

ABSTRACT

Title of Thesis: MIXED INCOME HOUSING, A REVITALIZATION PROJECT
IN MEDELLIN, COLOMBIA

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Settled in the Central branch of the Andes mountain chain, the city of Medellin (3 million inhabitants) has occupied most of the land available for urbanization. This pattern has led to the appropriation, use and development of topographically unstable slopes that often represent geological risks and little by little destroys one of the city's most valuable attributes: the beauty of its geographic location.

In spite of the deterioration and the correspondent decline in the architectural landscape, downtown Medellin continues to be a vibrant market for both formal and informal commerce and services activities out of which numerous low-income families survive, not to mention its value as a historical urban setting where Medellin was founded and where the first commercial and governmental institutions shaped the city life.

All this calls for an urban policy that creatively re-evaluates the growing possibilities of Medellin. Based on the frame summarized above, and following the basic guidelines of an existing partial plan for a deteriorated but historically valuable downtown area (area of intervention for this purpose), formulated by the Government of Medellin, I propose:

First, to develop a schematic housing system that complies with the normative plan, critique it and decide whether it should be pursued or improved.

Second, to design a mixed-income housing system that:

- Responds to the socio-economic characteristics of traditional inhabitants to the area while responding to the need for a functional mixture of housing, services and commercial activities.
- Help solve the existing housing deficit
- Connect the neighborhood to the urban fabric

¹. See section on mixed-income housing below

². According to the *Anuario Estadístico Metropolitano de 1997*, Medellín had, 423.162 houses and 465.478 households in 1996. This means that at that time there was a housing deficit of 42.316 houses.

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MEDELLIN, COLOMBIA

by

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INTRODUCTION

My thesis explores, from a regional development point of view, the design of housing solutions for a cluster of low-income families living in a neighborhood called Niquitao adjacent to the downtown urban area of Medellin, Colombia. It also connects the housing solutions to the existing development agenda for this area that holds the promise of regenerating the sense of belonging to a viable community, which has been lost in recent years.

The specific site is a downtown historic neighborhood area that has been subject to a progressive process of deterioration generated by the urbanization of the city and improper urban policies fostered by various governmental administrations over the last few decades. Medellin's government has addressed the problems of this area in a recently proposed master plan called *Plan Parcial Parque San Lorenzo* which encompasses three neighborhoods: *Barrio Colon – sector Niquitao* (the most deteriorated one), *Barrio Las Palmas*, and *Barrio San Diego*. The *Plan Parcial* sets the basic guidelines for construction in these areas.

I intend to critique the plan and its urban policies and design a viable schematic housing system for the Niquitao area (sector located in between the boundary that divides Barrio Colon and Barrio las palmas), that addresses the existing deficit, while improving the public promenade and connectivity with the rest of the city.

By means of a thorough analysis of relevant precedents I will seek to identify different housing systems and their appropriated demographics in order to have an idea of the “numbers” .

The final product deals with the design of a typical block type and the units within the block.

CHAPTER I

THE FUNDAMENTALS

1. THE POOR

Until the early years of the last century, Medellin was a small city, which had remained remarkably stable in terms of population size and the space it occupied over several centuries. In the 1920's a large migration of peasants to the city of Medellin, propelled by the mining crisis and the consequent economic depression in the eastern part of the State of Antioquia, of which Medellin is the capital. Medellin became an attraction for the migrant population due to promises of work, progress and expectations for better living conditions. As rural migrants arrived to the city they settled in areas such as Niquitao due

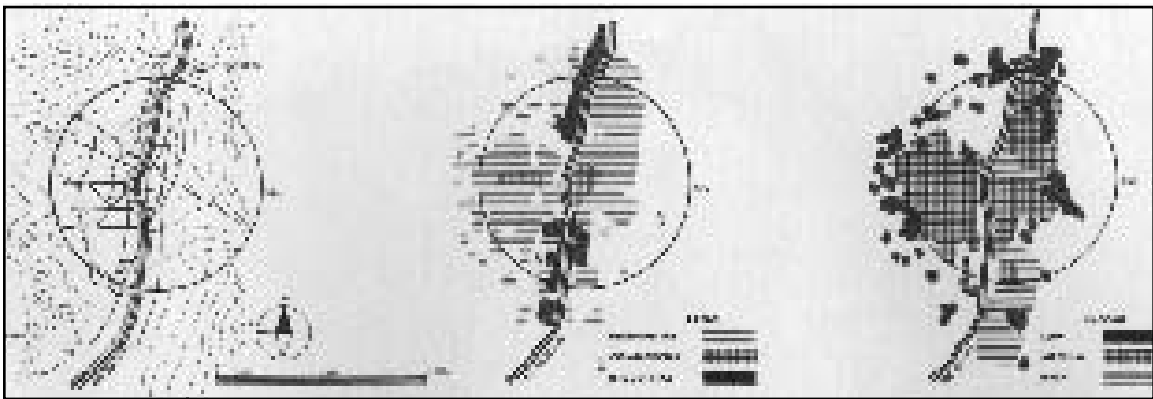


Figure 1. Medellin: Urban and social patterns. Low-income (third map) distributed around Medellin's periphery has been a constant since the 1960's. [Camino Horacio. Urban dwelling environments].

to its proximity to downtown. There, they built their own houses reflecting their previous rural housing standards, made out of poor construction materials, hoping that they would be able to make improvements as they progressed in economic terms. Because of their lack of formal education, most of them could not get established, well-paid jobs in the formal market, being forced to develop alternative ways to survive. Soon the majority of migrants became part of the existing and expanding informal economy³, in which life is lived on a day-to-day basis.

³ An informal economy consists of small productive and commercial enterprises that are not licensed, inspected or otherwise regulated or legalized by the government. They are "extra-legal" in the sense that red tape, the demand for bribes, restrictive legislation, and other factors make it impossible for enterprises to become legal even when they apply for licenses. For a full explanation see Hernando de Soto, *The Mystery of Capital*, New York: Basic Books, 2000.

Work in the informal economy requires long hours to earn an income at or below the minimum wage. Men and women both worked seven days a week, and as their numerous children matured they too were expected to bring food to the table everyday. Jobs included hauling goods, unskilled construction work, maintenance and cleaning of offices and homes, as well as tiny retail shops, bakeries, and cafes as well as street vending of home-cooked foods and myriad consumer items like pencils, cigarettes and shoelaces. It was a tough way of life for migrants who came with extended families often numbering 10-20 persons.

The economic situation of thousands of impoverished families did not allow residents of these areas to improve their housing conditions as they expected when they first arrived to the city. Quite the contrary. As families grew and as purchasing capacity deteriorated, the self-built houses became crowded, unhealthy spaces many times divided and shared with newly wed members and recently arrived relatives who had no other place to live.

2. HOUSING FOR EVERYONE

Affordable housing should be made available to everyone in a democratic society, and decent, affordable housing can be created through communal cooperation and through cooperation between the civil society, governmental institutions and private agencies. However, low-income housing is a complex issue anywhere in the world particularly in Colombia, when bureaucracy and corruption in governmental institutions makes the perfect combination to steal much of the money earmarked to help the most needy ones. Whatever is left is invested in housing projects that are poorly



Figure 2. Low-income project in *San Cristobal*, Medellin. Repetitive high rise pattern houses do not represent variety of life-styles [author]



Figure 3. Low-income project in *Robledo*, Medellin. Low Density and only one unit type.[author]

constructed, do not make any attempt to improve their surroundings, do not respond to the actual needs of these people, do not fit their socio- cultural characteristics and are often designed with little variety and end up in boring repetitive patterns.

As a young architect, it is my goal to contribute to the provision of affordable housing solutions for poor families, which constitutes the majority of our population, in a manner that reflects their socio-cultural characteristics and translates them to the city context. Any proposed solution should also take into account the traditional building culture handed down from one group to another. i.e. permanent residents that have already made the transition, teach newly arrived displaced ones how to build a house, make provisions for further expansion and divisions, utilize materials that are available and affordable, etc. The study of existent types and typologies in which one can identify the vertical or horizontal segregation of several households in one building (major house) will be crucial to identifying alternatives. These complex clusters integrated in one building type provide families with human conditions and all the advantages of ventilation, orientation, security, and accessibility. This approach will be called throughout this thesis “mixed-income housing.” (See details in section below)

3. MIXED-INCOME HOUSING

Throughout the world, mixed-income housing has been proven to foster stable new neighborhoods. It not only gives vitality and diversity but also acts as an alternative way of paying for the project since the higher income units subsidize the lower income units. It also allows households to move up to higher levels of quality and cost within the same neighborhood when their incomes improve⁴.

For taxes, services and other public policy issues, the population of Medellin is classified in *estratos* based on income levels. Under this system, lower and upper lower income levels compose strata 2 and 3. Mixed-income housing has been used as a solution for many years, especially for strata 2 and 3.

⁴. Clare Cooper and Wendy Sarkissian’s “Housing as if People Mattered.”

Traditionally, families from diverse strata share a communal house that has been zoned either horizontally or vertically. In the first case, newly immigrant family members and/or new marriages among offspring build their rooms on top of the initial dwelling; a second level is created and then a third level and maybe a fourth over a period of many years. Throughout the evolution of this communal house, one can observe that when the roof at each level is finished iron reinforcing bars remain sticking up into the air, giving the impression that the structure is not complete, because these will (someday) anchor the construction of the next level. In this way an extended family unit is created without having to acquire additional land – the expansion is vertical. Such units have been self-built, without any expert involvement, and do not comply with structural standards and hygienic parameters.



Figure 4. Vertically zoned unit

This type of urban settlement is even more characteristic of the city today that it was historically. Several reasons explain why this continuous stage of construction, extended over many years, is growing in importance: 1) the growing size of the low-income segment of the Colombian population due to deepening economic difficulties in the country, 2) the high and constant turn over of poor settlers, 3) the shortage of urban plots for home-building and their consequent high cost, and 4) the dramatic influx of displaced population from rural areas affected by the ongoing internal armed conflict. Some residents are permanent while others are “floating population”. The latter are mainly displaced population who come from rural areas affected by the internal war who are in desperate need of a place to stay to survive.

⁵. For more explanation and details on *Inquilinato*, see chapter II, section 1, and sub-section c.

In the second case, which is frequently found in Niquitao, there are communal houses that are zoned horizontally and are actually much like a type of hotel. (This type of house will be called *Inquilinato*⁵ throughout the document). For this dwelling type, it is important that communal and gathering spaces be sensitively addressed to facilitate interactions between permanent residents and the floating population and to foster mutual adaptation. My thesis deals with mixed-income housing as solutions that will help displaced families to make the transition from the rural to the urban setting, from the informal to the formal city, while improving the main access to the consolidated areas of the neighborhood, establish a recreational area; expand schools, etc.



Figure 5. Productive housing [atelier d' architecture de Medellin]

The third type of housing that is commonly found in the area is called the productive house. It can be called mixed, because it combines a regular housing unit with small-scale retail (usually informal). This is key to the survival of the poor dwellers since it helps house owners to make extra money, while furnishing the neighborhood with affordable supplies concurrent with their socio-economic strata.

On the other hand, specific sectors of Niquitao have consolidated houses that only require punctual developments and urban norms that allow for a harmonic long-term densification, implementation of social services, and public space.

Chapter II

SITE AS FORM DETERMINANT

1. MEDELLIN: Description and history of development

Medellin is the second largest city in Colombia. It is located in a bowl shaped valley that runs north south following its main axis of development, the Medellin River. At an altitude of 1538 meters / 5045' above the sea level and with an average of 24 oc, this city covers an area of 382 Km2 and has a population of approximately 3 million inhabitants. From the period of 1675 (year in which the city was founded) to 1973, Medellin had a very gradual growth: it went from 700 to 358.189 inhabitants⁶ . From there to the present, it has had a very accelerated growth (due to migrations from the rural areas, mostly displaced by our armed conflict) reaching 3 million inhabitants in the year 2000.



Figure 6. 1889 Medellin city plan: See Niquitao site (in red) with relation to historic downtown. Also notice city section (bottom center) showing characteristic topography of the East side of Medellin [Bernal Nichols...].

⁶ Bernal Nichols, Alberto. *Miscelanea sobre la historia los usos y las costumbres de Medellin*

The city's urban development has been the result of a linear boundary intersected by orthogonal grids that run down from both east and west sides of the valley, creating transitions between the two. These perpendicular green corridors were the result of several creeks running down the mountain that finally intersected the river at the bottom of the valley and, according to Jose Luis Sert⁷, would sponsor the future city's growth while complementing the existent north south service artery.

a. Development of downtown Medellin

The deterioration of Niquitao and its progressive decline are the direct result of 50 years of an inappropriate urban planning policy which started with the *Plan Piloto*⁸ and the new urban plans for Medellin, that since 1950's, have attempted to reorganize the city in zones (zoning) of singular uses.

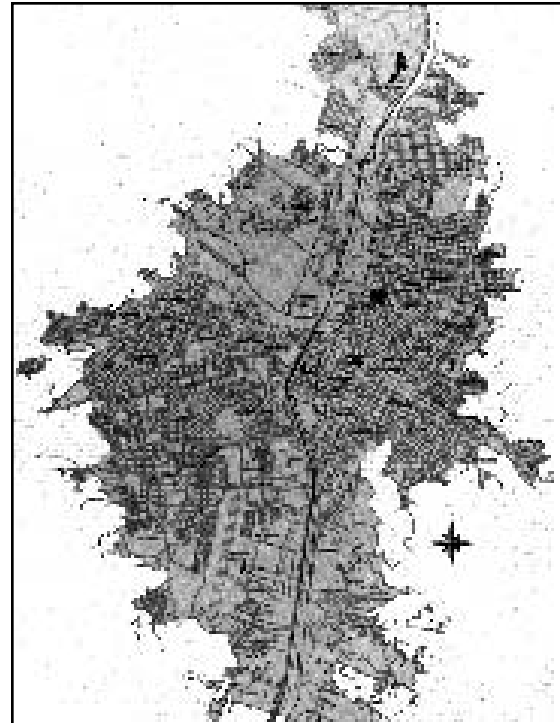


Figure 7. 1965 Medellin city plan: See Niquitao site (in red) with relation to the metropolitan area [Bernal Nichols...].

