TRANSFORMING AN URBAN ARTERIAL INTO A MULTIWAY BOULEVARD: A DESIGN PROPOSAL FOR KENNEDY BOULEVARD IN TAMPA, FLORIDA

By

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To my parents, Andrzej Sr. and Christine Mikulski.

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This thesis explores the possibility of transforming an urban arterial road in Tampa, Florida, into a multiway boulevard. Multiway boulevards are roadways that combine high speed regional traffic, slower local traffic, and a pedestrian environment, all into a single space. Urban arterials, especially those developed after World War II, are characterized by large parking lots, low-rise strip malls, large signs, fast automobile traffic, and a lack of a pedestrian realm. These kinds of urban arterials were designed solely for automobiles and function more like expressways than city streets. As a result, the roads separate neighborhoods from each other and act as a barrier to the free movement of people. There is a growing movement in the United States to improve the quality of the public realm by redesigning urban arterials into pedestrian-oriented streets. Public transportation is an important element that enhances the pedestrian realm because it reduces the amount of automobiles.

In Tampa, Kennedy Boulevard is an example of an urban arterial that lacks a quality public realm but has the potential to be a great street. Kennedy Boulevard was once called Grand Central Boulevard and was Tampa's premier street. Following World War II, the road was widened, development followed the emerging "strip" pattern, and the Kennedy Boulevard

corridor went into decline. Today, the road is characterized by its automobile-focused design that makes it difficult to walk.

The redesign of Kennedy Boulevard will focus on creating a pedestrian-oriented environment that reconnects neighborhoods. This will be achieved through a multiway boulevard that will include mass transit. Specific design elements that make a high quality pedestrian realm will be identified based on interviews, questionnaires, and case studies. The site as it exists today will be modeled using a three-dimensional computer visualization program and an alternative model that incorporates the specific design elements will be proposed.

CHAPTER 1
INTRODUCTION

Kennedy Boulevard History

Kennedy Boulevard was once known as Grand Central Boulevard. Grand Central Boulevard was the main east to west road through the city and marked the delineation between the north and south halves of the city and was Tampa's premier street for shopping and dining. The street was renamed Grand Central Boulevard in honor of President John F. Kennedy who paraded down Grand Central Boulevard just four days before he was assassinated in Dallas, Texas.

Today, Kennedy Boulevard still delineates the north half of the city from the south half. However, the boulevard has lost its previous grandeur following its decline as a shopping and dining destination. Today, the main function of the road is to move vehicles through the center of the city from downtown to the Westshore Business District. The stretch of road in the study area is lined by low rise strip malls and large parking lots. The specific section selected for this study starts at Dale Mabry Highway and goes westward for approximately one mile to Westshore Boulevard (Figure 1-1). The road right-of-way is 100 feet; the roadway is characterized by an automobile focused design and large setbacks (Figure 1-2).

Thesis Goals

The four goals of this thesis include:

A Plan to Restore Kennedy Boulevard

- Using Kennedy Boulevard's historical significance as Tampa's main street as a guide for the future.
- Creating a destination for shopping, business, dining, and living.
- Retaining existing businesses along the corridor

- Creating a diverse use of mixes to encourage interaction between various groups of people and businesses.

Aesthetic Improvements

- Implementation of build-to lines and bulk regulations.
- Addition of street trees and landscaping to improve microclimate and aesthetics.
- Minimizing curb-cuts and eliminate parking lots in front of buildings.
- Burying overhead utility lines or relocate them to alleyways.
- Using repeating streetscape elements and street furniture to unify the corridor.

Creating a Link

- Use repeating streetscape elements to reinforce the east-west connection between downtown Tampa and the Westshore business district.
- Use transit to strengthen the downtown-Westshore connection.

Increasing Alternative Forms of Transportation

- Adding light rail.
- Link light rail to an improved bus service that serves surrounding neighborhoods.
- Improve the pedestrian realm in order to make walking a viable option.
- Design for bicycles.

The Need for Improved Public Transportation in Tampa, Florida

The city of Tampa is a growing city at the center of the rapidly growing Tampa Bay metropolitan area. As more people move to the region every day, traffic congestion is worsening. For many years, city leaders of opposite ends of the political spectrum have ignored the consequences of growth and refused to create a viable public transportation system. Business leaders and politicians are starting to come to the realization that a convenient, efficient mass transit system is needed to keep Tampa competitive in the marketplace.

Hillsborough Area Regional Transit Authority

Pursuant to the Florida Statutes, the Hillsborough Area Regional Transit Authority (HART) is delegated responsibility for meeting the public mass transit needs of its member jurisdictions (HART, 2006). The member jurisdictions are unincorporated Hillsborough County and the cities of Tampa and Temple Terrace (HART, 2006). HART is governed by a 12 member board; six members are appointed by the Hillsborough County Board of County Commissioners, three by the City of Tampa, one by the City of Temple Terrace, and two by the Governor of Florida (HART, 2006).

Hillsborough County and the Tampa Bay area have long used a 'roads-only' approach to transportation. The 'roads-only' approach has made driving the only viable transportation option for residents. A recent survey found that the Tampa Bay area is the most expensive place in the country for transportation. The survey found that the average Tampa Bay resident spends 25 % of their income on transportation (Brill, 2003).

The Unstable Future of Oil

The era of cheap oil is coming to an end and we must adapt accordingly and retrofit our cities to reduce energy consumption. As of August 13, a gallon of self-serve regular gasoline cost $3.03 (CNN, 2006). Prices are unlikely to decrease much because of rising world-wide demand mostly from China and India and a continuing decrease in world-wide supply. Increasing demand and decreasing supply have caused oil prices to become very volatile. Any sign of conflict in the Middle-East causes oil prices to rise. Any tropical system or hurricane that comes within hundreds of miles of off-shore oil facilities also drives up the price of oil. While price hikes are to be expected, in recent years the prices are increasing more often and more drastically, signs of oil as a cheap, plentiful, and reliable source of energy are coming to an end. Sunbelt Cities such as Tampa were developed at the beginning of the cheap oil era; thus the

design and layout focused on the private automobile. When, not if, the era of cheap oil comes to an end, metropolitan areas such as Tampa will be in crisis because their very existence will be threatened. City and metropolitan leaders must act now and change land use and transportation patterns to create a more sustainable city and region.

Increasing Population

Florida has been one the fastest growing states in the nation for decades. Hillsborough County and Tampa are at the center of the rapidly growing Tampa Bay metropolitan area. A population projection conducted by the researcher shows that Hillsborough County will have 1,273,140 residents by the year 2010, an increase of almost a quarter million people from the year 2000. The population of the entire Tampa Bay area (Hillsborough, Pinellas, Pasco, Hernando, Manatee, and Sarasota Counties) will increase from 3,295,687in 2005 to 6,924,989 by the year 2055. While much of the growth will occur in greenfield development on the urban fringe, the City of Tampa will absorb some of that growth. In the last few years, many urban infill projects have been built in inner city Tampa. There is now a high demand for urban living; trends all around the country reflect this. Massive condominium projects are being built in Downtown Tampa and Channelside that will bring thousands of new residents and create entire new neighborhoods and districts in only a few years.

Florida's population will continue to grow at a rapid rate. Florida growth management laws, high demand for urban living, growing opposition to sprawl from both sides of the political spectrum, and concurrency requirements will make existing urban areas attractive for growth. The population projection done by the researcher found that Florida simply does not have enough land to accommodate the expected increase in population at current density levels. As urban areas such as Tampa become denser to accommodate the additional population, alternatives to the automobile must be planned for. The city's roads are already clogged with

traffic, and the problem will only grow worse with more people. Most roads in the city are already as wide as the right of way allows so any additional widening is cost prohibitive. The only way to deal with such a large increase in population is to construct a mass transit system.

Light Rail Transportation

A light rail line is an important element of the proposed redesign for Kennedy Boulevard. The Hillsborough Area Regional Transit Authority (HARTLine) is planning to build a light rail system; part of the system will parallel Kennedy Boulevard. The exact route has not yet been set, but this thesis calls for locating the light rail line on Kennedy Boulevard.

Mass transit systems come in a variety of forms ranging from bicycle powered taxis to high speed bullet trains. Within urbanized areas in developed countries, the most common forms of mass transit, ranging from lightest duty to heaviest duty are: streetcars, light rail, and commuter or heavy rail. Light rail is the most common form of fixed guideway mass transit in urban areas; good examples of rail mass transit are European countries such as Finland, Denmark, and the Netherlands. In the United States, Portland, Oregon is the best example of a successful light rail system. There is a debate about whether or not rail is superior to bus transit. Compared to bus transit, rail tends to offer superior service in terms of speed, comfort, and convenience (Henry, 2006). Rail transit is perceived to be more prestigious and therefore receives more public support. Rail stations also serve as a catalyst for dense, multi-modal development (Henry, 2006) and attract more discretionary riders (people who could drive instead) than busses.

Light rail lines can operate in their own dedicated corridor or be incorporated onto the street and share space with vehicles and pedestrians. This type of design is common in European cities but can also be found in the United States. In New Orleans, the streetcar system travels in its own separate right-of-way and on other parts of the system it travels on the street. The Saint

Charles line shares downtown streets with cars (Figure 1-3), and travels in a central median through the Garden District (Figure 1-3). The median, also called the "common ground," is covered with grass and used by pedestrians and joggers. The Riverfront line has its own dedicated right of way as it travels along the Mississippi River (Figure 1-3).

When contemplating a new streetcar system in American cities, issues about safety and litigation arise when the design calls for the tracks to share the same space as vehicles and pedestrians. The New Orleans streetcar system proves that streetcars can safely share the same space with vehicles and pedestrians. Other American cities such as San Francisco and Portland have similar systems.

The use of shared space between vehicular traffic, pedestrians, and streetcars is a common design practice in Europe. Vehicles and streetcar speeds are low enough not to endanger the safety of the pedestrian. Helsinki (Figure 1-4), Amsterdam (Figure 1-5), and Copenhagen (Figure 1-6) are European cities that have done an excellent job of safely creating a commonly shared street space.

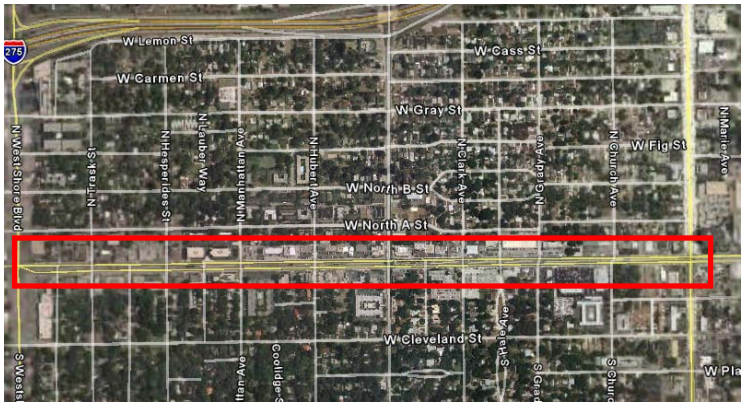


Figure 1-1. The study area.

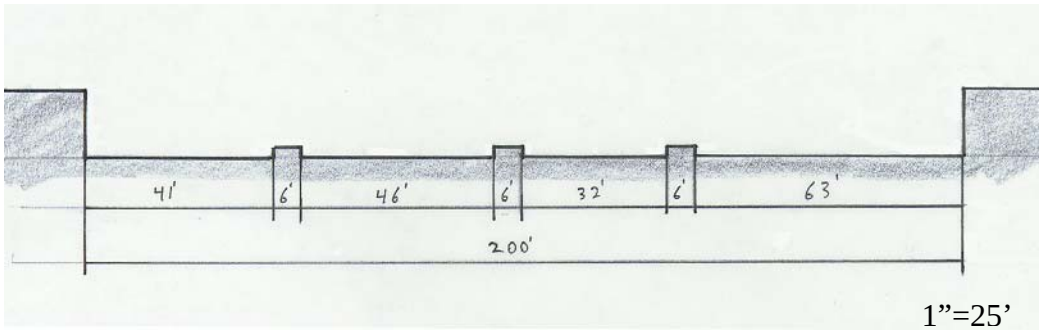


Figure 1-2. Cross section of Kennedy Boulevard (existing).

Figure 1-3. Kennedy Boulevard. Existing (left) and after the proposed redesign (right).

Figure 1-4. New Orleans streetcar system. A) Sharing the road in downtown. From http://members.virtualtourist.com. B) Common ground in the Garden District. From http://www.civilwaralbum.com. C) Dedicated right of way along the riverfront. From http://www.sullymansion.com.

Figure 1-5. Helsinki, Finland. Source: www.virtualtourist.com

Figure 1-6. Amsterdam, Holland. Source: citytransport.info; http://www.flamenet.ca/.

Figure 1-7. Copenhagen, Denmark. Source: www.macdesktops.com

CHAPTER 2
LITERATURE REVIEW

The Decline of Public Space in the United States

There is a general consensus that the United States is experiencing a withering of the public realm (Banerjee, 2001). The public realm is defined as, "publicly owned streets, sidewalks, rights-of-ways, parks and other publicly accessible open spaces, and public and civic buildings and facilities" (City of Burlington, CA, 2006). The decrease in both the quantity and quality of the public realm raises some warning flags because high-quality, plentiful public spaces are crucial to the free flow of people and ideas that are essential to any civilized society. On the other side of the Atlantic Ocean, European cities such as London, Paris, and Stockholm have a quality of completeness about them. A user traveling from one attraction to another does so in a continuous urban experience; there is a connectivity that is missing in most American cities (Barnett, 1989).

A recent survey found Americans have fewer confidants (people that they can discuss important matters with) than 20 years ago (McPherson, 2006). The same study also found that Americans' personal network (people considered very close friends) dropped from 2.94 in 1985 to 2.08 in 2004 (McPherson, 2006). There are several possible explanations for Americans' increasing isolation. Some researchers believe it is longer working hours, the increasing use of television and the Internet, the rise of suburban sprawl, or a combination of all of these.

One explanation for the increased isolation that is starting to gain acceptance is the form of America's built environment. Traditional public space is being replaced by privatized space. City squares were replaced with enclosed shopping malls; public grounds found in neighborhoods are now governed by Residential Community Associations (RCA's). Already, 47 million American's live in neighborhoods controlled by RCA's and fifty percent of new homes

fall under the control of RCA's (Kohn, 2004). The privatization of public space undermines the feeling that people of different classes and culture live in the same society and decreases the opportunities for recognizing commonalities and accepting differences (Kohn, 2004).

There is no single identifiable reason for the decline of public space, although some researchers suggest that the decline of the public realm is corresponding with a decline in the public spirit, which is the core element of a civilized society (Banerjee, 2001). A public space, whether it is a park, neighborhood tavern, or sidewalk, allows for the interaction of different members of society.

Current planning and zoning laws codify and quantify individual developments without considering the context. Zoning groups similar uses and separates dissimilar ones, causing local areas of a metropolitan area to become highly specialized. One zone will be for housing, another will contain retail, and a third will be for workplaces. As a result, friends at work are left behind, neighbors rarely see let alone know each other, and shopping areas are depersonalized (Popenoe, 1985). On average, Americans spend one-quarter of their time getting to places (Moscovich, 2006). The resulting built environment does not create a high quality public realm and inhibits the creation of tight-knit social networks. Current zoning standards also segregate housing by type and cost. The segregation of land uses and income levels prevents the intermingling of different people which is vital for a good public space. Current zoning does not address design. Over the years, three-dimensional design has been replaced by two-dimensional land use planning (Walters, 2005).

Of all regions in the United States, Sunbelt Cities have the poorest quality public realm. The lack of a quality public realm is the result of modern planning and zoning laws which segregates uses (Fink, 1993). Sunbelt Cities grew the most rapidly after World War II at the

time zoning was becoming a popular way for cities to manage growth. Zoning and planning did not address design as part of the criteria for new projects. Roads designs were based on disaster evacuation models and emergency response times (designed for maximum speed) rather than how the road fit into the context of the neighborhood or district. Travel lanes are wide and plentiful, turning radii allow for minimal breaking when turning, and vehicles can travel as fast as possible. While Sunbelt cities have many well-engineered roads, these roads are the most dangerous for non-motorists. A 2000 survey by the Surface Transportation Policy Project (STPP) found that the Tampa-Saint Petersburg metro area was the most deadly for pedestrians (Mitchell, 2000). Following Tampa were Atlanta, Miami, Orlando, Jacksonville, Phoenix, West Palm Beach, Memphis, Dallas, and New Orleans. It is no coincidence that all these are Sunbelt Cities that were built for the automobile. Roy Kienitz, Executive Director of STPP said, "Building our communities only for cars has deadly consequences. The riskiest places are characterized by spread-out growth and wide, high-speed streets that often lack sidewalks and crosswalks" (Mitchell, 2000).

Current Road-Building Standards

Most of the hostile environments seen along roadways are the result of modern day road-building standards. Standardized templates for roadways are favored over good design principles and common sense. Although road-building standards are needed to ensure that roads are built for efficiency and safety, more attention should be focused on the context of the roadway. Road-building standards are codified in two important books, *A Policy on the Geometric Design of Highways and Street* published by the American Association of State Highway and Transportation Engineers (AASHTO) and the *Traffic Engineering Handbooks* by the Institute of Transportation Engineers. State departments of transportation have adopted these books as the standard for roadway design.

For almost 50 years AASHTO has been publishing and updating its roughly 1,000 page book, *A Policy on the Geometric Design of Highways and Street* (it is more commonly referred to as the *Green Book* due to its lime-colored cover). The *Green Book* places a premium on safety. The first principle in the *Green Book* is that safety trumps all other considerations (AASHTO, 1994) such as history, aesthetics, community habits, community values. The *Green Book* clearly states, "The design values given within this text have safety as their primary objective" (AASHTO, 1994).

The second principle is that for a road to be safe it must accommodate drivers traveling at high speeds, even faster than the legal limit. AASHTO and most state highway departments traditionally have used what is known as the "85th percentile" standard. They calculate how fast the 15th fastest driver out of every 100 on a highway is traveling, and they commit to make that driver's trip free of danger (Swope, 2005). To create an efficient, uniform road design standard across the nation, the Federal Highway Administration has made it a policy that for any state or local road project to receive federal funds, the project must conform to AASHTO *Green Book* standards (Ehrenhalt, 1997).

The Institute of Transportation Engineers (ITE) publishes the *Traffic Engineering Handbook.* The book contains guidelines for urban and rural roadways and standards for travel lane widths, recovery areas, and intersection design. For an urban street with a speed limit over 40 miles per hour, such as Kennedy Boulevard, the desirable travel lane width is 13 feet (ITE, 1992). The design of the roadside is also important for safety. The handbook states, "*Clear Recovery Areas* are the portions outside the travel way that are free of objects or hazards such as trees, barriers, and utility poles (ITE, 1992 pg 174)." Intersection design is based on two

primary objectives: quality and safety. In order to achieve these objectives, the following principles guide intersection design (ITE 1992):

- Points of conflict should be minimized
- Conflict areas should be simplified
- Conflict frequency should be limited
- Conflict severity should be minimized

New Urbanism, Traditional Neighborhood Design and Transit Oriented Development

New Urbanism is a type of development that attempts to revive town design practices of the past. The Charter of the New Urbanism sets design guidelines for the three parts of a metropolis; the region; the neighborhood, the district, and the corridor; and the block, the street, and the building (Congress for the New Urbanism, 2006). Design principles for the neighborhood, the district, and the corridor are as follows:

- The neighborhood, the district, and the corridor are the essential elements of development and redevelopment in the metropolis. They form identifiable areas that encourage citizens to take responsibility for their maintenance and evolution.

- Neighborhoods should be compact, pedestrian-friendly, and mixed-use. Districts generally emphasize a special single use, and should follow the principles of neighborhood design when possible. Corridors are regional connectors of neighborhoods and districts; they range from boulevards and rail lines to rivers and parkways.

- Many activities of daily living should occur within walking distance, allowing independence to those who do not drive, especially the elderly and the young. Interconnected networks of streets should be designed to encourage walking, reduce the number and length of automobile trips, and conserve energy.

- Within neighborhoods, a broad range of housing types and price levels can bring people of diverse ages, races, and incomes into daily interaction, strengthening the personal and civic bonds essential to an authentic community.

- Transit corridors, when properly planned and coordinated, can help organize metropolitan structure and revitalize urban centers. In contrast, highway corridors should not displace investment from existing centers.

