



PETRONAS

PLAZA

SCHOOL OF ARCHITECTURE
MONTANA STATE UNIVERSITY

7249 J37M412

P378
.ls5

MONTANA STATE UNIVERSITY
LIBRARY

PETRONAS PLAZA AND OFFICE TOWER

BY

NAZREE M. ISMAIL

A professional paper submitted in partial fulfillment
of the requirements for the degree

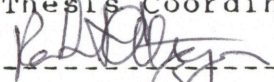
of

BACHELOR OF ARCHITECTURE

Approved:

Advisor

Thesis Coordinator



Director, School of Architecture

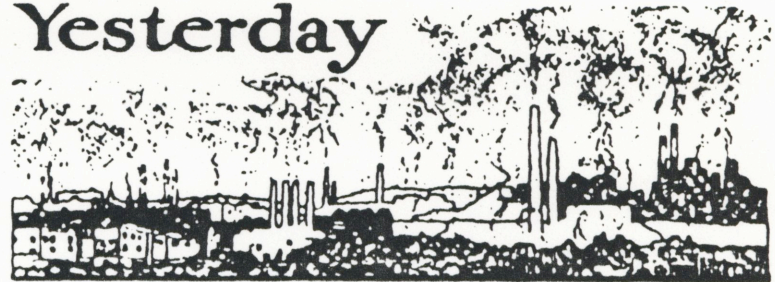
**MONTANA STATE UNIVERSITY
Bozeman, Montana
June 8, 1988**

001

QAY
NA
2040
ISS

P328
ISS

Yesterday



Living and Working in the Smoke

To-day



Living in the Suburbs - Working in the Smoke

To-morrow



Living & Working in the Sun at WELWYN GARDEN CITY

TABLE OF CONTENT

INTRODUCTION.

THE PROJECT

1. Statement.
2. Description.

THE THESIS

1. Statement.
2. Design Approach.

THE CLIENT

1. History
2. Brief facts

THE SITE LOCATION

1. Malaysia/KL: Brief facts
2. KL: History/ Land use
3. The Project site

B) ANALYSIS.

THE CLIMATE

1. General.
2. Climatic Chart.
3. Note: Facts and Needs.

THE VIEW/EXISTING ELEMENTS

1. People/Culture
2. Architectural Context

THE TRAFFIC FLOW/PEDESTRIAN MOVEMENT

C) PROGRAMMING.

THE GOALS, OBJECTIVES AND CONCEPTS
THE NEEDS: SPACE REQUIREMENTS

D) PRECEDENT

PROGRAM/FUNCTIONAL-CLIMATIC
TOWER/FORMS

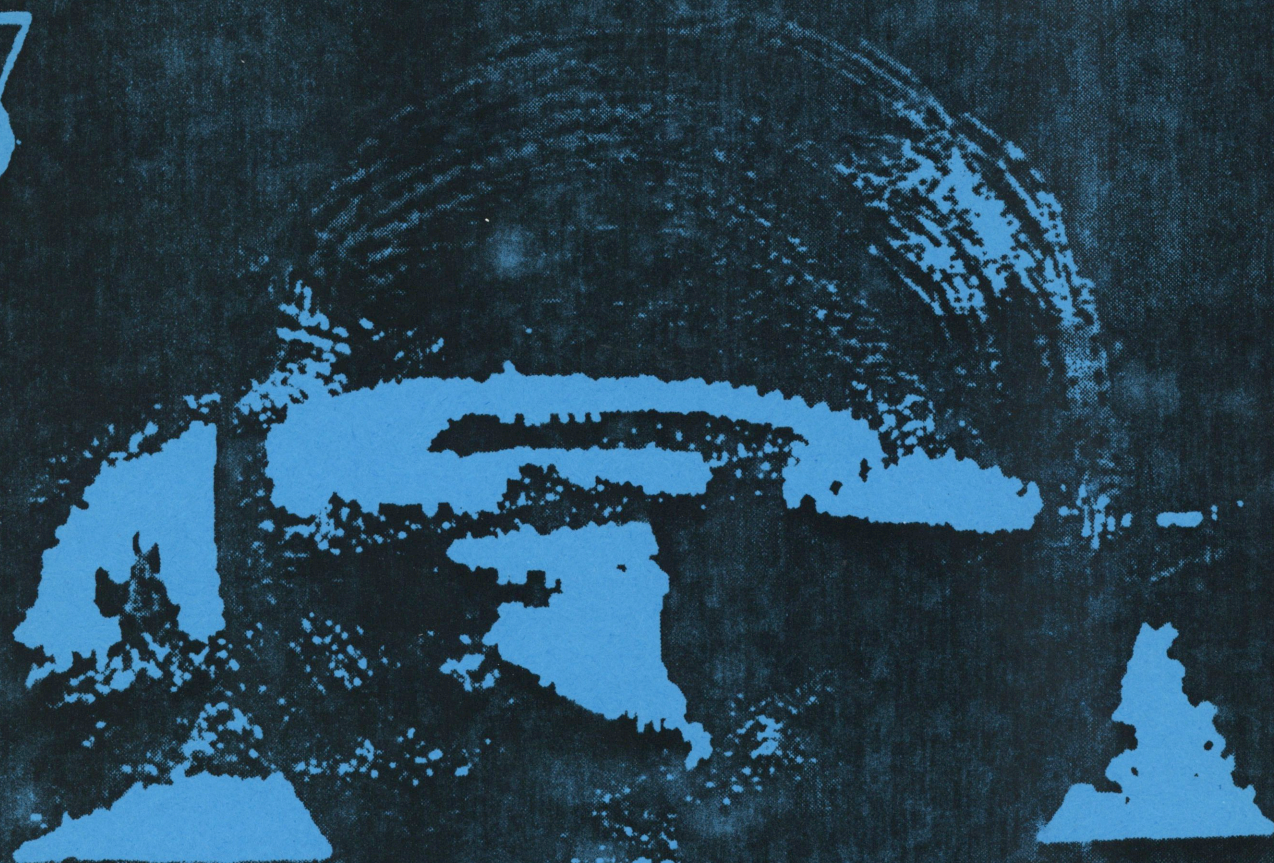
E) SCHEMES

F) BIBLIOGRAPHY

G) APPENDIXES

A. SITE DESIGN

B. FINAL DESIGN



Introduction

mass

A

Introduction

The pursuit for a contemporary and identifiable architecture has always been an attractive idea to large corporate group for their office structure. The purposes mostly are for the better working spaces that would help to increase human productivity and at the same time promote the corporate image for marketing strategies to the public. Trans-america for example has always being associated with its pyramid super structure in San Francisco. AT & T with its post modern structure in New York City. Some of them become landmark of the place and some of them become a tourist attractions

In Malaysia, such a concept has become a tradition and necessary, every tower has its own unique elements. In this thesis, it will be hypothetical enough to assume the same task for PETRONAS very first building in Kuala Lumpur area. Hopefully this document will also try to look for other ways and perspectives toward achieving a national identity and then lead to the finding ^{OF} ~~A~~ new image ~~making~~ for the corporate itself.

THE PROJECT

THE PROJECT

PROJECT STATEMENT:

To design and study various possible solutions in planning a mixed-used facility for (Petroleum Nasional Berhad). This structure will be the central administration headquarters in Kuala Lumpur (KL) after the phase II of the construction is done. The phase I will only place PETRONAS DOWN-STREAM DIVISION as their main administration office.

PROJECT DESCRIPTION:

This mixed-used project is mainly composed of
4 major architectural functions:

1. Offices: For client's central
 headquarters (PETRONAS TOWER-
 phase 2)

 For Petronas Sub-division
 offices (Phase 1)
2. Retail : Two floor enclosed shopping
 areas. (Phase 1 only)
3. Food Court: Semi enclosed food bazaar
4. Parking : Hourly/monthly rate to serve
 garage office, hotel and commercial
 functions in the area.

THE SIGHT

THESIS STATEMENT

THE SCOPE:

The direction of my thesis is to develop a clear vision of mostly external image of a multi-functions facility that will grow to be the headquarters by the end of phase 2 (depending on needs and financial situation of the owner). With the help of various experiments in graphics communication and functional study, this thesis will then explore the design concepts derived from the basic research in both area of climatic requirements and aesthetic considerations.

Three major project requirement are stated as:

1. Amplify the image of the company (PETRONAS) through design concept and solutions. (all Phases)
2. Designing for a minimum life-cycle cost and responding to the local climatic needs.
3. Designing for both functional and aesthetic and yet to be involved in more commercial area to the south of site.

DESIGN APPROACH

"NOTHING IS EXPERIENCE BY ITSELF BUT ALWAYS
IN RELATIONS WITH ITS SURROUNDING."

My informal design approach will be generated from 3 basic vocabularies that will then lead toward my formal exploration of the problem at hand. They are:

1. TROPICAL URBAN GARDEN

- Solutions toward tropical climatic needs and visual images that then will also fulfill a growing lack of local identity in Malaysia.

2. CORPORATE IMAGE

- Addressing the issues of clients visual needs of a more formal self-image making.

3. ARCHITECTURAL CONTEXT

- The potential of plaza(PETRONAS PLAZA), internally and externally expressed through movement systems, open spaces, the pedestrian and commercial networks.

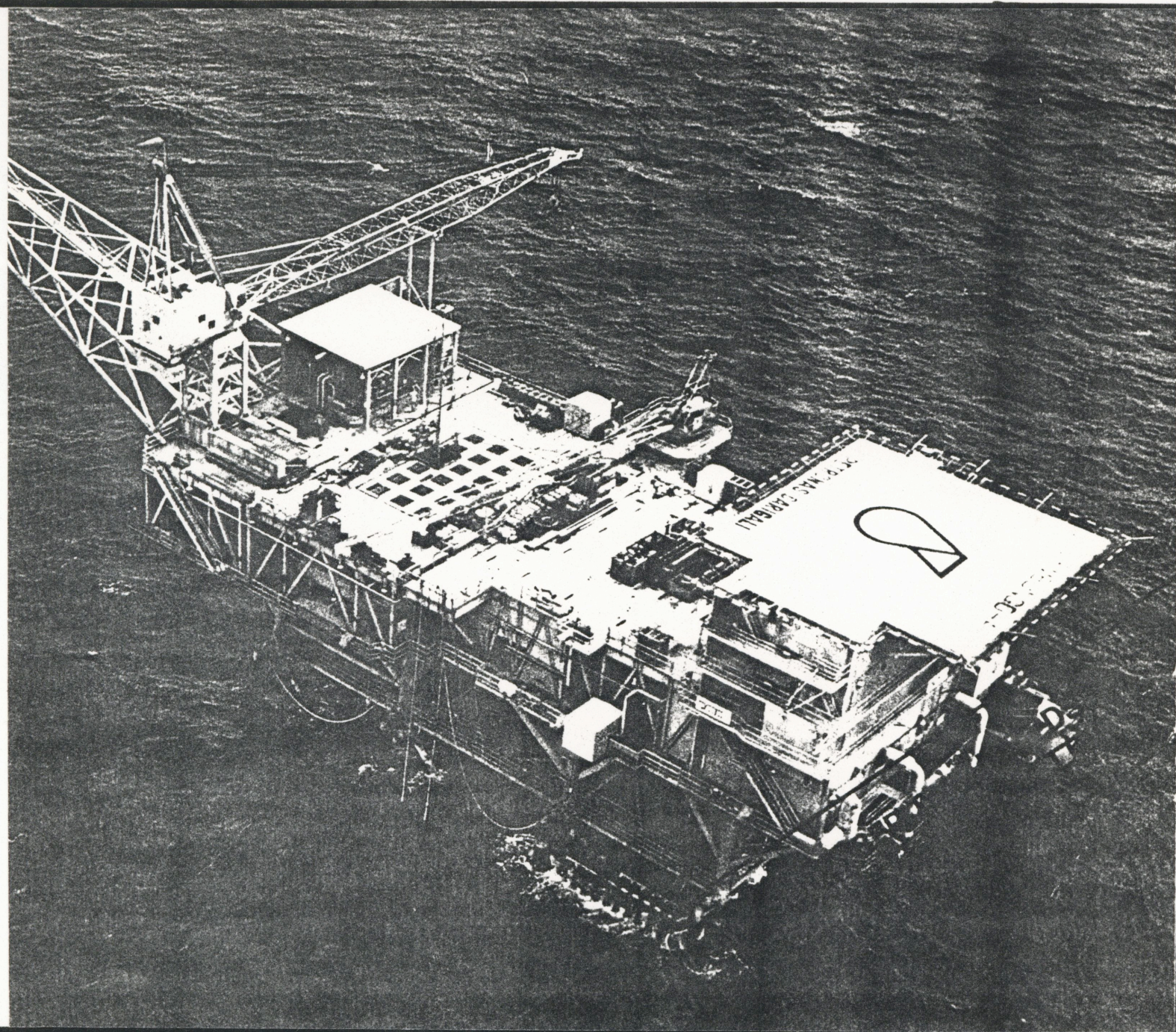
These 3 vocabulary elements will establish the master-plan of the overall project which the scope has been mentioned in the Thesis statement. The master plan will then set the concepts, the needs, the facts and the goals of the project and finally will produce the theme for the final built form in the following phases of design expansion.