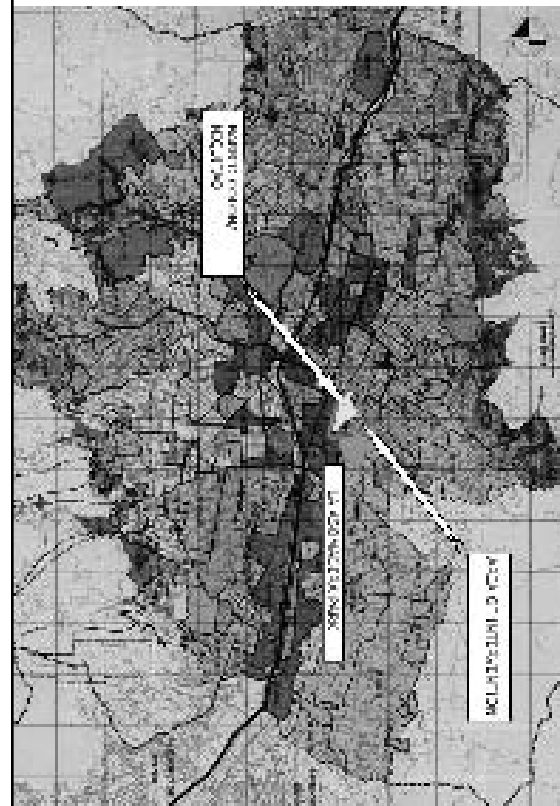


Figure 8. 1990's Medellin city plan: The area of intervention (red) is located close to the *Asomadera* Natural park in the east side hills of Medellin. [Municipal planning office]

⁷.Architect associated with the Modern Movement (CIAM) invited to propose a pilot plan for the city of Medellin in the 1940's

⁸. First urban plan to be developed for the city of Medellin.

In the mid 1900's, *Guayaquil* (traditional district in Medellin), and the *Plaza de Cisneros* (market place) were opposite but inseparable poles from the city center (downtown). This city market (*Plaza de Cisneros*) along with the railroad station (*Estacion Cisneros*) had a very established civic-public character. (see figure 8 below)



Figure 9. Context diagram. Niquitao has been separated from the main activity centers by the road structure. [author]



Figure 10. Downtown Medellin. Seen from Niquitao. [author]



Figure 11. *Alpujarra*. The governmental administrative center and Metro station should be re-linked to Niquitao [author]

This new zoning generated a profound change in character for the whole downtown sector, a change that reached its peak with the construction of the governmental administrative center of Medellin, *Alpujarra* and the consequent relocation of all governmental offices. There, The Municipal Palace (the major office and the municipal departments) and the Governor's Palace (the State's governors office and departments) were erected. In turn, the *Alpujarra*, the newly created governmental center, demanded an improved street network developed in the 70's, which eliminated the market place (Plaza de Cisneros) and disarticulated *Guayaquil* from the rest of the city.



Figure 12. *Avenida Oriental.* [author]



Figure 13. Road system diagram. The governmental administrative center and Metro station should be re-linked to Niquitao.[author]



Figure 14. *San Juan x Carrera 45.* There is no room for pedestrians. [atelier d' architecture de Medellin]



Figure 15. *Avenida Oriental x San Juan.* The elevated Avenue as a boundary. [atelier d' architecture de Medellin]

All these events affected the surrounding neighborhoods including Niquitao, which was left as an isolated urban island surrounded by a newly built road system, unrelated to the activities that used to take place in *Guayaquil*, *Barrio Colon* and downtown.

As a result of the relocation of the government's buildings and the creation of the new road system, a large displacement of population took place. Many of the original inhabitants of Niquitao left the area because of this project and lots of single-family houses were transformed into shops and unhealthy *inquilinos* (informal hotels paid on a daily or weekly basis where several families live together, often sharing basic spaces such as kitchen, patios and bathrooms). The establishment of *inquilinos* embodies one of the

main pathologies found in the area.
(See section below on *Inquilinatos*)

The selected area (see figure 16) is bordered by the *Avenida Oriental* (west), the *Asomadera park* (Southwest), part of *las Palmas district* (East), and *la Candelaria and Bombona district* (North). The most deteriorated part (Niquitao) is found along the *Carrera 44* between *Maturin (calle 46)*, and *los Huesos (calle 41)*.

Because of its relative closeness to downtown and to the public services it housed, neighborhoods such as *Barrio Las Palmas and Barrio Colon* of which Niquitao is part,

never developed local services and public facilities such as schools, health care, police, civil justice, etc. But once the area became isolated by this new infrastructure, the lack of services turned into a real constraint.



Figure 16. Schematic diagram showing Niquitao's location between the barrios. [author]

2. NIQUITAO

Because of the physical and socio-economic characteristics resulting from its disassociation with the urban grid, Niquitao is not a neighborhood, but a squatter area within two neighborhoods fragmented by the existing road system of Medellin. As can be seen in the aerial photo next page, the name Niquitao refers to a central area of the city adjacent to the *carrera 44*, and it is located between the boundary that divides *Barrio las palmas* and *barrio Colon* adjacent to downtown Medellin.

Niquitao is today a deteriorated squatter sector that shelters a fragile marginalized population with huge violence problems. This population is totally dependent of the city's downtown, street vendors, recyclers, rose sellers, and prostitutes who dwell together with a more traditional population of craftsman, shopkeepers and workers. It's a settlement impoverished by the re-organization of the production and distribution system, but completely linked to the surrounding neighborhoods. Both long-time dwellers and



Figure 17. Aerial photograph of Niquitao. The cemetery and its surrounding green areas allow for future gathering public spaces. Notice also the local or secondary streets that enclose Niquitao. [atelier d' architecture de Medellin]



Figure 18. Carrera 45 "el Palo". S-N [author]

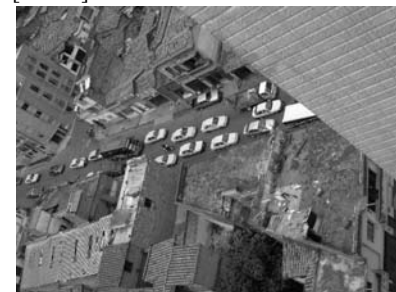


Figure 19. Calle 41 "los Huesos". Only means to traverse the Avenida oriental. [author]



Figure 20. Carrera 44 "Niquitao". N-S Most deteriorated road. [author]

newcomers, all together, are linked to and depend on downtown informal economic activities and opportunities for their survival such as garbage collection, recycling, cheap food, improvised street supermarkets, walking distances to services, daily-paid jobs and much more.

The growing housing deficit in the area and the overpopulated conditions in which residents live are just a couple of examples that evidence the need for revitalization in order to tie the area back to the city structure.



Figure 21. Niquitao youth. [atelier d' architecture de Medellin]

Niquitao has the potential for a harmonic development due to the quality of its infrastructure, geography, history and patrimony. In addition, the most powerful reason for intervention and improvement is the fact that it is inhabited by poor people who work hard to survive, impoverished and dispossessed individuals, families and groups that nonetheless display remarkable determination to improve their living conditions. The neighborhood in which Niquitao is located has been assigned a part in a partial urban development plan by Medellin's government, and it is actually starting to produce its first projects in the area.



Figs 22-23 Misguided youth. The lack of education and the poor resources, force the children to live in the streets. See girl sniffing glue [atelier d' architecture de Medellin]



Figure 24. Physical deterioration. Demolished shacks and empty lots are another pathology found in Niquitao. [atelier d' architecture de Medellin]



Figure 25. Mud construction. Along the Carrera 44 or "Niquitao" you can find all kinds of shacks. [author]

a. Physical and Socioeconomic Characteristics

- *Barrio Colon/Niquitao*:
- 15% of the planned area (45 Ha) = 4.8 ha
- Density: 92 inhabitants/ha
- Housing deficit: 885 houses
- Average people per housing unit: 4 inhabitants/ unit

Although it is common to find extensive families (where parents, grandparents, sons, and other relatives live together), there are also older citizens who live by themselves or with the company of one son occupying big units with as much as two to three stories. Approximately 40% of the population earns less than the minimum average wage (\$7500 pesos/ day or 2.5 dollars/ day).

b. Housing shortage in Niquitao

The 1996 municipal statistics showed that Medellin had 423.162 houses and 465.478 families, which implies a deficit of 42.316 houses, not counting the growing housing demand derived from the population growth. According to the same statistics there was a deficit of 1.260 housing units in the *barrio Colon, San Diego, and Las Palmas*, the location of the Niquitao area.

Today Niquitao presents a significant potential for new housing development through the urban revitalization of undeveloped, inadequate, or obsolete plots of land. Revitalization needs to go along with the achievement of adequate housing conditions, especially for those families who dwell in the *Inquilinatos*.



Figure 26. *Torres de San Sebastian.* Seen from las Palmas neighborhood. Recent housing project. [author]



Figure 27. Courtyards. Seen from *San Sebastian* towers, this courtyard typology appears as a small oasis. [author]



Figure 28. Corvide housing projects. These projects are the latest generation of housing projects in Niquitao. Notice treatment of sidewalks [author]

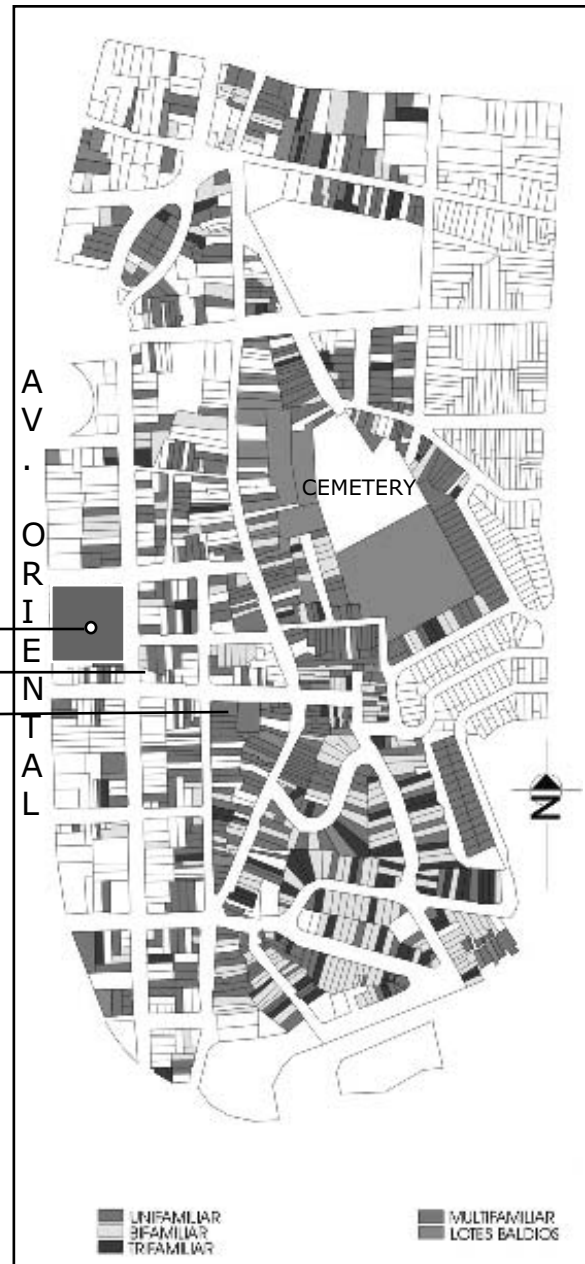


Figure 29. Housing usage diagnosis [atelier d'architecture de Medellin]

c. Inquilinatos

This type of dwelling seems to derive from the hotel type in which the administrator (or landlord) is the one in charge of collecting the daily or weekly rent from “*inquilinos*” (renters) and makes repairs when necessary. *Inquilinatos* are the only affordable housing for most of the low-income population settled in the neighborhood, who live on a day-by-day basis, very much depending on variable income earning activities provided by the infor-

mal sector. Paradoxically these people ended up paying as much as three times more for the housing than other leasers in the area to live in unhealthy conditions. This fact indicates that there is some scope for absorbing the costs of housing improvements on the part of the residents of *inquilinos*⁹.

For the owners, this is a way of making a living out of houses in deteriorated areas with minimum maintenance, taxes and investments, while taking advantage of the current low-income housing shortage in the city.



Figure 31. Inquilinato (Vertical typology). Balconies work as spaces for interaction, after all there is not much privacy. [atelier d' architecture de Medellin]



Figure 30. Inquilinato (horizontal typology). [atelier d' architecture de Medellin]



Figure 32. Kitchen. These tiny spaces are shared by several families [atelier d' architecture de Medellin]

⁹. Pact Arim – Corvide alliance. Studies for the *casa compartida* project in which people who dwell in the *inquilinos* were moved to a big quality housing unit for the same amount as to previous conditions

3. SAN LORENZO CEMETERY

The neighborhoods encompassed by the area of intervention were at first developed around the ancient cemeteries of *San Lorenzo* (1828) and *el Parroquial*, which in turn were constructed on top of the city's first chapel vestiges founded in 1626. These cemeteries have been closed for the last 7 years and their state of deterioration is such that renovation to their original state had proven to be tough task, even though the cemetery has been



Figure 33. Public space diagram. Ideal Pedestrian paths should be enhanced in order to tie the neighborhood to the city fabric [atelier d'architecture de Medellin]



Figure 35. Cemetery grounds. Actual state [atelier d'architecture de Medellin]



Figure 36. Available plot of land. The area adjacent to the cemetery belongs to the municipality [author]

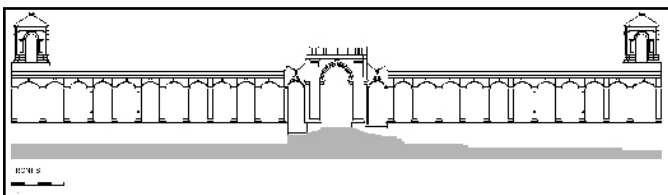


Figure 34. Cemetery colonnade elevation. Architectural drawings for the future preservation project [atelier d'architecture de Medellin]



Figure 37. Cemetery entrance. Architectural character [author]

declared of cultural interest in the municipal character, and has also been assigned a prominent role in the new *Plan Parcial Parque San Lorenzo* proposed by Medellín's government. Although its use will change, the cemetery will be preserved and will become, along with the available land (property of the municipality), the future public center of the area of intervention. (see more detailed information on the *Plan Parcial Parque San Lorenzo* chapter below).

