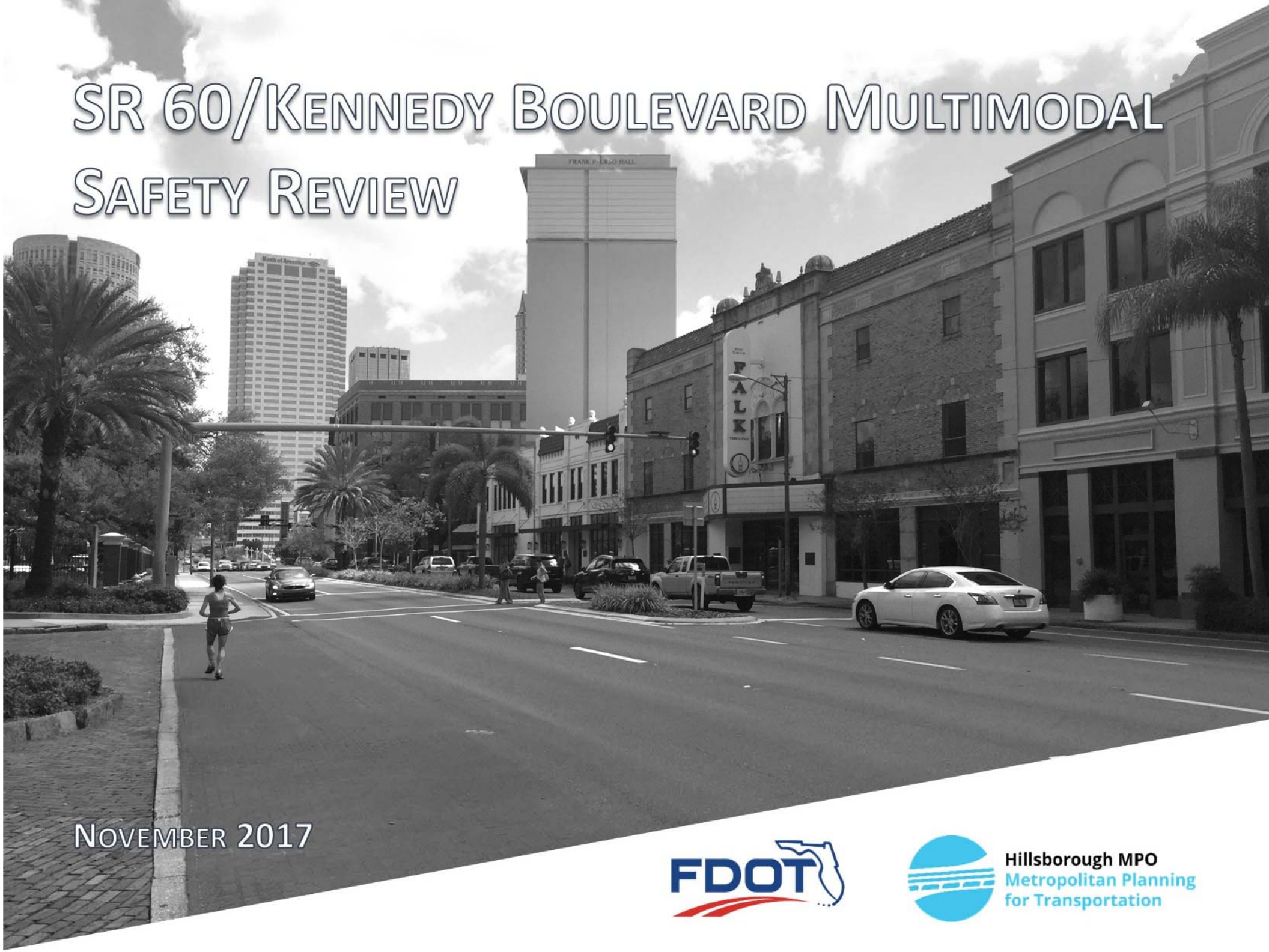
SR 60/Kennedy Boulevard Multimodal Safety Review



November 2017

FDOT

Hillsborough MPO
Metropolitan Planning
for Transportation

SR 60/Kennedy Boulevard Multimodal Safety Review

November 2017

Completed as a Collaborative Effort For:

Florida Department of Transportation, District Seven
11201 North Malcom McKinley Drive
Tampa, FL 33612
Contract Number: C-9o45
FM Number: 254553-1-32-94
Task Authorization: #27

Hillsborough County Metropolitan Planning Organization
601 East Kennedy Boulevard, 18th Floor
Tampa, FL 33601
Task Authorization: TOA – 03

Prepared By:

Tindale Oliver
1000 North Ashley Drive, Suite 400
Tampa, FL 33602

Table of Contents

Introduction 1
Study Area 1
Background Data 2
Access Management Safety Study 2
Study Recommendations 2
Existing Conditions 3
Number of Travel Lanes 3
Typical Cross-Sections 3
Traffic Volumes 3
Signalized Intersections and Crossing Opportunities 4
Transit Service 6
Block Density 6
Existing Land Use 8
Crash History 9
Roadway Lighting 12
Driveways 12
Signage 13
Existing Overlay Districts 14
Recent and Planned Roadway Projects 16
Multimodal Safety Review 18
Systemic Strategies 18
Roadway Lighting 18

Crosswalk Enhancement 19
Driveway Design and Frequency 19
Enhancing the Pedestrian Environment 20
Enhancing the Bicycling Environment 20
Speed Management Strategies 26
Signal Timing and Spacing 26
Site-Specific Strategies 27
Kennedy Boulevard from Westshore Boulevard to Manhattan Avenue 28
Kennedy Boulevard from Manhattan Avenue to Hale Avenue 30
Kennedy Boulevard from Hale Avenue to Sterling Avenue 32
Kennedy Boulevard from Sterling Avenue to Bradford Avenue 34
Kennedy Boulevard from Bradford Avenue to Habana Avenue 36
Kennedy Boulevard from Habana Avenue to Westland Avenue 38
Kennedy Boulevard from Westland Avenue to Oregon Avenue 40
Kennedy Boulevard from Oregon Avenue to Fielding Avenue 42
Kennedy Boulevard from Fielding Avenue to Hillsborough River 44
Feasibility Review and Cost Estimates 46
Feasibility Review 46
Cost Estimates 46
Future Considerations 47

Appendices

Appendix A: Kennedy Boulevard Access Management Safety Study Recommendations Summary

Appendix B: Kennedy Boulevard Typical Cross Sections

Appendix C: Kennedy Boulevard Daily Traffic Count Data

Appendix D: Kennedy Boulevard Existing Intersection Lighting Layout

Appendix E: Kennedy Boulevard Site Specific Enhancements Feasibility Review and Cost Estimates

List of Tables

Table 1: Annual Average Daily Traffic Volumes (2016) 3

Table 2: Kennedy Boulevard, Westshore Boulevard to Manhattan Avenue Site-Specific Strategies 29

Table 3: Kennedy Boulevard, Manhattan Avenue to Hale Avenue Site-Specific Strategies 31

Table 4: Kennedy Boulevard, Hale Avenue to Sterling Avenue Site-Specific Strategies 33

Table 5: Kennedy Boulevard, Sterling Avenue to Bradford Avenue Site-Specific Strategies 35

Table 6: Kennedy Boulevard, Bradford Avenue to Habana Avenue Site-Specific Strategies 37

Table 7: Kennedy Boulevard, Habana Avenue to Westland Avenue Site-Specific Strategies 39

Table 8: Kennedy Boulevard, Westland Avenue to Oregon Avenue Site-Specific Strategies 41

Table 9: Kennedy Boulevard, Oregon Avenue to Fielding Avenue Site-Specific Strategies 43

Table 10: Kennedy Boulevard, Fielding Avenue to Hillsborough River Site-Specific Strategies 45

List of Figures

Figure 1: Kennedy Boulevard Study Area 1
Figure 2: Annual Average Daily Traffic Volumes (2016) 5
Figure 3: Existing and Planned Crossing Opportunities 5
Figure 4: Transit Service and Stop Ridership 7
Figure 5: Blocks per Square Mile 7
Figure 6: Existing Land Use 8
Figure 7: Annual Distribution of Total Crashes 9
Figure 8: Annual Distribution of Severe Injury Crashes 9
Figure 9: Annual Distribution of Pedestrian and Bicycle Crashes 10
Figure 10: Annual Distribution of Angle and Left-Turn Crashes 10
Figure 11: Total Crashes by Intersection 10
Figure 12: Severe Injury Crashes 11
Figure 13: Pedestrian and Bicycle Crashes 11
Figure 14: Angle and Left-Turn Crashes 12
Figure 15: Existing Driveway Locations 13
Figure 16: Existing Overlay Districts 14
Figure 17: Recently-Completed and Planned Resurfacing Projects 16
Figure 18: Typical Urban Signalized Intersection Lighting Design (PPM Figure 7.3.4/Draft FDM Figure 231.3.4) 18
Figure 19: Four Types of Cyclists 21
Figure 20: “Interested but Concerned” Group Level of Comfort on Different Bicycle Facilities 22
Figure 21: R4-11 “Bicycles May Use Full Lane” Sign 23

Figure 22: W11-1+W16-1P Bicycle Image plus "Share the Road" Signs 23
Figure 23: Example of Signage for Bicyclists on Sidewalks 23
Figure 24: Potential East-West Bicycle Network Connections 25
Figure 25: #4 and #5, Kennedy Blvd at Westshore Blvd 28
Figure 26: #3, Existing R10-15 Sign, Westshore Blvd at Kennedy Blvd 28
Figure 27: #15, Kennedy Blvd at Lois Ave Concept 30
Figure 28: Kennedy Blvd at Lois Ave, Looking West 30
Figure 29: #17, Kennedy Blvd at Grady Ave Concept 32
Figure 30: #23, Kennedy Blvd at Dale Mabry Hwy Concept 32
Figure 31: Kennedy Blvd at Himes Ave, Looking East 34
Figure 32: Kennedy Blvd at Beverly Ave, Looking North 34
Figure 33: #30, Kennedy Blvd at Henderson Blvd Concept 36
Figure 34: Existing Mid-Block Crossing, Kennedy Blvd between Gomez Ave and Bungalow Park Ave, Looking Southeast 36
Figure 35: #41, Kennedy Blvd at Armenia Ave Concept 38
Figure 36: #45, Kennedy Blvd at Howard Ave Concept 38
Figure 37: Kennedy Blvd at Albany Ave, Looking South 40
Figure 38: Kennedy Blvd east of Rome Ave, Looking West 40
Figure 39: Kennedy Blvd at Fielding Ave, Looking East 42
Figure 40: Missing Pedestrian Signal, Kennedy Blvd at Willow Ave, Looking East 42
Figure 41: #67, Kennedy Blvd at Grand Central Ave Concept 44
Figure 42: Kennedy Blvd at UT Poe Pkwy, Looking West 44
Figure 43: Hourly Directional Traffic Volumes, Kennedy Blvd East of Westshore Blvd 47
Figure 44: Hourly Directional Traffic Volumes, Kennedy Blvd West of Dale Mabry Highway 47

Introduction

The SR 60/Kennedy Boulevard Multimodal Safety Review was conducted as a joint effort between the Florida Department of Transportation (FDOT) District Seven and the Hillsborough Metropolitan Planning Organization (MPO) to augment the recently-completed Kennedy Boulevard Access Management Study. This review effort was intended to identify opportunities to implement design and operation best practices to improve pedestrian and bicycle safety and comfort along Kennedy Boulevard. To accomplish this goal, the review incorporated tools that are consistent with both the Federal Highway Administration's (FHWA) Pedestrian Safety Design Best Practices and FDOT's emerging guidance on implementing Complete Streets. Although pedestrian and bicycle improvements are the primary focus of this review, the ultimate goal is to improve the safety, comfort, and livability of all roadway users along the Kennedy Boulevard corridor. As stated in FDOT's *Draft Complete Streets Handbook*:

> *"A transportation system based on Complete Streets principles can help to promote safety, quality of life, and economic development."*

Study Area

The study area for the Kennedy Boulevard Multimodal Safety Review runs approximately 3.8 miles along Kennedy Boulevard from Westshore Boulevard to the Hillsborough River. Often referred to as the "gateway" to Tampa, the study corridor connects the Westshore business district to downtown and serves as one of Tampa's primary commercial corridors. Along the eastern end of the corridor is the University of Tampa, which has an enrollment of more than 8,000 students. The review primarily focused on Kennedy Boulevard but looked at opportunities to enhance the pedestrian and bicycle environment north and south of Kennedy Boulevard. Figure 1 shows the study corridor extent and the general study area.

Figure 1: Kennedy Boulevard Study Area

Background Data

This section provides an overview of mobility data, information, and a summary of existing conditions along the Kennedy Boulevard corridor, as well as highlights from the recently completed SR 60 Access Management Safety Study.

Access Management Safety Study

This multimodal safety review is intended to complement the Kennedy Boulevard Access Management Safety Study, which covered Kennedy Boulevard from Westshore Boulevard to Brevard Avenue and evaluated 51 median openings that include 11 signalized intersections, 38 full median openings, and 2 directional median openings. The goal of the study was to reduce collisions at median openings, especially right-angle and left-turn collisions which resulted in fatalities and serious injuries. The stated objectives of study included the following:

- Enhance access management along the corridor to reduce conflicts and right-angle/left-turn collisions at unsignalized median opening locations.
- Seek opportunities to enhance safety and operations for pedestrians, bicyclists, and motorists traveling the corridor.
- Improve traffic operations along the corridor through the implementation of recommended access management improvements.

Study Recommendations

The Access Management Safety Study developed recommended actions for each of the 51 median openings along the corridor. Of the 51 median openings, 43 (84%) were recommended as candidates for median opening modifications, including:

- Extension or construction of left-turn storage lane (20 median openings)
- Conversion of full median openings to directional median openings (8 median openings)
- Closure of median openings (14 median openings)
- Installation of new traffic signal (1 median opening, Rome Avenue)

Included with these recommendations was a list of pedestrian and bicycle recommendations designed to provide increase safety and connectivity throughout the corridor, some of which are listed below. Appendix A of this document includes a copy of the recommendation pages from the completed Kennedy Boulevard Access Management Safety Study.

- Consider providing raised medians between Habana Avenue and Tampania Avenue
- Provide east-west pedestrian signals at Willow Avenue
- Evaluate feasibility of a southbound right-turn lane with channelization island on North Boulevard Street
- Conduct pedestrian counts
- Review existing lighting
- Provide R10-15 signage
- Consider high-emphasis crosswalks at all marked crossings, including side streets
- Consider reviewing corridor cycle lengths and splits

- Consider installing pedestrian signal feedback indicators
- Consider constructing traffic signal at Rome Avenue
- Evaluate feasibility of signalized crossing at Henderson Boulevard (west of the intersection)
- Evaluate feasibility of crossing between Habana Avenue and Tampania Avenue
- Consider using flashing yellow left-turn arrows and changing phasing by time-of-day based on actuation
- Consider "Share the Road" signage
- Explore opportunities to widen the sidewalk through redevelopment

Existing Conditions

The Access Management Safety Study was used, in large part, to establish the existing conditions along Kennedy Boulevard. In some cases, however, additional data was collected or updated to establish the existing conditions for Kennedy Boulevard. The following is a summary of the existing conditions along the Kennedy Boulevard corridor.

Number of Travel Lanes

Kennedy Boulevard is a 6-lane divided roadway from Westshore Boulevard to Church Avenue, just west of Dale Mabry Highway. Kennedy Boulevard from Church Avenue to the Hillsborough River is a 4-lane divided roadway.

Typical Cross-Sections

As with the number of travel lanes, the typical cross-section along Kennedy Boulevard varies as one moves along the corridor. Documenting the typical sections helps to provide a clearer understanding of how the existing right-of-way along the corridor is used and defined. Appendix B contains illustrations of the existing typical cross-sections along Kennedy Boulevard.

Traffic Volumes

Traffic counts along Kennedy Boulevard were evaluated using available traffic count data from FDOT's Transportation Statistics Office (TSO). Figure 2 and Table 1 provide a summary of the annual average daily traffic (AADT) and directional volumes for the seven count stations along the Kennedy Boulevard corridor. Not surprisingly, the 6-lane segment of Kennedy Boulevard east of Westshore Boulevard has the highest daily traffic volume, with an AADT of 41,500; the lowest daily traffic volume along the corridor is the 4-lane segment west of Henderson Boulevard, with an AADT of 30,000.

Table 1: Annual Average Daily Traffic Volumes (2016)

Location (Kennedy Boulevard)	Average Daily Traffic		
	Eastbound	*Westbound*	*Total*
E of Westshore Blvd	21,000	20,500	41,500
W of Dale Mabry Hwy	16,000	18,000	34,000
E of Dale Mabry Hwy	14,500	16,000	30,500
W of Henderson Blvd	14,000	16,000	30,000
E of Henderson Blvd	18,500	21,000	39,500
W of Willow Ave	15,500	17,500	33,000
E of Hillsborough River	14,000	20,000	34,000

Data Source: FDOT TSO 2016 Historical AADT Report

In addition to existing AADTs, historical traffic volumes along the corridor were evaluated. In evaluating the historical counts, it was observed that for six of the seven count stations, the existing 2016 AADTs are lower than the previous year's volumes and, in some instances, the decreases in traffic volumes are significant. Compared to 2015 counts, the decrease in 2016 AADT is appreciable along the 6-lane segments, where there is a 13.5% decrease in volume east of Westshore Boulevard and a 22.7% decrease west of Dale Mabry Highway. Although it is not unusual to see variation in traffic volumes over time, it is unusual to witness such a dramatic change throughout a corridor over a one-year timeframe. Decreased traffic volume may be attributable to the completion of construction on I-275, as drivers that were using Kennedy Boulevard to avoid construction returned to the interstate upon completion. Still there are concerns over the validity of the 2016 traffic counts. Appendix C contains a summary of the historical traffic counts along Kennedy Boulevard.

Appendix C also contains a summary of the 24-hour traffic patterns along Kennedy Boulevard. Included in the daily traffic evaluation are graphs depicting total hourly traffic, hourly directional traffic, and 15-minute directional traffic volumes. Due to the concerns over the validity of the 2016 traffic counts, the 2015 daily traffic counts/patterns (where available) are shown along with the 2016 counts.

Signalized Intersections and Crossing Opportunities

There are 12 existing signalized intersections and 2 signalized pedestrian crossings that provide protected crossing opportunities along the Kennedy Boulevard corridor. As a result of the Access Management Study, signalization is planned for the intersection of Kennedy Boulevard and Rome Avenue. Figure 3 shows the existing and planned signalized intersections and crossing opportunities along the corridor. Currently, the average distance between signalized intersections/controlled crossings along Kennedy Boulevard is approximately 1,600 feet; the greatest distance between crossing opportunities is approximately 2,970 feet between Westshore Boulevard and Lois Avenue; and the shortest distance between crossings is between UT Poe Parkway and Hyde Park Avenue, at approximately 330 feet.

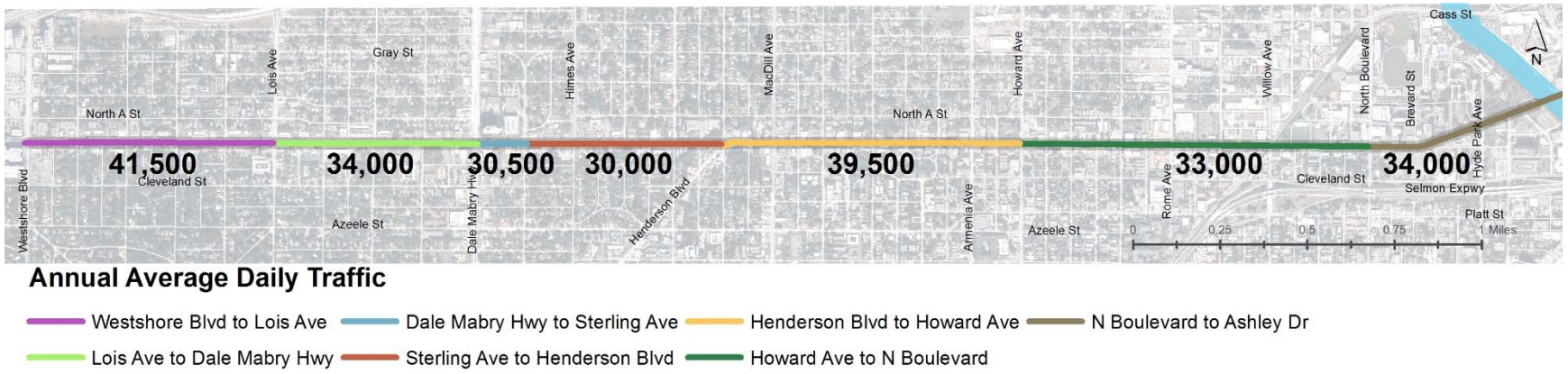


Figure 2: Annual Average Daily Traffic Volumes (2016)

Figure 3: Existing and Planned Crossing Opportunities

Transit Service

Transit service along Kennedy Boulevard is provided by Hillsborough Area Regional Transit (HART) Route 30. Route 30 currently provides 30-minute frequencies for approximately 20 hours per weekday and 18 hours on the weekends along Kennedy Boulevard. Although directly serving Kennedy Boulevard, Route 30 also provides a connection between downtown Tampa, the Westshore Business District, and Tampa International Airport. Route 36, which travels along Dale Mabry Highway, crosses Kennedy Boulevard and provides service to the corridor by the way of transfers. Figure 4 shows the route alignments for Routes 30 and 36 through the study area along with the location and ridership numbers for the bus stops along the corridor. As shown in Figure 4, the 10 bus stops near the intersection of Kennedy Boulevard and Dale Mabry Highway have the highest concentrations of transit activity along the corridor, with approximately 300 transit riders boarding or alighting a bus on an average weekday. It is assumed that a significant proportion of the ridership at this intersection is transfer activity between Routes 30 and 36. Although the area of Kennedy Boulevard and Dale Mabry Highway has the highest concentration of transit activity, the two busiest stops in terms of ridership are located at the intersection of Kennedy Boulevard and Oregon Avenue, which has a combined average daily ridership of approximately 120 people.

Block Density

Block density is the number of blocks within a given area. This measure can be used as a proxy for block size, intersection density, and street network connectivity. A higher block density typically indicates greater walkability and network connectivity, while smaller blocks and more frequent intersections may provide roadway users with increased route options to travel within that area. Figure 5 shows the block density along the Kennedy Boulevard corridor. Generally, a measure of 50 blocks per square mile is considered to be an acceptable level of density to provide options for walking and biking trips. As shown on the following page, nearly the entire corridor has a block density greater than 50 blocks per square mile.

The University of Tampa campus is shown to have a block density of less than 50 blocks per square mile, and is highly-walkable and well-connected. Because many of the streets and walkways on campus are private, however, there were not included in the block density evaluation.

Figure 4: Transit Service and Stop Ridership

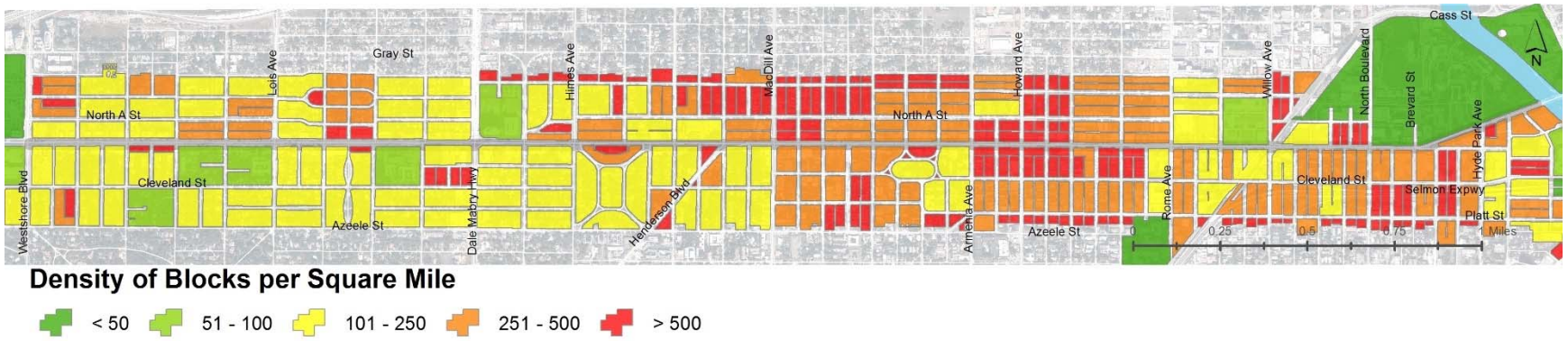


Figure 5: Blocks per Square Mile

Existing Land Use

The existing land uses within the corridor study area were plotted to better understand the make-up and diversity of uses within the corridor. As shown in Figure 6, the majority of the existing land uses fronting Kennedy Boulevard fall within the Commercial land use category, which includes retail, office, and restaurants. Toward the eastern end of the corridor, much of the land use is classified as Institutional, which is mostly the University of Tampa.

Although not prominent in Figure 6, a notable characteristic of the commercial properties fronting Kennedy Boulevard is that they are relatively small in size; the average size for a commercial property along Kennedy Boulevard is less than 0.5 acres, and many of them have a relatively shallow depth of less than 150 feet. The number of commercial properties (200+) and the relatively small parcel sizes result in a high number of access points (driveways) along Kennedy Boulevard and make larger-scale redevelopment along the corridor more challenging.

Not reflected in the current existing land use map is the proposed Lafayette Place development located at the eastern end of the corridor on the south side of Kennedy Boulevard between Plant Avenue and the River. Lafayette Place is proposed to include nearly 1.8 million square feet of offices, hotel, multifamily housing, parking, stores, restaurants, bars, and boat slips.

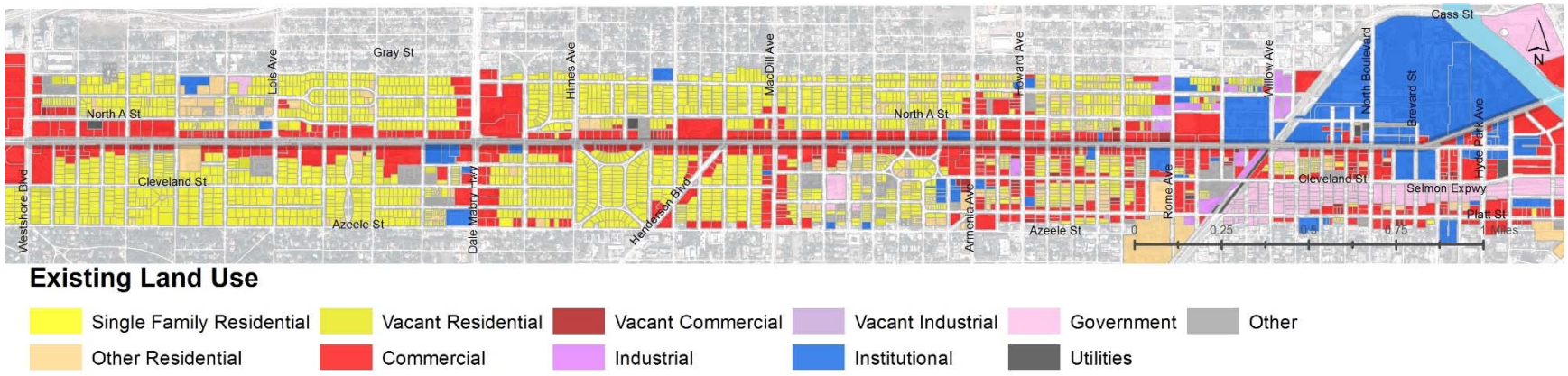


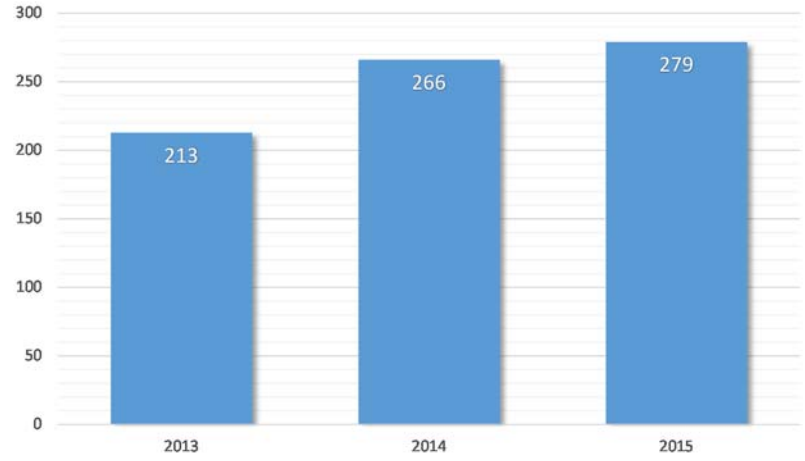
Figure 6: Existing Land Use

Crash History

A three-year crash history (2013–2015) within the corridor was analyzed. During the three-year period, there were 758 reported crashes. Figure 7 shows the annual distribution of total crashes within the corridor. In addition to total crashes the number and location of severe injury (fatal and incapacitating injury) crashes, pedestrian and bicycle crashes and angle and left-turn crashes were analyzed. Figures 8–10 show the annual distribution of severe injury, pedestrian and bicycle, and angle and left-turn crashes along Kennedy Boulevard.