- Appropriate building densities and land uses should be within walking distance of transit stops, permitting public transit to become a viable alternative to the automobile.

- Concentrations of civic, institutional, and commercial activity should be embedded in neighborhoods and districts, not isolated in remote, single-use complexes. Schools should be sized and located to enable children to walk or bicycle to them.

- The economic health and harmonious evolution of neighborhoods, districts, and corridors can be improved through graphic urban design codes that serve as predictable guides for change.

- A range of parks, from tot-lots and village greens to ballfields and community gardens, should be distributed within neighborhoods. Conservation areas and open lands should be used to define and connect different neighborhoods and districts.

Traditional Neighborhood Development (TND) is a type of New Urbanist development. TND and New Urbanist principles are very similar; both use the pedestrian as the center for the design process. The major principles of TND are: mixed uses, walkable neighborhoods, a network of interconnected streets, and priority for public spaces and civic buildings (Gordon, 2005). TND is based on the idea that the needs of the pedestrian should be considered over all other needs. TND still accommodates automobile needs, but not at the expense of the pedestrian. The goal is to create communities that encourage people to walk and minimize the amount of driving within the community.

TND is based on the principle that neighborhoods should be walkable, affordable, accessible, distinctive, and fit within the historic context of each community. Costs savings is one of the touted benefits of TND. Infrastructure costs less because streets in TND's are much narrower than conventional suburban developments and the destinations are in close proximity to one another, requiring less pavement to connect different areas (Calthorpe, 1993). Even though many New Urbanists claim that their developments are actually less expensive to build, homes in New Urbanist developments all across the country sell for a significantly higher rate than surrounding areas. Understandably so, many people criticize TND and New Urbanism for being

elitist and affordable only for the wealthy. However, a counterpoint to that argument is that New Urbanist developments are in such high demand that they demand higher prices.

Transit Oriented Development (TOD) is another branch of New Urbanism. Many of its principles are similar to TND, but TOD places a greater emphasis on transit uses. Like TND, TOD places the pedestrian at the center of the design. According to Peter Calthorpe, considered one the foremost experts in TOD, the following principles summarize TODs (Calthorpe, 1993):

- Organize growth on a regional level to be compact and transit supportive
- Place commercial, housing, jobs, parks, and civic uses within walking distance of transit stops
- Create pedestrian-friendly street networks which directly connect local destinations
- Provide a mix of housing types, densities, and costs
- Preserve sensitive habitat, riparian zones, and high quality open space
- Make public spaces the focus of building orientation and neighborhood activity
- Encourage infill and redevelopment along transit corridors within existing neighborhoods

Transit stops should be no more than one-half a mile apart to ensure that there is a reasonable distance for someone to walk to the nearest stop. The densest commercial areas should be located immediately adjacent to the transit stops to provide transit riders with convenient shopping opportunities before and after travel. Another important element to TOD is residential density. According to Calthorpe (1993), in order to support light rail transit in an urban setting, a density of 18 dwelling units per acres is needed. The type of service and level of service is tied directly to population density; the denser the area, the shorter the headways.

Multiway Boulevards

Multiway boulevards are unique streets because they seamlessly combine several disparate uses. According to Jacobs,

> Multiway boulevards are an urban form that responds to many issues that are central to urban life: livability, mobility, safety, interest, economic opportunity, ecology, mass transit, and the need for open space (Jacobs et al., 2002; 9).

Multiway boulevards combine high-speed regional traffic, slower local and neighborhood traffic, accommodate heavy pedestrian activity, and are often major shopping and residential streets. Some boulevards accommodate transit in the central median or have access to an underground subway system.

True multiway boulevards are really two or three different roads located immediately parallel to one another. American traffic engineering standards view multiway boulevards as unsafe because of the complex intersections resulting from multiple roadways, street trees that run all the way to the edge of intersections, and pedestrian realm. Publications of the Association of State Highway and Transportation Officials (AASHTO) discourage key features of boulevards such as side access roads and street trees. Research of 21 boulevards in the United States and Europe compared accident rate data on the boulevards to comparable nearby streets in each city. The results showed that multiway boulevard are no less safe than traditional streets nearby (Jacobs et al., 2002). Some of the boulevards were less safe, some as safe, and some more safe than the neighboring streets. The study also examined accidents involving pedestrians and found the same conclusion; multiway boulevards are no less safe than other streets.

Multiway boulevards are made up of two realms (Figure 2-1): a through-going realm and a pedestrian realm (Jacobs et al., 2002). The through-going realm is designed to carry regional traffic in multiple lanes at moderate speeds. The pedestrian realm is made up of the building

entrances, sidewalks, a parking lane, an access lane, and the landscaped median separating the through-going realm from the pedestrian realm.

In the through-going realm, traffic flows at around 40 miles per hour and access is limited. Entry and exit for the middle roadway only occurs at major intersections. Only major cross streets intersect with the through-going realm; minor streets and driveways terminate at the access roads (Figure 2-2). The elimination of driveways and minor intersections greatly enhances traffic flow and lessens the risk of a traffic collision. At intersections, the access roads can continue straight or be diverted into the through going realm to reduce the complexity of the intersection (Figure 2-3).

There may or may not be a central median separating the opposite traffic lanes in the through going realm. If there is a median, it should be wide enough to accommodate some landscaping and street trees. If transit is needed along the corridor, the central median can be used for Bus Rapid Transit (BRT) lanes, contain tracks for a light rail or streetcar route, or contain access points to a subway system. A central median is optional, but a median separating the through-going realm from the pedestrian realm is required. Medians delineate the space, serve as a pedestrian refuge when crossing the street, and accommodate street trees and landscaping (Figure 2-5).

The second and most important realm is the pedestrian realm. This realm includes the landscaped median separating the middle roadway from the access roadway, the access roadway and parking, sidewalk, and the buildings abutting the sidewalks. The median should be at least eight feet wide to accommodate shade trees. The side roadways accommodate slow-speed local auto traffic and should provide a lane for parking. Sixteen feet is ideal to provide one travel lane and one parking lane, each eight feet wide. Twenty miles per hour or less is an ideal traffic

speed for the side roadway. Traffic flows one-way and the lanes tend to be narrower than the lanes in the middle roadway to slow traffic. Due to the slow traffic of the side roadway, bicyclists and pedestrians also use the access roadway. The side roadways begin and terminate with the middle roadway at major intersections.

Multiway boulevards are common in major European cities. Paris' Champs Elysees was once the most famous multiway boulevard in the world. Although it is no longer a true multiway boulevard (the side access roads were made into sidewalks to accommodate heavy pedestrian traffic) the Champs Elysees remains an example of what a great street can do for a city (Jacobs et al., 2001). Barcelona, Spain has the largest and perhaps best collection of multiway boulevards of any city in the world. Three major multiway boulevards slice through Cerda's L'Eixample: the Passeig de Gracia, the Avenida Diagonal, and the Gran Via de les Corts Catalans (Jacobs et al., 2002).

Multiway boulevards can become a significant urban element in American cities. All major cities have large commercial strips that have a right-of-way or building-to-building width large enough to accommodate a multiway boulevard. Boulevards are appropriate where there is a need to carry both through traffic and local traffic and a need for the through traffic to move faster than the local traffic. Boulevards are appropriate for streets, by virtue of their size and location, have the potential to become a special place in the city (Jacobs et al., 2002). Boulevards are also appropriate where there is a large number of pedestrians who need to cross the street such as commercial streets or streets with mass transit. Although rarely built today, there are numerous opportunities to build multiway boulevards in the contemporary environment. Opportunities to build multiway boulevards exist in seven distinct contexts (Jacobs et al., 2002):

- Existing boulevards from the late nineteenth and early twentieth century.
- Existing inner-city major streets.
- Existing “strip development” streets.
- Existing expressways and freeways.
- Existing suburban residential arterials.
- Existing suburban commercial arterials.
- Major traffic streets in new urban or suburban developments.

Kennedy Boulevard is a “strip development” street that can be converted into a multiway boulevard. There is enough space between the buildings to accommodate a boulevard design with a dedicated transit way.

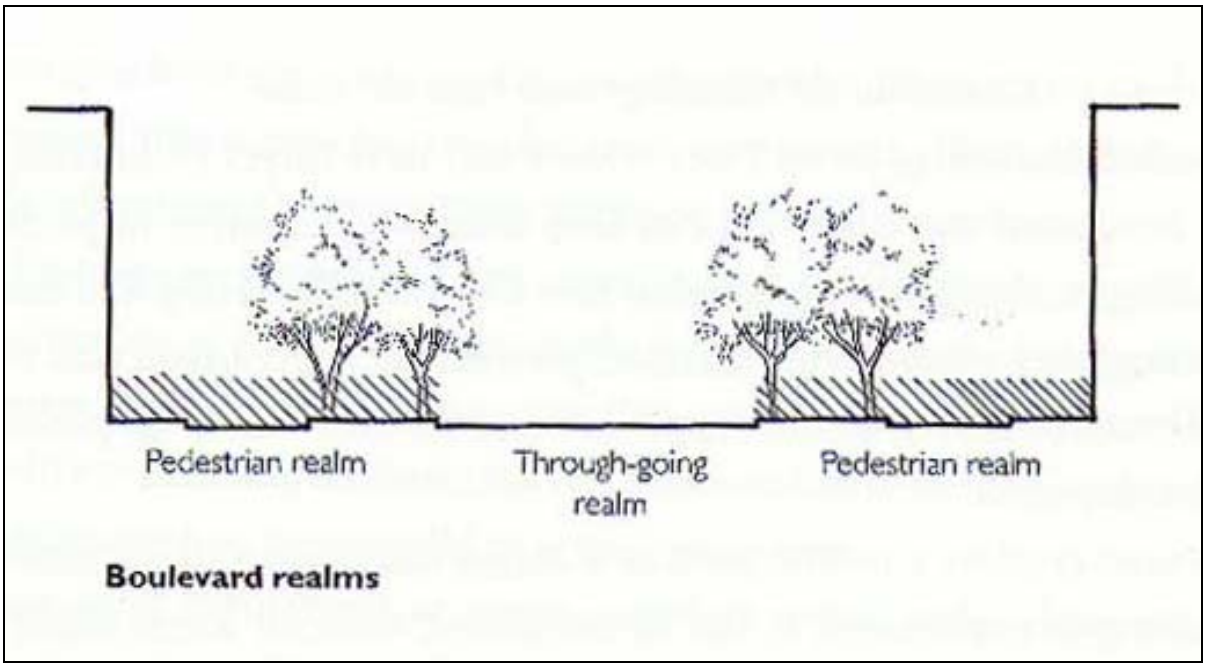


Figure 2-1. Boulevard realms. Source: Jacobs et al., 2002; 212.

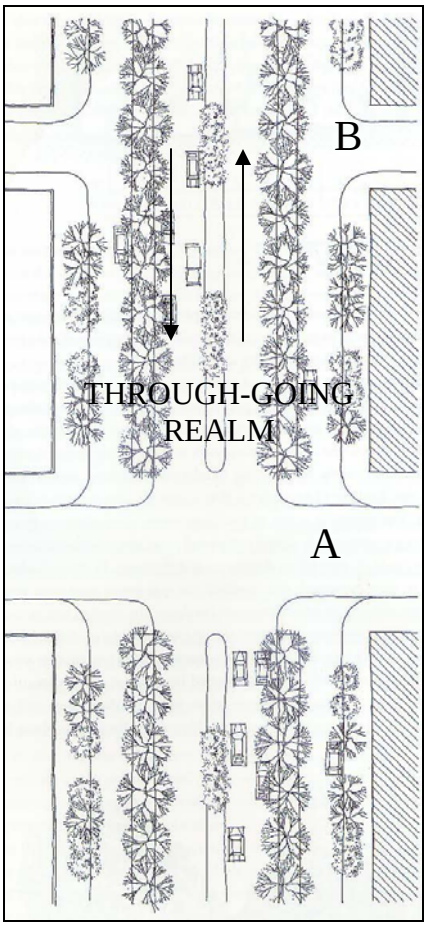


Figure 2-2. Boulevard overview. A) Major cross streets intersect with the through going realm. B) Minor streets and driveways terminate at the access roads, improving traffic flow on the through-going lanes. Source: Jacobs et al., 2002; 264.

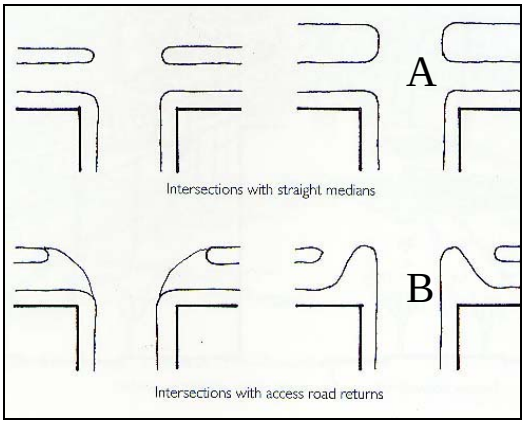


Figure 2-3. Intersection configurations. A) Access road traffic may continue through the intersection; or B) channeled into the through-going realm. Source: Jacobs et al., 2002; 228.

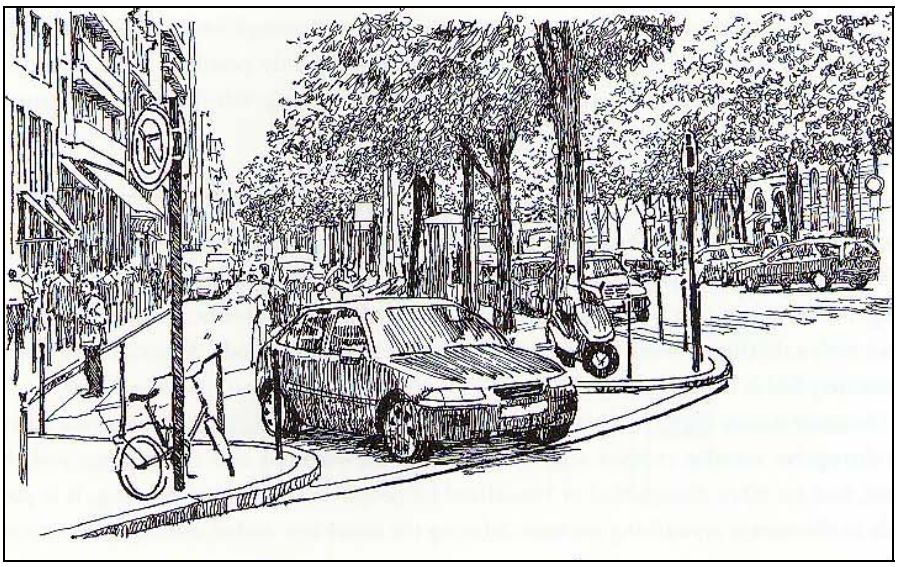


Figure 2-4. Access Road Exit. The road reenters the through-going realm. Source: Jacobs et al., 2002; 30.

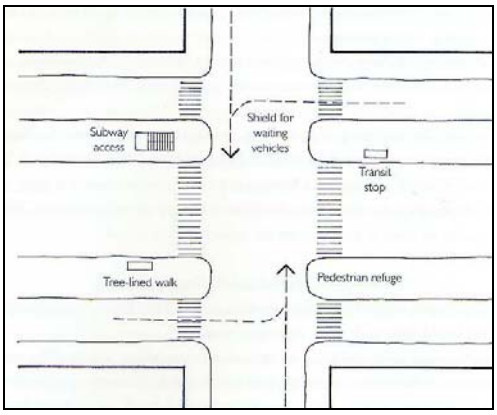


Figure 2-5. Various functions of a median. Source: Jacobs et al., 2002; 219.

CHAPTER 3
METHODOLOGY

The objective of this thesis is to study the prove that redesigning an urban arterial as a multiway boulevard is the best way to create a public street space, improve the pedestrian realm, improve traffic flow, and incorporate transit. The chosen method to gain an understanding of corridor improvements is exploratory research in the form of case studies. This research will contribute to the field of knowledge in urban design by suggesting ways to transform existing urban arterials into multiway boulevards that will improve the quality of the built environment. The research will also contribute to the field of urban planning by explaining how multiway boulevards can improve the public realm, make transportation safer and more efficient, and increase economic prospects for the city.

To prove that the stretch of Kennedy Boulevard in the study area would best function as a multiway boulevard, the following steps were taken:

- Selecting a study area that met a list of criteria.
- Reviewing literature to study the reasons for a decline in public street space.
- Reviewing case studies of street corridor improvements and construction of new multiway boulevards.
- Applying questionnaires and visual image surveys to three Tampa neighborhood civic associations to gauge public opinion about Kennedy Boulevard and gain an understanding of the types of built environments people prefer.
- Creating a digital three-dimensional (3D) model of the corridor as it exists currently, and based on the literature review, case study findings, and questionnaire and questionnaire results, creating a digital 3D model of the site redesigned as a multiway boulevard.

Exploratory Research

Exploratory research was the main type of social science research conducted in this thesis. Social science research is a way to examine and understand the operation of human affairs (Babbie, 1995). Social problems can not be solved until there is an understanding of the

problems and how they persist (Babbie, 1995). Exploratory research in the form of case studies were used because urban planners and designers primarily learn by studying other cities and developments. The case studies selected were examples of successful street corridor revitalizations. The first two case studies were roadways in Delray Beach, Florida, and West Palm Beach, Florida. Florida cases were selected because the governmental, political, and economic contexts in Tampa are expected to be similar to those in Delray Beach and West Palm Beach. The Florida case studies were expected to bring to light the challenges and problems that would be faced in the implementation of the redesign by showing how the redesign process is handled at local and state agencies. The third case study is of Octavia Boulevard in San Francisco, California. This case was selected because the physical design best represents the vision for Kennedy Boulevard. Each case study examined the following topics:

- History and context.
- Implementing the redesign.
- Design elements.
- Impact of the redesign.

Selection of the Study Area

The study area is Kennedy Boulevard, an urban arterial in Tampa, Florida. The specific section selected for this study starts at Dale Mabry Highway and goes westward for approximately one mile to Westshore Boulevard. The selection of the study area had to meet the following criteria:

- A distance between property lines wide enough to fit a multiway boulevard (about 130 feet)
- Primarily commercial and retail strip development along the road.
- Dominated by vehicular traffic.

- A heavily trafficked road.
- Containing or connecting major destinations.

Intersections were classified as either major or minor. Major intersections are where Kennedy Boulevard crosses an arterial road (as classified by FGDL and GIS data.) Minor intersections are where Kennedy Boulevard crosses a local/collector road (as classified by FGDL and GIS data.) The major intersections are where Kennedy Boulevard intersects the following roads: Dale Mabry Highway, Lois Avenue, and Westshore Boulevard. The minor intersections are where Kennedy Boulevard intersects the following roads: Church Avenue, Grady Avenue, Hale Avenue, Clark Avenue, Hubert Avenue, Manhattan Avenue, Hesperides Avenue, and Trask Street (Figure 3-1).

Literature Review

The second part of the research process was to identify the reasons why the public realm has declined so significantly in recent decades. The literature review was limited to the United States, as this is where the most severe decline of public space occurred. Within the United States, most of the research focused on Sunbelt cities. Of all regions in the United States, the greatest lack of public street space is in Sunbelt cities. The second topic that was studied was the current road-building principles used by traffic engineers. The third topic that was studied was light rail transportation in urban areas. Cities in the United States and Europe were studied; European cities were selected because they exhibit good urban design principles and have been used as models for other cities in the United States.

Case Studies

Three case studies were selected to understand how improvements can be made to urban arterial roadways. Case studies were selected because the primary way planners learn and solve

problems is by studying what other cities do. The case studies examined the history and context, implementation of the design, specific design elements used in the redesign, and the outcome of the redesign. Two of the case studies are in Florida and the third is in San Francisco, California.

Questionnaires

The subject population was identified as anyone who lives in a three mile radius of Kennedy Boulevard. The questionnaire was put online and a link was sent to the presidents of the following Tampa neighborhood associations: Tampa Heights, North Hyde Park, and Historic Hyde Park. The questionnaire asked general questions about the built environment of Kennedy Boulevard. The questions gauged people's perception and attitude about the roadway and desired improvements, reasons people come to Kennedy Boulevard, and transit usage. The entire questionnaire is found in Appendix A.