Chapter III

PREVIOUS STUDIES AND PLANS FOR THE AREA

1. CORVIDE-PACT ARIM 93

Since 1994, the housing and social development corporation (Corvide), the only municipal institution with real presence in Niquitao, has been putting forward a series of significant actions to improve its inhabitant's living conditions.

Thanks to a technical cooperation agreement, Corvide has received support from the French agency Pact Arim 93 (*Programme D' Action Contre Taudis Et Agencies De Rehabilitation Immobilier*) including assistance for long-term urbanism orientation. Together, the two agencies have conducted a series of investigations:

- Niquitao's socio-economic diagnosis.
- Basis for a Partial Plan.
- Studies for the rehabilitation and renovation of the historic patrimony (San Lorenzo Cemetery).

Once the mentioned studies were concluded, specific housing alternatives were designed, taking into account the existent pathology of *Inquilinatos* as well as the existing socio-economic conditions. Among these projects, I believe the shared house or *casa compartida* is an interesting way to deal with the resettlement and current housing problems affecting this population mainly composed of low-income workers of the informal market. Here are some of its basics:

a. Casas compartidas¹⁰

This program developed by the association of Pact Arim93 and Corvide offered in each shared house a quality-housing unit that can accommodate several family groups for the same price they currently pay in the sector's *Inquilinatos*.

¹⁰. Shared communal houses

This Project was intended to be developed through the leasing of twenty houses in the neighborhood surrounding Niquitao. It consisted of a program of adaptation and sub-leasing for a 10 year period. Each house would have sheltered an average of 5 family groups which would have included approximately 15 children: 20 houses; 100 families=400 inhabitants=300 children.

In the short term and through a small investment, this type of intervention solves the housing problem for those families that are marginalized. And what is more, the resettlement of families previously living in *inquilinos* to better housing conditions facilitates the process of support and follow-up¹¹ for those being relocated, securing much better living conditions and a promising future for adults and children.

The resettlement in adjacent neighborhoods contributes to the revival of areas where there is housing offered with little or no demand. The above-described intervention generates an increase in land value in the most deteriorated sector of Niquitao, which in turns makes feasible the process of revitalization of the whole neighborhood.



Figure 38. Interior view. Each house has at least good natural illumination and ventilation[ateliere d' architecture de Medellin]

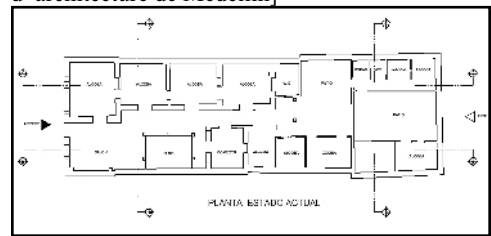


Figure 39. Existing plan [ateliere d' architecture de Medellin]

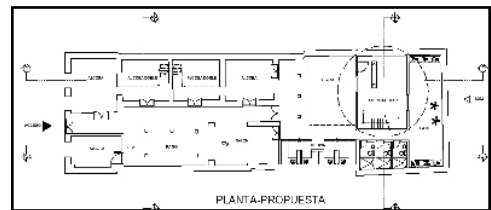


Figure 40. Proposed plan [ateliere d' architecture de Medellin]

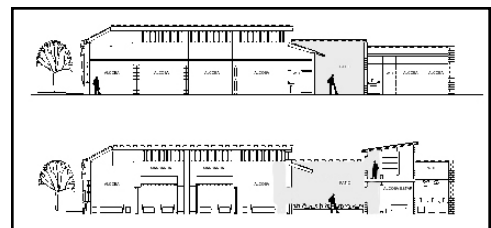


Figure 41. Existing and proposed sections [ateliere d' architecture de Medellin]

¹¹. Process in which non-governmental agencies assist the adaptation of the displaced families to their new houses and urban conditions.

2. P.O.T. *Plan de Ordenamiento Territorial*

In Colombia, the Territorial Development Law¹² governs the mid and long term development of the national territory. It provides the fundamental guidelines that must be followed by every governor when it comes to the city's development plans. According to this law, the *municipios* (counties) with a population over 100,000 inhabitants are required to formulate a Master Plan or Plan de Ordenamiento Territorial (P.O.T.). The Law also calls for the rational use of land and the creation and defense of the public space, with the purpose of: 1) improving the inhabitants' quality of life; 2) achieving equal access and distribution opportunities and,

- 3) developing and preserving the natural and cultural heritage.

Following the mandate of the P.O.T, the *Acuerdo 62 de 1999 (Resolución 62, year 1999)* of the Municipality of Medellin defines the areas for urban improvement in order to enhance the city and to generate the desired urban transformations. This is specifically the case of sectors with strategic locations such as downtown areas that are currently in the process of profound degradation, in order to concentrate investments in infrastructure. Under the POT, other areas with a more homogeneous land use will receive consolidation treatments.

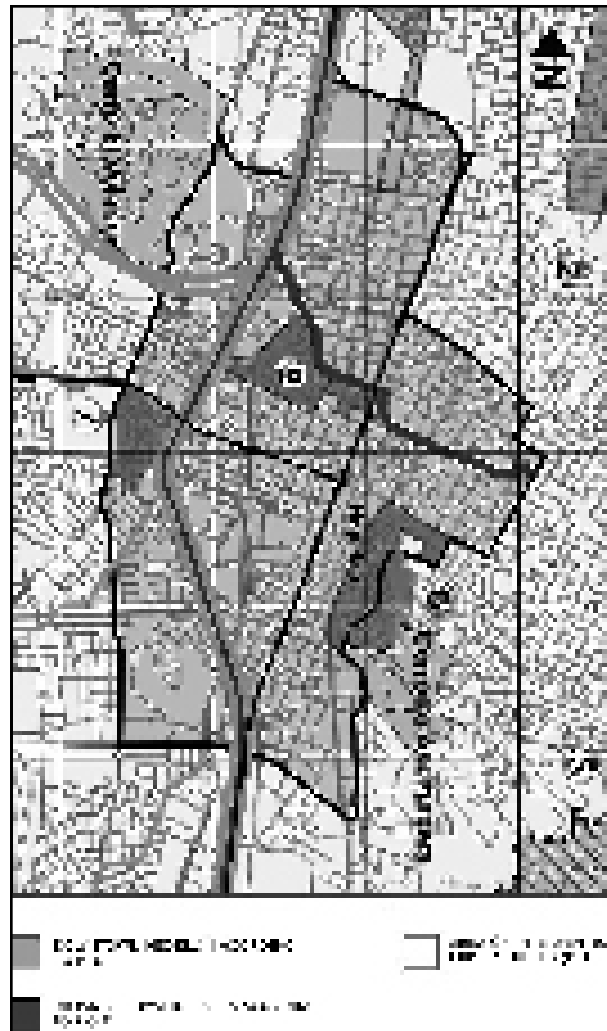


Figure 42. Area of intervention (P.O.T.) [ateliere d' architecture de Medellin]

¹² law 388 of 1997 Medellin Municipal Planning office

For my purposes, one of the most important planning instruments provided by the P.O.T. for such developments is the *Plan Parcial* (Partial Plan), which can be formulated either by the municipal administration, a private entity, community organizations or mixed associations (public and private corporations).

A Partial Plan is intended to represent the collective ideal model for the establishment of a better society; by definition, it requires the active participation of the target community as an indispensable ingredient for its success. Specifically, the Partial Plan calls for the re-connection of Niquitao to downtown by means of a transformation in which new constructions must be primarily oriented to low-income housing as well as retail and service activities. It calls for high densities in mid-rise, low f.a.r. (floor occupation ratio), and developing public spaces and social services in accordance with the population that will inhabit the sector. Importantly, the partial plan is designed to incorporate the present population, not displace it and bring in a new one.

3. PLAN PARCIAL *Parque San Lorenzo*

Partial plans are created as urban instruments for areas of Medellin that cannot be developed on plot by plot basis anymore. Instead, they have to be part of a general plan that includes entire neighborhoods with the purpose of organizing them and tying them back to the city.

This plan was designed as a mechanism that articulates public and private actions in the area of intervention in order to: 1) improve current housing conditions; 2) develop new opportunities for its inhabitants, and 3) encourage a sustainable development of Niquitao.

The Plan Parcial was created in order to favor the development of *Colon / Niquitao*, *San Diego*, and *las Palmas* neighborhoods anchored by a new public park and communal services located in the old grounds of the *San Lorenzo* cemetery. It seeks free pedestrian and vehicular circulation, access to collective services, to information and education, enjoyment of a healthy environment, and awareness about the cultural heritage (cemetery) of the area in which the city was founded. Last but not least, the plan hopes to enhance the relationship with downtown, the *Aburra valley*, the region and the country.

The polygon of intervention defined by the territorial development plan (*P.O.T.*) covers an approximately 45 ha constituted by 51 blocks and a population of 22,000 of which 7,500 belong to *barrio Colon*, 4,500 to *barrio San Diego*, and 10,000 to *barrio las Palmas*. (See “Area of intervention” map in *Plan Parcial* annex).

a. Physical boundaries of the area of intervention

The selected area is bordered by the *Avenida Oriental* (west), the *Asomadera park* (Southwest), part of *las Palmas district* (East), and *la Candelaria and Bombona district* (North). The most deteriorated part (Niquitao) is found along the *Carrera 44* between *Maturin (calle 46)*, and *los Huesos (calle 41)*.

The old *camellon, carrera 44* Niquitao today, was traditionally the only means to connect the city and the south part of the valley. Nowadays it still works as one of the principal routes of access and exit downtown. Because of this, *el Palo, Niquitao* and *los Huesos*, receive a traffic load for which they were not planned.

- *Avenida Oriental*

The *Avenida Oriental* cuts Medellin’s downtown in a North-South direction and has generated profound modifications to the urban context. It has an elevated segment over *San Juan* street, which suddenly interrupts the urban grid in Niquitao (east –west), breaking the old *barrio Colon* in halves, and interrupting the communication between Niquitao and the administrative center (*Alpujarra*).

- *San Juan*

This is a historic street that communicates eastern and western Medellin, and passes by the administrative center. It stands as a clear boundary between the city’s downtown and the area of intervention mentioned above.

b. Road structure improvements

The existing road system requires the execution of two complementing developments that guarantee the vehicular mobility in the area of intervention, taking into account the heavy traffic present in the residential sector.

The specific projects already identified are:

- widening of the *calle 44 (San Juan st)*, between the *carrera 46 (Avenida Oriental)* and *carrera 42*
- Prolongation of the *carrera 43 (Girardot)*, between the *calle 43 Altamira* and the *calle 41 Los Huesos*.

(See “public space structure” map in *Plan Parcial* annex).

c. Primary pedestrian network

Installation of a pedestrian grid of sidewalks and vehicle free promenades allows the establishment of a relationship between the area of the *Plan Parcial Parque San Lorenzo* with the traditional commercial (downtown) and governmental (*Alpujarra*) centers and with the nearby natural parks (*San Diego and la Asomadera*). It also connects the neighborhood with the existent mass transportation systems of the city, such as Metro, Metroplus (proposed), and regular bus routes.

The main proposed pedestrian axis are derived from their proximity to the existing road structure, which is constituted by:

- *Calle 43*, from the cemetery (new neighborhood center) to the *parque San Antonio* (metropolitan public park located at the intersection of *San Juan* and the *Avenida Oriental*)
- *Calle 42*, from the cemetery (new neighborhood center) to the *Alpujarra* metro station. It belongs to the local *Red Caminera*.
- *Calle 39* from the sports field in the *barrio San Diego* until the *Avenida Oriental*. It belongs to the city pedestrian network.

- *Carrera 44A*, from *Las Palmas* road (SE of Niquitao), to the *San Juan* street.

The pedestrian sidewalks and promenades located in the consolidation polygon (see more information below), that link the neighborhood to the new center (cemetery), San Diego park, la Asomadera park, and el Salvador hill should be enhanced with lighting public furniture, etc.

Chapter IV

PROGRAM AS FORM DETERMINANT

Programmatic functions as well as normative elements help visualize the kind of project intended. It provides you an accurate kit of tools regarding, densities, lot coverage, building height, etc.; with which can start to manipulate the system (housing system in this case) pursued. This chapter shows the different plots of land available for development, and their specifics (area, localization, plots to be preserved, etc.) It also outlines basic guidelines to be followed when designing within the area of intervention.

1. UNIDADES DE GESTION / Blocks to be developed

Unidades de Gestión	Plot code	Private Area m ²	Units to be consolidated	Area for new roads and improvements m ²	Net Area m ²
1	1014002	1.000,00	1	1	1.000,00
2	1014007	10.000,00	100,00	248,00	9.752,00
3	1014008 1014009	4.000,00 7.000,00	50,00	200,00	5.000,00
4	1114116 1114117 1114118 1114119	2.000,00 2.000,00 2.000,00 2.000,00	20,00	200,00	2.000,00
5	1114111 1114112 1114113	4.000,00 2.000,00 2.000,00	200,00	200,00	3.800,00
6	1000007	1.000,00	1	100,00	900,00
7	1000008 1000009	2.000,00 2.000,00	1	200,00	5.000,00
8	1111111	1.000,00	20,00	200,00	2.000,00
9	1111112	2.000,00	1	100,00	5.000,00
10	1111113	2.000,00	100,00	200,00	2.000,00
11	1111114	2.000,00	1	200,00	2.000,00
Total zonas privadas		60.000,00	5.490,00	7.254,20	52.000,00

Figure 43. Table 1 - Blocks to be developed [Decreto N. 0608 de 2003]

Private land is the result of subtracting public areas for roads, services and public spaces from the area of intervention. It is the available land to construct new buildings.

With the purpose of facilitating the execution of the *Plan Parcial Parque San Lorenzo*, and to comply with the outlined goals of generating public space and equal distribution of loads and benefits, the private land has been divided into **11** units of development. (See *Unidades de gestion/ blocks to be developed*” map in *Plan Parcial* annex).

