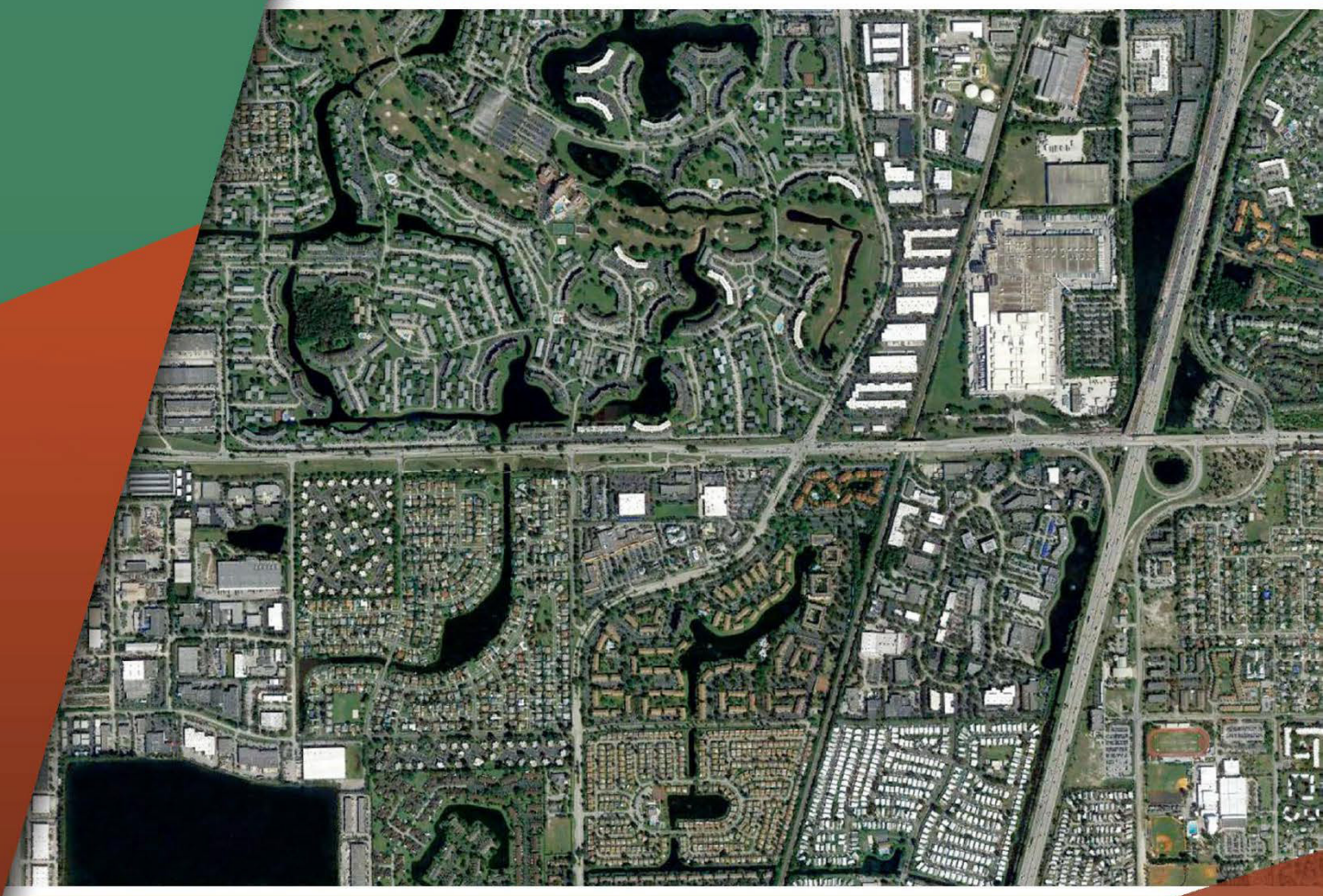
SW 10th Street PD&E
Project Traffic Forecast Memorandum
FPN 439891-1

January 2019



Project Traffic Forecast Memorandum

SW 10th Street PD&E Study

(From Florida's Turnpike to I-95)

Broward County

FPN 43989-1

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Table of Contents

Table of Contents

Tables **Page**

Figures

Charts

Appendices

1.1 STUDY PURPOSE

Currently, the Sawgrass Expressway (S.R. 869), in Broward County, begins at the connection of I-595/I-75 and ends on the east side of the interchange with Florida's Turnpike (S.R. 91). It converts to SW 10th Street and continues east as a principal arterial, with an interchange at I-95 (S.R.9). To the east of I-95, SW 10th Street continues as a local road. The SW 10th Street corridor has no direct access to or from Florida's Turnpike. Turnpike access is to and from the west via the Sawgrass Expressway. Traffic on SW 10th Street desiring access to Florida's Turnpike turns onto Powerline Road (S.R. 845) or onto Military Trail and travels either 4.6 miles north to Glades Road (S.R. 808) or 2.1 miles south to Sample Road (S.R. 834).

Florida's Turnpike Enterprise (FTE), working in conjunction with the Florida Department of Transportation (FDOT) District 4, and coordinating closely with Broward County, is studying the feasibility of a future SW 10th Street limited-access corridor. This project traffic forecast memorandum (PTFM) will support the effort. The SW 10th Street corridor is within the municipality of Deerfield Beach.

A Project Development and Environment (PD&E) study for SW 10th Street from Florida's Turnpike (S.R. 91) to I-95 (FPN: 439891-1) will begin in July 2017. FTE recently initiated a PD&E study to widen the Sawgrass Expressway from south of U.S. 441 (S.R. 7) to Powerline Road (FPN: 437153-1), which includes the evaluation of a full interchange at the Turnpike Mainline.

Improvements to SW 10th Street would enhance the benefit for full access to Florida's Turnpike at Sawgrass Expressway, and would improve regional connectivity between Florida's Turnpike and I-95. The upcoming efforts are focused on providing long-term transportation system improvements, improving overall traffic operations, reducing congestion, and enhancing safety and emergency response/evacuation for local traffic. The primary need for SW 10th Street improvements is addressing capacity/operational deficiencies for local traffic and regional connector traffic. Secondary considerations are serving existing and future need for modal connectivity, transportation demand, social demands, and economic development of the adjacent communities.

This PTFM evaluates existing operational conditions and provides traffic forecasts to develop coordinated long-term corridor operational needs through the year 2040 in support of the SW 10th Street PD&E and Sawgrass Expressway PD&E studies. The PD&E efforts supplement this PTFM and the Traffic and Revenue (T&R) study for SW 10th Street. This study considers the planned I-95 Express Lanes and interchange improvements from SW 10th Street to Hillsboro Boulevard interchanges to the east and the committed Sawgrass Expressway projects to the west.

1.2 PREVIOUS STUDIES

The need to improve SW 10th Street has been a longstanding identified need by Broward County and FDOT District 4. Previous proposals for improvements to SW 10th Street have focused on moving vehicles, with little consideration for livability issues that concern the adjacent residents,

resulting in strong opposition by the public to the proposed recommendations. As a result, improvements to SW 10th Street are not shown in the Broward Metropolitan Planning Organization (MPO) 2040 long range transportation plan (LRTP) known as *Commitment 2040*.

In 2015, the Broward MPO set up a consensus-building initiative with the communities along the SW 10th Street corridor to discuss the future of the corridor between Florida's Turnpike and I-95. The goal of the *SW 10th Street Consensus and Visioning Study* was to identify citizen concerns on current and future conditions and to develop consensus on potential near-term and long-term transportation improvements.

The effort focused on the cities along the section of the Sawgrass Expressway and the SW 10th Street corridor, including Coral Springs, Parkland, Coconut Creek, and Deerfield Beach. The team responsible for facilitating this process included Broward MPO staff, public outreach specialists, transportation planning professionals, and urban design experts. Between November 2015 and June 2016, the Community Oversight and Advisory Team (COAT) held numerous meetings and open houses with elected officials, homeowner and civic associations, and business and property owners to hear community concerns and suggestions. The process culminated in support for a new PD&E study for SW 10th Street including the following recommendations:

- Build depressed sections of roadway for the express lanes (ELs) between the Sawgrass Expressway and I-95
- Provide access from the ELs to neighborhoods along SW 10th Street
- Provide convenient access to the Publix/Newport Center while providing ingress/egress options to SW 10th Street
- Maintain accessibility to the Century Village existing entrances
- Minimize the use of flyovers adjacent to residential areas
- Provide noise walls where warranted for communities that want them
- Explore the use of adaptive signal technology
- Provide connectivity of bike/pedestrian facilities using table-top parks and other ideas
- Improve safety along the corridor, especially at intersections
- Coordinate with the I-95/SW 10th Street interchange and Turnpike/SW 10th Street interchange PD&E studies

The previous studies that had focused on moving vehicles, with little consideration for livability issues, include the following:

1992 – S.R. 869 from Florida's Turnpike to I-95 Environmental Assessment

In 1992, FDOT completed a PD&E study that evaluated alternatives to extend the Sawgrass Expressway from Florida's Turnpike to I-95. At that time, the need for the project was attributed to the substantial projected growth within Broward County resulting in future traffic demands along SW 10th Street. The study concluded with a proposed action of a six-lane, divided, limited-access expressway facility with a system of service roads running parallel to provide local access.

2008 – SW 10th Street Connector Feasibility Study (Sawgrass Expressway to I-95)

In 2008, FDOT District 4 initiated a new feasibility study along SW 10th Street, from Florida's Turnpike to I-95, to consider improvements that would satisfy both regional transportation demands and community needs along the corridor. That study developed a traffic technical memorandum (TTM) documenting existing conditions and future traffic conditions for both the No-Build alternative and various proposed build alternatives. In addition to the No-Build and Transportation System Management (TSM) alternatives, six build alternatives were considered.

Based on review and comments provided by the Broward MPO and FDOT, it was decided that further analysis and development of the traffic volumes should be conducted during a PD&E study if this project moved forward, but alternatives should consider ELs tying directly to I-95 and toll prices should be lowered to obtain significant operational improvement to the local intersections.

1.3 STUDY AREA

The study area includes:

- Sawgrass Expressway from the University Drive (S.R. 817) interchange to the Turnpike Mainline interchange
- SW 10th Street from Sawgrass Expressway/Turnpike Mainline interchange to Florida Atlantic University (FAU) Research Park Boulevard
- Turnpike Mainline from Atlantic Boulevard (S.R. 814) (MP 66) to Glades Road (MP 75)
- I-95 from Atlantic Boulevard (MP 36) to Congress Avenue-Peninsula Corp Drive (MP 50)

This segment of SW 10th Street connects three limited-access facilities: Florida's Turnpike, Sawgrass Expressway, and I-95, and:

- Runs east-west
- Is functionally classified as a Divided Urban Principal Arterial
- Is a Strategic Intermodal System (SIS) roadway facility
- Is a National Highway System (NHS) facility

- Is designated as an evacuation route
- Is a missing link in the planned regional ELs system network

This segment of SW 10th Street has the following characteristics within the project area:

Florida's Turnpike to Powerline Road

- Six lanes (three in each direction)
- Posted speed 45 miles per hour (mph)
- Access management Class 1, to just east of Powerline Road

Powerline Road to Military Trail

- Four lanes (two in each direction), to just east of Military Trail
- Posted speed 45 mph
- Access management Class 3

Military Trail to I-95

- Six lanes (three in each direction) from west of Military Trail to I-95
- Posted speed 40 mph
- Access management Class 3

The study area and project limits are shown on **Figure 1.1**.

FDOT	SW 10th Street PD&E Study Project Traffic Forecast Memorandum	Study Area	Figure 1.1

1.4 STUDY APPROACH

The study approach for this analysis included traffic data collection, analysis of traffic operations, and traffic volume forecasting.

Traffic volume, origin-destination, and speed data needed for these efforts were collected as follows:

- Historical traffic data were summarized to identify historical growth trends.
- Sawgrass Expressway and SW 10th Street to Powerline Road traffic count data were collected in October and November 2014 as part of the Sawgrass Expressway (south of Sunrise Boulevard to south of U.S. 441) PD&E study Traffic Technical Memorandum (TTM) efforts. These included intersection turning movement counts and 24-hour continuous counts.
- SW 10th Street traffic counts were collected by FDOT District 4 in March 2016 for a PD&E study for I-95 (SW 10th Street to Hillsboro Boulevard.)
- Travel time/speed runs were completed by FTE in October 2016 on the Sawgrass Expressway, SW 10th Street, Florida's Turnpike, and I-95 within the project study area.
- Turning movement counts and 24-hour continuous counts were collected by FTE along SW 10th Street, Powerline Road, and Military Trail in October 2016.

With the need to provide traffic as design hour traffic forecasts by hour, the traffic forecasting process was accomplished through a multi-step process using the following three modeling tools:

- Regional Travel Demand Model Southeast Florida Regional Planning Model (SERPM 6.5.4) that was used for the Sawgrass Widening PD&E study
- Subarea Model for the Sawgrass Expressway, Florida's Turnpike, SW 10th Street, and I-95 corridors
- Express Lane Time-of-Day Model (ELToD) to identify the traffic volume split between managed lanes and general lanes

Once the forecasted volumes were identified, traffic analysis was accomplished using analysis software, including:

- Synchro for intersection analysis
- VISSIM to evaluate the EL operations and overall system operations

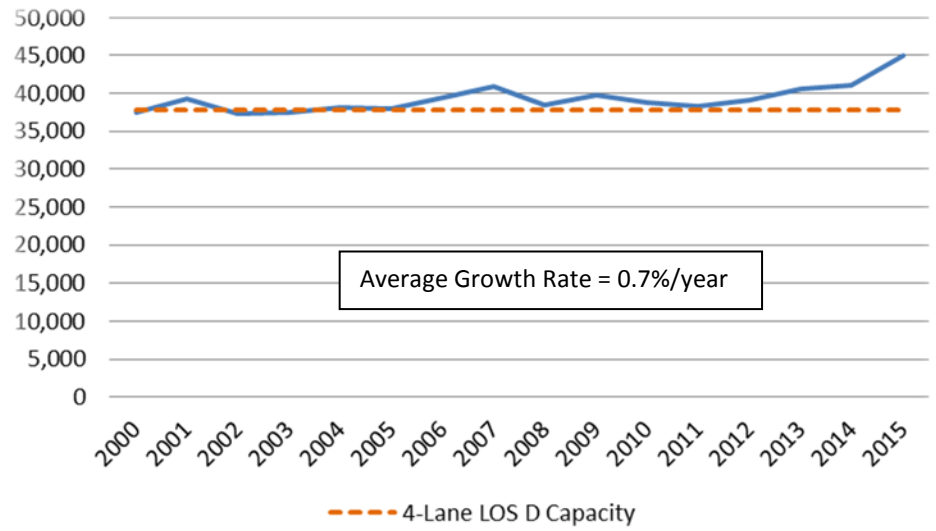
2.1 HISTORICAL CORRIDOR GROWTH

Annual average daily traffic (AADT) volumes from year 2000 through year 2015 have been summarized graphically for SW 10th Street, Sawgrass Expressway, Florida's Turnpike (Southern Coin System), and I-95. Historical AADT data were used to calculate the average annual growth rate of the roadways in the study area. This data is provided in **Appendix A**. Segment AADTs were weighted based on roadway segment length to identify an AADT for the entire roadway.

2.1.1 SW 10th Street

SW 10th Street between the Sawgrass Expressway/Turnpike Mainline interchange and I-95 interchange has an average annual growth rate of 0.7 percent per year, as shown in **Chart 2.1.** Volume data are the weighted averages of three portable traffic monitoring sites (PTMS) count sites: PTMS #3010 (Sawgrass Mainline just east of the Florida's Turnpike interchange), PTMS #3012 (SW 10th Street just east of Powerline Road), and PTMS #3015 (SW 10th Street just west of I-95). The chart shows that SW 10th Street exceeds the four-lane Level of Service (LOS) D capacity on a daily basis for a four-lane non-state facility.

Chart 2.1
SW 10th Street Historical AADT Volumes



2.1.2 Florida's Turnpike

There are two FTE systems within the study area: the Sawgrass Expressway and the Southern Coin System (S.R. 91). The AADT volumes are from the FTE *Traffic Engineer's Annual Report* (TEAR). The Sawgrass Expressway within the project study area had a 2015 AADT of 78,700 and a 2.8 percent per year average annual growth rate, as shown in **Chart 2.2**. The Southern Coin System within the study area had a 2015 AADT of 94,200 and an average annual growth rate of 1.5 percent per year, as shown in **Chart 2.3**. The charts show that volumes on the Turnpike systems are exceeding the volumes during the peak growth period that occurred in 2005-2006.

Chart 2.2
Sawgrass Expressway Historical AADT Volumes

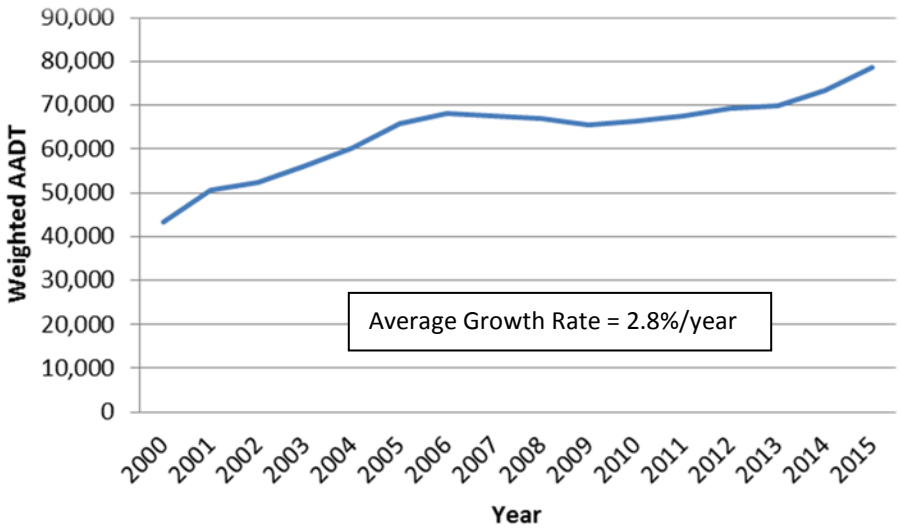
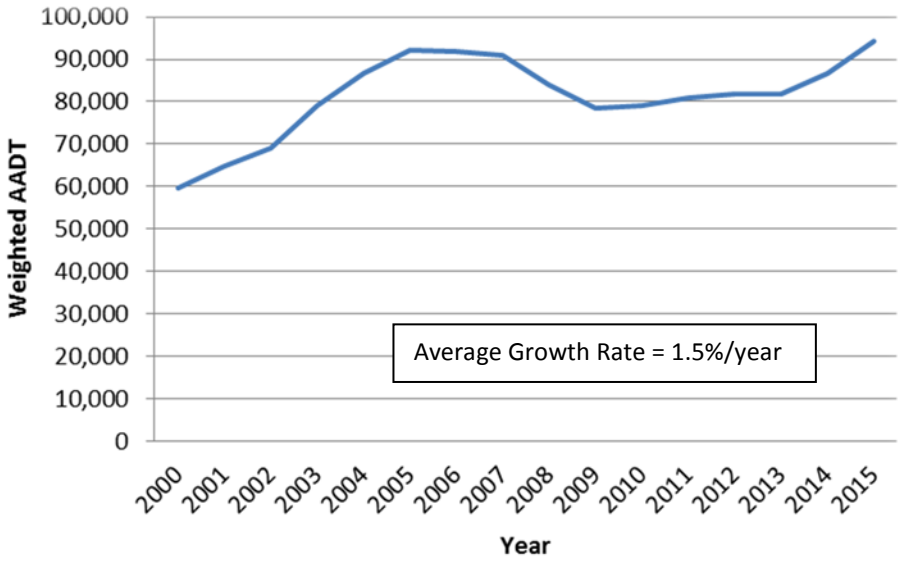


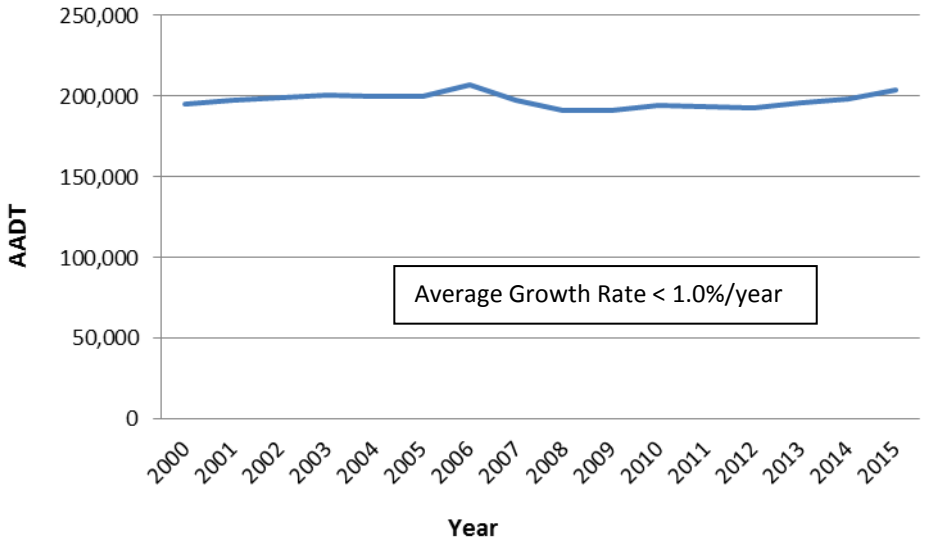
Chart 2.3
Florida's Turnpike (Southern Coin System) Historical AADT Volumes



2.1.3 I-95

Traffic volumes from the telemetered traffic monitoring site (TTMS) #0163 on I-95 just north of 48th Street in Pompano Beach were used to calculate the growth rate. The volumes show minimal growth over the last 15 years, which reflects I-95 not being able to accommodate more traffic. **Chart 2.4** shows the historical AADT volumes for I-95, with a 2015 AADT of 204,200.

Chart 2.4
I-95 Historical AADT Volumes



2.2 DATA COLLECTION

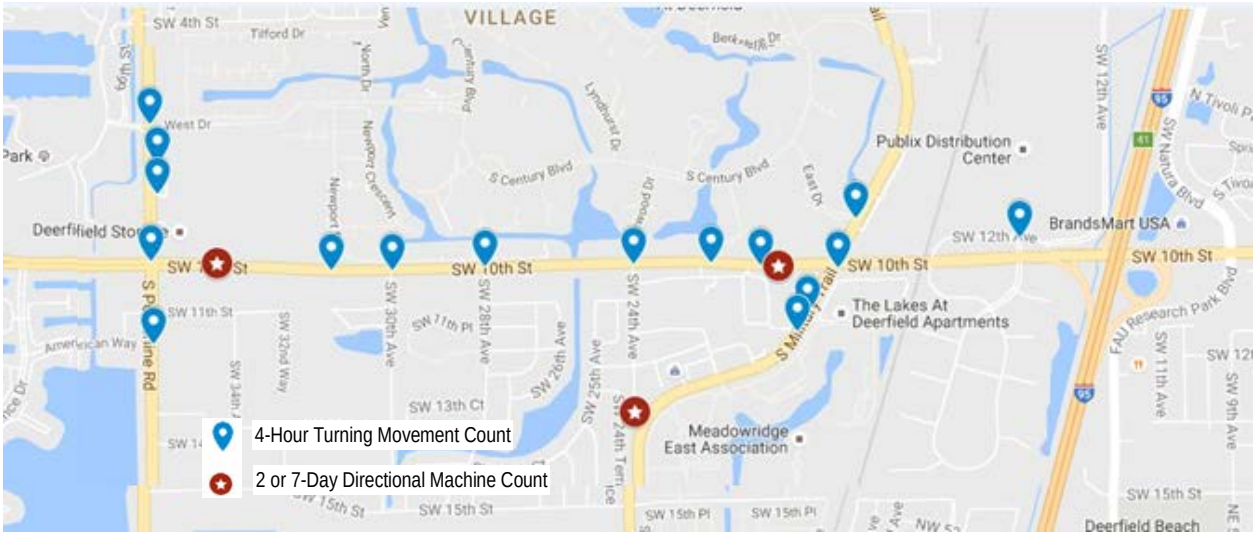
The categories of data collected and their sources are noted in this section.

2.2.1 Locations and Dates

FDOT District 4 provided existing 2016 volumes that had been summarized in the *Traffic Data Collection & Traffic Projections for I-95 PD&E Study from SW 10th Street to Hillsboro Boulevard*, dated May 19, 2016. The data collection effort was completed March 8 through March 10, 2016. A comparison of these volumes with volumes from previous studies revealed significant differences. In most cases, the District's March 2016 data showed lower volumes.

In order to address the discrepancies and to supplement existing data, additional 4-hour turning movement counts were conducted at 16 locations and 2-day to 7-day directional machine counts were collected at 3 locations. These additional counts were collected by FTE between October 18 and October 25, 2016, at the locations shown on **Figure 2.1**.

Figure 2.1
Additional Data Collection Locations

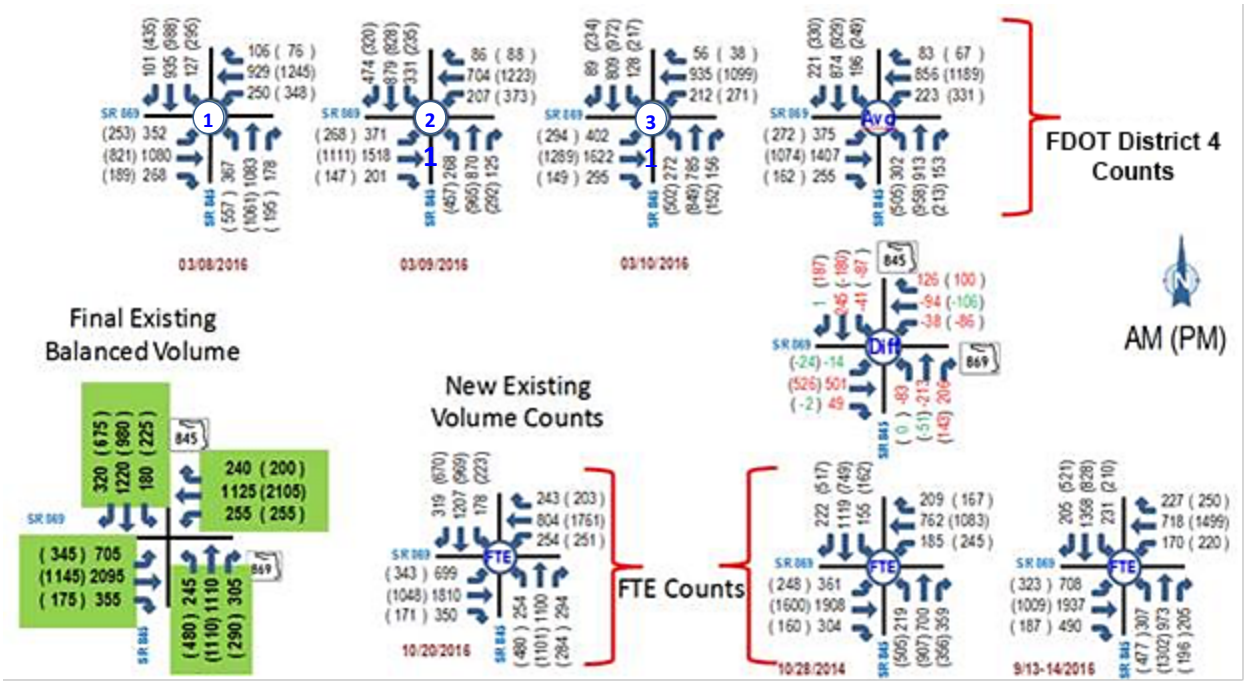


The additional counts verified that the March 2016 data presented lower volumes. Therefore, adjustments were made to develop balanced existing 2016 traffic volumes throughout the study area. The March 2016 intersection turning movement count data were replaced with the October 2016 data between Powerline Road and Military Trail. I-95 ramp volumes were adjusted to volumes obtained as part of the Broward County Interchange Master Plan reports.

As an example of this adjustment, the initial turning movement volumes and the balanced volumes for the intersection of SW 10th Street with Powerline Road are shown on **Figure 2.2**. These calculations are included in **Appendix A**.

Then, volumes were balanced to a control point west of Waterways Boulevard matching volumes obtained for the Sawgrass Expressway data collection efforts. The Sawgrass Expressway data collection effort included hose counts conducted in March 2016 for the non-tolled ramps on the Sawgrass Expressway and the Turnpike Mainline as part of the FTE's annual traffic data collection effort. The mainline and tolled ramp data was obtained in March 2016 to correspond with the non-tolled ramps. This data were used to develop the existing peak period peak hour traffic volumes for the Sawgrass Expressway, Turnpike Mainline and the study area interchange ramps. To develop the turning movements for the study area ramp intersections, traffic data from the on-going PD&E and traffic studies along Sawgrass Expressway and the Turnpike Mainline were used to determine the 2016 arterial traffic and turning movement splits. Traffic data from earlier years were normalized to year 2016 using a growth rate.

Figure 2.2
Existing Count Adjustment Example



2.2.2 Queues

Field observations were made during the week of October 17, 2016, to observe and document traffic bottlenecks and congested areas along Sawgrass Expressway, SW 10th Street, Florida's Turnpike, and I-95, and queuing on the ramps and SW 10th Street. The study area roadways were travelled during weekday AM and PM peak periods and queue observations were noted. In general, the following conditions were observed:

- On a day-to-day basis, the beginning and ending time of the worst congestion and queuing varies.
- During the AM peak period, the heaviest congestion with frequent stop-and-go conditions was observed in both northbound and southbound directions on I-95.
- During the PM peak period, significant congestion with frequent stop-and-go conditions was observed in both northbound and southbound directions on I-95.
- Crashes during peak periods compounded congestion severity and increased the extent and duration of traffic queues.

The following is a summary of observations along each of the major roadways within the study area.

Sawgrass Expressway

For the most part, Sawgrass Expressway traffic operations were stable, with the majority of vehicles traveling faster than the posted speed limit and no significant queueing observed. However, congestion conditions occurred at the following locations:

- During the typical AM peak period, moderate eastbound queues were observed at Sawgrass Expressway approaching the signalized SW 10th Street/Waterways Boulevard intersection and on the eastbound Collector-Distributor road between the southbound on-ramp and the northbound on-ramp to Florida's Turnpike.
- During the PM peak period, the right lane of the University Drive westbound off-ramp and the upstream Sawgrass Expressway westbound shoulder were closed at approximately 6:00 PM due to construction activity, which caused significant congestion on Thursday, October 20, 2016, resulting in queues beyond the Sawgrass Expressway toll plaza to the east.

SW 10th Street

There are nine signalized intersections between Sawgrass Expressway and FAU Research Park Boulevard. Congestion worsened at the western and eastern ends of the corridor where the closely spaced intersections and existing signal progression reduced eastbound and westbound SW 10th Street throughput. In the AM peak period, eastbound SW 10th Street experienced the heaviest volumes and significant congestion along the entire roadway. In the PM peak period, the westbound direction experienced the heavier congestion.

AM Peak Observations:

- Significant queues between I-95 and South Military Trail in both directions of SW 10th Street
- Heavy eastbound queues at the intersection with South Military Trail
- Heavy northbound queues at the intersection with South Military Trail
- Heavy eastbound queues at the intersection with Powerline Road

PM Peak Observations:

- Heavy westbound SW 10th Street queues from South Military Trail to the I-95 Interchange
- Moderate eastbound queues at the intersection with South Military Trail
- Heavy southbound queues along South Military Trail north of SW 10th Street
- Moderate queues at Powerline Road on all approaches

Florida's Turnpike (Southern Coin)

Traffic flow on Florida's Turnpike was significantly better than I-95 at the same cross streets. Crashes and incidents during peak periods compounded congestion severity and increased the extent and duration of traffic queues.

AM Peak Observations:

- Queues back up from the northbound Glades Road off-ramp onto the mainline
- Queues back up from the northbound Sample Road off-ramp onto the mainline
- Vehicles reduce speed southbound between Sawgrass Expressway and Sample Road
- Queues back up from Commercial Boulevard onto the southbound mainline due to signal operations beyond the toll plaza

PM Peak Observations:

- Queues back up from the southbound Glades Road off-ramp onto the mainline
- Northbound queue from the Lantana Toll Plaza results in queue jumpers
- Queues back up from the northbound Sawgrass Expressway off-ramp onto the mainline
- A crash occurred on Tuesday, October 18, 2016, at approximately 4:30 PM, which eventually shut down the southbound mainline and required vehicles to exit and use I-95. The Florida's Turnpike did not reopen until approximately 7:00 PM. Therefore, the Tuesday PM data were removed from travel time summaries.

I-95

I-95 was severely congested during the AM and PM peak hours. Single occupancy vehicles were frequently observed traveling in the HOV lane. Trucks were also frequently seen in the left general purpose travel lane despite the signage prohibiting them from using the left two lanes.

AM Peak Observations:

- Vehicles slow northbound between SW 18th Street and Palmetto Park Road
- Queues back up from the Glades Road northbound off-ramp onto northbound I-95 for more than one mile
- Queues back up onto I-95 from the northbound Congress Avenue off-ramp
- Northbound stop-and-go conditions in the area around Yamato Road (S.R. 794)
- Vehicles slow southbound between the Yamato Road and Congress Avenue interchanges
- Moderate queues occur before the SW 10th Street southbound off-ramp

PM Peak Observations:

- Northbound heavy queues near Sample Road until north of the on-ramp merge
- Moderate queues at the northbound SW 10th Street off-ramp
- Heavy congestion around Glades Road in both the northbound and southbound direction. The northbound off-ramp queues back onto I-95 and extend approximately 2,000 feet in the right lane.
- Southbound heavy queues between Camino Real and Glades Road, SW 10th Street and Hillsboro Boulevard (S.R. 810), and Atlantic Boulevard and Copans Road
- Moderate queues southbound between Copans Road and Sample Road
- Moderate queues for the approaches at the first signalized intersection of the Atlantic Boulevard southbound off-ramp

These observations are shown on **Figure 2.3** and **Figure 2.4**.

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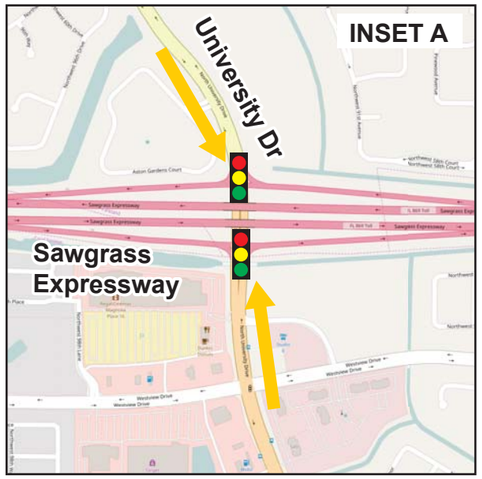

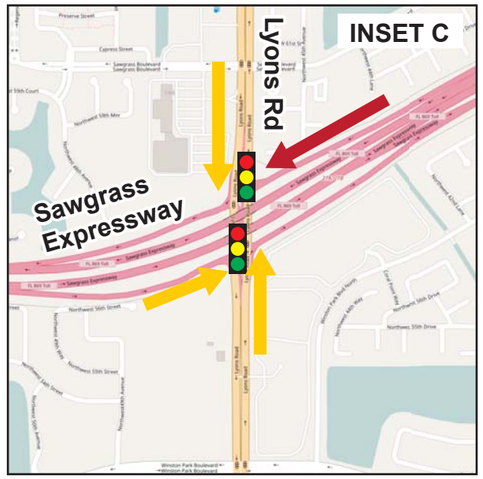

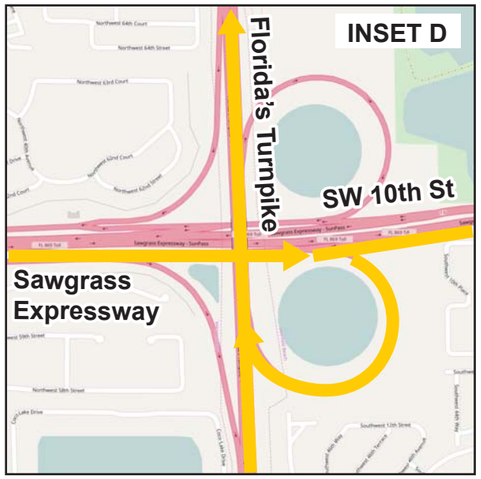

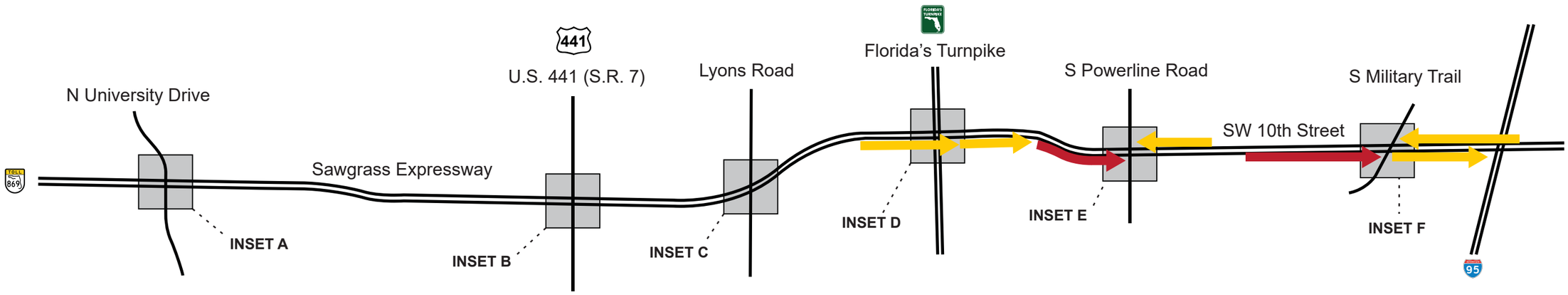

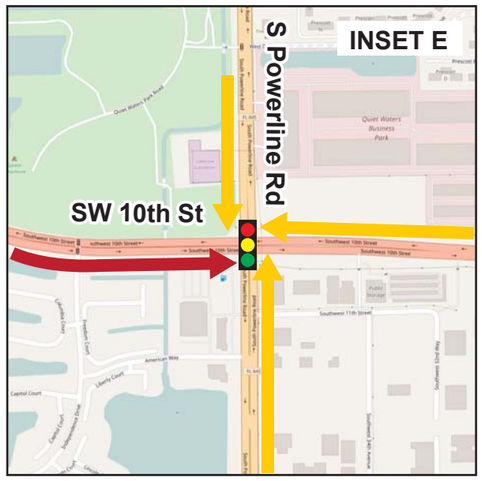

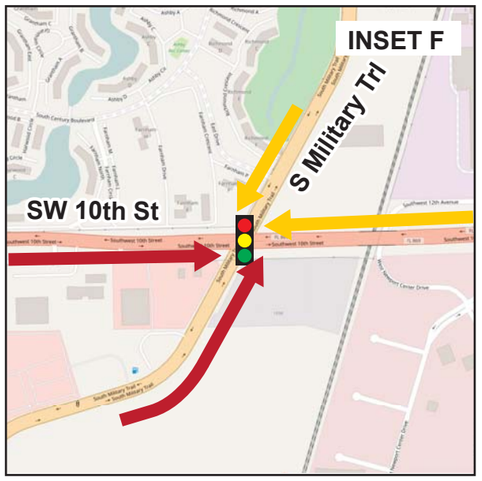

Legend

- Severe
- Moderate
- Signalized Intersection

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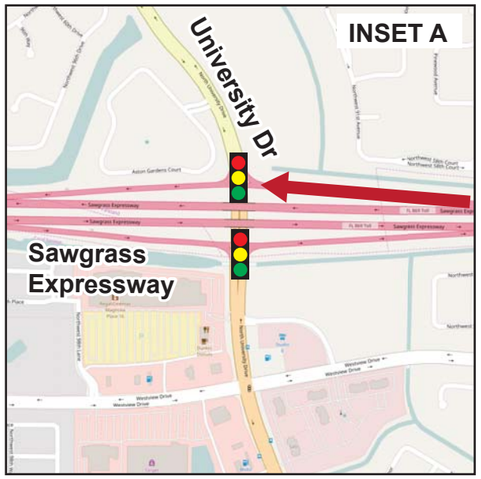
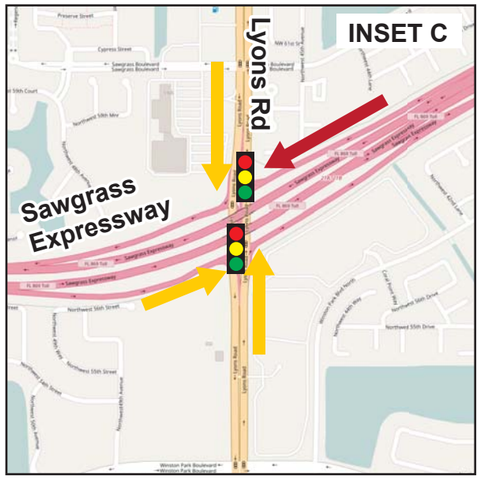
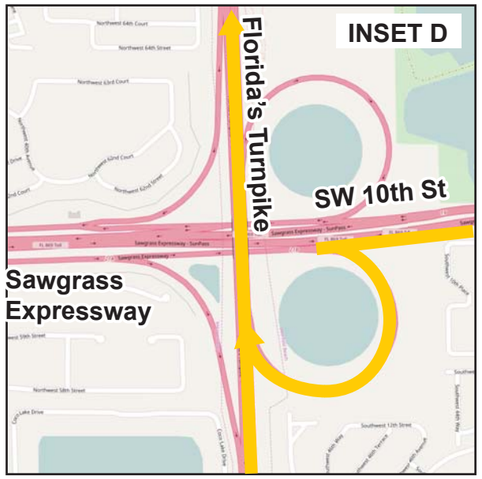
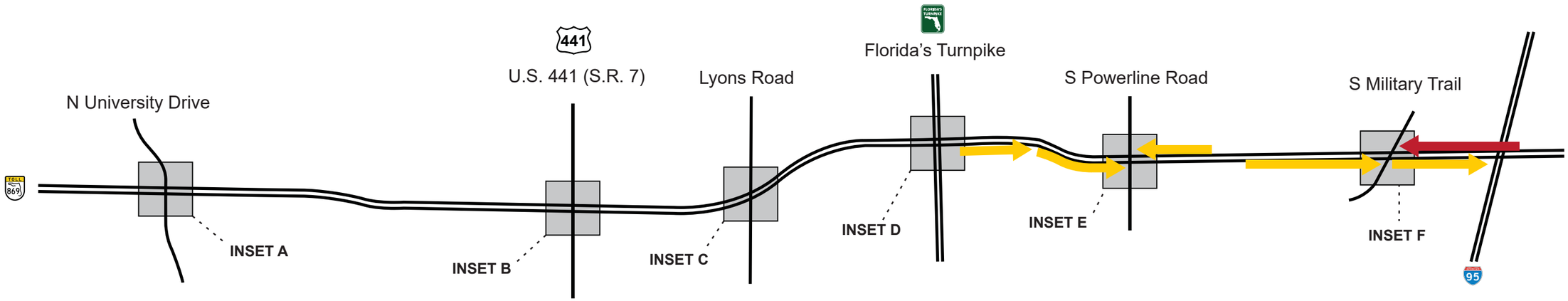
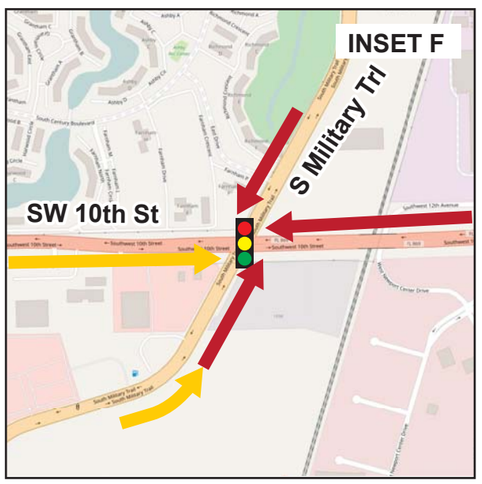










Legend

- Severe
- Moderate
- Signalized Intersection

2.2.3 Existing Travel Time

Travel time runs were completed and available speed data were collected to provide more data to help note where congestion is occurring along roadways in the study area.

