

Pedestrian Access

...In Puerto Rico



**Tren Urbano Project
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Tren Urbano has been designed to ensure and promote the continuing vitality of the San Juan Metropolitan Area, by providing clearer and better access. Tren Urbano must also assume the responsibility for the growth that will occur around the transit stops, as well as take into account how residents of these areas will access these stations..

The roles of stations are extremely important, whether they are stops for buses or full fledged intermodal facilities. These facilities were once located in the main plazas of towns in Puerto Rico, but have been removed to their own barren plaza sites. These new transportation plazas, in keeping with tradition, must now assume the role and develop into town plazas. How one gains access to and from these “plazas” plays an integral role in the integration into the community.

This research has been focused upon exploring both the historic development of public spaces, particularly specific to Puerto Rico, and how transportation has affected pedestrian environments. This paper will explore pedestrian access to and from the transit stops, focusing upon the proposed station at Minillas as a case study

How one accesses a transit facility is as important an issue as how the transit mode arrives to a site. The term “access” can be looked at in two ways, according to the Oxford English Dictionary, access refers to “an approaching or a coming to or towards something” and “a way or means of approach”- an entrance, passage, doorway. These two definitions provides one with both the *path* and the *gateway* as the building blocks from which access networks can be explored and developed.

What constitutes good (and bad) access? What are the issues that arise? The paths created, what are their roles? Assuming they are a form of walkway, is there a hierarchy or structure to how they are developed? Architecture serves not only as a place for activity to occur but also as a sign that it does. Is the space formal, casual, protective? What is the role of places over time? Another important question to ask is how accessible is a facility or amenity- does the existing fabric allow admittance or approach? What is the quality of doing so?

Role of Public Places

Public spaces, both paths and places, have played integral roles in all cultures, are representational of different forms of social interaction, and are functions of culture and physical elements. The activity which occurs, is based upon the unwritten rules of the society such as customs, traditions, habits, and the prevailing lifestyle and definition of activities appropriate to the setting. One could argue that the role of a public space is to provide for freedom of actions, protect the right to stay inactive, and generally, “ensconce community and to arbitrate

social conflict”¹. When developing public space, a fine balance must be determined between the natural process of growth and development, and that that which is physically planned and programmed.

The idea that open space has a role and belongs to society is an old one; the Greek Agora, the Roman Forum, the market in the Middle Ages. The Plaza, as developed in Spain as the “plaza mayor” was originally an extramural market, a site for bullfights, festivals, and public gatherings. Traditionally, there was no Church in these plazas. This is conveyed further through the treatment of the church in the Laws of the Indies, in Law 118, the churches were to be given space in the smaller plazas, only after the main plaza and streets had been laid out. This is an important distinction to the rather traditional view of the center plaza being the location of the church. In the smaller Spanish towns, the church was put in or next to the plaza. This also occurred when the town was founded by religious dignitaries.

Public space is defined and judged by its provisions of needs, rights, meanings, and physical qualities. Comfort, is a prime need for humans, and is judged through relief from the sun, wind, rain, as well as provision of seating in order to provide a break from walking or other activities. The more comfortable a person is with the site, the longer they will stay, and the more often they will reuse it.² There is also the need for social and psychological comfort. The provision of visual access in and

¹ Kostov, Spiro. *The City Assembled*. p. 124

² Carr, Francis, Rivlin, Stone. *Public Space*, p.94

out of the site is also important to a sense of comfort and safety.

As public spaces have developed, the most successful ones have included places for discovery- unpredictable spaces, stimulation's, changes in physical elements and activities. There are also issues of how well spaces appeal and treat the traveler versus the bystander.

Relaxation may be provided through places or respite from surrounding conditions, for example, having someone's first floor window or door face the public space along these routes. Water is also a major component to relaxation, especially within an urban environment because it adds a counter of nature to the built surroundings. Are there activities for someone to relax by passive or active engagement?

In today's society, the pedestrian environment among the streets has been overtaken and controlled by automobiles, buses, trucks and other modes. No longer do streets belong to people who walk and conduct business on them. The street has literally become "channels for vehicular traffic."³ Tren Urbano poses such a threat to the environment of Puerto Rico. Some ways to alleviate the stress created by technology is to control speeds, regulate emissions, reduce congestion by adopting new or alternate modes of transportation. An obsessions with efficiency has taken over, with the growing use

³ Moudon, Anne Verez. Public Streets for Public Use, p.290

of transit. A good public transportation network can substantially add to the quality and experience of the city.

With the multiple modes of transport, the planner must account for various experiences- that of driving, walking and riding transit. Pedestrians can fully experience the environment. Drivers receive a filtered experience due to speed and physical constraints of the vehicle. Distant views are more apparent than immediate perceptions- unless of course you are stuck in traffic. The use of cellular phones also adds to this.

Riding transit requires low concentration, and can let the traveler be oblivious to surroundings- pedestrians have to watch where they are going, transit riders just have to be cognizant of their wallets, and what stop they need to get off at. The transit vehicle provides an additional environment⁴. The rider has the choice of focusing attentions on either the inside experience or the outside one. The outside one is constantly changing, however the inside one has a continuity over distances.

⁴ Moudon, p.293

Examples of Paths and Places

Access is composed of paths and places, that work together to form public spaces. However, the path and place each possess qualities that are unique.

PATHS/STREETS

"...streets are the more or less narrow, linear spaces lined by buildings found in settlements and used for circulation and, sometimes, other activities⁵." Streets also define the city. They act as a back drop for the theater of life, cultures and classes, and are regulated through codes in traffic management, sidewalks and paving, and buildings.

Streets may be used to deal with

- * Technology
- * Safety- traffic, crime, and perceived safety
- * Environmental variables- noise fumes, congestion, quality of paving
- * Climate and weather
- * Topography
- * Distance- subjectively defined distance
- * Availability and presence of services
- * Culture
- * Physical, perceptual characteristics- adequate interests that will support activity⁶

⁵ Moudon, p.81

⁶ Moudan. p. 81

Streets in low-middle density settings have different characteristics than those with higher density. In lower density areas, activities are concentrated around the residential units, but also integrated with the other units. Hence, the boundary between public and private is vague. Higher density areas can achieve the high-rise/residential/commercial mixed land use.

Pedestrian and non-pedestrian movements provide one with different perspectives. Non-pedestrian refers to cars, buses, other modes of movement. Pedestrian movements may be either static or dynamic. Is the street condition supportive of pedestrians. Whether there is a sidewalk has little to do with the success, what is important is the relationship between users, and the qualities of the street- is it cared for? Is it possible to interact with inhabitants of buildings through stores, gardens, windows, porches? Speed of traffic? Needs for pedestrians is different than needs for vehicle operators. Pedestrians "...can use and desire, much more acute and abrupt transitions in space, sensory experiences, light levels...Only they can notice and respond to the variety of stimuli..."⁷

The scales of the streets is important, they may be boulevards, where car, bike messengers, and pedestrians mix (figure 1). Or a street may be big enough for one person to traverse (figure 2) or for many people (figure 3).

⁷ Moudan, p.88



Figure 1: View down street in Taipei

One of the major issues underlying the streetscape is the border between public and private spaces. Quite often it is easy to define what is public and what is private, however, the boundary is gray. It is this boundary that helps to make a place, street, park memorable.

