URBAN DWELLING ENVIRONMENTS
CASE STUDY: MEXICO CITY

by

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URBAN DWELLING ENVIRONMENTS: MEXICO CITY

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ABSTRACT

CONTENT: This research describes and evaluates the low income dwelling environment in Mexico City. The focus of this study is on 12 selected situations existing at the present time in the Metropolitan Area. The following is included: an "introduction" of Mexico City's housing systems; a description of the City's "urban context"; twelve "case studies" which deal with all the low income housing situations (three cases deal with the Government housing supply); and "dwelling and land evaluations" on the time/process perspectives, physical aspects, utilities and services, land utilization and layout efficiency of the cases presented. Each case is summarily described in similar terms: DRAWINGS: locality plan, locality segment, locality land use locality circulation, dwelling plan, dwelling facade and dwelling section; DESCRIPTIVE DATA: socio-economic and physical; PHOTOGRAPHS: aerial, environment and dwelling. The cases provide first-hand material with which to identify basic patterns in different aspects of the housing process, particularly in the matter of land utilization.

PURPOSE: This study attempts to identify and analyse the physical structure of different housing systems in Mexico City, based on low income dwelling types and their environments. The material is intended to stimulate the formulation of policies, regarding low income housing. The research provides a comparative framework for the analysis and evaluation of low income housing, including Governments' housing packages.

APPLICATION: This research provides a reference for the understanding of low income housing and its urban environment: the case studies are arranged so they can be viewed isolated or by relating them to different housing systems. It offers a reference base for tackling realistically low income housing, by taking advantage of existing housing and its service infrastructure. It can orient decision makars in optimizing the allocation of financial resources in housing, housing improvement and urban development.

DATA: This study is derived from field research carried on by the authors during the summers of 1972, 1973 and January 1974; complemented by maps, aerial photographs and mentioned bibliographic material. The case study analysis is based on a methodology developed in the Urban Settlement Design Program, directed by Prof. Horacio Caminos. The definitions of Mexico City housing systems are based on John F.C. Turner's hypothesis which was developed from his previous experience in Mexico City, particularly during the summer of 1972 in which the authors collaborated. A brief summary of that experience and findings is given as introduction.

MODEL: After the study of the housing systems in Mexico City, basic residential planning elements and concepts that have been previously discussed are illustrated and explained.
A proposed model is presented at the last part of the study developed from the research on the case studies. The model provides alternative housing options for very low, low and moderately low income groups. Expandable dwelling units, tenement units, walk-up apartments and site and services programs are emphasized.
The model complies with accepted/desirable ranges of population density, circulation areas and public and private land utilization percentages.

Thesis supervisor: Horacio Caminos
Title: Professor of Architecture

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The authors.

INTRODUCTION

In order to understand better the intensity, dynamics, and magnitude of Mexico City's housing systems, a description of the impact of the urbanization process in low income housing is presented. The housing systems are initially defined and the social mobility in the city is described. Afterwards, a general view of the housing systems is given, with the housing demand tendencies. Finally, according to income levels it is observed how population moves in the housing market.

Housing includes all the dwellings and shelters, legal and extralegal, existing in the Metropolitan Area housing market. Housing systems are identified dwelling/shelter unit groups, that constitute a defined environment, and are determined by particular socio/economic, physico/urban characteristics.

Mexico City's housing systems surveyed consider approximately 70 % -or 6 million- of the 8.6 million metropolitan population. The housing systems are defined as follows:

- CIUDADES PERDIDAS: unplanned shanty town in the core of blocks, scattered through the inner ring of the city (case study: Buenos Aires). Densily populated, this housing system house 2.3 % of the total metropolitan population; of generally very low incomes, with no expectations for economic, social or physical improvement. At subsistance level "S" (defined in the research at $36 US per household per month at 1972 prices), this income group is non or semi qualified and rents the land their shanty occupies.

- VECINDADES: one or two story courtyard tenements, in central and inner ring area (case studies: Las Vizcainas, La Casa Blanca, La Florida). The high density housing system concentrates 23 % persons of

total metropolitan population. Sizes from 20 to 50 one or two bedroom units, with generally communal facilities. Dweller's economic situation is generally upward mobile from 5 S to 8 S (sometimes more); being qualified workers, employees and professionists. As well, a substantial proportion of the dwellers are economically static generally at 3 S income level. A minority of dwellers have a downward tendency.

- COLONIAS PROLETARIAS: promoted land subdivisions, providing individual lots. This low density systems, houses 38 % of total metropolitan population. It can be distinguished in "old" colonias which are consolidated intermediate zones of the city and have most of the services (case studies: Pro Hogar, Vallejo); and the "new" colonias -legal or extra-legal- located in the periphery, with usually no services and facilities (case studies: Jalalpa, Lomas de San Agustin, Netzahualcoyotl). This system is basically integrated by young population from low to moderate low income groups, respectively the new and old colonias; the majority of which is economically static from 3 S to 5 S. A minority is at subsistance level or higher than 5 S. The downward and upward mobile tendencies are not significant. Generally there are formed by semi or skilled workers, eventually by some professionists.

UNIDADES HABITACIONALES: Government's subsidized multi-family apartment blocks or row houses (case studies: San Juan de Aragon, Iztacalco, Nonoalco-Tlatelolco). This variable density system offers housing to 6 % of the metropolitan population. Located anywhere in the city, the residents of the unidades are middle income at 8 S level and above; whose occupation is employees, merchants and professionists.

The accelerated urbanization rate manifested in the past decades -and still intense in the present- has a primary impact on housing. Decades ago, migration currents were principally absorbed by the city center where population settled temporarily until permanent jobs and residence was found. The city center then played a vital role in the urbanization process and the city's life. However the central areas became saturated, and the immigrants reception areas began shifting to the periphery.

According to Turner, two basic low income housing systems are identified in Mexico City: "vecindades" (tenements) and "colonias proletarias" (speculative developments).

The central area tenements played a major role in housing migrant population during decades of Mexico City's formation; and created a "tradition" in the way of living among the low income groups. Until the last decade the constantly increasing housing demand in the central areas, immobilized the tenement system from the market and pressed the city's center land lords to "open" the interior of the blocks; creating another system: "ciudades perdidas".

There was only limited free area for housing in the block's core in the central area. Therefore the periphery played an important role in providing large extensions of land for the populations housing, as represented by the "colonias proletarias". The increasing demand on inner ring and peripherical land generated uncontrolled speculation resulting in "paracaidismo" (squatter settlements).

The Public Sector's response for very low and low income groups housing demand is and traditionally has been to provide subsidized housing packages for moderate low and middle income groups; the so called "unidades habitacionales". Recently, the Government's response to low income housing was to forbid "vecindades" and "ciudades perdidas", since they were considered socially and physically undesirable. For other reasons,squatter settle-

ments are also forbidden, as they pose delicate legal problems, which are often accentuated by social and political pressures.

The annual increase rate of each system sensibly varies according not to the demand, but to the supply of the housing system market. The Turner research estimated in 1971, that the tenements' growth was completely static, but shanty towns had a 3.5 % p.a. increase rate (before being forbidden); the Public subsidized housing grew at 3.5 % p.a.; and finally the colonias -along with squatters- had a 10 - 15 % p.a. growth.

Of the 16 cases surveyed, it was found that the population's most frequent movements are: province-periphery 54 %, province-center 16 %, province-inner ring 6 %, periphery-periphery 5.5 %, inner ring-periphery 3 %, center-inner ring 2 %; and the remaining take a small percentages other trajectories. In general terms the economic characteristics of the population that made the trajectories province-periphery, a 34 % were non qualified and economically static; for the inner ring-periphery trajectory a 28 % were also non qualified and economically static; province-center a 13 % was classified with the same characteristics and as well as the 7 % of the periphery-periphery trajectory. Almost 10 % of downtown residents were born there,live there, are not qualified and are generally upward mobile. Finally 8 % that made the province-inner ring trajectory are also non qualified but economically upward mobile. It was found that 62 % of the population surveyed is economically static, 36 % is upward mobile and 2 % is downward mobile.

It is observed that generally in the housing system in Metropolitan Mexico City, at subsistance level "S"; the population locates its housing in reference to access (to transport, jobs/activities) and service facilities, sacrificing to live in shanties of the poorest physical condition (ex. ciudades perdidas, some households in tenements, some squatters).

At 3 S level the population priority is still location and access, tolerating for that a housing of poor service conditions (ex. vecindades); or when location and access of central areas is not available, the population is obliged to sacrifice it by moving to the periphery away from activities/jabs, receiving a dwelling without services (ex. new colonias proletarias).

As income raise to 5 S and more, households have more possibilities to find suitable housing, with priorities in the security of tenure and secondly in the physical conditions of the dwelling and its environment. At this subsistance level, families are established in old colonias prolrtarias' walk-up apartments or row houses and have most services and facilities. Families living in vecindades are sacrificing comfort for proximity to work and services, and are saving from their housing expenditures, blocking lower income groups housing mobility.

Finally, households with income levels of 8 S and more, are subject to credit and are eligible to public or private commercial housing. Any family remaining in vecindades or some colonias are making economic progress and may be allocating their savings for housing improvements or their comfort.

94 % of the metropolitan area housing is provided by private and popular sectors, in spite of the Government's intentions to contribute substantially in providing housing for the population's needs. The Public Sector still approaches housing demand by supplying dwelling packages; ignoring private and popular efforts and neglecting the possibility to improve the actual low income housing systems. An action in this direction, will undoubtely have a greater impact and benefit on population and housing.

URBAN CONTEXT
MEXICO CITY, MEXICO

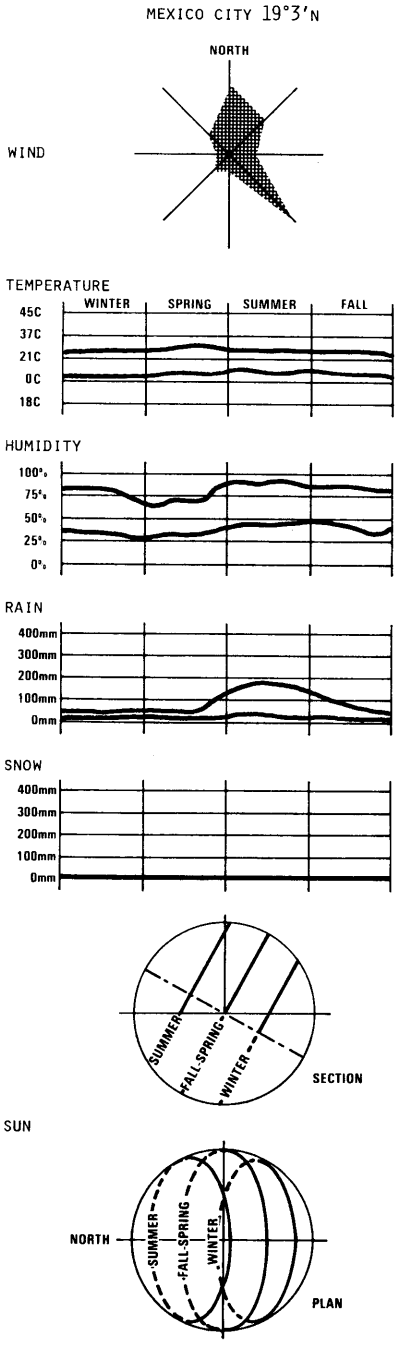
1. PRIMARY INFORMATION: Mexico City is on a high plateau, limited on the north by the Sierra de Guadalupe, to the south by the Sierra del Ajusco, to the east by the partially dry Texcoco Lake and to the west by the Sierra de las Cruces; latitude 19°3' north, longitude 99°22' west. Although located at an altitude corresponding to a trop ical climate, the city is 2242 meters above sea level, thus the area has moderate summer and winter temperatures ranging between 5° and 26° C., heavy precipitation during May to October with monthly averages ranging between 55 to 148 mm., often accompanied by electric storms.

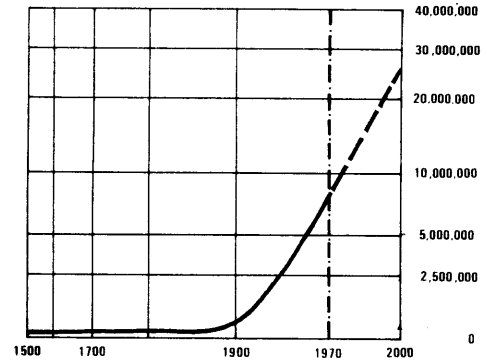
2. HISTORY: Originally called Tenotchtitlan, Mexico City was settled by the Aztecs, an advanced Indian civilization, in the XVI Century; a military, political and religious center, Tenotchtitlan had a population of 30,000 when it was conquered by Cortes in 1524 and founded the present day Mexico City. The city became the main administrative and military center for the expantion of the Spanish colonies throughout Latin America. The colony lasted approximately 300 years and after Independence in 1810, Mexico City remained the political, economical, intellectual and religious center; shortly after the revolution of 1910 and between 1940 and 1950 as a result of the industrialization process, the city showed the highest rate of growth (5,6 per cent), Mexico City currently is the seat of a highly centralized country and the bigest center of industrial development.

3. ECONOMY: The Metropolitan area represents 40 percent of the GNP of Mexico but its share from the annual national budget is only 28 percent. The labor force is 35 per cent of the population, and out of that, 31 percent work in manufacturing industries, 30 percent in services, 13 percent in commerce, 7 percent in the government and last but not least, 6 percent in construction. However, unemployment has grown considerabily since over-all productivity has grown substantially less than the demand for employment. The estimated gross per capita income in 1970 was $1824, against the country GNP per capita of $662.

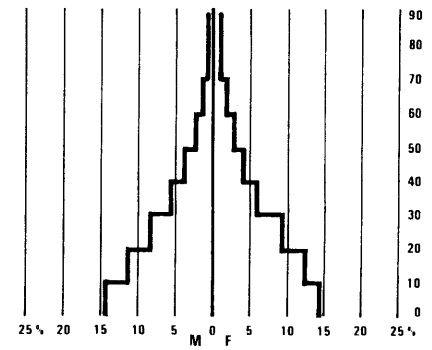
4. GOVERNMENT: The Federal District is the seat of the national government, and has an area of 1499 km^2. Until 1970, it was divided into Mexico City and 12 adjacent political wards (delegaciones), after 1970, Mexico City was divided further into 4 political wards, which made a total of 16 separate wards that depend administratively on the City. The Mayor (Regente) is appointed by the President and exercises his authority over all urban development and over 71 percent of the metropolitan population. The delegates from the political wards are appointed by the Mayor and their authority is limited to the issue of legal, civil and building, licenses. The remaining 29 percent of the population in the metropolitan area lives in five adjacent municipalities, where Mayors are elected by all literate, adult persons and depend administratively on the government of the neighboring state of Mexico.

5. DEMOGRAPHY: Public investment and industrial development attracted migrants from rural areas and the population increased 6.8 times from 1930 to 1970. The population in 1970 was 8,460,186 with an approximate annual growth rate of 6.2 percent compared to 3.5 percent for the country. The projected population for the year 2000 is 23.5 millions; which would primarily be due to natural growth, if the trend to attract rural migrants to other cities succeeds. 18 percent of the total population of the country lives in the metropolitan area; in 1970, 52 percent of the population were under twenty years of age; 66 percent of the total population was born in the city, 33 percent in the provinces and 1 percent abroad.

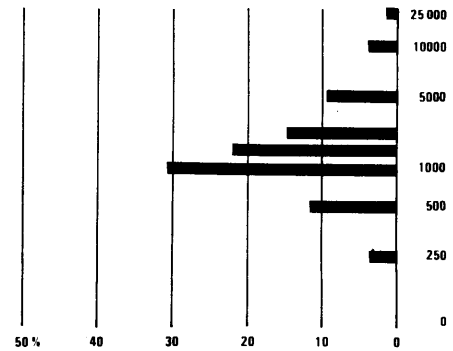




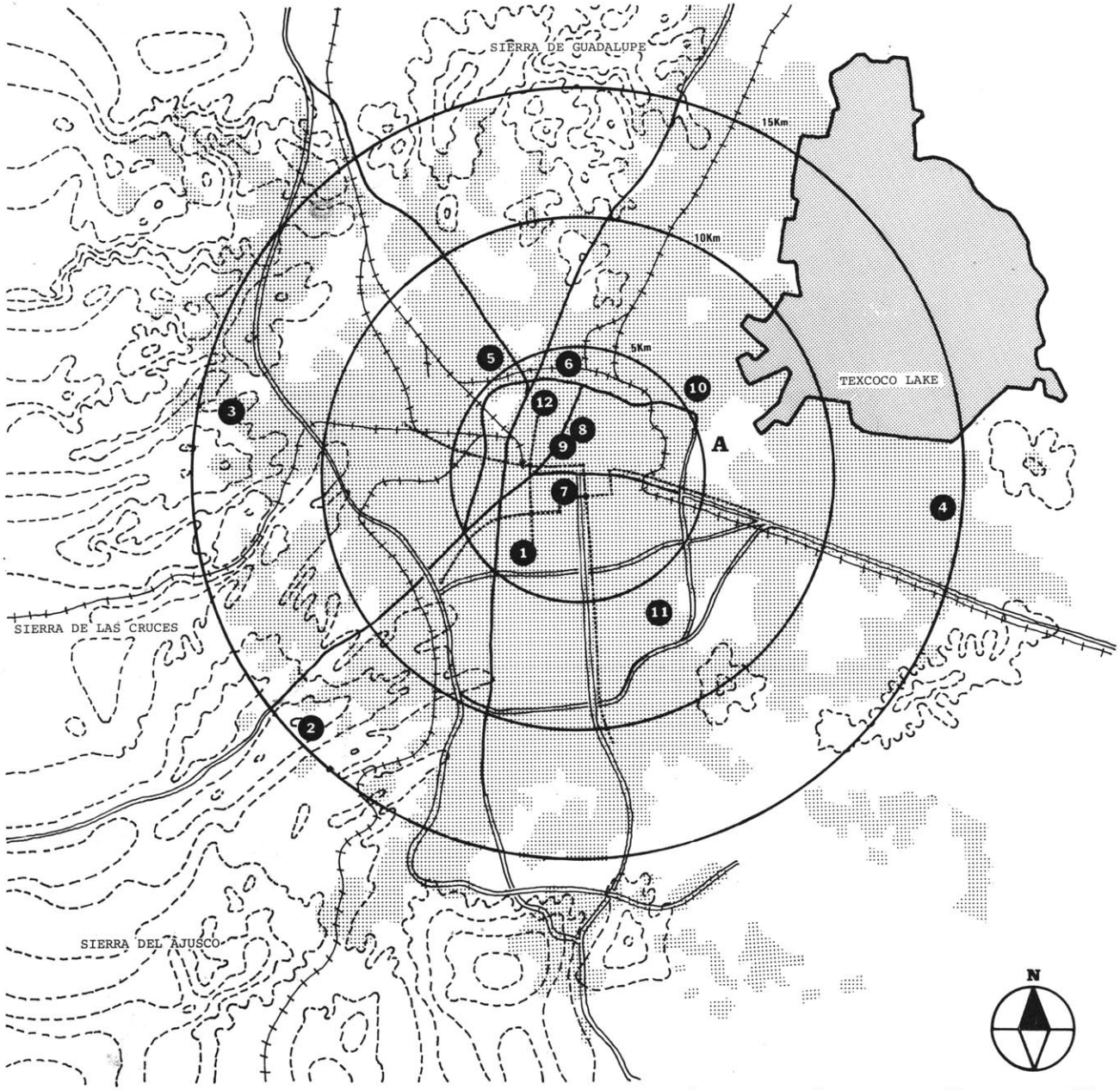
URBAN POPULATION GROWTH
horizontal: dates vertical: population
Source: D.D.F. Oficina del Plano Regulador



URBAN POPULATION DISTRIBUTION
horizontal: percentages vertical: ages
males: M females: F
Source: Census, 1970; population, 8,460,186



URBAN ANNUAL INCOME DISTRIBUTION
horizontal: percentages vertical: dollars
Source: Census, 1970; households, 1,623,558



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URBAN TOPOGRAPHY AND CIRCULATION

1. BUENOS AIRES (ciudad perdida)
2. JALALPA
3. LOMAS DE SAN AGUSTIN
4. NETZAHUALCOYOTL
5. PRO-HOGAR
6. VALLEJO
7. LAS VIZCAINAS
8. TEPITO (la casa blanca)
9. TEPITO (la florida)
10. SAN JUAN DE ARAGON
11. IZTACALCO
12. NONOALCO TLALTELOLCO

KEY

- A — Airport
- Primary Road
- Railroad
- Rapid Transit
- Built-up Area

6. SOCIO-CULTURAL: The vast majority of the population is predominantely a mixture of Spanish and Indian origins. The population has no major ethnic or cultural divisions, but is divided along the lines of income/class. However a very high proportion of the metropolitan Mexican poor are mainly migrants of Indian origin from the provinces of Michoacan, Mexico, Guanajuato and Hidalgo. The lowest income sectors are concentreted in the east and southeastern parts of the city in relatively new settlements (colonias proletarias). Low and moderately low income groups are settled in the old urban center and in the northern part of the city. The middle and upper-income sectors are concentrated in older suburban areas and in the new developments throughout the south and northwestern sections of the metropolitan area.

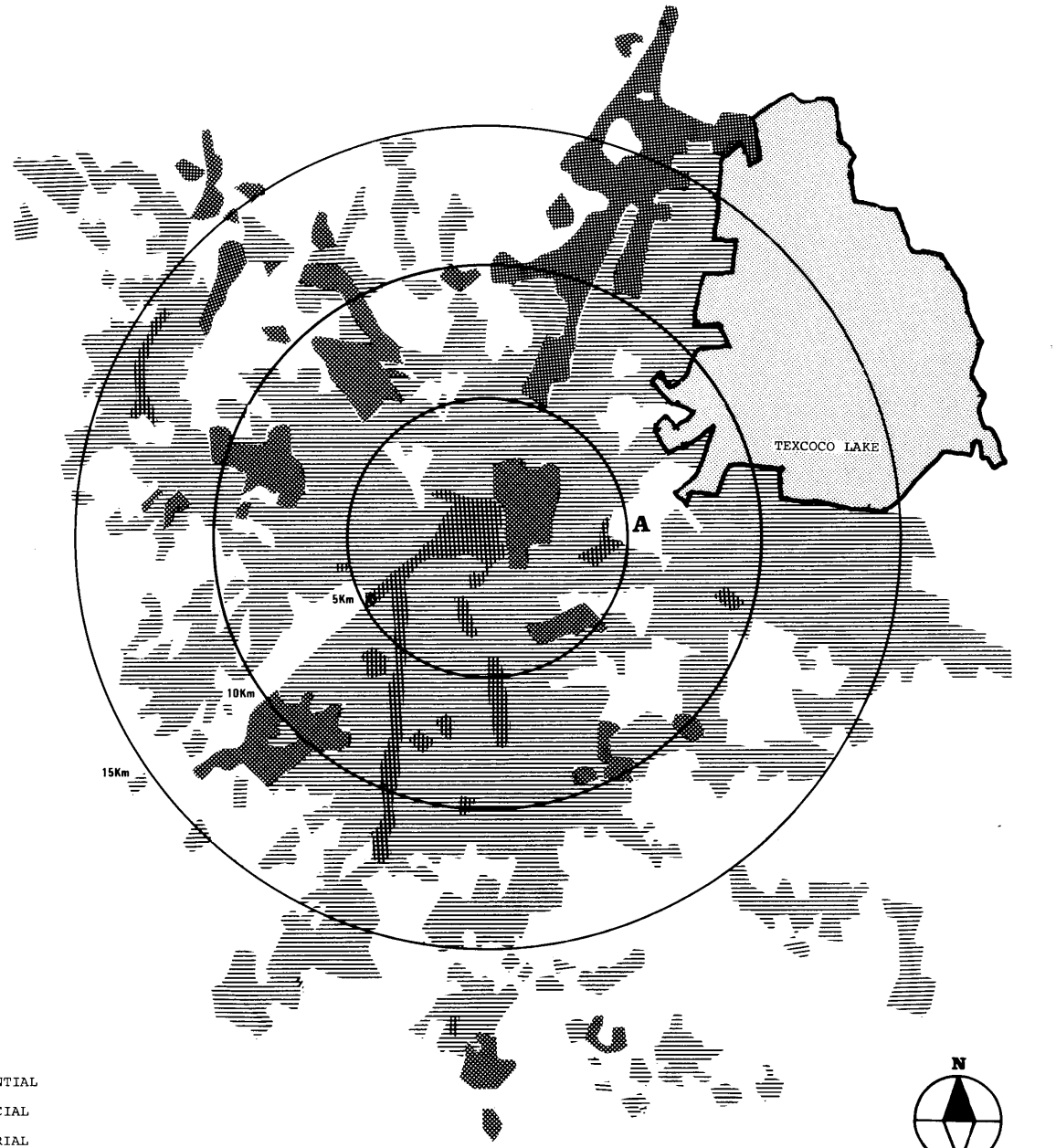
7. SOCIO-ECONOMIC: The average annual per capita income was $1824 in 1970. Approximate ly 45 percent had personal incomes under $1000, 37 percent had incomes between $1500 and $2500, and the remaining 18 percent over $5000. Sixteen percent of the population are reported to be below the official minimum wages for 1970. These dwellers have few oportunities for upward social mobility and are concentrated mainly in the outskirts of the metropolitan area.

8. HOUSING: Forty-five percent of the population are unable to afford the market prices of housing which meets city standards. Below-market-price housing is provided mainly by the private sector and the users themselves and they are as follows:

City center tenements (vecindades) in former decades offered relatively low-rental accommodation for migrants; currently housing a population of approximately two million.

Shanty towns (ciudades perdidas) evolved as an alternative to low cost rental accommodation in nearby localities of the city center. Although they tended to disappear they house a population of 200,000.

The colonias proletarias were developed in the begining of this century by speculators. Huge areas of land, commonly located in the periphery, were subdivided into lots, many times without the provision of minimum services or facilities, and only city



URBAN LAND USE PATTERN

URBAN INCOME PATTERN

dwellers who could afford it moved in. However a large proportion of users can not affore such options and many became squatters. The population of colonias proletarias is 3.3 million.

Public Housing has been encouraged during the last 35 years on a limited scale, however, eventually, public banks and the two major housing authorities (INDECO, and INFONAVIT) operate on a larger scale. Houses for workers and resettlement of squatters are carried out by these authorities.

9. URBANIZATION PROCESS: Mexico has experienced an intense demographic increase of 3.8 % per year during the last decade. Most of this growth has been increasingly concentrated in urban centers, which had an average growth rate of 5.5 % per year in the 1960-1970 decade.

The political and administrative centralization, and the size of the capital city, has stimulated the most intense wave of immigrants which by 1970 concentrated 20 % of the Country's 48.3 million population. The percentage has increased from 15 % in 1960.

Mexico City has grown at a rate of 5.7 % per year which means an additional 1000 persons per day during the 1960-70 period. By 1980 13.6 million persons will be concentrated in the metropolitan area, with an average increase of 1350 persons per day.

The Metropolitan area in 1970 already covered an estimated 500 000 hectares.

The city center and inner ring cannot absorb the intense low income housing demand. The natural growth tendencies are towards the periphery, where land is available at low cost and topography is suitable for urban expansion. The available land is usually not productive for agricultural purposes and has therefore poor quality or is located on hills. The flat north-east zone, once the bed of the salty Texcoco Lake and the hilly western zone are the protagonists in absorbing a great percentage of the populations increase.

For example, two municipalities in the north-east had an average 22 % annual increase rate during the 1960 - 1970 decade, with the po-

pulation increasing from 106 000 to 797 000 persons and expanding by an estimated 6 700 hectares in that decade only.

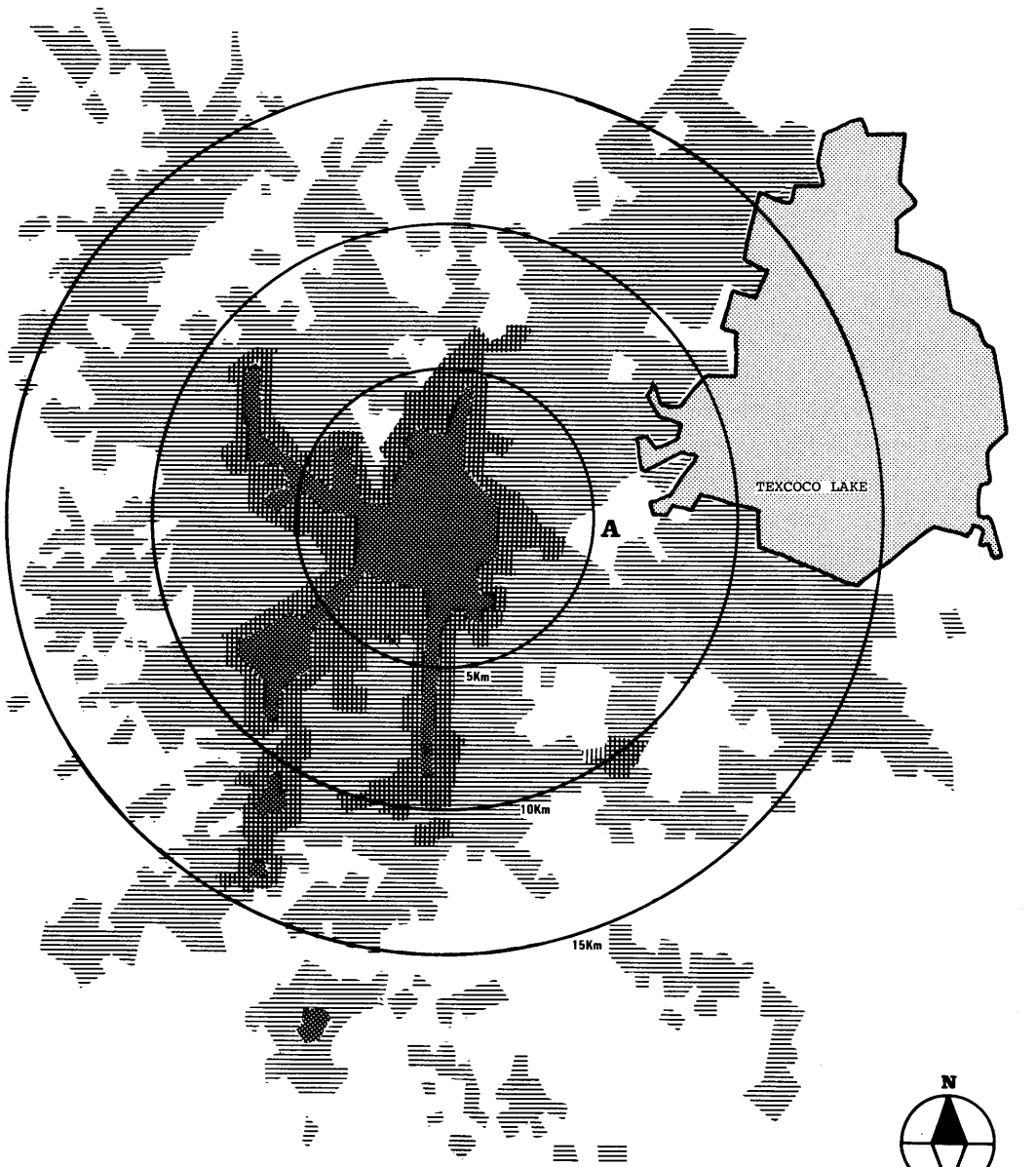
In the north-western zone, the city's low and middle income land developments are concentrated. During the past decade, this zone had a 15 % annual growth rate, which increased the population from 200 000 to 793 000 in 1970 and expanding from 5 500 to 13 100 hectares.

Of the 8.6 million metropolitan population in 1970, 77 % live in the Federal District and the remaining in the State of Mexico.

MEXICO CITY, Mexico: (opposite page) This aerial view partially covers the central business district. Facing towards the west one can see the texture of a rapidly sprawling metropolitan area (500,000 Has 1970). Mountains in the background which encircle the city on three sides constrain the growth.(1970).

URBAN CONTEXT SOURCES

Topography and Circulation:	*(accurate) Plano Geologico de la Ciudad de Mexico, 1905.*
Land Use Pattern:	*(approximate) Plano Mercadologico del Area Metropolitana, 1970.*
Income Pattern:	*(accurate) Plano Mercadologico del Area Metropolitana, 1970; CENSUS, 1970; DIRECCION GENERAL DE ESTADISTICA S.I.C.; BANCO DE MEXICO, S.A.*
Growth Pattern:	*(accurate) DEPARTAMENTO DEL DISTRITO FEDERAL, Oficina del Plano Regulador, 1974.*
Climate:	*(approximate) Servicio Metereologico Mexicano; INICIACION AL URBANISMO D.G. Ramos.*
Photographs:	*LITOGRAFICA TURMEX S.A., 1970.*
General Information:	*EL PERFIL DE MEXICO 1980, Siglo XXI, 1970; HOUSING ANALYSIS OF MEXICO, J. Bazant, 1972; ANALISIS, DIAGNOSTICO Y EVALUACION DEL SISTEMA GENERAL DE VIVIENDA DE LOS SECTORES DE ESCAZOS RECURSOS Y SUS SUBSISTEMAS ESPECIFICOS EN EL AREA METROPOLITANA DE LA CIUDAD DE MEXICO, J. Cortes, R. Davila, E. Espinosa T. Sudra, J.F.C. Turner, 1973; URBAN DWELLING ENVIRONMENTS, H. Caminos, J.F.C. Turner, J. J. Steffian, 1969.*



URBAN GROWTH PATTERN


COGNAC
MARTELL

CASE STUDIES

The following section contains case studies depicting selected dwelling environments/situations in Mexico City Urban Area at present time.

The 12 cases were selected according to income groups, housing system and proportion of the population that each system houses.

Each case study is represented at four scales:

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

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

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

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

CASE STUDIES SURVEYED:

CIUDADES PERDIDAS (SHANTIES):

1. BUENOS AIRES: Popular, Very Low Income, Shanties.

COLONIAS PROLETARIAS (SPECULATIVE DEVELOPMENT):

2. JALALPA: Private, Low Income, Shanties.
3. LOMAS DE SAN AGUSTIN: Popular, Low Income, Row Houses.
4. NETZAHUALCOYOTL: Private, Low Income, Row Houses.
5. PRO-HOGAR: Private, Moderately Low Income, Row Houses.
6. VALLEJO: Private, Moderately Low Income, Apartments.

VECINDADES (TENEMENTS):

7. LAS VIZCAINAS: Private, Moderately Low Income, Row Rooms.
8. TEPITO (Casa Blanca): Private, Low Income, Apartments.
9. TEPITO (La Florida): Private, Low Income, Apartments. .

UNIDADES HABITACIONALES (PUBLIC HOUSING):

10. SAN JUAN DE ARAGON: Public, Middle Income, Row Houses.
11. IZTACALCO: Public, Middle Income, Walk-Up Apartments.
12. NONOALCO TLATELOLCO: Public, Middle Income, High-Rise Apts.

1 BUENOS AIRES

2 JALALPA

3 LOMAS DE SAN AGUSTIN

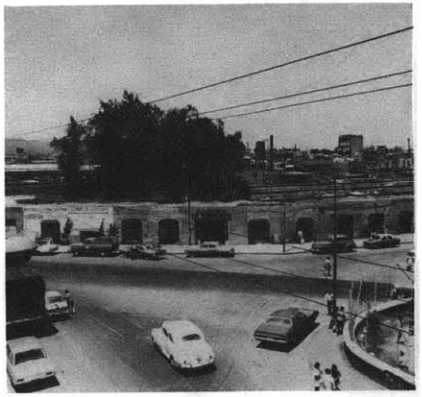
4 NETZAHUALCOYOTL

5 PRO-HOGAR

6 VALLEJO

7 LAS VIZCAINAS

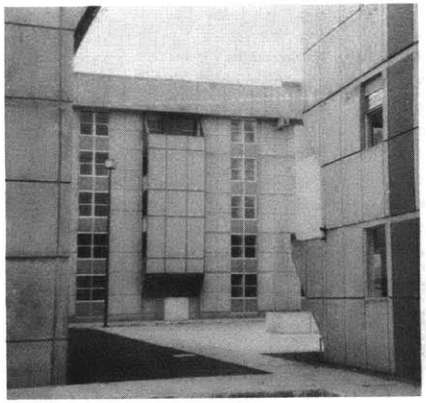
8 TEPITO



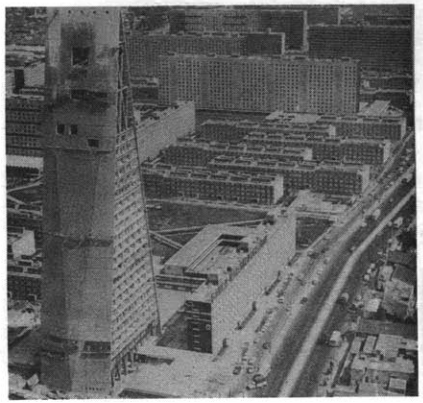
9 TEPITO

10 SAN JUAN DE ARAGON

11 IZTACALCO

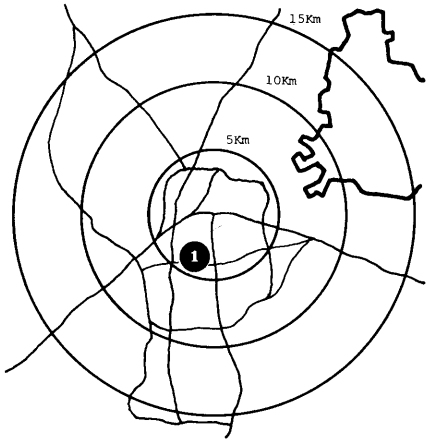


12 NONOALCO



1 BUENOS AIRES
México City

POPULAR, VERY LOW, SHANTIES



LOCALITY PLAN

SELECTED SEGMENT

LOCATION: The settlement Buenos Aires is situated adjacent to the Viaducto Miguel Aleman exprees highway crossing the city from east to west, and to a general hospital for the metropolitan area. It is about 4 kilometers from the central business district of the city and is well served by public transportation routes (rapid transit and buses). It is a small community or ciudad perdida ("lost city") in the interior of the block.

ORIGINS: The area was developed by the private sector as an alternative for housing migrants in the mid-twenty century, because of the increase of migration and the lack of reasonable rental facilities in the city center. The population of the neighborhood is mainly low/middle income, however the population of the ciudad perdida is predominantely a low/very low income group. The occupants pay rent for the land and build their own house (shacks). They lack water taps, storm drainage and swerage. Tenants have a relative stability and limited chances of improving their shelters. The locality is very well served by public facilities and provides job opportunities for most of the tenants. The ciudad perdida has been torn down (1973) because it did not meet the required health standards.

LAYOUT: The street pattern around the ciudad perdida is the typical Roman-Hispanic layout there are few open spaces but intensive use is made of streets. The ciudad perdida itself is enclosed in a block of approximately 100 by 100 meters. Because of the lack of housing, the interior of such blocks in many instances have been converted into ciudades perdidas, thus achieving better land utilization. Public land is reduced and private and semi-private land is increased. The interior of the ciudad perdida is that of a irregular compound and was determined by the users shacks and foot paths that connected the settlement with the major street which is an intensively used local thoroughfare. There is not a particular land subdivision and houses varying between 12 and 48 m^2. The total area is 0.63 Ha. with a gross density of 1800 persons per hectare.

LOCALITY LAND USE PATTERN

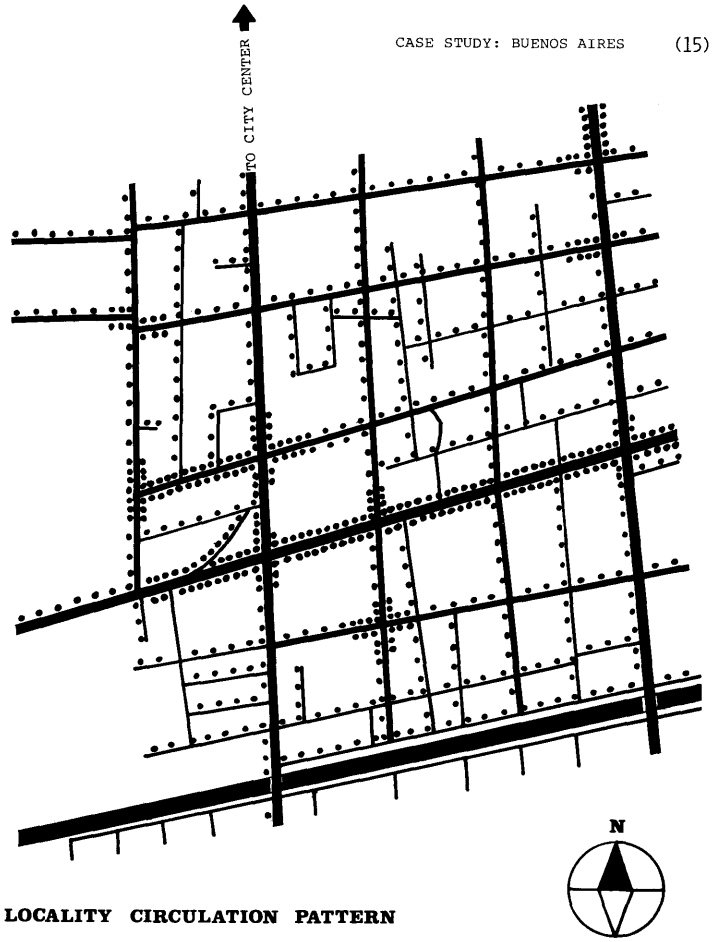
AREAS

- RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- OPEN SPACES

KEY

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

LAND USE: On the interior of the block, privately owned dwellings occupy 72 percent of the developed area, semi-private area accounts for 20 percent and streets for 8 percent, whereas in the exterior privately owned dwelling plots account for approximate ly 65 percent and 35 percent for streets. The locality is a major commercial area rath er than residential, thus households in the ciudad perdida have access to services with- in walking distances not larger than 100 to 200 meters. There are 2 primary schools with adjacent open area, two churches, sever al clinic and nursery schools, evenly dis- tributed and light industries throughout the locality.



LOCALITY CIRCULATION PATTERN

KEY

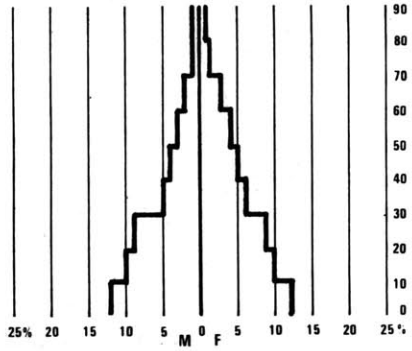
- VEHICULAR
- PEDESTRIAN

0 100 500m

1:10000

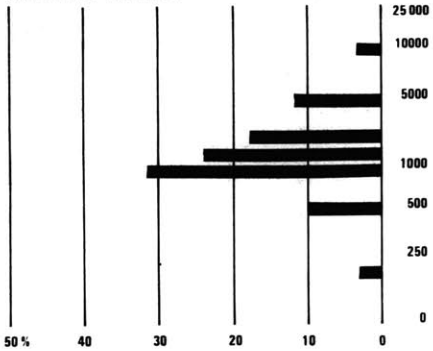
CIRCULATION: All public access routes in the locality arc open to both pedestrian and vehicular traffic. The locality is bounded on one side by a through traffic route, and the other side are more heavily used streets that are oriented to the city center. The important locality circulation is along parallel streets that run perpendicular to the divided highway. The secondary circula- tion is along the cross streets, except for the main street runing east to west. Resi- dents commute to work by foot or by public transportation, which is widely available. Within the ciudad perdida itself circulation is entirely pedestrian.

POPULATION: In 1968 there were approximately 189 households, with a total of 1040 persons, at an average of 5.6 persons per house hold. No data is available on the age-sex composition of the locality, however it should be noticed that 44 per cent of the population in the political ward (cuartel VI) are under 20 years (see bellow), and this figure is applicable to the locality since the political ward is more or less homogeneous.

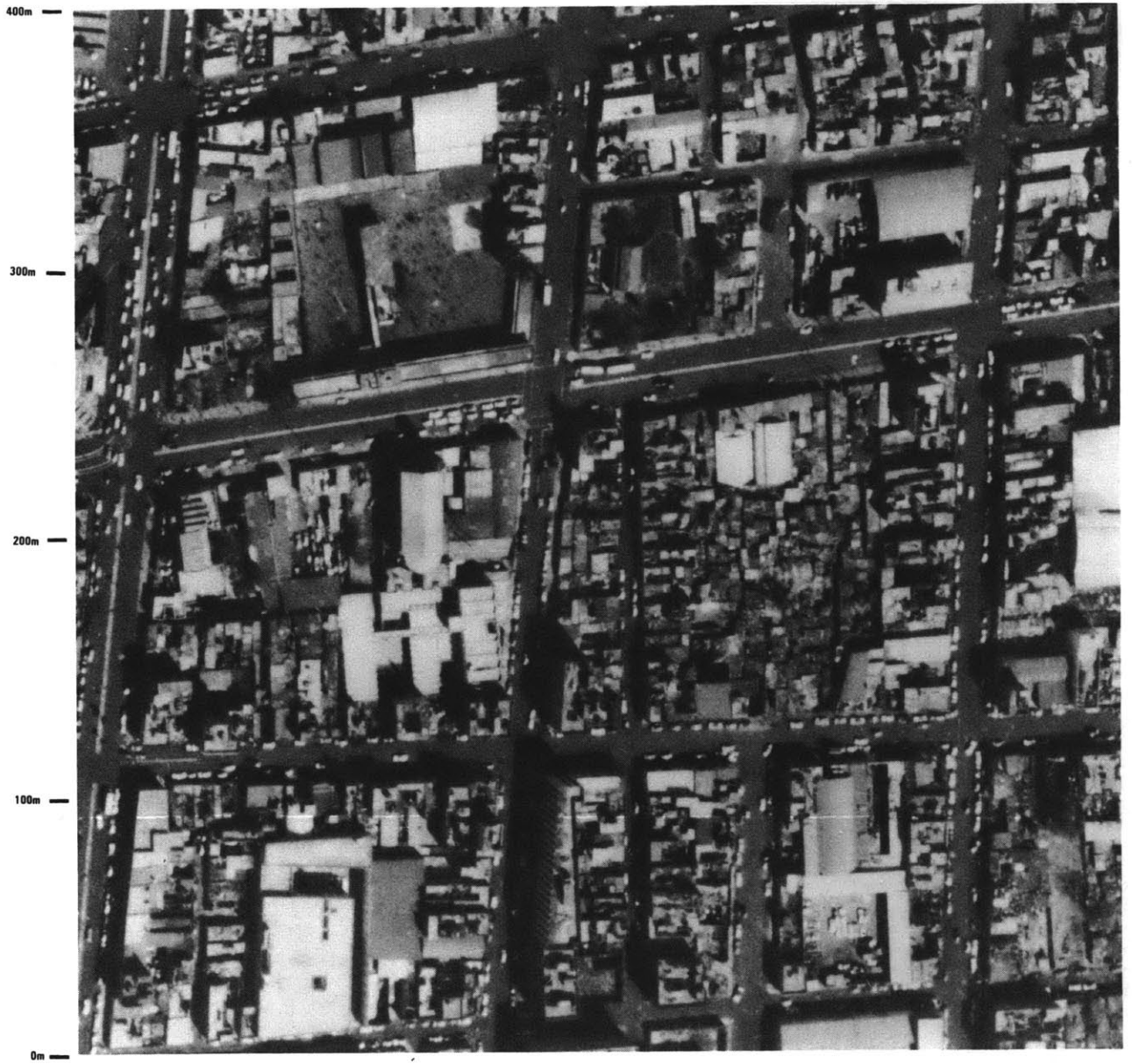


LOCALITY POPULATION DISTRIBUTION
horizontal: percentages vertical: ages
males: M. 46,574; females: F. 51,101
Source: Census 1970; population, (cuartel VI) 97,675

INCOMES: The approximate income distribution of the ciudad perdida is relatively homogeneous since 80 percent of households had annual incomes between $500 and $1000 (1970). The average income would be considered very low and the tenants had been excluded from public or private housing because of their incapacity to pay the market costs. 55 percent of the households in the political ward received incomes between $960 an $ 1440 in 1970.



LOCALITY ANNUAL INCOME DISTRIBUTION
horizontal: percentages vertical: dollars
Source: Plano Mercadologico de la Ciudad de Mexico, households, (cuartel VI) 21,436

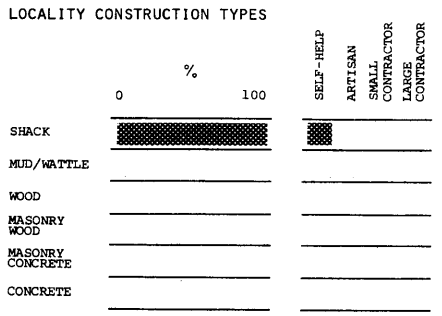


LOCALITY SEGMENT AIR PHOTOGRAPH

1:2500

LOCALITY SEGMENT PLAN

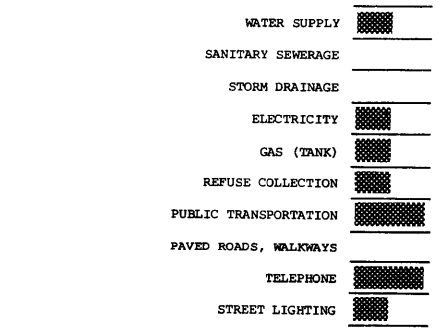
LOCALITY CONSTRUCTION TYPES



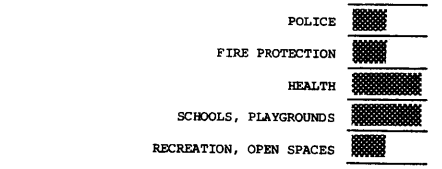
The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

Quality of information: Approximate

LOCALITY UTILITIES AND SERVICES



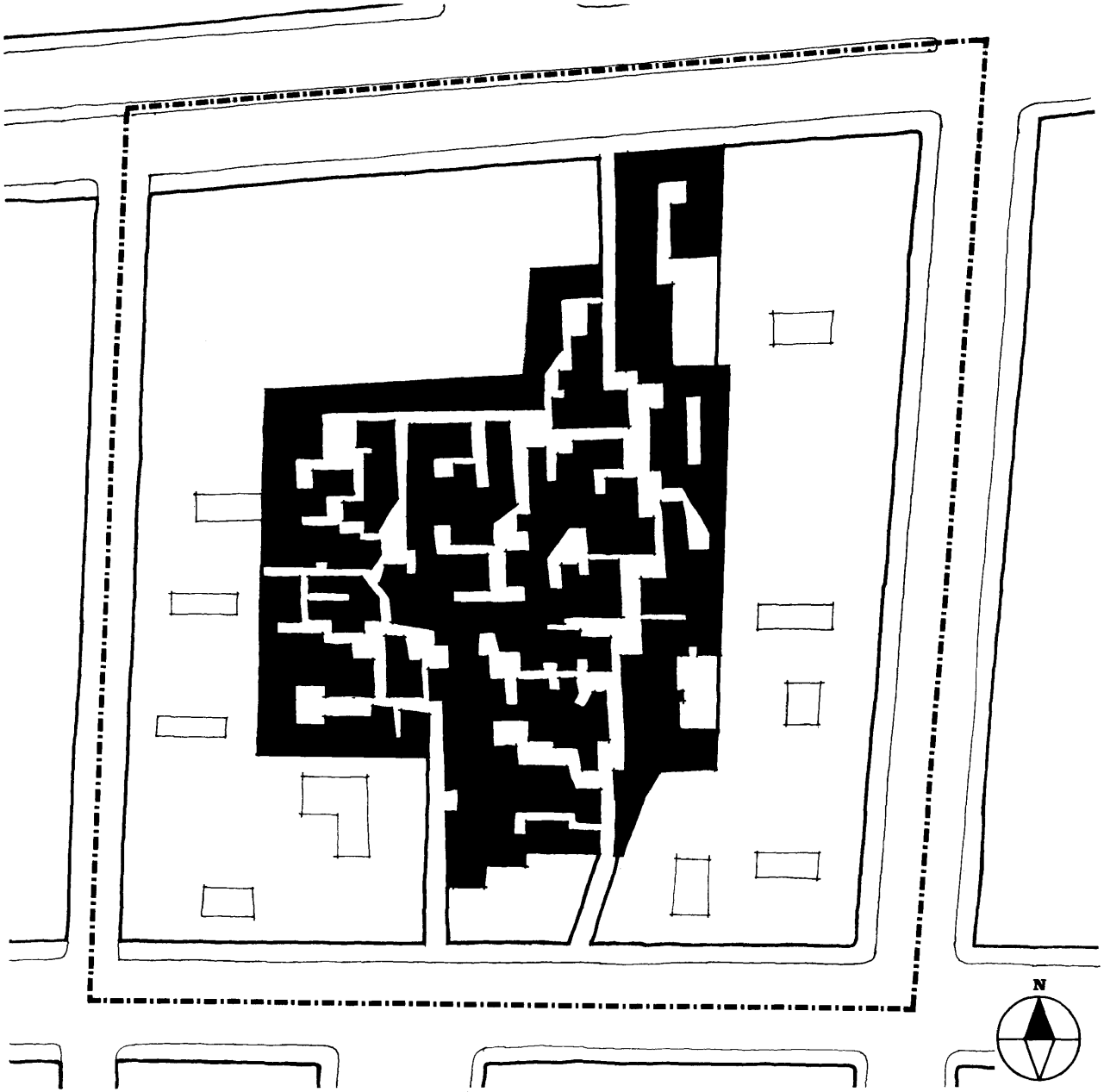
LOCALITY COMMUNITY FACILITIES



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

Quality of information: Approximate

SELECTED BLOCK



LOCALITY BLOCK PLAN

LOCALITY BLOCK LAND UTILIZATION DATA

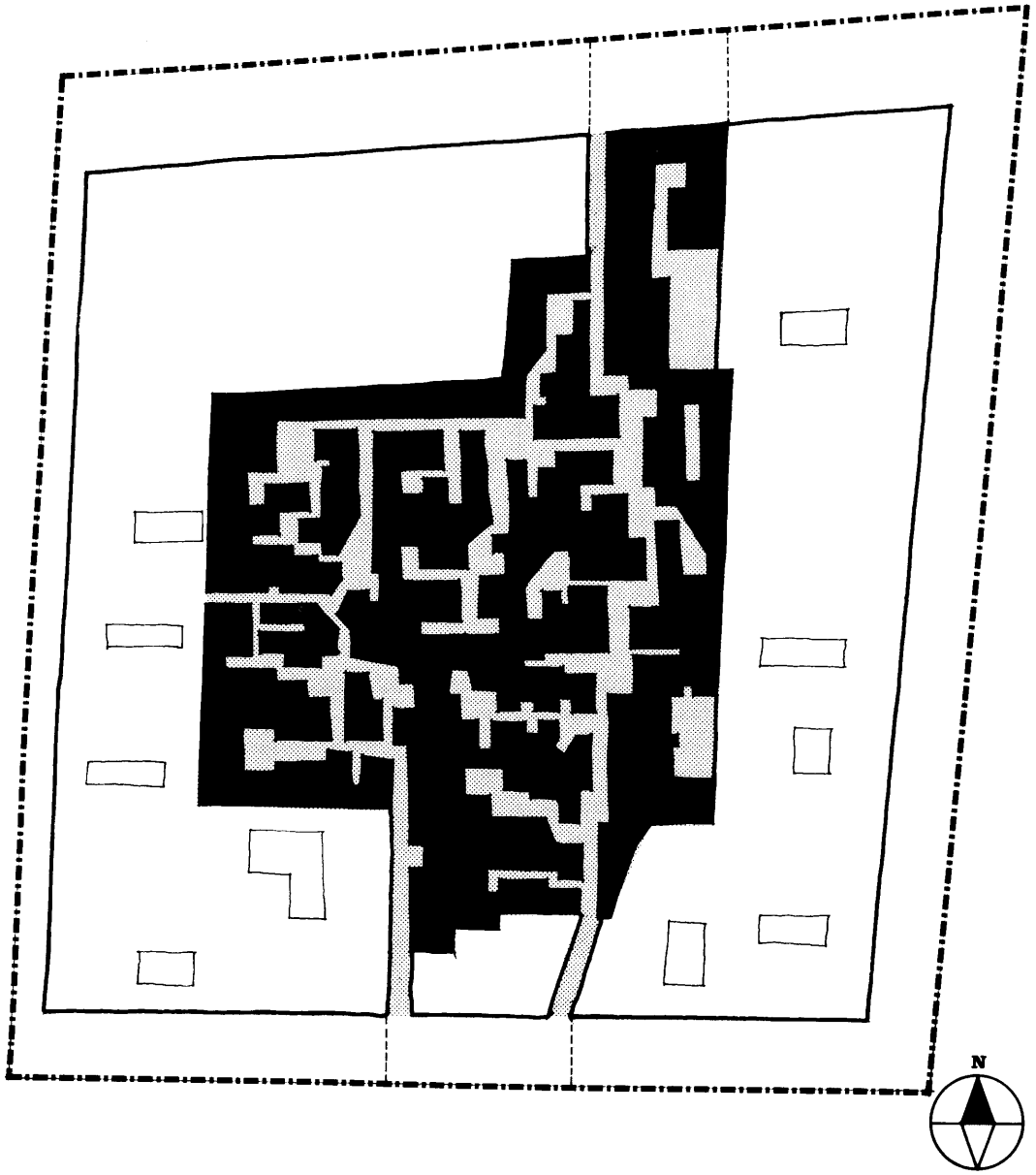
DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS			
DWELLING UNITS	189	0.63	300
PEOPLE	1134	0.63	1800

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.05	7.6
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	0.45	71.9
SEMI-PRIVATE (cluster courts)	0.13	20.5
TOTAL	0.63	100

NETWORK EFFICIENCY

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

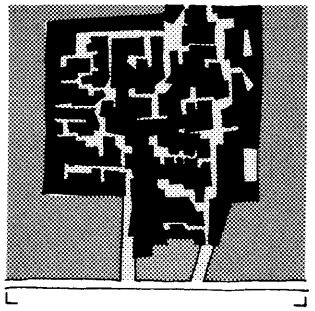
AVERAGE LOT AREA = NA



LOCALITY BLOCK LAND UTILIZATION

LAND UTILIZATION DIAGRAMS

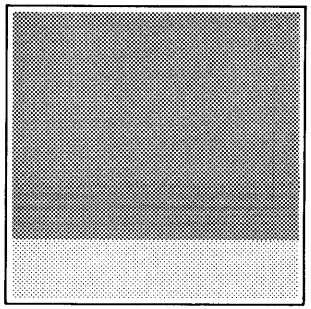
1 Hectare



PATTERN

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

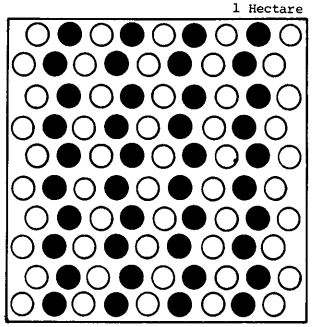
1 Hectare



PERCENTAGES

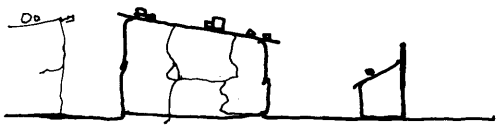
Streets/Walkways	7.6%
Playgrounds	-
Cluster Courts	20.5%
Dwellings/Lots	71.9%

1 Hectare



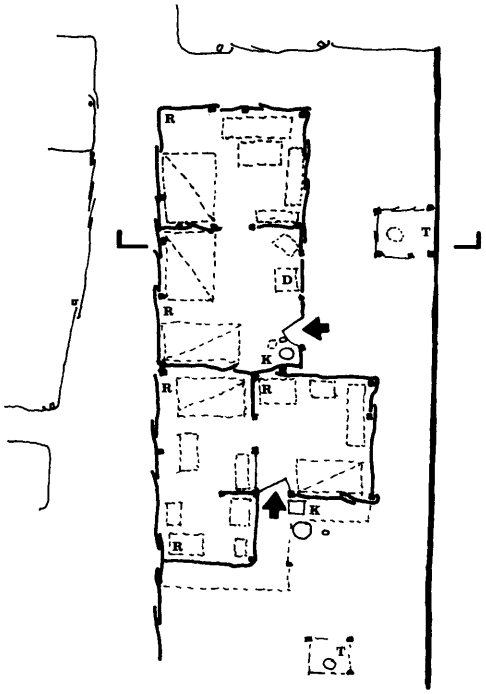
DENSITY Persons/Hectare

20 Persons TOTAL AREA	747
20 Persons ONLY RESIDENTIAL	1800



ELEVATION

SECTION

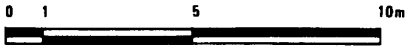


PLAN

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)



1:200

PHYSICAL DATA
(related to dwelling and land)

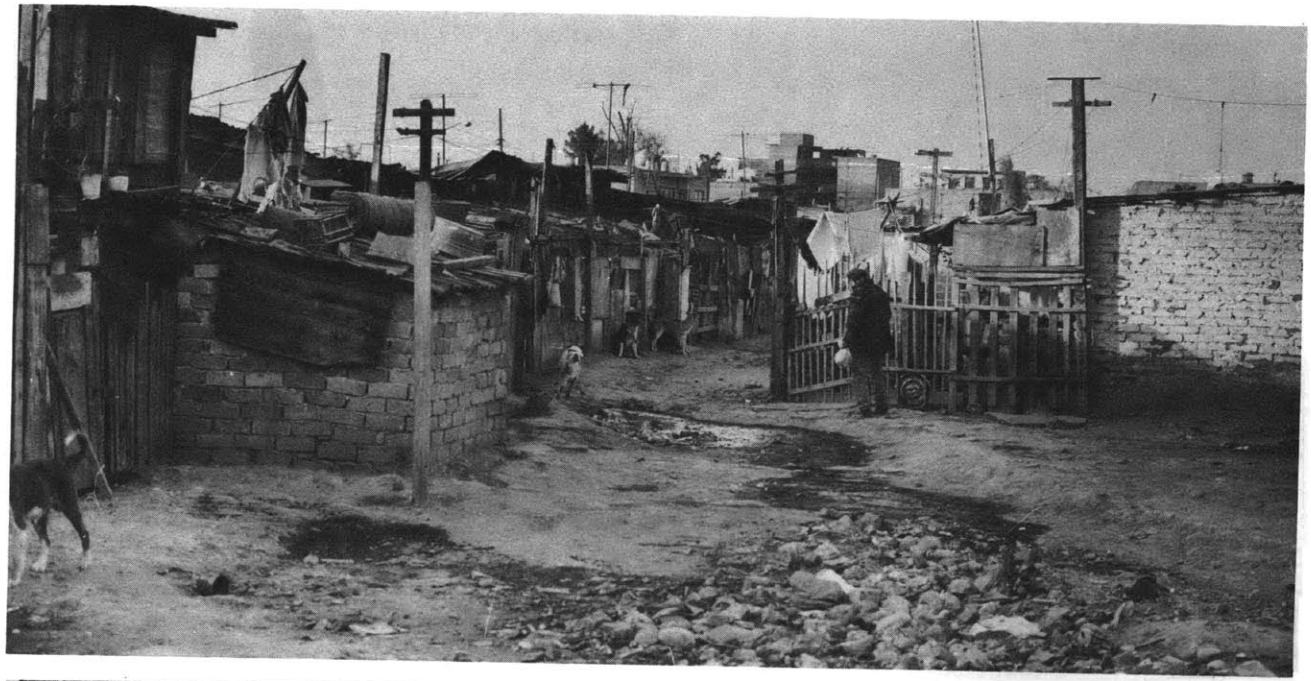
DWELLING UNIT	
type:	SHANTY
area (sq m):	28
tenure:	LEGAL OWNERSHIP
LAND/LOT	
utilization:	PRIVATE
area (sq m):	-
tenure:	EXTRALEGAL/RENTAL
DWELLING	
location:	CITY CENTER
type:	ROW/GROUPED
number of floors:	1
utilization:	MULTIPLE
physical state:	BAD
DWELLING DEVELOPMENT	
mode:	INCREMENTAL
developer:	POPULAR
builder:	SELF-HELP
construction type:	SHACK
year of construction:	1945
MATERIALS	
foundation:	-
floors:	COMPACTED EARTH
walls:	POLES, SCRAP WOOD, CARDBOARD
roof:	SCRAP WOOD AND CARDBOARD SHEETS
DWELLING FACILITIES	
wc:	NONE
shower:	NONE
kitchen:	NONE
rooms:	2
other:	PIT LETRINE, 1 STOVE

SOCIO-ECONOMIC DATA
(related to user)

GENERAL: SOCIAL	
user's ethnic origin:	MEXICAN
place of birth:	STATE OF PUEBLA
education level:	PRIMARY SCHOOL
NUMBER OF USERS	
married:	1 (WIDOW)
single:	-
children:	5+6 EVENTUAL
total:	6 TO 12
MIGRATION PATTERN	
number of moves:	3
rural - urban:	1950
urban - urban:	1955, 1960
urban - rural:	-
why came to urban area:	EMPLOYMENT
GENERAL: ECONOMIC	
user's income group:	VERY LOW
employment:	LAUNDRESS
distance to work:	(AT HOME)
mode of travel:	-
COSTS	
dwelling unit:	$12
land - market value:	$400,000/HA
DWELLING UNIT PAYMENTS	
financing:	SELF FINANCED
rent/mortgage:	$8/MONTH
% income for rent/mortgage:	20%

BUENOS AIRES, Mexico City: (top) This photograph gives an overall view of the Ciudad Perdida. Notice how it is engoulfed by 2, 3 stories buildings which can be seen in the background; circulation is entirely pedestrian, though pathways could be greatly improved. Electricity is tapped illegally and dwelling units (shacks) are in poor physical conditions due to insecurity of residence. However, tenants have very good control over the interior areas. The Ciudad Perdida has a strong sense of community. Television antennas may be seen on several shanties. (1973)

(bottom) The street and buildings surrounding the Ciudad Perdida is shown in this view. This area is popularly known as a place for automobile spare-parts. Notice the typical character of a corner shop. (1973)

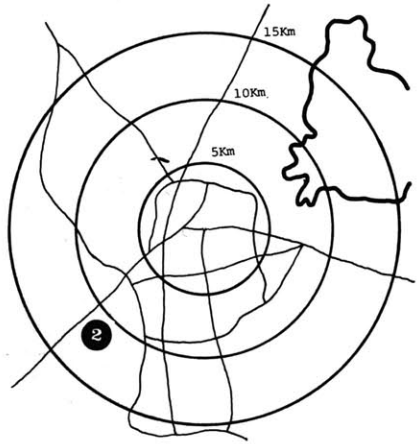


LOCALITY SOURCES

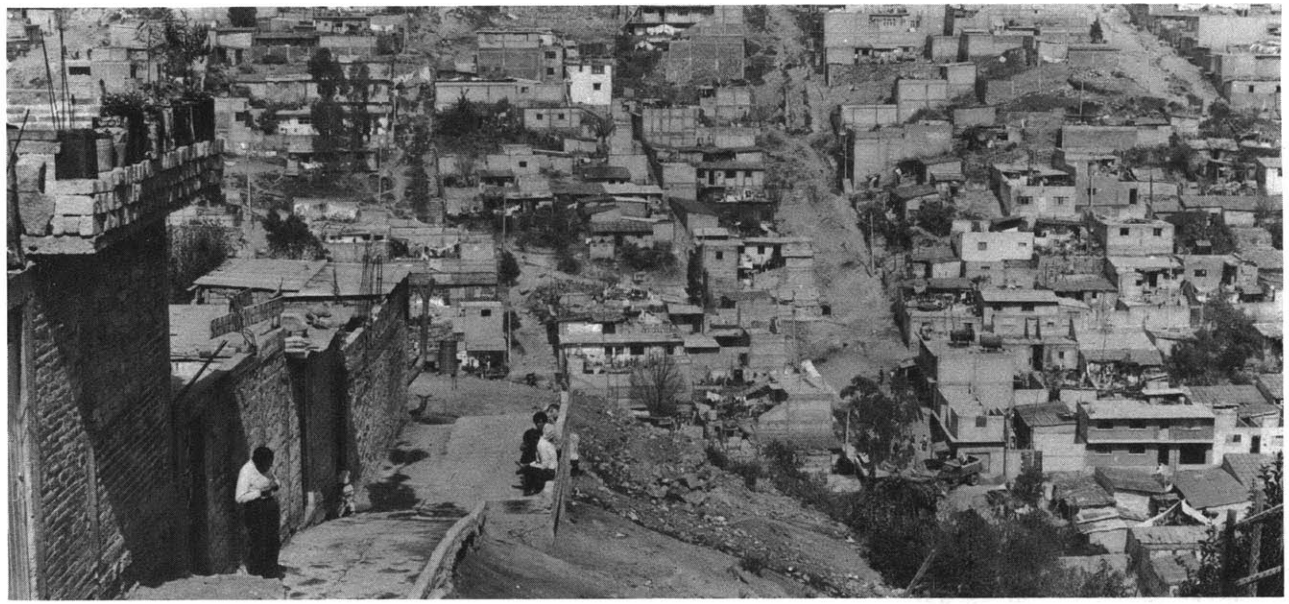
Plan:	*(accurate) AEROFOTO DE MEXICO, 1972.*
Land Use Pattern:	*UNA CIUDAD PERDIDA I.N.V.,*
Plan:	*(accurate) AEROFOTO DE MEXICO, 1972.*
Land Use Pattern:	*(accurate) UNA CIUDAD PERDIDA I.N.V., 1968; AEROFOTO DE MEXICO, 1972.*
Circulation Pattern:	*(approximate) Field Survey, R. Davila, 1973.*
Segment Plan:	*(approximate) IBID.*
Block Plan:	*(accurate) I.N.V., 1968.*
Block Land Utilization:	*(accurate) IBID.*
Typical Dwelling:	*(approximate) Field Survey, R. Davila, 1973.*
Physical Data:	*(accurate) IBID.*
Socio-Economic Data:	*(accurate) IBID.*
Photographs:	*AEROFOTO DE MEXICO, (aerial) 1972; J. Cortes; R. Davila, 1973.*
General Information:	*UNA CIUDAD PERDIDA I.N.V., 1968; I.M.S.S. INVESTIGACION DE VIVIENDA, 1965; CENSUS, 1970; Surveys, 1973.*

2 JALALPA
Mexico City

PRIVATE, LOW INCOME, ROW HOUSES

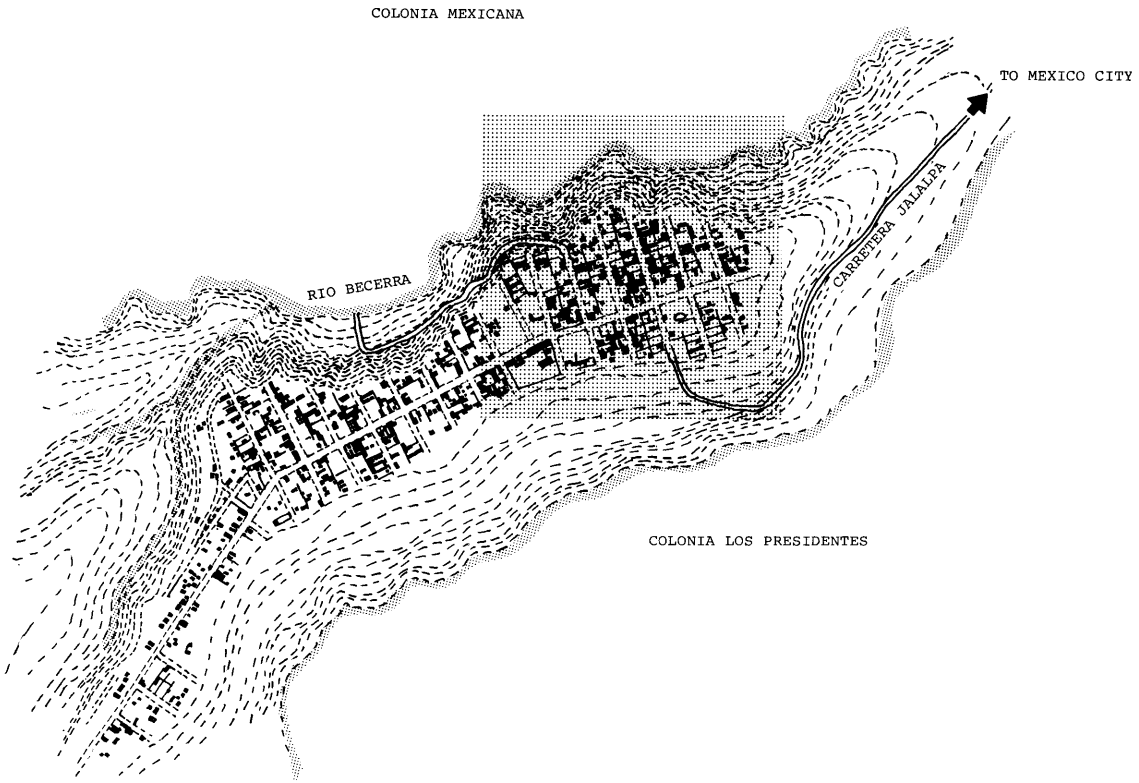


LOCATION: This site is located 14 km. from the city center, in the west periphery. It belongs to the Villa Alvaro Obregon Delegacion in the Federal District. It covers a surface of 18 hectares.



JALALPA, Mexico City: (top) The aerial photograph clearly shows the zone's topographic conditions and the site's relation with the neighboring "colonias" (communities) layout pattern. (scale of photograph 1:10 000). (1972).

(bottom) This photo was taken from the edge of a lateral street facing the colonia Mexicana to the north. It shows the dwellings at the end of the street, with sidewalks that are built by the dwellers. The locality has a remarcable view over the neighboring colonias and moreover, on "clear" days Mexico City can be seen. (1974).



1:10000

LOCALITY PLAN

ORIGINS: Jalalpa is a very representative settlement of the most recent type of land development that is taking place on the periphery hillsides of the city. It was developed in the early 1970's as a private land subdivision. Practically all city's western part are hills -as where Jalalpa is located-, which have been for decades exploited as sand mines; with resultant numerous construction industries like gravel, sand, cement, etc. The land is generally bad for agricultural or construction purposes. The intense city's growth in the last decade has rapidly urbanized this undesired zone. Most of the western zone, is formed by many small independent colonias -like Jalalpa-, with nothing in common but a main road of access and similar topographical conditions. In the near future, it is expected that this type of colonias will continue to expand and stimulate the settlement of new colonias. In the case of Jalalpa, its road of access will be utilized in the future by the south land owner, that previously didn't have direct access to the city.

SELECTED SEGMENT

LAYOUT: The site's topography and access road are the main determinants for the colonias layout. Orientation is generally secondary. A central street-spine is where the main activities take place, and then interconnect perpendicular dead-end streets. The site is reached by the Jalalpa road, but tha site also has a road that decends to the Rio Becerra, The lack of a bridge prevents vehicular circulation and conection between Jalalpa and the neighboring colonia Mexicana. Rough topographic conditions further discourage the conection of Jalalpa with colonia Los Presidentes. Both colonias have direct access to roads that conect higher rural settlements with the city.

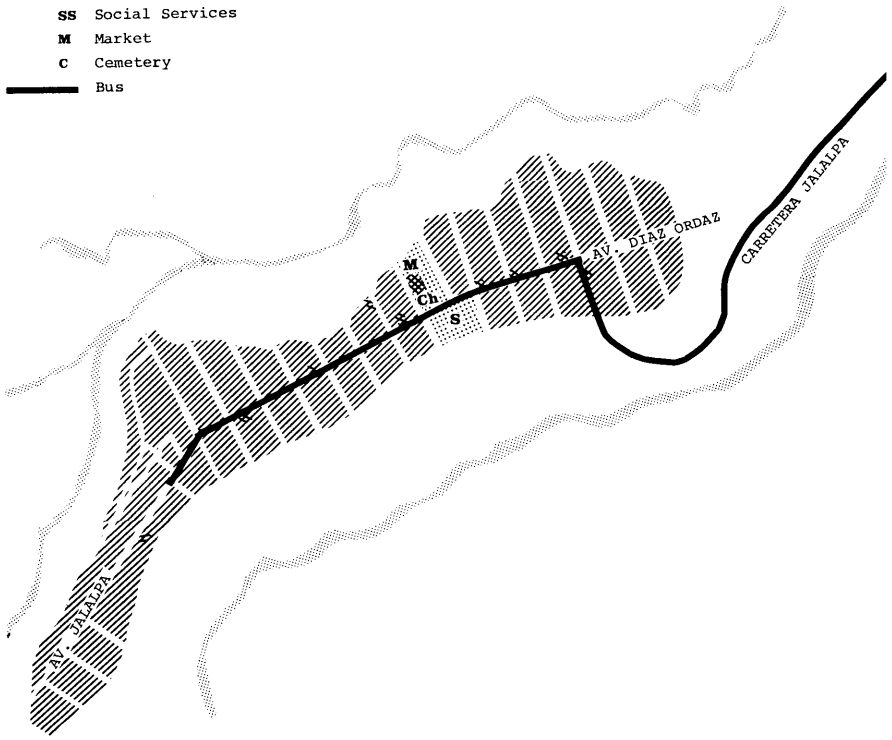
AREAS

- RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- OPEN SPACES

KEY

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

LAND USE: The site was developed for residential use for low income households. The layout includes two areas for community facilities: a school and a church with a market, which represent the 15 % of the total area. Eventhough the colonia is not yet densely populated, shops are spreading over the site. The land is heavily mixed with construction material industries. Most colonias are near sand mines, and some even in dangerous locations because of mud slides during rainy season. This zone is well known for the extremely bad air pollution.

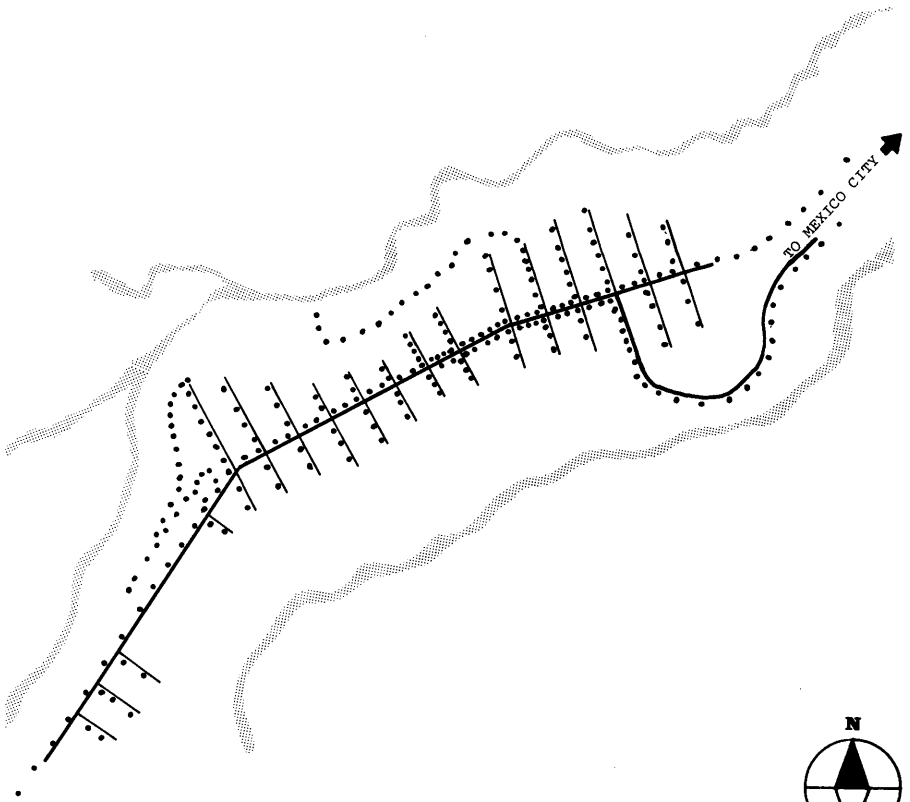


LOCALITY LAND USE PATTERN

CIRCULATION: The grid layout was used for Jalalpa's land subdivision. At the moment, not many vehicules circulate in the area -except for collective taxis and the sporadical bus service. The circulation is generally pedestrian.