HERE Data

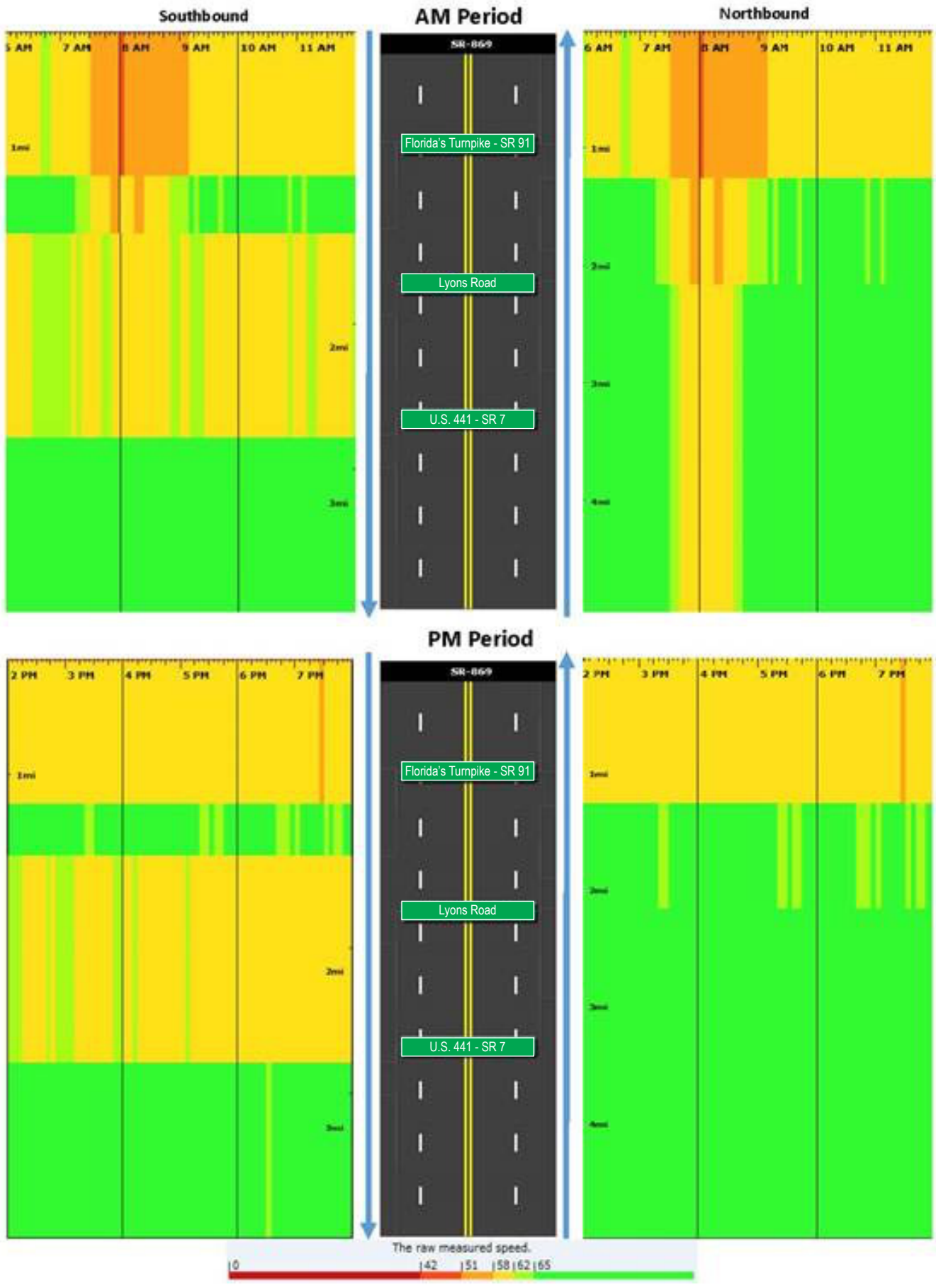
To complement the field-collected travel time runs, commercial travel speed data were used to develop graphical representation of degrees of congestion and travel speeds in the form of congestion scans. The data were supplied by HERE, formerly Nokia/Navteq, which acquires continuous roadway travel speeds through agreements with various cellphone providers and data sensors. These data are shared openly with public agencies for use in enhancing transportation planning. The data are also archived and processed within a tool, the Regional Integrated Transportation Information System (RITIS) tool, developed by the Center for Advanced Transportation Technology Laboratory at the University of Maryland, which has also been made available to the FDOT. RITIS was used for this effort. The speed thresholds used in the scans were customized by FTE to be consistent with *Highway Capacity Manual* (HCM) level of service thresholds.

The congestion scans were created to be consistent with the data collection time frame of the travel time runs and supplemental traffic data collection efforts. **Figures 2.5** through **2.8** reflect the congestion scans for the Sawgrass Expressway, SW 10th Street, Florida's Turnpike, and I-95, respectively. Note that colors range from red, indicating the slowest travel speed, through green, indicating free-flow or a higher rate of travel speed.

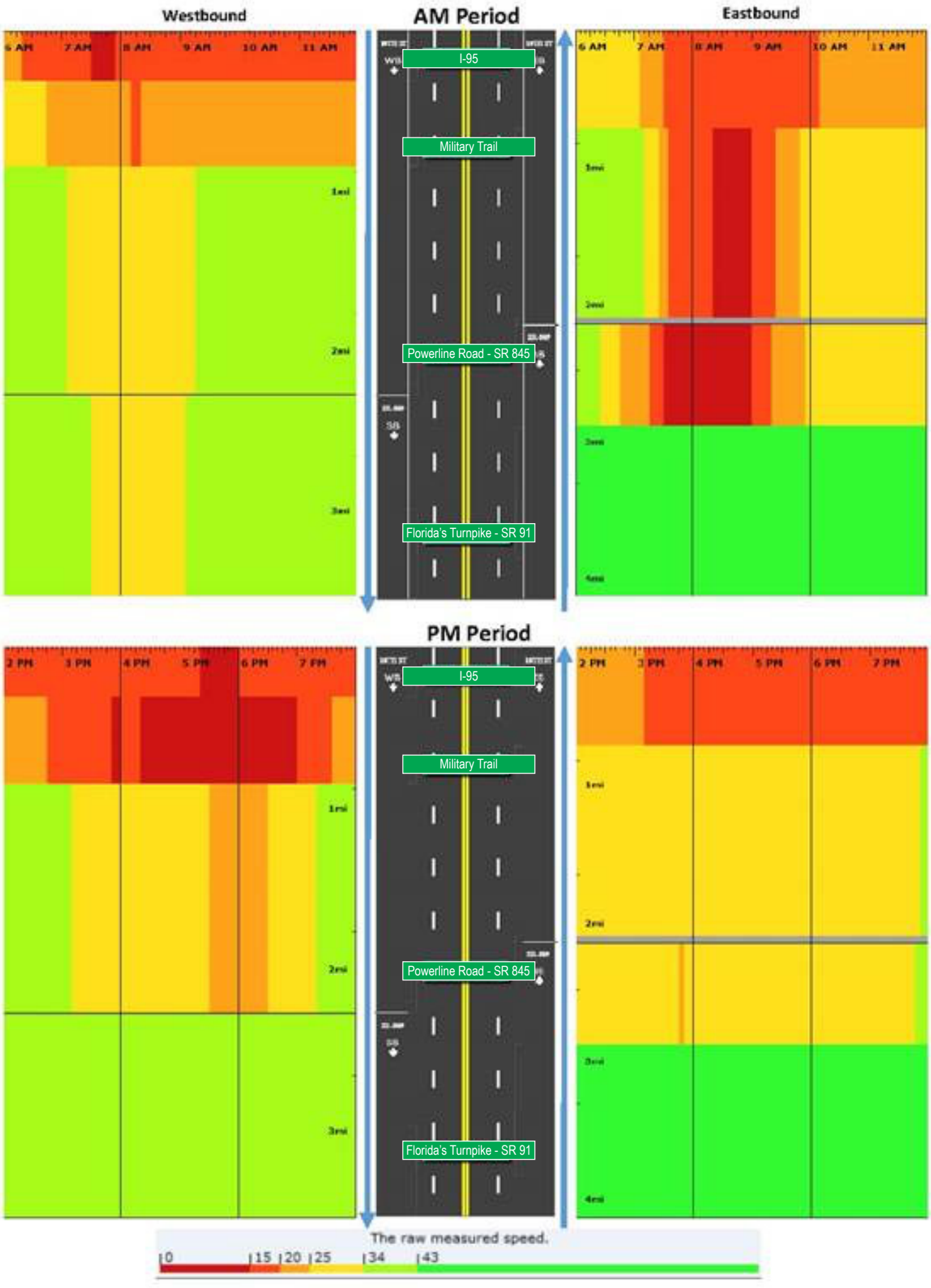
Sawgrass Expressway has posted speed limits of 65 mph and the collector-distributer road/ramps east of Lyons Road are posted 45 mph. SW 10th Street is posted 45 mph. The posted speed for the Turnpike Mainline and I-95 is 65 mph.

Results indicate:

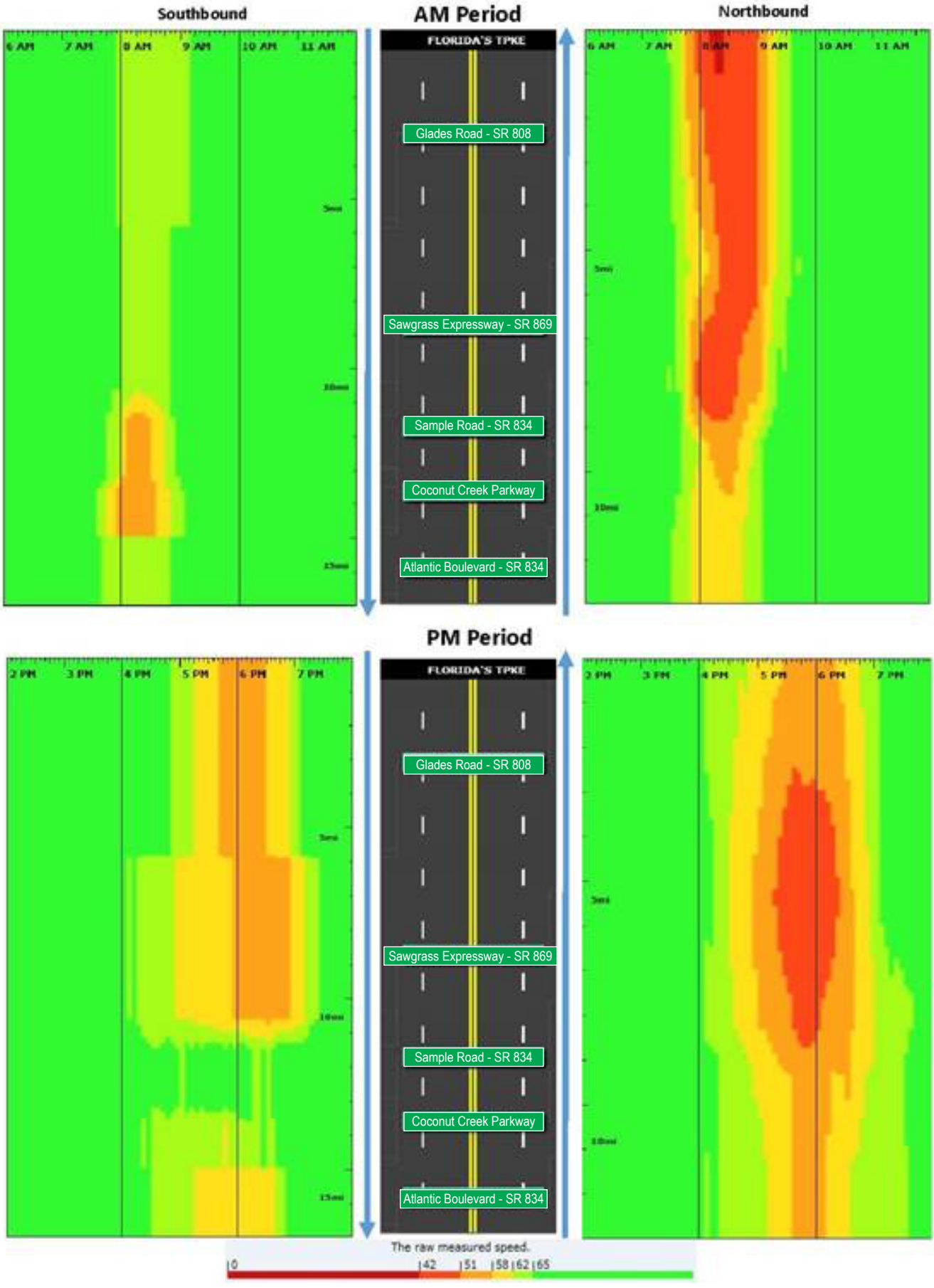
- Sawgrass Expressway traffic flows near the posted speed limit.
- SW 10th Street is congested near I-95, most notably in the AM peak period approaching I-95.
- Florida's Turnpike congestion occurs mostly in the northbound direction, especially in the AM peak period.
- I-95 is congested in both peak periods, though more so in the PM peak period.



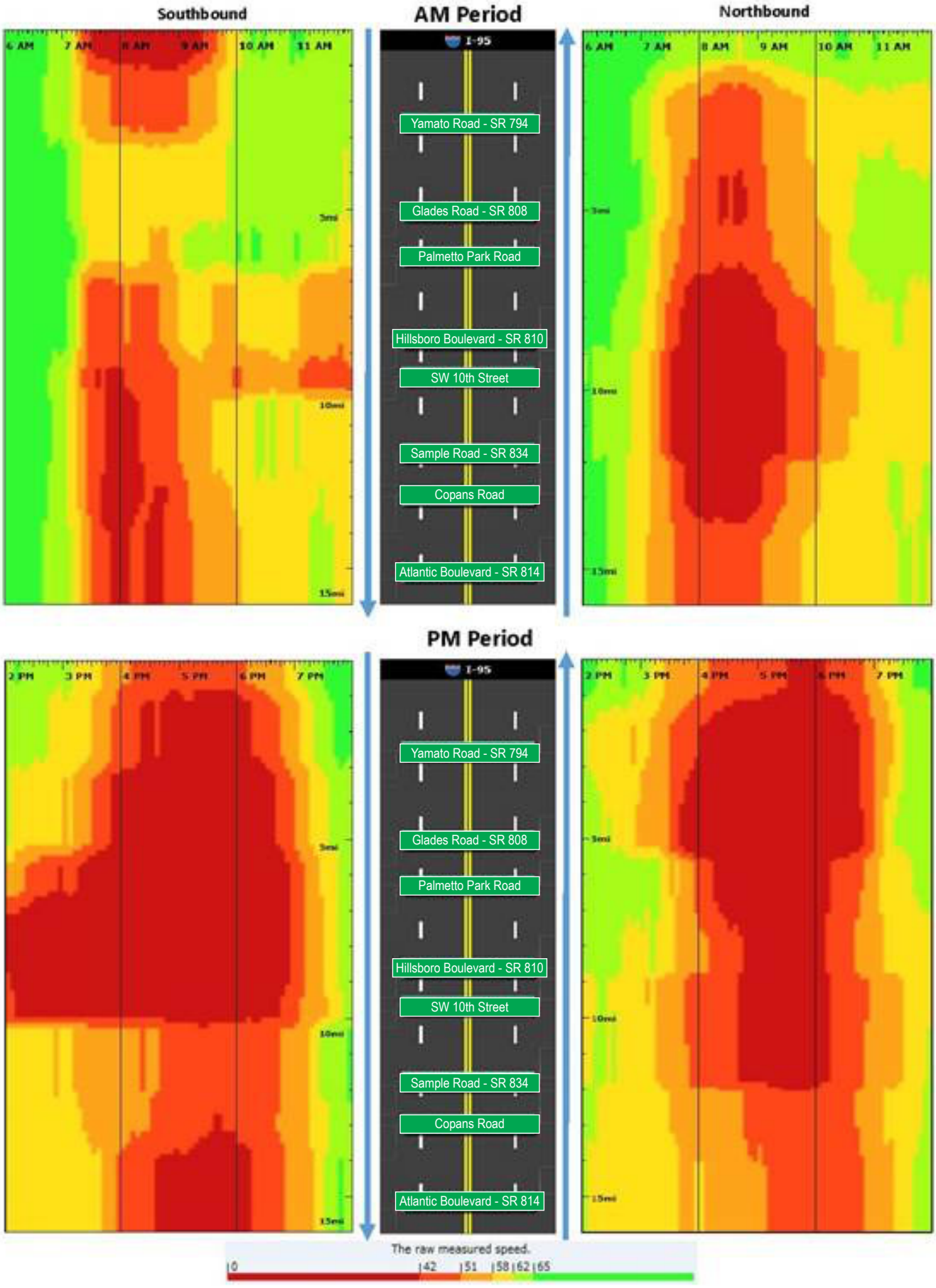
FDOT	SW 10th Street PD&E Study Project Traffic Forecast Memorandum	Sawgrass Expressway (S.R. 869) Congestion Scan	Figure 2.5	FLORIDA'S TURNPIKE



FDOT	SW 10th Street PD&E Study Project Traffic Forecast Memorandum	SW 10th Street Congestion Scan	Figure 2.6



FDOT	SW 10th Street PD&E Study Traffic Forecast Memorandum	Florida's Turnpike (S.R. 91) Congestion Scan	Figure 2.7	FLORIDA'S TURNPIKE



FDOT	SW 10th Street PD&E Study Traffic Forecast Memorandum	I-95 (S.R. 9) Congestion Scan	Figure 2.8	FLORIDA'S TURNPIKE

Field-Collected Data

Travel time runs were completed on Tuesday, October 18, 2016, Wednesday, October 19, 2016, and Thursday, October 20, 2016, generally in the time periods between 6:30 – 9:30 AM and 4:00 – 7:00 PM. Runs were done on the Sawgrass Expressway, SW 10th Street, Florida's Turnpike, and I-95 within the study area.

The resulting AM and PM peak period average speeds are summarized in **Table 2.1**, and the speed charts are shown in **Charts 2.5** through **2.20**. The charts depict the time each travel speed run began, and an average of the runs.

Table 2.1
Average Field-Collected Speed Summary

Roadway and Travel Direction	Average Speed (mph)	
	AM Peak Period	PM Peak Period
Sawgrass Expressway		
Eastbound/Northbound	68	72
Westbound/Southbound	70	63
SW 10th Street		
Eastbound	34	42
Westbound	44	39
Florida's Turnpike		
Northbound	69	70
Southbound	71	72
I-95		
Northbound	54	57
Southbound	57	34