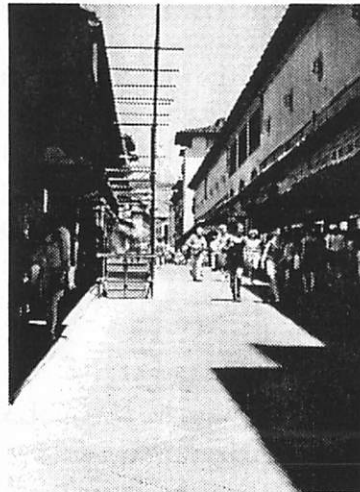
The interaction a traveler can have with his/her environment

contributes to the feelings of comfort and safety. The ground floor /street relationships is particularly important to this definition of border or lack there of.



Figure 2: Path in Taipei

Figure 2: View across Ponte Vecchio(right)



PLACES:

Types of space may encompass formal, casual, protective, and linear spaces. The term *place* in French refers to the built plaza. Generally, places will be looked at as plazas, or areas for one to stop and not be part of the path of movement. Needless to say, places and paths act both as networks, as well as layers that work within each other. Historically, the assignment of spaces has included: the Civic Center, Market Place, Place d'Armes, place for games to occur, and residential. There is also a smaller dimension, for communities, perhaps it is a shared garden, a stoop or bench where people hang out.

Some of the particular issues are:

Claim: A successful space will let a single person "claim" an area, whether it is a patch of dirt to plant flowers or a park bench(Figure 4), the place should also let a collective claim the space such as a community.



Figure 4: Central Park

Change: How a place changes over time, during a day or over years, helps to identify it. The physical space may not alter much, but its inhabitants might, will the space allow for this? Figure 5 shows a plaza in Hong Kong , the character changes over the course of the week, as well as during the day.

Equity:

Does the space allow for anyone to access and enjoy it? A place may be gated, but providing one with visual access is also important, and adds to the experience of passing by.

ROUTES: PATHS AND PLACES

When combining paths and places, routes form to provide access. A route may simply be a path that connects two places, or it may be a series of paths that travel through multiple places, and end in a destination. An example would be the route one would take from home to work, chances are you pass through various places, and move along various paths. Figure 6 shows a view through a house in Old San Juan, that demonstrates the passage, courtyard progression. It also references the ambiguity of public and private spaces.

There is also the responsibility that a path and routes should be sensitive to times in the day. One might argue that a successful network of paths and places functions well during rush hours, after school, at nights, and on weekends. In order for this to happen, the paths and places require multiple uses and layering of programming. For example, a pedestrian path that someone may walk along during the day may be used as a passage at night given there is lighting to guide the way.

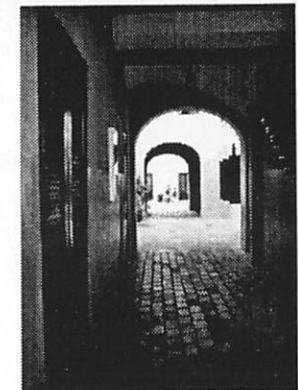


Figure 5: View of plaza in Hong Kong (Top)

Figure 6: View through house in Old San Juan

History of Urban Growth

Founded in 1493, Puerto Rico was not formally settled until Ponce de Leo surveyed the land in 1508 and founded the city of Caparra. Because of the distance to a port, relocation happened to the islet of San Juan followed soon after. Today, almost nothing remains of this city, around it has sprung the San Juan region,, with Route 2 going through what was once Ponce de Leon's house in Caparra.

The Spanish's main objectives for founding cities in the Caribbean, was to convert inhabitants to Catholicism, exploit and extract island resources, colonize new frontiers, and establish a trade system as well as defend it. As a result, native populations diminished quickly, so did the labor force. Puerto Rico remained having Spanish inhabitants. During first two centuries, Spain used island as military outpost, and as a supply depot for expedition to the US mainland. Eventually, Puerto Rico was neglected in favor of other colonies.

In the 16th and 17th century towns were developed in San German, Coamo, Arecibo, Aguada, Ponce, Las Piedras, Boca Rio Loiza (basically these were distribute around the island) During the 1800s, only San Juan and San German could be considered real towns, the others resembled ghost towns due to the extreme poverty level, wealth was based upon land ownership and rural activities. Usually only the priest lived in town and the vecinos (neighbors) would come to town only on Sundays

In the nineteenth century when Spain relaxed trade restrictions, sugar, coffee, and tobacco became important export crops. Until then, the farmers could just produce goods for internal use, or contraband trade. Because of the growing trades in crops, regional subcultures emerged. First Half of 19th Century, Puerto Rico's status globally changes dramatically⁸ through the :

- Expansion of legal commerce with foreign countries
- Growth in production of commercial agricultural staples
- Reactivating of the slave trade
- Impoverishment of the traditional peasant society
- Influx of free immigrants to the island
- Sudden efforts for Spanish dominant classes to retain possession of Cuba and Puerto Rico
- Development of a plantation economy
- 1815 the Cedula de Gracias decree penned by Alejandro Ramirez; legal decree favoring the economic development of Puerto Rico

Urban Development

Catano and La Puntilla-Marina were the major waterfront developments⁹, and represented the first area of expansion from San Juan. Puerta de Tierra, the second area for expansion, occurred on the rest of islet that San Juan is on. Given that military restrictions prohibited development near the eastern wall of the city, the development occurred away from

⁸ Sepulveda, Anibal. San Juan de Puerto Rico: Growth of a Caribbean Capital City. p.207

⁹ Sepulveda. Ch. 7

the central part of town, and had residents that were primarily part of the urban service sector. Cerda's plan for Barcelona, Castro's plan for Madrid, and the expansion plans in Havana were basis from which a development plan for the area was formed.

Due to weak municipal control versus military, the plan didn't prevail for expansion of San Juan. The only land available for development was the land south of the main boulevard and part of the marshland. In 1872, due to expansion pressures, and health hazards, Fernando Cordoba prepared a housing development, park system and boulevard system, and a population cap of 20,000. This resulted in the promotion the Cangrejos (today Santurce) area for further expansion. Everything would be linked with by tramways, and a steam ferry to Catano. This discussion will follow later.

The transportation system to/from San Juan was one of the major forces in the development of the San Juan region. Two roads that led towards the eastern coastal plains: Camino de Loiza and Camino de la Laguna. One road led to the south via the Martin Pena bridge. Two roads led from Palo Seca to the south and western coasts.

Today, Puerto Rico has developed into an automobile based economy. Not only is it a status symbol to own a car, but it is also a necessity to have one. Those who live within the San Juan Metropolitan Area may use the AMA bus system but that is currently unreliable. If one wishes to travel along a certain corridor, one may take the Metrobus. The Agua

Guagua barely functions, and the publicos are localized services that transfers are probably required. In sum, residents of the SJMA really have no choice but to use their cars.

Space in Puerto Rico

THE DOCUMENT OF THE LAWS

By the end of the 700 year occupation of Spain by the Arabs in 1492, military camps were laid out as towns were seized back, resulting in a network of cities that served as defensive posts along lines of communication and supplies. Port cities were connected with those inland. The city became a symbol of empire, and "supremacy" of culture. In 1573, under the reign of Philip II, the Laws of the Indies were written based upon the development process of the past hundred years. It is important to note that these laws defined a process, not product, for urban development.

