

URBAN DWELLING ENVIRONMENTS - BEIRUT, LEBANON
CASE STUDIES MKALLES HOUSING PROJECT

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Signature of Author.....
Department of Architecture June 1974

Certified by Thesis Supervisor

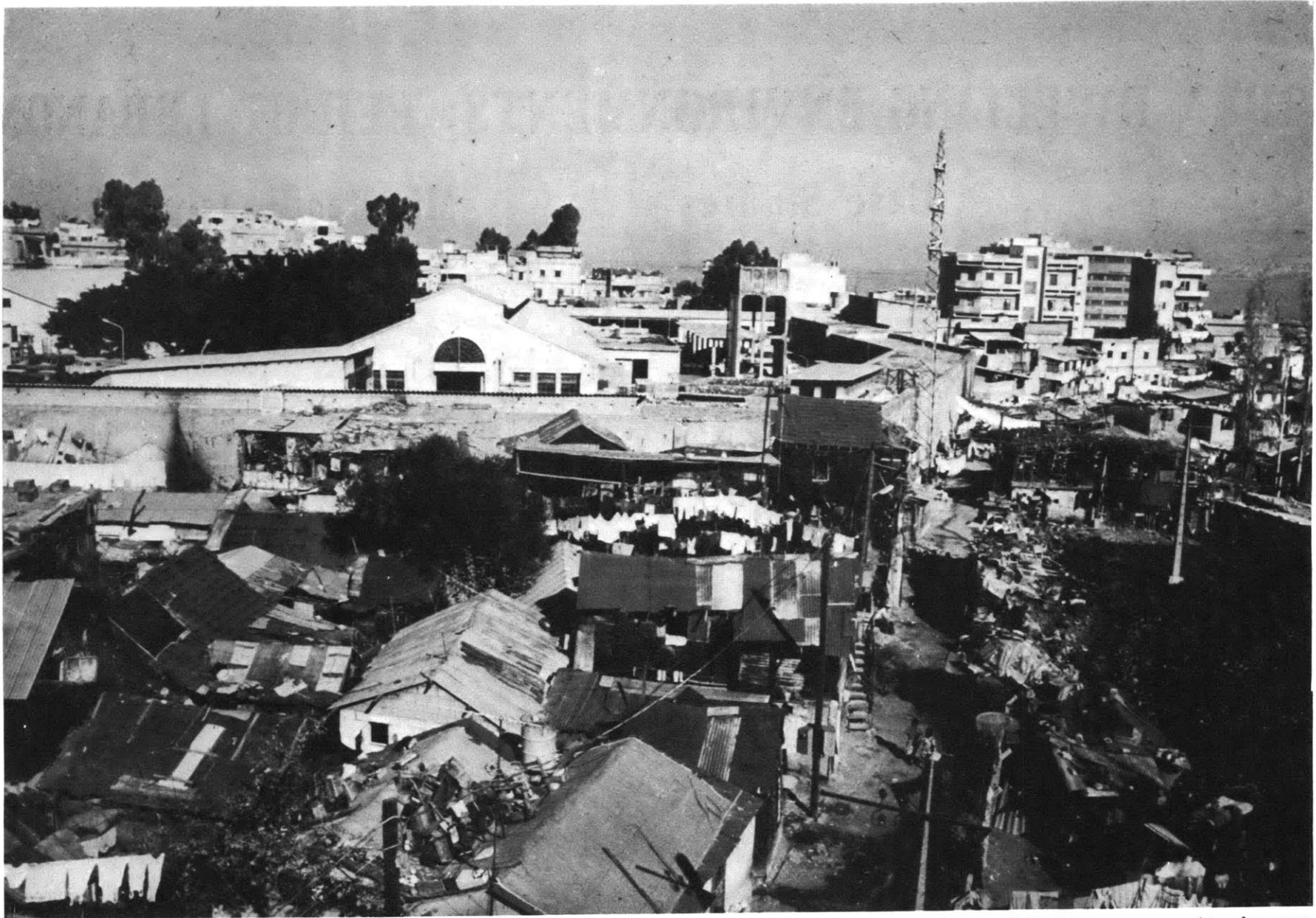
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URBAN DWELLING ENVIRONMENTS: BEIRUT, LEBANON

Case Studies – Mkalles Housing Project

Education/Research Program:
URBAN SETTLEMENT DESIGN IN DEVELOPING COUNTRIES
School of Architecture and Planning
Massachusetts Institute of Technology
Cambridge, Massachusetts
June 1974



A VIEW OF THE MEDAWAR LOCALITY In the background, the garage of the Municipality of Beirut, some city houses and walk-up apartment buildings. In the foreground, the squatter settlement. Little or no physical improvement takes place in these conditions, partly because of their insecurity, partly because of the high and rising population density. Notice the vegetable garden in the bottom right of the picture that has managed to survive.

URBAN DWELLING ENVIRONMENTS: BEIRUT, LEBANON

Case Studies – Mkalles Housing Project

Case Studies

OMAR TAKE

Mkalles Housing Project

HORACIO CAMINOS REINHARD GOETHERT OMAR TAKE

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O.A.T.

Beirut/Cambridge, Summer 1974

PREFACE

CONTENT: This is a study on residential land utilization and identification of dwelling environments for the low income groups based upon the survey and evaluation of two localities selected from the Beirut Metropolitan Area. The case studies provide first hand material with which basic patterns can be identified in different aspects of the housing process. In addition to this study, a model for Urban low-income housing is presented (see Annex). The model provides different housing options for the low and moderate income groups.

OBJECTIVES: To identify and analyse the physical structure of housing systems; To illustrate the relationships of the settlements in their Urban context; To illustrate the methodology for evaluation and identification of dwelling environments; To stimulate the formulation of more realistic and effective policies regarding low income housing.

APPLICATION: This study offers a reference for understanding and dealing realistically with low income housing, by taking advantage of existing housing and its service infrastructure. It can orient decision makers in optimizing the allocation of financial resources in housing, housing improvement and Urban development. The model presented represents a comprehensive framework for the formulation of housing policies and for the implementation of the physical plan.

DATA: This study is derived from field research carried out by the author during the Summers of 1973-1974 and January 1973 and 1974; complemented by maps, aerial photographs and bibliographic material. The case study analysis is based on a methodology developed in the program Urban Settlement Design in Developing Countries, directed by Professor Horacio Caminos at the Massachusetts Institute of Technology.

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Cover: Aerial view of the City of Beirut (Manoug)



A VIEW FROM BURJ HAMMOUD In the background, the compact skyline of Beirut. In the foreground, a view of houses built by the occupants solely by their own efforts and resources. This settlement was built very rapidly with no planning as a result the people live overcrowded with very limited utilities and services. Their only advantage is that they are in control of their dwellings, as a result their homes are better and cheaper than those built by government programs.

INTRODUCTION

The world today is witnessing major trends of global concern: rapid population growth, accelerating industrialization, depletion of nonrenewable resources, widespread malnutrition, housing shortages and many other factors that have unbalanced and are threatening our living environment. The problem is further aggravated because economic and political systems are unstable, social well being is a privilege of a minority usually in power, and the settlement process is largely out of control. The low and very low income sectors of the population are the most affected by the Urbanization process. They constitute the largest majority of the population, particularly in the developing countries and have the most urgent needs in terms of food, health-care, education and shelter. No one has an honest answer or a consequent action that implies any real hope for the 300 million people of Latin America whose number will reach 600 million within 25 years, and who, although desolately poor in the overwhelming majority have the right to a material life, to culture, and to civilization.

A complete change of the man-made environment is in the making marked by a great and ever increasing demand for shelter. Without adequate knowledge of the determining factors, planning the environment is becoming increasingly superficial, irrelevant and in short, impotent to deal with the environmental problems of poverty.

Beirut is an example of a rapidly urbanizing area, where the living conditions and the physical environment are rapidly deteriorating for the majority of the population, this trend is reaching staggering proportions as a consequence of two combined factors: the population is growing at an exponential rate, the highest being the low income sector. The housing supply is inferior to the housing demand for the vast majority of the population, this is being aggravated by the fact

that almost all the housing supplied suits the needs of the very privileged sector of the population. More and more dwellings, land and services need to be provided for the growing population that has less and less capacity to pay for them. As a result, most of the residents in the Metropolitan area live in old or substandard housing with limited services.

Squatting and illegal developments have become two popular forms of settlement because the public and the private sectors are not meeting the growing demand for dwellings and land for the vast majority of the population.

Squatting is a consequence of the struggle for shelter, it is the only alternative to rural migrants and unprivileged immigrants from other countries who come to Beirut to find job opportunities. In Beirut the squatter settlements are, in general terms, small in size, densely populated, scattered around the inner ring of the city (case study: Quarantine). There are seven squatter settlements in Metropolitan Beirut. Six of them are within the limits of the Beirut Municipal District, not including the large number of Palestinians living in refugee camps in the outskirts of the city. This housing system accommodates approximately five percent of the Metropolitan population.

Illegal developments are defined as a combination of legal ownership of the land and "noncompliance" with government rules for development enacted through zoning ordinances, subdivision regulations or building codes, as is the case of most low-income areas in Beirut. This illegal developments are a result of unrealistic rules. Most planning and building regulations have been adopted directly and uncritically from standards used in economically developed countries like France, England and the U.S.A.

In squatter or illegal settlements, land is occupied, subdivided and soon covered with all shelters and dwellings built by the occupants solely by their own efforts and resources. Utilities and services are neither provided nor anticipated initially. This has become a critical matter. Unplanned Urban sprawl and inefficient use of the land has made the provision of utilities and services both difficult and uneconomical. The resulting alternatives are either to pay high price for the development and improvement, or not to release funds and allow the community to stagnate.

The existing housing stock should incorporate slums and squatter settlements realistically appraised and upgraded. Popular participation (initiative, responsibility, "sweat equity") should be fully utilized. The lowest income sectors should be reached.

It is then clear that technical and professional services and contributions in physical development are badly needed not only in the provision of shelter, but rather in the crucial areas of land utilization, land distribution, provision, maintenance, and operation of utilities and services.

Urgent changes are needed in the housing process: FROM the provision of luxurious dwellings, at exuberant prices for the very high income sector resulting in less than ten percent of the population benefited; TOWARDS the provision of land and services, basic dwelling components, at lower costs, for the low and moderate income sectors, resulting in more people benefited. FROM Government efforts spread over small scale problems of a dwelling, TOWARDS Government efforts concentrated on the basic large scale problems of land and infrastructure. FROM eradication or renewal of "inadequate" dwellings, TOWARDS evaluation and upgrading of "inadequate" dwellings.

Ninety five percent of the housing in the Metropolitan area is provided by private and popular sectors. The public sector still approaches the housing demand by supplying dwelling packages, ignoring private and popular efforts and neglecting the possibility to improve the actual low income housing systems. A movement in this direction will undoubtedly have a greater impact and benefit on the population and housing.

This study attempts to identify and evaluate selected low-income dwelling environments in relation to social, economic, cultural and physical factors.

Sources of this study are drawn from field work experiences by the author carried out in Beirut, and academic work in the program "Urban Settlement Design in Developing Countries", School of Architecture and Planning, Massachusetts Institute of Technology. The observations, conditions, concepts, recorded here can easily be recognized in developing countries. A model for Urban low-income housing for Beirut, Lebanon was developed, it was commissioned by H.E. The President of Lebanon, Suleiman Bey Frangie, through the Ministry of Housing and Cooperatives (Beirut, Summer 1973). The project serves as a model for optimum efficiency of low income residential layouts. It illustrates the guidelines derived in the study for physical planning of residential development. The model provides different housing options for the very low, low and moderate income groups, expandable units are emphasized. The model complies with accepted /desirable ranges of population density, circulation area, public and private land utilization percentages (see Annex).

Omar A. Take
Cambridge, Massachusetts
Summer, 1974

BEIRUT, LEBANON

URBAN CONTEXT

1. PRIMARY INFORMATION: Beirut is located at the center of the East Oriental coast of the Mediterranean Sea; latitude 34° north, longitude 35° 30' east. Beirut's latitude is slightly south of Los Angeles, California. It enjoys a Mediterranean climate with warm summers and mild winters. Summer and winter temperatures range between extremes of 10° and 33°C. The annual precipitation averages 4 and 15cm. with exception of the months of July, August and September.

2. HISTORY: The city of Beirut dates back to the 14th century B.C. During the 12th century, Beirut was invaded by armies coming from Mesopotamia and Egypt. Towards 145 B.C. Beirut was united to the Selucid Kingdom of Syria where it played the role of the commercial agent between the east and the west. Beirut was occupied by two Roman legions in 14 B.C. and took the name of "Julius Augustus Prosperous Beryte". During the 5th century it became the most Roman village of the region. Beirut was then conquered by the Crusaders in 1101, and by the Otomans in 1516. Capital of Lebanon after independence in 1943, Beirut has maintained pre-eminence as a center of trade, finance, culture and industrial development.

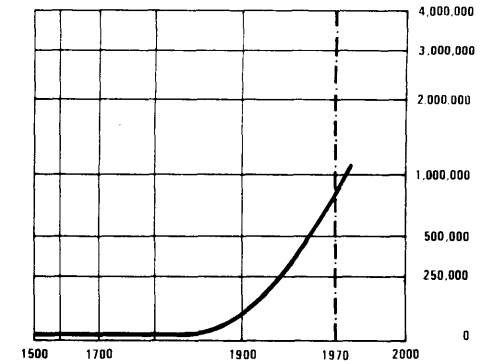
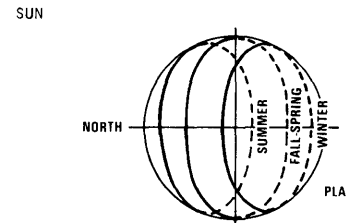
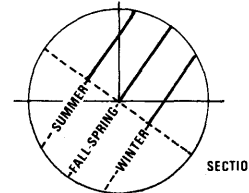
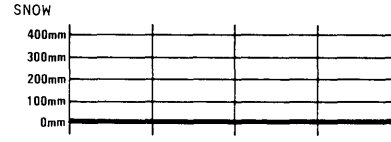
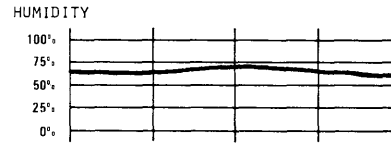
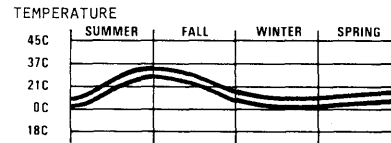
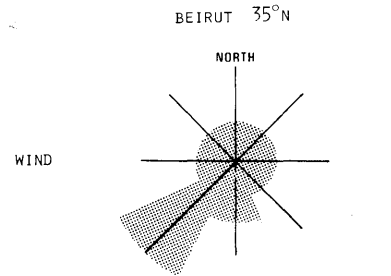
3. ECONOMY: Beirut is the focal point for trading activity in the Middle East and acts as an important gold and foreign exchange market. Beirut is also a major center of finance; before 1951 there were only 5 banks in the city, in 1966 there were 93. Lebanon's economy is based on private enterprise with few controls exercised by the Government. Two thirds of the GNP is drawn from services, primarily banking, commerce and tourism. Lebanon depends heavily on transit trade for its existence. During the 1964-1969 period, the increase rate of the GNP was 7% per annum. Except for a few large oil refineries and cement plants, industrial establishments are predominately small and heavily concentrated in and around Beirut. Major industrial activities include food processing, manufacturing of textiles and other light industrial goods. Beirut is also a publishing center having 50 privately owned political dailies and hundreds of periodicals. Lebanon's literacy rate is about 86 percent the highest in the Arab world the rate is higher in Beirut. Academic standards of two leading universities (The American University of Beirut and the Saint Joseph University) in addition to ten other institutions of higher learning in Beirut have made of Lebanon a center of higher education in the Eastern Mediterranean Area.

4. GOVERNMENT: Beirut is the seat of a highly centralized national government. Parliamentary elections are held every four years and the deputies themselves elect the president of the Republic. The Metropolitan area is divided into fourteen municipalities whose authority over urban development is limited to the issue of building licenses and inspections. Authorization for subdivisions are made by the national planning agencies.

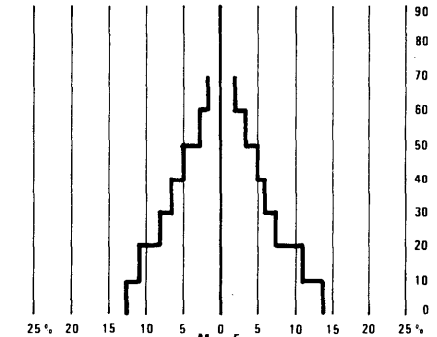
5. DEMOGRAPHY: Lebanon is unusual in that emigration has had a significant effect on its population history, as well as on social, cultural and political development. The development of the port of Beirut and the construction of roads and railroads leading to Syria provided a focus for economic development and, consequently, migration within Lebanon. An increasing number of people are abandoning the countryside for the city, generally Beirut, in order to seek a more lucrative livelihood and to participate in the social and cultural advantages of the city. A large proportion of these migrants alternate between the city and country on a seasonal, monthly or weekly basis. Despite the efforts to stem this movement, indicators are that the trend towards urbanization will continue. The estimated population of the Beirut Urban Area in 1971 was 1,200,000 assuming a 3.8 percent average annual increase since 1943; nearly 45 percent of the population of Lebanon lives in Beirut; 50 percent of the population of the metropolitan area is under 20 years of age.

6. SOCIO-CULTURAL: The population forms a mosaic of religious communities, comprising seven major religious groups; four Christian, two Islamic and the Druze. In addition there are five smaller groups. According to established custom, a balance is maintained among the religious communities in selecting all public officers.

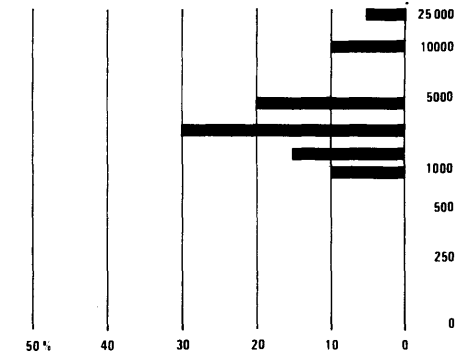
7. SOCIO-ECONOMIC: In 1972 Lebanon's gross national product was estimated at more than U.S. \$1.5 billion, or a per-capita income of well over U.S. \$550. According to the I.R.F.E.D. mission in 1960, half of the population may be classified as low and very low income and half as middle, high and very high. The first half accounts for eighteen percent of the Lebanese GNP.



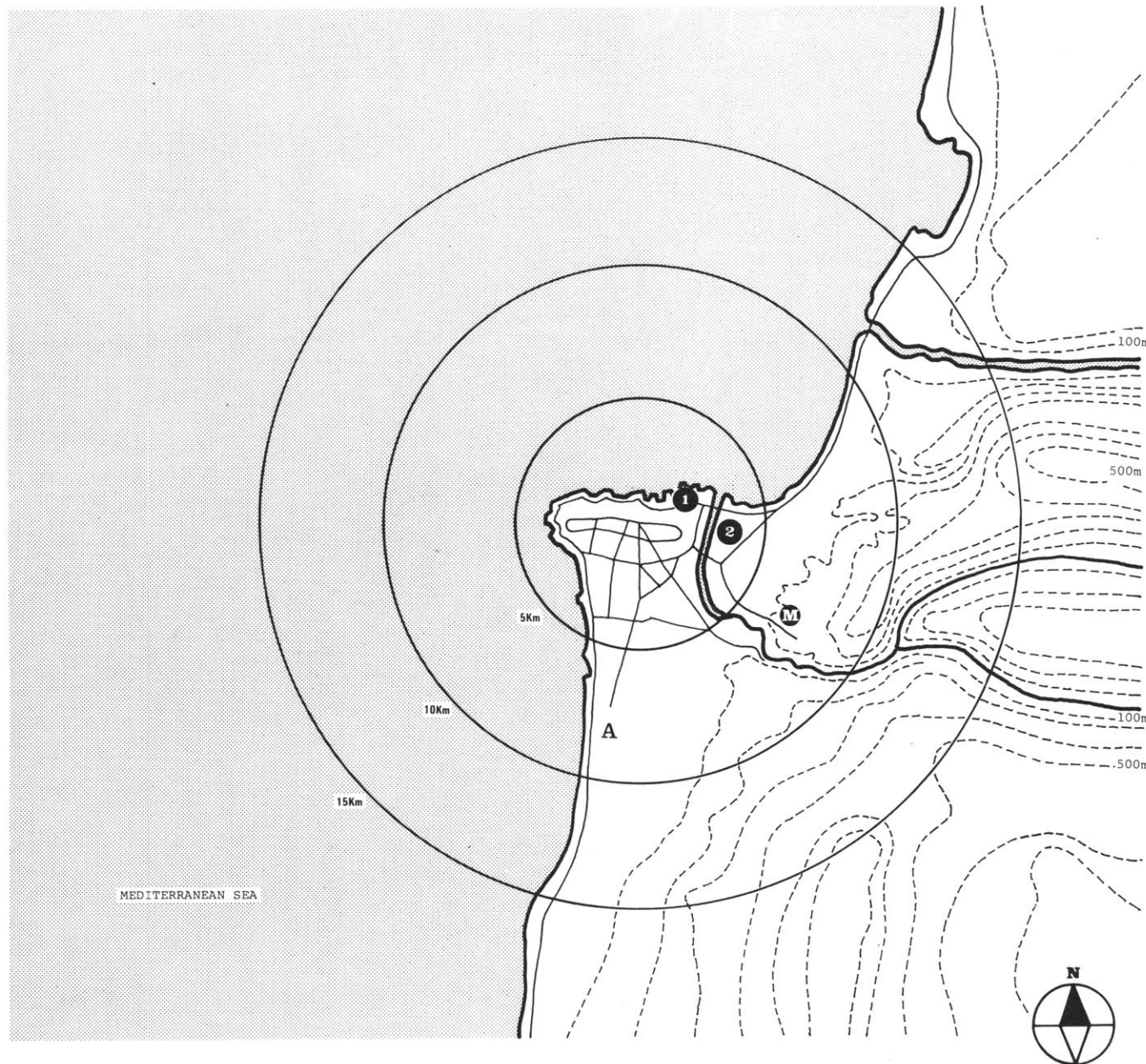
URBAN POPULATION GROWTH
horizontal: dates vertical: population



URBAN POPULATION DISTRIBUTION
horizontal: percentages vertical: ages
males: M females: F



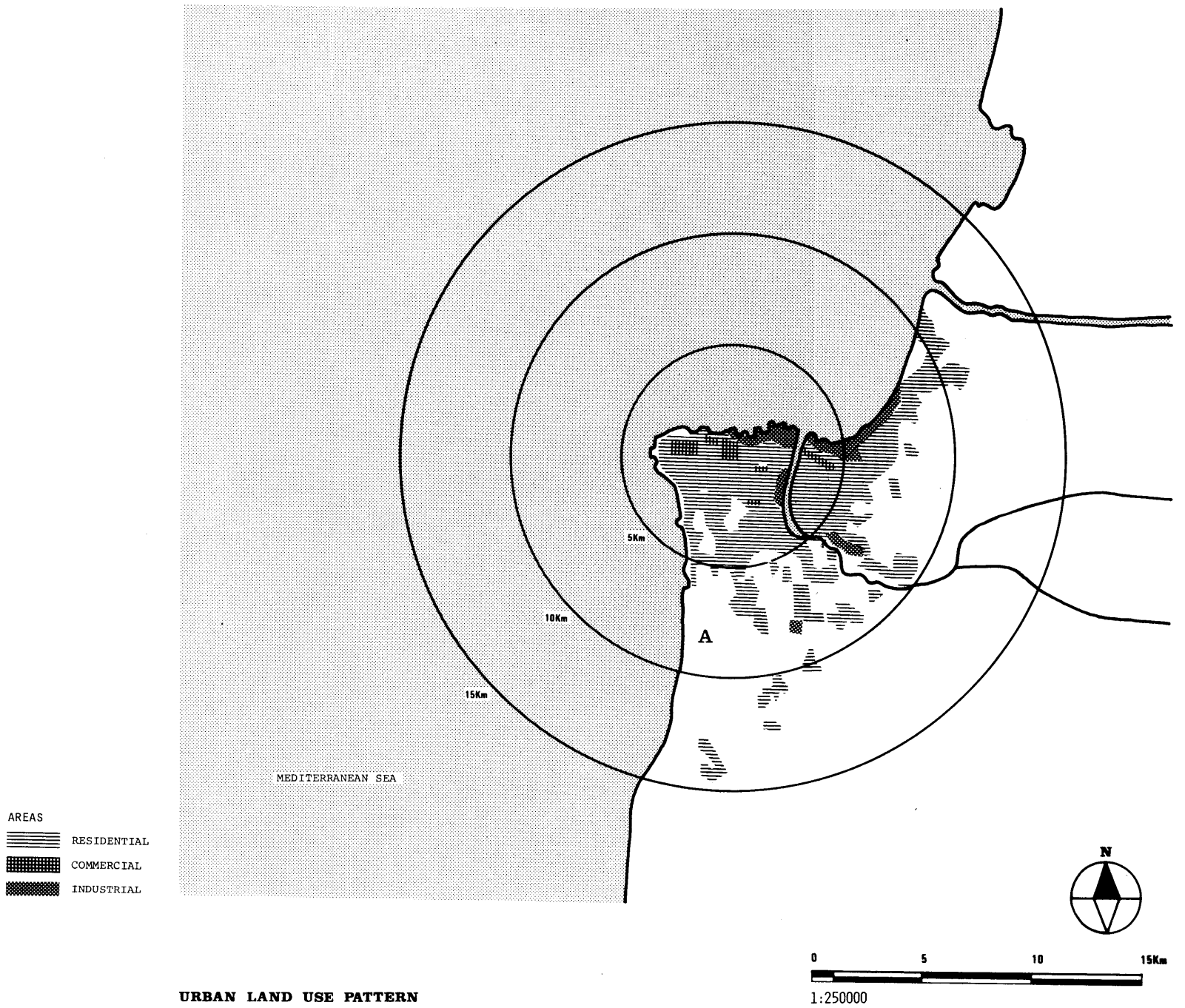
URBAN ANNUAL INCOME DISTRIBUTION
horizontal: percentages vertical: dollars



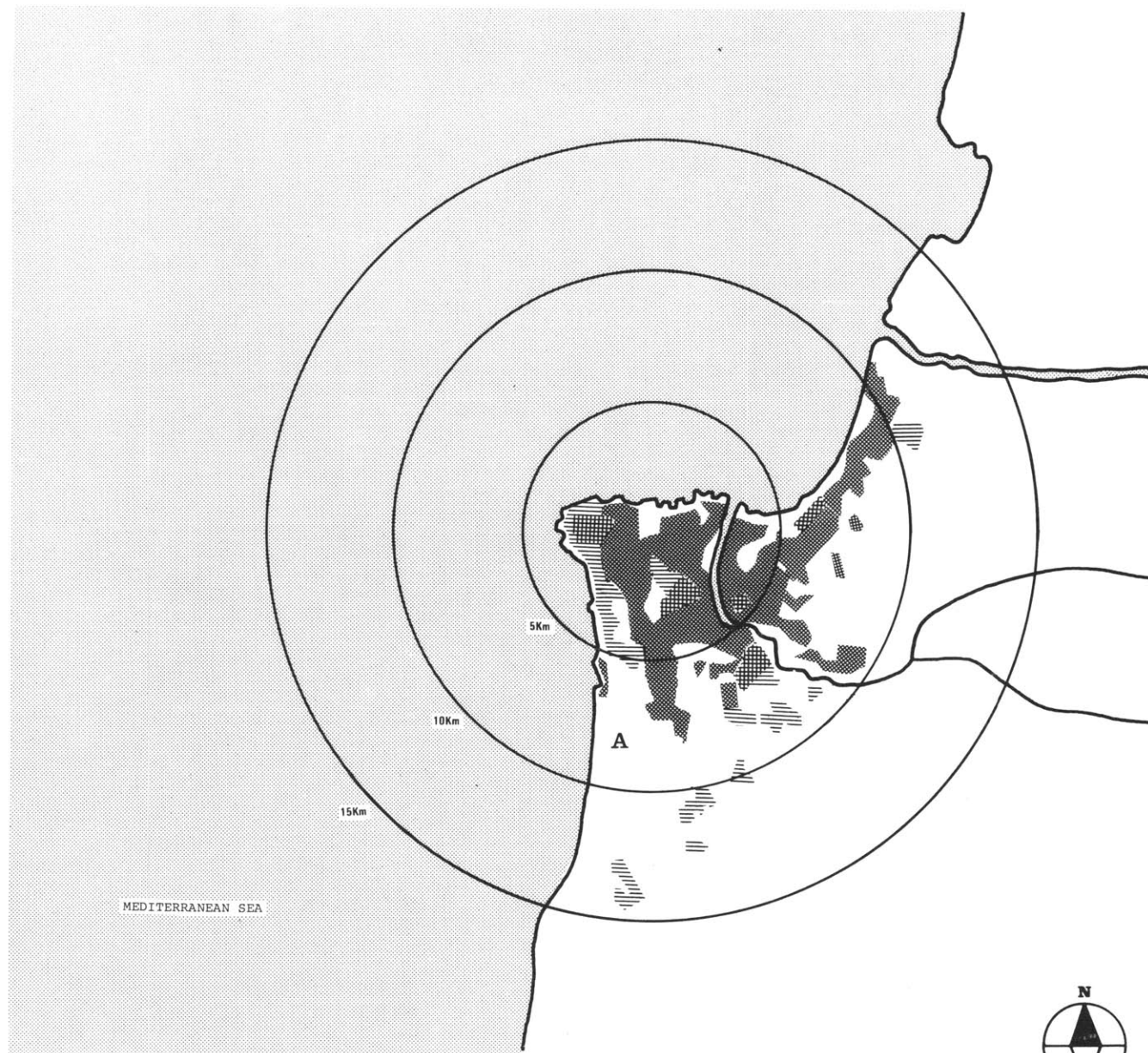
8. HOUSING: About sixty percent of the population are unable to afford the market prices of housing. Over ninety five percent of the housing in the Metropolitan area is provided by the private and public sectors. The new housing supplied by the private sectors can be afforded by less than ten percent of the population followed by an ever increase in land prices. A product of this equity is the presence of squatter settlements and illegal settlements. There are practically no public housing projects, the first of its kind is the Mkalles Housing Project. Nearly 56 percent of the residents of Beirut and 74 percent of those living in the outskirts of the city live in apartments of less than 80 sq.m. The cheapest subdivision building land is sold at between U.S. \$40 and \$60 per sq.m in some areas it is as high as U.S. \$6000 per sq.m; the minimum standard dwelling costs approximately U.S. \$20,000 up to U.S. \$200,000 for a luxurious apartment in Beirut. There is no participation of the private sector for low or middle income housing due to: lack of specialized institutions in long term credit; the unwillingness of the government to guarantee private investments; the desire of developers and speculators to make exuberant profits. The city center and inner ring cannot absorb the intense low income housing demand. The natural growth tendencies are towards the periphery, where land is available at lower cost though the topography is not suitable for urban expansion.

