

REHABILITATION OF A SLUM AREA IN
PANAMA CITY, R.P.

by

CONSUELO SILVERA

A THESIS

Presented to the School of Architecture
and Allied Arts
and the Graduate School of the University of Oregon
in partial fulfillment
of the requirements for the degree of
Master of Architecture

March 1953

APPROVED:

[REDACTED]

(Adviser for the Thesis)

[REDACTED]

(For the Committees)

Gift (# 5.75) bd. 1.10 F

AN ABSTRACT OF THE THESIS OF

Consuelo Silvera for the degree of Master of Architecture
in the School of Architecture and Allied Arts to be taken on March
17, 1953.

Title: REHABILITATION OF A SLUM AREA IN PANAMA CITY, R. P.

Approved:


(Thesis Adviser)

The project developed in this thesis is the Rehabilitation of a Slum Area in Panama City, R.P. The district is called "Chorrillo" and it had a population of 27,375 inhabitants in 1950, at a density of 500 people per Hectare. The solution proposed dwells only 20,000 at its maximum occupancy, at a density of 410 people per Hectare.

To rehabilitate this sector it was necessary to make a general study of the whole city, based in studies made in 1941 by Mr. Karl Brunner and in the information gathered by the Bank of Urbanism in Panama. It included study of geographic, economic, historic, cultural and climatic aspects.

A very good amount of reading had to be done to gather data on modern town planning theories, on solutions proposed for similar projects in other countries, in sociological theories regarding types of dwellings and neighborhood planning, etc.

Chorrillo presents its own geographic, economic and social characteristics. The population's income is very low; the land value high. The solution, pretending to be as realistic as possible, could not follow standards established by other countries.

Human and hygienic conditions were considered of primary importance. Large open spaces were compulsory to compensate the lack of living space.

Due to the value of the land, its urban characteristics, its present congestion, etc., the solution came to be a multi-story dwelling development. Five types of buildings are proposed:

- 1) 22-story high
- 2) 12-story high
- 3) 6-story high
- 4) 4-story high
- 5) 2-story high

The dwelling unit is based in a module 18' feet wide by 28' long. Its flexibility of design allows flexibility in the amount of people dwelled. The space problem is solved vertically: duplex for large families; one story apartments for small families; one module divided in two sections for bachelor apartments.

The whole area was divided in three self-contained neighborhoods, integrated by several "sub-neighborhoods", or small groups of buildings around a common court.

Each neighborhoods has a school, a shopping center, a civic center, playgrounds and playfields.

It was considered highly desirable to keep the pedestrian traffic completely separated from the vehicle traffic. Vehicles remain in the periphery and do not penetrate more than 200 feet in each sub-neighborhood. There are parking areas in each neighborhood.

The placement of the buildings was determined by the nature of the soil, direction of winds, insolation and design considerations.

The streets are designed according to their function.

TABLE OF CONTENTS

Introduction.....	Page 4
Chapter I- History of Panama City.....	Page 5
Chapter II- Panama City Today.....	Page 9
Chapter III- Malambo and Cherrillo, Blighted Areas In Panama City.....	Page 15
Chapter IV- Description of Cherrillo.....	Page 19
Chapter V- The Solution Proposed.....	Page 33
Chapter VI- Developments of the Project.....	Page 40
Chapter VII- Financial Aspect of the Problem.....	Page 48
Bibliography.....	Page 50

INTRODUCTION

The solution presented here for the Rehabilitation of a Slum Area in Panama City, R.P., is a general proposal with emphasis in certain design aspects, as the site plan and the basic dwelling unit. It demonstrates that an architect can preside over a team of workers from different fields and different branches of design.

To undertake a complex and human problem like this requires certain courage besides an understanding of what the role of an architect in a group is.

Due to the technical development of our days and the complexity of our social organization, the architect finds himself involved in a series of human, artistic, and technical problems. Because of this situation, he must be able to cooperate with specialists of other fields and coordinate their achievements and knowledge to fulfill the completion of every problem.

Most schools of architecture are revising their education programs today as a result of the understanding of this situation. One of the Universities in South America proposes that the education of the architect cover, as a complete body four major fields: Technology, Theory of Architecture including Regional and City Planning, Design, and Social Sciences.

In this project the solution has been worked out with the help provided by books written by city planners, economists, sociologists, architects, historians, and geographers. The architect has considered herself as presiding over a team of other collaborators, her contribution being the investigation in design. The path followed builds from town planning through landscape and architectural design to interior design.

CHAPTER I

HISTORY OF PANAMA CITY

The geographic position of the Republic of Panama, since the very moment it was discovered marked its destiny as a point of transference of people as well as of merchandise.

The city of Panama was founded in 1673 by the Government of Spain to serve very important functions; fortresses to defend the Isthmus, and a port of re-exportation for the treasures coming from Peru to Spain. The "Silver Route", as it has been called, started in Peru, crossed the Isthmus; and continued to Spain. Panama, the city on the Pacific Ocean, became the most important point where the Customs House and major Treasure authorities had their headquarters.

She served these functions two centuries and was always a very busy place until 1746, when the Crown of Spain decided to change the route Peru-Panama, for the route Peru-Buenos Aires, Montevideo-Spain.

The choice of the site where the city lies was motivated by several reasons:

1. The peninsular position surrounded by rocks that made the approach of enemy boats very difficult during the low tides.
2. The breezes from the sea that alleviate the climate at nights.
3. The natural spring of water coming from the skirts of Ancon Hill that provided water for the city dwellers.
4. The proximity to the island of Perico which was the actual port since it was there where the waters were deep enough for big boats.

The city was laid out with the checker board pattern and the central plaza presided by a cathedral which was the typical Spanish layout of the epoch.

The change of the Silver Route submerged Panama in a stage of decay. Even-though, it was during this period when cultural activities developed and the first university was founded.

Around 1790 the city had an approximate total population of seven thousand people. The sanitary conditions were very poor. Fires were very frequent.

During this period propositions were made for the construction of a canal through Panama or Nicaragua. The need for a connection between the Atlantic and the Pacific Oceans and her advantageous position saved her from a complete decay.

Simon Bolivar, the Liberator of the South American Republics, called Panama the future capital of the world. In 1835 it was suggested for the first time to convert Panama into a free port. It was not until 1846 when a new age began. Britain started using the Isthmus as a point of junction for her merchandise from the Atlantic side to her colonies in the Pacific and vice-versa. This fact attracted the attention of the United States since the gold mines of California had been recently discovered and the march to the West in that country was growing in importance.

A railroad from the city of Colon in the Atlantic to Panama was finished by an American Company in 1849, and during twenty years the Isthmus was crossed by thousands of people and near seven hundred and ten million dollars in gold.

But a railroad was not satisfactory for the service required by the commercial movement and negotiations for a canal started. The Societe Geo-

graphique in Paris in 1879 decided the construction of a level water way through the Isthmus. Ferdinand de Lesseps took charge of the enterprise and the Compagnie Universelle du Canal Interoceanique established her headquarters in Panama City.

The French Company met many difficulties during the excavations and lost a great many of her engineers and workmen due to the yellow fever. Laboring became difficult and negroes were brought from Jamaica to work in the Canal.

The city doubled her population, grew in importance, and started serving the function of head of the country as it is at present. A feeling of the importance of their country was growing in the Panamanians and so was the desire for independence. Later with the complete defeat of the French Company by the tropics; the discontent of the Panamanians for the lack of sanitary conditions; the revolutions in Colombia, etc., the discontent increased. The situation became critical when Colombia refused the Treaty with the United States for the construction of the canal. In 1903 Panama proclaimed her independence from Colombia.