Although the first couple of centuries that the Spaniards inhabited the Puerto Rico, it was treated as nothing more than a military outpost, with soldiers being the primary inhabitant, the influence was great. The Laws of Indies, written under Philip II, governed nearly every aspect of life, and created a ruling system that gave privileged Spanish landholders higher esteem than the artisans, workers, natives.

Implementation:

Regularization included political, religious, social institutions, as well as physical structure of the cities. All decisions made

by the Council of Indias, that was based in Sevilla. A framework was defined for land distribution, and represented a process of layout rather than the type of city to be developed. Hence the *gridiron* plan- the most expeditious way to lay out a town, as well as the one that provided the most control.

Laws' also made reference to the positioning of certain activities. The streets, plazas, arcades were conditioned by the settlers interpretation of the vague prescriptions by the planners. Directions of streets and alleys laid in lines of divisions between the 4 winds so that the force of the winds will be shut out from homes and the lines of houses, four corners of plaza will face four corners of the winds.

Plaza:

rectangles, length is at least half as long as the width. Size should be proportionate to the number of inhabitants. Should not be less than 200 feet in width, and three hundred feet in length, and no greater than 800' in length and 532 in width. Around the plaza and the 4 principal streets that start from plaza should arcades. The arcades should not block the juncture with the plaza. If town is in port, plaza should be in harbor, if inland, plaza should be in the center

Notable Buildings:

Church, palace, town hall, customs house, and arsenal. Inland church should not be placed in plaza, but in a place that is seen by all. The other buildings mentioned should be placed in the town -plaza to give the church more importance
-Santa Fe, Spain- probable prototype for cities in the new world

General Observations:

- The scales of blocks, arrangements of rooms/spaces within buildings, and scale of sites are not defined by the Laws.
- streets in hot places shall be narrow
- Building lots in main plaza not to be distributed to settlers
- rooms of houses should be arranged to receive the air from the south and north
- houses should be arranged to serve as a fort
- Tomas Lopez's Ideal Urban Plan :1787

7 blocks by 7 blocks with the center left for the plaza and the church adjacent to it. Each block appears to be about 60x60 meters.

The tendency was to have the main plaza and one street serve as the primary activity areas. The late 18th century represented the first real social differentiation displayed through architecture. House for the rich are spacious with large doors and windows, built of stone, spacious balconies, and having flat brick roofs. The 2nd group live in small masonry houses covered with bricks and being only one level. The poor live in houses built out of canes and palm leaves and covered with thatch¹⁰.

¹⁰ Sepulveda, p.175

ARCHITECTURAL DEVELOPMENT

As mentioned above, these areas, as well as the Minillas area in Santurce is primarily residential. It is therefore important to understand the types of buildings as well as their relevance from a sociohistorical perspective. Much of the following analysis was formulated previously by Carol F. Jopling in her book Puerto Rican Houses.

Until the late nineteenth century, houses are constructed primarily of wood, and had thatched palm roofs. Puerto Rican society evolved primarily from three ethnic groups- the Taino Indians (an Arawak people), Spaniards, and black Africans who were brought over as slaves. Resulting, architecturally is a layering of styles.

The Bohio:

Attributed to the Taino's, these were a two-room house built of timber frame, walled with cane. Today, while these houses are represented only in folklore, they had a significant influence on the ordering of spaces in subsequent vernacular houses.

According to Christopher Columbus's records, the Bohio's faced a square or plaza. The bohio's were round but adapted to the Spanish influence and quickly became rectangular. Some of the bohio's had their roofs extended to form a porch which served as an entryway or reception room. This idea of various public/ private spaces is one of the most important elements in Puerto Rican built form at all scales. Eventually, the bohio's became homes primarily for the lower class and the poor.

In 1532, Royal officials decreed that every one in six workers had to be a Christian, as opposed to a black African, in order to minimize cause for rebellion. Free black African refugees were allowed to form a colony at San Mateo de Cangrejos (Santurce). By 1834, racial categories had disappeared, and people were grouped according to occupation; slave, soldier, freeman. As society stabilized, the houses became more refined. Initially, the house was a fortress for the Spanish, and displayed status distinction through materials and decorations.

Town Houses:

Features are reminiscent of Victorian Europe, New Orleans Creole, hence the style name of Criollo or Criollo Pueblerino. Details include pierced wood fanlights, balconies with wrought iron railings, slanting high-pitch roofs. In the San Juan area, more solid Mediterranean architecture continued. Well proportioned facades, balustrades, plans which included interior patios. Evolved was the Criollo Neoclassic style which had half-circle window arch transoms, stained glass panes, pilasters, double jalousied doors. The development of the middle class created the Pueblerino (vernacular) which are painted bright light colors- green, aqua.

Eclectic Styles:

After the US took over Puerto Rico, they underwent a drastic change in lifestyle, governments, Frank Lloyd Wright was a major figure for Puerto Rican architects with Prairie, Bungalow, Spanish colonial Revival houses. Today, the well to do, have designed houses, the middle to lower class use paint and decoration to add personal identity to their house. The

poor live in Arrabel houses which are off-shoots of the Jibaro house, personal creation of the owner.

Social implication of the house form; preference for single family home, reflection of the change and continuity, as well as the complexity and differentiation that each building strives for.

Relation of house to environment and its locale. prevailing winds, and sun are major design issues. Traditionally, Puerto Ricans have not found a sea view to be wanted. Old San Juan's residential area is within the heart of the city. Sense of place, and relationship to a particular area is an important marker (p. 199). Strong bonds to town, region, and family. Wealthier houses were distributed around town plaza. Distance from the town center indicated social status, now due to transportation, this is no longer an issue.

Exterior spatial organization:

Indicator of desire of interaction with the surrounding elements- street, other houses- issues of level of private/ public spaces.

SAN JUAN REGION PLANS

In 1956, the Puerto Rico Planning Board developed a regional plan for the San Juan Metropolitan area. The plan viewed the San Juan area as the "fundamental pillar" of Puerto Rico, where Santurce and Rio Piedres were the major areas for growth, and Bayamon, Carolina, Guaynato, and Catano as the smaller growth areas. This still seem to hold strongly true for

today. Of great importance to this plan was the development of a Metropolitan Park System. Through this a hierarchy of spaces was developed and assigned to areas through population density numbers (example, a "community park" was assigned to groups of 50,000-100,000 persons). The following is the system developed:

1. Local Park System
2. Community Parks
3. Town Parks (30 acres for 40,000 persons)
4. District Parks
5. Neighborhood Parks, Playgrounds (5 acres for 5,000 persons)
6. Paseos for passive recreation. 60-120'
7. Provision for a continuous waterway system- hence the Agua Guagua

While the 1956 program was rigid, it does mean that there is an underlying desire and plan for open space in Puerto Rico. The need for a mixture of private housing, commercial and public institutions was also seen as being integral to the plan.

EXAMPLES OF HOW SPACE IS USED

A common theme in the towns of Puerto Rico, regardless of size is the placement of the church, and town square. In the smaller towns, often the church is within or along the plaza. The following are studies and example of several towns in Puerto Rico that range in size. While they are fundamentally the same, several ideas have been interpreted differently and fit the needs of the given community.

