

# DISTRICT 4 ROAD SAFETY AUDIT REPORT

SR-704 (OKEECHOBEE BOULEVARD)

AT FLORIDA AVENUE / ROSEMARY AVENUE

SECTION: 93 280 000

MILE POST: 8.881

SECTION: 93 280 001

MILE POST: 0.522

TASK WORK ORDER No. 19

CONTRACT NO: C-9E65

FM No. 429650-2-32-01

PREPARED FOR:

FLORIDA DEPARTMENT OF TRANSPORTATION, DISTRICT 4



OCTOBER 2015



## Engineer's Certification

I, William T. "WT" Bowman, P.E. #69132, certify that I currently hold an active Professional Engineers License in the State of Florida and am competent through education or experience to provide engineering services in the civil and traffic engineering disciplines contained in this plan, print, specification, or report.

I further certify that this Road Safety Audit (RSA) was prepared by me or under my responsible charge as defined in Chapter 61G15-18.001 F.A.C. and that all statements, conclusions and recommendations made herein are true and correct to the best of my knowledge and ability.

Study Roadway: SR-704 (Okeechobee Boulevard) at  
Florida Avenue / Rosemary Avenue

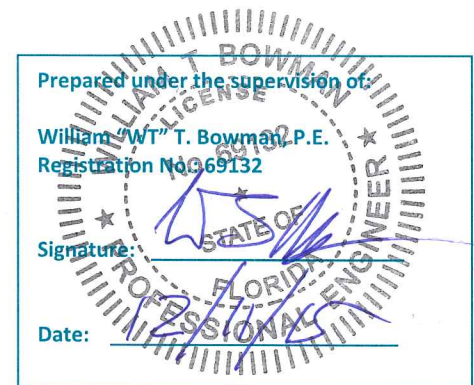
Section No: 93 280 000

Project Start: Milepost 8.881

Section No: 93 280 001

Project Start: Milepost 0.522

Project Location: West Palm Beach, Palm Beach County



# Table of Contents

<b>Project Location</b> .....	<b>i</b>
<b>Introduction</b> .....	<b>ii</b>
<i>Road Safety Audit Process</i> .....	<i>ii</i>
<i>Road Safety Audit Purpose</i> .....	<i>ii</i>
<i>Road Safety Audit Team Members and Stakeholder Coordination</i> .....	<i>iii</i>
<i>Road Safety Audit Stakeholders</i> .....	<i>iii</i>
<i>Report Structure</i> .....	<i>iii</i>
<i>Study Intersection</i> .....	<i>iv</i>
<i>Signal Features</i> .....	<i>iv</i>
<i>Pedestrian Features</i> .....	<i>v</i>
<i>Observations</i> .....	<i>v</i>
<i>Recommendations</i> .....	<i>v</i>
<i>Crash Data Analysis</i> .....	<i>vi</i>
<i>Pedestrian and Bicycle Crash Analysis</i> .....	<i>vi</i>
<i>Collision Diagram</i> .....	<i>viii</i>
<b>Road Safety Audit Findings Summary</b> .....	<b>1</b>
<b>Overview Map</b> .....	<b>3</b>
<b>Road Safety Audit Findings Details – Spot Observations</b> .....	<b>4</b>
<b>Road Safety Audit Findings Details – Corridorwide Observations</b> .....	<b>17</b>
<b>Road Safety Audit Findings Details – Positive Observations</b> .....	<b>25</b>

## Appendices

<i>Figure A1: Revised Median Concept</i> .....	<i>A1</i>
<i>Figure A2: Modified Traffic Signal Phasing of SR-704 at Florida Avenue / Rosemary Avenue</i> .....	<i>A2</i>
<i>Figure A3: SR-704 (Okeechobee Boulevard) Corridor Speed Limits</i> .....	<i>A3</i>
<i>Figure A4: SR-704 at Florida Avenue / Rosemary Avenue Alternatives</i> .....	<i>A4</i>
<i>Figure A4: SR-704 at Florida Avenue / Rosemary Avenue Bicycle Improvements</i> .....	<i>A5</i>
<i>Existing Signal Timings</i> .....	<i>A6</i>
<i>Table A1: Calculated Pedestrian Timings</i> .....	<i>A12</i>
<i>Table A2: Calculated Yellow Change Interval and Red Clearance Timings</i> .....	<i>A12</i>

## List of Figures and Tables

<i>Figure 1: Location Map</i> .....	<i>i</i>
<i>Figure 2: SR-704 (Okeechobee Boulevard) at Florida Avenue / Rosemary Avenue Collision Diagram</i> .....	<i>viii</i>
<i>Table 1: Crash Distribution</i> .....	<i>vi</i>
<i>Figure 3: Overview Map</i> .....	<i>3</i>



## Project Location

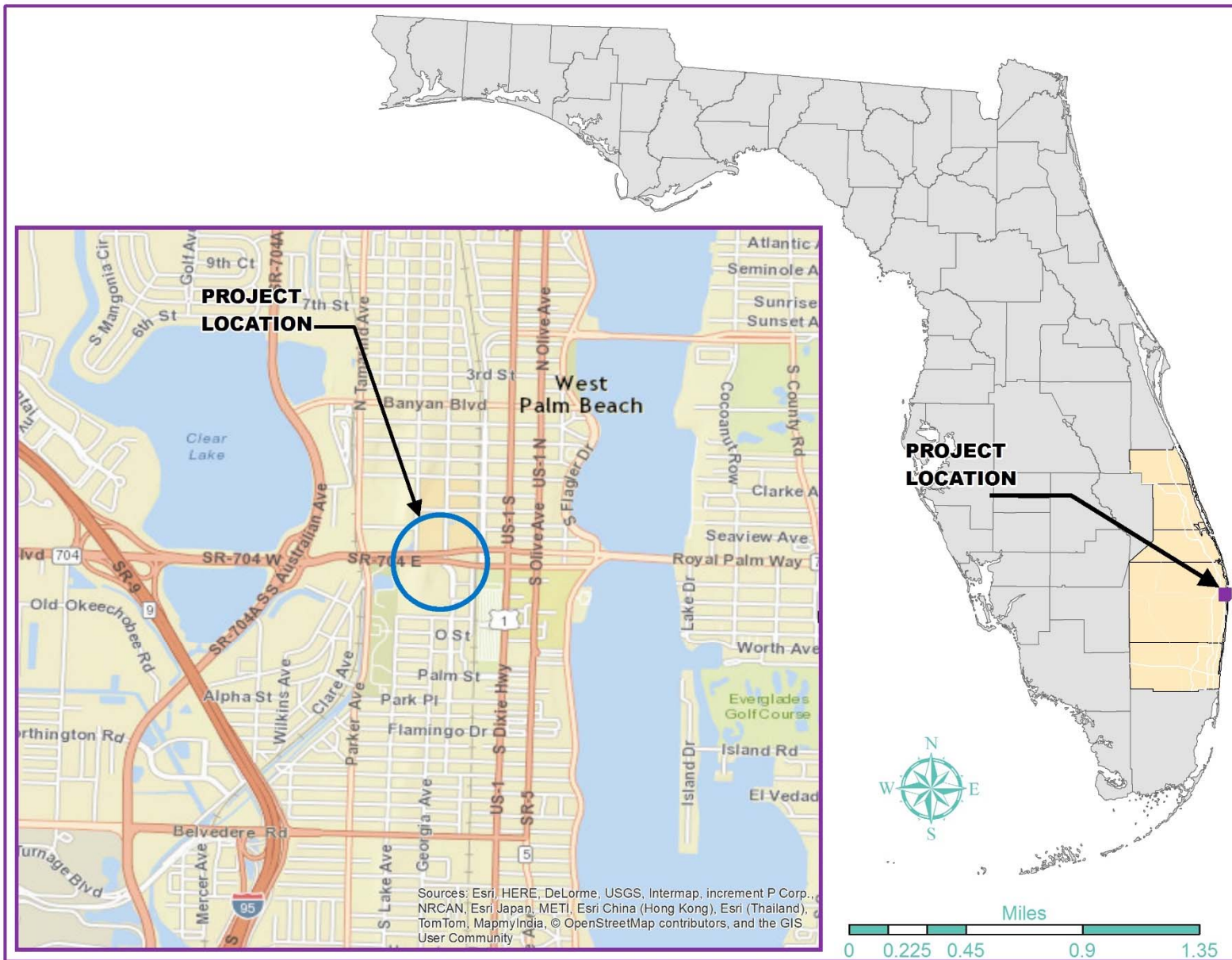


Figure 1: Location Map

# Introduction

---

## Road Safety Audit Process

The Federal Highway Administration's (FHWA) Safety Office has established the Road Safety Audits (RSA) process as a way to further enhance the overall safety performance of roadways for all users. An RSA is the formal safety performance examination of an existing or future road or intersection by an independent, multidisciplinary team. It qualitatively estimates and reports on potential road safety issues and identifies opportunities for improvements in Engineering, Education, Enforcement, and Emergency response to improve safety for all road users. The goal of an RSA is to save money and time and reduce the number and severity of crashes. RSAs are a low-cost, proactive approach to safety that considers all road users and identifies opportunities to enhance safety and reduce the number and severity of crashes.

A typical RSA consists of the following steps:

1. Identify project or road in service to be audited.
2. Select RSA team.
3. Conduct pre-audit meeting to review project information.
4. Perform field observations under various conditions.
5. Conduct audit analysis and prepare report of findings.
6. Present audit findings to Project Owner/Design Team.
7. Project Owner/Design Team prepares formal response.
8. Incorporate findings into project when appropriate.

## Road Safety Audit Purpose

This RSA along SR-704 (Okeechobee Boulevard) at Florida Avenue / Rosemary Avenue was conducted based on a variety of factors:

- Citizen complaints regarding the ability of bicyclists to clear the intersection along Rosemary Avenue/Florida Avenue
- Ongoing construction of the Convention Center Hilton Hotel, which is anticipated to generate significant additional pedestrian traffic
- Citizen petition proposing a pedestrian overpass to navigate the intersection north/south
- Significant pedestrian crossings, north/south, against the "DO NOT WALK" indication

The concerns with this intersection were previously studied within the CityPlace Hotel Pedestrian Study by Thomas A. Hall, Inc. on behalf of the CityPlace Hotel, LLC. Many of the conclusions of that analysis are consistent with recommendations of this RSA.

Through stakeholder coordination it was determined that a pedestrian bridge was not an optimal solution to moving pedestrian traffic due to cost, anticipated lack of use, and constructability issues. Therefore, this RSA focused on improvements that could enhance pedestrian and bicycle safety at this intersection and improve pedestrian and bicycle compliance with traffic control.

The RSA was conducted on the following days:

- Thursday, April 16, 2015 from 10:30 am to 11:00 am
- Monday, May 18, 2015 from 12:15 pm to 1:45 pm
- Tuesday, May 19, 2015 from 6:00 pm to 8:30 pm
- Tuesday, June 9, 2015 from 11:00 am to 12:00 pm
- Saturday, June 13, 2015 from 5:00 pm to 6:00 pm

## Introduction

### Road Safety Audit Team Members and Stakeholder Coordination

As this RSA was addressing issues that had already become "hot topics," the initial stakeholder coordination consisted of attending an already-scheduled meeting at West Palm Beach City Hall with a variety of stakeholders from local jurisdictions, FDOT, and private developers, held on April 14, 2015. In addition, on June 9, a variety of other stakeholders were contacted to participate. The core RSA members from Tindale Oliver and the various stakeholders from the meeting and other correspondence are detailed below. The core RSA team members included:

- W.T. Bowman, P.E., Tindale Oliver
- Kevin Moderie, E.I., Tindale Oliver

### Road Safety Audit Stakeholders

- Adriana Rodriguez, PE, PTOE, FDOT D4 Traffic Operations – Safety Studies Engineer
- Maria Anaya de Yeats, EI, FDOT D4 Traffic Operations – Pedestrian Safety Program Specialist
- Alex Hansen, AIPC, City of West Palm Beach – Senior Planner
- Rick Greene, City of West Palm Beach – Development Service Director
- Dan Weisberg, PE, Palm Beach County – Director Traffic Division
- Michael Stellino, Related Real Estate Development – Developer
- Jennifer Fierman, FDOT D4 – Complete Streets Coordinator
- Francheska Taylor, Palm Beach County MPO – Bike/Ped/TDM Coordinator
- Joe Roskowski, Citizen
- Ruth Kurtz, Citizen
- Sylvia Moffett, District 1 Commissioner – President of the City Commission
- Tom Harms, Palm Beach County Convention Center – Director of Operations

### Report Structure

The Summary of RSA Findings lists each observation's location, observation overview, suggestion for consideration, and responsible agency. Observations are sorted geographically from south to north following mile post convention. Observations and corresponding recommendations are assigned one of three levels of effort categories:

- "Low" improvements consist of basic improvements such as signs and pavement markings that can generally be done with in-house maintenance forces.
- "Medium" improvements are more involved and can typically be done by push button forces.
- "High" improvements are most involved in scope, may require right-of-way, public involvement, and will typically require a work program project to complete.

