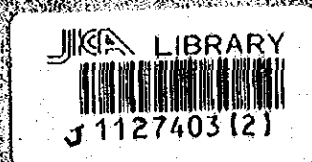


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DEPARTMENT OF HIGHWAYS

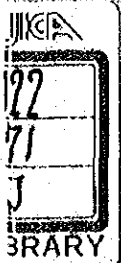
PROGRESS REPORT (I)
FOR
TRAFFIC SAFETY PLAN FOR ROADS
IN
THE KINGDOM OF THAILAND



AUGUST 1983

JAPAN INTERNATIONAL COOPERATION AGENCY

Progress report (1) for traffic safety plan for roads in the Kingdom of Thailand





1127403 [2]

**KINGDOM OF THAILAND
MINISTRY OF COMMUNICATIONS
DEPARTMENT OF HIGHWAYS**

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FOR
TRAFFIC SAFETY PLAN FOR ROADS
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CHAPTER 1 INTRODUCTION

This Progress Report 1 describes the study on Traffic Safety Plan for Roads in The Kingdom of Thailand (hereinafter referred to as the Study) performed during the period of about 3 months after the submission of the Inception Report to the DOH on May, 25, 1983.

CHAPTER 2 PROGRESS OF THE STUDY

The Study is composed of five major items as shown in the general study flow chart of Figure-1, i.e.,

- 1) Method for Identification of Hazardous Road Sections (hereinafter referred to as Identification Method);
- 2) Road Traffic Safety Plan on Experiment Roads (hereinafter referred to as Safety Plan);
- 3) Experiment Works;
- 4) Technical Standard for Traffic Safety (hereinafter referred to as Technical Standard); and
- 5) Information for Traffic Safety Master Plan.

The hatching blocks in Figure-1 show the works which have been set forth and proceeded in this study period. Some of study works as observed in Figure-1 are deviated from the original study flow. This is mainly due to data's readily availability.

The main works for the above items during the study period are as follows;

For Identification Method;

Data collection of traffic accident and traffic volume
Data filing

For Experiment Road;

Selection of experiment road
Site survey
Preparation of collision diagram and accident
location map

Preparation of Safety Plan

For Experiment Works;

Aspect of experiment works

For Technical Standard;

Before and after study on road improvements and safety
facilities implemented by DOH.

Technical Standard

This detailed progresses and findings on above study
works are described in the following chapter.

I. Method for Identification of Hazardous Road Section

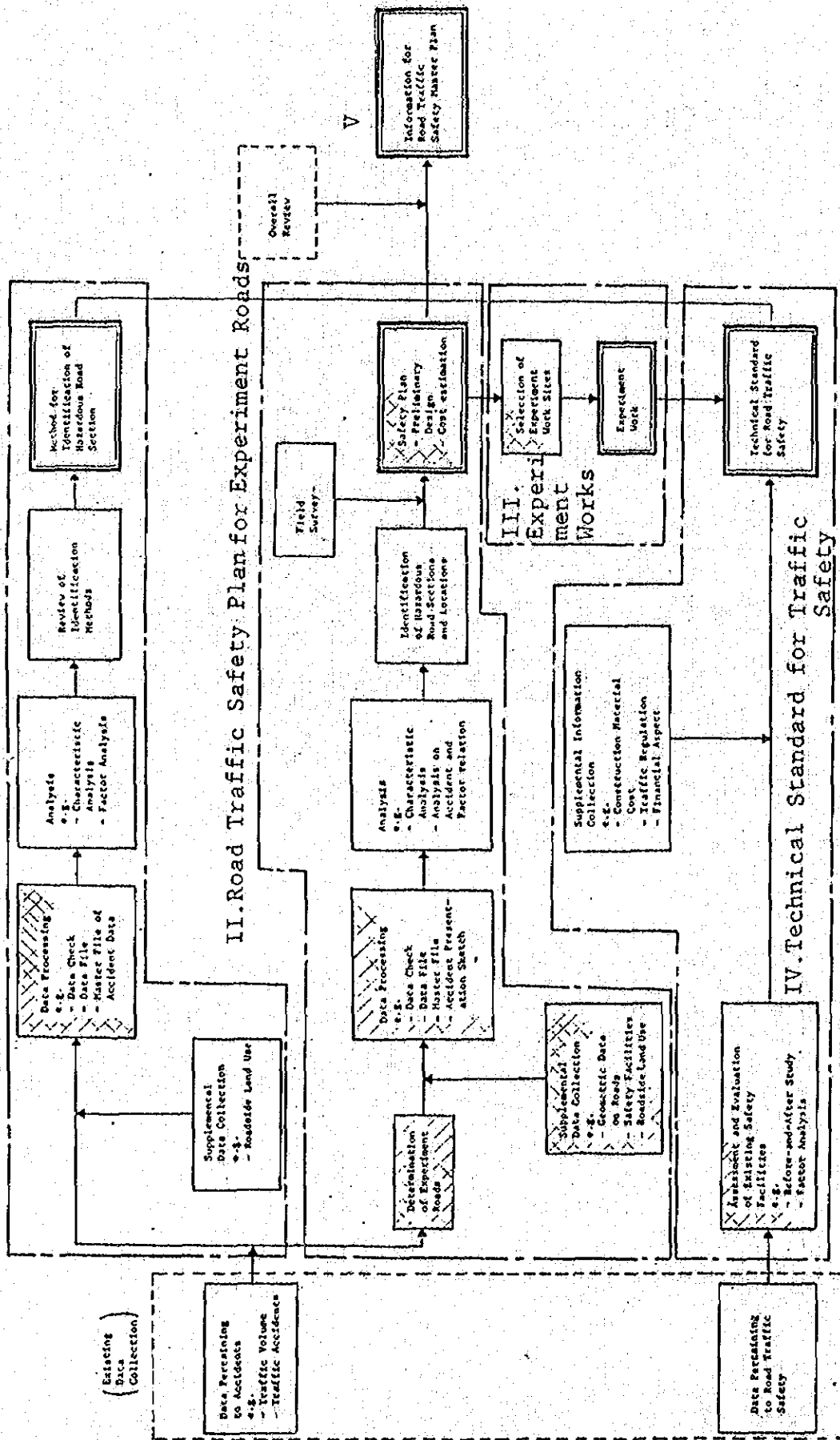


Figure-1 General Study Flow

CHAPTER 3 RESULT OF THE STUDY PERFORMED

[Identification Method]

3-1 Collection and Arrangement of Accident Data

(1) Agencies responsible for traffic accident investigation and reporting

(1) For the accident investigation on the DOH roads, DOH, HPD and LPs have responsibility, according to their responsible area. Basically, HPD has responsibility for accident investigations in rural areas exclusive of minor provincial roads, while LPs have responsibility in urban areas inclusive of minor provincial roads in rural areas. If DOH properties are damaged by traffic accidents, investigations officers of DOH also conduct investigations on traffic accidents.

At present, HPD has responsibility for approximately 13,000 Km of DOH standard roads.

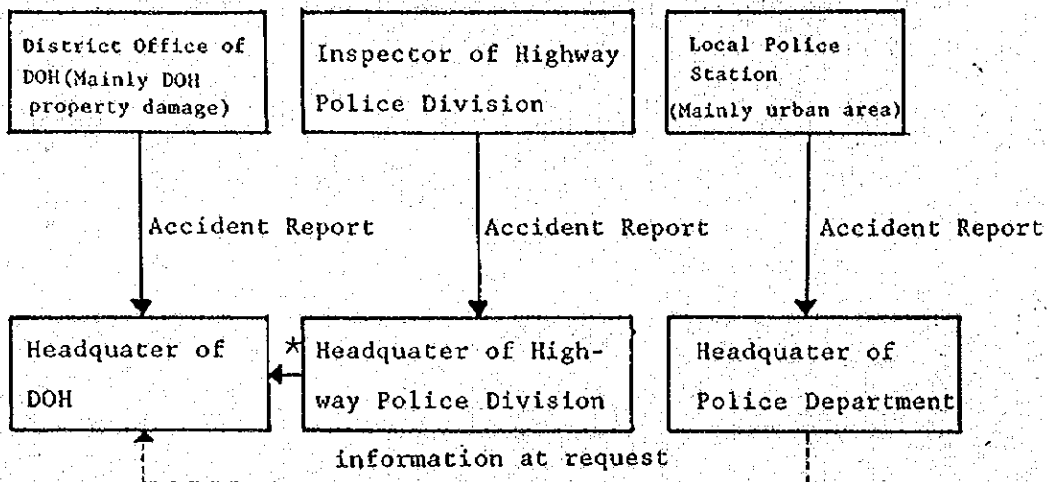
(2) Accident Report and Record System

Until 1982, the three agencies, i.e, HPD, LPs and DOH had used their own data recording forms. They were different each other. However, since 1983, HPD has been using same data form as DOH, while LPs are still using their own different form.

-
- 1) DOH : Department of Highways, Ministry of Communications
 - 2) HPD : Highway Police Division, Police Department of Ministry of Interior (MOI)
 - 3) LP : Local police, Police Department of MOI

All traffic accident reports by HPD, LPs and DOH are forwarded to their respective headquarters. The records of HPD, then, are sent to DOH regularly while there is no reporting system between the headquarters of LPs and DOH. The LPs' information will, therefore, be forwarded to DOH only at request (see Figure-2). The accident records prepared by LPs are mainly utilized for criminal case investigation. The record form of DOH and LPs are shown in Table-1 and 2.

DOH, after receiving traffic accident record from HPD, combine together with accident data investigated by DOH itself. Thus obtained data, then, are analysed by DOH's computer. Headquarter of Police Department of the Ministry of Interior also analyses its traffic accident data by their computer.



Note : *Every accident record is sent to the DOH Headquarter.

Figure-2 Accident Data Reporting Flow on DOH Roads

Table-1

DOH Accident Report

REPORT OF ACCIDENT ON HIGHWAY

FORMAT S3-02
DOH
Beginning Use

Reference No.....
ToFrom.....
Reference Radio, Telegram.....

Date.....

Route No..... Control Section..... Location..... By Pass..... Station km. of occurrence.....	<p>Kind of Highways</p> <input type="checkbox"/> Construction <input type="checkbox"/> Maintenance <input type="checkbox"/> Special Highway <input type="checkbox"/> National Highway <input type="checkbox"/> Provincial Highway <input type="checkbox"/> Confession Highways <input type="checkbox"/> Others
--	---

Dating.....Month.....Year.....Day.....Time.....

<p>Location</p> <input type="checkbox"/> Straight way <input type="checkbox"/> Curve way <input type="checkbox"/> Slope way <input type="checkbox"/> Mountain way <input type="checkbox"/> Bridge <input type="checkbox"/> Intersection <input type="checkbox"/> Railroad <input type="checkbox"/> Others	<p>Road Surface</p> <input type="checkbox"/> Concrete <input type="checkbox"/> Asphalt Concrete <input type="checkbox"/> Bituminous <input type="checkbox"/> Unpaved <input type="checkbox"/> Others	<p>Type of Highway</p> <input type="checkbox"/> 2 Lane Highway <input type="checkbox"/> 4 Lane Highway <input type="checkbox"/> One way road (2 Lanes) <input type="checkbox"/> Divided Highway <input type="checkbox"/> Others <p>Surface width.....m Shoulder width.....m</p>
--	--	--

First Car
Type of vehicle.....No. of Registration.....Tel.....
Office.....Drivers name.....age.....Sex Male Female
Part of car damaged.....

Second Car
Type of vehicle.....NO. of Registration.....Tel.....
Office.....Drivers name.....age.....Sex Male Female
Part of car damaged.....

<input type="checkbox"/> Highway <input type="checkbox"/> Traffic signals <input type="checkbox"/> Km. Post, Right of Way Post	<p>DOH Property Damage</p> <input type="checkbox"/> Part of Bridge <input type="checkbox"/> Traffic Signs <input type="checkbox"/> Others.....	<input type="checkbox"/> Street Lighting <input type="checkbox"/> Guardrail, Fence, Guide Post
--	--	---

DOH damage about.....\$	Damage	No. of car.....Vehicle
Private damage or other person.....\$		Injuries.....Person
		Fatalities.....Person

<p>Cause of Accident</p> <input type="checkbox"/> Over speed limit <input type="checkbox"/> Improper passing <input type="checkbox"/> Failure to yield right <input type="checkbox"/> Failure to signal of way <input type="checkbox"/> High beam <input type="checkbox"/> Parking without light <input type="checkbox"/> Vehicle defects at night <input type="checkbox"/> Drive Asleep <input type="checkbox"/> Drunken driving <input type="checkbox"/> Others	<p>Visibility</p> <input type="checkbox"/> Fine <input type="checkbox"/> Foggy <input type="checkbox"/> Smoky <input type="checkbox"/> Others <input type="checkbox"/> Raining <input type="checkbox"/> Dark-street light <input type="checkbox"/> Dark-no street light
--	---

- Group No1. Planning Division
- Group No2. Maintenance Division
- Group No3. District Division
- Group No4. Reporter Office

Locate map at Accident Area

Detail
1. Straight line shows accident highway 2. Put the No. to each car & show Direction → 1 X 2 ←
3. Straight line shows before accident → □ and dot line after accident happens → • □

Report the Detail of Accident Case

Signature..... Reporter	Signature.....Chief of Office
Position.....	Position.....
Dating.....Month.....Year.....	Dating.....Month.....Year.....

Table-2 LP Accident Report

POLICE DEPARTMENT
COMPLAINT OR ACCUSATION

AT...../.....
PRESENTATION.....
CASE NO.....

