

50)

J

URBAN DWELLING ENVIRONMENTS: ISTANBUL, TURKEY

by

MARK HORNE BUTLER

B. Arts, University of Minnesota  
1972

B. Arch., University of Minnesota  
1973

and

NEDRET TAYYIBE BUTLER

B. Arts, University of Minnesota  
1972

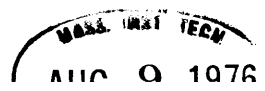
B. Arch., University of Minnesota  
1973

Submitted in partial fulfillment of the requirements  
for the degree of  
Master of Architecture in Advanced Studies  
at the  
Massachusetts Institute of Technology  
June, 1976

Signatures of the Authors ... *[Handwritten signatures]* ...  
Department of Architecture, May 7, 1976

Certified by *[Handwritten signature]* .....  
Thesis Supervisor

Accepted by .....  
Chairman, Department Committee on Graduate Students  
**Rotch**



**URBAN DWELLING ENVIRONMENTS:  
İSTANBUL, TURKEY**

**Six Case Studies, Urbanization Model**

**MARK HORNE BUTLER  
NEDRET TAYYIBE BUTLER**

Education/Research Program:  
URBAN SETTLEMENT DESIGN IN DEVELOPING COUNTRIES  
School of Architecture and Planning  
Massachusetts Institute of Technology  
Cambridge, Massachusetts  
June 1976

## ACKNOWLEDGMENTS

The authors wish to acknowledge the support, guidance and advice of Professor Horacio Caminos, whose direction was invaluable in the preparation of this work. We are also indebted to Reinhard Goethert for his personal assistance and to the members of the 1976 and 1977 classes in the Urban Settlement Design in Developing Countries Program at the School of Architecture and Planning, M.I.T. for their comments.

The authors gratefully acknowledge the information and general support from: Turgut Cansever, Head of the Greater Istanbul Master Plan Office, Timucin Kayabasi, Cihat Findikoglu, and Ali Barman; Professor Nezh Eldem, Department of Architecture, Istanbul Technical University; Professor Nephane Saran, Department of Social Anthropology, and Professor Erol Tumertekin, Institute of Geography, Istanbul University; Squatter Planning Office, Istanbul Municipality; Kagithane Municipality; Turkish Ministry of Reconstruction and Resettlement, General Directorate of Housing and Directorate of Istanbul Province Reconstruction; T. Cenani Ercan and J. Bradway Butler for their assistance with the field survey. The authors are further indebted to all who directly or indirectly contributed to this work.

Cover Photograph: View of downtown Istanbul (1971).  
By John Scott

COPYRIGHT © 1976, Urban Settlement Design in Developing Countries, M.I.T.

All rights reserved; no section may be reproduced by any means without the written permission from the authors.

URBAN DWELLING ENVIRONMENTS: ISTANBUL, TURKEY  
by Mark Horne Butler and Nedret Tayyibe Butler

Submitted to the Department of Architecture in partial fulfillment of the requirements for the degree of Master of Architecture in Advanced Studies.

ABSTRACT

The research identifies and evaluates a representative cross-section of low income dwelling environments in the metropolitan area of Istanbul, Turkey. The study focuses on six selected case studies/localities.

An Urbanization Model is proposed to demonstrate an alternative method of low income urban residential development. The Model optimizes land utilization and infrastructure networks through efficient layout design.

The study is intended to provide a reference in the formulation of housing policies and to provide a comparative framework for the analysis and evaluation of existing and proposed low income housing developments. The research is based on a methodology developed in the Urban Settlement Design in Developing Countries Program.

Thesis Supervisor: Horacio Caminos  
Title: Professor of Architecture

**CONTENTS**

PREFACE	2
INTRODUCTION	3
NATIONAL CONTEXT	4
URBAN CONTEXT	8
CASE STUDIES	
Zeyrek (1)	14
Rumelihisar Ustu (2)	24
Zeytinburnu (3)	34
Gultepe (4)	44
Osmaniye (5)	56
Umraniye (6)	68
EVALUATIONS	
Dwelling Time/Process Perspective	78
Physical Data Matrix	80
Community Facilities, Utilities/Services Matrix	82
URBANIZATION MODEL	
Urbanization Model	84
Development Plan	85
The Site	86
The Project/Policies/Goals	88
Circulation Plan	90
Blocks, Lots and Cluster Courts	92
Housing Options	95
Apartment Options	96
EVALUATION	
Land Utilization: Patterns, Percentages, Densities/Layout Efficiency	100
GLOSSARY/EXPLANATORY NOTES	102
REFERENCES	106

## PREFACE

**CONTENT:** This research identifies and evaluates existing low income dwelling environments in the metropolitan area of Istanbul, Turkey. The study focuses on six selected case studies/localities. The localities are representative of very low to moderately low income, low to high density residential areas in Istanbul.

The physical environment of each locality is described in terms of land utilization, layout efficiency, utilities, and services. The cases are analyzed at four scales: the locality; a selected segment of the locality; a selected block of the segment; selected dwelling(s). Availability and level of services for each dwelling environment is analyzed and evaluated.

For the purpose of further comparative evaluation an Urbanization Model is proposed. The model demonstrates an alternative method of urban residential development which optimizes land utilization and infrastructure networks through efficient layout design. The model is an illustration of the guidelines developed in the Urban Settlement Design Program for physical planning of residential areas.

**PURPOSE:** The study attempts: a) to identify and describe a representative cross-section of low income housing in the metropolitan area of Istanbul illustrating their physical environments; b) to organize case studies into a framework to facilitate analysis/evaluation; c) to relate the housing process to issues of land utilization.

The research is intended to serve as a reference in the formulation of housing policies and to provide a comparative framework for the analysis and evaluation of existing and proposed low income housing developments.

**APPLICATION:** The study provides: a) a reference for the understanding of urban dwelling environments, particularly Istanbul, Turkey; b) a model for the identification of dwelling environments in any urban context; c) a reference and tentative set of guidelines for those involved in the planning of residential developments.

**DATA:** This study is derived from field research carried out by the authors during the summers of 1974 and 1975; complemented by maps provided by Buyuk Nazim Plan Burosu (Greater Istanbul Master Plan Office) and mentioned reference material. The analysis, evaluation, and design work was carried out during the academic years 1974-75 and 1975-76. The case study analysis is based on a methodology developed in the Urban Settlement Design in Developing Countries Program directed by Professor Horacio Caminos.

## INTRODUCTION

Urbanization is occurring in developing countries at a rate far beyond that which the limited resources and abilities of cities can cope. These new populations, consisting primarily of unskilled, uneducated, and extremely poor people migrating from rural areas in search of employment, are in the midst of a fierce struggle for shelter and security. This struggle is creating an urban crisis all over the World. Until the cities are able to respond to the needs of these new populations, spontaneous urbanization (squatter settlements) and general discontent will continue to intensify the struggle. Resources are limited, urban land is scarce, and the burden on the public sector is becoming more unmanageable.

Istanbul is a city in the midst of this struggle. The largest urban and industrial area in Turkey, it began to experience the phenomenon of squatter settlements (gecekondu) in the mid 1940's. The term "gecekondu" literally means built-over-night. These dwellings, illegally located or built without construction permits are so named because until occupied, they are liable for demolition. Therefore, the buildings are constructed quickly and once occupied, require a court order and a decision of the municipal council to be demolished. Presently three decades after their appearance, over 45% of Istanbul's population live in gecekondu settlement areas.

The gecekondu phenomenon has heavily influenced Turkish urban dwelling environments. Compared to counterparts in most other developing nations, the gecekondu is more substantial, constantly improving, and more adaptable to change and development. Squatter dwellers are generally satisfied and proud of their shelters; therefore the environments are very well maintained. The fact that they own their shelter gives the users a feeling of responsibility and a desire for self-improvement.

The Squatter Law of 1966 defines three concurrent policies for the resolution of the squatter problem:

- Elimination; removal of squatter settlements from valuable land/locations and of squatter settlements constructed after 1966.
- Improvement; legalization and rehabilitation of squatter settlements developed prior to 1966.
- Prevention; planning of areas and/or provision of housing options for low income groups and resettlement of squatter dwellers who are affected by the Elimination Policy.

The improvement of existing squatter settlements, although very necessary, is costly because of inefficient layouts. It is in the Prevention Policy that new models for low income urban development should be established. This is the focus of our study.

# TURKEY

## NATIONAL CONTEXT

### 1. PRIMARY INFORMATION

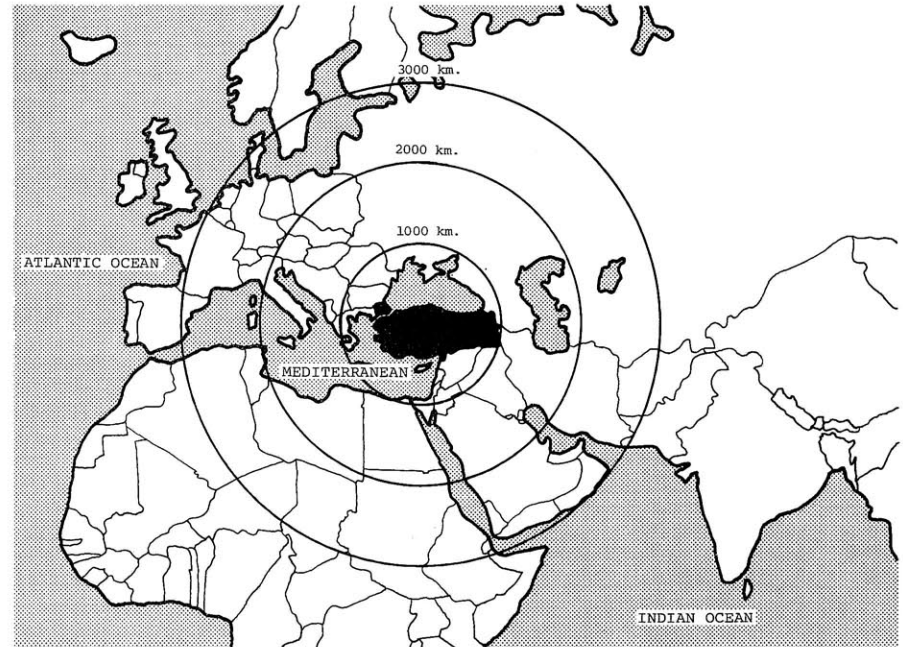
Country:	The Republic of Turkey	
Capital:	Ankara	
Population:	35,666,549 (1970 Census)	
Population growth:	2.7% per year	
Area:	779,452 square kilometers	
Language:	Turkish	
Currency (1975):	Turkish Lira (14.5TL=\$1)	
Per capita income:	5000TL per year (1972)	
Religion:	Moslem	
Government:	Democracy	
Major cities:	Istanbul	2,247,630*
(1970 Census)	Ankara	1,208,791
	Izmir	520,686
	Adana	351,655
	Bursa	275,917
	Gaziantep	225,881
	Eskisehir	216,330
	Konya	200,760
	Kayseri	167,696
	Diyarbakir	138,657
	Erzurum	134,655
	Samsun	134,272
	Sivas	132,527

\*Inside municipality boundaries

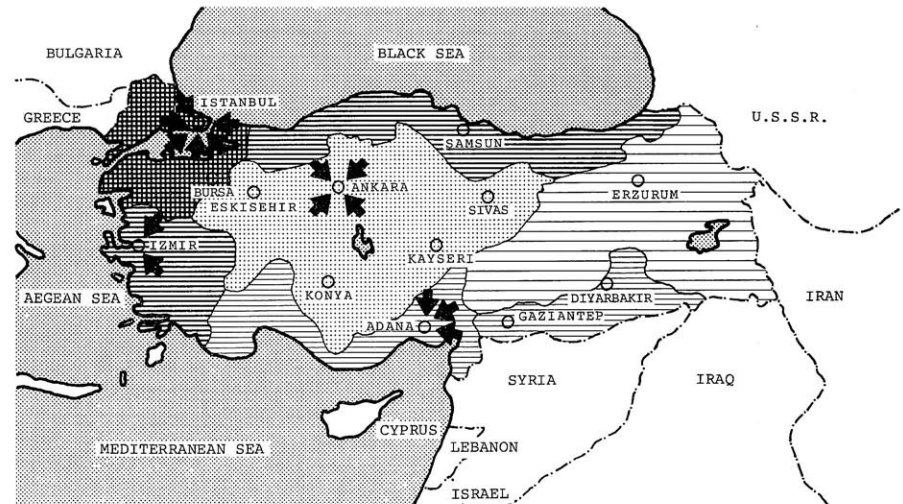
### 2. GEOGRAPHY

Turkey is situated in the temperate middle latitudes, between 36 and 42 degrees of the Northern hemisphere. European Turkey, the Thracian peninsula with an area of 23,764 square kilometers, and Asian Turkey, the Anatolian peninsula with an area of 755,688 square kilometers together has approximately the same area as France and West Germany combined. The country is rectangular in shape; 1600 kilometers from East to West and 650 kilometers from North to South. The sea coast runs 8,172 kilometers along the Mediterranean, the Aegean and the Black Sea. The country is part of the Great Alpine-Himalayan Mountain belt. It is located in a major earthquake region. The Mediterranean and Black Sea coasts are lined with steep mountains. Mountain ranges run perpendicular to the Aegean Sea coast. Most of Eastern Turkey is mountainous. The average altitude is 1,010 meters above sea level. The highest peak, at 5,165 meters, is Mount Ararat. There are numerous rivers of varying lengths and characteristics distributed throughout the Country. 65 lakes cover approximately 9,000 square kilometers. Lake Van (3,738 km<sup>2</sup>) and Salt Lake (1,642km<sup>2</sup>) are the most important.

Contrasting climates define the different regions of Turkey. The Southern coasts have mild winters and hot summers with temperatures often exceeding 32° C. Rainfall averages range from 500 to 750 mm. per year. The Black Sea coast has mild winters and moderately hot summers with temperatures averaging 22° C. during August. With 2500 mm. of average annual rain fall, it is the only region in Turkey with a moisture surplus throughout the year. The interior plateau has a wide range of temperature averaging from -1° C. in winter to 22° C. during summer. Annual rainfall averages between 250 and 430 mm. Eastern Turkey has extremely cold winters with hot and dry summers.

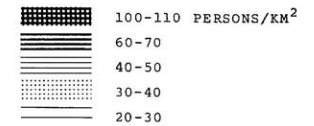


LOCATION OF TURKEY

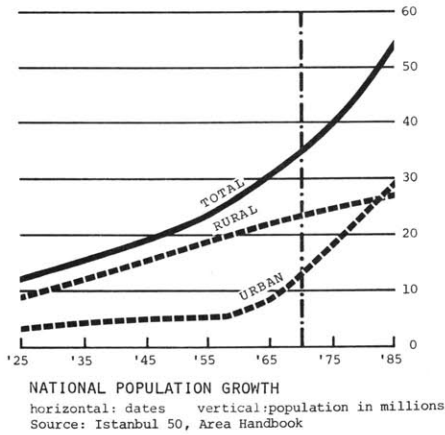


NEIGHBORS, MAJOR CITIES, DENSITIES, MIGRATION PATTERNS

Source: Adapted from Area Handbook and Turkey Report A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub>.



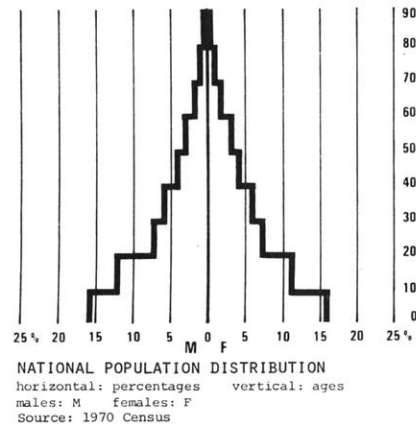




3. POPULATION

The ethnic-religious composition of the population is heavily Turkish (90%) and Moslem (99%). Moslem ethnic groups; Kurdish (7%), Arabic, Circassian and Lazi, live in rural areas of Eastern Turkey. Non-Moslem ethnic groups; Greek, Armenian and Jewish, live in urban areas, the largest groups being in Istanbul (1965 Census). The extended family is still the basis of social life in Turkey. 80% of rural and 40% of urban households include relatives. Family loyalty overrides other obligations in tradition-oriented areas. One's honor and dignity are tied to the repute of the kin group and especially to that of its women.

The single most significant distinction in Turkish society remains the separation of the educated from the uneducated. In Turkey, more than in most Middle Eastern countries, an understanding of the social structure requires an understanding of the social and cultural position of the elite.



4. HISTORY

Between 6500-5700 B.C. a prosperous Stone Age commercial center developed in Central Anatolia. The Hittite and Greek Civilizations followed. In 330 A.D. Constantinople (Istanbul) was inaugurated as the capital of the Eastern Roman Empire. The victory of Malazgirt in 1071 marked the first penetration of Turks into Anatolia. In 1453 Ottoman Turks conquered Byzantium (Istanbul) and established it as the capital of the Ottoman Empire. In 1918, at the end of World War I, the Allied Forces dissolved the Ottoman Empire.

On October 29, 1923, the Republic of Turkey was established under the leadership of Mustafa Kemal Ataturk who instituted reforms to westernize Turkey. In 1934 the First Five Year Plan for the Development of Industry was announced. Turkey stayed neutral during World War II, signed the United Nations Charter in 1945, and in 1947 joined the International Bank for Reconstruction and Development and the International Monetary

Fund. In 1952, along with Greece, Turkey became a full-fledged member of Nato and in 1959 applied for associate membership in the European Common Market.

5. GOVERNMENT

The first attempt to establish a parliamentary system of government along western lines was made in 1876 during the Ottoman Empire. The Turkish Grand National Assembly was first formed on April 23, 1920. In 1924 the Ataturk Government drafted and the assembly adopted a new constitution which remained in effect until 1961. The 1961 Constitution was amended in 1971 to give government more control of education, communications and other institutions. The National Government is comprised of the legislative, executive and the judicial branches. The President (Chief of State), at least 40 years old and a university graduate, is elected by the Grand National Assembly with at least a two-thirds majority, to a non-consecutive seven year term. The President acts as Commander in Chief of the Armed Forces, presides over the Council of Ministers, appoints and receives diplomatic representatives, and is authorized to ratify and promulgate international agreements. Most importantly, he appoints the Prime Minister and the Council of Ministers. These appointments, to form the government, must be approved by an absolute majority of the National Assembly. The 1961 Constitution established a bicameral Grand National Assembly. Senate members are either popularly elected (150), appointed by the President or chosen for life. The 450 members of the National Assembly are popularly elected.

The administration consists of central and local organs. The central government is comprised of provinces, districts and sub-districts established in accordance with geographic, economic and public service requirements. Each of the 67 provinces is under the supervision of a governor. At the local level each provincial and district capital, regardless of size, and each town

of more than 2,000 people, is organized as a municipality administered by a mayor. The smallest unit is the village which is virtually a self-governing body. All Turkish citizens over 21 years of age, who have not been legally deprived of the right to vote because of criminal activity or failure to fulfill military service requirements, are eligible to vote.

The Constitutional Court and subordinate civil, criminal and appeals courts exercise judicial power in Turkey. The Judicial system is headed by the High Council of Judges which rules on all matters relating to the careers of judges. The Council consists of eleven regular and three reserve members chosen by an absolute majority of the Court of Appeals from among its own membership. A member of the Council serves a four year term and is eligible for re-election. Only the Constitutional Court is empowered to bring a member of the High Council of Judges to trial.

The national policies and goals of the Third Plan Development Strategy for 1995 are:

1. Raise the standard of living to four times the present income level.
2. Accelerate industrialization in a mixed economy.
3. Decrease dependence on foreign resources.
4. Solve unemployment and improve the income distribution pattern.

The programs are outlined as follows:  
Economy;

- increase production of industrial materials and industrial exports
- increase savings (private and public)
- change investment allocation patterns and tax system
- redistribute investment and income regionally

Health;

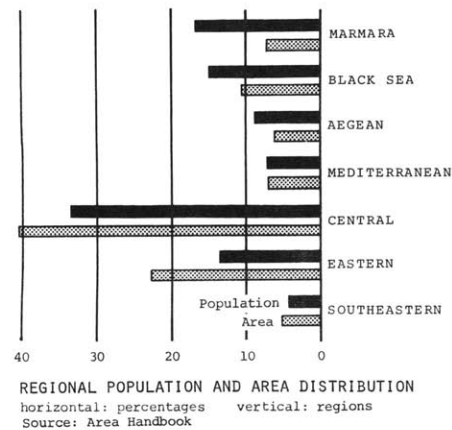
- increase the number of health centers

Education;

- raise the enrollment ratios in education at all levels
- train qualified manpower

Housing;

- supply adequate housing facilities for an urban population expected to reach 70% of the total national population
- introduce land reform and provide village water supply

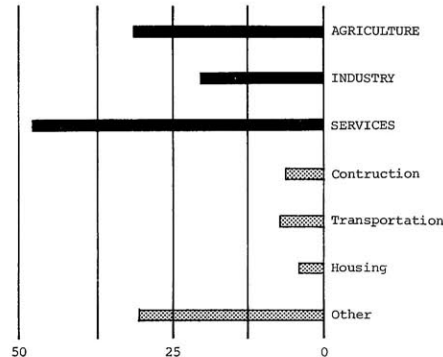


6. ECONOMY

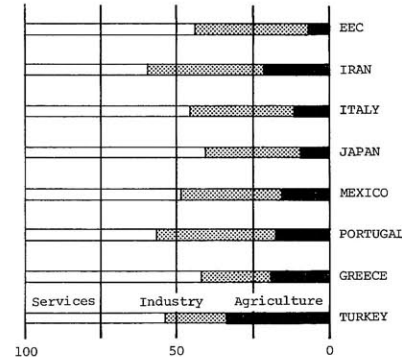
Turkey has a mixed economy. The National Product is shared by the public and private sectors. Most heavy industry and utilities are concentrated in the public sector. The economy although still heavily agricultural, maintaining two-thirds of the population, is moving toward the status of an industrialized nation. Turkey has an excess labor supply which is compounded by a lack of skilled manpower. The educational system is just beginning to produce the skilled personnel necessary to operate an industrialized economy. Skilled manpower is also being imported into the economy as Turkish workers return from jobs in Europe. The country is rich in natural resources. Exploration is expanding the inventory of mineral resources substantially. Unfortunately known petroleum reserves are limited. Approximately two-thirds of the petroleum consumed in 1972 was imported. The annual growth of the Gross Domestic Product from 1963 to 1971 averaged 6.5% at constant prices. During the same period per capita income rose 4% despite a population growth of 2.5%.

7. EDUCATION

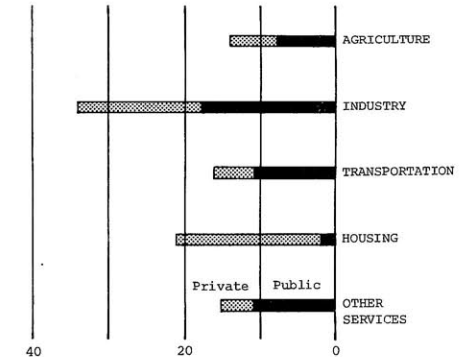
When the Turkish Republic was formed in 1923 only 10% of the population over the age of five was literate. By 1973 the literacy rate was 57%. The State provides tuition free but limited educational opportunities at all levels; primary, secondary, higher and adult education. In addition, private schools, both Turkish and foreign, offer educational opportunities. Primary education is compulsory for five years (the 6-14 year old age bracket). General secondary education consists of three years in middle school followed by an additional three years in high school. Vocational and technical secondary schools are being established to create a skilled labor force. Universities and other institutions of higher education, being independent in teaching and research, have complete scholastic autonomy. In 1973



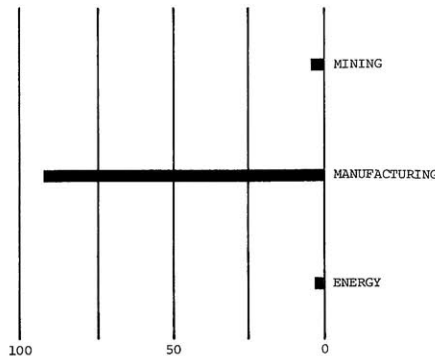
SECTORAL DISTRIBUTION OF GDP (1971)  
horizontal: percentage vertical: sector  
Source: Third Five Year Plan



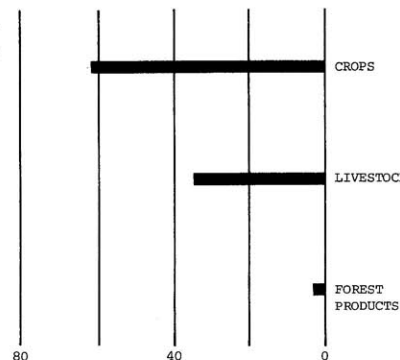
COMPARATIVE SECTORAL DISTRIBUTIONS (1968)  
horizontal: percentage vertical: country  
Source: Third Five Year Plan



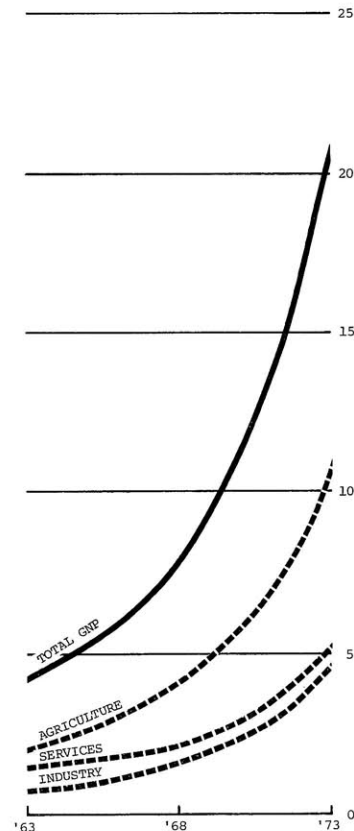
SECTORAL INVESTMENTS (1963-71)  
horizontal: percentage vertical: sector  
Source: Third Five Year Plan



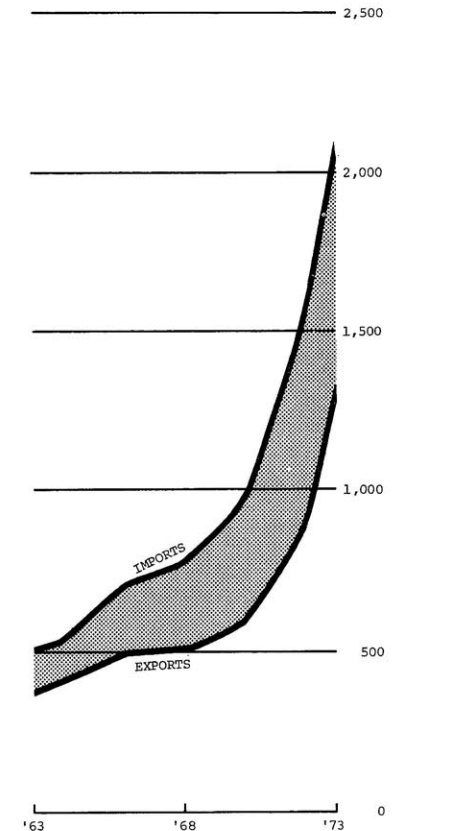
COMPOSITION OF INDUSTRY (1972 PROJECTION)  
horizontal: percentage vertical: industry  
Source: Third Five Year Plan



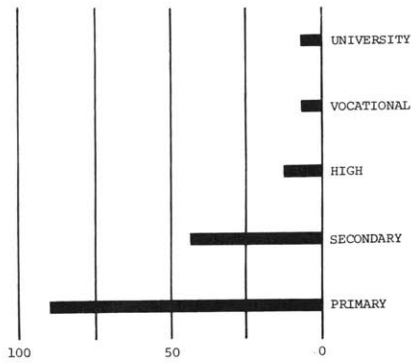
COMPOSITION OF AGRICULTURE (1972)  
horizontal: percentage vertical: agriculture  
Source: Third Five Year Plan



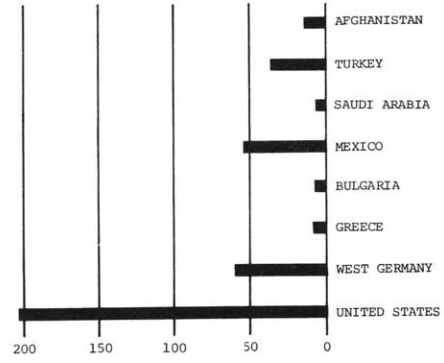
SECTORAL GROWTH OF GNP  
horizontal: year vertical: U.S. dollars (billions)  
Source: S.I.S. Publication No. 712



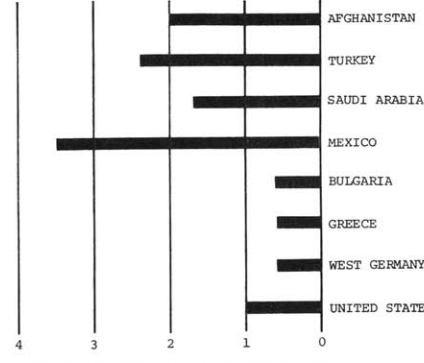
IMPORTS AND EXPORTS  
horizontal: year vertical: U.S. dollars (millions)  
Source: Turkey 1975



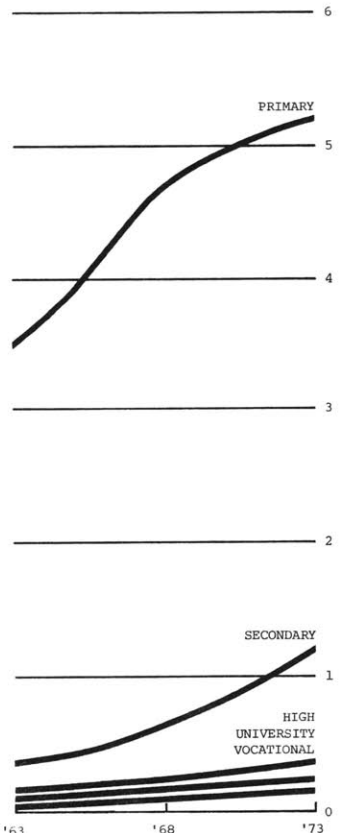
**STUDENT/SCHOOL POPULATION**  
horizontal: percentage vertical: education  
Source: Third Five Year Plan



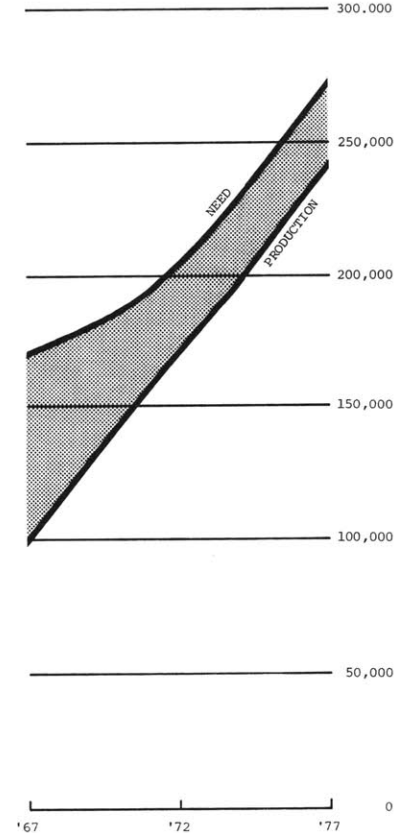
**POPULATION (1972)**  
horizontal: population (millions) vertical: country  
Source: World Bank Atlas



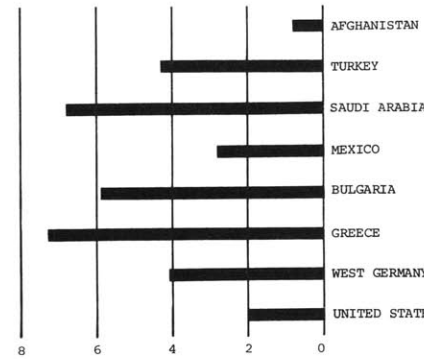
**POPULATION GROWTH RATE (1965-72)**  
horizontal: percentage vertical: country  
Source: World Bank Atlas



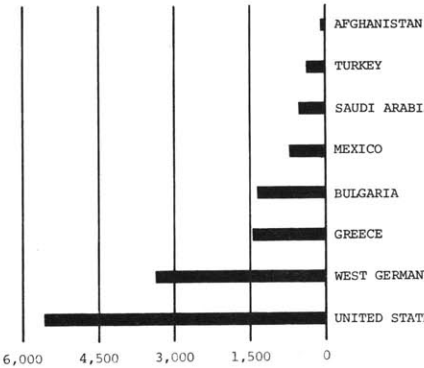
**STUDENT POPULATION**  
horizontal: year vertical: population (millions)  
Source: Third Five Year Plan



**HOUSING NEED/PRODUCTION**  
horizontal: year vertical: units  
Source: Statistical Data: Housing in Turkey



**PER CAPITA INCOME GROWTH RATE (1965-72)**  
horizontal: percentage vertical: country  
Source: World Bank Atlas



**PER CAPITA INCOME (1972)**  
horizontal: U.S. dollars vertical: country  
Source: World Bank Atlas

a bill was proposed for the official take-over of universities whenever violence threatened the educational process. Provision has been made for the education of adults who have not completed their normal schooling or who seek training in new skills.

**8. STANDARD OF LIVING**

Between 1969 and early 1972 the cost-of-living index in Ankara rose from 132.7 to 201.4 and in Istanbul from 144.2 to 208. Food prices alone increased by nearly 40% in both cities. The cost of recreational and cultural services, followed by health and personal services increased sharply. Inflationary pressures were less immediately felt in the countryside but the rural population still lacked the basic amenities and services available to city dwellers. In 1972 only 10% of the villages had electricity. Water shortages were common especially in Southeastern Anatolia. Of the 1970 urban housing stock, 26% had no electricity, 45% no running water, 49% no bathing facilities, 7% no toilet and 27% no kitchen. 41% of the urban dwelling stock was considered good, 33% fair and 26% poor. The improvement of dwelling conditions is largely dependent on expansion of the infrastructure in urban areas. In 1960 the ratios of those living in rental housing was 42% for Turkey, 67% for Istanbul and 62% for Ankara. On the average over 13% of the total family income is spent for rent.

Health threats continue due to substandard housing, inadequate sewer systems in urban areas and inadequate water supplies in villages. Major infectious diseases are under control. Diarrhea and enteritis are endemic and major causes of debility and death among infants and small children. In 1970 the country had approximately 15,800 registered physicians (one physician per 2,200 people) and 72,000 hospital beds (one bed per 500 persons). Most of the physicians practice in the major cities with only 15% in rural areas. In 1972 30% of all licensed Turkish physicians were practicing outside Turkey.

# ISTANBUL, TURKEY

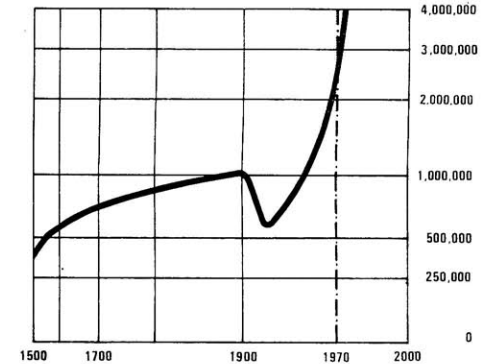
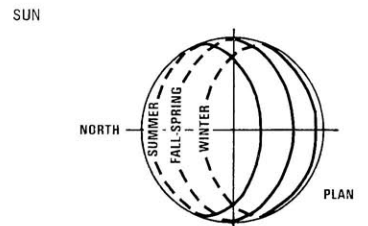
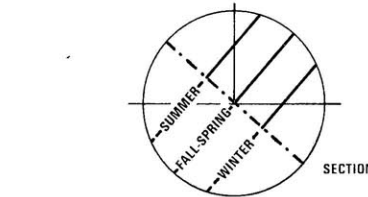
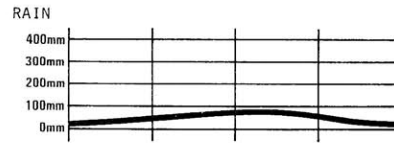
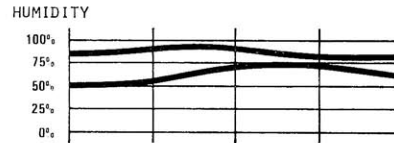
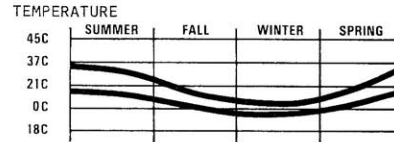
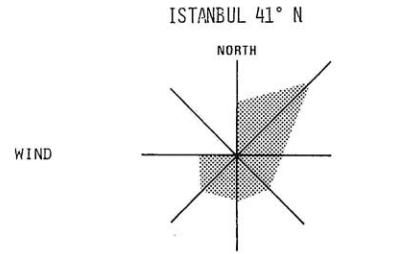
## URBAN CONTEXT

1. PRIMARY INFORMATION: Divided by the Bosphorus which links the Sea of Marmara to the Black Sea, Istanbul, the Country's largest city, principal port and tourism center, is a city belonging to both Europe and Asia. A bridge across the Bosphorus, the fourth longest suspension bridge in the world, was completed in 1973. A narrow inlet, known as the Golden Horn (Halic), divides the European side of Istanbul. The first bridge on the Golden Horn was built in 1845 between Eminonu, the historic peninsula and old city, and Galata, the modern section of the city. The Bosphorus is over 25 km. in length and averages 1.5 km. in width. Both banks rise steeply from the water forming a succession of cliffs, coves and nearly land locked bays. At the present time, the metropolitan area of Istanbul lies between Kucuk Cekmece Lake on the West and to the provincial boundary near Tuzla on the East. The urbanization sector, which is expanding rapidly, presently covers an area of 40,000 hectares. Istanbul is located at latitude 41° North, longitude 29° East. Summers are moderately hot, winters are mild with average temperatures ranging from 27 to -5 degrees Centigrade. Winters are generally the wettest months. 10 to 18 rainy days per month occur from October through May. Total annual rainfall is 666 mm. Snowy days average 9 per year.

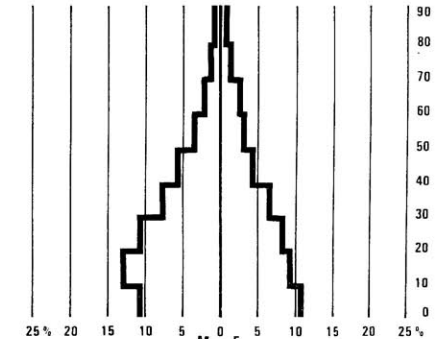
2. HISTORY: The origins of Istanbul date back to 658 B.C. when Greek colonists and Corinthians established Byzantium on the peninsula bordered by the Marmara Sea, the Bosphorus and the Golden Horn. In 330 A.D. Roman Emperor Constantine shifted his capital to Byzantium and thus named it Constantinople. The Byzantine Empire (East Roman Empire) continued until 1453 when the city was conquered by Ottoman Emperor Sultan Mehmet I and named Islambol (plenty of Moslems) which later became Istanbul. Istanbul was the capital of the Ottoman Empire until 1923, when Ankara was designated the capital

of the new Republic of Turkey. The City's population was 60,000 in 1453, 500,000 in the 1800's and 990,000 in 1940. The population and area has doubled since the 1950's, but in the early 1970's more than 70% of the population lived in the Istanbul municipality. A cosmopolitan, multi-ethnic city with a population in 1972 of 2.8 million, Istanbul has lost the political importance it had during the Ottoman Empire, but it has maintained a major role in the Nation's commercial and cultural life.

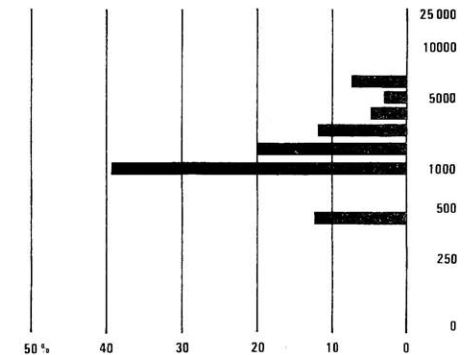
3. ECONOMY: Istanbul is an important industrial, commercial, transactional center and a major transshipping and railroad point handling 75% of the national imports and 50% of the national exports. Istanbul represents 35 to 40% of the nation's organized industrial labor force, 50% of the total income tax revenues and 50% of total private sector investments. The private sector makes up 80 to 90% of the total investments in industry and housing. In 1964, Istanbul contributed 18.3% of the total Gross National Product. Per capita annual GNP was \$416 in Istanbul versus \$157 for the Country. In 1972 Istanbul, which accounted for 8% of the total national population, produced 22% of the total GNP. GNP per capita (at current prices) was \$1065 for Istanbul and \$364 for Turkey. The economic growth rate was 11% for Istanbul and 7% for Turkey. In 1970, 83% of Istanbul's organized industrial labor force was employed on the European side, 17% on the Asian side. Small area consumption industries such as food canning, bottling, printing, textiles, chemistry, metal, furniture, take place on the European side to the north and west. Large area capital industries such as oil refineries, car and home appliance factories, machinery, stone and soil products industries are concentrated along the Istanbul-Izmit Highway on the Asian side.



URBAN POPULATION GROWTH  
horizontal: dates vertical: population  
Source: Arkitekt No: 322, Istanbul 50

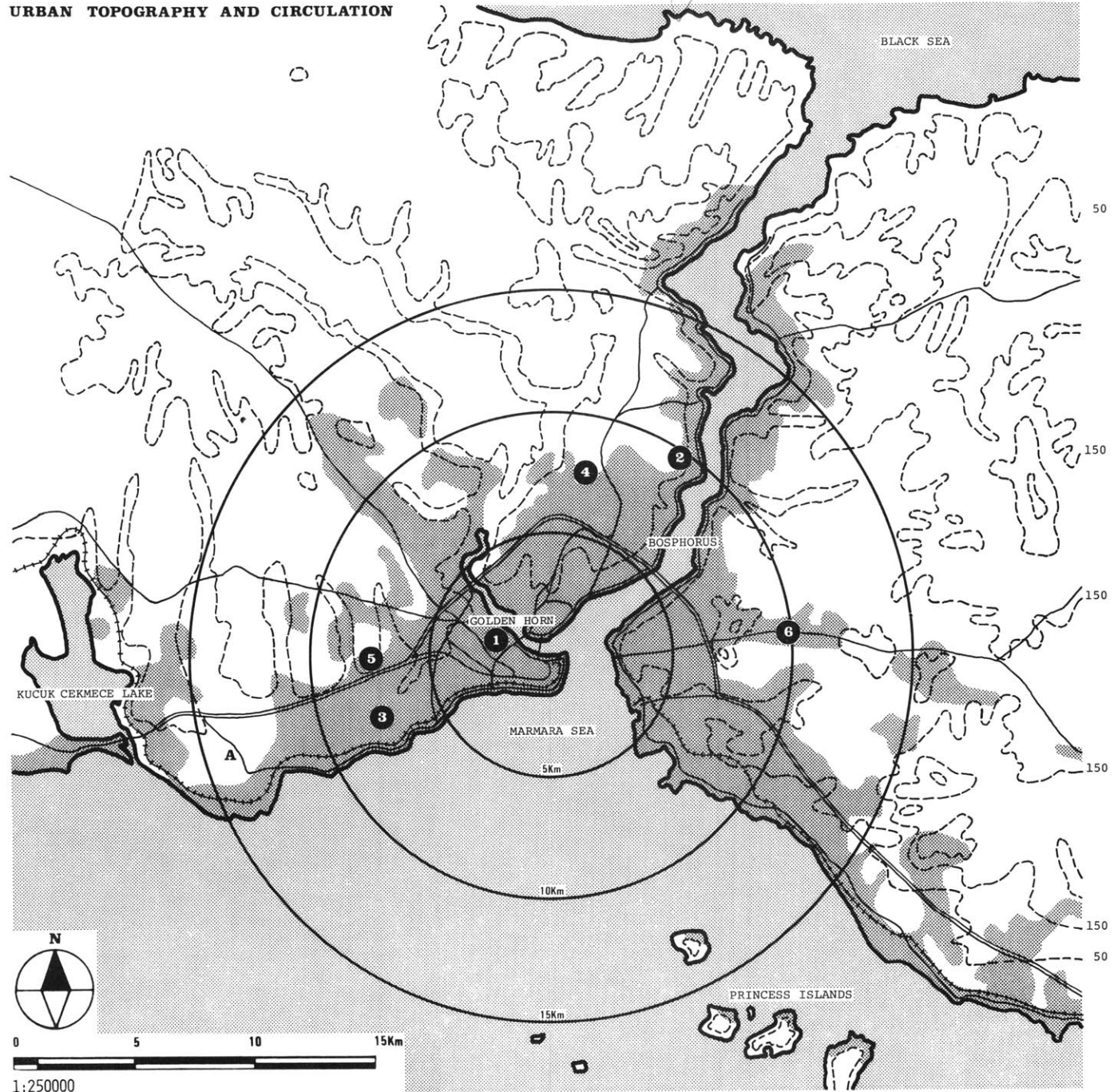


URBAN POPULATION DISTRIBUTION  
horizontal: percentages vertical: ages  
males: M females: F  
Source: 1970 Census



URBAN ANNUAL INCOME DISTRIBUTION  
horizontal: percentages vertical: dollars  
Source: Adapted from S.I.S. 1969, S.I.S. 1975

URBAN TOPOGRAPHY AND CIRCULATION



- KEY
- A** Airport
  - Primary Road
  - +—+— Railroad
  - ..... Rapid Transit
  - ▨ Built-up Area

CASE STUDIES

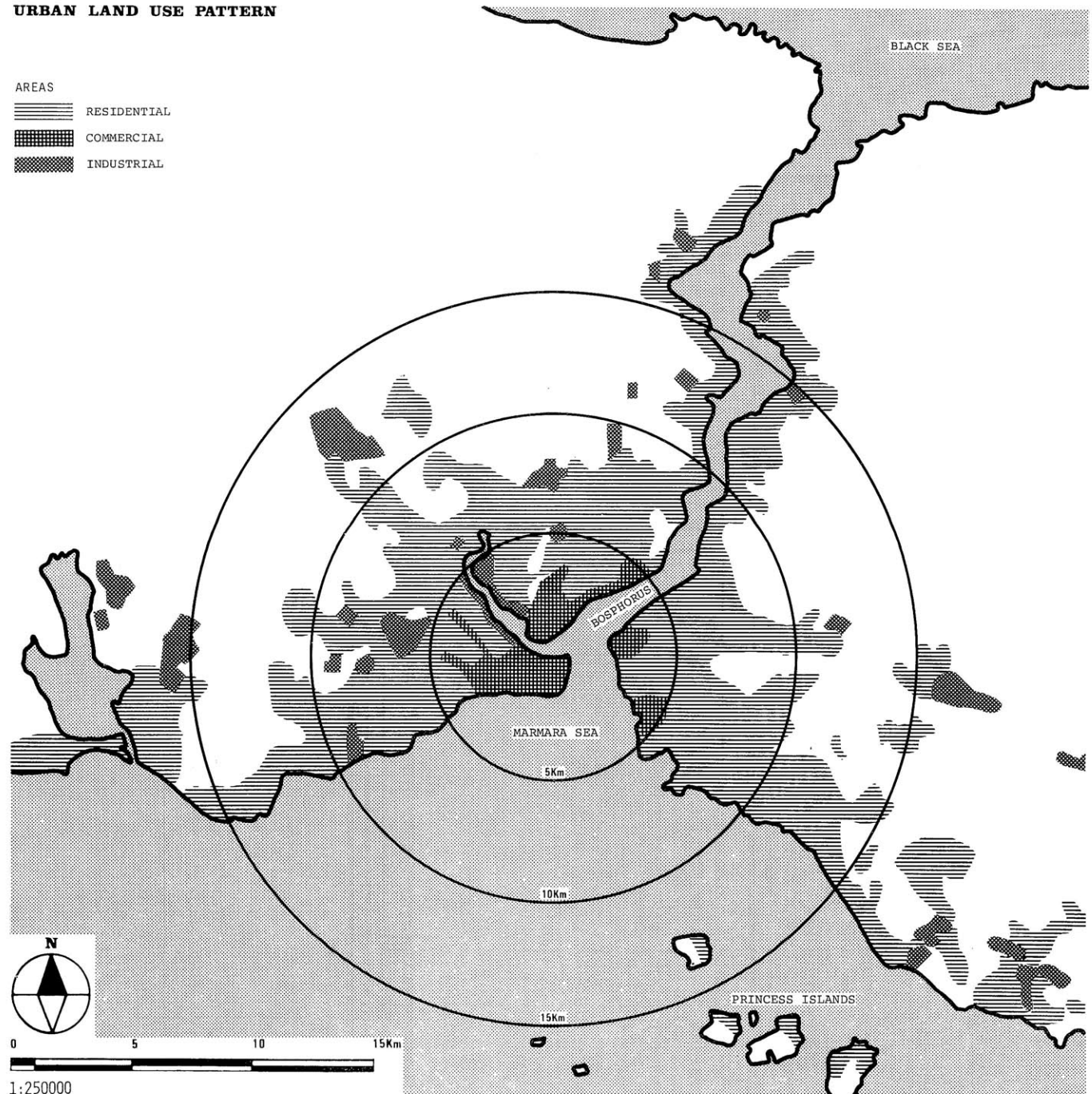
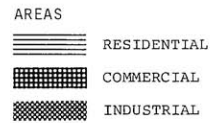
- 1** ZEYREK
- 2** RUMELIHISAR USTU
- 3** ZEYTINBURNU
- 4** GULTEPE
- 5** OSMANIYE
- 6** UMRANIYE

1:250000




4. GOVERNMENT: Since the beginning of the Ottoman Empire, the administrative organization of Istanbul has gone through many changes. The combined provincial and municipal government which was established in 1930 was separated in 1953 for purposes of efficiency. The chief provincial official is the governor who is appointed by the President on the recommendation of the Minister of Interior. There are 19 districts in the Province of Istanbul and 15 within the Istanbul metropolitan area. The Province is divided into municipalities. According to the Lausanne Treaty of 1923, the borders of the Istanbul municipality, established in 1853, cannot be changed. There are 32 other smaller municipalities located within the Province, 18 of which are in the Istanbul metropolitan area. The Municipal Administration consists of an assembly, a council and a mayor. The assembly is elected by popular vote. The organization and functions of municipal governments are prescribed in detail by national law. All Municipalities are required to draw up development plans and submit them for approval to the governor, or in the case of larger cities such as Istanbul, to the Ministry of Interior. Upon approval, the municipalities are required to conform to that plan. In 1965 the Greater Istanbul Master Plan Office was established to prepare the master plan of Istanbul to be approved by the Ministry of Reconstruction and Resettlement. The municipalities must prepare their plans according to the planning offices' goals.

