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La Puntilla Housing: Study in Low Rise - High Density Urban Housing. San Juan, Puerto Rico

Jose Antonio Rodriguez Barcelo

LA PUNTILLA HOUSING:
STUDY IN LOW RISE - HIGH DENSITY URBAN HOUSING
SAN JUAN, PUERTO RICO

by
JOSE ANTONIO RODRIGUEZ BARCELO

B. Arch., Tulane University, 1975

ABSTRACT OF THESIS

Submitted in partial fulfillment of the requirements for the degree of

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Since the dawn of man, shelter has been the main problem facing mankind. Housing, and in almost every case the lack or inadequacy of it, has been the major object and preoccupation of man.

The rapid growth of cities has led to a tremendous housing shortage in urban areas. The once rural population of this country and every developing nation in the world have come to the cities to find only inadequate, substandard housing. This influx to the cities creates stresses among the population that make the problem of urban housing ever more demanding.

"One variable that has been consistently implicated in a wide variety of urban ills is density. . . . We do not know whether density does in fact cause the effects that are attributed to it, and how it works if, indeed, it is responsible for them."[1] The high concentration of people in an area has been associated with adverse pathology, increase in crime, and the general degradation of social structures. This thesis looks into the fundamental causes of these effects, so that, hopefully a better understanding of these factors would translate into a better scheme for housing in urban areas.

This study focuses on the problems of urban housing, with special emphasis on low to middle income, high density - low rise solutions. The findings of the research of this thesis are incorporated

1. Ittelson, William H., et. al., An Introduction to Environmental Psychology, (New York: Holt, Reinhart and Wilson), 1974.

into a design solution of a low rise - high density development in La Puntilla sector of Old San Juan, Puerto Rico.

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TO MY PARENTS AND ESPECIALLY

TO MY WIFE VIVIAN

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Many people have assisted me in the preparation of this thesis. My sincere thanks for his incalculable help goes to Prof. Kermit J. Lee, Jr. of the Graduate School of Architecture. His insights into the socio-economic-political connotations of housing and their particular relationship to the architectural problem of La Puntilla Housing, became a major part of this work.

To Prof. William Manging of the anthropology department of the Maxwell Graduate School of Citizenship and Public Affairs, my sincere appreciation for his comments and help in getting the research work completed. To Prof. Fernando E. Fagundo, special thanks for his contribution towards the structural integrity of the architectural solution; and very special thanks to my wife, Vivian, for her final work in typing and editing of the original typescript, and also for her encouragement to continue forward at times when I needed it most.

TABLE OF CONTENTS

Page

LIST OF FIGURES

PART ONE

INTRODUCTION

This research treatise on the subject of urban housing is divided into three main sections.

Part One deals with the particular problems of housing in an urban setting, mainly densities, territoriality, privacy, and personal space. Part Two deals with the socio-economic-political factors that in general affect urban housing and in particular a focusing down on the subject of user's values in the design solution. Part Three, the final part of the report, deals with specifics of a housing development. This section focuses on specific site information for a housing development in La Puntilla sector of Old San Juan, Puerto Rico, and the design solution to La Puntilla Housing.

CHAPTER I

DENSITIES

As a factor affecting urban housing, density, until recently, received little attention from social scientists or architects. Usually the question of density was resolved in an economic way. Developers or governmental agencies such as the office of Housing and Urban Development or New York State's Urban Development Corporation determined the number of units to be erected in a particular site, based on the economic needs of residents, resources in subsidy funds, maintenance and operational budgets available, or the income producing capabilities of the project instead of the real needs of the residents of the social implications to the community. No thought was given to the variable, "density", nor to its relationship with crowding in urban housing.

The most general meaning of the term "density" has been the number of people per unit of space. However, this term refers more to crowding, which is the number of people occupying a unit of living space, as opposed to density which refers to the distribution of living units over a given area. These two definitions although related have different implications in urban housing problems

and have to be clearly understood. Density refers to the actual number of units in a particular site, while crowding is a psychological term that refers to the feeling of being in a space where too many people have congregated. In the following discussion the difference in the terms "crowding" and "density" will be alluded to.

In 1956 Loring in his treatise Housing and Social Organization brought up the idea that high densities per se were not the cause of social pathology, but could only be a contributing factor. He concluded: "Densities resulted in pathological results only when the seeds of pathology had already been sown among his respondents. High densities may (at best) aggravate the existing condition of individuals reacting pathologically."[1]

Schmitt (1966) wrote about the significance of crowding, or in his terms overcrowding, and density. He proposed that of the two variables, density and overcrowding, density is the most important. A study by Mitchell (1971) confirmed this hypothesis: "It is the number of households and not the number of people in the dwelling unit that is significant."[2]

These two writers have shed new light on the question of density and the relationship it has to crowding. Crowding is a psychological concept, with an experimental, motivational base. As such the experience of crowding can be characterized as a motivational state directed towards the alleviation of perceived restrictions and infringement through the augmentation of one's

1. Loring, W. C., "Housing and Social Organization." Social Problems, vol. 3, 1956.

2. Mitchell, R. L., "Density, Health and Social Organization." Journal of the American Institute of Planners, vol. 32, 1966.

supply of space, or the adjustment of social and personal variables so as to minimize the inconveniences imposed by spatial limitation.

Stokols (1972) stated that density is a necessary though not sufficient condition for the feeling of being crowded. For example, one can be with a group of friends and not feel crowded, but can be with the same size group of strangers and feel quite crowded. Thus certain other conditions aside from density are needed for the perception of crowding. Noise, for example, and other environmental factors or social factors such as competition, struggles or difference in personalities contribute to the overall feeling of crowding. Therefore, density, necessary for a feeling of crowding, and crowding, being affected by so many other determinants, become for the analysis of urban housing the two most important concepts.

Crowding or the feeling of being crowded is a personal matter, a psychological concept. The architect or urban designer has little control over crowding. It is true that these professionals control the amount of space allocated in a given situation, nevertheless, personal and psychological factors are also necessary. The designer's job is to be conscious of the implications of crowding and its relationship to density.

Jane Jacobs in her precise work Death and Life of Great American Cities argues that high densities are not only desirable, but also necessary. "Such densities are needed to maintain diversity and depth of urban services, and, in any event, are made inevitable

by the rapid population growth."[3] My ideas of density are compatible with Jacobs', in that I believe that in order to accommodate the expected growth of the population without significantly increasing the already sprawled metropolitan areas requires higher densities.

The attacks on the desirability of high densities are summarized in Mildred Schmertz' article "Design Alternatives for Low to Middle Income Urban Housing."[4] In here she brings up the concept that the attacks on high density high rise, low-to-middle income housing stems from the erroneous idea that the elements contributing to the decay of public housing; inhumane feeling of isolation and helplessness, the contribution of this segment of society to the collapse of family life, crime, juvenile deliquency, and vandalism, and the feeling of indifference, or neglect, are not present in low rise, low density semi-detached housing. I propose that these same factors affect low density housing, and the only reason the results are different is not because of the lower density, but because of the higher social and economic status of the residents. This idea is compatible to Loring's.

High density does not have to be bad. Several studies have been made of the effects of higher densities and its relation to social decay and pathology. The most important of these are Schmitt's "Density, Health and Social Organization," and Newman's Defensible Space.

Schmitt studied the particular case of Hong Kong, where one

3. Jacobs, Jane, Death and Life of Great American Cities. New York: Random House, 1961.

4. Schmertz, Mildred F., "Design Alternatives for Low-to-Middle Income Urban Housing." Architectural Record, August 1976.

of the world's highest densities is found. The result of his studies were that although the densities in Hong Kong are almost five times those found in dense areas of New York or Boston, (2,000 persons per acre compared to 450 persons per acre in New York City) the death rate, except for tuberculosis in 1966, was lower. Infant mortality although higher than in the United States, was significantly lower than the world average, and psychiatric disorders occurrence was one tenth that of America. He also found that juvenile delinquency and adult crime were less than in the United States. He concluded that densities are not invariably associated with pathologies and that other factors such as culture may have a greater importance in the eventual social degradation attributed to densities. Densities and overcrowding are hence variables whose effects are uncertain, even though it would on face value appear extremely relevant to pathology.

On the other hand, Newman investigated the effects of high rise high densities as causal elements of not only pathology but also of social desintegration. Newman's hypothesis is that the taller the building, implying higher densities, the higher the crime rate. He argues that given the same density and types of tenants, low rise projects show greater tenant satisfaction. Furthermore, Newman proposes that territoriality, image, personal space and eventually the total environmental setting contributes to the satisfaction or rejection of the housing project whole. "It is impossible to look at the physical setting without considering

the social setting and vice-versa."[5]

An example of a large scale public housing project which did not work for the lack of consideration to the social setting factors described above is Pruitt-Igoe Housing Project in Saint Louis.

Pruitt-Igoe looked only at the physical setting elements in the design solution, consequently omitting the social elements. The buildings eventually had to be destroyed. Some of the reasons given for the eventual destruction of Pruitt-Igoe were:

- Almost entirely black indicating a lack of social and economic integration.
- The site plan failed to provide the proper kind of space for development of social networks. Few places to meet. Living was vertical and institutional.
- No-man's land became the arena for vandalism and crime.
- Parental supervision difficult.
- Sheer scale, minimal landscape, and general isolation from the surrounding neighborhood.

These elements are essentially what Newman calls the elements of defensible space. Newman argues that physical design plays a very important role in crime rate, and that if designers were to follow and be conscious of defensible space elements the reasons for deterioration and vandalism could be eliminated. For Newman there is a definite negative identity attached to public housing. By their very design, most projects reinforce feelings of self-depreciation in their residents, and expresses feelings of hopeless isolation. Their physical world is telling residents that they are inferior

5. Newman, Oscar, Defensible Space. New York: McMilan, 1972.

and bad just as effectively as do their human interaction. Newman's conclusion: "A resident who has resigned himself to not caring about the conditions of his immediate surroundings; who has come to accept his ineffectualness in modifying his condition; is not about to intercede, even in his own behalf."[6]

Newman implies that physical design is a major cause of social decay and increase vandalism. Recent studies have shown that this may not be the case. Louis Sauer's work in Hartford, Connecticut (see American Institute of Architects Journal, February 1977) identifies two similar buildings in design, only two blocks apart, which after several years of use by low income subsidized housing families have shown that the implied relationship between physical design and urban decay is not a strong one. Other factors other than physical design contribute to the general deterioration and deprecation of the social and physical structures in public housing developments. Ethnicity, socio-economic status, occupational status, mobility, and educational levels are factors that have to be considered when evaluating public housing facilities. It was factors like these that cause the differing fates in the two buildings mentioned above.

High densities have also been attacked on the grounds that there is a relationship between high population density and crime, with high crime rates in heavily populated areas of cities and a decrease in crime towards the suburbs. However, the difficulty in

6. Newman, Oscar, Defensible Space. New York: McMilan, 1972

making inferences from such data is that many variables such as socio-economic status and other factors are not usually equivalent in dense and non-dense population areas. No comparison can be made between the two. However, comparisons of high versus low rise buildings in the same neighborhood are valuable.

Summary:

Densities have been attacked by behaviorist and social scientist as the sole contributor to a range of urban ills, from family degradation to high crime. However, recent studies have shown no causal relationship between high densities and crime or high pathology. (Schmitt, 1966; Jacobs, 1961; Mitchell, 1971; and Schorr, 1963). Furthermore, some authors, particularly Jacobs bring out the idea of densities as desirable if not necessary. To paraphrase Jacobs: Great urban housing is not like rural communities, only larger. They are not like suburbs only denser. They differ from rural and suburban communities in basic ways.

I share this idea with Ms. Jacobs. I believe that urban housing needs a sufficient rich environment in order to accommodate the demands made on the environment by residents. Architects and urban designers have to provide this rich environment where interactions are to occur and where meaningful contact can be made. A consciousness on the part of the architect or designer to the elements that shape and regulate the environment is needed in

order to provide the arena for meaningful human interaction to occur. However, people and architects in particular, need to realize that it is not enough to create new environments; we must also learn how they work. Furthermore, designers and researchers need to realize that people do not always use the environments in a predictible way, sometimes because the environment does not fit their particular lifestyles or because the environment gave them oppotunities that could not have been predicted in advance. If we are to learn how to design future environments better, it is important that we see how people use places created for them.

There is nothing intrinsically wrong with high density. In some places it has worked or is projected to work. Roosevelt Island for example. In others, Pruitt-Igoe, for reasons other than density alone, it has failed. Therefore, with no specific argument againts high densities per se, urban housing environments with high densities, in ways that are responsive to other sociological and psychological human needs are feasible and should be pursued.

CHAPTER II

HIGH RISE VERSUS LOW RISE

INTRODUCTION:

One important aspect of the question on density in urban areas is not only if density, or a high concentration of people in an urban core is bad, but whether the housing solution is itself good or bad; high rise or low rise. High density has most always been associated with high rise living. Recent studies, (McLaughlin 1976) have shown that this is not necessarily so. Low rise can in fact be high density.

McLaughlin defines high density as the ratio of occupied square feet in a building to square feet of site, rather than using the more common statistic of units per acre. He argues that units vary in size and efficiency so it is the occupied square feet that represents the final product. Even in this strict definition of density we see that it is possible to have low rise - high density housing. "Monumental towers scattered across a site very seldom result in a ratio of more than two and a half square feet of usable floor space to one square foot of site, a density that is equivalent to about 150 units per acre."[7]

7. McLaughlin, H., "Density: The Architect's Urban Choices and Attitudes." Architectural Record, February 1976.

Evenmore, McLaughlin shows that land costs have to reach two million dollars an acre before a high rise solution begins to produce occupied footage at the same cost as low rise.

The aspects of low rise housing versus high rise, are studied by, among others, Newman (1972), Michaelson (1970), and specifically by the Institute for Architecture and Urban Studies and the New York State Urban Development Corporation in their publication Another Chance for Housing: Low-Rise Alternatives. (See figures 1 and 2.) Michaelson in particular points to the problem of rising a family in high rise units in terms of the amount of control that parents potentially have over their children once the latter leave the apartment unit. This, Michaelson argues, differs for low rise buildings where children play in areas that can be seen from the kitchen window. Mothers can call their children, and are never more than a few flights of steps from the ground. This idea is similar to Newman's where he argues that the elements of defensible space are easier to apply in a low rise scheme than in a high rise solution.

High rise housing has been attacked for all the problems that have plagued high density housing, which in almost every case was high rise. These high rise projects, as they are usually called, house a great many families on a relatively small amount of land, and they do provide decent living space in quantities which would be difficult to achieve at lower densities. However,

Figure 1

Adapted From: Museum of Modern Art. Another Chance for Housing: Low-rise Alternatives, New York: The Museum of Modern Art. 1973

Figure 2

Adapted From: Museum of Modern Art. Another Chance for Housing: Low-rise Alternatives, New York: The Museum of Modern Art. 1973.

Their design and landscaping often remain quite sterile. The scale of such developments seems frequently to be way beyond any human dimension, and families, particularly young children, miss the feeling of a familiar, homelike atmosphere. Furthermore, such housing projects often seem not to fit with the surrounding neighborhood, but rather stand apart from it. Nevertheless, low rise - high density housing remains, by being an area where little study has been done, an open area. I propose to, in an architectural solution, investigate the design determinants of low rise - high density housing, in the light of the parameters set above and the discussion that follows.[8]

A MATTER OF NUMBERS:

Newman stated in Defensible Space that eighty units per acre may be the reasonable upper limit of defensible space. This number is not, by any means, a set, unchangeable, density limit for low rise housing. Theoretically, Newman argues, it is possible to go to 150 dwelling units per acre, if one is to follow his defensible space directives. But, how important are Newman's directives? His directives are only guidelines and not absolute "must do" to designers. Architects have to be conscious of defensible space directives, and what they imply, but should in no way be limited by them. Newman's directives are good in addressing the problems

8. For a specific discussion on the evolution of housing concepts and low rise - high density housing see: Another Chance for Housing: Low-Rise Alternatives, Institute for Architecture and Urban Studies, and New York State Urban Development Corporation. New York: The Museum of Modern Art, 1973.

of territoriality and personal space but in no way does it determine architectural solutions to these problems. Therefore; Newman numbers of density have to be considered in the light of his personal bias. Architect, Josep Lluis Sert said it best. For him, balance is the key word; it implies a correct relationship of all parts to the whole. This balance means not only a balance between the community and the densities of the community, but a balance between the elements of the housing solution itself. It implies a balance between units and recreational areas, as well as a balance between units and amount of space allocated to each unit.

By being conscious of the elements and variables that affect urban housing, we can start to make decisions, and if based on the findings, these decisions have a better chance of being the correct ones. No absolute number on density can be established until all the pertinent information is at hand. Density has to be established by carefully weighting all the factors specific to a project: site, tenants, neighboring facilities, etc.

Other variables which relate directly to the problems of housing are territoriality, personal space, and privacy. I will look into these variables next.

TERRITORIALITY:

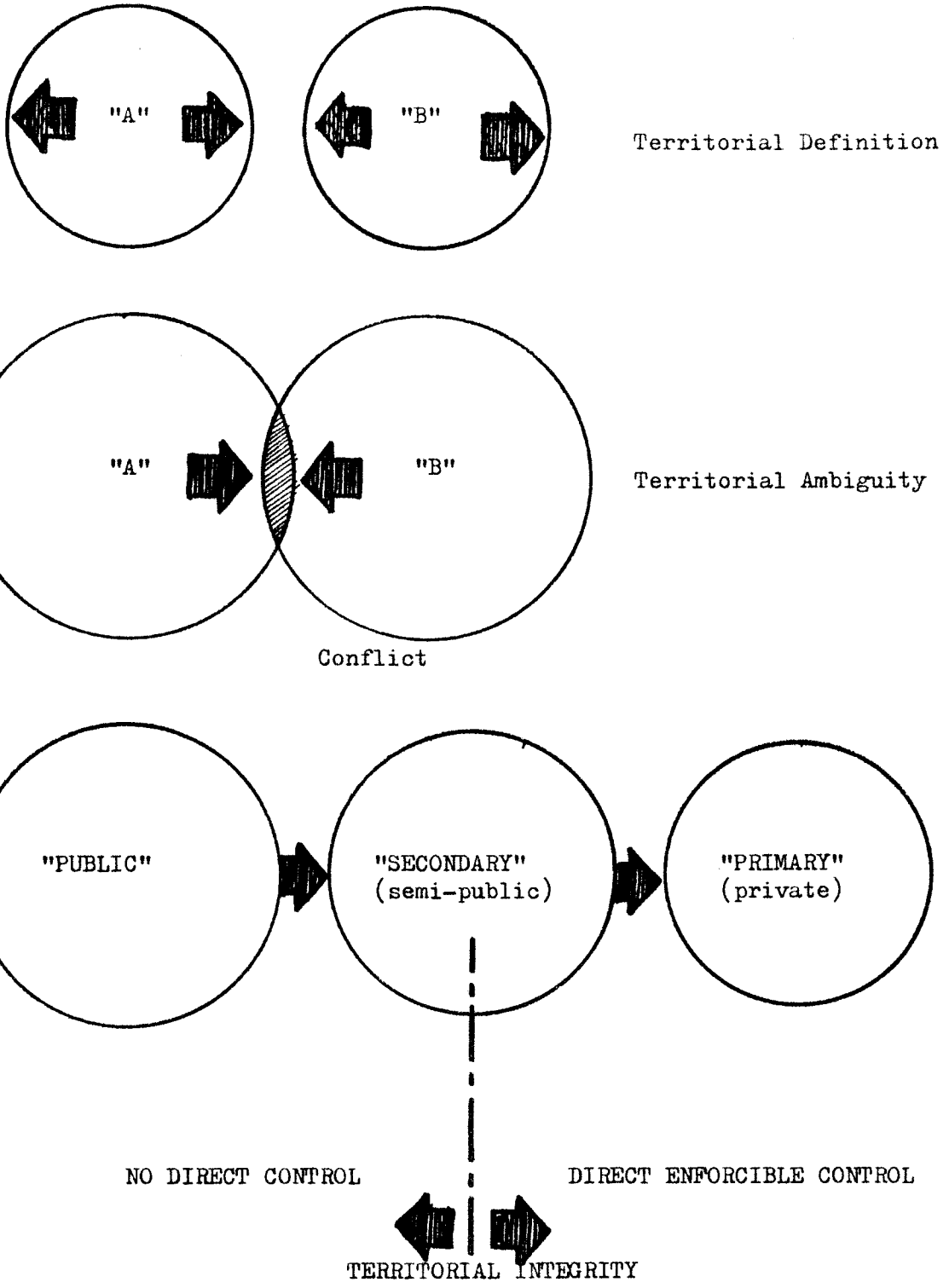
Resident satisfaction of their environment is not only

determined by whether they live in a high density environment, or by whether or not they live in a low rise housing scheme. Ultimate user satisfaction depends on associations individuals make with the environment itself or with other individuals. The possible associations by residents to other individuals is part of the privacy personal space part that follows. For now I will look into the associations between the residents and its environment.

