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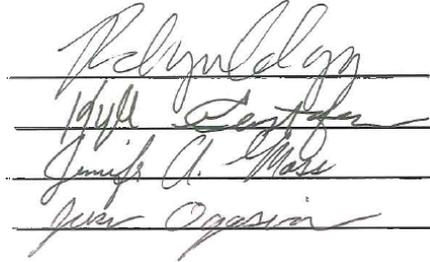
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## **An Analysis of the Challenges Facing the Redevelopment of Intersection 5 in San Juan, Puerto Rico**

(May 1, 2008)

This project report is submitted in partial fulfillment of the degree requirements of Worcester Polytechnic Institute. The views and opinions expressed herein are those of the authors and do not necessarily reflect the positions or opinions of CSA Group or Worcester Polytechnic Institute.

This report is the product of an education program, and is intended to serve as partial documentation for the evaluation of academic achievement. The report should not be construed as a working document by the reader.

## **Abstract**

This report, prepared for CSA Group in Puerto Rico, examines several proposed and on-going changes to Intersection 5, the gateway to historic Old San Juan. Through interviews with representatives from key agencies and organizations, the project assessed the level of communication among the stakeholders, including the general public in the adjacent community of Miramar, and recommended ways to integrate the major redevelopment efforts presently underway (the Convention Center District, San Juan Waterfront, Intersection 5, and a park project). Additionally this project suggested ways to modify and integrate possible routes for all modes of traffic (including motorized vehicles, light rail, buses, water taxis, bicycles, and pedestrians) to create a signature entry to the Islet of San Juan.

## Executive Summary

The city of San Juan, Puerto Rico is a densely populated, culturally diverse area with many districts in varying degrees of development. San Juan is also a city that relies greatly on private automobiles for transportation. This reliance on automobiles is compounded by a lack of pedestrian and bicyclist accessibility throughout many parts of the city. At the same time there are several redevelopment projects in downtown San Juan, which are designed to transform the capital city into an integrated, accessible, urban landscape. Included in these projects is the construction of the Puerto Rico Convention Center District, the San Juan Waterfront development, the designation of a bicycle path connecting major parks, and the addition of a light rail train system connecting the old city to Santurce. The key to integrating all these undertakings is the redevelopment of Intersection 5.

Intersection 5 located at the entrance to the Islet of San Juan, placing it right in the middle of all of the other development projects. The passage of traffic through this area is vital to the success of each of the other developments adjacent to it. The purpose of the project represented by this paper is to work with CSA Group, the company contracted to work on the redevelopment of the intersection, to provide recommendations and suggestions for innovative design ideas as well as provide details about the level and effectiveness of the coordination with the other urban development projects in the area, not only with each other, but also with residents of the surrounding communities.

In order to derive these conclusions and recommendations we identified three main objectives: **1)** Obtain an understanding of the nature and scope of each of the individual projects through conducting site explorations, reviewing completed reports, and speaking with and interviewing key officials. **2)** Analyze the cooperation and communication between the organizations involved in each of the new development projects by interviewing key players from each organization. **3)** Solicit community input about each development project in order to provide suggestions to the organizations that would represent the members of the affected communities as well as evaluate the current level of communication that exists between them.

The current situation presents many complexities which make analysis of the redevelopment of the entire area a difficult task. Each of the projects is at a different stage in the development process. The Convention Center District has already been started, with the Convention Center itself completed, roads paved and several nearby structures under construction. The San Juan Waterfront project has been almost completely designed, and land is being cleared for construction to begin, but progress has

been slowed by legal conflicts. The designs for the bicycle path and light rail systems are in development but they depend on the plans for Intersection 5 since they must pass through it. All these developments are impeded by tensions between and among the lead organizations caused by different missions, agendas, and constituencies. Through all of this one thing remains clear: none of the other projects can be completed without the redevelopment of Intersection 5.

The major findings presented in this report back up these statements. Through the course of our interviews we found that there is a breakdown in communications at several levels between the separate entities working in the area. Many key personnel revealed that they had not seen the most recent plans for the projects that most affected theirs, and attempts to obtain this information elicited no response. The residents of the adjacent residential district of Miramar expressed similar frustrations about the lack of communication. There appears to be a consensus that the project designers do not thoroughly incorporate the thoughts and needs of the community into their work, leaving those residents feeling left out of the process and more likely to oppose it. One purpose of this report will be to present the opinions of key community leaders to the appropriate organizations to try to help with the communication process.

Many interviewees from Miramar expressed similar concerns. Evidently, many residents feel that their community is trapped in a confined area with high-speed expressways that severely hinder pedestrian access to adjacent areas. Clearly, residents would like to be able to access the Convention Center District without having to attempt to cross the Luis Muñoz Rivera Expressway, which poses significant danger to pedestrians. Residents would also like to be able to pass through Intersection 5 on foot in order to access the Islet of San Juan but they believe it is much too dangerous for pedestrians in its current configuration.

Using the wealth of information collected during our project, we were able to devise several recommendations for the agencies involved in the various development projects. A table summarizing each of these recommendations is presented on the following page.

**Table 1 - Recommendations Derived from Results of Research**

<b>Recommendation 1:</b>	The light rail train should pass over the San Antonio Canal on the side of the existing San Antonio Bridge.
<b>Recommendation 2:</b>	A bus route connecting the Condado and Convention Center should pass south of the Condado Lagoon, through the re-designed Intersection 5 and avoid the Dos Hermanos bridge.
<b>Recommendation 3:</b>	Two pedestrian bridges should be built: one at the end of Elliot Place and one to allow passage from Miramar to the Condado Lagoon area.
<b>Recommendation 4:</b>	All pedestrian bridges should be handicap accessible.
<b>Recommendation 5:</b>	The San Juan Waterfront and National Parks should confer on all details of the proposed bicycle and pedestrian paths, as well as involve the designers for Intersection 5.
<b>Recommendation 6:</b>	Meetings of the major stakeholders should include not only senior members of each agency, but also key personnel from contracted companies.
<b>Recommendation 7:</b>	PRHTA needs to share technical drawings with the Municipality and the Municipality needs to provide current plans for a new mass-transit system.
<b>Recommendation 8:</b>	All agencies working near residential communities should increase contact with community members to gain input early in the design phase.
<b>Recommendation 9:</b>	Updated information should be included on the DTOP webpage about current development projects.
<b>Recommendation 10:</b>	All agencies working near residential communities should provide realistic updates about the nature and scope of the projects in discussion in order to keep the affected communities involved.
<b>Recommendation 11:</b>	Convention Center District planners should consider parking needs for both the district and the residents of Miramar before constructing additional sections of the Convention Center.

## **Authorship Page**

This paper was written with the complete collaboration of all members of the group, consisting of Robyn Colopy, Kyle Gustafson, Jennifer Moss, and Jason Ogasian. Each section of the paper was composed in a collaborative manner with input from each member of the group. Every section of this report was reviewed and edited by each member of the group to ensure that all of our viewpoints were expressed in a fashion that shows our own original thoughts and ideas. All work done on this project was shared equally, with most sections being written in pairs and then edited by the others after the initial draft was completed.



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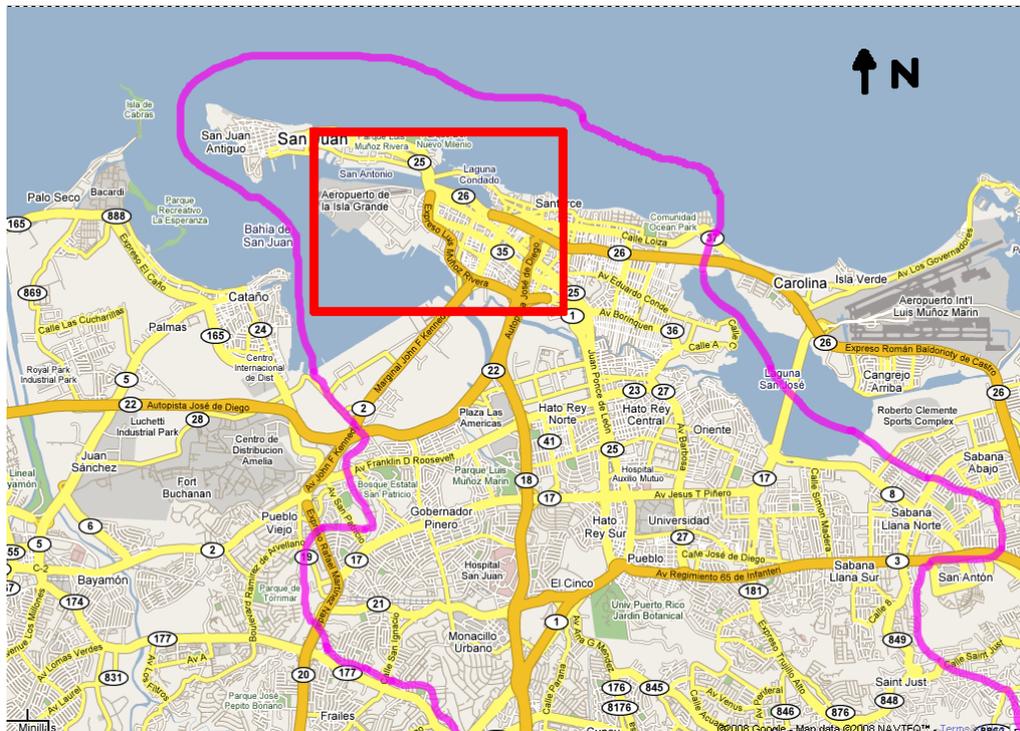
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## Chapter I: Introduction

This report was prepared by members of Worcester Polytechnic Institute Puerto Rico Project Center. The relationship of the Center to CSA Group and the relevance of the topic to CSA Group are presented in Appendix A.

The United States population is growing at a rate of around .894% and about 80.6% of its population is concentrated in cities (CIA, 2008). In its 2006 estimates, the United States Census Bureau documented a healthy growth in population in the majority of US cities since the 2000 Census. The populations of the largest cities, New York City and Los Angeles, had grown 2.6% and 4.1% in those 6 years respectively. Even some of the smallest US cities produced similar growth rates, such as Greenville City in North Carolina which grew about 19.1% and Bryan City, Texas which had an increase of about 2.4%. Such continued growth within a limited space leads to a phenomenon known as urban sprawl. Urban sprawl is defined as “peripheral growth that expands in an unlimited and non-contiguous way outward from the solid built-up core of a metropolitan area” (Martinuzzi et al., 2006). This growth leads to more people living farther away from places of employment and commerce and an increase of automobile usage for commuting, so it is no surprise that the mean travel time to work for people in the major metropolitan areas such as New York City, Los Angeles, Chicago, and Philadelphia is on average 5.6 minutes longer than that of their respective states. As these are also areas of high traffic density, the extra time on city roadways increases the occurrence of traffic jams and other congestion related conflicts.

Within the last half century, urban sprawl has spread throughout the metropolitan areas of Puerto Rico. There are nearly 450,000 people living within the 76.93 square miles of land in the city of San Juan, making it one of the most densely populated areas in the United States. The population of the San Juan Metropolitan Area (SJMA), which includes the major municipalities surrounding San Juan, has tripled since the 1950s. In 1960, the actual city of San Juan contained 59.5% of the total population of the SJMA; by 1990, that number fell to 33 percent, which could indicate changes in the population due to sprawl. As a result, the municipalities surrounding San Juan now make up two-thirds of the population within SJMA. A map showing the different districts is shown below. The area outlined in purple shows the SJMA while the red square depicts the area directly affected by our project.



**Figure 1 - Map showing San Juan Metropolitan Area**  
 Source: Adapted from Google Maps

## A) Problem Statement

The entrance to the Islet of San Juan, the islet farthest North in Figure 1, is in a unique state of development. Areas that once housed a flourishing maritime industry have been abandoned, and are now the focus of a redevelopment effort. On the mainland just south of the San Antonio Canal and west of the Esteve and San Antonio bridges, an old US naval base has already been replaced with a Convention Center, and the surrounding district is under development to become a vibrant mixed-use district with restaurants, hotels, office space, and residential areas. North of the San Antonio Canal on the Islet, construction will soon begin to transform a run-down shipping district into an urban public waterfront. With the revitalization of these two areas, the City of San Juan hopes to integrate currently disparate sections of the city, including the hotel district of the Condado, the upper-middle class neighborhood of Miramar, the urban parks on the northeast of the Islet, and the historic district of Old San Juan.

In order to accomplish this integration, the roads connecting the Islet to the mainland and the Condado, known as Intersection 5, must be restructured to allow better traffic flow. Additionally, developers want to encourage pedestrian and bicycle access to the areas, hoping to lessen their dependence on automobiles. Intersection 5, and the surrounding areas, is depicted in Figure 2. The

development of these areas has been undertaken by a variety of government organizations, private businesses, and contractors, including CSA. To date, communication between these groups has been insufficient, sometimes resulting in conflicting or poorly integrated plans.



Figure 2 – Map depicting Intersection 5  
Source: Adapted from Google Maps

## B) Project Goal and Objectives

The goal of this project was to assist CSA in reviewing and integrating diverse plans for the redevelopment of the area around Intersection 5, as well as to analyze the current level of interagency communication.

The first research objective for this project was to gain a better understanding of nature and scope of each of the major projects. Second was to analyze the degree and effectiveness of the cooperation between the key organizations. The third objective was to solicit community thoughts and opinions regarding the various projects underway in San Juan. The final objective was to provide suggestions and design ideas to better integrate the projects as well as to provide maps to CSA based on the results of our analysis of the information gathered.

## Chapter II: Background

Intersection 5 is considered by many to be the gateway of San Juan as it connects the mainland to the Islet of San Juan, which is the location of many government offices as well as the location of historic Old San Juan, founded in the early 1500s by Spanish settlers. In addition to this vital function, Intersection 5 serves as a link to Condado and the new Convention Center District making it a major hub for the metropolitan area. According to the 2002 traffic records by Steer Davies Gleave, the consultants hired to assess traffic conditions for the area, the intersection accommodates over 120,000 automobiles daily, but the current road network requires motorists to take circuitous paths and perform several complex merging, diverging and weaving patterns in order to reach their destinations. “The existing design of the road network combined with the high traffic volume using the road means that delays and congestion are regularly experienced” (Steer Davies Gleave, 2002a, p. 1). As the city of San Juan continues to grow, so does this problem, and there is concern that the lack of convenient access to the different areas of interest will cripple economic growth. With the extensive redevelopment of the areas surrounding Intersection 5, including the Convention Center District and soon the Waterfront District, tourism and economic activity are expected to increase, adding to the number of vehicles circulating through the intersection on a regular basis.

The purpose of the background section of this paper is to provide the knowledge necessary to understand the challenges facing the process of redesigning Intersection 5. There are many considerations that need to be explored in order to fully accomplish this goal. These include vehicular and non-vehicular traffic considerations, an understanding of the various projects underway in the area, a view of the different possibilities for the design, and finally a look at some case studies of similar endeavors in other areas.

### A) Transportation in Puerto Rico

In order to understand Intersection 5, we must first understand the general state of transportation in San Juan. The population of the San Juan Metropolitan Area, or SJMA, is currently heavily dependent on automobiles for transportation. The SJMA is heavily burdened by traffic. Urban sprawl and poor access exacerbate the transportation problem. This section looks into these details and also discusses the use of possible alternative modes of transportation.

## 1) Geography of San Juan

Figure 3 below shows the northern portion of San Juan, which is the area under consideration for this project. The Islet, north of the mainland, contains Old San Juan (brown), a historic area with both tourism locations and government offices, and the future location of the Waterfront District (yellow). Also on the Islet are residential, hotel, and shopping districts. Connecting the Islet to the mainland are the Estevez and San Antonio bridges. San Antonio is for traffic leaving the Islet. Estevez is for traffic entering the Islet. These bridges cross the Canal San Antonio. Between these two vehicular bridges is a smaller footbridge with historic value. The peninsula of the Condado (purple, east) is occupied largely by tourists, and is connected to the Islet via the Dos Hermanos Bridge which takes traffic in both directions and crosses over the Condado Lagoon. Currently, the Dos Hermanos is being redesigned and there is a temporary bridge in its place. The Expressway Baldorioty de Caster separates the Condado from Santurce (pink) to the south. Just south of the Estevez and San Antonio bridges are the Convention Center District (purple) and the long-established residential area of Miramar (green).