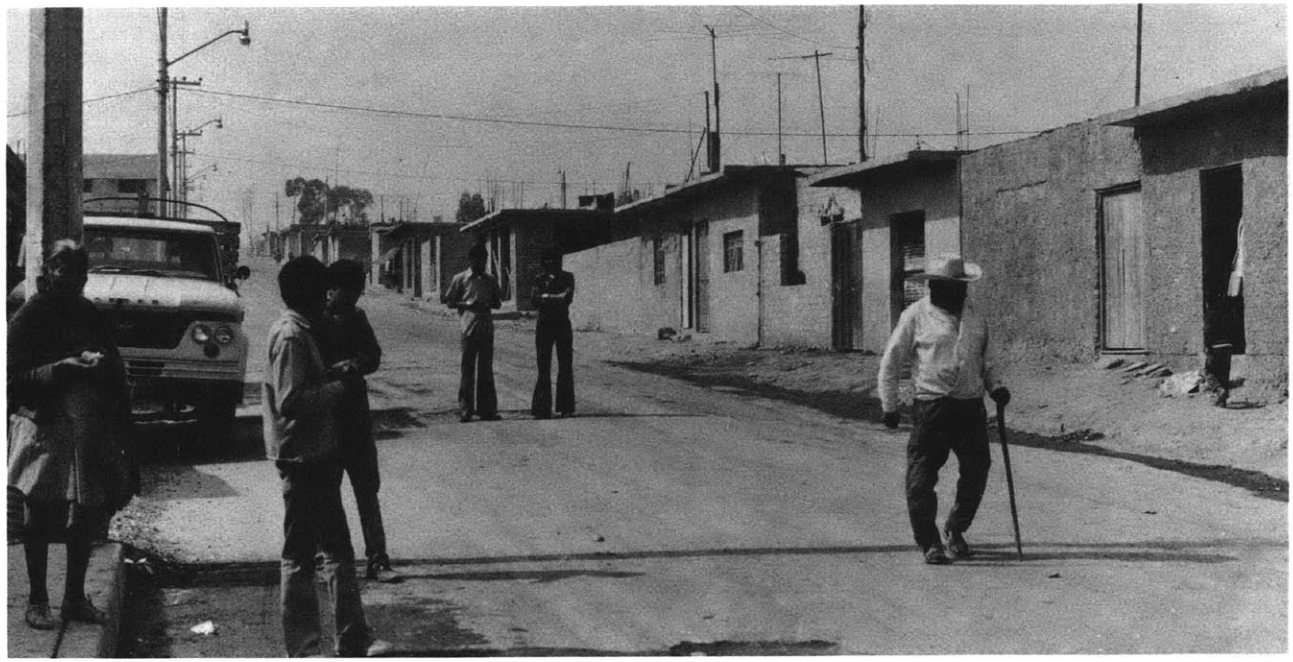
KEY

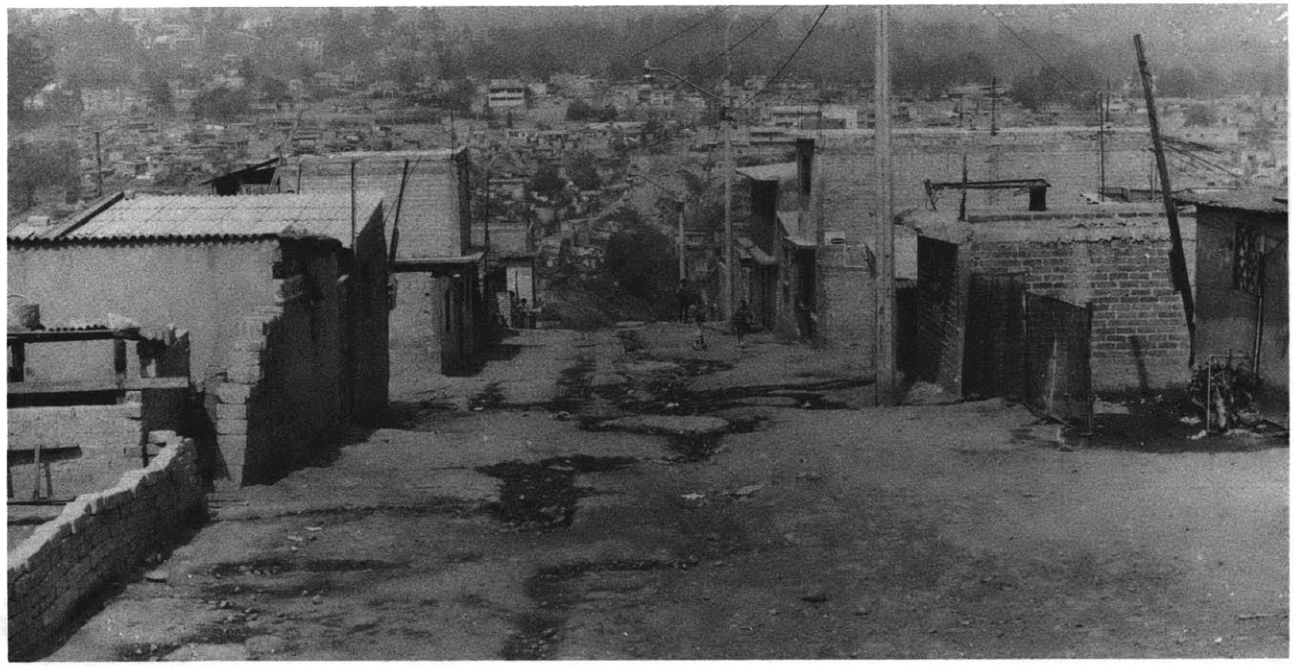
- VEHICULAR
- PEDESTRIAN



LOCALITY CIRCULATION PATTERN

1:10000

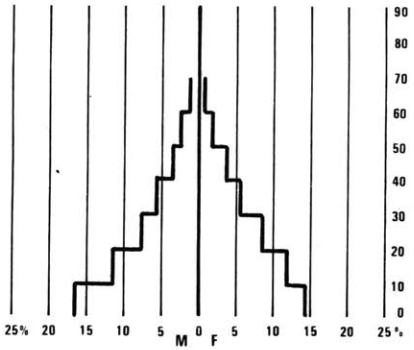




JALALPA, Mexico City: (top) The view shows the main central street, which is the only street that has been paved. Along this street, dwelling construction is more dense than in the rest of the colonia. Most of the services are available already (1974).

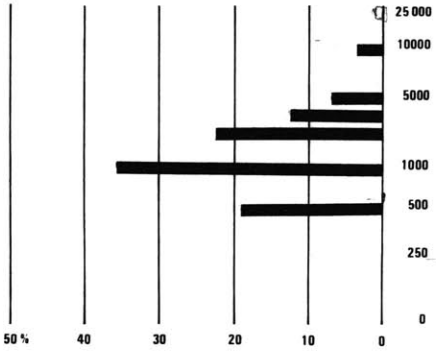
(bottom) This photo shows the perspective of a transversal dead end street facing colonia Mexicana. Erosion has started because of the lack of street pavement. Notice the dwellings at several construction stages, some with concrete roofs, but most with asbesto or asphalted corrugated plates. Reinforced concrete roofs are planned as future expansion for a second story (1974).

POPULATION: 55 % of the 1440 inhabitants are below 20 years, as registered in the 1970's Delegacion population census. The average population age group is 10 to 15 years. The masculine population represent 48 % of the total population.



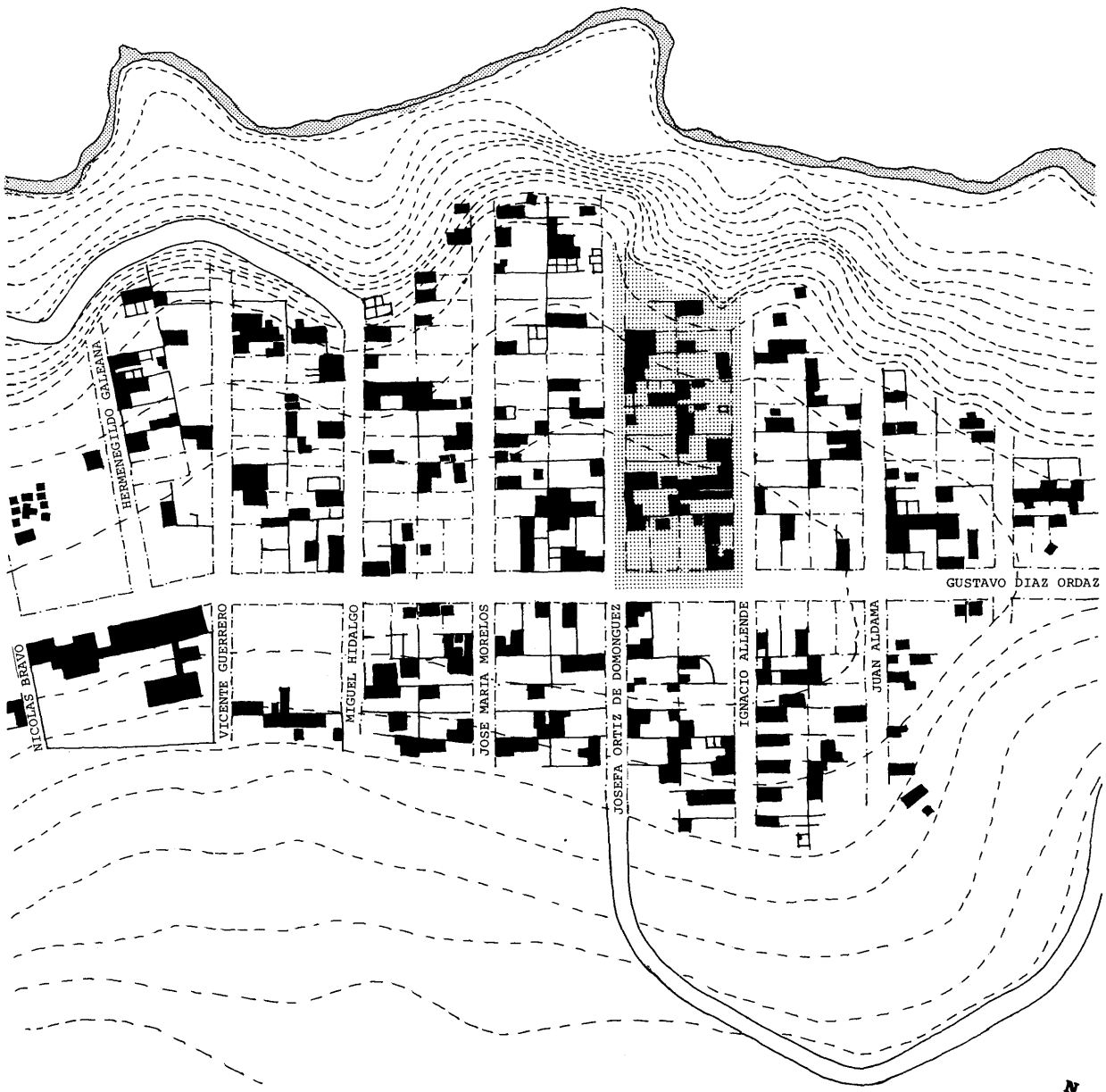
LOCALITY POPULATION DISTRIBUTION
horizontal: percentages vertical: ages
males: M females: F
Source: IX Censo General de la Poblacion, D.F. 1970

INCOME: The annual average income of the Delegacion's economically active population in 1970, was $ 960 US; but quite not representative of the Jalalpa settlements where it is estimated that average annual income runs below the Delegacion average, normally from $ 480 up to $ 960 US.



LOCALITY ANNUAL INCOME DISTRIBUTION
horizontal: percentages vertical: dollars
Source: IX Censo General de la Poblacion, D.F. 1970

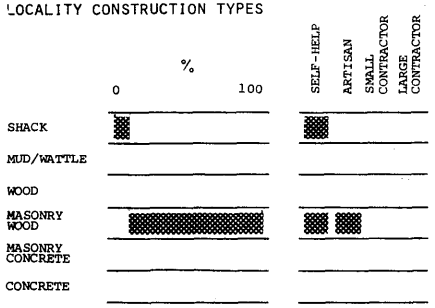
LOCALITY SEGMENT AIR PHOTOGRAPH



LOCALITY SEGMENT PLAN

1:2500

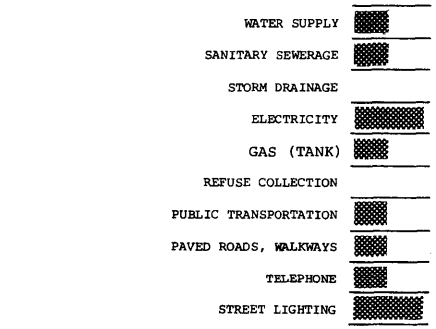
LOCALITY CONSTRUCTION TYPES



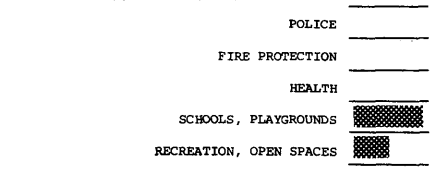
The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

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

LOCALITY BLOCK: The blocks have been determined by land utilization purposes rather than for particular topographic conditions. A central street of 12m. is the spine for perpendicular 8 m. streets, up to where topographic contours abruptly end the street. The lots are regularly subdivided until the topography requires adjustment of the lots. Narrow lateral streets are the only area for public use. Population density is still rather low, because the site was developed only three years ago. The efficiency ratio of the block is good.

LOCALITY BLOCK LAND UTILIZATION DATA

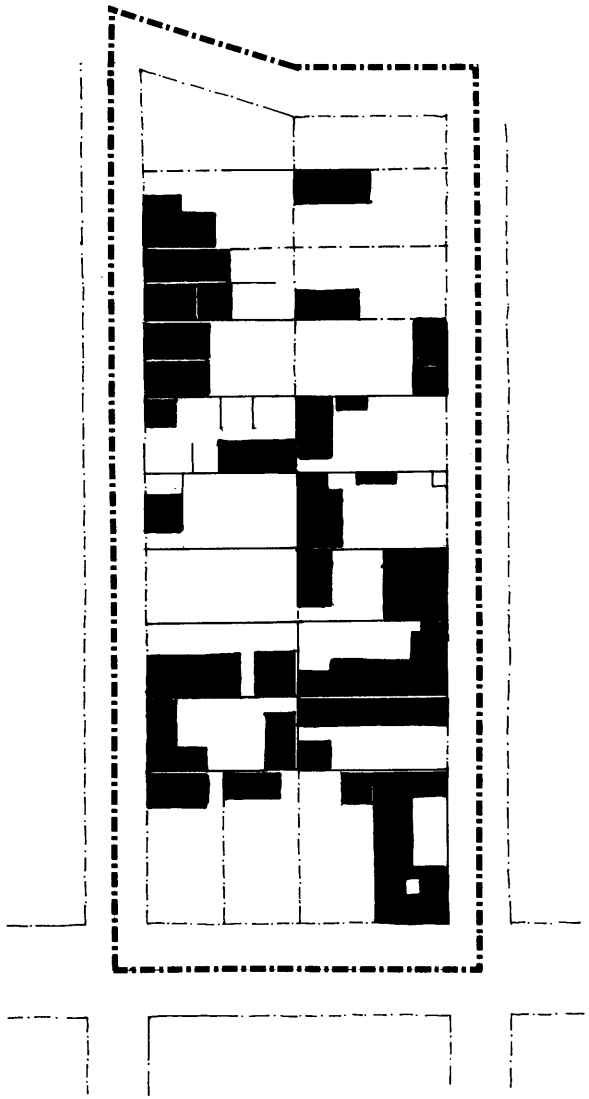
DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	22	0.576	38.19
DWELLING UNITS	19	0.576	32.98
PEOPLE	114	0.576	197.90

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.136	23.61
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	0.440	76.39
SEMI-PRIVATE (cluster courts)	-	-
TOTAL	0.576	100.00

NETWORK EFFICIENCY

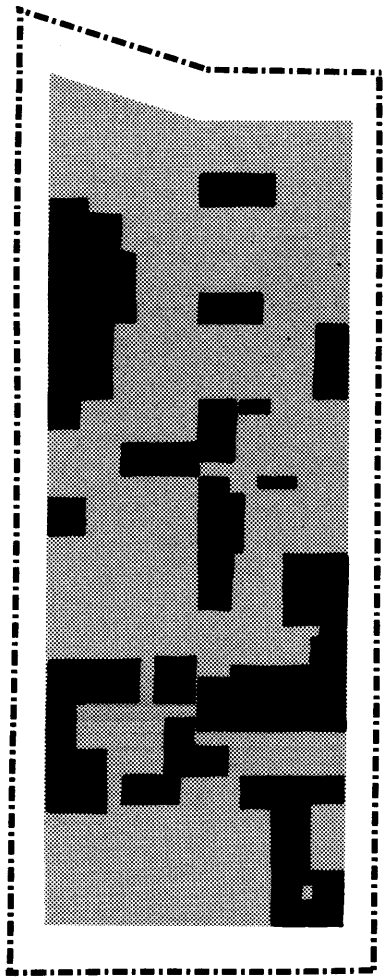
$$R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 298.6 \text{ m/Ha.}$$

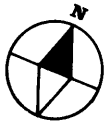
AVERAGE LOT AREA = 261.8 m^2



1:1000

LOCALITY BLOCK PLAN

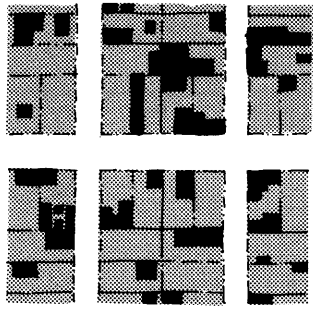




LOCALITY BLOCK LAND UTILIZATION 1:1000

LAND UTILIZATION DIAGRAMS

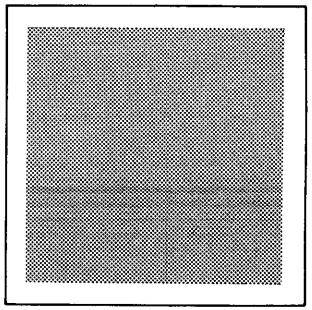
1 Hectare



PATTERN

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

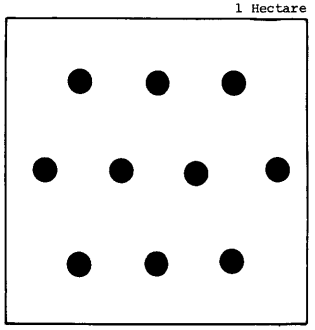
1 Hectare



PERCENTAGES

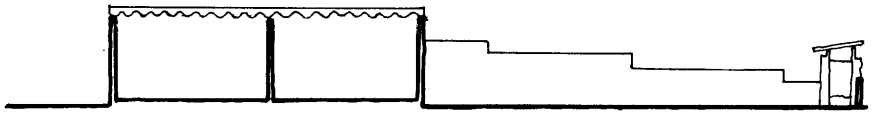
Streets/Walkways	23
Playgrounds	–
Cluster Courts	–
Dwellings/Lots	77

1 Hectare

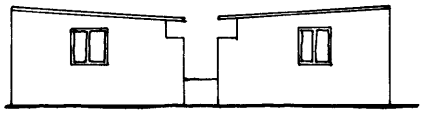


DENSITY Persons/Hectare 200

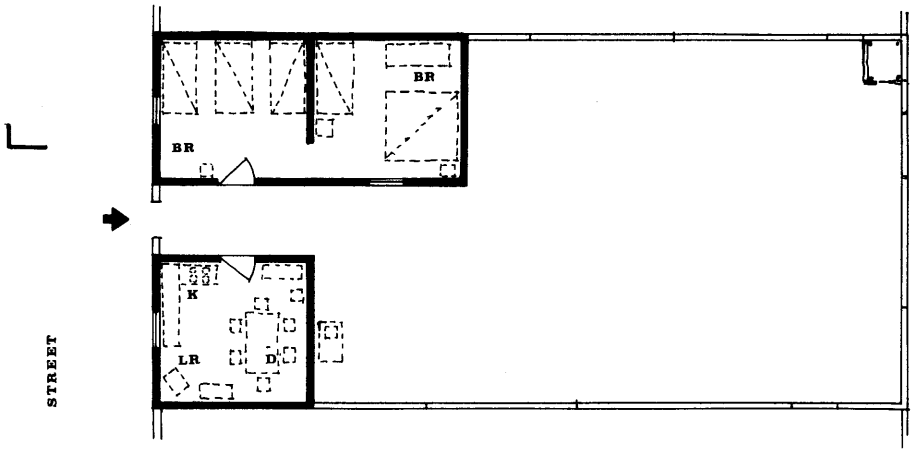
● 20 Persons



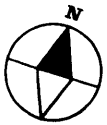
SECTION

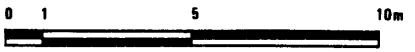


ELEVATION



PLAN





1:200

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):	30 - 60
tenure:	OWNERSHIP
LAND/LOT	
utilization:	PRIVATE
area (sq m):	200
tenure:	OWNERSHIP
DWELLING	
location:	PERIPHERY
type:	ROW
number of floors:	ONE
utilization:	SINGLE FAMILY
physical state:	FAIR, IMPROVING
DWELLING DEVELOPMENT	
mode:	INCREMENTAL
developer:	PRIVATE
builder:	ARTISAN, SELF HELP
construction type:	PERMANENT MATERIALS
year of construction:	1970's
MATERIALS	
foundation:	STONE/CONCRETE
floors:	CONCRETE WITHOUT FINISHINGS
walls:	CONCRETE BLOCKS
roof:	ASBESTO PLATES
DWELLING FACILITIES	
wc:	-
shower:	-
kitchen:	-
rooms:	2-3
other:	

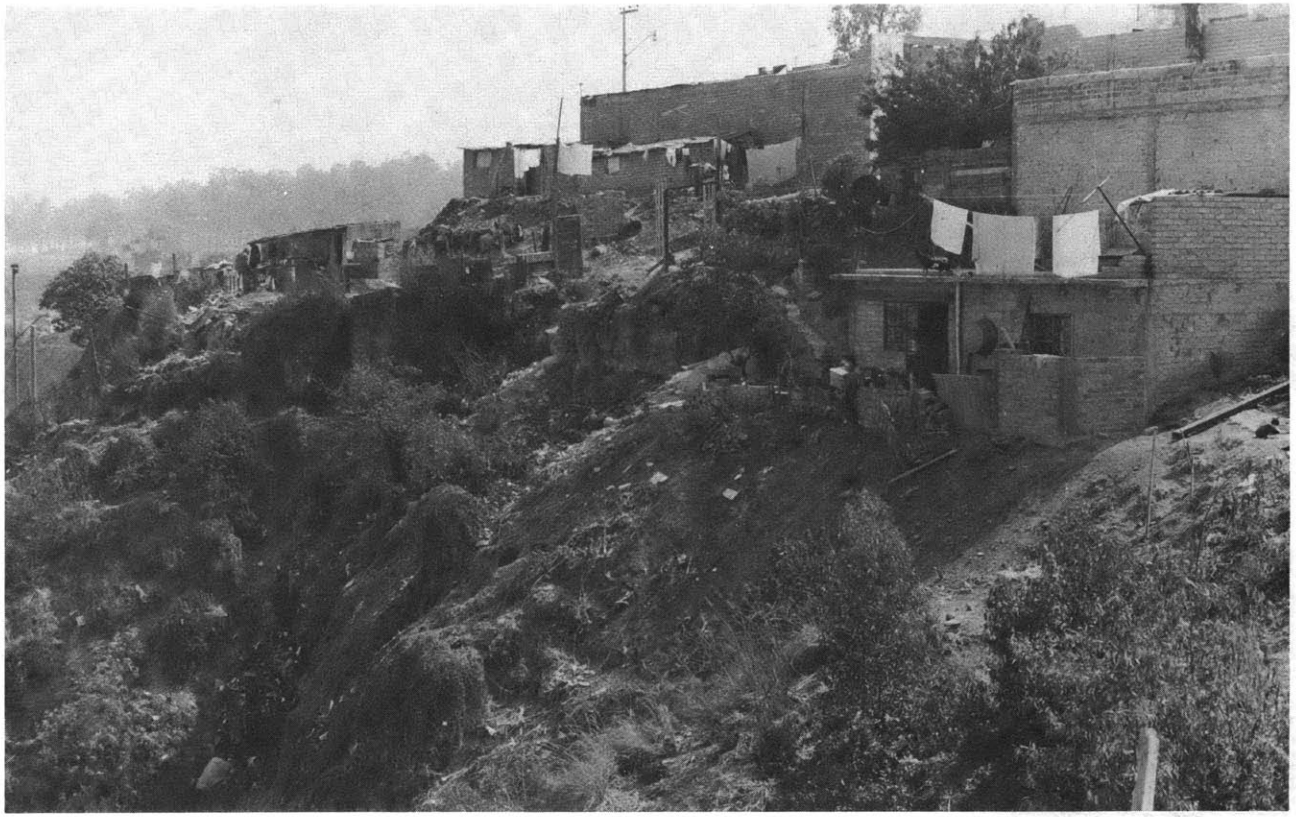
SOCIO-ECONOMIC DATA
(related to user)

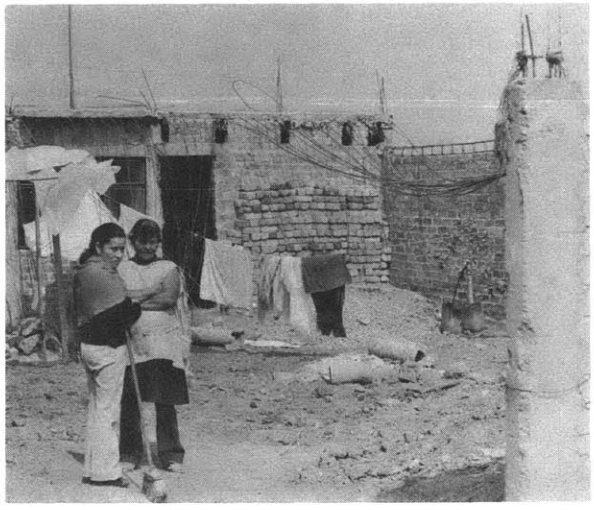
GENERAL: SOCIAL	
user's ethnic origin:	-
place of birth:	FEDERAL DISTRICT
education level:	74 % LITERATE
NUMBER OF USERS	
married:	2
single:	
children:	4
total:	6
MIGRATION PATTERN	
number of moves:	2
rural - urban:	1960's
urban - urban:	1970's
urban - rural:	-
why came to urban area:	EMPLOYMENT
GENERAL: ECONOMIC	
user's income group:	LOW
employment:	INDUSTRY, SERVICES
distance to work:	10 - 15 KM.
mode of travel:	PUBLIC TRANSPORTATION
COSTS	
dwelling unit:	$ 400
land - market value:	$ 4 / m^2
DWELLING UNIT PAYMENTS	
financing:	SELF FINANCED
rent/mortgage:	$ 8 - $ 16 / MONTH
% income for rent/mortgage:	20

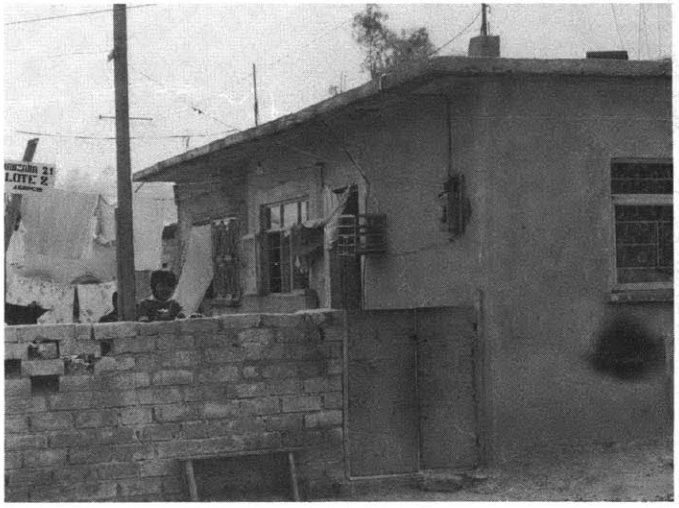
JALALPA, Mexico City: (top) The photo dramatizes how local dwellers have adapted to topographic conditions. The cliff is used as garbage damp. Some dwellers raise animals -chickens, turkeys, pigs- as a side income (1974).

(bottom left) Perhaps the most typical dwelling in the locality is of 1-2 rooms. The dwellings are in various construction stages; the owners move in when they are only partially completed. Most dwellings in Jalalpa are constructed with solid, permanent materials in the walls, and often concrete roofs (1974).

(bottom right) The photo shows a dwelling at a later stage of completition, but only small portion of the lot are utilized by the dwelling (1974).





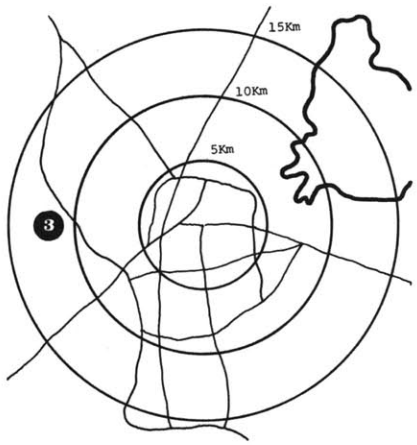


LOCALITY SOURCES

Plan:	*(approximate) Compania Mexicana de Aerofoto. Aerial photograph. 1972.*
Land Use Pattern:	*(accurate) Direccion de Promocion de la Habitacion Popular. Asesoria Tecnica de Planeacion de Colonias. Oficina del Plano Regulador. DDF. Plano archivo no. 982 y 982 A. 1971.*
Circulation Pattern:	*(approximate) Field Surveys, J. Bazant, 1974.*
Segment Plan:	*(accurate) Op. Cit. Direccion de Promocion...*
Block Plan:	*(accurate) IBID*
Block Land Utilization:	*(accurate) IBID*
Typical Dwelling:	*(approximate) Field surveys, J.Bazant, 1974.*
Physical Data:	*(accurate) Estudio Zonal de la Delegacion Alvaro Obregon. Direccion General de Planificacion. Oficina del Plano Regulador. DDF. 1974.*
Socio-Economic Data:	*(approximate) Field survey, J. Bazant, 1974.*
Photographs:	*J. Bazant, C.M.A.(aerial).*
General Information:	*Investigacion de Campo de la Delegacion Alvaro Obregon. Ed. Delegacion de Alvaro Obregon. 1972.*
	IX Censo General de la Poblacion 1970. Distrito Federal. Secretaria de Industria y Comercio. 1971.

3 LOMAS SAN AGUSTIN
Mexico City

PRIVATE/POPULAR, LOW INCOME, ROW HOUSES



LOCATION: This area is in the north-eastern part of the metropolitan periphery in the municipality of Naucalpan, State of Mexico. It covers an area of approximately 50 hectares.

ORIGINS: In the mid 1940's, the State Government decided to attract Mexico City's industrial development into the Naucalpan zone, by eliminating State tax obligations to the industries that established there. The economic boom which followed resulted in the construction of numerous industries and basic infrastructure services. Furthermore, the boom stimulated a massive wave of rural immigrants who were employed as unskilled construction laborers. The intensification of the construction activities in the next decades encouraged a second (and a third) wave of immigrants allowing the original unskilled laborers to advance to semi-skilled or skilled workers. Loma Linda was a private subdivision which received the immigrant waves and greatly expanded beyond its original area. It comprises a series of settlements along the primary road which links the City of Naucalpan with Toluca, the capital city of the State of Mexico.

LOMAS DE SAN AGUSTIN, Mexico City: (left) The aerial photograph shows the layout pattern of the zone, with its gradual expansion to less desirable areas. Neighboring agricultural areas, are not productive and are prime source of speculation (scale of photograph is 1:10 000). (1972).

SELECTED SEGMENT

LOCALITY PLAN

LAYOUT: The site's layout is structured by the Naucalpan-Toluca Road, the local topography and most important, by the original land ownership. This area has not been developed as a whole, but gradually through new smaller subdivisions when it was favorable to expand. This procedure has affected the site's general layout resulting in different street patterns and varied shapes and sizes of blocks.

AN DWELLING ENVIRONMENTS

The incremental/fractional
accurately reflexts the site's
Loma Linda was developed by
speculators whose main concern
r the largest amount of resi-
d for sale, with the minimum
tion and practically nothing for
s and for community facilities.
have been developed through
s initiative and appear sporad-
ıe site. The agricultural/light
cated within the site's limits
lly established before the area
ed.

SIDENTIAL
MMERCIAL
DUSTRIAL
EN SPACES

cking
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ce Department
hool
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creation
brary
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cial Services
rket
metery
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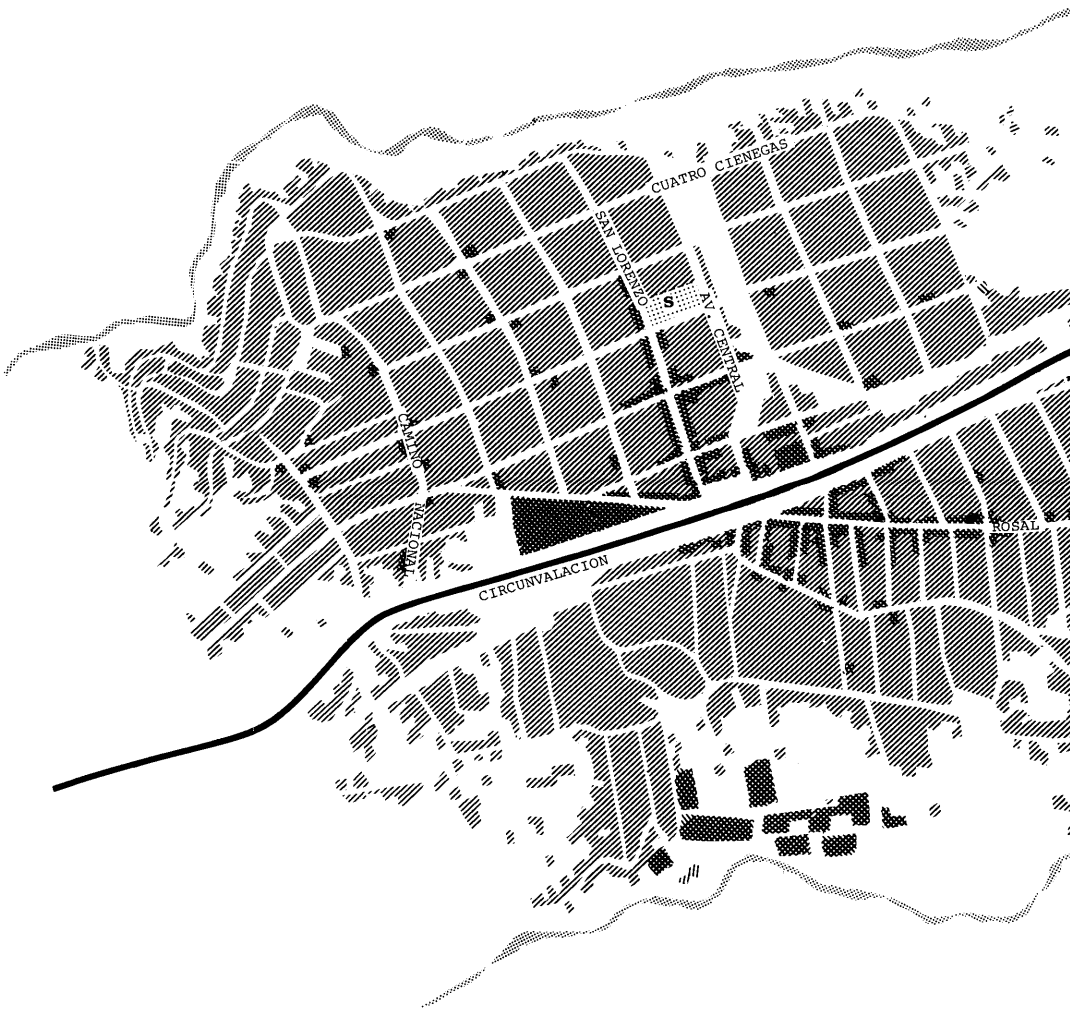
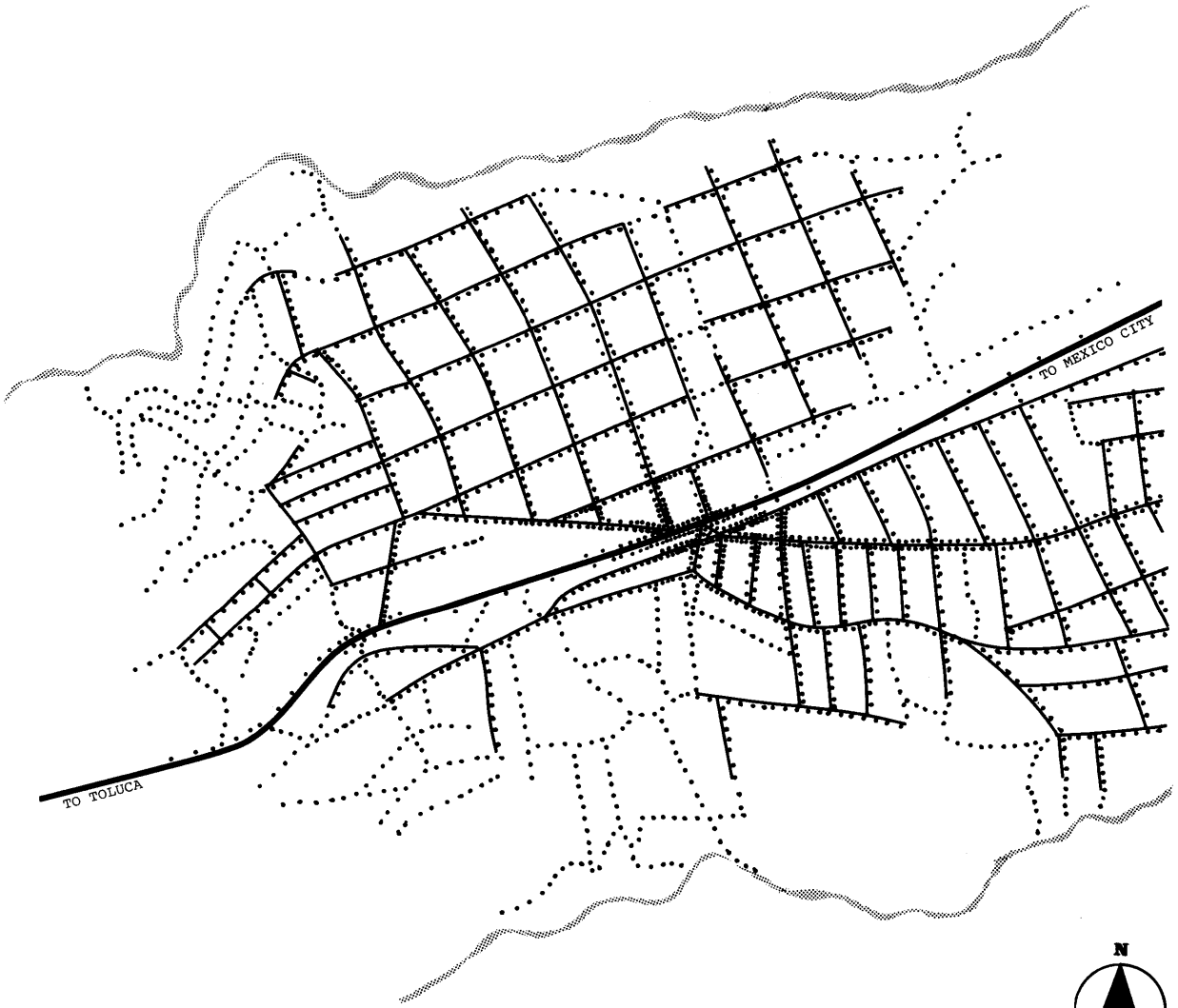
pid Transit



LOCALITY LAND USE PATTERN

0 100
1:10000



KEY

VEHICULAR

PEDESTRIAN

N

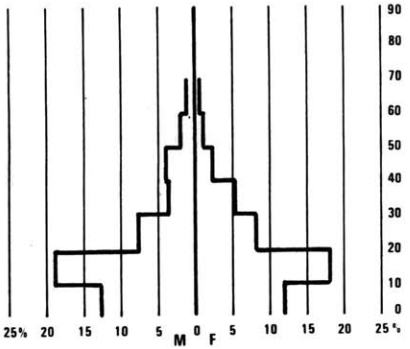
0 100 500m

1:10000

LOCALITY CIRCULATION PATTERN

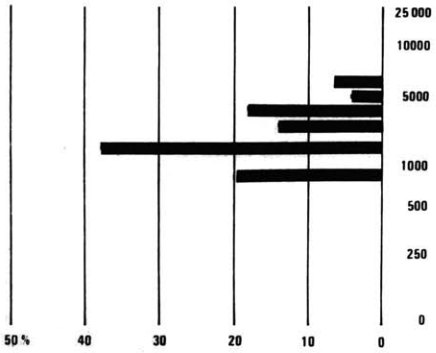
CIRCULATION: The only access to the site is through the Naucalpan-Toluca road. The streets in the site permit vehicular circulation throughout the network, only limited by topographic conditions. Pedestrians predominate in the internal circulation network. There is a high intensity of activity in specific points where the network crosses the main road, areas in which bus stops, small shops, etc., are predominantly located.

POPULATION; Sixty-five percent of the 33,300 inhabitants are below 20 years of age; 15 percent are between 20 and 30 years. The average age group of the locality is 10 to 15 years. There is an even 50-50 percentage of male/female distribution.



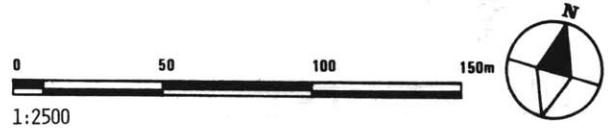
LOCALITY POPULATION DISTRIBUTION
horizontal: percentages vertical: ages
males: M females: F
Source: Informe sobre las Condiciones Psico-Socio-Antropologicas de San Rafael Chamapa. 1971.

INCOME: The annual household incomes in 1970 were: 20 percent earn up to US$960 and 38 percent from US$960 to US$1920. There were few families below the subsistence level (US$960) or above US$5,000.



LOCALITY ANNUAL INCOME DISTRIBUTION
horizontal: percentages vertical: dollars
Source: Informe sobre las Condiciones Psico-Socio-Antropologicas de San Rafael Chamapa. 1971.

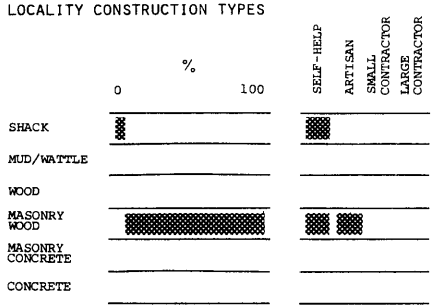
LOCALITY SEGMENT AIR PHOTOGRAPH



1:2500

LOCALITY SEGMENT PLAN

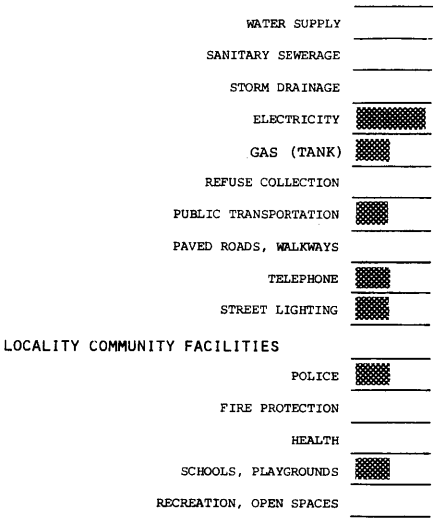
LOCALITY CONSTRUCTION TYPES



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



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 BLOCK: A square type of block predominates in the "Lomas" zone, where topographical conditions determine its particular shape. Normally, east-west streets follow the direction of the topographic contours, and generally have a gentle slope; whereas, north-south streets have a steeper slope. The lots within the blocks are perpendicular to the east-west streets, adjusting themselves in the center of the block. The lots fronting the streets parallel to the contours are always perpendicular to the street; the interior lots fronting the secondary streets are parallel to the contours. In the "Lomas" case, generally, streets that follow contours are 12m. in width, while perpendicular streets are 10 m. because of the slope. This block pattern offers a good percentage of private areas. The efficiency ratio is relatively low in comparison with other cases, and the density is medium.

LOCALITY BLOCK LAND UTILIZATION DATA

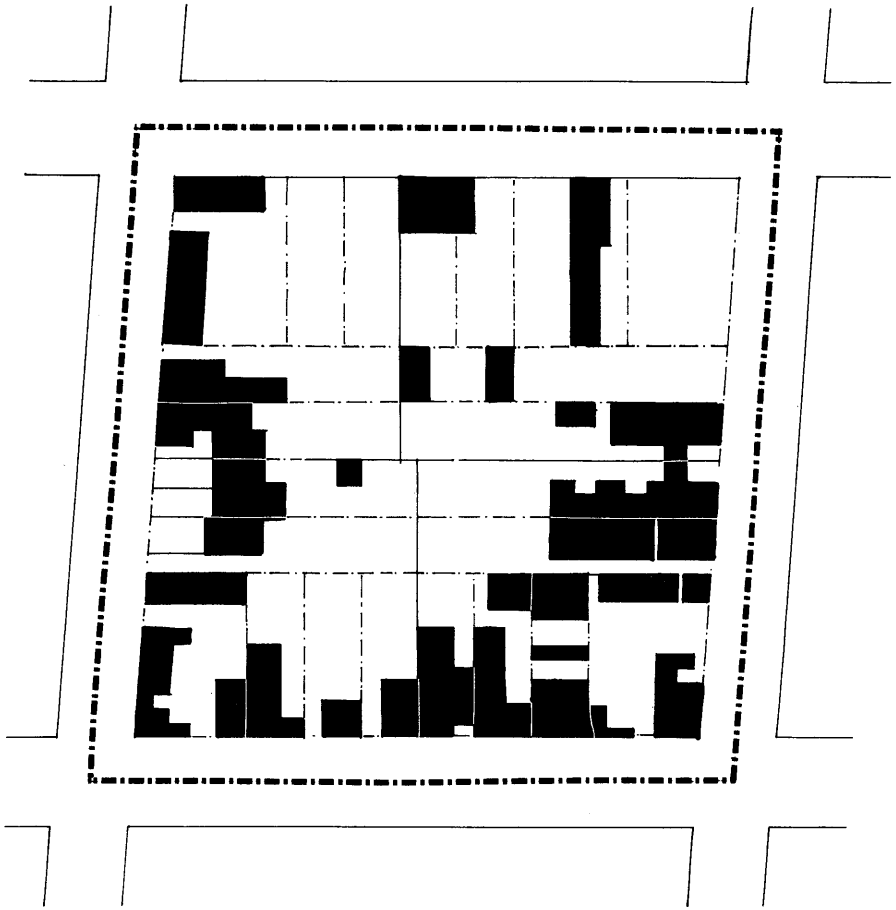
DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	24	0.743	32.26
DWELLING UNITS	25	0.743	33.61
PEOPLE	245	0.743	329.41

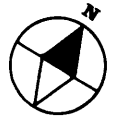
AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.181	24.37
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	0.562	75.63
SEMI-PRIVATE (cluster courts)	-	-
TOTAL	0.743	100.00

NETWORK EFFICIENCY

$$R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 231.4 \text{ m/Ha.}$$

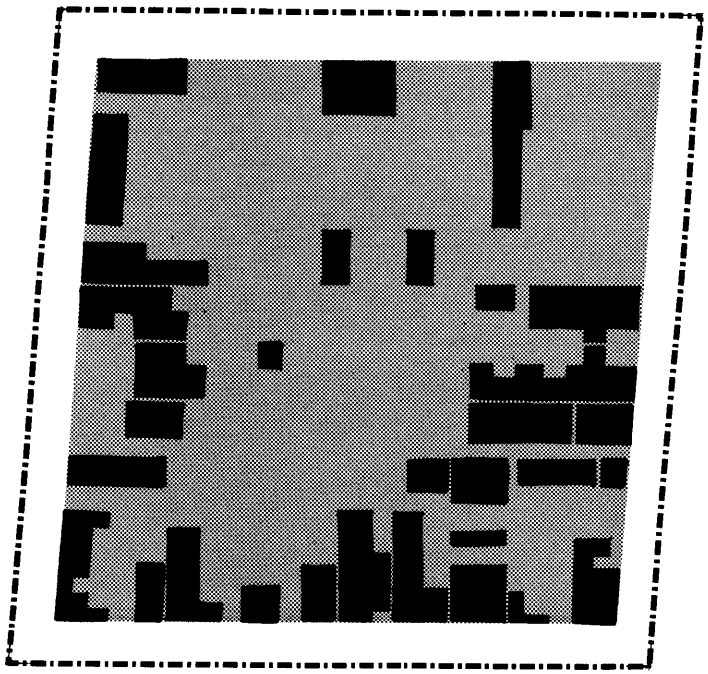
AVERAGE LOT AREA = 309.9 m^2





1:1000

LOCALITY BLOCK PLAN

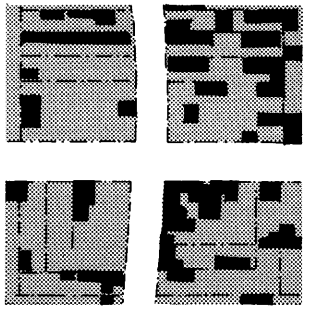


1:1000

LOCALITY BLOCK LAND UTILIZATION

LAND UTILIZATION DIAGRAMS

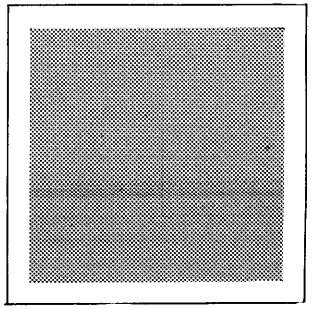
1 Hectare



PATTERN

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

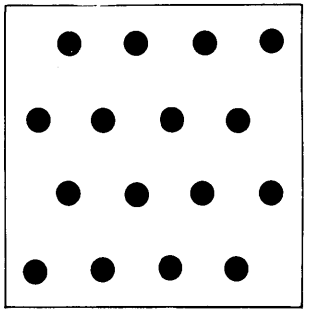
1 Hectare



PERCENTAGES

Streets/Walkways	24 %
Playgrounds	-
Cluster Courts	-
Dwellings/Lots	76 %

1 Hectare



DENSITY Persons/Hectare 329

20 Persons

BLOCK LOCALITY: A rectangular type of block in the "Lomas" area is common where topographic conditions are more severe. Usually, the block layout follows the same criteria as in square blocks. The contours run in a north-south direction, so that a 10 m. street located with this orientation has gentler slopes than those located perpendicular. Therefore, the rectangular blocks have more flexibility to be adapted to steep slopes, because the block width to length ratio is 1/2 to 1/4. It can be observed that in the northern part of the block, topographical conditions change, obliging lot owners to follow contour lines. A very high percentage of the blocks' total area is for public purposes. Private areas are limited, which concentrate the population. The density is medium-high.

LOCALITY BLOCK LAND UTILIZATION DATA

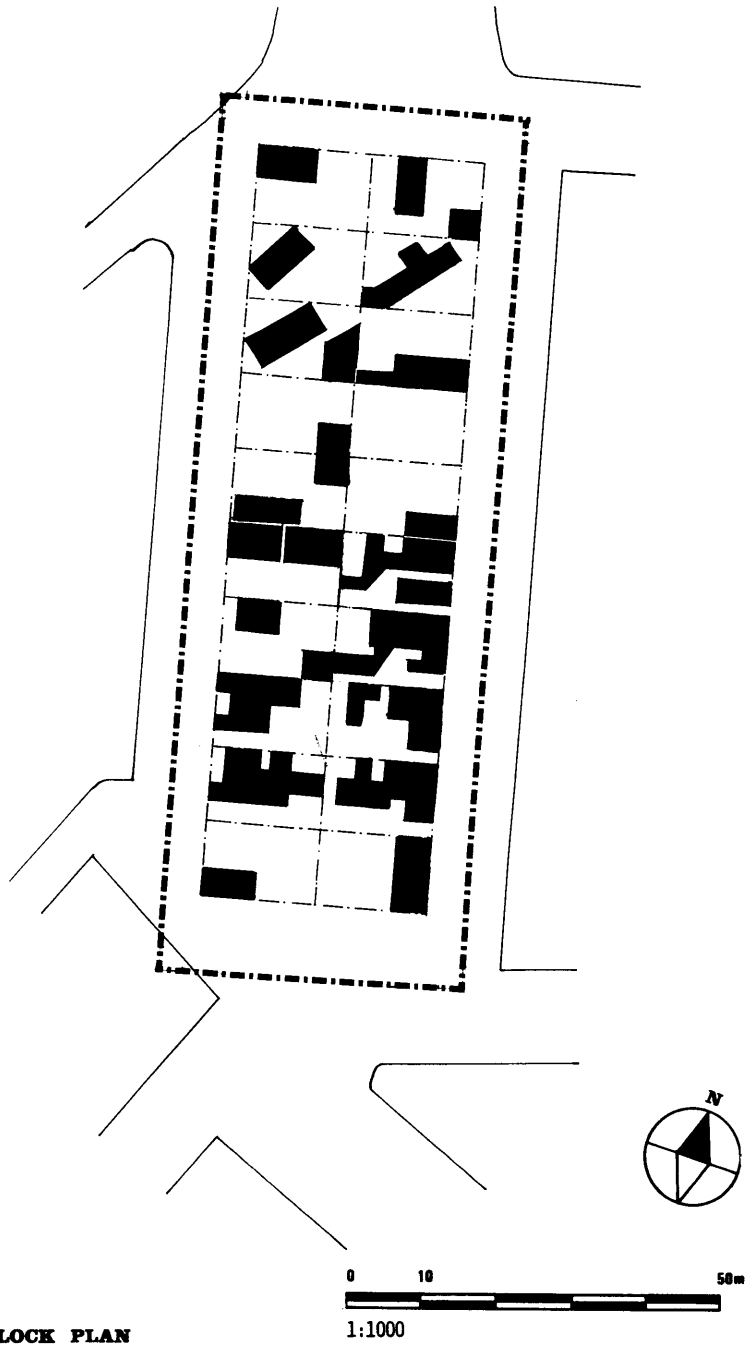
DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	20	0.460	43.47
DWELLING UNITS	23	0.460	47.82
PEOPLE	224	0.460	486.95

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.160	34.78
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	0.300	65.22
SEMI-PRIVATE (cluster courts)	-	-
TOTAL	0.460	100.00

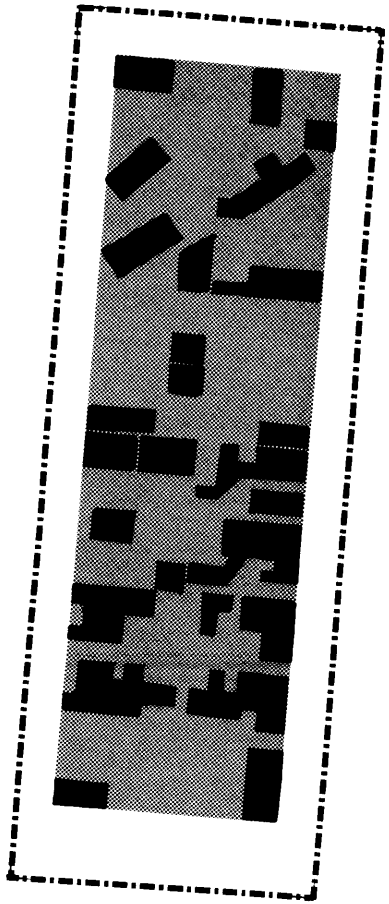
NETWORK EFFICIENCY

$$R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 339.1 \text{ m/Ha.}$$

AVERAGE LOT AREA = 230.0 m^2



LOCALITY BLOCK PLAN



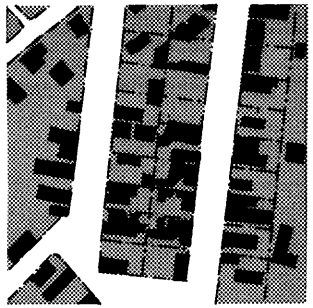
0 10 50m

1:1000

LOCALITY BLOCK LAND UTILIZATION

LAND UTILIZATION DIAGRAMS

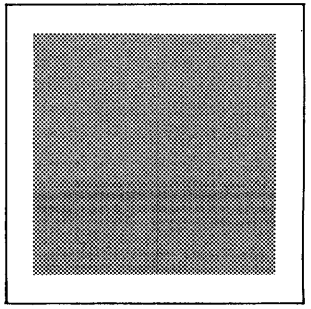
1 Hectare



PATTERN

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

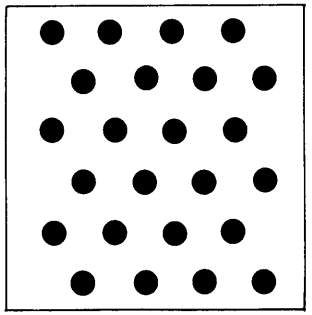
1 Hectare



PERCENTAGES

Streets/Walkways	35
Playgrounds	-
Cluster Courts	-
Dwellings/Lots	65

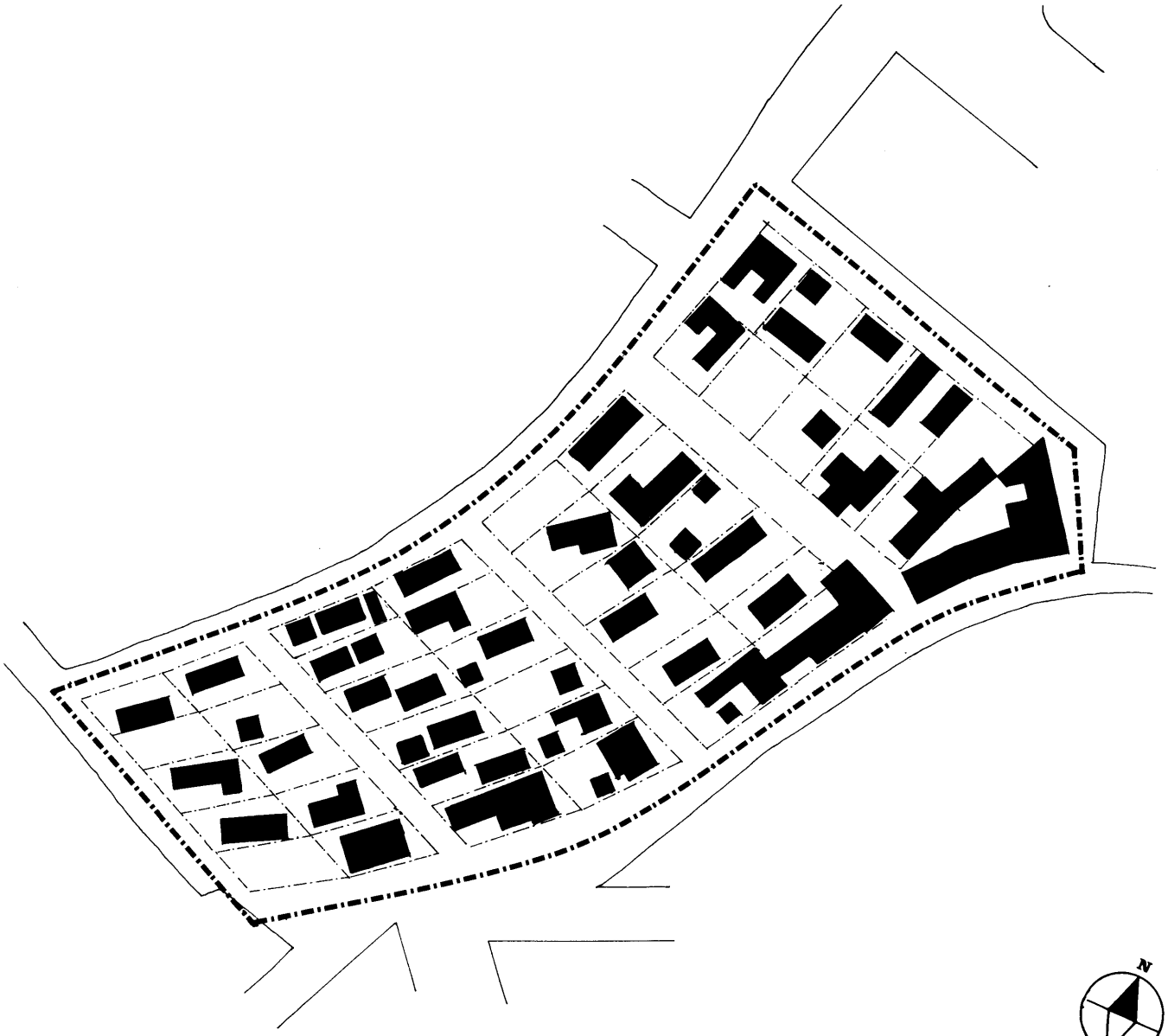
1 Hectare



DENSITY Persons/Hectare 487

● 20 Persons

LOCALITY BLOCK: The block has been determined by the topographical conditions, which are extreme. However, the two long boundary streets that follow the contour lines, serve to define the smaller block subdivisions. Only these two 6 m. streets accept limited vehicular circulation, while the narrow 4 m. connecting streets are too steep (and narrow) for vehicular use. The dwellings are placed parallel to the contours in each lot. Under this condition, streets do not conform to stipulated regulations. In spite of the very narrow streets, but more streets after all; give a low percentage of blocks' public areas and a very high population density. The particular block divisions result in a considerably high circulation length, and, therefore, a poor efficiency ratio.



LOCALITY BLOCK LAND UTILIZATION DATA

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	46	0.851	54.04
DWELLING UNITS	49	0.851	57.57
PEOPLE	450	0.851	529.66

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.204	23.98
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	0.647	76.02
SEMI-PRIVATE (cluster courts)	-	-
TOTAL	0.851	100.00

NETWORK EFFICIENCY

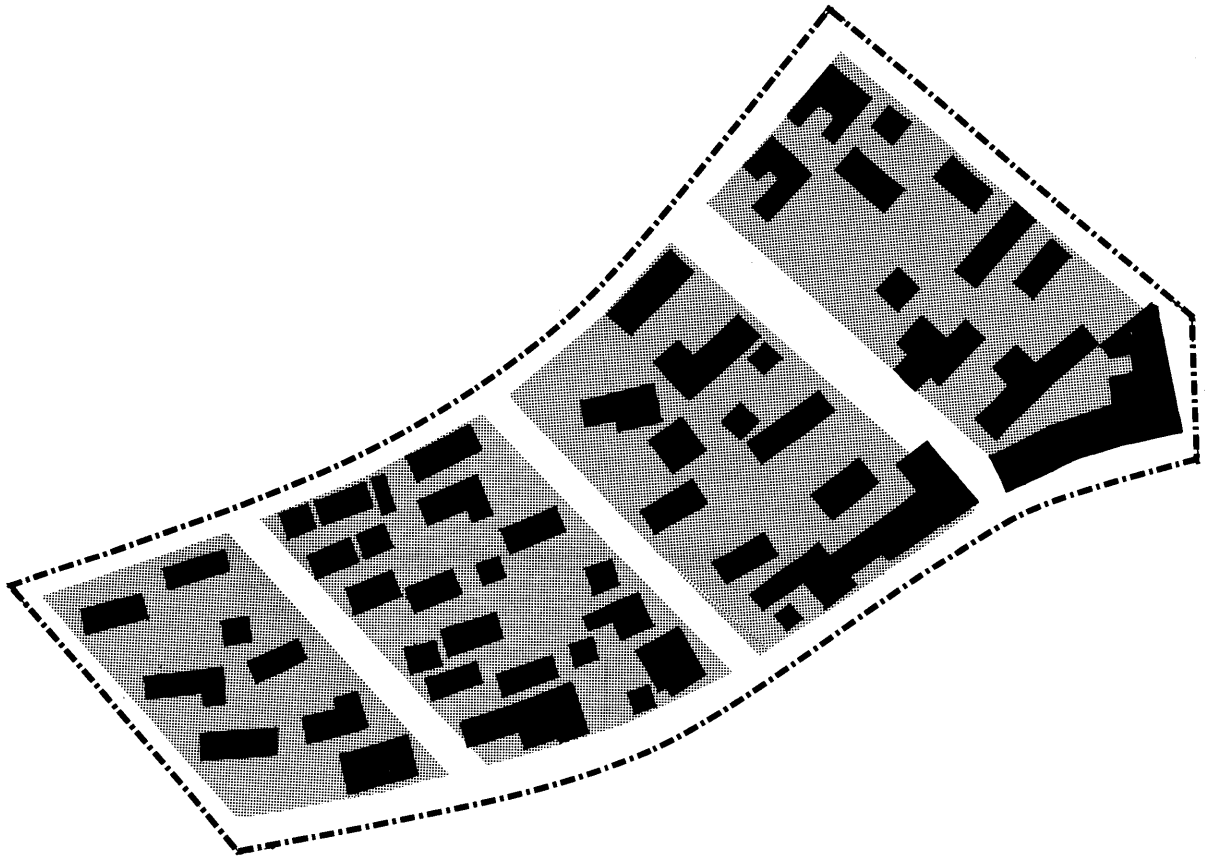
$$R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 438.5 \text{ m/Ha.}$$

AVERAGE LOT AREA = 185.0 m^2

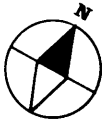
LOCALITY BLOCK PLAN

0 10 50m

1:1000



LOCALITY BLOCK LAND UTILIZATION



1:1000

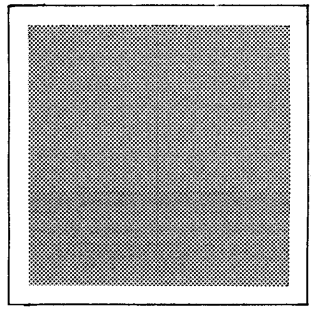
LAND UTILIZATION DIAGRAMS

1 Hectare

PATTERN

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

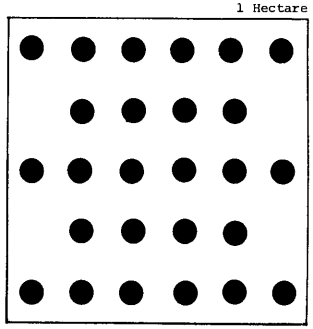
1 Hectare



PERCENTAGES

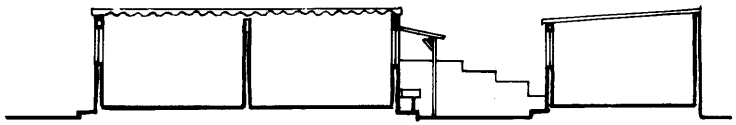
Streets/Walkways	24
Playgrounds	–
Cluster Courts	–
Dwellings/Lots	76

1 Hectare



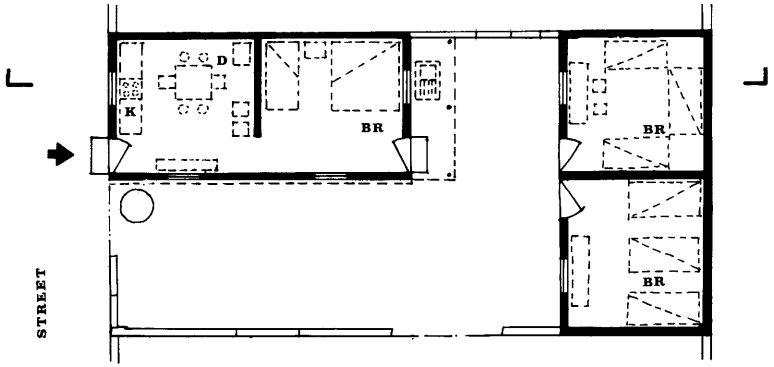
DENSITY Persons/Hectare 530

● 20 Persons

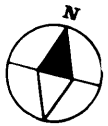


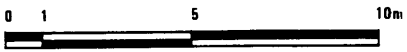
SECTION

ELEVATION



PLAN





1:200

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):	32-48
tenure:	OWNERSHIP
LAND/LOT	
utilization:	PRIVATE
area (sq m):	200-310
tenure:	OWNERSHIP
DWELLING	
location:	PERIPHERY
type:	ROW
number of floors:	ONE
utilization:	FAMILY/FAMILY RELATIVES
physical state:	FAIR, IMPROVING
DWELLING DEVELOPMENT	
mode:	INCREMENTAL
developer:	PRIVATE
builder:	ARTISAN , SELF HELP
construction type:	PERMANANT MATERIALS
year of construction:	1960's
MATERIALS	
foundation:	STONE/CONCRETE
floors:	CONCRETE WITHOUT FINISHINGS
walls:	CONCRETE BLOCKS
roof:	ASBESTO PLATES
DWELLING FACILITIES	
wc:	-
shower:	-
kitchen:	1
rooms:	3-4
other:	

SOCIO-ECONOMIC DATA
(related to user)

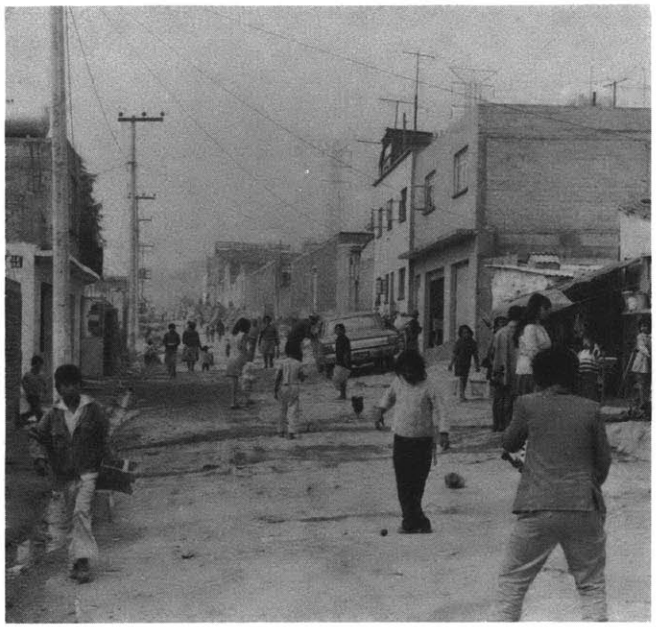
GENERAL: SOCIAL	
user's ethnic origin:	-
place of birth:	STATES OF MEXICO,
education level:	60 % LITERATE
NUMBER OF USERS	
married:	2
single:	1
children:	7
total:	10
MIGRATION PATTERN	
number of moves:	2
rural - urban:	1950's
urban - urban:	1960's
urban - rural:	-
why came to urban area:	EMPLOYMENT
GENERAL: ECONOMIC	
user's income group:	LOW
employment:	INDUSTRY, SERVICES
distance to work:	5 KM.
mode of travel:	PUBLIC TRANSPORTATION
COSTS	
dwelling unit:	$ 500
land - market value:	$ 8 / m^2
DWELLING UNIT PAYMENTS	
financing:	SELF FINANCED
rent/mortgage:	$ 12 - $ 20 / MONTH
% income for rent/mortgage:	18

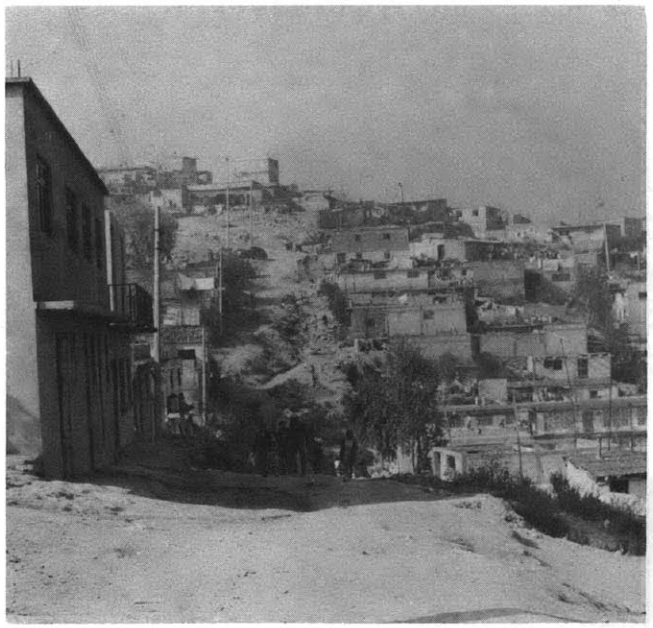
LOMAS DE SAN AGUSTIN, Mexico City: (top left) This view is along one of the principal streets. Only scattered small shops are to be found on this type of street, because of commercial concentration on the Naucalpan-Toluca road. NO public areas result in streets being used as playgrounds. Air pollution and dust make limited visibility. Pedestrians dominate (1974).

(top right) The panorama shows the northern boundary of the locality, facing the Los Remedios settlements. Notice that erosion has made the front street unaccesible for vehicular circulation. Houses constructed on sloped land are adapted to the slope by building of terraces (1974).

(bottom left) This view is of a tenement house. Most low cost constructions leave a small concrete cantilever, to protect the unplastered walls from the rain. Many houses are in various stages of completition. The metal drums are to store water for family use. Water is privately distributed by trucks (1974).

(bottom right) Photo shows a dwelling unit in early stage of construction. In spite of the lack of services, dwellings are generally constructed with permanent materials (1974).



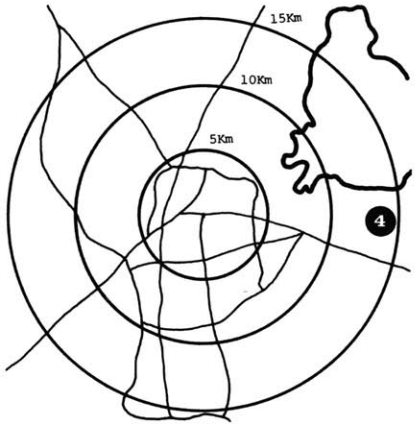


LOCALITY SOURCES

Plan:	*(approximate) Compania Mexicana de Aerofoto. Aerial photograph. 1972.*
Land Use Pattern:	*(approximate) Asentamientos Habitacionales Planificados y no Planificados. Cuadernos Tecnicos AURIS, no. 9. Planos anexos. Instituto AURIS. Naucalpan. Estado de Mexico, 1974.*
Circulation Pattern:	*(approximate) Field surveys, J. Bazant, 1974.*
Segment Plan:	*(approximate) Op. Cit. Compania...*
Block Plan:	*(approximate) IBID*
Block Land Utilization:	*(approximate) Field survey, J.Bazant, 1974.*
Typical Dwelling:	*(approximate) IBID*
Physical Data:	*(approximate) IBID*
Socio-Economic Data:	*(approximate) IBID*
Photographs:	*J. Bazant, C.M.A.(aerial).*
General Information:	*Panoramica Socio-Economica del Estado de Mexico. Vol.2. Toluca, 1971.*
	Informe sobre las Condiciones Psico-Socio-Antropologicas de San Rafael Chamapa. Instituto AURIS, Naucalpan. 1972.

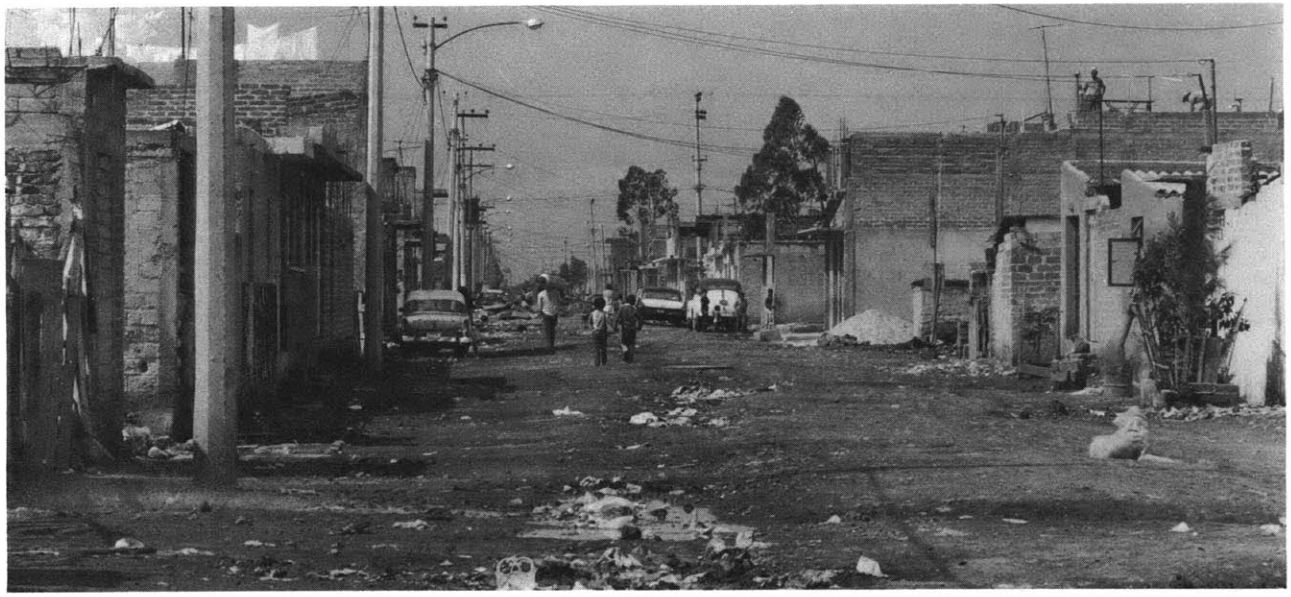
4 NETZAHUALCOYOTL
Mexico City

PRIVATE, LOW INCOME, ROW HOUSES



LOCATION: The Netzahualcoyotl municipality is situated on the eastern limits of Mexico city, nine kilometers from the zocalo (central plaza), the locality is on part of the partly dry Texcoco lake.

ORIGINS: This municipality was created in 1963, out of land from other municipalities. Three colonies were established in the locality in 1945 (Mexico, El Sol and Estado de Mexico). In 1958 the state government authorized developers to urbanize the land; some sections were urbanized, but until now not all has been developed. Because of the lack of utilities, some sections have been expropiated by the government and re-sold to the inhabitants.
In 1970 the population was 570,000, the fourth largest in the Republic. 68% of the population comes from the Distrito Federal and 32% from other states.



NETZAHUALCOYOTL, Mexico City: (top) This is one of the main streets running parallel to the edge of the lake. Notice the width of the street. The street is so long that is difficult to see the end.

(bottom) This view is along one of the interior residential streets that run perpendicular to the lake, the row housing is one and two stories. The lack of maintenance of the streets is obvious.

MUNICIPALITY PLAN

0 100 500m

1:10000

N

LOCALITY AIR PHOTOGRAPH

NETZAHUALCOYOTL, Mexico City: (right). The air photograph shows only a small portion of the locality. Notice the repetitive, monotonous grid, spotted with schools in neighborhood units.

1:10000

LOCALITY PLAN

SELECTED SEGMENT

LAYOUT: The settlement layout is a typical rectangular grid, with the streets running perpendicular to and parallel to the edge of the lake. The major through streets are found at approximately 900m. intervals. The majority of the blocks lie with their longer sides perpendicular to the lake. The block sizes average are about 200m. by 50m.; there are approximately 45 lots per block. The total occupied area is approximately 4400 hectares, giving a gross density of 120 persons per hectare (in 1970).

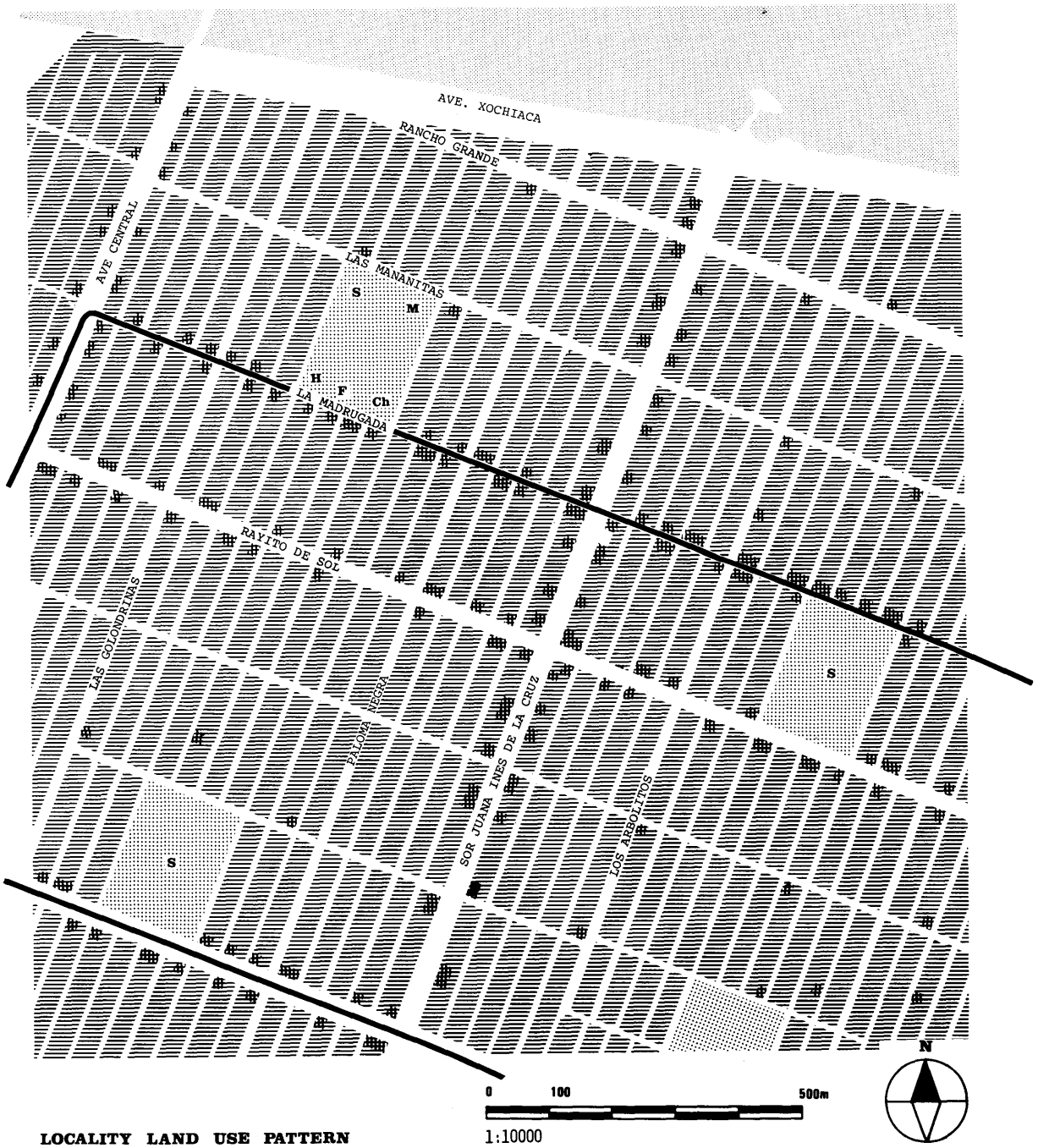
LAND USE: There are 137,000 lots from which 81,000 are occupied and 55,000 are empty. Privately owned dwelling lots occupy 50.15% of the area of the settlement, some of which are also used for minor commercial or artisan activities. Commercial activity is evenly distributed through out the locality with no significant concentration along the main through-fares or around the principal open spaces.
There are 8 school zones, 7 are federal and 1 is from the state, there are 55 federal primary schools, 13 state schools and 12 private schools with 1,037 classrooms, 1331 teachers and 55,639 pupils (1968). Still, there is no place for 10,000 children to attend primary school. There are 4 secondary schools, 13 kinder gardens and 85 centers for illiterate. In total 188 schools.
There are public open markets. These markets are extremely unhealthy.
There are limited clinics, 23 churches, government buildings, 3 movie theaters, 5 hotels, 2 sport centers, 2 boxing rings, a bull-fight plaza and several plazas.