Almost every study made on the user satisfaction aspect in urban housing; (Appleyard, 1972; Cooper. 1971; Ryan, 1963; and Fried and Gieicher, 1961.) identified a strong sense of identity to local places by residents as a major area for satisfaction. The variable territoriality deals directly with this issue.

Sommer (1969) defined territory as the area controlled by a person or family in which control is reflected by an actual or potential possession rather than evidence of physical aggression. Furthermore, he said, territories are the geographical areas that are personalized or marked in some way and that are defended. Resident satisfaction is found in areas where the resident territorial area extends to the reasonable limit, and where the sense of identity to the place of living begins to be felt. (Fig. 3)

There are three primary classifications of territories, primary, secondary, and public. Primary territories are those owned and used exclusively by individuals or groups. They are territories that are clearly identified as theirs by others, and are



TERRITORIAL DEFINITIONS (SCHEMATICS)

Figure 3

central to the day-to-day lives of the occupants. Examples of these territories are the living units themselves, the entrances to the living units and in some cases extend to undefined areas immediately adjacent to the entrance. These areas are the most powerful privacy-regulation mechanisms, and are usually viewed in a sacrosanct fashion and entered only after receiving permission from the owner.

Secondary territories are territories that although not necessarily are owned by residents that as a group exert control over the area. An infringement to these areas is a less serious offence than in the case of primary territory but, nevertheless, viewed as an intrusion. Secondary spaces, also referred to as semi public areas, are immediate streets, lounges, public recreation areas, and neighborhood stores where limited supervision can be exerted and as such are quasi public territories.

The third type of territories are public territories. Public territories have, by nature, a temporary quality, almost anyone has free access and occupancy rights to it. These territories are officially open to all, but certain images and expectations of appropriate behavior are required of users. In general terms the more control residents have over secondary and public territories the greater the extent of user satisfaction.

A neighborhood where territoriality exists and where a sense of identity is reflected, becomes a strong one. Residents become

highly stable and resident satisfaction increases. This is what architects and urban designers need to strive for. The fallacy of urban renewal has been just this, it tended to relocate people from what was considered a stable community with residential belonging, usually squatter settlements or slums to new areas where it was impossible to define territory and no sense of community was possible. In order to increase user satisfaction from the environment, secondary and public territories have to become primary ones. If control is given to the users and territorial extension limited to a manageable limit, strong sense of identity and residential satisfaction will result.

PRIVACY - PERSONAL SPACE:

Associations between individuals in an urban setting are necessary for the enrichment of life and of the environment. However, these associations and contacts have to be voluntary.

Privacy is an interpersonal boundary control process, which paces and regulates interaction with others. Sometimes a person is receptive to outside imputs, and sometimes the person closes off contact with the outside environment. This decision is personal and as such, of major importance. Just like in the case of crowding; if a person is not ready or receptive to outside intervention he will feel uncomfortable.

Privacy is important in urban housing because it is one of the principal elements of self-identity. If there is no self-identity there cannot be a sense of local identity and thus the whole concept of balance in the urban environment and urban housing will fall to the ground. Self-identity is central to human existence. For a person to function effectively in interaction with others requires some understanding of what the self is. If one's self is perceived as worthless, as is the case in many of our public housing projects, the person is reduced to literally nothing. In order to avoid this from happening, architects need to provide for privacy and thus make the living environment identifiable to the persons residing in it. Sometimes we, as architects, tend to think of the persons that are going to use our buildings as inanimate objects. This is where problems start. Architects and urban designers have to be conscious that the ultimate users of the buildings are humans, and as such subject to emotions and feelings, and need to realize the need for privacy and self-identity as the ultimate goal of user satisfaction.

Personal space, on the other hand, refers to an area with an invisible boundary surrounding the person's body into which intruders may not come. Any intrusion into this area causes the individual to feel encroached upon, which leads him to show displeasure or withdraw. The person opens to others when interaction is desired, and self closes itself off if the interaction is more

than desired or is undesired. Personal space thus becomes the mechanism used to regulate interpersonal interaction and to achieve a desired level of privacy.

The areas of privacy and personal space are related more to sociological studies than to architecture. Nevertheless, it is of an important consideration in that the elements of privacy and personal space correspond highly to the areas of residential satisfaction. Ultimately it is this, residential satisfaction, that architects, and myself in particular, am looking for in the design of the built environment.

CONCLUSION PART ONE

The work of urban designers and architects in relation to urban housing is to provide the best alternatives to the population. A consciousness to the factors that affect housing is needed. This section identified some of the problems of urban housing and also identified areas where the architect, in particular, needs to be on the lookout for in the actual design of the housing scheme.

The major problem affecting urban housing is not vandalism or crime. These are symptoms of the disease, which is indifference. Indifference not only by the residents, but also by architects, urban designers, the government and the public in general. Be it by design or by other factors today's housing, for the most part, is not responsive to the needs of the people it is supposed to house. Density as such is not the cause of this indifference. We have seen cases where given high densities the decay factors still exist. High rise or low rise do not become the determining factor, as low rise does not guarantee a reduction of indifference. The only aspect left in the analysis is the community involvement itself. Residents need to be motivated to effect change in the environment if they feel change is needed. They need to be motivated in order to erase every trace of indifference in our housing projects. This is the only answer.

PART TWO

CHAPTER III

THE RURAL IMMIGRANTS

INTRODUCTION:

There have been many studies of relocation of slums residents, however, I intend to address myself to the problem, not of urban relocation, but of urban integration. Integration of the immigrants that come from the rural areas, and residents of public housing, that once they have left their parents' houses in the slums, need a place to go and to start a new life. This part of this thesis deals specifically with the human element of housing. It identifies the sociological, political, and economic determinants of the users and tries to investigate further the residents' values, needs, and wants.

The rural population, throughout the years, has been getting smaller while the urban population is increasing. This is not a phenomena of the United States, but is also evident in developing countries around the world. Moreover, this is especially striking in South America and to a lesser degree in Puerto Rico. San Juan in particular, in recent years, has experienced a reverse migration trend. Puerto Ricans returning from New York or Chicago establish camp in San Juan looking for economic prosperity and social integration. This

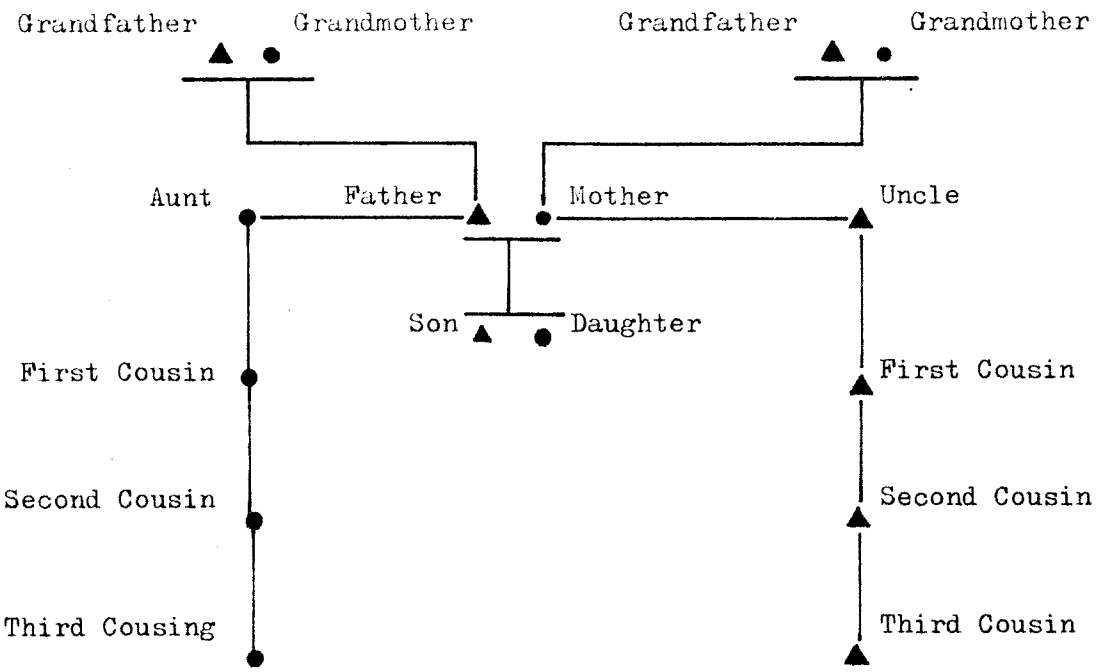
trend has affected the housing supply of the city to a point where a severe housing shortage is felt.

The capacity of cities to absorb into their infrastructures the mass migration of rural populus is limited. When this limit is exceeded, both in terms of housing and jobs, problems arise. The most obvious solution to the problem of housing is the urban slum. For all practical purposes this solution is inadequate and provisions for adequate housing for the newcomers to the city is needed.

THE RURAL IMMIGRANTS:

The typical rural immigrant comes from an agricultural background with very little contact with urban living. The average household is approximately five persons per unit, although households with six or more are not uncommon. The household is strongly tied to family life in a kinship unit. (Figure 4.) Visiting patterns are strong among relatives, and become one of the major activity of the rural household.

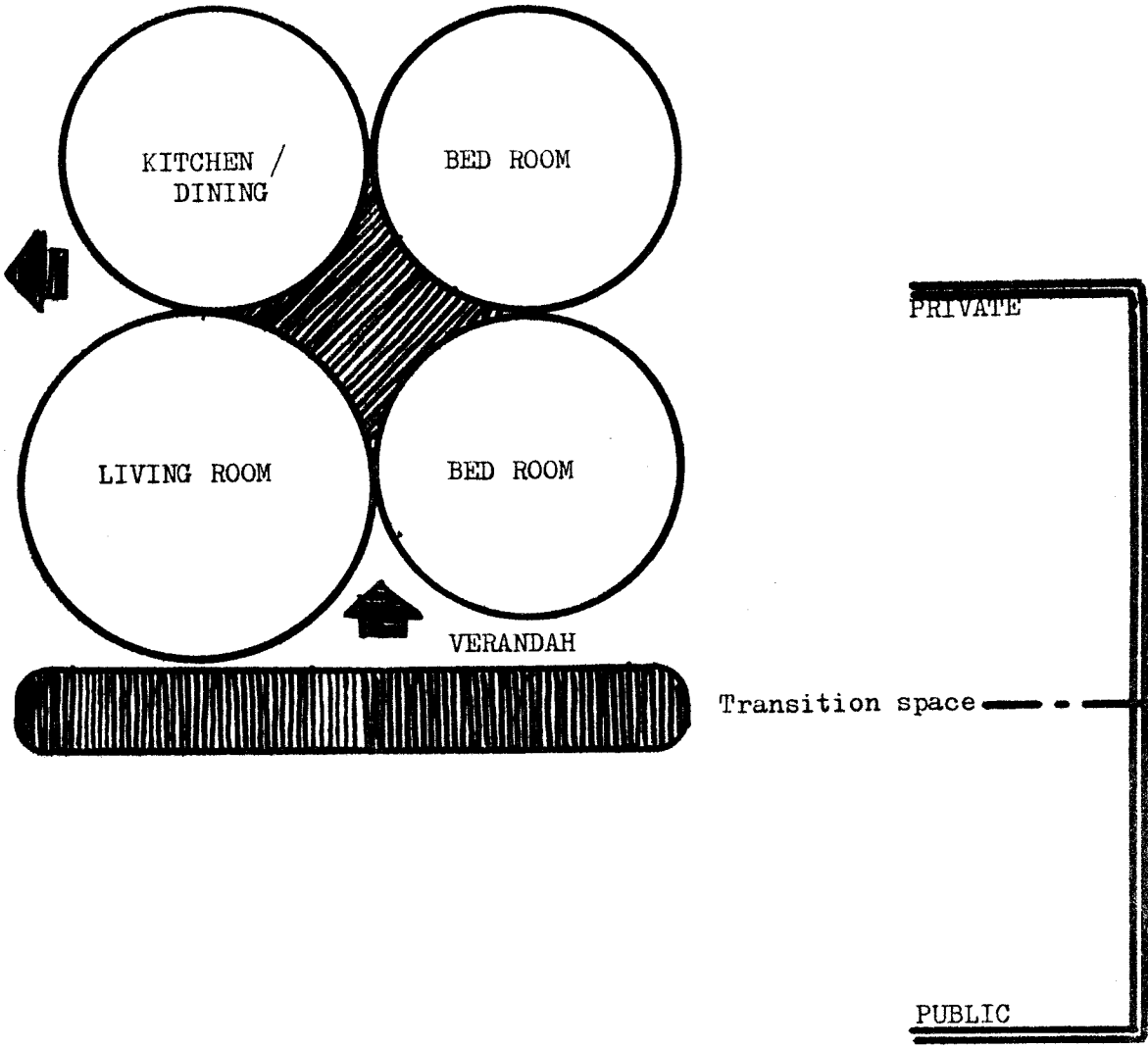
The typical rural household dwellings are single-story houses usually with five rooms. Of these rooms, two are probably bedrooms. (Figure 5.) Only larger houses have a separate dining room. Most of the houses have a verandah in front, in addition to the living room. However, the living room is the center of the house and all the activities of the household radiate out from this room. It is



KINSHIP TERMINOLOGY
(Consanguineal)

From: Carlos Buitrago Ortiz, Esperanza: An Ethnographic Study of a Peasant Community in Puerto Rico, U. of Arizona Press, 1973, p. 95.

Figure 4



TYPICAL RURAL HOUSEHOLD DWELLING SCHEMATIC

Figure 5

the place where visitors are received, where the family gathers in the evening to rest, converse, hear the radio, or watch television. The different rooms of the house, however, are not used exclusively for their specific purpose, but have many extra uses. Bedrooms can, during the day, become working rooms in which the women do their house keeping, and at night the living room can be used as an extra sleeping room for visiting relatives.

The area immediately surrounding the house is called the "patio". In this patio many activities typical of the household take place. It becomes the supervised area in which children play and women talk and gossip, but also becomes, at times, the men's area, where they sit around talking, drinking, and playing cards or dominoes. It is the active interaction space. Next to this area, the only other area within the house where similar activities occur is in the verandah. The verandah is a sort of lobby between the outside of the house and the living room. It is the place where most of the activities normally reserved for the patio take place if weather conditions do not allow for them to take place in the patio. In this sense the verandah is very important. In an informal way it is the place to sit in the evening after a day's work and to share with your family or neighbors.

Rural families have a very active social life, almost exclusively related to their immediate family living in the community. Separation from family members and close aquaintances is one of the

most important considerations in the reluctance to move out of the rural communities. Nevertheless, seeking better opportunities for them and their families, many rural households move to urban areas. Once a family member is in the urban fabric it is easier for other family members to follow, and in this way the whole process is accelerated.

Most of the customs and traditions of the rural communities are transported and practiced in the urban setting. This is more evident in squatter settlements where there is a strong social group and the traditional family and neighborhood visiting and communication lines have been established. Some of these customs are worth investigating here as they have specific bearing on the physical design of the proposed housing development at La Puntilla. First of all, as mentioned before, there are un-official gatherings that spring up every now and then and that are attended usually by males. These gatherings are the basis of the social life for many residents. This is where interpersonal contacts are made and where most of the time outside the household and not at work is spent. It becomes the center of activity outside the living unit. This area traditionally has been tied, and adjacent to, the local grocery store and bar.

For women and children, although most of their activities occur within the living units themselves, they usually come together at specific times and visit each other's households. A mid morning

break or a mid afternoon visit for coffee is the norm rather that the exception. However, women are rarely found with the men when they are in the game room of the bar or store. The time for formal, husband and wife, social visiting is a separate activity, but is also important. This aspect of family life is mostly carried out on week-ends and holidays. It is not unusual to see a whole family off to visit friends and relatives on a Sunday afternoon. Once in the visited household, different groups divide themselves, men, women, and children, but interaction between the groups occurs.

It is important for the designer to have a clear picture of the life sequence of the people he is designing for. In this case, the small things become large in providing an adequate living space for rural families. The adaptation period is the toughest, but once they are settled and their lives begin to revolve around their living unit, it is the architecture, the design configuration of the spaces that will determine the degree of satisfaction and the resident identification with the community.

The lifestyle of the immigrants from the United States is basically the same as for the rural immigrants. For them the transition from rural to urban living has already been made, however, they retain most of the customs and traditions of the rural families.

Some anthropologists and social scientists, (Hollingshead and Rogler 1963) have pointed out the dilemma in dealing with urban housing. In many instances, although families who live in apartments

in public housing projects are housed more adequately than families who live in the slums, most slums dwellers like their environment and particularly their neighborhood, while most dwellers in public housing dislike theirs. The cause for such dissatisfaction in urban public housing is the omission of all the pertinent criteria in the addressing of the architectural problem, the project statement. The users needs are altogether omitted from the program. The public housing developments stem out from middle class professional values, values that are not part of the class culture of the people who are going to live in them.

"CASERIO" DWELLERS:

Caserío is the Spanish word for public housing. Like the term public housing it has been stigmatized by society as a poor area in which to live. This is why the term "caserío" is gradually being replaced by "recidencial" or residential development. However, this does nothing more than to provide a cosmetic alteration to the term. The elements that gave it the bad name are still there. It is nothing more than calling the janitor the maintenance engineer, when in reality he still remains the janitor.

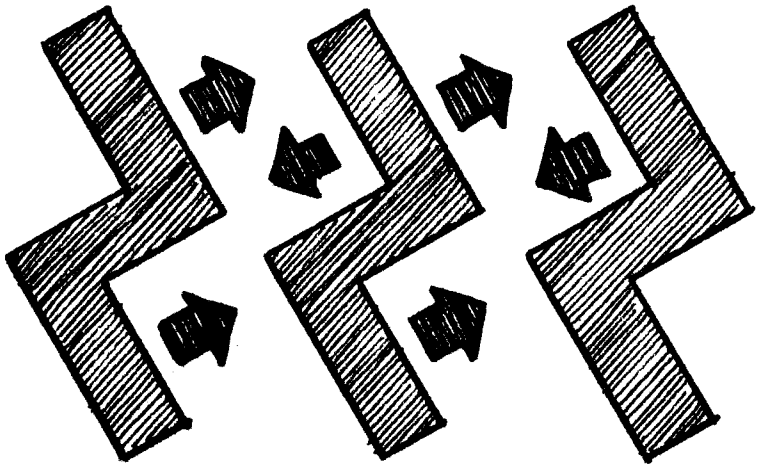
Public housing project residents consitute the second segment of society that will eventually reside in the proposed housing at La Puntilla. It is hoped that the mixing of these elements together

with other members of society, rural immigrants, and immigrants from the United States, would make the housing development more lively and make the transition from rural living to urban living easier for those individuals. However, to bring public housing people to the new housing development, all or most of the problems which public housing is confronted with have to be eliminated or corrected, so as to make the new development attractive to them and to other slum residents. It is important to understand that I do not intend for the people in public housing to break away from their neighborhood and come to La Puntilla. They would find it objectionable for most of the same reasons they found public housing objectionable. The people I would include as possible residents would be those in public housing who do not like the existing community in their projects. The same argument is true for slums residents. However, in order to be able to improve on the existing conditions in public housing, an understanding of what those conditions are is needed.