THE CLIENT

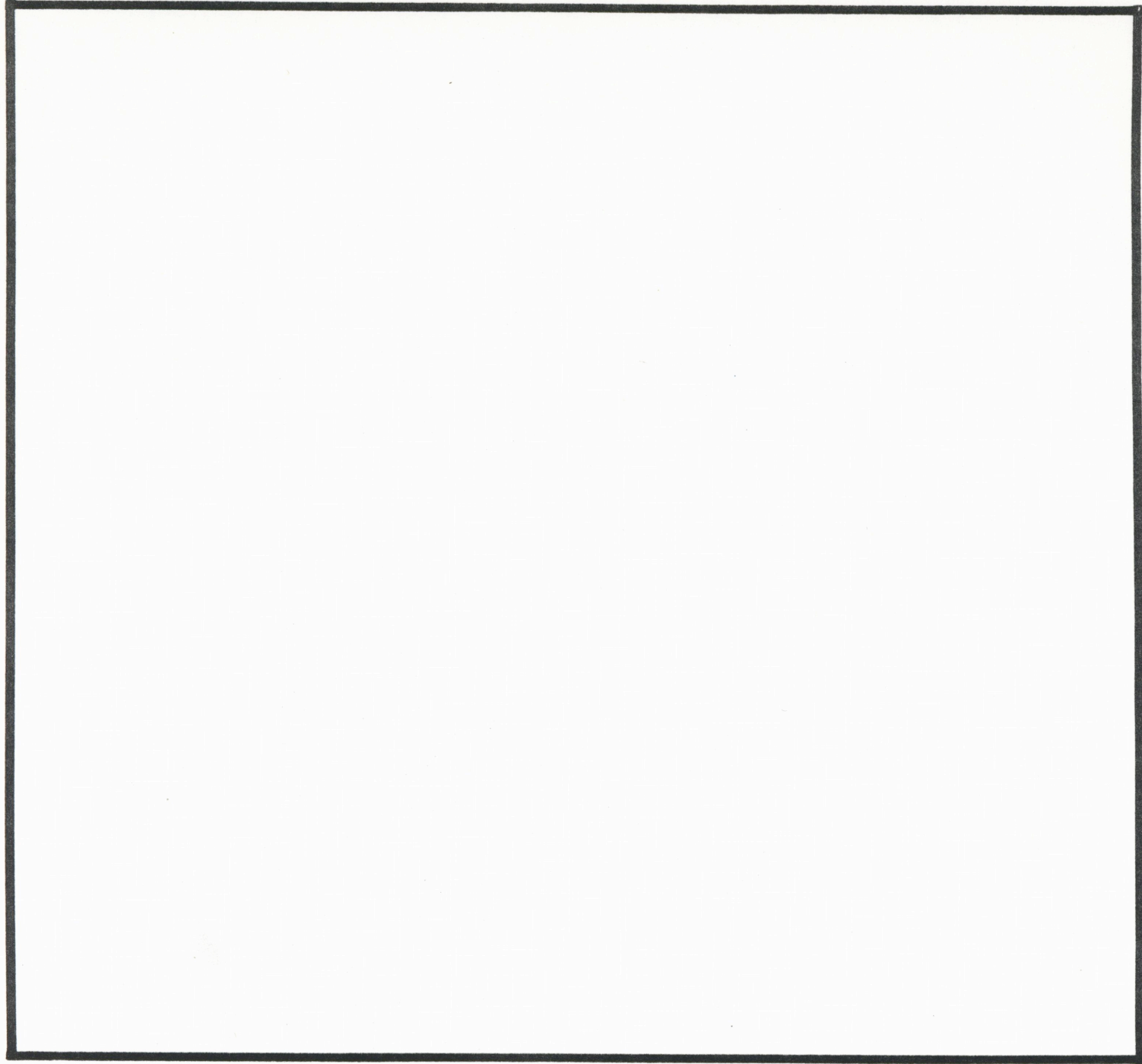
THE CLIENT: PETROLEUM NASIONAL BERHAD

The National Oil Corporation of Malaysia or better known as PETRONAS is design to play the vital role in the development of Petroleum industry in Malaysia.

It was incorporated in 1974 under the company act. In October of the same year, the Petroleum Development act(PDA) was enacted by an Act of Parliament investing in Petronas ownership and control of the country's entire oil and natural gas resources, on-shore and off-shore. PETRONAS has the exclusive rights to exploit such resources in Malaysia. The corporation is furthermore endowed with the responsibility of processing and refining of petroleum, and the development of petro-chemical industries, and also marketing and distribution activities. Petronas on the other hand also has production sharing agreements with oil companies operating in Malaysia.



THE PROJECT SITE



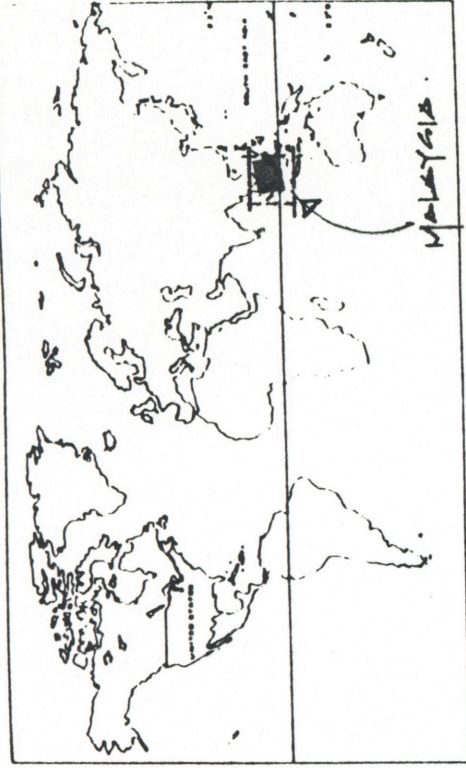
THE SITE LOCATION: KUALA LUMPUR
BRIEF FACTS AND DATA

General :

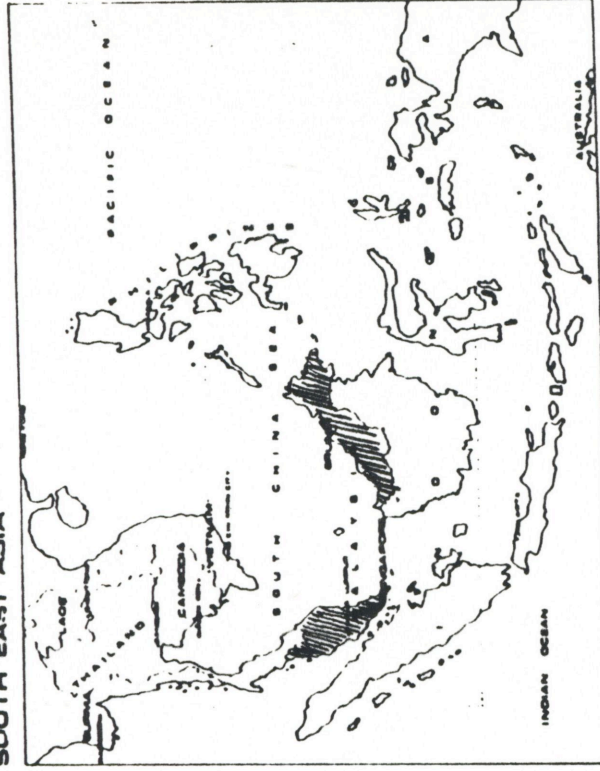
The site lies in the northern heart of Kuala Lumpur, the largest city in Malaysia with an area of 96 square miles and population of nearly 1.7 million (1985). The city is located in a valley, within proximity of a central of range hills that run the length of the west coast of the Malaysian Peninsular. Developed from a small tin mining village in 1857, Kuala Lumpur today is a city with a rich culture and heritage. The city has its own unique sense of identity because of the coherence and engaging images of various ethnic groups that merge together in different social interactions. With other various reasons, like political stability and consistent economic growth, Kuala Lumpur has the potential to become an important city in the Asian region.

The road network and Land use.

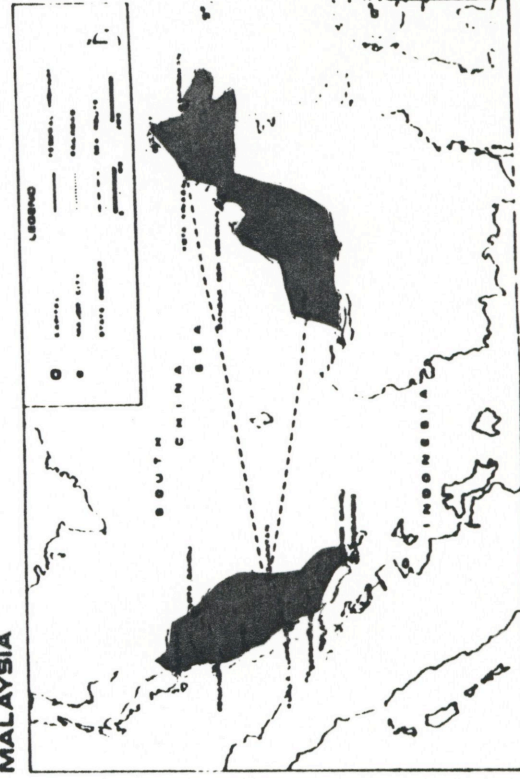
The road network has played a vital role in the development of Kuala Lumpur and its land use. The city road systems were once the continuation and the expansion of the existing roads used for tin mines and rubber estates. They became extremely congested with the over flowing population in the rubber and tin booming era around 1910s. The result was the formation of outer and inner ring roads with the radials interconnecting through the city central planning area.¹