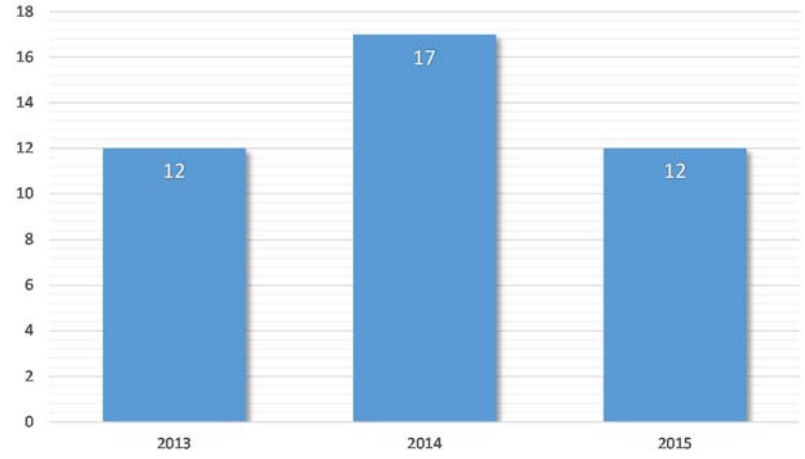
The distribution and frequencies of crashes by intersection are shown in Figures 11–14. As shown in Figure 11, the intersections with the highest frequencies of total crashes are:

- Kennedy Boulevard at Dale Mabry Highway – 88 total crashes
- Kennedy Boulevard at Westshore Boulevard – 55 total crashes
- Kennedy Boulevard at MacDill Ave – 50 total crashes



Source: Crash Analysis Reporting System (CARS) extract

Figure 7: Annual Distribution of Total Crashes



Source: Crash Analysis Reporting System (CARS) extract

Figure 8: Annual Distribution of Severe Injury Crashes

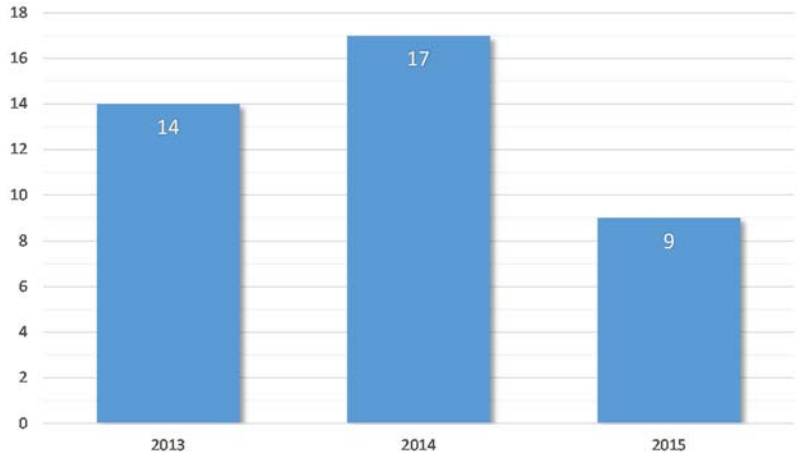


Figure 9: Annual Distribution of Pedestrian and Bicycle Crashes

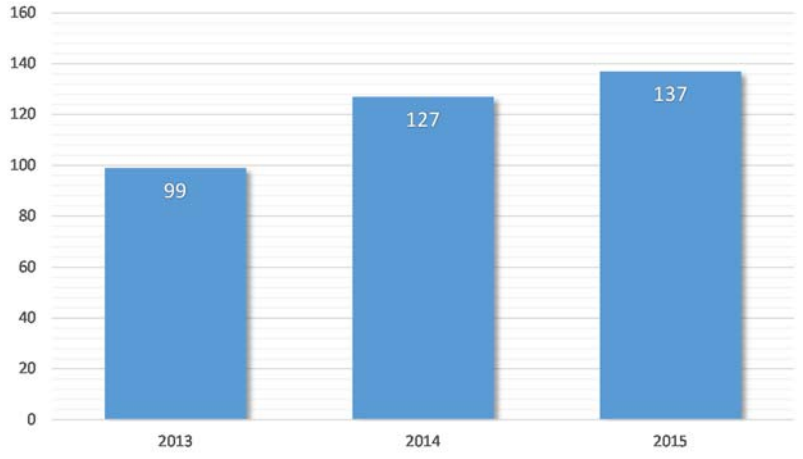


Figure 10: Annual Distribution of Angle and Left-Turn Crashes

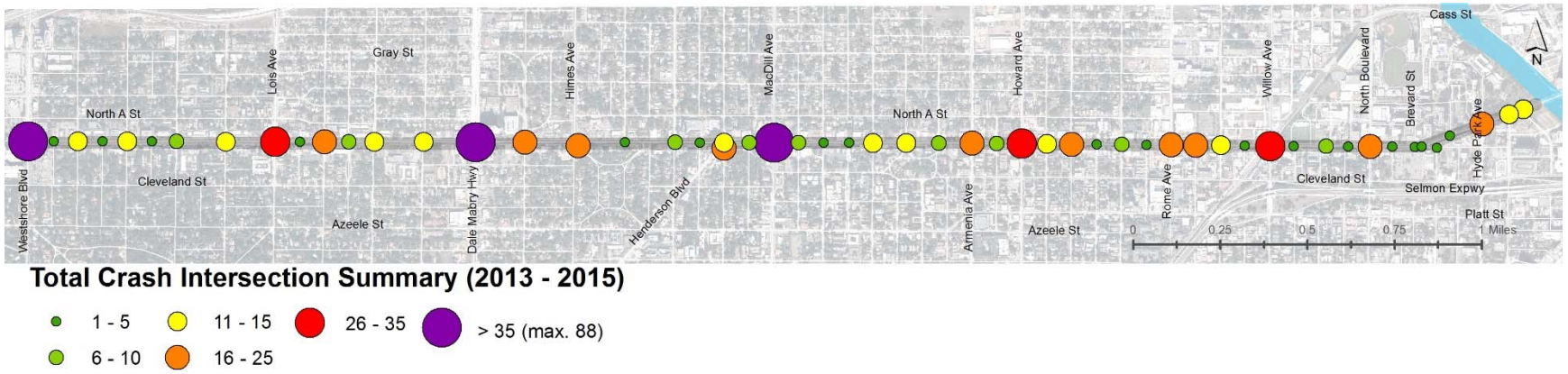


Figure 11: Total Crashes by Intersection

Figure 12: Severe Injury Crashes

Figure 13: Pedestrian and Bicycle Crashes

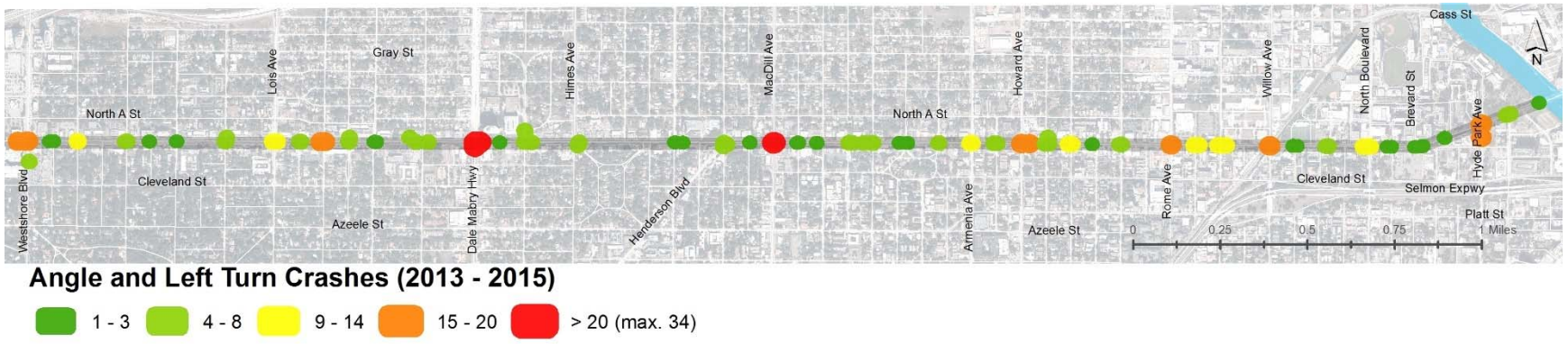


Figure 14: Angle and Left-Turn Crashes

Roadway Lighting

Roadway lighting plays an important role in creating a safe environment for all roadway users. Between 2013 and 2015 27% of the total crashes and 43% of the pedestrian and bicycle crashes occurred at night. Historically, roadway lighting has been focused on providing adequate lighting levels for motorists, but recently there has been more emphasis on using roadway lighting as a safety tool for non-motorists. Examples of this can be seen in the placement of roadway lighting. Traditionally, lighting at intersections has placed the luminaires directly over the intersection, pointing toward the middle of the intersection; more recently, there has been an emphasis on placing luminaires on the approach to the intersection in front of crosswalks, which improves driver visibility of pedestrians within the crosswalks. An inventory of the location of existing lighting structures near the signalized intersections along Kennedy Boulevard was conducted as part of this study effort; Appendix D of this document provides the results of the lighting inventory review.

Driveways

According to the American Association of State Highway and Transportation Officials (AASHTO), a driveway is defined as an access constructed within the public right-of-way, connecting the public roadway with adjacent property. Simply put, driveways physically connect the roadway to the properties along it. The design and location of driveways are based on multiple considerations, but ultimately, driveways need to provide safe entry and exit from a site, minimize impacts on traffic, and provide a clear and safe environment for all roadway users.

The impacts that driveways can have on the pedestrian and bicycle environment along a roadway have been well-documented. Driveways create inconsistencies in the walking/biking environment and increase the number of potential conflict points between pedestrians/bicyclists and motor vehicles. Furthermore, the physical design of a driveway can have a significant impact on the safety and

level of comfort for pedestrians/bicyclists along a roadway. Understanding the role that driveway design, location, and frequency have on pedestrian and bicycle safety and mobility is essential when trying to develop a quality multimodal environment.

Currently, there are nearly 250 existing driveways along Kennedy Boulevard between Westshore Boulevard and the Hillsborough River (Figure 15), equating to an average of about 66 driveways per mile. Directionally, there are approximately 31 driveways per mile along the north side of Kennedy Boulevard and 34 along the south side of Kennedy Boulevard. Although the size/width of each driveway varies, based on the per-mile driveway count, there is, on average, a driveway approximately every 160 feet along both sides of Kennedy Boulevard.

Signage

Signage plays an important role in the transportation environment. Signs provide roadway users with information, regulate proper use, and provide warnings. Signs can be used to alert motorists to the likely presence of pedestrians and bicyclists, increasing the likelihood that they will react and behave appropriately. A review of the existing signs specifically related to pedestrians and bicyclists (e.g., "Turning Vehicles Yield to Pedestrians" and "Share the Roadway") along Kennedy Boulevard were inventoried. The following is a list of existing pedestrian and bicycle related signs and their locations along the corridor.

- R10-15/"Right Turning Drivers Yield to Pedestrians":
  - Eastbound and Westbound Kennedy Boulevard at Westshore Boulevard
  - Northbound Westshore Boulevard at Kennedy Boulevard (older version)
  - Southbound Armenia Avenue at Kennedy Boulevard
  - Northbound Howard Avenue at Kennedy Boulevard

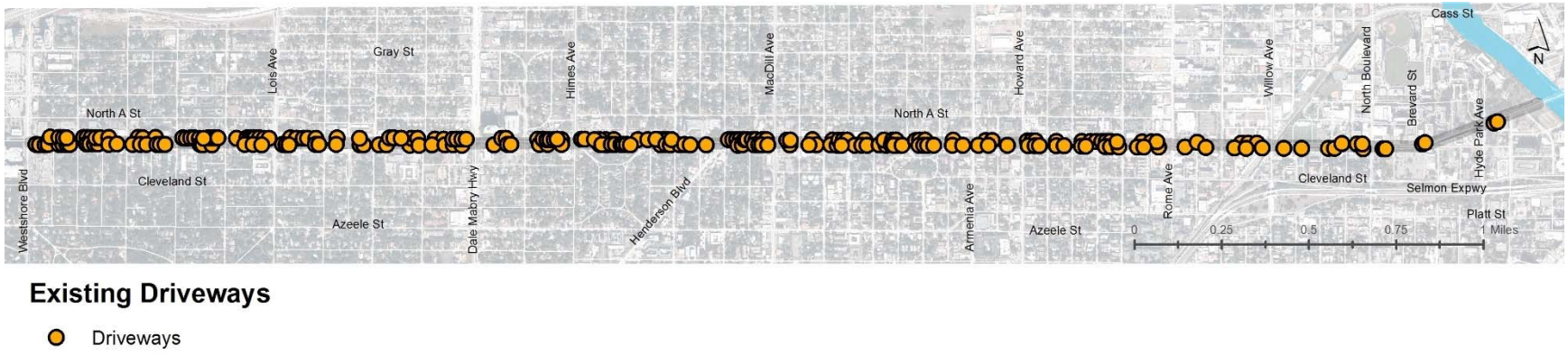


Figure 15: Existing Driveway Locations

Existing Overlay Districts

The City of Tampa has established overlay districts to allow for the application of specific regulations to distinct geographic areas. These districts can be used as instruments for protecting the character of a specific area and to encourage development and development patterns that are compatible and complementary to the existing character of the area. There are two established overlay districts along the Kennedy Boulevard corridor—the Kennedy Boulevard Corridor District and the Westshore Overlay District. Figure 16 shows the extent of these districts along the corridor.

Although they address different topics, both overlay districts along the corridor recognize the importance and significance of Kennedy Boulevard from an economic, social, and mobility standpoint and that the corridor serves as a gateway between two of the city's most prominent employment centers. The following provides an overview of how both overlay districts address transportation, specifically pedestrian and bicycle mobility.

Kennedy Boulevard Corridor District

The Kennedy Boulevard Corridor District overlay establishes design standards that are intended to promote development that creates a sense of interest through a physically-attractive, functionally-integrated environment. Since much of the Kennedy Boulevard corridor is built-out, the overlay district's design standards focus primarily on redevelopment, infill development, major renovations, and major additions. In addition to promoting development that is compatible and architecturally and aesthetically pleasing, the overlay provides provisions that establish pedestrian and transit-friendly design standards for the corridor. Some of the specifications from the overlay district design standards are provided on the following page.

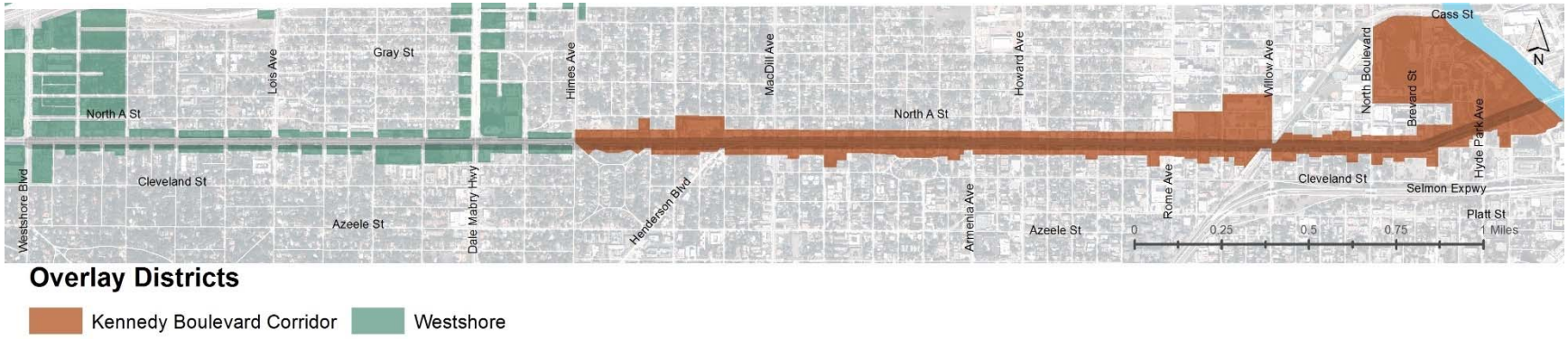


Figure 16: Existing Overlay Districts

- Each application for new construction and/or major renovation shall comply with all applicable overlay district and underlying district standards. (*Sec. 27-243(c)*).
- Minimum public sidewalk width shall be ten (10) feet adjacent to Kennedy Boulevard right-of-way. (*Sec. 27.243(f)(1)*)
- Light poles shall stand approximately thirteen (13) feet in height, as measured from finished grade, and shall be designed to provide safe pedestrian scale lighting. (*Sec. 27.243(f)(3)(d)*)
- Onsite pedestrian circulation shall be provided between tenants and/or structures, for properties with multiple structures, through the use of a sidewalk, or other suitable ADA compliant, pedestrian conveyance. (*Sec. 27-243(e)(3)(f)*)
- Vehicle access and flow shall be designed to have minimal impact on pedestrian circulation, and there must be continuity of sidewalk materials across the mouth of all curb cuts. (*Sec. 27-243(e)(4)(a)*)
- In all cases, efforts should be made to provide vehicular access that promotes safe pedestrian movement along Kennedy Boulevard…. (*Sec.27-243(e)(4)(b)(2)*)

Westshore Overlay District

Similar to the Kennedy Boulevard Corridor District overlay, the Westshore Overlay District establishes design standards to guide future development and provides parameters to ensure the implementation of compatible architectural elements and create appealing appealing business, commercial, and residential development environments. The Westshore Overlay District also establishes standards to improve mobility and the aesthetics of all roadways while also enhancing the overall public realm with specialty hardscapes, landscaping, and buffering.

The overlay's guidance recognizes that enhanced pedestrian connections will assist in characterizing the district as a significant economic activity area and, therefore, includes design standards and strategies to improve pedestrian mobility throughout the district. Many of the design standards and strategies established by the overlay are outlined in the Westshore Pedestrian Plan. The guiding principles of the Westshore Pedestrian Plan are as follows:

- Enhance the visibility and accessibility of the pedestrian, bicycle, and transit network to improve safety.
- Create roadways that equally serve pedestrians, bicyclists, transit users, and motorists.
- Mitigate traffic congestion and expand travel choices for all ages and abilities by making walking, biking, and transit more comfortable, accessible, and reliable modes of travel.
- Provide seamless connections between complementary uses (i.e., offices, hotels, retail, residences, schools, etc.).
- Connect and integrate pedestrian and bicycle facilities with transit, adjacent land uses, and activity centers.

Recognizing that the streets within the greater Westshore District are not the same nor serve the same users, the Pedestrian Plan and overlay identify four distinct street types, and establish specific land development and land/street design regulations to improve and strengthen the pedestrian environment. Kennedy Boulevard is identified as a "regional corridor," which is defined as follows:

> *Designed for high-speed travel across the region, Regional Corridors serve as important entry gateways into the Greater Westshore Area. These corridors contain significant office and commercial development, thereby containing a high amount of associated pedestrian traffic. Regional Corridors must allow direct vehicular access into*

the Greater Westshore Area while providing safe pedestrian connections between land uses.

The following highlights some of the specific overlay design standards related to the pedestrian environment:

- The overlay establishes a minimum public sidewalk width of 10 feet and states that this minimum width, along with the required adjacent buffer trees, be provided regardless of the width of the public right-of-way. Development applicants may elect to either install the sidewalk and provide an easement to the city, dedicate such an area to the city along with applicable multi-modal transportation impact fee credits, or if approved pay an applicable in-lieu fee. (*Sec. 27-238()(Table 238.2c)*)
- All buildings shall have pedestrian access oriented toward the public sidewalk adjacent to the street. (*Sec. 27-238(g)(4)(o)*)
- Small Public Open Space areas measuring twenty (20) feet by twenty (20) feet shall be provided at the following intersection corners:
  - Northeast and southwest corners of Kennedy Boulevard at Grady Avenue and Manhattan Avenue. (*Sec. 27-238(g)(4)(t)(2)(iii)*)
- Large Public Open Space areas measuring forty (40) feet by forty (40) feet shall be provided at the following intersection corners:
  - Northwest and southeast corners of Westshore Boulevard and Kennedy Boulevard. (*Sec. 27-238(g)(4)(t)(3)(i)*)
  - Northwest and southeast corners of Dale Mabry Highway and Kennedy Boulevard. (*Sec. 27-238(g)(4)(t)(3)(ii)*)
  - Northeast and southwest corners of Kennedy Boulevard and Lois Avenue. (*Sec. 27-238(g)(4)(t)(3)(iii)*)
- Requests for additional curb cuts, for existing development, will only be considered in instances of public safety issues. (*Sec. 27-238(i)*)
- Vehicle access shall have minimal impacts on pedestrian circulation. Sidewalk paving must continue across the mouth of all curb cuts… (*Sec. 27-238(g)(5)(b)*)
- Light poles and fixtures within the Kennedy Boulevard corridor shall follow the street lighting standards set forth in section 27-243 (Kennedy Boulevard Corridor District). (*Sec. 27.238(g)(3)(d)*)

Recent and Planned Roadway Projects

The constraining nature of the built environment along Kennedy Boulevard means that major roadway projects (e.g., widening or major reconstruction) are unlikely and that the best opportunity for roadway improvements along the corridor are through maintenance-type projects such as roadway resurfacing and through safety enhancements. Kennedy Boulevard between Church Street and Henderson Boulevard recently was resurfaced in 2015. A resurfacing project from Brevard Avenue across the Hillsborough River is scheduled to begin in late 2017, and will include the addition of shared lane markings along Kennedy Boulevard. Finally, there is a planned/unfunded resurfacing project along Kennedy Boulevard between Henderson Boulevard and Brevard Avenue. Figure 17 shows the extent of the recently-completed and planned resurfacing projects along Kennedy Boulevard.

Figure 17: Recently-Completed and Planned Resurfacing Projects

Multimodal Safety Review

The purpose of the Kennedy Boulevard Multimodal Safety Review is to identify opportunities to improve pedestrian and bicycle safety and comfort along the SR 60/Kennedy Boulevard corridor. The previously-completed SR 60 Access Management Safety Study made several recommendations to improve pedestrian and bicycle safety/comfort along Kennedy Boulevard. It is important to note that this multimodal safety review supports the pedestrian and bicycle safety recommendations from the Access Management Safety Study and that a large part of this review is aimed at supporting and strengthening those recommendations.

The identified opportunities to improve pedestrian and bicycle safety and comfort have been divided into two sections:

- *Systemic Strategies* – potential improvements and/or strategies that could be applied throughout the corridor, where feasible, or may be incorporated into future projects along the corridor.
- *Site-Specific Strategies* – potential improvements at specific locations along the corridor.

Systemic Strategies

Roadway Lighting

As stated in the previous section, there has been an increased emphasis on the importance of roadway lighting as an effective safety tool for improving conditions for all roadway users. Both FDOT and the City of Tampa are working on improving roadway lighting with a strategic emphasis on improving signalized intersection lighting. The FDOT recently adopted new standards for intersection lighting design (Figure 18) and illuminance levels for urban roadways with an elevated pedestrian crash risk. The intersection of Kennedy Boulevard and Dale Mabry Highway has been identified in FDOT's list of priority lighting enhancement intersections. Although Kennedy Boulevard is not currently identified as a priority lighting enhancement corridor, opportunities to enhance lighting along Kennedy Boulevard and at signalized intersections should continue to be identified.

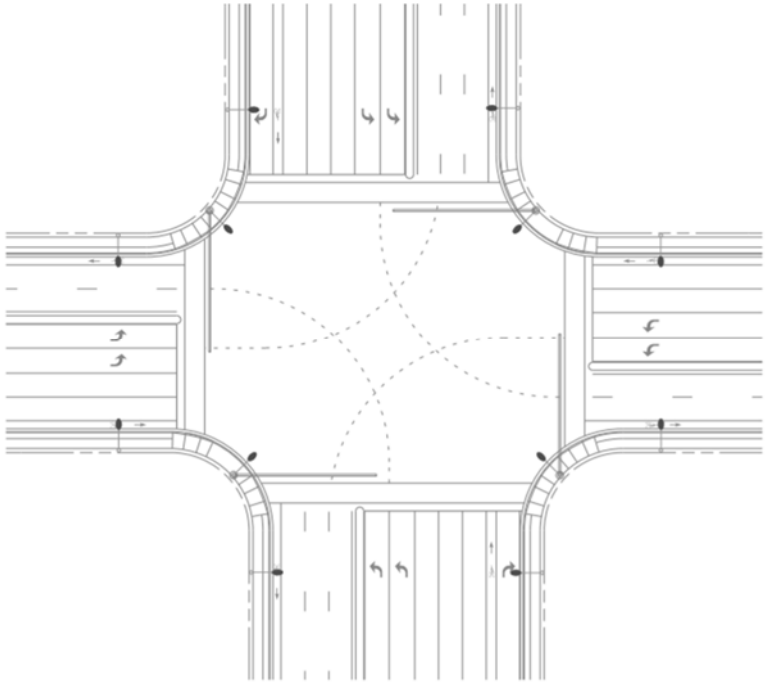


Figure 18: Typical Urban Signalized Intersection Lighting Design (PPM Figure 7.3.4/Draft FDM Figure 231.3.4)

In addition to supporting the enhancement of roadway and intersection lighting along Kennedy Boulevard, continuing efforts to provide pedestrian-scale lighting along Kennedy Boulevard, in line with the streetscape plan, will help improve lighting conditions for all users.

Crosswalk Enhancement

Crosswalks are a vital part of the pedestrian network, they define designated crossing areas for pedestrians and help alert drivers to the likelihood of pedestrians. Marked and well-distinguished crosswalks help discourage drivers from encroaching on the crosswalk area and can help pedestrians assert their right-of-way. A variety of crosswalk treatments exist within the Kennedy Boulevard corridor, ensuring that these crosswalks are well-maintained and highly-visible helps to establish a safer and more comfortable walking environment along the corridor.

This review supports the Access Management Safety Study's recommendation of considering high-emphasis crosswalk markings at all marked crossings, including side streets, but also recognizes the local desire for decorative (stamped asphalt) markings, and FDOT's preference for using standard crosswalk markings along roadways at non-intersection locations. The recently-improved crosswalks at Kennedy Boulevard and North/South Boulevard are a good example of how high-emphasis and decorative crosswalk markings can be incorporated together to provide a well-distinguished and highly-visible crosswalk. There are currently marked crosswalks at all of the intersections and side streets along Kennedy Boulevard, and continued coordination between the City of Tampa and FDOT will ensure that these crosswalks are well-maintained and will help in identifying opportunities to enhance existing crosswalk markings.

Driveway Design and Frequency

AASHTO states that driveways should be considered as intersections and should be designed to minimize conflicts with the roadway and sidewalk. All driveways should be designed to safely accommodate pedestrians, bicyclists, and vehicles, but in urban areas with heavier pedestrian and bicycle traffic, it is even more critical to design and locate driveways in a manner to reduce potential conflicts.

While driveways should be designed to improve the visibility and safety of pedestrians and bicyclists, the frequency with which driveways line the corridor is equally significant. As noted, there are nearly 250 driveways/curb cuts along Kennedy Boulevard. The *FDOT Driveway Information Guide* states that every driveway creates potential conflicts and that reducing the number of driveways reduces the number of pedestrian/vehicle conflict points.

An initial step in reducing the number of curb cuts along Kennedy Boulevard is to explore elimination of unused or abandoned driveways, which could dramatically improve the walking and biking environment by providing more uniform and consistent sidewalk facilities throughout the corridor. Both FDOT and the City of Tampa have processes in place to identify and eliminate unused/abandoned driveways, the following is a summary of the current processes:

- *FDOT* – If FDOT has determined a driveway to be an abandoned connection and is not in compliance with current design standards, and no additional right-of-way is required, FDOT will provide a written letter to the property owner in advance of roadway work that there is an intention to close the identified driveway. The property owner then has 21 days to request an administrative hearing before the action becomes effective and final. This process is further defined in

Chapter 14.96.015 of the Florida Administrative Code which states: *Where connections are to be modified as part of a Department construction project, and the Department is not planning to acquire any portion of the property for the project, the Department will provide notice and opportunity for an administrative proceeding pursuant to Rule 14-96.0011, F.A.C., and Chapter 120, F.S. For purposes of paragraph 14-96.011(1)(d), F.A.C., construction plans for a Department project signed, sealed, and dated by a Professional Engineer registered in the State of Florida shall substantiate a connection's non-conformance with Department standards or potential safety or operational problems, and a separate engineering study shall not be required.*

- *City of Tampa* – Section 22-318 of the City's Code of Ordinance addresses the process for dealing with abandoned driveways and states: *At any time an existing driveway is abandoned or use of such driveway is discontinued, it shall be the responsibility of the owner of the property formerly accessed by such driveway to restore the public right-of-way to its original condition. Determination of original condition shall be made by the city transportation manager.*

More information on the location of potentially unused driveways is provided in the Site-Specific Strategies section.

Other strategies to reduce the number of curb cuts along Kennedy Boulevard are to encourage shared driveways, provide cross-access between properties to minimize the number of driveways and provide better access for drivers, and to encourage the placement of driveways along side streets. An example of a shared access point and the use of side-street access can be found on the south side of Kennedy Boulevard between Rome Avenue and Dakota Avenue. The often-competing businesses of Dunkin' Donuts and Starbucks share a single access point along Kennedy Boulevard, provide cross-access between properties, and use access points along both Rome Avenue and Dakota Avenue. Encouraging shared driveways, cross-access, and side-street access will help to improve walking and bicycling conditions along Kennedy Boulevard by reducing the number of duplicative driveways.

Enhancing the Pedestrian Environment

The Access Management Safety Study recommended exploring opportunities to widen the sidewalk through redevelopment. As previously discussed, both the Westshore Overlay District and the Kennedy Boulevard Overlay have established a process to provide wider sidewalks along Kennedy Boulevard through redevelopment. One drawback to the current process is that relying on redevelopment has led to a patchwork of improved sidewalks along the corridor. While continuing to support the current processes established by the overlay districts, any opportunities to advance the enhancement of sidewalks along the corridor should be encouraged and explored.

Additionally, supporting strategies to develop a more livable street environment will improve the safety and comfort for pedestrians along Kennedy Boulevard. These strategies include better managing speeds, increased crossing opportunities, enhanced crossings at existing intersections, and improved lighting.

Enhancing the Bicycling Environment

Similar to the approach for improving the pedestrian environment, supporting strategies to develop a more livable street will improve the safety and comfort for bicyclists along Kennedy Boulevard. Providing a dedicated bicycle facility along Kennedy Boulevard would

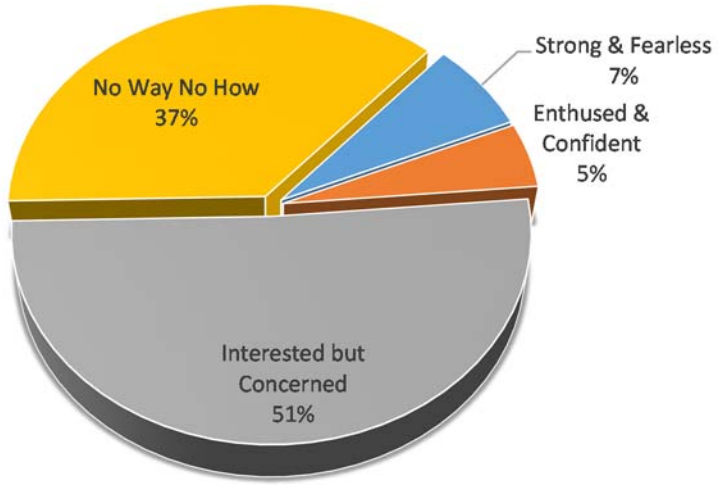
be ideal, and yet due to the current physical constraints along the majority of the corridor, doing so would most likely require a significant investment involving the purchasing of right-of-way, major roadway reconstruction, or both. These constraints currently make providing a dedicated bicycle facility along Kennedy Boulevard challenging, complex, and most likely cost prohibitive.