KEY

- A** Airport
- Primary Road
- 1** MEDAWAR (squatters)
- 2** BORJ HAMMOUD
- M** MKALLES HOUSING PROJECT



URBAN LAND USE PATTERN

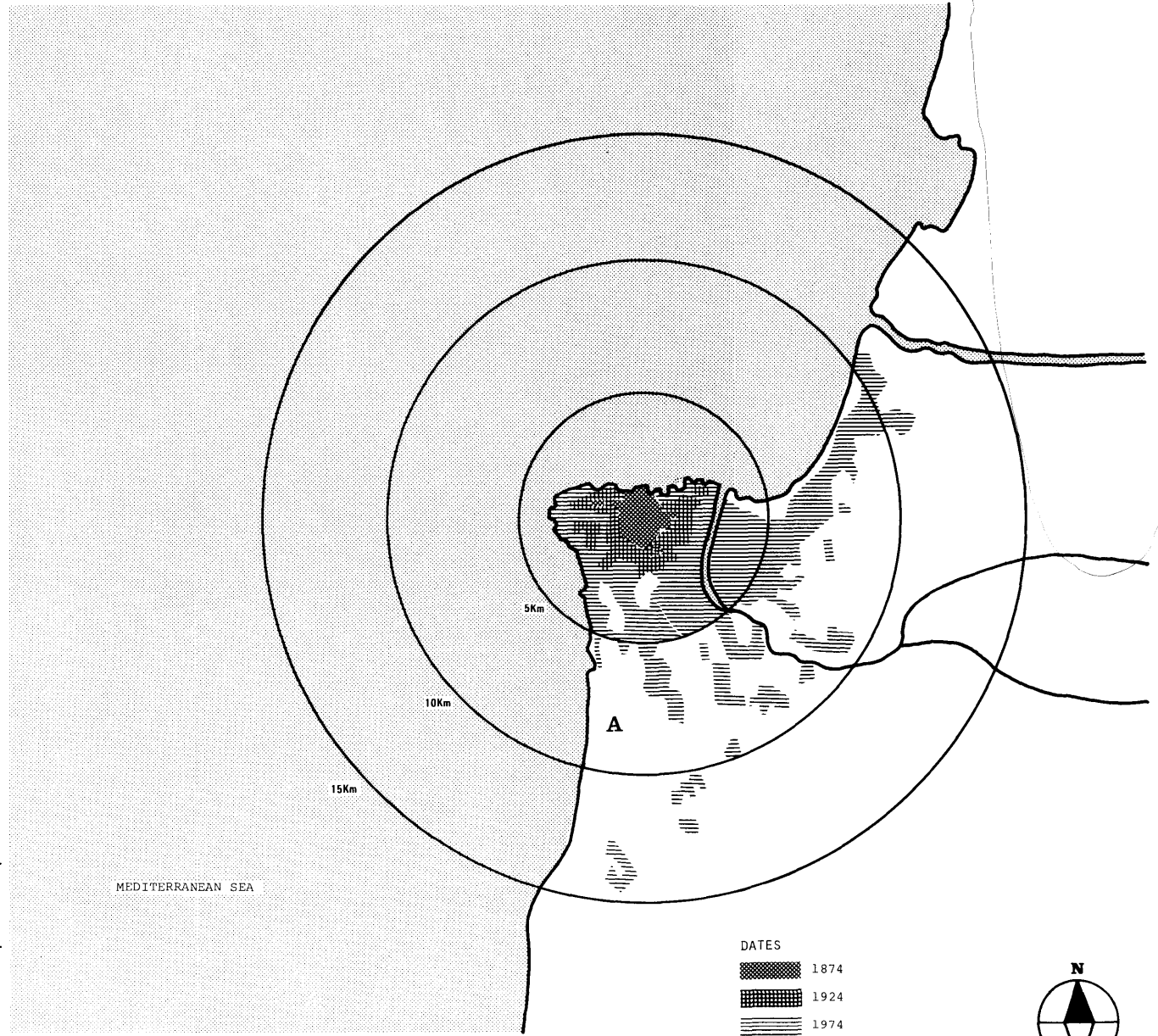


INCOMES
LOW
MEDIUM
HIGH

0 5 10 15Km
1:250000

URBAN INCOME PATTERN

9. URBAN GROWTH PATTERN: In 1922 Beirut was a charming port town with 140,000 inhabitants. In 1963 the greater Beirut area accomodated nearly 800,000 people and in 1972 the estimated population was about 1,200,000; nearly 45 percent of the entire population of the Country.



URBAN CONTEXT SOURCES

- Topography and circulation: (approximate) Directorate of Geographical Affairs, Beirut, 1970.
- Land Use Pattern: (approximate) Comprehensive Plan Studies for the City of Beirut, 1970.
- Income Pattern: (tentative) O. Take, 1973.
- Climate: (accurate) Directorate General of Statistics, Ministry of Plan, 1973.
- Photographs: Manoug, Beirut
- General information: I.R.F.E.D. Report, Ministry of Plan, 1961; Lebanese Statistics of 1973, 1974; The Precarious Republic, Michael Hudson, New York 1968.

URBAN GROWTH PATTERN

DATES
1874
1924
1974



0 5 10 15Km
1:250000

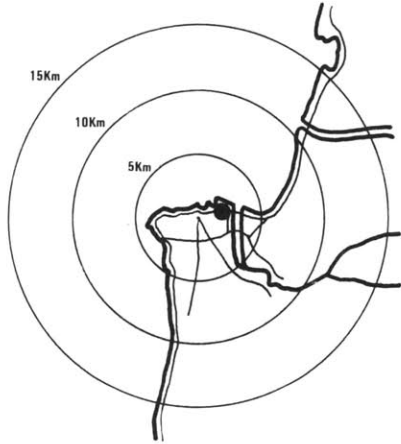
A VIEW OF BEIRUT IN THE LATE 1800's In the background, Mount Lebanon coming too close to the coastline in the East of Beirut. To the left, the Mediterranean sea and the Port of Beirut. Most of the city houses seen in this picture have been replaced by concrete "modern" buildings. This picture was taken by an old professor of the Syrian Protestant College, now, the American University of Beirut; the picture was taken from the campus of the University.



AERIAL VIEW OF BEIRUT 1970 Beirut manifests a great variety of urban settlements; it has a great variety of mixed land use patterns and architectural forms and styles. The street structure and block arrangements are not consistent or uniform. Beirut's planning and urban control have been inspired by Western concepts, its urban growth and structure shows the inadequacy of imported models.



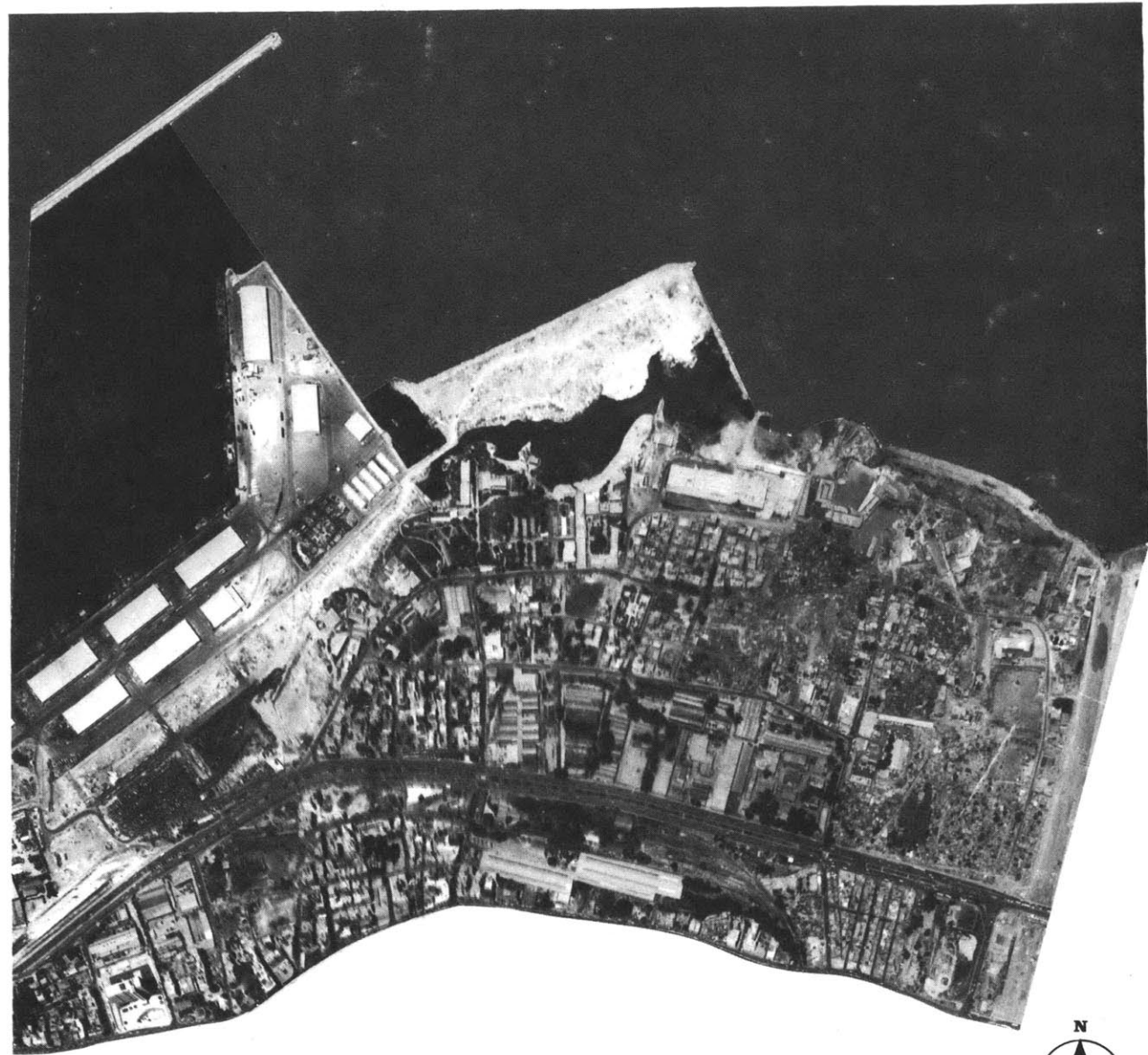
1 MEDAWAR Beirut



LOCATION: The Medawar locality is situated to the east of Beirut, about 1.5 Km from the central business district of the city. It is bounded on the north by the Mediterranean Sea; on the south by the Eastern Entrance of Beirut Avenue; on the east by the Beirut River and on the west by the Port of Beirut.

ORIGINS: Inflated land prices or snob planning and building codes prevent people from housing themselves, they must either continue to live in overcrowded and overpriced slums or they must squat. The Quarantaine is the oldest and largest squatter settlement in Beirut, it occupies a large part of the Medawar locality. It is a transit town, occupying inner-city land of high and rising commercial value.

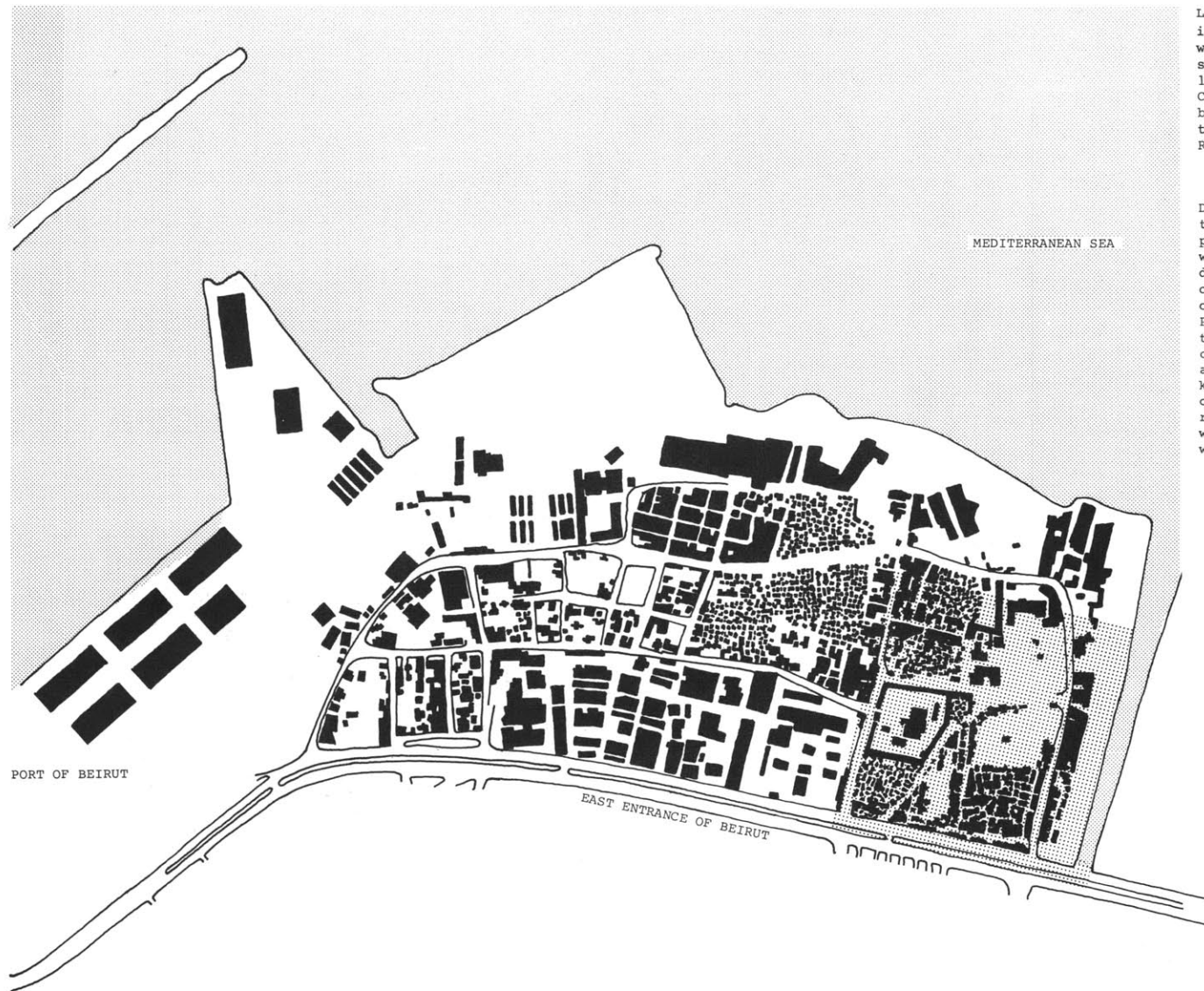
The land previously belonged to a cement factory which moved to the north of the country, the land was later sold to private individuals and institutions. The settlement started by an emigration of people from Turkey, Syria, Palestine and the rural areas of Lebanon. Between 1932 and 1947 there was a progressive increase in the number of immigrants and between 1952 and 1962 there was a constant flow of immigrants from the South of Lebanon due to unstable political conditions. The choice of the Quarantaine is in view of different factors: proximity to workplaces, availability of public schools, efficient public transportation, the presence of the main industrial area of Beirut and the Port of Beirut.



0 100 500m

1:10000

LOCALITY AIR PHOTOGRAPH



LAYOUT: The area grew by the accretion of individual or small group decisions, there was no planing. The layout within the squatter settlement consists of private areas (the dwelling structures) and public/circulation areas. Circulation is random and entirely dominated by pedestrians. For the rest of the locality the pattern of the blocks of city houses is a Roman Hispanic layout with few open spaces.

DEMOGRAPHY: The population of the Quarantine was estimated in 1971 at about 12,600 people living in about 2540 houses (shacks), with an assumed average of 5.5 persons per dwelling. The Lebanese constitute 29.6 percent of the population, the other 70.6 percent are immigrants from Syria, Turkey, Iraq, Palestine and Armenians. The active population of the Quarantine is only 23 percent, out of which 2.5 percent are women. Nearly all the heads of families are unskilled workers; 24 percent are street vendors; 33 percent work in factories and the Port and the rest are either street porters, municipal workers or legume sellers. Most of them work within the locality.

PORT OF BEIRUT

MEDITERRANEAN SEA

EAST ENTRANCE OF BEIRUT

SELECTED
SEGMENT

0 100 500m

1:10000

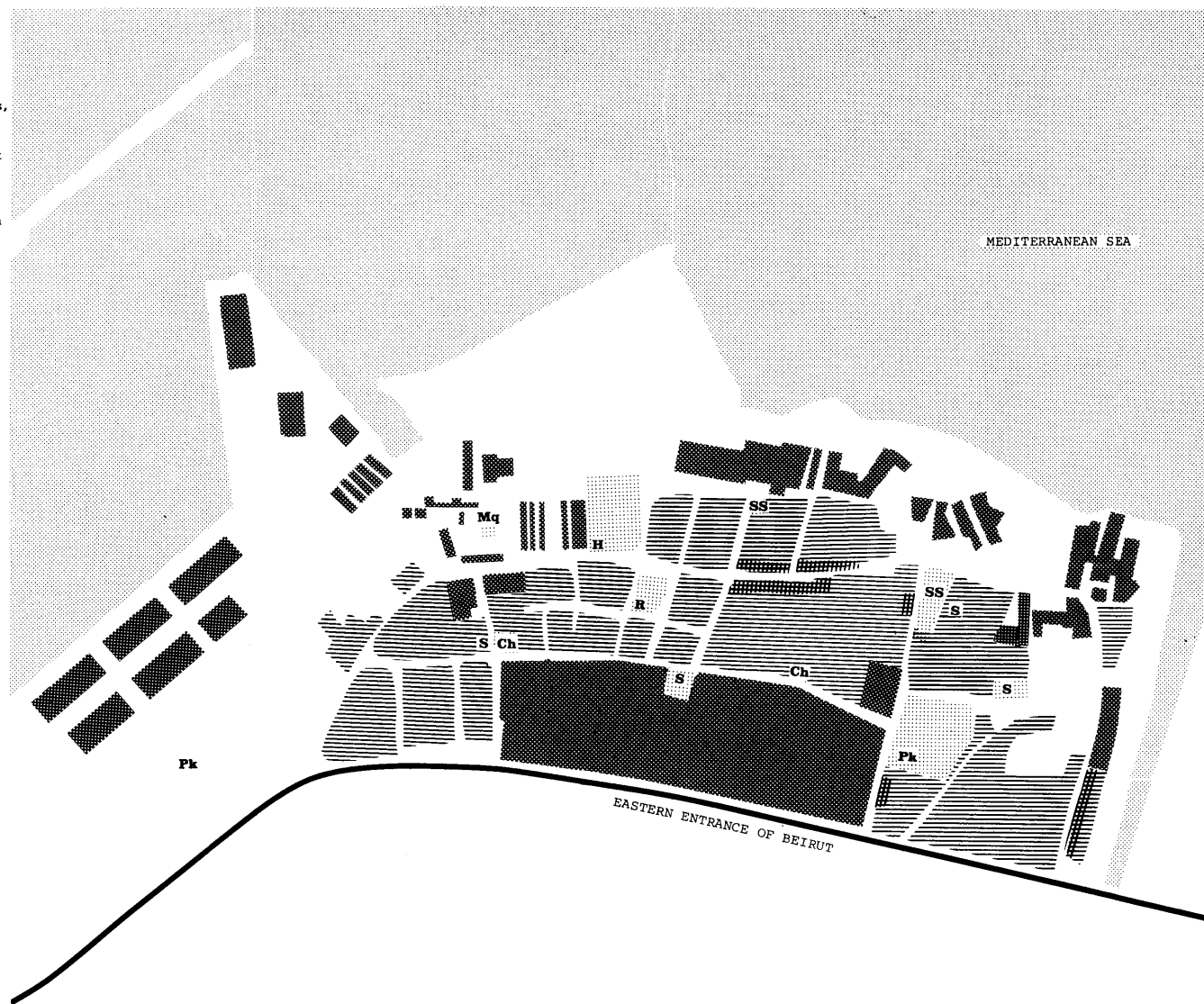


LOCALITY PLAN

LAND USE: Privately occupied land accounts for approximately 70 percent of the land surface. Industrial activities are located on the north. Commercial activities are located along pedestrian passageways including a daily open market. The following community facilities are available: four primary public schools, two dispensaries, two churches, a mosque, the quarantine hospital. The squatters have no secure tenure, there is no physical improvement in the settlement, partly because of their insecurity, partly because an increasing proportion of the people rent from original squatters and partly because of the high population density.

- AREAS
- RESIDENTIAL
 - COMMERCIAL
 - INDUSTRIAL
 - OPEN SPACES

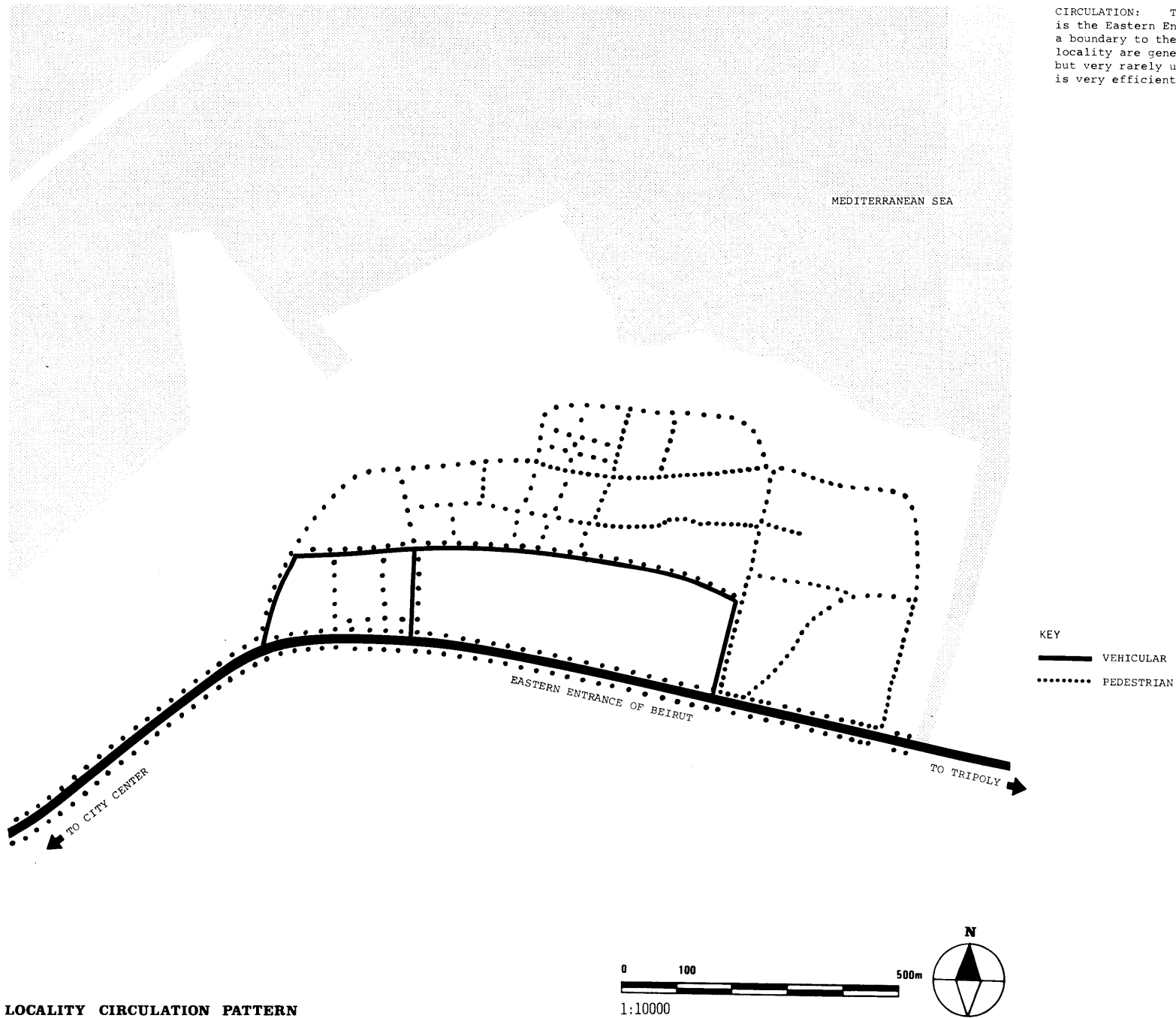
- KEY
- Pk Parking
 - P Police
 - F Fire Department
 - S School
 - Ch Church
 - R Recreation
 - L Library
 - U University
 - H Health
 - PO Post Office
 - SS Social Services
 - M Market
 - C Cemetery
 - Bus
 - Rapid Transit



LOCALITY LAND USE PATTERN

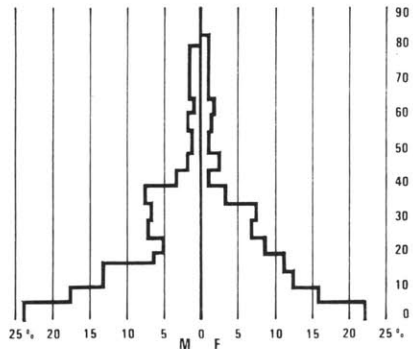


CIRCULATION: The main access to the locality is the Eastern Entrance of Beirut which acts as a boundary to the south. Streets within the locality are generally accessible to vehicles but very rarely used. Public transportation is very efficient and much used by the residents.

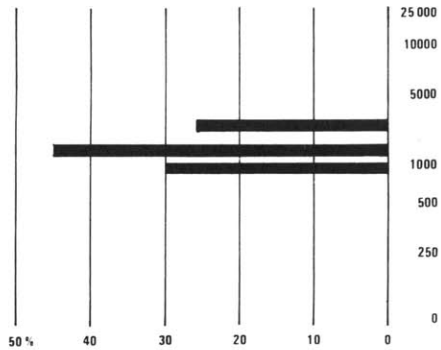


LOCALITY CIRCULATION PATTERN

POPULATION: According to a survey in 1971 there were approximately 2540 households, with a total of 12,600 persons at an average of 5 persons per household. No data is available on the age-sex composition of the whole locality, however a survey was made in 1971 from the squatter settlement. It can be noticed that nearly 60 percent of the population of the Quarantaine are under 20 years of age.

