

An Overview of Rail Transit Transportation Studies in SJMA

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Overview of the Presentation

- Role of Site/Corridor Selection in Infrastructure Projects
- Major Studies for SJMA Rail Projects
- Recent Project Evolution
- Conclusions & Recommendations



Project Definition Process

- Planning
 - ↳ Site /Corridor Selection
- Design
- Construction
- Operation



Infrastructure Site Selection Process

- Site evaluation
 - ↳ quantification of parameters
- Site analysis
 - ↳ qualification & quantification of characteristics
- Site planning
 - ↳ functional allocation
- Site selection
 - ↳ Decision making



Infrastructure Site Planning vs. Site Selection

- Site analysis
 - ↳ ... a continuous process on which a continuing design process can be based
- Site selection
 - ↳ ... same techniques, but a broad search will most often begin by the reduction of possibilities to a manageable handful of alternatives



Corridor/Technology Analysis

- Regional Planning
 - ↳ System Characterization
 - ↳ Problem Identification
 - ↳ Goals & Objectives
 - ↳ Regional Plan (multimodal)
- Major Corridor Alternative Analysis
- EIS Process

Río Piedras: a Town in Convalescence

The Tren Urbano as an Urban Generator

The history of Metropolitan San Juan is the history of its suburban growth. This process began in 1949 with the planning and construction of the first large scale *urbanización* called Puerto Nuevo. I have identified at least six major factors favoring the explosive growth of the capital city from 1949 on. These are:

1. The urgent need for new housing. The 1950 census indicated that 35% of the housing stock on the island was inadequate.
2. The second factor was the creation in 1942 of a central planning agency called the Puerto Rico Planning Board. This public agency brought to the island the zoning practice and regulations imported from the U.S.A.
3. The third factor was the postwar availability of federal money for the

construction of new infrastructure. Mainly energy and aqueduct lines and roads.

4. The fourth and most important factor was the ensured finance for the construction of new single family housing through the FHA programs available for local banks from that period on.

5. The next factor is the massive return of the war veterans with their modest but secure lifelong pensions. And finally,

6. The abundance of an enormous quantity of cheap land as leftovers from the decaying agrarian model that collapsed on the same period.

All these factors contributed to the rapid growth of a new suburban model. The low density layout on Metropolitan San Juan reflects the assumptions that people would all own their own cars, live a highly mobile life-styles and drive great distances daily. This attitude took no account on public transit and

avored the private car. Non-drivers such as the elderly, the young and the poor were considered as second class citizens. Today without a car in San Juan you are nowhere.

A few statistics will add to this point. In 1940 the island population was almost two million people. There were 22,847 cars, that is to say, about 12 cars per 1000 persons. Two decades later, in 1960 this proportion grew to 76. In 1980 the proportion was 353, in 1990 mounted to 449. Today there are on the island almost two million cars or more than 476 per 1000 inhabitants. This proportion is one of the highest of the world.

In the 1940s and the 1950s, when many Puerto Ricans were leaving for New York and Boston, the urban population on the island was only 30.3 percent. The cities and towns were small and compact, their urban fabric was mostly confined to the traditional historic nuclei. Fifty years later, the 1990 census indicates that 71.2 percent of the Puerto Rican population is considered as *urban*.

Puerto Rico has become one giant suburb where people are neither true jibaros, nor true urban dwellers. An entire generation of Puerto Ricans has known nothing but the lifestyles of the urbanizaciones. This style was prescribed by international modernists and adopted in Puerto Rico from the 1940s to the present as being synonymous with progress. It involved the desertion of traditional urban centers, and the artificial geographical segregation of habitation, production, commerce and recreation. As a result, citizens were obliged to travel greater distances as part of their daily routine, and the private car became an absolute necessity. On an island as small and crowded as ours, this model of suburban growth has been disastrous. The concept is now obsolete.

Urban planners worldwide have recognized its failures and urged a return to traditional and local urban values. Unfortunately, many groups and individuals involved in decision making have not yet

learned from our mistakes. In other words we have an *attitude problem*. Soon residents, real estate owners, financial institutions, developers, city planners and the public sector will have to change the ways we plan, finance and construct our living spaces. I think the Tren Urbano project that you are about to be part will stimulate these changes.

Despite many unwise decisions already etched in cement, there is some light at the end of this tunnel of suburban mediocrity. A new trend is already underway where renewed appreciation for traditional urban spaces is taking place. At the same time we have started to research the process of suburbanization as an important step to change our attitude problem.

Today I would like to share with you a sad story of one seriously deteriorated town center abused by suburban growth. This is the short story of Río Piedras, our university town. It will also be one of the most important Tren Urbano stations on the line.

On May 5, 1893, the Princess of Spain, Doña Eulalia de Borbón, visited San Juan en route to Havana, Washington, New York, and Chicago. As part of the royal visit Governor Antonio Dabán had arranged an excursion to the town of Río Piedras. She described her experience with these words: "On the estate gardenias in bloom filled the air with their intoxicating perfume, the mango and chirimoyo trees, as tall as poplars, shelter coffee plants which thrive only in the shade, and pineapples are grown among tobacco plants, under a sky of indescribable blue, unique to the tropics."

It is hard to believe that these pastoral scenes were located immediately adjacent to the plaza of Río Piedras, on the official summer residence of the Spanish governors, called the Casa de Convalecencia.