Questionnaire Results

The questionnaire asked questions pertaining to the visual character of Kennedy Boulevard and general questions about transit usage. Out of 217 questionnaires given out, 47 were completed. The redesign calls for the roadway to become a pedestrian-focused destination with transit as an integral function; in order to accomplish this goal, transit usage and the design of Kennedy Boulevard will have to dramatically change. Respondents were asked why they come to Kennedy Boulevard; multiple answers could be selected. Results of the questionnaire show that most people come to Kennedy Boulevard because they are passing through on the way to another location (Figure 3-2) and all the respondents used a private automobile to get to Kennedy Boulevard (Figure 3-3).

In order to identify elements that needed to change, the study population was asked to rank the biggest problems along Kennedy Boulevard. The biggest problems were appearance and traffic (Figure 3-4). The four elements that people were "Somewhat Dissatisfied" or "Very

Dissatisfied" with were landscaping, aesthetics/appearance, and open space and parks, and ability to walk/bike (Figure 3-5). The four changes that people would most like to see are: less traffic, better aesthetics, cleaner, and safer (Figure 3-6).

Because public transit is an important aspect of the proposed redesign, people were asked about their attitudes toward transit and what would make them want to use transit. Currently, most people in the study area never use public transit (Figure 3-7).

In order to understand people's attitudes about transit, questionnaire respondents were asked the three most influential factors that influence their decision to drive instead of using transit. The factors are: public transportation takes too long, public transportation is not convenient to home, work, and shopping, and the stigma of public transportation (Figure 3-8). Transit service and convenience must improve dramatically to fulfill the vision for Kennedy Boulevard. Questionnaire subjects were asked, "What three things would make you use public transportation along Kennedy Boulevard?" The most influential factor that would increase ridership is convenience. Surprisingly, the second most influential factor to increase transit usage would be the addition of light rail or streetcar service (Figure 3-9). Light rail or streetcar service itself may not necessarily be the reason that people would switch to transit, but rather the higher quality and faster service associated with rail transit. Although it is commonly thought that mode (rail versus bus) is not an important factor, the questionnaire results show otherwise. As other studies have shown, there tends to be more public support for funding and higher ridership figures for rail versus busses when all other figures such as headway times, and travel times are held constant (Henry, 2006).

Summary of Questionnaire Results

Questionnaire results clearly show that Tampa residents are dissatisfied with the appearance of Kennedy Boulevard. Elements that the public would like to see improved are the

aesthetics and landscaping along Kennedy Boulevard; these improvements were added into the redesign. The questionnaire also found why people do not use transit and factors that would make them want to use transit. Because the redesign includes the removal of a through-going traffic lane, increased transit ridership would have to mitigate some of the traffic effects. Questionnaire results showed that for people to switch from driving to transit, transit service would have to be more convenient and faster.

Digital Three-Dimensional Modeling

Digital stereoscopic aerial photograph pairs at six inch resolution of the study area and a camera collaboration report were obtained from the Hillsborough County Mapping and Surveying Department. The study area, as it currently exists, was modeled using the computer program Sketchup. The aerial photograph became the base for the model. The building masses were created by tracing over the rooftops and extruding the buildings to the appropriate height. Next, pictures were taken of the front façade of each building along the corridor. The façade pictures were edited using PhotoShop 7.0. The editing consisted of removing miscellaneous objects such as vehicles, signs, and other objects that blocked the view of the façades. Brightness, hue, and angles were also adjusted to give all the photographs a uniform appearance.

Finally, a redesign of Kennedy Boulevard was created. The proposed redesign used street, sidewalk, and building dimensions based on the literature review, design elements from the Octavia Boulevard case study, and incorporated questionnaire results.

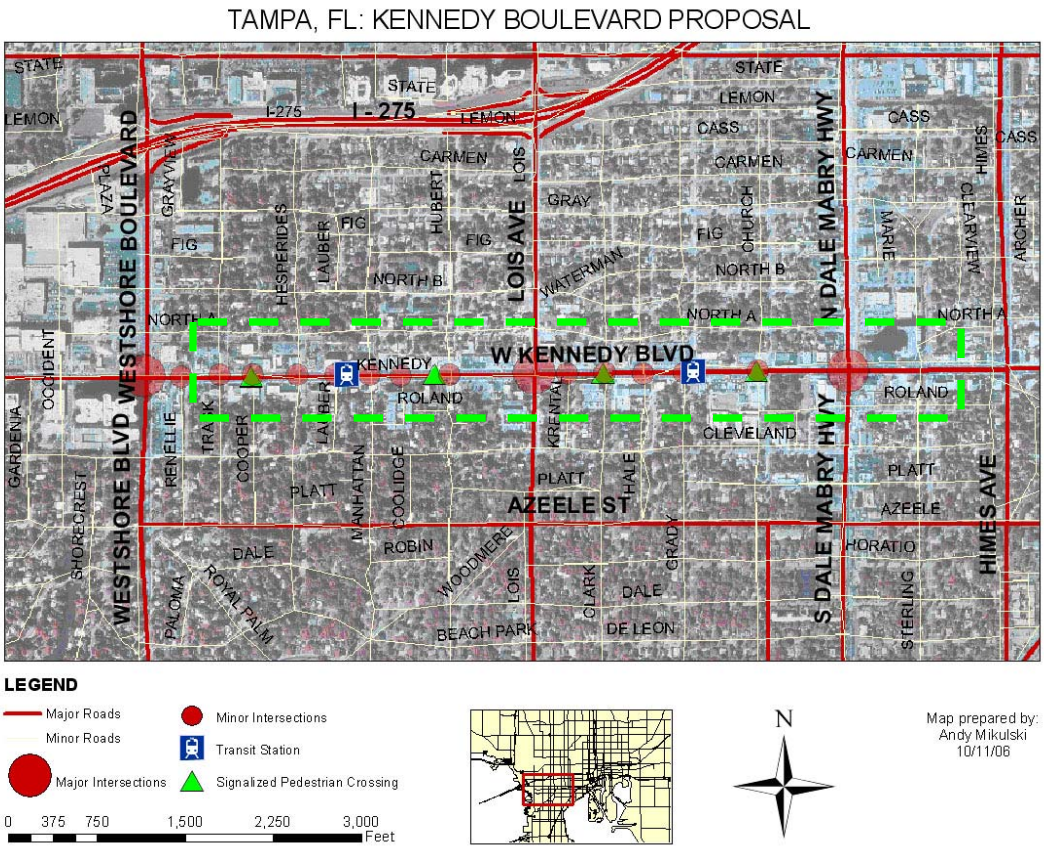


Figure 3-1. The study area showing major and minor intersections.

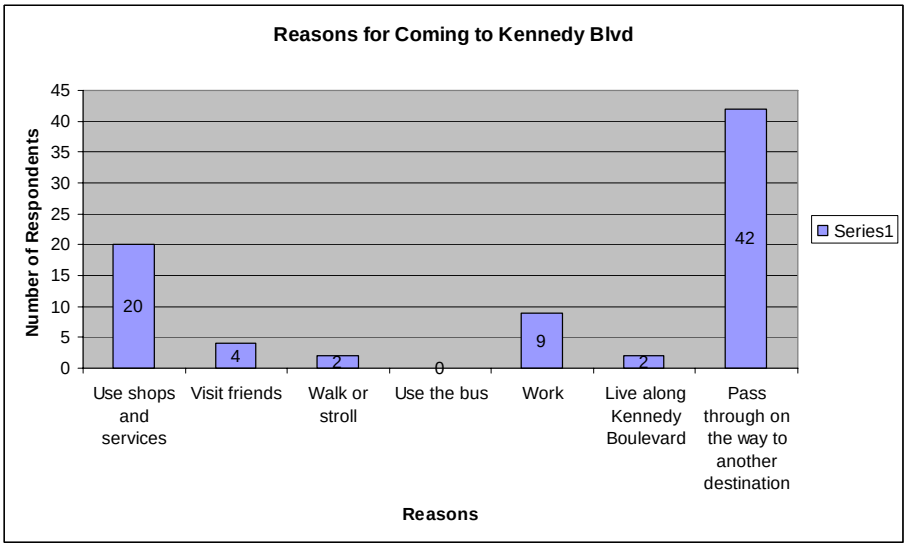


Figure 3-2. Reasons people come to Kennedy Boulevard.

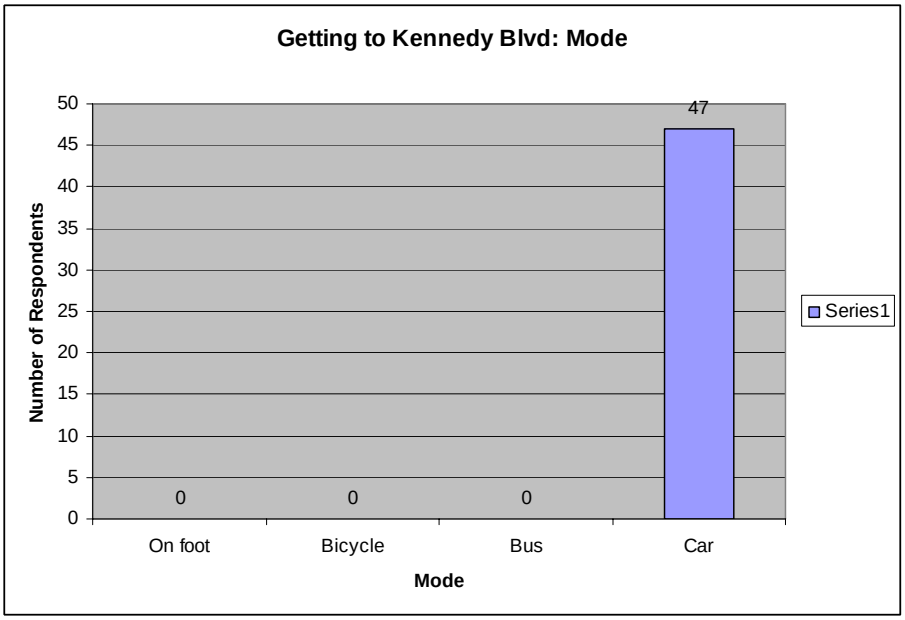


Figure 3-3. Mode of travel people use to get to Kennedy Boulevard.

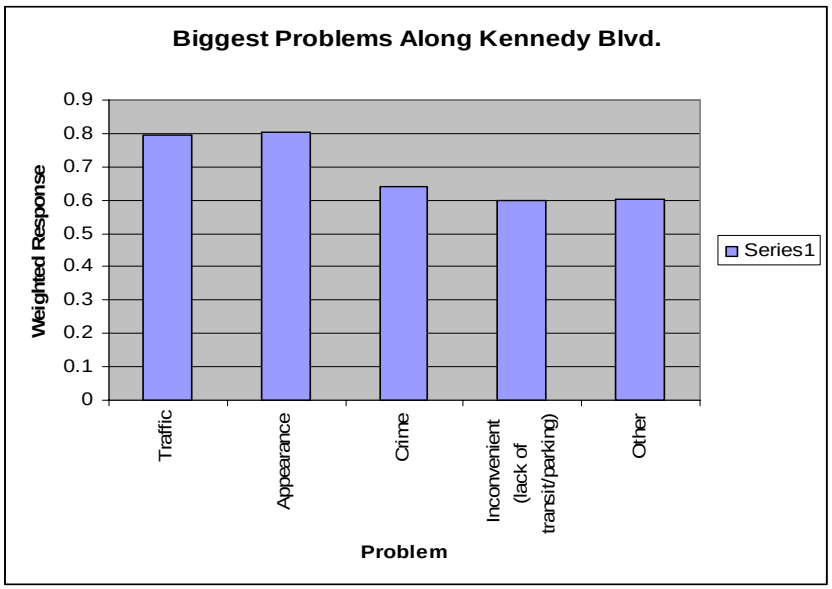


Figure 3-4. Biggest problems along Kennedy Boulevard.

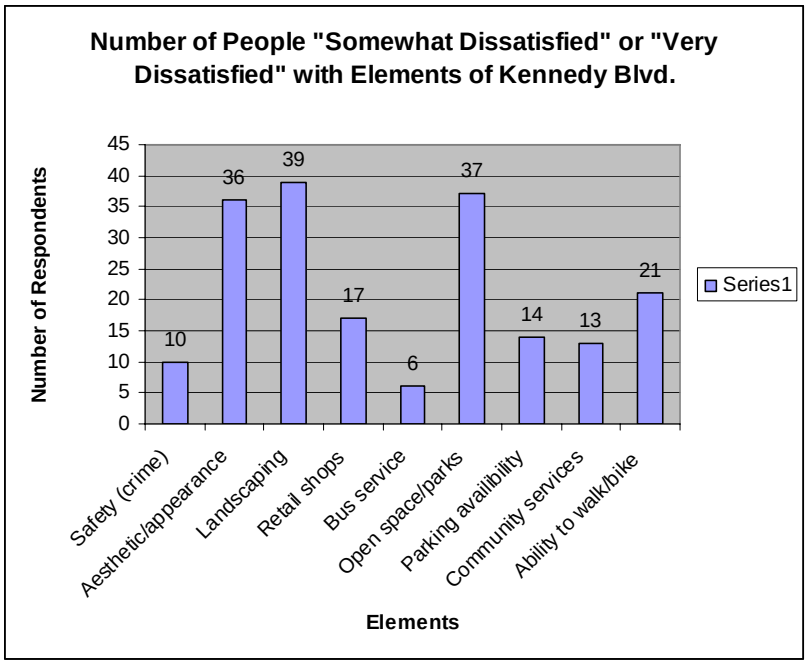


Figure 3-5. Ratings of various elements of Kennedy Boulevard.

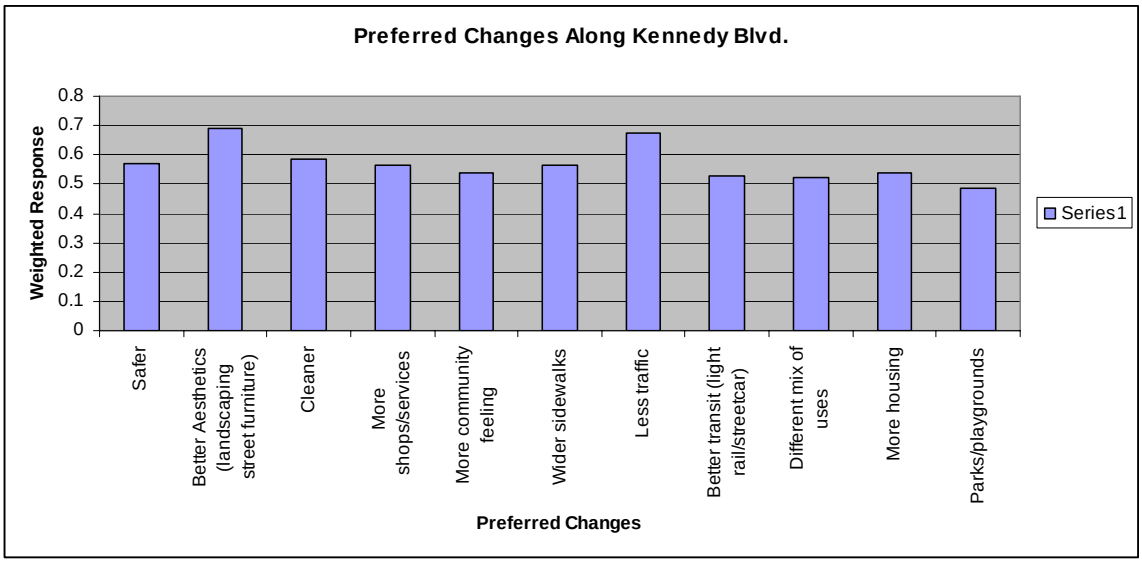


Figure 3-6. Changes people would like to see along Kennedy Boulevard.

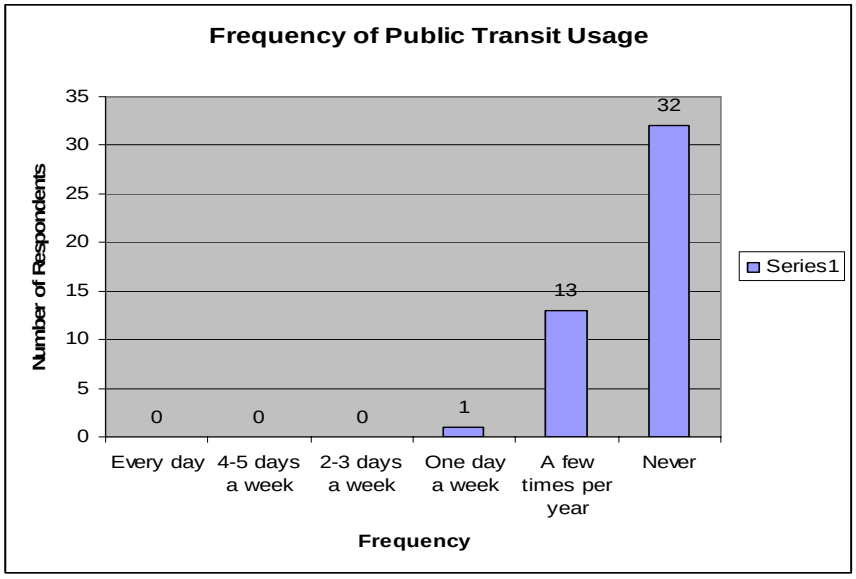


Figure 3-7. Frequency of transit usage.

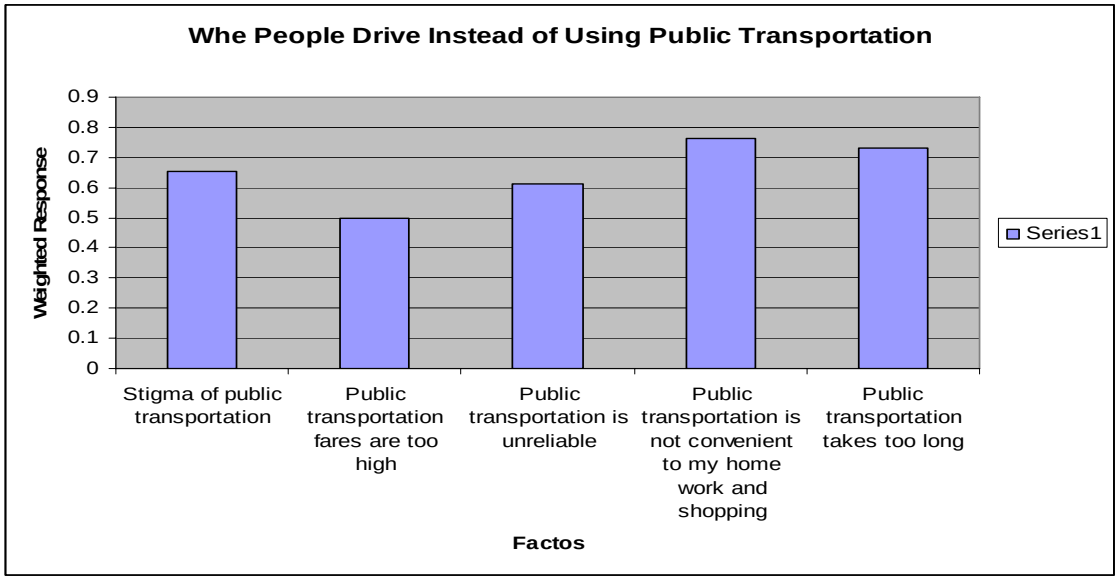


Figure 3-8. Factors that influence people to drive instead of using transit.

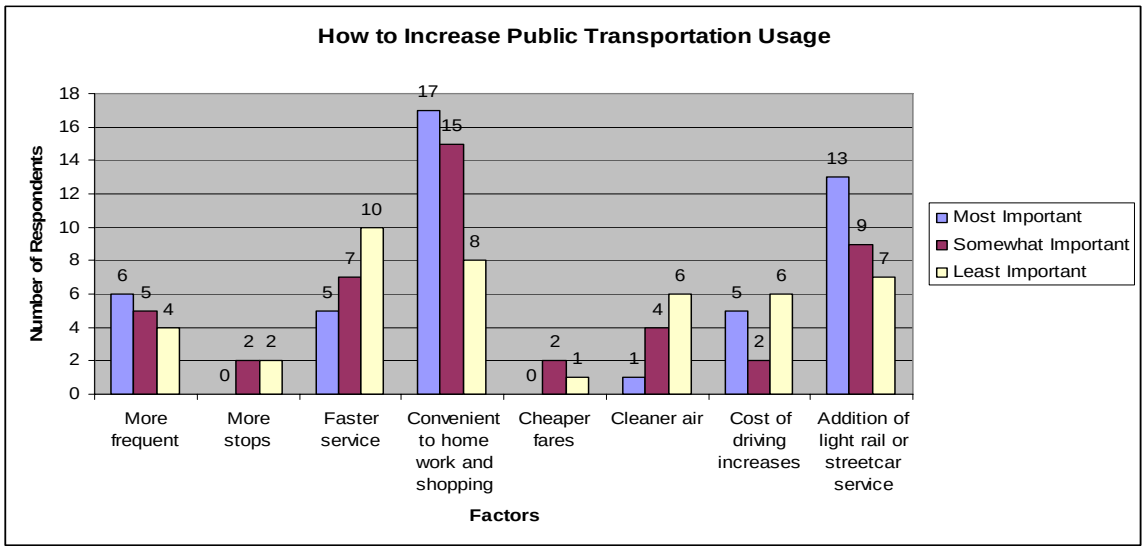


Figure 3-9. Factors that would increase transit ridership.