POLICE STATION AT.....
AMPHUR.....PROVINCE.....

TYPE OF CASE <input type="checkbox"/> CRIMINAL CASE <input type="checkbox"/> ADULT <input type="checkbox"/> YOUNG <input type="checkbox"/> ACT OF LIGISLATION.....		DESCRIPTION OF ALLEGATION			WEEKLY DAY		DATE/MONTH YEAR		TIME		
					ACCIDENT DATE						
					RECEIVING OF COMPLAINT DATE						
ACCIDENT AREA		ACCIDENT PLACE		POLICE STATION IN CHARGE		ACCIDENT MAKER		INJURY PERSON			
						PERSON CATCHED PERSON		DEAD	SERIOUS INJURY	LITTLE INJURY	
REASON		TYPE OF WEAPON			Q'TY	Q'TY	DRIVING VEHICLE		Q'TY		
METHOD		1. REGISTERED LICENSE GUN 2. NO REGISTERED LICENSE GUN 3. WAR WEAPON			4. BOMB	5. KNIFE	TYPE OF VEHICLE				
		3. WAR WEAPON			6. OTHERS..		BOAT				
							OTHERS				
ITEM OF DAMAGED ASSETS			Q'TY	PRICE	ITEM OF RETURNED ASSETS			Q'TY	PRICE COMMON PROPERTY	Q'TY	PRICE
FOR INVESTIGATOR WRITING ONLY						NAME OF INVESTIGATOR.....NO.....					
						DATE.....					

DETAILS OF COMPLAINT

WE,.....AGE.....RACE.....NATIONALITY.....RELIGION.....
 OCCUPATION.....FATHER'S NAME.....MOTHER'S NAME.....
 LIVE AT.....ROAD.....DISTRICT.....
 AMPHUR.....PROVINCE.....NAME OF HEADMAN OF VILLAGE.....KAMNAN'S NAME.....

(SIGN).....COMPLAINT OR ACCUSER

(SIGN).....COMPLAINT OR ACCUSATION RECEIVER

(SIGN).....WRITER

(3) Data Collection for the Study

For traffic accident records directly responsible for DOH and HPD, the data between 1978 and 1982 are available. They are kept in magnetic tapes for the computer. As these data contains a number of errors, the Team made correction on them and refiled them into new magnetic tapes.

As to the traffic accidents responsible for LPs, DOH has collected no data to date. The Team, therefore, after consultation with DOH staff, requested DOH to make necessary arrangement with concerned LPs for data collection.

With limited time, the Team has selected 6 Chang Wats (Saraburi, Chonburi, Nakhon Ratchasima, Khon Khaen, Chiang Mai and Songkhla; There are 73 Chang Wats throughout the country). The 6 Chang Wats have been selected on the premise that accident data would be available from the headquarters in Bangkok and if not, the number of Chang Wats would be decreased.

In parallel with above activities, the Team has been collecting traffic accident data on the experiment roads visiting local police stations with assistance of DOH staff. Since the experiment roads scatter in areas with 15 concerned local police stations, this data collection is quite time consuming in spite of the cooperation from concerned agencies.

For this data collection, the Team developed a special form to simplify and facilitate data collection works. The form is shown in Table-3.

Table-3 Data Collection Format for Traffic Accident
Data of Local Police Station

Route No.	Date & Year	Time
Control Section		Kilometer Post
Type of accident 1. Vehicle & Vehicle 5. Motorcycle & Motorcycle 2. Vehicle & Motorcycle 6. Motorcycle & Pedestrian 3. Vehicle & Pedestrian 7. Motorcycle & Bicycle 4. Vehicle & Bicycle 8. Others		
Number of casualties 1. Fatality 2. Serious Injury 3. Light Injury		
Place 1. Intersection 2. Others		

3-2 Collection and Arrangement of Traffic Volume Data

To the traffic accident analysis, traffic volume data are indispensable. DOH has been conducting traffic survey on its highways every year since 1962. The number of counting stations is 1859 in 1982. The past traffic volume data are readily available from DOH and applicable for traffic accident analysis.

In case of analysis by control sections, DOH's traffic volume data, of which counting stations are not necessarily located equally in conformity with control sections, require to be recompiled so as to enable interrelation analysis between traffic accidents and traffic volume by control sections.

Followings describe the methods of recompiling DOH's traffic volume to obtain equivalent traffic volume for each control section (see Block A in Figure-3).

- a) Where traffic volume is observed at one point for a control section, the result of DOH's survey will be directly used (Method a);
- b) Where traffic volume is observed at more than two points for a control section, a weighted average volume will be assumed as a traffic volume for the control section (Method b);
- c) For the section where no traffic counting is made, the traffic volume at the nearest counting station will be assumed as the traffic volume at the control section generally (Method c).

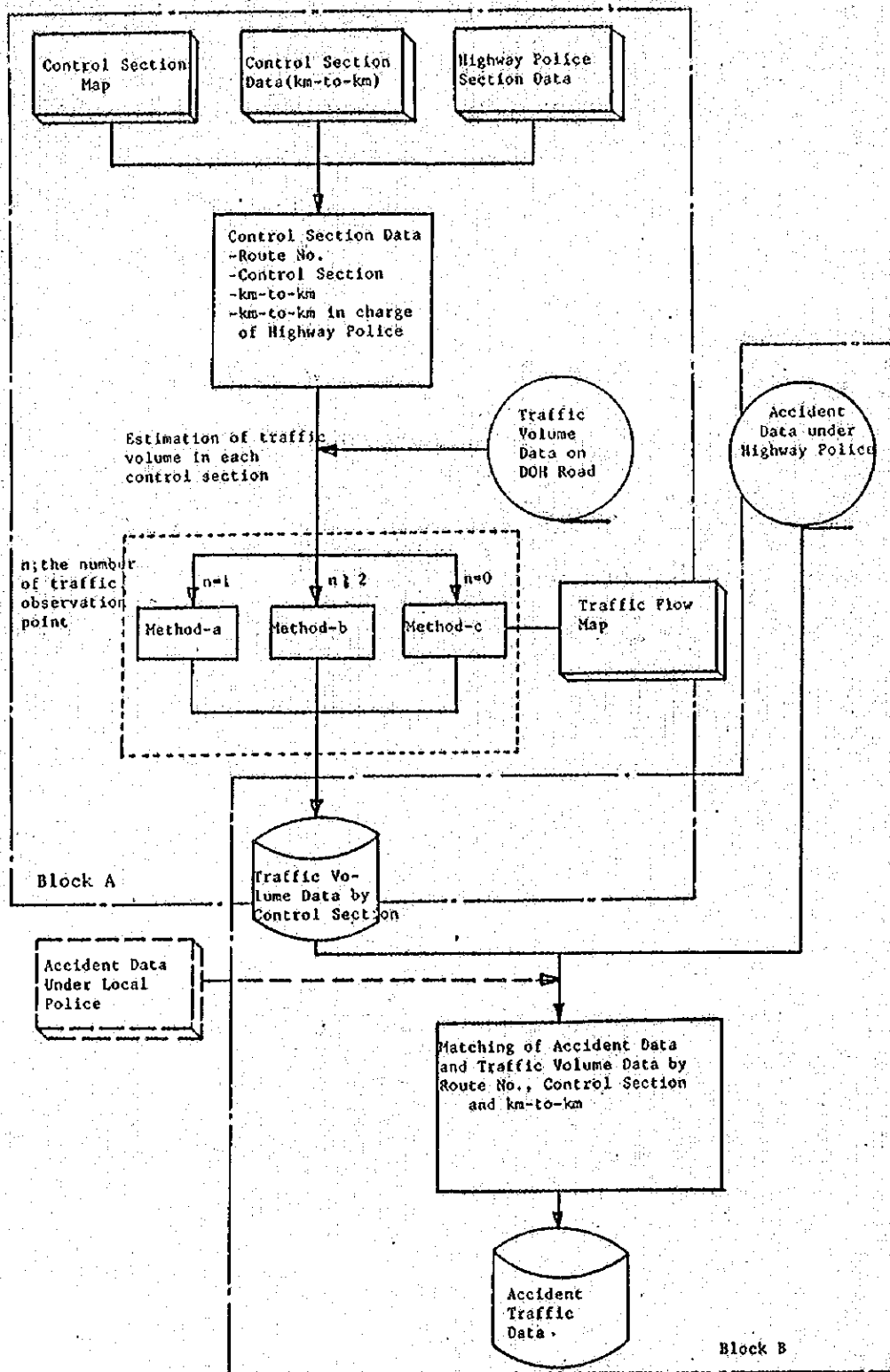


Figure-3 Procedure of Data Combination

3-3 Data Filing

The data of traffic accidents and traffic volume will be filed in two forms (See Block B in Figure-3).

- a) For analysis by control sections;
The traffic volume data for each control section prepared with aforementioned methods, will be filed together with the number of accidents, fatalities and injuries in accordance with tabulation format as shown in Table-4.
- b) For analysis by each accident;
All items in a traffic accident record (See Table-5) will be filed with traffic volume represented with that of traffic count station which is the nearest to where the accident occurs.

Table-4

Tabulation Format by Control Sections

Route No.	Control Section	1978			1979			1980			1981			1982			
		Traffic Volume per Day	Number of Accidents	Number of Fatalities	Number of Injuries	Traffic Volume per Day	Number of Accidents	Number of Fatalities	Number of Injuries	Traffic Volume per Day	Number of Accidents	Number of Fatalities	Number of Injuries	Traffic Volume per Day	Number of Accidents	Number of Fatalities	Number of Injuries

Table-5

Traffic Accident Record Format

Route Number		Detail of Accident Data																							
Control Section		Station Km.	Condition of Road	Date	Month	Year	Day	Time	Vertical Alignment	Horizontal Alignment	Location	Road Survey	Type of Highway	Survey Width	Shoulder Width	Type of	Vehicle Involvement	DOH Properties	Property Damage	Severity of Accident	Causes of Accident	Visibility	Type of Accident	Collision	

{Safety Plan}

3-4 Safety Plan on Experiment Roads

The Study entails demonstrative roads safety planning and some experimental countermeasure works at sites on selected roads (hereinafter referred to as experiment roads). In this period, experiment roads were selected and site survey thereon was carried out.

(1) Selection of Experiment Roads

Approximately 310 km from 13 routes of National highways was selected as experiment roads. Nine routes, with total length of 82 km, are in urban area and four routes, with total of 235 km, are in rural area. The location of the experiment roads is shown in Figure-4, while Appendix A presents the experiment roads with control sections thereon.

The experiment roads have been selected, taking into account the following items;

In urban area;

- a. high frequency of accidents;
- b. complaints and anxiety from neighbour inhabitants;
- c. number of pedestrian and traffic volume on minor roads connected major roads;
- d. running speed; and
- e. number and type of obstructions on traffic flow.

In rural area;

- a. to be trunk road in the region;
- b. physical characteristics; and
- c. high frequency of accidents.

On top of the above considerations, attention to availability of materials and labors for experimental works was paid.

The traffic volume in 1982 on experiment roads is shown in Table-6 and traffic volume between 1978 and 1981 is in Appendix B. It should be noticed that the locations of some traffic counting stations were changed during the above period.

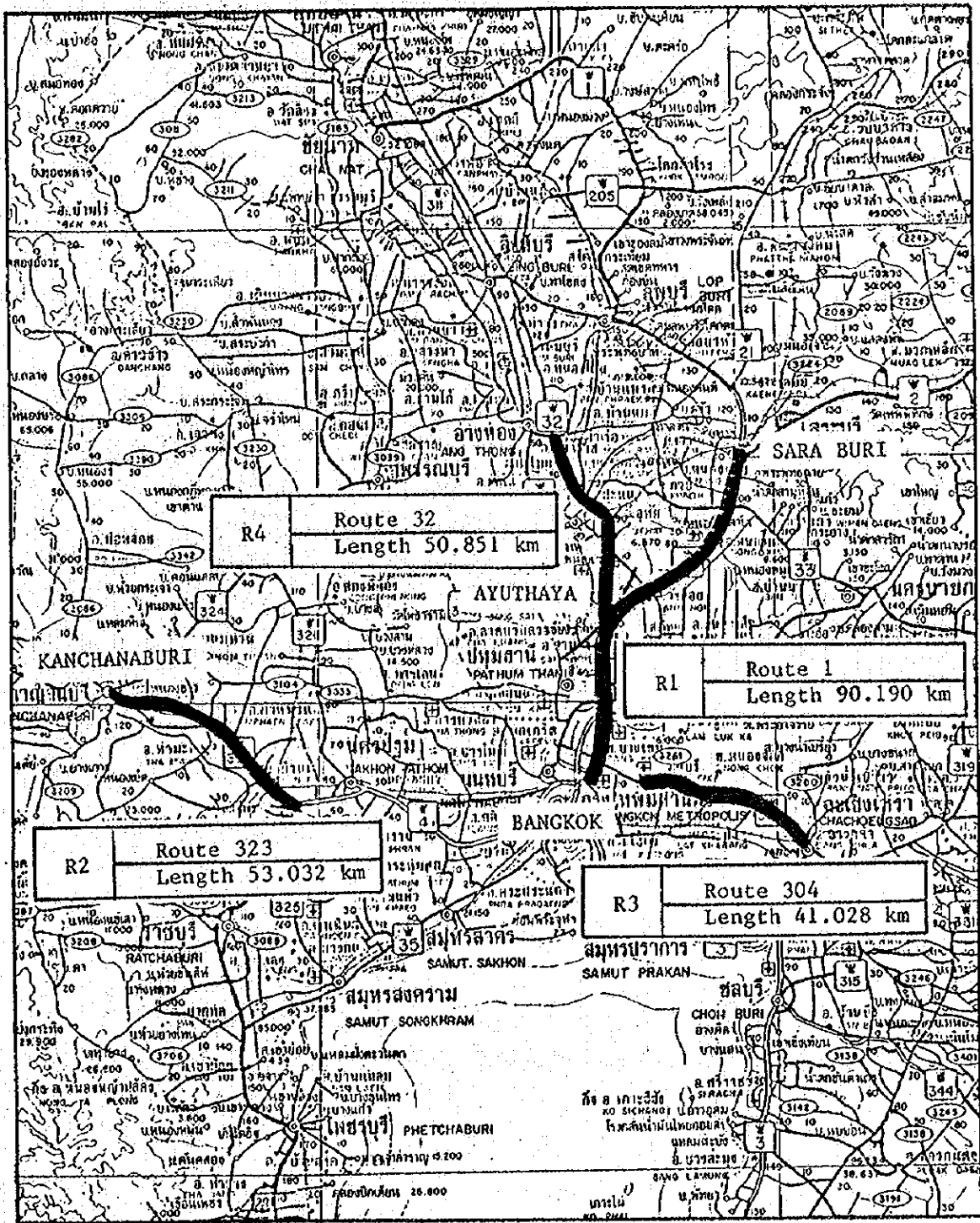


Figure-4-(1) Experiment Roads (Route 1, 323, 304, 32)