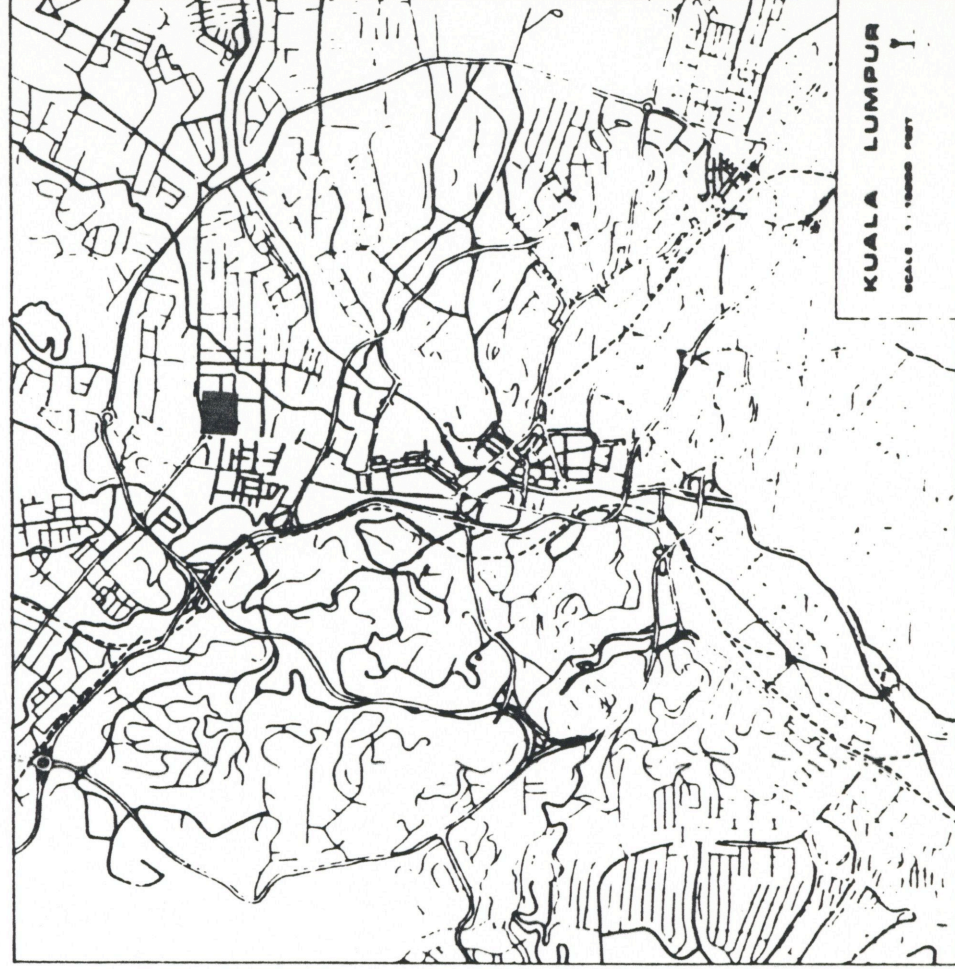
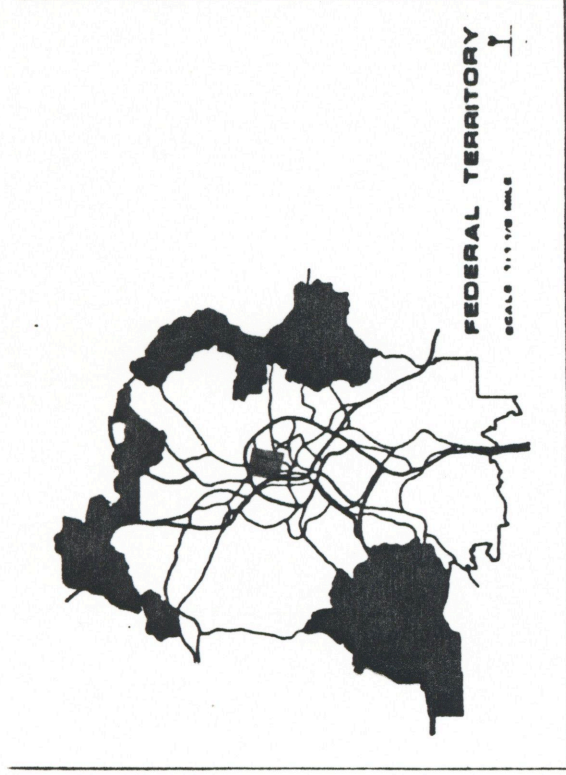


SOUTH EAST ASIA



MALAYSIA





PROJECT SITE

The location is on the northern part of Kuala Lumpur's Central Planning Area(CPA). This area is well-known for it's market center called Chow kit. This crowded commercial area shares the neighborhood with highrises in the west and north and the residential area toward the east. This extreme mixture of activities is an advantage for the client to be involved in commercial investment and yet set up an office tower on the north side together with some other taller structures. The existing residential area to the east is also an advantage to the PETRONAS employees to help saving their time and money to go to work.

The old government office on the site will be removed and replaced by "Petronas Plaza " as the latest and finest development in the area.

TOPOGRAPHY AND GENERAL SITE CONDITIONS

The land in the area is fairly flat and stable with the surface mostly covered by streets, side walks and commercial buildings. The designated land to be developed is granted by Bank Bumiputra Malaysia, a Petronas subsidiary.

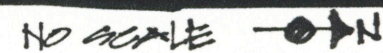
SURROUNDING ELEMENTS

North side: medium rise office buildings

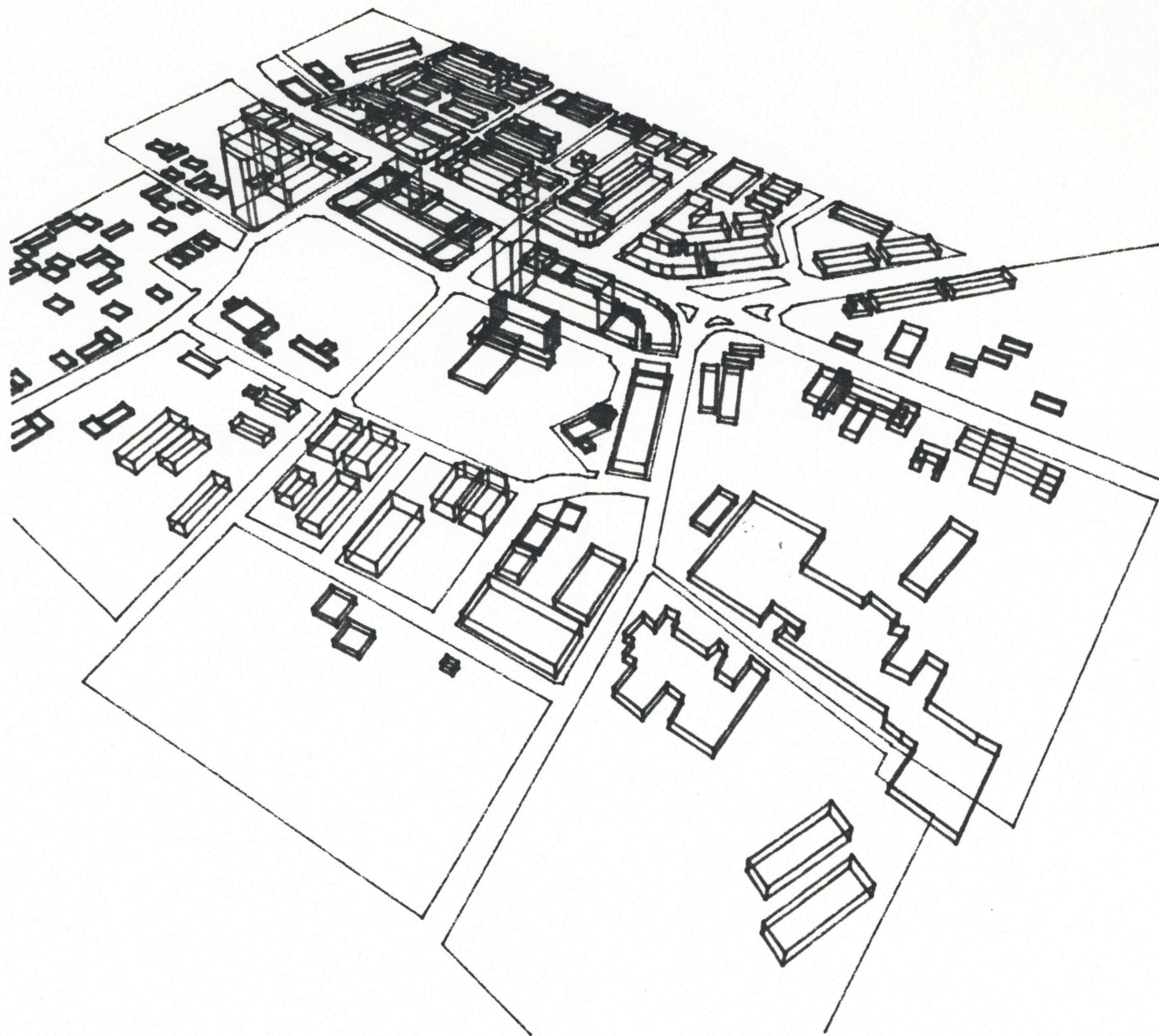
East : residential and housing complexes

south : Toward down-town and low rise commercial areas
(Chinese townhouses)

West : Planned High rise and civic center.



NO WRITE —●—N







DATASHEET

Employment

- | | |
|--|---------|
| 1. Total employment: | 486,290 |
| 2. Percentage of employment to total population: | 42 % |

COMMUNITY SERVICES

- | | |
|-----------------------|-----|
| 1. Kindergartens: | 78 |
| 2. Primary schools: | 141 |
| 3. Secondary schools: | 56 |
| 4. Hospitals: | 22 |
| 5. Clinics: | 272 |
| 6. Police Stations: | 16 |
| 7. Fire stations: | 7 |
| 8. Post Offices: | 25 |
| 9. Public Libraries: | 3 |
| 10. Churches: | 10 |
| 11. Temples: | 25 |
| 12. Mosque: | 35 |

Population Statistic

The growth of population in the Federal Territory has been very rapid especially in the last decade which experienced an average annual growth rate at 3 to 4%. This rate is expected to decrease to 2% a year due to competition with several other cities and economic recession over the last 5 years. There were 1,670,000 people reported in Kuala Lumpur in 1985 and expected growth to 2,220,000 people by year 2000. Also it is forecasted that during this period there will be a gradual expansion of the 20 -50 age group and increasing labor supply faster than the general population. These group will be the most valuable assets to the city labor force to maintain the increasing needs of skilled and semi-skilled labor in the growing industrial technology in the country.²

² Figures and numbers are taken from Department of Planning, Urban Development Authority(UDA).

SITE
ANALYSIS



THE CLIMATE

TROPICAL CLIMATE

GENERAL:

Malaysia's tropical climate is characterized by its intense tropical sunshine, heavy seasonal rainfall and prevailing winds. The average daily temperature varies from 80 to 88 degrees for almost all the months through-out the year. Relative humidity is generally high, with the low of 80%. The northeast monsoon that prevails from October to February is the only wind that brings a huge amount of rain in a year. Another monsoon from south west prevails around March to September but with less moisture content. Rainfall is recorded as 80 to 90 inches a year. Hazy and dull grey skies with annual solar radiation at 6 GJ/m² are expected year round. High ratio of indirect radiation to direct and also high heat storage capacity at the ground level are part of Malaysian intense tropical climate. The greenery and tropical forest added to the low ground reflection factor in a more rural areas in the country.

SW
MONSOON

SUNSET
6.30PM

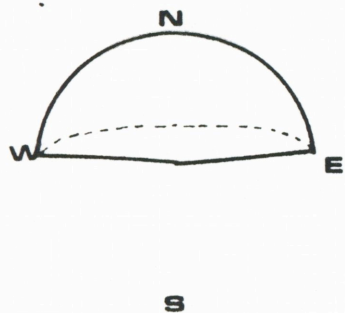
SUNRISE
6.45AM

NE
MONSOON

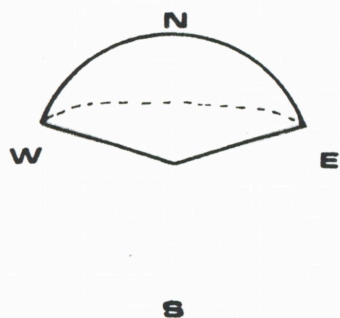
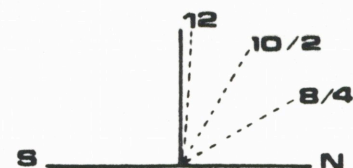


PEDESTAL
MARKET
PLACE
TRAFFIC

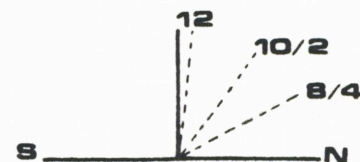
CHARTS

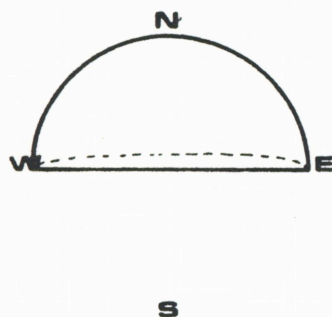


APRIL 21	ALTITUDE°	AZIMUTH°
SUNRISE	0	85°
8	30°	86°
10	60	87°
12 NOON	89°	0°
2	60°	273°
4	30°	274°
SUNSET	0°	275°

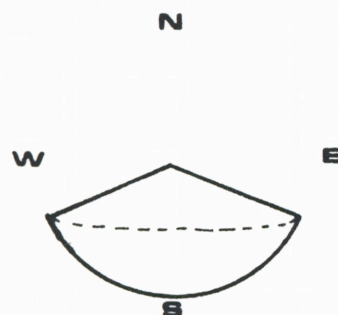
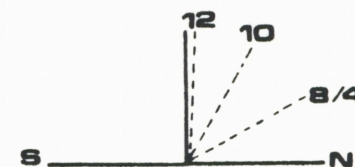


