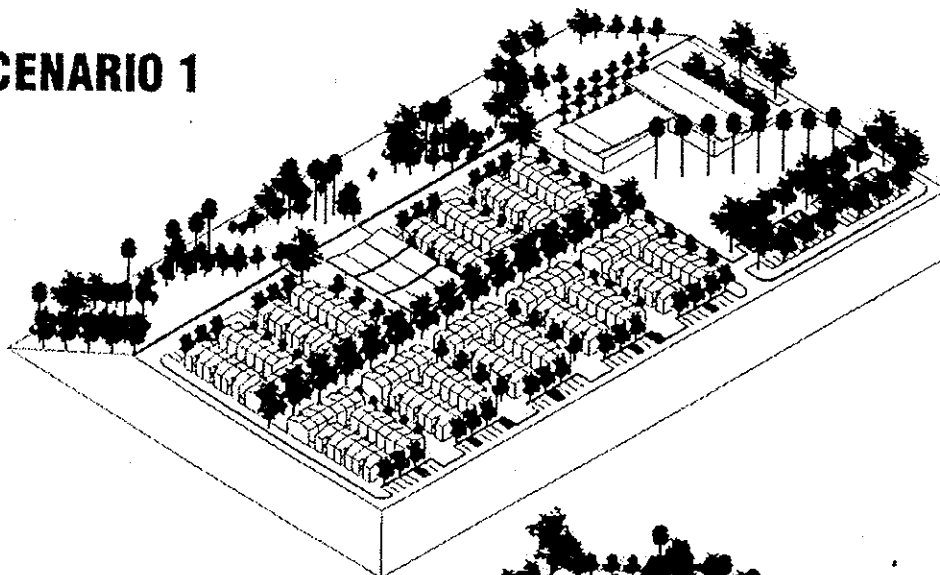


# CONFIGURACION DE ESCENARIOS

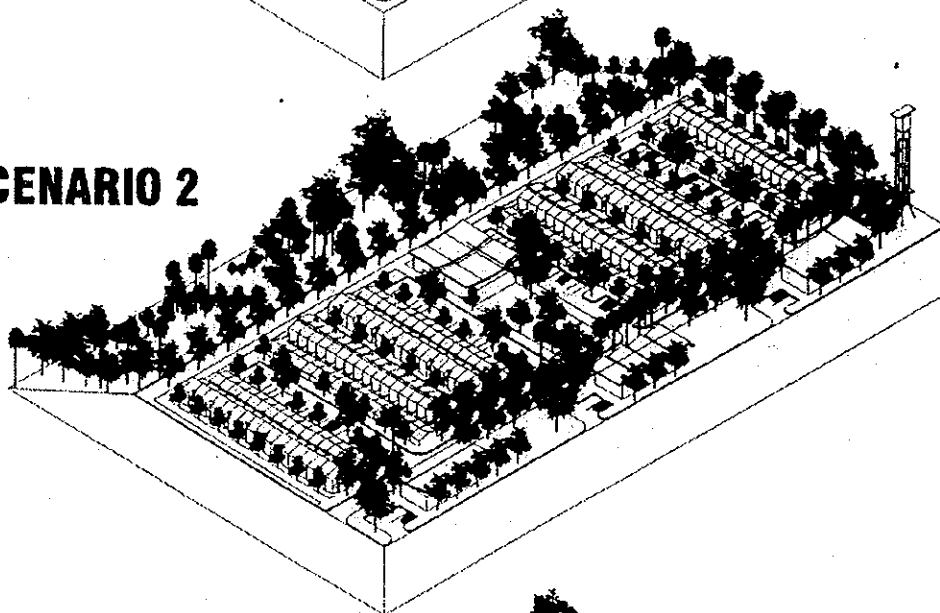
UNIDAD EJECUTORA		POBLACION BENEFICARIA		CONFIGURACION FISICA		MANEJO DE PREVENCIÓN Y ATENCIÓN DE DESASTRES	
URBANÍSTICA		ARQUITECTÓNICA		URBANÍSTICA		ARQUITECTÓNICA	
ESCENARIO 1	EJECUTOR RESPONSABLE SECRETARIA DE COMPETITIVIDAD COMIFAMA COMUNIDAD	HABITANTE DEL BARRIO ARTESANO EXTERNO TALLERES COMUNALES	VIVIENDA SC TALLERES VIVIENDA - PATIO	PREDIO INDIVIDUAL DE 3.60m. X 10.80 m. VIVIENDA - PATIO		SOLO SE USAN AREAS DE TALLERES - HELIPUERTO E INST. ESPECIALES	
	AREA INICIAL: 30.20 m <sup>2</sup> AREA FINAL: 54.10 m <sup>2</sup>	ZONAS DE VIVIENDA Y TALLERES SEPARADAS					
ESCENARIO 2	EJECUTORES POR FASES: SEC. COMP. FASE 1 COM. FAMA FASE 2 COMUNIDAD FASE 3	HABITANTES DE CADA UNO DE LOS SECTORES Taller 1 Taller 2 Taller 3 Artesanos Externos	VIVIENDA SC TALLERES 1, 2, 3	PREDIOS INDIVIDUALES DE 3.60m. X 18.00m. VIVIENDA-PATIO-TALLER		USO DE AREAS COMUNES - INST. ESPECIALES	
	AREA FINAL VIV.: 54.10m <sup>2</sup> AREA FINAL TALLER: 24.84 m <sup>2</sup>	CONJUNTOS DE VIVIENDA Y TALLER POR ACTIVIDAD					
ESCENARIO 3	EJECUCION TRANSVERSAL FASES 1 - 2 - 3 SEC. COMP. FASE 1 COMUNIDAD FASE 2 COM. FAMA FASE 3	HABITANTES DEL BARRIO TALLER UNIDO A VIVIENDA INDIVIDUAL.	SC VIVIENDA VIVIENDA	PREDIOS INDIVIDUALES DE 5.40 m. X 10.80 m. VIVIENDA - TALLER		SOLAMENTE APOYO BASICO DADAS LAS LIMITANTES DE ESPACIO	
		TALLERES Y VIVIENDAS MEZCLADOS SIN DIFERENCIACION					

Figura 4.5.1. Matriz general para configurar los escenarios

### ESCENARIO 1



### ESCENARIO 2



### ESCENARIO 3

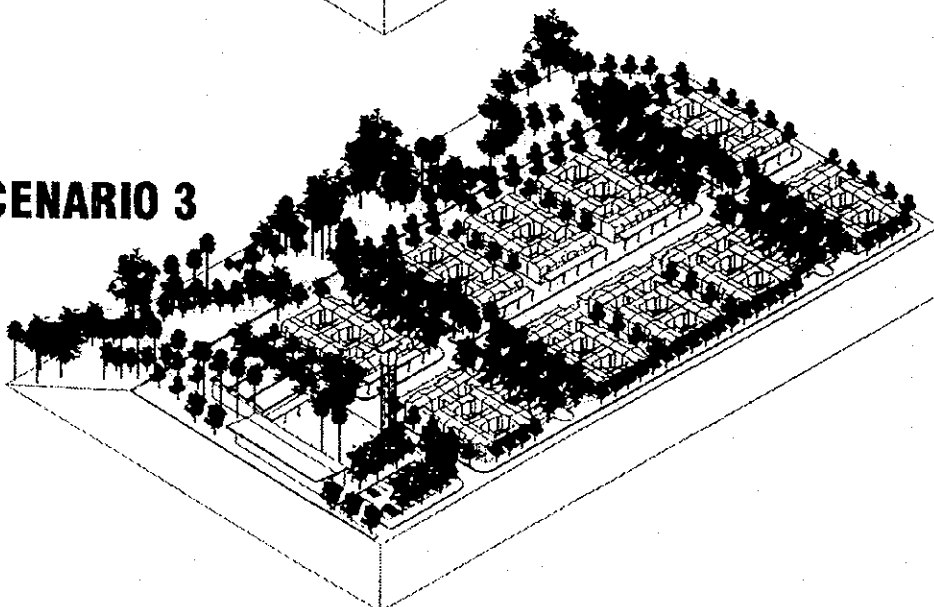


Figura 4.5.2. Evaluación y selección.

## 5. BASIC DESIGN PROPOSAL.

### 5.1. Program for constructions and areas.

#### 5.1.1. Constructions and areas.

The Project includes 92 housing units, a community room, a day-care center, five workshop units, an commercial area, a parking lot, a plaza for events and handicraft fairs, and a park.

Most of all, the Project emphasizes the presence of public spaces such as parks, plazas, and sidewalks, as well as open spaces for the community connected to housing units. In general terms, the Project is parceled out as follows:

**Table 5.1.1. Land Distribution.**

AREAS	square meters	square meters	%
<b>1. RESTRICTED AREAS</b>			
Venus stream round	3,312.60m <sup>2</sup>		
Road Zone Plan	547.37m <sup>2</sup>		
<b>Subtotal 1</b>		3,859.97m <sup>2</sup>	18.13%
<b>2. PUBLIC AREA/ TRANSFER A</b>			
Main local road	1,035.53m <sup>2</sup>		
Workshop, business, and community room areas	1,217.53m <sup>2</sup>		
Plaza for events and parking lot	6,243.06m <sup>2</sup>		
Venus stream park	1,626.50m <sup>2</sup>		
<b>Subtotal 2</b>		10,122.62m <sup>2</sup>	47.03%
<b>3. HOUSING AREA</b>			
Area allocated for housing	2,917.10m <sup>2</sup>		
Open community areas/ Transfer B	4,252.62m <sup>2</sup>		
Day-care center/ Transfer B	141.53m <sup>2</sup>		
<b>Subtotal 3</b>		7,311.25m <sup>2</sup>	34.84%
<b>LAND'S TOTAL AREA</b>		<b>21,293.84m<sup>2</sup></b>	<b>100.00%</b>

**Table 5.1.1. (2) Built areas.**

COMPONENT	Unit m <sup>2</sup>	Units	Subtotal m <sup>2</sup>	Total m <sup>2</sup>
<b>1. WORKSHOPS</b>				
Modules (1 floor)	190.23m <sup>2</sup>	5.00	951.15m <sup>2</sup>	
Commercial stores	209.00m <sup>2</sup>	1.00	209.00m <sup>2</sup>	
<b>Subtotal 1</b>				<b>1,160.15m<sup>2</sup></b>
<b>2. HOUSING</b>				
Stage 1 -Floor 1	18.04m <sup>2</sup>			
Stage 1 Floor 2	15.78m <sup>2</sup>			
<b>Subtotal 2</b>	<b>33.82m<sup>2</sup></b>	92.00	3,111.44m <sup>2</sup>	
Stage 2 -Floor 1	11.92m <sup>2</sup>			
Stage 2 Floor 2	10.62m <sup>2</sup>			
<b>Subtotal 3</b>	<b>22.54m<sup>2</sup></b>	92.00	2,073.68m <sup>2</sup>	
<b>Subtotal 4</b>	<b>56.36m<sup>2</sup></b>	92.00		5,185.12m <sup>2</sup>
<b>3. FACILITIES</b>				
Community room	189.33m <sup>2</sup>	1.00	189.33m <sup>2</sup>	
Day-care center	143.02m <sup>2</sup>	1.00	143.02m <sup>2</sup>	
Disposal area	36.78m <sup>2</sup>	1.00	36.78m <sup>2</sup>	
<b>Subtotal 5</b>				369.13m <sup>2</sup>
<b>TOTAL CONSTRUCTION</b>				<b>6,714.40m<sup>2</sup></b>

### 5.1.2. Site Planning Criteria

The site planning and execution of the Project is subject to three factors:

**a). Physical Characteristics of the Site.** The Project responds to the undulating topography. Workshops and businesses are located in the flat part of the terrain. Housing units are built on the middle slope area. The park and the restricted areas with constructions are situated in the highest slopes along with the stream that goes along this part of the terrain. This zone requires landscaping to avoid erosion and landslides. Thus, big cuts, earth removals and diggings will be avoided.

**b). Urban Characteristics of the Site.** The most highly appraised corner of the site is over 50<sup>th</sup> Street and the forthcoming *Avenida de Occidente* (West Avenue). This corner is destined to events (exhibitions, handicraft fairs, cultural performances, etc.). It is a plaza that occupies most of the front lot. Since its level is lower than that of 50<sup>th</sup> Street, there is total visibility over the workshops. Thus, the sidewalk along 50<sup>th</sup> Street works as a balcony over the public plaza. In case of emergency, some spots of the plaza are reserved for assistance and equipped with necessary implements. To facilitate direct access of vehicles to the plaza and the workshops without interfering with the main urban traffic, there is a road with parking spaces along with it. Pedestrian pathways would be built perpendicularly to this main vehicular access. These pathways lead to houses located in the middle slope of the site. All pedestrian pathways connect the events plaza with the linear park of Venus stream, to be built in the back of the lot.

With these construction measures, the public zone of workshops and the more private zone for housing can be differentiated. Community facilities (community room and day-care center) are strategically located in terms of visibility and easy access to them.

**c). Requirements to Utilize Each Component of the Project.** Workshops and business activities need maximum visibility and easy access by foot or by car. Housing units are located in the intermediate zone of the site, with pedestrian access and direct connection with the stream park, the commercial zone, and workshops. Houses share with workshops parking spaces. The community room is located in a corner that facilitates the access of, and attention to, inhabitants. The day-care center is connected to the housing units and the stream park. Such center is located in a visible place, but its access is restricted through the zone occupied by housing. The stream park is part of the 'stream rehabilitation system' proposed by PORTE.

### 5.1.3 Transfer Areas to the Municipality and Urban-Construction Norms. Figure 5.1.3

This Project does not follow the traditional way of housing development because the Project requires wide open zones for business activities, workshops, and emergency assistance. As a whole, the design surpasses by far the minimum requirements in relation to transfer areas and parking spaces defined by PORTE and the City Council Agreement No. 010, 27 July 1999. Due to the allocation of available resources for works, and the way in which the running of the construction is planned, two areas were defined in order to calculate and locate transfers.