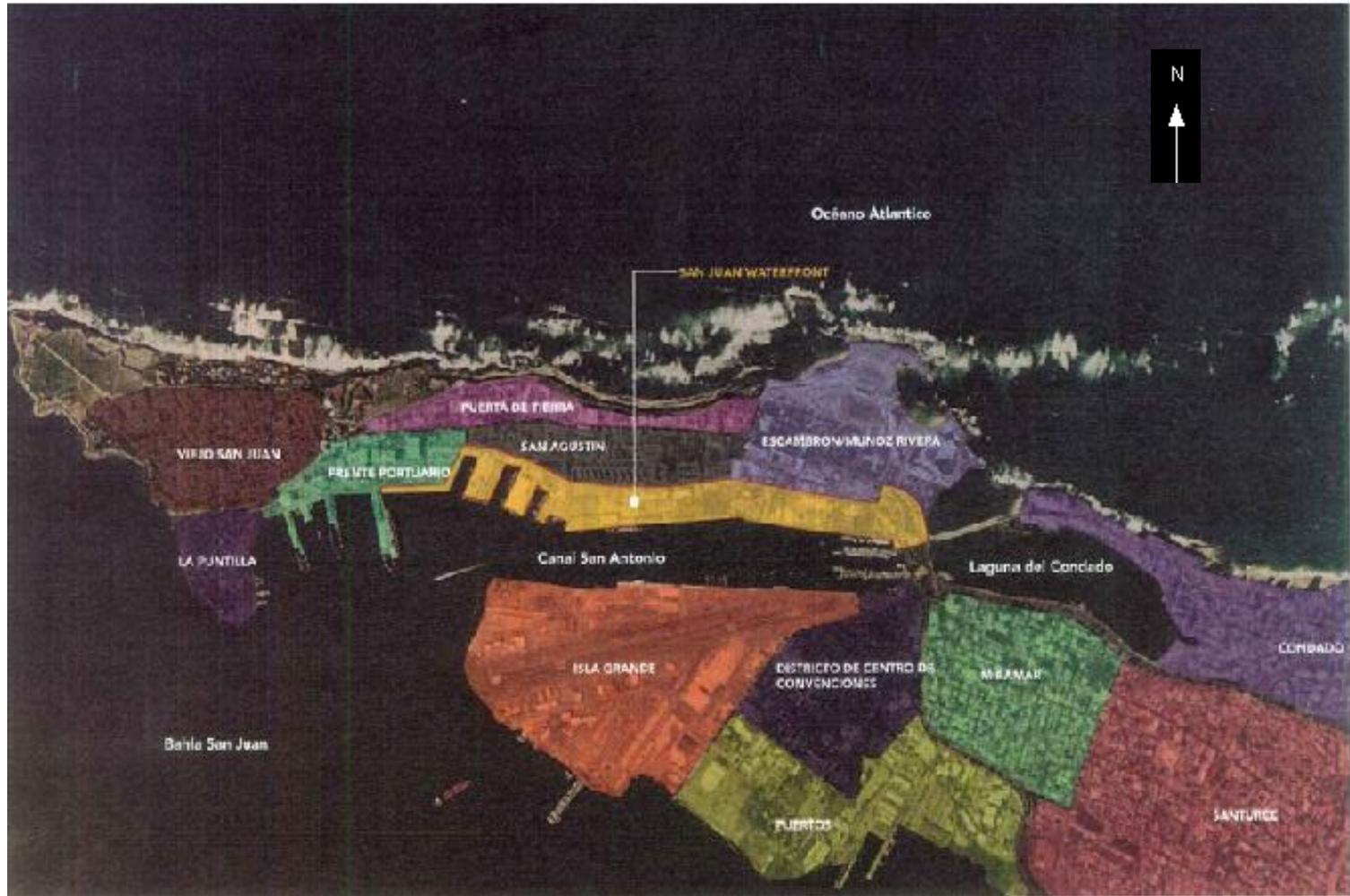


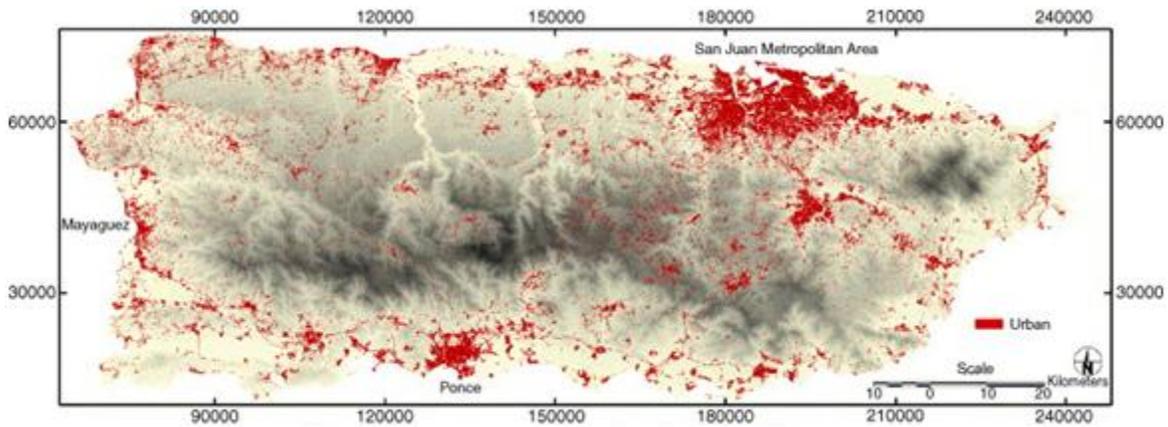
Figure 3 - Northern San Juan  
Source: Colliers, 2007, p. 19

## 2) Urban Sprawl

For a variety of historical and socio-economic reasons, Puerto Rico is in a unique state of development. While Puerto Rico and its capital city San Juan are in many ways modern, first-world entities, San Juan has reached this state over a much shorter period than comparable cities in Europe or the United States, and San Juan still contains many third world roots (Potter, 1993). In less than a century, Puerto Rico has transitioned from an agricultural economy to an industrial one in part as a result of Operation Bootstrap, which brought many industrial businesses to the island during the mid 20<sup>th</sup> century (Dietz, 1987). In the haste to “catch up” (Potter, 1993), considerations of its unique geography and the need for urban planning fell by the wayside and Puerto Rico has been left with “uncontrolled” urban sprawl (Martinuzzi, Gould, & Ramos González, 2007).

The Transportation Research Board defines urban sprawl as a “peripheral growth that expands in an unlimited and non-contiguous way outward from the solid built-up core of a metropolitan area” (as cited by Martinuzzi et al., 2007, p. 289) Additionally, “areas of urban sprawl are characterized by low density development...and almost total reliance on the automobile for transportation” (Martinuzzi et al., 2007, p. 289) The consequences of urban sprawl include “traffic congestion, increase costs for community services, reduction of open spaces, and....pollution.” (Martinuzzi et al., 2007, p. 289).

Puerto Rico has 3.9 million people living in a 9000 km<sup>2</sup> area, with most living and working in cities, especially the metropolitan area of San Juan (Martinuzzi et al., 2007). Between 1991 and 2000, urban development in Puerto Rico grew by 7 percent (Martinuzzi et al., 2007), and many of the 78 municipalities which make up Puerto Rico, suffer some degree of urban sprawl (Martinuzzi et al., 2007). These sprawling developments represent 35 to 50% of the total developed land in Puerto Rico (Martinuzzi et al., 2007). Figure 4 illustrates the major areas affected by sprawl in Puerto Rico. In the figure below, urban land cover of Puerto Rico is shown in red, equal to 95,342 hectares or about 11% of the total area. Gray colors correspond to higher elevations, including the central mountains, and El Yunque National Forest in the east. The problem of urban sprawl is most acute in the San Juan Metropolitan Area.

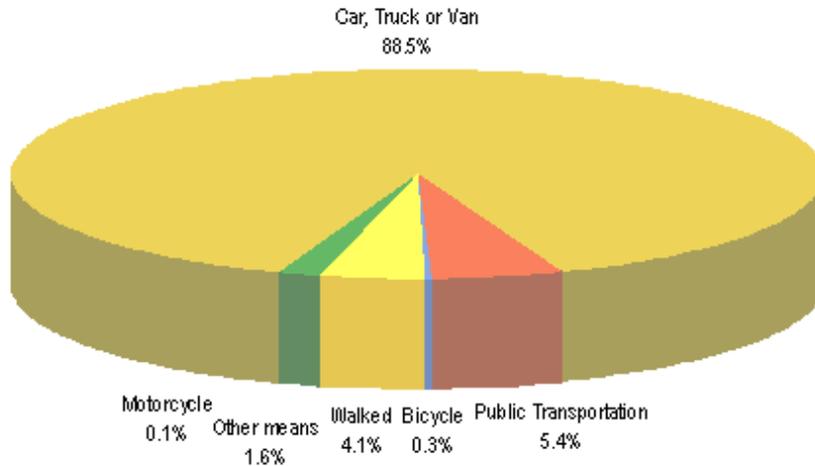


**Figure 4 - Urban Sprawl in Puerto Rico**  
 Source: Martinuzzi et al, 2007, p. 292

Like other North American cities, San Juan is surrounded by extensive sprawl. In fact “[t]he startling truth about San Juan...is that most of it looks like New Jersey. It is a landscape of ugly roadways lined with strip malls, American franchise restaurants, and glass office towers overlooking impenetrable limited-access highways.” (Marshall, 2001, para. 1) Javier Mirandés, a manager of architecture for the Tren Urbano project, says “We need to bring development back into the cities; instead of continuing with the sprawl that we have throughout the island...We need higher-density housing with minimum parking and good access to transit.” (as cited by Marshall, 2001, para. 6)

### **3) Vehicular Traffic in Puerto Rico**

Puerto Rico is a “car-loving” society with “one of the highest rates of car ownership in the world and the greatest density of cars per mile of metropolitan-area highway” (Green, 2005, para. 5). On the island, there are three millions cars serving four million people. Traffic is “habitual” (Martinuzzi et al., 2007). Only about five percent of the population uses public transportation such as a bus, or público (taxi-buses with no fixed routes). Four percent walk, and less than half of a percent use bicycles. Figure 5 below, dramatically shows that the majority of Puerto Ricans (88.5%) drive to work each day by car, truck, or van.



**Figure 5 - How Puerto Ricans Travel to Work by Mode of Transit**  
**Source: Business Register PR, 2007, Passenger Transportation section**

Due to the overbearing rush hour traffic, a “drive that takes 10 minutes in San Juan at night can take 90 during the day, when cars weave and honk through congested streets”, according to Benjamin Colucci, an engineering professor at the University of Puerto Rico (as cited by Green, 2005, para. 5). Figure 6 shows the number of cars entering and leaving the Islet via the Estevez and San Antonio bridges during peak traffic in the morning and evening. These figures were gathered by the traffic consulting firm Steer Davies Gleave in February 2008. Based on these figures, approximately 4,000 vehicles enter the Islet during the morning commute, while 2,000 vehicles are leaving.

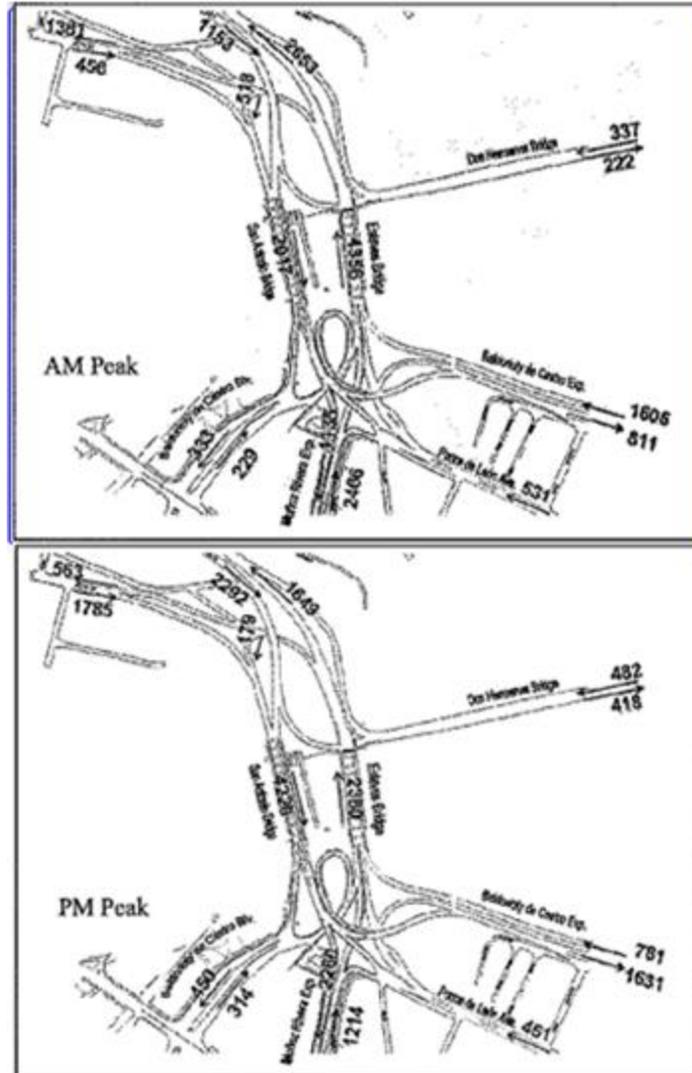


Figure 6 – Number of Vehicles Using Intersection 5 Daily  
 Source: SDG report

Even though the mean income of Puerto Ricans is only half that of those living in the U.S., and thus many island residents are relatively poor by mainland standards, ownership of automobiles is widespread for two reasons. First, the island's small size brings many possible destinations into a reasonable commuting distance. Second, the extensive sprawl makes motor transportation a necessity, even in urban areas. It is questionable whether the sprawl became prevalent due to the availability of automobiles, or whether automobile purchase became necessary due to existing sprawl, but either way the fact remains that today, a car is regarded as a necessity.

However, even with a car, navigating through San Juan is difficult. There are a great many one way streets and strange traffic patterns that force drivers to take long detours to arrive at a nearby location; this problem is exemplified in the area around Intersection 5.

#### **4) Alternative Transportation**

The government of Puerto Rico is not blind to problems caused by sprawl and recognizes that Puerto Rico needs a long term plan for a sustainable economy. Part of this plan is alleviating traffic through alternative transportation. Alexis Morales, president of the Metropolitan Bus Authority (AMA) and the Alternative Transport Initiative (ATI), has said "Our transportation doesn't work because it's broken, our transportation system doesn't work because it's not integrated" (as cited by Marquez & Ryan, 2007b, para. 1). The Secretary of Transportation, Carlos Gonzalez Miranda, expands on this idea: "We have to get people out of private cars and congestion and get them into something that is practical and realistic to move them to a definite destination...We have to integrate all potential collective transportation modes" (Marquez & Ryan, 2007c, Not Your Grandfather's Train section para. 6). The eventual goal of alternative transportation is to ensure that the "next generation will only have to use their vehicles on weekends," according to former Secretary of Transportation Gabriel Alcaraz Emmanuelli. (as cited by CB Staff, 2007, para. 2)

One effort that has been made by the ATI to improve transportation is the construction of the Tren Urbano, a \$2 billion commuter railway which travels throughout the San Juan area (Figure 7). The train, however, has been less popular than the original designers and proponents had hoped. The train took much longer to build than was originally planned (Green, 2005). Additionally the fares were deemed to be too high, costing \$1.50 in an area where the average family income is less than \$13,000, discouraging some passengers from using it.



Figure 7 - Tren Urbano Route  
Source: DTOP, 2006

Although the rail system has not been as successful as hoped, plans have been made to add more routes to the Tren Urbano, which maybe be light or heavy rail. These extensions will allow it to extend to more areas and attract more passengers, since a lack of destinations has been cited as one of the main reasons for people's reluctance to use the train. Figure 8 shows some of the proposed routes for the Tren Urbano, taken from the Master Plan for the Waterfront District. These proposals include extensions to the north to Old San Juan, to the residential area of Carolina as well as Luis Muñoz Marín Airport in the west, and to Caguas in the south. Of these, the Old San Juan and Caguas light rail extensions are under investigation by the relevant municipalities.

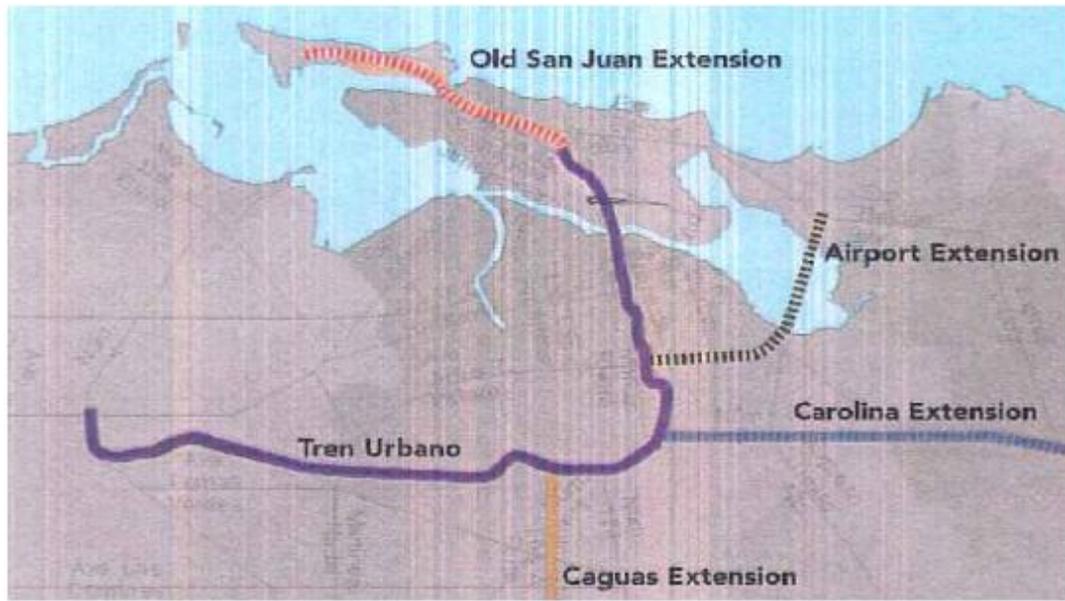


Figure 8 - Proposed Tren Urbano Rail Route  
Source: Colliers, 2007, p. 2-15

In another study done in cooperation with CSA Group, students from Worcester Polytechnic Institute analyzed the feasibility of water transportation in the area of Carolina and other surrounding areas in the SJMA (Fratelli, Johnson & Wicks, 2002). Their goal was to study possible water transportation to aid in traffic alleviation using internal waterways. As a result of their analysis, they were able to provide CSA with six possible solutions which consisted of short and long term solutions, as well as an assessment of their appeal (public or private), estimated infrastructure time, traffic alleviation effects, and the economic feasibility.

Due to such a high vehicle density (4,286 cars per square mile) in the SJMA, the student group needed to look into other possible modes of transportation. They were able to gather public opinion through surveying in order to find information about possible concerns for pedestrians. Specifically, they were concerned with the public's opinion on the current transportation system in the SJMA, as well as their opinions about the possibility of a water taxi using internal waterways. Other modes of transportation, which were already in place, consisted of the AMA/Metrobús system, Públicos (passenger vans), and the Acua Expreso (ferry service).