The construction of the Panama Canal by the United States marked a very important point in the life of the city. It was not only the physical conditions which changed; the building of the aqueduct; the control of malaria and yellow fever; the growth of the city, but there was a tremendous ethnic change since more than 8,000 Spaniards, 2,000 Italians, 1,000 Greeks, 1,500 Colombians and 30,000 negroes were brought to work in the construction of this important sea way.

With the coming of the negroes from Jamaica two important communities appeared; Chorrille and Marañon, today very congested areas. (See Map No. 2) The main street (Avenida Central) grew to connect the urban city founded by

the Spaniards with the Railroad Station, which at that time was in the suburbs and today in the center of the city. It is following this direction that the city has continued growing. (See Map No. 3).

In 1915 an International Fair was organized in Panama. New buildings of clear French flavor were constructed for exhibition in the area called "Exposicion", at the other side of Marafion and new subdivisions were laid out. These first suburbs were populated by the wealthy classes of Panama. The main street was prolonged to connect the suburbs to the city.

The period of 1915 to 1939 is characterized by a very fast growth of the city, the congestion of the urban center, and the spreading of the suburbs. Density in the nucleus in 1940 was already high.

In 1940 another important age for Panama City began. World War II demanded the building of a new set of locks for the Panama Canal to allow big ships to go through. The country experienced a tremendous impact of migration from the countryside and Central America to the urban centers which became more acute in the capital because its proximity to the Canal. Very soon congestion in the city became a problem. Lack of housing was the main disease plus the traffic conditions which became unbearable due to the large amount of vehicles and the inadequate layout of the streets. These problems provoked the arrival of Mr. Karl Brunner to make a study of the urban conditions in the city. From 1947 to 1953 the city has grown through a period of stabilization, eventhough the evils of congestion still remain.

CHAPTER II

PANAMA CITY TODAY

The city of Panama is a small peninsula with the shape of a boot east of Ancon Hill which is of volcanic origin. The urban nucleus has grown towards the Northeast since it is limited on its southern part by the bay and on the West by the flooded valley of the Curundu River and on the North by the Canal Zone. Today this nucleus extends to the Matasnillo River. (See Map No. 3). It is less than a kilometer wide in its narrowest part and it covers nearly seven square kilometers.

Political Divisions

It is politically divided in barrios or districts. (See Map No. 1). San Felipe, which is the old Spanish city with an approximate density of 350 persons per hectare. The total population in 1950 was 11,447. Its ethnic composition is 59 per cent mestizo and 34 per cent white.

Santa Ana, which was the suburb of the Spanish city, with an approximate density of 457 persons per hectare. Its population in 1950 was 33,742 and its ethnic composition in 1940 was 56.5 per cent mestizo, 22.5 per cent white and 17.2 per cent negro.

Chorrillo, which was born with the construction of the Panama Canal. Its density is nearly 500 persons per hectare. The total population in 1950 was 27,375. Its ethnic composition is 61 per cent mestizo and 25 per cent negro.

Calidonia, is a composite of two very different areas; Calidonia and Bella Vista. Calidonia is 50 per cent negro and was originally populated by the

colored people brought by the French and Americans to work in the construction of the Panama Canal. It has a lower density than Chorrillo. Bella Vista is a medium and high income residential area populated by 55.7 per cent whites and 35.8 per cent mestizos.

Demographic Aspects

The total population of the country in 1950 was 805,285 inhabitants. The density of the whole country was 10.9 inhabitants per square kilometer. The density of other countries was for the same year:

United States	19.2
Argentina	5.7
Mexico	13.0
Brazil	6.2

The total population of the capital was 127,874 within the nucleus. (See Map No. 3).

The increase in population from 1940 was: For the urban nucleus 15,981 inhabitants equivalent to 14.3 per cent. For the suburban areas 26,718 nearly three times the population in 1940.

The total increase in 10 years was 42,699. This figure raises the annual growth for 1930-1940 which was 3,748. The increase is explainable by the immigrations during the 1941-1947 period.

Panama City experimented one of the lowest increases in population. Some of the capitals of provinces had a larger percentage of increase.

The racial composition of the capital in 1940 (lack of 1950 information) was as follows:

Whites	19.3%
Mestizos	52.2%
Negrees	26.3%
Others	2.2%

During the year 1940, 17.4 per cent of the population was foreign born and 77.6 per cent of them were born in the American continent, 12.9 per cent in Europe, and 9.3 per cent in Asia.

The age distribution in 1940 showed a concentration of males and females in the ages 15 to 29 which is typical of urban places that experience immigration.

The crude birth rate has been decreasing since 1920. It was 31.7 per every thousand people in 1943.

The death ratio in Panama City is very low compared to most countries in Latin America. From 65.82 per thousand in 1905 it decreased to 11 per thousand in 1943, ratio comparable only to certain cities in the United States, where the death ratio is as low as 10.8 per thousand population.

The main causes of death are tuberculosis, pneumonia, heart disease, intestinal disease, and kidney disease.

Geographic Characteristics

Panama is in the earthquake belt and seismic movements are very frequent, yet not noticeable. They reach an average of 127 a year. In the history of the city there have been only two important earthquakes. One in 1621 and another in 1882.

The latitude of Panama City is $8^{\circ} 57'$ North. Her altitude slightly over sea level. The contours show very few hills in the city as a whole.

The solar declination is negative from October to February and positive from March to October. The trade winds blow during the dry season. The rainy season lasts nine months and the annual rainfall is 68". The temperature is more or less constant throughout the year with an average variation of 2° Centigrade.

The average temperature during 25 years was 78° 7' F. The maximum temperature for the period was 97° and the minimum 63°. The maximum usually occurs during April and the minimum in November. Panama has the advantage of the breezes from the ocean in the night.

The prevailing barometric pressures are usually low.

The winds blow from North, Northwest, South, and Southeast mainly. The winds from the Northwest are prevailing throughout the year with an average velocity of 7.1 miles per hour.

Economic Aspects

Panama, as it has been said before, has been a port of transit and transference both of people and merchandise. Besides it is the point where all national activities concentrate; political, governmental, and commercial. It is the port of exportation of products coming from the other parts of the country and the main incoming port too. So, Panama City has a large metropolitan area which can be considered as taking practically the whole province and perhaps the whole country, eventhough the rest of the country is of low productivity and consumption.

In reality, the function of Panama City has not only been national so far, but international due to the continuous meeting of routes in its lands from all over the world and from both Atlantic and Pacific Oceans.

It is very important for the economy of the country to decide very soon what is going to be the future function of the city of Panama before any attempt of a Master Plan is done.

Panama, due to her advantageous geographical position, has throughout history been a focal point in the world. She has been proposed as an inland port, sea port, or air port. Since most of her economy depends on tourist trade, commerce and re-exportation, it seems that that is the function she

should serve in the future together with that of exportation port for the national products, both agricultural and industrial.

With the construction of the Panama Canal, the port functions of the city were practically eliminated. Since then, we have been using the American ports of Cristobal in the Atlantic and Balboa in the Pacific.

These two ports are important points for repairing ships, oil, fuel supply, and transit, etc. Due to these conditions and the increase in air transportation, the Panamanian Government built a new airport as a terminal for most routes in the American continent. But it can be feared that the development of new planes that can fly longer distances without stopping for fuel diminishes the importance of the airports in general. Panama could also be developed as a point of assembly for planes, cars, etc.