**a). Transferred Area for Public Space.** This area is reserved for the local road of access, the plaza of events, the parking spaces, the workshops, businesses, and community room, plus the transfer for the Venus stream park. This area has 10,122.62 square meters (47.54 per cent of the site's total area) and will be developed by COFAMA with FOREC's resources. Based on the City Council Agreement 010/99, the minimum transfer for residential complexes should be 13 per cent of the net area subject to be developed. Once this public area is built and developed, it will be given through a contract of loan and restitution (commodate) to the community of the Village of Life and Work (*Villa de la Vida y el Trabajo*) so that it handles it and gains profit from it. In return to this type of contract, the community promises to take care of the Village and receive training in order to help people living in the sector in case of an emergency.

b). **Area of transfer for community spaces in the residential complex.** The second area of transfer corresponds to the terrain meant for a day-care center (147.92m<sup>2</sup>), plus common green spaces (4,065.53m<sup>2</sup>) that make part of the residential complex with 92 housing units.

## 5.2. Components of the Design. Figure 5.2

The following are the design components that belong to the "regulating grid" which differentiates them. The grids correspond to the same differentiation that was made in the analysis of the site at the sector level.

### 5.2.1. Road System and Traffic Control Grid. Figure 5.2.1.

a). **Access road.** The Project's most important component related to traffic is the road that organizes the access to all internal areas. According to PORTE, this double way road is classified as a Local Main Road, with a 14 meter section, two lanes for each way, a 4 per cent continuous slope, and parking spaces on both sides. It connects 50<sup>th</sup> Street with the prospective West Avenue. While this avenue is built, the road of access to the Project will work as a side-lane curve for entrance or exit of vehicles that run on 50<sup>th</sup> Street on both directions. Thus, this Local main Road will avoid traffic jams over the intersection.

b). **50<sup>th</sup> Street (Calle 50).** 50<sup>th</sup> Street is the way of access to the Project, and connects it with the rest of the city. In front of this road there should be a bus stop. Merging lanes with this road are designed with specifications (curve radiuses) to facilitate access and exits.

c). **West Avenue (Avenida de Occidente).** The Municipal Administration has not fully designed in detail this prospective road project. Therefore, the Board of Directors Committee agreed on defining the level of the finished surface which will determine the slope of the prospective avenue and its connection with the way of access to the Project. This definition would be done as part of the Project **The Village of Life and Work**. The road system was designed with a 31-meter section proposed by the so called City Workshop, as it was defined in the attachment of the intermediate report—Analysis of the Project's Site ( 7.1.1.h page 7-6). This report was given to the Steering Committee in July 2000. The final coordinates and boundaries of the site, as well as the ways in which roads affect it, were revised and later approved by the Planning Department, as recorded in the 12 September 2000 Act of the Project's Steering Committee. Unfortunately, on 12 October 2000 the Urban Curator Office told the Temporal Partnership that it was necessary to make changes in the road and urban designs because the City Workshop's proposal for the West Avenue section had not been approved by Armenia's City Council yet, and there should be a 48-meter road section to be taken into account. As a result of these changes, the area of the site had to be reduced, and the designs of road of access, day-care center, businesses, plazas, and sidewalks that had been already designed completely had to be modified. According to the municipal authorities, still it is possible to have the 31 meter section as the final one when the road is built. Yet, because of legal policies, the Urban Curator Office only issues urban and construction licenses with a 48 meter section.

d). **Local road.** It is seen over the western side of the site. It works as an access way to the community room. The local road is seven-meter wide. It can be adapted as a parking space for emergency vehicles (fire trucks, catering trucks, etc.).

e). **Pedestrian pathway system.** It is the access way to housing units. It is connected with the vehicular road, the stream park, the community facilities, and zones co-owned by the community (service roads for housing).

f). **Service road.** It was designed parallel to the Venus stream park. Its access is restricted and it is for emergency vehicles only.

g). **Vehicular parking space.** The Project proposes 78 parking spaces—i.e., 17 more than required standards. This extra space is essential, given the tourist and commercial nature of the Project.

h). **A system for people with special physical needs.** Figure 5.2.1. (1). The Project has a system of ramps that facilitates the access and displacement of wheelchairs to all its zones.

### 5.2.2. Environmental Grid. Figure 5.2.2.

a). **Handling topography.** The Project is adapted to the topography. Cuts and fillings are only done in critical points for drainage or in order to facilitate the design of vehicular and pedestrian roads. Handling slopes, terraces, and the adaptation of the topography is crucial for the design of public space. Retaining walls are designed with gabions, and the slopes are incorporated into the system of pedestrian pathways to make balconies, viewpoints, and meeting places. One aspect of this subject is the handling of the course of raining water and its drainage.

b). **Venus stream park.** A park is designed in the steepest zone of the Venus stream. This park integrates the transfer areas, community spaces, and the environmental zone which is restricted according to municipal norms. The design of this park includes the handling of landscape and gabions to control erosion and landslides.

c). **Tree planting strategy.** Table 5.2.2. The Project includes a continuous row of trees along the pedestrian pathways that connect all zones. The tree planting strategy is based on the following points:

- The idea is to improve the environmental quality and the landscape in the active urban zone. Two-to-three-meter species shall be used in order to establish a good image in the short run. Medium size and tall trees shall be used in order to protect pedestrians and parked vehicles from excessive solar radiation. These trees should be non-seasonal—thus avoiding falling leaves and branches—and resistant to urban stress (i.e., trimming, pollution, vandalism, etc.). Tall and long-lasting trees with a main trunk, alternated with palm trees, are suggested to be planted along the main road. Due to restrictions imposed by posts of electric wiring, low trees should be planted along pedestrian pathways. These trees should also develop a main trunk, have light colored, non allergenic flowers or leaves, be highly aesthetic and non-seasonal. They would be alternated with low palm trees as well. Each secondary pedestrian pathway should be identified with a particular kind of tree.
- Various kinds of trees should be incorporated in the zone of the stream in order to diversify the giant bamboo tree forest that predominates here. In addition to diversity, the stabilization of the soil and a scientific and aesthetic contribution to the habitat are sought. Thus the park would become a botanical garden of tourist interest. An ecological restoration should take place in order to bring the environmental potential back, control erosion and the instability of the terrain, regulate water well, and attract birds back to the region as part of the biological chain.

### 5.2.3. Public Space Grid. Figure 5.2.3.

This grid comprises the Project's public areas for circulation and recreation (passive and active). It includes the pedestrian pathways, sidewalks, and plazas, the system of recreational green spaces and the Venus stream park. Each component has a specific character due to the activities that it fosters. The public space system seeks to connect through pedestrian pathways the active urban zone with the stream stripe of passive recreation.

a). **Sidewalks and plazas.** The most outstanding part of the Project is the plaza of events. Its design allows to organize exhibitions and performances, or set temporary constructions such as kiosks or tents. It is a hard zone with pedestrian access along 50<sup>th</sup> Street. It has public street

lights and space for benches. This zone is "crossed over" by pedestrian pathways that lead to houses. This is made noticeable due to emphasis on the floors. Besides its recreational and commercial functions, this site must be adapted to take care of the habitants of the sector's needs in case of emergency.

**b). Pedestrian pathways.** This net of pathways gives access to all parts of the Project and connects the Venus stream park with the public business area. These pathways combine sections of hard floor with tree planting, embankments, and slopes with vegetation. The net is combined with the system of ramps for people with special physical needs.

**c). Recreational green spaces.** They are located on the border of the Venus stream. They are thought of as parks with special treatment to avoid erosion and landslides. They are part of the plan proposed by PORTE to save the water ecosystem for the city.

#### **5.2.4. Housing Grid. Figure 5.2.4.**

There are 92 housing units distributed in five blocks or clusters made by 16, 18, or 20 housing units depending on their location. All housing units are part of a residential complex that is treated as a co-ownership. Each block is composed by two rows of housing units and a space in the center for the community. Utility systems such as tap water go through this space. This guarantees that this space will not be occupied or built later on. Therefore, natural light and ventilation are ensured in back and front of houses. This space is also useful for evacuation in case of emergency.

Each housing unit occupies a plot of land of 33.30m<sup>2</sup>, on which the first stage of 33.82m<sup>2</sup> is built in front of the plot and an extension of 21.54m<sup>2</sup> is built in back.

- Two floors are built in the first stage. Any later extensions in height are restricted to ensure that the Project maintains its structural seismic-resistant integrity. Each row of housing units is built as a structural unit, with dilatation joints. The structure and materials comply with the seismic-resistance national standard.
- From the first stage, the interior design of housing has, in addition to services and social areas, two private spaces for bedrooms. The extension, done by each owner, allows the house two have two additional bedrooms and a bathroom.
- Program for the first stage on the second floor (15.78m<sup>2</sup>): one bedroom for a double bed plus an additional single bed (a cradle).
- Finishes' specifications: Facades in structural block of clay, painted with *Coraza*. Window frames with metallic angles and squared rod glass holders. Metallic front doors and bathroom door. Living room and dining room divider, made of recycled and compressed wood on a 1 inch wood strip. Internal walls in unfinished structural blocks. Second floor with unfinished concrete slab. Final thickness 10cm. Roof in Aluminum-Zinc tile over prefabricated concrete beams poured inside PVC pipes. Floors in finished concrete, except the bathroom floor which is overlaid with ceramic tiles. Shower area, as well as are in front of kitchen counter also come overlaid with ceramic tiles.
- Program for the second stage (extension) on the first floor (11.92m<sup>2</sup>): One bedroom for two single beds or one double bed, and one bathroom. This part of the housing has an independent entrance from outside; therefore, it can be rented easily.
- Program for the second stage (extension) on the second floor (10.62m<sup>2</sup>): One bedroom for two single beds.
- Finishes' specifications: They are the same as those for the first stage. However, since this stage will be built directly by each beneficiary, the type of finishes for floors, walls, and ceilings may vary according to available resources.
- Housing structure. The foundations are built with flat slabs of reinforced concrete, with outstanding and visible beams, below both contour walls and boundary walls. Walls are built

in structural masonry with blocks of clay. Second floor with prefabricated concrete slabs, with concrete poured in situ. Total height, 10cm. Roof in metallic tile supported over prefabricated concrete beams poured inside PVC pipes. Strip beam over walls. The porch is in metallic tile supported over beams and concrete columns poured inside PVC pipes.

- Electrical system. Electrical power levels are established in the respective architectural drawings. Such levels can only be increased by modifying the wire dimensions with approval of authorities. The first stage is designed in such a way that it can bear the additional power of the second stage. Ducts are ready to be connected to the extension.
- Hydraulic system. Hydraulic levels are established in the respective architectural drawings. Such levels can only be increased by modifying their dimensions with approval of authorities. The levels needed for the second stage are considered in the design of the first stage.

#### 5.2.5. Community Facilities Grid. Figure 5.2.5.(1).

a). **Workshops and business stores.** The productive area of the Project is composed by five workshops, a group of food stores, and a plaza for fairs and events related to the productive activities developed in the Village.

- Workshop modules. The essence of the design is its flexibility to adapt to the various organizational needs of beneficiaries. According to preliminary analyses, 92 spaces are needed. They should have about 25m<sup>2</sup> for woodwork, and 4m<sup>2</sup> for other jobs. These spaces are suggested to be organized in five one-story modules with 190.23m<sup>2</sup> each. They have direct access from the sidewalk. Their elongated shape and easy access allow to easily make subdivisions and adaptations to them. Parking spaces are located in front of workshops. Each workshop has its bathroom and cleaning room.
- Finishes' specifications. Facades in structural block of clay, painted with *Coraza*. Window frames with metallic angles and squared rod glass holders. Metallic external and internal doors. Internal walls as unfinished structural blocks. Roof in Aluminum-Zinc tile over prefabricated concrete beams poured inside PVC pipes. Outdoors floors (under roof) on clay tile. Indoor floors on finished concrete, except the bathroom floor which is overlaid with ceramic tiles. Bathroom and cleaning room walls also come overlaid with ceramic tiles.
- Structure. The foundations are built with flat slabs of reinforced concrete, with outstanding and visible beams, below both contour walls and boundary walls. Walls are built in structural masonry with blocks of clay. Roof in metallic tile supported over prefabricated concrete beams poured inside PVC pipes.
- Electrical system. Electrical power levels are established in the respective architectural drawings. Such levels were calculated based on one type of generic workshop. It is necessary to evaluate electrical levels very well when defining specific needs. Any changes ought to be approved by authorities.
- Hydraulic system. Hydraulic and sanitary levels are established in the respective architectural drawings. Such levels were calculated based on one type of generic workshop. It is necessary to evaluate these levels carefully when defining the need of every workshop. Any changes ought to be approved by authorities.

b). **Food stores.** They are located in a 209.00m<sup>2</sup> construction. It is subdivided into seven spaces that can be integrated or subdivided again according to the needs of users. The construction has a separate space for bathrooms and cleaning room. The construction is located in the plaza of events. Its roof is used as a terrace that is considered as part of the public space.

- Structural system. Portico and columns in concrete. Foundation in isolated footings or column bases tied to beams. Columns in reinforced concrete. Flat slab roof with outstanding and visible beams, both in reinforced concrete.
- Finishes' specifications. Facades in structural block of clay, painted with *Coraza*. Window frames with metallic angles and squared rod glass holders. Metallic external and internal doors. Internal walls in unfinished structural blocks. Concrete slab roof. External floors (under



roof) on clay tile. Internal floors in finished concrete, except the bathroom floor which is overlaid with ceramic tiles. Bathroom and cleaning room walls also come overlaid with ceramic tiles.

- Electrical system. It was calculated for a prototype store. Adjustments in the design have to be made and authorities' approval ought to be gained if special appliances are needed.
- Hydraulic system. It was calculated for a prototype store. If changes are to be done, approval by authorities is needed.

c). **Community room.** This 189.33m<sup>2</sup> construction is the headquarters of emergency assistance in the sector. The plaza of events in front of the community room can also be adapted as a place to take care of emergencies. Vehicular access comes directly from 50<sup>th</sup> Street, with an independent parking area for automobiles and bigger cars.