Chart 2.5
Sawgrass Expressway AM Speed Chart – Eastbound/Northbound

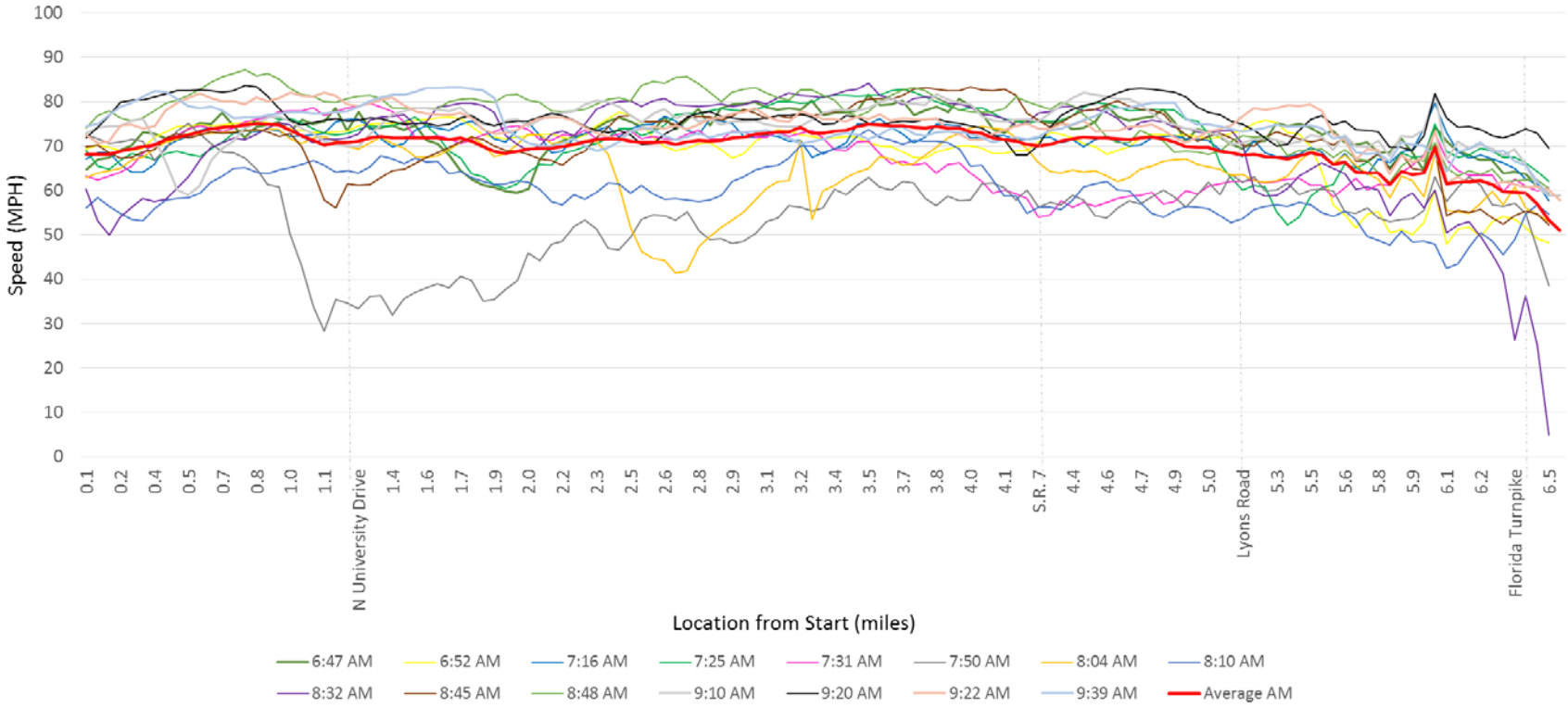


Chart 2.6
Sawgrass Expressway PM Speed Chart – Eastbound/Northbound

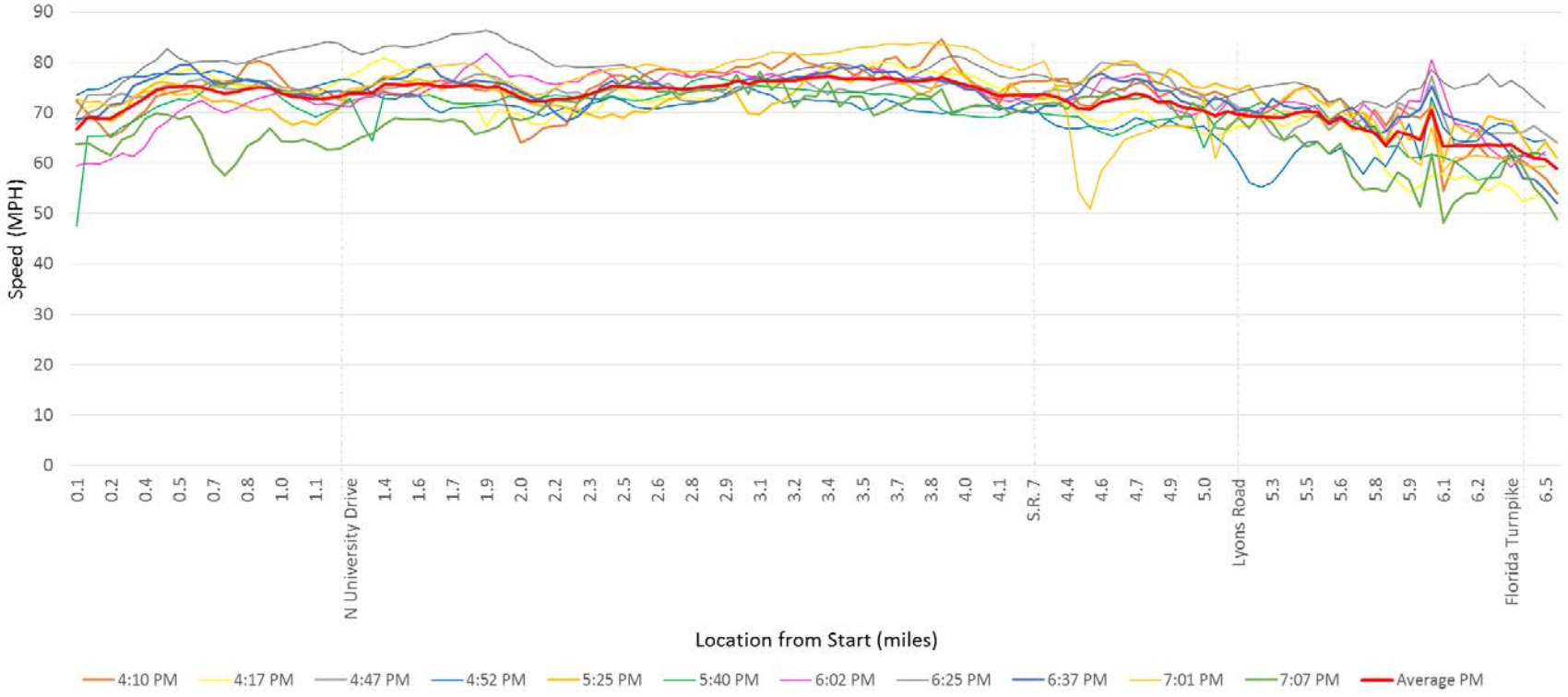


Chart 2.7
Sawgrass Expressway AM Speed Chart – Westbound/Southbound

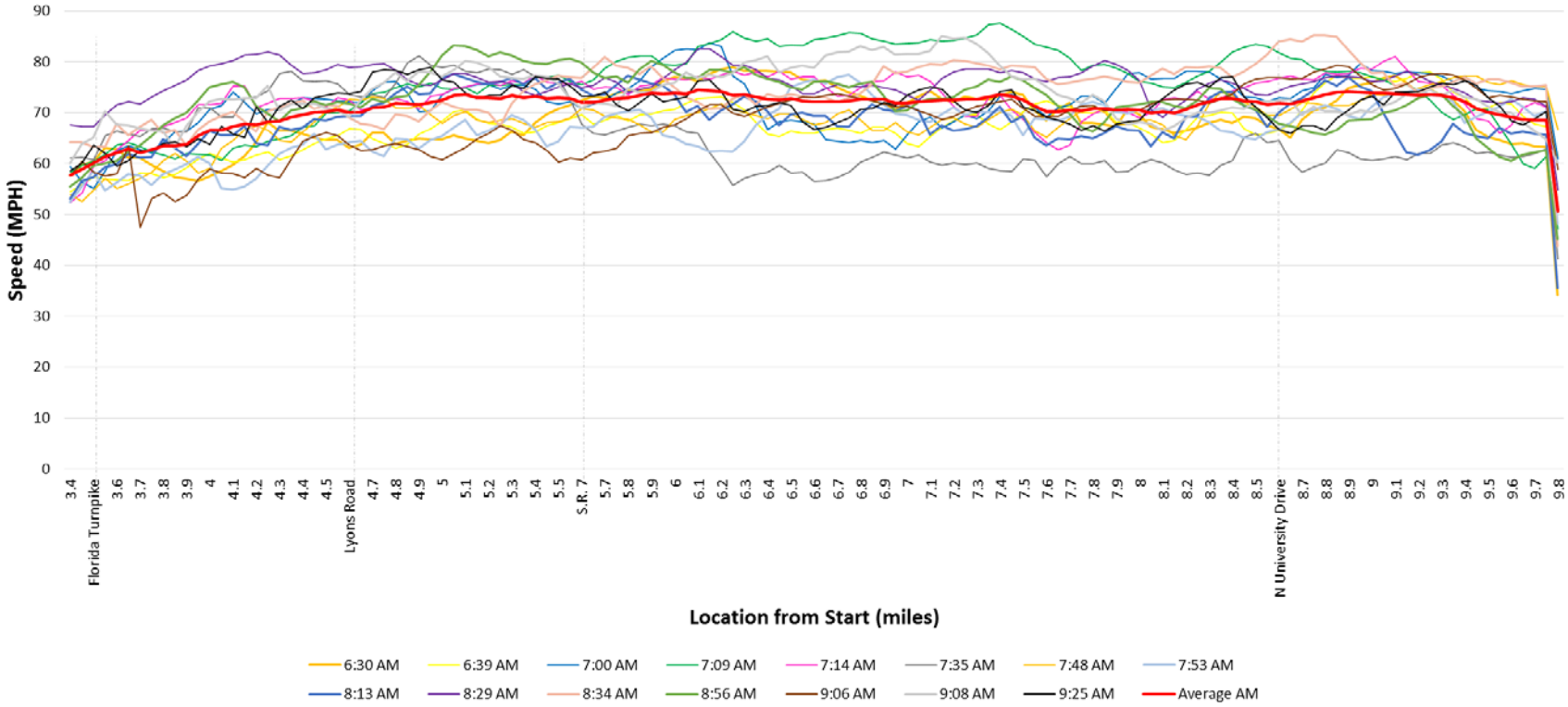


Chart 2.8
Sawgrass Expressway PM Speed Chart – Westbound/Southbound

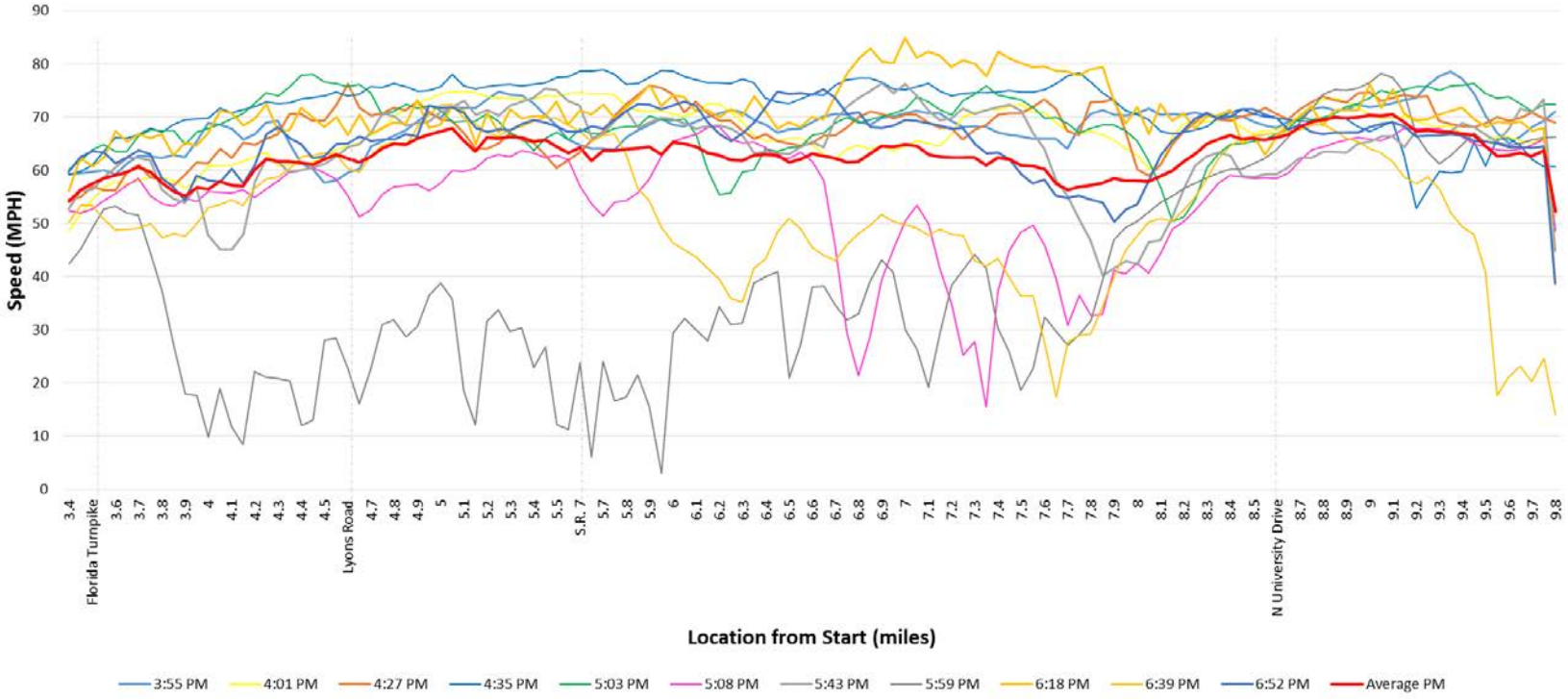


Chart 2.9
SW 10th Street AM Speed Chart – Eastbound

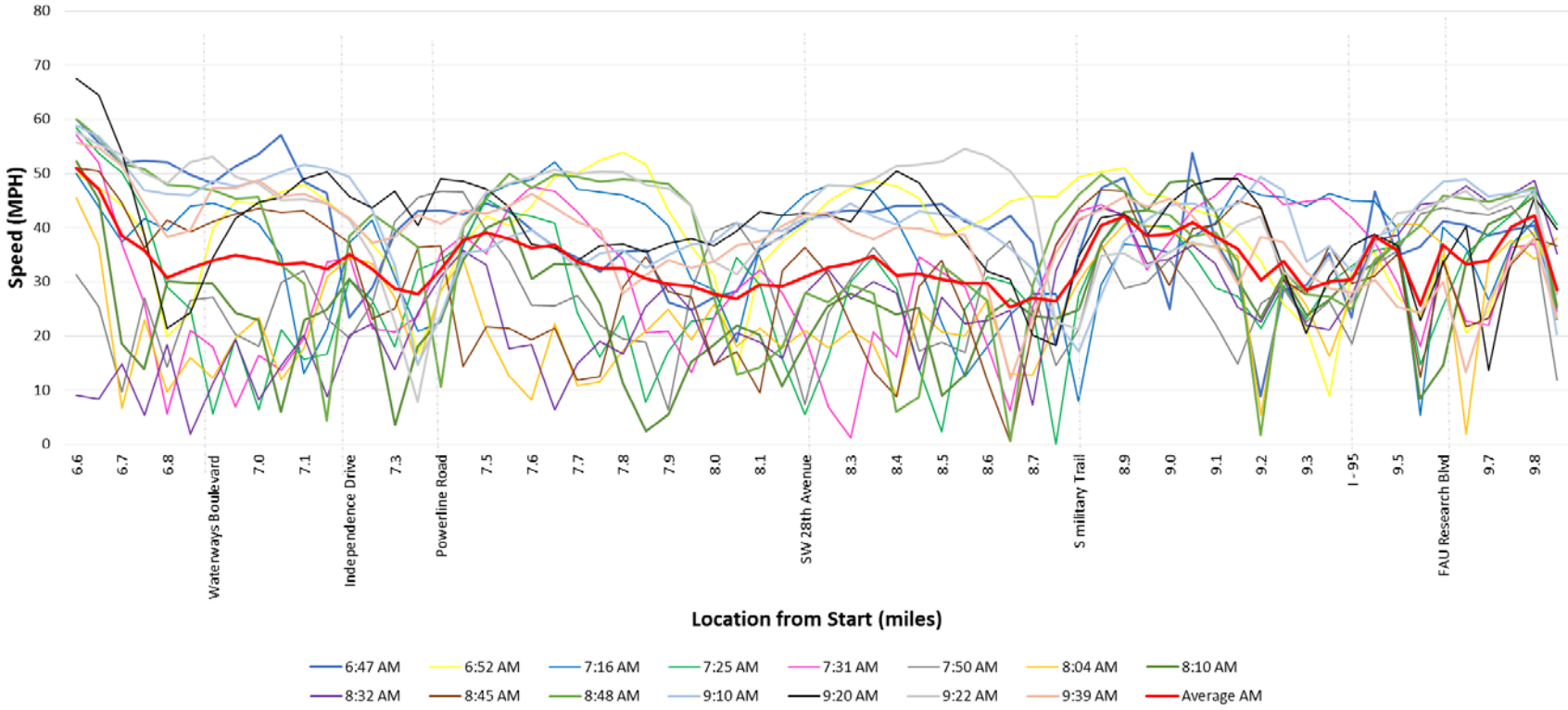


Chart 2.10
SW 10th Street PM Speed Chart – Eastbound

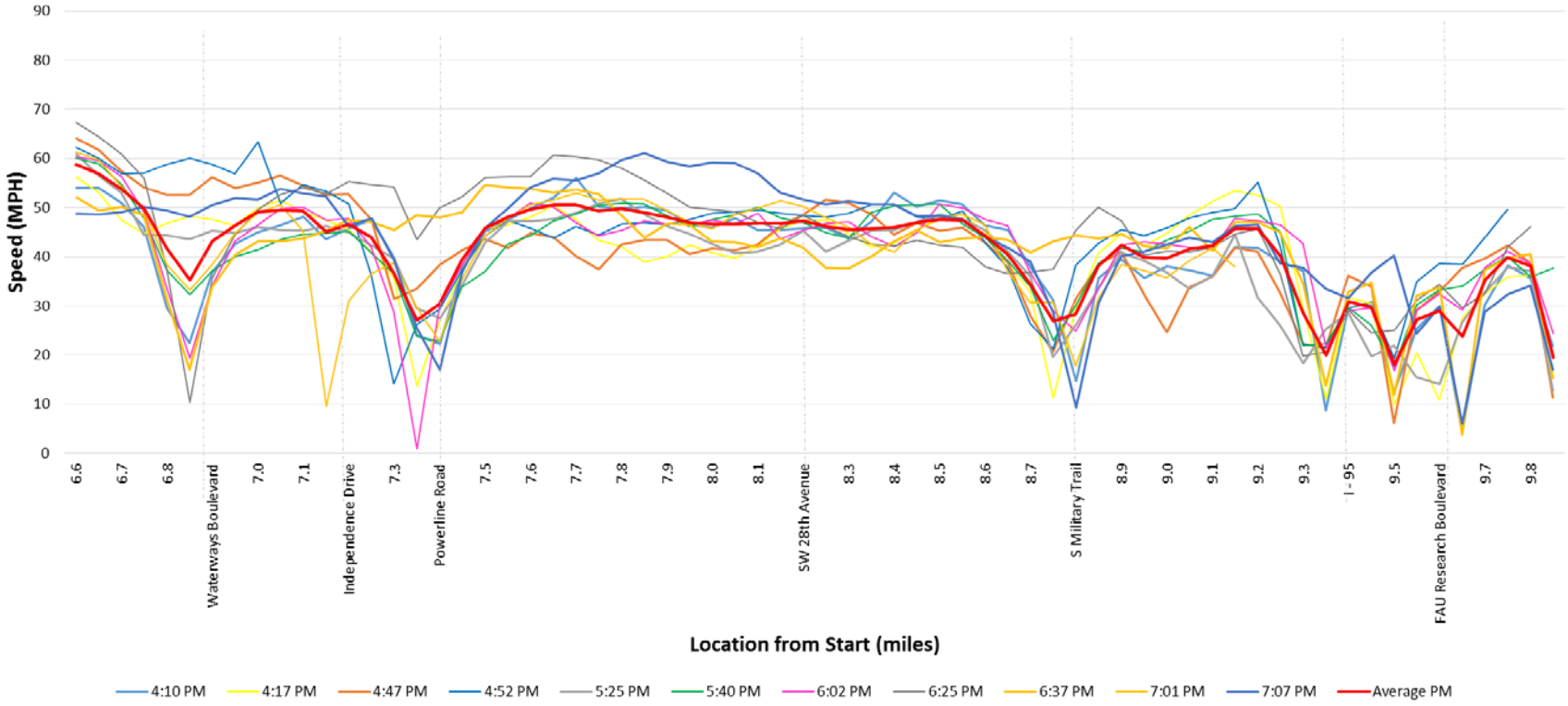


Chart 2.11
SW 10th Street AM Speed Chart – Westbound

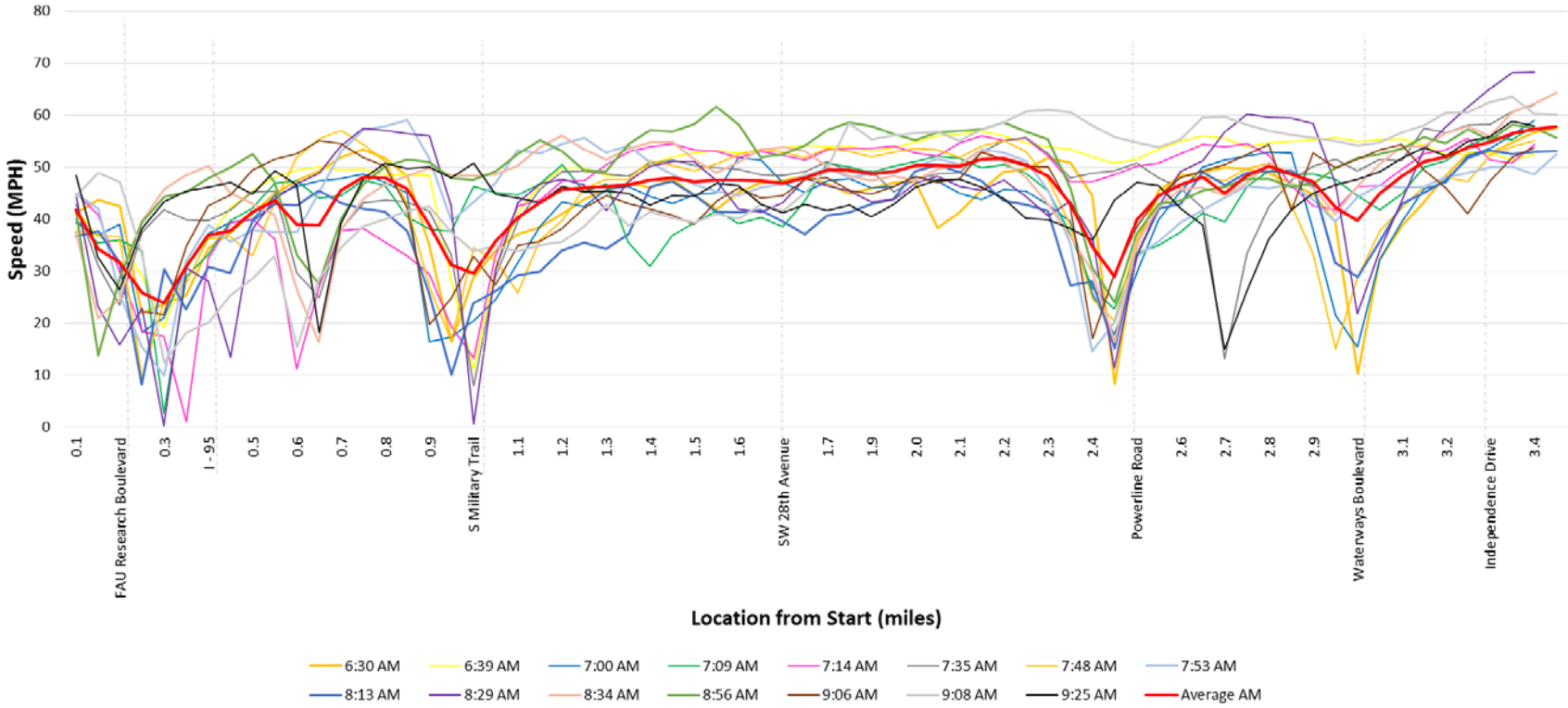


Chart 2.12
SW 10th Street PM Speed Chart – Westbound

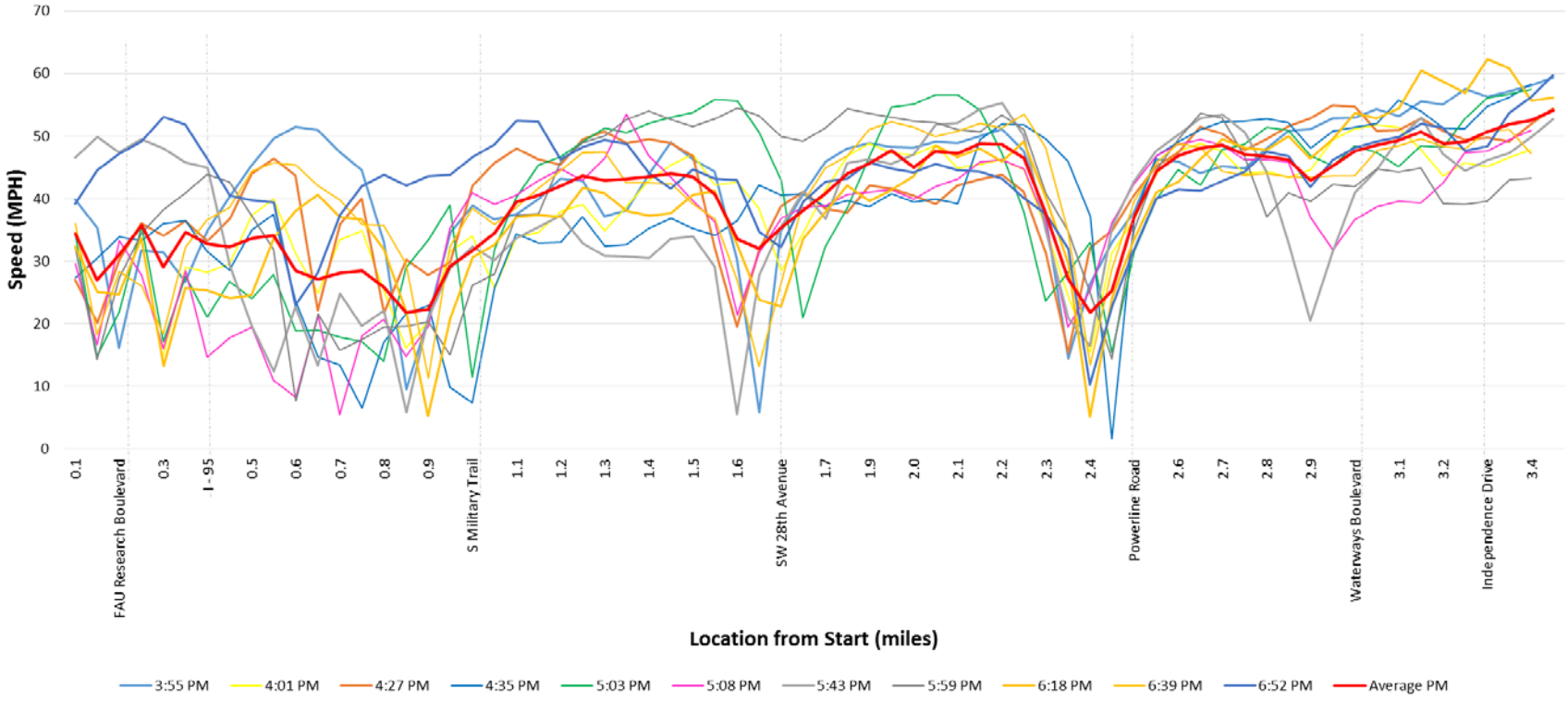


Chart 2.13
Florida's Turnpike AM Speed Chart – Northbound

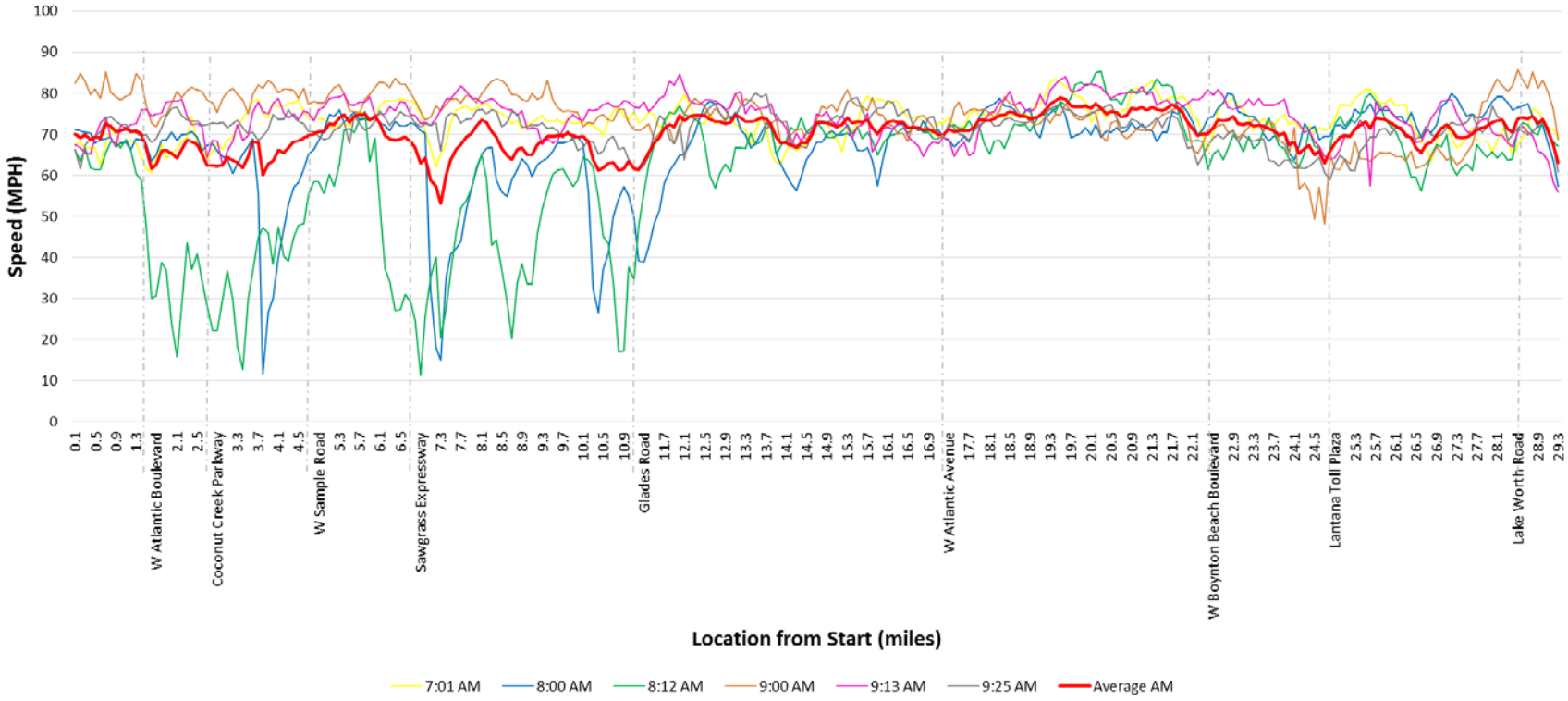


Chart 2.14
Florida's Turnpike PM Speed Chart – Northbound

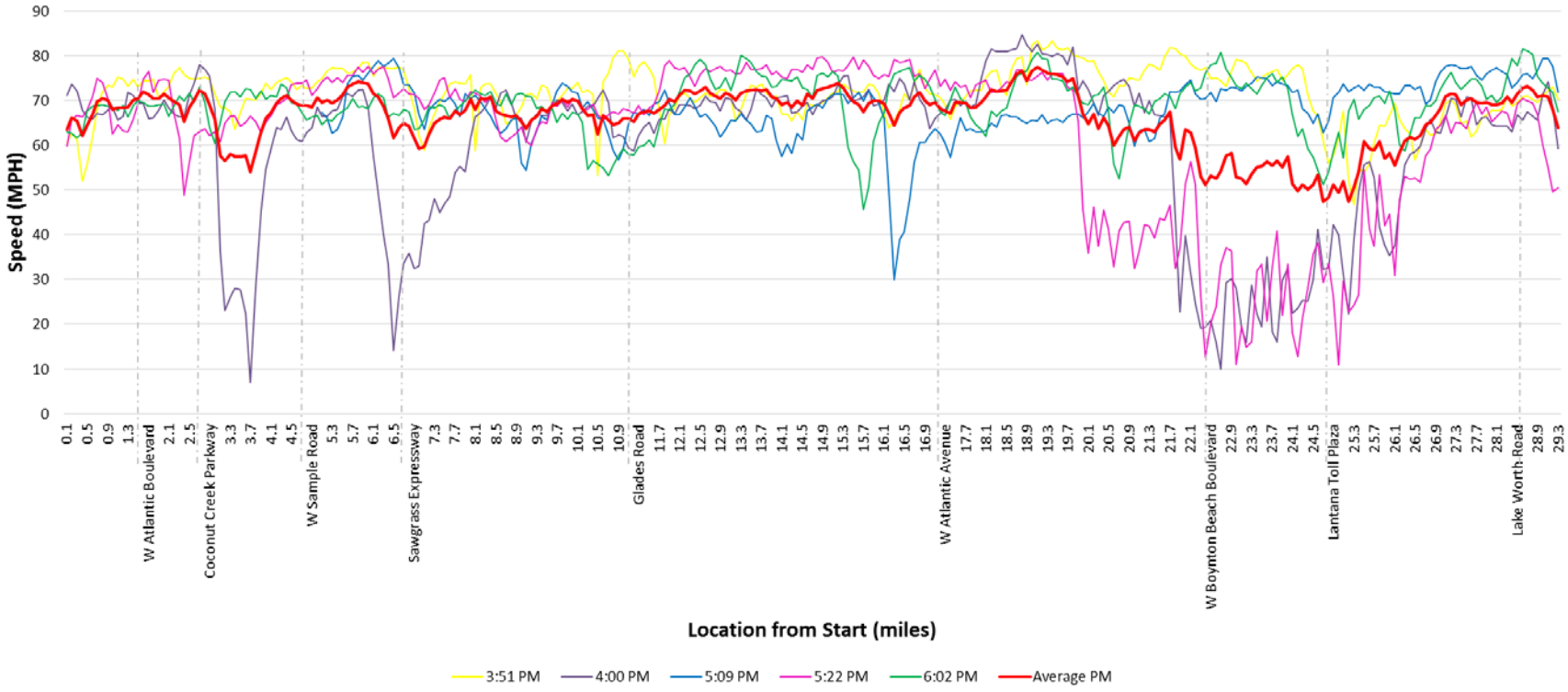


Chart 2.15
Florida's Turnpike AM Speed Chart – Southbound

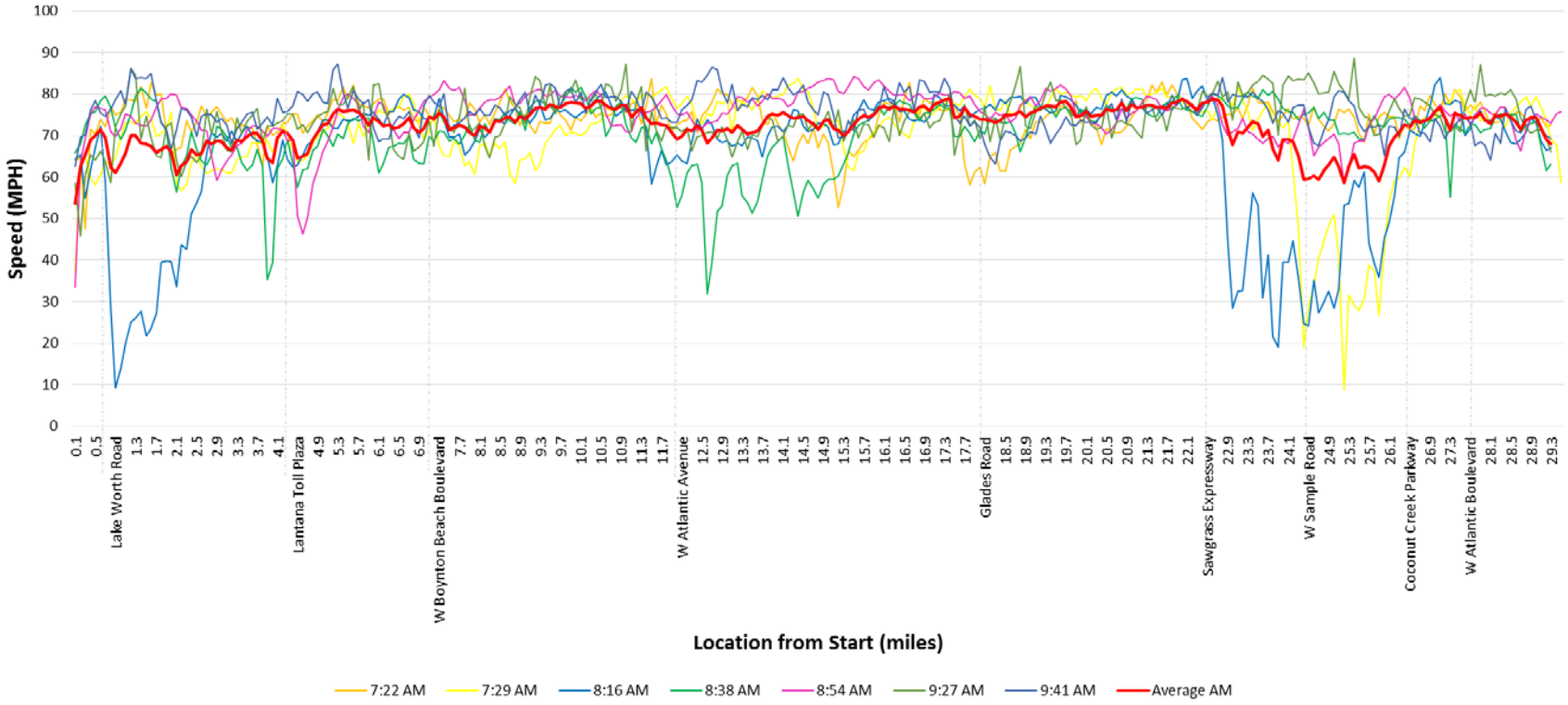


Chart 2.16
Florida's Turnpike PM Speed Chart – Southbound

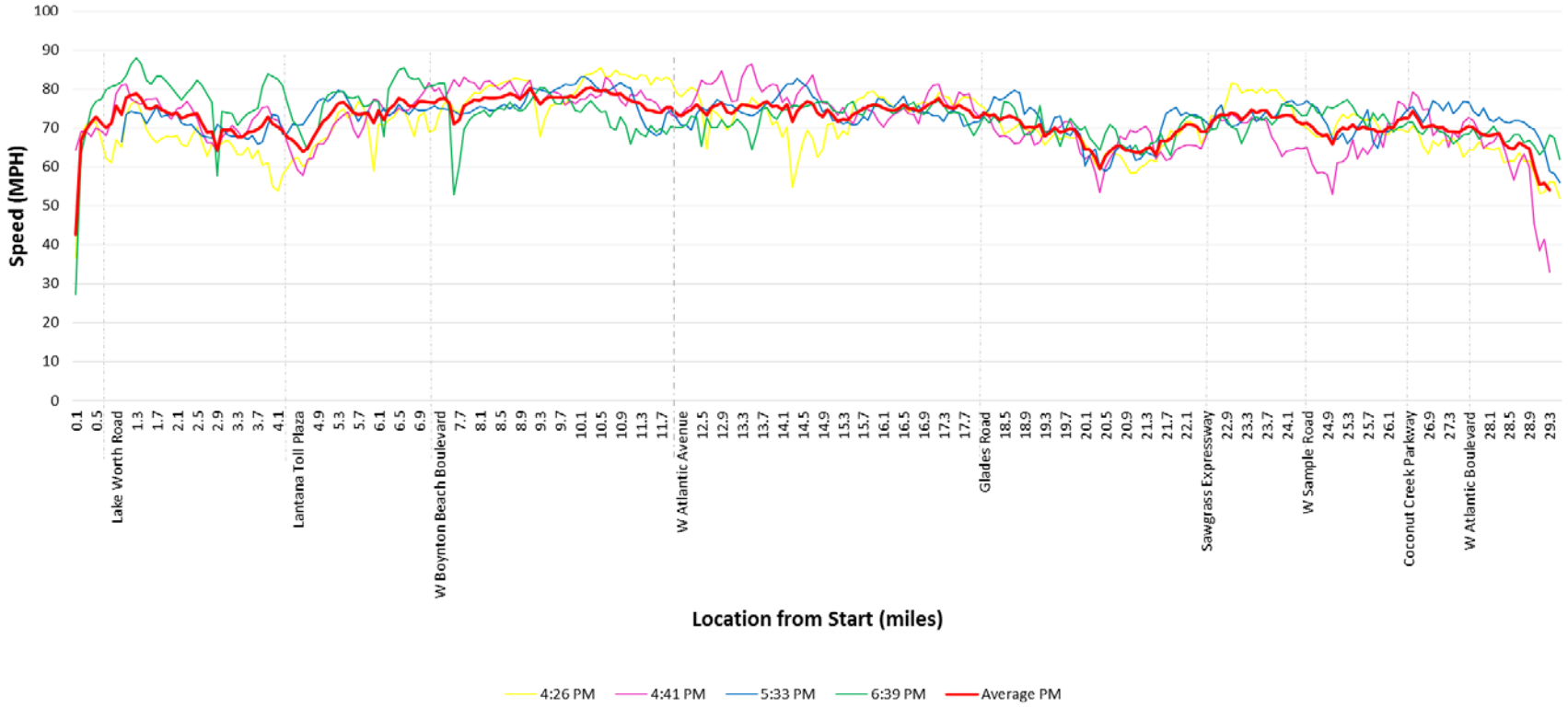


Chart 2.17
I-95 AM Speed Chart – Northbound

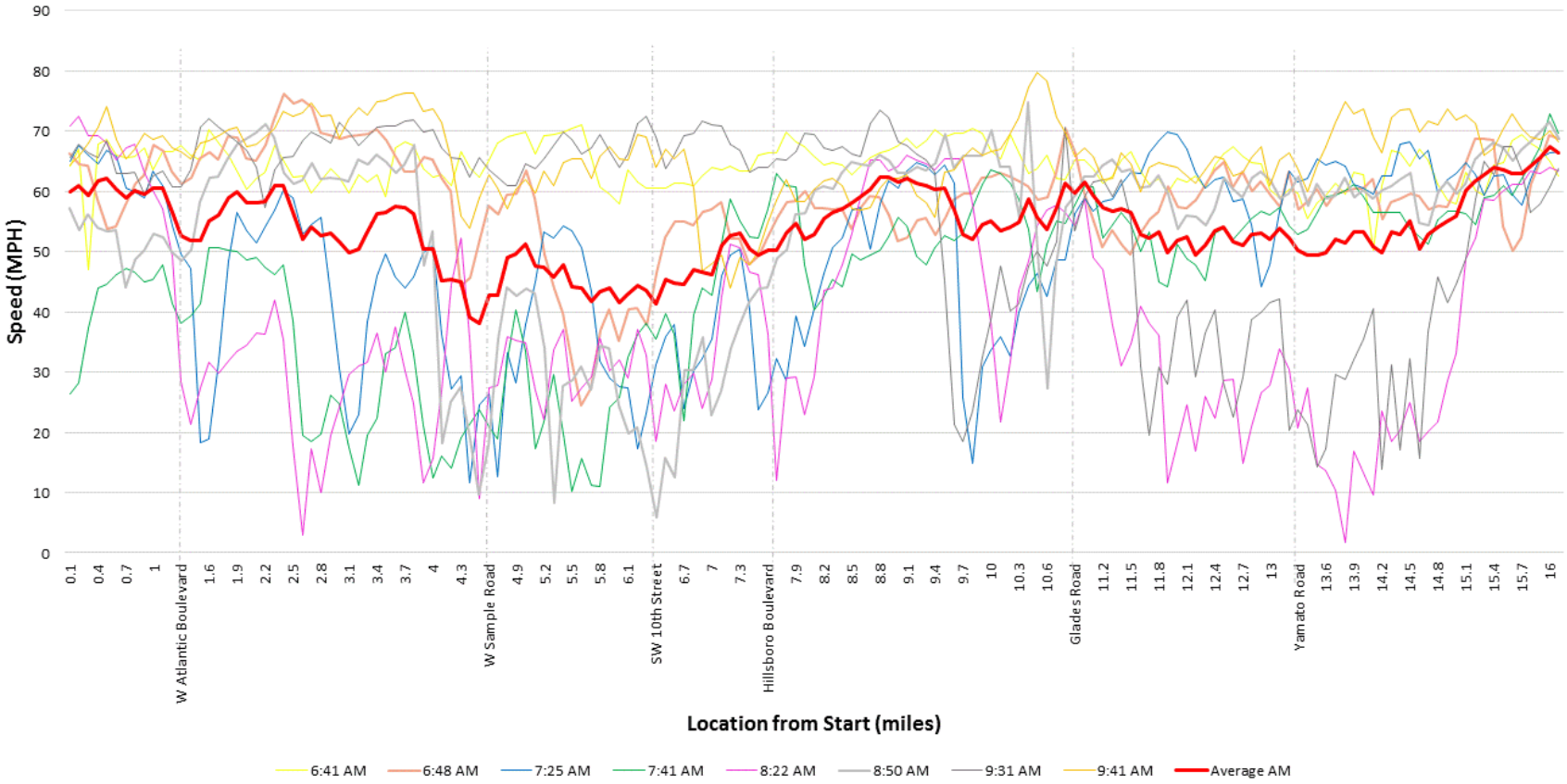


Chart 2.18
I-95 PM Speed Chart – Northbound

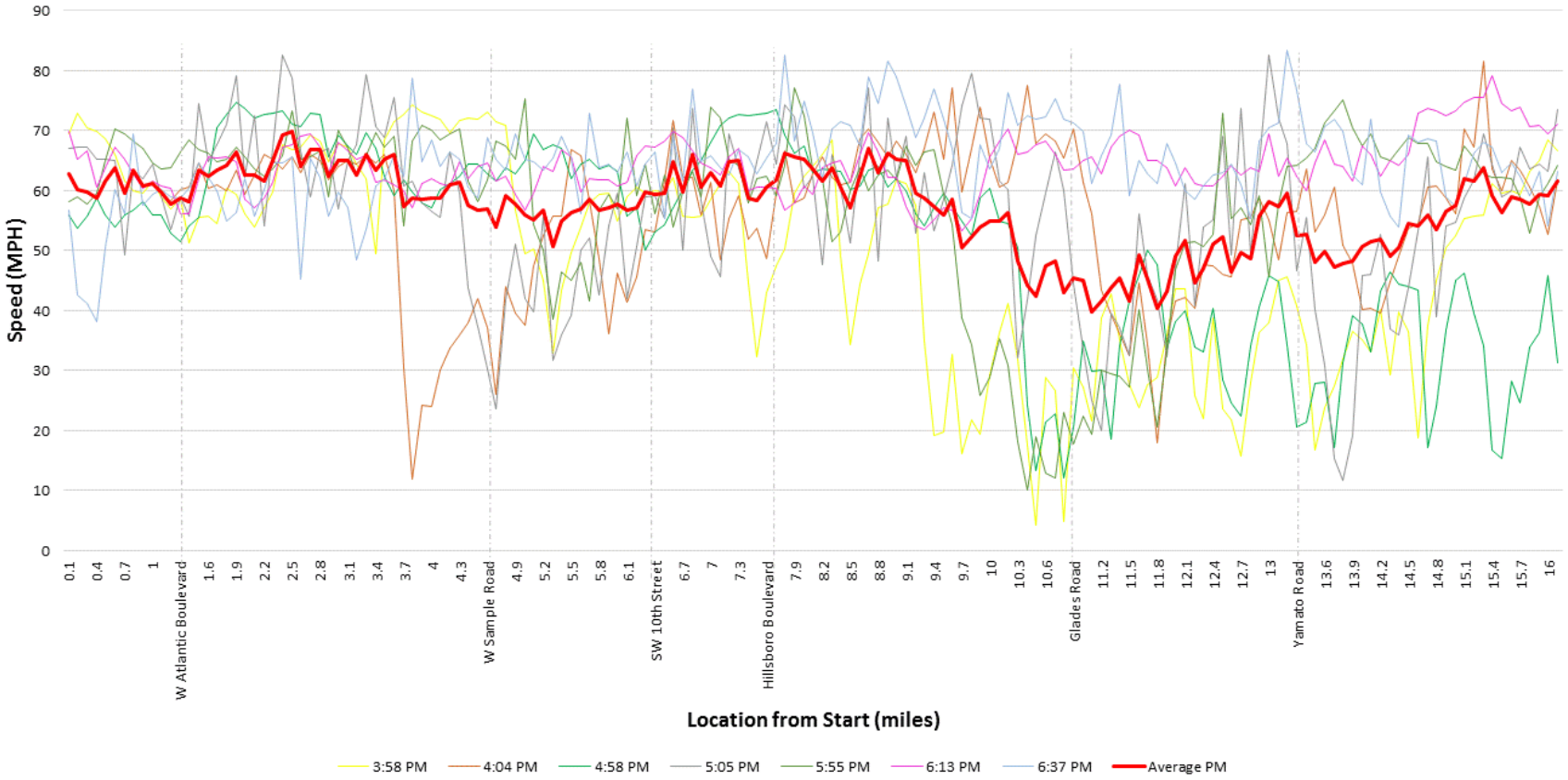


Chart 2.19
I-95 AM Speed Chart – Southbound

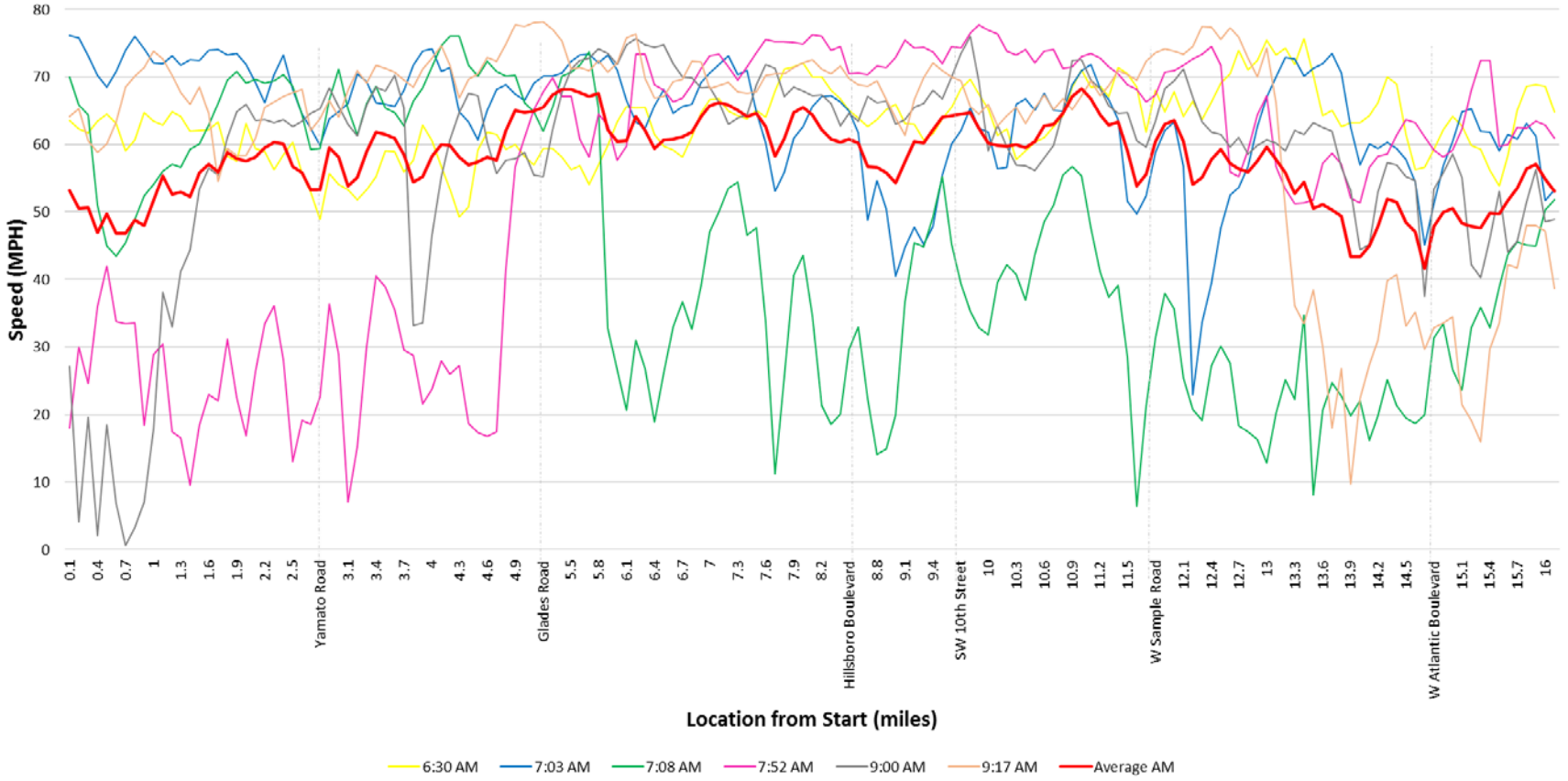
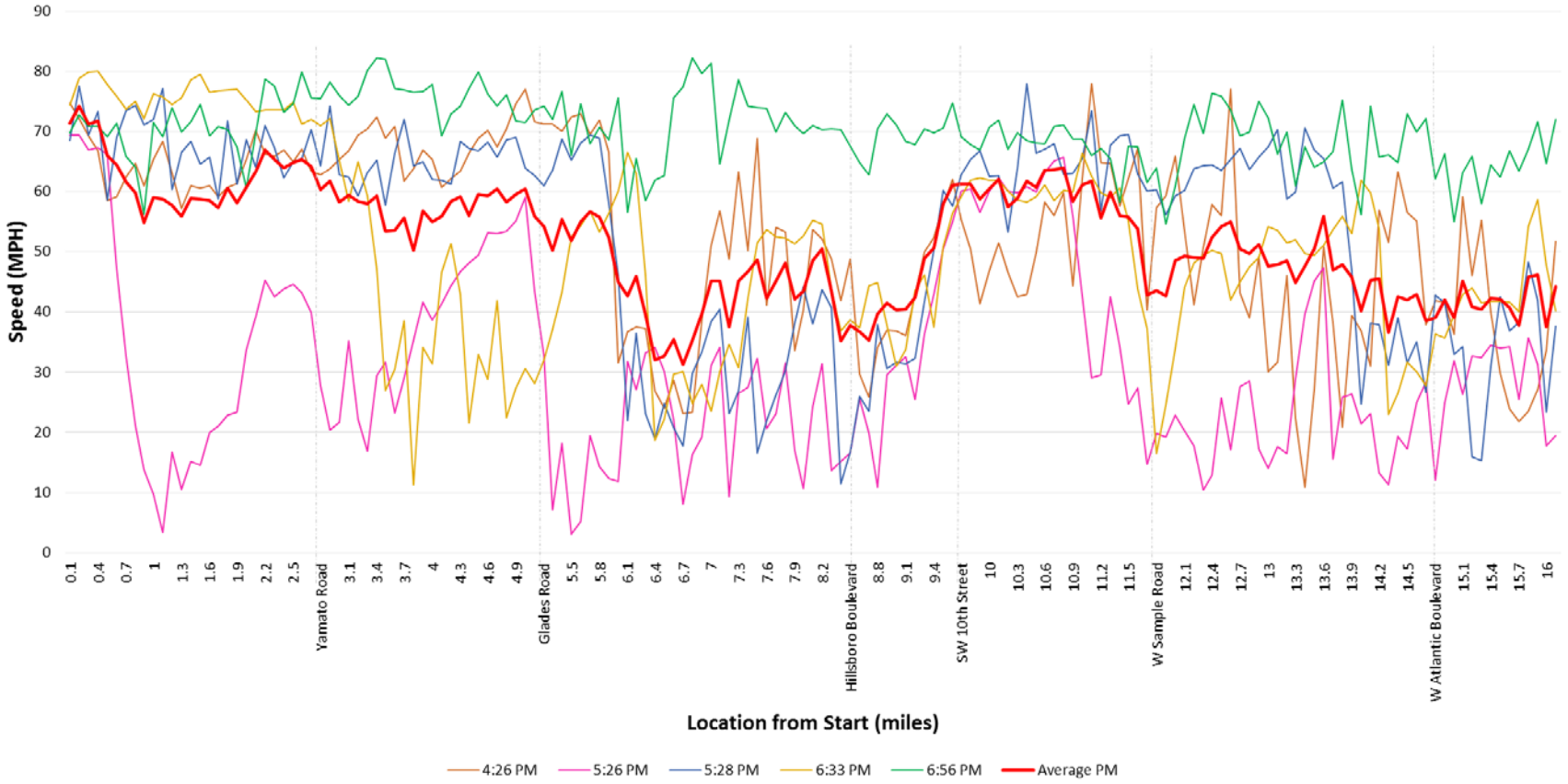


Chart 2.20
I-95 PM Speed Chart – Southbound



Using the average speed information from the travel time runs and the HERE data, the average times to drive each roadway and each direction are summarized in **Table 2.2**. Note the values are not the same as the data collected using different methods.

Table 2.2
Existing Travel Time Summary

Roadway and Travel Direction	Travel Time (minutes)			
	Field Collected Data		HERE Data	
	AM Peak Period	PM Peak Period	AM Peak Period	PM Peak Period
Sawgrass Expressway (6.5 miles)				
Eastbound/Northbound	5.7	5.4	7.3	7.5
Westbound/Southbound	5.7	6.6	7.0	6.9
SW 10th Street (3.3 miles)				
Eastbound	6.4	4.7	7.8	6.2
Westbound	4.5	5.1	7.1	8.5
Florida's Turnpike (29.3 miles)				
Northbound	25.5	25.1	28.9	27.1
Southbound	24.8	24.4	27.2	26.3
I-95 (16.1 miles)				
Northbound	18.2	19.7	21.6	21.2
Southbound	16.9	28.4	25.7	34.4

Results indicate:

- Sawgrass Expressway traffic flows above the posted speed limit, except in the westbound/southbound direction in the PM peak period. Travel speeds are notably lower near 6:00 PM.
- SW 10th Street experiences lower speeds eastbound in the AM peak period and westbound in the PM peak period. As expected, traffic slows at the major signalized intersections.
- Florida's Turnpike runs at or above posted speeds in both the AM and PM peak periods; however, in the AM peak period both directions experience congestion. Congestion occurs in the northbound direction (near 8:00 – 8:15 AM) from Atlantic Boulevard to Glades Road and in the southbound direction (near 8:15 AM and 8:40 AM) at Lake Worth Road, Atlantic Avenue, and Sample Road.
- I-95 is congested in both peak periods, with traffic speeds below posted speeds. This is worse in the PM peak period, most notably in the southbound direction.

Existing traffic count data are provided in **Appendix A**.

2.2.4 Bluetooth Origin-Destination

Origin-destination data were collected by FTE and FDOT District 4 as described below. These data will be used to develop future corridor forecasts.

Florida's Turnpike

Resource Systems Group, Inc. (RSG) conducted an origin-destination study for FTE for the Sawgrass PD&E study, with an expanded geographic coverage area on corridors impacted by SW 10th Street, including sections of I-95, Sawgrass Expressway, Florida's Turnpike, and I-595 in the Pompano Beach and Fort Lauderdale area. The purpose of the study was to estimate weekday travel patterns over a 24-hour period for the following four different time periods:

- AM: 6:30 AM – 9:30 AM
- Midday: 9:30 AM – 3:30 PM
- PM: 3:30 PM – 6:30 PM
- Overnight: 6:30 PM – 6:30 AM

The result of the study is an origin-destination matrix providing vehicle trip volumes for each of the four time periods.

In order to provide a basis for estimating travel patterns in the study area, Bluetooth detectors were used to track vehicle movements. Bluetooth detectors collect movement information from cell phones and similar devices as they pass near the detector. Deploying several detectors near roadways throughout an area allows devices (i.e., vehicles) to be tracked as they travel from detector to detector.