Each one of them should be developed in an autonomous way, depending on its

F.A.R. / Construccion ratio in gross area Revitalization polygon		2,31
Total constructed area		363.250,76 m ²
Constructed housing area	95%	345.088,22 m ²
Constructed retail area	5%	18.162,54 m ²
Housing unit average area		50,00 m ²
Shops average area		100,00 m ²
Total of housing units		6.902 Viv.

Figure 44. Table 2[Decreto N. 0608 de 2003]

location inside the neighborhood, and according to its net area, following the urban regulations of areas to cede (public space and roads), loads and benefits, F.A.R., and construction ratio.

With the hope of reaching a density of 200 inhabitants/Ha, and based on the immobiliary market of Medellin, the P.O.T. has stipulated a 2.3 F.A.R. over the revitalization polygon’s gross area. This is related to the financial, economic and market simulation carried out in the area¹³.

The constructed area that results from applying the construction ratio over the revitalization polygon gross area is distributed in the 11 units of development, taking into account that the bigger densities should be located along the polygon boundaries (*Calle San Juan and Avenida Oriental*)¹⁴

¹³ Acuerdo 1212 de 2000

¹⁴ Artículo 57, Decreto No 0608 de 2003

¹⁵ Artículo 59, Decreto No 0608 de 2003. Alcaldia de Medellin

2. NORMATIVE for Revitalization polygon Z3_R6

For the design of the units of development, the existent downtown urban normative will apply except for:

The low income housing average should be a minimum of 30% of the total developed units in the area of intervention.¹⁵

Parking:

- Housing: 2 parking spots for every 20 housing units
- Retail: 1 parking spot for every 150m² constructed
- No street parking will be allowed except when appropriate bays are designed
- Façade setbacks:
 - 6 or more stories buildings should be setback 11 meters from the road axis from the third floor on.
 - First two levels must respect the street section
 - Private open spaces:

Site approach:

The lot coverage over the Unidades de gestion /blocks to be developed, is 60%

At least 10% of each unit of development's net area should be dedicated for private recreational open spaces

Although each unit of development will be understood as an independent urbanization process, they can be developed in different stages. Stages that can have independent construction licenses as well.¹⁶

¹⁶ Artículo 10o del Decreto 1212 de 2000. Alcaldia de Medellin

Chapter V

PRECEDENTS

1. VILLA SOCORRO, Medellin, Colombia 1961-expanding¹⁷

Developed by Casitas de la providencia, a nonprofit foundation de dedicated to build dwellings for low-income families, this privately developed, single family semide-tached houses (in groups of four), housing project is situated on a steep hillside about 6 Km from the central business district of Medellin. The Subdivision system is determined by the topography, which is very steep (25% slope).

Demographics:

- Population of 7021 inhab itants in 1966
- Average of 6.8 people per dwelling
- Privately owned plots occupy approximately 37 percent of the built-up area.
- Approximate dwelling area per person: 7.16 sq.mt



Figure 45. Site plan. The poposed grid runs perpendicular to the contours [Caminos, Horacio. Urban dwelling enviroments]

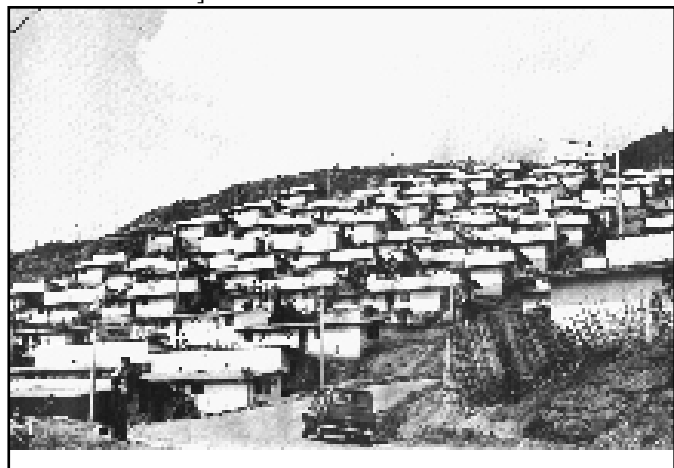


Figure 46. View up hill. Notice the relationship with topography[Caminos, Horacio. Urban dwelling enviroments]

¹⁷Caminos, Horacio. Urban dwelling environmets. p.230-242

a. Locality segment

Private ownership areas

- Dwelling lots: 3.81 Ha / 36.71% of the area of intervention (the rest belongs to public ownership)
- Commercial: .10 Ha / .96%

Densities

- Lots: 327 / 10.38 Ha
N/ Ha: 38.25
- People: 2183 / 10.38Ha
N/Ha: 210.31
(5.5 people per family)

b. Selected block

Densities

- Lots: 71 / 1.40
N/Ha: 50.7
- People: 390.5 / 1.40Ha
N/Ha: 278.9
(5.5 people per family)

Circulation Ratio

Circulation Length
(525mt) / Area (1.40 Ha)
= 375mt/Ha

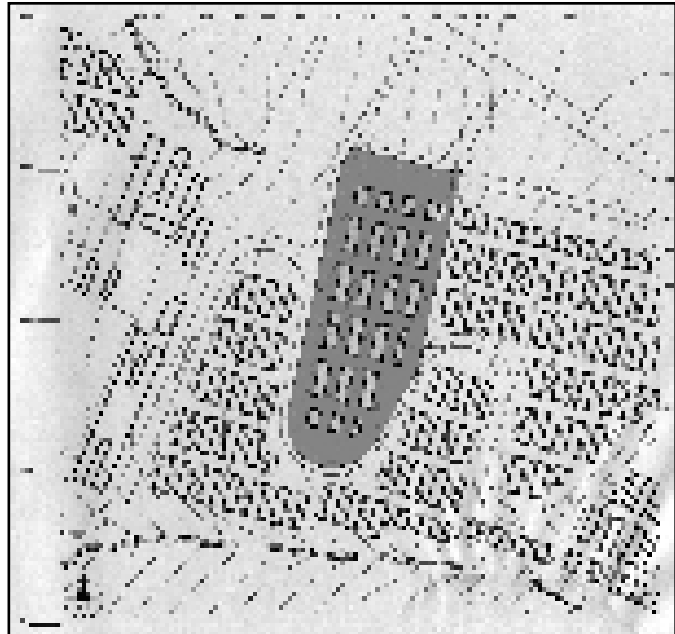


Figure 47. Selected block. [Camino, Horacio. Urban dwelling environments]

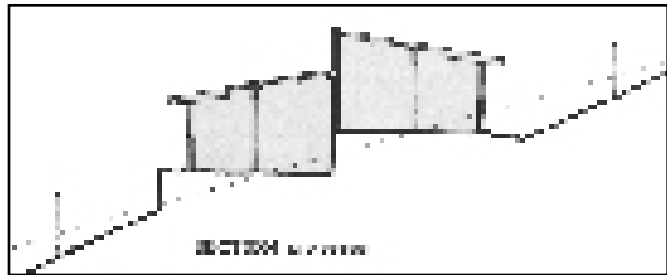


Figure 48. House section. [Camino, Horacio. Urban dwelling environments]

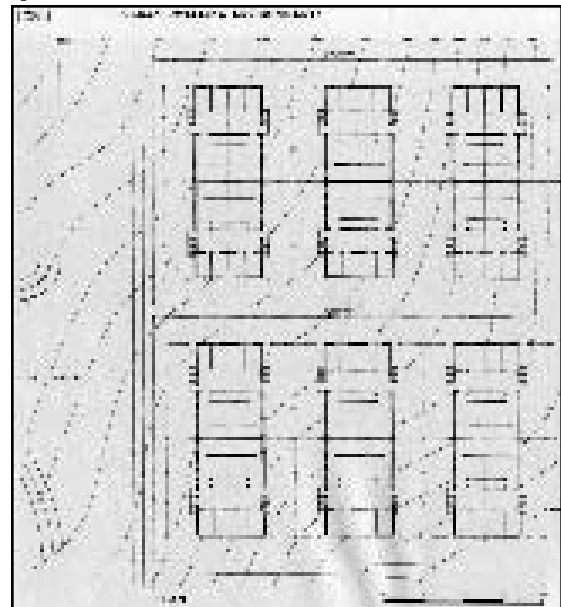


Figure 49. Modulation [Camino, Horacio. Urban dwelling environments]

2. *URBANIZACION CANAVERAL*, Medellin, Colombia 1998¹⁸

This housing complex is set in the west side of the Aburra Valley, in the outskirts of the neighborhood Robledo. Like most social housing projects, the site is found on the city's periphery. Position that gives each house a unique balcony view over the city. The first stage offered ample units in area, then (second stage), the areas were reduced a small percentage to allow variety, represented in three different typologies for three different type of families or lifestyles.

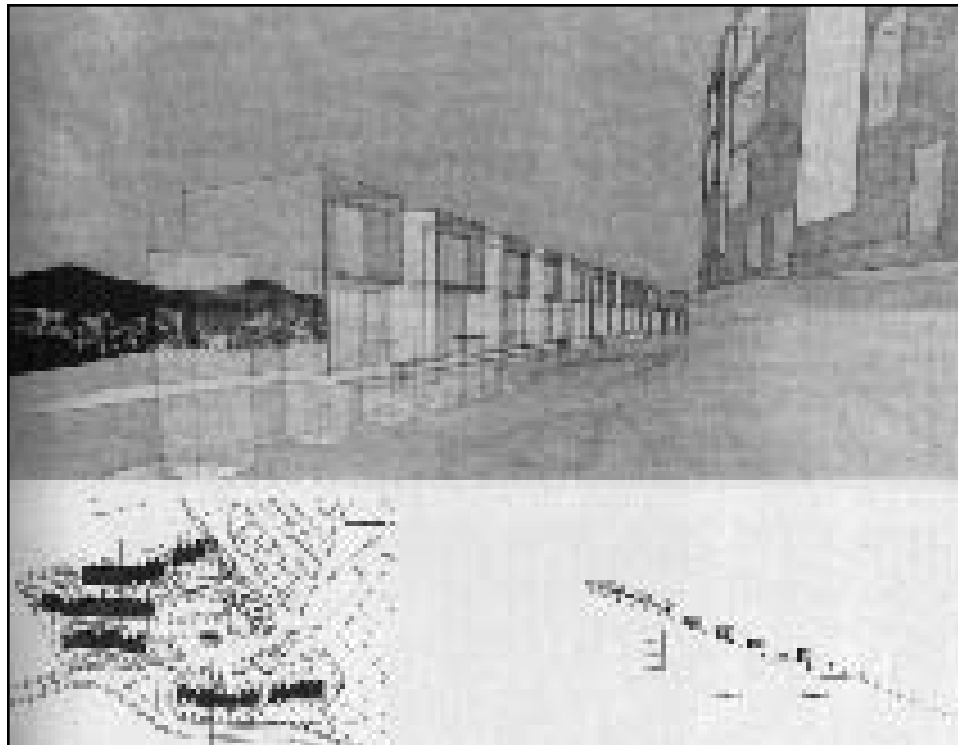


Figure 50. Localization, perspective and general section. Notice bar buildings parallel to the contours [Architecture since 1991. young architects of Antioquia]

What is interesting about this project is the way the architect responded to the site constraints (topography - 35% slopes) while implementing a vertical housing system (see building section below), based on variety. This condition produced a series of architectural situations that gave each owner a sense of identity, belonging, etc. Specially regarding independent access, panoramic views and cross ventilation.

¹⁸ Ana Elvira Velez Villa Architect. Architecture since 1991. Young Architects. p.20



Figure 52. Building section. notice the distribution of types.
 [Architecture since 1991. young architects of Antioquia]



Figure 51. View from entrance. Views fro everyone
 [Architecture since 1991. young architects of Antioquia]

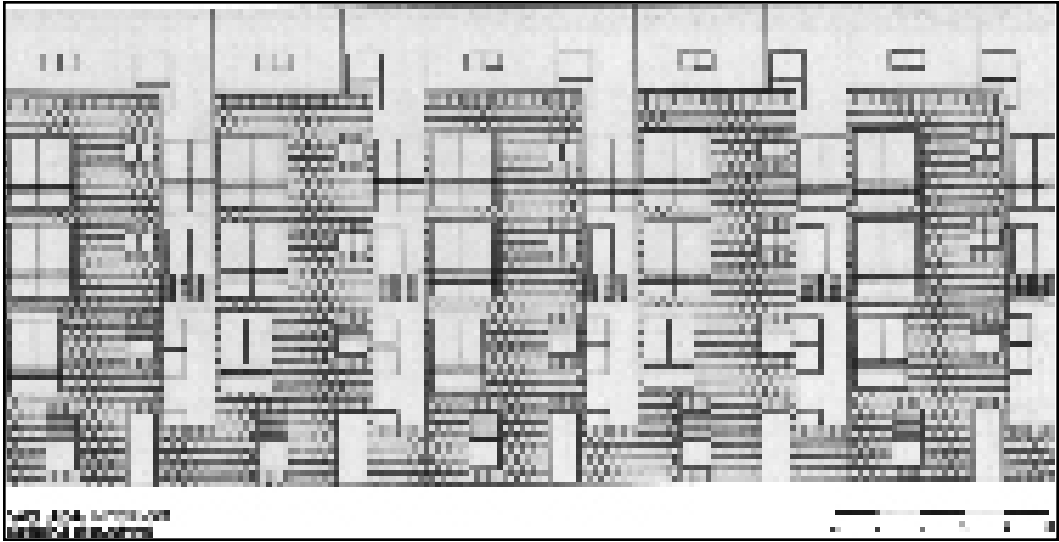


Figure 53. Elevation [Architecture since 1991. young architects of Antioquia]

3. Dar es Salaam, Tanzania

“...portray of the informal quarters which make up the greater part of the city where the poor live, but not that poor alone, there also immigrants who have just arrived or have already been there for a long time...”¹⁹

Research and projects carried by students and professors who had the opportunity to live there and work with the community.

In this projects students identified existent housing systems or patterns in the urban scale, and used its basic principles to design unique housing solutions that reflected particular ways of dwelling. Which in time form modular complexes (multifamily housing), based on a building type. In this case the courtyard.

