AN IMPROVEMENT PROGRAM FOR NEW URBAN RESIDENTIAL DEVELOPMENTS IN WEST PAKISTAN

Thesis for the Degree of M. U. P.

MICHIGAN STATE UNIVERSITY

Khalid Aziz

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ABSTRACT

An Improvement Program for New Urban Residential Developments in West Pakistan

by

Khalid Aziz

(Eighteen years ago, West Pakistan was a part of British India. This region was developed very little at that time. It had only a few cities or urban centers. The well developed area was the eastern part of this region. In 1947, when the people of Indo-Pakistan subcontinent achieved freedom, the country was divided into two states, Pakistan and India, and that is when the surge in urban problems started. Due to the political disturbances, there was devastation of urban areas and mass migration of the people. This resulted in an acute shortage and need of residential developments in the country.

With the efforts of government and individuals, this region started to develop at a very fast rate in every field. The residential development was one of these. There was neither time nor money to make studies and proper plans for the future to create the "most desirable" residential

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developments. The need was immediate and so the mass production of plans and development started.

By and by, over the last seventeen years, the situation of housing as well as finances has improved, but the poor development practices went on as before. All physical development has become routine work. It lacks clear thinking, foresight, contemporary taste and effort for the betterment of the standards. The danger is that new developments will become obsolete and fall below standards very rapidly and become problem areas.)

This thesis tries to analyze the specific developments, identify scientifically the defects and drawbacks of past practices and recommend the areas that should be approached differently or in a different manner for the improvement in residential developments of the future. The major emphasis has been on the physical aspects of planning and development.

The findings of this research reveals that improvement is needed in the following areas:

i) site size and location, and type of housing

ii) layout design and provision of circulation

iii) proper planning of recreation and open space

iv) overall environment

v) development program of various facilities in a residential development.

The thesis recommends an improvement program for the above considerations and specifically illustrates various

successful examples and approaches taken in other parts of the world. It also suggests that a different approach be taken for very large schemes and for smaller residential development schemes for planning.

In the end, this thesis includes some of the desirable standards for planning housing and facilities. The intent of this thesis is to guide the professionals towards an improvement in the residential developments in West Pakistan.

AN IMPROVEMENT PROGRAM FOR NEW URBAN RESIDENTIAL DEVELOPMENTS IN WEST PAKISTAN

by

Khalid Aziz

A THESIS

Submitted to

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in partial fulfillment of the requirements

for the degree of

MASTER IN URBAN PLANNING

School of Urban Planning and
Landscape Architecture

1965

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Most sincere thanks and appreciation are extended to Professor Charles W. Barr, whose valuable guidance was most useful during my stay at Michigan State University, and whose ever available advice and assistance made the preparation of this thesis possible. Sincere thanks are also extended to Professor Myles Boylan, Director, and to all other faculty members of the School of Urban Planning and Landscape Architecture at Michigan State University whose guidance, discussions and cooperation have been useful and helpful in making my stay at the University worthwhile.

I am greatly indebted to my father who has inspired me to take up this task. Without his help it would have been impossible to carry on my graduate work and collect the material to complete this thesis.

I also want to thank Mr. Costas Kakissopoulos of Doxiadis Associates, Athens, Greece, and other persons at Lahore and Karachi who have contributed in gathering data, and my folks and special friends in the U.S.A. and in Pakistan for their encouragement throughout my graduate study.

Grateful appreciation is also extended to the Ford Foundation, Institute of International Education (U.S.A.), and the Government of West Pakistan, Communication and Works Department for their valuable assistance.

FOREWORD

The past practices in developing residential areas in West Pakistan have made many people desire improvements, especially people with vision, foresight and contemporary thinking and taste. The physical developments indicate routine work with no clear thinking behind them. These contemporary new developments are liable to become the trouble spots and eyesores of tomorrow. This thesis is written with an attempt to draw attention to the common deficiencies and drawbacks and recommend different and desirable approaches to the problem.

The scope of this thesis has been limited to the physical aspects mainly. However, other areas have been touched upon wherever necessary. The study and conclusions are based on the limited data and material that could be made available here through correspondence.

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CHAPTER I

THE LAND AND THE PEOPLE

The Land

Pakistan is a new country, a new nation. It appeared on the map of the world August 14, 1947 when the colony of India, a major and an important asset of the British Empire, was given independence and divided into two separate countries, Pakistan and Hindustan (India). Actually there were three parts because Pakistan consists of not one but two geographically separated parts called West Pakistan and East Pakistan. In local terminology these are also known as the West Wing and the East Wing. Probably it is the only country in the world with that peculiar situation. Both the wings are separated by over a thousand miles of Indian territory. In this thesis we are concerned only with West Pakistan.

West Pakistan lies between 24^{o} and 27^{o} North latitude which is approximately the same latitude as California, and between 61^{o} and 75^{o} East longitude.[1]

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[1]Government of Pakistan, Ministry of Education and Information, (Department of Films and Publications, 1963), Pakistan—Basic Facts, p. 6.

West Pakistan has mainly three well defined seasons viz; winter, summer and monsoon or rainy season. In the northern parts of West Pakistan, which are in the foothills of the Himalayan mountains, the winter is extremely cold. Some of these northern areas have snowfalls, but generally the climate is dry. The winter season is relatively short. Summer starts in mid-April and during the next three months the temperature in the lower plains may reach 120^{o} F. Between July and September is the rainy season when the rainfall averages about fifteen inches in the plains and about sixty inches in the hills.[2]

As the map on the following page indicates, the northern and north-western areas of West Pakistan touching the Himalayan ranges and the Hindukush mountains are rugged, mountainous or hilly. The central part is called the Indus Valley and is composed of almost level plains and fertile fields while to the south and south-west is the barren desert stretching to the Arabian Sea. The total area of West Pakistan is 310,236 square miles.[3] As a whole, West Pakistan is a land of great scenic and topographic contrast.

Population Characteristics

Pakistan was created on the ideology of having an independent and separate state for the Muslims of India. The areas, at the time of independence, were divided and

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[2]Embassy of Pakistan, (Washington, D. C.), Pakistan—A Fact Sheet.

[3]Ibid.

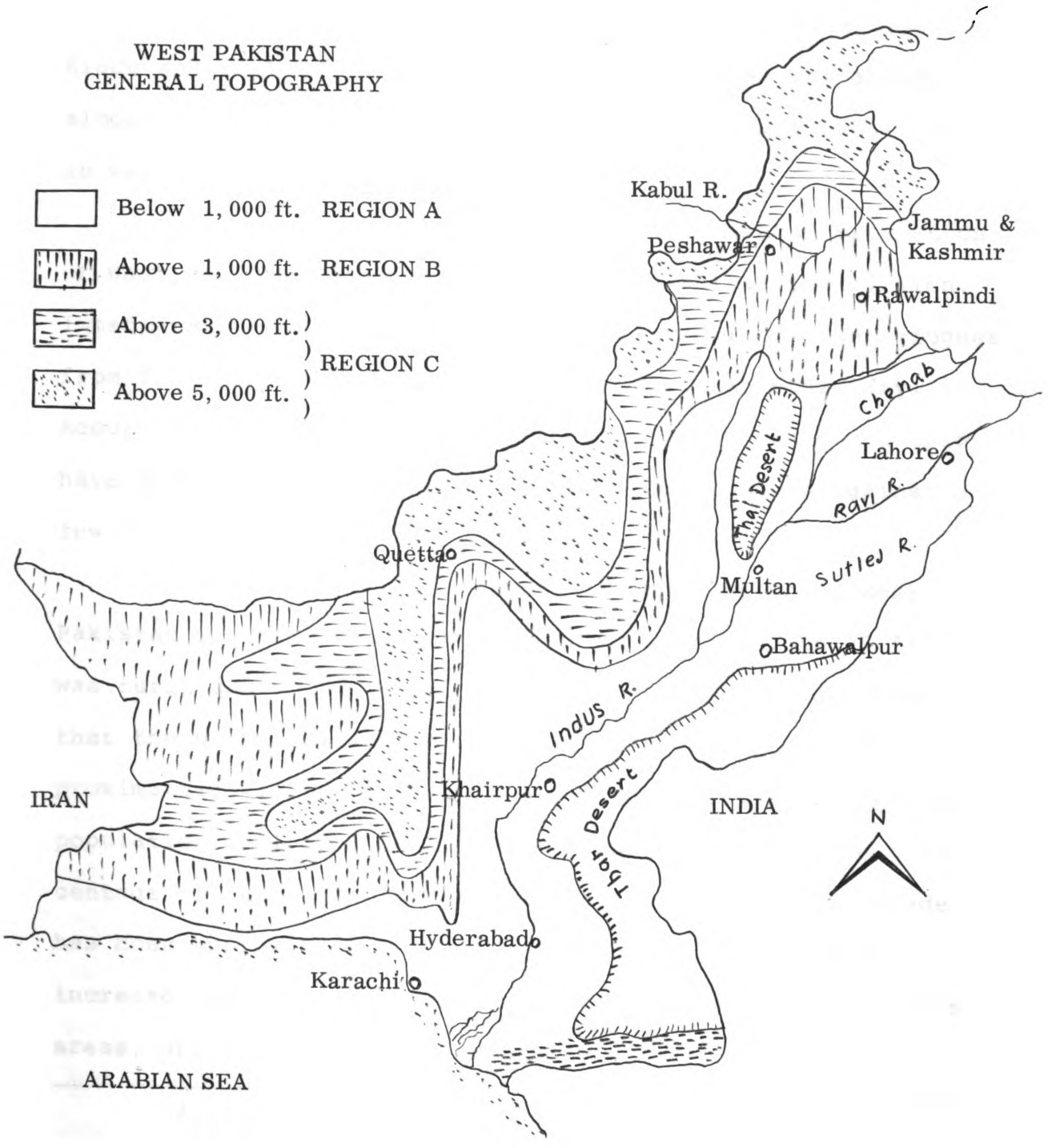
WEST PAKISTAN
GENERAL TOPOGRAPHY
Below 1, 000 ft. REGION A
Above 1, 000 ft. REGION B
Above 3, 000 ft.
Above 5, 000 ft.
REGION C
Kabul R.
Peshawar
Jammu & Kashmir
Rawalpindi
Chenab
Lahore
Ravi R.
Thal Desert
Quetta
Multan
Sutlej R.
Bahawalpur
Indus R.
IRAN
Khairpur
INDIA
Thar Desert
N
Hyderabad
Karachi
ARABIAN SEA

Fig. 2

distributed on the basis of population majorities following the Muslim or Hindu faiths. According to the latest census figures 85% of the population in Pakistan is Muslim, 13.9% Hindu and 1.1% of other religious faiths.[4] We can assume almost the same percentage figures apply to West Pakistan as well.

At the time of independence the estimated population of West Pakistan was between thirty and thirty-one million. Immediately after the partition of British India the refugees from India started pouring into West Pakistan every day. According to unofficial estimates over seven million people have migrated to West Pakistan since partition as against a few thousand who left for India.

According to 1961 census, the population of West Pakistan was 42.9 million. Out of this population 77.5% was rural and 23.5% urban. The projected estimates show that the urban population will attain a percentage of approximately 41 in the next twenty-five years, when the total population will have doubled its present number. The percentage of increase of urban population in the last decade has been approximately 60.1.[5] This was due to natural increase, as well as migration of rural population to urban areas, and this trend is increasing.

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[4] Ibid.

[5] Doxiadis Associates, "Revised Estimate of Urban and Rural Population of West Pakistan and Projections upto 1961"; 2.12, Lahore, 1963, Doc. No. R-PLH 40.

Rural Development

West Pakistan, and Pakistan as a whole are basically agricultural.

For the last decade there has been appreciable industrialization, but still agriculture is the main resource for West Pakistan and the main source of earning a livelihood. This is also apparent from the high percentage of rural population. Probably this is the cause for the majority of uneducated people in the country. The literacy rate in West Pakistan is only 13.6%, but is now increasing due to the Government's emphasis on free elementary education and increased facilities for higher education.

Government

All the theistic religions are aggressive and tend to regard religious views other than their own erroneous and inferior and tend to have a provincial self-righteousness.[6] This fact is reflected in the political behavior and conflicts. In West Pakistan this strong provincialsim has created problems and differences among people. To eliminate these ill effects and create more unity and harmony, the Government of Pakistan abolished the various provincial governments in West Pakistan about ten years ago and made it into a single unit. Still the traces of such behaviour (regionalism) are found. When planning for West

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[6]F. C. Northrop, The Meeting of East and West, p. 411.

Pakistan this fact will be very important.

At present, the government in Pakistan is a federal type with the presidential pattern.[7] The constitution provides for a president as a central executive, a central unicameral legislature known as National Assembly, which is the source of all law, and an independent judiciary, apexed by a supreme court, which interprets and enforces the constitution. The President is elected through secret ballot by an electoral college, which itself is elected on the basis of adult franchise by secret ballot. The President is assisted by a Cabinet of Ministers who, as in the United States, are appointed by the President.

The two Provinces of East and West Pakistan are headed by Governors and have separate unicameral legislatures known as Provincial Assemblies.

The Federal and Provincial governments have various departments like Health, Communication and Works and so forth. Each department is headed by a secretary.

Family Income

According to the National Sample Survey of 1960 and its findings, the average yearly family expenditure on consumer goods and services was estimated to be about

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[7]Embassy of Pakistan, Information Division, (Washington, D. C.), This Is Pakistan.

Rs. 1730.00[8] for West Pakistan. This amount when compared to the income groups in the urban centers shows that about 52% of the families in urban centers can hardly cover their everyday needs.[9] Obviously, most of the programs of development and public work, require effective government initiation, participation and support. So far, government has been responsible for almost everything, but lately there have been some fields where government has shared its responsibilities with cooperative societies or "Improvement Trusts."

Family Structure

Next to be mentioned here and probably the most important cultural aspect influencing residential development, is the family system. In Pakistan, in contrast to America, there is the so-called extended family system. There the stress is not on individualism like it is in America. This is a marked difference in the two cultures. In Pakistan it is thought to be the duty of one person of a family in good position to take care of the others, whereas in the West, particularly in America, everybody is on his own (broadly speaking).

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[8] $1.00 = Rs. 4.75.

[9] Doxiadis Associates, "Population Distribution by Income Groups in Urban Centers of West Pakistan"; 11.16 Lahore, 1963, Doc. No. R-PLH32, p. 2.

This dependency is considered an important obligation among the close-knit families of West Pakistan. In simple societies, the family is the government. The family system affects planning, especially the land-use, and in particular the housing. The nucleus[10] family is better adapted to industrial societies and it will be worth mentioning here that for the economic development of underdeveloped countries, it will be necessary to modify the behavior of the extended family. To do so, housing and the living environment will play an important and major role.

Cultural Changes

The urban people have a tendency to adopt new concepts and add them to their culture. This is because the increasing industrialization and related economic changes are weakening family ties and producing cravings for a new status and quick satisfactions. The greater acceptance of new ideas by urban dwellers is probably related to the higher percentage of literate persons and their discrimating selection of native as well as foreign material and non-material products. They are quick to recognize and appreciate the modern ways of life. The educated urban population is adopting the western ways more and more. (This aspect would make it easier to introduce new standards and patterns

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[10]Nucleus family is the one in which each family member primarily performs its role or function independently. They would normally live independently, too, as adults.

while planning for the residential developments). Neighborhood character very easily identifies the income groups residing there, as does the architecture which is getting more and more western in character.

There is some opposition to intermixing cultures. Reasons are many: incompatable religious practices and customs; too much freedom of social intermixing of opposite sexes which, according to the ideas of older and conservative people, creates immorality; and also, there are certain other Western practices that are not desirable according to Koranic teachings. This ideological struggle is creating a split between modern and traditional culture and the people who are facing it are, for the most part, of the upper-middle and lower-middle classes.

CHAPTER II

SETTLEMENTS IN WEST PAKISTAN

Politically, West Pakistan is only a few years old, but historically it is one of the most ancient lands known to man. Its recently excavated cities were founded before Babylon was built. Its people learned the art of good living and citizenship more than four thousand years before the European Renaissance. The evidence of this civilization has been found mainly along the Indus Valley and dates back to three thousand years before Christ. Ruins of well-planned cities with burnt-brick masonry, wide streets and underground drainage systems prove that a highly developed civilization existed in this area when Europe was still relatively primitive. Unfortunately, the successive waves of invaders appear to have swept away this great civilization.

From 1500 B.C. to the present, the country has been under the influence of Aryans, Greeks, Scythian and Huns, Persians and Arabs, Parthians, Kushans and other central Asian people, French, Portugese and Anglo-Saxon, each leaving their marks on the cultural pattern of West Pakistan.[11]

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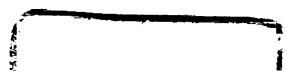
[11]Government of Pakistan, (Department of Films and Publications, Karachi, 1963), Pakistan—A Profile, p. 3.

The settlements in West Pakistan are, because of their function or when they were founded, similar to the eighth century A.D. developments when the Arabs first came. The Arabs settled in the Indus region or Indus Valley because water was the main means of transportation. They approached from the sea and by the Indus river (see map on next page), which is the biggest in West Pakistan and a great means of communications. For about two hundred years they remained mainly in the southern regions of West Pakistan.

In the tenth century Muslims from central Asia which included Turks, Afghans and Turkomans came through Khyber pass and we find settlements in the North-western regions of West Pakistan. So the early settlements were along these two routes, that is, the Indus Valley and the Khyber pass down to the plains in the central and eastern part.

Moghuls were the most influential rulers by the seventeenth century. They ruled this area along with the rest of the Indo-Pakistan subcontinent. The Moghuls were great builders and settlers and their world famous architecture is still dominant in this area.

The British ruled from 1857 to 1947, when Pakistan was created. They made an important contribution to the development and urban settlement of the land during the ninety year period.



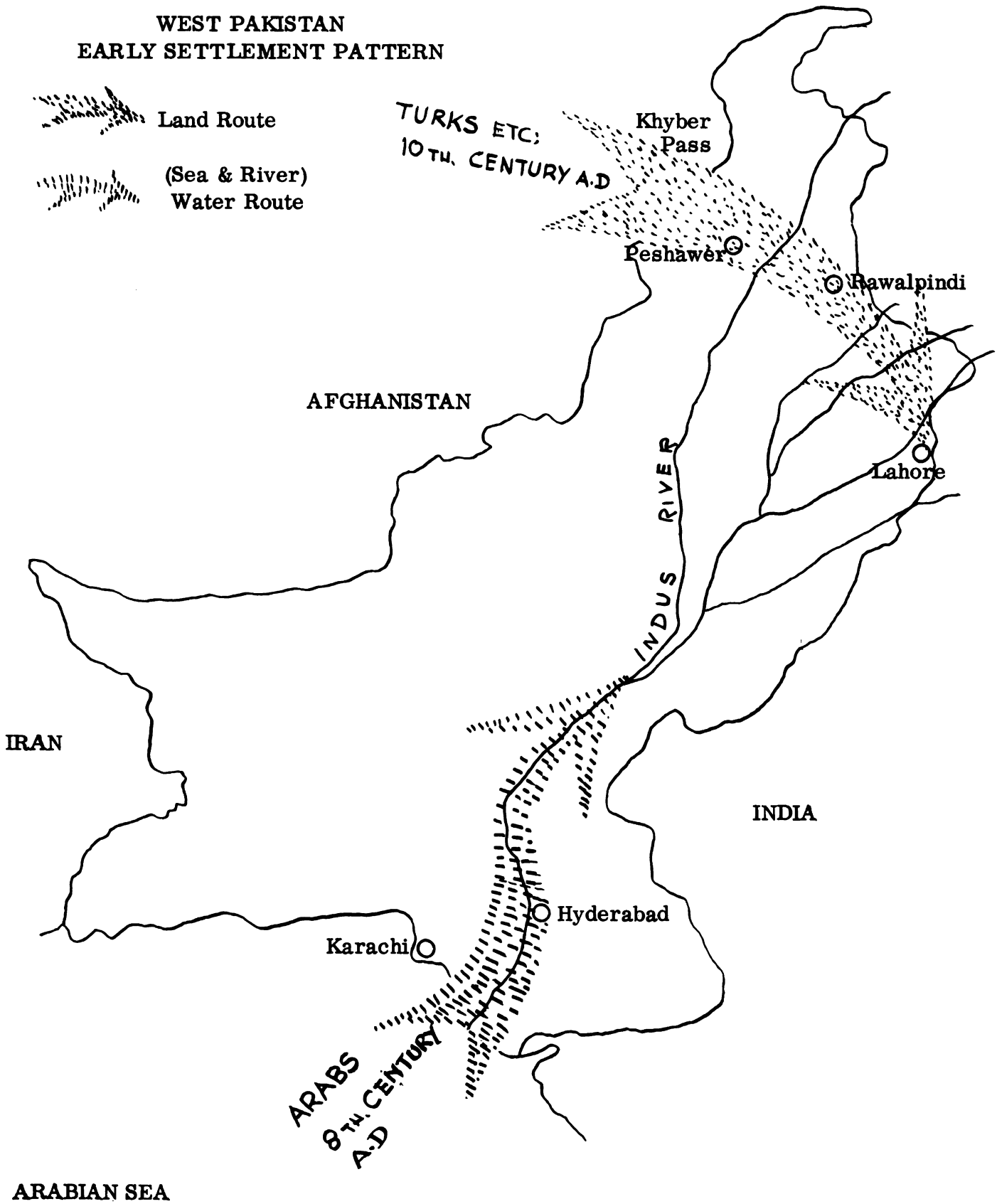

WEST PAKISTAN
EARLY SETTLEMENT PATTERN
Land Route
(Sea & River)
Water Route
TURKS ETC:
10TH. CENTURY A.D
Khyber
Pass
Peshawer
Rawalpindi
AFGHANISTAN
INDUS RIVER
Lahore
IRAN
INDIA
Hyderabad
Karachi
ARABS
8TH. CENTURY
A.D
ARABIAN SEA

Fig. 3

Recent history is more closely connected with the remains found in the present bigger cities like Lahore, Peshawar, and Hyderabad. In these cities architectural features and results of planning are found side by side in houses, mosques, squares, and city fortifications that cover the periods from a thousand years old to the present modern forms of settlements. The origins of more prominent buildings and settlements reflect the cultural features of the last five hundred years, which includes four hundred years of Muslim rule of the Moghul period.

Recent city location is due to the economic development of the country and the migration of people mainly into Pakistan after independence.

The present settlements in West Pakistan are of the following types:[12]

1. Fortified towns of the past which have developed into commercial and administrative centers. These are usually the larger cities as they have been constantly inhabited for ages due to their location at strategic points on communication routes. In addition to their age as occupied urban centers they have expanded in size to to the general population increase.

2. Marketing towns of the past which have developed into commercial and administrative centers. These were mainly marketing towns for food and grain and were located in agricultural areas serving as local centers but have developed into regional marketing centers.

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[12]Doxiadis Associates, "Settlements in West Pakistan Housing and Settlements Programme— Third Five Year Plan"; 3.10, Lahore, 1963, Doc. No. R-PLH 26.

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Both of the above kinds of settlements are also developing due to the industrialization of the country. Out of the two the second is more prominent in industrial development. These tow are the main kinds of settlement, however, we can classify some settlements under the following additional types as well.

3. Communication Centers: These are the settlements which have and are developing because of changing modes and methods of communication. This also includes the changing patterns of communication lines due to increased facilities, change in geographic location, political reasons and alternates in view of strategic considerations. For example, the smaller settlement on the junction points of railroad system west of Lahore developed more after the Partition when the main routes were not toward the east of Lahore but went south-west to Karachi or north-west to Rawalpindi. Another influence was the development of new routes to the west of Lahore to avoid making a detour when communicating between the southern and northern parts of West Pakistan.

4. Previous Military Cantonments: These settlements resulted from a change of function when military cantonments were vacated and relocated in new positions. Usually these were cantonments created in the beginning of the British rule which developed into towns due to commercial needs after being abandoned for military purposes e.g. Mianmir (Lahore).

5. New Administration Centers: These were the result of the political changes, independence, improvement in the form of porvincial governments and administration organization. The most prominent in this category is the entirely new capital city, Islamabad. In addition to this there are various smaller towns which have gained importance due to unification of various West Pakistan provinces into one province and subsequent changes in administration. These towns are also developing as centers of communications and of commercial activity.

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6. Recreational, cultural and institutional: These include the development due to the creation or set up of academic institutions or centers for specialized training, resort towns, and any of the above kinds which have also become prominent in cultural activities.

According to the Pakistan Census Bureau, there is a total of 234 urban settlements (of 5000 population or more) in West Pakistan. The geographic distribution of these urban centers is evident from the map on the following page. Out of these, there are two metropolitan areas of over one million population, 130 settlements of over 10,000 population, 22 of over 50,000 and 12 of over 100,000 population.[13] The geographic distribution clearly shows the pattern and trend of settlements at present. As we observe the concentration is in a relatively flat and non-desert area, which is best suited for agriculture, for construction purposes and easy communications.

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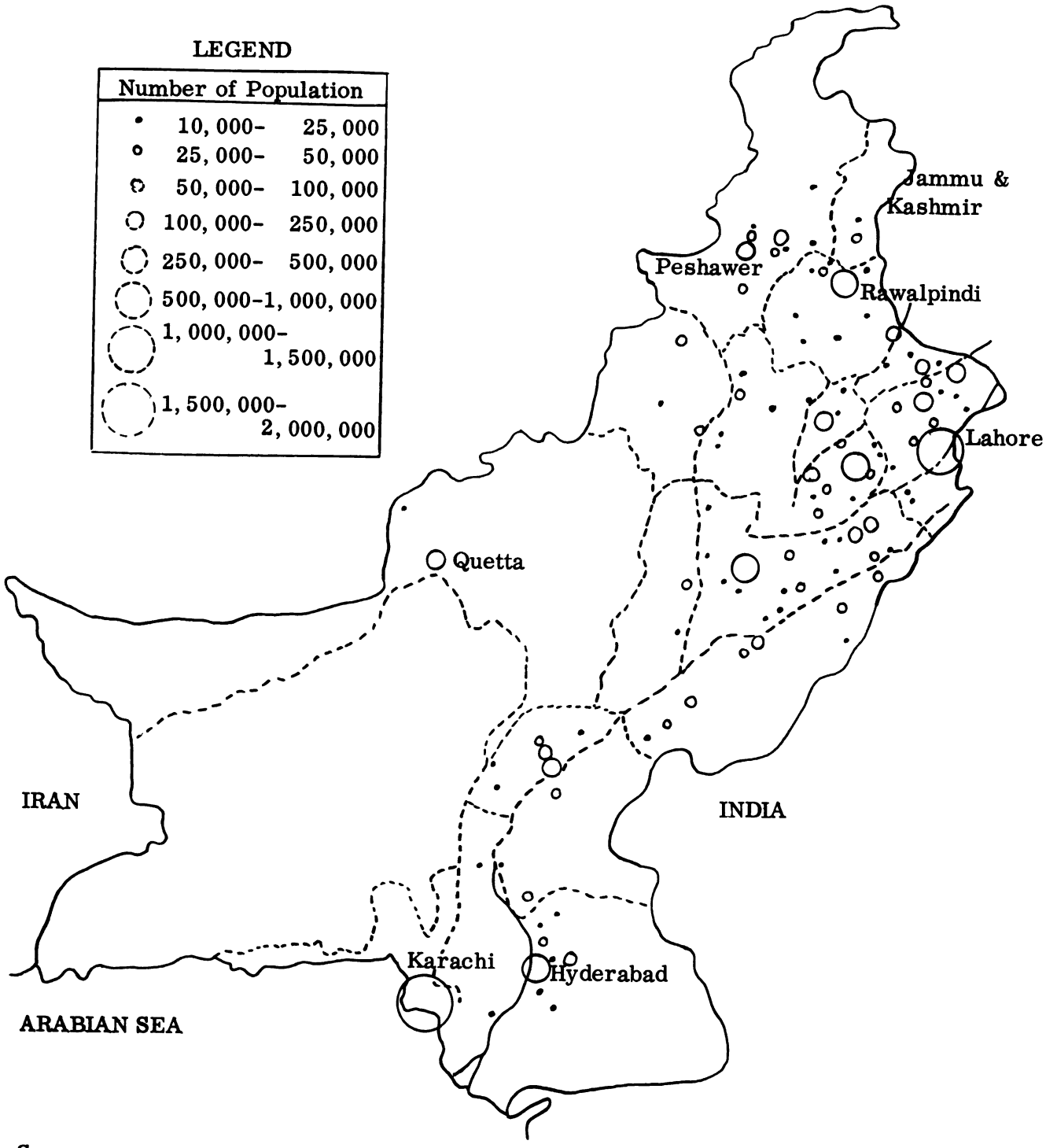
[13] Ibid, p. 6.