It is well known that the most developed regions in the world are the eastern regions of the American continent and the western regions of the European and African continents. The ratio of ships going through the Panama Canal has been 2:1 in favor of ships coming from the Atlantic Coast. Sixty-five per cent of the Panamanian commerce takes place in the port of Cristobal. The lines from the Pacific Ocean have been carrying mostly raw materials, while those from the Atlantic carry mostly manufactured products.

As synthesis of all these possibilities, the future of Panama seems to be a free port for the distribution of materials and products from the Pacific hinterland.

What is important now is that with the economic situation in the old continent and the development of the West and the increasing importance of the far East, the necessity for a free port will become real. Henceforth,

Panama can be developed as a focal point in the Panamerican Highway; as a seaport in the Pacific Ocean; airport and hydro-port for the American Continent. It has also been suggested that Panama exploit fishery in her waters.

Panama has many disadvantages as a seaport, due to the poor conditions of her shores. Since the times of the Spanish colony the great differences produced by the tides forced the Spaniards to use the islands of Perico and Naos for the docking of their ships. The construction of a seaport in Panama would require an artificial conditioning which would cost many millions. But, since our economy needs a radical solution, we shall start from the assumption that a great port of re-exportation will be built in Panama City in the future, and with this assumption attempt to indicate a possible zoning plan.

CHAPTER III

MALAMBO AND CHORRILLO, BLIGHTED AREAS IN PANAMA CITY

Malambo

When the Banco de Rehabilitacion y Urbanizacion started studies of the dwelling conditions in Panama City, it was found that the worst living area was the so called "Malambo". This area consists of 12 blocks where 7,247 (1944 census) people live in the most unsanitary conditions at skyscraper densities, in old two and three-story high wooden houses. Part of the area is in the District of Santa Ana and part in the District of Chorrillo.

Density

Malambo shows a density of 1500 people per Hectare in certain blocks, an index of tuberculosis in certain places of one contaminated per every 40 persons. It does not have commercial, industrial or merely residential characteristics. It could be considered, as a self-contained neighborhood, because of its population and the fair amount of shops and stores it has to provide for the everyday needs of the population. Even though, there are no schools.

Physical Characteristics

The street pattern and the quality of the dwellings in this sector, constitute a barrier for the commercial area, already bounded by the bay on one side and by the Marafien slum on the other side. The business center, strangled, has continued its ribbon development along Central Avenue and has jumped to certain streets in better residential areas.

Considering the possible redevelopment of Malambo several questions come to

mind; Is it worthy of rehabilitating for the same use? What is the future of the commercial center without lateral expansion? Where are the buffers of the city or green areas to isolate residences from other activities?

Since the sector is very narrow, the same amount of people could not be housed there in better conditions; and this remedy would be like a patch in an old suit. Consequently, it could either be cleared for parking, park or commercial expansion in the future. It was the intention of this work to propose the Rehabilitation of the Malambo area, which proved to be impossible after a careful study of the location and relationship of Malambo to the rest of the city. (See Map 1).

Discussion of a Zoning Plan

The city, as it has been said before, has been growing in Northeast direction in a disordered and uncontrolled fashion, without any zoning rule. The chaos, if not stopped will invade the good residential areas. The main governmental functions are still taking place in the colonial city, and due to the daily concentration of activities in its narrowest part, the traffic problem has grown worse every day. It constitutes a bottleneck in certain areas, not only because of the amount of cars in the city during the day, but due to the inadequate street pattern. The exodus to the suburbs indicates clearly the desire for better living conditions and a desire to avoid the noise and lack of space reigning in the nucleus. Obviously, there is a tremendous need for sensible and conscientious planning.

Henceforth, one of the first remedies for the solution of these problems will be an organized decentralization of services and activities, according to a flexible zoning plan. The city must define areas for living, commerce,

industry and government.

It seems that Panama - the capital of the country, where Government functions are so important - should have a well designed Government center. Here a person could go from one office to another without covering distances by car, getting into continuous traffic jams. This center should be like a great park, where the buildings would be located, with parking facilities and where the public would walk free of traffic difficulties. The location of this Government center should be near the business and commercial areas, since some of their activities are very closely related. The "Tentative Zoning Plan" (Map No. 4) shows where I think it should be located, a site that has already been suggested by the Brunner Report of 1941. This area, at present a dwelling slum, would be rehabilitated in this way, would connect the greener areas of Bella Vista to the old city and would be in a less congested place.

The Railroad Station would be moved to a place nearer the industrial areas to avoid the traffic problems now existing, due to interruptions in free circulation in the main street.

Considering the construction and installation of a free port in the city of Panama, which utilizes the bay, sufficient area would be required for these activities. They would then take place in what is now San Felipe and Santa Ana Districts.

It is considered in this thesis that the old city should be rehabilitated as commercial and business center which can be connected by through traffic ways to future local centers in the new communities.

Panama is in the danger of becoming a long, narrow city, with all the evils of enormous distances for the daily worker. The size of the city must

be controlled before it becomes intolerable. This will be achieved distributing the residential areas as self-contained neighborhoods adjacent to activity centers. There must always be residential areas adjacent to business and industrial centers to avoid transportation problems for the workers and to provide a better distribution of population. The Cherrillo District in our case, would be then, a community for workers of low income, who work in the Canal Zone or in the commercial areas of Panama City.

The future industrial sections to be developed would be located efficiently outside the urban radius and planned together with their residential neighborhoods.

The Zoning Plan only suggests the directions of this location, since a serious and sound study must be done to define their future sites. (See Map 4).

CHAPTER IV

DESCRIPTION OF CHORRILLO

The following statistics give a detailed description of the conditions of Chorrillo, in spite of the lack of information on land values. The ethnic composition according to the 1940 census was as follows:

Whites	14.3%
Negroes	23.1%
Mestizos	61.1%
Yellow, Hindu and Indian etc.	1.5%

The race differences do not constitute a problem in Panama, where most people are assimilated in one group. In this particular area mestizos and Jamaican Negroes have been living together for many years. In spite of certain cultural differences, it is expected that in a not very long period through a process of education, there would be no segregation of race groups.

From the data furnished on age distribution, we can calculate the birth rate of the area, which is:

$$\frac{\text{Children 1 to 11 months} \times 1000}{27,375} = 29$$

The birth rate in the U.S.A. in 1940 was 17.9

The fertility rate, or the ratio at which the population is increased is:

$$\frac{\text{Number of children under 5} \times 1000}{\text{Total Women 15-44 of age}} = 487$$

This ratio can be compared to the fertility rate in the U.S.A., for the rural nonfarm areas, which was 473 in 1940. Compared to the urban fertility ratio of the U.S.A., 221, the Chorrillo ratio appears to be high.

Eventhough the ratio for the U.S.A. is considered low. These figures - birth and fertility rates - indicate the need for both living and recreation space.- Since the family is subject to a future growth, space must be provided for more occupancy.

This also affects the flexibility of School Space design for a future increase in school population.

The London County Plan advices that the neighborhood population be stable, but one cannot start from an assumption that a family using a small apartment will have to move to a lower level dwelling when it grows in size. This factor then, affects the design of the dwelling unit.

