HOUSING FOR HONG KONG

UNDERGRADUATE THESIS IN ARCHITECTURAL DESIGN

BY

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Submitted to the School of Architecture as partial fulfillment of the requirements for the degree of Bachelor of Architecture at MONTANA STATE UNIVERSITY

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Housing for Hong Kong

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Statement

Living conditions and human behavior can be improved in a densely populated environment.

I am proposing that through in-depth study of an environment and the problems concerning high density housing, a designer can create a liveable environment, promoting human interaction, creating space for the residents with light, air, and verdure, a space the residents can be proud of, with privacy, identity, and a sense of community and security, a space one can raise one's children, a place which is a city by itself and yet relates well to the rest of the city as a whole.
Introduction

My project is a housing project for the middle class in the urban area of Hong Kong, a city which has population of close to four and a half million. It is to be located on a 16 hectares site, developing one fourth of it for housing and the remaining for park area. It will accommodate a total of 20,000 people. The existing housing situation is quite poor. Some places are hardly humane for human habitation. It is getting worse and worse because of the increasing population. At present it has an average density of about four thousand persons per hectare.

In a city, serious social problems are bound to be created when crowding becomes too great after population builds up. Hong Kong do have such problems—crime in Hong Kong is comparable to New York in the United States, if not worse. I do not presume to say a good design for the city is a solution, but I believe that it would certainly improve the situation.

In a crowded environment, what housing usually lacks are the following: air, light, green vegetation, privacy, social space, open space, identity, and space for a home. But these are really very important to a resident. Air is crucial for ventilation in order for one to live in a hygenic manner, like a human being. Light and green vegetation are very important for psychological
reasons. Man has to relate to nature—he cannot live underground all his life in the dark, away from the natural environment. Light and green vegetation are essential to constantly remind him of his existence in nature. Privacy and social space are important sociologically because sociability and community are likely to be encourage only if privacy is first protected, and social space is important as a place for interaction. Identity is important to individual irrespective of whether it is in a high density housing project or otherwise. In a large group of housing, individual should be able to establish his identity, find meaning for the small acts of his daily life, and ultimately some satisfaction and sense of well being in being there at all. And also, the space for a home in the heart of a city should be commodious—one needs more space in the home in the city, not less.

Building high can possibly solve some of the problems. It will retain essential joys of sun and space and verdure, but usually family is deprived of outdoor life, and contact with other family is difficult if not impossible on the narrow corridors and elevators that are their sole means of communication and communication. But I believe that such situation can be improved if more consideration is given to it. It is therefore my goal to research into the problem, study the complexity of high density housing and come up with a solution which will improve the situation to some extent.
Conditions creating a need

Population growth situation

The population of Hong Kong has been increasing rapidly and the total area of Hong Kong is but 1032 square Kilometers which includes many small islands and mountains which are not suitable for development. The majority of the people live in traditional four to five storeys apartment buildings which are constantly replaced by higher residential apartment buildings of fifteen to twenty storeys high. In spite of the many high rise apartment buildings being built each year, there is still a shortage of housing for the people, due to its rapid population growth.

The total population of Hong Kong in 1845 was estimated at 23,817; since then the Colony has acted as a magnet attracting immigrants and refugees from China in time of trouble. A census held in 1961 revealed the population as 3.2 million with a natural rate of increase of around 3% but due to immigration the overall growth rate at that time was around 5% to 6%. From the data provided by the census, the Commissioner of Census produced low, medium and high population projections to 1971 of 4.4, 4.8, and 5.2 million respectively with medium projections to 1981 of 6 million and to 1986 of 7 million.
4.a>

Note: The assumptions used in this medium projection are:
A) A 10% decrease in birth rates for age group 20-44
B) No change in mortality rates
C) A net gain of 5000 immigrants per annum
MALES

FEMALES

AGE AND SEX STRUCTURE

1966
PROJECTED AGE AND SEX STRUCTURE

1986
1966

PROJECTED EMPLOYMENT STRUCTURE
Since 1963, however, birth rate has gradually declined probably due to a slow shift towards a higher age of marriage and acceptance of family planning by a growing mass of the population. At the same time, tight control of the border has been exercised by the Chinese and on the basis of a by-census in 1966 employing a random sample of about 1% of the population, the revised medium population projections for 1971, 1981 and 1986 are 4.2 million, 5.2 and 5.8 million respectively, i.e. 1.2 million less in 1986. The assumptions used in this medium projection are a 10% decrease in birth rates for age group 30-44, no change in mortality rates and a net gain of 5000 immigrants per annum. ¹

It is also expected that the population living in built up areas will increase from 3.37 million in 1966 (91.1% of total population) to 5.48 million by 1986 (95.1%); the working population will increase from 1.43 million to 2.47 million by 1986. The city needs more housing for these people. And I think it should be done in a manner that the people are accommodated as though they are human beings as well.