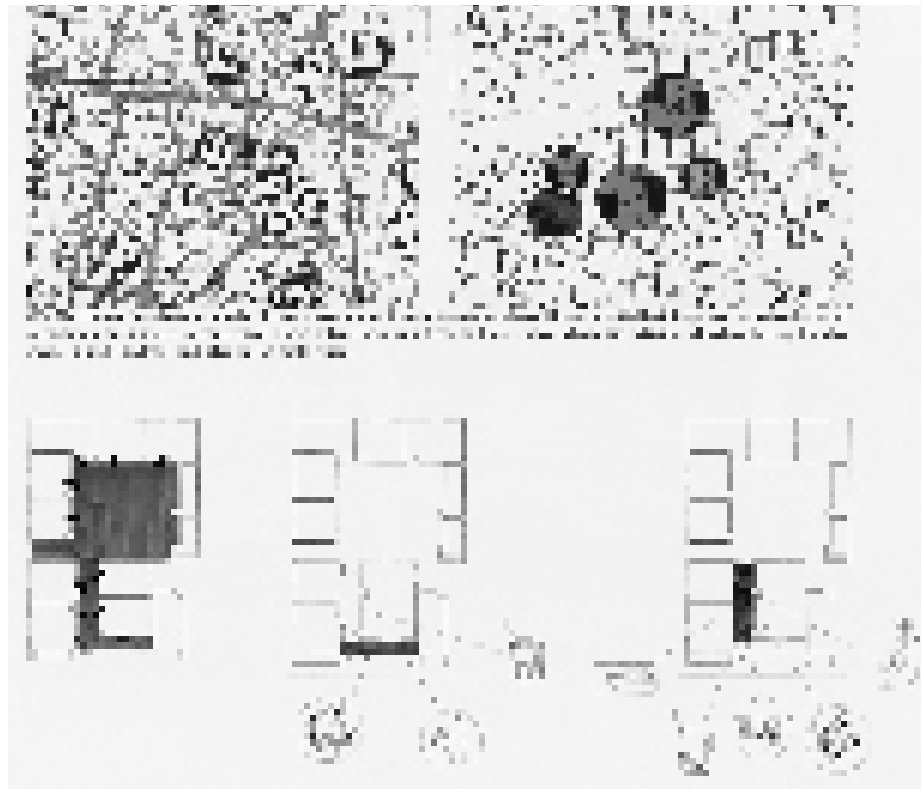


Figure 54. Modulation diagrams. Example of where domestic relations take -place. [Living in developing countries. Dar es Salaam].

¹⁹ Eleonora Bersani and Barbara Bogoni. Living in developing countries. Dar es Salaam.

The types of diagrams shown below reflect a thorough understanding of the different activities that take place in the house.

This type of analysis also reflect that the Inquilinatos pathology found on the Niquitao sector is not a exception, but almost a rule regarding the way poor communities dwell found around the world.

This problematic reflects the need for designing multifamily housing when propossing low-income alternatives fot this part of our population.

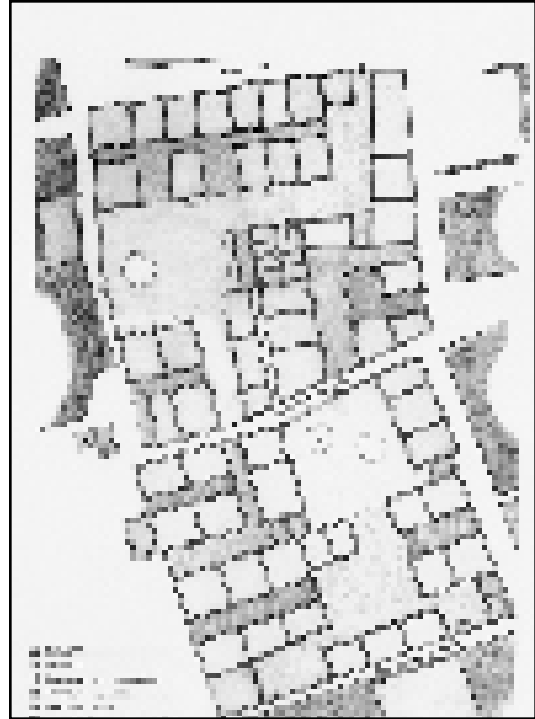


Figure 55. Courtyards. Proposal for upgrading an area around the church[Living in developing countries. Dar es Salaam].

Chapter VI
SCHEMES

Following The municipal normative implemented for the development of each unit of development, I achieved the following numbers:

EXAMPLE 1

BLOCK # 2 (Unidad de gestion #2)

- Net Area for development :

8.469 mt2

- Construction index :

5.0

- Total area (constructed):

42.344 mt2

- Constructed residential area (95%):

40.227 mt2

- Constructed public area (5%):

2.117 mt2

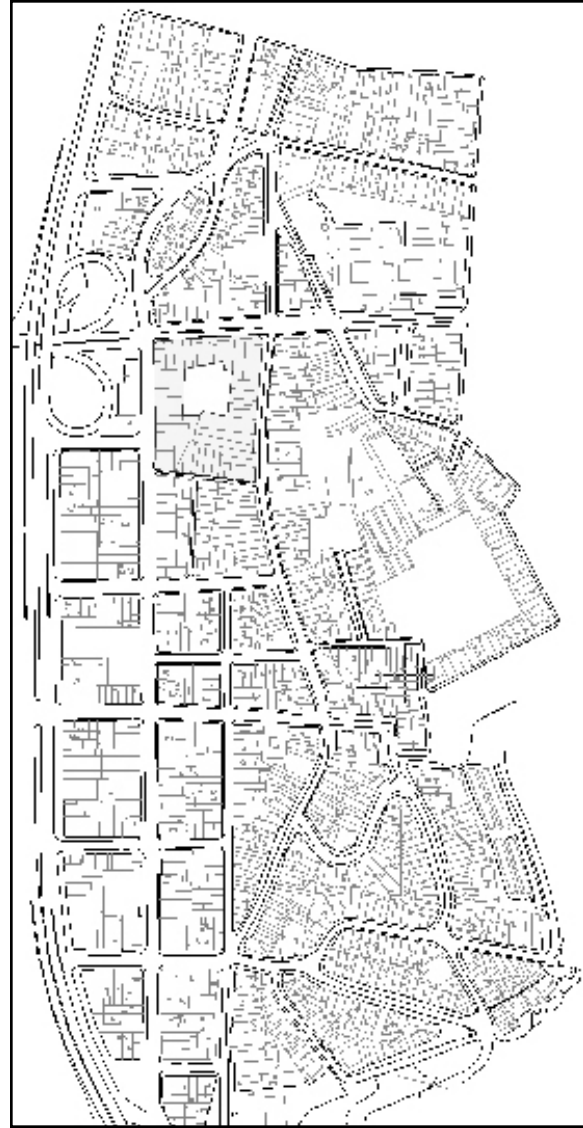


Figure 56. Development unit #2. with three sides facing important roads this block represents a challenge regarding overall massing (based on defined building heights).[personal]

Net Area 8.469mt2 x (70% F.A.R.)=

5.928 m2/floor

Total Area (constructed) 42.344 mt2 / 5.928 mt2=

7.14 stories

Residential Area 40.227m2 / 50m2 (% low-income unit area)= **804 Housing units**

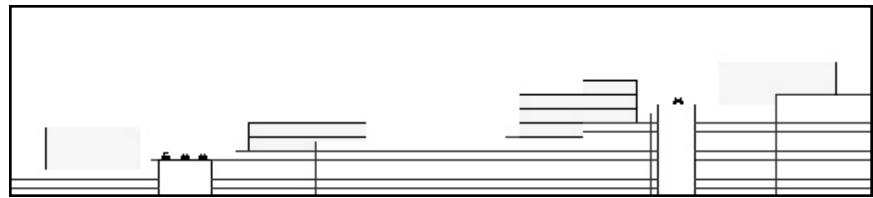


Figure 57. Existing section. Notice appropriate massing related to topography. Views for everyone [author]

1. Topography: The block presents a slope of 15%. This allows for a stepped massing.

2. Net area (after setbacks and obligations) is approximately the double of allowed constructed area/floor. +/- 10000 m²

3. Allowed area / floor : +/- 5000 mt² x 8 stories = +/- 40000mt²
100 units per floor.

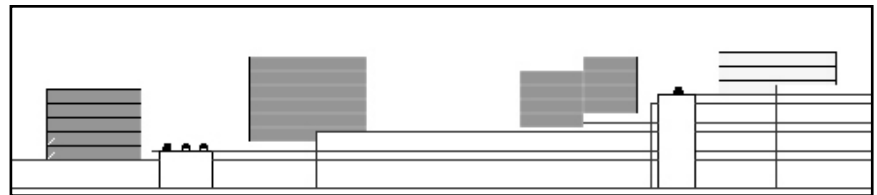
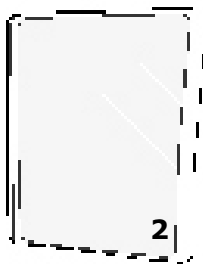


Figure 58. Partial Plan ideal section. Taller buildings facing principal roads. No views [author]

4. Allowed area / floor : +/- 5000 mt² x 8 stories = +/- 40000mt²

Left open space to be fully enhanced in order to provide recreational areas and other uses. 100 units per floor.

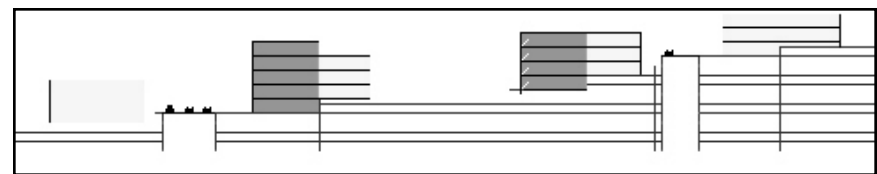
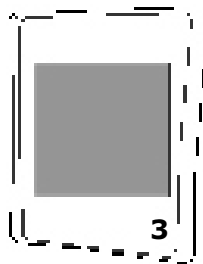


Figure 59. Ideal Section regarding distributed massing and medium lot coverage [author]

5. Ideal footprint. Mixed use housing distributed in variable building heights.

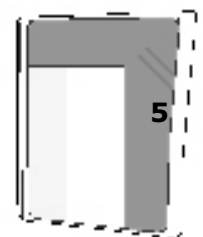
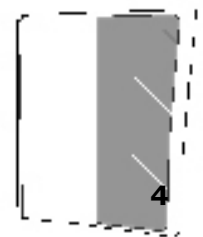


Figure 60. Density diagrams. See variation of footprints.[author]

DESIGN CONCLUSIONS

After choosing Block #2 for the development of a housing project, and applying all the normative, one can notice:

- The plan Parcial is looking forward to densify the area by means of high-rise structures, that do not really relate to the neighborhood and topography.
- Special attention should be paid to the design of left over spaces in order to enhance the units proposed.
- A high-density mid rise project would work better in this case, due to the fact that it allows variety of choices regarding massing.

The idea is to cover as much as possible of the lot area to provide lost amenities in each unit or module.

- Following the guidelines the project will reach an average of 100 units per floor roomed in a 8 stories structure.
- A study of the existing typologies (*inquilinos*, courtyard type, etc.), might show us different ways to deal with densities
- There should at least 30% of low-income housing

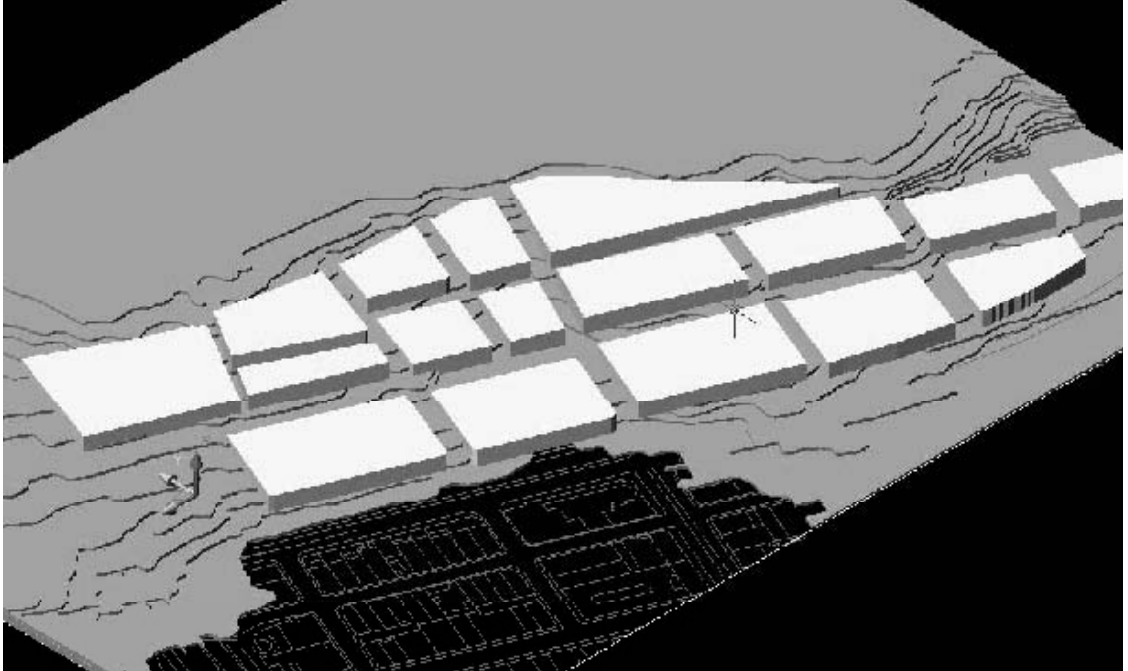


Figure 61. Neighborhood's Gross area x 2.3 F.A.R. It will take four stories of solid blocks to get the density required by the master plan. [author]

