107th AVENUE PEDESTRIAN TRANSIT GREENWAYS CORRIDOR AT CITY OF SWEETWATER

INTERLOCAL AGREEMENT BETWEEN FLORIDA INTERNATIONAL UNIVERSITY AND CITY OF SWEETWATER

Final Report

Prepared by

Dr. Sylvan C. Jolibois, Jr., Principal Investigator
Associate Professor and Deputy Director
Lehman Center for Transportation Research
Florida International University

Submitted to

Jorge Forte, Project Manager
City of Sweetwater

December 2003

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DISCLAIMER

The opinions expressed in this report are those of the author and can not be assumed to represent those of the City of Sweetwater and/or the Miami-Dade Metropolitan Planning Organization (MPO).

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EXECUTIVE SUMMARY

During the last few years, much of South Florida has lost critical quality of life characteristics, e.g., architectural and environmental assets, to the ravages of time, adverse economic conditions, and ill-considered development and land use activities. These losses have created the need for municipalities in South Florida, such as the City of Sweetwater, to develop plans for reconstruction and redevelopment of their urban form. In addition, the presence of Florida International University (FIU), the largest state employer in Miami Dade County, a few yards away from the limits of the City of Sweetwater has provided additional impacts for this new paradigm of development, one which looks at closer integration of university needs and services with the potential opportunities which Sweetwater can create.

The main purpose of this project is to illustrate a community transportation system that can not only generate new opportunities in residential, commercial and recreational growth, but is also compatible with the City's planning, development and redevelopment efforts. Through careful planning the City of Sweetwater can be enhanced through:

- Appropriate development of vacant land use areas
- Redevelopment of business areas and adjacent residential communities
- Implementation of a Transit Greenway Corridor to calm the existing roadway network and link key areas through improved pedestrian, bicycle and transit facilities

Transit Greenway is a place for human beings and their pets to enjoy nature and green space in an urban environment. It is an element of connection, rather than separation, in the landscape which enables it to convert the use of space from freight movement to a transit, bicycle, and pedestrian corridor. Most critical elements of transit greenways are greening (planting) the corridor and building attractive sidewalks, networks of footpaths, slowing vehicle traffic, narrowing streets, and providing safe intersections for pedestrians and bicycle riders.

Sweetwater is located on the western section of Miami-Dade County. The city has an entire surface area of 0.8 mi^2. It is bounded by Tamiami-Trail/SW 8TH Street and FIU main campus (S), West Flagler Street and the Engineering campus (N), SW 105th Avenue (E), and SW 117th Avenue (W). In the 1930s, the Sweetwater area was discovered by Clyde H. Andrews, and the incorporation of the City of Sweetwater was formalized in 1941. Its net population is 14,226 (93% Hispanics), its population density is 17,439.7/mi^2; it has 4,267 households and 3,550 families, and 4,353 housing units. Sweetwater's population is relatively young; its median income for a family is $30,823 (2002 Census)

The city's traffic conditions are moderate. Northbound, moderate delays particularly at the intersections of W. Flagler St. with SW 107th Ave., also at Flagler and SW 109th Ave occur regularly. Southbound traffic experiences moderate delays at SW 4th (school zone speed limits) and SW 8th Streets. SW 107th Ave. operates defectively (LOS E) during the peak periods. Adequate queues (15-20 vehicles) were observed on SW 109th Ave. on northbound approach (with W. Flagler) during morning peak period. Huge queues were

observed on southbound approach on the SW 109th Ave. and SW 8th St. intersection during the evening peak period. The SW 4th St. and 109th Ave. intersection operates at LOS A and has no queues and delays.

The FIU team developed and attempted to implement a strong community involvement component with the support of the Sweetwater city hall. Two residential neighborhood workshops and surveys were conducted to get the residents input. Business owners' workshop and surveys were also conducted. Attempts to schedule several meetings with key community leaders (e.g., elected officials, church and school leaders) were not successful. However, a major participation in the City of Sweetwater Fest yielded a considerable number of surveys. Door to door business surveys within the project area were also attempted with minor success.

The survey results are as follows: 128 persons completed the survey questionnaires; 70% (92) of the respondents were residents of Sweetwater; 11% (14) of the respondents were from businesses. The majority of respondents tended to find the Greenway project's components desirable to very desirable. Other components, such as adding shopping malls, theaters, bicycle paths and speed bumps, and having the transit greenway corridor by the canal were highly appreciated by respondents (58%). The inconveniences (eminent domain, work zones, disruption of traffic flow) were identified by 10% of respondents as concerns.

Based on the characteristics of the City of Sweetwater, the obtained community input and the future plans of the city, several alternatives are proposed as greenways corridors. The first alternative consists of a light rail system loop with origin and destination point at FIU University Park (UP) campus. The FIU station would be the only elevated station in the system. Alternative #2 is not a loop, however, it also consists of a light rail system which would be elevated at the origin and destination points, i.e., the UP and the Engineering Campuses of FIU. Alternative #3 is presented as a busway loop facility using local streets with a shared pedestrian/bicycle pathway. The final alternative is a light rail and pedestrian paths combination of the previous three alternatives; and it may be built on stages.

Based on the results of the surveys of the residents and businesses completed during the implementation of the project, and following the analyses performed by project staff on various components of the transportation network, the creation of the city of Sweetwater 107th St Transit Greenway would appear to be a major positive development for the community. The full integration of the two FIU campuses with the city would seem to be a welcome paradigm for all concerned parties.

Each of the transit greenway alternatives suggested in this report comes with several worthy characteristics. Yet, each one also raises several questions/issues which merit further discussion and analysis. However, community involvement in the tasks ahead is/will be of critical importance, as only a vibrant dynamic interactive process can help the political leadership select the most acceptable and beneficial solution for the City and its neighbors.

1. INTRODUCTION

Many cities in the United States have been establishing programs to promote bicycling and walking as an alternative to driving. Generally, the focus has been on bicycling, with some programs geared toward pedestrian safety and welfare. The change in philosophy has been reinforced by legislative and programmatic funding priorities at the federal level.

Comprehensiveness, stable funding, and development of new facilities characterize the more successful pedestrian and bicycling programs. These have evolved in response to a variety of circumstances. In Florida, accident statistics have been the spur to action. In Minnesota, the economics of encouraging bicycle use have appealed to advocates, politicians, and agency staff alike. More recent plans and programs, such as New Jersey, Pennsylvania, and Oregon are based on target usage goals, performance measures and implementation programs.

Throughout the country people are working locally to provide safe, attractive, car-free routes for healthy commuting, recreation and sport, thereby transforming local districts from a fragmented set of residential, commercial and industrial sites into a cohesive neighborhood conscious of its tangible and intangible assets.[1]

During the last few years, much of South Florida has lost critical quality of life characteristics, e.g., architectural and environmental assets, to the ravages of time, adverse economic conditions, and ill-considered development and land use activities. These losses have created the need for municipalities in South Florida, such as the City of Sweetwater, to develop plans for reconstruction and redevelopment of the urban form.

In addition, the presence of the Florida International University (FIU), the largest state employer in Miami Dade County, a few yards away from the limits of the City of Sweetwater, has provided additional impacts for this new paradigm of development, one which looks at closer integration of university needs and services with the potential opportunities which Sweetwater can create.

1.1 PROJECT OBJECTIVE

The main purpose of this project is to illustrate a community transportation system that can not only generate new opportunities in residential, commercial and recreational growth, but will also be compatible with the City's planning, development and redevelopment efforts. Those efforts would be tied into an integrated plan, significantly advancing the community goals. These goals are:

- Improving the quality of life for all, students of FIU and citizens of Sweetwater;
- Natural resource conservation
- Recreation
- Economic development and redevelopment;
- Increasing property values; and,
- Providing improved economic and cultural opportunities for all its citizens.

Given also the nature of SW 107th Avenue Corridor with its significant congestion, right-of-way constraints and abutting land uses, another overriding purpose of this project is to

Figure 1. 107th Avenue - Sweetwater Fest

Figure 2. Florida International University (FIU-University Park Campus)

explore a wider range of transportation alternatives and related improvements that can achieve the following goals within the Tamiami Trail and SW Flagler corridor:

- Increase capacity of travel on network
- Reduce demand for local vehicular trips
- Minimize negative impact on the adjacent land uses.

1.2 DEMOGRAPHICS, HISTORICAL & ARCHITECTURAL REVIEW

1.2.1 DEMOGRAPHY

SWEETWATER is a city located in Miami-Dade County, Florida. According to the 2000 U.S. Census Bureau, the city has a population of 14,226 residents (See Figure 3 and Table 1) .[2] Sweetwater is located, on the western section of the county, at 25°45'58" North, 80°22'25" West (25.765977, -80.373624)1. The city has an entire surface area of 2.1 km² (0.8 mi²). [3]

The 2000 census shows that there are 14,226 people, 4,267 households and 3,550 families residing in the city. The population density is 17,439.7/mi² (6,698.4/km²). There are 4,353 housing units at an average density of 5,336.3/mi² (2,049.6/km²). The racial makeup of the city is 87.15% White, 0.89% African American, 0.30% Native American, 0.20% Asian, 0.01% Pacific Islander, 7.17% from other races, and 4.29% from two or more races. The majority of the population (93.16%) is classified as Hispanic/Latino of all races.[3]

Within the 4,267 households, 39.3% have children under the age of 18 living in the house, 57.7% are married couples living together, 19.1% are female-headed households, and 16.8% are non-families. Approximately 13% of all households are made up of singles and 7.3% have someone living alone who is 65 years of age or older. The average household size is 3.33 and the average family size is 3.55.

Sweetwater' population is relatively young, with close to 60% of the residents younger than 45 years old, i.e., 24.2% under the age of 18, 9.6% from 18 to 24, 29.7% from 25 to 44. In addition, 23.0% fare aged from 45 to 64, and 13.6% are 65 years of age or older. The median age is 36 years. Gender ratios are approximately 100 females to 93 males in the general population and 100 females to 88 males for the over 18 cohort.

The median income for a household in the city is $29,333, and the median income for a family is $30,823. Males have a median income of $22,378 versus $17,020 for females.

The per capita income for the city is $11,098. Approximately 18 % of the population and 16.4% of families live below the poverty line. Out of the total number of people living in poverty, 21.3% are under the age of 18 and 21.7% are 65 or older.

FIGURE 3. PROJECT LOCATION
CITY OF SWEETWATER

Table 1. Profile of General Demographic Characteristics: 2000
Geographic Area: Sweetwater city, Florida

Subject	Number	Percent
Total population	**14,226**	**100.0**
SEX AND AGE		
Male	6,843	48.1
Female	7,383	51.9
Under 5 years	741	5.2
5 to 9 years	965	6.8
10 to 14 years	1,066	7.5
15 to 19 years	1,090	7.7
20 to 24 years	947	6.7
25 to 34 years	1,963	13.8
35 to 44 years	2,256	15.9
45 to 54 years	1,798	12.6
55 to 59 years	785	5.5
60 to 64 years	682	4.8
65 to 74 years	1,061	7.5
75 to 84 years	665	4.7
85 years and over	207	1.5
Median age (years)	36.3	(X)
18 years and over	10,781	75.8
Male	5,044	35.5
Female	5,737	40.3
21 years and over	10,148	71.3
62 years and over	2,346	16.5
65 years and over	1,933	13.6
Male	786	5.5
Female	1,147	8.1
RACE		
One race	13,616	95.7
White	12,398	87.2
Black or African American	126	0.9
American Indian and Alaska Native	42	0.3
Asian	28	0.2
Asian Indian	5	-
Chinese	13	0.1
Filipino	2	-
Japanese	-	-
Korean	1	-
Vietnamese	-	-
Other Asian [1]	7	-
Native Hawaiian and Other Pacific Islander	2	-
Native Hawaiian	2	-
Guamanian or Chamorro	-	-
Samoan	-	-
Other Pacific Islander [2]	-	-
Some other race	1,020	7.2
Two or more races	610	4.3
Race alone or in combination with one or more other races: [3]		
White	12,984	91.3
Black or African American	156	1.1
American Indian and Alaska Native	50	0.4
Asian	41	0.3
Native Hawaiian and Other Pacific Islander	6	-
Some other race	1,606	11.3

Subject	Number	Percent
HISPANIC OR LATINO AND RACE		
Total population	**14,226**	**100.0**
Hispanic or Latino (of any race)	13,253	93.2
Mexican	69	0.5
Puerto Rican	286	2.0
Cuban	7,101	49.9
Other Hispanic or Latino	5,797	40.7
Not Hispanic or Latino	973	6.8
White alone	884	6.2
RELATIONSHIP		
Total population	**14,226**	**100.0**
In households	14,226	100.0
Householder	4,267	30.0
Spouse	2,461	17.3
Child	4,571	32.1
Own child under 18 years	2,870	20.2
Other relatives	2,034	14.3
Under 18 years	524	3.7
Nonrelatives	893	6.3
Unmarried partner	246	1.7
In group quarters	-	-
Institutionalized population	-	-
Noninstitutionalized population	-	
HOUSEHOLD BY TYPE		
Total households	**4,267**	**100.0**
Family households (families)	3,552	83.2
With own children under 18 years	1,676	39.3
Married-couple family	2,461	57.7
With own children under 18 years	1,229	28.8
Female householder, no husband present	814	19.1
With own children under 18 years	350	8.2
Nonfamily households	715	16.8
Householder living alone	548	12.8
Householder 65 years and over	311	7.3
Households with individuals under 18 years	1,989	46.6
Households with individuals 65 years and over	1,411	33.1
Average household size	3.33	(X)
Average family size	3.55	(X)
HOUSING OCCUPANCY		
Total housing units	**4,353**	**100.0**
Occupied housing units	4,267	98.0
Vacant housing units	86	2.0
For seasonal, recreational, or occasional use	7	0.2
Homeowner vacancy rate (percent)	0.9	(X)
Rental vacancy rate (percent)	1.9	(X)
HOUSING TENURE		
Occupied housing units	**4,267**	**100.0**
Owner-occupied housing units	2,148	50.3
Renter-occupied housing units	2,119	49.7
Average household size of owner-occupied units	3.38	(X)
Average household size of renter-occupied units	3.29	(X)

- Represents zero or rounds to zero. (X) Not applicable.
[1] Other Asian alone, or two or more Asian categories.
[2] Other Pacific Islander alone, or two or more Native Hawaiian and Other Pacific Islander categories.
[3] In combination with one or more of the other races listed. The six numbers may add to more than the total population and the six percentages may add to more than 100 percent because individuals may report more than one race.

Source: U.S. Census Bureau, Census 2000.

General Demographics 2000

1.2.2 HISTORY OF SWEETWATER

In the early 1920s, the land where Sweetwater exists was owned by the Pittsburgh-Miami Investment Company who platted the area and named the resulting subdivision "Sweetwater Groves." Sweetwater is the translation of the Seminole word "Miami" Sweetwater Groves was being called the "Gateway to the Everglades" and eventually hoped to be known as the "Gem of the Everglades." However, the development was not a success. Although a number of lots were sold, Sweetwater was hampered by the 1926 Hurricane and the ensuing economic depression.[4]

It was not until the late 1930s that this area of Dade County again received attention as the site as a potential community. At about this time, Clyde H. Andrews, an electrician from Coral Gables, decided to leave civilization behind in order to "pioneer" this western frontier of the county. Andrews purchased an entire block of land in Sweetwater Groves and settled there with his family.

In 1941 Sweetwater achieved more notoriety when a performing group of Russian midgets led the areas inhabitants through the city's incorporation process at the state legislature. Initially it was a mile square strip with six of the Russian performers as leading citizens: Mayor Joe Sanderlin, Marry and Basil Fillina, Paula and Johnny Vilikanoff and Mike Sokolsky. These civic leaders joined forces with the idea of establishing a colony where midgets could build their homes and retire. [5]

Sweetwater was a colony of "real troupers" with its own water, sewer, electric system, city council, mayor and all other attributes of a municipality. The only difference was that the town's residents were never called upon to pay taxes for any public service. Everyone used to pay for the utilities used but if the time came when more funds were needed for operating the government then the performers would "hit the road" again and earn enough in show business to pay for the continued functioning of the town. Mayor Sanderlin actually constructed six houses with his own hands. [5]

Today, Sweetwater is still considered a mostly residential community. It does boast, however, of a vibrant, if small, business sector that is kept bustling through the activities of newly arrived immigrants from Central (Nicaragua/Honduras) and South America (Colombia/Venezuela). In addition to a local Sweetwater elementary school, it also has a county fire station, a major community/youth development center and is looking to almost double its size through annexation of adjacent unincorporated lands.

1.2.3 ARCHITECTURAL AND HISTORIC SITES

Even though the exact date of construction has not been determined, the Sweetwater Bridge, spanning the Tamiami Canal at SW 109th Avenue, is historically significant as the last remaining structure of Sweetwater's early days. Until 1970, when the bridge located on 107th Avenue was built, this was the only route to Sweetwater from the Tamiami Trail.[4]

The structure main support is provided by a row of wood utility poles, parallel to both banks of the canal. The surface is paved with asphalt over a concrete slab.

Figure 4. Sweetwater Bridge – 109Th and Tamiami Canal

Figure 5. Sweetwater Bridge – 109Th and Tamiami Canal

1.3 STUDY OBJECTIVES AND CORRIDORS INVESTIGATED

1.3.1 RESEARCH OBJECTIVES

This study proposes a transit greenway system within the City of Sweetwater; one that connects the major centers of activities within the city of Sweetwater, e.g., the city hall, the public school, shopping malls within the residential areas and the Florida International University (FIU) facilities (See figure 6).

The study has been undertaken with the following goals:

1. To undertake a nontraditional transportation project that will promote infrastructure development for a more walkable community;
2. To improve mobility, intermodal connections and alternative modes of transportation consistent with eliminating deficiencies identified in any relevant long-range planning documents;
3. To identify transit greenway opportunities for the City of Sweetwater and the Florida International University;
4. To identify appropriate accessible funding sources for transit greenway project development and construction; and,
5. To conceptualize the following:
    - the corridors and destinations to be served with reference to the historic and cultural record of the Sweetwater area;
    - the existing rights-of-way that can be used for transit greenways without adversely affecting current transportation utilization within the corridor, and, the extent and expected cost of any additional land purchases that would be appropriate;
    - the extent to which transit greenways may reduce traffic congestion in comparison to other alternatives, including additional road widening;
    - the manner in which the transit greenway plan, the repositioning of parking capacity, and the enhancement of space for pedestrian and bicycle use can resolve traffic congestion and enhance access to adjacent residences and businesses;
    - the kinds of greenway transit vehicles that would best serve area citizens and visitors, including alternatives as to vehicle size, speed and fuel type that would be compatible with pedestrians and bicyclists utilizing the transit greenway corridors or adjacent walkways, bike paths, and trails;
    - the intermodal connections and coordination that should be made a part of the transit greenway system;

FIGURE 6. MAJOR CENTER OF ACTIVITIES
CITY OF SWEETWATER

the nature and kind of parking facilities that should be maintained or established, including where it might be more to develop above grade parking with at grade mixed uses and design elements appropriate to the adjoining built environment;

- the most appropriate phasing for transit greenway implementation, and, the effects that such phasing will have on operations and the self-sufficiency of the system;
- the relationships between the transit greenway system, local governmental bodies, any operating entities, and any community redevelopment agency (CRA), special district, or other funding mechanisms that might be utilized to enhance social, economic, and educational opportunities for the existing population living within a transit greenway serviced community; and
- the project's compliance with the Federal Transit Administration Planning Emphasis Areas, the FTA Strategic Plan, and other Federal, Florida, regional, and local planning and policy instruments.

1.3.2 CORRIDORS INVESTIGATED

This planning activity addressed the transportation needs of the 107th Avenue corridor, with particular emphasis on the section that includes connections between the FIU campuses northward to Flagler Street and ranging from at least 105th Avenue to 111th Avenue, to provide for more efficient transportation and reduced traffic congestion along the corridor.

Figure 7. Corridors Investigated

1.4 TRANSIT GREENWAYS

On a broad scale, transportation is all about places and movement between those places. Throughout the country people are working locally to provide safe, attractive, car-free routes for healthy commuting, recreation and sport. Often routes will link to open spaces, country parks, schools, leisure centers, and features of interest. The ultimate aim is to provide well-designed facilities locally, linking-in to the national networks. [6]

Greenway space promises to be something it has never been before: a place for human beings to enjoy nature and green space in an urban environment, an element of connection rather than separation in the landscape by converting the use of the space from freight movement to a transit, bicycle, and pedestrian corridor, the Greenway now serves to bring together the very people that it previously divided. The Greenway is multifaceted in performing its function of community connection .[7]

John Trevelyn, in a report prepared for the Countryside Agency, defines greenway as a descriptive term for a network of largely car-free off-road routes connecting people to facilities and open spaces in and around towns, cities and to the countryside.[6]

A study produced by the Midtown Greenway Coalition (MGC) as a consultative document to affirm community interests to all interested parties, including public agencies, with a role in implementing the Greenway or developments at the City of Minneapolis provides different definitions of a greenway. [8]

- ***The Greenway is a transit link.*** The Greenway connects transit users to immediate destinations, but also provides a juncture between private and public means of transportation.

Greenways link to other networks for non-motorized users - such as the National Cycle Networks, towpaths beside inland waterways, National Trails and rights of way. They include stretches of 'quiet' minor roads designed to be more attractive for people on bikes, horseback or walking. The benefits associated with greenways are overwhelmingly positive. Communities investing substantial resources to this effort enjoy widespread citizen support and the realization of healthier lifestyles, a more diversity economic, a beautiful environment, and a more enjoyable quality of life.[9]

- ***The Greenway is a connection with nature*** .The Greenway connects people to natural water bodies, to a pathway bounded increasingly by natural elements, and to the natural experience of traveling by means of the exertion of one's own body.

- ***The Greenway is an open space link.*** The bike and pedestrian trails within the Greenway will extend the system of "green infrastructure" known as the Grand Round. By connecting the chain of lakes with the Mississippi River through the middle of south Minneapolis, neighborhoods within the heart of the city will have a direct connection to these natural water bodies from which the city gained its name.

Transportation specialists have generally overlooked and undervalued walking. *Pedestrians are the invisible road users* and walking is the *forgotten transportation mode*. This oversight directly affects the number of pedestrian fatalities and injuries that occur each year. The standard of living is reduced because the very design of many communities makes it difficult or dangerous for those who want to walk. As result, the nation is often not walkable.

Although walking is our oldest and most basic form of transportation, it is a convenient form of transportation for most people.[10]

There are various ways to define what is meant by "Walkable".

> *Walkability is the cornerstone and key to an urban area's efficient ground transportation. Every trip begins and ends with walking. Walking remains the cheapest form of transport for all people, and the construction of a walkable community provides the most affordable transportation system any community can plan, design, construct and maintain. Walkable communities put urban environments back on a scale for sustainability of resources (both natural and economic) and lead to more social interaction, physical fitness and diminished crime and other social problems. Walkable communities are more livable communities and lead to whole, happy, healthy lives for the people who live in them.* [11]

Although walking is not the most important form of circulation within the area of the project, it could very well be if the facilities necessary to make the area more walkable and livable were available. "Pedestrians are the canaries in the coal mines of the American Community. If you see people out walking, the community is healthy. If you don't, the place is dead." [12]

Traffic congestion has become a severe problem in Florida's urban areas. The inability to construct new capacity fast enough to keep up with the demand, the increasing costs associated with adding that capacity, and the political and environmental controversy often associated with building new roads compound the mobility dilemma requiring different approaches to mobility.[1]

The 1995 Oregon Bicycle and Pedestrian Plan 1 notes that increased walking will help reduce traffic congestion, air and noise pollution, wear and tear on roads, and consumption of petroleum; it will reduce the number of pedestrian-motor vehicle-related crashes, injuries, and fatalities; and it will reduce the need for additional roads, travel lanes and parking. The plan also notes that the number of people who are walking (or riding bicycles) is an important measure of the quality of life of a community.

There are solid connections between walkable environmental and economic viability.[13] A 1999 study by the Urban Land Institute of four new pedestrian friendly communities determined that home buyers were willing to pay a $20,000 premium for homes in these neighborhoods compared to similar housings in surroundings areas. Each of the four

communities including Kentland in Gaithersburg, Maryland, promoted transit and pedestrian access. Design features include systems of interconnected, often narrow streets, sidewalks, a mix of residential retail and office land uses, and components such as short front yard, set backs front porches, and rear garages accessed by alleys.[14]

Reducing traffic noise, traffic speeds, and vehicle generated air pollution can increase property values. One study found that 5 to 10 mph reduction traffic speeds increases adjacent residential property values by roughly 20%. [15]

Downtown Lodi, California, launched a $4.5 million public-private pedestrian-oriented project, including a retrofit of five main street blocks from building face to building face. On the main School Street, sidewalks were widened, curbs bulbed out at intersections and colored paving stones laid in the new sidewalks and street. A striking gateway was installed, as well as 140 street trees, lighting, benches, and other streetscape amenities.[16]

The city credits the pedestrian improvements, as well as economic development incentives, with the 60 new businesses, the drop in the vacancy rate from 18% to 6%, and the 30% increase in downtown sales tax revenues since work was completed in 1997.