The detectors were deployed from Wednesday, February 18 through Tuesday, February 24, 2015, at 48 locations. Of the 48 detectors, the data from 5 detectors were discarded from the analysis because of too much missing data or a bad deployment location. Of the 43 remaining detectors, 16 were placed in paired deployments at 8 different locations, and 27 were placed in single-detector deployments. Thus the final analysis used a total of 35 unique detector locations, as shown on **Figure 2.9**. This set of data consists of approximately 5.4 million detections from approximately 158,000 devices.

Once collected, the data were processed through special algorithms to match unique media access control identifiers (MACIDs) of the devices to trace vehicles and develop origin-destination trips. Typically, this type of Bluetooth origin-destination survey results in collecting data for 5 to 10 percent of the total traffic. Therefore, to represent total traffic, a global expansion factor is applied. Based on the start time of the trips, the records were grouped into one of the four time periods, and trip tables in 33 zone systems were developed.

FDOT	SW 10th Street PD&E Study Project Traffic Forecast Memorandum	Bluetooth Detector Locations	Figure 2.9

For this SW 10th Street study, additional analysis was performed using the same data, but the study area was reduced to focus on the SW 10th Street corridor between Florida's Turnpike and I-95. The original 33-zone matrix was aggregated into an 8-zone system. This trip table was analyzed to identify the through movement volumes on SW 10th Street travelling between Florida's Turnpike and I-95. The through volumes represent vehicles that may use the ELs. **Tables 2.3** through **2.7** provide origin-destination summaries of SW 10th Street through volumes on a weekday daily and time period basis.

FDOT District 4

CTS Engineering, Inc. (CTS) provided FDOT District 4 origin-destination data for I-95 at the SW 10th Street interchange. Data were collected from Tuesday, April 19 through Thursday, April 21, 2016, using Bluetooth equipment. The data were collected during the peak periods of 7:00 – 9:00 AM and 4:00 – 6:00 PM. **Figure 2.9** shows the locations of the Bluetooth detectors used for that study.

In order to compare the origin-destination patterns from the 2015 RSG study for FTE and the 2016 CTS study for FDOT District 4, the data were grouped together to develop a similar format and coverage area. Since the CTS data are raw data without applying an expansion factor, the comparison between RSG and CTS data was done on a percentage basis (i.e., percentage of trips traveling from the eastern end of SW 10th Street near I-95 to the western end near Florida's Turnpike). The comparison shows that the patterns, in terms of vehicles traveling between Florida's Turnpike and I-95 using SW 10th Street, and traveling to/from Military Trail or Powerline Road to I-95 and Florida's Turnpike, are similar. Since both data-sets have similar origin-destination patterns, it was decided to use the RSG dataset, as it traces trips for longer distances and has been factored to represent total traffic at detectors.

Figures 2.10 and **2.11** depict the origin-destination pattern of eastbound and westbound trips on the SW 10th Street corridor. As shown on **Figure 2.10**, at the western end near Florida's Turnpike, SW 10th Street carries approximately 17,500 eastbound vehicles. Out of these 17,500 vehicles, 55 percent (9,500 vehicles) travel the full length of SW 10th Street, and either go onto I-95 or continue on SW 10th Street east of I-95. Similarly, as depicted on **Figure 2.11**, at the eastern end just west of I-95, of the 23,000 vehicles in the westbound direction, 48 percent (11,100 vehicles) travel the full length and continue onto Sawgrass Expressway. These full length trips should be similar in magnitude on a daily basis.

2.3 CORRIDOR TRAFFIC

2.3.1 Annual Average Daily Traffic

AADT volumes were balanced between the Sawgrass Expressway and Southern Coin based on counts taken in October 2016 and March 2016, respectively, and at I-95 based on a balanced 2015 profile. SW 10th Street volumes are not balanced and are based on counts taken in March and October 2016. Results are shown on **Figure 2.12**. The values shown are not the same as those from the Bluetooth origin-destination data collection effort, as the methods of data collection and adjustment of volumes are accomplished differently.

Table 2.3
SW 10th Street Express Lanes Eligible Trips – Daily

Daily		Turnpike north of SW 10th Street	Sawgrass Expressway west of Turnpike	Turnpike south of SW 10th Street	I-95 north of SW 10th Street	I-95 south of SW 10th Street	SW 10th Street east of I-95	Powerline Road	Military Trail	Total
		1	2	3	4	5	6	7	8	
Turnpike north of SW 10th Street	1	0	0	0	0	0	0	0	0	**0**
Sawgrass Expressway west of Turnpike	2	0	0	0	4,861	1,867	2,729	5,531	2,507	**17,495**
Turnpike south of SW 10th Street	3	0	0	0	0	0	0	0	0	**0**
I-95 north of SW 10th Street	4	0	7,052	0	0	0	0	1,483	0	**8,535**
I-95 south of SW 10th Street	5	0	1,045	0	0	0	0	584	2,278	**3,907**
SW 10th Street east of I-95	6	0	3,093	0	0	0	0	1,999	5,788	**10,880**
Powerline Road	7	0	0	0	689	1,750	1,408	0	0	**3,847**
Military Trail	8	0	1,571	0	0	0	0	0	0	**1,571**
Total		**0**	**12,761**	**0**	**5,550**	**3,617**	**4,137**	**9,597**	**10,573**	**46,235**

= Eastbound Through Trips = Westbound Through Trips

Table 2.4
SW 10th Street Express Lanes Eligible Trips – AM Peak Period

Daily		Turnpike north of SW 10th Street	Sawgrass Expressway west of Turnpike	Turnpike south of SW 10th Street	I-95 north of SW 10th Street	I-95 south of SW 10th Street	SW 10th Street east of I-95	Powerline Road	Military Trail	Total
		1	2	3	4	5	6	7	8	
Turnpike north of SW 10th Street	1	0	0	0	0	0	0	0	0	**0**
Sawgrass Expressway west of Turnpike	2	0	0	0	1,154	462	719	1,845	593	**4,773**
Turnpike south of SW 10th Street	3	0	0	0	0	0	0	0	0	**0**
I-95 north of SW 10th Street	4	0	1,830	0	0	0	0	310	0	**2,140**
I-95 south of SW 10th Street	5	0	95	0	0	0	0	119	363	**577**
SW 10th Street east of I-95	6	0	692	0	0	0	0	357	1,206	**2,255**
Powerline Road	7	0	0	0	200	359	194	0	0	**753**
Military Trail	8	0	172	0	0	0	0	0	0	**172**
Total		**0**	**2,789**	**0**	**1,354**	**821**	**913**	**2,631**	**2,162**	**10,670**

= Eastbound Through Trips = Westbound Through Trips

Table 2.5
SW 10th Street Express Lanes Eligible Trips – Midday Period

Daily		Turnpike north of SW 10th Street	Sawgrass Expressway west of Turnpike	Turnpike south of SW 10th Street	I-95 north of SW 10th Street	I-95 south of SW 10th Street	SW 10th Street east of I-95	Powerline Road	Military Trail	Total
		1	2	3	4	5	6	7	8	
Turnpike north of SW 10th Street	1	0	0	0	0	0	0	0	0	**0**
Sawgrass Expressway west of Turnpike	2	0	0	0	1,818	723	806	1,494	842	**5,683**
Turnpike south of SW 10th Street	3	0	0	0	0	0	0	0	0	**0**
I-95 north of SW 10th Street	4	0	2,211	0	0	0	0	580	0	**2,791**
I-95 south of SW 10th Street	5	0	336	0	0	0	0	227	894	**1,457**
SW 10th Street east of I-95	6	0	836	0	0	0	0	781	1,990	**3,607**
Powerline Road	7	0	0	0	198	713	552	0	0	**1,463**
Military Trail	8	0	444	0	0	0	0	0	0	**444**
Total		**0**	**3,827**	**0**	**2,016**	**1,436**	**1,358**	**3,082**	**3,726**	**15,445**

= Eastbound Through Trips = Westbound Through Trips

Table 2.6
SW 10th Street Express Lanes Eligible Trips – PM Peak Period

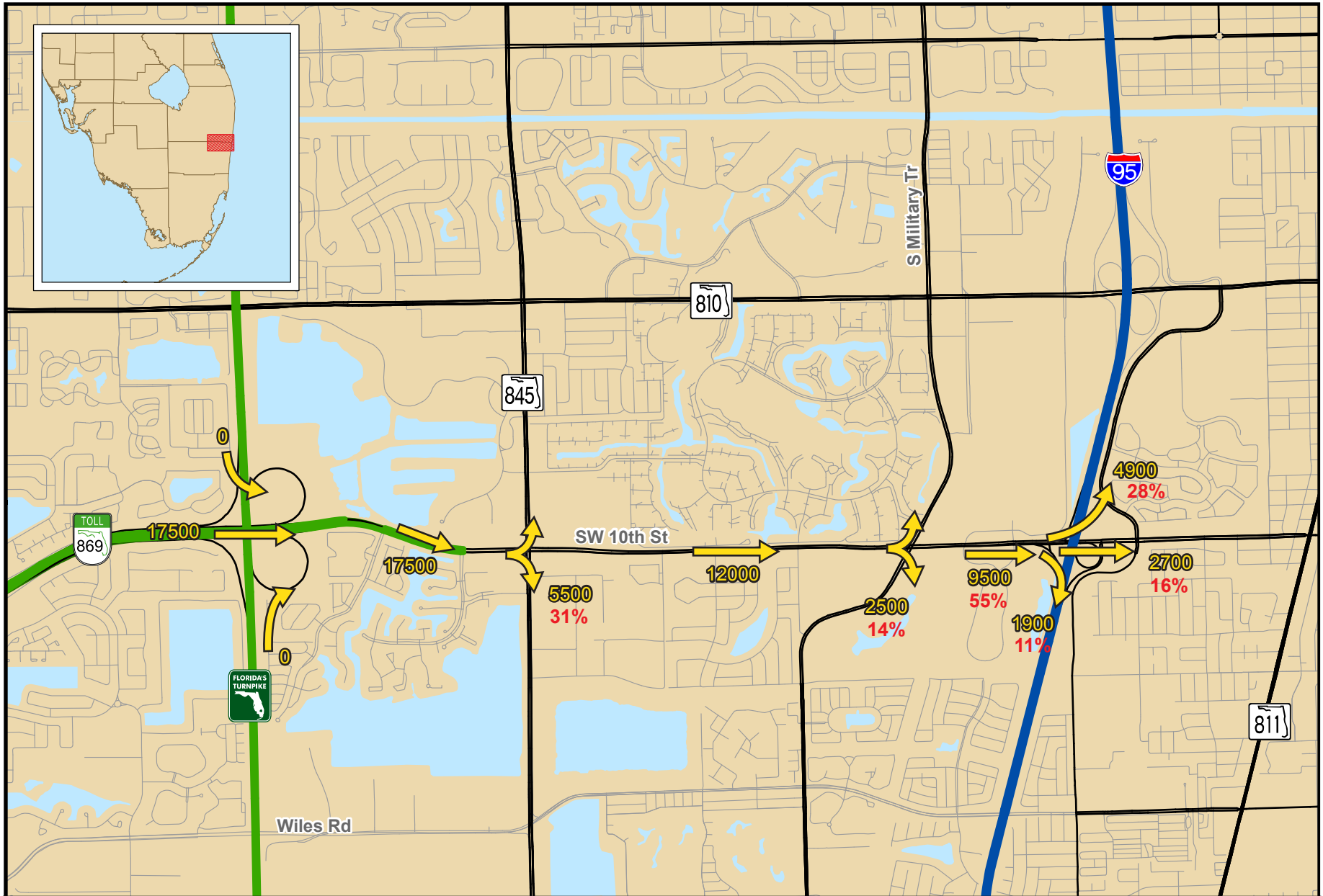
Daily		Turnpike north of SW 10th Street	Sawgrass Expressway west of Turnpike	Turnpike south of SW 10th Street	I-95 north of SW 10th Street	I-95 south of SW 10th Street	SW 10th Street east of I-95	Powerline Road	Military Trail	Total
		1	2	3	4	5	6	7	8	
Turnpike north of SW 10th Street	1	0	0	0	0	0	0	0	0	**0**
Sawgrass Expressway west of Turnpike	2	0	0	0	805	245	707	1,021	564	**3,342**
Turnpike south of SW 10th Street	3	0	0	0	0	0	0	0	0	**0**
I-95 north of SW 10th Street	4	0	1,247	0	0	0	0	247	0	**1,494**
I-95 south of SW 10th Street	5	0	221	0	0	0	0	123	285	**629**
SW 10th Street east of I-95	6	0	752	0	0	0	0	376	1,336	**2,464**
Powerline Road	7	0	0	0	235	332	358	0	0	**925**
Military Trail	8	0	624	0	0	0	0	0	0	**624**
Total		**0**	**2,844**	**0**	**1,040**	**577**	**1,065**	**1,767**	**2,185**	**9,478**

= Eastbound Through Trips = Westbound Through Trips

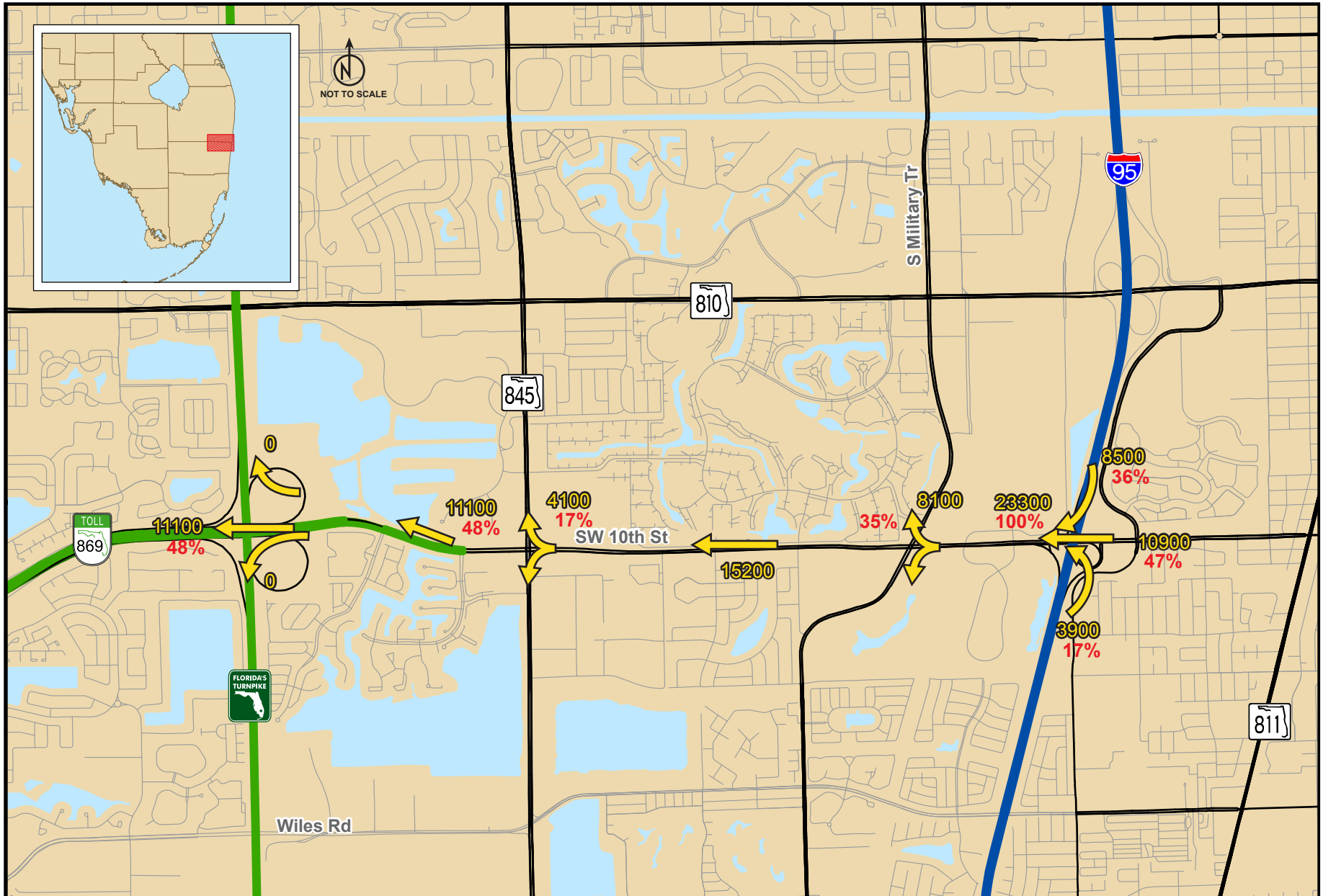
Table 2.7
SW 10th Street Express Lanes Eligible Trips – Overnight Period

Daily		Turnpike north of SW 10th Street	Sawgrass Expressway west of Turnpike	Turnpike south of SW 10th Street	I-95 north of SW 10th Street	I-95 south of SW 10th Street	SW 10th Street east of I-95	Powerline Road	Military Trail	Total
		1	2	3	4	5	6	7	8	
Turnpike north of SW 10th Street	1	0	0	0	0	0	0	0	0	**0**
Sawgrass Expressway west of Turnpike	2	0	0	0	1,083	437	498	1,170	507	**3,695**
Turnpike south of SW 10th Street	3	0	0	0	0	0	0	0	0	**0**
I-95 north of SW 10th Street	4	0	1,771	0	0	0	0	348	0	**2,119**
I-95 south of SW 10th Street	5	0	398	0	0	0	0	113	735	**1,246**
SW 10th Street east of I-95	6	0	812	0	0	0	0	485	1,255	**2,552**
Powerline Road	7	0	0	0	56	346	304	0	0	**706**
Military Trail	8	0	330	0	0	0	0	0	0	**330**
Total		**0**	**3,311**	**0**	**1,139**	**783**	**802**	**2,116**	**2,497**	**10,648**

= Eastbound Through Trips = Westbound Through Trips



FDOT	SW 10th Street PD&E Study Project Traffic Memorandum	Eastbound Daily Traffic Origin-Destination Pattern	Figure 2.10



FDOT	SW 10th Street PD&E Study Project Traffic Memorandum	Westbound Daily Traffic Origin-Destination Pattern	Figure 2.11	FLORIDA'S TURNPIKE

NOT TO SCALE

Glades Rd (S.R. 808)

Matchline A

To SW 10th St

University Dr (S.R. 817)

US 441 (S.R. 7)

Lyons Rd

Sample Rd (S.R. 834)

Coconut Creek Pkwy (S.R. 812)

Atlantic Blvd (S.R. 814)

Hillsboro Blvd (S.R. 810)

Powerline Rd (S.R. 845)

SW 28th Ave

S Military Trl

E Newport Center Dr

SW 10th St

FAU Research Park Rd

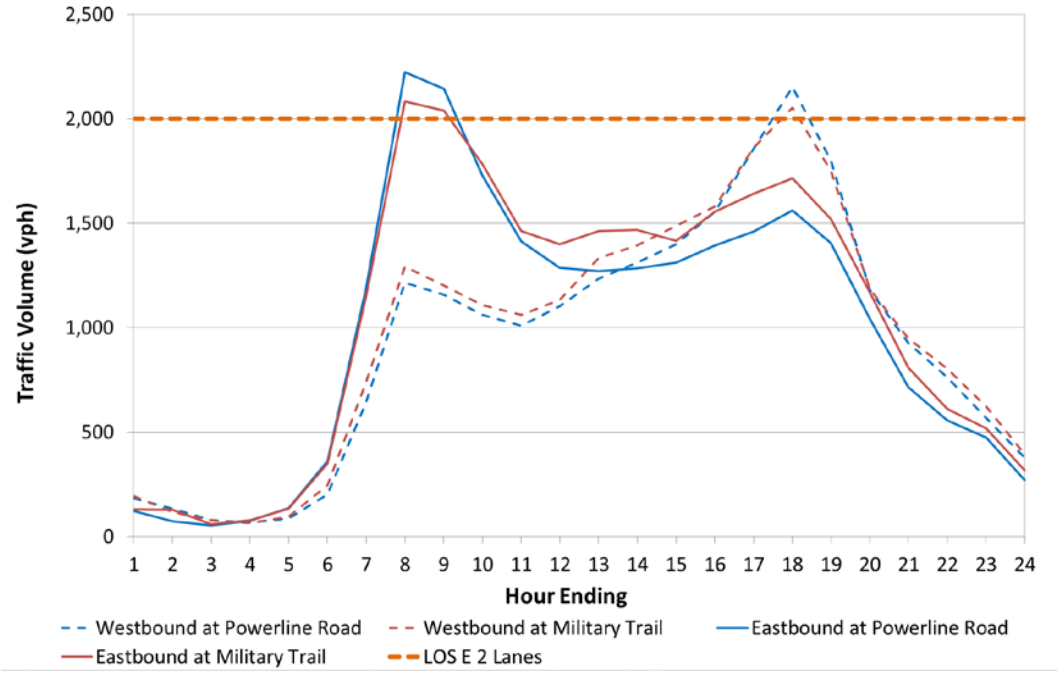
Signal Controlled
Lane Direction
Lane Volume

FDOT	SW 10th Street PD&E Study Project Traffic Forecast Memorandum	**Existing (2016) Annual Average Daily Traffic**	Figure 2.12

2.3.2 Traffic Distribution by Direction

The existing traffic distribution in the eastbound and westbound directions along SW 10th Street at Powerline Road and Military Trail is shown on **Chart 2.21**. The peak direction for SW 10th is eastbound during the AM peak and westbound during the PM peak, similar to other east-west arterials in Broward County. The chart shows that SW 10th Street exceeds the four-lane LOS E capacity during the peak periods in both the eastbound and the westbound directions.

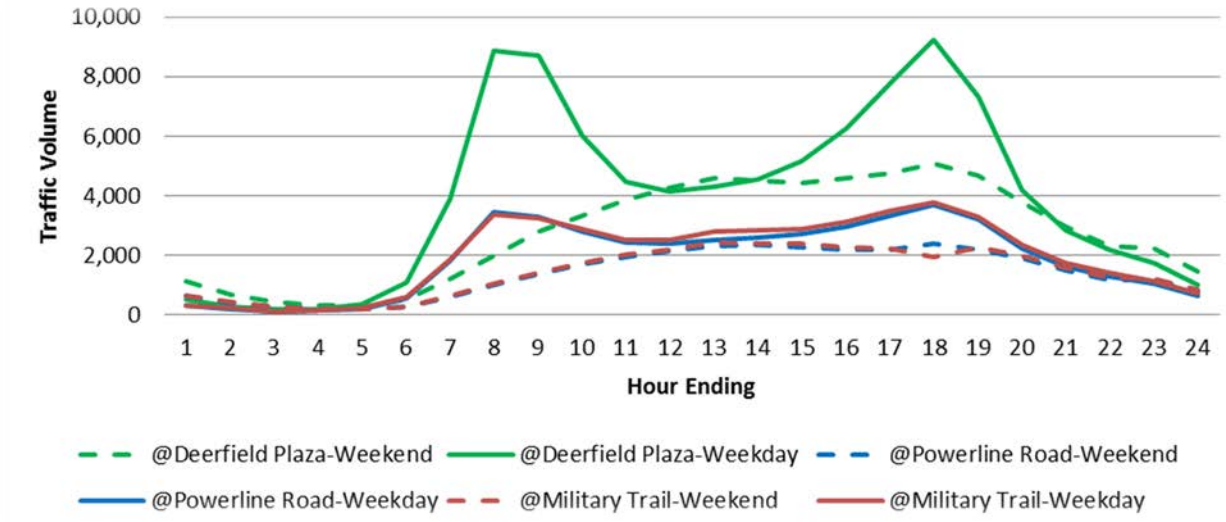
Chart 2.21
SW 10th Street Traffic Distribution



2.3.3 Weekday vs. Weekend Traffic Volumes

The comparison of existing weekday versus weekend traffic on SW 10th Street is shown on **Chart 2.22**. Weekday traffic typically shows peaks in the morning and evening, and weekend traffic typically shows increases up through noon, with leveling or slight increases into the early evening hours before decreasing later in the evening.

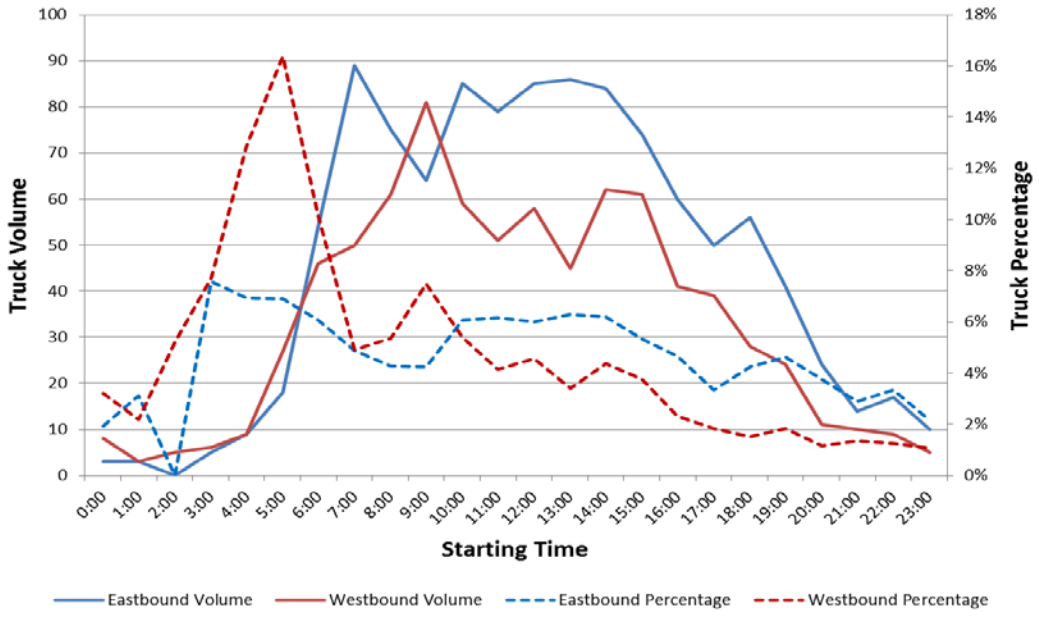
Chart 2.22
SW 10th Street Weekday vs. Weekend Traffic Volumes



2.3.4 Truck Traffic

The SW 10th Street truck traffic by hour per direction shown in volume and percentage of overall traffic, from the PTMS #3012 located just east of Powerline Road, is shown on **Chart 2.23**.

Chart 2.23
SW 10th Street Truck Volume by Direction



A design hour truck factor of 2 percent was used for the 10th Street corridor analysis, with the exception of the access to the Publix Distribution Center located just to the west of the I-95 interchange. **Table 2.8** provides a summary of truck percentages along the corridor as measured from counts collected in 2016 for the corridor. **Table 2.9** summarizes the truck percentages along SW 10th Street as measured during the peak hours from the turning movements counts collected for the project.

Figures 2.13 and **2.14** summarize the truck percentages used in the analysis for peak/design hour and peak/design period, respectively, at the access to the Publix Distribution Center and derived from project traffic data collected in the field.

Table 2.8
Sawgrass Expressway/SW 10th Street Corridor Design Hour Truck Percentage from FTI

	Site	Type	T24	Tf*
SW 10th Street				
East of Powerline Road	863012	PTMS	4.23%	2.12%
West of I-95	863015	PTMS	7.97%	3.99%
East of I-95	860070	PTMS	5.17%	2.59%

*No TTMS sites available, all class calculations based on limited data. Assumes ½ of T24.

Table 2.9
Sawgrass Expressway/SW 10th Street Corridor Peak Hour Truck Percentage Calculated from Project TMC

	Date	Type	AM*	PM*	Peak Hour	
					Average	Rounded Up
SW 10th Street						
West of Powerline Road	3/9/2016	TMC	1.77%	1.33%	1.5%	2%
Between Powerline Road and NW 28th Avenue	3/9/2016	TMC	2.20%	1.38%	1.4%	2%
Between NW 28th Avenue and Military Trail	3/9/2016	TMC	2.09%	1.45%	1.8%	2%
Between Military Trail and Newport Center Drive	3/9/2016	TMC	1.33%	1.62%	1.5%	2%
Between Newport Center Drive and I-95	3/9/2016	TMC	1.97%	0.85%	1.4%	2%
Between I-95 and Natura Boulevard	3/9/2016	TMC	1.09%	0.73%	0.9%	1%
East of Natura Boulevard	3/9/2016	TMC	1.23%	0.43%	0.8%	1%

*Calculated by averaging the truck percent from all movements to/from segment from TMC truck percentages within or at end of segment.

Figure 2.13
Publix Distribution Center – AM and PM Peak Hours

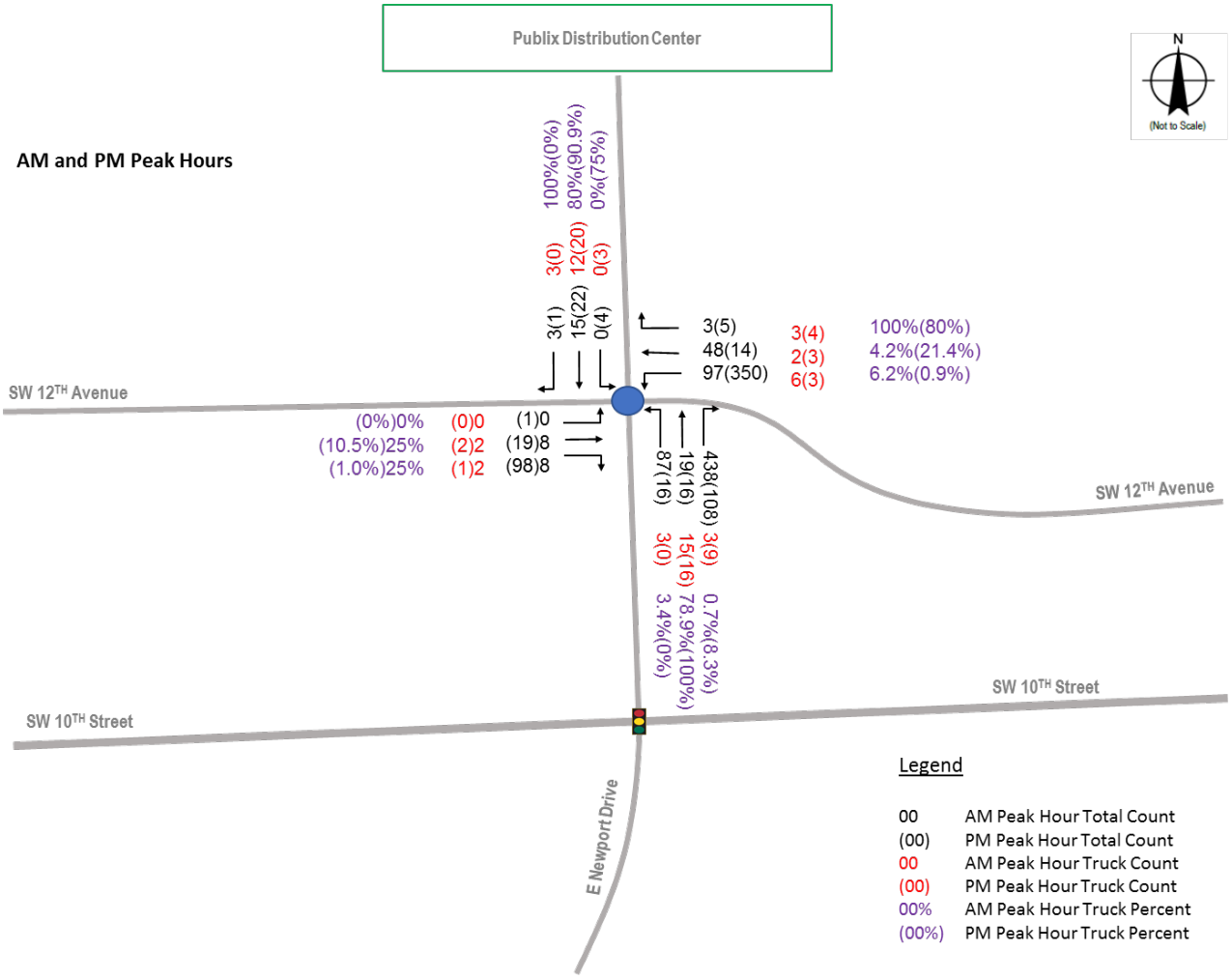
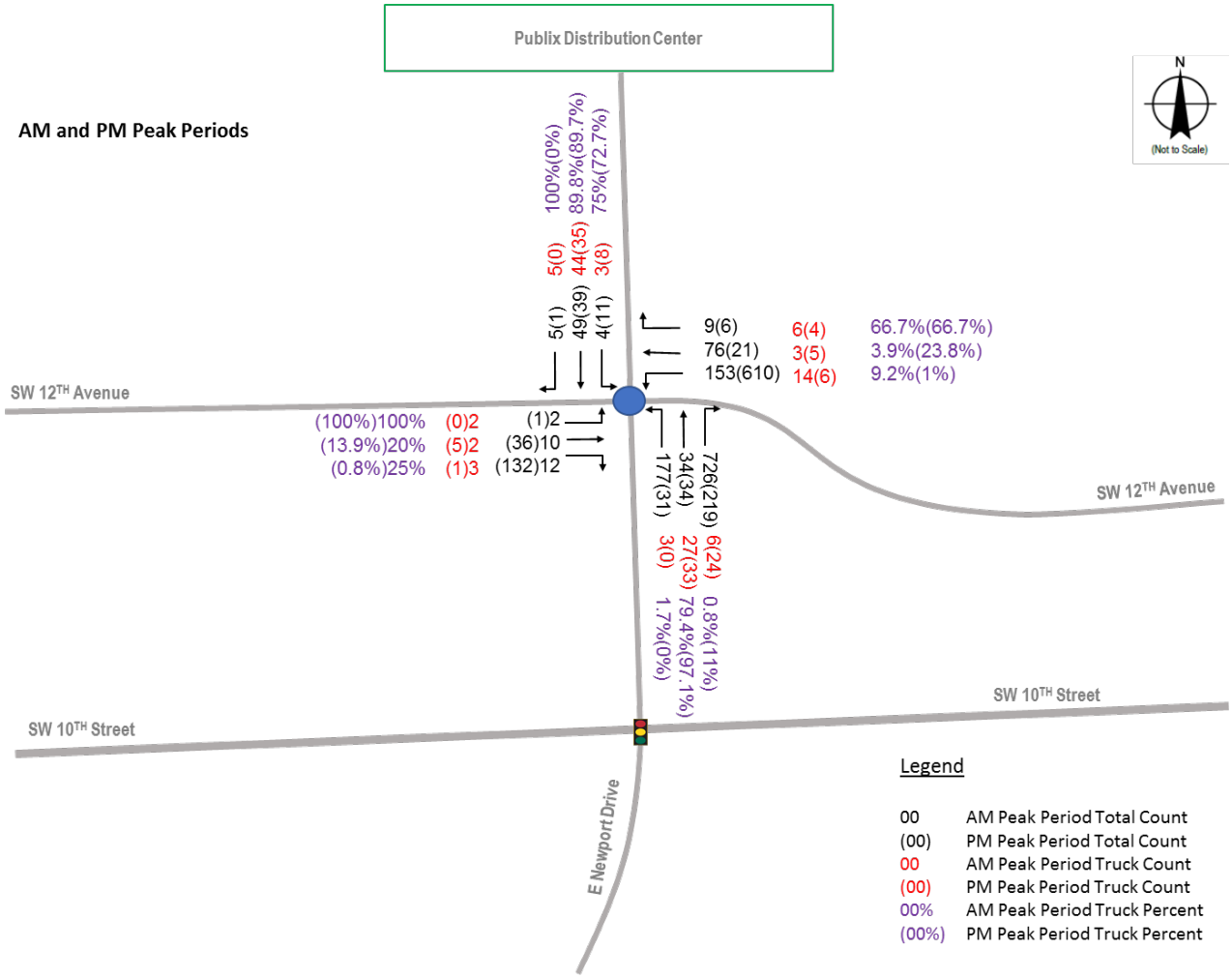


Figure 2.14
Publix Distribution Center – AM and PM Peak Periods



2.4 PEAK PERIOD TRAFFIC

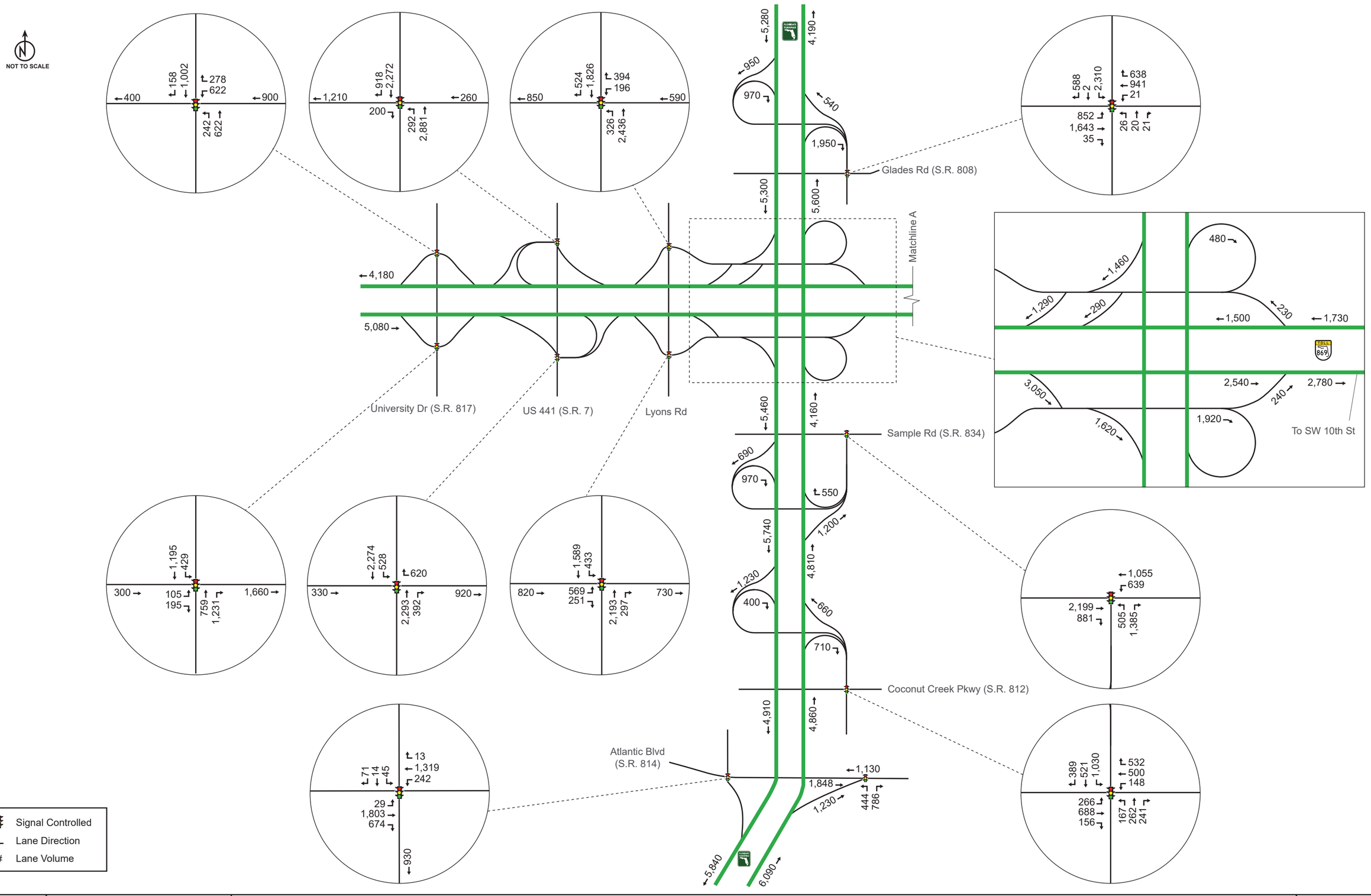
As described in **Section 2.2.1**, peak period turning movement counts were conducted at intersections in the study area and were adjusted. For each intersection, the highest overall volume hour in the AM peak and PM peak periods were used and seasonal factors applied. The volumes were then balanced between the intersections using the SW 10th Street/Powerline Road intersection as the control point. The most common peak hours on SW 10th Street are:

- AM Peak = 7:30 AM – 8:30 AM
- PM Peak = 5:00 PM – 6:00 PM

Figures 2.15 through **2.20** depict AM peak hour and PM peak hour volumes.

Figures 2.21 through **2.23** depict existing lane geometry for the corridor.