A dedicated bicycle facility along Kennedy Boulevard is therefore unlikely, but there are still opportunities to improve the bicycling environment within the Kennedy Boulevard corridor. This section looks at two approaches for accommodating bicyclists within the Kennedy Boulevard corridor. One is to identify strategies that can enhance bicycling directly along Kennedy Boulevard and the other is to identify strategies and opportunities to enhance bicycling along parallel streets within the larger "corridor" area.

Before exploring strategies and opportunities to enhance bicycling within the Kennedy Boulevard corridor, it is important to recognize that there are important differences among bicyclists' attitudes and comfort while riding a bicycle in different situations and contexts. In 2006, Portland (Oregon) bike chief Roger Geller categorized the city's cycling population into four kinds of riders based on their comfort levels in a variety of cycling environments, as follows:

- "*Strong and Fearless*" – bicyclists who will ride their bike anywhere regardless of roadway conditions or presence of facilities.
- "*Enthused and Confident*" – bicyclists who are comfortable sharing the roadway with automobile traffic, but often prefer to do so within a dedicated facility such as a marked bike lane. Many in this group may already be riding their bikes for transportation purposes.
- "*Interested but Concerned*" – people who enjoy riding a bicycle and may already ride for recreational purposes but are often discouraged from riding more regularly by roadway conditions and/or lack of "comfortable" facilities.
- "*No Way No How*" – people who either have no interest in riding a bike or are unable to do so because of physical limitations.

In 2016, Jennifer Dill and Nathan McNeil of Portland State University conducted a national study to determine how riders across America fit into these four typologies. Figure 19 shows a breakdown of their findings.

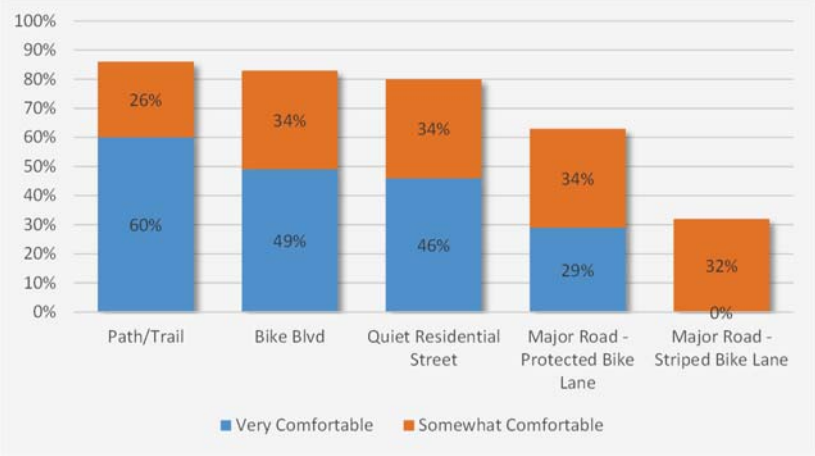


Data Source: Dill & McNeil, 2016

Figure 19: Four Types of Cyclists

As shown, the majority of bicyclists can be categorized within the "Interested but Concerned" category—people who like to ride a bike and often do so for recreational purposes but often do not feel

comfortable riding along busy roadways without some level of protection. Figure 20 shows the responses of the "Interested but Concerned" group on their level of comfort on different facilities and roadway types. Data from respondents shows there is a higher level of comfort with lower-stress facilities such as trails and bike boulevards, and zero percent said that they would be "very comfortable" riding along a major roadway with just a striped bike lane. This suggests that providing more separation between bicyclists and motor vehicles may increase bicycling within this group, which could significantly increase the overall number of bicyclists.



Data Source: Dill & McNeil, 2016

Figure 20: "Interested but Concerned" Group Level of Comfort on Different Bicycle Facilities

One thing to note about this research and its finding is that these are general groupings and that the differences among these groups are not discrete. It is also important to recognize that these types are defined primarily by comfort level bicycling in different environments, not by their current bicycling behavior. One of the takeaways of understanding the different type of bicyclists and encouraging bicycling is that bicycle infrastructure needs to correspond to the desired comfort level of those using the facilities. Making bicycling more attractive is as much about recognizing the comfort levels and environments of different users as it is about providing infrastructure.

Irrespective of whether there is a dedicated bicycle facility along Kennedy Boulevard, promoting a more livable street environment with calmer traffic and wider sidewalks will help to provide a safer and more comfortable bicycling environment. More direct enhancements to the bicycling environment could be the use of signage such as a R4-11 sign ("Bicycles May Use Full Lane") (Figure 21) or a W11-1 (bicycle image) warning sign along with a W16-1P sign ("Share the Road") (Figure 22), both of which could be used to alert drivers to the potential presence of bicycles and to empower bicyclists to use the full travel lane. If traffic speeds could be reduced enough to lower the posted speed limit to 35 mph, then shared lane markings could be installed along Kennedy Boulevard. The upcoming resurfacing project from Brevard Avenue across the Hillsborough River will include shared lane markings, but until then, bicyclists along Kennedy Boulevard will either need to ride within the travel lane or use the sidewalks.

Figure 21: R4-11 "Bicycles May Use Full Lane" Sign

Figure 22: W11-1+W16-1P Bicycle Image plus "Share the Road" Signs

Many current bicyclists currently utilize the sidewalk to travel along Kennedy Boulevard. This is an acceptable practice, assuming that bicyclists recognize that they have the responsibility to yield to pedestrians, and in some instances, may actually be a safer option. This is particularly true for bicyclists who are uncomfortable riding in mixed traffic. Riding along a sidewalk, however, is not always the safest option for bicyclists. When riding on a sidewalk, bicyclists often become invisible to motor vehicle drivers, especially at driveways and on side streets while riding opposite the direction of traffic. One option to help remind bicyclists of potential dangers while riding on the sidewalk is to explore the possibility of placing bicycle warning signs on the back of existing traffic signs. Figure 23 is an example of signage from Toronto that warns both bicyclists and pedestrians to be vigilant of turning vehicles and reminds bicyclists to yield to pedestrians along the sidewalk.

Figure 23: Example of Signage for Bicyclists on Sidewalks

The following options for improving the bicycle environment along Kennedy Boulevard require adopting a systems view of the corridor, where there are opportunities to create very safe bicycle facilities along parallel streets. Facilities along parallel streets may not directly serve the businesses along Kennedy Boulevard and should not be considered substitutes for facilities along Kennedy Boulevard, they

can be useful and should be considered part of the overall network. The following highlights some options for east-west bicycle travel along streets parallel to Kennedy Boulevard. Additionally, Figure 24 visually represents how parallel routes could be used to accommodate east-west bicycle travel through the corridor:

- *Cass Street* – Located about one-third of a mile north of Kennedy Boulevard. Plans are underway to complete a two-way cycle track along Cass Street between Howard Avenue and the Hillsborough River (the "Green Spine"), which will connect to the existing facility along Cass Street in downtown and eventually extend into Ybor City. Once the cycle track along Cass Street is complete, it could serve as an alternative east-west connection into/from downtown on the eastern end of the Kennedy Boulevard corridor.
- *Gray Street* – A local, primarily residential, street located approximately one-quarter mile north of Kennedy Boulevard that runs uninterrupted from Westshore Boulevard to Rome Avenue. Parts of Gray Street recently were vacated to accommodate parking at the recently-constructed NoHo Flats development east of Rome Avenue. The street has signalized crossings at Westshore Boulevard and Dale Mabry Highway, runs adjacent to the new Jewish Community Center between Armenia Avenue and Howard Avenue, and has speed tables west of Himes Avenue. These characteristics make it an ideal candidate for consideration as a bicycle boulevard (lower volume streets designed to promote and prioritize bicycling).
- *North A Street* – Located one block (approx. 300 ft) north of Kennedy Boulevard, North A Street is a local, primarily residential street that currently provides bicyclists with a lower-stress alternative to riding on Kennedy Boulevard. Crossing enhancements at key intersections along North A Street could make this an even more attractive option for bicyclists traveling within the corridor. The street could also be considered as a potential bicycle boulevard candidate.
- *Cleveland Street* – Varying throughout the corridor, Cleveland Street is located approximately 500–600 feet south of Kennedy Boulevard. Between Armenia Avenue and the Hillsborough River, it is a one-way (westbound) street with a mix of office/commercial and residential uses that recently was reconfigured to include a buffered westbound bicycle lane. West of Armenia Avenue, it is a two-way, primarily residential, local street that could be considered a potential bicycle boulevard candidate.
- *Platt Street* – Located approximately 500 feet south of Cleveland Street and 1,000 feet south of Kennedy Boulevard. Platt Street is a one-way (eastbound) street that together with Cleveland Street forms a one-way pair. As with Cleveland Street, between Armenia Avenue and the Hillsborough River, Platt Street has a mix of office/commercial and residential uses and was recently reconfigured to include a buffered eastbound bicycle lane. The combination of buffered bicycle lanes on both Cleveland Street and Platt Street provides bicyclists within the Kennedy Boulevard corridor with an alternative east-west travel route between Armenia Avenue and downtown Tampa.
- *Azeele Street* – Located approximately one-quarter mile south of Kennedy Boulevard. Between Westshore Boulevard and Dale Mabry Highway, Azeele Street is a 2-lane street that is primarily fronted with single-family residences. Between Dale Mabry Highway and Armenia Avenue, it is a 4-lane undivided roadway with a mix of residential uses and some

office/commercial uses. Between Armenia Avenue and Fremont Avenue, it returns to a 2-lane street with a mix of residential uses. Traffic counts from 2011 suggest that the total traffic volumes might be accommodated within a 2-lane divided cross-section. Further evaluation would be needed to determine the feasibility of a lane elimination along Azeele Street, but if a lane elimination is determined to be feasible it may be useful to provide an enhanced bicycle facility along Azeele Street which could include bicycle boulevard treatments and/or buffered/protected bicycle lanes, or some combination of both.

In the absence of being able to provide a dedicated bicycle facility along Kennedy Boulevard, improvements to the bicycling environment can be accomplished by continuing to support strategies that make Kennedy Boulevard a more livable street, such as speed management, enhanced lighting, well-designed driveways, and wider sidewalks. If posted speed limits can be reduced to 35 mph or less, shared lane markings should be considered. Until posted speeds are reduced, signage such as R4-11 ("Bicycles May Use Full Lane") should be considered to encourage bicyclists to use the full lane, thereby discouraging unsafe within-lane passing; encourage drivers to change lanes to pass a bicyclist; and warn drivers that bicyclists may be using the full lane.

In combination with improvements along Kennedy Boulevard, improvements to the bicycling environment along parallel streets could include evaluating bicycle boulevard opportunities north along Gray Street and North A Street, and south along Azeele Street and Cleveland Street. Additionally, identifying opportunities to enhance north-south connections could lead to improved connectivity within the Kennedy Boulevard corridor and would encourage more people to choose bicycling as a more frequent mode of transportation.

Figure 24: Potential East-West Bicycle Network Connections

Speed Management Strategies

Speed plays a critical role in the cause and severity of crashes, and there is a direct correlation among higher speeds, crash risk, and injury severity. Speed is also a factor in determining livability or overall comfort for all modes of a street, especially along urban corridors such as Kennedy Boulevard. Managing travel speeds can help make a street feel like a part of the city rather than an incongruous thoroughfare.

While speed reduction cannot be achieved simply by reducing the posted speed limit, there are a variety of speed management strategies which may bring speeds to a more "livable" level. There ar two approaches to managing speed – changing the physical design of the roadway and/or changing people's psychological perceptions and responses to the roadway.

Changing a street's design changes people's behavior. Street design has traditionally been based on highway design principles that accommodate higher speeds and are forgiving to driver error. Designing for higher speeds often means including mandated design features like larger curb radii, wider travel lane widths, and clear zones. These features have many positive benefits on highways intended to move a large number of fast-moving vehicles, but in complex urban environments with multiple users traveling at various speeds, they often create a less-than-favorable environment, especially for non-motorized users.

The conventional highway design practice for establishing posted speed limits involves establishing a roadway design speed based on existing observed (85th percentile) speeds along a roadway. The design speed is then used to determine the various design features of the roadway. An alternative approach to establishing posted speed is to set the design speed and design features based on a target speed—the speed intended for drivers to travel—rather than observed operating speeds. Target speed should be determined based on the context of the street and consistent with the existing/desired level of multimodal activity to provide mobility for motor vehicles and a safe environment for non-motorized users.

Using target speed to establish a roadway's design speed can result in greater flexibility in implementing speed management strategies. Popular design strategies used to manage traffic speeds, change driver behavior, and improve the quality of the non-motorized environment include narrower lane widths, roadside landscaping, and extending curbs. Exploring strategies to manage speeds and create a safer and more livable environment along Kennedy Boulevard should be supported and implemented where feasible.

Signal Timing and Spacing

Although often invisible to the public, traffic signal cycle lengths have a significant impact on the quality of the urban environment, and consequently, the opportunities for non-motorized users to operate safely along a corridor. Long signal cycles compounded over multiple intersections can make crossing a street or walking even a short distance prohibitive and frustrating. This discourages walking altogether and makes streets act as barriers which separate destinations, rather than routes that link them together. Conversely, it is also important to recognize that although reduced traffic signal cycle lengths can improve walkability, they also can lead to increased delay and congestion for motor vehicles. One option for balancing the needs of pedestrians and motor vehicles is to adjust traffic signal cycle lengths by time of day to account for fluctuations in vehicle and pedestrian volumes.

Traffic signal spacing, or the distance between crossing opportunities, similarly impacts the connectivity and walkability of an area. Reducing the distance between traffic signals can help to create a connected network of routes that provide all users with more opportunities and choices. As with signal cycles, however, it is important to recognize that decreasing the distance between traffic signals can impact the flow of motorized traffic and possibly lead to increases in certain types of crashes, particularly rear-end crashes. Finding a traffic signal spacing that balances mobility for pedestrians and motorized vehicles which does not severely impact either can help to create and strengthen a network that provides opportunity to all roadway users. A potential signal spacing goal for the Kennedy Boulevard corridor could be ¼-mile signal spacing between Westshore Boulevard and Armenia Avenue and ⅛-mile spacing between Armenia Avenue and the Hillsborough River.

Site-Specific Strategies

This section focuses on potential pedestrian and bicycle improvements at specific locations along the corridor. It is important to note that the enhancements identified in this section represent potential opportunities and are not necessarily recommendations; rather, they are suggestions for further consideration. It should be understood that, in many instances, the identified enhancements will require additional evaluation, analysis, and/or engineering design to determine the full feasibility of each potential enhancement.

Site-specific enhancements are identified along the following nine Kennedy Boulevard segments:

- Westshore Boulevard to Manhattan Avenue
- Manhattan Avenue to Hale Avenue
- Hale Avenue to Sterling Avenue
- Sterling Avenue to Bradford Avenue
- Bradford Avenue to Habana Avenue
- Habana Avenue to Westland Avenue
- Westland Avenue to Oregon Avenue
- Oregon Avenue to Fielding Avenue
- Fielding Avenue to Hillsborough River

Kennedy Boulevard from Westshore Boulevard to Manhattan Avenue

Figure 25: #4 and #5, Kennedy Blvd at Westshore Blvd

Figure 26: #3, Existing R10-15 Sign, Westshore Blvd at Kennedy Blvd

Table 2: Kennedy Boulevard, Westshore Boulevard to Manhattan Avenue Site-Specific Strategies

ID	Location	Suggestions for Consideration
1	SB Westshore Blvd at Kennedy Blvd	Consider installing R10-15 ("Right-Turn Yield to Pedestrians") sign.
2	EB Kennedy Blvd at Westshore Blvd	Consider relocating the existing R10-15 sign from right-turn channelization island to curb approx. 25 ft west of existing crosswalk.
3	NB Westshore Blvd at Kennedy Blvd	Consider upgrading existing "Right-Turn Yield to Pedestrians" sign with new R10-15 sign.
4	NW Quadrant of Kennedy Blvd and Westshore Blvd	Consider reducing curb radius within northwest quadrant, which will shorten pedestrian crossing distances, reduce turning vehicle speeds, and provide more room for pedestrians at intersection.
5	SE Quadrant of Kennedy Blvd and Westshore Blvd	Consider reducing curb radius within southeast quadrant, which will shorten the pedestrian crossing distances, reduce turning vehicle speeds, and provide more room for pedestrians at intersection.
6	EB Kennedy Blvd approaching Westshore Blvd	Consider installing overhead luminaire along south side of Kennedy Blvd on EB approach to Westshore Blvd; determine if existing concrete signal support could accommodate additional luminaire.
7	NB Westshore Blvd approaching Kennedy Blvd	Consider installing overhead luminaire along east side of Westshore Blvd south of Kennedy Blvd.
8	WB Kennedy Blvd approaching Westshore Blvd	Consider installing overhead luminaire along north side of Kennedy Blvd east of Westshore Blvd.
9	EB Kennedy Blvd east of Westshore Blvd	Consider installing R4-11 ("Bicycles May Use Full Lane") sign or W11-1 + W16-1P ("Share the Road" plus bicycle image) sign assembly.
10	Kennedy Blvd between Renellie Dr and Trask St	Potential unused driveway along south side of Kennedy Blvd between GoGo Greek Grill and Stonegate Bank.
11	Kennedy Blvd near Lauber Wy (between Hesperides St and Manhattan Ave)	Evaluate pedestrian crossing potential (pedestrian hybrid beacon); median at Lauber Way recommended for closing per Access Management Safety Study. Alternatively, evaluate traffic signal feasibility at Kennedy Blvd and Hesperides St or Kennedy Blvd at Manhattan Ave.

Kennedy Boulevard from Manhattan Avenue to Hale Avenue

Figure 27: #15, Kennedy Blvd at Lois Ave Concept

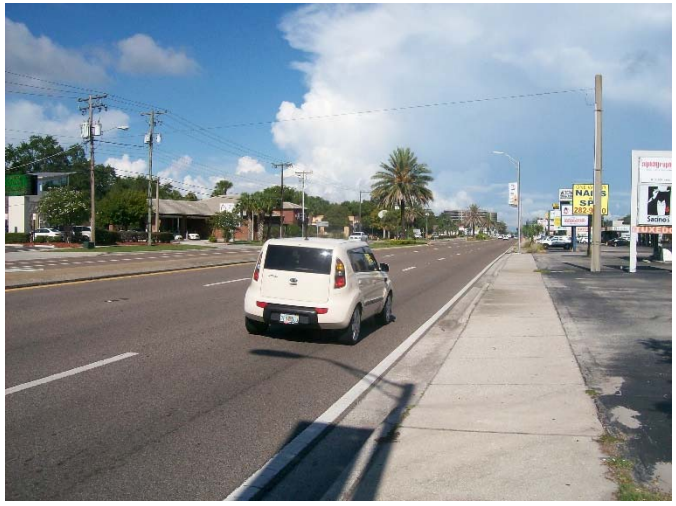


Figure 28: Kennedy Blvd at Lois Ave, Looking West

Table 3: Kennedy Boulevard, Manhattan Avenue to Hale Avenue Site-Specific Strategies

ID	Location	Suggestions for Consideration
12	WB Kennedy Blvd west of Lois Ave	Consider installing R4-11 ("Bicycles May Use Full Lane") sign or W11-1 + W16-1P ("Share the Road" with bicycle image) sign assembly.
13	WB Kennedy Blvd at Lois Ave	Consider installing R10-15 ("Right-Turn Yield to Pedestrians") sign on all intersection approaches.
14	Lois Ave at Kennedy Blvd	Consider evaluating intersection and crosswalk lighting levels to ensure appropriate illumination being provided.
15	Kennedy Blvd at Lois Ave	Consider reducing curb radius within northwest quadrant, which will shorten pedestrian crossing distances, reduce turning vehicle speeds, and provide more room for pedestrians at intersection. Additionally, consider realigning/straightening crosswalk across northern leg of intersection.
16	EB Kennedy Blvd east of Lois Ave	Consider installing R4-11 ("Bicycles May Use Full Lane") sign or the W11-1 + W16-1P ("Share the Road" plus bicycles image) sign assembly.

Kennedy Boulevard from Hale Avenue to Sterling Avenue

Figure 29: #17, Kennedy Blvd at Grady Ave Concept

Figure 30: #23, Kennedy Blvd at Dale Mabry Hwy Concept

Table 4: Kennedy Boulevard, Hale Avenue to Sterling Avenue Site-Specific Strategies

ID	Location	Suggestions for Consideration
17	Kennedy Blvd at Grady Ave, SE quadrant	Consider extending curb within painted gore area (currently has kwik kerb); drainage inlet within gore area impacts to drainage, will need to be evaluated.
18	Kennedy Blvd at Grady Ave	Evaluate traffic signal warrants; closest signalized intersections are Lois Ave (1,350 ft to west) and Dale Mabry Hwy (1,350 ft to east).
19	Kennedy Blvd between Grady Ave and Church Ave	Potential unused driveway along south side of Kennedy Blvd; Kuhn Automotive Group driveway closest to Grady Ave—consider contacting business to determine if posts located in driveway are mounted or are removable, determine if driveway currently being used.
20	WB Kennedy Blvd west of Dale Mabry Hwy	Consider installing R4-11 (“Bicycles May Use Full Lane”) sign or W11-1 + W16-1P (“Share the Road” plus bicycle image) sign assembly.
21	Kennedy Blvd at Dale Mabry Hwy	Consider installing R10-15 (“Right-Turn Yield to Pedestrians”) sign on all intersection approaches.
22	Kennedy Blvd at Dale Mabry Hwy	Consider evaluating intersection and crosswalk lighting levels to ensure appropriate illumination being provided.
23	Kennedy Blvd at Dale Mabry Hwy, NE Quadrant	Consider reducing curb radius within NE quadrant (approx. 30’ ft radius), which will shorten pedestrian crossing distances, reduce vehicle turning speeds, and provide pedestrians with enhanced waiting area.
24	EB Kennedy Blvd east of Dale Mabry Hwy	Consider installing R4-11 (“Bicycles May Use Full Lane”) sign or W11-1 + W16-1P (“Share the Road” plus bicycle image) sign assembly.

Kennedy Boulevard from Sterling Avenue to Bradford Avenue

Figure 31: Kennedy Blvd at Himes Ave, Looking East

Figure 32: Kennedy Blvd at Beverly Ave, Looking North

Table 5: Kennedy Boulevard, Sterling Avenue to Bradford Avenue Site-Specific Strategies

ID	Location	Suggestions for Consideration
25	Kennedy Blvd at Himes Ave	Consider installing R10-15 ("Right-Turn Yield to Pedestrians") sign on all intersection approaches.
26	Kennedy Blvd at Himes Ave	Consider enhancing intersection lighting by installing overhead street light luminaires on all intersection approaches as indicated by typical urban signalized intersection lighting design (PPM Fig. 7.3.4).
27	Kennedy Blvd at Himes Ave	Potential unused driveway along north side of Kennedy Blvd east of Himes Ave; Club ENVY driveway closest to Himes Ave; bus stop and third-party bench located near/within driveway; consider contacting business to determine if driveway is used.
28	Kennedy Blvd near Beverly Ave	Consider evaluating installation of pedestrian crossing (pedestrian hybrid beacon) in vicinity of Kennedy Blvd at Beverly Ave; Access Management Safety Study recommends closing of median at Beverly Ave.

Kennedy Boulevard from Bradford Avenue to Habana Avenue

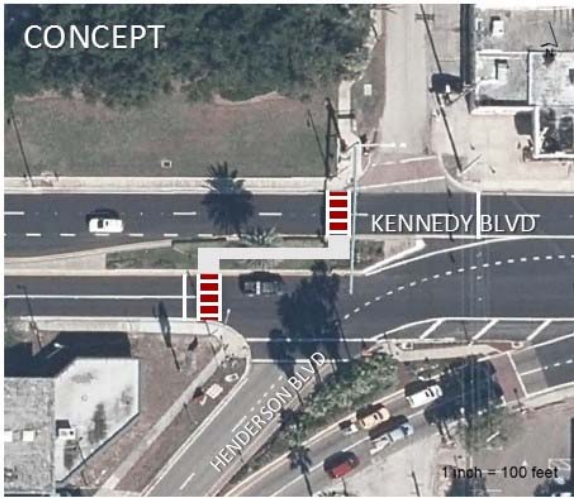


Figure 33: #30, Kennedy Blvd at Henderson Blvd Concept

Figure 34: Existing Mid-Block Crossing, Kennedy Blvd between Gomez Ave and Bungalow Park Ave, Looking Southeast

Table 6: Kennedy Boulevard, Bradford Avenue to Habana Avenue Site-Specific Strategies

ID	Location	Suggestions for Consideration
29	EB Kennedy Blvd west of Henderson Blvd	Consider installing R10-15 ("Right-Turn Yield to Pedestrians") sign.
30	Kennedy Blvd at Henderson Blvd	Consider evaluating feasibility of pedestrian crossing (pedestrian signal) along western leg of intersection. In addition to evaluating crossing demand, evaluate impacts to WB traffic; consider as two-stage crossing, could help to reduce impacts to traffic flow. Identified in Access Management Safety Study.
31	WB Kennedy Blvd west of MacDill Ave	Consider installing R4-11 ("Bicycles May Use Full Lane") sign or W11-1 + W16-1P ("Share the Road" plus bicycle image) sign assembly.
32	Kennedy Blvd at MacDill Ave	Consider installing R10-15 ("Right-Turn Yield to Pedestrians") sign on all intersection approaches.
33	Kennedy Blvd at MacDill Ave	Consider evaluating intersection and crosswalk lighting levels to ensure appropriate illumination being provided.
34	EB Kennedy Blvd east of MacDill Ave	Consider installing R4-11 ("Bicycles May Use Full Lane") sign or W11-1 + W16-1P ("Share the Road" plus bicycle image) sign assembly.
35	Kennedy Blvd between Gomez Ave and Bungalow Park Ave	Consider evaluating crosswalk lighting levels to ensure appropriate illumination being provided.
36	Kennedy Blvd at Habana Ave	Unused driveway on north side of Kennedy Blvd west of Habana Ave; consider removing curb cut and provide level sidewalk through this section.
37	Kennedy Blvd at Habana Ave	Consider evaluating traffic signal warrants; Access Management Safety Study recommends leaving this intersection open. Closest signalized intersections/crossings are MacDill Ave (1,330 ft) and the mid-block crossing between Gomez Ave and Bungalow Park Ave (525 ft) to west and Armenia Avenue (1,320 ft) to east.

Kennedy Boulevard from Habana Avenue to Westland Avenue

Figure 35: #41, Kennedy Blvd at Armenia Ave Concept

Figure 36: #45, Kennedy Blvd at Howard Ave Concept

Table 7: Kennedy Boulevard, Habana Avenue to Westland Avenue Site-Specific Strategies

ID	Location	Suggestions for Consideration
38	Kennedy Blvd at Arrawana Ave	Potential unused driveway along south side of Kennedy Blvd west of Arrawana Ave (in front of Miguelito's); existing landscaping partially blocking existing curb cut; consider contacting business and removing existing curb cut.
39	WB Kennedy Blvd west of Armenia Ave	Consider installing R4-11 (“Bicycles May Use Full Lane”) sign or W11-1 + W16-1P (“Share the Road” plus bicycle image) sign assembly.
40	EB Kennedy Blvd at Armenia Ave	Consider installing R10-15 (“Right-Turn Yield to Pedestrians”) sign.
41	Kennedy Blvd at Armenia Ave	Consider constructing curb extensions within southeast and southwest quadrants of intersection along Armenia Ave using existing painted gore area south of intersection.
42	Kennedy Blvd at Armenia Ave	Consider evaluating intersection and crosswalk lighting levels to ensure appropriate illumination being provided.
43	Kennedy Blvd between Armenia Ave and Moody Ave	Potential unused driveway along south side of Kennedy Blvd; in front of Kennedy Club is fence/wall and landscaping blocking driveway; consider contacting owner and removing existing curb cut.
44	WB Kennedy Blvd at Howard Ave	Consider installing R10-15 (“Right-Turn Yield to Pedestrians”) sign.
45	NW quadrant of Howard Ave at Kennedy Blvd	Consider constructing curb extension within northwest quadrant along Howard Ave within existing painted gore area.
46	EB Kennedy Blvd east of Howard Ave	Consider installing R4-11 (“Bicycles May Use Full Lane”) sign or W11-1 + W16-1P (Share the Road plus bicycle image) sign assembly.

Kennedy Boulevard from Westland Avenue to Oregon Avenue

Figure 37: Kennedy Blvd at Albany Ave, Looking South

Figure 38: Kennedy Blvd east of Rome Ave, Looking West

Table 8: Kennedy Boulevard, Westland Avenue to Oregon Avenue Site-Specific Strategies

ID	Location	Suggestions for Consideration
47	Kennedy Blvd at Albany Ave	Consider evaluating traffic signal warrants; Access Management Safety Study proposes converting intersection into directional median opening. Closest signalized intersections/crossings are Howard Ave (665 ft) to west and Willow Ave (2,660 ft) to east; however, planned signal for Rome Ave 1,330f ft east of Albany Ave. Alternatively, consider evaluating for pedestrian crossing with pedestrian hybrid beacon.
48	Kennedy Blvd at Fremont Ave	Vacant property with two driveways along north side of Kennedy Blvd west of Fremont Ave; consider monitoring site for development and potential to eliminate/consolidate driveways.
49	Kennedy Blvd at Fremont Ave	Consider evaluating traffic signal warrants; Access Management Safety Study proposes converting intersection into directional median opening. Closest signalized intersections/crossings are Howard Ave (1,335 ft) to west and Willow Ave (1,990 ft) to east; however, planned signal for Rome Ave 665 ft east of Fremont Ave. Alternatively, consider evaluating for pedestrian crossing with pedestrian hybrid beacon.
50	Kennedy Blvd at Rome Ave	Potential unused driveway along north side of Kennedy Blvd west of Rome Ave; consider monitoring current self-storage development to determine if existing curb cut will be eliminated.
51	Kennedy Blvd at Oregon Ave	Consider evaluating traffic signal warrants; Access Management Safety Study proposes leaving intersection as full median opening. Closest signalized intersections/crossings are Howard Ave (2,660 ft) to west and Willow Ave (665 ft) to east; however, planned signal for Rome Ave 665 ft west of Oregon Ave. Alternatively, consider evaluating for pedestrian crossing with pedestrian hybrid beacon.