CHAPTER 4
CASE STUDIES

Three case studies were picked to examine how Kennedy Boulevard can be redesigned as a pedestrian-friendly boulevard. The first two case studies, Atlantic Avenue in Delray Beach and Clematis Street in West Palm Beach, are in Florida and the third, Octavia Boulevard, is in San Francisco, California. The Florida cases were chosen because they show how problems were overcome to redesign a street as a pedestrian-friendly destination. The same problems are expected if Kennedy Boulevard is redesigned. Like Kennedy Boulevard, Atlantic Avenue was a State Road and the same problems between the local and state governments and FDOT might arise. The last California case study was chosen because the physical design is very similar to the vision for Kennedy Boulevard. Although the political process is different in Tampa and San Francisco, Octavia Boulevard shows how many different agencies, jurisdictions, and neighborhood associations at the local and state level can come together and make a vision a reality.

Atlantic Avenue: Delray Beach, Florida

History and Context

Delray Beach experienced severe decline in the 1980s. Its 100-year-old downtown was 35% vacant. The main street, Atlantic Avenue, was a three-lane high speed state road that cut through the city (Figure 4-1). In 1988, FDOT plans called for eliminating parking and widening Atlantic Avenue to a four lane road to "improve hurricane evacuation" (Figure 4-2).

City officials had a much different vision for Atlantic Avenue than FDOT's. Atlantic Avenue was a serious problem and major reason why Delray Beach's downtown was blighted. The road was unattractive, hostile to pedestrians, and allowed motorists to speed through the downtown. Rather than letting FDOT control the future of their town, city leaders decided to

take control. Under the guise to "improve hurricane evacuation," the FDOT proposal would have caused traffic to flow even faster through the city. While the FDOT proposal would have slightly improved traffic flow and made hurricane evacuation negligibly quicker, the city did not want to become a place that cars drove through. Cities should not be designed solely for disaster evacuation or built for maximized traffic flow. City leaders argued a city should be designed as a place that people can enjoy every day of the year, not designed for an evacuation event that is likely once every few years.

Delray Beach leaders worked with FDOT to come up with an alternative design for Atlantic Avenue. The alternative design included narrow lanes and street furniture, elements that went against FDOT design guidelines. Because the city's and FDOT's plans were so different, a new strategy was needed.

FDOT allowed the city to take ownership of the stretch of Atlantic Avenue that cut through the middle of downtown; in return, the city gave FDOT ownership of two roads on either side of Atlantic Avenue to be converted into a pair of one-way roads to meet FDOT's traffic flow goals.

Implementing the Redesign

The city created a CRA in 1985 (three years before the FDOT proposal) with the goals of:

- Eliminate slum & blighted conditions
- Revitalize downtown and adjacent neighborhoods
- Enhance tax base

The CRA provides the following financial incentives:

- County Grant Program – CRA provides 50 % match for new jobs created
- Façade Easement Program—pays for renovations to historic properties
- Site Assistance Program—Pays percentage of improvements up to 25% or $50,000

The city and FDOT had very different plans for Atlantic Avenue; the CRA viewed the FDOT proposal as a threat to their goal of redeveloping the downtown. The city and the CRA took advantage of the redevelopment opportunity and worked with FDOT to come up with a plan that served FDOT's needs to move traffic and the city's need to reinvigorate their downtown.

Design Elements

The city agreed to take over ownership and maintenance of the six block segment of Atlantic Avenue from FDOT. In return FDOT took over ownership of two roads on either side of downtown to create a pair of bypasses. Instead of widening Atlantic Avenue to four lanes, the city reduced the road from three lanes to two and widened the sidewalks, installed brick paver walkways, added trees and landscaping, and added artistic lighting (Figure 4-2).

Despite the empty on-street parking, there was still a perceived shortage of parking in downtown. Instead of adding more parking, the city replaced surface parking lots with buildings and moved parking lots to the rear of buildings. To encourage sidewalk cafes, the city allows restaurants to place tables and chairs in the in the right-of-way provided there is adequate space for pedestrians to pass. The downtown allows higher densities than city code calls for, allows parking lots to be shared by multiple businesses, and waives parking requirements for a fee.

Impact of the Redesign

Since the road narrowing, sidewalk widening, and aesthetic improvements, Atlantic Avenue now has outdoor cafés, shops, and other smaller-scale businesses as well as a new museum, theater, and meeting hall.

The tax roll value in the CRA increased from $250,000,000 in 1985 to $1.2 billion in 2005, and vacancy went from 35 % to 5 %. Over 2,000 new residential units (Figure 4-4) are in planning or construction phases (CNU Florida, 2006). Assessed property values rose from approximately $5-$6/square foot to $15-$30/square foot (FHA, 2004.)

The renaissance of Atlantic Avenue was so successful the city is adopting similar principles for other roads in their master plan. The new master plan calls for a number of changes to the downtown's roadway system in order to enhance pedestrian safety and improve traffic circulation. One goal is to convert the conversion of the one-way pair bypass system into two-way traffic; the narrowing of the downtown highway pairs from three to two lanes; the slowing of traffic; widening of sidewalks; and the creation of a "gateway feature" for vehicles that enter the downtown area from I-95.

Clematis Street: West Palm Beach, Florida

History and Context

West Palm Beach has always been a city that stood in the shadow of its glitzy neighbor to the east, Palm Beach. Palm Beach is one of the richest cities in the country, but its residents very rarely cross the bridge into the less well-to-do county seat, West Palm Beach. Clematis Street is the east-west spine of historic West Palm Beach and was once a bustling center of commerce and vitality (Figure 4-5).

Wealthy residents and northern visitors would arrive by train at the West Palm Beach train station, travel by carriage along Clematis Street to the waterfront, and then finally board a ferry to the island resort of Palm Beach. Residents of West Palm Beach that were employed by wealthy residents of Palm Beach, such as groundskeepers, house maids, nannies, and cooks, also made the daily trek down Clematis to the ferry. Clematis Street served as the vital connection between the cities of Palm Beach and West Palm Beach and the rest of the world.

After the construction of a causeway to Palm Beach and the completion of the interstate system, Clematis Street lost its vital geographic importance. Clematis Street and West Palm Beach declined even further in the 1970s and 1980s and reached a low point when the drug dealers and prostitutes of Clematis Street were featured in the 1993 PBS documentary “Crack

America." Vacancy in downtown was 85 % and property values were as low as $10 per square foot. Clematis Street, the historic east-west route through downtown, was a one-way, four lane road with signalized turn lanes that cut through the historic heart of downtown.

Implementing the Redesign

In 1989, the City of West Palm Beach only had $12,000 in the bank and faced a declining tax base (PPS 2006). Facing bankruptcy, city leaders started a revitalization effort focused on improving the financial situation of the city. Mayor Nancy Graham and transportation planner Ian Lockwood started the initial revitalization by focusing on traffic calming and design standards for the downtown and a Tax Increment Financing (TIF) district was created to reinvest tax money to improve Clematis Street. In conjunction with the traffic calming and pedestrian amenities, façade improvements financed 50-50 by business owners and the city focused on improving the visual character of the street. One of the first built projects was Centennial Square. The square is built at the intersection of Clematis Street and Narcissus Street and serves as the centerpiece of block parties held every week on Clematis Street.

Design Elements

Traffic calming, as practiced in West Palm Beach, is about "changing behavior," says Lockwood (Pollock, 1998). "We don't close any streets- that's not part of the equation. We don't do route modifications either, such as prohibiting turns. Rather, the changes improve pedestrian access, safety, and quality of experience. It's about building community," says Lockwood.

Clematis Street was converted from a one-way four lane road into a two way road with pocket parking on both sides. At intersections, the sidewalks "bulb out" to slow traffic, give pedestrians a better view, and reduce the amount of roadway a pedestrian has to cross. Attractive benches, street lights, and decorative paving patterns were added and sidewalks were widened to 11 feet (Figure 4-6).

Traffic terms such as “local,” “collector,” and “arterial” are no longer used. Since transportation is being planned to serve land use, instead of vice versa, the relevant measures become the distance between buildings, the number of pedestrians using the corridor, and the quality of the trip (Pollock, 1998).

Traffic calming islands were added to residential neighborhoods. The islands jut out from the side of the road and force cars to slow down to negotiate an “S” turn. The lanes are as narrow as nine feet, but still accommodate emergency vehicles and garbage trucks.

Zoning is no longer designated by use, but rather by building type. Four categories are employed to denote overall size, ceiling height, setback, and other parameters. All buildings must be between two to five stories. The new approach is intended to result in more flexible building types that are able to evolve over time and to serve multiple uses.

Impact of the Redesign

The revitalization of Clematis Street sparked the creation of the $600 million CityPlace project, a 72 acre mixed-use development with 600,000 square feet of retail space and 620 residential units that opened in the mid 1990s (Figure 4-7). New developments in the construction and planning stages will add 8,000 residents to downtown in the next four years.

The Clematis Street project cost $1.8 million in 1991; by 2001, private-sector reinvestment downtown has reached $500 million (excluding City Place). TIF revenue generation is $5 million annually, giving the City of West Palm Beach the ability to reinvest in the central city or to subsidize alternative urban initiatives (Project for Public Spaces, 2001). The city’s master plan intends to convert each branch of U.S. 1 from one-way streets to two-way streets. The idea is to slow down traffic and create a “livable” city street rather than have cars speed through the city. The weekly block parties at Centennial Square, located at the eastern terminus of Clematis Street, draw between 3,000-5,000 people every Thursday night.

West Palm Beach now takes the upper hand in negotiations with developers and has learned to say "No." If a private enterprise will not conform to the design elements of the master plan, it is invited to take its business elsewhere.

Octavia Boulevard: San Francisco, California

History and Context

Octavia Boulevard in San Francisco is the first true multiway boulevard to be built in the United States in almost 80 years. Octavia Boulevard has all the elements of a true multiway boulevard--it contains multiple roadways that separate local and regional traffic, it has landscaped medians separating the roadways, and it is flanked by wide sidewalks. The boulevard stretches for four blocks through the center of San Francisco (Figure 4-8).

Although it is only a few months old, neighborhood and city residents are very pleased by the aesthetic quality of the boulevard and its ability to handle large amounts of traffic at relatively quick speeds. Local traffic is accommodated by the outer roadways and regional traffic traveling to and from the Central Freeway is carried on the middle roadway. There is almost unanimous consensus that the boulevard is a remarkable addition to the city, although it came after years of debate about the design.

The history of Octavia Boulevard starts in the 1950s when the Central Freeway was built in the Civic Center neighborhood near downtown San Francisco. The freeway was originally built to connect Interstate 80 in the southeastern part of the city to the Golden Gate Bridge in the northwest. The Central Freeway was just one of many highways planned to bisect the city and improve traffic flow; the California Department of Highway's plan for San Francisco was modeled after Los Angeles (San Francisco CityScape, 2006).

In 1959, the first segment to open was a mile long stretch that ran from I-80 to Franklin and Gough Street (San Francisco CityScape, 2006). Before any new segments could be built,

there was a freeway revolt in San Francisco, the first of its kind in the country. The Bayshore Freeway (101) and the Southern Freeway (I-280) were built without much controversy. However, the Central Freeway was met with strong resistance because it was planned to cut through many of the city's residential neighborhoods. Also in 1959, the San Francisco Board of Supervisors voted 6-5 to cancel the rest of the Central Freeway project.

For several decades the freeway spur remained an underused eyesore in the middle of a residential neighborhood. Then on 1989, fortune or misfortune, depending on how one perceives events, struck San Francisco. The Loma Prieta earthquake caused extensive damage to the city but was the catalyst in the long process that ultimately created Octavia Boulevard. The earthquake damaged the double decked Central Freeway; the section north of Fell Street was so severely damaged that it was torn down. Elsewhere in the city, the earthquake also damaged the double-decked Embarcadero Freeway along the city's bayfront. The freeway was demolished between 1991 and 1993 and replaced with a six lane boulevard complete with a streetcar line that runs in the median (San Francisco CityScape, 2006).

Implementing the Redesign

The redesigned Embarcadero proved so popular that residents pushed for a similar design for Octavia Boulevard. In 1995, a city task force began to examine the possibility of replacing the remaining section of the Central Freeway with an at-grade multiway boulevard. In 1997, a measure to rebuild the Central Freeway passed. The measure was repealed in 1998 when voters passed a measure to replace the damaged expressway with an at-grade boulevard (Jacobs et al., 2002). The fight finally ended in 1999 when yet another pro-freeway measure lost to a pro-boulevard counter-measure. Accompanying the pro-boulevard measure were images and graphics showing what the boulevard would actually look like.

Design Elements

Octavia Boulevard's right of way is 133 feet, significantly smaller than the freeway it replaced. The western sidewalk is 15 feet wide; the eastern sidewalk 12 feet wide. The access roads are 18 feet wide- one ten-foot lane for travel and one eight-foot lane for parallel parking (Figure 4-9). Since there was not enough room for a dedicated bike lane, bikers share the access roads with the slow moving local traffic (Figure 4-10). In a critique of the post construction Octavia Boulevard, Elizabeth MacDonald, one of Octavia Boulevard's designers, now says the 18 foot wide access roads are too wide, a narrower access lane would have contributed more to traffic calming (Macdonald, 2006). A nine-foot wide median separates the access road from the travel roadway with trees spaced 20 feet apart on center. The center roadway has two lanes of traffic, each 11-foot wide, in each direction. An eight-foot wide center median separates the two travel roadways. The center median is lined with groupings of trees and landscaping. The extra right of way from the elevated highway is to be used for new housing.

Impact of the Redesign

The completion of Octavia Boulevard reconnected the Hayes Valley Neighborhood that was divided by the double-decked Central Freeway. The new boulevard carries roughly the same amount of traffic as the old Central Freeway, but it does it in a way that does not disrupt the neighborhood. The extra land means that 22 new parcels can be built on. Plans call for over 1,000 new residential units and new retail and commercial space (San Francisco Beautiful, 2005; York, 2004). Impacts on surrounding property values are too early to analyze because the road is only several months old at the time of this writing.

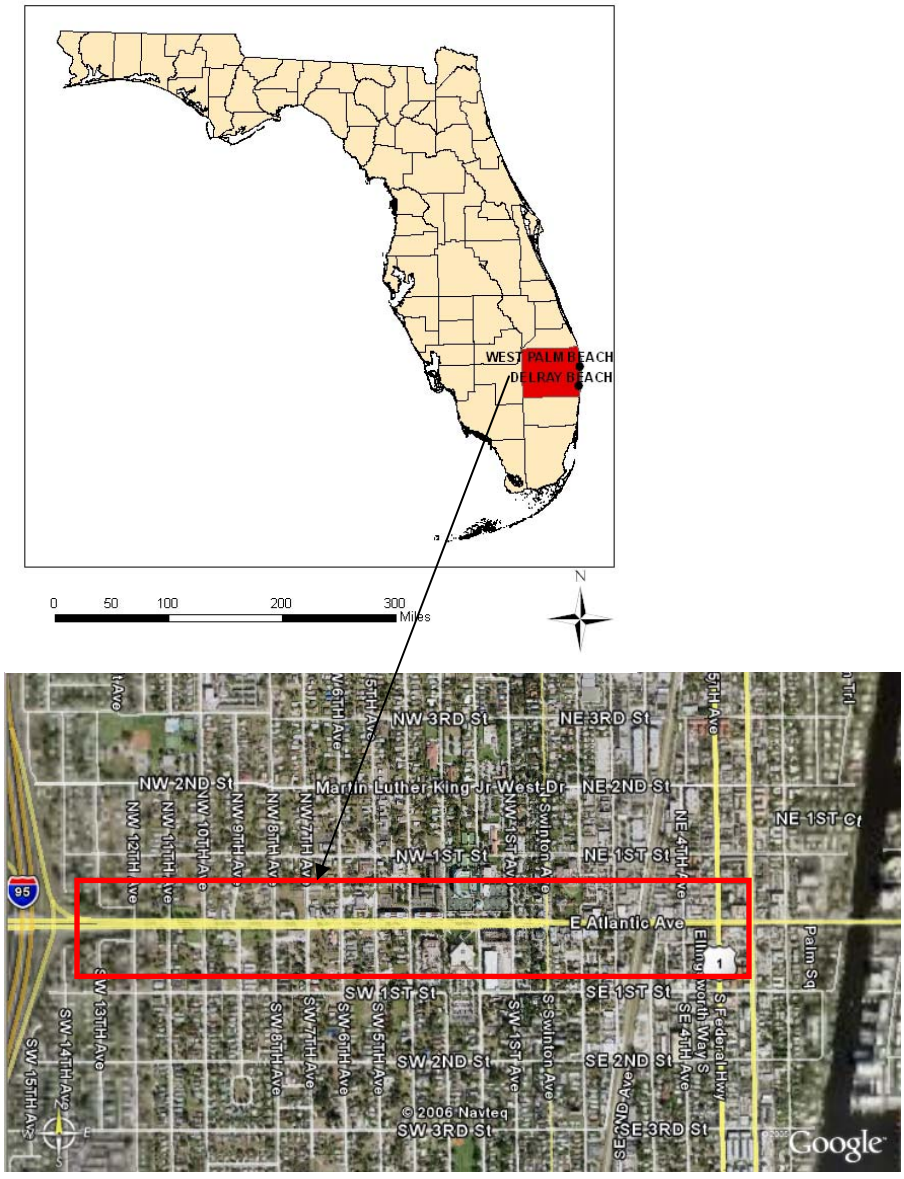


Figure 4-1. Atlantic Avenue, Delray Beach, Florida.

Figure 4-2. Atlantic Avenue before the redesign. Source: Project for Public Spaces http://www.pps.org/great_public_spaces/.

Figure 4-3. Atlantic Avenue after the redesign. Source: Photographs by the author.

Figure 4-4. New residential construction following improvements to Atlantic Avenue. Source: Photograph by the author.