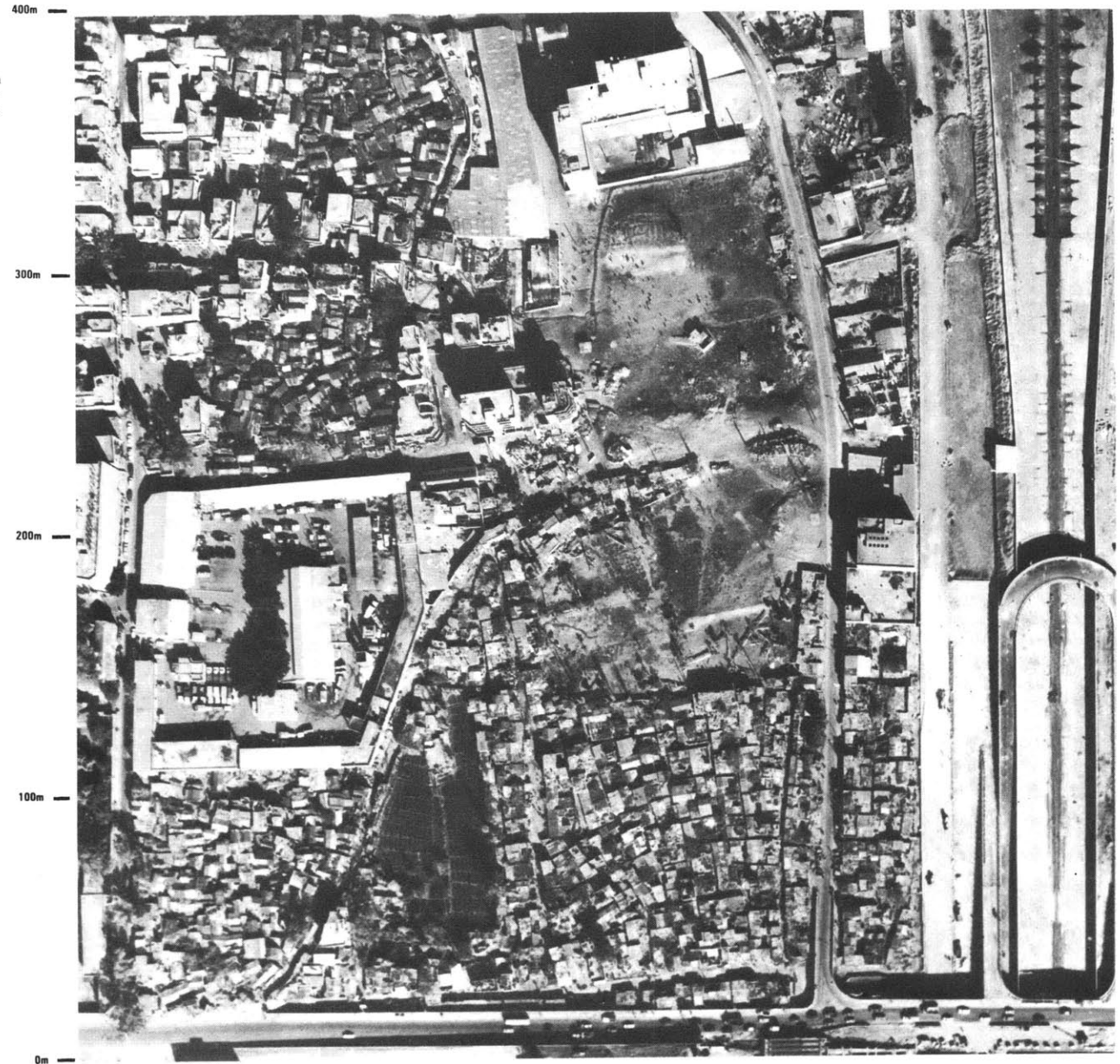


LOCALITY POPULATION DISTRIBUTION
horizontal: percentages vertical: ages
males: M females: F
Source: (approximate) Survey of Quarantaine,
Ecole Libanaise de Formation Sociale, 1971.



LOCALITY ANNUAL INCOME DISTRIBUTION
horizontal: percentages vertical: dollars
Source: (approximate) IRFED Report (updated)

INCOMES: The approximate income distribution of the Quarantaine is relatively homogeneous since about 80 percent of the households have annual incomes ranging between \$1000 and \$2000. The average income would be considered low and the tenants have been excluded or private housing because of their incapacity to pay the market costs.

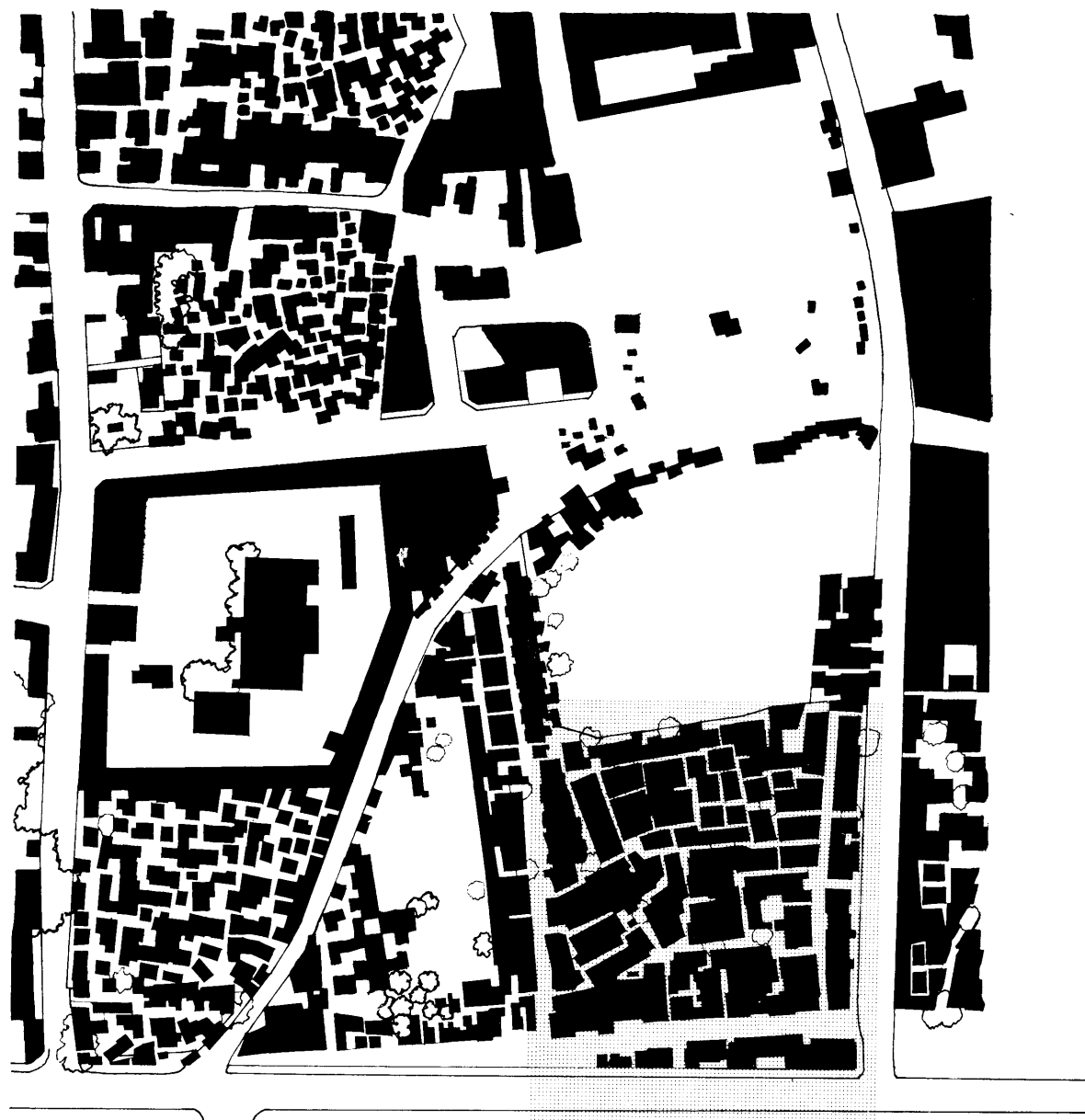


LOCALITY SEGMENT AIR PHOTOGRAPH

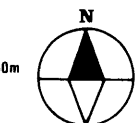


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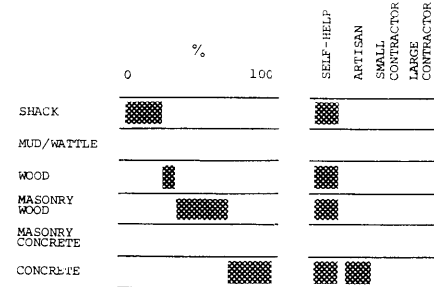




LOCALITY SEGMENT PLAN



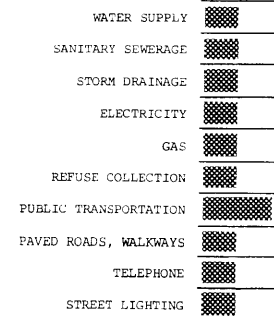
LOCALITY CONSTRUCTION TYPES



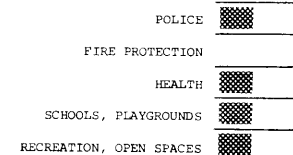
The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

Quality of information: Approximate

LOCALITY UTILITIES AND SERVICES



LOCALITY COMMUNITY FACILITIES

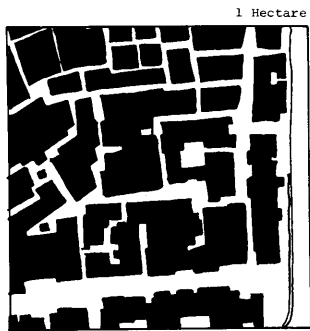


The chart illustrates the approximate availability of utilities, services, and community facilities at three levels: NONE, LIMITED, ADEQUATE.


Quality of information: Approximate


[Pattern] SELECTED BLOCK


LAND UTILIZATION DIAGRAMS





PATTERN

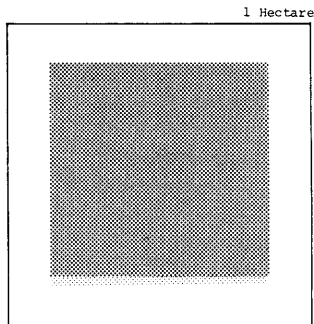
Public: streets/walkways 

Semi-Public: playgrounds 

Semi-Private: cluster courtyards 

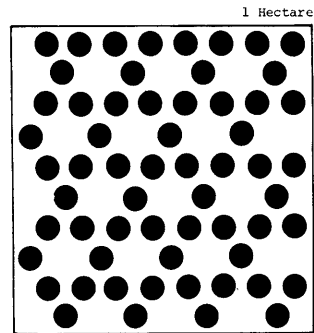
Private: lots 

 dwellings 




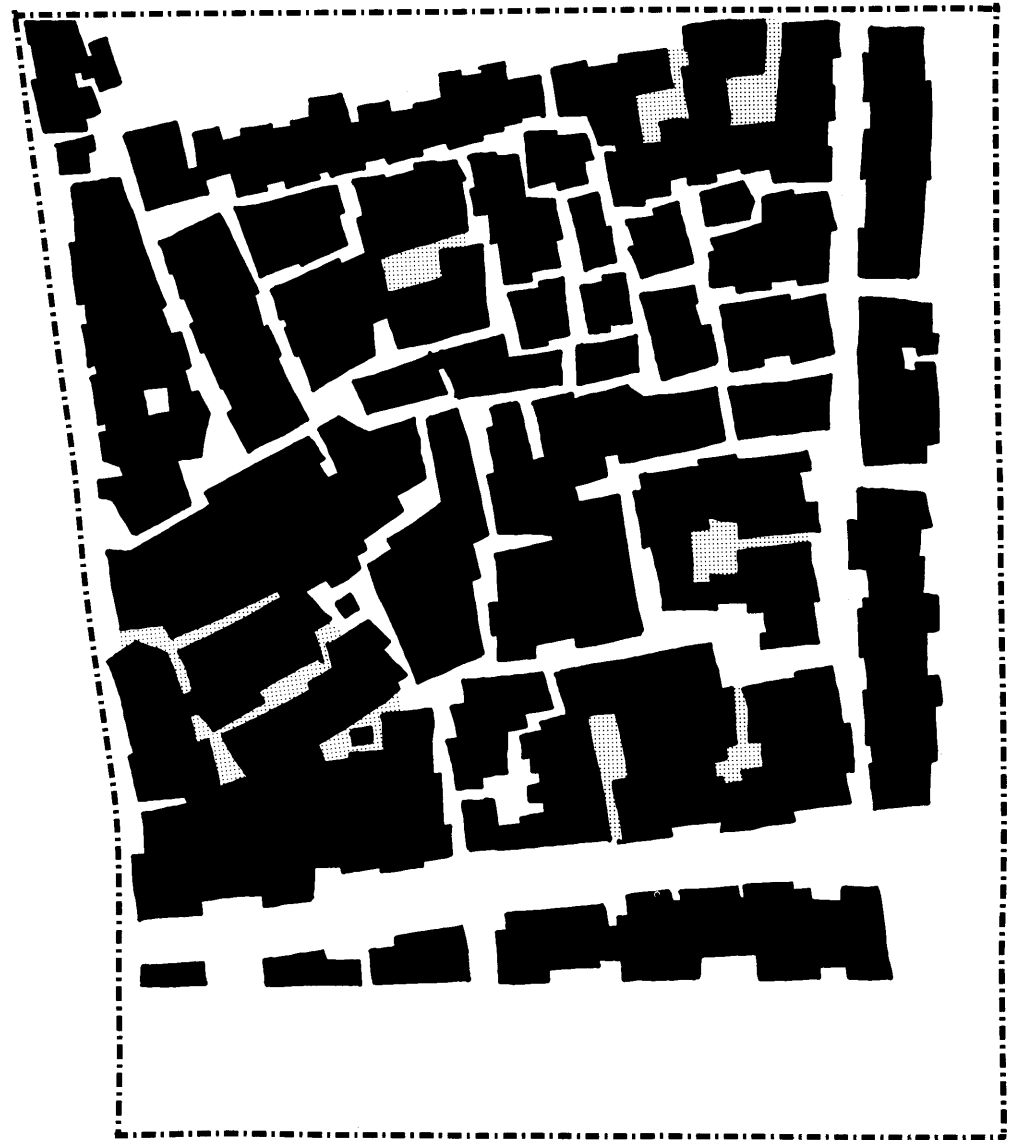
PERCENTAGES

Streets/Walkways	48.5%
Playgrounds	-
Cluster Courtyards	2.5%
Dwellings/Lots	49.0%



DENSITY Persons/Hectare 1200

 20 Persons



LOCALITY BLOCK LAND UTILIZATION





LOCALITY BLOCK LAND UTILIZATION DATA

DENSITIES:	Total Number	Area Hectares	Density N/Ha
LOTS			
DWELLING UNITS	400	0.91	440
PEOPLE	2200	0.91	2417
AREAS:			
		Hectares	Percentages
PUBLIC (streets, walkways, open spaces)		0.89	48.2
SEMI-PUBLIC (open spaces, schools, community centers)		-	-
PRIVATE (dwellings, shops, factories, lots)		0.91	49.5
SEMI-PRIVATE (cluster courts)		0.04	2.3
		TOTAL	1.84 100.0

NETWORK EFFICIENCY

$$R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = \text{NA}$$

$$\text{AVERAGE LOT AREA} = \text{NA}$$

LOCALITY SOURCES

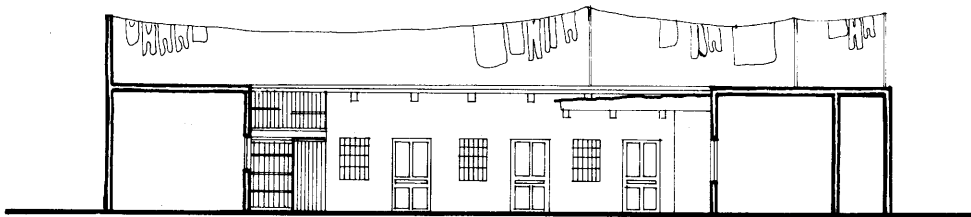
- Plan: (accurate) Aerial photograph of Beirut, 1973; Cadastral plan for the City of Beirut.
- Land Use Pattern: Directorate of Geo
- Plan: (accurate) Plan Cadastral de la Ville de Beirut, 1970.
- Land Use Pattern: (accurate) Direction des Affaires Geographiques, Beirut, 1970.
- Circulation Pattern: (approximate) O. Take, 1974.
- Segment Plan: (accurate) Plan Cadastral de la Ville de Beirut, 1970.
- Block Plan: (accurate) Plan Cadastral de la Ville de Beirut, 1970.
- Block Land Utilization: (accurate) Field Survey, O. Take 1973, Beirut.
- Dwelling Plan: (approximate) Field Survey, O. Take, 1973, Beirut
- Physical Data: (accurate) IBID
- Socio-Economic Data: (approximate) IBID
- Photographs: Omar Take
- General Information: Studies by the Lebanese School of Social Formation; Field Surveys 1973, 1974.

LOCALITY BLOCK PLAN

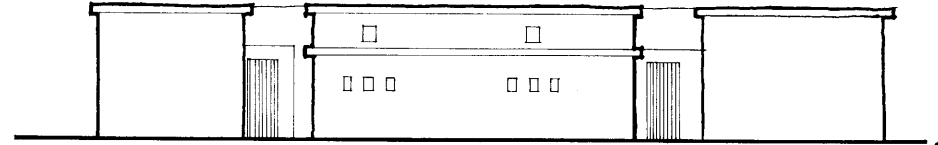


1:1000

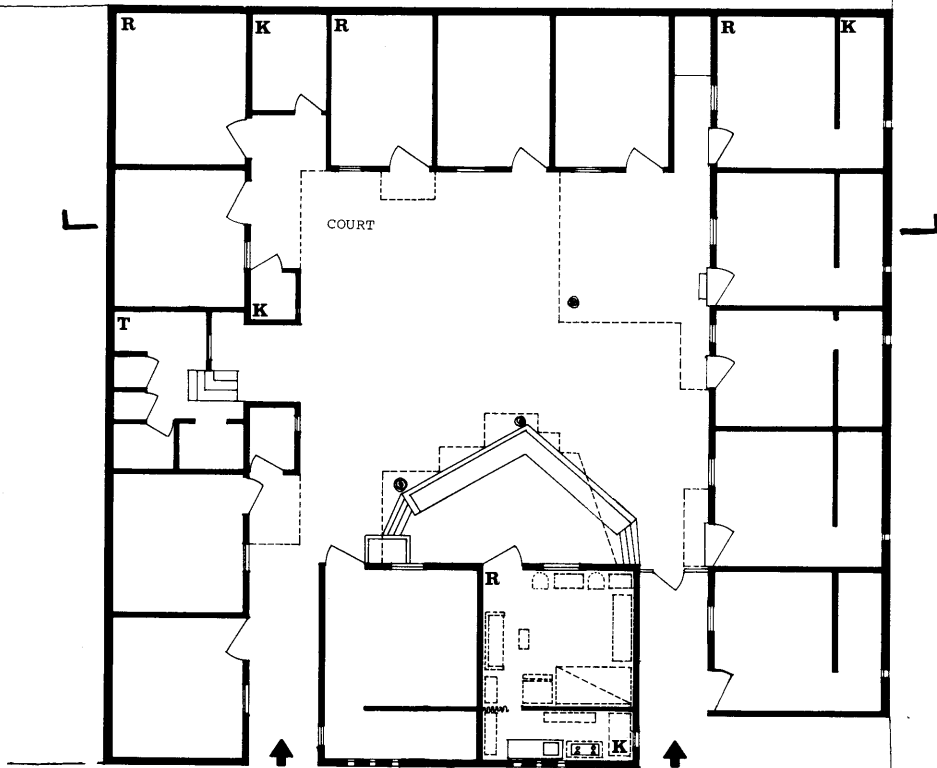




SECTION



ELEVATION

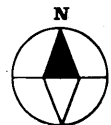


PLAN

KEY

- LR Living Room
- D Dining/Eating Area
- BR Bedroom
- K Kitchen/Cooking Area
- T Toilet/Bathroom
- L Laundry
- C Closet
- S Storage
- R Room (multi-use)

TYPICAL DWELLING



MEDAWAR, Beirut: (left top) the picture shows a family from South Lebanon living in the tenement.

(right top) view of the court of the tenement. The court is used for social gatherings, as a play area for the children, as a place for cooking and other activities. The roof of the rooms is used for drying the daily laundry. Barrels are used for storing water. This tenement can be easily upgraded.

(bottom) a view inside one of the rooms. Notice how well kept and equipped is the room. The walls are well painted, a rug on the floor, a new refrigerator, cigarettets on the table for the guests. This is not a typical dwelling, but in general the rooms are very tidy. This shows the pride the people feel for their homes.



PHYSICAL DATA
(related to dwelling and land)

DWELLING UNIT	
type:	ROOM
area (sq m):	30
tenure:	RENTAL
LAND/LOT	
utilization:	PRIVATE
area (sq m):	420
tenure:	RENTAL
DWELLING	
location:	PERIPHERY
type:	TENEMENT
number of floors:	1
utilization:	MULTIPLE
physical state:	FAIR
DWELLING DEVELOPMENT	
mode:	INCREMENTAL
developer:	PRIVATE SECTOR
builder:	ARTISAN
construction type:	CONCRETE
year of construction:	1952
MATERIALS	
foundation:	CONCRETE
floors:	POURED CONCRETE SLAB
walls:	CONCRETE BLOCKS
roof:	POURED REINFORCED CONCRETE
DWELLING FACILITIES	
wc:	2 (SHARED)
shower:	2 (SHARED)
kitchen:	10
rooms:	14
other:	COURTYARD

SOCIO-ECONOMIC DATA
(related to user)

GENERAL:	SOCIAL	
user's ethnic origin:	LEBANESE	
place of birth:	SOUTHERN LEBANON	
education level:	PRIVATE	
NUMBER OF USERS		
married:	2	
single:	2	
children:	4	
total:	8	
MIGRATION PATTERN		
number of moves:	2	
rural - urban:	1	
urban - urban:	1965	
urban - rural:	DURING SUMMER	
why came to urban area:	EMPLOYMENT	
GENERAL: ECONOMIC		
user's income group:	LOW	
employment:	TRUCK DRIVER	
distance to work:	5KM	
mode of travel:	TRUCK	
COSTS		
dwelling unit:	L.L. 2000	
land - market value:	L.L. 2,500,000/HA	
DWELLING UNIT PAYMENTS		
financing:	PRIVATE	
rent/mortgage:	L.L. 50/MONTH	
% income for rent/mortgage:	20%	



PHYSICAL DATA

(related to dwelling and land)

DWELLING UNIT
type: SHANTY
area (sq m): 36
tenure: EXTRALEGAL RENTAL

LAND/LOT
utilization: PRIVATE
area (sq m): 20
tenure: EXTRALEGAL RENTAL

DWELLING
location: PERIPHERY
type: SEMI-DETACHED
number of floors: 2
utilization: SINGLE
physical state: BAD

DWELLING DEVELOPMENT
mode: INCREMENTAL
developer: POPULAR SECTOR
builder: SELF-HELP
construction type: SHACK
year of construction: 1950

MATERIALS
foundation: NONE
floors: POURED CONCRETE SLAB
walls: POLES, CARDBOARD, CORRUGATED IRON SHEETS
roof: WOOD JOISTS WITH CORRUGATED IRON SHEETS

DWELLING FACILITIES
wc: 1
shower: -
kitchen: 1
rooms: 2
other: -

SOCIO-ECONOMIC DATA
(related to user)

GENERAL: SOCIAL
user's ethnic origin: SYRIAN
place of birth: DAMASCUS
education level: PRIMARY

NUMBER OF USERS
married: 2
single: 1
children: 4
total: 7

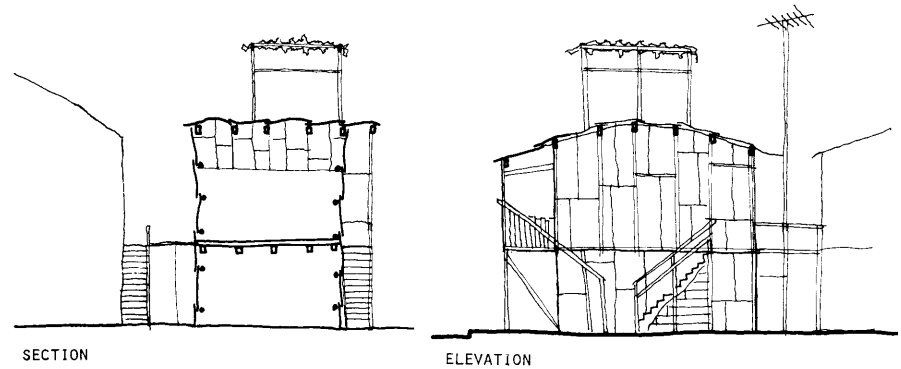
MIGRATION PATTERN
number of moves: 4
rural - urban: 1947
urban - urban: 1950, 1964, 1967
urban - rural: DURING SUMMER
why came to urban area: EMPLOYMENT

GENERAL: ECONOMIC
user's income group: LOW
employment: ARTISAN
distance to work: 4 KM
mode of travel: PUBLIC TRANSPORTATION

COSTS
dwelling unit: L.L. 1000
land - market value: L.L. 2,500,000/HA

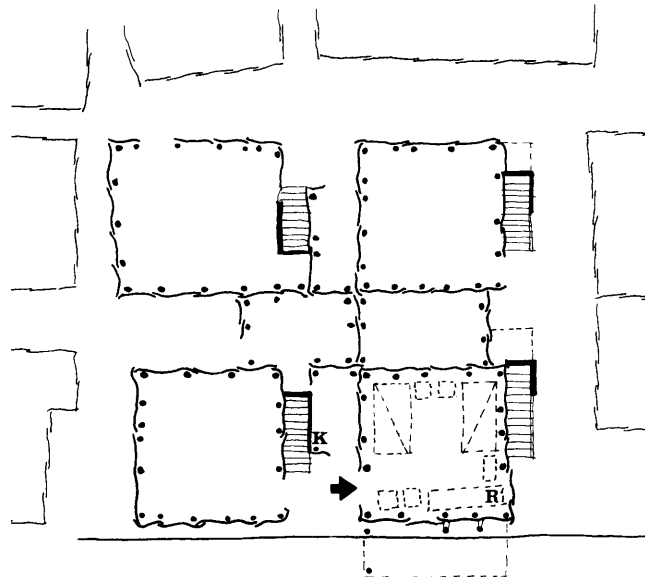
DWELLING UNIT PAYMENTS
financing: SELF FINANCED
rent/mortgage: L.L. 10 /MONTH
% income for rent/mortgage: 4%

TYPICAL DWELLING



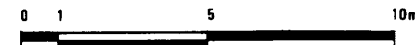
SECTION

ELEVATION

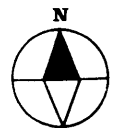


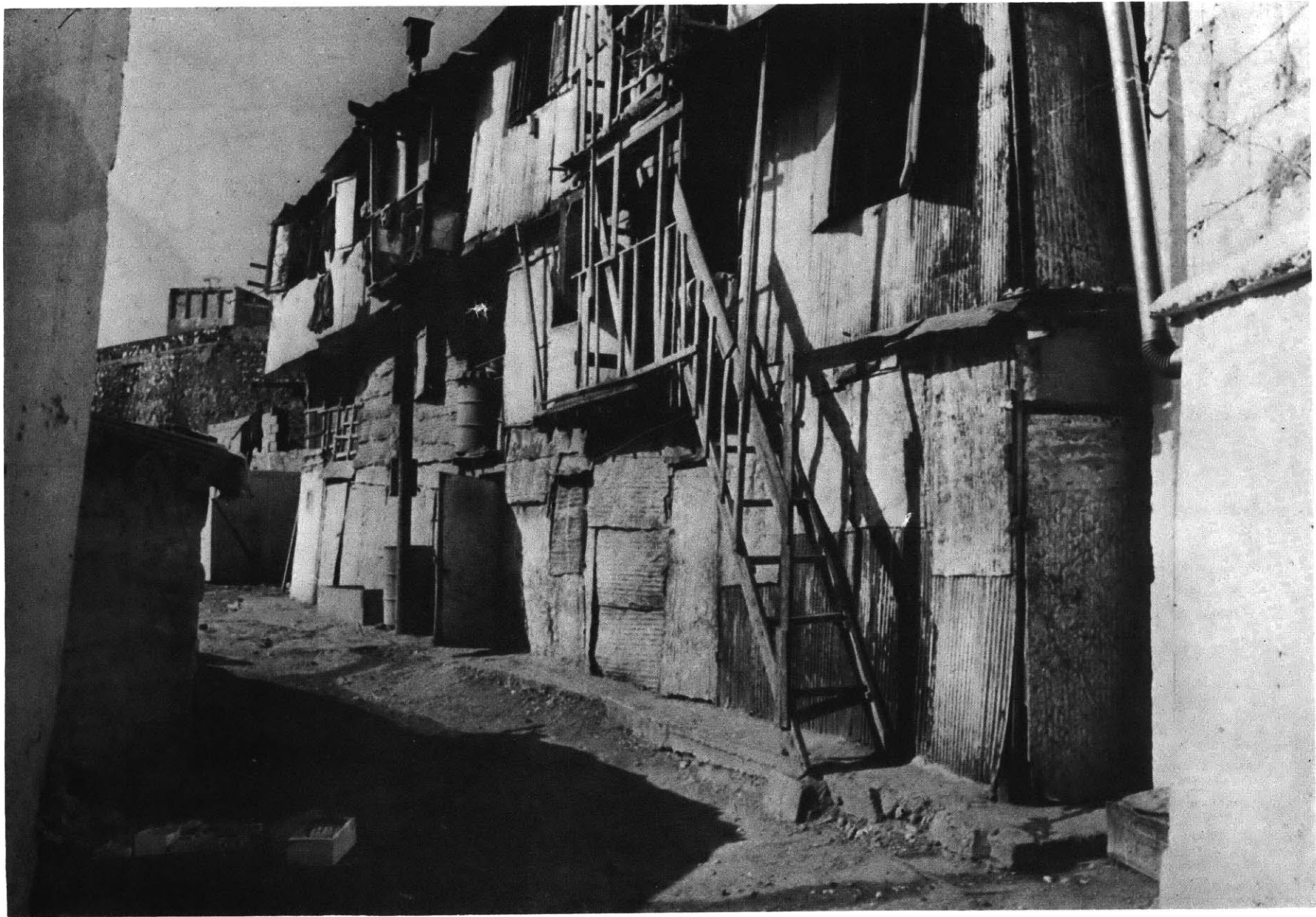
KEY

- LR Living Room
- D Dining/Eating Area
- BR Bedroom
- K Kitchen/Cooking Area
- T Toilet/Bathroom
- L Laundry
- C Closet
- S Storage
- R Room (multi-use)



1:200





VIEW OF A ROW OF SHANTIES Three storey shanties are common in the Quarantaine squatter settlement. Notice the ingenuity of the people to build three story huts out of materials of little or no value like cheap wood, galvanized iron sheets. The roads are not paved but yet they are kept clean, these streets could be greatly improved. There is a strong sense of community in the Quarantaine.