JUNE 21	ALTITUDE°	AZIMUTH°
SUNRISE	0°	67°
8	29°	65°
10	55°	53°
12 NOON	87°	360°
2	55°	307°
4	29°	295°
SUNSET	0°	293°

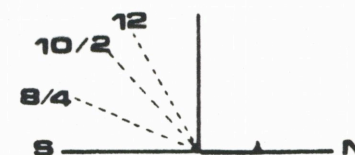


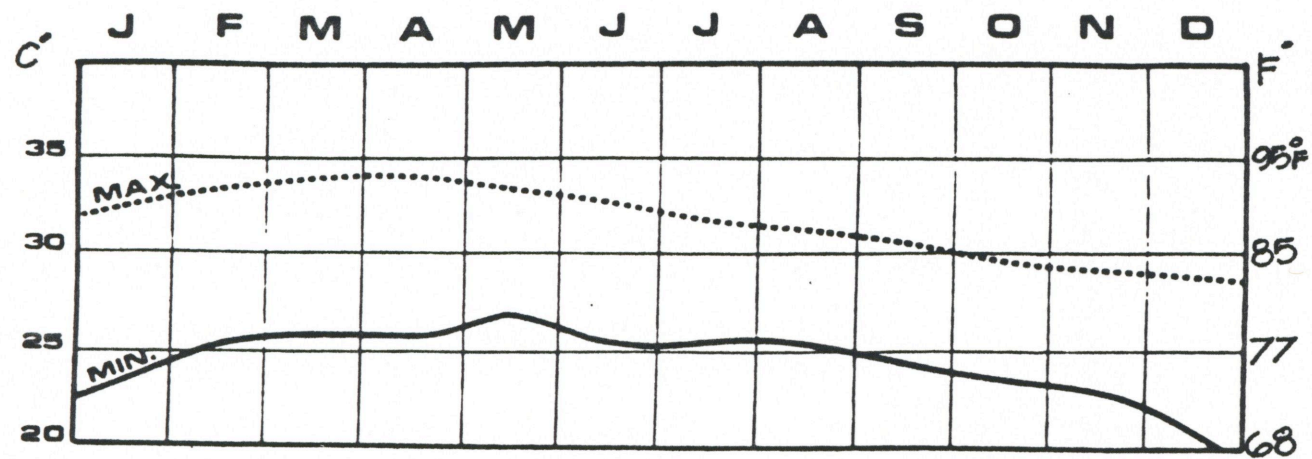
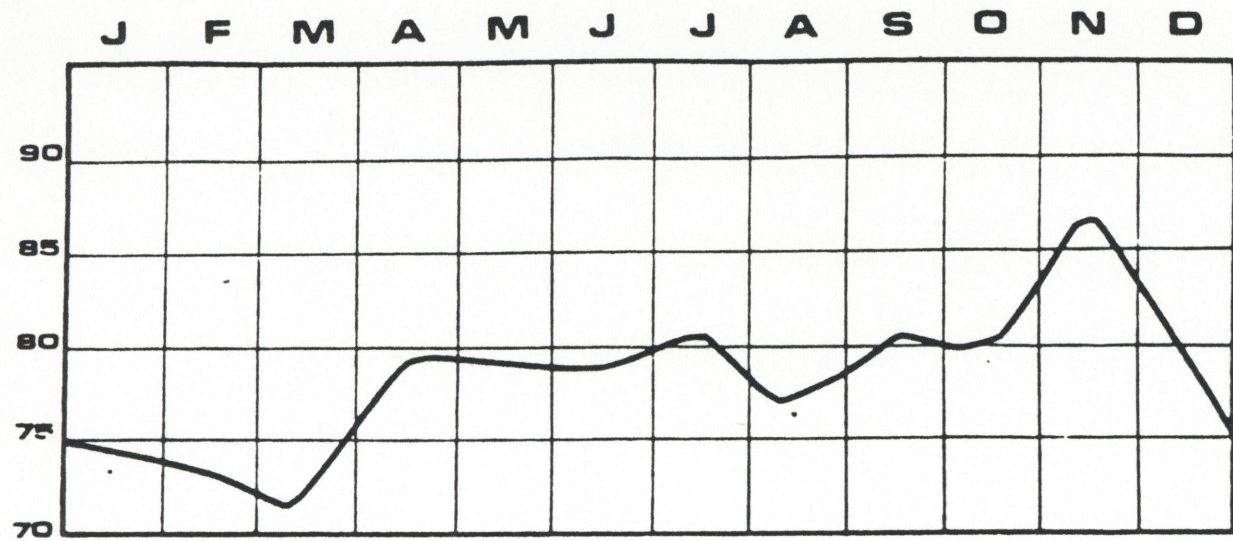


SEPT. 23	ALTITUDE °	AZIMUTH °
SUNRISE	0°	90°
8	30°	98°
10	60°	97°
12 NOON	86°	180°
2	60°	208°
4	30°	267°
SUNSET	0°	270°

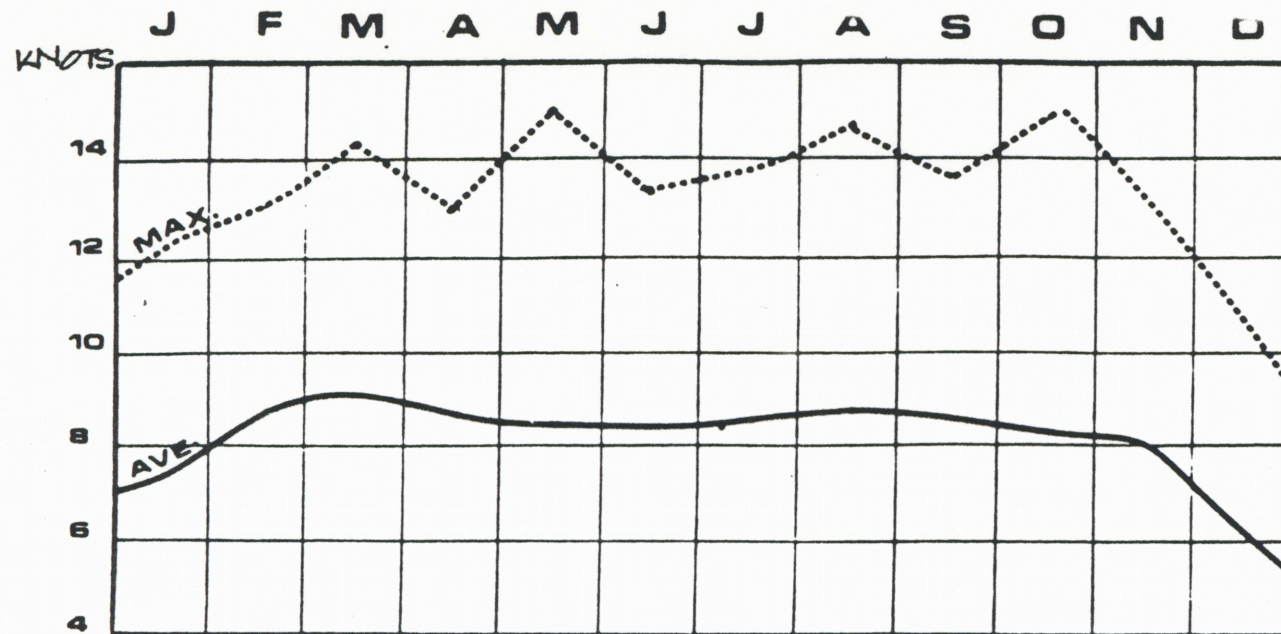


DEC. 22	ALTITUDE °	AZIMUTH °
SUNRISE	0°	113°
8	25°	118°
10	50°	135°
12 NOON	62.5°	180°
2	50°	208°
4	26°	242°
SUNSET	0°	247°



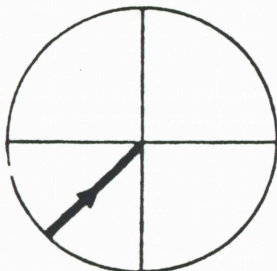


WIND



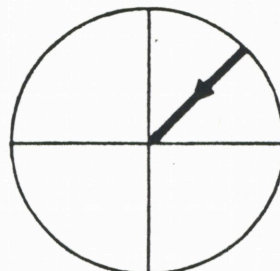
WIND DIRECTION

SOUTHWEST MONSOON



JUL.-SEPT

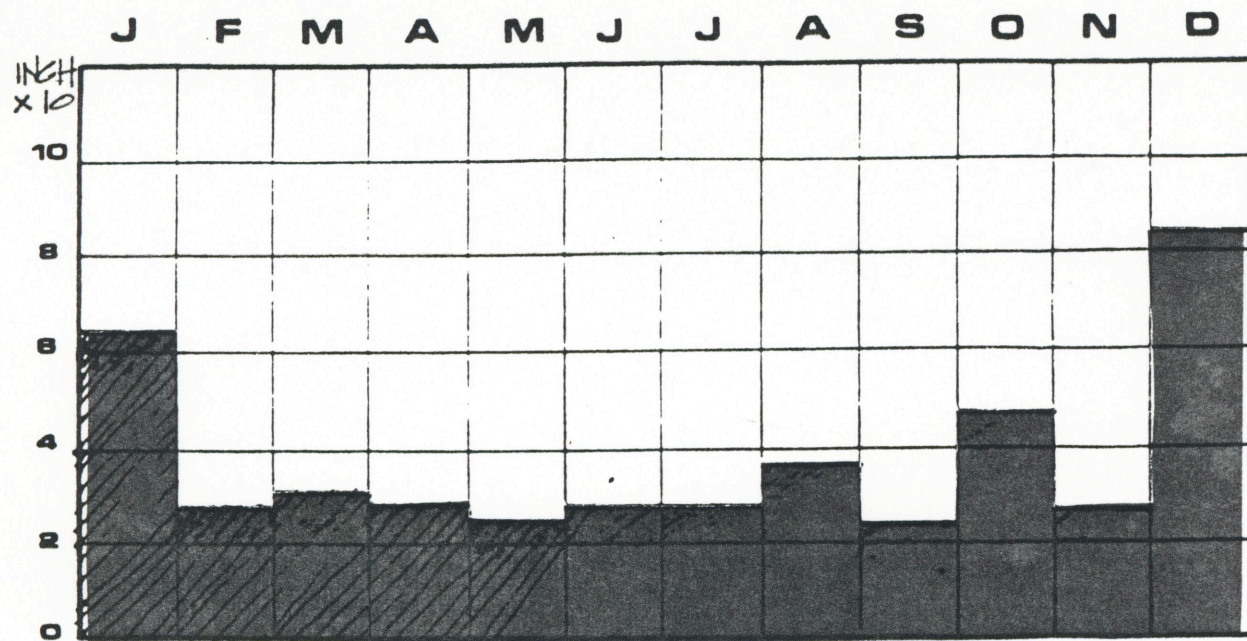
NORTHEAST MONSOON



OCT.-MAY

115.