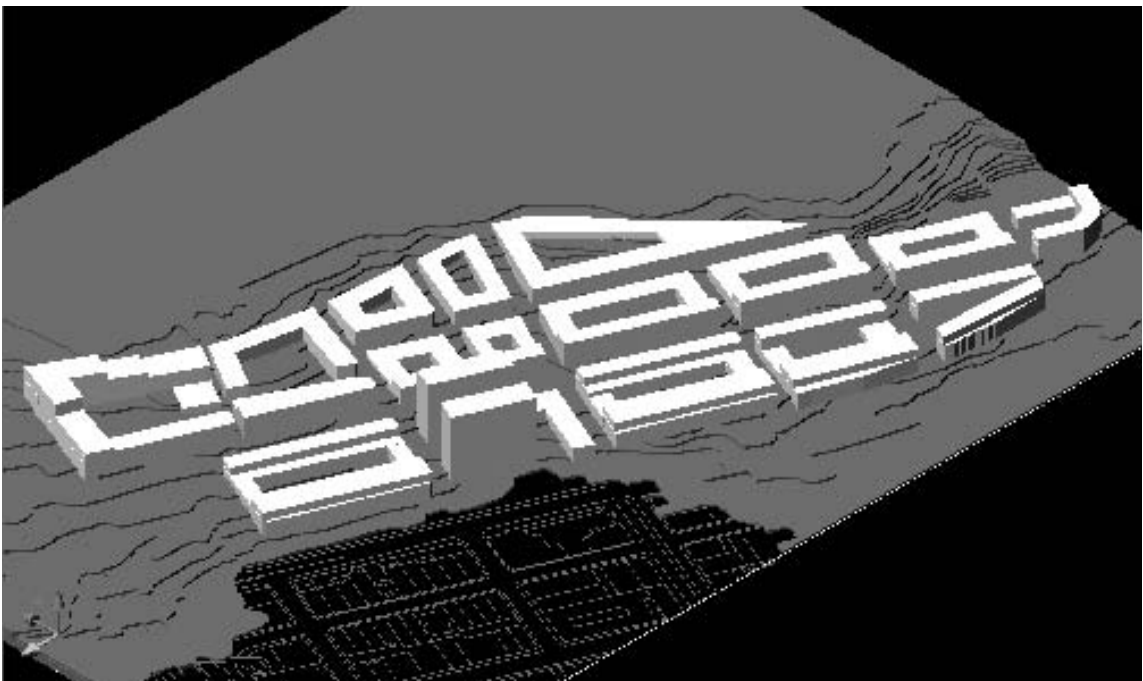


Figure 62. Assigned densities according to location. Notice taller structures along primary roads. [author]

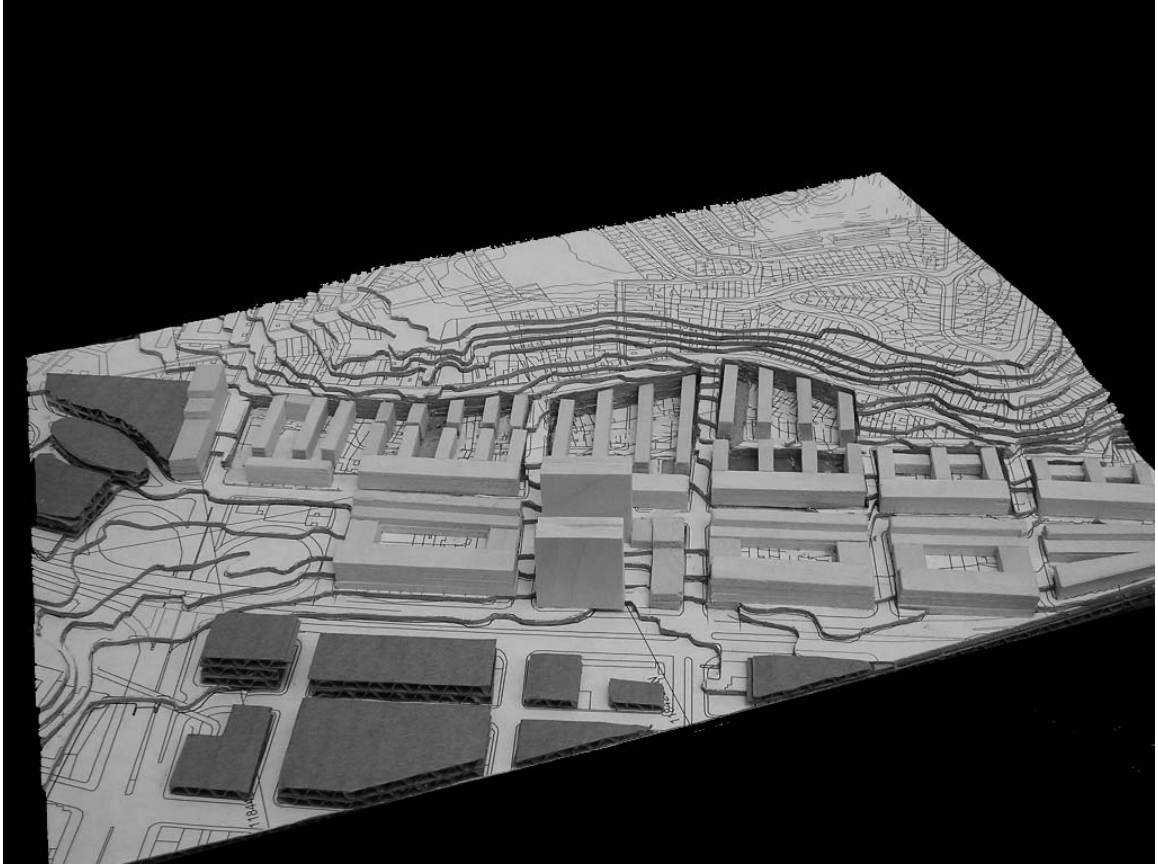


Figure 63. Urban model showing adopted scheme. Mixed use structures hold the street edge while “fingers” or housing bars climb up the hill following the best orientation. [author]

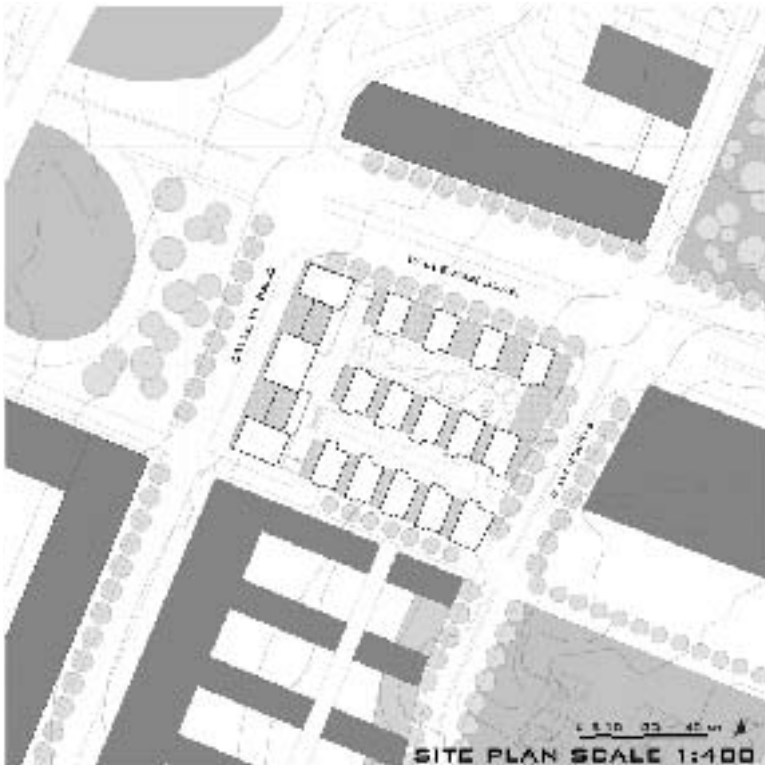


Figure 64. Site Plan showing pedestrian links between cemetery and park. [author]

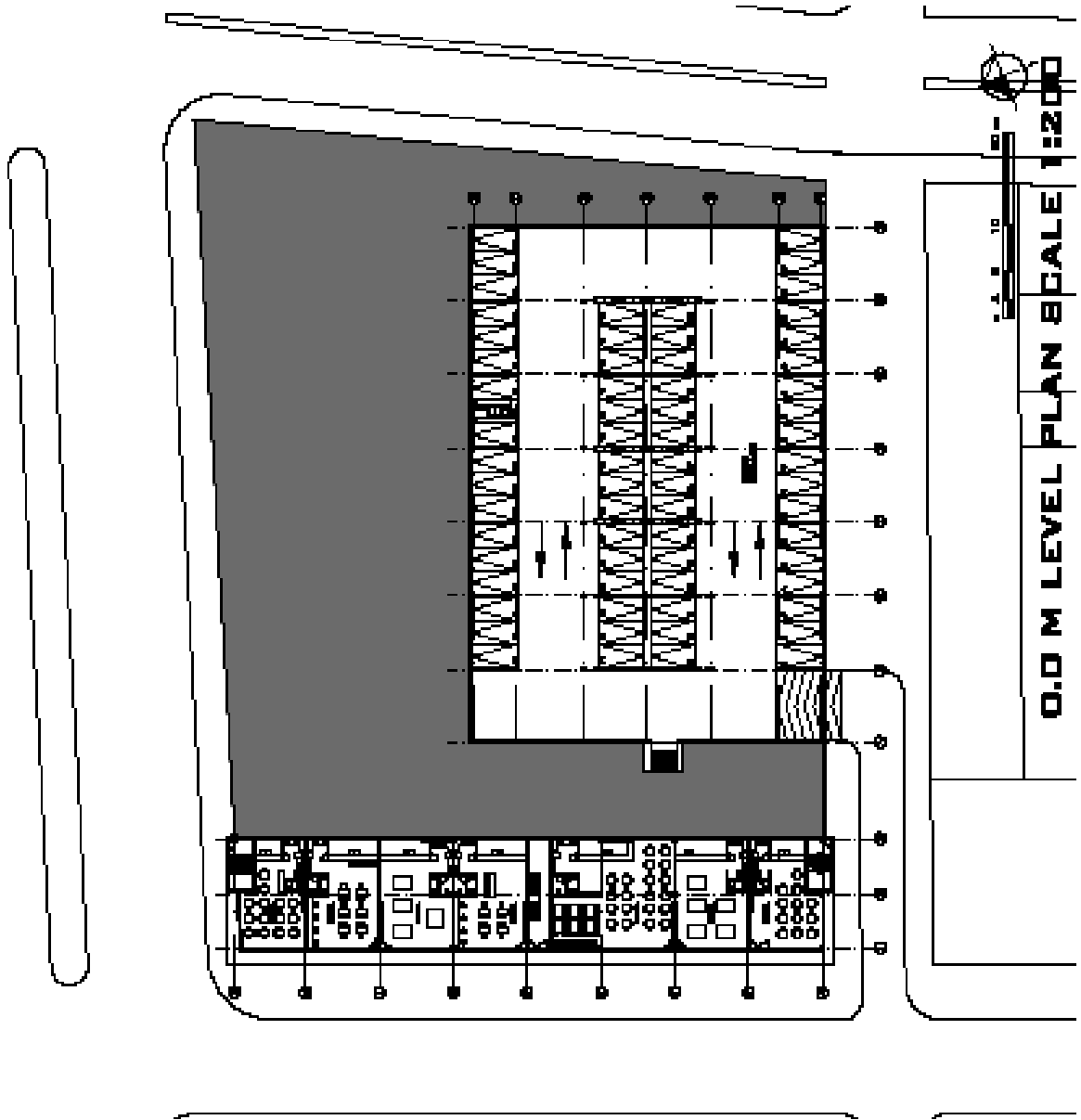


Figure 65. 0.0m level plan showing parking and retail. [author]

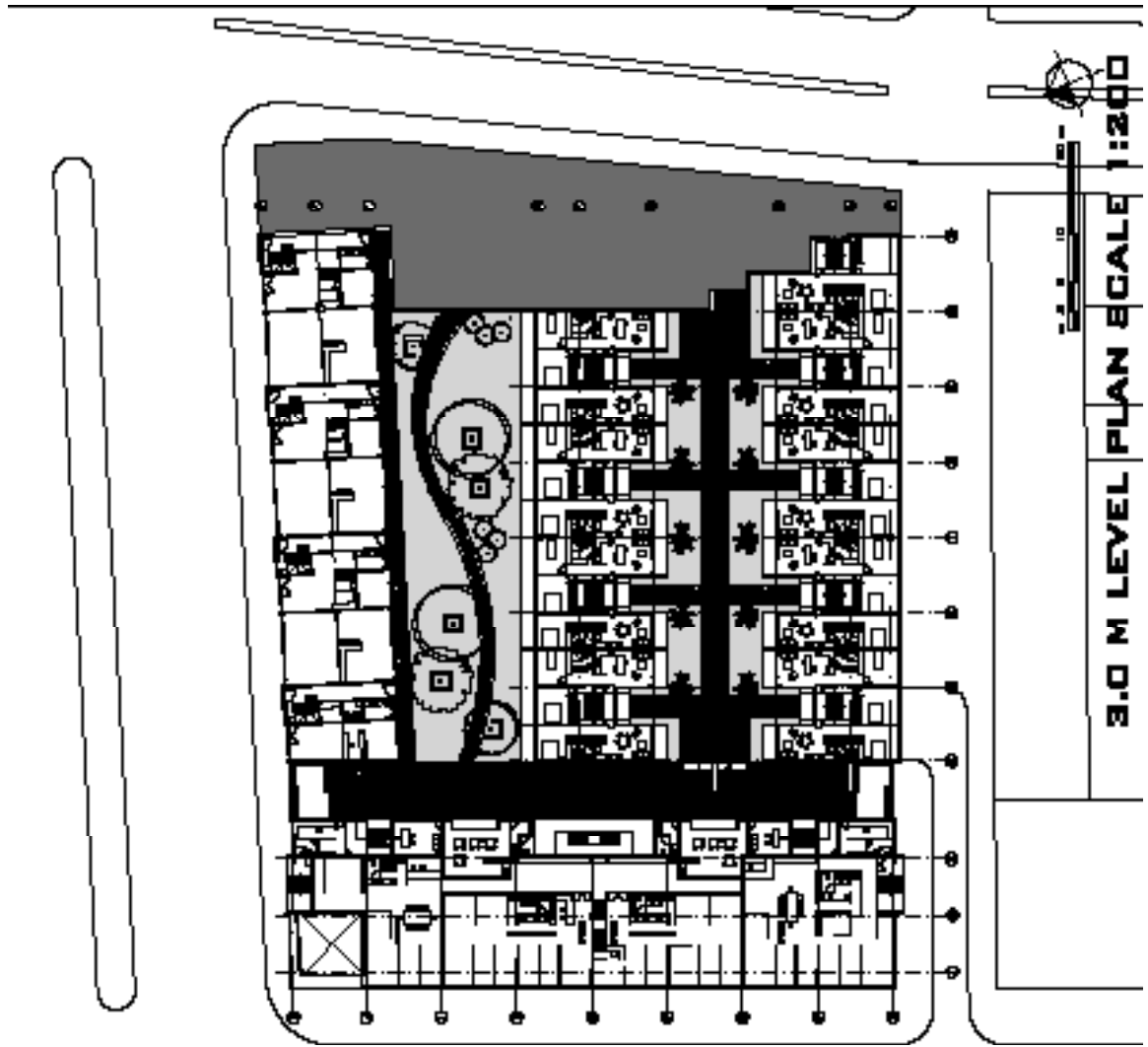


Figure 66. 3.0mt level plan showing offices, retail and first floor of housing [author]

