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FEASIBILITY STUDY FOR THE IMPROVEMENT OF TRAFFIC SIGNALING AND CONTROL IN REGIONAL CITIES WITH RESPECT TO TRAFFIC SAFETY AND CONGESTION CONTROL. THAILAND

I. INTRODUCTION

Urban transport problems in Thailand have been worsening year by year, particularly in Bangkok. Since the investment programs for roads and public transportation cannot keep pace with increasing demand for transport services, better management and control of existing infrastructure have attained high priority among various measures to improve traffic conditions and generally reduce accidents.

The Office of the Commission for the Management of Land Traffic (OCMLT) is now recognizing the need to pursue the sustainability agenda. To do so it is seeking to define indicators of sustainability. Among these activities reduction of energy use per capita, reductions of total quantity of air pollutants per capita, and reduction of total greenhouse gases goes according to the Kyoto goals and objectives are top priorities.

OCMLT acknowledges the pledge for the livable city, which can be established only if traffic management brings optimum performance to the whole transport system. Many of these activities have been concentrated within the Bangkok Metropolitan Region, where steps towards Area Traffic Control (ATC) and Advanced Transport Telematics (ATT) have been undertaken.

However, Thailand has a number of regional cities that need to be addressed too.

Thailand's largest city districts, ranging from Samut Prakan with some 412.000 inhabitants to Prathum Thani with some 124.000 inhabitants expect strong growth in the future. Population in these cities is expected to grow by approximately 800.000 people in 10 years. Growth will evolve both from birth rate and immigration, highest growth rates can be expected in Nakhon Ratchasima (108.000 people), Chon Buri (108.000) and Udon Thani (85.000).

At the same time, private vehicle ownership is growing rapidly, especially of motorcycles. Vehicle ownership rates are already comparable with Bangkok in many regional cities, though there is a higher share of motorcycles in the provinces. In Chiangrai and Lampang more than 30% of households already own one or more vehicles. The road space in regional cities is still very low, while typical density figures are 72 persons per hectare (11 persons per rai). Road space is only 7 percent of the urban area, which is a very low figure. It is obvious, since increase for transport purposes is difficult, that a good management of the existing roads has highest priority.

Traffic management in larger regional cities exists, but not in an efficient way. Most important intersections are controlled by signals and can cope with existing traffic using reasonably short cycle times. However, there is no general area traffic control and devices are often obsolete. Intersections design including traffic signals do not always meet accepted safety standards, and their operation does not save delays. This is also indicated by accident figures.

Traffic signals are still the main means of separating conflicting traffic flows and modes in urban areas. When controlled automatically and demand responsive, they may well bring a given road network to an optimum performance with respect to capacity and safety. There seems to be a huge potential for lowering accident rates in



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urban areas by signaling of non-signaled intersections and improvement of signaled intersection, respectively.

One very important issue should not be overlooked. Regional cities have a much lesser developed public transport network than Bangkok. Their market share is still small, but general policy asks for increase of public transport in regional cities as well. Considering the problems of bus prioritization in Bangkok, it seems obvious that development of signaling and control including prioritizations measures will benefit public transport to a considerable extent.

Regional cities have a unique chance to avoid some of Bangkok's disadvantageous developments if quick action is taken. They could be a position to accompany rather than chase after the expected increase in transport demand, using suitable measures and thus develop a sustainable transport system.

It is the intention of OCMLT to implement traffic management in regional cities starting with three cities to be selected in the process.

II. SELECTION PROCEDURES

1. The Terms of Reference prepared by the Office of the Commission for the Management of Land Traffic (OCMLT) and approved by the Spanish Administration will be attached to the tender as Annex I.
2. A general invitation to tender will be published, with the support of the Spanish Administration, so all interested Spanish Companies will be able to submit a Statement of Interest, enclosing the information requested in Annex I and II
3. The Thai authorities, under the supervision of the Spanish Administration will evaluate the final bids, according to the evaluation criteria outlined in Annex III.
5. The maximum cost of the Study will be 50 million pesetas.



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ANNEX I TERMS OF REFERENCE

1. **Restricted to Spanish Companies**
2. **Goals of the Study:** basic objective of the study is to determine the need and to prepare plans of urban management systems with respect to traffic safety improvement and congestion decrease in regional cities. The objectives may be specified as follows:
 - a) Identification of regional cities with considerable lack in traffic management systems, especially signaling and a worrying accident record. Cities shall have already completed transport master plans.
 - b) Collection of data on existing traffic management systems in six identified regional cities and assessment and evaluation of existing conditions as well as already planned measures. An assessment of predicted transport demand increase and its impact on congestion levels and safety shall also be achieved.
 - c) Preparation of proposals for a development of signaling and other means of urban traffic management in stages and review of existing master plans in that respect. Special consideration shall be given to safety issues including local characteristics of road users, and introduction of bus prioritization concepts.
 - d) Conduct of a feasibility study including costs and staging of necessary measures. From the study, a clear gui-

deline shall evolve for implementation of urban traffic management in regional cities.

- e) Summary of the findings to establish a preliminary standard for traffic signaling and urban traffic management, which may form a source in the development for the comprehensive Thai guidelines for urban traffic management and control.
- f) Preliminary project proposals for three selected regional cities including layout specification, cost estimates and time schedules for subsequent accelerated implementation.