PHYSICAL DATA

(related to dwelling and land)

DDDD DWELLING UNIT
type: ROOM
area (sq m): 25
tenure: LEGAL RENTAL

LAND/LOT
utilization: PRIVATE
area (sq m): 121
tenure: LEGAL RENTAL

DWELLING
location: PERIPHERY
type: SEMI-DETACHED
number of floors: 1
utilization: MULTIPLE
physical state: BAD

DWELLING DEVELOPMENT
mode: INCREMENTAL
developer: POPULAR SECTOR
builder: SELF-HELP
construction type: MASONRY/WOOD
year of construction: 1950

MATERIALS
foundation: NON
floors: POURED CONCRETE SLAB
walls: CONCRETE BLOCKS
roof: WOOD JOISTS WITH CORRUGATED IRON SHEETS

DWELLING FACILITIES
wc: 1 (SHARED)
shower: 1 (SHARED)
kitchen: 2
rooms: 4
other: COURTYARD

SOCIO-ECONOMIC DATA
(related to user)

GENERAL: SOCIAL
user's ethnic origin: LEBANESE
place of birth: SOUTHERN LEBANON
education level: PRIMARY

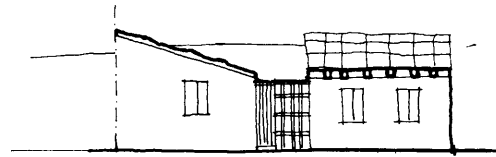
NUMBER OF USERS
married: 2
single: 1
children: 5
total: 8

MIGRATION PATTERN
number of moves: 3
rural - urban: 1955
urban - urban: 1965, 1967
urban - rural: EVERY SUMMER
why came to urban area: EMPLOYMENT

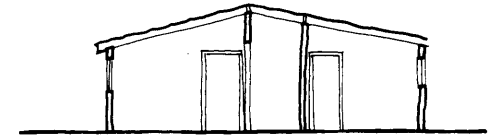
GENERAL: ECONOMIC
user's income group: LOW
employment: STREET VENDOR
distance to work: 3 KM
mode of travel: WALKING

COSTS
dwelling unit: L.L. 400
land - market value: L.L. 2,500,000

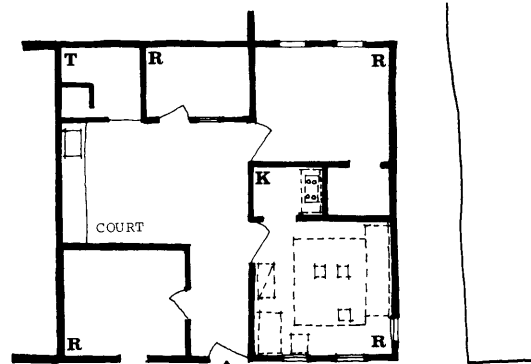
DWELLING UNIT PAYMENTS
financing: SELF FINANCED
rent/mortgage: L.L. 42/MONTH
% income for rent/mortgage: 15%



ELEVATION



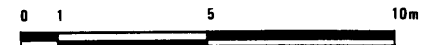
SECTION



PLAN

KEY

- LR Living Room
- D Dining/Eating Area
- BR Bedroom
- K Kitchen/Cooking Area
- T Toilet/Bathroom
- L Laundry
- C Closet
- S Storage
- R Room (multi-use)



1:200

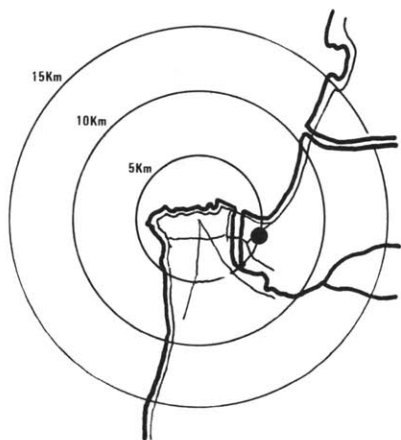


TYPICAL DWELLING



A VIEW OF THE QUARANTAINE SQUATTER SETTLEMENT In the background, the Eastern entrance of Beirut. In the foreground, the semi-rural squatter settlements occupying inner-city land of high and rising commercial value. Notice their huts made out of concrete block walls and galvanized iron sheets roofs. The settlement is located approximately two kilometers from the center of Beirut.

2 BORJ HAMMOUD Beirut



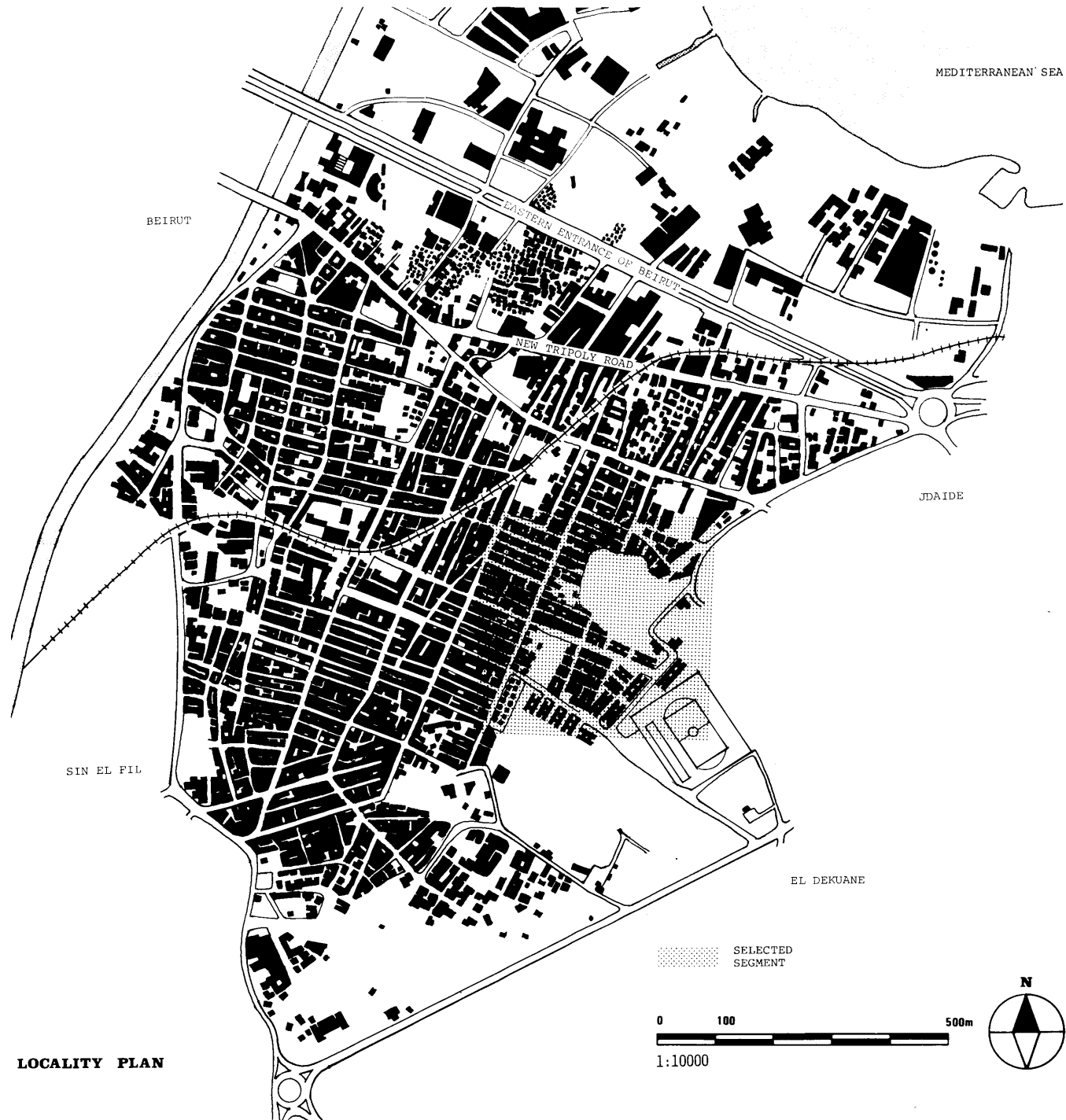
LOCATION: The municipality of Borj Hammoud is located on the eastern border of the city of Beirut, within the 2.5 to 5 Km inner-ring. It is mainly a low-income settlement with boundaries on the north: the Mediterranean sea; on the south and east: the municipalities of Sin-el-fil and Jdaide el-baouchriye; on the west: the Beirut river.

ORIGINS: Before 1948 Borj Hammoud was a suburb of Beirut with a semi-rural population, it has been occupied since 1948 by a relatively stable Armenian community who like all other Armenians followed a movement of emigration, after wars and political crisis. The Armenian population constitute around 25 percent of the population of the Beirut metropolitan area.

LOCALITY AIR PHOTOGRAPH







0 100 500m
1:10000





LAYOUT: The street pattern is irregular in some areas, determined by footpaths and narrow canals that existed in the past. The area built after 1950 was subdivided into rectangular blocks with commercial streets running perpendicular to a main access road. The blocks of single-family houses and walk-ups are long with the short sides facing the main traffic streets. The system ensures a maximum flow along the latter accentuated by the very high population density, determines the sites for commercial activities. The individually and haphazardly determined individual plots vary between one hundred and several hundred square meters. The total area of 177 hectares mushroomed from a suburb of 40,000 people in 1948 to Lebanon's largest town with a population of over 100,000 people, with a density of over 1600 persons per hectare.

LOCALITY PLAN

LAND USE: The land-use is mainly residential with a great amount of commercial activity. Most of the houses and apartment buildings have shops on the ground floors, consequently most dwellings have shopping facilities, however sketchy, located a few minutes walk away. The commercial activities are concentrated along four streets running perpendicular to the main access road (New Tripoly Road). There is a main industrial zone located between the Eastern Entrance of Beirut Avenue and the Mediterranean sea. The following community facilities are found in the locality: six primary and secondary schools, five churches, a mosque, two police stations, houses for the blind and elderly, and a football stadium. Little or no physical improvement takes place partly because of the little maintenance provided by the municipality and the people and partly because of the high and rising population density.

- AREAS
-  RESIDENTIAL
 -  COMMERCIAL
 -  INDUSTRIAL
 -  OPEN SPACES

- KEY
- Mq** Mosque
 - P** Police
 - F** Fire Department
 - S** School
 - Ch** Church
 - R** Recreation
 - L** Library
 - U** University
 - H** Health
 - PO** Post Office
 - SS** Social Services
 - M** Market
 - C** Cemetery
 -  Bus
 -  Rapid Transit



LOCALITY LAND USE PATTERN

0 100 500m
1:10000





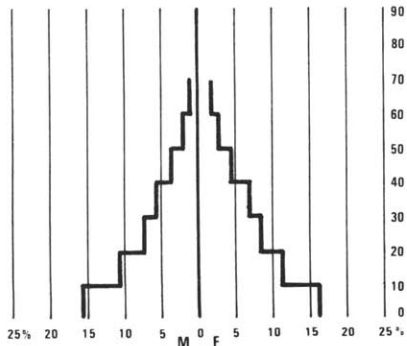
CIRCULATION: There is a high intensity of vehicular movement in the locality, generated through the eastern entrance of Beirut, which serves as vicinal and thru-traffic; it divides the area into a residential and commercial zone and a main industrial area. Pedestrian movement is concentrated along the main commercial streets, served by public transportation. There are still a number of pathways and narrow clusters in different areas.

KEY
 ————— VEHICULAR
 PEDESTRIAN

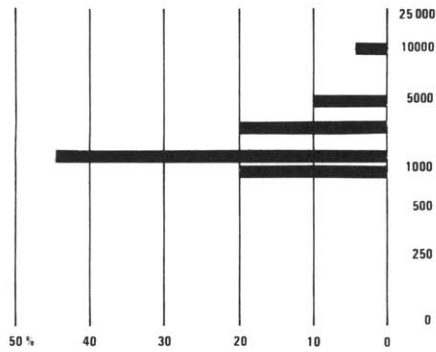
LOCALITY CIRCULATION PATTERN



POPULATION In 1971 there were approximately 22,280 households, with a total of 111,400 persons at an average of 5 persons per household. No data is available on the age-sex composition of the locality, however the age-sex pyramid of the outskirts of Beirut applies to the locality since the population is more or less homogeneous and contains the majority of the population of the outskirts of Beirut. The population is young, 52.7 percent are under twenty years of age.



LOCALITY POPULATION DISTRIBUTION
horizontal: percentages vertical: ages
males: M females: F
Source: (approximate) L'Enquete par Sondage sur la Population Active au Liban. November 1970



LOCALITY ANNUAL INCOME DISTRIBUTION
horizontal: percentages vertical: dollars
Source: (approximate) I.R.F.E.D. Report (updated)

INCOMES: The estimated average for 1974 household income was about \$2000 per year.



LOCALITY SEGMENT AIR PHOTOGRAPH

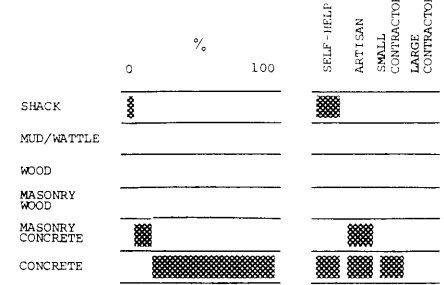


1:2500





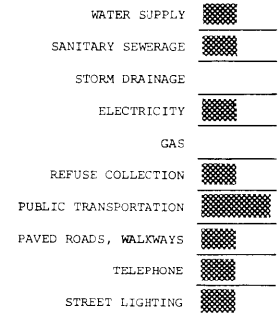
LOCALITY CONSTRUCTION TYPES



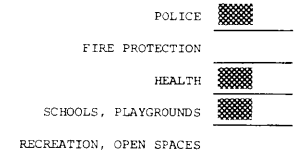
The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

Quality of information: Approximate

LOCALITY UTILITIES AND SERVICES



LOCALITY COMMUNITY FACILITIES



The chart illustrates the approximate availability of utilities, services, and community facilities at three levels: NONE, LIMITED, ADEQUATE.

Quality of information: Approximate

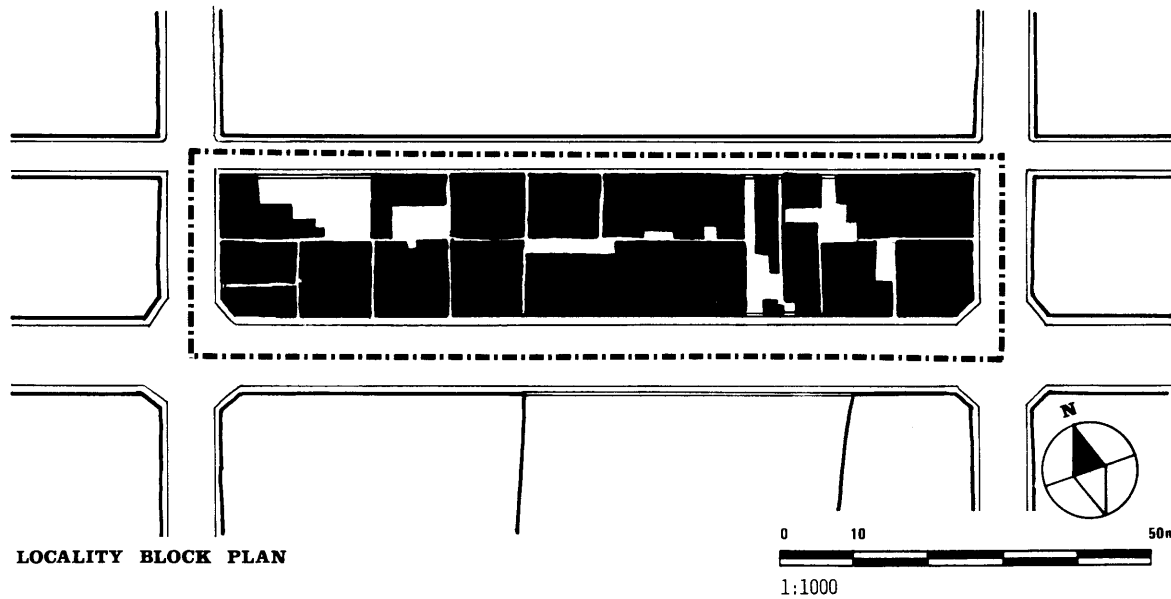
SELECTED BLOCK



1:2500



LOCALITY SEGMENT PLAN



LOCALITY BLOCK LAND UTILIZATION DATA

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	18	.2916	61.73
DWELLING UNITS	72	.2916	247.00
PEOPLE	470	.2916	1610.00

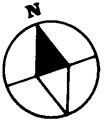
AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	.1026	35.0%
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	.1890	65.0%
SEMI-PRIVATE (cluster courts)	-	-
TOTAL	.2916	100.0%

NETWORK EFFICIENCY

$$R = \frac{\text{network length(circulation)}}{\text{areas served(circulation, lots)}} = 463 \text{ m/Ha}$$

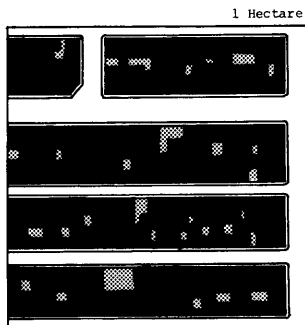
AVERAGE LOT AREA = 162 m²

LOCALITY BLOCK: The land subdivision of this block is typical not only of Burj Hammoud but of large areas of Beirut. A series of lots varying in size and shape. Since the original subdivision was meant for housing construction the predominant land use is residential. Streets in most cases are narrow (10m). Notice the high percentage of land for circulation, and the high population density resulting from the homogeneous and compact dwelling construction. The dwellings are built neglecting any building code and regulations. The overcrowding is a result of lack of anticipation or planning by the local authorities.



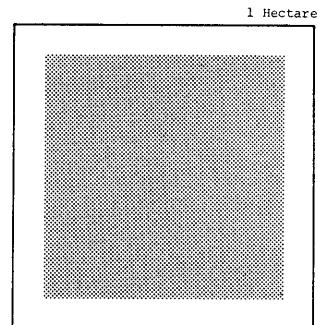
LOCALITY BLOCK LAND UTILIZATION

LAND UTILIZATION DIAGRAMS



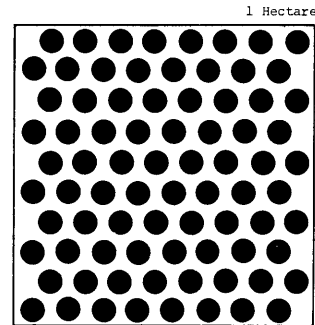
PATTERN

Public:	streets/walkways	
Semi-Public:	playgrounds	
Semi-Private:	cluster courts	
Private:	lots	
	dwellings	



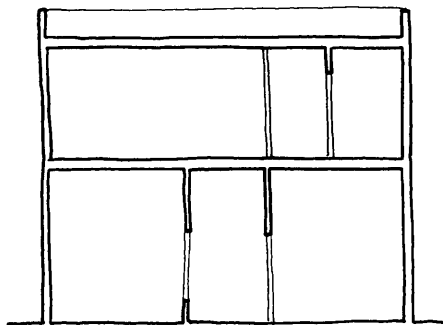
PERCENTAGES

Streets/Walkways	35.0%
Playgrounds	-
Cluster Courts	-
Dwellings/Lots	65.0%

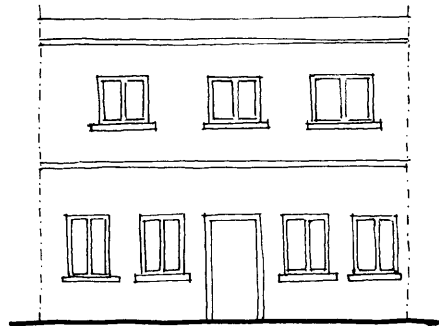


DENSITY

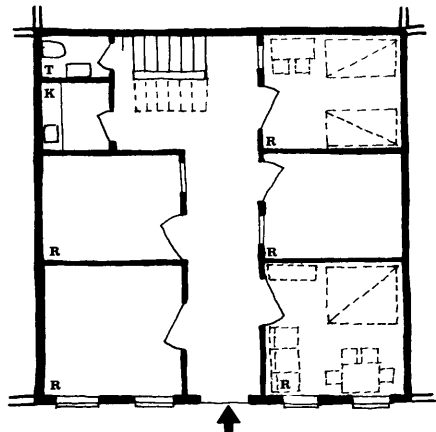
Persons/Hectare	1610
	20 Persons



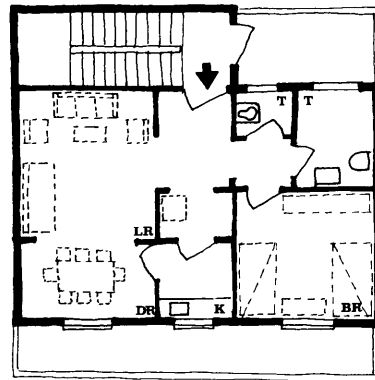
SECTION



ELEVATION

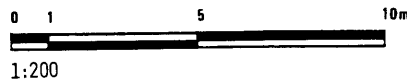


PLAN STREET



- KEY
- LR Living Room
 - D Dining/Eating Area
 - BR Bedroom
 - K Kitchen/Cooking Area
 - T Toilet/Bathroom
 - L Laundry
 - C Closet
 - S Storage
 - R Room (multi-use)

TYPICAL DWELLING



PHYSICAL DATA
(related to dwelling and land)

DWELLING UNIT
 type: HOUSE
 area (sq m): 200
 tenure: LEGAL RENTAL/OWNERSHIP

LAND/LOT
 utilization: PRIVATE
 area (sq m): 100
 tenure: OWNERSHIP

DWELLING
 location: INNER RING
 type: ROW/GROUPED
 number of floors: 2
 utilization: MULTIPLE/SINGLE
 physical state: FAIR

DWELLING DEVELOPMENT
 mode: INCREMENTAL
 developer: PRIVATE SECTOR
 builder: ARTISAN
 construction type: CONCRETE
 year of construction: 1956

MATERIALS
 foundation: CONCRETE
 floors: POURED REINFORCED CONCRETE
 walls: CONCRETE BLOCKS
 roof: POURED REINFORCED CONCRETE

DWELLING FACILITIES
 wc: 3 (1 SHARED)
 shower: 2 (1 SHARED)
 kitchen: 2 (1 SHARED)
 rooms: 9 (5 ON FIRST FLOOR)
 other: TERRACE ON FIRST FLOOR

SOCIO-ECONOMIC DATA
(related to user)

GENERAL: SOCIAL
 user's ethnic origin: ARMENIAN
 place of birth: TURKEY
 education level: PRIMARY

NUMBER OF USERS
 married: 2
 single: 1
 children: 4
 total: 7

MIGRATION PATTERN
 number of moves: 3
 rural - urban: -
 urban - urban: 1944, 1950, 1956
 urban - rural: -
 why came to urban area: POLITICAL REASONS

GENERAL: ECONOMIC
 user's income group: LOW MIDDLE
 employment: TAILOR
 distance to work: 2 KM
 mode of travel: PUBLIC TRANSPORTATION

COSTS
 dwelling unit: L.L. 20,000
 land - market value: L.L. 800,000/HA

DWELLING UNIT PAYMENTS
 financing: SELF FINANCED
 rent/mortgage: L.L. 25/MONTH (ROOMS ON G. FLOOR)
 % income for rent/mortgage: 10%

PHYSICAL DATA
(related to dwelling and land)

DWELLING UNIT
 type: HOUSE
 area (sq m): 127
 tenure: LEGAL RENTAL/OWNERSHIP

LAND/LOT
 utilization: PRIVATE
 area (sq m): 100
 tenure: OWNERSHIP

DWELLING
 location: INNER RING
 type: ROW/GROUPED
 number of floors: 2
 utilization: MULTIPLE
 physical state: FAIR

DWELLING DEVELOPMENT
 mode: INCREMENTAL
 developer: PRIVATE SECTOR
 builder: ARTISAN
 construction type: CONCRETE
 year of construction: 1954

MATERIALS
 foundation: CONCRETE
 floors: POURED REINFORCED CONCRETE
 walls: CONCRETE BLOCKS
 roof: POURED REINFORCED CONCRETE

DWELLING FACILITIES
 wc: 3
 shower: 2
 kitchen: 1
 rooms: 3
 other: SHOP

SOCIO-ECONOMIC DATA
(related to user)

GENERAL: SOCIAL
 user's ethnic origin: ARMENIAN
 place of birth: BEIRUT
 education level: PRIMARY

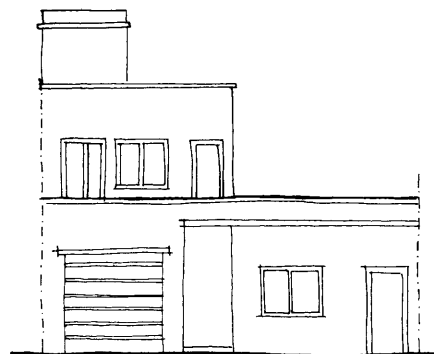
NUMBER OF USERS
 married: 2
 single: -
 children: 3
 total: 5

MIGRATION PATTERN
 number of moves: 3
 rural - urban: -
 urban - urban: 1942, 1950, 1954
 urban - rural: -
 why came to urban area: POLITICAL REASONS

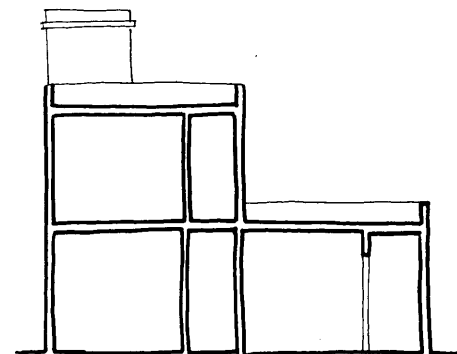
GENERAL: ECONOMIC
 user's income group: LOW MIDDLE
 employment: ARTISAN
 distance to work: 1.5 KM
 mode of travel: WALKING

COSTS
 dwelling unit: L.L. 12,700
 land - market value: L.L. 800,000/HA

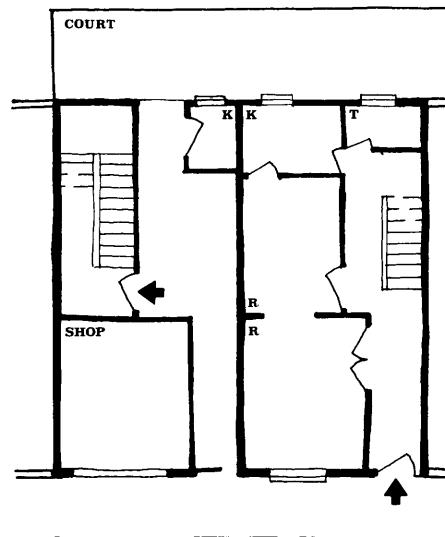
DWELLING UNIT PAYMENTS
 financing: SELF FINANCED
 rent/mortgage: L.L. 100/MONTH
 % income for rent/mortgage: 20%



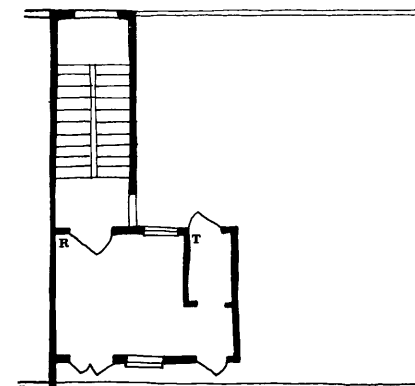
ELEVATION



SECTION

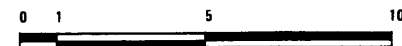


PLAN STREET



EXPANSION

- KEY
- LR Living Room
 - D Dining/Eating Area
 - BR Bedroom
 - K Kitchen/Cooking Area
 - T Toilet/Bathroom
 - L Laundry
 - C Closet
 - S Storage
 - R Room (multi-use)



1:200



TYPICAL DWELLING

PHYSICAL DATA
(related to dwelling and land)

DWELLING UNIT
 type: HOUSE
 area (sq m): 72
 tenure: Le

LAND/LOT
 utilization: PRIVATE
 area (sq m): 42.5
 tenure: OWNERSHIP

DWELLING
 location: INNER RING
 type: ROW/GROUPED
 number of floors: 2
 utilization: MULTIPLE
 physical state: FAIR

DWELLING DEVELOPMENT
 mode: INCREMENTAL
 developer: PRIVATE SECTOR
 builder: ARTISAN
 construction type: CONCRETE
 year of construction: 1953

MATERIALS
 foundation: CONCRETE
 floors: POURED REINFORCED CONCRETE SLAB
 walls: CONCRETE BLOCKS
 roof: POURED REINFORCED CONCRETE SLAB

DWELLING FACILITIES
 wc: 1
 shower: 2
 kitchen: 2
 rooms: 2
 other: -

SOCIO-ECONOMIC DATA
(related to user)

GENERAL: SOCIAL
 user's ethnic origin: ARMENIAN
 place of birth: TURKEY
 education level: PRIMARY

