _____ อำเภอ _____	จังหวัด _____ อำเภอ _____	1 งาน หรือธุรกิจ 2 ส่วนตัว 3 ท่องเที่ยว 4 อื่น ๆ			1 ว่าง 2 1/4 3 1/2 4 3/4 5 Full		
8 รถบรรทุก 6 ล้อ				จังหวัด _____ อำเภอ _____	จังหวัด _____ อำเภอ _____	1 งาน หรือธุรกิจ 2 ส่วนตัว 3 ท่องเที่ยว 4 อื่นๆ			1 ว่าง 2 1/4 3 1/2 4 3/4 5 เต็ม		
9 รถบรรทุก 10 ล้อ				จังหวัด _____ อำเภอ _____	จังหวัด _____ อำเภอ _____						

APPENDIX 3.1-1 TRAFFIC SURVEY FORMS

Speed Survey Form

FEASIBILITY STUDY ON THE INTER-CITY TOLL MOTORWAY PROJECT - THAILAND 1993
TRAFFIC SPEED SURVEY

SECTION NO. ..... HIGHWAY NO. ..... KILO POST ..... to .....
ROAD TYPE ..... NO. OF LANES .....

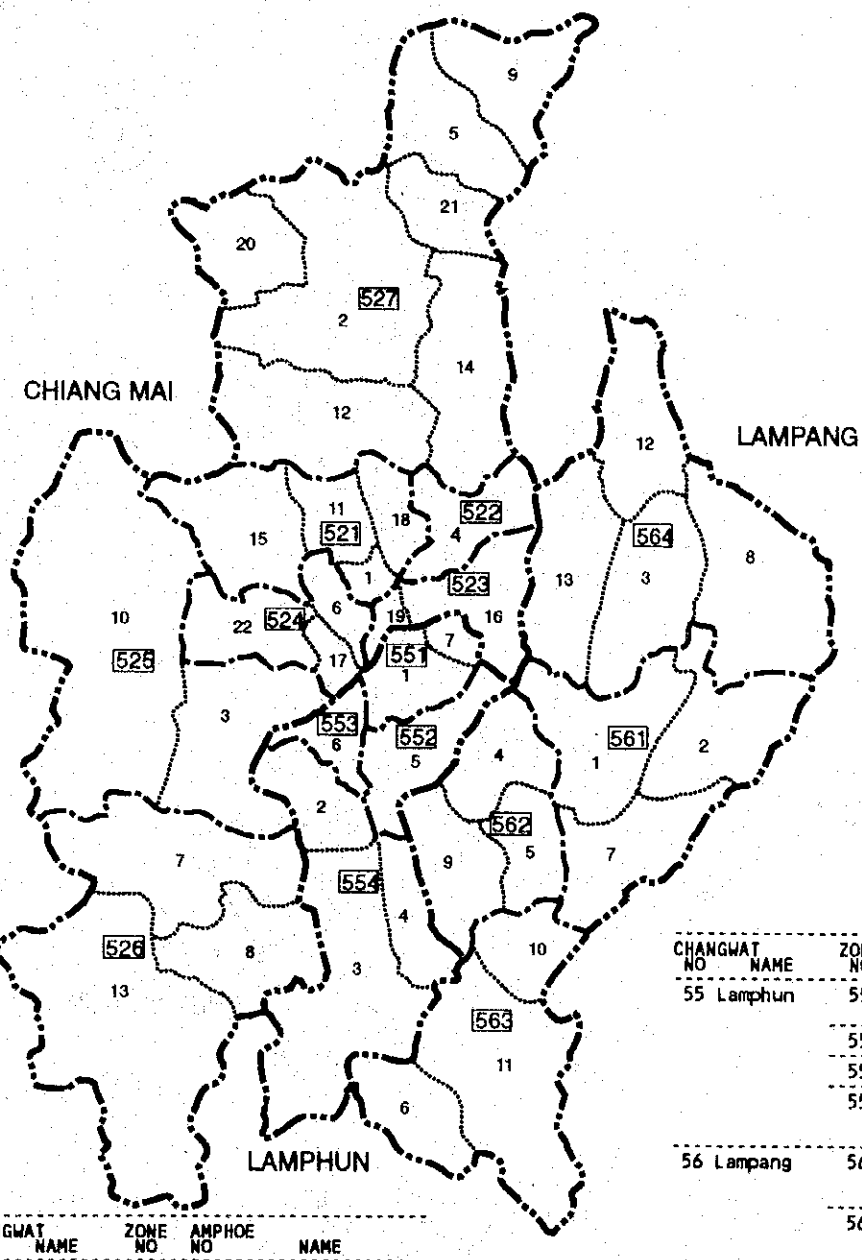
MONTH ..... DATE ..... WEATHER .....
SURFACE CONDITION ☐ Good ☐ Fair ☐ Poor TERRAIN ☐ Flat ☐ Rolling ☐ Mountainous
START TIME ..... FINISH TIME .....

DIRECTION A: From ..... To .....
TRAFFIC VOLUME (excl. motorcycle/15 minutes):
before ..... vehicles/after ..... vehicles

SPEED: RUN NO. 1 ..... Minute/5 km. SPEED ..... KPH
RUN NO. 2 ..... Minute/5 km. SPEED ..... KPH
RUN NO. 3 ..... Minute/5 km. SPEED ..... KPH
RUN NO. 4 ..... Minute/5 km. SPEED ..... KPH
AVERAGE SPEED ..... KPH

DIRECTION B: From ..... To .....
TRAFFIC VOLUME (excl. motorcycle/15 minutes):
before ..... vehicles/after ..... vehicles

SPEED: RUN NO. 1 ..... Minute/5 km. SPEED ..... KPH
RUN NO. 2 ..... Minute/5 km. SPEED ..... KPH
RUN NO. 3 ..... Minute/5 km. SPEED ..... KPH
RUN NO. 4 ..... Minute/5 km. SPEED ..... KPH
AVERAGE SPEED ..... KPH



CHANGWAT NO	NAME	ZONE NO	AMPHOE NO	NAME
52	Chiang Mai	521	1	Muang Chiang Mai
			11	Mae Rim
			15	Samoeng
			18	San Sai
		522	4	Doi Saket
		523	16	San Kamphaeng
			19	Saraphi
		524	6	Hang Dong
			17	San Pa Tong
			22	K.A.Mae Wang
		525	3	Chom Thong
			10	Mae Chaem
		526	7	Hot
			8	Doi Tao
			13	Omkoi
		527	2	Chiang Dao
			5	Fang
			9	Mae Ai
			12	Mae Thaeng
			14	Phrao
			20	K.A.Wiang Haeng
			21	K.A.Chai Prakan

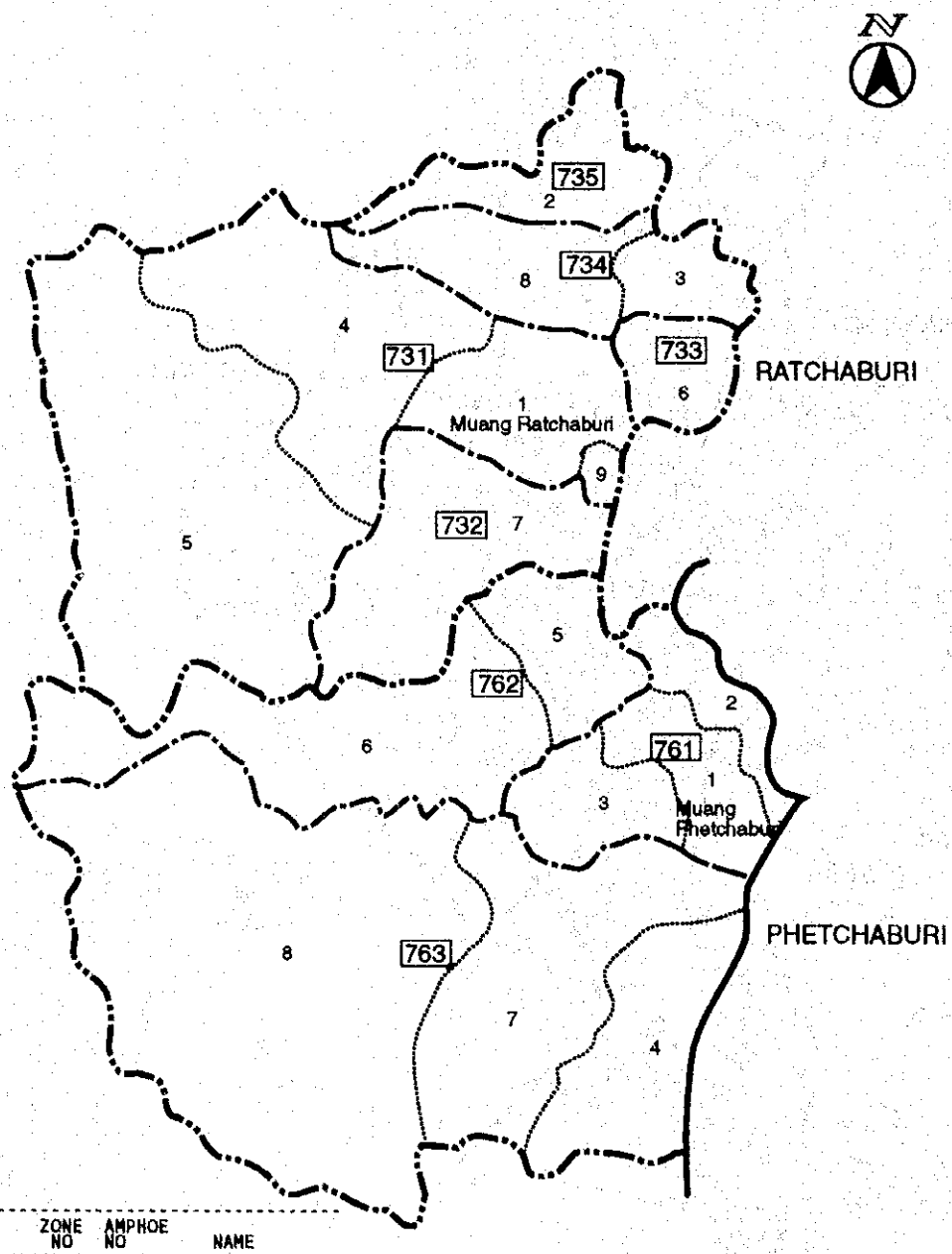
CHANGWAT NO	NAME	ZONE NO	AMPHOE NO	NAME
55	Lamphun	551	1	Muang Lamphun
			7	K.A.Ban Thi
		552	5	Mae Tha
		553	6	Pa Sang
		554	2	Ban Hong
			3	Li
			4	K.A.Thung Hua Chang
56	Lampang	561	1	Muang Lampang
			2	Mae Mo
			7	Mae Tha
		562	4	Hang Chat
			5	Ko Kha
			9	Soem Ngam
		563	6	Mae Phrik
			10	Sop Prap
			11	Thoen
		564	3	Chae Hom
			8	Ngao
			12	Wang Nua
			13	Muang Pan

LEGEND

- 521 Traffic Zone No.
- 1 Amphoe No.
- Changwat Boundary
- Traffic Zone Boundary
- Amphoe Boundary

FEASIBILITY STUDY
ON
THE INTER-CITY TOLL MOTORWAY PROJECTS

APPENDIX 3.1-2 SUB-ZONING SYSTEM
- Lampang/Lamphun/Chiang Mai Area
(1/3)



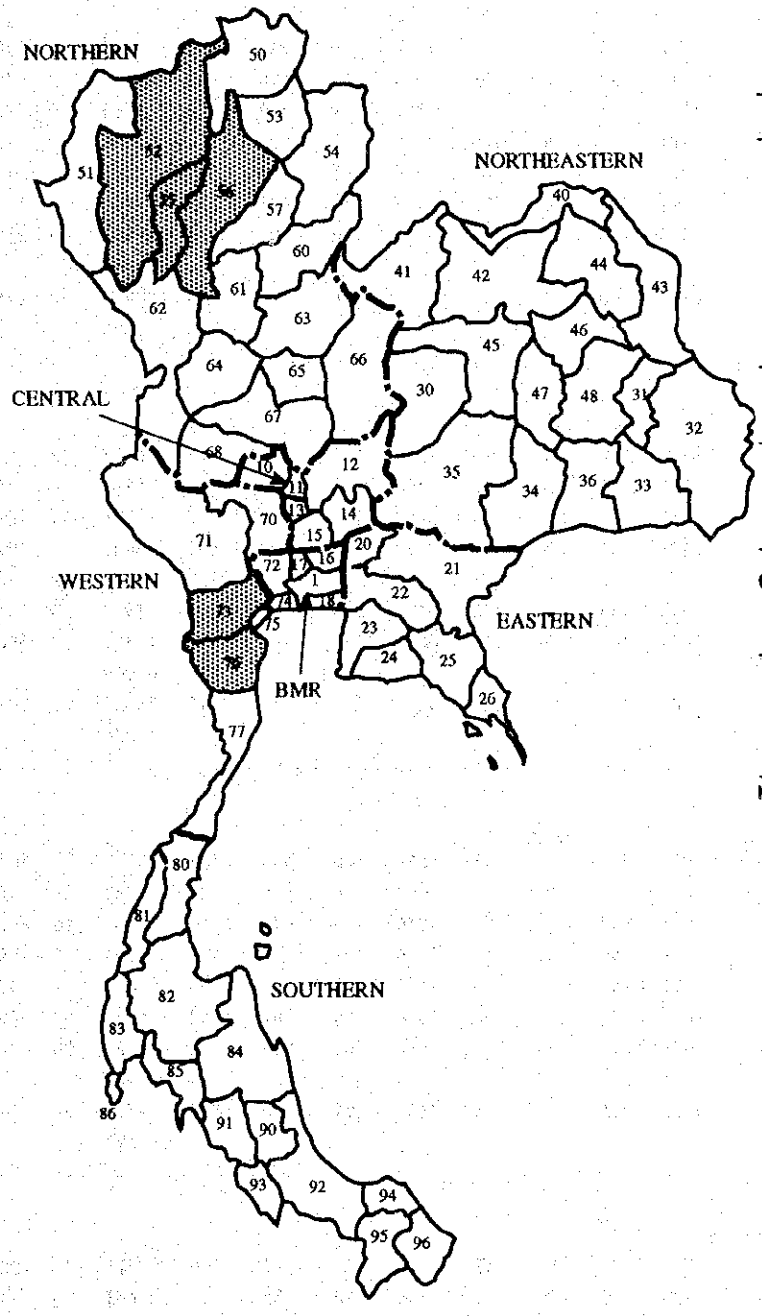
CHANGWAT NO	CHANGWAT NAME	ZONE NO	AMPHOE NO	AMPHOE NAME
73	Ratchaburi	731	1	Muang Ratchaburi
			4	Chom Bung
			5	Suan Phung
			9	Wat Phleng
		732	7	Pak Tho
		733	6	Damnoen Saduak
		734	3	Bang Phae
			8	Photharam
		735	2	Ban Pong
76	Phetchaburi	761	1	Muang Phetchaburi
			2	Ban Laem
			3	Ban Lat
		762	5	Khao Yoi
			6	Nong Ya Plong
		763	4	Cha Am
			7	Tha Yang
			8	K.A.Kaeng Krachan

LEGEND

- 731 — Traffic Zone No.
- 1 — Amphoe No.
- Changwat Boundary
- Traffic Zone Boundary
- Amphoe Boundary

FEASIBILITY STUDY
ON
THE INTER-CITY TOLL MOTORWAY PROJECTS

APPENDIX 3.1-2 SUB-ZONING SYSTEM
- Ratchaburi/Phetchaburi Area
(2/3)



REGION	CHANGWAT NO	NAME
Northern	50	Chiang Rai
	51	Mae Hong Son
	53	Phayao
	54	Nan
	54	Phrae
	60	Uttaradit
	61	Sukhothai
	62	Tak
	63	Phitsanulok
	64	Kamphaeng Phet
	65	Phichit
	66	Phetchabun
	67	Nakhon Sawan
	68	Uthai Thani
Central (Western)	70	Suphan Buri
	71	Kahchanaburi
	75	Samut Songkhram
	77	Prachuap Khiri Khan
Central (BMR)	1	Bangkok Metropolitan
	16	Pathum Thani
	17	Nonthaburi
	18	Samut Prakan
	22	Nakhon Pathom
	74	Samut Sakhon
Central (Sub-central)	10	Chai Nat
	11	Sing Buri
	12	Lop Buri
	13	Ang Thong
	14	Saraburi
	15	Ayutthaya
Central (Eastern)	20	Nakhon Nayok
	21	Prachin Buri
	24	Chachoengsao
	25	Chon Buri
	27	Rayong
	25	Chanthaburi
	26	Trat
Northeastern	30	Chaiyaphum
	31	Yasothon
	32	Ubon Ratchathani
	33	Si Sa Ket
	34	Buri Ram
	35	Nakhon Ratchasima
	36	Surin
	40	Nong Khai
	42	Loei
	43	Udon Thani
	44	Nakhon Phanom
	45	Sakhon Nakhon
	46	Khon Kaen
	46	Kalasin
	47	Maha Sarakham
	48	Roi Et
	49	Mukdahan
Southern	80	Chumphon
	81	Ranong
	82	Surat Thani
	83	Phang Nga
	84	Nakhon Si Thammarat
	85	Krabi
	86	Phuket
	90	Phatthalung
	91	Trang
	92	Songkhla
	93	Satun
	94	Pattani
	95	Yala
	96	Narathiwat

LEGEND

1 — Traffic Zone No. (Changwat No.)