According to the research, these are the most critical aspects to have in account when creating a bicycle riding and walkable neighborhood:

Greening the Corridor and Building Attractive Sidewalks: "In a broader sense, the word greenway is a generic term for a wide variety of linear open space." [17] Wide roads bordered by narrow sidewalks, parking lots and strip malls are uncomfortable pedestrian environments. Whereas neighborhoods in which a range of transportation choices encourage easy walking access are "livable communities."[18] Theoretically, sidewalks should be provided on both sides of virtually every street, especially in residential areas. In the case of retrofitting existing, long-established neighborhoods, these are places where tree and hedges have been planted, fences have been built, and cars are frequently parked on the verge. But where the street is no more than two lanes and the speed no more than 30 mph the answer may be to direct efforts towards installing a sidewalk along one side of the road. The important thing is to improve street crossings and to make the places people walk attractive. This entails providing things such as shade trees, lighting, and benches at appropriate locations. Also, it means keeping sidewalks well maintained and free from encroachment from shrubs and conflicting uses like parked cars and newspaper boxes.[19]

Develop a Network of Footpaths: Pedestrians want to take the most direct route to their destination. Communities can create sidewalk networks, which provide walkers with many route alternatives. Especially delightful are mid block routes. A dense network of footpaths will provide walking route continuity. [18]

Shorten the Distance: Encouraging neighborhoods with a mix of land uses and a better "connected" network of walking routes is the best way to facilitate people in walking. Opportunities within existing neighborhoods to create pedestrian destinations include

restoring and reusing a neighborhood school that has been closed.[6] Or, it could be changing the zoning to permit the development of small, neighborhood shopping areas. Developing vacant sites as "pocket" parks or playgrounds provides shorter distances for residents, particularly children, to go for recreation. The challenge is to "re-engineer" the old suburban street network which was with a pattern of streets that require long, circuitous journeys to get from point A to point B, whereas the sites are actually quite close together. One way to do this, for both pedestrians and bicyclists, is to acquire and develop easements between existing properties that provide better connections within the community. However, convincing existing residents to allow access alongside their property to provide for these connections can be difficult.[19]

Slow Vehicle Traffic: Pedestrians feel most comfortable walking on streets where traffic speeds are 20 mph or less. Walkers avoid high-speed streets with good reason. The majority of pedestrian fatalities occur on streets where vehicles are traveling at speeds of 35 mph or faster. Enforcement, while effective and necessary, is typically expensive and can't always be done everywhere it is needed as a deterrent. The answer is to re-engineer the streets to contain and control motor vehicle speeds to levels appropriate to, and compatible with, the activities that take place there. Traffic-calming techniques are proving very effective in reducing motor vehicle speeds and cut-through traffic (as motorists look for short-cuts to avoid congested roadways). Narrower lane widths, speed humps, roundabouts, and traffic diverters are just some of the design treatments that are being used to make it safe again for people to walk and for children to play in their neighborhood.[19]

Narrow Streets: The most effective way of slowing traffic for pedestrian safety is to construct narrow streets with narrow, and sometimes fewer lanes. Many streets can function efficiently with one moving lane in each direction. In residential areas even narrow streets are adequate for emergency vehicles and discourage speeding. Incorporating strong vertical elements along the sides of the streets can also narrow the perceived width of streets. For example, mature trees, streetlights and even parked cars tend to slow down drivers. When traffic moves at steady but slow speeds, narrow streets can accommodate a large number of cars. Cars will use less fuel and pollute less.[18]

Make Intersection Safe for Walkers and Bicycle Riders: Most pedestrian accidents occur at intersections. This is because most intersections are designed to move cars, not people. Pedestrian-friendly intersections should be "Neck downs" or "bulb outs" to make walkers visible and reduce the time they are in the intersection, small corner turning radii to slow speed of the turning vehicles, Broad and raised crosswalks to help elderly and disabled people, Adequate and frequent walk time in the signal to cross the street and lighting systems which illuminate sidewalks, street corners and crosswalks.

The Oregon Bicycle and Pedestrian Plan, one of the modal elements of the Oregon Transportation Plan, carries considerable authority as it establishes ODOT's policies regarding bicycling and walking. It sets construction standards for ODOT and offers guidance to local jurisdictions in establishing their bicycle and pedestrian networks. It also says that access management practices should be used to remove additional conflict

points. Good intersection signals should be timed so they do not impede bicycle or foot traffic with excessively long waits or insufficient crossing times. Good design creates a path for bicyclists that is direct, logical and close to the path of motor vehicle traffic; only in rare cases should they proceed through intersections as pedestrians. Bicyclists should be visible and their movements should be predictable. Bike lanes should be striped to a marked crosswalk or a point where turning vehicles would normally cross them. The lanes should resume at the other side of the intersection. All legs of an intersection should be open to pedestrians. The pedestrian's path of travel should be direct with minimal out-of-direction travel. At signalized intersections, pedestrian signal heads should be clearly visible - this requires that they not be placed too far from the nearest safe refuge. [20]

In Davis, CA, the city logo is a bicycle, more than 20 percent of trips are made by bicycle, there are no school buses (everyone walks or bicycles to school) and the local microbrewery brews a "bicyclists beer". Many consider Davis, population 55,000, to be the most bicycle friendly city in the United States.[21]

The main focus of the Birmingham Area Bicycle, Pedestrian and Greenway Plan Greenway Plan is to establish the transportation value of bikeways, sidewalks, and trails for Jefferson and Shelby Counties as an element of the Long-Range Transportation Plan. By creating routes which provide linkages to retail establishments, households, schools, recreational facilities, major employment centers and other destinations, bicycle and pedestrian projects can be justified and programmed for funding in the five-year Transportation Improvement Program (TIP).

The idea of streetscape is now commonplace in the context of urban design, redevelopment, and community planning. Examples of Greenway Projects are all over the world, in Collier County, Florida, the urban design phase of all planned developments includes extensive landscape architecture. Entry features, landscaped medians, and edge treatments are all part of the development identity. In addition, the streetscape landscaping, streetlights, benches, bike racks, and trash receptacles becomes a major component of the redevelopment of streets. Collier County has also included streetscape in its overall community planning with the development and adoption of a Streetscape Master Plan. [22]

Twenty-five years ago, Arlington County, VA was a languid suburban community just across the Potomac River from Washington, DC. Today, the county has been transformed into a thriving, diverse urban community with a balance of residences, offices, and retail. The catalyst has been the opening of eleven stations on two lines of the regional sub-way system (Metro).

County leaders and planners in the 1970s agreed to concentrate intensive development around the planned transit stations and to create a mix of office, retail, residential, and public uses. Stable residential neighborhoods more than one kilometer away from the stations would be connected to the new development with pedestrian walkways.

Edge cities in Texas, Virginia, Florida, and elsewhere are becoming real cities. Streets have sidewalks, and they define blocks, squares, and courtyards. Parking is tucked away in garages. Buildings house multiple uses. [23]

Addison, Texas, began as a suburb on the northern edge of Dallas, then became part of "the Blade Runner Landscape" of gaudy buildings, vast parking lots, and huge signs along the North Dallas Tollway that Joel Garreau described in his 1991 book, *Edge Cities: Life on the New Frontier.*

His definition of an edge city is a relatively dry recital of statistics: 5,000,000 square feet of leasable office space; 600,000 square feet of retail space; a significant increase in daytime population on weekdays; and, most important a location that was farmland or a suburban residential neighborhood 30 or 40 years ago.

Today part of Addison is being transformed into something much more like a real city: a place with streets and sidewalks, where street frontages have stores and restaurants on the ground floors, where the parking is tucked away in garages, and the offices and apartment buildings define spaces along the street, or around landscaped urban squares and hidden courtyards. The North Dallas Tollway is still the front door, but the city is also planning development to take advantage of a future stop on a new cross-town rapid transit line.

One of the first prototypes for channeling these new development forces was built in downtown Boca Raton, Florida, where the city acquired a failed two-department-store mall along a highway and made the site available to developers. The development that replaced the mall, Mizner Park, designed by Richard Heapes, then at Cooper, Carry Architects, is built around a new main street, a wide boulevard running parallel to U.S. Highway 1. Arcaded shops line this street on both sides.

2. PROJECT SETTING

2.1 LAND USE CHARACTERISTICS

2.1.1 EXISTING ACTIVITIES AREAS

Sweetwater is one most active center of activities on the west of Miami Dade. As time past the activities and most of locations seem remain same as they were initially built except by some shopping centers built at the intersection of 107th Avenue and SW Flagler.

The residential areas of Sweetwater look more traditional Center American than American Neighborhoods in almost everyway.

Sweetwater has a great variety of land uses including residential, commercial, and institutional. As Figure 8 shows on next page, the residential area includes mostly single-family and low-density multi-family homes on both the east and west sides of 107th Avenue respectively. The commercial area is composed mostly of a variety of small businesses located along 107th Avenue between Flagler and SW 4 Street or "Calle Cuba" as it is most known. The Latin Supermarket “Sedanos”, the Elementary School, the Main Campus and the engineering building are the major attractors for the residents of Sweetwater.

2.1.2 SUMMARY OF LAND USE CHARACTERISTICS

The land uses along the study corridor are predominant commercial on the northern portion of the corridor. On the southeastern side of 107TH Avenue the land uses is predominantly low density residential (up to 6 dwelling units per gross acre). The southwestern side of the corridor is comprised of medium density residential (up to 25 dwelling units per gross acre).

2.2 TRANSPORTATION SYSTEM CHARACTERISTICS OF 107TH

2.2.1 ROADWAY NETWORK AND CHARACTERISTICS ON 107TH

The project’s study area is bounded by West Flagler Street (North), Tamiami Trail/SW 8TH Street (South), SW 105th Avenue (East) and SW 111th Avenue (West). SW 107th Avenue is classified as an access Class 5 facility. The 107th Avenue section that fall within the project area is functionally classified for federal consideration as a Minor Arterial.

2.2.2 ROADWAY GEOMETRY OF 107TH

The length of the corridor SW/NW 107th Avenue from SW 8th Street to West Flagler Street is 0.8 miles. At present, NW/SW 107th Avenue has varying typical sections. The segment between SW 8th Street and West Flagler Street has two lanes in both the

FIGURE 8. LAND USE MAP-EXISTING CONDITIONS CITY OF SWEETWATER

Map Area: 0.71 sq mile Go

Search Results:
14 landuse type(s) found in 0.71 square mile

Summary Result:

No.	Landuse Type
370	Single-Family
133	Low-Density Multi-Family
77	Two-Family (Duplexes)
30	Shopping Centers, Commercial, Stadiums, Tracks
21	Townhouses
18	Streets/Roads, Expressways, Ramps
6	Institutional
4	Parks (Including Preserves & Conservation)
4	Vacant Unprotected
4	Water
3	Multi-Family, Migrant Camps
3	Communications , Utilities, Terminals , Plants
2	Office
1	Cemeteries
676	**Total**

LEGEND

- Townhouses
- Single-Family
- Two-Family (Duplexes)
- Low-Density Multi-Family
- Multi-Family
- Mobile Home Parks
- Office
- Shopping Centers, Commercial, Stadiums, Tracks
- Transient-Residential (Hotels|Motels)
- Industrial Extraction
- Industrial
- Institutional
- Cemeteries
- Water Conservation Areas
- Parks (Including Preserves and Conservation)
- Airports|Ports
- Streets|Roads, Expressways, Ramps
- Expressway Right of Way Open Areas
- Streets|Roads|Canals R|W
- Communications , Utilities, Terminals , Plants
- Agriculture
- Vacant, Government Owned
- Vacant, Protected, Privately Owned
- Vacant Unprotected
- Water
- Highway
- Major Road
- Street
- Property
- Miami-Dade County
- Atlantic Ocean

N W E S

directions, approximately 11 feet in width. The intersections, which affect the flow of traffic for the project study area, are Coral Way, Calle Cuba (4TH Street) and Fontainebleau Boulevard.

2.2.3 PAVEMENT CHARACTERISTICS

PAVEMENT CONDITION
The pavement is in fair to poor condition throughout the study corridor.

PAVEMENT MARKINGS
Pavement markings are in good condition along 107TH Avenue between SW 8TH street and West Flagler Street with the exception of the pedestrian crosswalks throughout the study segment and the pavement markings on the side streets.

2.2.4 EXISTING TRAFFIC CONDITIONS

Field visits were conducted during both morning and afternoon peak periods from March 31st, through April 3rd, 2003 (Monday through Thursday); in order to have the physical and geometrical characteristics along SW/NW 107th Avenue between SW 8th Street and West Flagler Street, with focus on three signalized intersections SW 8th Street, SW 4th Street and West Flagler Street. The SW 107th Avenue (Avenue of Americas) is a four-lane divided arterial aligned in the north and south direction.

The posted speed limit on SW 107th Avenue (Avenue of Americas) is 40-mph. The SW 107th Avenue (Avenue of Americas) access management classification is class 5. According to the land use map the northern portion of the SW 107th Avenue/ Avenue of Americas is commercial area and the southern portion comprises thickly populated residential areas.

Figure 9. 107th Avenue and Tamiami Trail looking North and South.

a. SWEETWATER ELEMENTARY SCHOOL AND FIRE STATTION

-b. SUPERMARKET "SEDANOS"

c. SWEETWATER CITY HALL

d. ELDERLY CENTER

e. FIU MAIN CAMPUS

f. ENGINEERING CENTER

Figure 10.a.b.c.d.e.f. 107th- SWEETWATER AND FIU

TABLE 2. CHARACTERISTICS
SW/NW 107TH AVENUE
AM PEAK PERIOD

AVENUE OF THE AMERICAS (NW/SW 107TH AVENUE)				
AM PEAK PERIOD				
Roadway Segment	**Length (ft)**	**Direction**	**Travel Time (sec)**	**Speed (mph)**
Tamiami Trail - C.Cuba	**1400**	**NB**	**140**	**10**
Flagler St: - C.Cuba	**1400**	**NB**	**170**	**8**
Flagler St: - Fontainebleau	**2500**	**NB**	**155**	**10**
Total	**5300**	**NB**	**465**	**9**

TABLE 3. CHARACTERISTICS
SW/NW 107TH AVENUE
PM PEAK PERIOD

AVENUE OF THE AMERICAS (NW/SW 107TH AVENUE)				
PM PEAK PERIOD				
Roadway Segment	**Length (ft)**	**Direction**	**Travel Time (sec)**	**Speed (mph)**
Flagler St: - Fontainebleau	**2500**	**NB**	**105**	**20**
Flagler St: - C.Cuba	**1400**	**NB**	**36**	**30**
Tamiami Trail - C.Cuba	**1400**	**NB**	**145**	**5**
Total	**5300**	**NB**	**286**	**18**

The section between Fontainebleau Blvd and West Flagler Street is approximately 0.9 miles and has two lanes in each direction with a median on which landscaping can be incorporated. The section between West Flagler Street and SW 8th Street is approximately 0.6 miles. This area is very constrained due to pedestrian traffic during the elementary school hours and business activities along the SW/NW 107th Avenue corridor.

STOPS SIGNS
The following intersections are controlled by stops signs, located on the east and west approaches**:**

- SW 107th Avenue and SW 2nd Street
- SW 107th Avenue and SW 3rd Street
- SW 107th Avenue and SW 5th Street
- SW 107th Avenue and SW 6th Street
- SW 107th Avenue and SW 7th Street

Full median openings are prevalent at the above listed intersections.

LIGHTING FEATURES
Street lights are located on both sides of SW 107th Avenue throughout the study corridor.

SIGHT DISTANCES RESTRICTIONS
Based on the field observations these are the sight distance restrictions:
- SW 107th Avenue and SW 5th Street (East leg).
- SW 107th Avenue and SW 6th Street (East leg).
- SW 107th Avenue and SW 7th Street (East leg).

PARKING
Parking of vehicles was observed on most of the side streets that comprise the study area.

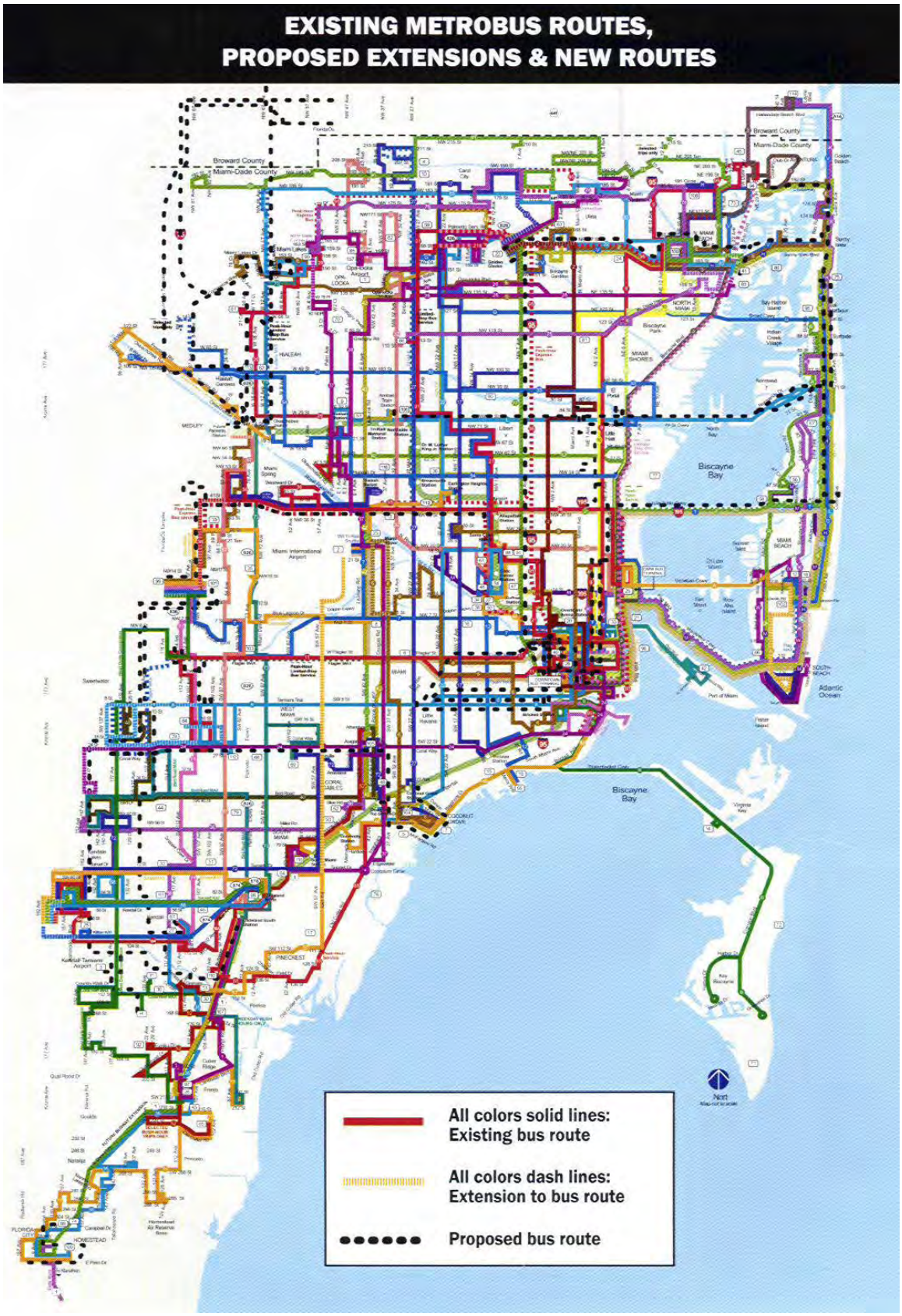
TRANSIT
Beside a shuttle circulator, Miami Dade Transit (MDT) Routes 11 and 71 travel through the study corridor. From SW 8th street and SW Flagler the following additional elements can be found as part of the transit system inventory:

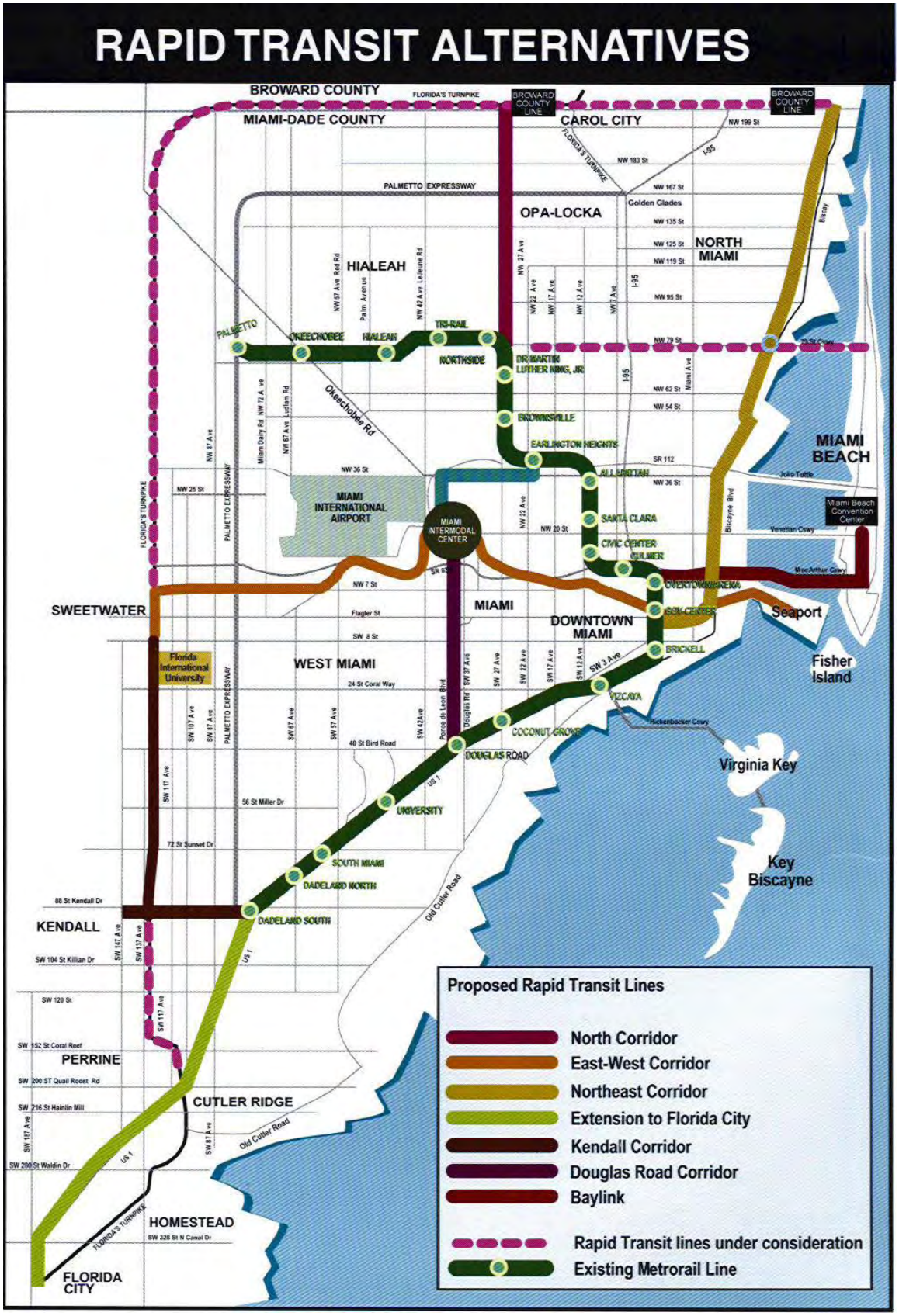
- Between SW 6th Street and SW 7th Terrace: 2 benches and a sign post northbound; 2 benches and a sign post southbound.

- Between SW 4th Street and SW 3rd Street: 1 bus shelter, 2 benches and a sign post northbound; 1 bus shelter, 2 benches and a sign post southbound.

- Between W. Flagler Street and SW 2nd Street: bus shelter, 1 bench and a signpost.

The existing Metrobus routes and the proposed extensions and new routes and the rapid transit alternatives can be found in Figures 11 and 12. The elements are also represented in the county's Long Range Transportation Plan for 2025.