The major complaint about public housing is the actual internal operation of the system. The regulations imposed on the residents often result in disruption of the large kin network and the contiguous residential pattern of the residents, the relocation of individual parts of the network into separate and dispersed dwelling units, and the lack of control over their unit, all of which compound to produce general dissatisfaction with their immediate environment. (Figure 6.) For now it will suffice to say that life among the public housing

Figure 6

TYPICAL AND PROPOSED PUBLIC HOUSING CONCEPTS

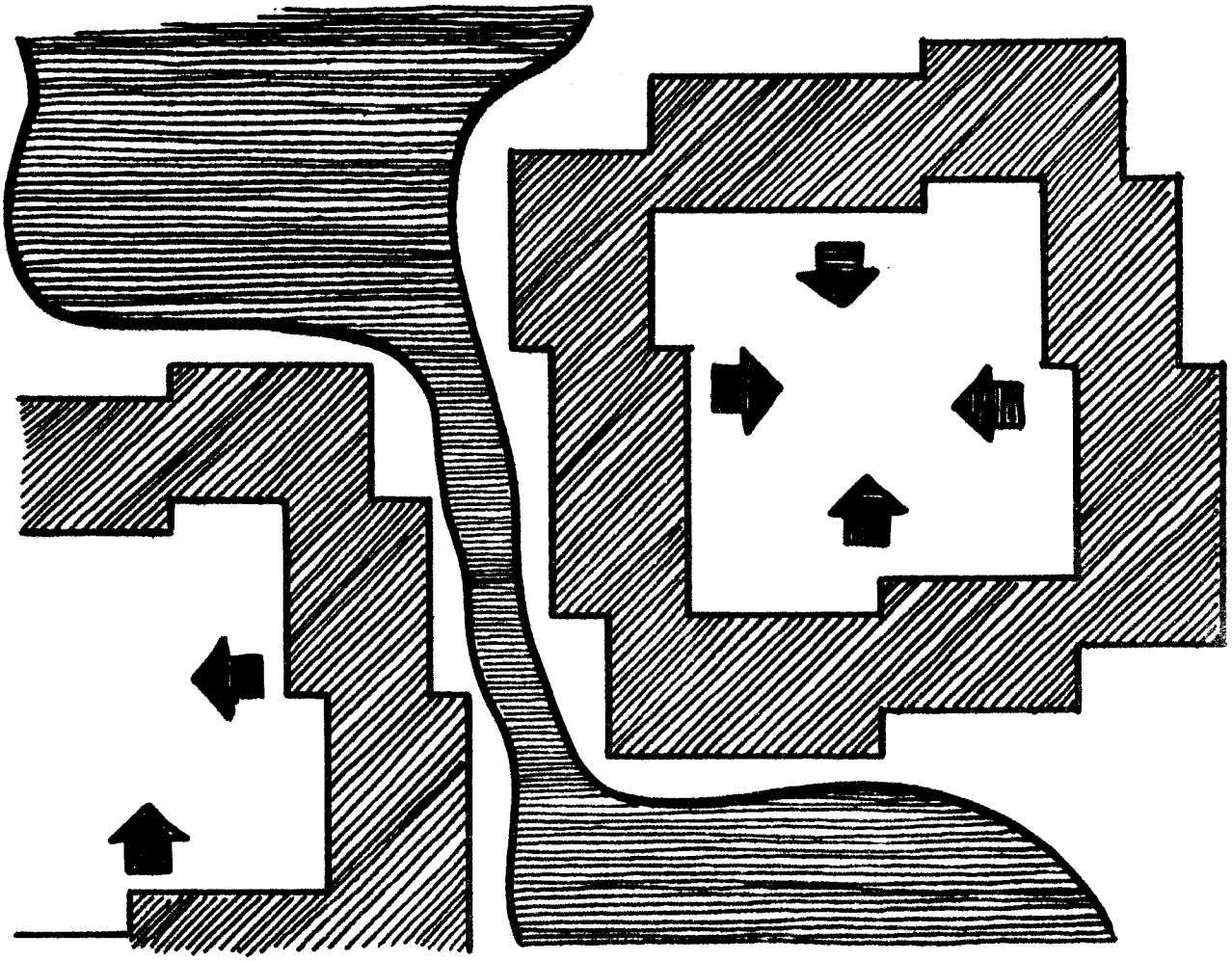


No semi-public areas.

Transition from exterior to interior vague.

No sense of containment.

No defined areas of individual influence.



Semi-public areas well defined.

Easy transitional contex

Strong sense of containment.

project residents and that of the rural communities have much in common, and that the problems of one segment are reflected in the other.

SUMMARY:

The expectations of the rural immigrants of the urban center can be summarized by the goal of decent housing and better opportunities for him and his family. The immigrants, upon arriving at the urban center, usually settle in a slum where he expects to stay only for a brief period of time until he can provide, through his earnings, better housing. Almost unequivocally it happens that the rents on the slums rise at the same or at a more accelerated rate than does the capacity for the head of the household to earn his way out of the slum. Traditionally, the slums residents have either turned to squatter settlements or to public housing for the next step out of the constrictions of the slums.

Squatter settlements are an altogether different situation. Many studies have been done about squatters and I do not intend to retrace those studies. I will address myself to the other problem, the alternative to the public housing project.

A high percentage of public housing residents are dissatisfied with the whole structural framework of the housing projects. I propose that, in order to provide an alternative to this problem and

to do this while relating to the user needs and goals, the architect needs to be aware of the social implications and the particular lifestyle of the users.

In the last chapter I tried to illustrate what some of the lifestyles of the probable residents of the proposed development at La Puntilla. The next two chapters will provide the proper perspective for the framework necessary for such a project.

CHAPTER IV

ECONOMICS

One of the most important considerations for the move to urban areas of the rural population is the expectation of raising their standard of living. This goal is seldom arrived at if the immigrant is forced to stay, for lack of income and financial mobility, in the slums. Most of the newcomers to the urban areas have no formal training and have had little schooling. Most know how to read and write but have dedicated most of their life to agricultural activities which is somewhat incompatible with urban living.

A cross sectional look at findings by anthropologists in urban slums in San Juan illustrates the range of income and its relationship with educational attainment found in the slums. The average unemployment rate of slum residents in San Juan is figured at 9.5 percent. However, actual figures may in fact be a lot higher reaching to the twenty percent figure. The last part of 1975 and 1976 have been periods recognized as recessionary. Under these specific conditions, slum residents are the hardest hit of any segment of society in that income generating activities they can perform are limited. A recent study by the Urban Renewal Administration (1972) has shown that 48.8

percent of those employed in slums were employed as laborers or other types of unskilled labor. The blue collar employees represented about twenty-nine percent of the total working force; and only 13.9 percent were employed as office clerks or salespersons. Of the crossection surveyed only 6.2 percent had their own business.

Clearly the chances for advances under these circumstances depend heavily on the capacity of the individual househead to obtain a well-paying job. Within the existing structure of the city and the low educational attainment, this becomes very hard to accomplish. Income levels are very low, and almost all of it is spent for the basic necessities of daily living. According to a 1973 study of slum income, approximately twenty-two percent of the residents reported an annual income of less than five hundred dollars. Only twenty-seven percent reported yearly earnings ranging from $2,000, to $4,000, and only four percent declared income of four thousand or more. This is also indicative of the income range found in the rural communities and public housing projects with only slight variations in the percentages.

There is a strong correlation among the income level and the educational attainment of the residents in slums or public housing. Reports by the Department of Education show that among the population group of twenty-five years of age or more, nearly twenty-five percent had no schooling, and only forty-three percent had reached a fourth grade attainment. Fifteen percent had completed sixth grade and only

twelve percent had nine years of school. The better chance for income thus falls on the twelve percent that completed the formal school training or had gone to vocational training schools to learn a skill.

Undoubtedly, the income of the residents of the proposed development at La Puntilla will be low. However, this fact in no way contradicts the established goal for this thesis, if anything it helps reenforce it.

FINANCING AND POLITICS:

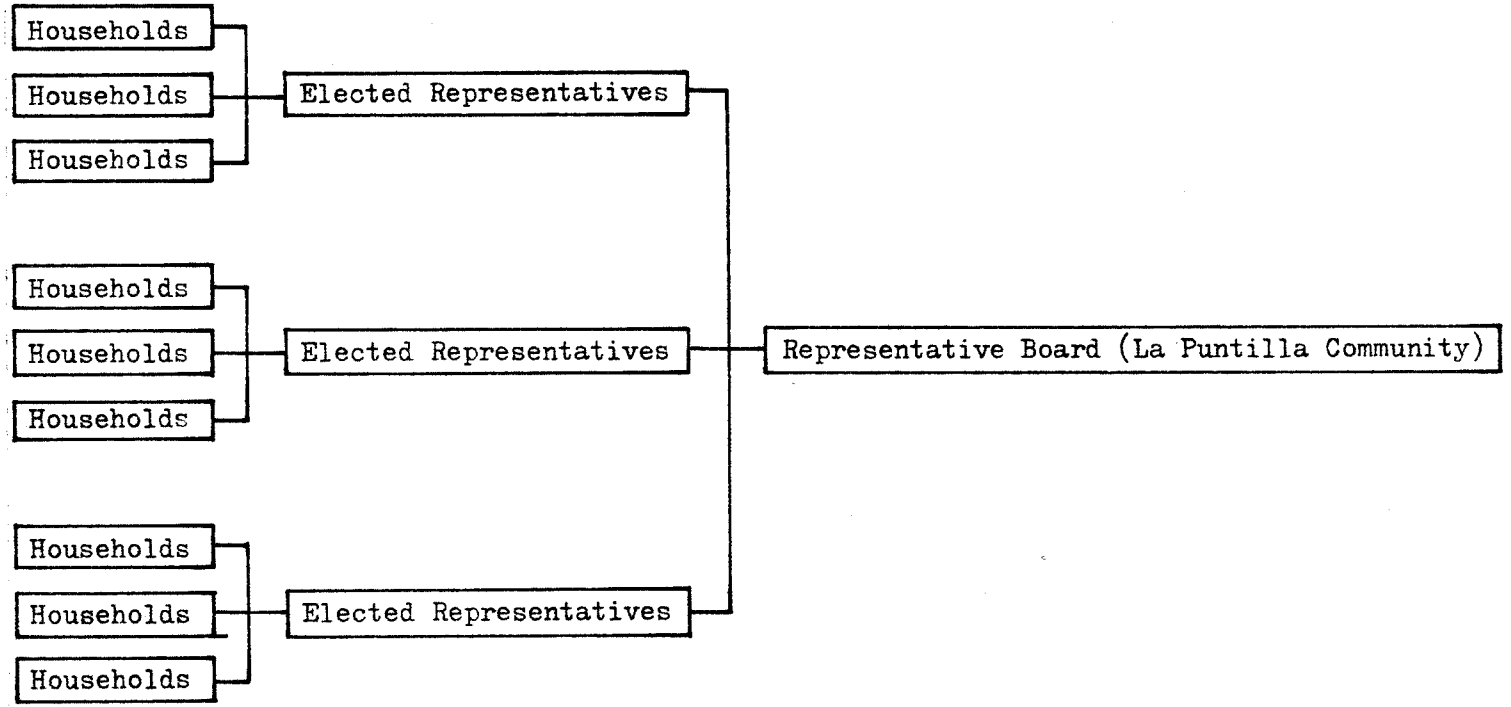
There has been a lot of criticism of the way that the public housing projects are administered. This has resulted in dissatisfaction, on the part of the residents, to be able to control their immediate environment. Every household wants individuality, privacy, and control. In order to achieve a new system or network, control by the residents themselves has to be established. This system, however, cannot be incorporated without the help of the government and its agencies, because they have the monetary resources to implement the project.

Every household wants to have their own house, on their own property and under their sole control. This is not possible. Not only because the household does not have the monetary resources, but also because that is the wrong avenue to urban growth and the

fastest road to urban structural decay. Therefore, the new system needs to incorporate the basic wants of the residents within a new framework of community living. The organization of the community into a cooperative group which will supervise the maintenance and internal operation of the housing project is one alternative to the more impersonal governmental agency operation. The proposed organizational chart of such a group is shown in figures seven through ten. Figure seven organizes the residential cooperative, which will work together with governmental agencies having jurisdiction over the project, (fig. 8) and with private entities which will help in the community development process. (Fig. 9) The three segments are chartered together into a working unit reporting directly to a higher office. (Figure 10)

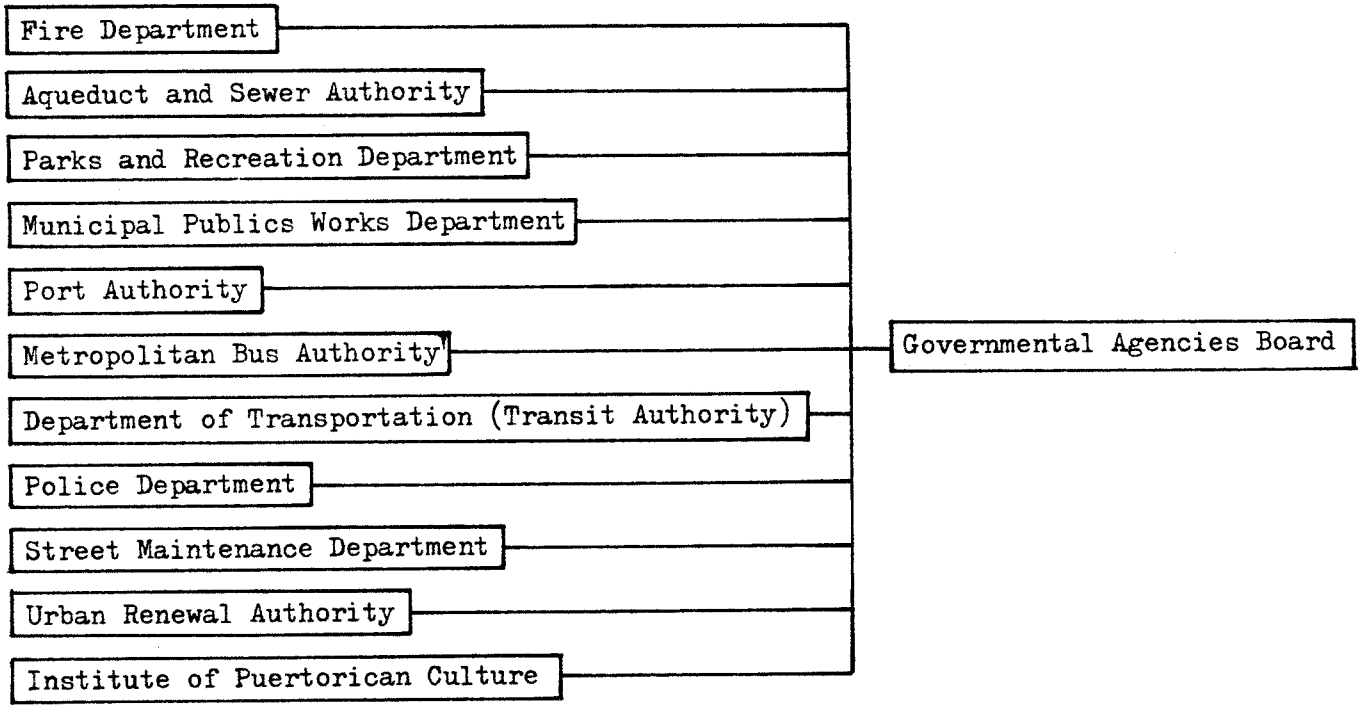
This organizational system provides for residential control over the project, with private and governmental imput where needed, and is figured to go a long way in erasing the hard feelings between the residents and the governmental agencies in charge of overseeing the operation of the housing project.

In order for the resident to have more control over his unit, which is the major determinant in the resident's point of view, it is necessary for him to be the owner of his unit. However, if the household lacks the resources, how are they going to be able to buy a housing unit? I propose a system that provides for subsidized principal and interest payments to the owners. A system similar to



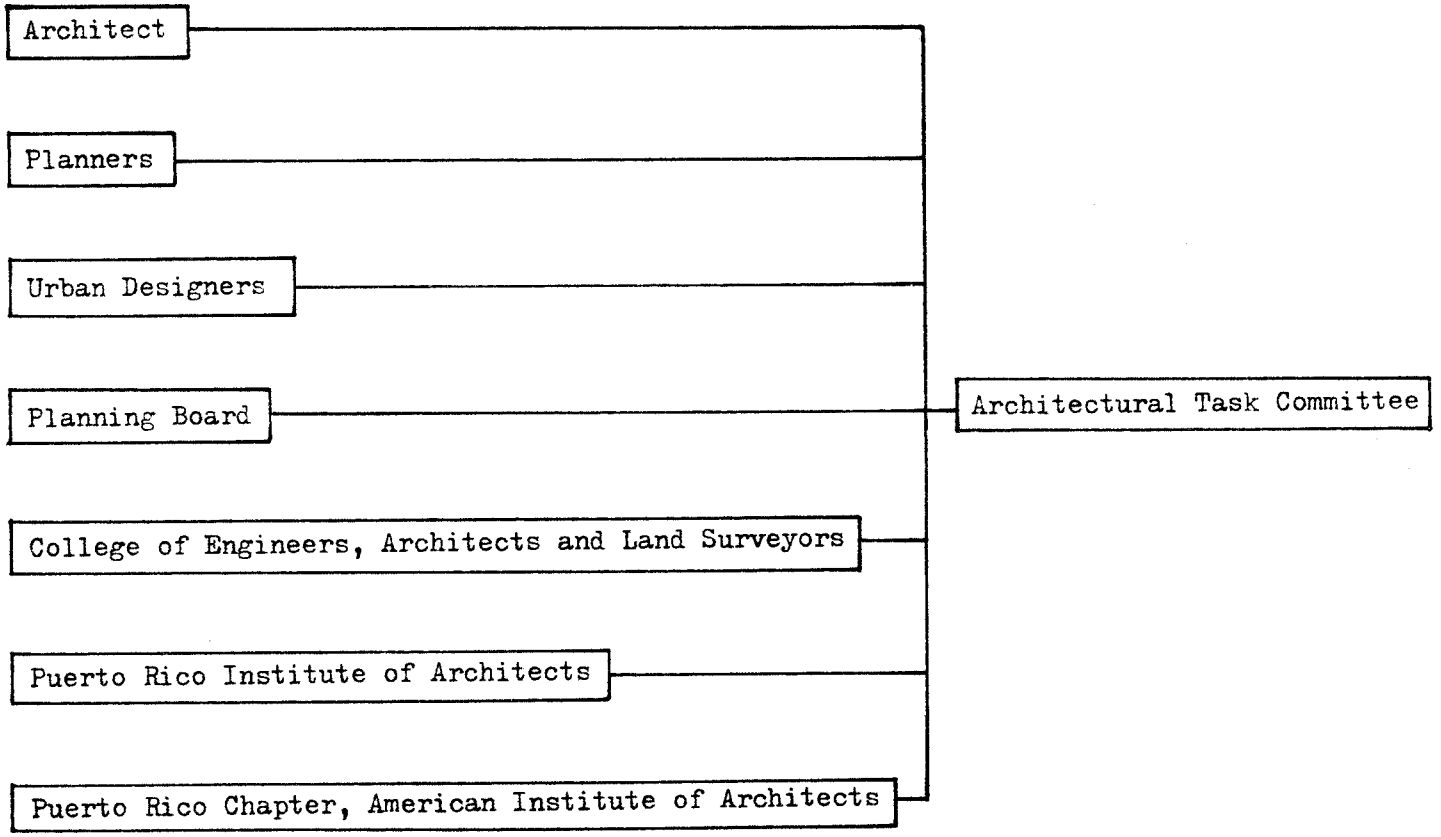
COMMUNITY ORGANIZATION CHART
(La Puntilla Community)

Figure 7



COMMUNITY ORGANIZATION CHART
(Governmental Agencies Board)

Figure 8



COMMUNITY ORGANIZATIONAL CHART
(Architectural Task Committee)

Figure 9

COMPREHENSIVE COMMUNITY ORGANIZATION CHART

Figure 10

Housing and Urban Development 221 D-3 and 221 D-12 for subsidized rent. In a system like this no individual would have to pay more than a certain percentage of his income for housing.[9] This system will necessitate two things: first that the mortgageable amount be low, and secondly that the governmental subsidy be floating to meet any changes in both the family income level and the fluctuations in the interest rate. This system does, however, present a problem of implementation but it is hoped that with the greater user satisfaction of an environment, residents not only own but have physical and actual control over it, would bring a greater pride in urban life, the one element that is now lacking in all public housing projects.