Alternative modes of transportation, such as buses and públicos, are an important part of the city; however, unreliability, inconvenience, and crowding lead many people to use their personal vehicles rather than public transportation. As shown in Table 2, bus use in particular has declined sharply in the last 40 years—much more sharply than other modes of transit. While in 1964, almost one-

fifth of Puerto Ricans commuted by bus, now only two percent do so. AMA buses are notorious for their late arrivals, causing most people to consider them an unreliable means of transportation. There is also a privately owned group of buses known as the Metrobuses, which are considerably more reliable than the city's AMA buses, arriving more frequently and with greater regularity. The bus routes were designed to minimize traffic delay caused by buses. The buses have their own lanes on several major one-way streets, running in the opposite direction from the general flow of traffic keeping them out of the way of commuters and allowing a greater variety of stops. Públicos, large passenger vans charging flat rates, are somewhat more reliable than the buses; however they are privately owned by individuals, generally used for long distances, and often require a reservation. The taxis on the island are plentiful and reliable; however they are not a feasible means of commuting to and from work every day as the cost would be prohibitive. The Acua Expreso is a ferry which currently runs only between Cataño and Old San Juan. The following table shows percentages of different types of transportation used by Puerto Ricans to get to work each day.

**Table 2 - Survey Data on Transportation**  
 Source: Fratelli et al, 2002

<b>Percentage of Puerto Ricans Using Mode of Transport</b>			
	<b>1964</b>	<b>1976</b>	<b>1990</b>
<b>Private Cars</b>	62.7	81.8	90.5
<b>Públicos</b>	9.2	7.7	5.1
<b>MBA Buses</b>	19.6	8	2.4
<b>Other</b>	8.5	2.5	2
<b>Study Area (km<sup>2</sup>)</b>	363	489	1036

## **B) San Juan Area Redevelopment**

The population of San Juan has spread far from the city center, leaving some areas (such as Puerto de Tierra) sparsely populated and in poor condition. As a result, the Commonwealth and Municipality see a need to attract new development, especially around the entrance to the Islet. The goal behind this redevelopment is not only to make the city more easily navigable, but also to make it an overall better place to live. Revitalizing urban centers attracts both residents and businesses (Martinuzzi et al, 2007). One project that is being considered by the Compañía de Parques Nacionales de Puerto Rico (CPNPR) is to add a bicycle path connecting Luis Muñoz Rivera Park and Parque Central (Figure 9). Other, more significant projects being undertaken in the SJMA are the redevelopment of the Waterfront and the

Convention Center Districts. With the redevelopment of these areas, it is hoped that jobs will be created, tourism will increase, and local residents will gain pleasant public spaces and easier pedestrian and vehicular access.

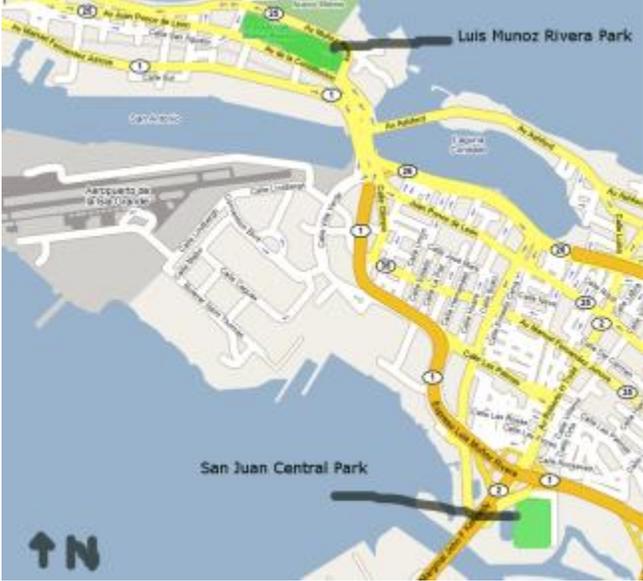


Figure 9 - Locations of Central Park and Muñoz River Park  
Source: Adapted from Google Maps

**1) Convention Center District**

One effort being made to revitalize the area is the development of the Convention Center District. The Convention Center District consists of over 113 acres and will be home to several hotels recreational facilities, retail stores, and residential areas (PRCCD prconvention.com, 2006). This project is a huge investment for the Municipality of San Juan, expected to create jobs while adding greatly to the overall value of the area. CSA Group, as a leading architectural firm located in San Juan, is leading the building and development of the Convention Center District. Figure 10 below shows the Convention Center itself, which has already been built.



**Figure 10 - Puerto Rico Convention Center**  
**[Photo: Jason Ogasian]**

## **2) Waterfront District**

Another area under development is the San Juan Waterfront. On southern coast of the Islet, this area was once a flourishing shipping district. However, changes in technology have rendered it obsolete. This land is now underutilized, rife with abandoned warehouses and empty lots as seen in Figure 11 and Figure 12. Some docks have already been redeveloped and are used as a loading point for cruise ships and the Acua Expresso. A redevelopment plan for this area has been approved and will be implemented starting in 2008. The abandoned district will be transformed in to usable office, residential, and park space. As such, traffic to this area is expected to increase considerably, and the current congested state of Intersection 5 will not be adequate to meet its needs.



**Figure 11 - Warehouses on San Juan Waterfront**  
**Source: Colliers, 2007, 2-4**



Figure 12 - Empty Lot on San Juan Waterfront  
Source: Colliers, 2007, 2-4

### 3) Intersection 5

Connecting Old San Juan, the Convention Center District, the Waterfront District, Miramar, and the Condado is Intersection 5, consisting of PR-1, PR-26, PR-25, PR-35 and other streets. This intersection is currently a confusing amalgamation of roads linking each of the districts in a circuitous route, as can be seen in Figure 13.

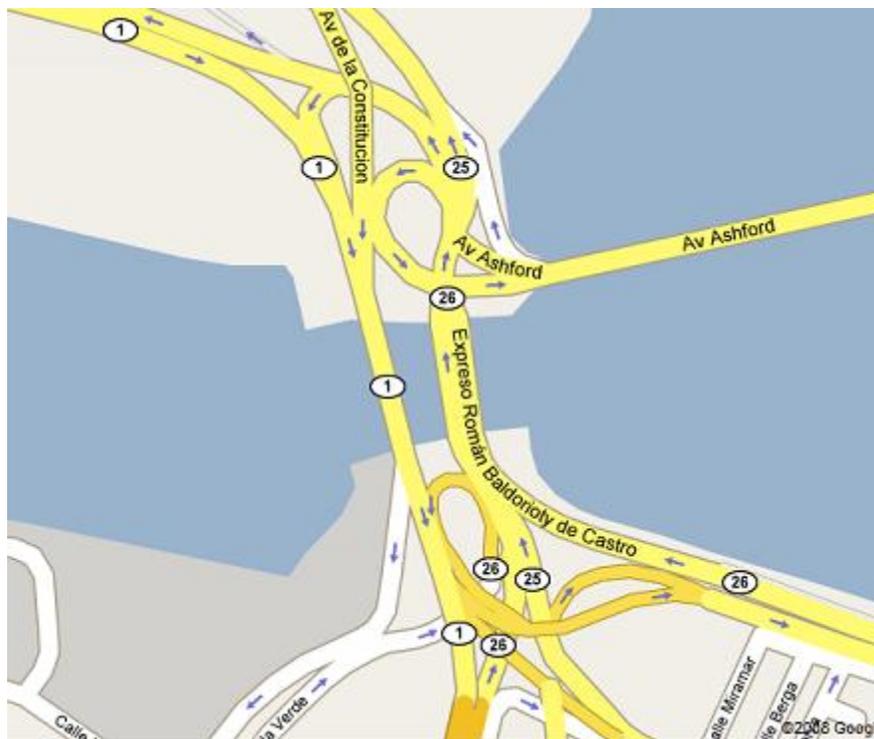


Figure 13 - Map Depicting Intersection 5  
Source: Adapted from Google Maps

With the development of the new Convention Center District and the Waterfront, some changes will inevitably need to be made to Intersection 5 in order to accommodate what will, in the near future, become a busier, more commercialized area. These changes will primarily affect transportation to and from each of these areas in vehicles as well as on foot. In considering the changes that must be made to this intersection, it is necessary not only to optimize the flow of several different methods of transportation, but also to make traversing the intersection as enjoyable as possible.

## **C) Considerations in Road Design**

An area's infrastructure plays an important role in how communities and their residents interact. The redevelopment of Intersection 5 will need to take into account several different, possibly competing, design considerations. Among these are urbanism concepts, necessary to make the area more community oriented. Public opinion will also need to be taken into account to some degree, making sure the people most affected by the changes will be pleased with the outcome. Pedestrian and bicyclist communication is another vastly important consideration for the redesign of this area, especially taking into account how poor it is through the current design. Along with all of this will need to be the underlying basic concepts of road design such as traffic calming and enhanced traffic flow measures.

### **1) New Urbanism**

Although the term "new urbanism" has only recently become a buzzword, community developers have been trying to implement its concepts for decades (Southworth, 2005). In its most basic definition, new urbanism is a method of urban planning and construction using smart, people-friendly design to improve the lives of urban dwellers and bolster the spirit of the community (Newman & Kenworthy, 1999). The push towards this new brand of urbanism has been given momentum over the past decade due to the widespread feeling that existing "patterns of urban and suburban development seriously impair our quality of life" (Newman & Kenworthy, 1999).

The scope of the principles of New Urbanism is vast and encompasses just about all aspects of urban living, but the ideas most pertinent to the goal of the Intersection 5 project are those concerning how public space is utilized. The architecture and site designs will need to be built in a way which encourages residents to feel comfortable exploring and interacting within their community by venturing into public places without the barrier of a motor vehicle. According to Talen (1998, p. 1374), "improved design creates improved behavior. . . In order to create this sense of community new urbanites should attempt to integrate residential space with surrounding public space and by the careful design and

placement of public space.” This is the purpose of the redesign of Intersection 5, to create a link between the residents and the amenities in their neighborhoods. One goal of CSA will be to explore these concepts of new urbanism to uncover possible ways to connect the community to the major areas surrounding the intersection, the San Juan Waterfront, Old San Juan, The Convention Center, Miramar, and Condado.

## **2) Public Opinion**

An area which needs to be addressed when attempting to provide recommendations for the redevelopment of any area is that of public opinion. As best described by Lippman, “The public interest may be presumed to be what men and women would choose if they saw clearly, thought rationally, and acted disinterestedly and benevolently (Wooten, 2008).” Public opinion asks people to seek as tolerable and comprehensive a compromise among those interests as possible. A difficult task, though, is establishing what the public’s interests are. In relation to Intersection 5, the construction of freeways and urban renewal both require the clearance of land. This land often contains housing, as well as businesses which provide families with jobs and services. One must take the public’s feelings into account when a project of this magnitude takes place. (Glazer, 2007)

## **3) Pedestrian and Bicyclist Communication**

Throughout the United States cities have started taking into account the necessities of walking pedestrians as well as bicyclists. In an article by Michael Southworth (2005, abstract) it is stated that Federal policy is “beginning to shift from auto-centric planning, provision for pedestrian and bicycle access is now mandated in federally supported projects”. With new emphasis on “green” living, along with rising fuel prices in the United States, it comes as no surprise that people are choosing to walk and bicycle more often when possible. This trend shows a need to develop roadways that not only accommodate vehicular traffic, but also provide access for pedestrians and bicyclists.

Making walking easier for pedestrians has been addressed in many ways. One important factor to take into account is the width of sidewalks. According to the City of Rockville Maryland’s Sidewalk Standards (Town, 2006, sec. II-A) a “balance between maximizing pedestrian capacity/walking speeds and creating an experience must be evaluated”. For instance an area with large commercial properties, such as a convention center, where many people are likely to congregate, a sidewalk will need to be much wider than one that simply allows access to small residential zones. Areas with many commercial businesses, such as cafes, which can sometimes take up considerable amounts of sidewalk space, will need a width somewhere between these two. According to Grava (2007) a minimum width for sidewalks

in urban areas should be five feet and can easily reach up to and even exceed fifteen feet for largely commercialized districts. It is also important to note that making these walkways handicapped accessible, meaning that obstruction such as mailboxes, benches, and trees need to be placed in such a way as to provide an easily navigable route for mentally and physically handicapped persons.

This theme leads into the overall topic of pedestrian safety, on which many articles have been written (Hughes, 1998; Sylvain et. al., 2007). Both of these articles agreed that possibly the most dangerous areas for pedestrians are intersections, where interactions with vehicular traffic are typically at a maximum. To this end it is always wise to add traffic lights with controls to allow pedestrians to cross at a specified time. These lights need to be timed so that pedestrians have sufficient time to cross since, according to Grava (2007 p.39), they “tend to take into account the speed of cars, not of pedestrians”. Also, the use of Accessible Pedestrian Signals (APS) should be considered in major urban areas where noise and other distractions can hinder the ability of blind and visually impaired people to know when the pedestrian phase of the light has occurred (Accessible Design for the Blind, n.d.).

Pedestrian mobility through areas with complicated intersections and wide expressways can be challenging. The continuity of pedestrian and bicycle pathways is a good measure of the “walkability” of a city. In order to get people to walk the directness of the route and distance of travel have to be taken into account. According to Hawthorne (1989), Aultman-Hall et al. (1997), and Shriver (1997) these two factors are the most common reasons for choosing not walk. If an area has already been designed with large barriers, such as expressways and busy interchanges which inhibit pedestrian communications, it can be a difficult task to provide means of passing through these obstacles. Southworth (2005) provides a list of some possible remedies to this situation including pedestrian overpasses, underpasses, and certain types of traffic calming techniques.

Many different studies have been conducted on the best way to move walking pedestrians around intersections and areas with dense vehicular traffic. The information in this field of study will be of vital importance to the redevelopment of Intersection 5. From the concept of New Urbanism we learn that walkways for pedestrians should be clearly defined, easily accessible, and, aesthetically pleasing. There is a very compelling argument to use footbridges instead of underpasses (“Putting Pedestrians on Top”, 2007). Tunnels are typically uninviting, dark areas that are often vandalized and can potentially become a shelter for homeless people. Pedestrian bridges which were found to be safer, less costly, and often times lower maintenance. Pedestrian footbridges are used in many parts of the world to enhance pedestrian access in difficult locations. In the United Kingdom, several projects involving footbridges

have been completed recently (*Planning*, 2005; *Transport News*, 2003). In Singapore an extremely modern looking double-helix design footbridge (Figure 14) is currently being planned (Reid, 2007). However, some studies have suggested that often times pedestrians prefer not to have to walk up an incline in order to access a bridge (Grava, 2003); this preference could lead to some possible negative public opinion about adding overpasses for walking pedestrians. There are, however, other possible solutions to improving pedestrian communications between physically separated locations in an urban setting.



**Figure 14 - Double Helical Bridge Design – Singapore**  
Source: Reid, 2007

#### **4) Traffic Flow and Traffic Calming**

Due to the design of Intersection 5 and its environs, which include the San Juan Waterfront, Old San Juan, and the Convention Center District, pedestrian traffic between and among these areas is minimal. Many of the parties interested in redeveloping this area would like to enhance pedestrian access, but this goal tends to conflict with another goal to enhance the flow of vehicular traffic. Typically, putting large volumes of vehicular traffic together with large numbers of pedestrians is a recipe for conflict. Pedestrians and drivers often ignore signals and designated crossing areas. High volumes of pedestrian traffic and poor intersection design and signage encourage jaywalking, which slows traffic and puts pedestrians in harm's way (Hughes 1998). These problems are only exacerbated when many of the pedestrians and drivers are tourists that are unfamiliar with local traffic patterns. Consequently, it is essential that the designs proposed for Intersection 5 explore innovative ways to enhance traffic flow while enhancing safe pedestrian access.

Consequently, the redevelopment of Intersection 5 will need to incorporate methods of traffic calming in certain areas. The aim of traffic calming is to reduce speeding, noise, and volume through an area (Hoyle, 1995). One of the goals of traffic calming is to “improve conditions for non-motorized street users” (US DOT, 2002 para. 1). Most often, these techniques are used in communities which are more oriented towards walking, bicycling, and have easy access to transit. This concept of creating a sense of community by increasing pedestrian communication fits perfectly with the design concept of new urbanism previously discussed (Hoyle, 1995).

Design engineers use traffic calming as a way to change the “psychological feel” (Hoyle, 1995) of the street. Some ways to do this include adding bicycle lanes, center islands, forced turning lanes, and roundabouts (US DOT, 2002). There are a variety of traffic calming techniques. Some of these (such as raised crossing) are meant to change the mindset of the driver so that they automatically become more aware of their surroundings and, as a result, slow down. Others simply allow for safer passage of pedestrians and bicyclists, such as bike lanes. Again with the new urbanism concept, separate walkways and/or bike lanes can also act as traffic calming devices. These create a more pedestrian friendly environment (Hoyle, 2005).

The design and implementation of the previous road and bridge descriptions will all need to be done in specification laid out by the Department of Transportation. Combining both pedestrian and traffic flow will need to be designed in a manner to maximize the competing goals of each.

## **D) Case Studies**

In order to get a better idea of how design concepts are formed and brought through to completion, the group has reviewed other major highway construction projects completed outside of Puerto Rico. The team focused on extensive reconstruction projects in busy, highly populated cities that would be comparable to the San Juan Metropolitan area and found several inspired designs.

One such project is the Route 9A Project in Manhattan, New York. Formerly the West Side Highway Project, this repair necessary due to poor infrastructure maintenance of the elevated highway dating back to the 1950s, as well as needs caused by increased traffic due to population growth. After a catastrophic accident in 1973 in which a cement truck fell through the road, the city began to make proposals to reconstruct a 4.1 mile stretch of the vital highway. In the years following the accident, several proposals were made, some of which were eliminated due to community concerns and some of which were environmentally unsafe, as route 9A runs along the Hudson River. The actual plans for the

reconstruction were only finalized in 1994 and revisions were made after the terrorist attacks on September 11, 2001 which changed the conditions of the area. The finalized plans, released in 2005 proposed an at-grade 8 lane highway designed with the community in mind. It featured ample pedestrian walkways on both sides of the road as well as bike lanes spanning the entire length of the reconstructed area. The walkways, known as Promenade South, are artistically landscaped and are meant to be a focal point and a gathering place for the community. What is even more commendable is the way that the city kept the community involved and updated through informational meetings and open houses during each phase of the project. Promenade South was completed in 2006, and the highway is on schedule to be completed in 2009 (O'Brien, 1997; NYS DOT, 2007).

