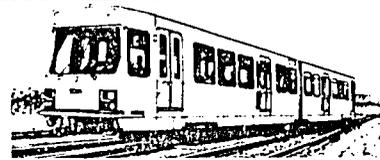
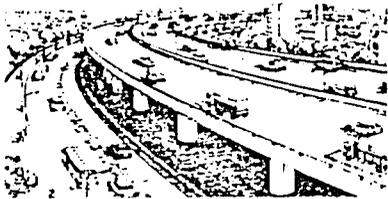


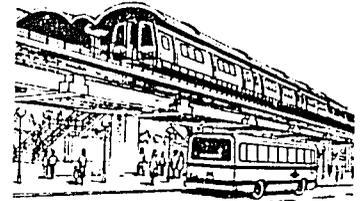
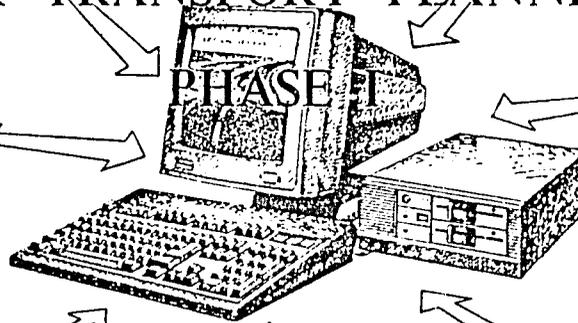
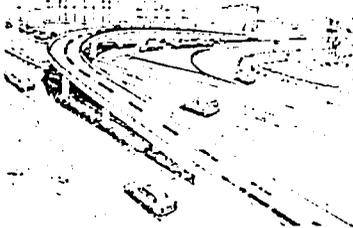


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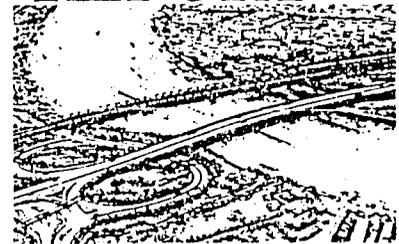
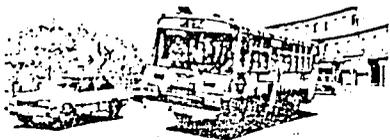
KINGDOM OF THAILAND  
DEPARTMENT OF TECHNICAL AND ECONOMIC COOPERATION  
BANGKOK METROPOLITAN ADMINISTRATION  
PUBLIC WORKS DEPARTMENT



BANGKOK TRANSPORT PLANNING UNIT



EXECUTIVE SUMMARY REPORT



Submitted By



WILBUR SMITH ASSOCIATES

In Association With

*AEC Asian Engineering Consultants Corp., Ltd.*



KINGDOM OF THAILAND  
DEPARTMENT OF TECHNICAL AND ECONOMIC COOPERATION  
BANGKOK METROPOLITAN ADMINISTRATION  
PUBLIC WORKS DEPARTMENT

BANGKOK TRANSPORT PLANNING UNIT  
PHASE I

CONTRACT NUMBERS : 493-0341-71099, 493-0341-71100

**EXECUTIVE SUMMARY REPORT**

JUNE 1991

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In Association With

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# BANGKOK TRANSPORT PLANNING UNIT (BTPU) - PHASE I

## PREFACE

Bangkok, one of the world's largest and most rapidly growing metropolises, is experiencing rapid growth in the demand for transport services. To meet this demand for transport, several very large transportation system improvement projects are in the planning and implementation stages. It is inevitable that additional projects and, perhaps, changes in transport demand management policies, will be examined in coming years to provide a better quality of transport for Bangkok residents.

The process of evaluating, planning and implementing improvements to Bangkok's transport system is the responsibility of several agencies and departments within the Bangkok and Thailand government. While this multi agency approach provides a means for a range of resources to be brought to bear on Bangkok's transport problems, it does present difficulties in coordinating the activities of all agencies involved.

These problems were recognized by the Thai government and the "Bangkok Transport Planning Unit" - Phase I was created as a first step towards easing communication and coordination between the agencies involved and to eliminate duplication of effort resulting from uncoordinated transport planning. It should be strongly stated that the purpose of the Bangkok Transport Planning Unit is not to take over the project planning roles currently being performed by existing agencies. Rather, BTPU is intended to function as an unbiased technical resource to support these agencies and to provide a forum for communication and coordination between them.

The following pages contain a summary of the reasons for undertaking the BTPU project, the major work accomplishments, and the steps required to continue the work started in Phase I. A more detailed description of project work activities is contained in the project documents which are available through the Bangkok Metropolitan Administration, Department of Public Works.

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# 1. THE PROJECT

## 1.1 WHAT IS BTPU?

BTPU stands for "Bangkok Transport Planning Unit". It is intended to be a technical support group whose mission is to assist Government agencies in the planning of transportation system improvements.

BTPU was conceived as being undertaken in two phases with the following responsibilities by phase:

Phase I - Develop data bases and transport models that can be used to more effectively plan transport system improvements. Train Thai Government staff in their use.

Phase II - Provide continuing technical, coordination and training services to Thai transport planning agencies. Refine and enhance the data bases and models developed during Phase I. Conduct comprehensive analyses of major projects, especially related to how they impact other proposed projects and the existing transport system.

The Phase I project was financed under a USAID grant through the Department of Technical and Economic Cooperation (DTEC) of the Royal Thai Government. The Bangkok Metropolitan Administration (BMA), Department of Public works was designated as the executing agency.

A consultant team consisting of Wilbur Smith Associates (WSA) of the United States of America and Asian Engineering Consultants Corp., Ltd. (AEC) of Thailand was selected to carry out the BTPU-Phase I work program. They were assisted by staff seconded from the Bangkok Metropolitan Administration, the Office Of The National Development And Social Development Board and the Thailand University Community. The project was undertaken in accordance with contracts executed between DTEC, WSA and AEC.

## 1.2 WHY IS BTPU NEEDED?

In planning how BTPU should be organized a series of problems and anticipated responses to these problems was identified. They include the following:

- **Problem** - Prior planning transport projects in Bangkok used very different analysis procedures and data bases. Therefore, comparison of their findings was difficult or impossible.

**Solution** - Create a single technical unit to provide standardized analysis tools and data bases. Therefore, different study findings may be directly compared and evaluated.

- **Problem** - Coordination of work by different agencies is difficult. No formal or informal lines of communication exist for the exchange of information and opinions.

**Solution** - The technical unit, as an unbiased and technically skilled resource, would build a reputation for credibility. This could be used to encourage interagency participation in developing solutions to mutual problems. The physical presence of this technical unit would provide a means for communication and a forum where all sides could sit down and exchange their views.

- **Problem** - Most prior planning efforts were conducted by international consultants. At completion, the experience and knowledge gained during the project left Thailand.

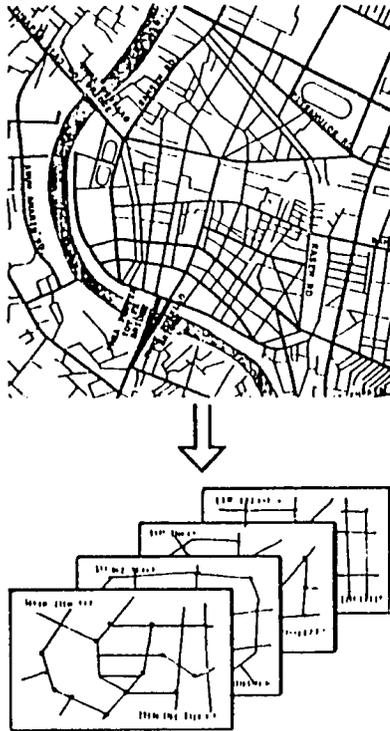
**Solution** - The technical unit would provide the organizational framework for developing and retaining transport system planning experience within the Thai Government.

- Problem - In the past, with several agencies planning different projects, it has been difficult to determine how different projects impact on one another and on the existing transportation system.