To illustrate this concept with examples, certain assumptions have to be made regarding the building costs and the eventual total development costs.

Example: Two Bedroom Unit

Approximate square foot.....	700
Approximate construction cost based on $18.00 per square foot.....	$12,600.00
Incidental costs.....	630.00
Site development costs (ten Percent)..	1,260.00
Land at approximate..... per unit	1,000.00
TOTAL Unit Development Cost.....	$15,500.00

Federal Housing Administration Title II Section 235 low income mortgage for thirty years at eight and a half percent annual interest, yield a monthly payment of $125.64. Excluding taxes and insurance.

9. The Federal Housing Act of 1969, section 23, stipulates that no household shall be forced to pay more than twenty-five percent of their total income for housing.

Case No. 1

Annual income of the household.....	$4,000.00	Four percent of the population in public housing
Monthly income.....	$ 333.00	
Twenty-five percent monthly income.....	83.25	
Government subsidy.....	42.39	Thirty-three percent subsidy

Case No. 2

Annual income of the household.....	$3,000.00	Twenty-seven percent of the population in public housing
Monthly income.....	$ 250.00	
Twenty-five percent monthly income.....	62.50	
Government subsidy.....	63.14	Fifty-one percent subsidy

Case No. 3

Annual income of the household.....	$2,000.00	Twenty-two percent of the population in public housing
Monthly income.....	$ 166.00	
Twenty-five percent monthly income.....	41.50	
Government subsidy.....	84.14	Sixty-six percent subsidy

Obvious from these examples an income of less than three thousand annually would create a heavy burden on the local government for subsidy. However, let us not forget that these are not the only subsidies available to the average family at these income levels. Another important aspect to consider is that with the greater the

motivation by the environment and the greater the satisfaction with it, the residents will feel much more rewarded if they take more of the burden of the mortgage and make the unit truly their "home."

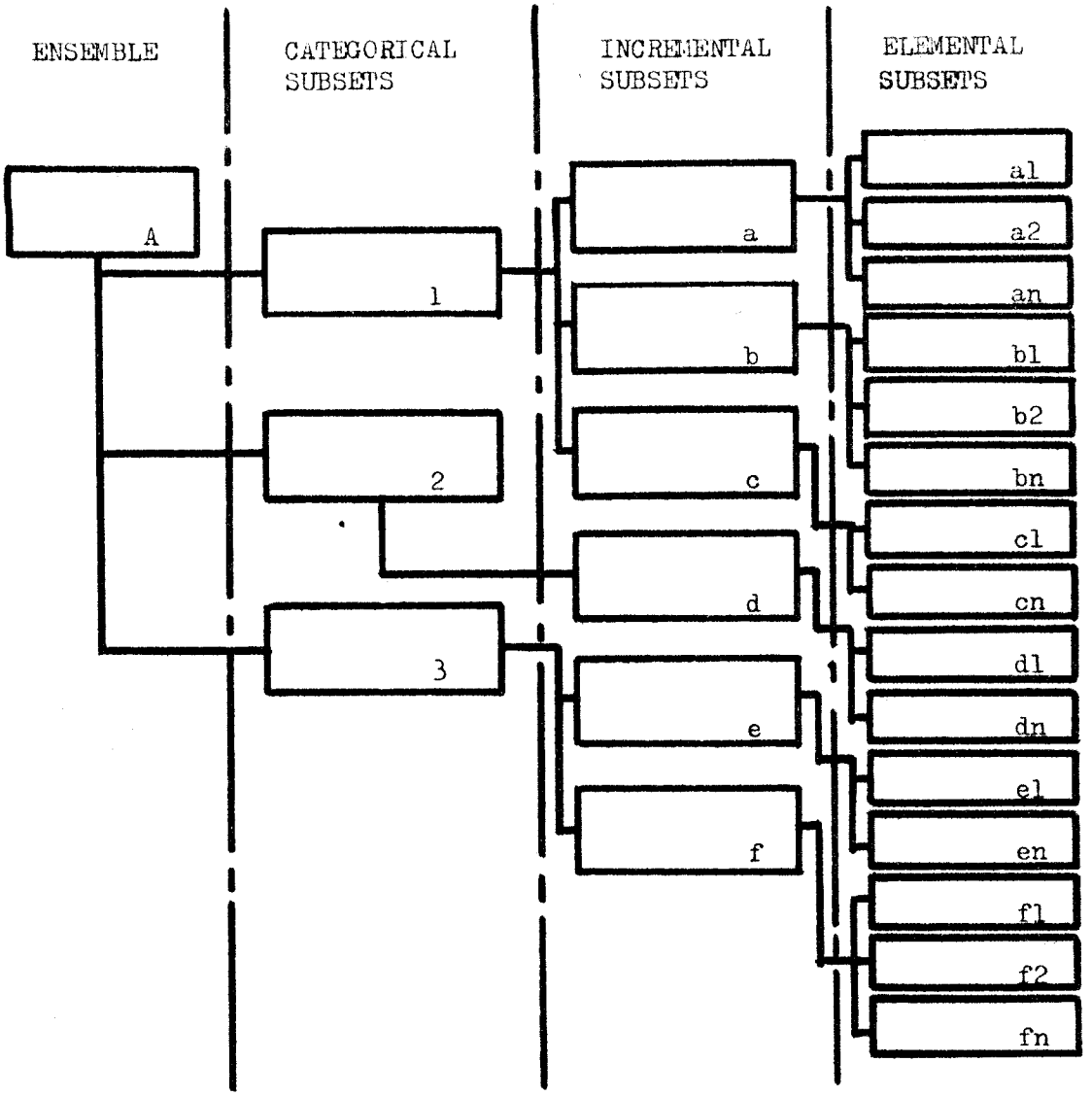
This is not a complete analysis of the financial system which could be set up to finance new low income housing. Government agencies and their internal structures, together with economists and bankers would have a great deal to say on the workings of a system like this. The architect's contribution is in the design of a workable, satisfying environment for the residents, which could set off the necessary stimulus that would produce such conditions.

CHAPTER V

OPEN RESPONSE MODEL

"Within the design process, it is often possible to forget, misplace, or not even process certain bits of data and information which can affect the design result."[1] The following is a model for processing this information. (See figure 11.) An Open Response Model is a way of sorting information into significant areas in a mechanical way that allows one to add or substract information. "The objectives of an Open Response Model are to exhaust, in as methodical a way as possible, the data at hand leading to a Program Statement. Since the Program Statement will consist of preliminary commitments to a formal statement, the gestalt of the situation and the general background of the designer must play an important role."[2] The following Perceptual Matrix identifies many of the determinants which influence urban housing, and in particular La Puntilla Development.[3]

1. Lee, Kermit, ARC 602 Design Methods: Student Manual. Syracuse, New York: Syracuse University, 1974, pp. 38-39.
2. Ibid.
3. For an in depth discussion of Open Response Models see: Lee, K., ARC 602 Design Methods: Student Manual. Syracuse, New York: Syracuse University, 1974, pp. 38-50.



OPEN RESPONSE MODEL

A ENSEMBLE where the problem "name" , boundaries, goals, and initial designer's values are explicated. A generative set.

1 CATEGORICAL SUBSETS where history, existing environment, existing physical context, existing human set, existing behavioral patterns, existing legal outlines, site generalities, and regional analysis are discussed.

a INCREMENTAL SUBSETS where identity characteristics of dimension, landmarks, descriptions, quantity, and character are given to the categorical subsets.

a1 ELEMENTAL SUBSETS where the smallest constituent part having anything whatever to do in the generation of form or formal arrangement are noted.

Figure 11

From: Lee, K., ARC 602 Design Methods: Student Manual. Syracuse, N. Y.: Syracuse University, 1974, pp. 42.

PERCEPTUAL MATRIX:

1. Family (kinship) ties are very strong
2. Neighborhood identification
3. Neighborhood preocupation
4. Men get together for social interaction
5. Women socialize separate from men
6. Women gossip extensively about neighbors
7. A need is felt for control over land and living unit
8. The man of the house is always the head of the household
9. Men have privileges on the household
10. Role of provider (men)
11. Role of house support (women)
12. Social Fridays (men)
13. Playing cards, dominoes, drinking, horse betting (men)
14. Defined areas of household control
15. Monetary decisions are made by the household head
16. Children are disciplined by mother
17. Mother image strong
18. Children - adult role differentiation
19. Serious offences are reprimanded by group
20. Men is the serious disciplinarian
21. Most all residents Christians
22. Most Catholics
23. Women and children practice religion, men are independent
24. Ceremoniality of "velorio" burial rite
25. Ceremony and ties of marriage strong
26. Strong family ties in marriage
27. Events celebration is neighborhood activity
28. "Compadres" relationship is strong; stronger than friendship
29. Men usually the one who works outside the home
30. Women stay at home and near children
31. Most immigrants to urban areas were agricultural workers
32. Lack of training or schooling

33. Willingness to sacrifice and work long hours for family
34. Not many jobs around for unskilled labor
35. Need for vocational training
36. Need to improve school attendance
37. Opportunities for youth activities
38. Children supervised play areas
39. Place to wash and dry clothes
40. Clothes lines
41. Outdoor television
42. Corner grocery store
43. Corner bar
44. Response to climate conditions.
45. Connections to the Old City
46. Interrelationship to existing old structures
47. **Park areas**
48. Fishermen dock
49. San Juan walls
50. Sounds of sea
51. Sounds of the port
52. Cataño ferry
53. Old San Juan Plaza
54. Guaguas routes (buses)
55. Access to bus and ferry station
56. Service areas
57. Fire lanes
58. Pedestrian traffic
59. Private automobile traffic
60. Bicycle route
61. Internal circulation pattern
62. Relationship to health centers
63. Access to hospitals and doctors
64. Internal project maintenace
65. Human - animal relationship

66. Stray animals problems
67. Social integration with Old San Juan neighborhoods
68. Set up of standards for Old San Juan districts
69. Places of work
70. Information dissemination within the project
71. Accomodation of new comers to the project
72. Achieve economic independence as soon as posible
73. Development of community
74. User ownership of unit
75. User control over the unit
76. User control over the surrounding area
77. Cooperative action
78. Stable community
79. Prevent migration of young people to the suburbs
80. Planting of trees
81. Relationship to open areas
82. Site utilization
83. Development of on site jobs
84. Necessity for strong orientation
85. Adjacent unit social interaction
86. Outdoor play spaces
87. Sea wall relationship to site
88. Job base of the area needs to be enriched
89. Income as a major determinant for housing eligibility
90. Vocational-technical training for residents
91. New job creation
92. Community involvement by residents
93. Housing cooperative functioning
94. Public servants overseeing cooperative activity
95. Policy decision by cooperative unit
96. Proximity between recreational facilities
97. Proximity between schools
98. Proximity to stores

99. Proximity to transportation modes
100. Proximity to churches
101. Proximity to community center
102. Existing city fabric incorporation of new community
103. Governmental services for site
104. Waste collection and treatment
105. Solid waste disposal
106. Use satisfaction with the environment
107. Control of the environment
108. Aesthetic consideration of form
109. Vernacular architecture
110. Selection of materials
111. User familiarity with building systems
112. User response to high density
113. User response to low rise
114. User response to neighborhood
115. Unit entrance location
116. Ultimate family identification, sense of being
117. Human identity search fullfilled

ORDERING OF THE PERCEPTUAL MATRIX:

The Open Response Model is a means to an end. The final result of the response simulation is to be able to program a building, in this case a housing development. Formal design begins after this step with a synthesis of priority judgements. In here the designer brings his own Synthesis skills to this weighting of factors, matrices, and begin to exert some imposition on the programatic set.

ENSEMBLE

La Puntilla Housing, Low rise, High density, Low income.

CATEGORICAL

Connections

47. Park areas
48. Fishermen dock
49. San Juan walls
50. Sounds of the sea
51. Sounds of the port
52. Cataño ferry
53. Old San Juan Plaza
54. Guaguas routes (buses)
55. Access to bus and ferry station
56. Service areas
57. Fire lanes
58. Pedestrian traffic

Neighborhood

72. Achieve economic independence as soon as possible

73. Development of community
74. User ownership of unit
75. User control over the unit
76. User control of the surrounding area
77. Cooperative action
78. Stable community
79. Prevent migration of young people to the suburbs
80. Planting of trees
81. Relationship to open areas
92. Community involvement by residents
93. Housing cooperative functioning
94. Public servants overseeing cooperative activity
95. Policy decision by cooperative unit
109. Vernacular architecture
110. Selection of materials
111. User familiarity with building systems
112. User response to high density
113. User response to low rise
114. User response to neighborhood
115. Unit entrance location
116. Ultimate family identification, sense of being
117. Human identity search fullfilled

INCREMENTAL

Site utilization

31. Most migrants to urban areas were agricultural workers
32. Lack of training or schooling
33. Willingness to sacrifice and work long hours for family
34. Not many jobs around for unskilled labor

35. Need for vocational school
36. Need to improve school attendance
37. Opportunities for youth activities
38. Children supervised play areas
39. Place to wash and dry clothes
40. Clothes lines
41. Outdoor television
42. Corner grocery store
43. Corner bar
44. Response to climate conditions
83. Development of on site jobs
84. Necessity for strong orientation
85. Adjacent unit social interaction
86. Outdoor play spaces
87. Sea wall relationship to site
88. Job base for the area needs to be enriched
89. Income as a major determinant for housing eligibility
90. Vocational-technical training for residents

ELEMENTAL

Family

4. Men get together for social interaction
5. Women socialize separate from men
6. Women gossip extensively about neighbors
7. A need is felt for control over the land and unit
8. The man of the house is always the head of the household
9. Men have privileges on the household
10. Role of provider (men)
11. Role of house support (women)
12. Social Fridays (men)

13. Playing cards, dominoes, drinking, horse betting
14. Defined areas of household control
15. Monetary decisions made by the head of household
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17. Mother image strong
18. Children - adult role differentiation
19. Serious offenses are reprimanded by group
20. Men is the serious disciplinarian
21. Most all residents are Christians
22. Most Catholics
23. Women and children practice religion
24. Ceremoniality of "velorio" burial rite
25. Ceremony of marriage strong
26. Strong family ties in marriage
27. Events celebration is neighborhood activity
28. "Compadres" relationship strong
29. Men usually the one who works outside the home
30. Women stay at home and rear children

PART THREE

CHAPTER VI

REGIONAL ANALYSIS

INTRODUCTION:

A Regional Analysis is a design tool which helps in answering the architect's or urban designers' questions about the region he is being asked to consider. Figure twelve shows the schematic model for such an analysis.

PUERTO RICO:

Puerto Rico is an island in the Caribbean Sea, roughly rectangular in shape, of about one hundred miles long and thirty five miles wide. It is the smallest and easternmost of the greater Antilles. It is located between 18 31' and 17 55' north latitude and 65 37' and 66 17' west longitude. (See figure 13.) The total area of Puerto Rico is 3,435 square miles and in 1970 had a population of some three million persons and a population density of 792.8 persons per square mile, up from 760 persons per square mile in 1960. (Figure 14.) The population of Puerto Rico is mostly urban, with more than fifty percent of the population now

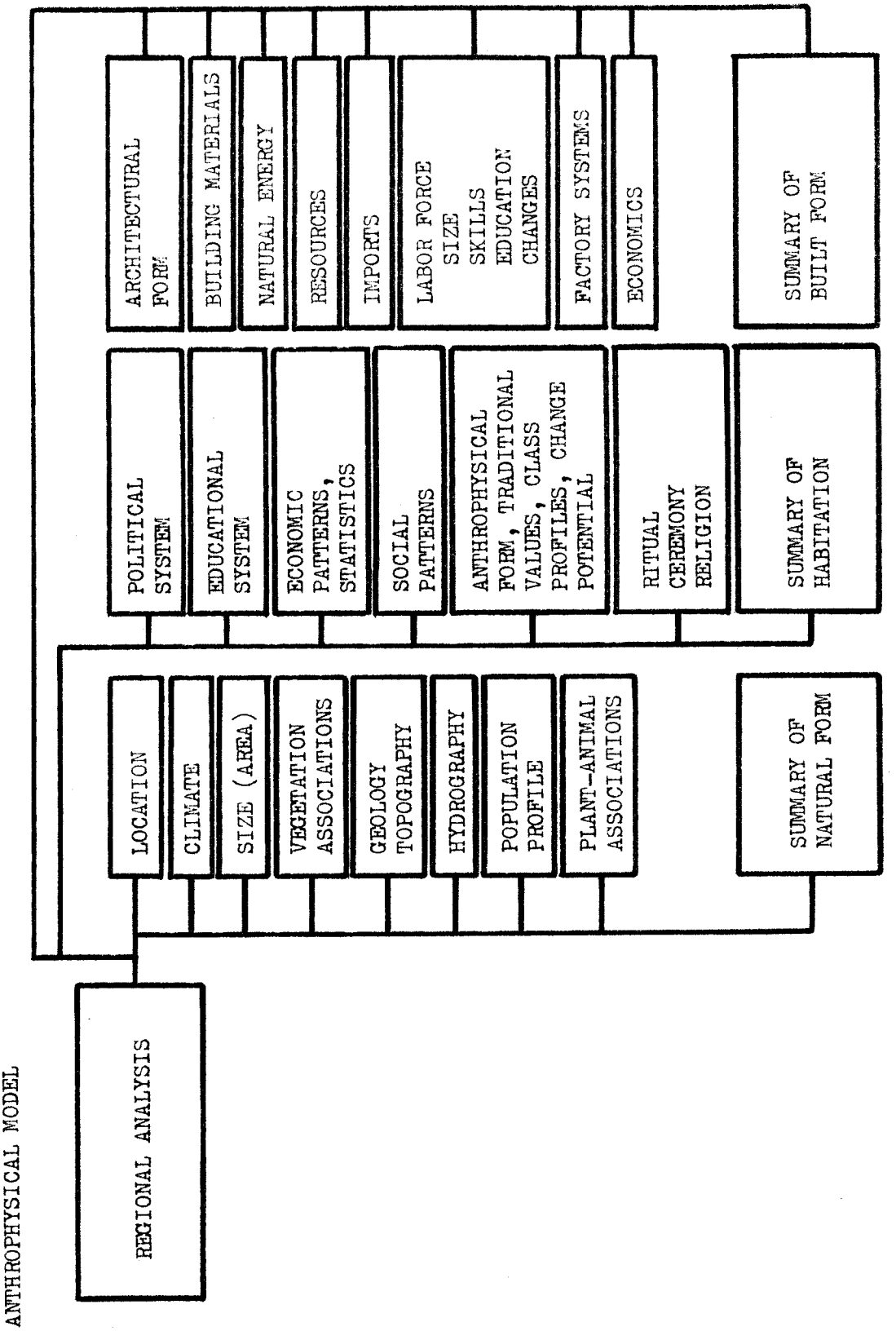


Figure 12

From: Handout, K. J. Lee, Jr. ARC 602 1977.