BAYAMON

Located to the south west of San Juan, this town is one of the end points for Tren Urbano. There are 217,879 inhabitants, accounting for 16% of the region's population. Unique to Bayamon, is the mixture of pedestrian only paths with the monolithic structures used as a Publico terminal, and other government offices. The main pedestrian path leads from what is currently a parking lot, but will be the location for the Tren Urbano station, and meanders up into a corner of the town plaza. Along the path is a mixture of old and new architecture, varying forms of shade, vegetation, places to sit (see figure 7), as well as changes in elevation. The light fixture reminiscent of boulevards that you might walk down in Europe.(see figure 8)

Where the path intersects with the street, bollards have been placed to halt traffic from parking and stopping. Paving has also been added into the cross walk to give a sense that the pedestrian path has the right of way over the vehicular street. These surrounding streets have narrow sidewalks and mark a dramatic difference from the pedestrian path.

The scale is also important. The path is small enough to afford some privacy, yet wide and long enough to let various activities occur (see figure 9). The stepping up to the plaza also provides a series of paths and places along the way, while maintaining the visual access.



Figure 7



Figure 8



Figure 9

PONCE

Historically, the southern port of Puerto Rico, Ponce is unique because of the extensive historic preservation and renovation process it has undergone. Wires have been put below grade, removed from the human eye, streets are clean, and the architecture has a different feel than that on the north side of the island. Main interesting points for pedestrian access are the plaza- with the firehouse (Laws of the Indias) is placed, the entrances to housing, and the pedestrian mall.

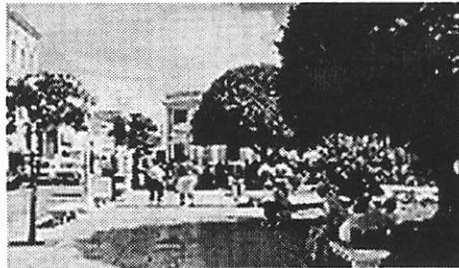


Figure 9

The Plaza: (see figure 10)
The plaza provide a variety of sitting places, trees groomed to form an umbrella of shade, and several water fountains which are welcome in the heat. Users of the plaza have the option to become

active or remain passive with the ongoing activities. The Firehouse, with its bright colors offers an unusual place to explore.

The Pedestrian mall which connects to a corner of the plaza is not as successful as the one in Bayamon. There is a lack of shade. (see figure 11), it is difficult to walk through due to the width and the number of vendors and carts. The vendors set themselves up in the shady spots, so if one is not shopping, you have to walk in the sun. At the intersections with streets, the

street rises up to the sidewalk level of the mall. The mall is an active place, where one cannot go to rest. The other pedestrian mall attached to the plaza is barren during the day, but has life at night. Ideally, one would want the best of both malls combined into one.

Typical Houses- (see figure 12)

With the side stair, a veranda is formed, providing a clear stratification of public to private space through having to change elevation to enter. This elevational progression into the house is different than the usual horizontal/ linear progression into the house

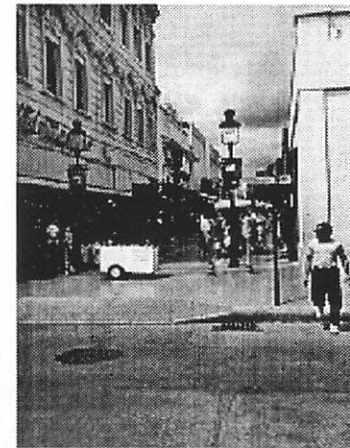


Figure 11



Figure 12

OLD SAN JUAN

Settled in 1493, Old San Juan represents one of the oldest Spanish settlement cities in the Caribbean. The four plazas each house different functions: the port, the main center, the church, and the theater.

Streets have to cover great changes in topography (see Figure 13), and do so using different paving. The architecture (balconies) and the vegetation provide for shade. The houses offer the passer by a view of the progression through the passages and courtyards, removing a sense of strong public/private. Unlike Ponce, where the verandahs act as the mediator between public and private, in Old San Juan, the mediator takes its shape in the details of each house through shutters, doors, planters that individuals have put on the sidewalk (see figure 14).



Figure 13



Figure 14

SUMMATION OF ISSUES

The major issues that have come to light when looking at Puerto Rican examples of space are dealt with are:

- how topography is dealt with.
- treatment of the Public/private
- Pedestrian only vs. mixed use
- Historical/controlled vs. natural development process
- Building typology
- Climate

The following section *explores* the development of prototypical paths and places that are indigenous Puerto Rico, and relate to common perceptions of access. Based upon precedents, primarily in Puerto Rico, the prototypes were developed to reflect what works in terms of paths and places, as well as how the existing may be improved.

Pedestrian Space Typologies								
Classification	Transport Modes				Building	Building		
	Vehicles	Transit	Street	Sidewalk	Heights	Use	Comments...	Precedents
Primary	Yes	Yes- Publico and AMA/Metr obus	4-5 lanes at 3.5 meters each, one lane for transit bus use only. No Parking	Minimum 4m. sidewalk both sides	5-20 stories	Primarily Commercial, institutional, some residential above ground level	These are the main organizing streets where pedestrians must fully integrate themselves with all forms of activity. Generally, these streets emerged due to linear growth from Old San Juan	Ponce de Leon Avenue
# 1								
Secondary								
A	Yes	Publicos	2 lanes of travel, with parking (3m each) on both sides	1-2 m. wide both sides	3-7 stories	Commercial first level, with residential above	This street is used as a connecting street between primary roads	Ave. De Diego (existing)
# 2								
B	Yes	Publicos	2 lanes of travel with one side parking	Side with parking has 1-2m sidewalk, other side has 3-4m sidewalk	3-7 stories	Commercial first level, with residential above	Often, the 4m sidewalk is not all pavement. In some cases, cafes have seating or people have put planters out. The quality of the street has changed more than the physical spaces	Some of the streets in Old San Juan.
# 3								

Classification	Transport Modes		Street	Sidewalk	Building Heights	Building Use	Comments...	Precedents
	Vehicles	Transit						
Tertiary								
A # 4	Yes	Maybe Publicos, not part of route	One lane travel, parking both sides	1 m, if any	1-5 Stories	Primarily Residential, with some commercial (Mom & Pop stores) on ground level	The sidewalks along these streets usually have cars parked half in driveways and half in streets. Therefore, pedestrians tend to also use the street as their space	Residential streets in Ponce
B # 5	Yes	None	One lane travel, parking either on one or both sides	None	1-5 stories	Residential	These spaces are generally in poorer areas in Puerto Rico, however the Italian versions offer more to the user	Streets in Siena
Pedestrian Paths								
A # 6	NA	NA	1m wide	NA	2+ stories	Commercial first level, residential above	Typical Arcade- may be substituted for the sidewalk, acts as a buffer zone between public and private	Along main plaza in Old San Juan
B # 7	NA	NA	10m wide	NA	1-5 stories	Commercial first level, residential above	A form of pedestrian street	Bayamon, good example, Ponce has unexciting examples
C # 8	NA	NA	2m	NA	1-5 stories	No access	Alleyway- windows and balconies jut out from above creating an enclosed private walkway	Old San Juan