Regional Boundary

Changwats of Study Routes

FEASIBILITY STUDY
ON
THE INTER-CITY TOLL MOTORWAY PROJECTS

APPENDIX 3.1-2 SUB-ZONING SYSTEM
- Whole Kingdom
(3/3)

APPENDIX 3.1-3 TRAFFIC COUNTING SURVEY RESULTS

Vehicle Category	PC	LB	MB	HB	PU	LT	MT	HT	Total	TC	MC
Station Number N-1:											
12-hr Daytime Counting - Direction 1	937	84	0	93	1342	9	214	443	3122	0	1006
12-hr Nighttime Counting - Direction 1	218	11	0	86	545	10	90	209	1169	0	273
24-hr Counting - Direction 1	1155	95	0	179	1887	19	304	652	4291	0	1279
12-hr Daytime Counting - Direction 2	971	96	0	100	1478	15	198	297	3155	0	1152
12-hr Nighttime Counting - Direction 2	222	15	0	87	475	18	89	189	1095	0	135
24-hr Counting - Direction 2	1193	111	0	187	1953	33	287	486	4250	0	1287
24-hr Counting - Total	2348	206	0	366	3840	52	591	1138	8541	0	2566
Fluctuation Factor									0.969		
Average Daily Traffic	2275	200	0	355	3721	50	573	1103	8276	0	2486
Peak Hour Volume (10:00-11:00h)									670		
Station Number N-2:											
12-hr Daytime Counting - Direction 1	1865	87	73	75	2952	104	552	649	6357	32	1452
12-hr Nighttime Counting - Direction 1	451	16	8	39	790	47	80	148	1579	2	239
24-hr Counting - Direction 1	2316	103	81	114	3742	151	632	797	7936	34	1691
12-hr Daytime Counting - Direction 2	2196	51	28	51	2252	244	492	691	6005	21	1094
12-hr Nighttime Counting - Direction 2	347	7	0	71	884	31	70	162	1572	2	222
24-hr Counting - Direction 2	2543	58	28	122	3136	275	562	853	7577	23	1316
24-hr Counting - Total	4859	161	109	236	6878	426	1194	1650	15513	57	3007
Fluctuation Factor									0.969		
Average Daily Traffic	4708	156	106	229	6665	413	1157	1599	15032	55	2914
Peak Hour Volume (07:00-08:00h)									1236		
Station Number N-3:											
12-hr Daytime Counting - Direction 1	812	240	2	51	1369	86	453	132	3145	37	1529
12-hr Nighttime Counting - Direction 1	213	67	0	3	467	4	36	32	822	9	488
24-hr Counting - Direction 1	1025	307	2	54	1836	90	489	164	3967	46	2017
12-hr Daytime Counting - Direction 2	777	446	3	34	1176	197	458	112	3203	45	1864
12-hr Nighttime Counting - Direction 2	251	38	0	18	450	13	46	40	856	7	394
24-hr Counting - Direction 2	1028	484	3	52	1626	210	504	152	4059	52	2258
24-hr Counting - Total	2053	791	5	106	3462	300	993	316	8026	98	4275
Fluctuation Factor									0.969		
Average Daily Traffic	1989	766	5	103	3355	291	962	306	7777	95	4142
Peak Hour Volume (16:00-17:00h)									653		
Station Number N-4:											
12-hr Daytime Counting - Direction 1	749	198	5	49	1578	33	182	79	2873	11	981
12-hr Nighttime Counting - Direction 1	125	49	0	3	406	10	36	24	653	2	219
24-hr Counting - Direction 1	874	247	5	52	1984	43	218	103	3526	13	1200
12-hr Daytime Counting - Direction 2	780	407	16	13	1441	216	207	61	3141	14	1214
12-hr Nighttime Counting - Direction 2	247	31	3	3	488	0	51	39	862	4	231
24-hr Counting - Direction 2	1027	438	19	16	1929	216	258	100	4003	18	1445
24-hr Counting - Total	1901	685	24	68	3913	259	476	203	7529	31	2645
Fluctuation Factor									0.969		
Average Daily Traffic	1842	664	23	66	3792	251	461	197	7296	30	2563
Peak Hour Volume (16:00-17:00h)									660		

Direction 1 : From Bangkok

Direction 2 : To Bangkok

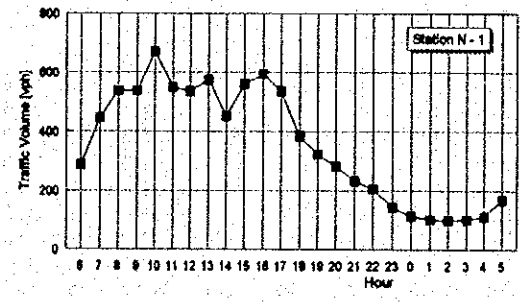
APPENDIX 3.1-3 TRAFFIC COUNTING SURVEY RESULTS

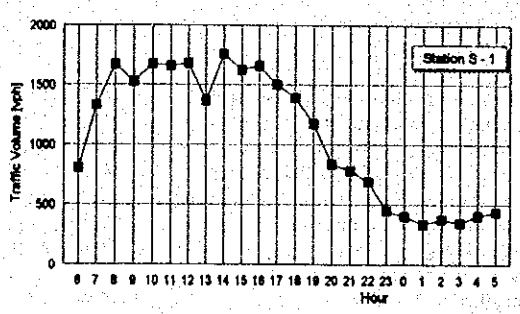
Vehicle Category	PC	LB	MB	HB	PU	LT	MT	HT	Total	TC	MC
Station Number S-1:											
12-hr Daytime Counting - Direction 1	1412	476	190	211	3264	850	660	1881	8944	7	1829
12-hr Nighttime Counting - Direction 1	463	106	34	90	1116	704	235	1064	3812	4	529
24-hr Counting - Direction 1	1875	582	224	301	4380	1554	895	2945	12756	11	2358
12-hr Daytime Counting - Direction 2	1400	28	83	298	5019	149	630	1705	9312	19	1658
12-hr Nighttime Counting - Direction 2	455	21	20	55	1621	77	295	1270	3814	12	464
24-hr Counting - Direction 2	1855	49	103	353	6640	226	925	2975	13126	31	2122
24-hr Counting - Total	3730	631	327	654	11020	1780	1820	5920	25882	42	4480
Fluctuation Factor									0.910		
Average Daily Traffic	3394	574	298	595	10028	1620	1656	5387	23552	38	4077
Peak Hour Volume (14:00-15:00h)									1759		
Station Number S-2:											
12-hr Daytime Counting - Direction 1	1470	52	115	249	3292	171	491	1775	7615	18	920
12-hr Nighttime Counting - Direction 1	482	29	22	75	1174	95	115	881	2873	8	299
24-hr Counting - Direction 1	1952	81	137	324	4466	266	606	2656	10488	26	1219
12-hr Daytime Counting - Direction 2	1177	724	112	243	3122	98	374	1636	7486	10	956
12-hr Nighttime Counting - Direction 2	461	66	8	58	1044	82	126	996	2841	11	271
24-hr Counting - Direction 2	1638	790	120	301	4166	180	500	2632	10327	21	1227
24-hr Counting - Total	3590	871	257	625	8632	446	1106	5288	20815	47	2446
Fluctuation Factor									0.874		
Average Daily Traffic	3138	761	225	546	7544	390	967	4622	18192	41	2138
Peak Hour Volume (15:00-16:00h)									1674		
Station Number S-3:											
12-hr Daytime Counting - Direction 1	686	35	30	167	2013	166	350	1424	4871	13	374
12-hr Nighttime Counting - Direction 1	173	28	17	53	635	55	125	714	1800	4	120
24-hr Counting - Direction 1	859	63	47	220	2648	221	475	2138	6671	17	494
12-hr Daytime Counting - Direction 2	544	427	17	165	1690	80	232	1272	4427	9	424
12-hr Nighttime Counting - Direction 2	163	54	10	34	571	74	110	697	1713	5	98
24-hr Counting - Direction 2	707	481	27	199	2261	154	342	1969	6140	14	522
24-hr Counting - Total	1566	544	74	419	4909	375	817	4107	12811	31	1016
Fluctuation Factor									0.935		
Average Daily Traffic	1464	509	69	392	4590	351	764	3840	11978	29	950
Peak Hour Volume (14:00-15:00h)									948		
Station Number S-4:											
12-hr Daytime Counting - Direction 1	1512	228	203	232	2060	172	445	863	5715	2	1152
12-hr Nighttime Counting - Direction 1	453	29	21	197	1079	65	167	1044	3055	1	295
24-hr Counting - Direction 1	1965	257	224	429	3139	237	612	1907	8770	3	1447
12-hr Daytime Counting - Direction 2	1547	133	71	368	1792	172	536	694	5313	3	1130
12-hr Nighttime Counting - Direction 2	361	13	8	190	1492	55	309	1095	3523	1	406
24-hr Counting - Direction 2	1908	146	79	558	3284	227	845	1789	8836	4	1536
24-hr Counting - Total	3873	403	303	987	6423	464	1457	3696	17606	7	2983
Fluctuation Factor									0.910		
Average Daily Traffic	3524	367	276	898	5845	422	1325	3363	16021	6	2715
Peak Hour Volume (16:00-17:00h)									1280		
Station Number S-5:											
12-hr Daytime Counting - Direction 1	1819	353	77	195	2319	112	468	867	6210	2	1198
12-hr Nighttime Counting - Direction 1	537	23	12	204	1313	50	276	1134	3549	0	317
24-hr Counting - Direction 1	2356	376	89	399	3632	162	744	2001	9759	2	1515
12-hr Daytime Counting - Direction 2	1244	208	91	201	2600	123	424	918	5809	1	1315
12-hr Nighttime Counting - Direction 2	589	11	10	166	1372	80	260	1026	3514	0	274
24-hr Counting - Direction 2	1833	219	101	367	3972	203	684	1944	9323	1	1589
24-hr Counting - Total	4189	595	190	766	7604	365	1428	3945	19082	3	3104
Fluctuation Factor									0.874		
Average Daily Traffic	3661	520	166	669	6646	319	1248	3448	16678	3	2713
Peak Hour Volume (10:00-11:00h)									1174		

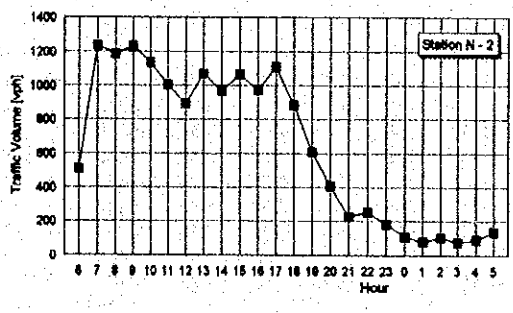
Direction 1 : From Bangkok

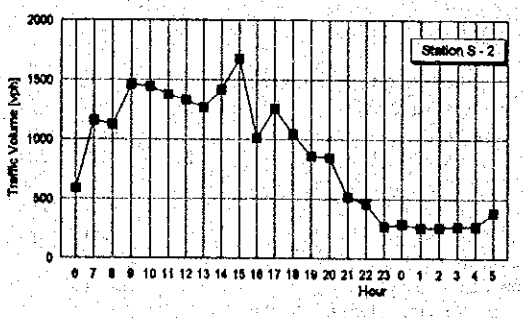
Direction 2 : To Bangkok

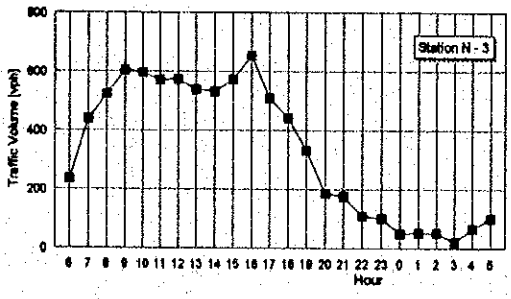
APPENDIX 3.1-4 HOURLY TRAFFIC VARIATION

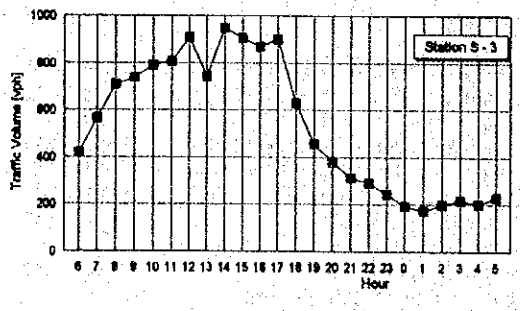


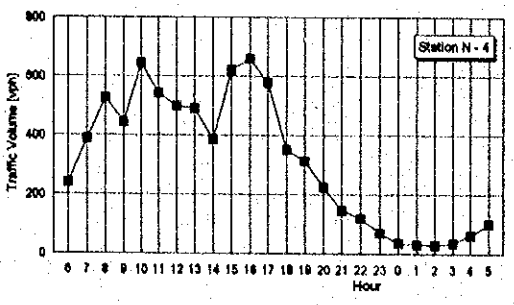


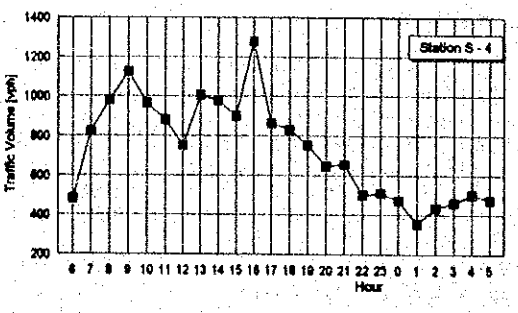


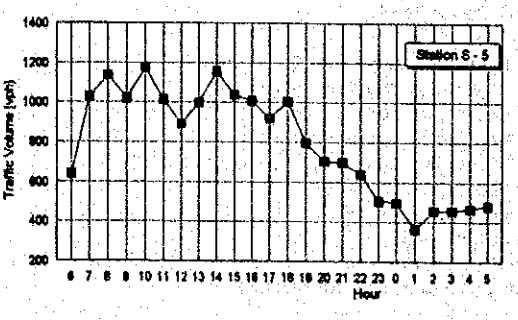












APPENDIX 3.1-5 OD SURVEY SAMPLES

Station	Direction		Vehicle Category							
			PC	LB	MB	PP	LT	MT	HT	Total
Lampang - Doi Saket Route:										
N-1	1	OD Samples	322	59	94	626	60	78	240	1479
		Counting	1155	95	179	1735	171	304	652	4291
		Sampling Rate %	27.9	62.1	52.5	36.1	35.1	25.7	36.8	34.5
	2	OD Samples	290	108	94	726	43	73	117	1451
		Counting	1193	111	187	1858	128	287	486	4250
		Sampling Rate %	24.3	97.3	50.3	39.1	33.6	25.4	24.1	34.1
N-2	1	OD Samples	323	91	92	767	112	119	155	1659
		Counting	2316	103	195	3295	598	632	797	7936
		Sampling Rate %	13.9	88.3	47.2	23.3	18.7	18.8	19.4	20.9
	2	OD Samples	444	58	120	741	70	122	157	1712
		Counting	2543	58	150	2919	492	562	853	7577
		Sampling Rate %	17.5	100.0	80.0	25.4	14.2	21.7	18.4	22.6
N-3	1	OD Samples	331	174	34	730	94	133	53	1549
		Counting	1025	307	56	1634	292	489	164	3967
		Sampling Rate %	32.3	56.7	60.7	44.7	32.2	27.2	32.3	39.0
	2	OD Samples	322	166	34	814	101	70	48	1555
		Counting	1028	484	55	1463	373	504	152	4059
		Sampling Rate %	31.3	34.3	61.8	55.6	27.1	13.9	31.6	38.3
N-4	1	OD Samples	307	144	37	768	143	95	35	1529
		Counting	874	247	57	1680	347	218	103	3526
		Sampling Rate %	35.1	58.3	64.9	45.7	41.2	43.6	34.0	43.4
	2	OD Samples	266	182	35	953	91	80	33	1640
		Counting	1027	438	35	1769	376	258	100	4003
		Sampling Rate %	25.9	41.6	100.0	53.9	24.2	31.0	33.0	41.0
Ban Pong - Cha Am Route:										
S-1	1	OD Samples	422	22	69	344	182	137	480	1656
		Counting	1875	582	525	3044	2890	895	2945	12756
		Sampling Rate %	22.5	3.8	13.1	11.3	6.3	15.3	16.3	13.0
	2	OD Samples	300	23	218	564	239	178	445	1967
		Counting	1855	49	456	4934	1932	925	2975	13126
		Sampling Rate %	16.2	46.9	47.8	11.4	12.4	19.2	15.0	15.0
S-2	1	OD Samples	360	34	140	587	125	95	357	1698
		Counting	1952	81	461	3799	933	606	2656	10488
		Sampling Rate %	18.4	42.0	30.4	15.5	13.4	15.7	13.4	16.2
	2	OD Samples	369	13	217	359	133	76	328	1495
		Counting	1638	790	421	3122	1224	500	2632	10327
		Sampling Rate %	22.5	1.6	51.5	11.5	10.9	15.2	12.5	14.5
S-3	1	OD Samples	404	22	40	461	215	107	485	1734
		Counting	859	63	267	1907	962	475	2138	6671
		Sampling Rate %	47.0	34.9	15.0	24.2	22.3	22.5	22.7	26.0
	2	OD Samples	242	28	113	595	135	69	461	1643
		Counting	707	481	226	1938	477	342	1969	6140
		Sampling Rate %	34.2	5.8	50.0	30.7	28.3	20.2	23.4	26.8
S-4	1	OD Samples	326	35	230	593	149	132	250	1715
		Counting	1965	257	653	2582	794	612	1907	8770
		Sampling Rate %	16.6	13.6	35.2	23.0	18.8	21.6	13.1	19.6
	2	OD Samples	407	54	254	400	180	78	260	1633
		Counting	1908	146	637	2346	1165	845	1789	8836
		Sampling Rate %	21.3	37.0	39.9	17.1	15.5	9.2	14.5	18.5
S-5	1	OD Samples	342	17	165	655	154	103	228	1664
		Counting	2356	376	488	3038	756	744	2001	9759
		Sampling Rate %	14.5	4.5	33.8	21.6	20.4	13.8	11.4	17.1
	2	OD Samples	505	18	176	477	200	86	277	1739
		Counting	1833	219	468	2888	1287	684	1944	9323
		Sampling Rate %	27.6	8.2	37.6	16.5	15.5	12.6	14.2	18.7

Direction 1 : From Bangkok

Direction 2 : To Bangkok

APPENDIX 3.1-6 EXPANSION FACTORS

Station	Direction	Vehicle Category						
		PC	LB	HB	PP	LT	MT	HT
Lampang - Doi Saket Route:								
N-1	1	3.59	1.61	1.90	2.77	2.85	3.90	2.72
	2	4.11	1.03	1.99	2.56	2.98	3.93	4.15
N-2	1	7.17	1.13	2.12	4.30	5.34	5.31	5.14
	2	5.73	1.00	1.25	3.94	7.03	4.61	5.43
N-3	1	3.10	1.76	1.65	2.24	3.11	3.68	3.09
	2	3.19	2.92	1.62	1.80	3.69	7.20	3.17
N-4	1	2.85	1.72	1.54	2.19	2.43	2.29	2.94
	2	3.86	2.41	1.00	1.86	4.13	3.23	3.03
Ban Pong - Cha Am Route:								
S-1	1	4.44	26.45	7.61	8.85	15.88	6.53	6.14
	2	6.18	2.13	2.09	8.75	8.08	5.20	6.69
S-2	1	5.42	2.38	3.29	6.47	7.46	6.38	7.44
	2	4.44	60.77	1.94	8.70	9.20	6.58	8.02
S-3	1	2.13	2.86	6.68	4.14	4.47	4.44	4.41
	2	2.92	17.18	2.00	3.26	3.53	4.96	4.27
S-4	1	6.03	7.34	2.84	4.35	5.33	4.64	7.63
	2	4.69	2.70	2.51	5.87	6.47	10.83	6.88
S-5	1	6.89	22.12	2.96	4.64	4.91	7.22	8.78
	2	3.63	12.17	2.66	6.05	6.44	7.95	7.02

Direction 1 : From Bangkok Direction 2 : To Bangkok

APPENDIX 3.1-7 PASSENGER-VEHICLE MOVEMENT CHARACTERISTICS

■ Capacity (persons)