PUERTO RICO LOCATION

Figure 13

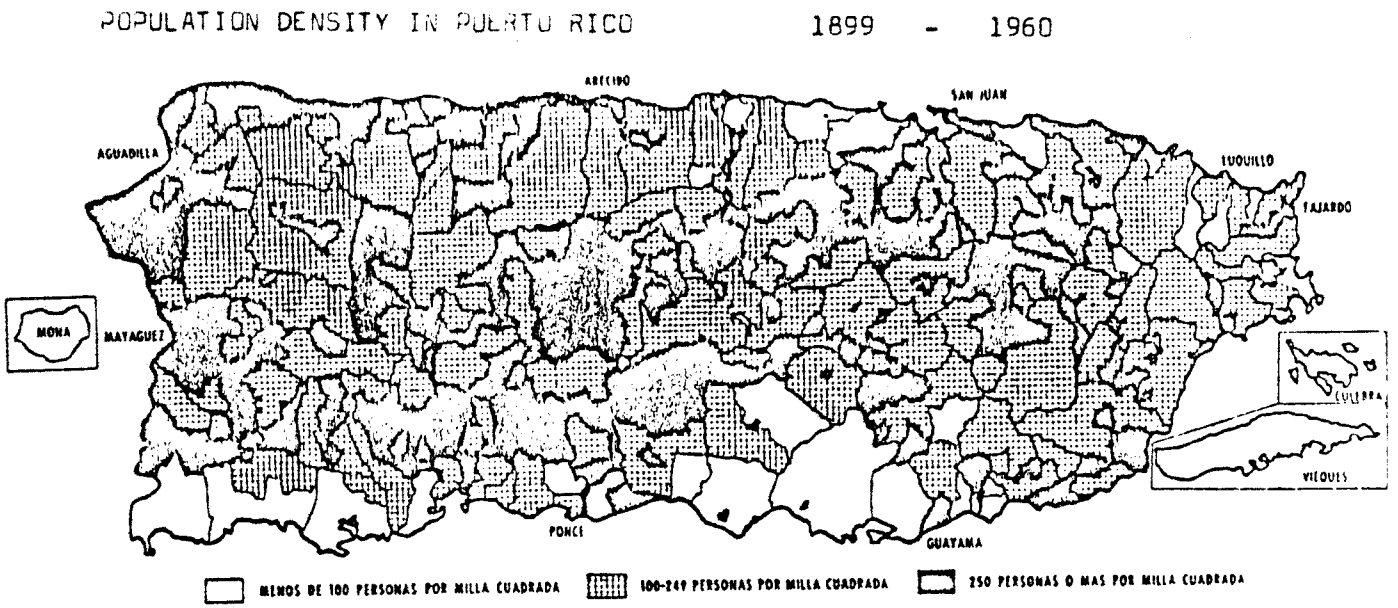


FIG. 96. Densidad poblacional en los barrios de Puerto Rico-1899. (Fuente de información: Censo de los Estados Unidos-1899.)

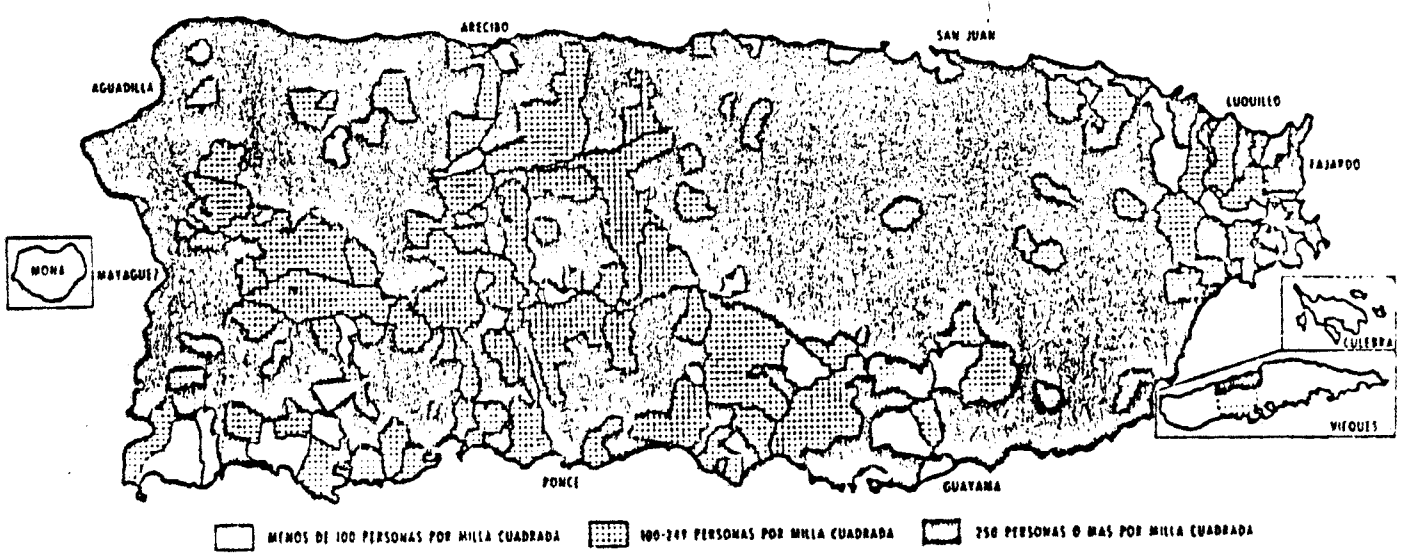


FIG. 97. Densidad poblacional en los barrios de Puerto Rico-1960. (Fuente de información: Censo de Población de los Estados Unidos 1960.)

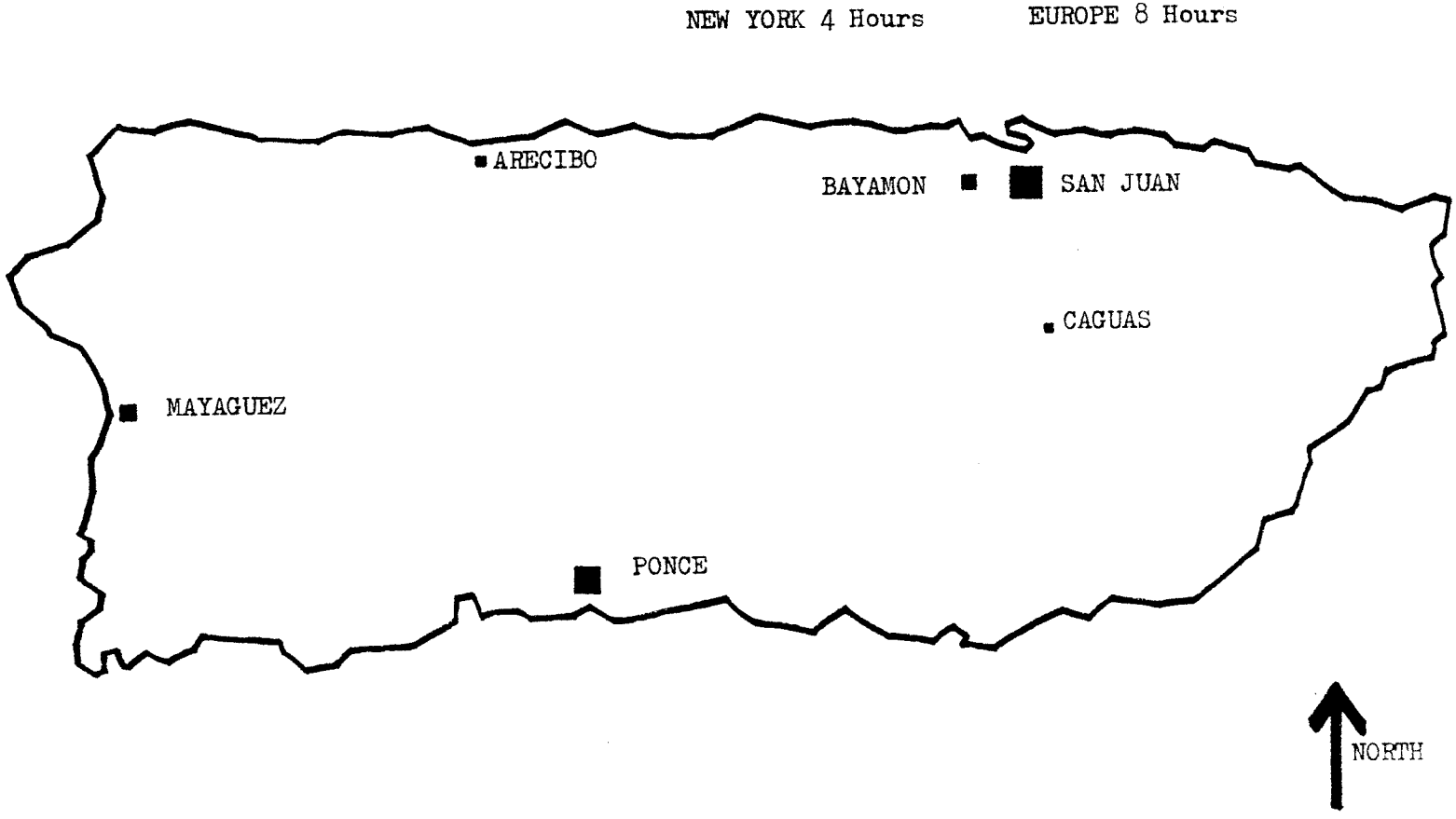
Figure 14

living in urban areas; up 51.6 percent from 1960. In 1970, 1575,000 persons lived in urban areas and 1,137,000 persons in rural areas. The population thus had declined 13.3 percent in ten years between 1960 and 1970. (Figure 15 and 16.)

Puerto Rico, by its location, is in an advantageous location for trade between North and South America. San Juan, the capital of Puerto Rico, is approximately 1,050 miles south east of Miami, Florida, and 1,400 miles south - southeast of New York City. This locates San Juan half way between the major ports of the eastern United States and the important ports of South America. It is no surprise then that San Juan has grown to be a major seaport for the United States' trade with the Caribbean and South America. San Juan in the last ten years has become the distribution point for most of the trade destined for such ports. This impetus for the city required a new locale for the port activity and most of this activity was transfered to the southern part of San Juan Bay, leaving the area of La Puntilla open for new development. (Figure 17.)

OLD SAN JUAN:

Old San Juan is the oldest city under the American flag. It is also, after Santo Domingo, the oldest city in the Western Hemisphere. Moreover, following nearly twenty years of careful



PUERTO RICO METROPOLITAN AREAS 1977

Figure 15

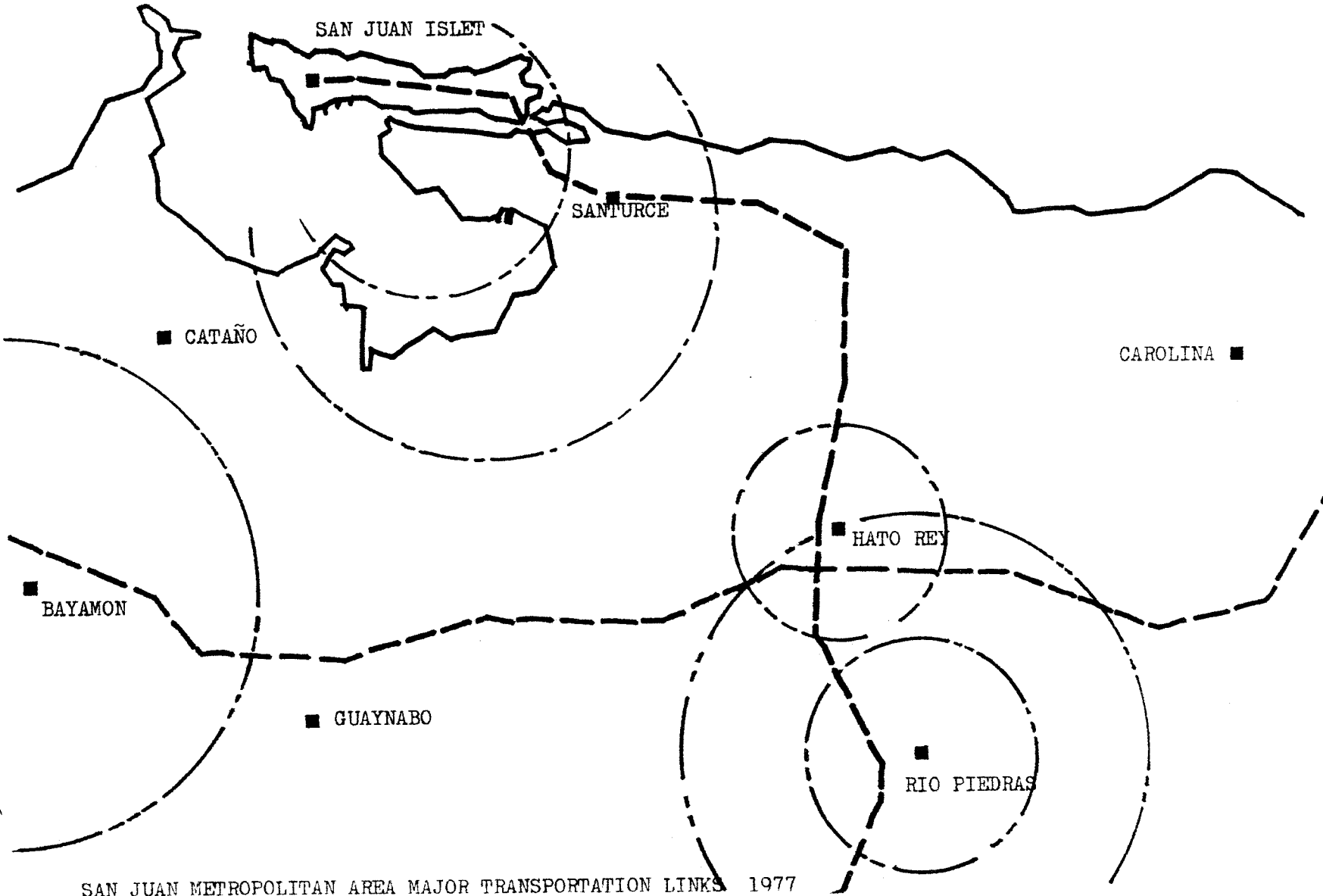


Figure 16

SAN JUAN METROPOLITAN AREA MAJOR TRANSPORTATION LINKS 1977

OLD SAN JUAN ENVIRONS

Figure 17

restoration, it is now the finest example of authentic Spanish colonial architecture in the world. Unlike Williamsburg, which it resembles in some respects, Old San Juan is a living city whose restoration efforts has increase its vitality, as well as its historic interest and beauty. Barely three decades ago, the northern part of the Old City had deteriorated into a vast slum, where handsome old colonial houses had been subdivided and rented to poor low income families. Fortunately, the houses had been so solidly built that they were remarkably resistant to the ravages of time and neglect.

Puerto Rico was formerly the Gibraltar of the Spanish Main, where the treasure galleons of Imperial Spain found shelter under the walls of the great fortress, San Felipe del Morro. (See figure 18.) Along with Cartagena in Colombia, the fortifications of Old San Juan are the most impresive and best preserved examples of military architecture in the Western Hemisphere. By the middle of the ninteenth Century, the entire islet of San Juan had been fortified from the harbor channel, El Morro, to Fort San Geronimo to the east. The average height of these fortifications, those that still stand, is forty feet, reaching forty-eight feet by La Fortaleza, the Governor's Mansion. As the exterior face of the walls slant, their width varies from twenty feet at the base to ten or twelve at the top. At various points are bastions with gun embrasures, as at the Bastion de las Palmas on Tetuan Street which faces La Puntilla. There were

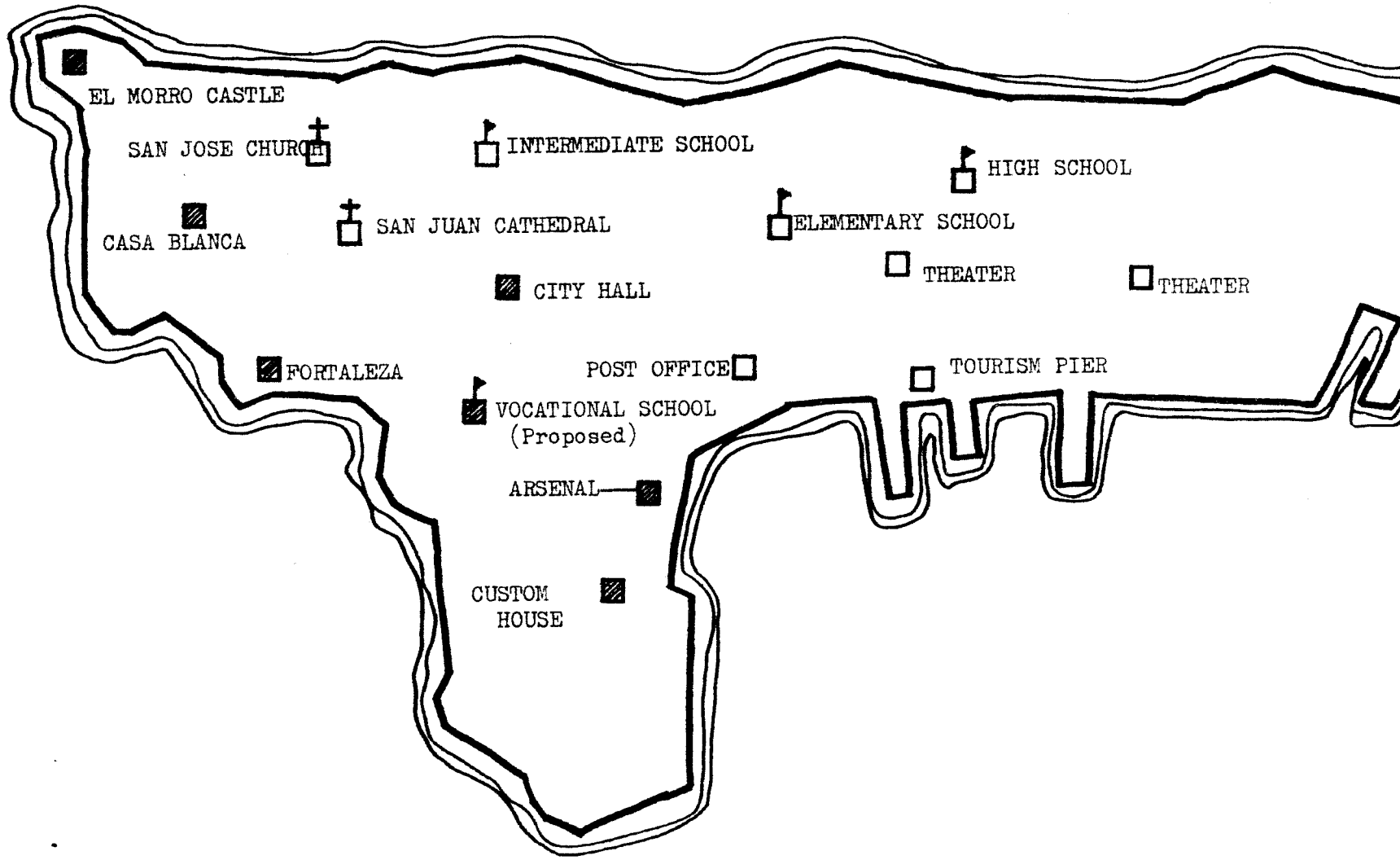


Figure 18

OLD SAN JUAN SCHEMATIC DIAGRAM

FACILITIES

six gates on the walls, each with a niche above it with a religious painting or figure which also gave the name to the gate. The San Juan gate, which opens on the cove just north of La Portaleza, (see figure 18.) was especially important as sailing ships usually anchored near it, and it is the only one remaining.

Behind the walls and fortifications grew the houses, churches, and convents of a typical Spanish colonial city. Most of the colonial mansions are built of a solid mixture of stone, brick, lime and sand. Their characteristics are a long balcony or a series of balconies across the facade, archway, wide entrance hall, interior patio, broad impressive stairway and high ceilings supported by wood beams of "ausubo", bulletwood.

However, Old San Juan is not limited to art enterprises or restored residential areas. Since the sixteenth century the city has been very active in commerce and as a major commercial center. This commercial activity allows Old San Juan to remain a lively participant in the community instead of becoming an extended museum.

CLIMATE:

The climate of Puerto Rico is "tropical marine." This type of weather is characterized by heavy rainfall. However, rainfall distribution varies from place to place within relatively short assistances due to the action of the trade winds. These moisture laden

winds come directly in contact with the northern and eastern regions of the island, leaving the southern and western sections of the island drier and suffering occasional droughts. (See figure 19.)

Trade winds blow steadily from the east, and although blowing across the island, they have their greater effect in the northern and eastern parts of Puerto Rico where they come in contact with land. Their average annual speed is eleven miles per hour and the highest speed recorded on a monthly basis was eighteen miles per hour during the month of July. Trade winds have two basic types of waves. The easterlies waves and the polar trough. The easterlies is an area of low pressure which is embedded in the deep easterly current or deep trade winds. This meteorological phenomenom, occuring mostly in the Caribbean during the warm season, from May to October, blows from the east. This system moves from east to west at an average speed of fifteen knots. (Figure 20.)