Observations are also assigned one of three time frame categories:

- "Short-term" recommendations can take weeks to implement.
- "Mid-term" recommendations can months to implement.
- "Long-term" recommendations can take years to implement.

The observations and corresponding recommendations are grouped as follows:

- Spot observations relate to one issue at a single location.
- Corridorwide observations relate to a recurring issue throughout a study area.
- Positive observations denote best practices implemented along the study area.

The detailed section of the report includes an aerial that illustrates the location of the observation highlighted with a red circle. Spot observations are shown in yellow, corridor-wide observations are shown in orange, and positive

observations are shown in green. Figure 3, on page 3, illustrates the relative location of observations on an aerial.

### Study Intersection

The intersection of SR-704 (Okeechobee Boulevard) at Florida Avenue / Rosemary Avenue is a four-legged signalized intersection with no intersection street lighting. SR-704 (Okeechobee Boulevard) is an east-west eight-lane divided roadway with a 70-90-foot median and a posted speed limit of 40 miles per hour (mph). The eastbound approach has a dedicated left-turn lane, three through lanes, a shared through right-turn lane, and no bike lanes. The westbound approach has three through lanes, a shared through right-turn lane, and no bike lanes. There are sidewalks along both sides of SR-704 (Okeechobee Boulevard). Pedestrian lighting is provided on the north side of SR-704 (Okeechobee Boulevard) to the west of Florida Avenue / Rosemary Avenue. Figure 1 illustrates the project location.

Florida Avenue / Rosemary Avenue is a four-lane divided roadway to the south and a two-lane undivided roadway with on-street parking to the north. The northbound approach has a dedicated left-turn lane, a shared through left-turn lane, a dedicated right-turn lane, and no bike lanes. The southbound approach has a dedicated left-turn lane with sharrows for bikes, and a shared through right-turn lane. There are sidewalks along both sides of Florida Avenue / Rosemary Avenue. Lighting is provided within the median of the northbound approach and pedestrian lighting is provided both sides of the roadway on the southbound approach.

Primary land uses of the intersection at SR-704 (Okeechobee Boulevard) and Florida Avenue / Rosemary Avenue to the north are pedestrian attractors, including the City Place shops, restaurants, theaters and attractions. South of the intersection, the primary land uses are pedestrian generators, including the West Palm Beach County Convention Center, Convention Center Hilton Hotel (opening in 2016), and the City Place South Tower.

### Signal Features

The study intersection has a mast arm traffic signal. The eastbound approach has a protected left-turn phase. The northbound and southbound approaches operate with split phasing. The existing signal phasing diagram (Figure A2) and the signal timings are both provided in the Appendix. It is noted that the existing signal phasings are recommended to be modified and are discussed further in this report.

The traffic signal is coordinated with an Adaptive Traffic Control System that utilizes In-Sync video detection to coordinate the upstream and downstream signalized intersections. The intersection is coordinated with the following intersections:

- SR-704 (Okeechobee Boulevard) at South Sapodilla Avenue approximately 500 feet to the west
- SR-704 (Okeechobee Boulevard) at Alabama Avenue (westbound only) approximately 500 feet to the east
- SR-704 (Okeechobee Boulevard) at Quadrille Boulevard approximately 650 feet to the east

SR-704 (Okeechobee Boulevard) at Florida Avenue / Rosemary Avenue has no coordination to the south and north due to the following:

- Florida Avenue ends approximately 750 feet south at the parking lot of the Palm Beach County Convention Center parking lot
- Rosemary Avenue at Hibiscus Street is STOP-controlled approximately 900 feet north

# Introduction

## Pedestrian Features

There are marked crosswalks, 12 pedestrian signal features (4 within the median), and American Disability Act (ADA) ramps (without contrasting truncated domes) provided at the signalized intersection. The pedestrian signal heads are LED / countdown. Two of the pedestrian signals are mounted to the mast arm, and two are mounted to individual pedestals. The remaining eight pedestrian signals are two-way pedestrian signals on four separate pedestals.

The existing pedestrian phasing and timings are provided in the Appendix. It is noted that the existing pedestrian clearance timings are recommended to be increased and are discussed further in this report.

## Observations

The intersection of SR-704 (Okeechobee Boulevard) at Florida Avenue / Rosemary Avenue was observed on April 16, May 18–19, June 9, and June 13, 2015. During the field review the following were observed:

- Vehicles stopping within the intersection
- Conflicts between pedestrians and eastbound U-turns as well as right-turns
- Pedestrians walking / running during “DO NOT WALK” phase
- Pedestrian crossing distance is long for the northwest and southeast crosswalk
- Pedestrians pushing the incorrect push buttons
- Construction of Conventions Center Hilton Hotel
- Lack of lighting
- Bicyclists not clearing the intersection

## Recommendations

The main concern with the intersection is pedestrians crossing during the “DO NOT WALK” phase. Pedestrians were observed waiting an extended period of

time within the median in anticipation of the “WALK” phase, as they either did not activate the push button or pressed the incorrect one. Generally, these pedestrians would then become impatient and walk or run across SR-704 (Okeechobee Boulevard) during the “DO NOT WALK” phase. When the Convention Center Hilton Hotel is completed in 2016, it is anticipated even more pedestrians will cross SR-704 (Okeechobee Boulevard) to reach the City Place, which will further add to the problem.

Therefore, to enhance safety of the intersection, the following are recommended:

- Adjust signal phasing and add pedestrian phase during eastbound left-turn phase
- Prohibit eastbound U-turns
- Install “TURNING VEHICLES YIELD TO PEDESTRIANS” sign for southbound right turns
- Add Leading Pedestrian Interval (LPI)
- Reduce the northwest and southeast crosswalk’s crossing distance
- Add automatic pedestrian phases
- Hire off-duty police officers during events
- Conduct a study to review lighting conditions
- Lengthen the yellow and all-red times for bicyclists crossing north / south
- Improve pedestrian signage and add “feedback” to push buttons

These recommendations plus additional recommendations are discussed further in the report.



# Introduction

## Crash Data Analysis

Crash data from January 2009 to December 2013 extracted from the State Crash Analysis Reporting System (CARS) were reviewed to identify any crash patterns that could be addressed as part of the RSA recommendations.

During 2009–2013 analysis period, a total of 47 crashes occurred along SR-704 (Okeechobee Boulevard) from milepost 8.778 (South Sapodilla Avenue) to milepost 9.011 (US-1 / South Quadrille Boulevard). Table 1 provides the overall number of crashes by their injury severity for each year.

Table 1: Crash Distribution

SR-704/Okeechobee Blvd		Number of Crashes					5 Year Total	Mean Crashes	%
		2009	2010	2011	2012	2013			
Crash Type	Angle	2	2	0	3	1	8	1.6	17%
	Bike	0	0	0	0	2	2	0.4	4%
	Fixed Object	0	1	1	0	1	3	0.6	6%
	Front to Rear (Rear End)	2	5	1	3	4	15	3	32%
	Left Turn	3	0	0	1	0	4	0.8	9%
	Lost Control	0	1	0	0	0	1	0.2	2%
	Pedestrian	0	0	0	0	1	1	0.2	2%
	Sideswipe, same direction	2	3	3	2	3	13	2.6	28%
	<b>Total</b>	<b>9</b>	<b>12</b>	<b>5</b>	<b>9</b>	<b>12</b>	<b>47</b>	<b>9.4</b>	<b>100%</b>
Injury Severity	Fatal	0	0	0	0	0	0	0	0%
	Incapacitating	1	0	0	1	1	3	0.6	6%
	NonIncapacitating	2	2	0	1	2	7	1.4	15%
	Possible Injury	1	5	1	3	4	14	2.8	30%
	None	5	5	4	4	5	23	4.6	49%
	<b>Total</b>	<b>9</b>	<b>12</b>	<b>5</b>	<b>9</b>	<b>12</b>	<b>47</b>	<b>9.4</b>	<b>100%</b>
Lighting Condition	Daylight	4	4	2	4	7	21	4.2	45%
	Dawn	0	0	0	0	0	0	0	0%
	Dusk	0	2	0	0	1	3	0.6	6%
	Dark-Lighted	5	6	3	5	4	23	4.6	49%
	Dark-Not Lighted	0	0	0	0	0	0	0	0%
	<b>Total</b>	<b>9</b>	<b>12</b>	<b>5</b>	<b>9</b>	<b>12</b>	<b>47</b>	<b>9.4</b>	<b>100%</b>
Surface Conditions	Dry	9	9	5	8	11	42	8.4	89%
	Wet	0	3	0	1	1	5	1	11%
	<b>Total</b>	<b>9</b>	<b>12</b>	<b>5</b>	<b>9</b>	<b>12</b>	<b>47</b>	<b>9.4</b>	<b>100%</b>
Ped/Bike Crashes	Pedestrian	0	0	0	0	1	1	0.2	0%
	Bicycle	0	0	0	0	2	2	0.4	1%
	<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>0.6</b>	<b>1%</b>

## Pedestrian and Bicycle Crash Analysis

Scanned police reports were reviewed to identify bicycle and pedestrian crashes. There were one pedestrian and two bicycle-related crashes distributed throughout the corridor, with no fatalities from 2009 to 2013.

However, during evening observations of May 19, 2015 at 8:35 pm there was a bike fatality just outside the study area. The crash occurred along the railroad tracks 1,500 feet west of SR-704 (Okeechobee Boulevard) and Florida Avenue / Rosemary Avenue. Per news reports, a bicyclist headed westbound on Old Okeechobee Road, ignored the downward railroad crossing arms, attempted to cross the tracks while an on-coming train was coming, and was hit. The bicyclist was transported as a trauma patient and died following surgery. According to the initial investigation, the train operator and conductor followed all standard protocols. It is noted that this railroad crossing is recommended to be further studied.

On February 2, 2013 at 6:17 pm, a bicyclist was crossing northbound at the southeast crosswalk of SR-704 (Okeechobee Boulevard) and South Sapodilla Avenue and was struck by a westbound U-turn that had a green arrow. The officer observed the signal phasing and determined the bicyclist crossed during the “DO NOT WALK” phase.

On May 11, 2013 at 10:04 pm, two pedestrians were crossing eastbound approximately 450 feet north of SR-704 (Okeechobee Boulevard) and Florida Avenue / Rosemary Avenue and were struck by a southbound vehicle. It is noted that this accident happened during a very heavy rain storm. The driver was reported to be travelling approximately 5 to 10 mph. No citations were issued.

On October 21, 2013 at 8:46 am, a bicyclist was crossing northbound 20 feet east of the southeast crosswalk of SR-704 (Okeechobee Boulevard) and Florida Avenue / Rosemary Avenue and was struck by an eastbound vehicle with a green signal. The bicyclist was at fault for failing to yield the right-of-way.

## Introduction

---

Figure 2, on the following page, is a map / collision diagram of SR-704 (Okeechobee Boulevard) from milepost 8.778 (South Sapodilla Avenue) to milepost 9.011 (US-1 / South Quadrille Boulevard) that depicts all the pedestrian and bicycle-related crashes as well as any crashes with incapacitating injuries. The diagram also depicts locations of bus stops and street lighting.