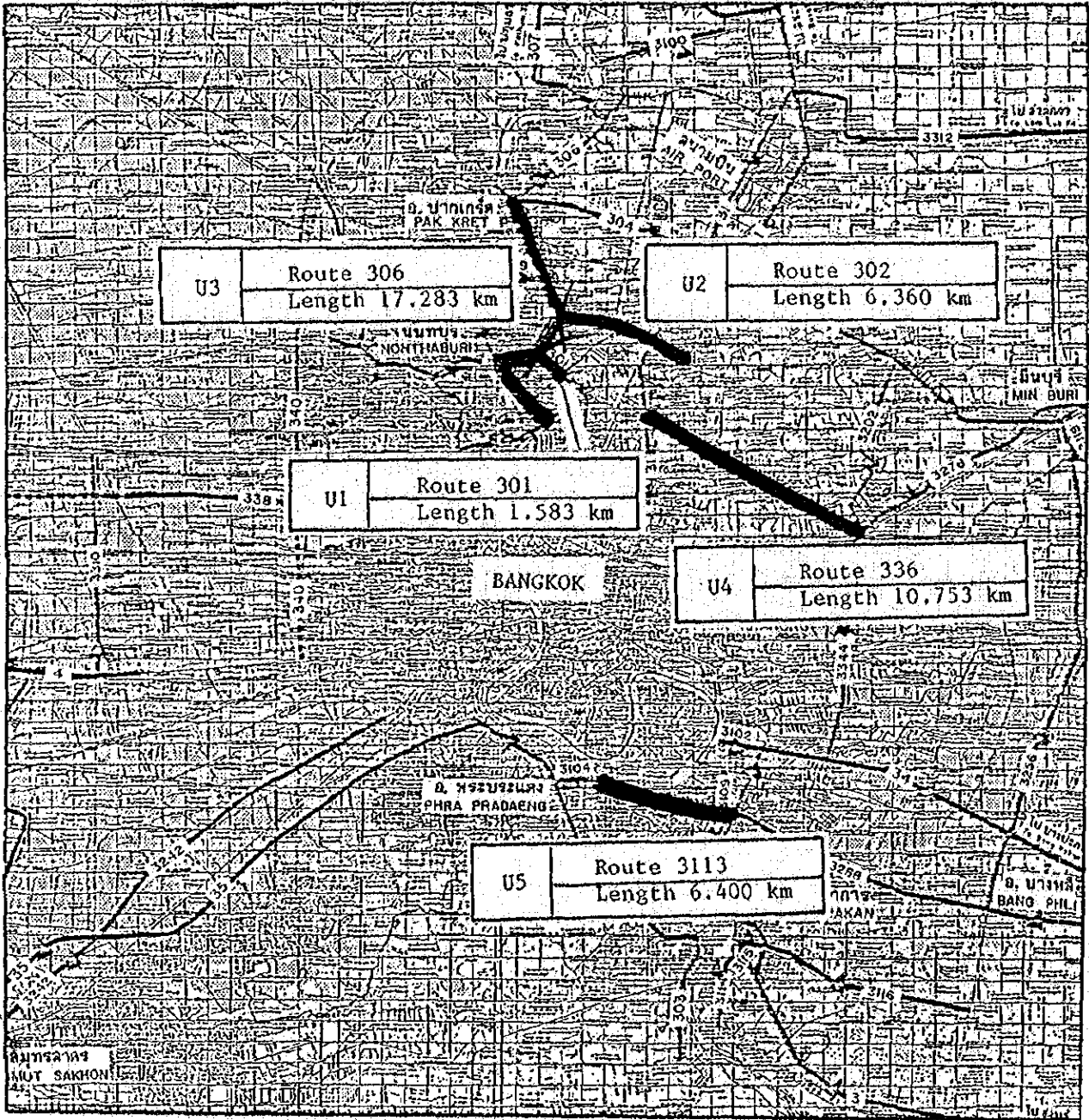


Figure-4-(2) Experiment Roads (Route 301,302,306,336,3113)

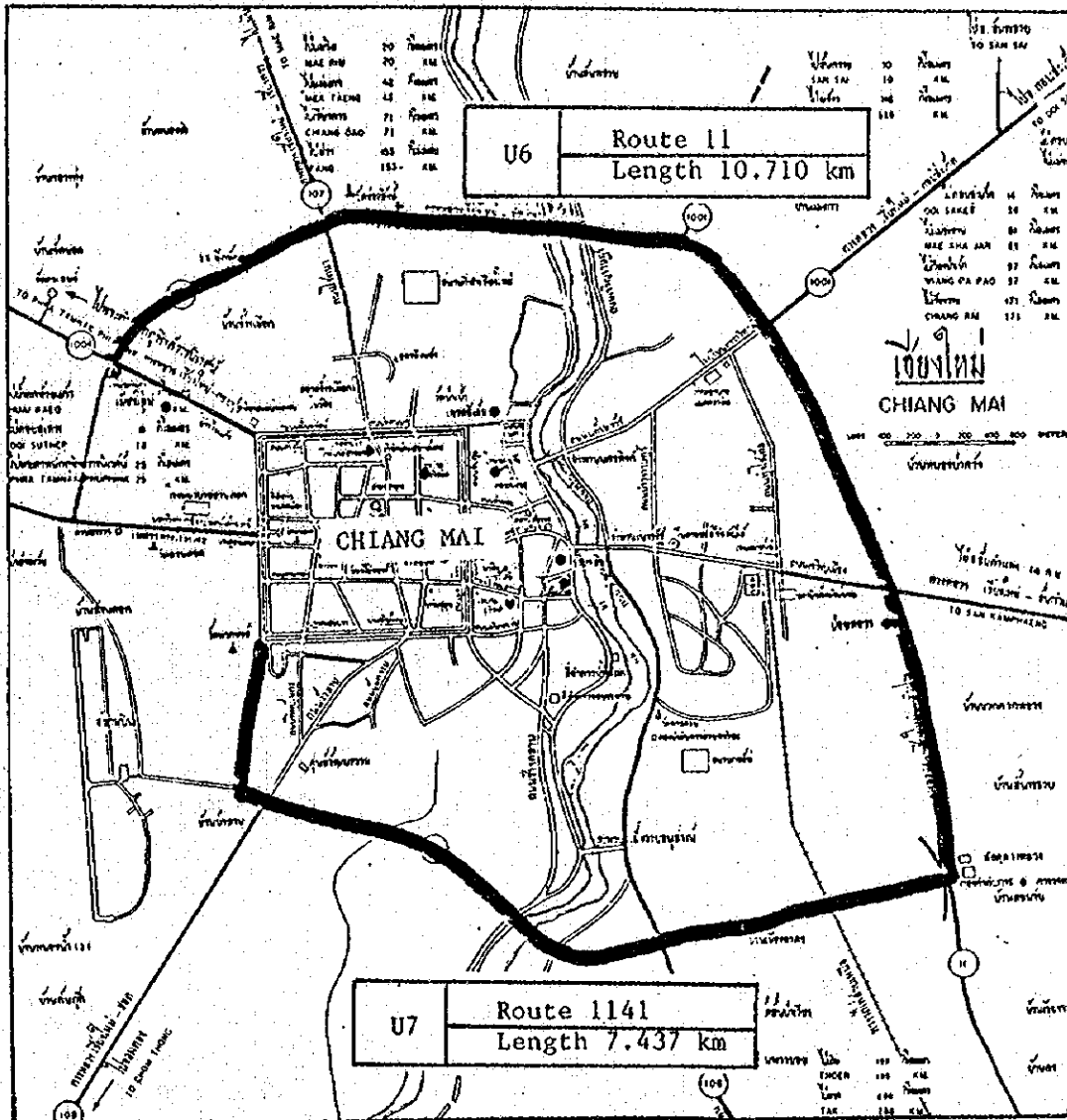


Figure-4-(3) Experiment Roads (Route 11,1141)

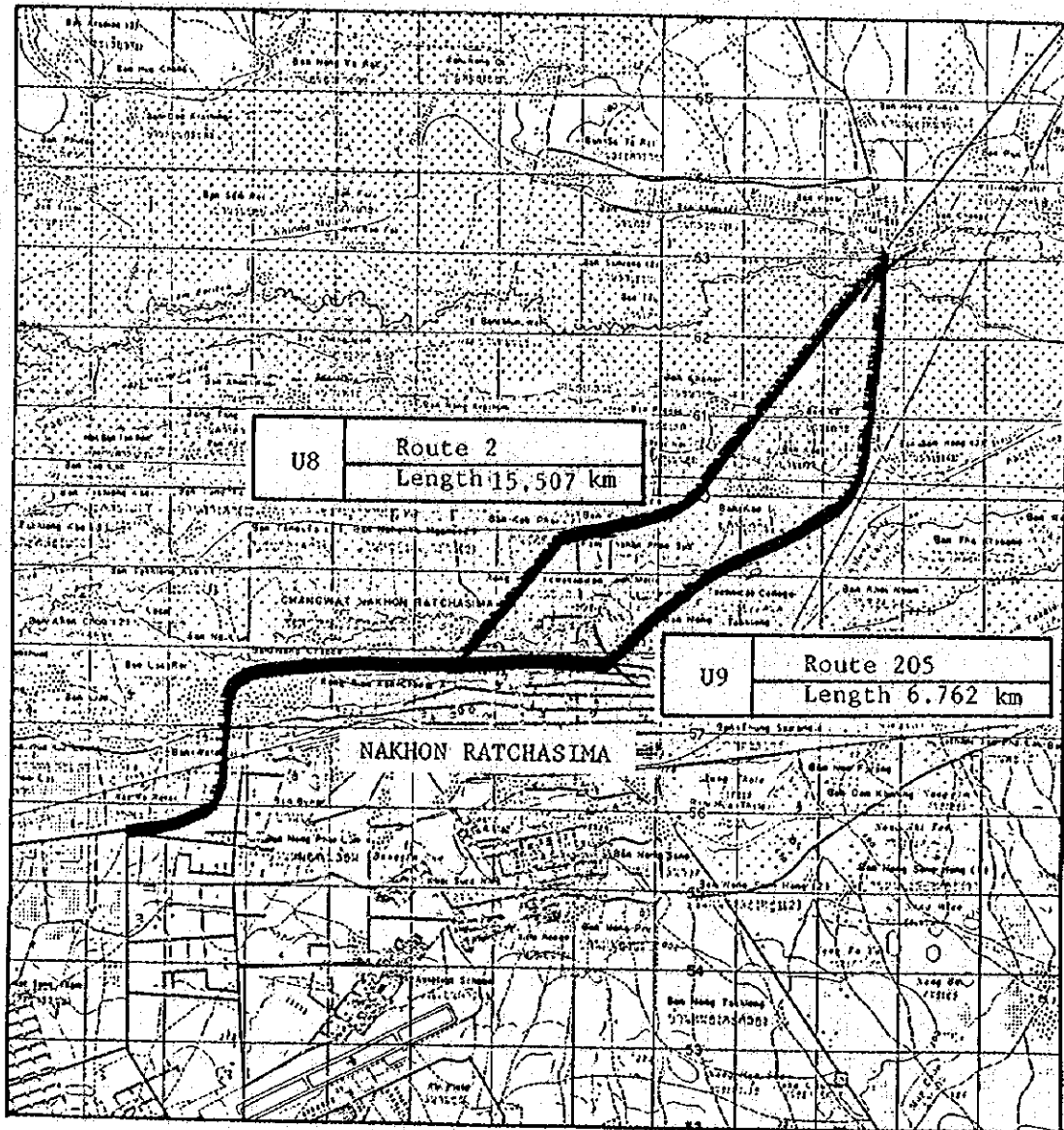


Figure-4-(4) Experiment Roads (Route 2,205)

Table-6-(1) Traffic Volumes on Experiment Roads
(1982, Rural Area)