WEST PAKISTAN
URBAN CENTRES



Source:
DOXIADIS ASSOCIATES

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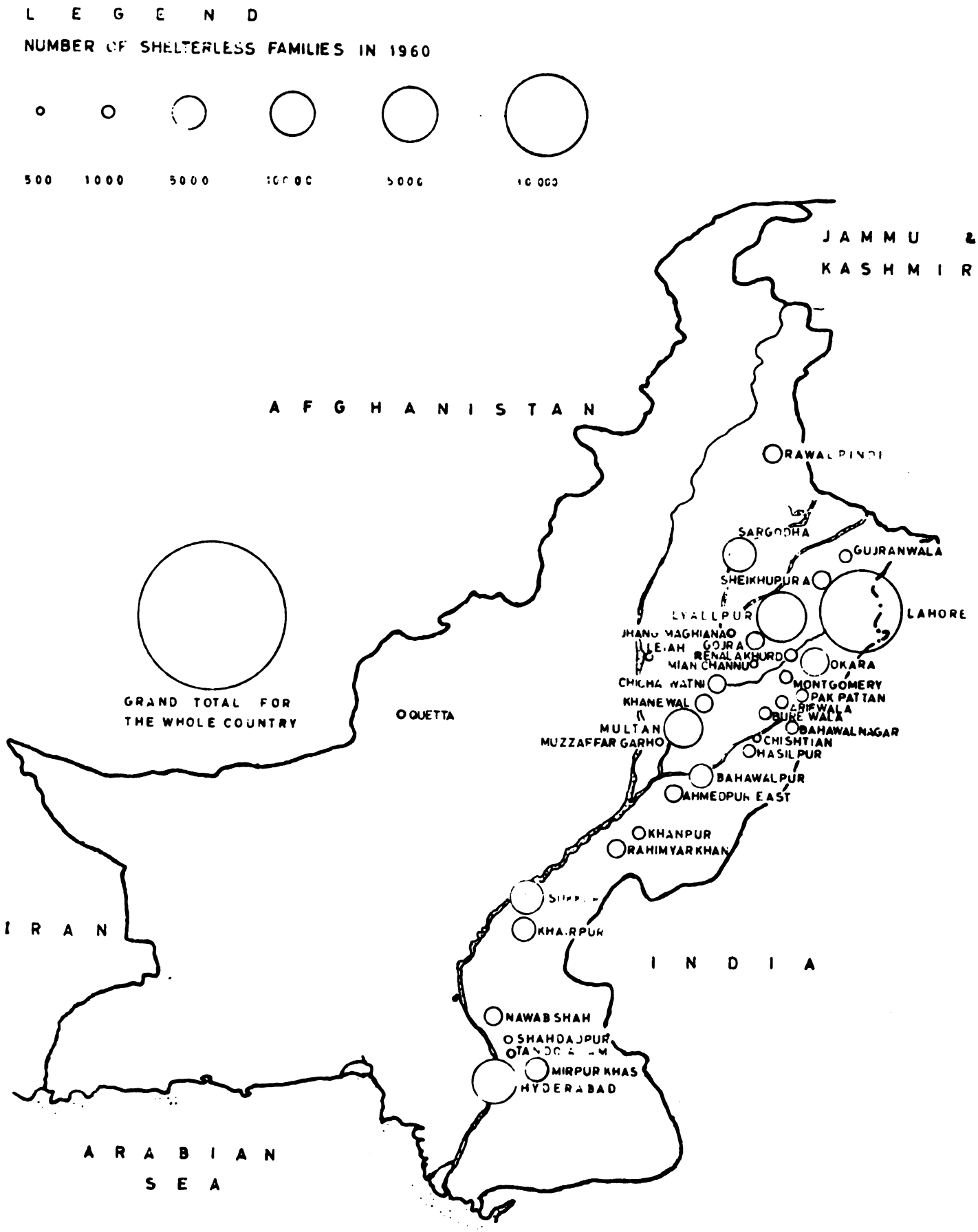
CHAPTER III

HOUSING DEMAND AND PAST RESIDENTIAL DEVELOPMENT PROGRAMS

Development of the Need

(In West Pakistan the important bases for the housing problem were the political and religious distrubances of 1947 and the floods of subsequent years. These resulted in two things: (1) migration of a great number of people in a short time into West Pakistan; and (2) destruction of houses which were either burned during the riots of 1947 or destroyed by the floods. The mass migration of refugees increased the slums in the urban areas. (The map on the following page shows the concentration of shelterless refugee families.) These causes made the housing shortage a catastrophe) since it was already critical because of the high rate of natural increase and migration of rural population to the urban centers. A minor contribution to this demand for urban homes was the increasing number of married children desiring homes of their own. While this indidated a change in the joint family system due to impact of modern life, it resulted in a greater demand for houses by higher income families. Most families had an income too low to finance the high construction costs of a home. Thus,

WEST PAKISTAN - CONCENTRATION OF REFUGE FAMILIES



Source:
DOXIADIS ASSOCIATES

Fig. 5

private building was unable to meet the shortage of housing. West Pakistan in 1947 was suffering with inadequate housing activity, which had almost stopped during the Second World War. The situation could not be met by constructing new houses alone.

With the help of the Pakistan Housing Census of 1960 and using five persons per family as base, it was estimated that the housing shortage in 1960 was 551,400 dwelling units in urban areas.[14] Adding the number of substandard houses, on the assumption that 20% of Katcha[15] and 10% of Pacca houses were substandard, the total need for 1960 came out to be 943,700 dwelling units.

From the above figures for 1960, Pakistan housing needs for 1965 and 1970 have been projected. For these projections population figures of 1961 census and National Five Year Plans were used plus considerations for the formation of additional families, wear and tear on the existing houses, and the house building activity in that period. The total net needs for urban housing in West Pakistan have been estimated by Doxiadis Associates to be 1,232,200 for 1965 and 4,929,200 (gross) by 1970.[16] (That is the building

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[14]Doxiadis Associates, "Housing Needs West Pakistan 1960, 1965 and 1970"; Rept. No. P-PAK-LH 109 Dt. 6.15.1964.

[15]Katcha house is the one in which mud mortar and unbaked or unburned bricks have been used in construction. Pacca houses are the ones that are made with burned bricks and using cement and concrete in the construction.

[16]Op. cit.

activity has not been taken into account for 1970.) According to the National Planning Commission, the demand for new housing nationally is roughly 500,000 houses per year.[17] This, ofcourse is not the figure for urban areas of West Pakistan alone. The tables below show the need of housing in different areas (divisional administrative areas) of West Pakistan for 1960 and 1965.

TABLE 1

ESTIMATED URBAN HOUSING NEEDS WEST PAKISTAN 1960

Divisions	Housing Shortage 1960	Substandard Houses 1960	Total Needs 1960
Quetta	6,900	5,000	11,900
Kalat	2,400	2,100	4,500
Hyderabad	43,200	43,000	86,200
Sargodha	65,000	30,800	95,800
Peshawar	31,300	15,000	46,300
Rawalpindi	38,700	15,300	54,000
Lahore	150,600	40,000	190,600
Multan	57,300	83,700	141,000
Bahawalpur	19,200	37,800	57,000
Karachi	110,500	102,600	213,100
Dera Ismail Khan	1.900	3,200	5,100
Khairpur	24,400	13,800	38,200
Total	551,400	392,300	943,700

Source: Doxiadis Associates

[17]Government of Pakistan, Planning Commission, Nov. 1963, Guidelines for the Third Five Year Plan (1965-70), p. 121.

TABLE 2

ESTIMATED URBAN HOUSING NEEDS WEST PAKISTAN 1965

Divisions	Housing Shortage 1960	Additional Families 1960-1965	Sub-Standard Houses	Gross Needs 1965	Building Activity 1960-1965	Net Needs 1965
Quetta	6,900	5,500	5,000	17,400	3,000	14,400
Kalat	2,400	3,600	2,100	8,100	800	7,300
Hyderabad	43,200	45,000	43,000	131,200	31,000	100,200
Sargodha	65,000	100,000	30,800	195,800	27,600	168,200
Peshawar	31,300	40,000	15,000	86,300	15,400	70,900
Rawalpindi	38,700	35,000	15,300	89,000	17,400	71,600
Lahore	150,600	79,800	40,000	270,400	53,500	216,900
Multan	57,300	58,400	83,700	199,400	23,000	176,400
Bahawalpur	19,200	17,900	37,800	74,900	9,100	65,800
Karachi	110,500	150,000	102,600	363,100	76,800	286,300
D.I. Khan	1,900	1,700	3,200	6,800	2,700	4,100
Khairpur	24,400	20,900	13,800	59,100	9,000	50,100
Total	551,400	557,800	392,300	1,501.500	269,300	1,232,200

These sets of figures give us a fair idea of the magnitude of housing activity needed for residential development.

Past Housing Programs

In Indo-Pakistan subcontinent, local planning started as a result of a plague epidemic in Bombay in October 1896. Finding the Municipal act insufficient to handle the problems, an Epidemic Disease Act was made in 1898 which did not work too well either. So, the same year, city of Bombay Improvement Act was made which was the basis of creation of Bombay Improvement trust. In 1911 Calcutta followed suit and later more improvement trusts were formed in different cities. Essentially these trusts were to clear up congestion and insanitary areas and to prepare and implement housing and street improvement schemes. In Pakistan, Punjab Town Improvement Bill of 1921 is the basis of various town improvement acts.

At the time of the partition, West Pakistan was not one province but comprised of five provinces under the administration of five provincial governments. Out of these five only two, namely Punjab and Sind had a town palnning organization. These organizations headed by a provincial town planner or town planning and valuation officer gave advice and made schemes for municipalities, improvement trusts and the provincial government. Later, there were

other agencies and organizations also who participated in residential developments which are described below.

If we take a look at the Five Year Plans prepared so far by the Government of Pakistan, we see that: The First Five Year Plan for the period 1955-1960 had a budget provision for about 250,000 new housing units in urban areas, 100,000 of which were to be for refugees.[18] This target could not be met and only 49,000 families were settled during this plan period.[19] The Second Five Year Plan for the period of 1960-1965 provided for the settlement of about 98,000 families. According to reports, in the first two years only about 9,280 families were settled.[20] This represents 10% of the total program. In this plan as in the First Plan, the target could not be met. Inability to implement the plans has been due to problems in planning of the projects which in turn is due to inadequate professional staff and lack of administrative coordination. These problems delayed the project sufficiently to prevent the full utilization of budget provisions. In the Third

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[18]Government of Pakistan, Planning Board, The First Five Year Plan 1955-60 (Draft) Vol. 1, May 1956, p. 11.

[19]Doxiadis Associates, "General Framework of West Pakistan Housing Programme for Third Five Year Plan"; Doc. No. R-PLH 30, p. 3.

[20]Doxiadis Associates, "Evaluation of the Implementation of the West Pakistan Housing and Settlements Programme Provided in the Second Five Year Plan"; Doc. No. DOX-PLH 2, 1963, p. 13.

Five Year Plan, provision is for only about 62,500 houses whereas need is four times this.[21] This ofcourse has been planned in view of the previous experiences of the two plans. Unless some policy changes are made and administrative reorganization is done to make the planning smooth and efficient it will be difficult to meet this target in the next plan. This will aggravate the problem much more. The past activity in the field of housing is described below:

Improvement Trust Schemes

Lahore Improvement Trust is the oldest in West Pakistan which was created in 1936. By the end of 1959 there were nineteen improvement trusts in West Pakistan. The location of these trusts is shown on the map on the following page. In an effort to broaden the scope of work, functions, responsibility and powers of these trusts, they are now being converted into Development Authorities. These trusts prepared some eleven schemes during 1947-1950 period for the areas burnt and damaged during the 1947 riots in Punjab. These burnt areas were mainly residential. A few schemes were prepared for other vacant land areas. However, these efforts were not enough to cope with the situation.

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[21]Memorandum of the Secretary to Government of West Pakistan, Communication and Works Dept., "Comments on Guideline for the Third Five Year Plan— Housing and Settlement Sector," Dec., 1963, p. 13.

WEST PAKISTAN
LOCATION OF IMPROVEMENT TRUSTS
by 1959

Fig. 6

Satellite Town Schemes

With the rapid increase in population as well as industrialization the problem of housing became acute enough to force the central government ordered the provincial governments to prepare large residential schemes in the vicinity of towns utilizing the funds made available through a new tax. This tax was called the Refugee Tax and was levied on a number of items and other sources of income. It was collected by the central government and redistributed to the provincial governments.

The schemes made under this program were called satellite towns. The provincial government of Punjab established the Urban Rehabilitation Department in 1952 for the purpose of housing shelterless and displaced families. The Department prepared a number of satellite town schemes for various locations. These were actually not "Satellite Towns," but suburbs or colonies with a dormitory function. None of these proposed developments provided means of employment or assumed an independent existance of their own. All of these schemes were inside existing city boundaries. Later, however, many schemes, especially the ones developed within existing builtup areas on large vacant tracts were named colonies or housing schemes.

The overall size of these satellite town schemes varied very much depending on the size of the existing town, need for housing, the amount of land belonging to government,

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and availability of evacuee land. The bigger schemes provided for as much as 47,000 persons. (Appendix D shows some particulars of satellite town schemes.) The satellite town schemes had different housing categories. The lots were of the following four categories mainly depending upon area:

A Category Lots	1210 sq. yds. or more up to 1 acre
B Category Lots	302 to 1150 sq. yds.
C Category Lots	below 302 sq. yds., usually 212 sq. yds.
D Category Lots	about 106 sq. yds.

There were some colonies planned for one type of house also which were for low income people. In other schemes the policy was to provide 50% of the total area for the two smallest lots. This was only followed for the schemes in the beginning. Generally all the lots were developed providing all utility services and part of the smaller category lots were built upon by the government and given to the people on easy installment basis. Houses on the other lots were built by the people, which were all for single family detached house. The "C" and "D" category houses built by the government were either single story quarters in rows or single story duplexes. The development and construction work was carried out by the Buildings and Roads Branch of the Public Works Department for the Government.

By June 1960 48,931 families[22] had been settled in such schemes.[23]

These schemes had many deficiencies. The biggest defect was in site selection. These were not selected on the basis of planning principles, any studies or relation to the places of work, but in a very haphazard manner. The sites usually had poor location and poor physical features. The reasons for these actions were many. The colonies were developed on government or evacuee land to save cost so wherever the land was available, it was taken. A second reason was the lack of technical skill in planning. These resulted in them ignoring the long range effects. A third important factor was the inadequacy of available funds.

Housing and Settlement Agency Programs

An important role has been played by the National Housing and Settlement Agency in this field. National Housing and Settlement Agency was created by the central government in 1959. Later, in 1962, under the new constitution (June 1962) all public functions relating to housing were brought under the jurisdiction of provincial government. The National Housing Agency was transferred to the

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[22]This fugure does not include Karachi area.

[23]Government of Pakistan, Communications and Works Department, Sattellite Towns in West Pakistan, Appendix "A."

provincial government and renamed West Pakistan Housing and Settlement Agency. The Urban Rehabilitation Department was also merged in this agency the following year, that is in 1963.

The first major assignment of this agency was to handle the housing problem in Karachi which was more acute than anywhere else. This was because Karachi was only a small port town before independence. After independence, Karachi became the Federal Capital of Pakistan, the major seaport, as well as the major international airport on the eastern air map. It developed very rapidly into the biggest center for commerce and industry in Pakistan. The National Housing and Settlement Agency sponsored two major projects in the Karachi area under the Greater Karachi Resettlement Program. These were Korangi Colony[24] and North Karachi project. The Korangi colony alone has a provision for some 500,000 people. This colony was planned for the shelterless refugees (100,000 families out of 35% of Karachi population that needed houses[25]) in Karachi who were living in huts as squatters.

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[24]This scheme is discussed in more detail in the next chapter.

[25]Government of Pakistan, Ministry of Rehabilitation and Works, National Housing and Settlement Agency, The Korangi Story 1958-1961, p. 3.

Colonies for Government Employees

In addition to various programs for general public, the central and provincial governments have carried out some housing schemes for their employees. Usually these schemes are of one or two classes. These colonies, exclusively for government employees, are at various large urban centers which were also administrative centers. This was an effort to solve the overall housing shortage and in particular provide added facilities for its employees.

Housing Society Schemes

In addition to the housing projects by government through various agencies and Improvement Trusts, there were projects initiated by some wealthy land owners or cooperative housing societies in bigger cities like Karachi and Lahore. Some of these schemes are of fairly large size. The Pakistan Employees Cooperative Housing Society (P.E.C.H.S.) scheme in Karachi is bigger than any of the satellite town schemes. Such schemes have contributed a lot in meeting the housing need, as well as improving the architectural and environmental standards of housing which usually are lacking in government schemes.

CHAPTER IV

REVIEW OF SOME SPECIFIC RESIDENTIAL SCHEMES

In this chapter we will review some[26] past residential schemes and projects in more detail. This is to give the highlights, and salient features of such schemes and then bring out the defficiencies, drawbacks and debatable points of such endeavors. While reviewing and evaluating, we will look at the three main aspects: (1) the purpose and objective of the scheme; (2) the policies and principles observed in planning and developing the schemes; and (3) the design or physical organization of the scheme.[27]

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[26]It is not possible to cover all the schemes or all the similar details of the schemes due to the unavailability of complete data, reports, and necessary information.

[27]The financial aspect of the development schemes other than brief non-statistical consideration is considered beyond the scope of this thesis.

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Korangi Project

I. Purpose and Background of the Project:

Korangi Township project is one of the largest governmental housing programs for refugees in the country. It is the first of two under "The Greater Karachi Resettlement Program." This program was started in 1958 with an aim to house the shelterless families of Karachi, mostly refugees and squatters who migrated to Karachi after independence in 1947. According to estimates at that time there were about 120,000 families or about 600,000 people out of a population of two million without proper housing in Karachi who lived on pavements and in shacks.

The project was started by the Ministry of Rehabilitation with Karachi Development Authority as its agents to handle the project and execute the work. Originally the project started in December 1958 with a program to construct 15,000 one room houses initially, with a target of 30,000 finally. In early 1959, realizing the acute shortage of housing in Karachi and the need for a huge number of residential units, the scheme was revised entirely. The work was entrusted to the newly created National Housing Agency whose main job was to tackle the housing problem of Karachi. (The two plates on the following two pages show the original Korangi township scheme and the master paln of the revised scheme.) The revised scheme was not to be a residential

KORANGI PROJECT - ORIGINAL SCHEME

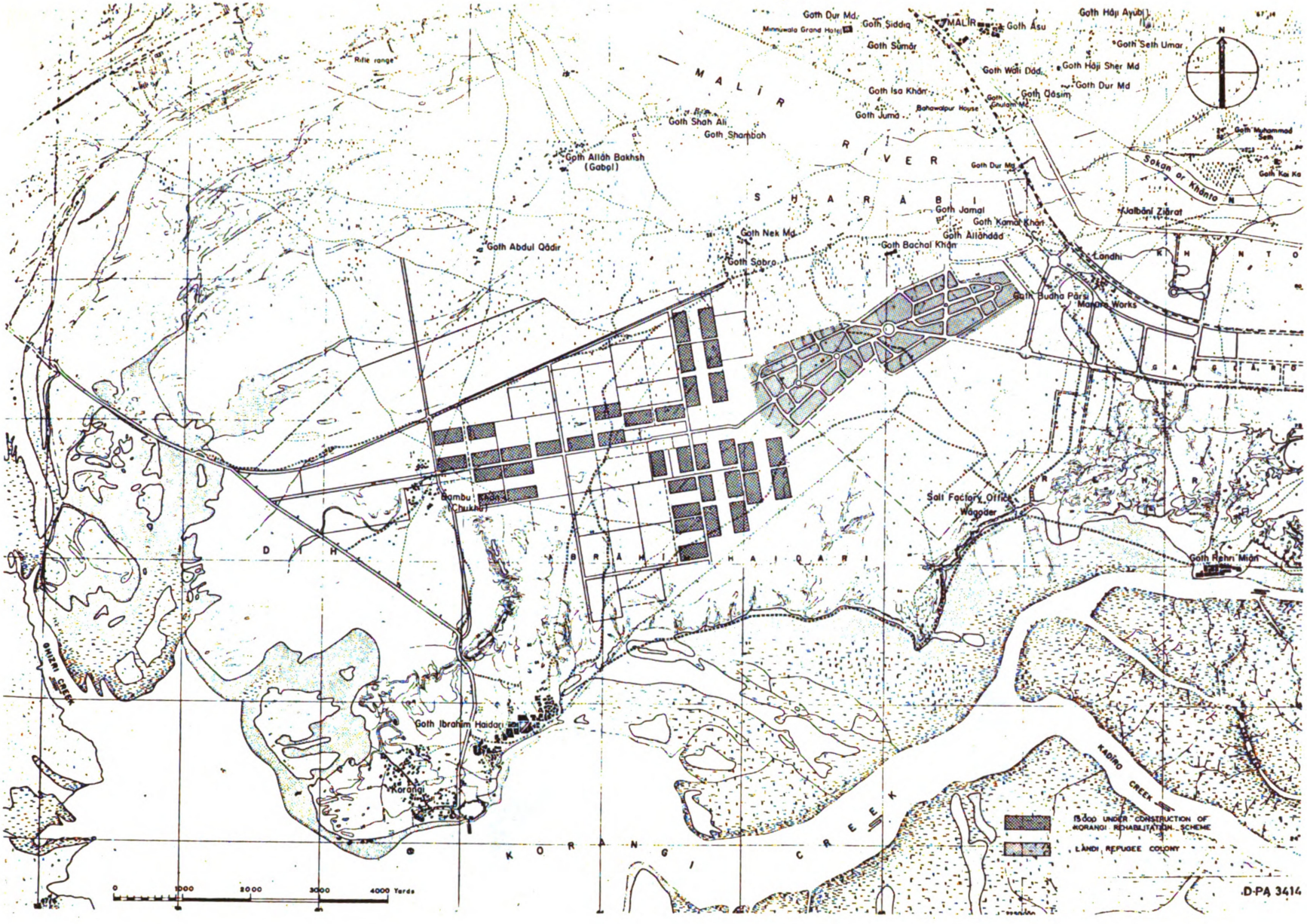

Fig. 7

KORANGI MASTER PLAN

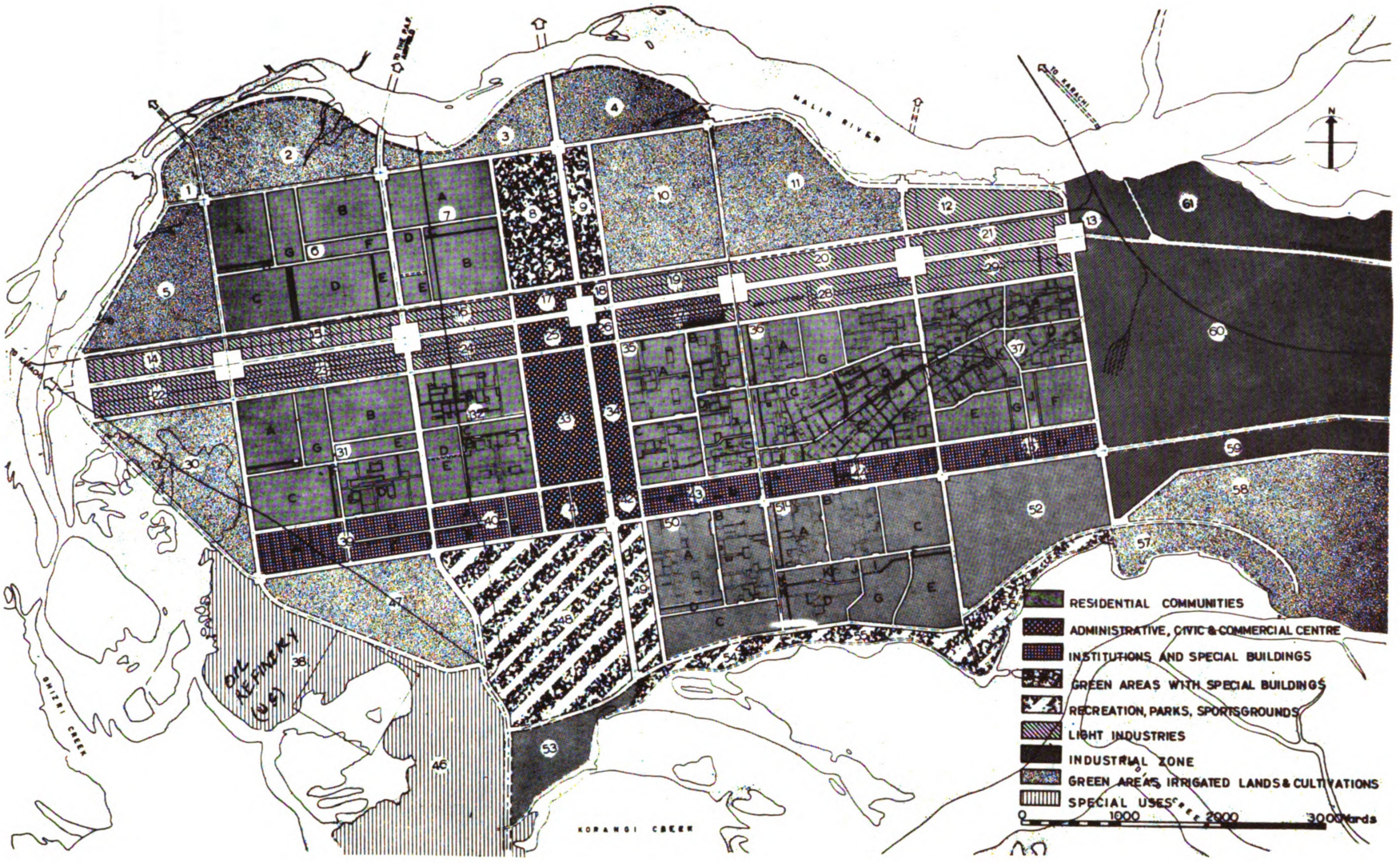

Fig. 8

suburb but entirely a new self contained community of 100,000 residential units.

The objectives of the project now were:[28]

a) To meet as great a proportion of the needs of Karachi as possible.

b) To serve as a training ground for the town planners, architects, civil engineers etc., as well as for other specialists like economists, sociologists, and administrators who are required in Pakistan. It was intended, by this process, to graudally render the country self sufficient in the skilled personnel needed to promote its effort in the field of ekistics.[29]

c) To be a pilot and demonstration project permitting conclusions to be drawn in a scientific manner on the best methods of action in all fields connected with housing and settlement, which would include building materials, methods of construction, self-help methods, management, etc.

The scheme is financed by the Government of Pakistan and the Government of the United States. The consultants for programing, planning and designing are Doxiadis Associates

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[28]Government of Pakistan Planning Commission, The Greater Karachi Resettlement Programme, January 1962, p. 3.

[29]"Ekistics" is the term developed by Dr. C. A. Doxiadis of Athens, Greece, for "the science of human settlements."

of Athens, Greece.

II. Planning Principles and Policies Observed:

The basic principles involved in this project are:

a) The Korangi Township is intended to be self sufficient settlement that is providing the employment opportunities for its residents is part of the project design. It also privides for trade, industry health, education and recreation in addition to residences.

b) The settlement will be comprised of the full range of income groups and they will be in the same proportions as the population of Karachi. This is to avoid the character of a limited suburban city.

c) During actual development on the site, only nuclei-houses for the lowest income groups were constructed at first. The lots were, however, developed for the middle and higher income groups. These people were to build the houses themselves. The people granted nuclei-houses also are supposed to complete the houses through personal efforts by self-help methods.

d) The people would fully pay for the housing facilities provided by the government on a long-term installment basis. Houses for the lowest income groups are subsidized 30% by the government. Developed lots for the higher income groups are made

available on the basis of the commercial value which they will acquire when the area is fully developed.[30]

e) The project is a long-term project and will be completed in 14 years time (that is in 1972).