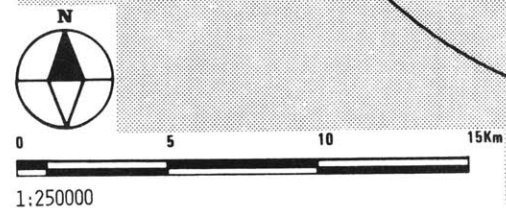
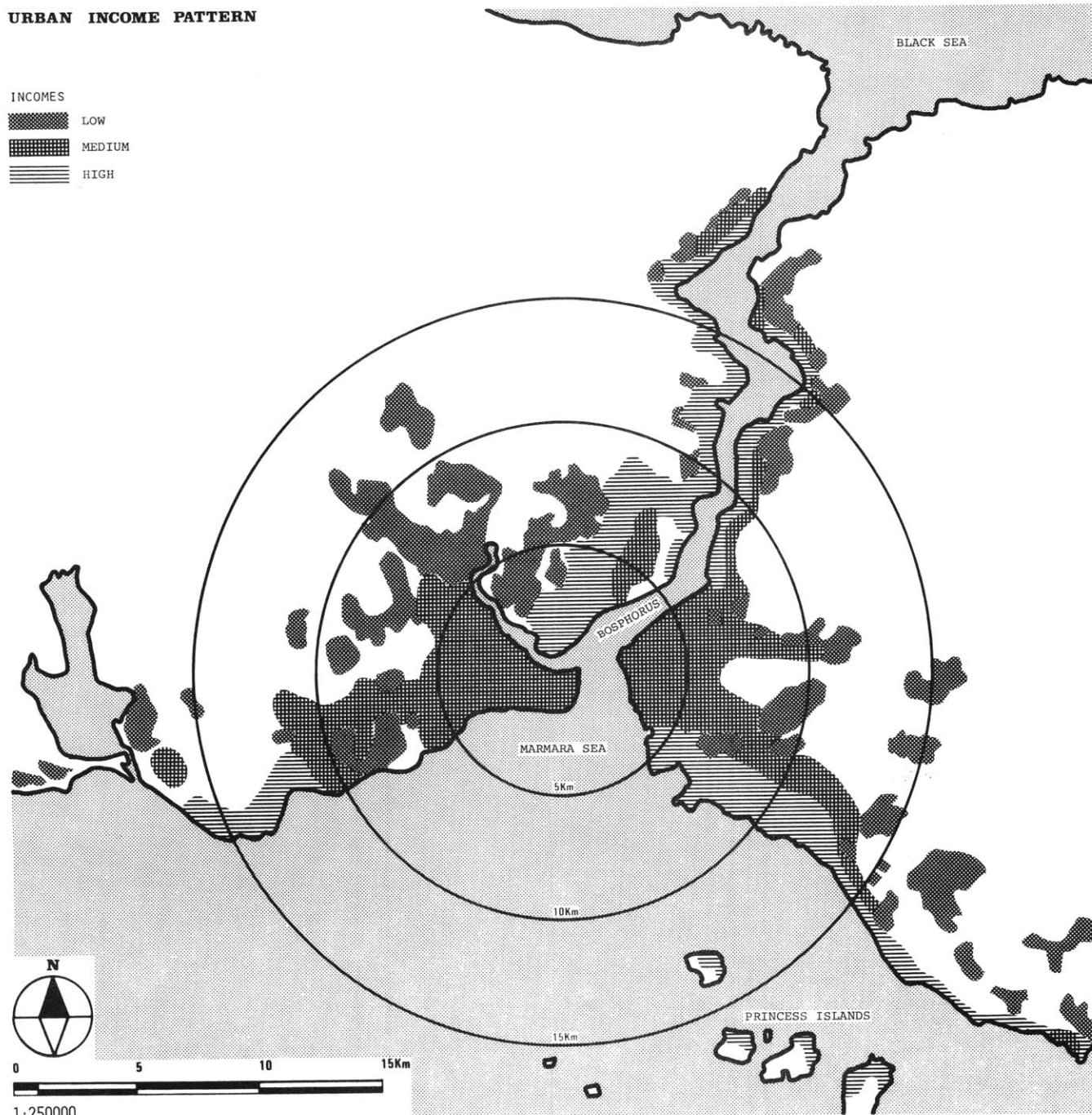
5. DEMOGRAPHY: Metropolitan Istanbul represents 8% of the total national population and 20% of the urban population of Turkey. Istanbul metropolitan population has more than doubled since 1955. In 1970, 2,247,630 of the 2,995,191 metropolitan population lived within the Istanbul Municipality; the growth rates are 5.2% and 3.5% respectively, 2.7% for Turkey and 7% for Ankara. 36.6% of the population growth was inborn and 63.4% was due to migration. In 1955, 45.5% of the population was born in Istanbul. The illiteracy rate above six years of age was 19.2% compared to a national figure of 45.2% in 1970 in a ratio of 1 to 3 between males and females. 46.4% of Istanbul's population was female. 10% of the population above six

### URBAN LAND USE PATTERN



**URBAN INCOME PATTERN**

INCOMES  
 LOW  
 MEDIUM  
 HIGH



years of age had completed high school and 3% higher education.

6. SOCIO-CULTURAL: Despite the continued dominance of the educated elite, changing circumstances such as economic growth and diversification have substantially altered the composition and therefore the interests of the powerful national elite. Since World War II, increased economic opportunities have greatly expanded the size and power of the middle class based in commerce, industry, technocracy, education, and private practice of the learned professions. However, wealth, occupation, family heritage and place of residence still distinguish the different social classes. The social hierarchy moves upward from unskilled workers to industrial workers and service employees to salaried people and small businessmen to the middle class and finally to the traditional elite. Istanbul's population is the most heterogeneous in Turkey. In 1965 28.4% of Turkey's minority population accounted for 5.1% of the population of Metropolitan Istanbul.

7. SOCIO-ECONOMIC: According to the 1966 Survey of Consumer Expenditures in Istanbul 51.1% of the population had annual incomes under \$850, 21.7% between \$850-\$1285, 19.8% between \$1285-\$2571 and 7.3% above \$2571. In the last two decades Istanbul's industries have tripled and the urbanized area doubled. In 1965 38% of the population was employed. Low income settlements are scattered around the periphery of Istanbul and in pockets of the city's historical core. The middle income areas are concentrated in the historic peninsula. The remaining middle and high income areas are spread along the shores of the Sea of Marmara, the Bosphorus and to the northeast of the historical core.

8. HOUSING: In 1963, 660,000 people were living in 120,000 squatter dwellings (geceknodu - literally built at night) which made up 40% of the dwelling stock and 45% of the population in the metropolitan area. 19% of the squatters in Turkey lived in Istanbul. By 1972 there were 200,000 squatter dwellings housing 30-40% of the population in 50% of the built up area. 30,000 housing units are needed each year in Istanbul. 17,000 are provided by the private sector, 3,000 by the public sector and 10,000 by squatter settlers. In 1972 there were an estimated

80,000 registered squatter dwellings. 10,000 unregistered squatter dwellings were being built every year at a rate of 20 to 30 per day. Of the total housing investments only 5.1% is from the public sector. 51% of public sector housing investments are allocated for squatter settlement improvements. Construction tax laws discourage construction of dwelling units in excess of 100 m<sup>2</sup>. According to No. 1318 Financing Law, dwellings not exceeding 100 m<sup>2</sup> are exempt from building construction taxes. By public housing standards, 30.5 to 63 m<sup>2</sup> is minimum and 40 to 100 m<sup>2</sup> is the average dwelling size, range being relative to family size. Urban dwelling stock statistics show a decrease from 2.17 persons per room in 1955 to 1.87 persons per room and 2.7 rooms per household in 1972. In 1970 41% of the urban dwelling stock was in good condition, 33% in fair and 26% in poor condition. The percentages for squatter dwellings were 30%, 40% and 30% respectively. The average dwelling areas for high income families is 24.3 m<sup>2</sup> per person as opposed to 7.2 m<sup>2</sup> per person for squatter families. The densities average 250 persons per hectare in high income areas and 320 persons per hectare in squatter settlements.

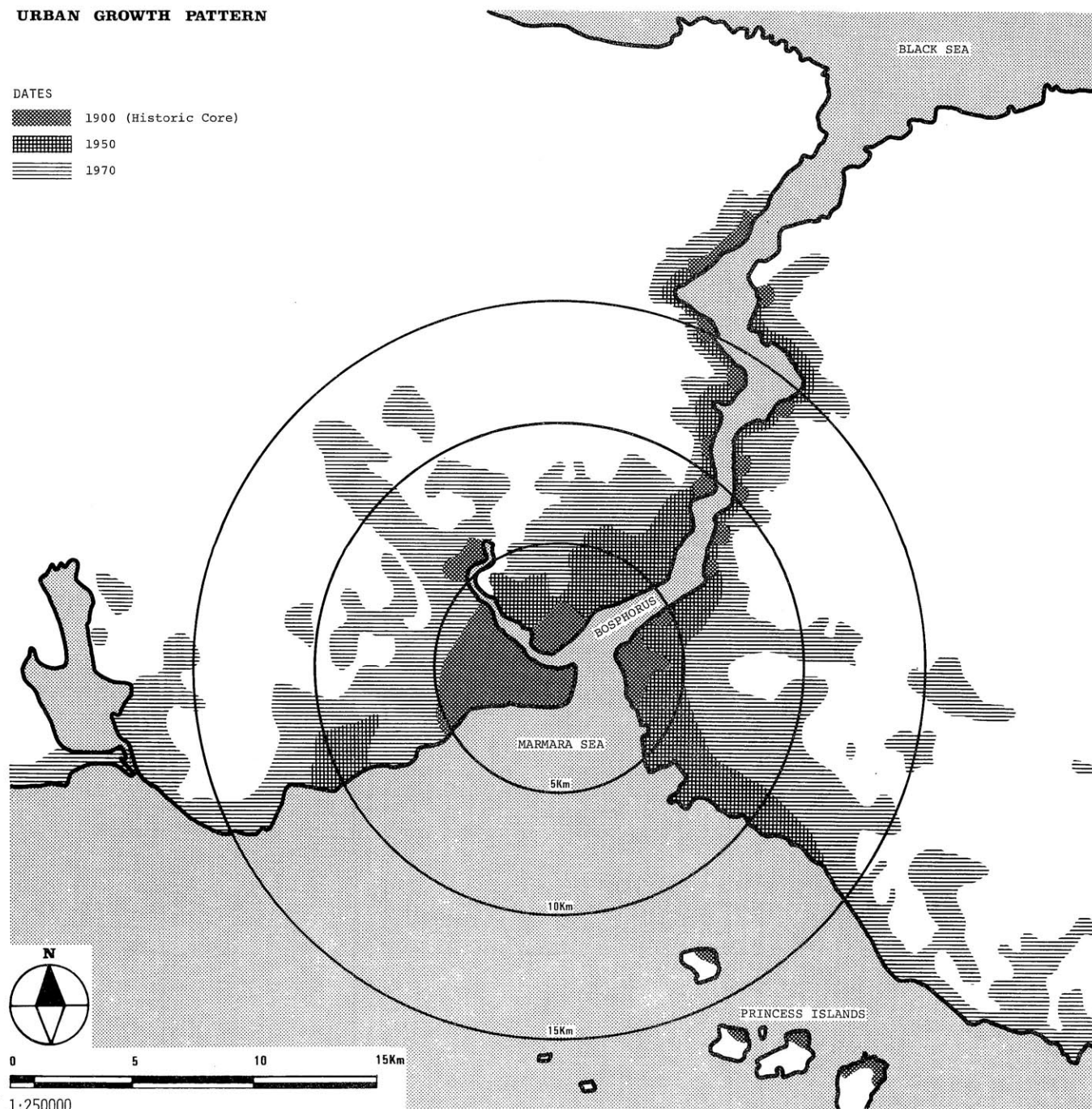
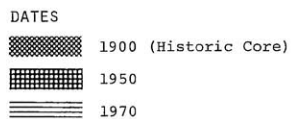
ISTANBUL: (top left) View of Suleymaniye Mosque on the historic peninsula from Galata Bridge which crosses the Golden Horn.

(top right) View of center city from a minaret of Fatih Mosque. The foreground shows typical high density middle income housing. Suleymaniye Mosque is to the right, Ataturk Bridge is on the left and Galata Bridge in the distance.

(bottom left) Passenger ferries, car ferries and small cargo boats link the European and Asian sections of the city.

(bottom right) Looking south along the Bosphorus toward downtown Istanbul. The bridge, the world's third longest span suspension bridge, opened in 1973.

**URBAN GROWTH PATTERN**

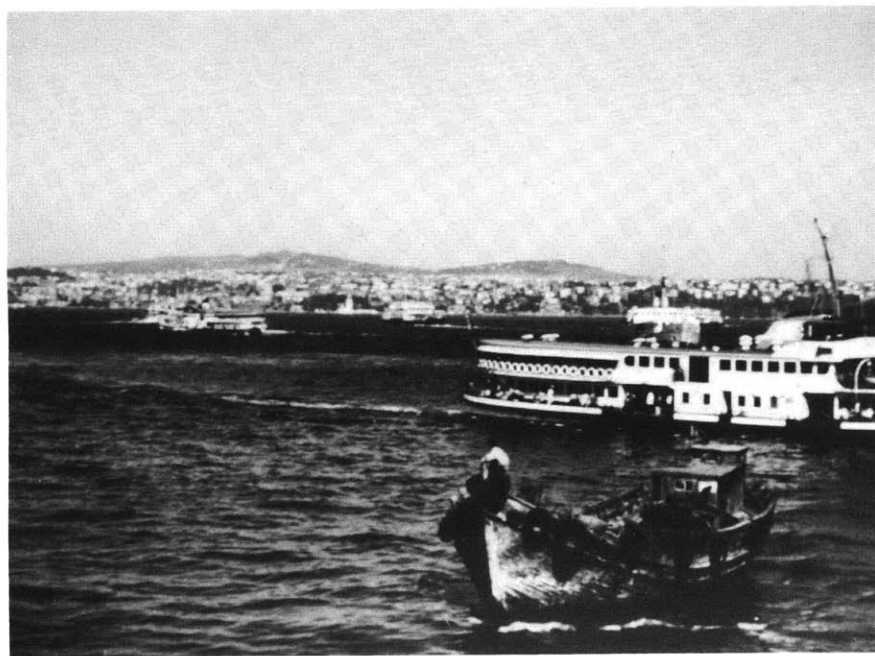


**URBAN CONTEXT SOURCES**

- Topography and Circulation: (accurate) Updated Office Plans, Greater Istanbul Master Plan Office, 1970.
- Land Use Pattern: (accurate) IBID.
- Income Pattern: (accurate) IBID.
- Growth Pattern: (accurate) IBID.
- Climate: Konut Projeleri Yonunden Iklim Ozelliklerinin Analizi ve Degerlendirilmesi - Istanbul, Ankara, 1968.
- Photographs: C. Ercan, 1969; M. and N. Butler, 1970, 1971, 1974.
- General Information: Mimarlik, No. 5, 1970; Area Handbook of Turkey, R. Nyrop, Washington, D.C., 1973; Istanbul 50, Il Tmar Mudurlugu, 1973; Arkitect, No. 322, 1966.

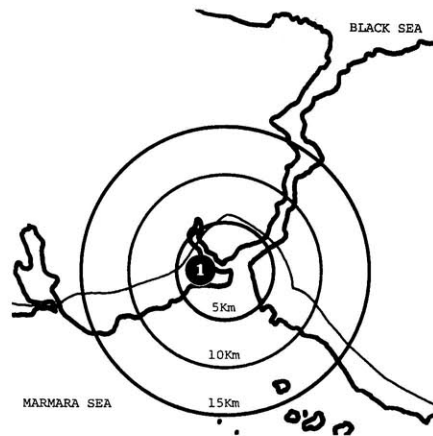
1:250000



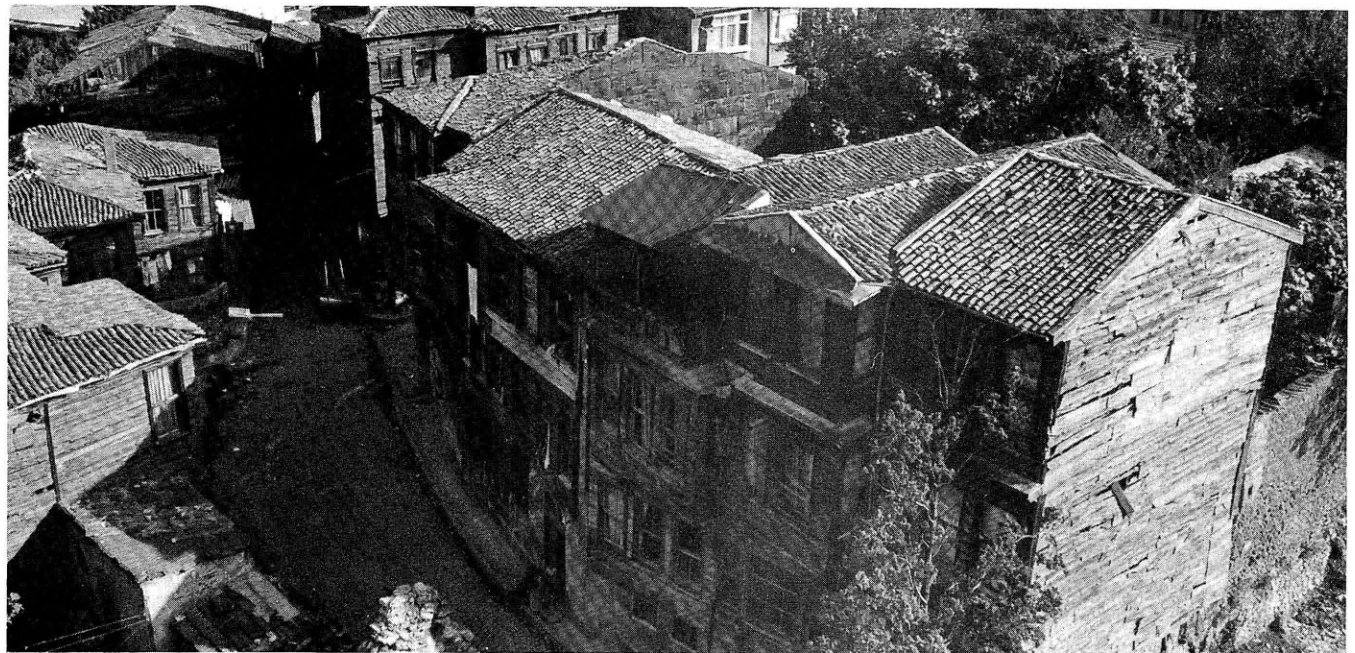


# 1 ZEYREK, İstanbul

PRIVATE, LOW INCOME, TRADITIONAL  
URBAN HOUSES (ROOMS/APARTMENTS)

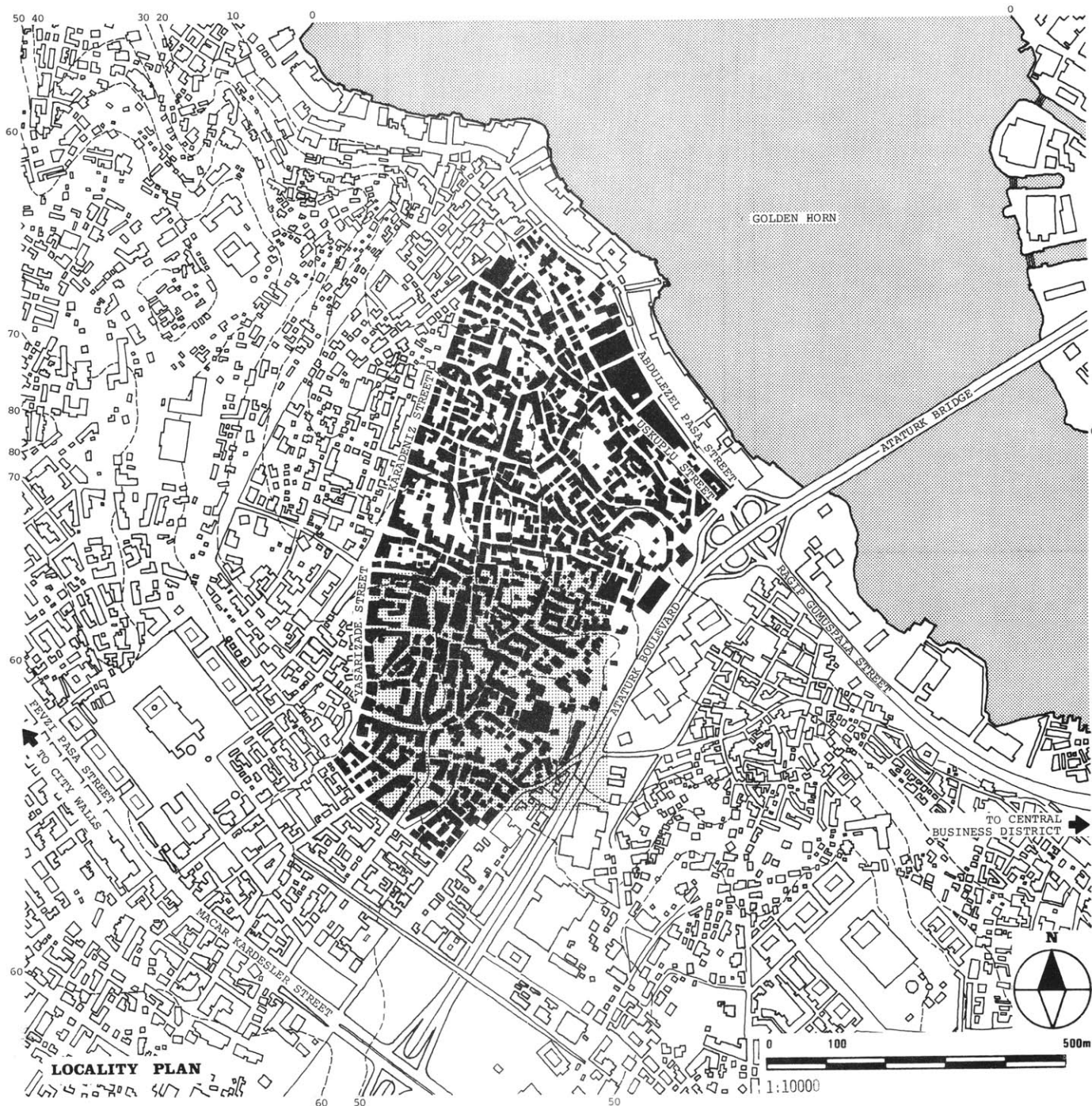


**LOCATION:** Located on the historic peninsula of the old city, the site is in the hub of the city. Ataturk Boulevard, an important traffic artery defines the eastern boundary of the site. The Golden Horn provides the northern boundary. The eastern and southern boundaries are defined by high density medium income residential development.



**ZEYREK, Istanbul:** (top) View from the Zeyrek Mosque looking toward the Golden Horn. The locality developed in the 1600's.

(bottom) Old and deteriorating wooden houses along narrow streets are characteristic of the locality.



**ORIGINS:** The historic peninsula between the Sea of Marmara, the Golden Horn and the old city walls is the oldest part of Istanbul. It is rich in ancient ruins, landmarks and old wooden houses. The old quarter of Zeyrek, with three and four story mansions in large gardens integrated with smaller one and two story row houses with small gardens, was one of the wealthiest neighborhoods of Ottoman Istanbul. The character of the neighborhood started changing in the 1930's. The established family heirs started moving away to new middle and high income areas, renting their Zeyrek properties to newcomers. The one-family mansions became multi-family dwellings. Later, due to building deterioration and the high cost of maintenance, landlords began building new masonry and concrete apartment buildings in place of the old wooden houses. Because of this rapid loss, historical societies and restorationists have begun to designate a large number of the old wooden structures as historic. Therefore, by law these buildings cannot be torn down. Thus, many landlords have either allowed their buildings to deteriorate further and/or found it advantageous to charge low rents but further increase the number of tenants in their structures. Today old residential quarters similar to Zeyrek remain as pockets throughout the center city.

**LAYOUT:** The locality exemplifies the traditional organic residential development of Istanbul. Lot size and configuration is totally independent of the circulation network. The daily activities of the house are focused to the interior. The layout is primarily oriented to the pedestrian. Many lots are developed into clusters. Streets and walkways wind through the area interconnecting one neighborhood to another by following topography. The streets lead to nodes typically formed by a small mosque, primary school, religious meeting places, a library, fountain, shops and a coffee house. In contrast the strong automobile oriented gridiron pattern of the adjacent areas exemplifies the more recent residential developments in Istanbul.

SELECTED SEGMENT

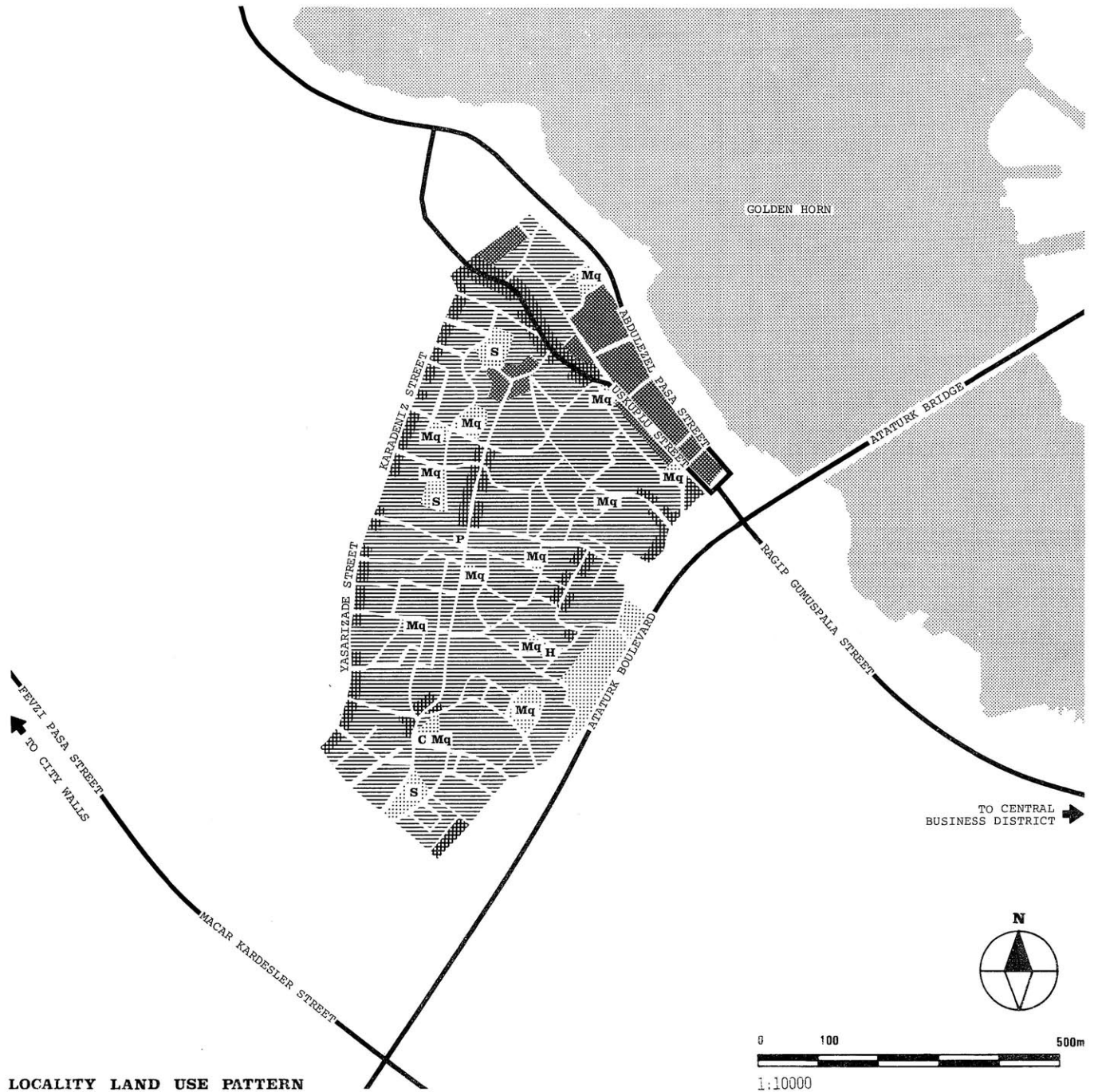
LAND USE: An unrestored church, mausoleum and other historic structures are dispersed throughout this residential community. Small nodes of neighborhood oriented commercial establishments exist within the locality with open markets occurring on the streets of the different neighborhoods during the week. Linear commercial activity along Kara Deniz Street forms the western boundary of Zeyrek. Toward the Golden Horn land use shifts from residential to light industrial and commercial activity with small workshops and stores lining the narrow streets. Factory and warehouse facilities are located between the Golden Horn and Abdulezel Pasa Street, the northern boundary of the locality. A strip of steeply sloping open land, with an historic ruin and further south a large health clinic, separates Zeyrek from Ataturk Boulevard. Schools, mosques and other community facilities are scattered through the site.

AREAS

-  RESIDENTIAL
-  COMMERCIAL
-  INDUSTRIAL
-  OPEN SPACES

KEY

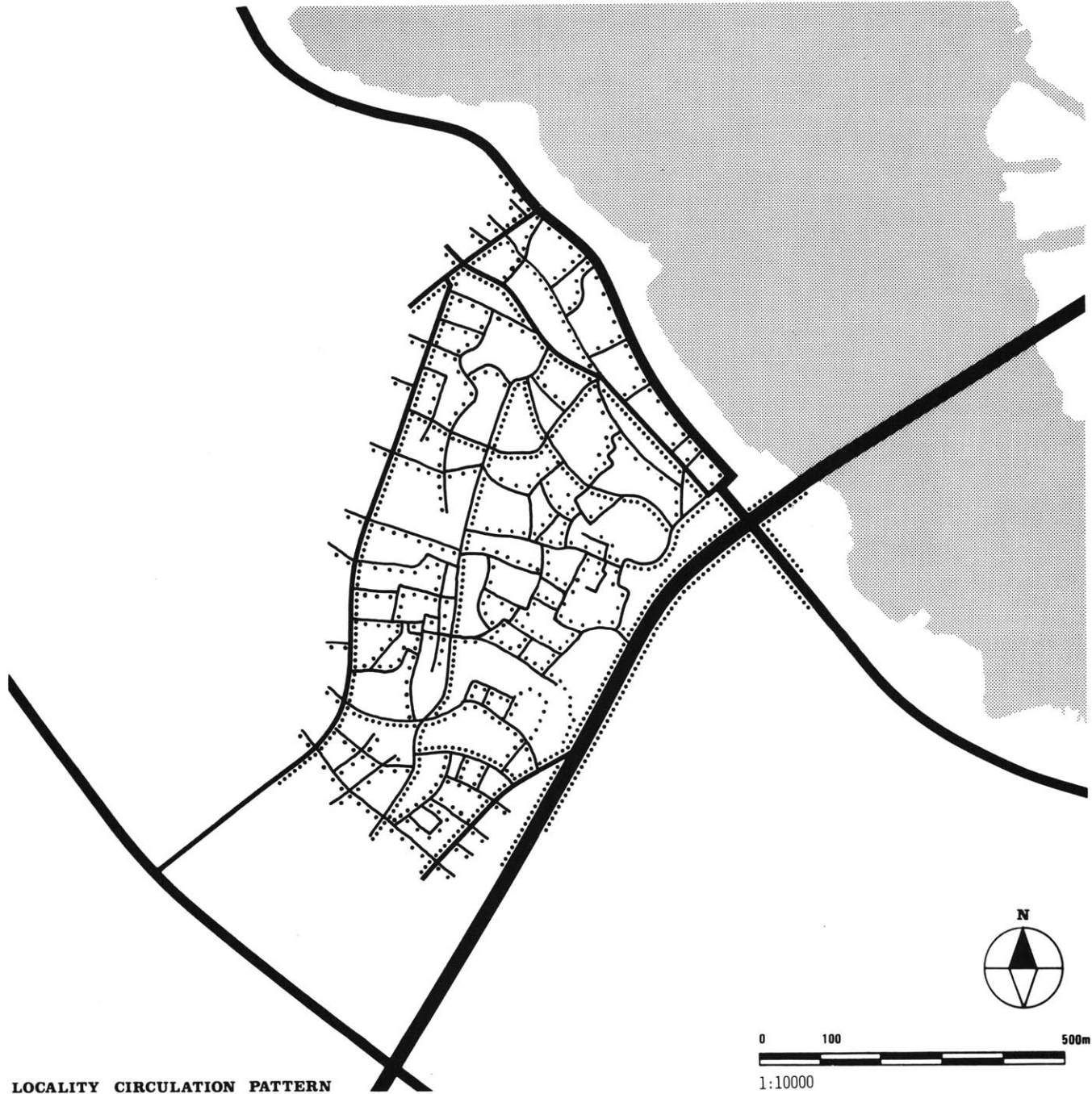
- Pk Parking
- P Police
- F Fire Department
- S School
- Mq Mosque
- R Recreation
- L Library
- U University
- H Health
- PO Post Office
- SS Social Services
- M Market
- C Cemetery
-  Bus
-  Rapid Transit



LOCALITY LAND USE PATTERN



CIRCULATION: A network of pedestrian dominated narrow streets and walkways wind through the locality. With only few exceptions, all streets are paved, most having curbs and extremely narrow sidewalks. Streets rather than sidewalks are used by pedestrians. Also, the lack of open space within the locality encourages children to play in the streets. Walkways are narrow and often include steps as they follow the topography. No through vehicular traffic penetrates the locality. Heavy vehicular traffic does travel along the narrow streets parallel to the Golden Horn.



KEY  
—— VEHICULAR  
..... PEDESTRIAN

LOCALITY CIRCULATION PATTERN

0 100 500m  
1:10000

POPULATION: No formal statistical data is available. The locality consists of five neighborhoods with populations ranging from 3,056 to 10,967 persons. Each neighborhood represents the smallest unit of local government headed by a "muhtar" (neighborhood mayor). There are 31 additional district neighborhoods in the administrative district of Fatih, bringing the total population to 417,662 persons. The locality has a population of 29,727 persons.

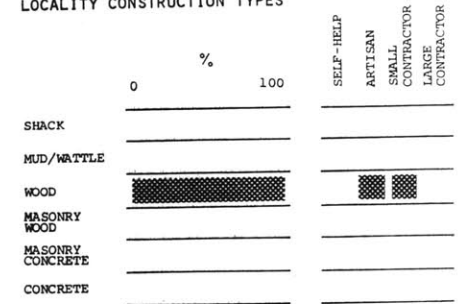
INCOME: No formal statistical data is available. 30% of the working population are government employees, 40% are in trade and the remaining 30% are self-employed or are laborers. Approximately one-third of the population is classified in very low and low income groups. The remaining two-thirds are primarily from the middle income groups. All low income persons live in rental units. The old traditional structures housing the low income groups are being replaced by the new row apartment buildings for the middle income groups.

ZEYREK, Istanbul: Old houses are being replaced by new walk-up apartment buildings. Many buildings are now classified as historic and therefore cannot be destroyed. Once a prominent mansion, the large wooden building is now a tenement.





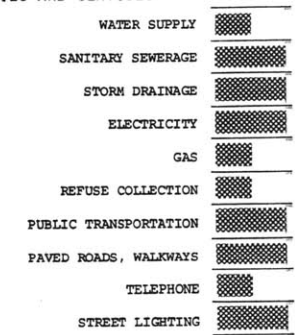
LOCALITY CONSTRUCTION TYPES



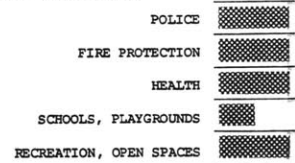
The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

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

[Dotted pattern] SELECTED BLOCK

LOCALITY SEGMENT PLAN

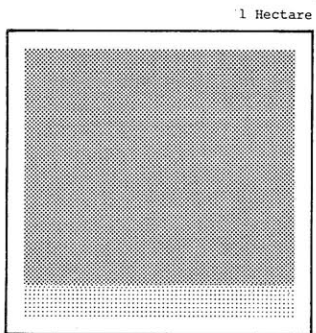
1:2500



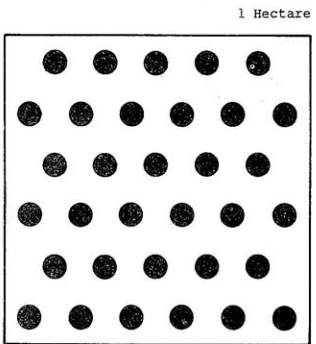
LAND UTILIZATION DIAGRAMS



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



PERCENTAGES	Streets/Walkways	20%
	Playgrounds	9%
	Cluster Courts	1%
	Dwellings/Lots	70%

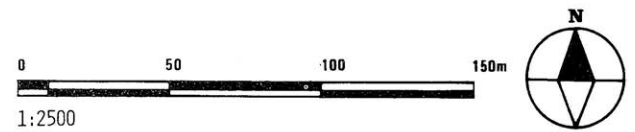


DENSITY Persons/Hectare 680

● 20 persons



LOCALITY SEGMENT LAND UTILIZATION



1:2500



LOCALITY SEGMENT LAND UTILIZATION DATA

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	750	14.3	50
DWELLING UNITS	2500	14.3	175
PEOPLE	9725	14.3	680

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	2.9	20
SEMI-PUBLIC (open spaces, schools, community centers)	1.2	9
PRIVATE (dwellings, shops, factories, lots)	10.0	70
SEMI-PRIVATE (cluster courts)	.2	1
<b>TOTAL</b>	<b>14.3</b>	<b>100</b>

NETWORK EFFICIENCY  
 $R = \frac{\text{network length(circulation)}}{\text{areas served(circulation, lots)}} = 310 \text{ m/Ha}$   
 AVERAGE LOT AREA = 133 m<sup>2</sup>

Note: Density figures are tentative.