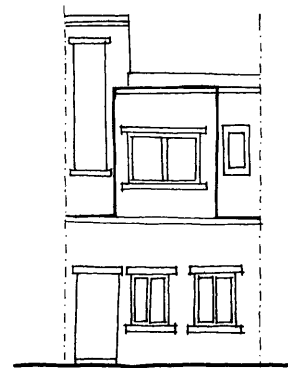
NUMBER OF USERS
 married: 2
 single: 2
 children: 3
 total: 7

MIGRATION PATTERN
 number of moves: 3
 rural - urban: -
 urban - urban: 1944, 1950, 1953
 urban - rural: -
 why came to urban area: POLITICAL REASONS

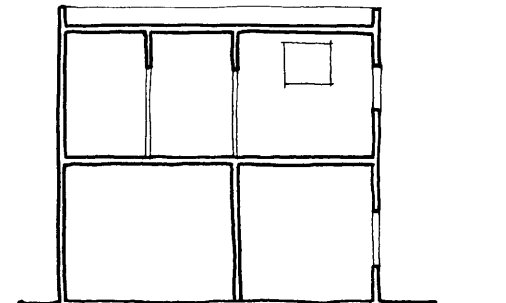
GENERAL: ECONOMIC
 user's income group: LOW MIDDLE
 employment: ARTISAN
 distance to work: 2 KM
 mode of travel: PUBLIC TRANSPORTATION

COSTS
 dwelling unit: L.L. 7250
 land - market value: L.L. 800,000/HA

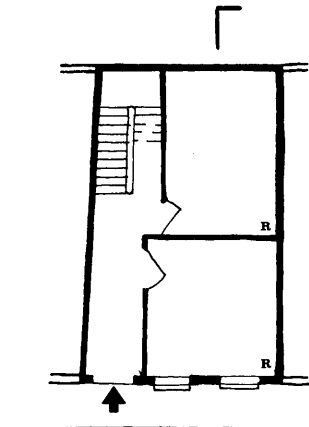
DWELLING UNIT PAYMENTS
 financing: SELF FINANCED
 rent/mortgage: L.L. 25/MONTH (FIRST FLOOR)
 % income for rent/mortgage: 10%



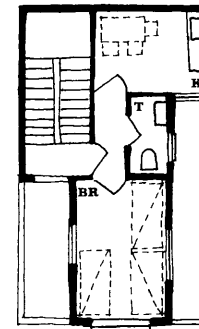
ELEVATION



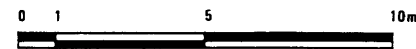
SECTION



PLAN



- KEY**
- LR Living Room
 - D Dining/Eating Area
 - BR Bedroom
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 - C Closet
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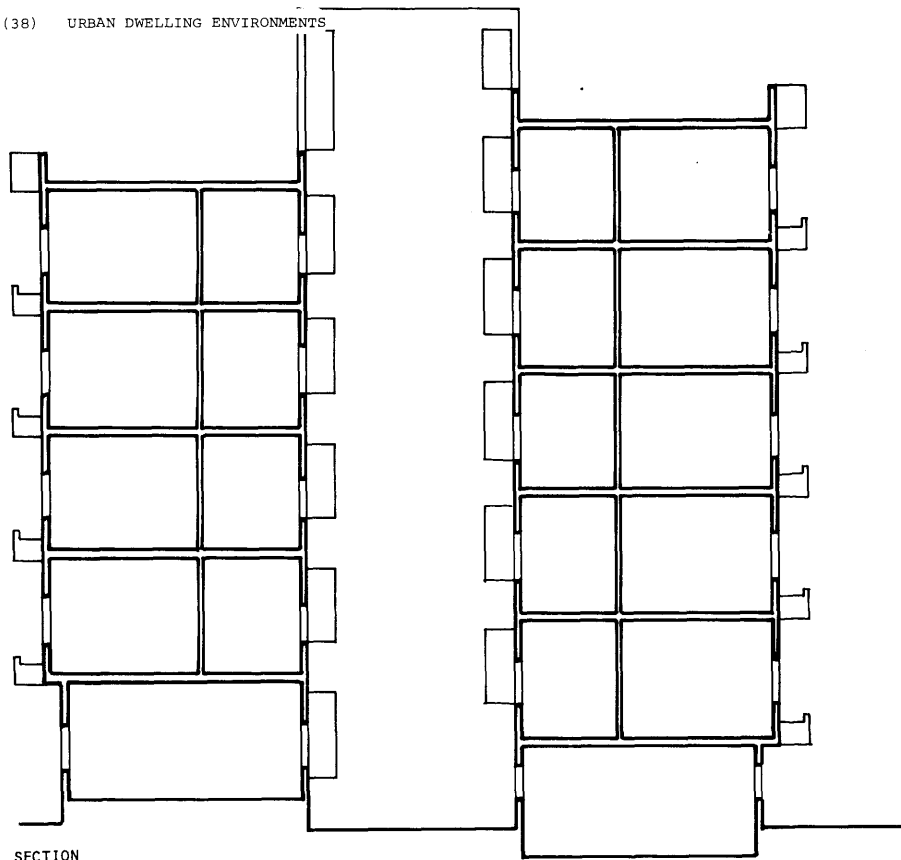


TYPICAL DWELLING

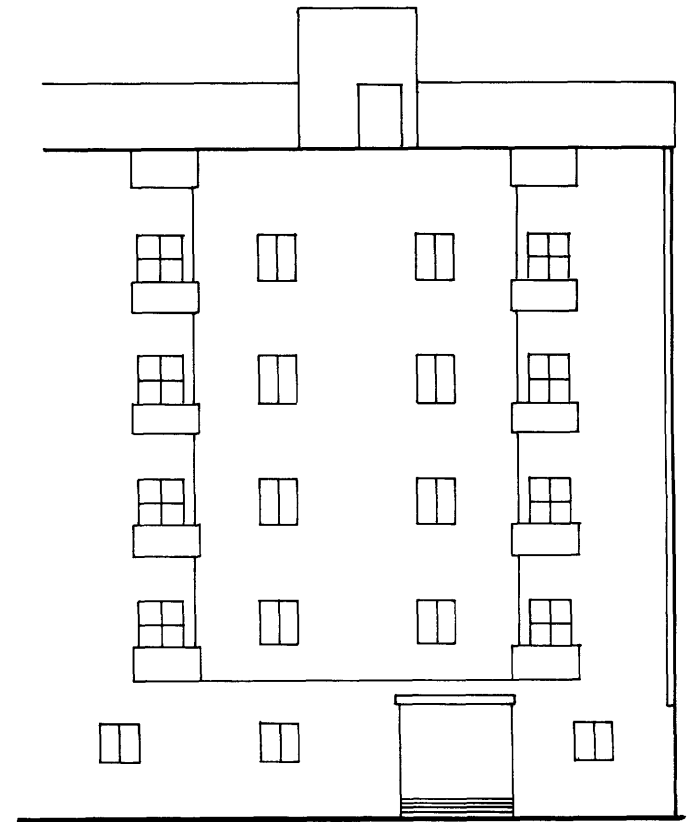
1:200



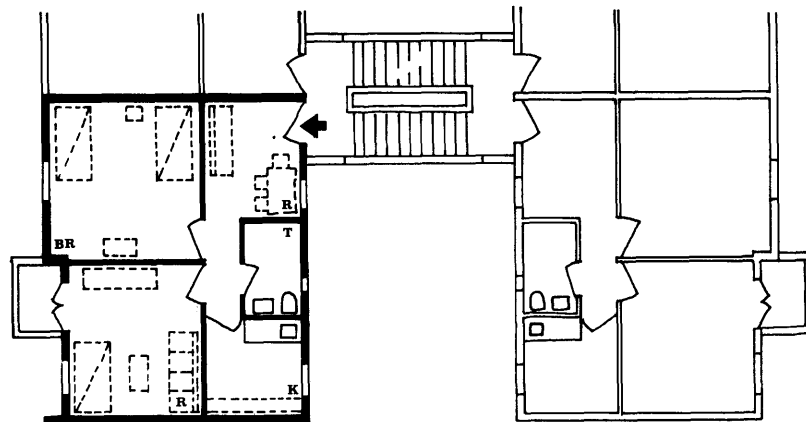
VIEW OF A STREET OF ROW HOUSES This is a typical case of illegal settlements where the houses do not comply with building codes and regulations. The plots are small, narrow and deep, sometimes built hundred percent. Notice how all the houses have been built progressively. The roofs have columns ready for future expansion, the roofs are used as recreation spaces for children, for the laundry etc. Notice the narrow streets and the very high density of population occupying this area, one of the highest in the world.



SECTION



ELEVATION



PLAN

TYPICAL DWELLING

DWELLING: This is a standard public housing project sponsored by the municipality of Borj Hammoud. It consists of thirteen walk-ups, five to six storey high, containing 710 apartments. All the apartments have the same area of 82 sq.m, the access to the apartments is from a common staircase. The degree of proximity of the buildings as can be seen from the locality segment air photograph, implies a very distinct impersonal relationship between neighbours for lack of privacy, to the point that the users are refusing to pay the monthly payments, one of the interviewed families has refused to pay for the last two years and apparently the public authorities are unable to control the situation.

The materials used for the construction of the buildings are deteriorating very rapidly, and the situation is being aggravated by the fact that neither the municipality nor the people are maintaining the place. This is partly because there is no definition of the property neither control on the environment. The sense of identity that the people had in their shacks before they were forced to move to this project, has been completely lost so has the community life. The Armenian people call the squatter settlements "camps", they have called this project "camp" trad.

KEY

- LR Living Room
- D Dining/Eating Area
- BR Bedroom
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1:200



VIEW OF THE CAMP TRAD HOUSING PROJECT The picture shows the environment of this project. The buildings have been built very close to each other creating a very high density of population. The buildings contain 710 families in one bedroom apartments. The occupants have no way of expanding their dwellings, they live overcrowded. During the survey cases were found where children were married and had to go back to the squatter settlements they originally came from, this situation is commonly found in most projects of this kind, due mainly to their inability to expand their homes. In previous pages it was seen how the inhabitants of Borj Hammoud expand their houses in time according to their needs, this project does not satisfy their expectations. In this case the value lies in the product rather than in its usefulness. The sponsorship, construction and management of their homes have been decided by few individuals who have avoided the real issues of authority and autonomy by convincing themselves that the poor are congenitally ignorant, incompetent, and feckless, an absurd notion in any context and impossible to maintain in the face of the housing achievements of the urban poor in areas like Borj Hammoud and other cities.



SOCIO ECONOMIC DATA (related to user)

GENERAL: SOCIAL
user's ethnic origin:
place of birth: ZAKHLE, LEBANON

GENERAL: SOCIAL
user's ethnic origin: LEBANESE
place of birth: ZAKHLE, LEBANON
education level: PRIMARY

NUMBER OF USERS
married: 2
single: -
children: 5
total: 7

MIGRATION PATTERN
number of moves: 4
rural - urban: 1955
urban - urban: 1960, 1966, 1969
urban - rural: SEASONAL
why came to urban area: EMPLOYMENT

GENERAL: ECONOMIC
user's income group: LOW
employment: CARPENTER
distance to work: 1 KM
mode of travel: WALKING

COSTS
dwelling unit: L.L. 8,400
land - market value: L.L. 2,500,000/HA

DWELLING UNIT PAYMENTS
financing: COMMERCIAL
rent/mortgage: L.L.50/MONTH
% income for rent/mortgage: 15%

PHYSICAL DATA (related to dwelling and land)

DWELLING UNIT
type: APARTMENT
area (sq m): 82
tenure: OWNERSHIP

LAND/LOT
utilization: PUBLIC
area (sq m): 16,800
tenure: OWNERSHIP

DWELLING
location: INNER RING
type: WALK-UP
number of floors: 5 - 6
utilization: SINGLE
physical state: GOOD

DWELLING DEVELOPMENT
mode: INSTANT
developer: PUBLIC SECTOR
builder: LARGE CONTRACTOR
construction type: CONCRETE
year of construction: 1969

MATERIALS
foundation: CONCRETE
floors: POURED CONCRETE SLAB
walls: FRAME, CONCRETE BLOCK INFILL
roof: POURED REINFORCED CONCRETE

DWELLING FACILITIES
wc: 1
shower: 1
kitchen: 1
rooms: 3
other: TERRACE

LOCALITY SOURCES

Plan: (accurate) Aerial Photographs, maps, Direction des Affaires Geographiques 1970.
Land Use Pattern: Map, IBID; Survey O. Take 1973.
Circulation Pattern: (approximate) Field Survey O. Take, Beirut, 1973.
Segment Plan: Plan de Conservation de Cadastre, Baabdah, 1969.
Block Plan: (approximate) Field Survey O. Take, Beirut, 1973.
Block Land Utilization: (approximate) IBID
Dwelling Plan: (accurate) Municipality of Borj Hammoud, Beirut, 1973; Field Survey, O. Take, A. Tannir, Beirut, 1973.
Physical Data: (accurate) Field Survey, O. Take, Beirut, 1973.
Socio-Economic Data: (approximate) IBID
Photographs: O. Take, Beirut, 1973, 1974.
General Information: Studies by the Lebanese School of Social Formation; L'Enquete par Sondage sur la Population Active au Liban, 1971; other publications.

GLOSSARY

Definitions of terms which are generally understood/accepted and not essential to the presentation/understanding of the text are included in the Glossary.

The criteria for the preparation of the definitions have been as follows:

First Preference: definitions from "Webster's Third New International Dictionary", Merriam-Webster, 1971.

Second Preference: definitions from technical dictionaries.

Third Preference: definitions from the authors, used when existing definitions did not satisfactorily make clear with what meaning, extend and limits, terms were used.

Masonry/Wood Roof: structure - wood rafters.
infill - corrugated iron or asbestos sheets, or terracotta tiles.
Walls: structure/infill - murrum, stone, brick, block or tile masonry without columns.
Floor: structure/infill - poured concrete slab on/off grade, wood joists, flooring.

Masonry/Concrete Roof: structure/infill - poured reinforced concrete with tar and gravel, or terracotta tiles.
Walls: structure/infill - murrum, stone, brick, block or tile masonry without columns, or with columns for multi-story dwellings.
Floor: structure/infill - poured concrete slab on/off grade.

Concrete Roof: structure/infill - poured or precast reinforced concrete with tar and gravel, or terracotta tiles.
Walls: structure - poured or precast walls or frame.
infill - metal, wood, masonry, plastic.
Floor: structure/infill - poured or precast concrete slab.

DWELLING BUILDER: Four groups are considered:

Self-Help Built: where the dwelling unit is directly built by the user or occupant.

Artisan Built: where the dwelling unit is totally or partially built by a skilled craftsman hired by the user or occupant; payments can be monetary or an exchange of services.

Small Contractor Built: where the dwelling unit is totally built by a small organization hired by the user, occupant, or developer; 'small' contractor is defined by the scale of operations, financially and materially; the scale being limited to the construction of single dwelling units or single complexes.

Large Contractor Built: where the dwelling unit is totally built by a large organization hired by a developer; 'large' contractor is defined by the scale of operations, financially and materially; the scale reflects a more comprehensive and larger size of operations encompassing the building of large quantities of similar units, or a singularly large complex.

DWELLING DENSITY: The number of dwellings, dwelling units, people or families per unit hectare. Gross density is the density of an overall area (ex. including lots, streets). NET density is the density of selected, discrete portions of an area (ex. including only lots).

DWELLING FLOORS: The following number are considered:

One: single story; generally associated with detached, semi-detached and row/group dwelling types.

Two: double story; generally associated with detached, semi-detached and row/group dwelling types.

Three or More: generally associated with walk-up and high-rise dwelling types.

DWELLING DEVELOPER: Three sectors are considered in the supply of dwellings:

Popular sector: The marginal sector with limited or no access to the formal financial, administrative, legal, technical, institutions involved in the provision of dwellings. The housing process (promotion, financing, construction, operation) is carried out by the Popular sector generally for 'self use' and sometimes for profit.

Public sector: The government or non-profit organizations involved in the provision of dwellings. The housing process (promotion, financing, construction, operation) is carried out by the Public sector for service (non-profit or subsidized housing).

Private sector: The individuals, groups or societies who have access to the formal financial, administrative, legal, technical institutions in the provision of dwellings. The housing process (promotion, financing, construction, operation) is carried out by the Private sector generally for profit.

DWELLING GROUP: The context of the dwelling in its immediate surroundings.

DWELLING LOCATION: Three sectors of the urban area considered:

City center: the area located within a walking distance (2.5 km radius) of the commercial center of a city; relatively high residential densities.

Inner ring: the area located between the urban periphery and the city center (2.5 to 5 km radius); relatively lower residential densities.

Periphery: the area located between the rural areas and urban inner ring (5 or more km radius); relatively low residential densities.

DWELLING PHYSICAL STATE: A qualitative evaluation of the physical condition of the dwelling types: room, apartment, house; (the shanty unit is not evaluated).

Bad: generally poor state of structural stability, weather protection and maintenance.

Fair: generally acceptable state of structural stability, weather protection and maintenance with some deviation.

Good: generally acceptable state of structural stability, weather protection and maintenance without deviation.

DWELLING UNIT: A self-contained unit in a dwelling for an individual, a family, or a group.

DWELLING UNIT AREA: The dwelling unit area (m²) is the built-up, covered area of a dwelling unit.

DWELLING UNIT COST: The initial amount of money paid for the dwelling unit or the present monetary equivalent for replacing the dwelling unit.

DWELLING UNIT TYPE: Four types of dwelling units are considered:

Room: A SINGLE SPACE usually bounded by partitions and specifically used for living; for example, a living room, a dining room, a bedroom, but not a bath/toilet, kitchen, laundry, or storage room. SEVERAL ROOM UNITS are contained in a building/shelter and share the use of the parcel of land on which they are built (open spaces) as well as common facilities (circulation, toilets, kitchens).

Apartment: A MULTIPLE SPACE (room/set of rooms with bath, kitchen, etc.). SEVERAL APARTMENT UNITS are contained in a building and share the use of the parcel of land on which they are built (open spaces) as well as some common facilities (circulation).

House: A MULTIPLE SPACE (room/set of rooms with or without bath, kitchen, etc.). ONE HOUSE UNIT is contained in a building/shelter and has the private use of the parcel of land on which it is built (open spaces) as well as the facilities available.

Shanty: A SINGLE OR MULTIPLE SPACE (small, crudely built). ONE SHANTY UNIT is contained in a shelter and shares with other shanties the use of the parcel of land on which they are built (open spaces).

DWELLING TYPE: The physical arrangement of the dwelling unit:

Detached: individual dwelling unit, separated from others.

Semi-Detached: two dwelling units sharing a common wall (duplex).

Row/Grouped: dwelling units grouped together linearly or in clusters.

Walk-Up: dwelling units grouped in two to five stories with stairs for vertical circulation.

High-Rise: dwelling units grouped in five or more stories with stairs and lifts for vertical circulation.

DWELLING UTILIZATION: The utilization indicates the type of use with respect to the number of inhabitants/families.

Single: an individual or a family inhabiting a dwelling.

Multiple: a group of individuals or families inhabiting a dwelling.

FINANCING: The process of raising or providing funds.

Self Financed: provided by own funds.

Private/Public Financed: provided by loan.

Public Subsidized: provided by grant or aid.

DWELLING DEVELOPMENT MODE: Two modes are considered:

Incremental: The construction of the dwelling and the development of the local infrastructure to modern standards by stages, often starting with provisional structures and underdeveloped land. This essentially traditional procedure is generally practiced by squatters with de facto security of tenure and an adequate building site.

Instant: The formal development procedure in which all structures and services are completed before occupation.

DWELLING CONSTRUCTION TYPES: Primary dwelling construction types and materials are grouped in the following categories:

Shack Roof: structure - rods, branches.
infill - thatch, mats, flattened tin cans, plastic or canvas sheets, cardboard, scrap wood, and/or mud.
Walls: structure - rods, branches, poles.
infill - thatch, mats, flattened tin cans, plastic or canvas sheets, cardboard, scrap wood, and/or mud.
Floor: structure/infill - compacted earth.

Mud and Wattle Roof: structure - wattle.
infill - thatch, flattened tin cans, or corrugated iron sheets.
Walls: structure - wattle.
infill - mud.
Floor: structure/infill - compacted earth.

Wood Roof: structure - wood rafters.
infill - thatch, flattened tin cans or corrugated iron sheets.
Walls: structure - wood frame.
infill - rough hewn wood planks.
Floor: structure/infill - compacted earth, wood joists, flooring.

LAND TENURE: The act, right, manner or term of holding land property. Types are categorized by how land is held and for what period of time. Legal definitions are established to determine the division of property among various owners, or the relationship between owner or occupier, or between creditor and owner; and between private owners and the public, and includes the assessment of taxes on private land rights and the regulation of land use through government control. There are TWO BASIC FORMS of land tenure:

Land Ownership: where the exclusive right of control and possession of a parcel of land is held in freehold.

Land Tenancy: where the temporary holding of mode or holding a parcel of land is of another.

LAND UTILIZATION: A qualification of the land around a dwelling in relation to user, physical controls, and responsibility.

Public: User: anyone/unlimited (streets, Physical controls: minimum walkways, Responsibility: public sector open spaces

Semi-Public: User: limited group of people (open spaces, Physical controls: partial or playgrounds, complete schools) Responsibility: public sector and user

Private: User: owner or tenant or squatter (dwellings, Physical controls: complete lots) Responsibility: user

Semi-Private: User: group of owners and/or tenants (cluster Physical controls: partial or courts) complete Responsibility: users

LAND UTILIZATION: PHYSICAL CONTROLS: The physical/legal means or methods of directing, regulating and coordinating the use and maintenance of land by the owners/users.

LAND UTILIZATION: RESPONSIBILITY: The quality/state of being morally/legally responsible for the use and maintenance of land by the owners/users.

METROPOLITAN AREA: "an area in which economic and social life is predominantly influenced by a central city, to which it is linked by common interests though not often by common policies. The metropolitan area may have one city or more as well as outlying districts or satellite communities. No physical or legal boundaries mark its borders, but roughly speaking, these are the outer limits of commuting to or from the central city" (Abrams, 1971).

PERCENT RENT/MORTGAGE: The fraction of income allocated for dwelling rental or dwelling mortgage payments; expressed as a percentage of total family income.

PUBLIC TRANSPORTATION: that segment of URBAN TRANSPORTATION which is available to the public without restriction. As public transport, it may also be regulated as to its operation, charges, and profits (Abrams, 1971).

SETTLEMENT: occupation by settlers to establish a residence or colony.

SUBSISTENCE INCOME: Average amount of money required for the purchase of food and fuel for an average family of 5 people to survive (\$325/year in Nairobi, 1972).

TENURE: Two situations of tenure of the dwelling units and/or the lot/land are considered: Legal: having formal status derived from law. Extralegal: not regulated or sanctioned by law.

Four types of tenure are considered:

Rental: where the users pay a fee (daily, weekly, monthly) for the use of the dwelling unit and/or the lot/land.

Lease: where the users pay a fee for long-term use (generally for a year) for a dwelling unit and/or the lot/land from the owner (an individual, a public agency, or a private organization). No cases of lease are shown in Typology.

Ownership: where the users hold in freehold the dwelling unit and/or the lot/land which the unit occupies.

Employer-Provided: where the users are provided a dwelling unit by an employer in exchange for services; i.e., domestic live-in servant. (Only one case is shown in the case studies.)

URBAN AREA: All developed land lying within the urban fringe (politically undefined development lying between the city and the country) including a central city and any of its satellite communities; it is not a political/governmental unit (Bartholomew, 1955).

URBANIZATION: the quality of state of being or becoming urbanized: to cause or take on urban characteristics.

USER INCOME GROUPS: Based upon the subsistence (minimum wage) income per year, five income groups are distinguished. (The subsistence income per year in Nairobi is approximately \$325.)

Very Low (below subsistence level) less than \$325/year:

The income group with no household income available for housing, services, or transportation.

Low (1 x subsistence level) \$325/year:

The income group that can afford limited subsidized housing.

Moderate Low (4 x subsistence level) \$1,300/year:

The income group that has access to public/private commercial housing (rental).

Middle (15 x subsistence level) \$4,875/year:

The income group that has access to private commercial housing (ownership).

High (above 15 x subsistence level) above \$4,875:

The income group that represents the most economically mobile sector of the population.

USUFRUCT: The right to profit from a parcel of land or control of a parcel of land without becoming the owner or formal lessee; legal possession by decree without charge.

EXPLANATORY NOTES

QUALITY OF INFORMATION

The quality of information given in the drawings, charts and descriptions have been qualified in the following manner:

Accurate: when taken from reliable or actual sources.

Approximate: when deducted from different and/or not completely reliable sources.

Tentative: when based upon rough estimations of limited sources.

QUALITY OF SERVICES, FACILITIES AND UTILITIES

None: when the existence of services, facilities and utilities are unavailable to a locality.

Limited: when the existence of services, facilities and utilities are available to a locality in a limited manner due to proximity.

Adequate: when the existence of services, facilities and services are available in/to a locality.

METRIC SYSTEM EQUIVALENTS

Linear measures

1 centimeter = 0.3937 inches
1 meter = 100 centimeters = 39.37 inches or 3.28 feet
1 kilometer = 1000 meters = 3,280.83 feet or 0.62137 miles
1 inch = 2.54 centimeters
1 foot = 0.3048 meters
1 mile = 1.60935 kilometers

Square measures

1 square meter = 1,550 square inches or 10.7639 square feet
1 hectare = 10,000 sq meters = 2.4711 acres
1 square foot = 0.0929 square meters
1 acre = 0.4087 hectares

DOLLAR EQUIVALENTS

All income, costs and rent/mortgage data have been expressed in terms of U.S. equivalent;
1 U.S. dollar = 2.5 Lebanese Liras (January 1974)

REFERENCE ABBREVIATIONS

I.R.F.E.D. Institut International de Recherche et de Formation en vue de Developpement.

CASE STUDY

Each Case Study is represented at four scales:

LOCALITY: A locality is defined as a relatively self-contained residential area. In general it is contained within physical boundaries.

LOCALITY SEGMENT: All the localities differ in size and shape. A segment of the same dimension has been taken from each locality for purposes of comparison. The size of the segment is 400 by 400 meters or a six minute walk.

BLOCK: Within each locality segment a typical residential block has been selected to allow comparison of land utilization (patterns, percentages and densities) that are homogeneous. The block is bounded on all sides by circulation so that the ratio of circulation to area served may be compared.

DWELLING UNIT: A typical self-contained unit for an individual, a family or a group in each locality segment

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HORACIO CAMINOS REINHARD GOETHERT OMAR TAKE

MKALLES HOUSING PROJECT

BEIRUT URBAN AREA



HORACIO CAMINOS REINHARD GOETHERT OMAR TAKE

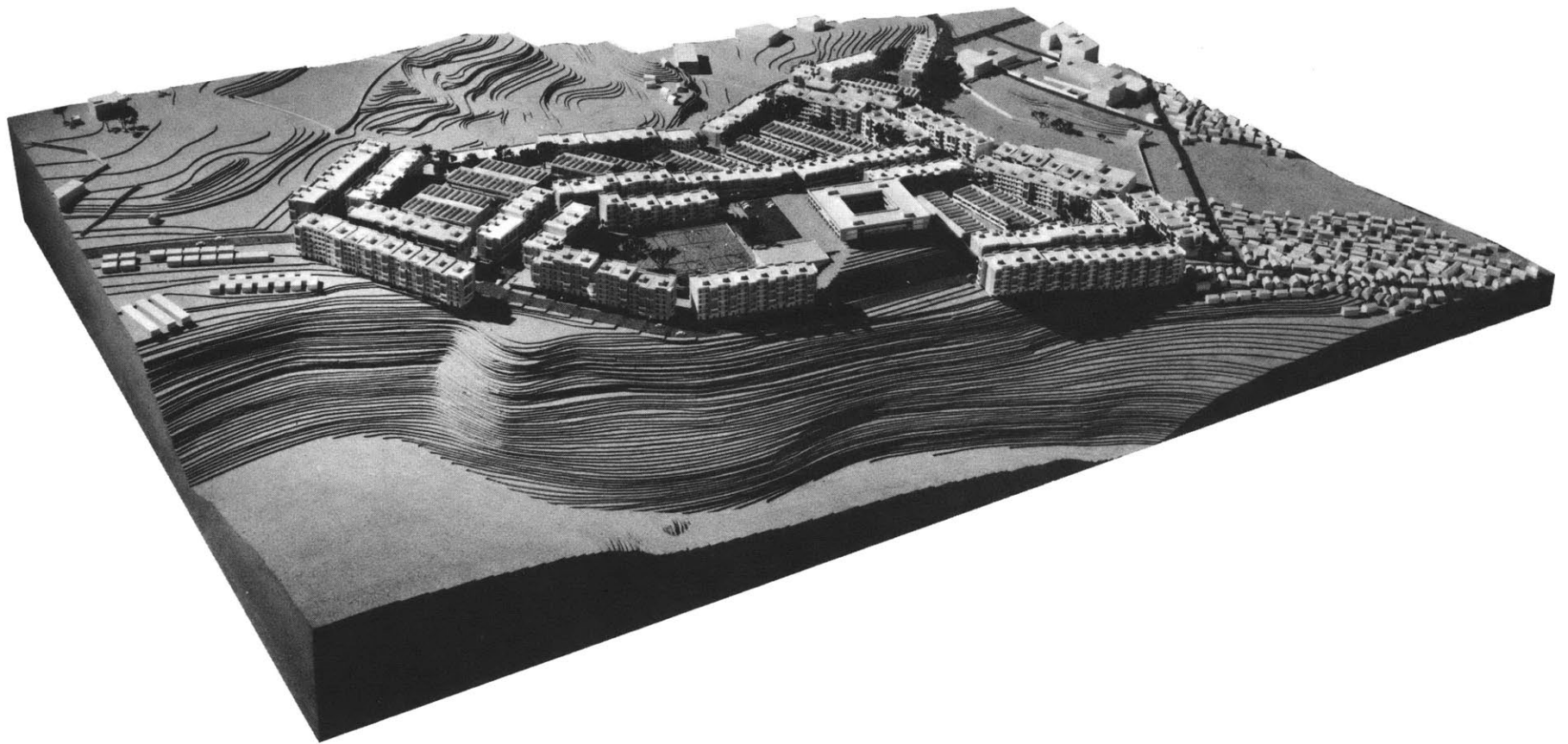
MKALLES HOUSING PROJECT

BEIRUT URBAN AREA

URBAN SETTLEMENT DESIGN PROGRAM, M.I.T.