- The room can be subdivided up to three independent spaces. In the near surroundings there is a 10 KVA electric power plant for emergencies, 6.6 HP Hydropneumatic Equipment, a storage place to keep emergency equipment, a zone to keep telecommunication equipment to contact the City's emergency network when needed, a 330m<sup>3</sup> water tank under the plaza, and a network to install toilettes, a kitchen, and other emergency services shared with Workshop number 5.
- Structural system. Structural masonry, combined with metallic trusses in iron pipes.
- Finishes' specifications. Facades in structural block of clay, painted with *Coraza*. Window frames with metallic angles and squared rod glass holders. Metallic external and internal doors. Internal walls in unfinished structural blocks. Roof in Aluminum-Zinc tile over metallic pipe structure. External floors (under roof) in clay tile. Internal floors in finished concrete slabs, except the bathroom floor which is overlaid with ceramic tiles. Bathroom and cleaning room walls also come overlaid with ceramic tiles.
- Structure. Foundation in flat slabs of reinforced concrete, with outstanding and visible beams, below both contour walls and boundary walls. Walls are built in structural masonry with blocks of clay. Roof in metallic tile supported over metallic pipe structure.

d). **Day-care center.** Its purpose is to provide support for working women or families with children younger than 4 years old. It is a service managed directly by the community. The day-care center has a zone for babies, a lounge, a sleeping area for older children, service area, and administrative area. In addition, the plan is to incorporate a restaurant that follows the alimentary programs of the Colombian Institute of Family Welfare (ICBF). The day-care center has a 143.02m<sup>2</sup> constructed area, plus controlled outdoor playgrounds for children. As it is located, the day-care center is directly integrated to housing units through pedestrian pathways.

- Structural system. Structural masonry combined with metallic pipe trusses.
- Program: Area of Assistance with module 1 (for children between 6 and 18 months old) and module 2 (for children older than 18 months), bathrooms, kitchenette, and administration area.
- Finishes' specifications: Facades in structural block of clay, painted with *Coraza*. Window frames with metallic angles and squared rod glass holders. Metallic external and internal doors. Internal walls as unfinished structural blocks. Roof in Aluminum-Zinc tile over metallic pipe trusses. External floors (under roof) on clay tile. Internal floors on finished concrete, except the bathroom floor and walls which are overlaid with ceramic tiles.
- Structure: Foundation in flat slash of reinforced concrete, with outstanding and visible beams, below both contour walls and boundary walls. Walls are built in structural masonry with blocks of clay. Roof in metallic tile supported over metallic pipe trusses.

e). **Emergency Attention Facilities** – Figure 5.2.5.(2). The Project has been designed in a way that public spaces and community facilities (Community Hall and Day Care Center) can be easily adapted and used in case of an emergency in accordance with the Neighborhood's Prevention

and Action Plan, and the Neighborhood Emergency Committee, already mentioned in this report.

#### 5.2.6. Public Utilities Network Grid. Figure 5.2.6.

a). **Tap Water.** It will be connected to the 6" main pipe that goes along and under 50<sup>th</sup> Street, about 1.00m or 1.20m deep. Water pressure ranges between 25 and 35 pounds. The Project will have a 160m<sup>3</sup> spare emergency tank.

#### b). Sewage system:

- Rainwater. It will be poured directly to roads and to the Venus stream, according to recommendations given by the Public Utilities Company of Armenia (*Empresa de servicios públicos de Armenia, EPA*).
- Sewage. It will end up in the Venus collector that goes through the eastern and northern flanks of the site and, currently, is being built by the firm Wastewater Pollution Abatement Company (*Empresa de descontaminación de aguas residuales, EDAR*).

c). **Electric power.** Quindío's Electric Power Company has affirmed that it can provide 150 KVs to the Project from Armenia's substation on 50<sup>th</sup> Street through Americas primary circuit. It has authorized to set up posted cables for medium and low voltage. A 10 KVA power plant is planned to be installed as part of the emergency equipment to feed the Community room and surroundings, plus the public light system of the Project.

d). **Telephone wires.** The telecommunications company TELEARMENIA-TELECOM has affirmed that it is technically feasible to offer 100 telephone pairs. The service will be provided upon request of the residents of the Project.

e). **Gas.** Quindío's Gas Company has stated its capacity and availability to provide natural gas to the Project. This company installs gas directly upon request of users.

f). **Waste management.** Two rooms for waste disposal are strategically located to facilitate access to them from workshops.

#### 5.2.7. Grid to integrate the Project to its Regional and City Context. Figure 5.2.7.

The Project is integrated to the urban structure through each of its "ordering grids." Given its strategic location, the Project works as a connecting pivot of all the activities and services that the sector offers. The following are the factors that determine such integration in the context of the Project:

a). **Road Grid.** The intersection between 50<sup>th</sup> Street and West Avenue is the most important corner of the site. The relation of the Project with these roads determines its connection with the city and the region. The roads of access and evacuation in case of emergency work in the same manner.

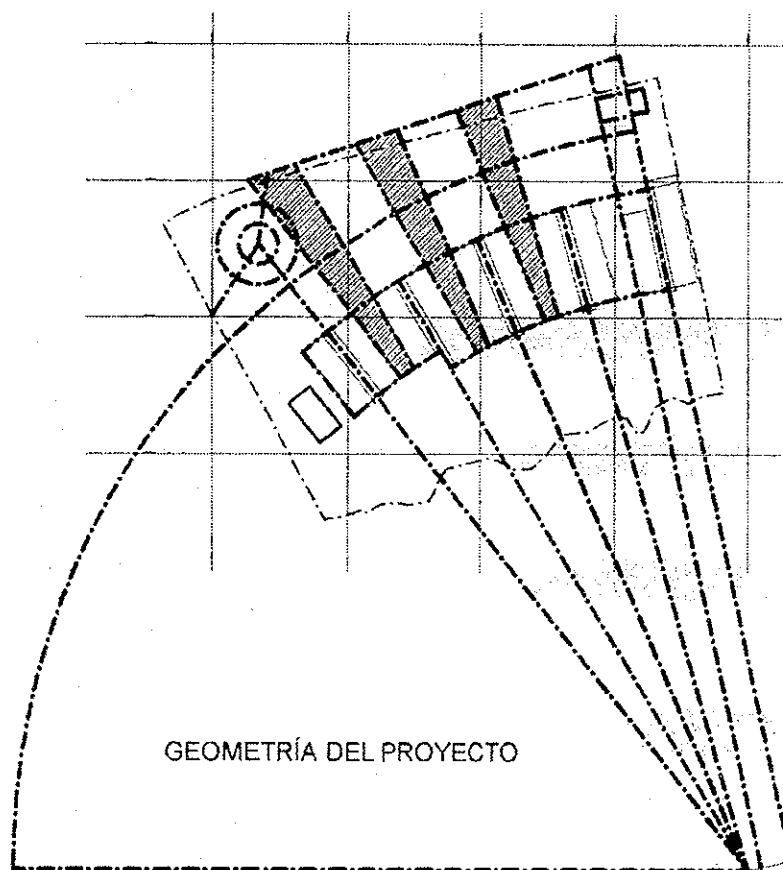
b). **Environmental Grid.** It is defined by the continuity of the Venus stream. The park of the Project is thought of as a fragment of what it should be a system that includes the entire stream.

c). **Public space Grid.** There are public parks in the sector. They can be used by residents of the Project for recreational activities. Nevertheless, there is not a space with a civic character as a meeting place. One of the purposes of the Project is to provide this kind of space and adapt it for emergency assistance.

d). **Housing Grid.** The Project is thought of as a neighborhood integrated to the sector. Housing units are similar to those in the sector as far as density, height, and social and economic level of their inhabitants is concerned.

e). **Facilities Grid.** The Project offers the sector a community room, facilities and spaces for emergency assistance and commercial activities derived from workshops. The sector offers the Project educational services, recreational facilities, and institutional services.

f). **Public Utilities Network Grid.** It is totally integrated to the already-working infrastructure of the sector.



PLAN MAESTRO DE ARBORIZACION DE LA VILLA DE LA VIDA Y EL TRABAJO

TABLA 5.2.2. ESTRATEGIA DE ARBORIZACION

			Altura	Diámetro copa	Distancia plantación	Altura mínima de plantación	CANT	
<b>Franja urbana sobre vías principales:</b>								
1	AL	101 Almendro	<i>Juglans cactapa</i>	15,00	8,00	2,0	5	
2	CE	102 Ceiba	<i>Ceiba pendultra</i>	20,00	15,00	2,0	3	
3	JA	103 Gualanday	<i>Jacaranda caucana</i>	10,00	8,00	1,5	5	
4	CV	104 Casco de Vaca/buey	<i>Bauhinia purpurea</i>	8 A 10	8,00	2,0	7	
5	Cam	105 Cambulo	<i>Erythrina christa galli</i>	5,00	4,00	1,0	5	
6	PB	106 Palma botella	<i>Roystonea regia</i>	18,00	6,00	2,0	15	
7	Pco	107 Palma corozza	<i>Ceroxyhum alpinum</i>	20,00	6,00	1,0	19	
8	TU	108 Tulipan	<i>Spanthodea campanulata</i>	6,00	4,00	1,5	40	
<b>Senderos internos viviendas</b>								
9	TA	109 Laurel rosa	<i>Nerium oleander</i>	5,0	3,0	1,0	10	
10	ACH	110 Achiote	<i>Bixa orellana</i>	5,00	3,00	1,0	14	
11	CBR	111 Carbonero rojo	<i>Callandrea pittieri</i>	5,0	3,0	1,0	10	
<b>Franja transición entre la ronda y las viviendas</b>								
12	GU	112 Guayacan amarillo	<i>Tabebuia chysantha</i>	20,0	12,0	1,5	3	
13	TR	115 Trompeto	<i>Bocconia frutescens</i>	3,0	3,0	Según detalle DT- 26	0,80	6
14	CC	116 Cordoncillo	<i>Piper bogotensis</i>	3,00	3,00	Según detalle DT- 26	0,80	10
<b>Ronda de la quebrada dependientes de maderas a 25'</b>								
15	YA	117 Yarumo	<i>Cecropia caucana</i>	20,00	10,00	Según manual de plantación	0,80	4
16	BB	118 Balso blanco	<i>Helicarpus papayanensis</i>	12,00	6,00	Según manual de plantación	0,80	4
17	CJ	119 Cajeto madreaguá	<i>Trichanthera gigantea</i>	3,0	4,0	Según manual de plantación	0,80	2
18	SP	120 Sapá	<i>Cousapoa araneosa</i>	3,00	3,00	Según manual de plantación	0,80	3
<b>Coberturas</b>								
1	KU	201 Kudú	<i>Pueraria gascoides</i>	Ronda de quebrada	Según detalle DT-27	Bolsa 9/m2		
2	MF	202 Maní forrajero	<i>Arachis pintoi</i>	Taludes Plazoleta eventos	Según detalle DT-27	Bolsa 9/m2		
3	BH	203 Bella helena	<i>Impatiens</i>	Ronda de quebrada	Según detalle DT-27	Bolsa 9/m2		
4	VC	204 Vinca	<i>Vinca mayor</i>	Taludes vía servicio	Según detalle DT-27	Bolsa 9/m2		
5	HE	205 Azucena	<i>Hemerocallis</i>	Materas agrupaciones	Según detalle DT-28	Bolsa 5/m2		





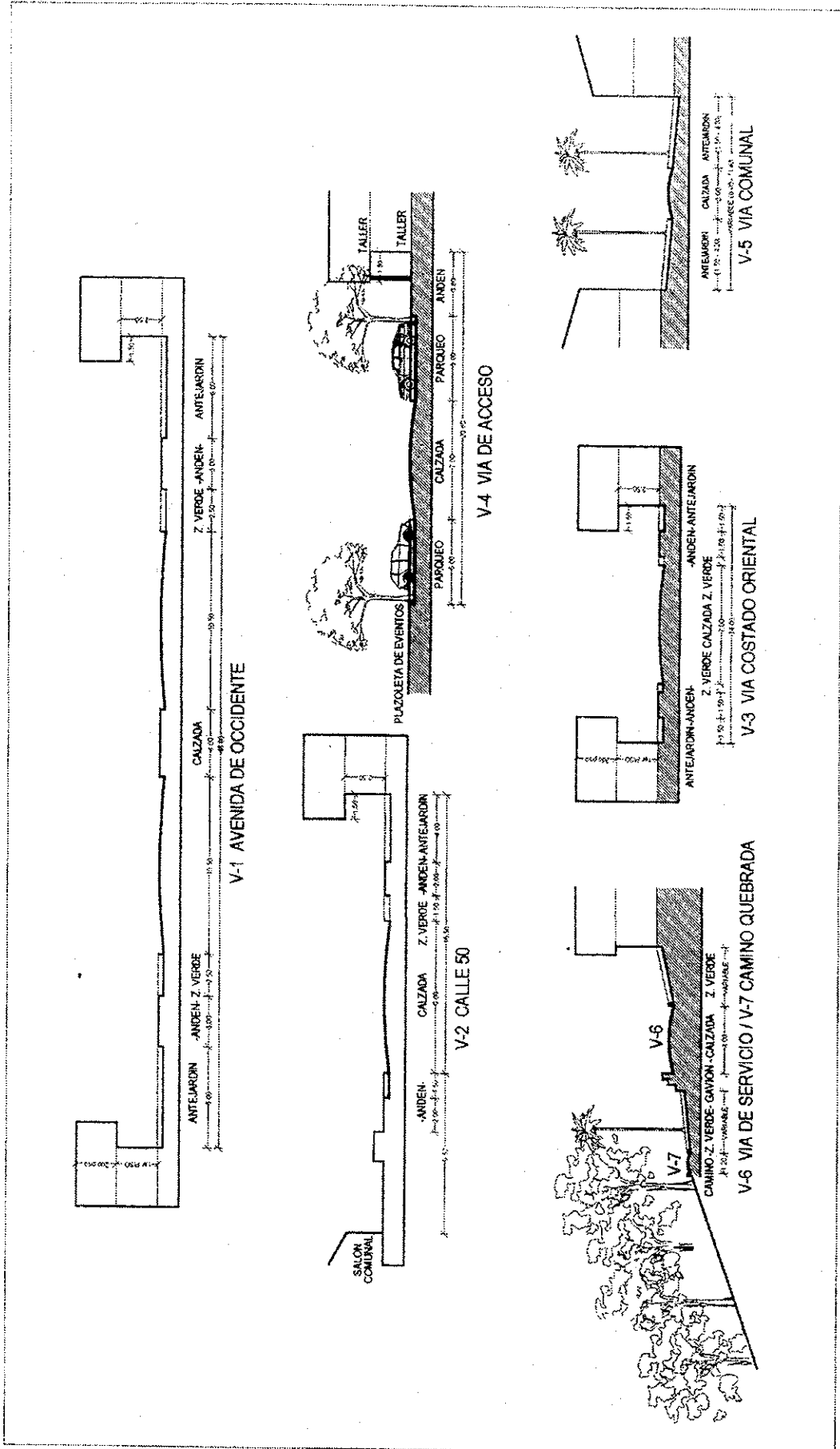


Figura 5.1.3. (2). Cortes viales.  
 Figure 5.1.3. (2). Street sections.