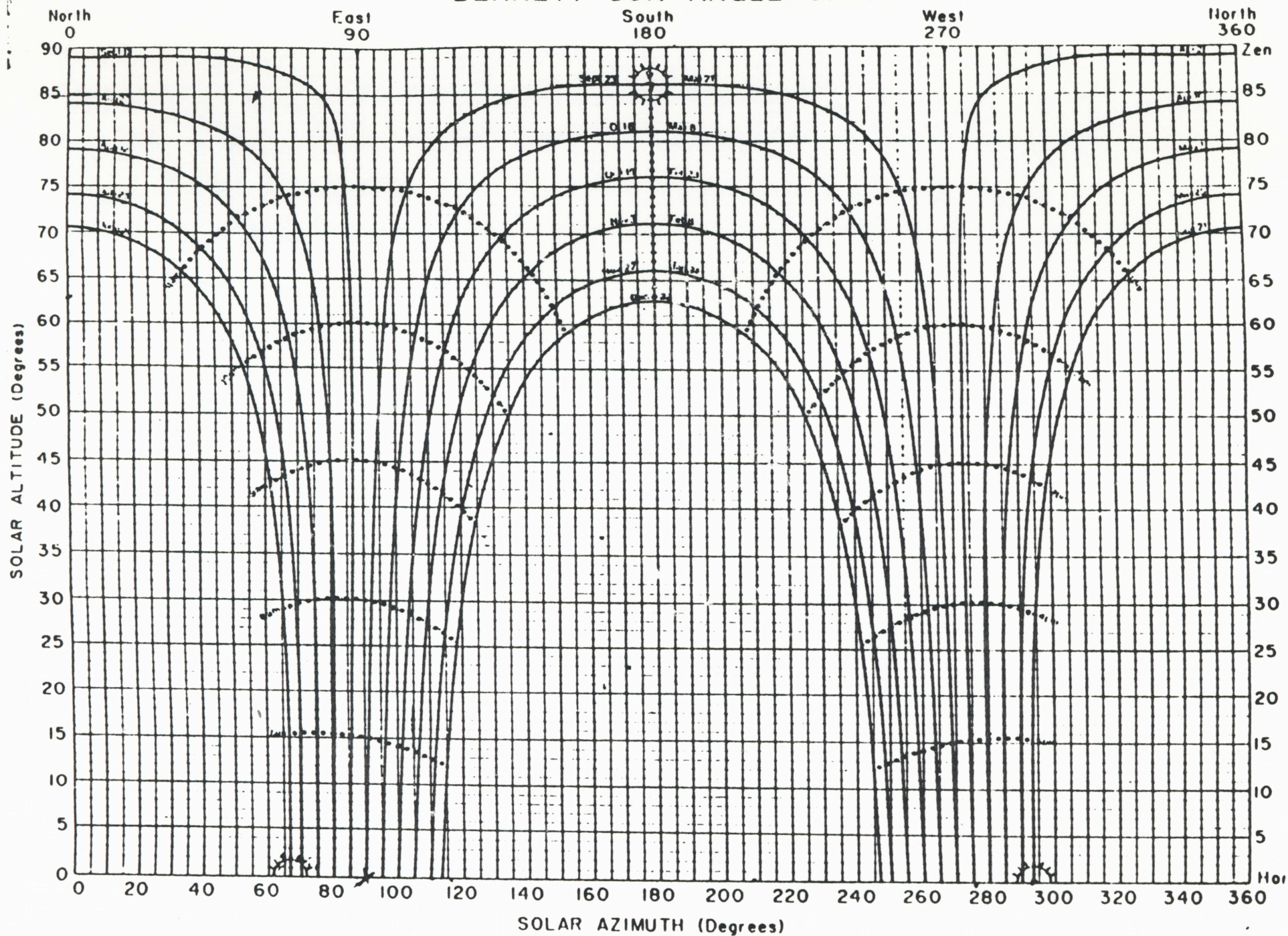
High wind during the months of July, August and September is brought by the Southwest Monsoon.



Rain

- . Rainstorms are about 120-140 days a year.
- . Average yearly precipitation is 2000 mm/year.
- . Rainy season is during the months of October, November, December and January.

BENNETT SUN ANGLE CHART



CLIMATE: THE NEEDS

CLIMATE: FACTS, NEEDS AND OBJECTIVE NOTES

The two most important considerations towards in a tropical climate are to create a cooler environment and exploit the natural breezes.

The needs listed below are some of the solutions that would be useful to tap the intense tropical climatic condition based on climatic charts in the previous pages.

OBJECTIVE: To make it cooler

- NEEDS
- Locate activities on the leeward side of water bodies.
 - Use extensive coarse deciduous trees.
 - Provide shade for all activities and areas
 - Do not block or curtail down hill air flow
 - Use moveable overhangs, awnings and canopies during the day which may be moved aside at night to allow for release of the trapped warm air.
 - Use extensive turf and ground covers throughout the site.
 - Use a minimum of hard, paved surfaces. Shade all the paved surfaces with structural or vegetational canopies.
 - Use raised decks for paving where possible.
 - Use vines, shade trees, or canopies over all exposed wall surfaces.
 - Prune lower growth on all trees to allow for increased air circulation.
 - Plant to divert winds or breezes through the site.
 - Provide pools, fountains, spray devices, and irrigation as extensively as possible.

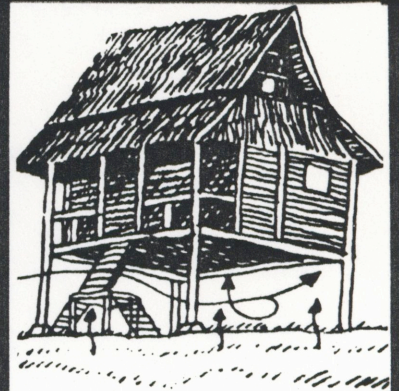
OBJECTIVE: To make the site breezier

- NEEDS
- Remove all restriction to air flow where ever possible.
 - Curtail and limit all low plant growth between 1 foot and 10 feet high which would inhibit or limit wind flow.
 - Locate outdoor activities in areas which have the maximum access to wind.
 - Build decks or platforms in the windiest areas.
 - create natural wind tunnels or breezeways using either plant materials, earth forms, architecture fences or walls.

CLIMATE, NOTES AND SUMMARY

PRINCIPLES AND GUIDELINES FOR SITE PLANNING: Hot Humid Region

1. Site should be selected where it is not necessary to remove much of the existing vegetation.
2. In the hot humid region, building should be elevated and opened in order to take advantage of cooling breezes as much as possible.
3. Site development should reflect as much as possible indigenous forms and materials in paving, walls, fences, canopies, fountains, pools and accessories.
4. Paving with hard reflective surfaces should be either reduced or the paving should be shaded to reduce excess heat and reflectivity
5. Vines growing on walls, trellises, or canopies are effective in shading the south and west walls of the buildings, keeping them cooler.



6. In the hot humid and hot arid region, trees and medium to high hedges within ten feet of the building should be placed relative to the openings in the building so that they assist in channelling and directing beneficial breezes through the openings.
7. Decks provide a less reflective and less hot paving surface and also provide air circulation from underneath the decking.
8. Decks can be used as extensions of the architecture to place people in a more favorable climate on the site.
9. Large lawns and open spaces should be punctuated with groupings of shade trees.
10. Trees and plants in containers can be placed as to provide areas of shade- shade houses-gazebos, garden shelters, tea houses or belvedere- provide an oasis for relaxing and entertaining.



11. A tree located to shade the wall and roof in the afternoon will keep house temperatures more comfortable and may reduce the wall and roof temperature by as much as 2 to 40 degrees F.

12. To a lesser degree, climbing and clinging vines also afford summer shade and heat control. They are effective sun screens, supported by trellises, over out-door areas. Grown on masonry walls, they act as insulating blankets for hot summer sun.



VIEW / EXISTING ELEMENTS



THE VIEW AND EXISTING ELEMENTS

GENERAL:

To bring a conclusive idea of how the site should serve its populace is to look closer towards what is happening among the people. Who is using the area, who are the dominant figures in creating the place and how the place is being used are as important as an ability for creating an exciting design. The two notions that exhibit the dynamics of an area are the place itself and its inhabitants, THE PEOPLE and their ARCHITECTURAL SPACES.

PEOPLE/CULTURE

The city of Kuala Lumpur, as much as any other city in Malaysia is a melting pot of various cultural and traditions. It is the city of a mixed subculture, stemming from Malay archipelago as well as from china, India, middle east, and Europe. The 4 major races that dominate the area are Malays, Chinese, Indians and Pakistanis.

The Malays comprise 50% of the total population and plays the most important role in shaping the political arena since independence as well as the prominent cultural identity that Malaysia is trying to promote through its architecture and context. The malay culture in Malaysia nowadays is reflected through its political power, adherence to Islamic customs, mixed with local traditions from the Malay pre Islamic empire before the 13th. century. Multi-faceted norms and standards are influenced by Hindu, Islam and animistic beliefs pattern the Malay culture that we see today, distinctively different from the other 4 major races.

The Chinese who make up 35% of the whole population are originally immigrants from southeastern China. They became important in the economic development in Malaysia under the British administration in the 17th century. The early Chinese settlements in the 14th century were not a cross cultural problem because they adopted the local traditions of the Malays and their language. However, the later Chinese immigrants of the 19th century showed some difficulties blending-in. Their numbers were so large that it was hard to leave their long established traditions behind. Self contained communities established in the early years also worsened the cultural gap within the two dominant races. Nowadays the Chinese are mostly identified with their economic success, playing a big role in urban commercial activities, expressed in their rows of shophouses.

Indians, Pakistanis and Ceylonese from the Indian subcontinent constitute about 10% of the population, are more distributed around the plantation and industrial estates as a labor force.

The integration between these major races were hardly achieved because of the big difference in their religion, beliefs, back-ground, language and area of interest. Today, with several ideas of implementing the slogan of a national unity and social educations, Malaysia is looking forward for a better understanding community.

ARCHITECTURAL CONTEXT:

Malaysia is a new country with an old land that was occupied by several foreign empires started by Majapahit kingdom in the early 4th century a.d and replaced by Siamese, Malacca Sultanate and then the Dutch empires.. Portuguese occupation in 1511 a.d., marked the first European invasion in Malay peninsula and for the last 140 years before independence, Malaysia was named Malaya as a part of British colony. By 19th century, Malaysian architectural heritage were the mixture of several style from the outside and some modified structures according to the needs and local climatic condition. By understanding how these architectural heritage and how they were built to take the best advantage of the climate and natural resources, we can better understand how to build the future with the resources and technology that we now command and still responding to natural needs of the environment.

To study architectural context is to study physical form and to be sensitive to the nature and function embodied by the culture of the people in the area.

Some examples of those existing built elements are:

1. TRADITIONAL SHOP HOUSES

- Covered colonnade that forms a varandah way and provides shade from the sun and the rain when linked together.
- Two stories high; shop in front, court yard in the middle, and storage at the rear of the first level; living, dining, kitchen and sleeping on the top.
- Central air well for ventilation and lighting.
- Jack roof on the ridge of the roof, allowing natural drafts to enter through the openings to cool the heated roof and reduce the radiation to the rooms below.

2 STREET HAWKERS

-Using shaded vendor carts

-2 types: a. selling daily use products, clothing and toys.

b. Food stalls and local drinks

-Attracts a lot of lower income workers like laborers and pedestrians for it is fast and cheap.

-No threat to bigger commercial establishments.

-Placed on designated areas only.

3. SHOPPING CENTERS

- have the disadvantage of being quite a distance away. however shopping centers have become more popular than shophouses and in fact are the most successful business ventures in Malaysia recently.

-The goal for the shopping center is to conserve the street scape activities while providing modern shopping facilities.

-Most of the KL shopping centers have turned their backs to the streets because the central activity occur in the inner core of the buildings.

4. OFFICE TOWERS

-These are the latest building type and definitely can't be ignored in the central Planning Area. With a rapid transition of two story mixed-used residential and shophouses into a totally commercial Central Business District area , a new city-scape identity will be created as part of city planning goal.

-The most critical part in designing office tower is to create the most effective space for the work habit. That is to say to utilize the day lighting at the maximum level thus meet the acceptable energy saving criteria.

- Tiled roof
- Full height windows on the facade which have openings that are taller than the width and closed by window shutters.
- Openings which are protected by a rail or baluster at the bottom to prevent people or objects from falling off.
- High ceiling, which is about 12 feet or more. to provide more air circulation.
- Linear arrangement, which create a regularity along the street.

* To note here that these 2 story shophouses are no longer going to be built in the near future and the existing shophouses around the site are under a process of demolishing due to a new policy of land use reorganization and they are economically unwise for the increased land value and commercial opportunities

PROGRAMMING



PROGRAMMING

GENERAL

This architectural program for phase I for PETRONAS (Down Stream Division) office complex and retails is an effort toward defining the problem and searching for possible and appropriate solutions. The program is the result of a systematic approach to the schematic design process, which has moved from the general to the specific in terms of both data collecting and understanding the critical site condition as a whole.

An organized five steps method of inquiry has been adapted from "PROBLEM SEEKING", an architectural programming primer (Pena 1977).

The steps involved are:

1. Establish GOALS
2. Uncover and test CONCEPTS
3. Collect and analyze FACTS
4. Determine NEEDS
5. State the PROBLEM

Considerations for each step are: FUNCTIONS, FORMS, ECONOMY and CLIMATIC NEEDS

It is a hope that this in-depth understanding of the problem shall lend greater insight towards a more successful design solution.