NO	ROUTE NO.	CON- TROL SEC- TION	TERMINI	STA- TION TYPE CODE	STA- TION KM.	AVERAGE DAILY TRAFFIC BY TYPE							% HEAVY VEHIC- LE	BI+TRI CYCLE	MOTOR CYCLE	REFERENCE MAP
						CAR& TAXI	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCKS	TOTAL				
R1	1	0100	LAKSI-SAPHANMAI	20	19+100	9949	1396	1940	2858	1588	1047	18778	24.36	616	3387	
		0100	SAPHANMAI-RANGSIT	20	24+685	8927	1814	2807	3196	2005	972	19721	29.32	525	3163	
		0202	RANGSIT-BANG PA IN	20	35+000	9625	4723	3280	2756	2986	5292	28662	40.32	227	1681	
		0203	BANG PA IN-WANG NOI	20	60+800	3653	389	1371	1173	906	4077	11569	54.92	23	517	
		0302	WANG NOI-SARABURI	20	67+900	3614	1382	1461	1694	3847	657	12655	47.13	170	601	
		0302	WANG NOI-SARABURI	20	102+000	4126	577	1393	1630	2305	2599	12630	49.85	377	1333	
R2	323	0101	SAM YAK KRACHAB-JCT. TO PHRATHAEN DONG RANG	20	80+264	2056	465	391	4738	647	4207	12504	41.94	588	4699	
		0102	BANG PONG BYPASS	20	76+600	1396	167	77	2129	530	2785	7084	47.88	210	1721	
		0201	JCT TO PHRATHAEN DONG RANG -JCT. TO PHANONTHUAN	20	108+300	395	185	286	519	153	389	1927	42.96	263	723	
		0202	JCT TO PHRATHAEN DONG RANG	21	117+000	964	226	427	2780	434	968	5799	31.53	286	2350	
R3	304	0202	MINBURI-CHACHOENGSAO	20	47+000	2015	394	429	952	518	500	4808	30.09	27	250	
		0202	MINBURI-CHACHOENGSAO	20	73+000	1667	443	376	1041	417	342	4286	26.48	42	367	
R4	32	0401	BANG PA IN-JCT. TO AYUTTHAYA	20	55+850	3031	898	1163	927	802	1802	9423	39.97	32	498	
		0500	AYUTTHAYA-JCT. TO ANGTHONG	20	96+800	2975	500	872	630	511	1508	6996	41.32	24	374	

Table-6-(2) Traffic Volumes on Experiment Roads
(1982, Urban Area)

NO	ROUTE NO.	CON- TROL SEC- TION	TERMINI	STA- TION TYPE CODE	STATION KM.	AVERAGE DAILY TRAFFIC BY TYPE							% HEAVY VEHIC- LE	MOTOR CYCLE	REFERENCE MAP
						CARS TAXI	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	TOTAL			
U1	301	0100	TAOPUN-TIWANON	20	5+175	8647	1249	1317	2737	1333	577	15860	20.34	949	2597
U2	302	0100	KASETSART-KHAERAI	20	6+345	9180	758	1516	2868	1591	600	16513	22.44	566	2776
U3	306	0200	PHARARAM 6 BRIDGE-BANG PHUM	20	12+796	9889	2230	2109	4080	3206	568	22082	26.64	550	3041
U4	336	0100	LAT PHRAO-BANG KAPI	20	5+980	17994	858	2718	5270	607	238	27685	12.86	278	5014
U5	3113	0100	SAM RONG-THA HIN	20	0+500	13307	4153	2218	5044	4190	3103	32015	29.70	185	4826
U6	11	1602	KM.85+452-CHIANG MAI	21	89+000	2210	524	309	3002	790	468	7303	21.45	289	4353
U7	1141	0100	YAK TO ROUTE NO.11 - ROUTE NO.1005	21	7+ 0	1220	242	83	1111	456	201	3313	22.33	768	2218
U8	2	0802	JCT. TO SUNG NOEN- JCT. TO KABINEURI	10	223+300	799	328	874	925	689	1662	5277	61.11	248	402
U9	205	0801	NAKHONRATCHASIMA-PHIMAI NON THAI-NAKHONRATCHASIMA	20	10+700 386+000	762 364	299 118	712 237	1512 665	525 237	646 105	4456 1726	42.25 33.54	133 91	814 543

(2) Site Survey on Experiment Roads

To select hazardous road sections on the experiment roads for which to formulate necessary safety plans, site survey has been conducting by the Team. The data and information obtained from the site survey are as follows;

- 1) number of crossing roads;
- 2) traffic safety facilities;
- 3) land use along roadside; and
- 4) road conditions and alignment for road locations which were selected taking into account of accident number, or where road alignment and/or side environments change.

The findings of item 1) to item 3) will be tabulated in form of Table-7, 8 and findings of item 4) will be illustrated in drawings in form of Figure-5.

In parallel with the site survey, road conditions and their circumstances on experiment roads were recorded on video tape. The tapes will be used when reconfirmations and checks are needed in the course of analysis, discussion and meetings. The tapes were listed in order by the frame number by each road section.

Through field observation, the experiment roads have been broken down into several sections where in road conditions and land use along roadside are similar and uniform (see Figure-6). The data and information in form of Table-7, 8 and Figure-5 are incorporated in a concise and comprehensive sheet to help grasp full pictures of the roads (see Table-9).

Table-7 Check List for Site Survey

Route No.		Control Section No		Date : 18 / July / '83										
Kilometer from the origin		Intersection		Safety Facilities					Roadside Land Use			Others		
		>5.5 ^m	≤5.5 ^m	Sidewalk	Lighting	Guard Rail	Guide Post	Marking	Density	Low density	Rural	Mountainous		
16 + 441				8th side W=35 ^m	at the Median	---	---	Long mark --- (Median)		○			P.C.B. Surface : good (Concrete) School	
17														
18	Route 307 Roundabout													
19														
20									○				Parking Veh.	
21														
22														
23										○			P.C.B.	
24											○		P.C. (✓) School (curve Sec. (not sharp))	

Table-8

Findings of Selected Points

Form 3

No :

Date: 18 July 1983

Route <u>1</u> Control Section <u>0201</u> K.P. <u>32 + 000</u>		
<u>Geometry</u>	<ul style="list-style-type: none"> Intersection (T) with R. 306 auxiliary lane (right turn, U-turn) 	[Comment]
<u>Road Surface</u>	<ul style="list-style-type: none"> good condition paved shoulder 	
<u>Markings</u>	<ul style="list-style-type: none"> disappearing no marking on Route 306 	<ul style="list-style-type: none"> to be distinct to minimize saturation (crowd?)
<u>Delineator</u>	<ul style="list-style-type: none"> none no guardrail 	
<u>Pedestrian</u>	<ul style="list-style-type: none"> pedestrian overhead crossing 100 m apart from the intersections no sidewalks 	
<u>Traffic Sign</u>	<ul style="list-style-type: none"> No Right Turn : for Trucks from Bangkok No Parking ; at intersection 	<ul style="list-style-type: none"> to reduce speed (R. 1)
<u>Signal</u>	<ul style="list-style-type: none"> not installed 	<ul style="list-style-type: none"> traffic signal
<u>Lighting</u>	<ul style="list-style-type: none"> Serial street lightings from this intersection to BKK low-pressure sodium lamps (perhaps) 	
<u>Environment</u>	<ul style="list-style-type: none"> BKK side : commercial area, opposite side : field 	
<u>Others</u>	<ul style="list-style-type: none"> many conflicts in the intersection many right-turn vehicles U-turn vehicles from BKK, considerable cars running R. 1 very fast 	<ul style="list-style-type: none"> very dangerous provision of U-turn splitters

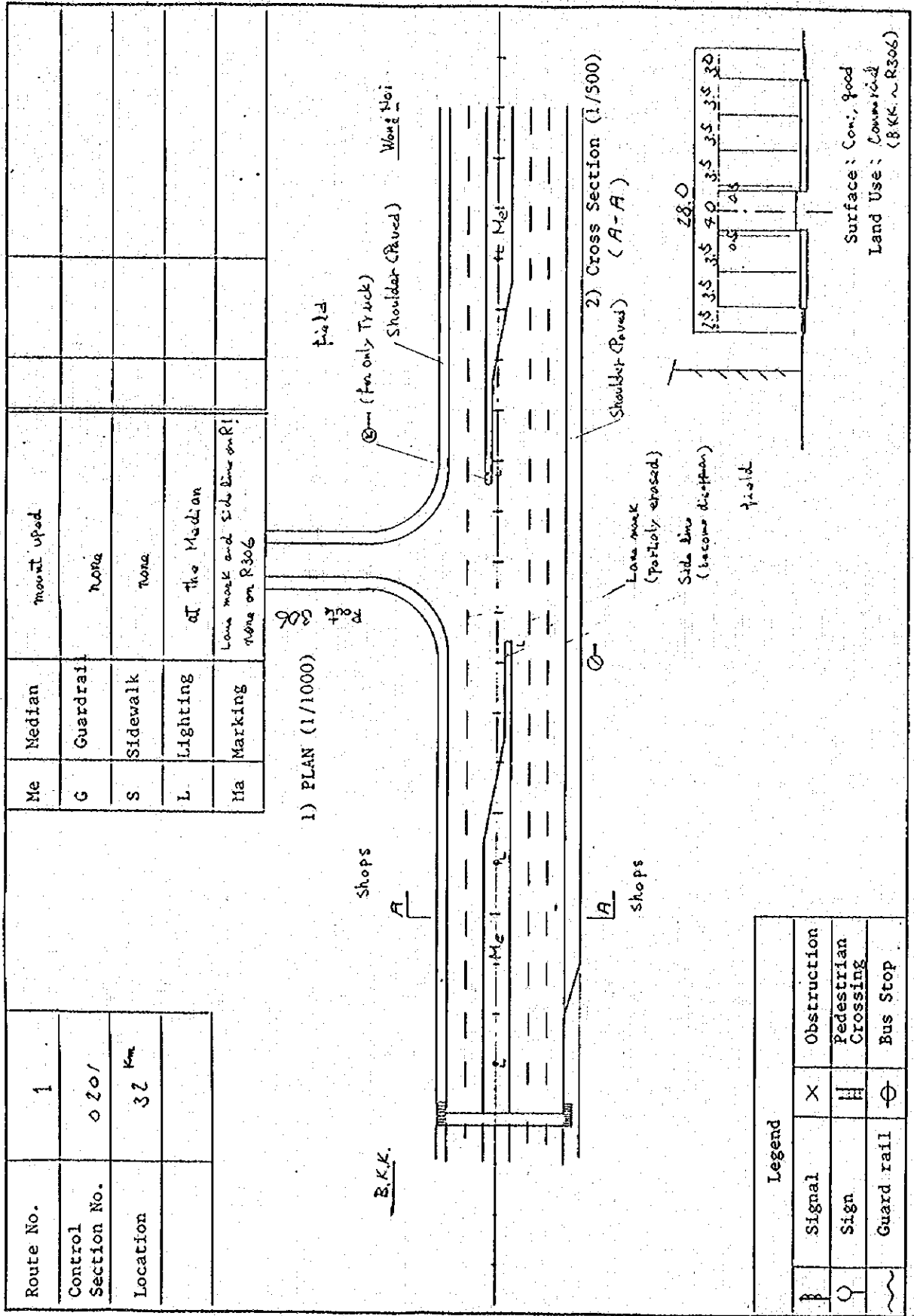


Figure-5 Illustration of Selected Point

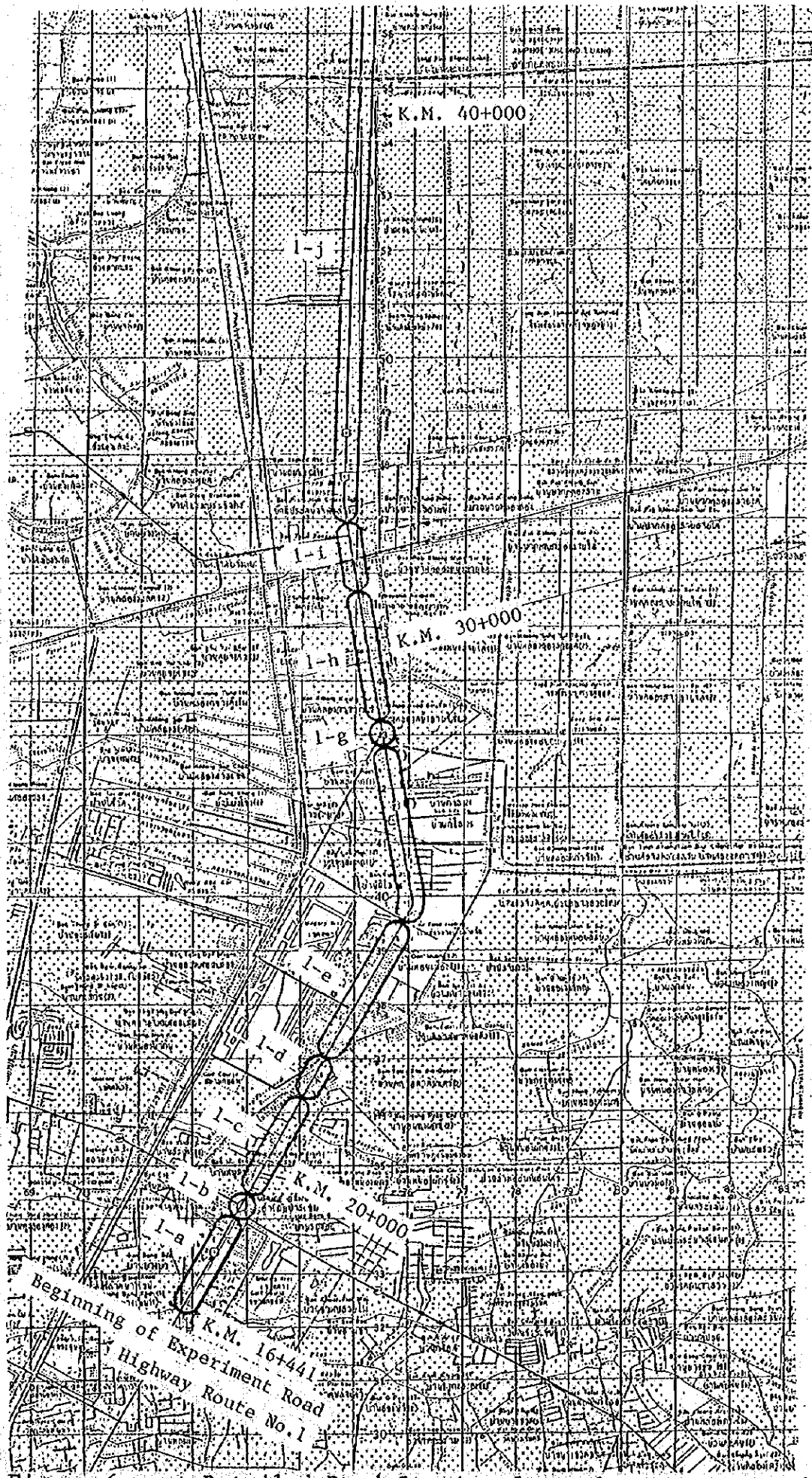


Figure-6 Detailed Road Section for Safety Plan (Route 1)