AREAS

- RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- OPEN SPACES

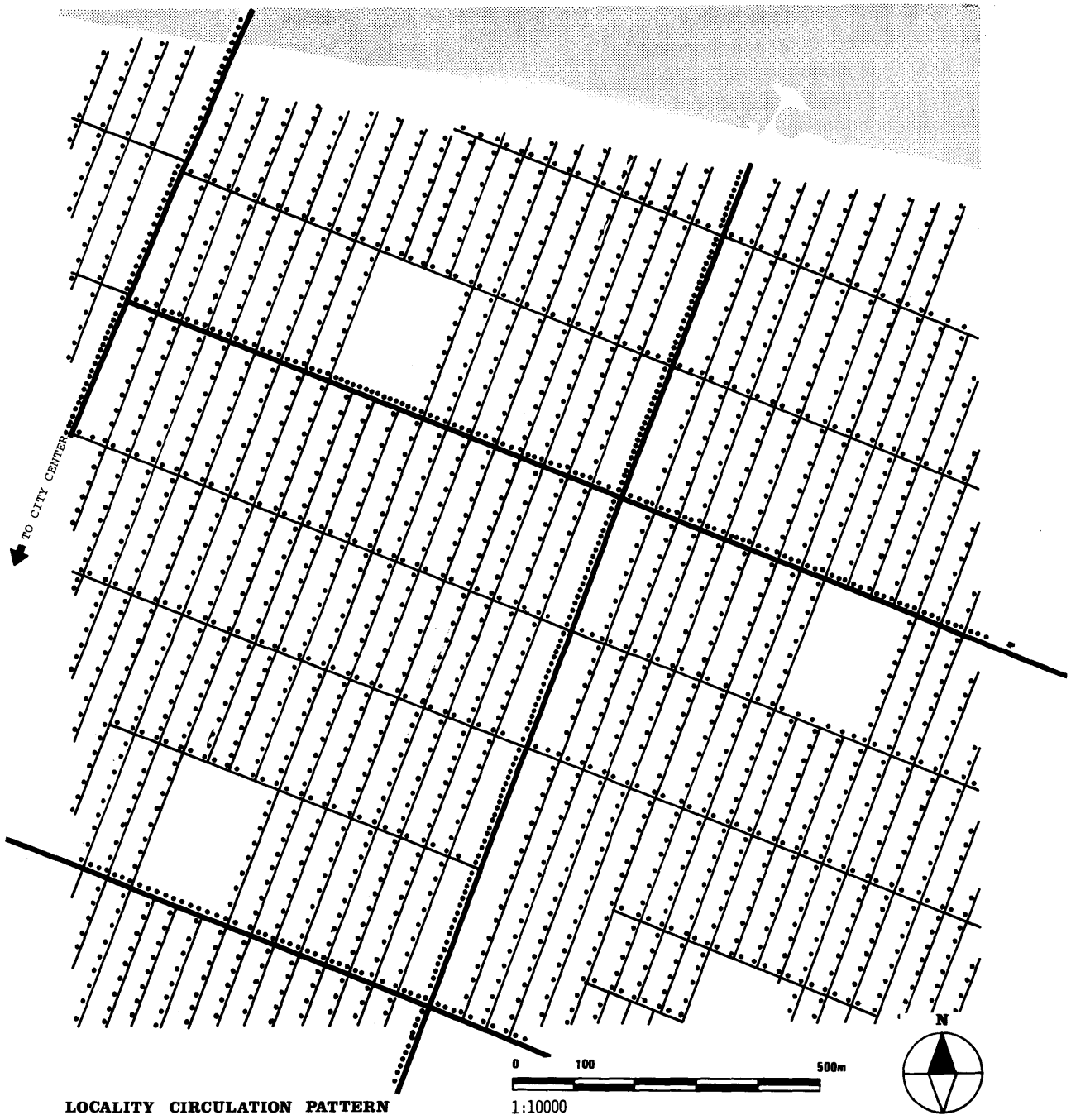
KEY

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



LOCALITY LAND USE PATTERN

1:10000



LOCALITY CIRCULATION PATTERN

1:10000

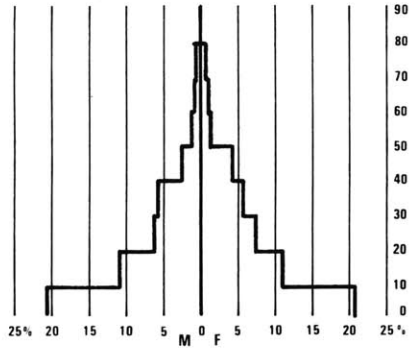
CIRCULATION: All streets are available to vehicles, but very few are paved. There are three lines of omnibus services providing the area, they have the concession and exploit the service. There are 10 taxi stations with approximately 120 taxis. The main asphalted roads that are linked to Netzahualcoyotl have extremely heavy traffic, as it connects a working class population with the city proper. A very small percent of the households possess motor vehicles (excluding motorcycles).

KEY

VEHICULAR

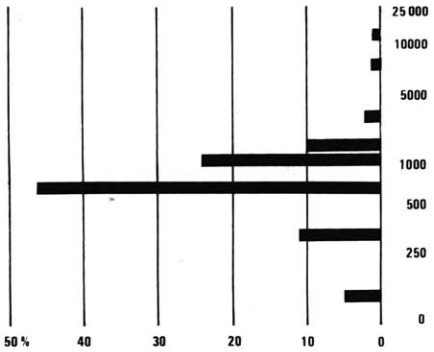
PEDESTRIAN

POPULATION: There are 570,000 inhabitants (1970) and approximately 81,500 families. The family average is 6.3 members, approximately 63% of the population is less than 20 years old; it is a very young population.

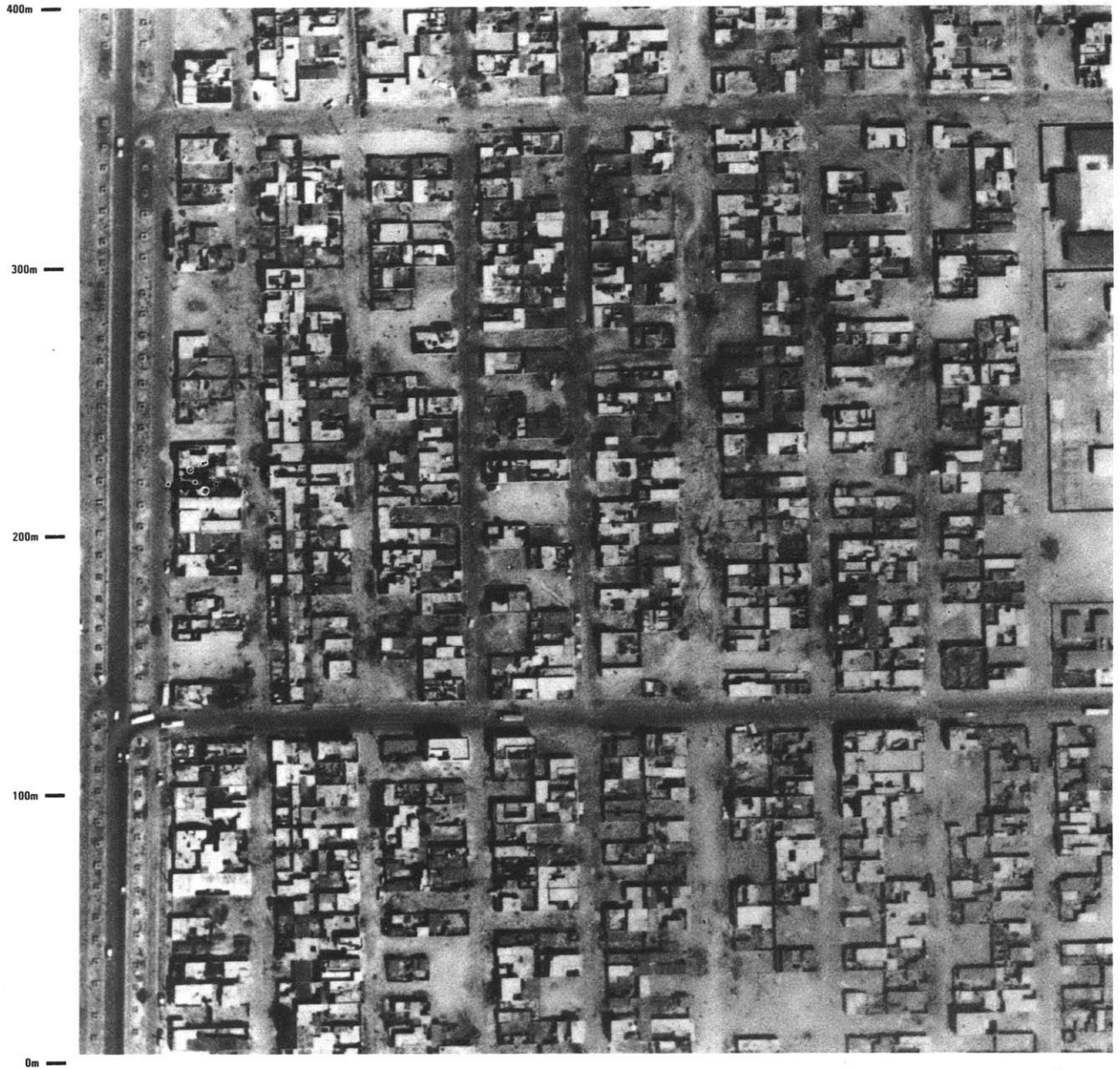


LOCALITY POPULATION DISTRIBUTION
horizontal: percentages vertical: ages
males: M 284,248 females: F 286,787
Source: Census 1970; population: 571,035

INCOMES: 50% of the families have their income of less than $80.00 per month and 36% of the families from $80 to $120 per month. The average family income is about $67.

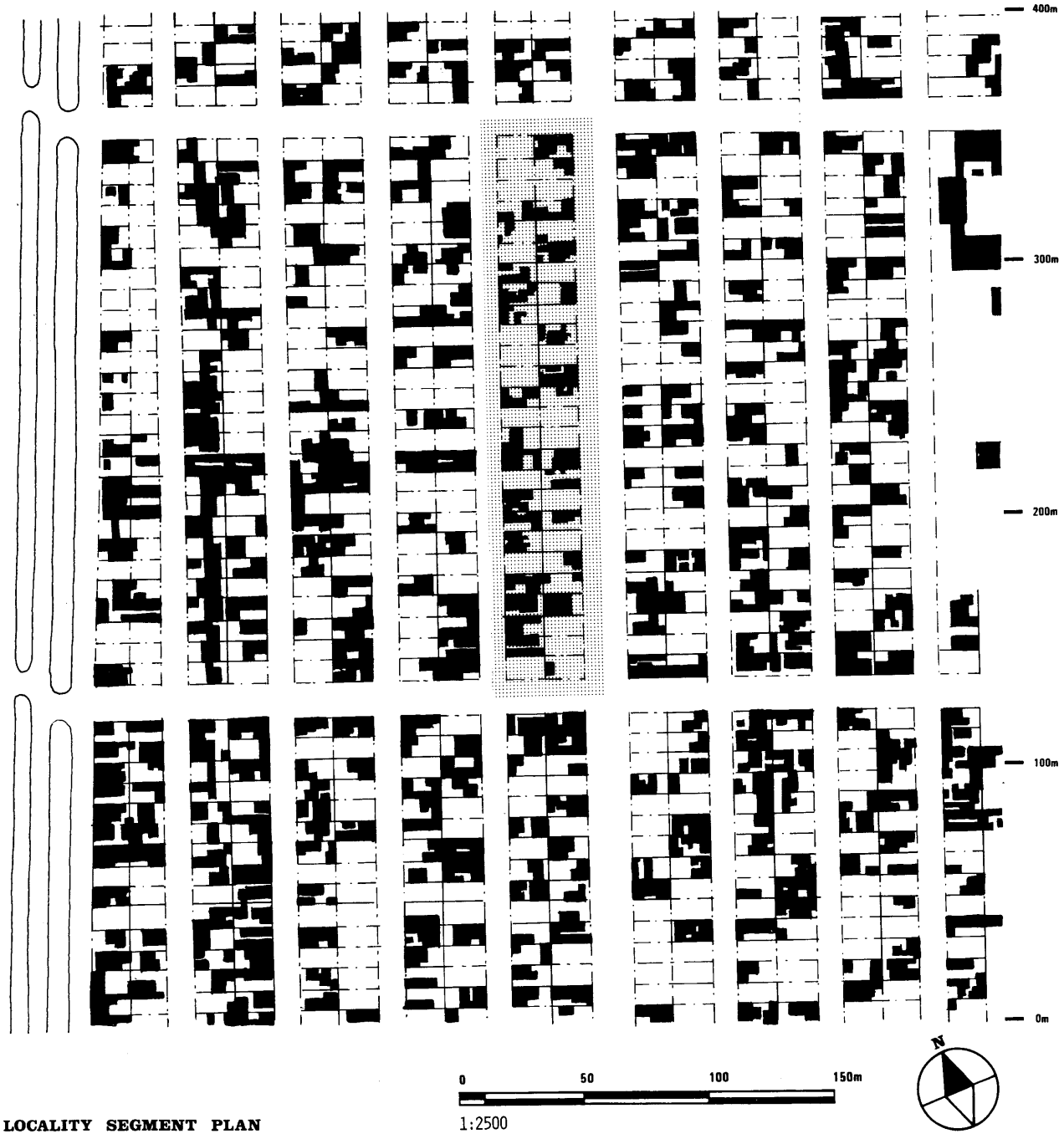


LOCALITY ANNUAL INCOME DISTRIBUTION
horizontal: percentages vertical: dollars
Source: Census 1970; households: 135,376



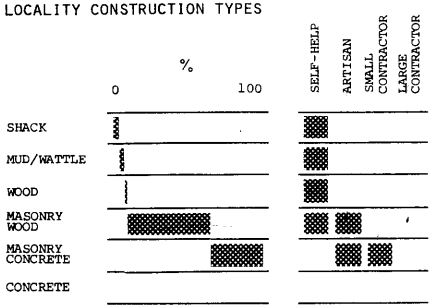
LOCALITY SEGMENT AIR PHOTOGRAPH

1:2500



LOCALITY SEGMENT PLAN

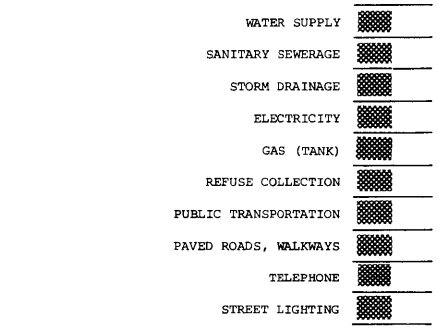
LOCALITY CONSTRUCTION TYPES



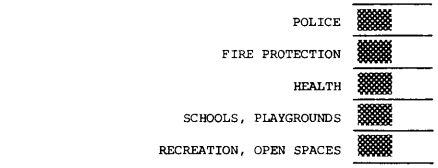
The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

Quality of information: Accurate

LOCALITY UTILITIES AND SERVICES



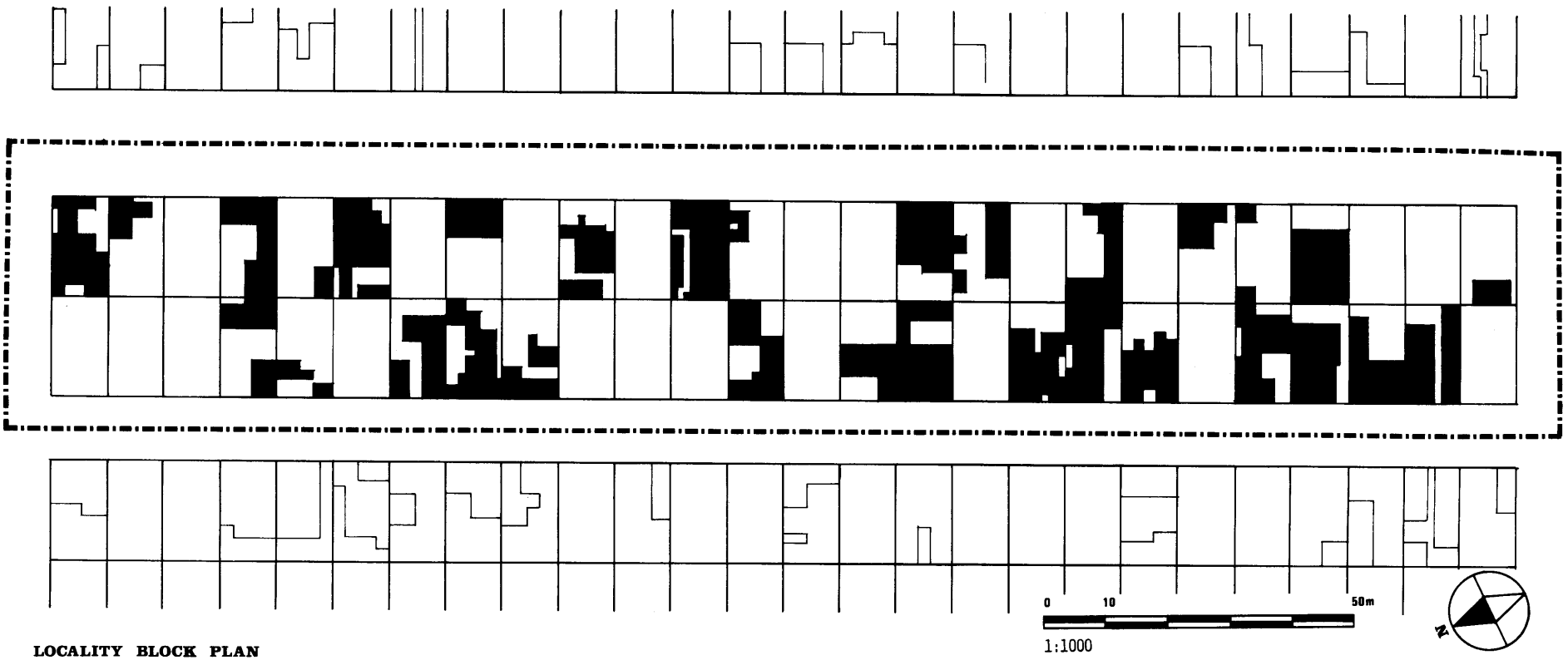
LOCALITY COMMUNITY FACILITIES



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

Quality of information: Accurate

SELECTED BLOCK



LOCALITY BLOCK PLAN

LOCALITY BLOCK LAND UTILIZATION DATA

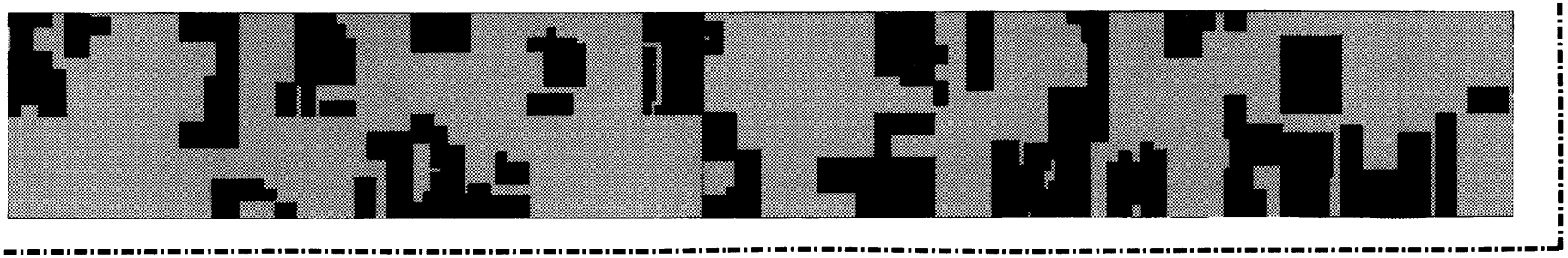
DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	52	1.12	46.42
DWELLING UNITS	31	1.12	27.67
PEOPLE	186	1.12	166.07

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.38	33.4
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	0.74	66.6
SEMI-PRIVATE (cluster courts)	-	-
TOTAL	1.12	100

NETWORK EFFICIENCY

$$R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 261 \text{ m/Ha}$$

AVERAGE LOT AREA = 215 m^2



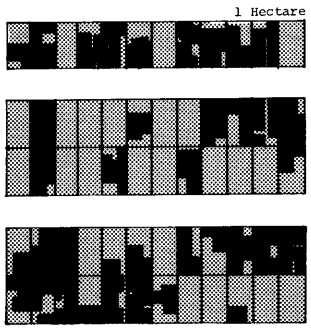
LOCALITY BLOCK LAND UTILIZATION

0 10 50m

1:1000

N

LAND UTILIZATION DIAGRAMS



PATTERN

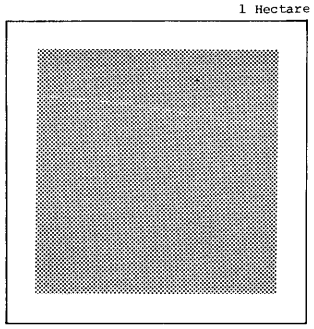
Public: streets/walkways

Semi-Public: playgrounds

Semi-Private: cluster courts

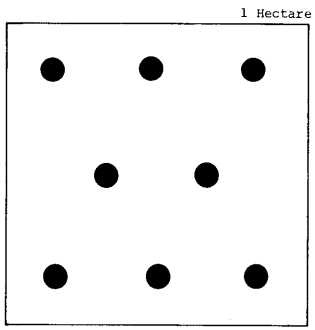
Private: lots

dwellings



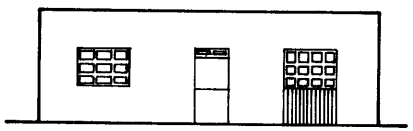
PERCENTAGES

Streets/Walkways 33.4%
Playgrounds -
Cluster Courts -
Dwellings/Lots 66.6%

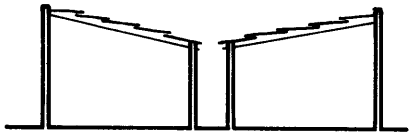


DENSITY Persons/Hectare 166

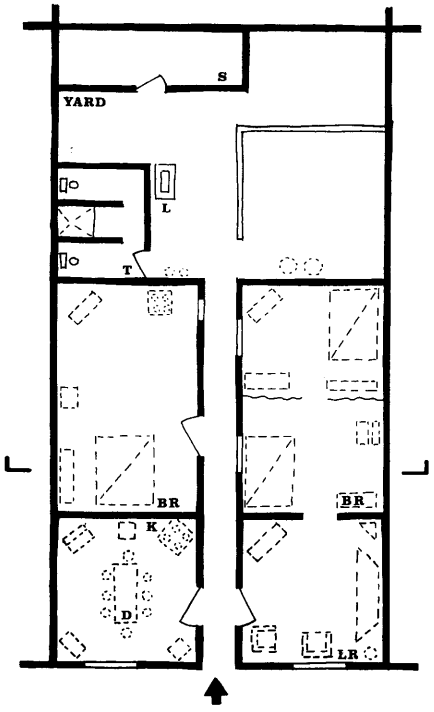
20 Persons



ELEVATION



SECTION

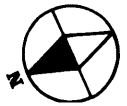


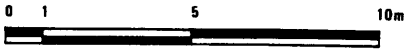
PLAN

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)





1:200

PHYSICAL DATA
(related to dwelling and land)

DWELLING UNIT	
type:	HOUSE
area (sq m):	123.5
tenure:	LEGAL OWNERSHIP
LAND/LOT	
utilization:	PRIVATE
area (sq m):	153
tenure:	LEGAL OWNERSHIP
DWELLING	
location:	PERIPHERY
type:	ROW HOUSING
number of floors:	1
utilization:	MULTIPLE: FAMILY
physical state:	FAIR
DWELLING DEVELOPMENT	
mode:	INSTANT
developer:	POPULAR
builder:	ARTISAN
construction type:	MASONRY, WOOD
year of construction:	1966
MATERIALS	
foundation:	CONCRETE SLAB
floors:	CONCRETE
walls:	CONCRETE BRICK
roof:	WOOD WITH CORRUGATED IRON SHEETS AND CARDBOARD
DWELLING FACILITIES	
wc:	2
shower:	1
kitchen:	1
rooms:	3
other:	STOVE+OVEN, BACK YARD (PARTIAL WALLED).

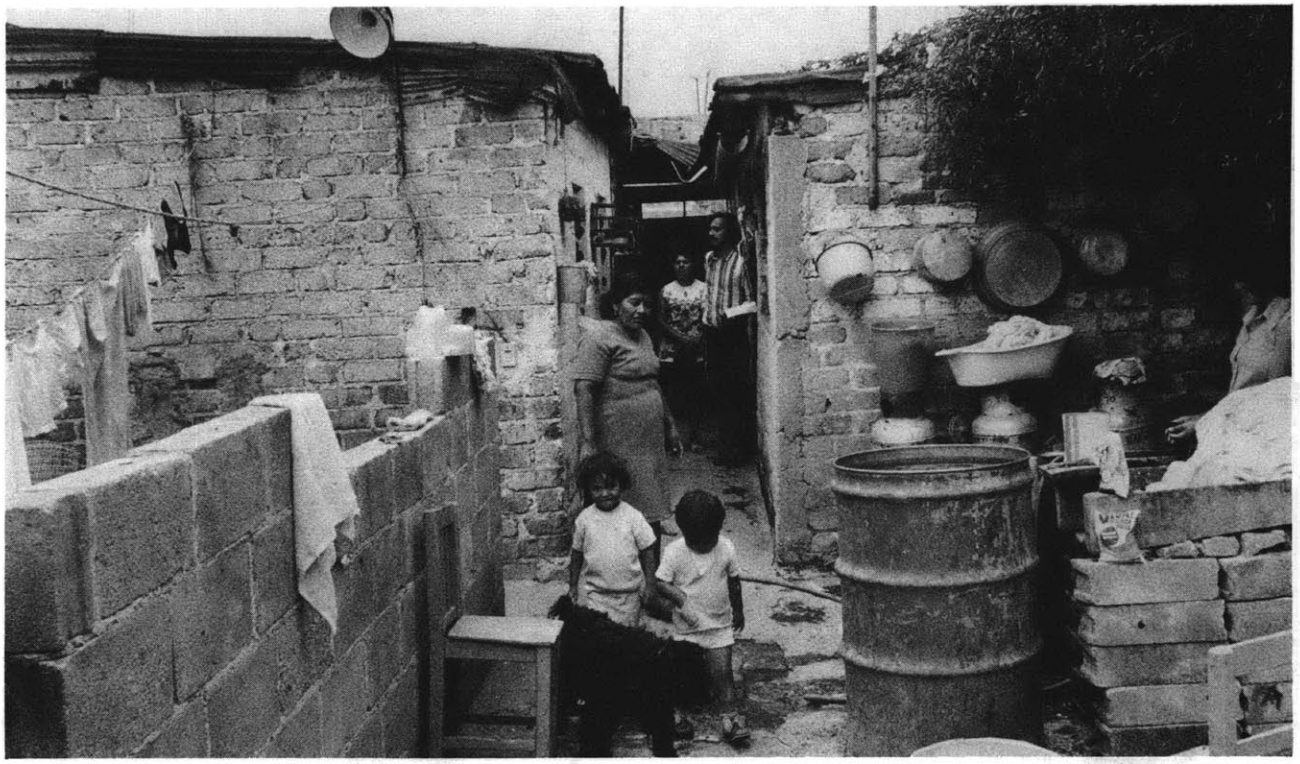
SOCIO-ECONOMIC DATA
(related to user)

GENERAL: SOCIAL	
user's ethnic origin:	MEXICAN
place of birth:	STATE OF VERACRUZ
education level:	PRIMARY SCHOOL
NUMBER OF USERS	
married:	4
single:	2
children:	2
total:	8
MIGRATION PATTERN	
number of moves:	3
rural - urban:	1955
urban - urban:	1958, 1966
urban - rural:	-
why came to urban area:	EMPLOYMENT
GENERAL: ECONOMIC	
user's income group:	LOW
employment:	DRIVERS
distance to work:	10 KM
mode of travel:	BUS
COSTS	
dwelling unit:	$1200
land - market value:	$160,000/HA
DWELLING UNIT PAYMENTS	
financing:	PRIVATE
rent/mortgage:	-
% income for rent/mortgage:	-

NETZAHUALCOYOTL, Mexico City: (left top) the view of the kitchen and the dining room shows that is very well equiped, an electrical blender is seen in the cabinet. Every thing is neat and orderly.

(right top) the front of the house is very well kept. Note the plants that the family has put to improve the front of the house. Electrical services are apparent as notice by the T.V. antena on the roof. The garage has been enclosed by a doble door and is now used as a living room.

(bottom) This is the back part of the house. Notice the construction materials and the activities in the yard. Bricks are stocked in the yard for future improvements to the house.

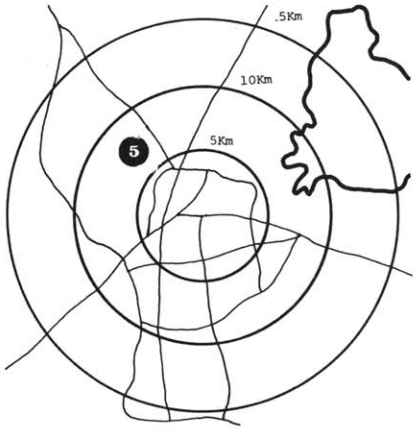


LOCALITY SOURCES

Municipality Plan:	*(accurate) PLANO DEL AREA METROPOLITANA DE LA CIUDAD DE MEXICO, 1972.*
Locality Plan:	*(accurate) Aerocartografia de Mexico, 1972.*
Land Use Pattern:	*(approximate) Aerocartografia de Mexico, 1972. J. L. Cortes Field Survey, 1973.*
Circulation Pattern:	*(accurate) Aerocartografia de Mexico, 1972.*
Segment Plan:	*(accurate) IBID.*
Block Plan:	*(accurate) IBID.*
Block Land Utilization:	*(accurate) IBID.*
Typical Dwelling:	*(accurate) R. Racki and R. Davila Field Survey, 1972. J. L. Cortes Field Survey, 1973.*
Phisical Data:	*(accurate) IBID.*
Socio-Economic Data:	*(accurate) IBID.*
Photographs:	*J. L. Cortes, 1973. Aerocartografia de Mexico, 1972. (aerial).*
General Information:	*J. L. Cortes Field Survey, 1973. ESTUDIO: ACCION CASA, PLANTECNICA, 1970; ESTUDIO PARA LAS OBRAS DE ALCANTARILLADO EN EL MUNICIPIO DE NETZAHUALCOYOTL, SECRETARIA DE RECURSOS HIDRAULICOS, 1969.*

5 PRO HOGAR
Mexico City

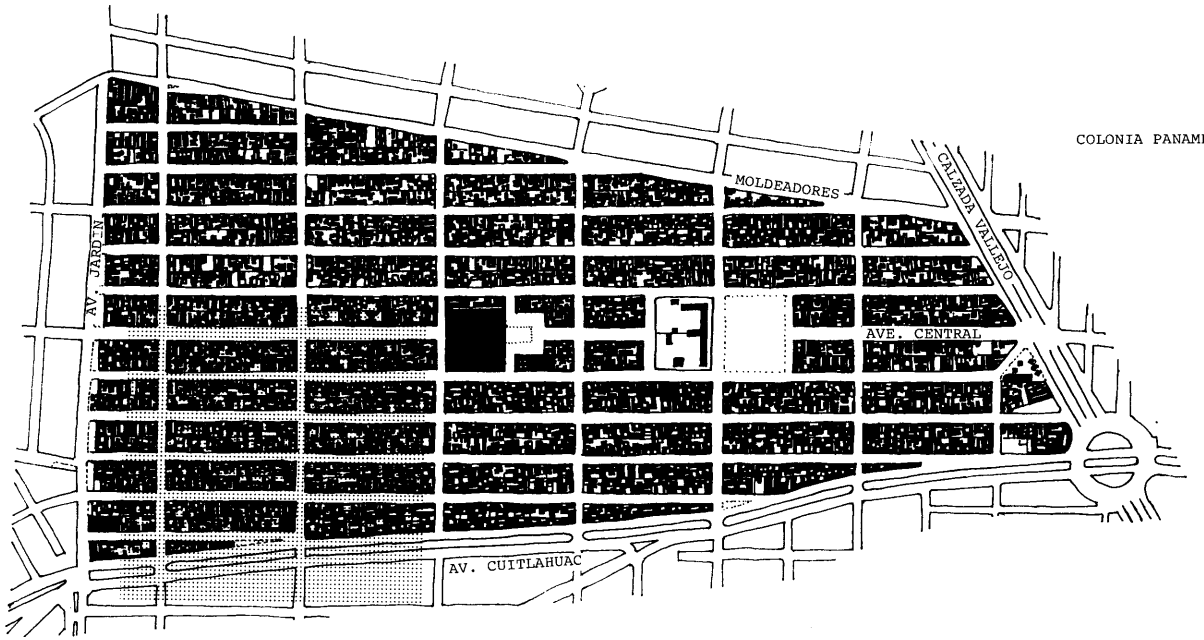
PRIVATE, LOW INCOME, ROW HOUSES



LOCATION: This area is located in the northern part of the city, within the 5-9 km. intermediate ring. It is placed in the city's industrial zone, and is bordered on the south by the "Industrial Vallejo," the largest metropolitan industrial park. It covers a surface of 66 hectares. The Colonia belongs to the Atzcapozalco Delegacion in the Federal District.

ORIGINS: The Pro Hogar Colonia was developed in the early 1940's as a private land subdivision for workers of the nearby industries. One project was made for the site with two stages of development. The first stage extended from the Calzada Vallejo, while the second stage consisted in developing the remaining series of blocks up to the Jardin Street. The site has two important boundaries; the Calzada Vallejo and goes northwest, and the Avenida Cuitlahuac on the south.

PRO HOGAR, Mexico City: (left) The aerial photograph show the regular layout pattern of the colonia, an early 1950's speculative development. Note the uniformity of land use and the density of construction. The colonia show a typical urban pattern of the northern part of the city (scale of the photograph is 1: 10 000) (1972).

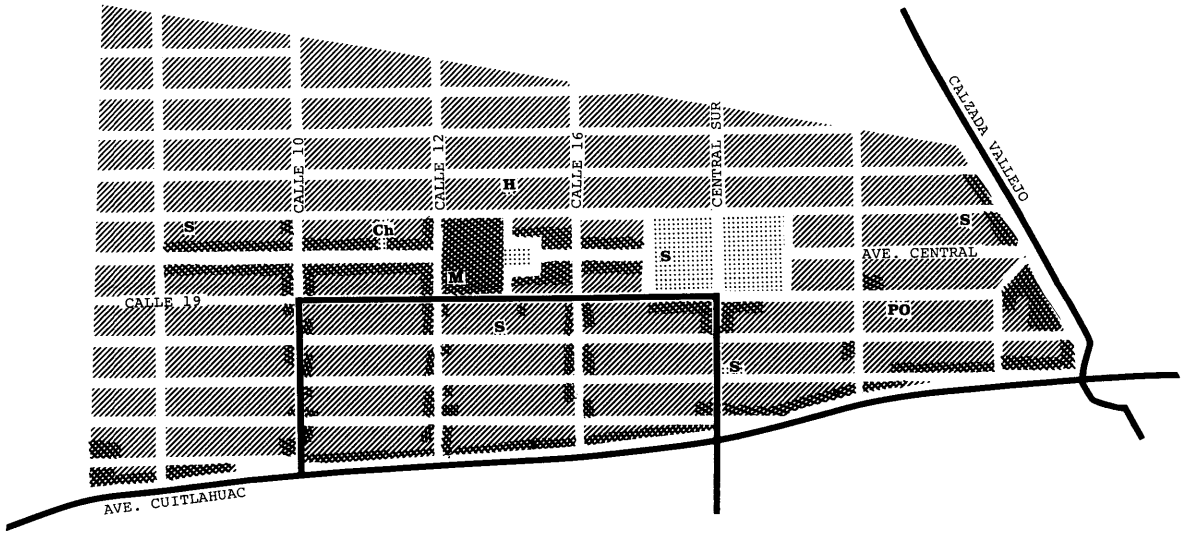


LOCALITY PLAN

SELECTED SEGMENT

LAYOUT: The Pro Hogar layout was partially determined by the existing Vallejo and Cuitlahuac Avenues. The blocks adjacent to these avenues have irregular shapes. In Mexico City, the orientation of lots is normally north-south because it protects the houses from the harsh and cold north winds, since heating is never used. In the Pro Hogar case, it can be noted that the layout orientation is east-west, exposing the houses to the undesired cold north,hot south orientations. It can be observed that the same type of layout is used in the neighboring Colonia Panamericana, but it has adequate orientation. The layout emphasizes an interior street, Central Avenue, as the locality's main activity spine. The project complied with the city's land development regulations by leaving large areas for community services and facilities.

LAND USE: The site was developed for private residential use for moderate low income households. Some residential lots have been gradually changing (by the market demand) for commercial and community services. The following facilities are found in the project: 4 kindergardens, a small clinic, a church, a post office, several small industries, a police office, a bank, a public bath, and many small commercial shops. Some dwelling units have expanded through small apartments added for rental purposes.



AREAS

- RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- OPEN SPACES

KEY

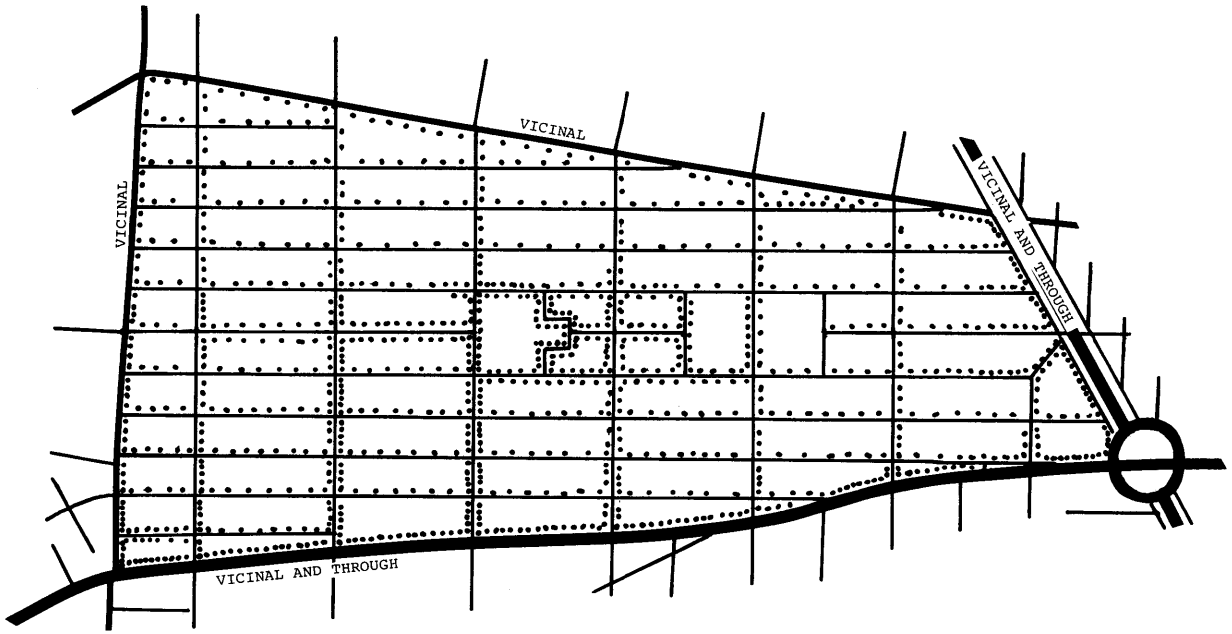
- **Pk** Parking
- **P** Police
- **F** Fire Department
- **S** School
- **Ch** Church
- **R** Recreation
- **L** Library
- **U** University
- **H** Health
- **PO** Post Office
- **SS** Social Services
- **M** Market
- **C** Cemetery
- Bus
- Rapid Transit

LOCALITY LAND USE PATTERN

N

0 100 500m

1:10000



KEY

VEHICULAR

PEDESTRIAN

CIRCULATION: The layout pattern conceals the traditional vehicular circulation. A number of bus routes serve the area through the Vallejo and Cuitlahuac Avenues; one bus route and one trolley bus route penetrates into the Colonia. The Pro Hogar Colonia has no through traffic streets; the internal circulation is only local service. Pedestrians circulate easily in the colonia, since it is only a small distance between their houses and the market, shops, peripherical avenues and other secondary points of activity.

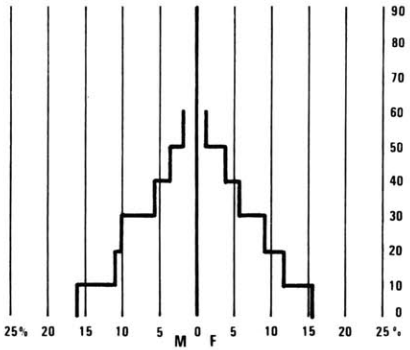
N

0 100 500m

1:10000

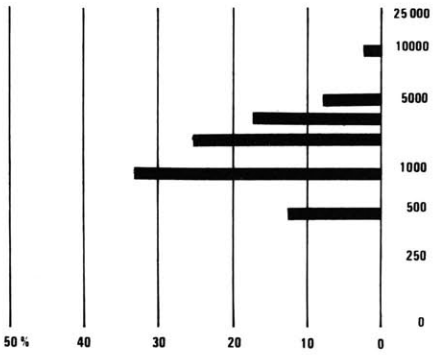
LOCALITY CIRCULATION PATTERN

POPULATION: Of the 28,500 total population, 55 percent is below the age of 20. The average population age group is from 15 to 20 years, representing 12 percent of the population. Only 5 percent is 60 years or older. Males represent 49 percent of the total population.

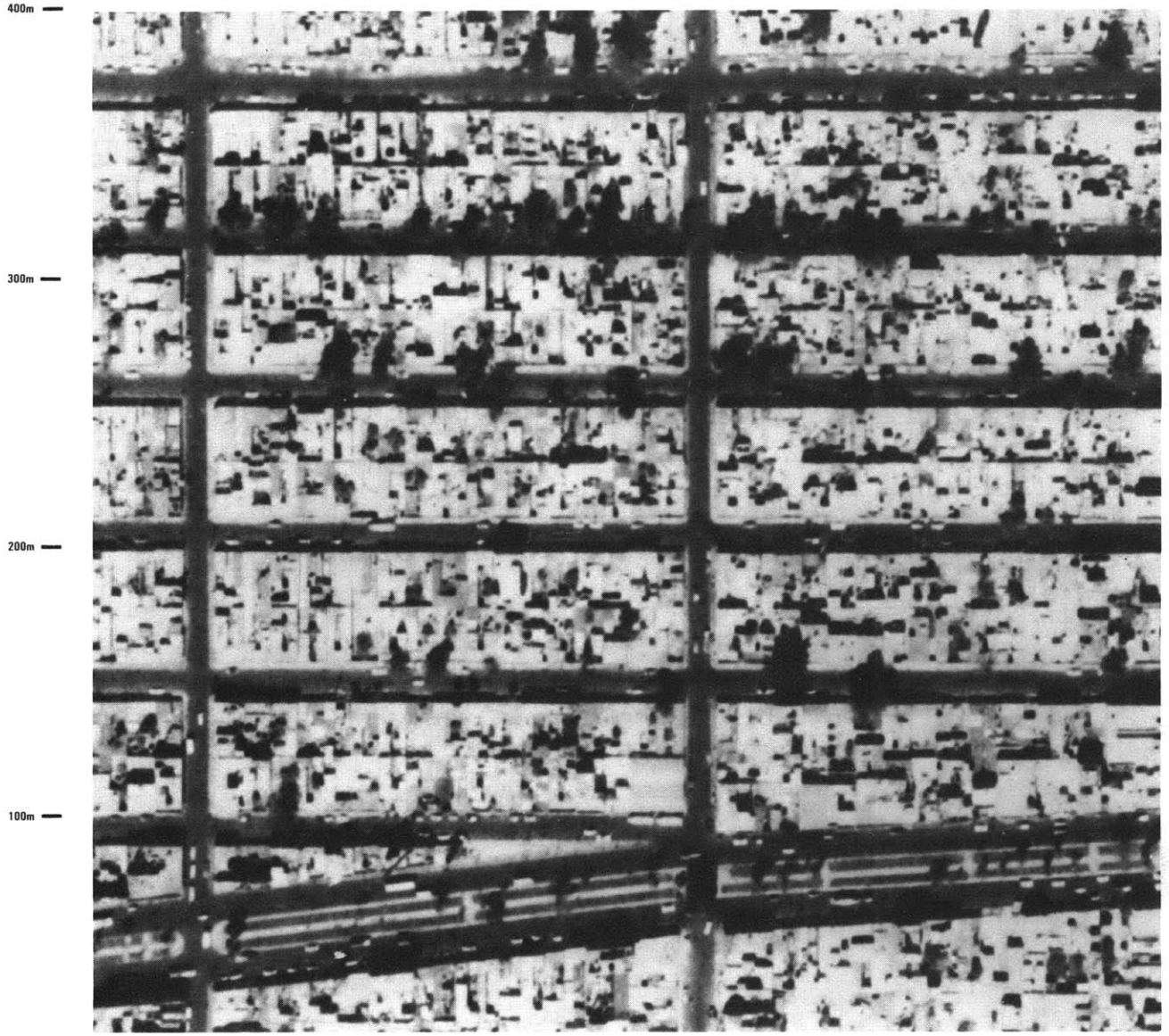


LOCALITY POPULATION DISTRIBUTION
horizontal: percentages vertical: ages
males: M females: F
Source: IX Censo General de la Poblacion. D.F. 1970

INCOME: The average annual income of the economically active population is $960 US. Approximately 2 percent earn more than $5,000 US annually, and 12.4 percent earns less than the average annual income.

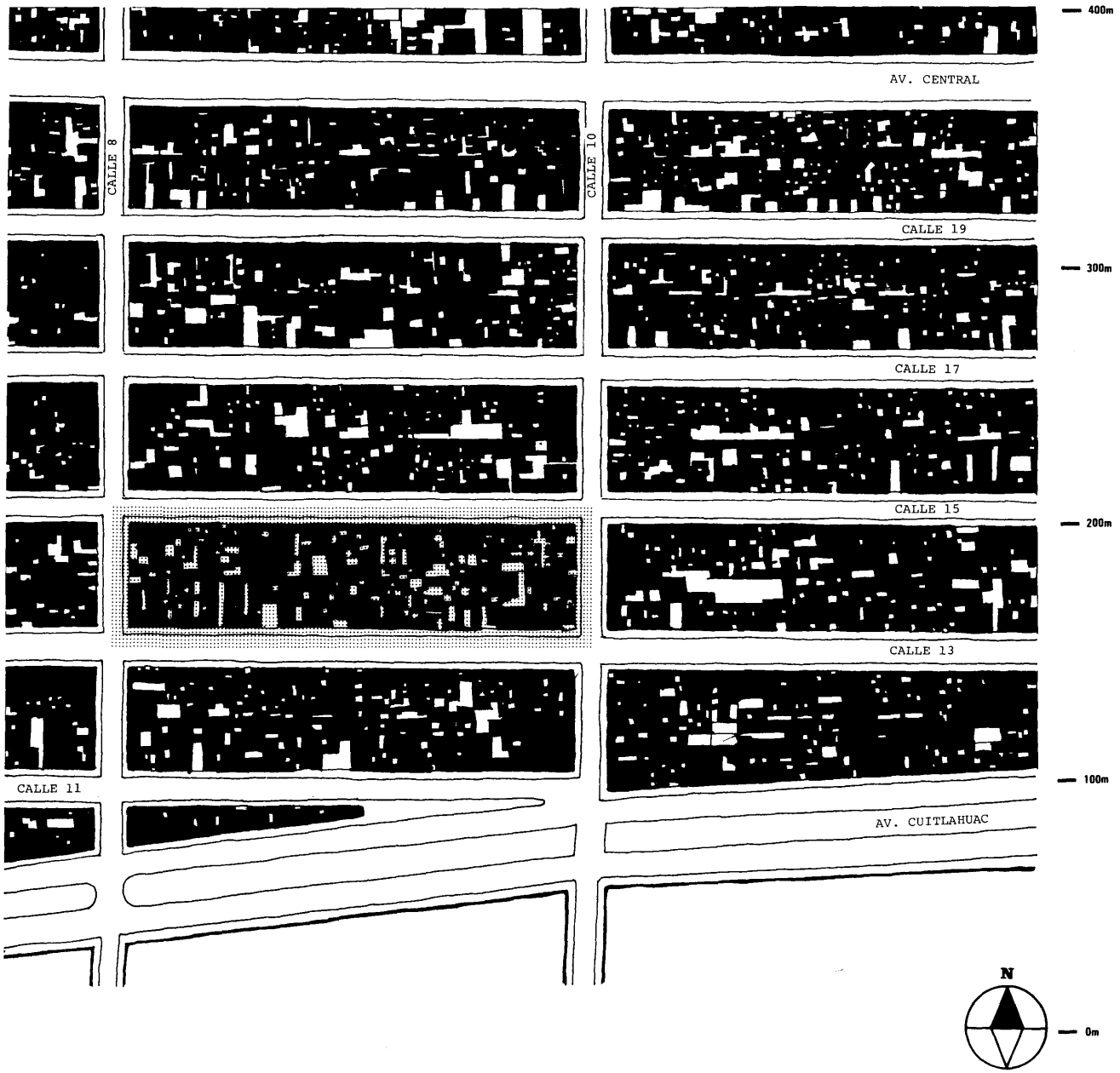


LOCALITY ANNUAL INCOME DISTRIBUTION
horizontal: percentages vertical: dollars
Source: IX Censo General de la Poblacion, D.F. 1970



LOCALITY SEGMENT AIR PHOTOGRAPH

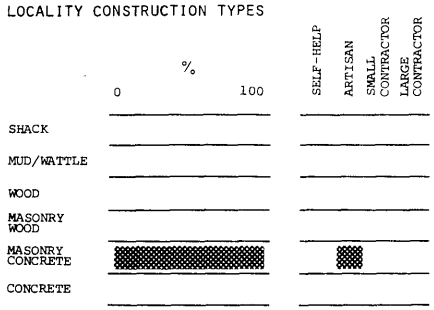
1:2500



LOCALITY SEGMENT PLAN

1:2500

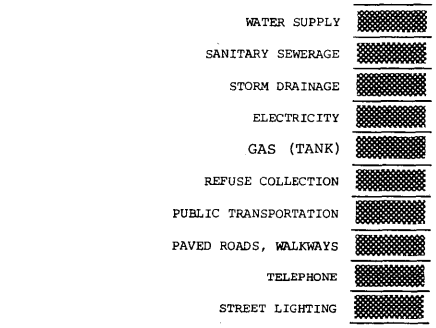
LOCALITY CONSTRUCTION TYPES



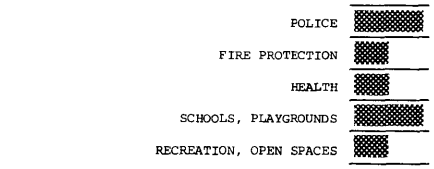
The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

Quality of information: Approximate

LOCALITY UTILITIES AND SERVICES



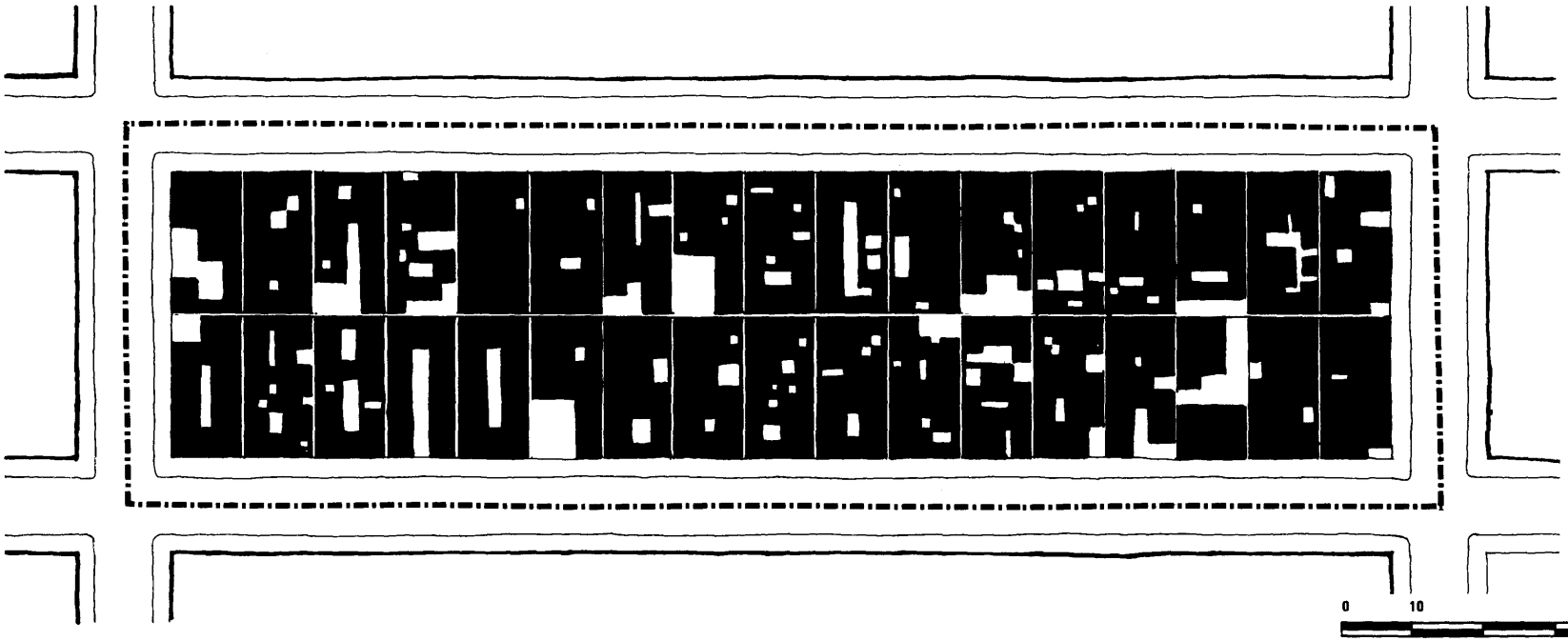
LOCALITY COMMUNITY FACILITIES



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

Quality of information: Approximate

SELECTED BLOCK



LOCALITY BLOCK PLAN

LOCALITY BLOCK: The grid type of layout offers a simple land subdivision: a series of identical lots in shape and dimension, and with similar possibilities of later modification or subdivision. Since the original subdivision was meant for housing construction, the predominant land use is residential. Street rights-of-way, (12 m.) observe local planning regulations. Note the high percentage of land for public areas, and the comparatively high population density resulting from the homogeneous, compact, dwelling construction.

LOCALITY BLOCK LAND UTILIZATION DATA

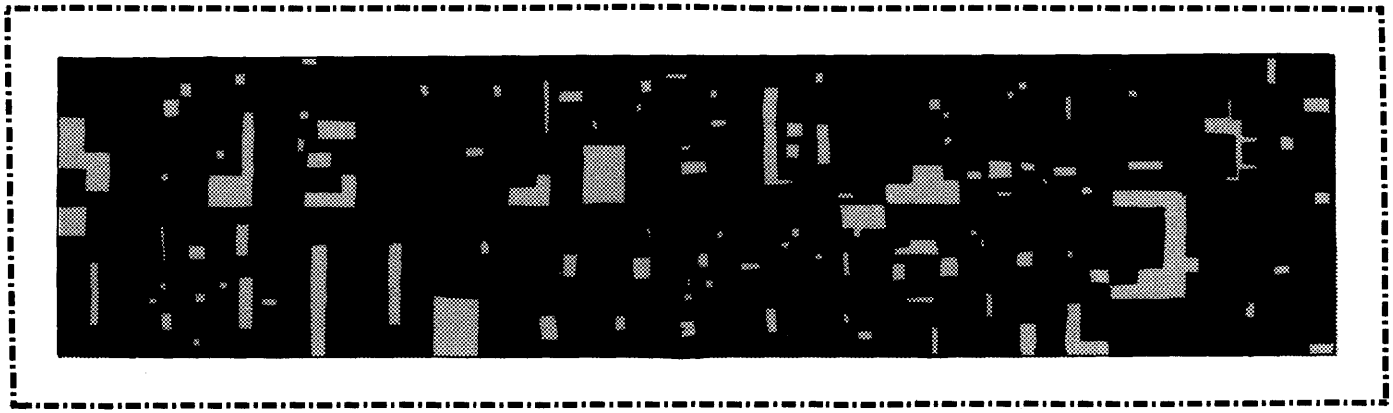
DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	34	0.960	35.41
DWELLING UNITS	46	0.960	44.79
PEOPLE	390	0.960	410.00

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.280	29.16
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	0.680	70.84
SEMI-PRIVATE (cluster courts)	-	-
TOTAL	0.960	100.00

NETWORK EFFICIENCY

$$R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 245.8 \text{ m/Ha.}$$

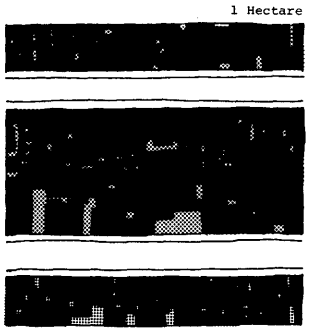
AVERAGE LOT AREA = 282.5 m^2



1:1000

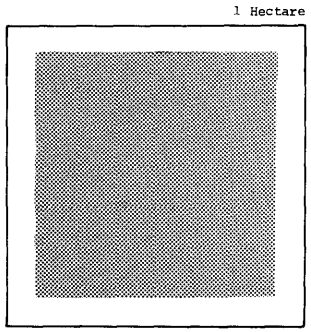
LOCALITY BLOCK LAND UTILIZATION

LAND UTILIZATION DIAGRAMS



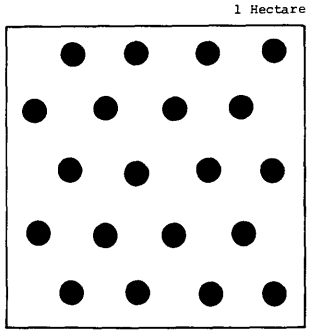
PATTERN

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



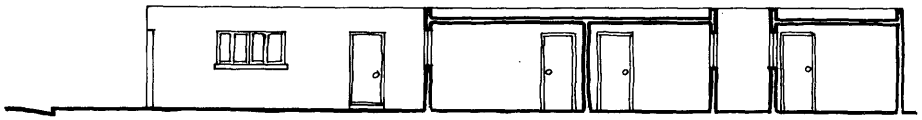
PERCENTAGES

Streets/Walkways	30
Playgrounds	-
Cluster Courts	-
Dwellings/Lots	70

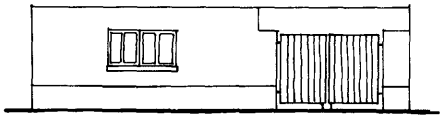


DENSITY Persons/Hectare 410

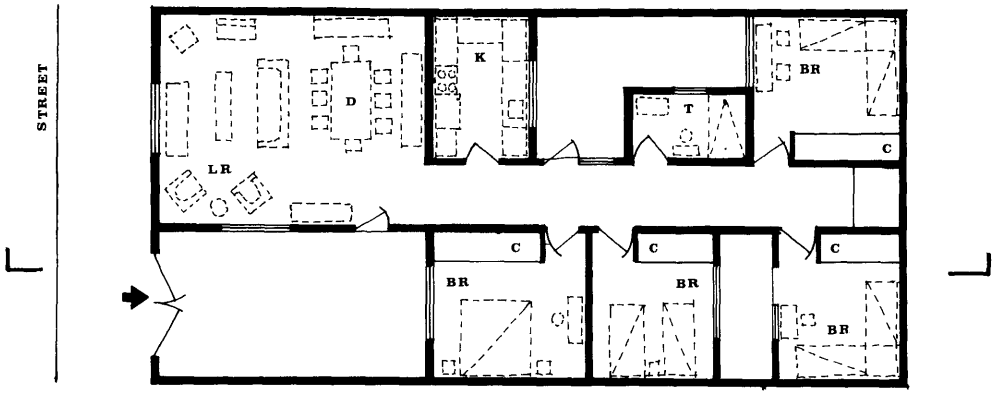
20 Persons



SECTION



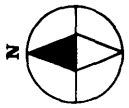
ELEVATION

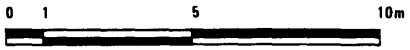


PLAN

KEY

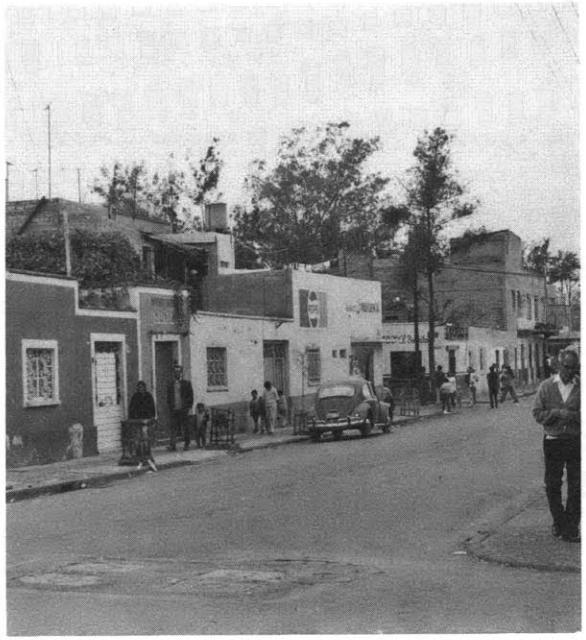
LR	Living Room
D	Dining/Eating Area
BR	Bedroom
K	Kitchen/Cooking Area
T	Toilet/Bathroom
L	Laundry
C	Closet
S	Storage
R	Room (multi-use)

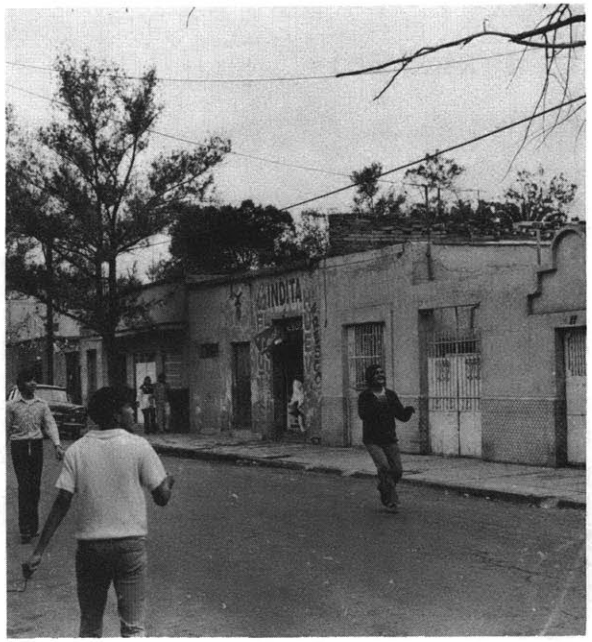




1:200

TYPICAL DWELLING





PRO HOGAR, Mexico City: Along the streets are seen the typical one family, one story dwellings. Small shops are scattered in the locality, some as an extension or adaptation of the dwelling. Notice the many trees, the absence of automobiles and dominance of pedestrians.

PHYSICAL DATA
(related to dwelling and land)

DWELLING UNIT	
type:	HOUSE
area (sq m):	150-200
tenure:	OWNERSHIP
LAND/LOT	
utilization:	PRIVATE
area (sq m):	200
tenure:	OWNERSHIP
DWELLING	
location:	INTERMEDIATE RING
type:	ROW
number of floors:	ONE/TWO
utilization:	SINGLE FAMILY
physical state:	FAIR TO GOOD
DWELLING DEVELOPMENT	
mode:	INCREMENTAL
developer:	PRIVATE
builder:	ARTISAN
construction type:	PERMANENT MATERIALS
year of construction:	1950's
MATERIALS	
foundation:	STONE/CONCRETE
floors:	CONCRETE WITH FINISHINGS
walls:	CONCRETE BLOCKS/BRICKS
roof:	CONCRETE SLAB
DWELLING FACILITIES	
wc:	1
shower:	1
kitchen:	1
rooms:	3-4
other:	

SOCIO-ECONOMIC DATA
(related to user)

GENERAL: SOCIAL	
user's ethnic origin:	-
place of birth:	STATE OF MEXICO, FEDERAL DISTRICT
education level:	92 % LITERATE
NUMBER OF USERS	
married:	2
single:	1
children:	5
total:	8
MIGRATION PATTERN	
number of moves:	3
rural - urban:	1940's
urban - urban:	1950's
urban - rural:	-
why came to urban area:	EMPLOYMENT
GENERAL: ECONOMIC	
user's income group:	MODERATE LOW
employment:	INDUSTRY, SERVICES
distance to work:	5 - 10 KM.
mode of travel:	PUBLIC TRANSPORTATION/AUTOMOBILE
COSTS	
dwelling unit:	$ 5000
land - market value:	$ 30 - $ 40 / m^2
DWELLING UNIT PAYMENTS	
financing:	SELF FINANCED
rent/mortgage:	$ 20 - $ 28 / MONTH
% income for rent/mortgage:	20 %

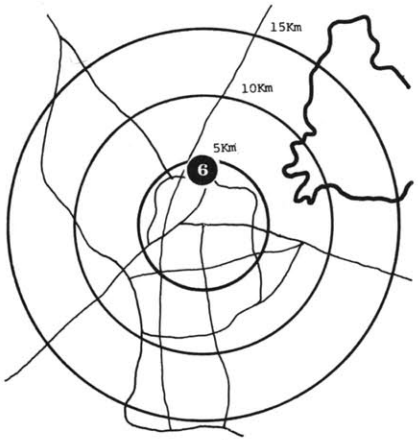
LOCALITY SOURCES

Plan:	*(approximate) Compania Mexicana de Aerofoto. Aerial photograph. 1972.*
Land Use Pattern:	*(accurate) Estudio Zonal de la De_legacion Atzcapozalco. Direccion General de Planificacion. Oficina del Plano Regulador. DDF. 1972.*
Circulation Pattern:	*(approximate) Field Surveys, J. Bazant, 1974.*
Segment Plan:	*(accurate) Proyecto de Planificacion para la Colonia Pro Hogar. Direccion General de Obras Publicas. Sub Direccion de Planeacion. Oficina del Plano Regulador. DDF. Plano archivo no. 267. 1951.*
Block Plan:	*(accurate) IBID*
Block Land Utilization:	*(approximate) Field surveys, J. Bazant, 1974.*
Typical Dwelling:	*(approximate) IBID*
Physical Data:	*(accurate) Op. Cit. Estudio Zonal...*
Socio-Economic Data:	*(approximate) Field surveys, J. Bazant, 1974.*
Photographs:	*J. Bazant, C.M.A.(aerial)*
General Information:	*IX Censo General de la Poblacion 1970. Distrito Federal. Secretaria de Industria y Comercio. 1971.*

Censo de la Extension Territorial del Distrito Federal.1970. Secretaria de Industria y Comercio.

6 VALLEJO
Mexico City

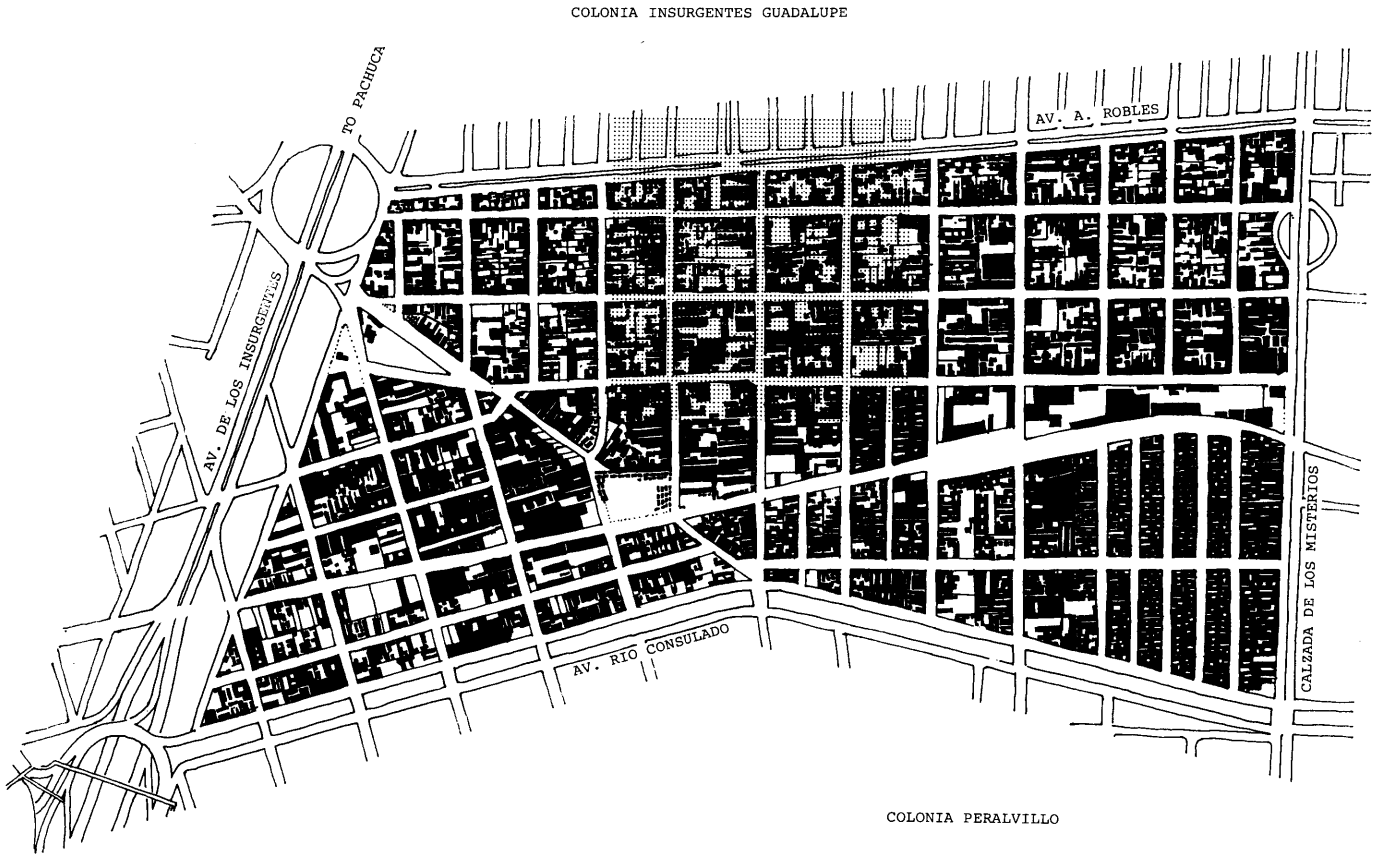
PRIVATE, LOW INCOME, WALK-UP APARTMENTS



LOCATION: This area is located in the northern part of the city's central ring. It belongs to the Delegacion Gustavo A. Madero in the Federal District. It covers a surface of 91 hectares.

ORIGINS: At the turn of the century, the only road linking the city center with the wellknown Schrine of the Guadalupe Virgin in the northern part of the city, was the Calzada de los Misterios. As the city expanded in the following decades, this road directed the north development. In 1910-1920 the now Vallejo colonia had residential and commercial buildings along this road. In the decades to come expansion consolidated this axis of growth and in the 1930's Vallejo was developed. The existing railroad line that crossed the colonia's site stimulated the settlement of industries. Due to a lack of an effective City Master Plan, light industries began spreading throughout the area, mixing with the city's residential/commercial growth. During this time, this northern part of the city played an important role in its growth by concentrating the industrial activities. The area has now becomed basically stagnant.

VALLEJO, Mexico City: (left) The aerial photograph show the pattern of the city's gradual expansion, occurred in the early 1940's. This fractional urban development is observed by the different layout patterns and the diversity of land use (scale of the photograph 1: 10 000) (1972).

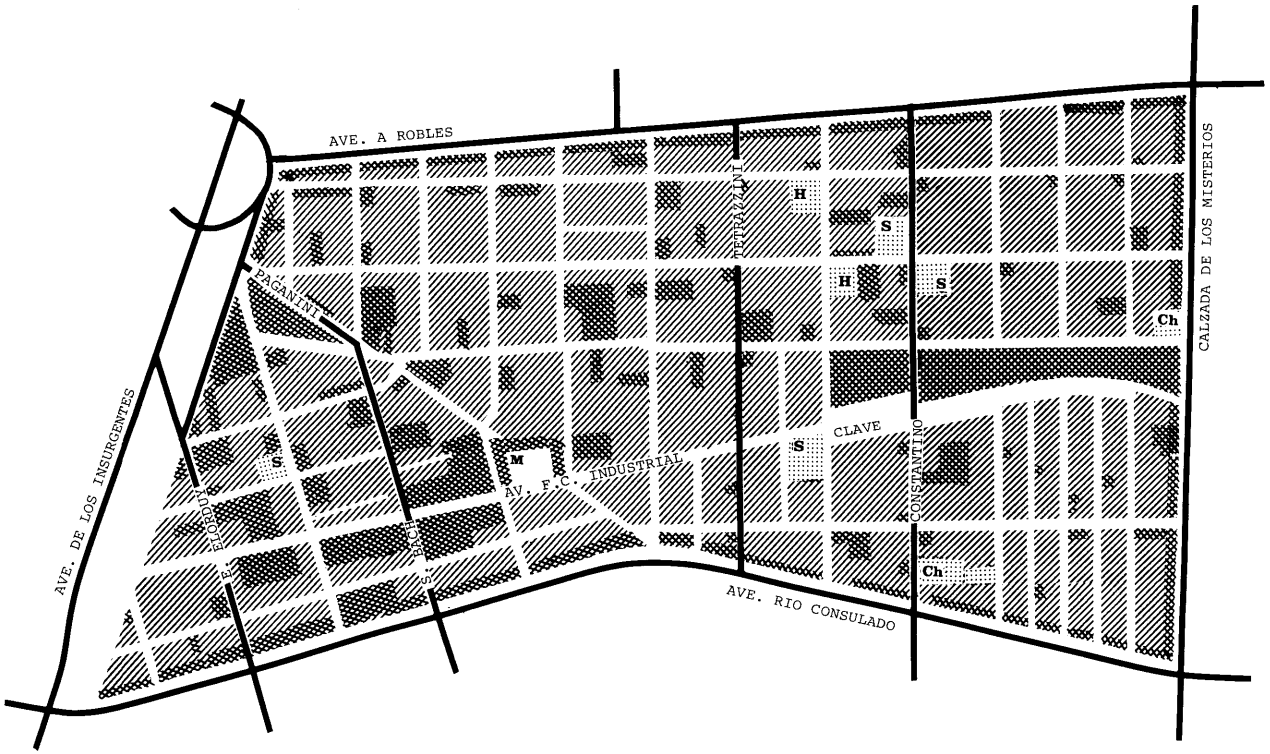


LOCALITY PLAN

SELECTED SEGMENT

LAYOUT: Vallejo's layout is principally determined by the Calzada de los Misterios on its east boundary; by the Consulado River -now in pipes and forming an avenue- on the south boundary; a railroad that crosses the colonia; and an existing neighboring Peralvillo colonia layout. The oldest part of Vallejo is the south-eastern section developed in the 1920's and follows a grid pattern; while the rest of the colonia has a Spanish type of grid. It can be observed that there are two basic aspects of the Vallejo development. The north, north-eastern area was developed considering the existing south-east part; while all the south, south-west was developed taken into consideration the colonia Peralvillo layout. Note that the Insurgentes Avenue was developed after the 1930's, and it is clear that the imposition of this avenue cut the colonia into two sections.

LAND USE: The Vallejo Colonia has mixed land use. Each block has generally industrial, commercial and residential land uses. This particular condition has influenced not only the colonia's general layout, but also it has been decisive in the block's lot subdivision. It can be seen -in the block analysis- the different shapes and dimensions an average block offers according to the lot's uses. The community services in the colonia are: 4 schools, 2 health centers, 2 churches, and no recreation or public areas.



AREAS

- RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- OPEN SPACES

KEY

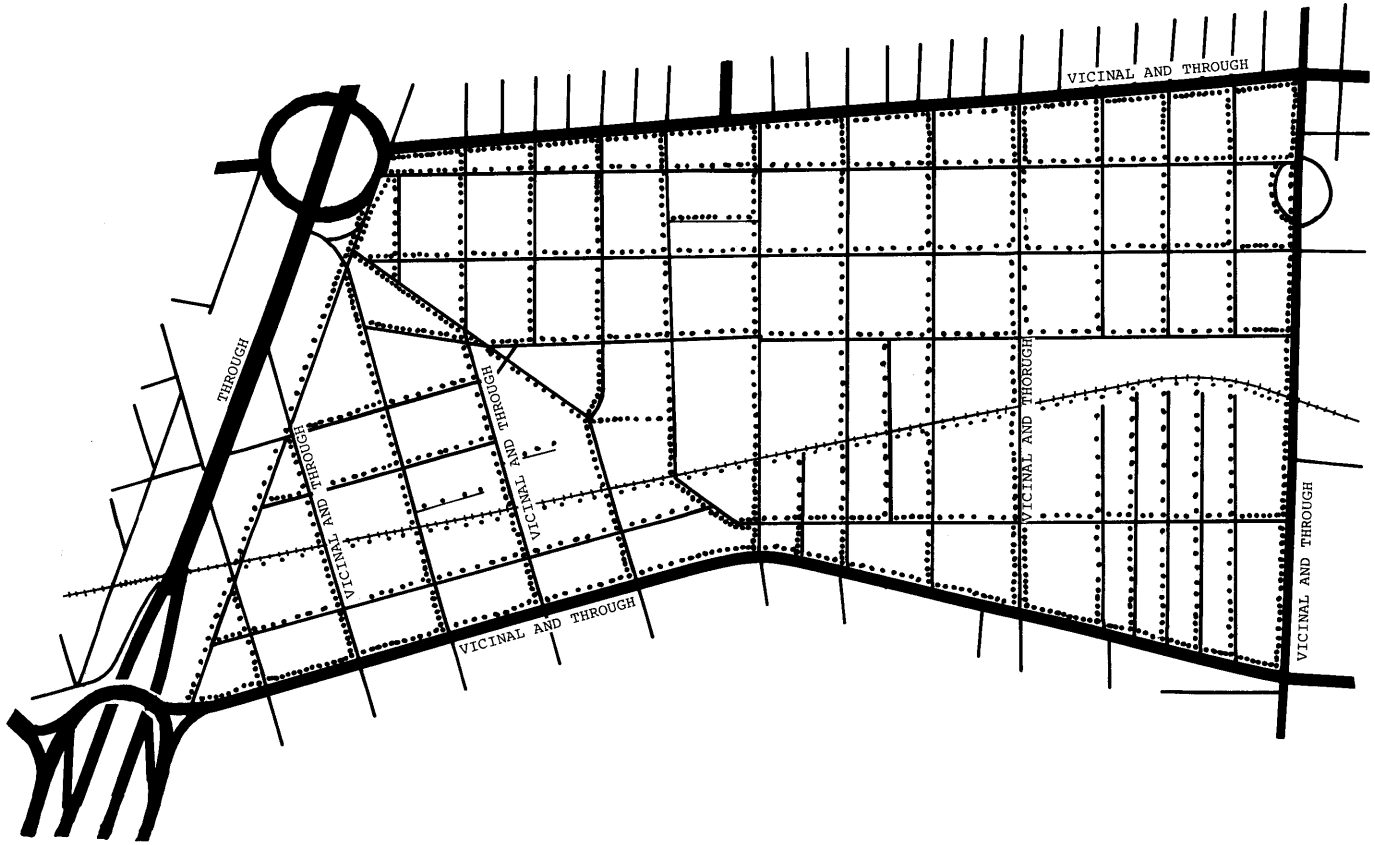
- **Pk** Parking
- **P** Police
- **F** Fire Department
- **S** School
- **Ch** Church
- **R** Recreation
- **L** Library
- **U** University
- **H** Health
- **PO** Post Office
- **SS** Social Services
- **M** Market
- **C** Cemetery
- Bus
- Rapid Transit

LOCALITY LAND USE PATTERN

N

0 100 500m

1:10000



KEY

VEHICULAR

PEDESTRIAN

CIRCULATION: The site's layout was principally developed for vehicular circulation, according to the traditional layout pattern. Vehicular circulation is basically concentrated in the colonia's peripherical arteries, leaving the internal streets for local service; except in the case where streets are used as bus routes. Vallejo zone is served by 17 bus routes and 4 troley bus routes; local population therefore has no trouble in reaching adequate transportation by foot. Pedestrians commonly use sidewalks to move around the colonia; with natural congestion points where bus stops and/or commercial activities take place.

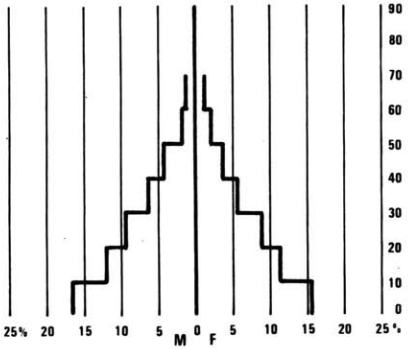
N

0 100 500m

1:10000

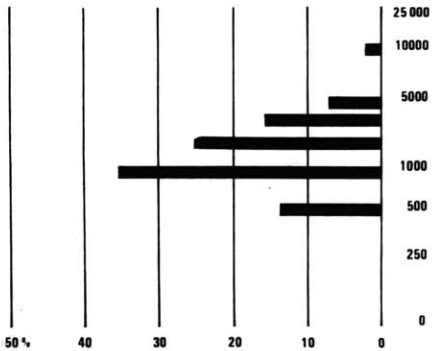
LOCALITY CIRCULATION PATTERN

POPULATION: According to 1970's population census of the Delegacion, of the 35 000 total population, 55.7 % are below 20 years; and 17.2 % range from 20 to 30 years. 51 % of the total population is masculine. The average population group if 15 to 20 years.