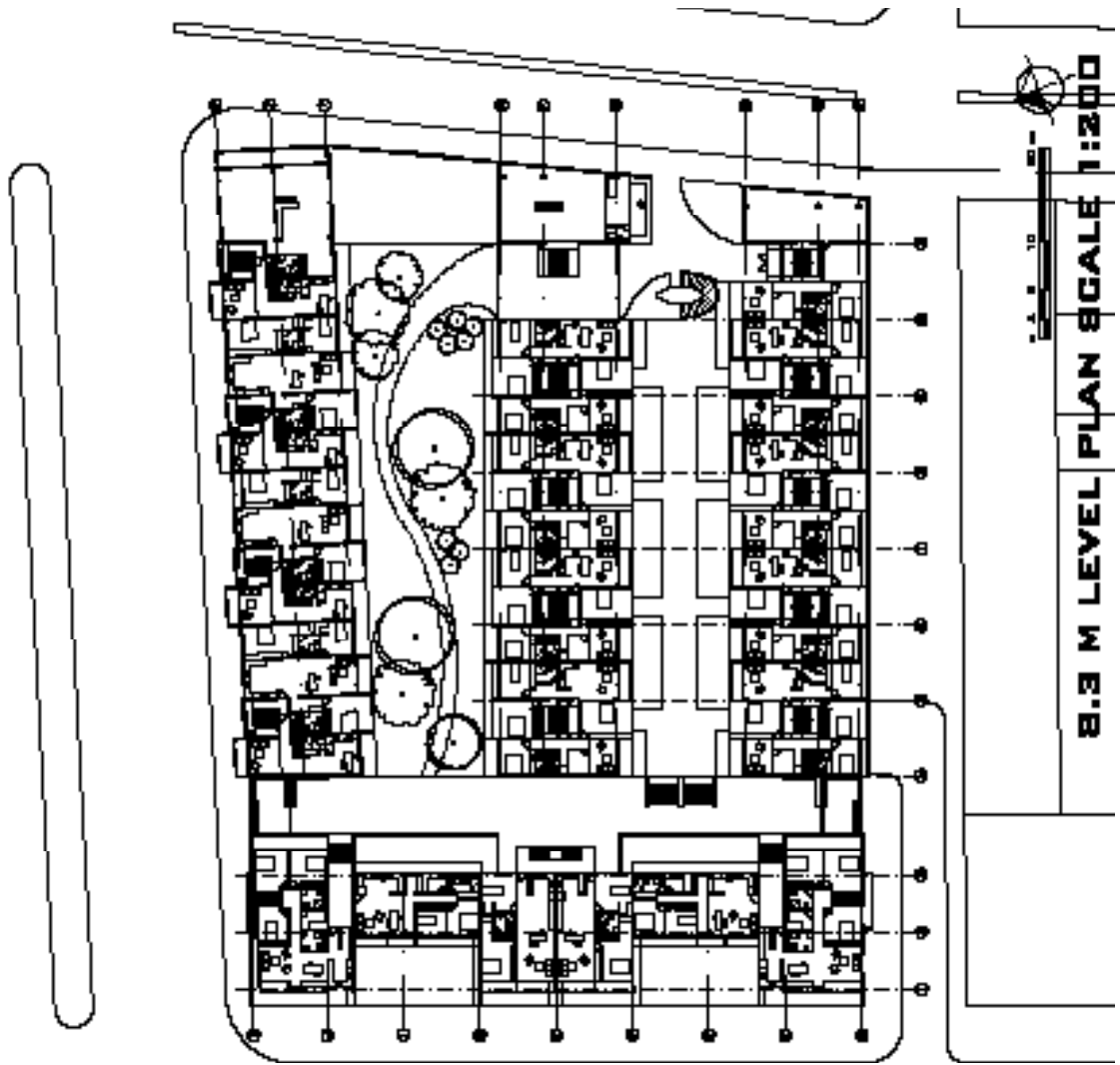


Figure 67. 8.3 mt level plan showing general housing plan. [author]

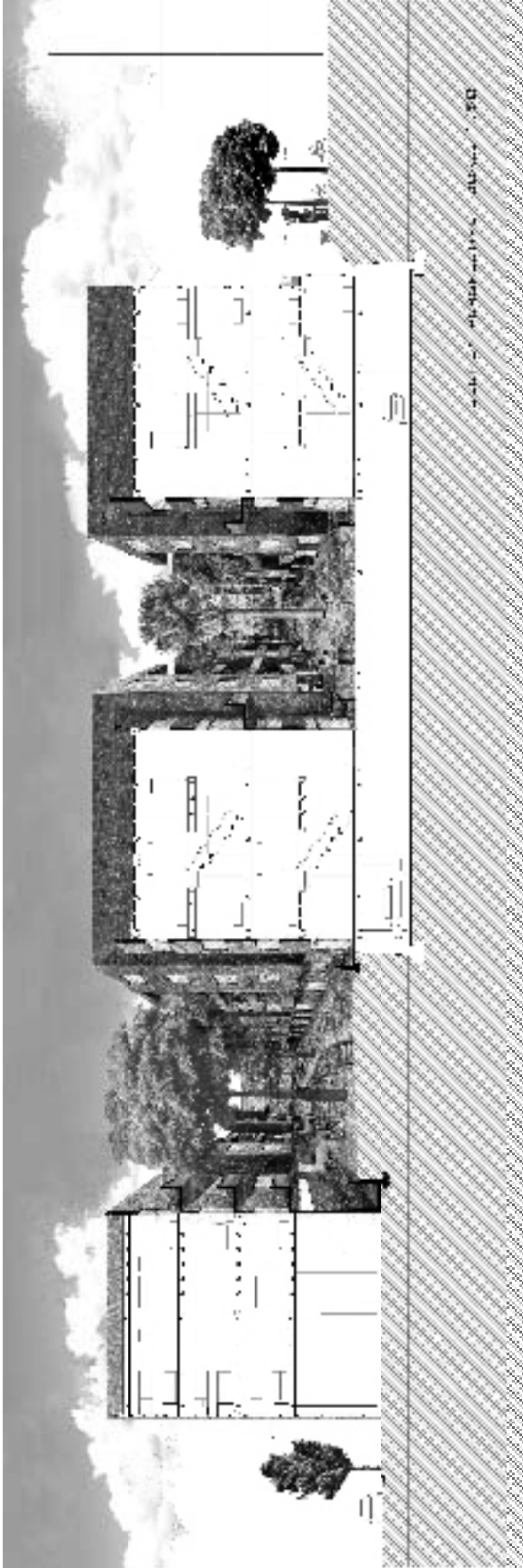


Figure 68. Section perspective. Notice difference between courtyards [author]



Figure 69. Longitudinal Section elevation showing the building's adaptation to the terrain. [author]

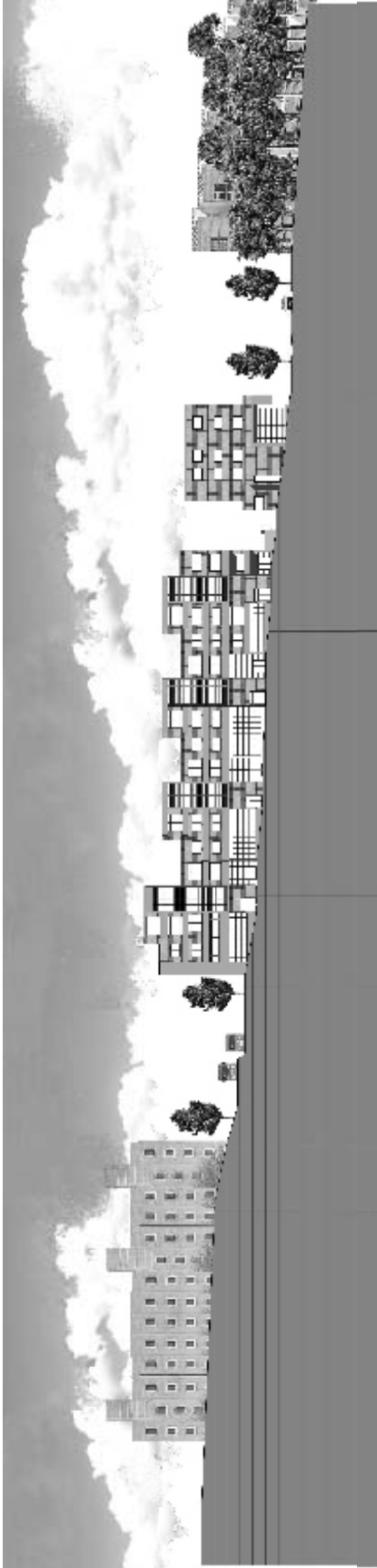


Figure 70. North elevation [author]

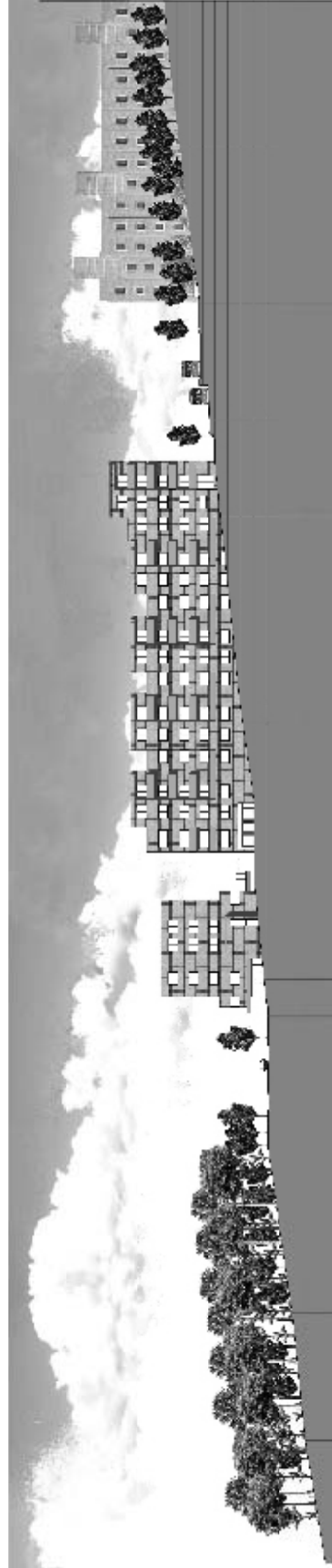


Figure 71. South elevation [author]

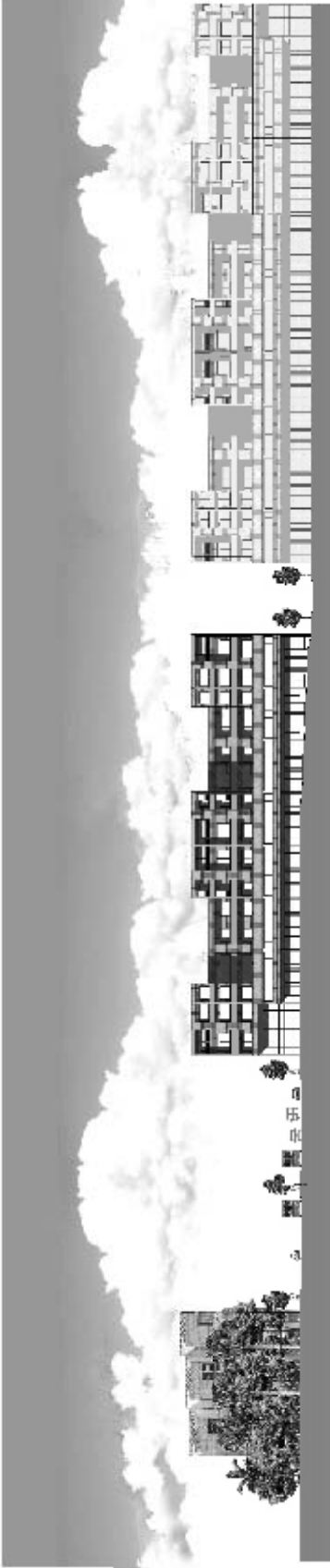


Figure 72. West elevation [author]



Figure 73. East elevation [author]



Figure 74. Block model [author]



Figure 75. Aerial axonometric [author]