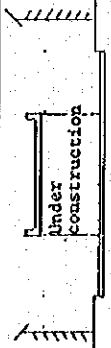
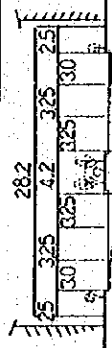
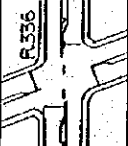
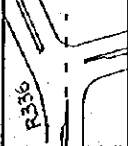
Table-9-(1) Description of Experiment Roads (Route 1)

Route	1		Road Condition			State of Road Safety Facilities							Traffic Condition	Remarks		
	Control Section	0100	Location Code	Location (K.P)	Land Use*	Cross-Section	Alignment	Surface	Marking	Traffic Sign	Street Lighting	Guardrail			Sidewalk	Others
1-a	16K+440	-	L.D				Straight - Flat	good (Concrete Shoulder is paved)	Lane mark	Rev. (at the median-opening)	At median	-	Both Side	Ped. Cro. Bridge	School	
1-b	18K+500	-	L.D				Route 304 Straight Flat	do	do	do	do	-	do			
1-c	19K+000	-	L.D			Same as 1-a	Straight	do	do	do	do	-	do			
1-d	21K+000	-	D			do	do	do	do	do	do	-	do			Parking Veh.
1-e	22K+000	-	L.D			do	do	do	Lane mark Side line Pede. Crossings	Rev. (at Pde. Cr.) 	do	-	do	Pede. Cro. Bridge	School	
1-f	24K+000	-	F				Rmini = 250 ^m Flat	do	Lane mark Side line	do	do	-	None			School
1-g	28K+000	-	F				Route 31 Flat	do	Lane mark (erased) Reduce Speed on the surface		do	-	do	Signalized (not operated)		
1-h	28K+500	-	F				Straight Flat	do	Lane mark (erased partially) Pede Crossings		do	-	do			

* D : Density, LD : Low Dense
F : Field



Table-9-(2) Description of Experiment Roads (Route 336)

Route	Control Section	Location Code	Road Condition		State of Road Safety Facilities							Traffic Condition	Remarks	
			Cross-Section	Alignment	Surface	Marking	Traffic Sign	Street Lighting	Guardrail	Sidewalk	Others			
336	0100													
336-a	0+000 - 0+500	D		Straight ----- Level	Concrete (poor condition)	Disappeared because of construction	Information sign on bridge construction in the median	Sodium lamp mounted on pole	none	Both side (planted) along R.31 under construction	Mounted up median (planted)			
336-b	0+500 - 1+500	D		Straight ----- Level	Concrete (good condition)	Lane line Bus-lane line (yellow)	Warning sign and yellow blinker at each side of split of median	Pole type plus raised carriage very type - seat lamp	do	do	Bus exclusive lane			
336-c	1+500 - 2+000	D	do		do	Stop line Lane line	Warning signs for intersection	Pole type	do	do	Signalized Intersection			
336-d	2+000 - 10+000	D	do	Straight ----- Level	do	Lane line Bus-lane line (yellow)	The same as 336-b	The same as 336-b	do	do	Bus exclusive lane (ends at 5 km) Pedestrian overpass crossing Many cross-walks	Prevailing speed very high Many crossing people	Sight distance short (Bridge)	
336-c	10+000 - 10+750	D	do		do	Lane line	Warning signs for intersections	Pole type	do	do	It has two signalized intersections with shopping people	Very crowded and congested	Commercial Area	

Note: Planted median strip has been cut at many locations, but some of them are blocked up by burials or concrete pots.

Horizontal
Vertical

* D : Density, LD : Low Dense
F : Field

(3) Preparation of Collision Diagram and Accident Location Map

1) Collision Diagram

Collision diagram is important information for the knowledge of characteristics of accident as well as for road improvement planning. Therefore, in this study period, collision diagrams on experiment roads under responsibility of HPD have been prepared. Most of the diagrams contain the accidents for five years from 1978 to 1982. A typical collision diagram for Route 1 is shown in Figure-7.

As to the experiment roads under responsible of LPs, no collision diagrams have been, so far, prepared, mainly because of incomprehensive accident records. The Team, however, is going to try to work out collision diagrams, if possible, with LP's accident data which contain no collision diagrams but relatively detailed accident situation in writing.

2) Accident Location Map

Accident location maps which indicate number of traffic accidents for certain length of road section (in general 100m) is one of useful information to identify hazardous locations of roads. Accident location maps for Route 1 and Route 336, as example are shown in Figure-8. The Team, has been preparing accident location maps for other experiment roads and expect to complete by mid September.

As one of means to see characteristics of experiment roads as compared to other DOH roads, the Team intends to make histograms of traffic accidents' number with computer and compare them with the accident location maps on experiment roads.

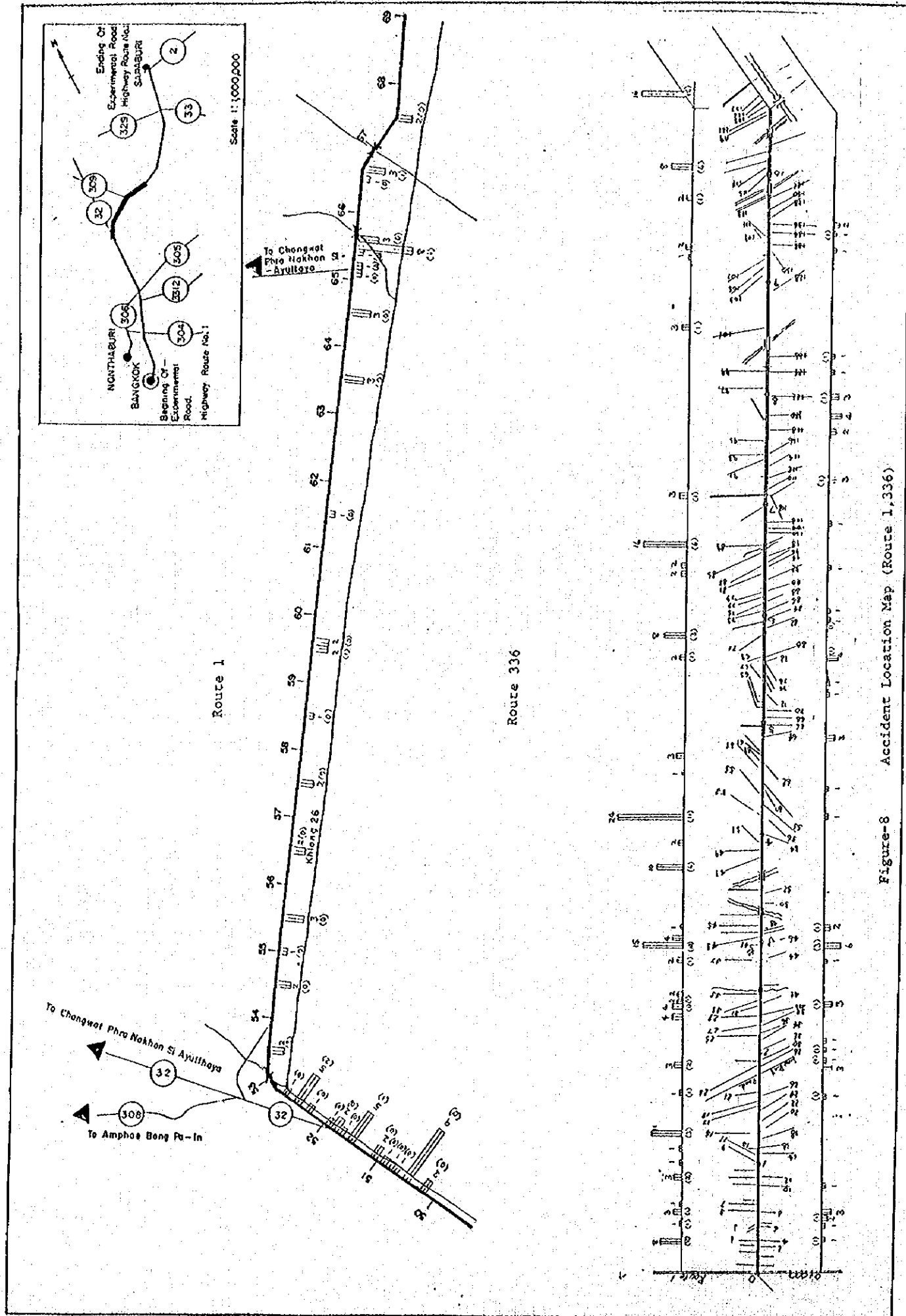


Figure-8 Accident Location Map (Route 1, 336)

(4) Preparation of Safety Plan

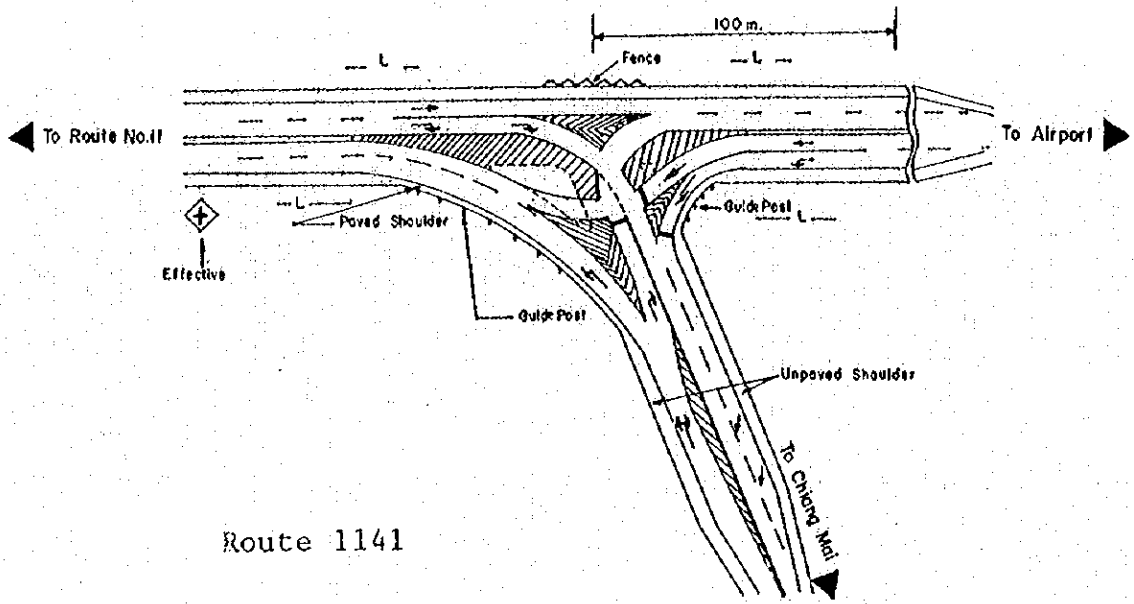
In this study period, as a first step to prepare a safety plan, by review of accident maps and through site investigation, the Team has selected sections and points where traffic accidents occurred frequently and remedial measures are needed.