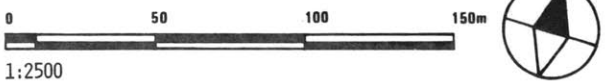
LOCALITY POPULATION DISTRIBUTION
horizontal: percentages vertical: ages
males: M females: F
Source: IX Censo General de la Poblacion, D.F. 1970

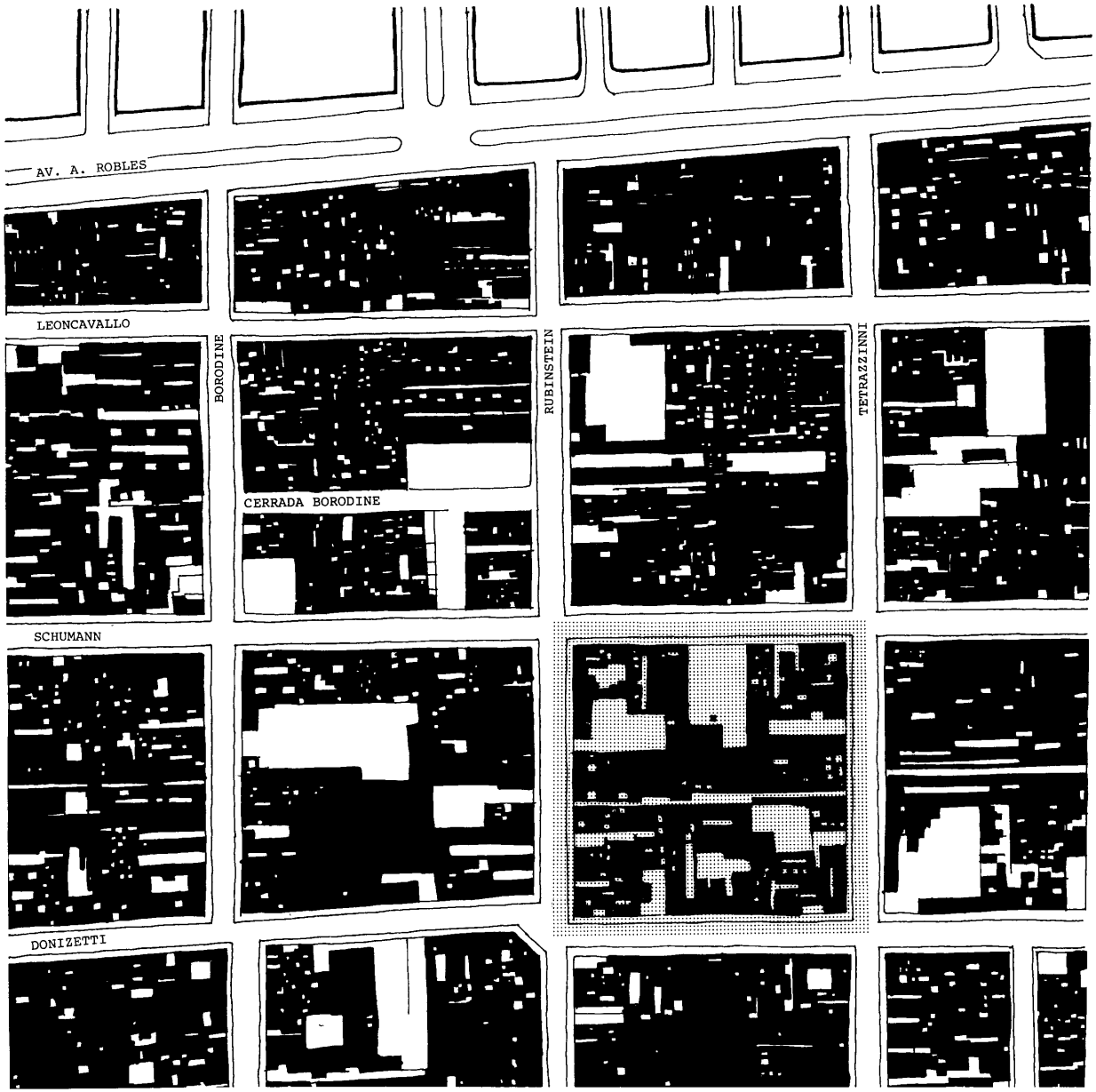
INCOME: The average annual income of the Delegacion's economically active population is $ 960 US. Only 3 % of the population aerns more than $ 5 000 US annually; and 13 % earns less than average annual income.



LOCALITY ANNUAL INCOME DISTRIBUTION
horizontal: percentages vertical: dollars
Source: IX Censo General de la Poblacion, D.F. 1970

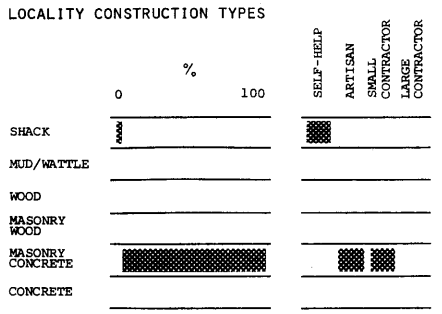
LOCALITY SEGMENT AIR PHOTOGRAPH





LOCALITY SEGMENT PLAN

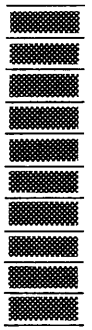
LOCALITY CONSTRUCTION TYPES



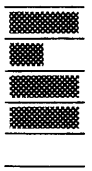
The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

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

SELECTED BLOCK

LOCALITY BLOCK: The Spanish type of layout gives apparently a very rigid and regular lot subdivision pattern. Nevertheless, the original lot subdivisions was regular, due to land-market demands, later further divisions have been taking place in the lots. The result is that the lots in an average block actually are a wide variety of shapes and dimensions; according to the use of the lots which also varies considerably within the same block. Medium to small lots are mostly for residential use; while larger lots are usually for commercial or industrial purposes. Street widths observe local planning regulations. Twenty-three percent of the block's total area is destined for public use. A large part of lots remain unconstructed, however, there are a large number of dwelling units per block, which result in a medium-high density.

LOCALITY BLOCK LAND UTILIZATION DATA

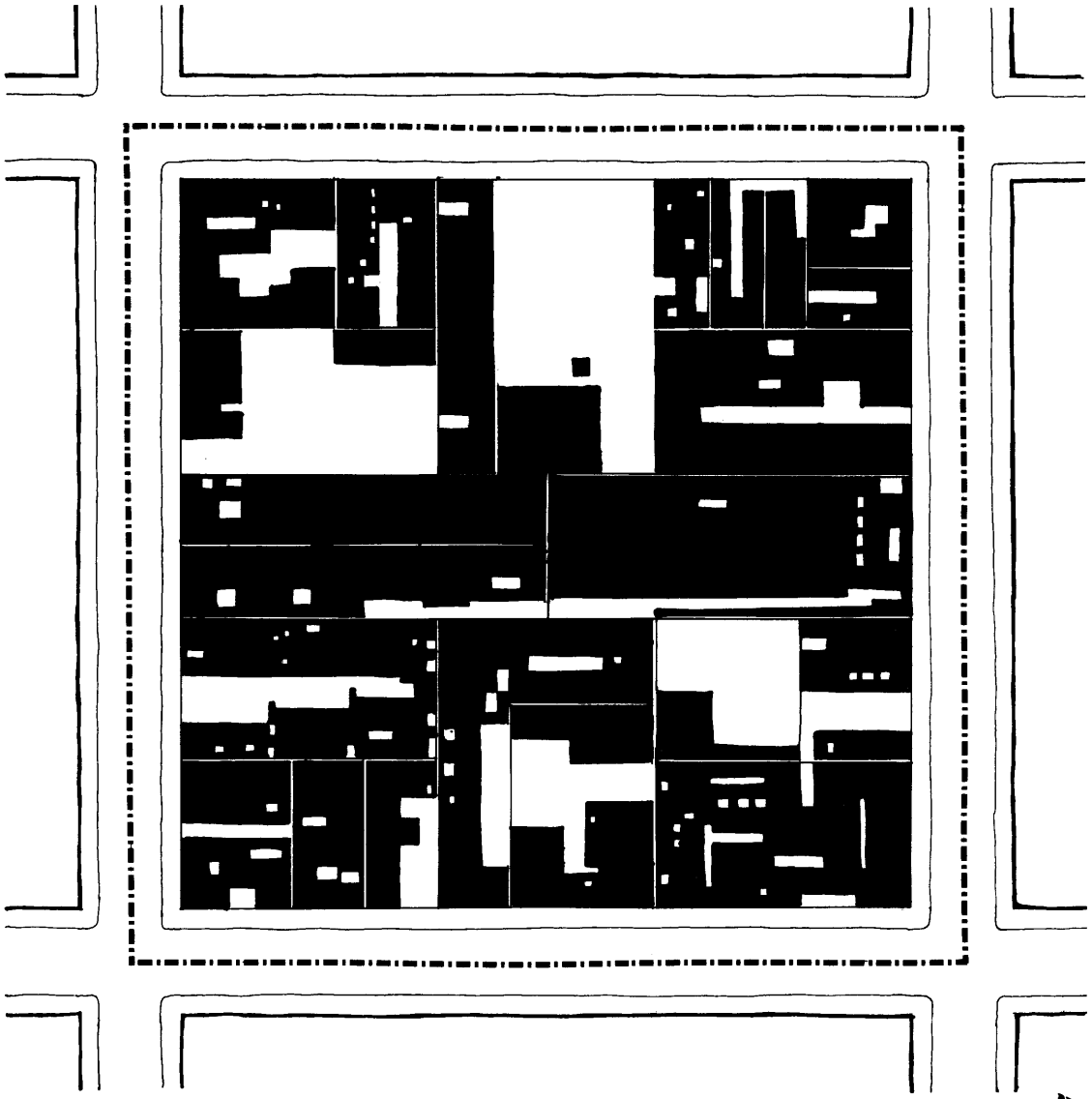
DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	22	1.299	16.93
DWELLING UNITS	91	1.299	70.05
PEOPLE	550	1.299	423.00

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.299	23.02
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	1.000	76.98
SEMI-PRIVATE (cluster courts)	-	-
TOTAL	1.299	100.00

NETWORK EFFICIENCY

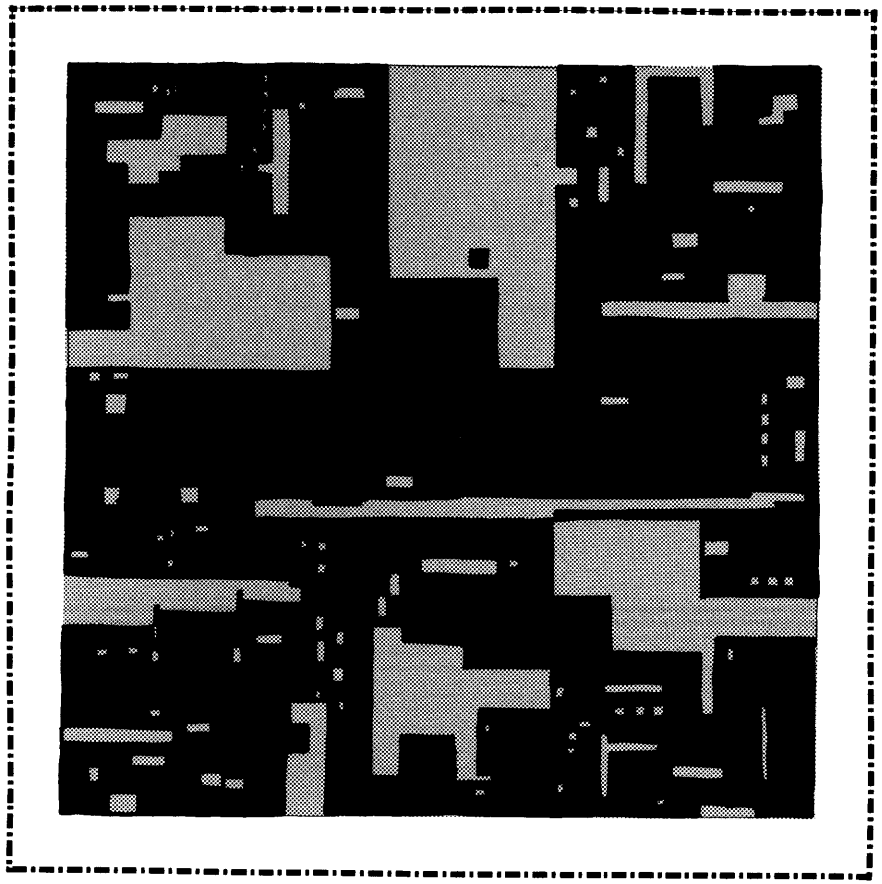
$$R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 175.5 \text{ m/Ha.}$$

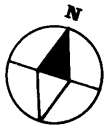
AVERAGE LOT AREA = 590.5 m^2



LOCALITY BLOCK PLAN

1:1000



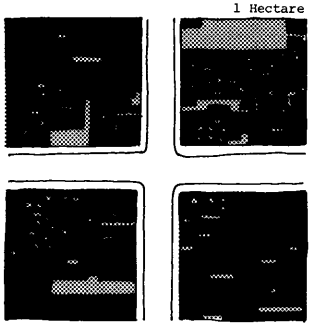


1:1000

LOCALITY BLOCK LAND UTILIZATION

'LAND UTILIZATION DIAGRAMS

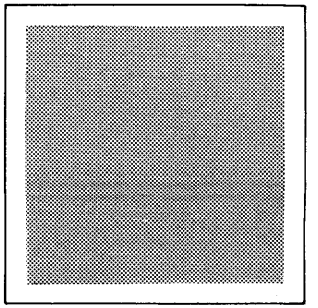
1 Hectare



PATTERN

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

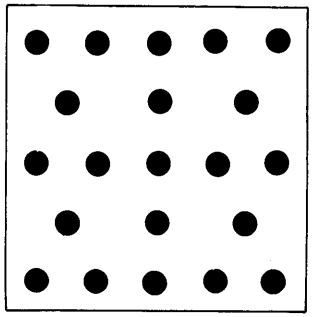
1 Hectare



PERCENTAGES

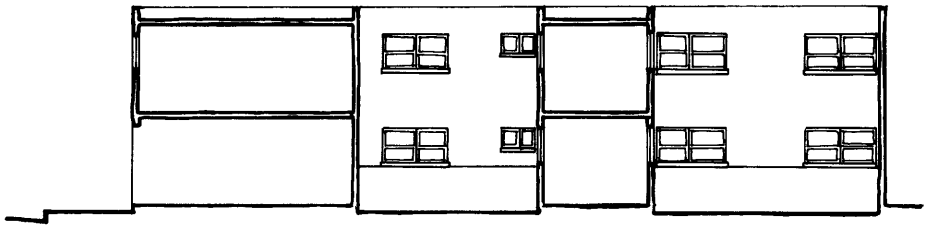
Streets/Walkways	23
Playgrounds	–
Cluster Courts	–
Dwellings/Lots	77

1 Hectare

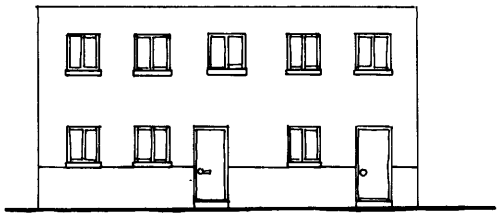


DENSITY Persons/Hectare 423

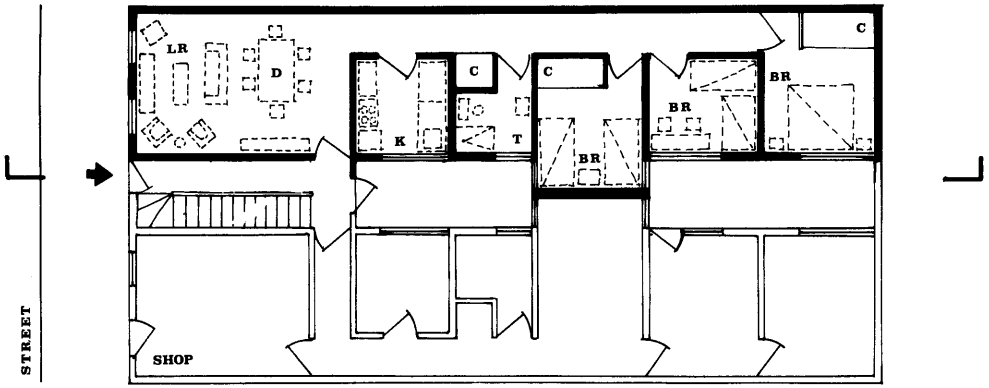
● 20 Persons



SECTION



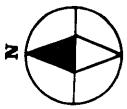
ELEVATION

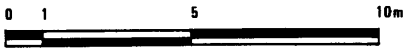


PLAN

KEY

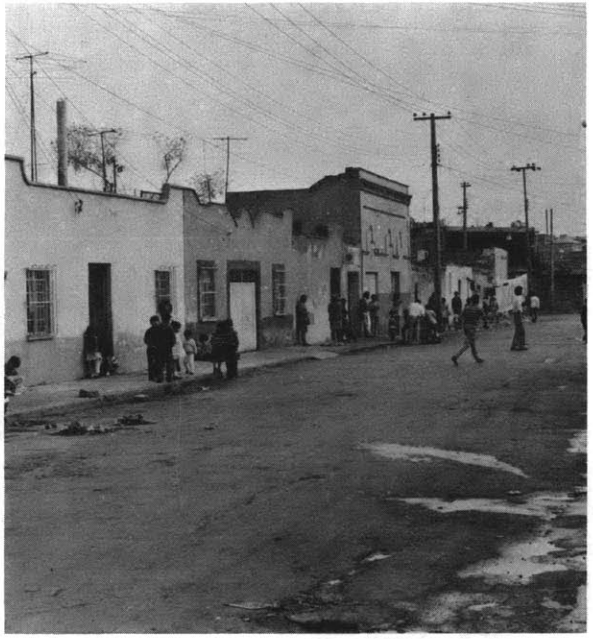
LR Living Room
D Dining/Eating Area
BR Bedroom
K Kitchen/Cooking Area
T Toilet/Bathroom
L Laundry
C Closet
S Storage
R Room (multi-use)





1:200

TYPICAL DWELLING



PHYSICAL DATA
(related to dwelling and land)

DWELLING UNIT	
type:	APARTMENT
area (sq m):	100
tenure:	OWNERSHIP
LAND/LOT	
utilization:	PRIVATE
area (sq m):	200 - 400
tenure:	OWNERSHIP
DWELLING	
location:	INTERMEDIATE RING
type:	WALK-UP APARTMENT
number of floors:	2
utilization:	MULTIPLE: FAMILY
physical state:	FAIR TO BAD
DWELLING DEVELOPMENT	
mode:	INCREMENTAL
developer:	PRIVATE
builder:	SMALL CONTRACTOR
construction type:	PERMANENT MATERIALS
year of construction:	1950
MATERIALS	
foundation:	CONCRETE
floors:	CONCRETE
walls:	BRICK
roof:	CONCRETE
DWELLING FACILITIES	
wc:	1
shower:	1
kitchen:	1
rooms:	3-4
other:	

SOCIO-ECONOMIC DATA
(related to user)

GENERAL: SOCIAL	
user's ethnic origin:	-
place of birth:	D.F.,STATE OF GUANAJUATO
education level:	92 % LITERATE
NUMBER OF USERS	
married:	2
single:	-
children:	5
total:	7
MIGRATION PATTERN	
number of moves:	3
rural - urban:	1940's
urban - urban:	1950's
urban - rural:	
why came to urban area:	EMPLOYMENT
GENERAL: ECONOMIC	
user's income group:	MODERATE LOW
employment:	INDUSTRY,SERVICES
distance to work:	5 KM.
mode of travel:	PUBLIC TRANSPORTATION/AUTOMOBILE
COSTS	
dwelling unit:	$ 4000
land - market value:	$ 50 / m^2
DWELLING UNIT PAYMENTS	
financing:	SELF FINANCED
rent/mortgage:	$ 16 - $ 32 / MONTH
% income for rent/mortgage:	20 %

VALLEJO, Mexico City: The photographs show different types of dwellings in the locality: the most common are the walk-up apartments (left); there are one story dwellings which have often been adapted as tenements (right). The phto in the center shows squatters invading a wide sidewalk, notice the contrast with the middle income dwellings (1974).

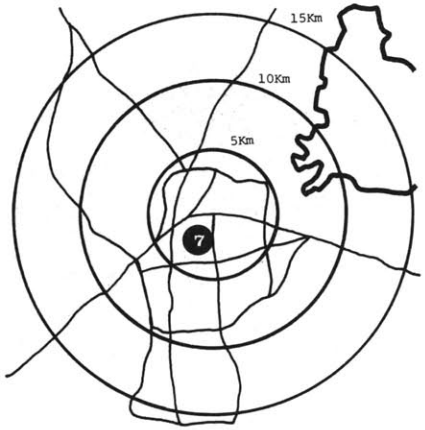
LOCALITY SOURCES

Plan:	*(approximate) Compania Mexicana de Aerofoto. Aerial photograph. 1972.*
Land Use Pattern:	*(accurate) Estudio Zonal de la Delegacion Gustavo A. Madero. Direccion General de Planificacion. Oficina del Plano Regulador. D.D.F. 1973.*
Circulation Pattern:	*(approximate) Field surveys, J. Bazant 1974.*
Segment Plan:	*(accurate) Plano de Conjunto de Planificacion de la zona comprendida por Calzada Vallejo, Insurgentes, Ronda, y Tamagno. Direccion General de Obras Publicas. Sub Direccion de Planeacion. Oficina del Plano Regulador. DDF. 1949.*
Block Plan:	*(accurate) IBID*
Block Land Utilization:	*(approximate) Field survey, J.Bazant 1974.*
Typical Dwelling:	*(approximate) IBID*
Physical Data:	*(accurate) Op. Cit. Estudio Zonal...*
Socio-Economic Data:	*(approximate) Field Surveys, J.Bazant 1974.*
Photographs:	*J.Bazant, C.M.A.(aerial)*
General Information:	*IX Censo General de la Poblacion 1970. Distrito Federal. Secretaria de Industria y Comercio. 1971.*

Censo de la Extension Territorial del Distrito Federal 1970. Secretaria de Industria y Comercio.

7 LAS VIZCAINAS
Mexico City

PRIVATE, LOW-INCOME, ROW ROOMS



LOCALITY AIR PHOTOGRAPH

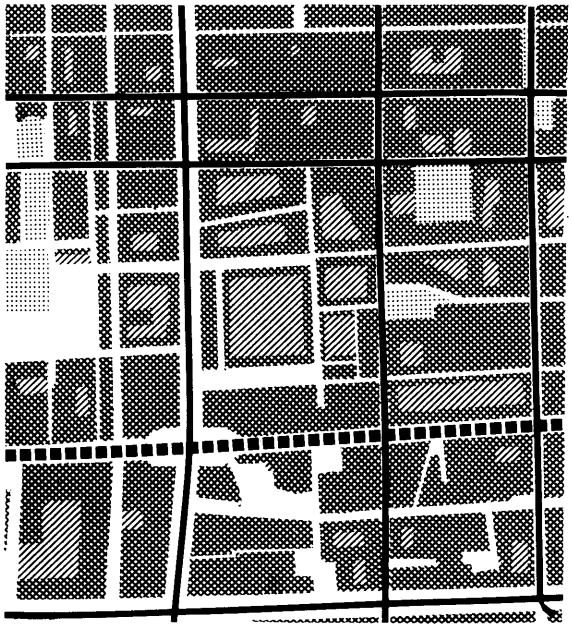
LOCALITY PLAN

SELECTED SEGMENT

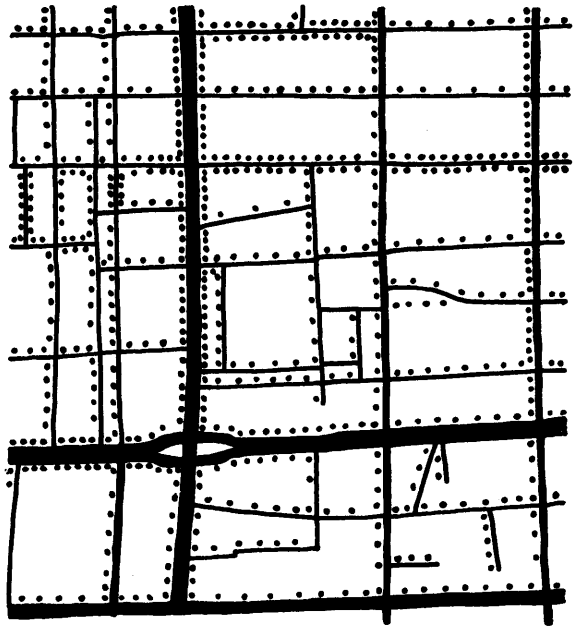
LOCATION: It is located two kilometers from the center of Mexico City in one of the oldest areas of the city (15th Century). The primary element in this locality is the school building itself, which is representative of the area. Within the building, which occupies a large whole block, there are courts, dormitories, classrooms, a chapel, a cemetary, administration, rooms, shops, and another 120 different spaces for several uses. (Gonzalo Obregon, "El Real Colegiode San Ignacio," 1960, Porua, Mexico.) Single rooms or "accesorias," were constructed in the periphery of the block to be rented to the public, small artisans, or merchants. The shops are located on the first floor and the houses upstairs; this arrangement is locally recognized as "taza y plato" (cup and saucer). The building at present is still used as a school and for residences.

ORIGINS: School founded by merchants from Vizcaya (now province of Spain), in July, 1734, for the widows and young girls of Spanish decendents. Later, the admission of other girls from different citizenships were allowed. This building gives the name to the locality, "Area de las Vizcainas." Housing was constructed surrounding the school to be rented to artisans and small merchants.

LAYOUT: The locality area is a dense conglomeration of offices, commercial area and low income deteriorating residences. The layout was planned by the Spanish conquerors in an orthogonal grid, dividing the land in large square and rectangular lots. At that time this was the periphery of the city.



LOCALITY LAND USE PATTERN



LOCALITY CIRCULATION PATTERN

AREAS

- RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- OPEN SPACES

KEY

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

0 100 500m

1:10000

N

KEY

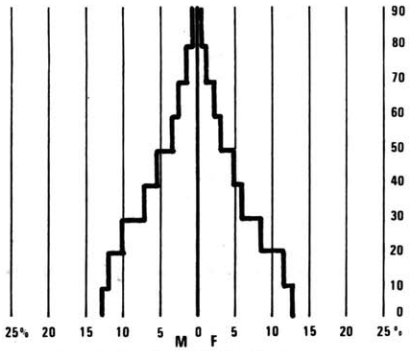
- VEHICULAR
- PEDESTRIAN

LAND USE: The area is hetergeneous in terms of activities. The Northern side is bordered by administrative and commercial uses. The east is dispersed with commercial and low income residences. The southern side is bordered by a very important street and the subway. The west, by the main commercial avenue in Mexico City. The locality is deteriorated because of its age and the controlled rents in the area which discourage housing investments by the owners.

CIRCULATION: The settlement has a high intensity of circulation, both pedestrian and vehicular. The locality is bounded on two sides by very heavy traffic routes and the subway. The narrower streets do not have, proportionally, the same intensity of vehicular traffic as the main streets.

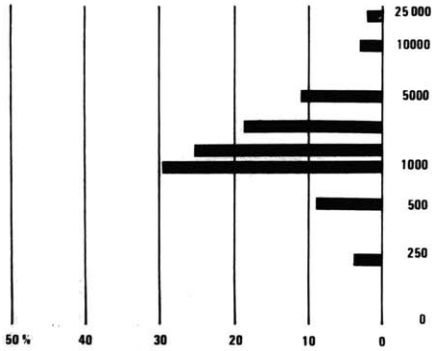
LOCALITY SEGMENT: The streets within the subdivision are typical of a well-planned Spanish layout. The subdivision inside the blocks are not so regular; with the exception of the block where las Vizcainas is located, the sizes of the courtyards are very big and the property is the block itself. This specific block is surrounded by streets, and bordering is a belt of construction, row rooms/residential, and inside is subdivided by the courts and groups of row rooms. The consequence of the large size of the blocks and the well-limited boundaries in the segment make possible range of private, semi-private, and public spaces. There is no semi-public land, with the exception of the plaza which is used for parking lot six days of the week, and on Sundays is used (by the dwellers) for recreation (soccer).

POPULATION: The age/sex pyramid for the "vizcainas area" is similar to all the low income areas in Mexico City, mainly young people, and children. The geographical movility is almost static; this settlement has been held by the same families for two generations.

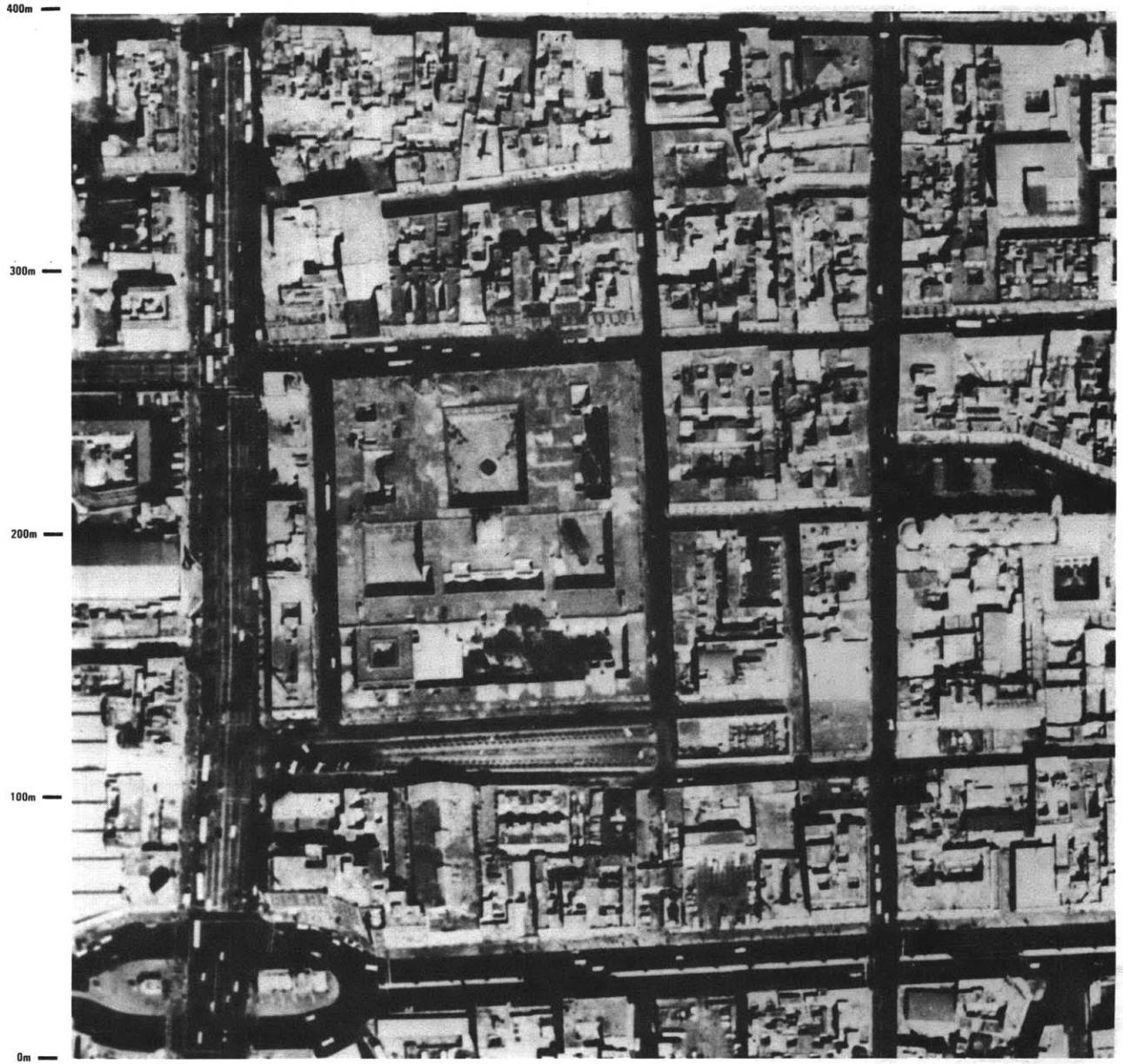


LOCALITY POPULATION DISTRIBUTION
horizontal: percentages vertical: ages
males: M females: F
Source: IX Censo General de Poblacion. 1970
Mexico, D.F., SIC/DGE.

INCOME: The estimate average for 1970 household income was about $2,500 U.S. per year, slightly higher than the "normal" average for this type of settlement.



LOCALITY ANNUAL INCOME DISTRIBUTION
horizontal: percentages vertical: dollars
Source: IX Censo General de Poblacion. 1970
Mexico, D.F., SIC/DGE.



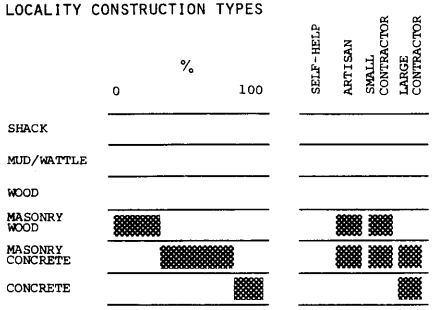
LOCALITY SEGMENT AIR PHOTOGRAPH

1:2500

LOCALITY SEGMENT PLAN

1:2500

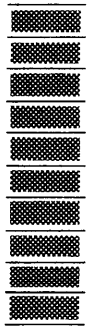
LOCALITY CONSTRUCTION TYPES



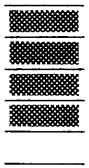
The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

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

THE BLOCK: The very dense occupation and large size of the land is evident from the plan of the three-story building shown. This degree of proximity implies a very personal relationship between neighbors. In addition to the dwellings on the periphery of the block, the school is shown which is in the center of the block. It is evident that the dwellings do not have a private open space.

LOCALITY BLOCK LAND UTILIZATION DATA

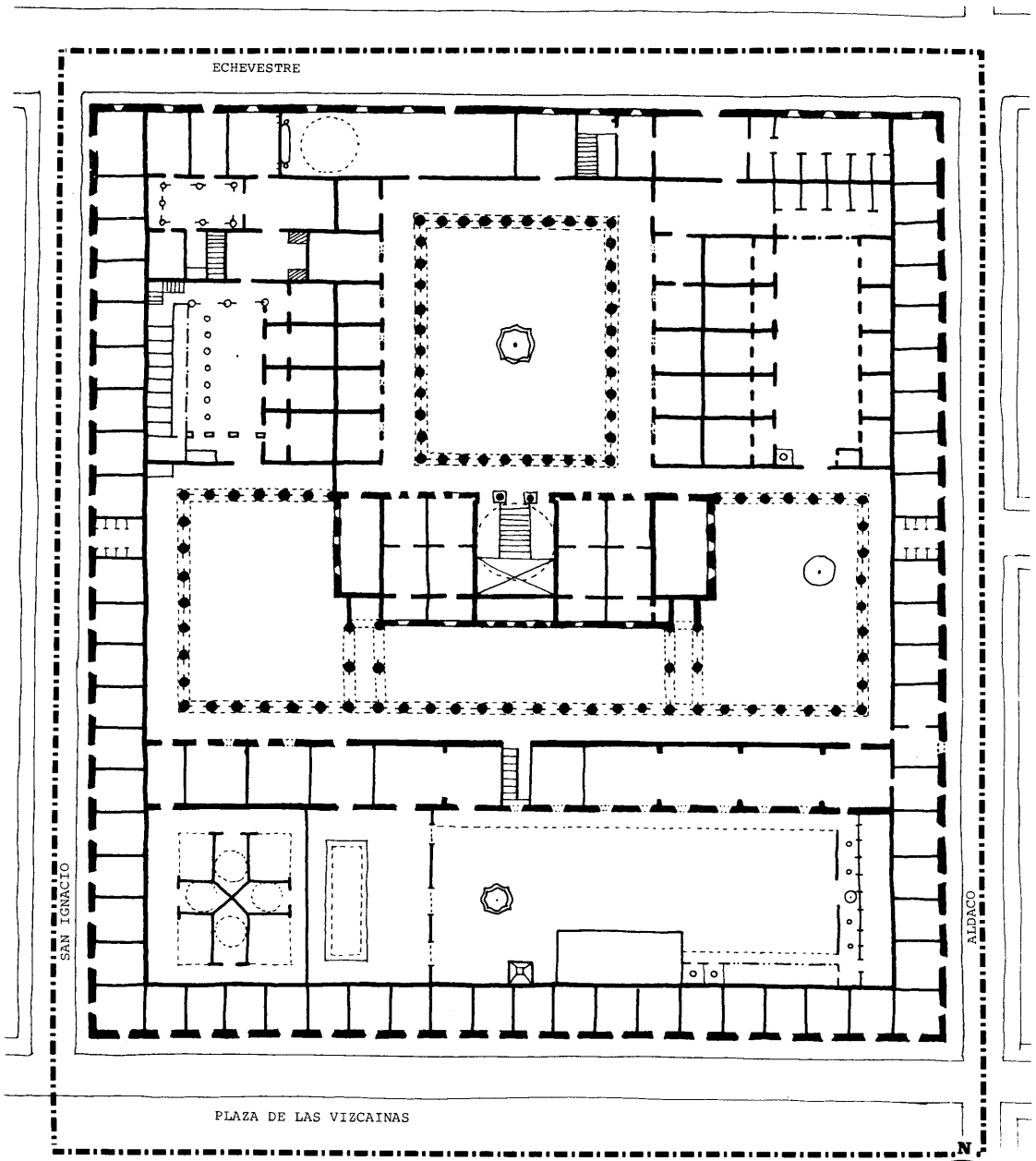
DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	1	2.09	-
DWELLING UNITS	-	2.09	-
PEOPLE	546	2.09	233
	546	0.28	1782

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.39	19
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	1.70	81
SEMI-PRIVATE (cluster courts)	-	-
TOTAL	2.09	100

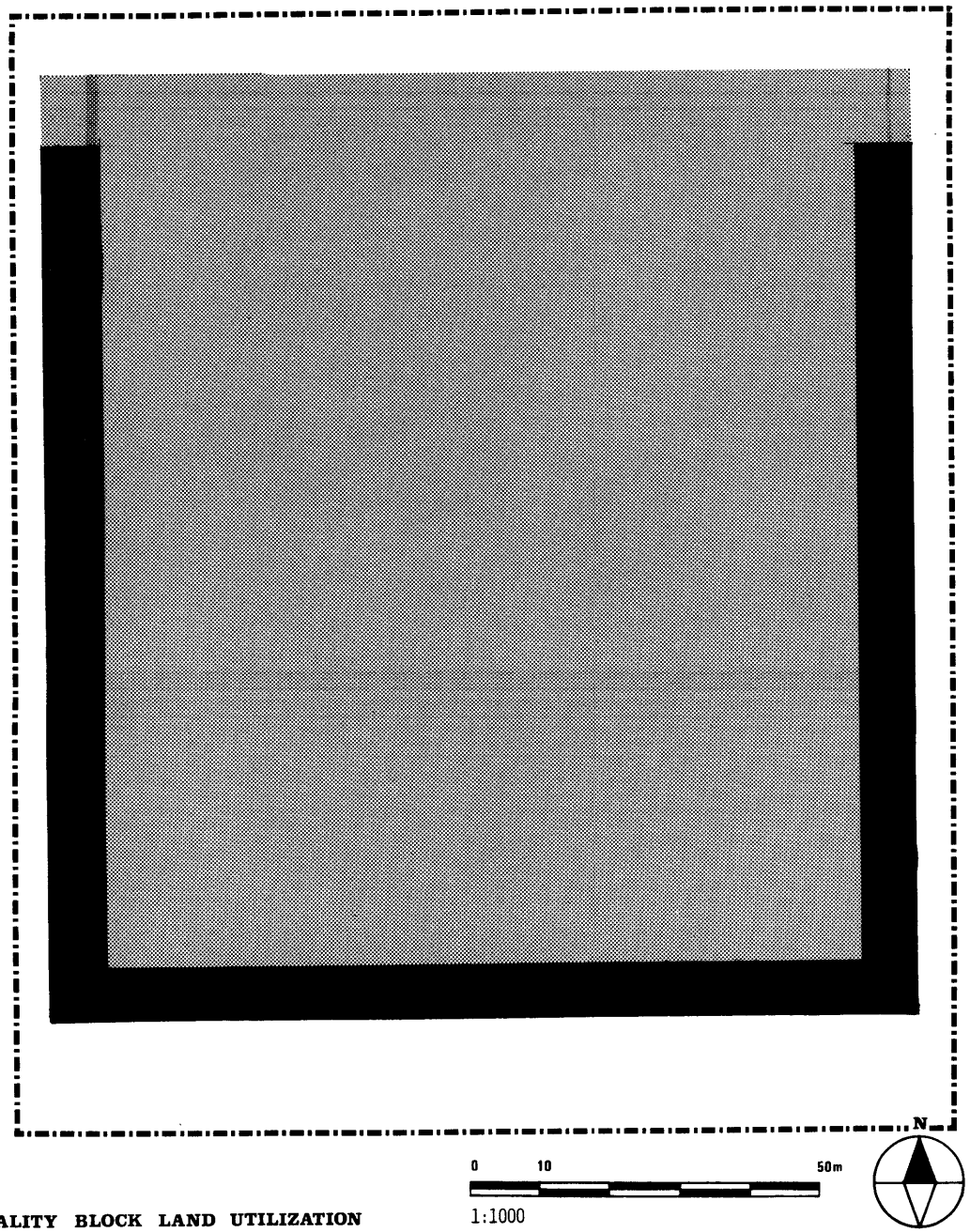
NETWORK EFFICIENCY

$$R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 277$$

AVERAGE LOT AREA = -



LOCALITY BLOCK PLAN GROUND FLOOR 1:1000



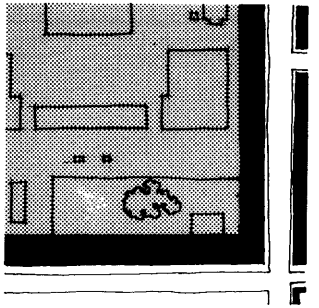
LOCALITY BLOCK LAND UTILIZATION

KEY

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

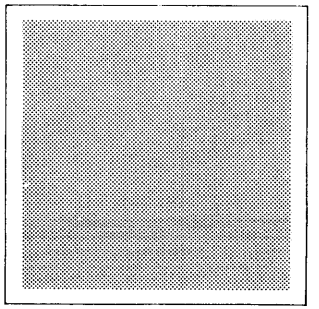
LAND UTILIZATION DIAGRAMS

1 Hectare



PATTERN

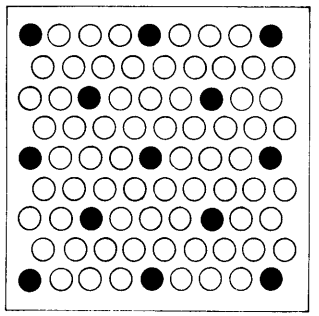
1 Hectare



PERCENTAGES

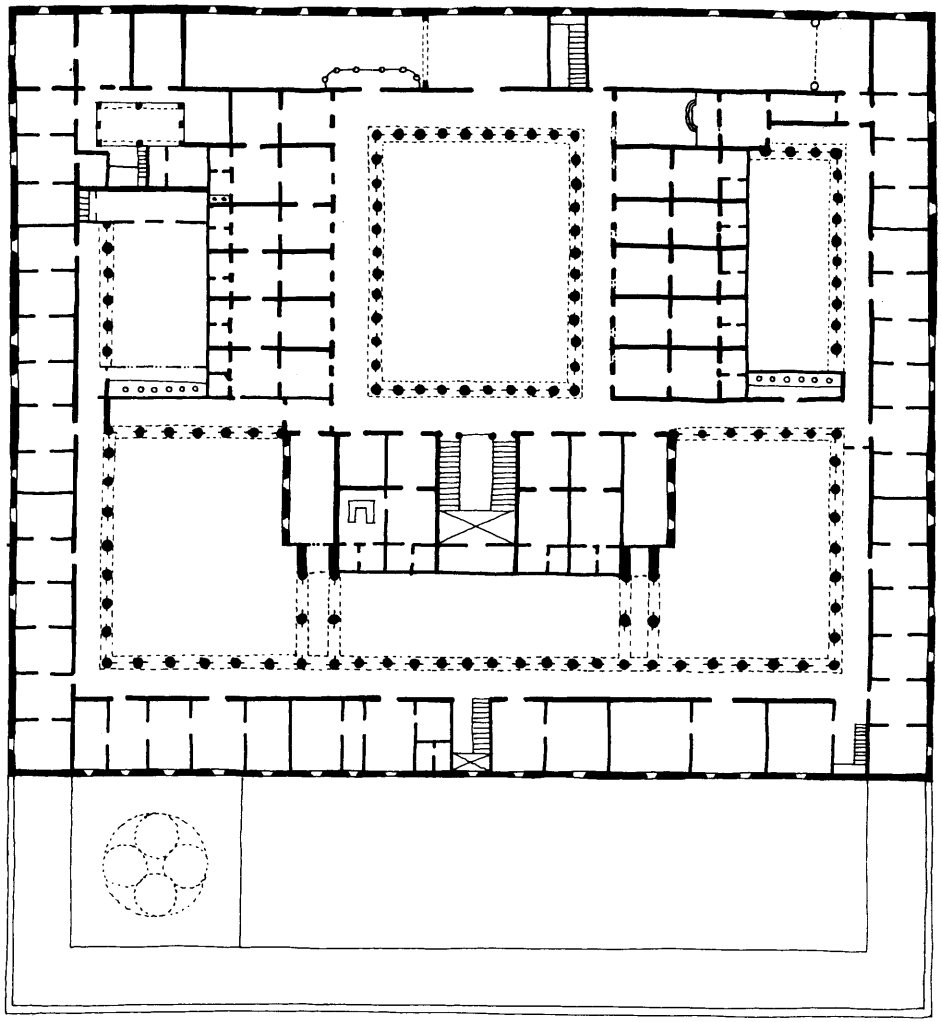
Streets/Walkways	19
Playgrounds	-
Cluster Courts	-
Dwellings/Lots	81

1 Hectare



DENSITY Persons/Hectare

● 20 Persons TOTAL AREA	233
○ 20 Persons ONLY RESIDENTIAL	1782



LOCALITY BLOCK UPPER FLOOR

PHYSICAL DATA
(related to dwelling and land)

DWELLING UNIT	
type:	ROOM
area (sq m):	96
tenure:	LEGAL RENTAL
LAND/LOT	
utilization:	PRIVATE
area (sq m):	17,035
tenure:	LEGAL/OWNERSHIP
DWELLING	
location:	CITY CENTER
type:	ROW/GROUPED
number of floors:	2
utilization:	MULTIPLE/FAMILY
physical state:	FAIR
DWELLING DEVELOPMENT	
mode:	INSTANT
developer:	PRIVATE
builder:	LARGE CONTRACTO
construction type:	MASONRY,WOOD
year of construction:	1734
MATERIALS	
foundation:	CUT STONE
floors:	CONCRETE
walls:	BRICK, STONE
roof:	WOOD, BRICK
DWELLING FACILITIES	
wc:	-
shower:	-
kitchen:	1
rooms:	2
other:	-

SOCIO-ECONOMIC DATA
(related to user)

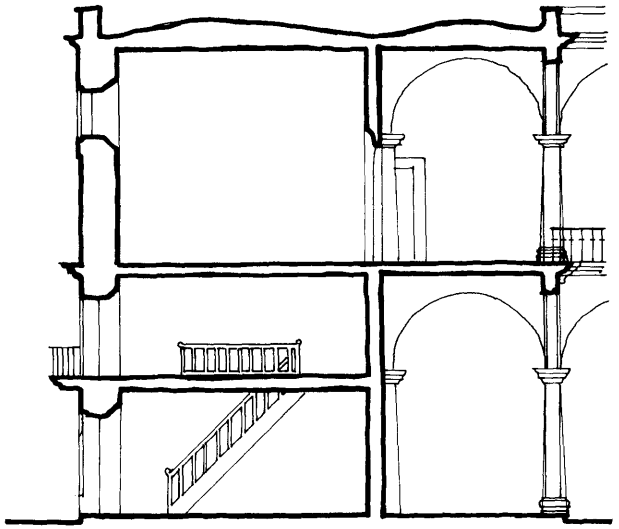
GENERAL: SOCIAL	
user's ethnic origin:	
place of birth:	MEXICO, CITY
education level:	SECONDARY SCHOOL
NUMBER OF USERS	
married:	2
single:	-
children:	4
total:	6
GENERAL: ECONOMIC	
user's income group:	MODERATE
employment:	MERCHANT
distance to work:	0
mode of travel:	-
COSTS	
dwelling unit:	N.A.
land - market value:	$ 1,600,000/HA
DWELLING UNIT PAYMENTS	(rent controlled)
financing:	-
rent/mortgage:	$ 8/MONTH
% income for rent/mortgage:	5%

LAS VIZCAINAS, Mexico City.- Top, the photograph shows the south side of the block. Notice that all the doors have a window on the upper floor; the lower rooms are utilized for commercial use dureing the day, and as bedrooms dureing the night; the upper rooms are multipurpose rooms.

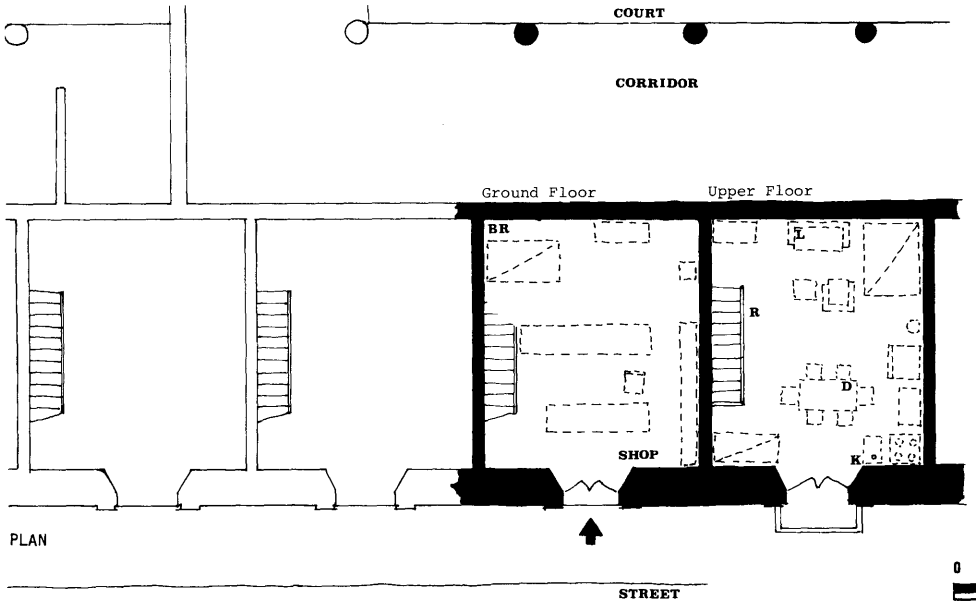
Bottom left, the picture shows the west facade of the block/tenements.

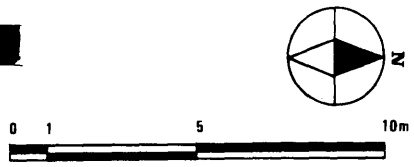
Bottom right, regardless of the height of the building a high density is obtained in this tenement, the average dwelling has an area of 96 square meters.

ELEVATION



SECTION





1:200

TYPICAL DWELLING

THE DWELLING: The individual dwellings are very big with an average size of 96 square meters. The access to the dwelling is directly from the street sidewalk. On the first floor, many people have a small shop, and on the second, there is their house. Inside, running water, but not toilets and shower are available; the baths are shared, there are two groups of eight toilets facing the east and west of the block. A public bathroom is located one block from their houses available for bathing where they pay a small fee.

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)

LAS VIZCAINAS, Mexico City: (top right) A view of the roof of the Colegio de las Vizcainas. Notice the courts which are perforations in the solid masses (1973).

(top left) The main facade of the school building shows the main entrance to the school and the entrance to the church which forms part of the community services in the locality (1973).

(bottom right) The main patio of the building, which is sorrounded by archades. The classrooms are in the second floor. On the ground level there are other services as offices, dormitories and workshops (1973).

LOCALITY SOURCES

Plan: *(accurate) AEROCARTOGRAFIA DE MEXICO, 1973, Mexico, DF*

Land Use Pattern: *(approximate) Field Survey, E.Espinosa, 1973, Mexico, DF.*

Circulation Pattern: *(approximate) Field Survey, E.Espinosa, 1973, Mexico, DF.*

Segment Plan: *(accurate) AEROCARTOGRAFIA DE MEXICO, 1973, Mexico, DF.*

Block Plan: *(accurate) Gonzalo Obregon, EL REAL COLEGIO DE SAN IGNACIO, 1960, Mexico, DF.*

Block Land Utilization: *(accurate) IBID*

Dwelling Plan: *(approximate) Field Survey E.Espinosa, 1973, Mexico, DF.*

Physical Data: *(approximate) IBID*

Socio-Economic Data: *(approximate) IBID*

Photographs: *E.Espinosa, 1973*

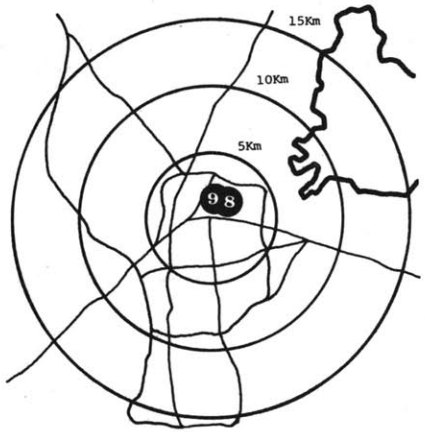
General Information: *"LA PATRIA Y LA ARQUITECTURA NACIONAL", Mariscal, Federico 1915, Mexico, DF.*
"EL REAL COLEGIO DE SAN IGNACIO" Las Vizcainas, Obregon Gonzalo, 1960, Mexico, DF.
Field Surveys, 1971,1973.

8 TEPITO, la casa blanca

9 TEPITO, la florida

Mexico City

PRIVATE, LOW INCOME, APARTMENTS



LOCATION: This area of "vecindades" (slum tenements) is near the center of the city, only a ten-minute walk from the main plaza, or Zocalo, with its great cathedral and Presidential Palace. The Tepito section is a poor area with a few small factories and warehouses, public baths, run-down third-class movie theaters, overcrowded schools, saloons, pulquerias (taverns) where pulque, a native alcoholic drink is sold), and many shops.

ORIGINS: Tepito is the largest second-hand market in Mexico City and gives the name to the locality. The "Thieves' Market" is only a few blocks away from the tenements studied are is near other large markets, La Merced and La Gunilla, which have recently been rebuilt and modernized and are within easy walking distance. This section of the city was once the home of the underworld, and even today, people fear to walk in it late at night. But today most of the criminal element has moved away and the majority of the residents are poor tradesmen, artisans and workers who come from through-out the thirty-two states of Mexico. Most of these families have lived in Tepito since 1940. The area was probably established in 1840. This locality is where the research of Oscar Lewis was held during the 1950's and 1960's on which the book, "The Children of Sanchez", was based.

The air photograph above shows Tepito (La Casa Blanca and La Florida), the photograph is at the scale of 1:10,000.

LOCALITY PLAN

LAYOUT: Tepito is a dense conglomeration of apartments and singles room dwellings, mostly one to two stories high. The layout was product of several adjustments to the land subdivision, initially by the trees and streams, and later by an imposed lay-out to provide piped water and sewage. In consequence, some of the interior land sub-divisions do not correspond with the street layout. The blocks are large, and some of the properties go from one street to the other.

LAND USE: Mainly residential, most of the people live in vecindades, row-rooms of one-room dwelling in side courtyards shut off from view of the street by shops or vecindad walls. There is a minimum open space for gardens and recreational purposes, with the exception of the courtyards of the tenements, the streets, and the roofs which are used as internal circulation among the tenements of the same block. (This circulation is an imporvement of the users to add to the security of the private land). The small industries and the shops are concentrated in the center of the locality, but also are found in the smallest and farthest vecindad within the locality. The big open and covered markets provide the main source of employment to the locality.

AREAS

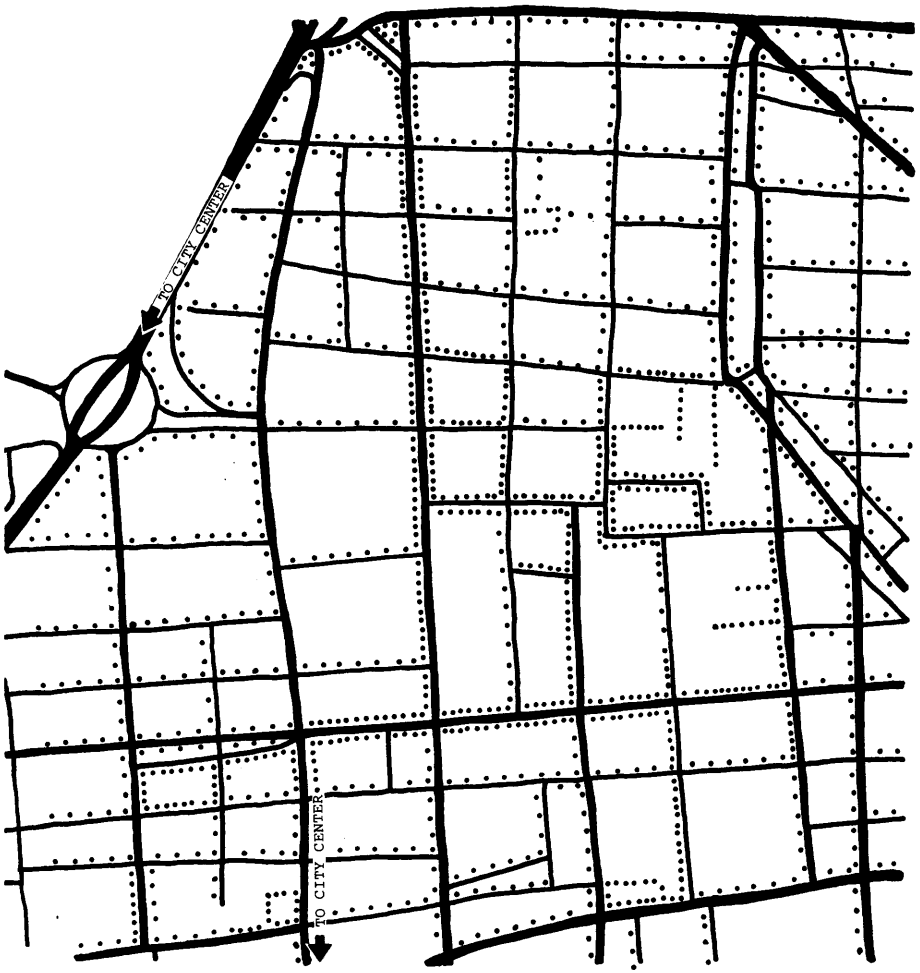
- RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- OPEN SPACES

KEY

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

LOCALITY LAND USE PATTERN

1:10000



KEY

VEHICULAR

PEDESTRIAN

N

0 100 500m

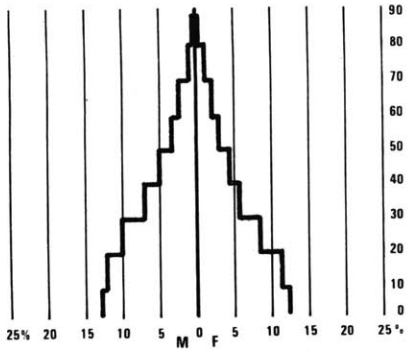
1:10000

LOCALITY CIRCULATION PATTERN

CIRCULATION: Most of the streets are accessible to motor vehicles, but as most of the residents do not have cars and the main streets do not pass through the locality, there is not a high traffic intensity. The streets and sidewalks are narrow, and most of the time, the people walk through the center of the street because the sidewalks are crowded with many street vendors and petty tradesmen of used items.

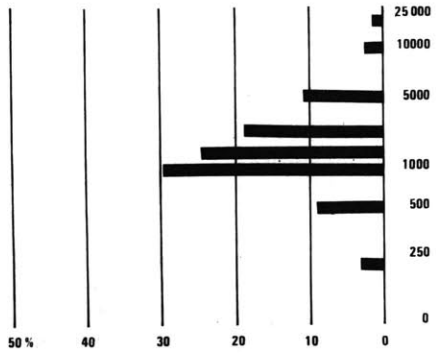
LOCALITY SEGMENT: In the 16 hectares area analyzed the approximate density is 900 per hectare. The plots are very irregular in shape and size. The depth is larger than the width. The covered area is extremely high, most of the locality is 1-2 story buildings. There is no semi-public space available.

POPULATION: The total population in 1970 was about 40,000 people in 7,000 households (over five persons per household). It is a densely populated neighborhood. During the day and well after dark, the streets and doorways are filled with people coming and going or crowding around shop entrances. The streets and sidewalks are broad and paved but are without trees, grass, or gardens.

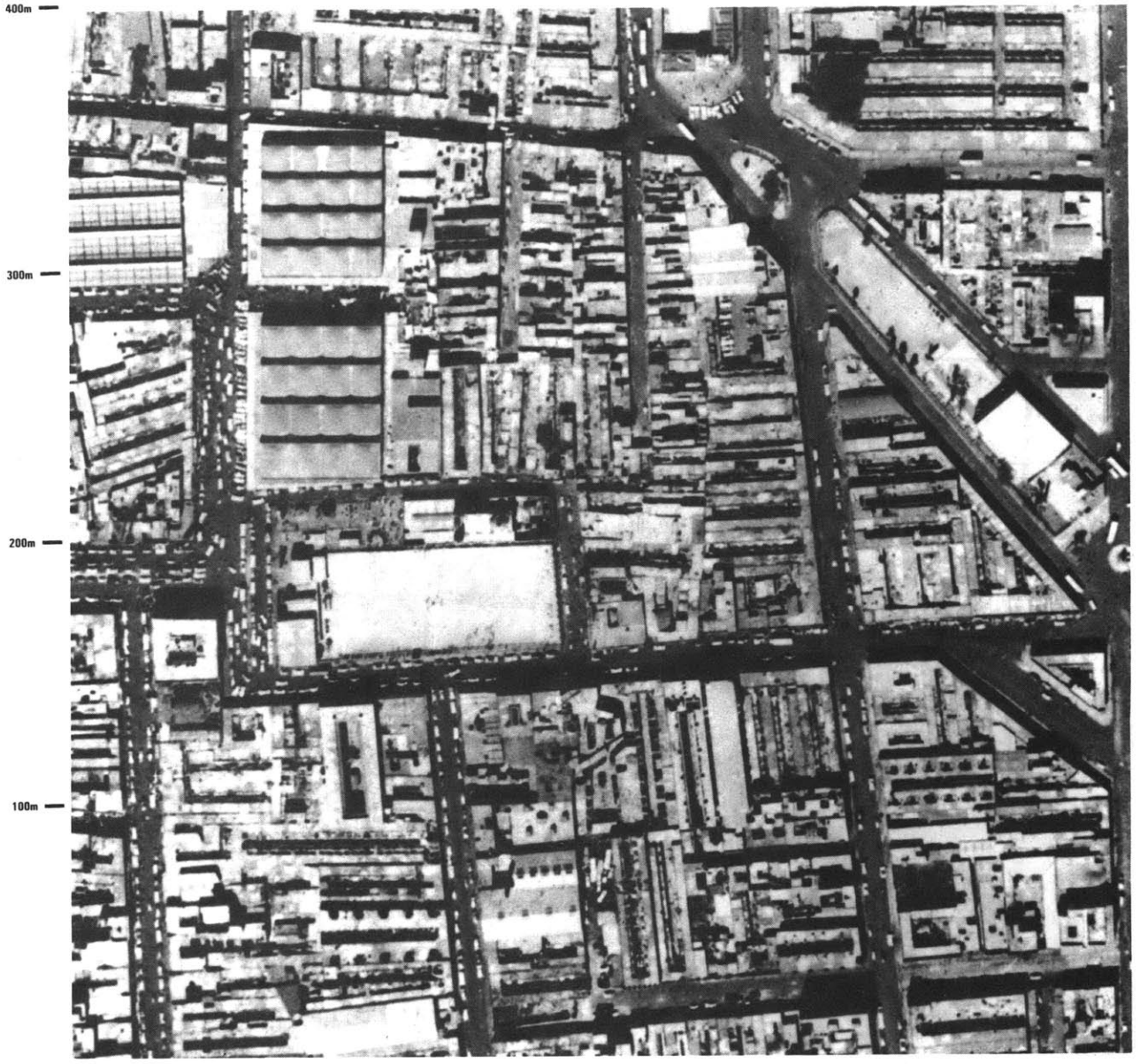


LOCALITY POPULATION DISTRIBUTION
horizontal: percentages vertical: ages
males: M females: F
Source: IX CENSO GENERAL DE POBLACION. 1970. SIC/ DGE. Mexico, D.F.

INCOME: The estimate average for 1970 household income was about $2,500 U.S. per year, slightly higher than the "normal" average for this type of settlement.

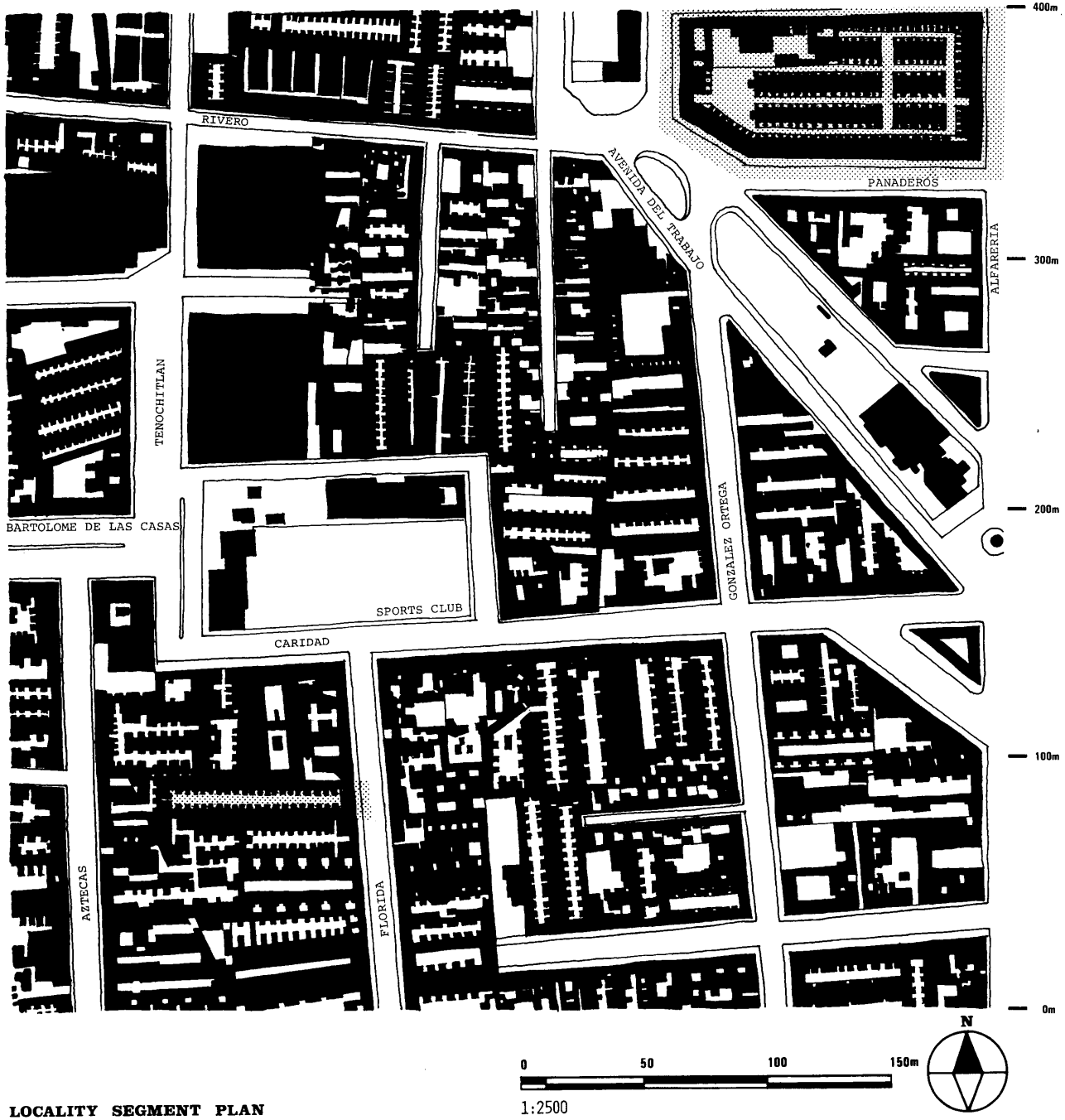


LOCALITY ANNUAL INCOME DISTRIBUTION
horizontal: percentages vertical: dollars
Source: IX CENSO GENERAL DE POBLACION. 1970. SIC/ DGE. Mexico, D.F.



1:2500

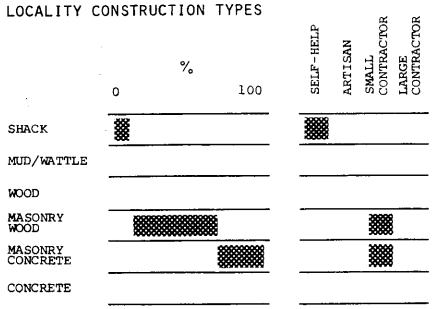
LOCALITY SEGMENT AIR PHOTOGRAPH



1:2500

LOCALITY SEGMENT PLAN

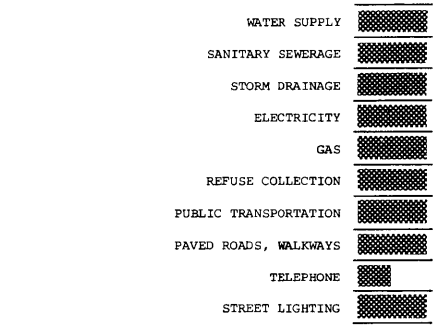
LOCALITY CONSTRUCTION TYPES



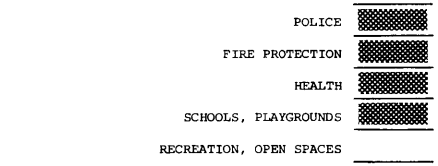
The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

Quality of information: Approximate

LOCALITY UTILITIES AND SERVICES



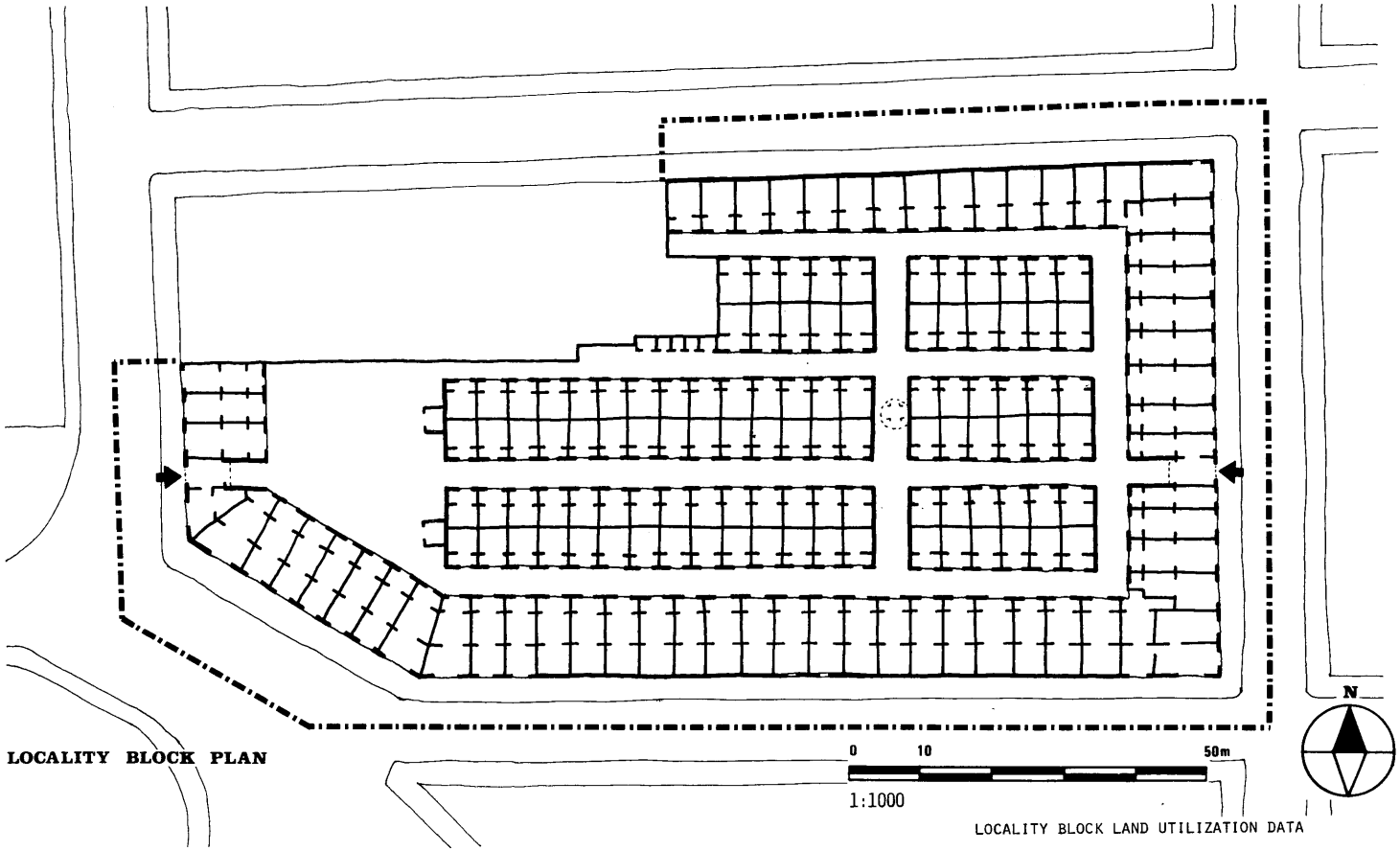
LOCALITY COMMUNITY FACILITIES



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

Quality of information: Approximate

SELECTED BLOCK



LOCALITY BLOCK PLAN

LOCALITY BLOCK LAND UTILIZATION DATA

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	1	1.08	0.92
DWELLING UNITS	157	1.08	144.70
PEOPLE	864	1.08	796.00

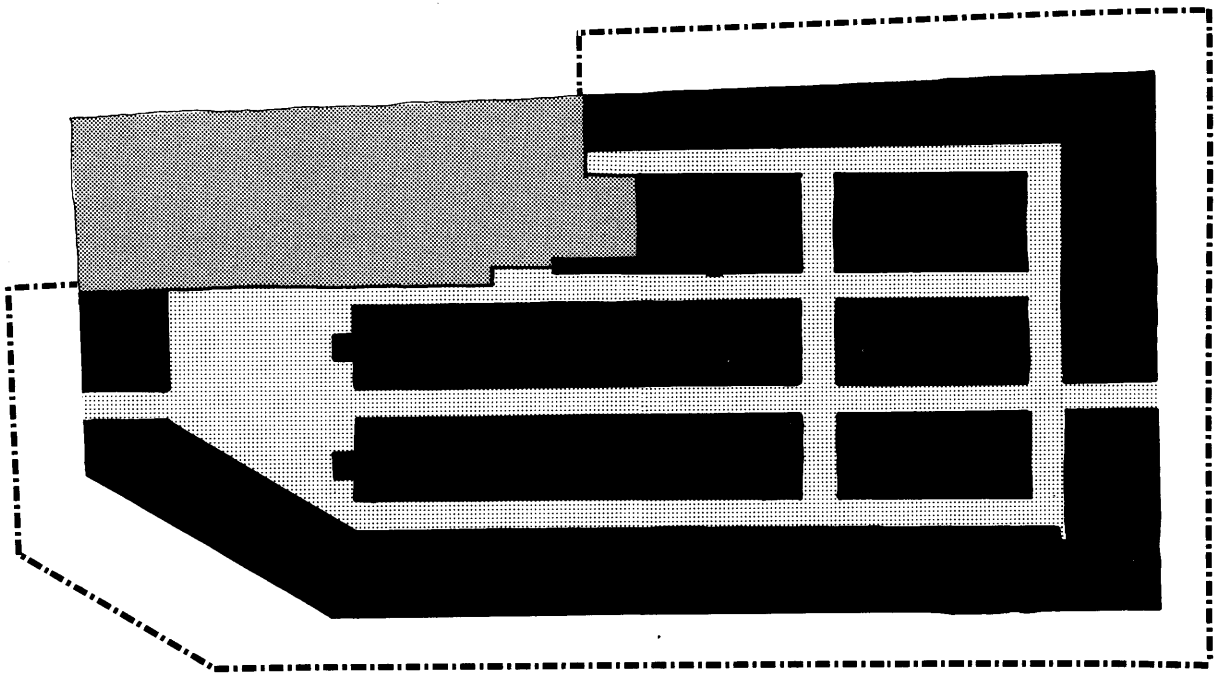
AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.25	22.74
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	0.60	55.53
SEMI-PRIVATE (cluster courts)	0. 23	21.73
TOTAL	1.08	100.00

NETWORK EFFICIENCY

$R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 343.7$

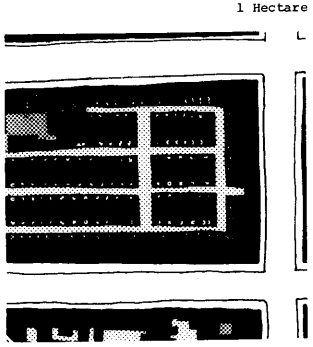
AVERAGE LOT AREA = NA

THE BLOCK: "La Casa Blanca" (La Casa Grande" as Oscar Lewis describes in the book, The Children of Sanchez) stands between the street of barbers and the tinsmiths. Spread out over an entire square block and housing seven hundred people, the Casa Grande is a little world of its own, enclosed by high cement walls on the north and south and by rows of shops on the other two sides. These shops supply the basic needs of the vecindad. Two narrow, inconspicuous entrances, each with a high gate, open during the day but locked every night at ten o'clock, lead into the vecindad on the east and west sides. Anyone coming or going after hours must ring to the janitor and pay to have the gate opened. Within la vecindad stretch four long concrete paved patios or courtyards, about fifteen feet wide. Opening onto the courtyards at regular intervals of about twelve feet, are 157 one-room windowless apartments, each with a barn-red door. In the daytime, besides most of the doors, stand rough wooden ladders leading to low, flat roofs over the kitchen portion of each apartment. These roofs serve many uses and are crowded with lines of laundry, chicken coops, dovecotes, pots of flowers or medical herbs, tanks of gas for cooking and occasionally a TV antenna. In the daytime, the courtyards are crowded with people and animals, dogs, turkeys, chickens and a few pigs. Children play here because it is safer than the streets. On Sunday nights there is usually an outdoor dance. Within the west entrance is the public bathhouse and a small garden whose few trees and patch of grass serve as a meeting place for young people. Here also is a one-room shack marked "Administration Office" where a bulletin lists the names of families who are delinquent in paying their rent.

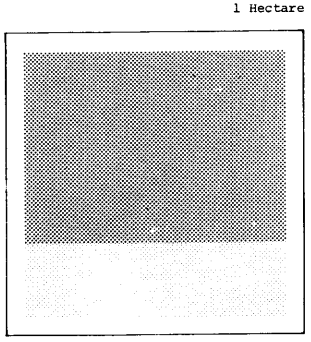


LOCALITY BLOCK LAND UTILIZATION

LAND UTILIZATION DIAGRAMS

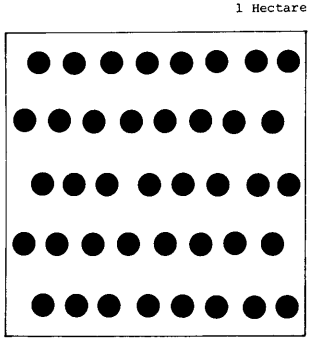


PATTERN



PERCENTAGES

Streets/Walkways	23
Playgrounds	-
Cluster Courts	22
Dwellings/Lots	55

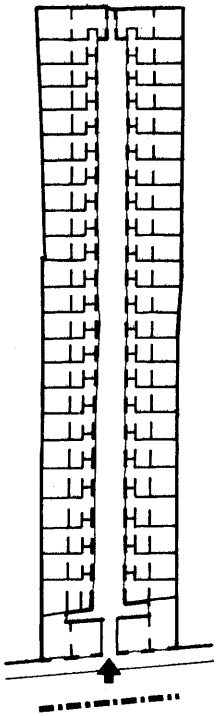


DENSITY Persons/Hectare 796

● 20 Persons

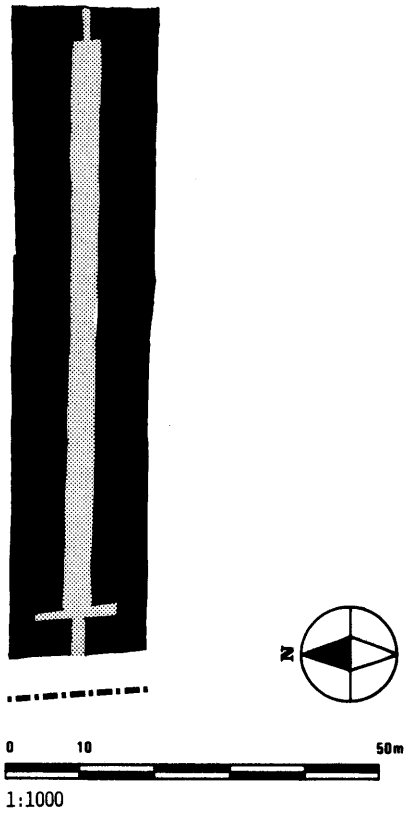
KEY

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



LOCALITY BLOCK PLAN

THE BLOCK: "La Florida" is a smaller vecindad very similar to the Casa Grande but with only one gate and a much higher density, different lot proportions (100 x 20 meters), and a narrower (3.5 meters) patio. The layout of the lot is irregular because before its development, there was a small river passing through the block. This vecindad is part of one of the most crowded blocks within the area. The roofs of this vecindad are on the same level and are used as pedestrian streets by its inhabitants. The front part of the vecindad contains four shops and the entrance gate.