Station No.	Direction	Vehicle Category				
		Passenger Car	Light Bus	Heavy Bus	Pick-up Passenger	Average
a. Lampang - Doi Saket Route						
N-1	1	5.0	11.8	73.3	12.3	13.1
	2	5.0	12.0	69.0	13.3	13.4
	Average	5.0	11.9	71.1	12.8	13.2
N-2	1	5.0	12.3	70.6	13.8	12.2
	2	5.0	11.9	70.7	12.0	10.4
	Average	5.0	12.2	70.6	13.0	11.3
N-3	1	5.0	12.1	69.7	12.7	11.1
	2	5.0	12.1	75.3	12.8	11.2
	Average	5.0	12.1	72.5	12.7	11.1
N-4	1	5.0	12.1	70.3	12.8	11.5
	2	5.0	12.0	72.6	13.1	10.9
	Average	5.0	12.0	71.2	13.0	11.3
Average - N		5.0	12.1	71.1	12.9	11.7
b. Ban Pong - Cha Am Route						
S-1	1	5.0	12.3	59.9	12.1	14.1
	2	5.0	12.2	52.2	11.8	12.6
	Average	5.0	12.3	56.3	11.9	13.3
S-2	1	5.0	12.1	64.5	11.9	13.6
	2	5.0	11.2	63.5	12.1	13.7
	Average	5.0	11.3	64.0	12.0	13.6
S-3	1	5.2	13.2	64.4	12.0	14.7
	2	5.0	13.0	70.4	11.9	14.5
	Average	5.1	13.0	67.2	11.9	14.6
S-4	1	5.0	14.2	58.7	13.9	16.1
	2	5.0	15.0	59.6	12.9	15.9
	Average	5.0	14.5	59.1	13.4	16.0
S-5	1	5.0	13.9	63.2	14.4	14.6
	2	5.2	16.6	64.3	13.3	15.1
	Average	5.1	14.9	63.7	13.9	14.9
Average - S		5.0	12.9	61.3	12.6	14.4
Total Average		5.0	12.6	62.9	12.7	13.4

Direction 1 : From Bangkok Direction 2 : To Bangkok

APPENDIX 3.1-7 PASSENGER-VEHICLE MOVEMENT CHARACTERISTICS

■ Number of Passengers

Station No.	Direction	Vehicle Category				
		Passenger Car	Light Bus	Heavy Bus	Pick-up Passenger	Average
a. Lampang - Doi Saket Route						
N-1	1	2.6	7.5	54.1	2.8	5.8
	2	2.3	6.1	55.6	2.8	5.7
	Average	2.5	6.8	54.9	2.8	5.7
N-2	1	2.0	5.4	46.3	2.8	4.0
	2	2.0	2.5	33.7	2.6	3.2
	Average	2.0	4.4	40.8	2.7	3.6
N-3	1	2.4	7.3	69.0	2.7	4.3
	2	2.2	5.8	54.5	2.6	3.9
	Average	2.3	6.4	61.8	2.7	4.1
N-4	1	2.3	9.8	64.9	2.5	4.3
	2	2.2	7.2	66.1	2.6	3.8
	Average	2.3	8.1	65.4	2.6	4.0
Average - N		2.2	6.9	51.5	2.7	4.2
b. Ban Pong - Cha Am Route						
S-1	1	2.1	3.0	32.3	2.8	5.2
	2	2.1	5.3	21.9	2.9	3.9
	Average	2.1	3.2	27.5	2.9	4.5
S-2	1	2.1	3.7	39.0	2.4	5.0
	2	2.0	4.7	36.8	2.6	5.1
	Average	2.1	4.6	38.0	2.5	5.1
S-3	1	2.4	4.9	32.6	2.8	5.3
	2	2.4	6.8	36.3	2.8	5.6
	Average	2.4	6.6	34.3	2.8	5.4
S-4	1	2.3	4.2	32.1	2.7	6.1
	2	2.4	2.8	29.4	2.7	6.0
	Average	2.4	3.7	30.8	2.7	6.1
S-5	1	2.3	3.5	32.0	2.8	4.9
	2	2.5	8.1	31.2	3.4	5.7
	Average	2.4	5.2	31.6	3.1	5.3
Average - S		2.3	4.7	32.0	2.8	5.2
Total Average		2.2	5.5	35.2	2.8	4.9

Direction 1 : From Bangkok Direction 2 : To Bangkok

APPENDIX 3.1-7 PASSENGER-VEHICLE MOVEMENT CHARACTERISTICS

• Trip Purpose %

Station No.	Direction	Passenger Car				Pick-up Passenger			
		Work	Private	Tour	Other	Work	Private	Tour	Other
a. Lampang - Doi Saket Route									
N-1	1	28.6	54.0	13.4	4.0	45.5	46.3	5.4	2.7
	2	40.7	42.4	16.9	0.0	49.3	39.3	10.5	1.0
	Average	34.3	48.5	15.0	2.1	47.6	42.5	8.1	1.8
N-2	1	43.7	40.2	13.9	2.2	58.5	29.7	10.5	1.3
	2	52.9	40.8	5.4	0.9	48.4	45.1	1.6	4.9
	Average	49.0	40.5	9.0	1.4	53.2	37.8	5.8	3.2
N-3	1	47.3	43.3	8.2	1.2	45.2	41.7	12.1	0.9
	2	49.0	43.7	4.2	3.0	49.8	39.9	7.7	2.6
	Average	48.5	43.6	5.5	2.5	48.5	40.4	9.0	2.1
N-4	1	49.8	40.1	8.8	1.3	43.1	51.4	4.7	0.8
	2	57.1	35.7	6.4	0.8	56.9	39.6	2.9	0.6
	Average	53.2	38.0	7.7	1.0	50.7	44.9	3.7	0.7
Average - N		46.6	42.8	8.7	1.9	50.1	41.6	6.4	1.9
b. Ban Pong - Cha Am Route									
S-1	1	58.8	37.2	4.0	0.0	66.0	32.3	1.2	0.6
	2	48.7	49.3	2.0	0.0	55.9	41.5	2.5	0.2
	Average	54.6	42.2	3.2	0.0	59.7	38.0	2.0	0.3
S-2	1	47.2	48.1	4.7	0.0	54.2	43.6	2.2	0.0
	2	56.5	42.7	0.8	0.0	55.2	44.0	0.8	0.0
	Average	51.9	45.3	2.7	0.0	54.5	43.8	1.7	0.0
S-3	1	58.6	33.2	7.6	0.5	59.7	35.9	4.4	0.0
	2	40.2	56.5	3.3	0.0	50.4	47.2	2.4	0.0
	Average	51.5	42.2	6.0	0.3	54.5	42.3	3.2	0.0
S-4	1	48.6	43.7	7.4	0.3	46.2	50.4	3.1	0.3
	2	52.3	33.9	7.1	6.6	60.5	29.8	5.0	4.8
	Average	50.7	38.3	7.2	3.8	52.0	42.0	3.9	2.1
S-5	1	44.6	50.4	4.7	0.3	42.6	53.4	3.9	0.2
	2	39.0	42.8	10.3	7.9	53.5	31.2	8.2	7.1
	Average	41.3	45.9	8.0	4.8	47.2	44.0	5.7	3.1
Average - S		48.4	43.0	6.1	2.4	51.9	43.0	3.7	1.4
Total Average		47.5	42.9	7.4	2.1	50.9	42.2	5.2	1.7

Direction 1 : From Bangkok Direction 2 : To Bangkok

APPENDIX 3.1-8 COMMODITY-VEHICLE MOVEMENT CHARACTERISTICS

■ Capacity in tons

Station No.	Direction	Vehicle Category				
		Pick-up	L. Truck	M. Truck	H. Truck	Average
a. Lampang - Doi Saket Route						
N-1	1	1.50	3.00	7.58	11.92	9.19
	2	1.48	3.00	7.66	11.15	8.72
	Average	1.49	3.00	7.62	11.59	8.98
N-2	1	1.50	3.25	7.35	10.45	6.89
	2	1.50	3.00	7.67	12.08	8.17
	Average	1.50	3.06	7.50	11.29	7.51
N-3	1	1.50	3.00	7.82	11.74	6.69
	2	1.50	3.00	7.66	10.29	6.12
	Average	1.50	3.00	7.74	11.04	6.39
N-4	1	1.50	3.00	7.85	11.09	5.15
	2	1.50	3.40	7.47	10.48	5.38
	Average	1.50	3.33	7.64	10.79	5.27
Average - N		1.50	3.12	7.62	11.34	7.26
b. Ban Pong - Cha Am Route						
S-1	1	1.18	3.45	5.88	9.91	6.15
	2	1.27	3.95	6.68	11.21	7.30
	Average	1.23	3.51	6.29	10.56	6.68
S-2	1	1.23	3.77	6.74	11.15	8.47
	2	1.23	3.27	5.63	10.39	7.35
	Average	1.23	3.57	6.24	10.77	7.90
S-3	1	1.14	3.11	5.64	9.94	6.85
	2	1.23	3.47	6.55	10.64	8.65
	Average	1.17	3.26	6.02	10.04	7.64
S-4	1	1.47	2.95	7.82	11.96	8.79
	2	1.49	3.25	7.44	13.75	8.69
	Average	1.48	3.10	7.60	12.83	8.74
S-5	1	1.49	3.10	7.89	11.93	8.89
	2	1.50	3.48	7.71	14.59	9.19
	Average	1.50	3.31	7.80	13.24	9.05
Average - S		1.31	3.41	6.86	11.34	7.84
Total Average		1.35	3.36	7.11	11.34	7.74

Direction 1 : From Bangkok

Direction 2 : To Bangkok

APPENDIX 3.1-8 COMMODITY-VEHICLE MOVEMENT CHARACTERISTICS

■ Payload in tons

Station No.	Direction	Vehicle Category				
		Pick-up	L. Truck	M. Truck	H. Truck	Average
a. Lampang - Doi Saket Route						
N-1	1	0.74	2.25	4.88	9.38	6.88
	2	0.91	1.50	2.08	3.48	2.69
	Average	0.81	1.77	3.52	6.86	5.02
N-2	1	0.75	0.72	3.33	6.38	3.77
	2	1.10	0.20	3.39	4.96	3.43
	Average	0.88	0.33	3.36	5.65	3.60
N-3	1	0.95	1.50	2.81	4.12	2.51
	2	0.75	0.60	3.61	4.72	2.71
	Average	0.86	0.87	3.22	4.41	2.61
N-4	1	0.95	0.75	3.89	6.81	2.80
	2	0.89	1.60	2.86	2.42	2.00
	Average	0.93	1.46	3.33	4.65	2.38
Average - N		0.88	0.98	3.34	5.88	3.52
b. Ban Pong - Cha Am Route						
S-1	1	0.44	1.69	2.47	3.08	2.15
	2	0.74	1.69	3.44	6.56	4.17
	Average	0.61	1.69	2.96	4.83	3.09
S-2	1	0.52	1.58	2.89	1.89	1.80
	2	0.69	2.17	2.93	7.46	5.10
	Average	0.62	1.82	2.91	4.66	3.48
S-3	1	0.68	1.56	2.56	6.80	4.64
	2	0.47	1.19	2.44	1.82	1.70
	Average	0.62	1.41	2.51	4.41	3.36
S-4	1	0.76	1.52	3.80	7.43	5.22
	2	0.86	0.99	3.89	10.15	5.92
	Average	0.82	1.26	3.85	8.75	5.59
S-5	1	0.77	1.37	3.89	7.64	5.39
	2	0.96	1.39	3.89	10.85	6.41
	Average	0.89	1.38	3.89	9.22	5.92
Average - S		0.70	1.58	3.29	6.10	4.13
Total Average		0.73	1.47	3.31	6.07	4.02

Direction 1 : From Bangkok

Direction 2 : To Bangkok

APPENDIX 3.1-8 COMMODITY-VEHICLE MOVEMENT CHARACTERISTICS

■ Empty Vehicles %

Station No.	Direction	Vehicle Category				
		Pick-up	L. Truck	M. Truck	H. Truck	Average
a. Lampang - Doi Saket Route						
N-1	1	41.82	20.00	21.05	15.61	20.69
	2	27.03	40.00	66.67	67.52	61.97
	Average	36.13	32.69	43.20	37.78	39.03
N-2	1	27.88	75.00	38.66	30.97	33.66
	2	14.55	93.33	50.00	57.32	50.37
	Average	22.76	88.64	44.00	44.59	41.76
N-3	1	25.56	25.00	59.40	64.15	49.71
	2	35.16	80.00	47.14	47.92	52.07
	Average	29.85	63.50	53.18	56.34	50.94
N-4	1	14.73	66.67	35.16	31.25	27.29
	2	26.74	60.00	58.75	72.73	54.05
	Average	18.87	61.11	47.95	51.68	41.30
Average - N		24.84	67.04	47.23	43.81	43.04
b. Ban Pong - Cha Am Route						
S-1	1	35.10	25.81	43.07	63.33	46.37
	2	21.65	45.45	32.02	21.12	23.95
	Average	27.56	28.30	37.45	42.12	35.96
S-2	1	44.66	45.45	44.21	78.99	66.38
	2	25.00	23.08	38.16	16.77	21.46
	Average	32.66	36.42	41.47	48.02	43.50
S-3	1	18.44	30.56	38.32	13.40	18.82
	2	39.39	55.56	52.17	80.91	71.18
	Average	24.80	40.82	44.12	45.77	41.76
S-4	1	25.78	33.33	40.91	31.60	32.47
	2	21.25	60.00	38.46	20.77	27.17
	Average	22.94	46.38	39.49	26.36	29.64
S-5	1	31.03	45.45	41.24	30.56	33.60
	2	20.67	38.10	38.37	22.38	25.52
	Average	24.34	41.36	39.86	26.53	29.33
Average - S		26.83	34.56	39.91	38.92	36.13
Total Average		26.48	40.79	42.32	39.53	37.39

Direction 1 : From Bangkok

Direction 2 : To Bangkok

APPENDIX 3.1-8 COMMODITY-VEHICLE MOVEMENT CHARACTERISTICS

■ Average Number of Assistants (4/5)

Station No.	Direction	Vehicle Category				
		Pick-up	L. Truck	M. Truck	H. Truck	Average
a. Lampang - Doi Saket Route						
N-1	1	0.80	0.60	0.83	0.64	0.71
	2	0.89	1.00	0.74	0.65	0.72
	Average	0.83	0.85	0.79	0.64	0.71
N-2	1	0.89	0.62	0.74	0.73	0.77
	2	0.49	0.53	0.43	0.43	0.45
	Average	0.74	0.55	0.59	0.57	0.62
N-3	1	0.42	0.75	0.40	0.34	0.43
	2	0.57	0.80	0.66	0.48	0.65
	Average	0.49	0.79	0.53	0.41	0.54
N-4	1	0.42	0.75	0.56	0.54	0.51
	2	0.64	0.80	0.50	0.52	0.62
	Average	0.50	0.79	0.53	0.53	0.57
Average - N		0.65	0.73	0.60	0.58	0.61
b. Ban Pong - Cha Am Route						
S-1	1	0.66	0.61	0.70	0.48	0.58
	2	0.28	0.34	0.31	0.24	0.27
	Average	0.45	0.58	0.50	0.36	0.43
S-2	1	0.36	0.14	0.48	0.11	0.21
	2	0.77	0.92	0.72	0.59	0.66
	Average	0.61	0.45	0.59	0.35	0.44
S-3	1	0.88	0.69	0.81	0.53	0.65
	2	0.34	0.22	0.25	0.11	0.16
	Average	0.72	0.50	0.58	0.33	0.44
S-4	1	0.85	0.90	1.02	0.66	0.78
	2	0.50	0.75	0.72	0.72	0.67
	Average	0.63	0.83	0.85	0.69	0.72
S-5	1	0.55	0.54	0.77	0.44	0.53
	2	0.37	0.57	0.42	0.65	0.53
	Average	0.43	0.56	0.60	0.54	0.53
Average - S		0.54	0.58	0.62	0.44	0.50
Total Average		0.56	0.61	0.62	0.45	0.52

Direction 1 : From Bangkok Direction 2 : To Bangkok

APPENDIX 3.1-8 COMMODITY-VEHICLE MOVEMENT CHARACTERISTICS

■ Commodity Weight in ton/day (5/5)

Station No.	Direction	Agriculture	Construction	Manufacture	Others	Total
a. Lampang - Doi Saket Route						
N-1	1	1973.2	1492.2	2439.8	1517.5	7422.7
	2	631.5	131.2	814.8	749.8	2327.3
	Total	2604.6	1623.4	3254.6	2267.3	9750.0
N-2	1	1370.6	1536.0	2457.6	2281.7	7645.9
	2	1652.7	1841.2	1784.3	1578.2	6856.4
	Total	3023.3	3377.2	4241.9	3859.9	14502.3
N-3	1	448.9	1113.8	324.0	384.8	2271.4
	2	676.6	1447.2	206.7	276.7	2607.3
	Total	1125.5	2560.9	530.7	661.5	4878.6
N-4	1	536.5	507.7	472.6	280.6	1797.3
	2	458.4	408.7	356.2	187.1	1410.4
	Total	994.9	916.4	828.8	467.7	3207.7
b. Ban Pong - Cha Am Route						
S-1	1	4744.7	4864.3	5862.4	880.2	16351.6
	2	5062.5	16370.2	3546.6	341.4	25320.8
	Total	9807.2	21234.5	9409.0	1221.6	41672.4
S-2	1	3478.9	1599.5	2351.2	116.3	7545.9
	2	4325.2	14377.2	2847.2	803.1	22352.7
	Total	7804.0	15976.7	5198.5	919.4	29898.6
S-3	1	1734.1	11301.3	2358.4	1075.6	16469.5
	2	1778.8	1179.5	1072.3	560.1	4590.7
	Total	3512.9	12480.8	3430.7	1635.7	21060.2
S-4	1	5020.0	3309.3	5727.6	1334.6	15391.4
	2	12289.3	3031.8	6243.3	1154.4	22718.9
	Total	17309.4	6341.1	11970.9	2489.0	38110.3
S-5	1	5177.0	2330.4	5722.7	2856.7	16086.7
	2	16363.6	3180.1	4310.7	633.9	24488.3
	Total	21540.6	5510.4	10033.4	3490.6	40575.0