NOT TO SCALE



FDOT	SW 10th Street PD&E Study Project Traffic Forecast Memorandum	**Sawgrass Expressway (S.R. 869) and Florida's Turnpike (S.R. 91) - Existing (2016) AM Peak Hour Volumes**	**Figure 2.15**

NOT TO SCALE

Matchline A

To SR 869

West Dr

Quiet Waters Driveway North

Quiet Waters Driveway South

Driveway

Quiet Waters Business Park Driveway

East Dr

SW 12th Ave

I-95

SW Natura Park Blvd

SW 10th St

FAU Research Park Rd

Waterways Blvd

Independence Dr

SW 30th Ave

SW 28th Ave

SW 24th Ave

Driveway

Driveway

E Newport Center Dr

SW 11th St

American Way

Powerline Rd (S.R. 845)

The Lakes at Deerfield Beach Driveway

Horizon Club Driveway

S Military Trl

Signal Controlled

Stop Controlled

Lane Direction

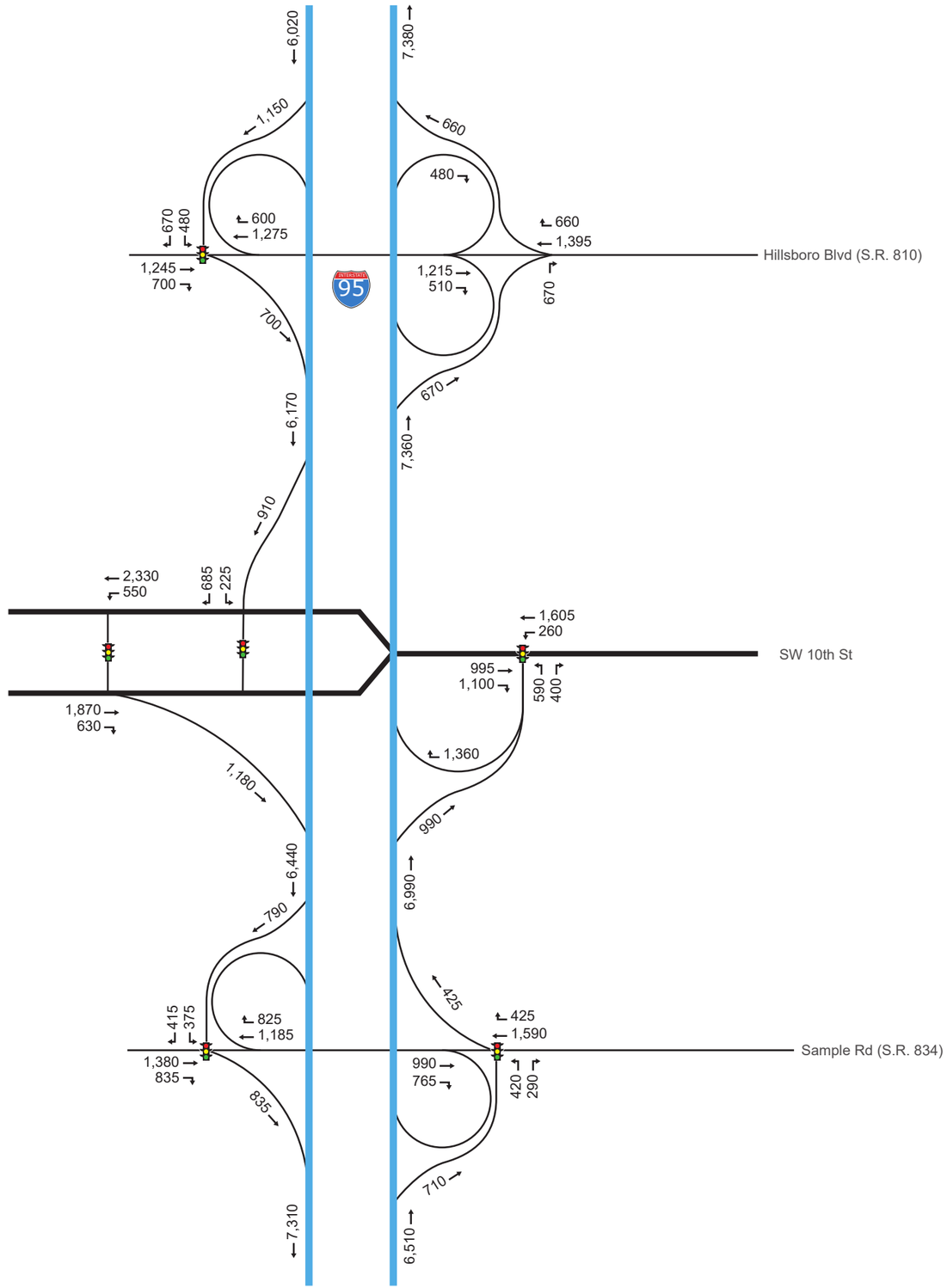
Lane Volume

SW 10th Street - Existing (2016) AM Peak Hour Volumes

Figure 2.16

Florida's Turnpike

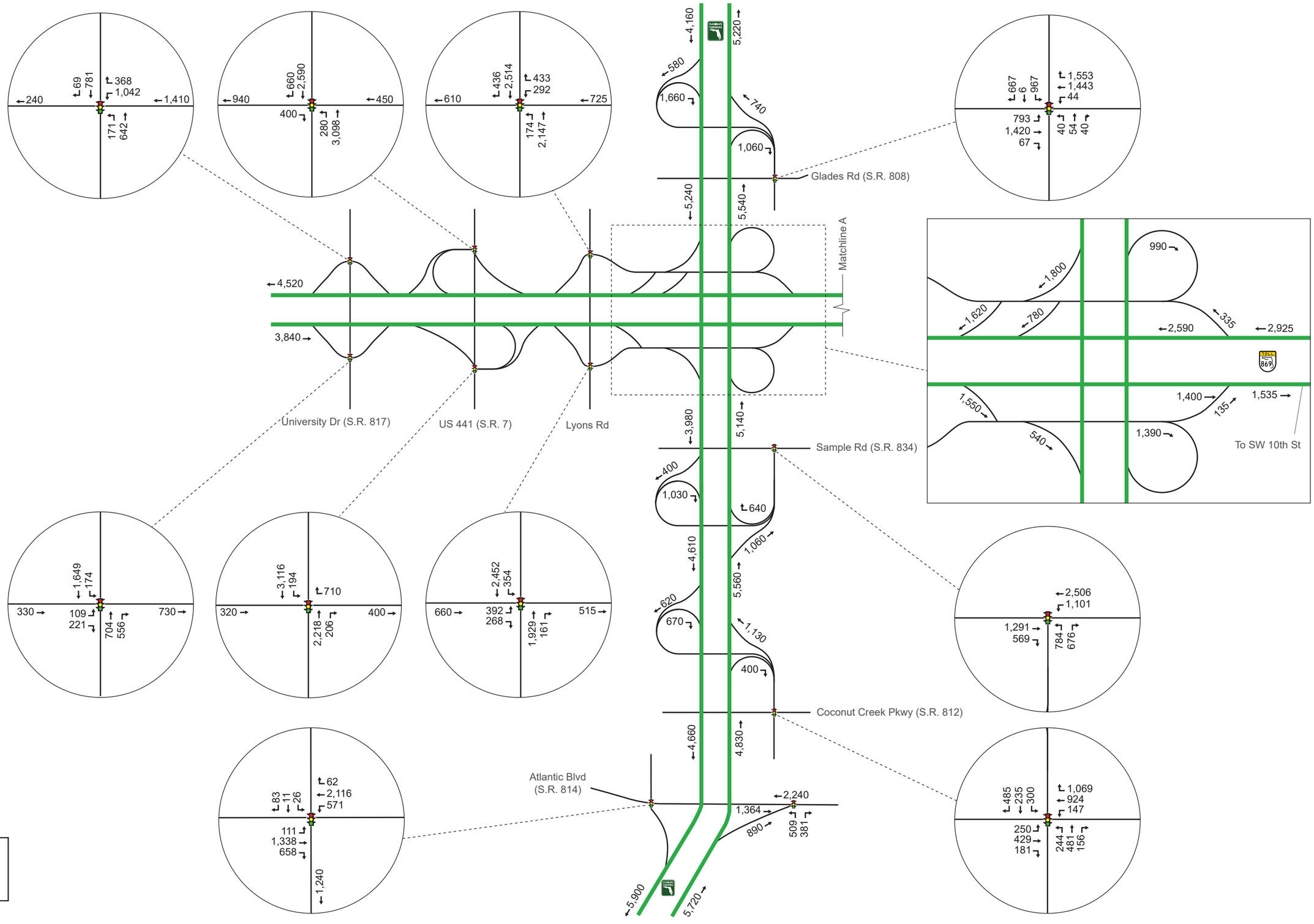
NOT TO SCALE



I-95 (S.R. 9) - Existing (2016) AM Peak Hour Volumes

Figure 2.17

NOT TO SCALE



FDOT	SW 10th Street PD&E Study Project Traffic Forecast Memorandum	**Sawgrass Expressway (S.R. 869) and Florida's Turnpike (S.R. 91) - Existing (2016) PM Peak Hour Volumes**	**Figure 2.18**

NOT TO SCALE

West Dr

Quiet Waters Driveway North

Quiet Waters Driveway South

Driveway

Quiet Waters Business Park Driveway

To SR 869

Matchline A

Waterways Blvd

Independence Dr

SW 30th Ave

SW 28th Ave

SW 24th Ave

Driveway

East Dr

SW 12th Ave

E Newport Center Dr

SW 11th St

American Way

Powerline Rd (S.R. 845)

The Lakes at Deerfield Beach Driveway

Horizon Club Driveway

S Military Trl

I-95

SW Natura Park Blvd

SW 10th St

FAU Research Park Rd

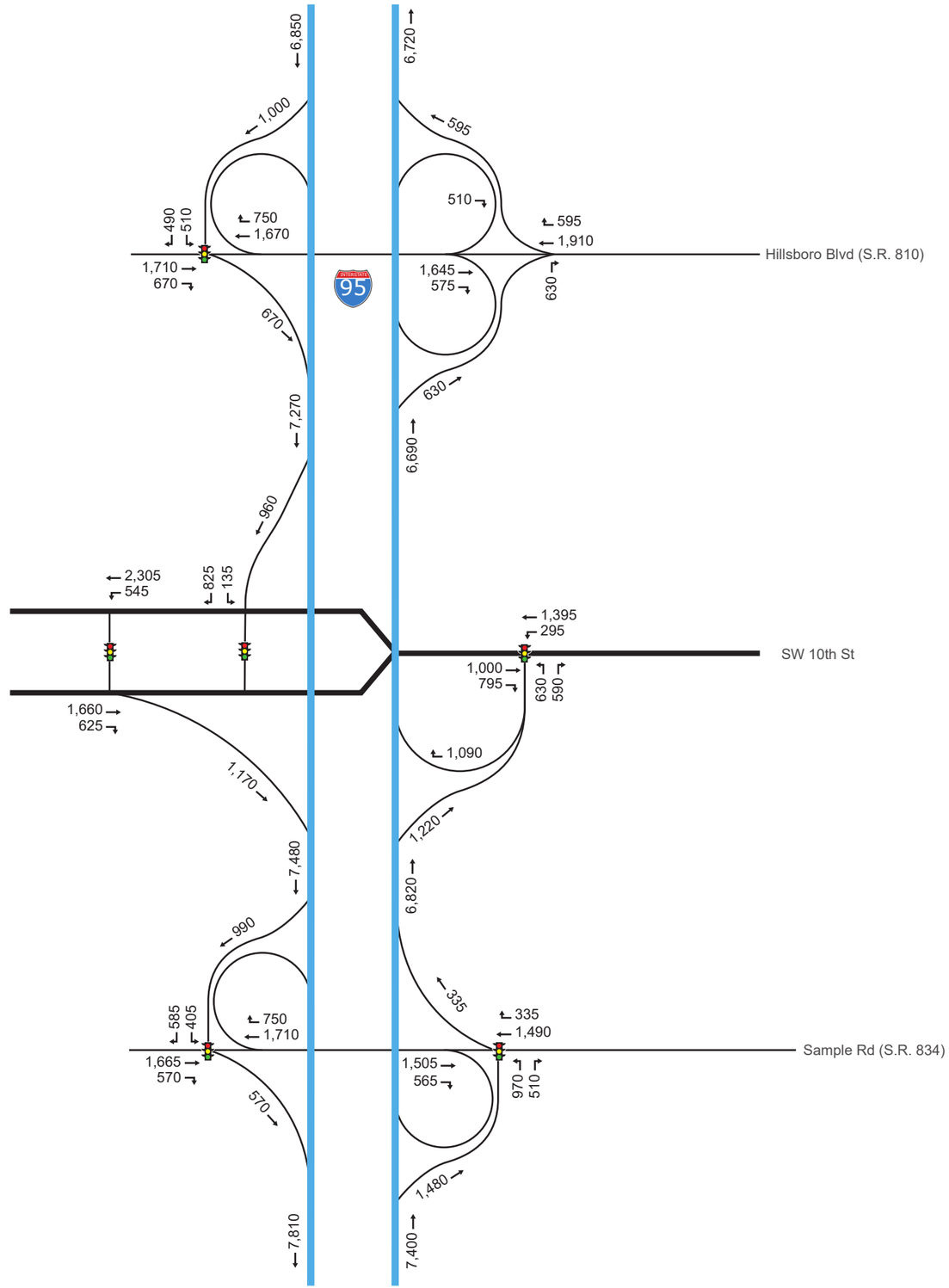
Signal Controlled
Stop Controlled
← Lane Direction
Lane Volume

SW 10th Street PD&E Study
Project Traffic Forecast Memorandum

SW 10th Street - Existing (2016) PM Peak Hour Volumes

Figure 2.19

NOT TO SCALE



Signal Controlled
← Lane Direction
Lane Volume

SW 10th Street PD&E Study
Project Traffic Forecast Memorandum

I-95 (S.R. 9) - Existing (2016) PM Peak Hour Volumes

Figure 2.20

NOT TO SCALE

TOLL 869

University Dr (S.R. 817)

US 441 (S.R. 7)

Lyons Rd

Glades Rd (S.R. 808)

Matchline A

Sample Rd (S.R. 834)

Coconut Creek Pkwy

Atlantic Blvd (S.R. 814)

Signal Controlled

Stop Controlled

Lane Direction

FDOT

SW 10th Street PD&E Study
Project Traffic Forecast Memorandum

Sawgrass Expressway (S.R. 869) and Florida's Turnpike Mainline (S.R. 91) - Existing Lane Geometry

Figure 2.21

NOT TO SCALE

West Dr

Quiet Waters
Driveway North

Quiet Waters
Driveway South

Driveway F

Quiet Waters
Business Park
Driveway

Matchline B

Matchline A

Waterways Blvd

Independence Dr

SW 30th Ave

SW 28th Ave

SW 24th Ave

West Driveway

SW 11th St

American Way

Powerline Rd (S.R. 845)

Signal Controlled
Stop Controlled
Lane Direction

NOT TO SCALE

Matchline B

East Dr

SW 12th Ave

Hillsboro Blvd (S.R. 810)

SW Natura Park Blvd

SW 10th St

FAU Research Park Blvd

East Driveway

West

E Newport Center Dr

The Lakes at Deerfield Beach Driveway East

Horizon Club Driveway

Sample Rd (S.R. 834)

S Military Trl

Signal Controlled

Stop Controlled

Lane Direction

3.1 INTERSECTION ANALYSIS

The focus of the existing operational analysis is the roadway capacity and intersection analysis. The traffic operations analysis for the roadway segments are based on *2010 Highway Capacity Manual* (HCM) methodologies. As noted earlier, SW 10th Street exceeds the four-lane LOS D capacity on a daily basis and LOS E capacity during the peak periods.

Intersections were analyzed using Synchro software (Version 9.2, Build 914, Revision 6). The analysis was performed with existing turning movement volumes, intersection lane configurations, and existing signal timing plans, as of September 2016.

The results of the existing unsignalized intersection analysis on SW 10th Street and its cross streets are provided in **Table 3.1**. Results show unacceptable operations at four unsignalized intersections along SW 10th Street.

Table 3.1
Existing 2016 SW 10th Street Unsignalized Peak Hour Intersection Analysis Results

Main Roadway	Cross Street	LOS (Delay)	
		AM	PM
SW 10th Street	Industrial Park	A (7.8)	F (347.9)
	SW 30th Avenue	F (165.7)	F (372.4)
	SW 24th Avenue	F (120.4)	F (114.2)
	Driveway east of SW 24th Avenue	A (2.9)	F (197.6)
	Driveway west of South Military Trail	A (1.6)	A (2.0)
South Military Trail	East Drive	A (0.7)	A (0.6)
	Lakes at Deerfield	A (1.2)	A (1.0)
	Horizon Club	A (2.4)	D (29.3)
Newport Center Drive	SW 12th Avenue	A (4.2)	B (11.0)
Powerline Road (S.R. 845)	Quiet Waters North	A (0.1)	A (0.4)
	Quiet Waters South	A (0.4)	A (0.1)
	American Way	A (0.9)	A (0.5)

Notes: **F (##.#)** = Level of Service (LOS) E or F, reflecting unacceptable/failing operations
Delay is in seconds/vehicle

The signalized intersection analysis of the Sawgrass Expressway, SW 10th Street, Florida's Turnpike, and I-95 is summarized in **Tables 3.2** through **3.9**. Results for signalized intersections along SW 10th Street indicate that the Powerline Road, South Military Trail, and I-95 northbound ramps intersections operate at or over capacity (LOS E or LOS F) in both peak hours.

The Synchro analysis is provided in **Appendix B**.

Table 3.2
Existing 2016 Sawgrass Expressway Interchange Ramp Signalized Intersection Analysis Results – AM Peak Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	AM Movement/Approach LOS (Delay)												Intersection AM LOS (Delay)
				Eastbound			Westbound			Northbound			Southbound			
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Lyons Road	Sawgrass Expressway Westbound Ramps	LOS (Delay)	Movement				C (31.0)		E (75.8)	F (128.9)	A (8.2)			B (20.0)	B (18.0)	C (25.1)
			Approach				E (61.5)			C (21.8)			B (19.5)			
		Volume to Capacity ratio	Movement				0.24		0.97	1.13	0.79			0.61	0.39	
		Queue Length 95th (feet)	Movement				89		#428	m#370	189			295	58	
	Sawgrass Expressway Eastbound Ramps	LOS (Delay)	Movement	D (37.2)		D (37.1)					C (23.9)	B (16.6)	F (326.0)	A (4.2)		D (44.4)
			Approach	D (37.2)							C (23.1)		E (75.4)			
		Volume to Capacity ratio	Movement	0.69		0.63					0.79	0.29	1.57	0.5		
		Queue Length 95th (feet)	Movement	253		191					419	104	#626	78		
U.S. 441 (S.R. 7)	Sawgrass Expressway Westbound Ramps	LOS (Delay)	Movement							D (53.5)	A (0.2)			A (4.3)	B (13.9)	A (6.7.6)
			Approach							A (6.1)			A (7.2)			
		Volume to Capacity ratio	Movement							0.73	0.48			0.61	0.85	
		Queue Length 95th (feet)	Movement							189	0			m398	m1073	
	Sawgrass Expressway Eastbound Ramps	LOS (Delay)	Movement								B (18.9)	A (0.0)	E (71.7)	A (0.1)		B (15.0)
			Approach							B (16.0)			B (14.0)			
		Volume to Capacity ratio	Movement								0.65	0.28	0.81	0.37		
		Queue Length 95th (feet)	Movement								m712	m0	303	0		
University Drive (S.R. 81)	Sawgrass Expressway Westbound Ramps	LOS (Delay)	Movement				C (34.1)		A (0.4)	D (36.1)	A (7.7)			C (22.9)	A (0.1)	B (19.5)
			Approach				C (22.9)			B (15.6)			B (19.7)			
		Volume to Capacity ratio	Movement				0.78		0.24	0.71	0.33			0.71	0.11	
		Queue Length 95th (feet)	Movement				#319		0	207	132			374	0	
	Sawgrass Expressway Eastbound Ramps	LOS (Delay)	Movement	D (37.1)		A (0.2)					B (10.2)	A (6.5)	C (20.0)	A (1.9)		A (8.0)
			Approach	B (14.0)							A (7.9)		A (6.6)			
		Volume to Capacity ratio	Movement	0.38		0.17					0.39	0.86	0.73	0.47		
		Queue Length 95th (feet)	Movement	63		0					200	0	246	142		

Synchro 9.2.914.6 Results
LOS Notes: Delay is in sec/veh Level of Service E reflecting at capacity operations Level of Service F reflecting over capacity operations
Queue Notes: ~: Volume exceeds capacity, queue is theoretically infinite #: 95th percentile volume exceeds capacity m: Upstream metering is in effect

Table 3.3
Existing 2016 Sawgrass Expressway Interchange Ramp Signalized Intersection Analysis Results – PM Peak Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	PM Movement/Approach LOS (Delay)												Intersection PM LOS (Delay)
				Eastbound			Westbound			Northbound			Southbound			
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Lyons Road	Sawgrass Expressway Westbound Ramps	LOS (Delay)	Movement				C (32.0)		F (129.8)	D (53.4)	A (7.3)			C (23.1)	B (17.3)	C (27.0)
			Approach				F (93.9)			B (10.7)			C (22.1)			
		Volume to Capacity ratio	Movement				0.36		1.15	0.72	0.69			0.81	0.44	
		Queue Length 95th (feet)	Movement				128		#474	m168	157			503	117	
	Sawgrass Expressway Eastbound Ramps	LOS (Delay)	Movement	C (33.6)		D (37.7)					C (21.3)	B (14.9)	F (281.5)	A (8.4)		D (36.4)
			Approach	D (35.3)						C (20.7)			D (48.1)			
		Volume to Capacity ratio	Movement	0.51		0.65					0.67	0.15	1.48	0.79		
		Queue Length 95th (feet)	Movement	176		206					337	46	#480	164		
U.S. 441 (S.R. 7)	Sawgrass Expressway Westbound Ramps	LOS (Delay)	Movement							E (58.8)	A (0.3)			A (7.5)	A (7.0)	A (6.5)
			Approach							A (6.3)			A (7.4)			
		Volume to Capacity ratio	Movement							0.7	0.49			0.66	0.55	
		Queue Length 95th (feet)	Movement							223	0			264	m131	
	Sawgrass Expressway Eastbound Ramps	LOS (Delay)	Movement								A (4.3)	A (0.2)	E (78.1)	A (0.3)		A (7.5)
			Approach							A (3.9)			A (5.3)			
		Volume to Capacity ratio	Movement								0.54	0.15	0.63	0.52		
		Queue Length 95th (feet)	Movement								281	0	156	0		
University Drive (S.R. 81)	Sawgrass Expressway Westbound Ramps	LOS (Delay)	Movement				D (44.4)		A (0.5)	C (30.8)	A (8.4)			C (21.7)	A (0.1)	C (23.4)
			Approach				C (31.6)			B (13.5)			B (19.8)			
		Volume to Capacity ratio	Movement				0.97		0.3	0.64	0.35			0.7	0.06	
		Queue Length 95th (feet)	Movement				#573		0	117	177			250	0	
	Sawgrass Expressway Eastbound Ramps	LOS (Delay)	Movement	C (47.8)		A (0.2)					A (7.5)	A (0.6)	A (5.7)	A (3.7)		A (4.9)
			Approach	B (10.6)						A (4.7)			A (3.9)			
		Volume to Capacity ratio	Movement	0.3		0.16					0.37	0.36	0.37	0.65		
		Queue Length 95th (feet)	Movement	62		0					155	0	m11	m371		

Synchro 9.2.914.6 Results
LOS Notes: Delay is in sec/veh Level of Service E reflecting at capacity operations Level of Service F reflecting over capacity operations
Queue Notes: ~: Volume exceeds capacity, queue is theoretically infinite #: 95th percentile volume exceeds capacity m: Upstream metering is in effect

Table 3.4
Existing 2016 SW 10th Street Signalized Intersection Analysis Results – AM Peak Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	AM Movement/Approach LOS (Delay)												Intersection AM LOS (Delay)
				Eastbound			Westbound			Northbound			Southbound			
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
SW 10th Street	Waterways Boulevard	LOS (Delay)	Movement		B (18.5)	A (5.8)	D (35.9)	A (4.7)		D (46.0)		A (3.4)				B (13.8)
			Approach	B (18.4)			A (6.1)			B (13.9)						
		Volume to Capacity ratio	Movement		0.9	0.01	0.47	0.43		0.66		0.23				
		Queue Length 95th (feet)	Movement		#790	8	112	193		114		22				
	Independence Drive	LOS (Delay)	Movement		A (8.1)	A (0.4)	C (28.8)	A (4.3)		D (41.0)		D (39.8)				A (7.4)
			Approach	A (8.1)			A (4.6)			D (40.2)						
		Volume to Capacity ratio	Movement		0.9	0.01	0.13	0.43		0.3		0.04				
		Queue Length 95th (feet)	Movement		#243	m0	m7	376		45		37				
	South Powerline Road (S.R. 845)	LOS (Delay)	Movement	**F (82.8)**	**E (68.2)**	C (30.6)	**F (101.4)**	**E (79.8)**	**F (83.9)**	**F (83.0)**	**E (77.6)**	**E (57.4)**	**E (75.2)**	**F (140.5)**	**F (190.9)**	**F (88.0)**
			Approach	**E (67.2)**			**F (83.8)**			**E (74.7)**			**F (143.0)**			
		Volume to Capacity ratio	Movement	0.96	1.03	0.39	0.95	0.83	0.35	0.73	0.94	0.53	0.65	1.12	0.25	
		Queue Length 95th (feet)	Movement	#602	#1163	253	m#263	582	m247	211	#591	299	161	#765	227	
	SW 28th Avenue	LOS (Delay)	Movement		D (38.1)	A (8.6)	D (45.0)	A (6.2)		**F (130.3)**		**E (77.1)**				C (29.2)
			Approach	D (37.7)			A (6.4)			**F (111.7)**						
		Volume to Capacity ratio	Movement		0.89	0.02	0.14	0.54		0.91		0.1				
		Queue Length 95th (feet)	Movement		m1380	m10	m4	278		#285		64				
	South Military Trail	LOS (Delay)	Movement	**F (95.1)**	D (51.2)	**E (58.7)**	**F (195.1)**	D (53.4)	C (34.7)	**F (81.3)**	**F (88.5)**	**F (241.7)**	**F (151.0)**	**E (57.5)**	D (52.9)	**F (85.7)**
			Approach	**E (56.4)**			**E (72.9)**			**F (146.1)**			**F (89.7)**			
		Volume to Capacity ratio	Movement	0.84	0.94	0.06	1.18	0.86	0.3	0.58	0.95	1.35	1.09	0.58	0.33	
		Queue Length 95th (feet)	Movement	m217	933	m11	#325	842	184	140	#626	#1025	#427	381	196	
	East Newport Center Drive	LOS (Delay)	Movement	**E (71.9)**	C (23.8)		**F (174.3)**	B (10.8)	B (13.4)	**E (75.0)**	**E (74.9)**	**E (72.8)**	**E (75.2)**	**E (74.5)**	**E (72.6)**	C (32.5)
			Approach	C (28.0)			C (33.6)			**E (73.6)**			**E (73.4)**			
		Volume to Capacity ratio	Movement	0.96	0.76		1.17	0.51	0.21	0.39	0.38	0.06	0.38	0.33	0.06	
		Queue Length 95th (feet)	Movement	#363	711		#621	314	37	73	72	5	58	58	0	
	I-95 Southbound On-ramp	LOS (Delay)	Movement		C (34.3)	A (0.6)	**E (65.8)**	A (0.2)								B (18.8)
			Approach	C (25.8)			B (12.8)									
		Volume to Capacity ratio	Movement		0.71	0.42	0.87	0.48								
		Queue Length 95th (feet)	Movement		541	0	m471	m0								

Table 3.4 (continued)
Existing 2016 SW 10th Street Signalized Intersection Analysis Results – AM Peak Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	AM Movement/Approach LOS (Delay)												Intersection AM LOS (Delay)
				Eastbound			Westbound			Northbound			Southbound			
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
SW 10th Street	I-95 Southbound Off-ramp	LOS (Delay)	Movement		A (3.4)			A (4.6)					**F (156.9)**		**F (191.3)**	D (35.1)
			Approach	A (3.4)			A (4.6)						**F (173.8)**			
		Volume to Capacity ratio	Movement		0.58			0.54					1.17		1.25	
		Queue Length 95th (feet)	Movement		5			m77					#795		#846	
	I-95 Northbound Ramps	LOS (Delay)	Movement		C (25.3)	A (2.5)	**F (224.5)**	C (25.5)		**F (100.7)**		**F (138.0)**				D (48.2)
			Approach	B (13.4)			D (53.3)			**F (112.3)**						
		Volume to Capacity ratio	Movement		0.54	0.75	1.3	0.7		1.02		1.08				
		Queue Length 95th (feet)	Movement		m348	m1066	m#548	m294		#546		#650				
	FAU Research Park Boulevard	LOS (Delay)	Movement	B (14.2)	B (15.8)		A (10.0)	B (17.3)	B (12.3)	**F (169.9)**	**E (65.0)**	**E (63.0)**	**F (106.5)**	**E (77.2)**	**F (83.1)**	D (38.1)
			Approach	B (15.6)			B (16.7)			**F (112.7)**			**F (89.7)**			
		Volume to Capacity ratio	Movement	0.55	0.41		0.3	0.48	0.05	1.13	0.32	0.07	0.95	0.72	0.76	
		Queue Length 95th (feet)	Movement	m136	m361		49	396	14	#355	99	58	#306	229	237	
Powerline Road (S.R. 845)	West Drive	LOS (Delay)	Movement	**F (92.7)**	**E (79.9)**		**F (88.0)**		**F (86.1)**		C (30.5)	**E (66.3)**	C (23.6)	A (7.8)		C (23.5)
			Approach	**F (85.0)**			**F (86.9)**			C (31.5)			A (8.1)			
		Volume to Capacity ratio	Movement	0.64	0.07		0.28		0.01		0.8	0.04	0.4	0.64		
		Queue Length 95th (feet)	Movement	138	63		38		0		1430	m9	21	550		

Synchro 9.2.914.6 Results
LOS Notes: Delay is in sec/veh Level of Service E reflecting at capacity operations Level of Service F reflecting over capacity operations
Queue Notes: ~: Volume exceeds capacity, queue is theoretically infinite #: 95th percentile volume exceeds capacity m: Upstream metering is in effect

Table 3.5
Existing 2016 SW 10th Street Signalized Intersection Analysis Results – PM Peak Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	PM Movement/Approach LOS (Delay)												Intersection PM LOS (Delay)
				Eastbound			Westbound			Northbound			Southbound			
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
SW 10th Street	Waterways Boulevard	LOS (Delay)	Movement		B (12.0)	A (8.2)	E (56.2)	A (6.3)		D (47.9)		A (1.8)				B (11.6)
			Approach	B (11.9)			B (11.4)			B (11.9)						
		Volume to Capacity ratio	Movement		0.53	0.04	0.89	0.71		0.57		0.11				
		Queue Length 95th (ft)	Movement		241	17	#341	617		60		10				
	Independence Drive	LOS (Delay)	Movement		A (8.9)	A (3.6)	A (3.5)	B (10.9)		D (40.5)		D (40.3)				B (10.5)
			Approach	A (8.8)			B (10.7)			D (40.3)						
		Volume to Capacity ratio	Movement		0.47	0.02	0.25	0.8		0.1		0.04				
		Queue Length 95th (ft)	Movement		343	m6	m9	m499		21		38				
	S Powerline Road (S.R. 845)	LOS (Delay)	Movement	F (115.4)	D (36.3)	E (73.3)	E (76.9)	F (125.7)	D (48.5)	F (155.7)	E (68.9)	D (52.9)	F (90.1)	E (74.7)	F (339.4)	F (109.9)
			Approach	E (56.5)			F (114.8)			F (88.6)			F (171.6)			
		Volume to Capacity ratio	Movement	0.96	0.61	0.14	0.72	1.13	0.25	1.12	0.88	0.37	0.71	0.9	1.58	
		Queue Length 95th (ft)	Movement	#352	368	108	m207	#1272	m200	#497	#597	214	205	501	#1297	
	SW 28th Avenue	LOS (Delay)	Movement		A (6.9)	A (0.7)	A (4.6)	A (6.3)		F (92.1)		F (82.2)				A (8.0)
			Approach	A (6.6)			A (6.3)			F (87.4)						
		Volume to Capacity ratio	Movement		0.61	0.06	0.26	0.8		0.59		0.03				
		Queue Length 95th (ft)	Movement		218	1	m13	m1126		102		45				
	S Military Trail	LOS (Delay)	Movement	F (194.0)	D (39.2)	A (8.7)	E (75.0)	F (173.4)	D (52.7)	F (101.5)	E (68.3)	E (60.1)	F (81.2)	E (67.2)	E (66.8)	F (96.2)
			Approach	E (61.7)			F (142.7)			E (70.3)			E (69.2)			
		Volume to Capacity ratio	Movement	1.15	0.7	0.1	0.78	1.25	0.48	0.78	0.75	0.43	0.66	0.83	0.76	
		Queue Length 95th (ft)	Movement	#338	578	3	m281	#1770	m386	#144	434	230	182	556	483	
	E Newport Center Drive	LOS (Delay)	Movement	E (62.5)	B (15.1)		F (95.4)	B (19.1)	A (4.5)	F (100.4)	F (102.1)	F (127.0)	E (64.9)	E (64.9)	F (111.7)	D (38.3)
			Approach	B (16.6)			C (21.7)			F (115.1)			F (101.9)			
		Volume to Capacity ratio	Movement	0.62	0.6		0.64	0.79	0.05	0.83	0.84	0.94	0.19	0.19	0.93	
		Queue Length 95th (ft)	Movement	m86	159		175	557	5	#323	#332	#409	94	94	#458	
	I-95 Southbound On-ramp	LOS (Delay)	Movement		D (36.5)	A (0.6)	D (40.6)	A (0.2)								B (16.3)
			Approach	C (26.7)			A (8.0)									
		Volume to Capacity ratio	Movement		0.78	0.42	0.67	0.48								
		Queue Length 95th (ft)	Movement		283	m52	m422	m0								
	I-95 Southbound Off-ramp	LOS (Delay)	Movement		A (6.0)			A (7.8)					F (183.6)		F (209.5)	D (46.1)
			Approach	A (6.0)			A (7.8)						F (196.3)			
		Volume to Capacity ratio	Movement		0.53			0.51					1.22		1.28	
		Queue Length 95th (ft)	Movement		45			m88					#958		#1001	

Table 3.5 (continued)
Existing 2016 SW 10th Street Signalized Intersection Analysis Results – PM Peak Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	PM Movement/Approach LOS (Delay)												Intersection PM LOS (Delay)
				Eastbound			Westbound			Northbound			Southbound			
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
SW 10th Street	I-95 Northbound Ramps	LOS (Delay)	Movement		D (43.2)	A (1.1)	E (70.6)	C (30.2)		F (265.1)		F (316.4)				F (95.7)
			Approach	C (24.6)			D (37.3)			F (281.2)						
		Volume to Capacity ratio	Movement		0.63	0.53	0.75	0.57		1.41		1.5				
		Queue Length 95th (ft)	Movement		m508	m512	472	479		#858		#980				
	FAU Research Park Boulevard	LOS (Delay)	Movement	B (13.3)	B (18.5)		B (17.8)	B (18.9)	B (14.9)	F (325.6)	E (60.2)	E (58.8)	E (75.9)	F (88.2)	F (82.2)	D (49.0)
			Approach	B (17.8)			B (18.5)			F (206.7)			F (82.1)			
		Volume to Capacity ratio	Movement	0.61	0.49		0.66	0.41	0.07	1.52	0.22	0.06	0.82	0.86	0.8	
		Queue Length 95th (ft)	Movement	117	381		112	297	30	#456	85	48	#307	#343	#326	
Powerline Road (S.R. 845)	West Drive	LOS (Delay)	Movement	F (87.2)	F (86.5)		F (93.0)		E (75.2)		A (9.6)	A (0.1)	C (26.5)	B (10.5)		B (14.5)
			Approach	F (86.6)			F (84.6)			A (9.0)			B (11.3)			
		Volume to Capacity ratio	Movement	0.12	0.02		0.73		0.07		0.74	0.09	0.56	0.69		
		Queue Length 95th (ft)	Movement	21	0		204		62		m480	m0	85	710		

Synchro 9.2.914.6 Results
LOS Notes: Delay is in sec/veh Level of Service E reflecting at capacity operations Level of Service F reflecting over capacity operations
Queue Notes: ~: Volume exceeds capacity, queue is theoretically infinite #: 95th percentile volume exceeds capacity m: Upstream metering is in effect

Table 3.6
Existing 2016 Florida's Turnpike Interchange Ramp Signalized Intersection Analysis Results – AM Peak Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	AM Movement/Approach LOS (Delay)												Intersection AM LOS (Delay)
				Eastbound			Westbound			Northbound			Southbound			
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Glades Road (S.R. 808)	Turnpike Ramps	LOS (Delay)	Movement	F (106.1)	E (60.1)	C (34.1)	D (54.8)	F (242.1)	A (0.8)	F (84.6)	F (84.6)	F (82.5)	F (195.9)	F (193.6)	A (0.8)	F (123.6)
			Approach	E (74.9)			F (145.2)			F (83.9)			F (155.7)			
		Volume to Capacity ratio	Movement	0.98	0.91	0.02	0.23	1.42	0.44	0.33	0.34	0.01	1.3	1.28	0.4	
		Queue Length 95th (feet)	Movement	#627	#900	m0	m57	#624	271	67	69	0	#1487	#1610	0	
Sample Road (S.R. 834)	Turnpike Ramps	LOS (Delay)	Movement		D (54.7)	A (1.8)	E (55.7)	A (2.9)		E (76.9)		B (13.5)				C (32.8)
			Approach	D (39.9)			C (22.5)			C (30.5)						
		Volume to Capacity ratio	Movement		0.96	0.6	0.86	0.3		0.81		0.95				
		Queue Length 95th (feet)	Movement		#1242	0	351	113		374		#66				
Coconut Creek Parkway (Dr. MLK Boulevard) (S.R. 812)	Turnpike Ramps	LOS (Delay)	Movement	F (112.1)	F (82.2)	F (113.8)	E (79.7)	D (50.7)	E (59.8)	E (78.6)	F (223.6)	E (62.3)	E (72.3)	E (59.9)	D (39.7)	E (76.9)
			Approach	F (93.7)			E (58.4)			F (131.9)			E (59.1)			
		Volume to Capacity ratio	Movement	0.99	0.86	0.17	0.72	0.73	0.36	0.74	1.28	0.24	0.93	0.91	0.42	
		Queue Length 95th (feet)	Movement	#498	#574	163	m212	302	161	#290	#615	109	#860	#732	220	
Atlantic Boulevard (S.R. 814)	Turnpike North Ramps	LOS (Delay)	Movement		C (27.5)			B (18.5)		D (50.7)		E (60.4)				C (32.4)
			Approach	C (27.5)			B (18.5)			D (53.8)						
		Volume to Capacity ratio	Movement		0.69			0.42		0.8		0.85				
		Queue Length 95th (feet)	Movement		750			254		#579		#719				
	Turnpike South Ramps	LOS (Delay)	Movement	E (74.4)	B (11.1)	B (12.1)	E (64.3)	A (4.6)	A (3.9)					E (71.7)	E (68.4)	B (14.4)
			Approach	B (12.1)			B (13.4)						E (69.9)			
		Volume to Capacity ratio	Movement	0.36	0.55	0.53	0.68	0.37	0.01					0.48	0.05	
		Queue Length 95th (feet)	Movement	70	446	248	m180	172	m0					118	10	

Synchro 9.2.914.6 Results
LOS Notes: Delay is in sec/veh Level of Service E reflecting at capacity operations Level of Service F reflecting over capacity operations
Queue Notes: ~: Volume exceeds capacity, queue is theoretically infinite #: 95th percentile volume exceeds capacity m: Upstream metering is in effect

Table 3.7
Existing 2016 Florida's Turnpike Interchange Ramp Signalized Intersection Analysis Results – PM Peak Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	AM Movement/Approach LOS (Delay)												Intersection AM LOS (Delay)
				Eastbound			Westbound			Northbound			Southbound			
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Glades Road (S.R. 808)	Turnpike Ramps	LOS (Delay)	Movement	F (622.9)	B (10.6)	A (0.1)	F (80.4)	C (20.6)	F (119.4)	E (77.7)	F (82.9)	E (75.2)	F (210.2)	F (222.5)	A (1.0)	F (132.0)
			Approach	F (218.9)			E (71.1)			E (79.2)			F (127.5)			
		Volume to Capacity ratio	Movement	2.16	0.52	0.05	0.43	0.58	1.06	0.39	0.58	0.03	1.28	1.28	0.46	
		Queue Length 95th (feet)	Movement	#927	176	m0	m0	m235	m#1220	90	128	0	#665	#760	0	
Sample Road (S.R. 834)	Turnpike Ramps	LOS (Delay)	Movement		C (31.0)	A (0.6)	F (120.0)	B (12.7)		F (96.1)		A (1.0)				D (40.1)
			Approach	C (21.9)			D (44.7)			D (52.1)						
		Volume to Capacity ratio	Movement		0.77	0.39	1.11	0.77		1.02		0.46				
		Queue Length 95th (feet)	Movement		271	17	m#715	m315		#600		0				
Coconut Creek Parkway (Dr. MLK Boulevard) (S.R. 812)	Turnpike Ramps	LOS (Delay)	Movement	F (107.6)	D (38.7)	D (47.4)	D (54.8)	E (65.8)	F (462.8)	D (52.6)	F (168.2)	D (46.7)	F (90.6)	E (79.2)	F (111.4)	F (165.4)
			Approach	E (60.1)			F (260.2)			F (117.0)			F (96.5)			
		Volume to Capacity ratio	Movement	0.92	0.38	0.13	0.7	0.92	1.83	0.56	1.2	0.22	0.8	0.8	0.93	
		Queue Length 95th (feet)	Movement	#452	227	70	m144	m498	m#1215	329	#956	118	#346	#282	#434	
Atlantic Boulevard (S.R. 814)	Turnpike North Ramps	LOS (Delay)	Movement		A (1.6)			B (16.4)		E (61.7)		E (74.9)				C (21.2)
			Approach	A (1.6)			B (16.4)			E (65.8)						
		Volume to Capacity ratio	Movement		0.44			0.72		0.8		0.85				
		Queue Length 95th (feet)	Movement		20			678		380		436				
	Turnpike South Ramps	LOS (Delay)	Movement	E (74.9)	B (17.7)	B (19.7)	E (62.7)	A (9.0)	A (7.7)					E (72.3)	E (70.3)	C (21.6)
			Approach	C (21.4)			B (19.6)						E (70.9)			
		Volume to Capacity ratio	Movement	0.66	0.48	0.52	0.77	0.63	0.04					0.36	0.06	
		Queue Length 95th (feet)	Movement	193	376	205	392	430	m9					84	27	