As table No. 3 shows the average family is 4.3. This makes a four member family the most common type (30 per cent of the total). The distribution of family sizes had to be calculated since there was no information available. It went through several trials until the 4.3 average was arrived to. It is as follows:

<u>Members in the family</u>	<u>%</u>
1	5
2	12
3	20
4	30
5	17
6	9
7	5
8	1
9 and over	1

Table 1 shows a high percentage of single people in 1940, which is not clear, but justifies the percentage assigned here to 1 and 2 person family units.

Table 3 also describes the congestion existing in the present dwellings, where the occupancy is 1.3 families, or approximately 5.6 persons per room.

Table 1

	Marital Status					1940
	Single	Common Law Marriage	Married	Widows	Divercees	
Men	54.3%	22.1%	21.3%	2.1%	0.2%	
Females	46.3%	24.0%	21.0%	8.3%	0.4%	

Taken from Publication No. 1 - Banco de Urbanizacion y Rehabilitacion.

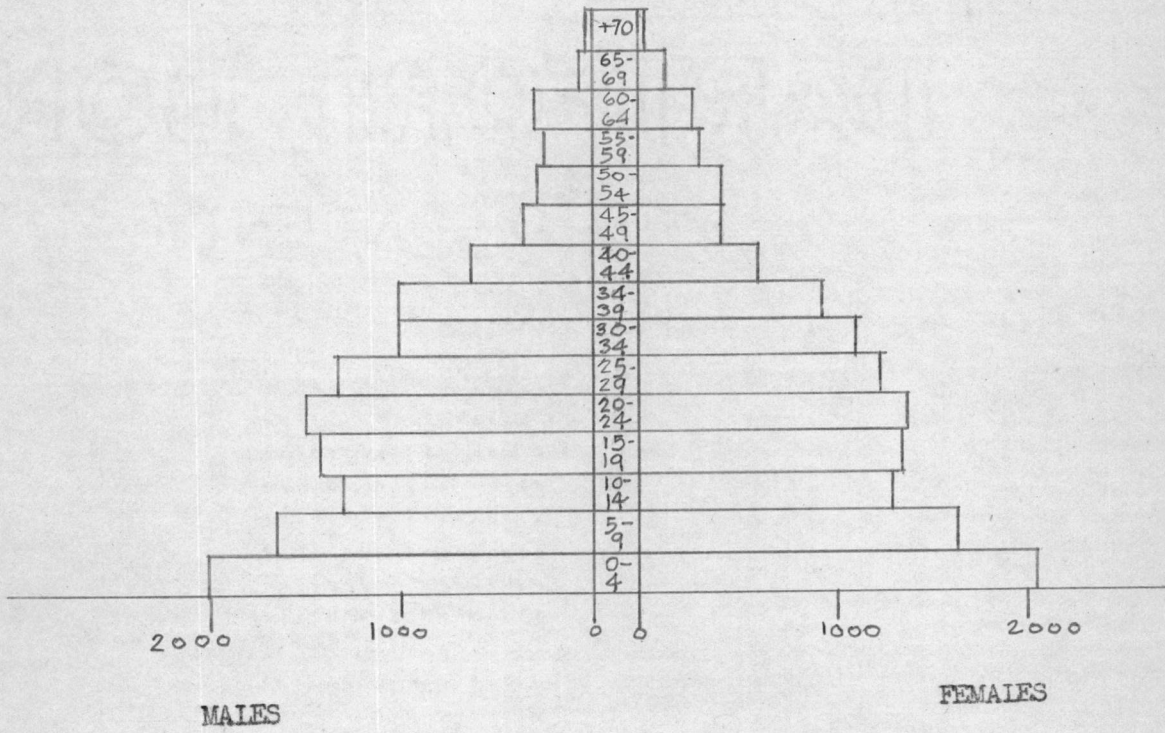
Table 2

Republica de Panama
 CONTRALORIA GENERAL DE LA REPUBLICA
 Direccion de Estadistica y Censo
 Departamento de Censos

CIVIL POPULATION BY AGE AND SEX GROUPS - DISTRICT OF CHORRILLO
 1950 Census

Age groups	Total	Male	Female
Total.....	27,375	13,695	13,680
Under 5 years.....	4,021	2,003	2,018
Under 1 month.....	82	46	36
1 - 11 months.....	795	384	411
1 - 4 years.....	3,144	1,573	1,571
5 - 9 years.....	3,239	1,624	1,615
10 -14 "	2,620	1,301	1,319
15 -19 "	2,507	1,153	1,354
20 -24 "	2,776	1,408	1,368
25 -29 "	2,694	1,432	1,262
30 -34 "	2,435	1,321	1,114
35 -39 "	2,007	1,032	975
40 -44 "	1,250	642	608
45 -49 "	881	406	475
50 -54 "	871	395	476
55 -59 "	625	298	327
60 -64 "	666	338	328
65 -69 "	370	177	193
70 -74 "	187	88	99
75 -79 "	112	44	68
80 -84 "	61	20	41
85 -99 "	45	10	35
100 and over.....	1	0	1
Non declared.....	7	3	4

Panama, July 22, 1952



AGE PYRAMID OF CHORRILLO

Table 3

Republica de Panama
 CONTRALORIA GENERAL DE LA REPUBLICA*
 Direccion de Estadistica y Cense
 Departamento de Censos

AVERAGE NUMBER OF PERSONS PER FAMILY AND FAMILIES PER ROOM IN THE
 DISTRICT OF CHORRILLO - 1950 CENSUS -

Population	No. of fam.	Persons per family	No. of Rooms	Families per room
27,375	6,393	4.3	8.485	1.3

July 24, 1952.

*Source

Table 4

República de Panamá
 CONTRALORIA GENERAL DE LA REPUBLICA*
 Dirección de Estadística y Censo
 Departamento de Censos

EMPLOYED POPULATION OVER 10 YEARS OF AGE, BY EMPLOYMENT, IN THE
 DISTRICT OF CHORRILLO - 1950 CENSUS

Sex	Total	Patron	Employee		Independ.	Domestic
			Gvt.	Others		
Total	7,949	119	1,430	5,205	1,152	44
Males	5,703	107	1,046	3,688	837	25
Females	2,246	12	384	1,517	314	19

Panamá, September 6, 1952.

*Source

Table 5

Republica de Panama
 CONTRALORIA GENERAL DE LA REPUBLICA
 Direccion de Estadistica y Censo
 Departamento de Censos

GENERAL CLASSIFICATION OF THE CIVIL POPULATION, BY SEX IN THE
 DISTRICT OF CHORRILLO - 1950 CENSUS

General classification	Total	Male	Female
Total.....	<u>27,375</u>	<u>13,695</u>	<u>13,680</u>
Active population, total.....	10,115	7,246	2,869
Employed.....	7,949	5,703	2,246
Not employed*	1,989	1,476	513
New worker**	177	67	110
Total inactive population....	<u>17,260</u>	<u>6,449</u>	<u>10,811</u>
Housewife.....	3,904		3,904
Student.....	5,592	2,792	2,800
Minor***	5,551	2,781	2,770
Inactive.....	1,701	530	1,171
Retired.....	151	75	76
Jubilado***	227	197	30
Rentier.....	13	5	8
Incapable.....	118	68	50
In transit.....	3	1	2
Not declared.....	0	0	0

* A "not employed" person is that who has been working, but does not have a job at present, and is looking for one; regardless of how long he has not worked.

** A "new worker" is a person who has never worked and is looking for a job for the first time.

*** "Minor" is every child under 12 years of age who does not go to school nor is working.

**** "Jubilado" is a term used to name a person who retires after 25 years of work with a fixed monthly income.

Panama, September 4, 1952.