For selected road sections and points, relatively detailed field investigations are being carried out. Alternative safety plans for selected hazardous locations on experiment roads are under preparation. Main items of safety plans are as follows:

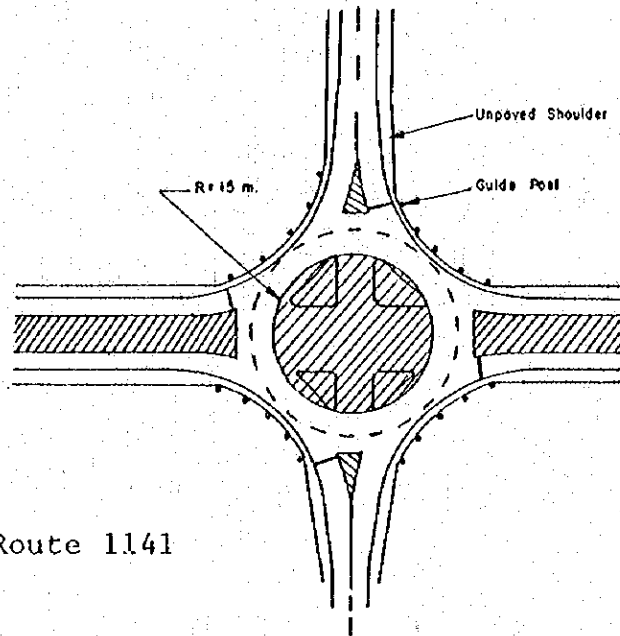
- 1) At grade intersection
 - a. installation or rearrangement of islands
 - b. marking
 - c. traffic sign
 - d. delineator
 - e. crossing for pedestrian
 - f. installation of traffic signals
 - g. modification on split and phase of traffic signal
 - h. street lighting

- 2) Uninterrupted flow section
 - a. marking
 - b. delineator
 - c. crossing for pedestrian
 - d. traffic control facilities
 - e. road side control
 - f. traffic sign

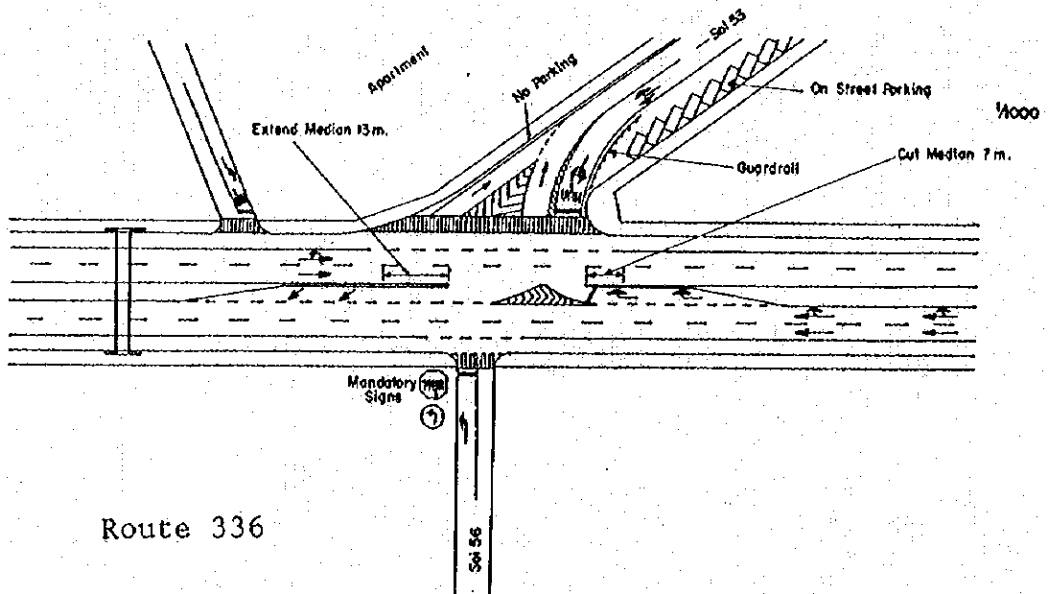
The Team is going to prepare more than two alternatives of safety plan at each hazardous location. The examples of safety plans on Route 1141 (Chiang Mai) and Route 336 (Bangkok) are shown in Figure-9.



Route 1141



Route 1141



Route 336

Figure-9 Safety Improvement Plan

3-5 Experiment Works

Experiment works for some of the hazardous road sections and locations will be demonstrated under the Study. The experiment works are implementation of some of the road safety plans on experiment roads, in order to investigate efficiency of planned facilities and improvements.

The experiment works shall be planned in such ways that they will cover various and possible countermeasures to reduce traffic accidents. The plans for experiment works shall be made taking into account the prevailing engineering practice in Thailand and economical aspects as well as driving characteristics.

3-6 Technical Standard

(1) Before and After Study

To evaluate the efficiency of traffic safety facilities on the DOH roads and to know the method of implementation, the Team is carrying out the Before and After study for some road sections where installation of traffic safety facilities and/or improvements were implemented by DOH within last few years.

For carrying out the Before and After study, the Team has requested DOH to propose sites for the Before and After study. The sites proposed by DOH are listed in Table-10.

As seen in Table-10, most works on selected sites are improvements on road surface. To cover various safety facilities for the Before and After study, the Team intends to increase the number of sites after hearing from some district offices of DOH. The Team has analysed data obtained for some study sites.

(2) Technical Standard

In Thailand, there are two different standards for traffic safety facilities adopted by the DOH for the DOH roads and the Ministry of Interior (MOI) mainly for Municipality roads, respectively.

There are following manuals and specifications for traffic safety adopted by the DOH.

- Traffic Sign
- Marking or Painting
- Guard Rail
- Street Lighting
- Traffic Signal
- Pedestrian Crossing Facility (Bridge, Signal)
- Guide Post

The existing DOH standards will be reviewed and if found unsatisfactory for traffic safety stand point of view, the Team will propose necessary modification thereon.

Table 10 List of Proposed Site for the Before and After Study

Improvement Type	Number of locations
1. Surface Levelling	21
2. Surface Improvement	35
3. Geometric Improvement	8
4. Seal Coat	30
5. Guard Rail	5
6. Shoulder Improvement	7
7. Lighting & Signalize	3
8. Signalize	1
9. Lighting	2
10. Traffic Sign & Guide Post	1

OTHERS

In this section, the schedule of further study for following study items are described.

Regarding to the progress of the Study, some study items are behind the original schedule due to the delay of data collections. However, the Team considers that these delay can be recovered and every working item can be completed within the frame work of original study schedule.

1) Identification Method

a. Collection and arrangement of accident data

To collect LPs' accident data from 6 Chang Wats and to make necessary arrangement.

b. Data Analysis

To make analysis on accident data to find out elements highly related to traffic accident such as traffic volume and road conditions.

c. Identification Method

To develop identification method based on the methodology of "Accident Index Ordering Diagram Method" and "Accident Index Traffic Volume Diagram Method". The contents of these two method are described in Figure-10 and 11.

2) Safety Plan

To prepare safety plans for selected sections of approximately 30 Km length in all and to carry out topographic survey for the selected sections.

3) Experiment Works

a. Selection of experiment work site

To select sites at which experiment works will be executed. The total road length of possible experiment work sites will be around 10 km.

b. Design and Cost Estimation

To complete safety plans for experiment work sites and to estimate cost for implementation of safety plans.

c. Implementation

Of expected safety plan, to implement the "Zebra Marking" plan. The other plans will be executed in the early next year.

d. Before and After survey

To conduct, as part of Before and After survey , Before-survey at experiment work sites.

4. Technical Standard

To review existing DOH standards and to prepare for revisions on these standards if found necessary.

The study schedule until the end of December are shown in Table-12.

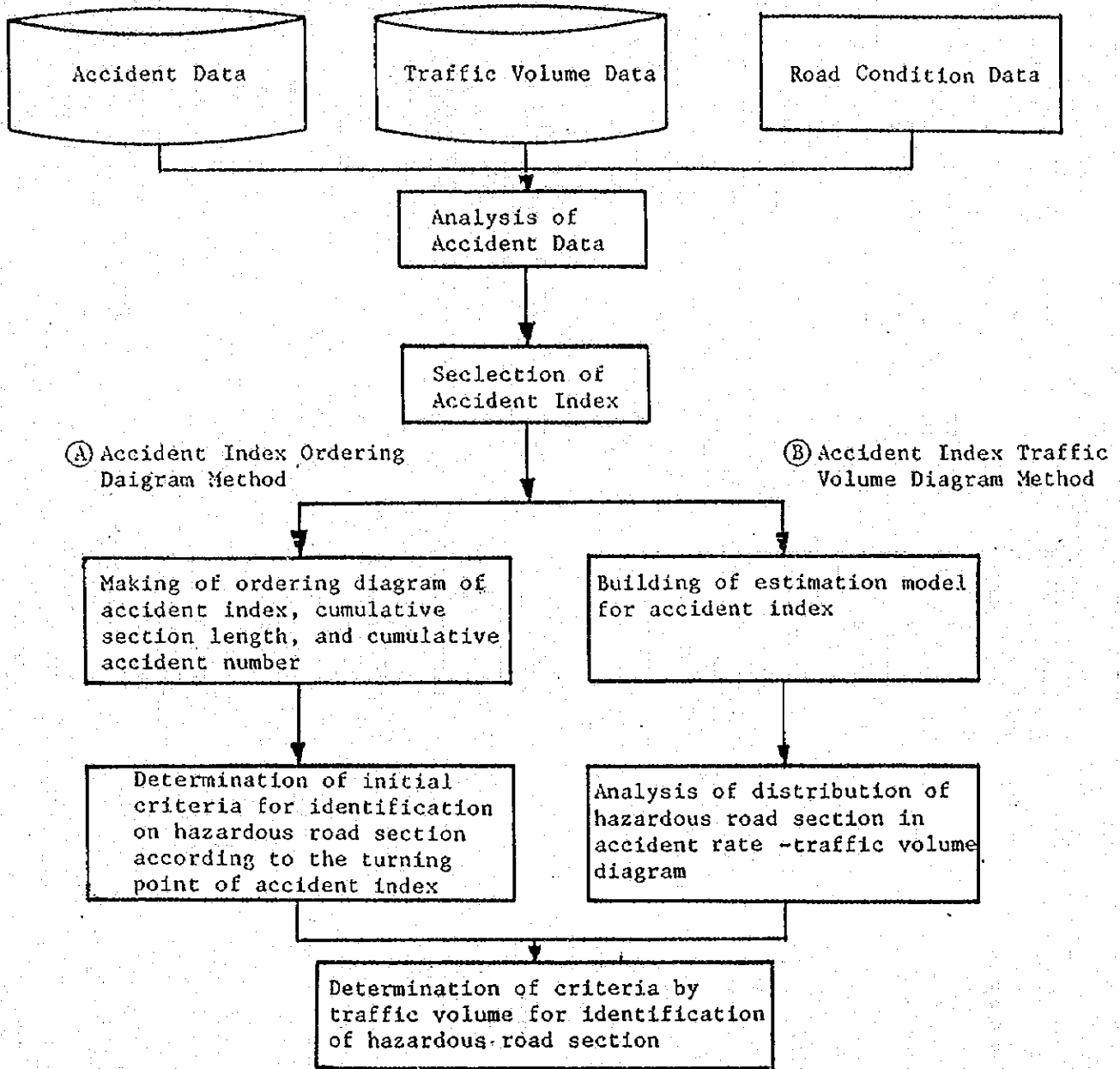


Figure-10 Tentative Procedure for Identification Method (I)

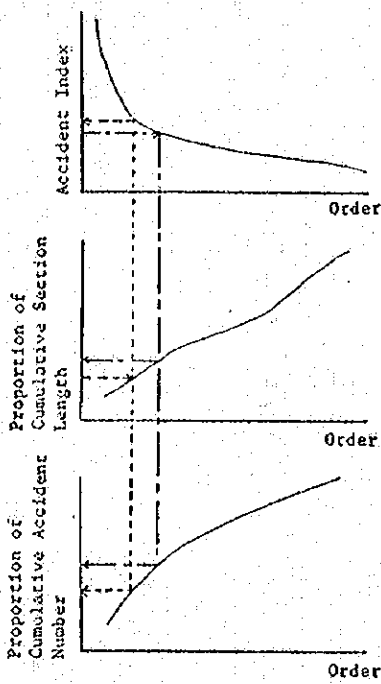
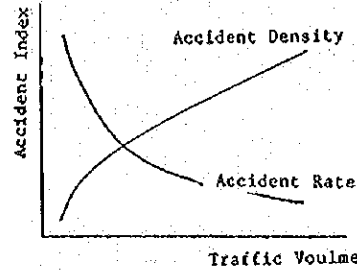
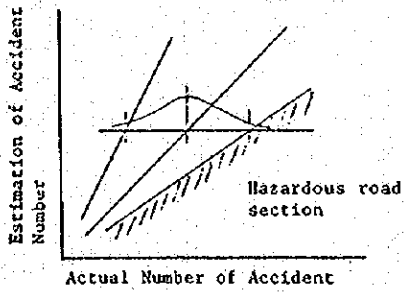
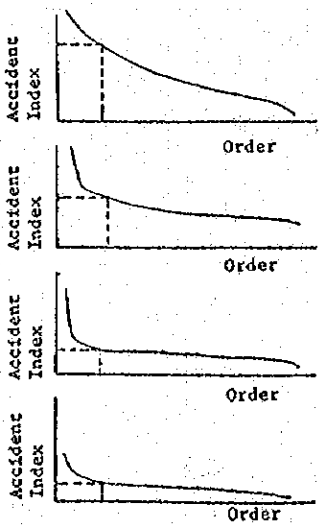
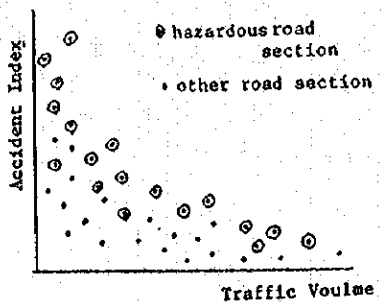
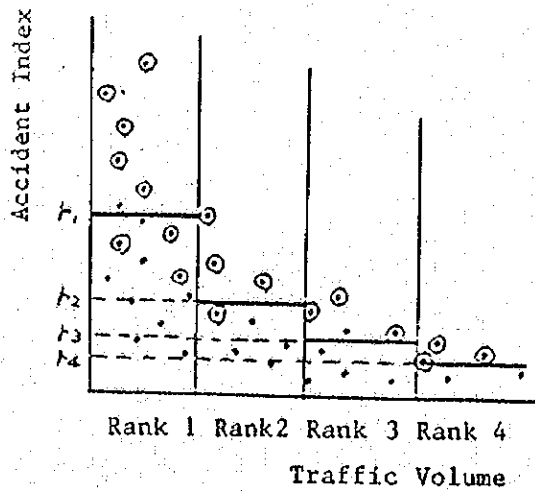
Accident Index Ordering Diagram Method	Accident Index-Traffic Volume Diagram Method
<p>1) Making of ordering diagram of accident index, cumulative section length and cumulative accident number</p>  <p>Note : Making by Traffic Volume Rank (4 - 5 Ranks)</p>	<p>1-1) Making of estimation model for accident index</p>  <p>1-2) Identification of hazardous road section according to the model</p> 
<p>2) Determination of initial criteria by traffic volume rank for identification of hazardous road section according to the turning point of accident index</p> 	<p>2) Analysis of distribution of hazardous road section in accident rate-traffic volume diagram</p>  <p>(continued)</p>