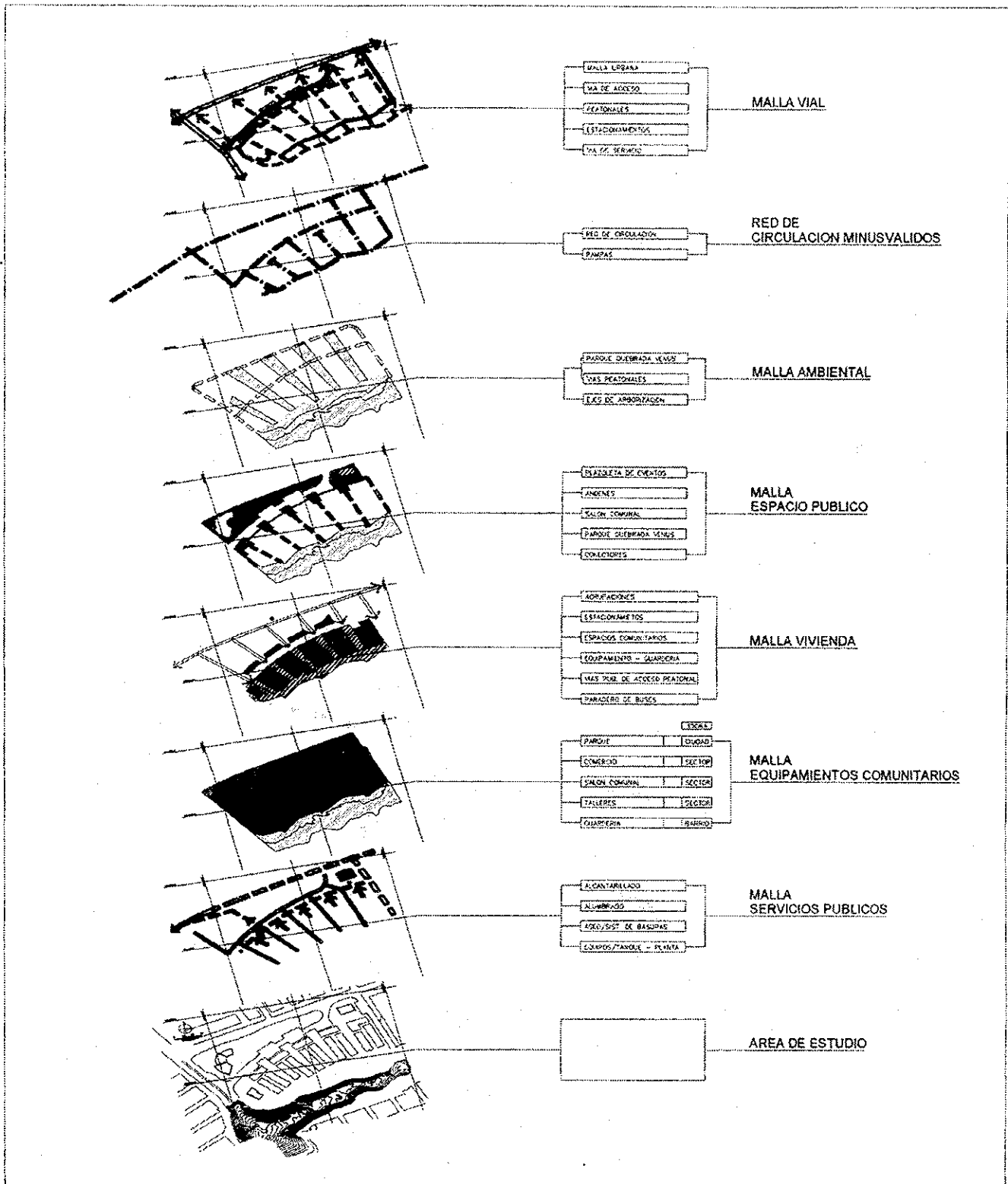


Figura 5.2. Componentes del diseño.  
 Figure 5.2. Design components.



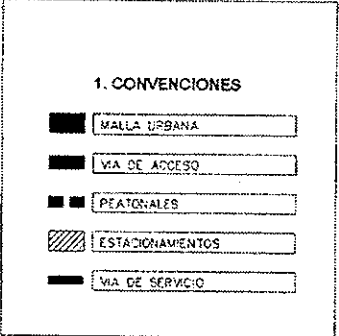
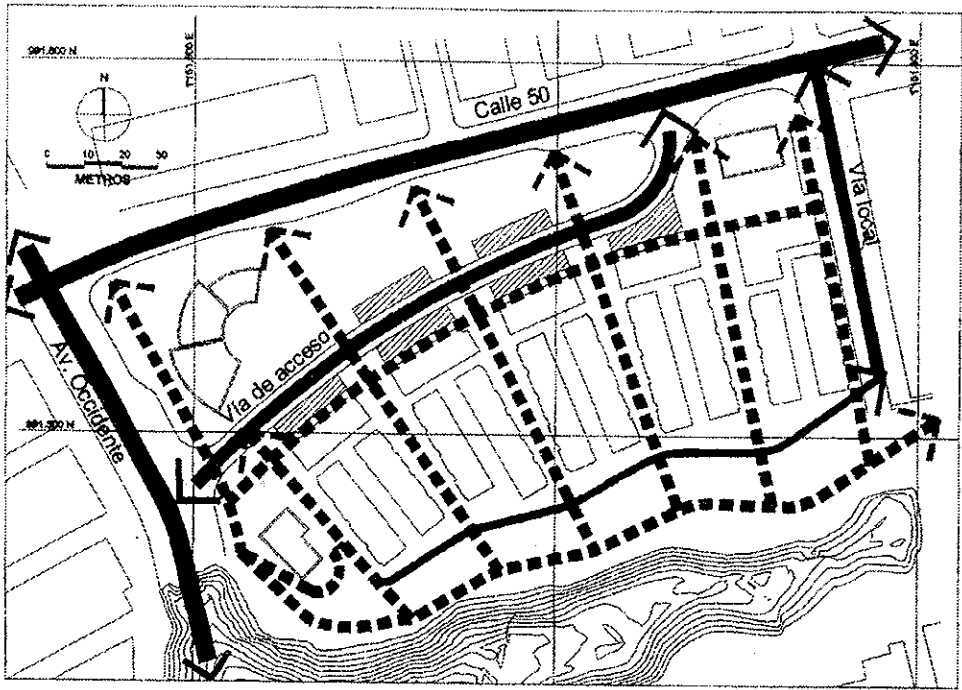


Figura 5.2.1. Malla vial.  
 Figure 5.2.1. Road system Grid.

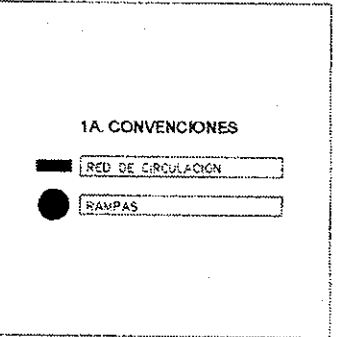
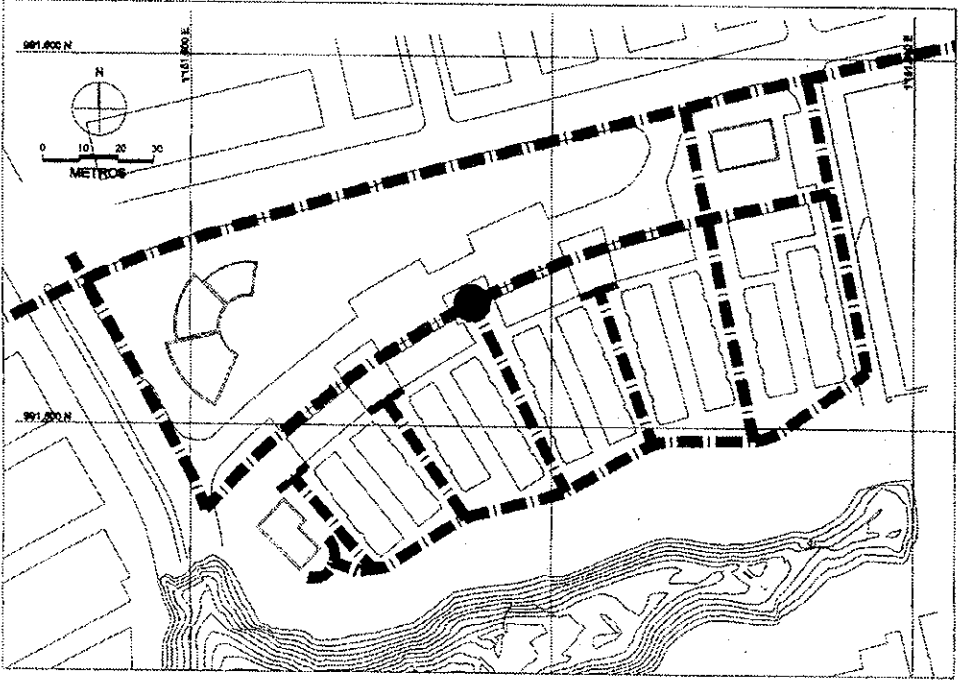
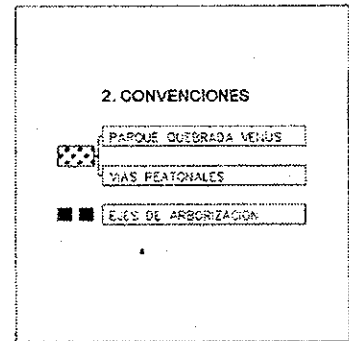
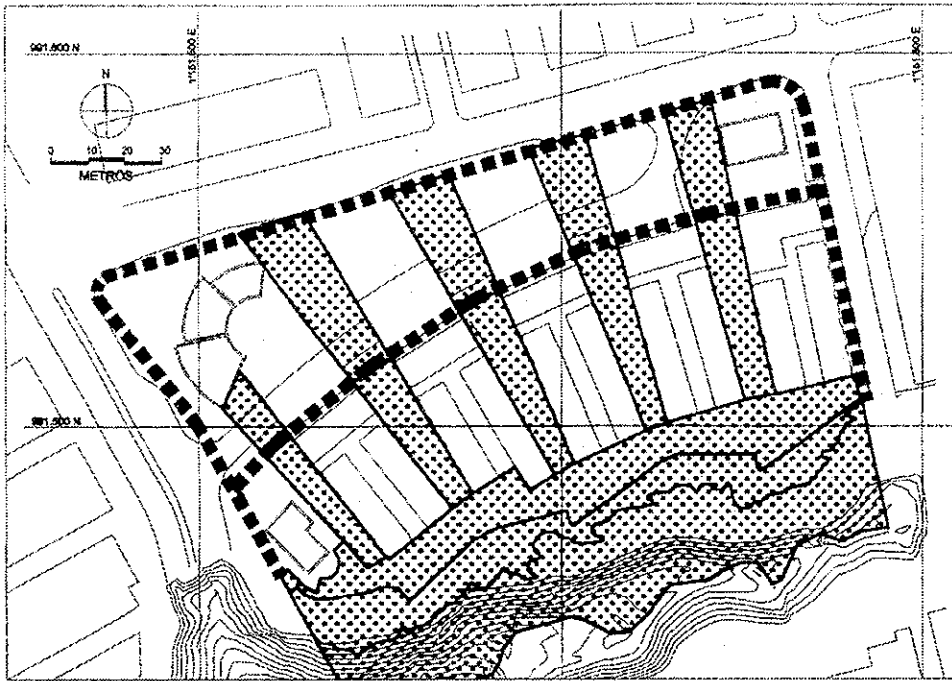
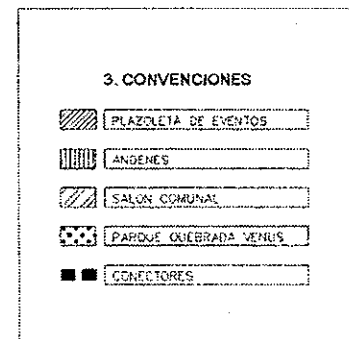
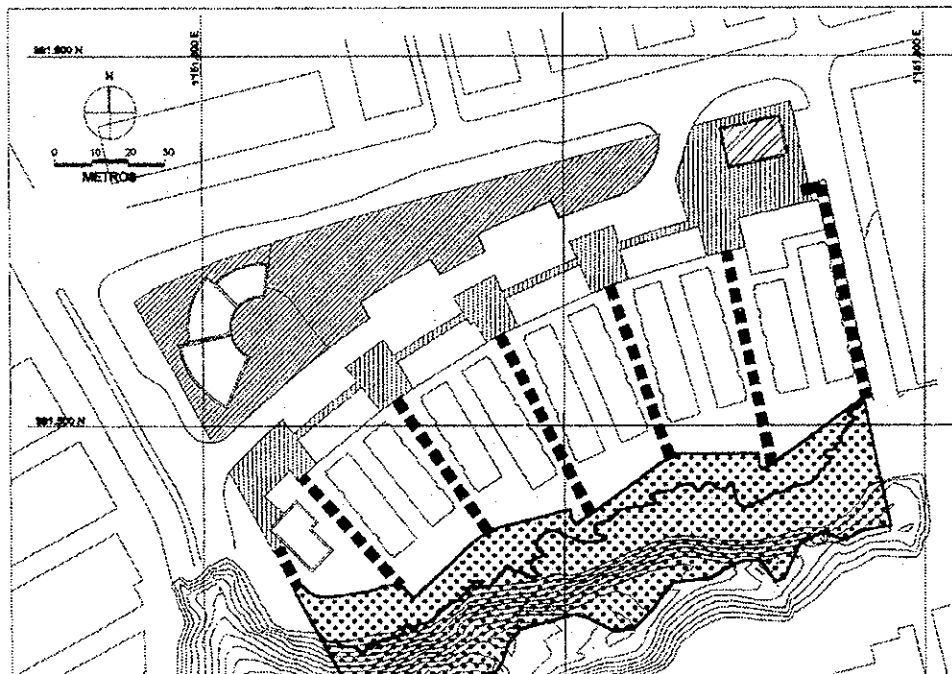


Figura 5.2.1.(1). Red de circulación para minusválidos.  
 Figure 5.2.1.(1). Road circuit for the handicapped