**Figure 2: SR-704 (Okeechobee Boulevard) at Florida Avenue / Rosemary Avenue Collision Diagram**

## Road Safety Audit Findings Summary

ID	Location Description:	Spot Observation Overview:	Suggestions for Consideration:	Assigned to:
01	SR-704 at Florida Avenue / Rosemary Avenue	Vehicles stopped in intersection	Modify signal phasing, review alternative solutions	Palm Beach County, FDOT
02	North / south crosswalk on northwest quadrant	Conflict between pedestrians and eastbound U-turns	Prohibit eastbound U-turns or add "TURNING VEHICLES YIELD TO PEDESTRIANS" sign, add pedestrian phase	Palm Beach County, FDOT
03	All crosswalks	Conflict between pedestrians and right turns	Install "TURNING VEHICLES YIELD TO PEDESTRIANS" signs, consider "blank-out" signs, and consider LPI	Palm Beach County
04	North / south crosswalk on northwest and southeast quadrants	Pedestrian crossing distances are long	Reduce crossing distances by modifying median	Developer of Convention Center Hilton Hotel, Palm Beach County, FDOT
05	SR-704 at Florida Avenue / Rosemary Avenue	Confusing striping	Modify striping in median	Developer of Convention Center Hilton Hotel, FDOT
06	North / south crosswalk on northeast quadrant	Pedestrian(s) crossing on "DO NOT WALK"	Add pedestrian phase during eastbound left-turn phase	Palm Beach County, FDOT
07	North / south crosswalk on northeast quadrant	Pedestrian(s) crossing on "DO NOT WALK"	Add automatic pedestrian calls	Palm Beach County, FDOT
08	All pedestrians ramps	Truncated domes not contrasting	Provide contrasting truncated domes, further review of each pedestrian ramp	FDOT
09	SR-704 at Florida Avenue / Rosemary Avenue	Minimal pedestrian warning signs	Add Pedestrian Warning Signs (W11-2) and supplemental plaques	FDOT
10	All crosswalks	Short "WALK" and "DO NOT WALK" phases	Increase "WALK" and "DO NOT WALK" phases	Palm Beach County
11	Railroad crossing at SR-704 and Parker Avenue	Bike fatality during night observations	Further review railroad features	FDOT
12	SR-704 at Florida Avenue / Rosemary Avenue	Citizen recommended to reduce speed limit	Conduct speed study	FDOT
13	SR-704 at Florida Avenue / Rosemary Avenue	Citizen concern of wrong way turning	Install "ONE-WAY", "DIVIDED HIGHWAY", "DO NOT ENTER", and "WRONG WAY" signs	FDOT
ID	Location Description:	Corridorwide Observation Overview:	Suggestions for Consideration:	Assigned to:
C01	Southwest corner of SR-704 at Florida Avenue / Rosemary Avenue	Construction site of Convention Center Hilton Hotel	Improve pedestrian features prior to opening	Developer of Convention Center Hilton Hotel, Palm Beach County, FDOT



<i>ID</i>	<i>Location Description:</i>	<i>Corridorwide Observation Overview:</i>	<i>Suggestions for Consideration:</i>	<i>Assigned to:</i>
C02	Southwest corner of SR-704 at Florida Avenue / Rosemary Avenue	Convention Center events are anticipated to draw high volumes of pedestrians	Hire police officers during events	Developer of Convention Center Hilton Hotel, West Palm Beach Police Department
C03	South of SR-704 at South Sapodilla Avenue	Convention center events release heavy traffic simultaneously	Hire police officers during events	Palm Beach County Convention Center, West Palm Beach Police Department
C04	SR-704 at Florida Avenue / Rosemary Avenue, SR-704 corridor	Lack of lighting	Conduct study to review lighting conditions	FDOT
C05	SR-704 at Florida Avenue / Rosemary Avenue	Bikes not clearing intersection	Lengthen yellow and all-red times for bicyclists crossing north / south	Palm Beach County
C06	SR-704 at Florida Avenue / Rosemary Avenue	Bikes not clearing intersection	Consider a bicycle staging area with push button	FDOT
C07	Median of SR-704 at Florida Avenue / Rosemary Avenue	Pedestrians observed pushing the push button multiple times	Improve pedestrian signage with arrows, upgrade pedestrian push buttons to include "feedback", add additional pedestrian station within median, and consider installing audible pedestrian signals	Palm Beach County, FDOT
C08	All crosswalks	Pedestrian(s) crossing on "DO NOT WALK"	Educate and enforce public of Florida laws related to pedestrian signals	West Palm Beach Police Department

<i>ID</i>	<i>Location Description:</i>	<i>Positive Observation Overview:</i>	<i>Suggestions for Consideration:</i>	<i>Assigned to:</i>
P01	Florida Avenue / Rosemary Avenue, north of SR-704	Sharrows provided	Positive observation	FDOT
P02	SR-704 at Florida Avenue / Rosemary Avenue	Signal features	Positive observation	FDOT
P03	Sidewalk northwest of SR-704 at Florida Avenue / Rosemary Avenue	Lighting is provided along north sidewalk, northwest of SR-704 and Florida Avenue / Rosemary Avenue	Positive observation	FDOT
P04	SR-704 westbound inside through lane	Westbound left turns and U-turns are prohibited	Positive observation	FDOT

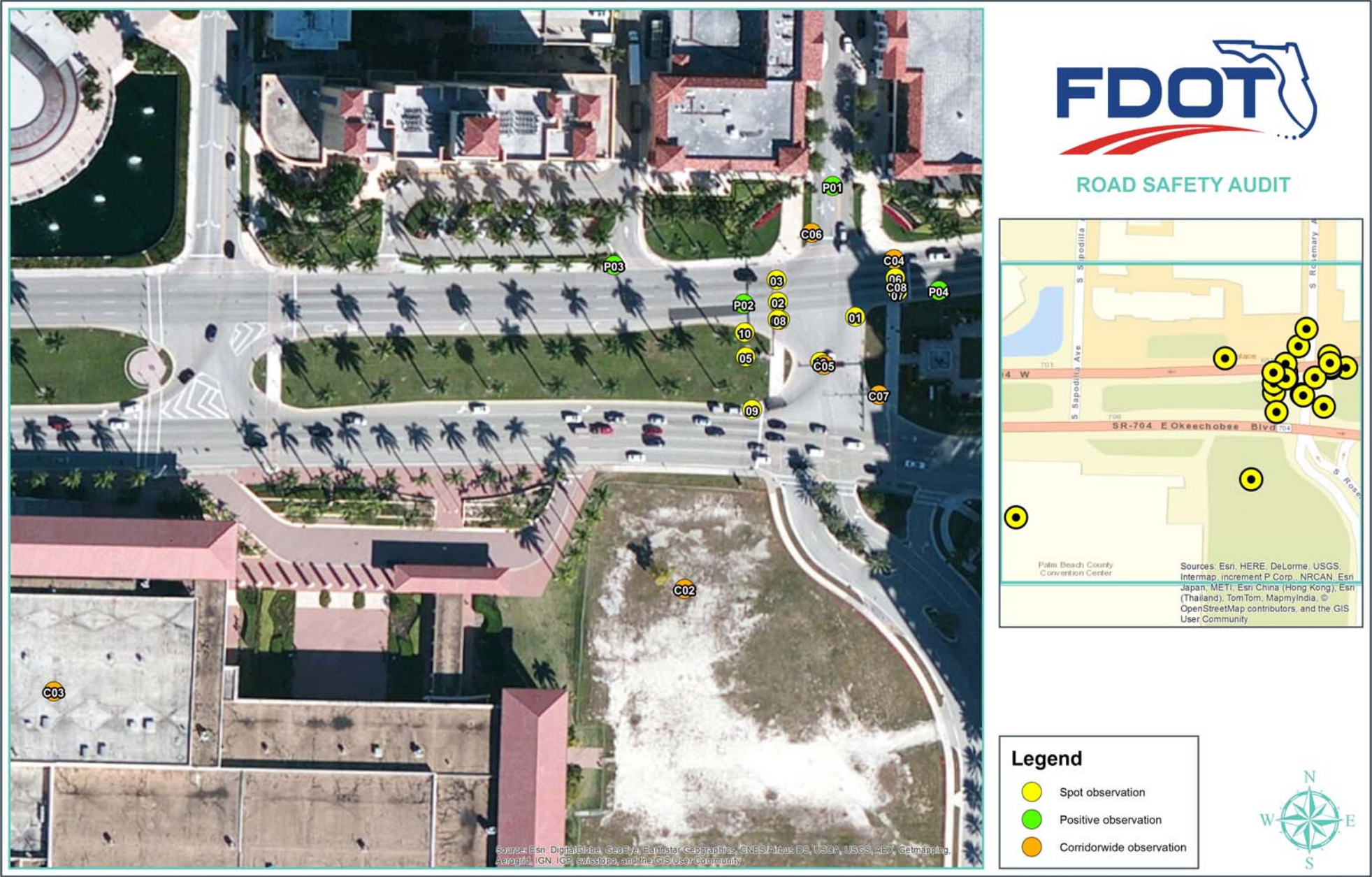


Figure 3: Project Overview



Road Safety Audit Findings Details - Spot Observations

ID	Location Description:	Spot Observation Overview:	Suggestions for Consideration:
01	SR-704 at Florida Avenue / Rosemary Avenue	Vehicles stopped in intersection	Modify signal phasing, review alternative solutions



Spot Observation Details:

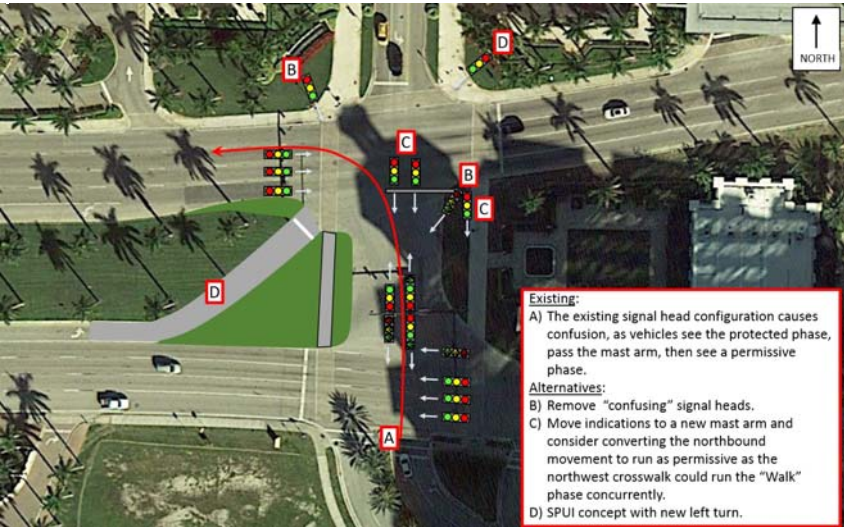
Eastbound left-turning vehicles from SR-704 (Okeechobee Boulevard) were observed turning left towards northbound Florida Avenue / Rosemary Avenue and then stopping within the intersection during both the green and red phases. Vehicles that observed the ground-mounted signal change to red within the median would stop at that signal. It is noted that the photo depicts a green ball on the northwest side of the intersection but a red arrow and a red ball within the median, which makes it unclear to motorists whether or not to go through the remainder of the intersection.

Suggestion Details:

Consider modifying the eastbound left-turn phase to a lagging phase followed by the southbound and northbound split phases to encourage the eastbound left-turn movement to continue through the intersection. See the proposed signal phasing plan on Figure A2 in the Appendix. Verify the feasibility of eliminating the eastbound left-turn movement or prohibiting U-turns at the intersection. This modification may require identifying appropriate alternative routes for the rerouted traffic and operational impacts on the adjacent intersection.

Also, perform an analysis to determine the feasibility of the following alternative solutions depicted to the left and on Figure A4 in the Appendix:

- A) On Figure A4, (A) depicts the existing signal head configuration and movement.
- B) Remove "confusing" signal heads.
- C) Move signal heads to a new mast arm and consider converting the northwest movement to run as permissive as the northwest crosswalk could run the "Walk" phase concurrently.
- D) Verify the feasibility of realigning the eastbound left-turn lane through the median similar to that of a Single Point Urban Interchange (SPUI).



Agency:	Improvement Type:
Palm Beach County, FDOT	Signs, Signal
Time Frame:	EEE:
Mid Term	Engineering, Education
Level of Effort:	Comment:
Medium	

ID	Location Description:	Spot Observation Overview:	Suggestions for Consideration:
02	North / south crosswalk on northwest quadrant	Conflict between pedestrians and eastbound U-turns	Prohibit eastbound U-turns or add "TURNING VEHICLES YIELD TO PEDESTRIANS" sign, add pedestrian phase



#### Spot Observation Details:

Conflict between pedestrians and eastbound U-turns were observed within the southbound crosswalk north of the median at SR-704 (Okeechobee Boulevard) and Florida Avenue / Rosemary Avenue.

#### Suggestion Details:

To remove conflicts between vehicles and pedestrians, prohibit eastbound U-turns (as mentioned in Observation 1) at SR-704 (Okeechobee Boulevard) and Florida Avenue / Rosemary Avenue. Prior to prohibiting the U-turn movement, conduct an analysis to determine the potential impacts to Ruth's Chris Steak House by conducting a U-turn count, as a U-turn is likely the primary method of entry for vehicles from the west. In addition to business impacts, evaluate the impacts of the rerouted traffic on the adjacent intersections due to the eastbound U-turn prohibition.