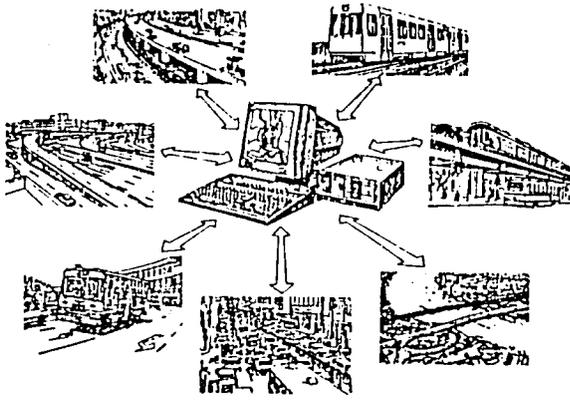
Solution - The technical unit will have the ability to conduct independent analysis of inter-project impacts and provide previously unavailable information to Thai Government decision makers.

### 1.3 OBJECTIVES

In recognizing the problems and to resolve those problems, BTPU was created and was assigned the following objectives:

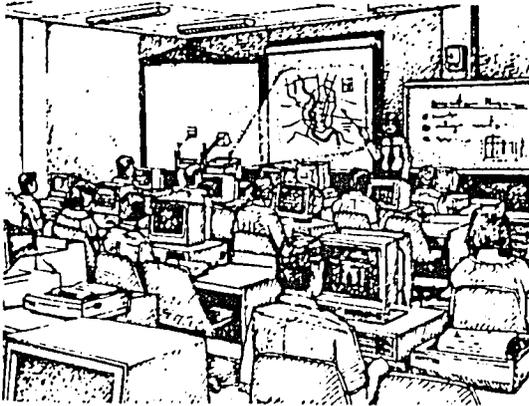


1. Set in place the computerized demographic and transport system data bases required for the evaluation of proposed transport system improvements.



2. Set in place standardized computer models for estimating the usage of existing and proposed roadways and public transport services. These models are a basic tool used in the long range planning of transport improvements.

3. Acquaint the agencies involved in planning transport projects in Bangkok with the capabilities being provided by BTPU.



4. Train the agencies technical staff in the use of these data bases and transport demand estimation models.

5. Taking into account the experience gained during BTPU-Phase I, provide recommendations for how best to proceed with BTPU-Phase II (an ongoing technical resource to support all planners of transport system improvements in Bangkok).

#### 1.4 HOW WILL BTPU BENEFIT THAILAND?

BTPU has the potential for providing significant benefits for Thailand and particularly for Bangkok. With the continued support of Government and the agencies involved in planning Bangkok's transport system, these benefits include:

- Reduce Costs - BTPU will reduce duplication of effort between agencies (and their consultants) thereby reducing project planning costs.
- Improve Quality - BTPU will improve the quality (in terms of accuracy and types of information produced) of transport planning technical studies.
- Build Thai Experience - BTPU will provide day to day hands on experience to assigned staff as well as conduct specialized training programs.
- Create A Permanent Technical Resource - BTPU will be an ongoing, continuing resource to all Government agencies. Experience and information will be retained - not lost when consultant involvement is completed.
- Provide A Forum for Communication - BTPU will be an easily identified location where activities requiring actions by more than a single agency can be coordinated.
- Better Decisions - BTPU will provide more reliable, up to date information in an objective format. Better information always leads to improved decision making.
- Gain Public Confidence - BTPU will be a clear demonstration of Government's intention to take an objective, rational, unbiased and technically competent approach to solving Bangkok's transportation problems.
- Continuing of Planning - BTPU core staff will be aware of all prior ongoing and planned investigations. Again, this will allow coordination of effort and reduce duplication of work.

## 2. BTPU PHASE I - THE FIRST STEP

### 2.1 INTRODUCTION

Phase I was the first step in providing continuity and coordination of transport system planning for Bangkok. A modelling system is now in place that can be used to help planners structure a transport system that effectively meets Bangkok's needs.

The next two sections of this report describe in detail the model development and training activities undertaken in BTPU-Phase I.

The final chapter describes the steps necessary to continue the BTPU process and ensure that the accomplishments in Phase I are not lost.

The work flow diagram and work schedule overleaf illustrates the work program undertaken by BTPU-Phase I. This program consisted of:

1. Reviewing prior major model - The Short Term Urban Transport Review (STTR) completed in 1985 and The Study on Medium To Long Term Improvement/Management Plan of Road And Road Transport in Bangkok (SIMR) completed in 1989. Both of these projects included data base and travel demand modelling components that were potentially usable by BTPU.
2. Development of a data base to be undertaken as part of BTPU-Phase I. The content of this work was suggested by the review of prior modelling efforts.
3. Implementation of the transport modelling.
4. The training of Thai Government staff in their use and preparation of documents.

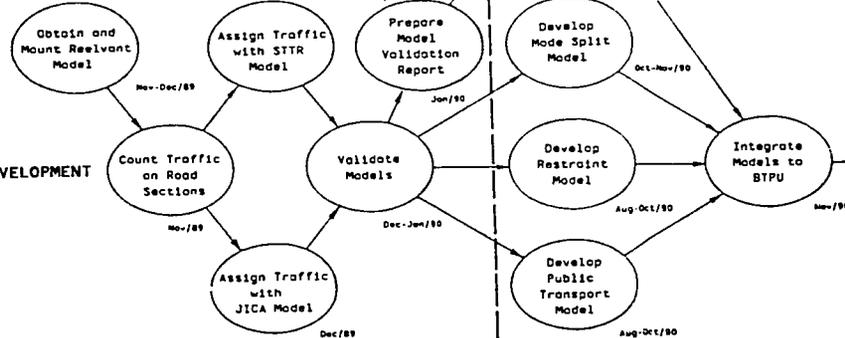
1. REVIEW PRIOR MODEL/DATA



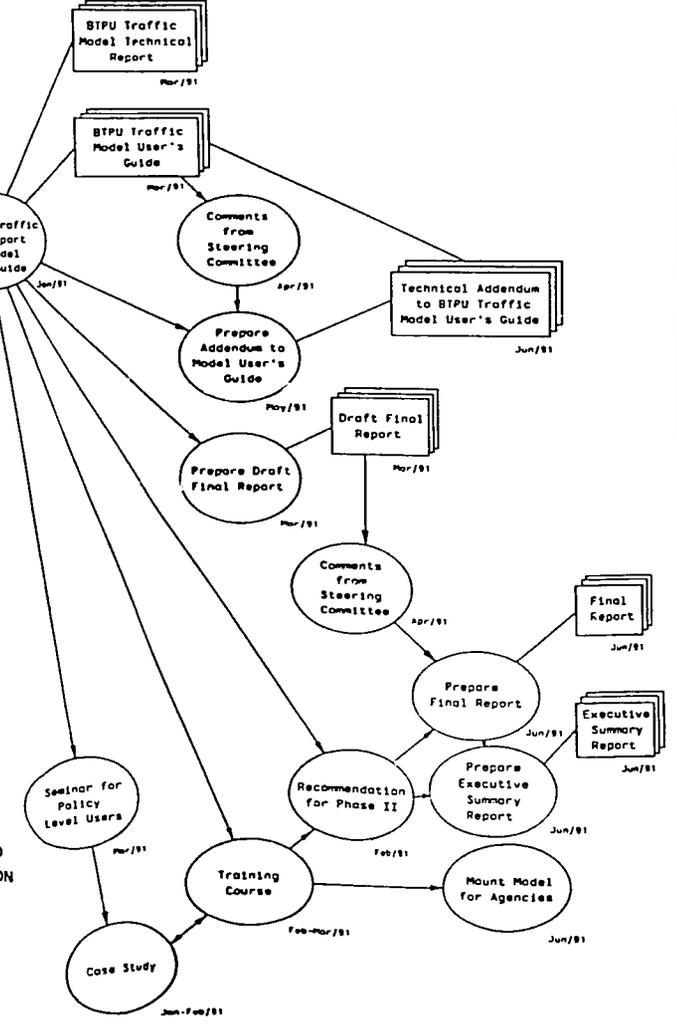
2. DATABASE DEVELOPMENT



3. MODEL DEVELOPMENT



4. TRAINING AND DOCUMENTATION



BANGKOK TRANSPORT PLANNING UNIT  
PHASE I

WORK FLOW DIAGRAM AND WORK SCHEDULE

As indicated in the diagram the project was initiated in November 1989. A suspension of BTPU work, from March to August 1990, was undertaken to better coordinate the activities of BTPU with another major project, the Seventh Plan Urban and Regional Transport (SPURT). This five-month suspension allowed several of the products of SPURT (most importantly, the computerized road network and population and employment inventories) to be used by BTPU, thereby making the most current data available to BTPU. A Draft Final Report for the project was submitted in March 1991. The Final Report and other project deliverables were submitted in June 1991.