Republica de Panamá
 CONTRALORIA GENERAL DE LA REPUBLICA
 DIRECCION DE ESTADISTICA Y CENSO
 Departamento de Censos

27

EMPLOYEES 10 YEARS OLD AND OVER ACCORDING TO MONTHLY SALARY, SEX AND TYPE OF PAYMENT
 DISTRICT OF CHORRILLO - 1950 CENSUS

Monthly salary in U.S.A. dollars	Inhabitants			Type of payment					
	Total	Male	Female	per hour	per day	per week	per decade	per 2 weeks	per month
Total.....	6,530	4,629	1,901	1,248	377	1,587	8	725	2,445
Less than 25.....	469	89	380	2	2	88	0	23	354
25 - 49	1,215	439	776	43	79	497	4	75	517
50 - 74	1,718	1,336	382	551	146	416	2	198	405
75 - 99	1,683	1,511	172	388	83	294	0	227	691
100 - 124.....	751	652	99	196	44	146	0	117	248
125 - 149.....	239	216	23	40	19	71	0	28	81
150 - 199.....	211	193	18	25	2	62	1	40	81
200 - 299.....	88	75	13	3	2	10	0	15	58
300 -499.....	14	14	0	0	0	3	0	2	9
500 and over.....	2	2	0	0	0	0	1	0	1
Per task.....	19	18	1	-	-	-	-	-	-
Commission or Percentage.....	15	14	1	-	-	-	-	-	-
Other kinds.....	26	10	16	-	-	-	-	-	-
Not specified.....	80	60	20	-	-	-	-	-	-

Notes: 1- According to the Census, data about income was required only to those who called themselves "employees" with a salary or remuneration. They referred to their last salary and specified if they were payed per decade, month, hour, etc.

2- These salaries were reduced to a monthly amount, to make the comparison between them possible.

3- The purchasing power of a dollar in Panama varies slightly from that in the U.S.A.

Panama, July 24, 1952.

Republica de Panama
 CONTRALORIA GENERAL DE LA REPUBLICA
 Direccion de Estadistica y Censo
 Departamento de Censos

GRADES AND TOTAL SCHOOL ENROLLMENT OF THE PRIMARY SCHOOLS OF THE
 DISTRICT OF CHORRILLO - PANAMA CITY - JUNE 1952.

Schools	Grades	Total Enrollment		
		Total	Male	Female
Total.....	129	5,082	2,635	2,442
Public Schools, total.....	126	5,077	2,635	2,442
Centro Amador Guerrero, total	69	2,185	1,082	1,103
Rep. of Argentine School.....	19	592	291	301
Rep. of Cuba School.....	27	806	399	407
Rep. of Chile School.....	23	787	392	395
Manuel Jose Hurtado School...	29	1,895	1,021	874
Republic of El Salvador.(1)..	12	439	221	218
Republic of El Salvador.(2)..	16	558	311	247
Private Schools, total.....	3	5	—	—
Baptist School.....	3	5	—	—

Ministry of Education, Inspeccion Provincial de Educacion, Direccion General.

Panama, July 31, 1952.

The Department of the Census considers that the population of Chorrillo in school age in 1952 amounts to 5,335 (From seven to fifteen years of age), which was the population between 5 and 13 in 1950.

Table 8

	Total Structures	Wood	Brick Stone or Concrete	Corrug. Iron Roof	Tile Roof	Wood Floor
Calidonia	10,546	8,281	2,258	9,634	109	6,758
Bella Vista	3,339	664	2,666	999	1,661	—
San Felipe	2,327	726	1,596	2,012	219	1,484
Chorrillo	6,374	5,112	883	6,362	12	3,630
Santa Ana	8,743	5,565	2,877	8,307	142	5,603

Source: Department of the Census (1950).
Panama, R.P., January 1953.

República de Panamá
 CONTRALORIA GENERAL DE LA REPUBLICA
 Dirección de Estadística y Censo
 Departamento de Censos

DWEELLINGS AND RENT PER MONTH IN THE CITY OF PANAMA - PER DISTRICT - NATIONAL CENSUS 1950

Dwelling and monthly rent per unit in U.S.A. dollars.	CITY total %	San Felipe %	Santa Ana %	CHORRILLO %	Calido- nia %	Bella Vista %
Total.....	100	100	100	100	100	100
Less than \$ 4.00	0.4	0.2	0.3	0.4	0.3	0.8
4 - 6	23.0	5.1	14.2	33.6	34.4	2.5
7 - 9	23.2	8.3	25.7	26.6	29.5	0.9
10 - 14	13.2	12.6	16.4	15.4	13.4	0.8
15 - 19	7.0	11.2	10.4	5.8	5.4	2.4
20 - 24	5.3	8.9	6.4	5.0	5.4	0.4
25 - 29	2.8	8.5	3.5	3.6	1.2	0.7
30 - 34	3.0	7.1	4.0	1.8	1.2	5.9
*35 - 99	12.7	29.5	14.0	3.6	6.1	48.6
100 - 124	0.9	0.6	0.1	0.0	0.1	7.4
125 - and more.....	0.7	0.1	0.1	0.0	0.0	5.9
.....	4.3	4.5	1.6	1.6	0.7	28.1
Owned dwelling /, non spelcified,..	0.9	0.8	1.4	0.8	0.8	0.6
Other cases (free, loaned, etc.)	2.6	2.6	2.0	1.8	1.6	8.3

Panamá, May 1953.

* These figures have been simplified in one group, instead of giving the details because they serve the required purpose adequately.

The evils of this congestions are promiscuity, contamination in case of sickness, etc. Thus, privacy is one of the most important elements in the solution of the problem.

The pyramid of age (See graph) is a very unusual one, even for very urban areas. There seems to be an extreme concentration of people between five and forty-four years of age, with a very sharp decrease beginning at the age of forty-five. Sixty-four per cent of the population is over 15 years, a fact that can only be explained by migrations in the area. The amount of children is fairly large. According to the London County Plan, the school population is usually twelve per cent. In Cherrille, children in school age, seven to fifteen, amount to twenty per cent.

The number of children already mentioned indicates the necessity for recreation space as well as for school facilities.

Table 7 gives information about existing school facilities. Even though the number of classrooms (129) is sufficient for the school population, since it gives an average of 39 students per room, the condition of the schools is very bad, since most of them are old and do not have an adequate design.

There are no parks in the area. There are some empty lots that are not built up yet. The percentage of open spaces in Malambo in 1944 was eighteen per cent, less than the minimum required by law in Panama for each house, which is twenty per cent.

It is not too difficult to define a type of dwelling, since the most common type has one room without bath or kitchen facilities. Most houses are two or three stories high, made of wood, sometimes over concrete pillars, usually built around a small patio where the communal toilet facilities are located. Stairs come to open galleries or circulation balconies. For

structure type comparisons see table #8, which indicates frame and iron roof houses as predominant type.

The rental level is very low. The most usual, according to studies made in Malambo, seems to be between \$7.00 and \$15.00 per month. Notice in the salary table (No. 6) that the median wage is less than \$100.00 per month, and that only 1/3 of the women work. This fact indicates the limitation of the rent in the solution proposed, which reflects in the design of space for living.

Table 8 indicates the number and type of structures in all the districts of the City. Chorrillo's structures show a predominance of wood houses with corrugated iron roof, in comparison with the rest.