Figure-11-(1) Tentative Procedure for Identification Method (II)

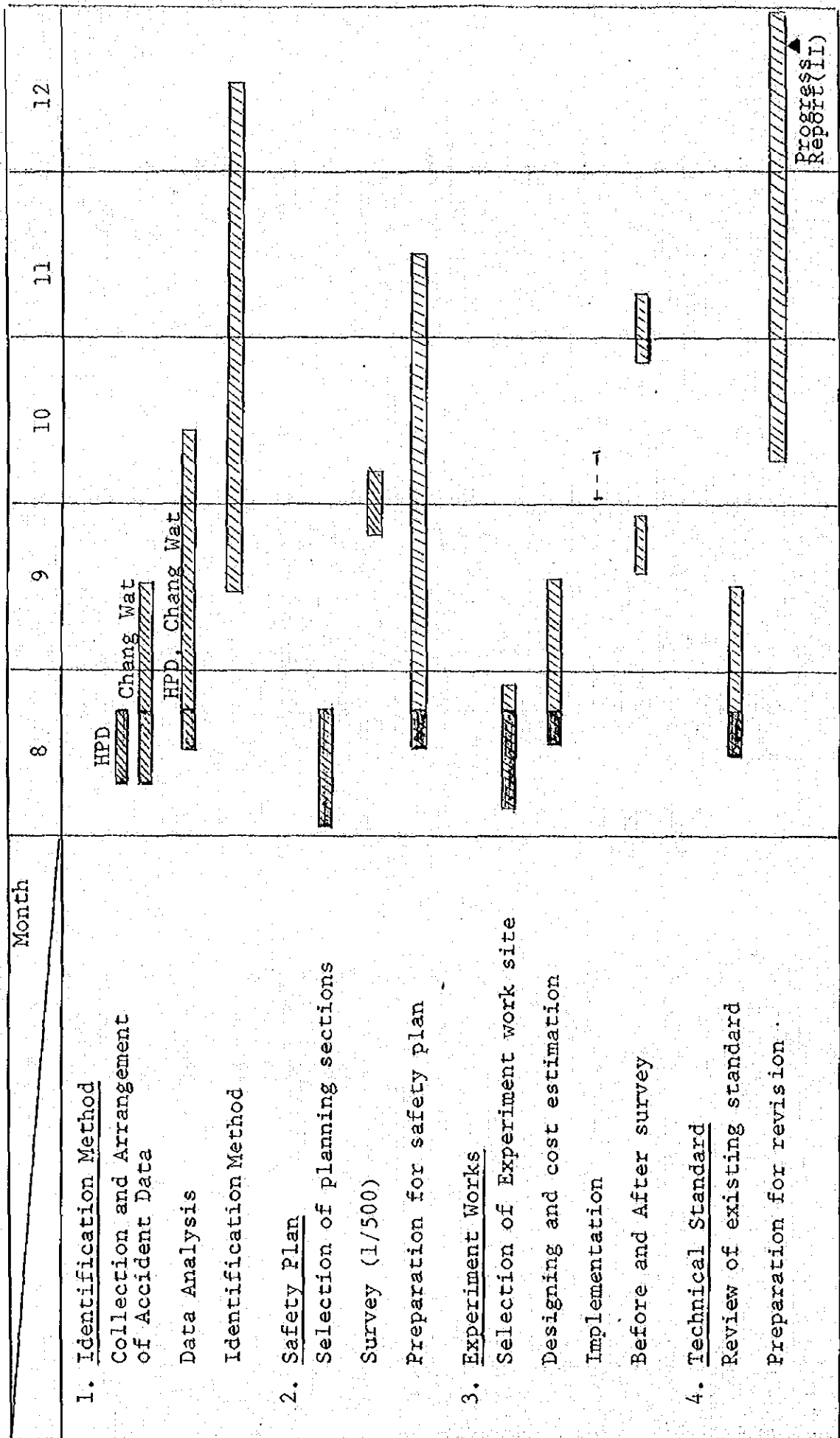
- 3) Determination of criteria by traffic volume rank for identification of hazardous road sections.



Criteria for identification of hazardous road section are determined by each traffic volume rank after the confirmation of propriety of criteria under statistical model.

Figure-11-(2) Tentative Procedure for Identification Method (II)

Figure -i2 Study Schedule



APPENDIX A

Experiment Road (R1, R2)

NO.	ROUTE NO.	CONTROL SECTION NO.	CONTROL SECTION		STUDIED SECTION		NUMBER OF LANE	SCALE OF PLAN	CONDITION OF ACCIDENT DATA				
			TERMINI	LENGTH KM.	TERMINI	LENGTH KM.			LOCAL POLICE	HIGHWAY POLICE	COLLISION DIAGRAM		
R1	1	0100	RURAL AREA		-do-	-do-	4	1:2,000	-	○	○		
			LAKSI-RANGSIT	15.039	-do-	15.039						-	○
			16+441-31+480		-do-								
			RANGSIT-KM.32-615	1.135	-do-	1.135						-	○
			31+480-32+615		-do-								
			KM.32+615-RANG PA-IN	18.785	-do-	18.785						-	○
			32+615-51+400		-do-								
			BANG PA-IN - WANG NOI	13.751	-do-	13.751						-	○
			51+400-65+151		-do-								
			WANG NOI-KM.65+951	0.800	-do-	0.800						-	○
65+151-65+951		-do-											
R2	323	0302	RURAL AREA		-do-	-do-	4	1:2,000	○	○	○		
			KM.65+951-SARABURI	40.680	-do-	40.680						○	
			65+951-107+950		-do-								
				90.190	-do-	90.190							
			SAM YAK KRACHAB-JCT. TO PHRATHAEN DONG RANG	24.973	-do-	24.973						-	○
			72+180-100+927		-do-								
			BAN BONG BY PASS	3.196	-do-	3.196						-	○
			76+726-79+922		-do-								
			JCT. TO PHRATHAEN DONG RANG-KANCHANABURI	24.863	-do-	24.863						○	
			100+927-125+792		-do-								
	53.022	-do-	53.022										

Experiment Road (R3, R4)

NO.	ROUTE NO.	CONTROL SECTION NO.	CONTROL SECTION		LENGTH KM.	STUDIED SECTION		NUMBER OF LANE	SCALE OF PLAN	CONDITION OF ACCIDENT DATA	
			TERMINI	TERMINI		TERMINI	LENGTH KM.			LOCAL POLICE	HIGHWAY POLICE
R3	304	0201	JCT. TO MIN BURI-KM. 17+800 17+398-17+800	0.402	-do-	-do-	0.402	2	1:1,000	-	○
R4	32	0401	BANG PA-IN - KM. 68+000 51+315-68+000	16.685	-do-	-do-	16.685	2	1:2,000	-	○
0500	JCT. TO AYUTTAYA-JCT. TO ANG THONG 71+140-101+600	31.026	-do-	-do-	31.026	2	1:2,000	-	○		

Experiment Road (U1-U7)

NO.	ROUTE NO.	CONTROL SECTION NO.	CONTROL SECTION		STUDIED SECTION		NUMBER OF LANE	SCALE OF PLAN	CONDITION OF ACCIDENT DATA		
			TERMINI	LENGTH KM.	TERMINI	LENGTH KM.			LOCAL POLICE	HIGHWAY POLICE	COLLISION DIAGRAM
U1	301	0100	(JERAN) BANGKOK TAOPUN - TIGANON 3+617-5+200	1,583	-do- -do-	1,583	4	1:250	N.A.	—	N.A.
U2	302	0100	KASITSANT-KHAERAI 0+000-6+360	6,360	-do- -do-	6,360	4	1:500	N.A.	—	N.A.
U3	306	0200	PHARAH 6 BRIDGE - BANG PHUN 3+450-3+425R-3+450AR-0+000-27+724	31,174	PHARAH 6 BRIDGE-JCT TO PAKKREI 3+450-3+425R-3+450-0+000-13+583	17,283	4	1:1,000	N.A.	—	N.A.
U4	336	0100	LAT PHRAO-BANG KAPI - 0+000-10+753	10,753	-do- -do-	10,753	4	1:250	N.A.	—	N.A.
U5	3113	0100	SAM RONG-THA HIN 0+000-6+400	6,400	-do- -do-	6,400	4	1:500	N.A.	—	N.A.
U6	11	1602	CHIANG MAI KM. 85+452-CHIANG MAI 85+452-99+662	14,210	KM. 88+952 - CHIANG MAI 88+952-99+662	10,710	2	1:2,000	○	—	○
U7	1141	0100	ROUTE NO. 11-ROUTE NO.1005 0+000-7+437	7,437	-do- -do-	7,437	2	1:1,000	○	—	○

Experiment Road (U8, U9)

NO.	ROUTE NO.	CONTROL SECTION NO.	CONTROL SECTION		LENGTH KM.	STUDIED SECTION		NUMBER OF LANE	SCALE OF PLAN	CONDITION OF ACCIDENT DATA	
			TERMINI	TERMINI		TERMINI	TERMINI			LOCAL POLICE	HIWAY POLICE
U8	2	403	NAKHON RATCHASIMA JCT. TO KABIN BURI-NAKHON 248+112-255+925 RATCHASIMA	7.813	7.813	-do-	2	1:1,000	○	-	○
						-do-					
						-do-					
U8	501	NAKHON RATCHASIMA-KM.0-400 0+000-0+400	0.400	0.400	-do-	2	1:1,000	○	-	○	
					-do-						
					-do-						
U8	502	KM.0+400-JCT. TO PHIMAI 0+400-49+100	48.700	7.294 7.694	2	1:1,000	○	-	-	○	
											KM.0+400-10 HO
											0+400-7+694
U9	205	NAKHON RATCHASIMA-KM.0+400 0+000-0+400	0.400	0.400	2(4)	1:1,000	○	-	-	○	
											-do-
											-do-
U9	0801	KM.0+400-NON THAI 0+400-6+762KM.-396+788AH-375 +404	27.436	6.362 6.762	2(4)	1:1,000	○	-	-	○	
											KM.0+400-10 HO
											0+400-6+762

APPENDIX B

Traffic Volumes on Experiment Road (1978, Rural Area)

NO.	ROUTE NO.	CON-TROL SEC-TION	TERMINI	STA-TION TYPE CODE	STATION KM.	AVERAGE DAILY TRAFFIC BY TYPE										% HEAVY VEHI-CLE	BI+TRI CYCLE	MOTON CYCLE	REFERENCE MAP
						CAR& TAXI	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	TOTAL							
R1	1	0100	BANGKOK-RANGSIT	-	24+685	3645	670	809	1280	417	362	7183	22	N.A	N.A				
			FANGSIT-WANGNOI	-	35+000	9769	2939	2751	2252	2389	4369	24474	39	N.A	N.A				
			RANGSIT-WANGNOI	-	60+800	4855	321	1280	534	619	3625	11240	49	N.A	N.A				
			WANGNOI-SARABURI	-	67+400	3151	433	1198	2143	635	3211	10781	47	N.A	N.A				
			WANGNOI-SARABURI	-	102+200	3121	320	1118	2637	1326	3461	11983	49	N.A	N.A				
R2	323	0101	BAN PONG-KANCHANABURI	-	80+264	1780	497	396	3560	682	2973	9888	41	N.A	N.A				
			BAN PONG BY PASS	-	76+600	1729	242	220	2509	490	2409	7686	42	N.A	N.A				
			MINBURI-CHACHOENSAO	-	47+000	1308	197	203	392	305	439	2842	33	N.A	N.A				
R3	304	0202	MINBURI-CHACHOENSAO	-	73+000	2384	315	289	654	837	861	5340	37	N.A	N.A				
			BANGPALIN-AYUTHAYA	-	55+850	4104	779	958	759	656	1068	8524	32	N.A	N.A				
R4	0200	0200	AYUTHAYA-ANGTHONG	-	96+800	2673	595	746	991	675	947	6653	36	N.A	N.A				

Traffic Volumes on Experiment Road (1979 , Rural Area)