III. Physical Planning Aspects:

a) The Site

The site of Korangi project is about 8 miles east of the central city of Karachi and includes an existing settlement or colony called Landhi. Korangi is a more or less rectangular site of 9 to 10 miles in length and a maximum width of 4 miles covering approximately 40 square miles area. On three sides it is surrounded by water—Malir River, Gizri Creek and Korangi Creek which extend to the Arabian Sea.

b) The Form

Essentially it is a "linear city" or "spine and ribs" arrangement. The area on both sides of the spine or main highway is distributed into rectangular sectors which comprise of various "neighborhoods." Rectangular areas for light industry are located all along the central highway. In the center these rectangles have been provided for administrative, civic and commercial areas. A belt to the south of the first southern residential belt is provided for

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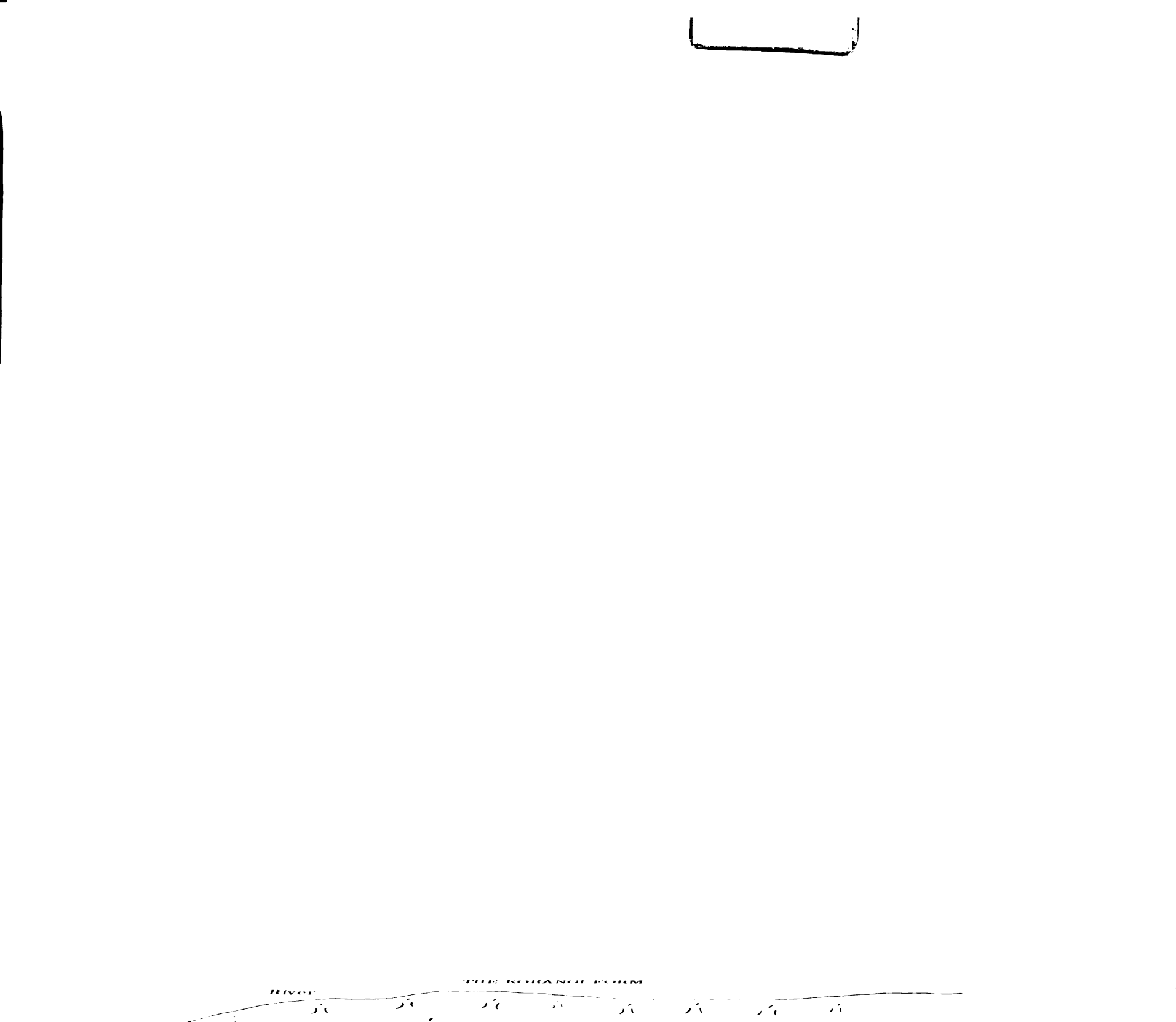
[30]This was to make the scheme more self-financing.


River
THE KORANIC FORM

THE KORANGI FORM

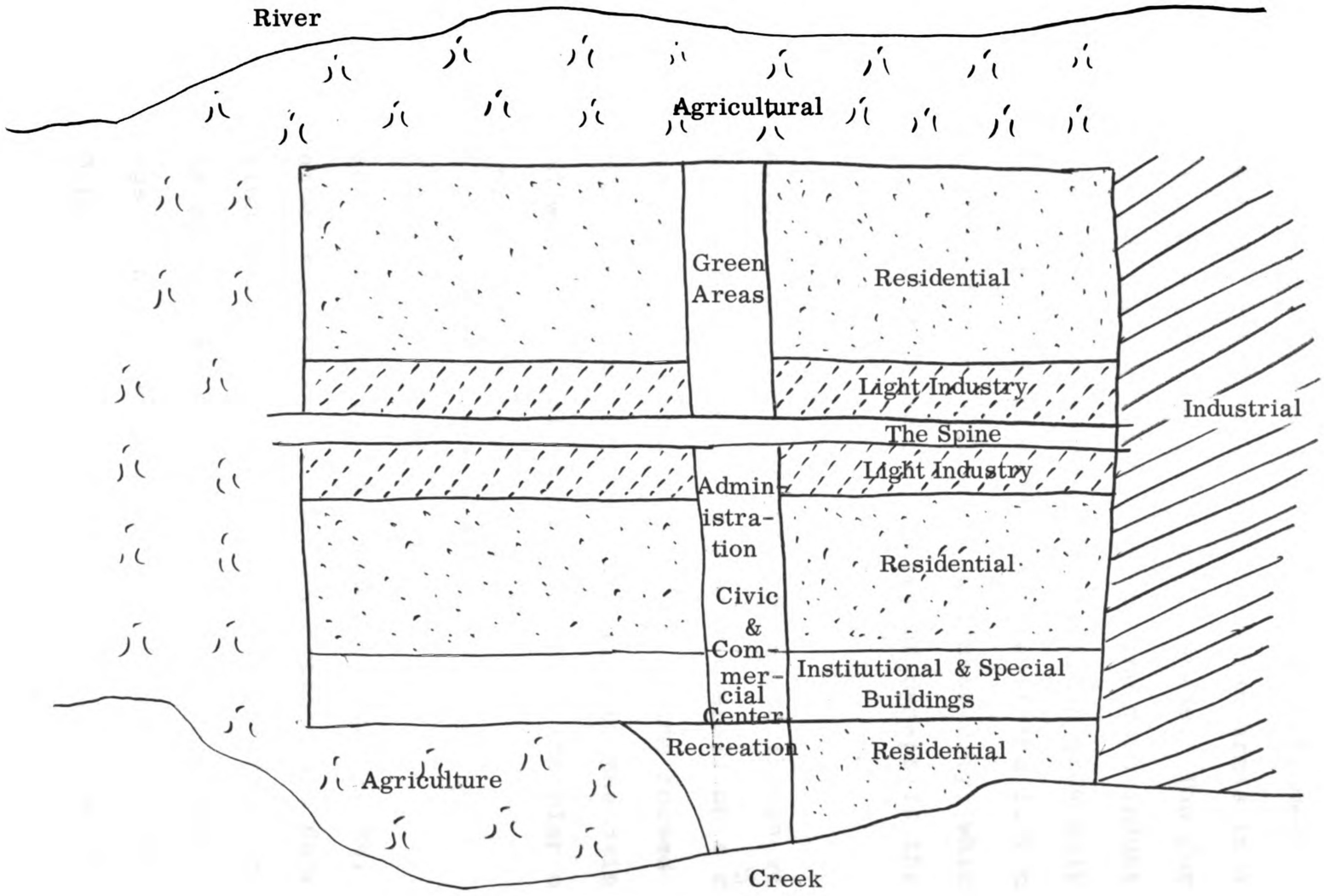


Fig. 9

institutions and special buildings, and then half the length is again a belt of residential neighborhoods. Almost three sides of the settlement, between the water areas and the urban areas is a belt of agricultural and green areas. The forth side on the east is blocked by the main industrial area. This means the settlement can grow only up to the designed capacity inspite of the fact that it has a "growing form" of a linear city, which is according of Doxiadis' theory of dynapolis the form with growing center.

Lay out of residential neighborhoods though varying in size in different sectors is overall on a rectangular grid pattern. The low income houses are in straight rows arranged parallel to the main road and walk. The following page shows the plan of a typical neighborhood design.

c) Circulation

Each of the sectors is bounded by multi-lane, boulevarded streets providing acceleration and deceleration lanes at the crossings. The central road (or spine) is proposed to have well designed crossings. In the neighborhoods emphasis has been given on pedesterain circulation—walking, especially in low-income neighborhoods. Vehicular access in

TYPICAL LAYOUT OF A LOW INCOME COMMUNITY
IN KORANGI

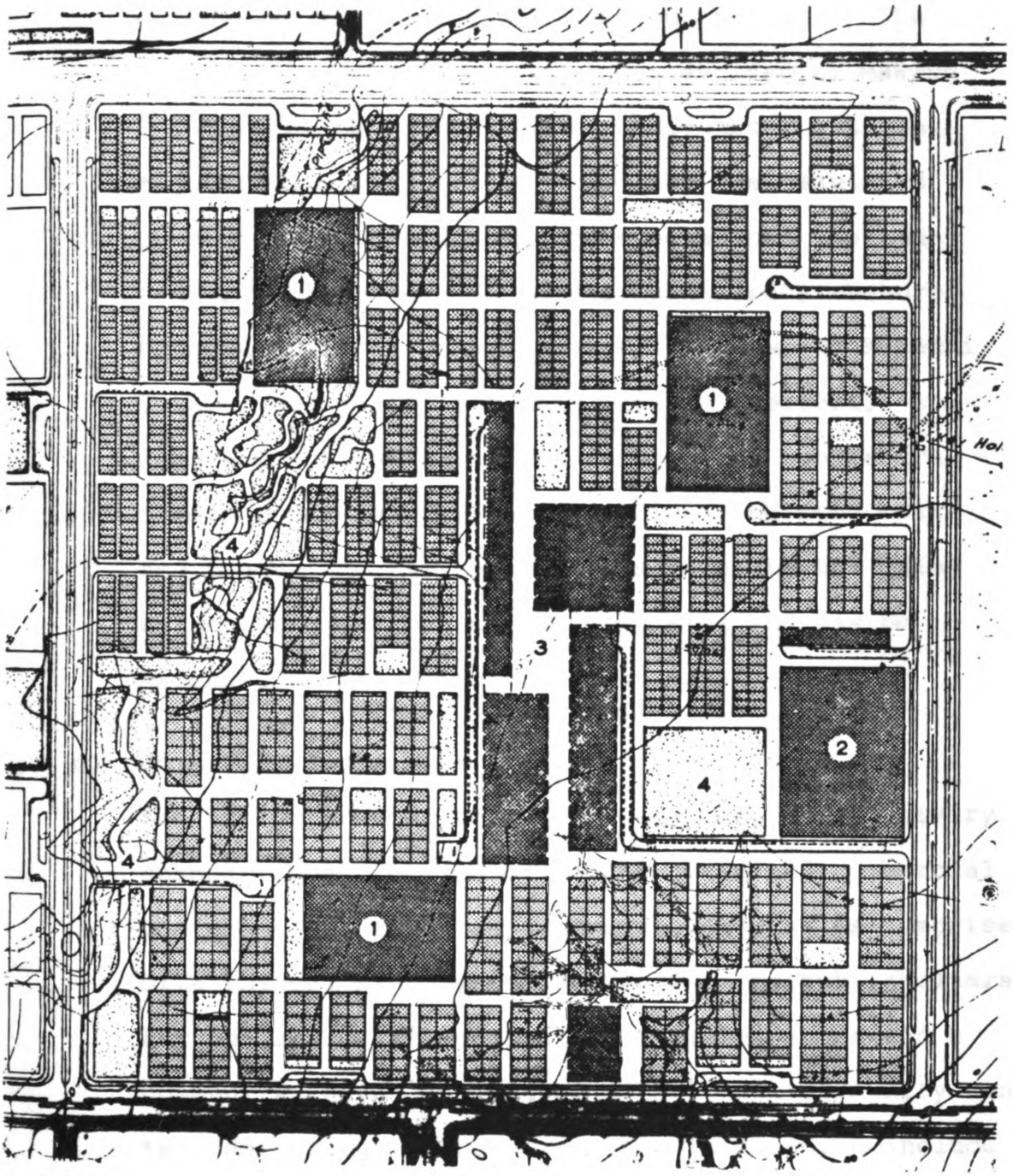


Fig. 10

Source: DOXIADIS ASSOCIATES

these neighborhoods is only to the schools and neighborhood civic and commercial centers through cul-de-sac streets. (See plan on page 41). The four way intersections have been avoided by making T-intersections and there are only about sixteen major four way intersections which are regulated by design. For regional transportation, the central road is connected to the main Karachi-Lahore-Peshawar highway towards the east. Towards Karachi, in all, six roads lead from various "sectoral" connections. A railroad runs parallel to the central road but between the northern light industry belt and the residential belt. This connects the main Karachi-Lahore line on the east side and may be extended to Karachi on the west too.

d) Community Facilities

Each neighborhood, on the average, has three primary schools, one high school, and a civic and commercial center. This civic and commercial center is comprised of a mosque, cinema, tea house, food market, shelters for pedlars, firewood stalls, toilets, shops and a community center grouped together. The community center, depending on the community class, would include common rooms, offices, courtyards, kitchen, showers and toilets for one class and library, exhibition

halls, auditorium, etc. for the other. Bigger civic and commercial centers also include bank, health center, restaurant, gas station, public baths, and theatre. In addition to these there is a central administrative, civic and commercial center (shown in Figure 8) which is planned to have all these facilities on a still larger scale. The watersupply, sewerage and electric services are available to the area, but not to the individual at present. Community water taps have been provided for every few units. The same arrangement has been made for sewerage and electric connection.

e) Recreation and Open Spaces

There is one main area set aside in the total plan for parks and a sportground which is north of the center. Another large area south of the center and a narrow belt to the south-east are earmarked as green areas with special buildings. These are in addition to various smaller open spaces and green areas in the civic and commercial centers, neighborhoods and adjacent to the schools.

Recreation for the youth is provided mainly through the playgrounds connected with the primary and high schools. For others the cinemas, theatre, auditoriums, exhibition halls and community centers are

included in the plan. The open areas are sufficient to provide for the traditional pastime and recreation of all classes, low classes in particular, which is just sitting and talking or playing cards.

f) Houses

The lots for low income residents are designed for single family basic houses. The government has constructed and plans to construct most of these houses as one or two room nuclei houses, to be completed in the future by the beneficiary families themselves. These lots are 120 square yards in area. The ultimate number of low income, middle income and high income residential units is 56,000, 33,900 and 9,600, respectively. The photographs on the following pages show views of low income houses already built by the government.

g) Population and Future Growth

The whole project has been designed for an optimum population of 500,000 in 100,000 units. This, however, is the target for 14 years from the date of starting. The scheme is mainly for housing existing displaced and shelterless families. There seems to be no consideration for further growth, unless the settlement is to change its present or designed form.

IV. Evaluation

Two aspects of this scheme seem to be very prominent The linear form, and the introduction of a pedestrian scale in the residential neighborhoods and the home-work relationship. The linear pattern of layout has always been subject to criticism. In this particular case there is no separation between the areas for home and place of work except the street which is not so very desirable when the inudstrial zone goes all along the length of the settlement. The northern residential belt is bounded by a main traffic route and a railroad, which is highly undesirable when there is the opportunity to plan an entirely new community.

Further, the site is close to the sea which is to the south-west. The wind blows at a fair velocity most of the year. The wind direction being south-west, any areas to the north-east of industrial sites are liable to be under the influence of one nuisance or the other. Another important fact is that there is a new oil refinery under construction in the south-west corner of the site. This will have major adverse effects on the areas next to it.

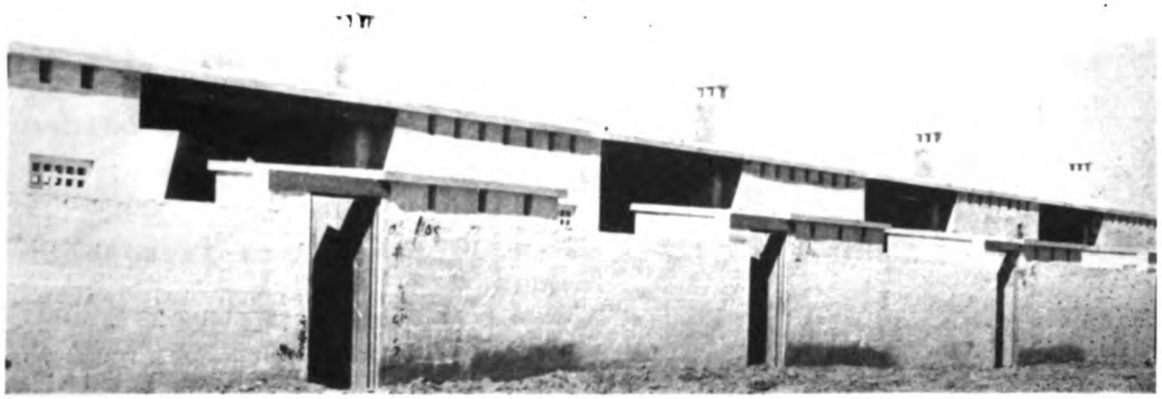
Considering the road standards, we notice that in residential areas the pedestrian scale is used, but the streets around the sectors are multilane roads. In view of the fact that the majority of the sectors are for low income people, the use of automobiles is expected to be very limited. So the provision of such elaborate roads seems wasteful and unnecessary.

In the house design, the majority, of course, is of low income, the minimum is one room house expandable to two rooms or so. Living in one room, for a family, is no less than living in any shack whether it is constructed by straws or cement concrete. In view of the number of persons per average family, which is five, and the cultural and religous traditions that demand more privacy and segregation of sexes, and above all, in view of social and human requirements, this design is absolutely inadequate.

A Bird's Eye-View of Houses in Korangi

Photo No. 1

Photo No. 2



A close view of the houses built in the Korangi Township for the lowest income group

Photo No. 3

One of the eleven primary schools provided in the Korangi Township

This pattern of layout has been obviously adopted with the assumption that the people will be next to the area of work. In this instance this is not practicable at all. The industry or the places of employment are way behind in development or establishment in the ribbon provided. Later, if we assume that the development of industrial zone takes place all along the belts as planned, how can we say that the people living nearer to certain establishments will work in those too. This cannot be achieved unless there is a whole reshuffling of residences or the jobs in various establishments and the people employed. We duly recognize the urgency of housing those people and the time element involved, but it might have been better to devise another way of housing these people. It could be in multisotry apartments nearer to the central city or the existing industrial estates for as much as these areas of employment could absorb. For a big project as this, it could have been better to make it a real satellite town and build it at least fifteen miles or more away from its present location along with the construction of industrial establishment. In its presest situation, there are many people who have left these houses and gone back to the city or still commute to the places of employment and work in the city. There is no enthusiasm

on the part of the people to take possession of the lots or even the built-up houses on very easy installments provided by the government. A very recent news item[31] shows this very clearly. The hesitency on the part of the people to move to Korangi is very apparent.

In developing this project, the government's policy of charging for lots and facilities serving upper or higher income groups on the basis of commercial value that they would acquire when the area is fully developed is not favorable to achieving the goals of a balanced and desirable community. No doubt this policy will give a return to the government's investment if successful, but from the view point of the customer it is unacceptable. If the government is unable to sell these lots it will discourage the development of a community having all income groups and all types of occupational classes. The danger exists that the project in the long run will end up all of the lower classes.

Besides the above considerations, there is one last objectionable policy observed in planning the project. In planning for the various income groups, the

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[31] Dawn (Karachi), Nov. 25, 1964, "KDA asks Allottes to Take Possession of Quarters in W. Karachi and Korangi within 15 Days."

proportions followed are the same as for Karachi city. This we cannot say is very appropriate. Before it was adopted, it needed an investigation as to the desirability of the social structure of Karachi.

Nazimabad-Karachi

I. Purpose and Background of the Scheme:

The objective behind this scheme was the same as for most of the other new residential developments built during the first years of independence, that is, to house the refugees and other shelterless population in Karachi, and to accommodate the overspill of the population. During the first four years after independence the population of Karachi had risen to four times its population in 1947. This created such overcrowding and congestion that the city was in danger of becoming a big slum. Consequently, back in 1950, the central government decided to develop a satellite town, and this was the beginning of Nazimabad, which has since been completed.

The overall layout plan was prepared by a firm of town planners. The detailed layout within the framework of that overall plan was then completed by the central Public Works Department.[32]

It was planned more or less arbitrarily, to house about ten thousand families. (Lately an extention scheme for this development was implemented which is not included in this review.)

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[32]It may be noted that in 1950, Karachi was the Federal Capital of Pakistan and was administratively independent from the rest of the West Pakistan. All the construction, development and maintenance works in such area or directly relating to Federal Government were and are handled by P.W.D. of the central government.

II. Policies and Planning Principles Observed:

In planning and development of Nazimabad, the following policies and principles were observed:

a) The scheme was to provide housing for low and middle class people.

b) The scheme was to be near the potential employment centers.

c) The scheme was to be in the Karachi Centrally Administered Area, yet outside the existing partially developed area.

d) The lots were to be developed and leased out to people on an annual installment payment basis.

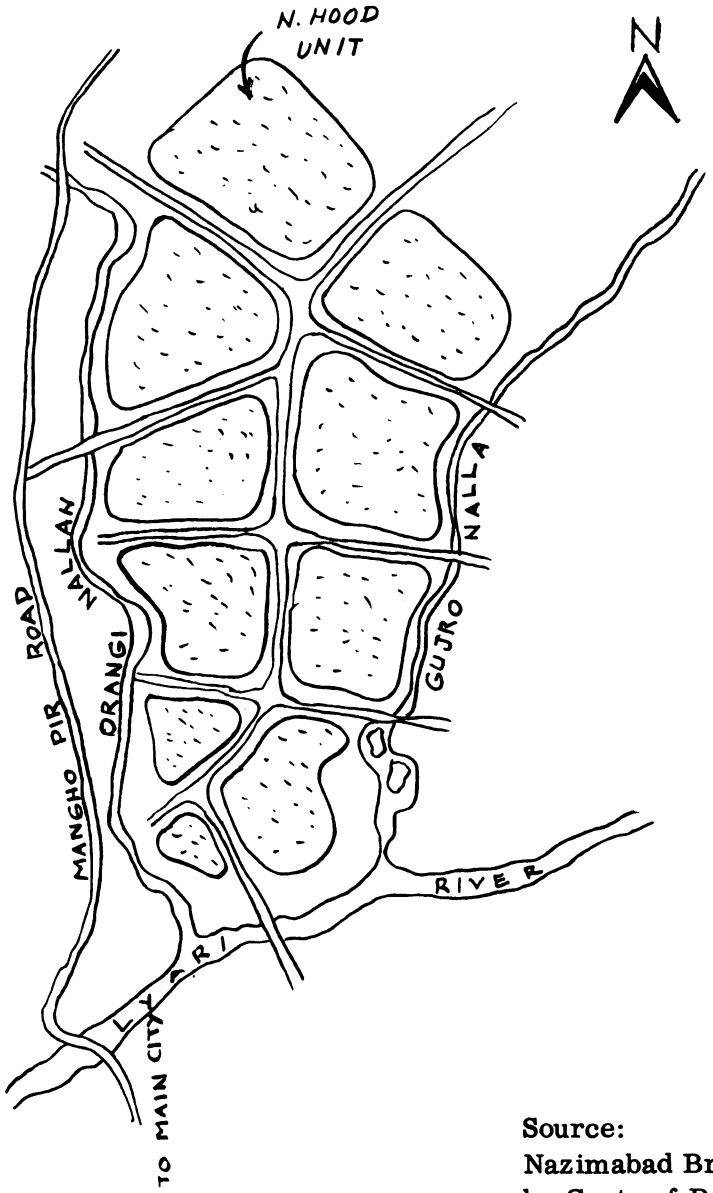
e) For those poor refugees who were absolutely unable to build houses for themselves, the government built 3,000 dwelling units (quarters) and the Refugee Rehabilitation Corporation built 250 additional dwelling units.

III. Physical Planning Aspects:

a) The Site

Nazimabad is located north of the central city of Karachi beyond Lyari River. (See Figure 11.) Lyari, though a seasonal river, was a natural barrier to urban growth until Nazimabad was planned. The land to the north and north-east of Lyari was vacant and barren. North of Lyari and west of

LAYOUT PATTERN, NAZIMABAD, KARACHI



Source:
Nazimabad Brochure
by Govt. of Pakistan

Fig. 11

Orangi Nalla,[33] an industiral estate was already being built. So the area to the east of Orangi Nalla up to Gujro Nalla was selected with a view of providing employment opportunity for the people in the industrial estate and utilizing the cheep land.

b) The Form

Since the site is narrow and rectangular, the lay-out is more linear in form. A main road runs north-south in the center of the site dividing it longitu-dinally. The lateral or east-west roads then form the neighborhood units. So, each neighborhood unit has major thoroughfares on three sides as boundaries and Nallah, a natural boundry on the fourth side. (See Figure 11 on last page.) Each neighborhood unit is aobut 200 acres in size and provides accom-mocations for about 2000 families. The figure on the following page shows the layout of a neighbor-hood unit. The size of the unit being large, the focal point or center is not a primary school but an industrial-commercial center. It is in the shape of a horse-shoe in the center of the neighborhood. The three primary schools are distributed through

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[33]"Nalla" in Urdu language is a brook or very small river. Nallas usually are seasonal, that is, they flow in rainy or flood season, and remain dry or have very little flow at other times.

DETAILED LAYOUT PLAN OF A NEIGHBORHOOD UNIT IN NAZIMABAD

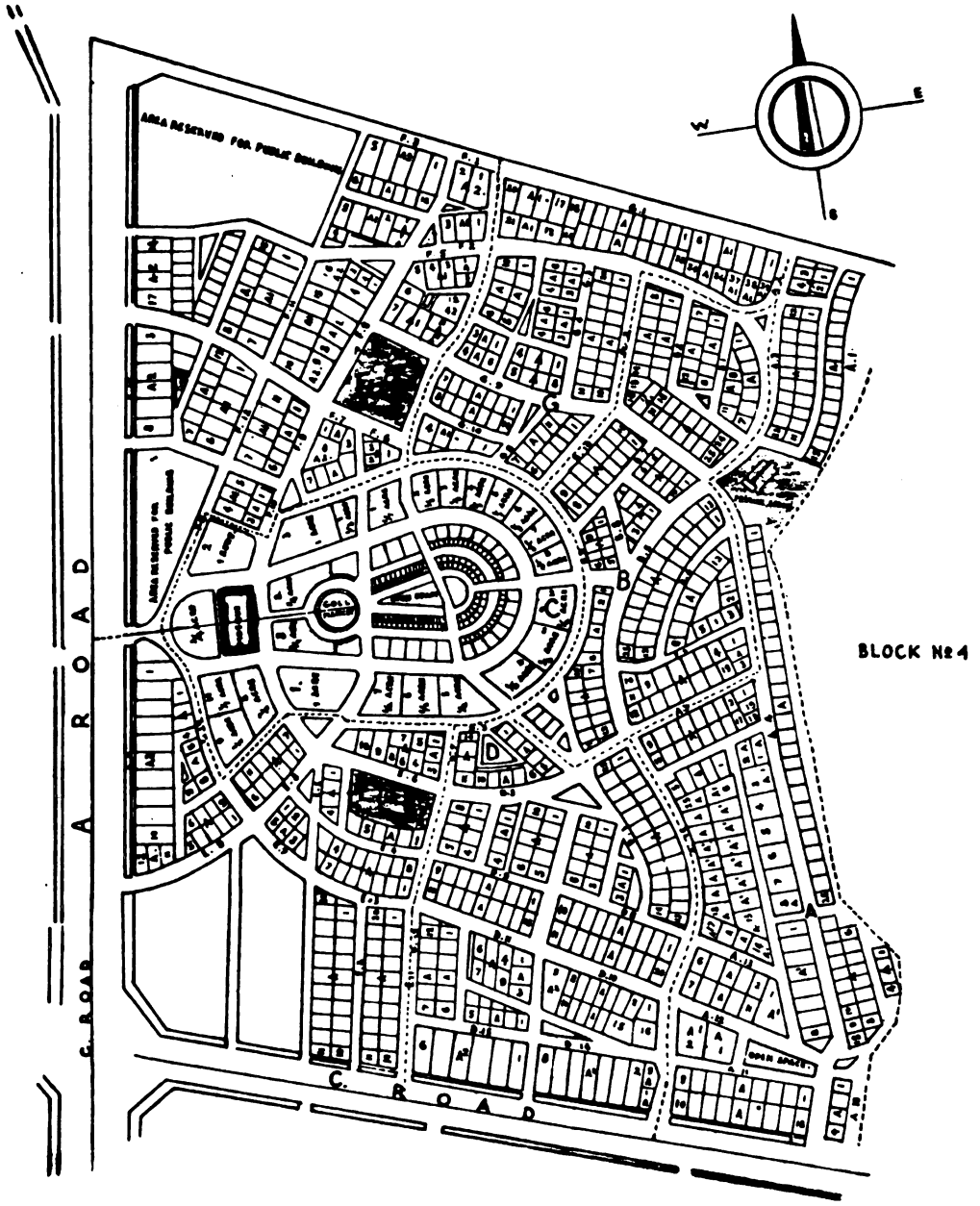


Fig. 12

the rest of the area. The "center" contains service industries, market, mosque community center and other conveniences. The most valuable land in the neighborhood viz; the corners and in the center next to the major thoroughfares had been reserved for public buildings. Most of this land has been utilized by public offices and government colleges etc. Curves have been used in combination with straight lines in laying out the street pattern.

c) Circulation

The major circulation pattern is produced by one main north-south thoroughfare. This directly connects the area with the central protion of Karachi, and four east-west off-shoots from this central thoroughfare carry the traffic to the major place of employment, the indistrial estate. The right-of-ways for the main thoroughfare and the major off-shoots are 320 ft. and 200 ft. respectively. However, the metalled width is only 22 feet. The excess area is for berms, tree platation and future extention.