## 2.2 THE TRANSPORT MODEL

In the early years of transport planning the only way to determine how many people would actually use a proposed new transport facility was to actually build the project and see what happened. Much reliance was placed on experience and judgement, rather than quantitative analysis in the planning of transport projects.

In the 1950's and early 1960's manual procedures were developed that were capable of quantifying the usage of existing and proposed new transport facilities in a logical, scientific manner. However, the mathematical computations involved were quite cumbersome and the use of these procedures was limited to very simple analysis.

In the late 1960's high speed electronic computers became available that were capable of performing the calculations required to analyze very complicated transport problems. Since then, transport modelling has been enhanced and improved to the point that most major cities use such models to evaluate proposed system improvements and decide which projects best meet each city's transport objectives.

These models consider the spatial distribution of residential and commercial development; the characteristics, location and carrying capacity of city's transportation network, and observed travel behaviour to produce forecasts of travel demand. Major evaluation measures produced by these models include:

- Road vehicle traffic volumes by location and period of the day
- Road volume/capacity ratios
- Reduction in road travel speed due to congestion
- Vehicle delay due to congestion
- System wide vehicle kilometer and vehicle hours of travel
- Public transport system line volumes and station volumes
- Public transport revenues
- Public transport vehicle requirements

These evaluation measures are first produced for a so-called "Do Nothing (No Improvements)" situation. They are then produced for different improvement alternatives and the benefits produced by the improvement calculated. These benefits may then be compared to the improvement costs to determine the most cost effective means of solving transportation problems.

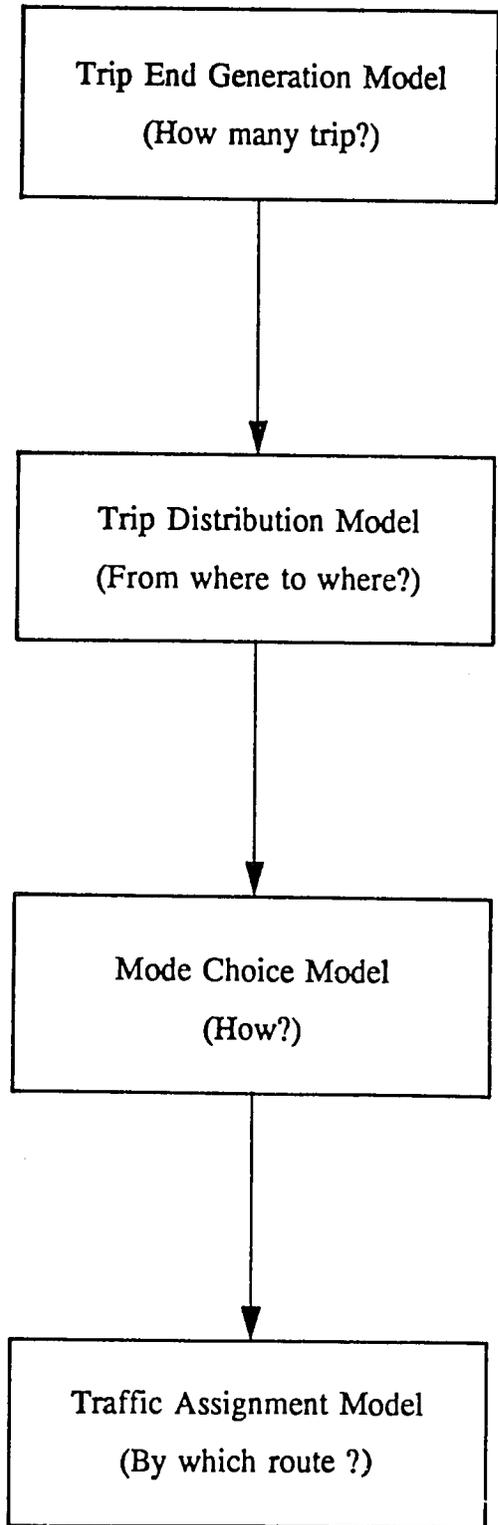
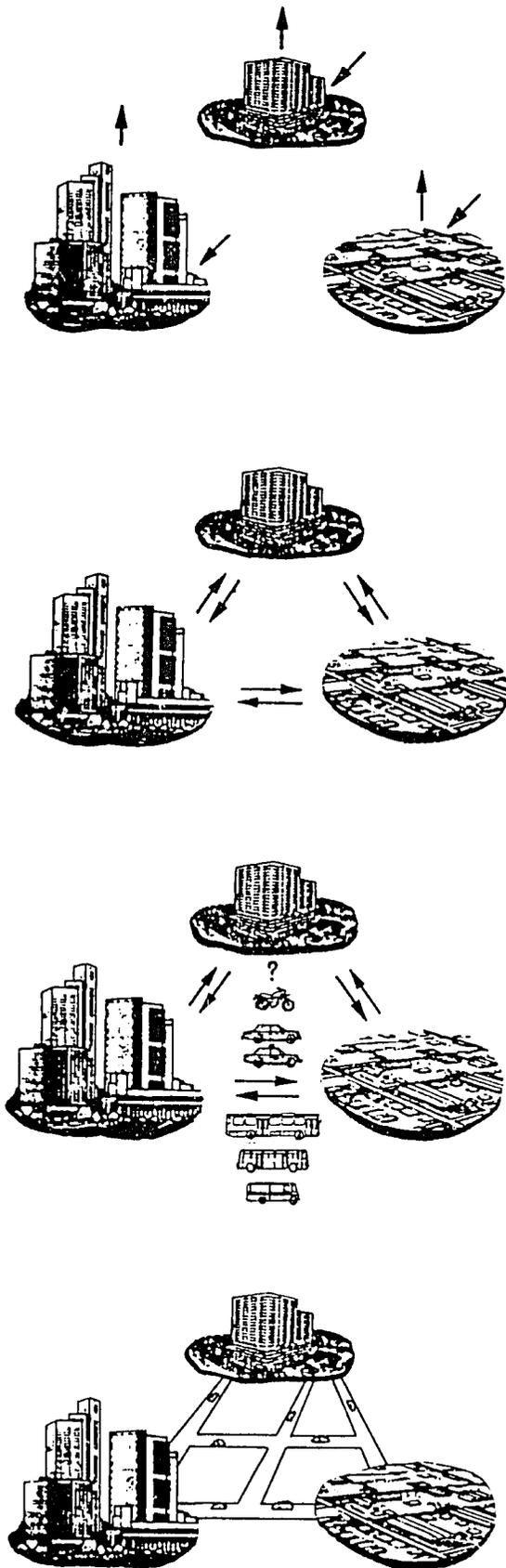
### 2.3 MODELLING APPROACH

In general, transport modelling is a scientific approach in identifying potential magnitude of transport demand over a specific period of time in the future. The transport model, one way or another, will address to the following key issues:

- How many trips will be there in the future in the study area? (or more particularly in the zone)
- From which zone are these trips generated and to which zone are these trips bound?
- Which mode of travel that these trips used?
- Which route will these trips take?