**Figura 5.2.2. Malla ambiental.**  
**Figure 5.2.2. Environmental Grid.**



**Figura 5.2.3. Malla de espacio público.**  
**Figure 5.2.3. Public space system grid.**

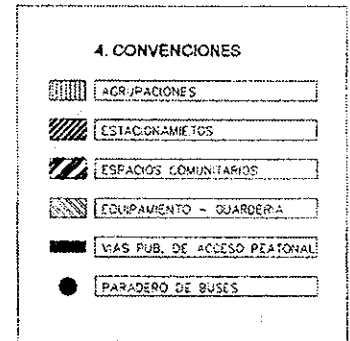
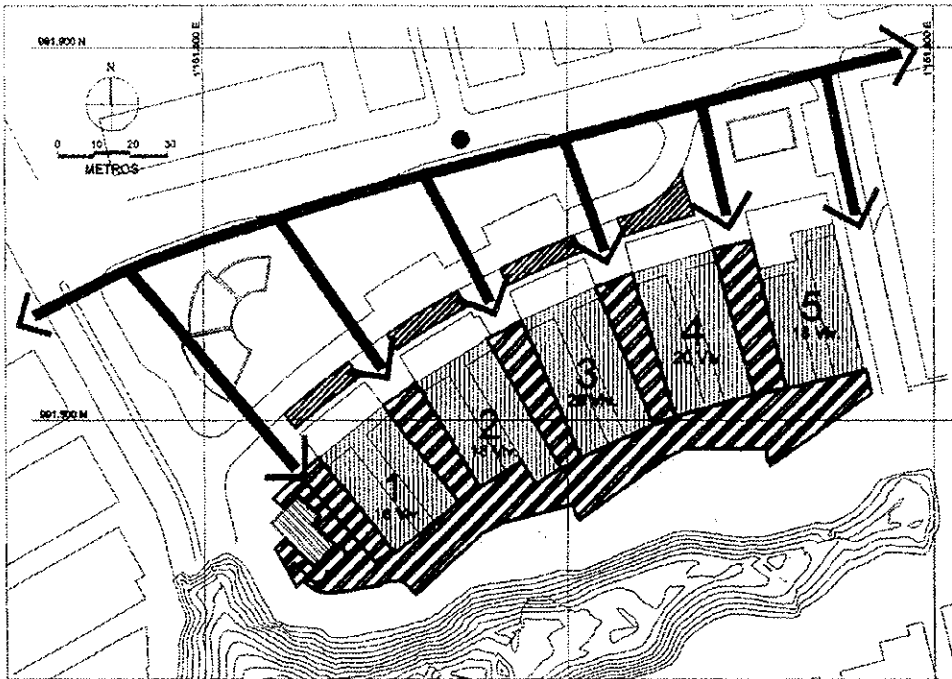


Figura 5.2.4. Malla de vivienda.  
Figure 5.2.4. Housing Grid.

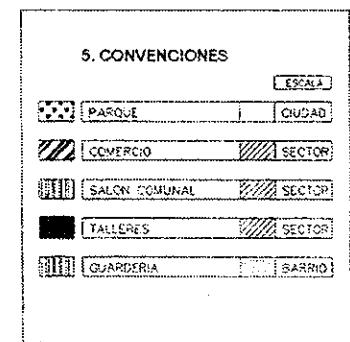
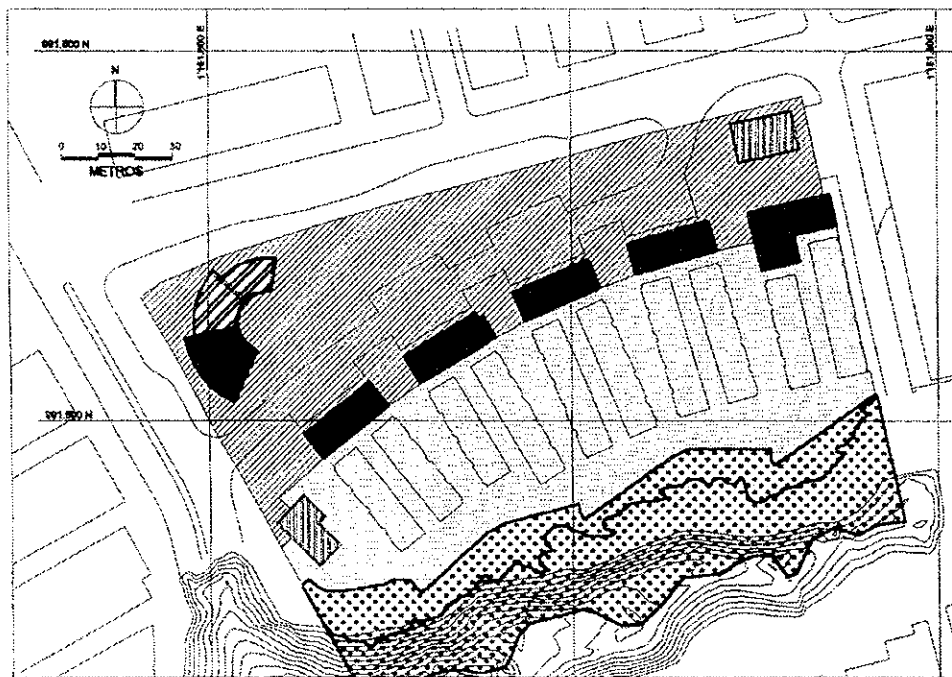


Figura 5.2.5. Malla de equipamientos comunitarios.  
Figure 5.2.5. Community facilities grid.

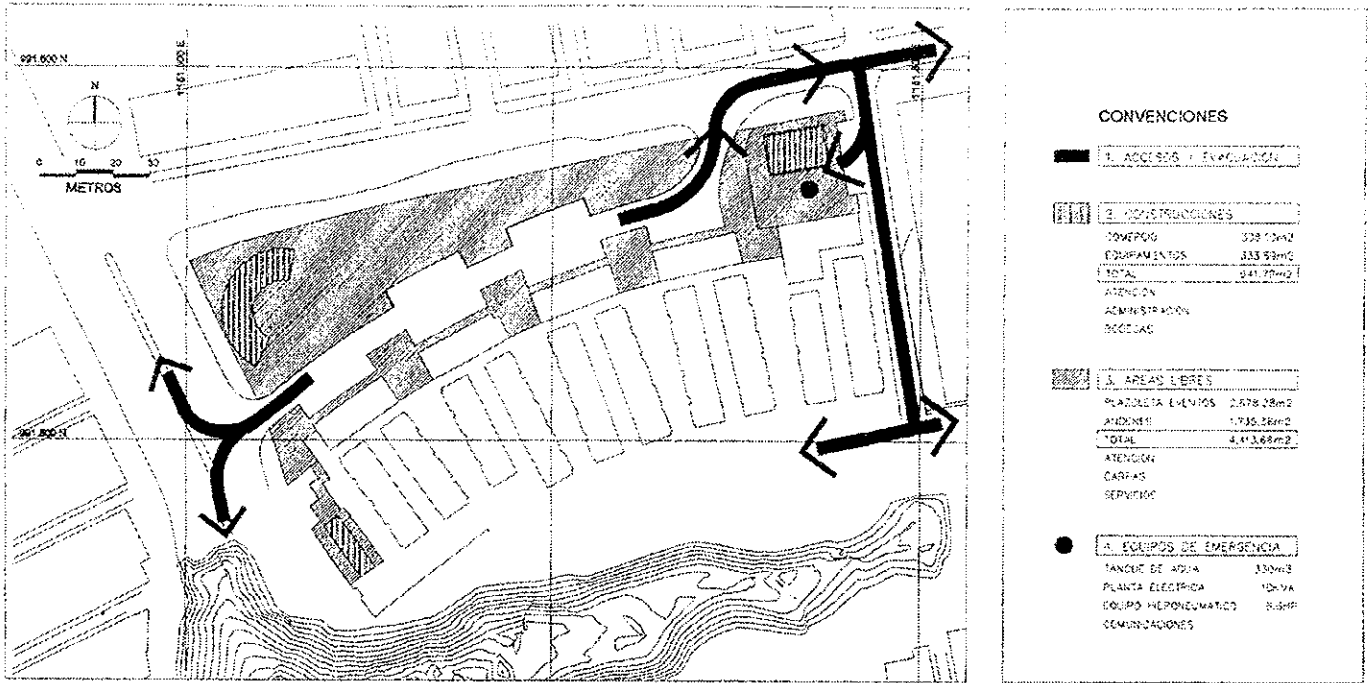


Figura 5.2.5. (2). Atención de emergencias.  
Figure 5.2.5. (2). Emergency attention facilities.

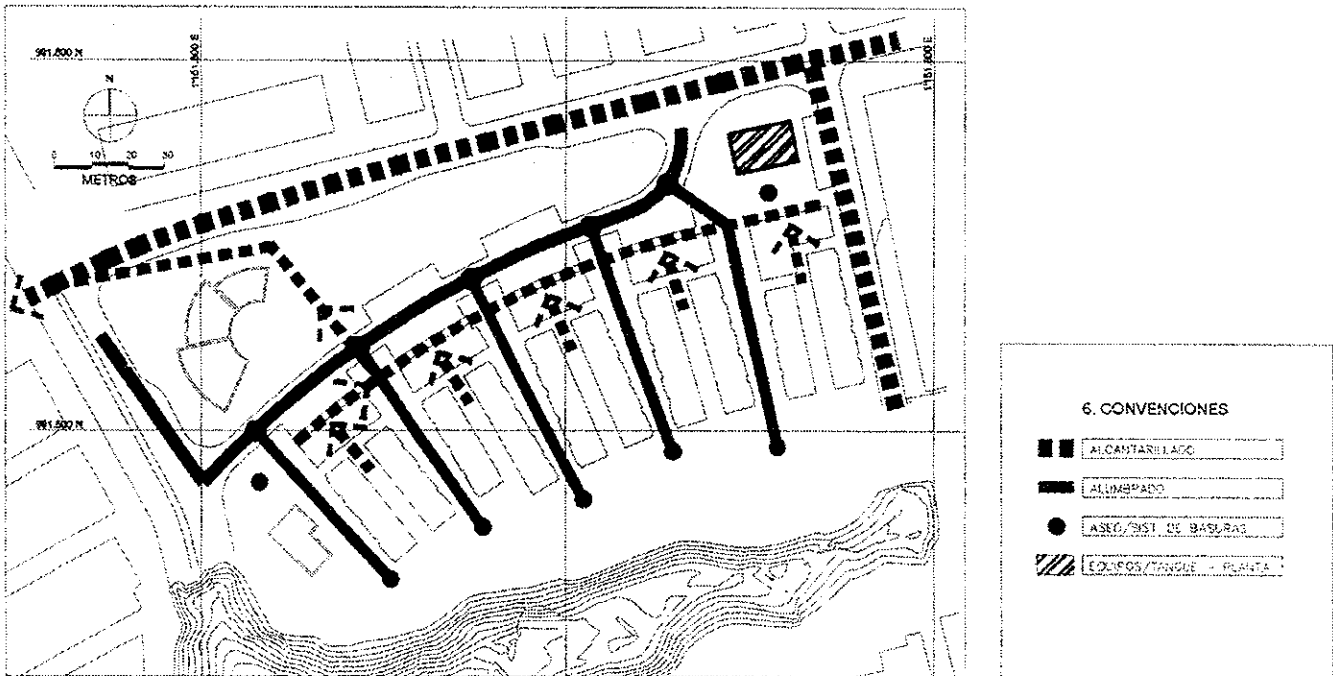


Figura 5.2.6. Malla de servicios públicos domiciliarios.  
Figure 5.2.6. Utility service network grid.

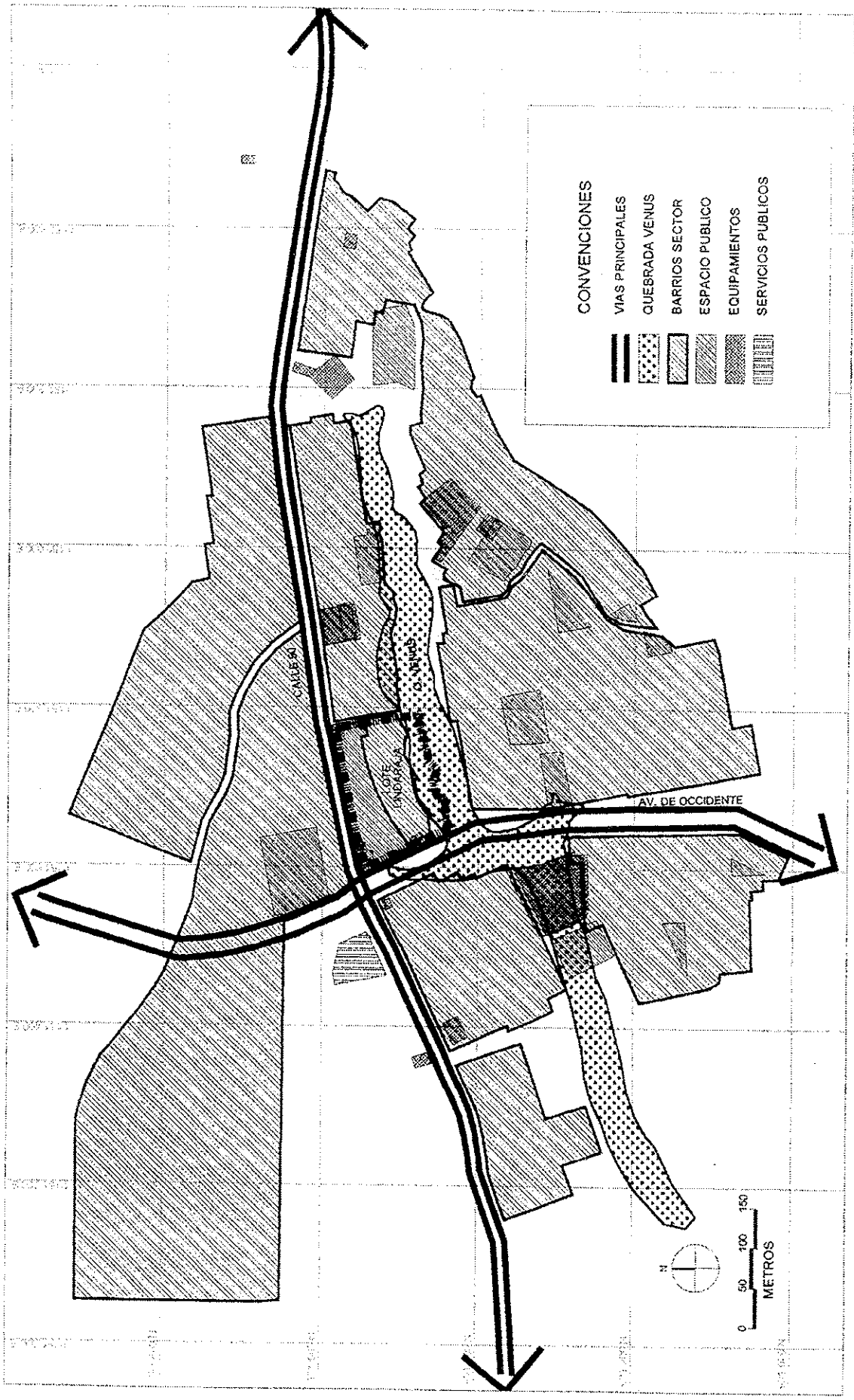


Figura 5.2.7. Relación ciudad-región.  
 Figure 5.2.7. Relationship between the city and the region

## 6. COST ESTIMATION

### 6.1. Structure of Costs.

Based on the budget attached to the present report, the Project costs Col.\$2,616,224,162.00 (US\$1,221,444.48)<sup>1</sup>.

