

หลักการออกแบบการคมนาคมสำหรับ เมืองท่าแห่งใหม่

ระพีพร โรจนประดิษฐ์*

“เมืองใหม่” นับว่ามีความสำคัญอย่างยิ่งต่อรัฐบาลไทยในการใช้เป็นกลยุทธ์การจัดการรองรับการเจริญเติบโตในภูมิภาคตะวันออกของประเทศไทย ถึงแม้ว่าในช่วงเริ่มต้นเราอาจนิยามคำตัดสินเกี่ยวกับแนวทางการสำเร็จไว้ค่อนข้างสูง ซึ่งสวนทางกับสัญญาณที่บ่งบอกในขณะนี้ว่าอยู่ต่ำกว่าเป้าหมายที่คาดการณ์ไว้ แนวความคิดว่าด้วยการสร้าง “เมืองใหม่” เกิดขึ้นต่อเนื่องควบคู่มา กับประวัติศาสตร์มนุษยชาติตลอดเวลา เมืองใหม่จึงได้รับการออกแบบมาเพื่อตอบสนอง รองรับ และพัฒนาให้เหมาะสม สอดรับกับภูมิภาคนั้นๆ การศึกษาเรื่องการตั้งเมืองใหม่ใดก็ตาม ควรต้องมีจุดรวมของการศึกษาที่หน้าที่เฉพาะของเมืองนั้นๆ ควบคู่กันไปกับสิ่งที่สามารถจะเรียกว่า “ของใหม่” ได้

จากบทเนื้อหาวิจัยจะมีจุดรวมการศึกษาอยู่ที่กระบวนการพัฒนาในด้านหลักด้านเดียวคือเมืองท่าเรือใหม่ ซึ่งแต่เดิมเรื่องนี้ อาจไม่ใช่ประเด็นสำคัญลำดับแรกแต่ในอนาคตในเรื่องนี้จะมีบทบาท ความสำคัญมากขึ้น การประสบกับข้อจำกัดของท่าเรือแห่งเดิม ในด้านที่ไม่สามารถขยายตัวเพื่อรองรับความเจริญในอนาคต ความแออัดและก่อปัญหาต่อสิ่งแวดล้อมในชุมชนเมือง ทำให้ท่าเรือหลัก ที่ทำหน้าที่ในการคมนาคมขนส่งทางเรือในปัจจุบันพยายามลดบทบาทตนเองลงและพยายามแสวงหาสถานที่แห่งใหม่เพื่อส่งเสริม ให้เป็นท่าเรือสากลแห่งใหม่ที่มีศักยภาพสูงต่อไป

อย่างไรก็ตามการศึกษาเรื่องการคมนาคมขนส่งเพื่อ

ออกแบบเมืองใหม่ให้สอดคล้องกับท่าเรือขนส่ง จะต้องคำนึงถึงการเชื่อมโยงกับทุกเมืองใหม่ที่สร้างขึ้น พร้อมกับคำนึงถึงหน้าที่เฉพาะ ด้านในฐานะเมืองท่าพร้อมกันด้วย