Unlike the wave in the easterlies, the polar trough moves in the upper winds in an east to west direction. Overcast skies and rain is characteristic of this system and it usually takes two to three days to pass over Puerto Rico, but sometimes it might remain stationary in any region.

Cold fronts which originate in the north temperate regions, also affect Puerto Rican weather. Cold winds usually coming from Canada move southward and eventually enter the Caribbean. These cold fronts interact with the warmer air of the tropics and as the

TABLA 11

PROMEDIOS MENSUALES Y ANUALES DE LLUVIA

(En pulgadas)

ESTACION	Altura (pies)	Ene.	Feb.	Mar.	Abr.	May.	Jun.	Jul.	Ago.	Sep.	Oct.	Nov.	Dic.	Año
Aguirre	10	1.43	1.49	1.22	2.05	4.43	4.53	4.26	4.93	5.91	5.80	4.62	1.92	42.59
Arecibo (Cambalache)	50	4.92	3.44	3.46	3.77	6.46	3.79	4.66	4.82	5.08	5.00	7.49	5.37	58.26
Cabo Rojo	250	2.27	2.39	4.03	4.08	8.51	3.98	6.04	8.99	8.99	7.61	5.50	3.43	65.82
Caguas	250	3.80	2.36	2.65	3.72	5.82	5.98	6.42	6.47	7.32	6.58	6.35	4.72	62.19
Cayey	1,400	3.31	2.64	2.57	3.64	5.63	5.47	6.08	6.65	6.81	6.43	5.80	3.71	58.74
Cidra	1,400	6.07	3.76	3.73	5.12	7.86	6.76	8.06	9.27	7.70	6.54	6.99	6.24	78.10
Coamo	200	1.31	1.24	0.78	2.10	5.84	4.09	2.91	6.24	5.75	6.75	4.23	1.29	42.53
Coloso	35	2.20	2.15	3.18	5.00	10.82	11.75	9.50	10.80	10.20	8.13	5.94	2.47	82.14
Corozal	400	5.12	4.06	4.06	5.89	8.12	5.53	7.40	8.22	7.41	7.29	8.62	6.77	78.49
Culebra (Naval St.)	50	1.89	1.23	1.26	2.61	4.75	4.69	3.75	4.00	4.44	4.57	5.96	2.54	41.69
Ensenada	10	0.83	1.45	1.37	1.92	3.77	2.46	1.94	3.17	4.27	4.36	3.68	1.46	30.68
Fajardo	40	3.56	3.83	2.82	3.81	6.85	5.58	5.62	6.19	7.30	8.17	7.95	4.62	65.30
Guayama	200	2.49	2.05	1.64	2.65	6.18	5.93	5.20	5.64	7.27	6.71	5.80	2.93	54.49
Humacao (C. Ejemplo)	90	4.52	3.32	3.32	4.59	9.54	9.14	8.26	8.89	9.96	9.66	8.99	5.16	85.35
Isabela (Mora Camp)	275	3.46	2.80	2.90	3.78	6.66	4.94	4.03	5.50	5.67	5.52	6.99	4.29	56.54
La Mina (El Yunque)	2,300	14.89	10.16	7.23	9.54	20.51	18.52	13.59	19.08	14.84	16.40	20.19	15.94	180.89
Lares	1,200	2.96	3.38	4.35	8.33	14.08	9.37	8.13	10.54	11.92	12.15	8.18	4.49	97.88
Maricao	1,500	2.19	3.05	5.11	7.92	12.41	8.70	11.60	14.16	15.14	14.96	8.17	3.71	107.12
Mayagüez	80	2.05	2.04	3.81	5.08	8.46	8.74	10.50	11.18	10.86	9.32	5.81	2.56	80.41
Ponce	40	1.09	1.13	1.17	2.12	4.05	3.40	2.68	4.43	5.01	5.77	4.12	1.13	36.10
Represa Dos Bocas	198	2.48	3.17	3.57	5.63	12.01	7.41	5.69	10.08	9.26	8.69	8.58	3.77	80.34
Represa El Guineo	2,250	4.11	4.72	4.25	7.12	17.13	7.61	7.22	13.48	13.54	15.91	8.37	4.68	108.14
Río Blanco	500	7.76	6.08	5.36	7.27	15.23	14.14	11.94	13.66	14.22	13.49	13.65	10.85	133.65
Río Grande	350	6.60	5.95	5.10	5.50	7.30	7.70	12.30	8.10	9.20	7.90	10.30	9.70	94.80
San Germán	350	1.18	2.08	2.45	2.94	7.56	2.92	3.89	6.35	8.09	9.29	6.73	3.00	56.48
San Juan (Neg. Tiempo)	50	4.34	2.58	2.75	4.13	6.07	5.35	5.73	6.16	6.08	5.60	6.72	5.10	60.81
PUERTO RICO	—	73.6	73.5	74.2	75.7	77.7	78.7	79.0	79.5	79.3	78.7	77.4	75.0	76.8

Fuente de Información: McGuinness, Charles L.: «Ground Water Resources of Puerto Rico». Servicio de Acueductos y Alcantarillados de Puerto Rico, en cooperación con el Servicio Geológico del Departamento del Interior de los Estados Unidos, 1948, página 88.

ANNUAL AND MONTHLY RAINFALL RECORDED

Figure 19

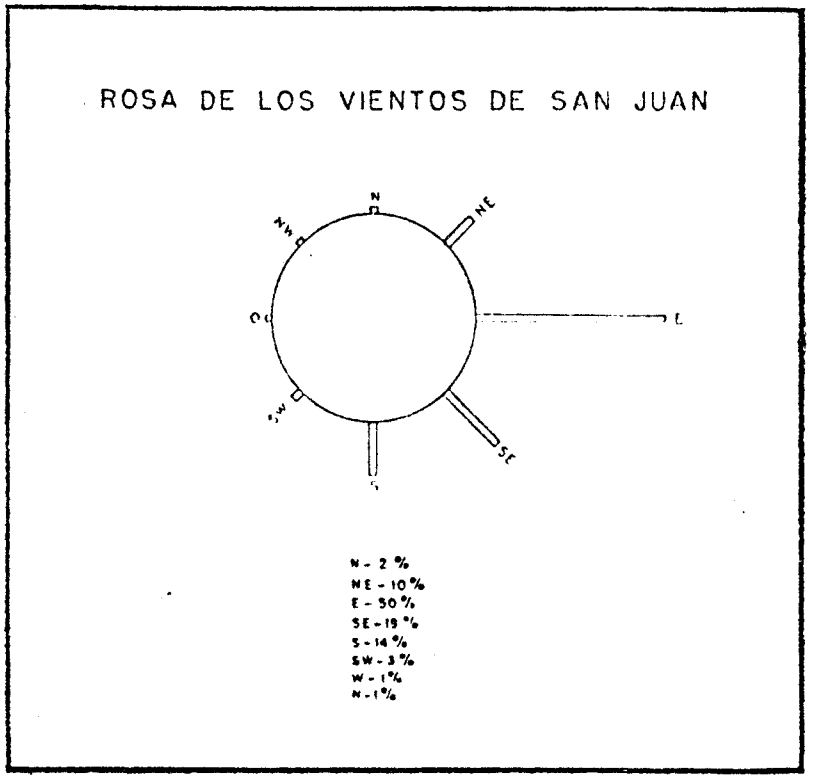


Fig. 55. Datos suministrados por el Negociado del Tiempo.

WIND DIRECTION (SAN JUAN)

Figure 20

two masses of air mix they form a wall-like structure producing overcast skies and intermittent rain. In addition they bring stormy winds, rough seas and high tides. Cold fronts usually affect the weather in Puerto Rico from November to April.

Hurricanes and tropical storms or depressions do, however, represent the major yearly threat to the island. The hurricane season extends from July to November, but it peaks in August to mid-October. Most hurricanes develop or form off the coast of equatorial Africa and move west through the north Atlantic reaching the Caribbean area in approximately two weeks. This is enough time for the proper warning to be given in the island and thus avoid major disasters. In recent years Puerto Rico has been lucky to avoid a major hurricane, although in 1975 hurricane Eloise did cause some dammage in the island mostly as a result of the rain associated with hurricanes instead of the usual high winds.

Temperature range in Puerto Rico varies slightly from season to season. The average temperature difference from the warmest to the coldest month is 4.6 degrees F. September is the warmest month with 82.5 degrees, and the reported average minimum occurs in February and March with 77.9 degrees. (See figure 21.) In striking contrast to this average maximum and minimum is the average annual minimum and maximum diurnal variant which is figured to be 19 degrees F. for the island and eleven degrees for the San Juan area.

In Puerto Rico summer temperatures are usually in the 80's and

TABLA 10

PROMEDIOS MENSUALES Y ANUALES DE TEMPERATURA
(En Grados Fahrenheit)

ESTACION	Elevación (pies)	Ene.	Feb.	Mar.	Abr.	May.	Jun.	Jul.	Ago.	Sep.	Oct.	Nov.	Dic.	Año
Aguirre	10	75.9	75.6	76.0	77.4	79.4	80.4	81.0	81.4	81.2	80.6	79.2	77.2	78.8
Aibonito	2,000	67.9	67.8	68.6	69.9	71.9	73.4	74.4	74.8	74.1	73.2	71.6	69.4	71.4
Arecibo	50	74.1	74.0	74.8	76.2	78.5	79.5	80.0	80.6	80.5	80.0	78.0	75.4	77.6
Caguas	250	72.4	73.5	73.4	75.5	78.0	79.0	79.2	79.5	79.4	78.5	76.6	73.8	76.5
Canóvanas	30	74.3	74.6	75.4	77.2	79.5	80.5	80.4	81.0	80.7	79.8	78.0	75.8	78.1
Cayey	1,300	69.1	69.1	70.2	71.6	74.0	75.0	75.6	76.0	75.8	75.0	73.2	70.8	73.0
Cidra	1,400	69.3	69.2	70.1	72.2	74.0	74.8	75.5	75.6	75.7	74.9	73.5	71.0	73.0
Corozal	400	72.5	72.4	73.2	74.9	77.2	78.2	78.3	78.5	78.4	78.0	76.2	73.8	76.0
Fajardo	30	76.5	76.1	76.8	78.2	80.2	81.2	81.8	82.1	81.6	80.8	79.2	77.6	79.3
Guayama	50	77.4	77.2	78.0	79.0	80.4	81.1	81.8	82.2	81.8	81.2	80.0	78.6	79.9
Humacao	90	73.8	74.0	75.1	76.8	78.4	79.5	80.0	80.2	79.8	79.0	77.3	74.8	77.4
Isabela	275	74.7	74.4	75.4	76.6	78.0	79.2	80.0	80.1	80.0	79.4	78.0	76.0	77.6
Jayuya	1,700	71.4	71.6	72.0	72.9	74.7	76.5	77.3	77.7	77.1	76.2	74.8	72.6	74.6
Lares	1,200	72.0	71.6	72.6	73.8	75.3	76.5	77.1	77.4	77.1	76.6	75.4	73.2	74.9
Manatí	60	73.2	73.4	74.2	75.9	78.0	79.4	79.7	80.0	79.5	78.8	76.9	74.6	77.0
Maricao	1,500	70.1	69.7	69.9	71.1	72.1	73.3	74.0	74.7	73.4	72.7	72.1	70.9	72.0
Mayagüez	80	74.5	74.4	74.8	76.0	77.8	78.8	78.9	79.2	79.4	79.1	77.6	76.1	77.2
Ponce	40	75.4	75.2	76.0	77.4	79.4	80.6	81.1	81.5	81.2	80.5	79.0	77.0	78.7
Río Piedras	75	73.2	73.0	74.1	75.2	77.8	78.8	79.0	79.4	79.5	78.8	77.0	74.5	76.7
San Germán	350	74.2	74.4	75.0	76.3	78.4	79.6	80.0	80.2	79.9	79.5	78.0	75.8	77.6
San Juan	50	74.9	74.9	75.5	76.7	78.7	79.7	80.0	80.5	80.5	80.0	78.3	76.4	78.0
PUERTO RICO	—	73.2	73.2	73.9	75.3	77.2	78.3	78.8	79.1	78.9	78.2	76.7	74.5	76.4

Fuente de Información: Harris, M. F.: «La Temperatura de Puerto Rico». Almanaque Agrícola de Puerto Rico, 1947. Departamento de Agricultura y Comercio, San Juan, P. R. Administración General de Suministros, Oficina de Servicios, División de Imprenta, 347 págs.

ANNUAL AND MONTHLY TEMPERATURE RECORDED

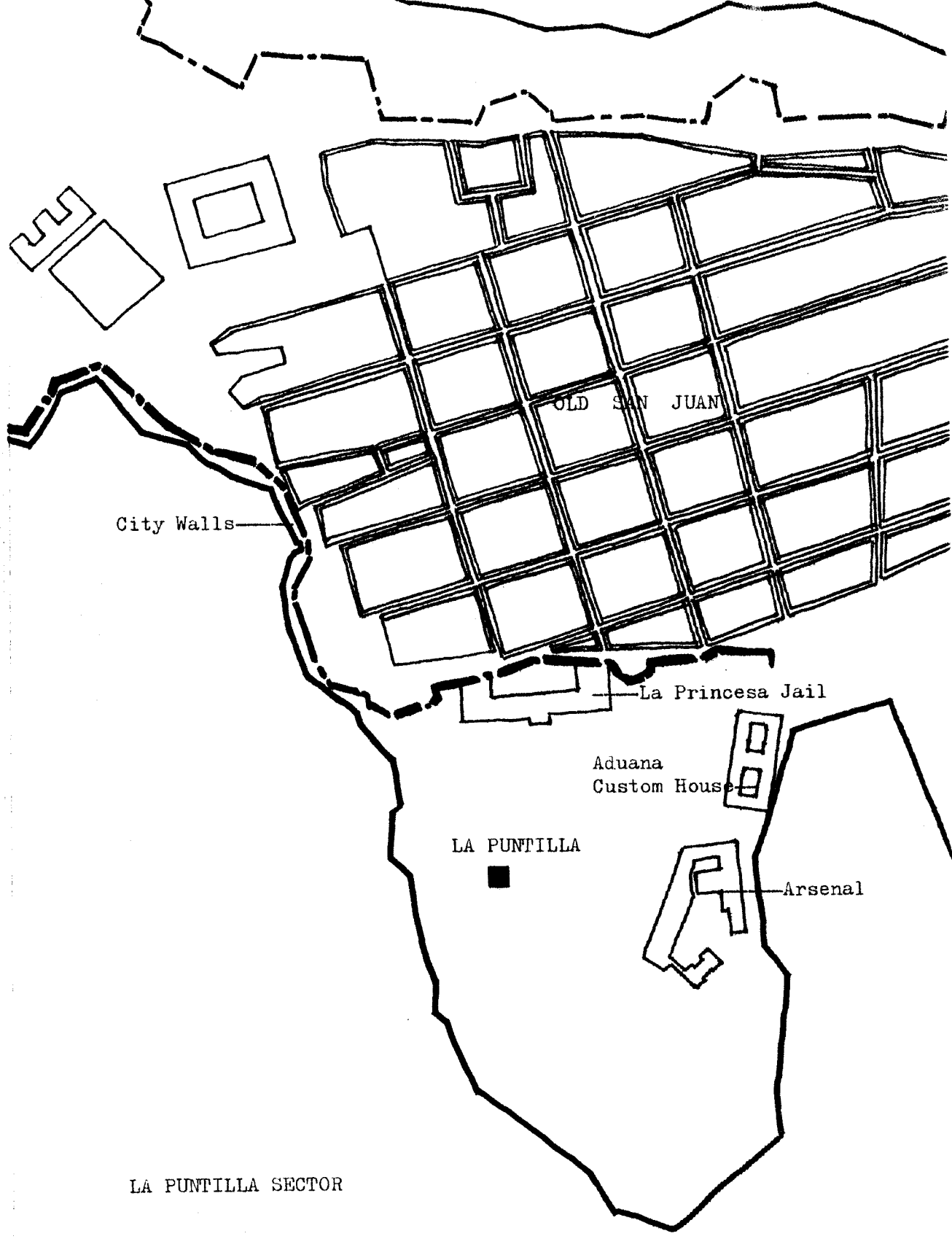
Figure 21

it is not unusual for a ninety degree reading in the month of August or September. The record high temperature for San Juan is 96 degrees. Mild temperatures are common in the island from November to March, the average low being 73.2 degrees F.

LA PUNTILLA:

La Puntilla (figure 22) is a point of land south of the San Juan islet that juts into the bay. It owes its origin to the establishment of customs and warehouse facilities for the old city of San Juan. However, as the metropolitan area developed and sea trade began growing in San Juan, the Puerto Rican Planning Board decided to transfer the port activities to the Puerto Nuevo area, south of San Juan. Puerto Nuevo offered physical advantages and accessibility to the different areas of Puerto Rico, and had better ground transportation access. At present, most of the port activities are centered in the new terminal, leaving the Old San Juan port as the cruise ship terminal, the tourism pier.

The moving of the port facilities to another area had a significant impact on the economy of Old San Juan and left much of the area around the old port center vacant or underutilized. Now with the increase traffic at the cruise ship terminal new activity has sparked in this area, and this has given rise to an economic base for the new housing development at La Puntilla.



LA PUNTILLA SECTOR

Figure 22

After the transfer of the port and the release of privately and public owned land near the old port center various studies were made by the Urban Renewal Division of the Puerto Rican Housing Authority. First of all, La Puntilla was rezoned as a residential district. This decision was based on two primary considerations, first because of the proximity to work centers, and second because the Housing Authority saw the possibility of recovering and balancing socially and economically the population of Old San Juan. This they hoped would help enrich the lifestyle of the residents and of the Old City, and solve some of the problems of housing in the area. The question arose whether to develop the area or restore it. A detailed inspection of the existing structures at La Puntilla showed that a large portion of the building inventory was in a great state of deterioration. Most of the buildings were warehouses, machine shops and commercial establishments judged too costly to either rehabilitate or convert to housing. Restoration would have meant the creation of colonial architecture with details and elements similar to the Old San Juan historic district which are very expensive. Thus it was decided that the urban texture and scale were, in the case of La Puntilla, more important than historic preservation of something incompatible with actual needs and the best utilization of the site. In fact La Puntilla is separated from the historic zone of Old San Juan by the city wall, which visually and psychologically separate the two. The site at present has been cleared exept for the two buildings of historical significance, the "Arsenal" and the "Aduana." (See figure 22.)

SIZE:

La Puntilla peninsula consist of 38.24 acres. Part of La Puntilla is now the property of the U. S. Coast Guard, but an understanding exists between the Coast Guard and the city that if a residential community is to be built in the area, all the public facilities of the station can be used by the residents of the project. Therefore, the actual area of the proposed development will be approximately ten acres, leaving twenty eight acres for park and other recreational facilities. (See figure 23.)

TRANSPORTATION:

La Puntilla is one of the most accessible areas of San Juan. (See figure 12.) It can be reached by either land or sea transportation. At present there is only one ferry route which connects San Juan to Cataño, across the bay. However, the Planning Board of Puerto Rico is considering a design proposal for a system of ferries that would link San Juan with other parts of the metropolitan areas, mainly Hato Rey and Carolina, by water.