The following aspects are included in such cost:

#### 6.1.1. The Site

The value of the lot amounted to Col.\$300,000,000.00 paid directly by the Mayor's Office of Armenia.

#### 6.1.2. Urban Design.

The cost of all urban works is Col.\$895,867,438.00. This sum includes the following components already affected by an 18 per cent of Management, Incidental Expenses, and Profits:

a). **Adaptation of the Terrain.** The cost of Col.\$264,713,322.00 includes:

- Preliminary studies.
- Drillings with topographical control.
- Gabions, slopes, and protective vegetation.
- Retaining walls.

b). **Vehicular Roads and Parking.** The cost of 152,111,234.00 includes:

- Main internal road of access.
- Service road in gravel.
- Channels, grids, water-drains, sidewalks curbs, and parking blocks.

c). **Hydro-Sanitary Networks.** The cost of Col.\$216,343,854.00 includes:

- Works in public zone. Cession A. It includes facilities for workshops, a community room, and public square areas.
- Housing zone.

d). **Electric Power Network.** The cost of Col.\$79,808,958.00 includes:

- Public zone. Cession A. It includes facilities for workshops, a community room, and public square areas.
- Housing zone.
- The costs of setting up telephone and gas systems are extra and are paid directly by users interested in getting the service.

e). **Free Areas and Squares.** The cost of Col.\$182,890,070.00 includes:

- Public zone. Cession A. It includes:
  - Public squares (3) of the communal ways that go through the squares of events.
  - Ways of access to pedestrian pathways—stairs and ramp.
  - Squares of events in gravel (2).
  - Sidewalks—concrete terrace for access to squares.
  - Commercial circle — Food square.
  - Workshop sidewalks.
  - Community room's square.

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<sup>1</sup> The official price of the US dollar in 25 November 2000 is Col.\$2,141.91

- Sills and railings.
- Stairs in concrete.
- Exterior sidewalks in concrete.
- Housing zone.
- Communal ways of access for pedestrians to housing units (5)
- Communal patios of housing-clusters (5)
- Viewpoints of communal patios of housing-clusters (5)
- Ends of communal pathways for pedestrians (2)
- Ends of communal pathways with viewpoint for pedestrians (2)
- Day-care center's square.
- Tree-planting. It includes planting vegetation in public zones (Cession A) and in the housing complex.

### 6.1.3. Architecture.

**a). Housing Units – Stage 1.** The total cost is Col.\$839,906,031.00. The direct cost of each unit, not including the value of the lot nor urban costs is Col.\$9,129,413.00. The final cost of housing will be defined by the Executive Unit according to the policies adopted by Armenia's Mayor's Office and FOREC regarding subsidies for public works, workshops, and community facilities. If the total cost assigned to each housing unit is proportional to the total cost of the project with workshops and public spaces, including a 10% rise due to designs, financing, and administration, the approximate cost of each unit could be Col.\$31 million. What each beneficiary should pay will be determined based on this sum. Extensions in each unit (stage 2) will be carried out by each beneficiary with his or her own resources.

**b). Workshops (5 Modules).** The cost is Col.\$338,456,655.00. It includes the typical internal facilities, and special facilities for the Workshop of the group of housing units No. 5 for its adaptation with sanitary services in case of emergency. The average cost per workshop is Col.\$67,691,331.00.

**c). Commercial Stores - Food Square.** The cost is Col.\$66,080,000.00. It includes six standard stores and a store in the terrace above.

**d). Community Room.** The cost is Col.\$96,342,841.00. It includes the emergency electric power plant and the hydro-pneumatic equipment to connect the emergency water tank with all housing units.

**e). Day-Care Center.** The cost is Col.\$50,891,117.00.

**f). Garbage disposal and other services.** The cost is Col.\$28,680,080.00. It applies to the construction of two rooms to collect garbage and Col.\$20,000,000.00 assigned by FOREC as the cost of auditing Col.\$820 million given by it. This last sum has to be administered by COFAMA.

## 6.2. Allocation of Available Resources. Possibilities of Investment.

The resources available are not enough to be able to build the whole project in one stage. The deficit is approximately 12 per cent. This means that the Executive Unit must decide which the best strategy is to spend available resources most efficiently. The following are three scenarios for the Executive Unit to define a detailed construction program:

**6.2.1. Scenario 1: Emphasis on Productive Infrastructure/Workshops.** Table 6.2.1.  
Figure 6.2.1.

This scenario is focused on building the housing complex with all units, and on developing a productive infrastructure, directly associated with workshops. Public space (square of events and food plaza) and community facilities would be built later. Resources would be distributed thus:

**a). Resources from the Mayor's Office:** They amount to Col.\$451,607,847.00 allocated thus:

- Acquisition of the site: Col.\$300,000,000.00
- Adaptation of the terrain: Col.\$105,885,329.00. This sum represents 40% of the total item.
- Free areas and squares: Col.\$45,722,518.00. This sum is 25% of the total item.

**b). Resources from FOREC.** They amount to Col.\$818,668,378.00 allocated thus:

- Adaptation of the terrain: Col.\$52,942,664.00. This sum is 20% of the total item.
- Vehicular roads and parking. Construction of the entire main internal road with diggings, channels, grids, water-drains, and parking blocks.
- Hydraulic and sanitary system: Col.\$173,075,083.00. It corresponds to 88% of the total item.
- Electric power system: Col.\$63,847,166.00. It corresponds to 80% of the total item.
- Free areas and squares: Col.\$27,433,511.00. It corresponds to sidewalks and squares, directly connected to ways of access to housing units and workshops.
- Workshops. Five workshops are built.
- Garbage disposal rooms and other services. This item is done completely.

**c). Housing Subsidies and Contributions of Beneficiaries.**

A Col.\$703,400,000.00 income to the Project's funds is expected from 31 subsidies given by FOREC and from 61 subsidies given by INURBE. In addition, each beneficiary gives Col.\$2,808,423.00. Thus a total amount of Col.\$961,774,948.00 is reached to develop the housing complex. This includes:

- Adaptation of the terrain. The investment amounts to Col.\$26,471,332.00 which corresponds to the execution of 10% of this item.
- Vehicular roads and parking. The investment amounts to Col.\$17,878,015.00. It corresponds to the construction of the internal road for service.
- Hydraulic and sanitary system. The investment amounts to Col.\$43,268,771.00 which corresponds to the execution of 20% of the entire item.
- Electric power system. The investment amounts to Col.\$15,961,792.00 which corresponds to the execution of 10% of the entire item.
- Free space and squares. The investment amounts to Col.\$18,289,007.00 which corresponds to the execution of 10% of the entire item.
- Construction of housing units. The investment amounts to Col.\$839,906,031.00 which corresponds to all direct costs.

**d). Works to Be Done in Later Stages:**

30% of the adaptation of the terrain; 50% of free areas (squares, commercial center,, etc.), commercial stores for food, the community room, and the day-care center.

**6.2.2. Scenario 2: Emphasis in the Infrastructure of Public Space to Organize Commercial Events.** Table 6.2.2. Figure 6.2.2.

This scenario is focused on building housing units, squares of events, all peripheral sidewalks, the food center, and the community room. Public space shall be use for fairs and events that



promote products made in other places outside the Project. Workshops will be gradually built as resources are available.

**a). Resources from the Mayor's Office:** They are Col.\$446,554,506.oo allocated thus:

- Acquisition of the site: Col.\$300,000,000.oo
- Adaptation of the terrain : Col.\$119,120,995.oo. This sum represents 45% of the total item
- Free areas and squares: Col.\$27,433,511.oo. This sum is 15% of the total item (peripheral, external sidewalks).

**b). Resources from FOREC.** They amount to Col.\$818,546,937.oo allocated thus:

- Adaptation of the terrain: Col.\$119,120,995.oo. This sum is 45% of the total item.
- Vehicular roads and parking. Construction of the entire main internal road with diggings, channels, grids, water-drains, and parking blocks.
- Hydraulic and sanitary system : Col.\$173,075,083.oo. It corresponds to 80% of the total item.
- Electric power system : Col.\$63,847,166.oo. It corresponds to 75% of the total item.
- Free areas and squares: Col.\$137,167,553.oo. It corresponds to 75% of the item.
- Commercial stores- Food center. The entire item is built.
- Garbage disposal rooms and other services. This item is done completely.

**c). Housing Subsidies and Contributions of Beneficiaries.**

This point remains the same in the three scenarios.

**d). Works to Be Done in Later Stages:**

The five workshops and the day-care center would be built as additional resources are available.

### **6.2.3. Scenario 3: Emphasis on a Mixed Development with Partial Construction of Workshops and Public Space.** Table 6.2.3. Fig. 6.2.3.

This scenario considers a combination of the two previous scenarios.

**a). Resources from the Mayor's Office:** They are Col.\$550,273,029.oo allocated thus:

- Acquisition of the lot : Col.\$300,000,000.oo
- Adaptation of the terrain : Col.\$158,827,993.oo. It is 60% of the item
- Free areas and squares: Col.\$91,445,035.oo. It is 50% of the item.

**b). Resources from FOREC.** They amount to Col.\$821,559,566.oo allocated thus:

- Adaptation of the terrain: Col.\$79,413,997.oo. It is 30% of the item.
- Vehicular roads and parking. Construction of the entire main internal road with diggings, channels, grids, water-drains, and parking blocks.
- Hydraulic and sanitary system : Col.\$173,075,083.oo. It corresponds to 80% of the total item.
- Electric power system : Col.\$63,847,166.oo. It corresponds to 80% of the total item.
- Free areas and squares: Col.\$73,156,028.oo. It corresponds to 40% of the item.
- Workshops: Col.\$203,073,993.oo. Three complete workshops.
- Commercial stores- Food center. The entire item is built.
- Garbage disposal rooms and other services. This item is done completely

**c). Housing Subsidies and Contributions of Beneficiaries.**

This point remains the same in the three scenarios.

**d). Works to Be Done in Later Stages:**

Two workshops, the day-care and the community room would be built as additional resources are available.

### **6.3. Construction Timetable.**

In the attached technical documents the construction timetable is presented differentiating the following aspects:

#### **6.3.2. Total Construction of the Project.**

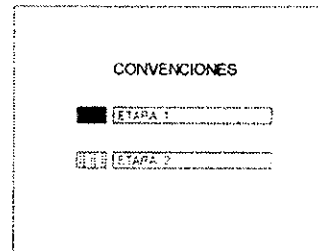
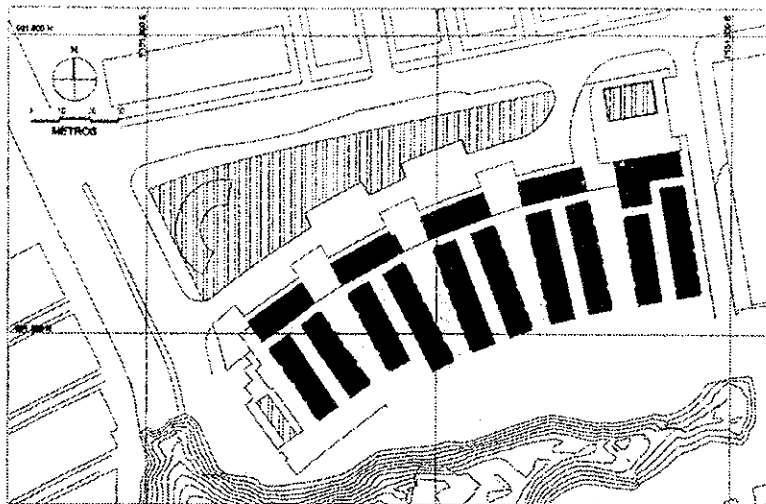
If all resources are found, the entire Project can be carried out in 10 months (213 days).

#### **6.3.3. Construction by Components.**

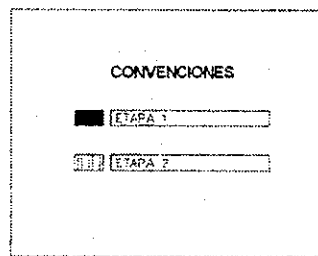
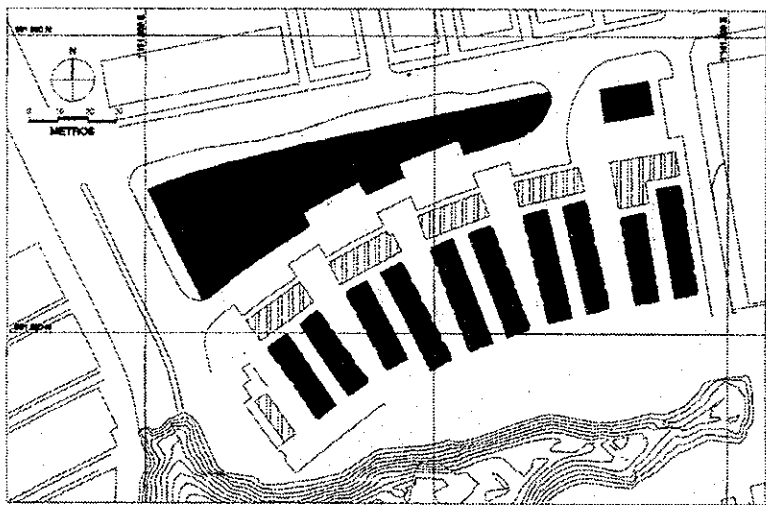
For the development of the project by stages, independent timetables have been designed for the following components:

- Urban design : Duration: 7 months (150 days)
- Group of 16 or 20 houses. Duration : 6 months (124 days)
- One workshop, or day-care center, or community room. Duration : 3 months (64 days).