Existing housing situation

In general there are two types of housing—government housing and private housing.
The government housing can be divided into four categories:

1. Resettlement:
   Income Limit—No limit.
   Purpose—Resettlement of families displaced from Crown land required for development; families made homeless by the demolition of dangerous buildings, compassionate welfare cases, and certain victims of natural disasters.
   Construction and Management—Build by Public Works Department for Resettlement Department. Legal Authority for managing urban estates, factories and cottage areas vested in the Urban Council but day-to-day management delegated to Resettlement Department.
   Standard—Mark I & II blocks with communal lavatories and washing places. Mark III blocks provides individual water supplies, private balcony, lavatories shares by two families. Mark IV & V blocks provides individual lavatories, water supplies, private balcony.
   Finance—Government Revenue.

2. Government Low Cost Housing
   Income Limit—Families with assessed income below HK$500 per month.
   Purpose—Housing for low income families living in overcrowded and substandard accommodation.
   Construction and Management—Build by Public Works Department managed by Housing Authority for Government.
Standard—35 square feet for each adult. Cooking bench and water tap on private balcony, individual lavatories.

Finance—Government Revenue.

3. Housing Authority

Income Limit—Families with assessed income between HK$400 and HK$900 per month (up to HK$1,250 for high rent units). Purpose—Housing for families of moderate means living in overcrowded and standard accommodation.

Construction and Management—Build and managed by Housing Authority under the Housing Ordinance.

Standard—Self-contained units, 35 square feet for each adult plus kitchen, bathroom and private balcony.

Finance—Government Development Loan Fund plus self-financing from rental returns.

4. Housing Society

Income Limit—Families with assessed income up to HK$1,000 per month (up to HK$1,250 per month for high rent units). Purpose—Housing on economic basis for persons of small income.

Construction and Management—Build and managed by the Hong Kong Housing Society.

Standard—Varies, but generally as Housing Authority.

Finance—Government Development Loan Fund plus self-financing from rental returns.
The private housing are mostly for the middle class whose incomes are higher than the limits for any of the government housing.

The following pages are pictures of some existing projects. One can feel the depressed situation from the pictures without much difficulties, and they alone explain the need for liveable housing.
Local conditions

General geographical

Hong Kong is situated on the southern coast of China, adjoining the province of Kwangtung. It lies between latitudes 22° 9' N and 22° 37' N, longitudes 113° 52' E and 114° 30' E.

It has an area of 1032 square kilometers which includes:

a) Hong Kong Island and a number of immediately adjoining islands. It has a total area of 75 square kilometers.
b) Kowloon and Stonecutters Island. It has an area of 10 square kilometers.
c) New Kowloon and the New Territories. It has a total area of 947 square kilometers.

New Kowloon and the New Territories is only leased to Britain until 1997. This accounts for the dense build up area on Hong Kong Island and Kowloon area which are ceded to Britain and do not expect to have to be returned to China.

Political situation

Hong Kong is a British Colony. It consists of Hong Kong Island, Kowloon, New Kowloon, New Territories and Lantau Island. Hong
Kong Island was ceded to Britain in 1842 under a treaty when China, then under the Ching dynasty, lost the Opium War. Later in 1860, Kowloon was also ceded and in 1898 the rest of the Colony was leased to Britain for 99 years.

More than 90% of the population in Hong Kong are Chinese. There are also a variety of other nationalities: British, American, Indian, Philippino, Japanese, Thai, etc. They only form a very small percentage. Most of the foreign nationalities are merchants, taking advantage of Hong Kong as a free port.

**Climate**

Hong Kong has a yearly mean temperature ranging from about 15.2°C in February, the coldest month of the year, to 27.9°C in July, the warmest month. Because of the high humidity all year long, one feels extremely hot in the summer and extremely cold in the winter. In the winter it often worsens by the cold gusty wind.

The mean annual rainfall is 216 cm. It rains rather often in the summer months with heavy downpours accompanying the typhoons. There are high-intensity short-duration showers and thunderstorms. Up to 90% of the total annual rainfall occurs from April to October.