Another example of a highway project which became a community gem is the reconstruction of Route 29 located along the Delaware River in Trenton, New Jersey. South Riverwalk Park was built in 2002 on top of the tunneled part of the highway. It is a bike path and pedestrian walkway which boasts several innovative design elements. One of the most impressive of these elements is a permanent exhibit which walks visitors through 500 years of Trenton's history. In addition to linking pedestrians and bicyclists to several sports, recreational and entertainment facilities, South Riverwalk Park can be used as an outdoor classroom for local elementary schools. And just as with the Route 9A Project, the community of Trenton was closely involved with the construction of South Riverwalk. The Community Partnering Team was created specifically to give businesses, residents, and various sector groups representation during the design and construction of the park (Cazenas, 2005).

Investigating these and other projects provides insight into what factors affected their design decisions and what should be taken into account in the case of Intersection 5. This knowledge will provide useful insight when making recommendations to CSA.

The information provided in this background section is necessary to gain a full understanding of the complexities and challenges facing the development of the area surrounding Intersection 5. The goal of this project was to identify these challenges and analyze them in such a way as to provide recommendations to circumvent the negative effects that could occur. This report contains a great deal of information gathered about the state of these projects as well as many varying viewpoints on design concepts from key personnel. As well as the thoughts and needs from key community members regarding these projects. Following this section is the methodology used to acquire all of the data gathered for this report.

## **Chapter III: Methods**

### **A) Problem Statement**

The entrance to the Islet of San Juan is in a unique state of development. Areas that once housed a flourishing maritime industry have been abandoned, and are now the focus of a redevelopment effort. On the mainland just south of the Canal San Antonio and west of the Estevez and San Antonio bridges, an old US naval base has already been replaced with a Convention Center, and the surrounding district is under development to become a vibrant mixed-use district with restaurants, hotels, office space, and residential areas. North of the Canal San Antonio on the Islet, construction will soon begin to transform a run-down shipping district into an urban public waterfront. With the revitalization of these two areas, the City of San Juan hopes to integrate currently disparate sections of the city, including the hotel district of the Condado, the upper-middle class neighborhood of Miramar, the urban parks on the northeast of the Islet, and the historic district of Old San Juan. In order to accomplish this integration, the roads connecting the Islet to the mainland and Condado, known as Intersection 5, must be restructured. Additionally, the City wants to encourage pedestrian and bicycle access to the areas, hoping to lessen their dependence on automobiles. The development of these areas has been contracted out to a variety of groups. To date, communication between these groups has been insufficient, sometimes resulting in conflicting or poorly integrated plans.

### **B) Project Goal**

The goal of this project is to assist CSA in reviewing and integrating diverse plans for the redevelopment the area, with a focus on interagency communication as well as community involvement. The current design of this interchange severely hinders access between and among these districts for pedestrians and bicyclists as well as for motor vehicles. In collaboration with CSA Group, this project examines possible solutions to these problems including, but not limited to the use of pedestrian walkways, bicycle lanes, and other alternative modes of transportation.

The first research objective for this project was to gain a better understanding of nature and scope of the problem area. Second, we analyzed cooperation between key organizations working on these projects as well with the public reviewed the designs and status of each of the major projects while. Third, we solicited the opinions about the developments from members of the community. Finally, we provided CSA with a map of all Intersection 5 area developments as well as

recommendations for integrating the proposed project so as to create a fluid, connected path for non-vehicular traffic and suggestions for improving internal and external communications.

As soon as they were provided, the group reviewed the most recent project reports and studies concerning Intersection 5 and the Waterfront District as well as the project designs for Intersection 5 and the Convention Center District. In order to get a better understanding of the nature and scope of the problem presented to us, it was imperative to explore the area in question. This would supplement our review of the plans and literature by providing us with a more concrete knowledge of the roadways and a better feel for the area, including its promises and problems. Therefore the group walked the routes necessary for pedestrians to navigate from Condado to the Convention Center District, to the Paseo Caribe area, Escambron Park, and Muñoz Rivera Park and back to Condado. The group also explored the difficulties in crossing Muñoz Rivera Expressway from Miramar and Santurce. Next, a series of interviews were conducted with representatives from each entity which was planning a construction project affecting Intersection 5. This included representatives from the Puerto Rico Highway and Transportation Authority, CSA Group, the Convention Center District, National Parks, and the Municipality of San Juan. These interviews were conducted in order to gather information concerning the perspectives of the different organizations on the various project proposals in play. Finally input was solicited from representatives from Miramar, the community that would be most directly affected by the projects. Interviews were conducted with some very active members of the community association, including its president and an architect who could discuss the projects on both a technical and personal level. In addition, we searched local newspaper databases for supporting articles about city development projects and the community of Miramar. Table 3 below shows our objectives, as well as the tasks conducted in order to accomplish them.

**Table 3 - Objectives and Tasks**

Objective	Task	Details
Understand nature and scope of projects, likelihood of success, issues.	Review reports	Waterfront Master Plan, Waterfront Environmental Impact, Steer Davies Gleave Traffic Studies
	Explore area	Convention Center District, Intersection 5, Miramar
	Solicit technical input via interviews with professionals	Luyanda, Hernández, Pérez, Martínez, Blázquez, Chaparro, Gómez, Alsina
Analyze cooperation between key organizations	Interview representatives participating agencies	Luyanda, Hernández, Pérez, Martínez, Blázquez, Chaparro, Gómez, Alsina
Solicit community opinion	Interview community groups and representatives	Jiménez, del Toro, Rodriguez
	Newspapers	El Vocero, El Nueva Dia, San Juan Star
Provide recommendations	Integrate findings from interviews, combine proposals	

### **C) Understand Nature and Scope of projects**

To facilitate the proper analysis of all of the information that was made available throughout the course of the project it was necessary to first gain a thorough understanding of the complexities of each of the development projects underway in San Juan.

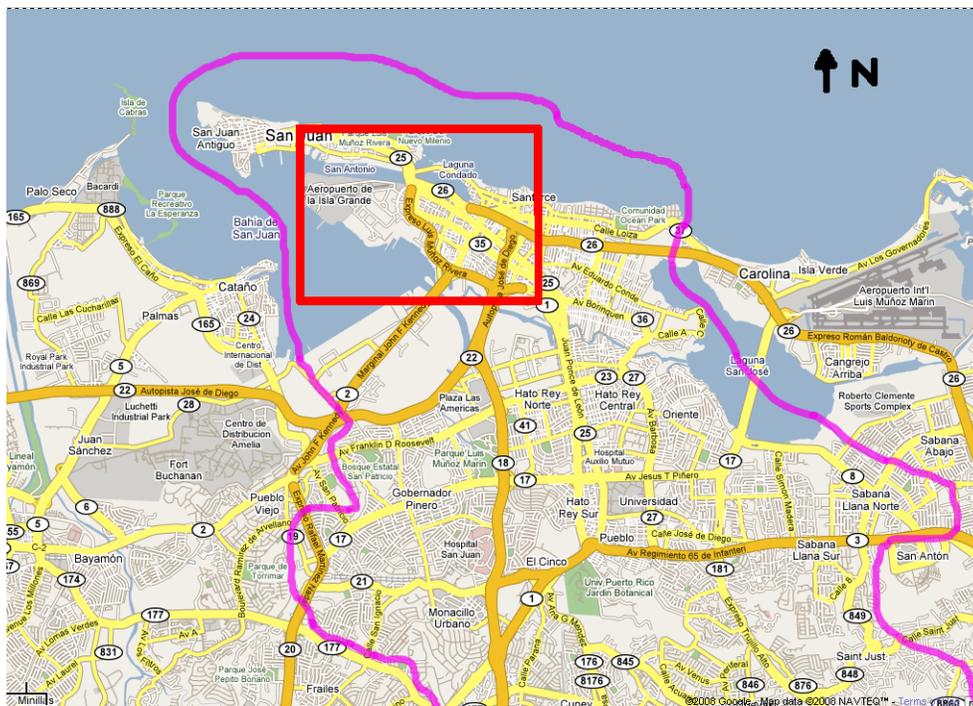
#### **1) Reviewing Reports**

In order to gain a firm grasp of the projects taking place in the San Juan, many documents were examined. These include reports from the traffic consulting firm Steer Davies Gleave, the Master Plan for the San Juan Waterfront, and the Environmental Impact statement for the San Juan Waterfront project. The Steer Davies Gleave reports were searched for information providing details into the nature of the traffic concerns present in the area as well as many of the design alternatives considered in the past. In the Master Plan for the San Juan Waterfront we looked for intelligence pertaining to the kinds of changes that would be made to the area as well as proving maps and deadlines for the project. From the

Environmental Impact Statement we wanted to learn details of existing land use, transportation, and infrastructure as well as how each of these will improve as a result of the development. These reports were also used in the process of devising interview questions for the appropriate parties. The purpose of this task was to build on discussion in the literature review, as these proprietary reports were not at our disposal before arriving in Puerto Rico.

## 2) Exploring the Area

It is important to note that the focus of this particular project is on Intersection 5, but it fits within the larger sect of projects associated with the Convention Center District, the San Juan Waterfront, the bicycle trail connecting Muñoz Rivera Park and Central Park, and the light rail train. Therefore it is necessary to define the region of interest with more clarity. A portion of the San Juan Metropolitan Area is shown below in Figure 15, with the Municipality of San Juan outlined in purple. The red square shows the region to be highlighted in the following figure.



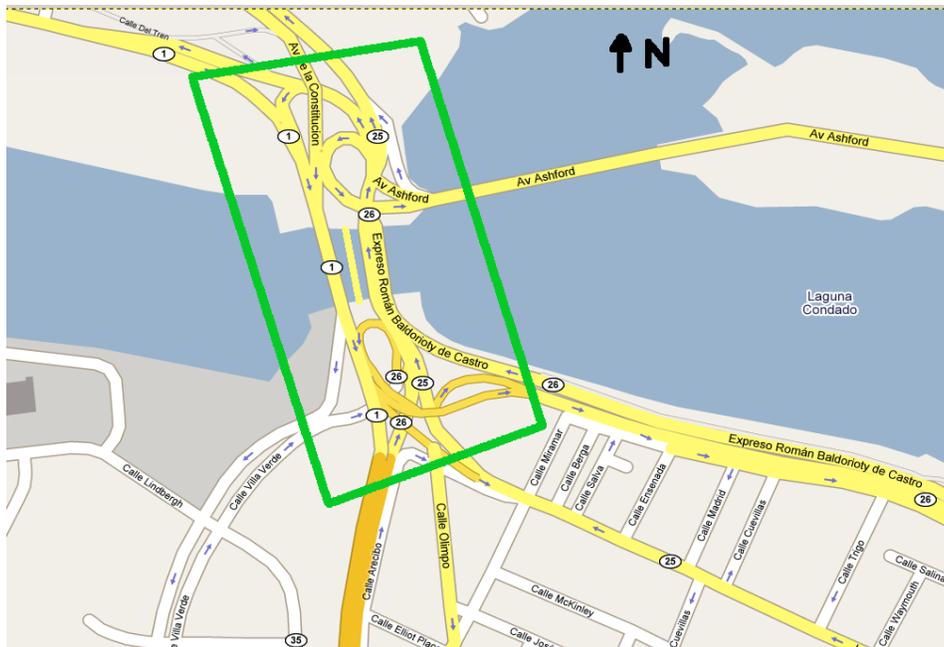
**Figure 15 – The San Juan Metropolitan Area**  
Source: Adapted From Google Maps

In this report, “the area” refers generically to the space outlined in green in Figure 16, including the San Juan Waterfront, Miramar, the Convention Center District, the urban parks, and the Condado. The red square shows the region to be discussed in the following figure.



**Figure 16 - Areas Serving Intersection 5**  
 Source: Adapted From Google Maps

“Intersection 5” refers to the space outlined in green in Figure 17, including the Estevez and San Antonio bridges, and their northern and southern connections.



**Figure 17 - Intersection 5**  
 Source: Adapted From Google Maps

On March 10, 2008, we explored Intersection 5 on foot and by car, with two CSA employees, as guides. We received a site walk-through and an explanation of the redevelopment plans for each of the areas visited. Starting at the Convention Center we drove through the intersection and parked in an area by left-hand exit ramp for PR-1 leading to the marginal road of Route 26. After walking along the ramp we returned to the car, drove up Muñoz Rivera Avenue, went down Ponce De Leon Avenue, and parked by Calle Cinco where we discussed the changes to the roadways around Muñoz Rivera Park.

On March 12, 2008, we began our first-hand observation of the difficulties in navigating Intersection 5 on foot by crossing the Dos Hermanos Bridge from Condado, crossing the Estevez Bridge, and continuing through Intersection 5 in the direction of the Convention Center. From there, we walked across the historic foot bridge between the San Antonio and Estevez bridges to the Paseo Caribe area, and Escambron and Munoz Rivera Parks. We also viewed the Marina in the San Antonio Canal.

We continued our research on March 18, 2008 by walking through Santurce and Miramar to assess the neighborhood's connectivity with the Convention Center District and find possible points of access to the district. We walked to the south-western border of Miramar and continued south along Munoz Rivera Expressway looking for safer places to cross it. Furthermore, we explored the access through the area of interest via public mass transportation on April 2, 2008 by taking the B-21 bus to get from the Condado, a tourist area, to the Convention Center, in the morning. We then took the B-21 to the business district of Hato Ray, during the lunchtime rush hour.

The geographical relationship of the areas visited can be seen in Figure 18.



Figure 18 - Development Geography  
 Source: Adapted From Google Maps

## D) Professional Opinion and Interagency Cooperation

Through a series of semi-structured, informal interviews with representatives from each of the redevelopment projects we were able to compile various types of information regarding their projects, their opinions of the other developments, and their experiences with trying to integrate the two. We also sought out reports and project designs which could be put into a composite map of all area projects.

### 1) Identifying Interviewees and Preliminary Report Gathering

In the case of the professional interviews, we relied greatly on the connections of our sponsor, who was already in contact with most of the project contractors and managers of the project sites because of Intersection 5. We were also referred to several contacts by our interviewees.

Our sponsor Ariel Pérez, the Civil Unit Manager of CSA Group, put us in contact with María de Lourdes Blázquez, CSA's Project Manager for the Waterfront, who provided us with the San Juan Waterfront Strategic Plan as of December 2007, created by Colliers TMT for the Commonwealth of

Puerto Rico. She also provided us with the Environmental Impact Statement prepared by AMEC E&E Caribe for Colliers and suggested that we speak with Anna Castillo, of the Port Authority.

Pérez also put us in contact with Peter Martinez, CSA's Civil Site Technical Leader. Martinez provided us with a variety of maps of the Convention Center District and Intersection 5, at various stages of design and development, a traffic study of Intersection 5 created by Steer Davies Gleave traffic consultants for the PRHTA, maps of the Compañía de Parques Nacionales de Puerto Rico's bike path plans, and a list of possibly helpful residents from the community of Miramar. Additionally he arranged a meeting with Víctor Chaparro, Director of Real Estate for the Convention Center District, who provided us with a PowerPoint presentation about the history of the development of the Convention Center as well as some of the Convention Center's promotional materials. Chaparro also put us in contact with Angel Rodriguez, a graduate architecture student studying Intersection 5.

Pérez contacted Steer Davies Gleave, the company contracted to do traffic studies for the Intersection 5 project, on our behalf. Upon meeting with Carmen Correa we received three further traffic studies. He also scheduled interviews with PRHTA officials Fernando Luyanda, Deputy Director of Traffic and Toll Roads, and José E Hernández Borges, Deputy Director of Infrastructure.

Another contact provided by Pérez was Leyda Gómez from the Compañía de Parques Nacionales de Puerto Rico. Gómez said that minutes from a previous public meeting regarding the construction of parks might be available, and suggested we speak to Belen from the Cultural Institute's Historic Preservation Office. One of Leyda Gómez's coworkers, Joel Franqui, Landscape Architect for the Compañía de Parques Nacionales de Puerto Rico suggested we speak to Javier Lauriano, who works for the San Juan Bay Estuary Project. Additionally he alerted us to an exhibit located in Old San Juan in the Banco Popular Building regarding the proposed light rail train, and suggested generically that we may want to speak to the Puerto Rico Tourism Company.

Another professional who Pérez contacted was Edgardo Torres an engineer for the Municipality of San Juan. Torres suggested we speak to Roberto Alsina the Planning and Infrastructure Advisor to the Mayor. To summarize, a list of our contacts can be seen Table 4.

**Table 4 - List of Project Contacts**

<b>Name</b>	<b>Company</b>	<b>Position</b>	<b>Project</b>	<b>Provided</b>
Ariel Pérez	CSA Group	Civil Unit Manager	Intersection 5	Maps, Contacts
Peter Martinez	CSA Group	Civil Site Technical Leader	Convention Center	Maps, Contacts
María De Lourdes Blázquez	CSA Group	Project Manager	Waterfront	Interview, Proposals, Contacts
Carmen Correa	Steer Davies Gleave	Office Leader	Intersection 5	Traffic Studies
Felipe Luyanda	PRHTA	Deputy Director of Traffic and Toll Roads	Intersection 5	Interview
José Hernández	PRHTA	Deputy Director of Infrastructure	Intersection 5	Interview
Víctor Chaparro	Convention Center District	Director of Real Estate	Convention Center	Interview, Contacts
María de Lourdes Jiménez	Miramar Residents Association	President	Community Input	Interview, Contacts, Articles
Leyda Gómez	de Parques Nacionales	Project Manager	Puerto Rico National Parks	Interview, Contacts
Joel Franqui	de Parques Nacionales	Landscape Architect	Puerto Rico National Parks	Interview, Contacts
Roberto Alsina	Municipality	Architect; Planning and Infrastructure advisor to the Mayor	Light Rail Train	Interview, maps
Angel Rodriguez	University of PR	Graduate Student	Intersection 5	Maps
Alberto del Toro	Miramar Residents Association	Member, Architect	Community Input	Interview, design suggestions
Luis Rodriguez	Resident of Miramar	Architect	Community Input,	Interview, suggestions

## 2) Developing Interview Topics

Prior to arriving in Puerto Rico preliminary topics and questions were devised according to the project description submitted by the sponsor and background research completed on campus. These questions were revised and added to based on the information available to us after arriving on site and the additional concerns expressed by our sponsor regarding communication between projects and the community's attitude toward development.