As mentioned in my thesis statement, the phase I will only involve designing 4 to 6 stories of office spaces (depending on needs) combined with two floors of retail and a food court. Details of the interior space program will not be part of this thesis which supposed to be valued at a planning stage. All the office spaces, parking garage, retail and food-court will be addressed as an urban design parameters which to some extent will be analyzed by this program for their functions, forms and economics goals.

GOALS AND CONCEPTS

GOALS-CONCEPTS

The following goal statements are essentially a brief analysis of a major schematic design objectives of this program.

They are rank ordered in groups relating to their appropriate consideration for FUNCTION, FORM, ECONOMY, and CLIMATE. BEHAVIORAL OBJECTIVES inherent to particular concept have also been noted.

FUNCTIONS

GOAL # 1 : To create a central (Plaza) that REFLECTS a MEMORABLE and RESPECTED corporate image.

CONCEPT 1: Utilize a central organization scheme in the space planning throughout the whole center.

2: Maintain a consistent vocabulary like "tropical garden" throughout the center.

3: Utilize a permanent, "up to date" materials.

4: Utilize a memorable image of expressive structure, unique sculpture and other plaza features such as fountains.

5: Create a sense of emotional security and harmonic relationship between the exterior and interior spaces by using the open atrium spaces.

6: Design a careful solution toward traffic circulation on site and traffic to and from the residential areas.

GOAL # 2 : To study and develop the potential of the plaza internally and create a force to draw people in from the outside

CONCEPT 1: Create a structure that would lead people toward inside space by utilizing a focal point of interest.

2: Separate the more corporate image spaces from the more public spaces verbally and literally(Formal spaces vs informal)

3: Utilize the "building edge open spaces" for retails and food court and avoid complete "internal core open spaces."

4: Utilize the low key operations at retails and food court to attract more people from the market place and yet more comfortable in nature setting of the area

5: Locate parking closer to retail than any other spaces and provide a shaded skywalk to and from retail.

GOAL #3: To create a relaxing, comfortable work space and yet motivate the employees productivity in the office.

CONCEPT 1: Locate the more executives work spaces on upper level of the multi-story building to achieve superior view.

BEHAVIORAL: To cause the employees to feel as a part outside
OBJECTIVE communities.

CONCEPT 2: To encourage the employees to interact with the public by crating a competitive eating place and this food court will function as mediator between the public world and corporate lifestyle.

- 3: Orchestrate fenestration within conference room with major views of the out door.
4. Separate the formal office building from the main flow of vehicular traffic.
- 5: Restrict vehicular traffic to the office area to service vehicles and main entry only.
- 6: Provide skywalk for the employees to and from parking
- 7: Utilize open structural plan which will allow for a multitude of interior spacial arrangement.
- 8: Utilize a structural system which allows for varying ceiling heights depending on space requirements.

GOAL # 4 : To encourage public integration in the 3 more
public spaces (Parking garage,retails and food court)

CONCEPT 1: To create an information center which details current activities at the center.

2: Establish visual and physical tie between them by using same type of construction, materials and graphics symbols.

FORMS

The General goal:

To develop forms that respect the local climatic conditions and yet reflect the national identity through the term "Modern Vernacular"

Modern vernacular is the term for defining a national identity and symbolism.(which has to be expressed by its total meaning.)

National identity is not the shape of the roof(eg. pitch roof next to the high-rise)

National Identity in a way, is a total representation of a particular place social norms, responses to climatic conditions, cultural aesthetic, definition and interpretation of space and local technological expertise against the economic frame- This is called Modern vernacular.

The concept: (Abstract from Ken Yeang; Tropical garden city)

Modern Vernacular representing national and local identity that responds to aspects endemic to the locality:

1. Climate- vital issues in determining the built forms
2. Influence- of architectural heritage
3. Incorporation of various cultures and their symbols
4. Integration of tropical landscape and ecology into urban environment.

All the aspects above have been compiled in the ANALYSIS part of this document.

GOAL # 1 : To create a center (Petronas Plaza) that merges and is in harmony with the site context and local climatic environment.

CONCEPT 1: Utilize the garden city phenomena and it's vocabulary such as vines, fountains shrubs, shades etc

- 2: Integrate wherever possible indoor spaces and outdoor as a single recreation environment that allow natural comfort
- 3: Design a structure that will keep the heat out and let the air flow through the building by utilizing open space plan with variety of ceiling heights and screening devices.

GOAL # 2 : To segregate the two type of building use, formal and informal without destroying the mechanical and organic bond between the center.

CONCEPT 1: Face the entrances of this two different type of building functions into different directions.

2: Create a neutral space between major functions containing gardens, outdoor, dining areas, street kiosks etc.

ECONOMY

GOAL # 1 : To have a center that lends itself to minimum maintenance and operating cost.

CONCEPT 1: To incorporate the leasable food court and retail to help out paying the maintenance fee and operating cost.

- 2: Utilize the low thermal capacity materials to dissipate and keep the inside cool and saving air-conditioning operating cost.
- 3: Utilize durable materials inside and outside for less maintenance cost .
4. Utilize maximum day-lighting and atrium design wherever possible

CLIMATE

General:

The optimal condition in a hot humid area is sitting under the shade of trees with consistent blowing breezes.

Thinking about having the same condition but in more a permanent and defined structure, then we need to apply the term "Valve design"³. It is an analogy for Tropical buildings in which an external climate is allowed to flow into the building passing the adjustable filters and baffles instead of being totally excluded by air conditioning.

CONCEPTS:

1. The office floors are designed as stepped back landscaped terraces overlooking the plaza or atrium below
2. The atrium should serve as a transitional space between the inside and outside.

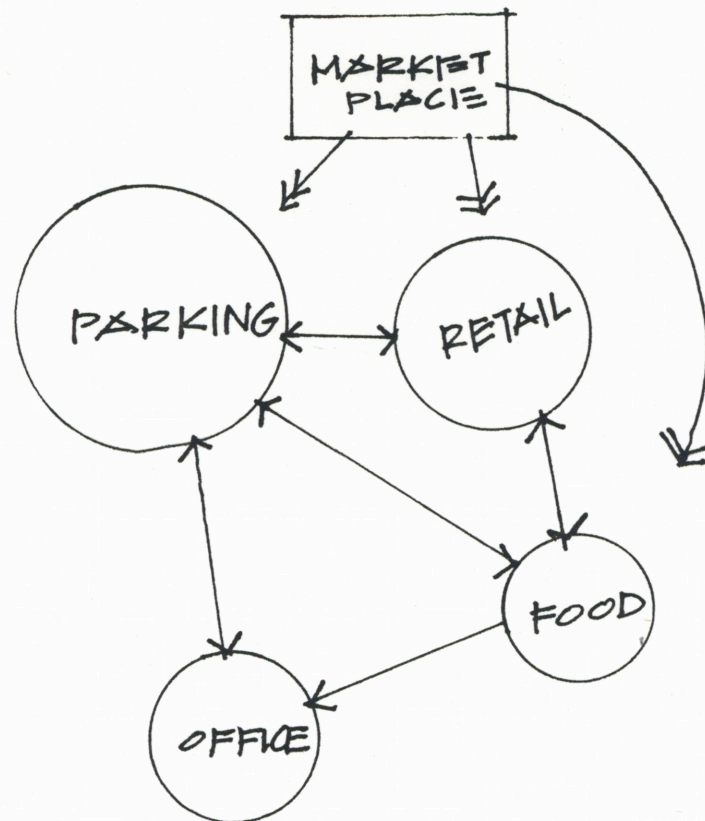
³ Ken Yeang; Notes for critical Malaysian Vernacular, UIA International Architect.

3. Provide an intermediary comfort zone that offer partial protection from the climate.

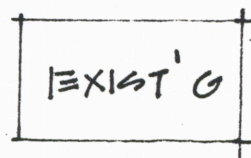
4. Provide all the adjacent outdoor areas with canopies, sun shading devices and ventilation.

NEEDS

MAJOR SPACE RELATIONSHIP



LEGEND:



SPACE PROGRAM

SPACE	AREA	%	PARKING NEEDED	# CARS
1. OFFICE 1% CIRCULATION	60,000 Δ 60,000 Δ 6,000 Δ	28%	24,000	60
2. RETAILS IRC. 12%	28,000 Δ 5,000	14%	28,000	70
3. FOOD COURT 1% IRC.	7000 Δ 700	3%	7,200	18
4. PARKING GARAGE IRC. INCLUDED	<u>PROVIDED AREA.</u> 81,000	34%	760,000' Δ	148
5. PUBLIC SPACES	50,000	21%	-	-