LOCALITY BLOCK LAND UTILIZATION

LOCALITY BLOCK LAND UTILIZATION DATA

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	1	0.17	5.88
DWELLING UNITS	46	0.17	270.58
PEOPLE	253	0.17	1442.82

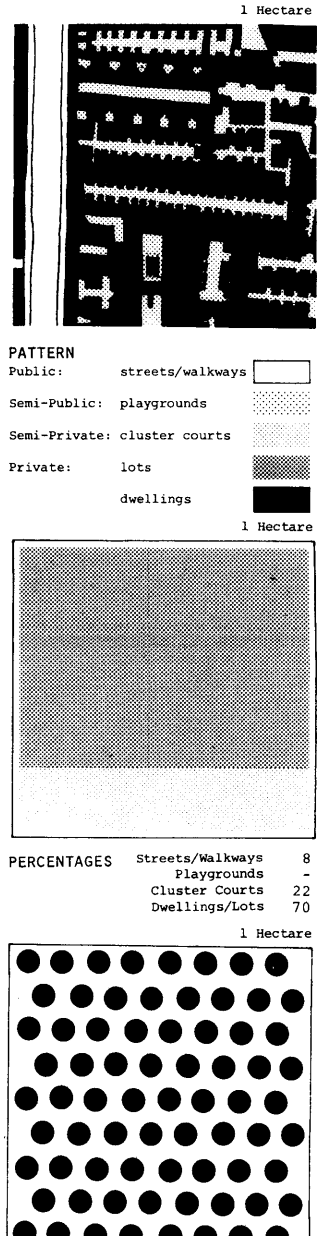
AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.0144	8
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	0.1234	70
SEMI-PRIVATE (cluster courts)	0.0375	22
TOTAL		

NETWORK EFFICIENCY

$$R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 105 \text{ m/Ha}$$

AVERAGE LOT AREA = -

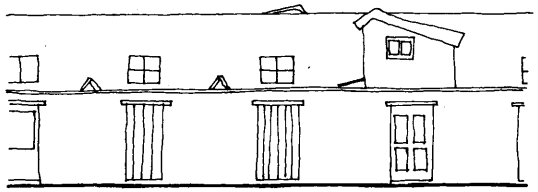
LAND UTILIZATION DIAGRAMS



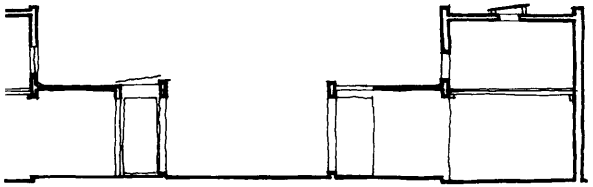
TEPITO (La Florida), Mexico City: (left) Tepito is characterized by its dense population, interior court tenements. The streets are used for all type of activities due to lack of open public spaces as seen in the photograph.

(top right) The view shows the interior court of La Florida which is controlled by the users and has its own particular character.

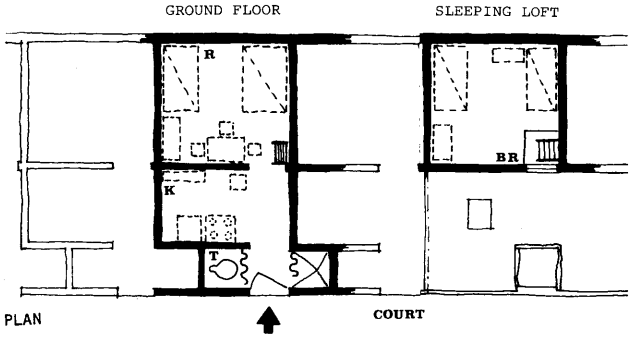
(bottom right) Notice the many cars parked on the street and the absence of trees, etc. on the exterior of the tenement.



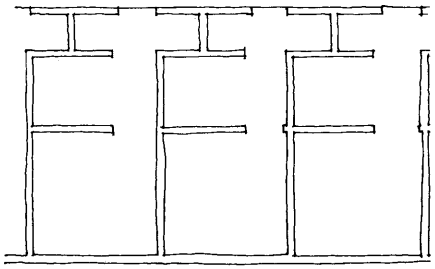
ELEVATION



SECTION



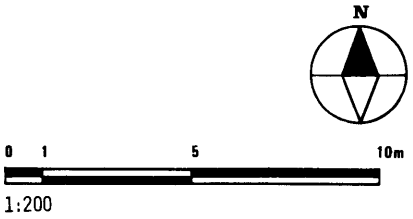
PLAN



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)



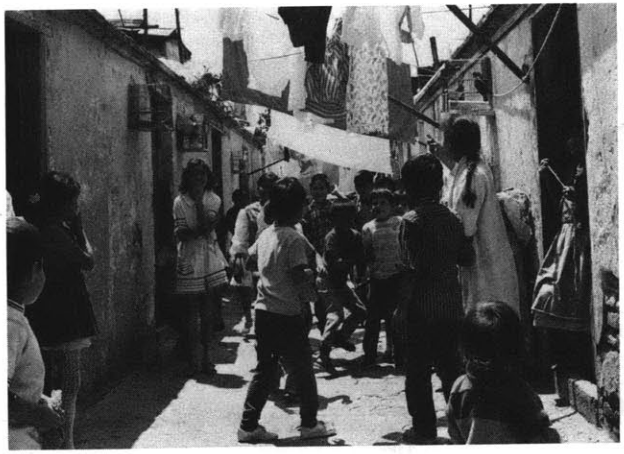
1:200

PHYSICAL DATA
(related to dwelling and land)

DWELLING UNIT	
type:	APARTMENT
area (sq m):	24.5
tenure:	LEGAL RENTAL
LAND/LOT	
utilization:	PRIVATE
area (sq m):	1609
tenure:	LEGAL OWNERSHIP
DWELLING	
location:	CITY CENTER
type:	ROW/GROUPED
number of floors:	1
utilization:	SINGLE
physical state:	BAD
DWELLING DEVELOPMENT	
mode:	INSTANT
developer:	PRIVATE
builder:	SMALL CONTRACTOR
construction type:	MASONRY - WOOD
year of construction:	1909
MATERIALS	
foundation:	CUT STONE
floors:	CONCRETE
walls:	MASONRY, ADOBE
roof:	BRICK, WOOD
DWELLING FACILITIES	
wc:	1
shower:	1
kitchen:	1
rooms:	1
other:	SLEEPING LOFT

SOCIO-ECONOMIC DATA
(related to user)

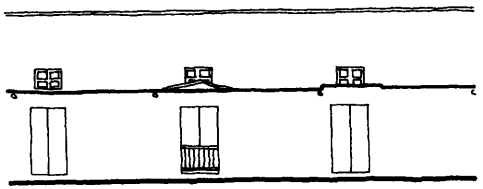
GENERAL: SOCIAL	
user's ethnic origin:	
place of birth:	VERACRUZ
education level:	PRIMARY SCHOOL
NUMBER OF USERS	
married:	2
single:	3
children:	1
total:	6
MIGRATION PATTERN	
number of moves:	1
rural - urban:	1942
urban - urban:	-
urban - rural:	-
why came to urban area:	EMPLOYMENT
GENERAL: ECONOMIC	
user's income group:	LOW- MODERATE
employment:	WHITE COLLAR
distance to work:	5 KM
mode of travel:	BUS
COSTS	
dwelling unit:	$ 120
land - market value:	$ 571,606
DWELLING UNIT PAYMENTS	
financing:	PRIVATE
rent/mortgage:	$ 15/MONTH
% income for rent/mortgage:	7%



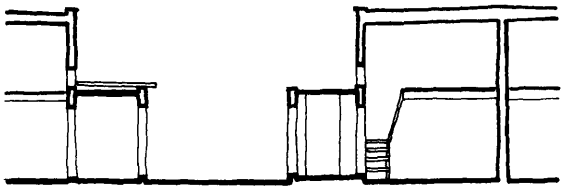
TEPITO, Mexico City: (top) Is a general view of the "Vecindad La Florida", showing a row of apartments with the front open to a semi-private court. Notice the different heights of the roofs; the improvements are done by the users.

(bottom right) This photograph shows the disposition of the furniture inside the room. The kitchen, table, and bed, are together.

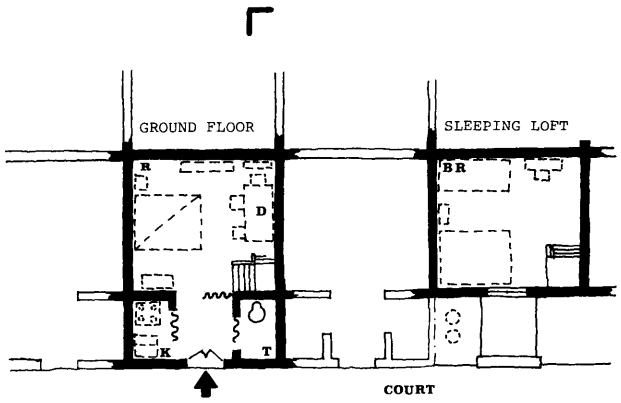
(bottom left) The narrow long corridor/court, is the space where most of the social activities take place.

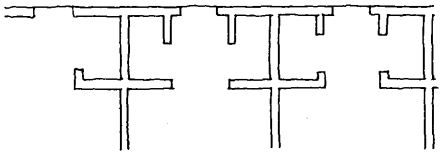


ELEVATION



SECTION



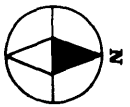


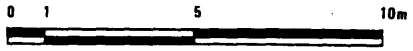
PLAN

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)





1:200

PHYSICAL DATA
(related to dwelling and land)

DWELLING UNIT	
type:	APARTMENT
area (sq m):	24
tenure:	LEGAL RENTAL
LAND/LOT	
utilization:	PRIVATE
area (sq m):	8380
tenure:	LEGAL RENTAL
DWELLING	
location:	CITY CENTER
type:	ROW/GROUPED
number of floors:	1 - 2
utilization:	SINGLE
physical state:	FAIR
DWELLING DEVELOPMENT	
mode:	INSTANT
developer:	PRIVATE
builder:	SMALL CONTRACTOR
construction type:	MASONRY - WOOD
year of construction:	1920
MATERIALS	
foundation:	CUT STONE
floors:	CONCRETE
walls:	MASONRY
roof:	MASONRY - WOOD
DWELLING FACILITIES	
wc:	1
shower:	0
kitchen:	1
rooms:	1
other:	SLEEPING LOFT

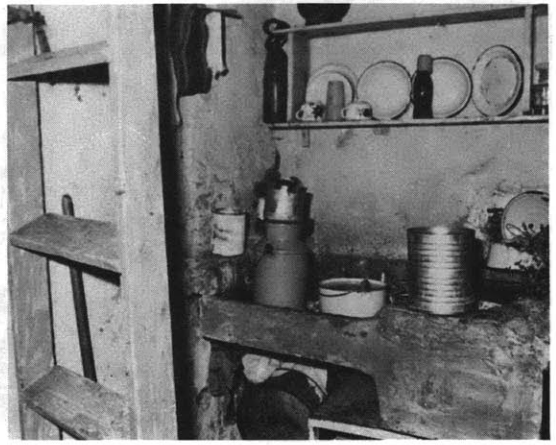
SOCIO-ECONOMIC DATA
(related to user)

GENERAL: SOCIAL	
user's ethnic origin:	
place of birth:	MICHOACAN
education level:	PRIMARY SCHOOL
NUMBER OF USERS	
married:	2
single:	2
children:	2
total:	6
MIGRATION PATTERN	
number of moves:	2
rural - urban:	1945
urban - urban:	1947
urban - rural:	-
why came to urban area:	EMPLOYMENT
GENERAL: ECONOMIC	
user's income group:	LOW
employment:	MERCHANT
distance to work:	1 KM
mode of travel:	WALK
COSTS	
dwelling unit:	$160.00
land - market value:	$800 000/HA
DWELLING UNIT PAYMENTS	
financing:	PRIVATE
rent/mortgage:	$16.00/MONTH
% income for rent/mortgage:	10 %

TEPITO, Mexico City: (top) Is a general view of the "Vecindad La Casa Blanca". Shows a row of apartments facing to the street. Inside of the block there are more apartments and a network of open courts.

(bottom right) The court is the environment where most of the social activities are held as well is use as access to the dwellings.

(bottom left) The picture shows the laundry/kitchen/ storage area; and the ladder which is used to go up to the sleeping loft.

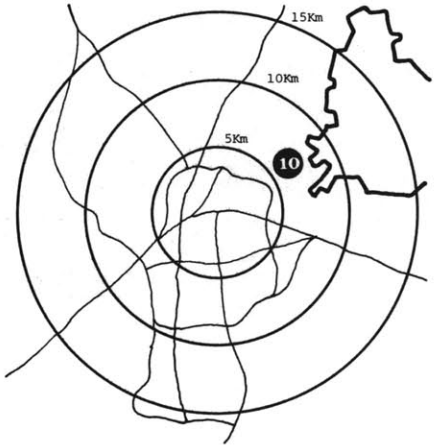


LOCALITY SOURCES

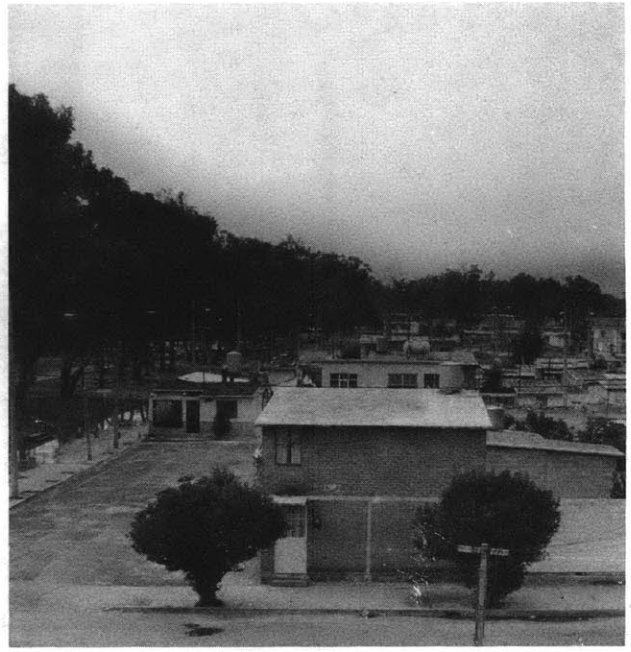
Plan:	*(accurate) AEROCARTOGRAFIA DE MEXICO, 1973, Mexico, DF.*
Land Use Pattern:	*(approximate) Field Survey, INDECO, 1972, Mexico, DF.*
Circulation Pattern:	*(approximate) Field Survey, E. Espinosa, 1973,Mexico, DF.*
Segment Plan:	*(accurate) AEROCARTOGRAFIA DE MEXICO, 1973, Mexico, DF.*
Block Plan:	*(accurate) INDECO, REMODELACION URBANA, 1971, Mexico, DF.*
Block Land Utilization:	*(accurate) Field Survey, E.Espinosa, 1973, Mexico, DF.*
Dwelling Plan:	*(approximate) "JESUS SANCHEZ" Luis Hernandez, Mexico, DF. (approximate) Field Survey, E.Espinosa, 1973, Mexico, DF.*
Phisical Data:	*(accurate) IBID*
Socio-Economic Data:	*(approximate) Field Survey, E.Espinosa, 1973, Mexico, DF.*
Photographs:	*E.Espinosa, R.Davila, INDECO.*
General Information:	*INDECO, 1971; Oscar Lewis "LOS HIJOS DE SANCHEZ", "FIVE FAMILIES" Field Surveys, 1971,1973.*

10
SAN JUAN DE ARAGON
México City

PUBLIC, MIDDLE INCOME, ROW HOUSES



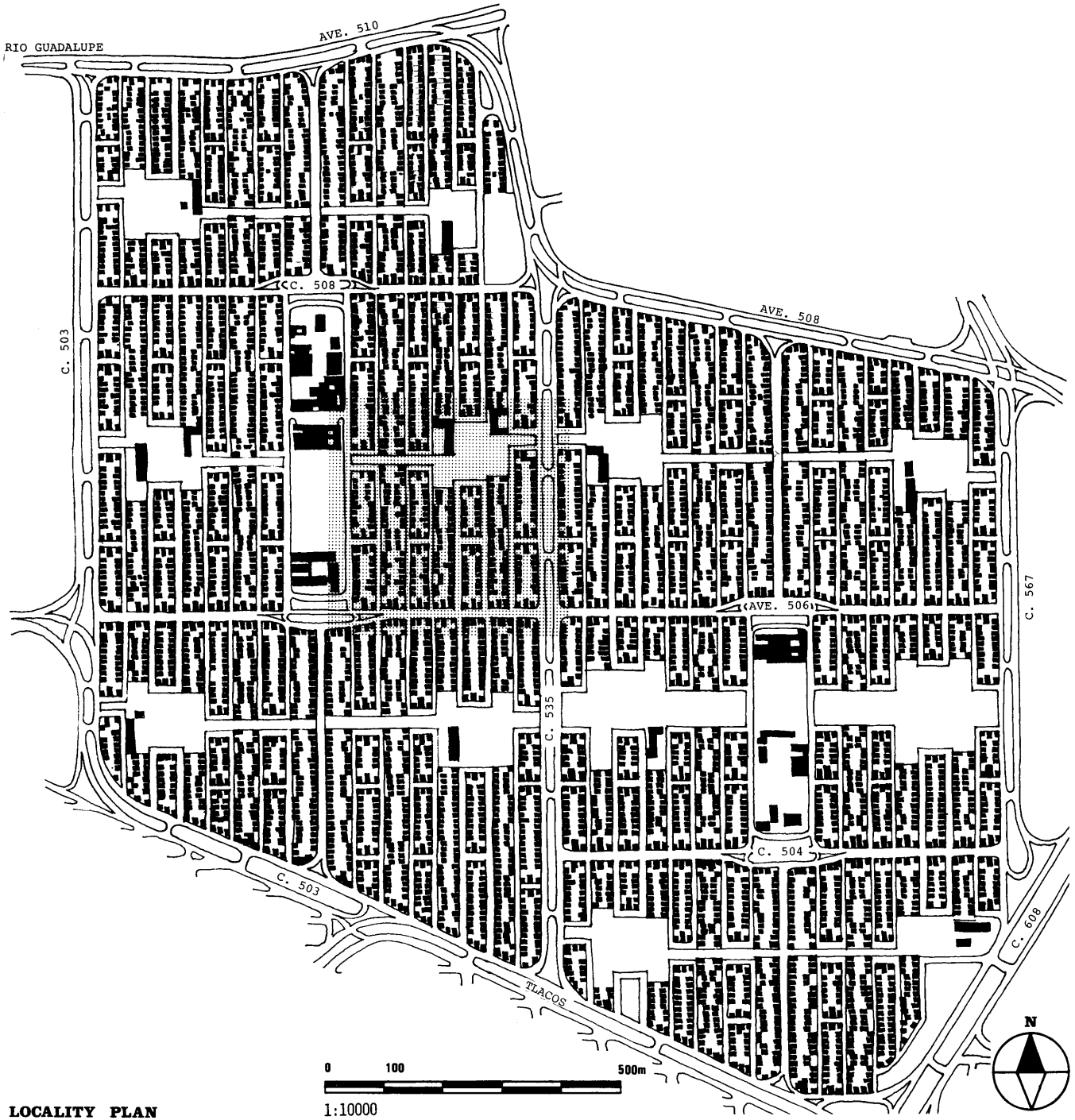
LOCATION: San Juan de Aragon, like many other residential areas of metropolitan Mexico, lies on land that originally was part of the Texcoco lake, and has an area of approximatelly 192 Has. The dominant features on this land is the zoo, and the International Airport. The area is 5 kilometers from the central business district and is connected to it by bus/trolley routes and by subway (3 kilometers distant from the farthest block in the project).



SAN JUAN DE ARAGÓN, Mexico City: (top) This photograph shows the dimensions of the locality (192 Has.) and its immediate surroundings. Notice in the foreground one of the two community centers and the pedestrian walkway across the locality. The area is engoulfed by highways, a zoo, sports fields and old colonias proletarias. (1965)

(left bottom) Land/lot subdivision is clearly shown in this photograph at completion of the project, (1965).

(right bottom) Partial view of dwellings and public open spaces. Notice the improvements in the dwellings like water tanks and painting, (1973).



LOCALITY PLAN

ORIGINS: The project was financed in 1964 by the National Bank of Public Works and Services and built by the City Housing Department. The project was originally intended to house very low income people with subsidized loans from the bank. The project was built in one stage, but services and communal facilities were provided over time. The original tenants had limited capacity to meet the monthly mortgage and many have moved out; the new dwellers are predominantely middle income groups representing approximately 2/3 of the population in the area.

LAYOUT: The project area is a conglomerate of one and two story buildings which was planned as an instant development. It is a basic rectangular grid with streets forming loops with pedestrian walkways. The area is linked by 4 pedestrian and recreational spines which lead to 2 major community centers as well as to schools located along the spine.

SELECTED SEGMENT

LAND USE: Private dwelling lots occupy 64 per cent of the area; most of the lots facing the Tlacos Ave. are used commercially as well as some facing internal through roads like Ave. 506. The two markets and community centers are located within a maximum distance of 400 meters from the farthest dwelling; 14 schools are located within walking distances ranging from 100 to 200 meters. Open space is adequate: a zoo and a sport field are adjacent to the locality and can be reached by foot. There are 2 churches, a hospital, several social service clinics, a thetre, post office and a police station.

LOCALITY LAND USE PATTERN 1:10000

AREAS

- RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- OPEN SPACES

KEY

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

LOCALITY CIRCULATION PATTERN 1:10000

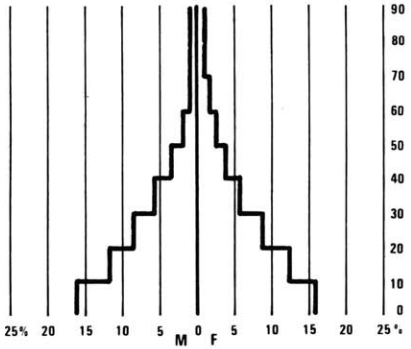
CIRCULATION: Two major roads bound the locality on its four sides, and connect the area with the central business district by frequent bus and trolley service. All streets are used by both pedestrian and vehicular traffic. The primary circulation is along parallel streets that run east-west. The secondary circulation is along the streets that run north-south. Pedestrian streets that run across the locality link schools, recreation areas and community facilities.

KEY

VEHICULAR

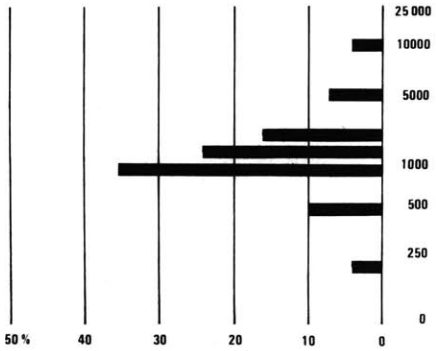
PEDESTRIAN

POPULATION: No data is available for the population distribution of the locality as such, although the distribution of population for the political ward shows that 55 percent of the population in 1970 was under 20 years and the two groups (male, female) were equally balanced. There are approximately 9000 households at an average of 5.6 members per family.

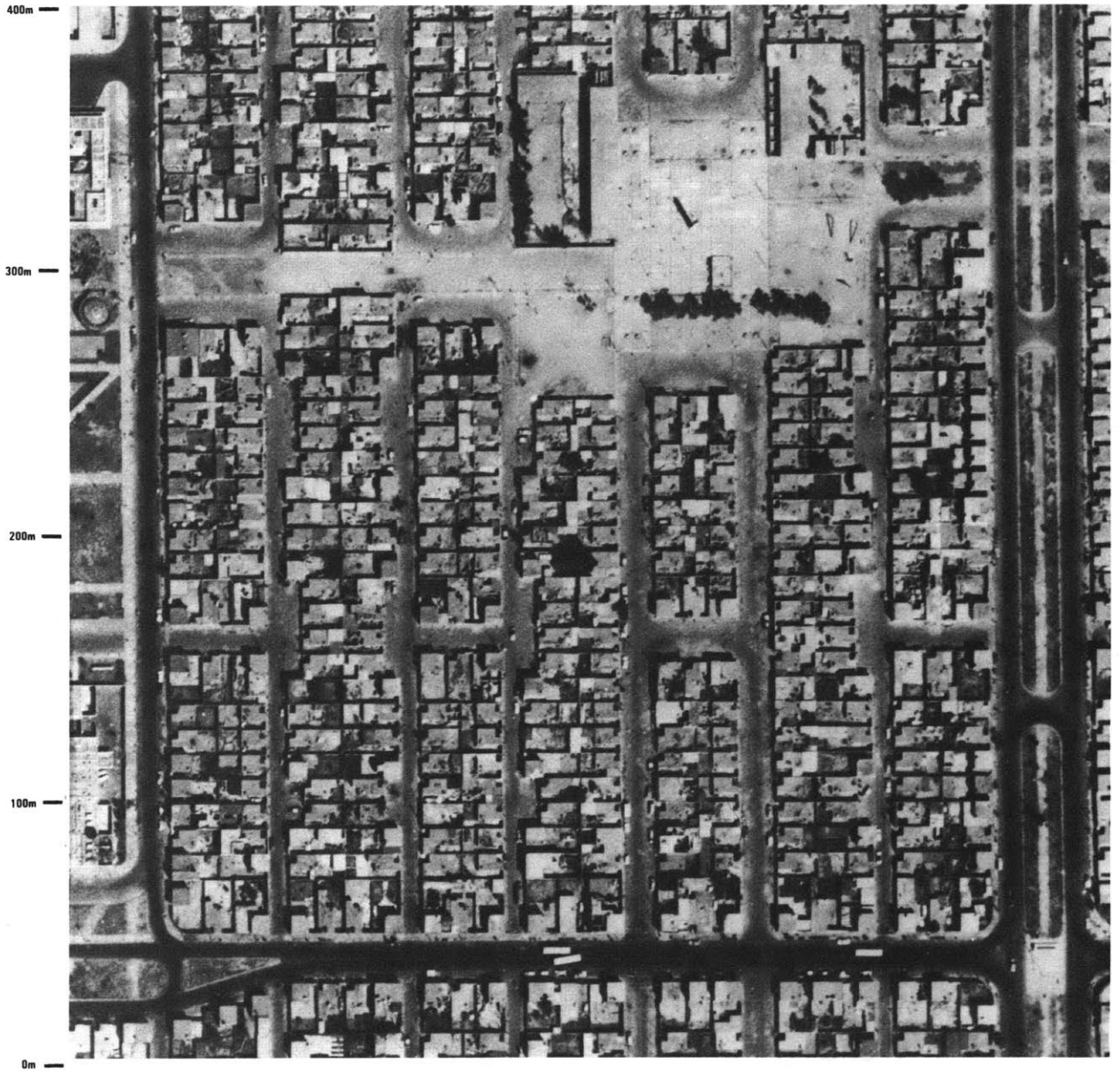


LOCALITY POPULATION DISTRIBUTION
horizontal: percentages vertical: ages
males: M 573,815; females: F 609,080
Source: Census 1970; population, (Delegacion Gustavo A. Madero), 1,182,895

INCOME: The average household income for the political ward (Gustavo A. Madero) in 1970 was $1839. 49 percent of the households had an income under 960; 40 percent between 960 and 2400 and 11 percent above 2400. San Juan de Aragon has a population with moderately low/middle income.

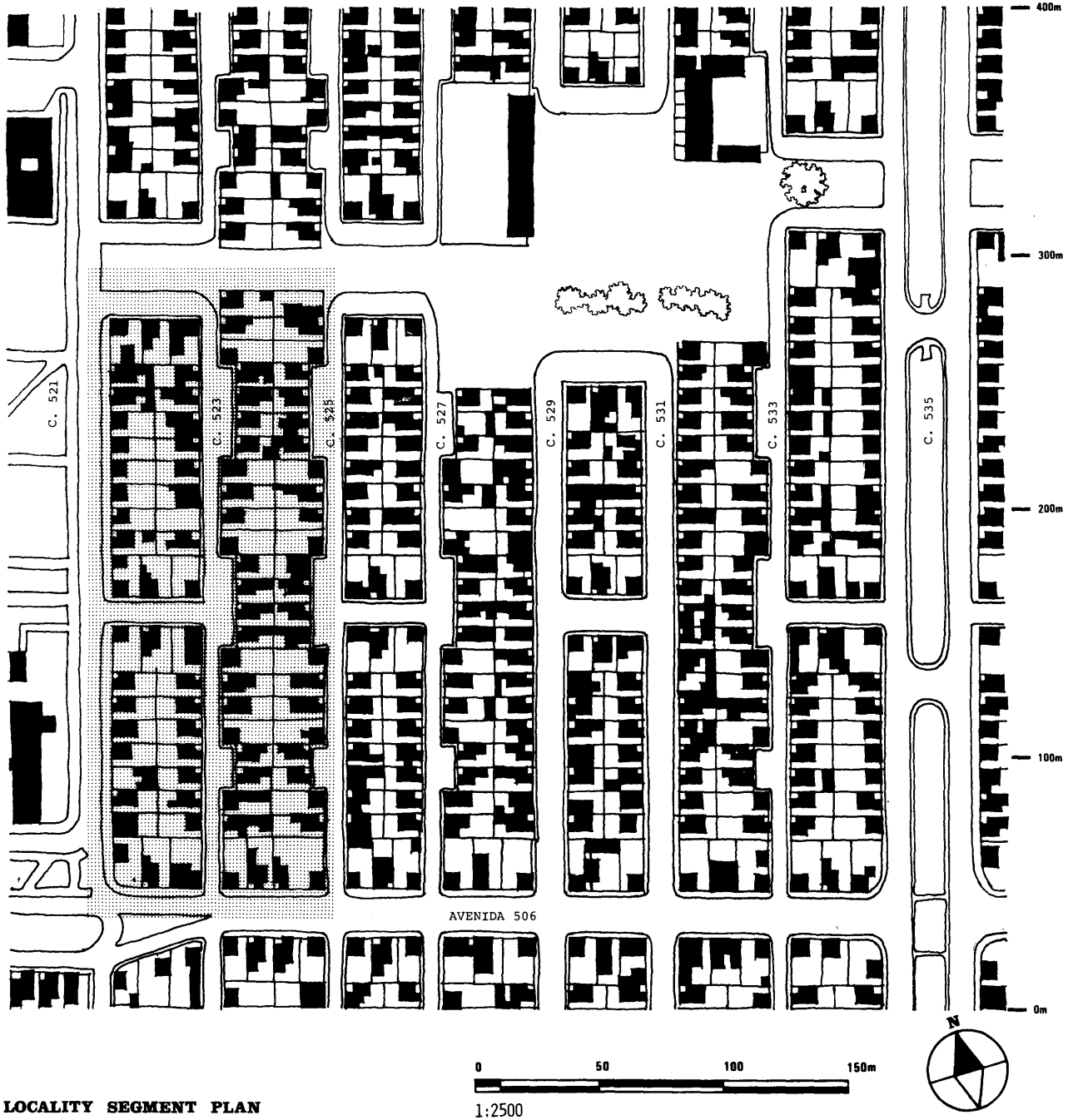


LOCALITY ANNUAL INCOME DISTRIBUTION
horizontal: percentages vertical: dollars
Source: Plano Mercadologico de la Ciudad de Mexico; households, (Delegacion Gustavo A. Madero), 202,184



LOCALITY SEGMENT AIR PHOTOGRAPH

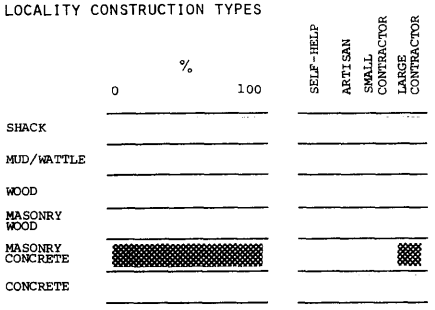
1:2500



1:2500

LOCALITY SEGMENT PLAN

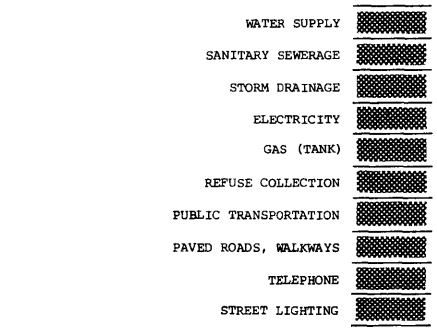
LOCALITY CONSTRUCTION TYPES



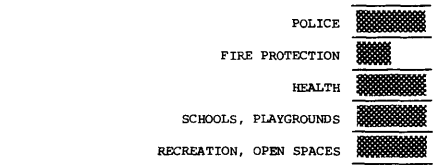
The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

Quality of inrormation: Accurate

LOCALITY UTILITIES AND SERVICES



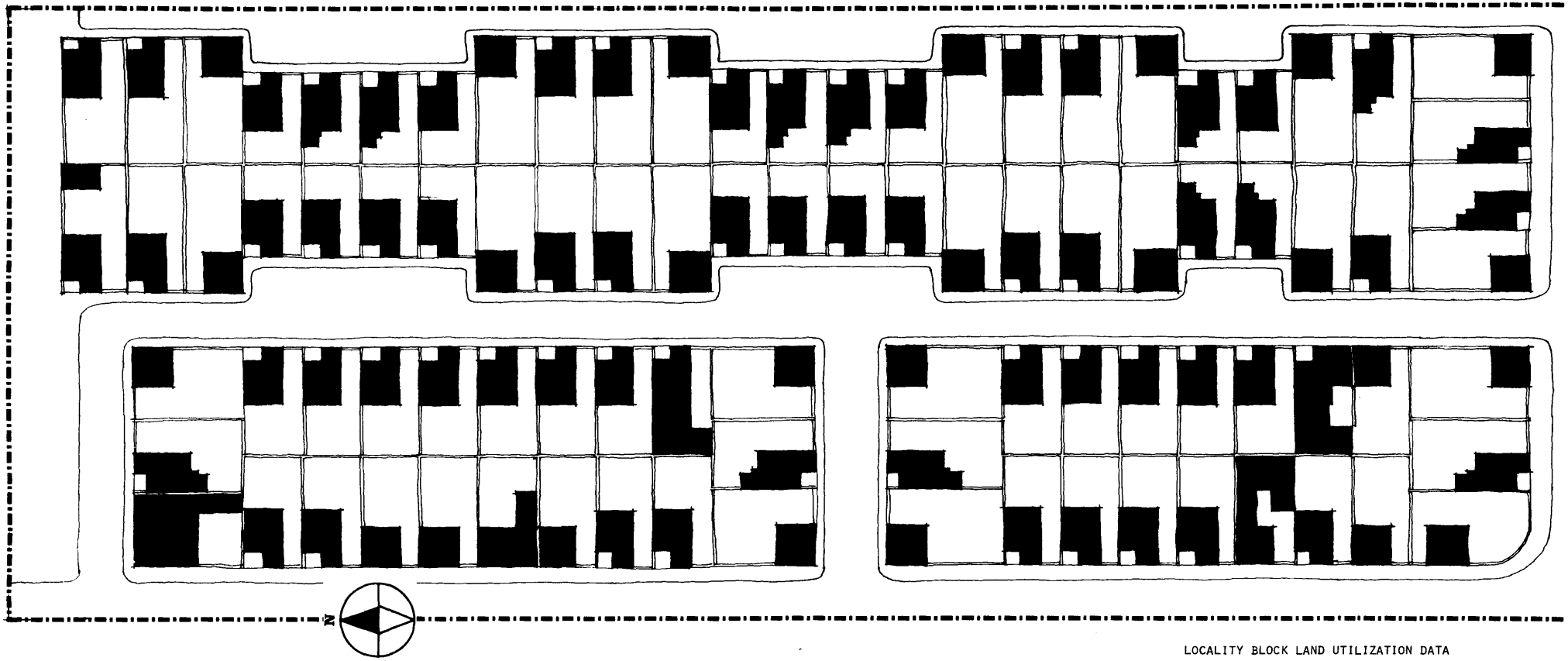
LOCALITY COMMUNITY FACILITIES



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

Quality of information: Accurate

SELECTED BLOCK



0 10 50m

1:1000

LOCALITY BLOCK PLAN

LOCALITY BLOCK LAND UTILIZATION DATA

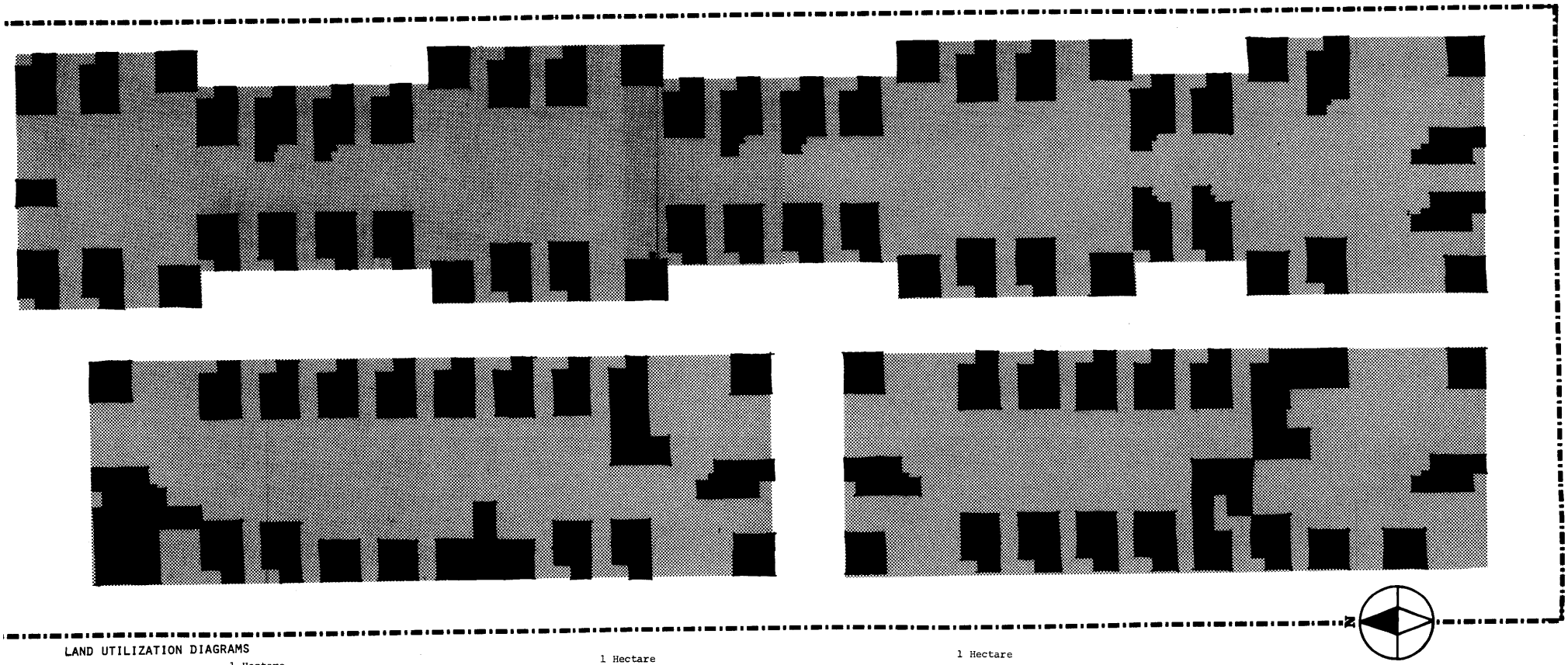
DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	92	2.83	32.5
DWELLING UNITS a	92	2.83	32.5
PEOPLE	506	2.83	178

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.97	34.3
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	1.86	65.7
SEMI-PRIVATE (cluster courts)	-	-
TOTAL	2.83	100

NETWORK EFFICIENCY A

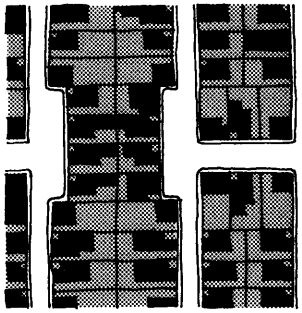
$R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 246$ m/Ha

AVERAGE LOT AREA = 308 m^2



LAND UTILIZATION DIAGRAMS

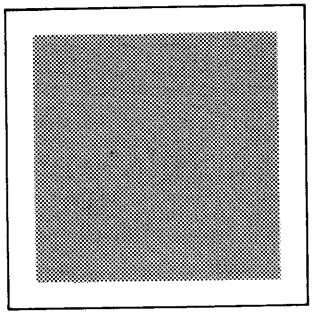
1 Hectare



PATTERN

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

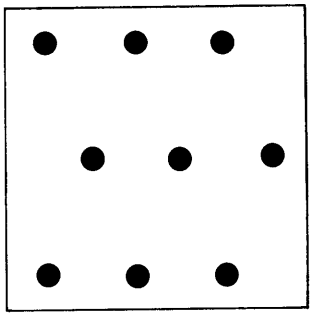
1 Hectare



PERCENTAGES

Streets/Walkways	34.3%
Playgrounds	-
Cluster Courts	-
Dwellings/Lots	65.7%

1 Hectare

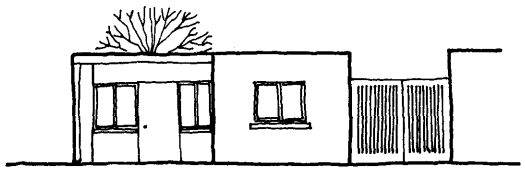


DENSITY Persons/Hectare 178

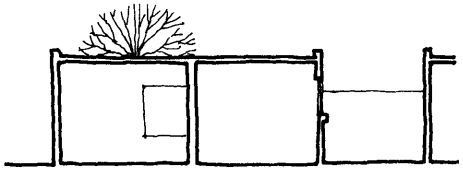
20 Persons

1:1000

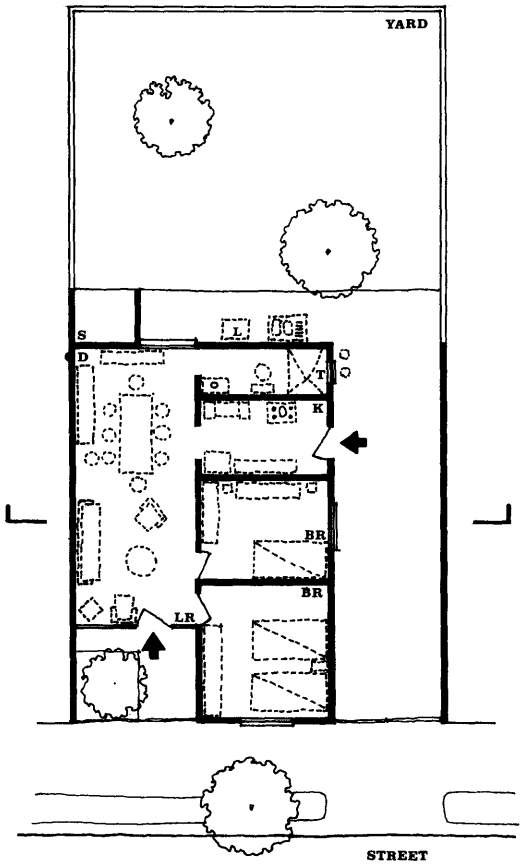
LOCALITY BLOCK LAND UTILIZATION



ELEVATION



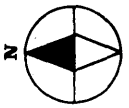
SECTION

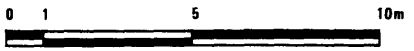


PLAN

KEY

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





1:200

TYPICAL DWELLING

PHYSICAL DATA
(related to dwelling and land)

DWELLING UNIT	
type:	HOUSE
area (sq m):	64
tenure:	LEGAL OWNERSHIP
LAND/LOT	
utilization:	PRIVATE
area (sq m):	190
tenure:	LEGAL/OWNERSHIP
DWELLING	
location:	INNER RING
type:	ROW/GROUPED
number of floors:	1/2
utilization:	SINGLE
physical state:	GOOD
DWELLING DEVELOPMENT	
mode:	INSTANT
developer:	PUBLIC
builder:	LARGE CONTRACTOR
construction type:	MASONRY/CONCRETE
year of construction:	1964
MATERIALS	
foundation:	CONCRETE STRIP
floors:	POURED CONCRETE SLAB
walls:	BLOCK/PLASTER
roof:	POURED REINFORCED CONCRETE
DWELLING FACILITIES	
wc:	1
shower:	1
kitchen:	1
rooms:	3
other:	BACK YARD

SOCIO-ECONOMIC DATA
(related to user)

GENERAL: SOCIAL	
user's ethnic origin:	MEXICAN
place of birth:	MEXICO CITY
education level:	PARENTS: PRIMARY SCHOOL; CHILDREN : COLLEGE
NUMBER OF USERS	
married:	2
single:	-
children:	2
total:	4
MIGRATION PATTERN	
number of moves:	4
rural - urban:	-
urban - urban:	1940, 1952, 1957, 1964
urban - rural:	-
why came to urban area:	-
GENERAL: ECONOMIC	
user's income group:	MIDDLE
employment:	FATHER: LABOR; SON: WHITE COLLAR
distance to work:	FATHER: 10 KM; SON: 5 KM
mode of travel:	FATHER: CAR; SON: PUBLIC TRANSPORTATION
COSTS	
dwelling unit:	4000
land - market value:	400,000/HA
DWELLING UNIT PAYMENTS	
financing:	PUBLIC SUBSIDIZED
rent/mortgage:	21/MONTH
% income for rent/mortgage:	5%

SAN JUAN DE ARAGON, Mexico City: (top) This photograph shows a two story house located at the head of the block, and in this particular case facing the pedestrian spine that connects schools, markets and community facilities. Notice the lot proportion of this corner lot, (1973).

(bottom left) Many of the houses are converted to include corner shoops as shown in the photograph. (1973).

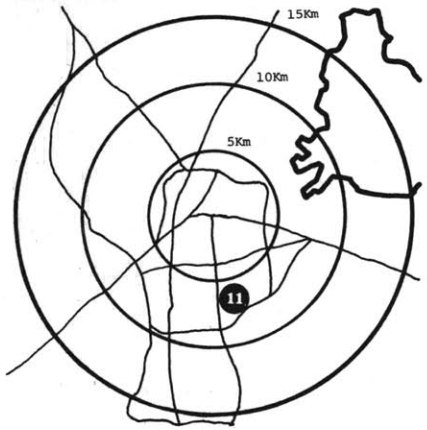
(bottom right) This is an example of a typical one story house, approximately 96 m^2. The dwelling unit has been improved by the tenant by providing the door and fence. Notice the construction materials that have been piled up in the yard and on the roof. (1973)

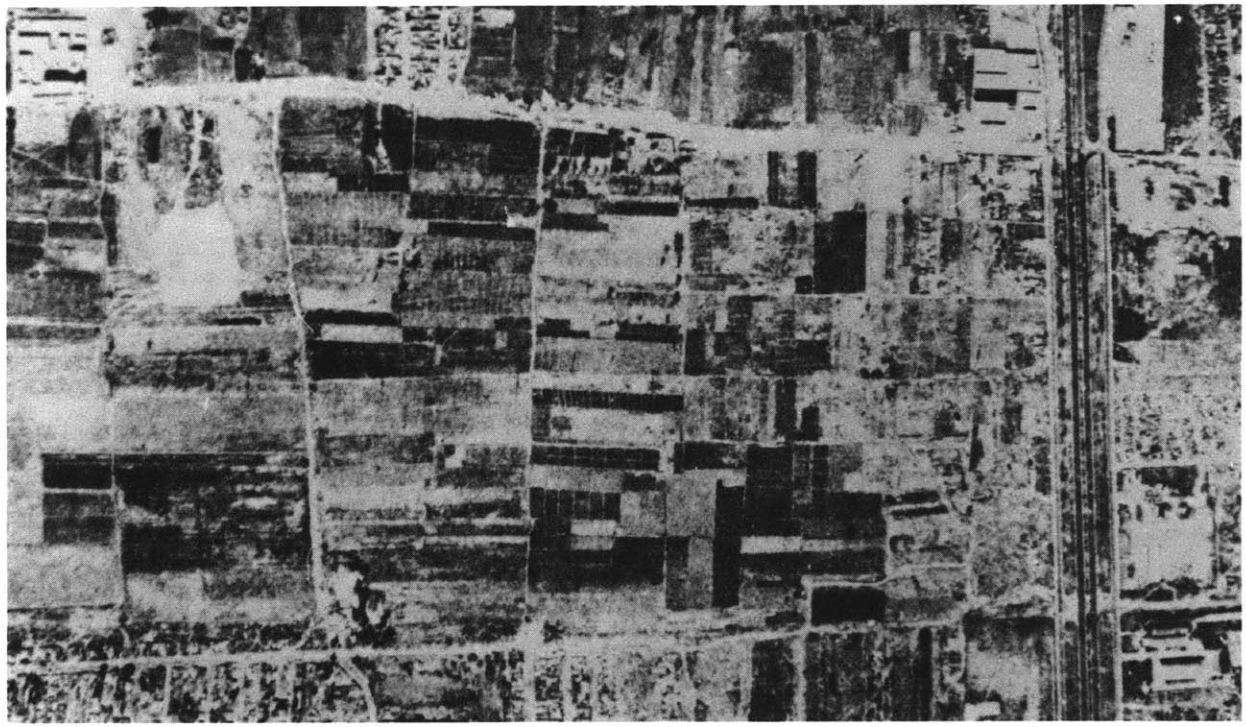
LOCALITY SOURCES

Plan:	*(approximate) AEROCARTOGRAFIA DE MEXICO, 1972.*
Land Use Pattern:	*(approximate) Field Survey, R. Davila, 1973.*
Circulation Pattern:	*(approximate) Field Survey, R. Davila, J. Cortes, 1973.*
Segment Plan:	*(accurate) Aerial photograph, 1972; Field Survey, R. Davila, 1973.*
Block Plan:	*(accurate) CATASTRO DEPARTAMENTO DEL DISTRITO FEDERAL, 1972.*
Block Land Utilization:	*(accurate) IBID.*
Typical Dwelling:	*(accurate) IBID, Field Survey, R. Davila, 1972-73.*
Physical Data:	*(accurate) IBID.*
Socio-Economic Data:	*(accurate) IBID.*
Photographs:	*AEROCARTOGRAFIA DE MEXICO, (aerial), 1972; R. Davila, 1973.*
General Information:	*I.M.S.S., INVESTIGACION DE VIVIENDA, 1965; CENSUS 1970; Various Reports from BANCO NACIONAL DE OBRAS Y SERVICIOS PUBLICOS.*

11 IZTACALCO
Mexico City

PUBLIC, MIDDLE-INCOME, WALK-UP APARTMENTS



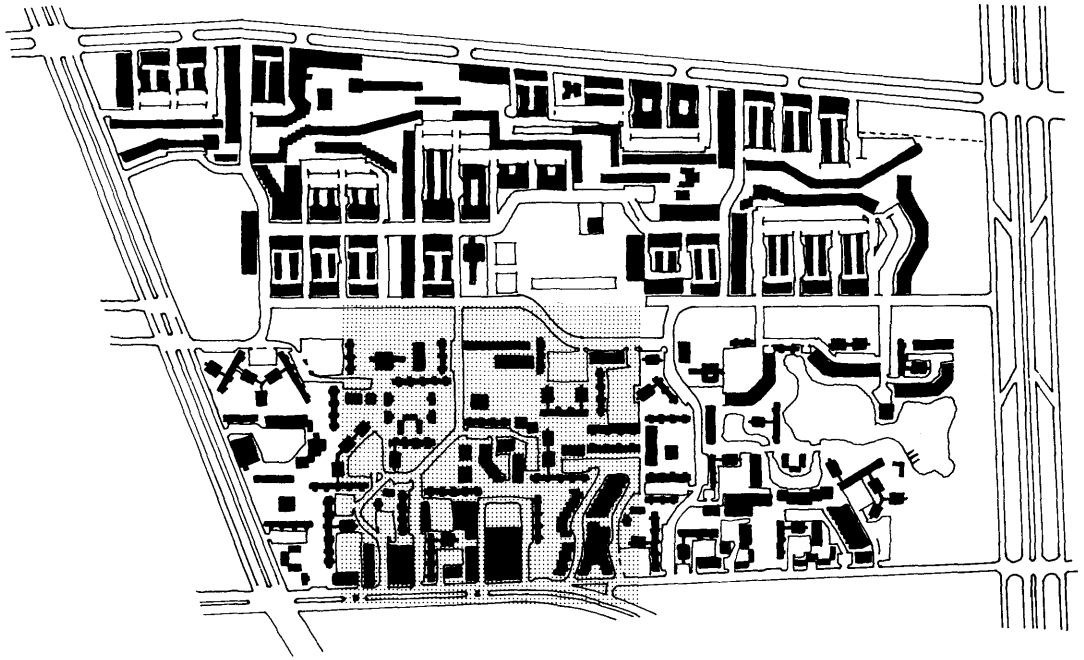


The air photograph shows the site where the IZTACALCO project is constructed.

ORIGINS: Iztacalco is a new development (1972-1974) which was promoted, administrated and constructed by the goverment agency "INFONAVIT" (Instituto Nacional del Fondo para la Vivienda de losTrabajadores). This "Unidad Habitacional" is the first prject by the INFONAVIT which was to serve as a prototype for future devalopments. The project includes residential, commercial and recreational land uses.

LOCATION: It is located 6 kilometers east from the city center, in one of the less developed areas of the city. The area was previously used for agriculture. On the north is the city sports area, on the east underdeveloped lots still used for agricul ture, and the Avenida Rio de Churubusco one of the main highways of the city; on the south are residences of low income people: squatters and illegal land subdivisions; on the west is the "La calzada de la Viga" another important artery of the city, and also slums of the old Iztacalco (XIV Century).

The locality itself is contained in 74 gross hectares of primarily residential use. The locality contains 5,691 apartments, at an average density of 430 people per hectare. The main dwelling type are walk-up apartment blocks; row housing and apartment towers are also planned. Some of the land will be retailed to private individuals to develop offiaces and commercial buildings. The locality includes generous open spaces and an artificial lake for sewage treatment. Of the two zones of the project (north and south), the focus has been on the south zone of the locality.
The apartments of the project are going to be offered in condominium ownership.



SELECTED SEGMENT

LOCALITY PLAN

LAYOUT: The instant, planned layout was developed by professionals. The main design constraints were: the avenues which define the periphery of the locality, the power line which runs through the length of the locality, and the size of the site.

LOCALITY SEGMENT: The pattern of the streets is a product of visual determinants rather than the maximization of the efficiency of the layout. The distribution of the buildin groups are mainly intended to create a pleasing landscape. The parking lots surrounding or added to the buildings are land undefined in reponsability and control.

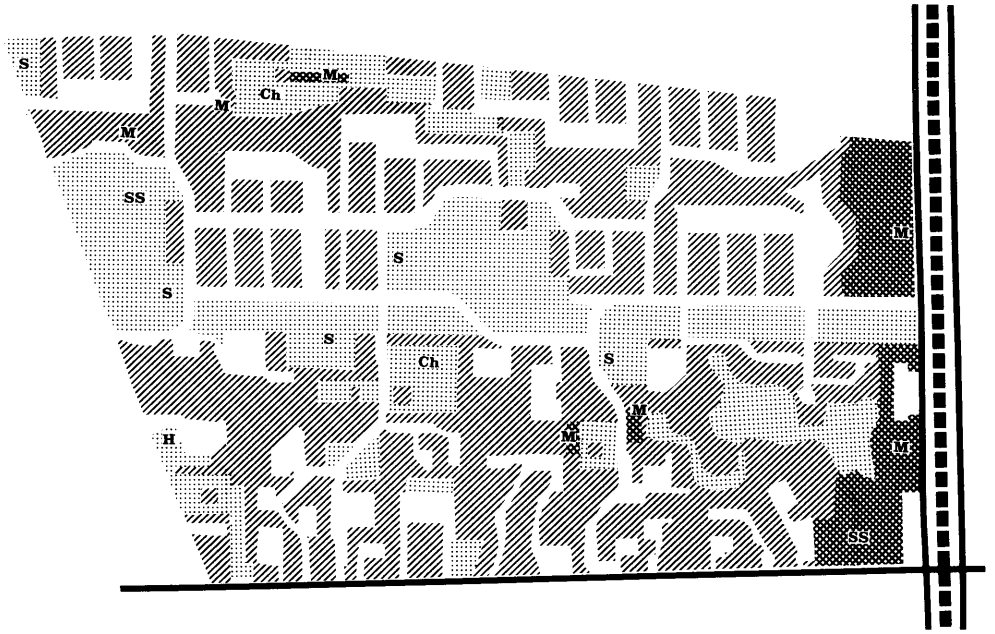
The open spaces, interior walkways, gardens, also suffer similar lack of definition of land utilization. This layout may be compared with the traditional spanish layouts of old Mexico City, where land utilization is precisely defined.

AREAS

- RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- OPEN SPACES

KEY

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



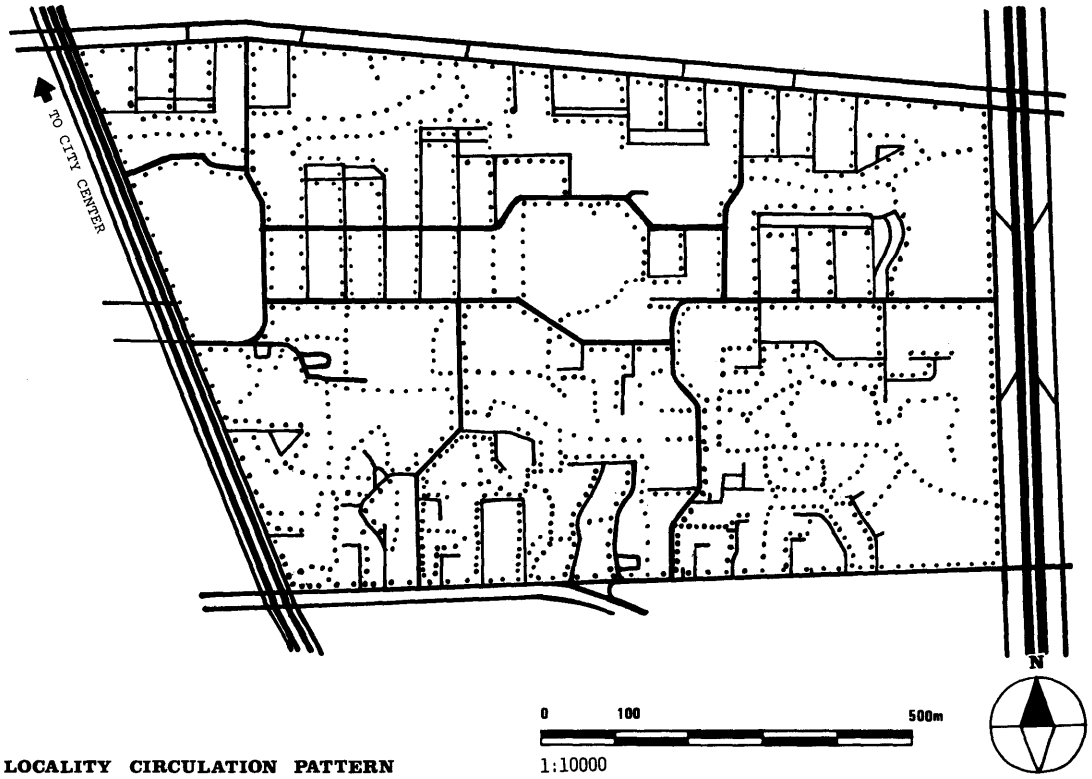
1:10000

LOCALITY LAND USE PATTERN

LAND USE: A concentration of land for commercial pourpose is bordering the east side of the locality, but there are also scattered commerces in other sections. Thereaare a large number of community facilities in the area (schools, churchs, health centers, recreational areas, etc.).

The rest of the land is mainly residential, open spaces, and parking lots.

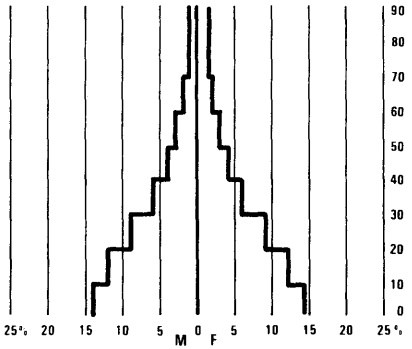
The locality includes an artificial lake, which will be used by the inhabitants of the neighborhood.



LOCALITY CIRCULATION PATTERN

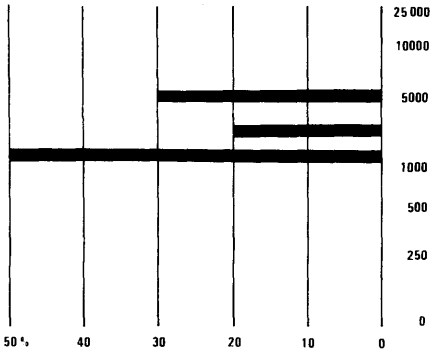
CIRCULATION: The settlement already has a very high intensity of circulation primarily vehicular, the locality is bounded by a very heavily traveled high speed traffic route. The layout of the streets in the site is designed to decrease the speed of the cars. The pedestrians are separated from the automobile cir-ulation.

POPULATION: The planned user is a family of 5.2 people, of middle—low and moderate incomes, the total population will be 30,000 people.

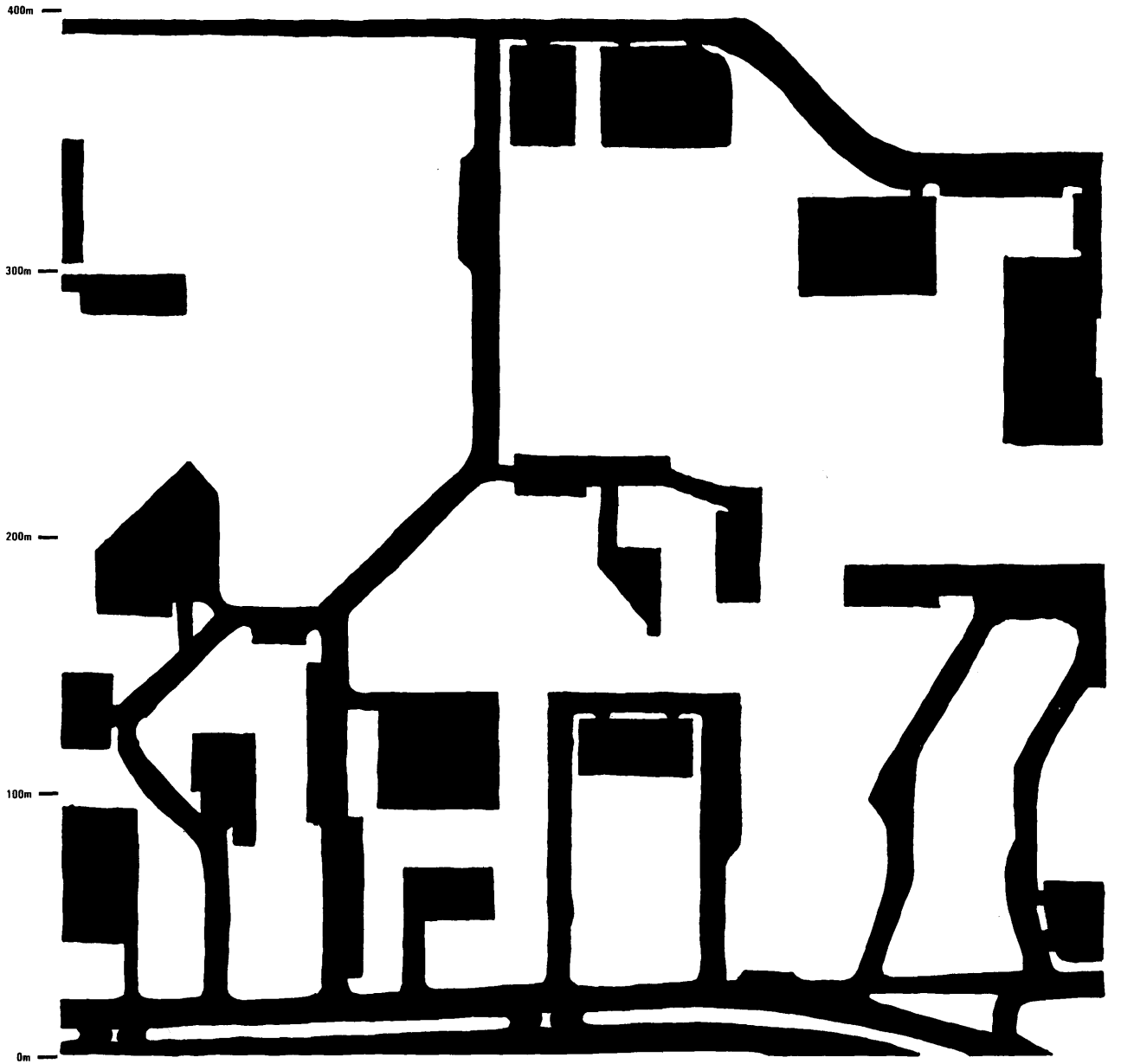


LOCALITY POPULATION DISTRIBUTION
horizontal: percentages vertical: ages
males: M females: F
Source: Censo General de Poblacion, Mexico D.F. 1970, SIC/DGE.

INCOME: The estimated average for the 1974 household income is $2,500 U.S..



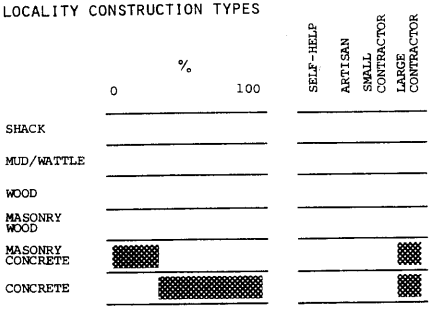
LOCALITY ANNUAL INCOME DISTRIBUTION
horizontal: percentages vertical: dollars
Source: INFONAVIT, 1973, Mexico, D.F.



LOCALITY SEGMENT CIRCULATION

LOCALITY SEGMENT PLAN

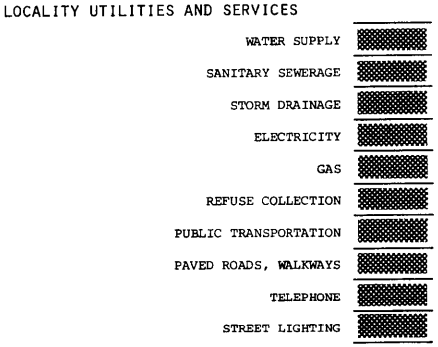
LOCALITY CONSTRUCTION TYPES



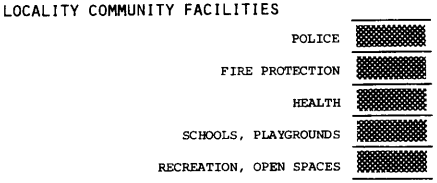
The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

Quality of information: Accurate

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: Accurate

SELECTED BLOCK

THE BLOCK: The block has undefined land responsibility and control, the circulation both pedestrian and vehicular (including parking lots), infringe on the other land uses.

Very low occupancy of the land by the buildings, very little private land and a high circulation length, will increase the cost for maintenance, administration and management of the units.

The apartment blocks underutilize the land, and are so narrow that they maximize the frontage of the apartments to the open spaces. The houses, of two and three stories are located with a double access to the lots. The grouping of the dwellings is not related to the property boundaries.

THE DWELLING: The individual dwellings have an average area of 80 m^2. The usual form of access to the dwelling is directly from the street. The average building height is five floors with some shops in the first floor. All the utilities are provided within the apartment including a small laundry.

LOCALITY BLOCK LAND UTILIZATION DATA

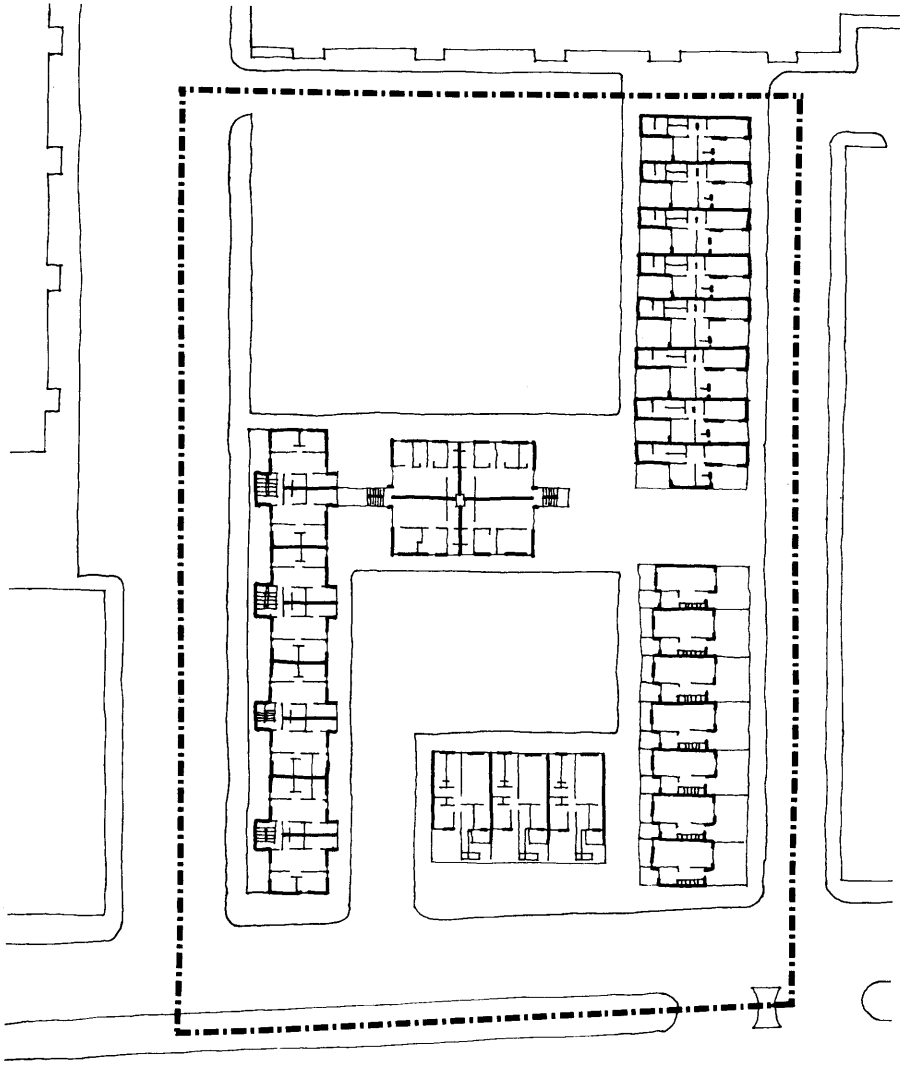
DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	-	-	-
DWELLING UNITS	84	1.00	84
PEOPLE	433	1.00	433

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.75	75
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	0.25	25
SEMI-PRIVATE (cluster courts)	-	-
TOTAL	1.00	100

NETWORK EFFICIENCY

$$R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 563$$

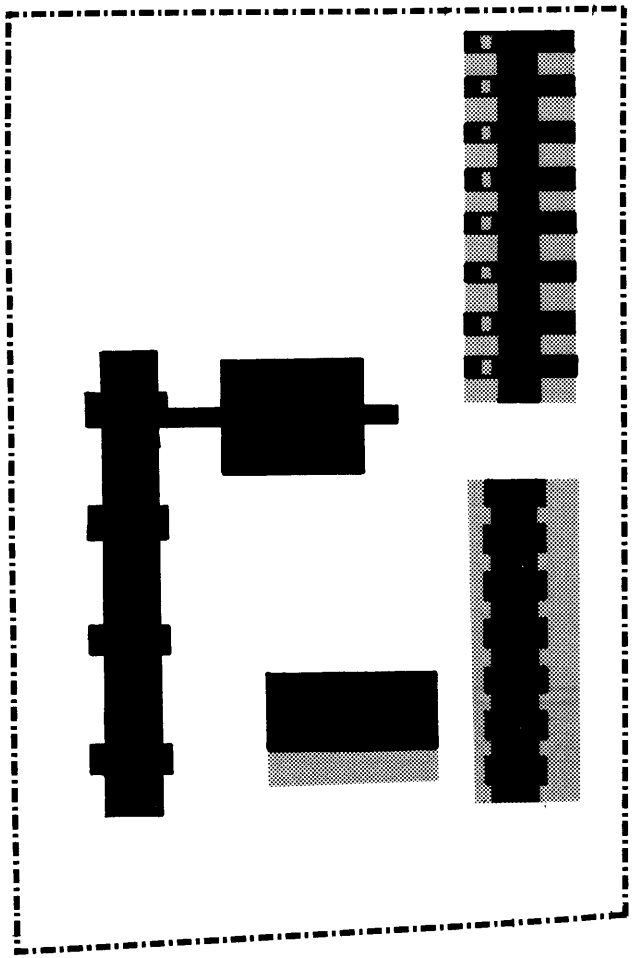
AVERAGE LOT AREA = 84



0 10 50m

1:1000

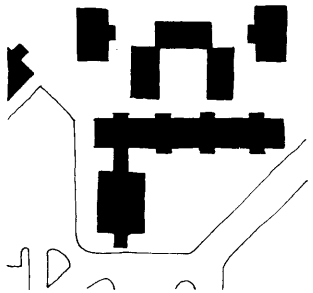
LOCALITY BLOCK PLAN



LOCALITY BLOCK LAND UTILIZATION 1:1000

LAND UTILIZATION DIAGRAMS

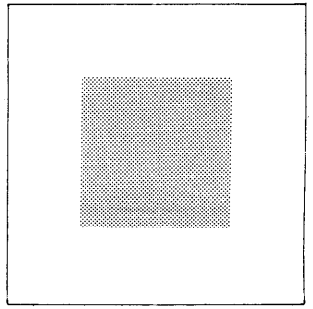
1 Hectare



PATTERN

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

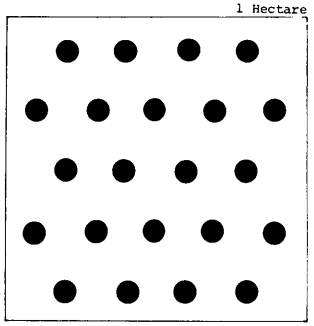
1 Hectare



PERCENTAGES

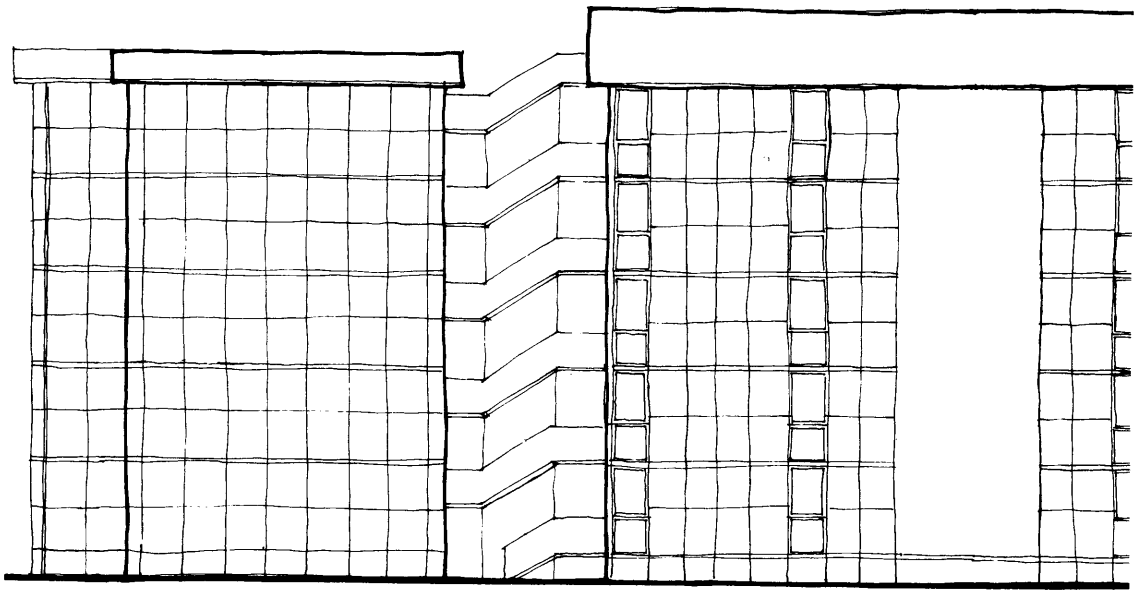
Streets/Walkways	75
Playgrounds	-
Cluster Courts	-
Dwellings/Lots	25

1 Hectare

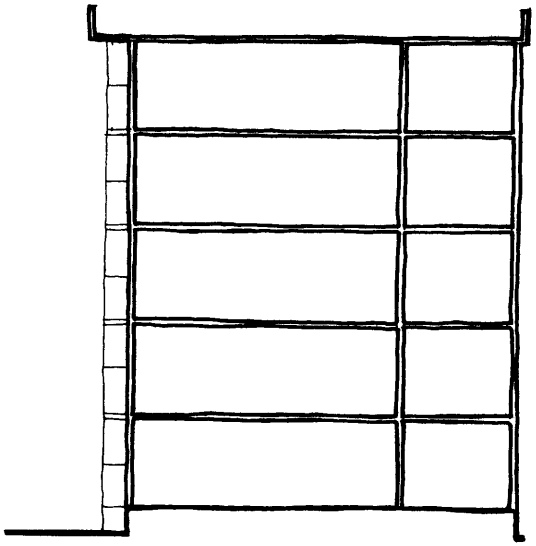


DENSITY Persons/Hectare 433

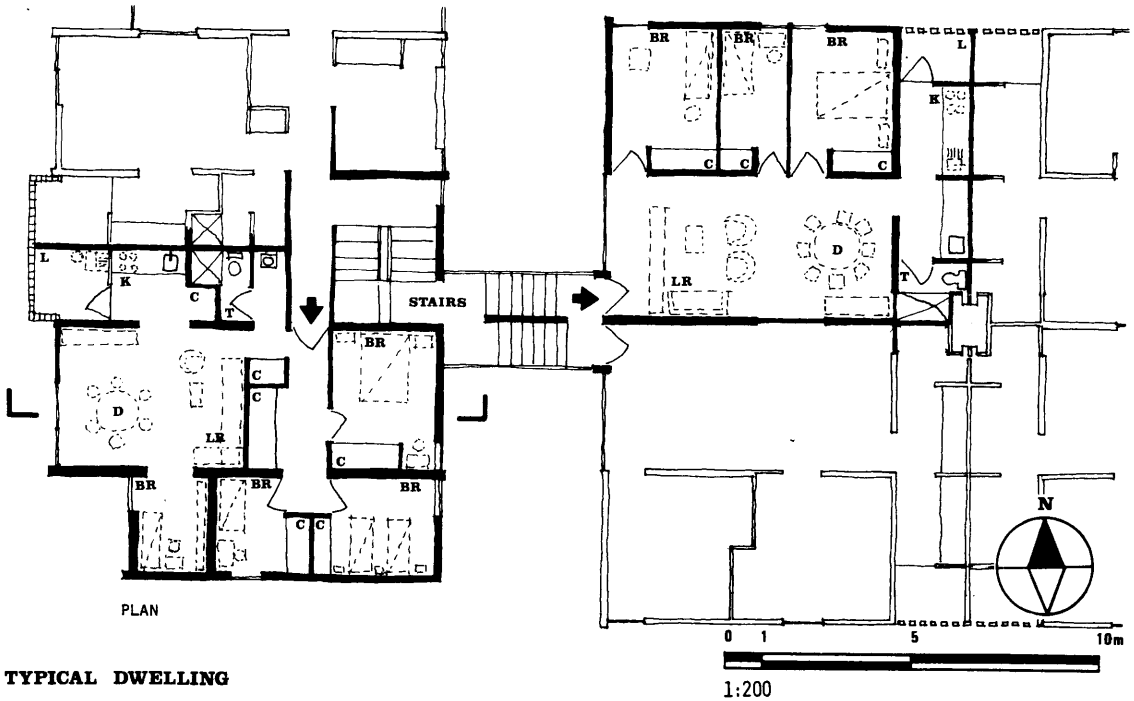
● 20 Persons



ELEVATION



SECTION



PLAN

1:200

TYPICAL DWELLING

KEY

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

LOCALITY SOURCES

Plan:	*(accurate) INFONAVIT, PLANOS DE TRAZO, CONDOMINIOS, CONCEPTOS URBANOS Y ARQUITECTONICOS IZTACALCO, 1973, Mexico, DF.*
Land Use Pattern:	*(accurate) IBID*
Circulation Pattern:	*(approximate) IBID*
Segment Plan:	*(accurate) IBID*
Block Plan:	*(accurate) IBID*
Block Land Utilization:	*(approximate) IBID*
Dwelling Plan:	*(accurate) CONCEPTOS URBANOS Y ARQUITECTONICOS, INFONAVIT, 1973, Mexico, DF.*
Physical Data:	*(accurate) IBID*
Socio-Economic Data:	*(approximate) INFONAVIT*
Photographs:	*E.Espinosa, 1973*
General Information:	*INFONAVIT, Field Survey, 1973, Mexico, DF.*

PHYSICAL DATA
(related to dwelling and land)

DWELLING UNIT
- type: APARTMENTS
- area (sq m): 80
- tenure: LEGAL OWNERSHIP

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

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

DWELLING DEVELOPMENT
- mode: INSTANT
- developer: PUBLIC
- builder: LARGE CONTRACTOR
- construction type: CONCRETE
- year of construction: 1973-1974

MATERIALS
- foundation: CONCRETE
- floors: CONCRETE, CONCRETE
- walls: CONCRETE, BRICK
- roof: ASPHALT ROOFING ON CONCRETE

DWELLING FACILITIES
- wc: 1
- shower: 1
- kitchen: 1
- rooms: 3-4
- other: CLOSETS, SERVICE PATIO

SOCIO-ECONOMIC DATA
(related to user)

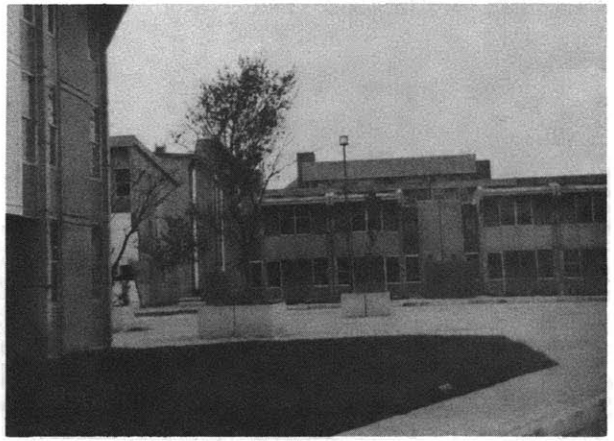
GENERAL: SOCIAL
- user's ethnic origin:
- place of birth: -
- education level: PRIMARY

NUMBER OF USERS
- married: 2 (expected)
- single: 1
- children: 2
- total: 5

GENERAL: ECONOMIC
- user's income group: MIDDLE
- employment: LABOR
- distance to work: -
- mode of travel: PUBLIC TRANSPORTATION

COSTS
- dwelling unit: $6,400
- land - market value: $24,000/HA

DWELLING UNIT PAYMENTS
- financing: PRIVATE/PUBLIC
- rent/mortgage: $80.00/MONTH (estimated)
- % income for rent/mortgage: 25%



IZTACALCO, Mexico City: (top) A group of low rise dwellings is shown. The row of houses is facing a parking lot.