The relative humidity is highest in the spring between April and
RELATIVE HUMIDITY

MONTHLY MEAN DURATION OF BRIGHT SUNSHINE.
SOLAR ANGLE DIAGRAM FOR 24° N
HONG KONG AT 22° N
May. It reaches as high as 85%. In the winter months, it is usually in the seventies. The lowest monthly mean of the year occurs in November, when it drops down to 69%.

The mean yearly duration of bright sunshine is 1963 hours. The shortest duration occurs in the months of February, March and April, with the lowest monthly mean of 95 hours in March.

From mid-April to September, the summer monsoon prevails over China, bringing warm and humid air masses from the ocean areas to the south and southwest. The winter monsoon dominates from October to mid-March bringing cold and dry air masses from the continental land masses in the north and northeast.

Typhoons occur in Hong Kong between May and November. They originate mainly over the ocean east of the Philippines and move north and northwest toward Hong Kong and the southeastern coast of China.

General Topography

Generally, the landscape of Hong Kong is rugged. The highest peaks reaches heights of about 3,000 ft. From the uplands and hill ranges, steep slopes descend to the sea and lowland plains. The only extensive flat land is found in the northern and north-
western parts of the New Territories. Elsewhere, it occurs mainly in small pockets in inland and coastal valleys.

Hong Kong has a submergent coastline as indicated by the many deeply indented bays, numerous offshore islands, projecting headlands and peninsulas, dismembered streams, and suberged, weathered-rock surfaces overlain by peat deposits. However, the coastline along the western part of the New Territories has been greatly modified by recent alluvial deposits which reach depths of over 100 ft. in many localities. Rejuvenated streams, raised beaches and uplifted wave-cut platforms are found on many places and show that Hong Kong has also undergone emergence.2

General Geology

Almost the entire area of Hong Kong is covered by igneous rocks. These rocks are associated with a series of granitic dome intrusions of southeastern China formed during the mountain-building movements of the Jurassic, Laramide and Alpine revolutions. The highest peaks and many prominent hill-ranges are composed of either porphyries of fine-grained volcanics. The lower hills are composed mainly of more coarsely grained granite and granitic rocks.

Sedimentary rocks occur to a relatively limited extent. The largest area comprises the plains in the northern and north-western parts
of the New Territories. These plain are composed of alluvial and marine deposits. The other major area of sedimentary rocks is in the northeastern part of the Colony and falls within the Tolo Channel series.

Generally, the soils of Hong Kong are thin in hill-country areas and deep in the valleys and alluvial plains. The deepest soils are found in the plains in the northern parts of the Colony. On the hill slopes, soils may be as thin as two or three inches. The natural residual soils are generally acidic and of low fertility.

**General Economics**

The economy of Hong Kong is highly dependent. It depends on trade with foreign countries and supplies from China. And for a long time it was very much so an entrepot, until it became industrialized. At present, the economy is quite stable. It has a high income per capita which is only second to Japan in Asia.

What Hong Kong receives from China are mostly food supplies. Hong Kong also receives \( \frac{1}{4} \) of the fresh water from China. The goods that Hong Kong exports abroad are all in the area of light industry--plastic things, such as toys, flowers, utensils, etc. It also produces electronic equipment such as radios and steros. Textile
is quite an industry in Hong Kong also. Hong Kong imports quite inexpensively up to 70 - 80% of its food supplies from China, and exports 80 - 90% industrial output.

There is a great amount of foreign investment in the colony. There are numerous British, U.S., and Japanese firms, all attempting to gain a profit. A recent huge investment in the colony is the Japanese investment of the underground mass transit system which connects Hong Kong Island and the peninsula. It will cost up to HK$6000 million (US$1200 million) when complete.

Tourism is a profitable industry in Hong Kong. More than a million tourists visit Hong Kong each year. Most of the tourists are from the U.S., Europe, Japan. They spend about US$2 billion in Hong Kong each year.
Hong Kong as a City

The following article, "Hong Kong Booms and Booms and Booms" by Anthony M. Paul was published in the May, 1973 issue of the Reader's Digest. I think it was quite appropriately written. I therefore intend to include it in this book, and hopefully it will assist depicting Hong Kong more clearly to readers who have not the slightest idea of how it is like:

You're a businessman, and an associate suggests that you invest in a metropolitan area answering this description:

It has virtually no defenses, yet is smack up against a revolutionary neighbor with the world's largest army. The revolution is communist and anti-Western, while this tiny, exposed territory is perhaps the world's most flamboyant example of free-market capitalism. Oh, yes, there is one other drawback: the lease to a large portion of what little land there is runs out in less than 25 years.