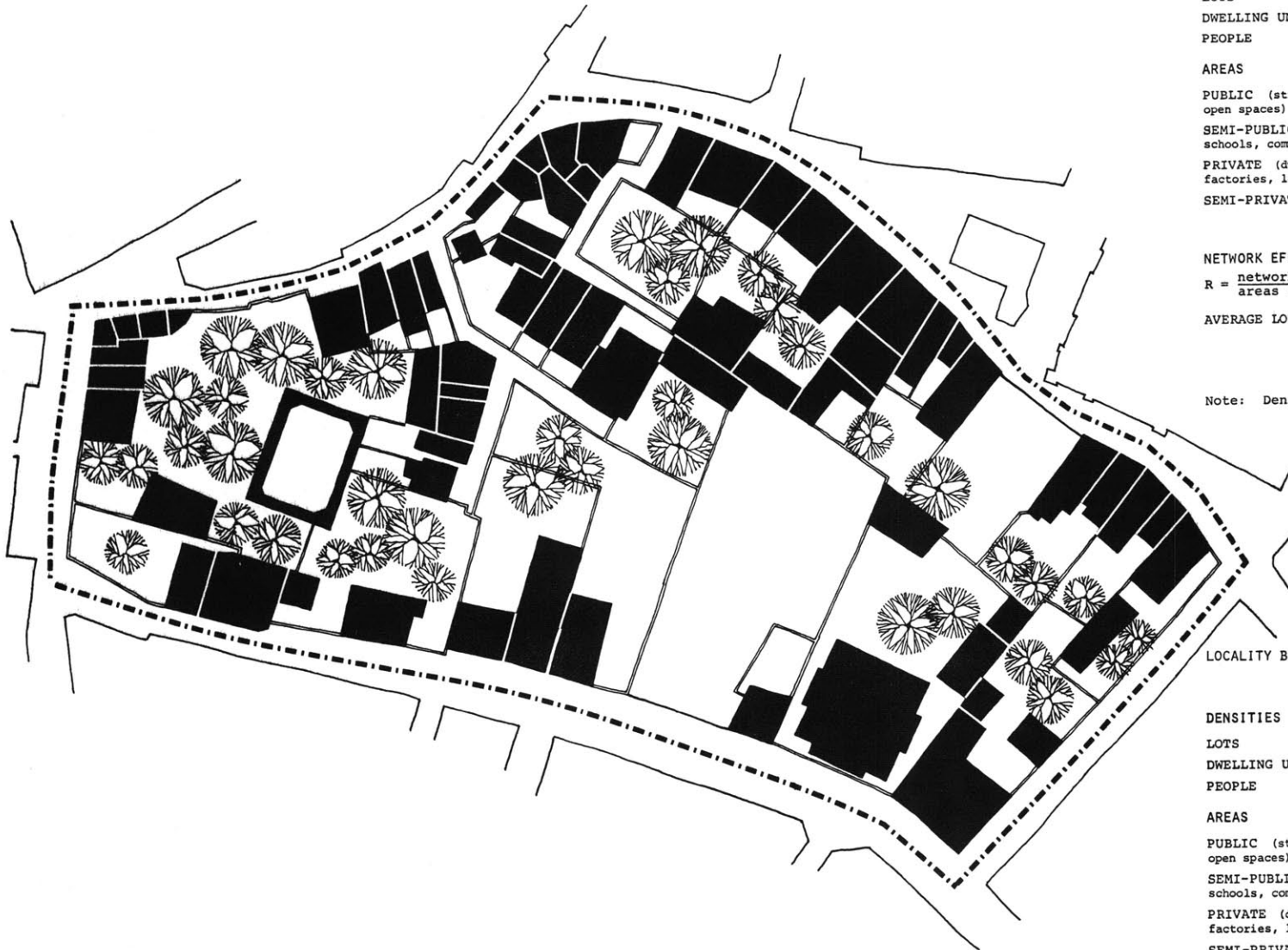
LOCALITY BLOCK LAND UTILIZATION DATA

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	45	1.24	36
DWELLING UNITS	231	1.24	186
PEOPLE	1109	1.24	894

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	.15	12
SEMI-PUBLIC (open spaces, schools, community centers)	.16	13
PRIVATE (dwellings, shops, factories, lots)	.90	73
SEMI-PRIVATE (cluster courts)	.03	2
<b>TOTAL</b>	<b>1.24</b>	<b>100</b>

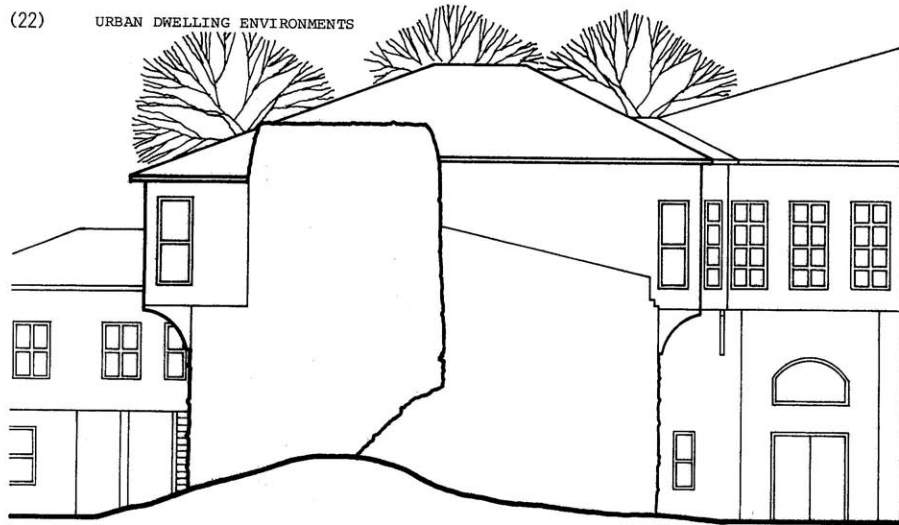
NETWORK EFFICIENCY  
 $R = \frac{\text{network length(circulation)}}{\text{areas served(circulation, lots)}} = 192 \text{ m/Ha}$   
 AVERAGE LOT AREA = 200 m<sup>2</sup>



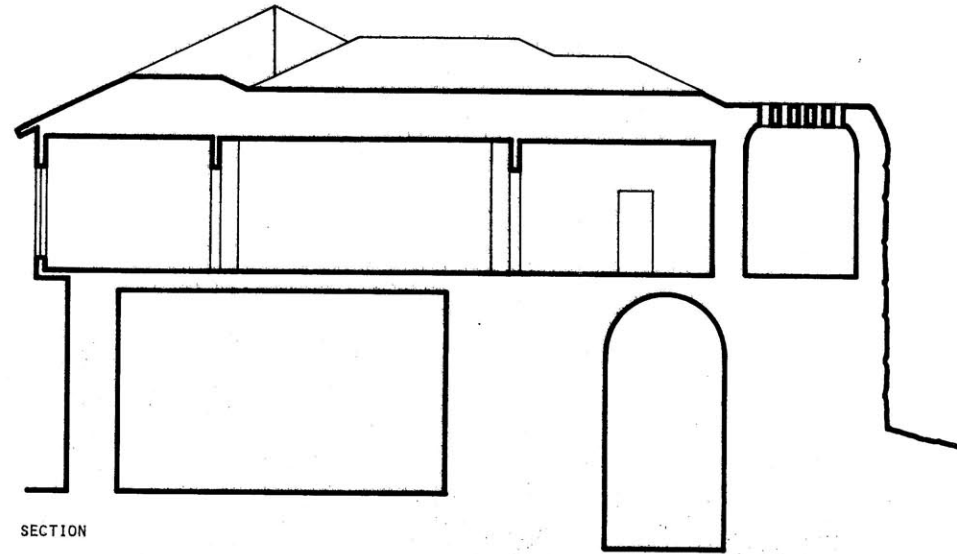
1:1000



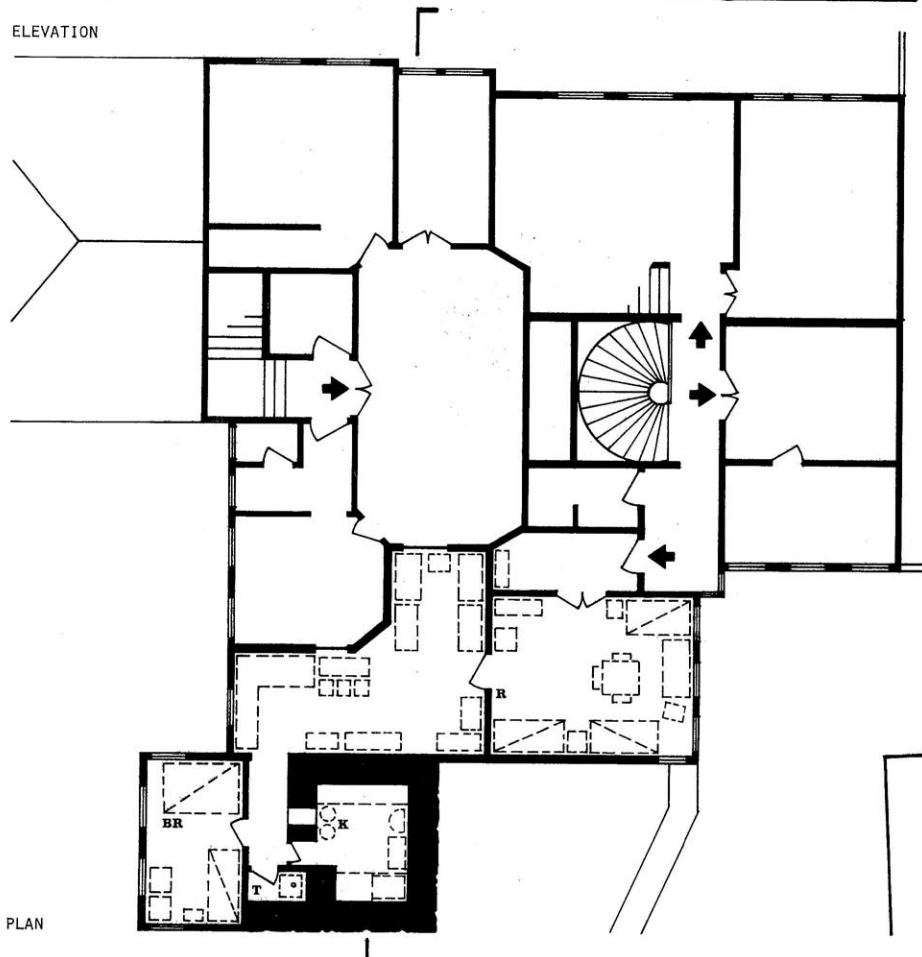
LOCALITY BLOCK PLAN



ELEVATION



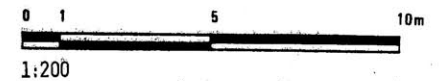
SECTION



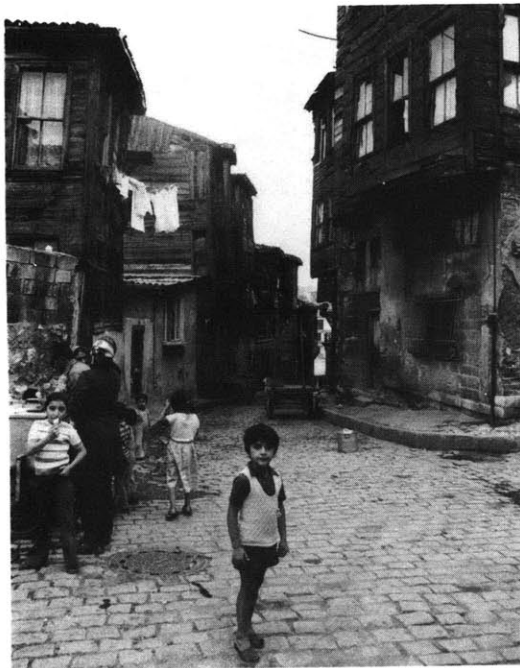
PLAN

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)



TYPICAL DWELLING



#### PHYSICAL DATA (related to dwelling and land)

DWELLING UNIT	
type:	APARTMENT
area (sq m):	57
tenure:	LEGAL RENTAL
LAND/LOT	
utilization:	PRIVATE
area (sq m):	800
tenure:	LEGAL OWNERSHIP
DWELLING	
location:	CITY CENTER
type:	DETACHED
number of floors:	3
utilization:	MULTIPLE FAMILY
physical state:	BAD
DWELLING DEVELOPMENT	
mode:	INCREMENTAL
developer:	PRIVATE
builder:	ARTISAN
construction type:	WOOD
year of construction:	XIII AND XVI CENTURY
MATERIALS	
foundation:	STONE
floors:	WOOD
walls:	WOOD
roof:	WOOD/TILE
DWELLING FACILITIES	
wc:	1
shower:	-
kitchen:	1
rooms:	3
other:	-

#### SOCIO-ECONOMIC DATA (related to user)

GENERAL: SOCIAL	
user's ethnic origin:	TURKISH
place of birth:	KOMOTINI, GREECE
education level:	ELEMENTARY
NUMBER OF USERS	
married:	2
single:	-
children:	4
total:	6
MIGRATION PATTERN	
number of moves:	4
rural - urban:	1932
urban - urban:	1933, 1935, 1941
urban - rural:	-
why came to urban area:	IMMIGRATION/WORK
GENERAL: ECONOMIC	
user's income group:	LOW
employment:	VEGETABLE VENDOR
distance to work:	.5 - 5 KM.
mode of travel:	TRUCK, SHARED TAXI
COSTS	
dwelling unit:	N.A.
land - market value:	N.A.
DWELLING UNIT PAYMENTS	
financing:	SELF-FINANCED
rent/mortgage:	\$17 PER MONTH
% income for rent/mortgage:	6%

ZEYREK, Istanbul: (left) Typical street environment. Most streets are paved, infrastructures exist but are in need of restoration/repair. An ice cream vendor is on the left.

(right) Sidewalks are extremely narrow and usually impassable. Pedestrians, playing children, and automobile traffic share use of the streets.

#### LOCALITY SOURCES

Plan: (approximate) Updated Office Plans, Istanbul Municipality Planning Office, 1960.

Land Use Pattern: (approximate) IBID; Field Survey, M. and N. Butler, 1975.

Circulation Pattern: (approximate) Istanbul Municipality Planning Office, 1960; Field Survey, M. and N. Butler, 1975.

Segment Plan: (accurate) Istanbul Technical University, Department of Architecture, 1974.

Segment Land Utilization: (accurate) IBID.

Block Plan: (accurate) IBID.

Typical Dwelling: (approximate) IBID; Field Survey, M. and N. Butler, 1975.

Physical Data: (accurate) Field Survey, M. and N. Butler, 1975.

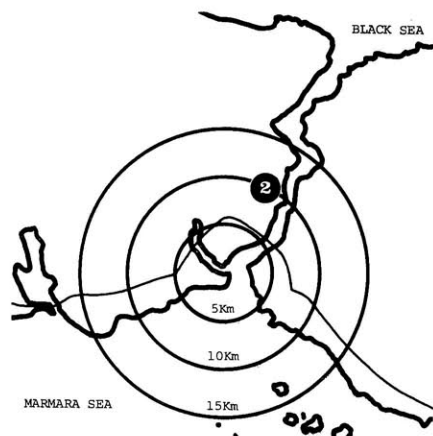
Socio-Economic Data: (accurate) IBID.

Photographs: M. and N. Butler, 1975.

General Information: Interviews, Istanbul Technical University, Department of Architecture, 1975; Neighborhood Mayor, 1975.

## 2 RUMELI- HİSAR ÜSTÜ, İstanbul

POPULAR, VERY LOW INCOME,  
SQUATTER HOUSES

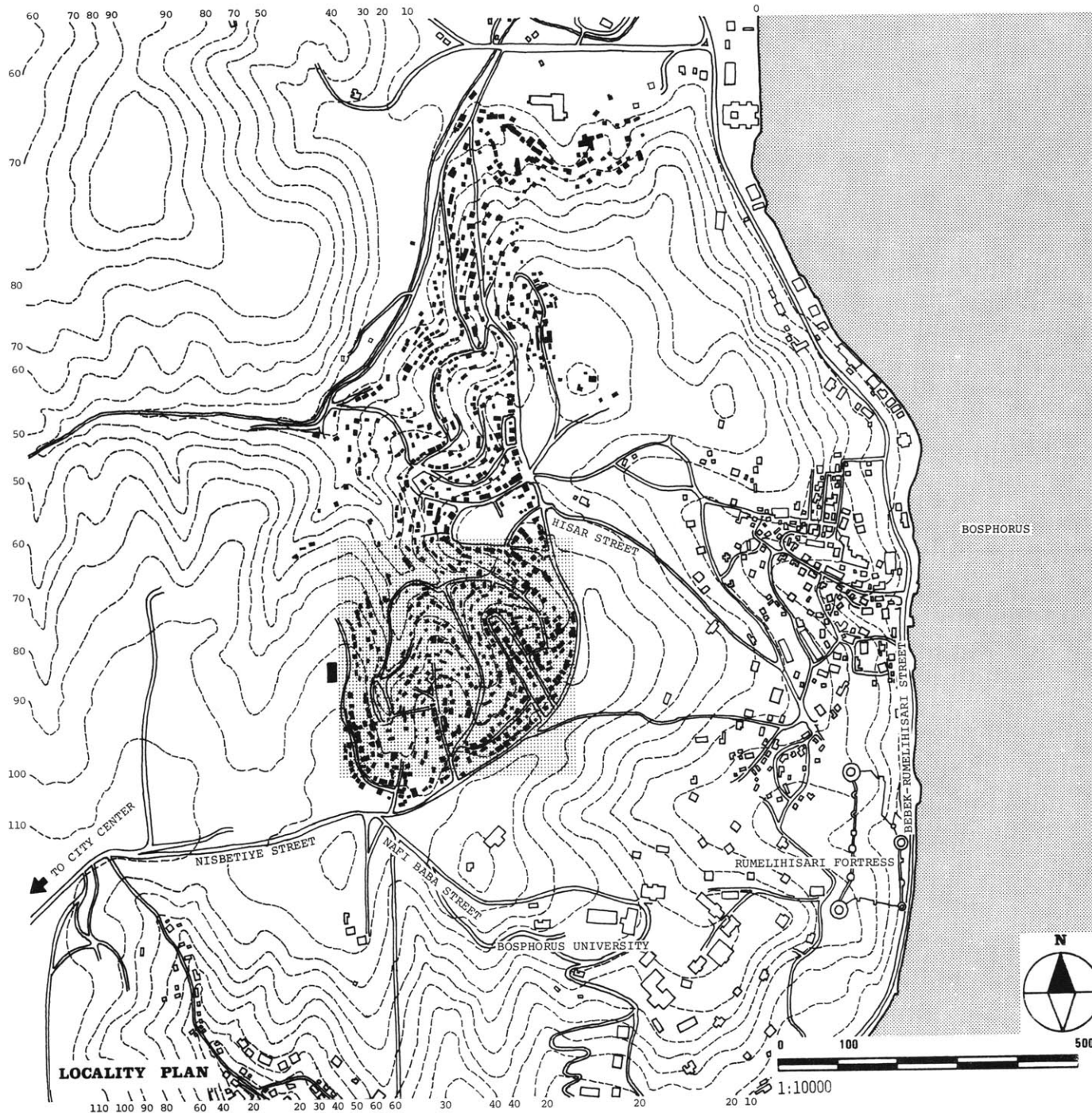


**LOCATION:** Located on the secondary interior hills on the European side of the Bosphorus, the settlement is approximately 10 km. from the city center. The locality is surrounded by open land both publicly and privately owned. Public bus service and gypsy-cabs provide the only transportation to the site from the city. Buses run every hour from Eminonu to Rumelihisar Ustu.

**RUMELIHISAR USTU, Istanbul:** (top) The locality has developed from the ridge of the hill. The layout is determined primarily by topography. Upper income apartment buildings are in the distance. A small section of the Bosphorus is visible in the background.

(bottom) The squatter dwellings are built against the hill. Construction materials are very substantial. Services have been installed by the residents. Sewage runs to the creek at the lower right. Trees and other vegetation are planted by the residents. The newer sections of the locality have only limited vegetation. Undeveloped land on the right is privately owned.








ORIGINS: The interior hills of the Bosphorus are zoned as open-green areas. People living in very poor rental situations moved onto the hill of Rumelihisar Ustu between 1962 and 1965 building detached one or two room houses. As the families enlarged and relatives and friends from rural areas arrived, additional housing was built. The squatters began planting fruit trees on the hill surrounding their homes. According to the Squatter Law of 1966 all squatter dwellings built before 1966 were to be legalized and given land titles. Since then water and electricity have been provided by the city. Roads are being built by the community using material supplied by the city and the Department of Roads. The sewer system, which is only 50% complete was financed and installed by the community itself.

LAYOUT: The settlement is a recent example of squatter development which occurs spontaneously. The layout is heavily influenced by topography. From Nisbetye Street, the main access, roads and walkways wind through the site either perpendicular or parallel to the changing slopes. The squatters have created their own groupings and blocks. Lots are either undefined or irregular in shape. Many lots have access only by walkways which in many cases are steep. One story masonry and concrete detached dwellings predominate. The area has been heavily planted with trees and gardens by the squatters. The city is developing rehabilitation plans for the area to improve and incorporate infrastructure and community facilities.

SELECTED SEGMENT



LAND USE: Except for an old Armenian cemetery and very limited commercial facilities along Nisbetiye Street, the site is almost exclusively residential and rural in character. The commercial facilities consist of small shops, a construction materials store, a restaurant, and a coffee house. One mosque and school are located at the southern edge of the site. Within the site defined open space is non-existent but the surrounding area is undeveloped, boundaries being defined only by adjacent property lines. No industry exists on or near the locality.

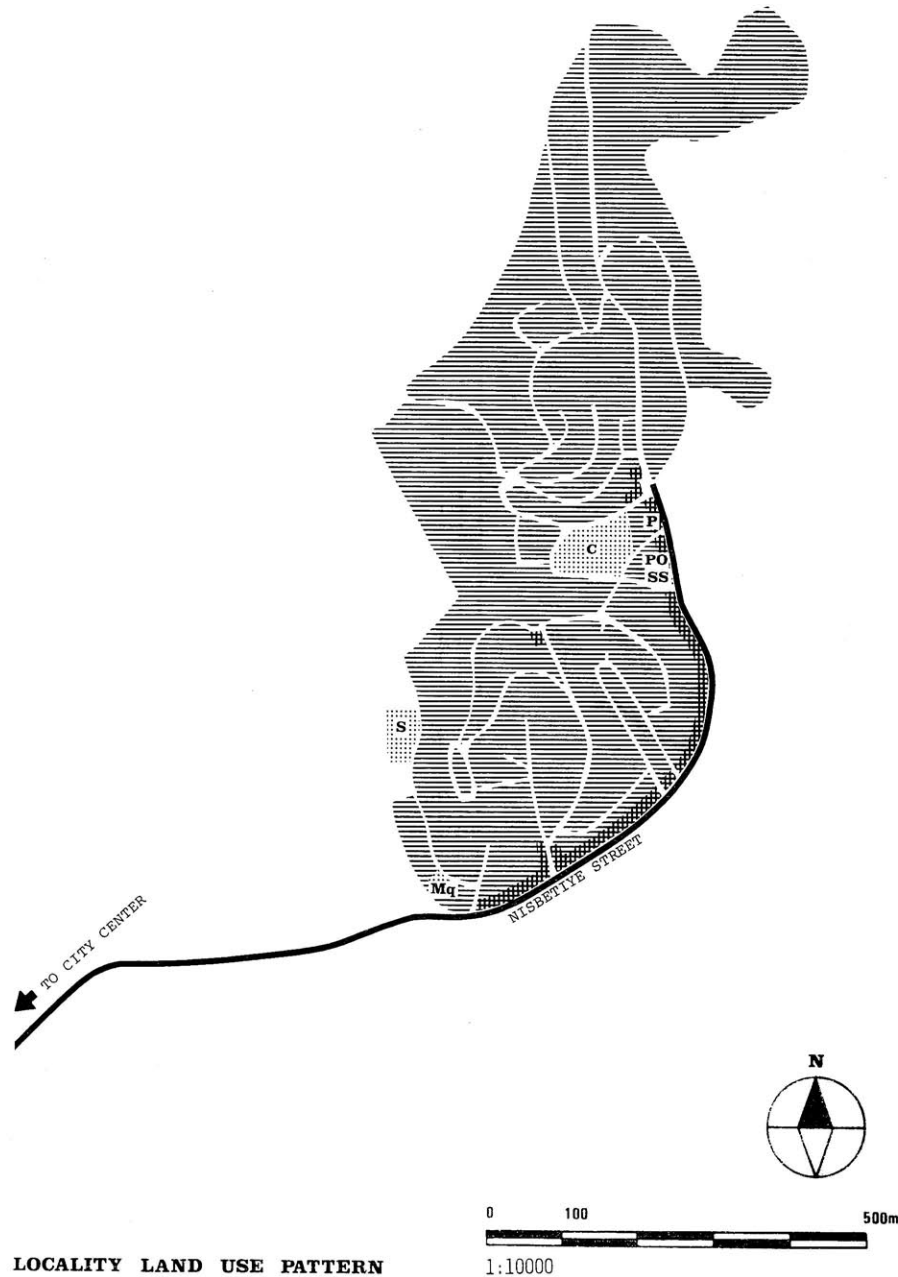
AREAS

-  RESIDENTIAL
-  COMMERCIAL
-  INDUSTRIAL
-  OPEN SPACES

KEY

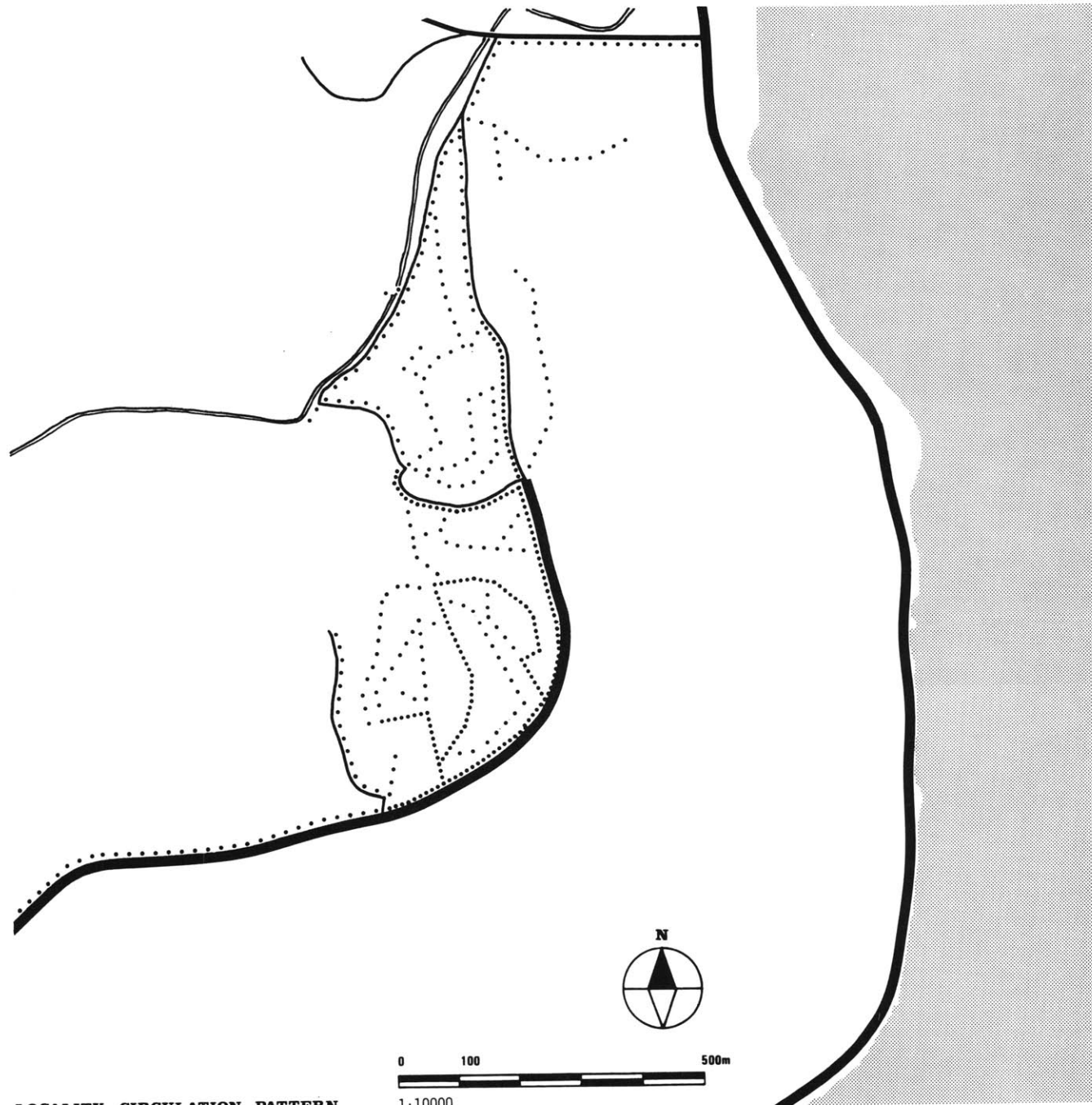
- Pk Parking
- P Police
- F Fire Department
- S School
- Mq Mosque
- R Recreation
- L Library
- U University
- H Health
- PO Post Office
- SS Social Services
- M Market
- C Cemetery

-  Bus
-  Rapid Transit



LOCALITY LAND USE PATTERN

0 100 500m  
1:10000



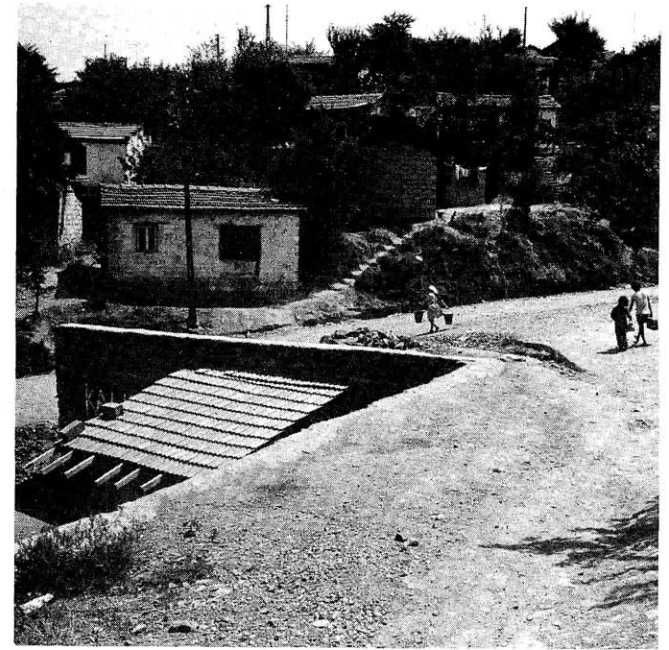
CIRCULATION: Because of the relatively steep and undeveloped slopes within the locality, vehicular traffic stays primarily on the ridge along Nisbetiye Street. The predominately pedestrian circulation within the site consists of a network of streets and walkways running perpendicular or parallel to the topography. Most walkways are hard-packed earth which erodes easily with heavy rain. Streets are either hard-packed earth or earth and stone. Dwellings either have access directly to streets or in many cases only to walkways.

KEY  
 ————— VEHICULAR  
 ..... PEDESTRIAN

LOCALITY CIRCULATION PATTERN

0 100 500m  
 1:10000

**POPULATION:** Formal population statistics are unavailable for the locality. As of 1975 the locality has a population of approximately 7,250 persons. On the average there are 4.67 persons per household. 76% of the population migrated from the Black Sea Region and 17% from Central Anatolia. 1000 students are enrolled in three elementary schools. Between 400 and 500 students are enrolled in middle and high schools. 20 students attend universities. Only one elementary school is in the locality. The other schools are located in nearby middle and high income areas. 80% of the population is illiterate.



**INCOME:** Statistical data is not available. In 1975 the average annual family income is an estimated \$1050, ranging from \$500 to \$2100. 90% of the working males are manual laborers. The remaining 10% are government employees or are self-employed. Work places generally require a minimum of one to two hours travel time every day. 70% of the female working age population are domestic workers in nearby upper-middle and high income areas.

**RUMELIHISAR USTU, Istanbul:** (top left) Walkway running perpendicular to the slope of the hill. Erosion is a major problem. The old Armenian cemetery wall can be seen in the background.

(top right) Unprotected retaining walls along undeveloped streets and walkways are common. Water supply network was put in during 1974. About half of the population still carry water to their homes from three communal water taps.

(bottom left) The main street, which existed prior to the development of the locality, runs along the ridge of the hill. New and used building materials for sale and other small commercial activity occurs along the street.

(bottom right) Circulation consists of walkways, stairs and undeveloped streets. Electricity network was installed in 1969.



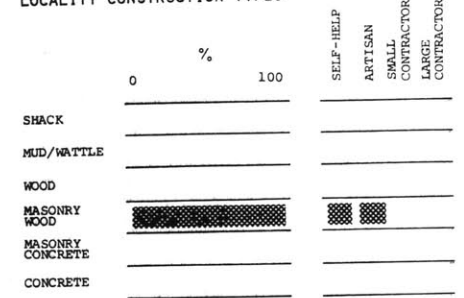




LOCALITY SEGMENT PLAN



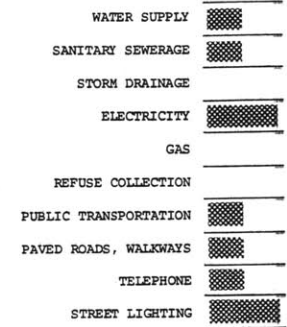
LOCALITY CONSTRUCTION TYPES



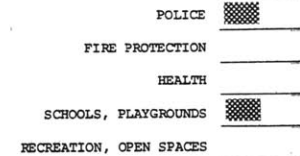
The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

Quality of information: Approximate

LOCALITY UTILITIES AND SERVICES



LOCALITY COMMUNITY FACILITIES



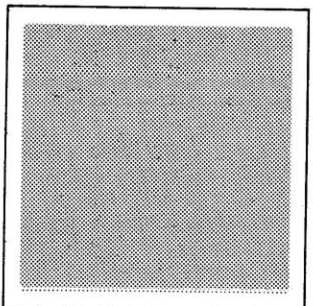
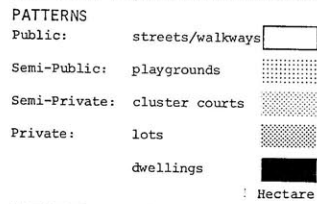
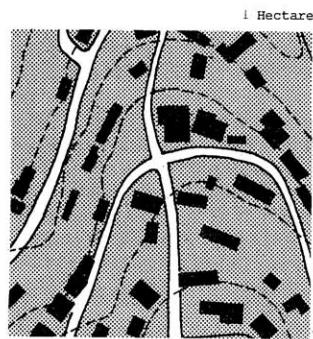
The chart illustrates the approximate availability of utilities, services, and community facilities at three levels: NONE, LIMITED, ADEQUATE.

Quality of information: Approximate

SELECTION BLOCK

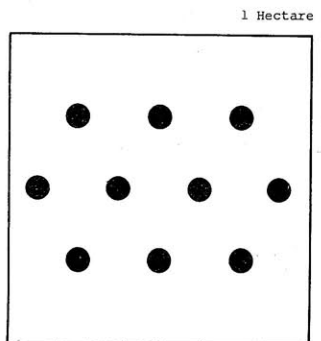


LAND UTILIZATION DIAGRAMS



PERCENTAGES

Streets/Walkways	21%
Playgrounds	1%
Cluster Courts	--
Dwellings/Lots	78%



DENSITY Persons/Hectare 209

● 20 persons



LOCALITY SEGMENT LAND UTILIZATION



1:2500



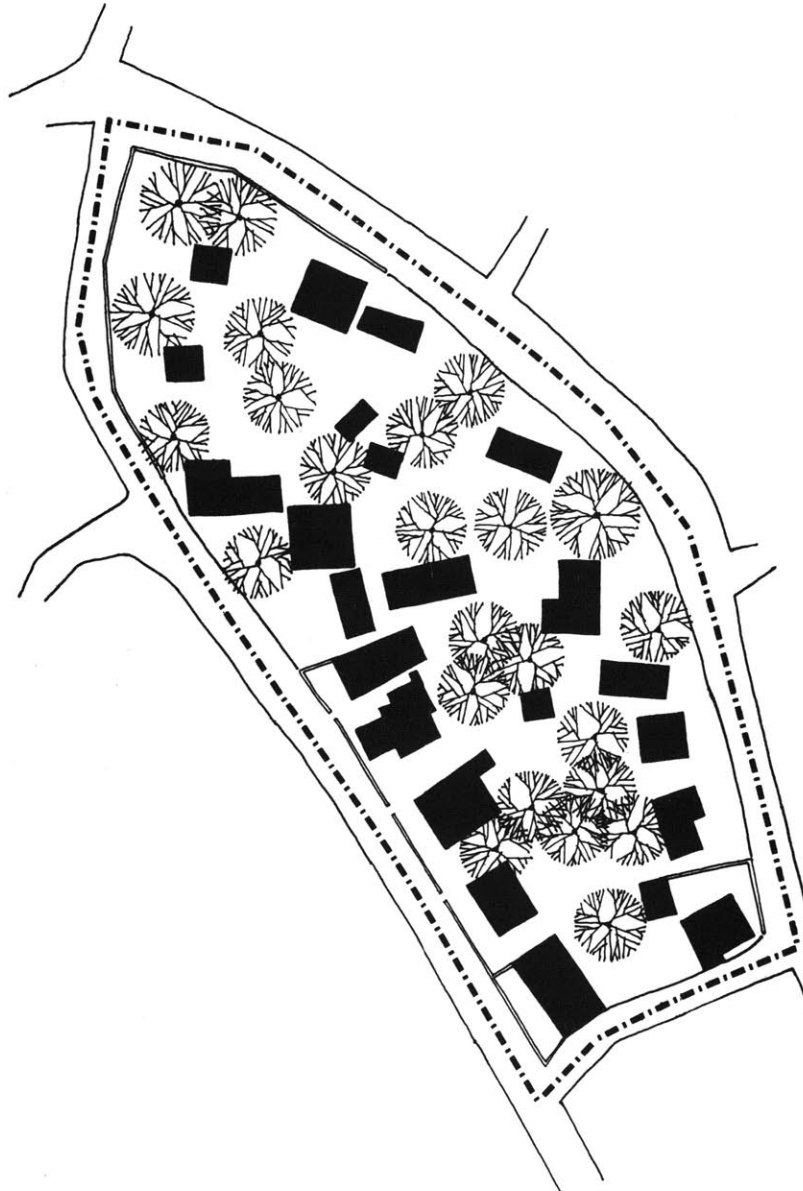
LOCALITY SEGMENT LAND UTILIZATION DATA

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	500	13.9	36
DWELLING UNITS	500	13.9	36
PEOPLE	2900	13.9	209

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	2.9	21
SEMI-PUBLIC (open spaces, schools, community centers)	.2	1
PRIVATE (dwellings, shops, factories, lots)	10.8	78
SEMI-PRIVATE (cluster courts)	-	-
<b>TOTAL</b>	<b>13.9</b>	<b>100</b>

NETWORK EFFICIENCY  
 $R = \frac{\text{network length(circulation)}}{\text{areas served(circulation, lots)}} = 350 \text{ m/Ha}$   
 AVERAGE LOT AREA = 216 m<sup>2</sup>



LOCALITY BLOCK LAND UTILIZATION DATA

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	28	.61	46
DWELLING UNITS	28	.61	46
PEOPLE	162	.61	266

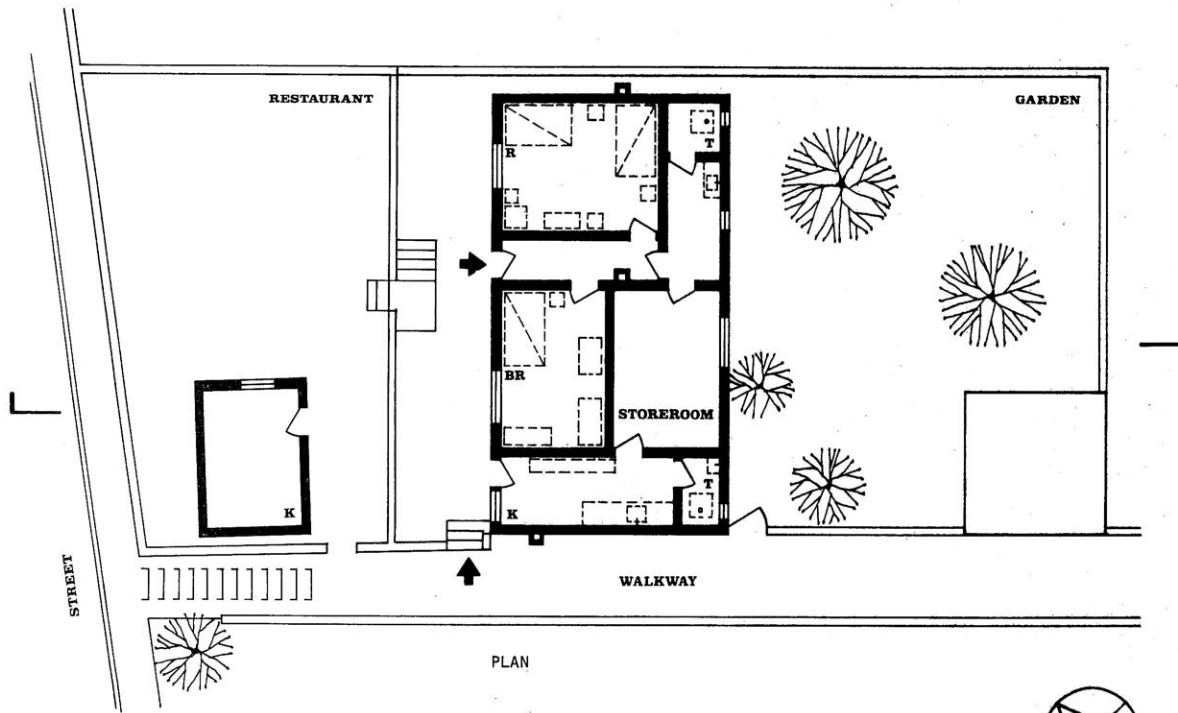
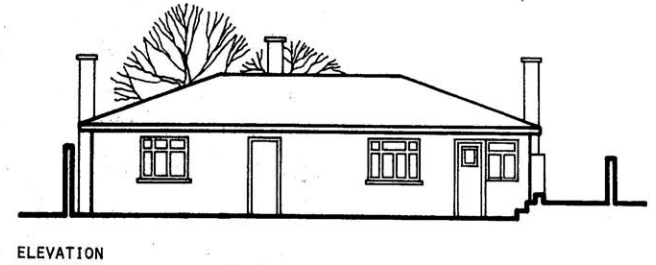
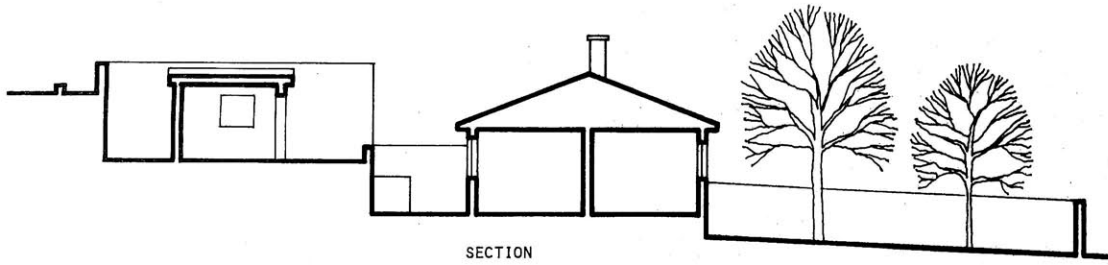
  

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	.11	18
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	.50	82
SEMI-PRIVATE (cluster courts)	-	-
<b>TOTAL</b>	<b>.61</b>	<b>100</b>

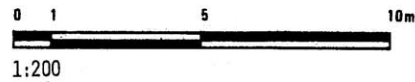
NETWORK EFFICIENCY  
 $R = \frac{\text{network length(circulation)}}{\text{areas served(circulation, lots)}} = 275 \text{ m/Ha}$   
 AVERAGE LOT AREA = 179 m<sup>2</sup>



LOCALITY BLOCK 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**



#### PHYSICAL DATA (related to dwelling and land)

DWELLING UNIT  
 type: HOUSE  
 area (sq m): 47  
 tenure: LEGAL OWNERSHIP

LAND/LOT  
 utilization: PRIVATE  
 area (sq m): 218  
 tenure: EXTRALEGAL OWNERSHIP

DWELLING  
 location: PERIPHERY  
 type: DETACHED  
 number of floors: 1  
 utilization: SINGLE FAMILY  
 physical state: FAIR

DWELLING DEVELOPMENT  
 mode: INCREMENTAL  
 developer: POPULAR  
 builder: ARTISAN  
 construction type: MASONRY/WOOD  
 year of construction: 1963

MATERIALS  
 foundation: STONE  
 floors: CONCRETE  
 walls: CONCRETE BLOCK  
 roof: WOOD/TILE

DWELLING FACILITIES  
 wc: 1  
 shower: -  
 kitchen: 2  
 rooms: 3  
 other: WASH AREA WITH LAVATORY

#### SOCIO-ECONOMIC DATA (related to user)

GENERAL: SOCIAL  
 user's ethnic origin: TURKISH  
 place of birth: BOLU  
 education level: ELEMENTARY

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

MIGRATION PATTERN  
 number of moves: 3  
 rural - urban: 1948  
 urban - urban: 1955, 1966  
 urban - rural: -  
 why came to urban area: RELATIVES/WORK

GENERAL: ECONOMIC  
 user's income group: VERY LOW  
 employment: SELF-EMPLOYED COOK  
 distance to work: -  
 mode of travel: -

COSTS  
 dwelling unit: \$340  
 land - market value: N.A.

DWELLING UNIT PAYMENTS  
 financing: SELF-FINANCED  
 rent/mortgage: N.A.  
 % income for rent/mortgage: N.A.

RUMELIHISAR USTU, Istanbul: (left) Typical small squatter house. Water is being borrowed from neighbors to wash rugs. Many roads are built with earth and stone.

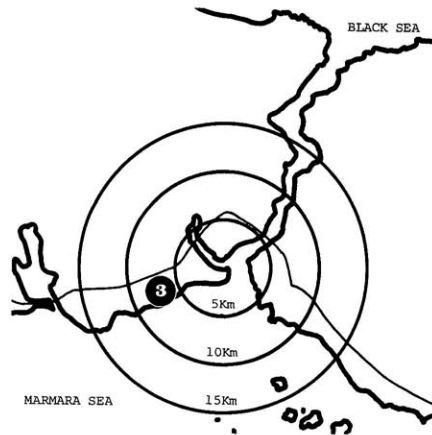
(right) Typical development along streets and walkways. All dwellings are masonry and wood with tile roofs.

#### LOCALITY SOURCES

Plan: (accurate) Istanbul Municipality Squatter Planning Office, 1973.  
 Land Use Pattern: (accurate) Field Survey, M. and N. Butler, 1975.  
 Circulation Pattern: (accurate) IBID.  
 Segment Plan: (accurate) Istanbul Municipality Squatter Planning Office, 1973.  
 Segment Land Utilization: (accurate) IBID.  
 Block Plan: (accurate) IBID.  
 Typical Dwelling: (accurate) Field Survey, M. and N. Butler, 1975.  
 Physical Data: (accurate) IBID.  
 Socio-Economic Data: (accurate) IBID.  
 Photographs: M. and N. Butler, 1975.  
 General Information: Interviews, Locality Mayor, M. and N. Butler, 1975.

### 3 ZEYTİNBURNU, İstanbul

POPULAR, LOW/MODERATELY LOW INCOME,  
SQUATTER HOUSES/WALK-UP APARTMENTS



**LOCATION:** Located on the Sea of Marmara, outside the old city walls, the settlement is approximately 7 km. from the city center. The district of Zeytinburnu covers an area of 40 km<sup>2</sup>. The locality boundaries are defined by; the London Highway on the north, to the south the transcontinental railroad-rapid transit line and adjacent industry, institutional and industrial development on the east, and Veli Efendi Hippodrome to the west.

**ORIGINS:** In 1880 the Zeytinburnu region, part of two large vakif (religious) foundations, was donated by the Sultan as a favor to the Armenian community. Political influence prevented the area from being developed. Between 1911 and 1914 Priest Agop, under whose name Zeytinburnu was registered,

**ZEYTİNBURNU, Istanbul:** (top) View from a minaret. The tight grouping of squatter dwellings occur due to expansion for rental purposes or as families receive new members. Gardens are highly developed by the residents. Walk-up apartment buildings are beginning to replace original squatter constructions.

(bottom) The main street is typical of the growth and assimilation of a squatter settlement into the urban environment; highly commercial, automobile oriented, substantial and fairly sophisticated building construction.









sold parts of the land to private individuals. After his death the remaining land returned back to the Vakıflar Administration. The first squatter constructions occurred in 1945 and continued until 1948. After being saved from destruction by the authorities in 1948 more rapid development took place. By 1962 the older neighborhoods were almost saturated. From 1954 to 1959 the Vakıflar Administration sold parts of the land to squatters in accordance with Legislation No. 6188. Because of political problems not all squatter owners on Vakıf land received their land titles. Realizing the expense of retaining their land, private land owners began selling land to squatters. Instead of parcelling their land, some large land owners sold "shares" in their land. Thus 40 to 50 squatters "share" one parcel of land. In some cases a piece of land has three different parties claiming ownership; the private owner, the Vakıflar Administration, and the Municipality. In 1957 Zeytinburnu became a district. Thus for the first time a squatter area became an administrative unit within the boundaries of the Municipality of Istanbul.

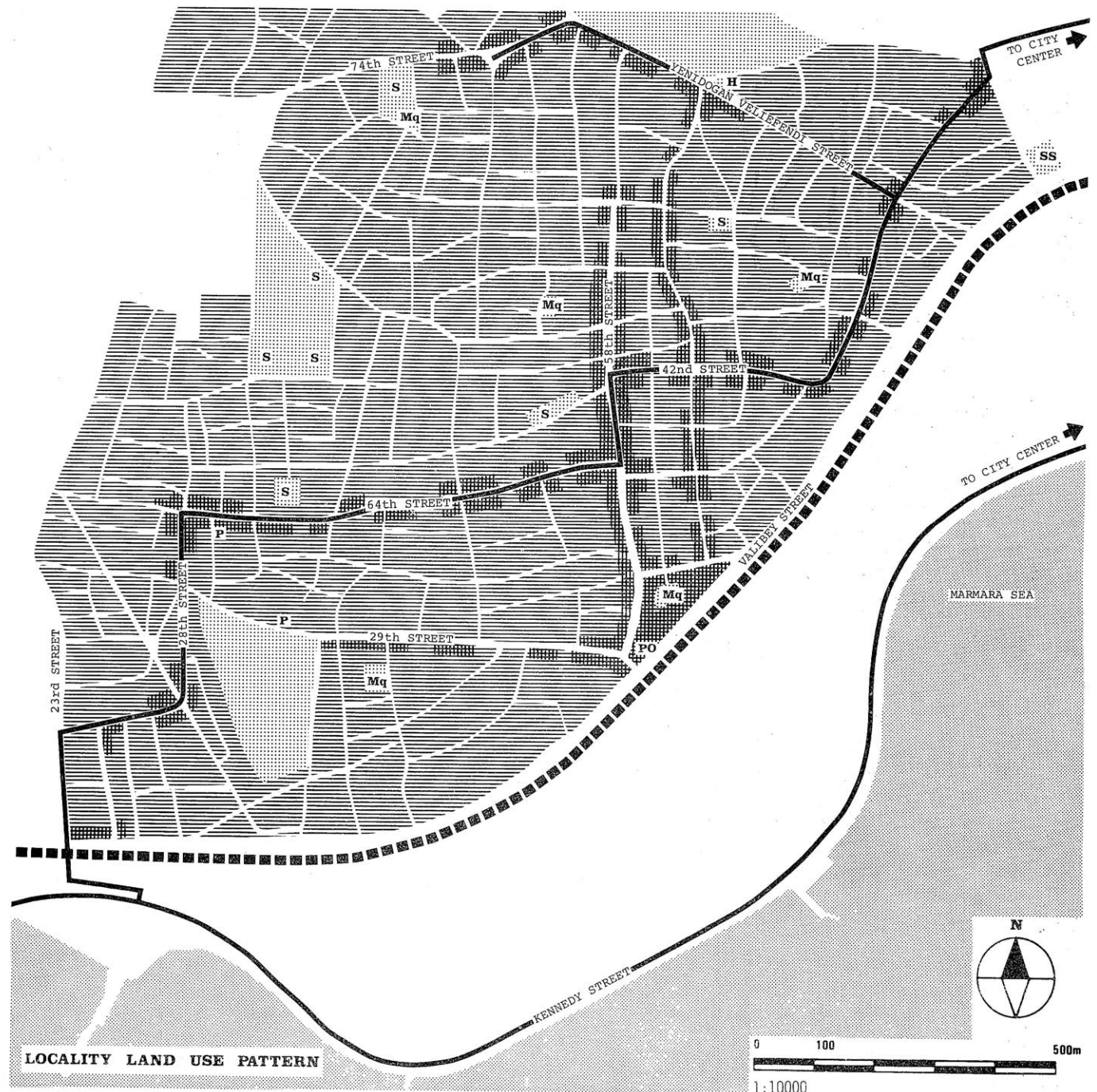
**LAYOUT:** The layout is typical of squatter settlements that develop on flat land. Social factors rather than physical forces determine layout. The squatters create their own cluster groupings and blocks. The blocks are large enough to allow lots of varied sizes and configurations to occur independent of the circulation network. A combination of row, semi-detached and detached one story masonry and concrete dwellings predominate. With the implementation of the Squatter Law of 1966, Zeytinburnu was designated as a rehabilitative squatter area. A plan of lot subdivision was made saving most of the existing conditions. Since then many residents have received land titles. Concurrently, planning for the improvement of streets and infrastructure networks was initiated. Land values have begun to increase to the point where substantial investment is being made in the development of three to five story walk-up apartment buildings typical of those found throughout middle income areas of Istanbul.