In 1995, one hundred and two years after this royal visit, no governor would dare arrange an official excursion to the center of

Río Piedras. The beautiful estate of Convalecencia disappeared in the 1960's, giving way to an underground parking lot which ironically still bears its' name. The town center, no longer a showcase of tropical beauty or tranquility, has experienced severe deterioration in all aspects. Its' population has shrunk and the socioeconomic diversity that once existed has been replaced by social homogeneity and dangerous segregation. Its' buildings are used almost exclusively for commercial purposes. During the day it is chokingly overcrowded and by night it is desolated and abandoned. Its' infrastructure is inadequate and its' quality of life worsens daily, along with its' reputation.

Why has such a venerable urban center been allowed to decay to such an extent? And why have so many towns of our island suffered a similar fate? The last few decades have seen the sacrifice of urban centers in exchange for suburban growth, a result of obsolete principles of urban planning which

are still in use in Puerto Rico. A very important aspect of the Tren Urbano project is related to the reverse of this process. I see the Tren Urbano as a major contributor for the rehabilitation of urban life opposed to the present trend on a small island of only 8,960 square kilometers.

A certain knowledge of the history of our urban centers is essential for planners, engineers and architects related to Tren Urbano. This does not guarantee high quality of proposed solutions but it does provide an essential spatial and historical context conscious of our Caribbean traditions.

There are a relatively large number of maps of Río Piedras, and the earliest of which I am aware is from 1775. The exact date of its' foundation is uncertain, but by the end of the 18th century Río Piedras was a discrete entity in Puerto Rico's urban system. By 1842, under the name of El Roble, it is clearly a node of regional transport: all the roads from the rest of the island to the capital

merged here and this fact was crucial to its' development. The Tren Urbano will continue the tradition.

Close to the center of town, at the entrance of the Experimental Station of the UPR, the oldest bridge of the Carretera Central (between San Juan and Ponce) lies hidden by weeds. It was completed in 1853 and should be highlighted both as the oldest public structure in town and as a symbol of Río Piedras' historical significance in transportation.

The first detailed map of the town center was produced in 1880. This document reflects the practices of urban planning at the time, and reveals many important elements in the town's development. For instance, it had become a site for summer homes of many wealthy families from the capital, and by 1880 was the last stop of the trolley line that linked it to the center of San Juan. Intense and daily contact between the two towns soon followed, as the travel time had been greatly reduced.

The trolley line ran parallel to the main road (now Ponce de León Avenue). It reinforced the North-South corridor which became the growth axis for both urban centers.

In the 1890's Río Piedras also became the site of the central junction for the islands' railway system. The western line, to Arecibo and Mayagüez, did not reach the town center, but the eastern line, to Carolina, had a station close to the town plaza. By now the town's boundaries were both natural and man made.

The Escuela Normal, built soon after 1900 on a farm to the north of town, later became the UPR. It was literally "on the other side of the tracks" and its' structures gave their backs to the town. This was perhaps the beginning of a faulty relationship between the campus and the town which, sadly, still persists.

The population of Río Piedras had begun to grow rapidly, from 3,084 in 1899 to 13,408 in 1930. The town expanded and neighborhoods such as Capetillo, Venezuela, and Buen Consejo were continued in the reticular pattern previously established. An influx of people from the countryside, added to the growing middle class that inhabited new suburbs such as Puerto Nuevo and Caparra Terrace, began to place impossible demands on the services of the municipality. Citizens became increasingly dissatisfied with the authorities and, in a 1951 referendum, voted for the union with San Juan. The municipality of Río Piedras, founded in the 18th century, was officially abolished. Uncontrolled suburban growth and simultaneous neglect of the town center had caused it to become the first victim of suburban modernism. Many other towns would soon follow suit.

By the 1950's the trolley and railway lines had fallen into disuse and were replaced

by Muñoz Rivera avenue. Construction of 65th Infantry highway and Barbosa avenue had begun and Gándara avenue had replaced the railway on the northern side. These avenues were designed and built to accommodate the increasing number of automobiles that had become part of city life. The center, which was not designed for cars, had been bypassed and became used almost exclusively for public transportation.

The population of the barrio pueblo reached an all-time high of 22,532 in 1950, but by 1990 was down to 8,804. Today it has less people than it did in 1930. The devitalisation has been both a cause and effect of this loss of permanent population.

In the 1960's the old center continued to deteriorate. It was the golden age of enormous urbanizations with their motorized residents and equally enormous shopping centers. The urban structure of the whole island was undergoing serious transformation and we have now become one vast suburban mass.

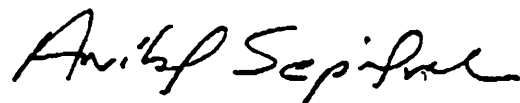
Surprisingly, Río Piedras still survives as a point of connections for buses and carros públicos. This fact has stimulated commercial development which is now geared to a segment of the population that was largely left behind by the frenetic *progress* of recent decades. Its' role as a regional commercial center has survived despite the fierce competition from shopping malls.

The deterioration of Río Piedras began with its' disappearance as a separate municipality in 1951, and it seems to have reached rock-bottom. Although depleted in population and lacking in socioeconomic diversity it still possesses unique advantages compared with other urban areas; the presence of a university campus, a system of public transportation that will be boosted by Tren Urbano, and a dynamic commercial life.

A collaborative revitalization plan should be put in place as part of the Tren Urbano

project. I invite you to use Río Piedras as a
case study for your individual projects.

Thank you very much.



ANÍBAL SEPÚLVEDA, PH.D.

Río Piedras

January 11, 1995.