EXISTING METROBUS ROUTES,
PROPOSED EXTENSIONS & NEW ROUTES
Broward County
Miami-Dade County
Biscayne Bay
Atlantic Ocean
All colors solid lines:
Existing bus route
All colors dash lines:
Extension to bus route
Proposed bus route


RAPID TRANSIT ALTERNATIVES
BROWARD COUNTY
MIAMI-DADE COUNTY
CAROL CITY
OPA-LOCKA
HIALEAH
NORTH MIAMI
MIAMI BEACH
MIAMI INTERNATIONAL AIRPORT
MIAMI INTERMODAL CENTER
SWEETWATER
MIAMI
DOWNTOWN MIAMI
WEST MIAMI
Seaport
Fisher Island
Virginia Key
Key Biscayne
KENDALL
PERRINE
CUTLER RIDGE
HOMESTEAD
FLORIDA CITY
PALMETTO
OKEECHOBEE
HIALEAH
TRI-RAIL
NORTHSIDE
DR MARTIN LUTHER KING, JR
BROWNSVILLE
EARLINGTON HEIGHTS
ALLAPATTAH
SANTA CLARA
CIVIC CENTER
CULMER
OVERTOWN/ARENA
GSA CENTER
BRICKELL
VIZCAYA
COCONUT GROVE
DOUGLAS ROAD
UNIVERSITY
SOUTH MIAMI
DADELAND NORTH
DADELAND SOUTH
Proposed Rapid Transit Lines
North Corridor
East-West Corridor
Northeast Corridor
Extension to Florida City
Kendall Corridor
Douglas Road Corridor
Baylink
Rapid Transit lines under consideration
Existing Metrorail Line

SIGNALIZED INTERSECTIONS WITHIN THE PROJECT AREA

Along the major study corridor the following three signalized intersections are to be found:

- SW 107th Avenue and SW 8th Street: this intersection is located in the southern part of the study area. This intersection has signals mounted on span wire and crosswalks are provided on three approaches north, south and east. There are pushbuttons present on south and north leg of the intersection. The push button provided on the east leg appears to be defective.

- SW 107th Avenue and SW 4th Street: this intersection is located in the middle of our corridor study and it is in the vicinity of the elementary school. This intersection has been provided with crosswalks on all the legs and pushbuttons are provided to allow school children and residents to safely cross the streets.

- SW 107th Avenue and West Flagler Street: this intersection is located in the northern part of the study area. This intersection has mast arm signals, with pedestrian crosswalks, pedestrian signals and push buttons on all four approaches.

The signal plans for the three intersections are as follows:

- SW 107th Avenue and SW 8th Street: a three-phase signal plan, which includes a) north, and south throughs, rights and permissive left turns; b) east and west bound throughs, rights and permissive left turns and (c) east bounds throughs, right and left turns.

- SW 107th Avenue and SW 4th Street: a three-phase signal plan, which includes a) north and south bound throughs, right and permissive left turns; (b) east bound throughs, left-turns and rights, and c) west-east bounds throughs, right turns and permissive left turns.

- SW 107th Avenue and West Flagler Street: a three-phase signal plan which includes a) northbound and south bounds throughs, right-turns and permissive left turns; (b) east and westbound throughs, right-turns and permissive left turns and c) eastbound throughs, right-turns and permissive left turns.

The posted speed limit on SW 107th Avenue/Avenue of Americas is 40-mph.

Data analysis in the next section is compiled from a qualitative assessment from FDOT as well as from field observations by the study team

AM PEAK PERIOD TRAFFIC CONDITIONS

Moderate delays were evident northbound, particularly at the intersections of West Flagler Street with SW 107th Avenue. Delays were also identified at Flagler and SW 109th Avenue.

The southbound traffic experienced moderate delays at SW 4th and SW 8th Streets. The delays at the SW 4th Street intersection are caused by the school zone speed limits.

At the intersection of SW 107Th Avenue and West Flagler Street the westbound to northbound right turns backed up approximately 25 vehicles. The westbound right-turn movement and eastbound left-turn movement compete for the northbound departure lanes on SW 107Th avenue. The inside through lane on the northbound departure lanes from the intersection of SW 107Th Avenue and West Flagler Street is offset with port-mounted delineators. Several conflicts were observed between the eastbound left-turn and westbound right-turn movements during the AM peak periods.

The study corridor operates defectively (LOS E) during the AM peak period.

PM PEAK PERIOD TRAFFIC CONDITIONS

Similar to the AM peak period, the PM peak periods at the signalized intersections along SW 107th Avenue operate poorly during the afternoon peak period. The high volume of vehicles and the restricted number of lanes create chaotic situations for SW 107Th Avenue between 5-7 PM, the period during which commuters/residents return home, FIU students arrive for classes and FIU employees leave for home.

As in the AM peak period, the southbound and northbound traffic experienced moderate delays. Additionally, the traffic circulating in the westbound and eastbound directions (on side streets) experienced delays turning onto SW 107Th Avenue due to the northbound and southbound traffic.

The northbound left turning at the intersections of SW 107TH Avenue and SW 8TH Street experienced heavy delays. Vehicles from the inside through lane were observed to perform simultaneous left-turns with the left-turn traffic located in the exclusive left-turn in order to bypass queued traffic. Numerous violations of the red light indicator were observed for the northbound to left-turning traffic at the end of the north/south green.

LEVEL OF SERVICE ANALYSIS ALONG SW/NW 107th AVENUE

Analysis of the SW 107th Avenue corridor is performed first by finding out the Level of Service of each intersection along the corridor and finding the Level of Service of the whole corridor. A peak hour factor (PHF) of 0.9, lane width of 12 feet and volumes of 10, 15 and 25 pedestrians per hour, based on field observations, were assumed for SW 8th St, West Flagler Street and SW 4th Street. Vehicle length was assumed to be 20 feet.

2.3 TRANSPORTATION SYSTEM CHARACTERISTICS OF SW 109th AVENUE

2.3.1 ROADWAY NETWORK AND CHARACTERISTICS ON SW 109th AVENUE

Field review and investigations were conducted to study the existing condition on SW 109th Avenue, from SW 8th Street to W. Flagler Street.

2.3.2 ROADWAY GEOMETRY OF SW 109th AVENUE

The existing roadway geometry for the study corridor is shown in Appendix A. The total length of study corridor from SW 8th Street to W. Flagler Street is 0.5 miles. Lane width for through and left turn lanes on SW 109 Avenue are approximately 11-12 ft and 10 ft respectively. No raised medians can be seen along the entire corridor. The posted speed limit on SW 109 Avenue is 30 mph. Table-4 summarizes the existing geometry of the three existing signalized intersections.

Table 4 - Geometry of Three Signalized Intersections on SW 109th Avenue

Intersection	Geometric Description
SW 109 Ave & SW 8th St (North bound)	NIL
SW 109 Ave & SW 8th St (South bound)	1-Right turn, 1-shared and 1-Left turn
SW 109 Ave & SW 8th St (East bound)	4-Throughs and 1-Left turn
SW 109 Ave & SW 8th St (West bound)	3-Throughs
SW 109 Ave & West Flagler (North bound)	1-Throughs and 1-Left turn
SW 109 Ave & West Flagler (South bound)	1-Throughs and 1-left turn
SW 109 Ave & West Flagler (East bound)	3-Throughs and 1-Left turn
SW 109 Ave & West Flagler (West bound)	3-Throughs and 1-Left turn
SW 109 Ave & SW 4TH St (North bound)	1-Throughs and 1-Left turn
SW 109 Ave & SW 4TH St (South bound)	1-Throughs and 1-Left turn
SW 109 Ave & SW 4TH St (East bound)	1-Throughs and 1-Left turn
SW 109 Ave & SW 4TH St (West bound)	1-Throughs and 1-Left turn

TRAFFIC CONTROL & ACCESS MANAGEMENT OF SW 109th AVENUE

SIGNALIZED INTERSECTIONS

The following three signalized intersection are located within the study corridor:

- The intersection SW 109 Avenue and West Flagler Street is the north end of the study area (mast arms with four crosswalks, pedestrians' push buttons and pedestrian signals).

- The intersection SW 109 Avenue and 4th street is located in-between the residential area (mast arms with four crosswalks, pedestrian's push buttons and pedestrian signals).

- The T-intersection SW 109 Avenue and 8th street located at the southern end of the study corridor (mast arms with two crosswalks, pedestrians push buttons in north-south direction and east-west direction only).

STOP SIGNS
The following intersections are controlled by stop signs, located on the east and west approaches.

- SW 109 Avenue and SW 2nd Street
- SW 109 Avenue and SW 3rd Street
- SW 109 Avenue and SW 5th Street
- SW 109 Avenue and SW 6th Street
- SW 109 Avenue and SW 7th Street
- SW 109 Avenue and SW 7th Terrace

SIGNAL SPACING OF SW 109th AVENUE
The existing signal spacing along the corridor range from a minimum of 1315 ft to a maximum 1303 ft. Table-2 shows the location of the traffic signals along the corridor and the spacing among them.

Table 5. Signal Location and Spacing between Signals (ft)

Signal Location	Spacing Between Signals (ft)
SW 8th Street	---
SW 4th Street	1315
West Flagler	1303

LIGHTING FEATURES
Streetlights are located on both sides of SW 109th Avenue throughout the study corridor.

PARKING
Parking of vehicles was observed on both sides of the study corridor. However these on-street parking maneuvers did not interfere with the traffic traveling through the study area. Parking lots are provided on the east and west sides of SW 109th Avenue at the commercial land uses.

2.3.3 PAVEMENT CHARACTERISTICS

PAVEMENT CONDITION
The pavement appears to be fair to poor condition throughout the study corridor.

PAVEMENT MARKING
Pavement marking appears to be in good condition on SW 109th Avenue between SW 8th Street and W. Flagler Street.

PEDESTRIAN FEATURES
The study corridor includes sidewalks on both the east and west sides of SW 109th Avenue. The width of sidewalk is approximately 5 feet throughout the study corridor. Crosswalks are found at two signalized intersections (SW 4th and W. Flagler) along SW 109th Avenue—in all bounds. Pedestrian curb ramps were observed on all corners of each

intersection in the study area. Pedestrian push buttons and pedestrian signal heads are included at the signalized intersections of SW 109th Avenue and W. Flagler Street and at the signalized intersection of SW 109th Avenue and SW 4th street.

Light pedestrian activity was observed at the intersections under study during the field visits. Pedestrian activity did not have a significant impact on traffic operations along the corridor (SW 109th Avenue).

2.3.4 EXISTING TRAFFIC CONDITIONS

EXISTING SIGNAL TIMING AND PHASING OF SW 109th AVENUE

The existing signal timing and phasing for the traffic signal at those intersections (W. Flagler, SW 4th Street and SW 8th Street) along SW 109th Avenue were obtained from FDOT. Pedestrian WALK/DON'T WALK signal head is provided at each direction of the intersections W. Flagler and SW 4th Street along SW 109th Avenue. The SW 109th Avenue and W. Flagler intersection is fully actuated. Left turn movements at east bound and west bound operate under both protected and permissive phases. North bound and south bound left turns operate under protected phase only. The SW 4th Street and SW 109th Avenue intersection signal on is semi-actuated control. Left turn movements at all bounds operate under permissive phase only. East bound left turn movement at SW 8th Street and SW 109th Avenue operates under both protected and permissive phases.

TRAFFIC ANALYSIS

During the morning peak period, adequate queues (15-20 vehicles) were observed in westbound approaches to the intersection under study. Vehicles traveling on West Flagler on both northbound and southbound approaches experience minimal delays. The southbound left turning vehicles generally wait two cycles to clear the intersection. Long queues were observed on the eastbound approaches. The SW 4th St and 109th Avenue intersection operates at LOS A and has no queues and delays. The SW 8th Street and SW 109thAvenue intersection experiences substantial delay for eastbound left turns. Vehicles traveling southbound experience moderate delays. Small queues (3 to 4 vehicles) were observed on SW 109th Avenue on both southbound and northbound approaches of the intersection along the corridor under study. Right turning vehicles are more on south leg and moderate right turn traffic were observed on other approaches.

During the evening peak period, huge queues were observed on the southbound approach of the SW 109th Avenue and SW 8th Street intersection. This traffic spilled back from SW 8th Street to SW 4th Street. Heavy traffic was observed on westbound at above said intersection. Vehicles traveling in southbound along the corridor experience considerable delay. The westbound through traffic and westbound left turning vehicles experience heavy delays at the intersection of SW 109th Avenue and West Flagler. This traffic spilled back from West Flagler St to SW 108th Avenue.

TRAFFIC VOLUMES AND FIELD DATA COLLECTION

Turning Movement Counts were taken on three weekdays at three signalized intersections on April 22, April 23 and April 24, 2003 for AM and PM peak hours. The average of the above three data points is taken for the analysis.

Signal timing data were provided by FDOT.

LEVEL OF SERVICE

The level of service was analyzed for each intersection individually and for the entire corridor at A.M. peak and P.M. peak using the Highway capacity software, HCS 2000.

The data shows that the SW 109th Ave/Flagler Street intersection is functioning at LOS C and D respectively at AM and PM peaks, SW 109th Avenue/ SW 4th St intersection is operating at LOS A and B at PM and AM peaks respectively, and the intersection of SW 109th Avenue and SW 8th Street is functioning at LOS D for both morning and evening peaks.

CONCLUSIONS

- The traffic traveling northbound experienced minor delays, particularly at the intersection of West Flagler Street.
- The traffic traveling southbound experienced long delays, particularly at the intersection of SW 8th street and SW 109 Avenue.
- At the intersection of SW 109 Avenue and West Flagler Street the eastbound through vehicles backed up approximately 10 vehicles. The northbound to eastbound right-turns wait for 2 cycles to clear the intersection. Several conflicts were observed between southbound left turns and northbound right turn movements during the AM peak period.
- The traffic traveling southbound left turning vehicles experience heavy delays at intersection SW 8th street. This traffic spilled back from SW 8th street to SW 4th street at 5:20 PM.
- Westbound left turn traffic at intersection of SW 109 Avenue and West Flagler experience heavy delays. Running of the red light was observed for the westbound left turning vehicles. Sneakers were observed at the end of the green time especially at W Flagler St.
- Southbound right turning vehicles experience heavy delays at intersection SW 8th street and SW 109 Avenue. Westbound through vehicles experience minor delays at SW 8th street.

RECOMMENDATIONS

- Pavement markings have to be painted at West Flagler and SW 8th Street along 109 Avenue. The left turn marking has to be painted at southbound instead of a through marking.
- The heavy traffic volume at the two major intersections (8th Street and West Flagler along 109 Avenue) influences level of service. There is a need for improving geometric configuration at the said intersections to improve the traffic operations.
- In order to enhance the traffic operation of SW 109 Avenue, Arterial Analysis that will include access management alternatives and operational and geometric improvements at the signalized intersection is recommended.
- Close the east-west traffic path by constructing a raised median at SW 7th terrace and SW 109 Avenue to avoid the left turning violation.

Looking South

Looking North

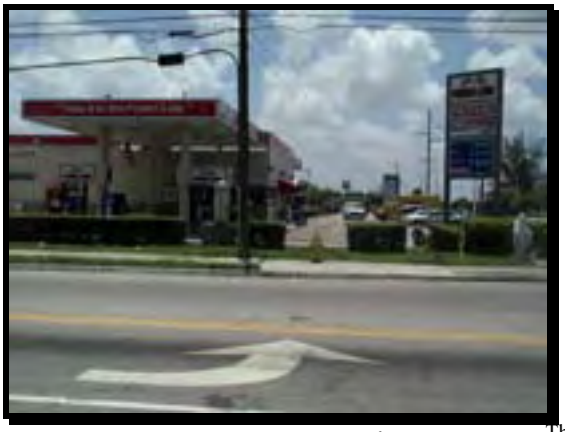


Figure 13. 109Th Avenue Pictures

2.4 PEDESTRIAN AND BICYCLE TRAFFIC

Almost 175,000 pedestrians died in all motor vehicle crashes with over 162,000 pedestrians killed in single vehicle crashes between 1975 and 2001. As a long-term trend pedestrian fatalities have decreased from a high of 8,096 fatalities in 1979 to a low of 4,763 in 2000. [24]

Pedestrian fatalities have decreased each year between 1995 (from 5,584) and 2000, a reduction of 15 percentage points. In 2001, the pedestrian fatalities increased slightly (119 fatalities, 2.5 percentage point) to 4,882 fatalities, the first increase since 1995. However, in 2001, pedestrians accounted for about 12 percent of all highway fatalities in motor vehicle crashes and 85 percent of all non-occupant fatalities in motor vehicle crashes. In 1979, pedestrians accounted for about 16 percent of all fatalities in motor vehicle crashes and 88 percent of all non-occupant fatalities in motor vehicle crashes.[24]

Some of the conclusions made in the study were:

- Almost two-thirds of pedestrian fatalities occurred on urban roadways;
- Most pedestrian fatalities occur at non-intersections (over 75 percent) and roadways without crosswalks (over 40 percent);
- Pedestrian actions at the time of the crash indicate the risks pedestrians are taking while crossing the roadways;
- Driver actions at the time of the crash indicate the risks pedestrians encounter on roadways;
- Dark and dark but lighted conditions (almost two-thirds) are a major concern in pedestrian fatalities. Nighttime, especially 6 PM to midnight hours, account for almost 50 percent of the pedestrian fatalities. These suggest that conspicuity may be a problem;
- Among the states, New Mexico had the highest pedestrian fatality rate per 100,000 population (3.94) followed by Arizona (3.00). In the ranking of cities based on pedestrian fatality rates, 5 of the top 10 cities were in Florida. The 3 cities with the highest fatality rates were in Florida. States and cities with the highest pedestrian fatality rates need to focus on special safety messages to pedestrians.

Pedestrian Fatality Rates by City

Table 6 shows the pedestrian fatality rates for the top ten cities based on the average of pedestrian fatalities from 1998-2000 along with the resident population of 100,000 or more for 2000. Out of the top 10 cities, 5 cities are in the state of Florida. Florida also has 3 cities with the highest pedestrian fatality rates of 7.66, 6.07 and 6.04. Almost one-third of the average total fatalities between 1998 and 2000 in the top four cities were pedestrian fatalities. Since the population for the cities was not available for 2001, rates are calculated based on 1998-2000 pedestrian fatalities.

CHILDREN AND SCHOOL ZONES

The potentially severe, and often fatal, a consequence of a collision between a moving vehicle and a child raises high emotions whenever the topic is discussed. Children are more vulnerable than adults to collisions with motor vehicles, because their movements are often unpredictable.

Table 6. Pedestrian Fatality Rates from All Crashes by City

Rank	City, State	Average Fatalities 1998-2000		2000 Population	Fatality Rate per 100,000 Population	
		Total from all Crashes	Pedestrian		Total from all Crashes	Pedestrian
1	Fort Lauderdale, FL	31	12	152,397	20.34	7.66
2	Miami, FL	60	22	362,470	16.65	6.07
3	Tampa, FL	58	18	303,447	19.22	6.04
4	Newark, NJ	39	14	273,546	14.26	5.24
5	Louisville, KY	53	13	256,231	20.68	5.20
6	Columbia, SC	25	6	116,278	21.79	5.16
7	Atlanta, GA	72	21	416,474	17.21	5.12
8	Detroit, MI	158	48	951,270	16.64	5.05
9	Clearwater, FL	14	5	108,787	12.56	4.90
10	Orlando, FL	33	9	185,951	17.93	4.66

Source: NCSA, NHTSA, FARS 1998-2000, US Census Bureau

SCHOOL RELATED PEDESTRIAN IMPROVEMENTS

There are two key components of a pedestrian improvement program that ensure safer conditions for school children:

• A sufficient level of physical facilities provided along the school walking route and adjacent to the school (responsibility: local jurisdiction, school district, and private development)

• Effective operation plans and safety programs, consisting of supervisory control elements and student/adult education for school trip safety (responsibility: school district, parents, and general community).[25]

GRADE SEPARATED CROSSINGS

Grade-separated crossings are much safer than at-grade crossings, and should be employed where high traffic volumes exist on the roadway or the trail. There are five types of grade-separated crossings.[26]

Grade separated crossings may be necessary to physically separate the crossing of a very heavy volume of school pedestrian traffic and a heavy vehicular flow, or where the roadway's cross section is exceptionally wide, such as freeways and principal arterials. Typical types of grade-separated crossings include overpasses and underpasses. Because these facilities are costly in comparison to other crossing solutions, they should be considered only in areas where large numbers of pedestrians will benefit. Grade separated crossings need to be easily accessible and convenient to use or they may lose their effectiveness. Pedestrians may be tempted to try crossing at grade instead of using the overpass or underpass.

PEDESTRIAN ALTERNATIVE FACILITIES

Based on the field observations, these are some pedestrian walkway alternatives that can be used along with the transit greenway corridor to encourage pedestrian to walk.

- Sidewalks on NW/SW 107TH are essential.

- Pedestrian and bicycle overpasses at Tamiami Trail and 107TH, SW Flagler and 107TH, and at Sweetwater Elementary School. How ever, these may be not taken into account due to limited use and the significant cost of construction.

According to the statistics Miami Dade has one of the highest pedestrian fatality rate in the state. A study made by the project team reflects the following:

At SW 107th Ave/SW 8th Street: - Pedestrians observed at the intersection were fairly low in number. During AM and PM peak hours the pedestrian traffic observed was almost identical. A higher number of pedestrians were observed heading north/south than were counted heading in the east/west directions. There were no delays caused due to pedestrian activities. A few cyclists were observed at the intersection commuting between Florida International University's, University Park and Engineering Campus.

At SW 107th Ave/SW 4th Street: - Pedestrian traffic level at this intersection ranged from medium to high, specially during morning and afternoon peak hours on east and west bounds sections. High pedestrian traffic was observed at this intersection due to the Elementary School. Pedestrians mainly comprised either parents with their children or school students themselves. There was heavy vehicular traffic observed during morning and afternoon peak hours. During the mornings and afternoon peak hours, a few cars hindered the flow of pedestrians by not stopping at the intersection. The drivers were reckless and sometimes stopped in the middle of the intersection. Although push buttons are provided at four legs of the intersection, there may be a need for a pedestrian overpass in the east-west direction

At SW 107th Ave/West Flagler Street: - Pedestrian traffic level observed at this intersection ranged from low to medium. Most of the pedestrians observed were on east and north bound approaches. These pedestrians were residents taking the transit bus to work. There were no conflicts with passenger cars as pedestrians were observed crossing the intersection without any difficulty.

2.5 SAFETY ANALYSIS

Crash data obtained from FDOT for the 1999-2001 period show a total of 47 crashes along the corridor during the years 1999 through 2001. One third of the total crashes involved property damage and the remaining two third involved injuries. There were no fatal accidents during the period. The breakdown along type of crashes is provided in Tables 7 and 8. The majority of crashes were turning movements (44%) and the least recurring types of crash were sideswipes and collision with traffic signal (4%).

Seventy percent of the accidents occurred during daytime and 30% of the crashes occurred at night. Along the corridor the most critical legs on SW 8th Street and West Flagler Street are the south and east approaches. They contributed to approximately 90% of the total crashes. Fifty-three (53%) percent of the 47 crashes occurred at the intersection of West Flagler Street and SW/NW 107th Avenue.

Table 7. CRASHES FOR THE YEARS 1999, 2000, 2001 AT SW FLAGLER STREET/SW 107TH AVENUE

YEAR	REAR END	ANGULAR	SIDESWIPE	COLL. WITH SIGNAL	TURNING	HEAD ON	TOTAL
1999	4	1	1	1	1	0	8
2000	4	1	0	0	3	0	8
2001	1	1	0	0	7	0	9
TOTAL	9	3	1	1	11	0	25
%	36	12	4	4	44	0	100

Table 8. CRASHES FOR THE YEARS 1999, 2000, 2001 AT SW 8TH STREET/SW 107TH AVENUE

YEAR	REAR END	ANGULAR	SIDESWIPE	COLL. WITH SIGNAL	TURNING	HEAD ON	TOTAL
1999	3	1	1	0	3	1	9
2000	2	1	0	0	3	0	6
2001	3	0	1	0	3	0	7
TOTAL	8	2	2	0	9	1	22
%	36	9	9	0	41	5	100

3. PUBLIC INVOLVEMENT AND PARTICIPATION

The civic infrastructure of the society is equally as important as the physical infrastructure. The level of involvement of people in their communities plays a crucial role in building neighborhoods.