Synchro 9.2.914.6 Results
LOS Notes: Delay is in sec/veh Level of Service E reflecting at capacity operations Level of Service F reflecting over capacity operations
Queue Notes: ~: Volume exceeds capacity, queue is theoretically infinite #: 95th percentile volume exceeds capacity m: Upstream metering is in effect

Table 3.8
Existing 2016 I-95 Interchange Ramp Signalized Intersection Analysis Results – AM Peak Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	AM Movement/Approach LOS (Delay)												Intersection AM LOS (Delay)
				Eastbound			Westbound			Northbound			Southbound			
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Hillsboro Boulevard (S.R. 810)	SW 12th Avenue	LOS (Delay)	Movement	F (128.2)	C (23.2)		F (80.4)	B (14.4)	A (7.8)	E (66.2)	F (81.7)	D (51.8)	E (74.4)	E (74.4)	D (53.8)	C (32.8)
			Approach	D (35.3)			C (22.6)			E (65.8)			E (67.7)			
		Volume to Capacity ratio	Movement	1.02	0.67		0.7	0.44	0.39	0.25	0.74	0.22	0.27	0.28	0.01	
		Queue Length 95th (feet)	Movement	#479	665		m198	310	m163	72	218	101	55	57	0	
	I-95 Southbound Ramps	LOS (Delay)	Movement		A (0.1)	A (0.8)		B (14.2)					F (80.4)		E (59.4)	C (22.2)
			Approach	A (0.3)			B (14.2)						E (68.2)			
		Volume to Capacity ratio	Movement		0.26	0.47		0.41					0.95		0.84	
		Queue Length 95th (feet)	Movement		0	71		m261					#733		480	
	SW Natura Boulevard	LOS (Delay)	Movement	F (144.5)	C (20.3)	B (14.1)	E (72.8)	C (22.7)		F (451.5)	E (67.8)	E (64.6)	E (67.3)	E (71.9)		E (72.4)
			Approach	D (37.8)			C (24.7)			F (317.7)			E (70.4)			
		Volume to Capacity ratio	Movement	1.1	0.49	0.06	0.53	0.6		1.82	0.45	0.08	0.23	0.1		
		Queue Length 95th (feet)	Movement	m#505	456	m21	130	494		#769	152	68	60	57		
Sample Road (S.R. 834)	NW 5th Terrace	LOS (Delay)	Movement		B (15.0)		E (74.2)	A (1.6)		E (79.8)		E (64.4)				B (16.1)
			Approach	B (15.0)			A (7.5)			E (71.1)						
		Volume to Capacity ratio	Movement		0.45		0.66	0.41		0.73		0.12				
		Queue Length 95th (feet)	Movement		329		191	33		213		74				
	NW 5th Avenue	LOS (Delay)	Movement	E (59.1)	A (1.7)			B (18.6)	C (32.8)				E (71.4)		E (64.3)	B (15.9)
			Approach	A (4.0)			B (19.2)						E (68.6)			
		Volume to Capacity ratio	Movement	0.56	0.42			0.39	0.05				0.65		0.1	
		Queue Length 95th (feet)	Movement	155	46			362	43				169		68	
	I-95 Southbound Ramps	LOS (Delay)	Movement		A (9.4)	A (1.3)		A (9.6)					C (26.2)		C (29.1)	B (11.3)
			Approach	A (6.3)			A (9.6)						C (27.7)			
		Volume to Capacity ratio	Movement		0.37	0.56		0.4					0.48		0.65	
		Queue Length 95th (feet)	Movement		198	366		225					118		151	
	I-95 Northbound Ramps	LOS (Delay)	Movement		A (8.7)			A (6.1)	A (0.3)	C (29.4)		C (28.2)				B (10.5)
			Approach	A (8.7)			A (4.9)			C (28.9)						
		Volume to Capacity ratio	Movement		0.32			0.51	0.28	0.6		0.51				
		Queue Length 95th (feet)	Movement		191			100	m0	137		109				
	NE 3rd Avenue	LOS (Delay)	Movement	E (61.9)	B (19.7)		E (74.4)	D (36.9)		D (48.3)	E (56.3)	D (49.7)	D (51.6)	E (68.5)	F (95.8)	D (45.6)
			Approach	C (31.0)			D (37.7)			D (52.2)			F (84.1)			
		Volume to Capacity ratio	Movement	0.75	0.37		0.36	0.68		0.66	0.53	0.03	0.28	0.69	0.9	
		Queue Length 95th (feet)	Movement	256	308		70	621		211	268	0	91	277	#365	

Synchro 9.2.914.6 Results
LOS Notes: Delay is in sec/veh Level of Service E reflecting at capacity operations Level of Service F reflecting over capacity operations
Queue Notes: ~: Volume exceeds capacity, queue is theoretically infinite #: 95th percentile volume exceeds capacity m: Upstream metering is in effect

Table 3.9
Existing 2016 I-95 Interchange Ramp Signalized Intersection Analysis Results – PM Peak Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	AM Movement/Approach LOS (Delay)												Intersection
				Eastbound			Westbound			Northbound			Southbound			AM LOS (Delay)
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Hillsboro Boulevard (S.R. 810)	SW 12th Avenue	LOS (Delay)	Movement	E (71.1)	C (34.6)		F (89.2)	B (19.5)	A (1.7)	E (76.2)	E (66.8)	F (87.2)	F (84.2)	F (84.7)	E (63.1)	D (41.8)
			Approach	D (35.4)			C (25.9)			F (82.4)			E (76.1)			
		Volume to Capacity ratio	Movement	0.34	0.77		0.62	0.74	0.03	0.7	0.07	0.87	0.85	0.86	0.73	
		Queue Length 95th (feet)	Movement	86	772		173	824	m3	156	32	339	361	371	244	
	I-95 Southbound Ramps	LOS (Delay)	Movement		A (0.1)	A (0.6)		B (15.1)					E (71.1)		D (44.3)	B (16.6)
			Approach	A (0.3)			B (15.1)						E (58.0)			
		Volume to Capacity ratio	Movement		0.36	0.45		0.57					0.92		0.56	
		Queue Length 95th (feet)	Movement		0	0		m357					#738		312	
	SW Natura Boulevard	LOS (Delay)	Movement	E (71.8)	C (33.5)	B (19.7)	F (81.2)	D (35.1)		F (101.2)	D (51.9)	D (52.4)	D (51.9)	F (87.1)		D (42.5)
			Approach	C (33.3)			D (37.6)			F (85.3)			E (78.4)			
		Volume to Capacity ratio	Movement	0.54	0.81	0.25	0.71	0.81		0.99	0.03	0.07	0.33	0.84		
		Queue Length 95th (feet)	Movement	m126	#903	m157	197	#934		#384	27	53	124	294		
Sample Road (S.R. 834)	NW 5th Terrace	LOS (Delay)	Movement		B (17.2)		F (80.8)	A (0.8)		E (80.0)		E (67.2)				B (15.9)
			Approach	B (17.2)			A (9.1)			E (73.4)						
		Volume to Capacity ratio	Movement		0.5		0.81	0.49		0.68		0.07				
		Queue Length 95th (feet)	Movement		369		#369	26		171		60				
	NW 5th Avenue	LOS (Delay)	Movement	E (67.7)	A (1.4)			B (10.6)	C (20.4)				E (71.9)		E (67.4)	B (12.8)
			Approach	A (6.1)			B (11.6)						E (69.8)			
		Volume to Capacity ratio	Movement	0.8	0.41			0.51	0.15				0.58		0.09	
		Queue Length 95th (feet)	Movement	#296	34			264	m50				127		69	
	I-95 Southbound Ramps	LOS (Delay)	Movement		B (18.8)	A (0.6)		B (15.3)					C (24.7)		C (33.9)	B (17.8)
			Approach	B (14.2)			B (15.3)						C (30.1)			
		Volume to Capacity ratio	Movement		0.46	0.38		0.59					0.46		0.81	
		Queue Length 95th (feet)	Movement		404	34		m306					129		#228	
	I-95 Northbound Ramps	LOS (Delay)	Movement		C (22.6)			B (13.1)	A (0.2)	D (50.8)		C (25.3)				C (24.1)
			Approach	C (22.6)			B (10.7)			D (42.0)						
		Volume to Capacity ratio	Movement		0.57			0.56	0.22	0.98		0.64				
		Queue Length 95th (feet)	Movement		467			171	0	#392		189				
	NE 3rd Avenue	LOS (Delay)	Movement	E (66.1)	D (39.7)		E (73.3)	D (38.7)		D (52.0)	E (60.0)	D (47.1)	D (52.5)	E (75.0)	E (59.5)	D (47.5)
			Approach	D (45.1)			D (40.6)			E (55.5)			E (64.9)			
		Volume to Capacity ratio	Movement	0.79	0.67		0.56	0.68		0.72	0.7	0.05	0.25	0.78	0.37	
		Queue Length 95th (feet)	Movement	291	629		143	582		219	396	0	63	331	150	

Synchro 9.2.914.6 Results
LOS Notes: Delay is in sec/veh Level of Service E reflecting at capacity operations Level of Service F reflecting over capacity operations
Queue Notes: ~: Volume exceeds capacity, queue is theoretically infinite #: 95th percentile volume exceeds capacity m: Upstream metering is in effect

3.2 STUDY AREA OPERATIONS

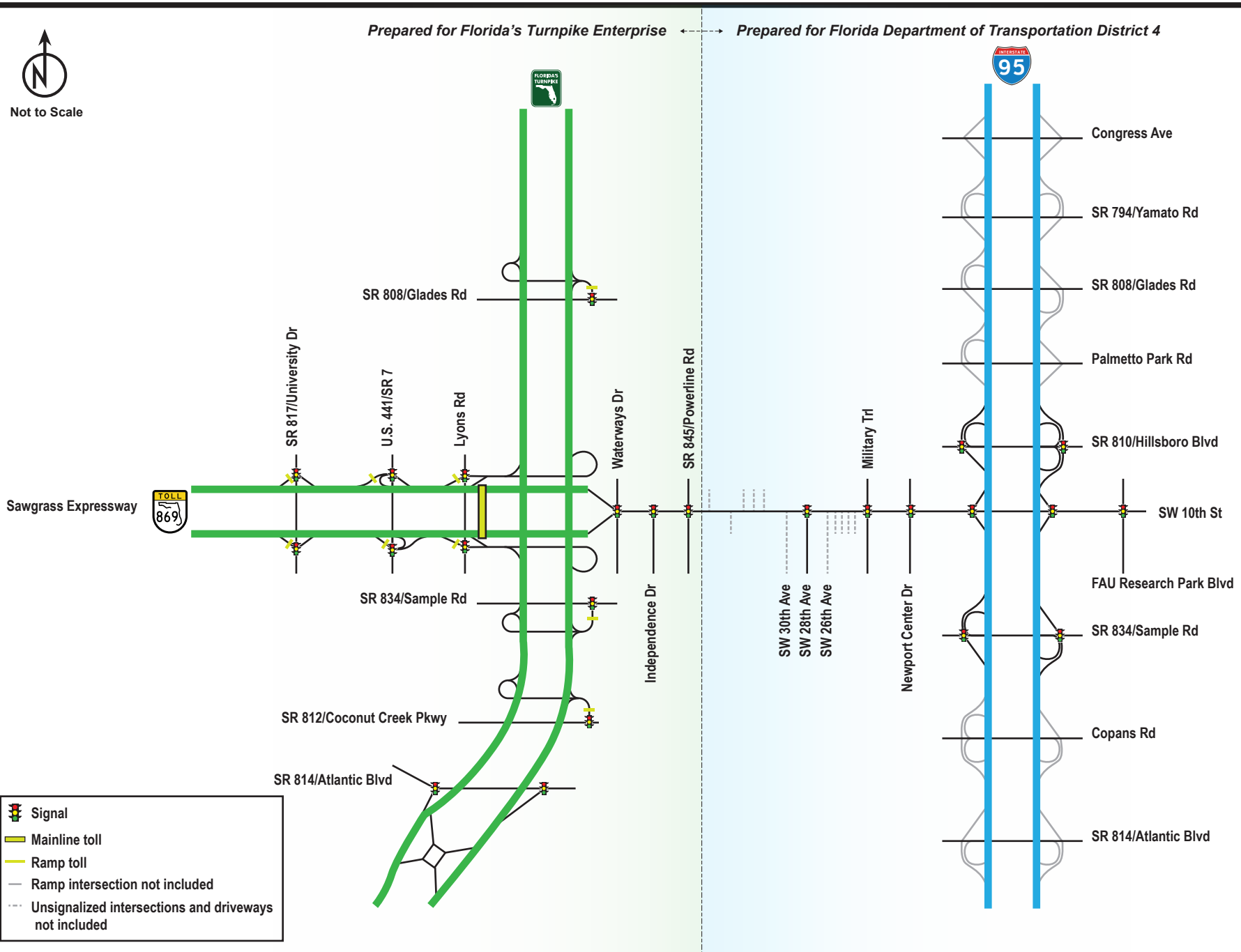
VISSIM microsimulation will be used to provide measures of effectiveness (MOEs) to compare improvement options for SW 10th Street. Therefore, an existing conditions VISSIM model of the study area is under development. The initial task includes reviewing the available data, models, and analysis results from the other recent studies.

FDOT District 4 has developed VISSIM models for I-95 as part of the 95 Express Phase 3 project. VISSIM models are also being developed by FTE for the Sawgrass Expressway and Turnpike Mainline. These models were merged into a new VISSIM file and the missing SW 10th Street roadways and I-95 network elements were added. The VISSIM model study area is shown on **Figure 3.1.**

Twenty-four signalized intersections have been coded for the existing conditions VISSIM model. The nine signalized intersections along SW 10th Street are:

- Independence Drive
- Powerline Road
- Waterways Drive
- South Military Trail
- SW 28th Avenue
- Newport Center Drive
- I-95 Southbound off-ramp
- I-95 Northbound off-ramp
- FAU Research Park Boulevard

The *Calibration Report* is provided in **Appendix C**.



FDOT

SW 10th Street PD&E Study
Project Traffic Forecast Memorandum

VISSIM Model Study Area

Figure 3.1

FLORIDA'S TURNPIKE

The project traffic forecasts for this study were developed through a multi-step process. With the need to estimate dynamically tolled express lane traffic for the Build scenario, the SW 10th Street study used two modeling tools:

- Travel demand model
- Express Lanes Time-of-Day Model

Forecasted AADT and EL hourly traffic were derived from these two models. This information was used to derive future year directional design hour traffic (DDHV). Model-generated origin-destination trip matrices also provided inputs to operational simulation models for the No-Build and Build scenarios.

For the travel demand modeling effort, the study used the FTE version of the Southeast Regional Planning Model (SERPM-FTE) 6.5.4, which has been used for various studies, including the I-95 Express Lanes Traffic and Revenue study and the Sawgrass Expressway Widening PD&E study. The SERPM covers a three-county region in Southeast Florida: Palm Beach, Broward, and Miami-Dade. SERPM-FTE includes model network enhancements such as the recoding of interchange configurations along the major freeway networks in Southeast Florida and updates to the future land use data to reflect the best known information at the time. The SERPM produces travel demand forecasts at a daily level and by three time periods: AM Peak (6:30 AM – 9:30 AM), PM Peak (3:30 PM – 6:30 PM), and off-peak (remainder of the day).

The ELToD model works in conjunction with the SERPM and is designed to take daily and peak period subarea trip tables and produce traffic estimates by hour, by direction, for both the general purpose lanes (GPLs) and ELs for each roadway segment. The model is considered state-of-the-practice for forecasting travel demand on Express Toll lanes in Florida.

4.1 MODEL VALIDATION

The model development for this project consisted of enhancing the local subarea by recoding intersection configurations, splitting Traffic Analysis Zones (TAZs), and adding local streets important to local circulation around the study corridor. As shown on **Figure 4.1**, the model subarea encompasses the area in three study corridors:

- Florida's Turnpike between Lake Worth Road and Atlantic Boulevard
- I-95 corridor between Congress Avenue and Atlantic Boulevard
- Sawgrass/SW 10th Street corridor between University Drive and Natura Boulevard

Within the subarea, the highway network coding was reviewed and corrected as needed using aerial imagery. The SERPM was validated to 2010 traffic conditions in an iterative fashion by first adjusting link speeds at the regional level using the Cube Analyst process at the subarea level.

Figure 4.1
Subarea Model Network

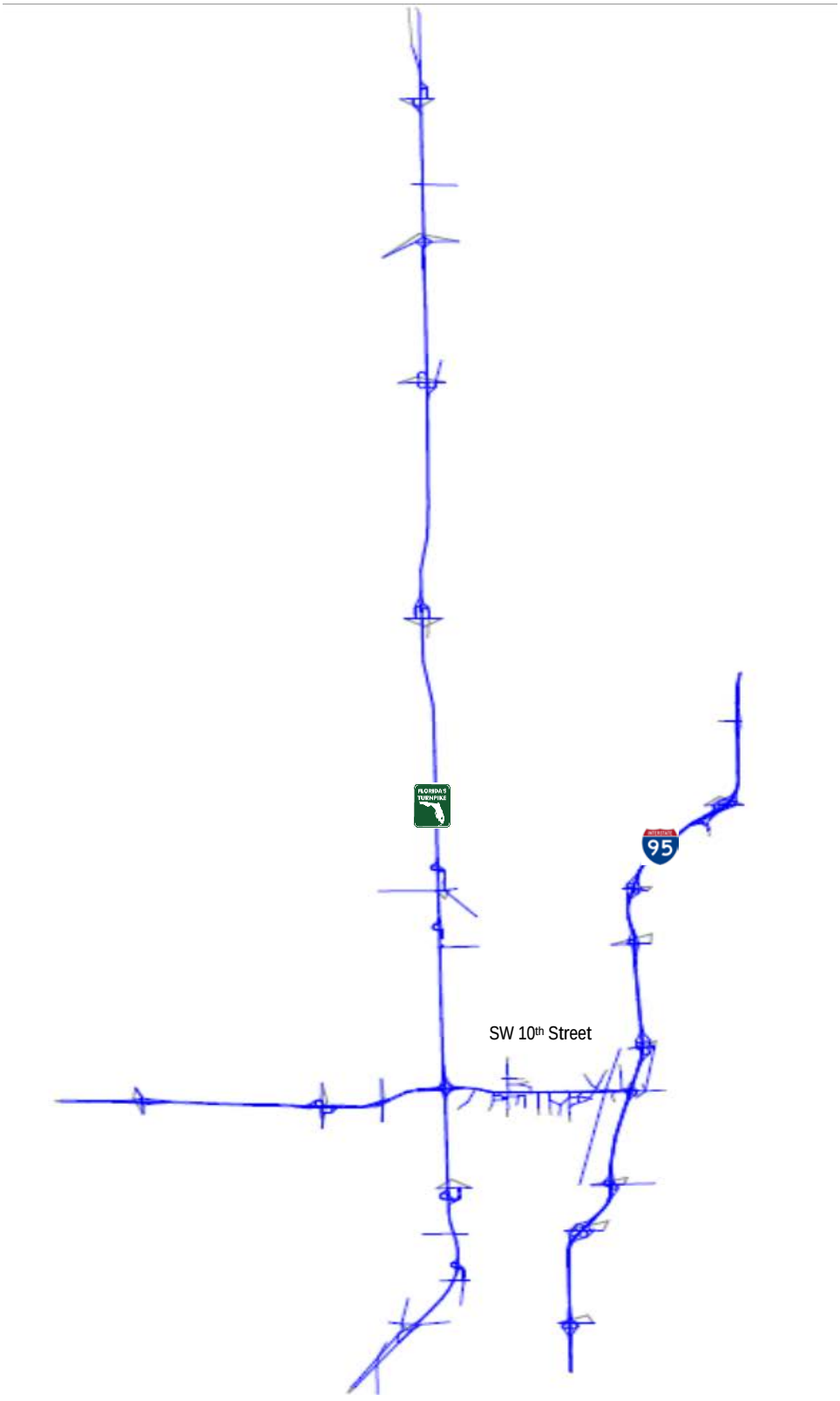


Table 4.1 shows the model performance statistics on a daily level by volume ranges for the three-county region. Since the focus of validation for this project was at the subarea level, the project team did not make significant changes to the model at the regional level. However, the overall volume-to-count (VC) ratio for the SERPM region is 1.0, indicating a good match. The VC ratios on the major roads (volume greater than 10,000), except for one category, are within 10 percent deviation, which is the acceptable range of variation for the project. Root mean square error (RMSE) statistics showed larger variations than acceptable ranges, but they were significantly improved at the subarea level using the Cube Analyst process as described below.

Table 4.1
RMSE and Volume-to-Count Ratio by Volume Range – Region

Volume Range	Acceptable RMSE Range	Region		
		Number of Links with Counts*	RMSE	VC Ratio
1 to 5,000	45 - 55%	938	123%	1.37
5,000 to 10,000	35 - 45%	1,423	58%	1.10
10,000 to 20,000	27 - 35%	2,080	39%	1.02
20,000 to 30,000	24 - 27%	946	30%	0.93
30,000 to 40,000	22 - 24%	172	28%	0.93
40,000 to 50,000	20 - 22%	60	31%	0.83
50,000 to 60,000	18 - 20%	35	27%	0.93
60,000 to 70,000	17 - 18%	24	27%	0.91
70,000 to 80,000	16 - 17%	83	19%	1.00
80,000 to 90,000	15 - 16%	29	21%	1.03
90,000 to 100,000	14 - 15%	22	20%	0.97
100,000 to 500,000	< 14 %	60	20%	0.93
Overall	**32 - 39%**	**5,872**	**41%**	**1.00**

*Represents one-way model links with traffic counts in the specified volume range

Table 4.2 shows VC ratio statistics on a daily level by facility type for the three-county region. All facility types are within the acceptable range of variations.

Table 4.2
Volume-to-Count Ratios by Facility Type

FT Group	Facility	Volume	Count	VC Ratio	Number of Links with Counts*
1	Freeways	21,125,619	21,441,016	0.99	294
2	Uninterrupted Roadways	2,051,326	1,980,656	1.04	209
4	Higher Speed Arterials	50,728,311	50,247,893	1.01	3,303
6	Lower Speed Arterials	9,616,288	9,659,005	1.00	1,183
7	Ramps	6,631,415	7,287,786	0.91	669
8	HOV	1,855,819	1,764,178	1.05	96
9	Toll Roads	4,134,121	4,108,326	1.01	118
Overall		**96,142,899**	**96,488,859**	**1.00**	**5,872**

*Represents one-way model links with traffic counts for the specified facility group

A Cube Analyst process was used at the subarea level to adjust the origin-destination matrices to obtain a better correlation between observed counts and model estimates. The Cube Analyst process is a matrix estimator that uses a seed origin-destination matrix along with link level traffic counts to develop an origin-destination matrix in an iterative fashion that corresponds to model-estimated volumes which closely match the provided link counts. The Cube Analyst process for this project consisted of the following steps:

- A subarea network consisting of only mainline and interchanges of study corridors (shown in **Figure 4.1**) was extracted from the regional model network.
- Using subarea assignment process in Cube, origin-destination matrices representing the subarea were extracted for three time periods, which were used as seed matrices in the Cube Analyst process.
- Within the Analyst step, three separate Analyst estimation processes were developed for the AM Peak Subarea Assignment, PM Peak Subarea Assignment, and Off-Peak Subarea Assignment, respectively.
- Traffic counts were processed for AM, PM, and Off-Peak periods for 2010 conditions and were coded on the appropriate links.
- An iterative feedback loop between highway assignment and Cube Analyst was performed until satisfactory RMSE and VC ratio statistics were obtained.
- Subarea-level and link-level validation statistics were evaluated.

- A reasonableness check, for selected origin-destination pair groups, between the adjusted origin-destination tables and observed Bluetooth origin-destination data was made and additional adjustments were applied manually to origin-destination tables and fed back to the Cube Analyst process.

Tables 4.3 through **4.5** provide RMSEs and VC ratios by volume ranges for the subarea for three time periods before and after Cube Analyst adjustments. The RMSE statistics, which signify the model estimate variation from observed counts, with Cube Analyst adjustments, are significantly improved for each volume range. These improved origin-destination tables were used in the project forecasting process.

The adjustments to origin-destination tables by the Cube Analyst process were calculated by subtracting the original subarea origin-destination table from the adjusted origin-destination table by time period. This adjustment (also known as validation Delta) was applied to the future year model estimated origin-destination tables. As large regional models such as SERPM are validated using the regional level statistics, they do not generally produce good results for specific corridor or links. Cube Analyst type adjustment to origin-destination tables and application of adjustments to future year model estimated origin-destination table is acceptable for project traffic forecasting models.

Table 4.3
RMSE and Volume-to-Count Ratio by Volume Range – Subarea – AM

Volume Range	Acceptable RMSE Range	Number of Links with Counts	Subarea before Analyst		Subarea after Analyst	
			RMSE	VC Ratio	RMSE	VC Ratio
1 to 5,000	45 - 55%	198	36%	0.98	10%	0.98
5,000 to 10,000	35 - 45%	29	27%	0.85	8%	0.94
10,000 to 20,000	27 - 35%	26	16%	1.07	5%	0.95
Overall	**32 - 39%**	**253**	**30%**	**0.98**	**9%**	**0.96**

Table 4.4
RMSE and Volume-to-Count Ratio by Volume Range – Subarea – PM

Volume Range	Acceptable RMSE Range	Number of Links with Counts	Subarea before Analyst		Subarea after Analyst	
			RMSE	VC Ratio	RMSE	VC Ratio
1 to 5,000	45 - 55%	181	41%	1.08	15%	0.95
5,000 to 10,000	35 - 45%	48	27%	1.04	6%	0.98
10,000 to 20,000	27 - 35%	24	7%	1.03	4%	0.96
Overall	**32 - 39%**	**253**	**27%**	**1.05**	**9%**	**0.96**

Table 4.5
RMSE and Volume-to-Count Ratio by Volume Range – Subarea – Off-Peak

Volume Range	Acceptable RMSE Range	Number of Links with Counts	Subarea before Analyst		Subarea after Analyst	
			RMSE	VC Ratio	RMSE	VC Ratio
1 to 5,000	45 - 55%	77	50%	1.12	21%	0.95
5,000 to 10,000	35 - 45%	59	43%	1.18	7%	0.99
10,000 to 20,000	27 - 35%	91	20%	0.96	8%	0.97
20,000 to 30,000	24 - 27%	8	14%	1.11	6%	0.97
30,000 to 40,000	22 - 24%	0	NA	NA	NA	NA
40,000 to 50,000	20 - 22%	15	13%	1.10	2%	0.98
50,000 to 60,000	18 - 20%	2	8%	1.05	2%	0.99
60,000 to 70,000	17 - 18%	1	NA	0.89	NA	0.97
Overall	**32 - 39%**	**253**	**25%**	**1.05**	**7%**	**0.97**

Tables 4.6 through **4.8** provide VC ratio statistics by Roadway Type (Facility Type) at the subarea level before and after using the Cube Analyst process. Numbers highlighted in pink denote a ratio with 10 percent or larger difference from 1.0. For example, in **Table 4.6**, there are four facility groups in the subarea before Analyst with VC ratios higher than 1.1 or lower than 0.9. The Analyst process showed improved VC ratios in all four ranges while the VC ratio worsened for one FT group (HOV).

Table 4.6
Volume-to-Count Ratios by Facility Type – Subarea – AM Peak

FT Group	Facility	Count	Number of Links with Counts	Subarea before Analyst		Subarea after Analyst	
				Volume	VC Ratio	Volume	VC Ratio
1	Freeways	258,425	18	293,165	1.13	248,505	0.96
4	Higher Speed Arterials	323,406	80	320,232	0.99	322,996	1.00
6	Lower Speed Arterials	13,551	18	16,322	1.20	14,709	1.09
7	Ramps	168,543	91	146,813	0.87	159,085	0.94
8	HOV	67,360	18	61,520	0.91	60,534	0.90
9	Toll Roads	190,168	28	165,415	0.87	176,367	0.93
Overall		**1,021,453**	**253**	**1,003,467**	**0.98**	**982,196**	**0.96**

#.## 1.0 < VC ratio < 0.90

Table 4.7
Volume-to-Count Ratios by Facility Type – Subarea – PM Peak

FT Group	Facility	Count	Number of Links with Counts	Subarea before Analyst		Subarea after Analyst	
				Volume	VC Ratio	Volume	VC Ratio
1	Freeways	294,080	18	308,931	1.05	283,911	0.97
4	Higher Speed Arterials	368,201	80	377,595	1.03	369,168	1.00
6	Lower Speed Arterials	14,612	18	20,770	1.42	15,431	1.06
7	Ramps	179,054	91	175,114	0.98	170,717	0.95
8	HOV	58,490	18	75,696	1.29	41,437	0.71
9	Toll Roads	199,783	28	211,965	1.06	187,449	0.94
Overall		**1,114,220**	**253**	**1,170,071**	**1.05**	**1,068,113**	**0.96**

#.## 1.0 < VC ratio < 0.90

Table 4.8
Volume-to-Count Ratios by Facility Type – Subarea – Off-Peak

FT Group	Facility	Count	Number of Links with Counts	Subarea before Analyst		Subarea after Analyst	
				Volume	VC Ratio	Volume	VC Ratio
1	Freeways	870,093	18	935,418	1.08	855,143	0.98
4	Higher Speed Arterials	971,055	80	1,019,198	1.05	977,913	1.01
6	Lower Speed Arterials	37,257	18	50,652	1.36	36,232	0.97
7	Ramps	479,906	91	478,129	1.00	458,773	0.96
8	HOV	251,863	18	227,625	0.90	229,916	0.91
9	Toll Roads	420,857	28	462,066	1.10	396,328	0.94
Overall		**3,031,031**	**253**	**3,173,088**	**1.05**	**2,954,305**	**0.97**

#.## 1.0 < VC ratio < 0.90

4.2 SOCIOECONOMIC DATA

Socioeconomic (SE) data are extremely important in producing accurate traffic forecasts, as future traffic demand is derived from these data. To provide reasonable traffic forecasts, the model must begin with up-to-date base year data. From this base year data, future year SE data and future traffic forecasts are then developed.

The SE data used in the SW 10th Street project are the culmination of a few studies conducted using the SERPM-FTE model over the last few years. These studies include the I-95 Phase 3 Traffic and Revenue Study and the recently completed Sawgrass Widening PD&E study. For each study, local land use data were collected, reviewed, and incorporated in the SERPM model TAZ database. The

process of developing SE data for the SW 10th Street project is briefly described in this section. A detailed description of this process is included in **Appendices D** and **E**. **Appendix D** includes the Land Use Assessment Report for the I-95 Phase 3 Traffic and Revenue study, while **Appendix E** includes a similar report for the Sawgrass Expressway Widening PD&E study.

The SW 10th Street project model, which was built upon the Sawgrass PD&E Model, includes the most recent SERPM 7 socioeconomic data (version 7.062). The important SE data variables, such as population, households, and employment data from SERPM 7, were converted to the SERPM 6.5.4 FTE format. Since the TAZ system of the SERPM 6.5.4 and SERPM 7 are different in many parts of the region, micro-analysis zone (MAZ) level data from SERPM 7 were aggregated into the SERPM 6.5.4 TAZ system using GIS tools.

The SE data development process included additional assessments to update the SE data after a review of existing land uses, findings from a review of the Bureau of Economic and Business Research (BEBR) data, and developments of regional impact (DRIs) and large sub-DRIs (residential and non-residential developments with either 120+ dwelling units or over 50,000 square feet of non-residential land use).

Existing Land Use

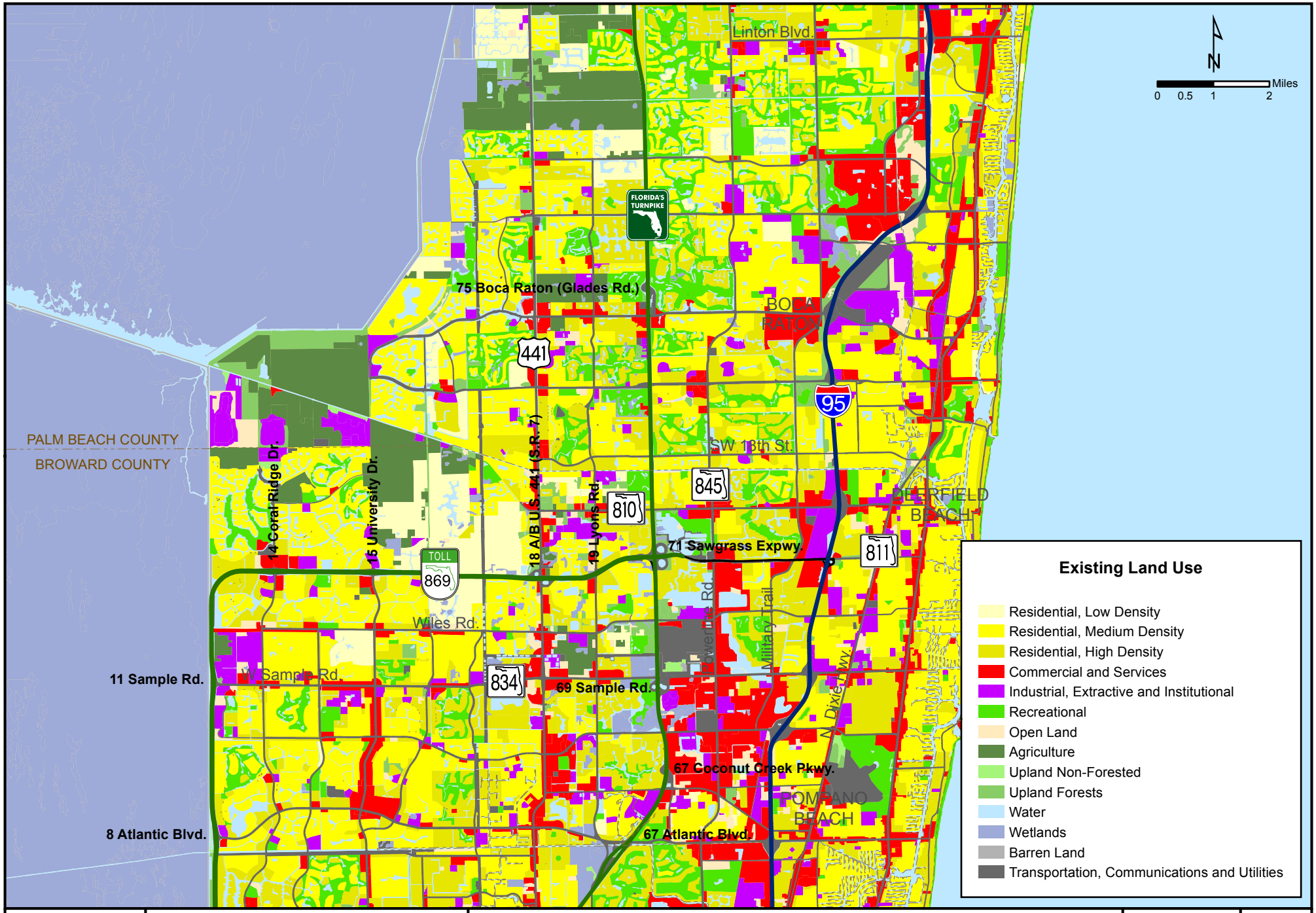
The existing land use around the SW 10th Street project corridor is depicted on **Figure 4.2**. This figure illustrates that the immediate vicinity of the SW 10th Street corridor, between the Turnpike and I-95, and areas to the east of I-95 are largely developed. There are not many large vacant tracts of land available for development in this region.

Developments of Regional Impacts (DRI) Data Collection Method

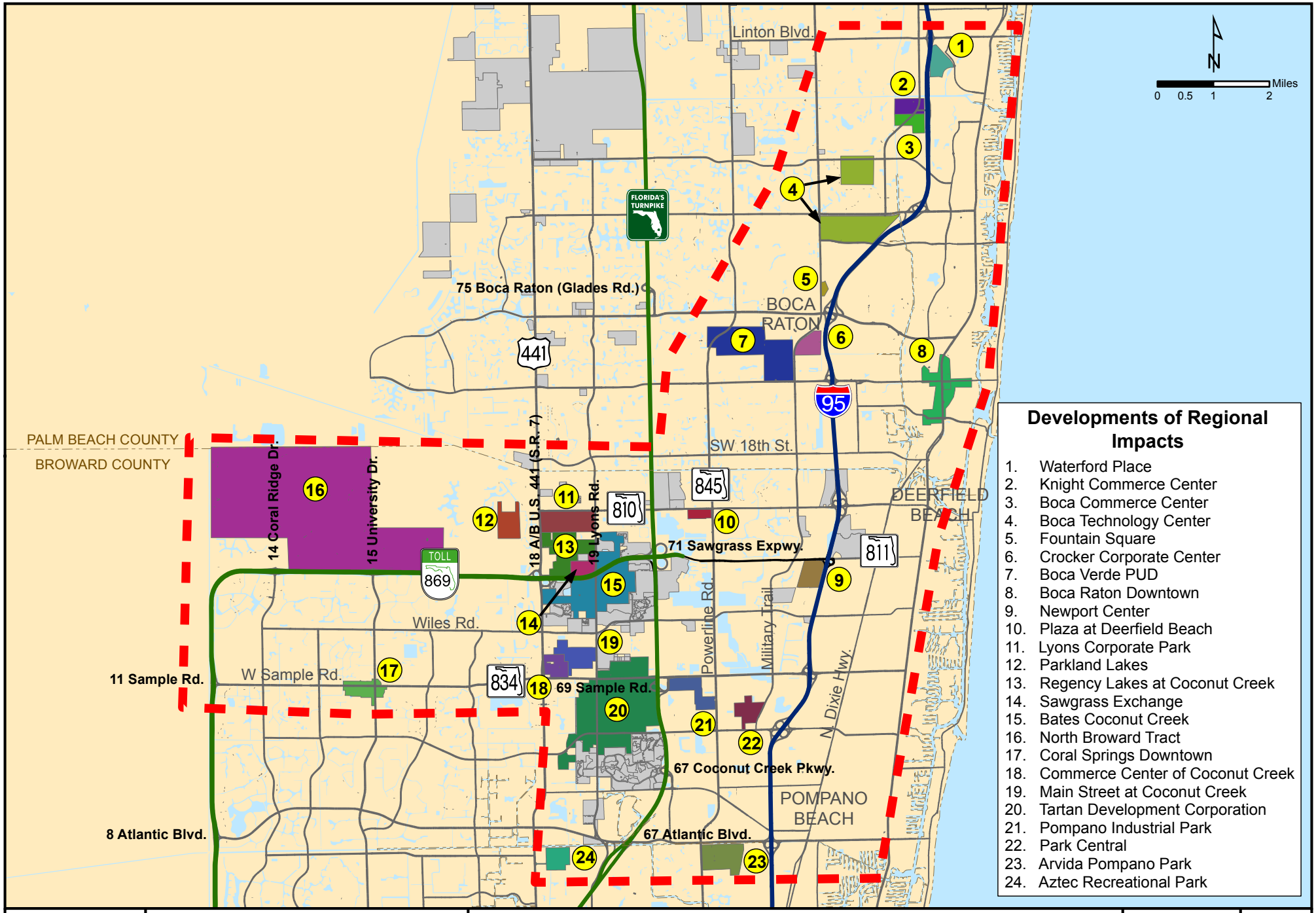
The land use data collection was performed in multiple steps. The available data were compiled and then additional inputs and clarifications from the regional planning staff and local government staff responsible for overseeing DRI/sub-DRI development were sought. This provided insight and understanding of the conditions associated with individual DRI projects and information on other development and local initiatives regarding future land use changes within the study area.

The data compiled and considered in the evaluation include DRI information provided by the two regional planning councils; Department of Economic Opportunity DRI records; Sub-DRI larger scale residential, non-residential, and mixed-use projects reported by the local jurisdiction (i.e., Planned Unit Developments [PUDs]); local college/university campus Master Plans and Redevelopment plans; and overlay districts potentially impacting future year development, such as Community Redevelopment Areas (CRAs), Transit Oriented Corridors (TOCs), Regional Activity Centers (RACs), and Local Activity Centers (LACs).

Figure 4.3 shows locations of DRIs that were evaluated along the I-95 and Sawgrass corridors that may impact traffic demand on the project corridor.