Direction 1 : From Bangkok Direction 2 : To Bangkok

APPENDIX 3.1-9 SPEED SURVEY RESULTS

Section No.	Direction	Highway No.	No. of Lanes	Terrain	Average Speed (km/h)	Traffic Volume (pcu/h)
a. Lampang - Doi Saket Route						
NS1	1	11	2	Flat	78.6	362
	2				83.7	365
NS2	1	11	2 + CL	Mountainous	72.0	311
	2				85.3	297
NS3	1	11	2 + CL	Mountainous	78.0	311
	2				72.3	297
NS4	1	11	2	Flat	81.9	327
	2				76.9	370
NS5	1	11	2	Flat	76.1	792
	2				72.2	640
NS6	1	118	2	Flat	69.7	386
	2				67.9	342
NS7	1	106	2	Flat	47.8	337
	2				44.8	390
b. Ban Pong - Cha Am Route						
SS1	1	4	4	Flat	79.0	907
	2				74.4	933
SS2	1	4	4	Flat	76.6	1142
	2				67.2	1219
SS3	1	4	4	Flat	83.0	1271
	2				79.6	1165
SS4	1	4	2	Flat	74.2	627
	2				75.3	636
SS5	1	4	4	Flat	81.1	733
	2				79.9	678
SS6	1	4	4	Flat	83.0	972
	2				84.6	735

Remarks: Section numbers are as indicated in Figure 7.2-1.
Direction 1 : From Bangkok
Direction 2 : To Bangkok
CL : Climbing Lane
pcu : PC 1.0
LB 1.0
HB 1.8
PU 1.0
LT 1.0
MT 2.0
HT 2.0

APPENDIX 3.2-1 SECTORAL GPP PARAMETERS

(million Baht at 1988 constant prices)

NO.	CHANGWAT	SECTOR	1993	2000	2010	2020
	NORTHERN					
52	CHIANG MAI	1	10,037	14,763	25,852	46,105
		2	6,581	9,895	17,688	31,996
		3	28,657	46,535	88,856	167,660
		TOTAL	45,275	71,194	132,395	245,761
55	LAMPHUN	1	2,889	3,882	6,254	10,403
		2	1,122	1,913	3,802	7,275
		3	4,515	6,891	12,576	22,854
		TOTAL	8,526	12,686	22,632	40,532
56	LAMPANG	1	2,882	3,629	5,243	7,855
		2	4,594	7,863	15,731	30,437
		3	11,843	19,071	36,337	68,210
		TOTAL	19,320	30,562	57,311	106,503
50	CHIANG RAI	1	10,000	14,673	25,857	46,052
		2	1,425	1,844	2,896	4,771
		3	11,376	16,635	29,234	51,980
		TOTAL	22,801	33,153	57,986	102,804
51	MAE HONG SON	1	1,040	1,260	1,783	2,643
		2	481	723	1,281	2,257
		3	1,842	2,897	5,325	9,593
		TOTAL	3,363	4,879	8,389	14,493
53	PHAYAO	1	4,000	5,808	10,123	17,850
		2	733	1,046	1,798	3,143
		3	4,670	6,691	11,545	20,235
		TOTAL	9,403	13,545	23,466	41,228
54	NAN	1	2,438	3,338	5,449	8,991
		2	594	856	1,465	2,498
		3	4,518	6,774	12,009	20,945
		TOTAL	7,550	10,968	18,923	32,434
57	PHRAE	1	2,293	3,235	5,457	9,279
		2	1,096	1,673	3,033	5,411
		3	5,695	8,641	15,583	27,706
		TOTAL	9,084	13,549	24,073	42,396
60	UTTARADIT	1	1,898	2,460	3,878	6,330
		2	2,218	3,587	6,678	12,032
		3	2,961	3,977	6,471	10,784
		TOTAL	7,077	10,024	17,027	29,146
61	SUKHOTHAI	1	4,316	6,218	10,658	18,082
		2	1,103	1,545	2,576	4,286
		3	6,314	9,721	17,671	31,163
		TOTAL	11,733	17,484	30,905	53,531
62	TAK	1	2,300	3,223	5,413	9,064
		2	4,811	7,985	15,056	26,907
		3	3,853	5,419	9,132	15,324
		TOTAL	10,964	16,628	29,600	51,296
63	PHISANULOK	1	5,833	8,510	14,917	25,921
		2	1,629	2,025	3,017	4,654
		3	10,395	15,754	28,487	50,483
		TOTAL	17,857	26,289	46,421	81,058
64	KAMPHAENG PHET	1	6,621	9,753	16,868	28,455
		2	3,078	4,755	8,511	14,644
		3	5,807	8,318	14,078	23,441
		TOTAL	15,506	22,826	39,457	66,540
65	PHICHIT	1	3,568	4,761	7,505	11,987
		2	1,950	3,303	6,458	11,934
		3	6,107	9,216	16,444	28,730
		TOTAL	11,624	17,279	30,407	52,650
66	PHETCHABUN	1	9,226	12,358	20,134	33,594
		2	970	1,117	1,568	2,353
		3	8,498	11,882	20,036	34,145
		TOTAL	18,694	25,357	41,738	70,091
67	NAKHON SAWAN	1	8,782	12,362	20,641	34,680
		2	7,805	13,335	25,974	47,982
		3	13,297	20,042	35,571	62,223
		TOTAL	29,885	45,739	82,186	144,885
68	UTHAI THANI	1	4,495	6,062	9,697	15,633
		2	1,505	2,145	3,637	6,122
		3	6,498	10,126	18,598	33,032
		TOTAL	12,498	18,333	31,931	54,787

APPENDIX 3.2-1 SECTORAL GPP PARAMETERS

(million Baht at 1988 constant prices)

NO.	CHANGWAT	SECTOR	1993	2000	2010	2020
	WESTERN					
73	RATCHABURI	1	5,768	9,948	18,681	33,763
		2	10,575	18,769	36,218	66,681
		3	16,003	30,112	61,109	116,238
		TOTAL	32,345	58,829	116,009	216,682
76	PHETCHABURI	1	3,233	4,765	8,058	13,775
		2	2,588	4,569	9,153	17,595
		3	9,682	16,864	33,426	63,844
		TOTAL	15,504	26,198	50,637	95,214
70	SUPHAN BURI	1	9,108	14,888	27,292	48,296
		2	4,386	8,467	17,555	33,402
		3	12,051	19,814	36,504	64,803
		TOTAL	25,545	43,169	81,351	146,501
71	KANCHANABURI	1	9,220	15,714	29,584	52,784
		2	10,782	18,418	34,745	62,079
		3	14,674	26,102	50,950	93,013
		TOTAL	34,676	60,233	115,278	207,876
75	SAMUT SONGKHRAM	1	664	1,000	1,782	2,897
		2	553	910	1,759	3,026
		3	4,278	7,479	15,192	26,933
		TOTAL	5,496	9,389	18,733	32,856
77	PRACHUAP KHIRI KHAN	1	7,945	12,055	21,054	36,485
		2	3,276	5,843	11,571	21,639
		3	7,974	13,293	25,094	45,664
		TOTAL	19,195	31,191	57,719	103,788
	BMR					
1	BANGKOK METROPOLIS	1	12,018	18,564	33,662	60,968
		2	328,149	569,984	1,142,571	2,207,404
		3	560,566	979,676	1,972,996	3,822,320
		TOTAL	900,733	1,568,225	3,149,230	6,090,692
16	PATHUM THANI	1	3,097	4,765	8,210	13,727
		2	45,039	87,786	187,151	361,428
		3	15,588	31,090	67,354	131,252
		TOTAL	63,723	123,641	262,715	506,407
17	NONTHABURI	1	2,451	3,976	7,516	13,830
		2	24,987	44,312	89,420	170,889
		3	18,832	32,800	65,374	124,084
		TOTAL	46,270	81,089	162,309	308,803
18	SAMUT PRAKAN	1	5,040	8,417	16,271	29,784
		2	91,383	160,802	322,943	604,352
		3	30,345	54,385	110,617	208,484
		TOTAL	126,768	223,604	449,831	842,620
72	NAKHON PATHOM	1	5,105	7,602	12,844	21,774
		2	11,767	23,155	49,830	99,158
		3	14,089	24,996	49,910	95,116
		TOTAL	30,960	55,753	112,584	216,048
74	SAMUT SAKHON	1	3,790	6,757	13,796	26,546
		2	21,741	42,024	90,203	178,210
		3	10,538	18,881	38,672	74,531
		TOTAL	36,068	67,663	142,671	279,287

APPENDIX 3.2-1 SECTORAL GPP PARAMETERS

(million Baht at 1988 constant prices)

NO.	CHANGWAT	SECTOR	1993	2000	2010	2020
	CENTRAL					
10	CHAI NAT	1	3,400	4,894	8,522	14,931
		2	1,292	1,826	3,130	5,427
		3	5,192	7,372	12,674	22,024
		TOTAL	9,883	14,093	24,326	42,383
11	SING BURI	1	1,356	1,584	2,028	2,576
		2	749	928	1,318	1,912
		3	4,344	7,131	14,056	26,963
		TOTAL	6,450	9,643	17,402	31,451
12	LOP BURI	1	5,140	6,463	9,777	15,424
		2	2,467	3,943	7,509	13,961
		3	12,333	18,699	34,172	61,949
		TOTAL	19,939	29,104	51,458	91,333
13	ANG THONG	1	1,625	2,185	3,364	5,266
		2	1,203	2,125	4,397	8,699
		3	5,097	8,625	17,211	33,283
		TOTAL	7,925	12,935	24,972	47,249
14	SARABURI	1	4,970	8,513	15,848	28,209
		2	28,713	58,106	124,354	241,871
		3	15,096	29,059	59,906	114,004
		TOTAL	48,778	95,678	200,107	384,084
15	AYUTTHAYA	1	4,074	6,970	13,841	26,669
		2	5,804	9,898	19,597	37,684
		3	12,896	23,373	48,771	97,014
		TOTAL	22,773	40,241	82,210	161,367
	EASTERN					
20	NAKHON NAYOK	1	1,440	2,103	3,743	6,818
		2	419	689	1,350	2,611
		3	4,026	6,397	12,216	23,277
		TOTAL	5,885	9,188	17,308	32,706
21	PRACHIN BURI	1	5,999	8,875	15,707	27,817
		2	2,969	4,956	9,603	17,978
		3	11,379	18,152	34,177	62,930
		TOTAL	20,367	31,983	59,486	108,726
22	CHACHOENGSAO	1	9,087	17,239	33,720	60,558
		2	17,852	43,468	101,737	202,837
		3	13,557	28,692	61,346	116,443
		TOTAL	40,496	89,399	196,804	379,837
23	CHON BURI	1	11,660	25,474	54,248	102,654
		2	42,554	93,287	199,260	377,779
		3	56,888	138,144	319,345	634,899
		TOTAL	111,102	256,905	572,853	1,115,332
24	RAYONG	1	7,694	15,364	31,231	59,684
		2	7,010	16,390	37,877	78,412
		3	12,206	28,009	63,871	131,219
		TOTAL	26,909	59,763	132,980	269,315
25	CHANTHABURI	1	4,164	8,222	16,240	30,939
		2	1,634	3,540	7,623	15,409
		3	10,693	24,472	55,097	114,473
		TOTAL	16,491	36,234	78,960	160,821
26	TRAT	1	2,052	4,411	9,078	17,606
		2	720	1,372	2,499	4,436
		3	6,213	14,335	31,289	62,968
		TOTAL	8,985	20,118	42,866	85,011

APPENDIX 3.2-1 SECTORAL GPP PARAMETERS

(million Baht at 1988 constant prices)

NO.	CHANGWAT	SECTOR	1993	2000	2010	2020
	NORTHEASTERN					
30	CHAIYAPHUM	1	6,349	9,362	16,105	27,333
		2	2,580	4,243	7,906	14,057
		3	8,613	12,947	22,615	38,739
		TOTAL	17,541	26,551	46,626	80,129
31	YASOTHON	1	1,947	2,761	4,692	8,018
		2	540	827	1,501	2,679
		3	4,385	6,516	11,555	20,319
		TOTAL	6,873	10,104	17,748	31,016
32	UBON RATCHATHANI	1	6,349	9,063	15,676	27,153
		2	3,845	5,888	10,766	19,293
		3	17,006	25,296	45,237	80,007
		TOTAL	27,200	40,246	71,679	126,453
33	SI SA KET	1	5,332	7,421	12,350	20,721
		2	1,159	1,793	3,258	5,776
		3	9,993	15,089	26,903	47,160
		TOTAL	16,484	24,303	42,512	73,657
34	BURI RAN	1	5,826	9,016	16,135	28,291
		2	3,910	6,534	12,298	22,170
		3	10,836	16,096	27,955	48,168
		TOTAL	20,573	31,646	56,387	98,630
35	NAKHON RATCHASIMA	1	13,088	18,416	30,295	50,263
		2	9,255	13,467	22,959	39,133
		3	26,555	44,125	84,749	156,413
		TOTAL	48,898	76,009	138,003	245,810
36	SURIN	1	3,989	5,262	7,913	12,151
		2	1,249	1,368	1,511	1,564
		3	11,700	19,791	38,138	70,246
		TOTAL	16,938	26,421	47,561	83,961
40	NONG KHAI	1	4,672	5,504	7,770	11,583
		2	3,453	5,988	11,686	21,568
		3	6,595	9,608	16,689	28,872
		TOTAL	14,721	21,099	36,145	62,022
41	LOEI	1	4,499	6,288	10,445	17,591
		2	700	806	1,081	1,535
		3	5,261	7,741	13,433	23,264
		TOTAL	10,460	14,835	24,959	42,390
42	UDON THANI	1	7,519	10,376	17,334	29,603
		2	3,175	4,133	6,488	10,575
		3	17,396	26,795	49,352	89,902
		TOTAL	28,091	41,303	73,174	130,080
43	NAKHON PANOM	1	3,229	4,778	8,382	14,654
		2	595	718	978	1,367
		3	5,161	7,449	12,743	21,877
		TOTAL	8,984	12,945	22,104	37,898
44	SAKHON NAKHON	1	4,334	6,256	10,812	18,849
		2	1,164	1,674	2,886	5,022
		3	8,479	12,288	21,302	37,204
		TOTAL	13,977	20,218	35,000	61,074
45	KHON KAEN	1	6,788	9,199	15,199	25,787
		2	6,515	9,799	17,753	32,013
		3	20,640	31,568	57,951	105,331
		TOTAL	33,943	50,567	90,902	163,131
46	KALASIN	1	3,955	5,541	9,225	15,460
		2	945	1,335	2,239	3,772
		3	7,357	11,314	20,387	35,952
		TOTAL	12,257	18,190	31,850	55,184
47	MAHA SARAKHAM	1	3,274	4,163	6,274	9,748
		2	1,235	1,942	3,584	6,416
		3	8,003	12,347	22,422	39,765
		TOTAL	12,512	18,453	32,279	55,929
48	ROI ET	1	5,458	8,194	14,578	25,528
		2	928	1,070	1,441	2,036
		3	10,257	15,204	26,779	46,595
		TOTAL	16,643	24,467	42,799	74,159
49	MUKDAHAN	1	1,249	1,728	2,880	4,845
		2	381	545	932	1,594
		3	2,391	3,638	6,526	11,473
		TOTAL	4,021	5,910	10,338	17,912

APPENDIX 3.2-1 SECTORAL GPP PARAMETERS

(million Baht at 1988 constant prices)

NO.	CHANGWAT	SECTOR	1993	2000	2010	2020
	SOUTHERN					
80	CHUMPHON	1	7,077	11,304	20,517	36,330
		2	1,054	1,554	2,647	4,509
		3	5,801	9,028	16,073	28,133
		TOTAL	13,933	21,886	39,236	68,973
81	RANONG	1	2,056	2,791	4,508	7,398
		2	532	1,191	2,163	3,883
		3	3,245	5,593	11,340	21,848
		TOTAL	5,834	9,575	18,010	33,129
82	SURAT THANI	1	9,812	15,654	28,300	49,951
		2	7,934	14,418	28,403	52,555
		3	12,602	20,213	36,686	64,901
		TOTAL	30,348	50,285	93,389	167,407
83	PHANG NGA	1	4,348	6,396	11,663	20,662
		2	1,138	2,877	4,598	7,444
		3	4,004	6,107	11,456	20,643
		TOTAL	9,491	15,380	27,717	48,750
84	NAKHON SI THAMMARAT	1	8,182	12,396	21,342	36,531
		2	7,560	13,908	27,924	52,536
		3	20,526	34,358	64,465	116,653
		TOTAL	36,269	60,661	113,731	205,720
85	KRABI	1	4,780	7,032	12,304	21,537
		2	616	766	1,161	1,852
		3	3,576	5,197	9,011	15,691
		TOTAL	8,973	12,995	22,476	39,081
86	PHUKET	1	1,463	2,281	4,306	8,119
		2	3,534	5,972	11,880	23,052
		3	8,847	14,511	28,331	54,426
		TOTAL	13,843	22,765	44,517	85,597
90	PHATTALUNG	1	3,135	4,502	7,772	13,539
		2	505	584	796	1,148
		3	5,258	7,642	13,331	23,375
		TOTAL	8,898	12,729	21,900	38,061
91	TRANG	1	4,881	7,288	12,986	23,265
		2	878	1,185	1,924	3,235
		3	7,514	11,585	21,186	38,577
		TOTAL	13,273	20,058	36,096	65,077
92	SONGKHLA	1	7,457	10,629	18,836	34,106
		2	3,784	5,175	8,839	15,615
		3	21,522	32,975	61,904	116,119
		TOTAL	32,763	48,779	89,579	165,840
93	SATUN	1	2,073	2,820	4,646	7,840
		2	424	623	1,087	1,897
		3	3,221	4,683	8,117	14,117
		TOTAL	5,719	8,126	13,850	23,854
94	PATTANI	1	2,616	3,788	6,674	11,855
		2	581	628	784	1,035
		3	6,627	9,965	18,106	32,783
		TOTAL	9,823	14,380	25,563	45,673
95	YALA	1	2,546	3,678	6,452	11,459
		2	1,001	1,231	1,829	2,867
		3	5,617	8,468	15,396	27,955
		TOTAL	9,164	13,377	23,677	42,281
96	NARATHIWAT	1	4,581	6,684	11,723	20,624
		2	856	1,103	1,744	2,871
		3	6,294	8,883	15,186	26,304
		TOTAL	11,731	16,670	28,653	49,799

APPENDIX 3.2-2 RAILWAY TRANSPORT SHARE

a. Passenger Share in Thailand

(million passenger-km)

Year	1985	1986	1987	1988	1989
Roadway	93,291	97,607	110,055	113,409	134,883
Railway	9,140	9,247	9,583	10,301	10,935
Total	102,431	106,854	119,638	123,710	145,818
Railway Share %	8.92	8.65	8.01	8.33	7.50

b. Railway Trips in Lampang - Doi Saket Area (1990)

PASSENGER/DAY

		DESTINATION								
		M.Chiang Mai	A.Saraphi	M.Lamphun	A.Mae Tha	M.Lampang	A.Hang Chat	A.Mae Tha	Others	Total
O	M.Chiang Mai	-	0	3	2	14	1	3	520	544
R	A.Saraphi	0	-	0	0	0	0	0	2	2
I	M.Lamphun	3	0	-	0	1	0	0	40	44
G	A.Mae Tha	2	0	0	-	1	0	0	31	34
I	M.Lampang	14	0	1	1	-	1	1	201	219
N	A.Hang Chat	1	0	0	0	1	-	0	21	23
	A.Mae Tha	3	0	0	0	1	0	-	48	53
	Others	520	2	40	31	201	21	48	7349	8210
	Total	544	2	44	34	219	23	53	8210	9129