SELECTED SEGMENT

LAND USE: Formerly an agricultural area Zeytinburnu has become primarily residential. Mosques, schools, and limited community facilities are scattered throughout the locality. A large complex of schools and a farm are located on the western edge of the site. Commercial and limited light industrial activity is concentrated along major circulation routes. The major commercial activity originates at the railroad-rapid transit station and extends north through the community. Increasing land values have encouraged redevelopment of land from single to multi-story construction as well as changing land use from residential to commercial. A strip of heavy industry is located between the locality and the Sea of Marmara.

- AREAS
-  RESIDENTIAL
  -  COMMERCIAL
  -  INDUSTRIAL
  -  OPEN SPACES

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







**CIRCULATION:** Heavy vehicular circulation cuts through the locality from the southwest to the northeast on a paved road which follows the original irregular circulation grid. Because of the many turns, narrow streets, commercial activity, and high traffic volume of buses and private mini-buses, this major circulation path is congested. Heavy pedestrian and vehicular traffic exists along 58th Street, a boulevard route through commercial development to the rapid transit-railroad station. Most residential streets are paved or are in the process of being paved. Where building and garden walls used to define the street, new construction is incorporating curbs and sidewalks. Although most movement within the locality is pedestrian, streets are usually wide enough to accommodate limited vehicular traffic and parking.

**KEY**  
 ————— VEHICULAR  
 ..... PEDESTRIAN



LOCALITY CIRCULATION PATTERN

POPULATION: According to the 1970 Census the locality had a population of 117,200 persons. In 1960, 55% of the population of 80,078 were between 13 and 65 years of age. 52% were foreign born immigrants most coming from Yugoslavia, Bulgaria, Greece and Romania. 25% migrated from the Black Sea Region of Turkey. 65% of the males migrated to the area directly from their villages. 56% of the families were homeowners. 77% of these families did not have land titles. On the average there were 4.71 persons per household and 2.92 persons per room. 56.7% of the population was illiterate.



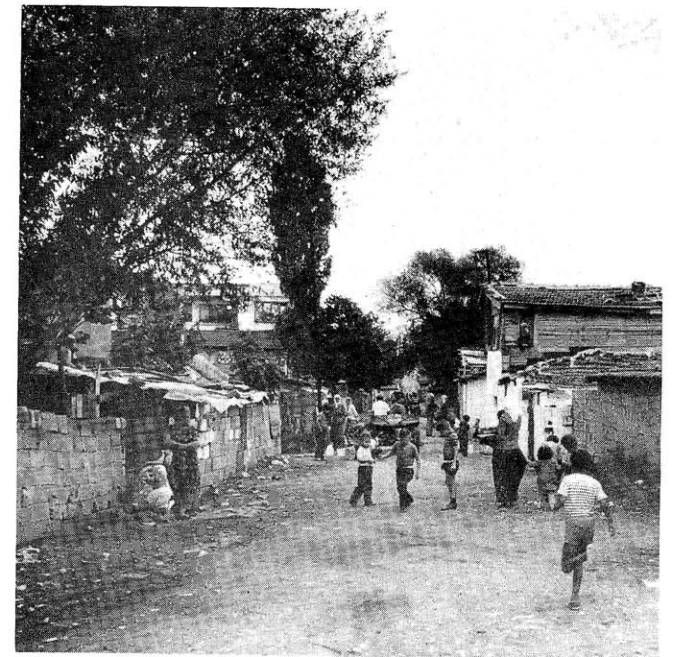
INCOME: Available statistical data dates back to 1962-65. The \$793 annual median family income of 1964 has doubled or tripled by 1975. More than half of the working population are laborers. The rest are tradesmen, artisans, or government employees. The majority work within walking distance of the industrial areas of Bakirkoy, Zeytinburnu and Kazlıcesme. About one fourth of the labor force work in the historic peninsula. At least one half of the people live in rental units. One room squatter dwellings rent for a minimum of \$15 per month.



ZEYTINBURNU, Istanbul: (top left and right) Views of cluster courts which in many instances are created as dwellings expand for multi-family use. Access into clusters is usually undeveloped. Notice the television antennas.

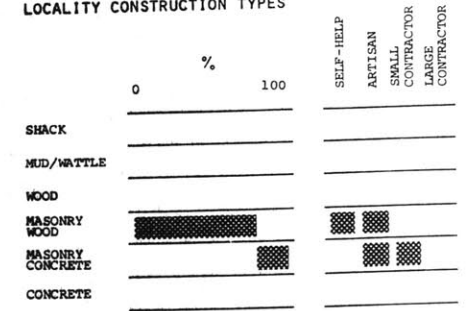
(bottom left) Walkways are defined by property walls and dwellings. Walk-up apartment in background is recent. A small store is incorporated in the first floor.

(bottom right) Undeveloped residential street. Construction at left without a tile roof is unusual. Even though this building is only for storage/animals, almost all buildings have tile roofs.



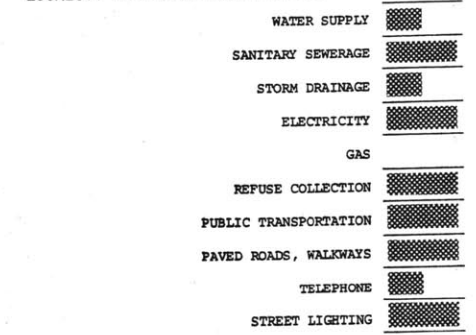


**LOCALITY CONSTRUCTION TYPES**

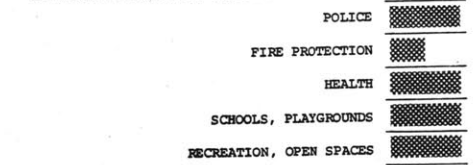


The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.  
 Quality of information: Approximate

**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

[Dotted pattern] SELECTED BLOCK

**LOCALITY SEGMENT PLAN**



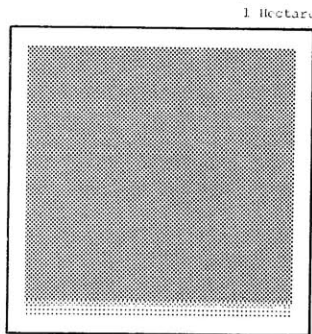
1:2500



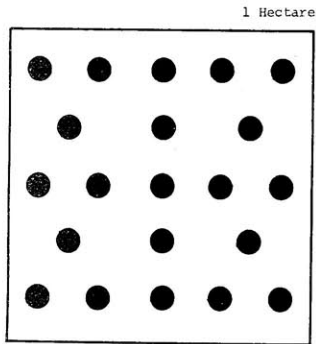
LAND UTILIZATION DIAGRAMS



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



PERCENTAGES	Patterns	Percentage
Streets/Walkways		22%
Playgrounds		3%
Cluster Courts		2%
Dwellings/Lots		73%

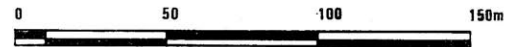


**DENSITY**      Persons/Hectare      420

● 20 persons



LOCALITY SEGMENT LAND UTILIZATION



1:2500



LOCALITY SEGMENT LAND UTILIZATION DATA

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	700	16.0	44
DWELLING UNITS	1400	16.0	88
PEOPLE	6720	16.0	420

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	3.5	22
SEMI-PUBLIC (open spaces, schools, community centers)	.5	3
PRIVATE (dwellings, shops, factories, lots)	11.7	73
SEMI-PRIVATE (cluster courts)	.3	2
<b>TOTAL</b>	<b>16.0</b>	<b>100</b>

NETWORK EFFICIENCY  
 $R = \frac{\text{network length(circulation)}}{\text{areas served(circulation, lots)}} = 315 \text{ m/Ha}$   
 AVERAGE LOT AREA = 167 m<sup>2</sup>



LOCALITY BLOCK PLAN

LOCALITY BLOCK LAND UTILIZATION DATA

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	32	.57	56
DWELLING UNITS	64	.57	112
PEOPLE	263	.57	462

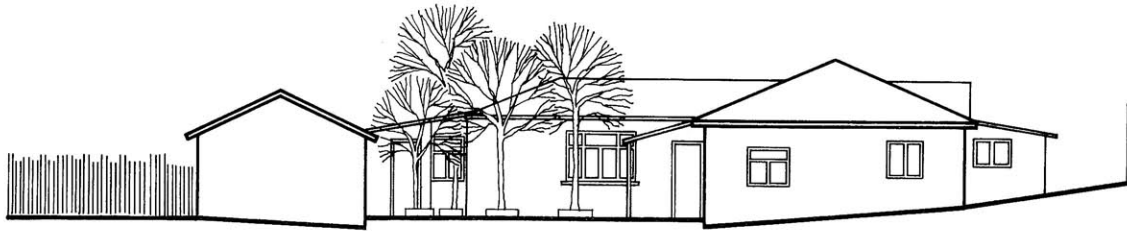
  

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	.09	16
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	.47	81
SEMI-PRIVATE (cluster courts)	.01	3
<b>TOTAL</b>	<b>.57</b>	<b>100</b>

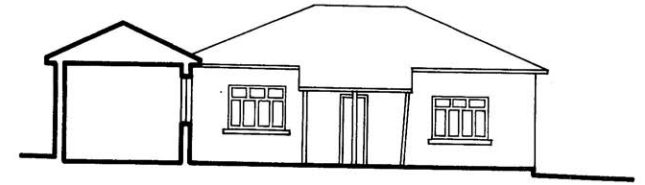
NETWORK EFFICIENCY  
 $R = \frac{\text{network length(circulation)}}{\text{areas served(circulation, lots)}} = 272 \text{ m/Ha}$   
 AVERAGE LOT AREA = 147 m<sup>2</sup>



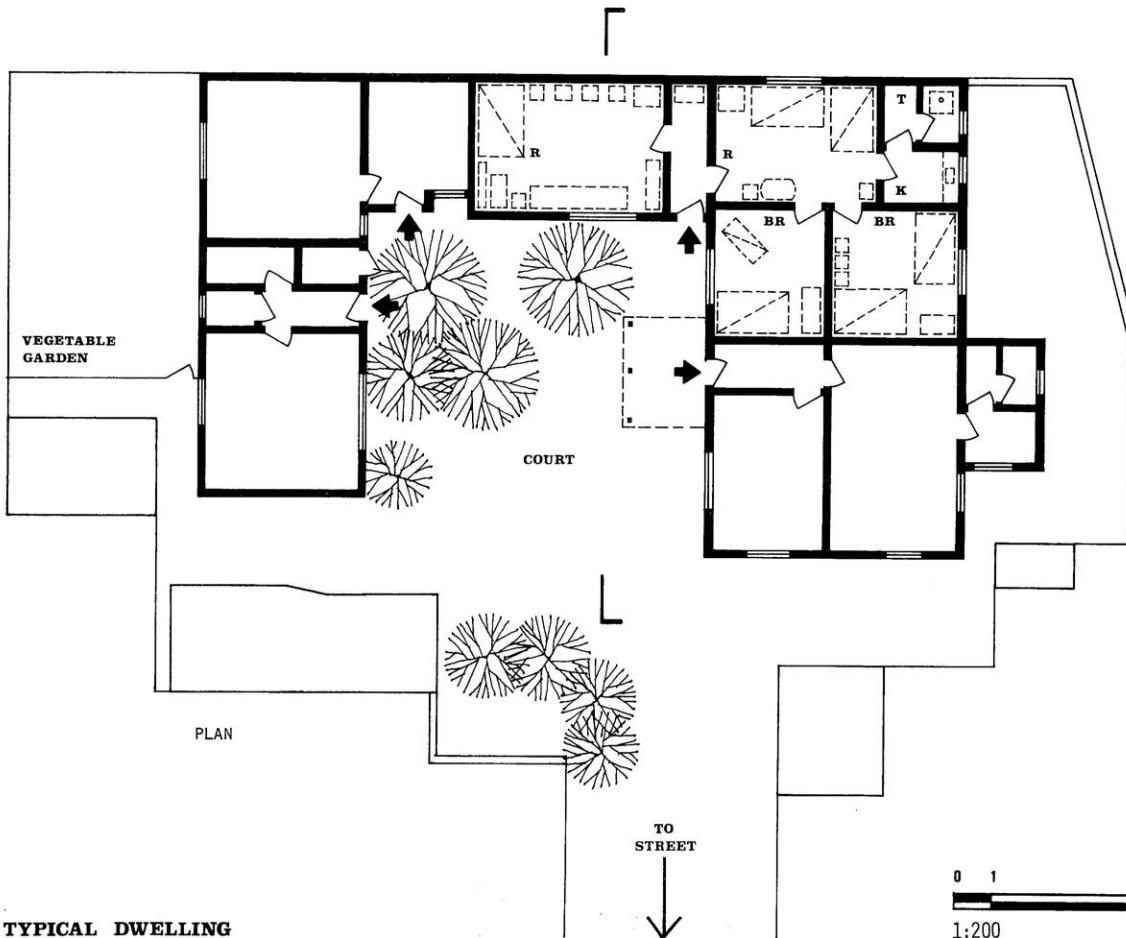
1:1000



ELEVATION



SECTION

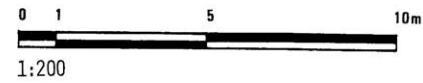


PLAN

TYPICAL DWELLING

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)



**PHYSICAL DATA**

(related to dwelling and land)

DWELLING UNIT  
 type: HOUSE  
 area (sq m): 62  
 tenure: LEGAL OWNERSHIP

LAND/LOT  
 utilization: SEMI-PRIVATE  
 area (sq m): 400  
 tenure: LEGAL OWNERSHIP

DWELLING  
 location: INNER RING  
 type: ROW/GROUPED  
 number of floors: 1  
 utilization: MULTIPLE FAMILY  
 physical state: FAIR

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

MATERIALS  
 foundation: STONE/CONCRETE  
 floors: CONCRETE  
 walls: CONCRETE BLOCK  
 roof: WOOD/TILE

DWELLING FACILITIES  
 wc: 1  
 shower: 1  
 kitchen: 1  
 rooms: 3  
 other: CENTRAL SPACE

**SOCIO-ECONOMIC DATA**

(related to user)

GENERAL: SOCIAL  
 user's ethnic origin: TURKISH  
 place of birth: SINOP  
 education level: NONE

NUMBER OF USERS  
 married: 4  
 single: 1  
 children: 4  
 total: 9

MIGRATION PATTERN  
 number of moves: 1  
 rural - urban: 1957  
 urban - urban: -  
 urban - rural: -  
 why came to urban area: FAMILY/WORK

GENERAL: ECONOMIC  
 user's income group: LOW  
 employment: GOVERNMENT EMPLOYEE  
 distance to work: 12 KM.  
 mode of travel: TRAIN AND SHARED TAXI

COSTS  
 dwelling unit: N.A.  
 land - market value: N.A.

DWELLING UNIT PAYMENTS  
 financing: SELF-FINANCE  
 rent/mortgage: N.A.  
 % income for rent/mortgage: N.A.

ZEYTINBURNU, Istanbul: (left) View of row dwellings along a street. Construction is simple but substantial.

(right) Section of private open court. Residents create very pleasing living environments for themselves. Exterior as well as interior spaces are always well maintained.

**LOCALITY SOURCES**

Plan: (approximate) Updated Office Plans, Istanbul Municipality Planning Office, 1960.

Land Use Pattern: (approximate) IBID; Field Survey, M. and N. Butler, 1975.

Circulation Pattern: (approximate) Field Surveys, M. and N. Butler, 1975.

Segment Plan: (accurate) Istanbul Municipality Squatter Planning Office, 1964.

Segment Land Utilization: (accurate) IBID.

Block Plan: (accurate) IBID.

Typical Dwelling: (accurate) Field Surveys, M. and N. Butler, 1975.

Physical Data: (accurate) IBID.

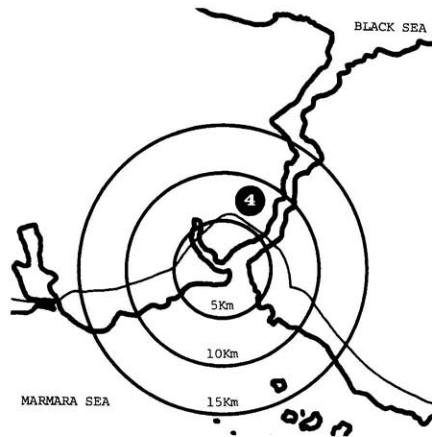
Socio-Economic Data: (accurate) IBID.

Photographs: M. and N. Butler, 1975.

General Information: Interviews, Istanbul University Department of Social Anthropology, 1975; Zeytinburnu Gecekondu Bolgesi, W. M. Hart, Istanbul, 1969.

## 4 GÜLTEPE, İstanbul

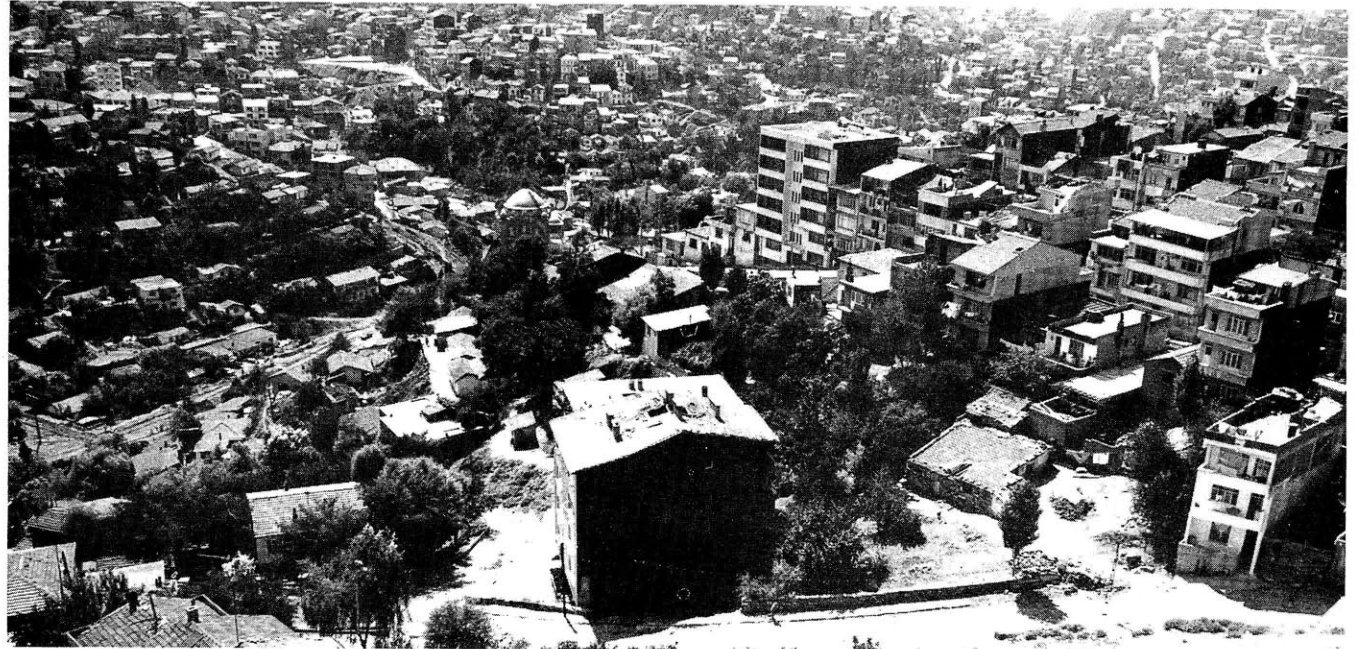
PUBLIC/POPULAR, LOW/MODERATELY LOW  
INCOME, ROW APARTMENTS/SQUATTER HOUSES



LOCATION: This linear and hilly site lies 7.5 km. northeast of the city center. The main access to the site is from Büyükdere-Sisli Highway running south to the Bosphorus. The site is bounded on the east by an industrial area running parallel to the highway, to the west by the Kagithane River and industry, and on the north and south by a series of residential developments similar in character to that of the locality.

GÜLTEPE, Istanbul: (top) View from a minaret showing the publicly subdivided lots with walk-up row apartment buildings on the top of the hill and squatter dwellings below.

(bottom) View of central spine. Once all single story construction, the locality is at saturated stage of development.





**ORIGINS:** In 1957, when road construction activity began in Istanbul, the authorities had to relocate or pay those people whose houses were removed. In cases where the affected dwellings were squatter houses, only new land would be supplied. This obligation led the Municipality of Istanbul to sign a contract with the Municipality of Kagithane to administer a long narrow piece of village land located within that municipality. The Istanbul Municipality then subdivided the land into 62.5 m<sup>2</sup> parcels and offered these parcels for one story dwellings to those families whose houses were taken by the road construction activity. The new occupants were given "parcel papers" but no land titles since the land still belonged to the Municipality of Kagithane. Meanwhile the parties who had been renting the adjacent village land for economic activities, began to divide the rented land into parcels and sell the parcels to squatters. These squatters eventually occupied the land around the parcelized area. Presently the locality is highly developed with row houses and apartment buildings and squatter dwellings.

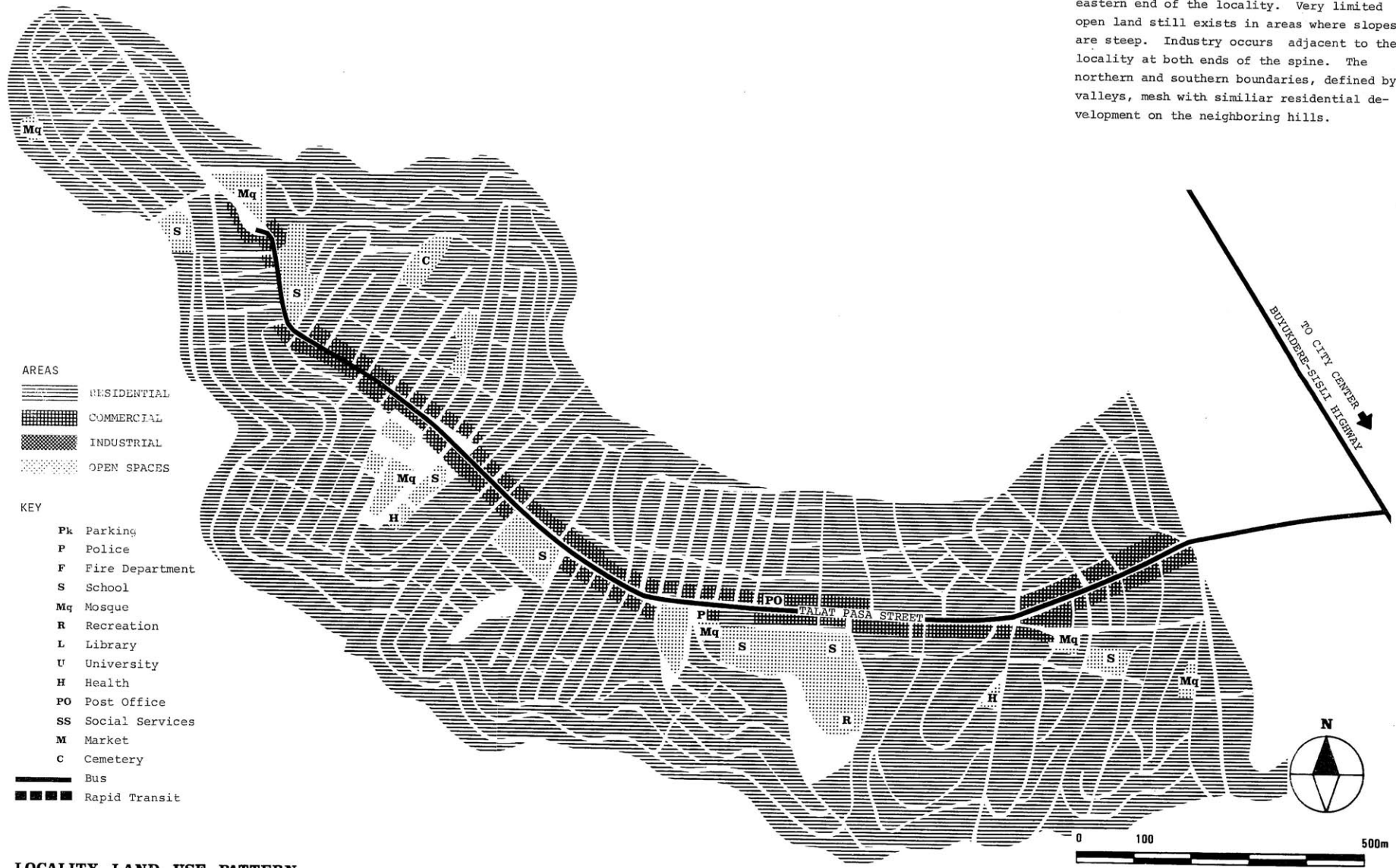
**LAYOUT:** The locality is situated along the ridge of a long hill. The layout is a combination of legally parceled land, occurring on relatively flat land, and squatter development on the less desirable steeply sloping land along both sides of the hill. Streets serving the parceled land are narrow, running perpendicular to the circulation spine. Because of long uninterrupted blocks movement between neighborhoods is difficult. Squatter lots of various sizes follow the topography of the site. Undeveloped roads and walkways follow the same pattern with only limited and indirect access to the upper part of the hill and the primary circulation spine. All construction is predominately masonry and concrete. Squatter development consists of detached, semi-detached and some apartment dwellings. Most of the parceled land is comprised of walk-up row apartments on small lots with extremely limited or no open space.







LOCALITY PLAN

1:10000


LAND USE: This primarily residential community is developed along a major commercial spine of two to five story row buildings having shops on the ground floor and apartments above. Religious, educational and other community facilities are dispersed along the length of the spine. A large vocational school complex is located in the eastern end of the locality. Very limited open land still exists in areas where slopes are steep. Industry occurs adjacent to the locality at both ends of the spine. The northern and southern boundaries, defined by valleys, mesh with similar residential development on the neighboring hills.



AREAS

-  RESIDENTIAL
-  COMMERCIAL
-  INDUSTRIAL
-  OPEN SPACES

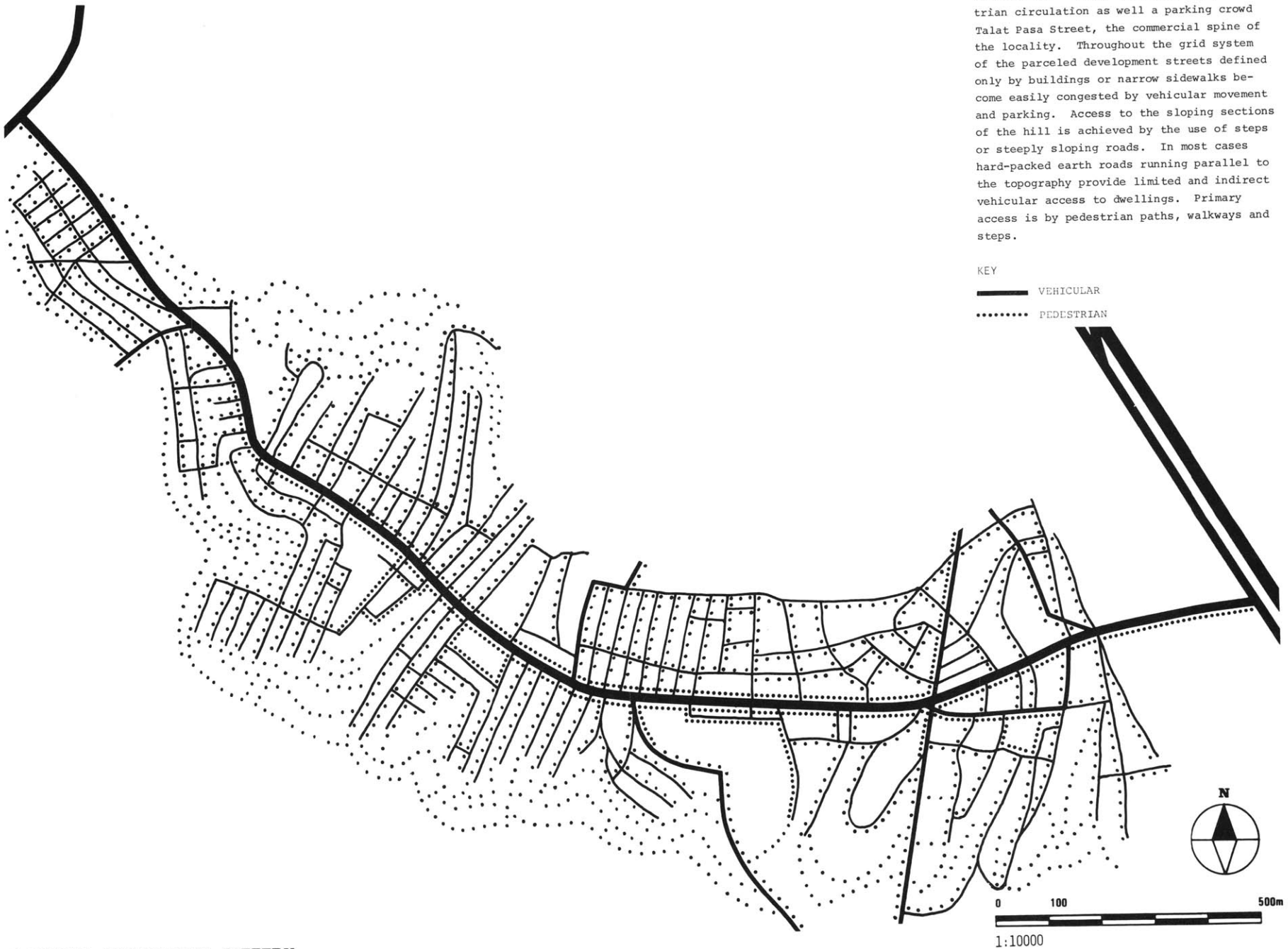
KEY

- Pk Parking
- P Police
- F Fire Department
- S School
- Mq Mosque
- 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



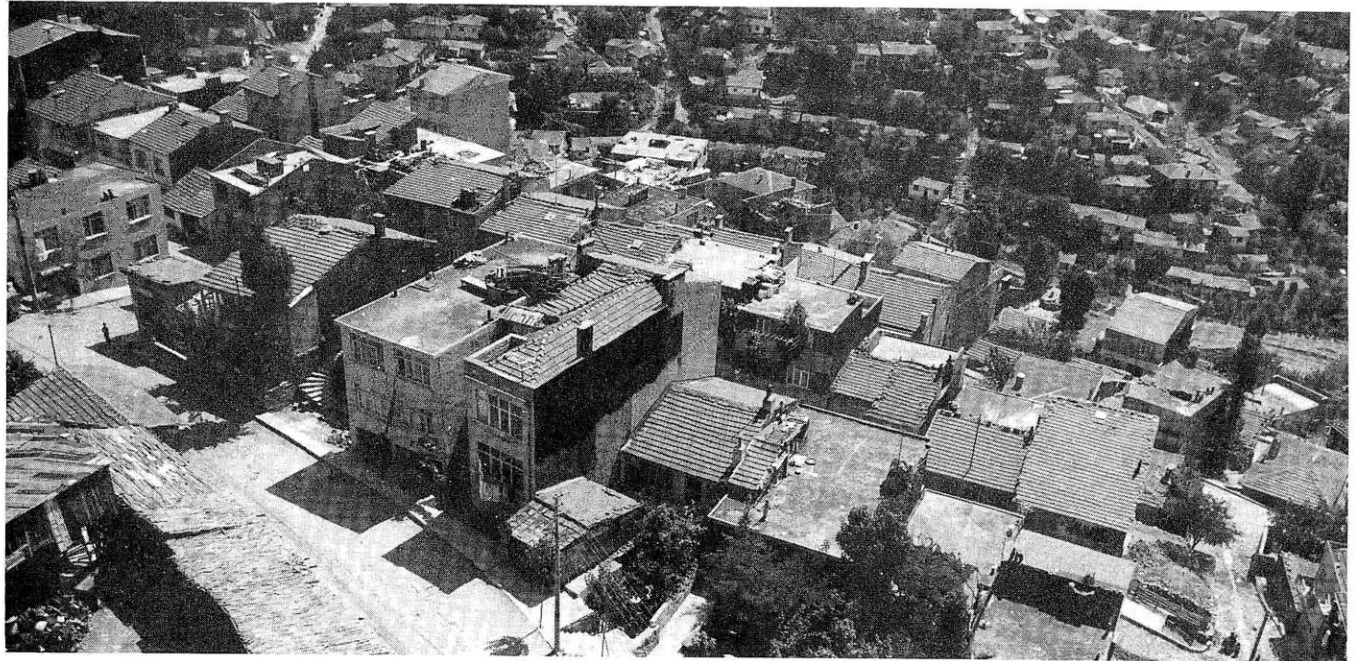
CIRCULATION: Major vehicular and pedestrian circulation as well as parking crowd Talat Pasa Street, the commercial spine of the locality. Throughout the grid system of the parceled development streets defined only by buildings or narrow sidewalks become easily congested by vehicular movement and parking. Access to the sloping sections of the hill is achieved by the use of steps or steeply sloping roads. In most cases hard-packed earth roads running parallel to the topography provide limited and indirect vehicular access to dwellings. Primary access is by pedestrian paths, walkways and steps.



LOCALITY CIRCULATION PATTERN

0 100 500m  
1:10000

**POPULATION:** According to the 1975 Census, the locality has an estimated population of 55,879 persons. In 1963, 29% of the population of 25,028 were living in rental housing. 83% of the homeowners were relocated from other sections of Istanbul. 50% of the residents were originally from the Black Sea Region and 30% from East Anatolia. 54.2% of the population was illiterate.



**INCOME:** Statistical data is not presently available. In 1975 the estimated minimum annual income is \$275 and maximum \$550 per capita. The majority of working males are manual laborers. The nearby industrial areas supply jobs for most of the working people. 30% of the population live in their own dwellings. The rest live in rental units. Minimum monthly rent in apartments is \$35. A two room dwelling unit rents for \$60 to \$85 per month.

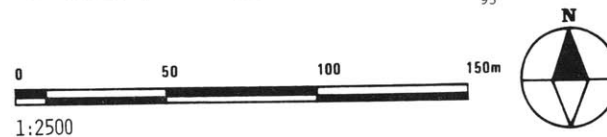


**GULTEPE, Istanbul:** (top) Row apartment buildings frequently use entire lot for construction creating a lack of open space. Original houses usually incorporate garden area at the front or back of lots. Notice the stairway for a new row apartment building being built in the open lot in the left foreground across from area where wood for fuel is sold.

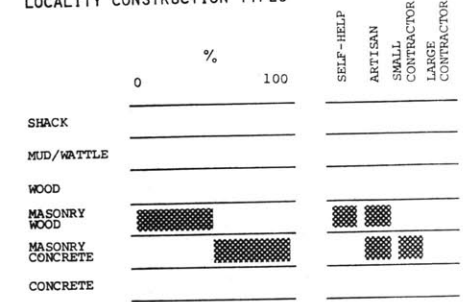
(bottom) Typical squatter development on the steeper slopes. Access to dwellings is often by undeveloped walkways. The land is very susceptible to erosion.



LOCALITY SEGMENT PLAN



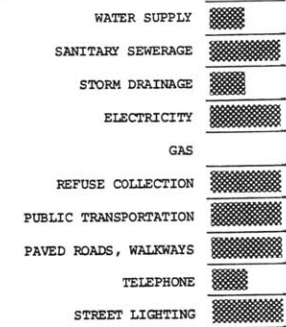
LOCALITY CONSTRUCTION TYPES



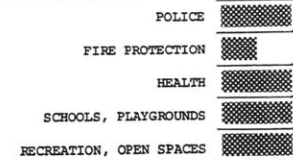
The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

Quality of information: Approximate

LOCALITY UTILITIES AND SERVICES



LOCALITY COMMUNITY FACILITIES

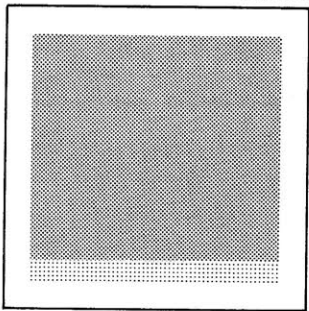
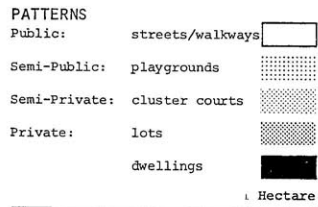
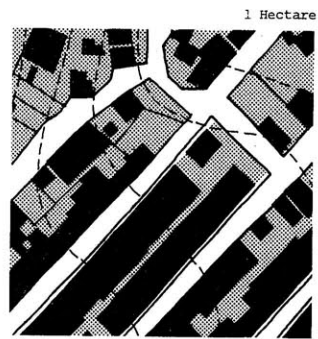


The chart illustrates the approximate availability of utilities, services, and community facilities at three levels: NONE, LIMITED, ADEQUATE.

Quality of information: Approximate

[Dotted pattern] SELECTED BLOCK

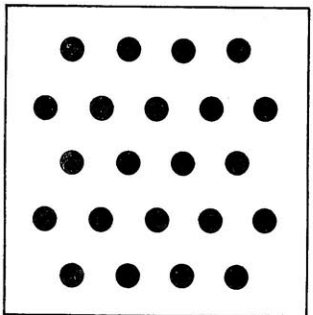
LAND UTILIZATION DIAGRAMS



**PERCENTAGES**

Streets/Walkways	32%
Playgrounds	6%
Cluster Courts	-
Dwellings/Lots	62%

1 Hectare

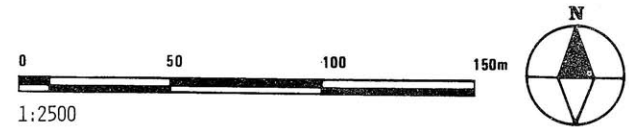


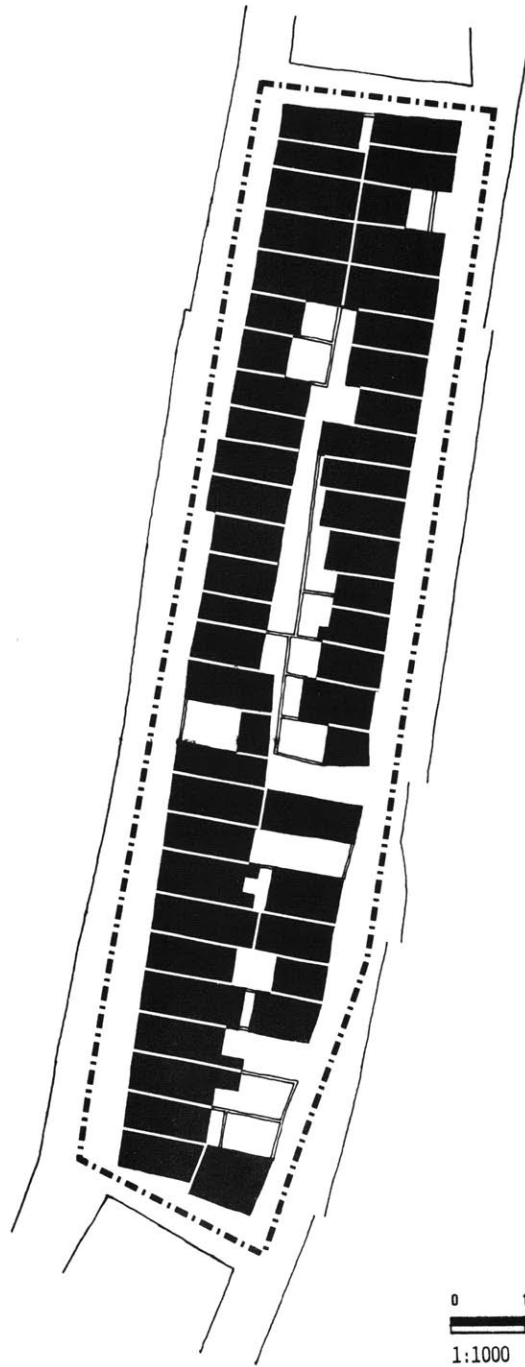
**DENSITY** Persons/Hectare 440

● 20 persons



**LOCALITY SEGMENT LAND UTILIZATION**





LOCALITY BLOCK PLAN



LOCALITY SEGMENT LAND UTILIZATION DATA

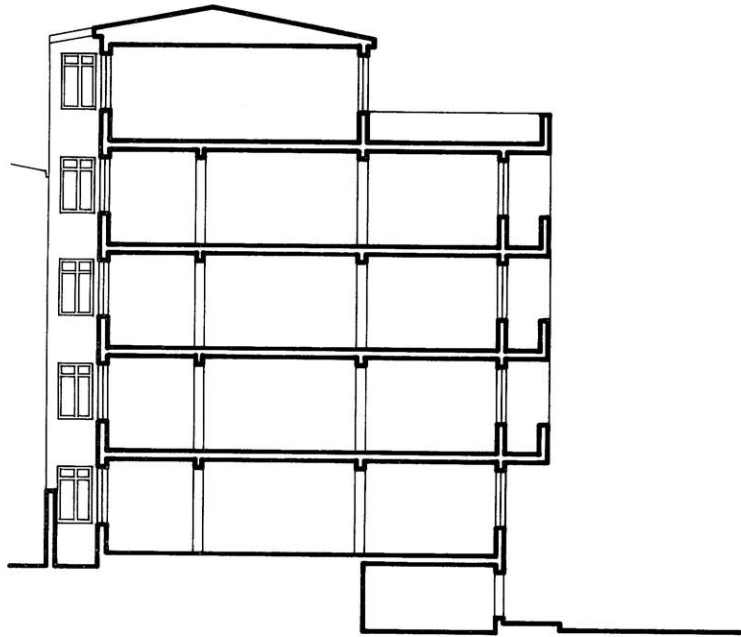
DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	950	16.0	59
DWELLING UNITS	1750	16.0	109
PEOPLE	7037	16.0	440
AREAS		Hectares	Percentages
PUBLIC (streets, walkways, open spaces)		5.0	32
SEMI-PUBLIC (open spaces, schools, community centers)		.9	6
PRIVATE (dwellings, shops, factories, lots)		10.0	62
SEMI-PRIVATE (cluster courts)		.1	-
TOTAL		16.0	100

NETWORK EFFICIENCY  
 $R = \frac{\text{network length(circulation)}}{\text{areas served(circulation, lots)}} = 366 \text{ m/Ha}$   
 AVERAGE LOT AREA =  $105 \text{ m}^2$

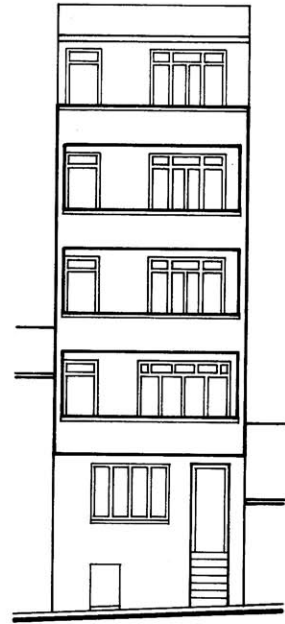
LOCALITY BLOCK LAND UTILIZATION DATA

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	56	.47	119
DWELLING UNITS	77	.47	164
PEOPLE	359	.47	764
AREAS		Hectares	Percentages
PUBLIC (streets, walkways, open spaces)		.13	28
SEMI-PUBLIC (open spaces, schools, community centers)		-	-
PRIVATE (dwellings, shops, factories, lots)		.34	72
SEMI-PRIVATE (cluster courts)		-	-
TOTAL		.47	100

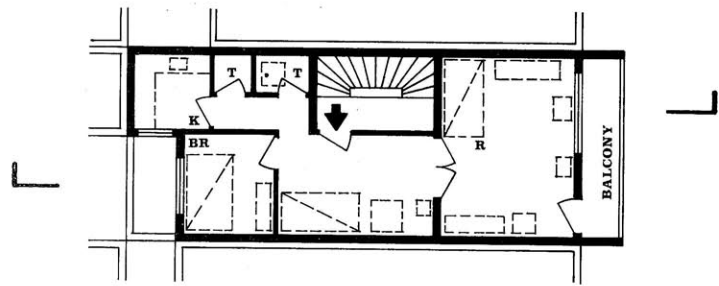
NETWORK EFFICIENCY  
 $R = \frac{\text{network length(circulation)}}{\text{areas served(circulation, lots)}} = 268 \text{ m/Ha}$   
 AVERAGE LOT AREA =  $61 \text{ m}^2$



SECTION

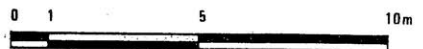


ELEVATION



THIRD FLOOR 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)

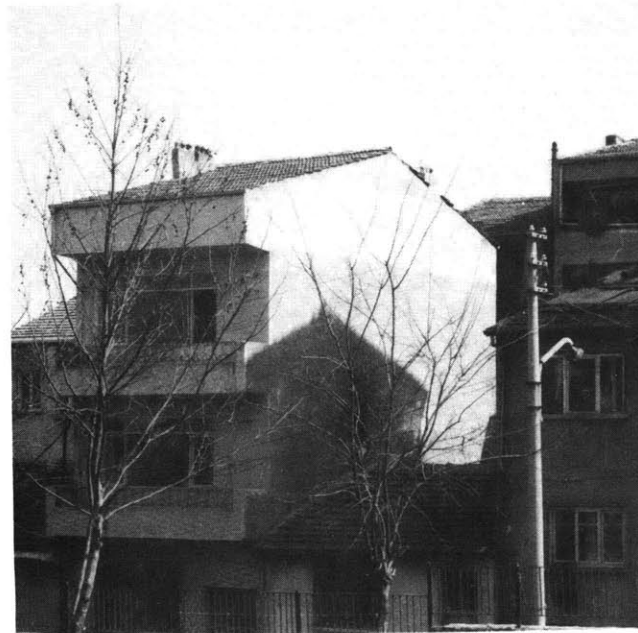


1:200



TYPICAL DWELLING

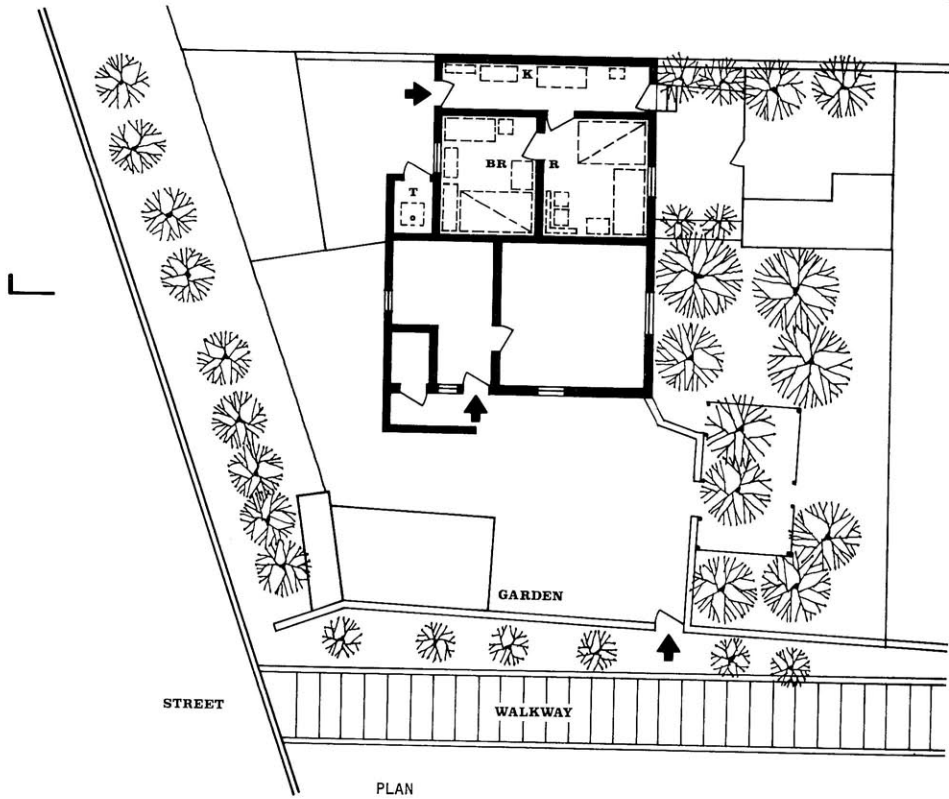
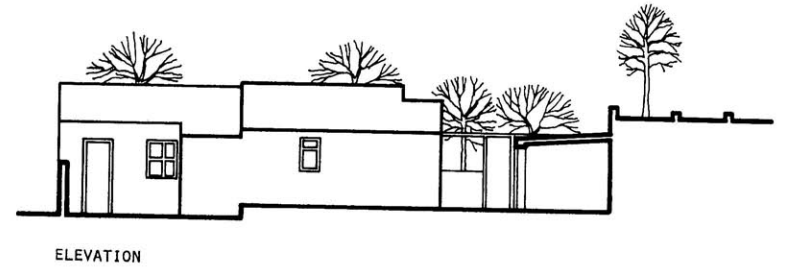
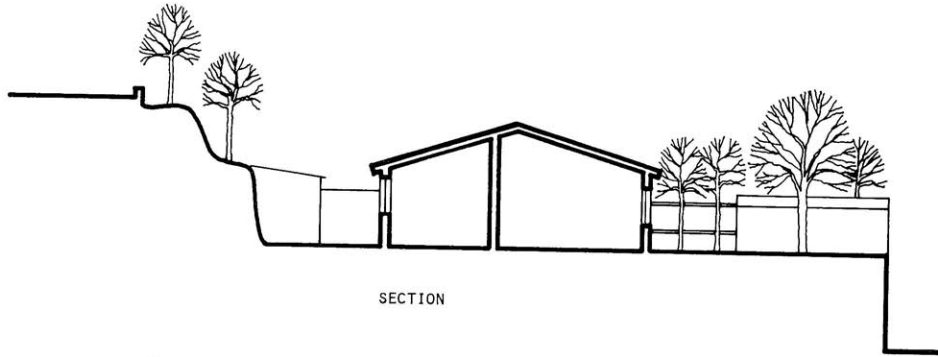




GULTEPE, Istanbul: (top left) Block of row apartment buildings. Most apartments have small private balconies.