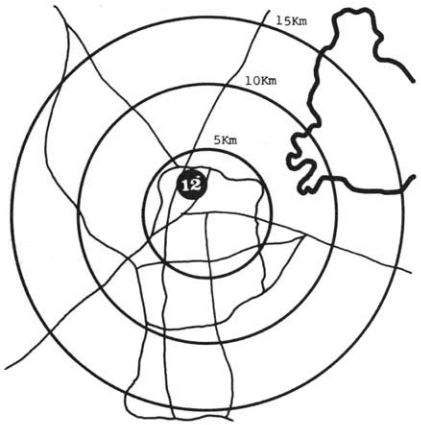
(bottom left) A typical five story walk-up block. This specific building contains 30 apartments, a parking space is provided for each apartment. The entrance to the stairs is facing to the street.

(bottom right) This picture shows the environment created by a group of row houses and walk-up blocks, as you notice, property boundaries are not well defined.

12 NONOALCO TLALTELOLCO

Mexico City

PUBLIC, MIDDLE INCOME,
WALK-UP/HIGH-RISE APARTMENTS



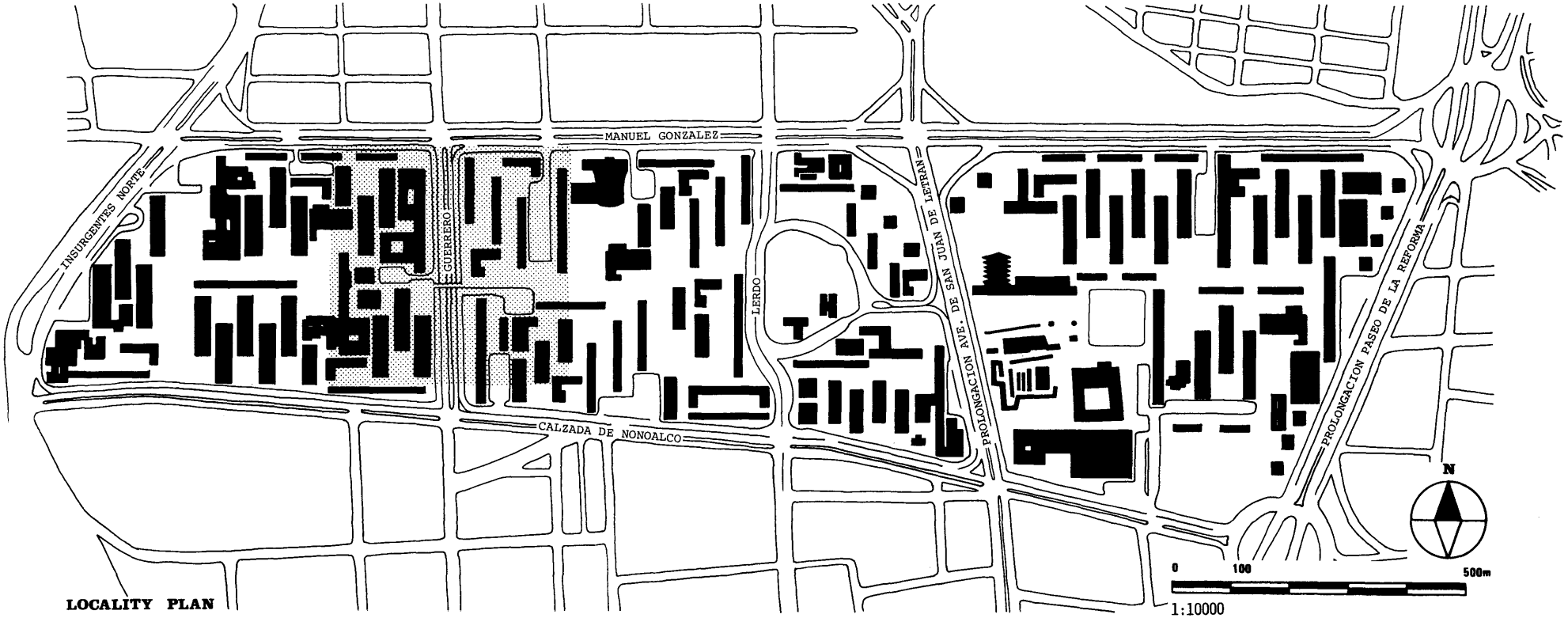
LOCATION: Nonoalco Tlaltelolco comprises the old Mexico city freight station, the custom houses and the store houses and depots which surround them. The project is bounded by in the west by Insurgentes avenue and the Nonoalco bridge, in the north by Manuel Gonzalez street, in the south by the Nonoalco road, in the east by new Paseo de la Reforma. The project extends from the Nonoalco bridge to the Peralvillo round point (glorieta de Peralvillo). It is 2400 m. long and its width varies between 550m. to 400m.. Its surface covers a little more than 115 Ha. There are high population densities to the west, east and south areas which surround the project. Deteriorating dwellings surround the project.

ORIGIN: The Nonoalco Tlaltelolco housing project was built in 1963 by the National Mortgage Bank and Urban and Public Works. This project was implemented as part of the renewal of the center of Mexico city, the area has historic-aesthetic values. Previously, this was a deteriorating area of houses constructed between 1880 and 1900. The construction was of low quality, adobe and tepetate, one family houses, tenement houses and some huts and barraks. The project aim was to give better dwellings to these low-income groups. The project appears to have middle-income people instead of the intended low-income.

NONOALCO TLALTELOLCO, Mexico City: (bottom) The air photograph shows the whole locality. Notice the big superblocks in relation with the surroundings, there are too many small open spaces with a poor character. The continuity of the project becomes evident, very repetitive. Great avenues run from north to south.

LAYOUT: The project is a dense conglomeration of apartment buildings, half are 4 and 5 stories high, and the other half 7, 8, 14 and 22 stories, the superblock layout has walk-up and high rise buildings with the aim of providing maximum open space and economy through high density and inexpensive forms of construction. The project was planned as an instant development. The layout is very monotonous.

SELECTED SEGMENT



LOCALITY PLAN

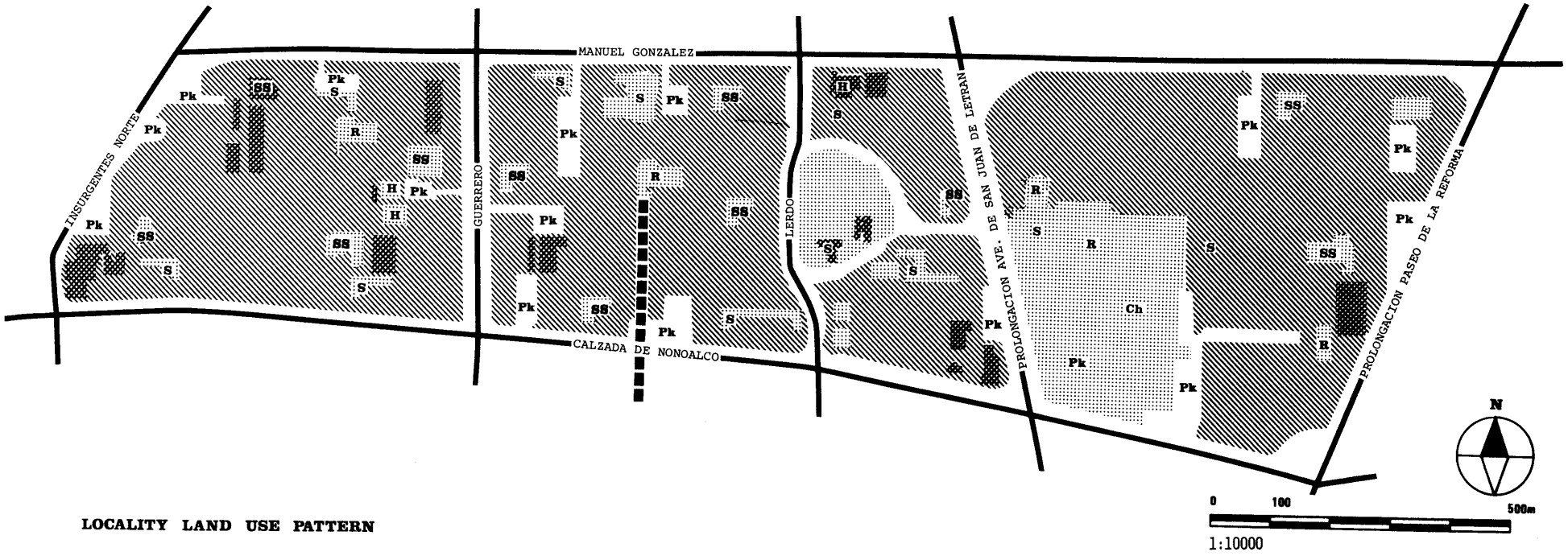
LAND USE: Approximately 15% of the 89 hectares is used for the apartment buildings, 9% is devoted to schools, commercial facilities, clinics, clubs, museum, church and other social activities, 27% for streets, sidewalks, squares, cover paths and parking areas. The remaining 49% is for green areas and recreational space.

AREAS

- RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- OPEN SPACES

KEY

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



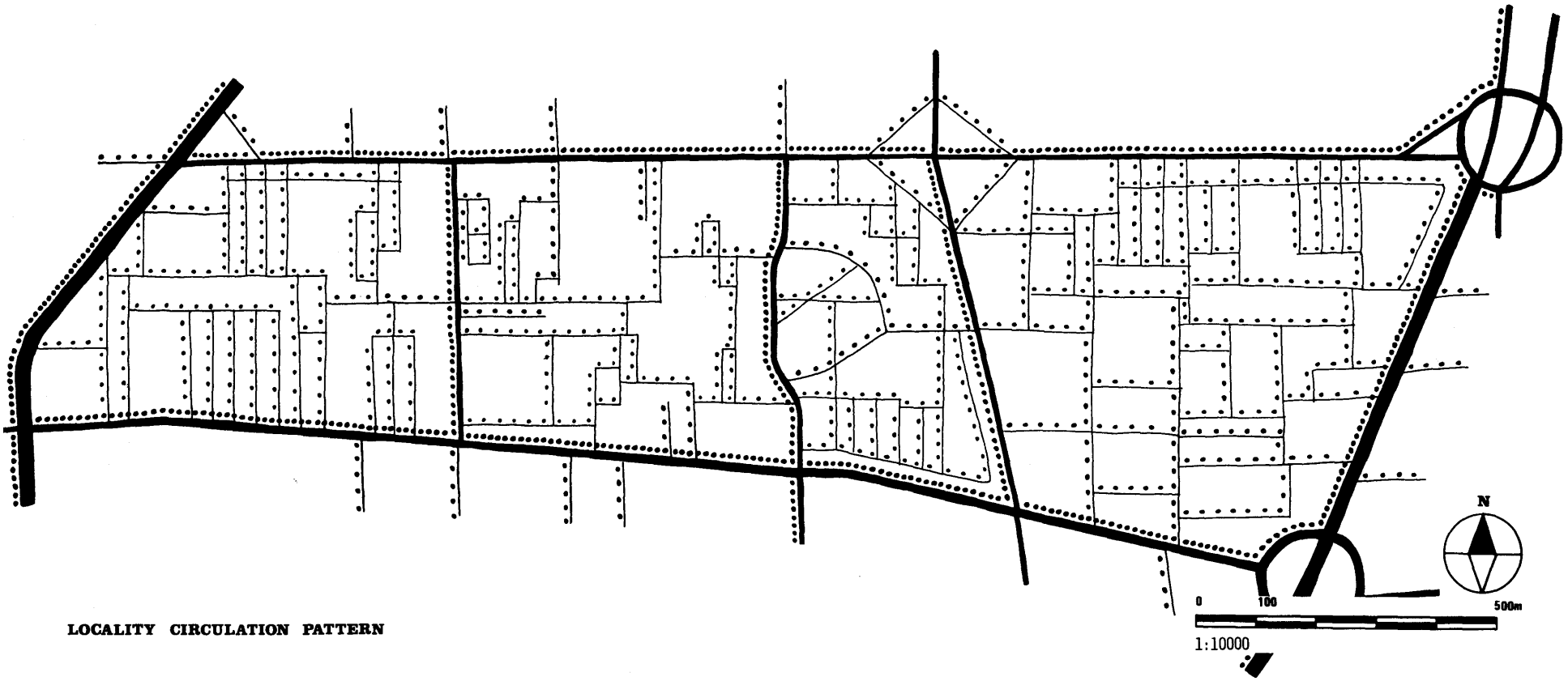
LOCALITY LAND USE PATTERN

CIRCULATION: The project is traversed from west to east through gardens having just three vehicular circulations. The area has four big islands or superblocks. There is free pedestrian circulation around and between the individual apartment blocks. There are wide streets bordering the project area and connecting with free ways. There is a subway station in the middle of the project. A large irregular shaped park has been planned in the project, the size is approximately double of that of the alameda garden in the center of the city, in it are contained the remains of the Tlaltelolco pyramid and the church of Santiago which is planned to become a national monument.

KEY

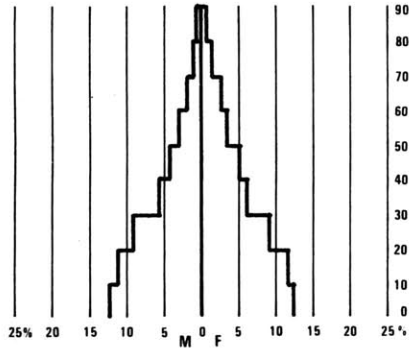
VEHICULAR

PEDESTRIAN



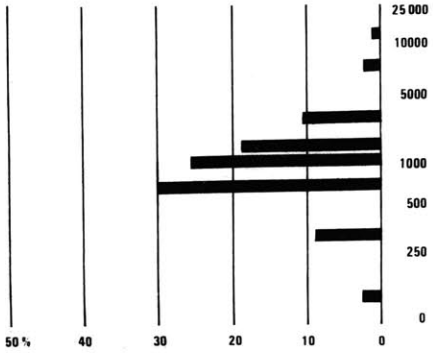
LOCALITY CIRCULATION PATTERN

POPULATION: There are 69,691 inhabitants and approximately 12,016 families, with a density of 779 inhabitants per hectare. The family average is 5.8 members, approximately 48% of the population is less than 20 years old.

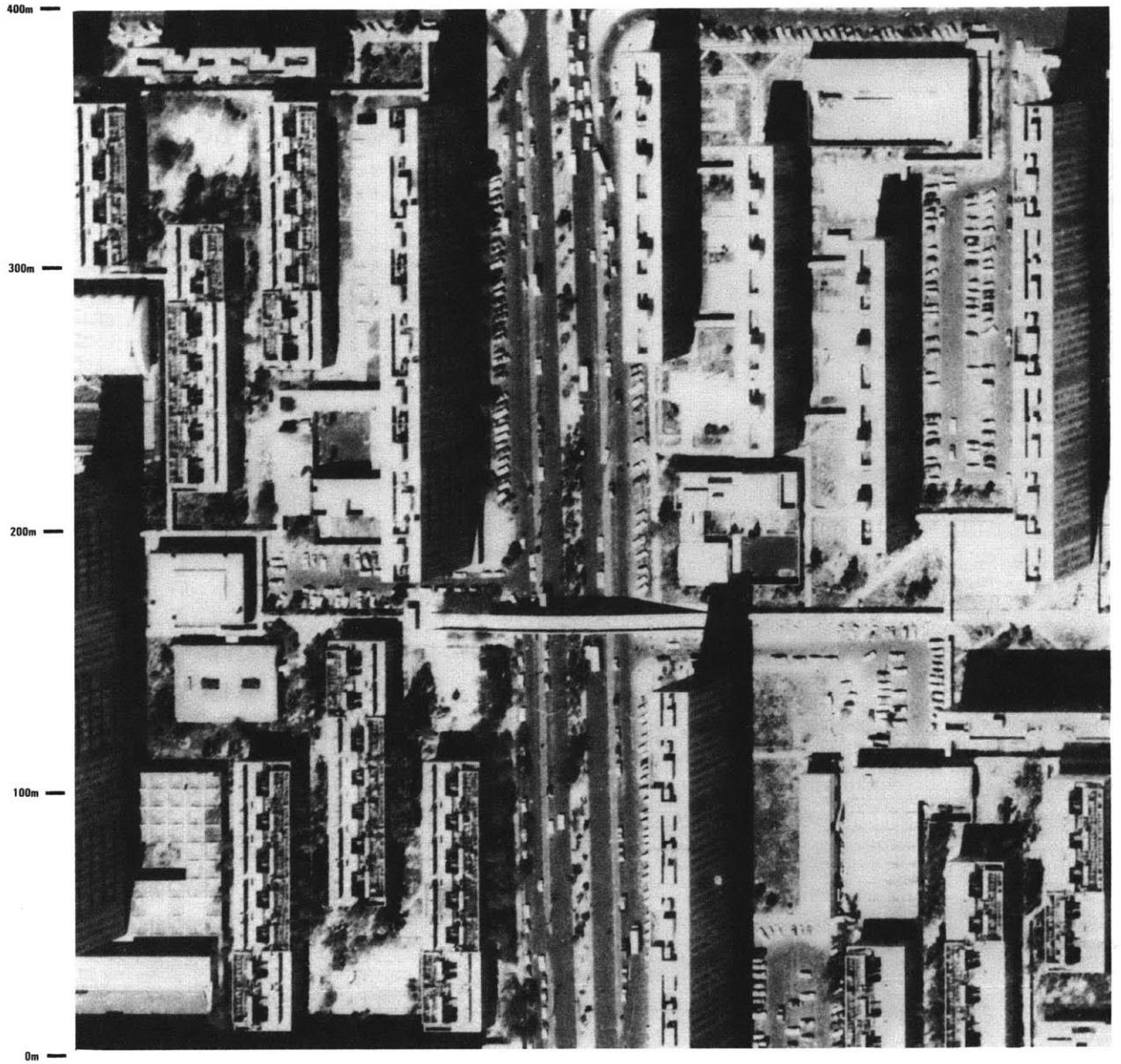


LOCALITY POPULATION DISTRIBUTION
horizontal: percentages vertical: ages
males: M. 33,270; females: F. 36,421
Source: Census 1970; population: 69,691

INCOMES: 42% of the families have their income of less than $80 per month and 25% of the families from $80 to $120 per month. The average family income is about $134 per month.

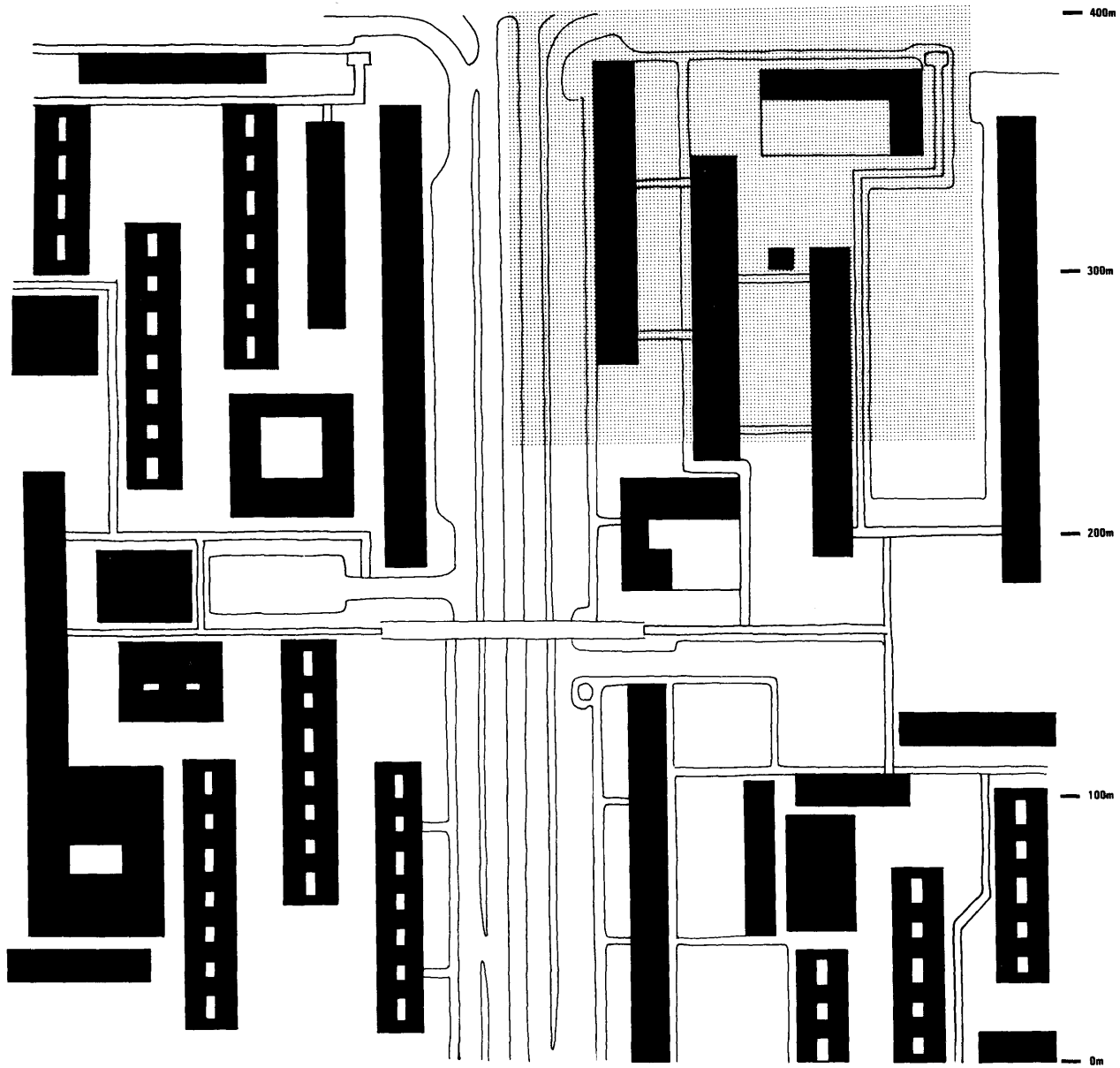


LOCALITY ANNUAL INCOME DISTRIBUTION
horizontal: percentages vertical: dollars
Source: Census 1970; households: 17,423



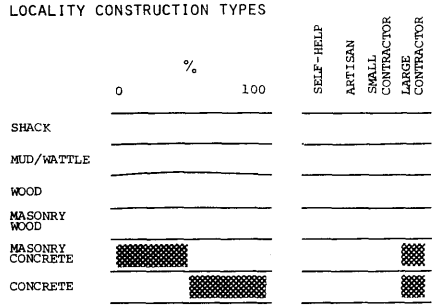
LOCALITY SEGMENT AIR PHOTOGRAPH

1:2500



LOCALITY SEGMENT PLAN

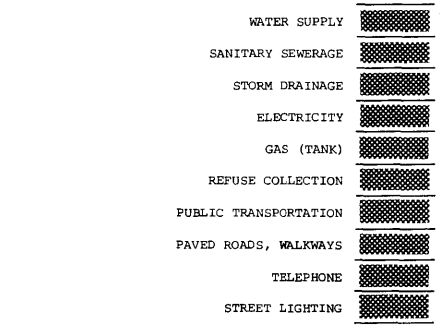
LOCALITY CONSTRUCTION TYPES



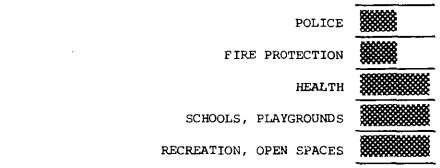
The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

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

SELECTED BLOCK

LOCALITY BLOCK LAND UTILIZATION DATA

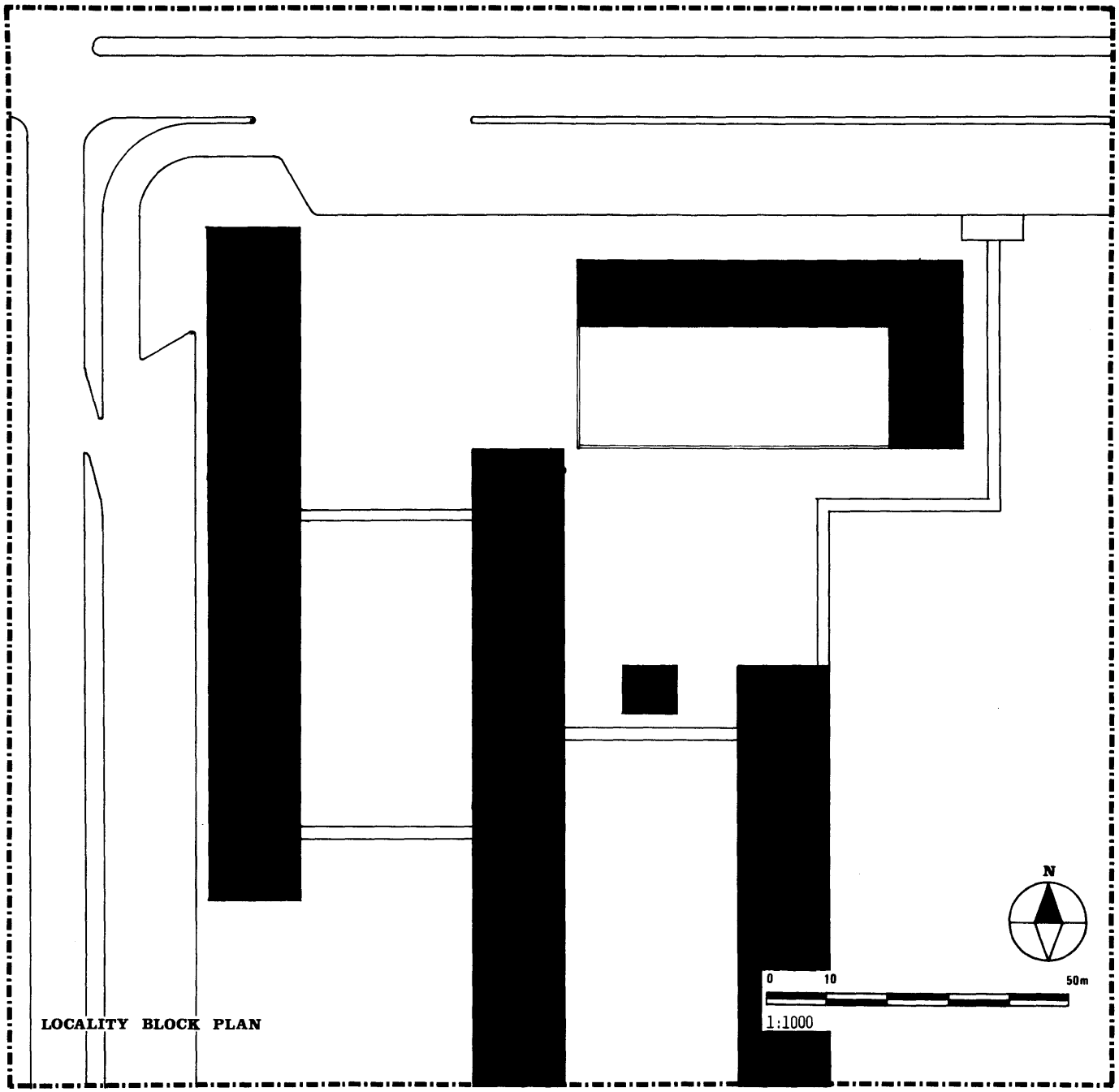
DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	-	3.15	-
DWELLING UNITS	280	3.15	88.88
PEOPLE	1680	3.15	533.33

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	1.13	35.9
SEMI-PUBLIC (open spaces, schools, community centers)	1.60	50.8
PRIVATE (dwellings, shops, factories, lots)	0.42	13.3
SEMI-PRIVATE (cluster courts)	-	-
TOTAL	3.15	100

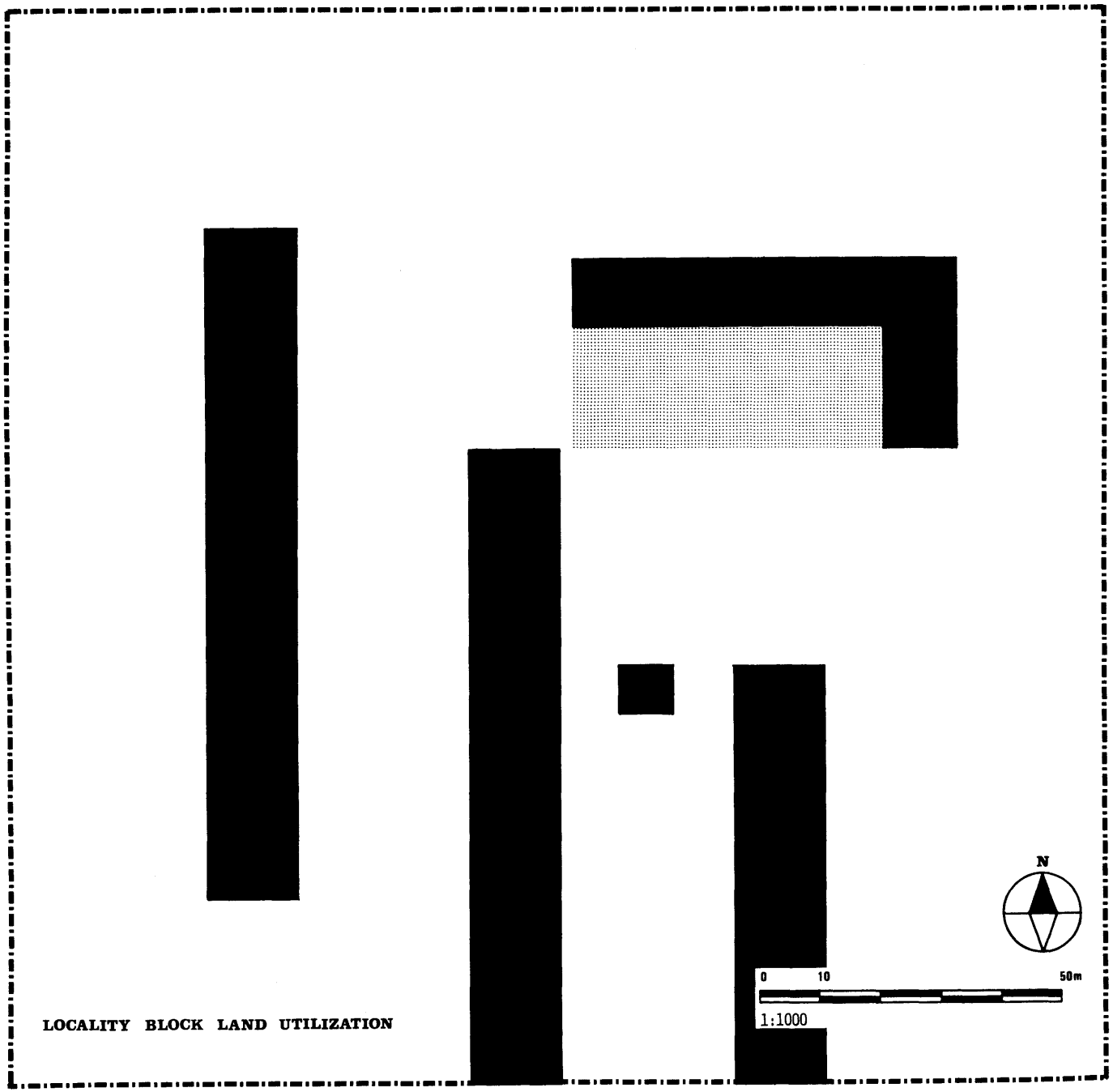
NETWORK EFFICIENCY

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

AVERAGE LOT AREA = -

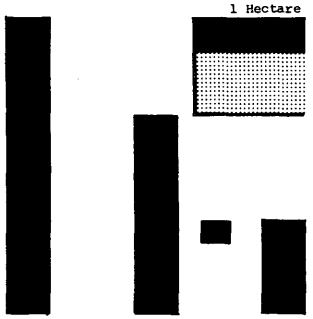


LOCALITY BLOCK PLAN



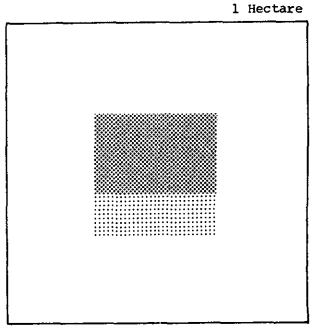
LOCALITY BLOCK LAND UTILIZATION

LAND UTILIZATION DIAGRAMS



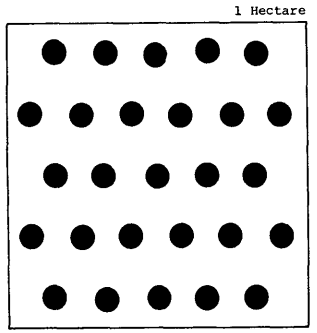
PATTERN

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



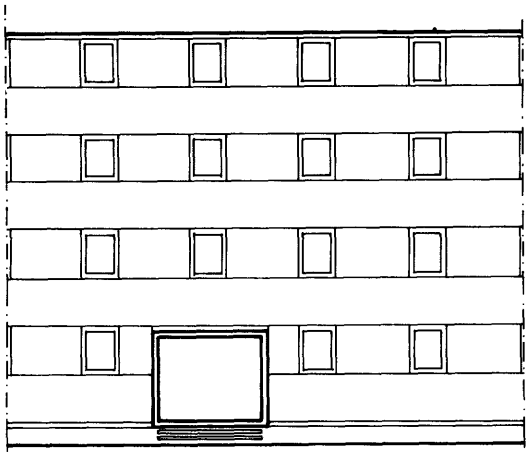
PERCENTAGES

Streets/Walkways	35.9
Playgrounds	50.8
Cluster Courts	-
Dwellings/Lots	13.3

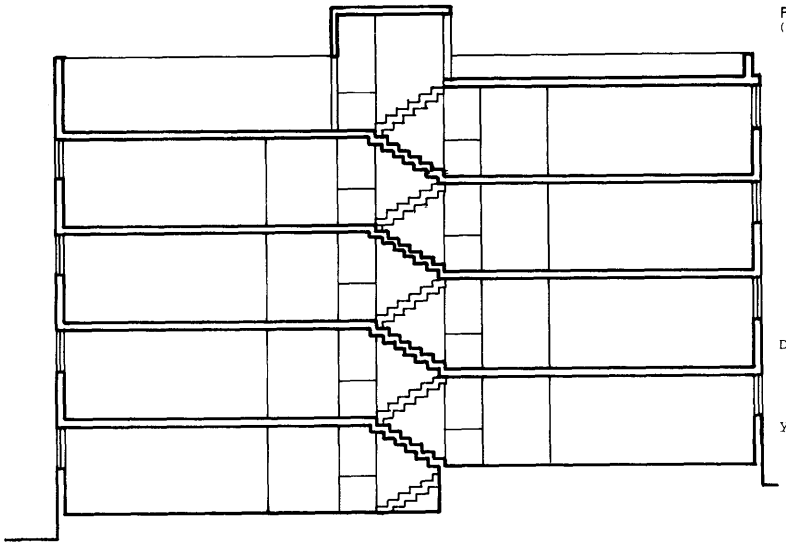


DENSITY Persons/Hectare 533

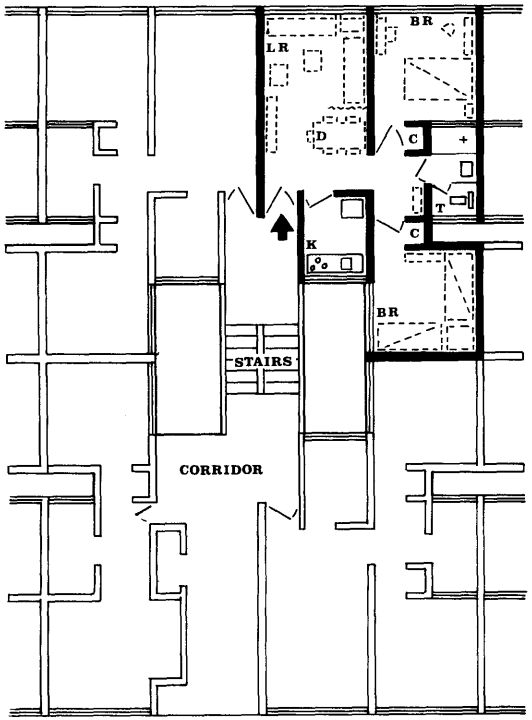
20 Persons



ELEVATION



SECTION

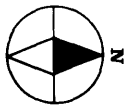


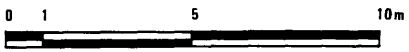
PLAN

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)





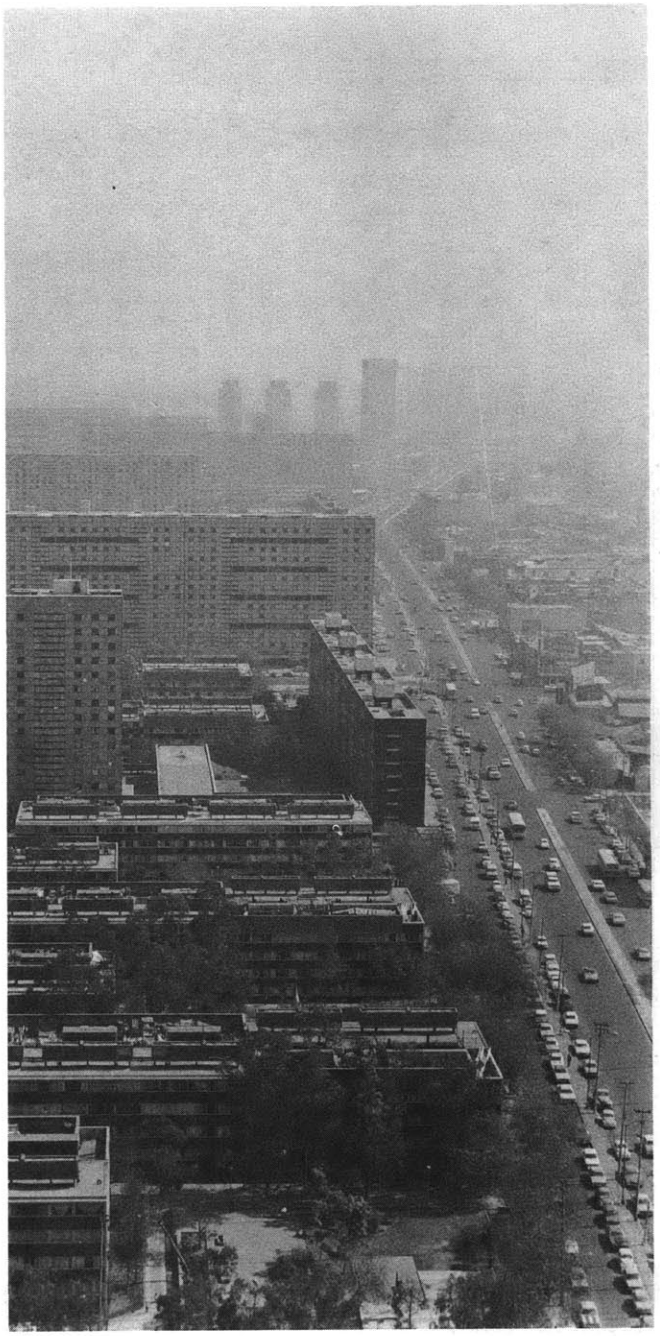
1:200

PHYSICAL DATA
(related to dwelling and land)

DWELLING UNIT	
type:	APARTMENTS
area (sq m):	53
tenure:	LEGAL OWNERSHIP
LAND/LOT	
utilization:	SEMI-PUBLIC
area (sq m):	1766.40
tenure:	LEGAL OWNERSHIP
DWELLING	
location:	CITY CENTER
type:	WALK-UP/HIGH-RISE
number of floors:	4 OR MORE
utilization:	MULTIPLE: FAMILY
physical state:	FAIR
DWELLING DEVELOPMENT	
mode:	INSTANT
developer:	PUBLIC
builder:	LARGE CONTRACTOR
construction type:	CONCRETE
year of construction:	1964
MATERIALS	
foundation:	CONCRETE VAULTS
floors:	POURED CONCRETE SLAB
walls:	BRICK, BLOCK AND CONCRETE
roof:	REINFORCED CONCRETE SLAB
DWELLING FACILITIES	
wc:	1
shower:	1
kitchen:	1
rooms:	3
other:	-

SOCIO-ECONOMIC DATA
(related to user)

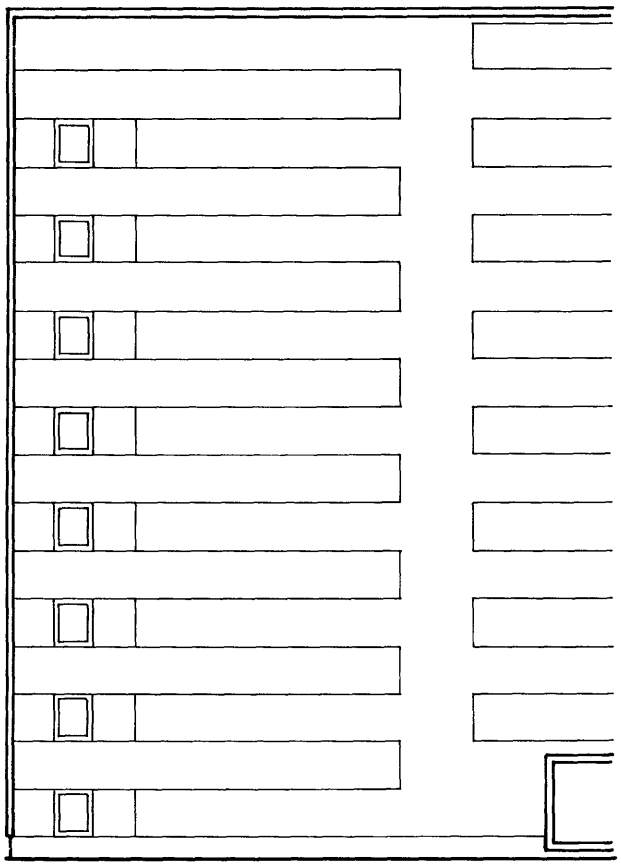
GENERAL: SOCIAL	
user's ethnic origin:	MEXICAN
place of birth:	MEXICO CITY
education level:	SECONDARY SCHOOL
NUMBER OF USERS	
married:	2
single:	-
children:	3
total:	5
MIGRATION PATTERN	
number of moves:	1
rural - urban:	-
urban - urban:	1964
urban - rural:	-
why came to urban area:	-
GENERAL: ECONOMIC	
user's income group:	MIDDLE
employment:	GOVERNMENT CLERK
distance to work:	2 KM.
mode of travel:	PUBLIC TRANSPORTATION
COSTS	
dwelling unit:	$3,200
land - market value:	$80/M2
DWELLING UNIT PAYMENTS	
financing:	PUBLIC SUBSIDIZED
rent/mortgage:	$30/MONTH
% income for rent/mortgage:	15%



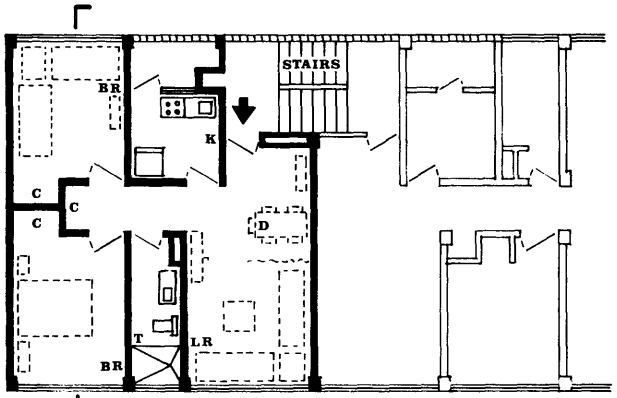
NONOALCO TLALTELOLCO, Mexico City: (top left) You can notice the open space related to the high rise buildings, you feel lost in the big complex.

(right) Walk-ups in the front and high rise apartments in the back, facing Reforma avenue. You can notice the smog of the city.

(bottom left) This is a walk-up apartment, the scale of the open space infront and the cover path looks very pleasent.

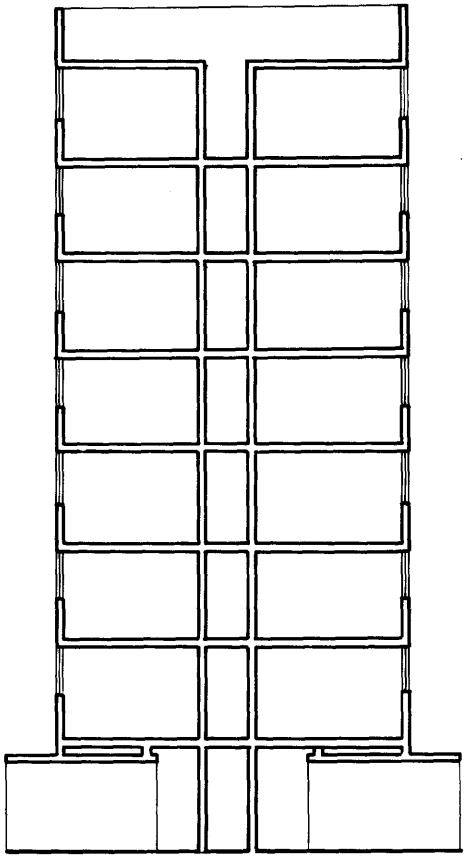


ELEVATION



PLAN

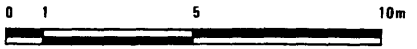
TYPICAL DWELLING



SECTION

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

PHYSICAL DATA
(related to dwelling and land)

DWELLING UNIT	
type:	APARTMENTS
area (sq m):	74
tenure:	LEGAL OWNERSHIP
LAND/LOT	
utilization:	SEMI-PUBLIC
area (sq m):	-
tenure:	LEGAL OWNERSHIP
DWELLING	
location:	CITY CENTER
type:	WALK-UP/HIGH RISE
number of floors:	8
utilization:	MULTIPLE: FAMILY
physical state:	FAIR
DWELLING DEVELOPMENT	
mode:	INSTANT
developer:	PUBLIC
builder:	LARGE CONTRACTOR
construction type:	CONCRETE
year of construction:	1964
MATERIALS	
foundation:	CONCRETE VAULTS
floors:	POURED CONCRETE SLAB
walls:	BRICK, BLOCK AND CONCRETE
roof:	REINFORCED CONCRETE SLAB
DWELLING FACILITIES	
wc:	1
shower:	1
kitchen:	1
rooms:	3
other:	-

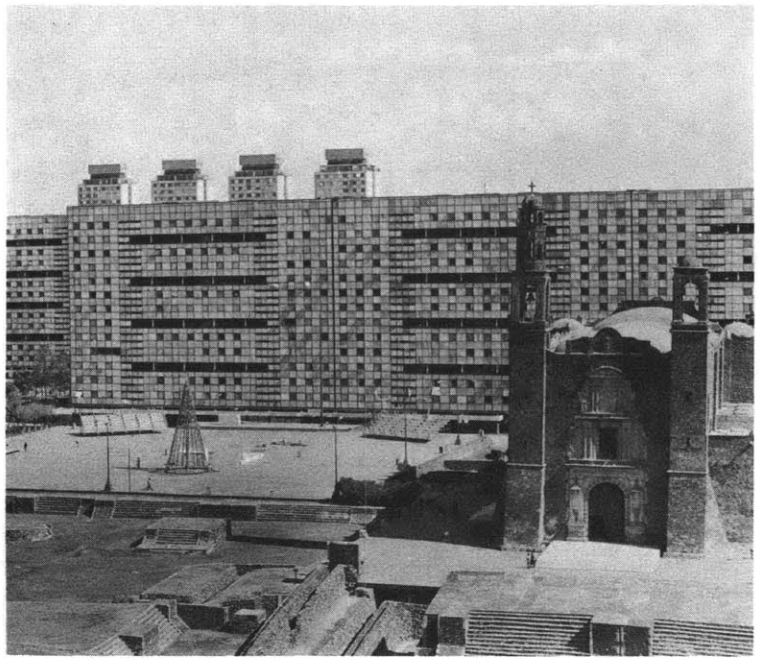
SOCIO-ECONOMIC DATA
(related to user)

GENERAL: SOCIAL	
user's ethnic origin:	MEXICAN
place of birth:	QUERETARO
education level:	HIGH SCHOOL
NUMBER OF USERS	
married:	2
single:	-
children:	4
total:	6
MIGRATION PATTERN	
number of moves:	2
rural - urban:	1950
urban - urban:	1965
urban - rural:	-
why came to urban area:	EMPLOYMENT
GENERAL: ECONOMIC	
user's income group:	MIDDLE
employment:	CAR FACTORY TECHNICIAN
distance to work:	4 KM
mode of travel:	PUBLIC TRANSPORTATION
COSTS	
dwelling unit:	$4,480
land - market value:	$80/M2
DWELLING UNIT PAYMENTS	
financing:	PUBLIC SUBSIDIZED
rent/mortgage:	$42/MONTH
% income for rent/mortgage:	20%

NONOALCO TLALTELOLCO, Mexico City: (top left) The mixture of different kinds of buildings with different highs doesn't give a good character to the scheme.

(right) This picture shows the facade of three different buildings.

(bottom left) This picture shows the mixture of three different cultures, the archeological ruins from the aztecs, the spanish influence with the church and the new architecture.



LOCALITY SOURCES

Plan:	*(approximate) AEROCARTOGRAFIA DE MEXICO, 1972*
Land Use Pattern:	*(approximate) IBID.*
Circulation Pattern:	*(approximate) IBID.*
Segment Plan:	*(approximate) IBID.*
Block Plan:	*(approximate) IBID.*
Block Land Utilization:	*(approximate) IBID.*
Typical Dwelling:	*(accurate) CONJUNTO URBANO NONOALCO TLALTELOLCO, BANCO NACIONAL HIPOTECARIO URBANO Y DE OBRAS PUBLICAS, S. A., 1964.*
Socio-Economic Data:	*(accurate) J. L. Cortes Field Survey, 1973.*
Photographs:	*J. Bazant, J. L. Cortes and N. Patel, 1974.*
General Information:	*J. L. Cortes Field Survey, 1973. CONJUNTO URBANO NONOALCO TLALTELOLCO, BANCO NACIONAL HIPOTECARIO URBANO Y DE OBRAS PUBLICAS, S. A., 1964. CENSUS 1970. PLANO MERCADOLOGICO DEL AREA METROPOLITANA DE LA CIUDAD DE MEXICO, 1972.*

EVALUATIONS

The following sections are contained in the Evaluations:
TIME/PROCESS PERSPECTIVE, models relating the case studies to their originating models.
PHYSICAL DATA MATRIX, a comprehensive summary of the data with comments.
COMMUNITY FACILITIES, UTILITIES, SERVICES MATRIX, a summary of the availability of facilities.
LAND UTILIZATION: PETTERNS, PERCENTAGES, DENSITIES, a graphic comparison of land utilization.
LAND UTILIZATION: OPTIMUM RANGES, a cross comparison of densities and percentages of land utilization.
LAYOUT EFFICIENCY: a comparative graph illustrating the relationship of the circulation networks with the areas served.

TIME/PROCESS PERSPECTIVE

The twelve case studies of the Mexico City' Metropolitan Area are representative models of existing housing situations which ilustrate different cases of land utilization.

The case studies have been distributed in the chart in the following page in an attempt to relate them to their originating models and to see them in a broader time/process perspective.

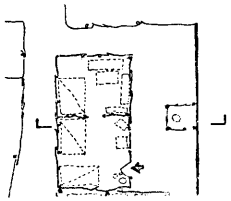
Existing housing models are the most valuable source of information or reference in formulating urban land policies and housing programs. The models provide a guide to general yet basic questions of land use (for what?), land distribution (to whom?), land subdivision (how to?). The models also provide a guide to more specific questions: How do they relate to different cultures and values? What range of population densities do they permit? To what income groups are they accessible? How efficient is the land utilization which they provide?

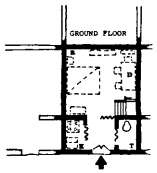
It is important to emphasize that from the five models descrived on the opposite page, only one is a Mexican model, two are Europeans and American and two are Universal. Models permit medium/high densities, with the exception of the model III which provides low/medium densities; three models are accessible to low and moderately low income groups and two are accessible to medium/high income groups; two models have very good land utilization (Ciudades perdidas and Vecindades), the other 3 have bad land utilization. Models have to be improved in terms of safety and it is important to encourage efficiency in the administrative procedures.

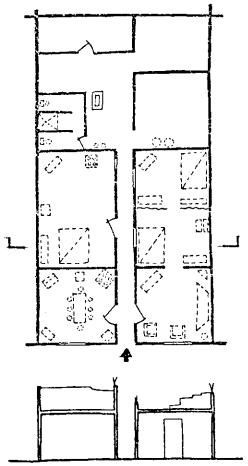
EXAMPLES

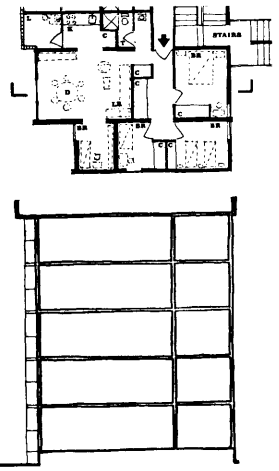
Plan

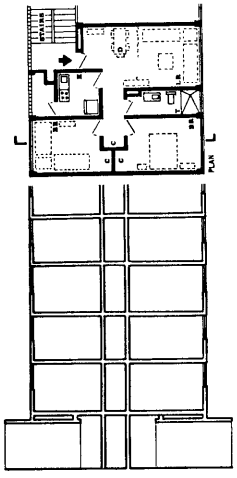
Section











ORIGINAL MODEL	**I** 'CIUDADES PERDIDAS' URBAN COURTS/CLUSTERED ROOMS	**II** 'VECINDADES' / TENEMENT COURT HOUSES	**III** 'COLONIAS PROLETARIAS' / ROW HOUSES	**IV** WALK-UP / APARTMENTS	**V** HIGH RISE / APARTMENTS
THE PAST — *Physical Characteristics*	Groups of Shanties clustered in courts.	Rooms around central courtyard, 1-4 stories, aligned in lots.	Row houses aligned in narrow lots, 1-2 stories.	Groups of 2 to 4 apartments per floor, 3-5 stories, sharing one stair.	Varied group configurations of several apartments per floor with 5 or more stories and 1 or more elevators, HIGH density
Population Density	MEDIUM / HIGH DENSITY	HIGH density	LOW/MEDIUM density.	MEDIUM / HIGH density	Higher densities and not economic use of land is major constraint.
Land/Layout	Layout provides good land utilization, higher densities, shared services and utilities, collective facilities and simple administrative organization.	Economic use of land is major constraint.	Economic use of land is major constraint. Simplicity of layout (grid iron), maximum number of lots.	Higher densities and not economic use of land is major constraint.	
Users	MEXICAN MODEL used by low income groups.	UNIVERSAL/TRADITIONAL model used originally by low and very low income groups.	UNIVERSAL, XIX Century model used by low income industrial labor.	EUROPEAN, U.S.A., XIX Century model used originally by LOW/MIDDLE income groups, often as Public Housing.	U.S.A., XX Century model used originally by MIDDLE income groups.
THE PRESENT — *MEXICAN MODEL*	Model was developed in Mexico by the private sector as an alternative for housing new migrants, because of scarcity of rental acommodation in the city center. High profits for the developer. Limited availability of facilities and utilities, land speculation.	Model was imported in Mexico by the Spanish conquerors since XV century as an extended family dwelling unit. HIGH PROFITS for the landlord, speculation with the use of the units/land, low investment on construction and utilities. In 1947 model prohibited and rents frozen. This system continues to be constructed illegally in periphery of city.	Model was imported to Mexico in the XX Century by speculators. Three main dwelling situations: 1. Private speculative progressive development. 2. Government instant development 3. Popular extra legal progressive development (squatter).	Model was imported to Mexico in the XX Century. Speculation with rents, high investment in construction and utilities, but still very profitable. Condominiums and rental apartments are the the most common. Accepted and encouraged by government agencies. Primarily in form of large scale condominiums.	Model was imported to Mexico in the XX Century. Very high investment in construction and utilities (particularly elevators). Speculation with rents and not suitable when used by the public sector for low income groups.
Administration	Carried out by the developer, speeds up time consuming administration because is done by one individual.	Carried out by the managers (PORTEROS), speeds up administration because is done by one individual.	Private sector/Government/User. Waste of resources due to burocratic administrative procedures.	Initially by the developer and eventually by the user.	Carried out initially by the developer, administration becomes a burden to the CITY.
Users	LOW/VERY LOW income groups; new migrants.	LOW/MODERATELY LOW income groups.	LOW/MIDDLE income groups in large scale.	MIDDLE/HIGH incomes in large scale complexes.	MIDDLE/HIGH incomes
Case Studies	1. BUENOS AIRES	7. LAS VIZCAINAS 8. TEPITO (La Casa Blanca) 9. TEPITO (La Florida)	2. JALALPA 3. LOMAS DE SAN AGUSTIN 4. NETZAHUALCOYOTL 5. PRO HOGAR 6. VALLEJO 10. SAN JUAN DE ARAGON	11. IZTACALCO 12. NONOALCO TLALTELOLCO	12. NONOALCO TLALTELOLCO
THE FUTURE — *LAND ISSUES*	MEXICAN MODEL Permits MEDIUM/HIGH DENSITIES. Accessible to LOW INCOME GROUPS. GOOD land utilization. Model provides semi-private land.	UNIVERSAL Permits HIGH population densities. Accessible to LOW/MODERATELY LOW income groups; VERY GOOD land utilization.	WESTERN CULTURE Permits LOW/MEDIUM population densities. Accessible to LOW/MEDIUM income groups. Model does not provide semi-private land.	UNIVERSAL Permits MEDIUM/HIGH population densities. Accessible to MEDIUM/HIGH income groups. BAD land utilization (see case studies).	WESTERN CULTURE Permits HIGH population densities. Accessible to HIGH income groups. BAD land utilization.
Comments	Model should be encouraged, to make better use of waisted interior lots in the City Center. Design should allow up-grading into cooperatives or condominiums. Model can be up-graded in terms of utilities, services and user responsabilities.	Model provides maximization of private responsibility, minimization of lines of utilities and services. Models as built can be easily upgraded in terms of safety, ventilation, privacy, toilets, showers, washing facilities, pavements, etc.	Layout would be efficient if public circulation areas minimized and open spaces provided.	Model should be GREATELY IMPROVED to use land more efficiently, to allow user control and responsibility over semi-public space, to determine optimum population ranges. The model as Public Housing becomes unlivable when certain population ranges are exceeded.	Model should not be encouraged for low income housing. No user responsibility on common spaces. No sense of community life. Model needs to be improve in terms of safety.

PHYSICAL DATA MATRIX

Category	Population per Category	% of Total Population	LOCALITIES	5 Income	6 Type	7 Area	8 Tenure	9 Rent/Mort.	10 Utilization	11 Area	12 Tenure	13 Location	14 Type	15 No. Floors	16 Utilizat'n	17 Phy State	18 Mode	19 Developer	20 Builder	21 Construct'n Type	22 Date	23 Den.	Locality
				Very Low / Low / Moderately Low / Middle / High	Shanty / Room / Apartment / House	$50m^2$ or lgss / 51 - 100m / 101- or more	Legal Rental / Legal Ownership	20% or less of income / 21% or more of income	Public / Semi-Public / Private / Semi-Private	m^2	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 Construction	People/Ha	
A	200,000	2.3	1. Buenos Aires							NA											1945	1800	1
			2. Jalalpa							200											1972	200	2
			3. Lomas de San Agustin							300											1960	530	3
			4. Netzahualcoyotl							165											1963	163	4
			5. Pro-Hogar							285											1950	410	5
B	3,300,000	38.4	6. Vallejo							590											1940	423	6
			7. Las Vizcainas							NA											1734	230	7
			8. La Casa Blanca							NA											1900	644	8
C	2,000,000	23.2	9. La Florida							NA											1900	1442	9
			10. San Juan de Aragon							190											1964	176	10
			11. Iztacalco							NA											1973	433	11
D	500,000	5.8	12. Nonoalco Tlaltelolco							NA											1964	525	12
	6,000,000	69.7	TOTAL																				
		30.3	Middle-High Income																				
	8,608,321	100.0	TOTAL POPULATION																				

Note: (1) = Usufruct (2) = Provided NA = Not Applicable

The physical data of the 12 case studies of dwelling environments existing in the Metropolitan Area is summarized in the physical data matrix and in the following comments. The matrix permits: a) a comprehensive view of the spectrum of dwelling types; b) 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 twelve case studies have been grouped in four categories, identifying different income groups, housing systems and selected physical characteristics.

The four categories shown were identified as follows:

Category/income	Housing System	Dwelling
A Very Low	Ciudad Perdida	Shanty
B Low/M. Low	Colonia Prolet.	House
C Low/M. Low	Vecindad	Room/Apt.
D Middle	Public Housing	House/Apt.

Categories A-B-C include the very low, low and moderately low income groups and represent the majority of the population (64%) and the category D includes middle income groups in public subsidized housing and represent 6% of the population.

(5) USER INCOME GROUP: The income level is the basic indicator in the expected pattern: The higher the income, the higher is the level of the indicator. The process of housing for the low income groups is a matter of survival whereas in the higher income group is a service or a commodity. (Note BUENOS AIRES, very low income, popularly developed, cardboard and tin structure, 24 m^2; in contrast with IZTACALCO (walk-up apartments) middle income, concrete construction, 76 m^2.

(6) DWELLING UNIT TYPE: A pattern is defined in terms of income groups: SHANTY: very low income; ROOM: moderately low income tenements APARTMENT: low, moderately low and middle income groups; HOUSE: low (squatters and new colonias proletarias), moderately low (old colonias proletarias); middle income groups (public housing).

(7) DWELLING UNIT AREA: In the lower income groups, (very low/low) the dwelling usually consists of one room (shack) a tenement room or a house. In the moderately low and middle income sector more than one single space is provided. The dwelling unit areas range from 28 m^2 (BUENOS AIRES-2 rooms) to a high of 107 m^2 (NONOALCO TLATELOLCO 3 bedrooms, living room, kitchen, bathroom, laundry room).

(8) DWELLING UNIT TENURE: In the very low and low income groups three situations can be descrived as follows: Quasi-legal ownership is typical of ciudades perdidas and squatters settlements (See BUENOS AIRES); rental situation is characteristic of groups with non-permanent tenure (See TEPITO La Casa Blanca); ownership is generally found in colonias proletarias where tenants build their shelters incrementaly NETZAHUALCOYOTL). In the moderately low and middle income groups two situations can be found: Middle income groups generally own their unit in public housing (IZTACALCO); rental situation is characteristic of old inner city colonias proletarias (See VALLEJO).

(9) DWELLING UNIT-PERCENT INCOME FOR RENT: A clear trend emerges from the case studies: 20% or less of income is paid by all income groups, although this percentage usually is higher for users in ciudades perdidas and colonias proletarias than for those in subsidized housing or tenements.

(10) LAND/LOT UTILIZATION: Three clear situations were derived from the study: The very poor (ciudades Perdidas) and the low/moderately low income groups in tenements, the land around the shelters becomes essential as a living area and users have control over the land because it is a semi-private space (BUENOS AIRES, TEPITO). In the colonias proletarias, tenants sometimes are crowded in a room or shanty but they have complete control of their land with the exception of squatters (JALALPA). Finally a tenant in a publicly built unit has no physical control of his land/lot since most of the space around is public or semi-public (NONOALCO, IZTACALCO).

(11) LAND/LOT AREA: Lot boundries were defined as follows: Ciudades perdidas, tenements and some public housing projects, the land/lot area is not measurable since is share by several dwellers or it has no physical limits (TEPITO La Casa Blanca, NONOALCO). In the Colonias proletarias the land/lot area ranges from 190 m^2 (SAN JUAN DE ARAGON) to 590 m^2 (VALLEJO).

(12) LAND/LOT TENURE: Extralegal tenure (BUENOS AIRES) is found in very low income groups. Legal rental is predominant of the low/moderately low income groups (See TEPITO, LAS VIZCAINAS, VALLEJO) and legal ownership is frequently found in the low and middle income levels (See NETZAHUALCOYOTL, SAN JUAN DE ARAGON).

(13) DWELLING LOCATION: The City Center is mostly occupied by very low and moderately low income groups(BUENOS AIRES, LAS VIZCAINAS TEPITO), such groups have more access to services, jobs and facilities. The inner ring is occupied by moderately low income groups (VALLEJO) middle (SAN JUAN DE ARAGON) and high income groups. The periphery is occupied by low income groups in colonias proletarias (NETZAHUALCOYOTL); accessibility to jobs and services is a burden for such income groups; scattered high income population is also found throughout the periphery.

(14) DWELLING TYPES: Row/Group dwelling types are found throughout the income spectrum, from ciudades perdidas (BUENOS AIRES) to low income colonias proletarias (NETZAHUALCOYOTL) and to middle income settlements (SAN JUAN DE ARAGON). Notice that in some newly built colonias proletarias the houses are detached and eventualy become row houses (See PRO-HOGAR, JALALPA). Tenements included under Row/Group provide housing close to City Center employment opportunities. Walk-up Apartments are found in moderately low and middle income groups. Walk-up Apartments and high rise apartments are both built by private developers and the public sector.

(15) DWELLING FLOORS: Most dwellings are generally single floor units in all income groups. Walk-up apartments are accepted as land values increase. High rise units are provided on a limited scale for middle/high income groups.

(16) DWELLING UTILIZATION: Single occupancy is in the form of colonias proletarias, row/group housing and public subsidized housing (SAN JUAN DE ARAGON). Multiple dwelling occupation is in the form of ciudades perdidas, tenements (TEPITO), or walk-up apartments (VALLEJO).

(17),DWELLING PHYSICAL STATE: The pattern of physical state is as follows: Bad states are found in very low and moderately low incomes, particularly in ciudades perdidas (BUENOS AIRES), and tenements (TEPITO); no investment is put into dwellings since tenants do not own the dwelling unit. Fair state is found in some low income groups (LOMAS DE SAN AGUSTIN) and good physical state is generally typical of middle income groups (IZTACALCO).

(18) DWELLING DEVELOPMENT MODE: Incremental mode is used by by low/moderately low income groups, particularly in ciudades perdidas and colonias proletarias. Instant is typical of City Center tenements and public housing.

(19) DWELLING DEVELOPER: The popular developer is generally found in the lowest income groups and particularly in new colonias proletarias since they lack financial resources and access to private, commercial or public institutions. The private sector deals with land subdivisions and housing for low and middle income groups and finally the public sector is concerned with the provision of packages for workers (over the minimum wages) and middle/high income groups.

(20) DWELLING BUILDER: The expected pattern can be seen from the case studies: self-help methods are employed by the very low income groups to build their own houses(BUENOS AIRES); this can be seen in some new colonias proletarias and in ciudades perdidas. Artisans are employed in most of the colonias proletarias (Note NETZAHUALCOYOTL); small contractors are hired by middle/high income groups to build individual homes. The public sector generally employs large contractors for the construction of middle income housing.

(21) DWELLING CONSTRUCTION TYPES: Shacks are common of very low income groups and represent approximately 8% of the dwellings (INVESTIGACION DE VIVIENDA I.M.S.S. 1967) (Note BUENOS AIRES). Masonry/wood is typical of old tenements and colonias proletarias, covers approximately 15% of the dwellings (See LAS VIZCAINAS and NETZAHUALCOYOTL). The most common materials are masonry and concrete and counts for approximately 65% of the dwellings in Metropolitan Mexico; and is typical of colonias proletarias and public housing projects (JALALPA, SAN JUAN DE ARAGON). Concrete construction has been used in large public housing projects and represents only 5% of the dwellings in the Urban Area (See IZTACALCO).

(22) DWELLING DEVELOPMENT - YEAR OF CONST.: The oldest case study is LAS VIZCAINAS (tenement) located in the City Center and built in 1734, this was followed by TEPITO (tenements) and BUENOS AIRES (ciudad perdida). Colonias proletarias are very typical of the urban sprawl in the mid-century (Note PRO-HOGAR). The latest case studies included were built in 1972-73; JALALPA (colonia proletaria) and IZTACALCO (public housing).

(23) DWELLING DEVELOPMENT - DENSITY: Population densities are intended as indicators for each dwelling group. Therefore, samples were taken from selected, small, homogeneous areas that include the land of a group of dwellings and their circulation access.
There is a clear pattern between density and income group: lower densities characterize moderately low/middle income groups; higher densities characterize low income groups. An exception is NETZAHUALCOYOTL and JALALPA, both low income, low density relatively new settlements not fully developed.
There is also a clear pattern between density and dwelling unit type: lower densities correspond to houses and apartments; higher densities correspond to apartments and shanties.

	Density P/Ha	User Income Group	Dwell. Unit Type	Density Group
NETZAHUALCOYOTL	163	Low	House	Low
S. J. DE ARAGON	176	Middle	House	Low
JALALPA	200	Low	House	Low
LAS VIZCAINAS	230	M. Low	Room	Low
PRO-HOGAR	410	M. Low	House	Medium
VALLEJO	423	M. Low	Apart.	Medium
IZTACALCO	433	Middle	Apart.	Medium
NONOALCO	525	Middle	Apart.	High
L. DE S. AGUSTIN	530	Low	House	High
LA CASA BLANCA	644	Low	Apart.	High
LA FLORIDA	1442	Low	Apart.	Very High
BUENOS AIRES	1800	V. Low	Shanty	Very High

COMMUNITY FACILITIES, UTILITIES/SERVICES MATRIX

Category	Population per Category	% of Total Population	LOCALITIES	COMMUNITY FACILITIES: Police	Fire Protection	Health	Schools, Playgrounds	Recreation	UTILITIES AND SERVICES: Water	Sewerage	Storm Drainage	Electricity	Gas (Tank)	Refuse Collection	Public Transportation	Paved Roads, Walkways	Telephone	Street Lighting	Locality
A	200,000	2.3	1. Buenos Aires	■	■	▬	▬	■	■			■	■	■	▬		▬	■	1
			2. Jalalpa				▬	■	■	■		▬	■		■	■	■	▬	2
			3. Lomas de San Agustin	■			■					▬	■		■		■	▬	3
			4. Netzahualcoyotl	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	4
			5. Pro-Hogar	▬	■	■	▬	■	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	5
B	3,300,000	38.4	6. Vallejo	▬	■	▬	▬		▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	6
			7. Las Vizcainas	▬	▬	▬	▬		▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	7
			8. La Casa Blanca	▬	▬	▬	▬		▬	▬	▬	▬	▬	▬	▬	▬	■	▬	8
C	2,000,000	23.2	9. La Florida	▬	▬	▬	▬		▬	▬	▬	▬	▬	▬	▬	▬	■	▬	9
			10. San Juan de Aragon	▬	■	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	10
			11. Iztacalco	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	11
D	500,000	5.8	12. Noncalco Tlaltelolco	■	■	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	12
	6,000,000	69.7	TOTAL																
		30.3	Middle-High Income																
	8,608,321	100.0	TOTAL POPULATION																

The matrix illustrates the approximate availability of community facilities, utilities, and services in the 12 dwelling environments. Three levels are indicated as follows:

- *No provision at all*
- *Limited or occasional*
- *Adequate or normal*

The matrix clearly indicates that the level of availability is directly related to the income sector and dwelling location.

Cases 1, 2, 3, 4, rate "none" and "limited". These cases are from the very low and low income sectors; location: periphery.

Cases 5, 6, 8, 9, rate "limited" and "adequate".
These cases are from the low and moderately low income sectors; location: city center and inner ring.

Cases 7, 10, 11, 12, rate "adequate".
These cases are from the moderately low and middle income sectors; location: city center and inner ring.

The following comments were withdrawn from the twelve case studies and are arranged in terms of income groups and housing systems.

VERY LOW/LOW INCOME: Four cases within this income bracket rate "none" and "limited". Two housing systems are involved: The ciuda des perdidas, relatively close to the city center, have access to halth centers, schools and public transportation since they are available in the locality, however, they are quasi-legal settlements with no financial capability to improve their environment, therefore they lack of water, sewerage, storm drainage and paved roads (See BUENOS AIRES). The colonias proletarias, particularly those which are newly built have no access to fire protection, health, sewerage, storm drainage and refuse collection; limited access to police, schools, water, gas (tank), public transportation and telephone. However, electricity and street lighting is widely available in this localities (Note JALALPA, LOMAS DE SAN AGUSTIN, NETZAHUALCOYOTL).

LOW/MODERATELY LOW INCOME: Four cases rate "limited" and "adequate". Two housing systems are involved: The colonias proletarias in the inner center rate limited availability of fire protection, health centers and recreation (public open spaces) this last been the most acute lacking community facility. In the other hand water, sewerage, storm drainage, electricity, police schools, gas (tank), refuse collection, public transportation, paved roads, telephone and street lighting are widely available and adequate (Note PRO-HOGAR, VALLEJO).
The vecindades because of its location (city center) have adequate access to police protection, fire protection, health centers, schools, water (usually commonly shared), sewerage, storm drainage, electricity, gas (tank), refuse collection, public transportation (buses, trollys, subway), paved roads and street lighting. They have limited access to telephones and because of the highly dense built up area of the city center they lack of open spaces for recreational facilities (See TEPITO: La Casa Blanca, La Florida).

MODERATELY LOW/MIDDLE INCOME: Four cases rate "adequate" and also two housing systems are in this situation:
The public housing projects are instantly built as packages and therefore most services utilities and facilities are provided along with the dwelling unit; however in some instances fire protection and police is not adequate (See NONOALCO, IZTACALCO, SAN JUAN DE ARAGON).
Vecindades housing moderately low income groups and located in the city center generally have access to most community services; but the same problem prevails: no provision of recreational open spaces is available (See LAS VIZCAINAS).

LAND UTILIZATION: PATTERNS, PERCENTAGES, DENSITIES

1 BUENOS AIRES

Popular Very Low Income Shanties

Very low percentage of land for streets and walkways; only private land is sheltered area; semi-private land constitutes only open space. High population density; very poor living conditions. BUENOS AIRES will be an optimum settlement in terms of land utilization if adequate open space is provided nearby.

2 JALALPA

Private Low Income Row Houses

Medium percentage of land for streets, walkways, open spaces; medium percentage of land for private use; medium/low population density. These factors make JALALPA a burden to the municipality.

3 SAN AGUSTIN

Popular Low Income Row Houses

Low percentage of land for streets and walkways, no land for public open spaces; high percentage of land for lots; high population density. SAN AGUSTIN will be an optimum settlement in terms of land utilization if adequate open spaces are provided nearby.

4 NETZAHUALCOYOTL

Private Low Income Row Houses

Medium percentage of land for streets, walkways; medium percentage of land for private use; low population density. Poor layout with excessive public land. NETZAHUALCOYOTL is a burden for the State of Mexico because of the low population density.

5 PRO-HOGAR

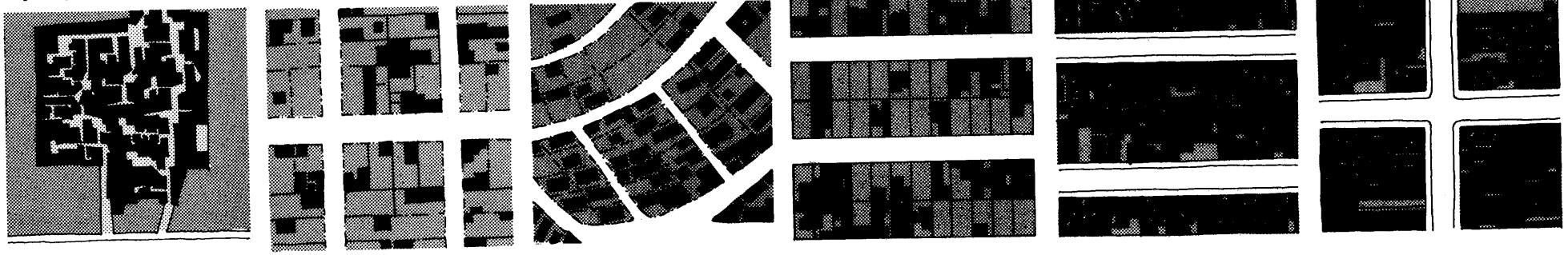
Private Moderately Low Row Houses

Medium percentage of land for streets and walkways; no land for public open spaces; high percentage of land for lots; high population density. PRO-HOGAR will be an optimum settlement in terms of land utilization if adequate public spaces are provided nearby.

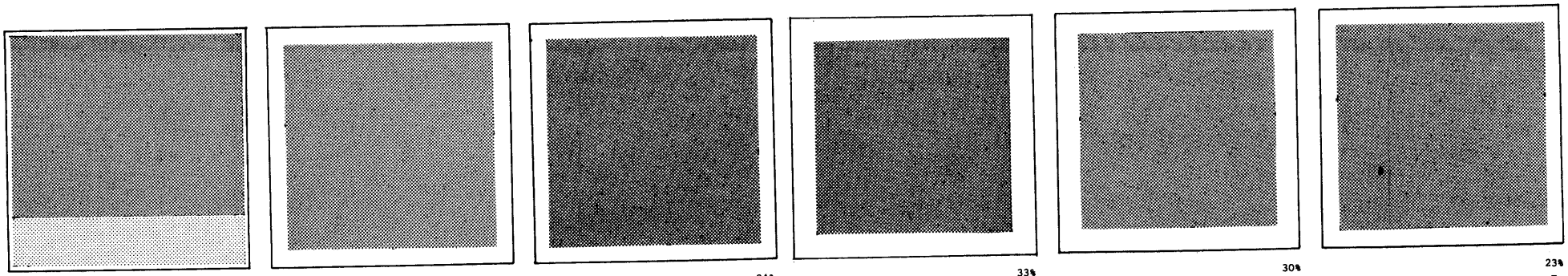
6 VALLEJO

Private Moderately Low Apartments

Low percentage of land for streets and walkways; no land for public open spaces; high percentage of land for lots; high population density. VALLEJO will be an optimum settlement in terms of land utilization if adequate public open spaces are provided nearby.

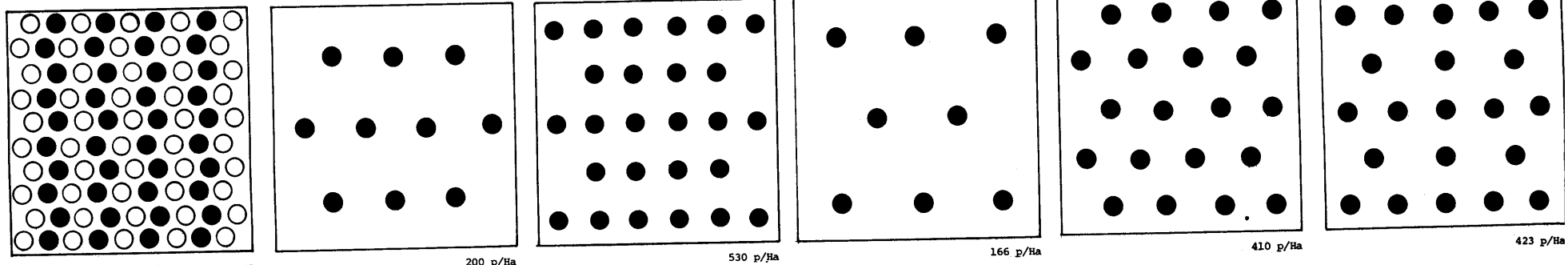


PATTERN



PERCENTAGES

	1	2	3	4	5	6
Streets/Walkways	8%	23%	24%	33%	30%	23%
Playgrounds	-	-	-	-	-	-
Cluster Courts	20%	-	-	-	-	-
Dwellings/Lots	72%	77%	76%	67%	70%	77%



DENSITY Persons/Hectare

1	2	3	4	5	6
747	200 p/Ha	530 p/Ha	166 p/Ha	410 p/Ha	423 p/Ha
1800					

● 20 persons TOTAL AREA
20 persons ONLY RESIDENTIAL

7 LAS VIZCAINAS

Private Moderately Low Row Rooms

Low percentage of land for streets and walkways; high percentage of land for lots. Most of the land with private utilization is sheltered area; high population density. LAS VIZCAINAS will be an optimum settlement in terms of land utilization if adequate open spaces are provided nearby.

8 TEPITO

Private Low Income Apartments

Low percentage of land for streets and walkways; high percentage of land for lots. Most of the land with private utilization is sheltered area; high population density. TEPITO will be an optimum settlement in terms of land utilization if adequate open spaces are provided nearby.