Hong Kong, the area so described, would appear to have less than promising prospects for business. Yet this British-run settlement on China's coast is paradoxically enjoying one of the greatest booms in its 132-year history. Hong Kong's huge money surpluses, placed in banks in the United Kingdom, reportedly amount to one third of Britain's gold and foreign-exchange reserves. Last year,
Hong Kong's export revenues rose 12.4 percent to $2.6 billion, and more than a million tourists visited the colony, spending an estimated $2 billion more. Some 510 U.S. firms have offices there. On the Hong Kong stock exchanges (there are no fewer than four to serve a city half the size of New York), buy-and-sell records are broken daily, and Hong Kong currently boasts a per-capita income second in Asia to Japan's only. All in all, the colony's 4.1 million inhabitants have never had it so good.

Stand these days on Victoria Peak, the fabled mountaintop overlooking the business and administrative center of Victoria township on Hong Kong Island, and you can hear the drumming of countless steamhammers and riveters on the phalanx of new skyscrapers 1200 feet below. Over near the green of the Cricket Club you can see the 32-story hotel that local Cinese interests are building. On the waterfront rises Asia's tallest building, the 52-story Connaught Center, on land reclaimed from Hong Kong harbor. Beyond the Happy Valley racetrack is the entrance to the recently completed Cross-Harbour Tunnel, the island's first road link with the mainland.

All over the main island and on Kowloon (Britain's four-square-mile toehold on the Chinese mainland), new office and apartment buildings are going up, and every other week seems to bring announcements of huge new projects. "Of all the 'economic miracles' enjoyed by war-devastated areas since 1945," says an Australian diplomat recently
stationed here, "Hong Kong's must surely be the most remarkable."

A less likely candidate for economic success is hard to imagine. Of the 236 islands and islets which, with Kowloon, compose the colony proper, many (including Hong Kong Island itself) are mountainous and hard to develop, and most are waterless and uninhabitable. What little elbow room Hongkongites enjoy is provided by a 370-square-mile section of the mainland known as the New Territories, leased to Britain until 1997 under an old treaty which, anyway, Communist China has long since repudiated. Most food and a quarter of the colony's water must be purchased from China. Thus a representative of Peking's New China News Agency was not exaggerating when he said to me, "Chairman Mao can take Hong Kong any time, simply by turning off some taps."

Ceded to Britain by the Emperor of China in 1841 as part of a war settlement, Hong Kong began life as a port for British opium-traders. Enraged by the acquisition of such a desolate place, British Prime Minister Lord Palmerston sacked the emissary who concluded the deal. After the opium trade was declared illegal, the colony settled into long, torpid decades as an obscure tropical outpost.

Invaded by the Japanese only hours after their Pearl Harbor attack in December 1941, Hong Kong surrendered after a brief defense by
soldiers, colonial officials and local merchants, who for once were fighting on the same side. The survivors were bundled into the notorious Stanley prison camp, where for 3½ years they learned to live together.

After liberation in 1945, relations between the colony's influential groups were vastly improved. "Perhaps for the first time, many of the colony's powerful men were on first-name terms," says Hong Kong University sociologist Henry J. Lethbridge. "As a result, post-war Hong Kong governments moved closer to business interests than before."

The colony's first big test came in the immediate post-war period. Only 6000,000 people were left in Hong Kong--one third of the pre-war population. Buildings were dilapidated or destroyed; harbor facilities had been wrecked. Britain, herself exhausted by war, had no funds for the colony's rehabilitation. "Most other war-devastated centers were given aid, usually by the United States," recalls Lawrence Kadoorie, member of a merchant family. "We received nothing. We had to work."

In 1949, as communist forces on the mainland won their final victories over the nationalists, Hong Kong was deluged with refugees. Some 750,000 poured across the border, putting a seemingly intolerable strain on the colony. But many of the newcomers brought capital and
much-needed skills with them. And all came with the immigrant's characteristic willingness to work.

Under this refugee impetus, older light industries (transistor radios, television sets, watches, clocks, wigs, plastics) developed. Despite forecasts of a communist take-over, the British banks gamely extended long-term loans to many a Chinese businessman who had fled with little more than his shirt and a sound reputation. Within ten years, Hong Kong had made a dramatic change from a trading into an industrial economy. And its population stood at 2.5 million, a 400-percent increase.