(right) A new row apartment building with adjacent low rise construction. Top floor apartments often have large terraces.

(bottom left) The row house in the center is an example of initial residential development. Adjacent buildings show how most lots are eventually developed.



- 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): 27  
 tenure: LEGAL OWNERSHIP

**LAND/LOT**  
 utilization: PRIVATE  
 area (sq m): 255  
 tenure: EXTRALEGAL OWNERSHIP

**DWELLING**  
 location: INNER RING  
 type: SEMI-DETACHED  
 number of floors: 1  
 utilization: MULTIPLE FAMILY  
 physical state: FAIR

**DWELLING DEVELOPMENT**  
 mode: INCREMENTAL  
 developer: POPULAR  
 builder: ARTISAN  
 construction type: MASONRY/WOOD  
 year of construction: 1958-59, 1963

**MATERIALS**  
 foundation: CONCRETE/STONE  
 floors: CONCRETE/WOOD  
 walls: CONCRETE BLOCK  
 roof: WOOD/TILE

**DWELLING FACILITIES**  
 wc: 1  
 shower: -  
 kitchen: -  
 rooms: 2  
 other: COOKING AREA/CIRCULATION



**SOCIO-ECONOMIC DATA**  
(related to user)

**GENERAL: SOCIAL**  
 user's ethnic origin: TURKISH  
 place of birth: ERZINCAN  
 education level: THIRD GRADE

**NUMBER OF USERS**  
 married: 2  
 single: -  
 children: 4  
 total: 6

**MIGRATION PATTERN**  
 number of moves: 5  
 rural - urban: 1944, 1960  
 urban - urban: 1960, 1963  
 urban - rural: 1950  
 why came to urban area: RELATIVES/WORK

**GENERAL: ECONOMIC**  
 user's income group: LOW  
 employment: DISABLED  
 distance to work: -  
 mode of travel: -

**COSTS**  
 dwelling unit: \$400  
 land - market value: N.A.

**DWELLING UNIT PAYMENTS**  
 financing: SELF-FINANCED  
 rent/mortgage: N.A.  
 % income for rent/mortgage: N.A.

GULTEPE, Istanbul: (left) Combination corridor and kitchen of squatter house. The stove uses butane gas. A small cold water faucet and sink are in the background.

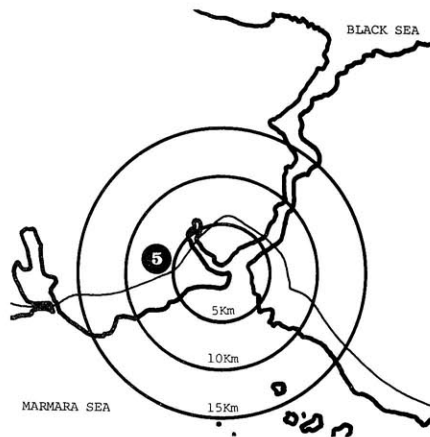
(right) Squatter houses many times offer living environments which far surpass those enjoyed by the more affluent. The back part of the lot contains a highly developed fruit and vegetable garden and an outdoor sitting area sheltered by peach trees and grapevines.

#### LOCALITY SOURCES

Plan: (accurate) Kagithane Municipality Planning Office, 1972.  
 Land Use Pattern: (approximate) IBID.  
 Circulation Pattern: (approximate) IBID.  
 Segment Plan: (accurate) IBID.  
 Segment Land Utilization: (accurate) IBID.  
 Block Plan: (accurate) IBID.  
 Typical Dwelling: (accurate) Field Survey, M. and N. Butler, 1975; Field Survey, C. Ercan, 1976.  
 Physical Data: (accurate) Field Survey, M. and N. Butler, 1975.  
 Socio-Economic Data: (accurate) IBID.  
 Photographs: M. and N. Butler, 1975  
 C. Ercan, 1976.  
 General Information: Istanbul University, Department of Social Anthropology, 1975; Zeytinburnu Gecekondu Bolgesi, W. M. Hart, Istanbul, 1969; Turkiye-Cografî ve Sosyal Aras-tirmalar, E. Tumertekin, F. Mansur, P. Benedict Istanbul, 1973.

## 5 OSMANIYE, İstanbul

PUBLIC, LOW INCOME, BLOCK  
APARTMENTS/CORE HOUSES



LOCATION: The site is located approximately 7 km. west of the city center. The site is bounded on the south by the London Highway and adjacent industry, on the north by the Old London Highway and the Davutpasa Military Base, to the east by the Mithatpasa Industrial Park, and on the west by a combination of land presently being developed for residential and light industrial use plus Merter Sitesi, a middle income housing development.



OSMANIYE, Istanbul: (top) View of locality looking toward the London Highway showing block apartment building development. Roofs of core housing units are visible in the foreground.

(bottom) Streets are highly developed. The main street is cobblestone. To create a feeling of having gardens, residents grow ivy up the sides of the buildings. Many balconies are enclosed for extra living space or used for storage and cloths hanging.



**ORIGINS:** The locality is one of the squatter prevention areas designated by the Ministry of Reconstruction and Resettlement. Construction began in 1963 and units were occupied in 1967. The first 1000 units of the 3000 walk-up apartment units were given to families relocated by the clearing of old buildings from around the city walls and other historic sites in Istanbul such as St. Sophia and the Blue Mosque. Families being relocated by the clearing of land around Merkez Efendi Cemetery were moved into the core housing located at the north-western corner of the site. The south-western part of the site remains undeveloped.

**LAYOUT:** The public housing project, which was designed by the Ministry of Reconstruction and Resettlement, consists of a variety of five story walk-up apartment buildings and a small neighborhood of core dwellings. The buildings are scattered on a system of loops and cul-de-sacs linked to a major circulation spine which traverses the site. The southwestern part of the site contains a loop system but is otherwise undeveloped.

 SELECTED SEGMENT

1:10000

LAND USE: The site is divided into four residential neighborhoods grouped around an open area containing commercial facilities. Except for a small development of core housing lots at the northwestern corner of the site all land was designed as semi-public or public. Land immediately adjacent to apartment buildings has in some cases been developed into small private gardens by individual apartment dwellers. Community facilities include three schools, a mosque, a small health clinic and police station. A coffee house and small shops are located adjacent to the mosque. Space for an open market and outdoor movie theater is provided at the northern edge of the site. Open land to the west and south remains available for development.



AREAS

- RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- OPEN SPACES

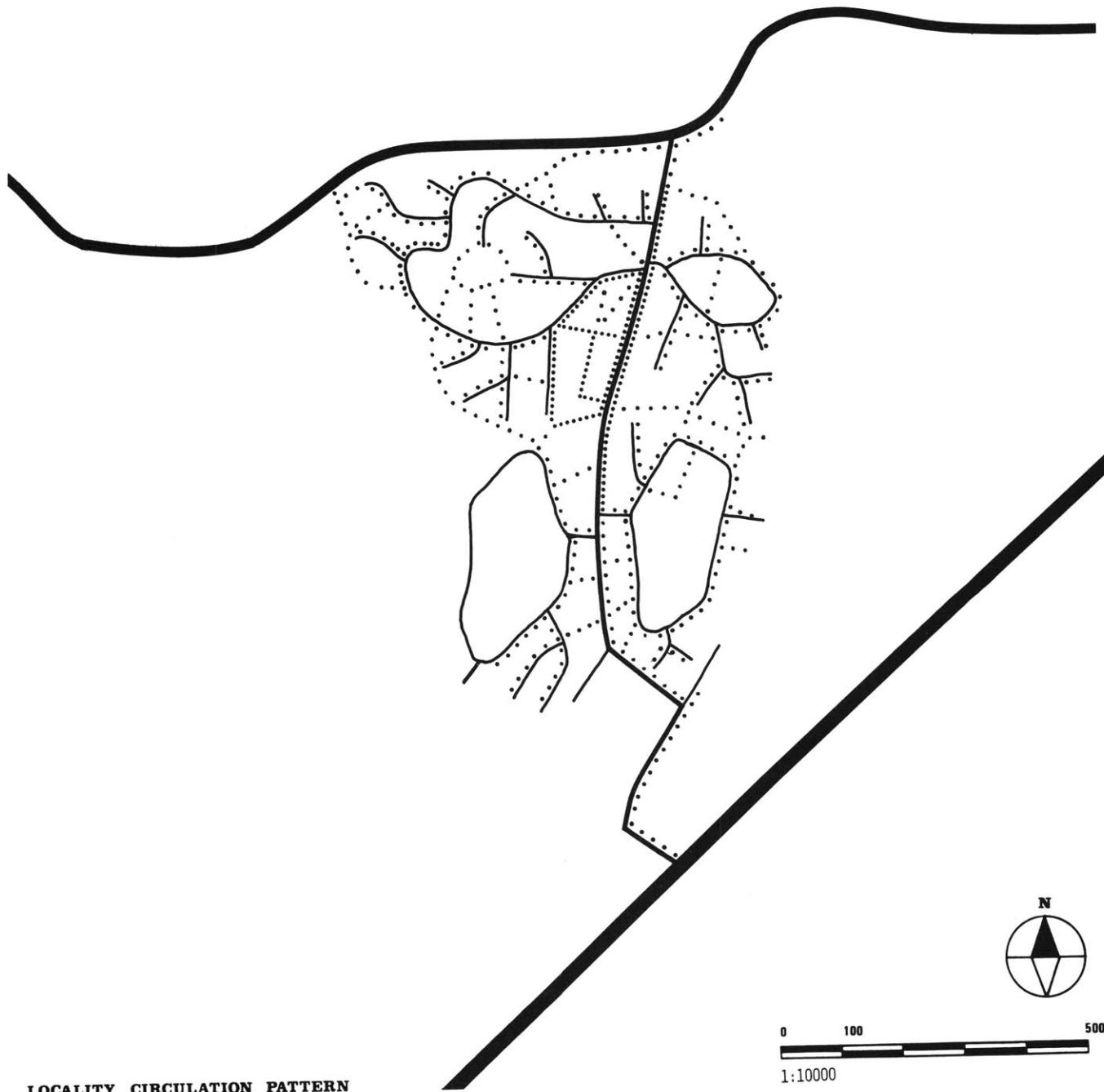
KEY

- Pk Parking
- P Police
- F Fire Department
- S School
- Mq Mosque
- 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: All streets are fully developed vehicular oriented accessways. Pedestrian movement is unrestricted throughout the site. Major vehicular access is from the London Highway on the south and the Old London Highway on the north bringing buses from the city center and private mini-buses from the city walls to the site.



KEY

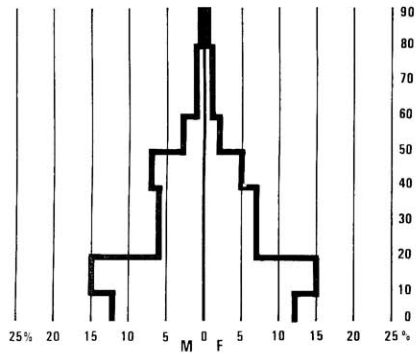
———— VEHICULAR

..... PEDESTRIAN



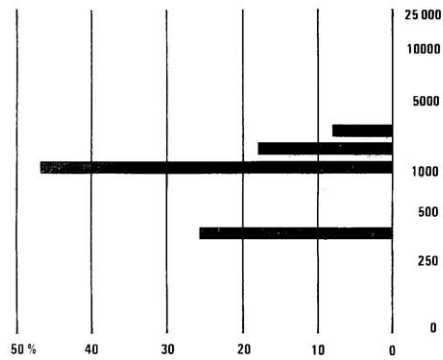
LOCALITY CIRCULATION PATTERN

POPULATION: As of June 1975, 17,850 people are living in the locality. 40.3%, mostly children, are Istanbul born and 52.3% are originally from the Black Sea, Central, Southeast and Eastern Anatolia. 47.6% of the population are between 16 and 45 years of age. 24.1% are less than 12 years old. On the average there are 6.08 persons per household and 2.7 persons per room. 38.4% of the families have more than seven persons versus 16% of the families in the Istanbul metropolitan area. 51% of the population are elementary and 3.5% high school graduates. 25.1% of the population is illiterate.



LOCALITY POPULATION DISTRIBUTION (May 1972)  
 horizontal: percentages vertical: ages  
 males: M females: F  
 Source: Department of Anthropology, Istanbul University,  
 Undergraduate Theses, 1973.

INCOME: In 1975 the average annual family income is \$1840. Annual food expenses average approximately \$870 per family. 50.4% of the working population are laborers, 19.2% professional workers, 12% government employees and 12.5% artisans. 96% of the laborers have annual incomes of \$1655 or less. 60.8% are one-person, 24% are two person and 10.6% are three person working families. 58.4% work in the historic peninsula and 24% in Bakirkoy and Zeytinburnu industrial areas. Even though the dwellings are given for ownership, those who find units too small or who improve their income move out and rent their units. 20.5% of the units are being rented. Average monthly rent is \$22 ranging from \$7 to \$35.



LOCALITY ANNUAL INCOME DISTRIBUTION (1975)  
 horizontal: percentages vertical: dollars  
 Source: Greater Istanbul Metropolitan Planning Office



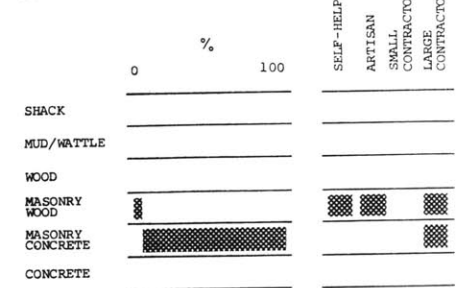




LOCALITY SEGMENT PLAN

1:2500

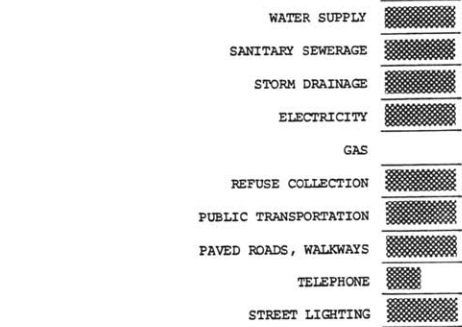
LOCALITY CONSTRUCTION TYPES



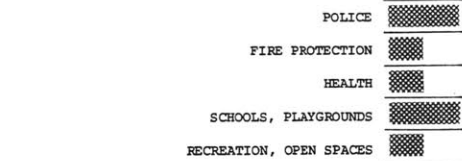
The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

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.

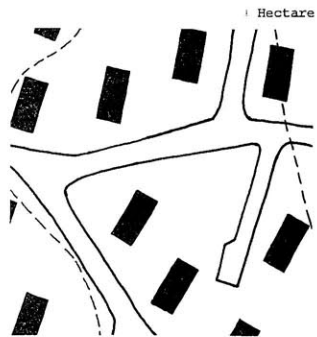
Quality of information: Approximate

SELECTED BLOCK

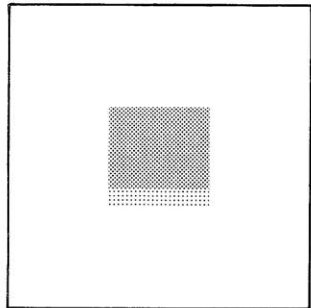
OSMANIYE, Istanbul: (top) View across open land toward segment area. Commercial activity occurs on the right. Excessive public open space is neither maintained nor used fully. Roaming animals and horse-carts pass through these areas.

(bottom) Electricity is supplied to buildings by underground cable. High tension lines run above ground through the locality. Residents create private/semi-private open space adjacent to first floor dwellings.

LAND UTILIZATION DIAGRAMS

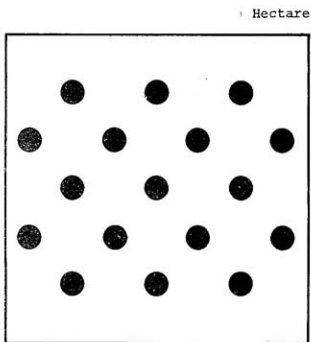


- PATTERNS**
- Public: streets/walkways
  - Semi-Public: playgrounds
  - Semi-Private: cluster courts
  - Private: lots
  - dwellings
- 1 Hectare



**PERCENTAGES**

Streets/Walkways	89%
Playgrounds	2%
Cluster Courts	-
Dwellings/Lots	9%

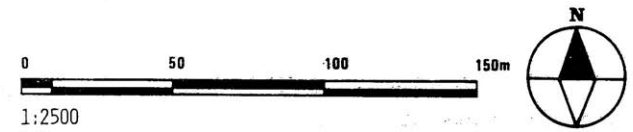


**DENSITY**      Persons/Hectare    333

20 persons



**LOCALITY SEGMENT LAND UTILIZATION**



1:2500

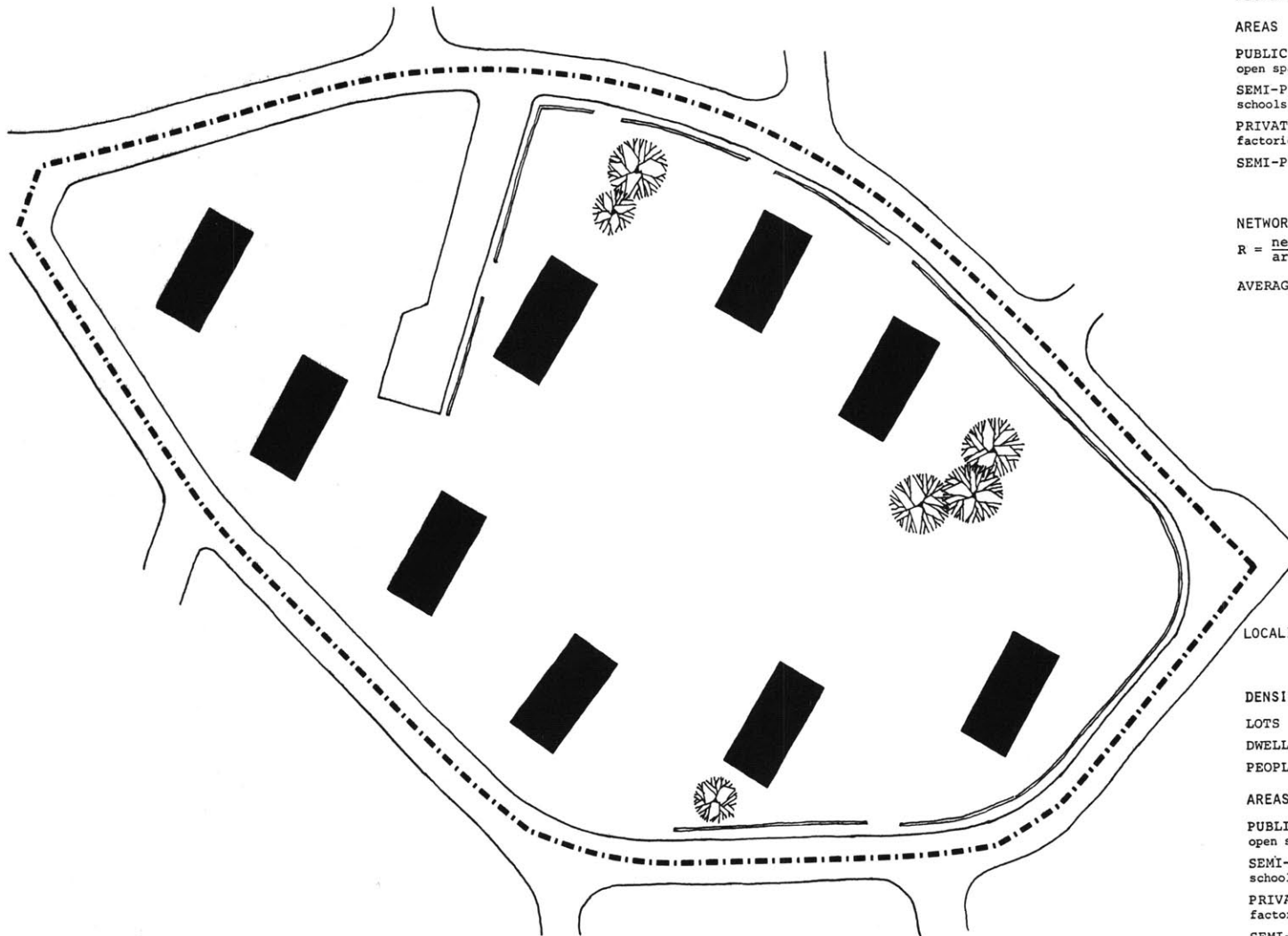
LOCALITY SEGMENT LAND UTILIZATION DATA

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	-	15.0	-
DWELLING UNITS	830	15.0	55
PEOPLE	5000	15.0	333

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	13.3	89
SEMI-PUBLIC (open spaces, schools, community centers)	.4	2
PRIVATE (dwellings, shops, factories, lots)	1.3	9
SEMI-PRIVATE (cluster courts)	-	-
<b>TOTAL</b>	<b>15.0</b>	<b>100</b>

NETWORK EFFICIENCY  
 $R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 170 \text{ m/Ha}$   
 AVERAGE LOT AREA = -



LOCALITY BLOCK LAND UTILIZATION DATA

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	-	1.39	-
DWELLING UNITS	90	1.39	65
PEOPLE	547	1.39	394

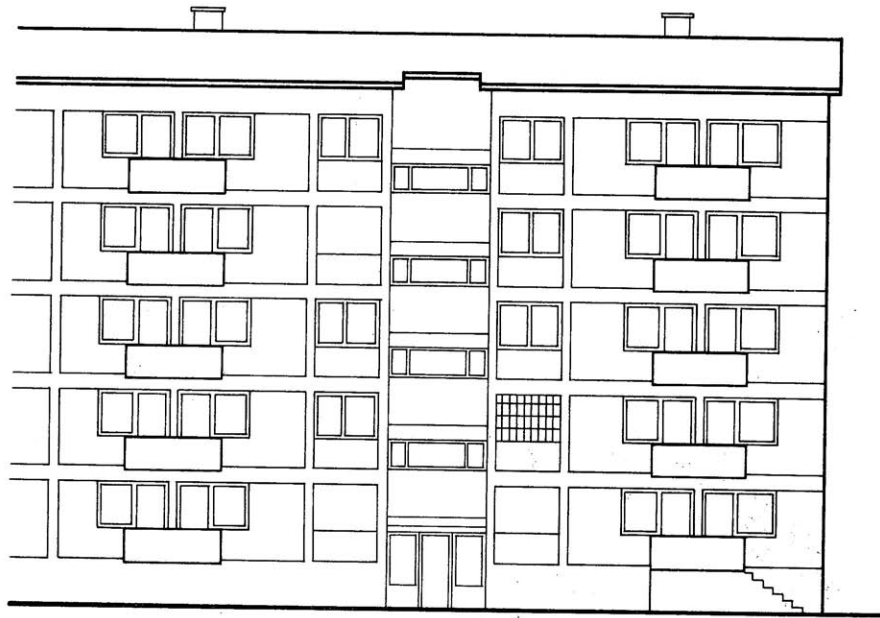
  

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	1.27	91
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	.12	9
SEMI-PRIVATE (cluster courts)	-	-
<b>TOTAL</b>	<b>1.39</b>	<b>100</b>

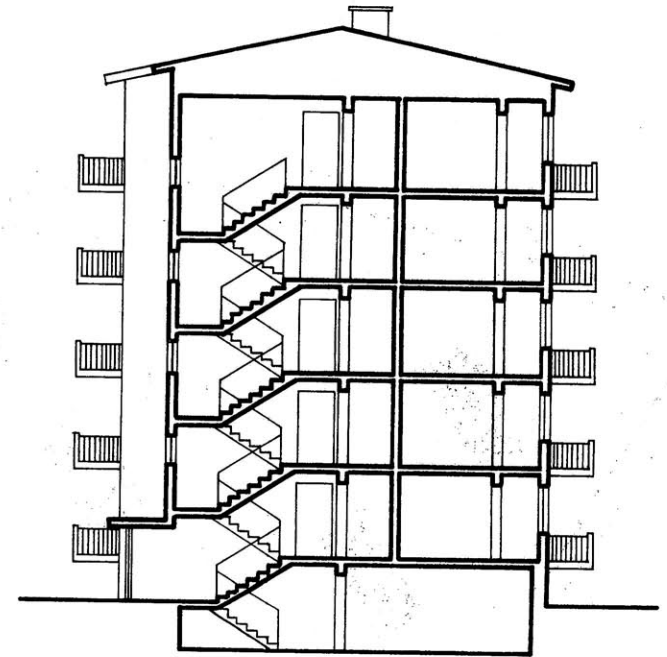
NETWORK EFFICIENCY  
 $R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 200 \text{ m/Ha}$   
 AVERAGE LOT AREA = -



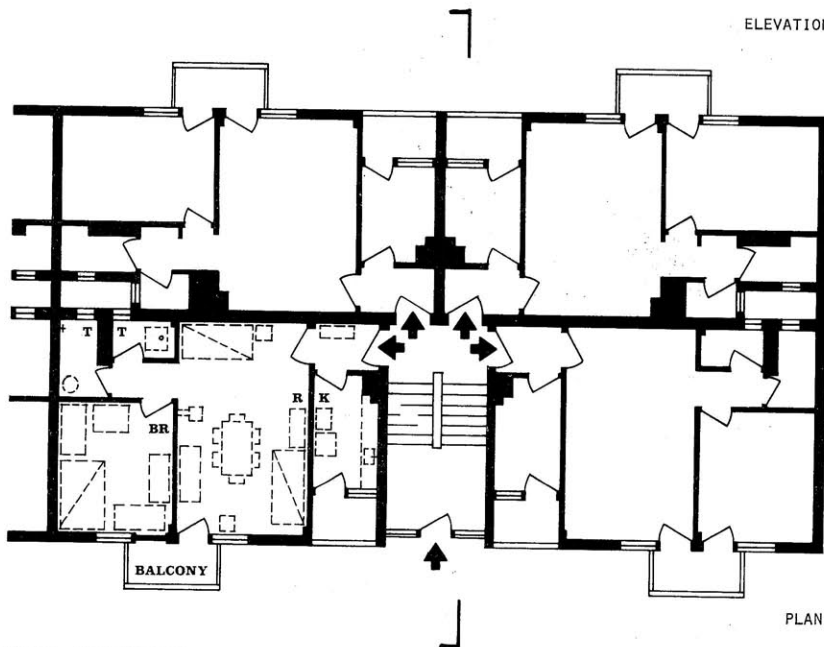
LOCALITY BLOCK PLAN



ELEVATION



SECTION

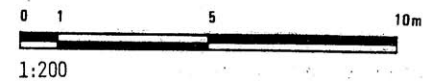


PLAN

TYPICAL DWELLING

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)





**PHYSICAL DATA**  
(related to dwelling and land)

DWELLING UNIT  
 type: APARTMENT  
 area (sq m): 45  
 tenure: LEGAL RENTAL

LAND/LOT  
 utilization: PUBLIC  
 area (sq m): -  
 tenure: LEGAL OWNERSHIP

DWELLING  
 location: INNER RING  
 type: WALK-UP  
 number of floors: 5  
 utilization: MULTIPLE FAMILY  
 physical state: FAIR

DWELLING DEVELOPMENT  
 mode: INSTANT  
 developer: PUBLIC  
 builder: LARGE CONTRACTOR  
 construction type: MASONRY/CONCRETE  
 year of construction: 1963 - 1967

MATERIALS  
 foundation: CONCRETE/STONE  
 floors: CONCRETE  
 walls: TILE MASONRY WITH COLUMNS  
 roof: WOOD/TILE

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

**SOCIO-ECONOMIC DATA**  
(related to user)

GENERAL: SOCIAL  
 user's ethnic origin: TURKISH  
 place of birth: ADANA  
 education level: ELEMENTARY

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

MIGRATION PATTERN  
 number of moves: 1  
 rural - urban: 1970  
 urban - urban: -  
 urban - rural: -  
 why came to urban area: EMPLOYMENT

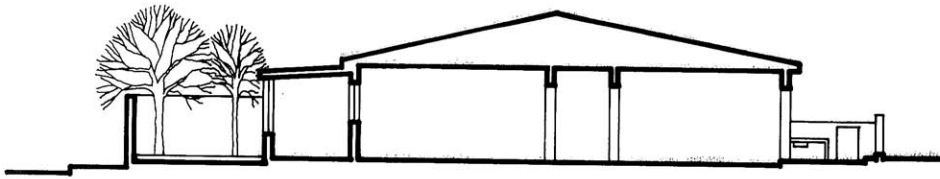
GENERAL: ECONOMIC  
 user's income group: LOW  
 employment: GOVERNMENT EMPLOYEE  
 distance to work: 6 KM.  
 mode of travel: GOVERNMENT VEHICLE

COSTS  
 dwelling unit: N.A.  
 land - market value: N.A.

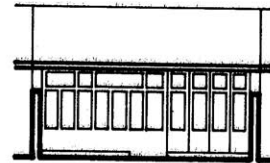
DWELLING UNIT PAYMENTS  
 financing: PUBLIC SUBSIDIZED  
 rent/mortgage: N.A.  
 % income for rent/mortgage: N.A.

OSMANIYE, Istanbul: (left) Typical block apartment buildings and surrounding public land.

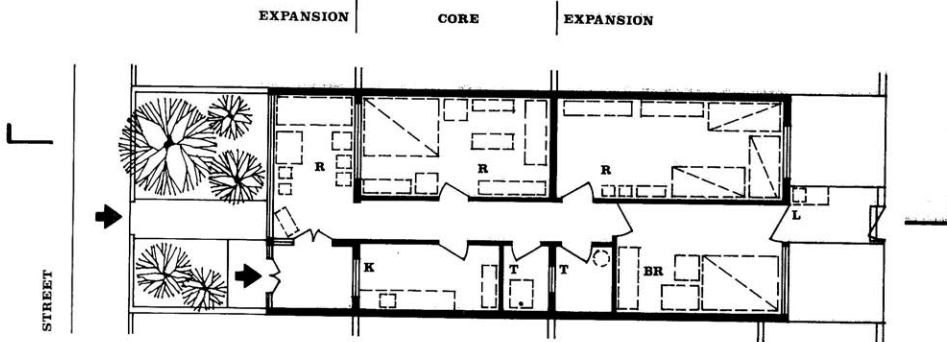
(right) The small and open balconies are generally used for drying vegetables, potted plants, and some storage. The block apartments provide a variety plan layouts.



SECTION

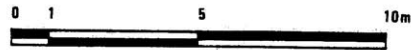


ELEVATION



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)



1:200

TYPICAL DWELLING

OSMANIYE, Istanbul: (top) View of core dwellings. Major complaint of residents is that structurally the core houses cannot support a second floor.

(bottom) The core houses contain highly developed front gardens opening out to the street. Although lots are small, the living environment is very pleasant.



#### LOCALITY SOURCES

Plan: (accurate) Ministry of Reconstruction and Resettlement, Istanbul, 1967.

Land Use Pattern: (accurate) IBID.

Circulation Pattern: (accurate) IBID.

Segment Plan: (accurate) IBID.

Segment Land Utilization: (accurate) IBID.

Block Plan: (accurate) IBID.

Typical Dwelling: (accurate) IBID, Greater Istanbul Master Plan Office, 1975; Field Survey, M. and N. Butler, 1975.

Physical Data: (accurate) Field Survey, M. and N. Butler, 1975.

Socio-Economic Data: (accurate) IBID.

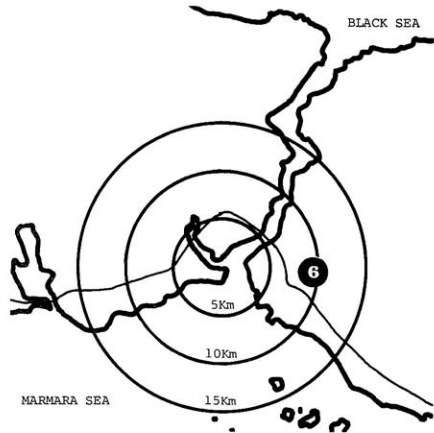
Photographs: M. and N. Butler, 1975.

General Information: Greater Istanbul Master Plan Office Survey, 1975; Department of Social Anthropology, Istanbul University, Undergraduate Thesis, 1973.



## 6 ÜMRANIYE, İstanbul

PRIVATE, MODERATELY LOW INCOME,  
GARDEN APARTMENTS/HOUSES



LOCATION: 6 km. west of the Bosphorus, the locality is situated in a formerly rural agricultural area approximately 9 km. from the city center. An industrial park is being developed on the eastern edge of the site. The Istanbul Radio transmitting station is located in the northern part of the residential area.

ORIGINS: The village of Umraniye dates back to the Ottoman Empire. After the Istanbul Radio transmitter station was built in the village, the population started to increase. From a population of less than 1,000 in 1950 the village enlarged to 7,582 in 1960, 23,046 in 1970, to an estimated 37,500 in 1975. The locality demonstrates an example of land speculation. Large land owners motivated by profit have parcelled existing agricultural land for residential development. The locality was established as a municipality of the Istanbul metropolitan area in 1963.

UMRANIYE, Istanbul: (top) View from a minaret of the parcelled land development.

(bottom) The main street is highly developed. Buses and private mini-buses provide transportation into Istanbul. Notice the contrast between the urban environment and the village man with his donkeys.





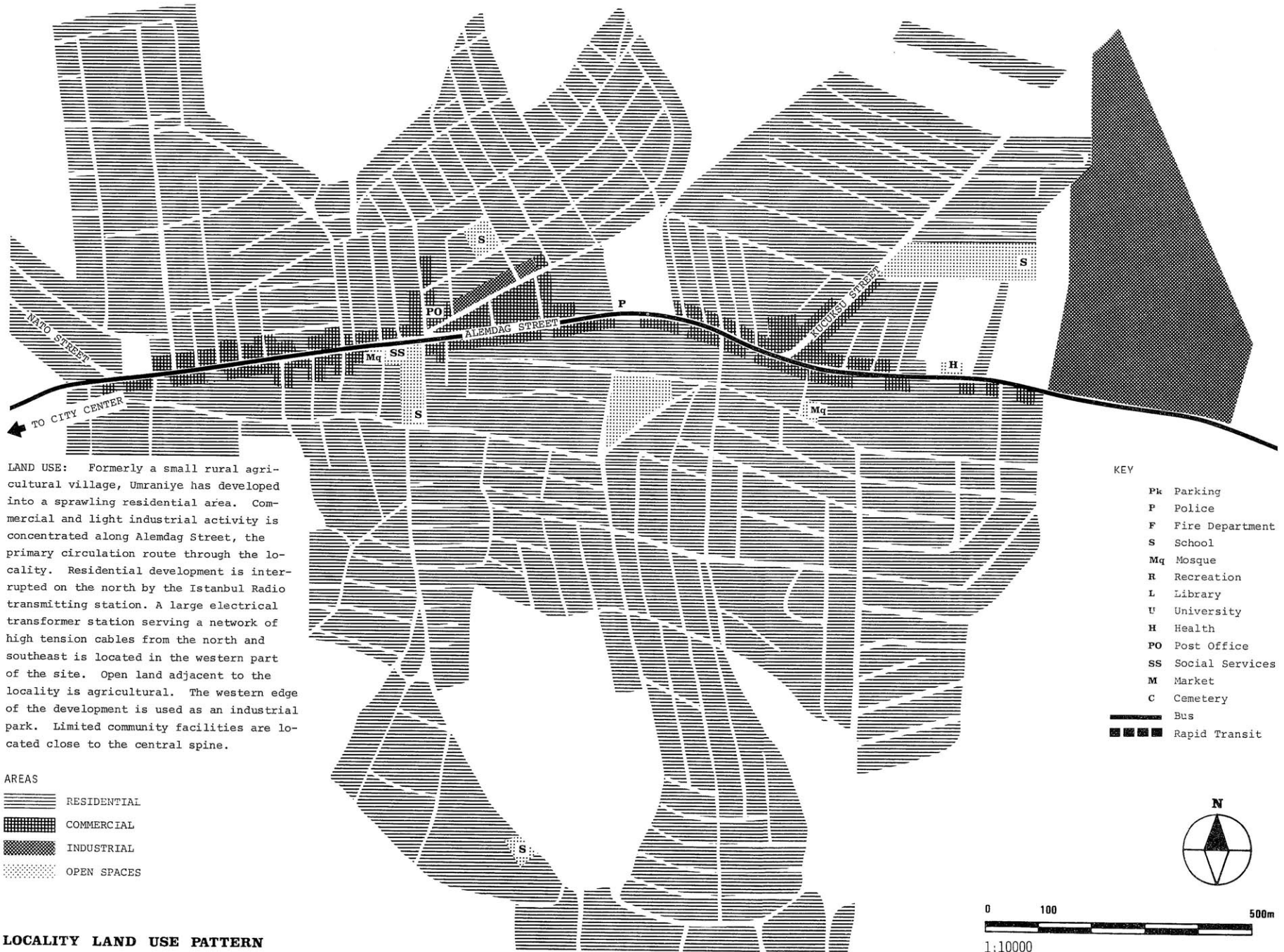


**LAYOUT:** The original village of Umraniye consists of a small organic pedestrian oriented grouping of buildings in the center of the locality along Alemdag Street, the major circulation spine. Development of the surrounding area is occurring as large pieces of land employed in agriculture are being divided into small parcels and sold for residential development. The different subdivisions, which are interconnected by existing farm roads, are parceled in different configurations of gridiron systems independent of one another. In contrast to the original village the scale of the new subdivisions is oriented to the automobile which at this time is generally unavailable to this income sector of the population. Construction is predominately masonry and concrete detached or semi-detached dwellings and apartment buildings.

..... SELECTED SEGMENT

LOCALITY PLAN






LAND USE: Formerly a small rural agricultural village, Umraniye has developed into a sprawling residential area. Commercial and light industrial activity is concentrated along Alemdag Street, the primary circulation route through the locality. Residential development is interrupted on the north by the Istanbul Radio transmitting station. A large electrical transformer station serving a network of high tension cables from the north and southeast is located in the western part of the site. Open land adjacent to the locality is agricultural. The western edge of the development is used as an industrial park. Limited community facilities are located close to the central spine.

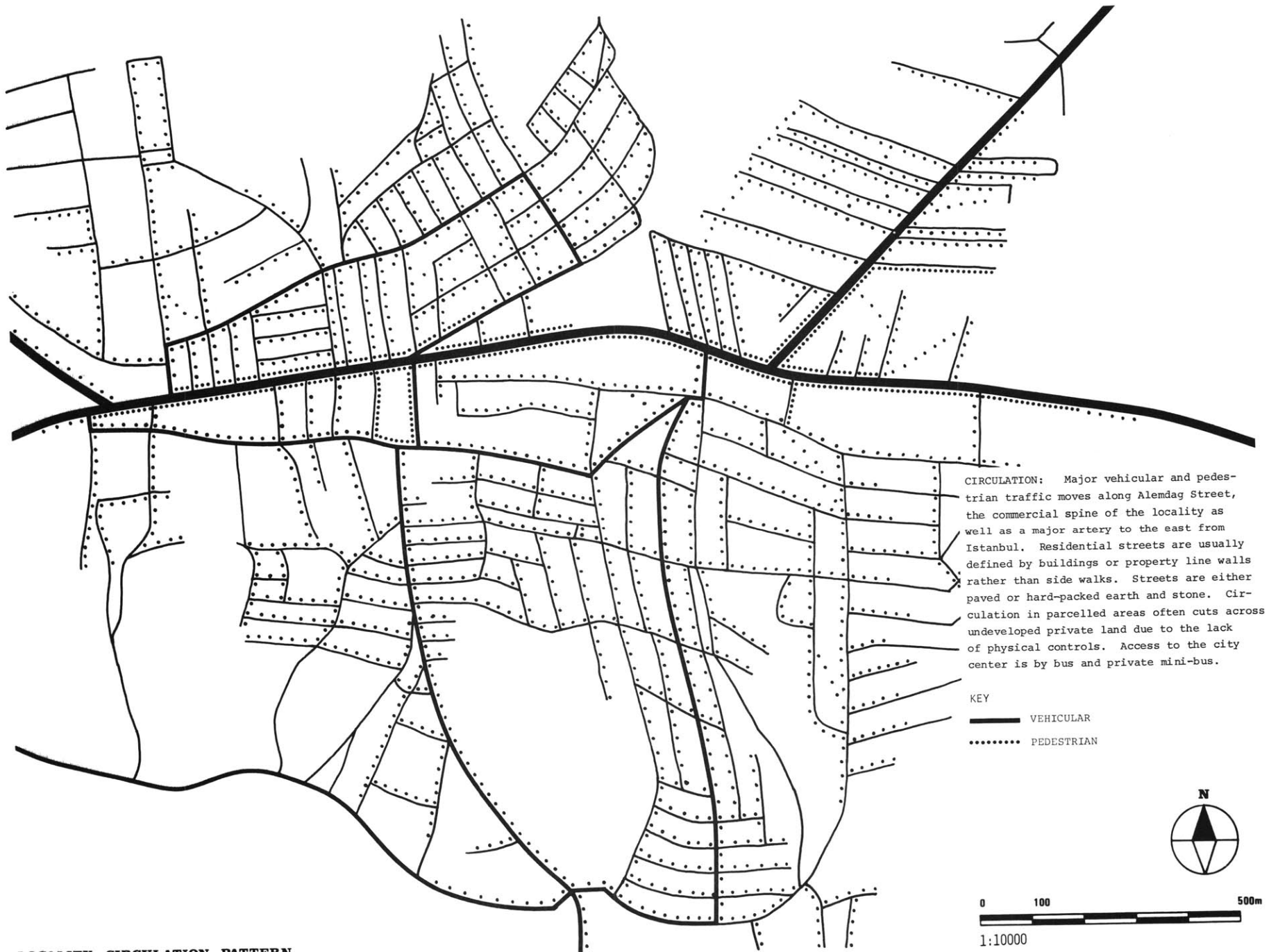
AREAS

-  RESIDENTIAL
-  COMMERCIAL
-  INDUSTRIAL
-  OPEN SPACES

- KEY
- Pk Parking
  - P Police
  - F Fire Department
  - S School
  - Mq Mosque
  - 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: Major vehicular and pedestrian traffic moves along Alemdag Street, the commercial spine of the locality as well as a major artery to the east from Istanbul. Residential streets are usually defined by buildings or property line walls rather than side walks. Streets are either paved or hard-packed earth and stone. Circulation in parcelled areas often cuts across undeveloped private land due to the lack of physical controls. Access to the city center is by bus and private mini-bus.

KEY  
—— VEHICULAR  
..... PEDESTRIAN



0 100 500m  
1:10000

LOCALITY CIRCULATION PATTERN

POPULATION: Formal population statistics are unavailable for the locality. As of 1975, the locality has a population of approximately 37,500 persons. Approximately 25% of the population are immigrants from Bulgaria and Yugoslavia. The majority, an estimated 50% of the population, are from the Black Sea Region of Turkey with nearly one half this number originating from Sile, a popular resort village on the Black Sea 60 km. northeast of Istanbul.