The topics of the interviews were generally consistent for all of the interviews; however, the questions asked varied depending on what project site the interviewee was representing. Before each interview, the interview questions were selected from the master list and supplemented by more site specific questions based on our findings and the interests expressed by our sponsor.

As the interviews were semi-structured and informal, additional unscripted questions were sometimes asked.

## 3) Interviews

All interviews were semi-structured, and were conducted face-to-face in English. Each interview was also recorded for transcription. On March 25, 2008, an interview was conducted with Filipe Luyanda at the Puerto Rico Highway and Transportation Authority offices. All four team members, as well as Ariel Pérez, were in attendance. Discussion topics included traffic through Intersection 5, current design for redevelopment, extending the train, regulations followed by PRHTA, organizations PRHTA collaborates with, community input and public hearings, communications between collaborating organizations, parks and bike lanes, and incorporating plans. Directly following the meeting with Luyanda was an interview with Hernández. In this interview, he gave an overview of the area, and discussed the goals of the redevelopment, importance of public opinion, possibility of water transportation, limitations of area, communication between organizations, compromises in designs made due to the other projects.

On April 1, 2008, a similar interview with María de Lourdes Blázquez was conducted at the CSA Group offices. She discussed the goal of Waterfront development, organizations involved in Waterfront, communications between organizations and within the many companies contracted by the Ports Authority, the bike paths of the Waterfront and the National Parks, press coverage of Waterfront, and public hearings and the expected public response.

Víctor Chaparro met with the group at the Convention Center offices on April 2, 2008. This discussion included a history of Convention Center development, current plans for development of the

Intersection 5 area, the impact of Intersection 5 on the Convention center District, the communication between organizations, political impediments, previous community reactions to the Convention Center District's design, the current state of mass transit, and the absolute necessity of the light rail train extension.

Leyda Gómez and Joel Franqui agreed to meet with us on April 4, 2008 at the National Parks offices in Santurce. We discussed plans for connection of the National Parks bicycle path and that of the Waterfront District, communication between organizations involved in the various projects, public meetings, and the problems with Intersection 5.

The final interview conducted was with Roberto Alsina on April 15, 2008 at the Municipality offices. Ariel Pérez was present at this meeting and contributed greatly to the discussion. Topics included communications with other projects and the central government in general, Puerto Rican politics and policy, the status and plans of the light rail extension into San Juan, and the community of Miramar.

## **E) Solicit Community Opinion**

The next step was to gather information from community leaders in order to determine their thoughts and opinions about the development projects in the area. This was necessary to determine their needs and judge their overall acceptance of the developments.

### **1) Identifying Interviewees**

Peter Martinez provided us with a list of attendees at a public meeting on March 16, 2006 regarding the Convention Center. From this list, we identified María de Lourdes Jiménez as the President of the Residents Association of Miramar. We then went to the rectory of Perpetuo Socorro Church in Miramar where we obtained Jiménez's contact information. Jiménez suggested we speak to Alberto del Toro, an architect involved in the Miramar Residents Association and to Edgardo Torres an engineer for the Municipality.

We also received helpful input from, Luis Rodriguez, del Toro's business associate who was in the office during our meeting.

### **2) Developing Interview Topics**

The interview topics and questions for the community representatives were developed in the same manner as those for the professionals, with preliminary topics and questions devised before reaching Puerto Rico and revised ones developed based on findings about the political and social climate in

Puerto Rico as well as the sponsor's concerns and interests. Unscripted questions were also asked during these interviews.

### **3) Interviews**

As with the professional interviews, all community interviews were semi-structured, and were conducted face-to-face in English. Each interview was also recorded for transcription. On April 4, 2008, an interview was conducted with Jiménez at her office in the Popular, Inc. offices in Hato Rey. She discussed Miramar as a historical district, past difficulties with developers in Miramar, community reactions to and opinions of the Convention center District and the Waterfront, the current state of pedestrian Movements, her hopes for improvements, and her ideas for how the government and developers can better inform and involve the community in their projects.

The group also met with Alberto del Toro and his associate Luis Rodriguez on April 12, 2008 at his office in Miramar. There we discussed Miramar as a historical district, the struggles that residents still face to have their views heard, attitudes toward redevelopment and the area projects, the current design of the expressways and Miramar's isolation from the surrounding communities, pedestrian difficulties, and considerations to be made when attempting to change the current design of the city.

### **F) Deliverables**

The final objective of this project consisted of providing a report outlining the results and conclusions derived from the research conducted. This report contains a series of maps detailing all of the projects from CSA, PRHTA, CPNPR, and any others that were discovered. These maps are visual tools in deciding what design elements work together and which are not cohesive in terms of pedestrian and bicyclist accessibility. From this, weaknesses in the integration of the proposed developments can be identified and recommendations made to address any disparities. Additionally, information from the interviews that were conducted were analyzed and it was determined that there was indeed a lack of communication or cooperation between separate agencies. We compared how much each organization knew about what other organizations were doing as well as how much contact they had with individuals working on different projects. This information allowed for recommendations to be made to people from these organizations as to how they can best improve their communications. This could include a different system for presenting and sharing project information with the public.

## Chapter IV: Results

This section outlines all of the results from the various tasks performed for this project while on-site in San Juan. The information presented includes findings from first-hand experiences during site evaluations as well as detailed information obtained from interviews, conversations, and newspaper research. The information found in this section will be used for discussion later on, and culminates in final recommendations for CSA. The results shown below were gathered using the methods presented previously in this report. The information presented will work toward the project goal of assessing the communications of the involved agencies as well as interpreting and reporting public needs and opinion with regard to the various projects proposed for the San Juan area, centering on Intersection 5. Figure 19 shows the layout of the area and highlights the positions of the major affected districts that are mentioned throughout this paper.



Figure 19 - Development Geography  
Source: Adapted from Google Maps

### A) Preliminary Site Assessment

The first stage of this project was to become familiar with the area and gain first-hand experience as to the difficulties facing pedestrians, bicyclists, and motorists trying to negotiate Intersection 5. During

visits to the project site several observations were made which supported the need for the redevelopment of the Intersection. Most notably, walking from the area of the Condado or Miramar to the Convention Center District is extremely difficult. In order to get through Intersection 5, especially the southern side; one must wait for long periods of time until it is safe to cross the street. In some areas, like the western edge of Miramar, it is nearly impossible to reach the Convention Center District without crossing a four lane expressway, which is done by some residents who need access to the area. Figure 20 is a photograph taken of an opening cut into a chain-link fence next to Luis Muñoz Rivera Expressway used by pedestrians to access and cross the roadway which contains no sidewalks, no crosswalks, and a very high volume of traffic at most times of the day and night.



**Figure 20 - Fencing Removed to Allow Pedestrian Crossing of Dangerous Expressway**  
[Photo: Jason Ogasian]

Another finding made while visiting the site was the circuitous routes which need to be taken in order to access some key areas while in a car. The most evident among these is the path that must be taken from Román Baldorioty de Castro Expressway, the main road into the city from San Juan International Airport, to the Convention Center District. This route requires drivers to enter the Islet of San Juan and make a wide U-turn in order to come back to the entrance to the Convention Center. Figure 21 illustrates this route, highlighted in red.



**Figure 21 - Circuitous Route to Convention Center**  
Source: Adapted from Google Maps

Additionally, we found that the B-21 is the only bus serving the Convention Center. Unfortunately, the B-21 bus is often extremely crowded because it is also one of the only buses connecting the two major tourist areas of the Condado and Old San Juan, and one of two routes that serve Plaza Las Americas, the only major mall in central San Juan. Moreover, the B-21 bus maintains a very erratic schedule, with only two buses per hour.

## **B) Details Collected from Reports, Articles and Interviews**

The main source of information for this project was interviews. Most of our data has been collected through the process of conversational interviewing providing us with several viewpoints on the topics pertinent to our research. Interviews were conducted to gather four types of information: 1) status of current projects in the Intersection and surrounding areas 2) professional opinions about ongoing projects and their organization 3) professional opinions regarding the effectiveness and prevalence of communications between organizations and 4) the thoughts and opinions of members of the public regarding their wants and needs regarding the redevelopment of the Intersection 5 area.

### **1) Existing Transportation and Proposed Developments**

Much technical information, regarding the plans for Intersection 5 and other developments, was gathered through informal semi-structured, open-ended interviews with several CSA employees. Additionally information was collected from various written reports made available upon arrival in San Juan. The main use of this information is to substantiate and revise the argument made in the Background section of this paper. Many of the thoughts and opinions, as well as facts presented by CSA

officials and others supported the claims that changes need to be made for Intersection 5, especially in terms of pedestrian and bicycle access. In a series of conversations during the early stage of the project, Ariel Pérez, Civil Discipline Manager at CSA, provided substantial amounts of background information about the history and nature of the project. In particular, he noted that one of the overriding goals behind current plan was to provide greater pedestrian and bicycle access through the area. This factor was confirmed and reiterated by Felipe Luyanda, deputy director of toll roads, traffic, and transit for the PRHTA, during an interview:

That's one of the things we want to fix with Intersection 5, is the movement of pedestrians. We have the Condado District, which is very touristy, we have the National Parks which is touristy, we have the Caribe Hilton and other hotels in the area and in Condado which are all touristy, so movement of pedestrians from one side to another is very critical. One of the things we wanted to do was connect all of those important places and make them viable for everybody at that point, and not to use their vehicles from point A to point B. So in this project, it was one of the most important things, making sure that we can have the pedestrian movements, and make correctly and safely. But usually, in other projects, pedestrians are [considered] after the fact. (F. Luyanda, personal communication, March 25, 2008).

### *i) General Traffic Issues*

Some current studies by Steer Davies Gleave have produced information about traffic during peak traveling hours. Over 600,000 cars occupied the SJMA highway system during these times, a number which is twice the capacity the roads were designed for. Also included in these studies was information about other traffic alleviation methods which do not require any construction. These methods include an increased fuel tax, providing car pool lanes, fees for using certain lanes, and auto-free zones (SDG, 2008). According to one of the traffic reports done by Steer Davies Gleave the inconvenience imposed on the public would likely make these measures extremely unpopular and politically difficult to implement.

### *ii) Intersection 5*

The project team learned that the plan for the redevelopment of Intersection 5 is becoming more stable, bringing the goal of “untangling the obstruction of Intersection 5” (Colliers, 2007, p. 02-12) closer to realization. Given the history of past planning efforts and the political context of the project, it is likely that consensus on a final product will take several more months if it can be achieved at all. Currently the plan is to connect Román Baldorioty de Castro Expressway and the main boulevard into the Convention Center District through an at-level intersection with the San Antonio and Estevez bridges. This design allows for greater pedestrian crossing opportunities thanks to the introduction of stop lights and crosswalks. This proposed configuration will also eliminate the need for the U-turn on the Islet of San

Juan to enter the Convention Center District from the west on Highway 26. The proposed plan will also make the traffic flow bi-directional on each of the bridges leading to and from the islet. This option will allow for more entrance and exit opportunities in the event of an emergency, as well as provide more versatile possibilities for commuters entering or leaving the area. A map of the current plan for the redevelopment of the south side of the intersection is provided in Figure 22 below.

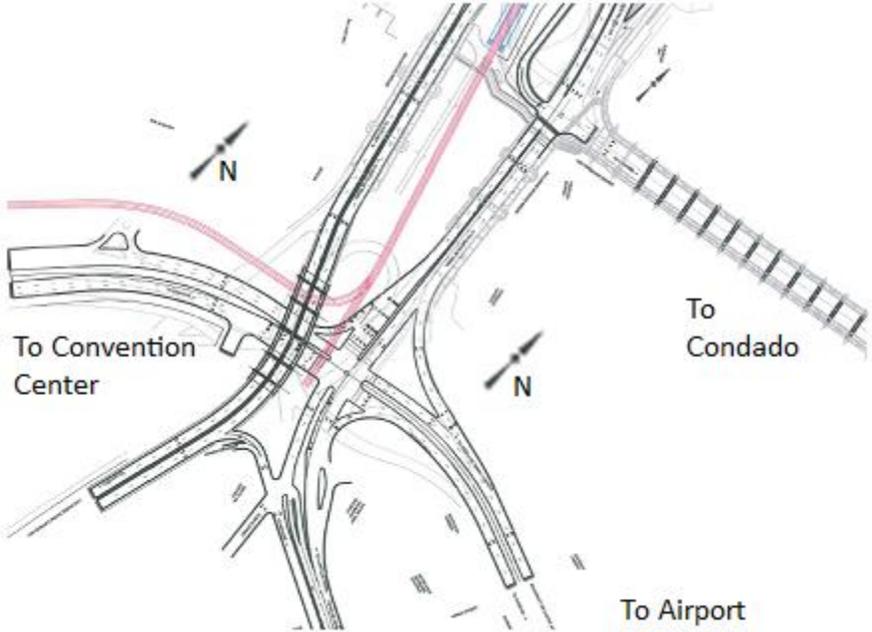


Figure 22 - Intersection 5 Proposed Changes  
Source: Graphic Provided by CSA

**iii) Convention Center**

Figure 23 below, provided by CSA, shows the Convention Center District and surrounding areas under development. The graphic also includes the proposed plans for implementing a light rail train, bicycle route, and pedestrian walkways.



Figure 23 - Map Showing Some Development in San Juan  
Source: CSA Group, 2007, slide 17

#### iv) San Juan Waterfront

Construction on the San Juan Waterfront is expected to begin in 2008 and be completed by 2026. It is envisioned as a gateway to the capital:

San Juan, like many cities around the world, is in the throes of a profound repositioning of its historic industrial port. These once thriving areas, often found in the hearts of great cities, deteriorated into underutilized waterfront holdings as global economic forces and changes in technology rendered them obsolete. But as the industrial glacier recedes, the same obsolescent lands provide extraordinary potential for transformation through new initiatives which convert them into active, vibrant renewed 'waterfronts' with unique opportunities for new life and vitality and a range of uses including residential, hospitality, recreation, retail and restaurant, and cultural uses serving local populations as well as becoming a significant draw for visitors. In this context the obsolescent piers along the north edge of the San Antonio Canal are being brought to new purpose, restoring the Isleta of San Juan to a walkable city and creating a remarkable, renewed and vibrant urban waterfront. (Colliers, 2007, p. 02-3)

It is intended not only as a tourist destination, but as method of revitalizing currently underused space.

The San Juan Waterfront plan endeavors to energize the Isleta and improve the quality of life for all who live, work and visit, by integrating all of the neighborhoods including Puerto de Tierra and Viejo San Juan to the Waterfront. (Colliers, 2007, p. 01-3)

In order to accommodate the expected increased traffic to the Islet, changes have been proposed for the transportation infrastructure.

It is essential that light rail be incorporated in the San Juan Waterfront plan as conceived along Fernandez Juncos. In order to cross onto the Isleta, a dedicated bridge is proposed.

Water transportation will enhance the multi-modal concept with water taxis stopping at Pier 6 and Parque de La Bahia.

Pedestrians and cyclists will benefit tremendously from the plan as a result of traffic calming measures, raised crossings, and exclusive bike lanes.

Given the need to reduce dependence on the vehicle and protect the delicate context of the Isleta, the team is recommending a shared parking concept which refers to mixed use developments that share parking spaces depending on the use and time of day.

The re-design of Intersection 5 will improve current traffic conditions, safety and pedestrian access. (Colliers, 2007, p. 01-4)

The Waterfront will link its walkways to those of other developments, as show in Figure 24.



**Figure 24 - Waterfront Walkways**  
Source: Angel Rodriguez, Graduate Student: University of Puerto Rico

#### ***v) Water Taxis***

Using water taxis as a mode of transportation between various parts of the city of San Juan has been a central topic in several discussions and previous proposals. A tentative plan for building the infrastructure for water taxi stops was mentioned by Blázquez, however the exact locations of these

stops are still not known. Chaparro expressed the opinion that “the water taxis are very important” and that he believes they could even function as their own attraction bringing more tourists to the area.

#### *vi) Light Rail Train*

Water taxis are not the only form of alternative transportation proposed by the Waterfront. There are also plans to possibly implement a light-rail train system that would extend from the existing Tren Urbano onto the Islet of San Juan which, according to Chaparro is “priority number one, and they [the Highway Authority] haven’t given it that.” Contrastingly the PRHTA’s immediate priority is to extend the system to Caguas, about 20 miles to the south of San Juan. As Luyanda said:

The train is one of the biggest challenges we have. The train and how the trains come in [to San Juan]. How it’s going to be developed? It depends on who you talk to. In terms of the priorities of our department, we are interested in having the train come into San Juan but at this point, priority number one is Caguas, Carolina, and then San Juan. So for San Juan, right now, the Municipality does have some plans. We, as the government, have plans but we are still not seeing eye-to-eye in terms of how that part of the train is going to come into San Juan. The way I see it is we must start seeing eye-to-eye soon because this is the capital so we have to start bringing people here. I think we are getting closer to seeing eye-to-eye in terms of final adjustments for the train. I think we just have to determine [specific design parameters]. I think that those are a real easy consensus to reach, at least those issues. In terms of where they connect, I think it’s going to take a while to reach a consensus. (F. Luyanda, personal communication, March 25, 2008).

Achieving consensus on the addition of a light rail system to the Tren Urbano into the islet of San Juan is going to be a major challenge over the next several years.