FREIGHT - KG/DAY

		DESTINATION								
		M.Chiang Mai	A.Saraphi	M.Lamphun	A.Mae Tha	M.Lampang	A.Hang Chat	A.Mae Tha	Others	Total
O	M.Chiang Mai	-	463	249	0	270	88	239	36679	37987
R	A.Saraphi	463	-	207	0	225	73	199	30546	31713
I	M.Lamphun	249	207	-	0	121	39	107	16431	17154
G	A.Mae Tha	0	0	0	-	0	0	0	3	3
I	M.Lampang	270	225	121	0	-	43	116	17806	18580
N	A.Hang Chat	88	73	39	0	43	-	38	5784	6064
	A.Mae Tha	239	199	107	0	116	38	-	15794	16493
	Others	36679	30546	16431	3	17806	5784	15794	2421838	2544881
	Total	37987	31713	17154	3	18580	6064	16493	2544881	2672875

c. Rail- and Road-Passenger Share in Study Area

(passenger/day)

Lampang - Doi Saket Area (1990)				Ban Pong - Cha Am Area (1991)			
	Rail	Road	Rail %		Rail	Road	Rail %
Chiang Mai	1,088	42,918	2.47	Ban Pong	3,552	58,211	5.75
Saraphi	1,092	24,574	4.25	Nakorn Choom	3,362	48,501	6.48
Lamphun	1,174	45,647	2.51	Klong Takod	3,048	38,791	7.29
Mae Tha	1,238	45,647	2.64	Photharam	2,769	30,583	8.30
Hang Chat	1,282	23,746	5.12	Jed Samian	2,444	22,375	9.85
Lampang	1,684	23,746	6.62	Ban Kluay	2,041	21,419	8.70
				S.Ratchaburi	1,833	20,463	8.22
AVERAGE			3.53	AVERAGE			7.34

APPENDIX 3.2-3 GROWTH IN SOCIO-ECONOMICS AND TRIPS

Year	1993	2000	2010	2020	GROWTH RATE 1993	2000	2010	2020	ANNUAL GROWTH % -2000	-2010	-2020
POPULATION ('000)											
Chiang Mai	1,413	1,502	1,605	1,698	1	1.06	1.14	1.20	0.88	0.67	0.56
Lamphun	426	453	485	513	1	1.06	1.14	1.20	0.88	0.68	0.56
Lampang	791	833	882	926	1	1.05	1.12	1.17	0.74	0.57	0.49
Ratchaburi	737	767	799	828	1	1.04	1.08	1.12	0.57	0.41	0.36
Phetchaburi	439	464	491	517	1	1.06	1.12	1.18	0.79	0.57	0.52
Thailand	58,281	62,857	68,205	73,206	1	1.08	1.17	1.26	1.09	0.82	0.71
GPP (million Baht)											
Chiang Mai	45,275	71,194	132,395	245,761	1	1.57	2.92	5.43	6.68	6.40	6.38
Lamphun	8,526	12,686	22,632	40,532	1	1.49	2.65	4.75	5.84	5.96	6.00
Lampang	19,320	30,562	57,311	106,503	1	1.58	2.97	5.51	6.77	6.49	6.39
Ratchaburi	32,345	58,829	116,009	216,682	1	1.82	3.59	6.70	8.92	7.03	6.45
Phetchaburi	15,504	26,198	50,637	95,214	1	1.69	3.27	6.14	7.78	6.81	6.52
Thailand	2,468,200	4,237,800	8,336,100	15,706,700	1	1.72	3.38	6.36	8.03	7.00	6.54
Generation and Attraction (trip/day)											
Chiang Mai	54,625	94,632	185,317	352,571	1	1.73	3.39	6.45	8.17	6.95	6.64
Lamphun	22,556	36,961	67,822	124,785	1	1.64	3.01	5.53	7.31	6.26	6.29
Lampang	11,822	23,982	46,010	90,273	1	2.03	3.89	7.64	10.63	6.73	6.97
Ratchaburi	56,155	116,368	238,255	457,472	1	2.07	4.24	8.15	10.97	7.43	6.74
Phetchaburi	23,097	46,962	96,548	183,076	1	2.03	4.18	7.93	10.67	7.47	6.61
Thailand	1,323,616	2,704,750	5,707,142	11,488,852	1	2.04	4.31	8.68	10.75	7.75	7.25

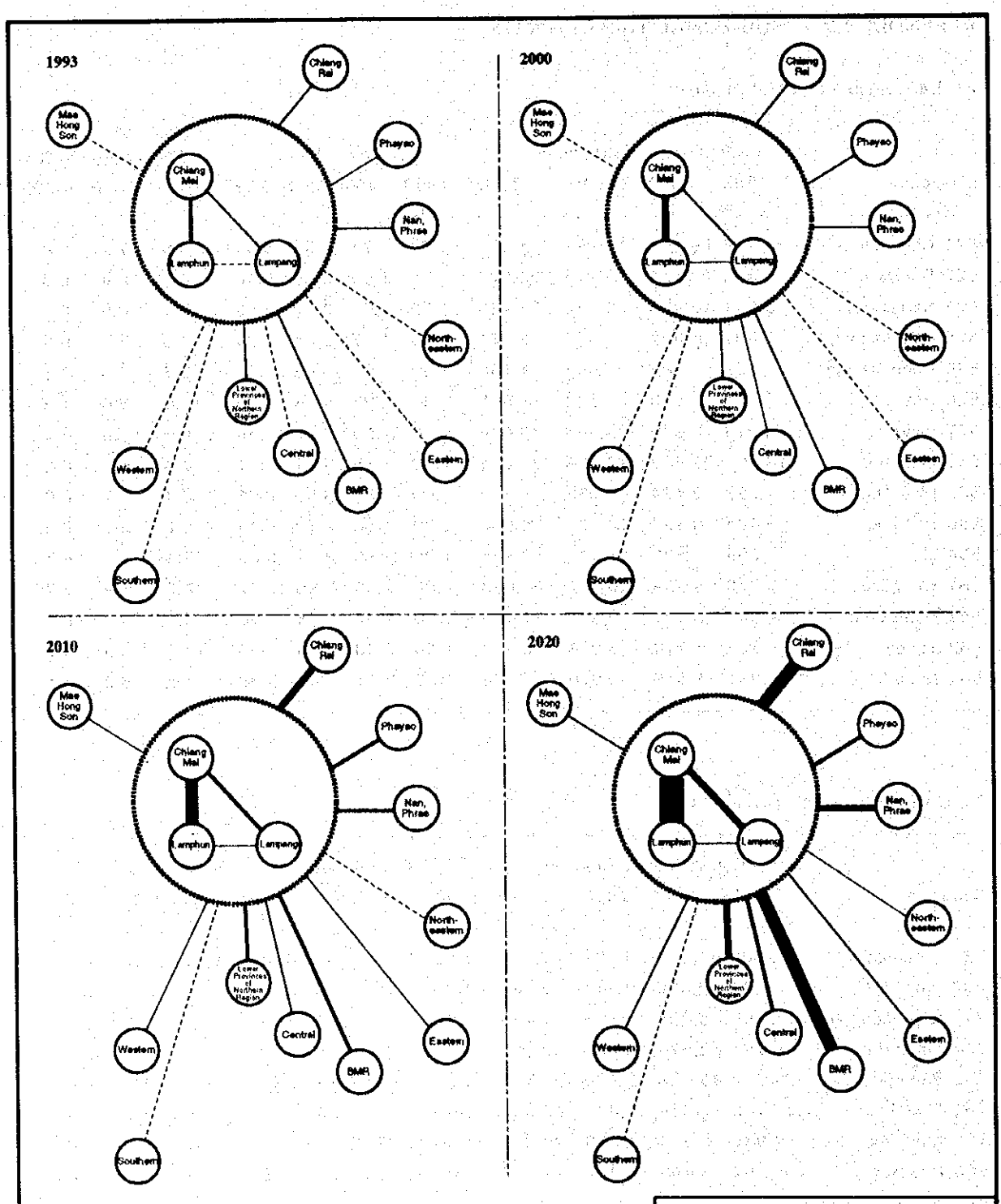
APPENDIX 3.2-4 SUB-ZONAL TRIP GROWTH

a. Lampang - Doi Saket Area

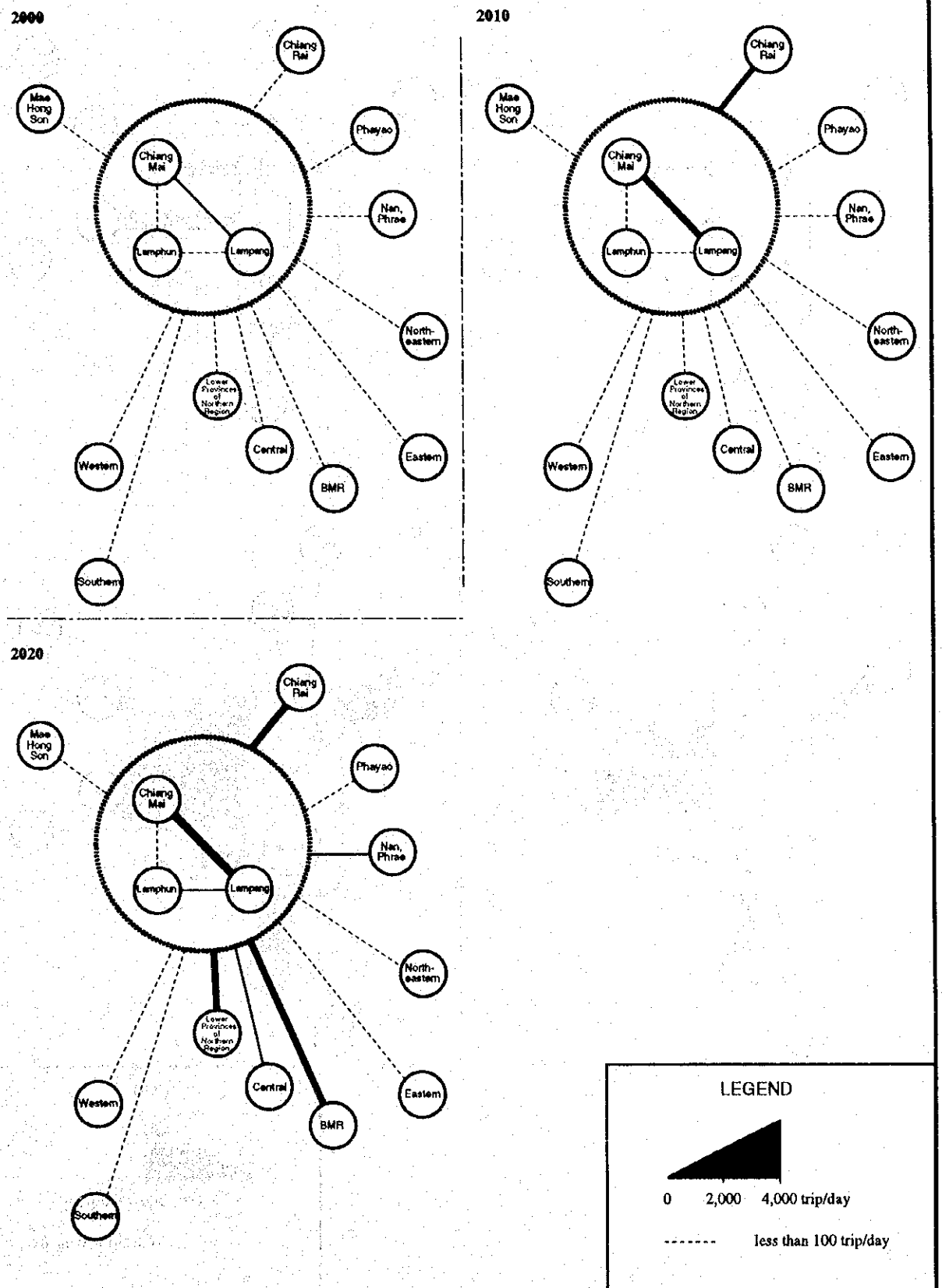
Sub-zone	Generation & Attraction				Growth Rate				Annual Growth %		
	1993	2000	2010	2020	1993	2000	2010	2020	-2000	-2010	-2020
521 Chiang Mai	31,708	56,268	112,917	217,221	1.00	1.77	3.56	6.85	8.5	7.2	6.8
522 Doi Saket	6,352	10,102	18,776	34,677	1.00	1.59	2.96	5.46	6.9	6.4	6.3
523 Saraphi	8,941	16,056	30,554	57,449	1.00	1.80	3.42	6.43	8.7	6.6	6.5
524 San Pa Tong	491	822	1,639	3,064	1.00	1.67	3.34	6.24	7.6	7.1	6.5
525 Chom Thong	159	286	582	1,156	1.00	1.80	3.66	7.27	8.7	7.4	7.1
526 Hot	61	119	283	595	1.00	1.95	4.64	9.80	10.0	9.0	7.8
527 Fang	6,913	10,979	20,566	38,406	1.00	1.59	2.97	5.56	6.8	6.5	6.4
551 Lamphun	14,401	23,808	43,304	79,304	1.00	1.65	3.01	5.51	7.4	6.2	6.2
552 Mae Tha	1,323	2,434	4,636	8,780	1.00	1.84	3.50	6.64	9.1	6.7	6.6
553 Pa Sang	6,474	10,127	18,691	34,543	1.00	1.56	2.89	5.34	6.6	6.3	6.3
554 Li	358	592	1,148	2,158	1.00	1.65	3.21	6.03	7.4	6.8	6.5
561 Lampang	7,740	15,838	30,902	62,059	1.00	2.05	3.99	8.02	10.8	6.9	7.2
562 Hang Chat	2,647	5,127	9,384	17,198	1.00	1.94	3.55	6.50	9.9	6.2	6.2
563 Thoen	534	1,118	2,054	3,738	1.00	2.09	3.85	7.00	11.1	6.3	6.2
564 Ngao	901	1,899	3,670	7,278	1.00	2.11	4.07	8.08	11.2	6.8	7.1

b. Ban Pong - Cha Am Area

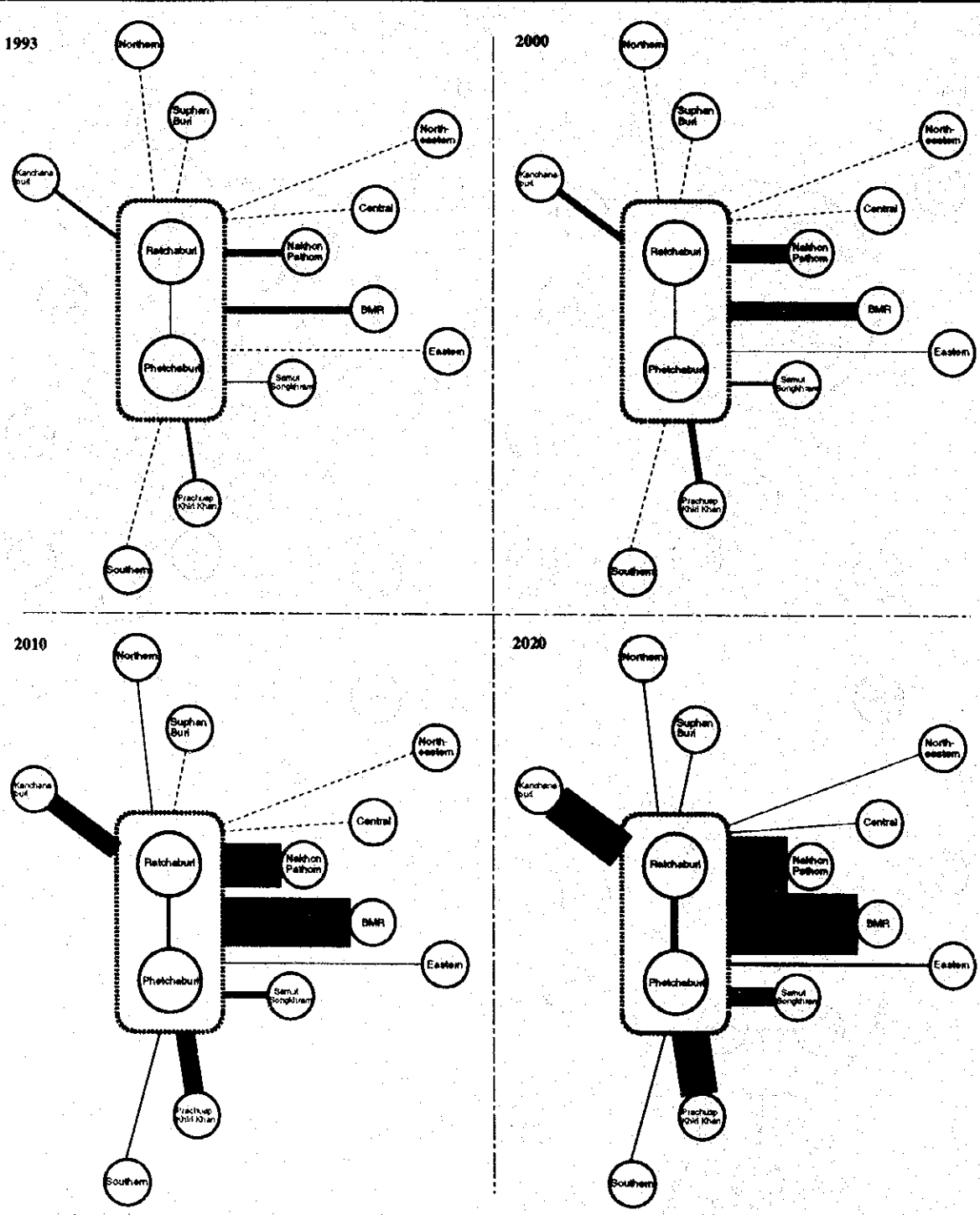
Sub-zone	Generation & Attraction				Growth Rate				Annual Growth %		
	1993	2000	2010	2020	1993	2000	2010	2020	-2000	-2010	-2020
731 Ratchaburi	19,863	41,297	85,791	167,673	1.00	2.08	4.32	8.44	11.0	7.6	6.9
732 Pak Tho	4,341	9,366	19,218	37,189	1.00	2.16	4.43	8.57	11.6	7.5	6.8
733 Damnoen Saduak	3,343	6,495	14,779	27,730	1.00	1.94	4.42	8.29	10.0	8.6	6.5
734 Photharam	6,791	13,674	27,602	52,766	1.00	2.01	4.06	7.77	10.5	7.3	6.7
735 Ban Pong	21,817	45,536	90,865	172,114	1.00	2.09	4.16	7.89	11.1	7.2	6.6
761 Phetchaburi	11,710	22,948	45,637	85,067	1.00	1.96	3.90	7.26	10.1	7.1	6.4
762 Khao Yoi	2,935	5,554	11,066	20,892	1.00	1.89	3.77	7.12	9.5	7.1	6.6
763 Cha Am	8,452	18,460	39,845	77,117	1.00	2.18	4.71	9.12	11.8	8.0	6.8