A VIEW FROM MKALLES, THE SITE OF THE PROJECT

In the background, the compact skyline of Beirut.
In the foreground, the semi-rural squatter settlements occupying the site. Notice their vegetable gardens and huts made out of galvanized iron sheets.
The site is located approximately 6 kilometers from the center of Beirut.



MODEL OF MKALLES HOUSING PROJECT AND VICINITY The site slopes from south to north and is bounded on the east side by the deep valley shown in the foreground. The following structures can be identified: Rows of walk-up apartments along the streets, row houses in the center of the blocks, school and the open space of a playground, squatter settlements on the right, existing one story public housing on the left.

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H.C., R.G., O.T.

Beirut/Cambridge, Summer 1974

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Cover: A family from South Lebanon living
 in Quarantaine, Beirut.



VIEW OF THE PROJECT FROM THE NORTH In the foreground, the Greek school, walk-up apartments on the Souk Street.

INTRODUCTION

This is a preliminary design for the development of a residential community in the municipality of Mkalles, in the Beirut Metropolitan Area.

The design is primarily intended as a basis for the preparation of final development plans and working drawings.

The following were the main steps on the design of the project:

- Surveys and identification of dwelling environments in Beirut for the low income groups were completed by Omar Take as part of his graduate work in the program Urban Settlement Design in Developing Countries, School of Architecture and Planning, M.I.T. (Beirut-Cambridge, Fall 1972 - Spring 1973).

- The Mkalles Housing Project was commissioned by H.E. The President of Lebanon, Suleiman Bey Frangie, by presidential decree, through the Ministry of Housing and Cooperatives (Beirut, Summer 1973).

- A preliminary design was prepared by the staff and graduate members of the program U.S.D.D.C. at M.I.T. (Cambridge, Fall 1973). The design was presented to H.E. The Minister of Housing and Cooperatives, Mr. Michel Sassin, as well as to other officials of the Ministry by Omar Take at the American University of Beirut in January 1974. A second presentation was made at the Presidential Palace at the request of H.E. President Frangie in the presence of his advisors. These presentations permitted a review of the project and recommendations by the government officials (see acknowledgements).

- An additional socio-economic spot survey of the families living in the Mkalles area was completed by Omar Take (Beirut, January 1974).



VIEW FROM THE EAST Walk-up apartments bordering the deep valley, the primary school over Tal el Mir.

- The design and the model contained in this report were prepared by the staff and graduate members of the program U.S.D.D.C. at M.I.T. (Beirut - Cambridge, Spring 1974). It will be eventually presented in Beirut for review.

The project represents a comprehensive framework for the formulation of housing policies and for the implementation of the physical plan, yet there is still much to be done and the final decisions can only be taken by local people. Further development of the project will be mainly carried out in Beirut.

The Mkalles Housing Project incorporates the following distinct characteristics:

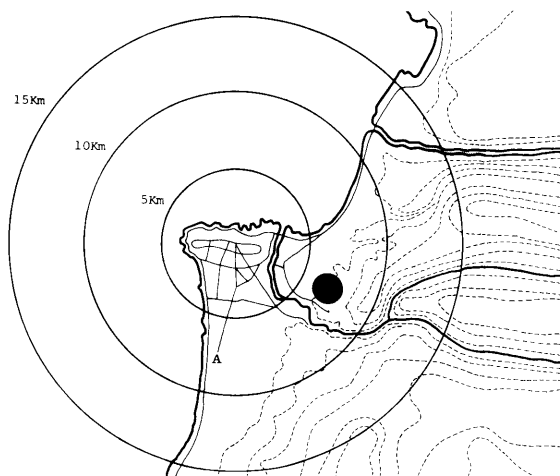
- In LAND SUBDIVISION: provision of "condominium" or "clusters" ownership, with relatively large plots, to maximize private/collective initiative, responsibility, participation and to minimize government costs in implementation, maintenance and operation.

- In HOUSING: provision of dwellings that can be easily expanded to permit flexibility in their use, to absorb growth of the family needs and to minimize initial investment cost by the users and the government.

The Mkalles Housing Project is intended to be used as a pilot project for urban low income housing by the new Ministry of Housing and Cooperatives of Lebanon in addition to being a specific proposal for the development of the Mkalles site.

Horacio Caminos
Reinhard Goethert
Omar Take
Cambridge, Massachusetts
Summer, 1974

BASIC DATA



The Mkalles Housing Project is located in the Beirut Urban Area, 6 km south-east of the city center

Area of the site: 13.2 hectares

Approximate population: 6860 Lebanese from the low and moderate low income groups

Number of dwelling units: 1248 apartments and houses

Number of small shops: 161 including artisan shops

Supporting facilities: primary school, day care nursery, kindergarten, playground, dispensary/social center, auditorium, movie theater

Approximate density: 520 people/hectare

At the present time part of the site is occupied by a squatter settlement of approximately 500 dwellings and 2500 people (Lebanese and Syrian). The project contemplates the relocation of most of these people.

All costs in U.S. Dollars

1 U.S. Dollar = 2.5 Lebanese Pounds

COST DATA

BUILDINGS

BASIC AREAS (m ²) PER UNIT	N ^o OF UNITS	TOTAL BASIC AREAS (m ²)	BUILDING EXPANSION AREAS (m ²) PER UNIT	TOTAL EXPANSION AREAS (m ²)
--	-------------------------	-------------------------------------	---	---

Dwellings

57	164	9,348	-	-
73	178	12,994	-	-
76	125	9,500	13	1,625
76	125	9,500	32	4,000
93	225	20,925	28	6,300
93	225	20,925	46	10,350
80	106	8,480	43	4,558
94	100	9,400	78	7,800
	<u>1248</u>	<u>101,072</u>		<u>34,633</u>

Shops

57	64	3,648		
73	97	7,081		
	<u>161</u>	<u>10,729</u>		

Access Stairs 10,941

APPROXIMATE COST

Dwellings	101,072m ² at \$70/m ²	\$ 7,075,040
Shops	10,729m ² at \$70/m ²	\$ 751,030
Stairs	10,941m ² at \$70/m ²	\$ 765,870
Land Development/Community Facilities	(estimated at 1/3 cost of dwellings)	\$ 2,863,980

TOTAL \$11,455,920

The cost estimate assumes that only basic units will be built. These units are expandable from 101,072m² to an additional area of 34,633m², an increase of 34.2% over the total initial area.

MKALLES HOUSING PROJECT
PRELIMINARY DESIGN

Beirut, Lebanon

Urban Settlement Design Program, M.I.T.
Beirut/Cambridge (Massachusetts)

APARTMENTS/EXPANDABLE APARTMENTS
HOUSES/EXPANDABLE HOUSES

GREEK SCHOOL

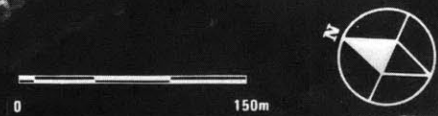
TAL EL ZAATAR

MKALLES INDUSTRIAL AREA

BEIT MERI ROAD

TO CITY CENTER

PLAN OF PROJECT



THE SITE

The site of the Mkalles Housing Project has the following characteristics:

LOCATION

- The site is located in the municipality of Mkalles, in the Beirut Urban Area, approximately 6 km south-east of the city center and the centers of employment. The site lies in a residential and industrial area.

APPROACHES/ACCESS

- Main route of approach is the Beit Meri Road which leads to the city center (north-west), to other industrial areas (north) and to the mountains (east). The Beit Meri Road is 300m from the site and accessible through narrow streets.

TRANSPORTATION

- The nearest public bus service is approximately 30 minutes walking distance. Village buses and service taxis offer limited service to the city center along the Beit Meri Road.

SIZE/SHAPE

- Gross area of the site: 13.2 hectares.
- Triangular shape

TOPOGRAPHY/NATURAL FEATURES/SOIL

- The site overlooks the city of Beirut at an altitude of 125m. The site is irregular with slopes varying from 6% to 60%, with an average slope 12.5%. The site contains a prominent hill. The surface is devoid of vegetation and limited to sandy, rocky surfaces. Soil dumpings covering large portions of the site need to be removed. The soil is composed of clay, sand and gravel, with a deep rocky substrata. Limestone outcroppings are also found in several areas.

BOUNDARIES

- On the east: a deep valley with steep sides provides a natural barrier. On the south and west: existing developments of light industries and vacant land mesh with the site. On the north: a private Greek school and a squatter settlement mesh with the site.

ZONING RESTRICTIONS/REGULATIONS

- The site is zoned for residential and commercial purposes. Allowed ground coverage of the site 50%. Coefficient of land exploitation 1.65. Maximum height of buildings 17m.

EXISTING STRUCTURES

- Part of the site is occupied by a squatter settlement of approximately 500 dwellings and 2500 people (Lebanese and Syrian). A socio-economic spot survey was taken in January 1974 to identify the population.

OTHER FACTORS

- Views: the site enjoys a commanding view of the surroundings. Smoke, odors, dirt: none at the moment. Flooding: site well drained. Hazards: boundaries on east side should be fenced to prevent accidents.

LAND TENURE/LAND COST

- All the land in the site is owned by the government.
- The land is valued at approximately \$32/m².

INFRASTRUCTURE/COMMUNITY FACILITIES

- No utilities exist on the site. All utilities are available from the surrounding areas. Limited commercial facilities exist along the Beit Meri Road and small shops are found in the squatter settlement.

The air photograph of the site (opposite page) illustrates some of the characteristics mentioned above.

MKALLES HOUSING PROJECT
PRELIMINARY DESIGN

Beirut, Lebanon

Urban Settlement Design Program, M.I.T.
Beirut/Cambridge (Massachusetts)



ACCESS

PROPERTY LINE

TAL EL MIR

GREEK SCHOOL

ACCESS

TAL EL ZAATAR

ACCESS

MKALLES INDUSTRIAL AREA

BEIT MERI ROAD

TO CITY CENTER

PLAN OF SITE

0 150m



THE PROJECT

The policies/goals that are proposed for the Mkalles Housing Project are as follows:

PRIMARY USE: RESIDENTIAL COMMUNITY

- The primary use of the site will be a residential community for 6860 people at full development. Public facilities will include: primary school for 1200 children, day-care nurseries, kindergartens, auditorium, playground, dispensary, police station. Facilities developed by the private sector will include: churches, mosques, a souk, artisan shops, movie theater.

TARGET INCOME GROUPS: LEBANESE LOW INCOME

- The development will aim at a community with Lebanese low income groups:

	PEOPLE PER INCOME GROUPS				TOTAL
	family annual income				
From:	\$1200	\$2000	\$3200	\$4800	
Site area	1000	397			1397
Quarantaine	397	1000	1491		2888
Other areas			500	2079	2579
TOTAL	1397	1397	1991	2079	6864

TENURE: CONDOMINIUM OWNERSHIP

- The development will offer condominium ownership with expandable apartments and houses.

INTENSITIES OF LAND USE: MEDIUM DENSITY

- The densities planned for the site range from 300 to 600 people per hectare.

FINANCING GROUPS: PUBLIC WITH LIMITED PRIVATE

- The size of the project and its prototype nature will demand primarily public financing. Private investment will be encouraged as a model for future housing.

CIRCULATION: PREDOMINANTLY PEDESTRIAN

- Pedestrians and vehicles will be mixed in the public streets, but pedestrians will dominate over vehicles. Control of traffic frequency, character and speed are mainly established by the street layout and use.

UTILITIES: CONNECTION TO EXISTING SYSTEMS

- All utility systems will be interconnected into the existing Beirut Urban Area networks.
 - Water: connection into Jal El-Deeb.
 - Sewerage/storm drainage: connection into planned system for Mkalles.
 - Electricity: connection into Beirut Urban Area network.

DEVELOPMENT MODE: INSTANT AND/OR INCREMENTAL

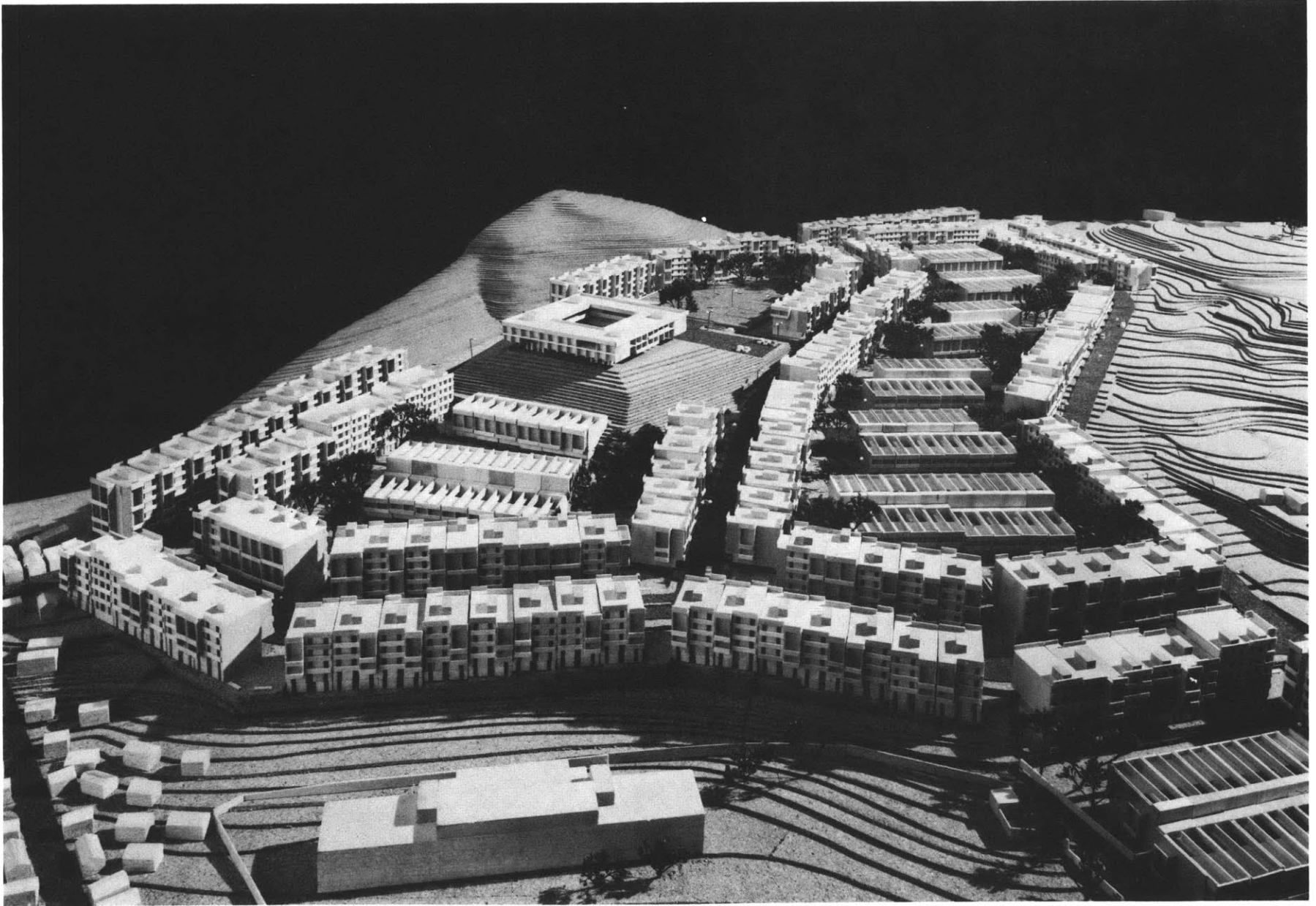
- The primary infrastructure networks (water, sewers, electricity, streets, street lighting) will be initially developed.
 - The dwellings, community facilities, and secondary infrastructure will be instantly or incrementally developed.

KEY OF PLAN OF PROJECT (opposite page)

- A apartments/expandable apartments
- H houses/expandable houses
- C cluster courts
- S primary school
- AU auditorium
- P playground

Note: shops are located along Souk and Main Streets

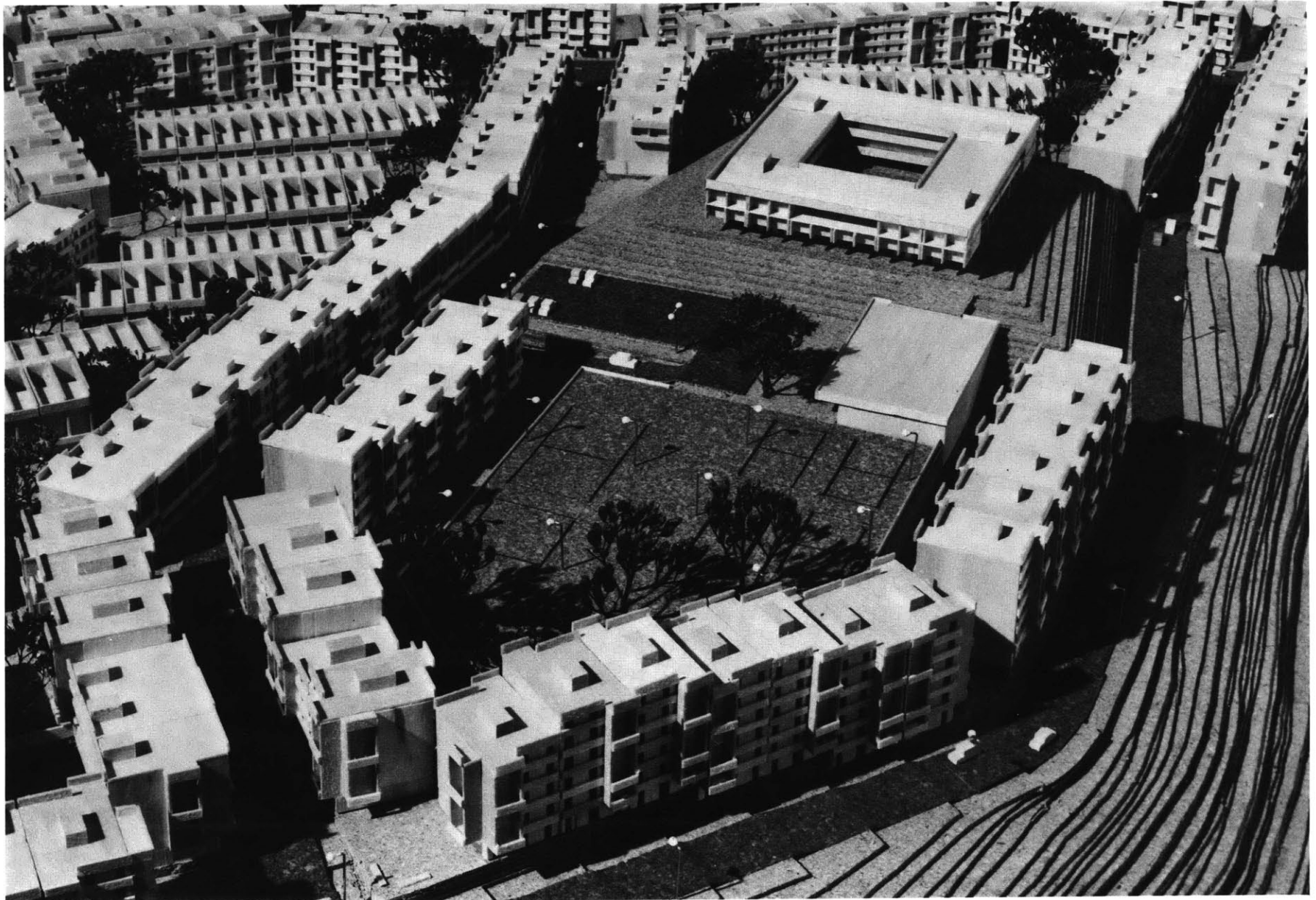




CIRCULATION AND COMMERCIAL AREAS The two main arteries of circulation can be identified: Souk Street (running horizontally) which is bordered by arcades with shops; Main Street (running vertically in the center) which is the main spine of circulation and provides access to most of the apartments, houses, and school, playground and souk.





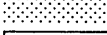
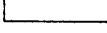
CORNER SHOPS View of corner at the south end of the Main Street. Two small squares provide public space for daily gatherings and outdoor commercial activities. The buildings around are from four to five stories high, with shops at ground level and apartments on the floors above.



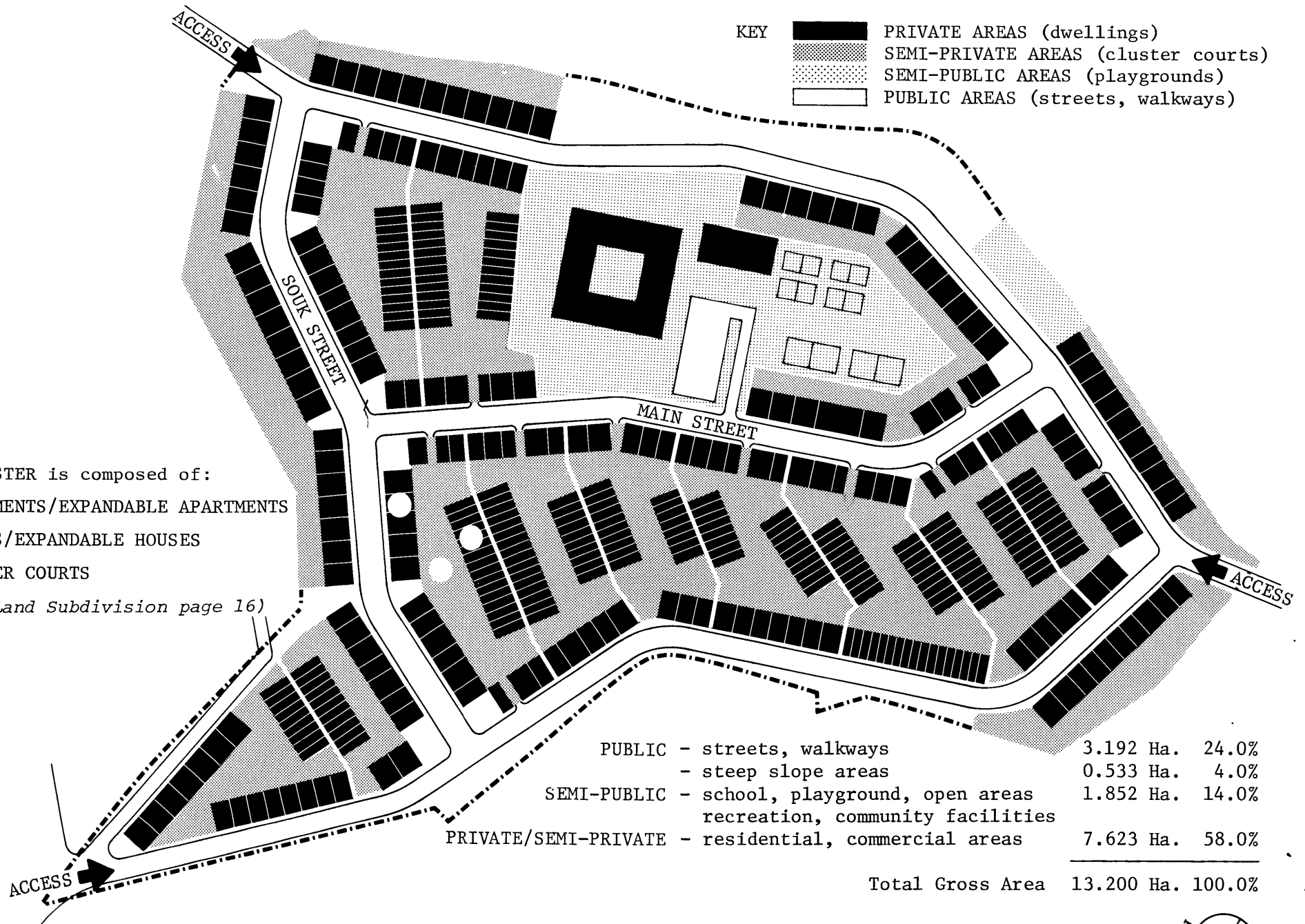
SCHOOL, PLAYGROUND, AUDITORIUM, DISPENSARY, SOCIAL CENTER All these facilities shown are grouped in the center of the site over Tal el Mir (The Prince's Hill). The location is dominant, with good views and easily accessible from any point of the community.



CLUSTERS (*AHIA'*) The picture shows a series of lot clusters, each containing a semi-private interior court (*SEHAT*) bounded by row houses and walk-up apartments. This interior court provides access to the dwellings and is the place for outdoor social activities of the families living in the cluster.

- KEY
-  PRIVATE AREAS (dwellings)
 -  SEMI-PRIVATE AREAS (cluster courts)
 -  SEMI-PUBLIC AREAS (playgrounds)
 -  PUBLIC AREAS (streets, walkways)

A CLUSTER is composed of:
 APARTMENTS/EXPANDABLE APARTMENTS
 HOUSES/EXPANDABLE HOUSES
 CLUSTER COURTS
 (See Land Subdivision page 16)

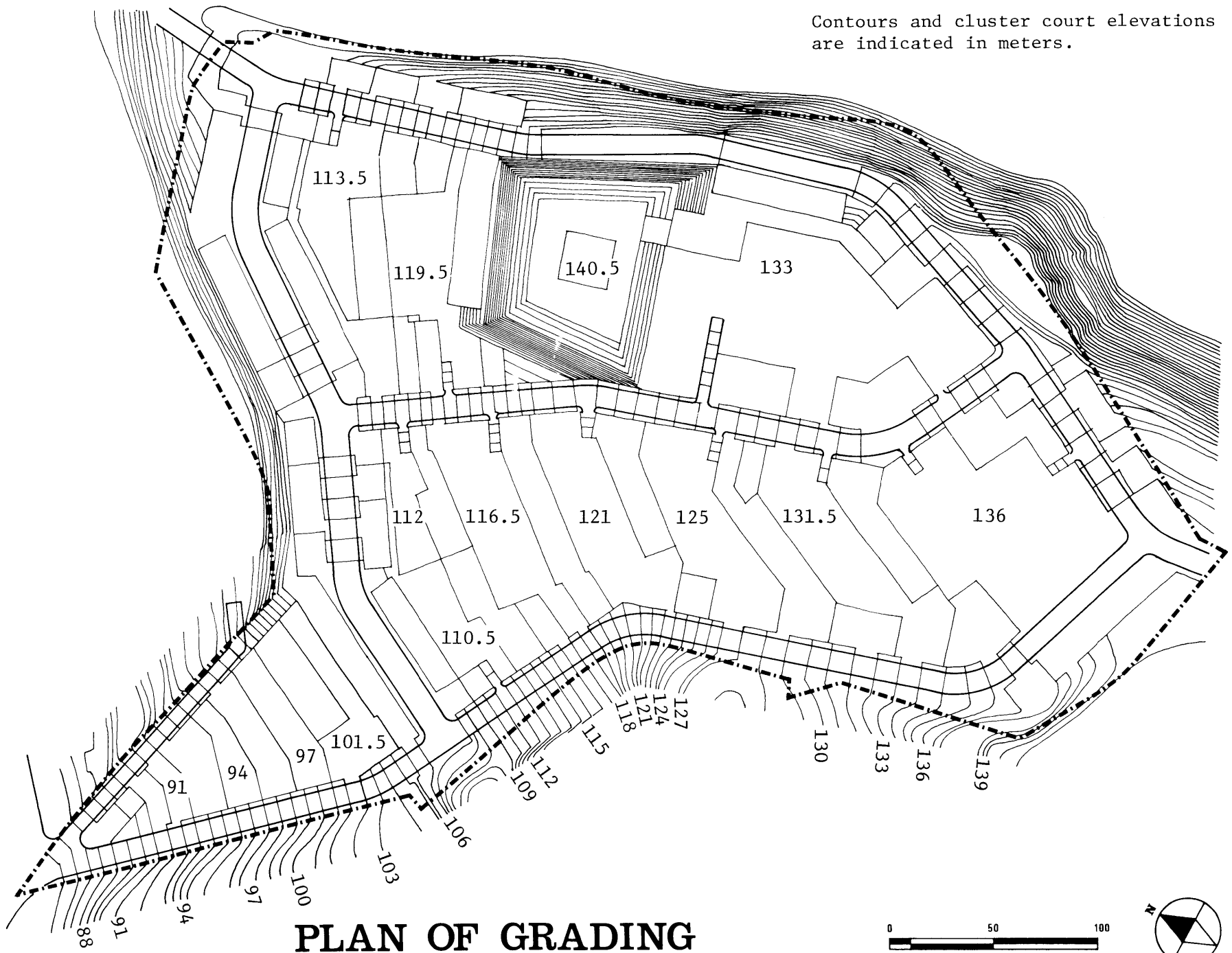


PUBLIC	- streets, walkways	3.192 Ha.	24.0%
	- steep slope areas	0.533 Ha.	4.0%
SEMI-PUBLIC	- school, playground, open areas	1.852 Ha.	14.0%
	- recreation, community facilities		
PRIVATE/SEMI-PRIVATE	- residential, commercial areas	7.623 Ha.	58.0%
Total Gross Area		13.200 Ha.	100.0%

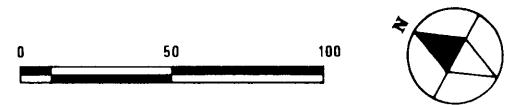
PLAN OF LAND USE / SUBDIVISION



Contours and cluster court elevations are indicated in meters.