เหตุผลที่ประเทศไทยต้องแสวงหาท่าเรือสากลแห่งใหม่ เนื่องจากอดีตที่ผ่านมาการคมนาคมขนส่งทางเรือ นับเป็นเครื่องมือสำคัญในการสร้างความเจริญเติบโตทางเศรษฐกิจของไทย ตลอดระยะเวลาที่ผ่านมา ดังนั้นตั้งแต่ปี 2532 เป็นต้นมารัฐบาลไทยจึงเริ่มดำเนินนโยบายสร้างท่าเรือที่มีความเหมาะสมทั้งใน ด้านภูมิศาสตร์และยุทธศาสตร์การรองรับการขนส่งสินค้าทาง ทะเลแทนท่าเรือกรุงเทพที่ประสบกับข้อจำกัดในการขยายตัว ประกอบกับรัฐบาลไทยได้มีการกำหนดนโยบายการพัฒนาพื้นที่ ชายฝั่งทะเล ภาคตะวันออกในนามโครงการอีสเทิร์นซีบอร์ด ท่าเรือแหลมฉบังและ เมืองใหม่แหลมฉบัง จึงมีความเหมาะสมอย่างยิ่งต่อการตอบสนอง วัตถุประสงค์ดังกล่าว ถึงแม้ว่าในปี 2539 เป็นต้นมา ประเทศไทยจะ เริ่มประสบปัญหาวิกฤตเศรษฐกิจ หลายโครงการถูกชะลอการ ดำเนินการและหลายโครงการถูกระงับการดำเนินการ แต่ท่าเรือ แหลมฉบังก็ยังมีกรก่อสร้างอย่างต่อเนื่องและจำนวนการ ขนถ่ายสินค้าก็ยิ่งเพิ่มปริมาณอย่างต่อเนื่อง และเชื่อเชิญให้ผู้ ประกอบการการขนส่งสินค้าเข้ามาใช้บริการมากขึ้น แต่พื้นที่บริเวณ ชายฝั่ง ที่สร้างอยู่รายรอบท่าเรือ ดูเหมือนจะลดบทบาทความสำคัญ ลง เมืองใหม่แหลมฉบังได้รับการวางแผนสร้างเพื่อรองรับ ประชากรประมาณ 120,000 คน แต่ในปัจจุบันประมาณว่ามีจำนวน ประชากรอาศัยอยู่เบาบางเพียง 5,000 คนเท่านั้นเอง

* อาจารย์ประจำภาควิชาการวางแผนภาคและเมือง คณะสถาปัตยกรรมศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย ขณะนี้ได้รับทุนรัฐบาลไทยศึกษาต่อระดับ

Principles of Transportation Design in New Port Town : An Urban Design Approach

■ Rahuth Rodjanapradied *

ABSTRACT

New towns are the vital dimension of the growth management strategies of many Governments of fast grows regions in the East. Although it is early to make definitive judgements about their success, there are signs that many of them are falling down below expectations. The concept of new town has been in existence throughout human history. All "new towns" have been deliberately designed and developed to fulfil one or number of specialised functions in a region. Any study of a new town must therefore focus on its special functions as well as on the fact that it is "new" .

From the research topic will focus on the urbanisation process in one kind of the new town ; New Port Town, which are not many issues in the past, but in the future this kind of the city will be

important. The existing international ports in the global cities, now in the centre of the business cities by urban growth of the port hinterland that makes pollution and city congestion. Many port cities decreased their role and find the new place to promote to be the new port. However the study of the transportation of a new town designed to support a port must address both those qualities it shares with all new towns and its special function as a port town. The main question of the research is that "What principle should underline the Design and Timing of Transportation Infrastructure building in New Port Town?"



* Rahuth Rodjanapradied is a student of Department of Urban and Regional Planning, Faculty of Architecture

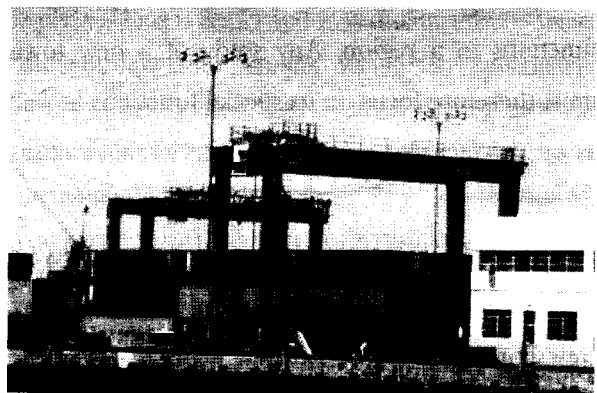


Laem Chabang Port

With globalisation, trade as well as business enterprises among the International Community began to expand and develop, and this continued phenomenon has exerted a tremendous influence on National Economic Processes. Transportation of cargo-whether lights or heavy-is highly dependent on the services provided by maritime transportation. There is no better alternative from of cargo transportation that is as suitable and as efficient in terms of cost and convenience and even speed. Overland transportation by rail and truck has serious limitations. Transportation of essential cargo by air is not feasible or even practical in terms of volume and cost. Therefore international cargo transportation still remains the major monopoly of shipping concerns or agents. (White, 1993 ; Hoyle, 1994)

Maritime transportation has, over the years, continued to be the most efficient and sought-after means of general cargo transportation worldwide.