After speaking to Alberto Alsina, the Planning and Infrastructure Advisor to the Mayor of the Municipality of San Juan, information was obtained concerning the current state of the Light Rail proposal. Currently, the Municipality has seven to eight proposed designs which will reduce to three within the upcoming weeks. The current plans for the Light Rail can be seen below in Figure 25. At first, they had considered an extension of the heavy rail system, which currently operates from Sagrado Corazon, to Bayamon, but was found to be too expensive. The Municipality currently has information regarding the site analysis and has reviewed the general land usage and has developed information regarding other possible developmental opportunities in the area. According to Alsina, the Municipality is also in the stage of doing a radius analysis, information which will need to be shared with the engineers developing the road system through Intersection 5.



Figure 25 - Possible Light Rail Routes  
 Source: Feasibility Study of Light Rail Project in San Juan Press Conference

*vii) Acua Expresso Ferry Service*

Another alternative transportation system in the area is the Acua Expresso ferry service. This, however, is currently only operating from the Islet of San Juan to Cataño, a short ride due south of the Islet. At one time there was also a route that ran from Old San Juan across the bay and through the Martin Pena Canal to Hato Rey. Difficulties in maintaining enough ferries for both routes, however, caused this route to be abandoned. A map of these routes is shown in Figure 26.

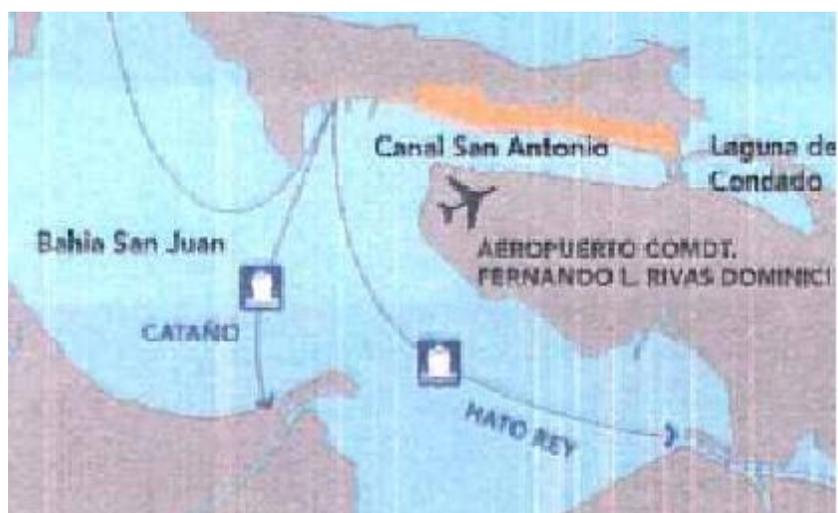


Figure 26 – Acua Expresso Routes  
 Source: Colliers, 2007, p. 2-15

If the Martín Peña Canal were to be dredged this service could be greatly expanded, having routes to the airport and other destinations in the Carolina area through the Laguna San Jose. Figure 27, adapted from Google Maps, shows the area where dredging would be necessary to make this connection.

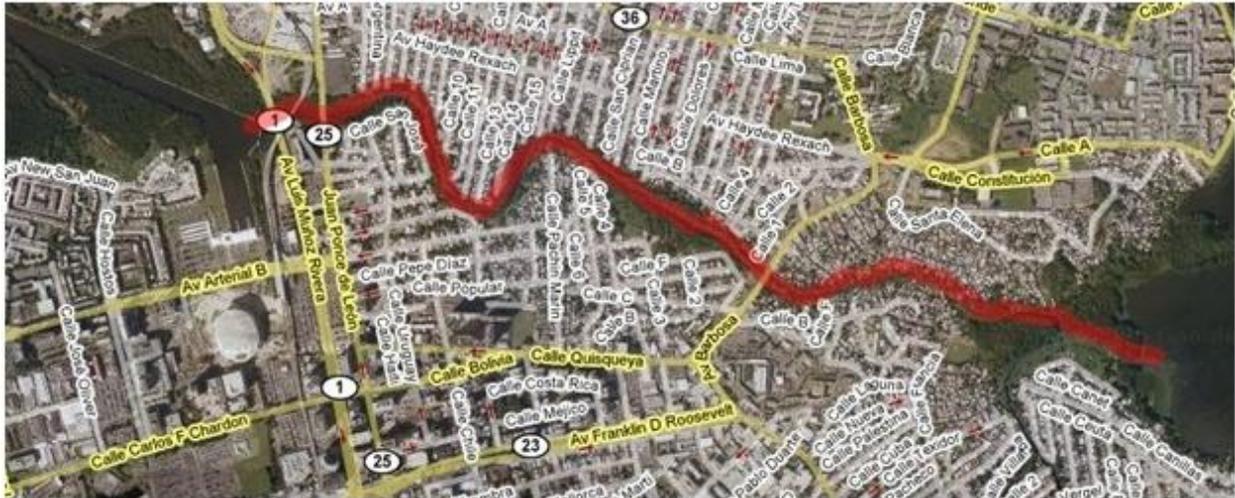


Figure 27 - Area of San Antonio Canal in need of Dredging  
Source: Adapted from Google Maps

#### *viii) Abarca Intersection*

More technical information that was gathered from discussions with the professionals included details about other projects, besides Intersection 5, that are being considered in the area. One of these projects is to create an entrance to the Convention Center District from its southern side, near the Abarca Foundry, where there is currently no connection as shown area marked in red in Figure 28.



would provide a second entrance to the Convention Center District, which now needs to be reevaluated to take into account this possible pathway.



Figure 29 - Locations of Central Park and Muñoz River Park  
Source: Adapted from Google Maps

## 2) Politics of Development in Puerto Rico

Politics have a great deal of effect on developments in Puerto Rico. These conflicts results in a lack of long term planning, lowered communication, and wasted efforts. The main cause of political conflict in Puerto Rico is the issue of status.

### *i) Puerto Rico's Political Status*

Puerto Rico's political status has existed in a kind of limbo for decades—the United States calls it a “commonwealth,” while the Puerto Ricans call it a “free associated state.” Those in favor of independence feel that it is still in many ways a colony. Puerto Ricans are subject to laws and non-income taxes, but do not vote. The issue of whether Puerto Rico should remain as a commonwealth or become a state is a contentious, unresolved, and very divisive issue, and is the primary differentiation between the two main political parties. Like the Republicans and Democrats on the mainland, public support for the two parties is roughly equally split.

The Partido Popular Democrático de Puerto Rico (Popular Democratic Party, PPD) is in favor of remaining a commonwealth. The current Governor, Aníbal Acevedo Vilá, in power since 2005, as well as the last governor, Sila M. Calderón, in power from 2001 to 2005, each came from this party.

The Partido Nuevo Progresista de Puerto Rico, (New Progressive Party, PNP) is in favor of becoming a state. Jorge Santini Padilla, mayor of San Juan since 2001, comes from the PNP.

San Juan is the most populated, most complex, and most politically significant of Puerto Rico's 78 municipalities, and "historically, mayors of San Juan have become governors of Puerto Rico" (R. Alsina, personal communication, April 15, 2008). Because of this tradition, when the Governor and Mayor come from different parties, the Governor regards the Mayor as a threat: a soon-to-be opponent. As such, the Governor attempts to undermine the Mayor's success. In order for the Governor to support the Mayors projects, they must be from the same party. According to Alsina, "Going back to history, the many times that San Juan has flourished in terms of urban renewal in terms of government projects...the Central government and the mayors are from the same party."

A split government, such as the one currently in place, results in "unending partisan squabble and irreconcilable disagreement over cabinet appointments, government budgets, major infrastructure projects, and public policy on everything from economic development to fighting crime and from health to education." (Javier Cimiadevilla, 2004, Sec. A house divided para. 5) The public is aware of this conflict. A commentary in the San Juan Star asks: "Are our political divisions so extreme here that the consensus necessary for...long-term planning is simply unattainable?" (Sherwood, 2007, October 3, para. 12)

These political conflicts are in some ways the root of Puerto Rico's lack of sustainable development.

Our lack of long-term planning is also due to our inability to agree on anything. In a word: politics. Each new administration tends to discard or modify the projects of its predecessor; knowing this, a new administration tends to limit itself to achieving short-term goals, or to present its successor with expensive ongoing projects that would be difficult to stop, like the Urban Train or the Miguel Agrelot Coliseum...Besides, why try to plan long-term if real progress cannot occur until our political status changes or improves? (Sherwood, 2007, October 3, para. 9, 10)

## *ii) Political Associations of Developments*

There is a citywide plan which is intended to integrate all of the projects that are being worked on currently in San Juan. This initiative, known as Ciudad Mayor (or "Greater City"), is meant to be a citywide development that will enhance the San Juan area.

On the Isleta itself, in Condado and on Isla Grande, a number of significant development initiatives are already underway which are complementary to development of the waterfront and offer significant opportunities for synergies in terms of use and building critical mass. Recognizing this development focus, the Government of Puerto Rico has undertaken a major

planning initiative, Ciudad Mayor, to strategically integrate planning initiatives and investment in the region's core assets. (Colliers, 2007, p. 02-16)

Many of the developments discussed in this project are part of the Ciudad Mayor initiative. The initiative is intended to create a long term plan for the development of the area and to increase communication between developers. However, while this has greatly benefited a number of "state" government agencies, the municipal government feels it is being left out.

The San Juan Waterfront development is headed by the Port Authority, and is therefore a state project, but much of the land which is being affected belongs to the municipality. This has caused two significant conflicts. First, the Waterfront proposed moving the loose cargo ships, which currently unload in the underused ports, to Ponce, on the southern coast. The Municipality fears that this move will result in a loss of jobs for those in the shipping industry in San Juan, and also effect area businesses by increasing the cost of shipping materials, since trucks will be needed to get materials from Ponce to San Juan. The other conflict is that Ports Authority made plans for the development of city land without consulting the city. This conflict has resulted in a lawsuit.

The city has also has conflicts with the PRHTA. The light rail train, which is a municipality project heavily promoted by Mayor Santini, must pass through Intersection 5 on its way to Santurce. However, the city planners have been unable to get a hold of a copy of the plans for Intersections 5. According to Alsina, "I have been waiting for a meeting for discussing that subject from Luyanda for almost 8 months. And nothing has happened. Actually, you [students] have called me more times than Luyanda has done. That's how things have been working." In fact, much of the planning for the light rail should be the responsibility of the PRHTA, and done on the state government's dime, but the lack of communication caused the city to give up and go it alone. Alsina said that this was also the case in the extension of the Tren Urbano to Caguas.

Politics not only affect developments when there is a conflict between the city and state. They can also come into play when the administration changes. This has been the case in the redevelopment of Intersection 5. There have been approximately 50 proposals for the intersection, two of which were heavily considered. One of these was a complex, multi-level roundabout which would separate pedestrian and vehicular traffic, and provide a distinctive entrance to the city. The other was a tunnel into the Islet, which, though expensive, would provide the best solution in terms of the sustainability of traffic flow. Several persons we talked to charged that these solutions were scrapped not because of

prohibitive costs or insufficient traffic characteristics, but because they had been the pet projects of previous administrations.

### **3) Professional Concerns about Area Plans**

As well as information about the current and future developments of the land surrounding Intersection 5, we also wanted to get professional input about some of the common concerns which they plan to encounter during development. This section details the two major considerations by the professionals, which consist of 1) Residential Considerations and 2) Environmental Considerations.

#### ***i) Communication between Organizations***

The complete redevelopment of Intersection 5 consists of several different projects simultaneously to improve both the traffic flow and pedestrian access through the area. In such cases, collaboration among different groups is essential for success. As of now, the major players involved in the development consist of CPNPR, the Municipality of San Juan, and CSA as contracted by the Convention Center District Authority, PRHTA, and the Port Authority. CSA's responsibilities consist of the Convention Center and the San Juan Waterfront, whereas the Municipality is proposing a light rail system connecting the Tren Urbano to Old San Juan, and CPNPR wants a bicycle trail connecting Muñoz Rivera Park and Central Park which is to go directly through Intersection 5.

Due to the importance of creating a successful connection to Old San Juan to the main land, the Puerto Rico governor's office has given Intersection 5 much attention. According to Blázquez, "The governor has created an executive order for the development of the San Juan Waterfront Area." As the need for collaboration increased, a task force encompassing the major stakeholders has been developed. According to Luyanda, the task force "meets on a monthly basis. During their meetings, a representative from each stakeholder is responsible for providing updated information about their plans for the advancement of the intersection". Luyanda also goes on to say that "if updated plans are not discussed, then the San Juan Waterfront and surrounding areas will not be viable, and the construction cannot be done." Each agency has to respond during these monthly meetings and present their status to the group. Most of the professionals interviewed agree that these meetings are very useful and help the different agencies stay abreast of new developments in the designs of other projects, but a prevalent complaint is that the most recent design changes and feedback are not always provided expeditiously.

Also, there is the general feeling that since CSA is involved in the Waterfront, the Convention Center District, and the Intersection 5 redevelopment, it is easier to integrate those projects; however

none of the other organizations seem to have good contact with CPNPR nor do they have a good grasp of the anything related to the light rail system proposed by the Municipality.

**Table 5 - Key Agencies Participating in Development**

<b>Agency</b>	<b>Operation</b>
CSA	Contracted on CCD, SJW, and I5
PRHTA	Intersection 5
CPNPR	Bike Path
Municipality of San Juan	Light Rail Train

One of the biggest issues in terms of an exchange among the stakeholders of Intersection 5 is communication with the Municipality of San Juan. The Municipality is in control of the proposed light rail system through Intersection 5 into Old San Juan. According to Chaparro, “The problem with that is no one knows where it’s going to be yet...They don’t have drawings saying [where] the light rail is going to be.” Chaparro also goes on to state that “this is one of the things we should communicate better on...to make it a priority.”

Obtaining proposed documentation of the light rail system is not only an issue with the Municipality. Political issues have also slowed the communication among the organizations. Because of this, says Blázquez, “we do not have a good relationship with the Municipality of San Juan.” Blázquez claims she “did initially make an attempt to establish a relationship and communicate at the beginning, but afterwards the communication stopped...and now [the Municipality] is accusing us that we haven’t involved [them] in any of the decision making”. When asked the same question regarding the relationship between National Parks and the Municipality, Joel Franqui, Landscape Architect with CPNPR, stated that while lines of communication exist, the Municipality can be difficult to work with due to their “attitude” (L. Gómez, personal communication, April 4, 2008).

One of the major problems in communication among the stakeholders in Intersection 5 is that between the PRHTA and the Municipality of San Juan. Due to political opposition, the two government agencies have not been sharing each other’s plans and ideas for redevelopment in the area. According to Roberto Alsina of the Municipality of San Juan, the central government is sometimes hesitant to share

information Alsina also goes on to say that he has been “waiting for a meeting for discussing the subject with [a representative from the PRHTA] for almost eight months and nothing has happened.”

Although there have been issues between the two parties, Alsina believes that communication needs to improve in order for the intersection and surrounding areas will be viable. He also states that “[The Municipality] is not trying to do this project alone. [The Municipality] will have to have an intervention of the government state agency.” Finally, he states that “[The PRHTA] has the answers that [he] is looking for, and [he] has the answers to what [the PRHTA] is looking for, and that is why it is so important for the meeting of minds to happen.”

Communication between the Municipality and the other major stakeholders clearly appears to be an obstacle in the development of Intersection 5 and the projects surrounding it. However, the communication among CSA, the PRHTA, and National Parks does appear to be improving, based on the task force meetings. When Luyanda was asked about the communication between the PRHTA and National Parks, he responded by stating that there are “no problems [in the communication]” between the two parties. One way the improvement in communication can be exemplified is in the National Parks’ Linear Parkway project, which is under preliminary stages. The PRHTA is helping “to accommodate the project” (J.E. Hernández Borges, personal communication, March 25, 2008) by incorporating it into their designs. Luyanda did admit that their correspondence could be better but he also said “[w]e are working on that and through the task force, it has helped us.”

The PRHTA is also in contact with the representatives from the Convention Center District. According to Luyanda, the PRHTA has “a better communication with the Convention Center than with the National Parks,” most of which has been done within the meetings at the Governor’s office. On the other hand, Chaparro, the representative from the Convention Center District, feels that the communication between the two organizations is less than ideal. Chaparro said that “the highway department is difficult to work with,” which he blamed on bureaucracy. He also stated that the task force meetings are useful and beneficial to the progress of the project, but that doesn’t mean “that after the meeting they [the PRHTA] do what they’ve been told.” Leyda Gómez of the National Parks held the same sentiment regarding the other larger developments going on in the Intersection 5 area. She said that “the biggest challenge right now is to make them build what our designer designs... we have an agreement so the challenge is for us to be there, watching out that that they don’t lose our small concern.”

There also seems to be breakdown in communication between the San Juan Waterfront and the National Parks. Blázquez stated that she does have plans to incorporate bicycle paths through the Waterfront District when it is developed. A connection between her bicycle path and the one being developed by the National Parks would be something that could improve the pedestrian access through the area. But, according to Blázquez, she has “done nothing with Parques Nacionales” to incorporate such a design.

Despite having the San Juan Waterfront task force act as an integrator among the stakeholders for the intersection, we found that there is still conflict among different players. When asked how the different designs of Intersection 5 fit together. Luyanda responded by stating that “that’s an issue we are working on in these committees. The Convention Center has one style, National Parks has another style. At what point do we stop with the National Parks style and move to the Convention Center style? Or do we use a completely new style?” As Víctor Chaparro put it, “you have different agencies and different agendas,” all of whom want what is best for their particular project. Also, because of political influences from opposing parties, it is sometimes difficult for organizations to come to a consensus on issues that arise, but so far most of the people involved seem to be pleased that the projects are being guided through from the highest levels of the Puerto Rican government, making it a very high priority and more likely to be completed.

### *ii) Environmental Considerations*

Another recurring obstacle in the interviews was the land usage during construction as stated by Borges.

Basically the obstacle or the challenge is [that there is] very limited space. We have to develop the project [which is] limited by a lot of archaeological sites that we need to preserve... Also, how we maintain the traffic...to construct the project. I think that the traffic and the limitation of space is the most important.