Kennedy Boulevard from Oregon Avenue to Fielding Avenue

Figure 39: Kennedy Blvd at Fielding Ave, Looking East

Figure 40: Missing Pedestrian Signal, Kennedy Blvd at Willow Ave, Looking East

Table 9: Kennedy Boulevard, Oregon Avenue to Fielding Avenue Site-Specific Strategies

ID	Location	Suggestions for Consideration
52	Kennedy Blvd between Oregon Ave and Willow Ave	Potential unused driveways along north side of Kennedy Blvd; site currently used as parking lot and access to site from Kennedy Blvd fenced off. Consider monitoring site for redevelopment and eliminate driveways as necessary.
53	WB Kennedy Blvd west of Willow Ave	Consider installing R4-11 ("Bicycles May Use Full Lane") sign or W11-1 + W16-1P ("Share the Road" plus bicycle image) sign assembly.
54	Kennedy Blvd at Willow Ave	As identified in Access Management Safety Study, consider providing pedestrian signal for east-west crossing along north and south legs of intersection.
55	Kennedy Blvd at Willow Ave	Consider installing R10-15 ("Right-Turn Yield to Pedestrians") sign on all intersection approaches.
56	Kennedy Blvd at Willow Ave	Consider evaluating intersection and crosswalk lighting levels to ensure appropriate illumination being provided.
57	EB Kennedy Blvd east of Willow Ave	Consider installing R4-11 ("Bicycles May Use Full Lane") sign or W11-1 + W16-1P ("Share the Road" plus bicycle image) sign assembly.
58	Kennedy Blvd at N Delaware Ave	Consider evaluating feasibility of mid-block pedestrian crossing in vicinity of Kennedy Blvd and N Delaware Ave.
59	Kennedy Blvd at Edison Ave	Potential unused driveway along north side of Kennedy Blvd east of Edison Ave; driveway in front of Outpost blocked-off to allow for additional parking; consider contacting business and eliminating existing curb cut.
60	Kennedy Blvd west of N Boulevard St	Consider reconstructing alley crossing along north side of Kennedy Blvd; pavement currently broken and poses trip hazard.
61	Kennedy Blvd at N/S Boulevard St	Consider installing R10-15 ("Right-Turn Yield to Pedestrians") sign on all intersection approaches.
62	Kennedy Blvd at N Boulevard St	Consider evaluating intersection and crosswalk lighting levels to ensure appropriate illumination being provided.
63	EB Kennedy Blvd east of S Boulevard St	Consider installing R4-11 ("Bicycles May Use Full Lane") sign or W11-1 + W16-1P ("Share the Road" plus bicycle image) sign assembly.

Kennedy Boulevard from Fielding Avenue to Hillsborough River

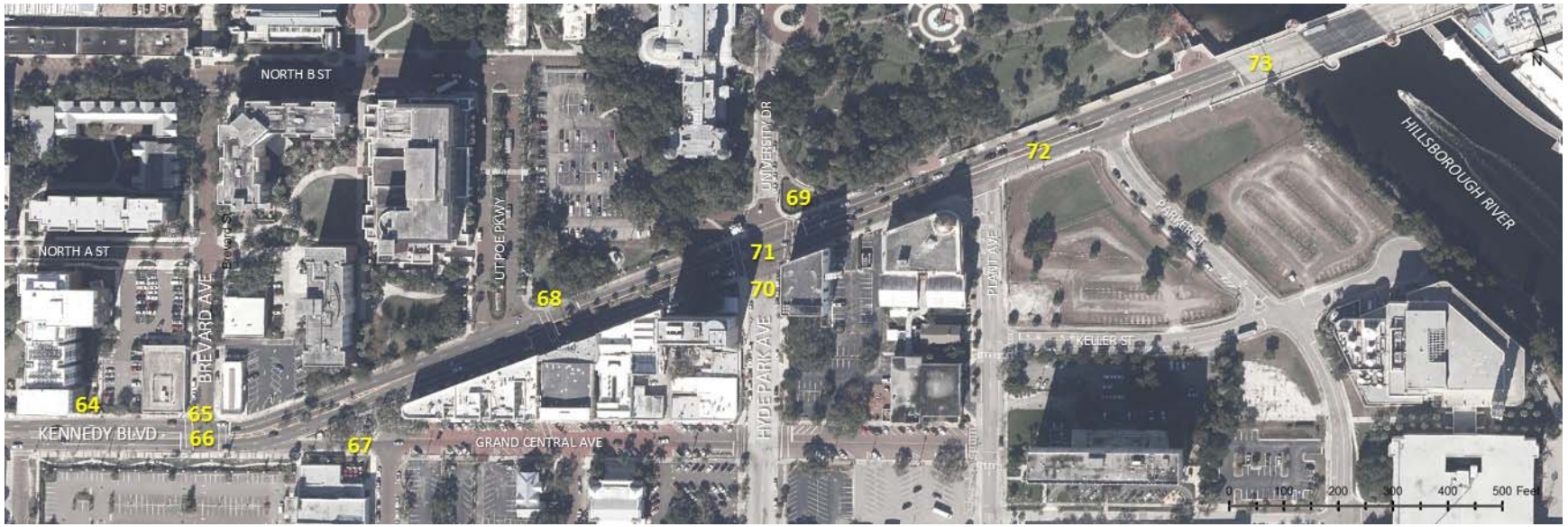


Figure 41: #67, Kennedy Blvd at Grand Central Ave Concept

Figure 42: Kennedy Blvd at UT Poe Pkwy, Looking West

Table 10: Kennedy Boulevard, Fielding Avenue to Hillsborough River Site-Specific Strategies

ID	Location	Suggestions for Consideration
64	WB Kennedy Blvd west of Brevard Ave	Consider installing R4-11 ("Bicycles May Use Full Lane") sign or W11-1 + W16-1P ("Share the Road" plus bicycle image) sign assembly.
65	SB Brevard Ave at Kennedy Blvd	Consider installing R10-15 ("Right-Turn Yield to Pedestrians") signs on WB and SB intersection approaches.
66	Brevard Ave at Kennedy Blvd	Consider evaluating intersection and crosswalk lighting levels to ensure appropriate illumination being provided.
67	Kennedy Blvd at Grand Central Ave	Consider providing marked crossing (including pedestrian ramps) across Grand Central Ave to continue sidewalk and accommodate east-west pedestrian traffic along south side of Kennedy Blvd.
68	Kennedy Blvd at UT Poe Pkwy	Consider evaluating intersection and crosswalk lighting levels to ensure that appropriate illumination is being provided.
69	WB Kennedy Blvd at University Dr	Consider installing R10-15 ("Right-Turn Yield to Pedestrians") sign.
70	Kennedy Blvd at Hyde Park Ave	Consider installing R10-15 ("Right-Turn Yield to Pedestrians") sign on EB and NB intersection approaches.
71	Kennedy Blvd at Hyde Park Ave	Consider evaluating intersection and crosswalk lighting levels to ensure appropriate illumination being provided.
72	Kennedy Blvd at Plant Ave and Parker St	Continue to monitor planning and development of proposed Lafayette Place mixed-use development; continue coordination to identify signal/crossing opportunities as development progresses.
73	Kennedy Blvd at Hillsborough River	Consider alternative options of crossing under Kennedy Blvd bridge along west bank of Hillsborough River to accommodate north-south pedestrian/bicycle movement to/from Plant Park/University of Tampa and proposed Lafayette Place mixed-use development.

Feasibility Review and Cost Estimates

Feasibility Review

For the site-specific strategies, a review of project feasibility was conducted with a goal to identify potential fatal flaws or challenges that would make the suggested enhancements unfeasible (physically or fiscally) or significantly increase the complexity and/or cost to complete the enhancement. Appendix E contains a detailed summary of the feasibility review.

Although a feasibility review was conducted to identify fatal flaws that would prohibit the type of enhancements being suggested, it is recommended that necessary engineering, survey, and/or design work be completed prior to commencing construction on any of the identified enhancements. Unless otherwise noted, most of the enhancements identified as part of this review were developed to avoid major right-of-way impacts and avoid/minimize major reconstruction of the roadway, curb, and drainage structures.

Cost Estimates

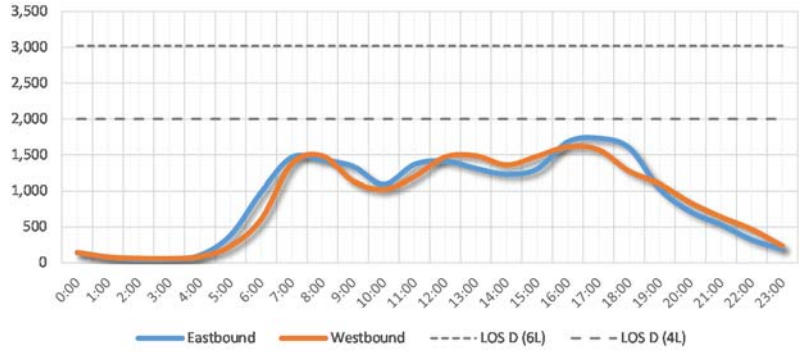
Planning-level cost estimates for the identified enhancements were developed to provide general guidance of the level of investment needed to implement the enhancements. The cost estimates were developed using a mix of generic cost estimates that were applied to the identified enhancements and do include general percentage assumptions beyond base item/construction costs for costs associated with maintenance of traffic, mobilization, engineering design, construction, engineering, and inspection (CEI), and project unknowns.

In total, the identified site-specific enhancements have a cost estimate of approximately $4 million. Again, these are planning-level estimates for implementing the identified site-specific enhancements and do not include costs associated with additional evaluation/analysis that would be required to advance the identified enhancements. The cost estimates for the site-specific enhancements are included in Appendix E along with the project feasibility review notes.

Future Considerations

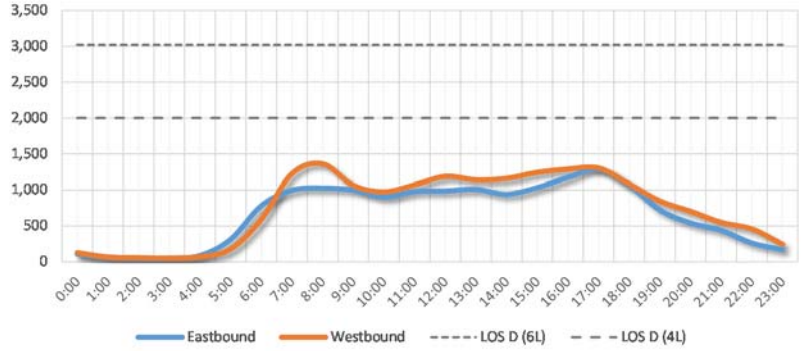
According to 2016 data from FDOT count stations 105141 (41,500 ADT) and 105140 (34,000 ADT), counts for the existing 6-lane segment of Kennedy Boulevard suggest that six travel lanes are needed to accommodate daily traffic. The observed daily traffic patterns and evaluation of peak-hour to daily ADT ratio (approximately 7.9% and 7.6%, respectively) and directional factor (approximately 57% for both locations) suggest that there may be excess capacity throughout the majority of the day along this segment (also true for 2015 traffic count data). Although it is beyond the scope of this study to conduct an operational traffic analysis along the corridor, given these noted observations, it may be worth conducting follow-up efforts that evaluate and consider options such as off-peak, on-street parking or other strategies, including the possibility of business access transit (BAT) lanes, to reduce pedestrian exposure and slow traffic when the full capacity of the 6-lane roadway may be unnecessary to meet the hourly travel demand. Figures 43 and 44 illustrate the existing directional hourly traffic volume counts along the 6-lane segments of Kennedy Boulevard, along with the directional traffic volumes. The figures show the generalized directional peak-hour LOS "D" values based on 2012 FDOT *Q/LOS Handbook* tables for both a 6-lane and 4-lane divided roadway.

Additionally, as improvements are made to the SR 60 and I-275 interchange west of the study corridor and to I-275 between Westshore and Downtown, it may become more attractive to many to use the interstate corridor and not Kennedy Boulevard for longer-haul trips. If improvements to the SR 60 and I-275 interchange and to I-275 as a whole decrease the demand for traffic along Kennedy Boulevard, consideration of a permanent lane elimination on the 6-lane section of Kennedy Boulevard may be warranted.



Source: FDOT Florida Traffic Online Synopsis Reports, 2015, Site 105141; 2012 FDOT Q/LOS Generalized Tables (Table 7)

Figure 43: Hourly Directional Traffic Volumes, Kennedy Blvd East of Westshore Blvd



Source: FDOT Florida Traffic Online Synopsis Reports, 2015, Site 105140; 2012 FDOT Q/LOS Generalized Tables (Table 7)

Figure 44: Hourly Directional Traffic Volumes, Kennedy Blvd West of Dale Mabry Highway

Appendix A: Kennedy Boulevard Access Management Safety Study Recommendations Summary

Kennedy Boulevard Access Management Safety Study Recommendations Summary

From Section 4.7 (Recommendations) of the State Road 60 (Kennedy Boulevard) Access Management Safety Study:

Tables 4-9 and 4-10 provide a color-coded summary of the existing conditions at each median opening using the previously described criteria. The recommendation for a median opening improvement was based on a detailed analysis of all of these factors, as well as any traffic operational issues noted during the qualitative assessments. Unsignalized median openings with two (2) or more correctable collisions per year (Yellow) and deficient median opening spacing in both directions (Red) typically represent the greatest safety concerns. Conceptual plans provided in Appendix D include aerial views of the entire study area and identify the proposed improvement recommendations for each median opening.

Of the 24 total signalized and unsignalized median openings analyzed in Segment One, 22 (92%) are recommended as candidates for median opening improvement (Reference Table 4-9). Of the 27 total signalized and unsignalized median openings analyzed in Segment Two, 21 (78%) are recommended as candidates for median opening improvement (Reference Table 4-10). Overall, 43 (84%) of the 51 total unsignalized median openings have been recommended as candidates for median opening improvement.

The analysis of the 40 unsignalized median openings has considered the advantages and disadvantages of channelizing the traffic. In general, the advantages and disadvantages are as follows:

- The median opening modifications proposed will increase the travel distance for some minor truck turning movements and may affect the accustomed access patterns for large service vehicles.
- The overall total delay to vehicles using the median openings is not expected to change substantially.
- The median opening improvements are anticipated to significantly reduce the number of conflict points for turning vehicles and, as a result, should improve the overall safety of the corridor.
- Implementation of the recommended median opening improvements will bring increased conformance to the FDOT Access Management standards.
- Signalized intersections have a greater overall collision experience, primarily due to the heavier volumes at these locations. However, right-angle collisions should be reduced at signalized intersections. Although red-light running is a common enforcement problem, left-turn collisions can frequently be mitigated by signal phasing changes.

The median opening improvements, as proposed throughout the study corridor, will have a minimal impact on existing truck traffic. Of the 40 existing unsignalized median openings, 14 (35%) are recommended for closure. This will require trucks to be re-routed and travel farther; however, truck traffic should be adequately accommodated with the number of proposed directional openings and the proposed lengthening of the existing left-turn lanes / construction of new left-turn lanes.

Of the recommended modifications at signalized and unsignalized median openings, many can be considered short-term improvements. These include:

- Performing a corridor lighting study to determine the lighting level along the corridor and upgrading illumination where needed.
- Installing R10-15 signage for left and right turns off Armenia Avenue and Howard Avenue.
- Considering high emphasis crosswalks at all marked crossings, signals and side streets.
- FDOT conducting counts to determine where midblock warrants are met and conducting a signal warrant study for Rome Avenue.
- Reviewing the corridor cycle lengths, phasing and splits to reduce wait times and increase pedestrian compliance.
- Conducting a traffic signal timing study at Henderson Boulevard and reviewing the feasibility of a signalized crossing here.
- Considering "Share the Road" signage.
- Lengthening the westbound left-turn lane at Manhattan Avenue to 285 feet.
- Lengthening the eastbound left-turn lane at Hubert Avenue to 285 feet and the westbound left-turn lane to 180 feet.
- Lengthening the eastbound left-turn lane at Lois Avenue to 400 feet.
- Lengthening the westbound left-turn lane at Dale Mabry Highway to 390 feet.
- Adjusting the eastbound and westbound left-turn lanes at Sterling Avenue to 200 feet.
- Lengthening the eastbound left-turn lane at Himes Avenue to 350 feet and lengthening the westbound left-turn lane to 300 feet.
- Lengthening the eastbound left-turn lane at Glen Avenue to 255 feet.
- Modifying striping to reflect a two-way left-turn lane from Bungalow Park Avenue to Armenia Avenue.
- Reconstructing the raised island on the west leg of Armenia Avenue.
- Installing a modified raised median on the east leg of Albany Avenue.
- Installing a modified raised median on the east leg of Freemont Avenue.
- Lengthen westbound left-turn lane at Oregon Avenue to 255 feet.

The remaining recommendations at median openings shown in Table 4-9 and Table 4-10 are mid-term improvements that should be considered as additions to the FDOT's 5-Year Work Program.

Table 4-9: Segment One Median Opening Improvement Recommendation Summary

Median Opening ID	Mile Post	Median Opening Type (Full, Directional, Signal)	Median Opening / Intersection	Collision Criterion	Median Spacing Criterion	Left-Turn Storage Criterion	Median Opening Improvement Recommendations
1-A	1.608	Signalized	Westshore Boulevard				Lengthen westbound overall dual left-turn length to 760 feet.
1-B	1.671	Full	S Renelle Drive				Close median opening.
1-C	1.739	Full	Trask Street				Lengthen westbound left-turn lane to 285 feet.
1-D	1.795	Full	Cooper Place				Close median opening.
1-E	1.859	Full	Hesperides Street				Covert to bi-directional median opening. Lengthen eastbound and westbound left-turn lanes to 285 feet.
1-F	1.922	W/B In - E/B Out	Lauber Way				Close median opening.
1-G	1.984	Full	Manhattan Avenue				Lengthen eastbound and westbound left-turn lanes to 285 feet.
1-H	2.109	Full	Hubert Avenue				Lengthen eastbound left-turn lane to 285 feet. Lengthen westbound left- turn lane to 180 feet.
1-I	2.234	Signalized	Lois Avenue				Lengthen eastbound left-turn lane to 400 feet. Lengthen westbound left- turn lane to 285 feet.
1-J	2.296	Full	Krental Avenue				Close median opening.
1-K	2.359	Full	Clark Avenue				Covert to bi-directional median opening. Lengthen eastbound and westbound left-turn lanes to 250 feet.
1-L	2.422	Full	Hale Avenue				Close median opening.
1-M	2.488	Full	Grady Avenue				Lengthen eastbound left-turn lane to 285 feet.
1-N	2.616	E/B Directional	Church Avenue				No Change
1-O	2.748	Signalized	Dale Mabry Highway				Lengthen westbound left-turn lane to 390 feet.

Median Opening ID	Mile Post	Median Opening Type (Full, Directional, Signal)	Median Opening / Intersection	Collision Criterion	Median Spacing Criterion	Left-Turn Storage Criterion	Median Opening Improvement Recommendations
1-P	2.874	Full	Sterling Avenue				Convert to bi-directional median opening. Adjust eastbound and westbound left-turn lanes to 200 feet.
1-Q	2.999	Signalized	Himes Avenue				Lengthen eastbound left-turn lane to 350 feet. Lengthen westbound left- turn lane to 300 feet.
1-R	3.127	Full	Glen Avenue				Lengthen eastbound left-turn lane to 255 feet. Construct a westbound left-turn lane 200 feet in length.
1-S	3.193	Full	Beverly Avenue				Close median opening.
1-T	3.255	Full	Lincoln Avenue				Lengthen eastbound and westbound left-turn lanes to 255 feet.
1-U	3.318	Full	Bradford Avenue				Close median opening.
1-V	3.362	Signalized	Henderson Boulevard				No Change
1-W	1.047	Full	Woodlynne Avenue				Close median opening.
1-X	1.110	Signalized	MacDill Avenue				Lengthen westbound left-turn lane to 200 feet.

COLOR LEGEND:

Low Priority unsignalized median opening based on criterion metrics

Medium Priority unsignalized median opening based on criterion metrics

High Priority unsignalized median opening based on criterion metrics

Signalized Intersection

Table 4-10: Segment Two Median Opening Improvement Recommendation Summary

Median Opening ID	Mile Post	Median Opening Type (Full, Directional, Signal)	Median Opening / Intersection	Collision Criterion	Median Spacing Criterion	Left-Turn Storage Criterion	Median Opening Improvement Recommendations
2-A	1.173	Full	New Jersey Avenue				Convert to westbound directional median opening. Install modified raised median 18" wide on east leg of intersection extending to Gomez Avenue
2-B	1.235	Full	Gomez Avenue				No Change
2-C	1.299	Full	Bungalow Park Avenue				Modify striping to reflect a two-way left-turn lane from Bungalow Park Avenue to Armenia Avenue
2-D	1.362	Full	Habana Avenue				Modify striping to reflect a two-way left-turn lane from Bungalow Park Avenue to Armenia Avenue
2-E	1.445	Full	Arrawana Avenue				Modify striping to reflect a two-way left-turn lane from Bungalow Park Avenue to Armenia Avenue
2-F	1.528	Full	Tampania Avenue				Modify striping to reflect a two-way left-turn lane from Bungalow Park Avenue to Armenia Avenue
2-G	1.612	Signalized	Armenia Avenue				Reconstruct raised island on west leg of intersection. Lengthen westbound left- turn lane to 255 feet.
2-H	1.672	Full	Moody Avenue				Close median opening
2-I	1.736	Signalized	Howard Avenue				Lengthen eastbound left-turn lane to 255 feet.
2-J	1.798	Full	Westland Avenue				Close median opening
2-K	1.862	Full	Albany Avenue				Convert to bi-directional median opening. Lengthen eastbound left-turn lane to 255 feet.
2-L	1.926	Full	Melville Avenue				No Change

Median Opening ID	Mile Post	Median Opening Type (Full, Directional, Signal)	Median Opening / Intersection	Collision Criterion	Median Spacing Criterion	Left-Turn Storage Criterion	Median Opening Improvement Recommendations
2-M	1.988	Full	Freemont Avenue				Convert to bi-directional median opening.
2-N	2.053	Full	Packwood Avenue				No Change
2-O	2.117	Full	Rome Avenue				Construct traffic signal per FDOT Traffic Operations internal recommendations. Lengthen westbound left-turn lane to 200 feet.
2-P	2.178	Full	S Dakota Avenue				Convert to westbound directional median opening. Construct westbound left- turn lane 125 feet in length.
2-Q	2.241	Full	Oregon Avenue				Lengthen eastbound left-turn lane to 160 feet. Lengthen westbound left-turn lane to 255 feet.
2-R	2.299	Full	S Orleans Avenue				Close median opening
2-S	2.371	Signalized	Willow Avenue				Lengthen eastbound and westbound left-turn lanes to 280 feet.
2-T	2.431	Full	S Newport Avenue				Close median opening
2-U	2.494	Full	S Delaware Avenue				No Change
2-V	2.522	Full	N Delaware Avenue				No Change
2-W	2.559	Full	S Edison Avenue				Close median opening
2-X	2.572	Full	N Edison Avenue				Close median opening
2-Y	2.622	Signalized	N Boulevard				Lengthen eastbound left-turn lane to 300 feet.

Median Opening ID	Mile Post	Median Opening Type (Full, Directional, Signal)	Median Opening / Intersection	Collision Criterion	Median Spacing Criterion	Left-Turn Storage Criterion	Median Opening Improvement Recommendations
2-Z	2.677	Full	S Fielding Avenue				Convert to westbound directional median opening. Adjust westbound left-turn lane to 100 feet in length.
2-ZZ	2.734	Signalized	N Brevard Avenue				No Change.

COLOR LEGEND:

- Low Priority unsignalized median opening based on criterion metrics
- Medium Priority unsignalized median opening based on criterion metrics
- High Priority unsignalized median opening based on criterion metrics
- Signalized Intersection

From Section 3.3 (Location Specific Pedestrian/Bicycle Recommendations) of the State Road 60 (Kennedy Boulevard) Access Management Safety Study:

During the crash review, four locations along the corridor were identified of particular interest.

- There were 10 pedestrian/bicycle crashes between Habana Avenue and Tampania Avenue
- There were 3 crashes at Armenia Avenue, all of which involved southbound right turning vehicles
- There were two crashes involving southbound left-turning vehicles at Rome Avenue
- There were four pedestrian/bicycle crashes at or in the vicinity of Willow Avenue

As nearly half of the crashes are focused at these key locations, they will be the focus of the recommendations.

- Consider providing a raised median for pedestrian refuge between Habana Avenue and Arawana Avenue and between Arawana Avenue and Tampania Avenue.

- At Armenia Avenue and Howard Avenue, install R10-15 signage for the left and right turns off Armenia Avenue and Howard Avenue.
- At Willow Avenue, there are no pedestrian features for the east/west pedestrian crossings. This may be due to the railroad through the intersection. However, consider providing these facilities and coordinating with the railroad. Also coordinate this with the City of Tampa, as a Willow Avenue project is currently under design.
- North Boulevard experiences significant pedestrian activity when the University of Tampa is in session. Often, this foot traffic is on the west leg of the intersection and results in significant delay for southbound right turning vehicles. Review the feasibility of developing a dedicated southbound right-turn lane with a channelized island (large enough to serve as pedestrian refuge). This improvement would be both a capacity and safety benefit.
- Recommend FDOT conduct counts to determine where midblock warrants are met and also if Rome meets signalization warrants.

From Section 4.7 (Area-Wide Pedestrian/Bicycle Recommendations) of the State Road 60 (Kennedy Boulevard) Access Management Safety Study:

Review the existing lighting levels. If they are deficient, consider upgrades to the corridor and intersection lighting.

- Due to the high pedestrian volumes throughout, consider high emphasis crosswalks at all marked crossings, signals and sidestreets.
- Implement the R10-15 signage at signalized intersections.
- Consider installing feedback lights on pedestrian signals that light up when the phase has been activated to communicate to the pedestrian that the pedestrian phase will soon transition to “walk”
- Consider reviewing the corridor cycle lengths and splits. Shorter cycle lengths reduce wait times and increase pedestrian compliance.

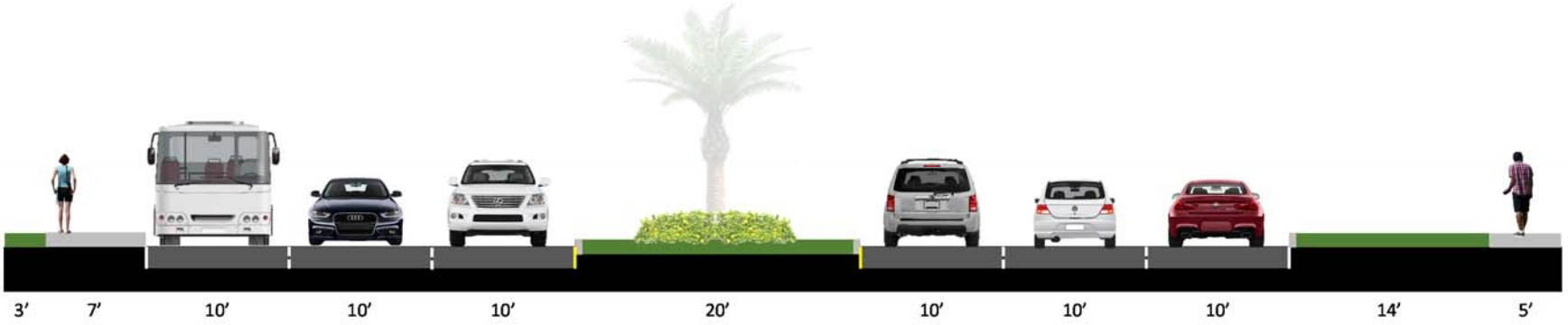
<u>Other Suggestions for Consideration (potentially outside of the scope of this analysis)</u>

- Consider the feasibility of constructing a traffic signal at Rome Avenue.
- Review the feasibility of a signalized crossing at Henderson Boulevard. This would likely be best placed on the west leg. Prior to consideration, a traffic signal timing study would need to be conducted.
- Due to the high volumes of pedestrians between Habana Avenue and Tampania Avenue, suggest a study to determine if a HAWK or RRFB would be an appropriate application in conjunction with raised median refuge.
- For all left turn movements from Kennedy Boulevard, consider deployment of a flashing yellow arrow. Consider manipulating the phasing by time-of-day based on pedestrian actuation.
- As this is a high speed corridor, and ROW constrained, bike lanes and/or Sharrows are not likely to be the preferred treatment. Consider “Share the Road” signage.
- With any redevelopment, seek opportunities to widen the existing sidewalk and remove utility obstructions (see the development in front of the UT facilities).