CHAPTER V

THE SOLUTION PROPOSED

Taking Cherrille as it would be available if completely clean of buildings, we would have an extension of land of 48 hectares 8,000 square meters or 117.11 acres. Part of the land next to the coast has been reclaimed and does not have the firmness or strength to support high buildings. The northern boundary is at the skirts of Ancon Hill and there is a possibility of good footing soil.

The area is limited by "B" Street at the North edge, the Avenue of the Poets on the South, parallel to the shore. Twelfth Street West on the East end and the Canal Zone in the West. "A" Avenue in the district has fairly good traffic at present, which is expected to increase in the future with the growth of population and with the increase in cars, which is 600 per year average. This is an important avenue since it connects Panama City with the road in the Canal Zone to the Ferry Boat that crosses the Canal and connects with the Panamerican Highway. The Avenue of the Poets has been proposed as the continuation of a circumvallation road for the city. Twelfth Street West has no considerable traffic, and there is no existing street between the boundaries of Panama and the Canal Zone in the West side of Cherrille.

Presuming that the area is going to be used for residential purposes, it immediately appears that the same streets will circumvallate the area, and a new one would be open in the West side to completely encircle it. At the same time this street would directly join the road in the Canal Zone already mentioned. The extra streets are needed for service and to divide it in three

different areas.

The district is 300 meters (990 feet) wide at Twelfth Street and at its full width 680 meters (2,270 feet) in the West boundary.

Most authors agree in having 1/2 mile radius as a size limit for a neighborhood where most traffic is pedestrian traffic. The division of this District in three sections allows for a smaller radius. In our case the community services can be located within that distance from all residential buildings.

A gross population density of 500 inhabitants per hectare is considered very high. Yet, for an urban development like this, trying to keep the largest amount of people that could be dwelled in sanitary conditions, we have reduced it to 20,000 at its maximum occupancy, at a density of 410 per hectare (approximately 200 per acre).*

Each one of the three sectors in which the area has been divided is designed as a neighborhood.

The Neighborhood Concept

The concept of what a neighborhood is has been very much discussed from sociological and planning stand points. Some Sociologists and Psychologists, maintain that it should be a homogenous group, some others that it should have people from different incomes and cultural backgrounds to get them acquainted and become a unit.

The neighborhood is the smallest physical environment in planning, the human element being its unit of measurement. The neighborhood is an area where a group of families live with a feeling of belonging to a group; where

*Sert - Maximum urban density for Lima 600 per hectare ("Planning in South America").

certain community activities take place. It originated in the primitive grouping of men with common interests. These groups usually had certain homogeneous characteristics.

The neighborhood has been discussed, planned and modified by people like Clarence A. Perry, José Luis Sert, Clarence Stein etc. Each one has been concerned with size, community facilities, etc.

Some of the conclusions are: The neighborhood should have variety in population composition. It should provide all the facilities for:

1. Recreation of body and soul
2. Work
3. Dwelling
4. Circulation

There should be variety in dwelling units to provide for different necessities.

What makes a neighborhood successful is usually the sociologic factor. In other words, the community must be integrated as a group and have an interest in common life and properties. This feeling must be helped through designs, providing opportunities of meeting for the tenants. For example: common courts, community laundries, recreation centers, design of walks, etc.

Most authors seem to agree that a unit with a population bigger than 10,000 people cannot be an efficient neighborhood and should rather be divided in two 5,000 units. A 5,000 people neighborhood has been advised by Stein as ideal. Eventhough, the population limit varies in each country and in each case, according to circumstances of culture, land development, urban characteristics, income level, etc, etc.

A neighborhood does not necessarily include industrial or business areas, but there are commercial facilities, schools, nurseries, health centers, where people work. It must be connected by good means of transportation

to industrial and business centers. The circulation of vehicles and pedestrians should be well separated within the neighborhood radius.

Based in these conclusions, the whole area of Chorrillo was divided in three sections. The main reasons being as follows:

1. The shape of the area, long, and narrow.
2. The total population proposed: 20,000, which is the population of a town.
3. A division that allows a reasonable radius in each section for pedestrians to reach all facilities. Maximum radius advised is 1/2 mile. In our case, the community services are within a distance of 600 meters from any residential building.

The sectors vary in size, and so the populations in each one. The average population comes to be 6,600.

The maximum school distance from any dwelling unit is 440 meters (1/4 of a mile).

Sub-Neighborhoods:

The buildings are grouped around a communal court, forming small groups within the whole area, to promote a feeling of intimacy or of belonging to a small community. The provision of a common court, plus children playgrounds, service facilities, etc. would facilitate acquaintance between dwellers.

The study of one typical unit (See drawing No. 6) considers the grouping of six buildings (types 3 and 4. See drawings No. 19 & 20) and a group of row houses (Drawings No. 21 and 22) with a common court. There are two small stores, that may include repair shops to provide for the most immediate necessities for the tenants. There is also a community laundry in

the ground floor of one of the buildings that could be operated by the Administration, containing washing machines and drying space, for those who do washing for others or want to do their washing mechanically. There are two service driveways in each sub-neighborhood that also serve for emergency entrances in case of fire, ambulances or furniture moving trucks. The garbage collection takes place at a convenient time during the day. Each group of houses has a main 10' wide walk where a truck can circulate and collect the garbage cans, which will have a special enclosed place in the ground floor of each building.

The sub-neighborhood has sanded areas for small children to play, completely safe from traffic hazards. There are also volley and basket ball courts for older children and enough open spaces to install apparatuses. Some areas are destined merely for gardens to give the tenants a nice vista.

Types of Buildings Chosen

The solution, due to low incomes, to the urban nature of the sector, to the high value of the land and to regulations about the height of buildings (no buildings one story high allowed in the nucleus of the city) calls for a multi-story development. After a long study of the types of buildings to use, we came to the conclusion that instead of having buildings 10 or 12 stories high, which would amount to a fairly high number, multiplying expensive facilities like elevators, it would be better to have very high buildings taking a great amount of population; the walk type that does not require elevators, and the twin two-story high row houses for large families.

Another factor to choose the types of buildings is children. Families with small children must be dwelled in buildings of the walk-up type to avoid operation of elevators by the youngsters. Old people, persons with heart disease,

should also be given an opportunity to live in ground floors or low buildings.

The arrangement of the walk-up types in sub-neighborhoods provides facilities for the kind of population housed in these areas.

The nature of the land immediately defined the position of the buildings according to the strength of the soil. The northern side of the land is expected to be strong enough, while the southern edge, which is reclaimed from the sea, would be better for low buildings.

A very simple zonation scheme comes out then, with very high density to the north, medium density in the middle and lower density in the southern end.

This distribution of the buildings has many advantages:

1. The high buildings do not cut the view to the lower ones.
2. The southeastern exposure is uninterrupted for all the buildings.
3. The slope of the land, towards the South, permits the continuous ventilation of the buildings.
4. Restaurants in the roof of the 12-story high buildings have the view of the whole development, and are conveniently located for customers.
5. Wind is not stopped by the high buildings since they have the ground floor open to allow the cool winds near the ground to come up along the whole site. This also has the advantage of keeping the bulk of the buildings away from the eye level. The pedestrian is in direct contact with nature and can also protect himself against sun and rain.

The arrangement of the different types of buildings is conditioned by the open space surrounding them according to their height. One and 1/2 times the height of the building is good in any latitude to allow necessary insolation and wind circulation.

In a high-rise development eight per cent to twelve per cent is usually the land coverage, but in our case, with a mixed development that includes

different heights, the land coverage raises to twenty per cent allowing a ratio of 4.5 acres of open space every hundred people.