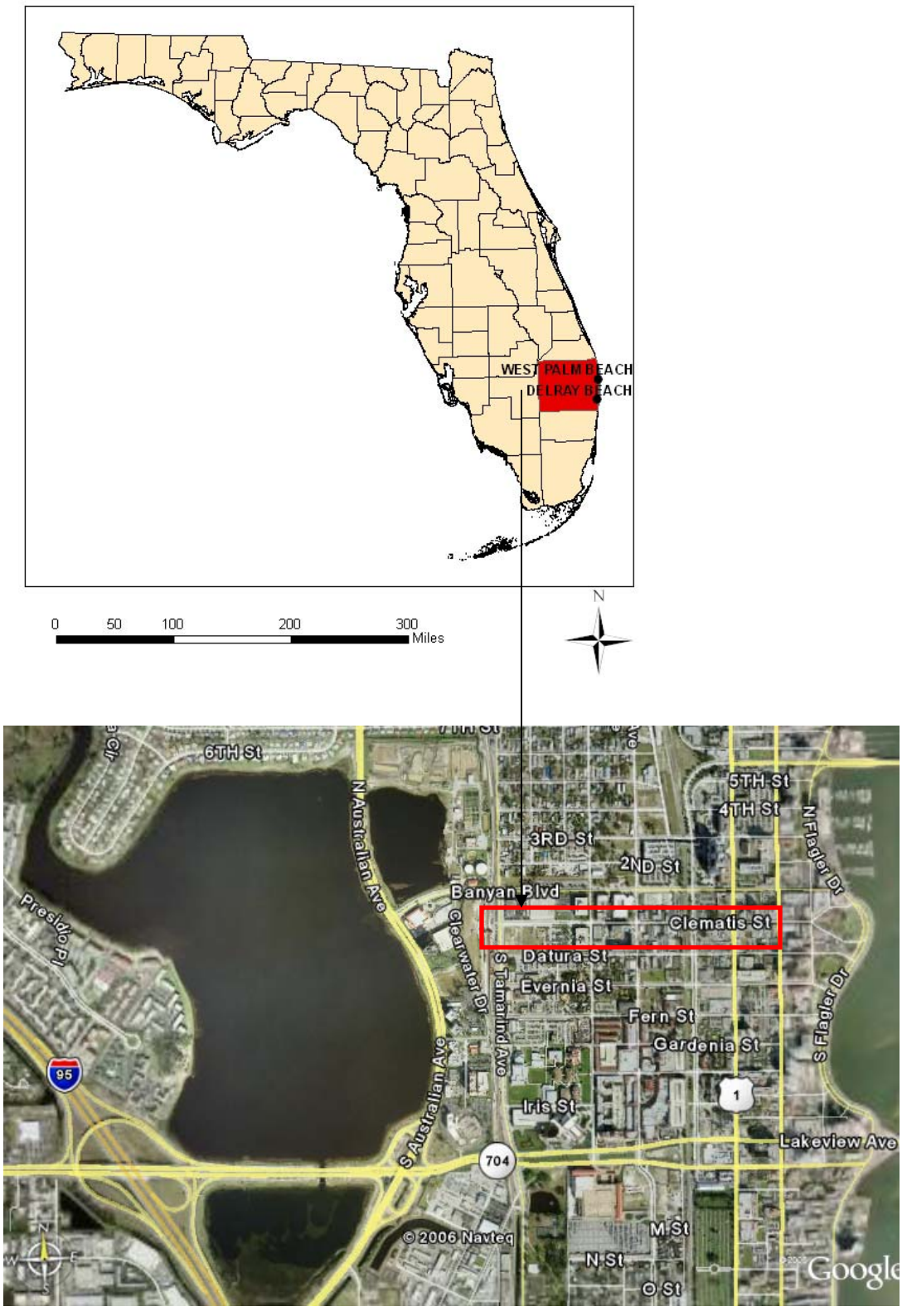


Figure 4-5. Clematis Street, West Palm Beach, Florida.

Figure 4-6. Clematis Street after the improvements. Source: Photographs by the author.

Figure 4-7. CityPlace, sparked by the Clematis Street revitalization. Source: Congress for New Urbanism, http://www.cnu.org/.

Figure 4-8. Octavia Boulevard in San Francisco, CA.

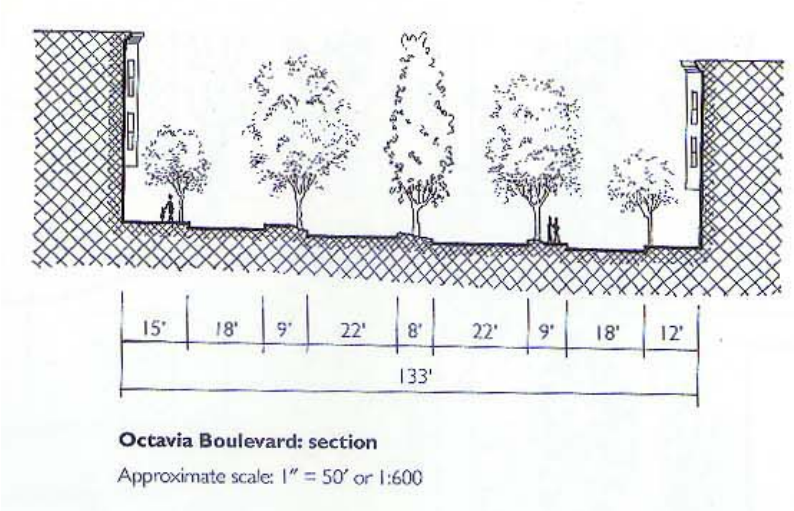


Figure 4-9. Octavia Boulevard cross section. Source: Jacobs et al., 2002; 242.

Figure 4-10. The side access road. Source: Jacobs et al., 2002; 242.

CHAPTER 5
PROPOSAL

This section will discuss the redesign of Kennedy Boulevard as a multiway boulevard by exploring the literature review in light of the case studies. The first part of this section will examine the type and route of a mass transit system that may be built in Tampa. Special consideration will be given to the overall context of the surrounding area and provide the justification for a mass transit system. The next section will discuss the digital 3D model and will include schematics and site plans of the redesign. The final section will study how the redesign can be implemented and the obstacles that may be faced if the project is built.

Kennedy Boulevard Redesigned

Currently, the Kennedy Boulevard right of way is 100 feet wide. There are three 12-foot wide travel lanes in each direction separated by an 18-foot wide space that contains a six-foot wide median and 12-foot wide alternating turn lane. Six-foot wide sidewalks flank each side of the roadway; only in a few places is there a grass median that separates the sidewalk from the traffic. Building setbacks range from six feet to over 100 feet; most of the building setbacks are 60 feet (Figure 5-1).

To redesign Kennedy Boulevard as a true multiway boulevard, the proposed total width from building to building would be 142 feet. Two 11-foot wide travel lanes would travel in each direction and an eight-foot wide median would separate the travel lanes from the pedestrian realm. The access roads would be 16.5 feet and accommodate one lane of parallel parking and one travel lane. Twelve foot sidewalks would line each of the access roads and buildings would be brought up to the sidewalk (Figure 5-2).

In order to accommodate the redesign, approximately 21 extra feet of right-of-way would have to be bought from private landowners along the corridor. Implementation and financing

will be discussed in more detail in another section. Because the building setbacks are so great, the only land that would have to be acquired is land that already is being used for automobile storage and circulation in the form of parking lots. Only a few buildings along the corridor are within the needed 144 feet.

The centerpiece of the redesign is the light rail line that runs in both directions down the center median (Figure 5-3). The dedicated transit-way is 25 feet wide which is the width of the double tracked streetcar tracks that currently run through parts of the Channelside district in Tampa. Tampa's current streetcar system would be integrated into the regional light rail system; vehicles on both systems would be interchangeable.

At the light rail stops along Kennedy Boulevard, the dedicated transit-way will be enlarged to create more space to accommodate the platforms and pedestrians (Figure 5-4).

The rail line would cross as few roads as possible to improve efficiency. The only intersections the rail line would cross would be at Dale Mabry Highway, Lois Avenue, and Westshore Boulevard. The transit-way would be built slightly above the road bed and be built with brick pavers or stained concrete to delineate the realm of the transit-way. Bollards, lights posts, or utility poles for the overhead electrical system for the light rail would separate the transit-way from the travel lanes.

The travel lanes on Kennedy Boulevard would be reduced from three lanes to two and the lanes narrowed to 11 feet. FDOT is more likely to approve the project if the lanes are at least 11 feet (Roarke, 2006). Minor intersections and driveways would be eliminated to improve the traffic flow of the road. The main objective is to channel local traffic onto the access roads. Local traffic enters the roadway and only drives a few blocks before turning off but in the process slows down traffic when it enters and exits the roadway. By using the access roads,

local traffic could still flow, but without interrupting the higher speed regional traffic. The elimination of 10 driveways and/or intersections per mile will increase speed by three miles per hour (Roarke 2006). The elimination of minor intersections and driveways would mitigate the increased congestion resulting from narrowing of the travel way from three lanes to two lanes in each direction. Eliminating minor intersections and driveways will also decrease the chance of rear end vehicle collisions that occur when vehicles pull out onto a high speed road. The only intersections at which vehicles on the travel way would be able to turn left or right would be major intersections (Lois Avenue, Dale Mabry Highway, and Westshore Boulevard; Figure 5-5).

An eight-foot wide median would separate the middle roadway from the access road. An eight-foot median is generally accepted as the standard minimum width required to support shade trees. It is important that the median be continually lined with trees, preferably native shade trees, to delineate the separation of the high speed traffic roadway from the slower, quieter pedestrian realm (Figure 5-6).

The pedestrian realm would have 12 foot sidewalks and buildings would be required to front the road and be built with zero setback. The access roadway would accommodate local traffic and provide parking for businesses along Kennedy Boulevard.

The building height to width ratio is an important element that is needed to create a sense of enclosure of the street space. A building height-to-width ratio of one to three is considered acceptable (Nelessen, 1994) to create a sense of enclosure. The total width of the redesigned Kennedy Boulevard corridor is 144 feet; using a ratio of one to three means the buildings should be 50 feet tall (four to five stories).

Alternative Redesigns

The first alternative is very similar to Kennedy Boulevard as it currently exists (Figure 5-8). There are no side access lanes or transit in this alternative. The central median would have

two rows of street trees that give way to turning lanes at intersections. The sidewalks would be widened to 12 feet and have a row of street trees.

The second alternative is similar to the preferred redesign except that the transit vehicles run on the outside lane of the central roadway (Figure 5-9). An advantage to this design is that transit riders do not have to cross the busy central roadway to get to a transit stop. However, the transit vehicles would travel slower because of the potential conflicts where it crosses the access road and central roadway returns.

The third alternative (Figure 5-10) is also a 145 foot wide boulevard much like alternative two. Instead of transit running on the outside lane of the middle roadway, the transit is moved to the side access roads. An advantage to this is that transit riders do not have to cross the middle lanes of high-speed automobile traffic. However, the transit vehicles will move slower because they share the side access road with automobile traffic, bicyclists, and pedestrians.

A Rail System for Tampa

In order to accommodate a large population increase the Tampa Bay area is planning for a regional rail system. The Tampa light rail system will connect the regions major destinations. The first phase of the 26 mile system will connect the University of South Florida (USF), Ybor City, Downtown, the Westshore Business District, and Tampa International Airport (TIA). A preliminary route is shown in Figure 5-11. The route connecting the USF to Ybor City and Downtown will run along existing freight rail tracks. The segment connecting Downtown Tampa to TIA via the Westshore Business District will run on a newly built rail bed. Long range plans have not identified a definite corridor for this segment, but the original light rail plan proposed by HART line call for the rail line to run along Cypress Street.

In order for mass transit to be effective, it must link together major destinations. While the Tampa rail system will connect most of the regions major destinations, it does leave out some

destinations such as Westshore Mall, much of the Westshore Business District, and the Kennedy Boulevard retail corridor (Figure 5-12).

The three possible alignments for the light rail system as it travels through this part of Tampa are: the I-275 alignment; the Cypress Street alignment; and the Kennedy Boulevard alignment. There are economic, social, and design ramifications for each of the three alignments (Table 5-1).

I-275 Alignment

The I-275 alignment would start in downtown Tampa and run west out of downtown on existing CSX tracks. Immediately after crossing the Hillsborough River, the route would run north on North Boulevard for four-tenths of a mile to I-275. From there, the route would run west on I-275 in the center median for three and a quarter miles to Trask Street. At Trask Street, the route would turn north and head toward International Plaza Mall and TIA.

The I-275 alignment takes advantage of the already existing public right of way of I-275. No new land would have to be bought because the land is already publicly owned. This type of alignment is what is found in Chicago in which the 'El' trains run in the center median of the interstates in the outlying parts of the city. The interstates are built slightly below the surrounding areas, in a sort of large ditch. Station entrances are located above the interstates at the street level, and escalators take passengers down to the platforms (Figure 5-14). A downside to an alignment like this is higher infrastructure costs (due to complex stations) and the inhospitable pedestrian environment due to the noise and fumes of highway traffic just feet away.

In Tampa, the interstates are at the same level of the surrounding landscape. The local streets go under the interstate, so the station configuration would be slightly different. The I-275 alignment would cause minimal disruption to nearby businesses and homes; however,

construction would most likely cause disruptions on the interstate temporarily affecting regional traffic at a large scale.

Cypress Street Alignment

The Cypress Street Alignment would follow the CSX tracks west out of downtown Tampa to North Boulevard. New track would start at the intersection of North Boulevard and the CSX tracks and run north for one-tenth of a mile and turn west on Cypress Street. The tracks would run along Cypress Street for three and a quarter miles to Trask Street where the route would turn north to International Plaza Mall and TIA.

The Cypress Street alignment is the route HART line selected in their rail study. This alignment would cut through a residential neighborhood and make transit easily available for many people. Disruption during construction would be minimal because the area is not heavily trafficked and has few businesses that would be affected during construction. However, running the route through a residential neighborhood would likely be met with opposition from the neighborhood. Currently, the neighborhood consists primarily of single family residential homes and because transit lines attract commercial development and denser residential development, the neighborhood would be under pressure to change. Transit stations would induce commercial demand where there currently is none and market forces would also create a demand for high density multi-family residential units (Handy, 2005).

Kennedy Boulevard Alignment

Like the Cypress Street and I-275 alignments, the Kennedy Boulevard alignment would follow the CSX tracks west out of Downtown Tampa. From the Hillsborough River, the route would follow the tracks southeast for six-tenths of a mile to Kennedy Boulevard. The new tracks would run west down the center of Kennedy Boulevard for three miles to Trask Street. Like the

other alignments, the tracks would turn north and Trask Street to the International Plaza Mall and TIA.

This alignment is the most disruptive to businesses of the three proposed alignments. The Kennedy Boulevard alignment would also be the most disruptive to traffic patterns because Kennedy is one of the busiest east-west routes through the city. Also, right-of-way would have to be bought from businesses to accommodate the additional space the light rail would need. Buying right-of-way along one of Tampa's busiest commercial streets would cost a lot of money and make this alignment the most expensive of the three proposed alignments. Although this alignment would be the most disruptive to business and traffic and cost the most, in the long term, residents and businesses would benefit the most from this alignment. Kennedy Boulevard is already lined with office and retail; a light rail line would allow riders to take advantage of the commercial opportunities along the corridor. In turn, the commercial uses along the road would also provide a large supply of potential transit users (Table 5-1).

The Kennedy Boulevard alignment would attract more commercial and residential uses and improve the economic situation for one of Tampa's busiest streets. The light rail line would create more demand for commercial and retail uses at a higher density. Currently, land along Kennedy Boulevard is underutilized. Most of the land is used for parking and almost all the buildings are one story. This alignment would provide workers from Downtown Tampa and the Westshore Business District a convenient link to the restaurants, retail, and offices on Kennedy Boulevard. The Kennedy Boulevard alignment could relieve some of the lunch hour traffic by transferring automobile trips to transit.

Selecting the Correct Alignment

Kennedy Boulevard would be the best option for the rail alignment. Kennedy Boulevard is already a major commercial corridor in Tampa and the addition of light rail would further

reinforce that strength. Bus lines already operate along the corridor and the large amount of commercial uses would provide trip generation for a light rail line. The redesign will make Kennedy Boulevard a destination and mass transit is a key element that is needed to bring people to the area. Businesses and traffic would be disrupted during construction, but the end benefits far outweigh the costs. The Kennedy Boulevard alignment would allow businesses along the corridor to get high visibility from regional traffic.

Table 5-1. Possible Rail Alignments.

ALIGNMENT	RIGHT-OF-WAY COST	PEDESTRIAN ACCESS	DISRUPTION TO HOMES	DISRUPTION TO BUSINESSES	DISRUPTION TO TRAFFIC	POTENTIAL ECONOMIC RETURN	OTHER
I-275	Low	Poor	Minimal	Minimal	Severe	Minimal	Elevated stations would significantly increase costs
Cypress St	Moderate	Good	Severe	Minimal	Moderate	Some	Rail will induce commercial and high density residential in a neighborhood of single family homes
Kennedy Blvd	High	Good	Moderate	Severe	Severe	Most	Opportunity to create a connector between downtown and Westshore/airport Commercial/retail to support transit already exists

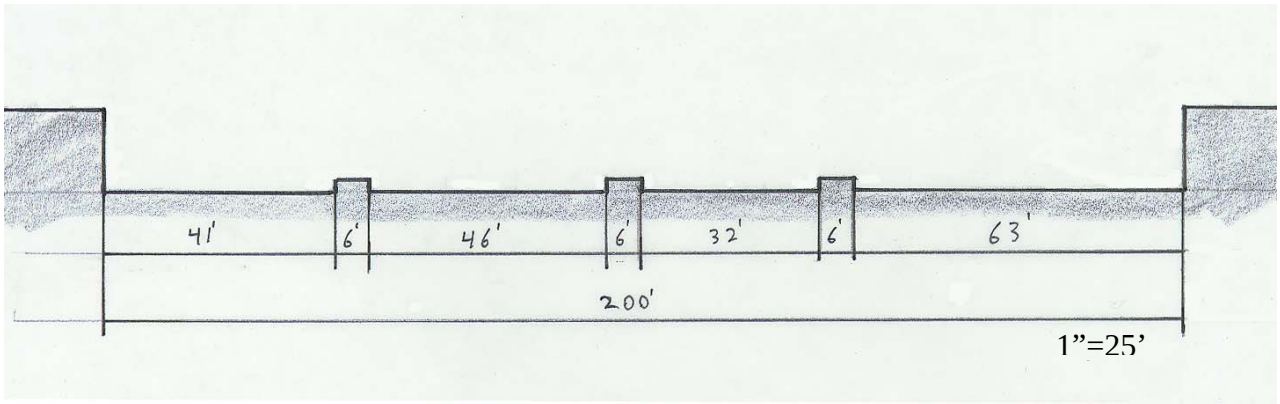


Figure 5-1. Cross section of Kennedy Boulevard (existing).

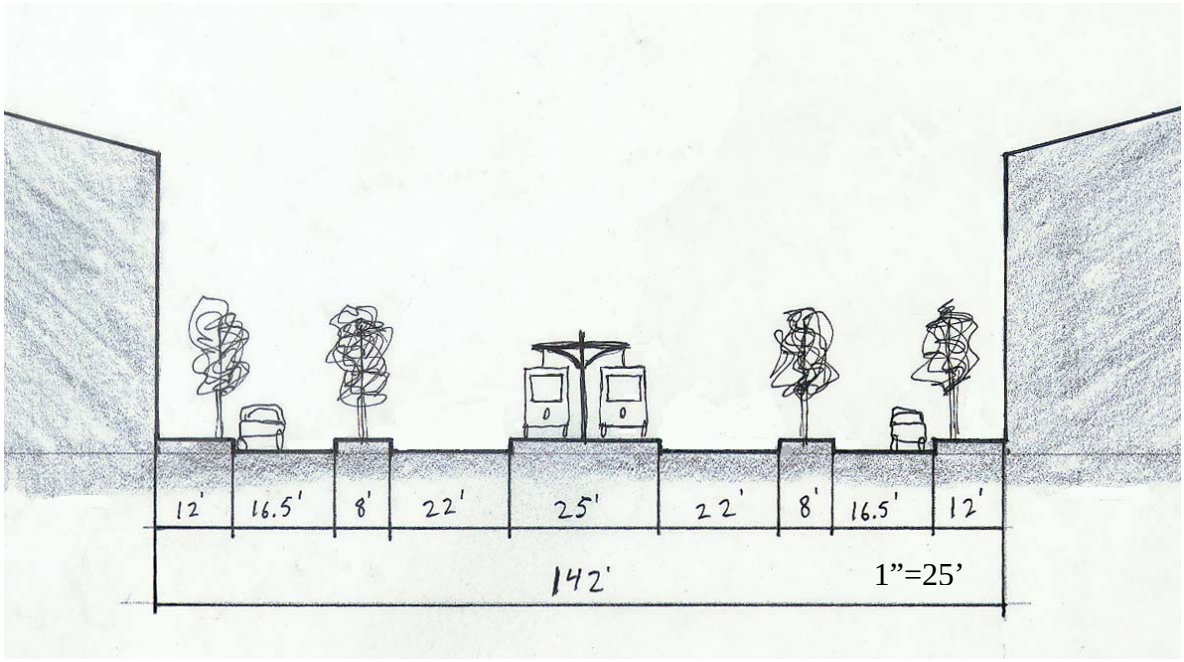


Figure 5-2. Kennedy Boulevard Proposed Redesign.