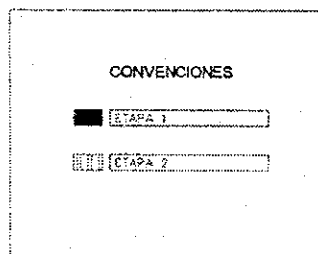
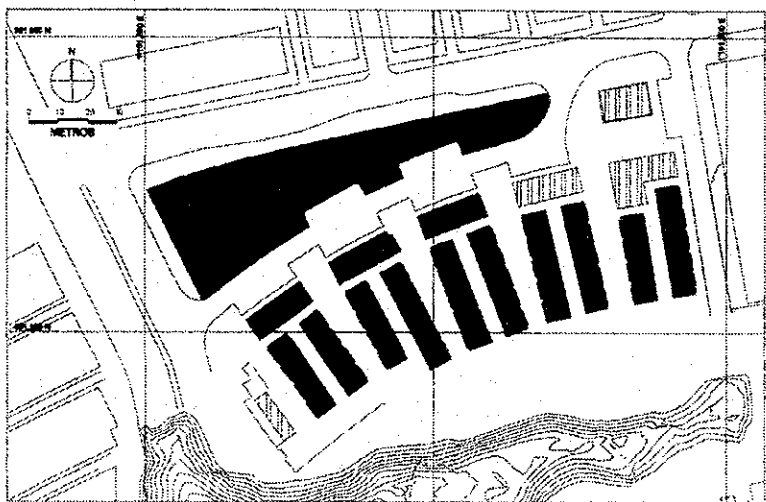




**Figura 6.2.1.** Escenario 1: Enfoque en producción / talleres.  
**Figure 6.2.1.**



**Figura 6.2.2.** Escenario 2: Enfoque en espacio público / eventos.  
**Figure 6.2.2.**



**Figura 6.2.3.** Escenario 3: Mixto / talleres + espacio público.  
**Figure 6.2.3.**

**Tabla 6.2.1. PRESUPUESTO GENERAL**

Noviembre de 2000

**ESCENARIO 1: ENFASIS EN PRODUCCION/ TALLERES**

ITEMS	AREA (Magnitud)	COSTO UNITARIO	COSTO TOTAL
1- LOTE	21,294	14,089	300.000.000
Subtotal 1			300.000.000

RECURSOS - DISTRIBUCION DE COSTOS		ETAPA 2
Alcaldia	FOREC	COSTOS
300.000.000		
300.000.000		

**2- URBANISMO**

ITEMS	AREA (Magnitud)	COSTO UNITARIO	COSTO TOTAL
ADECUACION TERRENO	21,294	12,431	264.713.322
VIAS VEHICULARES/ PARQUEOS (m2)		Global	152.111.234
REDES HIDROSANITARIAS	Global	Global	216.343.854
RED ELECTRICA	Global	Global	79.808.958
AREAS LIBRES /PLAZAS	21,294	8,589	182.890.070
Subtotal 2			895.867.458

ITEMS	Alcaldia	FOREC	Beneficiarios	ETAPA 2
ADECUACION TERRENO	0,40	0,20	0,10	0,30
VIAS VEHICULARES/ PARQUEOS (m2)	105.885.329	52.942.664	26.471.332	79.413.997
REDES HIDROSANITARIAS		134.233.219	17.878.015	
RED ELECTRICA		173.075.083	43.268.771	
AREAS LIBRES /PLAZAS	0,25	0,15	0,10	0,50
Subtotal 2			121.888.917	170.859.033

**3- ARQUITECTURA**

ITEMS	AREA (Magnitud)	COSTO UNITARIO	COSTO TOTAL
VIVIENDAS / Etapa 1	3,109,60	270,101	839,906,031
TALLERES - 5 MODULOS	951,15	355,839	338,456,655
LOCALES COMERCIO	264,94	249,415	66,080,000
SALON COMUNAL	189,33	508,862	96,342,841
GUARDERIA (m2)	143,02	355,832	50,891,117
BASURAS y VARIOS	36,78	779,774	28,680,080
Subtotal 3			1.420.356.723

ITEMS	Alcaldia	FOREC	Beneficiarios	ETAPA 2
VIVIENDAS / Etapa 1			839.906.031	
TALLERES - 5 MODULOS		338.456.655,00		
LOCALES COMERCIO				66.080.000
SALON COMUNAL				96.342.841
GUARDERIA (m2)				50.891.117
BASURAS y VARIOS		28.680.080		
Subtotal 3			839.906.031	213.313.957

<b>GRAN TOTAL</b>	<b>2.616.224.162</b>
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<b>GRAN TOTAL</b>	<b>451.607.847</b>	<b>818.668.378</b>	<b>961.774.948</b>
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Costo x Vivienda

\$9.129.413,38

AIU: 18%

RECURSOS	Alcaldia
FOREC- PAZ	451.607.847
Subsidios: Forec+Inurbe	820.000.000
Aportes de los beneficiarios	703.400.000
Recursos x conseguir	258.374.948
	382.841.368

**Subsidios**

FOREC: \$9'900,000 x 31 = 306'900,000

INURBE: \$6'500,000 x 61 = 396.500,000

Aporte x Beneficiario  
C\$ 2.808.423,34

TOTAL : 2.616.224.162

**Tabla 6.2.2. PRESUPUESTO GENERAL**

Noviembre de 2000	AREA (Magnitud)	COSTO UNITARIO	COSTO TOTAL
1- LOTE	21.294	14.089	300.000.000
Subtotal 1			300.000.000

**2- URBANISMO**

ADECUACION TERRENO	21.294	12.431	264.713.322
VIAS VEHICULARES/ PARQUEOS (m2)		Global	152.111.234
REDES HIDROSANITARIAS	Global	Global	216.343.854
RED ELECTRICA	Global	Global	79.808.958
AREAS LIBRES /PLAZAS	21.294	8.589	182.890.070
Subtotal 2			895.867.438

**3. ARQUITECTURA**

VIVIENDAS / Etapa 1	3.109,60	270.101	839.906.031
TALLERES - 5 MODULOS	951,15	355.839	338.456.655
LOCALES COMERCIO	264,94	249.415	66.080.000
SALON COMUNAL	189,33	508.862	96.342.841
GUARDERIA (m2)	143,02	355.832	50.891.117
BASURAS y VARIOS	36,78	779.774	28.680.080
Subtotal 3			1.420.366.723

**GRAN TOTAL**

2.616.224.162

Costo x Vivienda

\$9.129.413,38

AIU: 18%

**Subsidios**

FOREC: \$9'900,000 x 31 = 306'900,000

INURBE: \$6'500,000 x 61 = 396,500,000

**ESCENARIO 2: ENFASIS EN ESPACIO PUBLICO/EVENTOS**

RECURSOS - DISTRIBUCION DE COSTOS		ETAPA 2 COSTOS	
Alcaldia	Beneficiarios	FOREC	Comfama
300.000.000			
300.000.000			

0,45	0,45	0,10	
119.120.995	119.120.995	26.471.332	
	0,88	0,12	
	134.233.219	17.878.015	
	0,80	0,20	
	173.075.083	43.268.771	
	0,80	0,20	
	63.847.166	15.961.792	
0,15	0,75	0,10	
27.433.511	137.167.553	18.289.007	
146.554.506	627.444.016	121.868.917	

		839.906.031	
		338.456.655,00	
	66.080.000		
	96.342.841		
	28.680.080	50.891.117	
	191.102.921	839.906.031	
446.554.506	818.546.937	961.774.948	

RECURSOS	Alcaldia	FOREC-PAZ	Subsidios: Forec-Inurbe	Aportes de los beneficiarios	Recursos x conseguir
	446.554.506	820.000.000	703.400.000	258.374.948	387.894.708

Aporte x Beneficiario \$2.808.423,34

TOTAL : 2.616.224.162

**Tabla 6.2.3. PRESUPUESTO GENERAL**

Noviembre de 2000

**ESCENARIO 3: MIXTO / TALLERES + ESPACIO PUBLICO**

ITEMS	AREA (Magnitud)	COSTO UNITARIO	COSTO TOTAL
1- LOTE	21,294	14,089	300,000,000
Subtotal 1			300,000,000
2- URBANISMO			

RECURSOS - DISTRIBUCION DE COSTOS	Beneficiarios	ETAPA 2 COSTOS
Alcaldia		
300,000,000		
300,000,000		

ITEMS	AREA (Magnitud)	COSTO UNITARIO	COSTO TOTAL
3- ARQUITECTURA			
VIVIENDAS / Etapa 1	3,109.60	270,101	839,906,031
TALLERES - 6 MODULOS	951,15	355,839	338,456,655
LOCALES COMERCIO	264,94	249,415	66,080,000
SALON COMUNAL	189,33	508,862	96,342,841
GUARDERIA (m2)	143,02	355,832	50,891,117
BASURAS y VARIOS	36,78	779,774	28,680,080
Subtotal 3			1,420,356,723
Subtotal 2			895,867,438
Subtotal 1			300,000,000
Subtotal 1			300,000,000

RECURSOS - DISTRIBUCION DE COSTOS	Beneficiarios	ETAPA 2 COSTOS
Alcaldia		
300,000,000		
300,000,000		
0,60	0,10	
158,827,993	26,471,332	
	0,12	
	17,878,015	
	0,20	
	43,268,771	
	0,20	
	15,961,792	
0,50	0,10	
91,445,035	18,289,007	
250,273,029	121,868,917	
523,725,493		
	839,906,031	
		135,382,662,00
		96,342,841
		50,891,117
		282,616,619
297,834,073	839,906,031	
550,273,029	821,559,566	961,774,948
		282,616,619

RECURSOS	Subsidios
Alcaldia	
Forec-PAZ	550,273,029
Subsidios: Forec-hurbe	820,000,000
Aportes de los beneficiarios	703,400,000
Recursos x conseguir	258,374,948
	284,176,185
GRAN TOTAL	
	2,616,224,162

RECURSOS	Subsidios
Alcaldia	
Forec-PAZ	550,273,029
Subsidios: Forec-hurbe	820,000,000
Aportes de los beneficiarios	703,400,000
Recursos x conseguir	258,374,948
	284,176,185
GRAN TOTAL	
	2,616,224,162

Costo x Vivienda  
\$9,129,413,38  
AIU: 18%

**Subsidios**

FOREC: \$9'900,000 x 31 = 308'900,000  
INURBE: \$6'500,000 x 61 = 396,500,000

Aporte x Beneficiario  
\$2,808,423,34

TOTAL: 2,616,224,162

## 7. IMPLEMENTATION PROGRAM.

### 7.1. Community Organization Program.

According to the original working plan, the selection of beneficiaries had to be done before the Project designed was completed. This would have allowed to a) make a thorough study of their social and economic characteristics, b) know which or how much space they needed in housing, community facilities, and equipment, c) work on the development of the project with the selected group, and d) evaluate options for the community's productive organization. Unfortunately, the selection process is still going on, and it will be confirmed only when INURBE and FOREC should grant subsidies for housing.

Throughout the elaboration of the study, surveys and interviews were made based on preliminary listings of people interested in the Project—i.e., prospective beneficiaries. These listings were provided by the Office of Competitiveness and Economic Development. From this information, a profile of candidates was drawn. Such profile is introduced in this report. The formal presentation of the Project before the group with the highest chance to become part of the *Village of Life and Work* was done in a meeting on 12 September 2000. In addition, this meeting discussed the general guidelines for the organization of the community, emergency procedures and prevention, and the future of productive activities.

The following are guidelines with which beneficiaries—once they have been selected— could evaluate organizational possibilities and determine the procedures they would adopt. The participation of Municipality of Armenia's Office of Citizens' Participation and Community Action, Office of Competitiveness and Economic Development, Armenia's Chamber of Commerce, the National Learning Service, SENA (*Servicio Nacional de Aprendizaje*), the legal office of INURBE and Armenia's Mayor Office, is essential in this process.

#### 7.1.1. Organization Components.

The organization must respond to the following needs:

- **Construction of the Project.** For this process there are associations of community housing. They are civic associations with private rights whose objective is the construction of housing and the formalities to obtain resources, for example, from INURBE. These associations shall last only during the construction of the Project.
- **Co-Property Management.** It comprises the definition of statutes and norms to handle and manage private areas of housing units, their zones for extensions, community zones of which co-owners have a share of participation. The Project is thought of as a co-ownership managed by an association according to legal norms established by Colombian law. The association shall last as long as there are co-owned goods to take care of. The co-ownership must evaluate the legal terms and implications of profiting from workshop areas and public spaces, and which of these profits the Municipality ought to share with the community.
- **Management of Prevention and Emergency Assistance Related Activities.** It can be led by a community action association from the Project, but it can also have the participation of inhabitants of the sector. This is an organizational model established by Colombian law.
- **Management of Productive Activities Affairs.** It can be led by a cooperative that deals with the specialization of artisans, or by various cooperatives that join artisans according to their specialization. This organization manages resources related to credit, training, promotion, sells, etc., and it can be conceived of as a Community Foundation.

#### 7.1.2. Organizational Options. Figure 7.1.2.

One single body may be created in order to organize the community formally. This association would develop all processes just described immediately above, or differentiate activities by



assigning an independent organization to each one of them. Having a well defined and independent administrative management of resources for housing and workshops is the purpose of creating two or more organizations.

Whatever option that should be chosen must consider the following aspects:

- Education and information.
- Production.
- Culture and recreation.
- Discipline and conflict resolution.
- Finances.
- Health and environmental improvement (cleanliness and garbage control)
- Environmental and risk management.