Public involvement is principally important when talking about planning and revitalizing communities. Community participation should be a vital and constant part of the development of a transit greenway for Sweetwater. In that respect, the FIU team developed and attempted to implement a strong community involvement component. With the support of the Sweetwater city hall, we conducted two residential neighborhood workshops, a business owners' workshop; we scheduled several meetings with key community leaders (e.g., elected officials, church and school leaders). In addition, we also participated at the Sweetwater Fest, and conducted door to door business surveys within the project area.[27]

Cities that have taken the effort to involve their residents report the following significant benefits:

- Reduction in the probability of controversial battles before councils and planning commissions.
- Acceleration of the development process and reduction in the cost of good projects.
- Increase in the quality of planning.

3.1 WORKSHOPS I AND II.

These two workshops, one at the Community center and the other at the Commission Chambers) were organized under the leadership of city commissioner Jose Bourginhan. Brochures and fliers were distributed to invite the community to participate (See Appendix A).

The workshops objectives were to give the residents and business owners an overview of the project and obtain comments on the transportation issues affecting the City of Sweetwater, e.g., traffic congestion on SW 107th Avenue and lack of facilities that benefit pedestrian and bicycle riders). Participants also received an update on health issues related to air emissions, current air quality, pedestrian and safety issues and ambient air quality regulations.

3.2 WORKSHOP III

This workshop was organized by Mrs. Illania Llanios, Director of Activities at the Mas Canosa Youth Center. Similar to the other workshops, this gathering was designed to give the residents of Sweetwater, more specifically, parents of students involved at this

Figure 14. Workshop III, Mas Canosa Youth Center

Figure 15. Workshop III, Mas Canosa Youth Center

institution, an understanding of the project's mission and timelines. At the top of the agenda, FIU staff was to solicit input from parents on their concerns on mobility and accessibility issues. Participants were also provided with examples of cities that have been redeveloped and have implemented greenways transit systems.

3.3 SWEETWATER FEST, NOVEMBER 11TH, 2001

As mentioned earlier, FIU staff had the opportunity to engage in a dialogue with the community of Sweetwater when the project team participated in the most important annual event organized by the City of Sweetwater, the "Sweetwater Fest." This yearly community experience, which converts SW 107Th Avenue from W Flagler to SW 4Th Street into a wide corridor for pedestrians, was held on November 11, 2002. Results of the data/survey analysis appear in the next section.

Figure 16. Presentation at Sweetwater Fest, SW 107Th Avenue

Figure 17. Collection of Public Opinions through Surveys During Fest, SW 107Th Avenue

3.4 RESIDENT AND BUSINESS SURVEY: METHODOLOGY AND ANALYSIS

A 13 items questionnaire was developed to evaluate respondents' perceptions regarding specific design characteristics of the Greenway Corridor planned in the Sweetwater area. Announcements were sent out to inform residents of the Sweetwater area of a town meeting/workshop to discuss the Greenway Corridor project and to solicit the participants' opinions about the project. In addition, a booth in which details of the Greenway Corridor project were displayed was retained during Annual Sweetwater Festival which was held on November 2002 and one on one interviews were also conducted to gather festival attendees' opinions about the project. 60 businesses located in the study area were also visited to gather information on business owners' opinions about the project. The results of the analyses of responses to the questionnaire items follow.

Sample

One hundred twenty eight (128) persons completed the questionnaires. Seventy percent (92) of the respondents were residents of Sweetwater. In spite of repeated attempt to solicit responses from various businesses, completed questionnaires were obtained from only fourteen businesses. They made up 11% of the respondents.

Results

Upon acceptance to participate in the survey, respondents were given an overview of the Greenway Corridor project and their questions regarding any component of the project were answered.

Pathways to and from Specific Destinations – To the question about respondents' opinion regarding the design of pathways to and from various destinations in Sweetwater, including FIU and the downtown business district, 91% of the respondents thought these components of the corridor to be desirable (15%) to very desirable (76%). Only 2% thought it to be undesirable. The rest were undecided.

Landscaping of Pathways – Ninety percent of the respondents thought that the design of wide sidewalks to facilitate the movement of pedestrians and bicyclists along the corridor was desirable (20%) to very desirable (70%). About 2% of the respondents thought this to be undesirable to very undesirable and 8% were undecided.

Narrowing of Streets and Lowering of Speeds – The narrowing of streets and lowering of speeds to enhance the safety of pedestrians and bicyclists was considered desirable (24%) to very desirable (55%) by 79% of the respondents. About 10% of the respondents thought that to be undesirable (8%) to very undesirable (2%). Twelve percent were undecided.

Parking Garages – The provision of parking garages to discourage on street parking was perceived as desirable (32%) to very desirable (55%) by 87% of the respondents. Seven percent of the respondents thought the idea undesirable (5%) to very undesirable (2%) and 7% were undecided.

Transportation along Corridor – Eighty-three percent of respondents perceived the idea of providing such vehicles as small shuttles and electric cars to transport people to and from various locations along the corridor as desirable (23%) to very desirable (59%). About 3% thought the idea to be undesirable (2%) to very undesirable (1%); the remainder were undecided.

Overall Opinion Regarding Features Mentioned – Respondents who have a business in Sweetwater were asked whether they felt that the features mentioned above would be helpful to their business. Forty-three percent (6) of the business owners responded in the affirmative; only one did not think these features would help. Twenty-nine percent (4) mentioned not knowing whether these features would be helpful; the others mentioned needing more information to make a decision. While most of the respondents owning a business perceived the features mentioned as having the potential to be helpful to their business, given the very small number of respondents in this category, these results cannot be considered reliable.

Destination – The respondents were also asked what destination they wished to be connected through the pathways of the Greenway Corridor. The majority of respondents (65%) mentioned facilities other than those specified in the questionnaire. Those included the portion of S.W. 107th Avenue between Flagler Street and 8th Street, the intersection of S.W. 8th Street and S.W. 117th Avenue, and S.W. 4th Street and S.W. 108th Avenue. About twenty-five percent of the respondents mentioned the FIU Flagler and Tamiami campuses. The number of respondents mentioning other destinations on the list was not substantive.

Features About Greenway Corridor Liked Most – As for the features the respondents liked best among those mentioned, those most frequently mentioned included: landscaping (17%) and the wide sidewalks (11%). Six percent of the respondents liked the electric cars and the shuttles best. The largest proportion of respondents (58%) preferred features other than those mentioned. These included adding shopping malls, theaters, bicycle paths and speed bumps, and having the transit greenway corridor by the canal.

Features About Greenway Corridor Liked Least – Among the features liked the least, "Narrow streets" were mentioned most (10%). A large percentage of respondents (80%) mentioned "Other" features, i.e., having more traffic and less transit.

Concerns – To the question "what concerns do you have regarding the Greenway Corridor project?" most respondents (61%) did not have any comments. Eighteen percent were concerned about the project not being completed and 10% mentioned "Other" concerns, i.e., private property acquisition (eminent domain), constructions duration, disruption of traffic flow and transit reliability. Four percent of respondents mentioned traffic related problems and 3% mentioned cost as a concern.

3.4.1 SURVEY RESULTS AND CONCLUSIONS

As shown by the results, the majority of respondents tended to find the Greenway project's components desirable to very desirable. This is evidently very encouraging as far as the respondents' opinions regarding the potential benefits of the Greenway project. There are, however, some limitations to these results. The very small number of businessmen who responded constitutes an important limitation since businesses stand to be greatly affected by the development of such a project. In addition, the respondents' perceptions regarding the inconveniences (eminent domain, work zones, disruption of traffic flow) they might be subjected to during the development of the Greenway project were not separately evaluated, however, they were part of the "other" concerns mentioned in the responses. These concerns might have been of particular importance to business owners. In spite of these limitations, it would be fair to conclude that the development of a pedestrian friendly corridor that would provide respondents the options of reaching various destinations in Sweetwater on foot or by bicycle would be welcome.

4. TRANSIT GREENWAY DEVELOPMENT

4.1 STRATEGIES TO REDUCE CONGESTION

One of the most important benefits of a Sweetwater transit greenway may be to relieve traffic congestion along neighborhood streets and SW 107th Avenue. However, along with transit greenways, additional traffic calming strategies can be implemented

4.2 TRAFFIC CALMING

Success in road design depends to a large extent on how safe it is for different users. The safety of pedestrians/bicyclists is most often relegated to a marginal status in many parts of the urban areas. Traffic calming is one way of reclaiming the roads for a more equitable use by different users. Many European countries have been successful in giving back the road to the pedestrians and bicyclists by implementing area wide traffic management and speed reduction measures.

Excessive speed and reckless driving jeopardize both the safety and "livability" of our neighborhoods. The decision to use a particular device at a particular location should be made on the basis of an engineering study of the location. Traffic conditions on residential streets can greatly affect neighborhood livability. Speeding traffic and unnecessary through traffic in neighborhoods create safety hazards on residential streets. When traffic problems become a daily occurrence, the sense of community and personal well being are threatened.

Experience in other cities has shown that traffic calming projects that are implemented without involving the neighborhood are frequently unsuccessful, often resulting in the future removal of traffic calming measures. A municipality's goal should be to give the people who live and work in the project area the opportunity to become actively involved in the planning and decision-making process. Traffic is a major factor that affects the livability of a community. As speeding and vehicular volume increases, walking to the neighborhood store or even across to the street to a neighbor's house can be an uncomfortable event. The noise, safety hazards, vehicular speeds, vehicular volumes, existence of sidewalks and bike lanes all contribute to the neighborhood's integrity.

This section is organized into the following categories:

- Literature review of the past research on traffic calming measures in residential areas.
- Description of the methodology for data collection on traffic volume and crashes in the City of Sweetwater.
- Brief overview of the traffic calming measures.
- Traffic Data Analysis
- Recommendations and Conclusions.

A major traffic-calming plan was implemented in downtown Sacramento, California. The movement to develop a traffic-calming plan was initiated by individuals from neighborhoods Midtown and East Sacramento as these two neighborhoods experienced a substantial amount of through traffic from commuters who work in the CBD. The final plan for traffic calming covers approximately 120 square blocks in the residential portion of downtown Sacramento. The cornerstone of the plan is the conversion of two heavily traveled residential streets from on-way to two-way operation. The final plan also includes 18 new stop signs, 5 new traffic signals, 83 high-visibility crosswalks, 16 intersection portals, 7 traffic circles and 9 half street closures. A traffic claming plan was initiated, after a long period of community involvement, with the city's hiring of a planning consultant. The planning consultant and city staff also completed a fatal flaw analysis to test if the preliminary plan would divert and tame traffic as desired, and if other parallel streets could absorb the diverted traffic. This test analyzed existing traffic, and concluded plan development should proceed to the next stage. A significant effort was made to design the traffic calming devices to allow unrestricted passage by buses and emergency vehicles.[30]

In Omaha, Nebraska, before and after data at ten speed-hump locations found a significant reduction in the 85th percentile speeds. Data collected from 19 locations showed that the number of accidents involving personal injury decreased. In Bellevue, Washington, sixteen speed humps were installed in five residential neighborhoods. After installation, the 85th percentile speeds reduced from 36mph to 24mph. Traffic volumes fell when alternate routes existed. Speed humps in Montgomery County, Maryland reduced the 85th percentile speed by 6 to 11 km-h. The installation of the humps reduced the accident frequency, but it did not have much effect on traffic volumes.

The City of Asheville is committed to obtaining significant levels of citizen participation when developing traffic calming projects. Experience in other cities has shown that traffic calming projects that are implemented without involving the neighborhood are frequently unsuccessful, often resulting in the future removal of traffic calming measures. The City's goal is to give the people who live and work in the project area the opportunity to become actively involved in the planning and decision-making process. The City of Asheville continually strives to strengthen and protect its neighborhoods by improving the quality of life in residential areas. In March 2000, The City Council adopted the Neighborhood Traffic Calming Policy that was developed to guide city staff and inform residents about the processes and procedures for implementing traffic calming on residential streets. Under the policy, the City Traffic Engineering Division will work with residents to identify traffic problems in their neighborhoods and seek appropriate solutions. [28]

Studies of permanent and trial installations in some Colorado communities provided positive results on the use of various traffic calming devices and emphasize the need for community support and involvement throughout the whole traffic calming process. In particular, the City of Golden, Colorado found that speed humps used in series resulted in a 13 to 15 mph reduction in the 85th percentile speed and at least a 14 mph reduction in the maximum speed observed. Testing on collector roadways with over 10,000 vehicles

per day showed that after the installation of traffic circles at Boulder, Colorado, the average speed was reduced up to 8mph at the midpoint between two circles. In one instance, before the implementation of traffic calming the percentage of motorists exceeding the posted speed limit was over 90 percent; after traffic circles were installed, less than 40 percent exceeded the posted speed limit. In 1997 a study conducted by Flannery et al. reviewed five single-lane roundabouts in Florida and Maryland. The roundabouts had average daily traffic (ADT) values from 7,600 to 17,800 vehicles. Crashes dropped by about 75% on each of four of the intersections, but rose slightly at the fifth; overall, injury crashes dropped from 20 in the two years prior to conversion to just one in the two years after. Typical traffic delays dropped sharply at four intersections and rose at the fifth. [29]

4.2.1 OVERVIEW OF TRAFFIC CALMING MEASURES

"Traffic calming" is the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non-motorized street users.
Four types of measures are summarized:

- **Vertical deflections**, **horizontal shifts**, and **roadways narrowing** are intended to reduce speed and enhance the street environment for non-motorists.
- **Closures** (diagonal diverters, half closures, full closures, and median barriers) are intended to reduce cut-through traffic by obstructing traffic movements in one or more directions.

SPEED HUMPS

Speed Humps are rounded raised areas of pavement typically 12 to 14 feet in length, which are placed mainly in the residential areas for reducing the speeds (speeds are reduced by nearly 25%) and collisions (reduced by nearly 13%).[32]

Figure 18. Speed hump

TRAFFIC CIRCLES

Traffic Circles are raised islands, placed in intersections, around which traffic circulates. These are mainly used at intersections of local or collector streets. The placing of traffic

circles reduces the speeds (reduced by nearly 10%) and collisions (reduced by nearly 28%) and also diverts some of the traffic. [33]

Figure 19. Traffic Circle

SPEED TABLES

Speed Tables are long raised speed humps with a flat section in the middle and ramps on the ends; sometimes constructed with brick or other textured materials on the flat section. These are placed at local and collector streets to reduce speeds, traffic volumes (reduced by nearly 12%) and collisions (reduced by 45%). The use of speed tables increase pedestrian visibility and likelihood that driver yields to pedestrian. [33]

Figure 20. Speed Table

RAISED INTERSECTIONS

Raised Intersections are flat raised areas covering entire intersections, with ramps on all approaches and often with brick or other textured materials on the flat section and ramps. These help in reducing the speeds and make the entire intersection more pedestrian friendly.

Figure 21. Raised Intersection

CHOKERS AND CURB EXTENSIONS

Chokers are curb extensions at mid-block or intersection corners that narrow a street by extending the sidewalk or widening the planting strip. These are mainly used for local and collector streets. The use of chokers can reduce the speeds by nearly 4-14% and can also decrease the traffic flow. [33]

Figure 22. Choker

MEDIAN BARRIERS

Median Barriers can improve safety at an intersection of a local street and a major street by prohibiting dangerous turning movements and also they can reduce traffic volumes on a cut-through route that crosses a major street.[33]

Figure 23. Median Barrier

4.2.2 TRAFFIC CALMING PRINCIPLES

•Speed
•Pedestrian Crossing Time/Distance
•Driver Discipline
•24/7

Speed is the single most determinate of traffic safety and by reducing it the street will be safer, especially for pedestrians and cyclists. Speed reduction also opens a whole range of design options, for the street can begin to look less like an expressway and more like a neighborhood street.

Pedestrian crossing distance: By making the distance that a person has to cross the street shorter, thereby reducing the time spent crossing the street, one reduces the pedestrian's exposure risk. The less time that a person is in the street, the less likelihood of that person being hit by a car.

Driver discipline: If other street users can be assured of how and where a particular driver will drive, the street will be safer. Passing on the right is the clearest example of poor driver discipline. Especially when the car waiting to turn stopped for a person crossing the street.

24/7: Traffic calming is defined as self-enforcing, and so it must operate around the clock to get reliable results. The best example is speed humps which not only slow vehicles when school is in session, but also on Saturdays where the playground is used and at night when there is little traffic.

Steps for Traffic Calming

1) Identify the problem
2) Gather data
3) We start simple
4) Physical devices last

The decision to implement traffic calming in any residential area will be based on the following:

- Problem is on a local and not a major road;
- More than half the road is fronted by houses;
- More than 200 vehicles use the road during a peak hour;
- There are at least 3 injury accidents in 3 years or 2 vulnerable road user accidents in 3 years;
- Average traffic speed;
- There is substantial public support for the introduction of traffic calming measures.

4.2.3 TRAFFIC CALMING IN SWEETWATER

Turning movement counts were collected during the morning and evening peak hours of weekdays. This section analyzes the turning movement counts collected for the signalized intersections in the project corridor (See Appendix A for the tabulated volume counts). The data has been collected from the following intersections:

1. Intersections along 107th Ave
   - SW 107th Ave / SW 8th Street
   - SW 107th Ave / West Flagler Street

2. Intersections along 109th Ave
   - SW 109th Ave / West Flagler Street
   - SW 109th Ave / SW 4th Street
   - SW 109th Ave / SW 8th Street

3. Intersections along 112th Ave
   - SW 112th Ave / West Flagler Street

From the data, Crash summaries were prepared for the years 1999, 2000 and 2001(See Appendix B for the crash summaries). The crash data for the following intersections is used for the analysis.

1) Intersection of SW 107th Ave and West Flagler Street
2) Intersection of SW 107th Ave and SW 8th Street.

It is important for the public to be involved in the traffic calming projects. So, data collected by surveying the residents and pedestrians in the city of Sweetwater was used to analyze the problems faced by pedestrians and identify the potential harmful locations in the city of Sweetwater.

DATA ANALYSIS

From the traffic counts taken at the intersection SW 109th Ave and SW 4th Street, we see that the traffic volume is greater than 200 vph in the Northbound direction (in residential areas, we can apply traffic calming measures if the traffic volume is greater than 200 vph). But, at the intersection of SW 109th Ave and West Flagler, the northbound traffic volume is reduced drastically. This indicates that, most of the traffic volume is going through other local streets i.e. SW 2nd Street and SW 3rd Street. Therefore, Chokers or Semi-Diverters or Speed Humps can be installed on the SW 2nd Street and SW 3rd Street along SW 109th Ave so that the traffic flows and the speeds are reduced. The installation of Speed Tables makes the roadway more pedestrian friendly. On the road link between SW 109th Ave and SW 108th Ave along SW 2nd Street, we can see tire marks (see Appendix E), which indicates that the vehicles are speeding (the posted speed limit is 30mph). So as to reduce the speed of the vehicles, we can install Roundabout or Speed Humps on SW 2nd St. on both the approaches of the intersection of SW 108th Ave and SW 2nd Street. The installation of speed humps also reduces the chances of collisions.

Otherwise, we can use the combination of Chokers and Speed Humps, which will reduce the speeds and increase the pedestrian safety at the same time.

From the traffic counts taken at the intersection of SW 109th Ave and SW 8th St, we see that the traffic volume is very high when compared to the traffic volume at the SW 109th Avenue and SW 4th Street intersection. This indicates that the traffic is coming through SW 5th, SW 6th, SW 7th St and accumulating at the intersection of SW 109th Ave and SW 8th St. Therefore, to reduce the traffic flow, we can install Median Barriers or Chokers at the intersection of SW 109th Ave and SW 8th St. We can also install a roundabout or speed hump near the intersection SW 109th Ave and SW 7th St. Presently, the intersection at SW 109th Ave and SW 4th St. is operated by traffic Signals. These traffic signals can be replaced by a Traffic circle. Traffic circles can enhance safety, more than traffic signals.

4.2.4 RECOMMENDATIONS AND CONCLUSIONS

After analyzing the acquired data from the field, the following recommendations, which do not have to be implemented in their totality, are suggested for reducing the traffic flow/speed and improve safety for the pedestrians in the City of Sweetwater:

- Install chokers on SW 2nd St and SW 3rd St along SW 109th Ave.
- Install round about or speed humps on SW 2nd Street near the intersection of SW 108th Ave and SW 2nd Street.
- Install median barriers or chokers at the intersection of SW 109th Ave and SW 8th St.
- Install roundabout or speed humps near the intersection SW 109th Ave and SW 7th St.
- The traffic signals at the intersection of SW 109th Ave and SW 4th St can be replaced by a Traffic Circle.
- Install Raised Crosswalks or Raised Intersection or Speed Tables at the intersections SW 107th Ave and West Flagler, SW 107th Ave and SW 8th Street.

4.3 USE OF ALTERNATIVES ROUTES

One of the feasible alternatives that has been already studied by the Florida Department of Transportation and the Miami Dade Metropolitan Organization to mitigate traffic congestion on NW/SW 107th Avenue, is to reroute traffic to side streets that are less congested. In order to do that, the traffic data obtained in field observations suggests that considerable diversion is already taking place. Even though there are some local streets that go north-south (parallel to 107th avenue) these are not considered as diversion routes to avoid a significant negative effect on quiet neighborhood streets such as SW 105th and SW 104th Avenues.

Several possible diversion routes in the vicinity of the NW/SW 107TH Avenue corridor include: NW 87TH Avenue, NW 97TH Avenue, NW 109TH Avenue and NW 117TH Avenue.

Based on field observations during morning and afternoon peak hours it was discovered and concluded that:

NW/SW 87TH Avenue is experiencing high congestion and therefore, additional traffic from NW/SW 107TH Avenue is not desirable.

NW/SW 97TH Avenue is an excellent option diversion route available to NW/SW 107TH commuters. Even though this alternative requires additional travel distance from southbound traffic accessing it from NW 107TH Avenue and Fontainebleau Boulevard or SW Flagler Street, the travel time to arrive at Tamiami Trail or SW 16 Street, avoiding to go through Sweetwater Section, is about same or less(in worst days). It is important to note that Lone Range Transportation Plan includes connecting NW 97TH Avenue over SR 836.[40]

NW 109TH Avenue has become already the most used alternative for commuters traveling from North to South West including students from FIU who see this route as an escape to get to the Main Campus or the Engineering Building during rush hours. How ever, this route is beginning to experience major congestion during the PM peak periods, the result of which is frustration in drivers and objections from residents in multifamily residential housing along the way.

Field observations indicate that **NW 117TH Avenue** may work as an appropriate alternative if it were to be connected through a bridge over Tamiami Trail. This possible diversion route of SW 107TH Avenue between Flagler and Tamiami is already being used in as a diversion route for SW 107TH avenue and Turnpike. This avenue has a right of way able to alleviate congestion along SW107Th Avenue if in the future it is connected to 836SR/Dolphin Expressway.

MIAMI DADE TRANSPORTATION PLAN TO THE YEAR 2025

Non-motorized facilities (on-road bicycle lanes, off-road greenways and trails, and sidewalks) are included in the Plan. These projects comprise the MPO's Bicycle and Pedestrian Facilities Plan elements of the Long Range Transportation Plan. Funding for non-motorized projects is based on the assumption that 1.5% of eligible surface transportation funds will be devoted to non-motorized transportation projects. The funding guideline is a continuation and refinement of a similar funding policy recommendation that was contained in the 2015 and 2020 Long Range Transportation Plans.

4.4 TRANSIT GREENWAY IMPROVEMENTS

In the next pages, examples of potential Transit Greenway improvements are presented in the form of “Before” and “After” photos (figures 24 – 27). These photos show the existing area conditions in the “Before” photo and the improvements that may be applied to the area to bring it to the Greenways conditions (After).

Before

After

Figure 24. S.W. 107th Avenue and S.W. 4th Street

Before

After

Figure 25. S.W. 109th Avenue and S.W. 2th Street

Before

After

Figure 26. S.W. 109th Avenue and S.W. 7th Terrace

Before

After

Figure 27. S.W. 7th Terrace

4.5 GREENWAY CORRIDOR ALTERNATIVES

4.5.1. SUPERBLOCK CONCEPT

More traditional recent efforts seeking to establish greenway networks within communities have sought to follow existing or abandoned rail, riparian, and transportation corridors. While the advantages of such linear connections within communities are diverse, a less-frequently considered greenway alternative within urbanized areas is the utilization of the "superblock" as a catalyst for positive aesthetic and functional change that is directed at reinforcing the greenway concept.