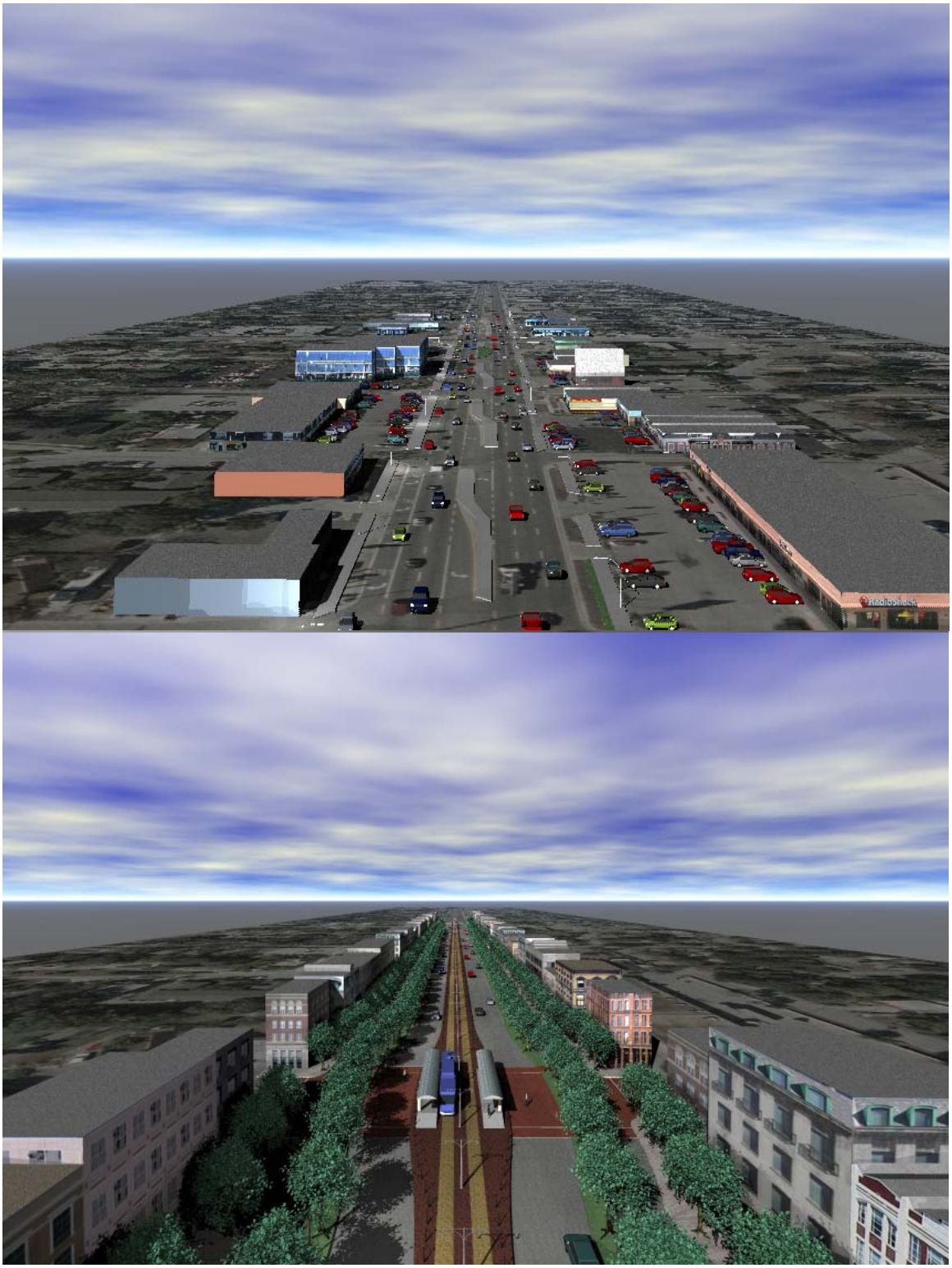


Figure 5-3. Kennedy Boulevard Proposal Overview. Existing (top) and after the redesign (bottom).

Figure 5-4. Transit station and pedestrian crosswalk.

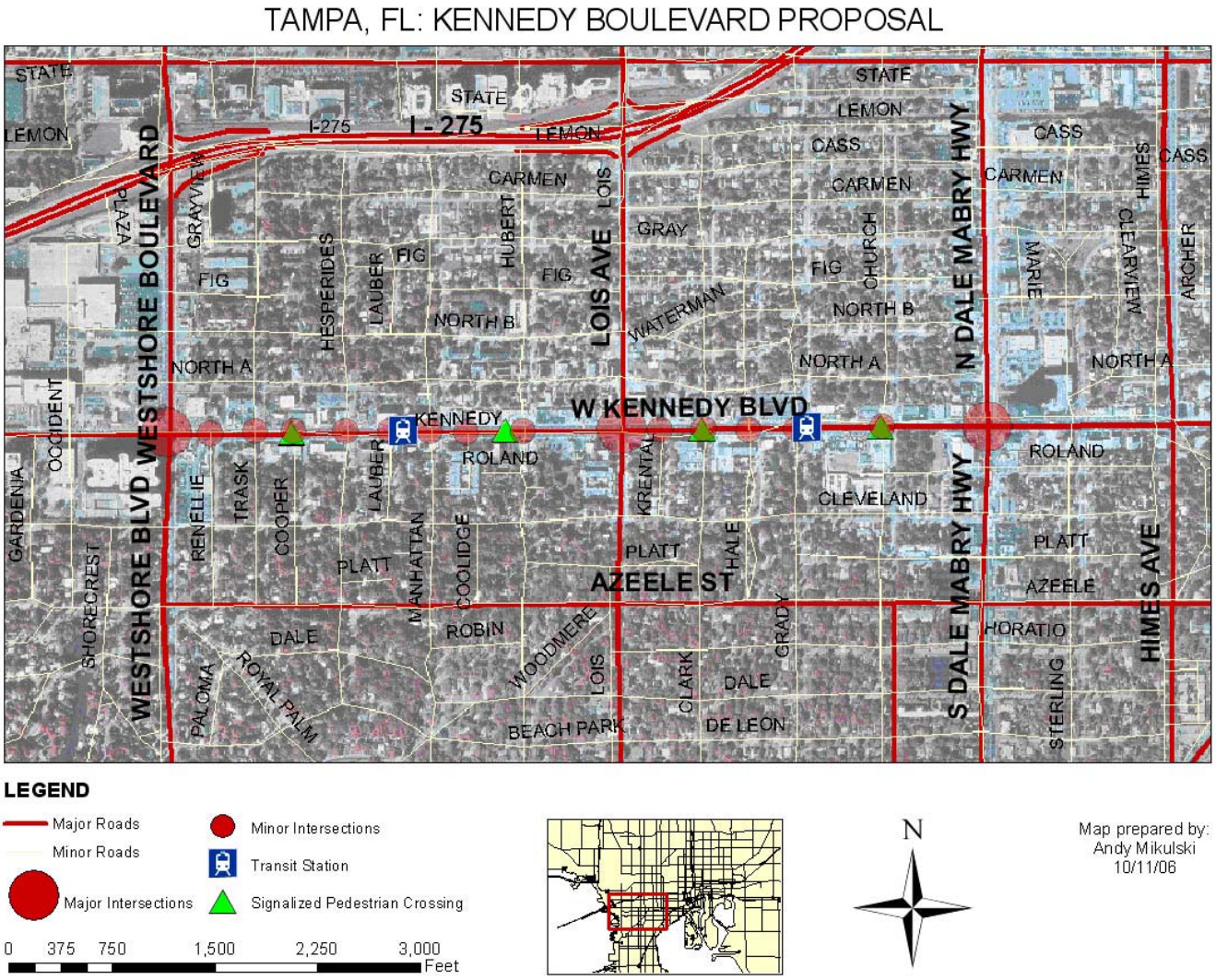


Figure 5-5. Intersection Designations. Traffic on Kennedy Boulevard will be able to turn left or right only at the major intersections.

Figure 5-6. Major Intersection. The redesigned boulevard at the intersections of Dale Mabry Highway, Lois Avenue, and Westshore Boulevard.

Figure 5-7. Hubert Street. Minor road intersection before (top) and after (bottom).

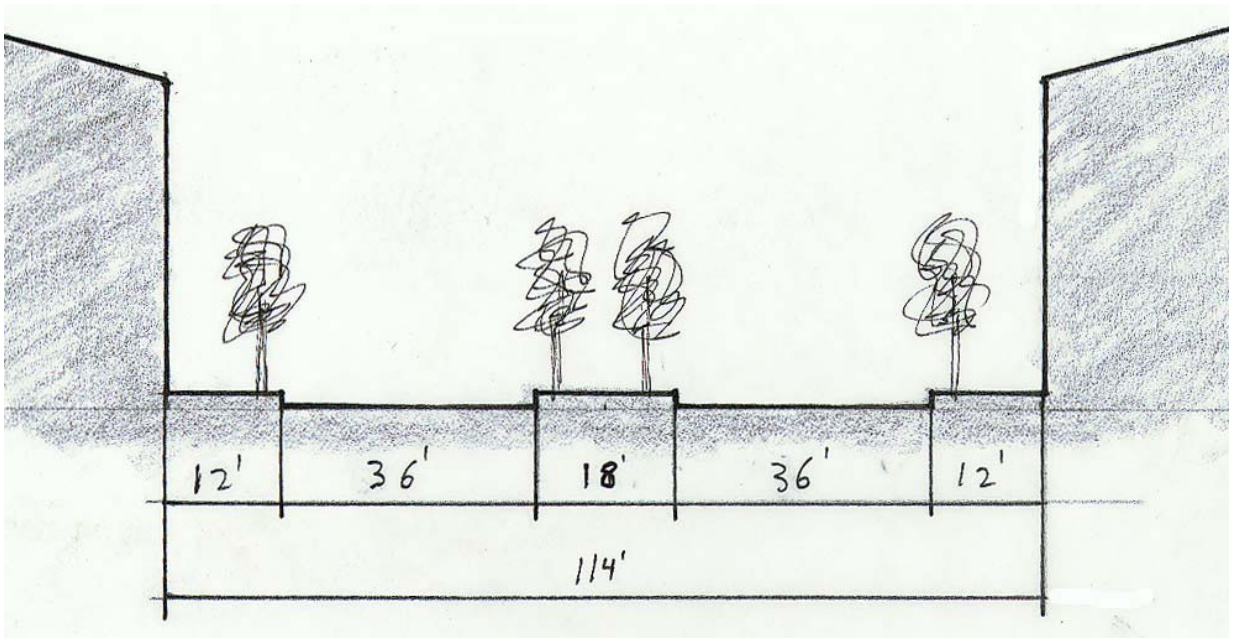


Figure 5-8. Alternative Redesign One. No transit.

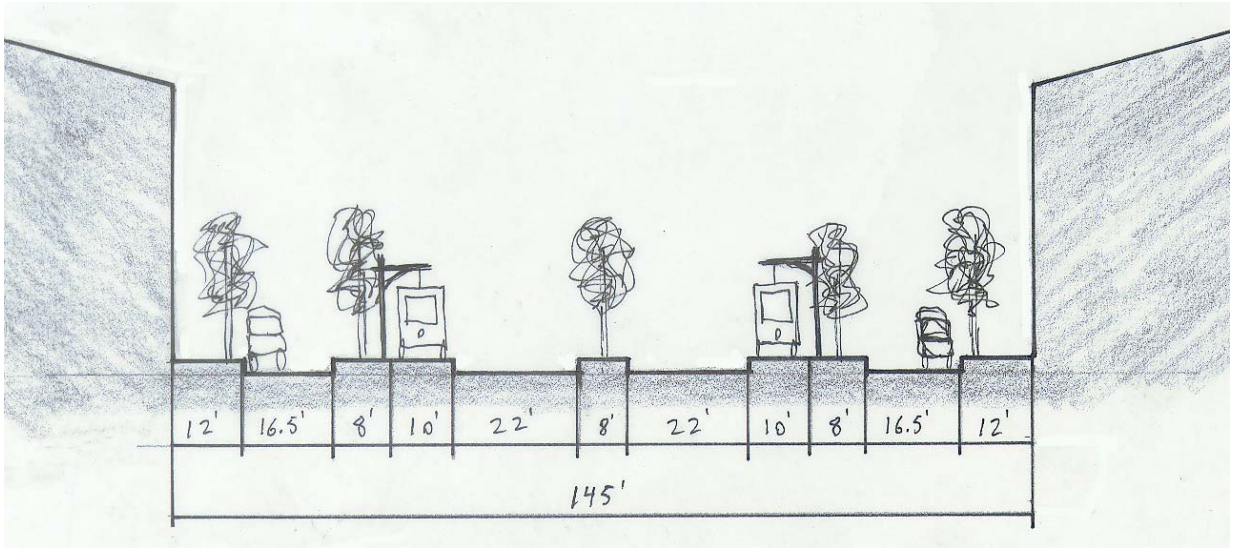


Figure 5-9. Alternative Redesign Two. Transit is moved to outside travel lanes.

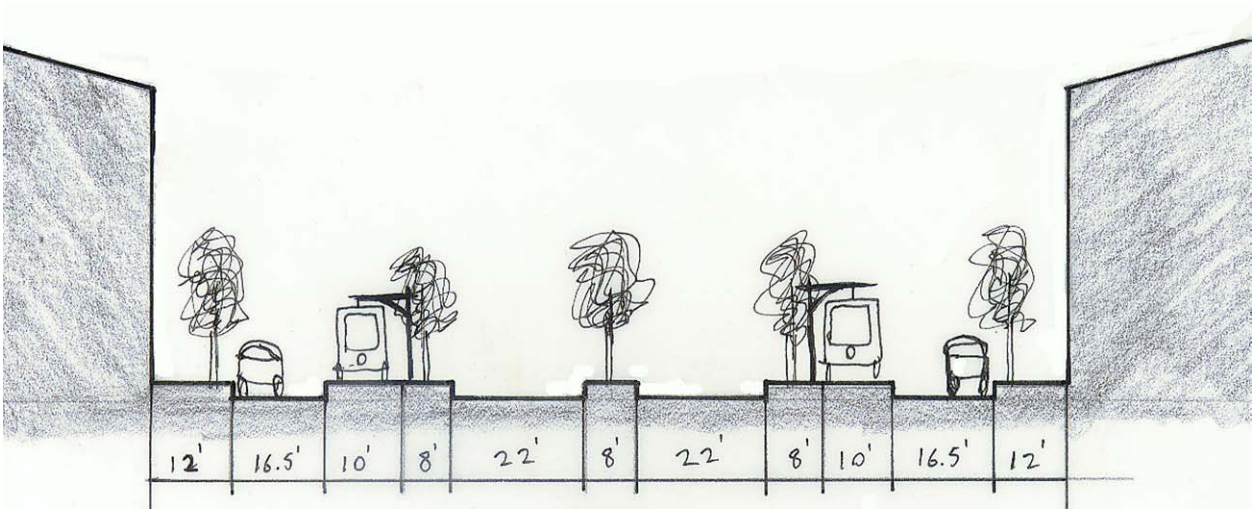


Figure 5-10. Alternative Redesign Three. Transit is located in the pedestrian realm.

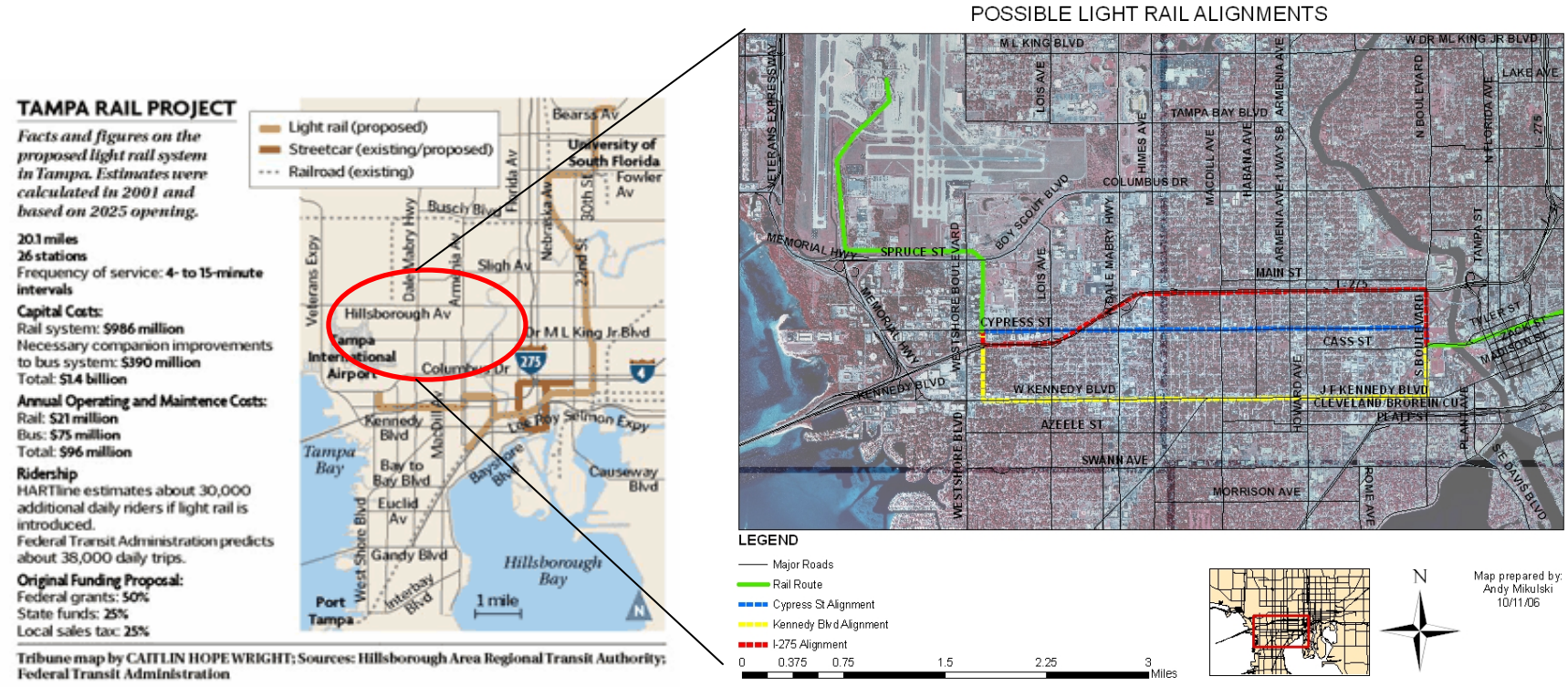


Figure 5-11. The Tampa Rail System and three alternative routes through the study area. Source: The Tampa Tribune.

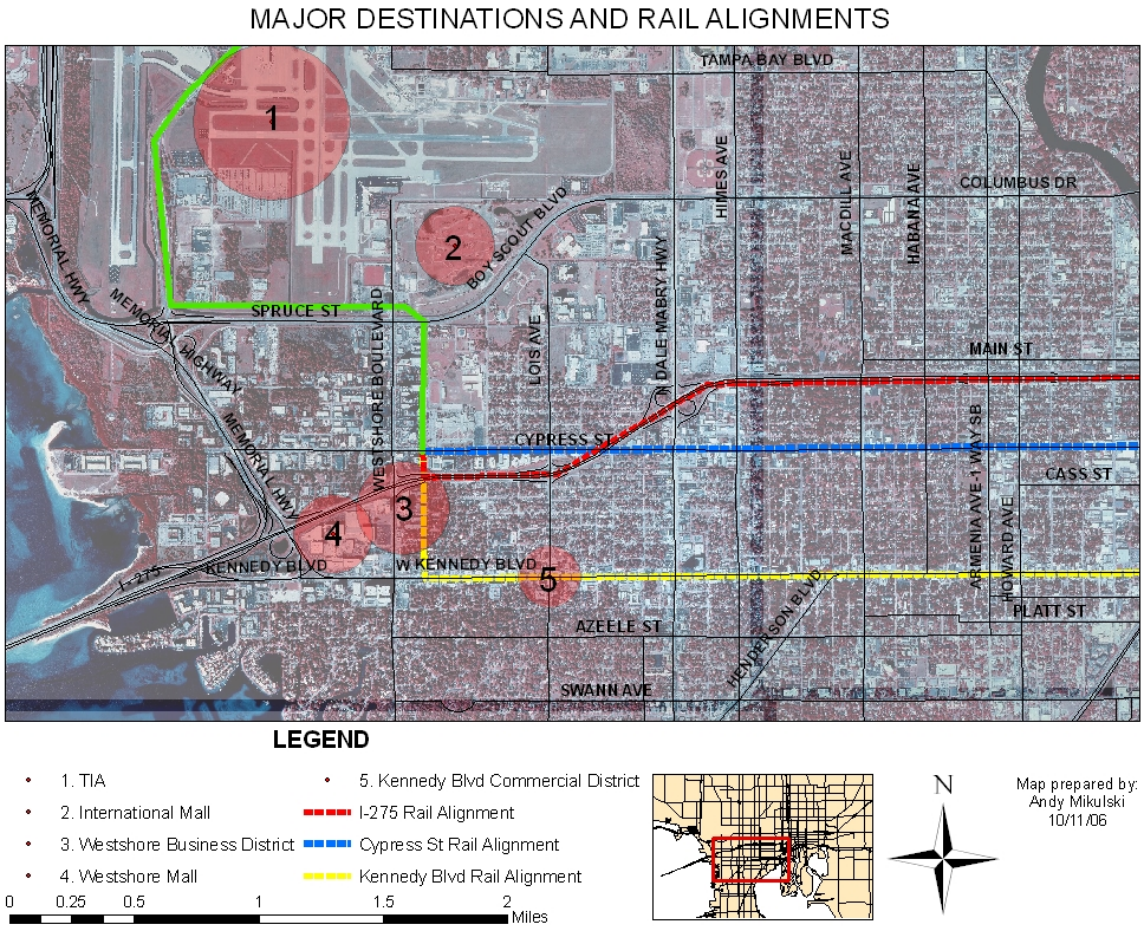


Figure 5-12. Major destinations. The Kennedy Boulevard alignment connects more destinations.