## 7.2. Construction Timetable.

### 7.2.1. Key Deadlines of the Project.

a). **Submittal of Reports and Documents by JICA.** According to recent adjustments and changes in the timetable, JICA shall submit all its reports to the Executive Unit the first week of December 2000. These reports are the ones established in the Cooperation Agreement. Once they shall be submitted, the Executive Unit is responsible for the development and execution of the Project. This includes architectural direction and any additional studies that should be needed.

b). **Licenses and Procedures to Obtain Subsidies.** The deadline to submit documents to INURBE and follow steps required to gain subsidies was 16 October 2000. By then, the Executive Unit had already been granted the Urban License for the construction of the Project with the documents that, up to that date, JICA had provided so far.

c). **Development of the Project.** The sequence and the duration of bidding, contracting, starting and finishing work are shown in detail in the Project's Technical Annex.

### 7.2.2. Selection of Contractors.

In the selection of contractors for the construction of the Project, COFAMA must follow the norms established by FOREC. The Municipal Fund for Housing must follow public contracting regulations.

a). **FOREC's Contracting Rules.** Depending on the sum and the characteristics of the Project, contracting can be treated as an international public bidding, a limited international bidding, a national public bidding, price comparison, direct contracting or through administration. FOREC follows the World Bank's recommendations regarding the allocation of sums. In this particular Project, norms for national public bids can be followed, since they apply to works with an estimated cost equivalent to US\$5,0 million or less. The Zone Administration Manager (COFAMA), with FOREC's advise<sup>9</sup>, can convoke highly credited contractors directly. Constructions with an estimated cost equivalent to US\$500,000.00 or less, up to an additional cost of US\$3,0 million can be contracted by awarding the total sum as a fixed price through quotations provided by at least three highly credited contractors in response to written bids. The bid must be awarded to the contractor who not only offers the lowest price, but also owns the experience and necessary resources to finish up the works satisfactorily.

<sup>9</sup> In general, Zone Administrations are to consult FOREC about the use of this approach in all contracts above US\$2,0 million. Likewise, FOREC is to consult the World Bank about contracts above US\$3,0 million.

b). **Municipal Fund for Housing.** It follows the Law 80, known as National Contracting Law, commercial civil legislation, and private law when contracting, for instance, with NGOs. The process requires having minimum three quotations from applicants, proving experience with the type of work that will be executed.

### 7.3. Operation Program for Community Sustainability.

The project includes both environmental and economic components, and its permanent validity depends upon these factors. The environmental component refers to dealing with emergencies, and reducing chances of being subject to risks. This environmental factor is related to the organization of the community, the execution of the Neighbor Emergency Plan and, the cultural, educational, recreational, environmental recovery, and health committees. All this will depend on the Community's Organizational Program.

Economic strength depends upon the productive structure adopted by the community. The project is designed so that amounts collected from rent of workshops guarantee a steady income for maintenance of all facilities. Nonetheless, this does not guarantee the success of productive activities nor of family sustenance.

Two options to approach the management of the project's production structure are introduced below. The organizational approach that the community should choose shall be supported by JICA, based on the business assessment and preliminary training plan made by *Compartir* Foundation once recipients have been selected. This assessment, which will be done from 11 to 15 September 2000, will be a supporting tool for the organizational activities that the Performing Executive has planned. The training plan identifies the activities that the community will execute, as well as their duration and cost.

#### 7.3.1. Option 1: Design of a Productive Project.

It is based on the creation of a type of association such as a co-op, a foundation or business with production objectives in the short, medium, and long run. Especially while starting, this option needs a considerable financial support for workshop setup, proper furnishing of workshops, marketing survey, technical and administrative instruction or specialization, etc. In the project, artisans would be producing or working as a team to deliver orders on time. There would be an efficient internal organization for a common aim. The business assessment and the training that this approach would provide would allow to develop the following steps while the project is being done:

a). **Inventory.** When recipient families have been finally selected, their type of manufacture, experience, and working hours per week are determined.

b). **Identification of Key Products.** Most frequently produced articles are known through the combination of variables. Thus, the time spent in the production process and the degree of expertise in the elaboration of each item is also calculated.

c). **Marketing Survey.** It will identify the degree of acceptance to selected items among consumers, and perspectives of potential markets as well.

d). **Support.** Technical support to this type of manufacture ought to be found. Such support would help determine and achieve better quality standards in productive processes, marketing strategies, and the use of appropriate workshop machinery.

e). **Managerial Training.** The *Compartir* Foundation could make an assessment of the managerial aptitudes of recipients, as the basis for the design of a detailed training plan. This will

enable recipients to know basic principles of book-keeping and marketing applied to their products.

**f). Ways of Association.** Based on the training mentioned above, ways of financing and managing the various workshops, as well as the distribution of profits, will be established.

**g). Workshop Furnishing.** A program that should include this point must be designed, specifying how it will be done.

**h). Execution of the technical support plan in order to comply with production and quality standards.**

**i). Execution of marketing and management plans.**

### **7.3.2. Option 2: Designing a Subsistence Plan.**

This option presupposes that each recipient rents a workshop space and acts independently. The plan does not include the creation of organizations or associations in order to achieve long-run objectives. It is an individualistic option, whose success would depend on each beneficiary's ability to carry out his or her plans. Some people would share a space but would not have a common project. Clearly, setup costs would be much lower in contrast with the previous option. Possibilities to compete in major markets would be highly limited. The purpose of this type of program would primarily be to offer an alternative for extra family income, complementary to other activities. In this case, the training plan would stress:

**a). Inventory.** When recipient families have been finally selected, their type of manufacture, experience, and working hours per week are determined.

**b). Identifying Workshop Areas.** The information on point a) above will help identify space needed in each of the workshops.

**c). Survey.** The information above must be complemented with a survey among workshop users in order to draw information about machinery and utensils they have to make their products, space needed for their activities in the workshop, and approximate number of hours spent in the workshop under rent.

**d). Allocating Spaces and Setting up Rent Prices.** Based on information b) and c), spaces for different workshops are assigned depending on products. In order to set up rent prices, an estimate on fixed and variable workshop-running costs of must be calculated.

**e). Training.** The *Compartir* Foundation could train workshop-users on business management and basics about book-keeping, costs, and marketing. Thus, artisans would think of their activity as a productive business. They would also widen their own entrepreneurial perspectives searching markets on their own, and know key clues to start up their own businesses.

**f). Technical Assistance.** As in the previous option, finding technical assistance is convenient as it helps improve quality and productive processes.

### **7.4. Operation and Maintenance Plan.**

The operation and maintenance plan identifies the activities that the community must carry out so that the medium and long run tasks for which the Project was designed can be accomplished.

This plan takes the organization of the community for granted. Such organization would allow

residents to take care of public spaces, workshops, facilities, and equipment that the community will be given under a contract of loan and restitution signed with the Municipality. Also, there will be a program to keep and regulate the use and operation of public and private spaces in the co-property.

In order to define this plan, each of the technical advisors made a listing with the activities that should be done, taking into account the resources available and the design specifications of each of the following components.

#### **7.4.1. Operation and Maintenance per Component.**

**a). Public Spaces.** These are the plazas and sidewalks that compose the Type A Transfer. It will be given to the Municipality as part of the urban process. Later on, the community will be in charge of this Transfer through a contract of loan and retribution. The following elements are worth noting in this group:

- **Gabions and Slopes.** Permanent work is needed to guarantee land stability through good maintenance both of 50<sup>th</sup> Street and Venus Stream. Maintenance implies a permanent care of the vegetation that protects slopes as well as civic campaigns so that the community itself takes care of these spaces.
- **Plaza of Events, Squares, Sidewalks, and Cobbled Pathways for Pedestrians.** In addition to permanent care and cleanliness, the community needs to establish policies to use the Plaza of events as a place for fairs, shows, and training activities in case of emergency. These factors ought to be guaranteed: streetlights, future replacement of outdoor conveniences (public phones, benches, street signs, etc.), when the community should have enough monetary resources to make this kind of investment.
- **Parking Spaces.** Since parking spaces are meant to be used both by residents and those who will go to commercial stores, regulations must be enforced to determine a) which vehicles will be allowed to use the parking lot, b) ways of loading and unloading, and c) security.
- **Venus Stream Park.** This part of the Project requires special care to guarantee the stability of the terrain, the protection of slopes, the preservation of the vegetation, and security in the zone.

**b). Road System.** The Project has two internal roads that require special attention: the way of access, heavily and permanently used, and the way for services and emergencies, occasionally use. The rest are peripheral urban roads whose maintenance is done by the Municipality. In relation to the road system, maintenance is defined as the group activities that must be constantly done in order to preserve adequate standards of service of all the elements that are subject to the normal influence of traffic and to the forces of nature.

- **Routine Maintenance.** It means the group of actions that must be taken in order to preserve the perfect level of service and operation of flexibly or fixedly paved roadways, street signs, and other infrastructure. The community that should receive Type A transfers through a contract of loan and restitution—among which the road of access is included—must do the activities described below:
  - Maintenance of road finished surface. The road finished surface must be kept free of flaws such as longitudinal and transversal fissures, cracks, potholes, shelling, loss of adhesive film or aggregate, etc. The "National Road Institute's General Specifications of Road Construction Manual" is available to follow repair procedures.
  - Maintenance of roadways, curbs and ditches, and shoulders. They should not have obstacles nor suffer landslides that could limit or interrupt a) the traffic, or b) the flow of rainwater through and toward drainage systems.
  - Maintenance of drainage system. It should guarantee the adequate drainage of rainwater by cleaning, repairing, or reconstructing the drains.
  - Maintenance of structures. Thus, retaining walls and slopes along the roads should operate

- well and provide a good service, guaranteeing the safety of pedestrians and drivers alike.
- Maintenance of horizontal and vertical signal systems. It must be enforced in all sections of roads so that their operation is guaranteed in terms of reflectiveness, cleanliness, and other basic conditions that street signals must have.
- Maintenance of various outdoor conveniences. It relates to public phones, benches, street signs, bus stops, and service areas that must be painted and repaired whenever it should be needed, or at least once a year.
- **Periodic Maintenance.** It is the group of conservation activities that are regularly done at relatively long periods of time. The purpose is to mend the deterioration of road finished layers and structures produced by traffic and other external factors.

**c). Tap water and Sewage Systems.**

- **Housing's Hydraulic Internal System.** The connection between wall-emerging couplings and equipment joints must be checked periodically in order to control water leaks. The floating system of toilette water tanks must be checked also.
- **Housing's Internal Installation of Sanitary Systems.** To avoid clogs, the system must be checked from the internal flush to the waste pipe. The same must be done with floor drainpipes and sinks.
- **Sewage Systems.** Cleanliness must be checked and solid materials must be removed from tanks and inspection boxes of rainwater and sewage systems. Ditches for rainwater must be free of sand and litter.

**d). Electrical Power System.** In addition to keeping streetlights, wires and accessories properly, and guaranteeing the permanent operation of community and public light, the following aspects of the Project's electrical power system are strongly recommended to keep in mind:

- **Transformers.** Check at least once a year the level of refrigerating oil.
- **Connections.** Provisional connections must not be allowed; nor modifications made by individual users must be permitted unless such changes are previously checked and technically approved by the administration.
- **Emergency Plant.** It must be turned on at least once a month. The level of liquids must be checked in the starting batteries.
- **Tree Planting.** The growth of trees must be controlled near electric wire systems and transmission lines. This requires permanent trimming.

**e). Community Spaces of the Co-Ownership.** They are the pedestrian pathways that lead to housing units, common patios, ways of access to workshops, and the borderline of the Venus Stream Park. These places need care, cleanliness, security, and maintenance like the ones on public spaces of the Project.

**f). Housing.** The critical point is to keep the seismic-resistance conditions of the structure. The first stage must keep its structural integrity without making third-floor extensions. Any extension in mind must be done according to the specifications of the project's architectural drawings. The community must guarantee this with a strict control.

**g). Community Room.** This construction requires a special treatment to ensure that it plays its double role as a site for emergencies and as a meeting place for social activities in the community.

- **Emergency Procedures.** The community must ensure that the communication system, the power plant, and the water tank are in optimal conditions to work well. Also, the community room must be tidy at all times. Its equipment, and security must function properly to be able to take care of an emergency. In addition, there must be funds available for permanent training in emergency procedures.

- **Community Activities.** To run the room, the community must organize itself to schedule events, raise funds to pay for utility services, guarantee the furnishing and conservation of the place, etc.

h). **Day-Care Center.** In addition to the building itself, its daily management, including personnel, equipment, food, public utility services, etc., ought to be considered. This management may be run by the community along with the Colombian Institute of Family Welfare (ICBF). Thus, the allocation of funds and the monthly administration quotas that users must pay can be determined.

i). **Workshops and Commercial Stores.** These constructions require permanent maintenance. The type of maintenance and its cost depend upon the use that is given to each module. Routine activities should ensure cleanliness, proper operation of utility systems, security, and finishes of walls, floors, and structure. In addition, heavy productive activities require special maintenance and management of cleaning services, loading and unloading, extra consumption of services, etc. The community must be highly organized to determine payments, control, and responsibilities of each beneficiary.

#### **7.4.2. Resources.**

Maintenance is closely related to availability of resources for personnel, equipment and materials. The following are some of the options that the community has to ensure permanent funds for the running and maintenance of the Project.

a). **Renting Workshops and Food Stores.** This is the main source of permanent funds. If each rented square meter costs Col.\$5,000 (this sum is similar to the one that beneficiaries pay for rent), the co-ownership can gain Col.\$5,000,000.00 a month for renting approximately 1,000 square meters<sup>2</sup>. Annually, this sum corresponds to approximately 5 per cent of the cost of constructing the infrastructure that should be kept. Designers and advisors of the Project consider it to be tight budget but reasonable if it is invested in preventive measures and the community is widely involved in taking care of the facilities.

b). **Administration Payments.** Each housing should contribute with a monthly payment, even if it is practically insignificant or symbolic in order to keep cleaning maintenance and security. If each housing pays Col\$10,000.00, Col\$920,000.00 can be collected monthly. This payment strengthens people's sense of community, belonging, and co-ownership.

c). **Institutional Income.** Additional income may come from possible donations by national or international entities, such as, for example, the Red Cross and nations that have collaborated in Armenia's reconstruction. Additional resources may also come from entities that deal with local and national emergencies. These organizations could donate equipment, help set it up, do maintenance to it, and give funds for a program to organize the community. Seeking support from the Colombian Institute of Family Welfare is highly advised.

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<sup>2</sup> This sum does not include normal costs of public utility services, cleaning and garbage services, security, fixing damages in the construction due to the normal operation of each of the productive activities. Each user of the workshops makes a general payment according to the space he or she uses, and another payment that depends on the consumption of services and other costs directly related to his or her productive activity.