Blázquez, Gómez, and Chaparro all agreed that as a result of environmental considerations, restrictions due to historically and archaeologically significant sites, and the desire not to acquire any more land, the projects must be constructed within a very limited space. It was made clear that every proposed project should be able to be completed if each project team can make considerations for the other developments in their designs. In regard to questions regarding the level of communication between the different project teams, there were differing opinions.

### *iii) Residential Considerations*

One concern that was prevalent during the interviews was the belief that the support of the residents of San Juan was a major factor in the realization of any of the projects, as well as the fact that more

effective ways of communicating plans to the public were needed. They needed a more human element to balance the technical information that they would be presenting to people who had limited expertise or grasp of the technical details. Luyanda expressed the feeling that “seven out of ten [people will be] happy, two out of ten will make comments, and one-tenth will be completely opposed to anything you do”. Also, “They usually see a project like this, and say “that’s going to affect us”. “Either I have to move, [or] they are going to buy my house...””.

Additional interest was expressed in ascertaining the needs and concerns of the residents so that they could be factored into the designs before any public hearings or announcements. Both the PRHTA and San Juan Waterfront projects specified that having community meetings are important. According to Borges, “we will obtain information, [gather] feedback from the public, and we will use those comments to improve our design.” Blázquez of the Waterfront District said “we want to know the issues before, so we are prepared. We had plans for a lot of things, which haven’t occurred, for x and y reasons. We wanted to have several meetings with the community before to hear their issues and concerns so we could address them.” She also feels that part of the problem is the negative press that large projects such as hers generate. When asked about the image that the general public has about her project and if it was cast in a good light, she said that the newspapers typically focused on the down side of the project, such as the “La Coal” fisherman, who currently catch and sell fish the area, would have to relocate to another part of the Waterfront, but she believed that better promotion by public relations would be effective in creating a positive image of the project and letting people know of its long term benefits.

#### **4) Characterization of Concerns and Needs of Local Communities**

This section contains information obtained during interviews with community leaders regarding their thoughts and opinions about the various projects being undertaken in the San Juan area. This section will focus on issues including community needs from the Intersection 5 redevelopment project as well as opinions on projects including the addition of train routes, the building of the Convention Center District, and the development of the San Juan Waterfront. These data will be used to derive suggestions for CSA as to how they may be able to present this project to the public in a way that allows them to understand its benefits while also attempting to incorporate suggestions made by community leaders for these projects.

### *i) Existing Distrust*

The Miramar Residents' Association was created in 1978 (Solis Escudero, 2006), and currently has about 250 members (STAR Staff, 2005, March 13). To date, their greatest concern has been the impact of the Justice Department on their community.

Although the Justice Department has been located in Miramar since 1980, the addition of an eight-story Special Investigations Bureau building caused some concern (STAR Staff, 2005, March 13). A great deal of parking is used by Justice Department employees, and some residents feel unsafe knowing that dangerous criminals are being transported through their neighborhoods (M. de Lourdes Jiménez, personal communication, April 4, 2008). Additionally, plans were in place to erect another building, housing more offices as well as a 500 space parking garage. The Justice Department felt that a parking garage would benefit the community, but residents feared it was the harbinger of further expansion (STAR Staff, 2005, March 13).

In order to prevent further expansion of the Justice Department, as well as to prevent the replacement of historically and architecturally significant buildings with high-rise condominiums, the Residents Association began the battle to make Miramar a historic district. According to Jiménez,

The idea behind declaring Miramar a historic zone is to save its historic buildings and to continue its being primarily a residential area. We don't want it to go the way of the Condado, which is becoming more likely because of the construction of the Convention Center across the road. (STAR Staff, 2005, March 13, para. 1).

One tool they used in this effort was the creation of [MiramarPR.com](http://MiramarPR.com), a website chronicling both their political efforts and the history of the neighborhood. This website, and their efforts, was in existence as early as 2003 (Cardenas, 2003). This website is temporarily offline as of the time of this report.

Some Miramar residents have a residual distrust of the federal government due to this battle. Former Governor Sila M. Calderón twice vetoed legislative efforts to turn Miramar into a historic district with insufficient explanation, leading to accusations of corruption. According to commentary in the San Juan Star, "The Planning Board went silently along with the Governor. This was one of those escapades the events of which were played out one way in public and in an entirely other way behind a political curtain" (Viglucchi, 2005, para. 7, 8) Said PDP Senator Ostolaza, a primary supporter of the effort, on the rejection of the bill, "By vetoing the bills, the governor has turned her back on her own promise to stand up for communities' demands. She has established a bad precedent by undermining the balance of

constitutional powers, and the people will turn against her for that...The people are outraged" (CB and WOW News, 2004, May 27, para. 2)

In the following gubernatorial election, both the PDP and NPP attempted to gain Miramar's support by addressing this issue. In order to secure Miramar's vote, now-Governor Aníbal Acevedo Vilá's made a campaign promise to "to recognize the historic value of the areas of Miramar and Sacred Heart and declaring them historic zones,"(Star Staff, 2005, January 26, para. 3) and prevent the expansion of the Justice Department. However, this change did not come quickly enough. In a letter to the Governor, Jiménez stated "I ask you, with the greatest sense of urgency, to make good on your promise to withdraw the expansion project for the Justice Department in Miramar" (CB and WOW News, 2005, February 3, para. 3).

Miramar was eventually declared an historic district in 2005, and further efforts to expand the Justice Department have been stalled, although the promise of moving the Justice Department to Hato Rey has not yet been realized (STAR Staff, 2006, October 8). Additionally, even after the historic bill was passed, some residents felt that "big money interests," (Neggers Crecioni, 2005, para. 10) "lobbyists with their own economic interests...developers who wanted to tear down historic buildings to erect condominiums" (STAR Staff, 2005, March 15, para. 1, 2), were influencing government agencies to ignore the law.

Residents felt that the Planning Board of Puerto Rico was "purposefully dragging its heels" (Neggers Crecioni, 2005, para. 10). In 2006, Jiménez told the press: "The community feels a great dissatisfaction and concern due to the delays of pertinent agencies in elaborating a map delineating the zone, the corresponding regulation and the absence of answers to our communications,"(Fajardo, 2006, para.1). According to del Toro, this dissatisfaction was heightened by the fact the community members took initiative to create such a map on their own, which the Planning Board refused to use. Del Toro said that when then Planning Board completed their study, the two maps were nearly identical.

Del Toro and Jiménez are by no means the only group criticizing the current planning process. Any persons who want to deal with them must "prepared for a long, drawn out endeavor"(STAR Staff, 2006, October 8, para. 6) In an editorial published in the San Juan Star, Myron Herrick stated "It is obvious to anyone but the blind that there is not and never has been a planning board in Puerto Rico." (Herrick, 2005, para. 1) He continues on to say,

Permits may be denied to the developers, but standard practice has been while appeals are pending the bulldozers move in on weekends or holidays, lay waste to the property and the developers pay a pittance of a fine. An ugly multi-story condo goes up and residents in the surrounding area suffer while scotch tape is applied to the overburdened infrastructure. (Herrick, 2005, para. 3)

A more moderate commentary by Tim Sherwood, a professor from an area university in support of Puerto Ricans for Puerto Rico, roughly comparable to the mainland's Green Party, claims that "too often [the Planning Board's] role has been merely to authorize developments already in the works." (Sherwood, 2007, October 12, para. 5)

Residents agree that they are not against development in general, but they are heavily opposed to the unplanned development that results in "scotch tape," "prison-like structures," (Herrick, 2005, para. 6) "a Berlin-wall of high rises." (Sherwood, 2007, October 12, para. 3) In the worst case, they fear the Miramar will become like the Condado: "[t]he ocean disappeared from view...a concrete tunnel from one end of Ashford Avenue to the other." (Herrick, 2005, para 2.) They feel that the cause of this poor planning is "politicians and/or others who are interested in the fast buck rather than the public good." (Herrick, 2005, para. 1)

Because these issues were so contentious and well publicized, several of the developers we spoke to indicated they were fearful that Miramar might also take issues with their projects, leading to a drawn out battle eventually forcing them to return to the drawing board. It is this fear, rather than a desire to be inclusive, that now drives developers to seek out Miramar's needs.

### *ii) Desire to be Included*

One of the major concerns expressed by Jiménez was that the Municipality of San Juan does not always fully engage the community during its project planning stages. "I wouldn't say the government engaged the community at all. It's what they think they should have, and what they think the community should have. I don't think many times they pick the right [answer]" (M. Jiménez, personal communication, April 4, 2008). Del Toro gave a similar opinion, saying that "[community involvement] in Puerto Rico is bullshit. Here, we have a paternal attitude. And the government [thinks] they know everything." He expressed the strong belief that

The designers, engineers and architects have to direct, and have to get feedback from the people. You cannot discard them. You have to make them feel that they participate in the process. Maybe you don't consider anything because their ideas may not be feasible. But again, you have a process where you considered them and let them participate. (A. del Toro, personal communication, April 11, 2008).

Additionally he recognized that the residents can sometimes be “too extreme” and stressed the need “to find that center point, the point where [the government and the community] can work together” by combining the rules of the planning board and the efforts of the community.

Even though the residents of Miramar seem generally pleased about the new developments and what they will bring to the area, they are aware of the government’s hesitance to share information about the projects with them. They have the reputation of being an active, vocal community with a record of successfully putting to rest projects that they do not support. Del Toro said that “They are a little afraid of the community because this is a very intelligent community”. The people of Miramar felt that the government has not made a sufficient effort to inform them of developments which will affect their community. As an example of this, Jiménez recalled the shoddy information distribution tactics used when the government was planning an expansion to the Judiciary building located in Miramar. She said that “they sent a few letters in the neighborhood to like ten houses next to where the project was going to be, letter[s] that [didn’t] say anything”. What the Miramar representatives wanted from the developers of projects in their area is an increase in communication with the community during earlier stages in the planning. This way they would be able to voice their concerns while there is still room to change designs and at least have a say in what is happening around them. This is a significant finding that suggests that the opinions of local residents toward projects may become oppositional due to the fact that they believe the government is making all of the decisions and not allowing residents the right to have their say on the matter.

### *iii) Attitude Toward Development*

Regarding the redevelopment projects in the Intersection 5 area, Jiménez and del Toro both agreed that they were a good idea and that the projects compliment Miramar. Del Toro said “We don’t see them as an intrusion to our neighborhood, on the contrary.” The main concern expressed was that the developments should be able to sustain all the activity it generates within its facilities, meaning that there should be sufficient parking for visitors because the Miramar streets are not equipped to accommodate excessive traffic and excess cars. All things considered, both community leaders interviewed felt that their problems with traffic and parking in Miramar are “more of bad design [of the urban grid] rather than having a neighborhood around the Convention Center. “ In fact, del Toro believes that Miramar, the Convention Center District and the Waterfront District can have a harmonious and symbiotic relationship. To illustrate this, he said “we have, for example, a lot of

restaurants here that can [benefit] from the [business that the] Convention Center [would bring]. So I think we both can stick together.”

At one time, residents of Miramar were fearful of the impact that the Convention Center would have on their community, and were not in favor of links between them. Before Miramar became a historic zone, Jiménez said: “With our being right next to what will be the Convention Center [it] will bring up property values so that people who own homes will not resist selling and people ... can tear them down to build condominiums.” (STAR Staff, 2005, March 13, Sec. Concerns about Designation para. 10). Speaking of the cultural value of historic structures, Jiménez says:

My house has a cement ceiling. But I know houses that were made with roofs of wood and zinc. They are difficult to maintain, but when it rains one can hear this particular sound of raindrops on zinc plates. And one is immediately transported to another time, to another Puerto Rico. (Merino, 2007, para. 13)

Now that Miramar has some protection against construction efforts affecting their historic homes, Jiménez and del Toro both expressed a desire to link Miramar to the Convention Center District.

#### *iv) Community Needs*

Miramar has been generally seen as an exclusive community which values its privacy and seclusion and is resistant to change. According to the two community leaders, this is only partially true. They agreed that Miramar is special because it is one place where the historical progression of Puerto Rico is clearly visible and it still is a self-sufficient, close-knit community. They do value their privacy, but want to be more connected to the other communities while retaining their community’s identity and without becoming completely tourist-oriented like Condado. Del Toro expressed this sentiment saying “we have always felt that since the construction of the expressway with the Munoz Rivera that Miramar was isolated from the continuity of other neighborhoods”. He likened the two expressways bordering Miramar to a river or a fortress wall preventing pedestrian access in or out of Miramar. Both del Toro and his business partner Luis Rodriguez thought that one way to make those roads more pedestrian friendly and help “tame” the beast of Intersection 5 was to start slowing down traffic long before it reaches the intersection. They also expressed confidence that running the light rail system through Miramar would be beneficial to the community and greatly appreciated. Figure 30 depicts the Miramar district and the two six lane expressways of Muñoz Rivera (to the west) and Baldorioty de Castro (to the north), which in effect cut Miramar off from the surrounding neighborhoods and amenities.





## **Chapter V: Conclusions and Recommendations**

The information presented in this section of the report will provide in-depth details as to the conclusions that have been drawn from the research conducted during this project. Included with these conclusions are any suggestions for affected parties with regards to the conclusions reached about each topic. The suggestions presented here will provide some thoughts as to how the integrations of these numerous complex projects can be coordinated in a more efficient way. This may help to provide the means to get the Intersection 5 project underway, allowing the integration of the area to be started. Based on the research conducted several conclusions have been reached regarding the transportation and design aspects of the intersection and surrounding projects. Recommendations are also presented on the topic of interagency coordination and communication which address the issues found during research. The conclusions section is divided into each of the two broad topics of transportation and communication. The transportation subsection includes all conclusions made about transportation related issues such as the commuter train extensions, the connectivity of Miramar, and the integration of the different projects in the area. The Communication subsection focuses on the varying levels of communication and the conclusions drawn about it in terms of interagency communication and communication with the public.

### **A) Innovation and Integration in Transportation Design**

In order to achieve the maximum level of integration of the various projects in San Juan, including the San Juan Waterfront, the Convention Center District, Intersection 5, and others, each of these projects must have a certain level of compatibility in their plans, designs, and overall goals allowing them to be integrated in a much smoother fashion. Creating effective links between previously disconnected areas will be the key to making this goal a reality. Some areas which need this kind of integration include the proposed light rail train system, the necessary connections to surrounding areas for Miramar, and the coordination of the walkways in the Waterfront project with the National Parks project.

#### **1) Commuter Train Extensions**

According to all of the research that has been conducted it appears that the existing mass transit system needs to be supplemented with another commuter system. The necessity of such an addition has been expressed by several interviewees including Roberto Alsina, Alberto del Toro, Luis Rodriguez, and many people at CSA. Additional mass-transit would be very beneficial to alleviating the traffic problems currently seen in Intersection 5 as well as allowing for much better overall integration of the area. Originally the Tren Urbano system had been planned to enter the Old San Juan area, however this was

never done. This proposed system should be an extension to the Tren Urbano system, which currently ends at the Sagrado Corazon station shown in Figure 32, and should have the ability to move passengers into the area of Old San Juan. The Municipality of San Juan is in charge of the light rail train project that is currently under consideration. As of yet the level of communication between the Municipality government and the other agencies using the land around Intersection 5 has been found to be insufficient by this group. There have already been routes proposed for a light rail train into the Islet of San Juan; however these have not been shared with the agencies involved in the redesign of Intersection 5, making the coordination of the two projects impossible. The recommendations provided here are meant to benefit them in their planning and design by providing solutions to the communication problem as well as recommendations for design improvements.



**Figure 32 - Proposed Routes of Light Rail Train System**  
**Source: Feasibility Study of Light Rail Project in San Juan Press Conference**

The figure shown above depicts some of the proposed routes for the light rail system through San Juan. The train will need to stop at several strategic locations along its route, such as a convenient location in Miramar and Santurce, as well as a location that would provide easy access to the Convention Center. Adding a stop in Miramar will likely be very popular with the residents as it will provide another way of linking them with the surrounding areas. The actual locations will depend on the ultimate route chosen and will require further study.

A major concern will be how to integrate the light rail with the other proposals for the redesign of Intersection 5. With the limited space available at this intersection it will be crucial to allow passage of the train without obstructing the flow of pedestrians and vehicles.

**Recommendation 1:** One possible solution to this dilemma would be to have the light rail pass over the San Antonio Canal on the side of the existing San Antonio Bridge, following roughly the same path depicted above. Figure 33 shows a similar implementation for a light rail system in Little Rock, Arkansas.



**Figure 33 - Light Rail System Appended to Existing Bridge**  
Source: Light Rail Now

Obviously an idea such as this would need in-depth evaluation from a team of civil engineers to determine the feasibility and practicality of the option. However, if all lanes are able to be preserved while keeping pedestrian walkways open this will be a very efficient use of resources and space through the intersection. Any such plan will of course need to be evaluated by the PRHTA and the Municipality of San Juan simultaneously in order to synchronize their individual efforts on the project.

Another issue that that came to the forefront during our interviews is the lack of transportation between the Condado area and the Convention Center District. The Municipality of San Juan is considering a few different methods of remedying this problem. One such idea is to have another light rail going over the Dos Hermanos Bridge into the Condado. The problem with this is that it will greatly increase the complexity of the intersection. Another plan was to utilize a Bus Rapid Transit (BRT) system

connecting the areas. However the passage of such a route through the intersection would have a negative effect on traffic.

**Recommendation 2:** The suggestion presented here would be to have the BRT route pass south of the Condado Lagoon and only pass through the southern part of Intersection 5, eliminating the need for the route to pass over either of the already busy bridges. Figure 34 shows a possible implementation of such a route.



**Figure 34 - Possible Bus Rapid Transit Route**  
Source: Adapted From Google Maps

This BRT route would obviously be able to then meet up with the light rail system in order to provide further accessibility to the area, allowing effective passage from any of the stops on the Tren Urbano all the way to the Convention Center, the Condado, and even Old San Juan while keeping the passage of large vehicles through Intersection 5 at a minimum.