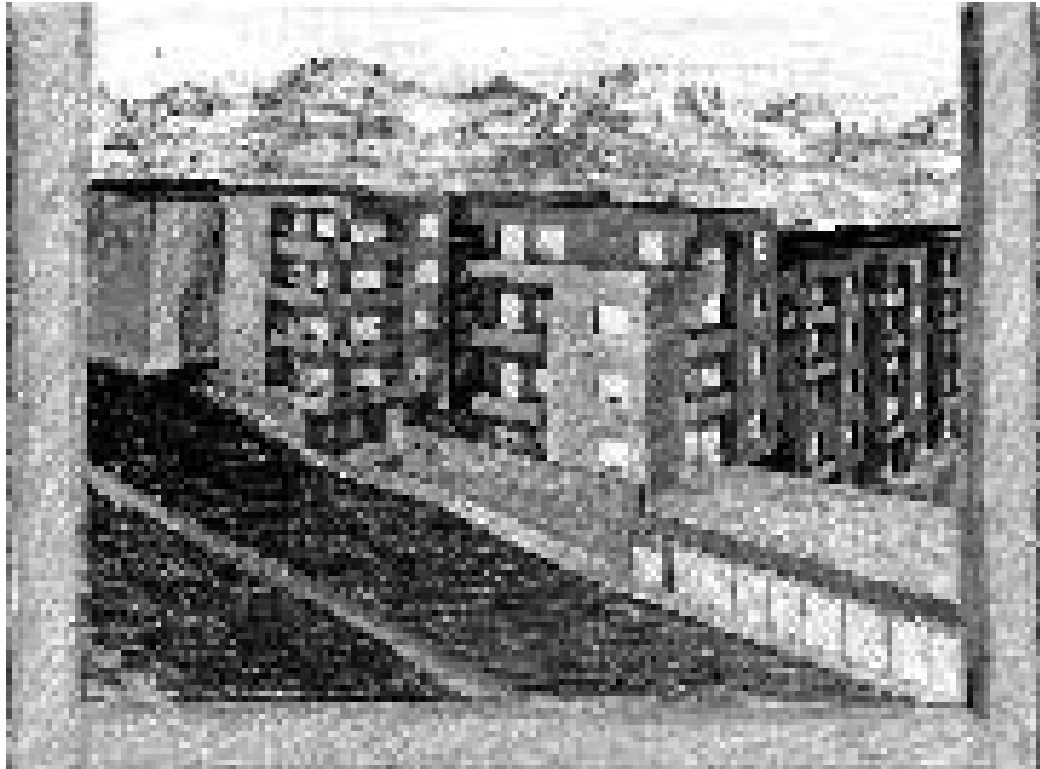


Figure 76. View from public building on the eastern side of the block [author]

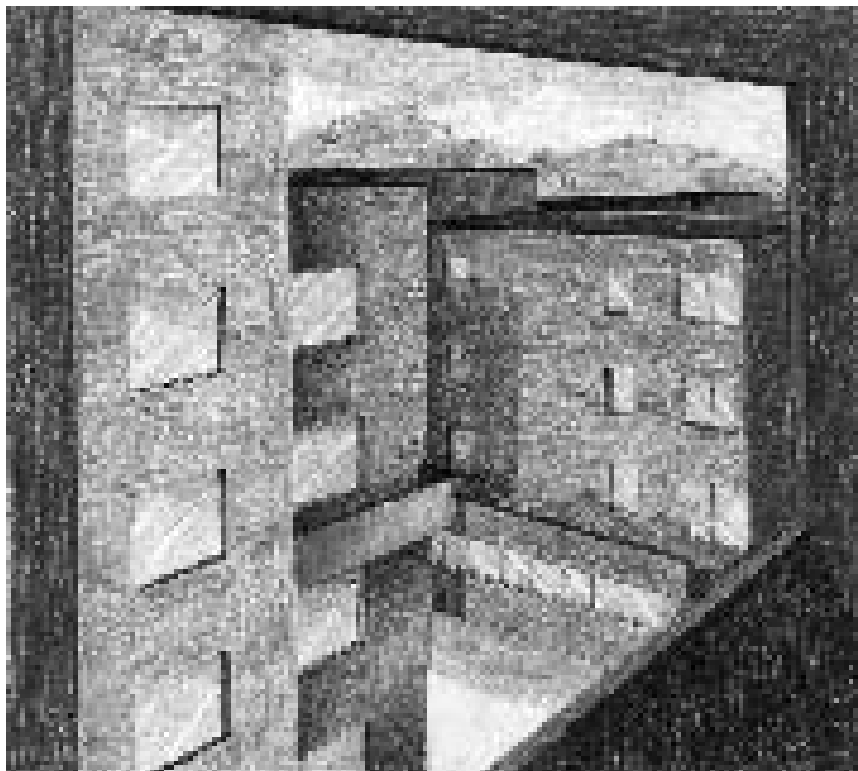


Figure 77. View from a unit [author]



Figure 78. Wall section and bay elevation showing concrete frame construction and brick masonry [author] **Figure 78.** Wall section and bay elevation showing concrete frame construction and brick masonry [author]

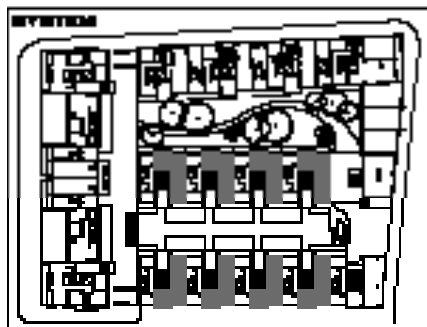
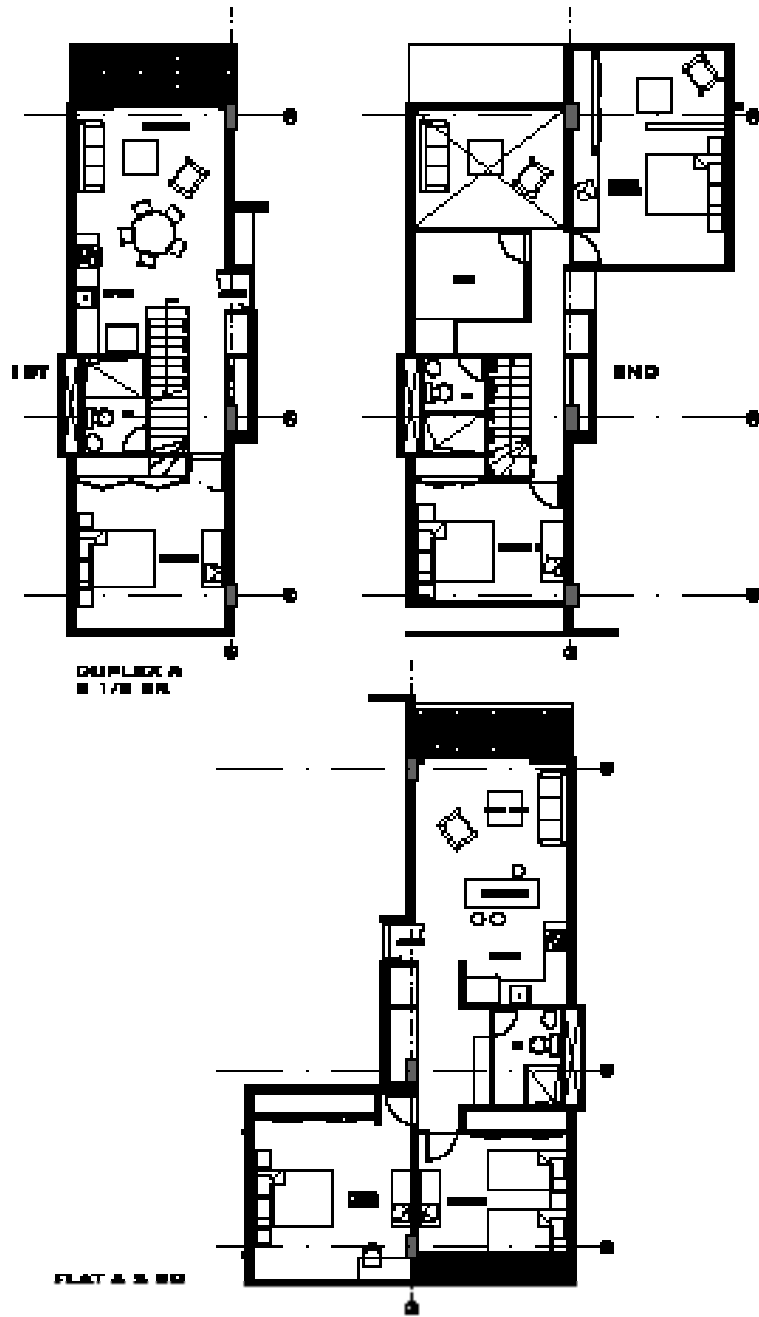


Figure 79. Typical housing units [author]



**PLAN TYPICAL UNITS
SCALE 1:50**

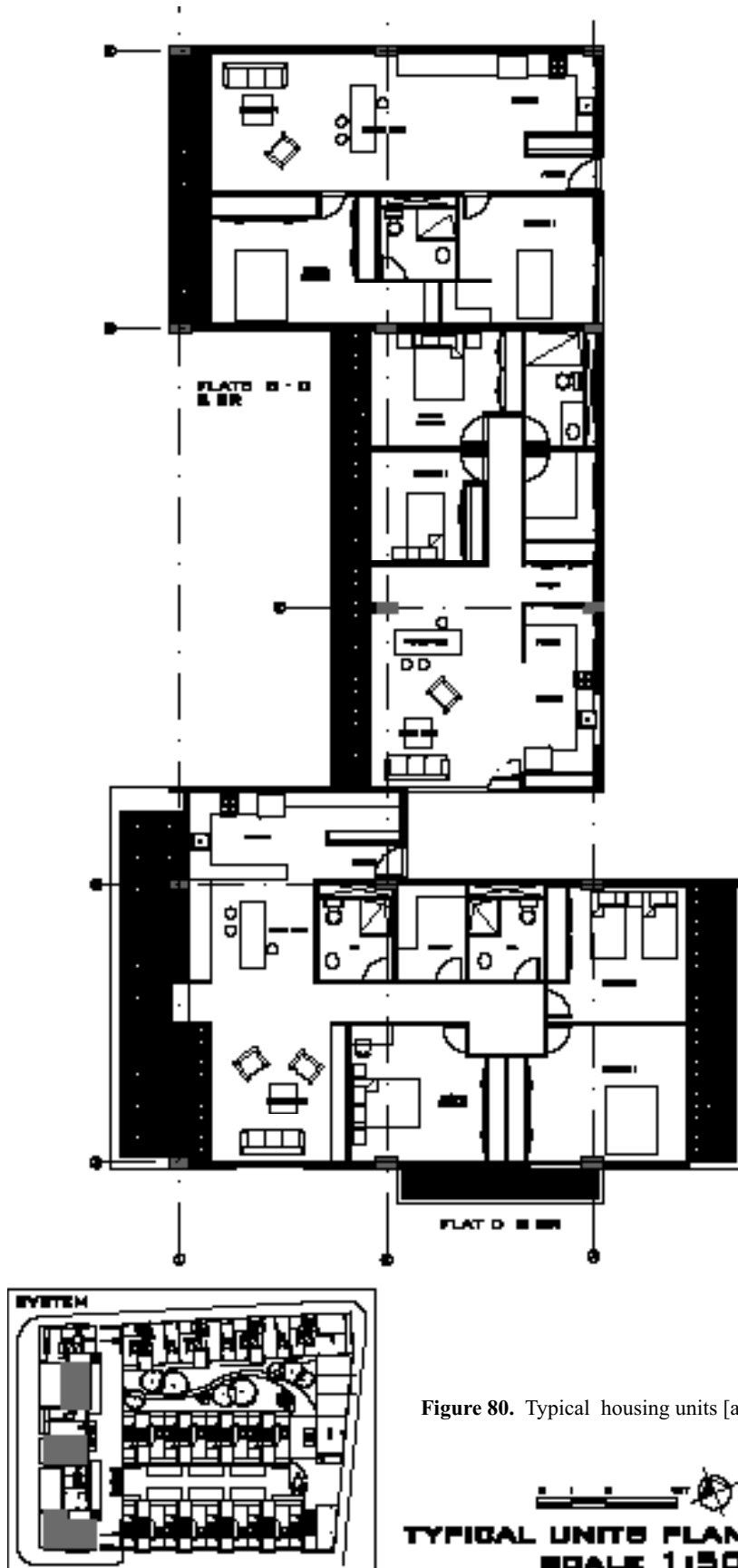


Figure 80. Typical housing units [author]

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PLAN PARCIAL ANNEX

a. Area of intervention

The *plan parcial Parque San Lorenzo* divides the area of intervention in two major parts: revitalization and consolidation. The first one is more related to Niquitao.

Z3_CN2_12 CONSOLIDATION POLYGON:

Polygon area 397.526 M2

Includes *barrio El Salvador* and part of *barrio Las Palmas*.

Most eastern zone of the intervention area

(See “Polygon Z3_CN2_12” map for limits)

Z3_R6 REVITALIZATION POLYGON:

Applies to Niquitao (area between *carrera 44 or Niquitao st.*, and the *carrera 46 or Avenida oriental*); old *barrio Colon* (north of niquitao); part of *barrio San Diego*; and the *San Lorenzo Cemetery* and its contiguous blocks. (See “Polygon Z3_R6” map for limits)

It includes: Revitalization area, special handling areas¹³ and public space designated areas.

Polygon area:	286.523 m2
Revitalization area:	157.106 m2(15.7 Ha)
Special handling areas:	107.214 m2
Public space designated areas:	22.201m2

The revitalization area (15.7 Ha) is constituted by public space (roads and areas to cede as urban planning obligations); and private land (net area of blocks to be intervened or land to be developed by new projects; area for new roads; and plots in process of consolidation).

¹³ Consolidation areas within the revitalization polygon. Blocks or plots to be developed independently from the rest of the polygon.

CONFORMATION OF THE REVITALIZATION AREA

Revitalization grounds (gross area for F.A.R.).....	157.106 m2
Public space	71.301 m2
Private land	85.805 m2
Lots with buildings to be consolidated	5.490m2
Projected roads (new and improved ones)	7.254 m2
<u>Net area</u> of blocks to be intervened	
(land for new projects)	<u>73.060m2</u>

Maps included:

- AREAS OF INTERVENTION
- PUBLIC SPACE DEVELOPMENT
- PUBLIC SPACE STRUCTURE
- REVITALIZATION POLYGON Z3_R6
- CONSOLIDATION POLYGON Z3_CN2_12
- BLOCKS TO BE DEVELOPED / *UNIDADES DE GESTION*
- TOPOGRAPHY