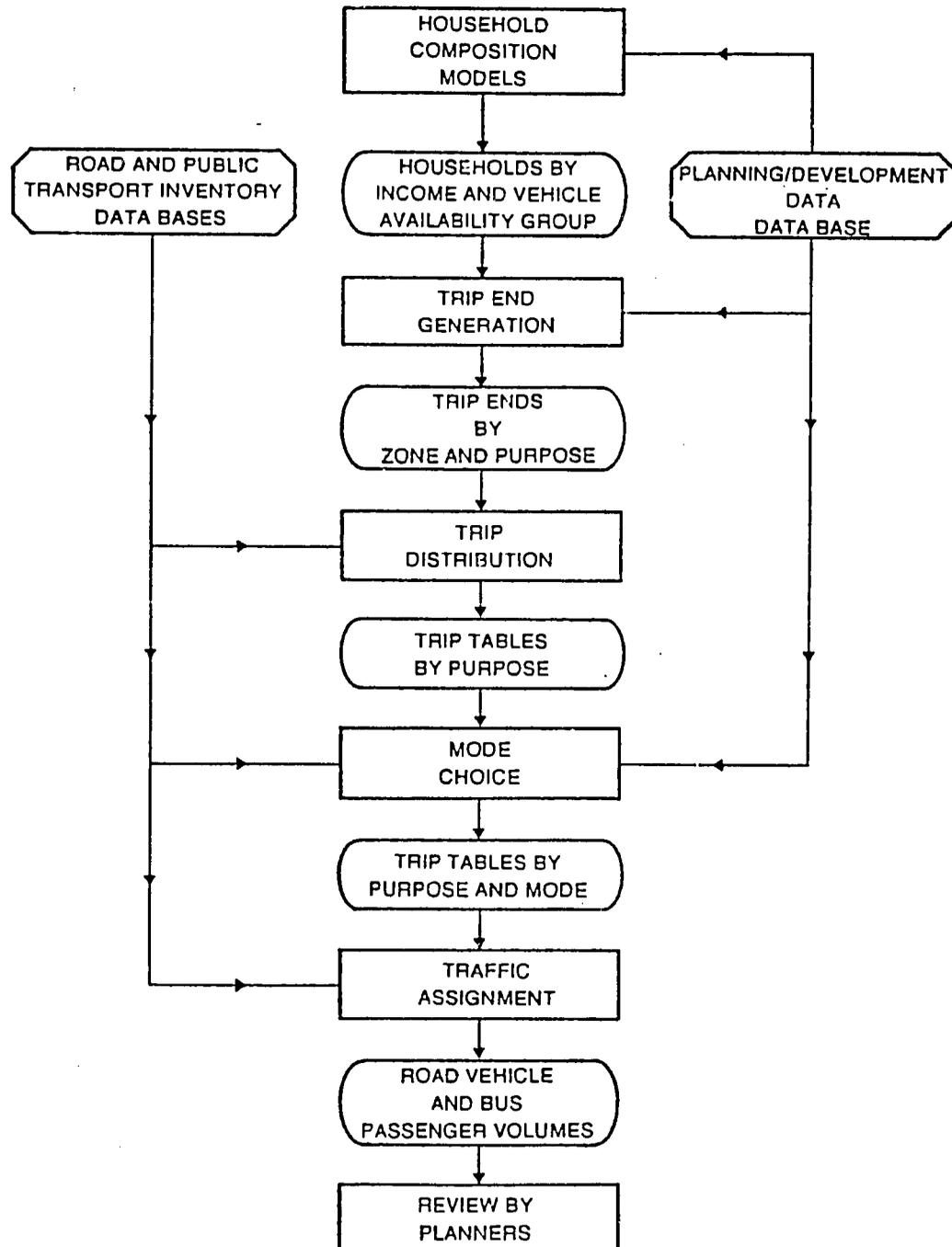
In response to those key issues, 4 basic transport sub-models were established, namely: Trip End Generation Model, Trip Distribution Model, Mode Choice Model and Traffic Assignment Model.

The flow diagram presented herein best describes the models:



## 2.4 DEVELOPMENT OF BTPU MODEL

During BTPU Phase I three data bases and five major model components were developed and organized into a complete travel demand modelling system for Bangkok. The structure of this system is shown in herein.



BANGKOK TRAVEL DEMAND MODEL/DATA BASE STRUCTURE

Three data bases; planning data, road inventory and public transport system inventory, were developed or expanded upon as part of BTPU-Phase I. The Bangkok Metropolitan Region is separated into 118 traffic analysis zones and the remaining project regional area are separated into 49 traffic zones for which the data were compiled.

The model development task relied heavily on the Home Interview Survey (HIS) data collected as part of the SIMR project in 1989. This survey contacted approximately 15,000 households and obtained information describing the composition of the household (income, number of persons, workers and students and the availability of private vehicles) and information describing each trip made by a member of the household on the previous day (origin/destination, purpose and mode of travel). These data formed the basis from which all model calibration was performed.

As the calibration of each model component was completed, results were compared to data contained in the HIS. In all cases, results were within acceptable limits for models of this type. These comparisons are contained in the BTPU Traffic Model - Technical Report.

As a final step in the model development process, the results of a full, base year run of the model were compared to available traffic counts (model validation). Initial comparisons of this type were undertaken within BTPU.

A comparison was made between basic trip generation relationships included in the Bangkok model and models currently in use in Singapore and Hong Kong. The results of this comparison are included in Table 1 and suggest that the relationships included in the Bangkok models are consistent with those used in these other asian cities that are similar in many ways to Bangkok.

**TABLE 1**  
**COMPARISON OF TRIP GENERATION CHARACTERISTICS**  
**BANGKOK - SINGAPORE - HONG KONG**

	BANGKOK (1)			SINGAPORE (2)			HONG KONG (3)		
	NO VEHICLE AVAILABLE	VEHICLE AVAILABLE	TOTAL	NO VEHICLE AVAILABLE	VEHICLE AVAILABLE	TOTAL	NO VEHICLE AVAILABLE	VEHICLE AVAILABLE	TOTAL
<b>HOMEBASED WORK</b>									
TRIPS (1,000'S)	1,291.9	3,077.4	4,369.3	797.5	681.3	1,478.8	2,560.0	390.0	2,950.0
TRIPS / WORKER	0.93	1.78	1.40	1.35	1.51	1.42	NA	NA	1.10
TRIPS / HOUSEHOLD	1.58	3.44	2.55	2.79	3.37	3.03	1.92	3.07	2.92
<b>HOMEBASED SCHOOL</b>									
TRIPS (1,000'S)	967.8	1,380.8	2,348.6	323.4	334.3	657.7	1,083.0	144.0	1,227.0
TRIPS / STUDENT	1.56	1.98	1.78	1.06	1.28	1.16	NA	NA	0.98
TRIPS / HOUSEHOLD	1.18	1.54	1.37	1.13	1.65	1.35	0.81	1.13	0.84
<b>HOMEBASED OTHER</b>									
TRIPS (1,000'S)	1,186.1	2,347.7	3,533.8	437.8	853.2	1,291.0	2,275.0	578.0	2,851.0
TRIPS / PERSON	0.40	0.65	0.54	0.33	0.82	0.55	NA	NA	0.52
TRIPS / HOUSEHOLD	1.45	2.62	2.06	1.53	4.22	2.54	1.71	4.53	1.95
<b>NONHOMEBASED</b>									
TRIPS (1,000'S)	431.3	1,578.0	2,009.3	129.5	528.4	657.9	1,196.0	439.0	1,635.0
TRIPS / PERSON	0.15	0.44	0.31	0.10	0.51	0.28	NA	NA	0.30
TRIPS / HOUSEHOLD	0.53	1.78	1.17	0.45	2.62	1.35	0.90	3.48	1.12
<b>TOTAL</b>									
TRIPS (1,000'S)	3,877.1	8,382.9	12,260.0	1,688.2	2,397.0	4,085.2	7,114.0	1,549.0	8,663.0
TRIPS / PERSON	1.32	2.34	1.88	1.28	2.33	1.74	NA	NA	1.58
TRIPS / HOUSEHOLD	4.73	9.36	7.38	5.90	11.87	8.37	5.33	12.20	5.93
POPULATION (1,000'S)	2,936.1	3,584.6	6,520.7	1,316.3	1,030.9	2,347.2	NA	NA	5,487.0
HOUSEHOLDS (1,000'S)	819.0	895.7	1,714.7	286.1	202.0	488.1	1,333.0	127.0	1,460.0
EMPLOYMENT (1,000'S)	1,394.9	1,751.1	3,126.0	591.1	451.8	1,042.9	NA	NA	2,674.0
STUDENTS (1,000'S)	622.1	695.9	1,318.0	305.5	260.8	566.3	NA	NA	1,252.0
PERCENT OF HOUSEHOLDS	47.8	52.2	100.0	58.6	41.4	100.0	91.3	8.7	100.0
PERSONS / HOUSEHOLD	3.58	4.00	3.80	4.00	5.10	4.81	NA	NA	3.75
WORKERS / HOUSEHOLD	1.70	1.96	1.82	2.06	2.23	2.14	NA	NA	1.83
STUDENTS / HOUSEHOLD	0.76	0.78	0.77	1.07	1.29	1.16	NA	NA	0.86
WORKERS / POPULATION	0.48	0.49	0.48	0.45	0.44	0.44	NA	NA	0.49
STUDENTS / POPULATION	0.21	0.19	0.20	0.23	0.25	0.24	NA	NA	0.23