Classification	Transport Modes		Street	Sidewalk	Building	Building	Comments...	Precedents
	Vehicles	Transit			Heights	Use		
Pedestrian Places								
A # 9	NA	NA	NA	162x244m	4-5 stories		Formal plaza- maximum size based upon the Laws of the Indies	Old San Juan's Plaza de Armas
B # 10	NA	NA	NA	61x91m	4-5 stories		Smaller plaza- minimum size based upon Laws of Indies	Old San Juan's Place de San Jose
C # 11	NA	NA	NA	14-28m x 30m	1-5 stories		Gardens- community, based upon lot sizes. Use empty lots as spaces for inhabitants of area	Similar to victory gardens
D # 12	NA	NA	NA	<10m	1-5 stories		Smaller areas for sitting, talking...	x

Development of Cangrejos/Santurce

The San Mateo de Cangrejos Chapel, the produce supply area-hermitage chapel built in 18th century is oldest sign of habitation in Santurce. In 1773, the area had become a municipality with 435 inhabitants, and was extensively covered by marshlands and mangrove forest with the exception of the central hillside section with five hills. During the first half of 19th century: livestock and sugar were added to the economy of existing agriculture, fishing and contraband.

Because land access to and from San Juan relied on going through Cangrejos, there was the need for urban development. Two main regional routes: one connecting to Loiza and another connection to Rio Piedras. The Martin Pena bridge and Boca de Cangrejos Bridge (connecting Loiza) were major public works. Both bridges had toll gates. Boca bridge exists no more. Also added was the San Antonio Bridge that connected Cangrejos to San Juan islet, and the road connecting San Juan to Rio Piedras. Many of the streets perpendicular to road to Rio Piedras were private, and were done in any old fashion, in other sectors, the municipal government regulated that the streets had to be perpendicular to the main road

FIRST URBANIZATION PLAN

San Mateo was built upon one of the hills, and was used for the base of further development. Local military officials took over the planning due to a lack of municipal funds. Next to San Mateo, Casa del Rey (city hall), a consistorial house, a new cemetery, and a slaughter house were designed. The latter two

were never built. The City Hall was to go across from the Church. Because the area lacked resources for independence such as drinking water, construction materials, and agriculture and pasture lands, Cangrejos would never be an extremely wealthy area. Hence the incorporation of Cangrejos into San Juan

In the early 1800s, carriages and omnibus services were introduced to area which competed with the steam trolley, inaugurated in 1880. Three months later, a petition was filed to change Cangrejos' name to Santurce, after the Earl of Santurce (Pablo Ubarri- founder and investor of steam trolley). Until the 1880s, the only building code was that the facades of houses would be parallel to the street. However, there were many complaints about the disorderly private construction. In 1887 General Survey Plan for Santurce prepared by the Army Corp. of Engineers. There existed five hilltops, four residential with the wealthiest living on top and the poorest living below, the fifth hill was for San Mateo. Still a low density suburban area, 62% of the structures were poor *bohios*, a fair number of service structures: butcher shops, bakeries, light industries and grocery stores

“URBANIZATION PLAN” FOR SANTURCE:

A contest was developed, with 2,000 pesos reward, to design a plan for Santurce. Contestants had to take into account:

1. layout of streets, plazas and public gardens
2. layout of blocks and their subdivisions
3. integration of existing with new

4. design of drainage, water supply, and gas lighting systems

Only one participant responded, after two more tries, Morales and Canals (the original entrants) won the contract:

Land was specified for uses, such as the Market Plaza in the most central site (which still exists to day, see figure 15)



Figure 15: Market Place

The Plan was ultimately relegated to second priority, parts of it were implemented without approval

Existing Condition

Recently Leon Krier, approached Santurce and remarked on the absurdity of location of 33% of population in an area of 9000 acres instead of 50,000 acres. He also stressed, the importance of things within a 10 minute walk- which can be achieved in Old San Juan, Florence, Bern, Munich,, Covent Garden, Aigues-Mortes, and Luxembourg. Although Krier argue that Santurce has no great urban spaces, no centers of communal life, the streets are bus thoroughfares with no visual foci and poorly formed, there is room for disagreement, there is an

underlying quality to the Minillas area that can be the basis for further development . The skyline is dominated by residential and administrative towers, however, there is a lower skyline of single family residential units, that may not be in the best shape, they do have a communal quality that is very strong.

Parking, like elsewhere in the region and island has eaten up much of the public and pedestrian spaces (see figure 16). In Santurce, parking has also invaded the insides of blocks,

transforming alleyways in to parking lots, and destroying front yards. There has also been the trend to use vacant lots for garbage dumps and or parking areas (see figure 17). While Leon Krier recommends curb-side parking to satisfy the needs of a 3-story high mixed use urban fabric. How this might be accomplished is not thoroughly discussed. But, based upon precedents set up with the island, ways can be found. Obviously, underground car-parks should be used for high skyscrapers

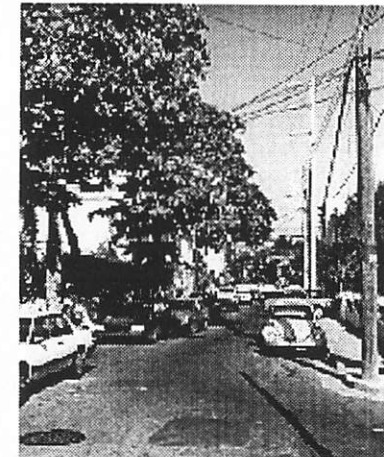


Figure 16: A street in Santurce



Figure 17: View across lot at older house in Santurce

Leon Krier's plan calls for the creation of several important new squares to provide identity- in past Santurce has been divided into 47 subbarrios- and form a cultural and commercial center to each community. Has five major linear /vehicular centers, needs to provide for pedestrian centers.

Divide area into three main pueblos, in which there will be 8-10 barrios. The barrios will in turn act as complete cities within the city, and will contain all the daily and weekly uses of work, residence, commerce, trade.... within pedestrian proximity. Barrios can be realized by optimizing the networks of streets, squares, alleys. Urban space should occupy somewhere between 30-35% of the total urban land. Individual Barrio Master Plans should be developed, which should define the size of plots, number of usable floors/plot,

Primary Redevelopment Areas:¹¹

1. National Government Forum- from Minillas Towers along Baldorioty to the Condado Bay.
2. 27 civic commercial squares
3. urbanization of public housing estates
4. Restoration and creation of five public parks
5. New open areas between reformed urban expressway and existing fabric

¹¹ Krier, Leon. Santurce: Estudio Preliminar para el Plan Maestro de un Barrio

6. Network of Boulevards, avenues, pedestrian areas:
 - Eliminate all urban expressways through Santurce
 - Future urban renewal projects, road building..., must be subordinated to the objective of creating finite and autonomous urban communities
 - Creation of urban parks and boulevards...

Intervention to Station Area

Development network of paths and places to provide access to the train station as well as provide access within each surrounding community, or as Leon Krier calls them, sub-barrios. The following pages represent an analysis of the existing fabric, as well as diagrams of the possible interventions using the prototypes developed in the preceding section.

Pedestrian Access



Base Plan of Santurce : Circles represent area with walking distance of 10 minute
Urbano Station in the Central Plaza.