The internal circulation of the neighborhood unit is by streets of nominal width of 40 to 80 ft. for the use of mixed traffic. On most of the internal residential streets there is no provision for sidewalks.

d) Community Facilities

As mentioned above, each neighborhood has three primary schools at different locations, a shopping center, and a mosque. Some of the area earlier reserved for public buildings has now been used for high schools and colleges which serve not one neighborhood but the entire area of Nazimabad. The scheme also includes a police post and medical clinics. The utilities, electricity, water and sewerage, are provided for each lot. The telephone facility is available, but due to inadequate capacity of the system it is not extended to every lot. Mail service is adequately provided.

e) Recreation and Open Spaces

Except for the grounds at the school sites, open spaces are very few and small, usually at the angular intersections of streets. The only spaces provided for recreation in the paln have been sites for cinema houses. For light and air the need of open space is sufficient due to the extensive street system and the low height of the structures. The excess land with the 320 ft. major throughfares at present serves the purpose of playgrounds for the youth and sports grounds for others.

f) The Houses

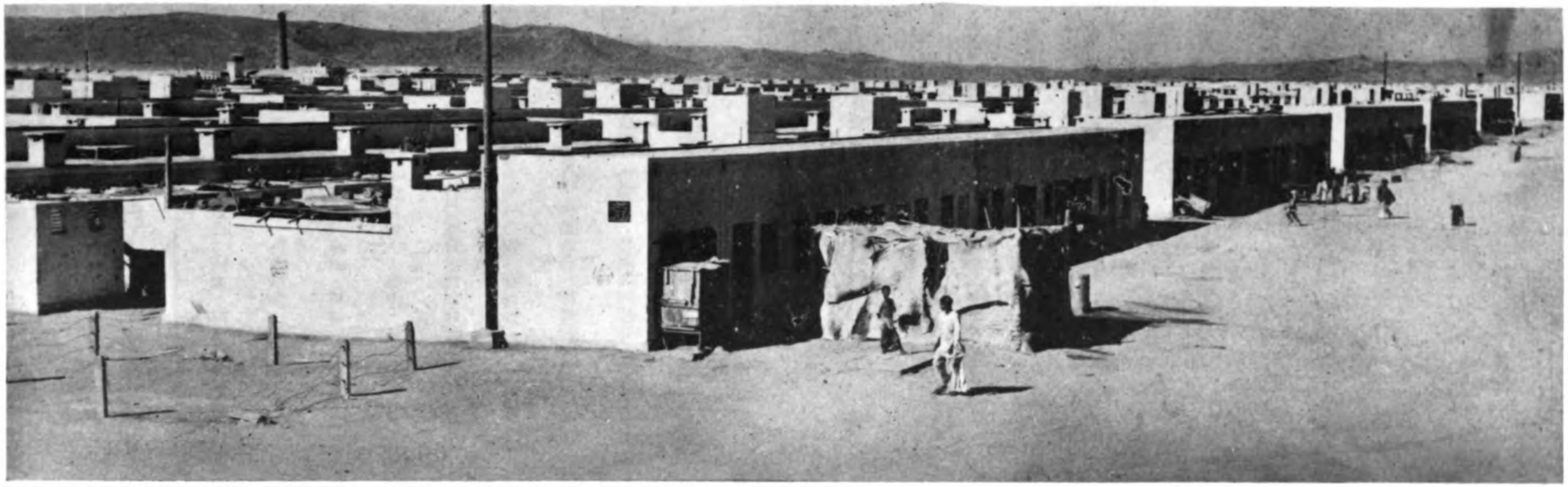
Except for the 3,000 quarters provided by the government and 250 by the Rehabilitation Corporation for the refugees of the poor class, all the development is mainly of detached houses. There was no architectural control and the development encouraged self-help housing, or the building of a home by the land owner. Due to the fact that the construction was done by the tennants or owners on these lots, the houses have various designs, internal and external. All the buildings are made of burnt brick, or cement concrete, or concrete blocks.

The houses provided by the government are in rows. Each of the units has two rooms of 10 x 12 size each with a verandah in front and a courtyard at the back with kitchen, bathroom and privy. Each row is identically laid down one after the other as shown in the layout in Photo No. 3 and Photo No. 4 on the following page.

g) Population and Scope of Future Growth

The total population of Nazimabad is about fifty thousand. The site and the general layout plan provides for future growth towards the north. It was believed that the same neighborhood pattern concept could be extended miles to the north by extending

Photo No. 4



To house poor refugees, Government have built 3,000 quarters. These quarters, which have cost Rs. 60 lakhs to build, are situated to the west of Nazimabad. The hut in front shows the kind of dwellings the refugees were living in before these quarters were built for them.

A view of the Colony consistiug of 250 quarters built by the Rehabilitation Corporation for refugee artisans. Each quarter has two rooms—10 ft. x 12 ft. with verandahs in front and behind and a courtyard with kitchen, bathroom and latrine.

Photo No. 5

the central north-south thoroughfare, and still maintain unity for the overall development.[34]

IV. Evaluation:

The choice of the site for Nazimabad was very wise. It is on the main route from the central area of the city and next to a big potential employment center the industrial estate. (Though not planned as an integral part of Nazimabad, the industrial estate developed more or less side by side.) Nazimabad is contained on three sides by natural boundaries which provides a sense of the whole, singurality to the development, and facilitates controlled growth in the future on the one open side. The drainage of the area is good.

The river or nallah banks were ideal for developing park areas, but unfortunately the river and nallahs are dry most of the period of the year. Still these belts could be developed into parks which would not only provide recreation and esthetics but alos help maintain the dry beds in good sanitary conditions. At present they are more like ill-kept "back alleys" of the neighborhoods.

As far as the overall layout plan of the scheme goes, it has been very well laidout. But, the design of each neighborhood is highly undesirable. It looks like a typical

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[34]The area to the north of Nazimabad is currently under development and is very appropriately called North Nazimabad.

office draftsman's design with a big "focus" in the center and streets, or a grid of lines woven around it. Curves which have been very generously used lack skill and imagination. There are too many small blocks some even with two lots only. Many streets meeting at a small angle have produced undesirable intersections. Some have been improved by making triangular open spaces at the intersections which are too small to be used for any useful purpose except as a green patch which usually is hard to maintain. This street system has resulted in wastage of land, irregular and odd shaped lots, more land under streets and consequently higher road and utility costs. This layout is inconvenient for the visitors too. The numbering system becomes very difficult and odd. Overall it lacks sense of order and is wearying and confusing.

Useful open space is absent in the total design. The usual recreation of people is to sit outside the house or walk around and talk on the streets. Provision of neighborhood parks, ideal for such things, was very necessary for this scheme and it is missing. The schools seem to have been located without reason. The primary schools are meant to serve a certain area or a certain group of residence and so should be in the center or near the center of these groups. All the three sites in the neighborhood shown on page 55 are wrongly chosen for this purpose. These are on major streets of the neighborhood but in the absence of any plan for a

school bus that seems no reason of their location. Lastly, the public housing for the poor (3,250 quarters) has not been given any consideration as regards to its distribution or choice of design. They were placed in rows parallel to each other with the back of one set of houses towards the front of the next row which is not a very good way of orienting houses. The space left on both sides of the rows of houses was intended to be landscaped. However, lack of landscaping, and sanitary controls has created unhealthy conditions. Overall the environment of these locations is very displeasing. Socially these people have been segmented into one, low class. With a little ingenious layout and variety in house design this area could have been made very attractive and constructive for the social, physical and moral uplift of the resident.

Jail Area Redevelopment Scheme

Lahore

I. Purpose and Bakcground of the Scheme:

As the name implies, the scheme has been prepared to redevelop the area where the district jail used to be. The jail site was over two hundred acres in area when the farm property attached to the jail was included. Residential development surrounded this site. The jail buildings were very old and it was decided to shift it to another place and use the buildings temporarily for housing certain government offices. However, the need for housing had increased in Lahore like most of the bigger urban areas. Lahore being the second biggest city of West Pakistan and the provincial capital, there was and is acute shortage of housing, second only to Karachi. This added to the fact that the jail area was in the best residential locality, made the government redevelop the area primarily for residential use. There are some provisions included, however, for certain offices and institutions in the plan.

II. Policies and Planning Principles:

The following policies and planning principles were observed in the outline, design and development of this scheme:

a) It is a residential development with necessary amenities and community facilities.

b) The scheme provides developed lots for all income groups.

c) The lots are offered to the general public at open auction. However, 30% of the lots of each category are reserved for government employees. These are given at the minimum rate worked out per unit area.[35] The selection of applicants is by ballots. If a person or a member of his family owns a house or lot in the Lahore urban area, he is not eligible for another one in this scheme.

d) The government will build single bedroom apartments for bachelor officers in the same scheme to provide rental accommodation for young single officers.

III. Physical Planning Aspects:

a) The site

The site of the scheme is located in the vicinity of the most pleasant section of the city, the best residential areas, colleges, and the hospital. The race course and famous Jinnah garden, which incorporates many social and recreation clubs, is only

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[35]The minimum rate has been worked out on the basis of development charges viz: roads, sewerage, water supply and electricity provision costs; plus the cost of construction of a new prison at another place and providing additional accommodation in other existing jails.

LOCATION OF JAIL AREA REDEVELOPMENT SCHEME, LAHORE

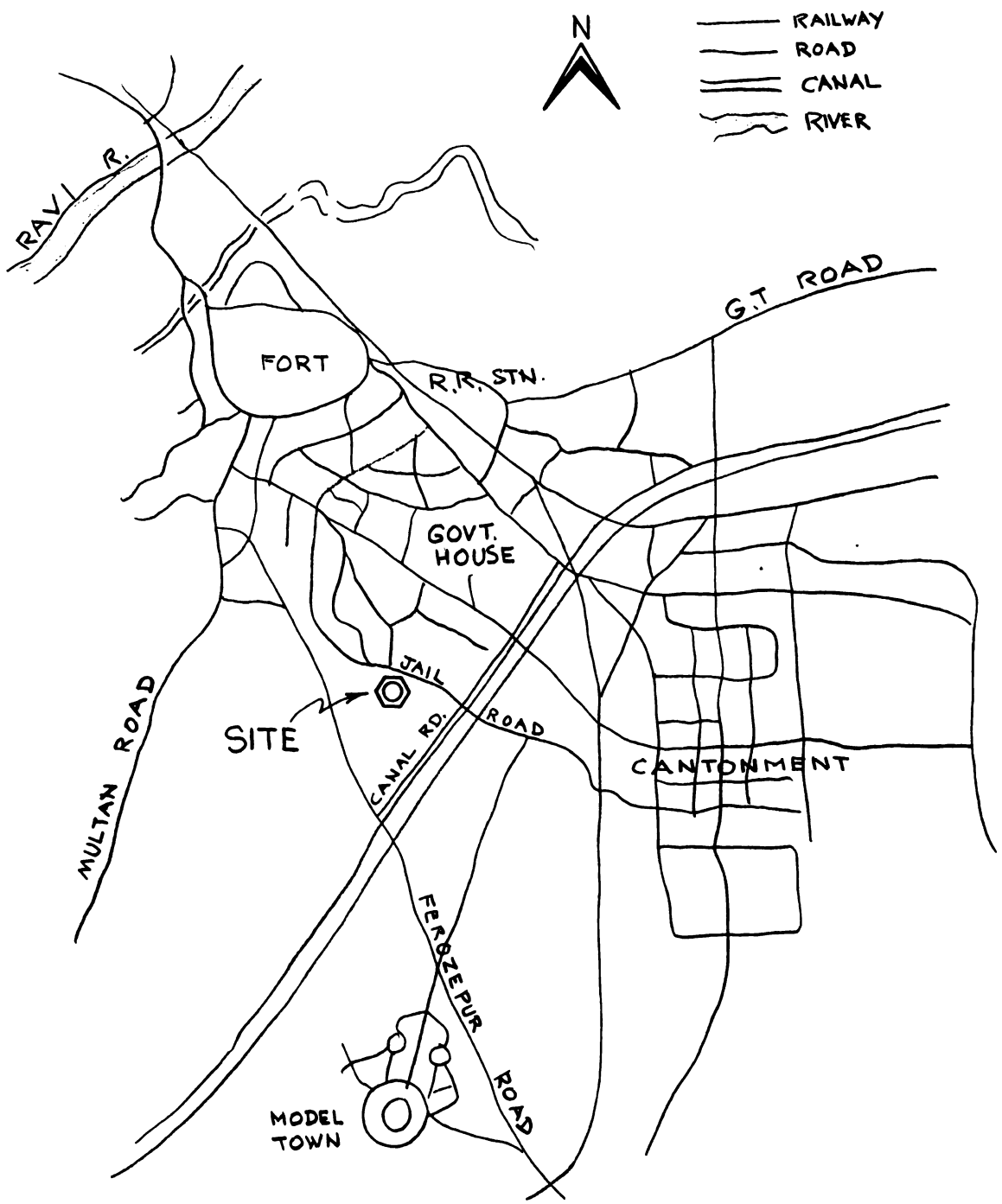

Fig. 13

one-eighth of a mile from the scheme. It is within the civil lines and located on the Gulberg road, which leads to another fairly new and beautiful residential area called the Gulberg. The sketch on the previous page shows the location of the site in respect to the old city and other important areas of the city.

b) The Form

The site is L-shaped which gives the layout two major divisions. The lots have been laid out in straight strip-blocks around four open spaces, two being with the primary schools. So we can say there is not one or two, but four focii created by four big open spaces. In those particular areas these open spaces give the feeling of a "square" in the center of the development, and will give the feeling of a group among residents of the area. The layout of strips is parallel and perpendicular to each other. However, there are many so called "nodes" at the end of straight streets created by another block or school. The blocks vary in length as indicated in Figure 14, on the following page.

c) Circulation

There is no real significant pattern of circulation indicated by layout. However, a north-south wide road and the Gulberg road on which the site

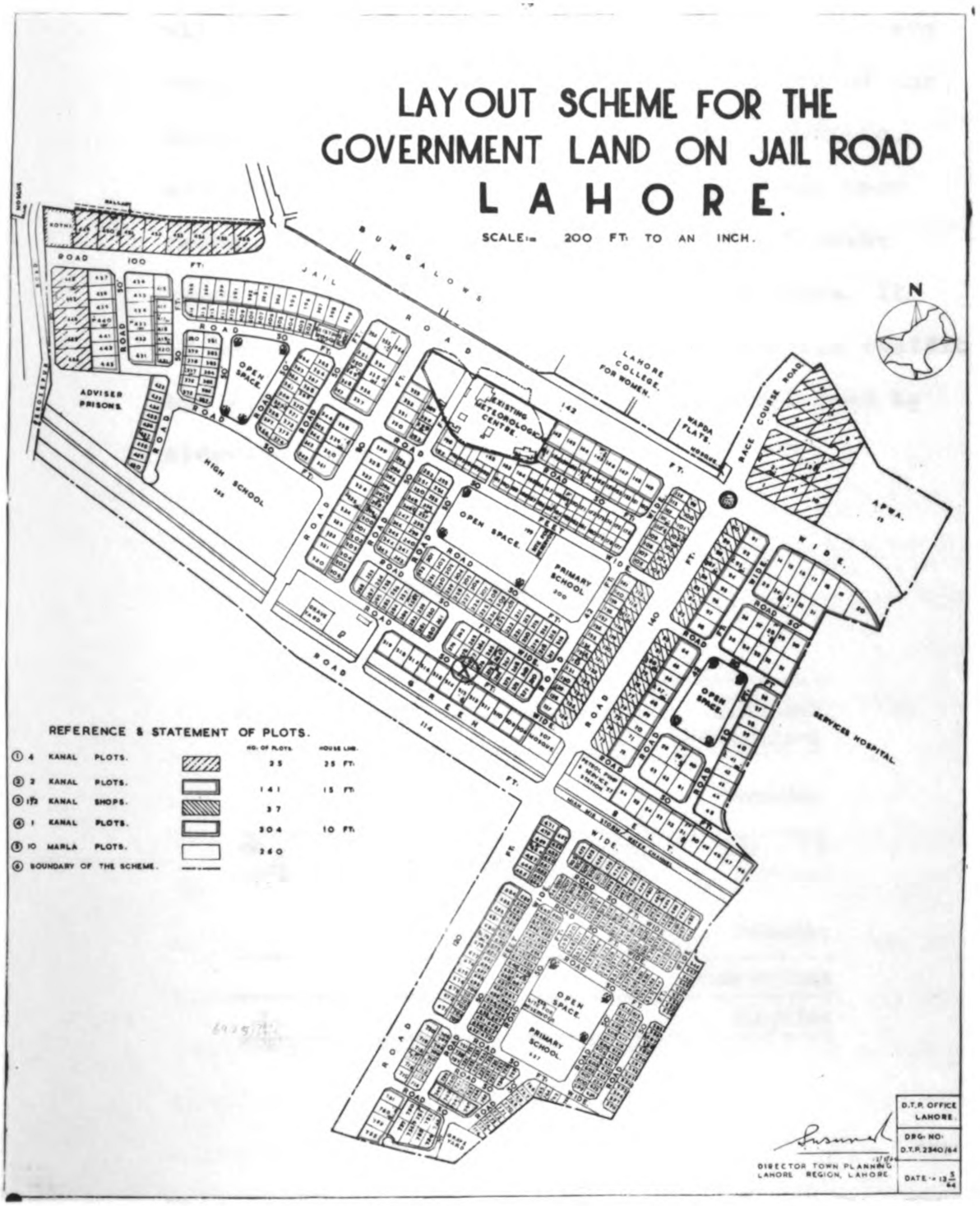
LAY OUT SCHEME FOR THE
GOVERNMENT LAND ON JAIL ROAD
L A H O R E.
SCALE:- 200 FT. TO AN INCH.
N
JAIL ROAD
BUNGALOWS
ROAD 100 FT.
ADVISER PRISONS
HIGH SCHOOL
OPEN SPACE
EXISTING METEOROLOGICAL CENTRE
LAHORE COLLEGE FOR WOMEN.
WAPDA FLATS.
RACE COURSE ROAD
APWA.
PRIMARY SCHOOL
SERVICES HOSPITAL
GREEN
REFERENCE & STATEMENT OF PLOTS.
NO. OF PLOTS. HOUSE LIN.
① 4 KANAL PLOTS. 25 25 FT.
② 2 KANAL PLOTS. 141 15 FT.
③ 1/2 KANAL SHOPS. 37
④ 1 KANAL PLOTS. 304 10 FT.
⑤ 10 MARLA PLOTS. 240
⑥ BOUNDARY OF THE SCHEME.
D.T.P. OFFICE LAHORE.
DRG. NO: D.T.P. 2340/64
DIRECTOR TOWN PLANNING LAHORE REGION, LAHORE
DATE:- 13/5/64

Fig. 14

is located make the two axes. The main traffic will be carried from and to the scheme by Gulberg road which leads to the more central parts of the city, the commercial and other working centers, and the recreation centers. This road has been redesigned to provide segregation of different types of traffic. As Figure 15 below shows, it is boulevarded in the center for automobile traffic and flanked on both sides of the central road by sidewalks and bicycle tracks.

GULBERG ROAD DESIGN

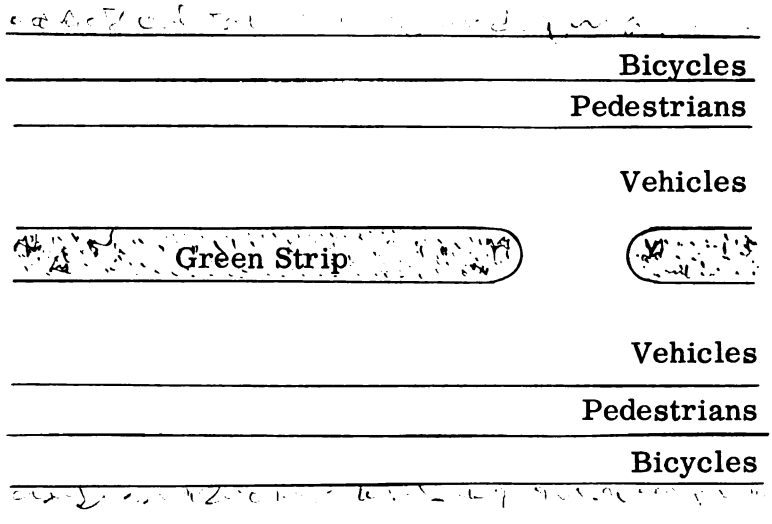

Fig. 15

This road has a total right of way of 142 ft. The other, north-south axis road is 140 ft. part of the length and 120 ft. the rest of the length. The

third major road which will come under the extension of this scheme to the south is 114 ft. wide. The secondary and collector streets are 50 and 80 feet wide, respectively. The connection between Gulberg road and Ferozepur road in the north-west corner of the scheme is 100 ft. wide. As the cycle is a common man's means of transportation, it is expected that most the the residents will be using cycles or public transportation plying on Ferozepur road and Gulberg road at present.

d) Community Facilities

The scheme provides for tow primary schools and one high school. Two women colleges already exist next to the scheme on the north and a third one is about one mile away. Boys colleges are not more than two to three miles from the scheme.

There is no provision for a dispensary or hospital in the scheme, but there is an existing hospital adjacent to the scheme. Two mosques have been provided in the paln and there are two already existing just outside the scheme and one inside the scheme boundaries. A shopping area has been provided all along the upper part of the north-south axis road and a site for the gas station.

Roads are planned to be paved as the development and construction of private houses progresses. Watersupply is being provided from tubewells and two reservoirs. All the lots will ultimately get sewer connections to the main sewerage system. Electricity is also being provided to all the units.

e) Recreation and Open Spaces

Lahore is one of the biggest cultural centers. Most of the cultural activity is centered around Mall road, Jinnah gardens and the institutions around these areas. There are many clubs, social and for sports, like Lahore Gymkhana, cosmopolitan, ladies club etc, and an open air theater in Jinnah gardens. Race course is on Gulberg road about half mile down. Cinemas are on Mall and Mcleod road mostly and also near the southwestern corner of the scheme. All these palces are one-eighth of a mile to two or two and one half miles maximum from the jail area redevelopment project.

There are four open spaces in the area itself which will provide recreation places for the youngsters and add greenery to the overall area.

f) The Houses

Except for the government-built apartments, all the houses will be of the single family detached type.

There have been some restrictions put on the construction and height of the houses which will result in a general harmony of the structures. Maximum height permitted is 40 ft. and three stories. Other usual regulations like land coverage, building line etc. will take care of the general environmental and healthful conditions. The apartments palnned to be built by the government for bachelor officers are in double storyed buildings. Each building has seventeen apartments and a common dining room, kitchen, pantry and recreation room. Each apartment has a living, a bedroom, a bath and a small room for storage.

g) Population and Scope of Future Growth

The area is divided to provide a total of 730 single family houses plus the apartments. This gives an estimated population of 3,650 persons. The layout design provides for connections to possible future extensions toward the south-east, south, or south-west which are the only possibilities open.

IV. Evaluation:

The setting of the site for a residential development is excellent. But, considering the value of the site and its location in the best high class residential area, the decision to develop it more into middle and low income

group housing does not seem to be very commendable. The lower class lots are too many in number. It could have been better to provide some more 2 Kanal[36] and 4 Kanal lots. Especially along Gulberg road, all lots should have been of the biggest category as this road on the other side has some of the most expensive houses or sites for that class of houses. Inside also, at one instance (marked "x" on the plan on page 65) houses of one category face other type on the other side of the road. This is not a very desirable practice. It creates imbalance in the setting. In this layout the orientation of end lots being exactly the same as others creates an unbroken line between the two lots back to back which is also not a very desirable situation. There are too many unnecessary streets which could be avoided along with the small blocks.

The layout is again typical, stereotype like most of the satellite towns in West Pakistan designed by the Public Works Department or the Town Planning Department in eastern and northern regions. No innovations are made and no effort has been made to produce some variety and some interesting different design.

In circulation, the design of Gulberg road has some objectionable points. Most important is the placing of a sidewalk right next to automobiles and inbetween the cycle

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[36] 1 Kanal = 5,445 sq. ft. and 8 Kanals = 1 acre.

and autoways.[37] It could be unsafe both ways. Also the width of cycle track is wasteful unless this is to be used as side road for tongas[38] and other slow traffic too, or, part of it is developed as a green belt between the property line and the sidewalk. The streets provided are of so many different widths like 50, 80, 100, 114, 120, 140, and 142. In one development there are seven different kinds of streets. There is nothing particularly wrong in doing so except that this shows ill-planning and that no standards have been used. There are too many access points from the busy main road that is Gulberg road and some of them are too close to one another. These may obstruct the smooth flow of the traffic on the main street and make it unsafe too.

The plan for implementation of this scheme seems very workable. However, the government may find it difficult to sell the lowest category lots to the poor people of that class in open auction. It is possible though that the speculators with money might but it and construct houses for rental purposes.

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[37] In plan no sidewalk has been shown next to the property line. It is therefore assumed none is provided.

[38] Tonga is a two-wheeled horse driven carriage used for passengers or sometimes freight.

Country Club Area Scheme

Karachi

I. Purpose and background of the Scheme:

This is another of the several Town Extension schemes prepared by or sponsored by Karachi Developemnt Authority for the city of Karachi. This particular scheme was prepared by the chief town planner of Karachi Developemnt Authority under the guidance of a U.N. advisor in 1959. The main purpose of the scheme was to house a part of the exploding population of Karachi. However, because of the scale of the development or scheme, commercial and trade or employment areas had to be included in the scheme. Also, the Government at that time had proposed to build a railway line to skirt the buildup area along Karachi's northern edge. The existing railway line passed through the southern area to the terminal located at the heart of the city. This proposal was for a three fold purpose:

i) to divert national passenger traffic from the existing congested terminal on Mcleod Road

ii) to conduct the national goods traffic to the port through the Sind Industrial Estate, and,

iii) to provide an east-west suburban rail link.

The proposed line passed through the country club area and so the new railway station for national railway terminal was also proposed there and included in the scheme.

Figure 16 (on the following page) shows the railway line and the location of the scheme in relation to the Karachi Metropolitan region. The regional traffic pattern and major routes indicated on the master paln of Karachi Metropolitan Region[39] has influenced this scheme, although the Master Plan was never formally adopted.

II. Policies and Planning Principles Observed:

The majority of the population needing houses being poor or of low income or low-middle income groups, the greater percentage of lots are designed for those people. However, for desirable social and economic reasons, a percentage of houses has been arbitrarily set aside for middle and higher income groups. The policy was[40] to develop the area and sell the lots to persons wishing to build their own residential or commercial premises. The price would increase with the size of the lot upto the full market value.