**SOURCES :**

- (1) BANGKOK - 1989 HOME INTERVIEW SURVEY CONDUCTED AS PART OF SIMR (APPROXIMATELY 15,000 HOUSEHOLDS SURVEYED)
- (2) SINGAPORE - 1981 HOME INTERVIEW SURVEY CONDUCTED AS PART OF THE COMPREHENSIVE TRAFFIC STUDY (APPROXIMATELY 20,000 HOUSEHOLDS SURVEYED)
- (3) HONG KONG - 1986 FINAL MODEL CALIBRATION RUN CONDUCTED AS PART OF CTS.2

Conclusions from the model validation task were as follows:

- On a global basis the models acceptably replicate trip generation, trip distribution and mode choice behaviour observed in the 1989 Home Interview Survey of Bangkok travel characteristics.
- On an individual screenline basis, the model forecasts fall short of the accuracy expectations generally accepted as proof of model validation. However, it was concluded that the observed discrepancies were primarily a result of inaccuracies in the zonal planning data estimates rather than errors in model specification.
- It was recommended that a review of the base year planning data be carried out and inaccuracies corrected.
- Despite the above problems, it was suggested that the model could be used to prepare future year forecasts of Bangkok travel demands and that these forecasts could provide useful information for evaluating proposed transport system improvements. However, the user should be aware of potential misestimates in the forecasts related to planning data and should use judgement in interpreting the resulting forecasts.

## 2.5 TRAINING

Two separate training/information dissemination programs were undertaken as part of BTPU-Phase I. These consisted of a one month technical training course in the application of the BTPU Travel Demand Models and a series one day seminars for policy level personnel intended to acquaint these officials with the potential uses of the analysis tools prepared as part of BTPU. The activities included in each are described below.

One Month Technical Training Course - This course was intended for technical staff from agencies involved in transport planning Bangkok. The course was designed to provide a basic understanding of the procedures used to estimate the demand for and usage of transport services. The course then provided "hands-on" experience to participants in applying the actual set of demand models developed for Bangkok.

BMA staff contacted government agencies, universities and other organizations considered to have a potential interest in the material to be offered. The organizations were provided with material outlining the content of the course, its duration and schedule. Organizations were invited to send representatives to participate in the training program.

The course was taught by members of the consultant team and professors from two Bangkok Universities. Participants in the course numbered 25 and were distributed among different agencies as follows :

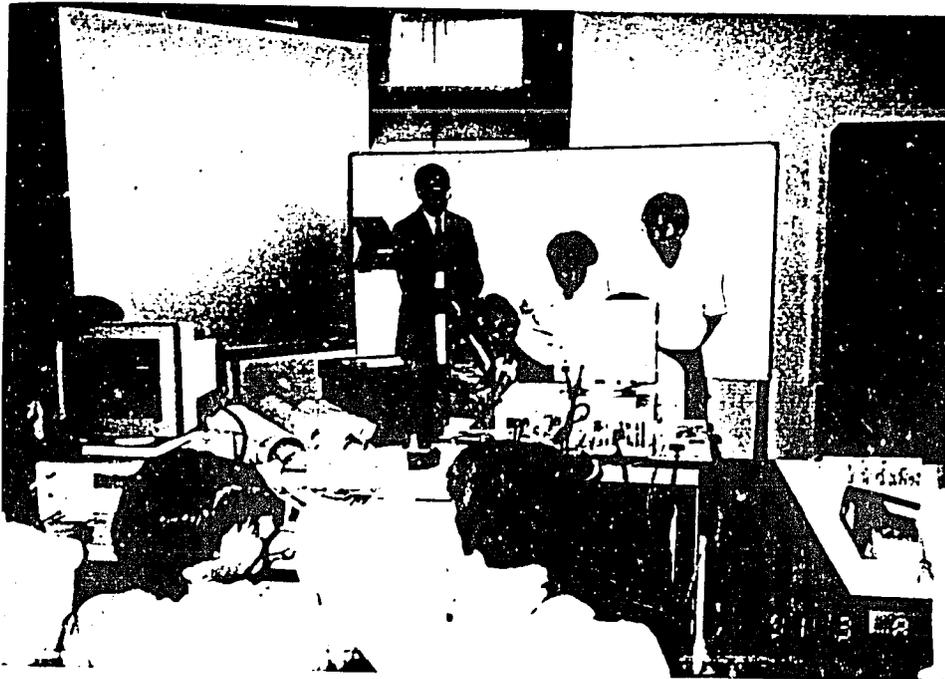
<u>Agency</u>	<u>Number of Representatives</u>
The State Railway of Thailand	2
The Department of Highways	1
The Expressway and Rapid Transit Authority of Thailand	2
The Bangkok Mass Transit Authority	1
Office of Policy and Planning	2
Ministry of Transport and Communication	1
Public Works Department	1
Department of Town and Country Planning	1
Kasetsart University	1
King Mongkut's Institute of Technology	1
Chulalongkorn University	1
Office of the National Economic and Social Development Board	1
Bangkok Metropolitan Administration	
• City Planning Division	1
• Traffic Engineering Division	2
• Department of Public Works	6
• Policy and Planning	1

A completion ceremony and lunch were also organized by BMA and Certificates of Completion were presented to the participants by the Deputy Secretary General of NESDB, who was the Chairman of the Project Steering Committee and was kind enough to take part in the completion exercise.

One Day Policy Level Seminars - This course was intended for policy level officials from agencies involved with transport planning in Bangkok. The seminars were designed to acquaint these officials with the work undertaken as part of BTPU-Phase I, the types of questions the BTPU models could be used to answer and the activities that were being considered for inclusion in BTPU - Phase II.

The seminar discussions were led by members of the consultant team and professors from two Bangkok Universities. Participants in the course numbered 45 and were distributed among different agencies as follows :

<u>Agency</u>	<u>Number of Representatives</u>
The Bangkok Mass Transit Authority	1
Ministry of Transport and Communications	1
The State Railway of Thailand	5
The Royal Thai Police Department	1
The Department of Highways	1
Ministry of the Interior	4
The Expressway and Rapid Transit Authority of Thailand	1
Bangkok Metropolitan Administration	
• Technical Division	6
• Traffic Engineering Division	4
• Design Division	10
• Policy and Planning Division	4
• City Planning Division	5
• Construction and Maintenance	2