At the core of this approach is the inherent value that will result from the total aesthetic and functional integration of a greenway that is interactive with the community it is intended to serve. Rather than seeking the more traditional perimeter alignment for greenways found in many urban areas, the "superblock" approach purposefully chooses to integrate the greenway as an internalized travel network, while continuing its more historical use as a connective tool. In this latter role, the "superblock" alternative may link areas and sections of an urbanized area through the enhanced development of green space and pedestrian ways, see Figure 37. The greenway thus becomes a vehicle through which to achieve urban revitalization that may be appropriate to reclaim marginal areas while fulfilling its acknowledged function as a pedestrian connector. Through such a vision, the greenway thus rises above its traditional role and becomes a facilitator of the urban interactions that contribute to social cohesion.

The concept sketch plan explores within a philosophical framework those physical changes that would contribute to the development of an integrated greenway. This graphic representation proposes the introduction of some possible design applications:

- The use of motorcourts as cul-de-sacs in select locations where through traffic may not be desirable, and where unimpeded pedestrian movement along the greenway is desired.
- The concentration of parking along community roads, relegating these roads appropriately to vehicular passageways, and moving pedestrian movement to internal open spaces.
- The sharing of use areas as a collective strategy to enhance the overall physical quality of the community.
- The introduction of larger public gathering and socializations spaces, that may be achieved through the development of open lawn areas, plazas, fountains, and children's play areas.
- The establishment of guidelines that will insure that such physical enhancements address sound ecological principles of connectivity and habitat restoration. This may include the expansion of portions of the existing canal to create littoral zones and emergent wetlands.
- The creation of one or more pedestrian overpasses traversing the Tamiami trail corridor and adjacent canal, providing safe access between the FIU campus and the city of Sweetwater.

- The utilization of a palette of design tools – repetitive pavement materials, a defined selection of tree species, and street furnishings such as lighting fixtures and benches, for example – to insure visual linkages within the community.

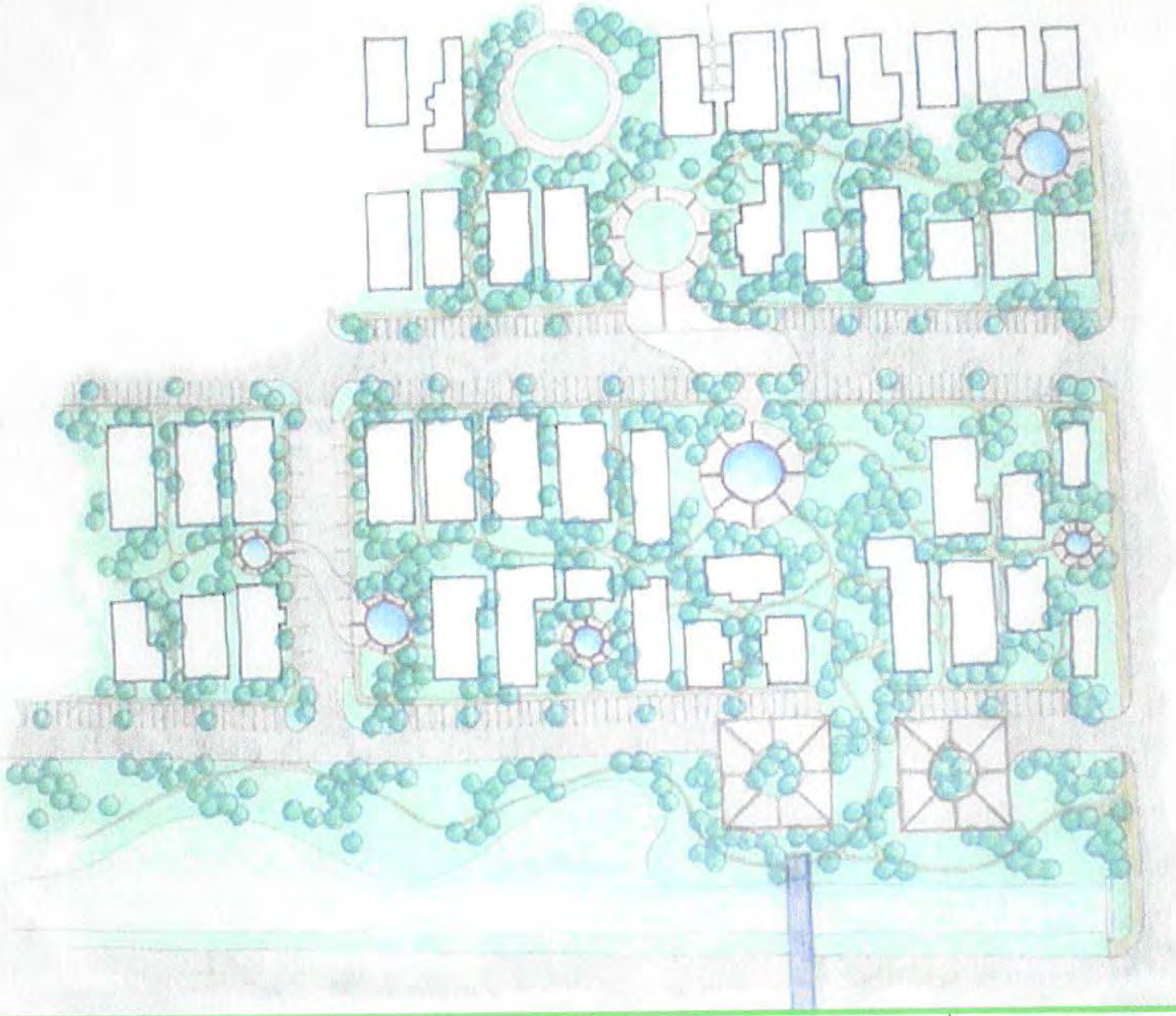
In areas of Sweetwater where such opportunities may be identified, the alternative of the superblock as an integral element of the greenway network should be considered. Its approach should be clearly defined, serving as an adjunct in support of greater physical and social community cohesion while supporting the objective of enhancing pedestrian connectivity throughout the community.

The Superblock concept offers a number of attractive advantages to the city of Sweetwater:

- the integration of safe pedestrian access at Tamiami Trail, through proposed enclosed pedestrian overpasses to the FIU campus and its broad array of educational and educational and cultural offerings;
- its implementation – in varying degrees that respond to site-specific need – in ameliorating unattractive physical conditions;
- the potential to completely integrate greenway corridors within, rather than "adjacent" to residential development;
- opportunities to directly utilize greenway corridors as active, functional recreational amenities serving residents where they live, work, and play

The Superblock alternative (Figure 37) is intended only to elaborate a simple graphic representation of the descriptive text: it is not intended as a final, location-specific design proposal. Such a proposal would be the product of site-specific investigations combined with further government input and review, community workshops, inventories, analyses, and the consideration of refined design alternatives. These efforts would be utilized to identify those sites considered suitable for implementation of the Superblock Alternative. The effective application of the concept should consider a variety of criteria, among which would be:

- identification of non-conforming housing;
- existing adverse environmental impacts, such as inadequate drainage;
- the desirable of safe and appropriate pedestrian connectivity;
- enhancement of the landscape including planting, pavement, and lighting;
- building and maintaining elements contributing to community cohesion



FLORIDA INTERNATIONAL UNIVERSITY	SW 107TH AVENUE TRANSIT GREENWAY CORRIDOR STUDY	SUPERBLOCK ALTERNATIVE	FIGURE 28

4.5.2 ALTERNATIVE PROJECT (I)

(Light rail loop, elevated only to cross SW 8th Street) – 7850 ft

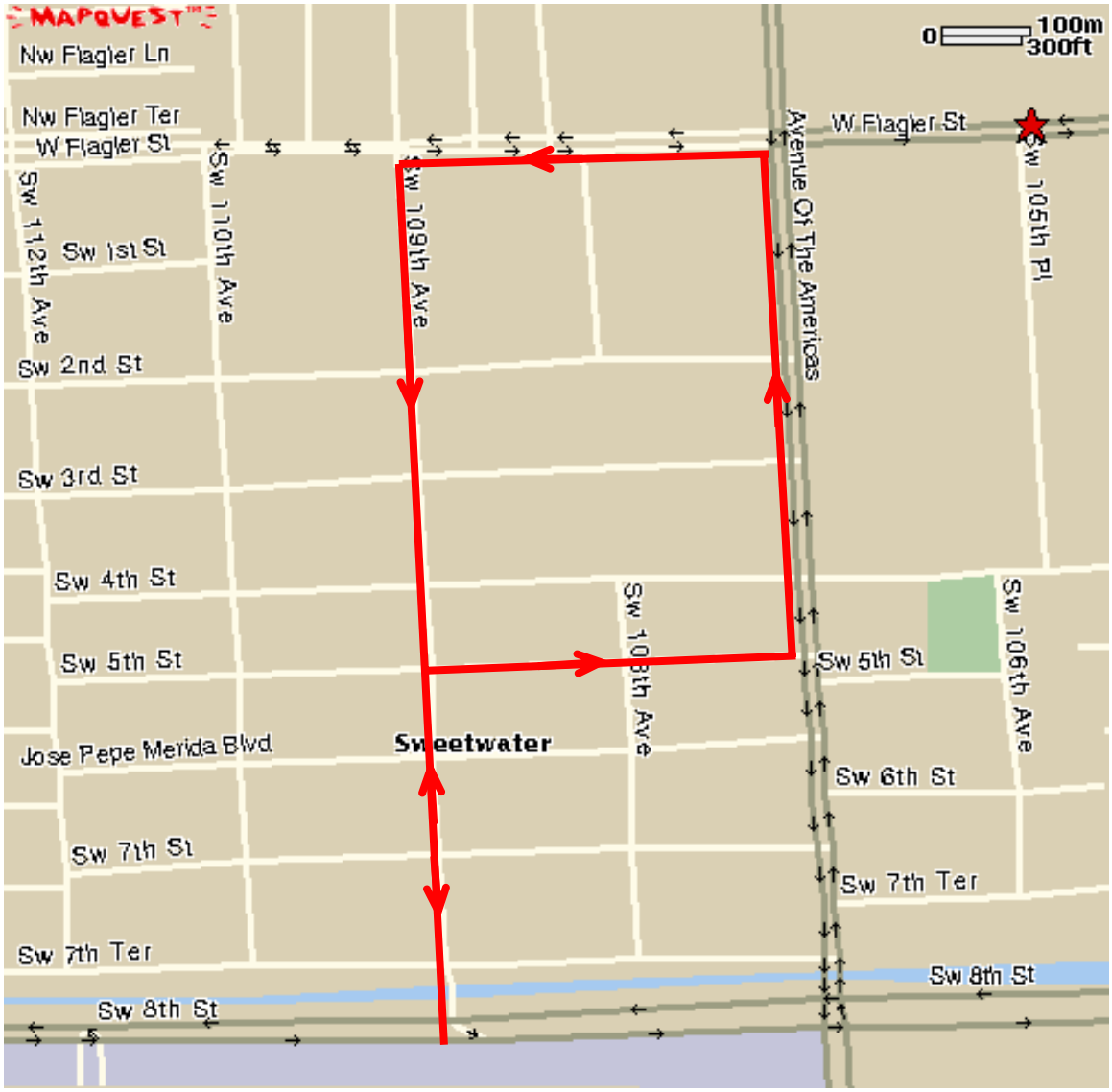
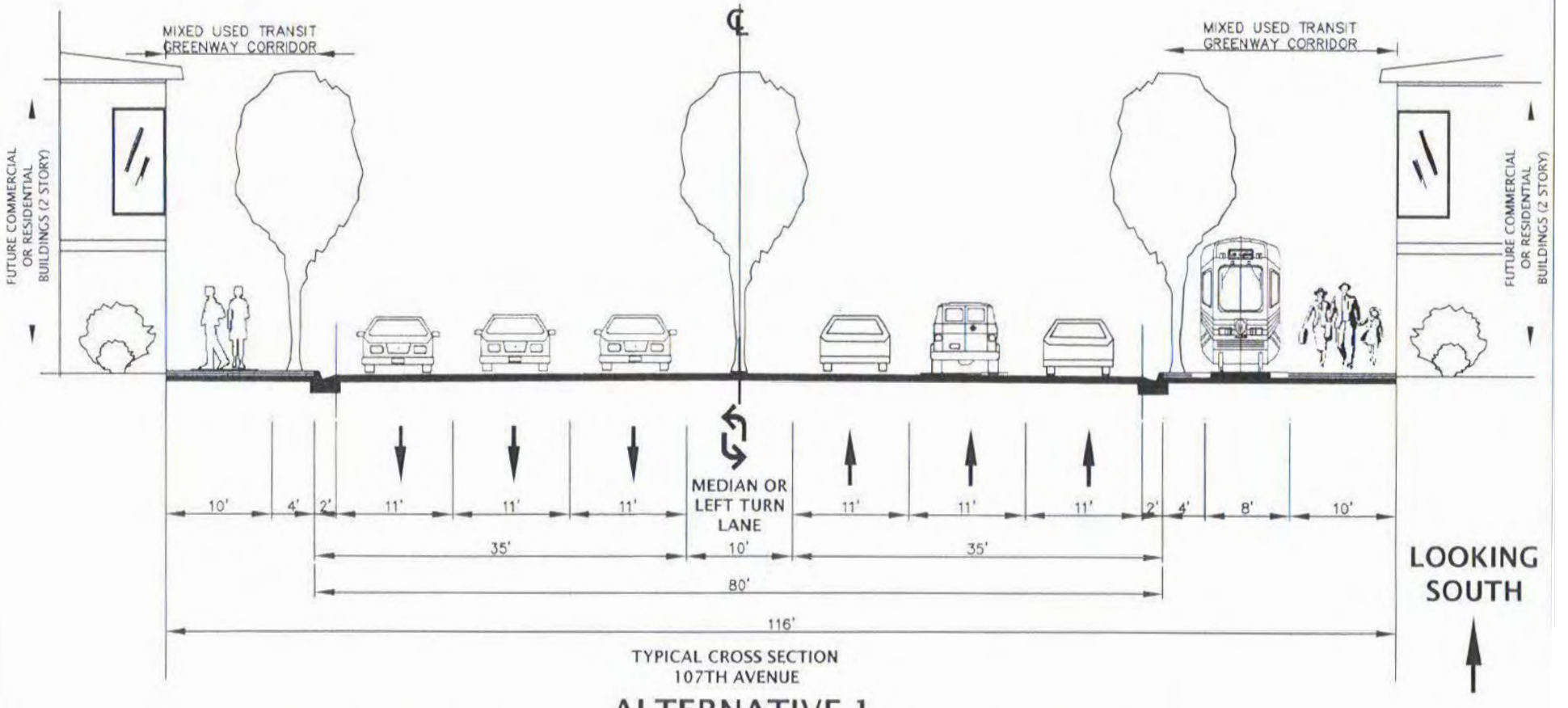


Figure 29. Greenway Corridor Alternative 1

This alternative would consist of a light rail system loop with origin and destination point at FIU University Park (UP) campus. The FIU station would be the only elevated station in the system. The tracks would follow the eastern side of SW 109th Avenue to SW 5th Street, then turn east on SW 5th street until reaching SW 107th avenue. The light rail track would then veer north on the west side of SW 107th Avenue and proceed until it reaches W Flagler Street. At that location, the approximate half point of the system, the tracks would turn left on the south side of W Flagler and proceed west to SW 109th Avenue, where they would turn left and head south on the east side of SW 109th Avenue. The tracks would begin their ascendancy at SW 6th Street and cross SW 8th Street at an approximate height of 25 feet.

107 TH AVENUE TRANSIT GREENWAY CORRIDOR STUDY

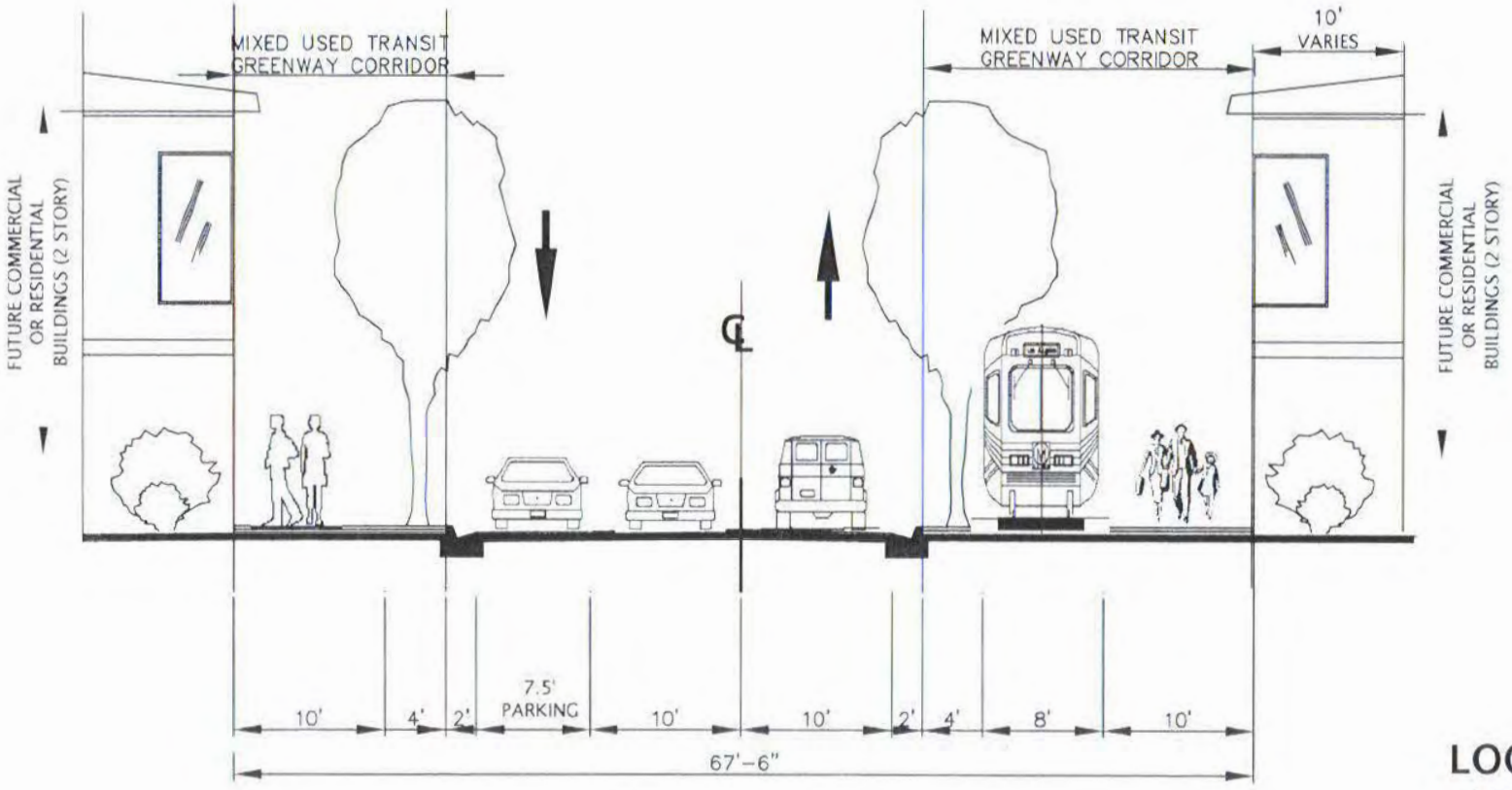


TYPICAL CROSS SECTION
107TH AVENUE

ALTERNATIVE 1

FLORIDA INTERNATIONAL UNIVERSITY	107 TH AVENUE TRANSIT GREENWAY CORRIDOR STUDY		FIGURE
LEHMAN CENTER FOR TRANSPORTATION RESEARCH	CITY OF SWEETWATER	ALTERNATIVE 1 / SECTION AT 107 TH AVENUE	30

107 TH AVENUE TRANSIT GREENWAY CORRIDOR STUDY



LOOKING NORTH

TYPICAL CROSS SECTION
AT 109TH AVENUE

ALTERNATIVE 1

FLORIDA INTERNATIONAL UNIVERSITY	107 TH AVENUE TRANSIT GREENWAY CORRIDOR STUDY		FIGURE
LEHMAN CENTER FOR TRANSPORTATION RESEARCH	CITY OF SWEETWATER	ALTERNATIVE 1 / SEC. SW 109 TH AVE	31

TABLE 9. CONSTRUCTION COST ESTIMATE
ALTERNATIVE PROJECT # 1

Item	Unit	Quantity	Unit Price ($)	Total Price ($)
Vegetation and landscaping[1]	mile	7.850	28,982	$227,507.54
Sidewalks* (10ft. wide, 2 sides)	mile	7.850	200,000	$1,570,000.00
Signage[2] (2 signs every 500 ft.)	mile	7.850	2,801	$21,986.09
Pedestrian Overpass installations[2]	sq. ft.	4000.00	318	$1,273,080.00
Benches[1] (1 bench every 100 ft.)	each	400	696	$278,225.78
Trash Receptacles[1] (1 bench every 100 ft.)	each	400	464	$185,483.85
Parking Garage[3] (300 spaces, $8,100/space)	each	1	2,734,986	$2,734,986.41
Light Rail vehicles[3]	each	3	112,551	$337,652.64
Track installation[3] (including signals, stations and platforms)	mile	7.850	208,219	$1,634,520.17
Light rail Overpass installations*	sq. ft.	12000.00	600	$7,200,000.00
Service vehicle and maintenance facility*	each	1	50,000	$50,000.00
20% Contingency				$3,102,688.50
TOTAL Alternative Project # 1				**$18,616,130.97**

1. Asheville Greenways Master Plan (1998)
2. Central Plantation Transit Greenways Feasibility Study (2001)
3. City of Fort Pierce Transit Greenway Conceptual Master Plan (1999)
** Rough estimate*
This estimate does not include acquisition of land or right of way.

Light rail vehicles (similar to those in San Francisco/New Orleans/Tampa) providing the service would stop at 8-10 stations along the path, allowing customers to board and exit at key points along the system. The estimated one way travel time, i.e., UP campus to W Flagler, which would include time for boarding and egress, is approximately 10 minutes. The total estimated cost of the Alternative #1 is around $18.5 million, excluding right of way acquisition.