9 TEPITO

Private Low Income Apartments

Low percentage of land for streets and walkways; high percentage of land for lots. Most of the land with private utilization is sheltered area. High population density. TEPITO will be an optimum settlement in terms of land utilization if adequate open spaces are provided nearby.

10 SAN JUAN DE ARAGON

Public Middle Income Row Houses

Medium percentage of land for streets, walkways, open spaces; medium percentage of land for private use; medium/low population density. Poor layout with undefined open spaces results in excesibe public land. These factors make SAN JUAN DE ARAGON a burden to the municipality.

11 IZTACALCO

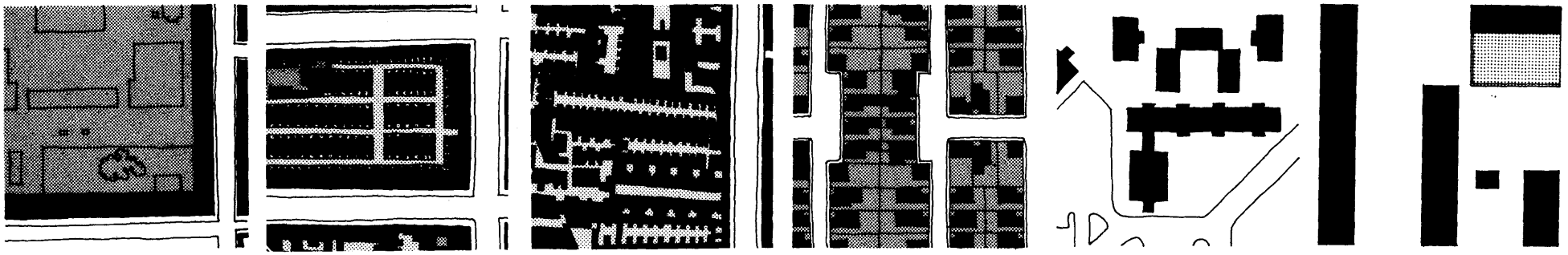
Public Middle Income Walk-Ups

High percentage of land for streets, walkways, open spaces; very low percentage of land for private use; medium population density. Poor layout with undefined open spaces results in excesibe public land. These factors will make IZTACALCO a burden to the municipality.

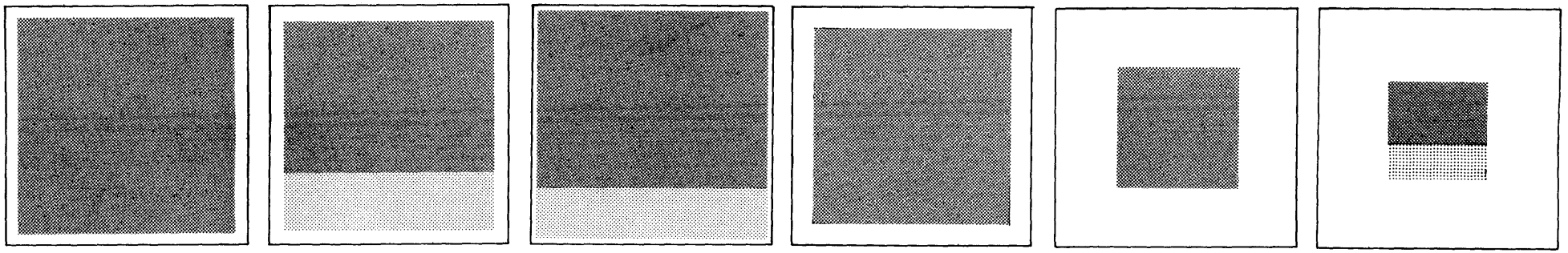
12 NONOALCO

Public Middle Income Apartments

High percentage of land for streets, walkways, undefined open spaces; low percentage of land for private use; medium/high population density. These factor make NONOALCO a burden to the municipality.

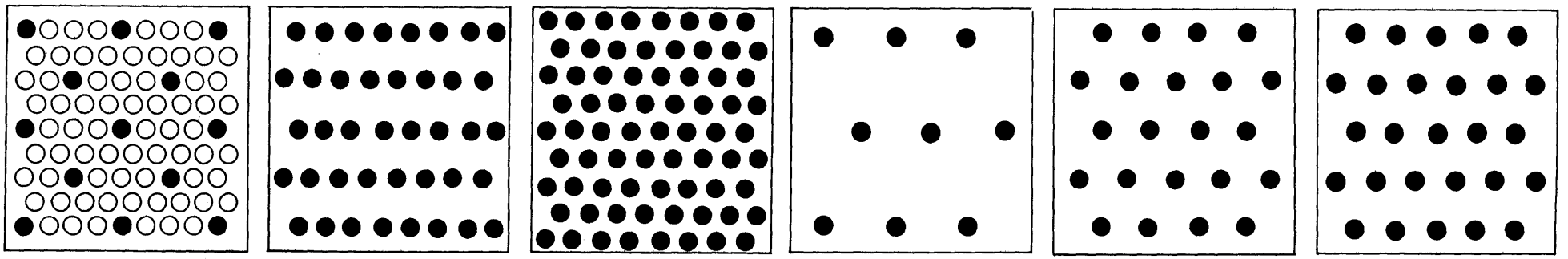


PATTERN



PERCENTAGES

	7	8	9	10	11	12
Streets/Walkways	19%	23%	8%	34%	75%	76%
Playgrounds	-	-	-	-	-	9%
Cluster Courts	-	22%	22%	-	-	-
Dwellings/Lots	81%	55%	70%	66%	25%	15%



DENSITY Persons/Hectare

7	8	9	10	11	12
233 1782	796 p/Ha	1442 p/Ha	175 p/Ha	433 p/Ha	525 p/Ha

● 20 persons TOTAL AREA
○ 20 persons ONLY RESIDENTIAL

LAND UTILIZATION: OPTIMUM RANGES

The three graphs shown are used to evaluate and to compare the 12 case studies in terms of LAND UTILIZATION PERCENTAGES and RESIDENTIAL POPULATION DENSITY.

Land utilization percentages are computed for the following areas: a) PUBLIC: streets, walkways, open spaces; b) SEMI-PUBLIC: open spaces; c) SEMI-PRIVATE: cluster courts; d) PRIVATE: dwellings, lots.

Residential population density is the total number of persons per unit hectare. The range of desired/acceptable densities is 300 persons per Ha to 600 persons per Ha, based upon case studies and accepted zoning standards in different urban contexts in developing countries. This range can be achieved assuming that the dwelling development is of 1-3 stories, with an average built-up area of 10-20 m^2 per person and 30-35 percent of land/lot coverage.

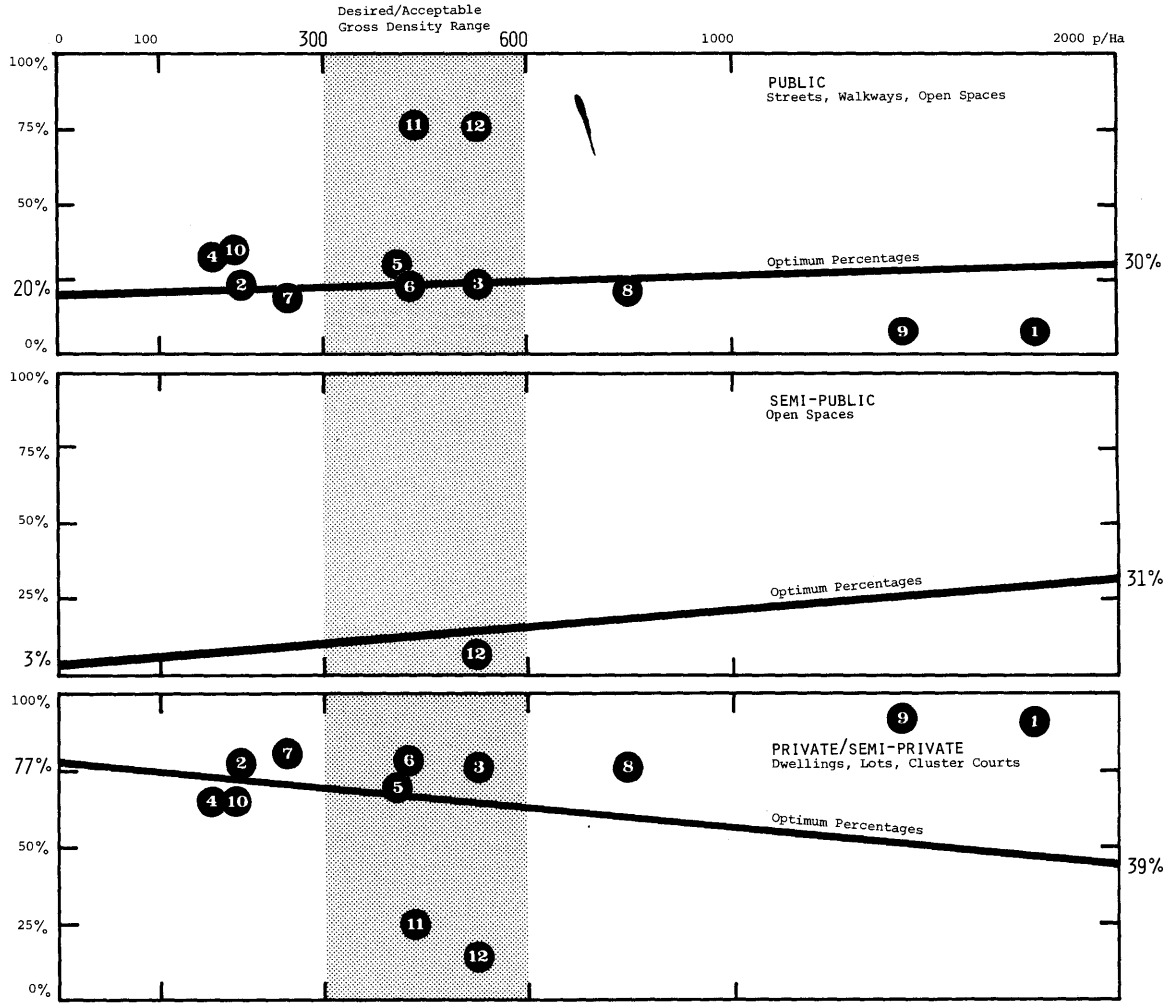
KEY
VERTICAL SCALE: Land utilization percentages (0 to 100%).
HORIZONTAL SCALE: Residential population density (0 to 2,000 persons per Ha shown on logarithmic scale).
CURVE: Range of optimum land utilization percentages (optimum values vary for different densities based upon case studies and accepted zoning standards in different contexts).
SHADED AREA: Desired/optimum efficiency of land utilization (the intersection of desired/accepted residential population densities and desired/accepted land utilization percentages).
NUMBERED DOTS: the Mexico case studies

● PUBLIC: streets, walkways, open spaces. Areas within an urban layout used for padestrian and vahicular circulation. The land has minimum physical controls and maximum public responsibility in initial purchase, development and maintenance.
The CURVE shows: optimum area percentages for streets, walkways and open spaces. (20-30%, based upon case studies in Latin America and in the U.S.A.) The percentage of street and walkway areas varies slightly with density.

● SEMI-PUBLIC: open spaces. Areas within an urban layout used for supporting facilities and services. (Open spaces-playgrounds are only considered since the percentages are based upon a small sector). The land has partial or complete physical controls and public/user responsibility in development and maintenance.
The CURVE shows: optimum area percentages for open spaces. (3-31%, based upon case studies in Latin America and in U.S.A.) The percentage of open spaces varies considerably with density.

● SEMI-PRIVATE: cluster courts. Areas within an urban layout used by group of owners and/or tenents. The land has complete physical controls and user responsibility in development and maintenance.

● PRIVATE: dwellings, lots. Areas within an urban layout used for residential and commercial use. The land has maximum physical controls and owner/tenant/user responsibility in development and maintenance.
The CURVE shows: optimum area percentages for dwellings and lots. (The range of optimum percentages of land for Public areas is 20-30% with 3-31% for Semi-Public areas; therefore, the remaining 77-39% of land is for private use).



LAYOUT EFFICIENCY

Comments have been included to the right of the graphs (opposite page) which relate to the land utilization percentages of the case studies. It may be observed from the graphs that only a limited number of cases are within reasonable density ranges. However, these cases do not satisfy all three optimum land utilization requirements (public, semi-public, private) but are only optimum in one or two of the categories.

● PUBLIC: Cases above curve (4, 5, 10, 11, 12) have a high percentage of land devoted to streets and walkways; therefore, these cases constitute a great burden to the municipal government in terms of land, construction, maintenance, and operation. Cases below the curve (1, 9) have very small percentage of land devoted to streets and walkways. Cases near the curve (2, 3, 6, 7, 8) have a reasonable percentage of land devoted to streets and walkways.

● SEMI-PUBLIC: Only one case (12) provide a small percentage of semi-public land. The rest of the cases do not provide semi-public land at all.

● PRIVATE/SEMI-PRIVATE: Cases above and below curve (2, 4, 10) are sparcely populated areas and, therefore, a burden to the municipal government in the provision, maintenance, and operation of utilities and services. Cases above the curve (1, 8, 9) have very high densities, all of the private land is within the sheltered area of the room. Cases above the curve (3, 6) have an acceptable density, but a higher percentage of land devoted to lots. Cases above the curve (7) has a low density as a total area. Cases below the curve (11, 12) have a very low percentage of land devoted to lots, private areas are confined to the area of the dwelling only. Case on the curve (5) has a good balance of density and land devoted to lots.

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.

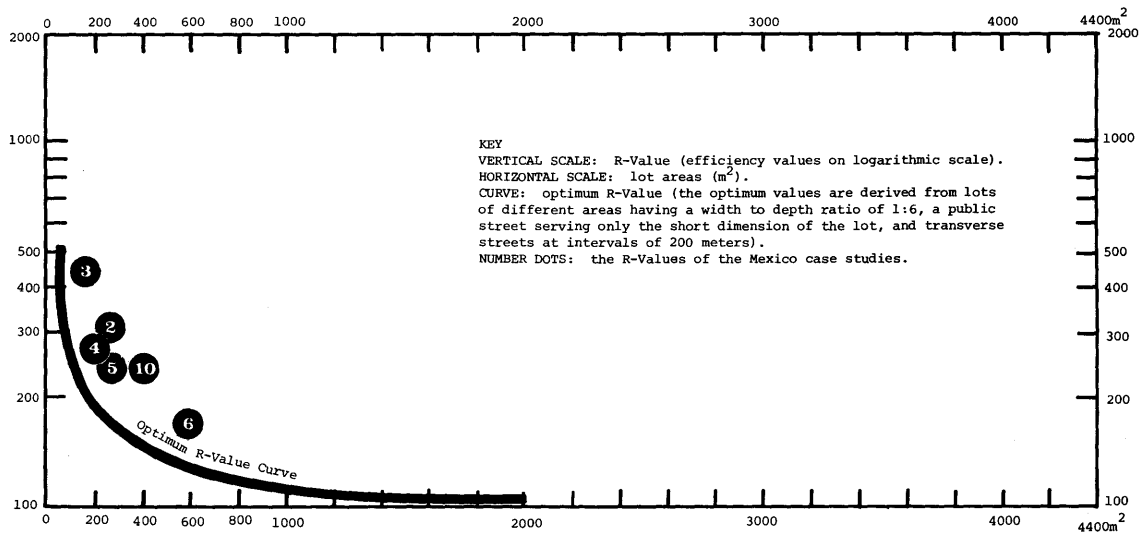
The efficiency/effectiveness of a network is the ratio of the length of the network to the area(s) served:

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

The R-Value varies inversely to the network efficiency; a smaller R indicates a higher efficiency and vice versa. The layouts of the case studies have been evaluated in terms of network efficiency and are shown in the graph below. For further information on the R-Value see: "A Method for the Evaluation of Urban Layouts", INDUSTRIAL FORUM, Volume 3, Number 2, Montreal, December, 1971.

R-VALUE SUMMARY

Cases	*Degree of Efficiency*	*Comments*
1	—	R-Value not measurable
2	Inefficient	Low population density
3	Inefficient	Good density
4	Inefficient	Very low population density
5	Inefficient	Good density
6	Inefficient	Good density
7	—	R-Value not measurable
8	—	R-Value not measurable
9	—	R-Value not measurable
10	Inefficient	Very low population density
11	—	R-Value not measurable
12	—	R-Value not measurable



PROPOSED MODEL

In Mexico City, the living conditions and physical environments are deteriorating rapidly for the majority of the population (See case studies 1, 7, 8, 9). The population is exploding; The rate of growth is higher for the low income sector.

The land requirements for this future population is immense. The resultant increase in demand for land has created a land shortage which severely affects the low income people. Furthermore land available in Metropolitan Mexico is a fixed quantity that cannot be increased. Demand for land is exceeding the supply. Essential factors such as efficiency of land use, land distribution, and land subdivision are completely ignored and as a result, urban land is wasted today at an unprecedent scale. The greater land waster/main squander is the public sector (See case studies 10, 11, 12). In Mexico City waste of land is the result of poor or bad planning that has neglected to relate land utilization with user responsibility and adequate controls (See case studies 11, 12).

The shortage of land, particularly for the low income groups, is exacerbate by land speculation. The crucial issue in speculation is that profits from the increase in land value are pocketed by the speculator, despite the fact that the increase in value is not the product of his work. The increase is due to community growth, which makes urban land scarce and consequently more valuable.

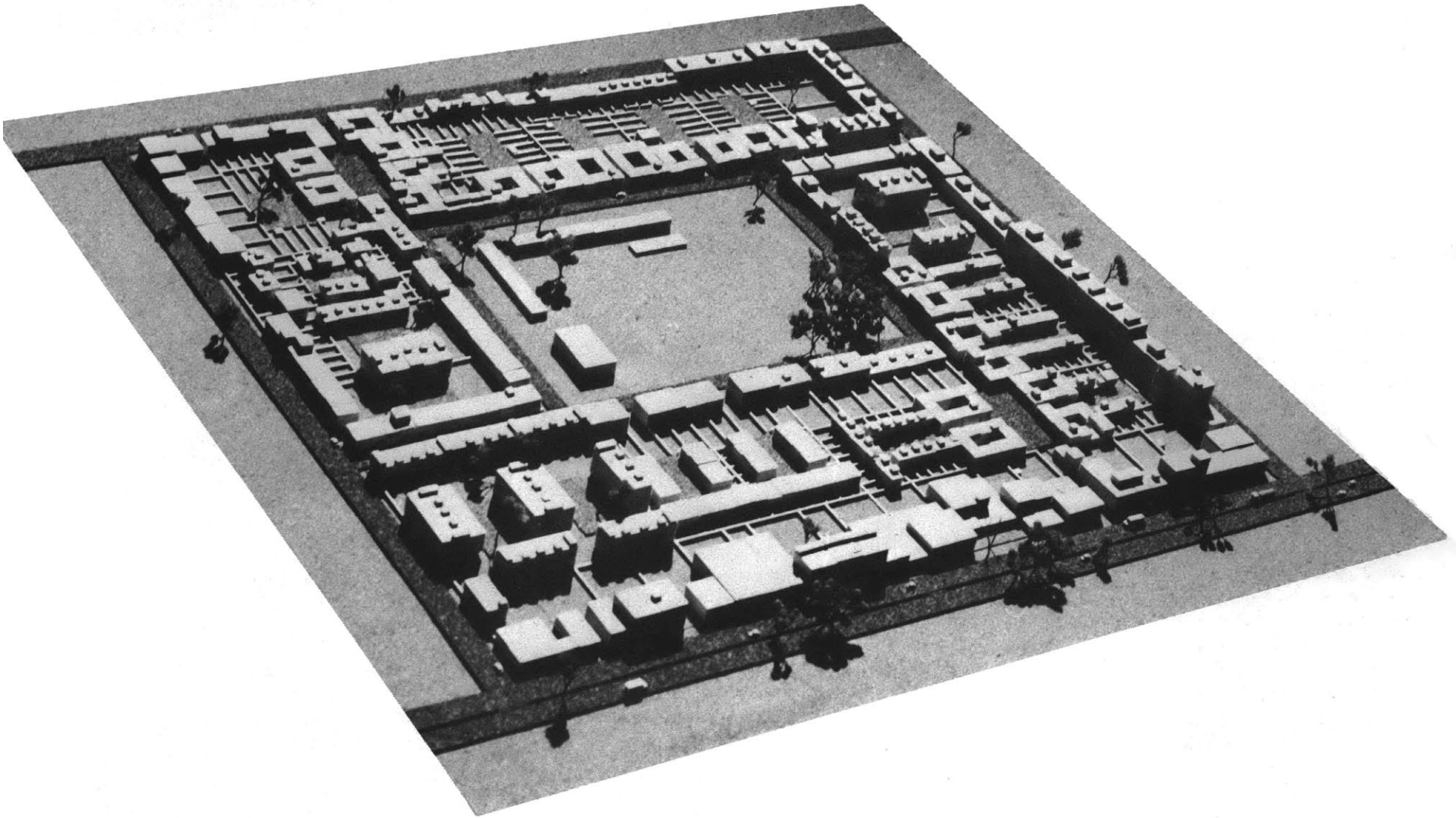
People depend not only on land and shelter, but also on a complex system of networks. More and more dwellings, land and services most be provided to the growing population that has less and less capacity to pay for them. This is the immediate problem that is confronted by the government, municipalities, administrations, large corporations, in short by the individuals in power.

Many other vital issues must be faced in Mexico City: Settlements are unnecessarily over-extended beyond existing utility networks, services, transportation (See case studies 2, 3, 4); only small portions of occupied land are fully utilized, environments are destroyed by uncontrolled development and policies/standards/models to prevent urban sprawl are inadequate or do not exist.

Another critical area is the increasing gap between housing demand and housing stock. It is invariably the low income sector that is most affected by this situation. This sector will constitute an increasinly larger proportion of the future population. Any study on land most take this expanding sector into serious consideration.

Drastic changes shall be necessary if serious efforts are made to meet the needs of the majority of the population. These changes will affect housing policies, shifting the focus from shelter to land, and should be carried out by all participants in the process and particularly promoted/sponsored/implemented by the public sector. The aims of the public sector should be focus on the provision of land and services, basic dwelling components, at lower costs for the low income sectors, resulting in more people benefited. Government efforts should be concentrated on: basic large scale problems of land and infrastructure; evaluation, upgrading of the existing "inadequate" dwellings; integrated socio-economic-physical programs. The public sector should support popular initiative, responsibility and participation; administrative/financial institutions should deal with small cooperatives/groups of individuals. The use of land requires effective policies and goals for the optimum benefit for a maximum number of users at a minimum cost.

J. L. CORTES R. DAVILA E. ESPINOSA



BASIC MODEL DATA

A Model was developed as a reference source for the provision of dwellings and land for very low, low and moderately low income groups (under $208/month). It was developed as a result of the analysis of the basic housing systems/types of residential layouts and dwelling environments in Metropolitan Mexico. The case studies previously discussed provided a basis for the understanding of critical land development issues and physical planning elements for the low income groups

The model focus specifically on the physical layout/subdivision of land. These fundamental aspects are not only critical from an efficiency and amenity standpoint, but also because it tends to be the most permanent feature of the city. Furthermore the layout is a determinant of efficiency in terms of cost and functional viability of the development and the primary determinant of subsequent commitments: administration, maintenance, etc..

Alternative housing options are provided in the model:

1. Progressive development
2. Tenement - room type 'A'
3. Tenement - expandable apartment type 'B/C'
4. Lot - expandable house type 'A'
5. Lot - expandable house type 'B'
6. Walkup - expandable apartment type 'A'
7. Walkup - expandable apartment type 'B'

Planning innovations of the model include:

- The physical plan provides for maximum private responsibility in the development and maintenance of the project.
- Flexible planning allows maximum accommodation to change
- Large lot planning units facilitate administrative control and planning development.
- Schools are combined with community open areas to act as a community focus.
- Horizontal condominiums (clusters) will provide the main residential components.

The model was planned with accepted/desirable ranges of population density, circulation, public and private area percentages and provides a framework of related aspects/determinants for discussion/evaluation/policy decisions.

The model is primarily residential with supporting commercial and community services. The population varies from 6000 to 8000 at saturation. The area has been defined according to the dimensions of a defined neighborhood unit (400m x 400m. = 16 Has.), generally an area in which a community is recognized with its schools, shops, etc., the site has been considered as flat.

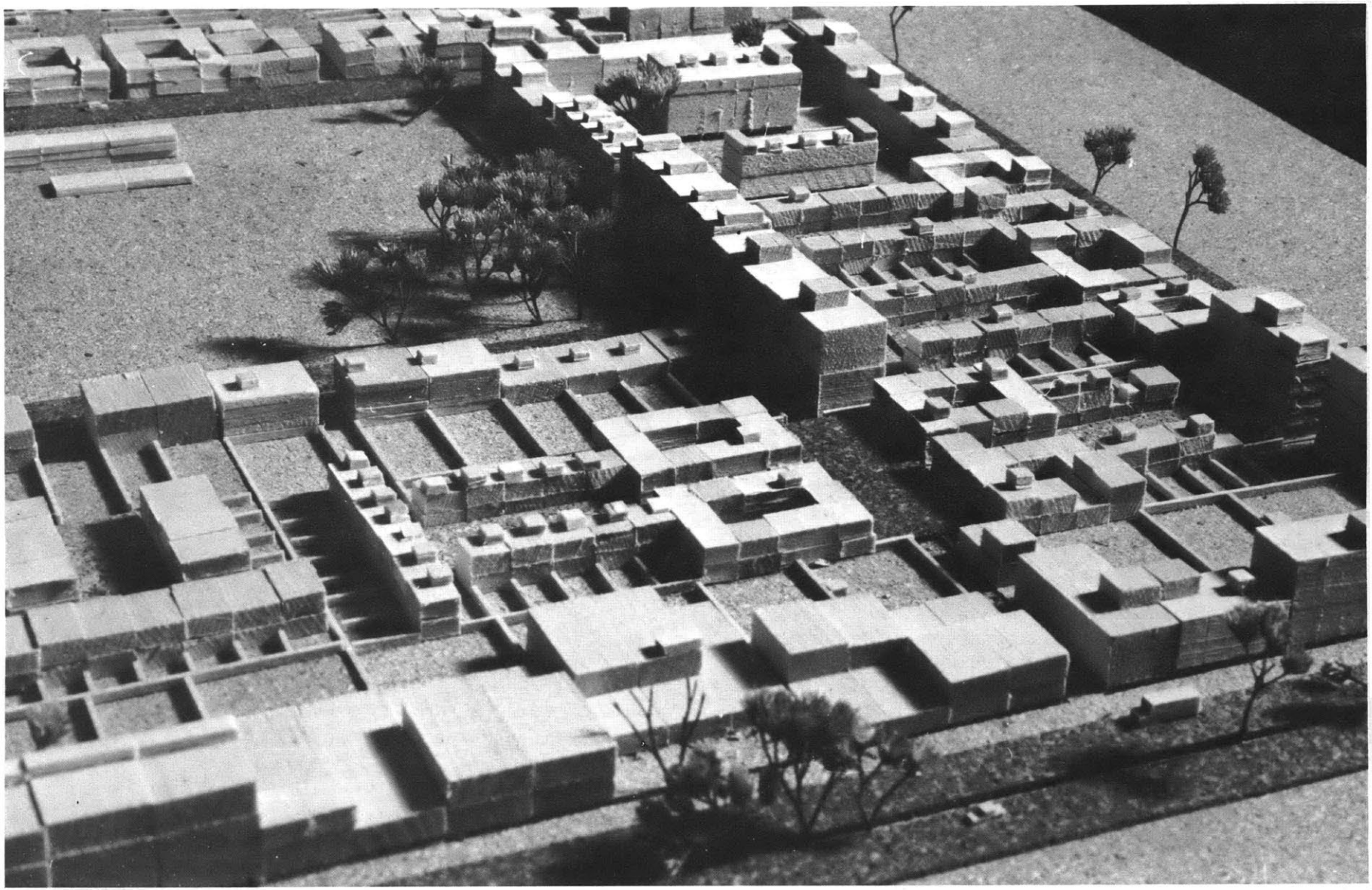
The magnitude of the proposed development precludes funding from a single source or agency. The development can be financed by public or private groups.

DEVELOPMENT MODE: INCREMENTAL GROWTH

- The model can be developed incrementally.
- Two periods are considered:

I PRELIMINARY: Initial studies and promotion.

II IMPLEMENTATION: Construction, habitation, evaluation and revision.
The implementation will be staged, consisting of the following cycle:
1 Planning design
2 Construction, allocation of lots
3 Habitation
4 Evaluation
5 Revision of policies
This cycle will be repeated till saturation of the site is achieved.



URBAN UNIT

● DEFINITION:

An Urban unit was established as an schematic concept to illustrate the flexibility of the model in terms of land utilization, circulation and land subdivision. The urban unit was established to create physical environments that may provide: a) a sense of community; b) facilitate incremental growth; c) match services with residential requirements.

Planning of the urban unit is premised on the following concepts:

a) an urban unit is defined as being bordered by a main commercial street and transverse connector streets
b) the size is 16 Has. with a density of 500 persons/ha. which allow the inclusion of an elementary school;
c) a maximum walking distance of 400 meters from the interior of the urban unit to the through street border is required to allow access to public transportation;
d) The urban unit may be a residential area with its required supporting facilities.

- Residential areas: a combination of 7 residential housing options based upon 5 main housing systems.
- Supporting facilities: elementary school, nursery, park, recreation areas, social services, market.
- Infrastructure: streets: layout promotes residential circulation; public bus route: follows main commercial street; pedestrian walkways: allow access to park, market, school and other sections of the urban unit; utility networks: water, sewer, storm drainage and electricity follow local streets.

● LAND USE PLAN

		Ha.	
AVAILABLE LAND FOR DEVELOPMENT:		16.0	100%
PUBLIC LAND:	Circulation:	2.6	16%
SEMIPUBLIC LAND:	School, playground, open area:	2.6	16%
PRIVATE LAND:	Residential, commercial:	9.6	60%
SEMIPRIVATE LAND:	Cluster courts:	1.2	8%

The urban unit has a potential population of 8,000 people at the saturation stage. The urban unit was defined not only in terms of community services but also in terms of the following options:

-Diferent income groups
-Diversity of choice
-Diversity in housing programs
-Public and private developers

OPEN AREAS: Located in the center of the urban unit thus been accessible within walking distances not greater than 100 meters.

SCHOOL: Within the open area, an elementary school is provided. According to the given population, 20% are children between 7-15, therefore a primary school should be provided for 1600 pupils at an average of 16 m^2/pupil (Standard for Latinamerica).

PUBLIC FACILITIES AREA: A small social service center may be located in the open area.

RESIDENTIAL AREA: Provided as lots, blocks and lot clusters. These can be developed incrementaly or instant since the land subdivision is designed to allow both options. Along the main street biger lots are

provided for commercial development or light industries; tenements and walk-up apartments are located facing the streets around the open space; lot clusters have access through the park and can accomodate site and services projects and expandable houses.

CIRCULATION PLAN

Assuming a main utilities network running parallel to the main commercial/residential street and local transverse streets the circulation layout is based upon:
a) Connection of the urban unit with its immediate neighborhood or the city center through a main street.

b) Minimum circulation length according to desired standards for an assumed density of population. Minimization of utilities networks for the public sector.

CIRCULATION MODES:

1 PEDESTRIAN ONLY: exclusive use by pedestrians.
Example: pedestrian walkways connecting market, park and residential areas.

2 PEDESTRIAN AND VEHICLES MIXED: pedestrians dominate over vehicles, control of traffic frequency, character, and speed are mainly established by the street layout and use.
Example: local streets around the open area.

3 VEHICLES AND PEDESTRIAN MIXED: Vehicles dominate but do not control circulation; controls are established for the protection of pedestrians, cross walks, traffic lights.
Example: main commercial street, transverse connectors.

DEVELOPMENT PLAN

Guidelines for development:

- Easiest access to the urban unit should be considered as a first priority.
- Convenient public transportation or extension is expected to be enforced.
- Minimization of costs as a result of immediate utilization of existing infrastructure and services.

INITIAL DEVELOPMENT:

Land use: residential development around open area, commercial development along main street, public facilities, open areas.
Circulation: pedestrian walkways, local streets, main street.
Infrastructure: primary network depending of the housing options to be build.

LAST STAGE:
The model allows:
- Natural progressive growth of land uses, circulation and infrastructure.
- Facilitates a compact development.
- In any stage the model maintains its consistency between land use/densities/commercial potential and intensity of circulation and activities.

LAYOUT:
The unit shown is 400 by 400 meters, based upon an approximate 90 by 240 meters block.
The top boundary of the plan is the main commercial street.
The bottom boundary is a local street.
The side boundaries are transverse streets, which can be local streets adjacent to other urban units.
Open space: Internalized within the urban unit, can be used primarily for an elementary school and social services.

THE SIZE OF THE LAYOUT: An area of 400 x 400 meters was premised on the following;
- The possibility to compare the model with the existing "locality segments" (See case studies).
- The maximum comfortable walking distance (400 meters or 6 minutes walk).
- The social sense of identity, control and responsability within a given environment.

URBAN UNIT LAND UTILIZATION

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	366	16	23
DWELLING UNITS	1600	16	100
PEOPLE	8000	16	500

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	2.58	16
SEMI-PUBLIC (open spaces, schools, community centers)	2.52	16
PRIVATE (dwellings, shops, factories, lots)	9.59	60
SEMI-PRIVATE (cluster courts)	1.31	8
TOTAL	16.00	100

BLOCK NETWORK EFFICIENCY

The R value for the selected block was calculated in order to compare it with previously evaluated blocks of existing housing systems (See case studies).
TOTAL AREA: 3.15 Has.
NUMBER OF LOTS: 47

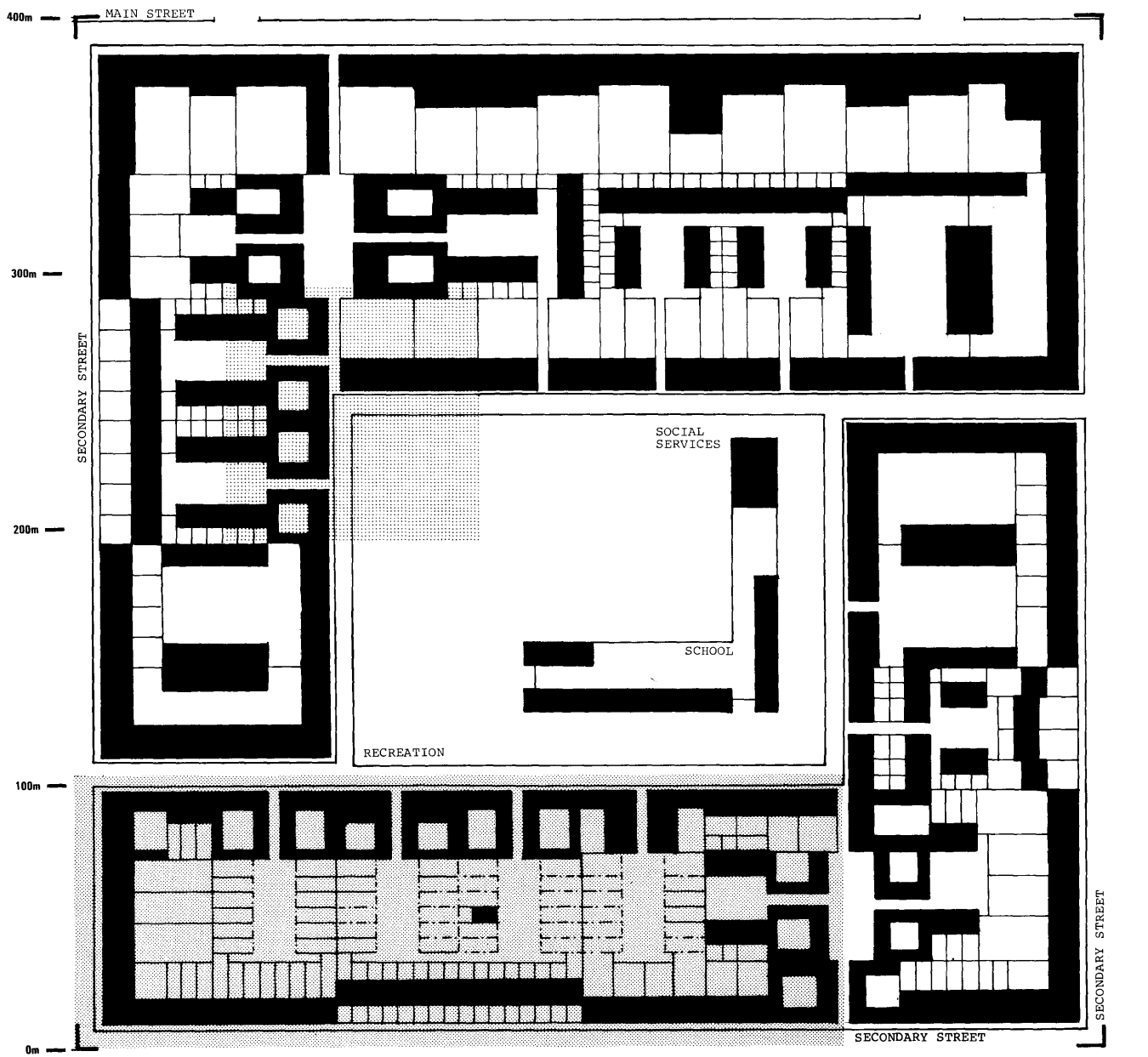
NETWORK EFFICIENCY

$$R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 128$$

AVERAGE LOT AREA = 675 m2

SELECTED SEGMENT

SELECTED BLOCK



URBAN UNIT PLAN

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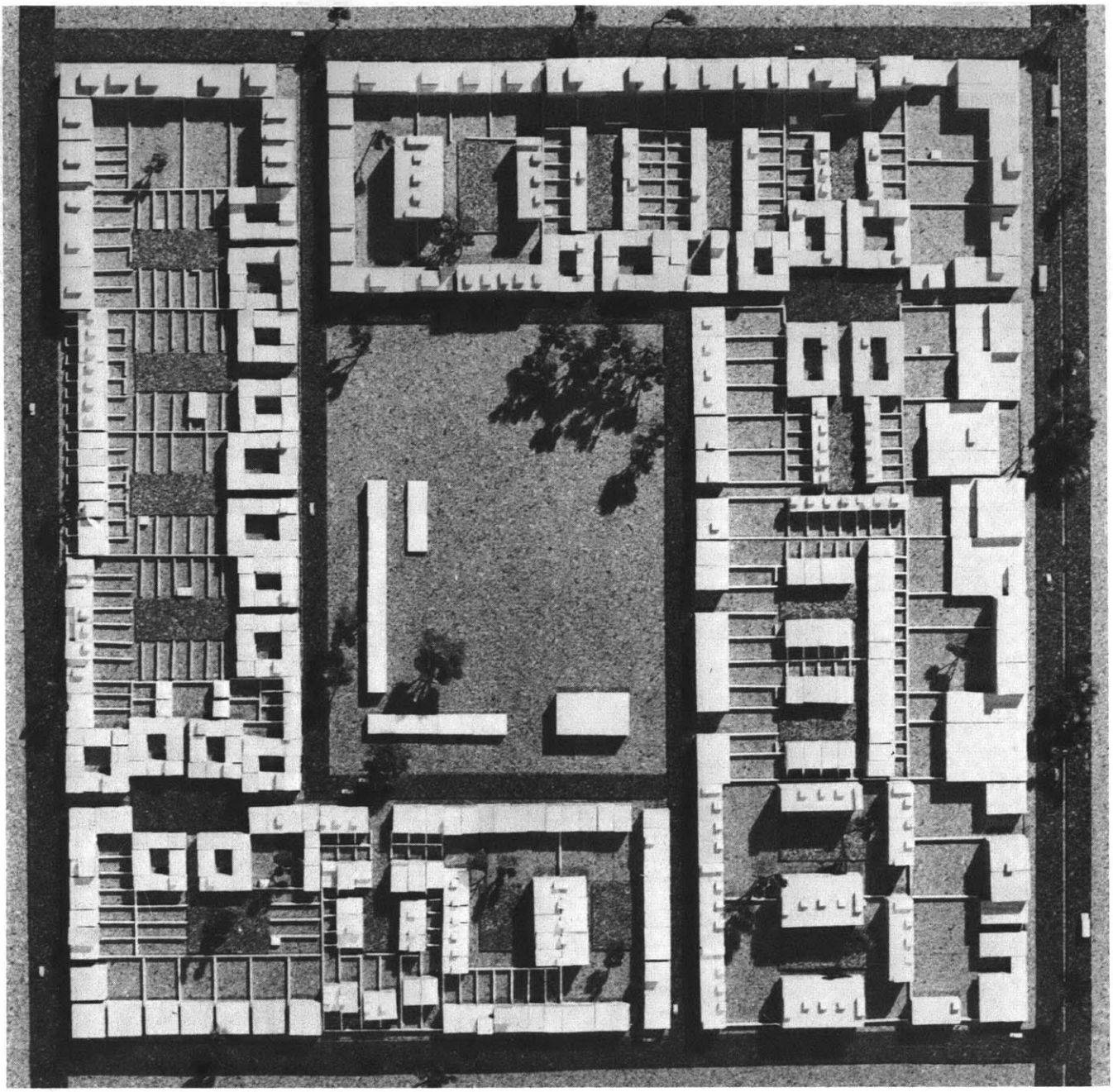


CIRCULATION: The circulation network provides a primary ordering framework around which the urban unit is developed. As well as circulation function, the network provides the utility spine along the main street. The land which is utilized by the circulation grid is considered to be under public ownership providing for paths of movement of both pedestrian and vehicular accesses.

CIRCULATION MODES: Three circulation modes are considered:

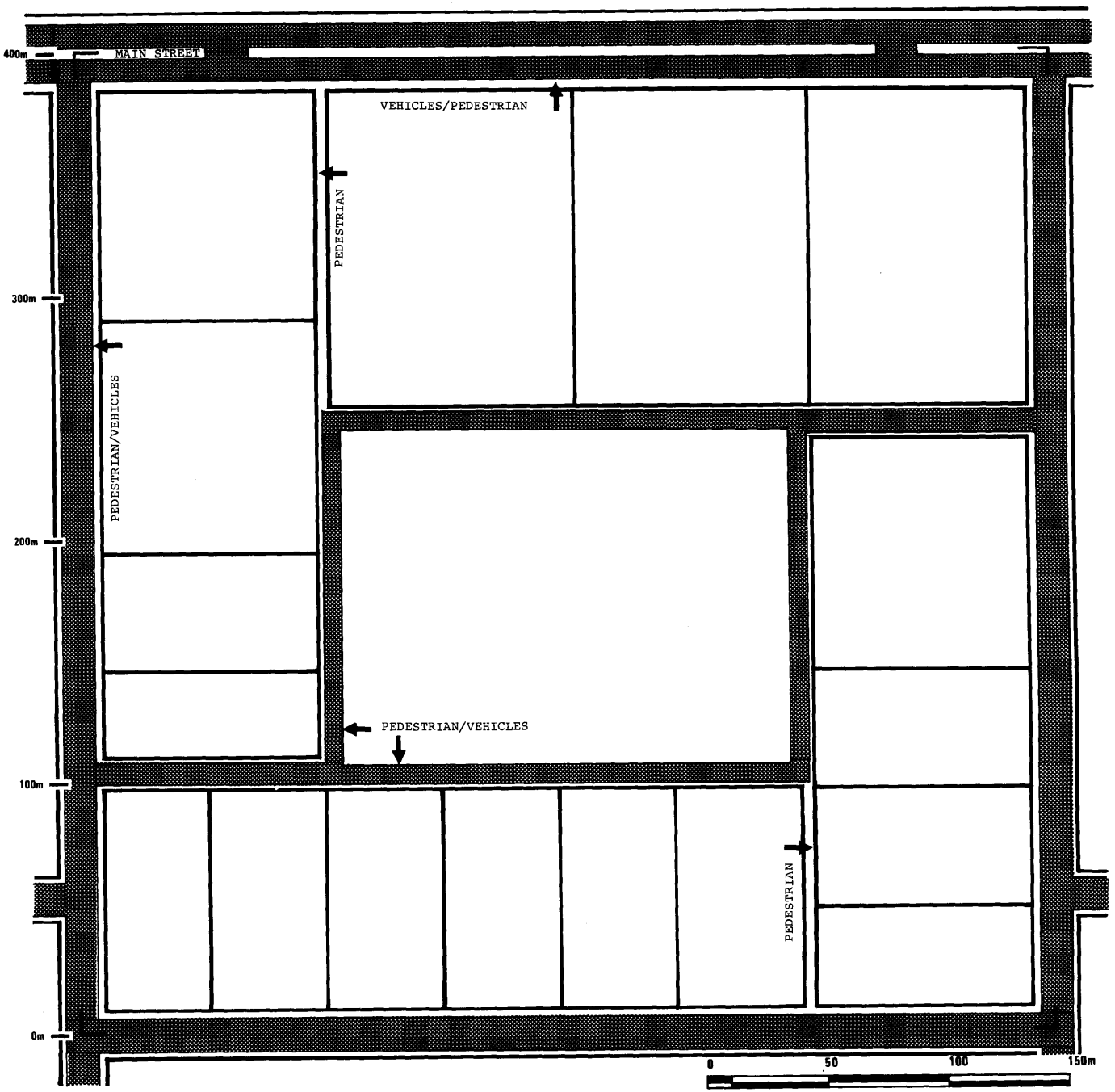
1 PEDESTRIANS ONLY; exclusive use by pedestrians.
2 PEDESTRIANS AND VEHICLES MIXED; pedestrians dominate over vehicles; control of traffic, frequency, character, and speed are mainly established by the street layout and use.
3 VEHICLES AND PEDESTRIANS MIXED: vehicles dominate but not control the circulation; controls are established for protection of pedestrians: crosswalks, traffic lights, etc.

PRIMARY LAND SUBDIVISION: Large blocks are subdivided in large properties.

The properties, facing the main street are longer than those facing the secondary streets; the longer the distance from the main street the smaller the properties and the price of land.

The size of the properties is defined in relation to the income groups, and the number of units, which are grouped in 12, 24 and 48 dwelling units, to allow a social control and equilibrium of the properties.

The tenure of the properties is proposed as a variety of options: condominium ownership, cooperatives, individual ownership, long lease, and rental.



URBAN UNIT CIRCULATION / PRIMARY LAND SUBDIVISION

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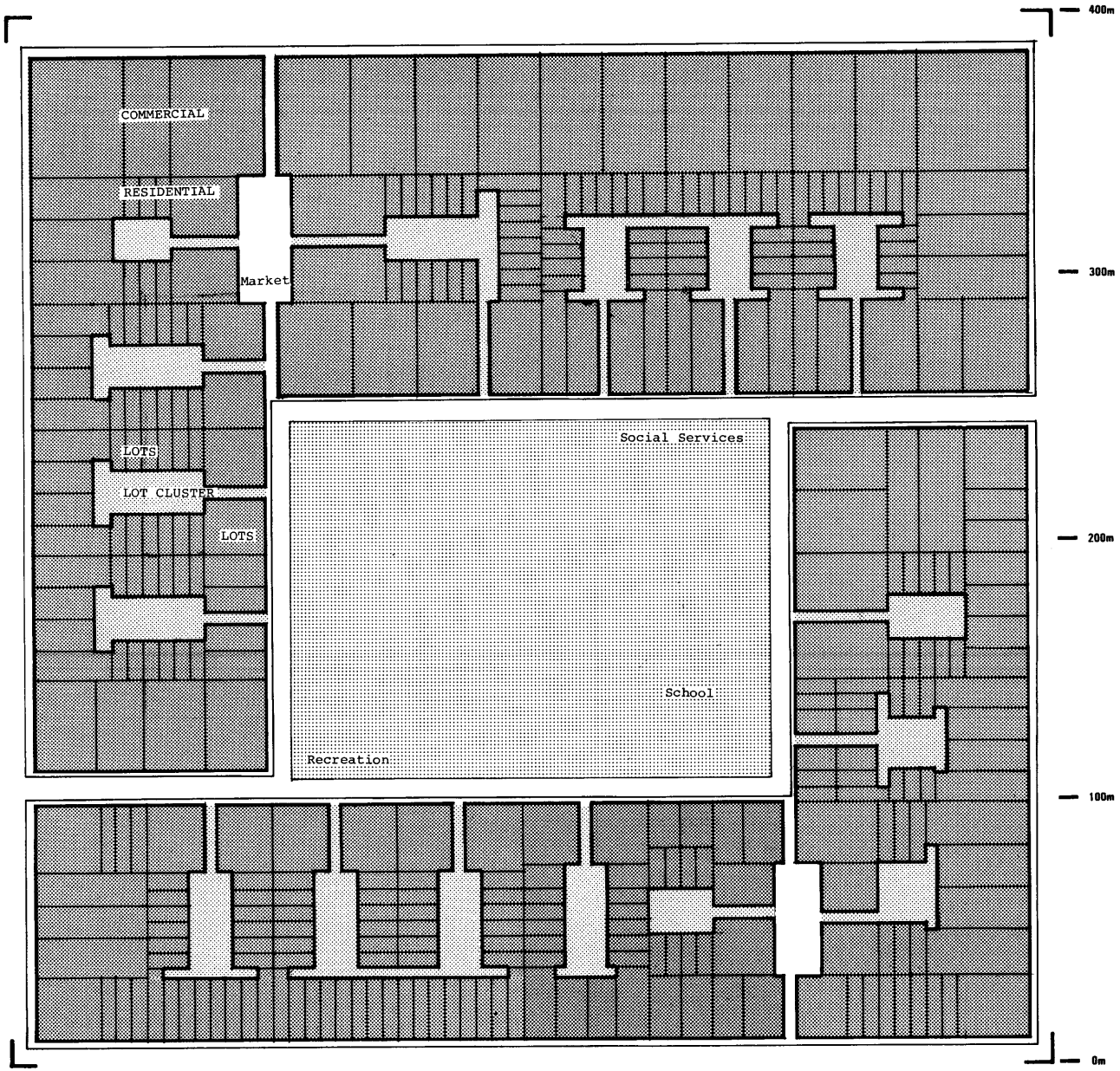

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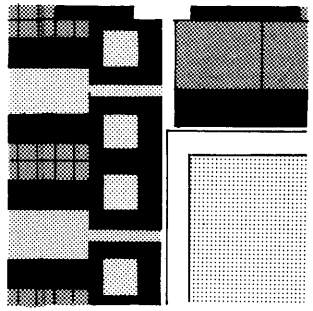
URBAN UNIT LAND UTILIZATION / LOTS SUBDIVISION

LAND UTILIZATION DIAGRAMS

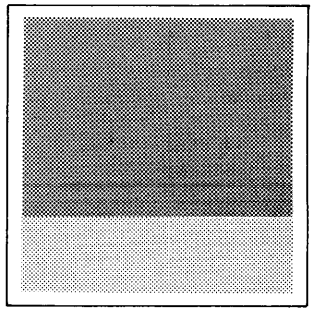
1 Hectare



PATTERN

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

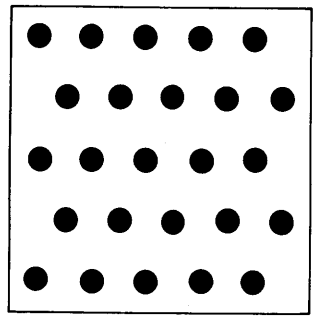
1 Hectare



PERCENTAGES

Streets/Walkways	16
Playgrounds	16
Cluster Courts	8
Dwellings/Lots	60

1 Hectare



DENSITY Persons/Hectare

20 Persons 500

BLOCKS, LOTS, LOT CLUSTERS

DEFINITION:

BLOCK is a portion of land bounded and served by lines of public streets,
LOT is a measured parcel of land having fixed boundaries and access to public circulation.
LOT CLUSTER is a group of lots (owned individually) around a semiprivate common court (owned in condominium).

The block layout proposed is based in the following policy:

MINIMIZATION OF: public ownership of land; lengths of infrastructure; government burdens, responsabilities, and services.
MAXIMIZATION OF: private ownership of land, and private responsability.

The blocks contain horizontal condominiums or clusters were lots are grouped around a common court that serves as an access space as well as a semiprivate open space and the occupants share the use of, and share responsability for the maintenance of the court.

Three types of lots are contained within such blocks:

EXTERIOR LOTS: Those having access to public streets.
INTERIOR LOTS: Those having access only to the semiprivate court of the cluster.
EXTERIOR-INTERIOR LOTS: Those having access to both; the public street and the semiprivate court.

The layout proposed permits:

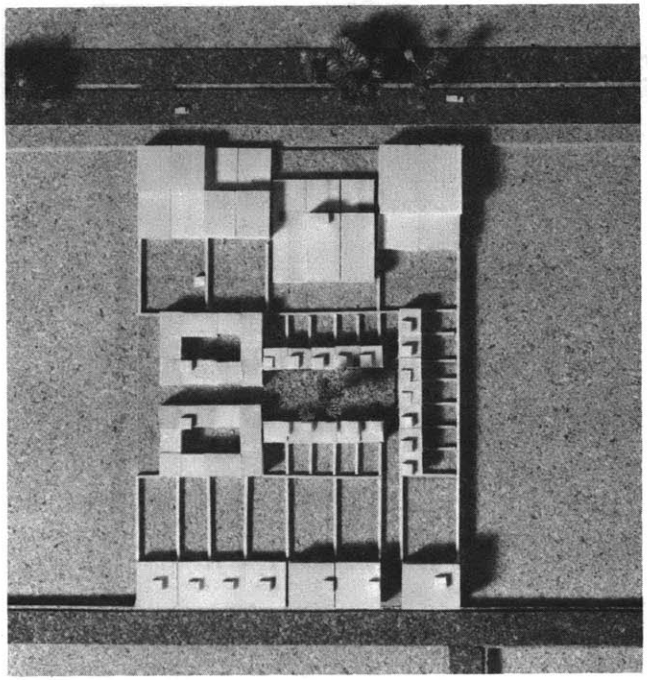
FLEXIBILITY IN LAND USES.
Blocks are similar in shape and dimensions. Still they permit the accomodation of different land uses (residential, residential/commercial, light industries, school, park.

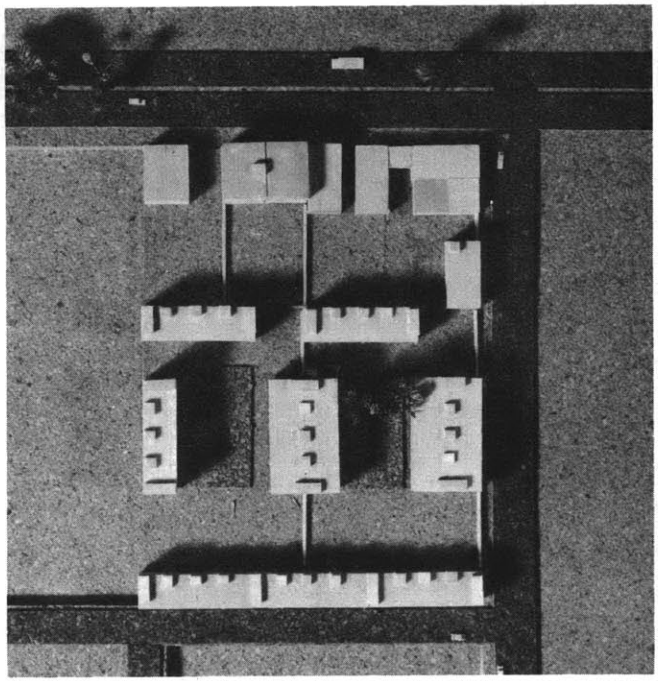
FLEXIBILITY IN RESIDENTIAL DENSITIES AND HOUSING SYSTEMS WITHIN THE SAME LOT STRUCTURE.
Lot clusters are of minimum optimum dimensions to permit flexibility. Progressive development units, expandable houses, tenement units, apartments, others. medium and high densities. Row, grouped, walk-up combinations. Instant-incremental.

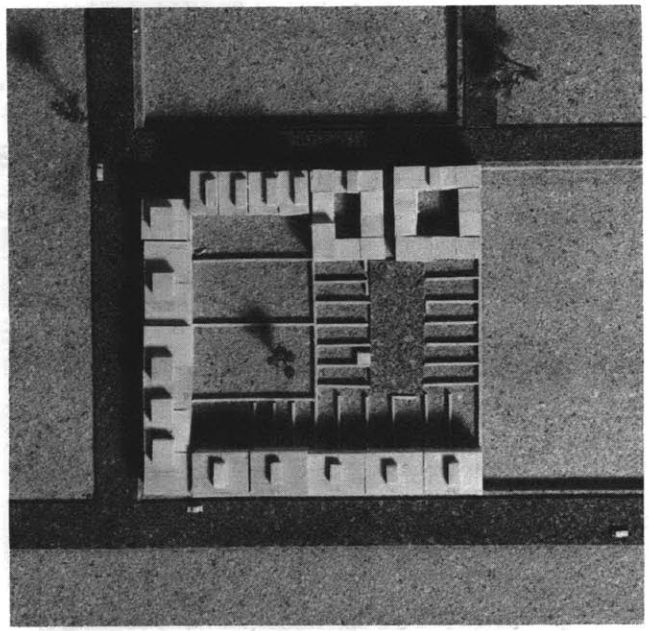
DIFFERENT TYPES OF LAND TENURE.
Lot clusters are of minimum optimum dimensions to allow different types of land tenure without legal/administrative complications:
a) ownership: -individual
-condominium
b) rental: -individual
-cooperatives

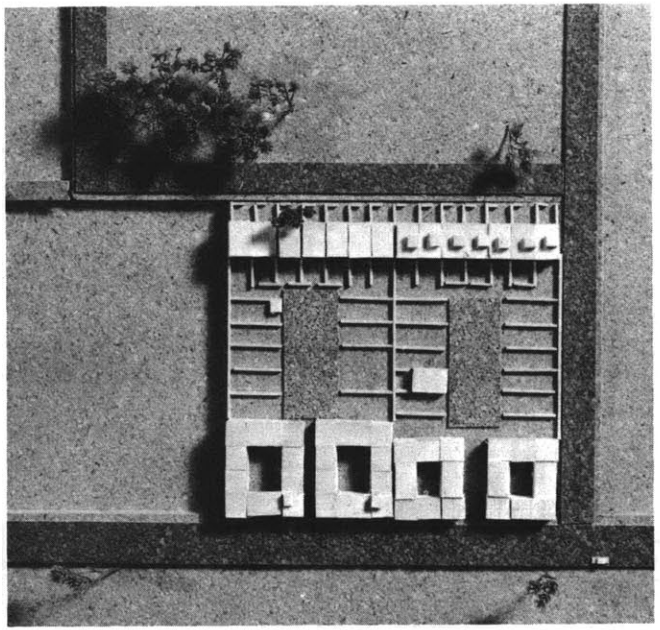
EXPANSION OF HOUSING SYSTEMS.
Lot cluster facilitate expansion and transformation of buildings:
- Horizontal (addition on the ground) and vertical expansion without changing lot cluster configuration.
- Control of minimum spaces in lot cluster courts.

(opposite page) Four types of large lots are shown to emphasize the flexibility of the model in terms of land uses, residential densities and housing systems.







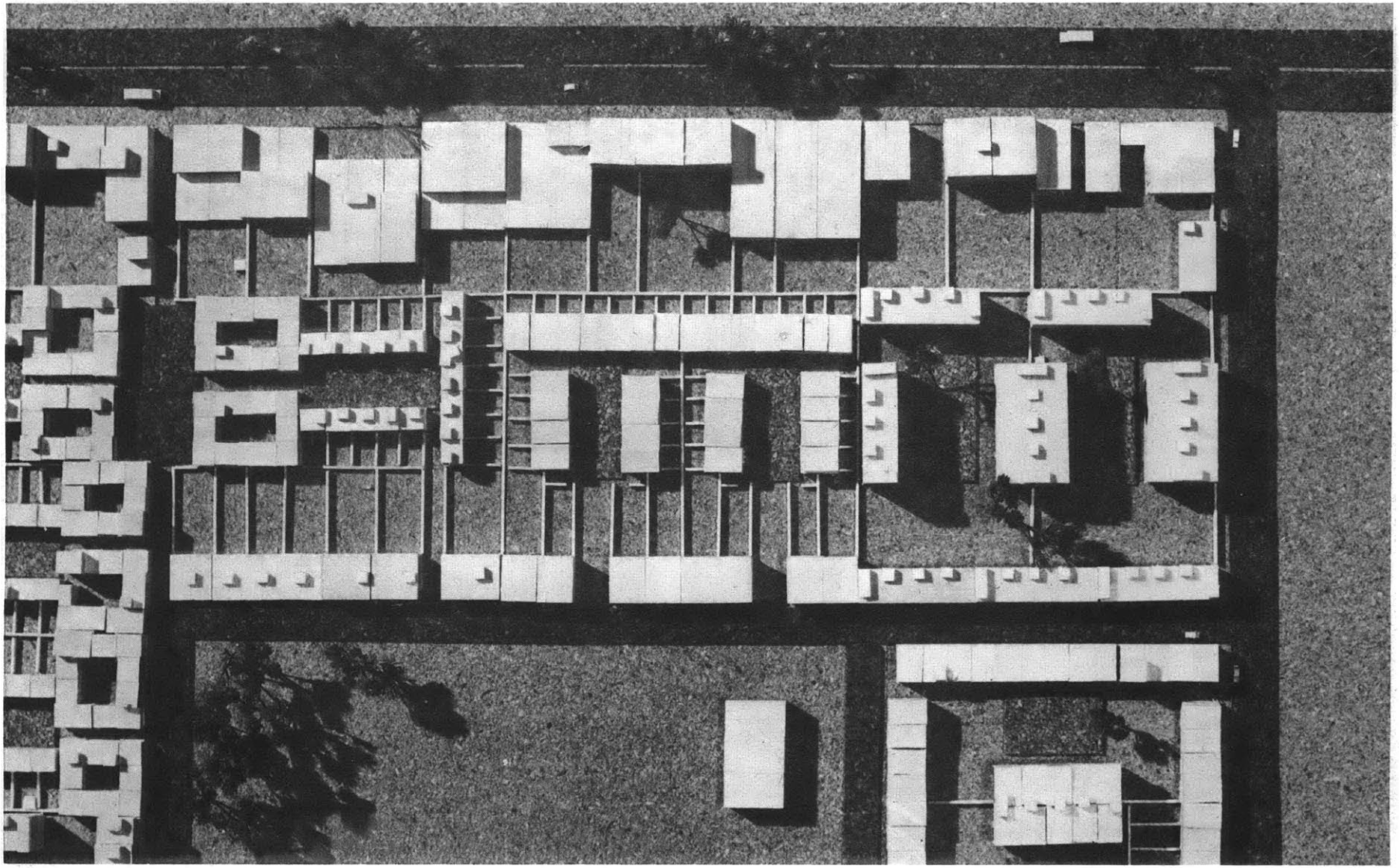


(top left) Depicted lot located along the main street and adjacent to the park, shows large lots for commercial development, lot cluster for housing types 2, 5, and housing type 7 along the park street.

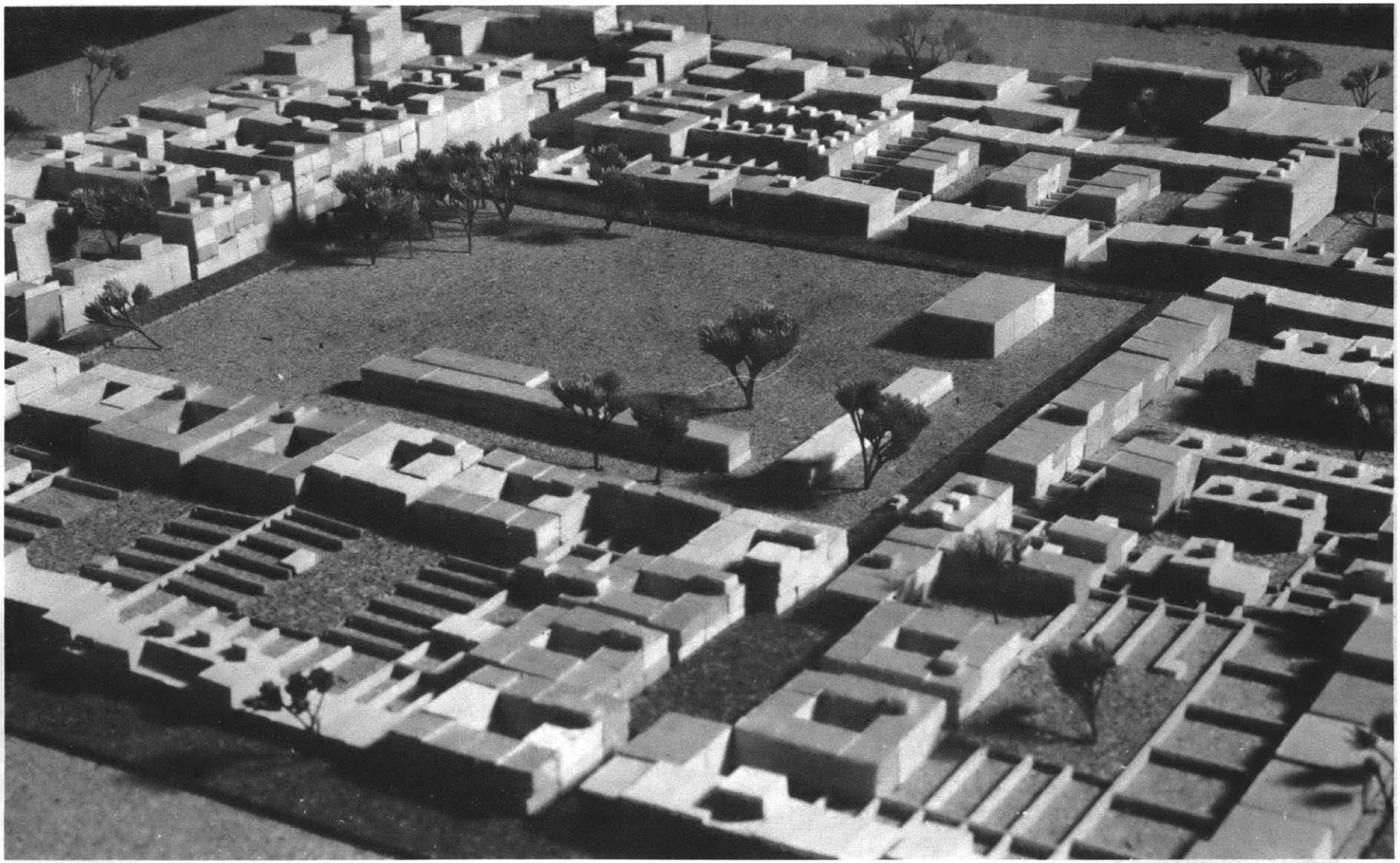
(top rigth) Depicted corner lot located along main street, local street and park street shows the possibility of locating commercial lots along the main street and lot clusters with housing type 6 (walk-up apartments).

(bottom left) Depicted corner lot located along 2 local streets and park street shows lots for housing type 7 along local streets and housing types 1 and 3 may be seen within the lot cluster.

(bottom rigth) Depicted corner lot along local street and park street shows clusters including housing types 1,2,3, and 4, this last facing the park.



BLOCK, LOTS, CLUSTERS: The block illustrated is 130 by 280 meters, at a saturated stage of development. Areas of faster development, higher density, higher potential development are located on the periphery of the block along the street frontage, with exception of the corner lot (top rigth). The areas include: Housing type 2 and 3 "tenements", Housing type 6 and 7 apartments and commercial lots along the main street. Areas of slower development, lower densities, lower commercial potential are located on the interior of the block grouped around the court of the cluster. The areas include: Housing type 1 "progressive development"; Housing type 4 and 5 "expandable houses".



The photograph illustrates an air view of the urban unit 400 by 400 meters. Notice the open area internalized within the urban unit containing the elementary school, social service center and community recreational areas. Top boundary of the urban unit shows areas of faster development. The bottom boundary is a local transverse street; lot clusters and pedestrian walkways may be seen along local streets.

HOUSING

The following housing options are derived from studies of existing housing systems (See Case Studies) and demands (socio-economic characteristics of users, physical environment) in Metropolitan Mexico.

1 PROGRESSIVE DEVELOPMENT:
- Units grouped in LOT CLUSTERS administered by users in cooperatives or condominiums.
- Units include lot with toilet, shower and minimum cooking facilities.
- Tenure: ownership. User will develop/build dwelling.
- Dwelling uses planned: a) family b) family subleting c) multi-family with shared facilities.

2 TENEMENT ROOM TYPE "A":
- Grouped in LOTS, administered by users in condominiums or cooperatives or by private developers.
- Units include lot with rental rooms, communal facilities and residential/commercial rooms.
- Units offered to users for rental.
- Dwelling uses planned: a) individuals or families renting rooms; b) commercial small industries.

3 TENEMENT EXPANDABLE APARTMENT TYPE "B/C":
- Grouped in LOTS, administered by users in condominiums or cooperatives.
- Units include lot with toilet, shower, cooking and 1 expandable room. User may expand dwelling to 2 rooms.
- Units offered to users for ownership/rental.
- Dwelling uses planned: same as in (2).

4 LOT - EXPANDABLE HOUSE TYPE "A":
- Dwelling unit grouped in LOT CLUSTERS, administered by users in condominium or by private developers.
- Units include lot with toilet, shower, kitchen and 3 rooms.
- Units offered to users for ownership. User may expand dwelling to 5 rooms.
- Dwelling uses planned: a) family, b) family and subleting - residential and/or commercial/small industries, c) multi-family with shared facilities.

5 LOT - EXPANDABLE HOUSE TYPE "B":
- Grouped in LOT CLUSTERS, administered by users in condominium or by private developers.
- Unit include lot with toilet, shower, kitchen and 4 rooms.
- Units offered to users for ownership. User may expand dwelling to 8 rooms.
- Dwelling uses planned: a) family, b) family and subleting, c) multi-family with shared facilities.

6 WALK-UP - EXPANDABLE APARTMENT TYPE "A":
- Walk-up units may be grouped in LOTS or LOT CLUSTERS, administered by cooperatives, condominiums or private developers.
- Units include lot with toilet, shower, kitchen and 2 rooms.
- Units offered to users for ownership. User may expand the dwelling to 5 rooms.
- Dwelling uses planned: a) family, b) multi-family, c) family/commercial.

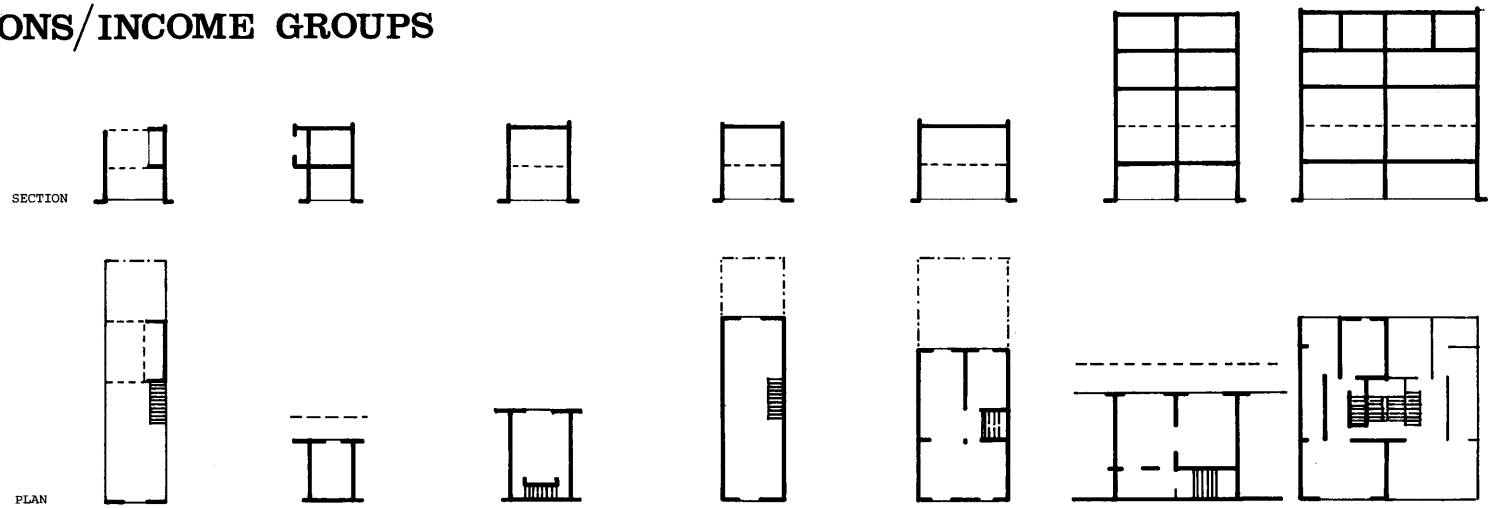
7 WALK-UP - EXPANDABLE APARTMENT TYPE "B":
- Units may be grouped in LOTS or LOT CLUSTERS, administered by cooperatives, condominiums or private developers.
- Units include lot with toilet, shower, kitchen and 3 rooms.
- Units offered to users for ownership. User may expand the dwelling to 7 rooms.
- Dwelling uses planned: a) family, b) multi-family.

DWELLING OPTIONS/INCOME GROUPS

The chart illustrates four categories of income groups subdivided as follows: a) family income per month (1972); b) monthly expenditure in housing (Survey: Mexico City 1972-73); c) Percentage of monthly income that each individual is capable to pay.
Seven dwelling options (described on opposite page) are arranged in terms of: a) basic area; b) expansion; c) total area; d) rent per month; e) total cost; f) tenure (rental or ownership).

The matrix matches income groups with dwelling options to derive the number of Housing types available to specific income categories.

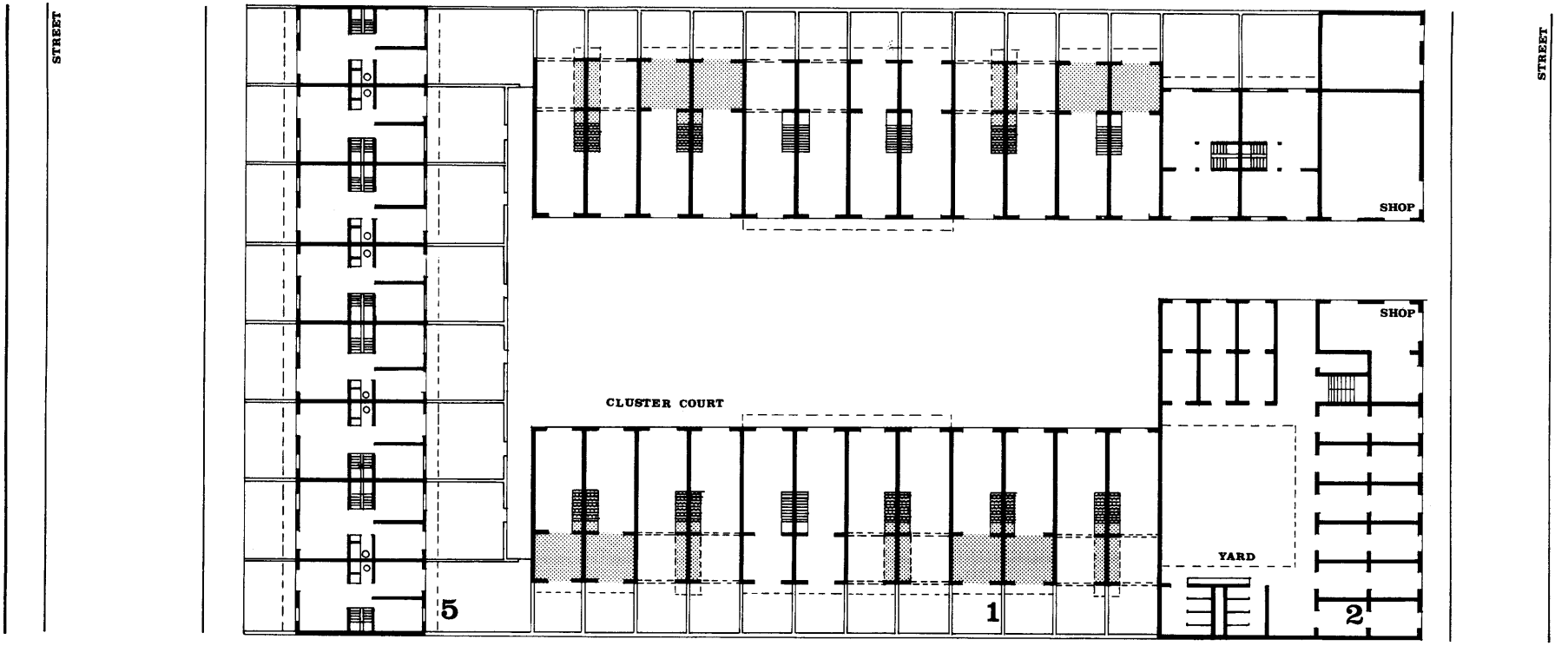
Notice: 12% of the population earn less than $42 per month and have access to Housing type 1.
30% of the population earn approximately $83 per month and have access to three types of Housing: 1,2,3.
22% of the population earn less than $125 per month and have access to two Housing types: 3,4.
15% of the population earn less than $ 208 per month and have access to three Housing types: 5,6,7.



% of total population	INCOME GROUPS		DWELLING OPTIONS						
			1 PROGRESSIVE Dwelling 1 Room Basic area m2 16.2 Expansion m2 80m2 Total area m2 96m2 Mortg./month 6.3 Cost 897.6 Tenure O	2 TENEMENT "A" Dwelling 1 Room Basic area m2 20.14 Expansion m2 - Total area m2 20.14 Rent/Mortgage 10.40 Cost 967 Tenure R/O	3 TENEMENT "B" Dwelling 1-2 R Basic area m2 32.8 Expansion m2 15.2 Total area m2 48 Rent/Mortgage 16 Cost 1496 Tenure R/O	4 HOUSE "A" Dwelling 3-5 R Basic area m2 56 Expansion m2 40 Total area m2 96 Rent/Mortgage 22.4 Cost 2094 Tenure O	5 HOUSE "B" Dwelling 4-8 R Basic area m2 72 Expansion m2 48 Total area m2 120 Rent/Mortgage 36.8 Cost 3441 Tenure O	6 APARTMENT "A" Dwelling 2-4 R Basic area m2 88 Expansion m2 40 Total area m2 128 Mortg./month 44.8 Cost 4166 Tenure O	7 APARTMENT "B" Dwelling 3-7 R Basic area m2 96 Expansion m2 48 Total area m2 144 Mortg./month 49.6 Cost 4613 Tenure O
12	VL	Family income/month: 42 Monthly exp. housing: 6.3 Percentage of income: 15	Progressive: 16.2 m2 % of income: 15	Tenement: 20.14 m2 % of income: 24.75					
30	L	Family income/month: 83 Monthly exp. housing: 16.6 Percentage of income: 20	Progressive: 18.7 m2 % of income: 11	Tenement: 20.14 m2 % of income: 12.5	Tenement: 32.5 m2 % of income: 19.2	House: 56 m2 % of income: 26.9			
22	ML	Family income/month: 125 Monthly exp. housing: 25 Percentage of income: 20		Tenement: 20.14 m2 % of income: 8.3	Tenement: 32.5 m2 % of income: 12.8	House: 56 m2 % of income: 17.9	House: 72 m2 % of income: 29		
15	M	Family income/month: 208 Monthly exp. housing: 52 Percentage of income: 25				House: 56 m2 % of income: 10.7	House: 72 m2 % of income: 17.7	Apartment: 87 m2 % of income: 21.5	Apartment: 96 m2 % of income: 23.8

7% interest for 15 years
10% down payment
Prices 1971

Sources: INDECO 'Programa de Reestructuracion Urbana 1972 Diagnostico y Evaluacion del Sistema general de Vivienda de los sectores de escazos recursos en el area Metropolitana de la Ciudad de Mexico; Cortes, Davila, Espinosa, Turner, Sudra, Mexico City-Cambridge 1972-73.



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LOT CLUSTER

Three types of proposed dwelling units are shown within the lot cluster:

1 PROGRESSIVE DEVELOPMENT

Unit include lot with toilet, shower, kitchen and no rooms. Dwelling uses anticipated/planned: a) family.

2 TENEMENTS ROOM TYPE 'A'

Units include lot with rental rooms, shared communal facilities (toilets, showers, laundry). Dwelling uses anticipated/planned: a) individuals or families renting rooms, b) commercial/small industries.

5 LOT - EXPANDABLE HOUSE TYPE 'B'

Units include lot with toilet, shower, kitchen and 4 rooms. Dwelling uses anticipated/planned: a) family b) family and subleting, c) multi-family with shared facilities.