Existing world ports have to keep up with the latest concepts in shipbuilding designs and technology. The modern-day trend is larger and roomier freight carriers. The latest development is the container ships specially designed and built for carrying container loads. Ports worldwide have to upgrade and modernize their facilities and other operational infrastructure in order to cope with the demands for more efficient handling and movement of cargo/goods.



In the past, ports were built largely on what is generally termed as Low Development Areas usually located away from the main urban areas. However, as port activity steadily increased because of greater trade volume, the port area gradually extended gradually and incorporated into the city districts it serves. During "The long boom" (1950-1970) the demand for maritime transportation increased by over 600% (Hoyle and Hilling, 1984)

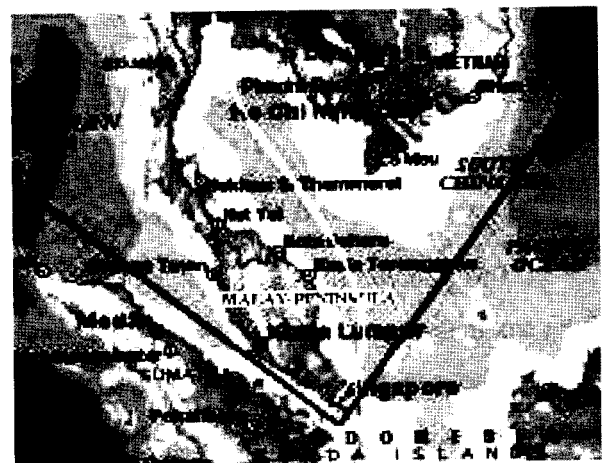
All over the world, new ports came into existence in order to accommodate the increasing numbers of ocean-going freighters of all kinds, steaming into and out of the ports. To keep up of maintain this heavy flow of goods and cargo through the ports, new technologies or innovative systems were incorporated so as to facilitate easier and faster handling of goods.

Urban revolution was not as forceful or even significant and rapid in the past as it is at the present time. Because of new technological advancement and the advance in worldwide communication system, rural communities could rapidly become urbanised. (Branch, 1975). The change towards urban living could affect people in these communities. Consequently, the governments at large are faced with the problem of providing the necessary infrastructure and other utilities to support the needs of the new township. Hence, it is of the ultimate importance to carefully study the urbanisation process in order to come up with appropriate infrastructure to serve or support such a development.

An efficient system of inland transport serves the essential needs of the hinterland, and this has become a crucial factor for the port's potential future as well as its over-all trade and growth prospects.

Today's global logistics organisation makes it mandatory for shippers worldwide to be able to rely on efficient transport chains of which the port is a permanent node. There must be smooth interaction between port and city, surrounding it in terms of transport network requirements, environmental protection and over-all safety features. These represent an important pre-requisite for effective delivery of integrated logistics services. Quick and safe access to port facilities from inland transport networks is an important basic requirement to be met in all cases. But this does not happen without calling into question the way both port and city are organised and managed, and also the way public transport infrastructure is planned financed. (Harding, 1977).

This research aims at finding a new body of knowledge which fills the gap of the individual concept of the particular circumstances in terms of port planning and urban planning. There are different views held by the individual producer and the Controller when considering the evolution of port and city. The academic aspect also differs from the professional aspect in this particular regard. In



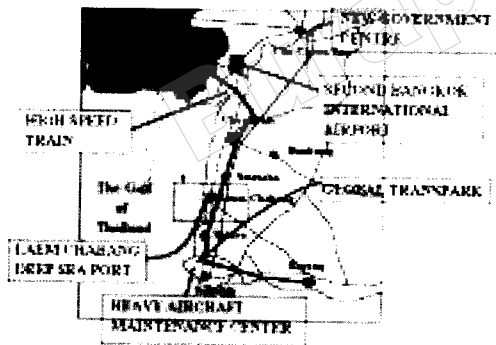
Maritime Routes

Europe-Asia Routes Regional Routes

particular, the essential focus is on a pre-plan of a new town designed to support a port function. This new town may be seen as a particular kind of company town, which is named here, as a “new port towns”. Until recently, this kind of town has assumed some importance.