When China suffered economic setbacks in the early 1960s, a second great exodus inundated Hong Kong. They were a different sort of refugee this time—starving and penniless. But government and business provided jobs and housing for most of them, and the fresh supply of willing labor mad possible further manufacturing expansion. (Today, 51 percent of workers are employed in small, privately owned Chinese firms.) New overseas markets opened up, particularly in the United States and Japan, and the colony embarked on another boom.

Suddenly, in the summer of 1967, all this seemed lost. Hong Kong found itself confronting the threat it had most feared—a political riot instigated by communists.
It began when striking workers attacked a foreman at a plastic-flower factory in Kowloon, and police arrested 21 strikers. At the time, the "cultural revolution" (which now seems to have been an attempt by ultra-leftists to take over in Peking) was sweeping China. Rather than appear less anti-capitalist than their mainland compatriots, Hong Kong's communist leaders permitted local Red Guards (revolutionary youth groups) to protest the arrests by going on a rampage.

Soon Hong Kong was in turmoil. Over a four-month period, thousands of communists repeatedly stormed through the colony's streets or besieged Government House, demanding that "British fascists leave China's sacred soil." Fearing that Hong Kong's time had run out, many citizens withdrew their savings from local banks—more than $52 million in June alone. The stock exchanges, face with plummeting prices, were forced to close, and tourist traffic decreased.

But now the government's past efforts to help the refugees were remembered. To the amazement of Hong Kong's communists (who reportedly were chastised later by Peking for their precipitate actions), the settlement's Chinese population rallied behind the British administration, and communist calls for a general strike were ignored. By the end of the year, banks, stock exchanges, export trade and tourist traffic were all back to their normal boom-time condition.
Today, as China enters a relatively tranquil stage of its tumultuous 20th-century history, Hong Kong and its huge neighbor appear to have worked out some stable rules for living together. After discussions with Premier Chou En-lai in Peking last October, British Foreign Secretary Sir Alec Douglas-Home was able to say of Hong Kong: "Both of us are satisfied with the present situation. Now the waters are warm, and we can swim in them together."

Although most authorities agree that China will one day re-absorb Hong Kong, the if, when and how seem of only passing interest to businessmen, who are busy making the most of a red-tape-free economy specially designed for them. Income and company taxes are held at a mouth-watering 15-percent maximum. Companies may be incorporated in a matter of days, with 73 banks from 14 countries standing ready to help.

In addition to Hong Kong's Chinese industry and wealth, and the formidable business endeavors of what is known locally as "old British money," there is yet another element in the economic makeup of Hong Kong. From his penthouse apartment in the massive Bank of China skyscraper in Hong Kong Island's central district, Li Chou-chih, the bank's Mao-jacketed manager, supervises the raking in of an estimated 25 to 30 percent of mainland China's yearly foreign exchange. Much of this money is made in Hong Kong's domestic marketplace, where one of the most prominent
entrepreneurs is the Peking government itself, with more than 50 department stores, eight smaller banks, two insurance companies, several financial syndicates, and a large number of affiliated restaurants, shoe stores, furniture shops and publishing houses.

A precise total figure for foreign exchange is unavailable. But veteran China-watchers believe that Hong Kong, with its affluent consumers of goods from China, its firms buying and then re-exporting Chinese products, and its banking services facilitating the sending of money home by overseas Chinese, may now be worth an annual $1 billion to Peking.

"This statistic is the single most important clue to Hong Kong's apparently paradoxical confidence in the future," says Richard Hughes, the London Sunday Times's Far East correspondent. "China should reach a population of one billion within 30 years. Unless she can industrialize, she is unlikely to be able to support so many people. And the only way she can industrialize is by buying technology from the United States, Japan and Europe. The proven best way to marshal this money, to use the services of capitalists without letting them live in China with their dangerously bourgeois ideas, is to keep Hong Kong the way it is."

One recent evening, as Hong Kong's communists celebrated the anniversary of Mao's proclamation of the People's Republic, I
drove from my Hong Kong office to my hillside apartment. At the foot of the hill stands a wholesale furniture firm. The firm's English sign advertises the company's aggressively capitalist name, Profit Traders. But on this day red flags fluttered from the facade, and a poster in Chinese exhorted, "Chairman Mao—Live ten thousand years!"