Because of the nature of traffic, the slow and fast traffic has been segregated, as well as the vehicular and pedestrian in planning the area. The future has also been

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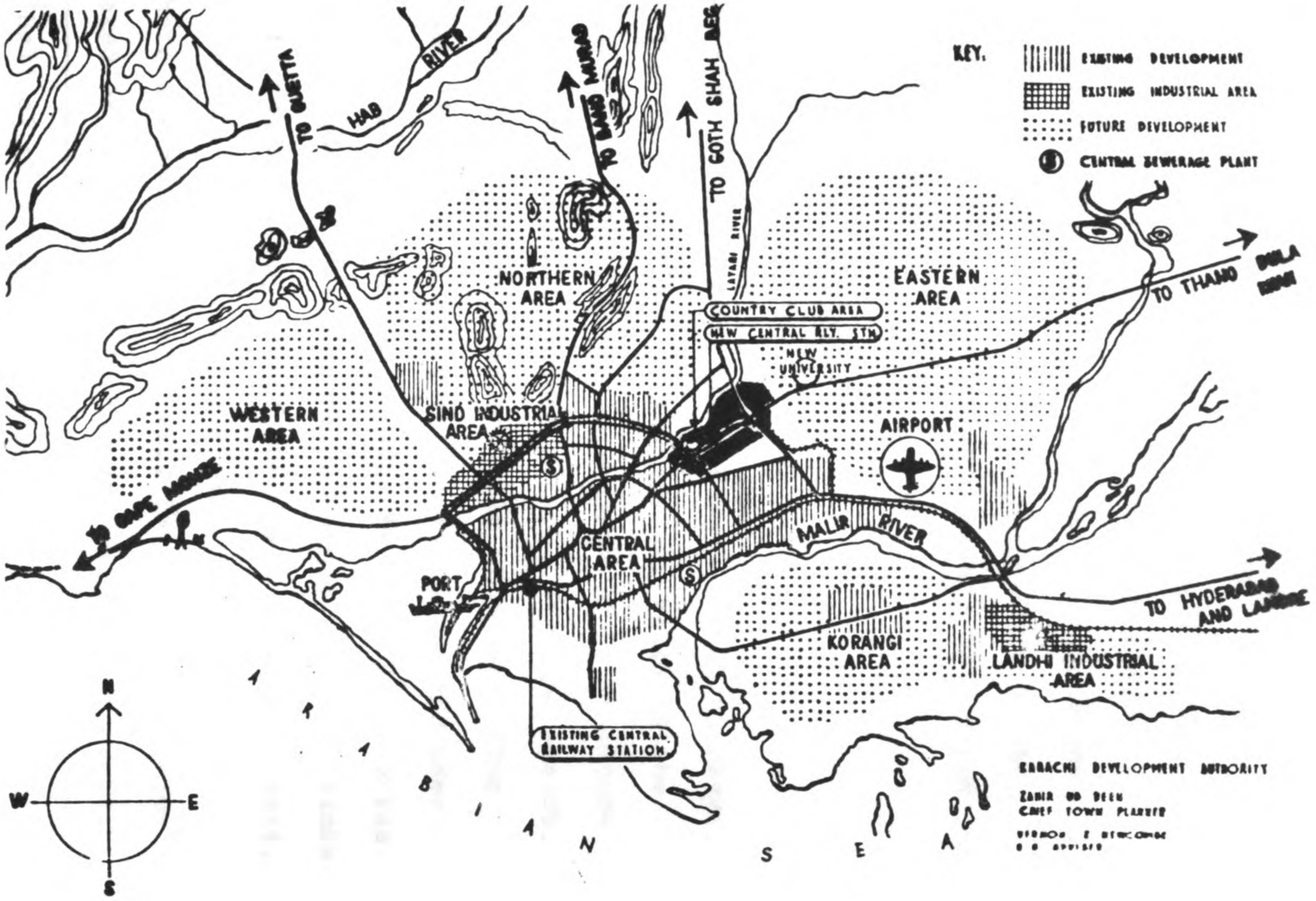
[39]The master plan for Karachi Metropolitan Region of about 560 square miles was prepared by Swedish consultants in 1952. This paln was under excessive fire by other experts and critics mainly because of laboured layout pattern which ignored natural features and extravegance in road and suburban railway proposal.

[40]The latest progress report on the scheme could not be obtained. Therefore it is not possible to say what its present shape is. The scheme discussed here is what was proposed.

Fig. 16

COUNTRY CLUB AREA IN RELATION TO KARACHI METROPOLITAN REGION



very much kept in view while planning for traffic with a pretext that houses can be changed later but roads once laid are laid for centuries.

Planning for economic considerations of present included safety and convenience objectives guiding the residential areas and facilities directly connected to them like shopping, education and recreation. The plans were made simple so that they could be understood by the limited staff available locally in the drawing office and at the development site.

III. Physical Planning Aspects:

a) The Site

The site of the scheme lies between the Lyari river to the north-west and a range of low hills to the south-east. (See Figure 16 on page 76.) It incorporates the area of Karachi country club and Karachi Flying Club and the area around it on Country Club road. The site is about three miles long and one-half mile wide covering an area of about 2,600 acres. major roads and the proposed suburban railway[41] links it to the major employment centers to the west, east, and south. Except for the Flying Club activities, there was nothing on this site that had to be relocated or needed to be transferred to another place.

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[41] Half of this line has recently been completed.

Mostly it was vacant and barren land, only a strip of vegetable gardens existed along Lyari river. Important existing features around the site are (and were at the time of planning) KDA water supply filteration plants and reserves, Dalmia cement factory and pipe factory to the south-east, Sui gas terminal station to the north-east, and a small light industrial area to the south-west. Topographically the site consists of slightly rolling hills. From all considerations, this was a good site for the scheme.

b) The Form

The main features of the plan are four major roads, two on each side with the country club road as a spine, the railway line, grouping of residential areas, and the open spaces.

The residential areas are grouped into nine sections, seven of them being in northern half of the scheme, and two on the other side of Country Club Road in the southern half. Each residential group has green and open areas on at least two sides and has a major road on the third and a road and commercial area on the fourth side. All through traffic has been discouraged in the residential areas. Along the inner parallel road space for cottage industry has been provided alternately with the commercial areas.

GENERAL LAYOUT COUNTRY CLUB AREA SCHEME

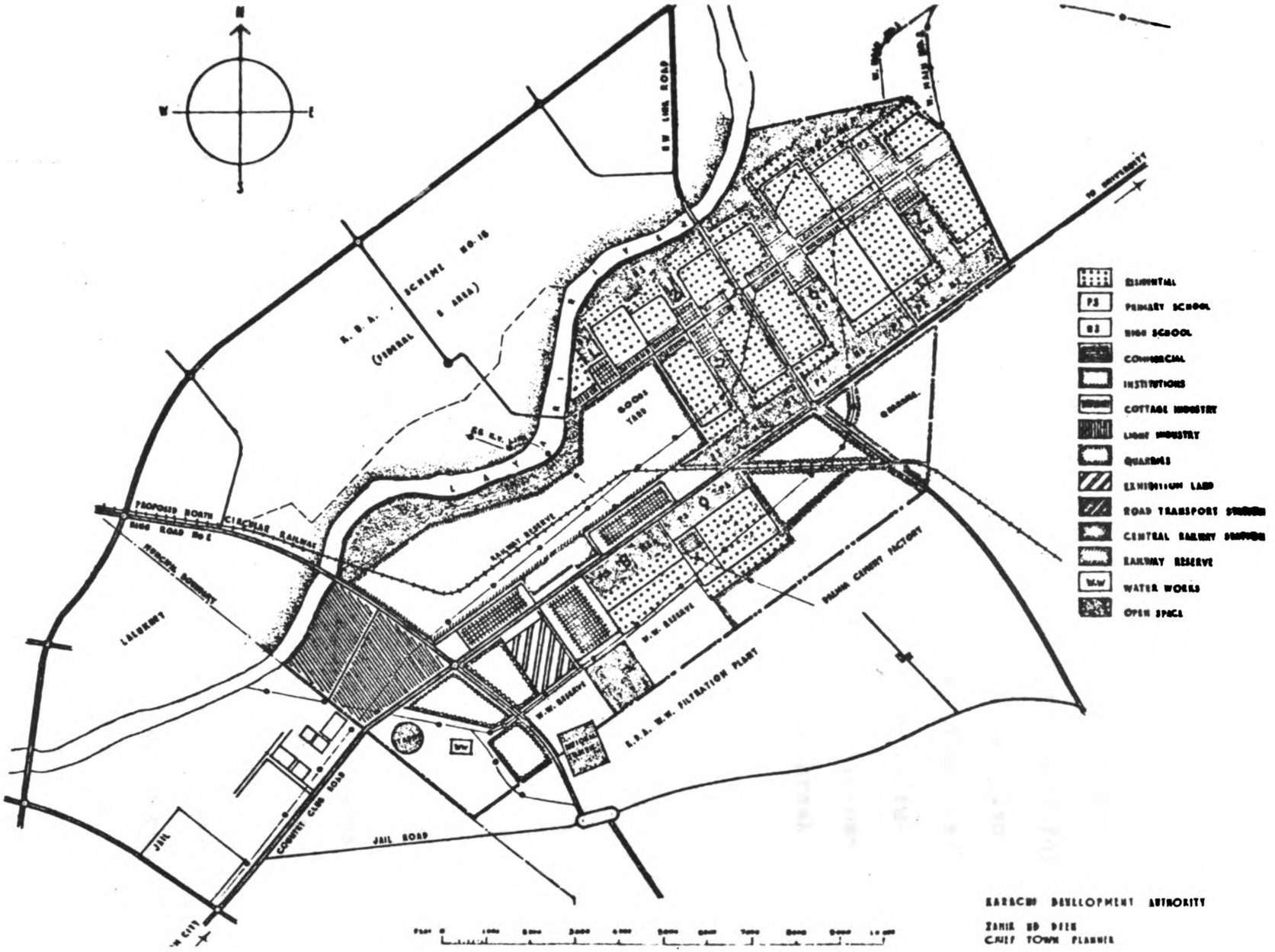

Fig. 17

Each section is served by three primary and one high school located in the T-shaped open areas.

The southern half of the scheme, except for two residential sections, is commercial and has the new central railway station and reserved land for goods storage yard. In this area land has also been reserved for exhibitions, mostly industrial. The land adjacent to the railway station is reserved for a road transport station in anticipation of growth in local bus traffic. The break down of land use areas is:

Residential	643 Acres
Recreation	422 Acres
Education	122 Acres
Transport	606 Acres
Public Utilities	182 Acres
Employment Areas	687 Acres
Total	2,662 Acres

The plan on the following page (Figure 18) shows the design of Section b, a typical section. It may be noted that two sides of each block are surrounded by open space. The convenience commercial center is between the two blocks, but on one side. Cottage industry is a strip between the major road and the residential area on one side.

COUNTRY CLUB AREA LAYOUT OF A HOUSING SECTOR

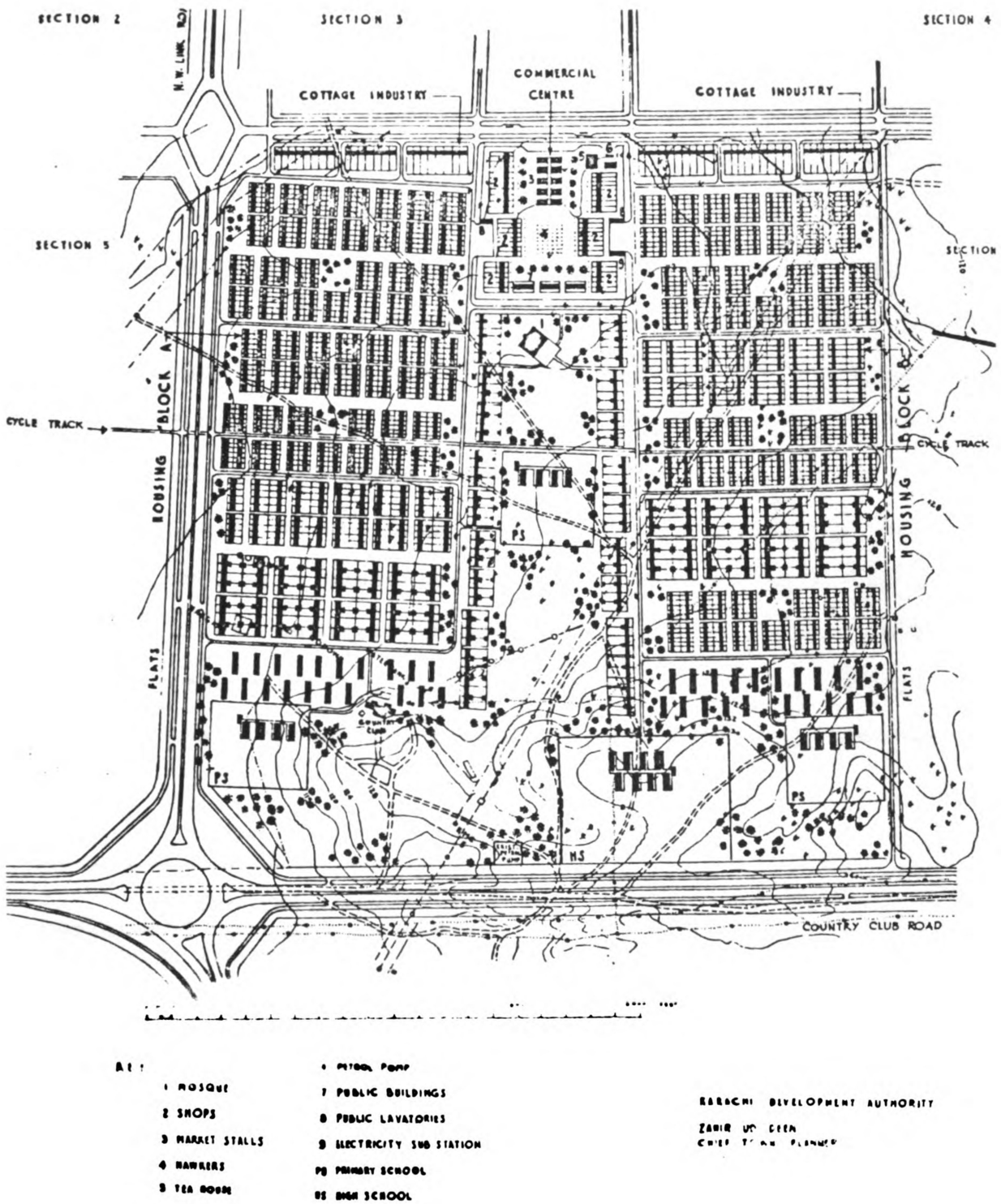

Fig. 18

Groups of different sizes of lots have been intermixed to break the monotony.

c) Circulation

The circulation is provided through three types of roads and a cycle way system. The local main road, parallel to country club road is 135 feet wide with 33 ft. carriage way for motor traffic and 16 ft. carriage ways on either side for all other mixed traffic.[42] The secondary streets within the residential areas are 60 ft. wide with 16 ft. pavement. Minor streets or collectors are 40 ft. wide with 12 ft. pavements. Because of the intensive use of cycles by the people, especially of lower income groups, a system of 30 ft. wide cycle ways having 12 ft. pavement is provided for more safety and to reduce traffic on other roads. The cycle tracks pass through the center of the residential blocks.

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[42]The following figures for different types of registered vehicles in Karachi (in 1957) will give a fair idea of mixed traffic there.

Private cars	17,636	Donkey carts	1,746
Motor cycles	4,197	Victorias (buggies)	1,122
Motorcycle-rickshaws	2,000	Tongas	802
Taxi Cabs	625	Cycle rickshaws	9,000
Buses	1,638	Hand carts	544
Trucks and vans	4,095	Cycles	83,703
Camel carts	971		

d) Community Facilities

Each of the residential sections is provided with three primary and one high school as mentioned earlier. All schools are located in the open area on the side and between the two residential blocks in the section. The primary schools are located in the three "ends" of the T-shaped open area.

Each section has a shopping center with shops, market stalls and "hawkers" to fulfill the needs of all classes of shoppers. A mosque is provided next to the shopping center in the open area for each residential section.

There is no specific mention of health clinics, colleges, police post and post offices but space has been provided for public buildings. So it is assumed that these will be provided as the development progresses.

Utilities like water, sewerage, electricity have been provided. Gas[43] and telephone service are becoming more and more common and could be furnished on demand.

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[43]Gas was found only in the mid fifties near Sui, about 300 miles from Karachi. Soon after the pipeline was laid to Karachi it was introduced as a fuel. Now it is mainly used in industries. Gas as a domestic use is still not common.

e) Recreation and Open Space

Open spaces has been provided quite generously as compared to most of the other schemes. Roughly 3 to 4 acres per 1000 persons has been provided. It is also provided in consolidated form which can be used for recreational purposes, active as well as passive. The schools have playgrounds in addition to this space. The shopping center also has a tea house which is a very popular and common means of recreation and passtime for the people of Karachi. The National Stadium is situated to the south, next to the scheme.

f) The Houses

A variety of house size and type are provided in the scheme on different sized lots. The majority of houses are for low income or middle income groups and are therefore small. The size varies from a minimum of 120 square yards to a maximum of 1,500 sq. yds. Section Six (Figure 18) has three types of lots and houses:

120 sq. yd. lots	-	one room dwellings	70%
200 sq. yd. lots	-	two room dwellings	15%
400 sq. yd. lots	-	three room dwellings	15%

Some sections have 600 sq. yd. lots for 4 room dwellings. The bigger lots are fewer in number and for sale at the full market price.

Varied house types have been intermixed in certain definite patterns, in small groups to make the form and environment interesting. Most houses do not face the major roads but interior minor roads. The sections also have some area for apartments as public housing on the open space end of the residential blocks.

g) Population and Future Growth

The total accommodation planned in the scheme is about 12,000 residential units which means for about 60,000 people. Residential area being 643 acrea, the average net density comes to 19 persons per acre. However at certain instances it is as high as 110 persons per acre.

A future extention of this scheme can be made to the north upto the new campus of Karachi University. Beyond that there is all kinds of space for future growth, and future developemnt, as shown in Figure 16.

V. Evaluation:

This scheme has many interesting, desirable and useful features like the overall design pattern in the residential part, layout of residential sections, circulation pattern, segregation of traffic, especially separate tracks for cycles and intelligently provided open spaces and schools. (However, the future maintenance of the open areas is doubtful because

of the soil, limited water supply and expense.) Safety and convenience for residents and particularly children has been achieved to a great degree. The intermixing of different sized lots has avoided long straight monotonous front lines.

The location of section five right next to the railway freight yard without an adequate buffer zone in between will be nuisance for the residents of that section, or the block next to the yard. Sections 8 and 9 have a buffer between them and the highway, but the location of a primary school next to the highway may prove to be very undesirable by the parents of the children going to that school. The railway will be a nuisance to the residents in sections 5, 8, and 9. The quarries located to the east of the main residential area is another source of nuisance. These two and the cement factory can also become potential sources for air pollution though the chances are very low due to the use of modern equipment, openness of the area, and the fact that the breeze is almost always blowing at a fair rate.

The need of a community center and a theater or cinema has been overlooked.

The policy to provide very minimum standard houses or lots may be perfectly right for the present, but the planning should be done, in these cases, for future also. The present percentage distribution of different dwelling types does not seem proper for a good social balance. For the economic stability and success of a scheme it is also desirable to have more higher income areas or lots.

Having houses face away from major roads is good for design and safety, but this method would result in costly developemnt.

134 Acres Scheme, Lahore

I. Purpose and Background of the Scheme:

This scheme was taken up in the early fifties to meet the acute shortage of housing accommodations for the average man in Lahore. By average man it is meant the people of middle and lower middle classes. The area is to the south of another big scheme for middle classes called Sumnabad. It is also in the general direction of the growth of the city that is the southern side. When the scheme was prepared, it was not given any particular name. This name, 134 acre scheme, was generally used due to the fact that it covered an area of 134 acres. Like most of the housing projects, this one was prepared and executed by the Lahore Improvement Trust. The scheme has been completed.

II. Policies and Planning Principles Observed:

The scheme was developed to give initiative as well as assistance. The Trust built one type of two roomed houses on one-third of the total lots and sold them on easy installment to the people of lower and lower-middle class. The rest of the lots were developed and sold to the public who built their own houses.

In designing the layout, provision of openness, light and air, pleasant physical environment, safety and convenience were kept in mind. In planning the circulation

pattern, discouragement of through traffic in general and breakage of monotonous straight lines were major considerations. The vehicular traffic is assumed to be not very heavy in the area due to the economic level of the community.

III. Physical Planning Aspects:

a) The Site

The site is located to the south-west of the main city near the major highway linking all the major urban areas of West Pakistan. Officially known as National Highway, it is known as Multan Road locally. Being in a region of flat plains, the site has no significant topographical features. To the north of this scheme is all new residential development, mainly for middle or upper middle class people.

b) The Form

A large open space is the focus of the design. If we include the convenience shopping center we can say the community has a rather enlarged focus. The layout is not of a routine type, or made with a straight edge and a setsquare but has a design. The curvilinear layout pattern has been set inside a frame of streets parallel to the boundary.

As shown on the plan (Figure 19) the streets parallel to the boundary have been designed to connect this scheme with existing and possible future developments

LAYOUT PLAN OF 134 ACRE SCHEME
LAHORE

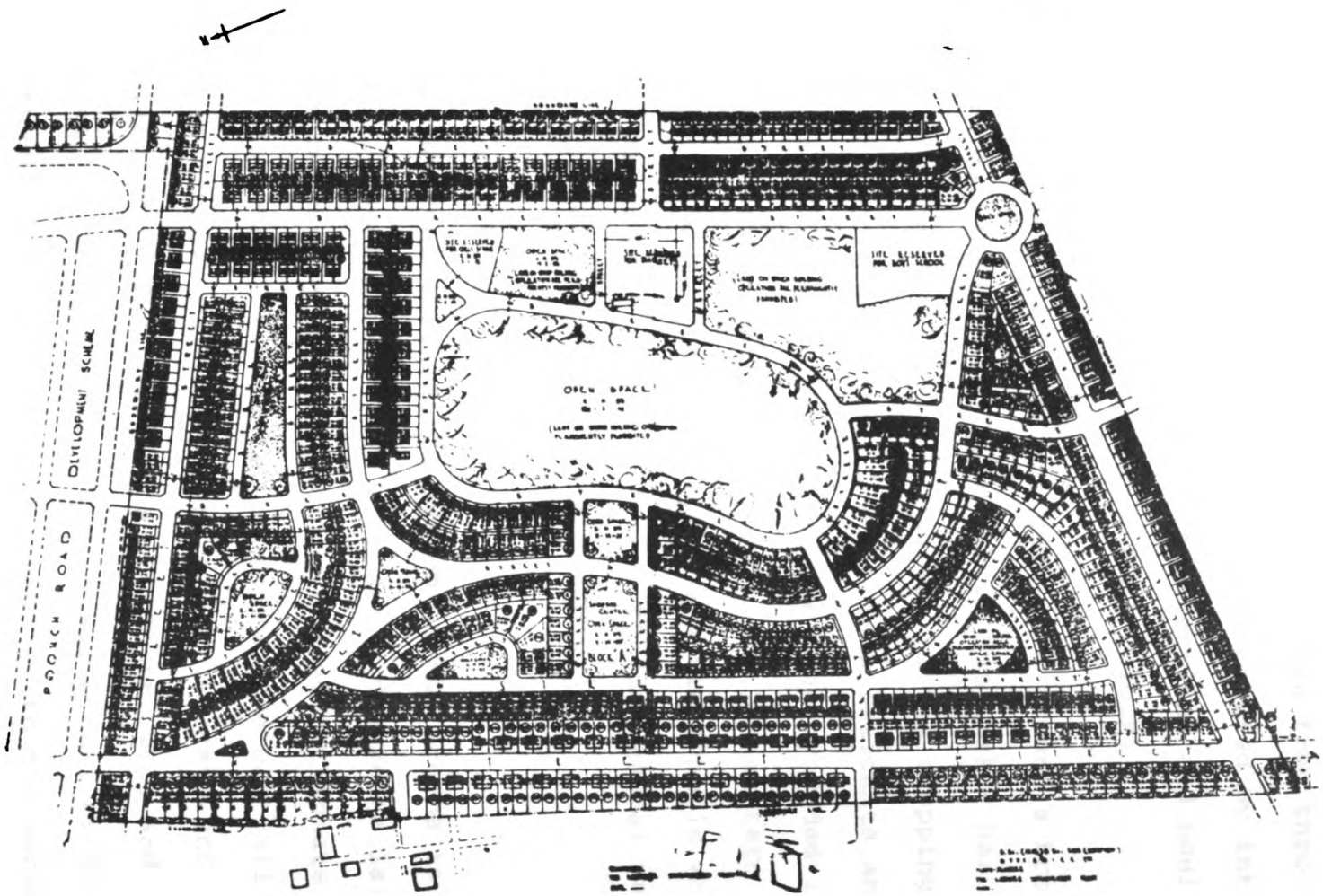

Fig. 19

around it, to "enclose" the area for a better image of unity and to protect the inner area from through traffic. Various spaces have been created by introducing loops or triangular intersections and boulevarding the street to form a small block.

The shopping area has been developed around a broad boulevard functioning as a mall. The market has been located in the area opposite to the shopping center for convenience of the area's residents and a balanced design. The lots have been provided in blocks for single family houses. On the eastern side of the central open space are two schools which, with their open spaces adjacent to the central park, expand the open center considerably.

c) Circulation

The internal circulation system of the scheme is comprised of three kinds of roads and streets laid down according to the function and proportionate traffic they are expected to carry. We can call these three; main roads, secondary streets and collectors. The collectors are 30 ft. wide and bring the traffic from loops, small blocks or small connections between the two streets, to the secondary or main street. The secondary streets are 40 ft. wide, longer in length than the collectors, and do

not run through the whole length of the scheme. These secondary streets feed the traffic to four main roads which are 50 ft. wide for external circulation mainly. These run from one end to the other through the scheme. Three of these roads are parallel to the boundary and the fourth curves through the shopping center diagonally from the south-east corner of the scheme to the northern corner. Main streets meet from five different directions at only one point in the scheme. Here a traffic circle has been provided. The fifth outlet has been provided for possible future development to the south. All other intersections are the standard "T" and cross form with the "T" intersections being used to minimize traffic within the housing area proper.

d) Community Facilities

Two schools, a boys high school and a Model school for girls[44] have been provided in the area. However, no primary school has been included. Both the schools have been allocated extra open space for playgrounds.

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[44]There was no clarification in the material whether this is a primary or high school. In view of the site for a boy's high school; it is assumed that this is a high school for girls.

For general shopping facilities, there is a shopping center to the west of central open space and a market to the east of central open space. For major shopping, the residents will have to use the bigger shopping areas in the main city.

An electric substation in the scheme serves the power needs of the community. Water for domestic and other uses in the area is supplied by a tube well and an overhead reservoir, whereas a sewerage system takes care of the waterborn sanitation. Telephone service can be made available by the department concerned if required.

e) Recreation and Open Spaces

In addition to the large central open space the scheme has various smaller open spaces in the residential area and between the two rows of shops in the shopping center. Ample open space has been provided with the school sites also. The scheme has a total of 30 acrea of area as open spaces.

The only recreation facility in the scheme is the open areas that can be used for sports like volleyball, cricket or badminton, which are popular neighborhood sports or media of recreation. The other common recreational activities are walking or sitting in the green areas and talking in the evening. The

cinemas, stadium, art centers and other such places of recreation, cultural and sports activities are available at a distance of one and one half miles to four or five miles from here.

f) The Houses

The Improvement Trust built 344 so called "N-type" houses which were sold to people. These houses, are usually two room houses with a courtyard at the back and a kitchen and lavatory in the courtyard attached to the houses, and are built in pairs with a common wall. The design of one is symmetrically opposite to the other. This type saves space on one side, is economical and at the same time does not look so small from outside. It is like a single story duplex.

The rest of the area was developed into 635 lots of varying size from 10 Marlas to one Kanal that is 2722.5 sq. ft. to 5,445 sq. ft. for single family houses. According to regulations for these lots, it is necessary to leave space in front and on one side. Almost always the houses have courtyards at the back.

g) Population and Future Growth

The scheme is designed to hold a population of about 5,000 people at a net density of about 36 persons

per acre, which is typical of such development for single family houses.

There is no scope for future growth in the scheme itself but the scheme can be connected to future developemnts through road connections provided on each side. For convenience and an overall harmony in the adjoining developments, the same design as of this scheme can be adopted with some improvements.

IV. Evaluation:

This scheme has an entirely different approach than the previous schemes presented. We might say size has influenced this but that is not enough. It is just one neighborhood and may be campared with the neighborhoods in the larger projects. The design is an attractive combination of straight lines and curves creating pleasant physical environment with the help of "islands" or open spaces. Many spaces have been formed in the scheme which are lacking in most other schemes. The circulation though not for segregated traffic, has been very well handled. The only objectionable point could be the north-western corner intersection of two main roads in the scheme meeting at an angle.