## 2) Connecting Miramar to Surrounding Areas

The interviews with representatives of the Miramar district revealed a strong, underlying feeling of isolation due to the lack of connectivity between Miramar and the surrounding districts. In particular, this is due to the number of high-speed multilane roadways that surround the district on three sides, including PR-26 (Baldorioty De Castro) to the North and PR-1 (Muñoz Rivera Expressway) to the west and south as shown in red in Figure 35.



Figure 35 - Miramar Isolated From Surrounding Areas  
Source: Adapted From Google Maps

This feeling of isolation is mainly felt by pedestrians and bicyclists since road access is less of an issue. This isolation is one of the reasons that it is believed a light rail train through Miramar would receive a great deal of public support from the residents. The addition of new forms of mass-transit, however, will not help to fix the difficulties in pedestrian accessibility from Miramar which are likely to increase as more attractions are added to the Convention Center District and the San Juan Waterfront. A suggestion from Jiménez as to a way to alleviate some of this isolation was to add a footbridge connecting Miramar to the Convention Center. While speaking with the architects from Miramar they also expressed the need pedestrian crossings into and out of Miramar.

**Recommendation 3:** It is the suggestion of this group that two pedestrian bridges be built in order to achieve this connection. One bridge should be placed at the end of Elliot Place allowing easy access to the Convention Center District. The other should allow passage over Baldorioty De Castro to the Condado Lagoon. The locations of these bridges are shown in Figure 36.



**Figure 36 - Map Depicting Locations of Proposed Pedestrian Bridges**  
Source: Adapted From Google Maps

With the addition of these two bridges as well as the changes being made to Intersection 5 the connectivity between Miramar and the surrounding areas can be greatly improved. The locations of the bridges mean there will be access to the Convention Center District and the Condado Lagoon area as well as much better, and safer, access to the Islet of San Juan through the improved intersection design.

One point that needs to be taken into account is the age of the population of Miramar. According to Alberto del Toro over 70% of Miramar residents are over the age of 70. Thus many of them will require handicap accessible amenities such as bridges. This point was also made by Jiménez when she pointed out the difficulties involved in getting around with a wheelchair.

**Recommendation 4:** From this information we recommend that all bridges constructed must be handicap accessible in order to provide the maximum amount of effectiveness.

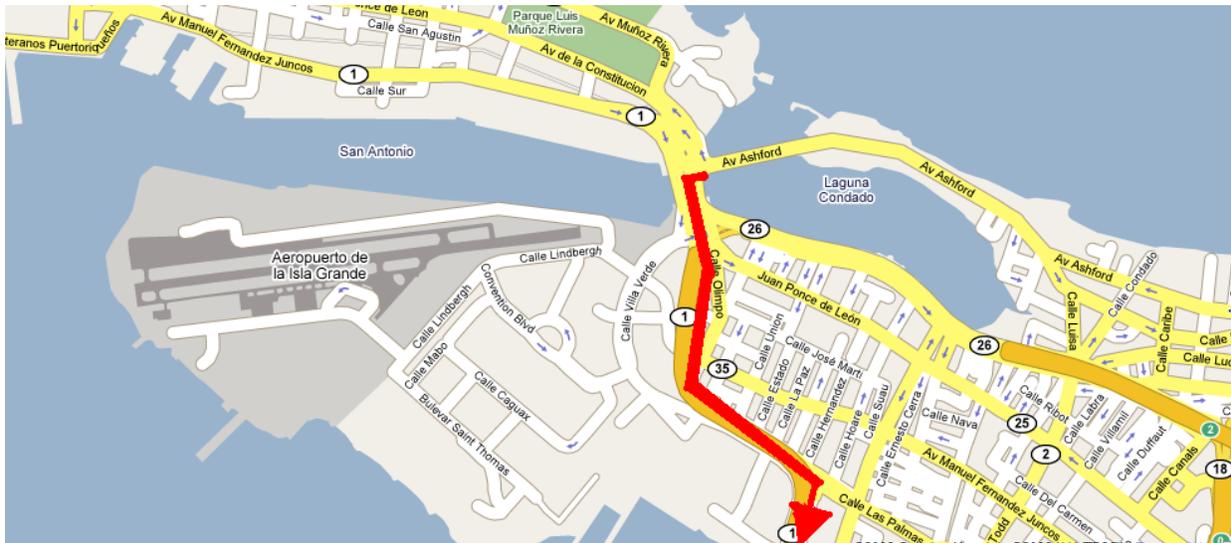
### **3) Connect Parks and the San Juan Waterfront Pedestrian Routes**

As a result of information gathered from interviews conducted with representatives from both the National Parks and the San Juan Waterfront District, we were able to find a gap in the communication between proposed projects around Intersection 5. Blázquez, the Waterfront project manager, stated that she did have plans to incorporate a bicycle and pedestrian path throughout the Waterfront District. On the other hand, National Parks representative Leyda Gómez was able to provide CSA with a map of their proposed Linear Parkway, which connects Munoz Rivera Park with Central Park, going directly through Intersection 5. The latest documentation provided from the San Juan Waterfront has already planned pedestrian and bicycle paths between Munoz Rivera Park and Intersection 5, as seen below in Figure 37.



**Figure 37 - Pedestrian Routes for Waterfront and National Parks**  
 Source: Adapted From Google Maps

Below, in Figure 38, is the Linear Parkway as proposed by the National Parks.



**Figure 38 - Map of National Parks' Linear Parkway**  
 Source: Adapted From Google Maps

When asked if there has been any communication between these projects, Blázquez stated that she had not been in contact with anyone from the National Parks. As a result of this breakdown in communication there appear to not be any current plans accommodate each others' developmental needs.

In this situation, we feel that there should be more communication between the two stakeholders. Figure39 shows the area where we think the proposed projects should connect. In a case such as this, both parties will be competing for land use, and better communication and implementation

of their respective plans will help bring their designs together. Also, both groups are going to have different styles of pedestrian paths. It would be beneficial to the overall appearance of the project to have similar design styles, such as pathway materials and lighting, so the pathway is visually acceptable to the users.

**Recommendation 5** is that representatives of the Waterfront and National Parks communicate more to help resolve some of the design details among the different pathways to help them integrate not only functionally but also aesthetically. This communication should be in the form of the task force meetings that have been conducted so far. These meetings should include as many affected organizations as necessary to share the full range of data available.

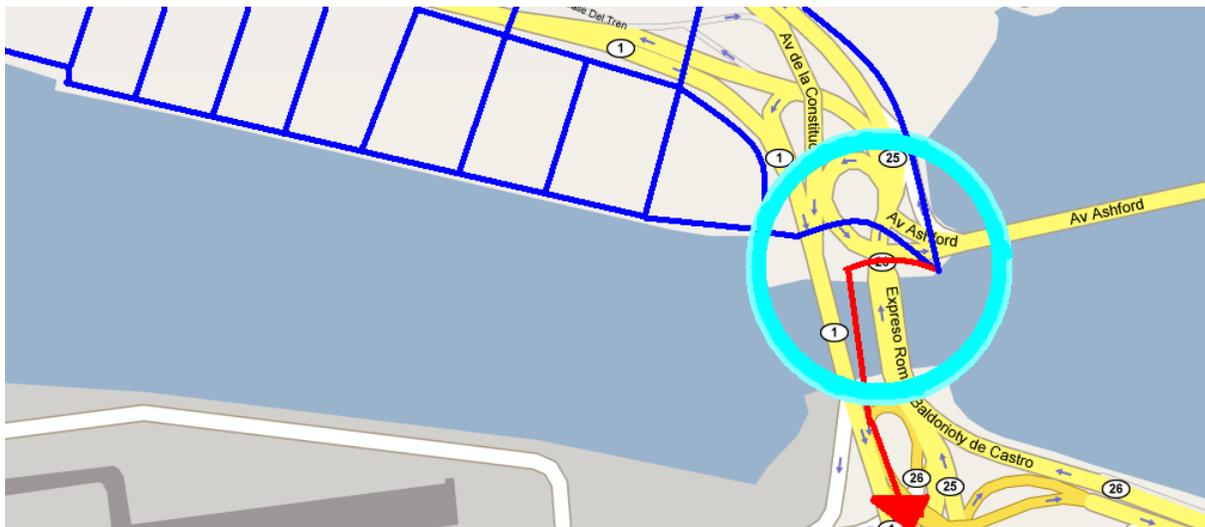


Figure 39 - Area of Necessary Integration  
Source: Adapted From Google Maps

## B) Recommendations Regarding Communication Issues

Branching from the idea that in order to connect the National Parks path and the pedestrian walkways of the San Juan Waterfront communication needs to be increased we arrive at the conclusion that communication needs to be improved across the board in order to make the redevelopment of the entire area a success. As stated above meetings such as the current task force meetings, which were said to be very beneficial by several interviewees, need to continue and, if possible, become more frequent and open to more people from a wider range of agencies.

**Recommendation 6:** Meetings of the major stakeholders should include not only senior members of each agency, but also key personnel from contracted companies. This will improve the flow of

information from top levels to bottom levels of companies as well as provide all parties with the necessary information for completing their project to meet all possible requirements placed on it by other projects. Two places where communication needs to be improved greatly are between the central and local governments and also with the local communities.

### **1) Communication between the PRHTA and the Municipality of San Juan**

One area where this group has observed a critical lack of communication is between the San Juan Municipal government and the Puerto Rico Highway and Transportation Authority. From the research conducted it was found that plans for the redevelopment of Intersection 5 developed by CSA Group for the PRHTA have not been shown to key members of the Municipality, including those in charge of the light rail train system. This lack of communication may prove to be detrimental to the Intersection 5 project. One example of this may happen can be seen by looking at the current situation facing the San Juan Waterfront Project, which is currently involved in a lawsuit with the Municipality presumably stemming from problems pertaining to the amount of cooperation between the two groups. If communication between the PRHTA and the government are not improved a similar fate could be in store for the Intersection 5 project, putting it on hold for even longer.

**Recommendation 7:** The PRHTA should provide their technical drawings of the intersection to the Municipality and that the Municipality should provide all current plans for a new mass-transit system through the intersection. This exchange will ensure that both parties know what the total design requirements are and how to most effectively use the available land. They believe that Miramar will benefit from the amenities and the business that the developments will bring to the area. This fact should be emphasized and used as a major selling point when discussing these projects with the community.

### **2) Suggestions for Improving Community Involvement**

One of the most important findings that emerged from the research conducted for this project was that the level of communication between project designers and the local residents who are likely to be affected by the project is insufficient. This opinion was expressed by Jiménez and del Toro during our interviews with them. Increasing the dialog between the residents and the designers would be a mutually beneficial act for both sides. By informing the public about plans for development in the area early on they will feel that they have a more important role in the process. This communication will allow the designers to take into account input from the residents thereby appeasing them while simultaneously improving their design to work better for the people it is intended to serve. This

interaction will also be beneficial to the organization initiating the contact in that it will increase the level of popular support for their project making it less likely that the community members will oppose it.

One of the more important areas to initiate this kind of dialog is with the residents of Miramar. This is a very well organized community of educated professionals with the ability to stop a project if they feel it does not meet their needs. It was found during the course of this project that it appears project designers may be apprehensive about communications with Miramar residents because they think their project may be blocked simply because the residents are against development. We found that this imagined resistance is not the case. The residents interviewed for this project stated that they are in favor of development projects such as the Convention Center District, the San Juan Waterfront Project, and a plan to redesign Intersection 5. They believe that these projects will complement Miramar if designed carefully with community involvement to avoid creating any new problems.

**Recommendation 8:** Contact should be initiated with local community leaders early in the design phase to gain their input on the projects being conducted. This contact can be made either through individual meetings or large group meetings where questions and concerns of the public are addressed on an individual basis. This will help ensure that all parties feel represented in the design and will help to avoid complications later on. The sooner this contact can be made the better, however a preliminary plan should be available to discuss.

**Recommendation 9:** Another suggestion would be to implement a page on the Public Works' (DTOP) website which could be used to provide information about current development projects directly to the public. The information displayed on the webpage would give the public information about the ideas behind such a project, as well as planned time and location of community hearings. This would allow people to provide thought- out feedback to the designers during meetings that may take place later on.

**Recommendation 10:** Also, give realistic updates about the nature and scope of the project. There should be more honesty about the current and future state of the project without raising the hopes of the community members involved. The community should be involved in the details which affect them the most. As a result of maintaining a solid and honest working relationship with the community, there will be less of a chance to have community opposition.

After meeting with Jiménez, we also found that another area of concern for the residents of Miramar is that of parking. Because Miramar is located so close to the Convention Center, large events

held at the Convention Center can lead to a decrease in available parking spaces in the district of Miramar. The available parking spaces will only decrease as there are plans to expand the already 580,000 square feet Convention Center.

**Recommendation 11:** Engineers and architects responsible for the designing need to consider the parking needs of the Convention Center as well as its effect on surrounding communities, specifically Miramar, before developing plans for adding additional sections to the Convention Center.

We feel that our recommendations should not only be considered with the current projects surrounding Intersection 5, but could also be applied to future projects which involve other agencies and/or communities. A list of all of our recommendations is provided in Table 6.

**Table 6 - Table of Recommendations**

<b>Recommendation 1:</b>	The light rail train should pass over the San Antonio Canal on the side of the existing San Antonio Bridge.
<b>Recommendation 2:</b>	A bus route connecting the Condado and Convention Center should pass south of the Condado Lagoon, through the re-designed Intersection 5 and avoid the Dos Hermanos bridge.
<b>Recommendation 3:</b>	Two pedestrian bridges should be built: one at the end of Elliot Place and one to allow passage from Miramar to the Condado Lagoon area.
<b>Recommendation 4:</b>	All pedestrian bridges should be handicap accessible.
<b>Recommendation 5:</b>	The San Juan Waterfront and National Parks should confer on all details of the proposed bicycle and pedestrian paths, as well as involve the designers for Intersection 5.
<b>Recommendation 6:</b>	Meetings of the major stakeholders should include not only senior members of each agency, but also key personnel from contracted companies.
<b>Recommendation 7:</b>	PRHTA needs to share technical drawings with the Municipality and the Municipality needs to provide current plans for a new mass-transit system.
<b>Recommendation 8:</b>	All agencies working near residential communities should increase contact with community members to gain input early in the design phase.
<b>Recommendation 9:</b>	Updated information should be included on the DTOP webpage about current development projects.
<b>Recommendation 10:</b>	All agencies working near residential communities should provide realistic updates about the nature and scope of the projects in discussion in order to keep the affected communities involved.
<b>Recommendation 11:</b>	Convention Center District planners should consider parking needs for both the district and the residents of Miramar before constructing additional sections of the Convention Center.

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## Appendix A – Sponsor Description

CSA Group is a privately held company that does both public and private sector work for profit. The CSA Group traces its origins to the formation of Burns and Roe operations in Puerto Rico in 1956. In 1981 Roe and Associates merged with Custodio and Associates, and after considerable growth the company reorganized into Custodio, Suárez and Associates (CSA) in 1992. In 1994 the company reorganized again as CSA Architects and Engineers and became the CSA Group in 1998. CSA Group now has operations in Philadelphia, Miami, Atlanta, Chicago, Jersey City, New York, Harrisburg, Washington DC, San Juan, and Panama City, Panama

CSA Group is a national caliber architectural and engineering firm and is currently ranked 190<sup>th</sup> in the top 500 design firms in the United States and 158<sup>th</sup> in the top 200 environmental firms by Engineering News Record magazine. CSA currently employs over 500 professionals, including more than 125 professional engineers or architects. CSA personnel work in 48 different technical and scientific fields. CSA Group also holds the title of largest Hispanic engineering procurement, and construction (EPC) firm in the United States. CSA's mission is “[t]o be the firm of choice for professional services in markets where Hispanics have a growing influence in public and private sectors” (CSA Group).

CSA is organized into six departments including: Engineering; Architecture; Program and Project Management; Environmental Services; Construction Management; and, Operations and Maintenance. The Engineering division is the largest and encompasses a wide range of disciplines including civil engineering, electrical engineering, structural engineering, plumbing and fire protection engineering, geotechnical engineering, scheduling and cost estimation, mechanical engineering, construction management and inspection.

CSA is structured to serve their customers in four different sectors: transportation, infrastructure, general building, and industrial. The transportation sector is an industry which includes projects involving highways, bridges, rails, ports, telecommunications, and airports. The scope of these projects varies from complete design and implementation to evaluation of pre-existing structures. Recently, CSA has been involved in 60 significant projects in all its locations, with a total installed cost of over \$2 billion.

The main market sector of CSA is their infrastructure division. They have completed more than 200 infrastructural projects in the past few years, with a total installed cost of over \$3 billion. They have become one of the leading service providers in the United States and the Caribbean. Their engineers and

architects have extensive experience in designing and installing water systems, power generation and distribution systems, and communications systems.

The last two sectors include their general building and industrial divisions. The general building projects range from the development of planned housing communities to the construction of hotels, educational, or commercial buildings. CSA employees plan and manage the construction of all projects. The industrial division includes the design and development of various pharmaceutical and other manufacturing facilities.

In Puerto Rico, CSA has completed a variety of projects, including designing hotels, aqueducts, public housing, bridges, transit systems, prisons, schools, and other buildings. The Group is also involved in large-scale renovation and demolition projects, the development of water and electricity infrastructure, and the conduct of environmental studies.

Two of their main projects in Puerto Rico are the development of the Convention Center District and the Water and Wastewater Infrastructure Program. CSA has been working in the Convention Center District on the behalf of the Puerto Rico Convention Center District Authority since 1998 and \$1.3 billion has been invested in the area. The area consists of a variety of businesses, hotels, restaurants, parks and tourist attractions. CSA oversees the development and is involved in the work on a variety of levels, from asbestos testing to architectural design and program management. The Wastewater Infrastructure Program has also been in the works for many years. Since 1998 CSA has worked for the Puerto Rico Infrastructure Finance Authority to alleviate problems caused by the deterioration of previous infrastructure. This program consists of hundreds of small projects to fix distribution all over the island, as well as several new treatment plants, totaling \$1.8 billion.