Laem Chabang new port town

In recent years, marine transportation activities involving the kingdom of Thailand have been developing rather rapidly as a direct result of the improving socio-economic situation of the country. According to statistics provided by the Ministry of Transportation and Communication in 1991, (Thailand 2000), international shipping to the Port of Bangkok accounted for 76.4% of the value of, and 92.5% of the quantity of the total foreign trade for the year, highlighting the essential role of marine transportation. The Port of Bangkok is essentially a river port with narrow bar channels, making it almost impossible to accommodate or service large global freight carriers.



Eastern Sea Board Mega Projects

The Thai government had, since 1989, laid down an ambitious plan to develop this new seaport, the construction of which was made possible with the assistance of the Japan International Corporation Agency (JICA). Laem Chabang Port, located on Thailand's eastern

seaboard is one of the many projects planned with decentralization in mind. Many other national projects have also been developed to explore the eastern seaboard area in order to complement the new port. In 1996, when Thailand was badly hit by an economic crisis, many projects were put in hold or even shelved. However, Laem Chabang's construction at that particular time had already proceeded to its second phase of construction, and the volume of cargo passing through had been steadily increasing. While Laem Chabang appeared to look prosperous and inviting as a global port, the hinterland port was viewed unfavorably as declining in importance. The new town at Laem Chabang, planned by the Department 6 of town Planning, was originally targeted to accommodate 120,000 people. At the present time, however, there are only an estimated 5,000 people living and working there.

Research question

“What principles from an urban design perspective, should underline the design of transportation infrastructure in new Port Towns today” and Sub research questions are What urban design principles should underline the design of road network in new port towns? And What urban design principles should underline the design of the physical relationship between the port and the town today?

Research Methodology

Stage 1 : Literature review

Outline some aspects in the literature review which are linked to the quality of public realm and the urbanisation process such as some of the political and functional economy, and some other

linked to port planning processes of globalisation and bulk-carrying industries. This review stage represents the guidelines in general issues of interesting areas. The latter then leads to the urban form implications of land-use function and transportation combination route/mode requirements. The broad matrix will be formed to guide the idea of transferring from the literature review of theories and conceptual thinking to specify or identify issues and to adjust the investigations via the case studies related.

Stage 2 : Investigate specific new towns and port cities in contemporary situations

Some aspects of port circumstance are associated with the social science and port development in an era of globalisation and its impact on cargo transportation industries. This stage will represent a guide to general issues focusing areas of new port town. However, it will lead to urban structure implications of land-use functions and road design and layout component requirement. The broad research methodology will be formed to guide the idea of transferring from the literature review of theories and conceptual thinking to specifically identified issues, and adjusts the investigations via the case studies related.

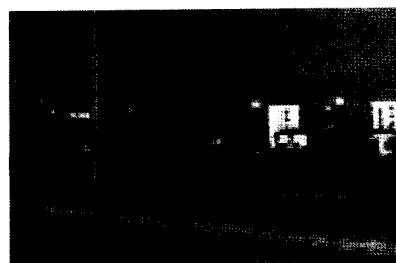
Stage 3 : Defining Issues and Elaborating via multi case study

Cases relating to Port cities and towns in selected areas of the U.K. and Asia are reviewed. (Southampton, Milton Keynes, Runcorn in UK and Kobe, Hong Kong, Singapore in Asia) Based upon an outline check-list derived from the review of the literature, a range of port cities and new towns, the macro scale issues of urban structure relevant to

port/town and linking of port re-design to town centre are examined. Case studies focus on one instance of road design and road layouts of a particular phenomenon and processes occurring in that particular instance. Conducting urban design studies, accessibility assessment and urban quality review as professional clarification to refine the range of issues and to identify and characteristic any appearance of topological patterns.