	SW 10th Street PD&E Study Project Traffic Forecast Memorandum	Existing Land Use	Figure 4.2



Developments of Regional Impacts

1. Waterford Place
2. Knight Commerce Center
3. Boca Commerce Center
4. Boca Technology Center
5. Fountain Square
6. Crocker Corporate Center
7. Boca Verde PUD
8. Boca Raton Downtown
9. Newport Center
10. Plaza at Deerfield Beach
11. Lyons Corporate Park
12. Parkland Lakes
13. Regency Lakes at Coconut Creek
14. Sawgrass Exchange
15. Bates Coconut Creek
16. North Broward Tract
17. Coral Springs Downtown
18. Commerce Center of Coconut Creek
19. Main Street at Coconut Creek
20. Tartan Development Corporation
21. Pompano Industrial Park
22. Park Central
23. Arvida Pompano Park
24. Aztec Recreational Park

	SW 10th Street PD&E Study Project Traffic Forecast Memorandum	Developments of Regional Impacts Locations	Figure 4.3

Socioeconomic Update Methodology

Considering data resources, local jurisdictional input, and aerial reconnaissance, a spreadsheet was developed summarizing each development, overall totals, and three model scenarios (2010, 2020, and 2040). Each development was identified by name, location/jurisdiction, relationship of the development location to the model TAZs structure, square footage by timing/phasing, land use type (e.g., residential, industrial, commercial, institutional), current development status, and projected population and employment.

Since the base year of the SW 10th Street project model is 2010, converted SERPM 7 SE data were checked for accuracy against several sources, including census data. DRI and Sub-DRI information collected was verified using aerial reconnaissance to confirm that actual built levels of the built-out DRIs were reasonable when compared to approved levels and development documentation. This approach provided the best available information for establishing base year conditions and input to future development forecasts.

Once DRI and other land use information was incorporated in the base year 2010, future year 2020 and 2040 socioeconomic TAZ-level data were adjusted to match the county-level control totals using BEBR medium projections. Zonal data with negative TAZ growth in population or employment between 2010 and 2020 and between 2020 and 2040 were further reviewed and resolved in an iterative fashion.

County-level Control Totals

Tables 4.9 and **4.10** provide a county-level population and employment forecasts comparison between the SW 10th Street project model (SERPM FTE) and SERPM 7. As expected, county-level totals compare well between these two datasets.

Table 4.9
Population Comparison between SERPM FTE and SERPM 7

County/Source	SERPM FTE		SERPM 7.062	
	2010	2040	2010	2040
Palm Beach	1,307,000	1,689,000	1,327,000	1,712,000
Broward	1,731,000	1,992,000	1,748,000	1,994,000
Miami- Dade	2,476,000	3,289,000	2,516,000	3,308,000
Total	**5,514,000**	**6,970,000**	**5,591,000**	**7,014,000**

Table 4.10
Employment Comparison between SERPM FTE and SERPM 7

County/Source	SERPM FTE		SERPM 7.062	
	2010	2040	2010	2040
Palm Beach	638,000	860,000	638,000	851,000
Broward	863,000	956,000	871,000	922,000
Miami- Dade	1,125,000	1,670,000	1,125,000	1,637,000
Total	**2,626,000**	**3,486,000**	**2,634,000**	**3,410,000**

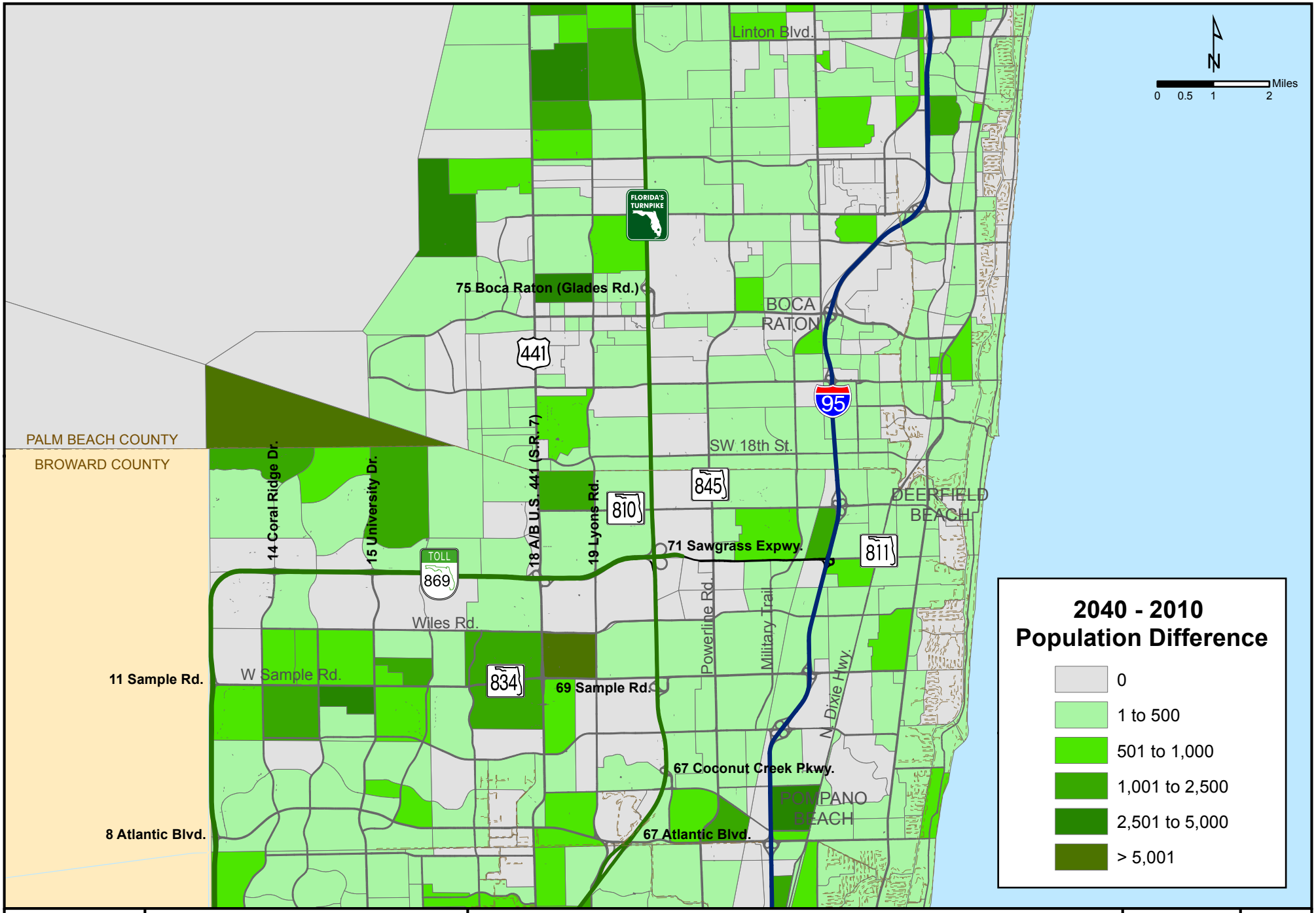
Population and Employment Growth around Study Corridor

Once the TAZ-level socioeconomic database was updated, reviewed, and finalized, future SE data forecasts were compared with the base year 2010 to understand the change in population and employment around the project corridors. **Figure 4.4** depicts the population growth between 2010 and 2040. **Figure 4.5** provides a comparison of employment data at the TAZ level between 2010 and 2040. A 5-mile buffer around the study corridor is also shown on these figures.

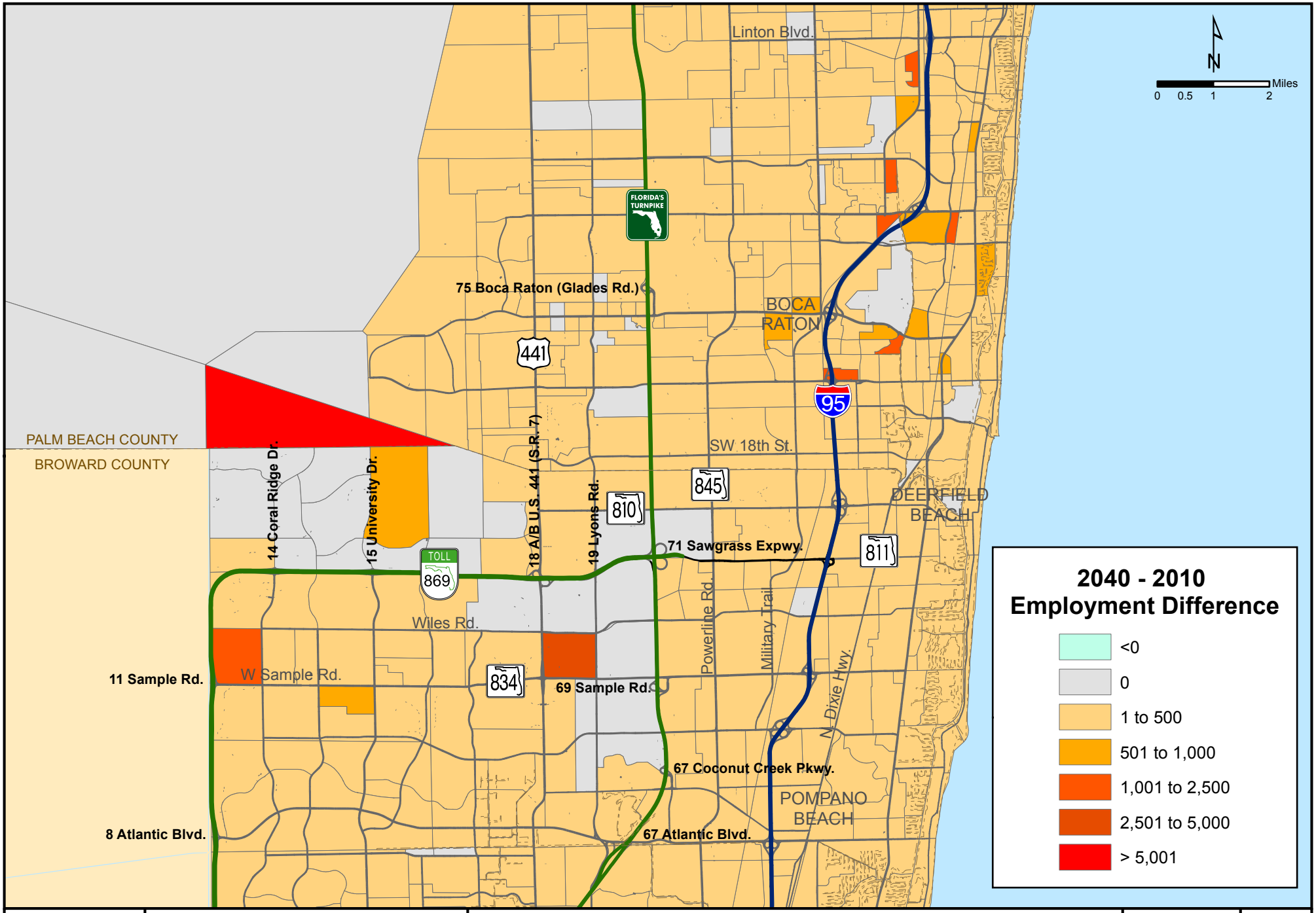
Table 4.11 lists the population and employment forecasts within the 5-mile buffer around the SW 10th Street study corridor. Population and employment are expected to grow at approximately 0.4 percent and 0.3 percent annually, respectively, between 2010 and 2040. This is consistent with the largely developed nature of the region within this buffer.

Table 4.11
Population and Employment Forecasts within 5-Mile Buffer of Study Corridor

Variable/Year	2010	2040	Change	AAGR
Population	426,700	482,800	56,100	0.4%
Employment	211,600	234,300	22,700	0.3%



	SW 10th Street PD&E Study Project Traffic Forecast Memorandum	2040 - 2010 Population Difference	Figure 4.4



	SW 10th Street PD&E Study Project Traffic Forecast Memorandum	2040 - 2010 Employment Difference	Figure 4.5

4.3 FUTURE YEAR MODEL NETWORKS

Future year models were developed for years 2020 and 2040. The future year highway networks prepared for the Sawgrass Widening PD&E study were modified with enhancements made during the base year model development and validation.

For the purposes of this study, there are three primary travel demand forecast alternatives.

No-Build

This alternative assumes that capacity will be in place for the following corridors:

- Sawgrass Express Lanes
- Turnpike Mainline Express Lanes
- 95 Express Lanes

The 2020 No-Build network also represents existing plus committed (E+C) roadway capacity improvements for the surrounding area, while the 2040 No-Build network includes Cost Feasible roadway projects in the Broward and Palm Beach long-range transportation plans. Figures 4.6 through 4.8 depict No-Build lane geometry for the corridor and the limits of the express lanes.

Tables 4.12 and 4.13 provide existing lanes and network capacity improvement assumptions in the 2020 and 2040 model network for regional limited-access facilities and local arterials within the vicinity of the study area.

Partial-Build

In addition to the No-Build improvements, the Partial-Build alternative assumes:

- Full Interchange at Turnpike Mainline/Sawgrass Expressway/SW 10th Street
- Modification of the I-95/SW 10th Street interchange to (1) provide a single intersection for the southbound ramps and (2) add a frontage road for the northbound on-ramp at SW 10th Street and the northbound off-ramp to Hillsboro Boulevard, resulting in a reduction of one general use lane from SW 10th Street to Hillsboro Boulevard.
- Direct Connections to northbound and southbound 95 Express

This alternative assumes that the 95 Express direct-connect ramps will extend west of Military Trail via grade-separated ramps. In addition, the full interchange at Turnpike Mainline/Sawgrass Expressway connects to an at-grade SW 10th Street arterial. SW 10th Street remains as an arterial between Powerline Road and Military Trail, but could either remain as the existing four lanes or be widened. Based on the travel demand model runs, the volumes along SW 10th Street between Powerline Road and Military Trail are well over the four-lane capacity under this forecast scenario. Figures 4.9 through 4.11 depict Partial-Build lane geometry for the corridor.

NOT TO SCALE

TOLL 869

University Dr (S.R. 817)

US 441 (S.R. 7)

Lyons Rd

Glades Rd (S.R. 808)

FLORIDA'S TURNPIKE

FLY-OVER

West of Boca Rio Rd

Matchline A

Sample Rd (S.R. 834)

(Ramp traffic to/from Blount Rd. not shown.)

Coconut Creek Pkwy

Atlantic Blvd (S.R. 814)

- Signal Controlled
- Stop Controlled
- Lane Direction
- Express Lane Ingress
- Express Lane Egress

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Project Traffic Forecast Memorandum

Sawgrass Expressway (S.R. 869) and Florida's Turnpike Mainline (S.R. 91) - No-Build Lane Geometry

Figure 4.6

NOT TO SCALE

West Dr

Quiet Waters
Driveway North

Quiet Waters
Driveway South

Driveway F

Quiet Waters
Business Park
Driveway

Matchline B

869

Matchline A

TOLL
869

Waterways Blvd

Independence Dr

SW 30th Ave

SW 28th Ave

SW 24th Ave

West Driveway

SW 11th St

American Way

Powerline Rd (S.R. 845)

Signal Controlled
Stop Controlled
Lane Direction

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Project Traffic Forecast Memorandum

SW 10th Street - No-Build Lane Geometry

Figure
4.7

FLORIDA'S TURNPIKE

NOT TO SCALE

Matchline B

East Dr

SW 12th Ave

869

Hillsboro Blvd (S.R. 810)

SW Natura Park Blvd

SW 10th St

East Driveway

West

E Newport Center Dr

FAU Research Park Blvd

The Lakes at Deerfield Beach Driveway East

Horizon Club Driveway

Sample Rd (S.R. 834)

S Military Trl

Signal Controlled
Stop Controlled
Lane Direction
Express Lane Ingress
Express Lane Egress

SW 10th Street and I-95 (S.R. 9) - No-Build Lane Geometry

Figure 4.8

Table 4.12
2020 No-Build Capacity Improvement Projects

From	To	2016		2020		
		GTL	HOV / EL	GTL	EL	Total
Sawgrass Expressway						
Sunrise Boulevard	Turnpike Mainline			All Electronic Tolling		
I-595	Sunrise Boulevard	6+aux		6+AUX	2	8
Sunrise Boulevard	Turnpike Mainline	6		6	4	10
Turnpike Mainline						
Golden Glades	North of Indiantown Road	All Electronic Tolling				
HEFT	Griffin Road	6		6	4	10
Griffin Road	Sunrise Boulevard	8		8	4	12
Sunrise Boulevard	Sawgrass Expressway	6		6	4	10
Sawgrass Expressway	Lake Worth Road	6		6	4	10
Lake Worth Road	PGA Boulevard	4		4	4	8
PGA Boulevard	Indiantown Road	4		4	4	8
I-75						
S.R. 826	Miami Gardens Drive	8		8	2	10
Miami Gardens Drive	I-595	8		8	4	12
I-95						
Golden Glades	Davie Boulevard	6+aux	2	6+aux	4	10+aux
Davie Boulevard	Linton Boulevard	6+aux	2	6+aux	4	10+aux
Spanish River Boulevard				New Interchange		

Table 4.13
2040 No-Build Capacity Improvement Projects

From	To	2016		2040		
		GUL	HOV / EL	GUL	EL	Total
I-95						
Linton Boulevard	Gateway Boulevard	8+aux	2	8+aux	4	12
Gateway Boulevard	Indiantown Road	8+aux	2	8+aux	4	12
University Drive						
Holmberg Road	Hillsboro Boulevard	2		4		4
NW 40th Street	Sawgrass Expressway	4		6		6
NE 3rd Avenue						
Sample Road	SW 10th Street	4		6		6
Glades Road						
Executive Center Drive	NW 13th Street	6		8		8
Lyons Road						
Broward County Line	SW 18th Street	4		6		6
Boca Rio Road						
Palmetto Park Road	Glades Road	2		4		4

NOT TO SCALE

University Dr (S.R. 817)

US 441 (S.R. 7)

Lyons Rd

Glades Rd (S.R. 808)

FLY-OVER

West of Boca Rio Rd

Matchline A

Sample Rd (S.R. 834)

(Ramp traffic to/from Blount Rd. not shown.)

Coconut Creek Pkwy

Atlantic Blvd
(S.R. 814)

- Signal Controlled
- Stop Controlled
- Lane Direction
- Express Lane Ingress
- Express Lane Egress

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SW 10th Street PD&E Study
Project Traffic Forecast Memorandum

Sawgrass Expressway (S.R. 869) and Florida's Turnpike Mainline (S.R. 91) - Partial-Build Lane Geometry

Figure
4.9

NOT TO SCALE

West Dr

Quiet Waters
Driveway North

Quiet Waters
Driveway South

Driveway F

Quiet Waters
Business Park
Driveway

869

Matchline B

Matchline A

TOLL
869

Waterways Blvd

Independence Dr

SW 30th Ave

SW 28th Ave

SW 24th Ave

West Driveway

SW 11th St

American Way

Powerline Rd (S.R. 845)

- Signal Controlled
- Stop Controlled
- Lane Direction
- Improvement over Existing

NOT TO SCALE

Matchline B

East Dr

SW 12th Ave

Hillsboro Blvd (S.R. 810)

SW Natura Park Blvd

SW 10th St

FAU Research Park Blvd

Sample Rd (S.R. 834)

E Newport Center Dr

East Driveway

West

The Lakes at Deerfield Beach Driveway East

Horizon Club Driveway

S Military Trl

Signal Controlled
Stop Controlled
Lane Direction
Express Lane Ingress
Express Lane Egress

Build

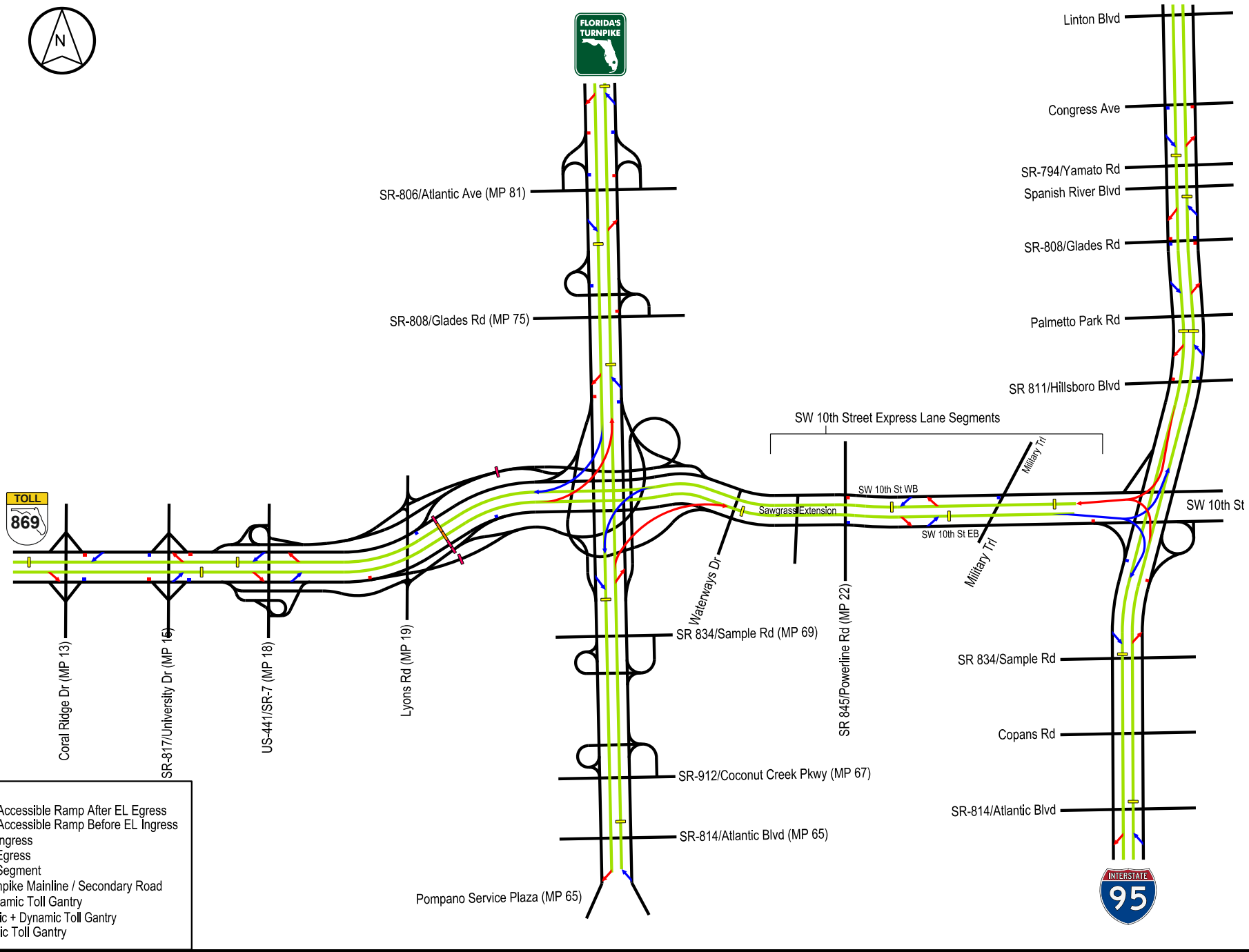
The location and selection of ingress/egress points are a critical component of the Build options evaluation process. The express lane ingress/egress points for this project were evaluated through an iterative evaluation of system to system origin-destination movements, geometric requirements, operational analysis, signing and tolling considerations. As part of the Sawgrass Widening PD&E Study, Options 3A through 3F at the Turnpike Mainline/Sawgrass interchange were evaluated through forecasting and operational analysis. Option 3D-1.1 was the recommended option for further study by the SW 10th Street PD&E Study team. Option 3A is provided in **Appendix G** since this Build option was previously submitted in the draft version of this Project Traffic Forecast Memorandum.

Through coordination with the SW 10th PD&E team, additional ingress/egress options were requested due to geometric issues with placing intermediate access between Powerline Road and Military Trail in Option 3D-1.1. Consequently, Options 3D-1.2 through 3D-1.6 were developed for further evaluation by the SW 10th Street PD&E team. Furthermore, the SW 10th Street PD&E team is evaluating an alignment with the express lanes in the center of the SW 10th Street arterial lanes and alignment with the express lanes positioned north of the SW 10th Street arterial lanes. The options are described herein for the center alignment are as follows:

Build Option 3D-1.1 (Center Alignment)

- Grade separated express lane in the center of SW 10th Street, which includes express lane overpass at all signalized intersections.
- Intermediate express lane ingress and egress in both directions between Powerline Road and Military Trail
- Same number of SW 10th Street arterial lanes that currently exist:
  - Six continuous arterial lanes between Sawgrass Expressway and Powerline Road
  - Four continuous arterial lanes between Powerline Road and Military Trail
  - Six continuous arterial lanes between Military Trail and I-95

Figure 4.12 provides the express lane diagram for Build Option 3D-1.1. The express lane diagram shows the ingress/egress ramps, near entry/exit ramp, toll gantry locations, destination signs and operational jurisdiction. The signs that will be operated and controlled by the District Four Traffic Management Center are outlined in green.



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SW 10th Street PD&E Study Project
Traffic Forecast Memorandum

Toll Plan and Access Points - Build Option 3D-1.1

Figure
4.12

FLORIDA'S TURNPIKE

Build Option 3D-1.2 (Center Alignment)

Similar to Build Option 3D-1.1 with changes to express lane ingress and egress points along SW 10th Street, see toll plan in **Appendix G**.

- Express lane alignment in the center of the eastbound and westbound direction of SW 10th Street.
- An eastbound express lane ingress and egress are provided between Powerline Road and Military Trail; the express lane egress is followed by express lane ingress.
- A westbound express lane ingress and egress are provided between Military Trail and Powerline Road; the express lane egress is followed by express lane ingress.
- An additional westbound express lane ingress is provided between Newport Center Drive and Military Trail.

Build Option 3D-1.3 (Center Alignment)

Similar to Build Option 3D-1.1 with changes to express lane ingress and egress points along SW 10th Street, see toll plan in **Appendix G**.

- Express lane alignment in the center of the eastbound and westbound direction of SW 10th Street.
- An eastbound express lane ingress is provided between Powerline Road and Military Trail, followed by an eastbound express lane egress between Military Trail and Newport Center Drive.
- A westbound express lane ingress is provided between Newport Center Drive and Military Trail, followed by a westbound express lane ingress between Military Trail and Powerline Road.

Build Option 3D-1.4 (Center Alignment)

Similar to Build Option 3D-1.1 with changes to express lane ingress and egress points along SW 10th Street, see toll plan in **Appendix G**.

- Express lane alignment in the center of the eastbound and westbound direction of SW 10th Street.
- An eastbound express lane egress is provided between Powerline Road and Military Trail.
- A westbound express lane ingress is provided between Newport Center Drive and Military Trail, followed by a westbound express lane ingress between Military Trail and Powerline Road.

Build Option 3D-1.5 (Center Alignment)

Similar to Build Option 3D-1.1 with changes to express lane ingress and egress points along SW 10th Street, see toll plan in **Appendix G**.

- Express lane alignment in the center of the eastbound and westbound direction of SW 10th Street.
- An eastbound express lane egress is provided between Military Trail and Newport Center Drive.
- A westbound express lane ingress is provided between Newport Center Drive and Military Trail, followed by a westbound express lane egress between Military Trail and Powerline Road.

Build Option 1.6 (Center Alignment)

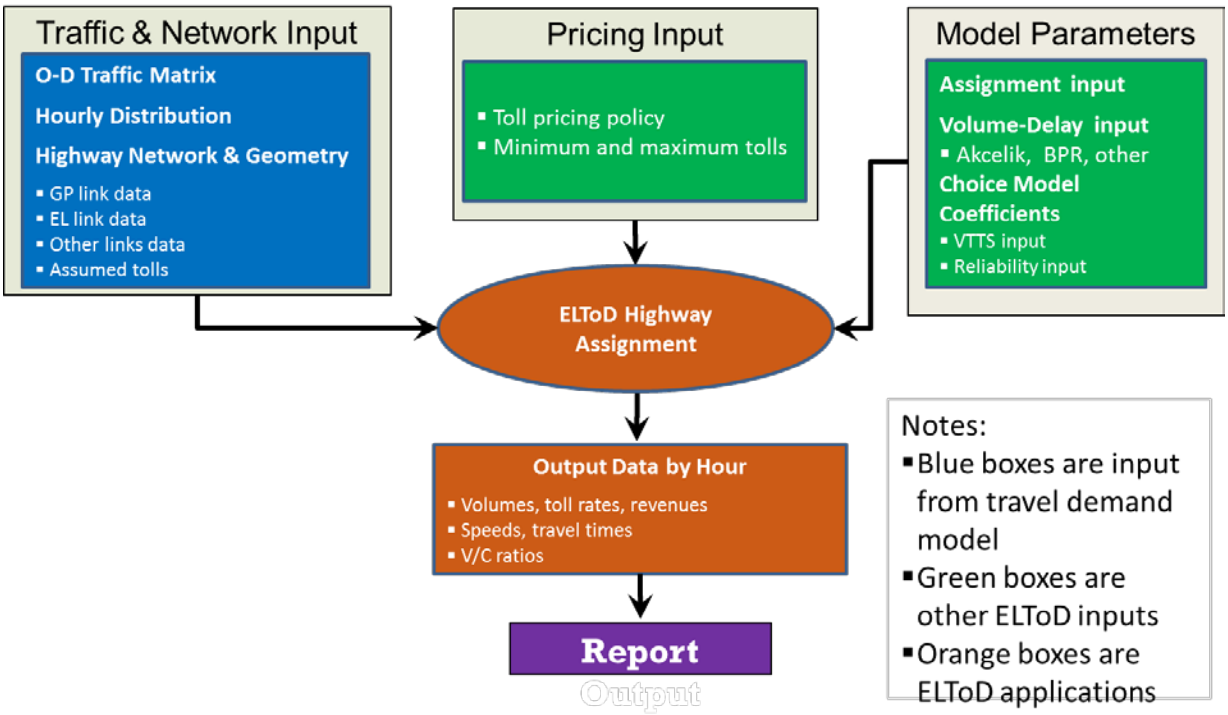
Similar to Build Option 1.1 Center Base without express lane ingress and egress points along SW 10th Street, see toll plan in **Appendix G**.

4.4 EXPRESS LANE TIME-OF-DAY MODEL

An important aspect of the congestion management strategy of express lanes is the toll rates charged to users over the course of the day. The traffic level of service in the express lanes is maintained through variable pricing, with the express lane tolls rising with increased congestion in the express lanes. The Express Lanes Time of Day Model v2.2 provides the means to forecast traffic by hour and direction in the express lanes via supply and demand equilibrium processes.

In the overall modeling process to develop hourly traffic and revenue forecasts, the first step is feeding the data derived from the Turnpike's version of the Southeast Regional Planning Model (SERPM), into the ELToD Model. Since the SERPM produces peak period traffic forecasts, the ELToD Model is necessary in order to produce hourly traffic forecasts for the general use lanes and express lanes. The ELToD Model works in conjunction with the demand model and was designed to utilize a subarea trip matrix and network extraction from the SERPM. This process produces traffic and toll estimates by hour and by direction, for both the general use and express lanes. **Figure 4.13** illustrates the ELToD Model process, inputs and outputs.

Figure 4.13
ELToD Model Flow Chart



In addition to a set of three period subarea trip matrices, the ELToD Model used hourly traffic distribution on the Sawgrass Expressway, Southern Coin, and I-95 by direction from count data; the geometric configuration of the proposed express lanes; and a toll policy pricing curve. For this study, two directional hourly traffic distributions were used to represent the corridor in the model, shown in **Table 4.14**. The pricing policy is graphically represented in **Figure 4.14** for both minimum tolls used in this study. The ELToD Model was developed for years 2020 and 2040 of the project corridor.

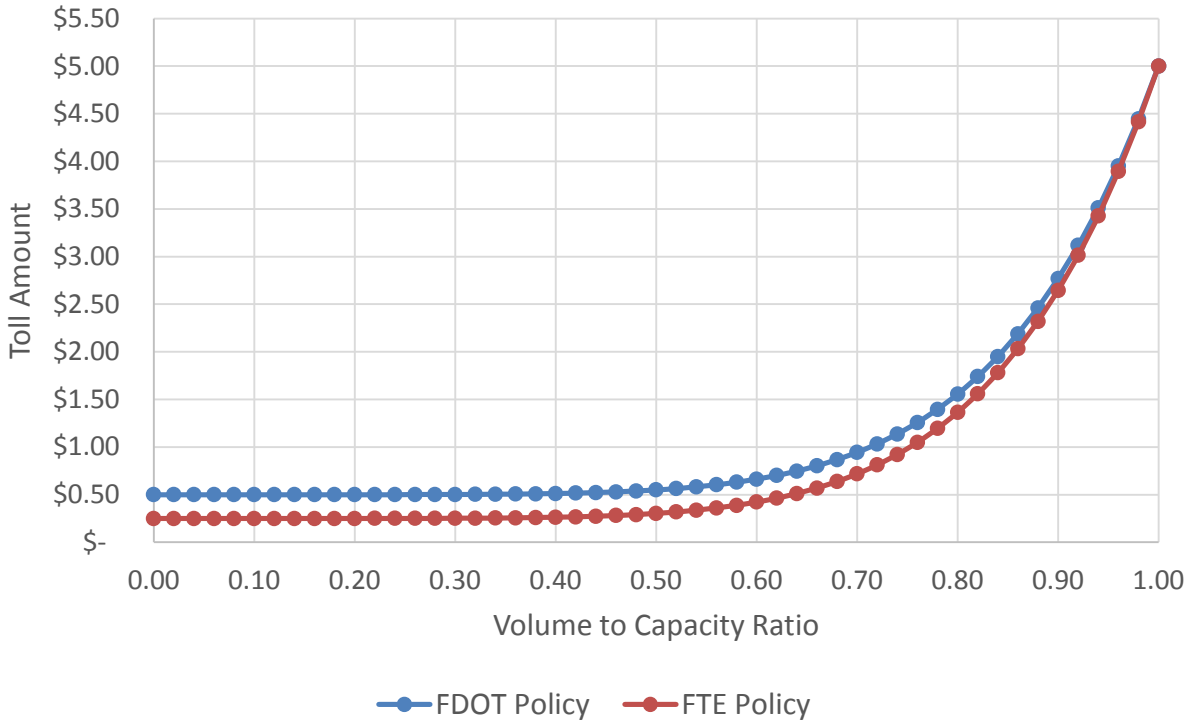
General Model Assumptions:

- Model Years: 2010 Base, 2020 and 2040 Future
- Opening Year: 2020
- Dynamically priced express lanes
- Minimum Toll:
  - $0.25 per segment for the Turnpike facilities – Sawgrass Expressway and Turnpike Mainline
  - $0.50 per segment for non-Turnpike facilities (SW 10th Street to the east of Military Trail and I-95)
- Maximum Toll:
  - $5.00 per segment for both Turnpike and non-Turnpike facilities
- Buses:
  - Do not pay the dynamic toll on the Turnpike system, however, they do pay the SunPass general toll of the adjacent tolled lane (the FTE portion of this project)
  - Do not pay the express lanes toll on non-Turnpike system express lanes (the FDOT District Four portion of this project)
- No Trucks are permitted in express lanes

Table 4.14
ELToD Traffic Distribution by Period by Hour

Hours	Period	Turnpike		I-95	
		NB	SB	NB	SB
1	Off Peak Period	1.3%	1.6%	1.6%	1.5%
2		0.8%	0.9%	1.0%	0.9%
3		0.6%	0.8%	0.8%	0.8%
4		0.6%	0.8%	0.8%	0.9%
5		1.1%	1.2%	1.2%	1.4%
6		2.6%	2.7%	2.7%	3.2%
7		7.6%	7.5%	7.2%	7.9%
8	AM Period	35.9%	35.0%	33.3%	33.4%
9		37.4%	37.0%	36.5%	36.5%
10		26.8%	28.0%	34.9%	34.7%
11	Off Peak Period	9.3%	9.4%	9.3%	9.3%
12		8.9%	9.2%	9.1%	9.3%
13		9.0%	9.3%	9.4%	9.6%
14		9.2%	9.6%	9.4%	9.6%
15		10.3%	10.2%	9.8%	10.0%
16		12.4%	12.0%	11.3%	10.9%
17	PM Period	32.2%	30.6%	31.7%	32.1%
18		38.0%	39.4%	36.5%	36.5%
19		29.7%	30.0%	34.9%	35.0%
20	Off Peak Period	8.3%	8.3%	7.7%	7.3%
21		5.9%	5.3%	5.9%	5.5%
22		5.0%	4.9%	5.2%	5.1%
23		4.3%	3.8%	4.5%	3.9%
24		2.7%	2.4%	3.0%	2.6%

Figure 4.14
Express Lanes Pricing Policy Curves



The ELToD Model holds the daily traffic and hourly distribution constant (i.e., ELToD does not simulate peak spreading) but estimates the split that will occur between the general use and express lanes, given the distribution. It does this by solving for the supply/demand equilibrium of each hour. The supply side is represented by Akcelik volume-delay curves that estimate the segment travel times separately for the general use and express lanes in each direction. These curves are based on queuing theory to more accurately represent congestion levels in overcapacity conditions. Hourly toll rates are computed by direction based on the volume-to-capacity ratio in the express lanes in relation to a specified toll policy, and are maintained within the specified highest and lowest toll limits. It should be noted that for the Turnpike express lanes, a pricing policy representing the current 95 Express was chosen. ELToD develops the express lane share of traffic by hour based on the toll amount and the differences in travel times between the general use lanes and express lanes. The share calculations are done by applying the discrete toll choice model equation and calibrated coefficients. Also, general use lanes may be either non-express lanes in an existing interstate corridor or non-express toll lanes in an existing tolled corridor.

4.5 ELTOD CHOICE MODEL

A key feature in ELToD is the toll choice model equation that predicts express lane share origin-destination (O-D) pair based on:

- Time: Time enters the choice model as the weighted time from using the express lanes minus the weighted time from using the general use lanes.
- Toll: Toll enters the choice model as the toll paid from using the express lanes minus the toll paid from using the general use lanes. If the general use lanes are toll free, this expression is simplified to the express lanes toll minus zero.
- Reliability: Reliability enters the choice model as the standard deviation of travel time from using the express lanes minus the standard deviation of travel time from using the general use lanes. (Note that travel time weights are not used for measuring reliability.)
- Toll Constant: The constant captures fixed or aggregate effects based on the network, time-of-day, or traveler characteristics. The Toll Constant can account for willingness to choose the express lanes with no time or reliability benefits, such as to avoid large trucks.

The differences in travel time and reliability result primarily from the congestion in the general use lanes. For facilities with conventional general use lanes, the toll is non-zero only on the express lanes and the amount of toll is determined dynamically based on congestion levels in the express lanes. In an iterative process, the ELToD model calculates the express lanes share, assigns traffic to the general use and express lanes, and then updates the measures for time, toll, and reliability based on the average traffic flow across all iterations.

The iterative process continues until convergence. The (model calculated) values for time, toll, and reliability are generally highest during the peak periods. For many origin-destination pairs, time and reliability grow faster than the toll as congestion increases, causing the (model calculated) express lanes share to reach its maximum value during one of the peak periods. For each eligible origin-destination pair, the express lanes share in the ELToD model can be calculated from the following choice model equation:

$$Express\ Lane\ Share = \frac{1}{1 + e^{(-1 * (\beta\_Constant + \beta\_Time * Time + \beta\_Toll * Toll + \beta\_Reliability * Reliability))}}$$

- **Toll Constant (β_Constant)**: This parameter determines the express lane share when time, toll, and reliability have a net zero effect.
- **Time Coefficient (β_Time)**: This parameter is for the travel time coefficient in the choice model equation defined in the ELToD Model as the **Travel Time Coefficient** (with units of 1/min). This is the disutility of increasing travel time by one minute.

- **Cost Coefficient (β_Toll)**: This parameter is for the toll cost coefficient in the choice model equation defined in the ELToD Model as the **Toll Coefficient** (with units of 1/$). This is the disutility of increasing the toll by one dollar.
- **Reliability Coefficient Ratio (β_Reliability)**: This parameter is the disutility of increasing the standard deviation of travel time by one minute. It can be calculated from a Reliability Ratio (defined in the ELToD Model documentation as the **Reliability Coefficient Ratio**) and the travel time coefficient. It indicates the disutility of one unit (one minute) of standard deviation.

"**β_Constant**," "**β_Time**," "**β_Toll**," "**β_Reliability**," are all estimated values. The latter three values determine the relative importance of time, toll, and reliability, while β_Constant has a fixed value. The measures for time, toll, and reliability represent the differences between these variables in the express lanes and the general use lanes. These calculation measures are represented by the general form of:

Measure = Express Lane Value - General Use Lane Value

Table 4.15 provides the choice model parameters for the Turnpike facilities (Turnpike Mainline/Sawgrass Expressway) and 95 Express. The 95 Express VTTS was obtained from the *95 Express Phase 3 and 4 Stated Preference Survey*. The Turnpike VTTS was obtained from the Integrated Congestion Pricing Project (ICPP) Stated Preference Survey conducted in South Florida. The reliability ratio was based on research from the SHRP2 C04 report, previous stated preference survey data for Turnpike facilities and observed 95 Express data. The hourly toll parameters were estimated from observed overnight shares and by calibrating the choice model to observed data on 95 Express Phase 1. The Turnpike hourly toll parameters were derived by applying a damping factor to the 95 Express hourly toll parameters, based on the perception of user bias towards express lane choice on existing toll roads. For the ELToD travel demand forecast, the 95 Express toll choice model parameters were used for the entire corridor. In VISSIM microsimulation analysis, however, the 95 Express toll choice model parameters were used for the I-95 and SW 10th Street corridor and the Turnpike Express toll choice model parameters were used for the Turnpike Mainline and Sawgrass Expressway corridor.