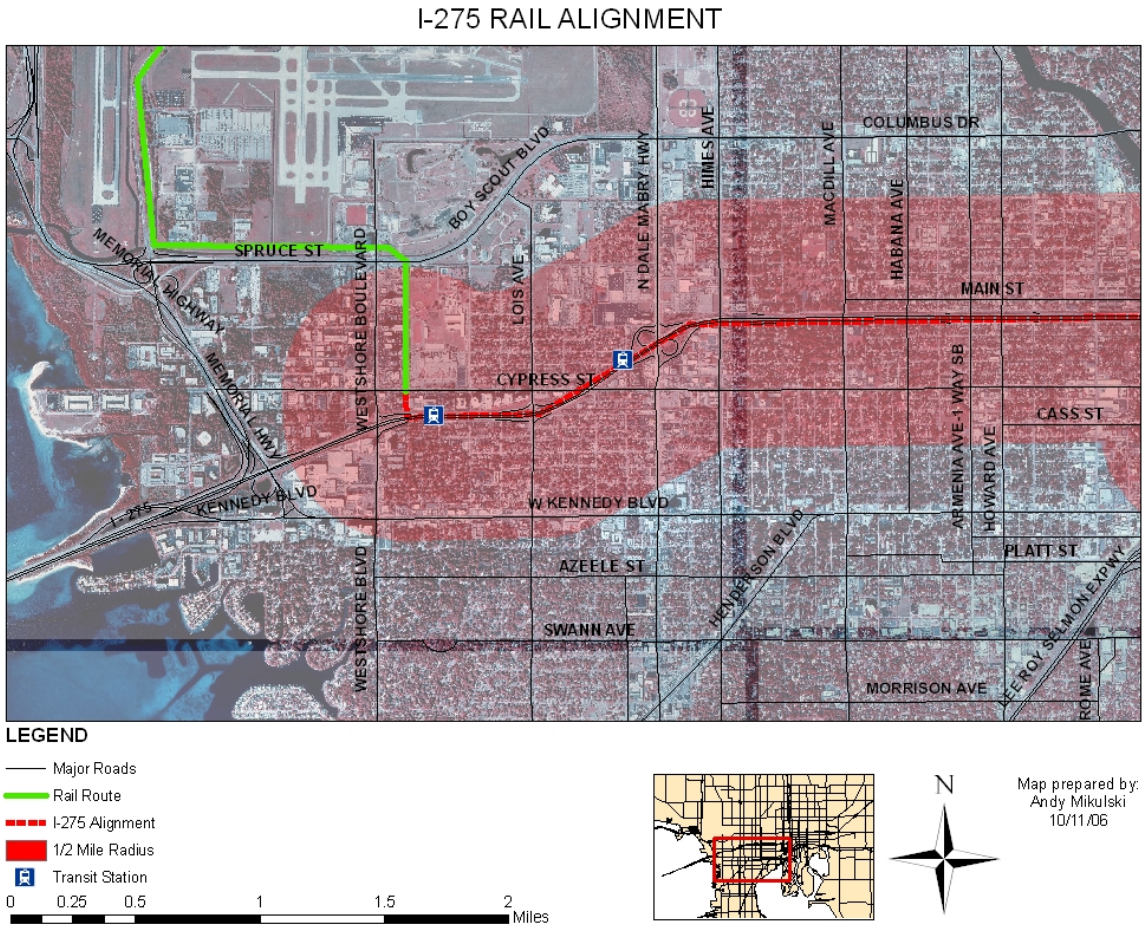


Figure 5-13. I-275 rail alignment and half-mile radius.

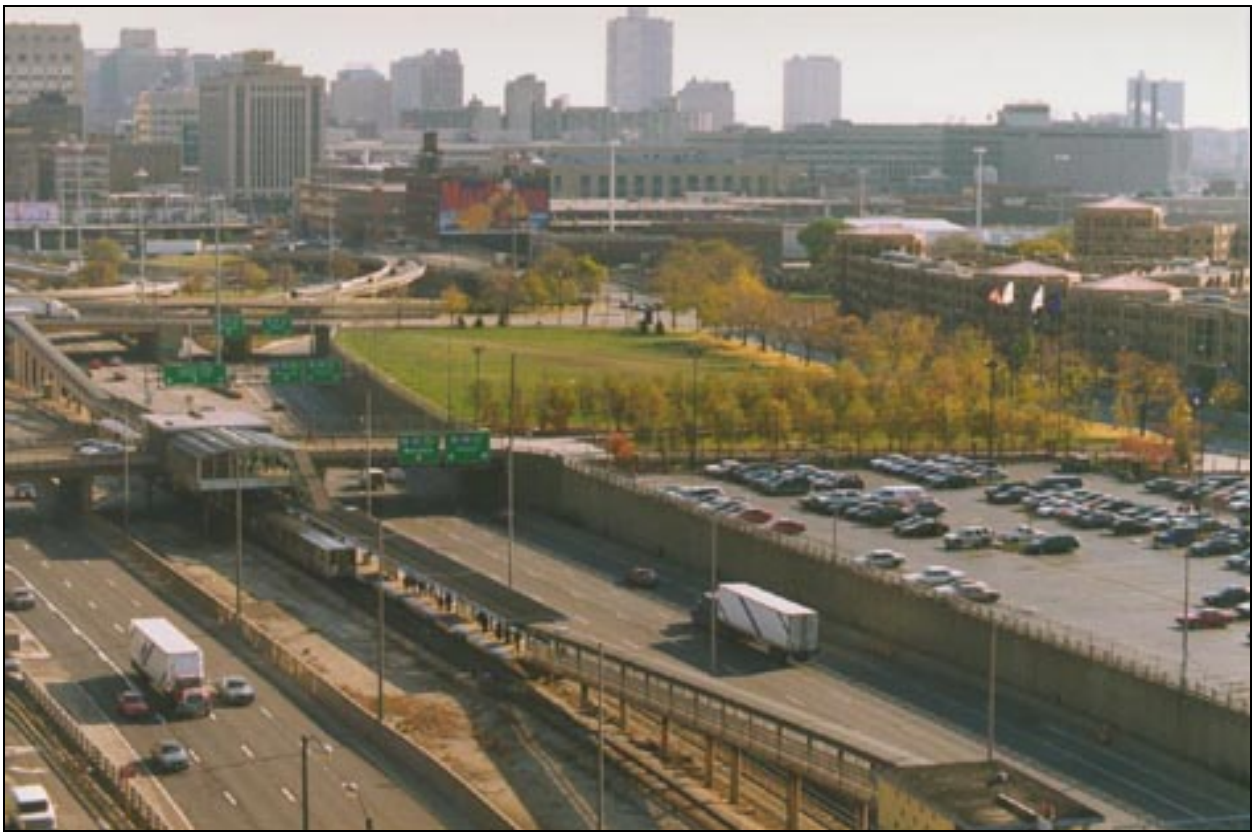


Figure 5-14. Highway median station in Chicago. Source: www.utc.uic.edu.

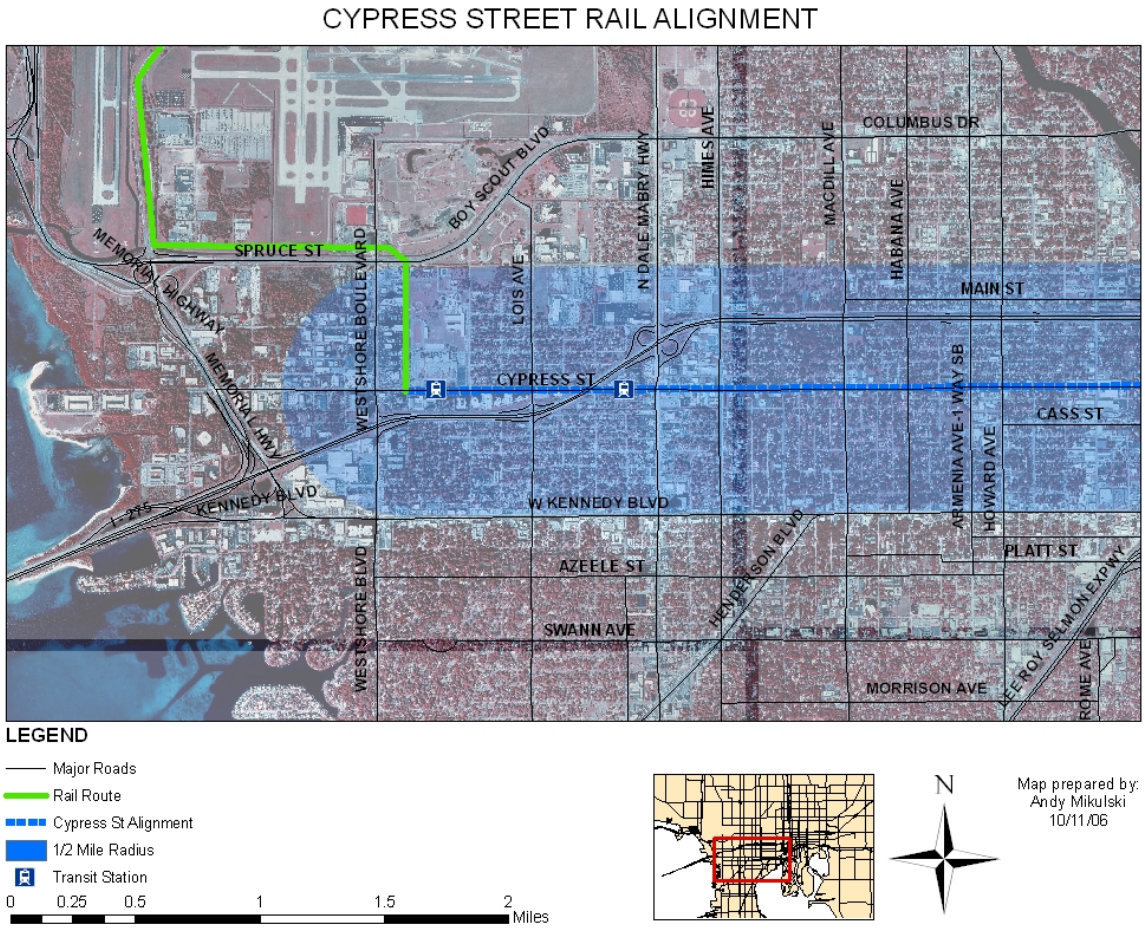


Figure 5-15. Cypress Street rail alignment and half-mile radius.

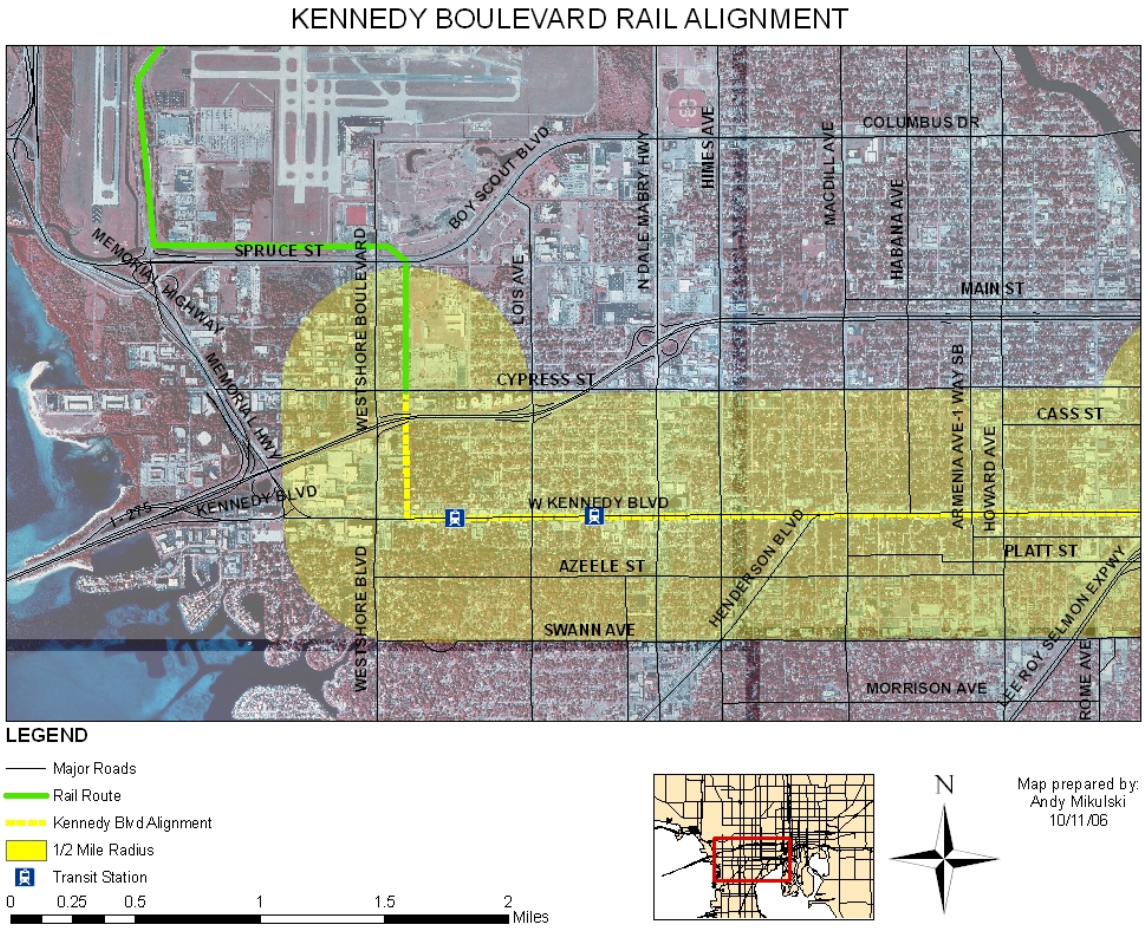


Figure 5-16. Kennedy Boulevard rail alignment and half-mile radius.

CHAPTER 6
DISCUSSION

Implementing the Redesign

Redesigning Kennedy Boulevard as a true multiway boulevard is a radical proposal. Very few multiway boulevards exist in the United States; there has only been one built in the last 80 years. The redesign goes against traffic engineering standards and will no doubt face opposition if an effort is made to implement it. However, based on the safety records of existing boulevards and the successful construction of Octavia Boulevard in San Francisco, there is evidence that multiway boulevards can be made a reality in the modern era.

Obstacles to the Redesign

The potential obstacles to the redesign are large and plentiful. According to an interview with a traffic engineer at Reynolds, Smith, and Hills, the Florida Department of Transportation (FDOT) would oppose the design for several reasons. State Road 60 (FDOT designation of Kennedy Boulevard) is part of the Florida Highway System. The main objective of the state highway system is to move vehicles from one part of the state to another in the easiest, fastest way possible on high capacity, high speed roads. High speed roads do make sense in rural areas, but they are out of place in urban settings. When a state road enters an urban setting, the context of the area must be considered.

The first obstacle would be the removal of traffic and turn lanes (Roarke, 2006) and the reduction of lane width on an already busy road. The travel lanes would be decreased from three lanes to two in each direction- although a new travel lane for local traffic would be built on each side of the roadway. The center medians and turn lanes would be replaced with a light rail line; turn lanes would only be at major intersections. The remaining travel lanes would be reduced from 12 feet to 10 feet. FDOT technically does allow for 10 foot travel lanes, but they would not

approve a project that made travel lanes that narrow (Roarke, 2006). FDOT would be more likely to approve the project if the lanes were narrowed to 11 feet.

Another obstacle would be the access roads and their intersections with the main roadway. The access roads create complex intersections that stand in conflict with design standards that only allow normal four way or "T" intersections. The multiway boulevard design requires trees and street furniture to be placed along the roadway. FDOT prohibits "fixed object hazards" within the designated "clear zone" alongside the roadway which is why state roads lack street trees and street furniture. There is evidence that streets lined with trees and other street furniture may actually be safer because they force the driver to slow down (Dumbaugh, 2005).

The largest obstacle would come from the users of Kennedy Boulevard. The goal of this redesign is to turn Kennedy Boulevard into a destination and bring more people to the area by encouraging and designing for pedestrians and public transit. However, to do this would require using eminent domain to acquire right-of-way from businesses. The right of way would only take land that is currently used for parking; but some business owners would claim the loss of parking spaces would render their business useless and demand compensation for the entire property parcel and building (Roarke, 2006).

Overcoming the Obstacles

Instead of trying to get FDOT approval for the project, the city could take ownership of the road and the State Road 60 designation could be moved to another road in the area, as the city of Delray Beach, Florida did. The city and FDOT exchanged ownership of two roads. The city received Atlantic Avenue (the main road through downtown) and in exchange gave FDOT a pair of one way roads on either side of downtown. This arrangement allowed the city to implement their road narrowing and traffic calming measures that sparked a downtown renaissance. The

city did not have to worry about meeting FDOT standards or gaining waivers through a lengthy review process.

If the city did take ownership of Kennedy Boulevard, an alternative designation for State Road 60 would have to be found. The state highway system must be continuous and the state roads must start and end at another state road. There are three alternative routes for State Road 60: Cypress Street, Columbus Avenue, and I-275 (Figure 6-1).

The I-275 designation is the preferred designation because it would be the easiest to accomplish and cause the least amount of disruption to the city. The travel lane dimensions and shoulders on the interstate meet or exceed FDOT standards for state roads. One disadvantage would be that FDOT would lose a major surface road through the city of Tampa and additional traffic would be put on I-275.

The Cypress Street and Columbus Avenue designations are the least preferred because they would cause the most disruption. Lanes and shoulders on both roads would have to be reconfigured and the new design would ruin the character of the surrounding neighborhoods.

FDOT has much power and control over state roads that run through cities, but the cities themselves are a major influence (Roarke, 2006) on the design and function of state roads that pass through their cities. If the city wanted to implement the redesign, the city would have to take the lead. The head of the city's transportation department would act as the advocate for the city's plans and work with FDOT. FDOT would have to make many exceptions for reducing the number of travel lanes, reducing the lane width, slowing the speed of traffic, building access roads, and placing street trees and street furniture in the clear zones. The review process would take much time and increase the cost of the project.

The complex intersections on multiway boulevards go against today's traffic engineering standards. This does not necessarily make them unsafe; after a short time drivers will learn and adapt to the new intersections. At the intersections, priority is given to traffic in the through-going realm, then to the cross streets, and finally to traffic on the access roads. The intersections can be controlled by stop signs, traffic signals, or a combination of both (Figure 6-2).

There is not enough public right-of-way along Kennedy Boulevard to construct the redesign. There is currently 100 feet; a 144 foot right-of-way is needed to implement the redesign. Purchasing the additional right-of-way would be very costly, and some land owners would object; using eminent domain to obtain the additional 21 feet on each side of the roadway would result in delays and lengthy court battles. Instead of buying the right of way, the city could create a design overlay district or a special zoning district to manage development. Since the additional 21 feet would be used for the access roads and sidewalks, the city could create design guidelines that would ensure the creation of uniform and connecting access roads and sidewalks. The city already has setback requirements and parking lot standards; these can be manipulated to create the side access roads and sidewalks without buying additional right-of-way.