- Rome Avenue/Wal-Mart Considerations
  - Review the feasibility of converting the Wal-Mart driveway to a westbound directional median opening.
  - If Rome Avenue is signalized, accommodate pedestrian crossings with intersection lighting.
  - If Rome Avenue is not signalized AND Wal-Mart is converted to directional, look for an opportunity to create a midblock crossing near Wal-Mart (signalized or not)

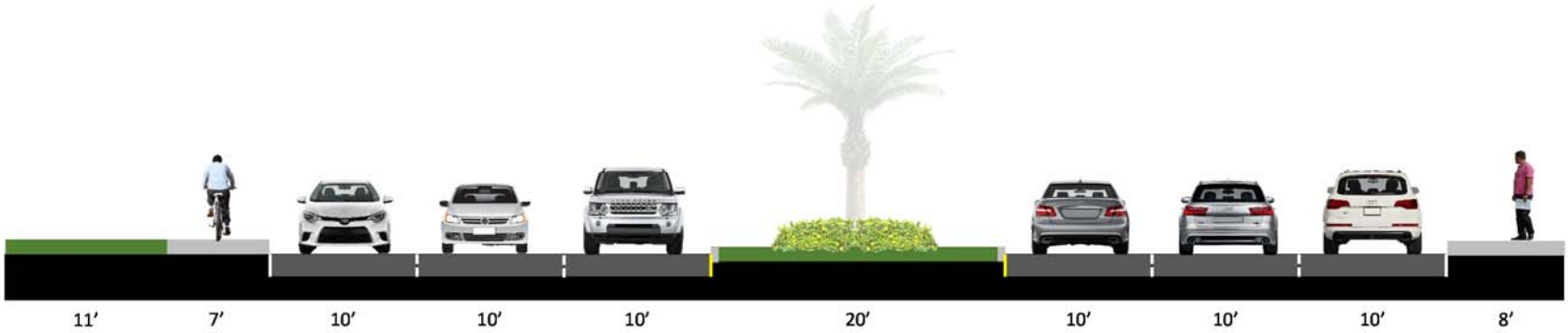
Appendix B: Kennedy Boulevard Typical Cross Sections

1. Kennedy Boulevard, From Westshore Boulevard to Manhattan Avenue



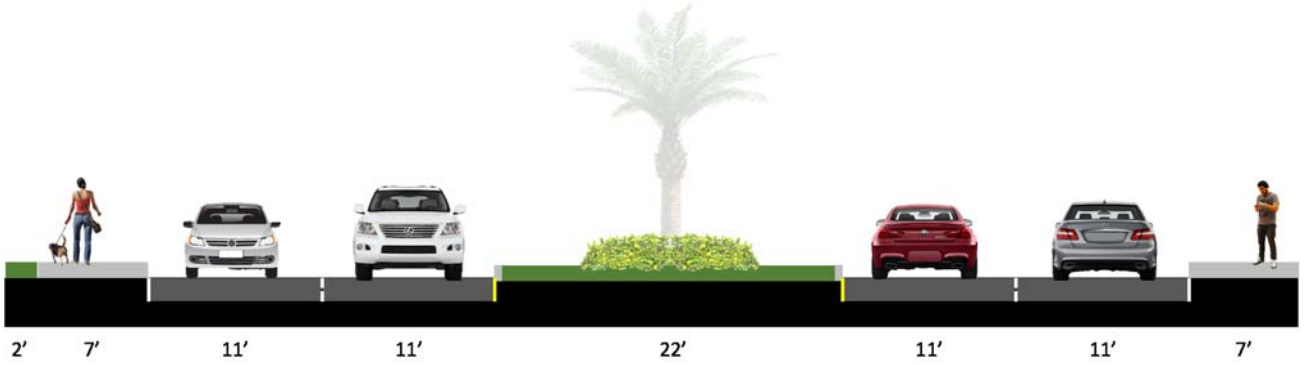
Actual conditions may vary, cross section is representative of the typical observed condition; measurements derived from aerial imagery review

2. Kennedy Boulevard, From Manhattan Avenue to Church Avenue



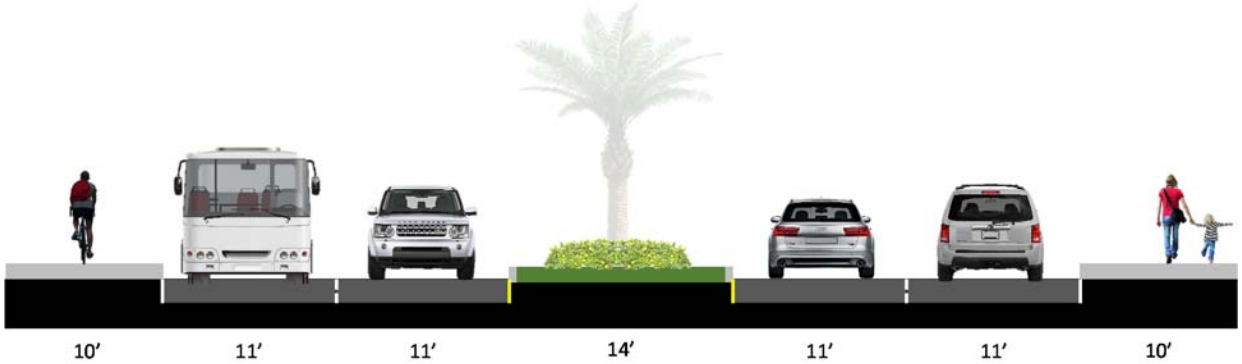
Actual conditions may vary, cross section is representative of the typical observed condition; measurements derived from aerial imagery review

3. Kennedy Boulevard, From Dale Mabry Highway to MacDill Avenue



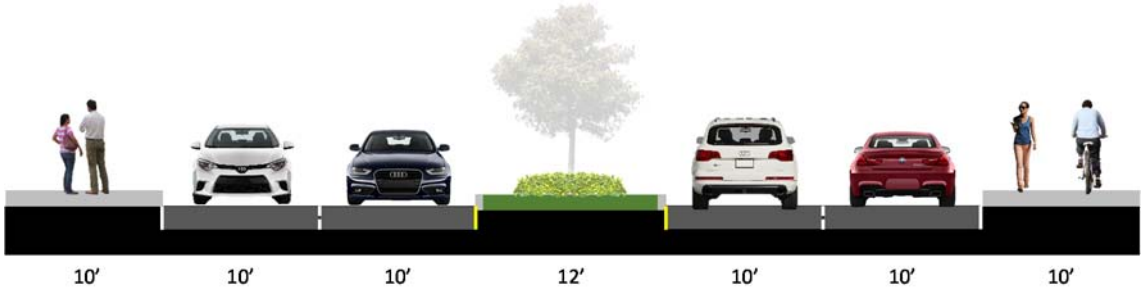
Actual conditions may vary, cross section is representative of the typical observed condition; measurements derived from aerial imagery review

4. Kennedy Boulevard, From MacDill Avenue to Tampania Avenue



Actual conditions may vary, cross section is representative of the typical observed condition; measurements derived from aerial imagery review

5. Kennedy Boulevard, From Tampania Avenue to Brevard Avenue



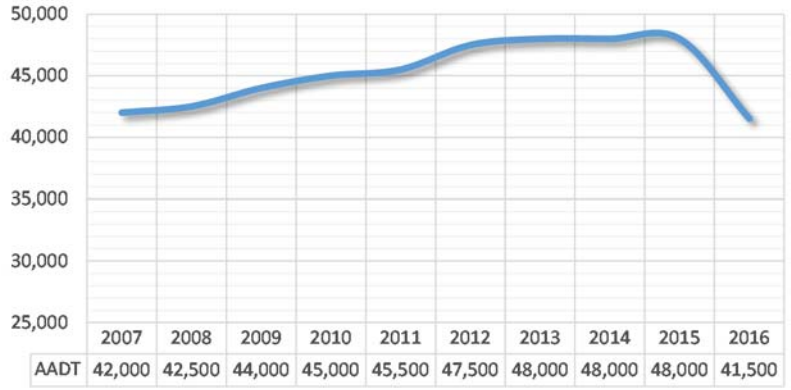
Actual conditions may vary, cross section is representative of the typical observed condition; measurements derived from aerial imagery review

Appendix C: Kennedy Boulevard Daily Traffic Count Data

1. Kennedy Boulevard, East of Westshore Boulevard, Count Station: 5141

Data Source: FDOT Transportation Statistics Office, Historical AADT Report and Synopsis Report

Historical AADT

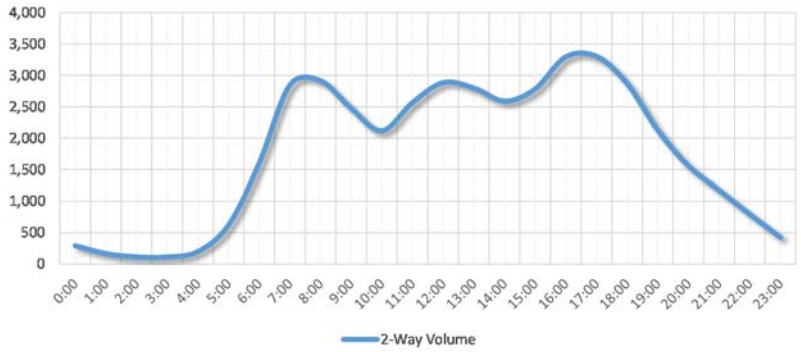


	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
AADT	42,000	42,500	44,000	45,000	45,500	47,500	48,000	48,000	48,000	41,500

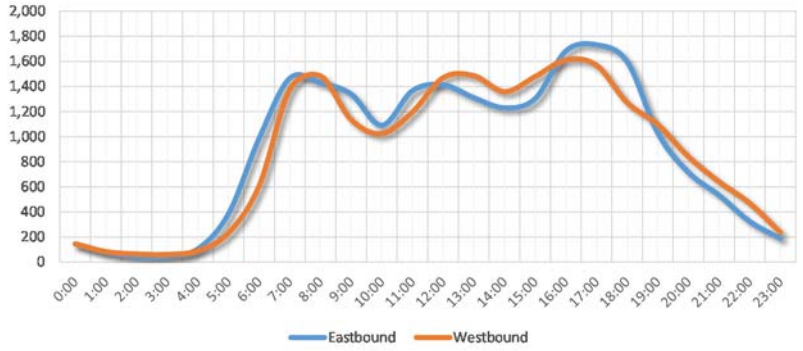
2016 Daily Traffic, Count Dates: 10/11/16 – 10/12/16

Daily traffic counts derived from the average of the Synopsis Report two-day traffic counts

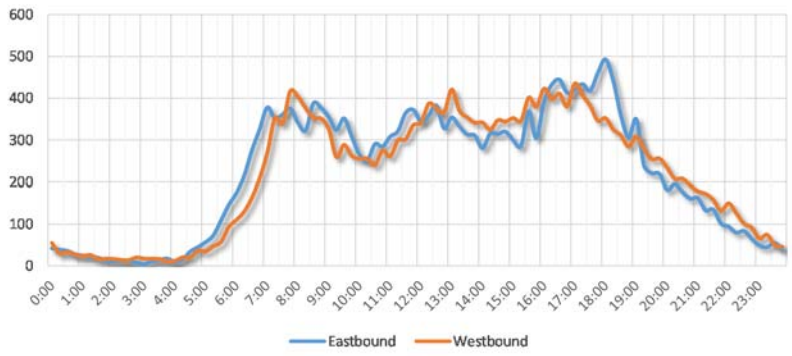
2016 Hourly Traffic Volumes



2016 Hourly Directional Traffic Volumes



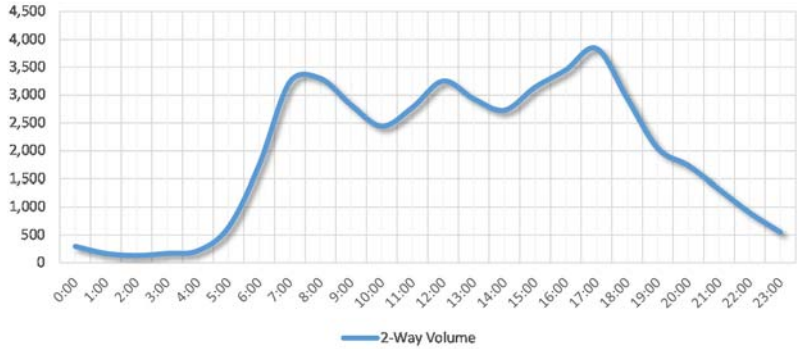
2016 15-Minute Directional Traffic Volumes



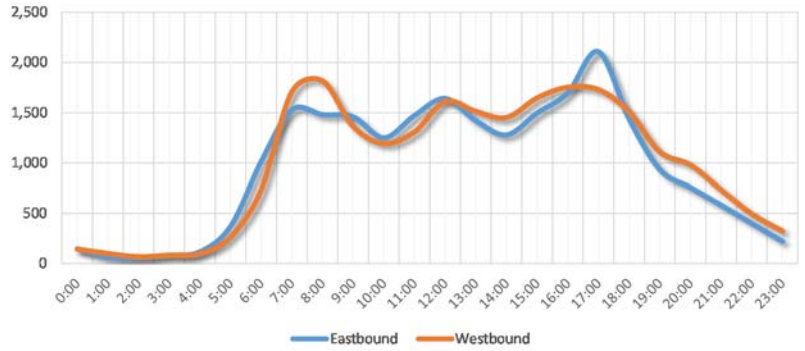
2015 Daily Traffic, Count Dates: 9/8/15 – 9/9/15

Daily traffic counts derived from the average of the Synopsis Report two-day traffic counts

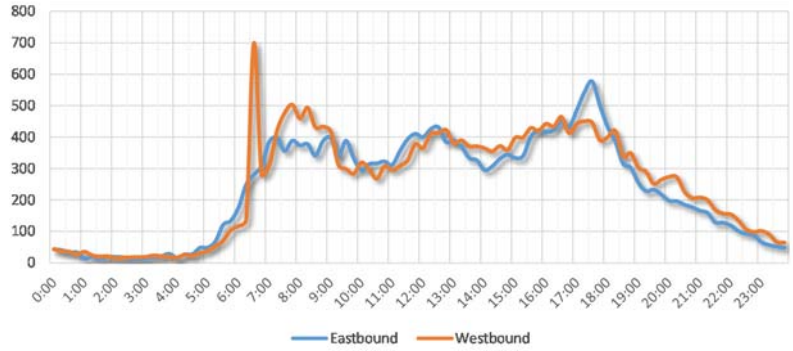
2015 Hourly Traffic Volumes



2015 Hourly Directional Traffic Volumes



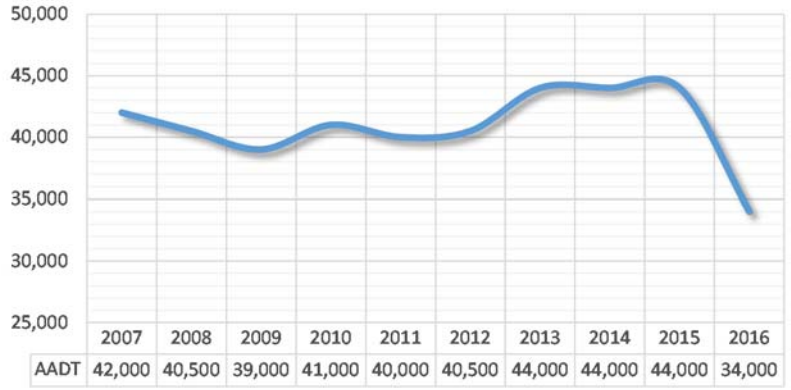
2015 15-Minute Directional Traffic Volumes



2. Kennedy Boulevard, West of Dale Mabry Highway, Count Station: 5140

Data Source: FDOT Transportation Statistics Office, Historical AADT Report and Synopsis Report

Historical AADT

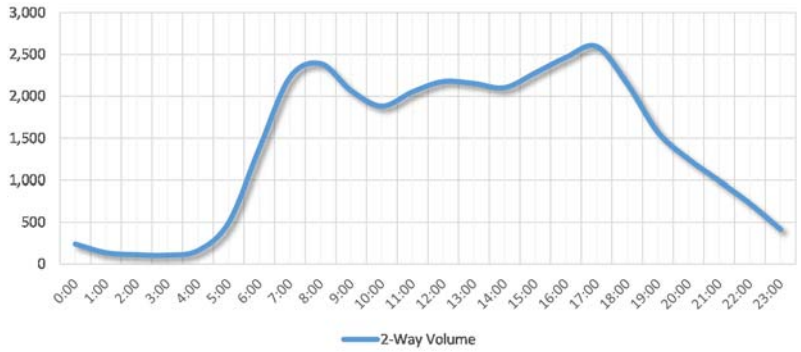


	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
AADT	42,000	40,500	39,000	41,000	40,000	40,500	44,000	44,000	44,000	34,000

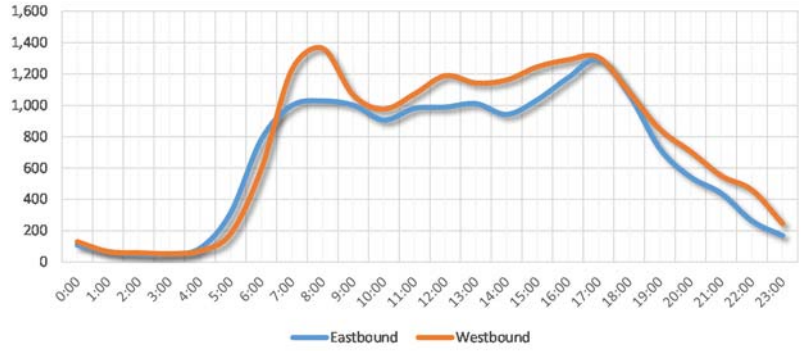
2016 Daily Traffic, Count Dates: 9/26/16 – 9/27/16

Daily traffic counts derived from the average of the Synopsis Report two-day traffic counts

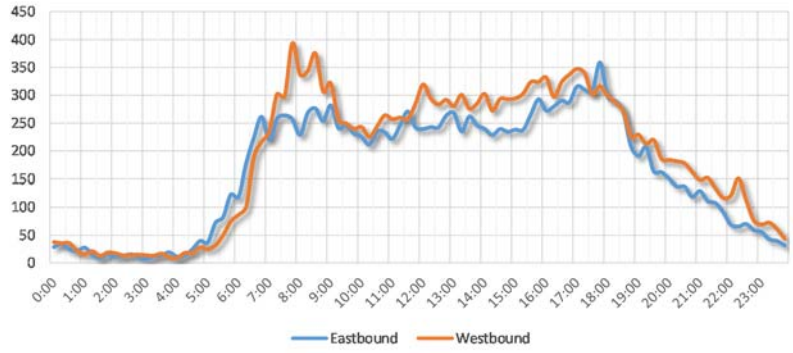
2016 Hourly Traffic Volumes



2016 Hourly Directional Traffic Volumes



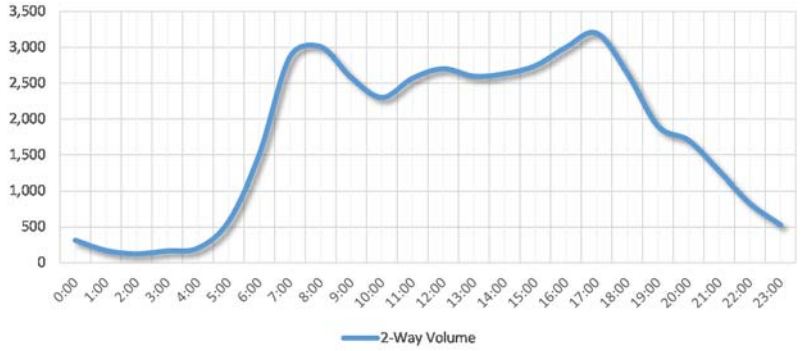
2016 15-Minute Directional Traffic Volumes



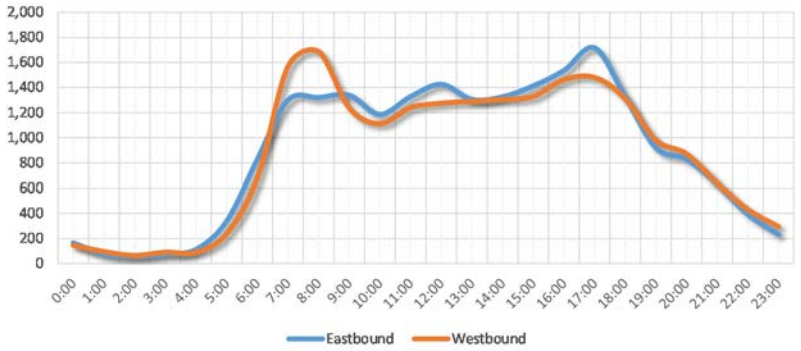
2015 Daily Traffic, Count Dates: 9/8/15 – 9/9/15

Daily traffic counts derived from the average of the Synopsis Report two-day traffic counts

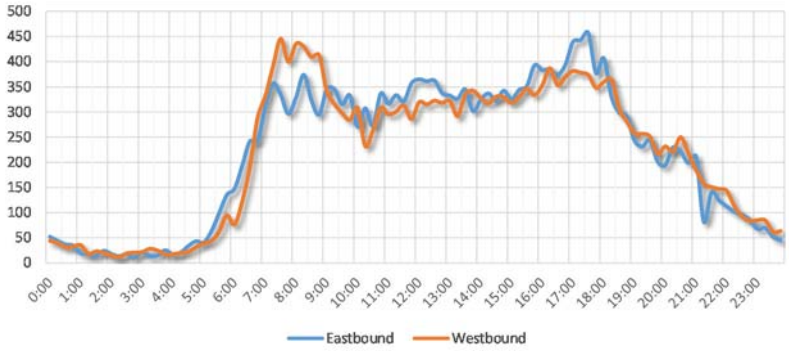
2015 Hourly Traffic Volumes



2015 Hourly Directional Traffic Volumes



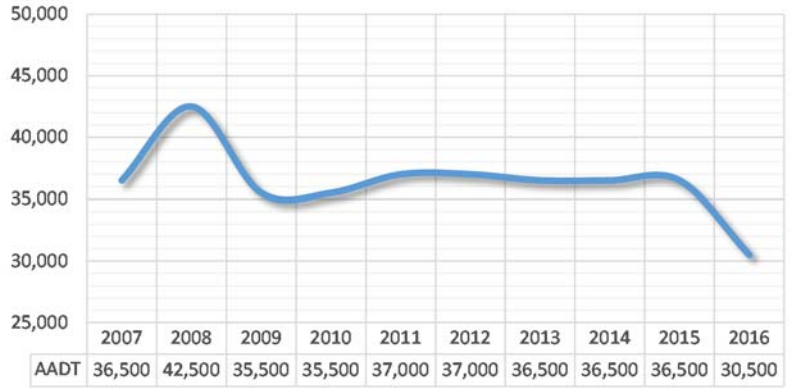
2015 15-Minute Directional Traffic Volumes



3. Kennedy Boulevard, East of Dale Mabry Highway, Count Station: 5139

Data Source: FDOT Transportation Statistics Office, Historical AADT Report and Synopsis Report

Historical AADT

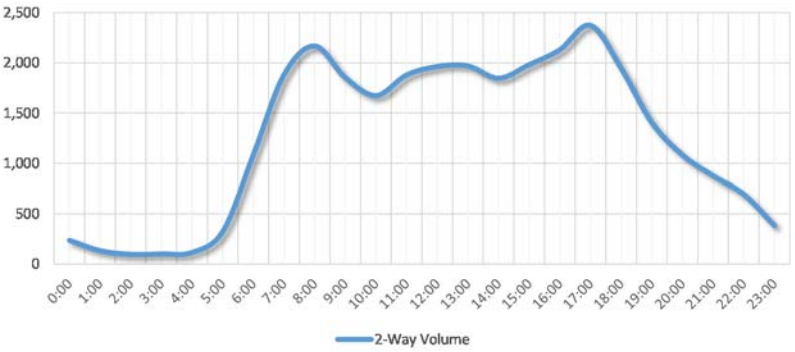


	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
AADT	36,500	42,500	35,500	35,500	37,000	37,000	36,500	36,500	36,500	30,500

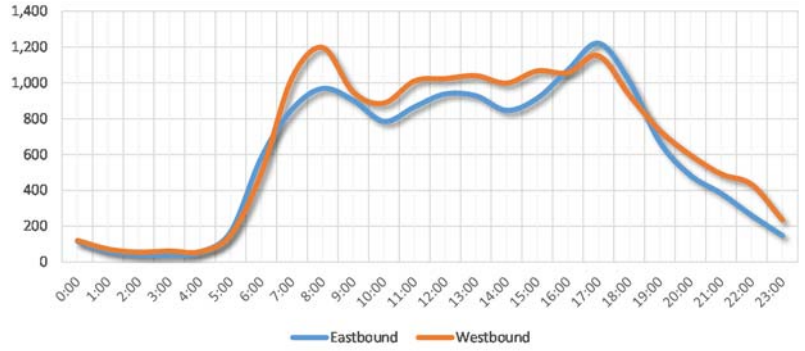
2016 Daily Traffic, Count Dates: 9/26/16 – 9/27/16

Daily traffic counts derived from the average of the Synopsis Report two-day traffic counts

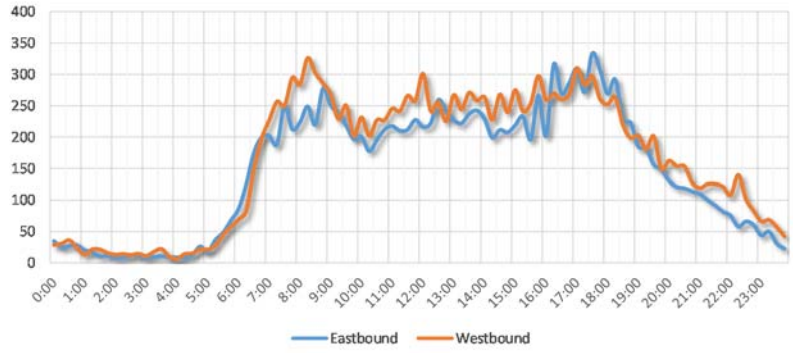
2016 Hourly Traffic Volumes



2016 Hourly Directional Traffic Volumes



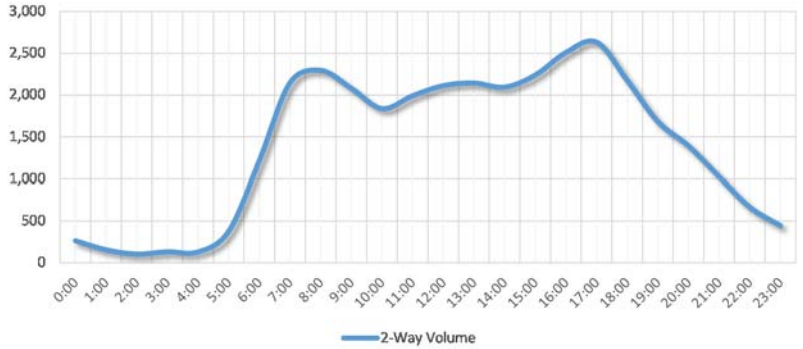
2016 15-Minute Directional Traffic Volumes



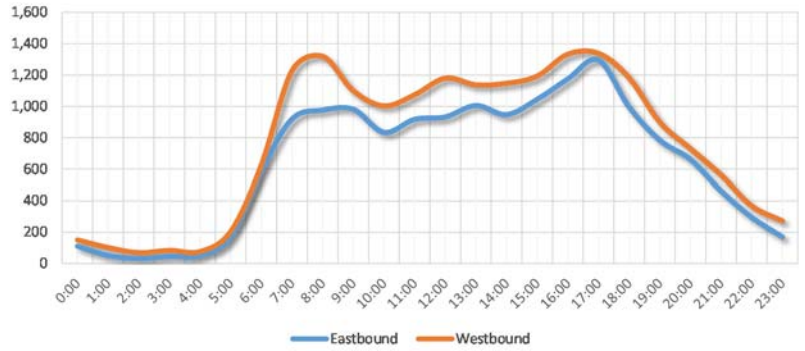
2015 Daily Traffic, Count Dates: 9/8/15 – 9/9/15

Daily traffic counts derived from the average of the Synopsis Report two-day traffic counts

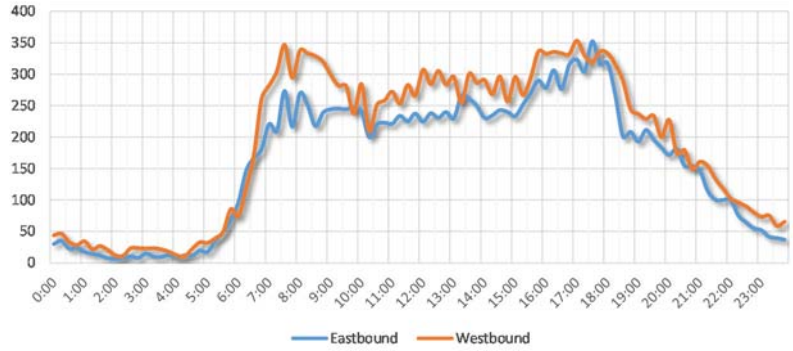
2015 Hourly Traffic Volumes



2015 Hourly Directional Traffic Volumes



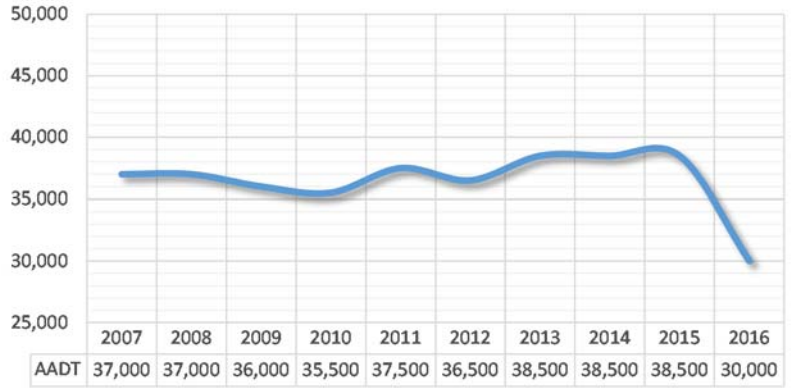
2015 15-Minute Directional Traffic Volumes



4. Kennedy Boulevard, West of Henderson Boulevard, Count Station: 5138

Data Source: FDOT Transportation Statistics Office, Historical AADT Report and Synopsis Report

Historical AADT

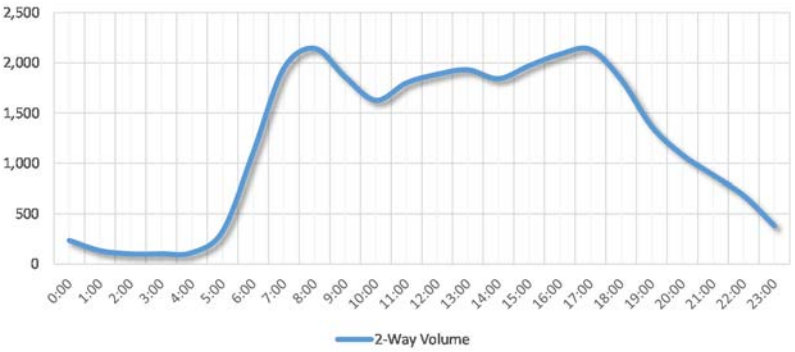


	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
AADT	37,000	37,000	36,000	35,500	37,500	36,500	38,500	38,500	38,500	30,000

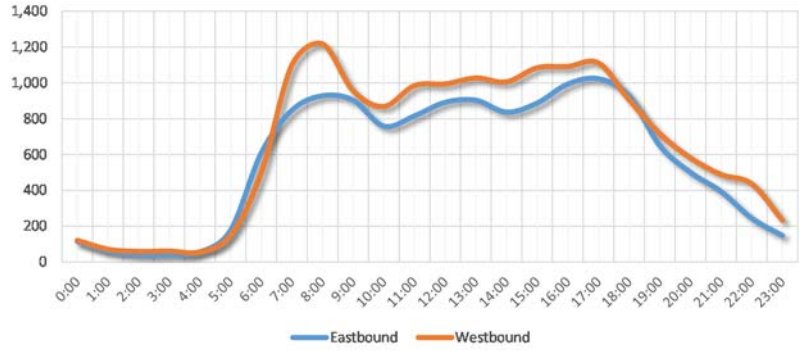
2016 Daily Traffic, Count Dates: 9/26/16 – 9/27/16

Daily traffic counts derived from the average of the Synopsis Report two-day traffic counts