4.5.3 ALTERNATIVE PROJECT (II)

(Light rail two-way single line, elevated twice to cross SW 8th Street and W. Flagler Street) – 4656 ft

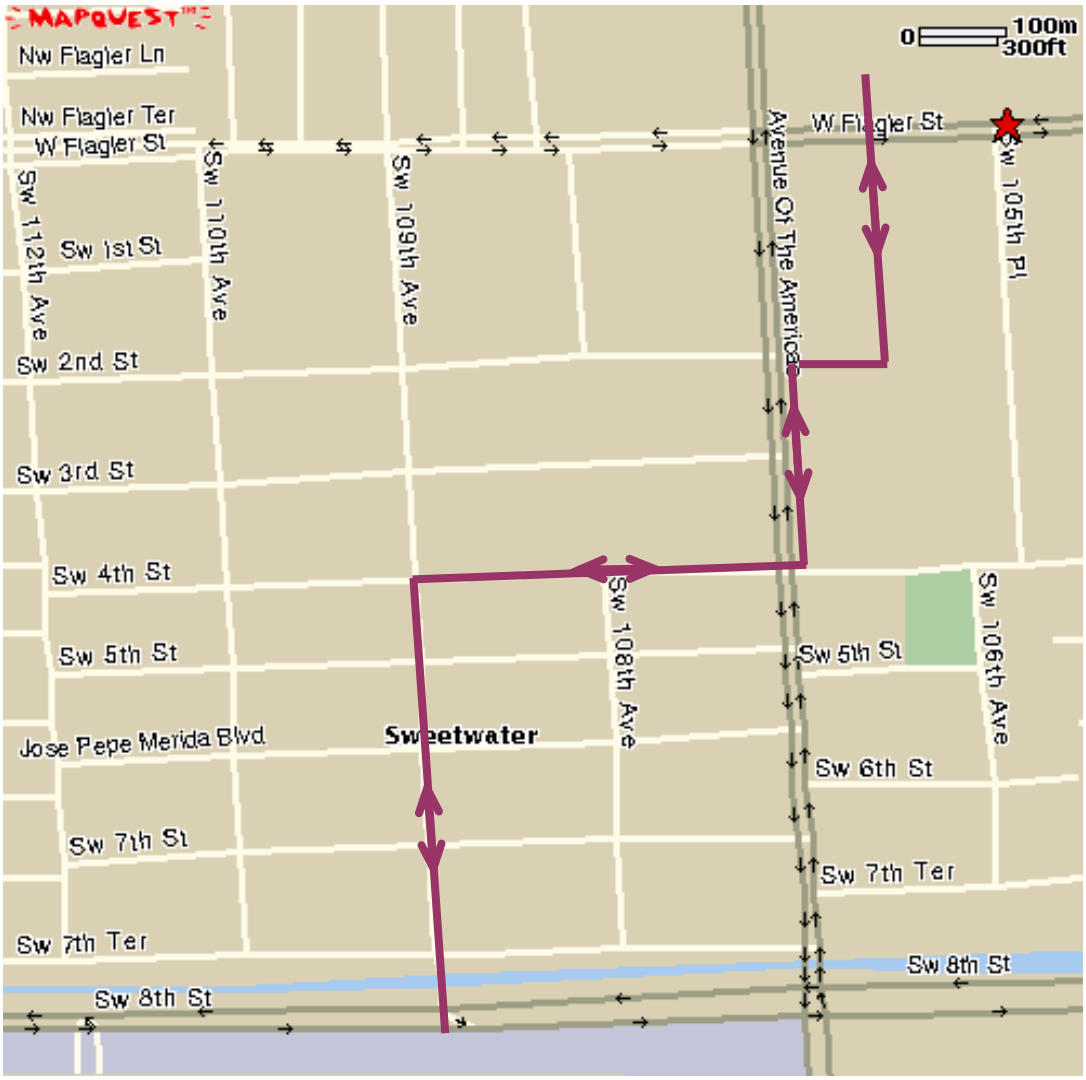
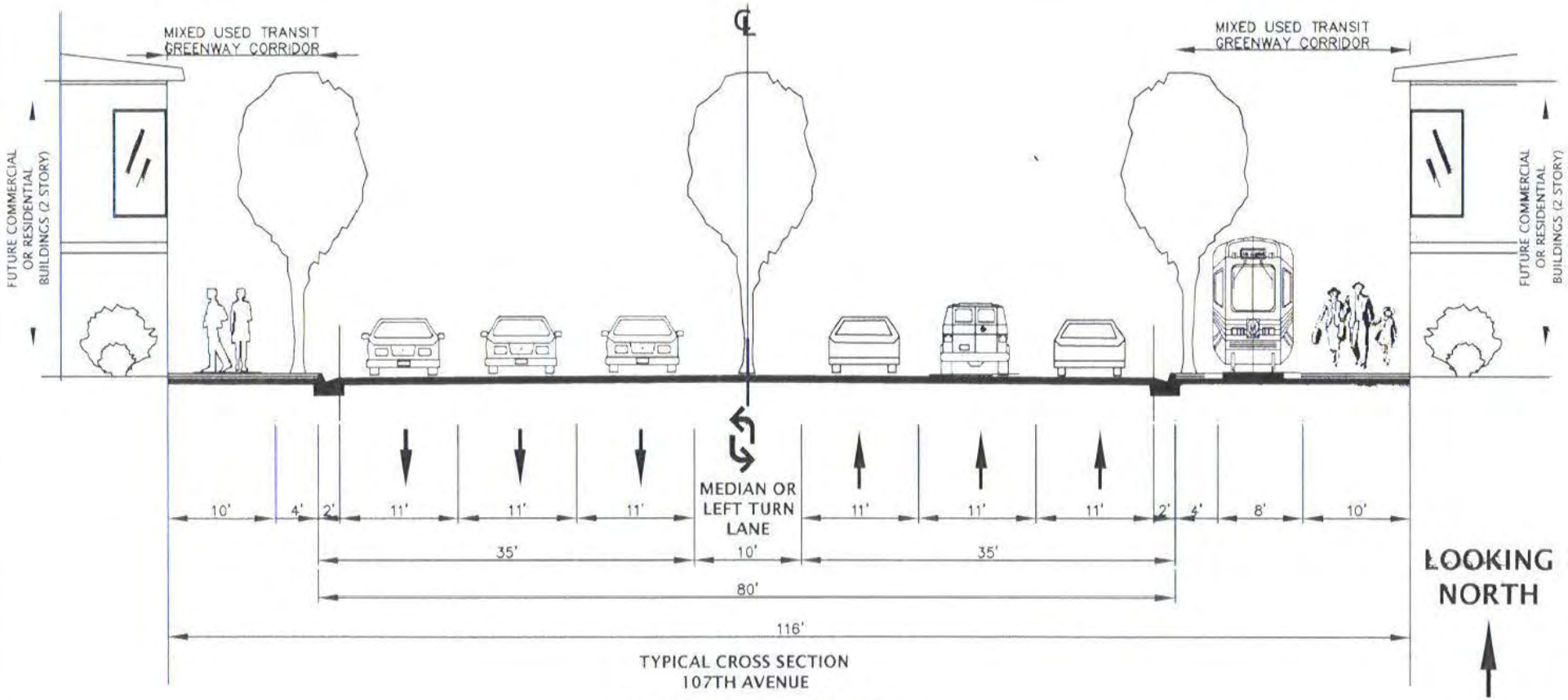


Figure 32. Greenway Corridor Alternative 2

Alternative #2 also consists of a light rail system (similar in technology to Alternative #1) which would be elevated at the origin and destination points, i.e., the UP and the Engineering Campuses of FIU. From UP at SW 109th Avenue, the tracks would cross SW 8th Street on a 25 feet overpass and land on the east side of the avenue at SW 6th Street.

107 TH AVENUE TRANSIT GREENWAY CORRIDOR STUDY

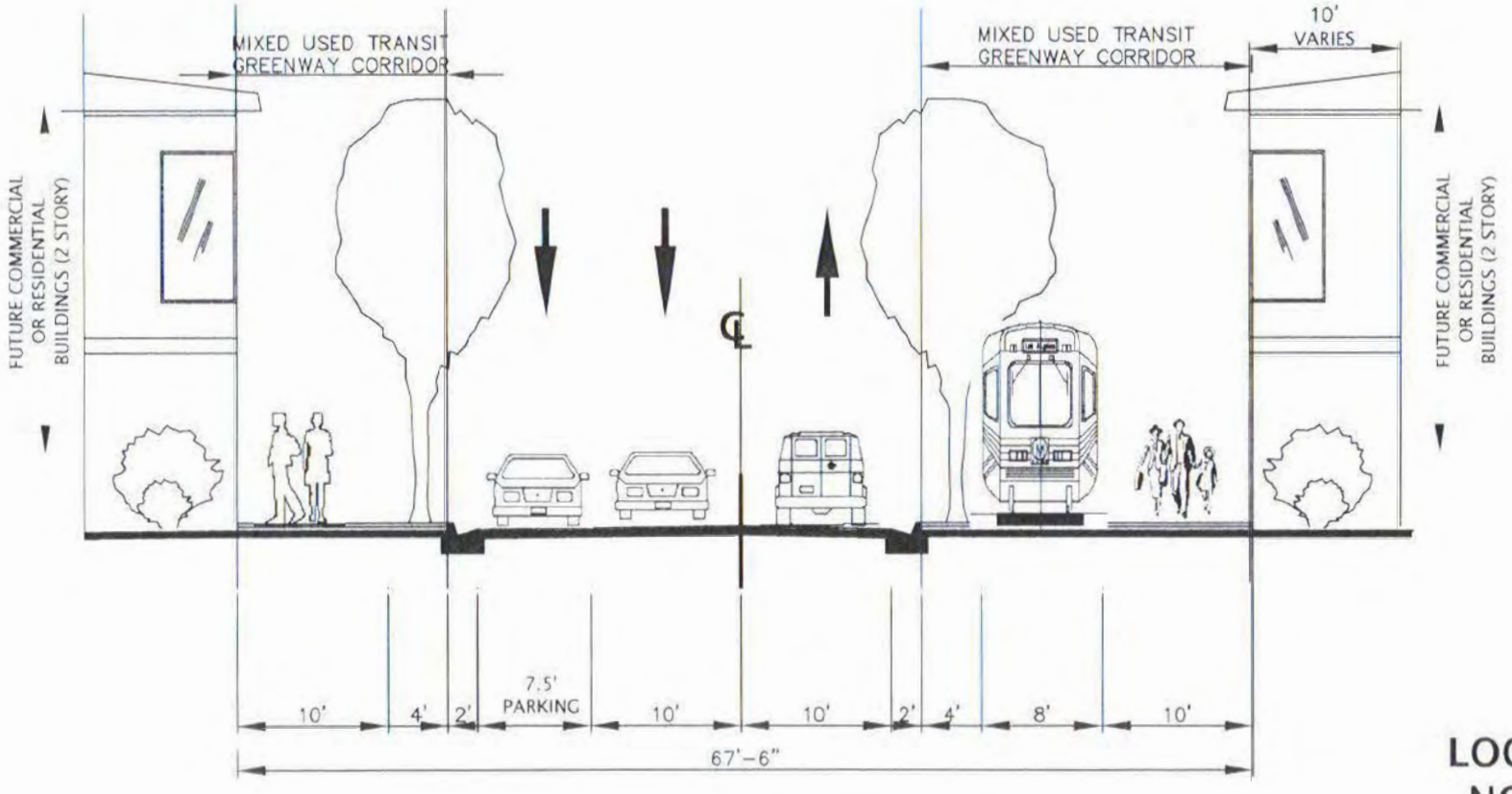


TYPICAL CROSS SECTION
107TH AVENUE

ALTERNATIVE 2

FLORIDA INTERNATIONAL UNIVERSITY	107 TH AVENUE TRANSIT GREENWAY CORRIDOR STUDY		FIGURE
LEHMAN CENTER FOR TRANSPORTATION RESEARCH	CITY OF SWEETWATER	ALTERNATIVE 2 / SECTION AT 107 TH AVENUE	33

107 TH AVENUE TRANSIT GREENWAY CORRIDOR STUDY



LOOKING NORTH

TYPICAL CROSS SECTION
AT 109TH AVENUE

ALTERNATIVE 2

FLORIDA INTERNATIONAL UNIVERSITY	107 TH AVENUE TRANSIT GREENWAY CORRIDOR STUDY		FIGURE
LEHMAN CENTER FOR TRANSPORTATION RESEARCH	CITY OF SWEETWATER	ALTERNATIVE 2 / SEC. SW 109 TH AVE	34

TABLE 10. CONSTRUCTION COST ESTIMATE
ALTERNATIVE PROJECT # 2

Item	Unit	Quantity	Unit Price ($)	Total Price ($)
Vegetation and landscaping[1]	mile	4.620	28,982	$133,896.16
Sidewalks* (10ft. wide, 2 sides)	mile	4.620	200,000	$924,000.00
Signage[2] (2 signs every 500 ft.)	mile	4.620	2,801	$12,939.59
Benches[1] (1 bench every 100 ft.)	each	250	696	$173,891.11
Trash Receptacles[1] (1 bench every 100 ft.)	each	250	464	$115,927.41
Parking Garage[3] (300 spaces, $8,100/space)	each	1	2,734,986	$2,734,986.41
Light Rail vehicles[3]	each	3	112,551	$337,652.64
Track installation[3] (including signals, stations and platforms)	mile	4.620	208,219	$961,972.38
Light rail Overpass installations*	sq. ft.	12000.00	600	$7,200,000.00
Service vehicle and maintenance facility*	each	1	50,000	$50,000.00
20% Contingency				$2,529,053.14
TOTAL Alternative Project # 2				**$15,174,318.83**

1. Asheville Greenways Master Plan (1998)
2. Central Plantation Transit Greenways Feasibility Study (2001)
3. City of Fort Pierce Transit Greenway Conceptual Master Plan (1999)
** Rough estimate*
This estimate does not include acquisition of land or right of way.

They would proceed to SW 4th Street, turn right at SW 4th Street and head east toward SW 107th Avenue. The tracks would then cross SW 107th Avenue before turning left on the west side of the arterial. The tracks would then proceed north to SW 2nd street, turn right just before the shopping plaza, and then proceed east to the elementary school playground. The facility would then veer left at the playground and rise slowly to cross W Flagler on a 25 feet overpass. The one way trip would end at the Engineering campus elevated station, from which the vehicles would depart. The light rail system would have 6-8 stations and the estimated one-way travel time would be 10 minutes. The projected cost of this facility is around $15.2 million, excluding right of way acquisition.

4.5.4 ALTERNATIVE PROJECT (III)

(Bus loop, with a designated pedestrian/bicyclist path) – 9820 ft

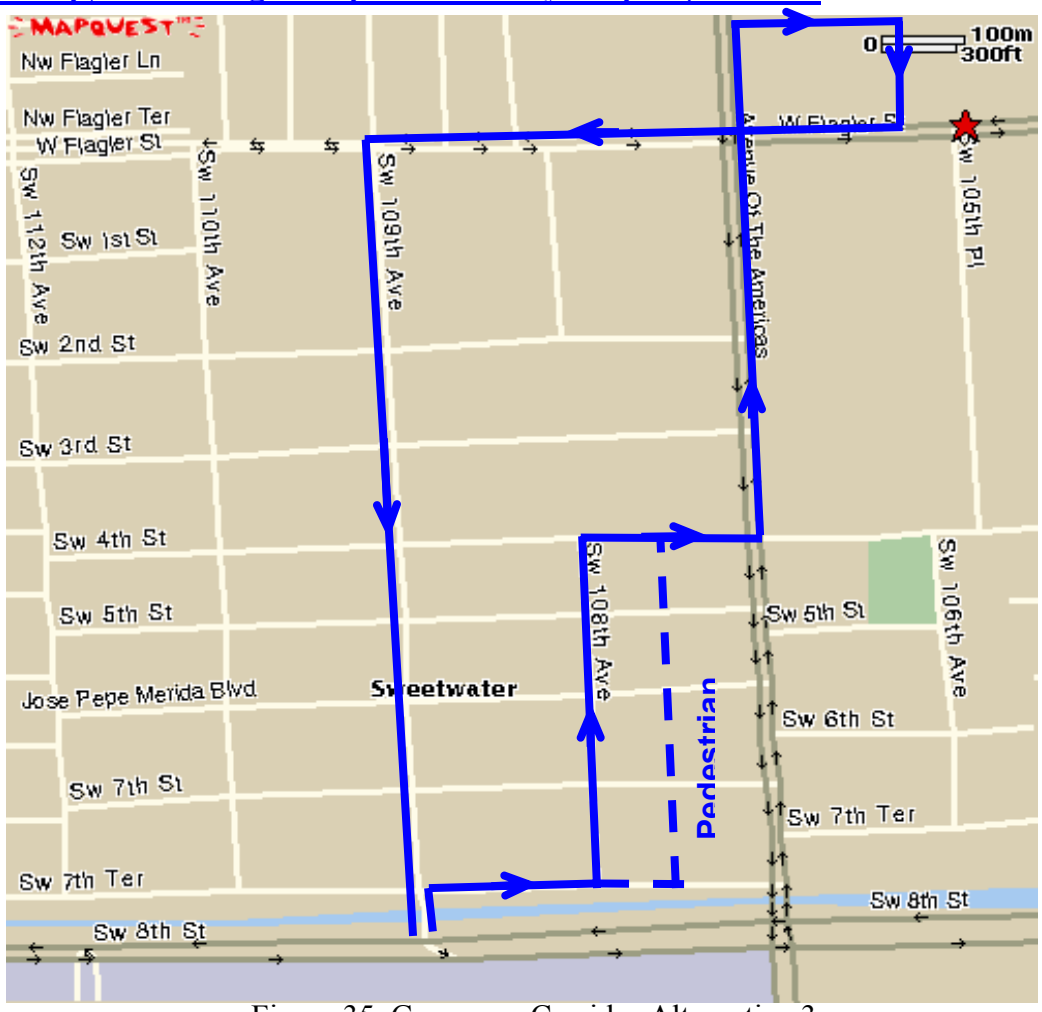
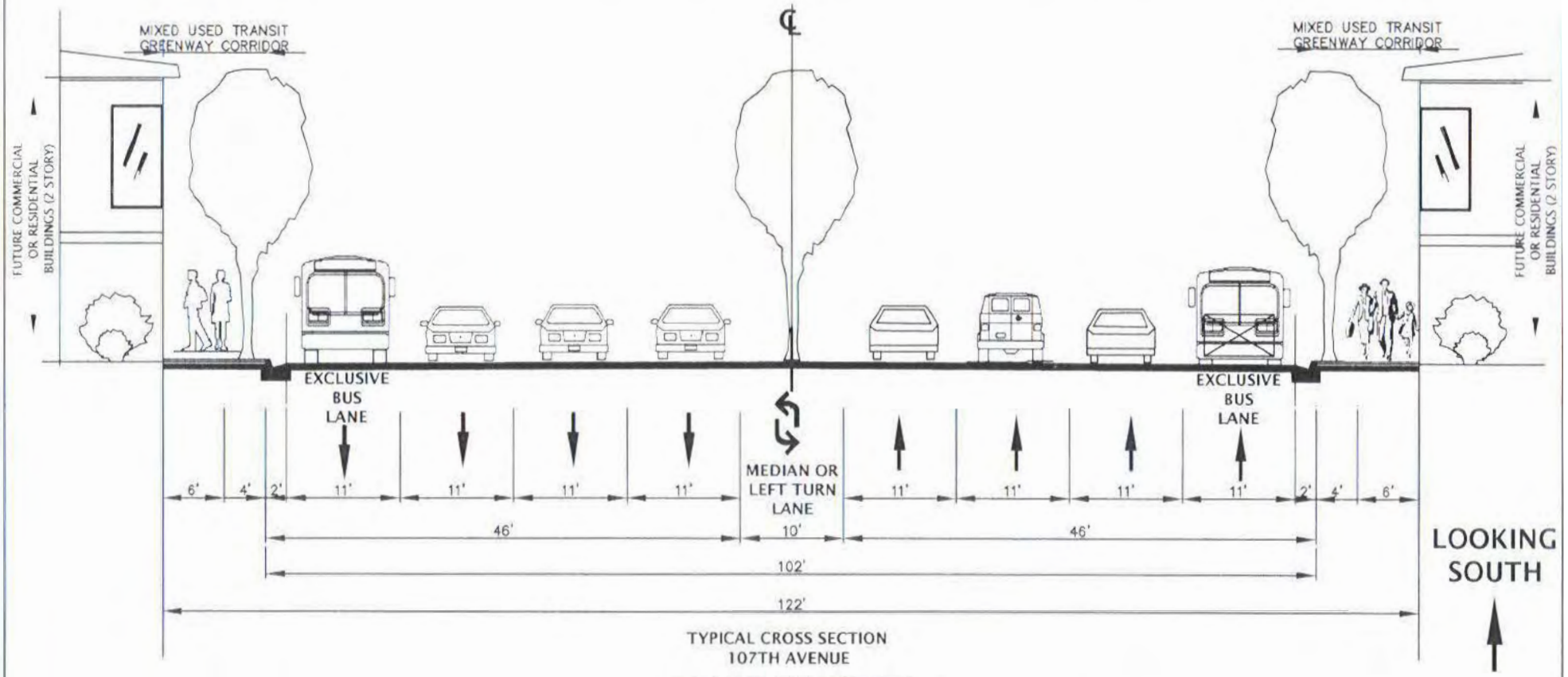


Figure 35. Greenway Corridor Alternative 3

This alternative is by far the simplest and less expensive proposition. It is presented as a busway facility using local streets with a shared pedestrian/bicycle pathway. The busway would begin at UP and proceed north on SW 109th Avenue to SW 7th terrace. It would veer right and head east to SW 108th Avenue where it would then turn left and head north toward SW 4th street.

107 TH AVENUE TRANSIT GREENWAY CORRIDOR STUDY

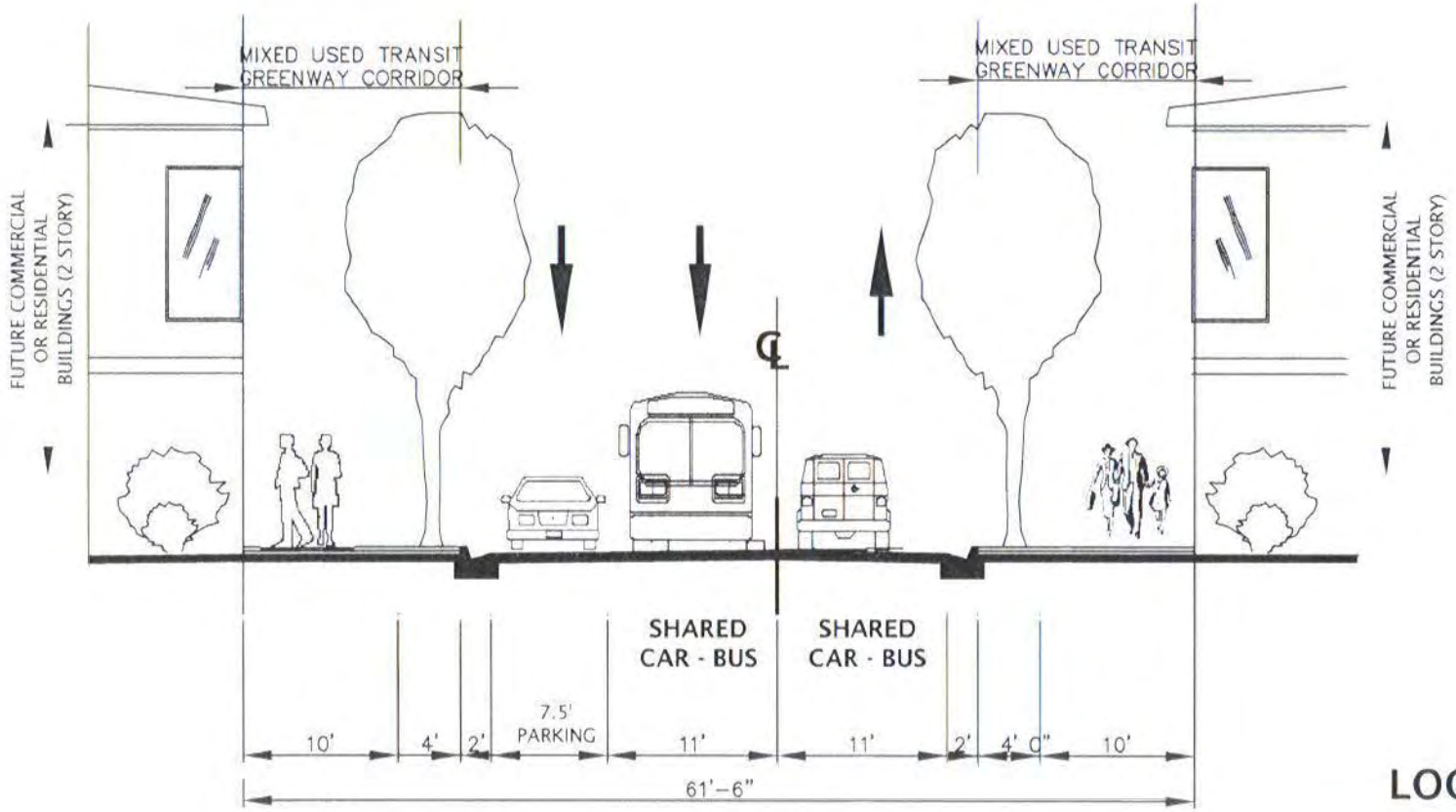


TYPICAL CROSS SECTION
107TH AVENUE

ALTERNATIVE 3

FLORIDA INTERNATIONAL UNIVERSITY	107 TH AVENUE TRANSIT GREENWAY CORRIDOR STUDY	FIGURE 36
LEHMAN CENTER FOR TRANSPORTATION RESEARCH	CITY OF SWEETWATER / ALTERNATIVE 3 / SECTION AT 107 TH AVENUE	

107 TH AVENUE TRANSIT GREENWAY CORRIDOR STUDY



LOOKING NORTH

TYPICAL CROSS SECTION
AT 109TH AVENUE

ALTERNATIVE 3

FLORIDA INTERNATIONAL UNIVERSITY	107 TH AVENUE TRANSIT GREENWAY CORRIDOR STUDY		FIGURE
LEHMAN CENTER FOR TRANSPORTATION RESEARCH	CITY OF SWEETWATER	ALTERNATIVE 3 / SEC. SW 109 TH AVE	37

TABLE 11. CONSTRUCTION COST ESTIMATE
ALTERNATIVE PROJECT # 3

Item	Unit	Quantity	Unit Price ($)	Total Price ($)
Vegetation and landscaping[1]	mile	10.165	28,982	$294,600.52
Sidewalks[*] (10ft. wide, 2 sides)	mile	9.820	200,000	$1,964,000.00
Signage[2] (2 signs every 500 ft.)	mile	9.820	2,801	$27,503.62
Benches[1] (1 bench every 100 ft.)	each	540	696	$375,604.80
Trash Receptacles[1] (1 bench every 100 ft.)	each	540	464	$250,403.20
Parking Garage[3] (300 spaces, $8,100/space)	each	1	2,734,986	$2,734,986.41
Minibuses[3]	each	3	45,020	$135,061.06
Pavement markings[2]	mile	9.820	28,008	$275,036.20
Signals and stations[2]	mile	9.820	2,801	$27,503.62
Service vehicle and maintenance facility[*]	each	1	50,000	$50,000.00
20% Contingency				$1,226,939.89
TOTAL Alternative Project # 3				**$7,361,639.32**

1. Asheville Greenways Master Plan (1998)
2. Central Plantation Transit Greenways Feasibility Study (2001)
3. City of Fort Pierce Transit Greenway Conceptual Master Plan (1999)
** Rough estimate*
This estimate does not include acquisition of land or right of way.