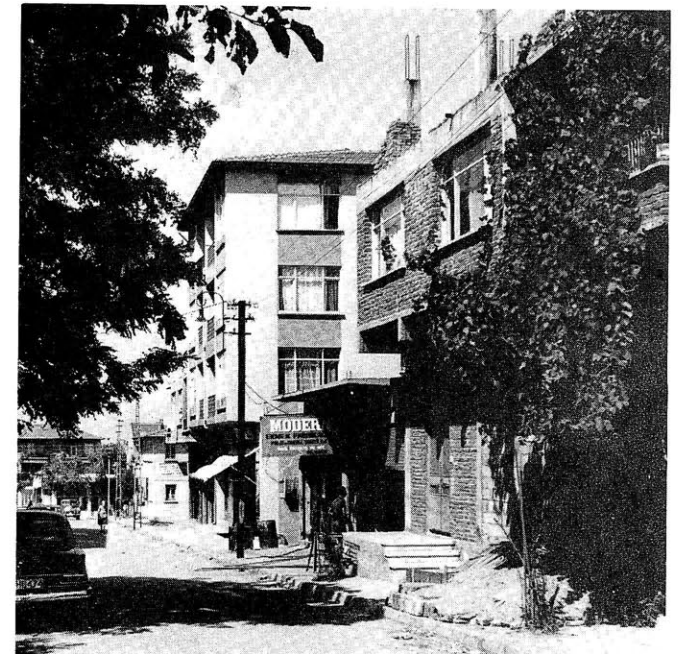


INCOME: Statistical data is not available. Approximately 50% of the working population are laborers. 25% are government employees and 25% are tradesmen or are self-employed. Construction workers make \$7 per day or average \$210 per month working every day. 75% unemployment is possible during winter months. Factory workers earn a minimum of \$1655 annually. Minimum annual starting salary for government workers is \$890. More than half of the working population work outside of Umraniye. Apartment rents range from \$17 to \$68 per month.

UMRANIYE, Istanbul: (top) Row and garden apartment buildings on long/narrow blocks. Open space through the center of the block is wasted.

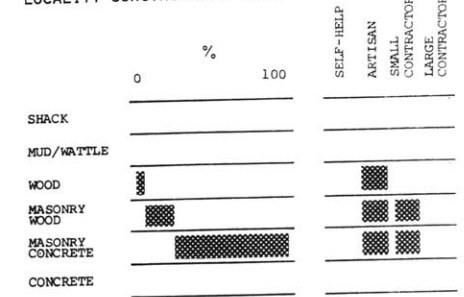
(bottom left) Typical street development. Circulation is usually defined only by garden walls or buildings.

(bottom right) Commercial activity is mixed within residential development. Notice incremental development of building on the right.





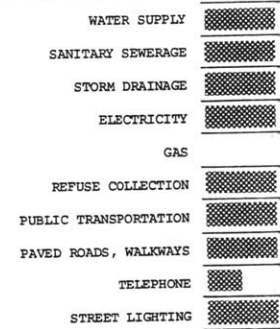
LOCALITY CONSTRUCTION TYPES



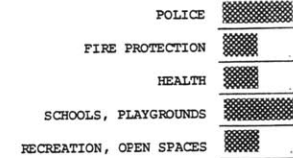
The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

Quality of information: Approximate

LOCALITY UTILITIES AND SERVICES



LOCALITY COMMUNITY FACILITIES

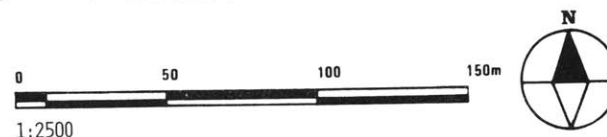


The chart illustrates the approximate availability of utilities, services, and community facilities at three levels: NONE, LIMITED, ADEQUATE.

Quality of information: Approximate

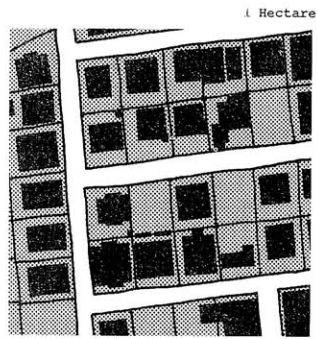
SELECTED BLOCK

LOCALITY SEGMENT PLAN



1:2500

LAND UTILIZATION DIAGRAMS



**PATTERNS**

Public: streets/walkways

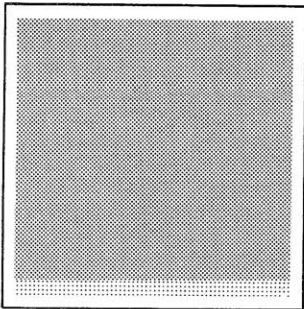
Semi-Public: playgrounds

Semi-Private: cluster courts

Private: lots

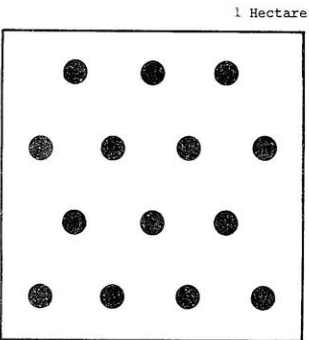
          dwellings

1 Hectare



**PERCENTAGES**

Streets/Walkways	17%
Playgrounds	5%
Cluster Courts	-
Dwellings/Lots	78%



**DENSITY**      Persons/Hectare      278

20 persons



LOCALITY SEGMENT LAND UTILIZATION



1:2500



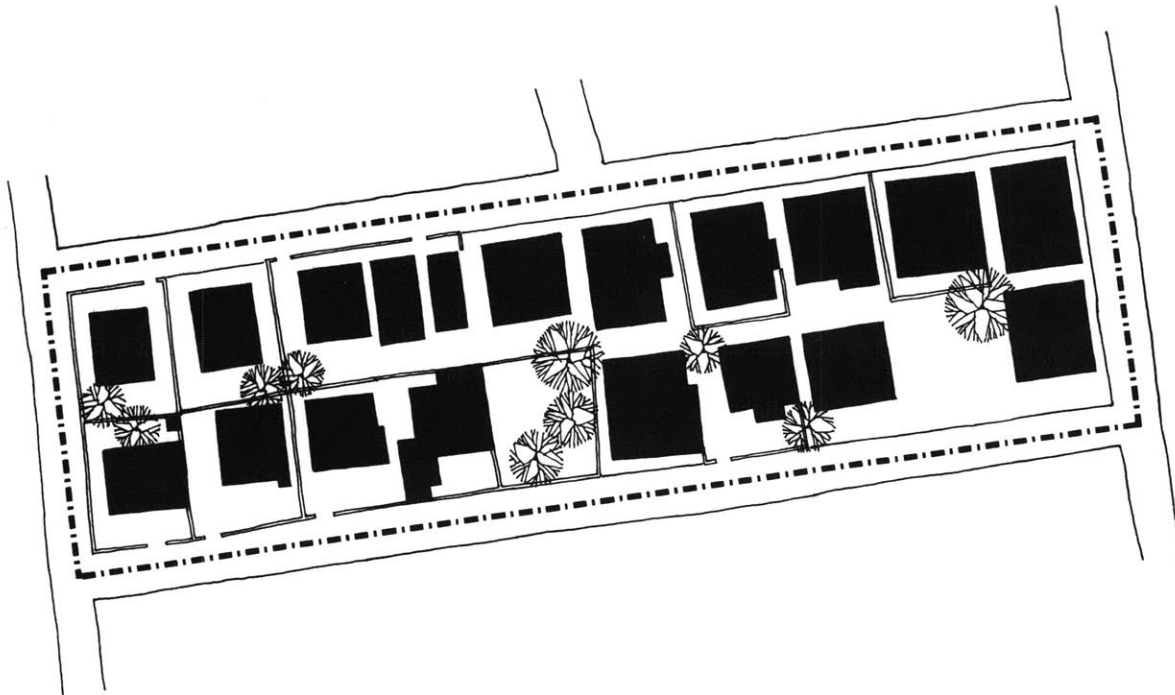
LOCALITY SEGMENT LAND UTILIZATION DATA

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	400	16.0	25
DWELLING UNITS	1000	16.0	63
PEOPLE	4450	16.0	278

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	2.7	17
SEMI-PUBLIC (open spaces, schools, community centers)	.8	5
PRIVATE (dwellings, shops, factories, lots)	12.5	78
SEMI-PRIVATE (cluster courts)	-	-
<b>TOTAL</b>	<b>16.0</b>	<b>100</b>

NETWORK EFFICIENCY  
 $R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 235 \text{ m/Ha}$   
 AVERAGE LOT AREA =  $312 \text{ m}^2$



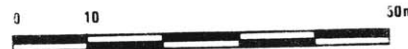
LOCALITY BLOCK LAND UTILIZATION DATA

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	20	.58	34
DWELLING UNITS	50	.58	86
PEOPLE	223	.58	384

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	.11	19
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	.47	81
SEMI-PRIVATE (cluster courts)	-	-
<b>TOTAL</b>	<b>.58</b>	<b>100</b>

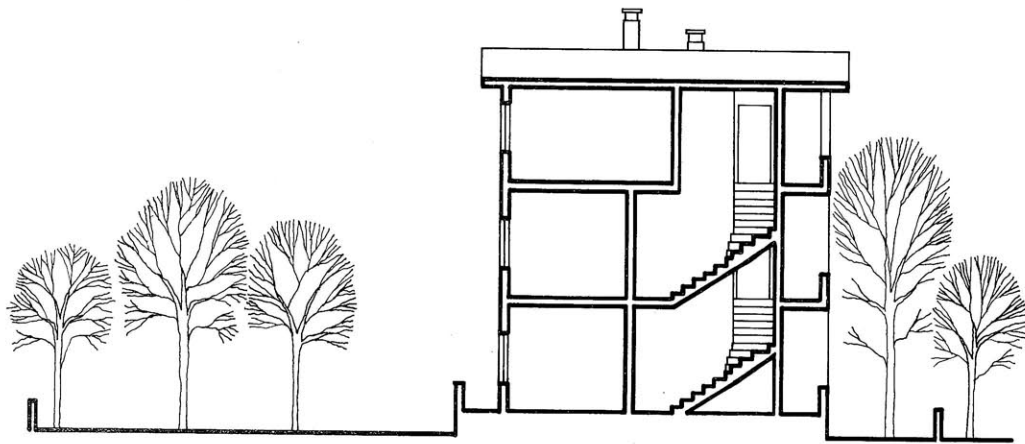
NETWORK EFFICIENCY  
 $R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 314 \text{ m/Ha}$   
 AVERAGE LOT AREA =  $235 \text{ m}^2$



1:1000



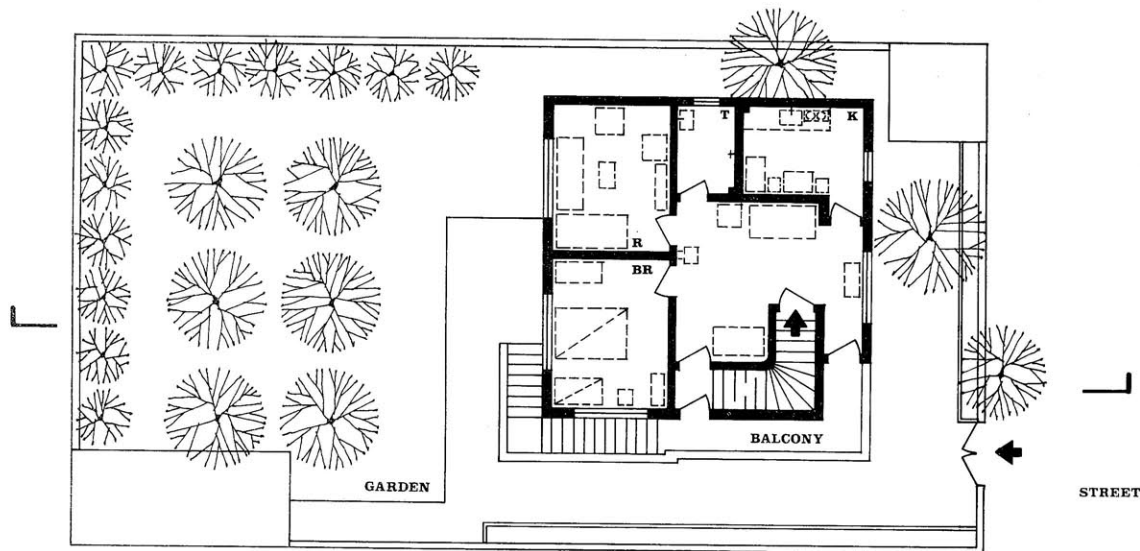
LOCALITY BLOCK PLAN



SECTION

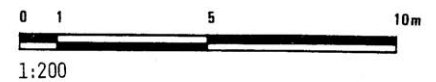


ELEVATION



SECOND FLOOR 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)







#### PHYSICAL DATA (related to dwelling and land)

DWELLING UNIT  
 type: APARTMENT  
 area (sq m): 66  
 tenure: LEGAL RENTAL

LAND/LOT  
 utilization: PRIVATE  
 area (sq m): 312  
 tenure: LEAGAL OWNERSHIP

DWELLING  
 location: PERIPHERY  
 type: WALK-UP  
 number of floors: 3  
 utilization: MULTIPLE FAMILY  
 physical state: GOOD

DWELLING DEVELOPMENT  
 mode: INSTANT  
 developer: PRIVATE  
 builder: SMALL CONTRACTOR  
 construction type: MASONRY/CONCRETE  
 year of construction: 1970

MATERIALS  
 foundation: CONCRETE/STONE  
 floors: CONCRETE  
 walls: CONCRETE BLOCK WITH COLUMNS  
 roof: WOOD/TILE

DWELLING FACILITIES  
 wc: 1  
 shower: 1  
 kitchen: 1  
 rooms: 2  
 other: CENTRAL SPACE

#### SOCIO-ECONOMIC DATA (related to user)

GENERAL: SOCIAL  
 user's ethnic origin: TURKISH  
 place of birth: SIVAS  
 education level: ELEMENTARY

NUMBER OF USERS  
 married: 2  
 single: -  
 children: 1  
 total: 3

MIGRATION PATTERN  
 number of moves: 3  
 rural - urban: 1960  
 urban - urban: 1972, 1974  
 urban - rural: -  
 why came to urban area: RELATIVES/PERSONAL

GENERAL: ECONOMIC  
 user's income group: MODERATELY LOW  
 employment: TELEPHONE FACTORY  
 distance to work: 1.5 KM.  
 mode of travel: WALKING

COSTS  
 dwelling unit: N.A.  
 land - market value: N.A.

DWELLING UNIT PAYMENTS  
 financing: PRIVATE  
 rent/mortgage: \$24 PER MONTH  
 % income for rent/mortgage: 14%

UMRANIYE, Istanbul: (left) Garden apartment building relation to street. Construction materials are substantial.

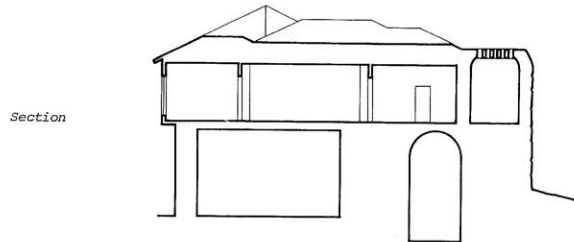
(right) Garden apartment buildings are often grouped close together allowing only limited private open space. Notice different scales of dwelling development.

#### LOCALITY SOURCES

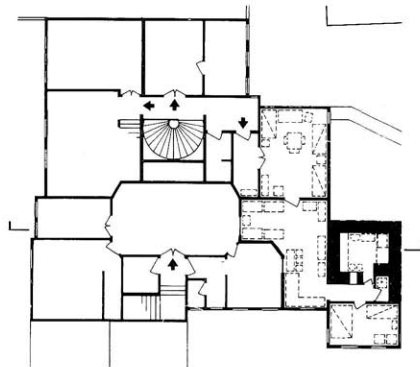
Plan: (accurate) Updated Office Plans, Greater Istanbul Master Plan Office, 1965.  
 Land Use Pattern: (approximate) IBID, Field Survey, M. and N. Butler, 1975.  
 Circulation Pattern: (approximate) Field Survey, M. and N. Butler, 1975.  
 Segment Plan: (accurate) Greater Istanbul Master Plan Office, 1965.  
 Segment Land Utilization: (accurate) IBID.  
 Block Plan: (accurate) IBID.  
 Typical Dwelling: (accurate) Field Survey, M. and N. Butler, 1975.  
 Physical Data: (accurate) IBID.  
 Socio-Economic Data: (accurate) IBID.  
 Photographs: M. and N. Butler, 1975.  
 General Information: Interviews, Umraniye Municipality Office, M. and N. Butler, 1975; C. Ercan, 1976.

# EVALUATIONS

## DWELLINGS TIME/PROCESS PERSPECTIVE



Section



Plan

**ORIGINAL MODEL**

**TRADITIONAL HOUSE**

THE PAST

<i>Physical Characteristics</i>	Rooms grouped around a large central hall, one to three stories, single family use.
<i>Population Density</i>	Low/medium density.
<i>Land/Layout</i>	Organic clusters/groups or rows.
<i>Users</i>	Low/middle/high income groups.

**PRESENT MODEL**

THE PRESENT

<i>Users</i>	Dwellings of this type are no longer being built. Depending on the users' income group, this model is either renovated, replaced or left to deteriorate. Single or multiple family use.
<i>Case Studies</i>	ZEYREK (low income)

**LAND ISSUES**

THE FUTURE

<i>Perspective</i>	OTTOMAN-TURKISH CULTURE Permits low/medium densities. Accessible to middle/high income groups. Land utilization provides maximization of private ownership and responsibility of land.
<i>Comments</i>	Stationary, disappearing. Not feasible for low income groups.

**EUROPEAN HOUSE**

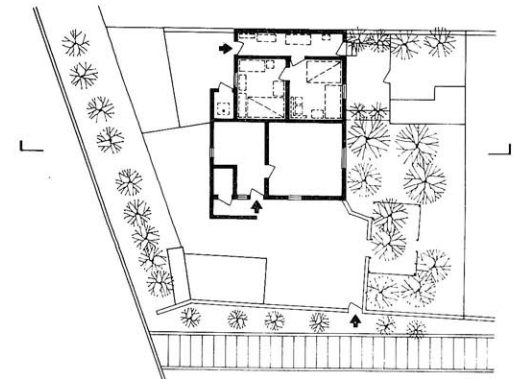
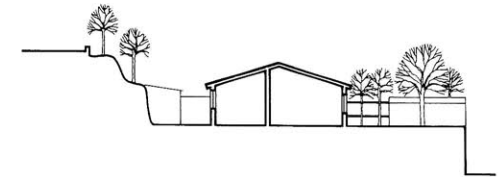
<i>Physical Characteristics</i>	One to three stories, single family use.
<i>Population Density</i>	Low density.
<i>Land/Layout</i>	Gridiron or organic.
<i>Users</i>	Middle/high income groups.

Model was imported in the late XIX Century. Used on a large scale it replaced the traditional house but construction of this type is now very limited. Single family use.

Middle/high income groups.  
Not covered. Concentrated in the suburbs and along the Bosphorus.

WESTERN CULTURE  
Permits low densities. Accessible to high income groups. Land utilization provides maximization of private ownership and responsibility of land.

Stationary, disappearing.  
Not feasible for low income groups.



**SQUATTER HOUSE**

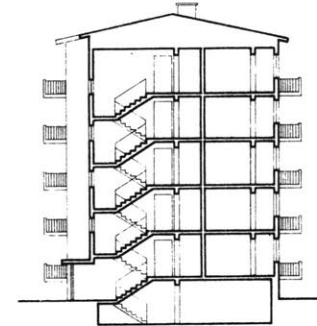
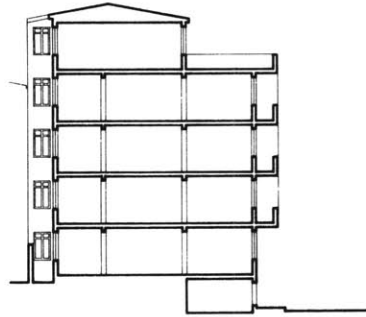
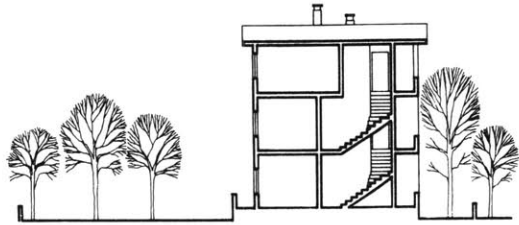
<i>Physical Characteristics</i>	Basically a core house, wet and dry functions are separated. One story, single family use.
<i>Population Density</i>	Low/medium density.
<i>Land/Layout</i>	Organic cluster/groups or rows on public or private land.
<i>Users</i>	Very low income groups.

The model was imported with some adaptations to urban context from Anatolia in the 1940's as squatter settlements began to develop in Istanbul. Single or multiple family use.

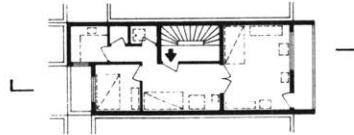
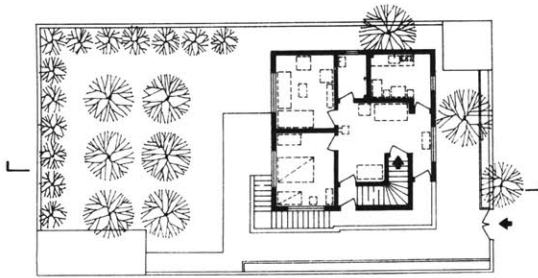
Very low/low income groups.  
RUMELIHISAR USTU, ZEYTINBURNU, GULTEPE

UNIVERSAL-TURKISH CULTURE  
Permits medium density. Accessible to very low/low income groups. Potentially efficient land utilization provides maximization of private ownership and responsibility of land.

Continuing and expanding.  
Presently a model for illegal urban settlement areas, it is applicable to future public sector site and service projects.



Section



Plan

**GARDEN APARTMENT**

One to four dwelling units per floor, one to six stories, garden all around, multiple family use.

Medium density.

Gridiron.

Low/middle/high income groups.

Model was imported in the XX Century. Used on a large scale, it replaces the European house when densities, housing needs and land values increase. Multiple family use.

Low/middle/high income groups.

UMRANIYE (low income)

**WESTERN CULTURE**

Permits medium densities. Accessible to low/middle/high income groups. Lot and dwelling unit sizes are dependent on income level. Land utilization provides maximization of private ownership and responsibility of land.

Continuing.

Block layout needs improvement to minimize infrastructure investment and maintenance/operation cost.

**ROW APARTMENT**

One or more dwelling units per floor, one to six stories, multiple family use.

High density.

Gridiron.

Low/middle/high income groups.

The model was imported in the XX Century. Now the major type of residential construction in the center city, the row apartment is being used increasingly throughout the metropolitan area. Multiple family use.

Low/middle/high income groups.

GULTEPE (low income)

**UNIVERSAL**

Permits high density. Accessible to low/middle/high income groups. Lot and dwelling unit sizes are dependent on income level. Land utilization provides maximization of private ownership and responsibility of land.

Continuing.

Block layout needs improvement to minimize infrastructure investment and maintenance/operation cost.

**BLOCK APARTMENT**

Two or more dwelling units per floor, five or more stories, multiple family use.

Medium/high density.

Varied groupings in commonly shared public/semi-public land.

Middle/high income groups.

The model was imported in the 1950's. Used in public and private housing developments. Multiple family use.

Low/middle/high income groups.

OSMANIYE (low income)

**UNIVERSAL**

Permits medium/high density. Accessible to low/middle/high income groups. Dwelling unit size is dependent on income level. Land utilization provides minimization of private ownership and responsibility of land. Efficient infrastructure network.

Continuing.

Model requires substantial change to maximize private ownership and responsibility of land.

**ORIGINAL MODEL**

Physical Characteristics

Population Density

Land/Layout

Users

**PRESENT MODEL**

Users

Case Studies

**LAND ISSUES**

Perspective

Comments

THE PAST

THE PRESENT

THE FUTURE

PHYSICAL DATA MATRIX

Category	Population of Istanbul Per Category	% of Total Population	LOCALITIES (representative of different categories)	USER	DWELLING UNIT				LAND/LOT			DWELLING				DWELLING DEVELOPMENT								
				5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
				Income	Type	Area	Ten-ure	Rent/Mort.	Utili-zation	Area	Tenure	Loca-tion	Type	No. Floors	Utili-zat'n	Phy. State	Mode	Devel-oper	Builder	Construction Type	Date	Den.		
				Very Low Low Moderately Low Middle High	Shanty Room Apartment House	50 m <sup>2</sup> or less 51 - 100 m <sup>2</sup> 101 m <sup>2</sup> or more	Legal Rental Legal Ownership	20% or less of income 21% or more of income	Public Semi-Public Private Semi-Private	m <sup>2</sup>	Extralegal; rental Extralegal; ownership Legal; rental Legal; ownership	City Center Inner Ring Periphery	Detached Semi-Detached Row/Grouped Walk-up High-rise	1 2 3 or more	Single Multiple	Bad Fair Good	Incremental Instant	Popular Public Private	Self-Help Artisan Small Contractor Large Contractor	Shack Mud and wattle Wood Masonry/Wood Masonry/Concrete Concrete	Year of Settlement	People/Ha		
A	240,000	8	1. ZEYREK	█	█	█	█	█	█	133	█	█	█	█	█	█	█	█	█	█	1600	680	1	
			2. RUMELIHISAR USTU	█	█	█	█	█	█	216	█	█	█	█	█	█	█	█	█	█	1962	209	2	
			3. ZEYTINBURNU	█	█	█	█	█	█	167	█	█	█	█	█	█	█	█	█	█	1945	420	3	
B	1,350,000	45	4. GULTEPE	█	█	█	█	█	█	105	█	█	█	█	█	█	█	█	█	█	1957	440	4	
C	67,000	2	5. OSMANIYE	█	█	█	█	█	█	N.A.	█	█	█	█	█	█	█	█	█	█	1967	333	5	
D	210,000	7	6. UMRANIYE	█	█	█	█	█	█	312	█	█	█	█	█	█	█	█	█	█	1955	278	6	
	1,140,000	38	MIDDLE & UPPER INCOME (not represented)																					
	3,000,000	100	TOTAL POPULATION																					

The physical data of the six case studies of dwelling environments existing in the Istanbul Metropolitan Area is summarized in the physical data matrix and in the following comments. The matrix permits:

- A comprehensive view of the spectrum of low income dwelling types.
- A comparison and determination of trends and patterns.

(1) CATEGORY; (2) POPULATION PER CATEGORY: Number of people; (3) PERCENT OF TOTAL POPULATION; (4) NAME OF LOCALITY. The six case studies are grouped in four categories identifying different low income groups, housing systems and selected physical characteristics. The four categories are identified as follows:

Cat./Income	Housing System	Dwelling
A. V.Low/Low	Traditional Urban	Room/Apt.
B. V.Low/Low/Mod. Low	Squatters	House
C. Low	Public Housing	House/Apt.
D. Mod. Low	Private Parcel	House/Apt.

Categories A-D represent 69% of the total population. Middle and high income groups make up the remaining 31%. Category B with 45% is the largest category. Settlement patterns of middle and high income groups are similar to localities 1,4,5, and 6 with larger lots and dwelling units. Category A indicates a departure from the general pattern. The category represents development that originally housed middle and high income groups but is now serving the low income sectors. All other categories described here represent areas originally developed by the low income sector.

(5) USER INCOME GROUP: The income level is taken as an indicator in the analysis of housing systems, although other factors such as profession/education play important roles. Differences exist between income groups, in the socio-cultural backgrounds, in the availability and maintenance of services, and dwelling location within the city. The process of housing for the low income groups is a matter of survival and security whereas in the middle and high income groups it is a service or a commodity.

(6) DWELLING UNIT TYPE: A pattern is defined in terms of income groups; ROOM: very

low income group; HOUSE: very low, low and very high income groups; APARTMENT: low, moderately low, middle and high income groups.

(7) DWELLING UNIT AREA: The tax exemption laws encourage smaller dwelling units (max. 100m<sup>2</sup>). In squatter dwellings area per person averages 7m<sup>2</sup> whereas in high income dwellings the average area is 24m<sup>2</sup> per person. Urban dwellings are constantly being improved, completed and expanded as incomes and densities increase.

(8) DWELLING UNIT TENURE: In the low income groups, four situations are described: legal ownership of dwelling on occupied land, ownership through purchase from first occupant (see Category B); room and apartment rentals (see Category A and D); legal ownership of both dwelling and land (see Category C and D).

(9) DWELLING UNIT-PERCENT INCOME FOR RENT/MORTGAGE: The rent-income ratio moves rapidly upward as an area develops, its land values increasing and its location becoming more important within the expanding metropolitan boundaries.

(10) LAND/LOT UTILIZATION: For the very low and low income groups the land around the dwelling unit becomes essential as a living area and for future expansion. The immediate use of land is inversely related to the number of floors and the area of the dwelling. In all cases control is evidenced by the use of gardens or cluster courts. In the apartments provided by the public sector (OSMANIYE), the lack of immediate access to the land as well as the lack of physical controls over adjacent public space becomes crucial. Here dwellers try to enclose spaces in front of their units and create gardens or put fences along streets to provide privacy.

(11) LAND/LOT AREA: In most planned areas lot sizes stay constant. In new squatter areas the lot sizes are usually large and varied. During rehabilitation processes the lots become more or less uniform in size. In all cases dwellers define lot boundaries.

(12) LAND/LOT TENURE: Extralegal tenure is common in very low and low income groups

(see Category B). Land titles providing construction rights were distributed to squatter dwellers settled previous to 1966. The titles account for the rapid development of these areas. Legal tenure is characteristic of moderately low/middle/high income areas. Traditional middle/high income settlements (ZEYREK) now house low income groups in a rental situation. The owners of these dwellings have remained as landlords on legally tenured land.

(13) DWELLING LOCATION: The city center is occupied primarily by middle and high income groups except for scattered pockets of low income groups (ZEYREK). The inner ring of the city is occupied almost equally by all income groups. Low income groups settle predominately on the periphery close to industrial areas.

(14) DWELLING TYPES: Very low and very high income groups live in detached houses situated in private gardens. Semi-detached, row/grouped and walk-up dwelling types are found throughout the remaining income groups.

(15) DWELLING FLOORS: Most dwellings in the low income sector are single story units. With the exception of walk-up apartment buildings (OSMANIYE), traditional old houses (ZEYREK) and garden apartments (UMRANIYE), multi-story construction is most frequently associated with middle and high income residential construction.

(16) DWELLING UTILIZATION: Single occupancy of the dwelling is a predominant form of utilization of the very low, low and very high income groups. The remaining income groups have multiple utilization of dwellings.

(17) DWELLING PHYSICAL STATE: A bad state is usually found in the traditional houses left to deteriorate. In most of the squatter areas constant upgrading, maintenance and expansion reflect the dynamic character of the housing process of this type of settlement. A good physical state is typical of moderately low, middle and high income dwellings.

(18) DWELLING DEVELOPMENT MODE: The incremental mode is used by very low and low income groups, particularly by squatter

dwellers. Instant development is typical of housing built by the public and private sectors.

(19) DWELLING DEVELOPER: The popular developer is generally found in the low income groups and particularly in squatter areas since the financial resources are very limited and there is no access to private, commercial or public credit institutions. The private sector is oriented towards middle and high income groups. The public sector's role is confined mainly to provision of services for all income sectors.

(20) DWELLING BUILDER: The very low and low income groups build their own houses sometimes with the assistance of an artisan. Artisans and small contractors are employed widely by the remaining income groups. Large contractors are generally used by the public sector and by the private sector for large scale developments.

(21) DWELLING CONSTRUCTION TYPES: No longer allowed by the Istanbul Building Code, wood construction exists only in old traditional houses. Masonry-wood is the typical construction type of very low and low income groups. The higher income groups use masonry-concrete construction. Concrete construction is rarely used in residential buildings.

(22) DWELLING DEVELOPMENT-YEAR OF CONSTRUCTION: The oldest case studied is the traditional development ZEYREK located inside the old city walls in the center city. Squatter settlements began to develop in the 1940's. ZEYTINBURNU is the oldest and RUMELIHISAR USTU is one of the newer squatter settlements. GULTEPE began as a public sector parcelled land development. Originally UMRANIYE was an Ottoman village which has now become a parcelled land suburb of Istanbul.




(23) DWELLING-DEVELOPMENT DENSITY: Population densities are intended as indicators for each dwelling group. Samples were taken from selected, small, homogeneous areas that include land of groups of dwellings and their circulation access. Low densities are typical of low income settlements located on the periphery of the city. In addition, low densities correspond to

areas containing detached dwellings versus high densities found in areas of predominantly row/grouped dwellings. The highest densities are achieved in the center city, which, with the exception of low income areas such as ZEYREK, is characterized by predominately middle and limited high income development.

## COMMUNITY FACILITIES, UTILITIES/SERVICES MATRIX

Category	Population of Istanbul Per Category	% of Total Population	LOCALITIES (representative of different categories)	COMMUNITY FACILITIES					UTILITIES AND SERVICES									Locality							
				Police	Fire Protection	Health	Schools, Playgrounds	Recreation	Water	Sewerage	Storm Drainage	Electricity	Gas	Refuse Collection	Public Transportation	Paved Roads, Walkways	Telephone		Street Lighting						
A	240,000	8	1. ZEYREK	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	1	
B	1,350,000	45	2. RUMELIHISAR USTU	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	2	
			3. ZEYTINBURNU	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	3
			4. GULTEPE	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	4
C	67,000	2	5. OSMANIYE	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	5	
D	210,000	7	6. UMRANIYE	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	6	
	1,140,000	38	MIDDLE & UPPER INCOME (not represented)																						
	3,000,000	100	TOTAL POPULATION																						

The matrix illustrates the approximate availability of community facilities, utilities and services in the six low income dwelling environments. Three levels are indicated as follows:

	No provision at all
	Limited or occasional
	Adequate or normal

(left) Typical communal water tap. Even residents who have their own water supply use communal water for washing large articles. See wet rug on wall.

(right) Street drainage is a problem. Streets are usually developed incrementally and many times have a higher elevation than dwellings.

Within the low income sector there are three basic groupings identified. ZEYREK is an example of low income areas that evolve from once wealthy residential areas left to deteriorate. Services, utilities and community facilities already exist but many are in need of repair or renewal.

RUMELIHISAR USTU and ZEYTINBURNU are examples of squatter settlements in initial and saturated stages of development respectively. In the initial stages of development residents of these areas collectively begin to provide their own infrastructure networks. Water may be avail-

able from wells. Sewerage systems, when constructed, usually feed into rivers or streams. Formal approval for rehabilitation of an area must be granted in order for the city to supply utilities and services. Depending on the size, density and location of a new settlement relative to existing urban development and associated services, community facilities begin to develop. Location within the metropolitan area is the main factor in the availability of fire protection and health facilities.

OSMANIYE and UMRANIYE, public housing and parcelled land settlements respectively, are examples of legal/planned developments which are built instantly and incrementally. Most of the services, utilities are initially provided. Community facilities provision is a function of location within the metropolitan area.

With the exception of telephone and gas utilities, services to middle and high income areas are generally adequate.

## COMMUNITY FACILITIES

- Police: Generally available throughout



- the metropolitan area.
- Fire Protection: Proximity to the center city affects the level of service.
- Health: Large hospitals are located in the center city. Developed sections of the metropolitan area usually are provided with smaller health units such as clinics and dispensaries.
- Schools, Playgrounds: Elementary and secondary schools and playgrounds are generally located within residential communities. High schools are concentrated throughout the center city and in large residential communities.
- Recreation: Proximity to the center city

and more developed sections of the metropolitan area affect availability and type of recreation facilities.

#### UTILITIES AND SERVICES

- Water: Due to a municipal water supply shortage the metropolitan water networks provide only limited service to the city, usually every other day or fractional daily service.
- Sewerage: Networks are generally adequate. Sewage treatment is available only on a limited basis.
- Storm Drainage: Network provision is a direct function of street development.

- Electricity: Networks are generally adequate. Limited illegal connections occur in squatter areas.
- Gas: Network exists in the center city but pressure is variable. Bottled gas is commonly used.
- Refuse Collection: Generally adequate throughout the metropolitan area. Some squatter areas have no formal refuse collection system. Refuse is transported by the residents to adjacent refuse collection points.
- Public Transportation: Except for the more isolated settlements which have limited service, public bus, private

- mini-bus and shared-taxi (dolmus) service is readily available.
- Paved Roads, Walkways: In the majority of the squatter settlements the residents, with the cooperation of the public sector, improve their circulation network incrementally to the standard level.
- Telephone: Service is an extremely expensive luxury predominately enjoyed only by the high income group. Public telephones are available throughout the city.
- Street Lighting: Networks are generally adequate throughout the city.

# Urbanization Model

Istanbul, as most cities in developing countries, has a critical housing shortage. The typologies illustrate typical low income housing situations in Istanbul. The city has had only marginal success in dealing with this problem. The metropolitan area of Istanbul has an increase in population of over 5% annually. Each year 33% of the new housing starts are squatter dwellings (gecekondu) being built in existing and new squatter settlements.

The purpose of the Urbanization Model, which focuses specifically on physical layout and land subdivision, is to propose an alternative method of residential development reinforcing the positive and solving the negative aspects of low income housing as it exists in Istanbul.

Although some of the dwelling environments illustrated in the typologies are lacking in certain amenities, the major problem of Istanbul's low income housing is not the dwelling as much as it is the framework in which they exist. Because of their illegal status squatter areas develop spontaneously without formal planning. This necessarily means that during the rehabilitation process when infrastructure is incorporated into these areas it becomes unnecessarily expensive for both the user and the public sector. In many cases it even precludes the availability of certain services to the areas. The lack of planning for the future growth and needs of a community only increases the burden of both the public sector and the user. The public sector will substantially minimize its capital investment and continuing maintenance/operation costs and at the same time improve upon the potential amen-

ity of developing urban areas by initially providing an efficient framework within which urbanization can occur.

The Urbanization Model incorporates the following distinct characteristics:

- In INFRASTRUCTURE: Provision of an efficient layout that minimizes public sector costs in implementation, maintenance, and operation of services and provides maximum amenity to the user.
- In LAND SUBDIVISION: Provision of "condominium" or "cluster" ownership, with relatively large plots to maximize private/collective initiative, responsibility, participation and to minimize public sector cost in implementation, maintenance and operation.
- In HOUSING: Provision of dwellings and lots that can be easily expanded or modified to permit flexibility in their use, to absorb growth of the family needs and to minimize initial investment cost by the user and the public sector.

For the purpose of demonstration the undeveloped squatter prevention area and additional open land immediately to the west of the Osmaniye Public Housing Project was selected as the site for the Urbanization Model. The physical inputs for this study are based on the situation of the site as it existed in 1970.



## DEVELOPMENT PLAN

The proposal is based on the potential development of two adjacent parcels of land. The First Stage, a publicly owned parcel of 15 hectares, would be initially developed. The Second Stage, a privately owned parcel of 40 hectares, would be developed either by the private sector or, after acquisition, by the public sector.

A development plan in terms of time, population to be settled, social and economic programs is beyond the scope of this preliminary model. Only guidelines for development are implicit in the different sections of this proposal.

- Land use, circulation and development are inseparable/interacting systems.
- Maximum flexibility should be provided to facilitate the continuous process of construction, habitation, evaluation and revision.

### INITIAL DEVELOPMENT

Initial development should provide:

- Convenient pedestrian access to public transportation or extension of public transportation.
- Immediate utilization of existing/available infrastructure and services, streets, adjacent community facilities, commercial areas and markets, small industries and schools.

Initial development should include:

- Land uses; residential, commercial, small industries, public facilities and open spaces.
- Circulation; pedestrian walkways, local streets and main commercial streets.
- Infrastructure; primary networks.

### SUBSEQUENT DEVELOPMENT

It is implicit in the proposal that the plan:

- Permits a natural development of different land uses, circulation and infrastructures.
- Reinforces and encourages a compact versus a scattered development.
- Maintains the consistency between land use/densities/commercial potential and intensity of circulation/activities.

### DEVELOPMENT MODE: INSTANT/INCREMENTAL

- The primary infrastructure networks (water, sewer, electricity, street lighting, streets) will be instantly developed by the public sector.
- Walk-up apartment buildings and core houses will be instantly developed by the public sector.
- Open lots, community and commercial facilities, and secondary infrastructure serving semi-private/private areas will be incrementally developed by the popular, private, and public sectors.

## THE SITE

### LOCATION

- The site is located in the municipality of Istanbul approximately 7 km. west of the city center and the centers of employment.
- The site is located within 2 km. of the Zeytinburnu and Topkapi industrial areas.
- The site lies in a residential and industrial area.

### APPROACHES/ACCESS

- The primary route of approach is from the Old London Highway which forms the northern boundary of the site. This highway leads east through industrial areas to the city walls and west to other residential and industrial developments.
- The secondary route of approach is from the London Highway located south of the site. This highway leads east to the city center and west to the airport and Europe. There is a point access to the highway 500 meters from the site.

### TRANSPORTATION

- Public bus service is provided to the site from the city along the Old London Highway. Private mini-buses offer frequent service to the city walls along the same route. Both public and private bus service is available along the London Highway.

### SIZE/SHAPE

- The First Stage contains approximately 15 hectares. The site is in the form of a triangle.
- The Second Stage contains approximately 40 hectares. The site is in the form of a rectangle.

### TOPOGRAPHY/NATURAL FEATURES/SOIL

- From an altitude of 60 meters the site overlooks

residential and industrial areas to the south toward the Marmara Sea and to the southeast toward the city walls.

- The topography of the site is regular with slopes varying from 5 to 10% with an average slope of 7%.
- The soil has poor characteristics for vegetation but is suitable for construction.

### BOUNDARIES

- North: The Old London Highway and Davutpasa Military Base.
- East: The Osmaniye Public Housing Project.
- South: Agricultural land and Merter Sitesi, a privately developed middle income residential area.
- West: Assumed development of a private middle income residential and light industrial area.

### EXISTING STRUCTURES:

- A water tower and reservoir are located on the northeastern part of the First Stage site.
- A small neighborhood of 93 squatter dwellings housing approximately 500 persons is located on the southern edge of the Second Stage site.

### OTHER FACTORS

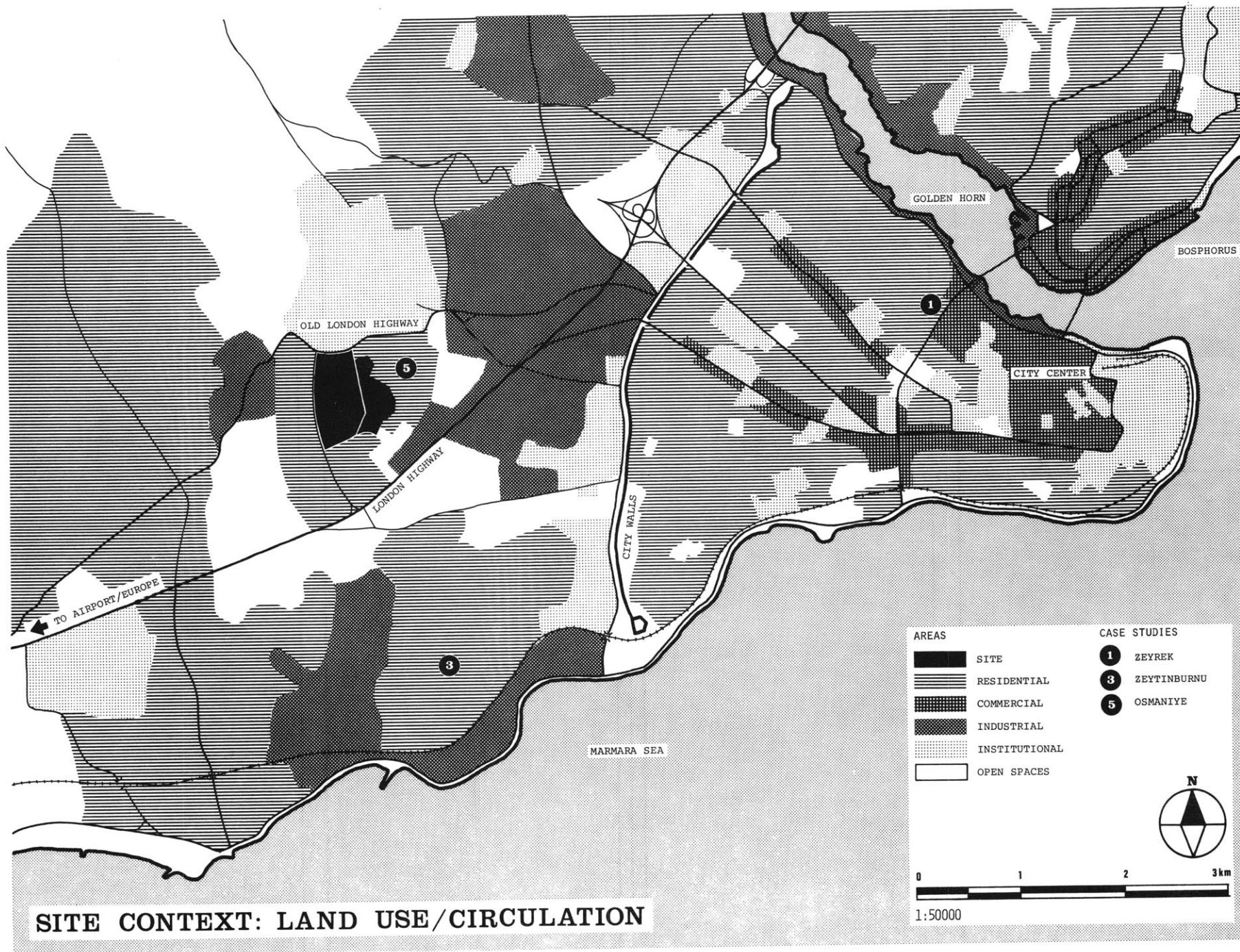
- The site is dusty.
- The site is well drained
- High tension electric lines run along the eastern edge of the First Stage but present no specific hazards.

### LAND TENURE

- First Stage: Public sector ownership.
- Second Stage: Private ownership.

### INFRASTRUCTURE/COMMUNITY FACILITIES

- All utilities are available from the surrounding area.
- Limited commercial facilities exist in the Osmaniye Public Housing Project to the east and in Merter Sitesi to the south.



**SITE CONTEXT: LAND USE/CIRCULATION**

## THE PROJECT/ POLICIES/ GOALS

### PRIMARY USE: RESIDENTIAL COMMUNITY

- The primary use of the site will be residential with supporting commercial and community facilities serving a population at full development of 24,000 people (First Stage - 6,000 people, Second Stage - 18,000 people).
- Four neighborhoods of approximately 6,000 persons each will be created having their own elementary school, kindergarten and open play area.
- The Second Stage will provide a middle school that will serve both stages.
- The Second Stage will provide a high school that will serve both stages plus the existing Osmaniye Public Housing Project.
- A community center, administration facilities, health clinic and local park will be provided to serve the new development as well as the existing Osmaniye development.
- Facilities developed by the private sector will include mosques, shopping streets, artisan shops, and accompanying housing.
- The public sector will build core houses for ownership.
- The public sector will build apartments for condominium ownership.
- The public sector will also provide large and small lots for ownership.

### TARGET INCOME GROUPS

- Development will aim at a community consisting of very low to moderately low income groups.

### TENURE

- The development will offer private, condominium, rental and lease situations.

### INTENSITIES OF LAND USE: MEDIUM DENSITY

- The densities planned for the site range from 300 to 600 persons per hectare (gross).

### FINANCING GROUPS: PUBLIC, POPULAR, LIMITED PRIVATE

- Public and popular financing for apartments, core housing and small lot acquisition.
- Popular and private financing for large lot acquisition and commercial development.
- Public, popular and private financing for residential construction and improvement.