The overall percentage of open spaces is sufficient, but the location of another large open space (that with the school) next to the large central open space unbalances the sense of "space" in that part. If it had been at another

place it could have not only avoided the visual conflict and too much proximity for overall usefulness with another space in the same area but also served more conveniently the residents of that particular surrounding. The distribution would have improved too.

The major deficiency of this scheme is the ommission of primary schools. The pattern of the layout could have very easily accommodated these schools. The road development does not incorporate sidewalks. On a road carrying mixed traffic it becomes more necessary to have a safe path for pedestrians. This being middle and low-middle class community, the majority would be using cycles. The second most commonly used mode of transportation will be the public bus from near by settlements for which people will have to walk some distance. The paved width of road is also kept small as a usual practice for economic reasons, which creates traffic hazards with the mixing of pedestrians, cycles and tongas. So it is much more important to have sidewalks as part of the initial scheme on the secondary streets and adjacent to the market areas.

Lastly, it is quite desirable not to intermix the classes too much that is poor class in upper class communities, but there should be some intermixing for social uplift and social benefits. In this scheme how there are only lower-middle class and so to say middle-middle class people. It would have been better to include a small percentage of

higher-middle calss people as well. This means inclusion of some 1 1/2 and 2 Kanal lots in the scheme. This would have also enhanced the esthetic and architectural variety of the area.

People's Colony, Lyallpur

I. Purpose and Background of the Scheme:

This is one of the 36 schemes carried out under the name of satellite towns by the Provincial Governments in the early fifties. Primarily these schemes were meant to house shelterless and displaced families in thirteen urban areas namely Lahore, Lyallpur, Multan, Montgomer, Jhang, Rawalpindi, Sargodha, Gujranwala, Bahawalpur, Rahimyarkhan, Mirpurkhas, Newabshah and Hyderabad. These schemes are not really satellite towns[45] but suburbs or dormitories developed inside the city limits.

People's colony was developed on a 589 acre site in Lyallpur, a growing industrial town about ninety miles from Lahore. The scheme was prepared by a provincial town planner of the former province of Punjab[46] and executed by the Public Works Department, Buildings and Road Branch. (Recently an extension scheme for the original People's Colony scheme was implemented which is not being included in the review.)

II. Policies and Planning Principles Observed:

The scheme was to provide housing for all groups of people, that is upper class, middle class, and lower class. As a policy, people's colony has four category lots, (more detailed description is given in a later section) for single

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[45]See Ch. III, p. for detailed description of satellite towns.

[46]See Ch. III. p. , para. 2.

family houses of maximum two stories. The lots belonging to the two lower categories were built upon by the government and allotted to the people of the lowest income groups.

A major consideration in site selection was available government or evacuee land. The site selected was inside the city limits so no provision has been made for the employment of the people within the project area. All other community facilities were provided.

Following the general policy for the satellite town schemes half of the total area has been developed into "A" and "B" category lots and the other half into "C" and "D" catetory lots.[47] Though mainly meant for refugees, the accommodations have also been provided for the local people in the best interest of implementing the scheme. However, the local people were not eligible for any concession in the cost of acquisition or development of land. Development costs included the construction of community buildings by the government. The commercial areas were not sold but leased.

III. Physical Planning Aspects:

a) The Site

The site is located on the main highway between Lyallpur and Lahore. It was not selected on the basis of scientific principles, but was picked up

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[47]For description and sizes of the lots see Item "f" on p. 104 of this chapter.

as it was available vacant government and evacuee land. However, being in the city limits was suitable for such a development as far as the proximity of employment areas is concerned. It is an absolutely flat site without any interesting topographical features. The boundaries of the site, unlike many schemes of this size, are quite regular.

b) The Form

A mosque is the focus of the scheme. The main features of the layout are two semi-circular residential areas surrounded by the straight housing blocks. (See Figure 20 on the following page.) This form breaks up the monotony of solely grid pattern and long straight blocks to some extent. The access from the main highway on which the scheme is situated is provided through four roads. Two of these roads lead to the center of the scheme and join in the shape of a semi-circle in which the mosque is situated. The major community facilities have been located along these two roads. The chord of this semi-circle is a boulevard which runs through the scheme from east to west. Another major road runs through the center of the semi-circle at right angles to the east-west boulevard. These roads divide the scheme into four quadrants. These four quadrants have been named block "A," "B," C," and "D."

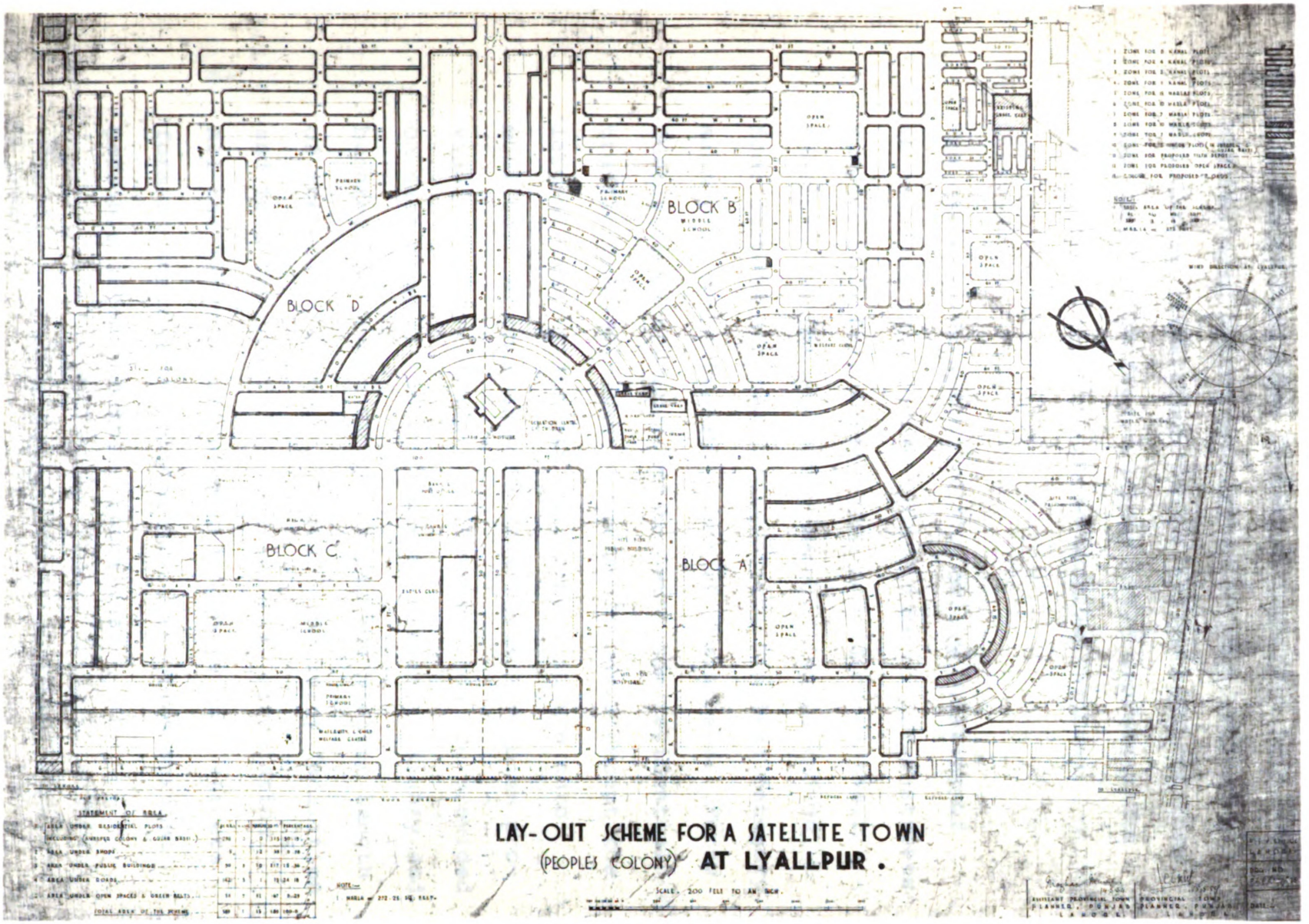
BLOCK D
BLOCK B
BLOCK C
BLOCK A
OPEN SPACE
PRIMARY SCHOOL
MIDDLE SCHOOL
LAY-OUT SCHEME FOR A SATELLITE TOWN
(PEOPLES COLONY) AT LYALLPUR.
SCALE. 200 FEET TO AN INCH.

Fig. 20

The blocks have been further sub-divided into lot blocks, open spaces and sites for more community facilities. The block length varies anywhere from 200 feet to 700 feet. A green belt separates the colony from the main Lahore-Lyallpur highway.

c) Circulation

The circulation system of the colony consists of seven kinds of streets. The widths of these streets vary from 20 feet to 100 feet according to their function and the area they serve. The 20 and 30 foot streets service blocks of the smallest category mainly in the south-west part of the scheme. Forty feet streets are provided to carry the residential traffic from all other classes of houses except the largest ones, which are more likely to use automobiles. In this case 50 foot roads have been provided. Fifty and sixty foot wide roads are provided on each side of the boulevarded streets. Eighty and hundred foot roads carry traffic the greater length of the colony or to the central community facilities and feed the traffic to the external circulation. All the large open spaces and schools have streets forming their site perimeter. This gives maximum possible access to these functions.

d) Community Facilities

A primary school is in each of the four blocks and two of the alternate blocks also have a middle school.[48] Neither a high school or college has been provided in the scheme but the facilities exist in the main city nearby.

The central area has a club and a swimming pool, a ladies club, bank, post office, bus and tonga stands, gas station and a number of shops in the semi-circle around the central mosque. Smaller shops have also been provided in the northern part of the scheme where there is a group of small houses and a higher density. Two maternity and child welfare centers and a site for a hospital have also been included.

Water supply is available from a tube-well through an overhead water reservoir. Sanitation is managed through a sewerage system and a refuse collection dump. Electricity is provided to every tenant and telephone service is available on request, subject to the load on the telephone exchange at the time.

e) Recreation and Open Spaces

For the recreation of the community adequate areas have been ear-marked. Club, swimming pool and a

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[48]Middle school is equivalent to a junior high school in America.

cinema for the elders, and a recreation center for children is in addition to the play grounds with the schools and open spaces. Open spaces in consolidated large areas are located in all the four parts and the center of the scheme. The area covered by the open spaces is 3.5 acres or 9.29% of the total area. This is a sufficient percentage of open space.

f) The Houses

The colony has been subdivided into seven kinds of lots ranging from seven marla to eight Kanal in size. Specifically speaking, the lot sizes are seven, ten and fifteen marlas, one, two, four and eight Kanal. The lots having an area of two Kanals or more are in category "A"; lots from ten to thirty-nine marlas in area are listed as category "B"; and lots of seven marlas belong in category "C." Categroy "D" lots measure 3.5 marlas. The minimum house accommodation is two rooms. The smaller lots are located away from the highway or the main roads.

g) Population and Future Growth

The colony houses about 10,000 people with a net density of about 37 persons per acre. For future growth the site has major road connections open to the south-west and south-east. The other two sides

are blocked by the highway or existing developments.

IV. Evaluation:

In view of economic consideration, the site selected and type of development is very appropriate. All the required facilities viz; schools, recreation areas, utilities and other community facilities have been provided quite adequately with the exeception of a high school. An effort has been made to avoid monotonous, drab and unpleasing physical environments by incorporating curvilinear residential blocks or commercial blocks and including different sized lots to be built upon by the private investors to obtain varied house plans and architectural designs.

The combined use of straight lines and curves in the layout has many advantages and is desirable, but it has produced many small blocks. In other areas there are also quite a few blocks of short lengths. Undoubtedly these can be convenient for pedestrians but these have resulted in producing more and unnecessary intersections and excessive use of land under streets. Consequently, this increases the development cost on streets as well as utilities. The blocks with smaller categories have back alleys which end up in becoming the most insanitary places in the community and are hard to maintain.

Rivaz Garden Estate, Lahore

I. Purpose and Background of the Scheme:

This is the last and the smallest scheme under review, areawise and populationwise. Rivaz Garden Estate was one of the oldest colonies built in Lahore and was being used for housing government officers. It contained small, cottage type single family homes built on large lots. These homes were built in early days with wood, mud, burnt and unburnt clay bricks. They had deteriorated structurally and were not fully equipped with proper modern sanitation or sewerage system. To maintain mud-plastered walls and mud, tile and wooden roofs had become very expensive and almost impossible to do. So the government decided to tear them down and redevelop the area. In this way the total area could be utilized more efficiently. The present development plan is the result of those decisions. A scheme was parapred earlier, but then revised in 1963 which is the program under discussion. The location of Rivaz Garden Estate is excellent and very close to the main city. As a matter of fact is would not be wrong if we say it is in the main city.[49]

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[49]This does not imply the old walled city of Lahore, but in the civil lines area—the area of major business, cultural, educational and official (governmental) activity.

II. Policies and Planning Principles Observed:

It was intended to accommodate middle class people and more in number than this estate originally provided for. The redevelopment scheme has been prepared in keeping with the economic conditions of the proposed occupants. As such, the lot areas have been reduced greatly from their original size. However, the lots facing the two main roads are bigger due to the value and importance of this location.

In planning the new environment for the neighborhood, there has been an effort made to consider the general comfort, convenience, safety and health of the people. However, stress has been placed upon privacy, which is always desired by the residents of West Pakistan. Climatic conditions are also recognized through the type of development by preparing the scheme for single family houses with backyards and shelter areas for summer use. It may be noted that the people prefer to sleep outside or on roofs in summer nights.

Due to the location of the Estate in relation to most of the community facilities (educational, recreational, health, etc.) it was not necessary to include them in the scheme.

III. Physical Planning Aspects:

a) The Site

The site is the same as of the old Rivaz Garden Estate. No change in the boundaries has been made. It is situated on the major road connecting Lahore

LOCATION OF RIVAZ GARDEN, LAHORE

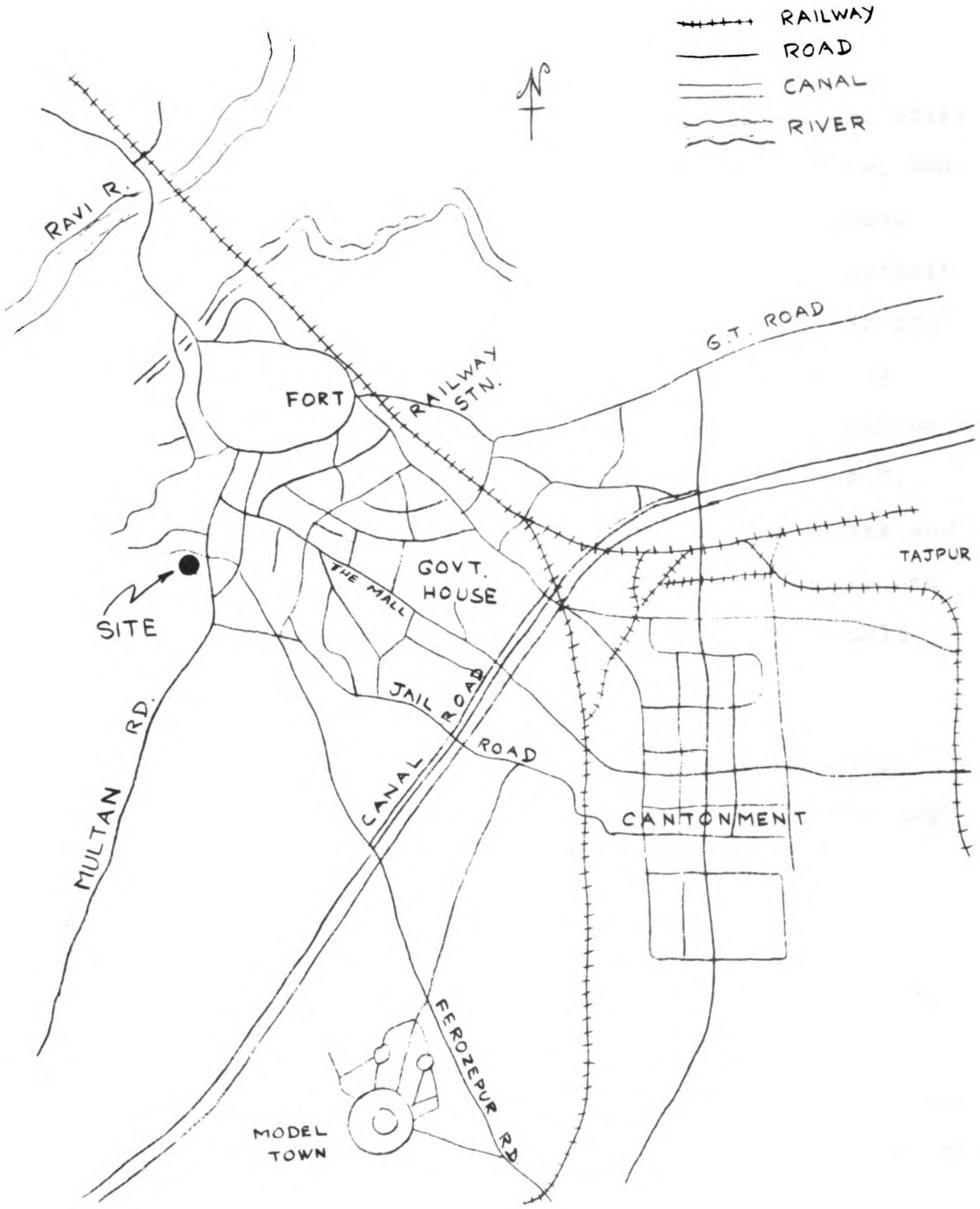

Fig. 21

with Multan, another big urban area of West Pakistan. Rivaz Garden Estate is in the fully developed (see map on the previous page) area of Lahore, exactly one mile from the district courts which is the starting point for all milage recordings for Lahore, and about 3/4 of a mile from the town hall and other major activities of the city. It is about one-half mile from the West Pakistan Secretariat.[50] In the immediate vicinity of the site are: a boarding house for the National College of Arts, the office of the Game Warden for West Pakistan, the M.A.O. college on the north, and the university sports and athletic grounds to the east. The other sides are all existing residential areas mainly for middle class people.

The land is flat. Many trees and some shrubbery existed on the site and along the sides of the two roads serving the site.

b) The Form

The layout is mainly of straight blocks except for one area where it is curved approximately parallel to the boundary line. (See Figure 22 on the following page.) The blocks are not long and their orientation has been varied, which resulted in some

[50]Governor's office and other high government offices are located here.

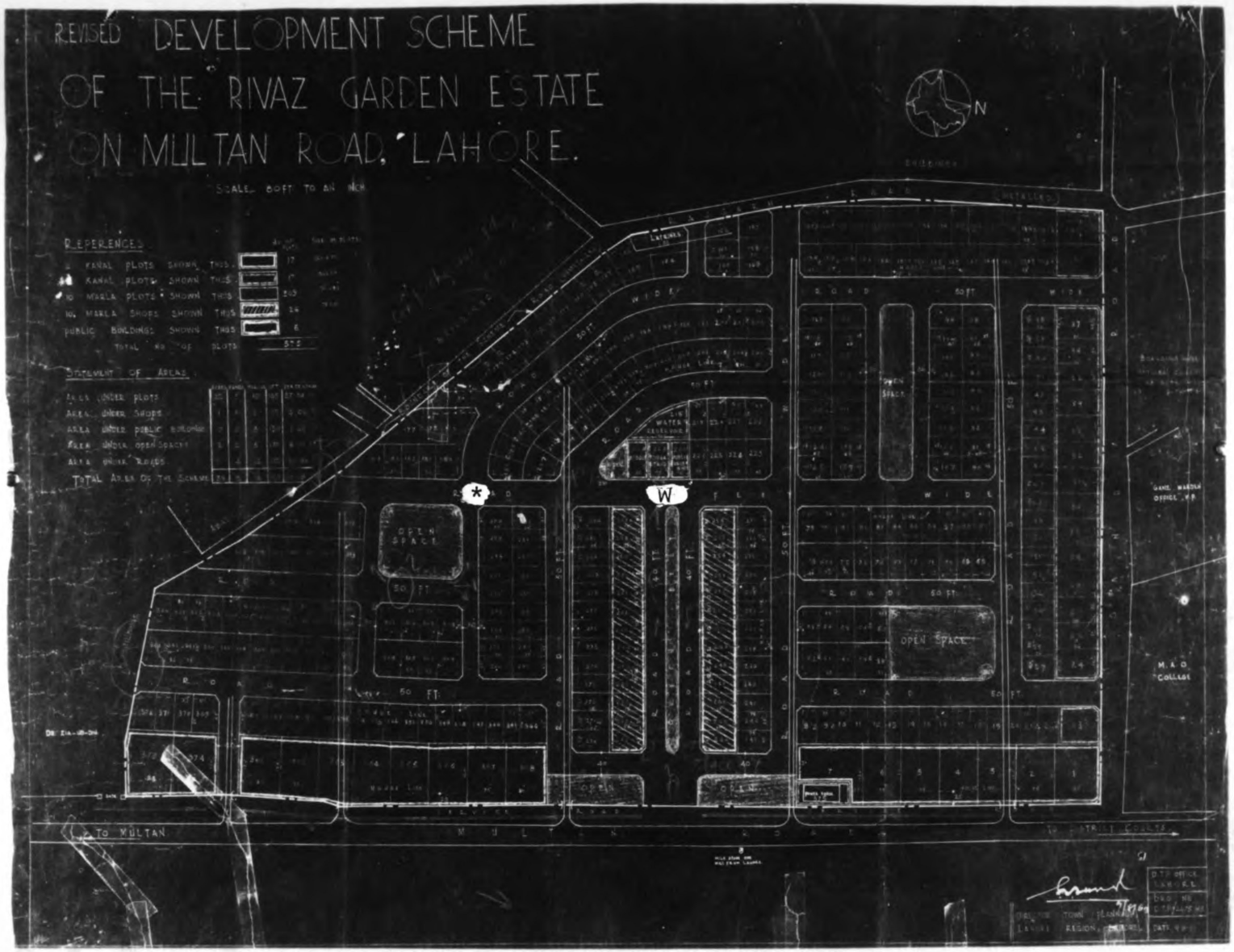
REVISED DEVELOPMENT SCHEME
OF THE RIVAZ GARDEN ESTATE
ON MULTAN ROAD, LAHORE.
SCALE 80FT TO AN INCH
REFERENCES
STATEMENT OF AREAS
N
OPEN SPACE
OPEN SPACE
OPEN SPACE
TO MULTAN
M.A.O. COLLEGE

Fig. 22

variation. The main access from Multan Road to the neighborhood takes you directly into the shopping area on a boulevard street. This access has been provided with open areas on both sides for an impressive entry. This kind of approach is almost as imposing as an arched gate or gateway pillars marking the entrance to a locality or community. If landscaped well, this could be a nice feature which will give a "setting" to the neighborhood. The housing blocks are set all around it. The existing roads on the two sides of the scheme have been used to face the lots located on these two boundaries. Most of the blocks or parts are grouped around open spaces. The access from each of the main roads has been limited to two. The layout pattern does not encourage through traffic that is attained by implying T-intersections.

c) Circulation

The internal circulation of the scheme is formed by a set of 50 foot wide streets with lots on both sides, or lots on one side and a major open space on the other. In places where there are lots on only one side or the road is only a connection street, the width is 30 feet. Another place of departure is the shopping area which is served by a boulevard with 40 foot wide streets on each side and the main entrance

links to the two roads parallel to boulevard which are also 40 feet wide. From almost any place in the scheme one can reach the shopping area or tonga stand or mosque by making a maximum of two turns. This circulation does not encourage through traffic in the area. The external circulation is over the two roads on the northern and eastern boundary of the scheme.

d) Community Facilities

Other than the paved roads, local central water supply, sewerage system and electricity, the area has its own mosque, a tonga stand and a shopping center of 26 shops. Public transport serves the area from the two roads on the boundaries. All the major activities as mentioned above can be reached on foot or by means of any public transportation very easily.

e) Recreation and Open Spaces

There are three large open spaces and four small ones. The large spaces can be used for active recreation. However, this is possible only on limited scale as the space is not large enough to be used as a soccer field or other such games. A part of the university sports grounds area is available for sports to the public. All kinds of other recerational

activity is ofcourse available outside the project area at reasonable distances.

f) The Houses

All the lots inside the scheme are of 10 Marlas in size measuring about 33' x 70'. The lots on the main road to the east are of 2 kanals each, about 76' x 120' and the ones on the north side road are of 1 kanal each, about 50' x 90' in size. Totally there are 343 lots, all for single family detached houses.

g) Population and Future Growth

The scheme in its present boundaries would hold about 1700 people with a net density of 74 persons per acre. The future growth of the area can only be made possible to south and west sides, because these sides, particularly south-west side has such builtup developed areas that might need redevelopment after some time.

IV. Evaluation:

Under the circumstances, that is need for more lower middle class accommodations and the economic conditions, the decision to redevelop the area for such a residential type was very appropriate. It has worked very well, especially because the total area of the scheme was comparatively small. The policy of providing bigger lots at the periphery has helped to retain the environment and character of the

surrounding areas as well as serving the need of some units of the higher middle class.

The principles observed in laying out the blocks as far as their size and direction goes is good but at certain places blocks have been broken like to provide access to the open space for the rear blocks in the south-western area and for no reason on the western boundary. This could have been avoided by slight adjustment and relocation. Ending of a 50 foot road into a 30 foot road in the southern area (See Figure 22 marked *) does not seem right as it is in the general direction of flow of traffic for external circulation while coming from the south side and the crossing 30 foot roads are connections from the south-eastern side. The curved street around the water reservoir is not in alignment with the 50 foot road connecting the main entrance to the scheme. This intersection will develop traffic hazards. Another important intersection that is liable to become hazardous is the western end of the shopping or main boulevard. The tonga stand has been located right in front of that. According to the circulation pattern, the 50 foot street at the west end of the shopping boulevard (marked W in Figure 22) will be the second busiest street after the shopping boulevard. The movement of tongas and people from and to the stand at the intersection will undoubtedly be hazardous.

It is assumed that the boulevard will have one-way streets on either side. To avoid the congestion at the two end intersections, a turning lane should be cut through the median strip at a central location. Also at the ends the center strip should be cut to provide U turns. If this small shopping area develops attractively, it is very likely that it will not only be used by the residents but also by the people residing nearby.

The other deficiency observed in this scheme, and in some of the others too, is the facing of corner lots. Invariably the end lots are left as the rest of them which is not a desirable practice. Leaving that aside, in this scheme there is potentially a beautiful main entrance with two open spaces on both sides but when you look from Multan Road you can only see the sides of the buildings. Unless expensive architectural treatment is given, which in these schemes always has been avoided due to economic reasons, this area will be unpleasing. The lot line between the shops and houses runs through unobstructed, which would produce bad layout effects unless the property is walled. In that case walls may become unattractive.

In laying out roads, some have been taken through to the southern and western boundaries obviously to connect to the future developments on three sides, or just to get people to roads on other sides quicker. But the layout of the blocks to the end of the boundary and the layout outline

of existing streets and buildings beyond show lack of comprehensive and coordinated planning and foresight. Doing so the lots could have been faced on the boundary road and so saved more space inside.

The last deficiency, but an importnat one, is of a primary school. With a population of 1,700 and a nice new neighborhood, a primary school should have been provided. It is necessary especially because the site is surrounded by an area in which the traffic is becoming more and more congested everyday. It would be much safer and desirable for the children to remain in the neighborhood.

Recapitulation of Reviews and Areas of Deficiencies and Drawbacks

We have reviewed seven residential development schemes of sizes varying from 38 acres to 3,000 acres in area, for ultimate populations of 1,700 to 100,000 people. These schemes are in three of the most populated cities of West Pakistan namely Karachi, Lahore, and Lyallpur, and have given us a cross-section of all kinds of urban residential development schemes prepared so far.

Except for Rivaz Garden Estate and Jail Area scheme, which we can classify as redevelopment projects, all the developments are on new sites. Primarily the schemes are to rehabilitate the refugees and displaced persons and meet the growing need of housing due to migration of people from rural to urban areas and the natural increase.

Common Policies and Planning Principles

All the developments are for single family detached or semi-detached houses with back yards. The public housing is in identical rows.

The larger schemes have been planned to be self sufficient. The employment areas are part of these large schemes and are provided by incorporating industrial sectors in the plan. The smaller schemes are mostly located near the existing employment areas.