At SW 4th Street, the busway would then veer right and proceed to SW 107th Avenue where it would turn left and head north, crossing west Flagler before entering through the SW 107th Avenue entrance to the Engineering campus. The bus would circle the Engineering building and exit through the southern entrance of the facility, turning right on West Flagler and proceeding eastbound to SW 109th Avenue. It would turn left at SW 109th Avenue, and continue south to the UP campus. This alternative incorporates a designated pedestrian path as described previously in section 4.5.1.

4.5.5 ALTERNATIVE PROJECT (IV)

Alternative 4: Combination of three alternatives – to be built on stages – 8476 ft

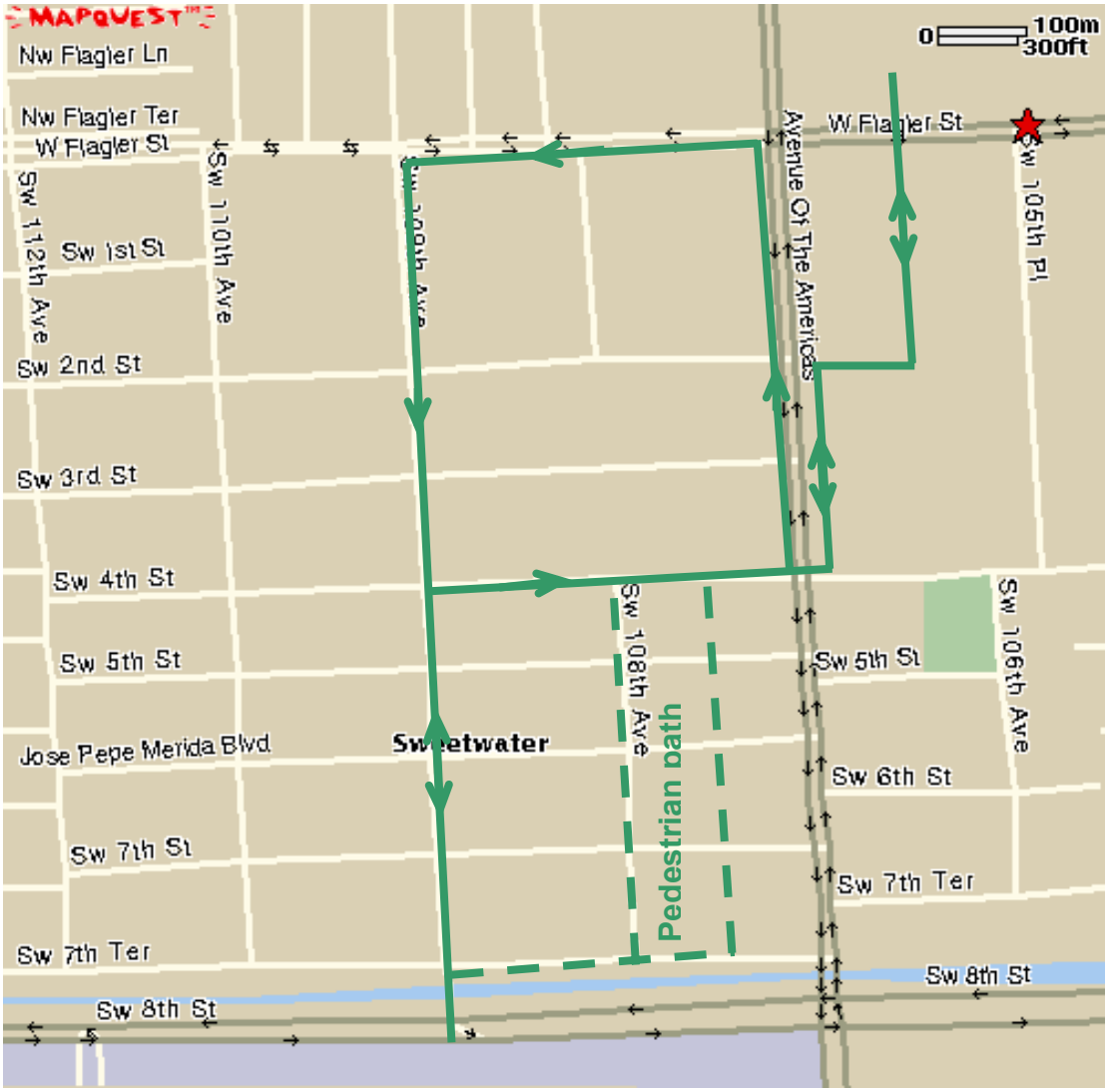


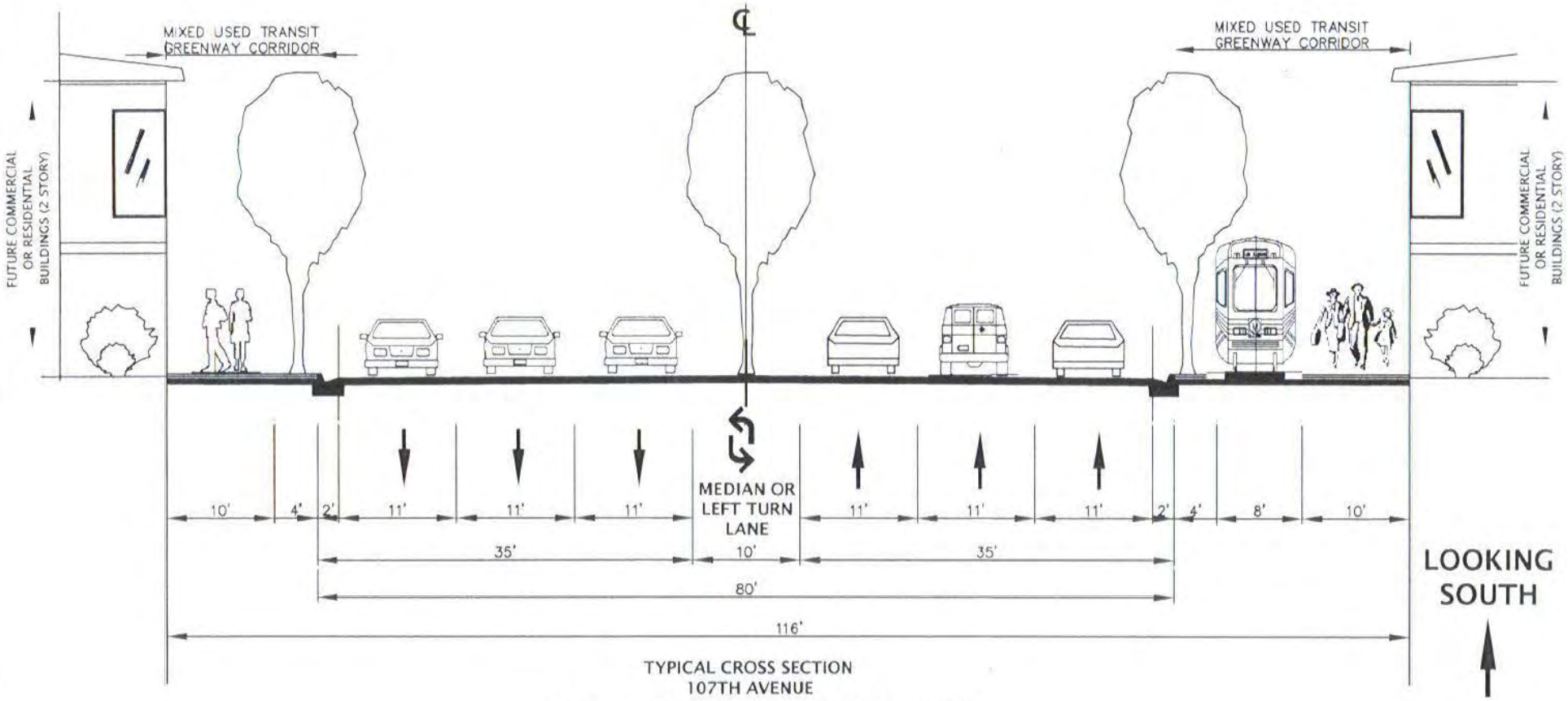
Figure 38. Greenway Corridor Alternative 4

This alternative is a light rail and pedestrian paths combination of the previous three alternatives; and it may be built on stages. The first stage is similar to Alternative 1, a light rail system loop with origin and destination point at FIU University Park campus. The FIU station would be the only elevated station in this stage. The tracks would follow

the eastern side of SW 109th Avenue to SW 5th Street, then turn east on SW 5th street until reaching SW 107th avenue. The light rail track would then veer north on the west side of SW 107th Avenue and proceed until it reaches W Flagler Street. At that location, the approximate half point of the system, the tracks would turn left on the south side of W Flagler and proceed west to SW 109th Avenue, where they would turn left and head south on the east side of SW 109th Avenue. The tracks would begin their ascendancy at SW 6th Street and cross SW 8th Street at an approximate height of 25 feet. This stage incorporates a designated pedestrian path as described previously in section 4.5.1.

The second stage will include tracks crossing SW 107th Avenue at SW 4th Street intersection then turning left on the west side of the arterial. The tracks would then proceed north to SW 2nd street, turn right just before the shopping plaza, and then proceed east to the elementary school playground. The facility would then veer left at the playground and rise slowly to cross W Flagler on a 25 feet overpass. The trip would end at the Engineering campus elevated station, from which the vehicles would depart back to reconnect with stage 1at the west side of the SW 107th Avenue and SW 4th Street intersection.

107 TH AVENUE TRANSIT GREENWAY CORRIDOR STUDY

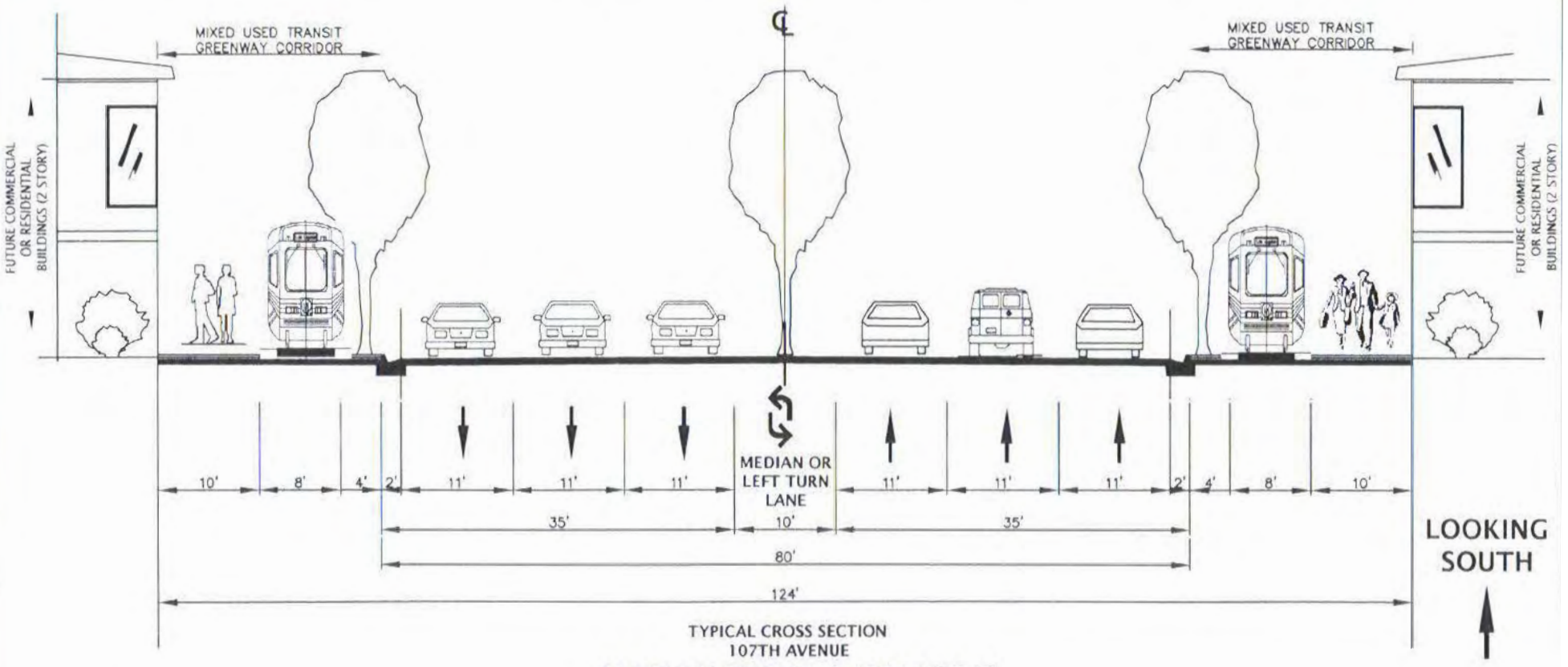


TYPICAL CROSS SECTION
107TH AVENUE

ALTERNATIVE 4 (PHASE 1)

FLORIDA INTERNATIONAL UNIVERSITY	107 TH AVENUE TRANSIT GREENWAY CORRIDOR STUDY		FIGURE
LEHMAN CENTER FOR TRANSPORTATION RESEARCH	CITY OF SWEETWATER	ALTERNATIVE 4 / SECTION AT 107 TH AVENUE	39

107 TH AVENUE TRANSIT GREENWAY CORRIDOR STUDY

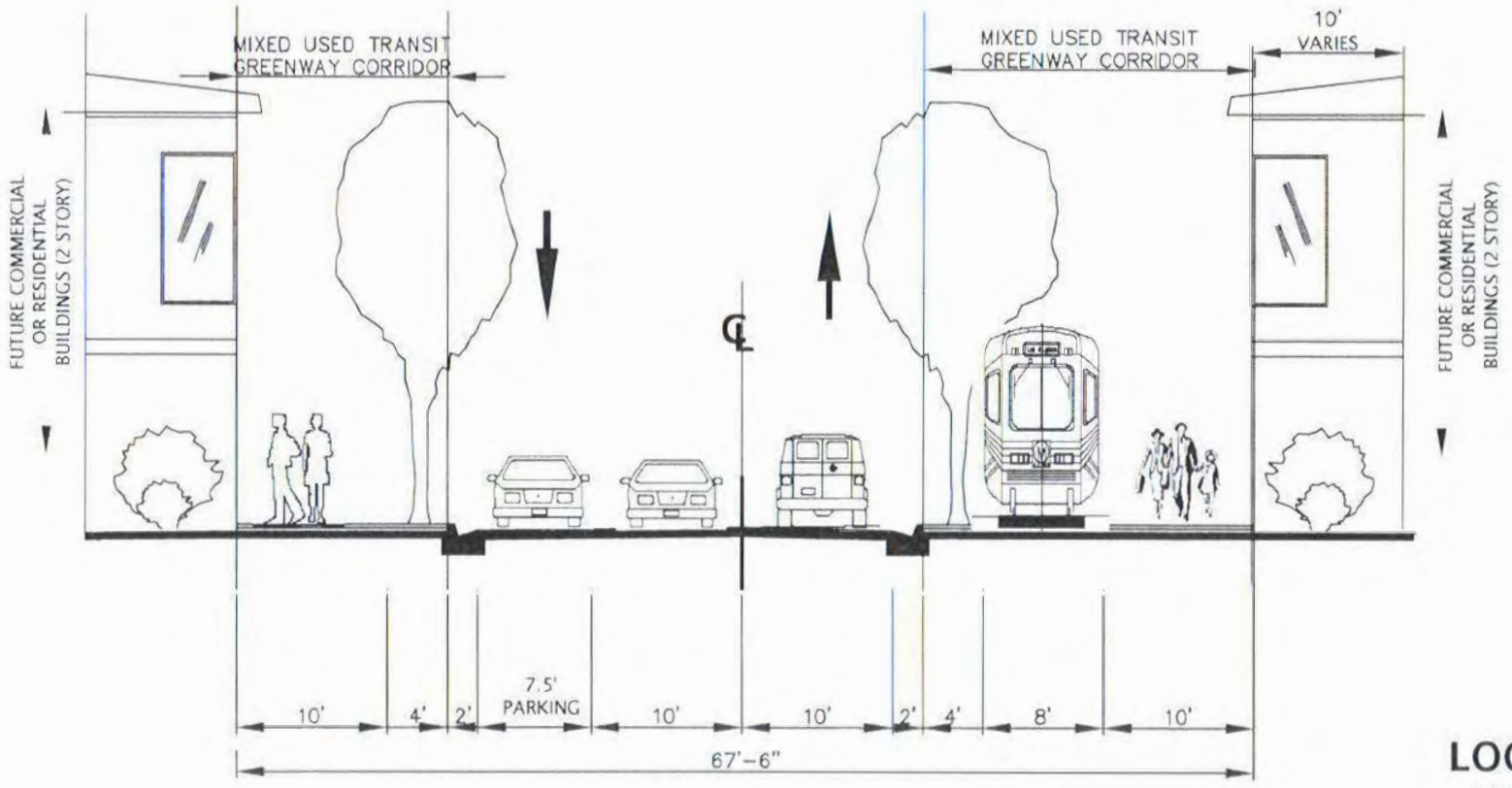


TYPICAL CROSS SECTION
107TH AVENUE

ALTERNATIVE 4 (PHASE 2)

FLORIDA INTERNATIONAL UNIVERSITY	107 TH AVENUE TRANSIT GREENWAY CORRIDOR STUDY	FIGURE
LEHMAN CENTER FOR TRANSPORTATION RESEARCH	CITY OF SWEETWATER / ALTERNATIVE 4 / SECTION AT 107 TH AVENUE	40

107 TH AVENUE TRANSIT GREENWAY CORRIDOR STUDY



LOOKING NORTH

TYPICAL CROSS SECTION
AT 109TH AVENUE

ALTERNATIVE 4 (PHASE 1 AND 2)

FLORIDA INTERNATIONAL UNIVERSITY	107 TH AVENUE TRANSIT GREENWAY CORRIDOR STUDY		FIGURE
LEHMAN CENTER FOR TRANSPORTATION RESEARCH	CITY OF SWEETWATER	ALTERNATIVE 4 / SEC. SW 109 TH AVE	41

TABLE 12. CONSTRUCTION COST ESTIMATE
ALTERNATIVE PROJECT # 4

Item	Unit	Quantity	Unit Price ($)	Total Price ($)
Vegetation and landscaping[1]	mile	8.476	28,982	$245,650.18
Sidewalks[*] (10ft. wide, 2 sides)	mile	8.476	200,000	$1,695,200.00
Sginage[2] (2 signs every 500 ft.)	mile	8.476	2,801	$23,739.38
Benches[1] (1 bench every 100 ft.)	each	500	696	$347,782.22
Trash Receptacles[1] (1 bench every 100 ft.)	each	500	464	$231,854.81
Parking Garage[3] (300 spaces, $8,100/space)	each	2	2,734,986	$5,469,972.82
Light Rail vehicles[3]	each	4	112,551	$450,203.52
Track installation[3] (including signals, stations and platforms)	mile	8.476	208,219	$1,764,865.34
Light rail Overpass installations[*]	sq. ft.	12000.00	600	$7,200,000.00
Service vehicle and maintenance facility[*]	each	1	50,000	$50,000.00
20% Contingency				$3,495,853.66
TOTAL Alternative Project # 4				**$20,975,121.93**

1. Asheville Greenways Master Plan (1998)
2. Central Plantation Transit Greenways Feasibility Study (2001)
3. City of Fort Pierce Transit Greenway Conceptual Master Plan (1999)
** Rough estimate*

4.5.6 TRANSIT GREENWAYS SITE MODEL

In order to illustrate the concept of the new proposed transit greenways as well as different alternative projects, the FIU research staff prepared and submitted to the City of Sweetwater a site model for the study area.

Figure 42:

Top – Plan View of Site Model with University Park Campus (top) and SW 107th / 109th Avenue Corridors
Bottom left – Side View of Site Model
Bottom right – Presentation of Site Model to Jorge Forte, Sweetwater Project Manager, David Henderson, MPO, and Javier Gonzalez, FDOT – District 6.

5. FUNDING MECHANISMS

The City of Sweetwater transit greenway can qualify not only as a transit project but also as a pedestrian and bicycle project as well. The most common method for funding greenways is to combine local, public sector and private sector funds with funds from state, federal and additional private-sector sources. Many communities involved with greenway implementation are choosing to leverage local money as a match for outside funding sources, in essence multiplying their resources.

Local advocates and government staff can pursue a variety of funding sources for land acquisition and greenway construction. A greenway program that relies on limited funding sources may one-day come to a grinding halt should these sources dry up. Potential funding sources are identified below.

5.1 LOCAL AND STATE FUNDING SOURCES

Miami Dade County People Transportation Plan. In November 2002, Miami Dade voters approved a half penny sales tax increase for transit. One of the plan's provision is that twenty percent of surtax proceeds be distributed annually to those cities existing as of November 5, 2002 that meet the following conditions: (i) Provide the same level of general fund support for transportation that is in their FY 2001-2002 budget in subsequent Fiscal Years, and (ii) Apply 20% of any surtax proceeds received to transit uses in the nature of circulator buses, bus shelters, bus pullout bays or other transit-related infrastructure. In addition, the plan stipulated that any city that cannot apply the 20% portion of surtax proceeds may contract with the County for the County to apply such proceeds on a County project that enhances traffic mobility within that city and immediately adjacent areas.

Bond Referendums for Greenways. Communities across the nation have successfully placed on local ballots propositions to support greenway development. The Charlotte-Mecklenburg County, NC area passed four consecutive referendums that generated more than $3 million for greenways. Guilford County, NC passed a referendum in 1986 that appropriated $1.6 million for development of a specific greenway corridor. In Cheyenne, Wyoming, a greenway bond referendum was used to fund the first three miles of local greenways. Residents throughout the United States have consistently placed a high value on local greenway development and voted to raise their own taxes in support of greenway implementation.[38]

Greenway Funding through Local Capital Improvement Plans. Perhaps the true measure of local government commitment to greenways is a yearly appropriation for trail development in the Capital Improvements Program. In Raleigh, NC, greenways continue to be built and maintained, year after year, due to a dedicated source of annual funding (administered through the Parks and Recreation Department). In addition, the City of Raleigh's Real Estate Department has its own line item budget for greenway land acquisition. [38]

Greenway Trust Fund. Another strategy used by several communities is the creation of a trust fund for land acquisition and facility development that is administered by a private greenway advocacy group, or by a local greenway commission. A trust fund can aid in the acquisition of large parcels of high-priority properties that may be lost if not acquired by private sector initiative. Money may be contributed to the trust fund from a variety of sources, including the municipal and county general funds, private grants, and gifts.

Local Private-Sector Funding. Local industries and private businesses may agree to provide support for greenway development through one or more of the following methods:

- Donations of cash to a specific greenway segment
- Donations of services by large corporations to reduce the cost of greenway implementation, including equipment and labor to construct and install elements of a specific greenway
- Reductions in the cost of materials purchased from local businesses that support greenway implementation and can supply essential products for facility development.

One example of a successful endeavor of this type is the Swift Creek Recycled Greenway in Cary, NC. A total of $40,000 in donated construction materials and labor made this trail an award-winning demonstration project. This method of raising funds requires a great deal of staff coordination. (Note: Some materials used in the "recycled trail" were considered waste materials by local industries!) [38]

Adopt-A-Trail Programs. These are typically small grant programs that fund new construction, repair/renovation, maps, trail brochures, facilities (bike racks, picnic areas, birding equipment).

State Departments of Transportation. Many states are the local administrators of federal funding from the Transportation Equity Act for the 21st Century (TEA-21) - see more info below, under Federal Funding Sources.

5.2 FEDERAL FUNDING RESOURCES

The primary source of federal funding for greenways is through the Transportation Equity Act for the 21st Century (TEA-21), or its successor. There are many sections of the Act that support the development of bicycle and pedestrian transportation corridors. Those sections that apply to the creation of greenway systems include: [38]

Section 1302 - SIMMs National Recreational Trails Fund Act (NRTFA): A component of TEA-21, the NRTFA is a funding source to assist with the development of non-motorized and motorized trails. In fiscal year 1994, Congress did not fund this national program, and it has become apparent that this funding source is not as stable as the national trail community once envisioned it. In 1993, Congress appropriated only $7.5 million of a $30

million apportionment. The Act uses funds paid into the Highway Trust Fund from fees on non-highway recreation fuel used by off-road vehicles and camping equipment.