He won't, of course. But as long as there's a loyal Chinese communist willing to work under a sign saying "Profit Traders," Hong Kong will probably endure. 4
Aesthetic considerations

I try to keep in mind that architecture is based on use, space and form. Use has to be social (functional), space has to be universal (cosmos) and form has to be total (organic). I think they should be all equally important in order that a successful piece of architecture be created. Too many architecture are designed without all these considerations. Many are designed functionally sound exclusively, with little regard to its space within and its external form. Some are designed merely to create a piece of monument, perhaps just a monument of the architect himself, giving little thought to anything else.

I think functionalism alone in a piece of architecture is far from being enough. If functionalism were the exclusive consideration a piece of architecture needed, perhaps, all the buildings should be either square or rectangular boxes, not having to articulate its form and space at all. One can instantly realize the situation when functionalism is emphasized to that extent.

Yet form alone in a piece of architecture is not adequate, after all it is built to use, not just for looking at, like a piece of sculpture or a monument. I think a piece of architecture should be monumental when the purpose justifies such cause. I do not agree that an architect should build monumental building every-

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where for his own sake, unless he building his own residence. In which case, the building will be his and no one else. Monumental buildings tend to, but not necessarily, sacrifice elements as function and space. But when a building does not need to be monumental, why sacrifice anything at all?

My main concern for my project is use and space, yet not neglecting form or its image. Looking back into some past projects, I think it is quite important to create a living environment that works for the overcrowded population. There will be also concern for the contextualism of the city. The project should, if possible, fit into the existing environment without disturbing too much of its existing context.
The programme

The area of my site is approximately sixteen hectares and I am proposing to develop one fourth of it for housing, leaving three-fourth of it for recreational park area both for the residents of the housing project and the residents of the vicinity.

At present, the average density for the middle class is about 4000 persons per hectare. And at some housing location, density reaches as high as 5500 persons per hectare.

The total population for the four hectares site will be 20,000. And an average family has four children, therefore the total number of units required is 3300 units.

There will be 500 one bedroom units, 500 two bedroom units, and 2300 three bedroom units which are the most popular for an average family.

The one bedroom unit will have an area of approximately 65 square meters. It consists of a living room, a dining room, a kitchen, a bedroom and a bathroom. These units are for young couples without children and older couples.

The two bedroom unit will have an area of approximately 90 square
meters. It consists of a living room, a dining room, a kitchen, two bedrooms and one and a half bathrooms. These units are for small families with two to three children.

The three bedroom unit will have an area of 120 square meters. It consists of a living room, a dining room, a kitchen, three bedrooms, two bathrooms and some storage area. These units are for large families with many children.

There will be a common laundry area each floor with an area of 2 square meters per dwelling. This will eliminate the sloppiness of the clothes hanging in front of the balconies. Also it will facilitate residents to get to know each other on the same floor. There will be seating area in the laundry room.

There will be a common indoor space of 10 square meters per dwelling. This will encourage residents to know one another. At the same time it forms a pleasant space for residents to get out of their apartments for a while without having to leave totally.

660 parking spaces will be provided with one parking space for every five dwellings. The parking area will be underground, leaving playground area above.

There will be amenities such as park, restaurants, shops, banks,
theatre and bowling alley. The park area will be divided into four categories: a) children of 0-5 years; b) children of 6-12 years; c) teenagers; and d) adults.
Issues of concern

My issues of concern for the housing project are the following:

a) Movement patterns in relation to surrounding context

b) Volumes and spaces in relation to surrounding context

c) Neighborliness and safety:
   mutual aid and surveillance
   activity in space: daily contact
      overlook
      sitting
      access
      casual encounter
      recreation
      participation
      observation
   access to space: inhabitant
      neighbor
      acquaintance
      outsider

d) Orientation: relation to sun
   shadows from neighboring area
   relation to wind patterns
   relation to views

e) Service: delivery of goods
   delivery of furniture
trash storage and pickup
emergency access
f) Privacy and identity for each dwelling
g) Economy of space
h) Sociological aspects
i) Maintenance of interior public space
j) Management
k) Light, air and verdure for the units

I think the above issues are important and should deserve special attention, not just for my project alone, but for any housing project, in order that slum not to be formed.
NEGATIVE CHARACTERISTICS OF REMOTE PARKING

FEATURES:
CARKY DISTANCE TOO LONG.
NO CASUAL OR MECHANICAL SURVEILLANCE OF CARS FOR SECURITY POSSIBLE.
POSITIVE CHARACTERISTICS OF PARKING BELOW BUILDING

FEATURES:
Access from car to unit without going outside.
Short carrying distance.
Security easily controlled mechanically.
SECURITY PROBLEMS WITH MULTIPLE ENTRANCES AND ACCESS TO INTERIOR MALL