Consider adding a pedestrian phase during this movement by modifying the eastbound left-turn phase to a lagging phase, followed by the split phases serving the southbound and northbound movements. See the proposed signal phasing on Figure A2 in the Appendix.

If removing the U-turn movement is not feasible, consider adding a "TURNING VEHICLES YIELD TO PEDESTRIANS" (R10-15) sign.

<b>Agency:</b>	<b>Improvement Type:</b>
Palm Beach County, FDOT	Signs, Signal, Pedestrian
<b>Time Frame:</b>	<b>EEE:</b>
Short Term	Engineering
<b>Level of Effort:</b>	<b>Comment:</b>
Low	



ID	Location Description:	Spot Observation Overview:	Suggestions for Consideration:
03	All crosswalks	Conflict between pedestrians and right turns	Install "TURNING VEHICLES YIELD TO PEDESTRIANS" signs, consider "blank-out" signs, and consider LPI



#### Spot Observation Details:

Conflicts observed between right-turning vehicles and pedestrians crossing in the crosswalks of SR-704 (Okeechobee Boulevard) and Florida Avenue / Rosemary Avenue.

#### Suggestion Details:

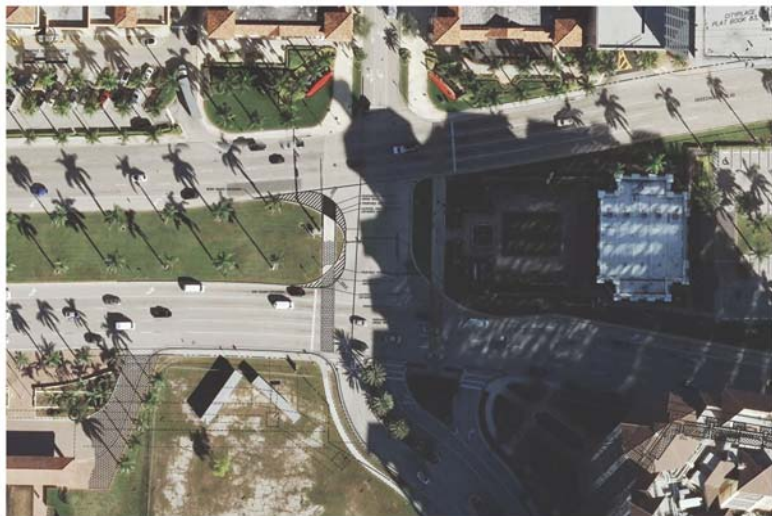
To advise vehicles to yield to pedestrians, install a R10-15 "TURNING VEHICLES YIELD TO PEDESTRIANS" sign.

A further review should be conducted to determine the need and feasibility of installing "blank-out" signs facing the right-turn movement that would display "TURNING VEHICLES YIELD TO PEDESTRIANS" during concurrent vehicular and pedestrian phases.

Also, consider a Leading Pedestrian Interval, which would allow pedestrians to establish themselves in the crosswalk before the light turns green. A further review should be conducted for having a LPI and to determine the operational impacts of the proposed LPI at all crosswalks.

<b>Agency:</b>	<b>Improvement Type:</b>
Palm Beach County	Signal, Pedestrian
<b>Time Frame:</b>	<b>EEE:</b>
Short Term	Engineering
<b>Level of Effort:</b>	<b>Comment:</b>
Low	

ID	Location Description:	Spot Observation Overview:	Suggestions for Consideration:
04	North / south crosswalk on northwest and southeast quadrants	Pedestrian crossing distances are long	Reduce crossing distances by modifying median



#### Spot Observation Details:

Pedestrian crossing distances are long to cross the north / south crosswalks of SR-704 (Okeechobee Boulevard) and Florida Avenue / Rosemary Avenue.

#### Suggestion Details:

To reduce the crossing time for pedestrians, consider modifying the west leg of the median to shorten the crossing distances for pedestrians. It is noted that the developer of the Convention Center Hilton Hotel is developing a concept of a revised median to reduce crossing distance for pedestrians. An "Auto Turn" analysis is recommended to ensure that the proposed concept provides appropriate control radii for the design vehicle in accordance with the current FDOT requirements. The concept is provided as Figure A1 in the Appendix.

It is noted that brick paver crosswalks are not allowed per current FDOT standards and policies. Prior to finalizing the concept, the developer needs to implement appropriate corrective actions.

#### Agency:

Developer of Convention Center Hilton Hotel, Palm Beach County, FDOT

#### Improvement Type:

Markings, Construction, Pedestrian

#### Time Frame:

Long Term

#### EEE:

Engineering

#### Level of Effort:

High

#### Comment:



ID	Location Description:	Spot Observation Overview:	Suggestions for Consideration:
05	SR-704 at Florida Avenue / Rosemary Avenue	Confusing striping	Modify striping in median



#### Spot Observation Details:

Eastbound left-turns, the southbound movement, and the northbound movement were observed not utilizing the guide striping within the median of SR-704 (Okeechobee Boulevard) at Florida Avenue / Rosemary Avenue as the striping is confusing.

#### Suggestion Details:

The developer of the Convention Center Hilton Hotel is developing a concept of a revised median at the intersection of SR-704 (Okeechobee Boulevard) at Florida Avenue / Rosemary Avenue. The developer should also consider revising the need for and feasibility of providing guide striping for the left-turn movements. The concept is provided as Figure A1 in the Appendix.

<b>Agency:</b>	<b>Improvement Type:</b>
Developer of Convention Center Hilton Hotel, FDOT	Markings
<b>Time Frame:</b>	<b>EEE:</b>
Mid Term	Engineering
<b>Level of Effort:</b>	<b>Comment:</b>
Med	

ID	Location Description:	Spot Observation Overview:	Suggestions for Consideration:
06	North / south crosswalk on northeast quadrant	Pedestrian(s) crossing on "DO NOT WALK"	Add pedestrian phase during eastbound left-turn phase

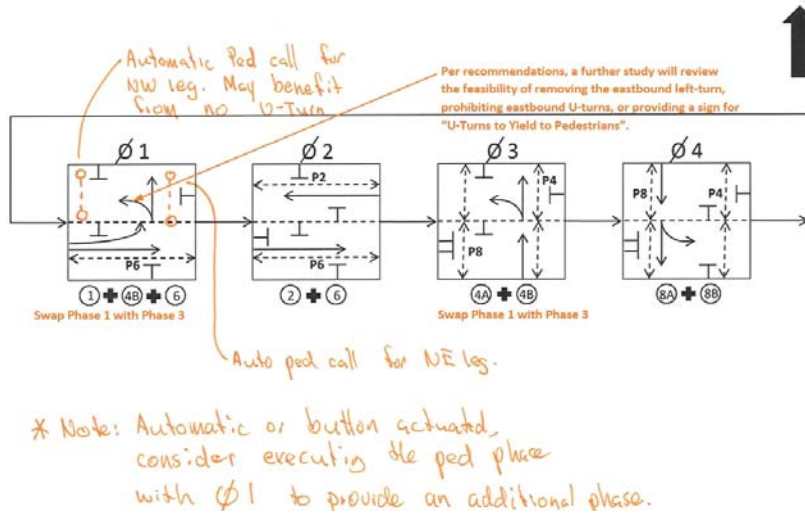


#### Spot Observation Details:

Pedestrians were observed waiting an extended period of time and then decided to cross during the "DO NOT WALK" phase, which was also the eastbound left-turn phase for SR-704 (Okeechobee Boulevard). It is noted that the signal phasing varied with InSync throughout the observations. Generally, the phasing was observed in the following order: Phase 2, Phase 1, Phase 2, Phase 3, Phase 4. The signal phasing gave pedestrians the impression that their phase was skipped to cross north and south SR-704 (Okeechobee Boulevard).

#### Suggestion Details:

To allow additional time for pedestrians to cross the northbound crosswalk of SR-704 (Okeechobee Boulevard), consider adding a pedestrian phase for the northeast crosswalk concurrently with the eastbound left-turn phase. Also, consider revising the signal phasing to the following order: Phase 2, Phase 1, Phase 4, Phase 3. The signal phasing diagram is also provided as Figure A2 in the Appendix.



Agency:	Improvement Type:
Palm Beach County, FDOT	Signal, Pedestrian
Time Frame:	EEE:
Short Term	Engineering
Level of Effort:	Comment:
Low	



ID	Location Description:	Spot Observation Overview:	Suggestions for Consideration:
07	North / south crosswalk on northeast quadrant	Pedestrian(s) crossing on "DO NOT WALK"	Add automatic pedestrian calls

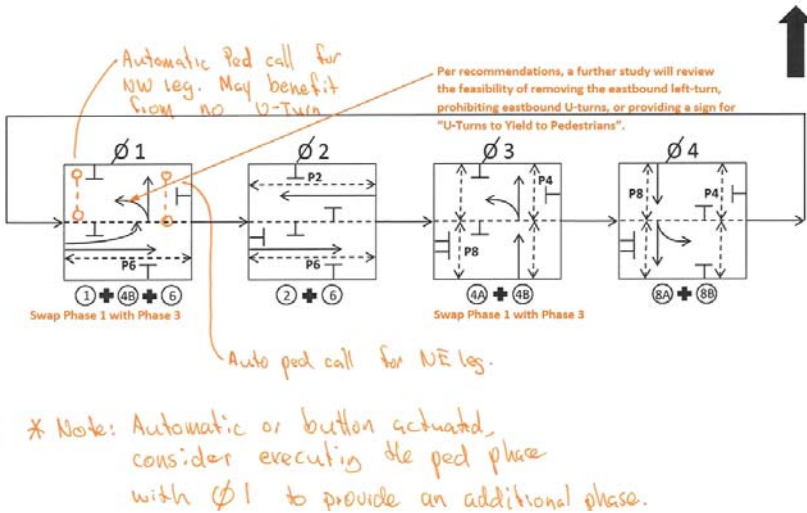


Spot Observation Details:

Pedestrians were observed waiting an extended period of time and then decided to cross during the "DO NOT WALK" phase.

Suggestion Details:

Allow for automatic pedestrian calls for the northbound and southbound crosswalks on the north side of the median to encourage pedestrians to walk during the "WALK" phase. These automatic pedestrian calls are in conjunction with the prior recommendation of modifying the signal phasing and adding a pedestrian phase to the northwest crosswalk.



Agency:	Improvement Type:
Palm Beach County, FDOT	Signal, Pedestrian
Time Frame:	EEE:
Short Term	Engineering
Level of Effort:	Comment:
Low	

ID	Location Description:	Spot Observation Overview:	Suggestions for Consideration:
08	All pedestrians ramps	Truncated domes not contrasting	Provide contrasting truncated domes, further review of each pedestrian ramp



#### Spot Observation Details:

The detectable warning surfaces are not contrasting with the sidewalk at all of the pedestrian ramps.

#### Suggestion Details:

To enhance visibility for the visually-impaired, it is recommended that the detectable warning surfaces contrast visually with adjacent walking surfaces per the Americans with Disabilities Act (ADA) Standards for Transportation Facilities 705.1.3.

Consider a further review of the pedestrian ramps to verify the ramps are in accordance with ADA and FDOT requirements.



Agency:	Improvement Type:
FDOT	Pedestrian
Time Frame:	EEE:
Mid Term	Engineering
Level of Effort:	Comment:
Med	

ID	Location Description:	Spot Observation Overview:	Suggestions for Consideration:
09	SR-704 at Florida Avenue / Rosemary Avenue	Minimal pedestrian warning signs	Add Pedestrian Warning Signs (W11-2) and supplemental plaques

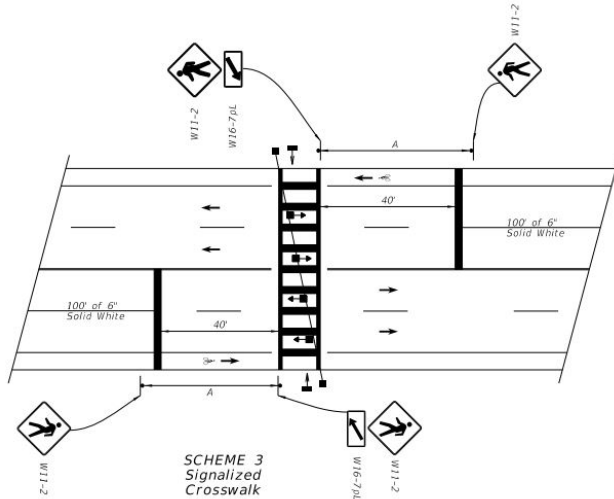


#### Spot Observation Details:

At the intersection of SR-704 (Okeechobee Boulevard) at Florida Avenue / Rosemary Avenue there are minimal pedestrian warning signs to advise motorists of pedestrians in the area.