Motorized and non-motorized trail projects receive a 30-percent share of annual appropriations. Forty percent of the appropriation must be spent on projects that accommodate both user groups. States can grant funds to private and public sector organizations. NRTFA projects are 100-percent federally funded during the first three years of the program. Grant recipients must provide a 20-percent match.

Section 1047 - National Scenic Byways Program: This element of TEA-21 is planned to protect and enhance America's designated scenic roads. Funds are accessible for planning, development, safety and facility improvements, cultural and historic resource protection, and tourism information signage. Bicycle and pedestrian facilities can be developed in combination with scenic roadway projects.[34]

Section 1008 - Congestion Mitigation and Air Quality Improvement (CMAQ) Program: The CMAQ program was created to reduce congestion on local streets and improve air quality. Funds are available to urban communities designated as "non- attainment" areas for air quality, meaning the air is more polluted than federal standards allow. Since the Apple Country region is not currently classified as a non-attainment area for air quality, it is not eligible for this funding. However, this funding source should be considered in the event that the air quality in the region deteriorates. The program is administered by the North Carolina Department of Transportation, the Federal Highway Administration and the Environmental Protection Agency. A grant recipient must demonstrate that its project will improve air quality throughout the community. Funding requires a 20-percent local match. [34]

Also, The Bicycle Transportation and Pedestrian Walkways provisions of Section 217 of Title 23, as amended by TEA-21, describe how Federal-aid funds may be used for bicycle and pedestrian projects. These projects are broadly eligible for all of the major funding programs where they compete with other transportation projects for available funding at the State and MPO levels.

5.3 OTHER GRANTS

Numerous communities have solicited greenway funding from a diversity of private foundations and other conservation-minded benefactors, such as:

The Community Foundation: Community foundations are tax-exempt public charities serving thousands of people who share a common concern improving the quality of life in their area. All community foundations are overseen by a volunteer board of leading citizens and run by professionals with expertise in knowing their community's needs.

Kodak Foundation: Kodak is one of the leader organization providing new products and processes that have made photography simpler, more useful and more pleasant.

Today, the company has manufacturing operations in Canada, Mexico, Brazil, the United Kingdom, France, Germany, Australia and the U.S. And Kodak products are marketed by subsidiary companies to people in more than 150 countries.

Conservation Fund: Since 1985, The Conservation Fund, through its partnership-driven approach, has sheltered more than three million acres of America's outdoor heritage.

Ittleson Foundation: Since 1932, The Ittleson Foundation has been serving the needs of the disadvantaged organizations. The Foundation recognizes not-for-profit organizations, dedicated to bettering the United States, and as such, provides funds for new initiatives and model projects that have the potential to greatly enhance public policy and the lives of fellow citizens.

Gund Foundation: The George Gund Foundation was established in 1952 as a private, nonprofit institution with the sole purpose of contributing to human well being and the progress of society. Over the years, program objectives and emphasis have been modified to meet the changing opportunities and troubles of our society.

6. CONCLUSION & RECOMMENDATIONS

Based on the results of the surveys of the residents and businesses completed during the implementation of the project, and following the analyses performed by project staff on various components of the transportation network, the creation of the city of Sweetwater 107th St Transit Greenway would appear to be a major positive development for the community.

As shown by the survey results, the majority of respondents tended to find the Greenway project's components desirable to very desirable. This is evidently very encouraging as far as the respondents' opinions regarding the potential benefits of the Greenway project. There are, however, some limitations to these results. The very small number of businessmen who responded constitutes an important limitation since businesses stand to be greatly affected by the development of such a project. In addition, the respondents' perceptions regarding the inconveniences (eminent domain, work zones, disruption of traffic flow) they might be subjected to during the development of the Greenway project were not separately evaluated, however, they were part of the "other" concerns mentioned in the responses. These concerns might have been of particular importance to business owners. In spite of these limitations, it would be fair to conclude that the development of a pedestrian friendly corridor that would provide respondents the options of reaching various destinations in Sweetwater on foot or by bicycle would be welcome.

The full integration of the two FIU campuses with the city would seem to be a welcome paradigm for all concerned parties. Indeed, as explained in the report, particularly when describing the concept of superblock, the transit greenway can serve as a major impetus for urban revitalization and redevelopment in Sweetwater. This community has the

potential of emerging not only as a university/college town but also as a dynamic residential/commercial center on the forefront of urban design.

Each of the transit greenway alternatives suggested in this report comes with several worthy characteristics, see table 13. Yet, each one also raises several questions/issues which merit further discussion and analysis. However, community involvement in the tasks ahead is/will be of critical importance, as only a vibrant dynamic interactive process can help the political leadership select the most acceptable and beneficial solution for the City and its neighbors.

Table 13. Main Characteristics of Proposed Alternatives

Alternative	Type	Length (ft)	Special Characteristics	Costs (US $)
1	Light Rail	7850	• Loop • Elevated (SW 8th Street) • 8-10 stations • 20 minutes roundtrip • Pedestrian Overpass	$ 18,616,130
2	Light Rail	4656	• Single line • Elevated (SW 8th Street and West Flagler Street) • 6-8 stations • 20 minutes roundtrip	$ 15,174,320
3	Busway	9820	• Loop • At grade	$ 7,361,640
4	Light Rail	8476	• Phases • Single line and Loop • Elevated (SW 8th Street and West Flagler Street)	$ 20,975,122

Recommendations

After analyzing the acquired data from the field, the following recommendations, which do not have to be implemented in their totality, are suggested for reducing the traffic flow/speed and improve safety for the pedestrians in the City of Sweetwater:

- Pavement markings have to be painted at West Flagler and SW 8th Street along 109 Avenue. The left turn marking has to be painted at southbound instead of a through marking.
- The heavy traffic volume at the two major intersections (8th Street and West Flagler along 109 Avenue) influences level of service. There is a need for improving geometric configuration at the said intersections to improve the traffic operations.

- In order to enhance the traffic operation of SW 109 Avenue, Arterial Analysis that will include access management alternatives and operational and geometric improvements at the signalized intersection is recommended.
- Close the east-west traffic path by constructing a raised median at SW 7th terrace and SW 109 Avenue to avoid the left turning violation.
- Install chokers on SW 2nd St and SW 3rd St along SW 109th Ave.
- Install round about or speed humps on SW 2nd Street near the intersection of SW 108th Ave and SW 2nd Street.
- Install median barriers or chokers at the intersection of SW 109th Ave and SW 8th St.
- Install roundabout or speed humps near the intersection SW 109th Ave and SW 7th St.
- The traffic signals at the intersection of SW 109th Ave and SW 4th St can be replaced by a Traffic Circle.
- Install Raised Crosswalks or Raised Intersection or Speed Tables at the intersections SW 107th Ave and West Flagler, SW 107th Ave and SW 8th Street.

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APPENDIX A

ENGLISH AND SPANISH BROCHURES AND FLYERS

You get Indignant because the cars are eaten the paths, the plazas, all the space "public" and gives terror simply to cross the street?

Bored of spending hours every day in the bus trying to arrive at the job or the school?

Are you irritated by the level of noise in your street, your office, your classroom, by the alarms of the cars or the passing of cars and buses at excessive velocities?

Are you frustrated because you would like to ride your bicycle, and you are not able, because to share a street

The city of Sweetwater and the Florida International University invite the community of Sweetwater to participate in the workshops and meetings that will be held in the future.

It is also inviting all interested individuals to get in touch with us, to give us their opinions and recommendations.

Sponsors:

Metropolitan Planning Organization
and
City of Sweetwater

FOR MORE INFORMATION, CONTACT:

Dr. Sylvan C. Jolibois, Jr.
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jolibois@fiu.edu

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http://www.eng.fiu.edu/lctr/sw107.htm

FIU

FLORIDA INTERNATIONAL UNIVERSITY
Lehman Center for Transportation Research
at Florida International University

City of Sweetwater

SW 107 AVENUE

TRANSIT GREENWAY CORRIDOR STUDY

FLORIDA INTERNATIONAL UNIVERSITY

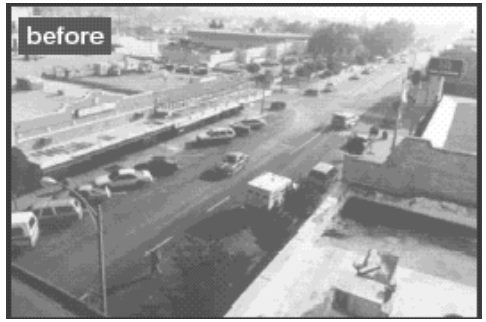
SW 107 Avenue Transit Greenway Study

This study requires the preparation of a conceptual master plan (CMP) for a transit greenway system within the City of Sweetwater that connects the major center of activities within the city of Sweetwater such as: the city hall, the school, and shopping malls with the residential areas and connects the Florida International University (FIU) facilities.

This planning activity will address the transportation needs of the 107th Avenue corridor, with particular emphasis on the section that includes connections between the FIU campus northward to Flagler Street, and ranging from at least 105th Avenue to 111th Avenue, to provide for more efficient transportation and reduced traffic congestion along the corridor.

This project proposed by the City of Sweetwater, sponsored by MPO and which is being carried out by the Lehman Center for Transportation Research of the Florida International University seeks through a careful plan, the investment reconstruction, redevelopment, and beautification of the city. Beautification that with the implementation of some elements for pedestrians and bicycle riders motivate students, residents and shoppers to walk in a healthy and pleasant environment.

The CMP will evaluate the feasibility of various transit concepts including, but not limited to, roadway improvements, transit greenways and other forms of mass transit.



Example of the before and after a greenway

Florida International University is interested in integrating the community in it takes of decisions. It intends with it to recognize and to promote an active role of who finally are the ones that result benefited or harmed with the politics prompted, in individual being trying to reach a global objective of quality of life. Besides, if the citizenship does not agree, there is not none political that can function, since are we the ones that should implement it in our daily life.

It Is not sufficient to complain of evil air, of the green lack of areas, of the dangers for the pedestrian and bicycle riders that try to move through the city. There is something that can be done, with good will and the organization of the civil society - that is to say, you.

This project will provide more efficient transportation, providing a community environment for pedestrian, bicycle and transit movements, at the same time it will reduce traffic congestion along the corridor.

¿Indignado porque los autos se comen los andenes, las plazas, todo el espacio "público" y da terror simplemente cruzar la calle?

Aburridos de gastar horas todos los días en el bus tratando de llegar al trabajo o la escuela?

¿Irritada por el nivel de ruido en tu calle, tu oficina, tu sala de clase, por las alarmas de los autos o el paso de autos y buses a velocidades

¿Frustrado porque te gustaría moverte en bicicleta o caminar , y no puedes, porque compartir una calle con los autos es demasiado peligroso?

Patrocinado por:

Metropolitan Planning Organization
Ciudad de Sweetwater

La ciudad de Sweetwater y la Universidad Internacional de Florida quieren invitar a la comunidad a que participen en los talleres o reuniones que se llevaran acabo con previo aviso.

Además quieren invitarlos a que se comuniquen con nosotros, nos den sus opiniones, recomendaciones y resuelvan sus inquietudes.

PARA MAYOR INFORMACION, CONTACTAR AL:

Dr. Sylvan C. Jolibois, Jr.
(305) 348-3485
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Keffler Castro
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http://www.eng.fiu.edu/lctr/sw107.htm

FIU

Lehman Center for Transportation Research at Florida International University

City of Sweetwater

ESTUDIO DEL CORREDOR VIAL DE LA 107 AVENIDA

FLORIDA INTERNATIONAL UNIVERSITY

Estudio del Corredor Vial de la 107 Avenida

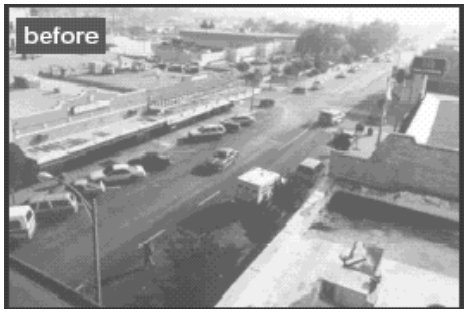
Este proyecto tiene como objetivo principal la preparación de un plan conceptual para el sistema de transito (corredor vial) en la ciudad de Sweetwater. Este plan debe incluir el diseño de una red de corredores (andenes y Ciclorutas) que conecten la sede principal de la universidad (FIU), ubicada sobre Tamiami Trail-(Calle 8 y la 107 avenida), con las instalaciones del departamento de ingeiería ubicadas sobre Flagler y 107 Avenida. Ademas, que comunique los mayores centros de actividades en Sweetwater como la alcaldía, la escuela y centros comerciales con las zonas residenciales.

En los últimos años la ciudad de Sweetwater ha perdido importantes cualidades arquitectónicas y ambientales, la avenida 107 se ha convertido en una de las mas importantes arterias y por ende una de las mas congestionadas en Miami Dade, siendo uno de los mayores obstáculos para el desplazamiento de peatones y ciclistas en la zona. Y aunque existen numerosos negocios las condiciones económicas podrían mejorar.

Este proyecto propuesto por la Alcaldía de Sweetwater, patrocinado por "Metropolitan Planning Organization" y el cual esta siendo llevado a cabo por el Centro Lehman para Estudios de Transporte de la Universidad Internacional de la Florida busca a través de un cuidadoso plan, la inversión reconstrucción, redesarrollo y el embellecimiento de la ciudad de Sweetwater. Embellecimiento que junto a la implementación de unos elementos para peatones y ciclistas motive a estudiantes, residentes y comerciantes a caminar en una ambiente agradable y sano.

El proyecto tiene que evaluar la factibilidad de varios conceptos de transito incluyendo:

- Mejoramiento de las vías,
- corredor para peatones y ciclistas y
- otras formas para el transito en masa.



Ejemplo del antes y despues de un corredor vial

Los principales objetivos de este estudio son:

- Establecer un plan orientado al transito peatonal,
- coordinar y desarrollar actividades con FIU;
- y dotar a la comunidad de Sweetwater de un mejor ambiente para caminar,
- montar bicicleta,
- descongestionando las vías.

Los objetivos del proyecto no pueden ser alcanzados sin la participación de la comunidad.

FIU esta interesada en integrar a la comunidad en la toma de decisiones, de manera informada y sistematizada. Se pretende con ello reconocer y fomentar un rol activo de quienes finalmente son los que resulten beneficiados o perjudicados con las políticas impulsadas, en particular tratándose de alcanzar un objetivo global de calidad de vida. Además, si la ciudadanía no está de acuerdo, no hay ninguna política que puede funcionar, ya que somos nosotros los que debemos implementarla en nuestra vida diaria.

Este proyecto proveerá un medio para transporte mas eficiente, dotando a la comunidad de instalaciones adecuadas para peatones y ciclistas.

City of Sweetwater
And
Florida International University (FIU)
Lehman Center for Transportation Research (LCTR)

Present

107TH AVENUE TRANSIT GREENWAY CORRIDOR STUDY WORKSHOP

Tired of looking for parking space at work or at school?

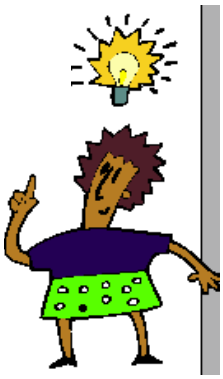
SWEETWATER CITY HALL
7:30 PM
Wednesday, October 16, 2002
500 SW 109th Avenue
Sweetwater

Are you frustrated because you would like to ride your bicycle, and you are not able, because to share a street with cars is too dangerous?

Are you irritated by the level of noise in your street, your office, your classroom, by the alarms of the cars or the passing of cars and buses at excessive velocities?

THERE IS SOMETHING YOU CAN DO...

You get Indignant because the cars are everywhere on the public space, and you get scared of simply crossing the street!!



*********REFRESHMENTS********** REFRESHMENTS*********

A COMMUNITY EVENT
EVERYBODY IS WELCOME !!!!

Ciudad de Sweetwater

y

Universidad Internacional de Florida (FIU)

Centro de Estudios de Transporte Lehman (LCTR)

Presenta

REUNION PARA EL ESTUDIO DE TRANSITO DE LA 107TH AVENIDA

CITY HALL DE SWEETWATER

7:30 PM

Miércoles 16 de Octubre del 2002

500 SW 109 Avenida

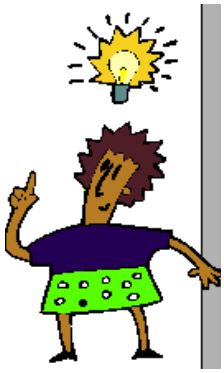
Sweetwater

Estas cansado de buscar parqeo en el trabajo o escuela?

¿Frustrado porque te gustaría moverte en bicicleta, y no puedes, porque compartir una calle con los autos es demasiado peligroso?

¿Irritada por el nivel de ruido en tu calle, tu oficina, tu sala de clase, por las alarmas de los autos o el paso de autos y buses a velocidades

¿Indignado porque los autos se comen las veredas, las plazas, todo el espacio "público" y da terror simplemente cruzar la calle?



HAY ALGO QUE PUEDES HACER...

******* Refrescos ********** * Refrescos **********

UN EVENTO PARA LA COMUNIDAD
TODOS ESTAN INVITADOS

APPENDIX B

ENGLISH AND SPANISH QUESTIONNAIRES

GREENWAY CORRIDOR SURVEY

NAME_____

1) Do you own a business in Sweetwater? Yes___ No___

2) Are you a resident of Sweetwater? Yes___ No___

3) One of the goals of the greenway Corridor Project is to design pathways (routes) to and from specific destinations in Sweetwater. These destinations will include FIU and the downtown business district. How desirable are these features to you?

Very desirable___ Desirable___ Undecided___ Undesirable___ Very Undesirable

4) Another goal of the Greenway Corridor project is to design wide sidewalks, and pathways that will make it easier for pedestrian and bicyclist to go to and from destinations along the corridor. How desirable are these features to you?

Very desirable___ Desirable___ Undecided___ Undesirable___ Very Undesirable

5) Another goal of the Greenway Corridor project includes landscaping the pathways and corridors of using shade trees and shrubbery, as well as some sidewalks fixtures and furniture o beautify the corridor and provide reststops for pedestrians and bicyclists. How desirable are these features to you?

Very desirable___ Desirable___ Undecided___ Undesirable___ Very Undesirable

6) Streets will be narrowed and speeds along these streets will be lower along the greenway corridor to make it safer for pedestrian and bicyclists using pathways. How desirable are these features to you?

Very desirable___ Desirable___ Undecided___ Undesirable___ Very Undesirable

7) Parking Garages will be built in specific locations close to the business district to discourage on-street parking. How desirable are these features to you?

Very desirable___ Desirable___ Undecided___ Undesirable___ Very Undesirable

8) Vehicles such as small shuttles and electric cars will be made available to transport people to and from one place to another along the greenway corridor. How desirable are these features to you?

Very desirable___ Desirable___ Undecided___ Undesirable___ Very Undesirable

9) If you own a business, do you feel that the features of the greenway corridor mentioned before would help your business?

Yes____ No____ I don't Know____ I need more information____

10) Using the below list below, what specific destination(s) would you like to see connected by the Greenway Corridor?

- ❑ City Hall
- ❑ Elementary School
- ❑ Community Center. Which_____
- ❑ Bank. Enter Which _____
- ❑ Recreation Facilities. Which_____
- ❑ FIU Facilities (SW 107th – Flagler)
- ❑ FIU Facilities (SW 107th – Tamiami)
- ❑ Shopping Mall. Which_____
- ❑ Health Center. Which_____
- ❑ Other. Enter Name_____

_____

11) What features of the Greenway Corridor do you like best?

- ❑ Wide sidewalks
- ❑ Small shuttles/ Electric cars
- ❑ Rest Areas Along Corridor
- ❑ Landscaping/ Shade trees/Shrubbery
- ❑ Narrow Streets
- ❑ Other_____

12) What features of the Greenway Corridor do you like least?

- ❑ Wide sidewalks
- ❑ Small shuttles/ Electric cars
- ❑ Rest Areas Along Corridor
- ❑ Landscaping/ Shade trees/Shrubbery
- ❑ Narrow Streets
- ❑ Other_____

13) What concerns do you have regarding the Greenway Corridor Project?

_____

_____

_____

Mail to:	Florida International University Department of Civil & Environmental Engineering University Park – EAS 3815 Miami, Florida 33199

CORRIDOR PEATONAL Y CICLORUTA DE LA 107TH AVENIDA

NOMBRE_____ TELEFONO_____

1) ¿Es usted el propietario de un negocio en Sweetwater? Si___ No___

2) ¿Es usted un residente de Sweetwater? Si___ No___

3) Uno de los objetivos del Projecto es diseñar rutas que unan los mayores centros de actividades de Sweetwater. Estos centros de destino incluirán la Universidad Internacional de la Florida (FIU), el centro de negocios de Sweetwater y mayores centros de actividades como la escuela y la alcaldía. ¿Que tanto desea estas instalaciones o elementos?

Bastante deseadas___ Deseadas___ Indeciso___Indeseadas___ Bastante Indeseadas___

4) Otro objetivo del proyecto es diseñar andenes anchos, y rutas que hagan mas facil el desplazamiento de peatones y ciclistas a lo largo del corredor. ¿Que tanto desea estas instalaciones o elementos?

Bastante deseadas___ Deseadas___ Indeciso___Indeseadas___ Bastante Indeseadas___

5) Otro objetivo del proyecto incluye arborizar y embellecer corredores usando arboles que den sombra y matorrales, asi como andenes y otros elementos para embellezer el corredor y proveer de descanso a los peatones y ciclistas. ¿Que tanto desea estas instalaciones o elementos?

Bastante deseadas___ Deseadas___ Indeciso___Indeseadas___ Bastante Indeseadas___

6) Calles serán angostadas y velocidades a lo largo de estas calles serán reducidas a lo largo del corredor para brindar mas seguridad a los peatones y ciclistas usando las rutas. ¿Que tanto desea estas instalaciones o elementos?

Bastante deseadas___ Deseadas___ Indeciso___Indeseadas___ Bastante Indeseadas___

7) Edificios de parqueaderos serán construidos en sitios estrategicos cerca de negocios para desalentar el uso de parqueaderos. ¿Que tanto desea estas instalaciones o elementos?

Bastante deseadas___ Deseadas___ Indeciso___Indeseadas___ Bastante Indeseadas___

8) Vehiculos pequeños como colectivos "shuttles" y carros electricos estarán disponibles para transportar gente dentro de la ciudad de Sweetwater. ¿Que tanto desea estas instalaciones o elementos?

Bastante deseadas___ Deseadas___ Indeciso___Indeseadas___ Bastante Indeseadas___

9) <u>Si usted tiene un negocio en Sweetwater,</u> ¿Piensa usted que los elementos del corridor mencionado antes ayudarían su negocio?
Si____ No____ No se____ Necesita mas información____

10) Usando la siguiente lista, Que sitios le gustaría ver conectados?

- ❑ City Hall
- ❑ Escuela
- ❑ Centro Comunitario. Cual_____
- ❑ Banco Entre Nombre_____
- ❑ Centro de Recreación. Cual_____
- ❑ FIU Instalaciones (SW 107th – Flagler)
- ❑ FIU Instalaciones (SW 107th – Tamiami)
- ❑ Shopping Mall. Cual_____
- ❑ Centro de Salud. Cual_____
- ❑ Otra. Cual_____

_____

11) Usando la siguiente lista, Que elementos del corridor le gustan mas?

- ❑ Andenes Anchos
- ❑ Microbuses o colectivos "shuttles"
- ❑ Areas de descanso a lo largo del corredor
- ❑ Arboles, jardines, etc
- ❑ Calles Angostas
- ❑ Otra_____

12) Usando la siguiente lista, Que elementos del corridor le gustan menos?

- ❑ Andenes Anchos
- ❑ Microbuses o colectivos "shuttles"
- ❑ Areas de descanso a lo largo del corredor
- ❑ Arboles, jardines, etc
- ❑ Calles Angostas
- ❑ Otra_____

13) Que inquietudes tiene acerca del projecto "CORRIDOR PEATONAL Y CICLORUTA DE LA 107TH AVENIDA"?

_____

_____

_____

Por favor envíe a:	Florida International University Department of Civil & Environmental Engineering University Park – EAS 3815 Miami, Florida 33199