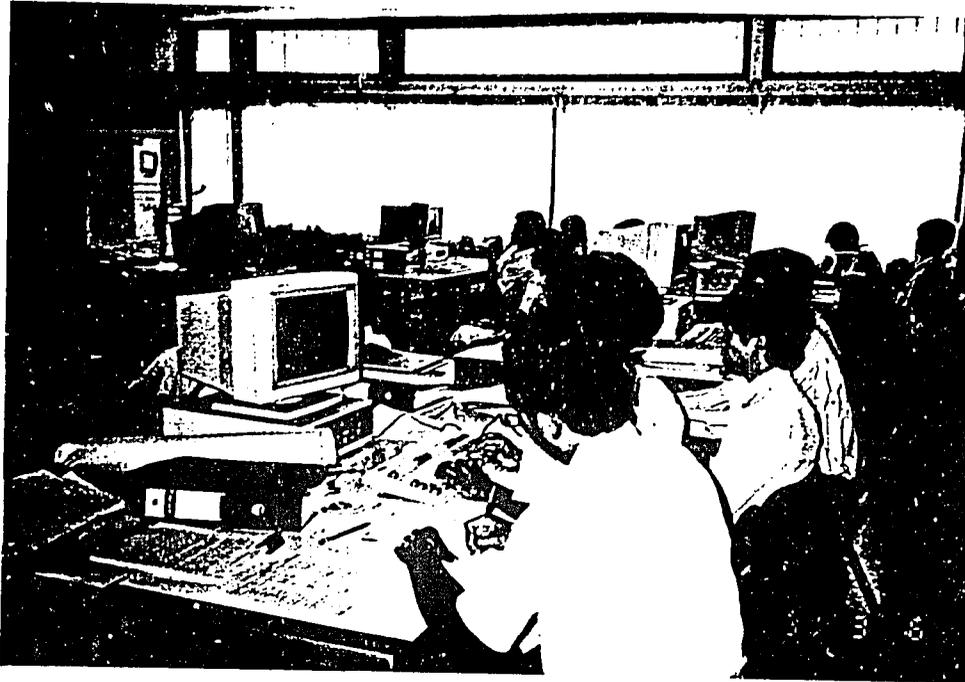


CHAIRMAN OF STEERING  
COMMITTEE VISIT TO  
BTPU TRAINING

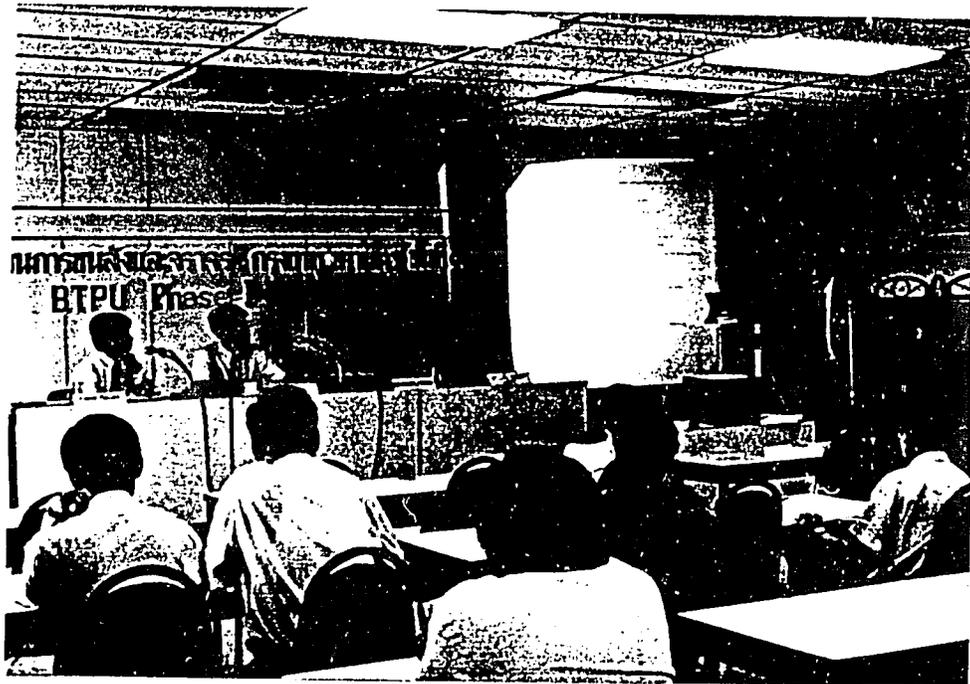


TRAINING PARTICIPANTS  
WITH CHAIRMAN OF  
THE STEERING COMMITTEE  
AND PROJECT DIRECTOR

BTPU PHASE I - ONE MONTH TECHNICAL TRAINING

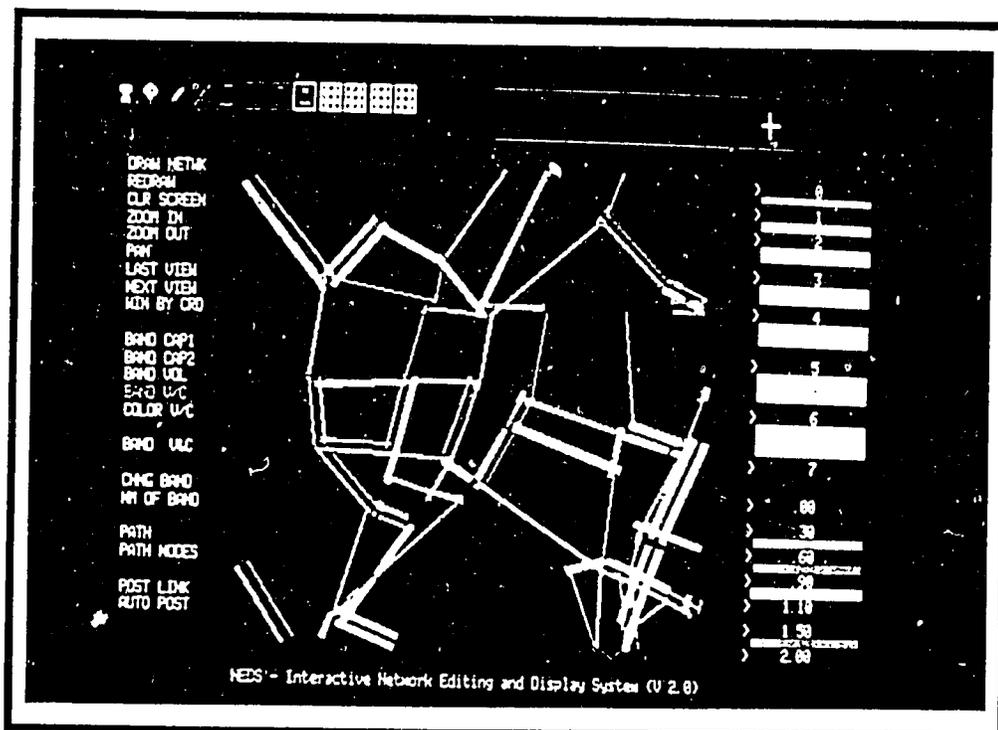
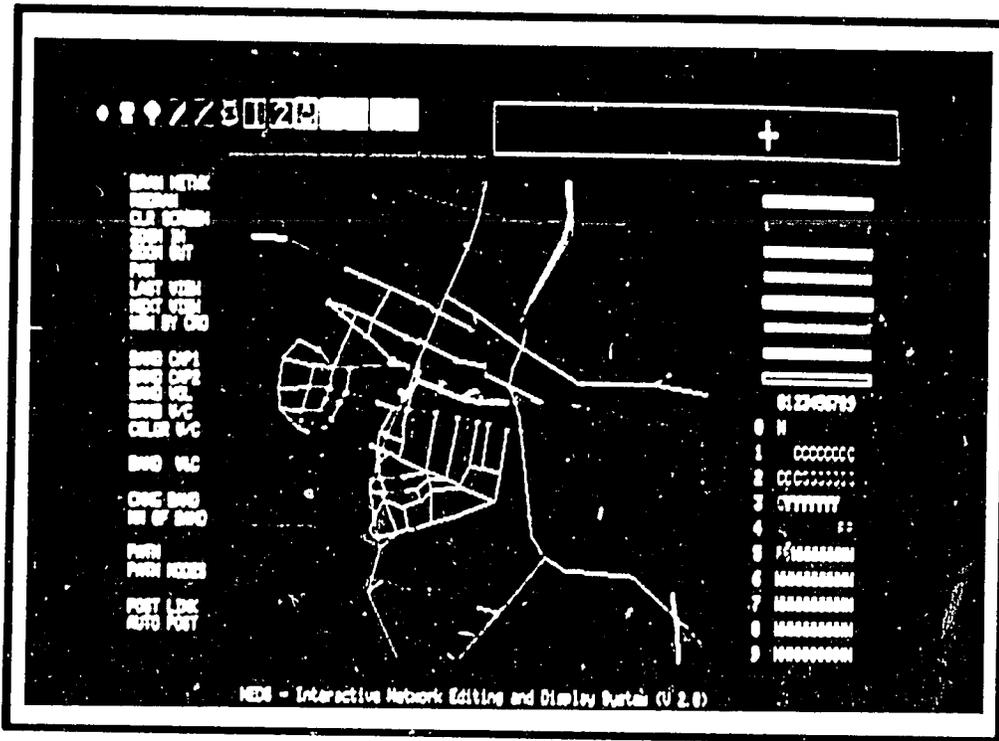