LACK OF TERRITORIAL DEFINITION ON OPEN SITE DOES NOT DISCOURAGE STRANGERS FROM ENTERING. MULTIPLE ENTRANCES TO BUILDINGS COMPlicATES SECURITY PROBLEM BY REQUIRING SEVERAL AREAS TO BE CONTROLLED.
POSITIVE CHARACTERISTICS OF TOT LOT LOCATION

ACCESS TO TOT LOT WITHOUT CROSSING PARKING LOT
AWAY FROM MAIN TRAFFIC ROADS
ADULT SEATING AREA PERMITS PHYSICAL SEPARATION FROM CHILDREN BUT
ALLOWS FOR VISUAL ACCESS TO THEM
POSITIVE CHARACTERISTICS OF TOT LOT DESIGN

Area delimited by grade change or other means contains activities equipment selected to be too small and uninteresting for older children. Tricycle paths scale small enough to discourage bike riding. Equipment manipulable and facilitates movement.
LOCATION AND CHARACTERISTICS OF LAUNDRY ROOM

Access from interior of building is desirable when scheme permits. Visual access from laundry to tot lot is desirable. Fold table and seating required.
SOME KITCHEN/DINING/LIVING ARRANGEMENT

DIADVANTAGES:
INCONVENIENCE OF CARRYING FOOD FROM ONE ROOM TO ANOTHER
FOOD ODORS IN LIVING ROOM
REDUCES POTENTIAL HOBBY SPACE

ADVANTAGES:
VISUAL SEPARATION OF COOKING ACTIVITIES
OPPORTUNITY TO WATCH TELEVISION WHILE EATING
EAT-IN KITCHEN AND SEPARATE DINING ROOM ARRANGEMENT

A EAT-IN KITCHEN ALLOWS FOR FORMAL DINING WITHOUT SEEING THE COOKING AREA AND EASY CLEANING OF THE EATING AREA IN THE KITCHEN FOR FAMILIES WITH CHILDREN, KITCHEN CAN BE USED FOR OTHER KIND OF ACTIVITIES.
SEPARATE DINING ARRANGEMENT

This arrangement is convenient for preparing and serving food, and separate eating activities from the more formal living area.
FLEXIBLE LIVING/DINING ARRANGEMENT

For informal every day meals or breakfasts there is a counter to eat at, with movable unit in position "A" a dining room is established. With wall unit in position "B" a large living/dining space can be set up.
SLEEPING/PLAY ALCOVE FOR TWO BUNKBEDS

IF NOT POSSIBLE TO PUT WINDOWS IN PLAY AREA THEY SHOULD BE PUT IN THE SLEEPING ALCOVE SO THAT LIGHT WILL REACH THE PLAY AREA WHEN DOORS ARE LEFT OPEN
VERTICAL DISTRIBUTION OF FAMILIES BY STAGE IN LIFE CYCLE

ELDERLY AND FAMILIES WITH NO CHILDREN — UPPER FLOORS

FAMILIES WITH OLDER CHILDREN — MIDDLE FLOORS

FAMILIES WITH YOUNG CHILDREN — LOWER 3 FLOORS

LOWER LEVELS CAN BE TERRACED TO PRODUCE PLAY AREA ABOVE GROUND LEVEL
RELATIONSHIP OF UNITS AND COMMON AREA

COMMON AREA CENTRALLY LOCATED PROMOTES INTERACTION
VEGETATION IN OPEN SPACE

VEGETATION ENLIGHTENS OPEN SPACE
IT CREATES HUMAN SCALE
Metric equivalents

My project is to be done in the metric system. Below are some equivalents:

Linear measure
1 inch = 2.540 centimeters
1 foot = 0.3048 meter
1 centimeter = 0.3937 inch
1 meter = 3.281 feet

Area measure
1 arce = 0.4047 hectare
1 hectare = 10,000 square meters = 2.471 acres
1 square meter = 10.765 square feet
Site description

The site has an area of approximately 16 hectares. It is 274 meters on the north side, 549 meters on the east side and 230 meters on the south side.

It is located in the residential/commercial district. On the west side of the site are piers, docks and the harbor. On the north side of the site are residential medium rise buildings ranging from 4 to 15 storeys high. On the east side are mostly residential/commercial buildings of 10 to 20 storeys high. On the south side of the site are residential building of 10 to 15 storeys high. Farther south is mainly a tourist district. There are some hotels, commercial buildings, the ferry, and the ocean terminal. There are many shops and plenty of pedestrian.