CHAPTER VI

DEVELOPMENT OF THE PROJECT

Neighborhood Community FacilitiesSchools:

The school population in 1950 was twenty per cent of the total; it has been used in the same proportion for the new population.

With a total of 1,200 children per neighborhood going to grammar school, it was considered better to have a large school with enough space surrounding it, instead of two small ones to avoid multiplication of facilities and teachers, which would make the whole project more costly.

Each school will have thirty classrooms with a capacity of forty children. This number is considered high for most American students, even though accepted in Europe and some countries in South America. Hygienic conditioning of the classrooms helps the situation.

There is also a gymnasium, a community library and administration offices in each one. The school playground is combined with the neighborhood playground.

The school in neighborhood 2 has been designed with an extra wing for special classrooms to be used as a Junior High School during the night. (See drawing No. 8). This is a compromise made due to lack of space to install a special building for a high school, and being necessary for the population dwelling in the whole area. It also has a swimming pool for training of older boys and girls.

Nurseries

There are two nurseries for the whole community, connected with the grammar schools, with a capacity of 150 children, each one. (See Drwg. No. 5, neighborhoods 1 and 3).

Shopping Centers

American standards for shopping centers indicate a total of 25,000 square feet for every 5,000 people in shopping centers, plus parking facilities standards, which are not applicable in our case. Although a more sound study of what the standards would be in Panama should be done in this case, the American indications have been used to supply rather a too large area than a very small one. Having an average of 6,600 people, the total floor area would be around 33,000, but having the space available, the area provided for the three shopping centers is 45,000 square feet, including the interior courts, used for ventilation and display facilities. Parking areas are provided.

Health Center

It was considered better to have one large health center instead of one in each neighborhood for economy and for a more diversified use of the space. This health center, together with school in neighborhood 2, around a plaza, becomes a community place for the particular section. (See Drwg. No. 8). Its functions would be maternal and school clinic, and a few beds for emergency. It would also be a Dispensary. Its floor area is 21,600 square feet distributed in two stories.

Churches

There are two churches in the whole district, with a capacity of 900 seats. The Catholic churches have services from 6 a.m. to 12 m., which allows a

capacity of 12,600 people.

Theaters

There are only two theaters, which would be used for movies and as auditoria. It was considered that the District is very near the center of the City where more theaters would be available.

Gymnasia

The Gymnasium in each school would serve civic functions as athletic competitions.

Plazas

Plazas where people meet and sit are traditional of countries with a Spanish cultural background. There is one large space devoted to these functions in each neighborhood. They are connected by walks along the whole area, shaded by trees, to form the "paseos". (See Drwg. No. 5). The cafes would be located in the shopping centers.

Playgrounds

The playgrounds vary in texture, being the soccer and baseball fields in grass; tennis and basketball courts in concrete and children play areas in sand or grass.

The ratio of open space for the whole area is 4.5 acres every 1,000 inhabitants. The standard for American cities has been indicated as 10 per thousand as ideal. The London County Plan adopted a different ratio: 4 per thousand in the nucleus and 7 per thousand for the rest of the urban radius. In our case, due to the general limitations, the ratio adopted seemed reasonable.

Sitting places

Along children play areas there are shaded places for mothers and older people to seat. Benches could be placed along the Avenue of the Poets, along the sidewalks, which are reasonably far from the curb, at an average distance of five meters. The sidewalks have an irregular pattern.

Pedestrian Walks

The main pedestrian walks will be ten feet wide and the secondary ones vary from 8' to 3' wide. The main ones in concrete and the secondary in cobble stone or gravel. The walks along the streets would be paved with colorful marble waste chips over a base of gravel, with a thin shield of cement to bind them together. This would give a colorful effect that would be very attractive.

Driveways

The driveways go far enough into the sub-neighborhood to make service efficient, but keeps away from interfering with the pedestrian and children circulation within the area. It ends in a paved space 20 x 25 meters. There is a fire hydrant in each driveway for fire control. There could be some parking in the driveways when it is necessary.

THE DWELLING UNIT

The design of the dwelling unit is based in a study of the habits of the tenants and their possibility of paying for the space provided.

Tenants Habits

Trying to apprehend the inhuman present conditions in which these people live, I pictured a kind of summary of what a family would do with their time and space.

Early in the morning the husband leaves for his work. School children usually have to stand in line for a chance to shower. The housewife in the

course of the morning goes to the market, does the housework. The crowded conditions (1.3 families per room) demand closing of beds in the morning and readjustment of furniture in more comfortable positions to allow room for other activities. Smaller children usually play in the circulation balconies, in the streets or sidewalks, or in damp paties where the housewife does her washing and meet her neighbors. Cooking takes place in improvised kitchenettes in the circulation balconies, protected by sheets of corrugated iron. The panorama for a tenant in such environment during the whole day is very oppressive. In the night or during resting hours there is no choice but to stay in the room, or sit on a common balcony facing the street, or get out of the room and stay in a public plaza. The environment is not attractive to keep people together in the home. This, of course, brings evils like juvenile delinquency, lack of family life, briefly, a spiritual and physical misery.

Orientation

Orientation is very important in the tropics, especially if natural ventilation is going to be used. Being at 9° North of the Equator, the azimuth angles of the sun are; $14^{\circ} 30'$ to the North and $34^{\circ} 30'$ to the South. The sun is in the Zenith on the 14 of April and on August 29.

A sound study was made of the insolation of a house in different exposure. Experiments were made with the heliodome, and the North-South exposure appeared to be the best. It has the advantage of getting enough penetrating sun, especially from the South-East, during 235 days of the year and the most vertical afternoon sun from the North-West can be easily controlled with overhangs. A house in this position also gets the prevailing winds from the NW and SE.

This orientation has been kept in the whole project as much as possible. The design of space distribution for purposes of composition, creation of community feeling with central courts, etc., demanded different positions in buildings. Even though, the exposures chosen, either East-West or South-East-Northwest, also get the benefit of the winds. These other exposures require the use of artificial devices to control sun penetration.

Natural ventilation is considered the best, since the climate is very humid, reaching an average of 83 per cent relative humidity in certain months of the year. Consequently, a complete cross ventilation is ideal. This last factor convinced the architect of the desirability of buildings one apartment deep.

Consequently, the main problems to consider and solve are: lack of space, promiscuity, lack of privacy for elementary necessities like cooking, bathing, etc; insolation, ventilation.

The solution calls for differentiation of activity areas keeping at the same time a multiple purpose for every room, in such a way that there is no need for a very large space that a family cannot afford. The architect came to the conclusion that no American standards established or required by F.H.A or other authorities could be applied as help. The case is different and needs a different approach and solution.

The Space: It has been divided in:

General circulation areas
Cooking area
Eating area
Seating area

Laundry rooms
Sleeping area
Bath room
Storage spaces

The general circulation areas are designed as open galleries or balconies. These corridors will be 7' wide, considered enough so people are not too

close to each apartment's windows. Windows in the North or West side are very important to take the prevailing winds. At the same time windows require shadow, which is provided by the balcony space separating them from the open air. It serves the function of an overhang too.

No livable room should face the corridor. Here a problem starts, since the ventilation is desirable for the bedroom. Solution: two floors to get the benefit of privacy and ventilation at the same time, or horizontal circulation every other floor.

The kitchen has the advantage of direct service from the corridor. Other areas, eating, and seating, face south in a flexible arrangement to avoid partitions and permit separation of activities. (See drawings No. 12 and 13). The mezzanine treatment of the second floor in the apartments facing South allows a feeling of spaciousness. It provides a good circulation of air, although it deprives one sleeping area of complete privacy, which can be helped by movable drapes.