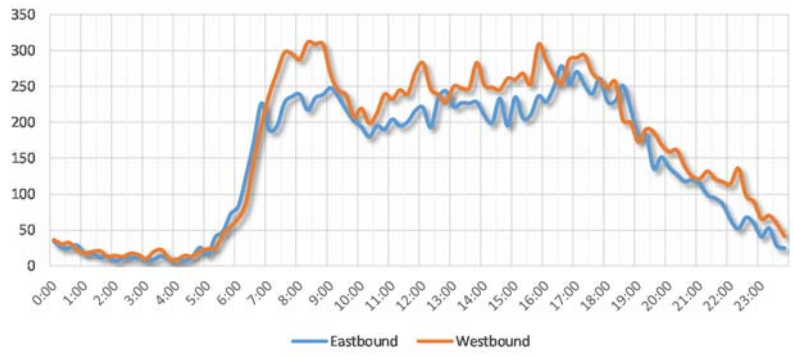
2016 Hourly Traffic Volumes



2016 Hourly Directional Traffic Volumes



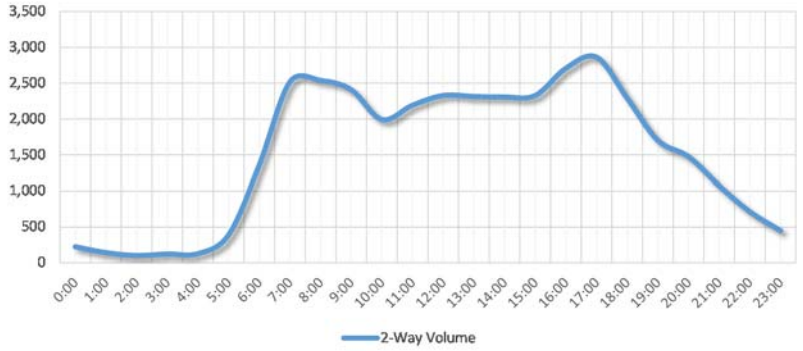
2016 15-Minute Directional Traffic Volumes



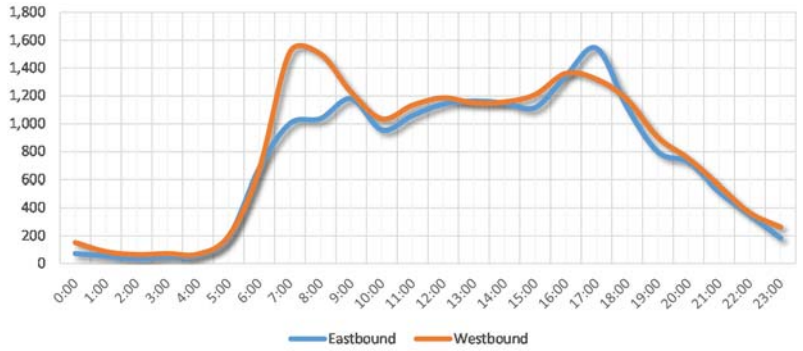
2015 Daily Traffic, Count Dates: 9/8/15 – 9/9/15

Daily traffic counts derived from the average of the Synopsis Report two-day traffic counts

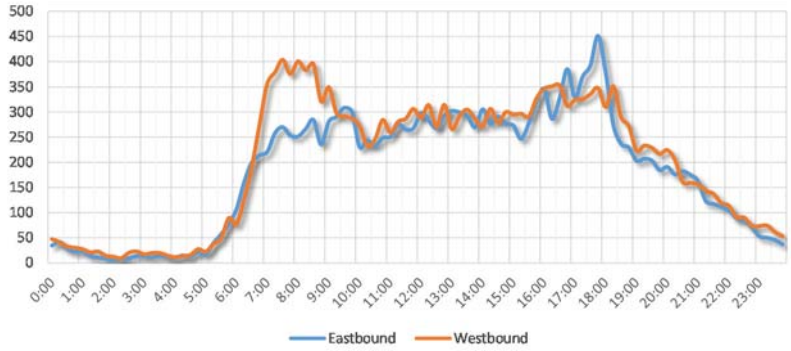
2015 Hourly Traffic Volumes



2015 Hourly Directional Traffic Volumes



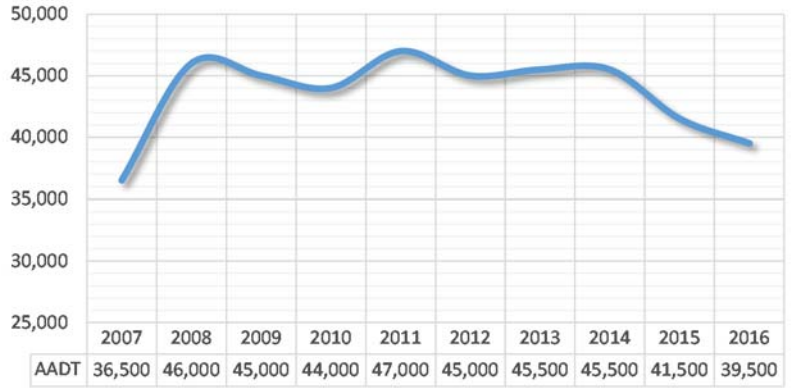
2015 15-Minute Directional Traffic Volumes



5. Kennedy Boulevard, East of Henderson Boulevard, Count Station: 5355

Data Source: FDOT Transportation Statistics Office, Historical AADT Report and Synopsis Report

Historical AADT

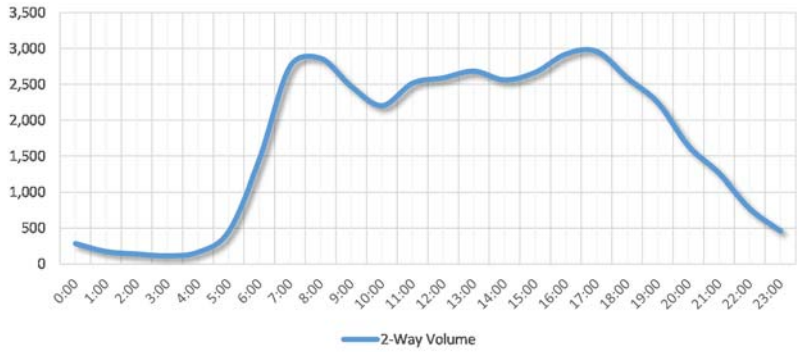


	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
AADT	36,500	46,000	45,000	44,000	47,000	45,000	45,500	45,500	41,500	39,500

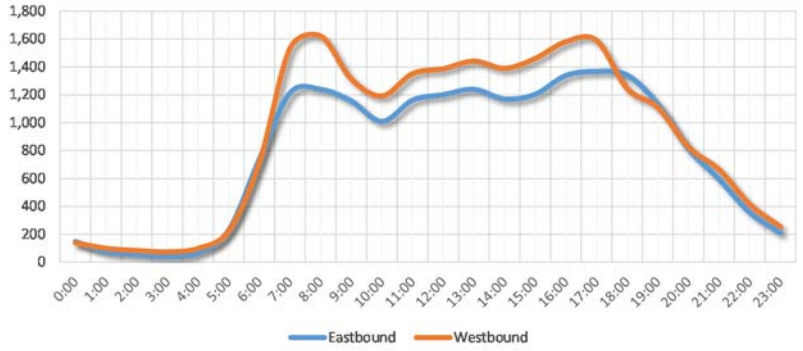
2016 Daily Traffic, Count Dates: 10/11/16 – 10/12/16

Daily traffic counts derived from the average of the Synopsis Report two-day traffic counts

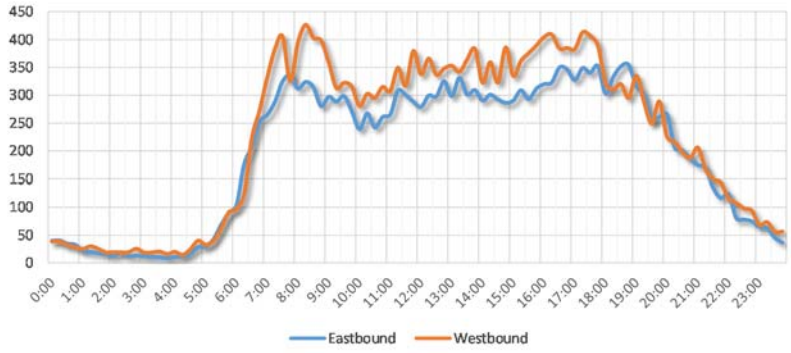
2016 Hourly Traffic Volumes



2016 Hourly Directional Traffic Volumes



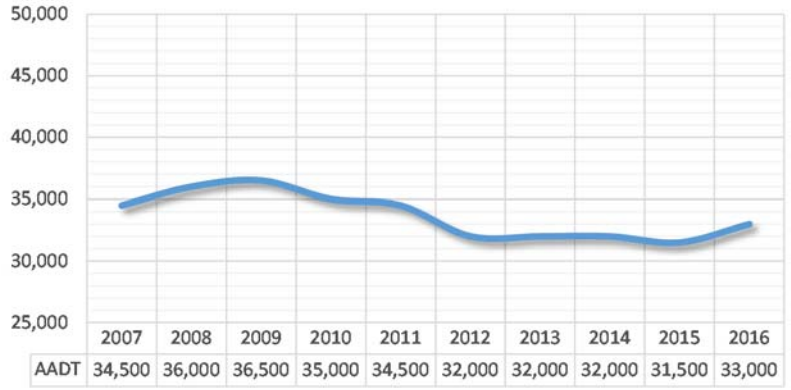
2016 15-Minute Directional Traffic Volumes



6. Kennedy Boulevard, West of Willow Avenue, Count Station: 5136

Data Source: FDOT Transportation Statistics Office, Historical AADT Report and Synopsis Report

Historical AADT

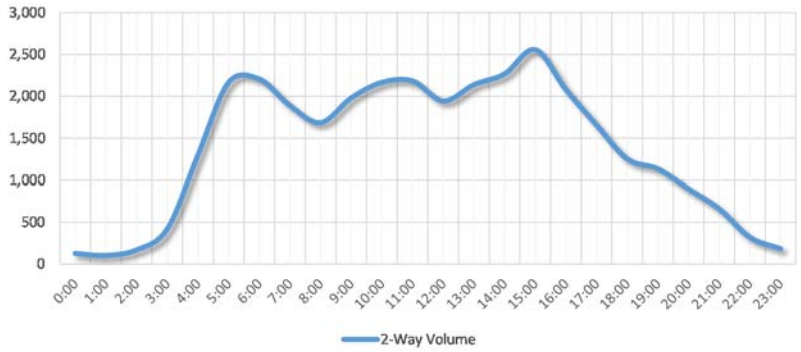


	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
AADT	34,500	36,000	36,500	35,000	34,500	32,000	32,000	32,000	31,500	33,000

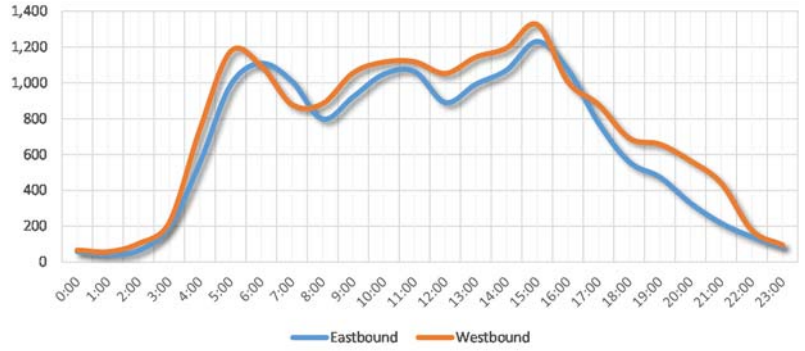
2016 Daily Traffic, Count Dates: 10/17/16 – 10/18/16

Daily traffic counts derived from the average of the Synopsis Report two-day traffic counts

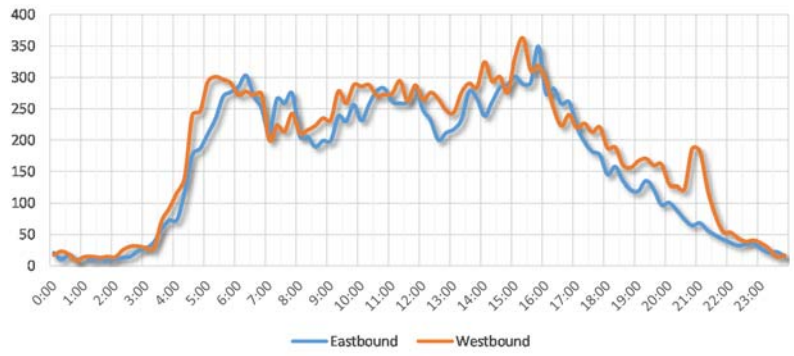
2016 Hourly Traffic Volumes



2016 Hourly Directional Traffic Volumes



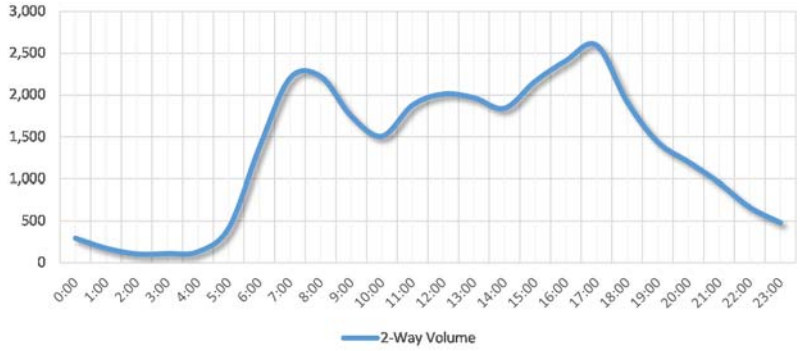
2016 15-Minute Directional Traffic Volumes



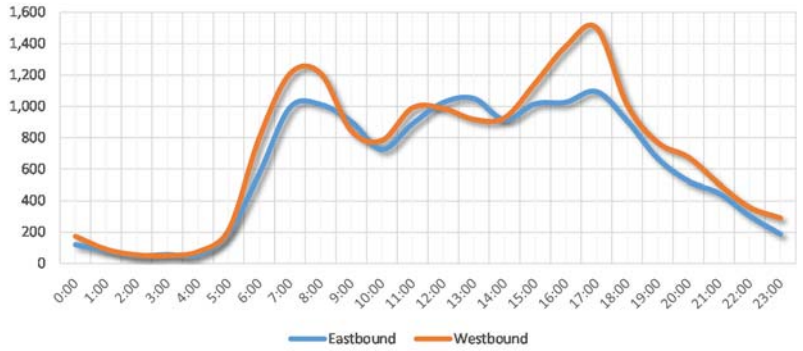
2015 Daily Traffic, Count Dates: 10/5/15 – 10/6/15

Daily traffic counts derived from the average of the Synopsis Report two-day traffic counts

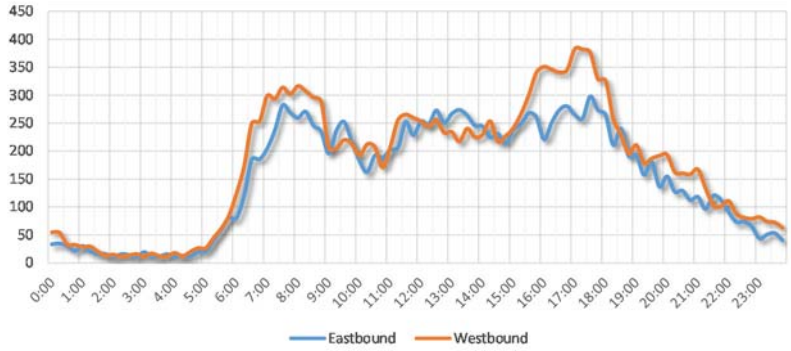
2015 Hourly Traffic Volumes



2015 Hourly Directional Traffic Volumes



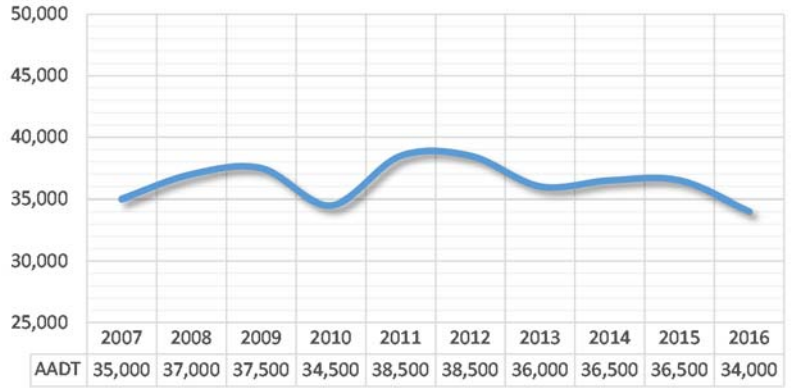
2015 15-Minute Directional Traffic Volumes



7. Kennedy Boulevard, East of Hillsborough River Bridge, Count Station: 0029

Data Source: FDOT Transportation Statistics Office, Historical AADT Report and Synopsis Report

Historical AADT

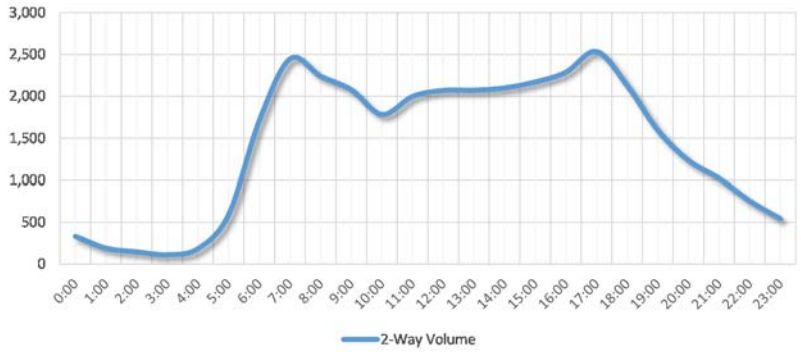


	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
AADT	35,000	37,000	37,500	34,500	38,500	38,500	36,000	36,500	36,500	34,000

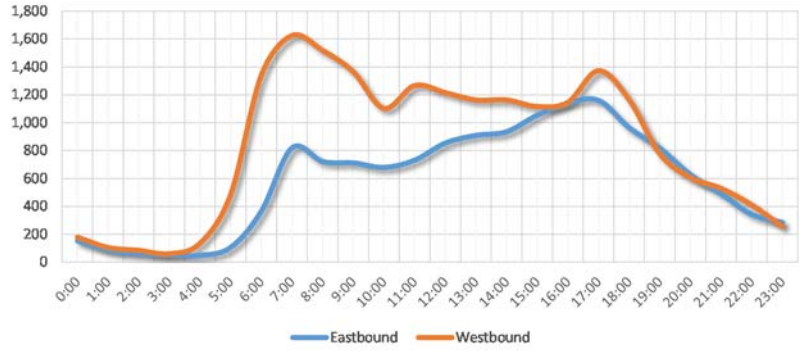
Daily Traffic, Count Dates: 10/4/16 – 10/5/16

Daily traffic counts derived from the average of the Synopsis Report two-day traffic counts

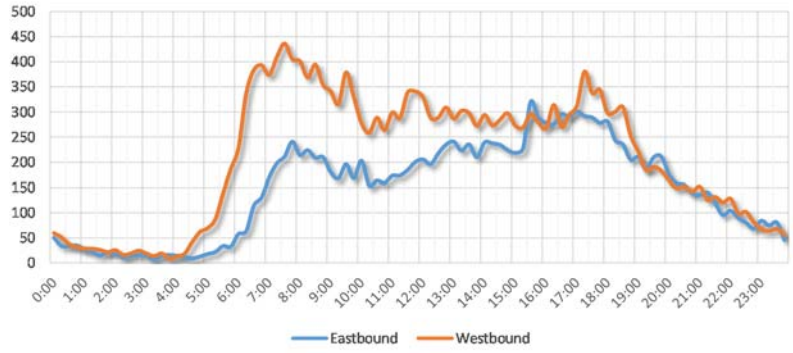
Hourly Traffic Volumes



Hourly Directional Traffic Volumes

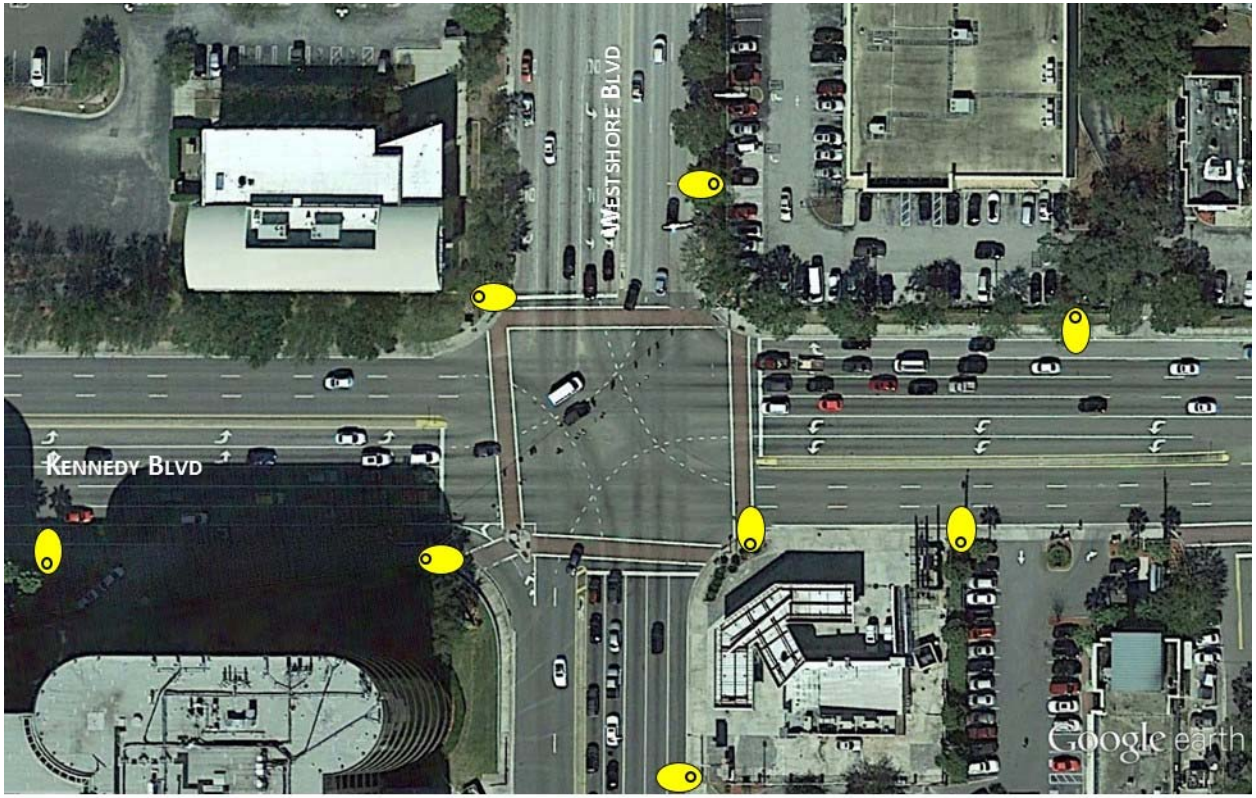


15-Minute Directional Traffic Volumes



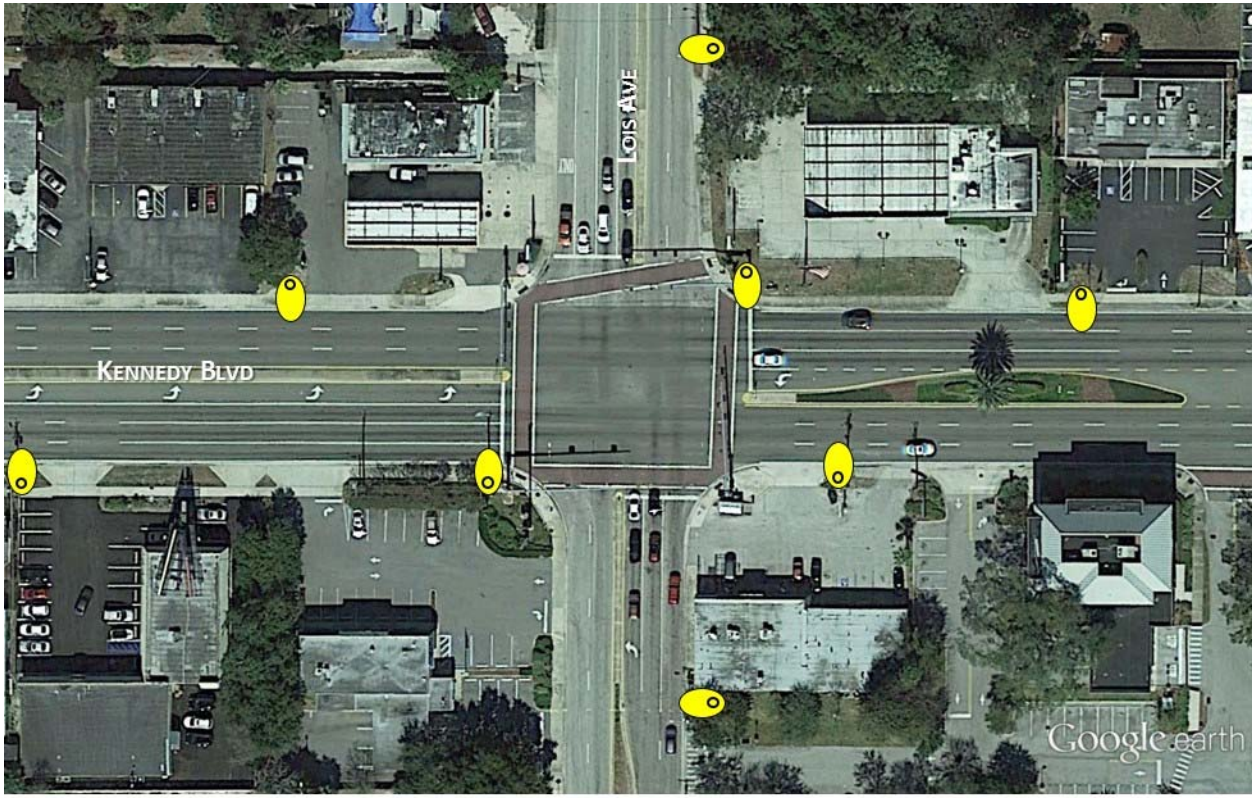
Appendix D: Kennedy Boulevard Existing Intersection Lighting Layout