#### Suggestion Details:

Consideration should be given to adding more signs warning motorists of upcoming pedestrians similar to FDOT Design Standards Index 17346 Sheet 10, Scheme 3, Signalized Crosswalk. Consider installing Pedestrian Warning Signs (W11-2) with a Downward Arrow plaque (W16-7) at the crosswalk within the median and to the right of the roadway. Also, consider adding Pedestrian Warning (W11-2) sign 300 feet prior to the crosswalk within the median and to the right of the roadway.



Agency:	Improvement Type:
FDOT	Signs, Pedestrian
Time Frame:	EEE:
Short Term	Engineering
Level of Effort:	Comment:
Low	



ID	Location Description:	Spot Observation Overview:	Suggestions for Consideration:
10	All crosswalks	Short "WALK" and "DO NOT WALK" phases	Increase "WALK" and "DO NOT WALK" phases



#### Spot Observation Details:

At all of the crosswalks, the existing "WALK" phase is only 5 seconds. Also, there is not enough time provided during the pedestrian "DO NOT WALK" phase. See existing pedestrian timings in the Appendix.

#### Suggestion Details:

Increase the "WALK" phase from 5 seconds to 7 seconds per 4E.06 of the MUTCD. Increase the "DO NOT WALK" phases for each of the crosswalks per Table A1 in the Appendix.

Agency:	Improvement Type:
Palm Beach County	Signal, Pedestrian
Time Frame:	EEE:
Short Term	Engineering
Level of Effort:	Comment:
Low	

ID	Location Description:	Spot Observation Overview:	Suggestions for Consideration:
11	Railroad crossing at SR-704 and Parker Avenue	Bike fatality during night observations	Further review railroad features



#### Spot Observation Details:

During evening observations of May 19, 2015 at 8:35 pm, there was a bike fatality just outside the study area. The crash occurred along the railroad tracks 1,500 feet west of the study intersection SR-704 (Okeechobee Boulevard) and Parker Avenue. Per news reports, a bicyclist headed westbound on Old Okeechobee Road, ignored the downward railroad crossing arms, attempted to cross the tracks while an on-coming train was coming, and was hit. The bicyclist was transported as a trauma patient and died following surgery. According to the initial investigation, the train operator and conductor followed all standard protocols.

#### Suggestion Details:

A further review is recommended to evaluate if the railroad features at the crossing are in accordance with the current applicable standards. Consider working with the railroad to confirm correct operations of the railroad signal. Based on the findings, implement appropriate corrective actions.



Agency:	Improvement Type:
FDOT	Other
Time Frame:	EEE:
Long Term	Engineering
Level of Effort:	Comment:
High	

ID	Location Description:	Spot Observation Overview:	Suggestions for Consideration:
12	SR-704 at Florida Avenue / Rosemary Avenue	Citizen recommended to reduce speed limit	Conduct speed study



Spot Observation Details:

A citizen recommended reducing the speed limit within the vicinity of City Place, along SR-704 (Okeechobee Boulevard), from 40 mph to 30 mph, indicating that this corridor has these posted speeds nearby. A review of posted speed limits shows that the speed limits along the corridor are as shown in the figure to the left and as in Figure A3 in the Appendix.

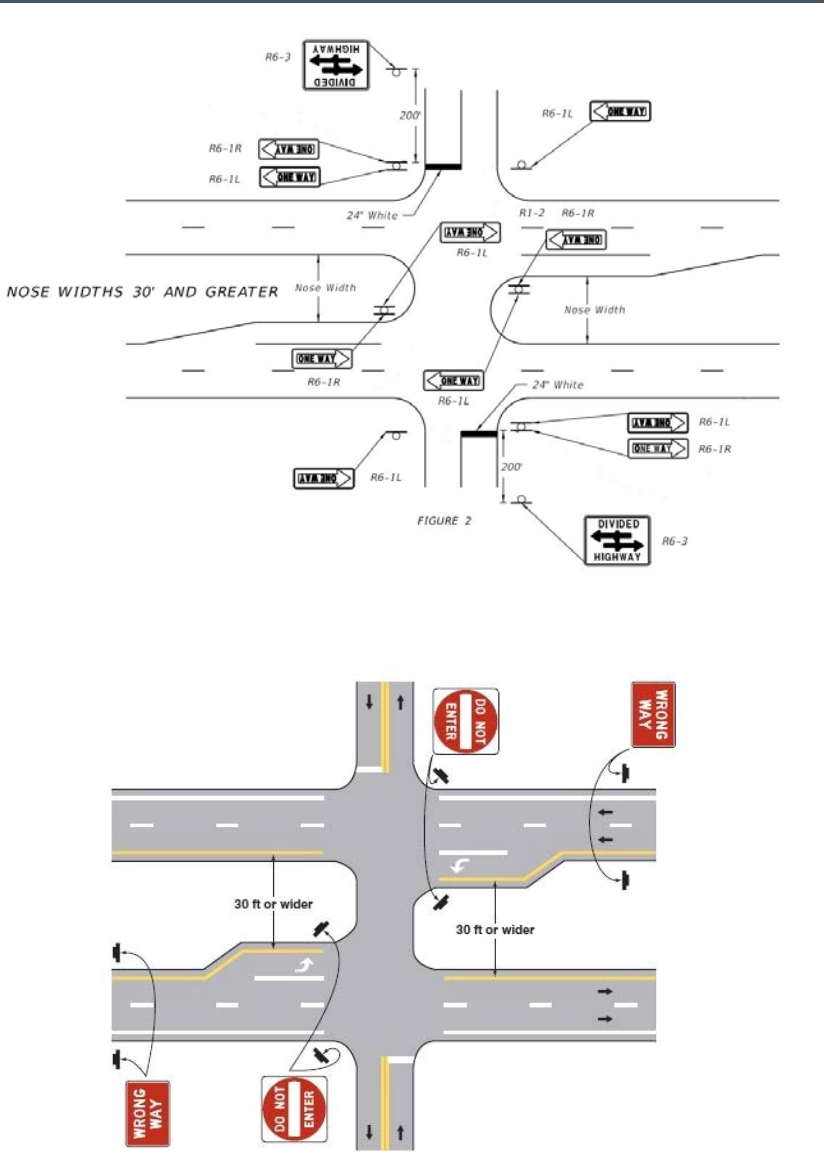
Suggestion Details:

Conduct a speed study to determine if vehicles are operating at an unacceptable level outside of posted speed limits. Also, conduct an analysis using USLimits 2 and/or current FDOT guidance to determine the appropriateness of a reduced speed limit. This analysis should consider the nature of nearby uses as well as the speeds and speed limits east and west of the study area. A reduced "speed zone" in this high pedestrian area may also be considered.

Agency:	Improvement Type:
FDOT	Other
Time Frame:	EEE:
Mid Term	Engineering
Level of Effort:	Comment:
Medium	



ID	Location Description:	Spot Observation Overview:	Suggestions for Consideration:
13	SR-704 at Florida Avenue / Rosemary Avenue	Citizen concern of wrong way turning	Install "ONE-WAY", "DIVIDED HIGHWAY", "DO NOT ENTER", and "WRONG WAY" signs



Spot Observation Details:

The large median can result in miscommunication of proper turning behavior from Florida Avenue / Rosemary Avenue to SR-704 (Okeechobee Boulevard). Although no specific crash pattern was observed indicating a tendency of wrong way turning, a citizen concern recommended "DO NOT ENTER" signs as a "best practice" measure.

Suggestion Details:

On roadways with wider median sections, it is considered "best practice" to install signage that better guides vehicles and communicates the proper behavior through the large median. Therefore, install "ONE-WAY" (R6-1) and "DIVIDED HIGHWAY" (R6-3) per FDOT Design Standards Index 17346 and install "DO NOT ENTER" (R5-1) and "WRONG WAY" (R5-1a) signs per MUTCD Figure 2B-12.

Agency:	Improvement Type:
FDOT	Signs
Time Frame:	EEE:
Mid Term	Engineering
Level of Effort:	Comment:
Medium	

## Road Safety Audit Findings Details - Corridorwide Observations

ID	Location Description:	Corridorwide Observation Overview:	Suggestions for Consideration:
C01	Southwest corner of SR-704 at Florida Avenue / Rosemary Avenue	Construction site of Convention Center Hilton Hotel	Improve pedestrian features prior to opening



### Corridorwide Observation Details:

Construction of Convention Center Hilton Hotel was observed. The hotel is expected to open in 2016 with 400 rooms. Construction crews were observed crossing at the intersection during afternoon observations. The opening is anticipated to draw high volumes of pedestrians, particularly during events. It also is anticipated that many pedestrians will cross the intersection of SR-704 (Okeechobee Boulevard) and Florida Avenue / Rosemary Avenue to reach the Convention Center Hilton Hotel / the City Place attractions.

### Suggestion Details:

Enhance pedestrian safety by reviewing and implementing improvements prior to the opening of the Convention Center Hilton Hotel.

An operational analysis should be conducted to include future pedestrian demand from the Convention Center Hilton Hotel to develop any signal phasing and timing modifications including the "WALK" and "DO NOT WALK" timings as well as vehicular clearance intervals.

<b>Agency:</b>	<b>Improvement Type:</b>
Developer of Convention Center Hilton Hotel, Palm Beach County, FDOT	Other
<b>Time Frame:</b>	<b>EEE:</b>
Mid Term	Engineering
<b>Level of Effort:</b>	<b>Comment:</b>
Medium	

ID	Location Description:	Corridorwide Observation Overview:	Suggestions for Consideration:
C02	Southwest corner of SR-704 at Florida Avenue / Rosemary Avenue	Convention Center events are anticipated to draw high volumes of pedestrians	Hire police officers during events



#### Corridorwide Observation Details:

The Convention Center Hilton Hotel is expected to open in 2016 with 400 rooms. The opening is anticipated to draw high volumes of pedestrians, particularly during events. It is anticipated many pedestrians will cross the intersection of SR-704 (Okeechobee Boulevard) and Florida Avenue / Rosemary Avenue to reach the Convention Center Hilton Hotel / the City Place attractions.

#### Suggestion Details:

During significant events, employ off-duty police officers to ensure that pedestrians and vehicles behave in a safe manner.

Agency:	Improvement Type:
Developer of Convention Center Hilton Hotel, West Palm Beach Police Department	Other
Time Frame:	EEE:
Short Term	Enforcement
Level of Effort:	Comment:
Low	



ID	Location Description:	Corridorwide Observation Overview:	Suggestions for Consideration:
C03	South of SR-704 at South Sapodilla Avenue	Convention center events release heavy traffic simultaneously	Hire police officers during events



#### Corridorwide Observation Details:

Palm Beach County Convention Center offers a variety of events that release heavy traffic simultaneously. All vehicles exit at SR-704 (Okeechobee Boulevard) and Florida Avenue / Rosemary Avenue causing heavy congestion.

#### Suggestion Details:

The intersection is not anticipated to have high pedestrian volumes during the release of an event at the Palm Beach County Convention Center. However, to control high volumes of vehicles during peak events and to reduce potential conflicts between vehicles and pedestrians, the owners should consider hiring off-duty police officers to control pedestrians and vehicles during event times.

Agency:	Improvement Type:
Palm Beach County Convention Center, West Palm Beach Police Department	Other
Time Frame:	EEE:
Short Term	Enforcement
Level of Effort:	Comment:
Low	

ID	Location Description:	Corridorwide Observation Overview:	Suggestions for Consideration:
C04	SR-704 at Florida Avenue / Rosemary Avenue, SR-704 corridor	Lack of lighting	Conduct study to review lighting conditions



#### Corridorwide Observation Details:

Concern was expressed about the lack of lighting in the corridor of SR-704 (Okeechobee Boulevard) and at the intersection of SR-704 (Okeechobee Boulevard) and Florida Avenue / Rosemary Avenue. During evening observations, many pedestrians crossed during the "DO NOT WALK" phase and lighting levels appeared low within the crosswalks of SR-704 (Okeechobee Boulevard).

#### Suggestion Details:

Conduct a feasibility review for intersection (and nearby corridor) lighting along SR-704 (Okeechobee Boulevard). Enhance the lighting, particularly at the crosswalks, as appropriate.