The street to the east side of the site is the main street. There are tremendous amount of traffic on this street. All the buses, taxis, minibuses, and private cars take this route. The street to the south side of the site is very much confined to local traffic and at no time will it become too busy. There is medium traffic on the street to the west side of the site and often there are some trucks unloading or loading cargoes at the piers. The street to the north side of the site does not get exceedingly busy. There are a lot of local traffic.
Since the site is centrally located in the urban area and was for a long time a British barrack, there are utilities lines on the site: water lines, sanitary sewers lines, electricity lines and gas lines. But due to the fact that the project is such a large sized one, accommodating such a population it can assume that applications have to be filed with the utilities companies to install adequate service lines wherever needed.

The vegetation on the site are all deciduous trees. For some area it is rather dense. The north east portion of the site is paved, with numerous vacated military camps.

There are two different types of soils on the site, namely eocene granite which is on the east portion of the site and recent sediments which is on the west portion of the site.
Preliminary design

The following pages are some of my preliminary design:
ADVANTAGES
1. GOOD LIGHT AND VENTILATION FOR 3 BED ROOM UNITS
2. NO LONG Corridors
3. OPEN SPACE FOR RESIDENT WELL-DEFINED

DISADVANTAGES
1. POOR VENTILATION FOR 2 BED ROOM UNITS
2. NO COMMON MEETING AREA EACH FLOOR NO GARDEN AREA
3. NO LIGHT FOR 2 BED ROOM UNITS KITCHEN AND DINING AREA
4. SOME UNITS HAVE NO VIEW
ADVANTAGES
1. LIGHT ENTERS INTO ALL ROOMS
2. GOOD VENTILATION
3. UNITS ALL FACING SOUTH
4. VEGETATION ON CORRIDOR

DISADVANTAGES
1. CORRIDOR IN FRONT OF UNITS — CREATES PRIVACY PROBLEM
2. LONG CORRIDOR, HOWEVER, IT CAN BE BROKEN UP
ADVANTAGES
1. LIGHT ENRES ALL AREA OF THE UNIT EXCEPT THE BATH ROOM
2. GOOD VENTILATION
3. VIEW FOR MOST UNITS
4. INTERIOR COMMON AREA CAN ACCOMMODATE SOME VEGETATION
5. OPEN SPACE FOR RESIDENTS WELL DEFINED

DISADVANTAGES
1. UNITS FACES EAST AND WEST (MORE FAVORABLE FACING SOUTH)
2. LONG CORRIDORS
The solution

The following pages are pictures of my design solution. The site is handled in such a manner that on the north side it respects the existing context. The buildings are at an increment of six storeys, not counting the three levels of commercial below. It goes to as tall as thirty-four storeys at the center, then goes down so as not to contrast too much of the south side of the site where commercial and residential buildings are located. The east side of the buildings is developed to be a park for both the residents and the surrounding public. It is designed also to encourage the public to walk through the path to and from the ferry, a few blocks south of the site. It will also link the green spaces to the north and south of the site. At the same time, it forms an open space adjacent to the busy street to the east, creating an oasis between the almost exclusive buildings and traffic environment.

The automobiles are to approach the buildings underground, leaving the whole site above for pedestrian only. Parking areas are underneath the buildings. It has the advantage of closer walking distance and it facilitates ease of pedestrian movement above.

The spaces between the buildings are design loosely so as to contrast and relieve the rigidity of the building form, creating a casual space for the residents. The spaces are flowing towards
the center where a revolving restaurant is located. There is not much encouragement for the public in the park area to approach the spaces of the projects. The spaces are designed for the 20,000 residents and the outsiders would not be encouraged to use the already limited spaces.

The units are designed so that there are light, ventilation, and view for a good many of the units. There are common areas and laundry rooms for each two floors, promoting human interaction. Horizontal skywalks are built to improve circulation. Plants are introduced where possible.

The roofs are to be utilized as open spaces for the residents. There will be plants on the roofs so some residents of the upper floors adjacent would have the pleasure of looking at the greenness of the plants.

The structure is to be reinforced concrete frame, prestress concrete slabs and precast concrete wall panels. It is an economical system which is also free of expensive maintenance cost. The skywalks are to be a prestress unit with metal frame above and plexiglass for the light to enter.

To conclude, I think my design solution would improve the living conditions a good many times and the residents would be more socialable.
Bibliography