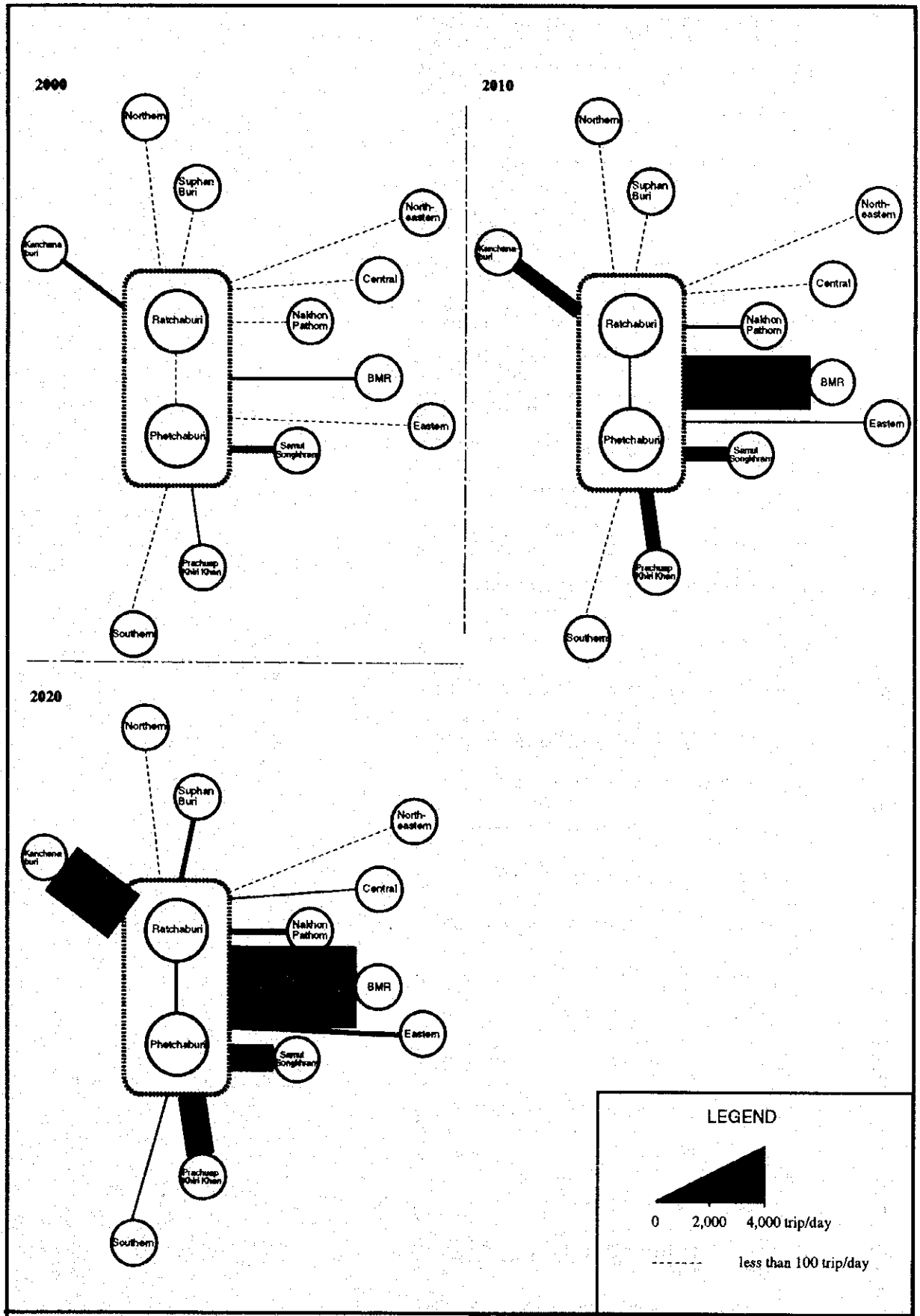
FEASIBILITY STUDY ON THE INTER-CITY TOLL MOTORWAY PROJECTS	APPENDIX 3.2-5 TRIPS FROM/TO CHANGWATS OF LAMPANG - DOI SAKET ROUTE a.Normal Traffic (1/2)



FEASIBILITY STUDY ON THE INTER-CITY TOLL MOTORWAY PROJECTS	APPENDIX 3.2-5 TRIPS FROM/TO CHANGWATS OF LAMPANG - DOI SAKET ROUTE b.Induced Traffic (2/2)



FEASIBILITY STUDY ON THE INTER-CITY TOLL MOTORWAY PROJECTS	APPENDIX 3.2-6 TRIPS FROM/TO CHANGWATS OF BAN PONG - CHA AM ROUTE a.Normal Traffic (1/2)



FEASIBILITY STUDY ON THE INTER-CITY TOLL MOTORWAY PROJECTS	APPENDIX 3.2-6 TRIPS FROM/TO CHANGWATS OF BAN PONG - CHA AM ROUTE b.Induced Traffic (2/2)

APPENDIX 3.2-7 OD TABLE OF LAMPANG - DOI SAKET AREA

a. 1993

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
		521	522	523	524	525	526	527	551	552	553	554	561	562	563	564	50	51	53	54,57	60-68	BMR	CENT	EAST	WEST	N-E	SOUTH	TOTAL
1	521	0	2919	2780	67	59	0	2950	2621	97	68	78	816	50	27	47	734	183	164	205	317	491	70	46	15	72	13	14889
2	522	3099	0	52	17	0	0	24	26	0	0	2	0	0	0	7	16	4	3	3	4	10	1	0	0	0	0	3268
3	523	3514	41	0	59	0	0	37	728	54	172	8	26	4	2	2	71	18	15	21	27	45	5	3	0	3	0	4855
4	524	31	19	12	0	7	0	28	19	0	0	0	24	0	0	0	25	6	6	7	8	15	1	0	0	0	0	208
5	525	11	0	0	0	0	0	14	0	0	0	0	0	0	0	0	10	2	2	2	0	8	0	0	0	0	0	49
6	526	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	2	2	2	0	8	1	0	0	0	0	31
7	527	3412	11	14	26	4	0	0	43	0	0	10	10	0	0	0	34	8	8	8	13	21	2	0	0	2	0	3626
8	551	2501	29	728	24	0	0	76	0	344	2804	7	198	65	0	3	29	0	15	39	91	24	150	6	9	10	7	7159
9	552	100	0	54	0	0	0	2	344	0	69	2	2	58	0	0	1	0	0	1	2	1	7	0	0	0	0	643
10	553	115	3	172	0	0	0	5	2804	69	0	0	18	25	0	2	4	0	3	6	14	3	20	0	5	1	1	3270
11	554	131	0	8	0	0	0	3	7	2	0	0	6	3	0	0	3	0	2	5	9	2	19	0	0	1	1	202
12	561	853	9	11	0	7	0	23	157	22	11	4	0	719	0	14	183	7	355	532	434	124	63	11	2	21	3	3565
13	562	93	0	4	5	0	0	6	65	58	25	3	1108	0	19	17	14	0	24	38	28	8	3	0	0	0	0	1518
14	563	114	0	0	3	0	0	0	18	11	3	0	23	58	0	0	14	0	26	41	29	8	3	0	0	0	0	351
15	564	88	0	0	0	0	0	0	3	3	7	0	52	20	0	0	32	1	62	94	77	21	9	1	0	2	0	472
16	50	762	17	73	26	9	10	35	42	1	5	5	220	17	17	40	0	0	1047	150	109	221	49	57	16	37	2	2967
17	51	199	4	19	7	2	2	8	24	1	3	3	9	0	0	3	6	0	5	2	9	11	0	3	0	0	0	320
18	53	173	3	16	6	2	2	8	12	0	1	1	331	24	26	59	961	2	0	161	49	78	15	7	5	14	5	1961
19	54,57	229	4	22	6	2	2	10	34	1	4	3	592	42	45	103	247	10	121	873	1034	163	23	27	6	31	2	3636
20	60-68	398	8	34	11	1	4	15	106	4	13	11	384	25	26	65	170	6	62	789	22119	3458	4806	288	537	1547	49	34936
21	BMR	709	15	66	22	8	9	32	79	3	10	10	230	15	17	43	351	11	145	210	3316	141404	22237	40288	39543	5306	1792	255871
22	CENT	104	1	8	2	0	0	2	59	2	6	6	55	3	3	10	39	4	31	81	5253	19608	19990	2302	465	2459	97	50590
23	EAST	52	0	5	0	0	0	0	21	0	2	2	25	0	0	7	35	0	35	50	439	39824	2702	52390	454	1741	173	97957
24	WEST	81	1	6	2	9	1	9	23	8	1	1	30	1	1	4	10	0	14	17	531	35103	355	609	34570	198	1462	73047
25	N-E	28	0	2	0	0	0	0	3	0	0	0	12	0	0	2	20	0	3	24	1426	5460	2572	1804	261	45018	55	56690
26	SOUTH	17	0	0	0	0	0	0	4	0	0	0	4	0	0	1	12	0	0	5	33	2095	42	222	1159	100	36033	39727
27	TOTAL	16819	3084	4086	283	110	30	3287	7242	680	3204	156	4175	1129	183	429	3032	264	2150	3366	35371	248214	53145	98064	77047	56563	39695	661808

APPENDIX 3.2-7 OD TABLE OF LAMPANG - DOI SAKET AREA

b. Normal Traffic - 2000

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	521	522	523	524	525	526	527	551	552	553	554	561	562	563	564	50	51	53	54,57	60-68	BMR	CENT	EAST	WEST	N-E	SOUTH	TOTAL
1 521	0	4638	5158	111	97	0	4689	4598	196	133	127	1792	98	60	105	1385	275	337	346	622	1063	169	147	32	132	26	26336
2 522	4911	0	84	26	0	0	36	42	0	0	3	0	0	0	14	25	6	5	4	7	22	3	0	0	0	0	5188
3 523	6461	66	0	96	0	0	56	1135	104	304	12	54	8	4	4	133	27	29	34	53	93	11	13	0	5	0	8702
4 524	52	29	20	0	11	0	44	29	0	0	0	45	0	0	0	44	8	9	10	11	34	3	0	0	0	0	349
5 525	19	0	0	0	0	0	23	0	0	0	0	0	0	0	0	21	4	4	3	0	18	0	0	0	0	0	92
6 526	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	4	3	4	0	17	2	0	0	0	0	59
7 527	5406	17	22	40	6	0	0	63	0	0	15	16	0	0	0	54	11	11	13	25	41	5	0	0	4	0	5749
8 551	4365	48	1130	36	0	0	110	0	588	4259	10	371	112	0	5	59	0	28	60	158	48	343	29	20	18	14	11811
9 552	204	0	105	0	0	0	3	587	0	125	3	4	114	0	0	3	0	0	2	4	2	18	0	0	0	0	1174
10 553	223	6	305	0	0	0	8	4240	125	0	0	36	48	0	4	8	0	3	9	26	6	52	3	11	1	3	5117
11 554	207	0	13	0	0	0	5	11	3	0	0	11	5	0	0	6	0	2	7	15	5	41	2	0	1	2	336
12 561	1864	18	23	0	13	0	40	300	46	22	7	0	1405	0	34	398	10	792	845	933	286	165	50	4	40	5	7300
13 562	182	0	8	9	0	0	9	112	115	48	5	2153	0	40	34	28	0	50	56	54	18	8	1	0	0	0	2930
14 563	246	0	0	7	0	0	0	37	25	6	0	60	128	0	0	29	0	56	69	55	17	8	2	0	0	0	745
15 564	196	0	0	0	0	0	0	7	7	16	0	127	44	0	0	66	1	142	147	166	50	23	6	0	4	0	1002
16 50	1433	25	134	46	17	18	53	82	3	9	8	473	32	36	81	0	0	1961	233	192	407	105	159	33	66	4	5610
17 51	306	5	29	9	3	4	11	35	2	4	4	13	0	0	4	8	0	7	2	11	18	0	9	0	0	0	484
18 53	355	5	31	9	4	3	13	24	0	3	1	745	47	54	139	1795	3	0	248	81	162	32	33	11	21	11	3830
19 54,57	385	6	35	9	3	4	15	51	2	5	4	935	62	78	161	412	14	193	1291	1502	260	36	86	8	46	2	5605
20 60-68	786	14	65	21	3	10	28	212	12	28	17	851	53	52	141	314	9	116	1124	36975	6146	8278	1007	1000	2300	90	59652
21 BMR	1629	32	140	46	16	19	65	161	9	22	19	526	32	38	104	663	17	283	335	5678	269951	42918	92418	83070	9082	4037	511310
22 CENT	244	3	17	4	0	0	3	144	5	16	14	140	6	6	27	82	7	68	141	9116	38181	39528	5912	785	5171	220	99840
23 EAST	157	0	18	0	0	0	0	63	0	8	5	84	0	2	22	96	3	106	131	1320	91976	6668	162560	1982	4402	680	270283
24 WEST	209	2	13	4	21	2	19	51	18	2	2	70	3	3	12	20	0	28	29	972	73469	590	2435	67087	382	3214	148657
25 N-E	51	0	4	0	0	0	0	5	0	0	0	23	0	0	4	35	0	5	35	2109	9379	5461	4458	496	73853	106	96024
26 SOUTH	33	0	0	0	0	0	0	8	0	0	0	9	0	0	2	22	0	0	10	60	4607	97	821	2547	188	65786	74190
27 TOTAL	29932	4914	7354	473	194	60	5230	11997	1260	5010	256	8538	2197	373	897	5727	399	4238	5188	60145	496276	104564	270151	157086	95716	742001	352375

c. Induced Traffic - 2000

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	521	522	523	524	525	526	527	551	552	553	554	561	562	563	564	50	51	53	54,57	60-68	BMR	CENT	EAST	WEST	N-E	SOUTH	TOTAL
1 521	0	0	0	0	0	0	0	0	0	0	0	78	0	2	2	18	0	7	3	12	13	1	0	0	0	0	136
2 522	0	0	0	0	0	0	0	9	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	12
3 523	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	1	0	0	0	0	0	4
4 524	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5 525	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 526	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7 527	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 551	0	11	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0	1	0	3	0	0	0	0	28
9 552	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 553	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2
11 554	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 561	84	4	0	0	0	0	0	10	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	99
13 562	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 563	13	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
15 564	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
16 50	18	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
17 51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 53	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
19 54,57	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
20 60-68	18	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22
21 BMR	21	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23
22 CENT	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
23 EAST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24 WEST	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
25 N-E	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26 SOUTH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27 TOTAL	173	17	2	0	0	0	0	27	2	0	0	94	0	2	4	20	0	7	3	13	14	5	0	0	0	0	383

APPENDIX 3.2-7 OD TABLE OF LAMPANG - DOI SAKET AREA

d. Normal Traffic - 2010

	1 521	2 522	3 523	4 524	5 525	6 526	7 527	8 551	9 552	10 553	11 554	12 561	13 562	14 563	15 564	16 50	17 51	18 53	19 54,57	20 60-68	21 BMR	22 CENT	23 EAST	24 WEST	25 N-E	26 SOUTH	27 TOTAL
1 521	0	8594	9946	217	184	0	8804	8440	417	278	239	3779	183	119	217	5175	493	636	669	1208	2302	366	354	73	262	55	53010
2 522	9100	0	141	46	0	0	58	66	0	0	7	0	0	0	27	108	11	10	8	13	38	5	0	0	0	0	9638
3 523	12373	107	0	172	0	0	100	1930	200	586	22	107	14	7	8	413	45	49	62	91	190	26	21	0	9	0	16532
4 524	99	48	36	0	22	0	78	56	0	0	0	89	0	0	0	133	14	18	18	24	61	5	1	0	0	0	702
5 525	38	0	0	0	0	0	44	0	0	0	0	0	0	0	0	54	5	7	5	0	34	0	0	0	0	0	187
6 526	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	62	6	6	6	0	40	6	0	0	0	0	144
7 527	10137	28	38	69	12	0	0	103	0	0	30	33	0	0	0	120	21	25	23	40	76	11	2	0	7	0	10775
8 551	7992	74	1918	63	0	0	184	0	1055	7736	17	664	189	0	10	163	0	47	108	262	91	783	51	41	31	29	21508
9 552	417	0	199	0	0	0	6	1062	0	264	5	8	210	0	0	6	0	0	3	7	5	44	1	0	0	0	2237
10 553	471	9	579	0	0	0	14	7689	257	0	0	73	85	0	8	27	0	10	19	45	12	123	3	23	4	4	9455
11 554	389	0	23	0	0	0	10	18	5	0	0	22	8	0	0	14	0	6	14	26	9	94	2	0	3	4	647
12 561	3925	36	47	0	29	0	70	543	94	44	13	0	2609	0	65	734	19	1392	1603	1805	626	386	99	9	90	15	14253
13 562	346	0	14	16	0	0	16	187	216	85	8	3975	0	72	65	48	0	78	99	96	38	16	0	0	0	0	5375
14 563	484	0	0	12	0	0	0	64	44	11	0	112	211	0	0	51	0	89	123	107	34	18	2	0	0	0	1362
15 564	408	0	0	0	0	0	0	11	12	30	0	255	82	0	0	122	2	250	272	314	104	53	11	0	9	0	1935
16 50	5378	121	429	148	46	55	125	218	6	29	18	871	57	60	155	0	0	3327	380	323	734	208	331	64	116	9	13208
17 51	535	9	47	17	5	6	20	60	3	9	9	28	0	0	9	15	0	12	5	21	35	0	15	0	0	0	860
18 53	655	11	52	18	7	6	23	39	0	4	4	1334	83	95	246	3074	5	0	426	142	300	65	60	22	36	20	6727
19 54,57	721	10	61	17	5	7	28	85	3	10	8	1760	107	135	294	734	25	342	2262	2591	521	74	164	18	88	4	10074
20 60-68	1540	24	115	35	4	17	45	373	17	49	34	1622	87	99	271	529	15	193	1919	64727	13580	17661	2110	2048	4263	190	111567
21 BMR	3333	58	276	90	36	43	113	316	15	44	43	1186	64	82	221	1211	32	521	658	11866	556782	100130	207046	167839	19055	95711	1080631
22 CENT	517	5	37	8	0	0	8	319	15	41	31	322	14	17	60	156	15	141	292	19475	89019	92854	14525	1561	12035	517	231984
23 EAST	355	0	32	1	0	0	2	123	1	11	9	189	2	2	47	185	5	226	257	2894	205170	16242	384620	3597	10313	1387	625670
24 WEST	483	4	25	8	45	5	43	110	39	5	4	150	4	4	18	32	0	63	54	2015	148486	1206	4743	136309	826	7765	302446
25 N-E	107	0	7	0	0	0	0	11	0	0	0	51	0	0	9	62	0	8	63	3873	19776	12860	10284	1076	132796	221	181204
26 SOUTH	86	0	0	0	0	0	0	16	0	0	0	19	0	0	5	43	0	0	25	117	10988	223	1689	5936	380	121913	141440
27 TOTAL	59907	9138	14022	937	395	139	9791	21839	2399	9236	501	16649	4009	692	1735	13271	713	7456	9373	1120821	049051	243459	626134	318616	180323	1417042	853571

e. Induced Traffic - 2010

	1 521	2 522	3 523	4 524	5 525	6 526	7 527	8 551	9 552	10 553	11 554	12 561	13 562	14 563	15 564	16 50	17 51	18 53	19 54,57	20 60-68	21 BMR	22 CENT	23 EAST	24 WEST	25 N-E	26 SOUTH	27 TOTAL
1 521	0	0	0	0	0	0	0	0	0	0	0	166	0	6	5	70	0	11	6	30	30	3	3	0	0	0	330
2 522	0	0	0	0	0	0	0	15	0	0	0	0	0	0	4	0	0	0	0	0	1	0	0	0	0	0	20
3 523	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	15	0	0	0	0	1	0	0	0	0	0	20
4 524	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	4
5 525	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
6 526	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
7 527	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 551	0	17	0	0	0	0	0	0	0	0	0	24	0	0	0	16	0	0	1	2	0	8	0	0	0	0	68
9 552	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	2
10 553	0	2	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	1	0	0	0	0	9
11 554	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
12 561	177	9	0	0	1	0	1	19	6	1	0	0	0	0	0	16	0	0	0	0	0	0	0	0	0	0	230
13 562	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
14 563	25	0	0	1	0	0	0	4	3	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	35
15 564	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
16 50	74	0	16	4	0	1	0	22	1	3	1	19	3	1	0	0	0	0	0	4	7	2	1	0	0	0	159
17 51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 53	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
19 54,57	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
20 60-68	37	0	2	0	0	0	0	9	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	56
21 BMR	47	2	2	1	0	0	0	3	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	69
22 CENT	8	0	0	0	0	0	0	3	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	12
23 EAST	5	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	7
24 WEST	3	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
25 N-E	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
26 SOUTH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27 TOTAL	408	30	20	6	2	1	1	77	11	5	1	217	3	7	9	154	0	11	7	36	39	15	4	0	0	0	1064