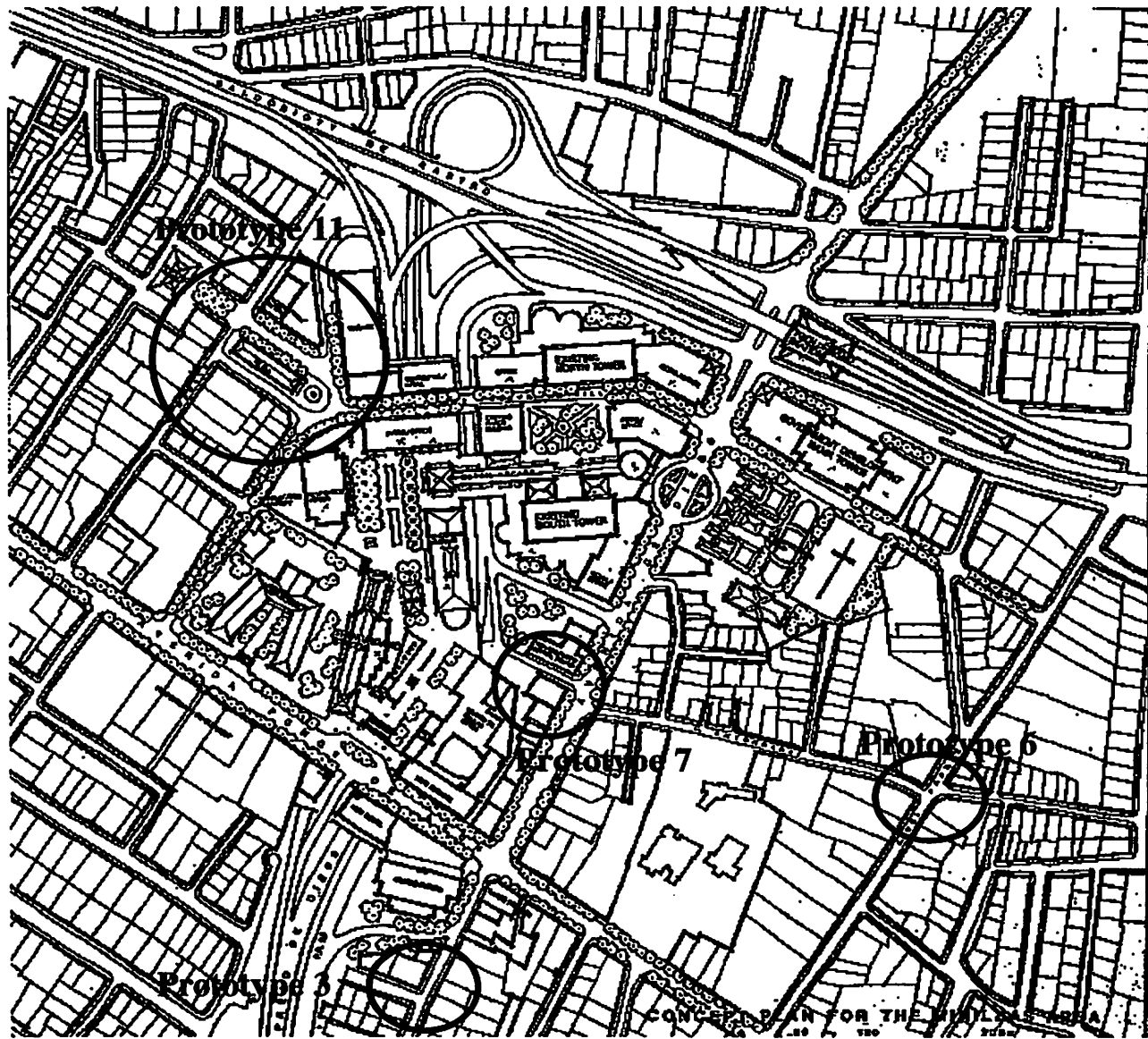


Figure 17: Plan of Minillas Tren Urbano Stop by D'Agostino Izzo Quirk. Plan courtesy of architects

Interventions in Minillas

Using the plan developed by the architecture firm of D'Agostino Izzo Quirk Architects as a base, interventions were made to the area using the prototypes of paths and places. The places for interventions areas where the current plan has not solved a problem, or taken advantage of a situation.

The areas for exploration are marked by the black circles on Figure 17.



Figure 18: Street in Old San Juan

PROTOTYPE #3 : Avenida de Diego:

This street is currently used as a connector from Avenida Fernandez Juncos and the expressway to Ponce de Leon and across into the Condado. The street also serves as the primary pedestrian access between transit stops and the Hospital Pavia. The street has parking on either side, and one lane for travel, the sidewalks are almost non-existent. Proposed is incorporation of Prototype #3 into the Ave. de Diego, one lane of parking is removed, and is used to plant trees and provide a buffer between the traffic and the pedestrians.