No.	ROUTE NO.	CON- TROL SEC- TION	TERMINI	STA- TION TYPE CODE	STA- TION KM.	AVERAGE DAILY TRAFFIC BY TYPE							% HEAVY VEHI- CLE	MOTOR CYCLE	REFERENCE MAP	
						CARS TAXI	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	TOTAL				
R1	1	0100	BANGKOK-RANGSIT	-	24+685	8386	1800	2566	1308	1715	1359	17214	32.76	N.A	2259	
			BANGKOK-WANGNOI	-	35+000	9727	4274	2987	2548	2823	5587	27946	40.78	N.A	1110	
			RANGSIT-WANGNOI	-	60+800	4781	515	1451	663	985	4210	12605	52.73	N.A	364	
			WANGNOI-SARABURI	-	67+400	3287	302	1461	2587	562	4235	12434	50.33	N.A	683	
			WANGNOI-SARABURI	-	102+200	3475	267	1477	3217	1321	4591	14348	51.50	N.A	1448	
R2	323	0101	BANFONG-KANCHANABURI	-	80+264	1226	383	337	2248	602	2035	6831	43.54	N.A	1725	
			BANFONG-KANCHANABURI	-	95+200	909	420	249	2070	481	2392	6521	47.87	N.A	2115	
			BANFONG BY PASS	-	76+600	1230	231	206	2341	467	2608	7083	46.32	N.A	1580	
			BANFONG-KANCHANABURI	-	108+300	945	201	326	1728	385	838	4423	35.02	N.A	1142	
			BANFONG-KANCHANABURI	-	116+200	875	384	331	1838	709	8	4145	25.28	N.A	1026	
R3	304	01	MINBURI-CHACHOENGSAO	-	47+000	852	281	324	354	617	2706	45.09	N.A	109		
			MINBURI-CHACHOENGSAO	-	73+000	1580	522	427	433	1300	491	4753	46.67	N.A	166	
R4	32	0101	BANG PA IN-AYUTHAY	-	55+850	3945	800	1079	669	657	1368	8518	36.42	N.A	352	
			AYUTHAYA-ANGTHONG	-	96+800	2271	511	799	965	629	1143	6309	40.79	N.A	298	

Traffic Volumes on Experiment Road (1980, Rural Area)

No.	ROUTE NO.	CON-TROL SECTION	TERMINI	STA-TION TYPE CODE	STATION KM.	AVERAGE DAILY TRAFFIC BY TYPE							% HEAVY VEHL-CLE	BI+TRI MOTOR CYCLE	REFERENCE MAP
						CAR& TAXI	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	TOTAL			
R1	1	0100	BANGKOK-RANGSIT	-	24+685	6242	924	1537	782	1080	629	11194	29.00	N.A.	1348
			RANGSIT-KLONG LUANG	-	35+000	8503	3724	3074	2344	2978	4375	25296	42.00	N.A.	1371
			KLONG LUANG-WANGNOI	-	50+800	3156	372	1343	810	892	3636	10209	57.51	N.A.	437
			WANGNOI-NONG KHAE	-	67+900	2208	557	1261	1160	872	3578	9636	59.27	N.A.	648
			NONG KHAE	-	103+200	3013	275	1410	2848	1163	4091	12820	51.98	N.A.	1624
R2	323	0101	BAN PONG-THAMAKA	-	80+264	1746	525	373	3546	671	2579	9440	28.38	N.A.	3384
			BAN PONG-THAMAKA	-	95+430	1059	330	293	2799	514	2694	7689	45.53	N.A.	2418
			BAN PONG BY PASS	-	76+600	1616	276	231	2421	522	2381	7448	42.09	N.A.	1853
R3	304	0200	THAMAKA-KANCHANABURI	-	108+300	1054	209	313	1607	319	918	4420	35.07	N.A.	803
			BAN KHEN-MIN BURI	-	47+000	1974	250	377	680	386	624	4291	32.32	N.A.	214
			MIN BURI-CHACHOENGSAO	-	73+000	1994	372	304	789	378	621	4460	29.22	N.A.	333
R4	32	0100	BANGPAIN-AYUTHAYA	-	55+850	4139	715	1320	626	778	1366	8964	38.64	N.A.	438
			AYUTHAYA-ANG THONG	-	96+800	1951	447	878	1099	659	1077	6111	42.78	N.A.	308

Traffic Volumes on Experiment Road (1981, Rural Area)

NO	ROUTE NO.	CONTROL SECTION	TERMINI	STATION TYPE CODE	STATION KM.	AVERAGE DAILY TRAFFIC BY TYPE								% HEAVY VEHICULE	BICYCLE	MOTOR CYCLE	REFERENCE MAP
						CAR TAXI	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	TOTAL					
R1	1	0100	LAK SI-SA PHAN MAI	20	19+100	9218	1468	1647	3657	909	997	17896	19.85	340	3622		
			SA PHAN MAI-RANG SIT	20	24+685	7694	730	1408	1600	1026	876	13334	24.82	1393	2732		
			RANG SIT-BANG PA IN	20	35+000	9030	3922	3251	2692	2755	5352	27002	42.06	240	1500		
			BANG PA IN-WANG NOI	20	60+800	3510	327	1314	738	884	3729	10502	56.43	14	435		
			WANG NOI-NONG KHAE	20	67+900	2935	515	1226	1009	2437	1580	9702	54.04	108	567		
			NONG KHAE-SAPAURI	20	102+000	3120	233	1486	2891	982	4443	13158	52.54	309	1723		
R2	323	0101	BANG PONG-KANCHANABURI	20	80+264	1980	467	304	3432	690	2633	9506	38.15	443	3111		
			BY PASS BAN PONG	20	76+600	1205	103	55	1508	537	2078	5486	48.67	129	1212		
			THA MA KA-KANCHANABURI	20	100+300	822	199	331	1389	311	972	4024	40.10	73	837		
			TA RUA-KANCHANABURI	40	116+800	1002	291	306	2121	2671	500	6891	50.45	124	1757		
R3	304	0202	MINBURI-CHACHOENGSAO	20	47+000	1924	216	418	705	394	558	4215	32.50	15	215		
			MINBURI-CHACHOENGSAO	20	73+000	1674	432	347	1189	783	215	4640	28.99	50	409		
R4	32	0100	BANG PA IN-AYUTTHAYA	20	55+850	3612	791	1182	897	749	1442	8673	38.89	9	435		
			AYUTTHAYA-ANG THONG	20	96+800	2190	404	857	923	660	1244	6278	43.97	53	369		

Traffic Volumes on Experiment Road (1978, Urban Area)

U	ROUTE NO.	CONTROL SECTION	TERMINI	STATION TYPE CODE	STATION KM.	AVERAGE DAILY TRAFFIC BY TYPE								% HEAVY VEHICLE	BI-CYCLE	MOTOR CYCLE	REFERENCE MAP
						CARS TAXI	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	TOTAL					
U1	301	0100	TAOPUN-TIMANON	-	5+175	10052	1091	1218	2434	1760	1204	17759	-	-	24		
U2	302	0100	KASSETSART-KHAERAI	-	0+050	10977	1180	1058	1305	1100	357	15977	-	-	16		
U3	306	0200	PHARAM VI BRIDGE-BANG PHUN	-	17+005	6036	493	1495	1798	872	31	10825	-	-	23		
U4	336	0100	LAT PHRAO-BANG KAPI	-	5+930	19931	1838	2068	1780	2034	74	27725	-	-	15		
U5	3113	0100	SAM RONG-THA HIN	-	0+050	13116	4232	975	4192	4232	2853	29600	-	-	27		
U6	11	1601	LAMPHUN-CHIANGMAI	-	80+850	1192	300	175	1141	441	282	3531	-	-	26		
U7	1141	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
U8	2	0402	SIKHUI-NAKHON RATCHASIMA(C)	-	223+500	1193	546	830	734	921	1780	6004	-	-	59		
		0502	NAKHON RATCHASIMA-PHIMAI	-	0+500	1275	480	698	1540	653	557	5203	-	-	37		
		0502	NAKHON RATCHASIMA-PHIMAI	-	6+300	1093	560	691	1086	564	559	4553	-	-	40		
U9	205	0800	NONTHAI-NAKHON RATCHASIMA	-	386+000	466	234	239	511	267	129	1846	-	-	34		

Traffic Volumes on Experiment Road (1979, Urban Area)

NO.	ROUTE NO.	CONTROL SECTION	TERMINI	STATION TYPE CODE	STATION KM.	AVERAGE DAILY TRAFFIC BY TYPE							% HEAVY VEHICLE	BI+TRI CYCLE	MOTOR CYCLE	REFERENCE MAP
						CAR & TAXI	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	TOTAL				
U1	301	0100	TAOPUN-TIWANON	-	15+175	7780	519	992	491	284	95	10161	-	-	1143	
U2	302	0100	KASETSAT-KHAERAI	-	0+050	9980	1502	1301	1244	1112	254	5393	-	-	2634	
U3	306	0200	PHARAM VI BRIDGE-BANGPHUN	-	17+005	6432	580	743	724	508	356	9343	-	-	1131	
U4	336	0100	LATHRAO-BANG KAPI	-	5+930	18735	1879	2164	1645	1929	125	26477	-	-	2237	
U5	3113	0100	SAM RONG-THA HIN	-	0+050	16017	5400	1143	6160	5957	4000	38677	-	-	5172	
U6	11	1601	LAMPHUN-CHIANGMAI	-	80+850	1095	284	153	1263	484	316	3595	-	-	840	
U7	1141	0100	-	-	-	-	-	-	-	-	-	-	-	-	-	
U8	2	0402	SIKHUU-NAKHON RATCHASIMA(1)	-	223+300	1085	314	924	941	758	2006	6028	-	-	270	
		0502	NAKHON RATCHASIMA-PHITHAI	-	0+500	1309	638	751	1243	798	678	5417	-	-	1138	
		0502	NAKHON RATCHASIMA-PHITHAI	-	6+300	841	529	704	1216	716	605	4611	-	-	733	
U9	205	0800	NONTHAI-NAKHON RATCHASIMA	-	386+000	456	229	202	493	192	87	1659	-	-	411	

Traffic Volumes on Experiment Road (1980, Urban Area)

ROUTE NO.	CONTROL SECTION	TERMINI	STATION TYPE CODE	STATION KM.	AVERAGE DAILY TRAFFIC BY TYPE							% HEAVY VEHICLE	BI-TRICYCLE	MOTOR CYCLE	REFERENCE MAP	
					CAR & TAXI	LIGHT BUS	HEAVY BUS	TRUCK	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK					TOTAL
U1	301	0100	TAOPUN-TIWANON	-	5+175	7097	541	1351	1843	961	198	11991	-	-	1745	
U2	302	0100	KASETSAT-KHAERAI	-	6+345	11547	1102	1574	2857	2995	1375	21450	-	-	3126	
U3	306	0200	KHAERAI-PAK KRET	-	12+850	3542	1182	1313	2516	2827	1203	12583	-	-	1377	
U4	336	0100	LATPHRAO-BANG KAPI	-	5+930	25285	666	2267	3453	1673	453	33797	-	-	6383	
U5	3113	0100	SAMRONG-THAHIN	-	0+500	9826	2503	788	3463	4390	368	21338	-	-	3309	
U6	11	1601	LAMPHUN-CHIANG MAI	-	80+850	960	185	164	1231	377	260	3177	-	-	984	
U7	1141	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
U8	2	0402	SIKHUI-NAKHON RATCHASIMA(CD)	-	223+300	988	364	870	1006	752	1972	5953	-	-	429	
		0502	NAKHON RATCHASIMA-PHUMAI	-	6+300	572	330	578	1098	466	458	3502	-	-	521	
U9	205	0800	NONTHAI-NAKHON RATCHASIMA	-	386+000	362	137	201	640	223	98	1661	-	-	439	

Traffic Volumes on Experiment Road (1981, Urban Area)

NO. ROUTE	CON- TROL NO. SEC- TION	TERMINI	STA- TION TYPE CODE	STATION KM.	AVERAGE DAILY TRAFFIC BY TYPE							% HEAVY VEHI- CLE	MOTOR CYCLE	REFERENCE MAP	
					CARS TAXI	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	TOTAL				
U 1	301	0100	TAO PUN-TI WA NON	20	5+175	6972	910	1218	1911	1050	312	12373	20.85	592	1961
U 2	302	0100	KASETSART-KHAE KAI	20	6+345	9691	833	1405	3423	2451	835	18638	25.16	478	3103
U 3	306	0200	PHA RAM VI BRIDG-BANG PHUM	20	17+005	3824	1150	744	1566	2074	1365	10723	39.06	151	862
U 4	336	0100	LAT PHRAO-BANG KA PI	20	5+980	17385	830	2032	3687	1098	236	25270	13.32	337	4237
U 5	3113	0100	SAM RONG-THAHIN	20	0+500	12283	2781	1261	4565	3712	2672	17274	28.04	0	4449
U 6	11	1601	DOIYI-ACCESS TO SANKAMPHAN	20	80+850	1097	205	174	1385	363	307	3531	23.90	278	1199
U 7	1141	0100	ROUTE NO.11-ROUTE NO.1005	21	7+000	1079	173	74	927	349	174	2775	21.51	455	1714
U 8	2	0402	SIRHUI-NAKHONRATCHASIMA	10	223+300	914	413	898	820	754	2119	5918	63.72	227	387
		0502	NAKHONRATCHASIMA-PHINAI	20	10+700	694	286	703	1055	497	649	3884	47.60	78	609
U 9	205	0800	NONTHAI-NAKHONRATCHASIMA	20	386+000	525	135	199	437	223	103	1622	32.34	42	475