Agency:	Improvement Type:
FDOT	Lighting, Pedestrian
Time Frame:	EEE:
Long Term	Engineering
Level of Effort:	Comment:
High	



ID	Location Description:	Corridorwide Observation Overview:	Suggestions for Consideration:
C05	SR-704 at Florida Avenue / Rosemary Avenue	Bikes not clearing intersection	Lengthen yellow and all-red times for bicyclists crossing north / south



#### Corridorwide Observation Details:

A citizen expressed concern about the ability for a bicyclist to clear the intersection when travelling north / south. The citizen stated that the signal runs a short cycle during times of low traffic volume.

#### Suggestion Details:

Consideration was given to using bicycle detection to allow selection of an alternate phasing plan (alternate min green time) when a bicycle is detected. In coordination with the County, it was determined that the existing In-Sync system can detect bicyclists, but cannot select an alternate pattern. The company is working on incorporating this ability into future updates.

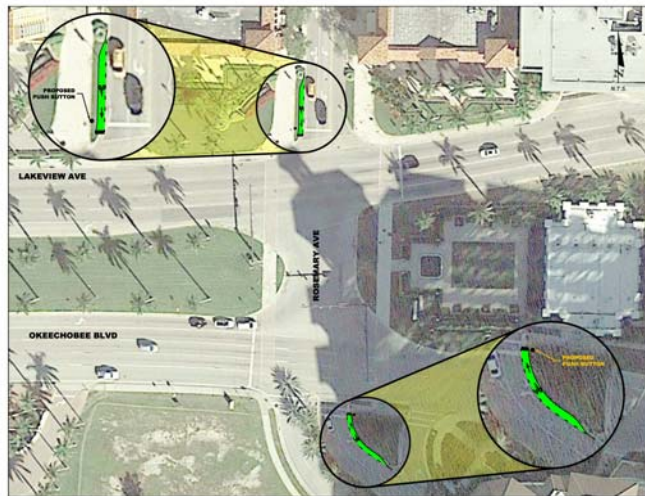
As the above approach was determined near-term infeasible, re-calculate the minimum green, yellow, and all-red times to provide the adequate calculated bicycle clearance time. Consider an operational analysis, as these increases will result in less mainline green time and may increase delay. See Table A1 and Table A2 in the Appendix.

A suggestion was made to consider running pedestrian recall by time of day. This operation has the potential to increase mainline delay by allocating green time to side street when it is not in demand. Consideration of this alternative would require coordination with Palm Beach County and detailed operational analysis to weigh the capacity implications.

<b>Agency:</b>	<b>Improvement Type:</b>
Palm Beach County	Signal, Pedestrian
<b>Time Frame:</b>	<b>EEE:</b>
Short Term	Engineering
<b>Level of Effort:</b>	<b>Comment:</b>
Low	Ongoing coordination with Palm Beach County



ID	Location Description:	Corridorwide Observation Overview:	Suggestions for Consideration:
C06	SR-704 at Florida Avenue / Rosemary Avenue	Bikes not clearing intersection	Consider a bicycle staging area with push button



#### Corridorwide Observation Details:

A citizen expressed concern about the ability for a bicyclist to clear the intersection when travelling north / south. The citizen stated that the signal runs a short cycle during times of low traffic volume.

#### Suggestion Details:

Consider enhancing bicycle safety by installing a green bicycle staging area for northbound and southbound bicyclists along Florida Avenue / Rosemary Avenue. Consider installing a pedestrian push button for bicyclists at the curb to activate the pedestrian phase to increase green time when activated.

This improvement would require curb modifications and push buttons. See Figure A5 in the Appendix.

Agency:	Improvement Type:
FDOT	Markings, Signal, Pedestrian
Time Frame:	EEE:
Mid Term	Engineering
Level of Effort:	Comment:
Medium	

ID	Location Description:	Corridorwide Observation Overview:	Suggestions for Consideration:
C07	Median of SR-704 at Florida Avenue / Rosemary Avenue	Pedestrians observed pushing the push button multiple times	Improve pedestrian signage with arrows, upgrade pedestrian push buttons to include "feedback", add additional pedestrian station within median, and consider installing audible pedestrian signals



#### Corridorwide Observation Details:

Pedestrians were observed pushing the push button for pedestrian signal multiple times and / or pressing the wrong button.

#### Suggestion Details:

For clarity, provide enhanced signage for pedestrians "PUSH BUTTON TO CROSS EASTBOUND SR-704 (OKEECHOBEE BOULEVARD)" with a supplemental arrow. Consider upgrading the pedestrian push buttons to include "feedback" that a pedestrian call is active such as an LED light and an arrow to point towards the crossing. The pedestrian button shall be an approved vendor on the FDOT's Approved Products List (APL).

Consider supplementing the existing pedestrian buttons with an additional pedestrian station located in the median roughly halfway through the crossing. Location may require review of pedestrian timings to ensure crossing times account for the extra walking distances per MUTC Section 4E.06.

A further review is recommended to determine the need for and feasibility of installing Audible Pedestrian Signals at the intersection that provide audible prompts for the pedestrians when to cross the roadway, thereby helping pedestrians to comply with signal indications.

<b>Agency:</b>	<b>Improvement Type:</b>
Palm Beach County, FDOT	Signs, Signal, Pedestrian
<b>Time Frame:</b>	<b>EEE:</b>
Mid Term	Engineering
<b>Level of Effort:</b>	<b>Comment:</b>
Medium	

ID	Location Description:	Corridorwide Observation Overview:	
<b>C08</b>	All crosswalks	Pedestrian(s) crossing on "DO NOT WALK"	Suggestions for Consideration: Educate and enforce public of Florida laws related to pedestrian signals



Corridorwide Observation Details:

A northbound pedestrian was observed waiting an extended period of time and then crossed during the "DO NOT WALK" phase or during the westbound phase of SR-704 (Okeechobee Boulevard).

Suggestion Details:

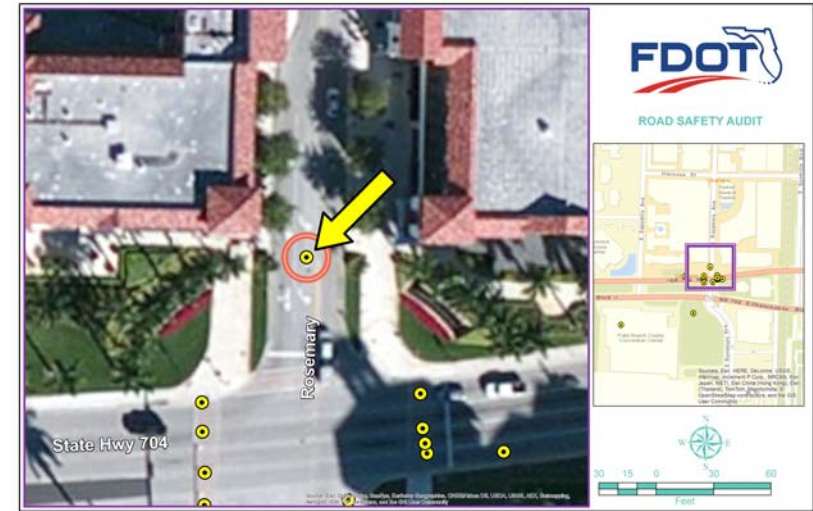
Educate the public on Florida Statute 316.130 that a pedestrian must obey the instruction of any official traffic control device specifically applicable to the pedestrian unless otherwise directed by a police officer. If pedestrians continue to disobey the pedestrian signal, enforce Florida Statute 316.130 to encourage pedestrian safety.

Agency:	Improvement Type:
West Palm Beach Police Department	Signal, Pedestrian
Time Frame:	EEE:
Short Term	Engineering
Level of Effort:	Comment:
Low	



Road Safety Audit Findings Details - Positive Observations

ID	Location Description:	Positive Observation Overview:	Suggestions for Consideration:
P01	Florida Avenue / Rosemary Avenue, north of SR-704	Sharrows provided	Positive observation



Positive Observation Details:

Sharrows provided for the north leg of Florida Avenue / Rosemary Avenue, north of SR-704 (Okeechobee Boulevard).

Suggestion Details:

Positive observation during field review.

Agency:	Improvement Type:
FDOT	Markings
Time Frame:	EEE:
N/A	Engineering
Level of Effort:	Comment:
N/A	

ID	Location Description:	Positive Observation Overview:	Suggestions for Consideration:
P02	SR-704 at Florida Avenue / Rosemary Avenue	Signal features	Positive observation



#### Positive Observation Details:

The signal of SR-704 (Okeechobee Boulevard) and Florida Avenue / Rosemary Avenue had internal illuminated street name signs and video detection.

#### Suggestion Details:

Positive observation during field review.

Agency:	Improvement Type:
FDOT	Signal
Time Frame:	EEE:
N/A	Engineering
Level of Effort:	Comment:
N/A	

ID	Location Description:	Positive Observation Overview:	Suggestions for Consideration:
P03	Sidewalk northwest of SR-704 at Florida Avenue / Rosemary Avenue	Lighting is provided along north sidewalk, northwest of SR-704 and Florida Avenue / Rosemary Avenue	Positive observation



#### Positive Observation Details:

Pedestrian lighting is provided along the north sidewalk of SR-704 (Okeechobee Boulevard), west of the intersection of SR-704 (Okeechobee Boulevard) and Florida Avenue / Rosemary Avenue.

#### Suggestion Details:

Positive observation during field review.

Agency:	Improvement Type:
FDOT	Lighting, Pedestrian
Time Frame:	EEE:
N/A	Engineering
Level of Effort:	Comment:
N/A	



ID	Location Description:	Positive Observation Overview:	Suggestions for Consideration:
P04	SR-704 westbound inside through lane	Westbound left turns and U-turns are prohibited	Positive observation



Positive Observation Details:

Westbound inside through lane prohibits left turns and U-turns, which eliminates a signal movement and reduces pedestrian and vehicular conflicts at the westbound approach.

Suggestion Details:

Positive observation during field review.

Agency:	Improvement Type:
FDOT	Signs
Time Frame:	EEE:
N/A	Engineering
Level of Effort:	Comment:
N/A	



Figure A1: Revised Median Concept



Figure A2: Modified Traffic Signal Phasing of SR-704 at Florida Avenue / Rosemary Avenue