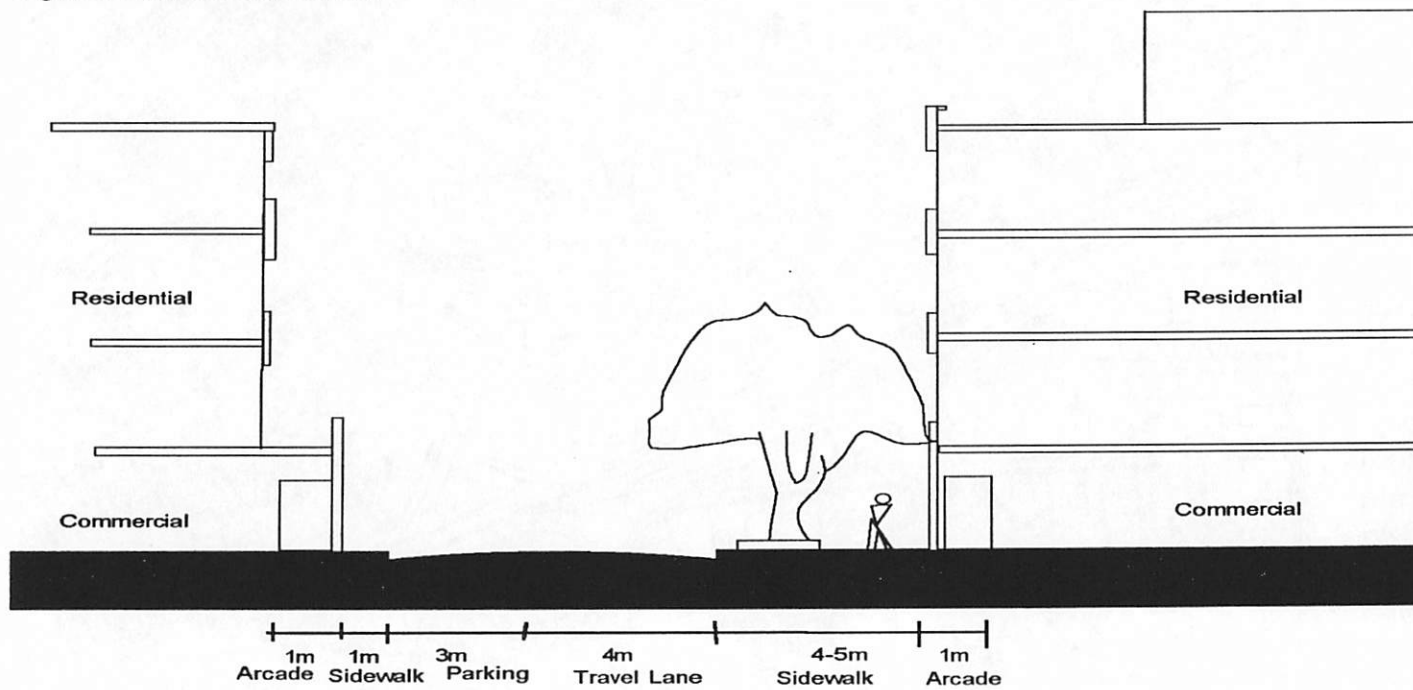


Figure 19: Cross-section through Ave. de Diego, heading south from Ponce de Leon

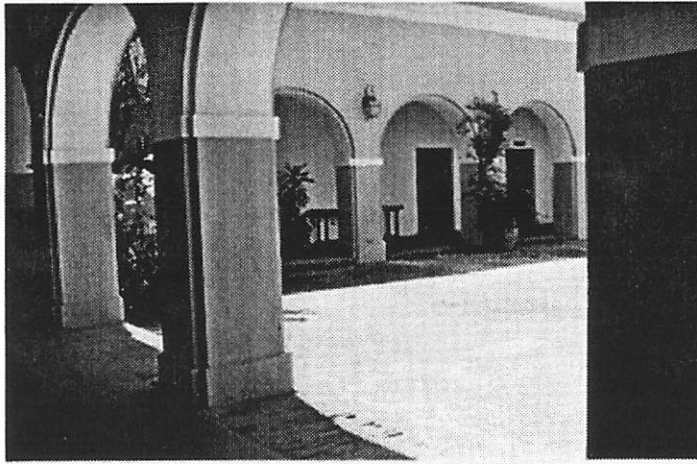


Figure 20: Arcade in Old San Juan

PROTOTYPE #6: Arcades along Secondary streets.

Many of the existing streets have maintained the commercial “Mom & Pop” stores on the first level, however, they have lost the arcade, buffer zone. Besides a lost traditional quality, the lack of arcade also denies the pedestrian protection from the sun and rain. Intervening with arcades would also mean that some form of sidewalk would be maintained, as well as a continuous sight line along a street.

While arcades are proposed for lower density areas, they also have a place at a larger scale in along the denser streets such as Ponce de Leon.

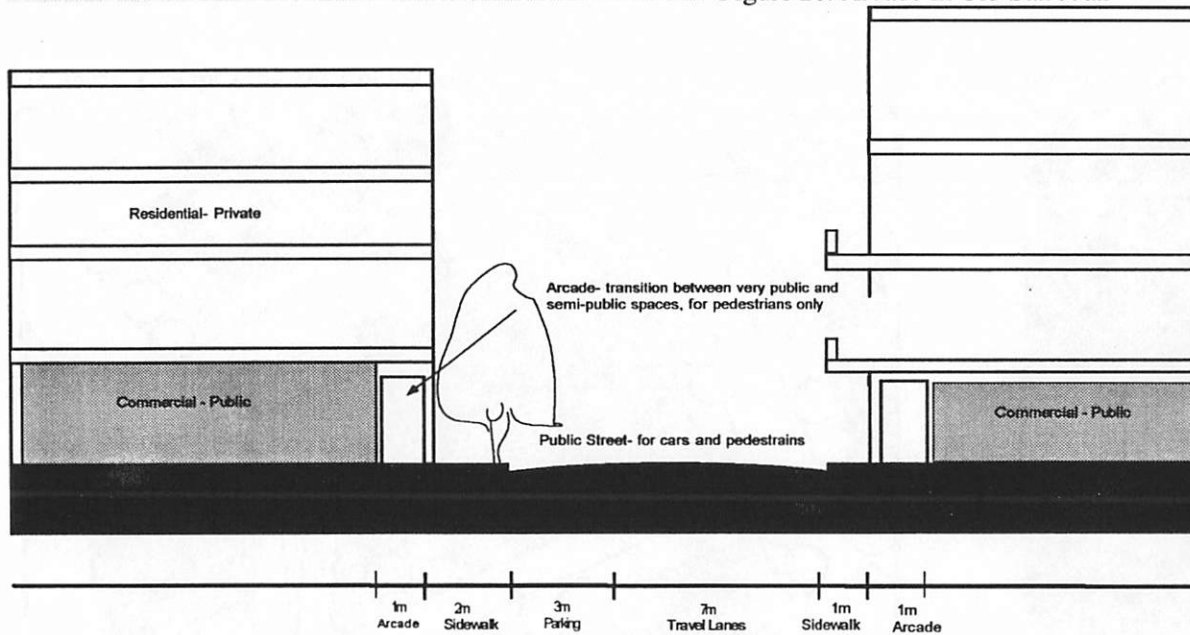


Figure 21: Cross Section of street with arcades

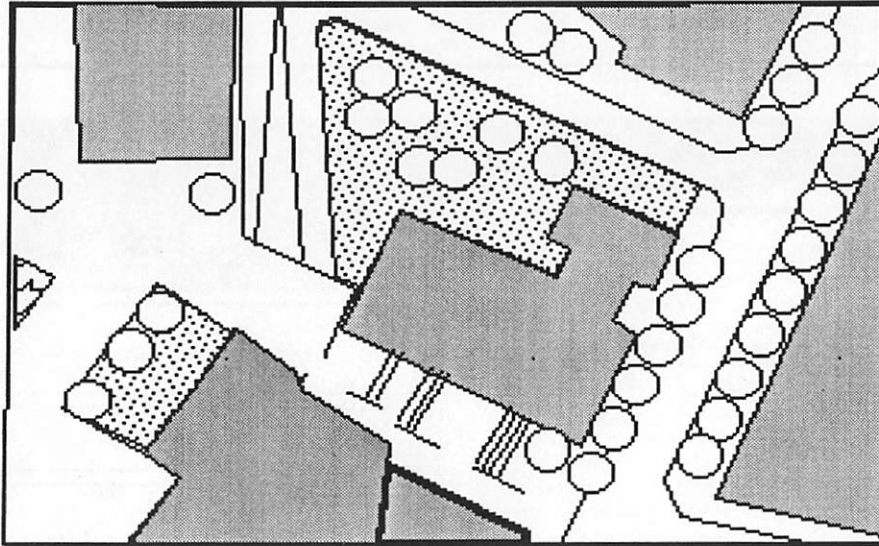


Figure 22: Plan for walkway from Avenue de Diego to the plaza.