PROVIDED # CARS

160 MIN.

* PARKING - 1 CAR - 400 Δ

* OFFICE - 1 CAR FOR EVERY 1000' Δ

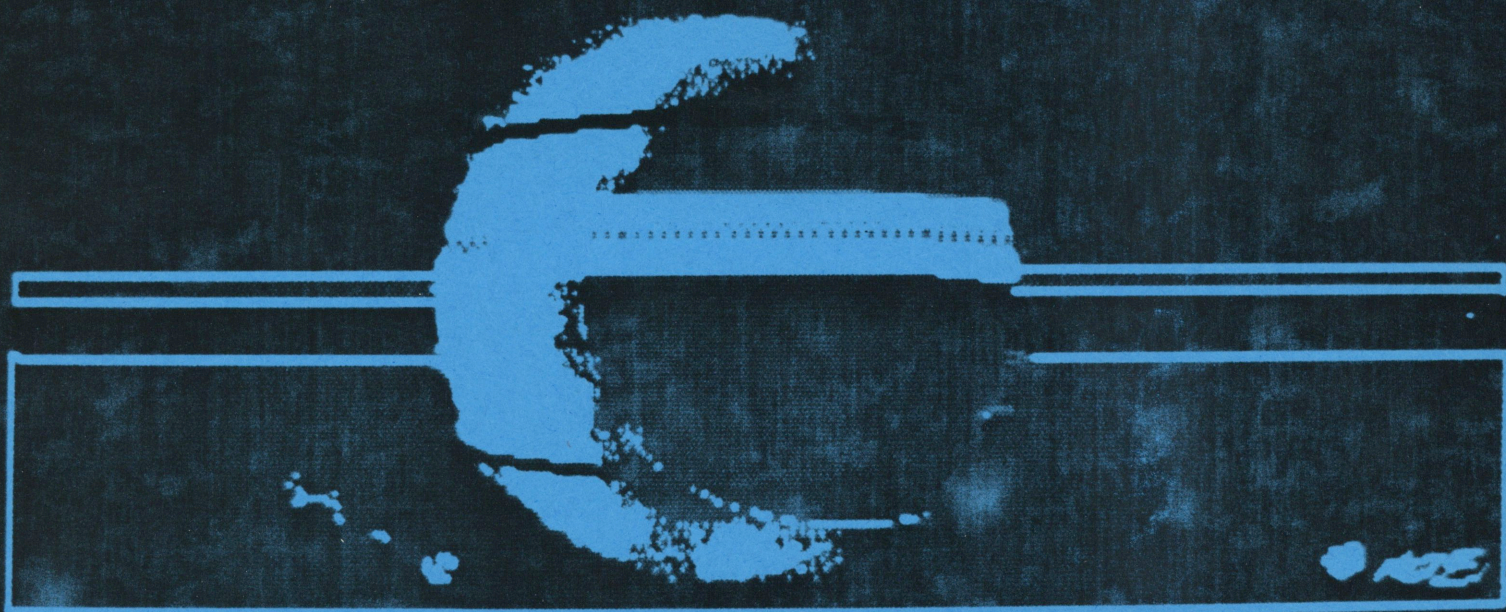
* COMMERCIAL - 1 CAR " 400 Δ

BRIEF SITE PROGRAM

TOTAL SITE AREA : $\pm 151,000 \text{ sq ft} = 3.7 \text{ ACRES}$

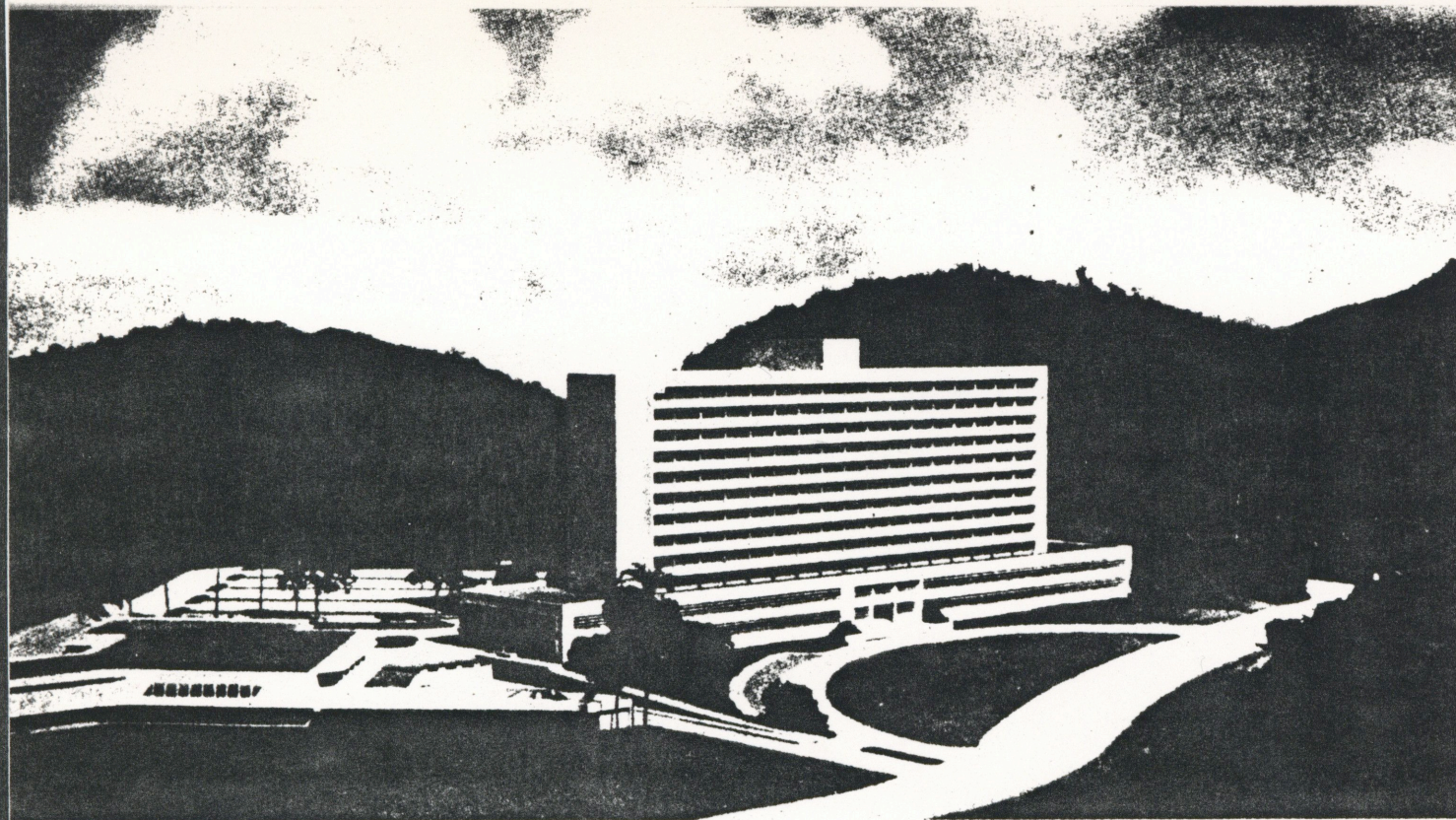
TOTAL BUILDING AREA : $\pm 237,700 \text{ sq ft}$

TOTAL AREA USED : $\pm 133,000 = 3 \text{ ACRES}$



THE PRECEDENCE





EDIFICIO ESSO

CARACAS, VENEZUELA

Lathrop Douglass, Architect

Fred N. Severud, Structural Engineer

PRECEDENT: CLIMATE



THE architect for this building is one of those who have called attention to some new criteria for office building design.* The project here presented is unusually fortunate for demonstration of new standards as applied to a specific case, for here the site and circumstances allowed virtually complete freedom in design. The project has been approved and the drawings completed, but construction has been voluntarily postponed by Creole. With a limited supply of steel and other critical items available for export, Creole has elected in the national interest to devote all of its allocations to actual oil production, even though its office employees must continue under unsatisfactory conditions.

Although the final design is quite happy with respect

*"New Departures in Office Building Design," by Lathrop Douglass (see pp. 161-164 of this volume)

to clean lines and imposing masses, these esthetic considerations waited upon the realization of more utilitarian objectives. In this case they did flow very naturally from the working out of functional solutions.

The long narrow form resulted from several factors: orientation in a hot and sunny climate, planning for the most direct circulation and greatest flexibility, and integration of specific office needs of the company that will occupy the building. (These are analyzed in detail as separate items on succeeding pages.) The wide, heavy base came from massing several large departments on two lower floors. The neatly closed ends grew out of the sun problem, as did also the long horizontal lines formed by sun visors. And the projection of the elevator core was by no means whimsical; it came directly out of the engineers' earthquake design. The separation of cafe-

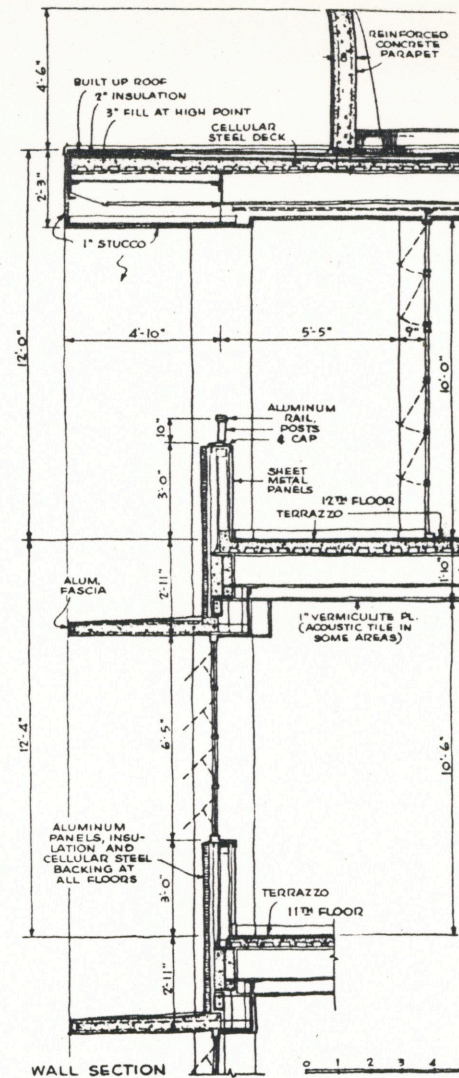
PRESENT: CLIMATE.

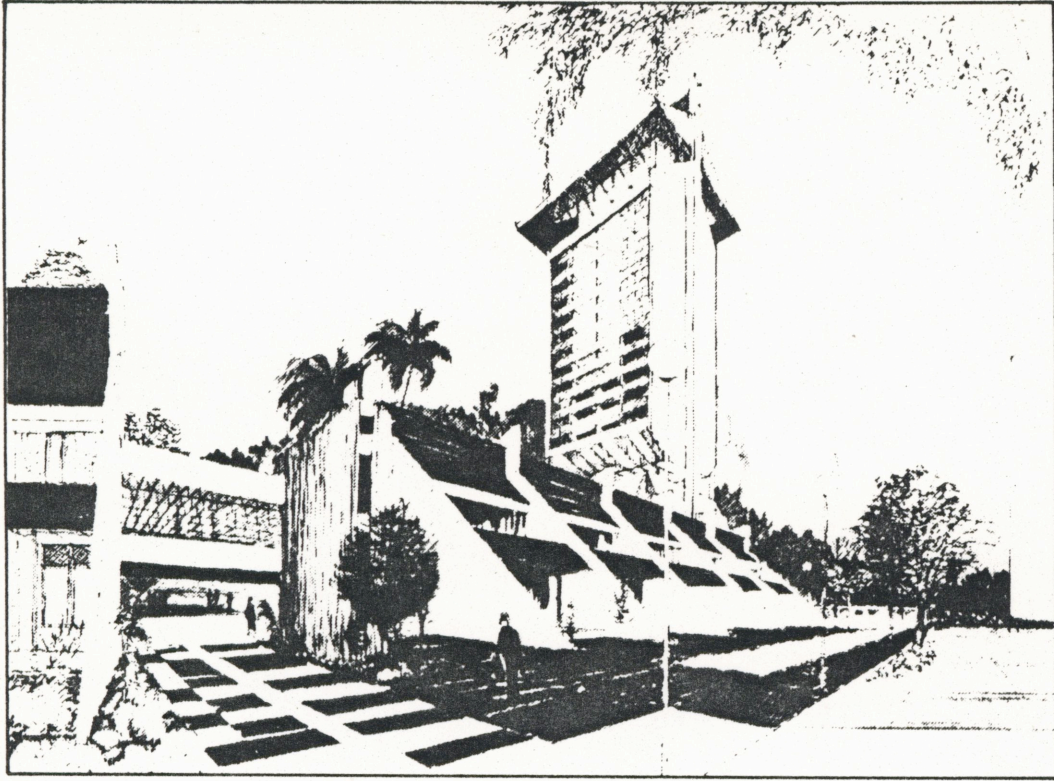
SUN DICTATES FORM

Here the sun was considered first from the standpoint of its heat — air temperature is almost ideal the year 'round, but a building can become a solar hot-bed. As the charts indicate, the sun in Caracas is high as well as hot. It shines from the south in winter, from the north in summer. On north and south sides it is easily screened off with fairly narrow visors. But on east and west ends, sun protection would be all but impossible.

The answer was obvious — a long, narrow building running east and west, with all offices facing north or south. And an extension of this idea was to block off both east and west ends with toilet rooms and stairs. Then no working space ever need have sun-heat troubles. As the sections (above) show, not even the desk nearest the window is ever touched by sunlight, and only rarely does any window glass get any sun. On the lower floors, the sun protection is by outside aluminum louvers, not overhanging visors, but the result is the same.

For maximum daylight, under such shading it is possible for the windows to be continuous, and inside shades or venetian blinds are not needed. A factor in this is that the glare of the sun is also avoided, yet normally glare would be such a consideration as to rule out such building forms as H or U plans, for the glare from one interior wall to another would be very disturbing. Fortunately the open site obviates glare from surrounding surfaces.