3. Scope of the Study:

A. *Identification of six suitable Regional Cities:*

- Review of Transport Master Plans and other transport related plans, with respect to population and transport demand increase, current traffic management and so on.
- Collecting basic socioeconomic data, such as population forecast, car ownership, land use existing and planned.
- Collecting basic public transport data.
- Evaluation of accident records, and related safety issues.
- Definition criteria for selection process
- Selection of six regional cities for further study, not necessarily the most populated ones, but listed according to selection criteria. A completed Transport Plan is prerequisite.

B. *Feasibility Study for six Regional Cities:*

- Completion of Database.
- Description of existing traffic management structures, role and functions of traffic police, existing signaling devices and so on.
- Outlining of possible future public transport in regional cities.
- Amendment of list of six selected cities, if deemed necessary.
- Assessment of accident situation.
- Proposal for implementation of urban traffic management with focus on intersection signaling.
- Market research for equipment purchase, cost estimates,...
- Selection of most preferred scenario valid for most of regional cities.
- General layout of urban management and control with focus on signaling of intersections in a framework of urban control.
- Basic outline of signaling devices and other traffic management control.
- Consideration of new ways to deal with high motorcycle share.

C. *Establishing a preliminary standard for regional cities' traffic management:*

- Listing of general measurements and procedures.
- Intersection signaling.
- Public transport prioritization.
- Common procedures and standards valid for all regional cities.

D. *Implementation Proposals for three Regional Cities:*

- Selection of 3 regional cities for detailed traffic management study.
- Implementation scheme and schedule.
- Intersection capacity and signaling.
- Control center.
- Sample intersection layout.



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- Identification of accompany measures such as intersection redesign.
- Bill of quantities and cost estimate with technical specification.
- Layout of a framework for staging measures.

E. ANEX: Spanish providers of goods and services needed for the development of the project

- 4. The OCMLT** will provide to the Spanish consultant all the information and documents that may be useful in the execution of the feasibility study, as well as a work team.
- 5. Interested companies** should submit certain documents, in accordance with the criteria in Annex II, in order to qualify for the final bids. Four copies should be submitted: two in the Office of the Commission for the Management of Land Traffic (OCMLT) of the Thai Office of Prime Minister one to the Spanish Embassy's Commercial Office in Bangkok and one to the Subdirección General de Gestión de Deuda Externa y Evaluación de Proyectos in Madrid.

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- 6.** Any change in the proposed team should be discussed beforehand with both the Thai and the Spanish Administrations and, if not accepted, will cause the termination of the contract.
- 7.** The bids should include both economic and technical proposals.



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8. The technical proposal will determine the scope of the study, methodology used, work plan, and activities' time-table cost and benefit analysis.
9. The economic proposal should be broken down into cost units, unitary cost and total cost for each category team. Other expenses related to the completion of the study, such as field trips, etc, should also be broken down. This should include every cost factor of the project. The cost should be stated in Spanish pesetas.
10. The proposal has a validity of six months. During this period, the conditions have to be maintained, especially those related with the work team, scope and methodology, chronogram of the works and price.
11. There is a limit for the local expenditure at 15% of the total costs of the Study. Within this limit, the Spanish firms can make coordination with any one of the Thai firms.
12. The OCMLT will evaluate the bids, under the supervision of the Spanish Administration, according to the evaluation criteria of Annex III.
13. During the completion of the study, the successful bidder will submit a monthly report. This will include progress on the study, actual and expected obstacles, suggested actions and deviations from the master plan, and will be submitted in Thai, Spanish and English (optional), before the 15th of the following month.
14. Payment:
 - 25% upon awarding of the contract
 - 25% upon reaching the middle stage to be accorded by the Thai OCMLT, the winner of the tender and the Spanish Administration.
 - 50% upon acceptance of completed study on the part of the Thai OCMLT and the Spanish Administration.



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ANNEX II

Companies must submit:

- 1) Company Annual Report or audited Balance Sheet and Financial Statement of the last available year.
- 2) General information on the company, which must include:
 - shareholders,
 - date of establishment,
 - sales of the last five years,
 - workforce, part-time and full-time workers: qualifications and experience.
- 3) A list of previously awarded projects must include details on: client, amount of the contract, date of start and ending, work team and a description of the project. Studies of a similar technical content and objectives should be especially highlighted.
- 4) Short description of intended approach and general scope of the project.
- 5) Proposed work team. It should include CV and letter of commitment valid for six months. The following data should be enclosed for each individual of the team:
 - name,
 - place and date of birth,

- nationality,
- academic degrees,
- working languages,
- related experience (including responsibilities and description of the jobs),
- general experience,
- miscellaneous (publications, seminars, etc.)

ANNEX III

CRITERIA FOR THE EVALUATION OF THE PROPOSALS

	Criteria	Weight
I	TECHNICAL PROPOSAL	80
	1. Company Reliability and Work Team	35
	• Experience in similar projects	14
	• Financial Capability.....	7
	• Key members of the work team	14
	2. Quality Technical Proposal	45
	• Approach.....	5
	• Scope.....	15
	• Methodology and Work Plan	20
	• Time Schedule	5
II	ECONOMIC PROPOSAL	20



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