PLAN OF GRADING



LAND SUBDIVISION

The land subdivision proposed for the Mkalles Project is based on the following policies:

Minimization of: public land for circulation and lengths of infrastructure per area served (electricity, water, sewerage networks, street lights, police protection, garbage collection). The results are savings for the government in construction, maintenance and operation.

Maximization of: private (users) responsibility, initiative, participation. The results are social and economic benefits.

These policies lead to a type of land subdivision called "condominiums" or "clusters", where dwellings are grouped around a common court that serves as an access space as well as a semi-private open space. This court is owned in condominium by the owners of the dwellings, which control, share the use and the responsibility for the maintenance of the court.

Condominium is a system of direct ownership of a single unit in a multi-unit structure. The individual owns the unit in much the same manner as if it were a single family dwelling; he holds direct legal title to the unit and a proportionate share of the common areas and the underlying ground.

But most important, clusters (*AHIA'*) and courts (*SEHAT*) belong to the Lebanese culture; they provide an environment for neighborhood associations and social proximity; they facilitate outdoor activities under the mild climate of Beirut.

HOUSING

The housing proposed for the Mkalles Project have the following characteristics:

- There are two basic types of dwelling units: walk-up apartments and houses.
- The ground floor of the buildings facing public streets can be alternatively used as dwellings or shops.
- The majority of dwelling units are basic shells that can be internally completed and expanded. The advantage of this system is that it provides flexibility and minimizes the initial investment by the users as well as the total investment by the government.
- The apartment units have a maximum of 8 families sharing the same facilities (stairs, terrace) to facilitate control and responsibility in the use and maintenance.
- Several dwelling options are available to different income groups: apartments, expandable apartments, houses, expandable houses of different areas.
- The type of tenure is condominium ownership in all the dwellings.

In the following pages, further aspects concerning dwellings are illustrated: construction, development, options, incomes, types.

DWELLING CONSTRUCTION

Dwelling design and construction system have the following characteristics:

- Building height: 2 to 5 floors for maximum land utilization within the Building Code restrictions. Main reasons are cost of land, the difficult topography of the site, saving on foundations and most important an adequate population density.
- Reinforced concrete frame construction: columns, bearing walls, beams, floor and roof slabs. The span ranges from 2.20m (staircases) to 6.60m (slabs).
- Minimum number of simple foundations.
- Minimum number of retaining walls. In most of the cases retaining walls and bearing walls are combined.
- Minimum public circulation (streets) and two basic directions for buildings: parallel or perpendicular to contours.
- Maximum cross ventilation and adequate orientation for dwellings.

Foundations: alternatives: a) reinforced concrete footings for columns, retaining walls, bearing walls; b) reinforced concrete slab on grade for partitions.

Retaining walls: reinforced concrete 2.40m, 3.00m high.

Bearing walls: alternatives: a) reinforced concrete, minimum width 20cm; b) concrete blocks 20cm with reinforced concrete columns, poured in block perforations; c) concrete blocks 20cm, with tie beams above.

Non-bearing walls: exterior, 20cm concrete blocks; interior, 10cm concrete blocks.

Floor slabs: alternatives: a) reinforced concrete, hourdi block slab poured in situ; b) wood floor in case of expansions.

Roof slabs: reinforced concrete hourdi slab poured in situ.

Balcony: same as slabs.

Bathroom: shower, lavatory, arabic water closet, ventilation duct.

Kitchen: sink, ventilation duct.

Stairs: reinforced concrete or wood.

Doors: wood, for entrance, shower, water closet, 1 room.

Windows: casement or sliding windows, wood or wood and metal.

Lightwell covers: translucent corrugated plastic sheets.

Walls/floor finish: exposed concrete floor, exposed walls painted.

Sewage/water: connections, fixtures, reserve water tank on terrace.

Garbage chute: access from each dwelling unit.

Electricity: conduits, outlets.

DWELLING PROGRESSIVE DEVELOPMENT

- *First phase* includes the basic shell described in construction system. It will be provided by the government and built by contractor.

- *Second phase* includes some elements added and paid by the owner for occupation of the dwelling: partitions, doors, closets, etc.

- *Third phase* includes more elements added and paid by the owner for expansion of the dwelling: interior partitions, floors, doors, closets, lightwell cover, interior stairs.

DWELLING OPTIONS

The following table illustrates the different dwelling options available in terms of types, area, number of rooms, capacity for expansion and costs. Unit construction costs, unit land costs are estimated on actual market values.

TYPE	AREA (m ²)	N ^o of ROOMS	N ^o of FLOORS	CONSTRUCTION COST \$70/m ²	LAND COST (1) \$11/m ² of const.	LAND COST (2) \$8/m ² of const.	INFRASTRUCTURE COST @ 1/3 of construction	DWELLING UNIT COST TOTAL
APARTMENT	57M ²	2	1	\$3,990	\$627	\$456	\$1,330	\$6,403
APARTMENT	73M ²	3	1	\$5,110	\$803	\$584	\$1,703	\$8,200
APARTMENT	76M ²	3	2	\$5,320	\$836	\$608	\$1,773	\$8,538
expandable to	89M ²	4						
APARTMENT	76M ²	3	2	\$5,320	\$836	\$608	\$1,773	\$8,538
expandable to	108M ²	4						
APARTMENT	93M ²	4	2	\$6,510	\$1,023	\$744	\$2,170	\$10,447
expandable to	121M ²	6						
APARTMENT	93M ²	3	2	\$6,510	\$1,023	\$744	\$2,170	\$10,447
expandable to	139M ²	6						
HOUSE	80M ²	3	2	\$5,600	\$880	\$640	\$1,867	\$8,987
expandable to	123M ²	5						
HOUSE	94M ²	4	3	\$6,580	\$1,034	\$752	\$2,193	\$10,559
expandable to	172M ²	7						

(1) land cost assigned by government

(2) additional cost to reach market value

DWELLINGS AND INCOMES

The following table illustrates a suggested distribution of the dwelling options among different income groups, their annual family budget and the annual subsidy needed for each dwelling option. Land value and infrastructure are assumed subsidized for all income groups.

ANNUAL FAMILY INCOME	\$1200			\$2000			\$3200			\$4800		
BUDGET: Housing:	\$240	20.0%		\$ 400	20.0%		\$ 640	20.0%		\$ 960	20.0%	
Transportation:	\$ 40	3.3%		\$ 40	2.0%		\$ 60	1.9%		\$ 60	1.3%	
Food/Clothing:	\$658	54.8%		\$1090	54.5%		\$1885	58.9%		\$2740	56.9%	
Health/Education:	\$100	8.3%		\$ 100	5.0%		\$ 200	6.2%		\$ 400	8.3%	
Utilities:	\$130	10.8%		\$ 150	7.5%		\$ 180	5.7%		\$ 60	1.3%	
Municipal Tax:	\$ 12	1.0%		\$ 20	1.0%		\$ 35	1.1%		\$ 60	1.3%	
Miscellaneous:	\$ 20	1.8%		\$ 200	10.0%		\$ 200	6.2%		\$ 400	8.3%	
DWELLING OPTIONS	57M ²	73M ²	76M ²	57M ²	73M ²	76M ²	76M ²	93M ²	80M ²	93M ²	80M ²	94M ²
ACTUAL COST/YR(1):												
20 yr. loan:	\$471	\$604	\$628	\$471	\$604	\$628						
15 yr. loan:							\$768	\$939	\$808			
12 yr. loan:										\$1114	\$958	\$1126
TOTAL SUBSIDY	\$231	\$364	\$388	\$71	\$204	\$228	\$128	\$299	\$168	\$154	-\$2	\$166
PER FAMILY PER YEAR												
Construction and land:	\$56	\$139	\$148	-\$60	\$ 35	\$ 53	-\$ 85	\$ 39	-\$ 57	-\$155	-\$269	-\$148
Additional land cost:	\$29	\$ 37	\$ 39	\$34	\$ 43	\$ 45	\$ 55	\$ 67	\$ 58	\$ 79	\$ 68	\$ 80
Infrastructure:	\$85	\$109	\$114	\$97	\$126	\$130	\$158	\$193	\$167	\$230	\$199	\$234
Interest difference(2):	\$61	\$ 79	\$ 80	-	-	-	-	-	-	-	-	-

(1) based on 4% government loan

(2) difference between 4% government loan and 2.5% family payment
amounts preceded with (-) can be applied to reduce subsidies by government

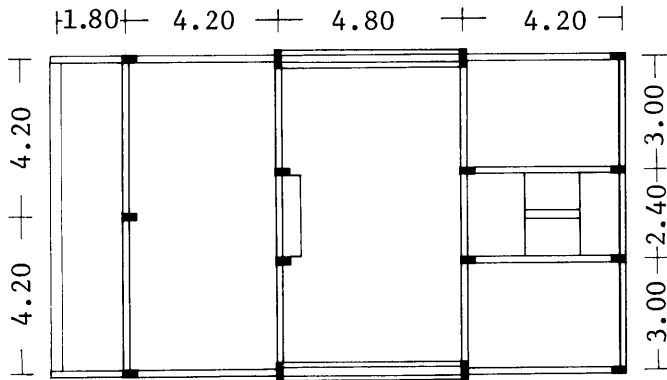
DWELLING UNIT: **57m²** - 2 ROOMS - 1 FLOOR

Type: APARTMENT
 Tenure: OWNERSHIP
 Land/lot area: VARIES
 Development mode: INSTANT

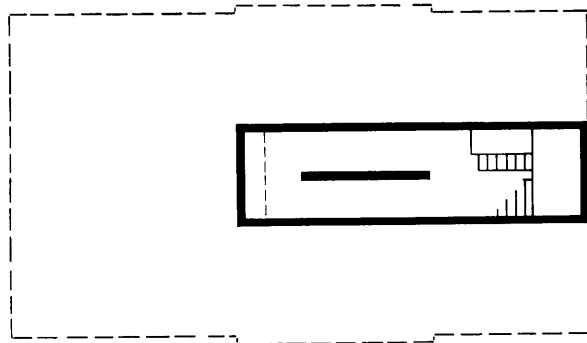
76m² - 3 ROOMS - 2 FLOORS

APARTMENT EXPANDABLE TO 89m², 4 ROOMS
 OWNERSHIP
 VARIES
 PROGRESSIVE

(Ceiling height is 2.20m, limiting a second floor expansion to 2/3 of the first floor area.)



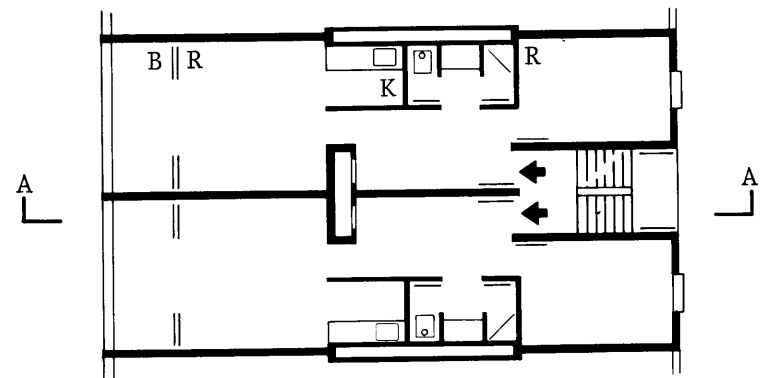
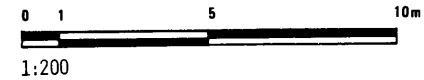
STRUCTURAL FRAME PLAN



BASEMENT PLAN

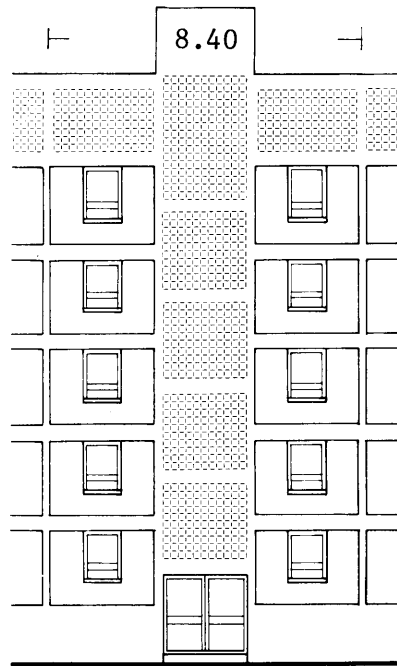
KEY

- R room
- K kitchen
- B balcony
- O opening
- (E) expansion

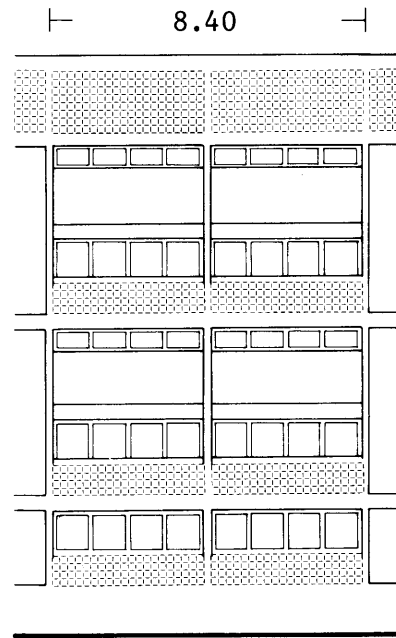


FLOOR PLAN

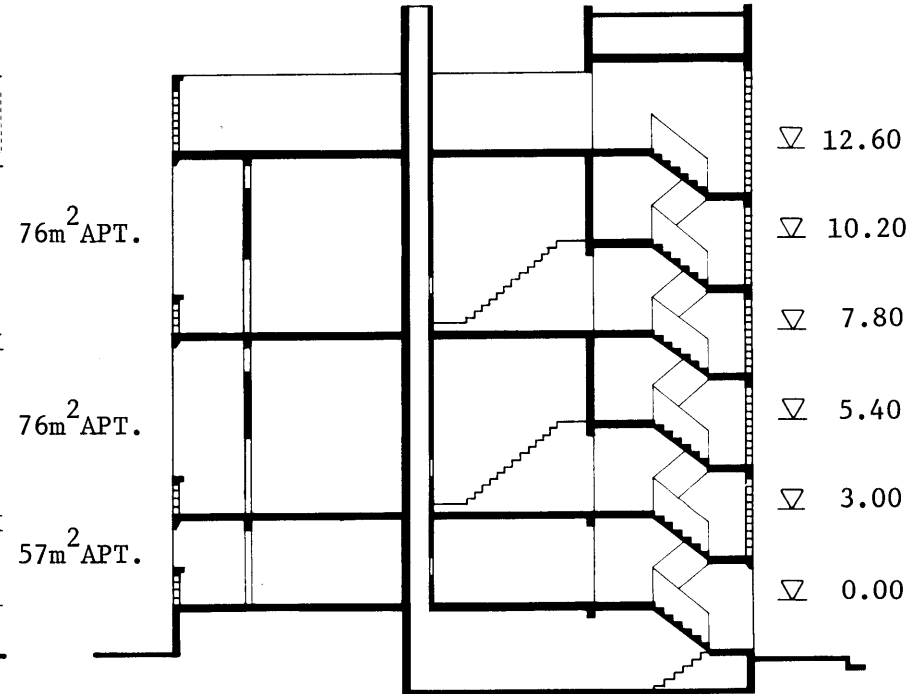
57m² APARTMENT



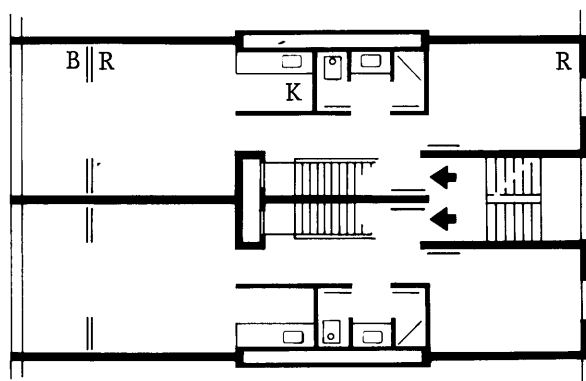
ENTRANCE ELEVATION



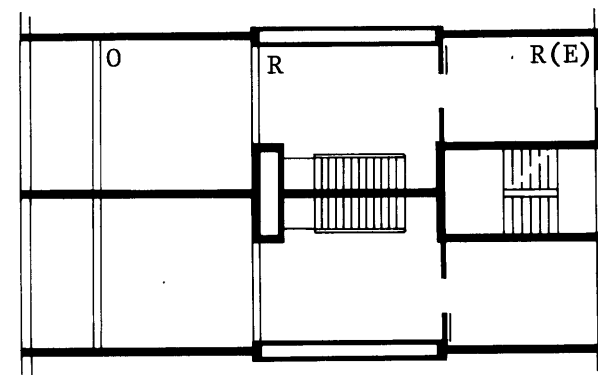
BALCONY ELEVATION



SECTION A-A



FIRST FLOOR PLAN



SECOND FLOOR PLAN

76m² APARTMENT EXPANDABLE TO 89m² - 4 ROOMS

DWELLING UNIT: **57m²** - 2 ROOMS - 1 FLOOR

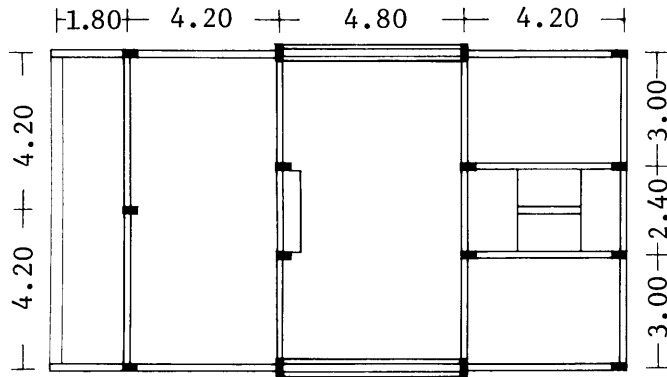
Type: APARTMENT
 Tenure: OWNERSHIP
 Land/lot area: VARIES
 Development mode: INSTANT

(Same as 57m² apartment on page 20.)

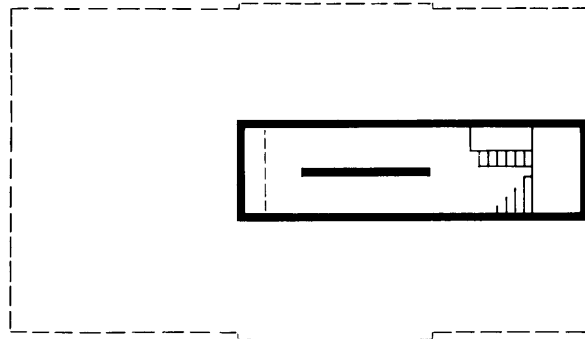
76m² - 3 ROOMS - 2 FLOORS

APARTMENT EXPANDABLE TO 108m², 4 ROOMS
 OWNERSHIP
 VARIES
 PROGRESSIVE

(Ceiling height is 2.80m, allowing a second floor expansion equal to the first floor area.)



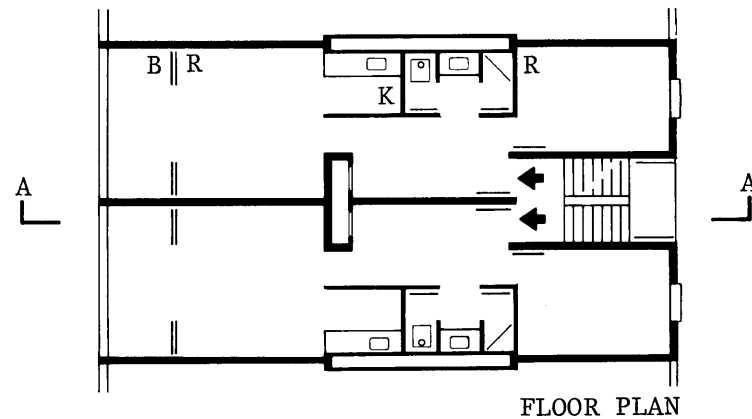
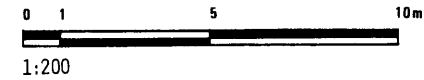
STRUCTURAL FRAME PLAN



BASEMENT PLAN

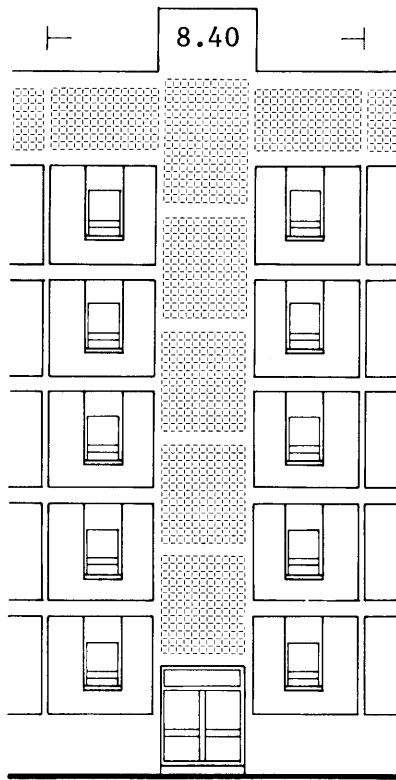
KEY

- R room
- K kitchen
- B balcony
- O opening
- (E) expansion

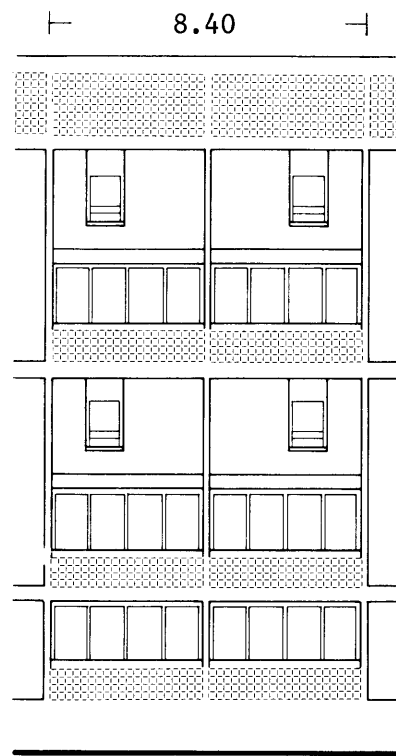


FLOOR PLAN

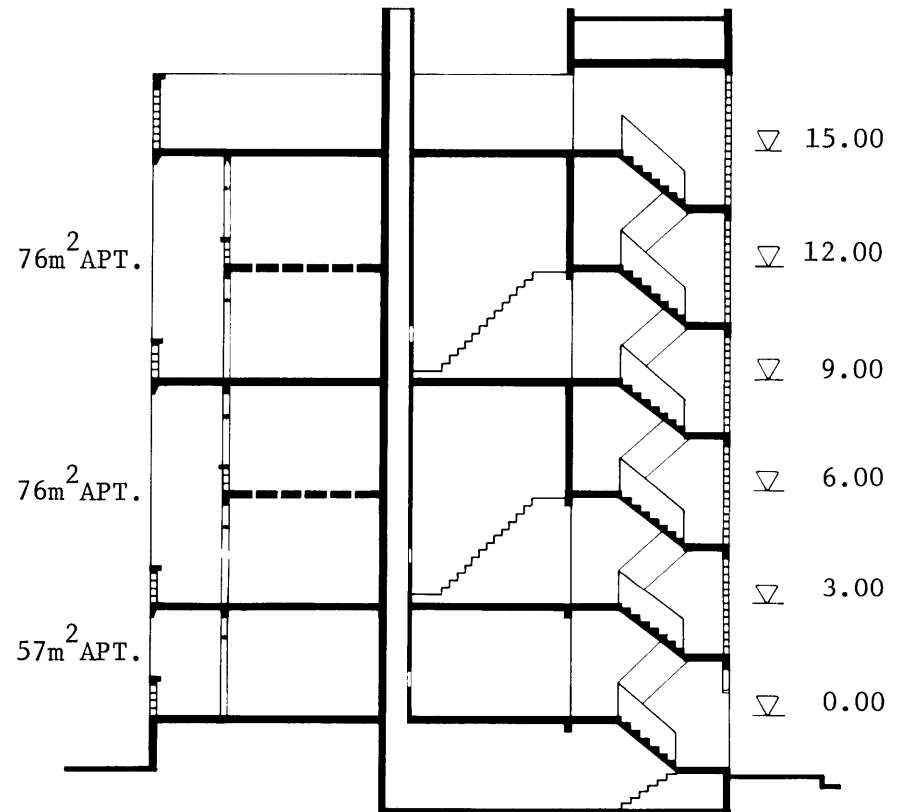
57m² APARTMENT (Same as apartment on page 20.)



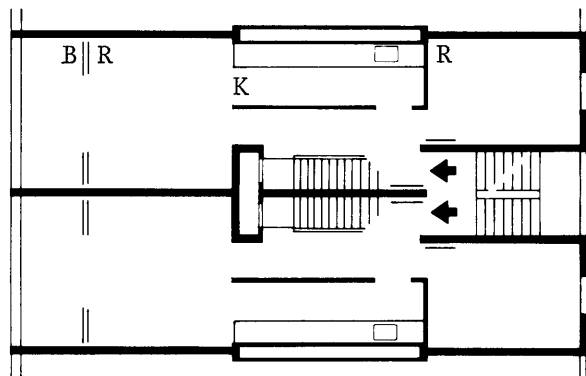
ENTRANCE ELEVATION



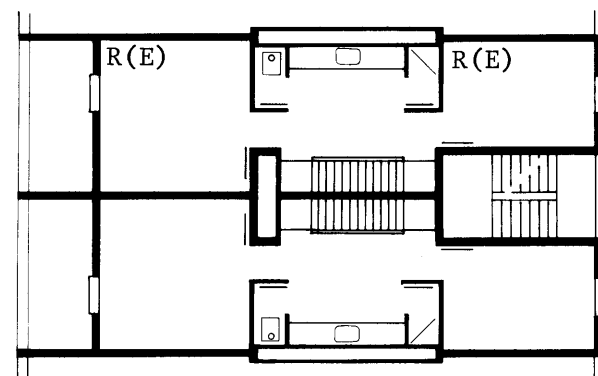
BALCONY ELEVATION



SECTION A-A



FIRST FLOOR PLAN



SECOND FLOOR PLAN

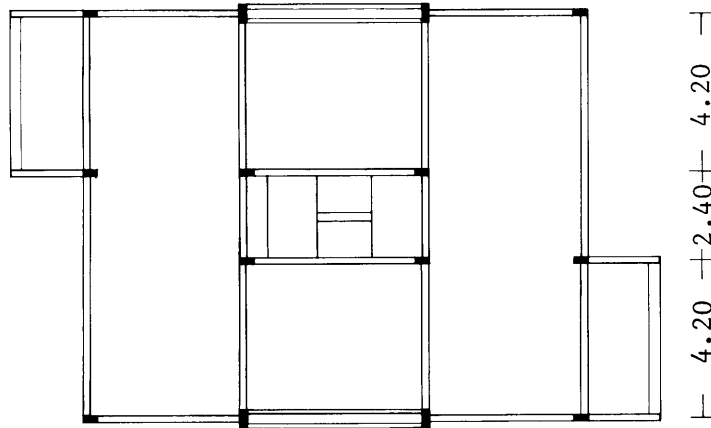
76m² APARTMENT EXPANDABLE TO 108m² - 4 ROOMS

DWELLING UNIT: **73^{m²}** - 3 ROOMS - 1 FLOOR
 Type: APARTMENT
 Tenure: OWNERSHIP
 Land/lot area: VARIES
 Development mode: INSTANT

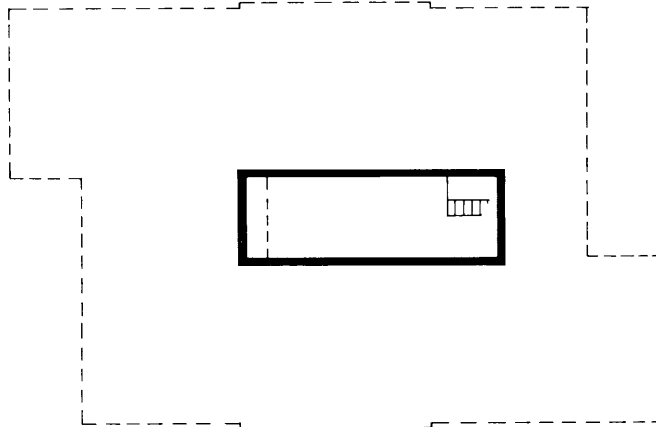
93^{m²} - 4 ROOMS - 2 FLOORS
 APARTMENT EXPANDABLE TO 121m², 6 ROOMS
 OWNERSHIP
 VARIES
 PROGRESSIVE

(Ceiling height is 2.20m, limiting a second floor expansion to 2/3 of the first floor area.)