Stage 4 : Primary information collected in the main case study

Using the output from the primary stage, indicators will be used for evaluating multi-case studies. These processes formed to investigate the advantage and disadvantage of problem solving in case studies, more than measure of evaluate which town is better developed than the others. An interview workshop is held and questionnaires will be drawn up in two categories-the open-ended and the close-ended pattern. Questionnaires gathered are analysed using the SPSS software. Participants are from the consumers, controller and producer groups.



Stage 5 : Proposing the principles of transportation infrastructure design.

The preliminary principles are formed by summarising the assessment of their relative success of those strategies of urbanisation process and road patterns from recent stages. The limitations of the research and areas for further investigation will be discussed. The primary

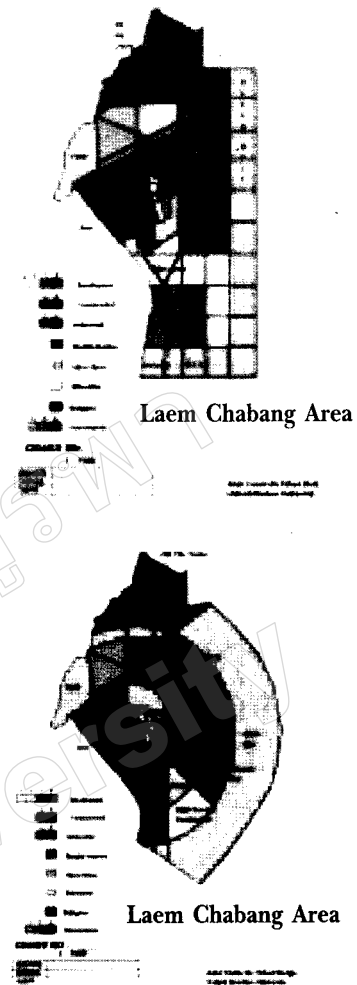
principle of the transportation infrastructure design in the new port town will also be established. Two proposed solutions will be constructed in conceptual assembling that will be transformed into physical proposals in the next stage. Pragmatic versions of the former stage will be transformed into abstract versions of plans and guidelines in urban design strategy of new port town.

Stage 6 : Arranging the classification of Alternative proposals

Developed primary principles in the former stages are used as a guide to format the physical proposals of road design and road layout models. Many hypothetical classifications of new port town patterns and many issues have been selected to include two proposals. The transportation infrastructure design of new port will be investigated based on the road design and road layout debates. Regional patterns of port towns follow the “Ribbon Corridor Development” by its geographical implications that urban growth actually occurs along the coastline. Moreover, for the urban structure level, road design and road layouts in this thesis are formulated in Concentric Hierarchy and Grid Pattern. The steps of the new port town design will be analysed to examine the characteristics and patterns of the two alternative proposals.

Stage 7 : Evaluating finding and drawing conclusions

Follow in the research question in the infrastructure design of new port towns, the research will focus on the guidelines of the principles of the new port town formed by the transport infrastructure, alter-native plan or concept will be reconstructed, following the trend of the urbanisation process.

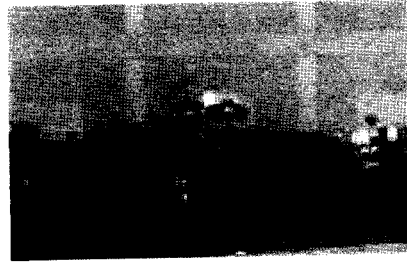


The Two Alternative Models
(Grid and Concentric Hierarchy)

As mentioned from previous stage, Space Syntax software Cost and Benefit Methodology and the urban design workshop will test the validity of the findings via enquiry. Space Syntax Software's accepted assessment of the quality of open space ; will be applied to access Permeability and Legibility of the urban realm. Cost and Benefit Methodology will be the tool employed to evaluate the potential of transportation patterns regarding benefit for investment. Though the details for practical costs and value of return cannot be calculated in the research, the methodology and the result of primary comparison can be demonstrated.