CLUSTER LAND UTILIZATION DATA

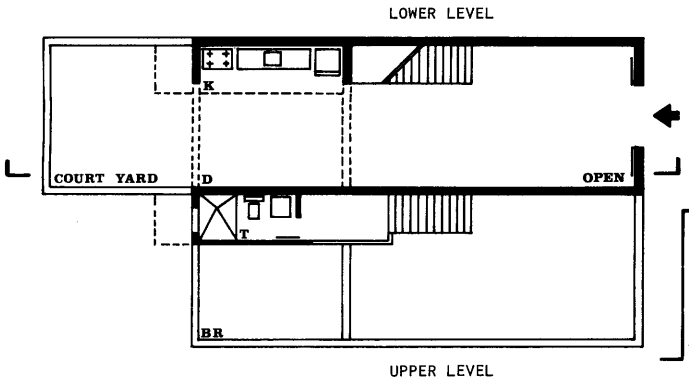
DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	36	0.50	72
DWELLING UNITS	54	0.50	108
PEOPLE	297	0.50	594

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.072	14.4
SEMI-PUBLIC (open spaces, schools, community centers)	NA	NA
PRIVATE (dwellings, shops, factories, lots)	0.332	66.4
SEMI-PRIVATE (cluster courts)	0.096	19.2
TOTAL	0.500	100

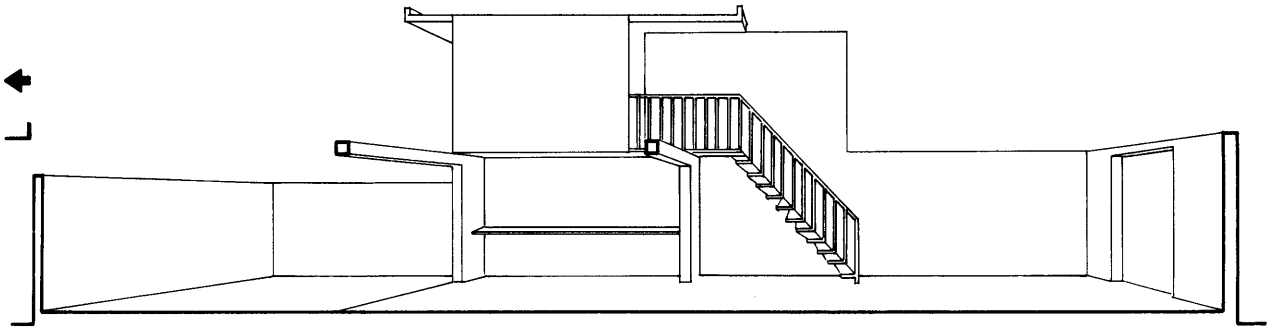
NETWORK EFFICIENCY

$$R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 288 \text{ m/Ha}$$

AVERAGE LOT AREA = 138 m^2

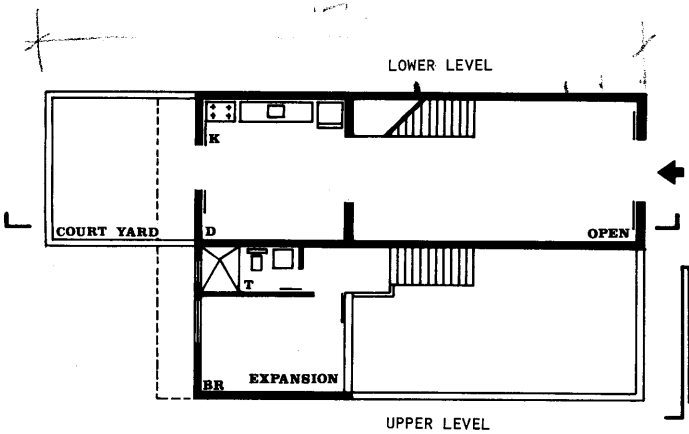


PLAN



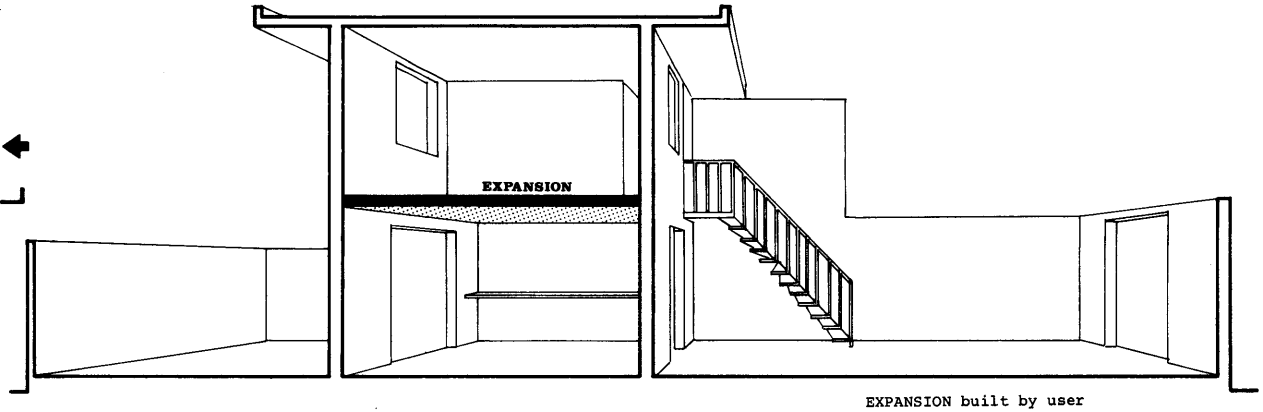
SECTION IN PERSPECTIVE

FIRST STAGE built by contractor



PLAN

17 x 5.5m.



SECTION IN PERSPECTIVE

EXPANSION built by user

PROPOSED DWELLING

PROGRESSIVE DEVELOPMENT

LOT - EXPANDABLE HOUSE TYPE A — 1 - 5 ROOMS

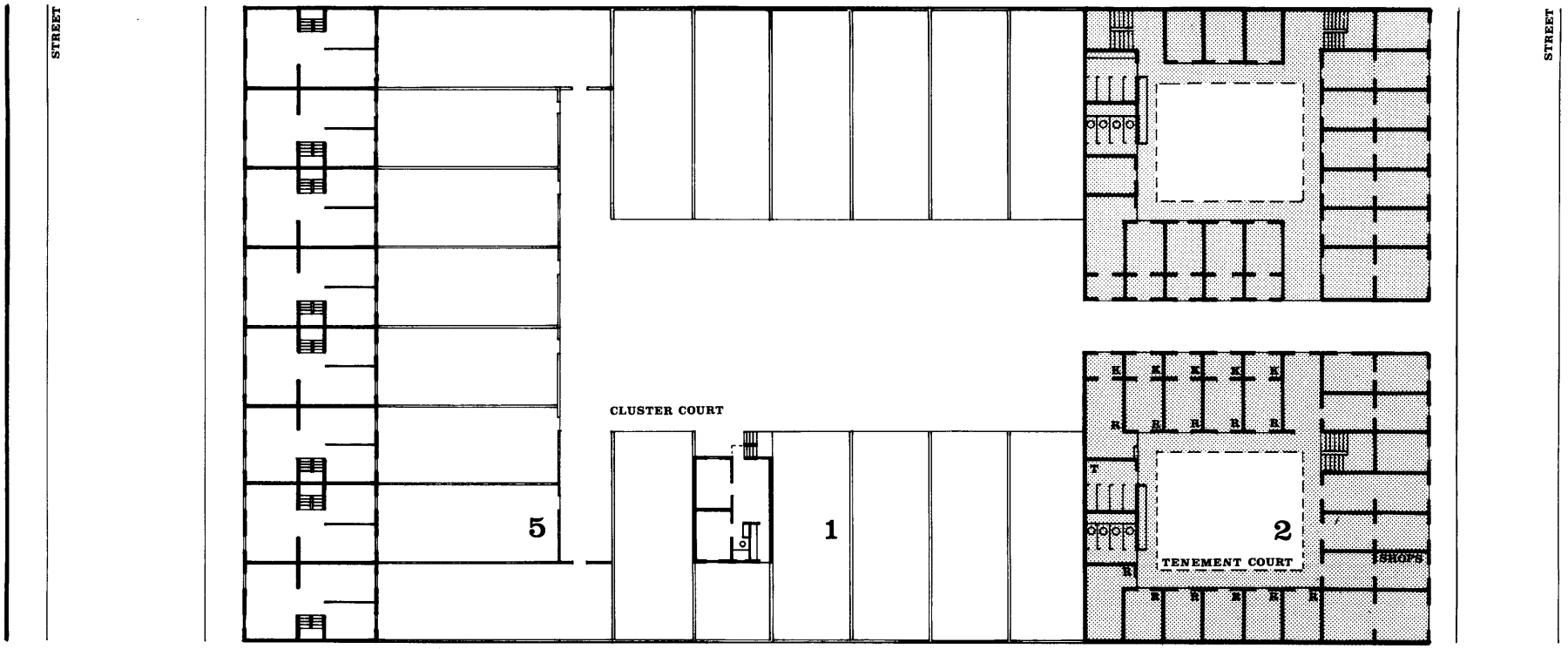
LOWER LEVEL	8 m2	
UPPER LEVEL	8 m2	
TOTAL BASIC AREA	16 m2	17 %
EXPANSION	80 m2	83 %
TOTAL AREA	96 m2	100 %

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)

0 1 5 10m

1:200



LOT CLUSTER

Three types of proposed dwelling units are shown within the lot cluster:

1 PROGRESSIVE DEVELOPMENT

Unit include lot with toilet, shower, kitchen and no rooms. Dwelling uses anticipated/ planned: a) family.

2 TENEMENTS ROOM TYPE 'A'

Units include lot with rental rooms, shared communal facilities (toilets, showers, laundry). Dwelling uses anticipated/planned: a) individuals or families renting rooms, b) commercial/small industries.

5 LOT - EXPANDABLE HOUSE TYPE 'B'

Units include lot with toilet, shower, kitchen and 4 rooms. Dwelling uses anticipated/planned: a) family, b) family and subleting, c) multi-family with shared facilities.

CLUSTER LAND UTILIZATION DATA

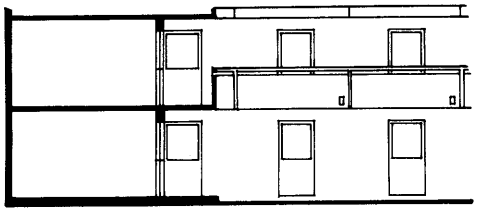
DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	22	0.503	43
DWELLING UNITS	60	0.503	119
PEOPLE	336	0.503	666

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.072	14.4
SEMI-PUBLIC (open spaces, schools, community centers)	NA	NA
PRIVATE (dwellings, shops, factories, lots)	0.300	60.0
SEMI-PRIVATE (cluster courts)	0.122	25.6
TOTAL	0.503	100.0

NETWORK EFFICIENCY

$R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 288$

AVERAGE LOT AREA = 230 m2



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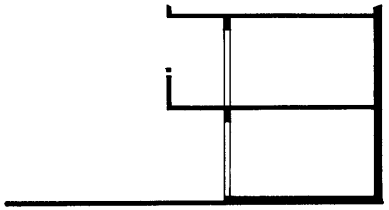

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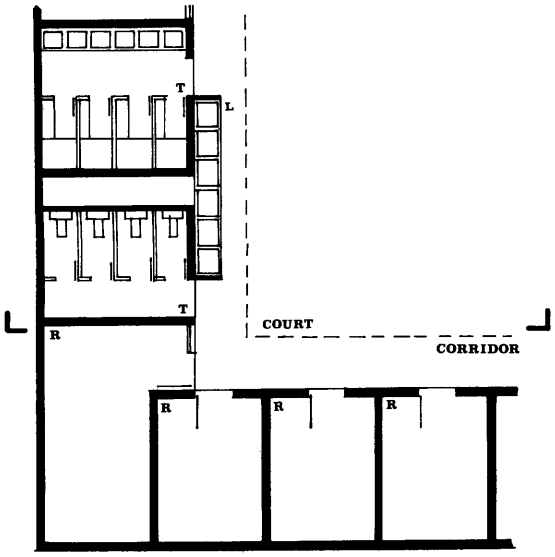


PLAN

TENEMENT **A**
ROOM - INSTANT - COMMUNAL FACILITIES 1 ROOM

ROOM, included
corridor and
communal facilities 20.04 m2

HABITABLE ROOMS
PER TENEMENT 24

The units will be offered for rent or sale in condominium or cooperative.
Uses anticipated/planed are:
a)individuals or families subletting rooms/transient lodging;
b)commercial/small industries.

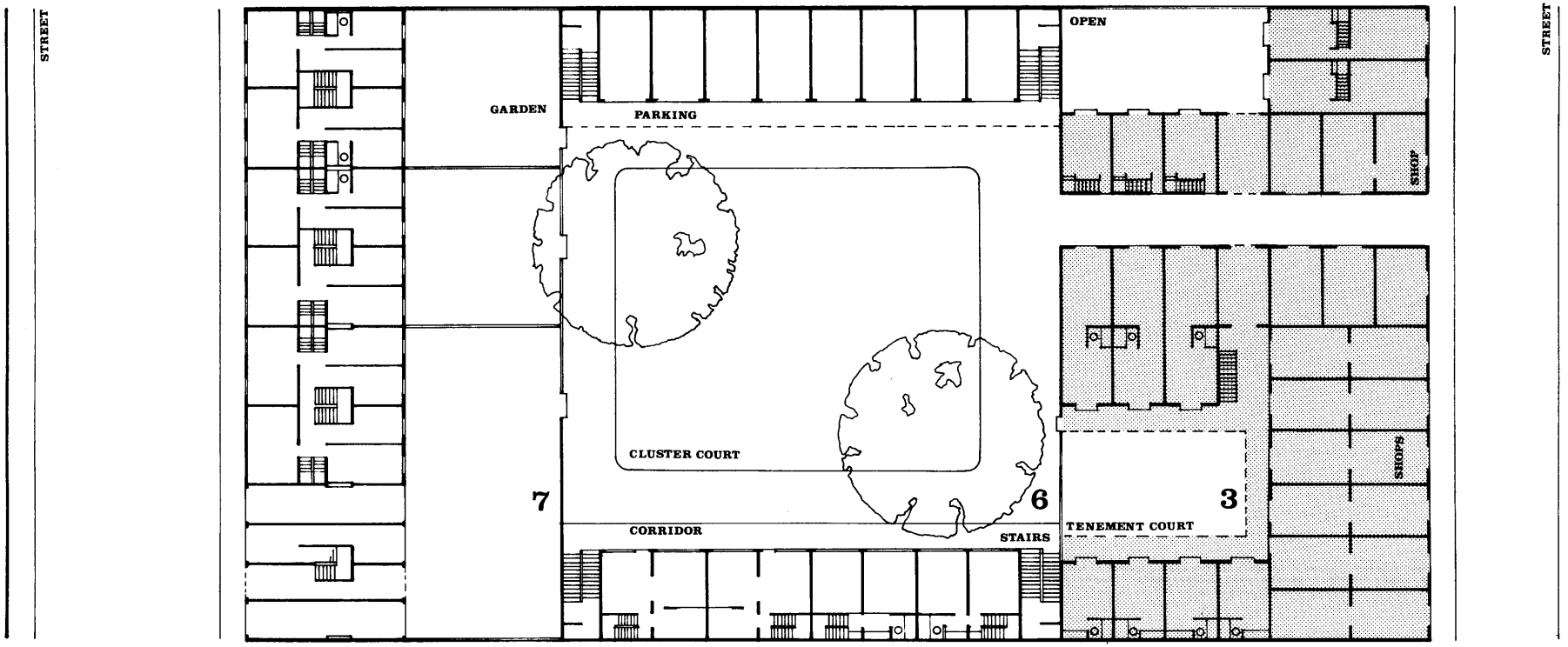
KEY

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)

0 1 5 10m

1:200

PROPOSED DWELLING



0 10 30m

1:500

LOT CLUSTER

Three types of proposed dwellings are shown within the lot cluster:

3 TENEMENT - APARTMENT - TYPE 'B' AND 'C'

Units include lot with rental rooms, communal court, individual facilities (kitchen, toilet, shower, laundry).
Dwelling uses planned: a) individuals or families renting rooms; b) commercial small industries.

6 WALK-UP - EXPANDABLE APARTMENT - TYPE 'A'

Units include lot with toilet, shower, kitchen and 2 rooms.
Dwelling uses planned: a) family, b) multi-family, c) family-commercial.

7 WALK-UP - EXPANDABLE APARTMENT - TYPE 'B'

Unit include lot with toilet, shower, kitchen and 3 rooms.
Dwelling uses anticipated/planned: a) family, b) multi-family.

CLUSTER LAND UTILIZATION DATA

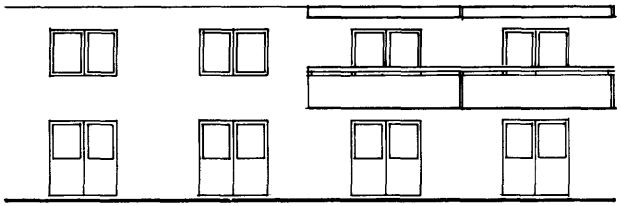
DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	1	0.50	2
DWELLING UNITS	51	0.50	101
PEOPLE	285	0.50	565

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.072	14.4
SEMI-PUBLIC (open spaces, schools, community centers)	NA	NA
PRIVATE (dwellings, shops, factories, lots)	0.192	38.2
SEMI-PRIVATE (cluster courts)	0.239	47.6
TOTAL	0.503	100.0

NETWORK EFFICIENCY

$R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 288$ m/ha

AVERAGE LOT AREA = NA



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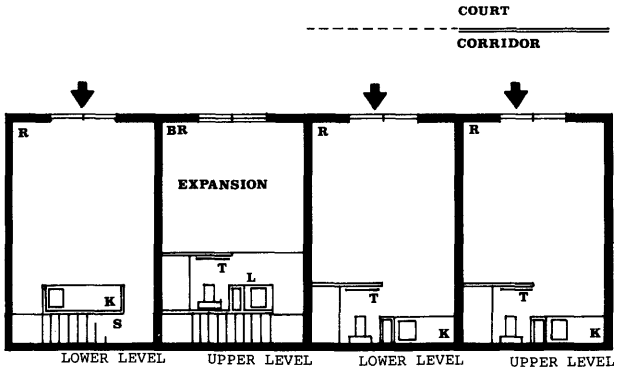
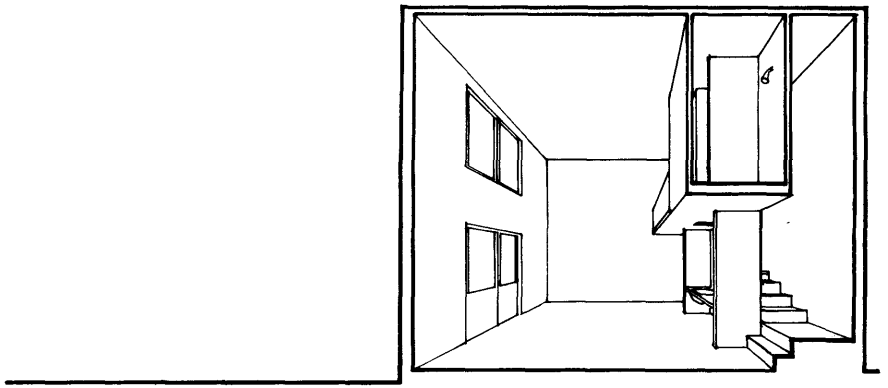
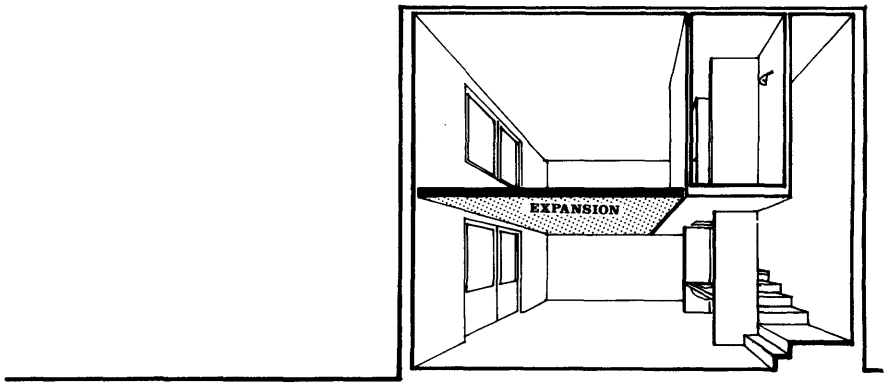


PLAN B C

PROPOSED DWELLING



SECTION IN PERSPECTIVE FIRST STAGE built by contractor



SECTION IN PERSPECTIVE LAST STAGE expanded by user

TENEMENT **B** 1 - 2 ROOMS
APARTMENT - EXPANDABLE

LOWER LEVEL	24.0 m2	
UPPER LEVEL	8.8 m2	
TOTAL BASIC AREA	32.8 m2	68.3 %
EXPANSION	15.2 m2	31.6 %
TOTAL AREA	48.0 m2	100.0 %

TENEMENT **C**
APARTMENT - INSTANT 1 ROOM

MULTIPORPOSE ROOM, KITCHEN, TOILET, CORRIDOR	30.4 m2

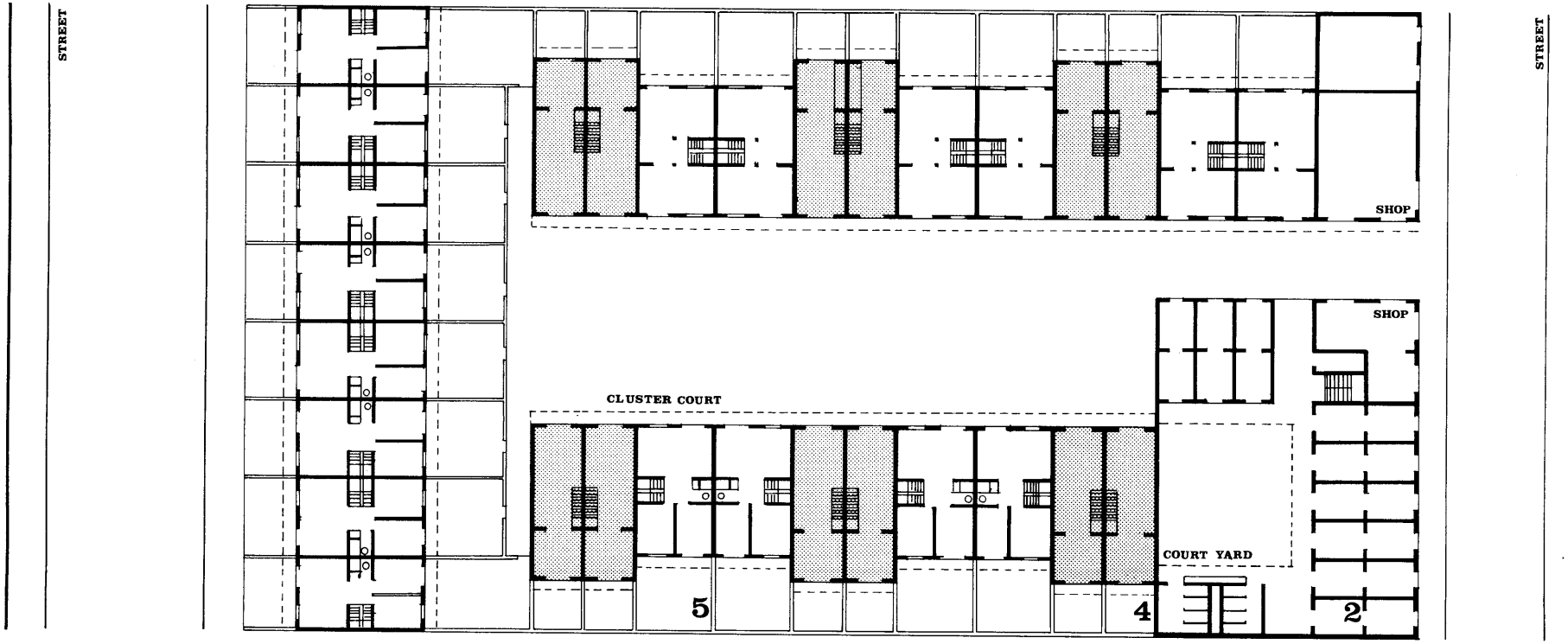
Include: 1) lot with facilities for shops/ small industry/dwellings;
2) market stalls/ dwellings.

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)

0 1 5 10m

1:200



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LOT CLUSTER

Three types of proposed dwelling units are shown within the lot cluster:

2 TENEMENTS ROOM TYPE 'A'

Units include lot with rental rooms, shared communal facilities (toilets, showers, laundry). Dwelling uses anticipated/planned:
a) individuals or families renting rooms,
b) commercial/small industries.

4 LOT - EXPANDABLE HOUSE TYPE 'A'

Units include lot with toilet, shower, kitchen and a big room. Dwelling uses anticipated/planned: a) family b)multi-family with shared facilities.

5 LOT - EXPANDABLE HOUSE TYPE 'B'

Units include lot with toilet, shower, kitchen and 4 rooms. Dwelling uses anticipated/planned: a)family b) family and subleting, c) multi-family with shared facilities.

CLUSTER LAND UTILIZATION DATA

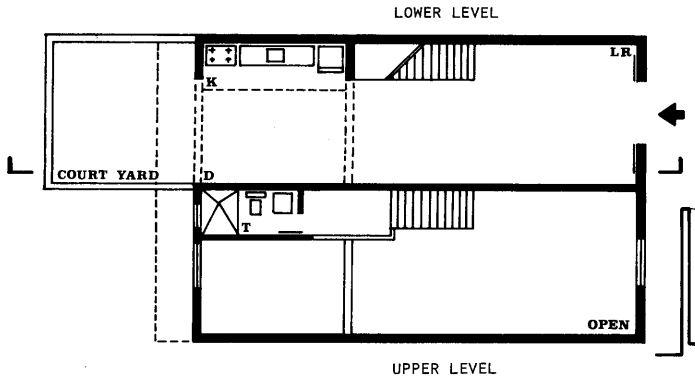
DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	32	0.50	64
DWELLING UNITS	50	0.50	100
PEOPLE	275	0.50	550

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.072	14.4
SEMI-PUBLIC (open spaces, schools, community centers)	NA	NA
PRIVATE (dwellings, shops, factories, lots)	0.332	66.4
SEMI-PRIVATE (cluster courts)	0.096	19.2
TOTAL	0.500	100

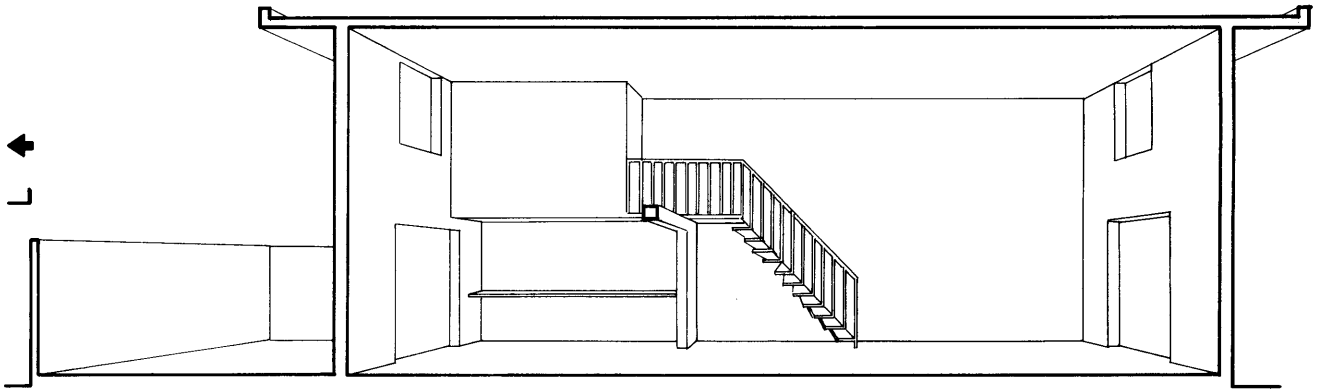
NETWORK EFFICIENCY

$$R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 288 \text{ m/Ha}$$

AVERAGE LOT AREA = 156 m^2

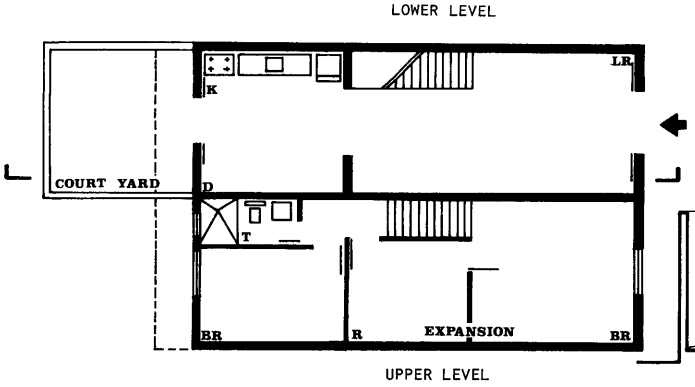


PLAN

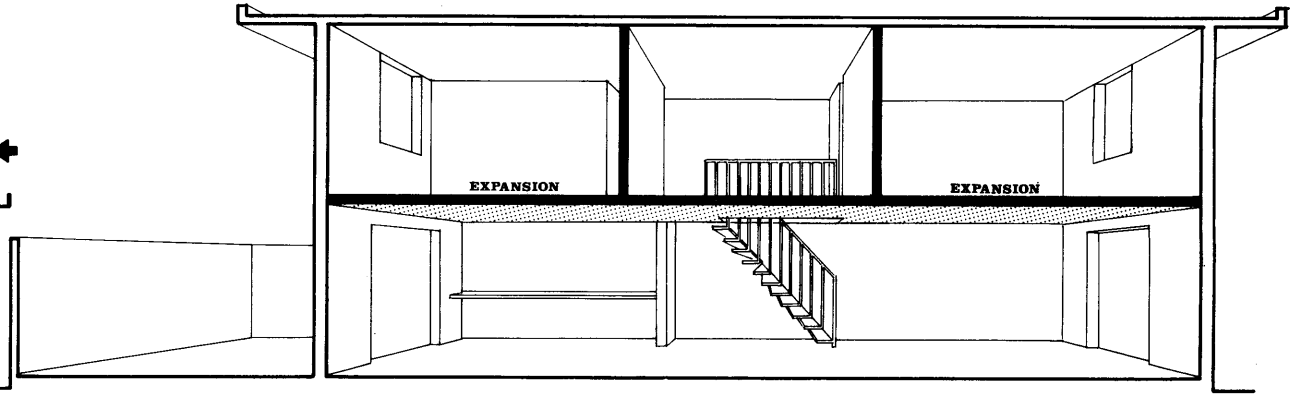


SECTION IN PERSPECTIVE

FIRST STAGE built by contractor



PLAN



SECTION IN PERSPECTIVE

LAST STAGE expanded by user

PROPOSED DWELLING

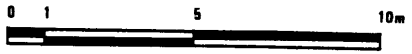
HOUSE

LOT - EXPANDABLE HOUSE TYPE A — 3 - 5 ROOMS

LOWER LEVEL	48 m2	
UPPER LEVEL	8 m2	
TOTAL BASIC AREA	55 m2	58 %
EXPANSION	40 m2	42 %
TOTAL AREA	96 m2	100 %

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)



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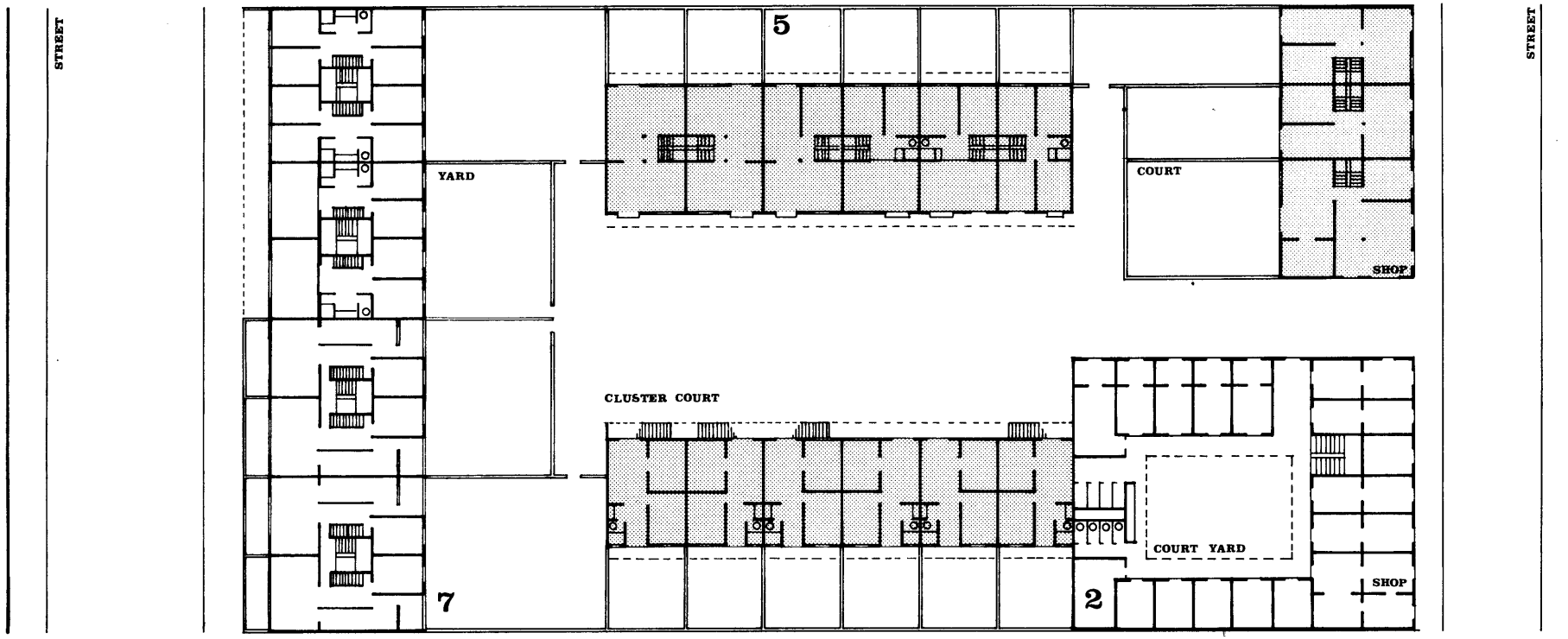

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LOT CLUSTER

Three types of proposed dwelling units are shown within the lot cluster:

2 TENEMENTS ROOM TYPE 'A'

Units include lot with rental rooms, shared communal facilities (toilets, showers, laundry). Dwelling uses anticipated/planned: a) individuals or families renting rooms, b) commercial/small industries.

5 LOT - EXPANDABLE HOUSE TYPE 'B'

Units include lot with toilet, shower, kitchen and 4 rooms. Dwelling uses anticipated/planned: a) family b) family and subleting, c) multi-family with shared facilities.

7 WALK-UP - EXPANDABLE APARTMENT TYPE 'B'

Unit include lot with toilet, shower, kitchen and 3 rooms. Dwelling uses anticipated/planned: a) family b) multi-family.

CLUSTER LAND UTILIZATION DATA

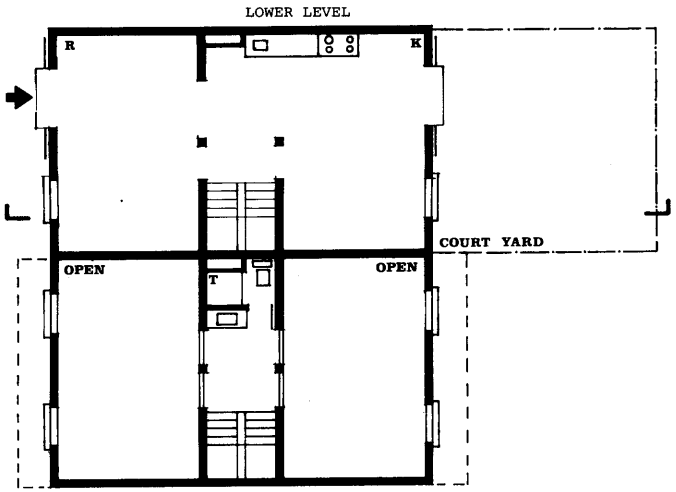
DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	20	0.50	40
DWELLING UNITS	61	0.50	122
PEOPLE	341	0.50	682

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.072	14.4
SEMI-PUBLIC (open spaces, schools, community centers)	NA	NA
PRIVATE (dwellings, shops, factories, lots)	0.34	68
SEMI-PRIVATE (cluster courts)	0.088	17.6
TOTAL	0.500	100

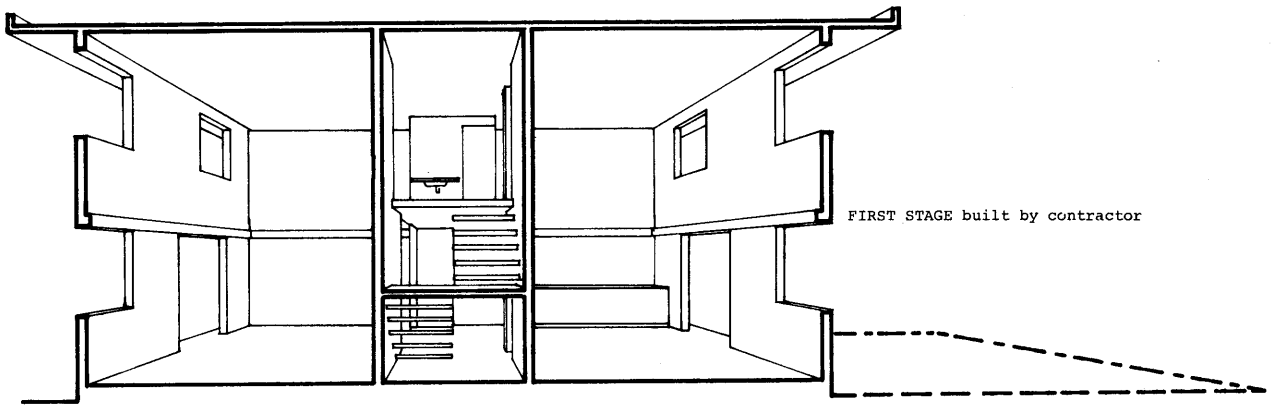
NETWORK EFFICIENCY

$$R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 288 \text{ m/Ha}$$

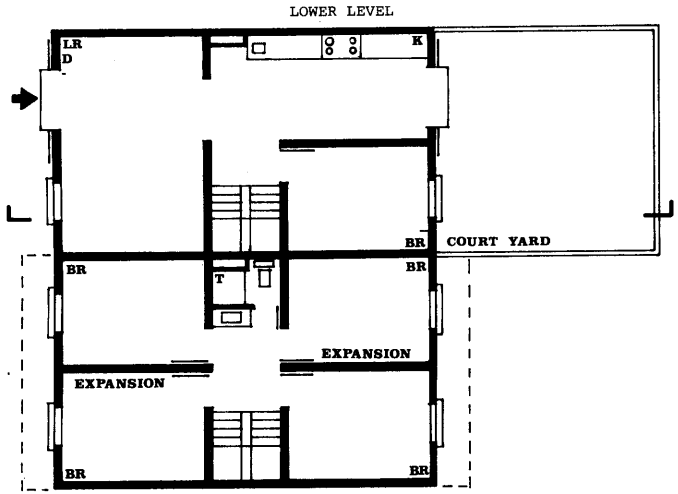
AVERAGE LOT AREA = 250 m^2



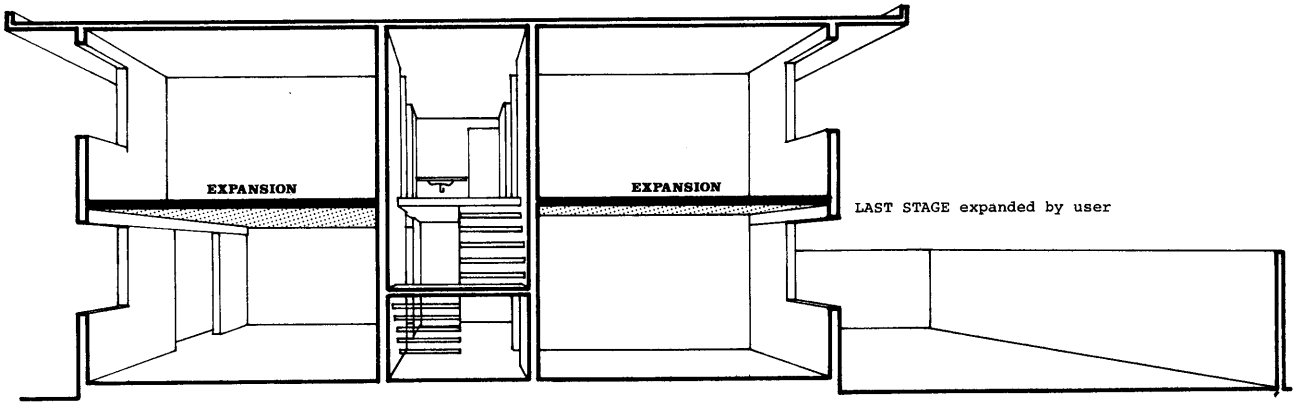
PLAN UPPER LEVEL



SECTION IN PERSPECTIVE



PLAN UPPER LEVEL



SECTION IN PERSPECTIVE

PROPOSED DWELLING

HOUSE
LOT - EXPANDABLE HOUSE TYPE B 4 - 8 ROOMS

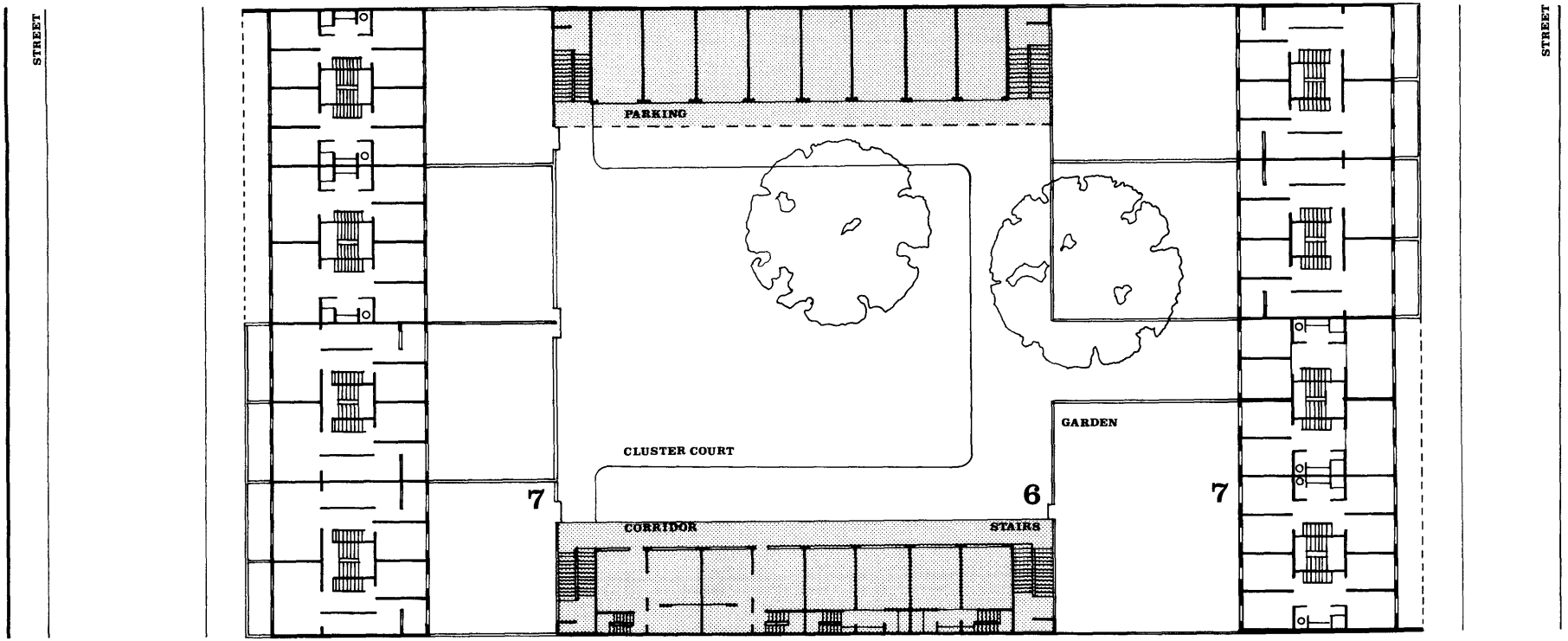
LOWER LEVEL	60 m2	
UPPER LEVEL	12 m2	
TOTAL BASIC AREA	72 m2	60 %
EXPANSION	48 m2	40 %
TOTAL AREA	120 m2	100 %

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)

0 1 5 10m

1:200



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LOT CLUSTER

Two types of proposed dwellings are shown within the lot cluster.

6 WALK-UP - EXPANDABLE APARTMENT - TYPE 'A'

Units include lot with toilet, shower, kitchen and 2 rooms.
Dwelling uses planned: a) family, b) multi-family, c) fammily-commercial.

7 WALK-UP - EXPANDABLE APARTMENT - TYPE 'B'

Unit include lot with toilet, shower, kitchen and 3 rooms.
Dwelling uses anticipated/planned: a) family, b) multi-family.

CLUSTER LAND UTILIZATION DATA

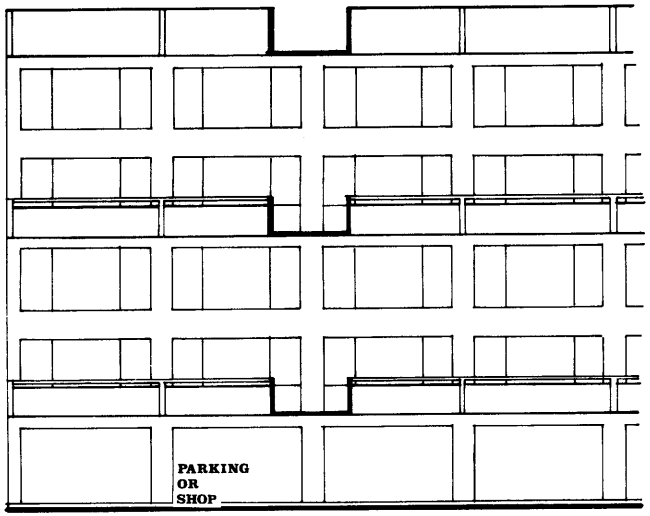
DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	NA	0.50	NA
DWELLING UNITS	64	0.50	128
PEOPLE	358	0.50	717

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.072	14.3
SEMI-PUBLIC (open spaces, schools, community centers)	NA	NA
PRIVATE (dwellings, shops, factories, lots)	0.341	55.7
SEMI-PRIVATE (cluster courts)	0.150	30.0
TOTAL	0.503	100.0

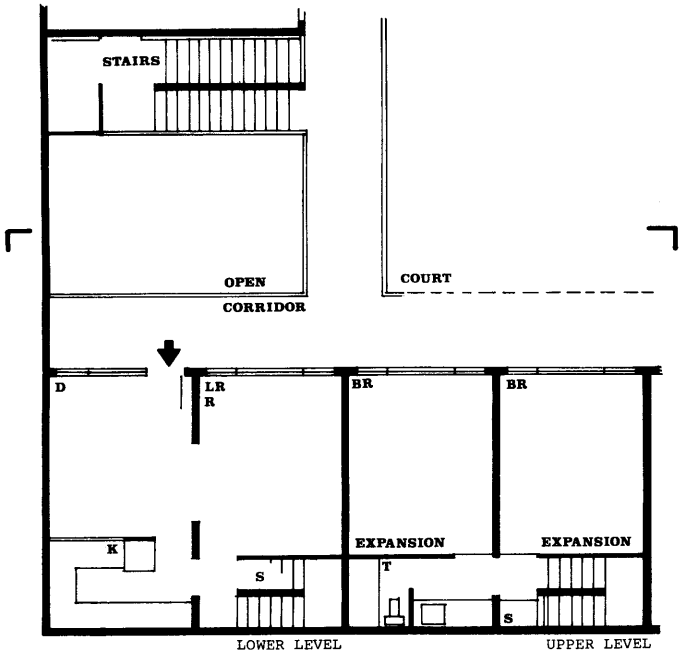
NETWORK EFFICIENCY

$$R = \frac{\text{network length (circulation)}}{\text{areas served (circulation, lots)}} = 288$$

AVERAGE LOT AREA = NA

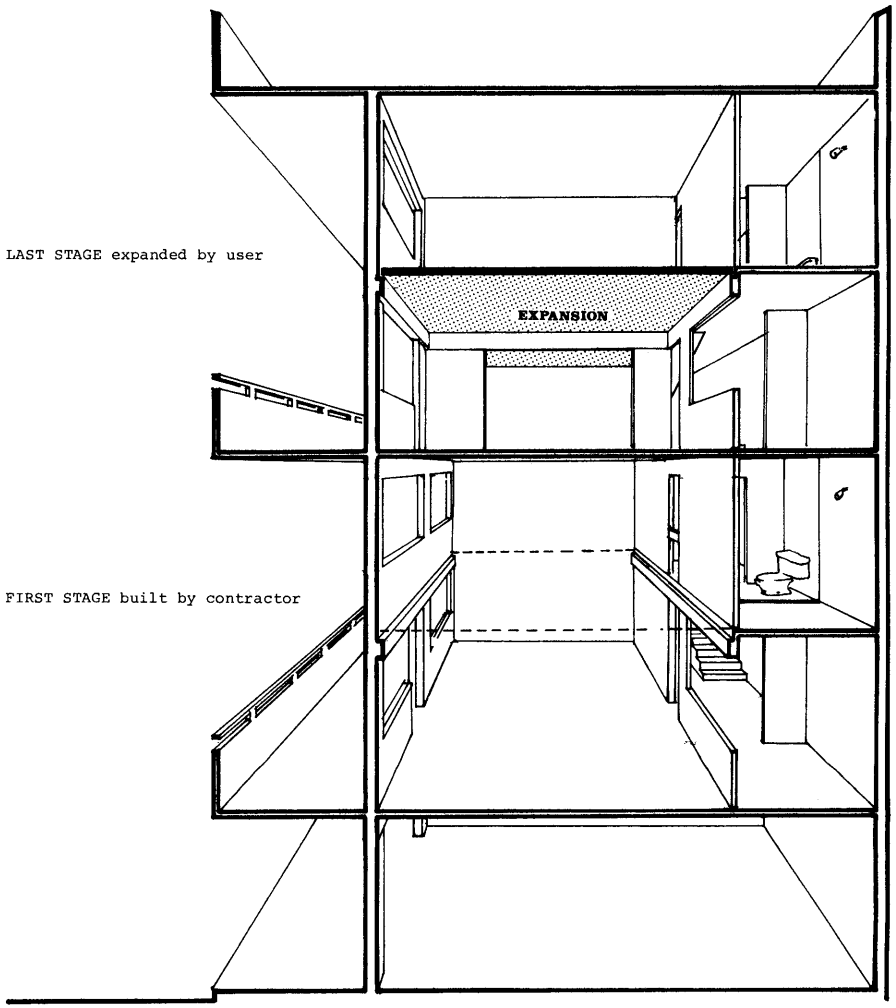


ELEVATION



PLAN

PROPOSED DWELLING



SECTION IN PERSPECTIVE

KEY

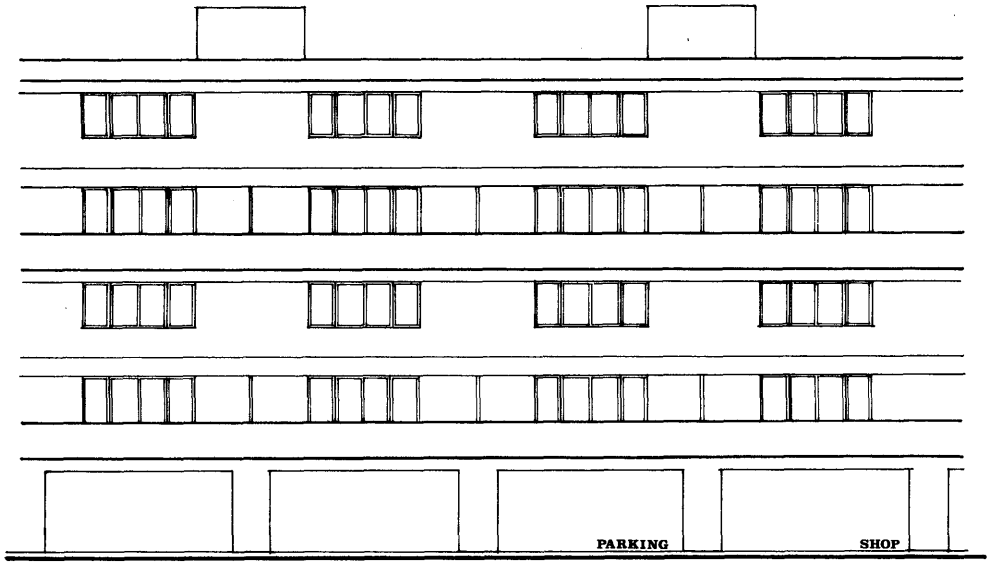
LR Living Room
D Dining/Eating Area
BR Bedroom
K Kitchen/Cooking Area
T Toilet/Bathroom
L Laundry
C Closet
S Storage
R Room (multi-use)

WALK - UP
EXPANDABLE - APARTMENT TYPE A 2 - 4 ROOMS

LOWER LEVEL	72 m2	
UPPER LEVEL	16 m2	
TOTAL BASIC AREA	88 m2	68.75 %
EXPANSION	40 m2	31.25 %
TOTAL AREA	128 m2	100.00 %

0 1 5 10m

1:200



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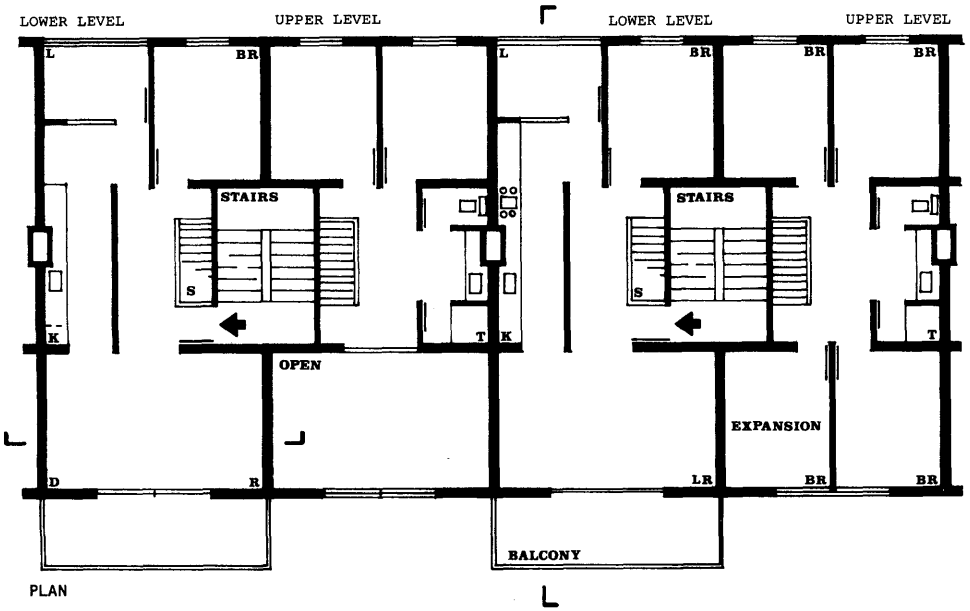
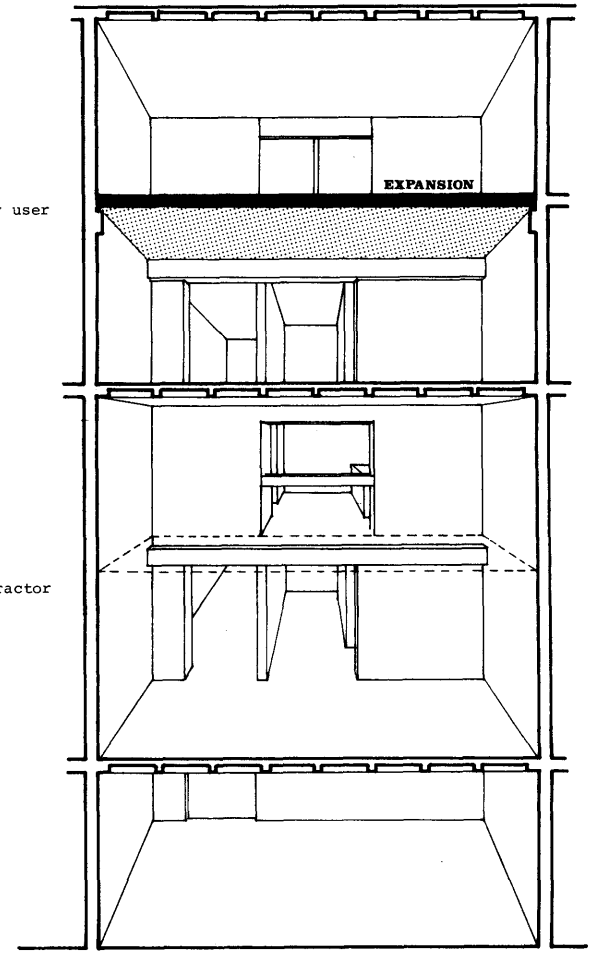


PLAN

LAST STAGE expanded by user

FIRST STAGE built by contractor



SECTION IN PERSPECTIVE

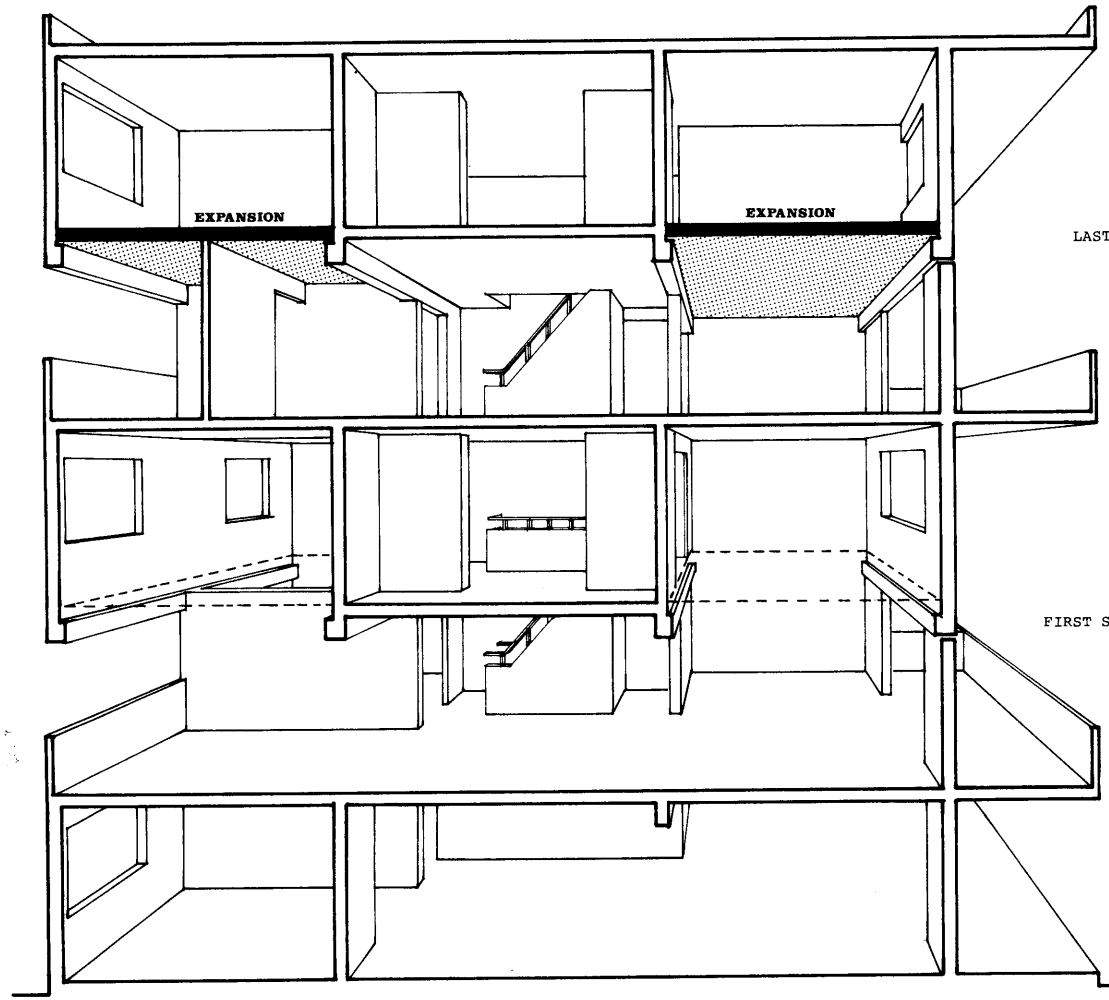
KEY

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)

0 1 5 10m

1:200

PROPOSED DWELLING



LAST STAGE expanded by user

FIRST STAGE built by contractor

SECTION IN PERSPECTIVE

WALK - UP
EXPANDABLE - APARTMENT TYPE B 3 - 7 ROOMS

LOWER LEVEL	72 m2	
UPPER LEVEL	24 m2	
TOTAL BASIC AREA	96 m2	66.6 %
EXPANSION	48 m2	33.4 %
TOTAL AREA	144 m2	100.0 %

EVALUATION

CRITERIA FOR EVALUATION OF PHYSICAL LAYOUT

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.
- *OTHER RELATED PHYSICAL DETERMINANTS.*

KEY OPPOSITE PAGE

LAND UTILIZATION DIAGRAMS

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

LAYOUTS: The proposed model layout is compared with different basic types of residential layouts.

Characteristics of the PROPOSED MODEL layout:

- Minimization of public land for circulation; electricity, water, sewage networks; street lights; 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. This court is owned in condominium by the lot occupants who control, share the use of, and share the responsibility for the maintenance of the court.
- Layout allows adequate public open spaces and easier administrative operation.

Characteristics of basic types of residential layouts:

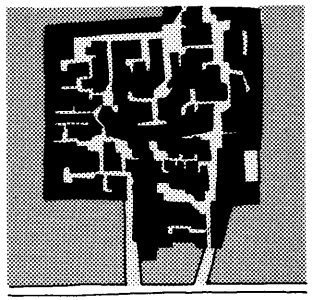
- Wasteful public land for circulation (See opposite page NONOALCO); electricity, water, sewage networks; street lights; police protection; garbage collection (See opposite page NETZAHUALCOYOTL).
- Heavy burden for the City in maintenance and administrative control (NETZAHUALCOYOTL).
- Inadequate public open spaces allowed (See BUENOS AIRES, TEPITO).
- Lots face public streets (NETZAHUALCOYOTL). The lot occupants do not have control and responsibility of the public space adjacent to their properties. Public streets become unsafe playgrounds. Space can not be maintained properly (NONOALCO). Wasted space becomes garbage dumps (NETZAHUALCOYOTL).

BUENOS AIRES

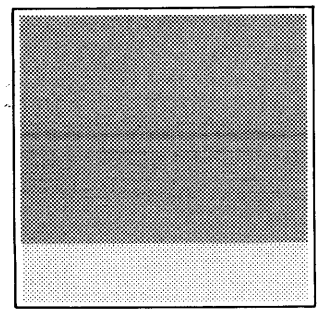
Ciudad perdida

Popular Very Low Income Shanties

Very low percentage of land for streets and walkways; only private land is sheltered area; semi-private land constitutes only open space. High population density; very poor living conditions. BUENOS AIRES will be an optimum settlement in terms of land utilization if adequate open space is provided nearby.

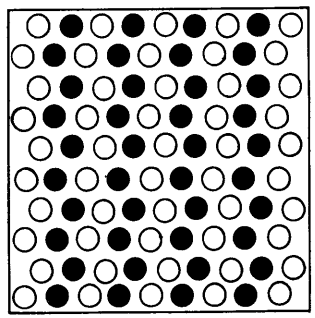


1 Hectare



PERCENTAGES

Streets/Walkways	8%
Playgrounds	-
Cluster Courts	20%
Dwellings/Lots	72%



DENSITY Persons/Hectare 747

1800

20 persons TOTAL AREA

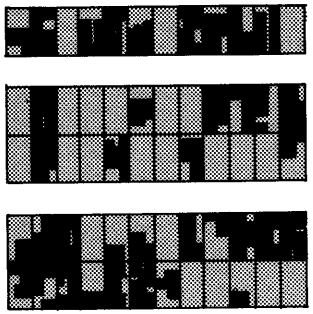
20 persons ONLY RESIDENTIAL

NETZAHUALCOYOTL

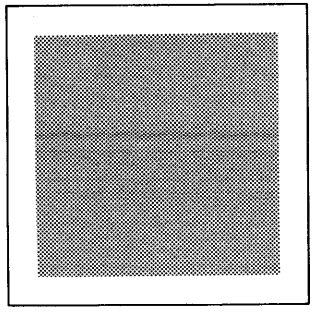
Colonia Proletaria

Private Low Income Row Houses

Medium percentage of land for streets, walkways; medium percentage of land for private use; low population density. Poor layout with excessive public land. NETZAHUALCOYOTL is a burden for the State of Mexico because of the low population density.



1 Hectare

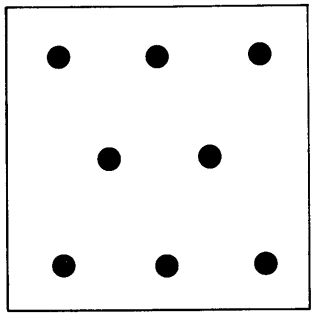


33%

-

-

67%



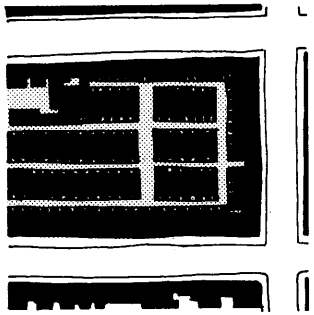
166 p/Ha

TEPITO

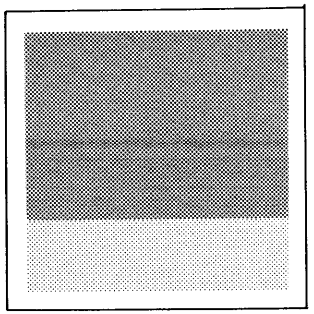
Vecindad

Private Low Income Apartments

Low percentage of land for streets and walkways; high percentage of land for lots. Most of the land with private utilization is sheltered area; high population density. TEPITO will be an optimum settlement in terms of land utilization if adequate open spaces are provided nearby.



1 Hectare

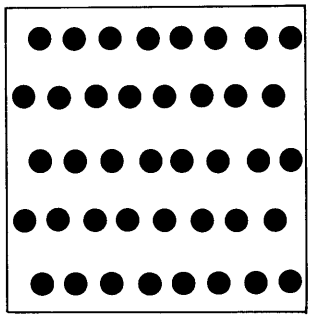


23%

-

22%

55%



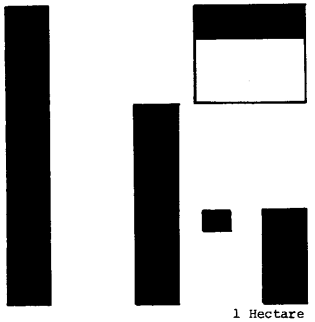
796 p/Ha

NONOALCO

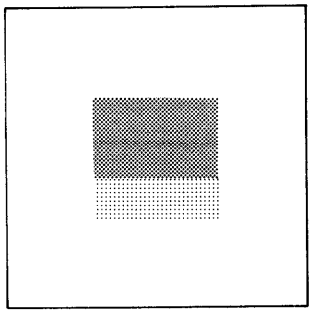
Public housing

Public Middle Income Apartments

High percentage of land for streets, walkways, undefined open spaces; low percentage of land for private use; medium/high population density. These factor make NONOALCO a burden to the municipality.



1 Hectare

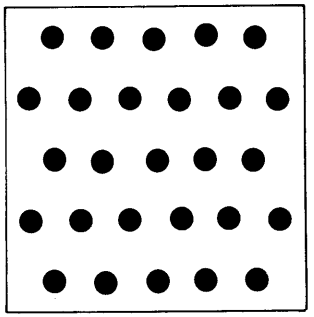


76%

9%

-

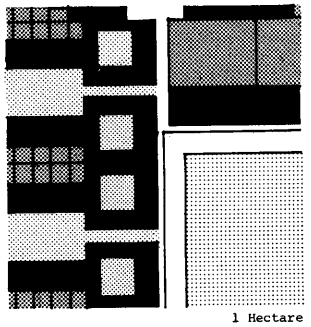
15%



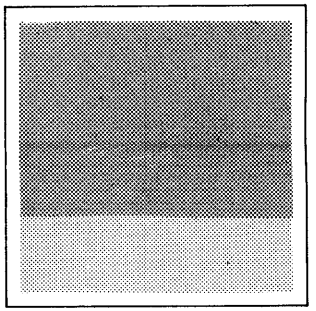
525p/Ha

MODEL

Good percentage of land for streets and walkways, defined open spaces; good percentage of land for private use; desired population density. Model provides optimum land utilization.



1 Hectare

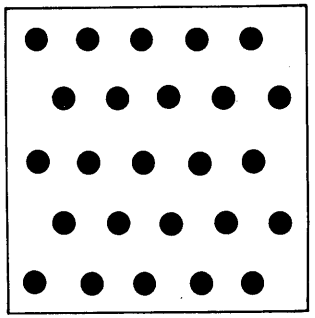


16%

16%

8%

60%



500 p/Ha

LAND UTILIZATION: OPTIMUM RANGES

The three graphs shown are used to evaluate and to compare the 12 case studies in terms of LAND UTILIZATION PERCENTAGES and RESIDENTIAL POPULATION DENSITY.

Land utilization percentages are computed for the following areas: a) PUBLIC: streets, walkways, open spaces; b) SEMI-PUBLIC: open spaces; c) SEMI-PRIVATE: cluster courts; d) PRIVATE: dwellings, lots.

Residential population density is the total number of persons per unit hectare. The range of desired/acceptable densities is 300 persons per Ha to 600 persons per Ha, based upon case studies and accepted zoning standards in different urban contexts in developing countries. This range can be achieved assuming that the dwelling development is of 1-3 stories, with an average built-up area of 10-20 m^2 per person and 30-35 percent of land/lot coverage.

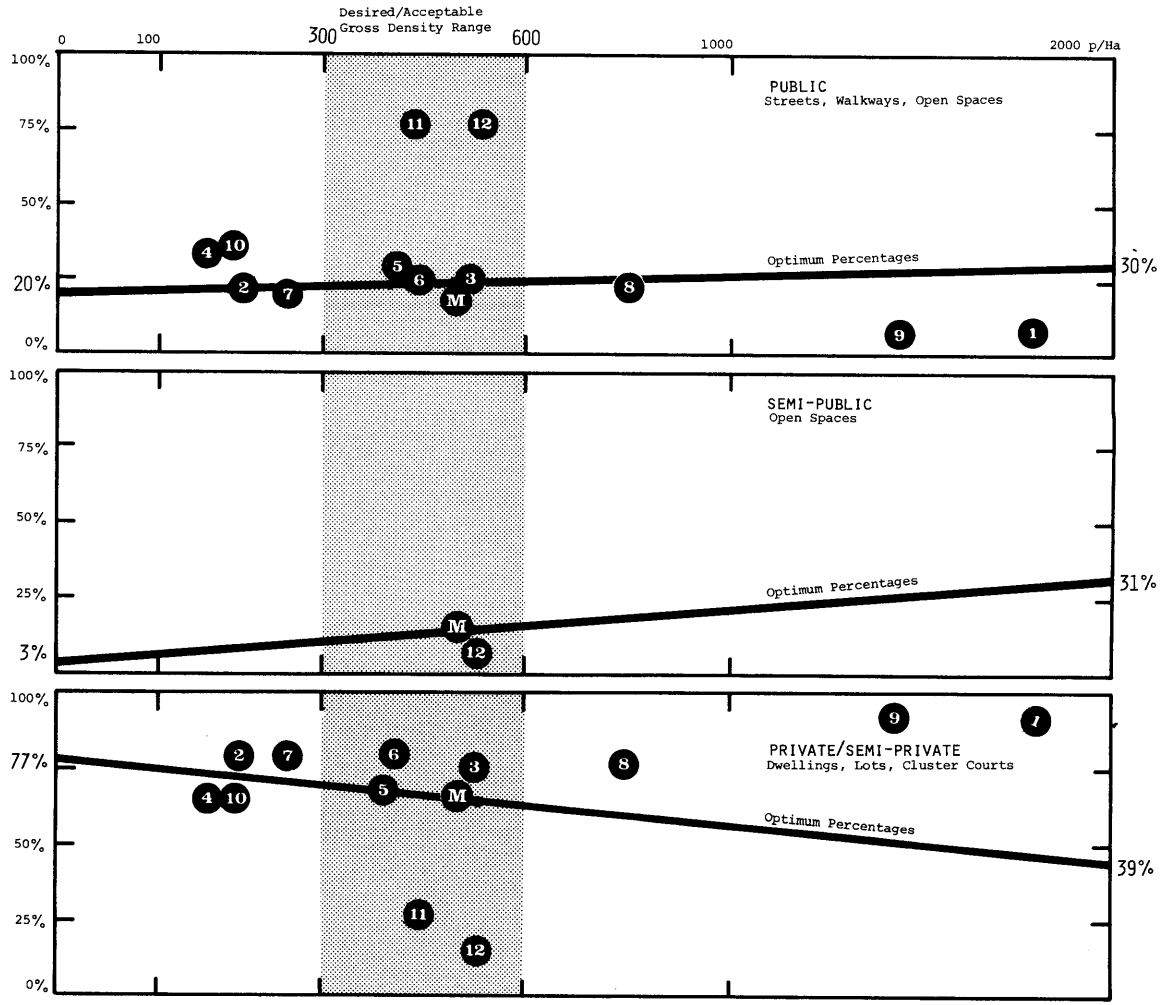
KEY
VERTICAL SCALE: Land utilization percentages (0 to 100%).
HORIZONTAL SCALE: Residential population density (0 to 2,000 persons per Ha shown on logarithmic scale).
CURVE: Range of optimum land utilization percentages (optimum values vary for different densities based upon case studies and accepted zoning standards in different contexts).
SHADED AREA: Desired/optimum efficiency of land utilization (the intersection of desired/accepted residential population densities and desired/accepted land utilization percentages).
NUMBERED DOTS: the Mexico case studies.

● PUBLIC: streets, walkways, open spaces. Areas within an urban layout used for pedestrian and vehicular circulation. The land has minimum physical controls and maximum public responsibility in initial purchase, development and maintenance.
The CURVE shows: optimum area percentages for streets, walkways and open spaces. (20-30%, based upon case studies in Latin America and in the U.S.A.) The percentage of street and walkway areas varies slightly with density.

● SEMI-PUBLIC: open spaces. Areas within an urban layout used for supporting facilities and services. (Open spaces-playgrounds are only considered since the percentages are based upon a small sector). The land has partial or complete physical controls and public/user responsibility in development and maintenance.
The CURVE shows: optimum area percentages for open spaces. (3-31%, based upon case studies in Latin America and in U.S.A.) The percentage of open spaces varies considerably with density.

● SEMI-PRIVATE: cluster courts. Areas within an urban layout used by group of owners and/or tenants. The land has complete physical controls and user responsibility in development and maintenance.

● PRIVATE: dwellings, lots. Areas within an urban layout used for residential and commercial use. The land has maximum physical controls and owner/tenant/user responsibility in development and maintenance.
The CURVE shows: optimum area percentages for dwellings and lots. (The range of optimum percentages of land for Public areas is 20-30% with 3-31% for Semi-Public areas; therefore, the remaining 77-39% of land is for private use).



LAYOUT EFFICIENCY

Comments have been included to the right of the graphs (opposite page) which relate to the land utilization percentages of the case studies. It may be observed from the graphs that only a limited number of cases are within reasonable density ranges. However, these cases do not satisfy all three optimum land utilization requirements (public, semi-public, private) but are only optimum in one or two of the categories.

PUBLIC: Cases above curve (4, 5, 10, 11, 12) have a high percentage of land devoted to streets and walkways; therefore, these cases constitute a great burden to the municipal government in terms of land, construction, maintenance, and operation. Cases below the curve (1, 9) have very small percentage of land devoted to streets and walkways. Cases near the curve (2, 3, 6, 7, 8) and the Model have a reasonable percentage of land devoted to streets and walkways.

SEMI-PUBLIC: One case (12) provide a small percentage of semi-public land. The Model provides reasonable percentage of semi-public land. The rest of the cases do not provide semi-public land at all.

PRIVATE/SEMI-PRIVATE: Cases above and below curve (2, 4, 10) are sparcely populated areas and, therefore, a burden to the municipal government in the provision, maintenance, and operation of utilities and services. Cases above the curve (1, 8, 9) have very high densities, all of the private land is within the sheltered area of the room. Cases above the curve (3, 6) have an acceptable density, but a higher percentage of land devoted to lots. Cases above the curve (7) has a low density as a total area. Cases below the curve (11, 12) have a very low percentage of land devoted to lots, private areas are confined to the area of the dwelling only. Case on the curve (5) and the Model have a good balance of density and land devoted to lots.

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.

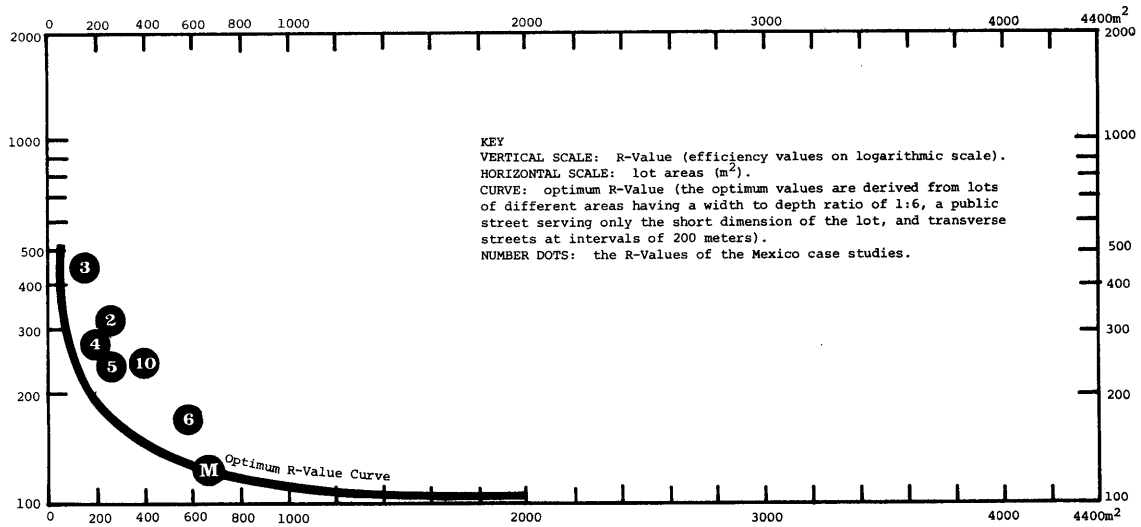
The efficiency/effectiveness of a network is the ratio of the length of the network to the area(s) served:

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

The R-Value varies inversely to the network efficiency; a smaller R indicates a higher efficiency and vice versa. The layouts of the case studies have been evaluated in terms of network efficiency and are shown in the graph below. For further information on the R-Value see: "A Method for the Evaluation of Urban Layouts", INDUSTRIAL FORUM, Volume 3, Number 2, Montreal, December, 1971.

R-VALUE SUMMARY

Cases	*Degree of Efficiency*	*Comments*
1	—	R-Value not measurable
2	Inefficient	Low population density
3	Inefficient	Good density
4	Inefficient	Very low population density
5	Inefficient	Good density
6	Inefficient	Good density
7	—	R-Value not measurable
8	—	R-Value not measurable
9	—	R-Value not measurable
10	Inefficient	Very low population density
11	—	R-Value not measurable
12	—	R-Value not measurable
Model	Efficient	Good density



GLOSSARY

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

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

First Preference: definitions from "Webster's Third New International Dictionary", Merriam-Webster, 1971.
Second Preference: definitions from technical dictionaries.
Third Preference: definitions from the authors, used when existing definitions did not satisfactorily make clear with what meaning, extend and limits, terms were used.

COMMUNITY: the people living in a particular place or region and ususally linked by common interests; the region itself, any population cluster.

DEVELOPMENT: gradual advance or growth through progressive changes; a developed tract of land.

DWELLING: The general, global designation of a building/shelter in which people live. A dwelling contains one or more 'dwelling units'.

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

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

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

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

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

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

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

DWELLING BUILDER: Four groups are considered:

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

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

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

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

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

DWELLING FLOORS: The following number are considered:

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

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

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

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

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

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

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

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

DWELLING LOCATION: Three sectors of the urban area considered:

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

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

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

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

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

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

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

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

DWELLING UNIT AREA: The dwelling unit area (m^2) is the built-up, covered area of a dwelling unit.

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

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

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

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

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

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

DWELLING TYPE: The physical arrangement of the dwelling unit:

Detached: individual dwelling unit, separated from others.

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

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

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

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

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

Single: an individual or a family inhabiting a dwelling.

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

FINANCING: The process of raising or providing funds.

Self Financed: provided by own funds.

Private/Public Financed: provided by loan.

Public Subsidized: provided by grant or aid.

DWELLING DEVELOPMENT MODE: Two modes are considered:

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

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

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

Land Ownership: where the exclusive right of control and possession of a parcel of land is held in freehold.
Land Tenancy: where the temporary holding of mode or holding a parcel of land is of another.

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

Public: (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: users

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

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

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

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

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

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

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

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

Four types of tenure are considered:
Rental: where the users pay a fee (daily, weekly, monthly) for the use of the dwelling unit and/or the lot/land.
Lease: where the users pay a fee for long-term use (generally for a year) for a dwelling unit and/or the lot/land from the owner (an individual, a public agency, or a private organization). No cases of lease are shown in Typology.
Ownership: where the users hold in freehold the dwelling unit and/or the lot/land which the unit occupies.
Employer-Provided: where the users are provided a dwelling unit by an employer in exchange for services; i.e., domestic live-in servant. (Only one case is shown in the case studies.)

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

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

USER INCOME GROUPS: Based upon the subsistence (minimum wage) income per year, five income groups are distinguished. (The subsistence income per year in Mexico was approximately $432 in 1972).
Very Low (below subsistence level) less than $432/year:
The income group with no household income available for housing, services, or transportation.
Low (1 x subsistence level) $432/year:
The income group that can afford limited subsidized housing.
Moderately Low (4 x subsistence level) $1728/year:
The income group that has access to public/private commercial housing (rental).
Middle (15 x subsistence level) $6480/year:
The income group that has access to private commercial housing (ownership).
High (above 15 x subsistence level) above $6480:
The income group that represents the most economically mobile sector of the population.

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

EXPLANATORY NOTES

QUALITY OF INFORMATION
The quality of information given in the drawings, charts, and descriptions have been qualified in the following manner:
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 to 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	= 2.54 centimeters
1 foot	= 0.3048 meters
1 mile	= 1.60935 kilometers

Square Measures

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

DOLLAR EQUIVALENTS
ALL INCOME,
All income, cost and rent/mortgage data have been expressed in terms of the U.S. equivalent;
1 U.S. dollar = 12.50 Mexican pesos (may 1974).

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