1.80 4.20 4.80 4.20 1.80

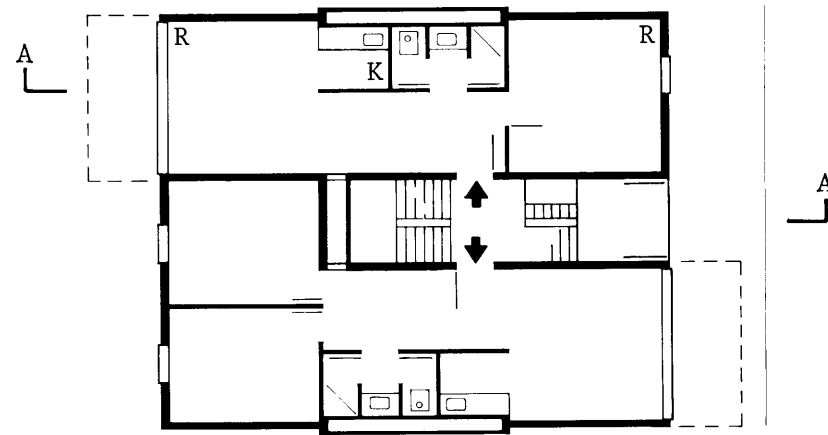
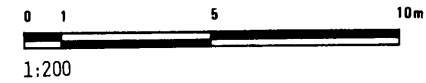


STRUCTURAL FRAME PLAN



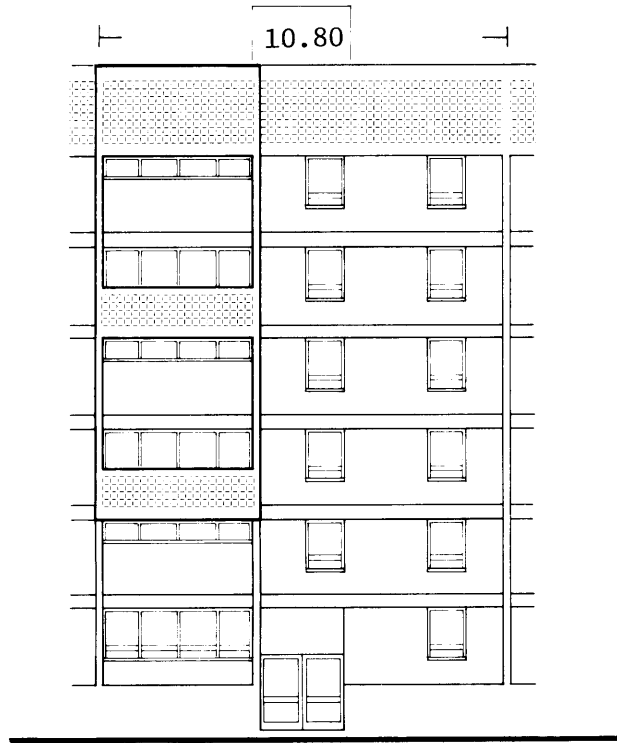
BASEMENT PLAN

KEY
 R room
 K kitchen
 B balcony
 O opening
 (E) expansion



FLOOR PLAN

73^{m²} APARTMENT



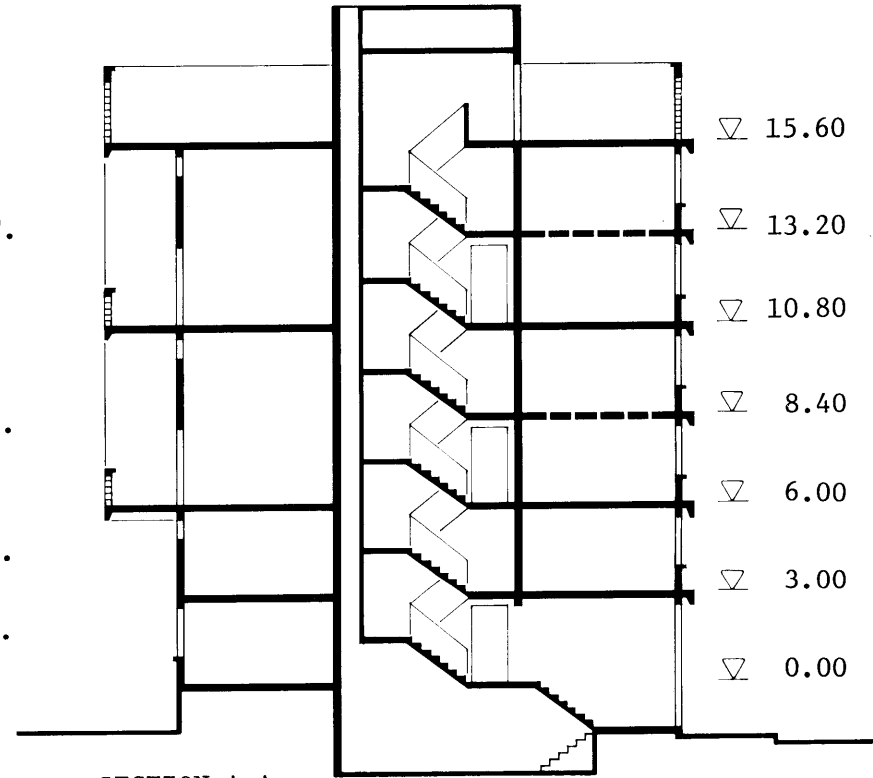
ENTRANCE ELEVATION

93m² APT.

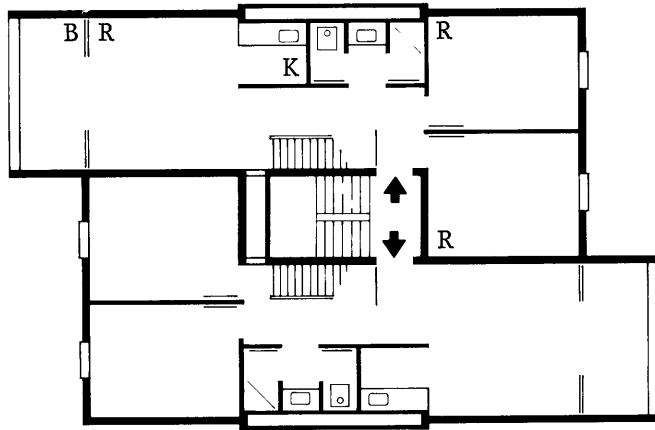
93m² APT.

73m² APT.

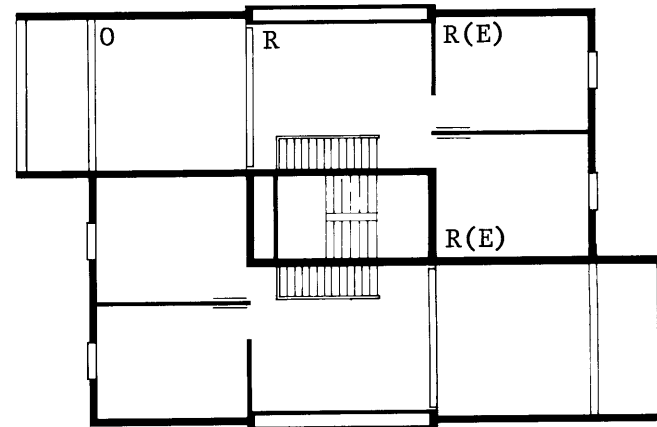
73m² APT.



SECTION A-A



FIRST FLOOR PLAN

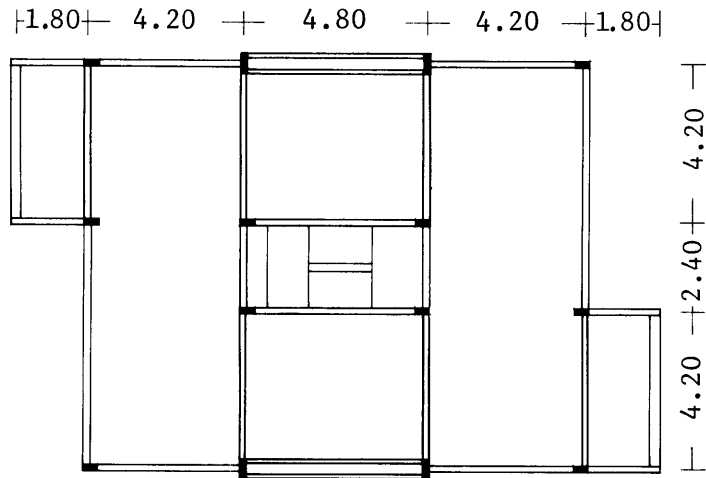


SECOND FLOOR PLAN

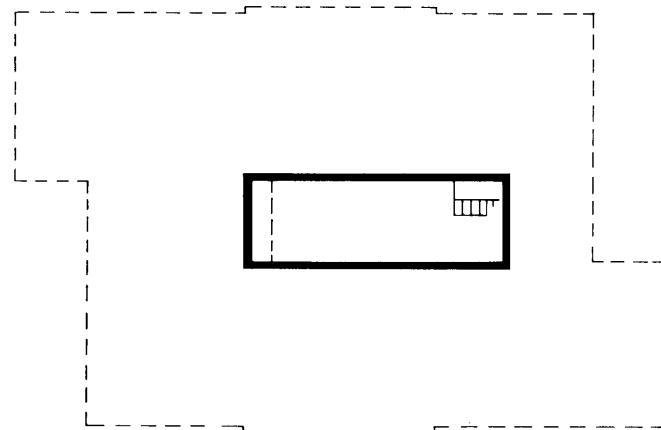
93m² APARTMENT EXPANDABLE TO 121m² - 6 ROOMS

DWELLING UNIT: **73m²** - 3 ROOMS - 1 FLOOR
 Type: APARTMENT (Same as 73m²)
 Tenure: OWNERSHIP apartment on
 Land/lot area: VARIES page 24.)
 Development mode: INSTANT

93m² - 3 ROOMS - 2 FLOORS
 APARTMENT EXPANDABLE TO 139m², 6 ROOMS
 OWNERSHIP
 VARIES
 PROGRESSIVE
 (Ceiling height is 2.80m, allowing a second floor expansion equal to the first floor area.)

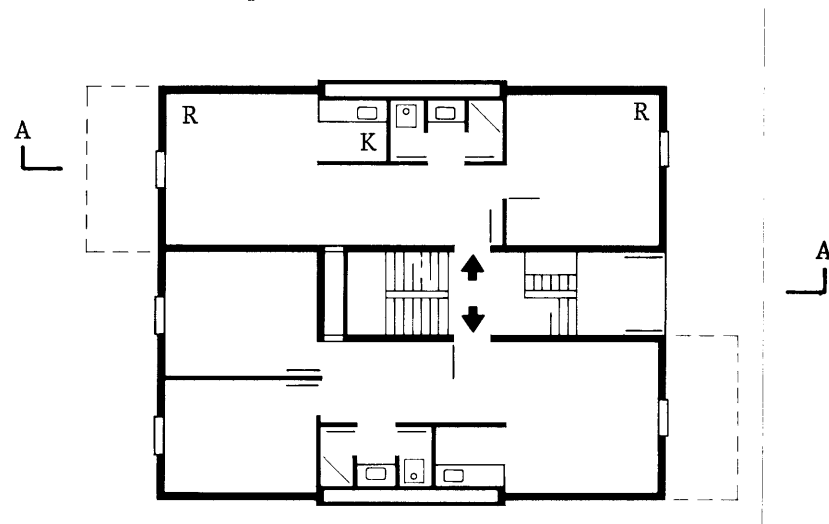
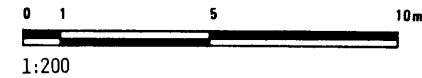


STRUCTURAL FRAME PLAN



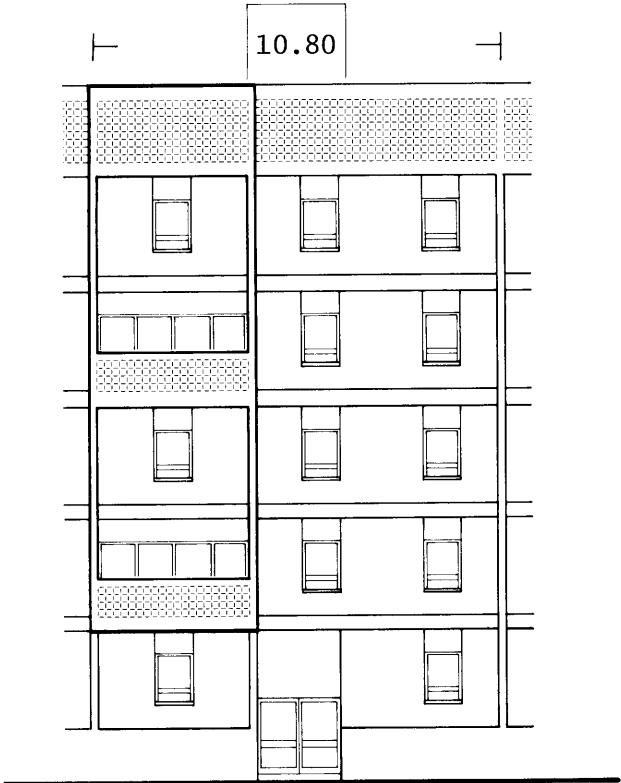
BASEMENT PLAN

KEY
 R room
 K kitchen
 B balcony
 O opening
 (E) expansion



FLOOR PLAN

73m² APARTMENT (Same as apartment on page 24.)

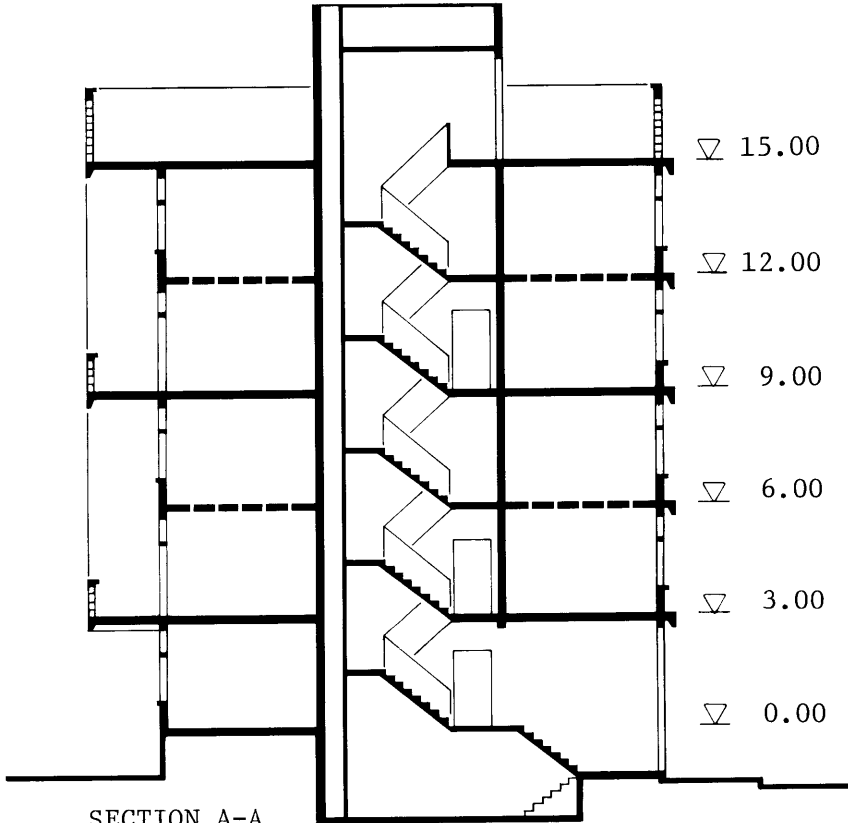


ENTRANCE ELEVATION

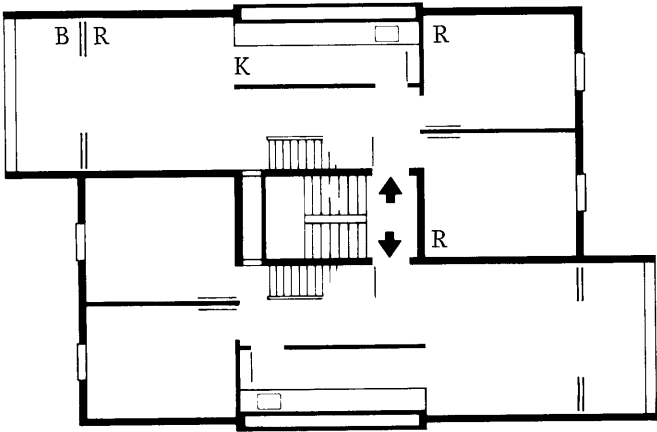
93m² APT.

93m² APT.

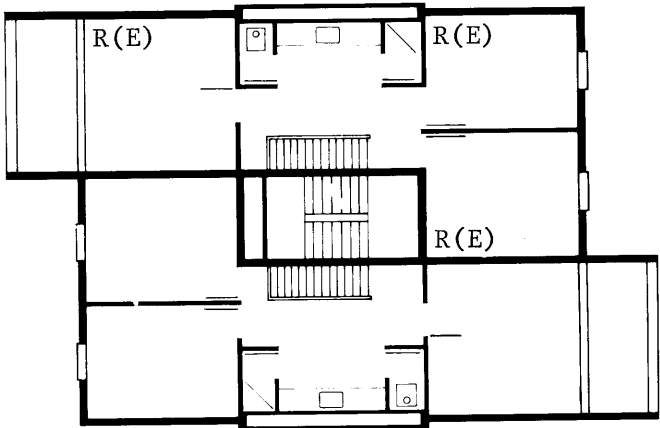
73m² APT.



SECTION A-A



FIRST FLOOR PLAN



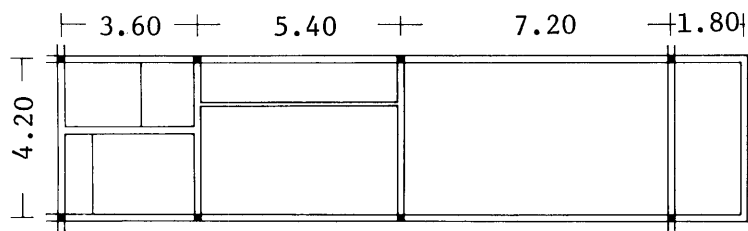
SECOND FLOOR PLAN

93m² APARTMENT EXPANDABLE TO 139m² - 6 ROOMS

DWELLING UNIT: **80m² - 3 ROOMS - 2 FLOORS**
 Type: HOUSE EXPANDABLE TO 123m², 5 ROOMS
 Tenure: OWNERSHIP
 Land/lot area: 68m²
 Development mode: PROGRESSIVE

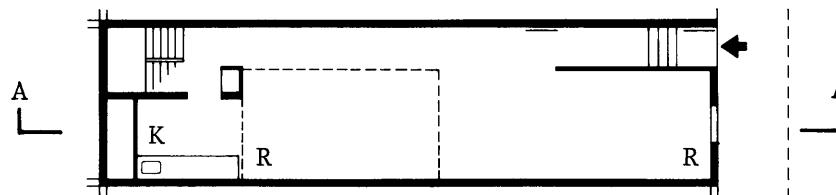
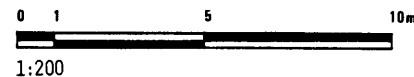
94m² - 4 ROOMS - 3 FLOORS
 HOUSE EXPANDABLE TO 172m², 7 ROOMS
 OWNERSHIP
 68m²
 PROGRESSIVE

(Same house as 80m², but with one additional floor.)



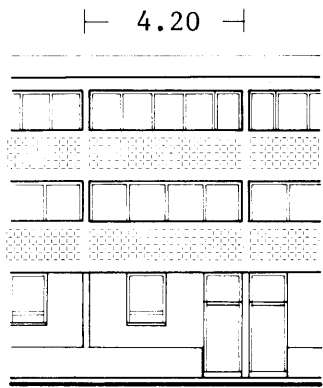
STRUCTURAL FRAME PLAN

KEY
 R room
 K kitchen
 B balcony
 O opening
 (E) expansion

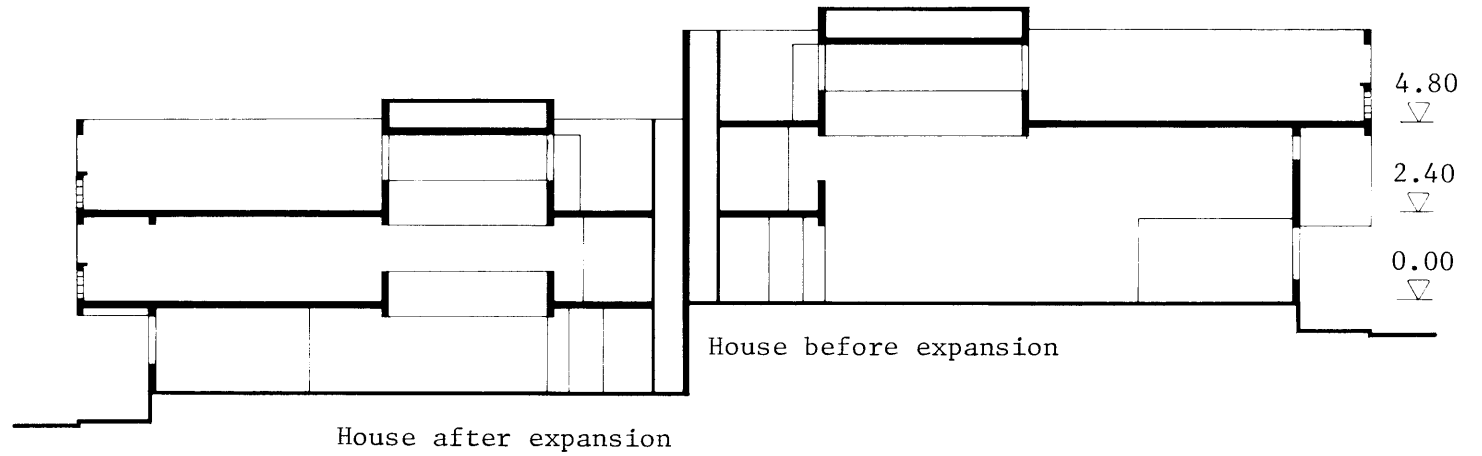


FIRST FLOOR PLAN

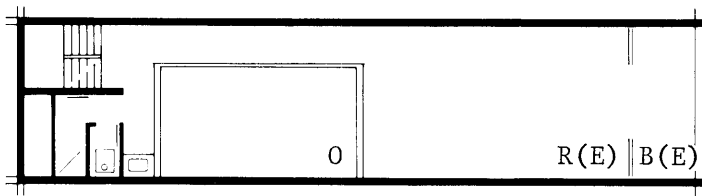
80m² HOUSE EXPANDABLE TO 123m² - 5 ROOMS



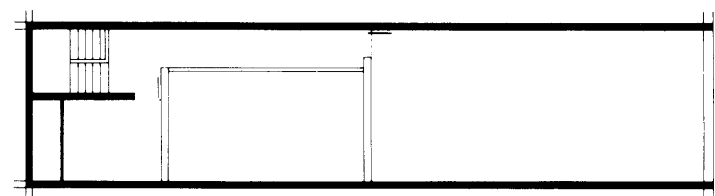
ELEVATION



SECTION A-A



SECOND FLOOR PLAN



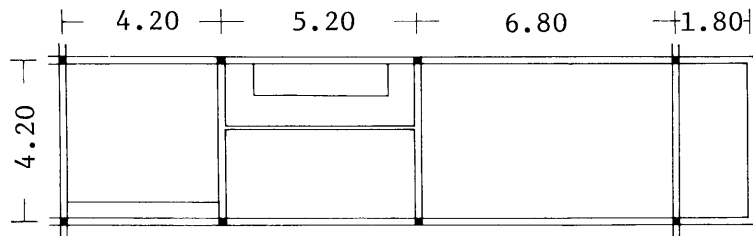
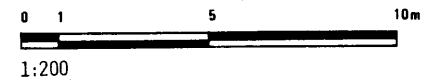
TERRACE PLAN

DWELLING UNIT: **80m² - 3 ROOMS - 2 FLOORS**
Type: HOUSE EXPANDABLE TO 123m², 5 ROOMS
Tenure: OWNERSHIP
Land/lot area: 68m²
Development mode: PROGRESSIVE

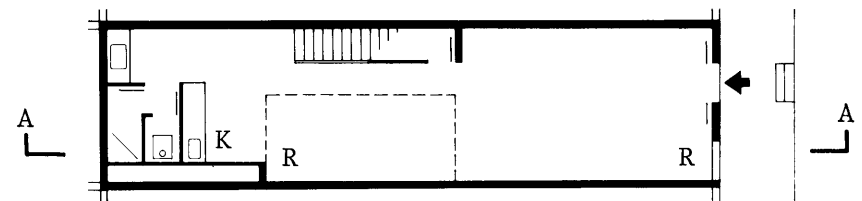
94m² - 4 ROOMS - 3 FLOORS
HOUSE EXPANDABLE TO 172m², 7 ROOMS
OWNERSHIP
68m²
PROGRESSIVE
(Same house as 80m², but with one additional floor.)

KEY

- R room
- K kitchen
- B balcony
- O opening
- (E) expansion

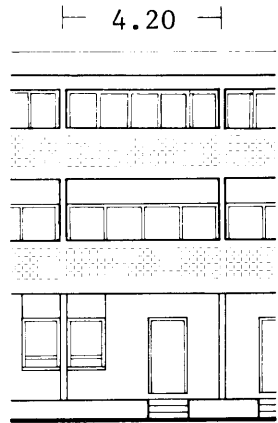


STRUCTURAL FRAME PLAN

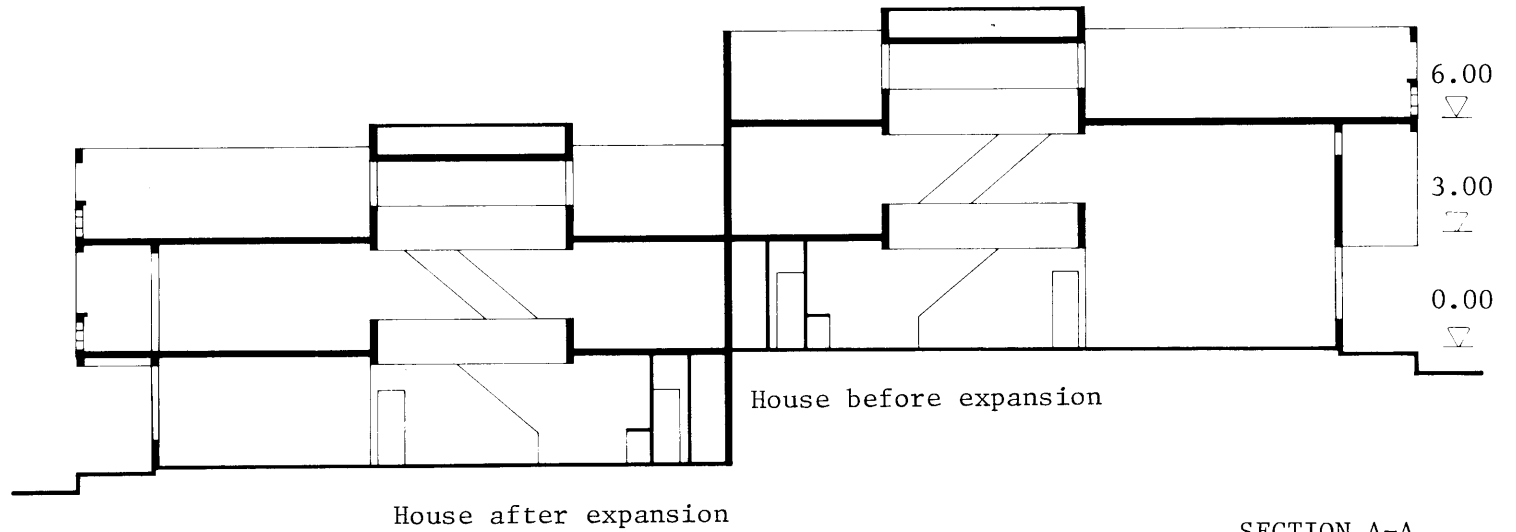


FIRST FLOOR PLAN

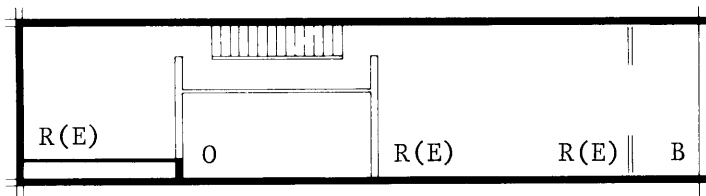
80m² HOUSE EXPANDABLE TO 123m² - 5 ROOMS



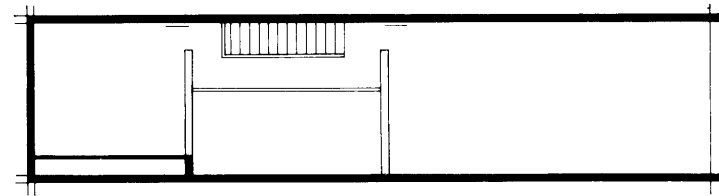
ELEVATION



SECTION A-A



SECOND FLOOR PLAN



TERRACE PLAN

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