Each apartment has the benefit of a complete private balcony, which serves several purposes; it can be a living room space for visitors, a gathering place for the family, a play area for an infant easily watched by the mother from inside, a dining area during the summer, with the full benefit of the sea and landscapes.

The green area surrounding the buildings gives the housewife an opportunity to change to a nice environment when she walks to the market; to the children walking to the schools; to the father walking to a bus stop or to the older people sitting on a bench.

A module of 18 feet center to center of column by 35 feet, full width of the building, proves to be a sufficiently small space which is big enough to

allow separation of activities, variation in design and flexibility in the number of tenants per unit. The apartment module, 18' x 28' has been kept in each type. One floor high for bachelors, couples or three person families; and two floors for larger families. The two floor unit dwells from four to seven people as shown in the plans and model. This unit varies in the row houses, which has a small private garden and four bedrooms. These houses dwell families up to nine members.

The one floor apartment has a total net area of 476 square feet (47.6 square meters) and the duplex 848 square feet (84.8 meters) including balconies. For the purpose of comparison; the American Public Health Association Committee on the Hygiene of Housing specifies as a minimum space living for six people, 1,550 square feet. (See "Planning the Home for the Occupancy").

Population in Different Buildings

Building type 1:	Maximum 2,722 persons
Building type 2:	" 834 "
Building type 3:	" 132 "
Building type 4:	" 200 "
Building type 5:	" 9 "

To allow flexibility in occupancy, apartments have been designed to dwell families of variable sizes. The apartment distribution is as follows:

Apartments for 1 to 2 persons	Type A-3	15.5%
" " 2 to 3 "	Type A-1 & C	20.0%
" " 2 to 4 "	Type A-2 & D	22.0%
" " 4 to 7 "	Type A & B	41 %
" " 7 to 9 "	Row Houses	1.5%

CHAPTER VII

FINANCIAL ASPECT OF THE PROBLEM

This is one of the most delicate and complex parts of the whole project. Regarding housing in Panama, the Brunner Report of 1941 suggests that the Government should not invest directly in the construction of low rent dwellings because "experience shows that the Government builds at a higher cost than a private company", due to the large overhead. On the other hand, there is the tendency of the individual to feel that the Government has a certain obligation of giving a place to live for him and the collection of rents becomes difficult.

One of the best solutions is to promote the investment of private capital, through a well organized program of Government loans at low interest rates, that can be helped by the creation of a Corporation for the Financing of Low Cost Housing. A similar corporation has been created in Mexico, the Banco Nacional Hipotecario Urbano y Salubridad Publica, S.A.

The land value is very important in this sort of program. Many solutions have been suggested to avoid land speculation, which makes housing difficult and costly, especially in urban areas near the nucleus, where labor residences would be desirable, and where land prices have grown gradually.

A solution suggested by Henry George years ago, and Jackson H. Ralston, is a revision of land taxation. It mainly consists of assessing the land according to its value, instead of taxing the investment over the land. This policy attempts to eliminate speculation with land and encourages private

enterprises to invest in industry, construction, etc., because the owner expects a revenue from his investment that is not so reduced by tax. At the same time the laborer may earn a better wage.

In the case of urban high price land, the Government can buy the land, condemn it, or buy it through an assembly process; lease it to the investor and loan money for the construction of housing in a mortgage system. With the land leased the Government keeps more control over the whole project. In cases of very low income classes, the Government would have to introduce a control of rent or a subsidy program.

One of the new reforms introduced for housing programs in Mexico and other countries is to make the individual a co-owner of the project. In a multi-story development, each individual may become the owner of his unit and live there indefinitely. The Law No. 33 of November 25, 1952 in Panama regulates and organizes this system. This law will soon be applied to the low rent houses built by the Banco de Urbanizacion y Rehabilitacion.

This Bank has engaged in the construction of both rental and owned housing, and so far it has made a 12 per cent profit, according to their reports. This proves that an investment with a lower profit, would be possible to provide the poor classes with decent living conditions.

BIBLIOGRAPHY

- Abercrombie, Sir Patrick, London City and County Plan
- Adams, Outline of Town and City Planning, New York: Russell Sage F, 1936.
- _____ Planning the Home for the Occupancy, Chicago: American Public Health Association, 1950.
- _____ Planning the Neighborhood, American Public Health Ass. Chicago; 1948.
- _____ L'Unité d'Habitation au Perogrulle, Paris: Architecture d'Aujourd'hui, 1952.
- _____ Planning in South America, Paris: Architecture d'Aujourd'hui No. 33, 1951
- _____ Saint Louis Housing Developments, Arch. Record, April 1951.
- _____ Are Apartments Economically Obsolete, Arch. Record, Dec. 1951
- _____ L'Unite D'Habitation - Corbusier, Arch. Review London, 1951
- _____ Edificio Multifamiliar Presidente Aleman, Arquitectura, Mexico, 1950
- Banco de Urbanizacion y Rehabilitacion, Publicacion No. 1, Panama, 1945
- Bauer, Catherine, Modern Housing
- Behrendt, Modern Building
- _____ Boletin Informativo No. 3, Panama: Quinto Censo Nacional, 1953.
- _____ Boletin Informativo No. 4, Panama: Quinto Censo Nacional, 1953
- Boesiger, Willy, Corbusier, Oevre Complete, Zurich: 1938-46
- Coit, Elizabeth, Housing from the Tenant's View Point, Arch. Record, 1942
- Elek, Paul Architect's Year Book No. 4, London: 1952

- Gallion, The Urban Pattern, New York: D. Van Nostrand Co, 1950
- Gay and Fawcett, Mechanical Equipment, New York: John Wiley and Sons, 1945
- George Henry, Social Problems
- Giedion, Space Time and Architecture, Cambridge: Harvard Univ. Press, 1944.
- Graham Jr. John, Housing in Scandinavia
- Hilberseimer, The New City, Paul Theobald Publ, 1944
- _____ Chicago Redevelops, Journal of Housing, April 1952
- Kidder Smith, G.E. Switzerland Builds, New York: Alber Bonnier, 1950
- Kingsley & Casis Urbanization in Latin America
- Mumford, Lewis, The Culture of Cities, Harcourt Grace and Co. 1938
- National Housing Agency Land Assembly for Urban Redevelopment, Dec. 1945
- Pierce Foundation, John Family Behavior, Arch. Record, June 1944
- Pound, The Golden Earth
- _____ Public Housing, Wash-D.C. Got Print Off. March 1946
- Ralston, Hackson, H. What is Wrong with Taxation
- Rubio, Angel La Ciudad de Panama, Panama: Banco de Urb. y Rehab, 1950
- Saarinen, Eliel, The City, New York: Reinhold Publ. Corp. 1943
- Sanchez, Felix El Problema de las Densidades de Poblacion, Revista Espacios, Mexico: August 1950
- Sert, Jose Luis, Can our Cities Survive, Cambridge: Harvard Univ. Press 1947
- Smith, T. Lynn, Population, New York: McGraw Hill, 1948
- _____ Local Planning Administration, Chicago: The International City Manager's Ass. 1948
- Violich, Francis Cities of Latin America
- Young, Sociology, A Study of Society and Culture

Zamora, Adolfo,

El Problema de la Vivienda y el Capital Privado,
Mexico: Arquitectura, March 1952.