### CIRCULATION: PREDOMINANTLY PEDESTRIAN

- Pedestrians and vehicles will share 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 Istanbul Urban Area networks.
- Water will connect to the water main which runs along the Old London Highway.
- Sewerage/storm drainage systems will connect into the existing sewerage network adjacent to the London Highway.
- Electricity will connect into the Istanbul Urban Area network.

# SITE LAND USE



**AREAS**

-  RESIDENTIAL
-  COMMERCIAL/LIGHT INDUSTRIAL
-  INDUSTRIAL
-  OPEN SPACES

**ADJACENT DEVELOPMENT**

- A** OSMANIYE PUBLIC HOUSING PROJECT (existing)
- B** MERTER SITESI (existing)
- C** RESIDENTIAL/LIGHT INDUSTRIAL DEVELOPMENT (assumed)

**KEY**

- P** Police
- F** Fire Department
- PS** Primary School/Kindergarten
- MS** Middle School
- HS** High School
- Mq** Mosque
- R** Recreation
- H** Health
- PO** Post Office
- SS** Social Services
- M** Market



## CIRCULATION PLAN

The circulation network forms the necessary framework around which the site is developed. The network also provides utility lines throughout the site by providing continuous access for maintenance and control. It is considered to be under public control.

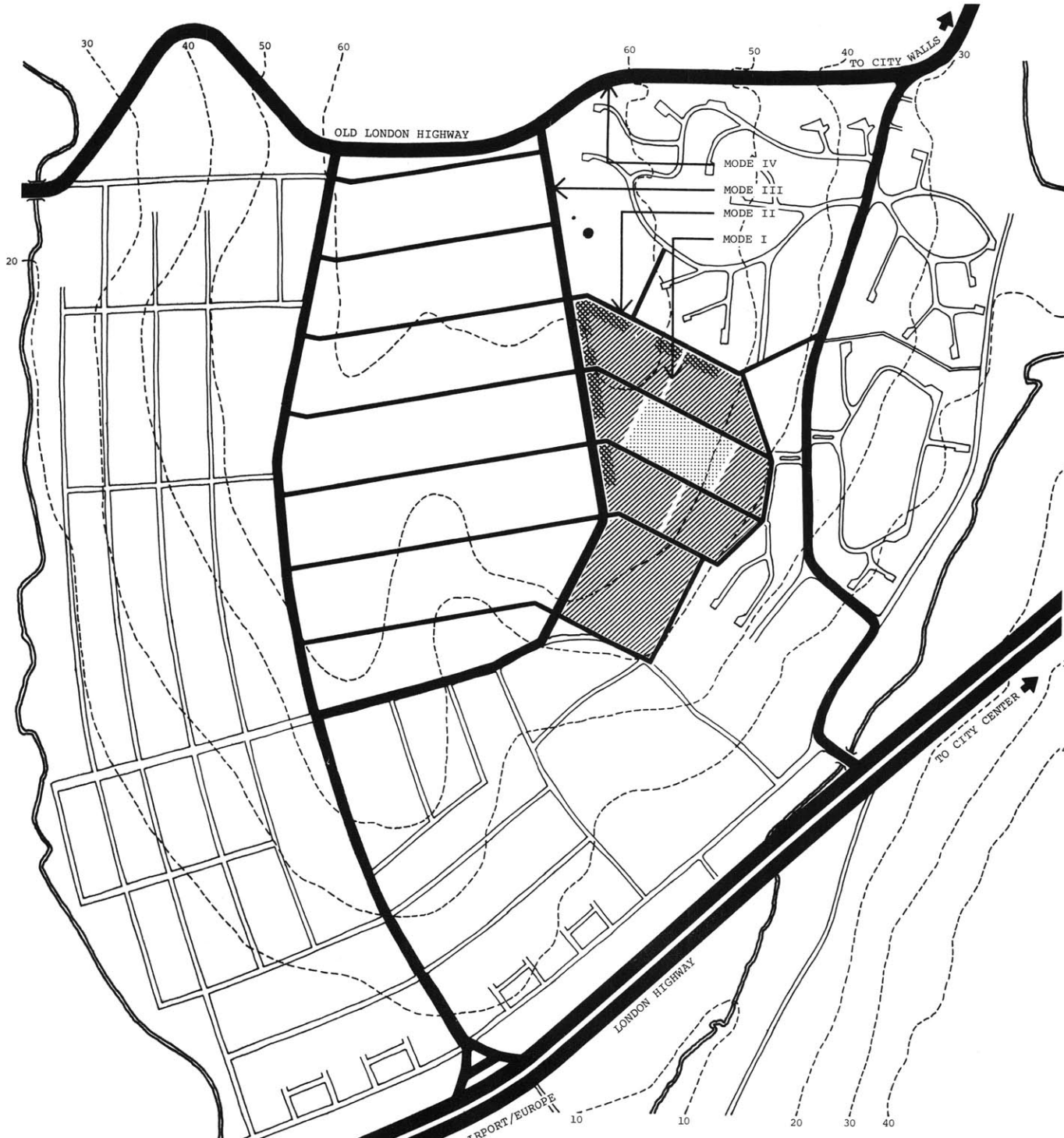
The circulation layout is based upon:

- Minimization of infrastructure investment for the public sector.
- Maximizing use of existing circulation.
- Integration of the First Stage with the adjacent Osmaniye Public Housing Project.

The following circulation modes are considered in the network:


- MODE I: Pedestrian walkways and cluster courts. Exclusive use by pedestrians.
- MODE II: Residential streets. Pedestrians and vehicles mixed, pedestrians dominate over vehicles.
- MODE III: Main arteries. Vehicles and pedestrians mixed, vehicles dominate but do not control circulation.
- MODE IV: Main access highways. Exclusive use by vehicles, relatively high speed with large volume of traffic flow.

# SITE CIRCULATION



### PUBLIC CIRCULATION WIDTHS

- MODE I: 9 meters
- MODE II: 12 meters
- MODE III: 22 meters
- MODE IV: Unlimited

 FIRST STAGE



# BLOCKS, LOTS AND CLUSTER COURTS

## DEFINITIONS

- BLOCK is a portion of land bounded and served by lines of public streets and walkways.
- LOT is a measured parcel of land having fixed boundaries and access to public streets, walkways or cluster courts.
- CLUSTER COURT is a group of lots owned individually or in condominium around a semi-private common area.
- CONDOMINIUM is a group of dwelling units (owned individually) in a multi-unit structure around a semi-private common area.

The block layout proposed is based upon the following policy:

- MINIMIZATION OF: public ownership of land, lengths of infrastructure per area served, public sector burdens, responsibilities and services.
- MAXIMIZATION OF: private responsibility and private ownership of land.

The above policy is demonstrated in the First Stage plan. The blocks contain "cluster courts" where lots are grouped around a common area that provides access as well as a semi-private open space. The occupants share the use and the responsibility for the maintenance of the court. The cluster court is initially one large parcel of land which can be subdivided publicly or privately.

Three types of lots are contained within these blocks:

- INTERIOR LOTS: have access only to the semi-private cluster court.
- EXTERIOR LOTS: have access only to public streets or walkways.
- EXTERIOR-INTERIOR LOTS: have access to public streets and to semi-private cluster courts.

## FIRST STAGE LAND UTILIZATION DATA

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	467	13.9	34
DWELLING UNITS	1150	13.9	83
PEOPLE	6950	13.9	500

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	2.9	21
SEMI-PUBLIC (open spaces, schools, community centers)	1.5	11
PRIVATE (dwellings, shops, factories, lots)	7.2	52
SEMI-PRIVATE (cluster courts)	2.3	16
<b>TOTAL</b>	<b>13.9</b>	<b>100</b>

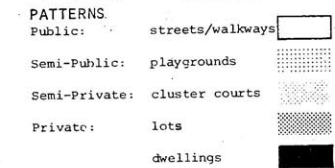
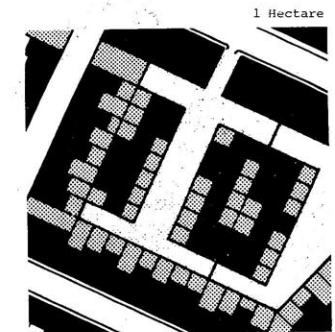
  

NETWORK EFFICIENCY

$$R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 148 \text{ m/Ha}$$

AVERAGE LOT AREA = 154 m<sup>2</sup>

## FIRST STAGE LAND UTILIZATION

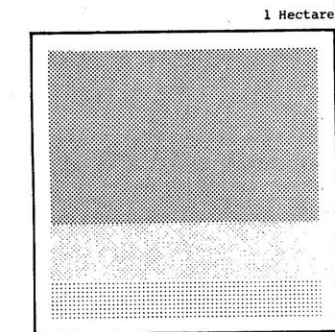


## URBANIZATION MODEL LAND UTILIZATION DATA

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	11.0	19
SEMI-PUBLIC (open spaces, schools, community centers)	12.7	22
PRIVATE/SEMI-PRIVATE (dwellings, shops, factories, lots and cluster courts)	34.2	59
<b>TOTAL</b>	<b>57.9</b>	<b>100</b>

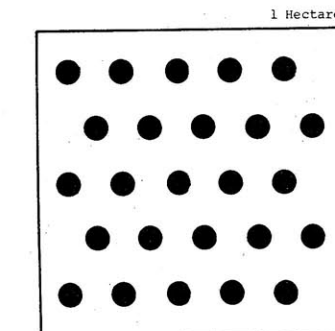
  

NETWORK EFFICIENCY

$$R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 138 \text{ m/Ha}$$


PERCENTAGES

Streets/Walkways	21%
Playgrounds	11%
Cluster Courts	16%
Dwellings/Lots	52%



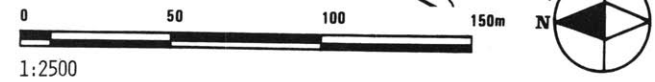
DENSITY Persons/Hectare 500

● 20 persons





**FIRST STAGE LAND SUBDIVISION/UTILIZATION**



The proposed layout permits:

- FLEXIBILITY IN LAND USES: Blocks permit the accommodation of different land uses; residential/commercial, light industries.
- FLEXIBILITY IN RESIDENTIAL DENSITIES AND HOUSING OPTIONS: Progressive development units, core houses, row and grouped walk-up apartments of low, medium and high densities.
- DIFFERENT TYPES OF LAND TENURE: Ownership, rental and lease.
- EXPANSION AND TRANSFORMATION OF HOUSING SYSTEM: Lot clusters facilitate expansion and transformation of buildings; horizontal and vertical expansion without changing lot cluster configuration, control of minimum spaces in lot cluster courts.

The following are general criteria by which the blocks are developed:

- Six meter minimum lot width dimension is required by the Istanbul Building Code.
- The density of the block is between 300 and 600 persons per hectare at saturation depending on the location of the lots.
- Maximum building height of four stories along circulation modes III and IV.
- Maximum building height of three stories along circulation mode II.
- Maximum building height of two stories along circulation mode I.
- Maximum building height of two stories within cluster courts.
- Lot clusters should retain an infrastructure easement for future installations.

## HOUSING OPTIONS

PROGRAM/ PRODUCT	SMALL LOTS	CORE HOUSES	APARTMENTS	LARGE LOTS
UNIT CONFIGURATION	Individual lots with direct access to public streets or walkways and some to cluster courts.	Individual lots grouped in cluster courts.	Condominium lots with direct access to public streets and a cluster court.	Individual lots with direct access to public streets and a cluster court.
UNIT COMPONENTS	Includes the lot for the dwelling. They are provided with water, sewer, circulation, storm drainage and electricity.	Includes the lot with a fence, floor slab and a shelter containing a w.c., bath area, washing sink and kitchen. They share in the cluster: semi-private area; circulation: access to public street; electricity: service drops.	Includes the dwelling unit containing a w.c., bath, lavatory, kitchen and room(s).	Same as SMALL LOTS. They share in the cluster: semi-private area.
UNIT TENURE	Ownership or lease.	Ownership or lease.	Ownership or rental.	Ownership, lease or rental.
USER CONTRIBUTION	Build dwelling.	Complete, expand dwelling.	Complete dwelling.	Build dwelling.
USER UTILIZATION	Family living, rental of units or rooms for living or shops.	Family living.	Family living, shops on ground floor facing public streets.	Family living, rental units, shops on ground floor facing public streets.
UNIT FINANCED BY	Public, popular.	Public, popular.	Public, popular.	Popular, private.
UNIT BUILT BY	Popular.	Public, popular.	Public.	Popular, private.
UNIT MANAGED BY	Popular.	Popular.	Popular.	Popular, private.
LOT SIZE	6m x 18m = 108m <sup>2</sup>	6m x 18m = 108m <sup>2</sup>	12m x 19m = 218m <sup>2</sup> 12m x 15m = 180m <sup>2</sup>	200m <sup>2</sup> to 600m <sup>2</sup>

# APARTMENT OPTIONS:

## DWELLING AREA/HOUSEHOLD SIZE

PROPOSAL URBANIZATION MODEL				HOUSING RECOMMENDATIONS**	
APARTMENT BUILDING	DWELLING UNIT AREA*	PERSONS/HOUSEHOLD	AREA/PERSON	DWELLING UNIT AREA*	PERSONS/HOUSEHOLD
TYPE A	44m <sup>2</sup>	3	15m <sup>2</sup>	0-50m <sup>2</sup>	2-3
	67m <sup>2</sup>	6	11m <sup>2</sup>	65-80m <sup>2</sup>	6-7
	76m <sup>2</sup>	7	11m <sup>2</sup>	65-80m <sup>2</sup>	6-7
	80m <sup>2</sup>	7	11m <sup>2</sup>	65-80m <sup>2</sup>	6-7
	98m <sup>2</sup>	9	11m <sup>2</sup>	80-100m <sup>2</sup>	8+
TYPE B	44m <sup>2</sup>	3	15m <sup>2</sup>	0-50m <sup>2</sup>	2-3
	60m <sup>2</sup>	5	12m <sup>2</sup>	50-65m <sup>2</sup>	4-5
	64m <sup>2</sup>	5	13m <sup>2</sup>	50-65m <sup>2</sup>	4-5
TYPE C	69m <sup>2</sup>	6	11m <sup>2</sup>	65-80m <sup>2</sup>	6-7
	88m <sup>2</sup>	8	11m <sup>2</sup>	80-100m <sup>2</sup>	8+

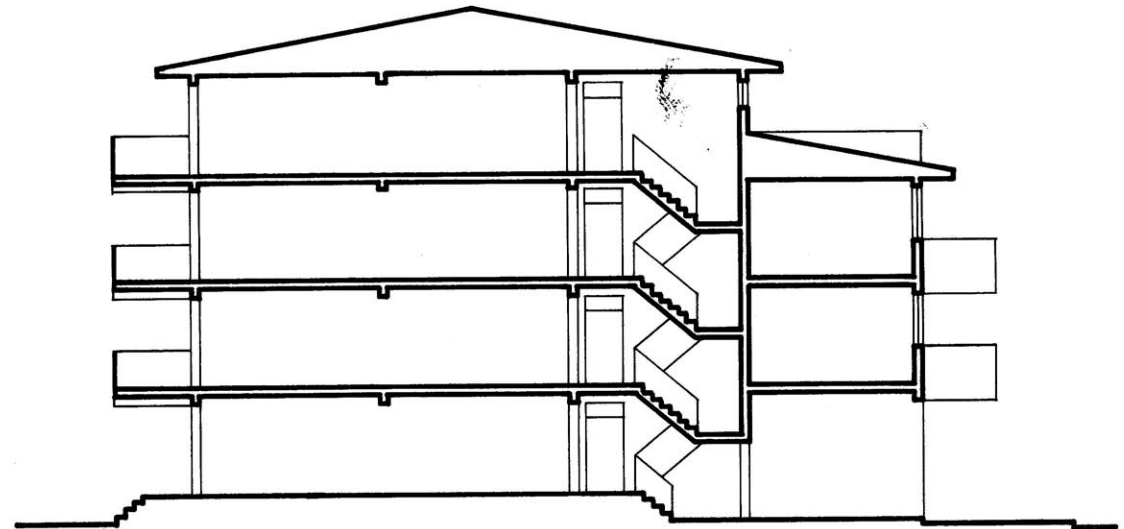
\*Unit Area = total enclosed gross area + 1/2 area of balconies.

\*\*Ministry of Reconstruction and Resettlement

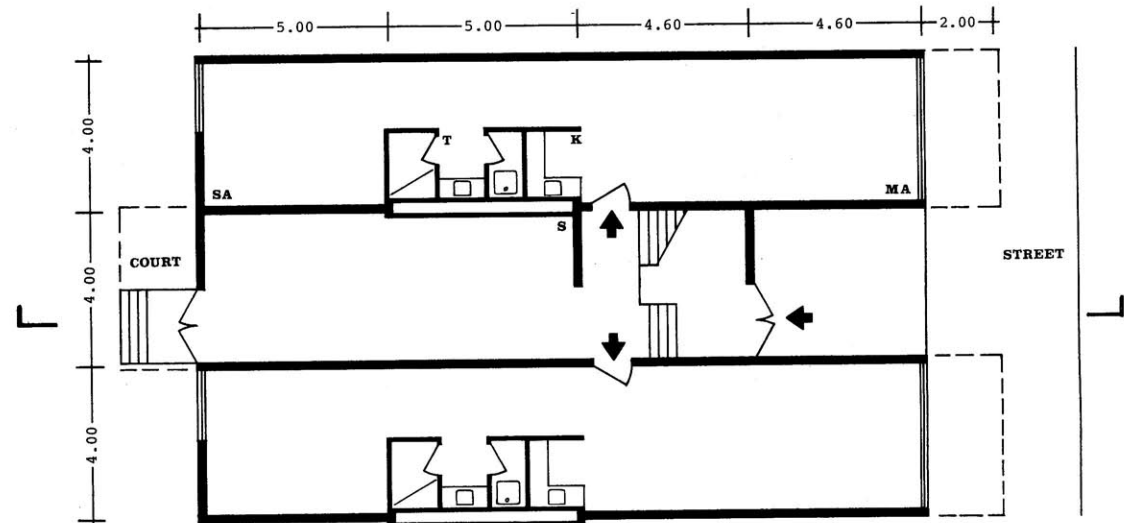
The row apartment buildings proposed for the Urbanization Model have the following characteristics:

- The dwelling units are basic shells designed to be internally completed and/or expanded. The advantage of this system is the provision of maximum flexibility of space and the minimization of initial investment by the user as well as the total investment by the public sector.
- The layout of the service core (kitchen, w.c., bath, lavatory) in each apartment is designed to provide efficiency by allowing simultaneous use.
- The ground floor of the apartment buildings fronting onto public streets may be used either as dwellings or shops.
- The apartment buildings offer a variety of dwelling unit sizes to accommodate two to eight plus person households.
- All apartment buildings have direct access to public streets as well as to a semi-private cluster court.
- Apartments are designed to take maximum advantage of cross ventilation and views and at the same time provide maximum privacy.

# TYPE A



SECTION



FIRST FLOOR PLAN

76m<sup>2</sup> SHELL APARTMENT

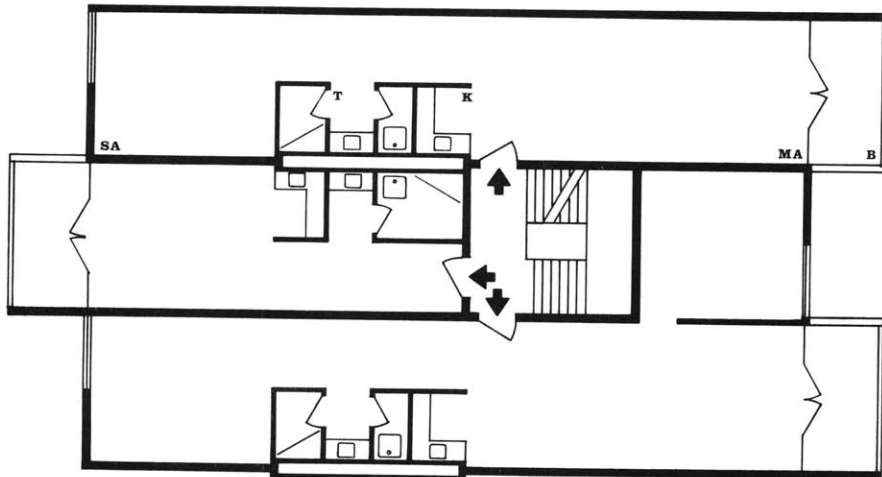


ENTRANCE ELEVATION



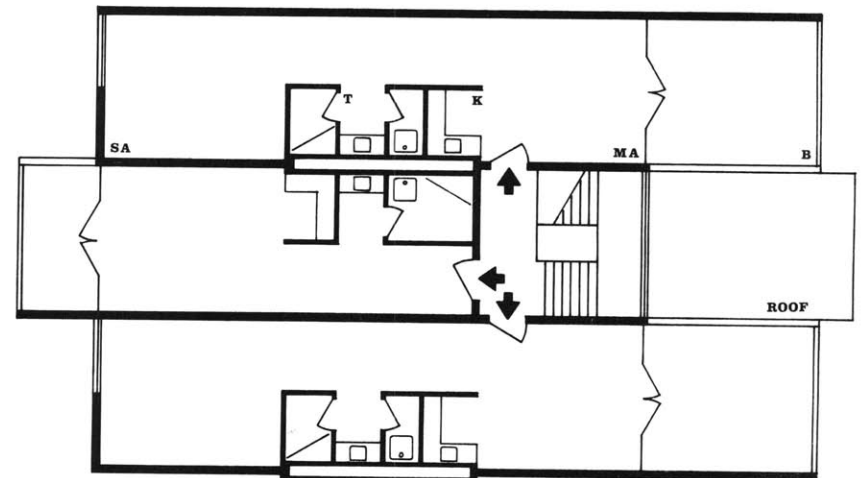
COURT ELEVATION

- SA Sleeping Area
- MA Multi-Use Area
- K Kitchen/Cooking Area
- T Toilet/Bath/Wash Area
- B Balcony
- S Storage



80 m<sup>2</sup>  
44 m<sup>2</sup>  
98 m<sup>2</sup> SHELL APARTMENT

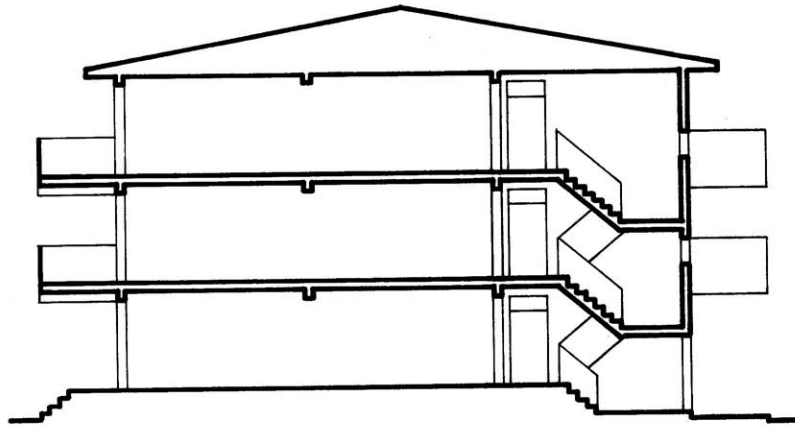
SECOND/THIRD FLOOR PLAN



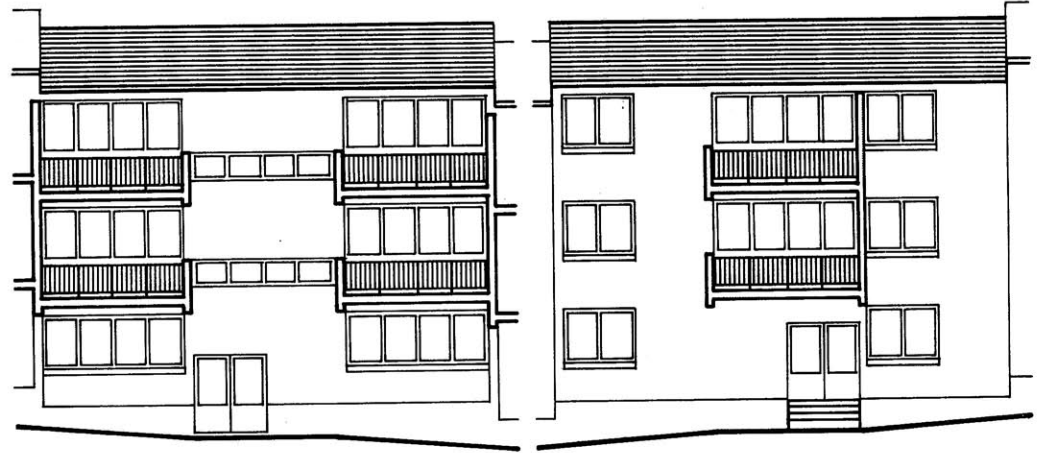
44 m<sup>2</sup>  
67 m<sup>2</sup> SHELL APARTMENT

FOURTH FLOOR PLAN

# TYPE B

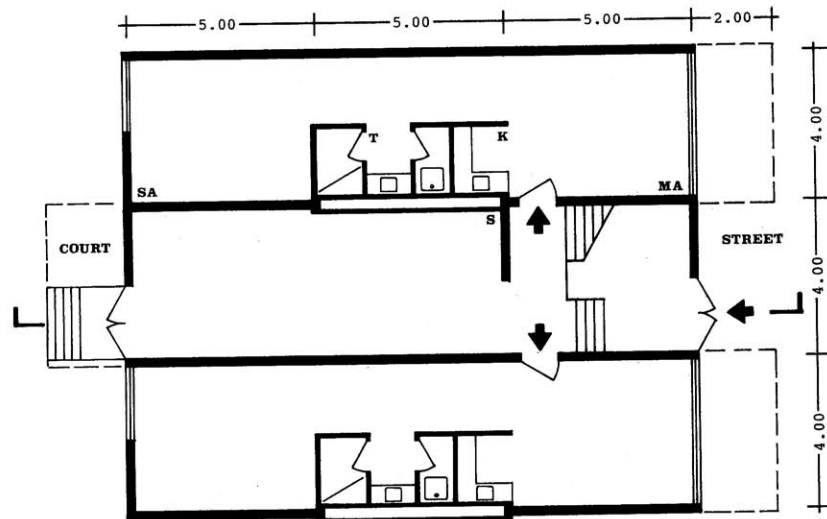


SECTION



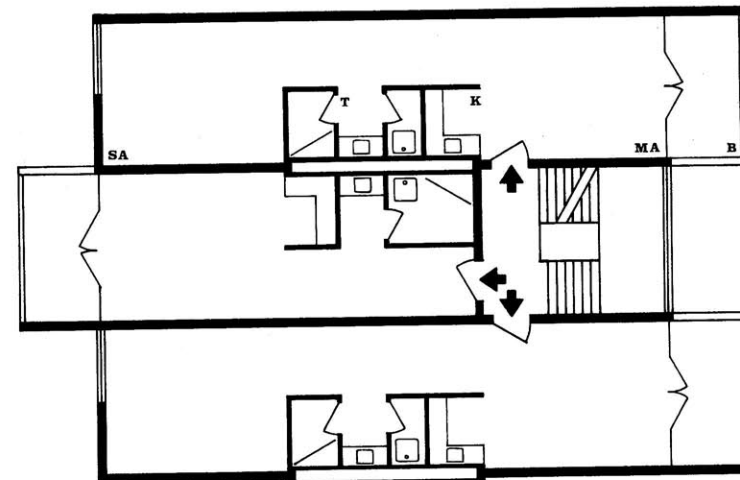
ENTRANCE ELEVATION

COURT ELEVATION



FIRST FLOOR PLAN

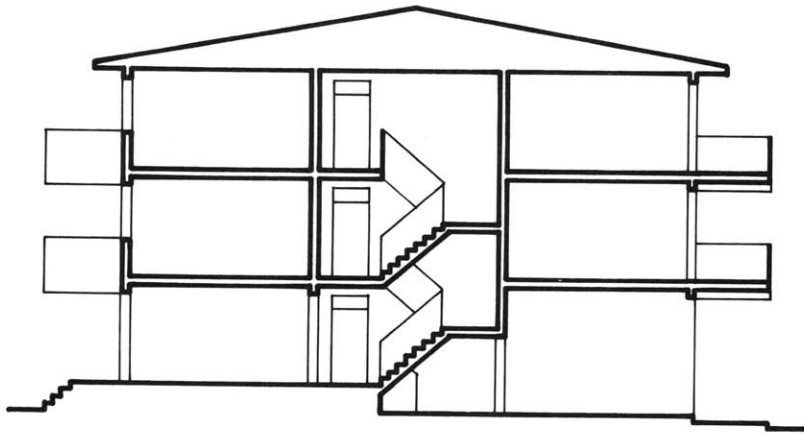
60 M<sup>2</sup> SHELL APARTMENT



SECOND/THIRD FLOOR PLAN

44 M<sup>2</sup>  
64 M<sup>2</sup> SHELL APARTMENT

# TYPE C

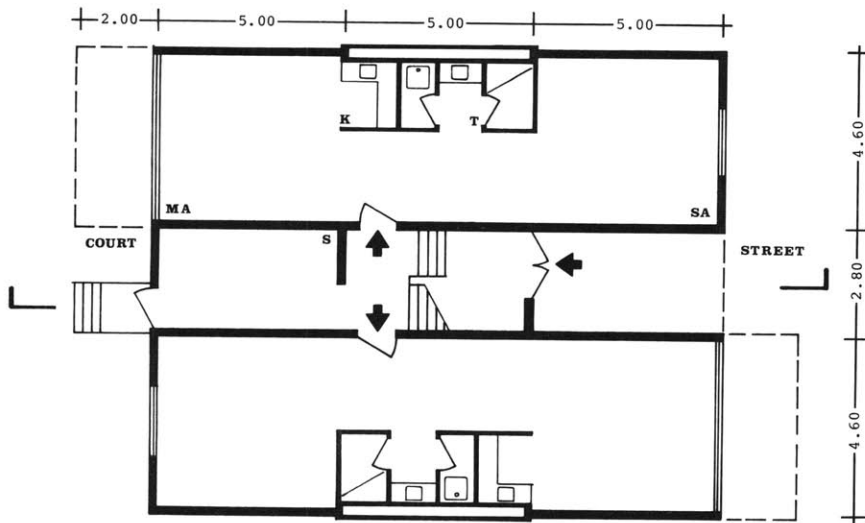
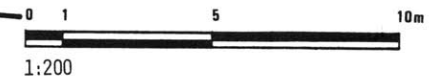


SECTION



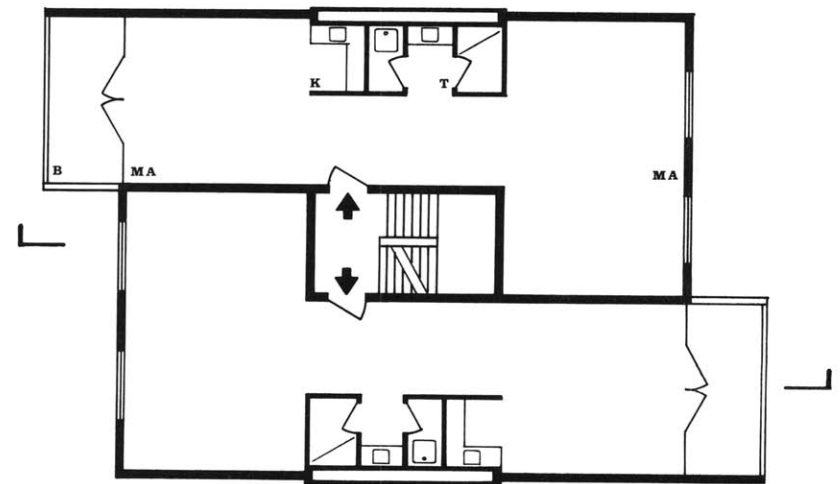
ENTRANCE/COURT ELEVATION

- SA Sleeping Area
- MA Multi-Use Area
- K Kitchen/Cooking Area
- T Toilet/Bath/Wash Area
- B Balcony
- S Storage



FIRST FLOOR PLAN

69 m<sup>2</sup> SHELL APARTMENT



SECOND/THIRD FLOOR PLAN

88 m<sup>2</sup> SHELL APARTMENT

# EVALUATION

## LAND UTILIZATION: PATTERNS, PERCENTAGES, DENSITIES

The criteria used in the evaluations of efficiency of physical layouts in the survey are:

### - LAND UTILIZATION DISTRIBUTION

Proportions of public, private and circulation areas within the layout. This determines maintenance, responsibility, user control, and functional efficiency. e.g. A high percentage of circulation means higher cost per person, and therefore indicates an inefficient layout.

### - LAYOUT

Lot configuration, blocks and circulation. This determines the infrastructure network. e.g. Certain layouts result in complicated infrastructure networks requiring excessive lengths of networks and therefore higher cost per person.

### - DENSITY

Number of persons and dwelling units per hectare. This determines the intensity of use. e.g. Low density means a higher cost of development per person.

### - R-VALUE (NETWORK EFFICIENCY)

The urban layout is the physical configuration determined by the combination of networks of circulation and areas served. Networks of circulation (highways, streets, walkways) define the lines of distribution/collection of the utilities and services, and are publicly owned land. Areas served (lots, blocks) are usually privately owned land. The urban layout is a major economic determinant in the provision of utilities and services and their maintenance and operation. The efficiency/effectiveness of a network is the ratio of the length of the network to the area(s) served:

$$\text{EFFICIENCY OF NETWORK} = \frac{\text{network length}}{\text{area(s) served}} = \text{R-VALUE}$$

The R-Value varies inversely to the network efficiency; a smaller R-Value indicates a higher efficiency and vice versa.

### - OTHER RELATED PHYSICAL DETERMINANTS.

### LAYOUTS

The Urbanization Model is compared with the case studies surveyed. Characteristics of the proposed layout:

- Minimization of public land for circulation; electricity, water, sewage networks, street lighting, police protection, garbage collection.
- Savings in the construction, maintenance and operation.
- Lots are grouped around a common court that serves as access as well as a semi-private open space. The court is owned/used in condominium by the lot occupants who control, share the use of, and share the responsibility for the maintenance of the court.

## 1 ZEYREK

Private, Low Income, Traditional Urban Houses (Rooms/Apartments)

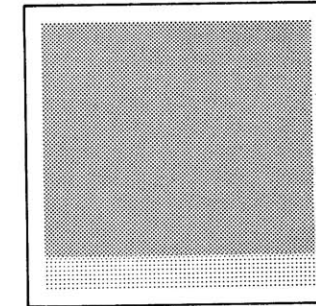
Low percentage of land for streets and walkways; high percentage of land for dwellings/lots; medium percentage of land for semi-public open space; high population density. Historical area in deteriorating condition.

R-VALUE = 310

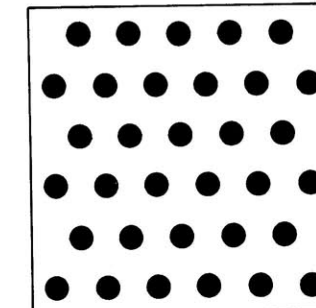


PATTERNS

1 Hectare



PERCENTAGES	
Streets/Walkways	20%
Playgrounds	9%
Cluster Courts	1%
Dwellings/Lots	70%



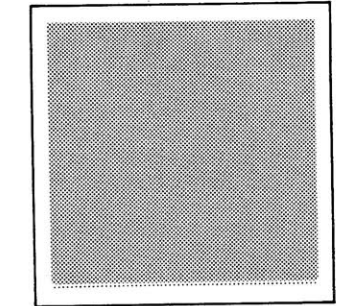
DENSITY      Persons/Hectare      680

## 2 RUMELİHİSAR ÜSTÜ

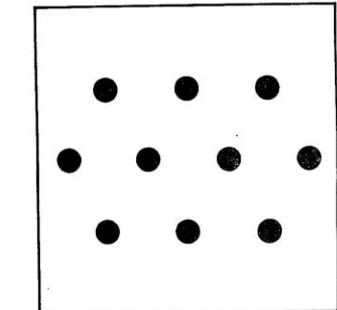
Popular, Very Low Income, Squatter Houses

Low percentage of land for streets and walkways; high percentage of land for dwellings/lots; low percentage of land for semi-public open space; low population density. Development potential/provision of services restricted by topography.

R-VALUE = 350



Streets/Walkways	21%
Playgrounds	1%
Cluster Courts	-
Dwellings/Lots	78%



DENSITY      Persons/Hectare      209 P/Ha

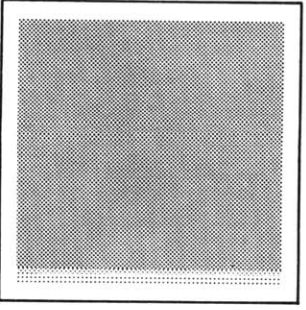


**3 ZEYTİNBURNU**

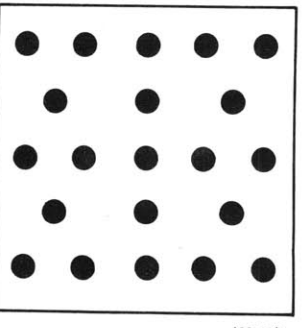
Popular, Low/Moderately Low Income, Squatter Houses/Walk-up Apartments

Low percentage of land for streets and walkways; high percentage of land for dwellings/lots; low percentage of land for semi-public open space; medium population density. Organic layout allows flexibility in development.

R-VALUE = 315



22%  
3%  
2%  
73%



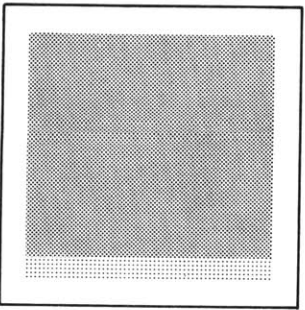
420 P/Ha

**4 GÜLTEPE**

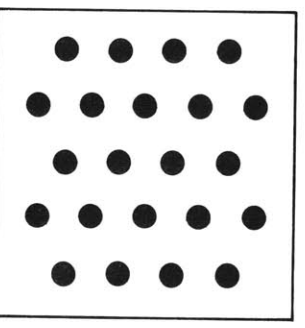
Public/Popular, Low/Moderately Low Income, Row Apartments/Squatter Houses

Medium percentage of land for streets and walkways; medium percentage of land for dwellings/lots; medium percentage of land for semi-public open space; low/high population density. Insufficient open private/semi-private area adjacent to row apartments. Development potential/provision of services restricted by topography.

R-VALUE = 366



32%  
6%  
-  
62%



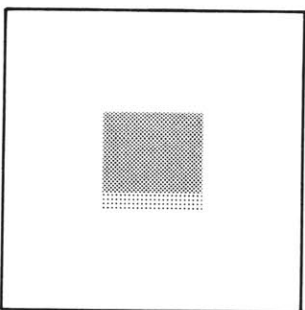
440 P/Ha

**5 OSMANİYE**

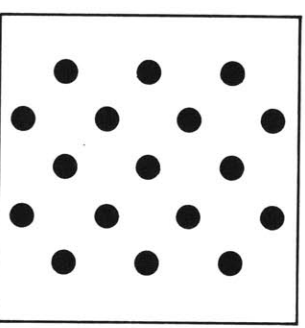
Public, Low Income, Block Apartments/Core Houses

High percentage of land for streets, walkways, and public open spaces; low percentage of land for dwellings/lots; low percentage of land for semi-public open space; medium population density. Excessive public space does not recognize user needs for private/semi-private open area; layout discourages development.

R-VALUE = 170



89%  
2%  
-  
9%



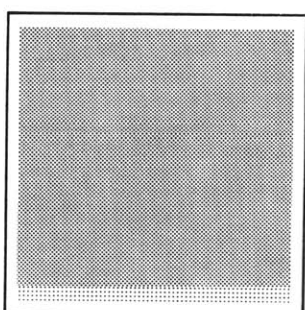
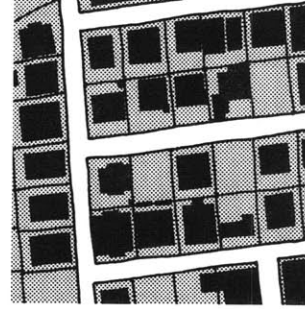
333 P/Ha

**6 ÜMRANIYE**

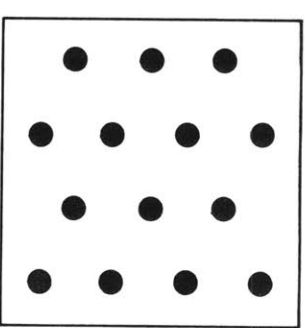
Private, Moderately Low Income, Garden Apartments/Houses

Low percentage of land for streets and walkways; high percentage of land for dwellings/lots; medium percentage of land for semi-public open space; low/medium population density. Lack of control and coordination of land parcellation causes urban sprawl.

R-VALUE = 235



17%  
5%  
-  
78%



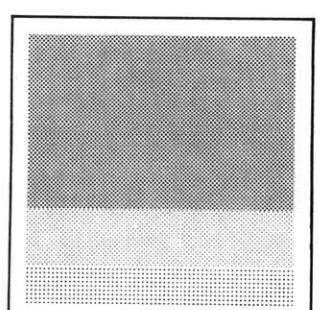
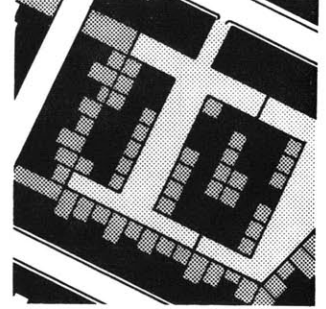
470 P/Ha

**URBANIZATION MODEL**

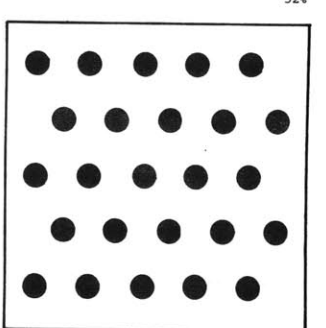
Public/Popular/Private, Low Income. Apartments/Core Houses/Lots

Low percentage of land for streets and walkways; high percentage of land for dwellings/lots/cluster courts; medium percentage of land for semi-public open space; medium population density. Provides optimum land utilization, maximum user responsibility, and flexibility in development.

R-VALUE = 148



21%  
11%  
16%  
52%



470 P/Ha

# 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, text books, or reference manuals.

**THIRD PREFERENCE:** definitions from the Urban Settlement Design Program (U.S.D.P.) Files. They are used when existing sources were not quite appropriate/satisfactory.

Words included for specificity and to focus on a particular context are indicated in parenthesis.

Sources of definitions are indicated in parenthesis. (See also: REFERENCES).

**ACCESSES.** The pedestrian/vehicular linkages from/to the site to/from existing or planned approaches (urban streets, limited access highways, public transportation systems, and other systems such as: waterways, airlines, etc.) (U.S.D.P.)

**ACTUAL LAND COST.** "(The cost of land is)...set solely by the level of demand. The price of land is not a function of any cost conditions; it is set by the users themselves in competition." (Turner, 1971)

**AD VALOREM (TAX).** A tax based on a property's value; the value taxed by local governments is not always or even usually the market value, but only a valuation for tax purposes. (U.S.D.P.)

**AIRPORT DISTURBANCE.** The act or process of destroying the rest, tranquility, or settled state of (the site by the annoyance of airport noise, vibration, hazards, etc.) (Merriam-Webster, 1971)

**AIRPORT ZONING RESTRICTIONS.** The regulation of the height or type of structures in the path of moving aircraft. (Abrams, 1971)

**ALTERNATING CURRENT (A.C.)** (an electric) current that reverses its direction of flow at regular intervals. (ROTC ST 45-7, 1953)

**AMENITY.** Something that conduces to physical or material comfort or convenience, or which contributes satisfaction rather than money income to its owner. (Merriam-Webster, 1971)

**AMPERES.** Amperes (amp) are a measure of the rate of flow of electricity. It is somewhat comparable to the rate of flow of water (quantity/time). A steady current produced by one volt applied across a resistance of one ohm. (ROTC ST 45-7, 1953)

**APPRAISAL.** An estimate and opinion of value, especially by one fitted to judge. (Merriam-Webster, 1971)

**APPROACHES.** The main routes external to the site (pedestrian/vehicular) by which the site can be reached from other parts of the urban context. (U.S.D.P.)

**ASSESSED VALUE.** A valuation placed upon property by a public officer or board as a basis for taxation. (Keyes, 1971)

**ASSESSMENT.** The valuation of property for the purpose of levying a tax or the amount of the tax levied. (Keyes, 1971)

**BACKFILL.** Earth or other material used to replace material removed during construction, such as in culvert, sewer, and pipeline trenches and behind bridge abutments and retaining walls or between an old structure and a new lining. (DePina, 1972)

**BARRIER.** (A boundary) as a topographic feature or a physical or psychological quality that tends to separate or restrict the free movement (to and from the site). (Merriam-Webster, 1971)

**BETTERMENT (TAX).** A tax on the increment in value accruing to an owner because of development and improvement work carried out by local authorities. (U.S.D.P.)

**BINDER COURSE.** A transitional layer of bituminous paving between the crushed stone base and the surface course (to increase bond between base and surface course). (DePina, 1972)

**BITUMINOUS.** A coating of or containing bitumin; as asphalt or tar. (DePina, 1972)

**BLOCK.** A block is a portion of land bounded and served by lines of public streets. (U.S.D.P.)

**BOUNDARY.** Something (a line or area) that fixes or indicates a limit or extent (of the site). (Merriam-Webster, 1971)

**BUILDING CODE.** "A body of legislative regulations or by-laws that provide minimum standards to safeguard life or limb, health, property, and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location and maintenance of all buildings and structures within the city, and certain equipment specifically regulated therein." (BOCA, 1967)

**BUILDING DRAIN.** Lowest horizontal piping of the building drainage system receiving discharge from soil, waste, and other drainage pipes. It is connected to the building sewer. (ROTC ST 45-7, 1953)

**BUILDING MAIN.** Water-supply pipe and fittings from the water main or other source of supply to the first branch of the water-distribution system of a building. (ROTC ST 45-7, 1953)

**CESS POOL.** An underground catch basin that is used where there is no sewer and into which household sewage or other liquid waste is drained to permit leaching of the liquid into the surrounding soil. (Merriam-Webster, 1971)

**CIRCULATION.** System(s) of movement/passage of people, goods from place to place; streets, walkways, parking areas. (U.S.D.P.)

**CLAY.** A lusterless colloidal substance, plastic when moist (crystalline grains less than 0.002mm in diameter). (U.S.D.P.)

**CLEANOUT.** A plug or similar fitting to permit access to traps or sewer lines. Cleanouts are usually used at turns and other points of collection. (ROTC ST 45-7, 1953)

**CLIMATE.** The average condition of the weather at a particular place over a period of years as exhibited by temperature, wind, precipitation, sun energy, humidity, etc. (Merriam-Webster, 1971)

**COLLECTION SYSTEM.** The system of pipes in a sewage network, comprised of house service, collection lines, manholes, laterals, mains. (U.S.D.P.)

**COMBINED SEWER.** A sewer that carries both storm water and sanitary or industrial wastes. (DePina, 1972)

**COMMUNITY.** The people living in a particular place or region and usually linked by common interests: the

region itself; any population cluster. (U.S.D.P.)