Efforts have been made to develop socially balanced communities by including all classes of people. This, however, has not been very successful. The percentage of poor classes or lower middle classes is far too high in most of the schemes. In view of the present economic considerations, in most cases absolute minimum standards have been adopted for accommodation space, circulation and in some cases for recreation. This has put minimum shelter as the most important consideration.

Physical Planning Aspects

The sites for most of the schemes were in undeveloped areas on the fringe of the city and on lands belonging to the government or the prople who had migrated out of Pakistan, that is the evacuee land. All these sites are located on the major roads or close to them.

In planning the larger schemes, the effort to use the neighborhood concept is very obvious. The usual practice noticed is to form sectors large enough to support two or three elementary schools. In other words a larger neighborhood has been adopted than in American planning. Almost all the schemes, bigger or smaller, incorporate the neighborhood shopping areas and some sort of community center with facilities depending on the size and the scheme.

The smaller schemes have been more adequately provided with the utilities like water supply, sewerage, and electricity than the larger schemes. The obvious reason

being inavilability of construction material and skilled personnel.

All the schemes incorporate a circulation system to be used by all kinds of traffic. However, one scheme was planned for separate bicycle-ways and another has segregated the type of traffic only on the major road on which the development scheme is located. The right-of-ways in the schemes are of various widths, anywhere from 30 feet to 300 feet. The schemes do not definitely provide for the developemnt of paved sidewalks and curbs though space provision is there.

As stated earlier, the schemes have most lots designed for single family detached houses, or duplexes, all with yards. This is mainly because of the warm weather conditions. However, the houses built by the government for the poor people are in rows and identical. Back yards have been provided in this type of development as well.

In planning for receration and open space, all the schemes have been equipped with some green open spaces and some areas for cinemas and theatres. The open spaces in smaller schemes especially are in various small sizes and sometimes as areas not intentionally created but as left over space due to the streets layout.

Looking into all these developments, we find undesirable practices repeated in the majority of schemes. There are drawbacks found in almost all and some that are

in only one or two. These areas of deficiencies and drawbacks are identified below.

1. Size, Type and Location of Development

As we have seen, the developments have been of two extremes in size. The smallest being a few acres, the size of an average subdivision and the larger being a new city, as in the case of Korangi. The other two aspects; type and location are interdependent and influenced by size. When a project was located in an already developed area, the size was limited to available land. Therefore, it was normal to build one kind of housing, unless the size was exceptionally great. Similarly if the site required is large, it will affect the location which would be most likely on the fringe. In this case the type of housing and developemnt could have more variety and choice. This, however, has not been found in the developments reviewed. The types of developemnt are limited to a couple and typically repeated with slight variation in different places.

The larger schemes like Korangi have brought many unsuccessful results. The main deficiency of this big project has been its location. It is not close to the existing fully developed areas of work nor at a sufficient distance from the big city to develop internal employment successfully.

2. Layout Design

The layouts are mostly based on crisscrossed straight lines and the ones with curvilinear layout, except one, have too many curves laid out without careful consideration and imagination. Usually it has resulted in small blocks, streets meeting at small angles, useless small open spaces and improper lots of odd shapes. There is no sense of order, imagery, or pleasing environments created by layout design. A common imbalance of setting is due to location of two different types and different classes of houses facing each other on the same street which is not very wide. Location of traffic generators like tonga stands and shopping needs more consideration.

3. Circulation

Considering the immediate needs, the circulation is workable to a certain extent but, from a planner's view point, it lacks efficiency and foresight. It is found that some schemes have introduced pedestrian scale residential streets because the community was for the lower class, yet the motor streets are multilane wide roads. At other places the provision of street widths is minimum for all kinds of mixed traffic, there are too many access points to the busy streets and no proper intersection designs are made.

Absence of sidewalk pavements in the initial development is found in most of the schemes. Having most of the people of lower income groups and using walking as the major part of the mode of transportation, this seems a big deficiency. This does add to the cost but we are looking for improvement in the future, and this is a necessity.

The next most common mode of transportation is the bicycle. Only one scheme has tried to incorporate bicycle ways, others do not provide any separation of different kinds of traffic which is a great hazard and hinders the efficient movement of traffic.

4. The Houses

For the lower class houses all the schemes provide minimum space standards for floor area and number of rooms, which is inadequate, create congestion in the house and provide no privacy which is very much a part of the Eastern culture. The accommodations provided by government built houses particularly have these deficiencies.

Improper distribution (physical spacing) of houses over the entire scheme area is another drawback in most of the schemes. Limiting housing to one type and one design provides little choice or variety. On the other hand, they create drab and monotonous

appearance. Socially people have been segmented. No effort has been made to look into the possibility of two storied or multi-family dwelling designs.

Absence of minimum utility services, landscaping and upkeep have resulted in unhealthy and unpleasant areas in many projects.

5. Community Facilities

Under this heading the most common weakness is location. Once again the school provisions indicate that there is no set criteria or standard that has been used for schools.

6. Recreation and Open Spaces

Insufficient provision for useful open areas like playgrounds, and adequate green areas for passive recreation is very much felt. In many schemes the open space has been provided, but there is no indication as to why it was made or the purpose it will serve. Many small open spaces are going to waste due to irregular shapes or insufficient upkeep. There is no attempt made to provide neighborhood parks and community parks. In some projects two large open spaces are provided next to each other which is a wasteful, inefficient and uneconomical design.

The cinema is the only other type of recreation provided in larger schemes.

7. Social

As already mentioned in the section on Houses (item 4) the people are segmented socially by providing a mass of one type of houses or lots in one area. Social balance, though sought for, has not been achieved successfully through the planning of these schemes.

8. Environmental

Esthetics, variety, and pleasant environment have not been considered. These factors have been ignored for the sake of economy. This neglect will have detrimental effects in the future on the areas.

9. Coordination in Different Developments

The bigger the scheme, the more comprehensive approach it requires. It becomes necessary to develop the work area one step ahead of the residential areas, especially when the whole settlement is not close to existing areas of employment.

A residential development should also be coordinated with the work on utility services which is even more important. This has been found lacking in some instances. The services should be available when houses are occupied.

CHAPTER V

THE IMPROVEMENT PROGRAM

Improving the new residential development will rest upon the participation of the government in implementing the program as it plays the major role in this field of residential developments. Also it will necessitate the modification and improvement of existing controls and regulations. Some policies will also need changing. Governemnt will have to take the initiative, set examples and provide for the encouragement of other private and public developers (local governments).

A housing improvement program must be considered at two levels: the new city level when the scheme is usually large and will form a big community, and at the residential areas scheme level. To make the difference of the two more clear, we can say that a residential area scheme is the scheme to house a certain population in one consolidated area which would not include provisions for employment. The people living here would be working outside this development. The large scale scheme would involve development of work areas, maybe industry, and would be composed of two or more smaller residential areas. The large scale scheme would include housing and employment areas for the residents as an

integrated design. Broadly speaking this large scale scheme will be for a town and the other for a residential neighborhood or part of a neighborhood.

I. Recommendations for Large Scale Schemes:

Korangi Township was the example reviewed and is the basis for the following recommendations.

1. Location

This is the most important factor of all. Such a large scale scheme should be developed according to either of the following policies:

a) In the shape of different neighborhoods close to existing areas of employment and industry to provide for the employment of the people housed in the project area.

These neighborhoods will then form a number of small residential schemes, the planning of which will be done according to the recommendations stated later in Section II, for smaller developments.

b) As a satellite town or new town: In this case it should not be at an inbetween distance from the main city so that the people living there will tend to commute back and forth to the main city or have the tendency

of moving back to the main city. The preferable location of these towns will be 15 to 50 miles away from the boundary of a big urban center. For illustration, the figure on the following page shows possible sites for new towns[51] in Karachi region as suggested by a planning expert, Vernon Z. Newcombe.[52]

It is further recommended to develop existing very small settlements into a new town. These towns must be located on the major highways, or main railway routes connecting existing major industrial and commercial urban centers.

2. Employment Areas

For the survival of these towns it is necessary to establish industry in them. These industries should be established just before the people are moved in and not afterwards.

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[51]Vernon Z. Newcombe, "A Town Extension Scheme," Town Planning Review, October 1960, pp. 221.

[52]Vernon Z. Newcombe was a visiting U.N. advisor for town planning working with the Pakistan Government in the early 1950's.

POSSIBLE SITES FOR NEW TOWNS IN KARACHI REGION

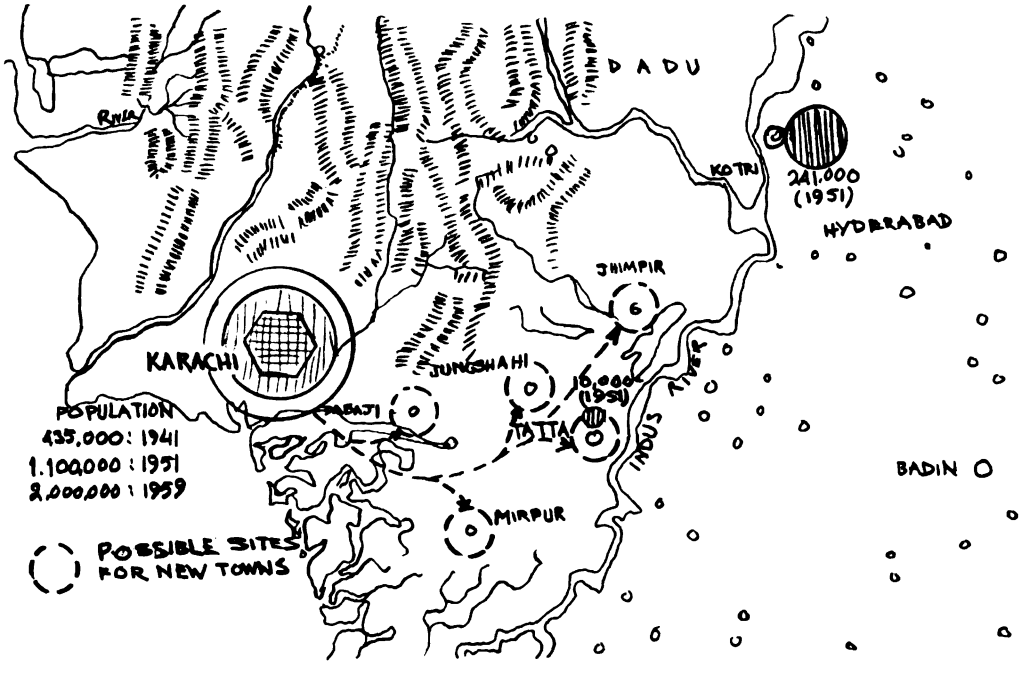

Fig. 23

Source: Town Planning Review
October 1960

3. Composition of the Community

Determining the criteria as to how much of one class should be settled in the new town or community is as difficult as it is important. In Korangi the ratio of this distribution was made the same as in Karachi with no other specific reason. Karachi has considerable unemployment and an excess of the illiterate and poor class. It is not desirable to have the same

composition in the new settlement. For the healthy existence and survival of a new community improvement in this ratio is recommended. The percentage of middle class skilled people should be increased in future schemes depending, of course, upon the type and quantity of industry that can be created.

4. Layout Pattern

The residential areas of the schemes should be split into sectors or "neighborhoods." The "Neighborhood Unit Concept" has been almost universally accepted as the best approach. A Neighborhood Unit is the minimum planning unit which permits organization of physical surroundings to eliminate inconveniences and hazards and provides for basic facilities and conditions along with a physical form favorable for the development of community life. The extent of the neighborhood is determined by the service area of a primary or an elementary school. The sector may be composed of a group of two or three neighborhoods. So the overall area may be split in any of these ways. (The recommendation on the layout of these neighborhoods or sectors is given in the next section.)

A layout pattern for the entire new town should be selected in such a way as to have definite boundaries

for these neighborhood or sectors, elimination of through traffic in these sectors, easy and convenient access to the work areas yet at the same time be out of the adverse affects of these same work or industiral areas. These two major kinds of areas may be buffered or separated by recreation areas, green open spaces or major circulation channels. A layout should be adopted which has least overall distances and the one which does not produce present or future danger or traffic congestion. Lastly, it should have a sense of order, identity of different areas, interesting vistas and the natural beauty of the site to create the best environments for living and not the provision of a mere shelter.

II. Smaller Schemes:

As stated above, the smaller schemes range in size from one neighborhood to one sector of upto four neighborhoods. These schemes do not include any area of employment for the residents but are only residential areas.

1. Size and Type of Development

The size of the scheme should be large enough to form a neighborhood. A primary or elementary school is the basis for a neighborhood. By studies and experience, it has been determined that an enrollment of 350 to 500 students is most desirable for an

elementary (primary) school. However, the minimum and maximum limits are stated to be 150 and 700. These limits in turn give the total number of people in the neighborhood which may be determined by the composition study of the population intended to be housed in the scheme or the neighborhood. The geographic size of a neighborhood should be so that the maximum walking distance from the school is 3/4 of a mile. (Most desirable is 1/2 mile). The maximum size of the sector may be determined from the high school which may in turn be supported by two junior high schools (middle schools) or four (ideally) elementary schools. The recommended standards for schools are given in Appendix A.

At this point it is very necessary to know about the population that will be living in the area, its composition, average family size, their places of work, income level. Basically, this data will be determined early in the planning program to know the type and magnitude of the housing need, public facilities required and desirable. (This data also can be used in determining location.)

The development should have intermixing of people from various professions and income levels, as well as the type of housing. Though people always want

to live in compatible social groups, it is desirable to have all the classes in the neighborhood. However, the percentage of one over the other can be determined seeing the need and the purpose of the scheme being developed. For example if it is a scheme for middle class people mostly there will be a little percentage of some high middle class and low class houses. If it is for low income people like most refugee colonies, it will have the same percentage of middle and high income people. For presenting the values and wishes of people, as well as the physical environment, the type of houses should be grouped together or buffered by landscaping. It is recommended that, contrary to the previous practices, single family, row houses, two family houses, multi-family apartments, town houses and planned-garden apartments be provided in the scheme to enhance the physical environment of the area, as well as to provide choice and variety for the people. Sketches of such possible designs are given in Appendix. The inclusion of multi-family dwellings will provide variety and choice for the people and different environment, reduce walking distances and limit excessive usage of useful land and cost of services. However care must be taken to avoid congestion, traffic hazards and lack of

privacy, air and light and other open space facilities which might occur in an effort to save land. The recommended housing density standards are given in Appendix C.

To provide these types of developments the codes, zoning and other development regulations will have to be modified and improved to aviod haphazard and unorderly development. Caution is necessary to avoid the indiscriminately mixed development to occur, i.e. having adjacent lots used for a succession of housing types. Different types should be in groups and buffered from other types by green areas or community bindings. (See sketches in layout design section below.)

2. Site Location

The biggest factor considered in site selection has so far been the availability of cheap land. There are many other factors equally important which should be given due consideration. These are:

a) Spatial Relationships

The site should be located close to areas of employment and/or bus lines. It should have convenient access to other major educational, commercial, cultural and recreational areas

of the community or city. (See access standards in Appendix B.)

b) Physical Features

The site should have a more or less regular shape and some topographical interest. The surface drainage of the area should be good, as well as the soil. The area should not have a slope of more than 8% unless it is in a very mountainous region. It should not be in flood plains.

The neighborhood site should be located away from the adverse effects of industry, the airport and its approach zones, major traffic routes and railroad tracks. There should be no industrial areas, present or proposed, nearby in the direction of the prevailing winds.[53] The location should preferably be close to the existing utility line viz., sewerage system, water mains and phone, and electricity lines.

In site selection good agricultural land and the land with natural scenic features like woods, etc. which may be developed as recreation areas, may be avoided for housing.

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[53]As is the case of an oil refinery and the Korangi Colony.

Finally, the site should have natural or man-made boundaries like a river, streams, canals, hills, or major streets.

3. Circulation

Next important neighborhood development feature which is more so in larger schemes, is circulation. The type of development, income level and class of people will influence the type and pattern of circulation. The areas for higher income people need a circulation pattern for cars, the middle class use mostly bicycles or buses and the poor class go on foot, bicycles or use public transportation like buses or tongas. The present mixing of so many different kinds of traffic on roads is resulting in an undesirable congestion which is increasing every day. Only one scheme has tried to segregate the traffic somewhat. In view of the convenience, efficiency and, above all, the safety of the street users segregation of the traffic is the only and best way, widening the street for more traffic is not. It is recommended that in all schemes pedestrian circulation, bicycle circulation and other vehicular circulation be separated entirely, especially at the boundaries of neighborhoods and in the major circulation of large schemes. In vehicular circulation, separation be provided between

the slow moving traffic of tongas and carts, and the fast moving traffic or cars and buses by providing or at least assigning different lanes. The bicycle ways may not necessarily be put along the other vehicular streets, but with innovation in layouts, the pedestiran and bicycle ways can be routed as "short cuts" through the settlement, open areas and community areas. The exclusive bicycle tracks should be between 2 1/2 to 5 ft. wide depending on the expected intensity of traffic and be provided as one-way tracks.[54]

For pedestrian circulation a system of sidewalks should be provided. In a planned unit or garden apartment type development it is not necessary to keep the walks next to the road or street side. The walks (as well as other circulation) must be built to provide access to dwellings, neighborhood community facilities and the areas outside the neighborhood. The width of the walks may vary from 2 1/2 to 6 feet depending on the expected use and traffic. The streets carrying vehicular traffic should be assigned a definite function according to the layout and type of houses they serve. The width

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[54]Government has long been thinking to levy cycle tax. A nominal amount of tax on bicycles can easily cover the costs for these bicycle tracks.

of these streets will be designed accordingly to that demand. The widths of streets in 134 Acre Scheme, Lahore, has been designed with this view point only.

Another important item here is the curb and gutter. The provision of these is as necessary as any other item of the circulation. This is because of less vegetation and dry soil conditions. The vehicles go over the berms and they produce clouds of dust creating nuisance and hazards for pedestrians and other traffic. In the rainy season the water staying at many places or on the berms forms mud which is splashed to the sides on pedestrians or carried on to road pavements. This is dried on the pavement then blows all over with the traffic.

A cul-de-sac may be used very desirably with cluster or garden apartment type developments. However, the length of a cul-de-sac should not exceed 600 feet.

Improvement of intersection design is needed too. At heavy traffic intersections an improvement can be made by introducing left turn cut off lane[55] as illustrated on the next page.

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[55]In Pakistan traffic moves on the left hand side of the street.

LEFT TURN CUT-OFF LANE

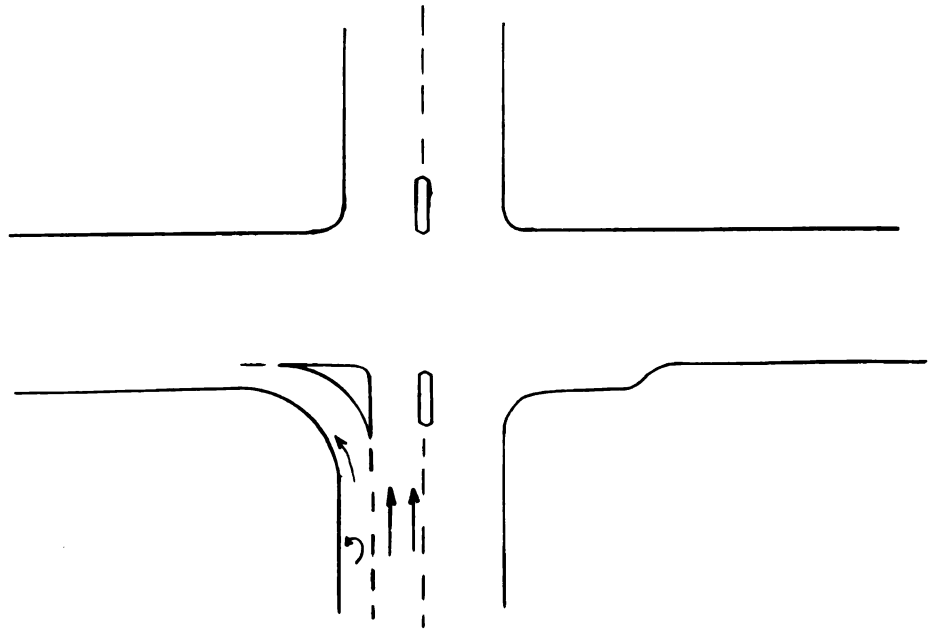

Fig. 24

4. Community Facilities

Most of the community facilities are already being provided in the new schemes. The following are recommended policy improvements.

a) The neighborhood shopping center should be designed for the convenience shopping of the neighborhood only and not to replace the main and major shopping areas.

b) A wood, coal and kerosine oil stall may be added to the neighborhood shopping area.

c) A more adequate water supply should be provided with provision for individual water connection available 24 hours.

d) In addition to the school facilities the community center should provide a meeting room, lecture room, TV room and facilities for adult education.

e) A dispensary and clinic should be located for each sector or two to three neighborhoods.

5. Recreation and Open Space

Neighborhood parks for the passive recreation of all ages and playground for active recreation should be provided along with the school located near the center of the development. Standards for these are given in Appendix 1. The park areas should be developed for walks and idle sitting. A couple of other open spaces for the same purpose will be desirable too. The playground should be developed for school children as well as adults for games of cricket, basketball and badminton. In a bigger scheme comprising a few neighborhoods or a sector, a separate ground for adults would be desirable. Indoor recreation can be provided in the community hall or center.

In Pakistan, people not very much interested in active recreation, spend their time outside the house walking, talking or playing cards. The

climatic conditions in most of West Pakistan necessitates passing the evening outdoors. It will be excellent if the recreation areas for these activities are designed as informal narrow long open spaces in the shape of green belts. The same may be used for pedestrian circulation or even bicycle ways if wider.

According to desirable standards one acre of recreation and outdoor play space is required for every 800 persons in addition to school playground for children.

6. Layout Design

Most of the previous designs have been very poor, drab, uninteresting, and resulting in poor circulation, unnecessary intersections, small blocks and were monotonous. It is urged that more imagination, originality, and innovation be introduced in this area. Pleasant physical environments, livability, esthetics, safety, convenience diversification and variety, all can be and should be achieved through an intelligent design. The recommendations offered when discussing the type of housing and circulation will play a major part when attempting to improve the actual layout. Some recommendations for better designs are illustrated by the following sketches and diagrams:

a) Use of loop streets and cul-de-sacs in single family detached residential neighborhood. The sketch below shows an example of a neighborhood layout for 532 lots of 7,000 sq. ft. each with a central school-park area of 11.3 acres and 25,630 lin-ft. of streets.

USE OF LOOP STREETS

Fig. 25

Source: ULI T.B. 47

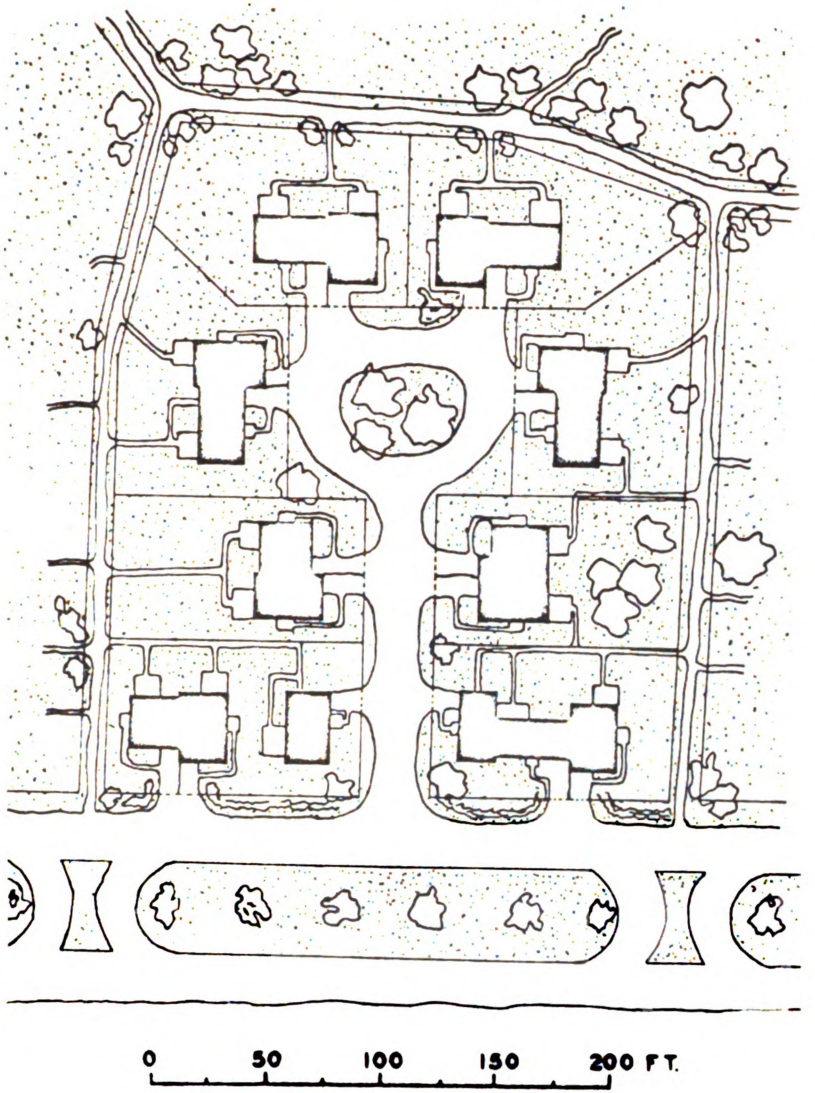
CULS-DE-SAC AND LOOP STREETS
0
50
100
150
200 FT.

Fig. 26

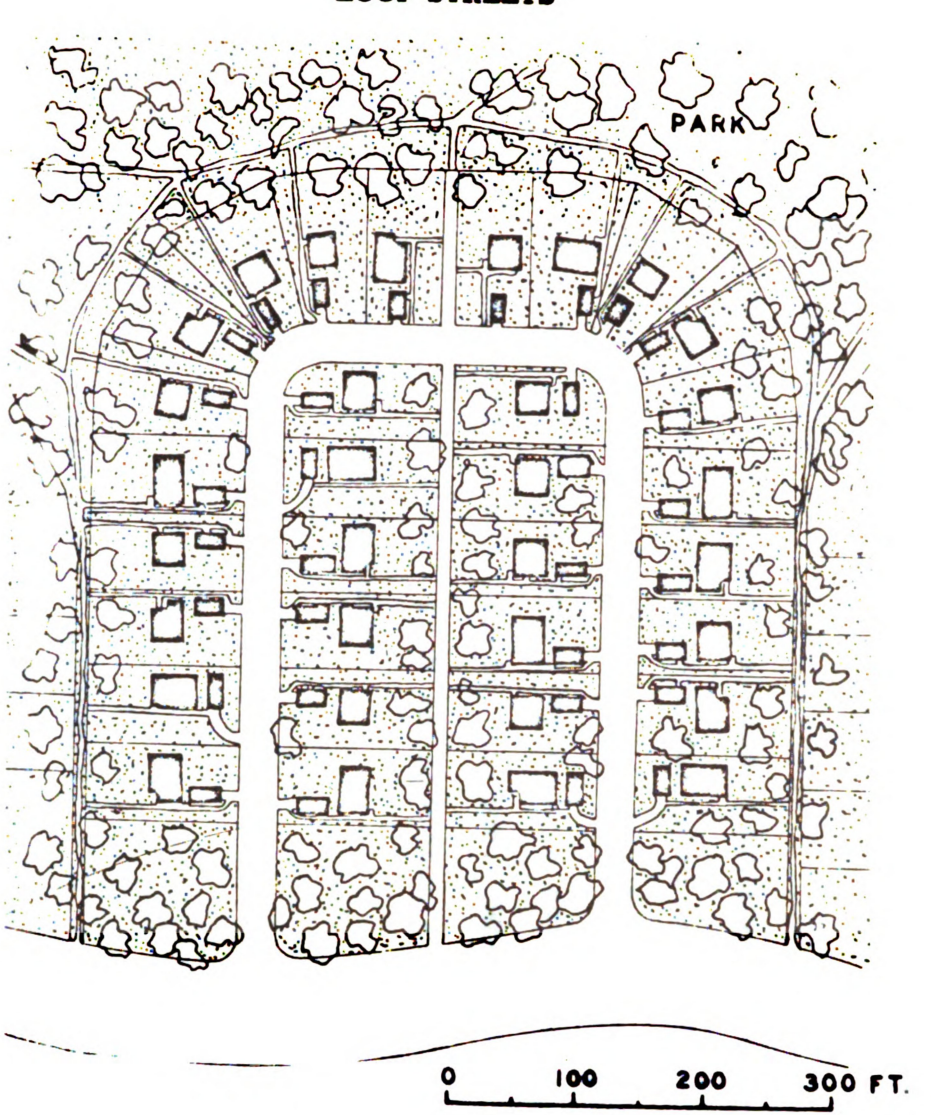
LOOP STREETS
PARK
0
100
200
300 FT.