**BTPU PHASE I - ONE MONTH TECHNICAL TRAINING FACILITIES**



**BTPU PHASE I - ONE DAY SEMINAR FOR POLICY MAKERS**

150



ILLUSTRATIONS OF  
 GRAPHICAL PRESENTATION FROM BTPU MODEL

152-

## 2.6 REPORTS AND DOCUMENTATION

In addition to periodic progress reports, six major project reports were prepared to document the work undertaken. These include:

1. Model Validation Report - Includes a comparison of the STTR and SIMR demand estimation procedures and recommendations for model improvements to be undertaken in BTPU-Phase I.
2. Data Base Report - Contains the content of the planning and transport system inventory data bases prepared in BTPU.
3. BTPU Traffic Model - Technical Report - Contains for each major model component the purpose/function of the component, how it interfaces with other model components, the component's mathematical structure, model mathematical constants and coefficients and a comparison of the model component application results with base year (1989) data.
4. BTPU Traffic Model - User's Guide - Contains detailed descriptions of program language, capacity and installation procedures; computer directory and file naming conventions; model application instructions with flow charts; program operating instructions and a glossary of frequently used technical terms.
5. BTPU Phase I - Final Report and Executive Summary - These reports contain a summary of project activities, findings and problems and recommendations for BTPU-Phase II responsibilities and organization.
6. Technical Addendum to the BTPU Traffic Model User's Guide - Contains a description of the model validation task findings, documentation of model changes made during model calibration, revised program write-ups for a small number of programs that were modified during the validation process and example program print-outs.

### 3. BTPU PHASE II - THE NEXT STEP FORWARD

BTPU-Phase I was the first step for setting in place the framework to allow the comprehensive and coordinated planning and improvement of Bangkok Transport System.

While Phase I accomplished its main goals, the development of a standardized demand model and data bases, it also identified areas where additional work is required (particularly within the estimates of base and future year population and employment) to obtain the full benefits of these tools.

Phase I was also required to present and review alternatives of how to proceed with Phase II - the ongoing organization for coordinating transport system planning in Bangkok and providing technical assistance and training to those agencies involved.

Presented below are five steps that, if undertaken, will produce an effective and useful Bangkok Transport Planning Unit. With this unit in place and functioning, Bangkok will have taken the next step forward towards the goal of solving its transport system problems.

- **THE FIRST STEP** is the most immediate. It relates to providing resources for an interim BTPU to carry on until BTPU-Phase II is initiated. A work program for this interim group has been prepared and is shown below:

#### **ROAD NETWORK REFINEMENT**

1. Assemble accurate, large scale base maps for the Bangkok Metropolitan Area.
2. Prepare overlays to the base maps showing the roads presently included in the Bangkok coded road network and the node numbers and locations.

3. Complete the work sheet shown on the following page for each link in the road network (may be different for AM peak, PM Peak and off peak periods). Data to complete the worksheet may be taken from existing records (where such data exist) or by field inspection.
4. Update the base map overlays to maintain a record of completed work and to schedule remaining work.

### PLANNING DATA REFINEMENT

1. Establish a multi-department working group (composed of representatives of BMA, NESDB, PWD, DTCP, ETA and others involved with the development and use of planning data forecasts).
2. Convene the working group to work to the following agenda:
  - a. Define the problem.
  - b. Identify available data sources.
  - c. Develop procedures / criteria for evaluating available data for accuracy.
  - d. Develop more detailed zone scheme consistent with available data sources.
  - e. Develop procedures for reestimating zonal values.

The staff required to carry out this interim work program is indicated below:

### STAFFING RECOMMENDATION - INTERIM BTPU

POSITION	NUMBER AND DEGREE OF PARTICIPATION		
	INTERNATIONAL CONSULTANT	THAILAND CONSULTANT	COUNTERPART
Senior Transport Analyst Transport Analyst Land Use Planner	1-Full Time	2-Full Time 1-Part Time	1-Full Time 2-Full Time 1-Full Time

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PREPARED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

TIME PERIOD:

AM PEAK

PM PEAK

OFF PEAK

FROM: \_\_\_\_\_

TO: \_\_\_\_\_

LENGTH: \_\_\_\_\_

SPEED LIMIT: \_\_\_\_\_

AUTHORITY:  BMA  ETA  DOH

EXPRESSWAY

MAJOR ARTERIAL

ARTERIAL

COLLECTOR

LOCAL

CBD

FRINGE CBD

URBAN

STRIP URBAN

SUBURBAN

RURAL

CROSS STREET: \_\_\_\_\_

A NODE \_\_\_\_\_

CROSS STREET: \_\_\_\_\_

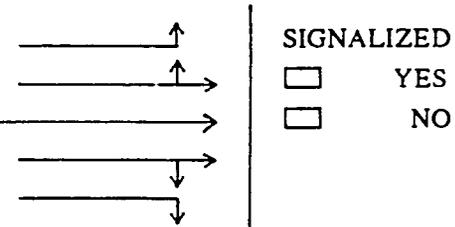
B NODE \_\_\_\_\_

PARKING ALLOWED  YES  NO

BUS LANE  YES  NO

INTERSECTION  
NUMBER  
OF LANES

—————> NUMBER OF MID-BLOCK LANES



MEDIAN  YES  NO

VIADUCT  YES  NO

MASS TRANSIT  YES  NO

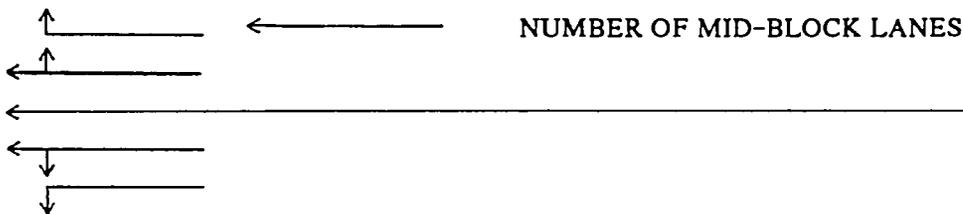


INTERSECTION  
NUMBER  
OF LANES

SIGNALIZED

YES

NO



PARKING ALLOWED  YES  NO

BUS LANE  YES  NO

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- THE SECOND STEP is for Government to agree in principle to support BTPU and implement BTPU-Phase II.

Participation in the BTPU-Phase I technical training program and policy level seminars suggest that interest exists in many Government agencies for supporting and taking part in the BTPU process. While interagency competition and lack of communication may still be a problem, it can be anticipated that as BTPU expands its credibility and proves itself as an unbiased technical resource, its acceptance by all agencies can be expected.

- THE THIRD STEP is to adopt an organizational structure for BTPU - those proposed for consideration are:
  - An AD-HOC unit within BMA
  - A new department within BMA
  - A university based transport institute
  - A quasi-private transport planning unit
  - A new Government Board similar to NESDB in structure

Based on the understanding gained in Phase I, the decision regarding the organizational structure of Phase II is seen as very difficult from a practical or implementability, point of view. In making this decision several criteria should be considered, including:

- BTPU should be perceived as (and, in fact, should be) a completely impartial and useful organization if it is to be accepted, used and supported by all the agencies involved.
- BTPU must be able to obtain computer and other capital equipment items without the delays experienced in Phase I. This means that a means must be found for by passing the equipment acquisition regulations currently applied when equipment is purchased by government agencies.

- Thai, and especially counterpart, staffing of BTPU will be a problem. The recommended organizational structure must be capable of attracting, and more importantly, retaining staff. Competent transport planners require years of experience to reach their full potential.
- BTPU, whether through respect for its impartiality and competence or through the support of very senior government officials, must be able to obtain the support and cooperation (especially regarding the provision of information) of all agencies involved in transport planning for Bangkok.
- If BTPU is to be placed under the management of a single government agency that agency must be willing to accept that responsibility. That agency should also be perceived as being above or not directly involved with present interagency differences of opinion regarding project priorities.

Formal and informal discussions with government staff members, and representatives of the university and public sectors suggested several organizational structures that might be considered for BTPU-Phase II. These are illustrated in Figure overleaf and summarized below:

Option I - Maintain BTPU As An Ad-hoc Unit - This was the structure used to organize and manage BTPU-Phase I. BTPU was located within BMA and day to day management and coordination was provided by BMA staff. Additional technical input was contributed by staff from NESDB and overall policy guidance was provided by a steering committee composed of representatives of all agencies with planning responsibilities for Bangkok.