Land transportation in the matropolitan San Juan area is available through a bus system. A study now underway for the expansion and reorganization of the whole system of transportation in San Juan include three major subway lines and is a step in the right direction in avoiding the increasing dependency in the private automobile. The

LA PUNTILLA (Proposed Development)

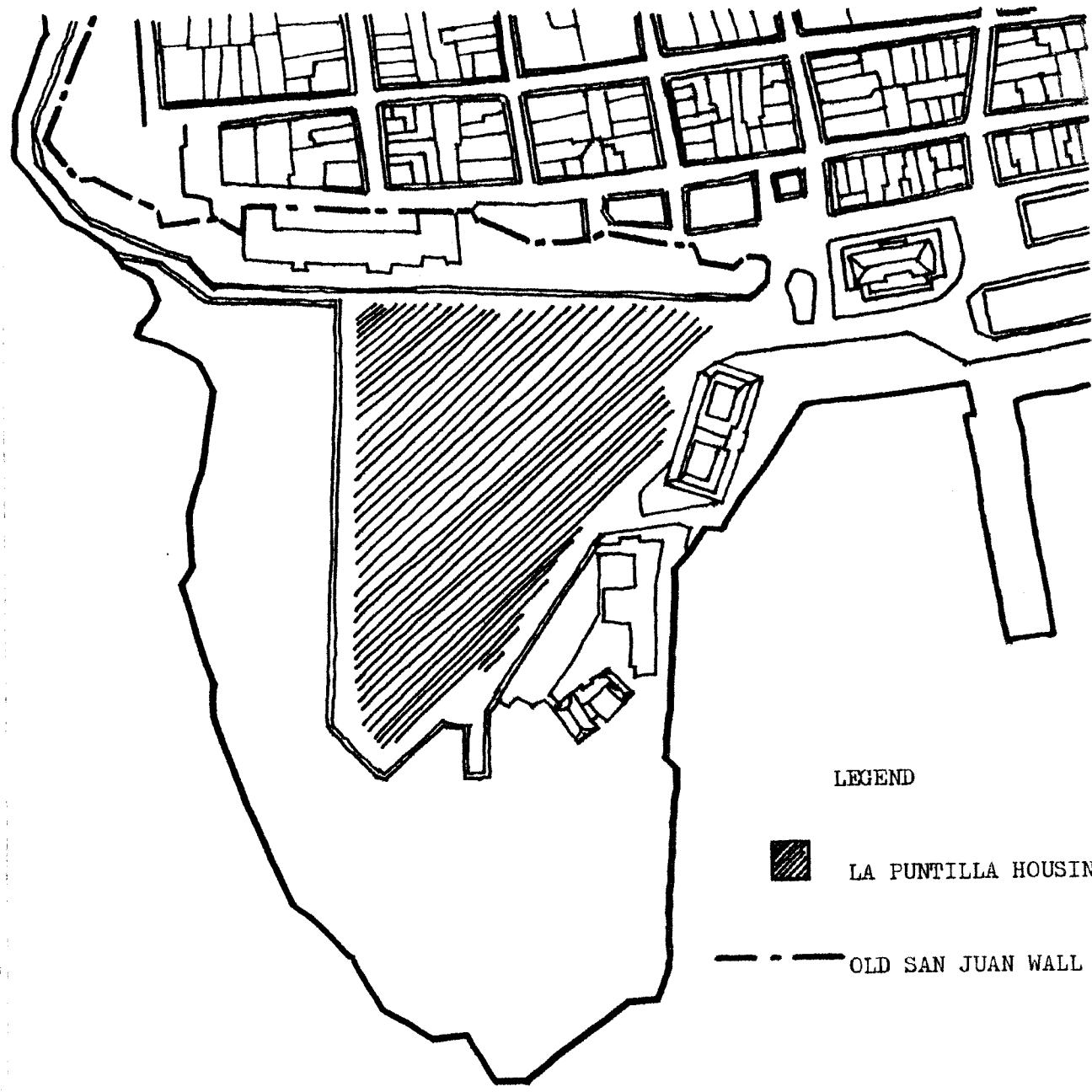


Figure 23

first line of the subway has been rescheduled to be in operation by mid-1985.

Transportation from San Juan to other towns of the island is very accesible from La Puntilla. The main terminal area for out of town busses and cars is in front of the Post Office building just a block from the proposed development. Figure 24 and 25.

COMMUNITY FACILITIES:

In a 1971 study by the Urban Renewal and Housing Authority it was shown that the most indispensable communal facilities for residents of public housing were, in order of importance:

- Schools
- Market place
- Post Office
- Drug store
- Medical health center
- Recreational areas
- Movie houses and theaters

With the above list in mind, I surveyed the Old San Juan area to locate relative to La Puntilla these facilities and to determine their accessibility from it. There are five public school in Old San Juan, three of which are elementary schools, one is an intermediate, and one is a high school. Their location relative to La Puntilla is shown in figure eighteen. Nevertheless, the absence of a nearby vocational training school is striking. I propose that the building known as La Princesa now the county jail scheduled to be vacated in 1977, be

LA PUNTILLA (Analysis)

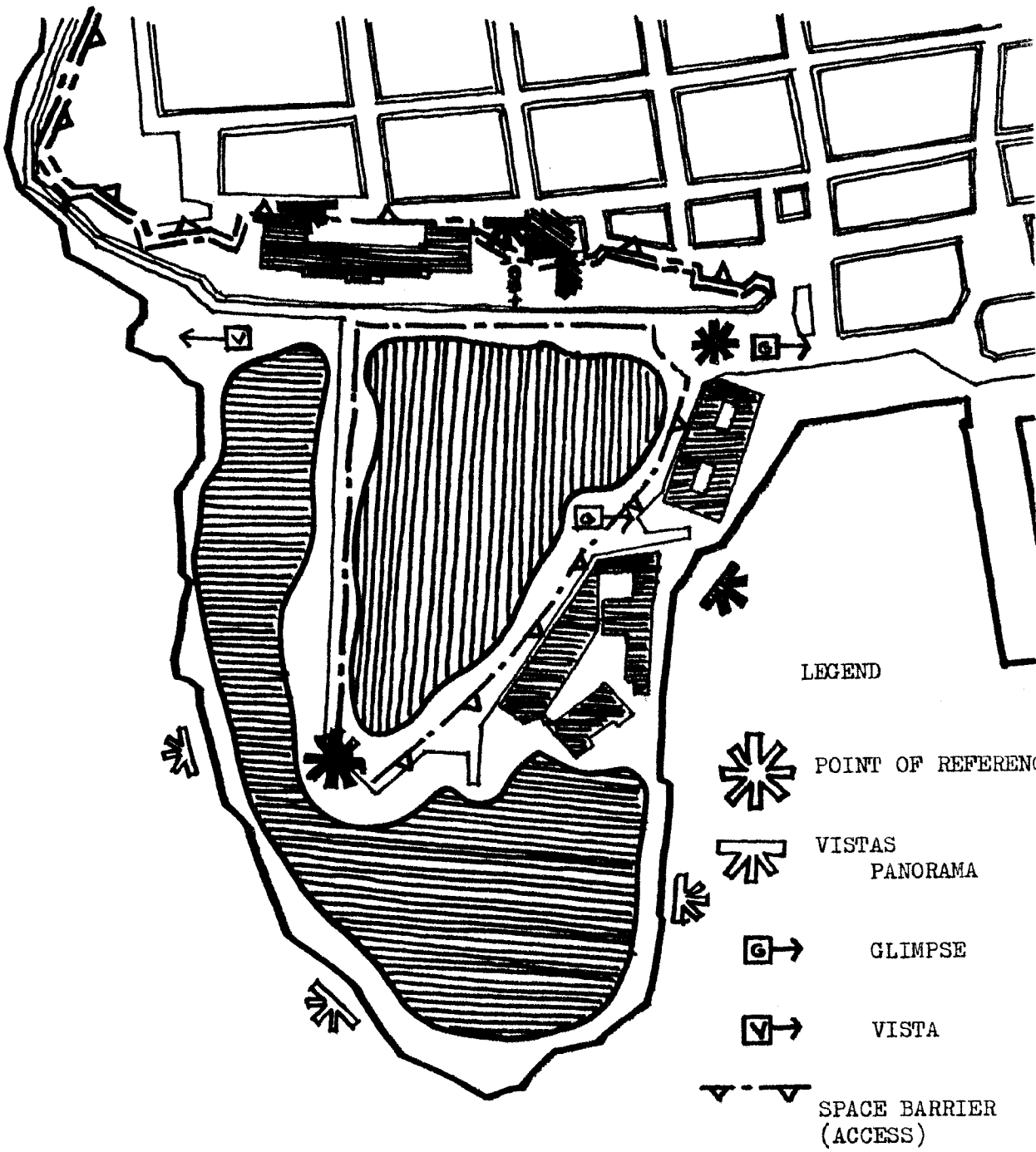


Figure 24

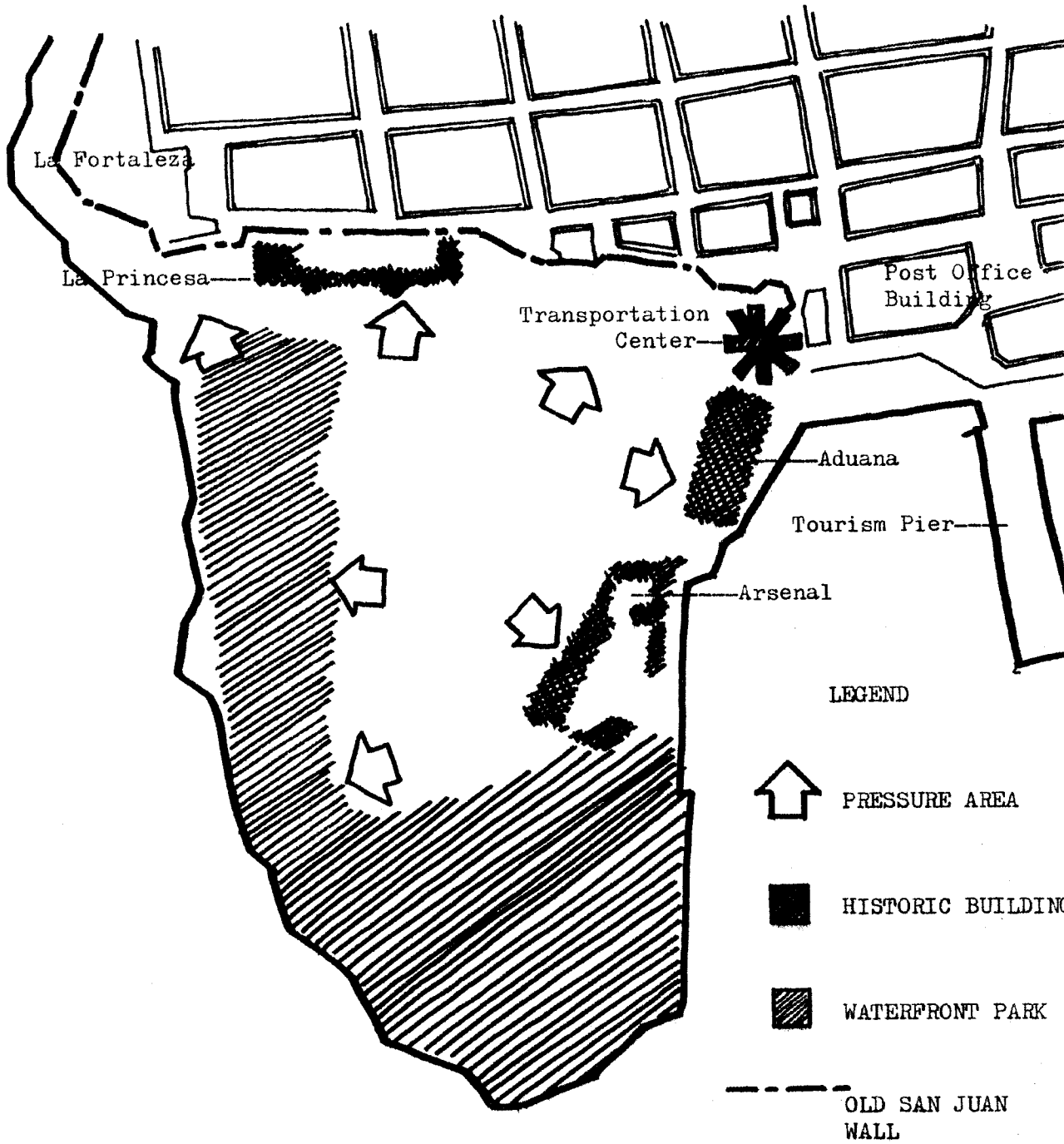

La Fortaleza
La Princesa
Transportation Center
Post Office Building
Aduana
Tourism Pier
Arsenal
LEGEND
PRESSURE AREA
HISTORIC BUILDIN
WATERFRONT PARK
OLD SAN JUAN WALL

Figure 25

restored into a vocational technical high school. The structural soundness and historic value of the building and its nature lend very well with the new use as a vocational high school. The fact is that even today when the building houses the municipal jail some parts of it are used as a rehabilitation center and school for inmates.

Market areas, as I have indicated in previous sections of this report, will be included in the proposed housing design, as an integral part of the total development. The existing store district in Old San Juan is a very stable one, however, with the incorporation of roughly five hundred families to the area new and closer market and stores will be needed.

On the other hand, neither the theaters or the post offices present any problem for the development of the housing community in La Puntilla. Within easy walking distance from the project, two or three blocks away, there are movie houses and a full service post office. Recreational areas as previously discusses will be included in the project design, but provisions will also be made to use the existing Coast Guard facilities. In this respect La Puntilla will have one of the best recreational facilities of any new community in San Juan.

CHAPTER VII

DESIGN PROPOSAL

INTRODUCTION:

"If our cities are ever to be healthy places to live, we must begin to think of them as arders which people can dominate, instead of orders that dominate people."[10] Cities should be places that offer its residents a wide range of alternatives, and should have an order that allows its residents to feel that they understand their environment, that they, infact, dominate the city.

In most contemporary cities, residents instead of enjoying the city struggle with it trying to establish their own order. Residents appreciate little of the city when they must spend most of their time locating places, identifying with city elements, and trying to move about the city efficiently. Cities seem to be without an established order, thus creating confusion and chaos. Cities should have an order that would allow a newcomer to arrive without the unpleasant feeling of being a stranger in an unknown and hostile environment.

An order that does not dominate, but that can be dominated by residents should be present throughout the entire hierarchy of man's urban attainments: the large metropolitan areas, the cities, the

10. Carlo, Miguel, "Urban Renovation Thesis." Professional Thesis, Tulane University, New Orleans, Louisiana, 1974.

neighborhoods, and the house or living units. Of the elements listed above, the neighborhood, is the most important. Neighborhoods are the basic building block of cities. They also are the basic component of cities which architects can dominate and exert the greatest amount of influence on. If Architects by way of neighborhoods and their architecture provide the order sough for in cities, the urban areas will gain this order and the cities would be better places in which to live in. An order would have to be established, one that would not only tie the elements of the urban scene into one system, but also one that would aid in the resident's identification with the city.

On the other hand, the future of the city does not lie in the building of ordered neighborhoods per se, it lies more in the city's ability to not only provide a place of residence to a large and varied number of people, but also must act as a social motivator. It must indicate the prevailing social pattern and help change, modify, or re-direct those patterns towards what they should be in the future.

LA PUNTILLA CONCEPT:

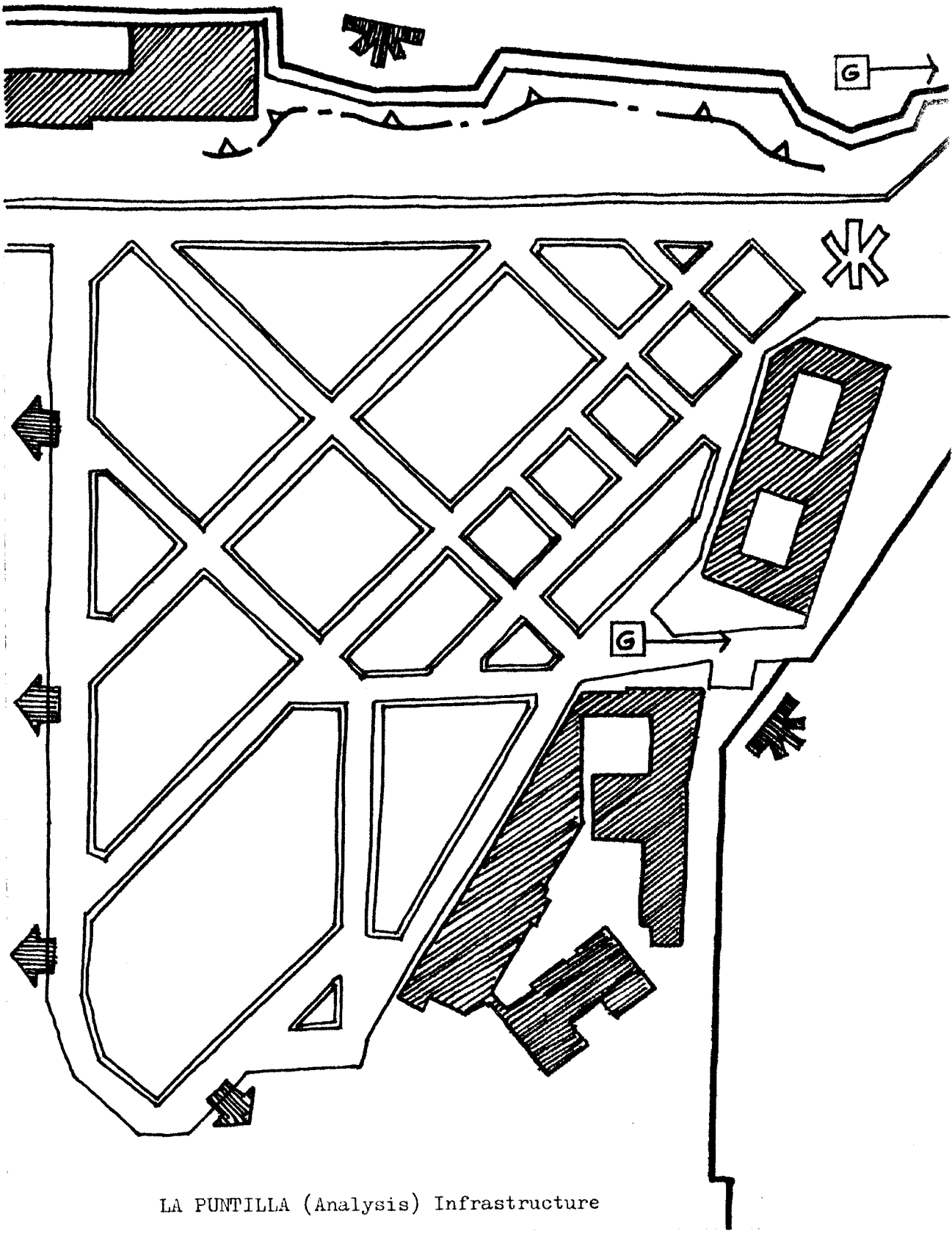
In La Puntilla I will design a residential community, a neighborhood, taking into consideration the elements and variables described as important in the first three parts of this thesis.

La Puntilla will be a high density - low rise community of

approximately five hundred families. It will house public housing residents, rural immigrants to the city, and Continental immigrants in an area that is by character residential and that is very accessible to urban services. It is also an area which already has the social and physical infrastructure necessary to accommodate the new housing development. (See figure 26.)

La Puntilla will have an approximate density of fifty units per acre with, tentatively eight buildings, of not more than five stories with sixty units each. Each residential structure will also accommodate small commercial establishments and community facilities. This concept is not different from that in Old San Juan. There a regular street system was established with commercial spaces in the street level and living units on the second and third levels. The only difference between the Old San Juan concept and the one I propose for La Puntilla is the density. In Old San Juan the average density is twenty-five units per acre, however, I feel that the increase of the density in La Puntilla will not adversely affect the character of Old San Juan because even though La Puntilla is next to the old city it is separated by strong physical boundaries.

The design concept of La Puntilla will be a system where the residents can move into their units and essentially complete the design to fit their purpose and lifestyle. Some basic suggestions will be delineated, but it is hoped that the residents themselves, with the help of the architect, will design and finish the unit.