Effects on Traffic

The proposed redesign calls for removing one lane of through-going traffic which will affect the traffic dynamics of Kennedy Boulevard. An access lane on each side of the roadway will alleviate some of the traffic; however, the traffic volume and speed on the access road will be much less than the through-going lane. Traffic projections obtained by the FDOT shows vehicular traffic growing each year. With the removal of the through-going lane and the additional vehicles each year, traffic congestion on Kennedy Boulevard will increase. The removal of roadway capacity on Kennedy Boulevard will disperse traffic on other roads in the

area. The light rail system would absorb some roadway users and mitigate some of the traffic effects. Exactly how many people switch to light rail is unclear, but the faster and more efficient the rail system, the more riders it will attract and therefore lessen the traffic impact on Kennedy Boulevard.

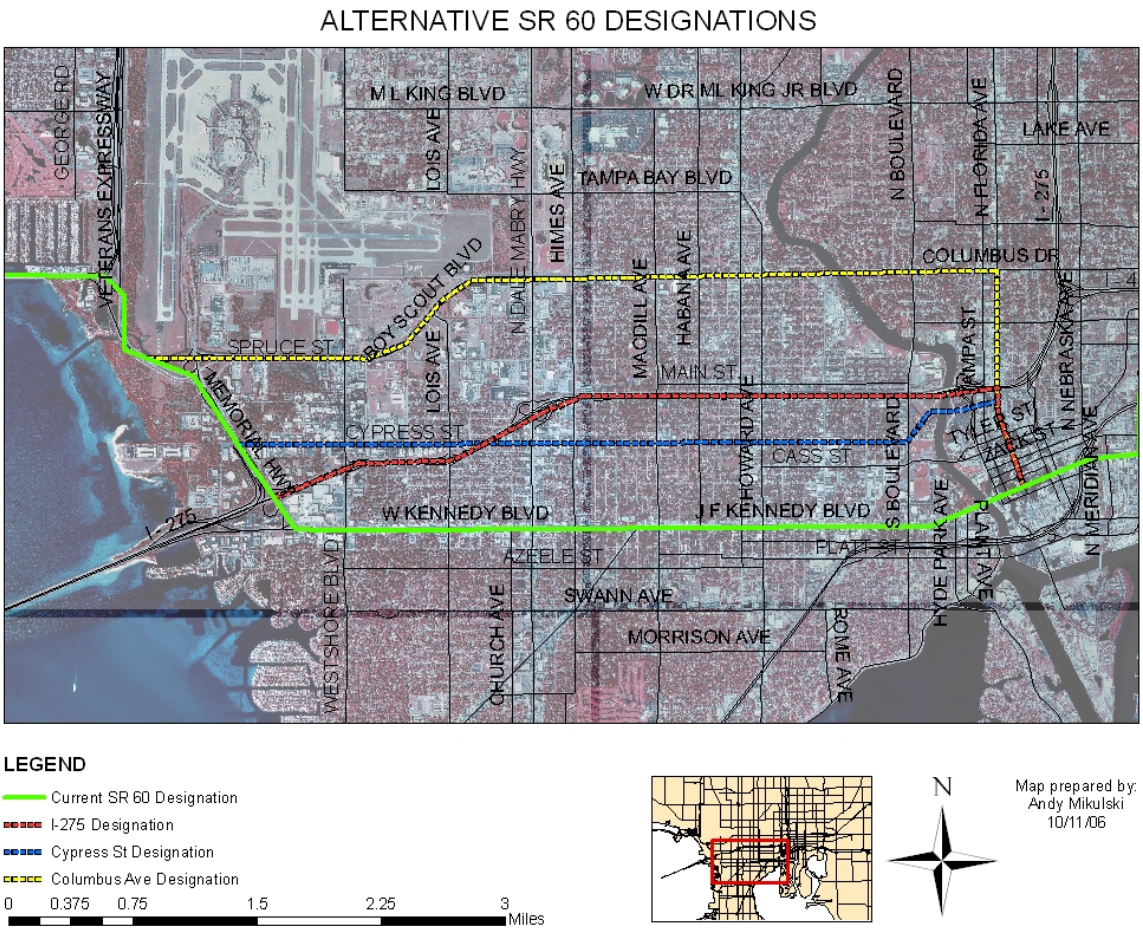


Figure 6-1. Alternative routes for SR 60 designation.

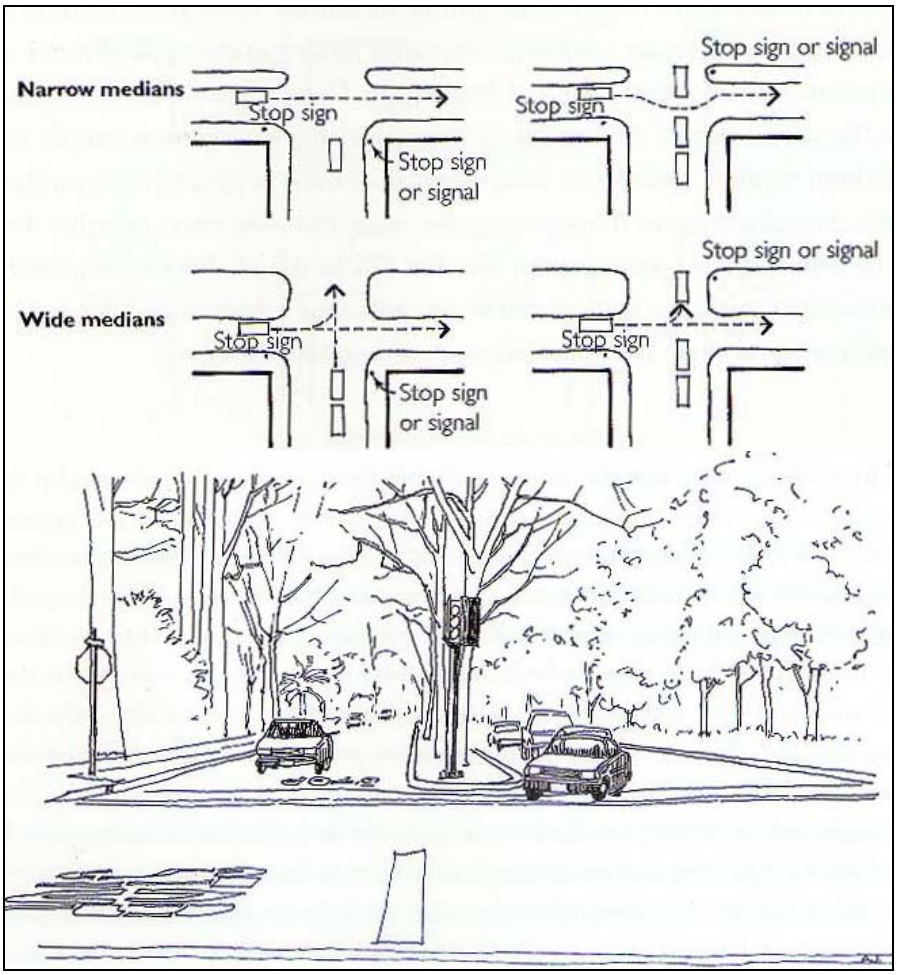


Figure 6-2. Intersection traffic control. Source: Jacobs et al., 2002; 230.

CHAPTER 7
CONCLUSION

An urban arterial can be transformed into a multiway boulevard. The construction of Octavia Boulevard in San Francisco is an example of how a multiway boulevard can be built in the contemporary environment. The boulevard was built after years of debate between the city, neighborhood activists, and the California Department of Transportation. Octavia Boulevard is less than a year old, so economic and social effects are not yet clear. However, area residents are very pleased with the reconstruction and over 2,000 new residential and commercial units are planned along the new four-block boulevard.

The questionnaire results clearly show that Tampa residents are dissatisfied with the current aesthetic condition of Kennedy Boulevard. The cases of Clematis Street in West Palm Beach and Atlantic Avenue in Delray Beach prove that traffic calming and pedestrian enhancements can revitalize an area both aesthetically and economically. In Delray Beach, the revitalization of Atlantic Avenue has spilled over an area several blocks on both sides of the road.

The redesign would eliminate a travel lane in each direction and the center median and turn lane would be replaced by a light rail system. There would be eight-foot wide medians on each side of the central roadway to separate the through-going realm from the pedestrian realm. The pedestrian realm would be made up of an access road and a lane for parallel parking; the access road would accommodate slow, local traffic as well as pedestrian and bicycle traffic. Sidewalks would be widened to 12 feet and new buildings would be required to front the sidewalk. A multiway boulevard is the best solution to improve the aesthetics and pedestrian realm of Kennedy Boulevard while still accommodating large amounts of automobile traffic.

The removal of a traffic lane in each direction would impact traffic; how much is unclear. Ideally, the addition of the light rail system would make up for this loss of a lane, but it is unknown if the rail system would gain a significant share of "choice riders" (those who have a car but opt for transit).

Recommendations for Future Research

Recommendations for future research are an analysis of the contextual area; traffic impacts of the redesign; and building typology and density. The redesign of Kennedy Boulevard is a radical change from the existing situation and would affect the surrounding areas. Surrounding building typology and architecture should be considered when designing buildings along Kennedy Boulevard to create a link between the boulevard and the side streets. As the area becomes denser and more commercialized, land values would presumably rise so an analysis of the area is needed to understand how the surrounding neighborhood would be impacted. Research should be conducted to determine the ideal residential and commercial density needed along Kennedy Boulevard to support the light rail line.

APPENDIX A
QUESTIONNAIRE

Informed Consent

Protocol Title: The Design Elements Needed to Create Pedestrian-Friendly Environment

Please read this consent document carefully before you decide to participate in this study.

Purpose of the research study:

The purpose of this study is to identify what elements people desire in a pedestrian-oriented environment.

What you will be asked to do in the study:

You will be asked various questions about Kennedy Boulevard in Tampa, Florida.

Time required:

5 minutes

Risks and Benefits:

There are no risks associated with this survey. We do not anticipate that you will benefit directly by participating in this survey.

Compensation:

There is no compensation for participation in this survey.

Confidentiality:

Your identity will be kept confidential to the extent provided by law. Your responses will remain anonymous.

Voluntary participation:

Your participation in this study is completely voluntary. There is no penalty for not participating.

Right to withdraw from the study:

You have the right to withdraw from the study at anytime without consequence.

Whom to contact if you have questions about the study:

Andy Mikulski, Graduate Student, Department of Urban and Regional Planning, 431 ARCH Building, Gainesville, FL 32611, (352)-392-3261, amikul3@ufl.edu

Whom to contact about your rights as a research participant in the study:

UFIRB Office, Box 112250, University of Florida, Gainesville, FL 32611-2250; ph 392-0433.

Agreement:

I have read the procedure described above. I voluntarily agree to participate in the procedure and I have received a copy of this description.

Participant: _____ Date: _____

Principal Investigator: _____ Date: _____

1. How often do you come to Kennedy Boulevard?

    4-5 days a week
    2-3 days a week
    Once a week
    Less than once a week

2. Why do you usually come to Kennedy Boulevard? (Circle all that apply.)

    Use shops/services
    Dining
    Visit friends
    Walk/stroll
    Use the bus
    Work
    Live along Kennedy Boulevard
    Pass through on the way to another destination

3. How do you usually get to Kennedy Boulevard? (Choose one.)

    On foot
    Bicycle
    Bus
    Car
    Other

4. Degree of satisfaction of Kennedy Boulevard:

    On a scale of 1 (Very Satisfied) to 5 (Very Dissatisfied), rate your satisfaction of different elements on Kennedy Boulevard.

	Very Satisfied	Somewhat Satisfied	Neither Satisfied Nor Dissatisfied	Somewhat Dissatisfied	Very Dissatisfied
Safety (crime)	1	2	3	4	5

	Very Satisfied	Somewhat Satisfied	Neither Satisfied Nor Dissatisfied	Somewhat Dissatisfied	Very Dissatisfied
Aesthetic/ appearance	1	2	3	4	5
Landscaping	1	2	3	4	5
Retail shops	1	2	3	4	5
Bus service	1	2	3	4	5
Open space/ parks	1	2	3	4	5
Parking availability	1	2	3	4	5
Community services	1	2	3	4	5
Ability to walk/bike	1	2	3	4	5

5. What are the three biggest problems along Kennedy Boulevard? (Please number your answers; 1 being the biggest problem.)

_____ Traffic
_____ Appearance (ugly buildings/lack of landscaping)
_____ Crime
_____ Inconvenient (lack of transit/parking)
_____ Other

6. What five changes would you like to see along Kennedy Boulevard? (Please number your answers; 1 being the most important.)

_____ Safer
_____ Better aesthetics (landscaping, street furniture)
_____ Cleaner
_____ More shops/services
_____ More community feeling
_____ Wider sidewalks
_____ Bicycle lanes
_____ Less traffic
_____ Better transit (light rail/streetcar line)
_____ Different mix of uses
_____ More housing
_____ Parks/playgrounds

_____ Other

7. What kinds of shops and services would you like to see along Kennedy Boulevard? (Please number your top five answers; 1 being the most important.)

_____ Neighborhood retail
_____ Food market
_____ Restaurants/cafes
_____ Theaters
_____ Department stores
_____ Hardware store
_____ Recreation
_____ Community services
_____ Discount stores
_____ Bookstore
_____ Other

8. How often do you use public transportation?

Every day
4-5 days a week
2-3 days a week
One day a week
Never

9. Do you use public transit to:

	YES	NO
Go to work	____	____
Go shopping	____	____
Visit friends	____	____
Attend sporting events/leisure activities	____	____

10. Why do you drive instead of using public transportation? (Please number your top three answers, 1 being the most important)

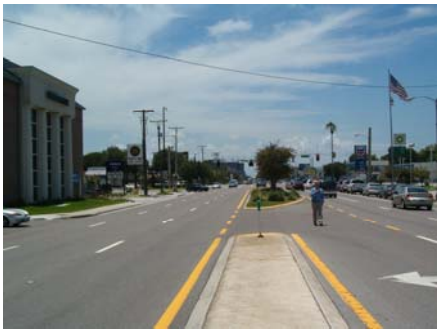
_____ Stigma of public transportation
_____ Public transportation fares are too high
_____ Public transportation is unreliable
_____ Public transportation is not convenient to my home, work, and shopping
_____ Public transportation takes too long

11. What three things would make you use public transportation along Kennedy Boulevard? (Please number your answers, 1 being the most important.)

_____ More frequent

_____ More stops
_____ Faster service
_____ Convenient to home, work, and shopping
_____ Cheaper fares
_____ Cleaner air
_____ Cost of driving increases
_____ Addition of light rail or streetcar service

APPENDIX B
VISUAL INVENTORY OF KENNEDY BOULEVARD



APPENDIX C
PHOTOSIMULATIONS

Figure C-1. Minor road intersection before (top) and after (bottom).

Figure C-2. Parking and Pedestrian realm. Grady Avenue before (top) and after (bottom).

APPENDIX D
TRAFFIC COUNTS AND PROJECTIONS

Print Date: June 30, 2006

Florida Department of Transportation
Transportation Statistics Office
Annual Vehicle Classification Report
Count Year 2004

County: 10 - HILLSBOROUGH

Site:	Roadway ID:	MilePoint:	AADT	Description:
5141	10270000	1.63	41,000	SR 60/KENNEDY BLVD, EAST OF WESTSHORE BLVD.

Func. Class: 14 - Urban Other Principal Arterial

Survey Type: P - PORTABLE **Duration(In Days):** 2

			Annual Average Daily Volume	Percentage
Class	01	MOTORCYCLES	148	0
Class	02	CARS	36,314	89
Class	03	PICK-UPS AND VANS	3,657	9
Class	04	BUSES	98	0
Class	05	2-AXLE, SINGLE UNIT TRUCKS	439	1
Class	06	3-AXLE, SINGLE UNIT TRUCKS	127	0
Class	07	4-AXLE, SINGLE UNIT TRUCKS	29	0
Class	08	2-AXL TRCTR W/ 1 OR 2-AXL TRLR, 3-AXL TRCTR W/ 1-A	86	0
Class	09	3-AXLE TRACTOR W/ 2-AXLE TRLR	70	0
Class	10	3-AXLE TRACTOR W/ 3-AXLE TRLR	8	0
Class	11	5-AXLE MULTI-TRLR	0	0
Class	12	6-AXLE MULTI-TRLR	0	0
Class	13	ANY 7 OR MORE AXLE	21	0
Class	14	NOT USED	0	0
Class	15	OTHER	0	0
			41,000	100

Summary Daily Statistics

Daily			Design Hour		
24T&B	=	2.15	DHT	=	1.07
24T	=	1.90			
24H	=	0.83	DH3	=	0.42
24M	=	1.31	DH2	=	0.66

Classes: Passenger Vehicles 01-03, Truck and Busses 04-13, Trucks 05-13, Medium Trucks 04-05, Heavy Trucks 06-13

* The Totals for Volume and Percentage are rounded.

Page: 1

Print Date: June 30, 2006

Florida Department of Transportation
Transportation Statistics Office
Annual Vehicle Classification Report
Count Year 2004

County: 10 - HILLSBOROUGH

Site:	Roadway ID:	MilePoint:	AADT	Description:
5139	10270000	2.75	29,500	SR 60/KENNEDY BLVD,E OF SR600/US92/DALE MABRY BLVD

Func. Class: 14 - Urban Other Principal Arterial

Survey Type: P - PORTABLE **Duration(In Days):** 2

			Annual Average Daily Volume	Percentage
Class	01	MOTORCYCLES	89	0
Class	02	CARS	23,638	80
Class	03	PICK-UPS AND VANS	4,269	14
Class	04	BUSES	189	1
Class	05	2-AXLE, SINGLE UNIT TRUCKS	593	2
Class	06	3-AXLE, SINGLE UNIT TRUCKS	83	0
Class	07	4-AXLE, SINGLE UNIT TRUCKS	41	0
Class	08	2-AXL TRCTR W/ 1 OR 2-AXL TRLR, 3-AXL TRCTR W/ 1-A	127	0
Class	09	3-AXLE TRACTOR W/ 2-AXLE TRLR	121	0
Class	10	3-AXLE TRACTOR W/ 3-AXLE TRLR	80	0
Class	11	5-AXLE MULTI-TRLR	0	0
Class	12	6-AXLE MULTI-TRLR	0	0
Class	13	ANY 7 OR MORE AXLE	50	0
Class	14	NOT USED	0	0
Class	15	OTHER	218	1
			29,500	100

Summary Daily Statistics

Daily			Design Hour		
24T&B	=	4.36	DHT	=	2.18
24T	=	3.72			
24H	=	1.71	DH3	=	0.85
24M	=	2.65	DH2	=	1.33

Classes: Passenger Vehicles 01-03, Truck and Busses 04-13, Trucks 05-13, Medium Trucks 04-05, Heavy Trucks 06-13

* The Totals for Volume and Percentage are rounded.

Page: 1

Print Date: June 30, 2006

Florida Department of Transportation
Transportation Statistics Office

2004 AADT Forecast

COUNTY: 10 -- HILLSBOROUGH

SITE	DESCRIPTION	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
5139	SR 60/KENNEDY BLVD,E OF SR600/US92/DALE MABRY BI	29,900	30,200	30,600	30,900	31,300	31,600	32,000	32,300	32,700	33,000

This report estimates the future AADT for a site based upon that site's historical AADT. These estimates should only be used as a first guess; more detailed analysis is required for planning purposes.

Future year AADT estimates are straight-line projections between 1991-1993 average and the 2001-2003 average. Future AADT estimates will only be projected for a time period commensurate with the amount of history available. This means, for example, if there is only 5 years of history available at a site, the AADT will only be projected for 3 years.

Projected AADT estimates are rounded to the nearest thousand vehicles.

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BIOGRAPHICAL SKETCH

Andrzej (Andy) Mikulski was born on March 8, 1982 in Chicago, Illinois. He and his family moved to Florida in 1993 to escape the harsh Chicago winters. He graduated high school in 2000 and entered the University of Florida. Andy majored in Political Science and also enrolled in Army ROTC. He graduated with a B.A. in Political Science and was commissioned as a Second Lieutenant in 2004. He stayed in Gainesville to pursue a Masters Degree in Urban and Regional Planning. Andy believes that planners and policymakers have a responsibility to the public to provide well-designed communities. Before joining the planning and design field, he will follow another one of his passions and serve in the United States Army. Andy enjoys running, biking, all kinds of sports, taking the back roads, outdoor adventures, and cooking.