Figure 23: Pedestrian Path in Bayamon

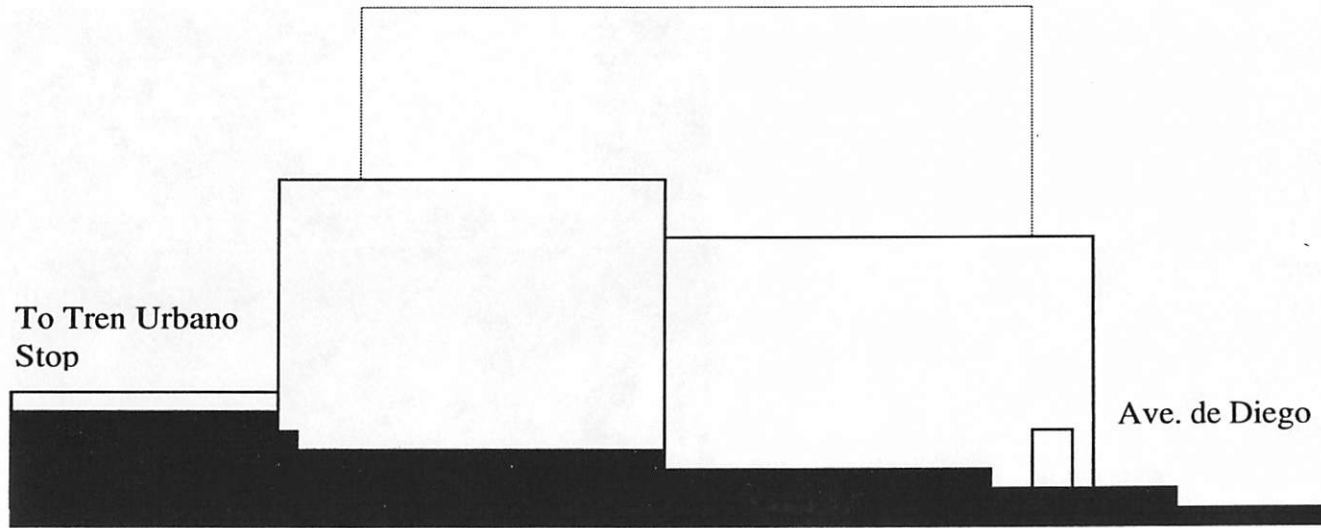


Figure 24: Diagram of cross-section along walkway

PROTOTYPE #7: Pedestrian Walkway

There is no direct connection from the plaza down 5m to Ave. de Diego, by creating a passage for pedestrians that leads into the residential district east of de Diego. The elevation change is 5m over 100m.

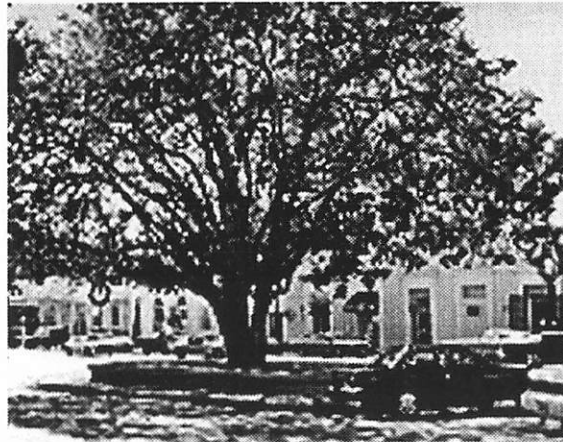


Figure 25: Precedent from Ponce

PROTOTYPE #11: Plaza along route connecting the Market with the main Tren Urbano plaza. Use of vacant lots to make a community plaza/garden.

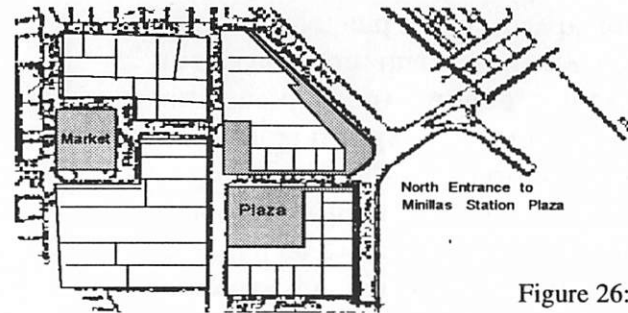


Figure 26: Location plan of Plaza space

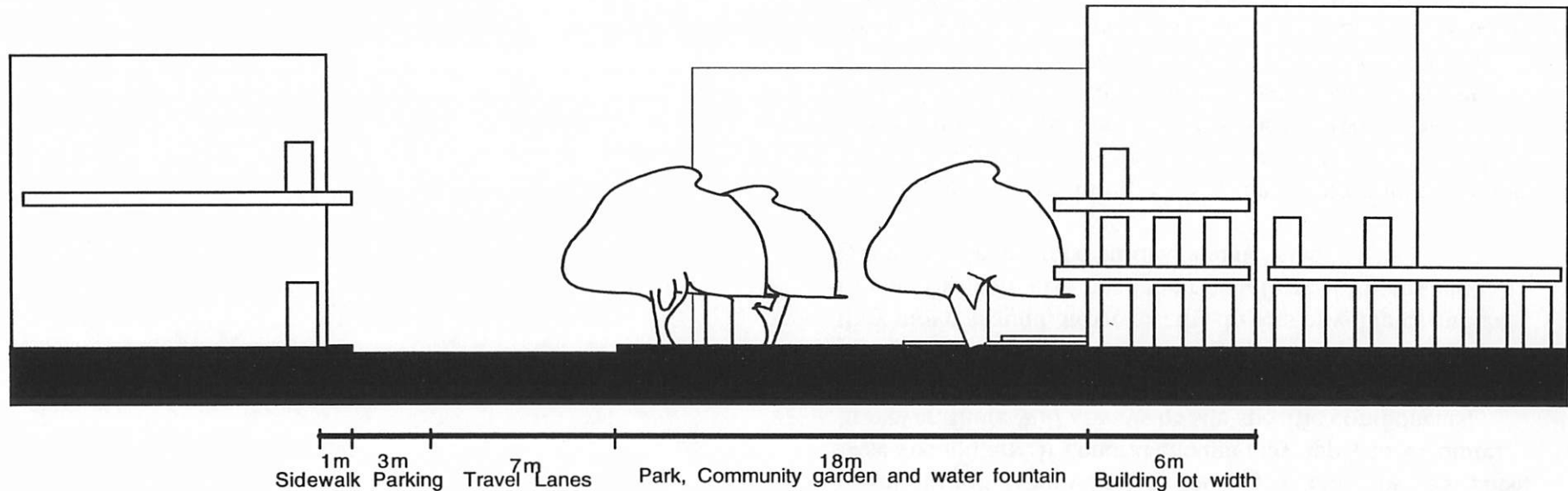


Figure 27: Elevation of Street and plaza

Using access to create paths and places, helps to form a library or set of tools from which to develop access networks. This base vocabulary, if general enough may apply to a culture, however, there will always be site specific components, whether it is a type of paving or the way people may use a place. This research has focused upon the pedestrian and how they move around, however, the drivers of vehicles and the riders of transit also need their own forms of paths and gateways/places to be studied and developed.

Tren Urbano is providing the San Juan Metropolitan Region with the opportunity to develop an access network for all modes and a comprehensive open space network for pedestrians. This research has focused upon the smaller aspects of access networks, by looking at connections of communities to a center focal point. There are several points of venture from here. One is how would this type of paths and places be implemented? Would there be a general plan or would it be more piecemeal, where each community could determine what they wanted. If a plan was formulated, would it be process or product oriented, what would be the benefits, and would it truly be feasible. An other point is to look at how other modes move around, and explore the possible networks that occur from that. Similarly, how detailed would these networks be, and would they be implemented by one party, or several organizations working together?



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Note: all images by author except where noted