LA PUNTILLA (Analysis) Infrastructure

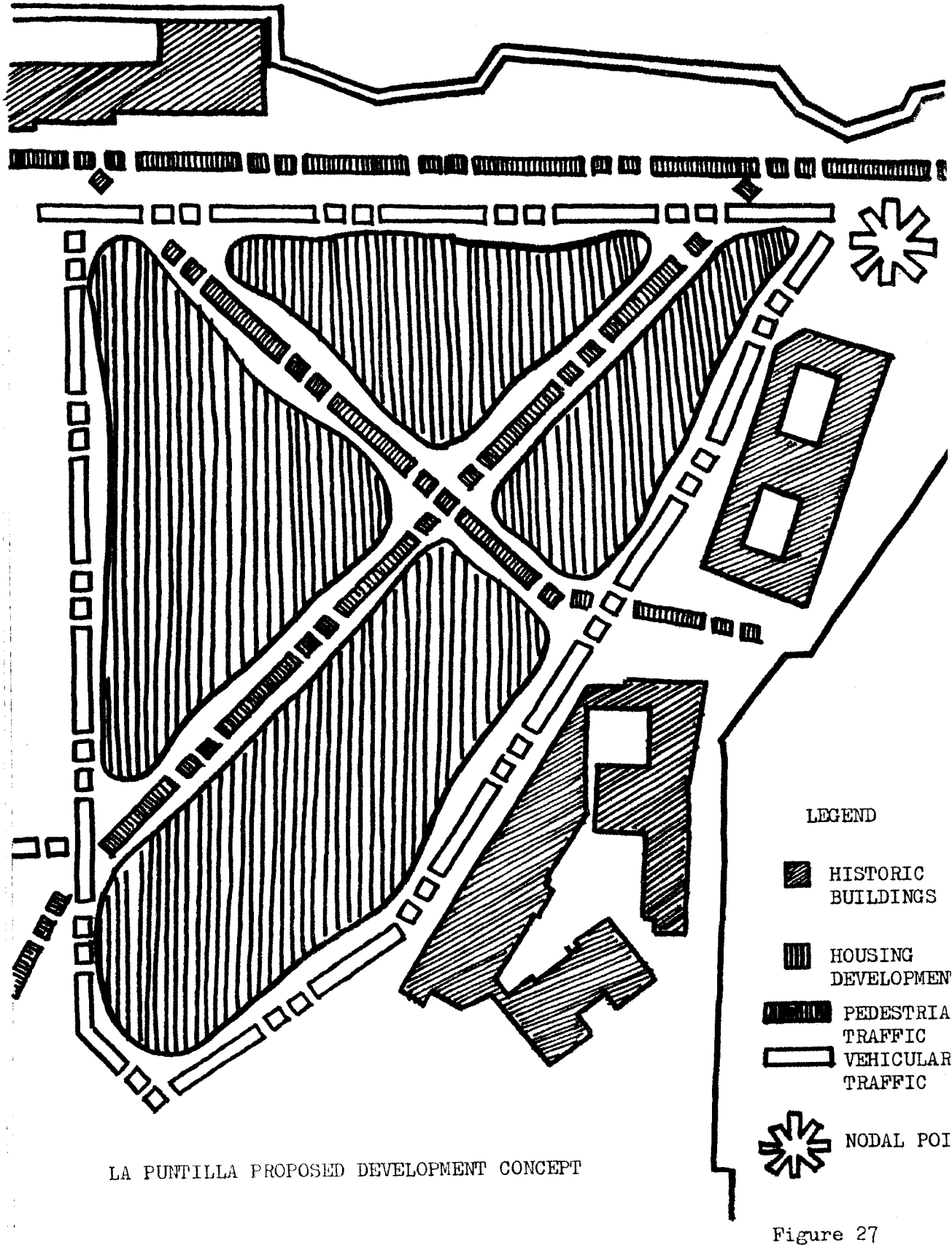
Figure 26

Even though most of the unit sizes will be roughly the same, individual units will vary and the result will be a strong order with a certain amount of variety. This concept suggests a basic framework of a slab and supporting bearing walls with a centralized service core.

Another important design concept in the development of housing at La Puntilla will be the links or connections between one use and the other. In La Puntilla the connections between one social activity and the other, between large and small, the inside to the outside, the new and the old, and most important of all between the old city and the new community are of major importance to the eventual success of the housing development and the whole development concept for the area. (See figure 27.) La Puntilla will have social emphasis on public and private activity spaces and links become very important if all of the social ammenities are to be properly coordinated.

RESTORATION:

Three buildings of historical significance are next to the proposed site for the new housing community. (Figure 24) The "Arsenal," "Aduana," and "La Princesa" all are structurally sound and are to remain. The Government through the Institute of Puerto Rican Culture is restoring the "Arsenal" to its Colonial grandeur, and will make a connection between the newer "Aduana" and the "Arsenal." The restoration of these buildings will be a great asset



LA PUNTILLA PROPOSED DEVELOPMENT CONCEPT

Figure 27

to La Puntilla as they will attract tourist traffic and enrich the area culturally.

The original street pattern in La Puntilla is also worth preserving. (See figure 26.) The existing pattern forms a diagonal through the site with the main axis focusing on the plaza next to the Post Office building in the old part of the city. Also inherent in the original pattern is the likelyhood of small plazas, and cobblestone streets and sidewalks that will give the area an attractive character and help create the Old San Juan atmosphere.

CIRCULATION:

Separation of pedestrian and vehicular traffic through the site is a major consideration where a high density development is to be built. The existing street pattern will, however, be retained because by its functional quality and scale, it guarantees a welcoming atmosphere to the housing development. The street pattern will, at the same time, promote communal integration to other Old San Juan neighborhoods. However, the retaining of the street pattern in La Puntilla will not exclude the possibility of changing the character of the streets from vehicular circulation to pedestrian ways.

Vehicular traffic within the site will be restricted, and of a peripheral nature, feeding the planned parking areas. No through traffic will be encountered in the site, and only service vehicles will

be allow to use the pedestrian ways and only in case of emergency. (See figure 27.) Parking areas for approximately three hundred cars will be provided within th project site, both as on street parking and off street parking. Mass transit stops, busses and mini busses, will be brought into the project to serve the five hundred families. The transit stop location will be next to the plaza area in the north east corner of the site.

WATERFRONT PARK:

As discussed earlier, the waterfront park will be one of the main elements of the La Puntilla project. The park will offer passive and active recreation areas as well as providing amenities, such as; open air theater, gardens, and small ponds. The incorporation of the fishermen facilities and the Coast Guard Station requirements will be looked into while the park layout is being considered.

There is a great need for community parks in the San Juan area, and especially in the Old San Juan sector. This waterfront park will undoubtedly, be one of the major assets and source of resident satisfaction in La Puntilla.

Control of the park will be in the hands of the community cooperative, while the maintenance and upkeep will remain the responsibility of the Parks and Recreation Administration. In this way the residents can have complete control of the park while avoiding the burden of maintenace.

LIVING UNIT DISTRIBUTION:

The following table summarizes the preliminary computations of living units types and total numbers:

TYPE OF UNIT	SQUARE FOOT AREA	PERCENT OF TOTAL	TOTAL NUMBER
Efficiency apartments	300	5	25
One bedroom apartments	600	15	75
Two bedroom apartments	800	45	275
Three bedroom apartments	1,000	25	125
Four bedroom apartments	1,300	10	50
Total.....		100	500

The total percentage of living units in the project by apartment type was developed from a study by the Puerto Rico Housing Authority.

The projected total population of La Puntilla is 2,000 persons. Figure 28, shows a schematic diagram of the units relationship to one another and to the public and semi-public areas of the building.

LA PUNTILLA HOUSING PROPOSED DEVELOPMENT CONCEPT

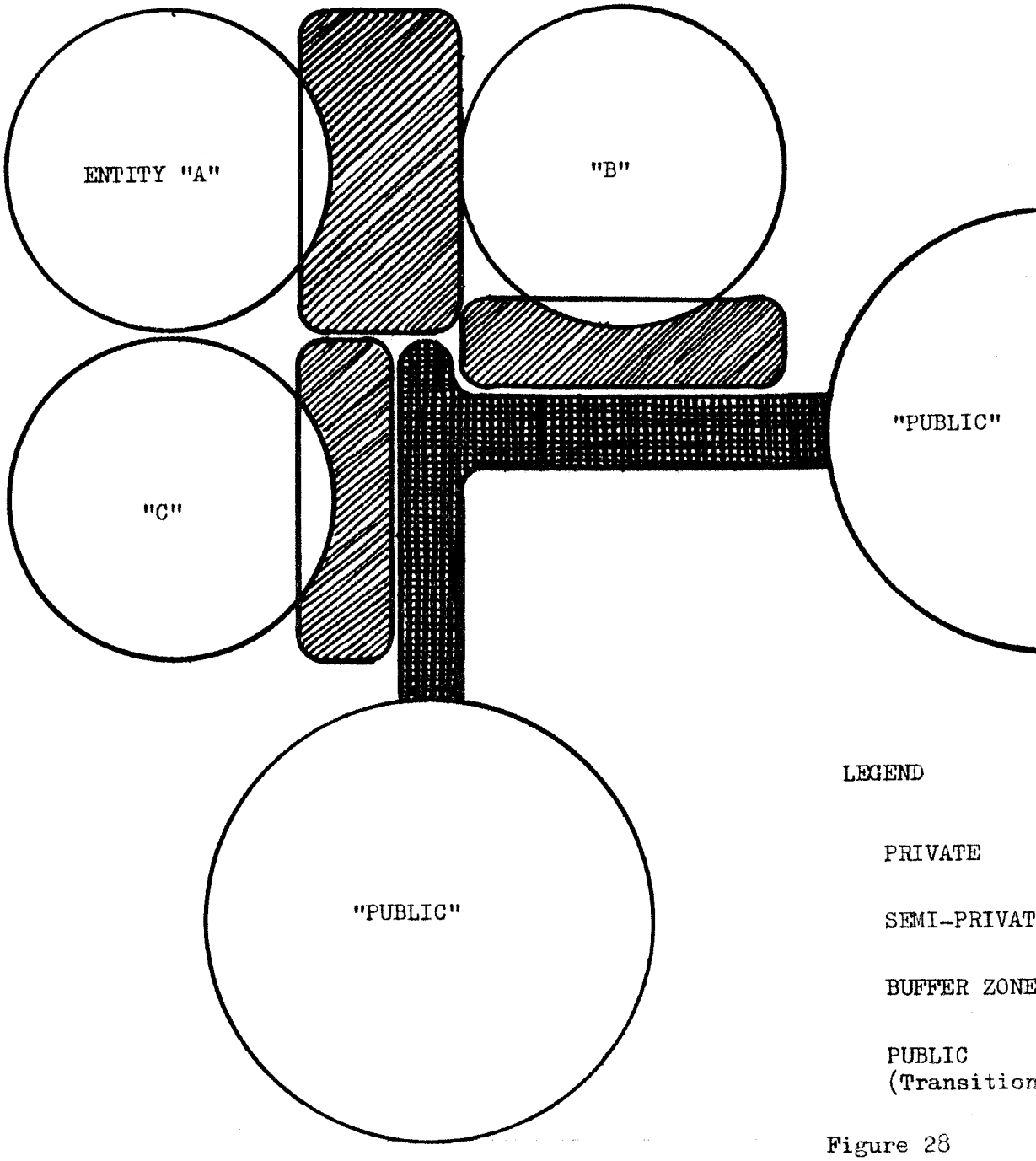


Figure 28

CHAPTER VIII

CONCLUSION AND FINDINGS

Density is a function of the amenities provided in a particular housing scheme. A balance between the desired amenities and the desired population density has to be achieved so that neither factor would have to be sacrificed for the sake of the other. At La Puntilla Housing, the overriding factor was to create the athmosphere and character of an Old San Juan neighborhood, not just the matter of numbers, in the production of dwelling units.

The character of any housing project, and of La Puntilla Housing in particular, is determined primarily by the amenities that are provided. The identification of the residents with these amenities, the use given to them, and the ultimate satisfaction achieved out of having these facilities are, therefore, very important. Even though a high density concept was envision for La Puntilla the final analysis showed a proposed density of forty-five dwelling units per acre. However, this fact does not negate the original thesis of high density-low rise. On the contrary it serves to reinforce some of the concepts of such schemes and of the underlined social connotations of this study.

It is not to the best interest of the community that just for the sake of higher densities to sacrifice the community characteristics that could possibly make it a better living environment. While still preserving the same approximate site and building configurations, La Puntilla Housing could accommodate a maximum of fifty-seven dwelling units per acre, without having to go any higher than four stories.[1] However, the character and the athmosphere of the community would be completely changed, not solely because of higher density as compared to that of Old San Juan, but because of the sacrifices that would have to be made in the social amenities of the community.

As an example, in the proposed development of La Puntilla Housing which follow this discussion, a community center of approximately 13,200 square feet is proposed at the center of the housing project. This community center includes facilities such as an auditorium with an approximate seating capacity of four hundred persons; a children day care center, a gymnasium, and other accesory facilities for the use of La Puntilla community in general. Also in the proposed scheme small commercial establishments have been incorporated in the architectural plans and design. If these additional facilities were to be converted into apartment units a substantial increase in the total number of dwelling units would be apparent and the overall density of the development would result. However, the character and livability of the community would have been sacrificed at the expense of density.

1. The total maximum density at La Puntilla Housing using the same design parti as in the proposed development is fifty-seven dwelling units per acre, with one parking space for every two apartments. The total density at La Puntilla Housing as presented in the architectural solution which follows is forty-five dwelling units per acre, with one parking space for every 1.3 apartments. The variations of apartments and facilities vary from these two extremes.

These commercial establishments, at La Puntilla Housing, are for the exclusive use of La Puntilla tenants, and will be the locale for spot commercial activity which will enrich and serve the population of La Puntilla. The owners of the commercial ventures in the housing development would be La Puntilla residents, thus preserving a characteristic element of Old San Juan of having the store keeper live in the same building as his store.

The measure of density is by no means an easy task. Who is to say that such a number is indeed low density as opposed to high density. All such factors are relative. Relative to what has traditionally been done. So the proposed density at La Puntilla Housing, forty-five units per acre, considering the amenities provided and the amount of off street parking, is, and can be considered to be high density. It is conceivable that the La Puntilla sector of Old San Juan could substantially absorb a higher density, and that the overall density of the sector could be eighty or one hundred units per acre or more. The important point to remember, and the consideration that should govern any decision on the part of architects and urban designers as to the actual density that a particular sector and site should have, is the residential community that is going to be created and the character of such community. Another important factor to consider in the measuring of the overall density of a project like La Puntilla Housing is the inclusion or exclusion of on site parking. The proposed scheme includes one on site parking for every 1.3 apartment units, or

a total of 335 spaces, with the capability of using an additional fifty-two spaces which are outside the site. The ratio of parking spaces to the number of apartments now proposed is well within government standards and a reasonable estimate of what the demand for these spaces will be given the specific conditions of the site and the residents of La Puntilla Housing.

One other important aspect of this search for high densities in our urban areas is either the inclusion or exclusion of mid rise or a high rise building in such developments like La Puntilla. Again, there is nothing intrinsically wrong about high rise buildings, and they can be designed in such a way as to make them work. However, these decisions more than economic are social decisions, and as such should be understood. For the particular case of La Puntilla Housing, a high rise solution, I feel, would have been disastrous.

A similar project to La Puntilla Housing, high density, high rise, public housing has been built by the Housing and Urban Renewal Corporation of Puerto Rico in a site not far from La Puntilla. I eagerly wait the fate of such a project.

LA PUNTILLA HOUSING STATISTICS

Typical Cluster

First Floor	4 (two bedroom) 4 (three bedroom)
Second & Third Floor	4 (one bedroom) 8 (two bedroom) 4 (three bedroom)
Fourth Floor	4 (two bedroom) 4 (three bedroom) 8 (four bedroom) (duplex)
TOTAL	56 apartments

Total development ..... 456 apartments
..... 335 parking

Note: 52 additional parking spaces ratio 1:1.2

One bedroom	8%
Two bedroom	24%
Three bedroom	16%
Four bedroom	8%

Approximate site area ..... 10 acres

Community facilities ..... 13,200 square feet

Commercial activities ..... 13,100 square feet

Approximate Total Development Cost ..... $9.2 million

Cost Per unit $20,000.00
(excluding Community Center)

LA PUNTILLA HOUSING

1

SITE PLAN

LA PUNTILLA HOUSING

STUDY IN LOW RISE, HIGH DENSITY URBAN HOUSING SAN JUAN, P.R.

SITE PLAN (DETAIL)

3

LA PUNTILLA HOUSING

CLUSTER FLOOR PLAN

SCALE

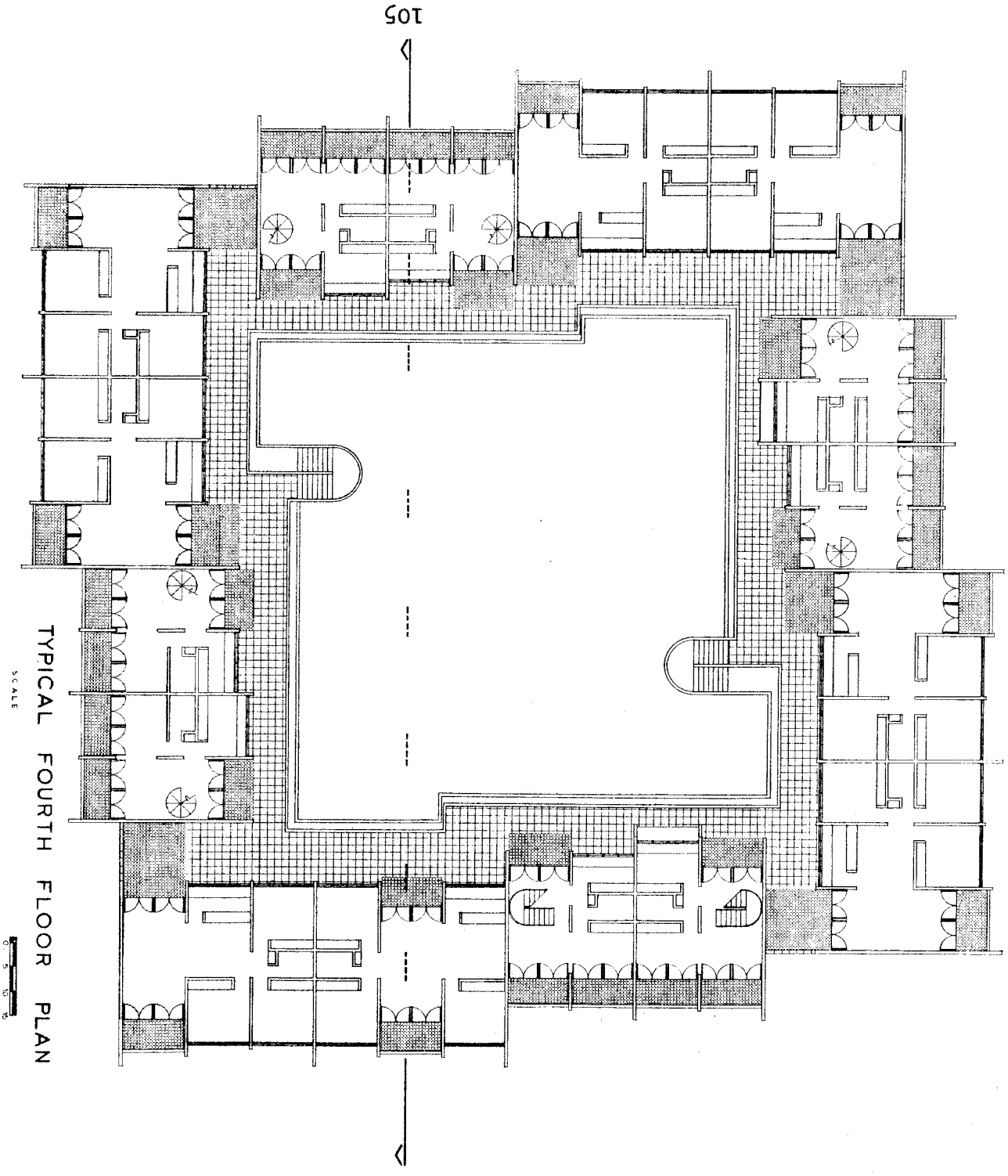
4

LA PUNTILLA HOUSING

STUDY IN LOW RISE - HIGH DENSITY URBAN HOUSING SAN JUAN P.R.

TYPICAL 2nd. & 3rd. FLOOR PLAN

SCALE 0 5 10 15



LA PUNTILLA HOUSING

STUDY IN LOW RISE - HIGH DENSITY URBAN HOUSING SAN JUAN P.R.

LA PUNTILLA HOUSING

SAN JUAN, PR

STUDY IN LOW RISE - HIGH DENSITY URBAN HOUSING

TYPICAL ELEVATION

TYPICAL SECTION

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