1. Kennedy Boulevard at Westshore Boulevard



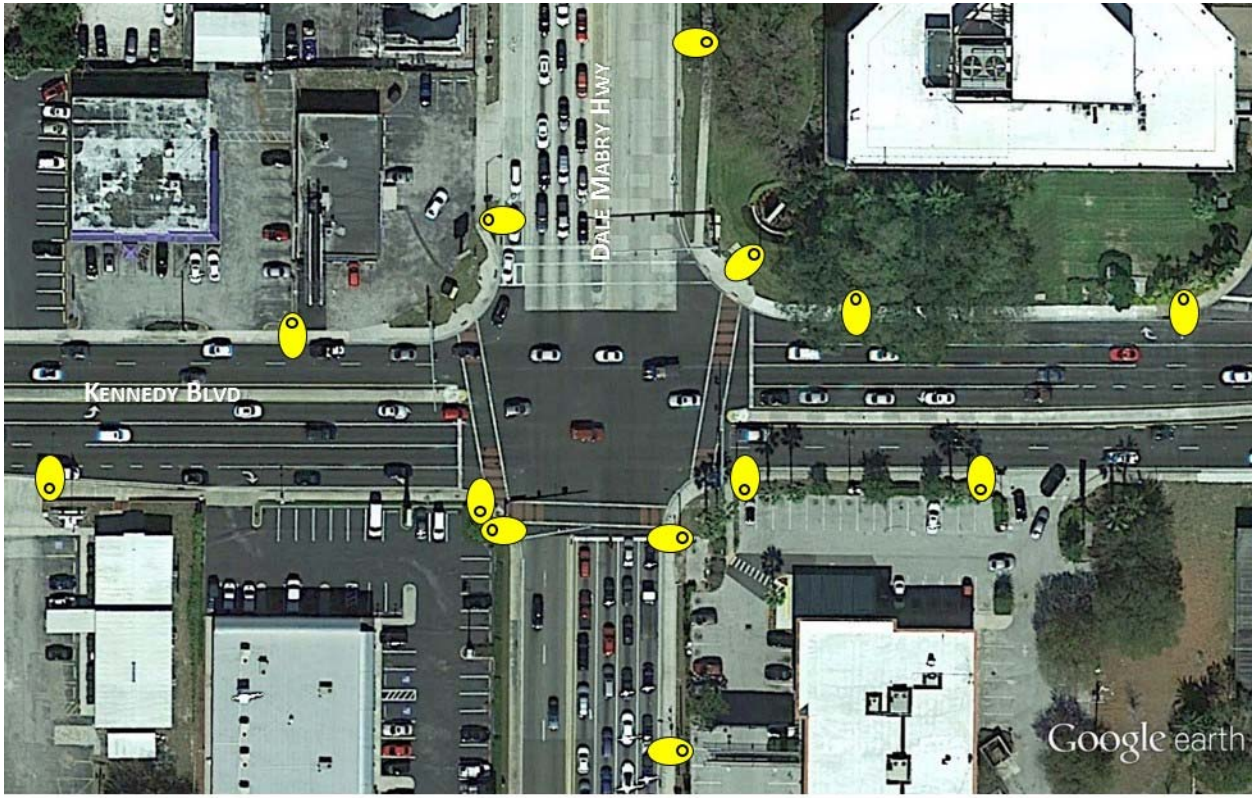
Existing Street Light

2. Kennedy Boulevard at Lois Avenue

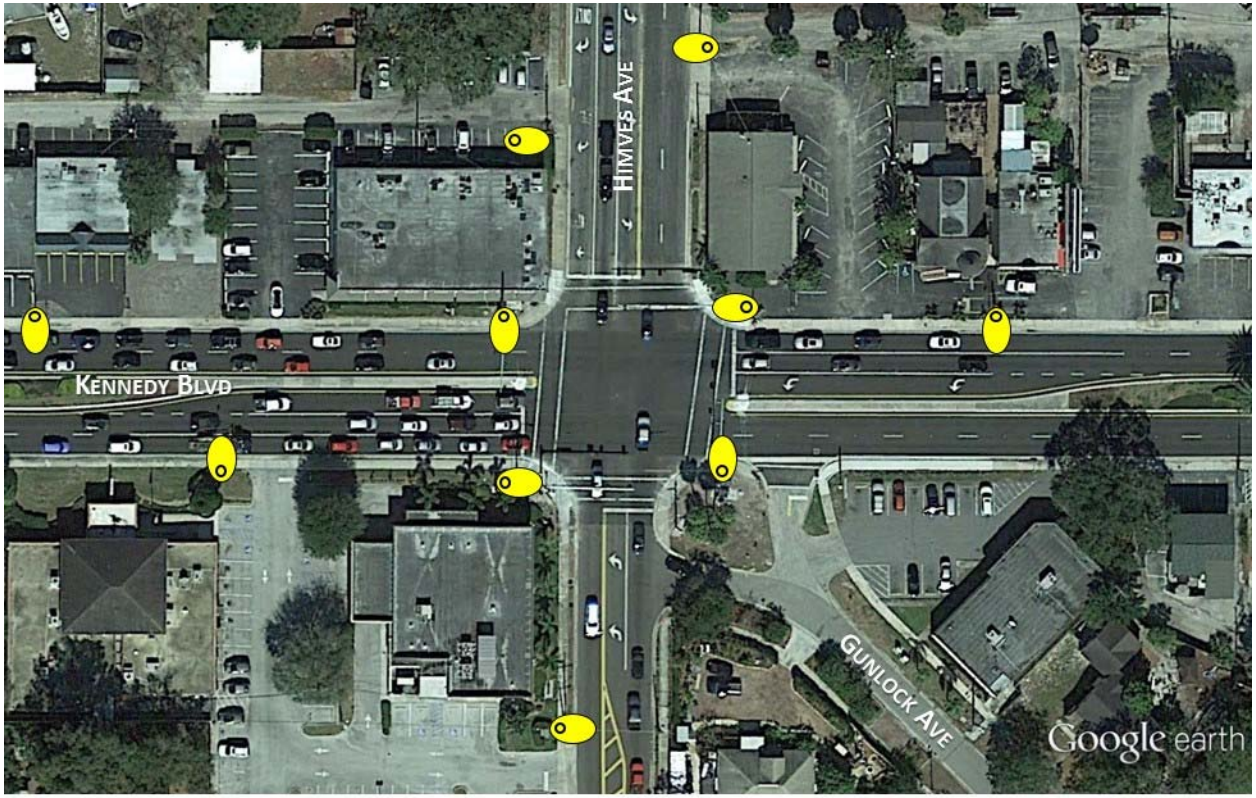


Existing Street Light

3. Kennedy Boulevard at Dale Mabry Highway

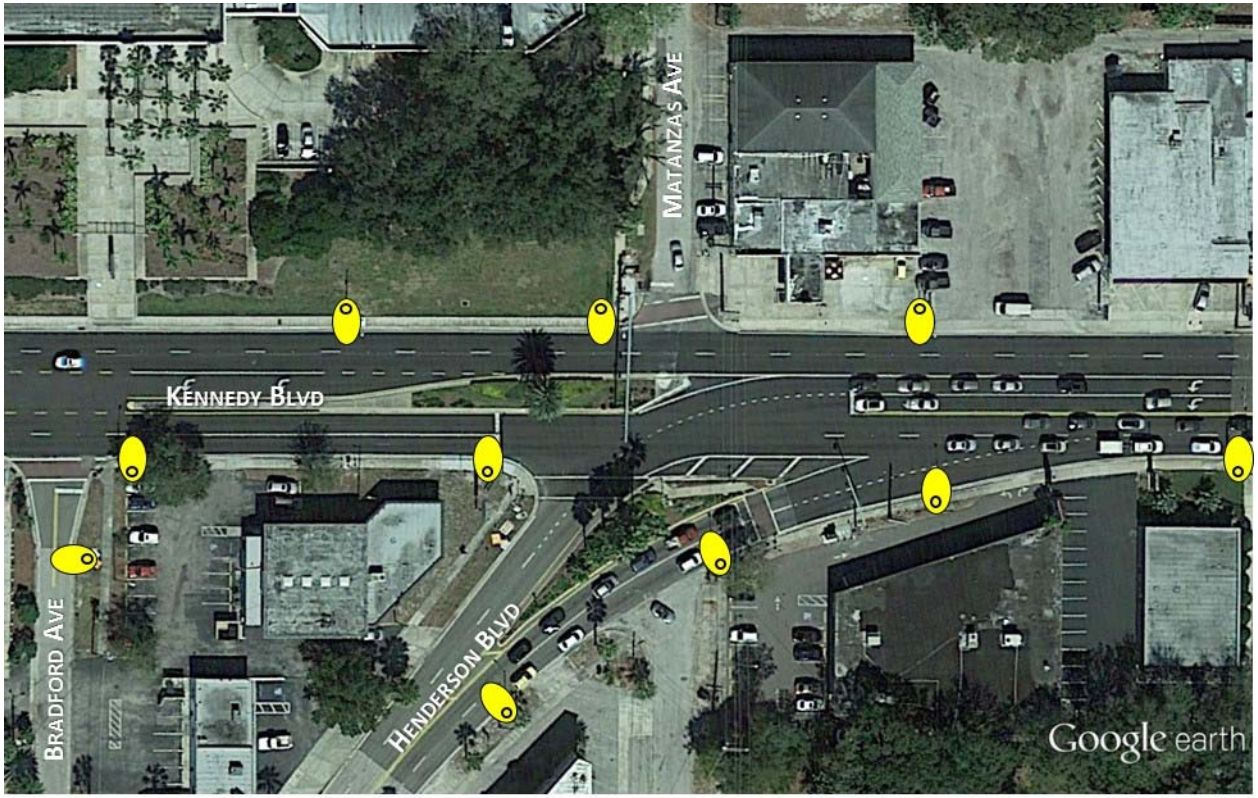


4. Kennedy Boulevard at Himes Avenue



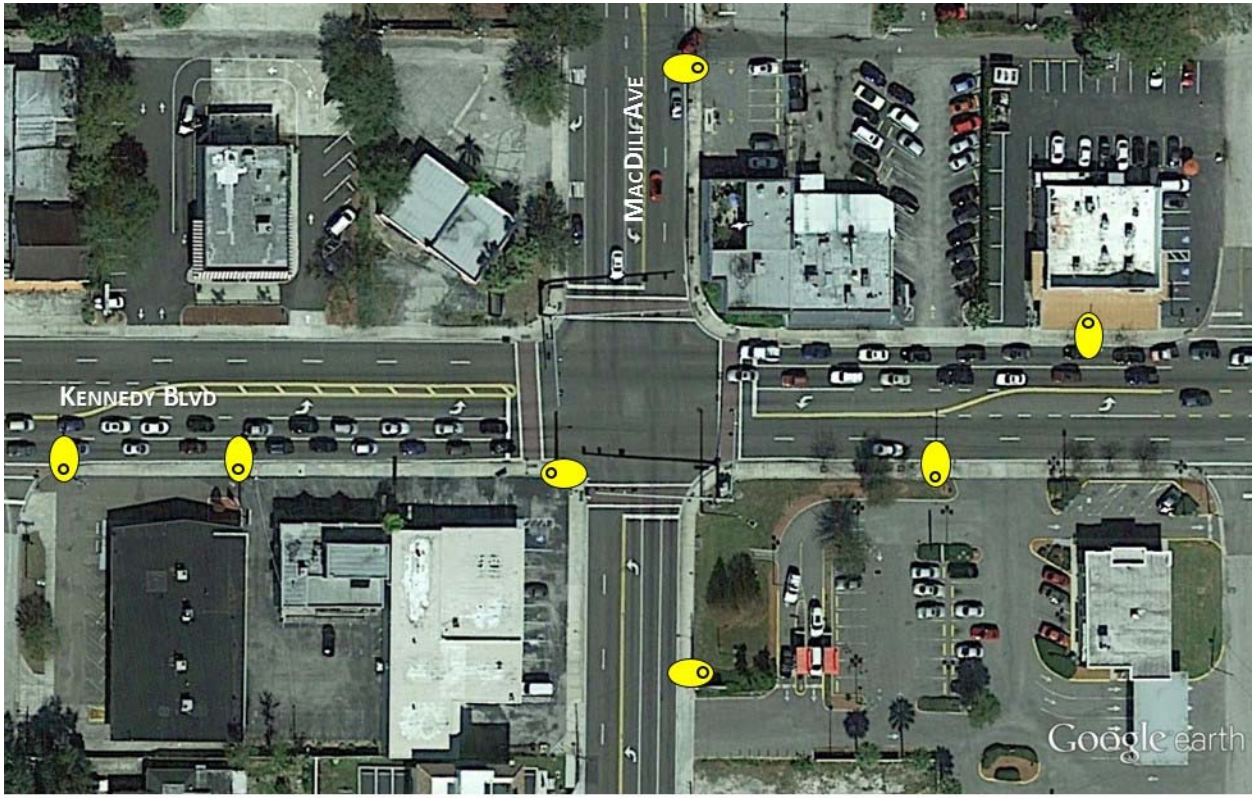
Existing Street Light

5. Kennedy Boulevard at Henderson Boulevard



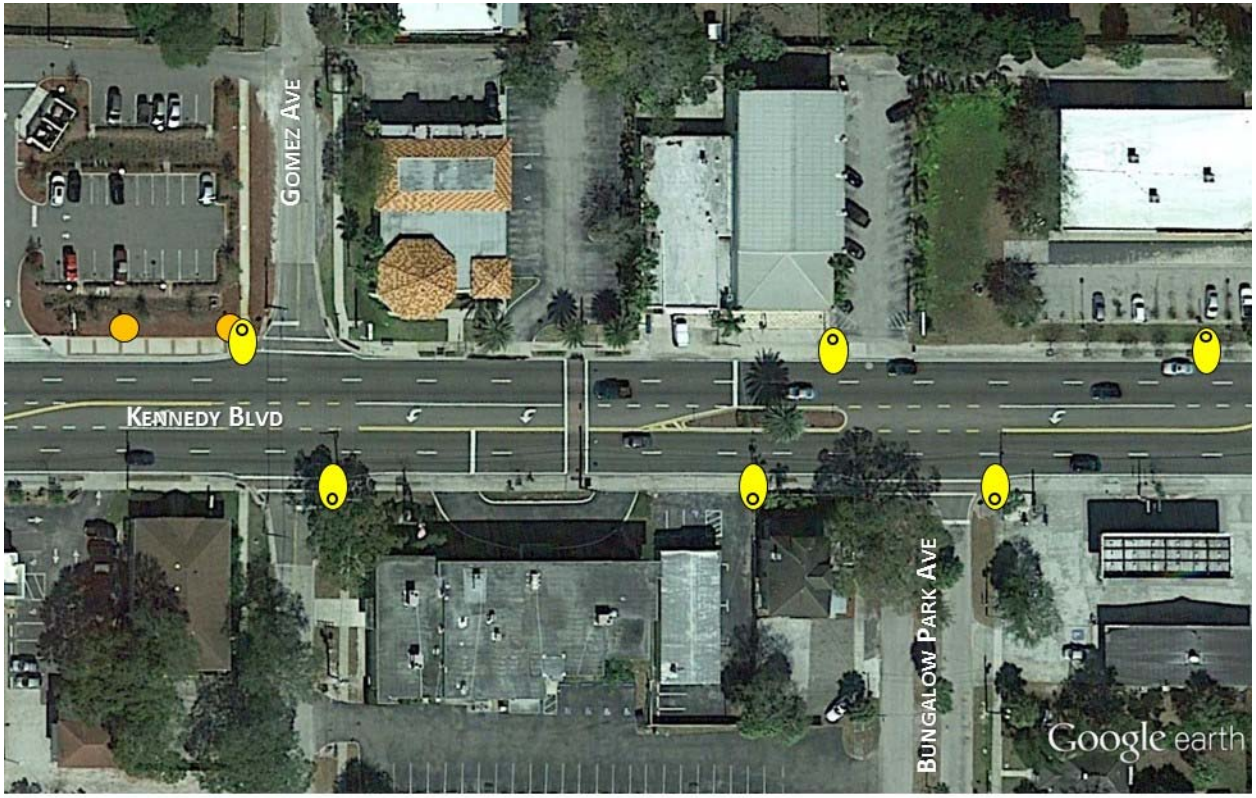
Existing Street Light

6. Kennedy Boulevard at MacDill Avenue

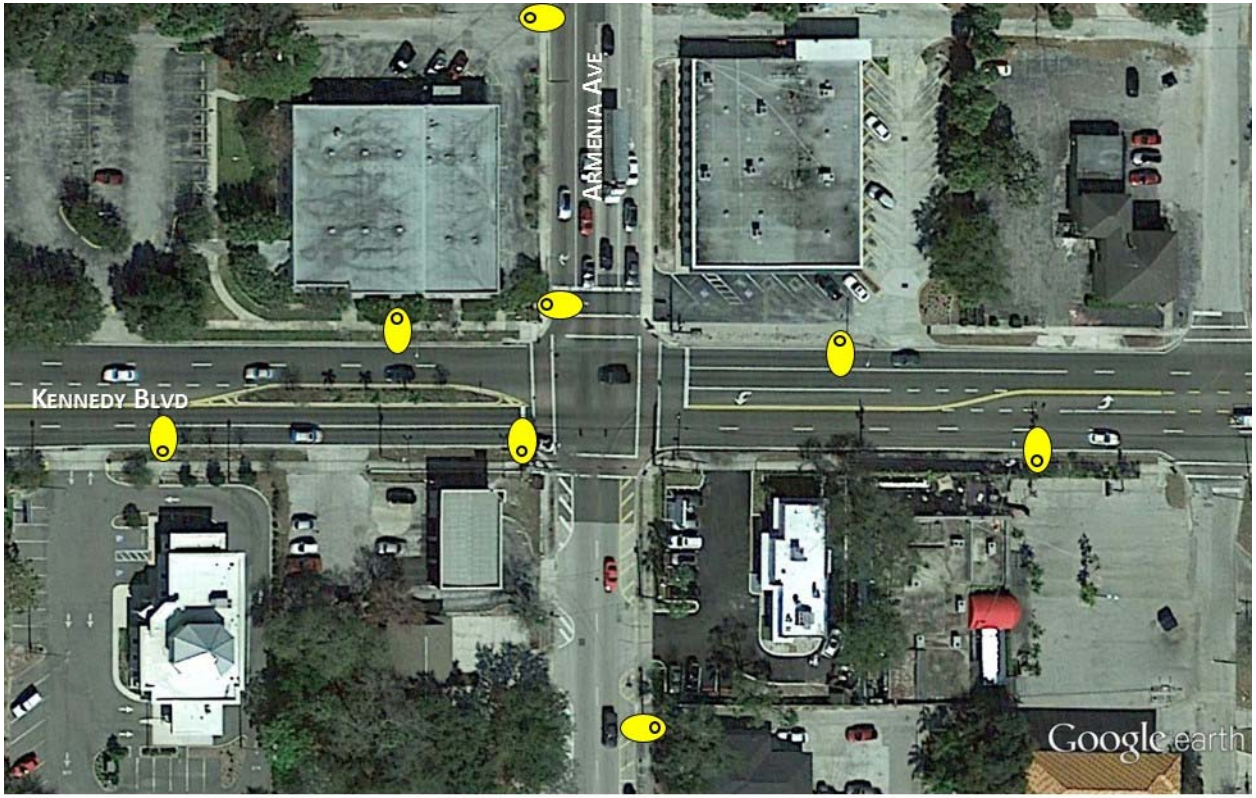


Existing Street Light

7. Kennedy Boulevard at Pedestrian Crossing between Gomez Avenue and Bungalow Park Avenue

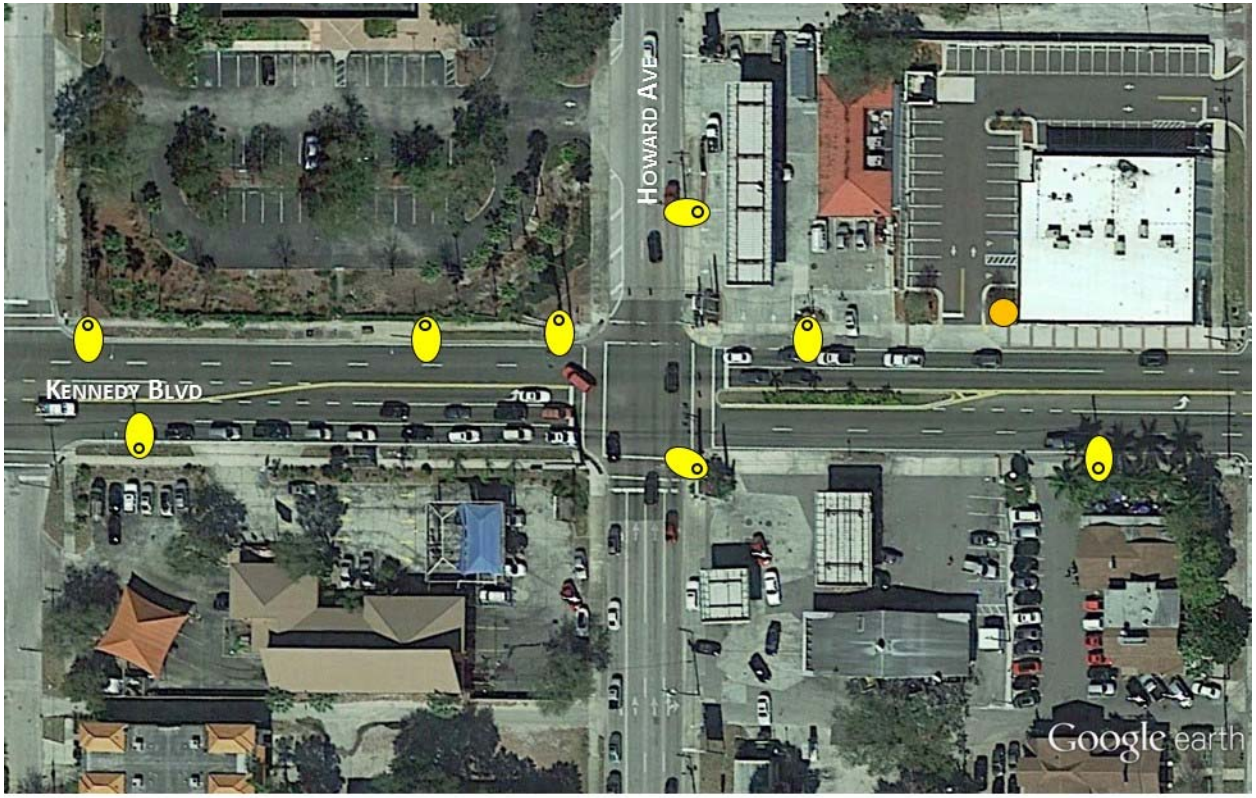


8. Kennedy Boulevard at Armenia Avenue

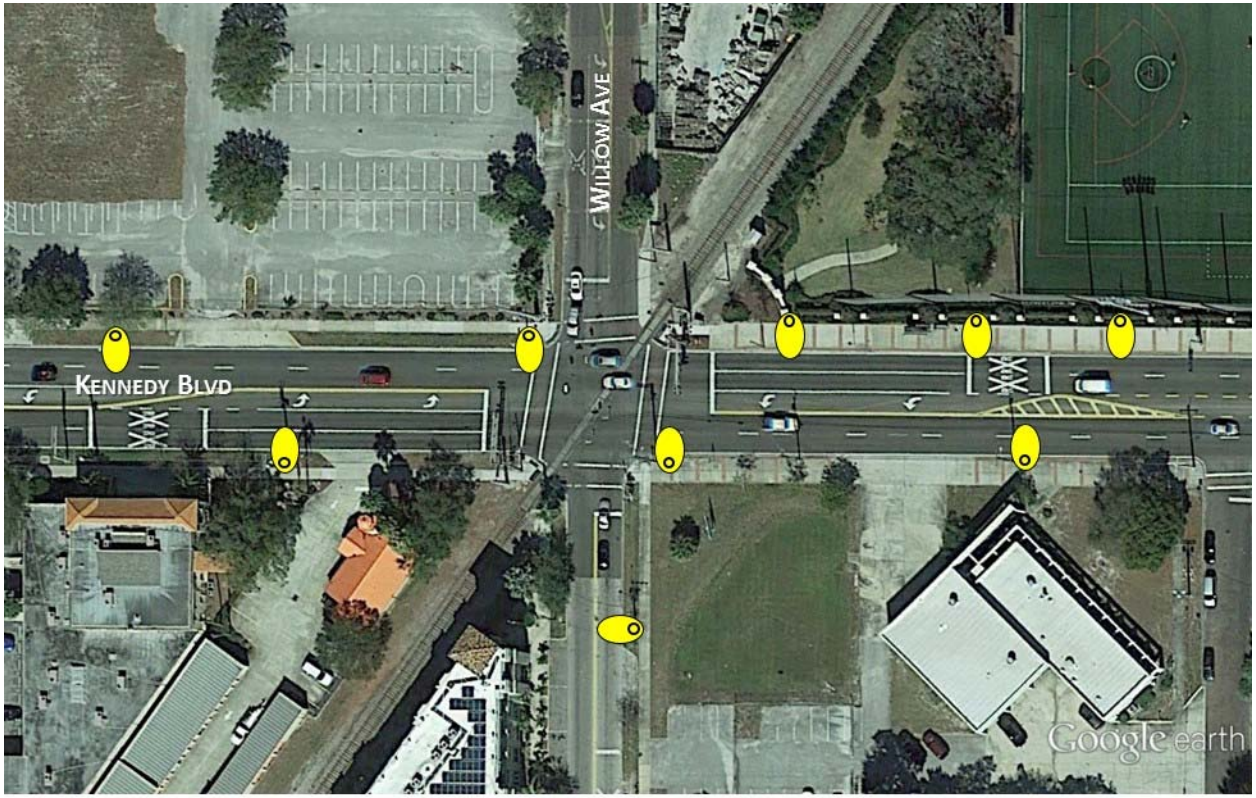


Existing Street Light

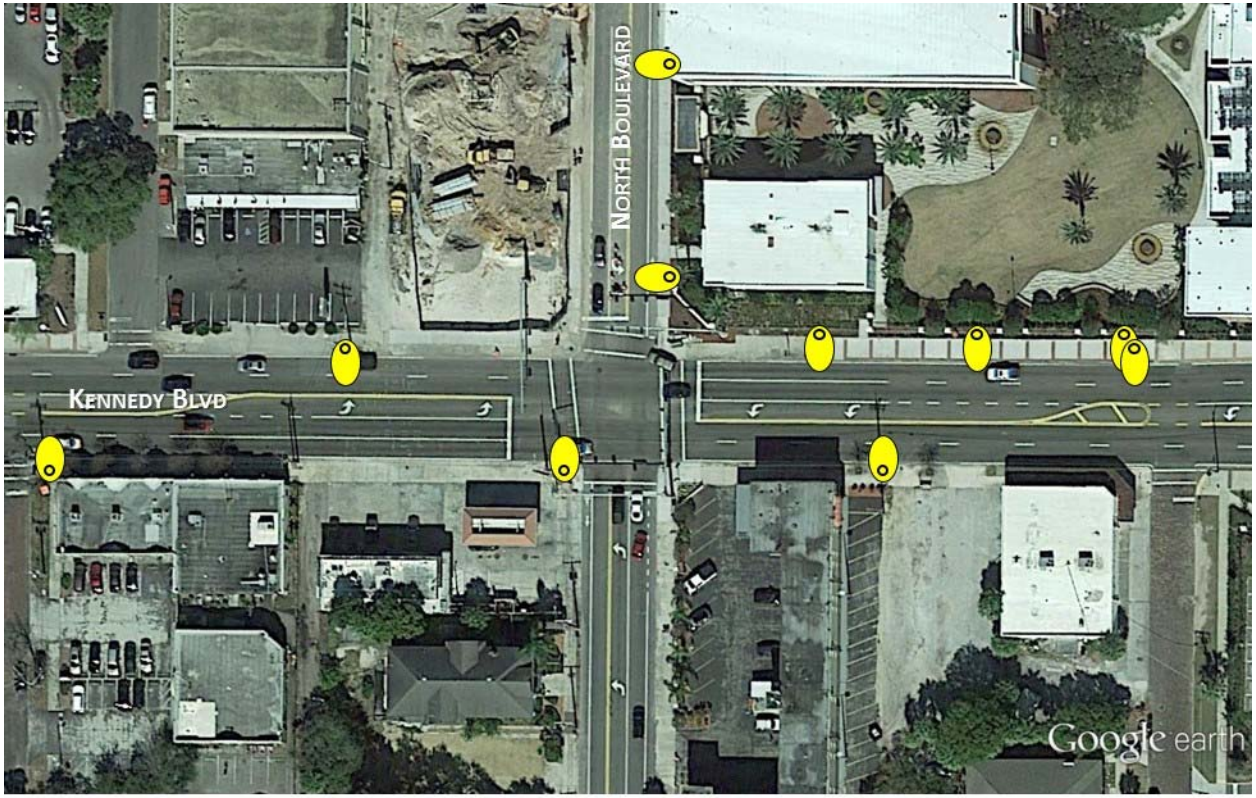
9. Kennedy Boulevard at Howard Avenue



10. Kennedy Boulevard at Willow Avenue

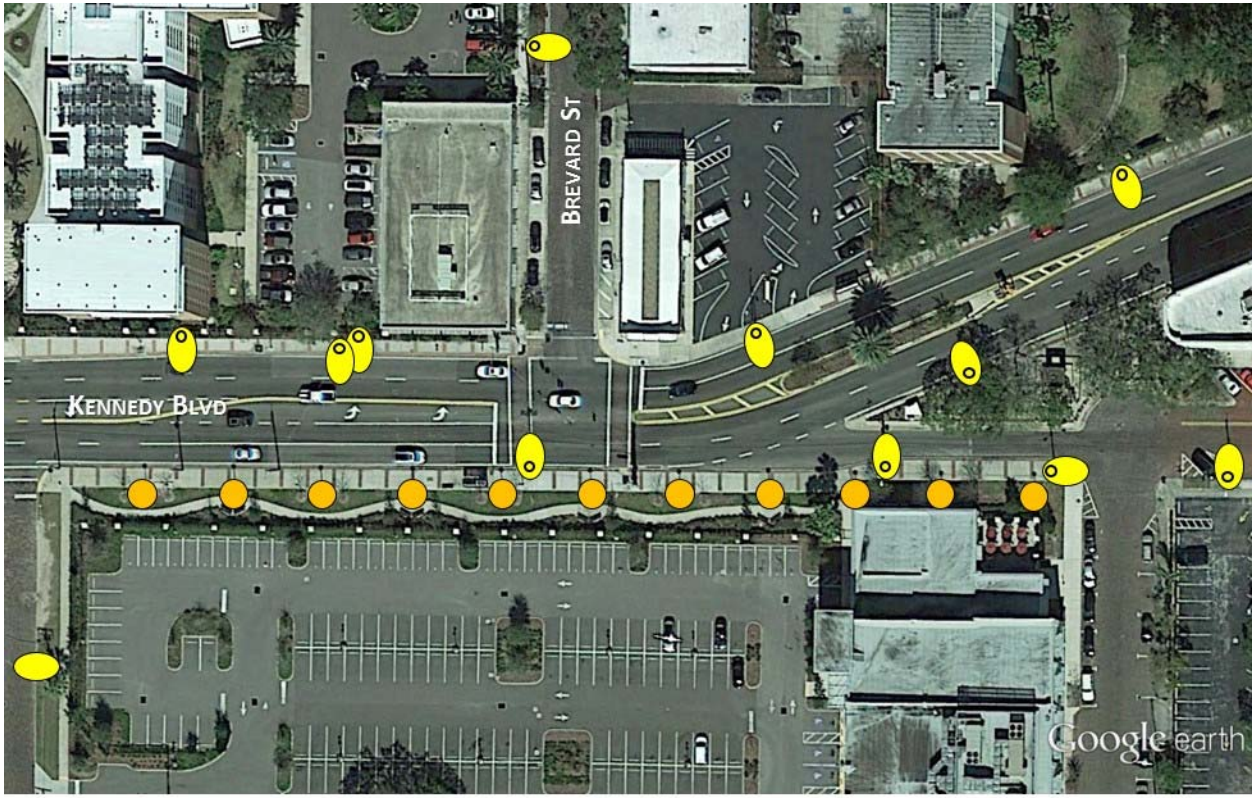


11. Kennedy Boulevard at North Boulevard

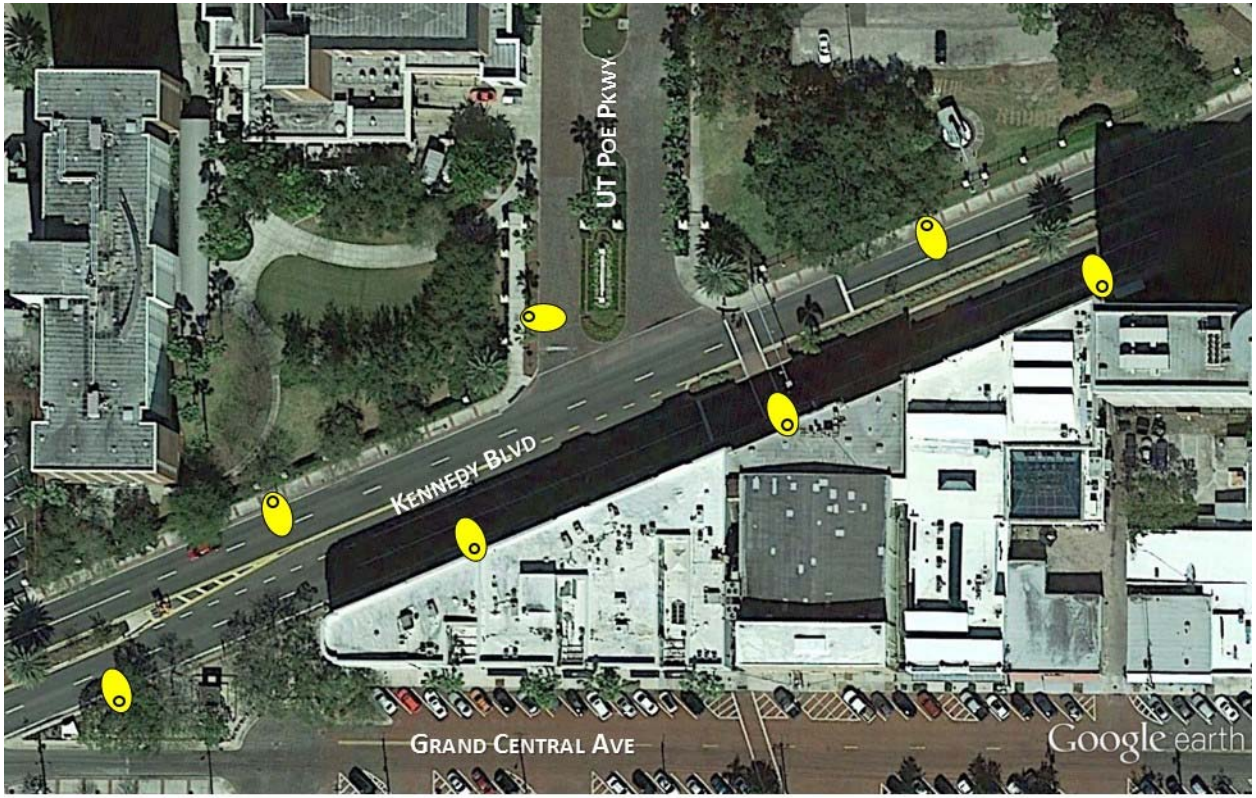


Existing Street Light

12. Kennedy Boulevard at Brevard Avenue

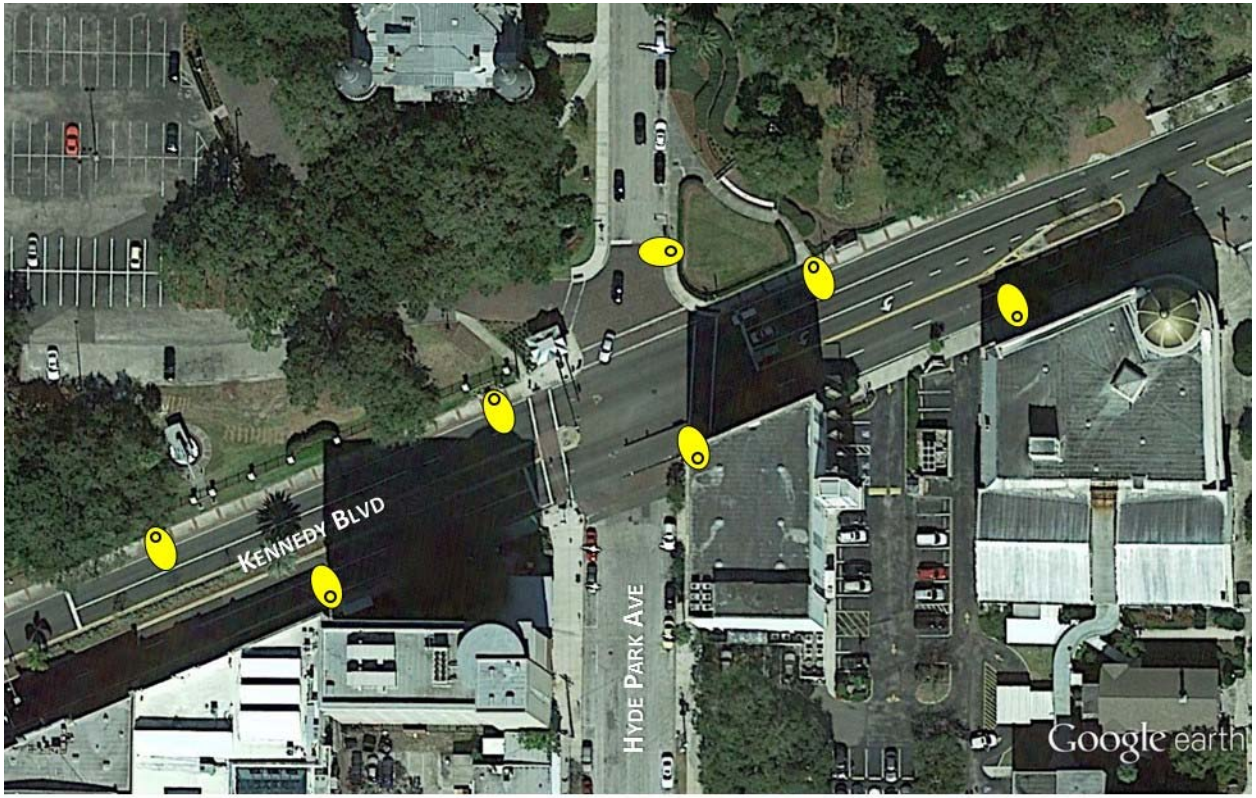


13. Kennedy Boulevard at UT Poe Parkway Pedestrian Crossing



Existing Street Light

14. Kennedy Boulevard at Hyde Park Avenue



Existing Street Light

Appendix E: Kennedy Boulevard Site Specific Enhancements Feasibility Review and Cost Estimates