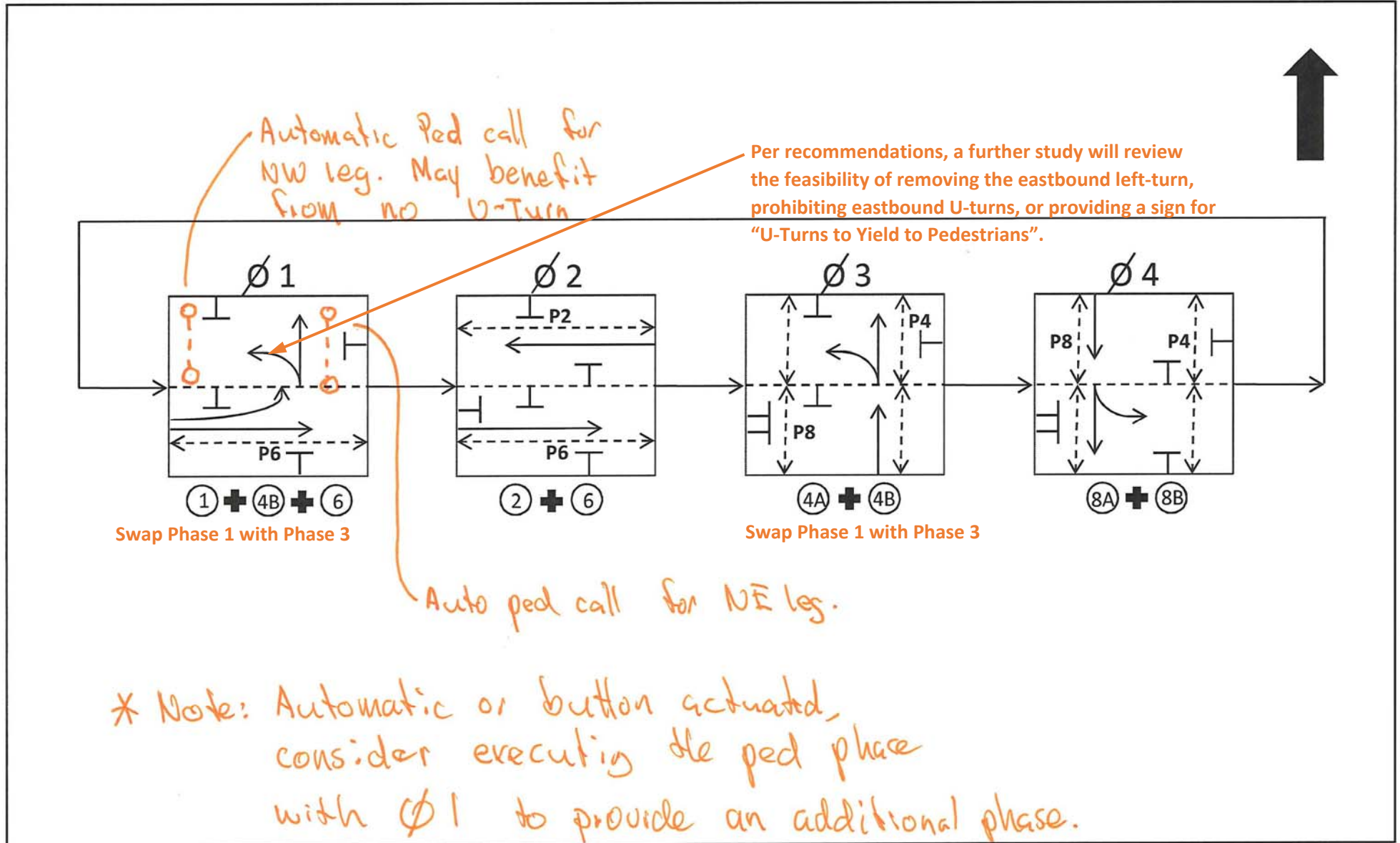




Figure A3: SR-704 (Okeechobee Boulevard) Corridor Speed Limits

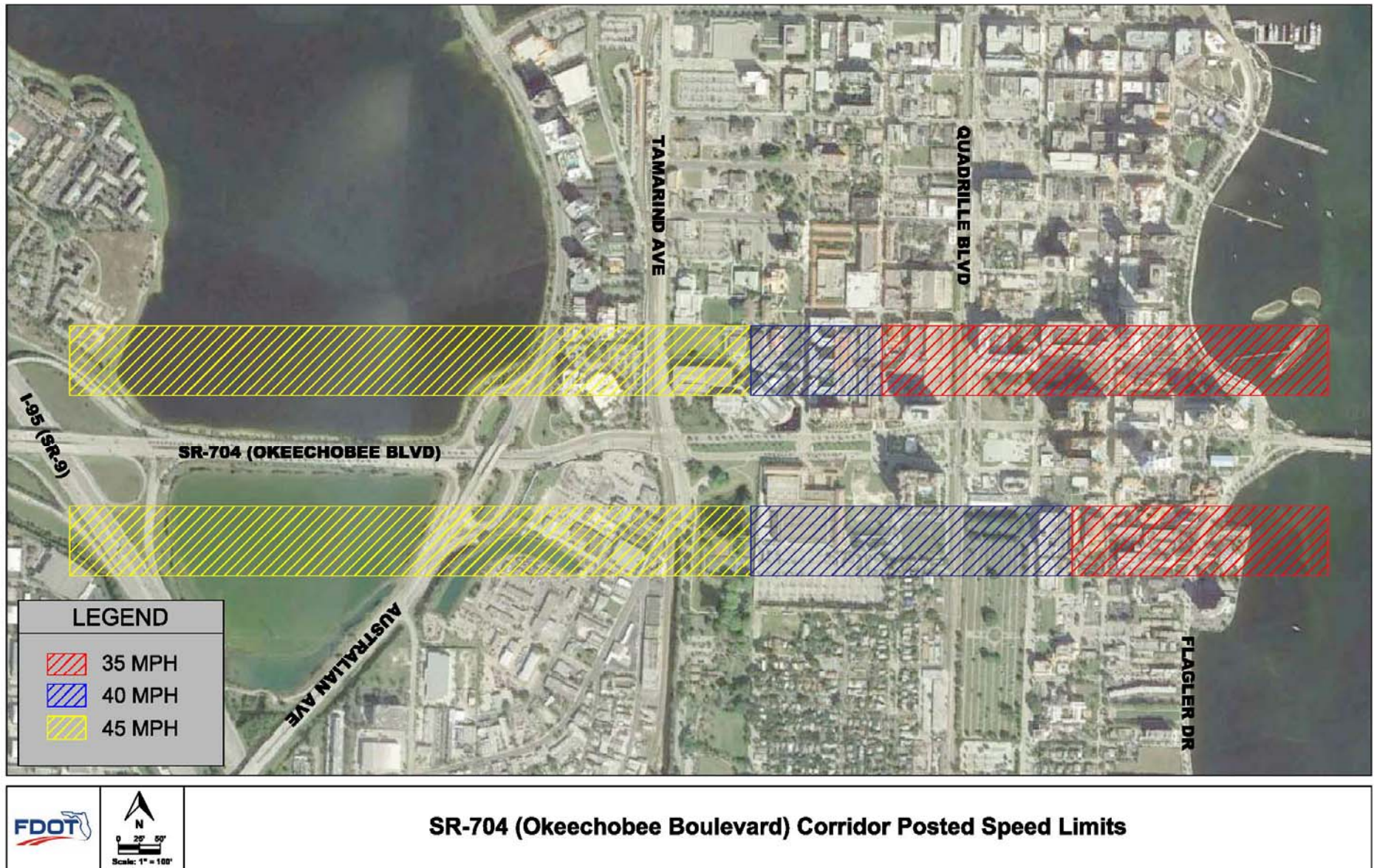




Figure A4: SR-704 at Florida Avenue / Rosemary Avenue Alternatives

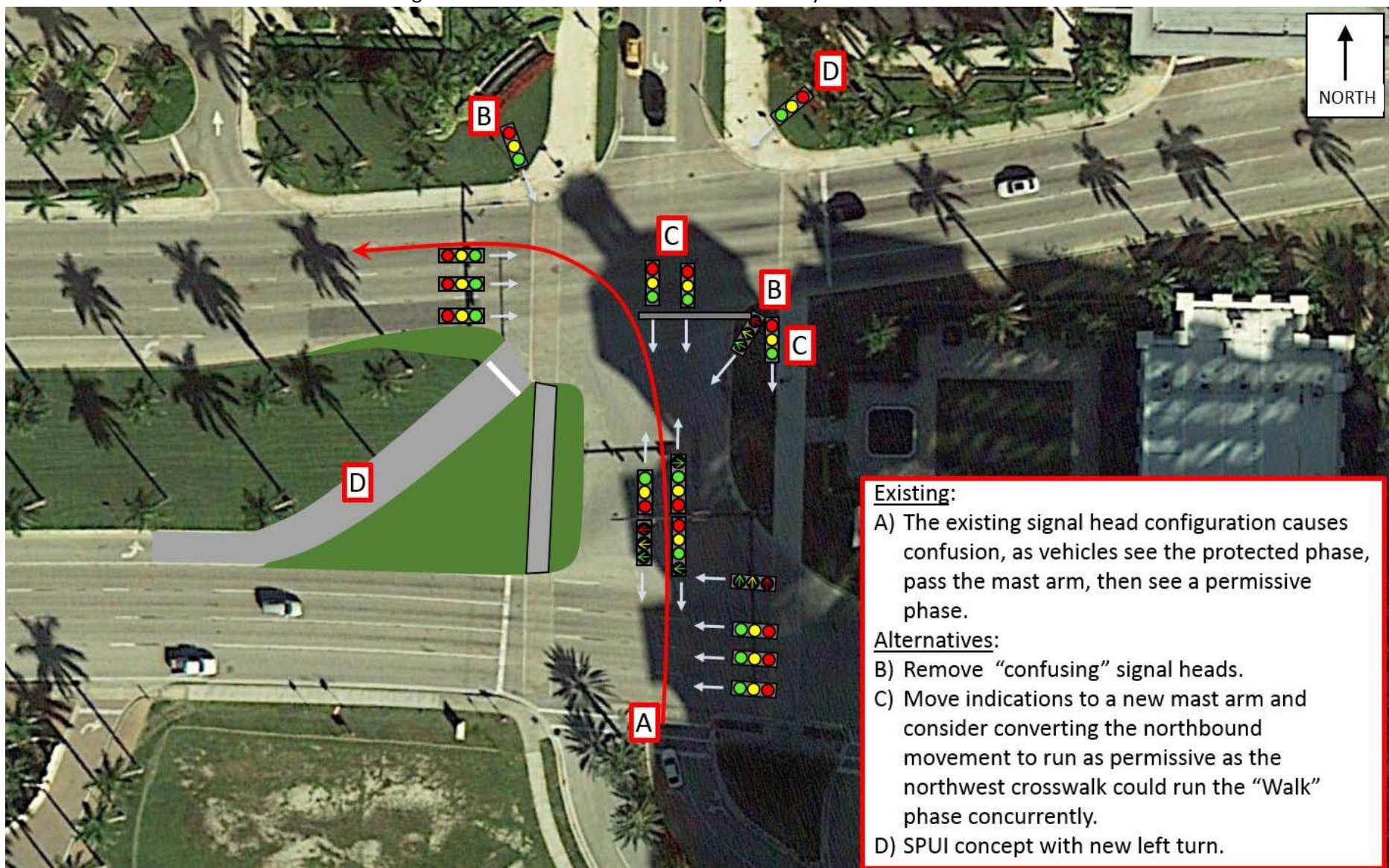
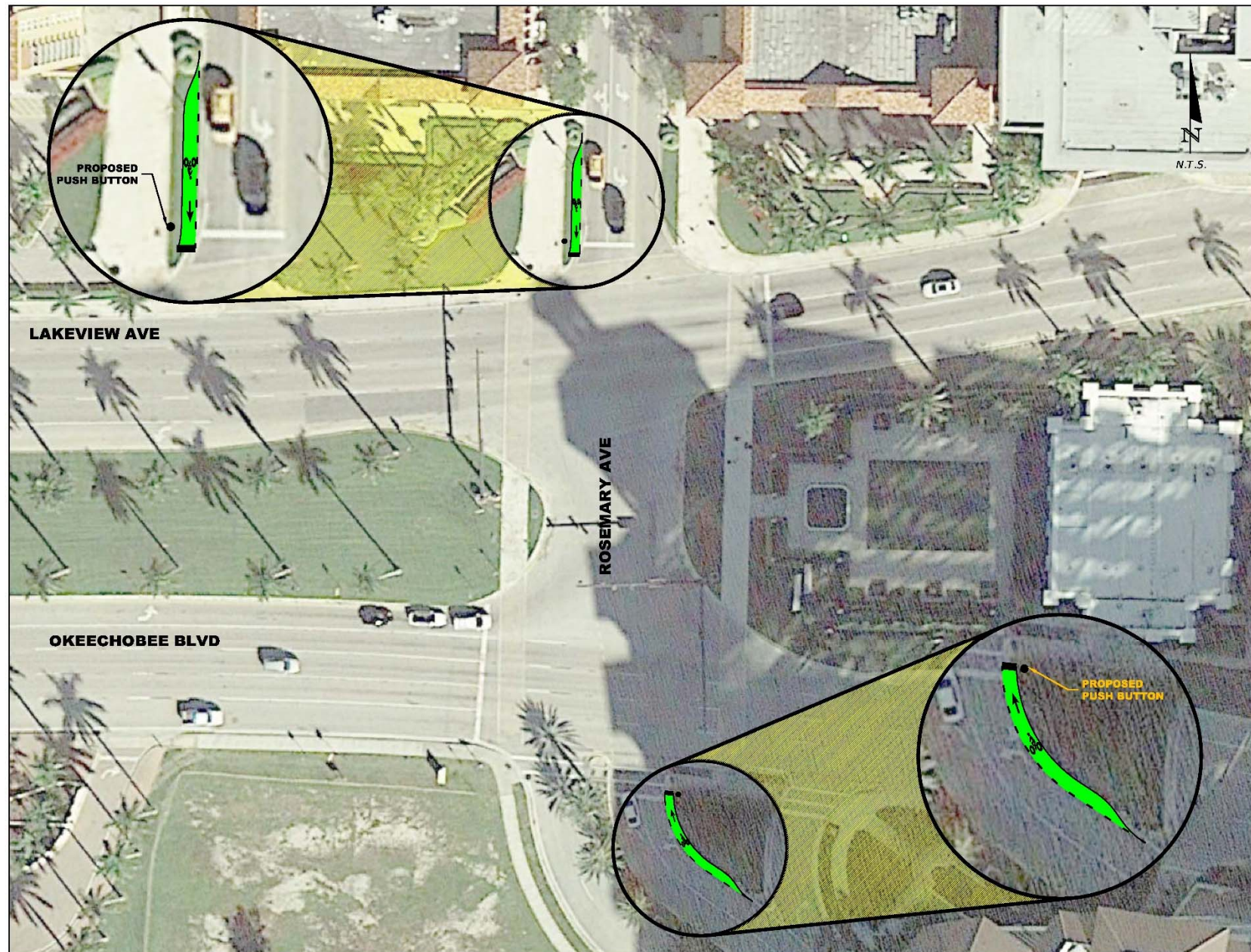