APPENDIX 3.2-7 OD TABLE OF LAMPANG - DOI SAKET AREA

f. Normal Traffic - 2020

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	521	522	523	524	525	526	527	551	552	553	554	561	562	563	564	50	51	53	54,57	60-68	BMR	CENT	EAST	WEST	N-E	SOUTH	TOTAL
1 521	0	15935	18951	428	365	0	16543	15452	832	556	461	7659	340	227	435	9477	887	1143	1277	2790	5449	848	831	172	574	135	101767
2 522	16855	0	248	76	0	0	97	104	0	0	14	0	0	0	47	176	18	17	14	28	80	12	0	0	0	0	17786
3 523	23441	182	0	315	0	0	173	3430	377	1118	37	199	23	13	13	679	79	78	109	203	419	59	49	0	19	0	31015
4 524	192	84	63	0	44	0	135	100	0	0	0	167	0	0	0	232	24	29	34	50	141	12	1	0	0	0	1308
5 525	75	0	0	0	0	0	83	0	0	0	0	0	0	0	0	102	9	11	10	0	87	0	0	0	0	0	377
6 526	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	116	10	11	13	0	98	13	0	0	0	0	299
7 527	18998	46	62	120	21	0	0	176	0	0	56	60	0	0	0	188	31	37	37	81	158	23	2	0	12	0	20108
8 551	14508	124	3404	111	0	0	314	0	1917	14085	30	1202	313	0	18	270	0	74	194	563	195	1739	88	93	65	61	39368
9 552	840	0	374	0	0	0	12	1919	0	517	10	15	386	0	0	12	0	0	7	17	9	105	1	0	0	0	4224
10 553	967	18	1097	0	0	0	28	13929	511	0	0	153	161	0	13	52	0	18	36	105	28	289	3	56	6	11	17481
11 554	730	0	40	0	0	0	18	29	10	0	0	39	14	0	0	26	0	11	25	50	15	190	2	0	6	8	1213
12 561	7972	68	90	0	54	0	126	1002	189	91	23	0	4801	0	129	1351	32	2481	3091	4136	1610	964	212	23	227	28	28700
13 562	630	0	23	29	0	0	27	314	392	162	15	7322	0	126	118	80	0	131	177	193	85	37	0	0	0	0	9861
14 563	925	0	0	23	0	0	0	98	78	21	0	210	356	0	0	88	0	151	225	195	66	34	2	0	0	0	2472
15 564	819	0	0	0	0	0	0	20	23	59	0	488	145	0	0	225	4	429	489	670	251	131	20	0	25	0	3798
16 50	9855	186	710	247	85	108	194	350	12	53	34	1580	101	107	283	0	0	5860	636	678	1522	426	685	139	233	21	24105
17 51	958	14	76	29	9	11	32	102	5	18	15	52	0	0	17	25	0	19	8	37	71	0	23	0	0	0	1521
18 53	1189	17	87	29	11	11	34	65	0	7	6	2410	138	159	435	5400	8	0	739	326	640	145	122	53	79	44	12154
19 54,57	1366	18	112	31	10	12	42	152	7	20	15	3397	192	253	534	1309	40	623	3922	4565	1131	163	333	41	190	5	18483
20 60-68	3460	53	254	77	7	40	89	733	36	113	66	3540	176	180	560	1091	26	413	3323	122387	27348	32345	3809	5379	8054	408	213967
21 BMR	7857	126	631	206	76	106	243	691	34	108	75	3040	146	159	546	2480	62	1086	1455	23939	1086589	197981	407632	353817	39516	191852	147786
22 CENT	1237	12	83	20	0	0	18	716	34	95	64	812	32	31	143	326	28	300	674	36490	177061	179717	28046	4421	23911	1112	455383
23 EAST	845	0	70	1	0	0	2	247	1	26	16	430	2	2	109	361	5	469	533	5608	402260	31041	791129	6141	20562	27021	262562
24 WEST	1215	8	43	14	97	11	88	255	98	13	8	402	11	9	47	66	0	139	128	5218	317039	3188	8533	261248	1713	14756	614347
25 N-E	257	0	16	0	0	0	0	21	0	0	0	138	0	0	21	137	0	18	137	7131	41057	25505	20801	2266	287834	450	385789
26 SOUTH	225	0	0	0	0	0	0	31	0	0	0	44	0	0	12	96	0	0	56	228	21347	519	3242	11449	799	290504	328552
27 TOTAL	115454	16891	26434	1756	779	299	18298	39936	4556	17062	945	33359	7337	1266	3480	24365	1263	13548	17349	2156882	084756	4754861	265566	645298	383825	3294305	744426

g. Induced Traffic - 2020

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	521	522	523	524	525	526	527	551	552	553	554	561	562	563	564	50	51	53	54,57	60-68	BMR	CENT	EAST	WEST	N-E	SOUTH	TOTAL
1 521	0	0	0	0	0	0	0	0	0	0	0	334	0	12	10	129	0	20	72	142	162	25	21	6	9	1	943
2 522	0	0	0	0	0	0	0	22	0	0	0	0	0	0	6	0	0	0	1	4	5	1	0	0	0	0	39
3 523	0	0	0	0	0	0	0	0	0	0	0	6	0	1	0	25	0	1	4	9	10	1	0	0	0	0	57
4 524	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5	0	0	1	1	2	0	0	0	0	0	14
5 525	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	2
6 526	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	2
7 527	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	3
8 551	0	27	0	0	0	0	0	0	0	0	0	43	0	0	0	28	0	0	11	28	5	43	3	3	2	0	193
9 552	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	1	0	3	0	0	0	0	7
10 553	0	4	0	0	0	0	0	0	0	0	0	5	0	0	0	5	0	0	1	3	0	7	0	1	0	0	26
11 554	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
12 561	357	15	3	0	1	0	2	36	10	3	0	0	0	0	0	30	0	0	0	0	0	0	0	0	0	0	457
13 562	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	5
14 563	47	0	0	1	0	0	0	5	6	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	62
15 564	18	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
16 50	134	0	26	5	1	1	0	36	1	5	1	33	6	2	0	0	0	0	22	26	35	10	15	3	3	0	365
17 51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 53	22	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
19 54,57	78	2	5	1	0	0	1	10	1	1	0	0	0	0	0	38	0	0	0	0	0	0	0	0	0	0	137
20 60-68	169	7	10	2	0	1	1	29	1	4	0	0	0	0	0	39	0	0	0	0	0	0	0	0	0	0	263
21 BMR	242	8	16	6	2	2	4	19	0	3	0	0	0	0	0	61	0	0	0	0	0	0	0	0	0	0	363
22 CENT	44	1	3	0	0	0	0	19	1	2	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	79
23 EAST	23	0	1	0	0	0	0	6	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	39
24 WEST	30	0	1	0	2	0	1	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43
25 N-E	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	7
26 SOUTH	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
27 TOTAL	1171	64	66	15	6	4	9	189	24	20	1	427	6	15	16	390	0	21	114	214	223	90	39	13	14	1	3152

APPENDIX 3.2-8 OD TABLE OF BAN PONG - CHA AM AREA

a. 1993

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		731	732	733	734	735	761	762	763	70	71	72	75	77	BMR	CENT	EAST	NORTH	N-E	SOUTH	TOTAL
1	731	0	380	44	837	471	338	97	112	49	1693	2033	605	103	2319	15	65	68	26	29	9284
2	732	405	0	0	19	11	92	152	2	10	335	400	120	20	459	2	14	5	5	5	2056
3	733	34	16	0	39	67	5	2	6	10	350	419	125	21	479	2	14	10	5	5	1609
4	734	1131	39	3	0	357	32	15	14	12	441	529	157	27	603	4	18	9	8	5	3404
5	735	417	17	28	361	0	41	6	20	66	2246	2695	804	137	3078	22	87	38	36	40	10139
6	761	350	83	0	24	29	0	422	1325	13	123	200	173	1583	1305	37	23	20	10	63	5783
7	762	67	152	0	3	0	360	0	51	3	27	44	39	351	290	7	5	2	2	9	1412
8	763	77	13	2	4	24	1534	55	0	10	91	146	128	1164	963	25	17	12	8	49	4322
9	70	10	1	1	2	13	4	0	3	0	1141	1683	0	0	7454	179	157	402	40	8	11098
10	71	1485	293	308	387	1970	48	11	35	940	0	1759	74	23	3315	3	88	149	41	39	10968
11	72	3161	625	653	824	4193	174	38	129	1847	2384	0	237	190	16330	586	789	149	102	85	32496
12	75	751	147	155	195	996	239	52	175	17	115	198	0	134	2915	40	87	5	15	56	6292
13	77	122	24	25	32	162	1552	343	1142	21	105	94	96	0	1723	19	34	30	2	1154	6680
14	BMR	2413	476	498	628	3199	1394	307	1025	6925	3740	17436	2882	1601	107638	21651	39499	5152	5204	1707	223375
15	CENT	13	1	1	4	18	1	0	1	328	44	559	23	31	19049	19990	2302	5669	2459	97	50590
16	EAST	52	10	10	14	68	28	5	21	73	149	336	21	3	39488	2702	52390	673	1741	173	97957
17	NORTH	35	4	2	3	32	3	0	8	395	67	99	24	22	4621	5247	449	75091	1741	83	87926
18	N-E	24	2	2	5	30	8	2	6	81	58	91	26	17	5369	2572	1804	1520	45018	55	56690
19	SOUTH	32	2	2	6	38	74	16	55	16	16	86	5	897	2009	42	222	76	100	36033	39727
20	TOTAL	10579	2285	1734	3387	11678	5927	1523	4130	10816	13125	28807	5539	6324	219407	53145	98064	89080	56563	39695	661808

APPENDIX 3.2-8 OD TABLE OF BAN PONG - CHA AM AREA

b. Normal Traffic - 2000

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		731	732	733	734	735	761	762	763	70	71	72	75	77	BMR	CENT	EAST	NORTH	N-E	SOUTH	TOTAL
1	731	0	905	81	1575	894	673	200	232	114	3161	4628	1363	226	4628	26	266	146	52	71	19241
2	732	957	0	0	41	24	175	274	4	23	635	911	261	43	980	4	54	11	10	13	4420
3	733	63	32	0	70	120	9	3	10	23	616	856	224	42	943	4	54	23	10	13	3115
4	734	2126	82	6	0	644	60	29	27	30	785	1334	302	56	1149	8	69	21	16	13	6757
5	735	786	34	49	657	0	75	9	35	152	4041	6790	1540	277	5845	45	346	74	72	87	20914
6	761	701	160	0	46	52	0	693	2435	26	205	397	280	3358	2616	57	115	41	18	138	11338
7	762	138	273	0	5	0	586	0	95	6	45	88	65	736	569	12	25	4	4	20	2671
8	763	164	25	4	7	47	2802	96	0	22	163	305	215	2786	2484	42	89	23	15	113	9402
9	70	23	2	2	5	28	9	0	7	0	1984	3969	0	0	15150	275	589	738	80	16	22877
10	71	2764	558	541	695	3529	84	19	66	1641	0	3522	139	45	5832	5	316	330	75	76	20237
11	72	7164	1425	1341	2079	10496	339	76	262	4325	4768	0	441	422	31200	1241	2348	309	202	185	68623
12	75	1676	324	278	380	1896	417	94	316	40	208	380	0	266	6013	71	381	12	27	122	12901
13	77	265	53	49	65	325	3302	724	2715	42	204	212	196	0	3868	41	131	57	3	2532	14784
14	BMR	4768	1009	968	1193	6014	2785	605	2610	13909	6479	33888	5997	3595	204863	41677	90070	9525	8880	3852	442687
15	CENT	28	2	2	7	37	2	0	2	499	88	1234	48	70	36947	39528	5912	10043	5171	220	99840
16	EAST	228	44	45	59	298	117	22	86	313	489	1356	219	62	90620	6668	162560	2015	4402	680	270283
17	NORTH	77	9	5	7	64	5	0	16	723	129	192	43	41	8521	9302	1547	128595	2638	157	152071
18	N-E	48	3	3	10	60	13	4	10	154	108	177	52	31	9202	5461	4458	2271	73853	106	96024
19	SOUTH	80	6	6	16	94	157	35	130	33	30	198	11	1949	4409	97	821	144	188	65786	74190
20	TOTAL	22056	4946	3380	6917	24622	11610	2883	9058	22075	24138	60437	11396	14005	435839	104564	270151	154382	95716	742001	352375

c. Induced Traffic - 2000

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		731	732	733	734	735	761	762	763	70	71	72	75	77	BMR	CENT	EAST	NORTH	N-E	SOUTH	TOTAL
1	731	0	0	0	0	82	0	0	5	3	116	0	0	15	27	0	8	0	0	0	256
2	732	0	0	0	0	3	0	0	0	1	64	12	0	1	8	0	0	0	0	0	89
3	733	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
4	734	0	1	0	0	0	0	0	2	0	0	0	19	5	3	0	0	0	0	0	30
5	735	71	6	0	0	0	9	2	6	8	0	0	279	40	65	0	16	1	0	4	507
6	761	0	0	0	0	7	0	0	0	2	19	4	0	0	13	1	0	0	0	0	46
7	762	0	0	0	0	0	0	0	0	0	4	0	0	0	3	0	0	0	0	0	7
8	763	2	0	0	1	8	0	0	0	2	19	19	0	0	16	1	0	0	0	0	68
9	70	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
10	71	100	56	0	0	0	7	2	7	0	0	0	14	5	77	0	11	2	0	2	283
11	72	0	20	0	0	0	4	0	15	0	0	0	26	32	0	0	0	0	0	3	100
12	75	0	0	0	23	337	0	0	0	0	21	21	0	13	0	0	0	0	0	1	416
13	77	18	3	3	5	46	0	0	0	4	22	18	9	0	158	3	5	1	0	0	295
14	BMR	31	3	0	4	73	24	4	25	0	66	0	0	135	0	0	0	0	0	37	402
15	CENT	0	0	0	0	1	0	0	0	0	2	0	0	4	0	0	0	0	0	2	9
16	EAST	8	0	0	0	14	0	0	0	0	19	0	0	2	0	0	0	0	0	1	44
17	NORTH	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	3
18	N-E	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3
19	SOUTH	0	0	0	0	3	0	0	0	0	1	3	0	0	48	0	3	0	1	0	59
20	TOTAL	230	89	3	33	576	44	8	60	20	355	77	347	257	418	5	43	4	1	50	2620