While this approach may be a useful way to maintain an interim BTPU it has several problems as a long term organizational structure. First of all, as long as BTPU is seen as being under the direction and control of a single agency involved with promoting its own agenda of priorities and needs, little interagency cooperation is likely to occur.

Staffing will likely continue to be a problem with BMA's own priorities superseding those of BTPU. BMA is also bound by government regulations affecting equipment acquisition.

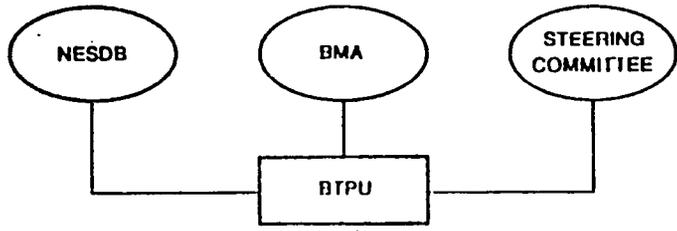
Option II - Integrate BTPU Within BMA - This approach would place BTPU as a permanent entity under the Department of Transport within BMA. This should allow a comprehensive approach to transport planning and data base maintenance to be taken within BMA. However, cooperation and support of other agencies would be difficult to obtain and staffing would continue to be a problem.

Option III - Create A Government Owned Transport Institute - This approach has several advantages over government based approaches related to staffing and equipment procurement. Staffing could be attracted through the offering of competitive compensation packages.

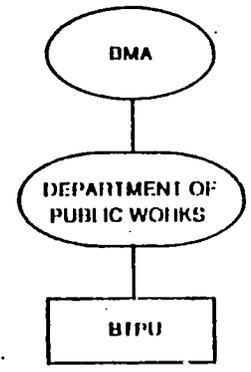
Equipment purchases should be easier to accomplish as a quasi-private agency.

Like all other alternatives, this approach also has drawbacks. First, it may be almost impossible to accomplish under existing government regulations. Second, because of its private nature, this type of organization may lack the influence to "encourage" communication and support from the various planning agencies. In the worst case, it could be perceived as 'elitist' and generate agency resentment and actual obstruction of its objectives.

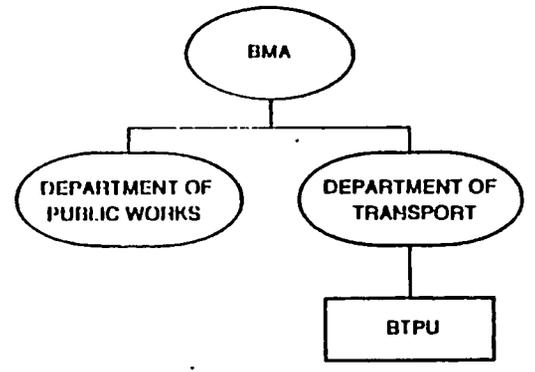
Option IV - Create A University - Based Urban Transport Institute - This approach has advantages relating to staff recruitment, the availability and use of university technical resources and the obviously enhanced training possibilities. Depending on the reputation of the University selected and the senior university staff assigned to the project, cooperation of planning agencies should be obtainable.



**ORGANIZATIONAL OPTION I  
MAINTAIN BTPU AS AN AD-HOC UNIT**

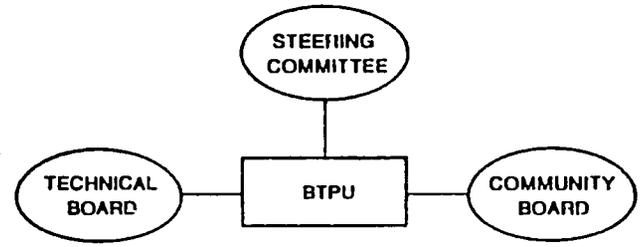


**OPTION A  
BTPU WITHIN DPW**

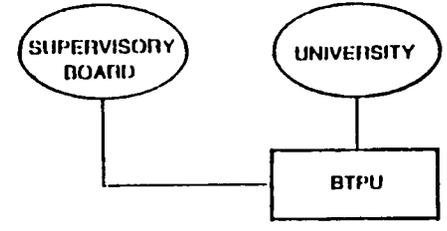


**OPTION B  
BTPU WITHIN NEW  
DEPARTMENT OF TRANSPORT**

**ORGANIZATIONAL OPTION II  
INTEGRATE BTPU WITHIN BMA**



**ORGANIZATIONAL OPTION III  
CREATE A GOVERNMENT OWNED  
URBAN TRANSPORT INSTITUTE**



**ORGANIZATIONAL OPTION IV  
CREATE A UNIVERSITY - BASED URBAN  
TRANSPORT INSTITUTE**

**POTENTIAL ORGANIZATION STRUCTURES**

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Disadvantages of this approach are primarily related to situating an activity of significant importance to the effective planning of Bangkok's transport system within an environment whose priorities might interfere with practical considerations relating to BTPU work assignments.

Option V - Create a New Government Board Similar to NESDB in Structure -

This approach would extract or "spin-off" the existing urban transportation planning responsibilities and staff currently assigned to NESDB to form the nucleus of a National Urban Transport Board.

It would be organized this National Urban Transport Board along the same structure as NESDB with cabinet level reporting responsibilities.

Initially supplement the staff the Board with a consultant team consisting of international and Thai members. Use this initial consultant contract to also cover the purchase of required computer equipment (at the consultant's responsibility - not government's).

As the original consultant contract expires (say, after three years) review the board's staffing needs and, if necessary, hire individuals (international and/or Thai) on a contract basis to fill specific needs.

Establish a Technical Advisory Committee (composed of representatives of the various agencies involved with urban planning) and a Private Sector Advisory Committee (composed of community leaders with specialized knowledge and interests related to transport) to periodically meet with the Board's management and technical staffs.

This approach has the advantages of creating a BTPU with significant perceived credibility, impartiality and, perhaps most importantly, the influence or power to encourage the cooperation of all agencies involved in transport planning.

The precedent exists within Thai Government for setting up a board of this type (the creation of NESDB). Using this kind of a "high profile" approach for implementing BTPU-Phase II would send a clear signal to Government and the general public that the transport problem is to be given a very high priority for solution.

- THE FOURTH STEP is to obtain or allocate funds for BTPU-Phase II (a three year initial period is suggested). Alternatives include:
  - International grants or loans
  - Thai Government operating funds.
  
- THE FIFTH STEP is to assemble a BTPU team - initially it should include:
  - Permanently assigned Government staff
  - Thai consultant(s)
  - International consultant(s)
  - University secondments

Staffing requirements and degree of participation are shown below:

### STAFFING RECOMMENDATION - BTPU PHASE II

POSITION	NUMBER AND DEGREE OF PARTICIPATION		
	INTERNATIONAL CONSULTANT	THAILAND CONSULTANT	COUNTERPART
Project Management	1-Full Time	1-Part Time	1-Full Time
Transport Planning	1-Full Time	1-Full Time	2-Part Time
Traffic Engineering	1-Part Time	1-Part Time	1-Full Time
Transport Analyst	1-Full Time	2-Full Time	2-Full Time
Urban / Land Use Planner	1-Part Time	1-Part Time	1-Full Time
Public Transport Planner	1-Part Time	1-Part Time	2-Full Time
Transport Economist	1-Part Time	1-Part Time	1-Part Time

Short Term Specialists As Required: Construction Cost Estimation  
 Survey Design  
 Public Relations

Legal  
 Data Base Administration

As indicated in the above presentation, there is considerable work involved with implementing BTPU-Phase II and, in fact, effectively planning solutions to urban transport problems. However, the work is not without major benefits. By way of example, Singapore started in 1965 implementing an approach to transport planning similar to that suggested by BTPU.

In 1965, Singapore's transport problems were as staggering and as seemingly unsolvable as Bangkok's. Today, after 25 years of work, Singapore's transport system is fast, efficient and, in many respects, the envy of other major world cities. The same result is possible in Bangkok, but not without the same kind of coordinated, comprehensive and continuing planning approach available through BTPU.