Figure A5: SR-704 at Florida Avenue / Rosemary Avenue Bicycle Improvement





## Palm Beach County

## Signal Timing Sheet

2/4/2014

27953 : 1750 - Okeechobee Bl and Rosemary Av ( Standard File )

## Phase [1.1.1]

	1 (EL)	2 (WT)	3 (ST)	4 (NT)	5	6 (ET)	7	8	9	10	11	12	13	14	15	16
Walk		5	5	5		5										
Ped Clearance		16	15	15		16										
Min Green	4	10	4	6		10			5	5	5	5	5	5	5	5
Passage	2.5	4	2	4		4			1	1	1	1	1	1	1	1
Max1	25	45	20	90		45			25	25	25	25	25	25	25	25
Max2									50	50	50	50	50	50	50	50
Yellow	4.5	4.5	4	4		4.5			3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Red	2.5	2	5	4.5		2			1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5

## Phase Option [1.1.2]

	1 (EL)	2 (WT)	3 (ST)	4 (NT)	5	6 (ET)	7	8	9	10	11	12	13	14	15	16
Enable	ON	ON	ON	ON		ON										
Auto Entry			ON													
Auto Exit		ON				ON										
Non Act1																
Non Act2																
Lock Call		ON				ON			ON	ON	ON	ON	ON	ON	ON	ON
Min Recall		ON				ON										
Max Recall		ON				ON										
Ped Recall																
Dual Entry																
Sim Gap Enable									ON	ON	ON	ON	ON	ON	ON	ON
Rest In Walk		ON				ON										

## Detector, Vehicle Parameters 1-16 [5.1]

	1 (EBL1)	2 (WBT1)	3 (SBT1)	4 (NBT1)	5	6 (EBT1)	7	8	9	10	11	12	13	14	15	16
Call Phase	1	2	3	4	5	6	7	8								
Switch Phase																
Delay Time																

## Detector, Vehicle Parameters 17-32 [5.1]

	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Call Phase																
Switch Phase																
Delay Time																

## Detector, Vehicle Parameters 33-48 [5.1]

	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
Call Phase																
Switch Phase																
Delay Time																

## Detector, Vehicle Parameters 49-64 [5.1]

	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
Call Phase																
Switch Phase																
Delay Time																

**Approved By:** Stephen Shreve

**Date:** \_\_\_\_\_

Palm Beach County

System Timing Sheet

2/4/2014

27953 : 1750 - Okeechobee Bl and Rosemary Av ( Standard File )

TB Coor, Day Plan [4.4]

Day Plan Table 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour		7	9	14	18	23										
Minute				30	30											
Action	1	2	1	3	6	1										

Day Plan Table 2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour		10	22													
Minute																
Action	1	6	1													

Day Plan Table 3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour		10	22													
Minute																
Action	1	6	1													

Coordination, Pattern 1-16 [2.1]/Coordination, Alt Tables+[2.6]

Pattern	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Cycle Time	100	150	180			100						180				
Offset Time	11	85	110			11						85				
Split Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Seq Number	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1
Ph Opt Alt																
Ph Time Alt																

Coordination, Splits [2.7.1]

Split Table 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	18	28	28	26		46		54								
Mode	NON	MXP	NON	NON	NON	MXP	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	30	50	35	35		80		70								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	25	95	30	30		120		60								
Mode	NON	MXP	NON	NON	NON	MXP	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	18	28	28	26		46		54								
Mode	NON	MXP	NON	NON	NON	MXP	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Approved By: Stephen Shreve

Date: \_\_\_\_\_



Palm Beach County

## Preempt &amp; Overlap Timing Sheet

2/4/2014

27953 : 1750 - Okeechobee Bl and Rosemary Av ( Standard File )

Preemption Times[3.1]/Phases[3.2]/Options[3.3]

Channel	1	2	3	4	5	6
Lock Input	ON	ON	ON	ON	ON	ON
Override Flash		ON	ON	ON	ON	ON
Override Higher	ON	ON	ON	ON	ON	ON
Flash Dwell						
Link						
Delay		10	40			10
Min Duration						
Min Green	5					
Min Walk		3	3	3	3	3
Ped Clear		15	15	15	15	15
Track Green		50	80			50
Min Dwell						
Max Presence						
Track R1		2	2			2
Track R2		6	6			6
Track R3						
Track R4						
Dwell P1		1	1			1
Dwell P2		2	2			2
Dwell P3		4	4			4
Dwell P4		6	6			6
Dwell P5		8	8			8
Dwell P6						
Dwell P7						
Dwell P8						
Dwell P9						
Dwell P10						
Dwell P11						
Dwell P12						
Dwell Ped1						
Dwell Ped2						
Dwell Ped3						
Dwell Ped4						
Dwell Ped5						
Dwell Ped6						
Dwell Ped7						
Dwell Ped8						
Exit R1		2	2			2
Exit R2		6	6			6
Exit R3						
Exit R4						

Preemption Times+[3.4]/Overlaps+[3.5]/Options+[3.6]

Preempt	1	2	3	4	5	6
Enable	ON	ON	ON	ON	ON	ON
Type	RAIL	RAIL	RAIL	RAIL	RAIL	RAIL
Skip Track						
Volt Mon Flash						
Coord in Preempt		ON	ON	ON	ON	ON
Max2						
Return Max/Min	MAX	MAX	MAX	MAX	MAX	MAX
Extend Dwell						
Pattern		11	23		32	13
Output Mode	TS2	TS2	TS2	TS2	TS2	TS2
Track Over 1						
Track Over 2						
Track Over 3						
Track Over 4						
Track Over 5						
Track Over 6						
Track Over 7						
Track Over 8						
Track Over 9						
Track Over 10						
Track Over 11						
Track Over 12						
Dwell Over 1						
Dwell Over 2						
Dwell Over 3						
Dwell Over 4						
Dwell Over 5						
Dwell Over 6						
Dwell Over 7						
Dwell Over 8						
Dwell Over 9						
Dwell Over 10						
Dwell Over 11						
Dwell Over 12						
Ped Clear						
Yellow	5					
Red	3					
Return Min/Max						
Delay Inh						
Exit Time						
All Red B4						

Overlap Program Parameters [1.5.2.1]

Overlap	Included Phases								Modifier Phases								Type	Green	Yellow	Red
Overlap 1																	NORMAL		3.5	1.5
Overlap 2																	NORMAL		3.5	1.5
Overlap 3																	NORMAL		3.5	1.5
Overlap 4																	NORMAL		3.5	1.5
Overlap 5																	NORMAL		3.5	1.5
Overlap 6																	NORMAL		3.5	1.5
Overlap 7																	NORMAL		3.5	1.5
Overlap 8																	NORMAL		3.5	1.5
Overlap 9																	NORMAL		3.5	1.5
Overlap 10																	NORMAL		3.5	1.5
Overlap 11																	NORMAL		3.5	1.5
Overlap 12																	NORMAL		3.5	1.5
Overlap 13																	NORMAL		3.5	1.5
Overlap 14																	NORMAL		3.5	1.5
Overlap 15																	NORMAL		3.5	1.5
Overlap 16																	NORMAL		3.5	1.5

Approved By: Stephen Shreve

Date: \_\_\_\_\_

Palm Beach County

Alternate Timing Sheet

2/4/2014

27953 : 1750 - Okeechobee Bl and Rosemary Av ( Standard File )

Alternate Phase Program 1, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1										
2										
3										
4										
5										
6										
7										
8										

Alternate Phase Program 2, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1										
2										
3										
4										
5										
6										
7										
8										

Alternate Phase Program 3, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1										
2										
3										
4										
5										
6										
7										
8										

Alternate Phase Program 4, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1										
2										
3										
4										
5										
6										
7										
8										

Alternate Phase Program 5, Interval Times [1.1.6.1]

Phase	Walk	Ped Clear	Min Green	Passage	Max1	Max2	Yellow	Red Clear	Assign Ph	Bike Clear
1										
2										
3										
4										
5										
6										
7										
8										

TB Coor, Day Plan [4.4]

Day Plan Table 4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour		10	19													
Minute																
Action	1	6	2													

Day Plan Table 5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour		1	10	22												
Minute																
Action	3	1	6	1												

Day Plan Table 6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hour		10	21	23												
Minute																
Action	6	1	32	6												

Approved By: Stephen Shreve

Date: \_\_\_\_\_

Palm Beach County

## Special System Timing Sheet

2/4/2014

27953 : 1750 - Okeechobee Bl and Rosemary Av ( Standard File )

Coordination, Splits [2.7.1]

Split Table 7	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 8	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 9	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	19	30		31		49		31								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 10	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time																
Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 11	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	24	35		31		59		31								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 12	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	30	80	35	35		110		70								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 13	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	19	40		31		59		31								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 14	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	19	40		31		59		31								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 15	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	19	45		26		64		26								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Split Table 16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time	19	40		31		59		31								
Mode	NON	MAX	NON	NON	NON	MAX	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
Coord-Ph		ON														

Approved By: Stephen Shreve

Date: \_\_\_\_\_



Table A1: Calculated Pedestrian Timings

Approaching Traffic	Ped Phase	Crosswalk	Length	"Walk" Phase		"Do Not Walk" Phase		
				Existing	Rec	Existing Timings	Calc Timings	Rec Timings
Eastbound SR-704	4	Southwest crosswalk	76	5	7	15.0	21.7	21.7
	3	Southeast crosswalk	67	5	7	15.0	19.1	19.1
Westbound SR-704	3	Northwest crosswalk	75	5	7	15.0	21.4	21.4
	4	Northeast crosswalk	52	5	7	15.0	14.9	14.9
Southbound Rosemary Avenue	2	North crosswalk	62	5	7	16.0	17.7	17.7
Northbound Florida Avenue	6	South crosswalk	69	5	7	16.0	19.7	19.7

Table A2: Calculated Yellow Change Interval & Red Clearance Timings

Phase	Movement	Length	Speed	Bike Crossing Time (BCT) *		Min Green					Passage			Yellow Change Interval			Red Clearance			Existing Total Crossing Time	Total Crossing Time	BCT Adequate?
				Rolling	Standing	Existing	Calc Per BCT	Rec Per BCT	Per Ped Call	Rec	Existing	Calc per BCT	Rec	Existing	Calc Per TEM**	Rec	Existing	Calc per TEM***	Rec			
6	Eastbound	115	40	10.1	15.1	10.0	8.3	8.3	19.7	10.0	4.0	3.3	4.0	4.5	4.4	4.5	2.0	2.3	2.3	16.5	16.8	yes
1	Eastbound Left-Turn	195	40	16.8	21.8	4.0	13.6	13.6		13.6	2.5	8.6	2.5	4.5	4.4	4.5	2.5	3.7	3.7	11.0	21.8	yes
2	Westbound	115	40	10.1	15.1	10.0	8.3	8.3	17.7	10.0	4.0	3.3	4.0	4.5	4.4	4.5	2.0	2.3	2.3	16.5	16.8	yes
3	Southbound	230	35	19.7	24.7	4.0	15.7	15.7	21.4	16.0	2.0	10.7	2.0	4.0	4.0	4.0	5.0	4.9	5.0	13.0	25.0	yes
3	Southbound Left-Turn	220	35	18.8	23.8	4.0	14.8	15.7		16.0	2.0	9.8	2.0	4.0	4.0	4.0	5.0	4.7	5.0	13.0	25.0	yes
4	Northbound	235	35	20.1	25.1	6.0	16.1	16.1	14.9	16.1	4.0	11.1	4.0	4.0	4.0	4.0	4.5	5.0	5.0	14.5	25.1	yes
4	Northbound Left-Turn	195	35	16.8	21.8	6.0	12.8	16.1		16.1	4.0	7.8	4.0	4.0	4.0	4.0	4.5	4.2	5.0	14.5	25.1	yes

\* Per AASHTO's Guide for the Development of Bicycle Facilities, 2012

\*\* Calculated per TEM Table 3.6-1

\*\*\* Calculated per TEM Formula 3.6-2