Fig. 27

b) Clusters

Cluster development allows a greater percentage of land to be left for open space as evident from the figure below. This has 499 units of Patio houses with 31.8 acres open area and 23,400 lin-ft. street. Where mass housing is done, such an approach can be very well adopted.

CLUSTER DEVELOPMENT

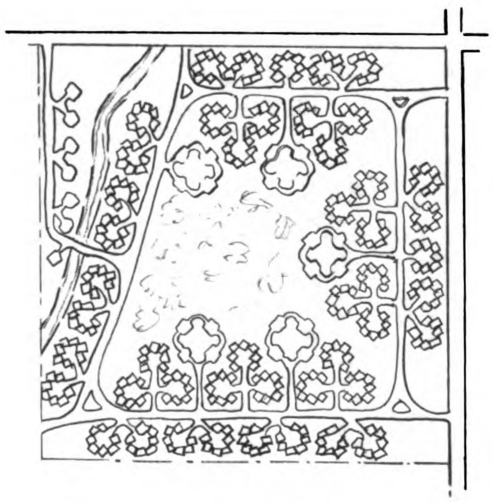

Fig. 28

Source: ULI T.B. 47

c) The design below shows another approach by changing the lot shapes and introducing more open spaces.

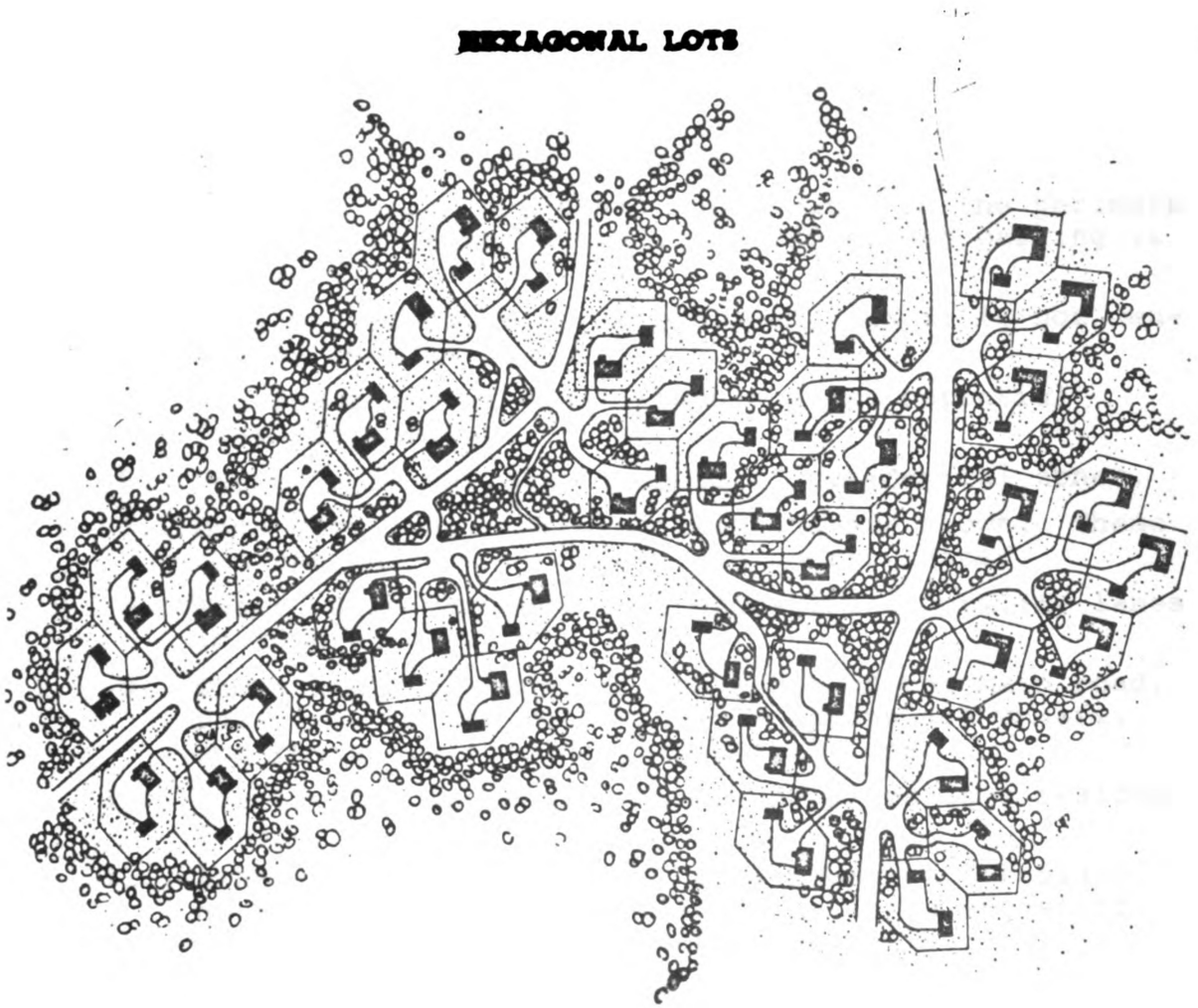

Fig. 29

Source: ULI T.B. 47

d) Illustration of a Planned and an Unplanned Scheme:

Figures on the following page show an area with unplanned and planned schemes for comparison. The two schemes have the following features.[56]

UNPLANNED SCHEME

1. There is a complete absence of parks and recreation areas.
2. No church sites are provided.
3. Shopping areas are small and located on the perimeter instead of being central. No off-street parking is provided.
4. Only one school site is provided, and it is not centrally located.
5. All roads are of equal width and are potential "through" streets.
6. There is no variety in types of residential zones.
7. Some very long, narrow house lots are shown. These are uneconomical. Others are poorly shaped.
8. There is an unnecessary duplication of utility lanes in some places.
9. There are variations in the width of the main road. Half-jogs in the roads in some places are unsafe, and there are some dangerous junctions.
10. The light industrial zone has no place in a residential area.
11. Likewise the agricultural zone seems out of place, especially with houses allowed in it in excess of a ratio appropriate to such a zone.
12. Residential zones are all one-family.

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[56]"Sherbrooke Neighborhood Unit," Edmonton, Alberta, Canada. Urban Land Institute, T.B. 47, "Innovations vs. Traditions in Community Development."

SHERBROOKE NEIGHBORHOOD UNIT

Edmonton, Alberta, Canada

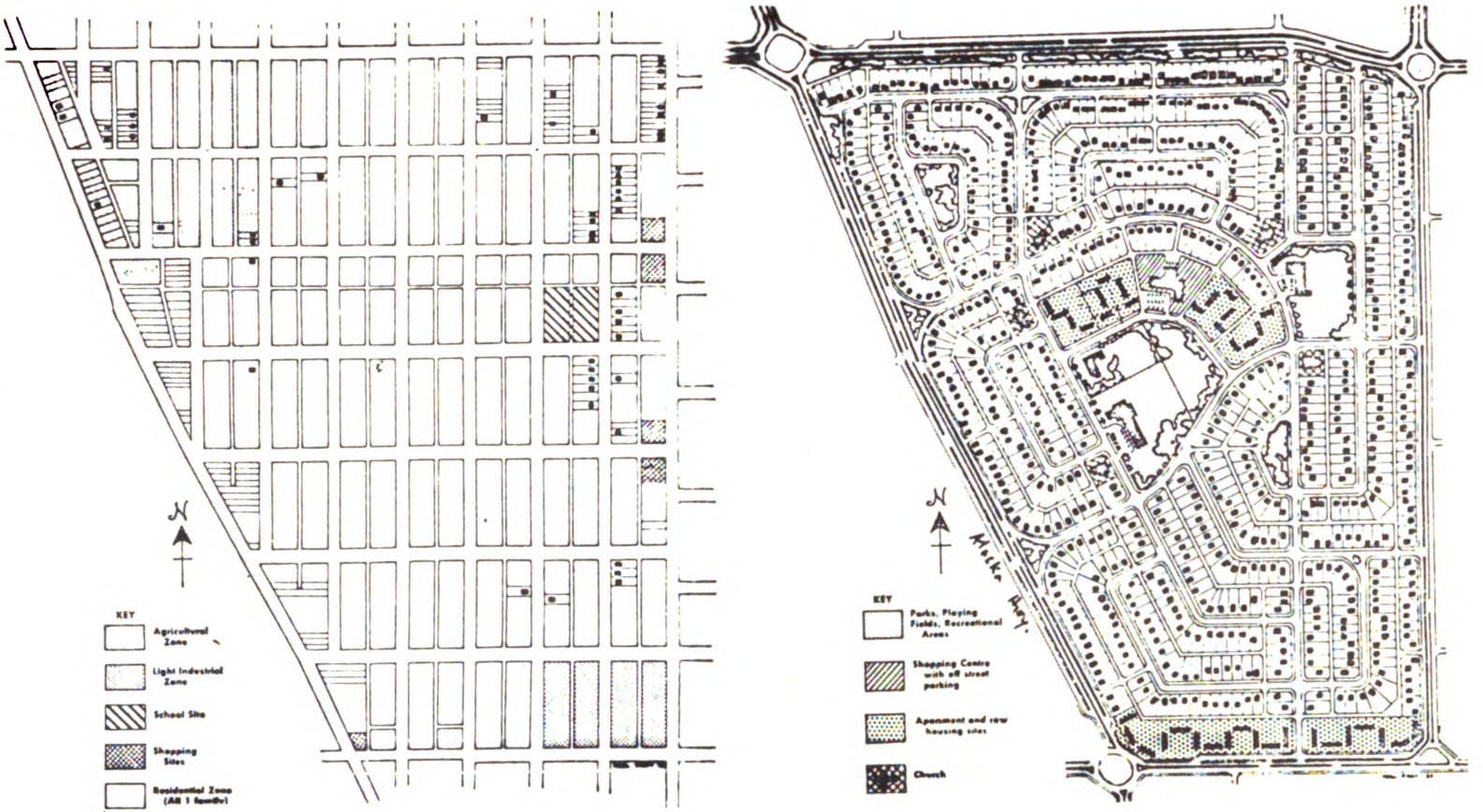


Fig. 30

The Unplanned Scheme . . . . and . . . . The Planned Scheme as proposed in 1949 and as finally developed, starting in 1952.

Source: ULI T.B. 40

PLANNED SCHEME

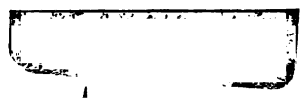
1. Sites are provided for parks, playing fields and recreational areas.
2. Church sites are provided in convenient locations.
3. There is a central shopping area, with off-street parking.
4. Two school sites are provided, reasonably accessible from all parts of the neighborhood. The Catholic school is off-centre because it also serves adjacent neighborhoods.
5. "Through" arterial highways, of adequate width, are separated from local service roads by limited access planted strips. Thus, both "local" and "through" traffic are safeguarded. There are feeder roads for bus routes. Local residential streets are designed in such a way as to discourage "through" driving, yet remain adequate for local purposes.
6. At the corners of the area, there are intersections designed to keep "through" traffic moving.
7. One-family housing is created in an aesthetic as well as a functional setting. Set-backs are arranged to allow for a "rhythmic variation." A buffer strip separates housing from an adjacent industrial zone.
8. There are also apartments and row housing in a variety of types.
9. A neighborhood "focus" of larger buildings and open spaces is included as an essential ingredient of a well-designed residential area.

Table No. III shows a comparison of the two schemes of on the following page (148). The first scheme has only one type of housing, whereas the second one has three types of houses, with all the facilities for the neighborhood and definitely having better environments.

TABLE III

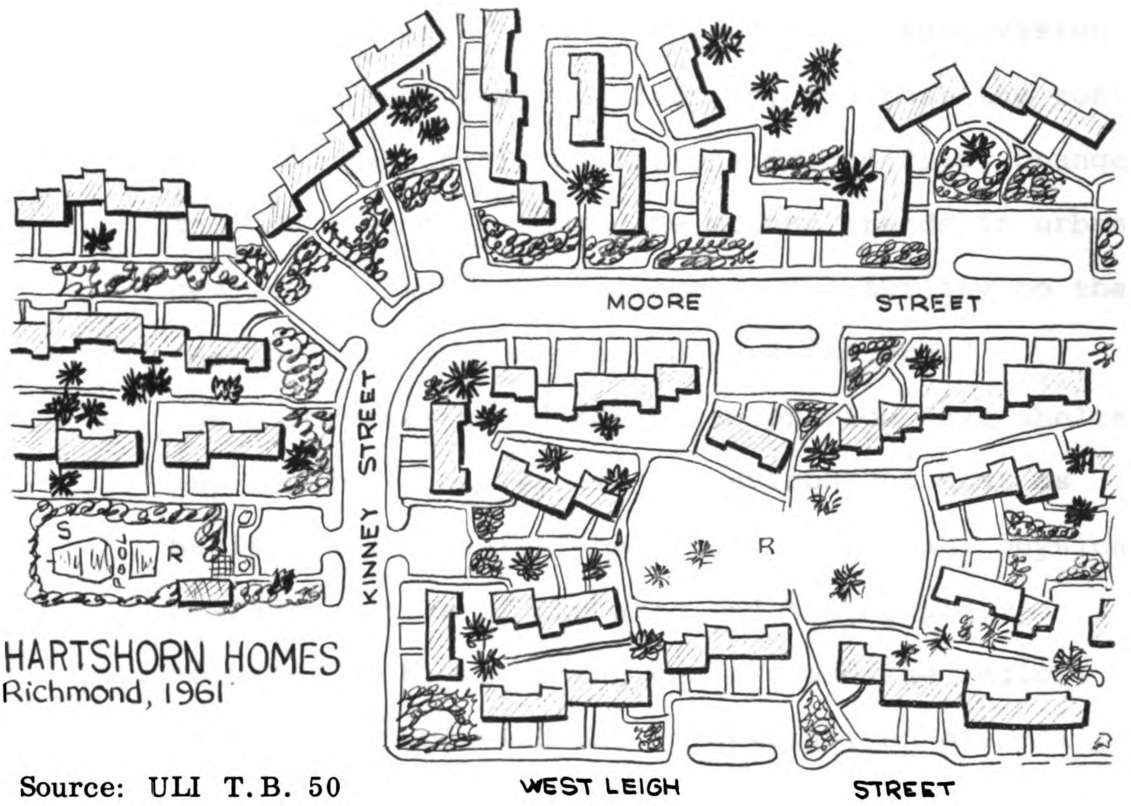
COMPARATIVE STATISTICS FOR A PLANNED AND UNPLANNED SCHEME

	Unplanned Scheme		Planned Scheme	
Internal Roads	37,960 lin. ft.	57.2 acres	27,600 lin. ft.	41.7 acres
Utility and Service Lanes	27,460 lin. ft.	12.6 acres	23,400 lin. ft.	10.7
Public School Space		2.14 acres		6. acres
Catholic School Space		—		4. acres
Recreation League Area		—		2. acres
Parks		—		4. acres
Churches		—		1.5 acres
Shopping Area (s)	(scattered)	1.9 acres		1.5 acres
Agricultural Zone		19. acres		—
Light Industry		6.56 acres		—
Miscellaneous (planted islands, etc.)		—		11.6 acres
Residential				
1-family Type	1,068 units	122.6 acres	896 units 3,584 people	112. acres
Row Housing	—	—	245 units 980 people	17.5 acres
Apartment Type	—	—	190 units 750 people	9.5 acres
Total	1,068 units	122.6 acres	1,331 units	139. acres
TOTAL ACREAGE OF SCHEME	222 acres		222 acres	
TOTAL POPULATION (residential)	3,400 people		5,324 people	
GROSS DENSITY (i.e. total no. of dwelling units divided by total acreage of scheme)	4.8 dwelling units/acre		5.7 dwelling units/acre	
NET RESIDENTIAL DENSITY (i.e. total no. of dwelling units or persons divided by total acreage of residential property and the roads and lanes which serve them)	26 persons/acre 6.27 units/acre		27 persons/acre 7 units/acre	



e) Use of different setbacks, house designs and orientation in a unit development created interesting environment as against the single line setback and repeated designs, as shown in the figure below.

USE OF DIFFERENT SETBACKS



Source: ULI T.B. 50

Fig. 31

III. Miscellaneous Recommendations

The recommendations given so far are not the only ones. There are many other factors and aspects which will help in improving the future residential developments. So it is recommended that:

1. To avoid the incompatable uses and adverse effects of such uses, the appropriate residential areas should be earmarked. To maintain an "urban discipline" and guide the future growth properly each urban area should be required to prepare a comprehensive plan.
2. Every urban area should have zoning, subdivision and other necessary regulaltion, and that the zoning (as well as other) regulations be modified, changed and improved to accommodate modern trends in urban development and give reasonable flexibility to the residential development type and pattern.
3. The objective should not be to provide just shelter but a place to live, and an environment that is healthy and elevates the moral, social and physical characteristics of the area and the people.
4. To save the bigger urban centers and the regions from over population and congestion, an overall plan be prepared for the regions and the province to distribute the population for a better balance.
5. The regulations for the maintenance and upkeep of the residential areas be enforced and the refuse collection requirements and services be increased.

Summary of Recommendations

As a result of the study and consideration of the past urban residential developments in West Pakistan, the following recommendations are offered as an improvement program for the new urban residential development.

1. The larger developments in the form of new towns should be located 15 to 50 miles away from the existing large urban center, on the major highways or rail links.
2. Develop only residential neighborhoods near existing large employment centers of the area.
3. Establish industry in new towns before and not after the people move in.
4. Plan residential areas on the neighborhood concept.
5. Smaller housing schemes should be kept large enough to form a "neighborhood."
6. Raise the percentage of skilled and literate persons in the new settlements.
7. Plan housing developments for the entire cross-section of people, i.e. people of all classes, all income groups and all professions. At the same time the type of housing may be diversified as well. The different type of houses and classes, however, must be grouped.
8. Change, modify or introduce codes and regulations to provide for the above mentioned diversified development.

9. The site for these developments must be selected scientifically. It should have spatial relationships with community facilities outside the neighborhood, offered by the community or city. The site should have a regular shape and be free of flood hazards, bad soil and bad drainage conditions. It should also be free of adverse influences of industries, airports and traffic. The site should hold scenic and esthetic value.

   The area should be bounded by man-made or natural boundaries.

10. Depending on the type of development, the pedestrian, bicycle and vehicular circulation should be separated from one another. The vehicular streets be designed with a specific role in mind. Provision of curb and gutter must be made compulsory.

    Intersections should be improved by providing cutoff lanes, through lanes and turning lanes.

11. The neighborhood shopping center should be limited in its function and be developed only for convenience shopping by the residents of the neighborhood.

12. The elementary school should be located in the center and combined with playgrounds, neighborhood parks and the community center.

13. Water supply and sewerage system should be provided more adequately and as soon as the people move in.

14. Effort should be made to provide green belts between the house lines or at random for passive recreation. (Same may be used for pedestrian circulation.)

15. Most attention should be given to the layout design to provide better livability, variety and esthetics as well as convenience and safety. Loop streets with cul-de-sacs, cluster plans and varied setbacks should be introduced along with the different type of house viz, town houses, patio houses, garden apartments as well as single family detached and attached houses, and planned unit schemes.

16. Comprehensive plans for urban areas be prepared.

17. An overall approach should be taken at the provincial or regional level to disperse and distribute the population (as well as the industry) instead of developing more and more residential areas in aleardy congested urban centers.

APPENDIX A

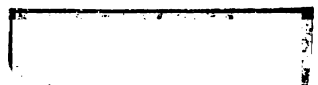
SCHOOL AND PARK STANDARDS

	Elementary School Complex		Junior High School Complex		Senior High School Complex	
	Desired	Maximum	Desired	Maximum	Desired	Maximum
Walking Distance	1/2 mile	3/4 mile	1 mile	1 1/2 mile	1 1/2 mile	2 miles
Enrollment	350-500	700	700-1,000	1,500	1,500	2,000
School and Playground Site Size	5 acres + 1 acre for each 100 pupils		10 acres + 1 acre for each 100 pupils		20 acres + 1 acre for each 100 pupils	
Park Size	1 acre for each 1,000 persons in neighborhood (4 - 8 acres)		1 acre for each 1,000 persons in the district		1 acre for each 800 persons in the district	
School and Park Combination Site Requirements	8 acres + 1 for every 100 pupils		18 acres + 1 for every 100 pupils		25 acres + 1 for every 100 pupils	
Tot Lots	1/8 mile 0.5 acres	1/4 mile or 75 sq. ft. per child				

Notes:

1. Usual playground sizes 3-10 acres. Playfield sizes 10-20 acres.

2. In school-park combination usually 1/3 of total area is devoted to building and accessories, 1/3 to playgrounds and the rest to park areas.



APPENDIX B

ACCESS STANDARDS FOR COMMUNITY FACILITIES

OUTSIDE THE NEIGHBORHOOD BY TIME

District or City Facility	Maximum Desirable Time from Farthest Dwelling
1. Secondary School:	
Junior High	15 to 25 minutes by bicycle, car, bus or tonga
Senior High	20 to 30 minutes by bicycle, car, bus or tonga
2. Shopping, cultural, religious and recreation (district)	20 to 30 minutes by bicycle, car, bus or tonga
3. Employment Centers	20 to 30 minutes by bicycle, car, bus or tonga
4. Urban Center - commerce, cultural, governmental	30 to 45 minutes by bicycle, car, bus or tonga
5. Outdoor Recreation:	
Major Park	30 to 60 minutes by bicycle, car, bus or tonga
Athletic Playfield	20 to 30 minutes by bicycle, car, bus or tonga
6. Health Services	Should be available in district urban center

APPENDIX C

RESIDENTIAL DENSITIES

Class and Type of Housing	Density Standard (No of d.u. per net acre[1])
Higher Income	
Single Family Detached	0.8-2
Middle Income	
Single Family Detached	4-6
Two-Family Detached	6-8
Row Houses	10-12
Planned Apartments	16-20
Multi-family	25-30
Low Income	
Single Family	16
Row Housing	25-30
Multi-family	40-50

[1] "Net acre" means that the area used for density calculation is exclusive of all street, open spaces and other areas for community facilities.

APPENDIX D

STATEMENT SHOWING THE PARTICULAR OF SATELLITE TOWN SCHEMES IN WEST PAKISTAN INCLUDING KARACHI.

S.No.	Name of the Satellite Town Scheme.	No. of families settled on plots/ houses upto 30th June, 1960.	No. of families settled on plots/houses during 1961 to 1963.			Total cost including 10% permissible limit (Rs.in lacs).	Total expdr. on acquisition, development/ construction upto June,1963. (Rs. in lacs.	Total tentative revised cost of the scheme. (Rs. in lacs).	Provision made during 1963-64. (Rs. in lacs).	Funds required during 1964-65 (Rs.in lacs).	REMARK.
			1961.	1962.	1963.						
1.	2.	3.	4.			5.	6.	7.	8.	9.	10
	LAHORE DIVISION.										
1.	Constn. of 1464 one-roomed & 383 two-roomed quarters at Lahore.	1847	-	-	-	76.71	82.25	..	Nil.	3.29	
2.	Purchase of 192 one-roomed & 52 two-roomed quarters at Lahore from Lhr.Imp. Trust.	-	-	-	-	70.43	68.45	..	Nil.	Nil.	
3.	58 'C' category Model Houses at Sant Nagar,Lhr.	58	-	-	-	7.59	2.94	8.61	Nil.	Nil.	
4.	Lahore Township Scheme.	-	-	-	-	990.00	33.57	..	65.00	416.35	
5.	Gujranwala S.T. Scheme.	1713	-	-	-	32.66	30.59	..	0.19	Nil.	
6.	G'wala S.T.Extn. Scheme.	441	-	-	-	16.16	12.37	..	1.80	2.00	
7.	'D' type Colony,Gujranwala.	200	160	240	115	4.50	2.35	8.25	0.81	2.00	
	RAWALPINDI DIVISION.										
8.	130 'D' type qrs.,R'pindi.	130	-	-	-	2.31	3.24	4.11	Nil.	Nil.	
9.	Rawalpindi S.T. Scheme.	3405	-	-	-	91.34	59.41	..	30.00	66.53	
	MULTAN DIVISION.										
10.	Montgomery S.T. Scheme.	1691	-	-	-	27.84	27.21	..	Nil.	1.58	
11.	Multan(Mumtazabad)S.T.S.I.	1114	-	-	-	27.24	23.97	..	Nil.	Nil.	
12.	Multan S.T.Scheme-II.	871	-	-	-	21.40	21.19	21.19	Nil.	Nil.	
13.	D type Colony, Multan.	301	100	150	50	11.08	9.68	11.43	0.73	Nil.	
	SARGODHA DIVISION.										
14.	Industrial Labour Colony, Lyallpur.	3103	-	-	-	20.75	21.19	20.93	Nil.	Nil.	
15	Cattle Fair Ground,Lyp:	476	20	40	15	28.01	12.11	..	1.83	7.50	
16.	Peoples Colony Scheme,Lyp:	2155	70	122	30	57.20	41.30	..	1.55	7.36	
17.	Ghulam Muhammadabad Colony, Lyallpur.	4982	200	300	38	45.44	40.75	..	0.10	0.06	
18.	Peoples Colony Extension Scheme, Lyallpur.	5105	100	200	67	50.14	44.73	53.39	0.25	0.83	
19.	Ghulam Muhammadabad Extension Scheme, Lyallpur.	1366	-	-	-	17.74	18.33	..	Nil.	0.30	
20.	'D' type Colony,Lyallpur.	1799	-	-	-	89.73	54.71	..	1.00	0.43	
21.	'C' type Colony, Lyallpur.	-	-	-	-	18.81	0.50	46.80	2.00	13.29	
22.	Sargodha S.T. Scheme.	1503	-	-	-	32.45	33.13	..	Nil.	Nil.	
23.	Jhang Satellite Town Scheme.	968	-	-	-	24.63	19.55	..	0.43	0.43	
	MISCELLANEOUS.										
24.	Constn. of 192 oneroomed & 1826 two-roomed Qrs. in S.T. Schemes at Sl:Nos.5,9,10,11, 12,14,16,17,22 & 23.	Included in the Schemes at serial Nos.5,9,10,11,12,14, 16,17,22 & 23.				70.43	82.25	..	Nil.	Nil.	
25.	Constn: of 11-Dhobi Ghats in Satellite Town Schemes.	-	-	-	-	0.41	0.33	..	Nil.	Nil.	
	BAHAWALPUR DIVISION.										
26.	Bahawalpur S.T. Scheme.	218	760	900	140	27.18	16.59	..	2.00	2.70	
27.	Gulberg Road Satellite Town Scheme,Rahimyarkhan.	491	300	400	214	12.27	13.21	..	Nil.	10.08	
	KHAIRPUR DIVISION.										
28.	Mirpurkhas S.T. Scheme.	1331	-	-	-	20.85	20.22	..	3.31	7.80	
29.	500 'D' type quarters at Mirpurkhas.	500	-	-	-	8.25	5.76	..	Nil.	Nil.	
30.	'D' type Colony,Sanabahah.	200	-	-	-	2.26	1.48	..	Nil.	Nil.	
	HYDERABAD DIVISION.										
31.	Shahlatifabad Satellite Town Scheme, Hyderabad.	8816	1063	1100	190	200.43	157.73	..	10.00	15.03	
32.	4000 'D' type quarters in Shah Latifabad.	-	1000	2057	653	112.55	51.88	..	5.00	15.00	
33.	2002 'D' type quarters at Hyderabad.	2002	-	-	-	42.54	33.46	..	Nil.	Nil.	
34.	2000 'D' type quarters at Hyderabad.	2000	-	-	-	24.53	22.74	..	Nil.	Nil.	
	KARACHI.										
35.	Greater Karachi Resettlement Scheme:-										
a)	Korangi Township.	9500	4600	3850	2250						
b)	North Karachi Township.	-	-	4350	3300	10450.00	1184.00	..	350.00	790.00	
c)	Shirin Township.	-	-	-	-						
	TOTAL :—	49000	13089	9859	7062	12735.86	2253.17	174.71	476.00	1362.56	

APPENDIX E

Town Houses

Source: UL1

APPENDIX F

Illustration of a development having a variety of housing types and design patterns.

Model of first village at Reston.

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