Kennedy Boulevard Site Specific Enhancements Feasibility Review and Cost Estimates

ID	Location	Suggestions for Consideration	Feasibility Notes	Cost Estimate
1	SB Westshore Blvd at Kennedy Blvd	Consider installing R10-15 (Right-Turn Yield to Pedestrians) sign.	NA	$700
2	EB Kennedy Blvd at Westshore Blvd	Consider relocating the existing R10-15 sign from right-turn channelization island to curb approx. 25' west of existing crosswalk.	Sign is difficult to see in its current location, moving it to the west before the turn should help in warning drivers in advance of the crosswalk.	$200
3	NB Westshore Blvd at Kennedy Blvd	Consider upgrading existing right-turn yield to pedestrian sign with new R10-15 sign.	Current sign is outdated, replace with new sign at existing location.	$700
4	NW Quadrant of Kennedy Blvd and Westshore Blvd	Consider reducing the curb radius within the northwest quadrant; reducing the curb radius will shorten the pedestrian crossing distances, reduce turning vehicle speeds, and will provide more room for pedestrians at the intersection.	There is a drainage inlet along the west side of Kennedy Blvd north of Westshore Blvd, reducing the turning radius to 30' and extending the curb may impact drainage to this inlet, further evaluation of drainage impacts are needed.	$25,000
5	SE Quadrant of Kennedy Blvd and Westshore Blvd	Consider reducing the curb radius within the southeast quadrant; reducing the curb radius will shorten the pedestrian crossing distances, reduce turning vehicle speeds, and will provide more room for pedestrians at the intersection.	There is a drainage inlet located along the curb in the intersection. Extending the curb would impact drainage at this location, further evaluation is needed to determine the level of impact. Additionally, the gas station driveways along Westshore Blvd and Kennedy Blvd are located close to the intersection, while it appears that they could be left intact, further evaluation is needed to determine if extending the curb would impact the existing driveways.	$25,000
6	EB Kennedy Blvd approaching Westshore Blvd	Consider installing an overhead luminaire along the south side of Kennedy Blvd on the eastbound approach to Westshore Blvd; determine if the existing concrete signal support could accommodate an additional luminaire.	Further evaluation is needed to determine if the existing concrete signal support pole could accommodate an additional street light luminaire. If it cannot support an additional luminaire consider placing light structure directly west of the existing signal support pole. Alternatively, consider replacing the existing diagonal span traffic signal support with a mast-arm support structure that can accommodate intersection lighting in accordance with PPM Chapter 7.3. Crash history indicates that approximately 22% of the crashes at this intersection occurred at night.	$11,000
7	NB Westshore Blvd approaching Kennedy Blvd	Consider installing an overhead luminaire along the east side of Westshore Blvd south of Kennedy Blvd.	Limited right-of-way; if the curb is extended (see #5) there may be adequate room for the installation of a light pole and luminaire. Alternatively, consider replacing the existing diagonal span traffic signal support with a mast-arm support structure that can accommodate overhead street lighting in accordance to PPM Chapter 7.3. Crash history	$11,000

ID	Location	Suggestions for Consideration	Feasibility Notes	Cost Estimate
			indicates that approximately 22% of the crashes at this intersection occurred at night.	
8	WB Kennedy Blvd approaching Westshore Blvd	Consider installing an overhead luminaire along the north side of Kennedy Blvd east of Westshore Blvd.	May require an easement from the adjacent property, there is a light pole located approximately 170 feet east of the proposed location. Alternatively, consider replacing the existing diagonal span traffic signal support with a mast-arm support structure that can accommodate overhead street lighting in accordance to PPM Chapter 7.3. Crash history indicates that approximately 22% of the crashes at this intersection occurred at night.	$11,000
9	EB Kennedy Blvd east of Westshore Blvd	Consider installing R4-11 (Bicycles May Use Full Lane) sign or the W11-1 + W16-1P (Share the Road with Bicycles) sign assembly.	NA	$700
10	Kennedy Blvd between Renellie Dr and Trask St	Potential unused driveway along the south side of Kennedy Blvd between the GoGo Greek Grill and the Stonegate Bank.	A wall has been constructed across the majority of this driveway, consider contacting business and modifying/removing the existing curb-cut	$5,500
11	Kennedy Blvd near Lauber Way (between Hesperides St and Manhattan Ave)	Evaluate pedestrian crossing potential (pedestrian hybrid beacon); the median at Lauber Way is recommended for closing per the access management safety study. Alternatively, evaluate traffic signal feasibility at Kennedy Blvd and Hesperides St or Kennedy Blvd at Manhattan Ave.	Conduct pedestrian volume counts and/or perform data collection to support the evaluation of a pedestrian crossing and/or traffic signal warrant. Access management safety study recommends eliminating the existing landscaped median, consider reevaluating the length of the westbound left-turn lane for Hesperides St to determine if part of the median can be retained and used if a pedestrian crossing is deemed feasible. Consider monitoring this intersection for future crossing opportunities if it does not currently meet crossing warrants.	$150,000
12	WB Kennedy Blvd west of Lois Ave	Consider installing R4-11 (Bicycles May Use Full Lane) sign or the W11-1 + W16-1P (Share the Road with Bicycles) sign assembly.	NA	$ 700
13	WB Kennedy Blvd at Lois Ave	Consider installing R10-15 (Right-Turn Yield to Pedestrians) sign on all intersection approaches.	NA	$2,800
14	Lois Ave at Kennedy Blvd	Consider evaluating intersection and crosswalk lighting levels to ensure that appropriate illumination is being provided.	Crash history indicates that approximately 41% of the crashes at this intersection occurred at night. Consider installing an overhead luminaire on the west side of Lois Ave north of Kennedy Blvd; there is currently limited right-of-way, if the curb is extended (see #15) there may be adequate room for the installation of a light pole and luminaire. Also, consider installing an overhead luminaire on the east side of Lois Ave south	$22,000

ID	Location	Suggestions for Consideration	Feasibility Notes	Cost Estimate
			of Kennedy Blvd; limited right-of-way and driveways adjacent to the intersection may make installing lighting at this location difficult.	
15	Kennedy Blvd at Lois Ave	Consider reducing the curb radius within the northwest quadrant; reducing the curb radius will shorten the pedestrian crossing distances, reduce turning vehicle speeds, and will provide more room for pedestrians at the intersection. Additionally consider realigning/straightening the crosswalk across the northern leg of the intersection.	There is an existing drainage inlet along Lois Ave on the curb, located directly north of the existing crosswalk. Extending the curb will impact drainage, additional evaluation is needed to determine the level of impact and the feasibility of extending the curb. Reducing the curb radius to 30' should still allow larger vehicles to make the southbound right-turn onto Kennedy Blvd, they may need to utilize the inside travel lanes of Kennedy Blvd, but based on initial evaluation it appears that they will still be accommodated.	$25,000
16	EB Kennedy Blvd east of Lois Ave	Consider installing R4-11 (Bicycles May Use Full Lane) sign or the W11-1 + W16-1P (Share the Road with Bicycles) sign assembly.	NA	$700
17	Kennedy Blvd at Grady Ave, SE quadrant	Consider extending the curb within the painted gore area (currently has kwik kerb); there is a drainage inlet within the gore area therefore impacts to drainage will need to be evaluated.	Further evaluation is needed to determine the full drainage impacts associated with extending the curb at this location.	$20,000
18	Kennedy Blvd at Grady Ave	Evaluate traffic signal warrants; closest signalized intersections are Lois Ave (1,350‘ to the west) and Dale Mabry Hwy (1,350‘ to the east).	Turning movement data collected as part of the access management safety study indicates a fairly high volume of westbound left-turning vehicles, consider conducting additional data collection to support a full traffic signal warrant analysis to determine the feasibility of a traffic signal at this location. If this intersection does not currently meet traffic signal warrants consider monitoring for future consideration.	$450,000
19	Kennedy Blvd between Grady Ave and Church Ave	Potential unused driveway along the south side of Kennedy Blvd; Kuhn Automotive Group driveway closest to Grady Ave, consider contacting business to see if the post located in the driveway are mounted or are removable and determine if the driveway is currently being utilized.	NA	$5,000
20	WB Kennedy Blvd west of Dale Mabry Hwy	Consider installing R4-11 (Bicycles May Use Full Lane) sign or the W11-1 + W16-1P (Share the Road with Bicycles) sign assembly.	NA	$700
21	Kennedy Blvd at Dale Mabry Hwy	Consider installing R10-15 (Right-Turn Yield to Pedestrians) sign on all intersection approaches.	NA	$2,800

ID	Location	Suggestions for Consideration	Feasibility Notes	Cost Estimate
22	Kennedy Blvd at Dale Mabry Hwy	Consider evaluating intersection and crosswalk lighting levels to ensure that appropriate illumination is being provided.	This intersection has been identified by FDOT for intersection lighting improvements. Crash history indicates that approximately 38% of the crashes at this intersection occurred at night.	$ -
23	Kennedy Blvd at Dale Mabry Hwy, NE Quadrant	Consider reducing the curb radius within the NE quadrant (approx. 30’ radius); reducing the curb radius will shorten pedestrian crossing distances, reduce vehicle turning speeds, and provide pedestrians with an enhanced waiting area.	Reducing the curb radius within the northeast quadrant would benefit pedestrians by reducing crossing distances (approximately 15' for east-west crossings and 10' for north-south crossings), which limits exposure and reduces the amount of time needed to traverse the intersection. Initial analysis indicates that larger vehicles would still be accommodated with a 30' radius, they may need to utilize the inside travel lanes of Dale Mabry Hwy, but will still be able to navigate the intersection.	$30,000
24	EB Kennedy Blvd east of Dale Mabry Hwy	Consider installing R4-11 (Bicycles May Use Full Lane) sign or the W11-1 + W16-1P (Share the Road with Bicycles) sign assembly.	NA	$700
25	Kennedy Blvd at Himes Ave	Consider installing R10-15 (Right-Turn Yield to Pedestrians) sign on all intersection approaches.	NA	$2,800
26	Kennedy Blvd at Himes Ave	Consider enhancing intersection lighting by installing overhead street light luminaires on all intersection approaches as indicated by the typical urban signalized intersection lighting design (PPM Fig. 7.3.4).	Crash history indicates that approximately 30% of the crashes at this intersection occurred at night. Consider repositioning the existing luminaires (on the existing poles) on the eastbound and westbound approaches so that they are positioned over Kennedy Blvd.	$44,000
27	Kennedy Blvd at Himes Ave	Potential unused driveway along the north side of Kennedy Blvd east of Himes Ave; Club ENVY driveway closest to Himes Ave, there is a bus stop and third party bench located near/within the driveway, consider contacting the business to see if driveway is used.	NA	$3,000
28	Kennedy Blvd near Beverly Ave	Consider evaluating the installation of a pedestrian crossing (pedestrian hybrid beacon) in the vicinity of Kennedy Blvd at Beverly Ave; the access management safety study recommends the closing of the median at Beverly Ave.	Conduct pedestrian volume counts to determine if a marked mid-block crossing is warranted near this location. If a mid-block crossing is not currently warranted consider monitoring this location for future consideration.	$150,000
29	EB Kennedy Blvd west of Henderson Blvd	Consider installing R10-15 (Right-Turn Yield to Pedestrians) sign.	NA	$700
30	Kennedy Blvd at Henderson Blvd	Consider evaluating the feasibility of a pedestrian crossing (pedestrian signal) along the western leg	As mentioned in the access management safety study; prior to further consideration a traffic signal study should be completed to evaluate the	$250,000

ID	Location	Suggestions for Consideration	Feasibility Notes	Cost Estimate
		of the intersection. In addition to evaluating crossing demand, an evaluation of the impacts to westbound traffic should be conducted; consider as a two-stage crossing as this could help reduce the impacts to traffic flow. Identified within the access management safety study.	traffic impacts to westbound traffic along Kennedy Blvd. Also, as mentioned, evaluating the crossing as a two-stage crossing should help to minimize impacts to traffic.	
31	WB Kennedy Blvd west of MacDill Ave	Consider installing R4-11 (Bicycles May Use Full Lane) sign or the W11-1 + W16-1P (Share the Road with Bicycles) sign assembly.	NA	$700
32	Kennedy Blvd at MacDill Ave	Consider installing R10-15 (Right-Turn Yield to Pedestrians) sign on all intersection approaches.	NA	$2,800
33	Kennedy Blvd at MacDill Ave	Consider evaluating intersection and crosswalk lighting levels to ensure that appropriate illumination is being provided.	Crash history indicates that approximately 24% of the crashes at this intersection occurred at night. There are currently no overhead street light luminaires located within 100' of the intersection on all approaches. Consider enhancing intersection lighting by installing overhead street light luminaires on all intersection approaches as indicated by the PPM typical urban signalize intersection lighting design example in Fig. 7.3.4.	$44,000
34	EB Kennedy Blvd east of MacDill Ave	Consider installing R4-11 (Bicycles May Use Full Lane) sign or the W11-1 + W16-1P (Share the Road with Bicycles) sign assembly.	NA	$700
35	Kennedy Blvd between Gomez Ave and Bungalow Park Ave	Consider evaluating crosswalk lighting levels to ensure that appropriate illumination is being provided.	Consider installing overhead street light luminaires on both the eastbound and westbound approached to the existing crossing. Additionally, the existing concrete signal support poles and signal control cabinet are located within the sidewalk, reducing the effective width of the sidewalk at this location; consider exploring opportunities in the future to relocate these from the middle of the sidewalk to the back of the sidewalk (may require an easement from the adjacent properties).	$22,000
36	Kennedy Blvd at Habana Ave	Unused driveway on the north side of Kennedy Blvd west of Habana Ave; consider removing curb-cut and provide level sidewalk through this section.	NA	$5,400
37	Kennedy Blvd at Habana Ave	Consider evaluating traffic signal warrants; the access management safety study recommends leaving this intersection open. The closest signalized intersections/crossings are MacDill Ave	Consider conducting necessary traffic data collection and performing a traffic signal warrant study to determine if traffic signal is warranted at this location. Alternatively consider the installation of a pedestrian crossing near this intersection. If this location does not currently meet traffic signal	$450,000

ID	Location	Suggestions for Consideration	Feasibility Notes	Cost Estimate
		(1,330') and the mid-block crossing between Gomez Ave and Bungalow Park Ave (525') to the west, and Armenia Avenue (1,320') to the east.	or pedestrian crossing warrants consider monitoring the intersection for future consideration.	
38	Kennedy Blvd at Arrawana Ave	Potential unused driveway along the south side of Kennedy Blvd west of Arrawana Ave (in front of Miguelito's); existing landscaping is partially blocking the existing curb-cut, consider contacting business and removing the existing curb-cut.	NA	$4,000
39	WB Kennedy Blvd west of Armenia Ave	Consider installing R4-11 (Bicycles May Use Full Lane) sign or the W11-1 + W16-1P (Share the Road with Bicycles) sign assembly.	NA	$700
40	EB Kennedy Blvd at Armenia Ave	Consider installing R10-15 (Right-Turn Yield to Pedestrians) sign.	NA	$700
41	Kennedy Blvd at Armenia Ave	Consider constructing curb extensions within the southeast and southwest quadrants of the intersection along Armenia Ave, utilizing the existing painted gore area south of the intersection.	Evaluate impacts to drainage; there are drainage inlets within both the southeast and southwest quadrants that would be impacted by the installation of curb extensions.	$40,000
42	Kennedy Blvd at Armenia Ave	Consider evaluating intersection and crosswalk lighting levels to ensure that appropriate illumination is being provided.	Crash history indicates that approximately 33% of the crashes at this intersection occurred at night. Consider placing an overhead street light luminaire on the north side of Kennedy Blvd adjacent to the intersection on the westbound approach, also consider installing a luminaire to illuminate the crosswalk on the south leg of the intersection.	$22,000
43	Kennedy Blvd between Armenia Ave and Moody Ave	Potential unused driveway along the south side of Kennedy Blvd, in front of the Kennedy Club, there is a fence/wall and landscaping that is blocking the driveway; consider contacting owner and removing the existing curb-cut.	Access to the property has been blocked by a fence and landscaping, there are access points along Moody Ave. Consider contacting property owner about removing the curb-cut during the planned resurfacing project.	$16,000
44	WB Kennedy Blvd at Howard Ave	Consider installing R10-15 (Right-Turn Yield to Pedestrians) sign.	NA	$ 700
45	NW Quadrant of Howard Ave at Kennedy Blvd	Consider constructing a curb extension within the northwest quadrant along Howard Ave within the existing painted gore area.	Even though there are no drainage inlets in the vicinity of the intersection evaluate impacts to drainage from extending the curb; there is evidence of ponding (sand and debris) within the crosswalks and the pedestrian ramp. Extending the curb within this quadrant would shorten pedestrian crossing	$20,000

ID	Location	Suggestions for Consideration	Feasibility Notes	Cost Estimate
			distance across Howard Ave and would provide a more comfortable waiting area for pedestrians.	
46	EB Kennedy Blvd east of Howard Ave	Consider installing R4-11 (Bicycles May Use Full Lane) sign or the W11-1 + W16-1P (Share the Road with Bicycles) sign assembly.	NA	$700
47	Kennedy Blvd at Albany Ave	Consider evaluating traffic signal warrants; the access management safety study proposes converting this intersection into a directional median opening. The closest signalized intersections/crossings are Howard Ave (665') to the west and Willow Ave (2,660') to the east, however there is a planned signal for Rome Ave 1,330' east of Albany Ave. Alternatively, consider evaluating for a pedestrian crossing with pedestrian hybrid beacon.	The access management safety study recommends converting this intersection into a directional median opening. Data collected during the access management safety study efforts indicate moderate levels of pedestrian/bicycle and turning movement activity. If this location does not currently meet traffic signal and/or pedestrian crossing warrants, consider leaving this intersection as a full median opening and re-evaluating for signalization as redevelopment north and south of Kennedy Blvd continues to increase the demand for crossing Kennedy Blvd.	$450,000
48	Kennedy Blvd at Fremont Ave	Vacant property with two driveways along the north side of Kennedy Blvd west of Fremont Ave; consider monitoring the site for development and potential to eliminate/consolidate driveways.	NA	$ -
49	Kennedy Blvd at Fremont Ave	Consider evaluating traffic signal warrants; the access management safety study proposes converting this intersection into a directional median opening. The closest signalized intersections/crossings are Howard Ave (1,335') to the west and Willow Ave (1,990') to the east, however there is a planned signal for Rome Ave 665' east of Fremont Ave. Alternatively, consider evaluating for a pedestrian crossing with pedestrian hybrid beacon.	The access management safety study recommends converting this intersection to a directional median opening. According to data collected through the access management safety study effort there appears to be moderate pedestrian and bicycle activity and traffic movement volumes at this intersection. Addition traffic data collection is needed to conduct traffic signal warrant analysis. If traffic signal warrants are not currently met, consider monitoring this location for future signal consideration, especially when the property to the northwest of the intersection is redeveloped.	$450,000
50	Kennedy Blvd at Rome Ave	Potential unused driveway along the north side of Kennedy Blvd west of Rome Ave; consider monitoring the current self-storage development to see if existing curb-cut will be eliminated.	NA	$ -
51	Kennedy Blvd at Oregon Ave	Consider evaluating traffic signal warrants; the access management safety study proposes	The access management safety study recommends leaving this intersection as a full median opening. According to data collected through the access	$450,000

ID	Location	Suggestions for Consideration	Feasibility Notes	Cost Estimate
		leaving this intersection as a full median opening. The closest signalized intersections/crossings are Howard Ave (2,660') to the west and Willow Ave (665') to the east, however there is a planned signal for Rome Ave 665' west of Oregon Ave. Alternatively, consider evaluating for a pedestrian crossing with pedestrian hybrid beacon.	management safety study effort there appears to be moderate pedestrian and bicycle activity near this intersection and fairly significant turning movement volumes. Addition traffic data collection is needed to conduct traffic signal warrant analysis. If traffic signal warrants are not currently met, consider monitoring this location for future signal consideration, especially when the property to the northeast of the intersection is redeveloped.	
52	Kennedy Blvd between Oregon Ave and Willow Ave	Potential unused driveways along the north side of Kennedy Blvd; the site is currently used as a parking lot and access to the site from Kennedy Blvd has been fenced off. Consider monitoring the site for redevelopment and eliminate driveways as necessary.	NA	$ -
53	WB Kennedy Blvd west of Willow Ave	Consider installing R4-11 (Bicycles May Use Full Lane) sign or the W11-1 + W16-1P (Share the Road with Bicycles) sign assembly.	NA	$700
54	Kennedy Blvd at Willow Ave	As identified in the access management safety study, consider providing pedestrian signal for the east-west crossing along the north and south legs of the intersection.	Most likely will require coordination with the railroad (CSX), also coordinate with the City of Tampa for opportunities to incorporate improvements to any planned enhancements along Willow Ave.	$3,000
55	Kennedy Blvd at Willow Ave	Consider installing R10-15 (Right-Turn Yield to Pedestrians) Sign on all intersection approaches.	NA	$2,800
56	Kennedy Blvd at Willow Ave	Consider evaluating intersection and crosswalk lighting levels to ensure that appropriate illumination is being provided.	Crash history indicates that approximately 35% of the crashes occurred at night. Consider installing an overhead street light luminaire along the south side of Kennedy Blvd (eastbound approach) adjacent to the intersection of Willow Ave and along Willow Ave on the southbound approach to Kennedy Blvd.	$22,000
57	EB Kennedy Blvd east of Willow Ave	Consider installing R4-11 (Bicycles May Use Full Lane) sign or the W11-1 + W16-1P (Share the Road with Bicycles) sign assembly.	NA	$700
58	Kennedy Blvd at N Delaware Ave	Consider evaluating the feasibility of a mid-block pedestrian crossing in the vicinity of Kennedy Blvd and N Delaware Ave.	The access management safety study recommended leaving this intersection as a full median opening and also identified this location as a high pedestrian activity area, with 52 pedestrians during the PM peak, of which 41 were crossing Kennedy Blvd. Consider conducting a 3-day pedestrian volume count in the vicinity of this intersection, if pedestrian	$80,000

ID	Location	Suggestions for Consideration	Feasibility Notes	Cost Estimate
			crossing volumes warrant a mid-block crossing consider installing a median island and evaluating the potential for a two-stage crossing using post mounted RRFBs within the median and along the sides of Kennedy Blvd.	
59	Kennedy Blvd at Edison Ave	Potential unused driveway along the north side of Kennedy Blvd east of Edison Ave; driveway in front of the Outpost is blocked-off to allow for additional parking, consider contacting the business and eliminating the existing curb-cut.	Existing driveway is not currently being used and is partially blocked by landscaping and by parking stops.	$17,000
60	Kennedy Blvd west of North Boulevard	Consider reconstructing the alley crossing along the north side of Kennedy Blvd; pavement is currently broken and poses as a trip hazard.	Reconstruct the alley opening to provide an accessible pathway along Kennedy Blvd.	$3,000
61	Kennedy Blvd at North/South Boulevard	Consider installing R10-15 (Right-Turn Yield to Pedestrians) sign on all intersection approaches.	NA	$2,800
62	Kennedy Blvd at North Boulevard	Consider evaluating intersection and crosswalk lighting levels to ensure that appropriate illumination is being provided.	Crash history review indicates that approximately 52% of the crashes at this intersection occurred at night. Consider installing an overhead street light luminaire along Kennedy Blvd on the westbound approach to North Boulevard, along North Boulevard on the southbound approach to Kennedy Blvd, and along South Boulevard on the northbound approach to Kennedy Blvd.	$33,000
63	EB Kennedy Blvd east of South Boulevard	Consider installing R4-11 (Bicycles May Use Full Lane) sign or the W11-1 + W16-1P (Share the Road with Bicycles) sign assembly.	NA	$700
64	WB Kennedy Blvd west of Brevard Ave	Consider installing R4-11 (Bicycles May Use Full Lane) sign or the W11-1 + W16-1P (Share the Road with Bicycles) sign assembly.	NA	$700
65	SB Brevard Ave at Kennedy Blvd	Consider installing R10-15 (Right-Turn Yield to Pedestrians) signs on the westbound and southbound intersection approaches.	NA	$1,400
66	Brevard Ave at Kennedy Blvd	Consider evaluating intersection and crosswalk lighting levels to ensure that appropriate illumination is being provided.	According to the crash history review all of the crashes at this intersection (during the analysis period) occurred at night. Consider installing an overhead street light luminaire on the west side of Brevard Ave on the southbound approach to Kennedy Blvd.	$11,000
67	Kennedy Blvd at Grand Central Ave	Consider providing a marked crossing (including pedestrian ramps) across Grand Central Ave to continue the sidewalk and accommodate east-	The existing sidewalk along the south side of Kennedy Blvd currently continues along Grand Central Ave and does not currently have a clearly defined path to continue along Kennedy Blvd. Consider placing a marked	$5,200

ID	Location	Suggestions for Consideration	Feasibility Notes	Cost Estimate
		west pedestrian traffic along the south side of Kennedy Blvd.	crossing on the western leg of the intersection of Grand Central Ave and Magnolia Ave.	
68	Kennedy Blvd at UT Poe Pkwy	Consider evaluating intersection and crosswalk lighting levels to ensure that appropriate illumination is being provided.	Evaluating placing an overhead street light luminaire on the north side of Kennedy Blvd on the westbound approach to the existing crossing at UT Poe Pkwy.	$11,000
69	WB Kennedy Blvd at University Drive	Consider installing R10-15 (Right-Turn Yield to Pedestrians) sign.	NA	$700
70	Kennedy Blvd at Hyde Park Ave	Consider installing R10-15 (Right-Turn Yield to Pedestrians) sign on the eastbound and northbound intersection approaches.	NA	$1,400
71	Kennedy Blvd at Hyde Park Ave	Consider evaluating intersection and crosswalk lighting levels to ensure that appropriate illumination is being provided.	According to the crash history review, approximately 21% of the crashes at this intersection occurred at night. Consider installing an overhead street light luminaire within the southwest quadrant of the intersection.	$11,000
72	Kennedy Blvd at Plant Ave and Parker St	Continue to monitor the planning and development of the proposed Lafayette Place mixed-use development; continue coordination to identify signal/crossing opportunities as this development progresses.	The proposed Lafayette Place redevelopment is for approximately 1.7 million square feet of residential, hotel, office, and retail uses with parking well in excess of requirements.	$450,000
73	Kennedy Blvd at Hillsborough River	Consider alternative options of crossing under the Kennedy Blvd bridge along the west bank of the Hillsborough River to accommodate north-south pedestrian/bicycle movement to/from Plant Park/University of Tampa and the proposed Lafayette Place mixed-use development.	Study feasibility of and develop a plan/vision for a west river trail crossing, similar to how the Riverwalk traverses under the bridges on the east side of the river. Consider how this could be tied into the Lafayette Place redevelopment plan.	$150,000