Cost and Benefit Analysis

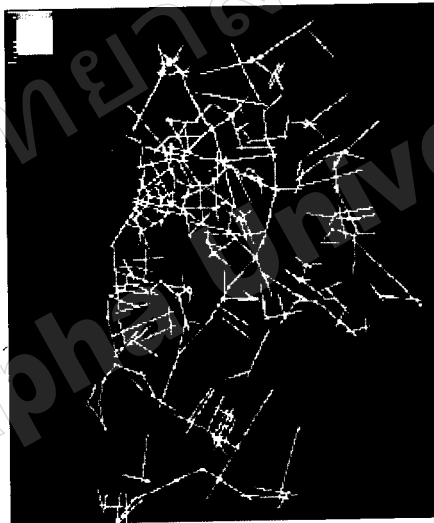
The comparative mechanism used to evaluate the remnant urban space is the questionnaire and the urban design workshop. (Urban Design Quarterly No.67, Special Report Methodology, July 1998) by professionals to fulfil the achieved inquiry in part of the mathematics Computerized Software and expert perception.



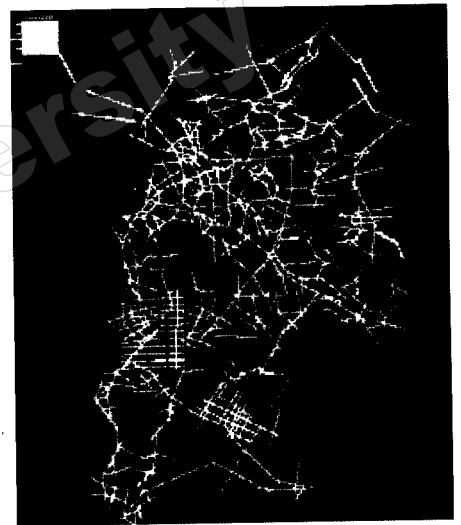
The Two Alternative Model



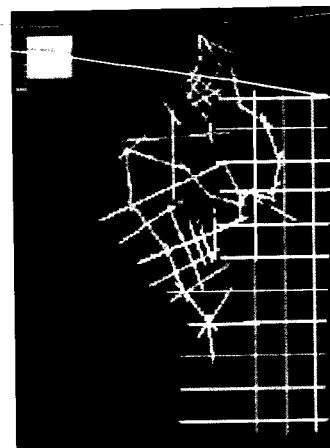
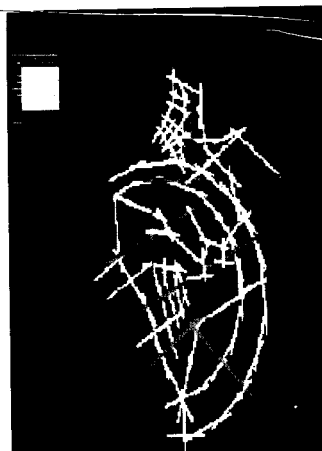
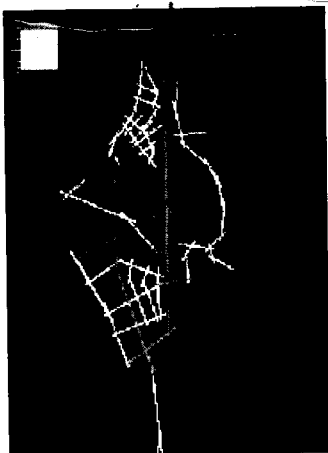
Existing Model



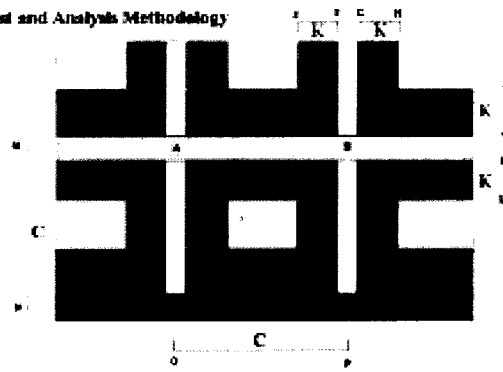
Concentric Hierarchy Model



Grid Model



Cost and Analysis Methodology



Example
 Cost A-B = (D-F) + cost X C (for land items)
 Boundary A-B = (G-F) + cost X K (Original Land Value)

Level - Boundary A-B
 Cost A-B

Level A,B - Level Road
 K = radius of road influence to the land (the Threshold = 500 meters from the road then level refers to Highway)
 C = cost of construction, that depend on type of road