**COMMUNITY FACILITIES/SERVICES.** Facilities/services used in common by a number of people. It may include: schools, health, recreation, police, fire, public transportation, community center, etc. (U.S.D.P.)

**COMMUNITY RECREATION FACILITIES.** Facilities for activities voluntarily undertaken for pleasure, fun, relaxation, exercise, self-expression, or release from boredom, worry, or tension. (U.S.D.P.)

**COMPONENT.** A constituent part of the utility network. (U.S.D.P.)

**CONDOMINIUM.** Condominium is a system of direct ownership of a single unit in a multi-unit whole. 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 interest in the common land and areas. Two types of condominiums are recognized: **HORIZONTAL:** detached, semi-detached, row/grouped dwelling types; **VERTICAL:** walk-up, high-use dwelling types. (U.S.D.P.)

**CONDUCTORS.** Materials which allow current to flow such as aluminum, copper, iron. (ROTC ST 45-7, 1953)

**CONDUIT.** A pipe or other opening, buried or above ground, for conveying hydraulic traffic, pipelines, cables, or other utilities. (DePina, 1972)

**CONSERVATION EASEMENT.** An easement acquired by the public and designed to open privately owned lands for recreational purposes or to restrict the use of private land in order to preserve open space and protect certain natural resources. (U.S.D.P.)

**CONSTRUCTION BORING.** A subsurface boring done at the planned location of all infrastructure and building footings and roadway sub-bases for design of foundation systems. (U.S.D.P.)

**CONVEYANCE.** The transfer of ownership (of land). (Merriam-Webster, 1971)

**CORPORATION COCK/CORPORATION STOP.** A water or gas cock by means of which utility-company employees connect or disconnect service lines to a consumer. (Merriam-Webster, 1971)

**COSTS OF URBANIZATION.** Include the following: **CAPITAL:** cost of land and infrastructure; **OPERATING:** cost of administration, maintenance, etc.; **DIRECT:** include capital and operating costs; **INDIRECT:** include environmental and personal effects. (U.S.D.P.)

**CURRENT** (See: ALTERNATING CURRENT, DIRECT CURRENT). An electric current is a movement of positive or negative electric particles (as electrons) accompanied by such observable effects as the production of heat, of a magnetic field, or of chemical transformation. (Merriam-Webster, 1971)

**CYCLE.** One complete performance of a vibration, electric oscillation, current alternation, or other periodic process. (Merriam-Webster, 1971)

**DAM.** A barrier preventing the flow of water; a barrier built across a water course to confine and keep back flowing water. (Merriam-Webster, 1971)

**DEPRECIATION ACCELERATION (TAX).** A tax incentive designed to encourage new construction by allowing a faster write-off during the early life of a building. (U.S.D.P.)

**DESIGN.** 1) The arrangement of elements that make up a work of art, a machine or other man-made object. 2) The process of selecting the means and contriving the elements, steps, and procedures for producing what will adequately satisfy some need. (Merriam-Webster, 1971)

**DETACHED DWELLING.** Individual dwelling unit, separated from others. (U.S.D.P.)

**DEVELOPMENT.** Gradual advance or growth through progressive changes; a developed tract of land (U.S.D.P.)

**DEVELOPMENT SIZE.** There are two general ranges of size: **LARGE:** may be independent communities requiring their own utilities, services, and community facilities; **SMALL:** generally are part of an adjacent urbanization and can use its supporting utilities, services, and community facilities. (U.S.D.P.)

**DIRECT CURRENT (D.C.)** (An electric current that) flows continuously in one direction. (ROTC ST 45-7, 1953)

**DISCHARGE (Q).** Flow from a culvert, sewer, channel, etc. (DePina, 1972)

**DISTANCE.** The degree or amount of separation between two points (the site and each other element of the urban context) measured along the shortest path adjoining them (paths of travel). (Merriam-Webster, 1971)

**DISTRIBUTION (STATION).** The part of an electric supply system between bulk power sources (as generating stations or transformation station tapped from transmission lines) and the consumers' service switches. (Merriam-Webster, 1971)

**DISTURBED SOIL.** Soils that have been disturbed by artificial process, such as excavation, transportation, and compaction in fill. (U.S.D.P.)

**DRAINAGE.** Interception and removal of ground water or surface water, by artificial or natural means. (De Pina, 1972)

**DUST/DIRT.** Fine dry pulverized particles of earth, grit, refuse, waste, litter, etc. (Merriam-Webster, 1971)

**DWELLING.** The general, global designation of a building/shelter in which people live. A dwelling contains one or more dwelling units! (U.S.D.P.)

**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. (U.S.D.P.)

**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). (U.S.D.P.)

**DWELLING DEVELOPER.** Three sectors are considered in the supply of dwellings: **POPULAR SECTOR:** the margins 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 SEC-**

**TOR:** 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 for profit. (U.S.D.P.)

**DWELLING DEVELOPMENT MODE.** Two modes are considered: **PROGRESSIVE:** 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. (U.S.D.P.)

**DWELLING FLOORS.** The following numbers 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. (U.S.D.P.)

**DWELLING GROUP.** The context of the dwelling in its immediate surroundings. (U.S.D.P.)

**DWELLING/LAND SYSTEM.** A distinct dwelling environment/housing situation characterized by its users as well as by its physical environment. (U.S.D.P.)

**DWELLING LOCATION.** Three sectors are considered in single or multi-center urban areas. Sectors are identified by position as well as by the density of buildings as follows: **CENTER:** the area recognized as the business center of the city, generally the most densely built-up sector; **INNER RING:** the area located between the city center and the urban periphery, generally a densely built-up sector; **PERIPHERY:** the area located between the inner ring and the rural areas, generally a scatteredly built-up sector. (U.S.D.P.)

**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. (U.S.D.P.)

**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. (U.S.D.P.)

**DWELLING UNIT.** A self-contained unit in a dwelling for an individual, a family, or a group. (U.S.D.P.)

**DWELLING UNIT AREA.** The dwelling unit area (m<sup>2</sup>) is the built-up, covered area of a dwelling unit. (U.S.D.P.)

**DWELLING UNIT COST.** The initial amount of money paid for the dwelling unit or the present monetary equivalent for replacing the dwelling unit. (U.S.D.P.)

**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). (U.S.D.P.)

**DWELLING UTILIZATION.** The utilization indicates the type of use with respect to the number of inhabitants/families. **SINGLE:** an individual or family inhabiting a dwelling. **MULTIPLE:** a group of individuals or families inhabiting a dwelling. (U.S.D.P.)

**EASEMENT.** Servitude: a right in respect of an object (as land owned by one person) in virtue of which the object (land) is subject to a specified use or enjoyment by another person or for the benefit of another thing. (Merriam-Webster, 1971)

**EFFICIENCY.** Capacity to produce desired results with a minimum expenditure of energy, time, money or materials. (Merriam-Webster, 1971)

**EFFLUENT.** Outflow or discharge from a sewer or sewage treatment equipment. (DePina, 1972)

**ELECTRIC FEEDER.** That part of the electric distribution system between the transformer and the service drop or drops. (HUD, Mobile Court Guide, 1970)

**ELECTRIC SERVICE DROP.** That part of the electric distribution system from a feeder to the user's service equipment serving one or more lots. (HUD, Mobile Court Guide, 1970)

**ELECTRIC TRANSFORMER.** A device which changes the magnitude of alternating voltages and currents; generally from distribution voltages to user voltages; a distribution component that converts power to usable voltage. (TM 5 765 US Army, 1970; U.S.D.P.)

**ELECTRICAL CIRCUIT.** A closed, complete electrical path with various connected loads. Circuits may either be 'parallel' (voltage constant for all connected loads) or 'series' (voltage divided among connected loads). Parallel circuits are fixtures wired independent of each other, which are used in nearly all building wiring. (U.S.D.P.; ROTC ST 45-7, 1953)

**ELECTRICAL FREQUENCY.** The number of times an alternating electric current changes direction in a given period of time. Measured in cycles per second: hertz. (ROTC ST 45-7, 1953)

**ELECTRIC GROUND.** The electrical connection with the earth or other ground. (Merriam-Webster, 1971)

**ELECTRICAL NETWORK COMPONENTS.** It is composed of the following: **GENERATION:** produces electricity; **TRANSMISSION:** transports energy to user groups; **DISTRIBUTION STATION:** divides power among main user groups; **SUBSTATION:** manipulates power into useful energy levels for consumption; **DISTRIBUTION NETWORKS:** provides electric service to user. (U.S.D.P.)

**ELECTRIC PHASE.** May be either a single-phase circuit (for small electrical devices) or a three-phase circuit (for heavy equipment, large electrical devices). In single-phase only one current is flowing through

the circuit with the voltage dropping to zero twice in each cycle. In three-phase currents flow through the circuit with the power never dropping to zero. (U.S.D.P.)

**ELECTRICAL POWER.** The source or means of supplying energy for use; measured in watts. (U.S.D.P.)

**ELECTRICAL WIRING SYSTEMS.** May either be single-phase or three-phase. **SINGLE-PHASE:** 2 hot wires with 1 neutral wire; **THREE-PHASE:** 3 hot wires with 1 neutral wire. (ROTC ST 45-7, 1953)

**ELECTRICITY.** Electrification: the process (network) for supplying (the site) with electric power. (Merriam-Webster, 1971)

**EMBANKMENT (or FILL).** A bank of earth, rock, or other material constructed above the natural ground surface. (DePina, 1972)

**EROSION.** The general process whereby materials of the earth's crust are worn away and removed by natural agencies including weathering, solution, corrosion, and transportation; (specific) land destruction and simultaneous removal of particles (as of soil) by running water, waves and currents, moving ice, or wind. (Merriam-Webster, 1971)

**EXCRETA.** Waste matter eliminated from the body. (U.S.D.P.)

**EXISTING STRUCTURE.** Something constructed or built (on the site). (U.S.D.P.)

**EXPLORATORY BORING.** Initial subsurface investigations (borings) are done on a grid superimposed on the areas of interest and on areas indicated as limited/restricted/hazard in the initial survey. (U.S.D.P.)

**EXTERIOR CIRCULATION/ACCESSES (SITE PLANNING).** The existing and proposed circulation system/accesses outside but affecting the site. These include limited access highways as well as meshing access to the surrounding area. Exterior circulation/accesses are generally given conditions. (U.S.D.P.)

**FAUCET (also TAP).** A fixture for drawing liquid from a pipe, cask, or other vessel. (Merriam-Webster, 1971)

**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. (U.S.D.P.)

**FIRE/EXPLOSION HAZARDS.** Danger: the state of being exposed to harm; liable to injury, pain, or loss from fire/explosion (at or near the site). (Merriam-Webster, 1971)

**FIRE FLOW.** The quantity (in time) of water available for fire-protection purposes in excess of that required for other purposes. (Merriam-Webster, 1971)

**FIRE HYDRANT.** A water tap to which fire hoses are connected in order to smother fires. (U.S.D.P.)

**FIRE PROTECTION.** Measures and practices for preventing or reducing injury and loss of life or property by fire. (Merriam-Webster, 1971)

**FLEXIBLE PAVEMENT.** A pavement structure which maintains intimate contact with and distributes loads to the subgrade and depends upon aggregate interlock, particle friction, and cohesion for stability. (DePina, 1972)

**FLOODING.** A rising and overflowing of a body of water that covers land not usually under water. (U.S.D.P.)

**FLOODWAY FRINGE.** The floodplain area landward of the natural floodway which would be inundated by low velocity flood waters. (U.S.D.P.)

**FLOW METER.** A device to measure flow of water. (U.S.D.P.)

**FLUSH TANK TOILET.** Toilet with storage tank of water used for flushing bowl. (U.S.D.P.)

**FLUSH VALVE TOILET.** Toilet with self-closing valve which supplies water directly from pipe. It requires adequate pressure for proper functioning. (U.S.D.P.)

**FOOT CANDLE.** A unit of illuminance on a surface that is everywhere one foot from a uniform point source of light of one candle and equal to one lumen per square foot. (Merriam-Webster, 1971)

**FUMES.** Gaseous emissions that are usually odorous and sometimes noxious. (Merriam-Webster, 1971)

**GAS.** A system for supplying natural gas, manufactured gas, or liquefied petroleum gas to the site and individual users. (U.S.D.P.)

**GRADE.** Profile of the center of a roadway, or the invert of a culvert or sewer. (DePina, 1972)

**GRID BLOCKS.** The block determined by a convenient public circulation and not by dimensions of lots. In grid blocks some lots have indirect access to public streets. (U.S.D.P.)

**GRIDIRON BLOCKS.** The blocks determined by the dimensions of the lots. In gridiron blocks all the lots have direct access to public streets. (U.S.D.P.)

**GRID LAYOUTS.** The urban layouts with grid blocks. (U.S.D.P.)

**GRIDIRON LAYOUTS.** The urban layouts with gridiron blocks. (U.S.D.P.)

**GOVERNMENT/MUNICIPAL REGULATIONS.** In urban areas, the development of the physical environment is a process usually controlled by a government/municipality through all or some of the following regulations: Master Plan, Zoning Ordinance, Subdivision Regulations, Building Code. (U.S.D.P.)

**HEAD.** (Static). The height of water above any plane or point of reference. Head in feet = (lb/sq. in. x 144)/(Density in lb/cu. ft.) For water at 68°F. (DePina, 1972)

**HIGH-RISE.** Dwelling units grouped in five or more stories with stairs and lifts for vertical circulation. (U.S.D.P.)

**HOT WIRE.** Wire carrying voltage between itself and a ground. (ROTC ST 45-7, 1953)

**HYDRAULICS.** That branch of science or engineering that deals with water or other fluid in motion. (DePina, 1972)

**ILLEGAL.** That which is contrary to or violating a rule or regulation or something having the force of law. (Merriam-Webster, 1971)

**INCOME.** The amount (measured in money) of gains from capital or labor. The amount of such gain received by a family per year may be used as an indicator of income groups. (U.S.D.P.)

**INCOME GROUPS.** A group of people or families within the same range of incomes. (U.S.D.P.)

**INCREMENT (TAX).** A special tax on the increased value of land, which is due to no labor/expenditure by the owner, but rather to natural causes such as the increase of population, general progress of society, etc. (U.S.D.P.)

**INFRASTRUCTURE.** The underlying foundation or basic framework for utilities and services: streets; sewage, water network; storm drainage, electrical network;

gas network; telephone network; public transportation; police and fire protection; refuse collection, health, schools, playgrounds, parks, open spaces. (U.S.D.P.)

**INSULATOR.** A material or body that is a poor conductor of electricity, heat, or sound. (Merriam-Webster, 1971)

**INTERIOR CIRCULATION NETWORK (SITE PLANNING).** The pedestrian/vehicular circulation system inside the site. It should be designed based upon the exterior circulation/accesses and land development requirements. (U.S.D.P.)

**INTERVAL.** A space of time (or distance) between the recurrences of similar conditions or states. (Merriam-Webster, 1971)

**KILOWATT (kw).** (1000 watts) A convenient manner of expressing large wattages. Kilowatt hours (kwh) measure the total quantity of energy consumed in a given time. One kwh represents the use of an average of 1 kilowatt of electrical energy for a period of 1 hour. (ROTC ST 45-7, 1953)

**LAMPHOLE.** A vertical pipe or shaft leading from the surface of the ground to a sewer, for admitting light for purposes of inspection. (U.S.D.P.)

**LAND COST.** Price: the amount of money given or set as the amount to be given as a consideration for the sale of a specific thing (the site). (Merriam-Webster, 1971)

**LAND DEVELOPMENT COSTS.** The costs of making raw land ready for development through the provision of utilities, services, accesses, etc. (U.S.D.P.)

**LAND LEASE.** The renting of land for a term of years for an agreed sum; leases of land may run as long as 99 years. (U.S.D.P.)

**LAND-MARKET VALUE.** Refers to: 1) the present monetary equivalent to replace the land; 2) the present tax based value of the land; or 3) the present commercial market value of the land. (U.S.D.P.)

**LAND OWNERSHIP.** The exclusive right of control and possession of a parcel of land. (U.S.D.P.)

**LAND SUBDIVISION.** The division of the land in blocks, lots and laying out streets. (U.S.D.P.)

**LAND TENANCY.** The temporary holding or mode of holding a parcel of land of another. (U.S.D.P.)

**LAND UTILIZATION.** A qualification of the land around a dwelling in relation to user, physical controls and responsibility. **PUBLIC** (streets, walkways, open spaces): user -anyone/unlimited; physical controls -minimum; responsibility -public sector. **SEMI-PUBLIC** (open spaces, playgrounds, schools): user -limited group of people; physical controls -partial or complete; responsibility -public sector and user. **PRIVATE** (dwellings, lots): user -owner or tenant or squatter; physical controls -complete; responsibility -user. **SEMI-PRIVATE** (cluster courts): user -group of owners and/or tenants; physical controls -partial or complete; responsibility -user. (U.S.D.P.)

**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. (U.S.D.P.)

**LAND UTILIZATION: RESPONSIBILITY.** The quality/state of being morally/legally responsible for the use and maintenance of land by the owners/users. (U.S.D.P.)

**LATERAL SEWER.** A collector pipe receiving sewage from building connection only. (U.S.D.P.)

**LATRINE.** A receptacle (as a pit in the earth or a water closet) for use in defecation and urination, or

a room (as in a barracks or hospital) or enclosure (as in a camp) containing such a receptacle. (Merriam-Webster, 1971)

**LAYOUT.** The plan or design or arrangement of something that is laid out. (Merriam-Webster, 1971)

**LEVELS OF SERVICES.** Two levels are considered: **MINIMUM**, are admissible or possible levels below the standard; **STANDARD**, are levels set up and established by authority, custom of general consent, as a model, example or rule for the measure of quantity, weight extent, value or quality. (U.S.D.P.)

**LIFT PUMP.** A collection system component that forces sewage to a higher elevation to avoid deep pipe networks. (U.S.D.P.)

**LOCALITY.** A relatively self-contained residential area/community/neighborhood/settlement within an urban area which may contain one or more dwelling/land systems. (U.S.D.P.)

**LOCALITY SEGMENT.** A 400m x 400m area taken from and representing the residential character and layout of a locality. (U.S.D.P.)

**LOCATION.** Situation: the way in which something (the site) is placed in relation to its surroundings (the urban context). (Merriam-Webster, 1971)

**LOT.** A measured parcel of land having fixed boundaries and access to public circulation. (U.S.D.P.)

**LOT CLUSTER.** A group of lots (owned individually) around a semipublic common court (owned in condominium). (U.S.D.P.)

**LOT COVERAGE.** The ratio of building area to the total lot area. (U.S.D.P.)

**LOT PROPORTION.** The ratio of lot width to lot depth. (U.S.D.P.)

**LUMINAIRE.** In highway lighting, a complete lighting device consisting of a light source, plus a globe, reflector, refractor, housing and such support as is integral with the housing. (DePina, 1972)

**MANHOLE.** An access hole sized for a man to enter, particularly in sewer and storm drainage pipe systems for cleaning, maintenance and inspection. (U.S.D.P.)

**MATRIX (OF BASIC REFERENCE MODELS).** A set of models of urban layouts arranged in rows and columns. (U.S.D.P.)

**MASTER PLAN.** A comprehensive, long range plan intended to guide the growth and development of a city, town or region, expressing official contemplations on the course its transportation, housing and community facilities should take, and making proposals for industrial settlement, commerce, population distribution and other aspects of growth and development. (Abrams, 1972).

**MEDIAN BARRIER.** A double-faced guard rail in the median or island dividing two adjacent roadways. (DePina, 1972)

**MESHING BOUNDARIES.** Characterized by continuing, homogeneous land uses or topography, expressed as: **LINES:** property lines, political or municipal divisions, main streets, etc.; **AREAS:** similar residential uses, compatible uses (as parks with residential). (U.S.D.P.)

**MICROCLIMATE.** The local climate of a given site or habitat varying in size from a tiny crevice to a large land area, but being usually characterized by considerable uniformity of climate. (Merriam-Webster, 1971)

**MODE OF TRAVEL.** Manner of moving from one place (the

site) to another (other parts of the urban context). (U.S.D.P.)

**MODEL (OF URBAN LAYOUT).** A representation of an urban residential area illustrating circulation, land utilization, land subdivision, and utility network of a specific layout and lot. (U.S.D.P.)

**MUTUAL OWNERSHIP.** Private land ownership shared by two or more persons and their heir under mutual agreement. (U.S.D.P.)

**NATURAL FEATURES.** Prominent objects in or produced by nature. (U.S.D.P.)

**NATURAL UNDISTURBED SOIL.** Soils that have not been disturbed by artificial process. Although natural, they depend greatly on local conditions, environment, and past geological history of the formations. (U.S.D.P.)

**NEIGHBORHOOD.** A section lived in by neighbors and having distinguishing characteristics. (U.S.D.P.)

**NETWORK EFFICIENCY (LAYOUT EFFICIENCY).** The ratio of the length of the network to the area(s) contained within; or tangent to it. (U.S.D.P.)

**NEUTRAL WIRE.** Wire carrying no voltage between itself and a ground. (ROTC ST 45-7, 1953)

**NOISE.** Any sound (affecting the site) that is undesired (such as that produced by: traffic, airports, industry, etc.) (Merriam-Webster, 1971)

**ODOR.** A quality of something that affects the sense of smell. (Merriam-Webster, 1971)

**OHMS (electrical).** The unit of resistance to the flow electricity. The higher the number of ohms, the greater the resistance. When resistance is constant, amperage (and wattage) are in direct proportion to voltage. Resistance varies inversely with the cross-sectional area of the wire. Ohms = volts/amperes.  $R = E/I$ . The practical mks unit of electrical resistance that is equal to the resistance of a circuit in which a potential difference of one volt produces a current of one ampere or to the resistance in which one watt of power is dissipated when one ampere flows through it and that is taken as standard in the U.S. (U.S.D.P.; ROTC ST 45-7, 1953; Merriam-Webster, 1971)

**OPTIMIZE/OPTIMIZE.** To bring to a peak of economic efficiency, specially by the use of precise analytical methods. (Merriam-Webster, 1971)

**ORGANIC SOILS.** Soils composed mostly of plant material. (U.S.D.P.)

**OXIDATION POND (LAGOON).** A method of sewage treatment using action of bacteria and algae to digest/decompose wastes. (U.S.D.P.)

**PERCENT RENT/MORTGAGE.** The fraction of income allocated for dwelling rental or dwelling mortgage payments; expressed as a percentage of total family income. (U.S.D.P.)

**PIT PRIVY/LATRINE.** A simple hole in the ground, usually hand dug, covered with slab and protective superstructure; for disposal of human excreta. (U.S.D.P.)

**PLANNING.** The establishment of goals, policies, and procedures for a social or economic unit, i.e. city. (U.S.D.P.)

**PLOT/LOT.** A measured parcel of land having fixed boundaries and access to public circulation. (U.S.D.P.)

**POLICE PROTECTION.** Police force: a body of trained men and women entrusted by a government with the maintenance of public peace and order, enforcement of laws, prevention and detection of crime. (Merriam-

Webster, 1971)

**POPULATION DENSITY.** It is the ratio between the population of a given area and the area. It is expressed in people per hectare. It can be: **GROSS DENSITY:** includes any kind of land utilization, residential, circulation, public facilities, etc. **NET DENSITY:** includes only the residential land and does not include land for other uses. (U.S.D.P.)

**POSITION.** The point or area in space actually occupied by a physical object (the site). (Merriam-Webster, 1971)

**PRIMER.** A small introductory book on a specific subject. (U.S.D.P.)

**PRIVATE LAND OWNERSHIP.** The absolute tenure of land to a person and his heirs without restriction of time. (U.S.D.P.)

**PRIVY.** A small, often detached building having a bench with one or more round or oval holes through which the user may defecate or urinate (as into a pit or tub) and ordinarily lacking any means of automatic discharge of the matter deposited. (Merriam-Webster, 1971)

**PROJECT.** A plan undertaken; a specific plan or design. (U.S.D.P.)

**PUBLIC CIRCULATION.** The circulation network which is owned, controlled, and maintained by public agencies and is accessible to all members of a community. (U.S.D.P.)

**PUBLIC FACILITIES.** Facilities such as schools, playgrounds, parks, other facilities accessible to all members of a community which are owned, controlled, and maintained by public agencies. (U.S.D.P.)

**PUBLIC SERVICES AND COMMUNITY FACILITIES.** Includes: public transportation, police protection, fire protection, refuse collection, health, schools, and playgrounds, recreation and open spaces, other community facilities, business, commercial, small industries, markets. (U.S.D.P.)

**PUBLIC SYSTEM (general).** A system which is owned and operated by a local governmental authority or by an established public utility company which is controlled and regulated by a governmental authority. (HUD/AID, Minimum Standards, 1966)

**PUBLIC UTILITIES.** Includes: water supply, sanitary sewerage, storm drainage, electricity, street lighting, telephone, circulation networks. (U.S.D.P.)

**PUMP.** A device or machine that raises, transfers, or compresses fluids or that attenuates gases especially by suction or pressure or both. (Merriam-Webster, 1971)

**REFUSE COLLECTION.** The service for collection and disposal of all the solid wastes from a community. (U.S.D.P.)

**RESERVOIR.** Large-scale storage of water; also functions to control fluctuations in supply and pressure. (U.S.D.P.)

**RESIDENTIAL AREA.** An area containing the basic needs/requirements for daily life activities: housing, education, recreation, shopping, work. (U.S.D.P.)

**RESISTANCE.** The opposition to electrical flow. (Resistance increases as the length of wires is increased and decreases as the cross-sectional area of wires is increased). (ROTC ST 45-7, 1953)

**RIGHT-OF-WAY.** A legal right of passage over another person's ground (land), the area or way over which a right-of-way exists such as: a path or thoroughfare which one may lawfully use, the strip of land devoted to or over which is built a public road, the land

occupied by a railroad, the land used by a public utility. Rights-of-way may be shared (as streets; pedestrians and automobiles) or exclusive (as rapid transit routes; subways, railroads, etc.) (Merriam-Webster, 1971; U.S.D.P.)

ROADWAY (HIGHWAY). Portion of the highway included between the outside lines of gutter or side ditches, including all slopes, ditches, channels, and appurtenances necessary to proper drainage, protection, and use. (DePina, 1972)

ROW/GROUPED HOUSING. Dwelling units grouped together linearly or in clusters. (U.S.D.P.)

RUNOFF. That part of precipitation carried off from the area upon which it falls. (DePina, 1972)

RUNOFF-RAINFALL RATIO. The percentage (ratio) of stormwater runoff that is not reduced by evaporation, depression storage, surface wetting, and percolation; with increased rainfall duration, runoff-rainfall ratios rise increasing runoff flow. (U.S.D.P.)

SAND. Loose, distinguishable grains of quartz/feldspar, mica (ranging from 2mm to 0.02mm in diameter). (U.S.D.P.)

SANITARY SEWERAGE. The system of artificial usually subterranean conduits to carry off sewage composed of: *excreta*: waste matter eliminated from the human body; *domestic wastes*: used water from a home/community containing 0.1% total solids; and some *industrial wastes*, but not water from ground, surface, or storm. (U.S.D.P.)

SEMI-DETACHED DWELLING. Two dwelling units sharing a common wall (duplex). (U.S.D.P.)

SEPTIC TANK. A tank in which the organic solid matter of continuously flowing sewage is deposited and retained until it has been disintegrated by anaerobic bacteria. (Merriam-Webster, 1971)

SERIES CIRCUIT. Fixtures connected in a circuit by a single wire. When one fixture is out, the circuit is broken. Fixtures with different amperages cannot be used efficiently in the same circuit. (ROTC ST 45-7, 1953)

SETTLEMENT. Occupation by settlers to establish a residence or colony. (U.S.D.P.)

SEWAGE. The effluent in a sewer network. (U.S.D.P.)

SEWER. The conduit in a subterranean network used to carry off water and waste matter. (U.S.D.P.)

SEWER BUILDING CONNECTION. The pipe connecting the dwelling with the sewer network. (U.S.D.P.)

SEWERAGE. Sewerage system: the system of sewers in a city, town or locality. (Merriam-Webster, 1971)

SHAPE. Form/configuration of the site surface as defined by its perimeter/boundaries. (U.S.D.P.)

SHOPPING. (Facilities for) searching for, inspecting, or buying available goods or services. (U.S.D.P.)

SILT. Loose, unconsolidated sedimentary rock particles (ranging from 0.02mm to 0.002mm in diameter). (U.S.D.P.)

SITE. Land (that could be) made suitable for building purposes by dividing into lots, laying out streets and providing facilities. (Merriam-Webster, 1971)

SITE AREAS. Two types are considered: *GROSS AREA*: includes the whole site or the bounded piece of ground. *USABLE AREA*: includes only the portion of the site that can be fully utilized for buildings, streets, playgrounds, recreation facilities, gardens, or other structures. (U.S.D.P.)

SITE AND SERVICES. The subdivision of urban land and the provision of services for residential use and complementary commercial use. Site and services projects are aimed to improve the housing conditions for the low income groups of the population by providing: a) *SITE*: the access to a piece of land where people can build their own dwellings; b) *SERVICES*: the opportunity of access to employment, utilities, services and community facilities, financing and communications. (U.S.D.P.)

SIZE. Physical magnitude or extent (of the site), relative or proportionate dimensions (of the site). (Merriam-Webster, 1971)

SLOPE. Degree or extent of deviation (of the land surface) from the horizontal. (Merriam-Webster, 1971)

SMOKE. The gaseous products of burning carbonaceous materials made visible by the presence of carbon particles. (Merriam-Webster, 1971)

SOIL. Soil structure: the arrangement of soil particles in various aggregates differing in shape, size, stability, and degree of adhesion to one another. (Merriam-Webster, 1971)

SOIL INVESTIGATION. It is the process to find the soil structure and other characteristics. It may include the following stages: initial soil survey, exploratory boring, construction boring. (U.S.D.P.)

SOIL PIPE. The pipe in a dwelling which carries the pipe discharge from water closets. (U.S.D.P.)

SOIL SURVEY (INITIAL). An on-site examination of surface soil conditions and reference to a GENERAL SOIL MAP. It is used to reveal obvious limitations/restrictions/hazards for early planning consideration. (U.S.D.P.)

STACK. The vertical pipe in a dwelling of the soil-, waste-, or vent-pipe systems. (ROTC ST 45-7, 1953)

STANDARD. 1) Something that is established by authority, custom or general consent as a model or example to be followed. 2) Something that is set up and established by authority as a rule for the measure of quantity, weight, extent, value or quality. (Merriam-Webster, 1971)

STANDPIPE. A pipe riser with tap used as a source of water for domestic purposes. (HUD/AID, Minimum Standards, 1966)

STORM DRAINAGE. Storm sewer: a sewer (system) designed to carry water wastes except sewage (exclusively storm water, surface runoff, or street wash). (Merriam-Webster, 1971)

STREET LIGHTING. Illumination to improve vision at night for security and for the extension of activities. (U.S.D.P.)

SUBDIVISION REGULATIONS. Regulations governing the development of raw land for residential or other purposes. (Abrams, 1972)

SUBGRADE. The layer of natural soil or fill (compacted soil) upon which the pavement structure including curbs is constructed. (DePina, 1972)

SUBMAIN or BRANCH SEWER. A collector pipe receiving sewage from lateral sewer only. (U.S.D.P.)

SUBSISTENCE INCOME. The minimum amount of money required for the purchase of food and fuel for an average family to survive. (U.S.D.P.)

SULLAGE. Drainage or refuse especially from a house, farmyard, or street. (Merriam-Webster, 1971)

TAP (also FAUCET). A fixture for drawing a liquid from a pipe, cask, or other vessel. (Merriam-Webster, 1971)

TAX EXEMPTION. A grant by a government of immunity from taxes; (a ten-year tax exemption on new housing in New York stimulated new construction in the 1920's; to ease its housing shortage, Turkey granted a ten-year tax exemption on new buildings). (Abrams, 1966)

TAX INCENTIVE. Favorable tax treatment to induce the beneficiary to do something he would not otherwise be likely to do. (U.S.D.P.)

TAX STRUCTURE - TAXATION. The method by which a nation (state, municipality) implements decisions to transfer resources from the private sector to the public sector. (U.S.D.P.)

TELEPHONE. An electrical voice communication network interconnecting all subscribing individuals and transmitting over wires. (U.S.D.P.)

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); *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. (U.S.D.P.)

TITLE. The instrument (as a deed) that constitutes a legally just cause of exclusive possession (of land, dwellings, or both). (Merriam-Webster, 1971)

TOILET. A fixture for defecation and urination, esp. water closet. (7th Collegiate Webster, 1963)

TOPOGRAPHY. The configuration of a (land) surface including its relief and the position of its natural and man-made features. (Merriam-Webster, 1971)

TRANSPORTATION. Means of conveyance or travel from one place (the site) to another (other parts of the urban context). (Merriam-Webster, 1971)

TRAP. A fitting that provides a water seal to prevent sewer gases and odors being discharged through fixtures. (ROTC ST 45-7, 1953)

TREATMENT WORKS. Filtration plant, reservoirs, and all other construction required for the treatment of a water supply. (ROTC ST 45-7, 1953)

UNIT. A determinate quantity adopted as a standard of measurement for other quantities of the same kind. (Merriam-Webster, 1971)

URBAN TRANSPORTATION. Means of conveyance of passengers or goods from one place to another along ways, routes of circulation in a metropolitan context. (U.S.D.P.)

URBANIZATION. The quality or state of being or becoming urbanized; to cause to take on urban characteristics. (U.S.D.P.)

USE TAX. The tax on land aimed primarily at enforcing its use or improvement. (U.S.D.P.)

USER INCOME GROUPS. Based upon the subsistence (minimum wage) income per year, five income groups are distinguished: *VERY LOW (below subsistence level)*: the income group with no household income available for housing, services, or transportation; *LOW (1 x subsistence level)*: the income group that can afford no or very limited subsidized housing; *MODERATE (3 x subsistence level)*: the income group that can afford limited housing and rent only with government assistance; *HIGH (5 x subsistence level)*: the income

group that can afford housing without subsidy, by cash purchase, through mortgage payments, or by rent; *VERY HIGH (10 x subsistence level)*: the income group that represents the most economically mobile sector of the population. (U.S.D.P.)

USUFRUCT. The right to profit from a parcel of land or control of a parcel of land without becoming the owner or formal leasee; legal possession by decree without charge. (U.S.D.P.)

UTILITIES. Include: water supply, sanitary sewerage, storm drainage, electricity, street lighting, gas, telephone. (U.S.D.P.)

UTILITY/SERVICE. The organization and/or infrastructure for meeting the general need (as for water supply, wastewater removal, electricity, etc.) in the public interest. (U.S.D.P.)

VALVE. A water supply distribution component which interrupts the supply for maintenance purposes. (U.S.D.P.)

VENT. A pipe opening to the atmosphere, which provides ventilation for a drainage system and prevents trap siphonage or back pressure. (ROTC ST 45-7, 1953)

VIBRATION. A quivering or trembling motion (such as that produced by: heavy traffic, industry, aircraft, etc. (Merriam-Webster, 1971)

VEWS. That which is revealed to the vision or can be seen (from the site). (Merriam-Webster, 1971)

WALK-UP. Dwelling units grouped in two to five stories with stairs for vertical circulation. (U.S.D.P.)

WASTE PIPE. A pipe (in a dwelling) which carries water from wash basins, sinks, and similar fixtures. (ROTC ST 45-7, 1953)

WATER SUPPLY. Source, means, or process of supplying water, (as for a community) usually involving reservoirs, pipelines, and often the watershed from which the water is ultimately drawn. (Merriam-Webster, 1971)

WATERSHED. The catchment area or drainage basin from which the waters of a stream or stream system are drawn. (Merriam-Webster, 1971)

WATERWORKS. The whole system of reservoirs, channels, mains, and pumping and purifying equipment by which a water supply is obtained and distributed to consumers. (Merriam-Webster, 1971)

WATT. Watts (w) measure the power of the flow of energy through a circuit. Wattage is the product of volts times amperes. Both watts and horsepower denote the rate of work being done. 746w = 1hp. (ROTC ST 45-7, 1953)

ZONING ORDINANCE. The demarcation of a city by ordinance into zones (areas/districts) and the establishment of regulations to govern the use of land and the location, bulk, height, shape, use, population density, and coverage of structures within each zone. (U.S.D.P.)

## EXPLANATORY NOTES

### QUALITY OF INFORMATION

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

Approximate: when deducted from different and/or not completely reliable sources.  
 Accurate: when taken from reliable or actual 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 utilities 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 (1,000 meters) = 3,280.83 feet or 0.62137 miles  
 1 inch (12 inches) = 2.54 centimeters  
 1 foot (12 inches) = 0.3048 meters  
 1 mile (5,280 feet) = 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 (43,560 sq. feet) = 0.4087 hectares

### DOLLAR EQUIVALENTS

All income, cost and rent/mortgage data have been expressed in terms of the U.S. equivalent;  
 1 U.S. dollar = 14.5 Turkish Liras (August 1975).

## REFERENCES

AGENCY FOR INTERNATIONAL DEVELOPMENT- PROPOSED MINIMUM STANDARDS, Washington, D.C., 1966.

ANALYSIS OF THE LOCATION OF INDUSTRY IN ISTANBUL, Tumertekin, E., Publications of Geographical Institute No. 71, Publications of Istanbul University No. 1808, 1972.

AREA HANDBOOK FOR THE REPUBLIC OF TURKEY, Nyrop, R., U.S. Government Printing Office, Washington D.C., 1973.

AYLIK FIYAT INDEKSLERİ BULTENİ, Devlet İstatistik Enstitüsü, Ankara, Eylül 1975.

BİNALAR SAYIMI (CENSUS OF BUILDINGS), Devlet İstatistik Enstitüsü Yayın No. 647, Ankara, 1972.

CEKIRDEK KONUT, Baytin, T., I.T.U. Teknik Okulu Yayınları Sayı. 48, İstanbul, 1966.

DEVELOPMENT PLAN: SECOND FIVE YEAR 1968-1972, Devlet Planlama Teskilati Yayın No. 752, Ankara, 1969.

DODGE ESTIMATING GUIDE FOR PUBLIC WORKS CONSTRUCTION, BUILDING COST SERVICES, De Pina, E. et al, ed., Mc Graw-Hill Information Systems Company, New York, N.Y., 1972.

GECEKONDULAR VE GECEKONDU BOLGELERİNİN SOSYAL- KÜLTÜREL ÖZELLİKLERİ, İmar ve İskan Bakanlığı, Ankara, 1968.

GENEL NUFUS SAYIMI 25 EKİM 1970: NUFUSUN SOSYAL VE EKONOMİK NİTELİKLERİ; İSTANBUL İLİ (CENSUS OF POPULATION OCTOBER 25, 1970: SOCIAL AND ECONOMIC CHARACTERISTICS OF POPULATION; İSTANBUL PROVINCE), Devlet İstatistik Enstitüsü Yayın No. 690, Ankara.

GENEL NUFUS SAYIMI 25 EKİM 1970: ÖRNEKLEME SONUÇLARI (CENSUS OF POPULATION OCTOBER 25, 1970: SAMPLING RESULTS), Devlet İstatistik Enstitüsü Yayın No. 659, Ankara.

GUIDE FOR SURVEY-EVALUATION OF URBAN DWELLING ENVIRONMENTS, Baldwin, J., M.I.T. Thesis, Cambridge, 1974.

GULTEPE ARASTIRMALARI-1963, Sosyal Antropoloji ve Etnoloji Bölümü, Edebiyat Fakültesi, İstanbul Üniversitesi.

HOUSING PROBLEMS (11.20 COURSE NOTES), Keyes, L., M.I.T., Cambridge, 1971.

İSTANBUL GECEKONDULARI, Mesken Genel Müdürlüğü, İmar ve İskan Bakanlığı, Ankara, Mayıs 1973. (pamphlet)

"İstanbul Metropolitan Alan Planlama Çalışmaları", MİMARLIK, No.5, 1970, pp.55-76.

İSTANBUL SEHİR REHBERİ 1971, İstanbul Belediyesi.

"İmar ve İskan Bakanlığı Halk Konutları Standartları", MİMARLIK, No.3, 1964, pp.9-24.

"İstanbul'da Nufusun Doğum Yerlerine Göre Dağılışı", Tumertekin, E., Ozguc, N., SEHIRCILIK ENSTITUSU DERGISI 8-9, I.T.U. Mimarlik Fakültesi, 1974.

İSTANBUL 50, İstanbul İl İmar Müdürlüğü, 1973.

"İstanbul Bölgesi Yerleşme Planı", Mentese, E., ARKITEKT, Cilt.35, No.322, 1966, pp.77-81.

İSTANBUL TÜKETİCİ HARCAMALARI ANKET SONUÇLARI (RESULTS OF THE SURVEY OF CONSUMER EXPENDITURES IN İSTANBUL), Devlet İstatistik Enstitüsü Yayın No. 548, Ankara, 1969.

KALKINMA PLANI UCUNCU BES YIL 1973-1977, Devlet Planlama Teskilati Yayın No. 1272, Ankara, 1973.

KENT TOPRAKLARI SORUNU, Mimarlar Odası Yayın Komitesi, İstanbul, 1973.

KONUT ÖZEL İHTİSAS KOMİSYONU-1971-GECEKONDU RAPORU, Yorukan, A., Mesken Genel Müdürlüğü, İmar ve İskan Bakanlığı, Ankara, Mart 1974.

KONUT PROJELERİ YONUNDA İKLİM ÖZELLİKLERİNİN ANALİZİ VE DEĞERLENDİRİLMESİ-İSTANBUL, Mesken Genel Müdürlüğü, İmar ve İskan Bakanlığı, Ankara, 1968.

THE LANGUAGE OF CITIES, Abrams, C., Viking Press, New York, 1971.

MAN'S STRUGGLE FOR SHELTER IN AN URBANIZING WORLD, Abrams, C., M.I.T. Press, Cambridge, 1970.

MARMARA BOLGESİ, BOLGESEL GELİŞME, SEHIRLESME VE YERLEŞME DÜZENİ, Planlama ve İmar Genel Müdürlüğü, İmar ve İskan Bakanlığı, Ankara, 1970.

NOTES FOR A HOUSING POLICY WITH SPECIAL REFERENCE TO LOW INCOME HOUSING SYSTEMS IN METROPOLITAN MEXICO, Turner, J., M.I.T., Cambridge, 1971.

ÖZEL NİVE SOSYAL MESKENLER ARASTIRMALARI-MAYIS 1972, Sosyal Antropoloji ve Etnoloji Bölümü, Edebiyat Fakültesi, İstanbul Üniversitesi, Lisans Tezleri, 1973.

ÖZEL NİVE SOSYAL MESKENLERİNDE OTURANLARA UYGULANAN KONUT KULLANIM ANKETİ, AİLE ANKETİ VE ELDE EDİLEN FİZİKSEL, EKONOMİK VE SOSYAL VERİLER, İoel, N., Onder, S., Büyük İstanbul Nazım Plan Burosu, Haziran 1975.

OUTLINE OF İSTANBUL'S MASTER PLAN REPORT, Büyük İstanbul Nazım Plan Burosu, 1974.

PLAN VE YAPI BAKIMINDAN GULTEPE, KUSTEPE, HARMANTEPE, CAĞLAYAN VE ZEYTİNBURNU GECEKONDULARININ İNCELENMESİ, İstanbul Teknik Üniversitesi, 1969.

PLANLAMA VE ÜLKESEL FİZİKİ PLANLAMA ÜZERİNE, Tekeli, I., Mimarlık Fakültesi, O.D.T.U., Ankara, 1971.

PLANNING IN TURKEY (SELECTED PAPERS), İlkin, İnanc, E., ed., İdari İlimler Fakültesi, O.D.T.U., Ankara, 1967.

ROTC ST 45-7: CONSTRUCTION, UTILITIES AND JOB MANAGEMENT (ENGINEER SCHOOL ROTC SPECIAL TEXT), U.S. Department of Army, The engineer School, Fort Belvoir, Virginia, 1953.

RUMELİHİSAR USTU-1973-; UMRANIYE-1971- NUFUS ÇALIŞMALARI, Coğrafya Enstitüsü, Edebiyat Fakültesi, İstanbul Üniversitesi.

SOSYAL MESKEN STANDARTLARI, Aktan, M., Komisyon Raporları, İmar ve İskan Bakanlığı, Ankara, 1962.

SEHIR PLANLAMALARI, Guven, T., Komisyon Raporları, İmar ve İskan Bakanlığı, Ankara, 1962.

SEHIRCILIK, SORUNLAR-UYGULAMA VE POLİTİKA, Yavuz, F., Keles, R., Geray, C., Sevinc Matbaası, Ankara, 1973.

TURKEY 1975, Directorate of Press and Information, Department of Publication- Documentation and Archives, Ankara, 1975.

TURKEY, REPORT A,A,A, INTERMET PROJECT. A RURAL-URBAN MIGRANTS AND METROPOLITAN DEVELOPMENT, Mimarlık Fakültesi, İstanbul Teknik Üniversitesi.

TURKIYE COĞRAFI VE SOSYAL ARASTIRMALAR, Tumertekin, E., Mansur, F., Benedict, P., Coğrafya Enstitüsü, Edebiyat Fakültesi, İstanbul Üniversitesi, Çağlayan Matbaası, İstanbul, 1971.

TURKIYE MİLLİ GELİRİ VE HARCAMALARI (NATIONAL INCOME AND EXPENDITURE OF TURKEY 1962-1973), Devlet İstatistik Enstitüsü Yayın No. 712, Ankara, 1974.

TURKIYE'DE KONUT KOOPERATİFLERİ, Keles, R., Mesken Genel Müdürlüğü, İmar ve İskan Bakanlığı, Ankara, Mayıs 1967.

TURKIYE'DE KONUTA İLİSKİN İSTATİSTİK VERİLER (STATISTICAL DATA RELATED TO HOUSING IN TURKEY), Buharalı, B., Mesken Genel Müdürlüğü, İmar ve İskan Bakanlığı, Ankara, Haziran 1974.

TURKIYE'DE KENTLESME, Mimarlar Odası, Ankara, 1971.

URBAN DWELLING ENVIRONMENTS, Caminos, H., Turner, J., Steffian, J., M.I.T. Press, Cambridge, 1969.

URBAN DWELLING ENVIRONMENTS: ANKARA, TURKEY, Tokman, K. B., M.I.T. Thesis, Cambridge, 1975.

URBANIZATION AND HOUSING SITUATION IN TURKEY-URBANIZATION, SQUATTER HOUSES AND HOUSING POLICY, Yorukan, T., Yorukan, A., Mesken Genel Müdürlüğü, İmar ve İskan Bakanlığı, Ankara, Mayıs 1966.

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT- MOBILE COURT DEVELOPMENT GUIDE, Washington, D.C., January, 1970.

WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY, Merriam-Webster, 1971.

WORLD BANK ATLAS, POPULATION, PER CAPITA PRODUCT AND GROWTH RATES, World Bank, Washington, D.C., 1974.

YENİ GECEKONDU KANUNU VE UYGULAMA YONETMELİĞİ, Alınmaz, H., Yıldız Kitabevi, İstanbul, 1966.

YENİ İMAR KANUNU, Tezmen, N., Yeni Büyük Dağıtım Yayınları, İstanbul, 1972.

ZEYTİNBURNU GECEKONDU BOLGESİ, Hart, C.W.M., Saran, N., translated by., İstanbul Ticaret Odası Yayınları, 1969.