APPENDIX 3.2-8 OD TABLE OF BAN PONG - CHA AM AREA

d. Normal Traffic - 2010

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	731	732	733	734	735	761	762	763	70	71	72	75	77	BMR	CENT	EAST	NORTH	N-E	SOUTH	TOTAL
1 731	0	1857	161	3175	1772	1327	401	498	236	6311	9913	2922	469	9755	71	524	336	119	153	40000
2 732	1974	0	0	83	50	351	544	7	46	1244	1919	555	91	2014	8	111	24	23	29	9073
3 733	124	62	0	133	226	15	6	21	52	1158	1730	456	80	2796	9	127	52	22	24	7093
4 734	4293	156	11	0	1231	115	53	56	57	1527	2775	633	111	2346	17	136	45	36	24	13622
5 735	1546	71	90	1257	0	143	19	81	303	7693	13862	3165	537	11767	101	663	163	152	188	41801
6 761	1396	325	0	90	97	0	1296	4932	55	369	783	465	6921	5022	125	220	84	40	316	22536
7 762	281	547	0	11	0	1093	0	205	12	83	178	113	1536	1128	22	49	7	9	43	5317
8 763	355	55	7	15	101	5618	200	0	51	326	672	397	6872	4925	98	185	55	39	297	20268
9 70	44	5	5	8	55	16	0	13	0	3733	8056	0	0	29101	495	1194	1463	161	30	44379
10 71	5502	1093	1014	1351	6697	158	38	135	3099	0	7203	298	86	11501	11	588	736	160	150	39820
11 72	15297	3005	2685	4329	21349	660	153	569	8789	9803	0	814	936	66563	2985	5209	698	475	428	144747
12 75	3581	674	561	790	3880	804	186	667	89	425	741	0	547	12222	153	713	29	59	303	26424
13 77	559	108	99	133	641	6782	1511	6658	75	398	475	412	0	7602	96	233	117	6	6208	32113
14 BMR	9895	2059	2920	2411	11897	5418	1218	5181	26624	12564	71676	12303	6960	418543	97145	201837	19510	18580	9143	935884
15 CENT	65	6	7	17	86	4	0	4	900	191	3099	119	162	85920	92854	14525	21473	12035	517	231984
16 EAST	425	83	97	109	529	205	39	167	541	963	2862	349	90	202308	16242	384620	4341	10313	1387	625670
17 NORTH	165	19	9	15	139	10	0	34	1438	286	453	101	82	18377	19944	3227	240649	4918	330	290196
18 N-E	110	8	10	21	128	26	8	20	324	224	395	133	64	19381	12860	10284	4191	132796	221	181204
19 SOUTH	179	12	10	32	186	356	77	329	76	66	471	28	4585	10517	223	1689	311	380	121913	141440
20 TOTAL	45791	10145	7686	13980	49064	23101	5749	19577	42767	47364	127263	23263	30129	921788	243459	626134	294284	180323	1417042	853571

e. Induced Traffic - 2010

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	731	732	733	734	735	761	762	763	70	71	72	75	77	BMR	CENT	EAST	NORTH	N-E	SOUTH	TOTAL
1 731	0	0	187	0	162	0	0	8	8	230	0	0	73	943	1	49	1	1	8	1671
2 732	0	0	0	0	7	0	0	0	2	123	25	0	12	154	0	7	0	0	1	331
3 733	152	55	0	3	55	6	4	8	0	125	37	0	28	0	0	0	0	0	4	477
4 734	0	3	0	0	0	0	0	4	0	0	0	38	20	8	0	2	0	0	3	78
5 735	139	13	22	0	0	20	3	13	14	0	0	553	128	188	5	33	3	1	15	1150
6 761	0	0	0	1	14	0	0	0	3	32	7	0	450	332	5	10	0	0	4	858
7 762	0	0	0	0	0	0	0	0	0	8	2	0	103	82	1	2	0	0	0	198
8 763	5	0	3	1	16	0	0	0	4	37	41	0	0	448	7	12	1	1	0	576
9 70	1	0	0	0	3	0	0	1	0	0	0	0	0	0	0	0	0	0	2	7
10 71	199	109	109	0	0	14	3	15	0	0	0	29	15	193	0	20	6	3	12	727
11 72	0	40	55	0	0	6	1	33	0	0	0	48	141	0	0	0	0	0	20	344
12 75	0	0	0	48	665	0	0	0	0	40	39	0	66	0	0	0	0	0	16	874
13 77	88	14	36	25	153	448	103	0	11	65	81	49	0	1250	10	31	6	0	0	2370
14 BMR	1041	166	0	7	194	346	87	463	0	167	0	0	1169	0	0	0	0	0	489	4129
15 CENT	1	0	0	0	4	0	0	0	0	6	0	0	20	0	0	0	0	0	22	53
16 EAST	40	5	0	0	26	12	2	13	0	37	0	0	12	0	0	0	0	0	60	207
17 NORTH	0	0	0	0	1	0	0	1	0	4	0	0	6	0	0	0	0	0	6	18
18 N-E	1	0	0	0	2	0	0	0	0	2	0	0	6	0	0	0	0	0	8	19
19 SOUTH	7	1	2	3	13	7	1	0	5	6	24	2	0	596	11	79	4	10	0	771
20 TOTAL	1674	406	414	88	1315	859	204	559	47	882	256	719	2249	4194	40	245	21	16	670	14858

APPENDIX 3.2-8 OD TABLE OF BAN PONG - CHA AM AREA

f. Normal Traffic - 2020

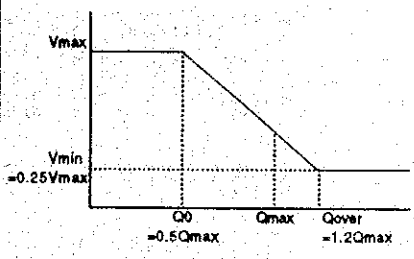
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		731	732	733	734	735	761	762	763	70	71	72	75	77	BMR	CENT	EAST	NORTH	N-E	SOUTH	TOTAL
1	731	0	3613	299	6071	3366	2522	776	1020	652	11885	19767	5372	851	19667	141	946	761	253	323	78285
2	732	3838	0	0	156	99	667	1048	14	118	2304	3782	1003	159	4008	17	195	54	45	52	17559
3	733	231	113	0	244	404	27	12	43	117	2085	3304	804	140	5364	19	228	106	44	45	13330
4	734	8206	294	21	0	2253	212	102	108	163	2812	5403	1139	196	4620	35	240	108	68	47	26027
5	735	2931	136	160	2314	0	264	39	154	869	14081	26627	5617	939	22856	201	1148	328	315	377	79356
6	761	2659	622	0	169	172	0	2401	9662	130	649	1479	723	12299	9515	228	369	187	82	632	41978
7	762	556	1051	0	21	0	2017	0	417	31	148	349	182	2789	2217	43	84	15	17	88	10025
8	763	735	112	16	29	201	10915	399	0	123	618	1371	674	13167	9442	198	335	133	80	672	39220
9	70	128	11	13	27	167	40	0	34	0	10963	29332	0	0	70097	1823	2431	4140	380	59	119645
10	71	10330	2020	1824	2487	12195	290	69	266	9167	0	15407	531	153	24714	25	1051	1746	315	285	82875
11	72	30555	5929	5118	8467	41004	1229	293	1154	31779	21146	0	1329	1830	133851	5944	9551	1581	985	953	302698
12	75	6554	1225	989	1419	6869	1415	335	1250	186	745	1267	0	932	21811	270	1139	62	97	560	47125
13	77	1017	195	171	241	1120	12096	2762	12706	151	701	918	704	0	13722	188	367	230	17	11616	58922
14	BMR	19808	4081	5557	4722	22913	10283	2409	9931	63065	26731	143089	22128	12356	809649	192037	398081	41485	38531	182321	845088
15	CENT	131	12	13	35	165	7	0	8	3088	434	6257	218	310	170804	179717	28046	41115	23911	1112	455383
16	EAST	726	140	166	188	875	320	62	290	964	1882	5050	426	102	397210	31041	791129	8727	20562	27021	262562
17	NORTH	369	41	20	33	303	21	0	79	4104	659	985	174	153	38418	37535	6183	450719	9490	721	550007
18	N-E	217	15	17	45	247	49	14	45	774	467	853	266	110	40204	25505	20801	7876	287834	450	385789
19	SOUTH	397	20	16	71	405	715	146	716	168	126	1030	47	8622	20317	519	3242	692	799	290504	328552
20	TOTAL	89388	19630	14400	26739	92758	43089	10867	37897	115649	98436	266270	41337	55108	1818486	475486	1265566	560065	383825	3294305	744426

g. Induced Traffic - 2020

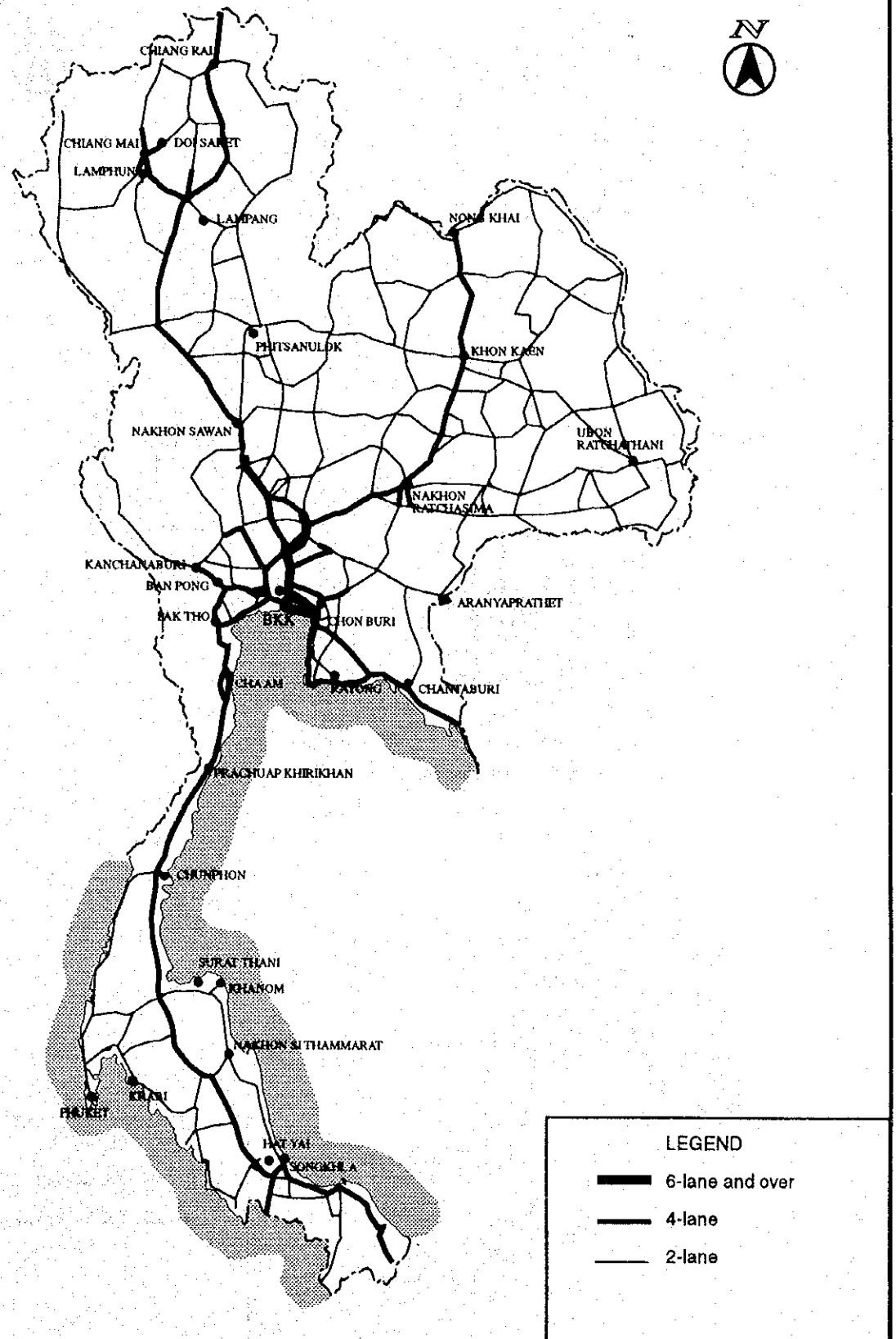
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		731	732	733	734	735	761	762	763	70	71	72	75	77	BMR	CENT	EAST	NORTH	N-E	SOUTH	TOTAL
1	731	0	0	347	0	307	0	0	18	77	1281	0	0	136	1890	9	90	19	2	20	4196
2	732	0	0	0	4	15	0	0	0	19	390	51	0	21	300	2	13	4	0	4	823
3	733	282	99	0	5	98	11	7	17	9	372	68	0	50	0	0	0	0	0	7	1025
4	734	0	5	0	0	0	2	2	8	15	224	0	68	36	14	3	3	3	0	4	387
5	735	261	27	38	0	0	35	6	25	160	0	0	961	223	360	20	58	18	7	36	2235
6	761	0	0	0	2	23	0	0	0	18	94	15	0	794	619	21	17	7	2	12	1624
7	762	0	0	0	0	0	0	0	0	5	25	4	0	187	166	5	5	0	0	1	398
8	763	13	0	6	2	32	0	0	0	18	100	82	0	0	837	23	22	5	2	0	1142
9	70	17	2	1	3	36	5	0	6	0	0	0	0	0	0	0	0	0	0	5	75
10	71	1108	341	323	196	0	40	11	42	0	0	0	79	33	0	0	0	0	0	25	2198
11	72	0	78	106	0	0	11	4	69	0	0	0	78	278	0	0	0	0	0	52	676
12	75	0	0	0	84	1154	0	0	0	7	104	66	0	110	0	0	0	0	0	28	1553
13	77	163	27	62	44	269	792	189	0	36	141	156	82	0	2243	21	48	21	1	0	4295
14	BMR	2066	326	0	16	362	651	173	859	0	0	0	0	2056	0	0	0	0	0	1073	7582
15	CENT	8	1	0	2	14	1	0	1	0	0	0	0	38	0	0	0	0	0	54	119
16	EAST	69	10	0	1	45	19	5	23	0	0	0	0	14	0	0	0	0	0	133	319
17	NORTH	10	2	0	1	12	2	0	4	0	0	0	0	16	0	0	0	0	0	32	79
18	N-E	2	1	0	0	9	1	0	1	0	0	0	0	10	0	0	0	0	0	23	47
19	SOUTH	26	2	3	5	39	18	2	0	15	14	56	4	0	1239	29	168	27	36	0	1683
20	TOTAL	4025	921	886	365	2415	1588	399	1073	379	2745	498	1272	4002	7668	133	424	104	50	1509	30456

APPENDIX 3.3-1 LINK CLASSIFICATION AND PARAMETERS

Code	Standard	Class	Surface Condition	Vertical Alinement	Number of Lanes	Velocity Vmax	Velocity Vmin	Capacity Q0	Capacity Qmax	Capacity Qover
1	Toll Motorway			F	6	120	30	36,000	72,000	86,400
2				F	4	120	30	24,000	48,000	57,600
3				RH	4	120	30	24,000	48,000	57,600
4				Mount	4	100	25	24,000	48,000	57,600
5	Primary	D	GG/FF	FRH	4	90	25	16,000	32,000	38,400
6				Mount	4	70	20	16,000	32,000	38,400
7			F/PP	FRH	4	70	20	16,000	32,000	38,400
8				Mount	4	50	15	16,000	32,000	38,400
9		D	GG/FF	FRH	6	90	25	24,000	48,000	57,600
10				Mount	6	70	20	24,000	48,000	57,600
11			F/PP	FRH	6	70	20	24,000	48,000	57,600
12				Mount	6	50	15	24,000	48,000	57,600
13		D	GG/FF	FRH	10	90	25	40,000	80,000	96,000
14				Mount	10	70	20	40,000	80,000	96,000
15			F/PP	FRH	10	70	20	40,000	80,000	96,000
16				Mount	10	50	15	40,000	80,000	96,000
17		1	GG/FF	FRH	2	90	25	4,000	8,000	9,600
18				Mount	2	70	20	4,000	8,000	9,600
19			F/PP	FRH	2	70	20	4,000	8,000	9,600
20				Mount	2	50	15	4,000	8,000	9,600
21		2	GG/FF	FRH	2	80	20	2,000	4,000	4,800
22				Mount	2	60	15	2,000	4,000	4,800
23			F/PP	FRH	2	60	15	2,000	4,000	4,800
24				Mount	2	40	10	2,000	4,000	4,800
25		3	GG/FF	FRH	2	80	20	1,000	2,000	2,400
26				Mount	2	60	15	1,000	2,000	2,400
27			F/PP	FRH	2	60	15	1,000	2,000	2,400
28				Mount	2	40	10	1,000	2,000	2,400
29	Secondary	D	GG/FF	FRH	4	80	20	16,000	32,000	38,400
30				Mount	4	60	15	16,000	32,000	38,400
31			F/PP	FRH	4	60	15	16,000	32,000	38,400
32				Mount	4	40	10	16,000	32,000	38,400
33		D	GG/FF	FRH	6	80	20	24,000	48,000	57,600
34				Mount	6	60	15	24,000	48,000	57,600
35			F/PP	FRH	6	60	15	24,000	48,000	57,600
36				Mount	6	40	10	24,000	48,000	57,600
37		1	GG/FF	FRH	2	80	20	4,000	8,000	9,600
38				Mount	2	60	15	4,000	8,000	9,600
39			F/PP	FRH	2	60	15	4,000	8,000	9,600
40				Mount	2	40	10	4,000	8,000	9,600
41		2	GG/FF	FRH	2	70	15	2,000	4,000	4,800
42				Mount	2	50	10	2,000	4,000	4,800
43			F/PP	FRH	2	50	10	2,000	4,000	4,800
44				Mount	2	30	5	2,000	4,000	4,800
45		3	GG/FF	FRH	2	70	15	1,000	2,000	2,400
46				Mount	2	50	10	1,000	2,000	2,400
47			F/PP	FRH	2	50	10	1,000	2,000	2,400
48				Mount	2	30	5	1,000	2,000	2,400
49		4	GG/FF	FRH	2	60	15	500	1,000	1,200
50				Mount	2	40	10	500	1,000	1,200
51			F/PP	FRH	2	40	10	500	1,000	1,200
52				Mount	2	20	5	500	1,000	1,200
53		5	GG/FF	FRH	2	60	15	150	300	360
54				Mount	2	40	10	150	300	360
55			F/PP	FRH	2	40	10	150	300	360
56				Mount	2	20	5	150	300	360
57	Feeder	D	GG/FF	FRH	4	80	20	16,000	32,000	38,400
58				Mount	4	60	15	16,000	32,000	38,400
59			F/PP	FRH	4	60	15	16,000	32,000	38,400
60				Mount	4	40	10	16,000	32,000	38,400
61		D	GG/FF	FRH	6	80	20	24,000	48,000	57,600
62				Mount	6	60	15	24,000	48,000	57,600
63			F/PP	FRH	6	60	15	24,000	48,000	57,600
64				Mount	6	40	10	24,000	48,000	57,600
65		1	GG/FF	FRH	2	80	20	4,000	8,000	9,600
66				Mount	2	60	15	4,000	8,000	9,600
67			F/PP	FRH	2	60	15	4,000	8,000	9,600
68				Mount	2	40	10	4,000	8,000	9,600
69		2	GG/FF	FRH	2	70	15	2,000	4,000	4,800
70				Mount	2	50	10	2,000	4,000	4,800
71			F/PP	FRH	2	50	10	2,000	4,000	4,800
72				Mount	2	30	5	2,000	4,000	4,800
73		3	GG/FF	FRH	2	70	15	1,000	2,000	2,400
74				Mount	2	50	10	1,000	2,000	2,400
75			F/PP	FRH	2	50	10	1,000	2,000	2,400
76				Mount	2	30	5	1,000	2,000	2,400
77		4	GG/FF	FRH	2	60	15	500	1,000	1,200
78				Mount	2	40	10	500	1,000	1,200
79			F/PP	FRH	2	40	10	500	1,000	1,200
80				Mount	2	20	5	500	1,000	1,200
81		5	GG/FF	FRH	2	60	15	150	300	360
82				Mount	2	40	10	150	300	360
83			F/PP	FRH	2	40	10	150	300	360
84				Mount	2	20	5	150	300	360
85		6	GG/FF	FRH	2	50	10	150	300	360
86				Mount	2	30	5	150	300	360
87			F/PP	FRH	2	30	5	150	300	360
88				Mount	2	10	1	150	300	360
89	Ramp				2	20	10	5,000	10,000	12,000



Note : Surface Condition ; G=Good, F=Fair, P=Poor
Vertical Alinement ; F=Flat, H=Hilly, Mount=Mountainout



FEASIBILITY STUDY ON THE INTER-CITY TOLL MOTORWAY PROJECTS	APPENDIX 3.3-2 FUTURE HIGHWAY NETWORK (2000,2010,2020)