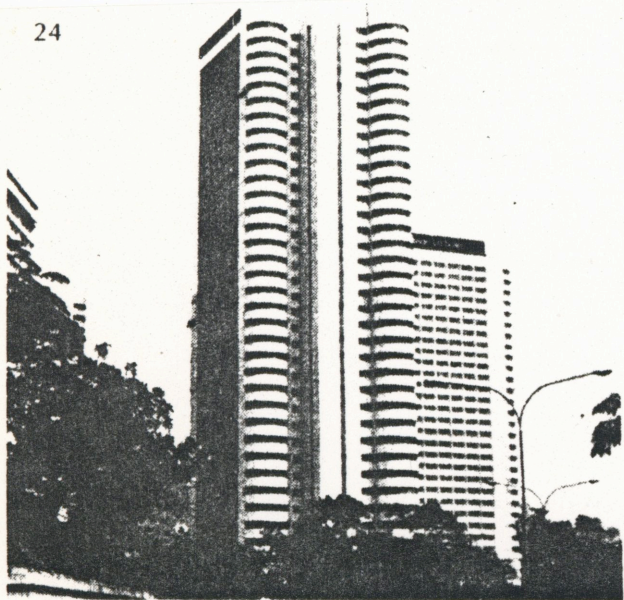


Forme: President

22



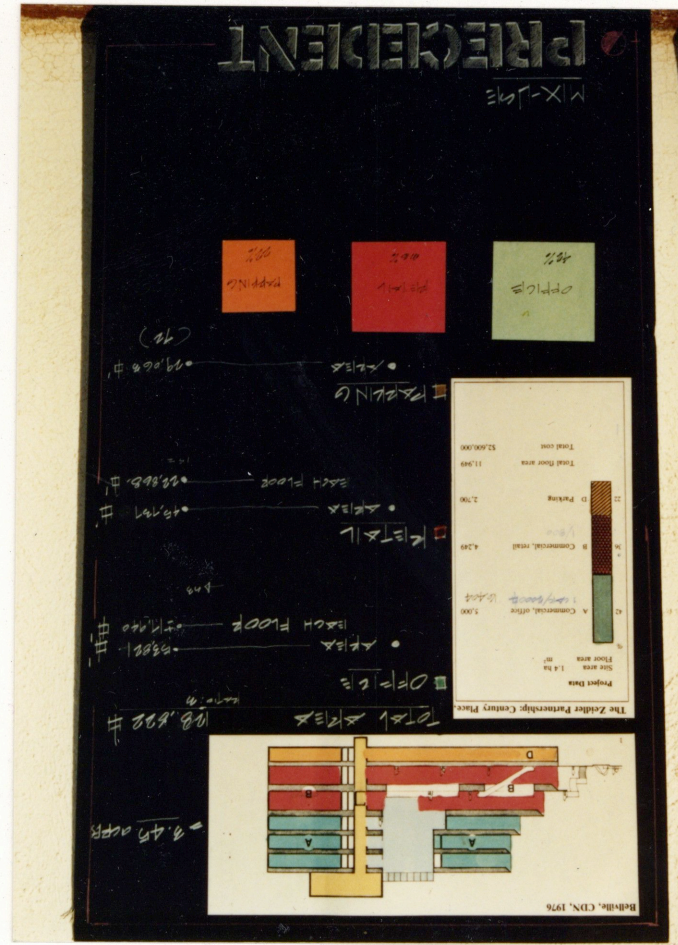
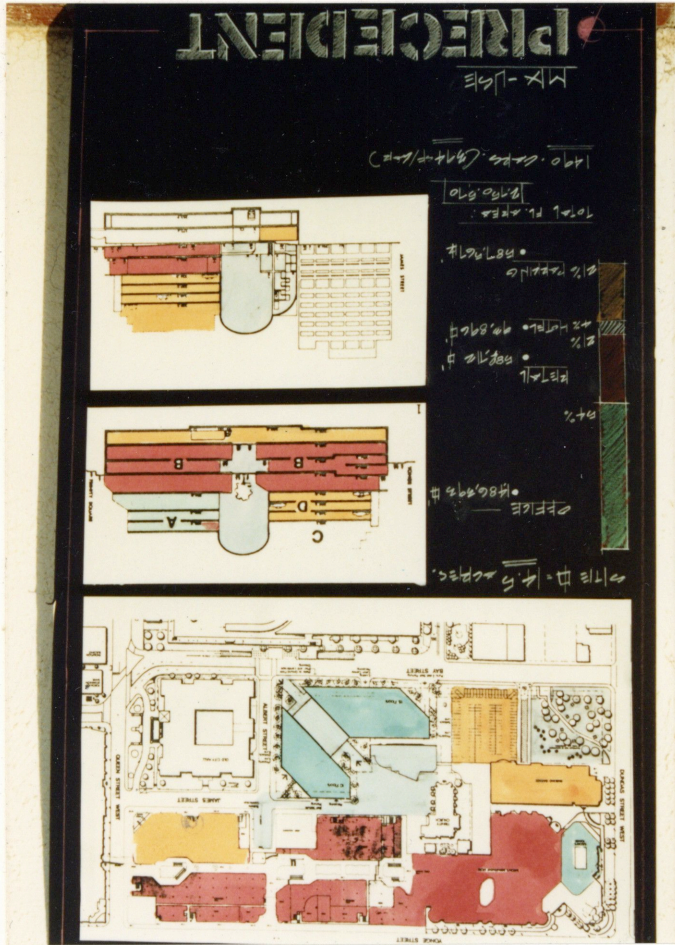
24



25



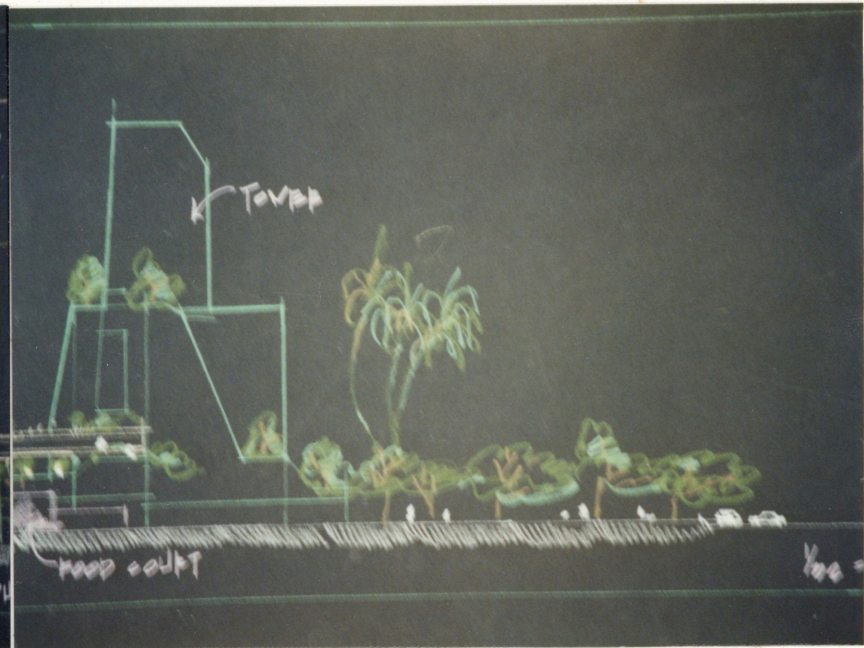
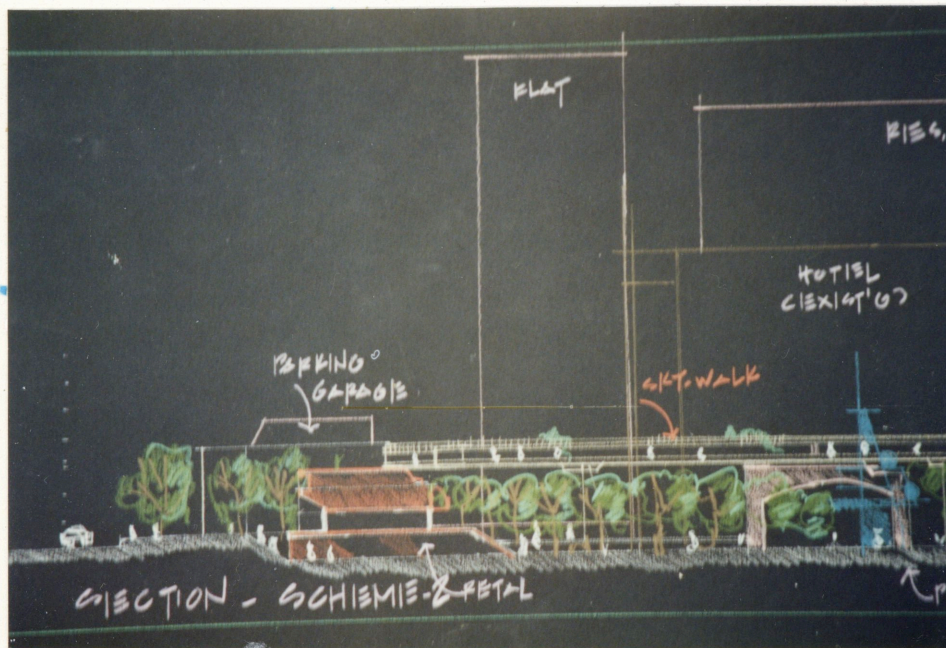
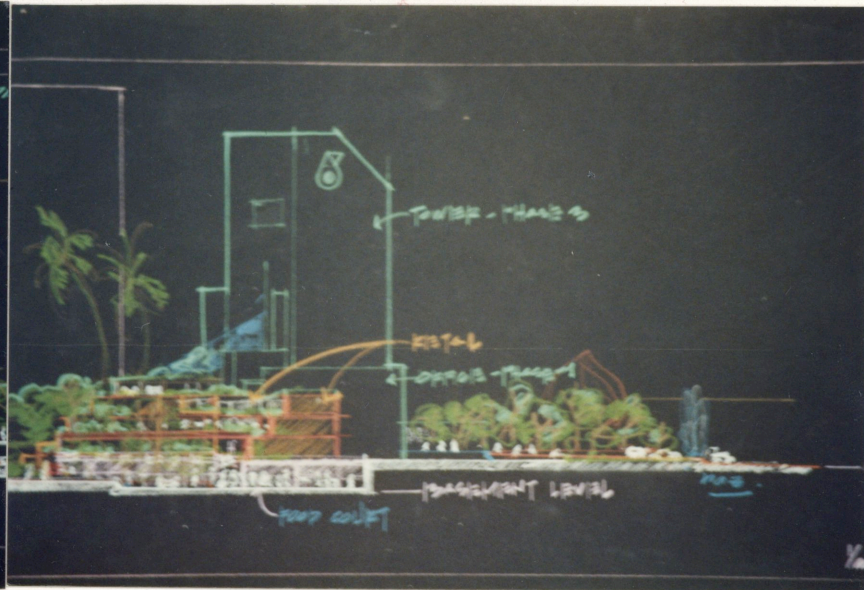
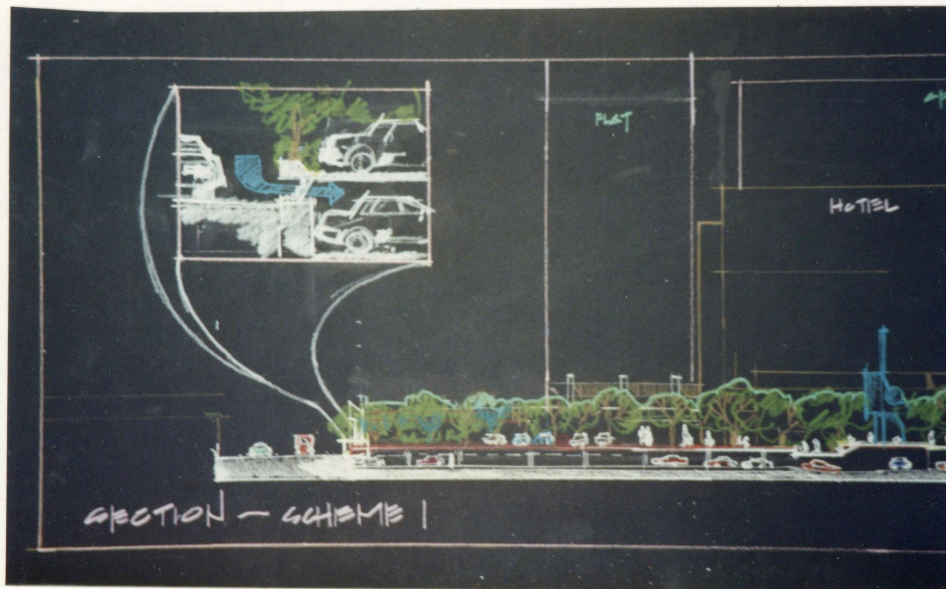
EXISTING





SCHEMES





BIBLIOGRAPHY

Abel, Chris. "Built sources of Malaysian identity" Majallah Akitek (March 1985) pp 32-33

Dewan Bandaraya Kuala Lumpur (KL Cityhall) Kuala Lumpur Structure Plan. 1984

Peter, Gurstein." Traditional Chinese shophouses of Peninsula Malaysia" International Architect Magazine" (Issue 6, 1984)

Ping, Ho Wai. "Development of Kuala Lumpur" International architect Magazine. (Issue 6, 1984)

Yeang, Kenneth. The Varandah City. KL. Percetakan Sinar Grafik Sdn. Bhd.

Pena, William. Problem Seeking. AIA Press. Washington (1987)

Darlow, Clive. Enclosed Shopping Center. Crane Russakalo. NY (1972)

Goldberg, Paul. The Skyscraper. Alfred A. Knopf. NY (1981)

Commercial Building. AIA Publication . NY (1982)

Huxtable, Ada Louise. The Tall Building.

Mc Tavish, Neil. Headquarters Office Building for MPC.

Gould, Brian. Planning for the New Headquarters.



MONTANA STATE UNIVERSITY LIBRARIES



3 1762 10076156 6