THE STRUCTURE OF THE PRINCIPLES

● New Port Town Principles

General Information

1. Aim and Objective

2. The Appearance of Urban Design Trend

- Urban Design Strategy
- Theoretical Comprehensive Plan

3. Schedule of the principle

4. Guideline in level of Administration Control

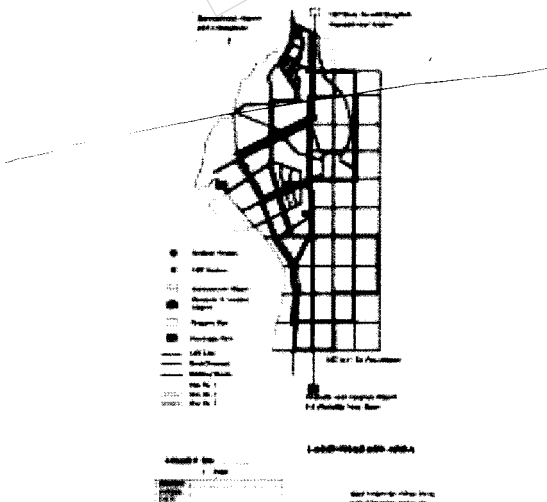
NPT1. The National Policy (Government Role)

NPT2. City Council Plan (City Strategy)

NPT3. District structures (Master Plan Guideline)

5. Characteristic of the principle

- Transportation Management Strategy



NPT 1 : National Policy

1. Guideline for Transportation Management Strategy

- Balance the benefit of Strong Economic and Better living in town.
- Co-ordination of Various Organisations.
- Public participation.

2. Guideline for Transportation Infrastructure strategy

- Road Management Guideline
- Railway Planning Guideline
- Public Transport Purposed
- Light Railway Mass Transit (LRT)
- Bus Network
- Deep Sea port Strategy
- Future Airport Network

NPT 2 : City Council Policy

1. Guideline for Conceptual Aspect

- Aim/Objective of the plan
- Characteristic of the town
- The aim of the town in the future
- Port and City relationship in new port town
- The role of the Port Town in the future

2. Guideline for Management Aspect

- Aggregately Area of the city
- City centre
- Characteristics of New Port Town
- The experiments in town planning
- Administration
- Element of New Port Town Planning guideline
- Categories of urbanisation process
- Physical linking : Port & City

3. Guideline for Physical Aspect

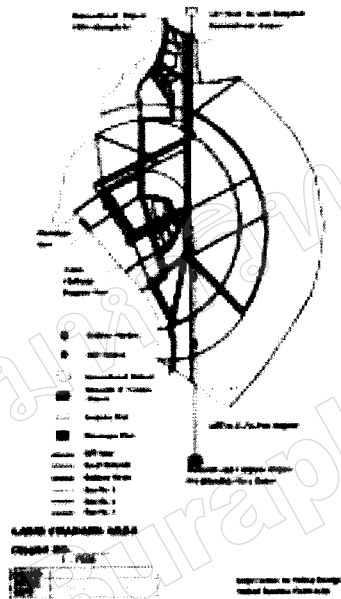
- Road Pattern
- Railway Routes
- Light Railway Mass Transit Routes
- Bus network
- Commercial Deep Sea Port

- o International Airport
- o Design for Bicycle & Pedestrian

NPT 3 : District Structure (Master Plan Guideline)

1. General Information

- o Definition
- o Period of the city plan :
- o Characteristics of Master Plan



2. The Conceptual Aspects

- o Master Plan Conceptual
- o Land Location conceptual
- o Transportation Conceptual

3. Land Use Planning

- o Reservation Zone
- o Residential Zone
- o Commercial Zone
- o Industrial & Warehouses Zone
- o Green belt Zone
- o Open space Zone
- o Health Service Zone
- o Education Service Zone
- o Religion Zone
- o Government Zone
- o Town Centre Zone

4. Transportation Planning

- o Road Network
- o Railway Route
- o Mass Transit
- o Bus network
- o Port
- o Airport

5. Standard Matrix Purposed