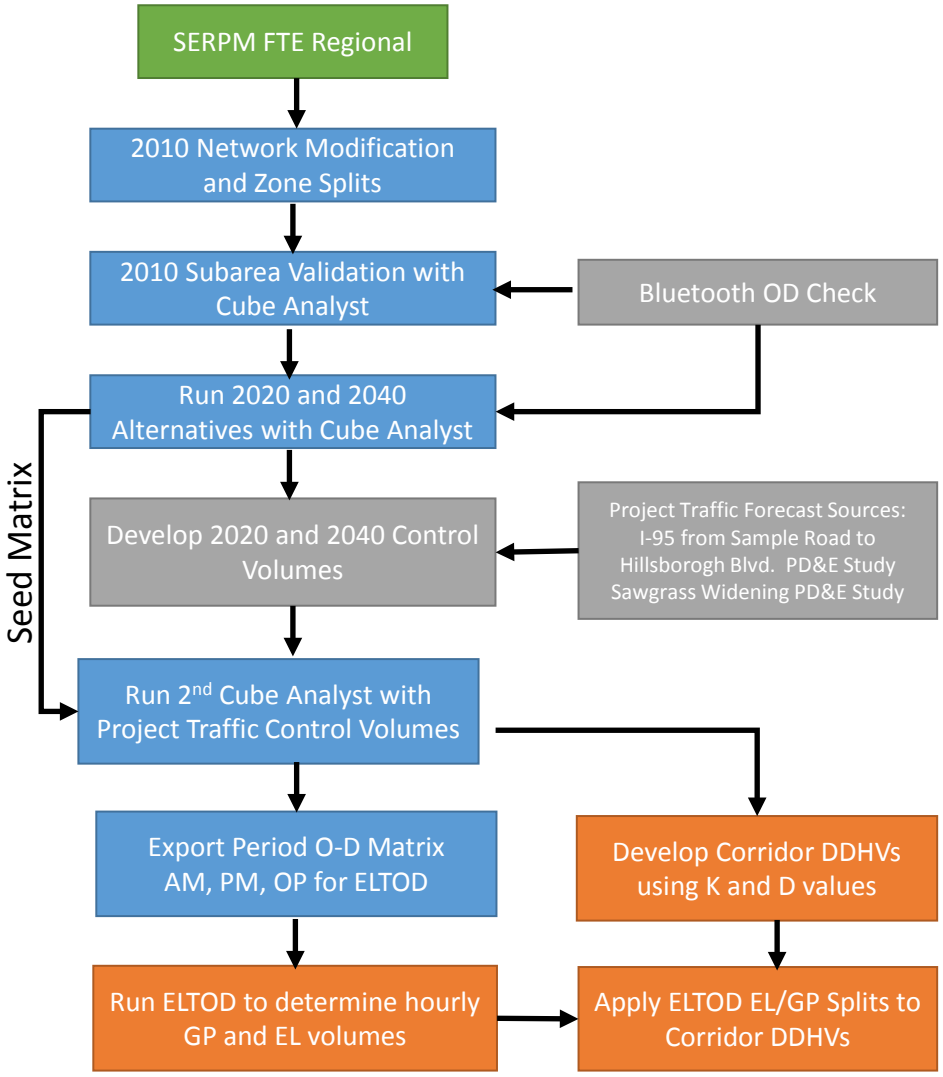
Table 4.15
Choice Model Parameter Comparison

Parameter	95 Express	Turnpike
Mean VTTS	$11.30	$9.62
Travel Time Coefficient	-0.112	-0.118
Toll Cost Coefficient	-0.5945	-0.736
Reliability Coefficient Ratio	2.65	0.90
Hourly Toll Parameters (peak)	-0.00	-0.647
Hourly Toll Parameters (off-peak)	-0.448	-1.095

5.1 FORECASTING PROCESS AND ASSUMPTIONS

The development of the project traffic forecast was a multi-step effort involving a combination of internal modeling procedures and post-model evaluation. **Figure 5.1** illustrates the process beginning with the regional SERPM-FTE. After the SERPM-FTE project model was validated against the 2010 traffic conditions, the future year model runs were conducted for the 2020 and 2040 No-Build, Partial-Build, and Build alternatives. An initial subarea model assignment was performed by applying the growth between the 2010 unadjusted matrices and the 2040 unadjusted matrices to the 2010 Cube Analyst adjusted matrices. The results of the future year Build scenarios were checked against the Bluetooth Origin-Destination data to see if the traffic between the Turnpike and I-95 Corridors that diverted to the SW 10th Street from the other interchanges on Florida's Turnpike, such as Sample Road and Glades Road, was reasonable.

Figure 5.1
Project Traffic Forecasting Process



The initial results for 2020 and 2040 for each scenario were then compared against the forecasts from two ongoing efforts: Sawgrass Expressway Widening PD&E study and the I-95 from Sample Road to Hillsborough Boulevard PD&E study. The I-95 PD&E study provided forecasts on I-95 mainline and ramps at the Sample Road, SW 10th Street, and Hillsboro Boulevard interchanges. The Sawgrass Expressway PD&E study provided traffic forecasts for the Sawgrass corridor from west of University Drive to east of Florida's Turnpike, as well as traffic forecasts on the Turnpike Mainline.

Base forecast volumes along the Sawgrass Expressway and Turnpike Mainline from the SW 10th Street project model were consistent with the Sawgrass Widening PD&E model projections, since only minor validation adjustments were made along the SW 10th corridor. The comparison against the I-95 PD&E study forecast indicated that SW 10th project model results were similar along SW 10th Street, but noticeably higher along I-95.

Because the No-Build scenario for the SW 10th Street PD&E study is the same as for the I-95 PD&E study, there is a need to achieve a consistent project forecast between the two projects. The forecast approach discussed with FDOT District 4 staff was to determine a project forecast for the No-Build scenario consistent with the I-95 PD&E study and pivot from these forecasts using the impacts identified from the SW 10th Street PD&E model. The methodology outlined in the *Traffic Data Collection and Traffic Projections Report* for the I-95 PD&E study was to apply a growth rate of 0.5 percent or SERPM 7.0 growth (whichever is greater) to the 2016 traffic volumes. Since the SW 10th Street I-95 study limits extend beyond the I-95 PD&E study limits (from Sample Road to Hillsboro Boulevard), a 0.5 percent growth rate was applied for the interchanges south of Sample Road, and the raw subarea SW 10th model results were used north of Hillsboro due to the impacts of the Spanish River Drive interchange.

Once the No-Build forecast was determined for 2040, the Partial-Build project forecast was determined by applying the model differences to the No-Build project forecast. For example, 2040 Partial-Build project traffic forecasts = 2040 No-Build project traffic + (2040 Partial-Build Model – 2040 No-Build Model). The Build project traffic was determined by taking the difference between the Partial-Build and Build model values and adding this impact layer to the Partial-Build project forecast. This process was also used to develop 2020 and 2040 Partial-Build and Build forecast volumes along I-95. A similar process was performed along the Sawgrass Expressway and Turnpike Mainline to achieve consistency with the Sawgrass Expressway Widening PD&E forecast.

Once project traffic forecast volumes were established as control values, a second Cube Analyst step was implemented to adjust the initial trip tables to match with the forecast values at selected links in the subarea. The final adjusted trip tables were assigned to the subarea networks for each scenario to produce the 2020 and 2040 forecasts on all links with and without control totals. Finally, the second Cube Analyst assignment results were checked, smoothed, and rounded to produce the project forecast AADTs.

The final forecasted AADTs from the subarea model, along with K-factors and D-factors, were used to develop corridor-level directional design hour volume (DDHV). For express lane locations, the

Subarea model peak period trip tables were then exported to ELToD to determine hourly traffic for the general purpose and express toll lanes.

5.2 ANNUAL AVERAGE DAILY TRAFFIC VOLUMES

The AADT volumes for each of the three scenarios are summarized and compared in the following tables to show the resulting annual growth rate between year 2020 and 2040 and to highlight the volume difference between the scenarios. **Table 5.1** shows the No-Build average growth by facility compared to historical trends and population/employment data within a 5-mile buffer of SW 10th Street. Segment-level forecast AADTs are shown for the Sawgrass Expressway, Turnpike Mainline, SW 10th Street, and I-95 in **Tables 5.2** through **5.5**. **Figures 5.2** through **5.4** show the AADT volumes for 2016, 2020, and 2040 for the three forecast scenarios.

Table 5.1
Facility Average Annual Growth Rate Comparison

Facility	2000-2015 Historical Trend	2016-2040 No-Build Forecast	2010-2040 SE Data TAZ 5-mile Buffer	
			Population	Employment
Sawgrass Expressway	2.8%	1.2%	0.4%	0.3%
SW 10th Street	0.7%	0.8%		
Turnpike Mainline	1.5%	1.7%		
I-95	-0.1%	0.6%		

A review of the AADT volumes indicates the following trends:

No-Build

- The portion of the Sawgrass Expressway within the study area shows average annual compound growth of 1.2 percent for the No-Build forecast. The Sawgrass Expressway is projected to have lower growth than historical trends indicate for the entire facility. The lower growth is due in part to the limited available capacity along SW 10th Street to feed the northern portion of the Sawgrass Expressway.
- SW 10th Street is anticipated to have growth similar to historical trends, although the corridor is capacity constrained.
- The Turnpike Mainline is anticipated to have higher growth than historical trends for the entire Southern Coin system due to the additional capacity with the planned widenings.
- I-95 has the lowest growth rate of the facilities, but the projected growth is expected to be higher than historical trends due to the added capacity from 95 Express.
- The I-95/Spanish River Drive interchange results in a diversion of traffic from the adjacent interchanges at Glades Road and Yamato Road, as expected with this reliever interchange.

Partial-Build

- The full interchange at Sawgrass Expressway and 95 Express direct connect ramps results in a shift of mainline traffic along both I-95 and the Turnpike.
- The prevalent movements appear to be Turnpike south to\from I-95 north, as they both increase with the Partial-Build.
- There is a noticeable reduction in traffic along I-95 south of SW 10th that has been shifted to the Turnpike.
- Reductions occur at Hillsboro Boulevard and Sample Road on I-95 due to a diversion to SW 10th Street.
- Reductions occur at the Sample Road and Glades Road interchanges on the Turnpike Mainline due to a diversion of traffic to SW 10th Street.
- There is a slight decrease in Sawgrass Expressway traffic due to a shift to the Turnpike Mainline.
- As expected, traffic along SW 10th Street increases with the new access.
- There is some reduction in traffic along Powerline Road and Military Trail south of SW 10th Street.

Build (Option 3D-1.1)

- Traffic volumes along the Sawgrass Expressway, SW 10th Street, and I-95 increase due to the additional capacity along SW 10th Street.
- There is some additional diversion of traffic at Glades Road on the Turnpike and at some I-95 interchanges, but the diversion is considerably smaller than with the Partial-Build.
- Although not depicted in the forecast tables/figures, the regional model results indicate that the Build alternative diverts traffic from parallel east-west roads such as Wiles Road and Hillsboro Boulevard.

Table 5.2
AADT Comparison – Sawgrass Expressway

Mile Post - Description	Profile	2016	No-Build (NB)						Partial-Build (PB)				Build Option 3D-1.1 (Build)			
			AADTs		Difference		Annual Growth Rate		AADTs		Difference NB to PB		AADTs		Difference PB to Build	
			2020	2040	2016 to 2020	2016 to 2040	2020	2040	2020	2040	2020	2040	2020	2040	2020	2040
West of Waterways		**37,700**	**38,500**	**52,000**	**800**	**14,300**	**0.5%**	**1.3%**	**62,500**	**86,400**	**24,000**	**34,400**	**64,400**	**95,000**	**1,900**	**8,600**
20 - SW 10th To/From Turnpike South									20,400	26,300	20,400	26,300	13,000	17,100	-7,400	-9,200
SW 10th To/From Turnpike North									9,000	15,400	9,000	15,400	10,500	16,400	1,500	1,000
Sawgrass Expressway To/From Turnpike North		30,000	32,000	36,600	2,000	6,600	1.6%	0.8%	32,000	36,600	0	0	32,000	36,600	0	0
Sawgrass Expressway To/From Turnpike South		14,000	15,000	19,700	1,000	5,700	1.7%	1.4%	14,300	18,900	-700	-800	15,700	22,000	1,400	3,100
		81,700	**85,500**	**108,300**	**3,800**	**26,600**	**1.1%**	**1.2%**	**79,400**	**100,200**	**-6,100**	**-8,100**	**88,600**	**120,100**	**9,200**	**19,900**
19 - Lyons Road		9,600	10,900	15,300	1,300	5,700	3.2%	2.0%	10,400	14,900	-500	-400	13,300	21,100	2,900	6,200
		9,600	9,700	13,000	100	3,400	0.3%	1.3%	9,900	15,200	200	2,200	9,300	13,000	-600	-2,200
		81,700	**84,300**	**106,000**	**2,600**	**24,300**	**0.8%**	**1.1%**	**78,900**	**100,500**	**-5,400**	**-5,500**	**84,600**	**112,000**	**5,700**	**11,500**
18 - US 441/ SR 7		12,400	13,300	17,900	900	5,500	1.8%	1.5%	12,900	17,200	-400	-700	13,800	18,500	900	1,300
		16,900	18,700	23,200	1,800	6,300	2.6%	1.3%	19,100	23,500	400	300	18,700	23,200	-400	-300
		86,200	**89,700**	**111,300**	**3,500**	**25,100**	**1.0%**	**1.1%**	**85,100**	**106,800**	**-4,600**	**-4,500**	**89,500**	**116,700**	**4,400**	**9,900**
15 - University		19,400	20,100	30,300	700	10,900	0.9%	1.9%	19,100	27,600	-1,000	-2,700	21,100	31,800	2,000	4,200
		5,400	5,800	13,100	400	7,700	1.8%	3.8%	5,800	13,200	0	100	5,800	13,100	0	-100
		72,200	**75,400**	**94,100**	**3,200**	**21,900**	**1.1%**	**1.1%**	**71,800**	**92,400**	**-3,600**	**-1,700**	**74,200**	**98,000**	**2,400**	**5,600**

Negative growth.

No-Build – Includes 95 Express Phase 3, 10-lane Turnpike Mainline Widening, 10-lane Sawgrass Expressway Widening.

Partial-Build – Includes No-Build with full interchange at Sawgrass Expressway and SW 10th/95 Express direct connect ramps.

Build – Includes Partial-Build with four-lane SW 10th Express Lanes and intermediate access point between Powerline Road and Military Trail.

Table 5.3
AADT Comparison – SW 10th Street

Description		Profile	2016	No-Build (NB)						Partial-Build (PB)				Build Option 3D-1.1 (Build)			
				AADTs		Difference		Annual Growth Rate		AADTs		Difference NB to PB		AADTs		Difference PB to Build	
				2020	2040	2016 to 2020	2016 to 2040	2020	2040	2020	2040	2020	2040	2020	2040	2020	2040
			34,500	**35,200**	**38,900**	**700**	**4,400**	**0.5%**	**0.5%**	**36,500**	**39,500**	**1,300**	**600**	**38,300**	**39,300**	**1,800**	**-200**
Natura Boulevard	(to/from North)		11,000	11,200	12,400	200	1,400	0.5%	0.5%	12,700	13,900	1,500	1,500	13,300	14,200	600	300
	(to/from South)		9,700	10,400	14,800	700	5,100	1.8%	1.8%	11,900	20,400	1,500	5,600	11,100	20,500	-800	100
			40,000	**40,900**	**45,600**	**900**	**5,600**	**0.6%**	**0.5%**	**42,400**	**46,300**	**1,500**	**700**	**44,700**	**46,300**	**2,300**	**0**
I-95																0	0
																0	0
			54,500	**55,700**	**61,900**	**1,200**	**7,400**	**0.5%**	**0.5%**	**65,000**	**76,300**	**9,300**	**14,400**	**77,700**	**94,200**	**12,700**	**17,900**
Newport Center Drive	(to/from North)		5,500	5,600	6,200	100	700	0.5%	0.5%	7,600	8,200	2,000	2,000	7,300	8,700	-300	500
	(to/from South)		7,400	7,500	8,300	100	900	0.3%	0.5%	7,600	8,600	100	300	7,800	8,900	200	300
			53,000	**54,100**	**59,800**	**1,100**	**6,800**	**0.5%**	**0.5%**	**64,100**	**76,000**	**10,000**	**16,200**	**76,500**	**93,200**	**12,400**	**17,200**
South Military Trail	(to/from North)		24,000	24,500	27,100	500	3,100	0.5%	0.5%	28,100	30,000	3,600	2,900	26,500	29,400	-1,600	-600
	(to/from South)		29,000	29,600	32,700	600	3,700	0.5%	0.5%	27,700	30,600	-1,900	-2,100	29,200	30,600	1,500	0
			46,600	**47,500**	**52,500**	**900**	**5,900**	**0.5%**	**0.5%**	**56,200**	**62,200**	**8,700**	**9,700**	**67,100**	**88,300**	**10,900**	**26,100**
Driveways	(to/from South)															0	0
																0	**0**
SW 24th Avenue	(to/from South)		2,600	2,600	2,800	0	200	0.0%	0.3%	2,600	2,800	0	0	2,600	2,800	0	0
			45,200	**46,100**	**51,300**	**900**	**6,100**	**0.5%**	**0.5%**	**54,800**	**61,000**	**8,700**	**9,700**	**65,400**	**87,100**	**10,600**	**26,100**
SW 28th Avenue	(to/from South)		2,100	2,200	2,400	100	300	1.2%	0.6%	2,800	3,700	600	1,300	4,300	5,500	1,500	1,800
			45,800	**46,700**	**51,700**	**900**	**5,900**	**0.5%**	**0.5%**	**55,400**	**61,500**	**8,700**	**9,800**	**66,100**	**87,400**	**10,700**	**25,900**
SW 30th Avenue	(to/from South)		2,500	2,500	2,500	0	0	0.0%	0.0%	2,500	3,000	0	500	3,400	4,400	900	1,400
			44,500	**45,400**	**50,400**	**900**	**5,900**	**0.5%**	**0.5%**	**54,100**	**60,100**	**8,700**	**9,700**	**66,400**	**85,000**	**12,300**	**24,900**
Driveways (Industrial Park)	(to/from North)		2,300	2,300	2,300	0	0	0.0%	0.0%	2,300	2,300	0	0	2,300	2,300	0	0
			46,200	**47,100**	**52,100**	**900**	**5,900**	**0.5%**	**0.5%**	**55,800**	**61,800**	**8,700**	**9,700**	**63,900**	**85,500**	**8,100**	**23,700**
Powerline Road (S.R. 845)	(to/from North)		39,000	39,800	43,900	800	4,900	0.5%	0.5%	40,000	48,600	200	4,700	37,100	46,000	-2,900	-2,600
	(to/from South)		34,500	35,200	38,900	700	4,400	0.5%	0.5%	30,200	36,100	-5,000	-2,800	31,800	38,900	1,600	2,800
			36,900	**37,700**	**55,900**	**800**	**19,000**	**0.5%**	**1.7%**	**65,500**	**88,800**	**27,800**	**32,900**	**67,500**	**95,400**	**2,000**	**6,600**
Independence Drive	(to/from South)		1,500	1,500	1,500	0	0	0.0%	0.0%	1,700	2,300	200	800	1,700	2,300	0	0
			36,000	**36,800**	**55,000**	**800**	**19,000**	**0.6%**	**1.8%**	**64,800**	**88,700**	**28,000**	**33,700**	**66,800**	**95,300**	**2,000**	**6,600**
Waterways Boulevard	(to/from South)		5,500	5,500	5,500	0	0	0.0%	0.0%	5,500	5,500	0	0	5,500	5,500	0	0
			37,700	**38,500**	**52,000**	**800**	**14,300**	**0.5%**	**1.3%**	**62,500**	**86,400**	**24,000**	**34,400**	**64,400**	**95,000**	**1,900**	**8,600**
Turnpike																	
Sawgrass Expressway																	

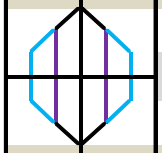
Negative growth.

No-Build – Includes 95 Express Phase 3, 10-lane Turnpike Mainline Widening, 10-lane Sawgrass Expressway Widening.

Partial-Build – Includes No-Build with full interchange at Sawgrass Expressway and SW 10th/95 Express direct connect ramps.

Build – Includes Partial-Build with four-lane SW 10th Express Lanes and intermediate access point between Powerline Road and Military Trail.

Table 5.4
AADT Comparison – Florida's Turnpike

Mile Post - Description	Profile	2016	No-Build (NB)						Partial-Build (PB)				Build Option 3D-1.1 (Build)			
			AADTs		Difference		Annual Growth Rate		AADTs		Difference NB to PB		AADTs		Difference PB to Build	
			2020	2040	2016 to 2020	2016 to 2040	2020	2040	2020	2040	2020	2040	2020	2040	2020	2040
		98,900	**102,100**	**145,300**	**3,200**	**46,400**	**0.8%**	**1.6%**	**104,800**	**150,600**	**2,700**	**5,300**	**105,400**	**150,900**	**600**	**300**
75 - Glades Road		13,100	13,900	19,800	800	6,700	1.5%	1.7%	12,600	17,500	-1,300	-2,300	12,400	17,200	-200	-300
		21,000	21,500	31,000	500	10,000	0.6%	1.6%	20,200	28,600	-1,300	-2,400	21,300	30,500	1,100	1,900
		106,800	**109,700**	**156,500**	**2,900**	**49,700**	**0.7%**	**1.6%**	**112,400**	**161,700**	**2,700**	**5,200**	**114,300**	**164,200**	**1,900**	**2,500**
71 - Sawgrass Expressway		30,000	32,000	36,600	2,000	6,600	1.6%	0.8%	41,000	52,000	9,000	15,400	42,500	53,000	1,500	1,000
Sawgrass Expressway West		30,000	32,000	36,600	2,000	6,600	1.6%	0.8%	32,000	36,600	0	0	32,000	36,600	0	0
SW 10th Street East									9,000	15,400	9,000	15,400	10,500	16,400	1,500	1,000
SW 10th Street East									20,400	26,300	20,400	26,300	13,000	17,100	-7,400	-9,200
Sawgrass Expressway West		14,000	15,000	19,700	1,000	5,700	1.7%	1.4%	14,300	18,900	-700	-800	15,700	22,000	1,400	3,100
		14,000	15,000	19,700	1,000	5,700	1.7%	1.4%	34,700	45,200	19,700	25,500	28,700	39,100	-6,000	-6,100
		90,800	**92,700**	**139,600**	**1,900**	**48,800**	**0.5%**	**1.8%**	**106,100**	**154,900**	**13,400**	**15,300**	**100,500**	**150,300**	**-5,600**	**-4,600**
69 - Sample Road		9,600	10,800	12,100	1,200	2,500	3.0%	1.0%	8,800	9,100	-2,000	-3,000	10,900	10,400	2,100	1,300
		19,400	22,300	24,900	2,900	5,500	3.5%	1.0%	15,300	18,100	-7,000	-6,800	20,700	23,000	5,400	4,900
		100,600	**104,200**	**152,400**	**3,600**	**51,800**	**0.9%**	**1.7%**	**112,600**	**163,900**	**8,400**	**11,500**	**110,300**	**162,900**	**-2,300**	**-1,000**
67 - Coconut Creek Parkway		13,400	16,700	22,200	3,300	8,800	5.7%	2.1%	17,000	22,800	300	600	17,000	23,000	0	200
		10,100	11,900	17,100	1,800	7,000	4.2%	2.2%	11,600	16,700	-300	-400	12,000	17,300	400	600
		97,300	**99,400**	**147,300**	**2,100**	**50,000**	**0.5%**	**1.7%**	**107,200**	**157,800**	**7,800**	**10,500**	**105,300**	**157,200**	**-1,900**	**-600**
66 - Atlantic Boulevard		18,400	21,500	23,000	3,100	4,600	4.0%	0.9%	20,900	22,000	-600	-1,000	21,100	22,200	200	200
65 - Pompano Beach Service Area		**115,700**	**120,900**	**170,300**	**5,200**	**54,600**	**1.1%**	**1.6%**	**128,100**	**179,800**	**7,200**	**9,500**	**126,400**	**179,400**	**-1,700**	**-400**

Negative growth.
No-Build – Includes 95 Express Phase 3, 10-lane Turnpike Mainline Widening, 10-lane Sawgrass Expressway Widening.
Partial-Build – Includes No-Build with full interchange at Sawgrass Expressway and SW 10th/95 Express direct connect ramps.
Build – Includes Partial-Build with four-lane SW 10th Express Lanes and intermediate access point between Powerline Road and Military Trail.

Table 5.5
AADT Comparison – I-95

Mile Post - Description	Profile	2016	No-Build (NB)						Partial-Build (PB)				Build Option 3D-1.1 (Build)			
			AADTs		Difference		Annual Growth Rate		AADTs		Difference NB to PB		AADTs		Difference PB to Build	
			2020	2040	2016 to 2020	2016 to 2040	2020	2040	2020	2040	2020	2040	2020	2040	2020	2040
		195,600	**211,400**	**242,000**	**15,800**	**46,400**	**2.0%**	**0.9%**	**213,900**	**245,400**	**2,500**	**3,400**	**216,000**	**248,700**	**2,100**	**3,300**
50 - Congress Ave.		13,100	14,000	18,800	900	5,700	1.7%	1.5%	14,100	18,900	100	100	14,100	18,900	0	0
		8,100	9,000	13,700	900	5,600	2.7%	2.2%	9,100	13,800	100	100	9,600	14,300	500	500
		190,600	**206,400**	**236,900**	**15,800**	**46,300**	**2.0%**	**0.9%**	**208,900**	**240,300**	**2,500**	**3,400**	**211,500**	**244,100**	**2,600**	**3,800**
48 - SR 794 (Yamato Rd.)		30,400	31,100	39,600	700	9,200	0.6%	1.1%	31,200	39,700	100	100	30,900	39,300	-300	-400
		37,900	34,900	38,100	-3,000	200	-2.0%	0.0%	34,700	38,300	-200	200	34,800	38,400	100	100
		198,100	**210,200**	**235,400**	**12,100**	**37,300**	**1.5%**	**0.7%**	**212,400**	**238,900**	**2,200**	**3,500**	**215,400**	**243,200**	**3,000**	**4,300**
Spanish River Blvd			21,900	26,500					21,900	26,600	0	100	21,900	26,600	0	0
			14,500	25,300					14,700	25,600	200	300	15,300	26,900	600	1,300
		198,100	**202,800**	**234,200**	**4,700**	**36,100**	**0.6%**	**0.7%**	**205,200**	**237,900**	**2,400**	**3,700**	**208,800**	**243,500**	**3,600**	**5,600**
45 - SR 808 (Glades Rd.)		34,000	27,500	33,800	-6,500	-200	-5.2%	0.0%	27,700	34,300	200	500	27,500	34,000	-200	-300
		39,900	33,100	35,600	-6,800	-4,300	-4.6%	-0.5%	33,300	35,900	200	300	33,600	36,200	300	300
		204,000	**208,400**	**236,000**	**4,400**	**32,000**	**0.5%**	**0.6%**	**210,800**	**239,500**	**2,400**	**3,500**	**214,900**	**245,700**	**4,100**	**6,200**
44 - CR 798 (Palmetto Park Rd.)		27,700	28,700	37,300	1,000	9,600	0.9%	1.2%	28,800	38,200	100	900	28,700	37,800	-100	-400
		31,500	32,300	35,500	800	4,000	0.6%	0.5%	32,100	35,300	-200	-200	33,100	36,600	1,000	1,300
		207,800	**212,000**	**234,200**	**4,200**	**26,400**	**0.5%**	**0.5%**	**214,100**	**236,600**	**2,100**	**2,400**	**219,300**	**244,500**	**5,200**	**7,900**
42 - SR 810 (Hillsboro Blvd.)		27,500	28,100	30,900	600	3,400	0.5%	0.5%	27,900	30,700	-200	-200	27,900	30,500	0	-200
		32,800	33,900	39,700	1,100	6,900	0.8%	0.8%	32,200	37,600	-1,700	-2,100	32,700	38,100	500	500
		213,100	**217,800**	**243,000**	**4,700**	**29,900**	**0.5%**	**0.5%**	**218,400**	**243,500**	**600**	**500**	**224,100**	**252,100**	**5,700**	**8,600**
41 - SR 869 (SW 10th St.)		31,500	32,500	37,800	1,000	6,300	0.8%	0.8%	40,200	47,300	7,700	9,500	46,900	60,600	6,700	13,300
		30,300	31,600	39,200	1,300	8,900	1.1%	1.1%	35,700	43,400	4,100	4,200	38,700	48,800	3,000	5,400
		211,900	**216,900**	**244,400**	**5,000**	**32,500**	**0.6%**	**0.6%**	**213,900**	**239,600**	**-3,000**	**-4,800**	**215,900**	**240,300**	**2,000**	**700**
39 - SR 834 (Sample Rd.)		27,100	28,100	33,300	1,000	6,200	0.9%	0.9%	27,500	32,800	-600	-500	27,800	33,100	300	300
		37,800	38,600	42,600	800	4,800	0.5%	0.5%	38,300	42,700	-300	100	38,100	42,500	-200	-200
		222,600	**227,400**	**253,700**	**4,800**	**31,100**	**0.5%**	**0.5%**	**224,700**	**249,500**	**-2,700**	**-4,200**	**226,200**	**249,700**	**1,500**	**200**
38 - Copans Rd.		24,700	25,200	29,500	500	4,800	0.5%	0.7%	25,700	30,500	500	1,000	25,400	30,200	-300	-300
		37,000	37,700	41,900	700	4,900	0.5%	0.5%	37,500	42,300	-200	400	37,700	42,600	200	300
		234,900	**239,900**	**266,100**	**5,000**	**31,200**	**0.5%**	**0.5%**	**236,500**	**261,300**	**-3,400**	**-4,800**	**238,500**	**262,100**	**2,000**	**800**
36 - SR 814 (Atlantic Blvd.)		42,000	42,800	51,200	800	9,200	0.5%	0.8%	42,900	52,500	100	1,300	43,200	52,200	300	-300
		44,800	45,700	50,500	900	5,700	0.5%	0.5%	46,400	51,500	700	1,000	46,500	51,600	100	100
		237,700	**242,800**	**265,400**	**5,100**	**27,700**	**0.5%**	**0.5%**	**240,000**	**260,300**	**-2,800**	**-5,100**	**241,800**	**261,500**	**1,800**	**1,200**

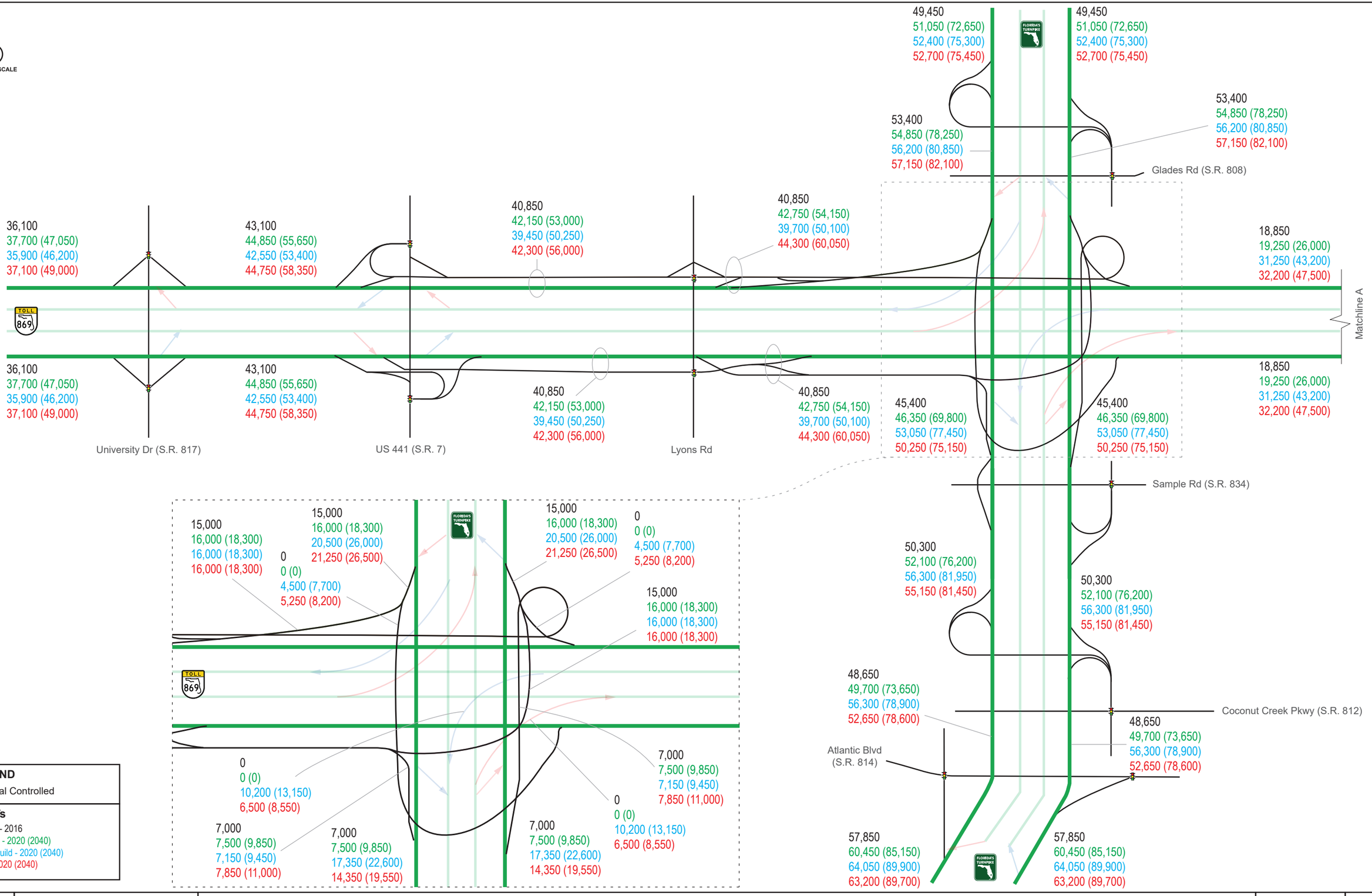
Negative growth.

No-Build – Includes 95 Express Phase 3, 10-lane Turnpike Mainline Widening, 10-lane Sawgrass Expressway Widening.

Partial-Build – Includes No-Build with full interchange at Sawgrass Expressway and SW 10th/95 Express direct connect ramps.

Build – Includes Partial-Build with four-lane SW 10th Express Lanes and intermediate access point between Powerline Road and Military Trail.

NOT TO SCALE



LEGEND

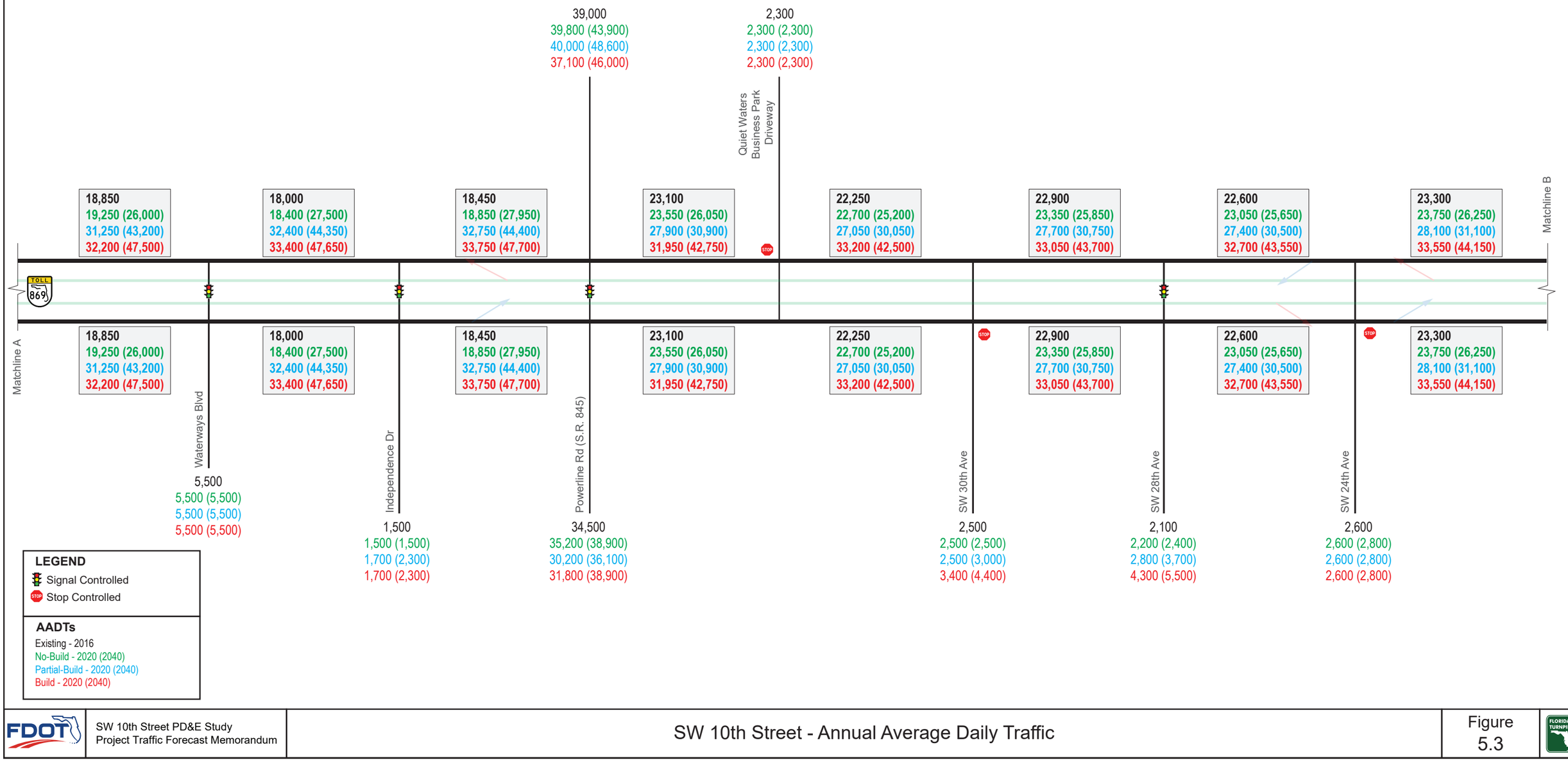
Signal Controlled

AADTs

Existing - 2016
No-Build - 2020 (2040)
Partial-Build - 2020 (2040)
Build - 2020 (2040)

FDOT	SW 10th Street PD&E Study Project Traffic Forecast Memorandum	Sawgrass Expressway (S.R. 869) and Florida's Turnpike Mainline (S.R. 91) - Annual Average Daily Traffic	Figure 5.2

NOT TO SCALE



FDOT	SW 10th Street PD&E Study Project Traffic Forecast Memorandum	SW 10th Street - Annual Average Daily Traffic	Figure 5.3

NOT TO SCALE

Matchline B

24,000
24,500 (27,100)
28,100 (30,000)
26,500 (29,400)

5,500
5,600 (6,200)
7,600 (8,200)
7,300 (8,700)

23,300
23,750 (26,250)
28,100 (31,100)
33,550 (44,150)

26,500
27,050 (29,900)
32,050 (38,000)
38,250 (46,600)

27,250
27,850 (30,950)
32,500 (38,150)
38,850 (47,100)

S Military Trl

29,000
29,600 (32,700)
27,700 (30,600)
29,200 (30,600)

E Newport Center Dr

7,400
7,500 (8,300)
7,600 (8,600)
7,800 (8,900)

8,800
9,000 (10,000)
9,000 (10,000)
9,100 (10,000)

103,900
105,200 (115,600)
106,500 (116,100)
109,250 (121,050)

13,500
13,800 (15,200)
13,700 (15,100)
13,700 (15,200)

57,000
58,100 (64,200)
56,600 (61,900)
56,800 (62,000)

7,600
8,100 (11,100)
7,200 (9,800)
7,200 (10,000)

106,800
108,500 (121,500)
109,000 (120,800)
111,850 (125,850)

15,000
15,600 (18,700)
19,300 (22,700)
22,500 (29,100)

103,900
106,800 (118,600)
107,600 (120,500)
110,050 (123,450)

7,700
7,900 (8,700)
7,900 (8,700)
7,950 (8,750)

7,600
7,800 (8,600)
7,000 (7,800)
7,200 (8,100)

58,000
59,200 (65,400)
59,200 (65,400)
59,500 (65,500)

Hillsboro Blvd (S.R. 810)

INTERSTATE 95

8,800
9,000 (10,000)
9,000 (10,000)
9,200 (10,000)

6,300
6,400 (7,000)
6,300 (6,900)
6,250 (6,550)

11,000
11,200 (12,400)
12,700 (13,900)
13,300 (14,200)

106,300
109,300 (121,500)
109,400 (122,700)
112,250 (126,250)

SW Natura Park Blvd

40,000
40,900 (45,600)
42,400 (46,300)
44,700 (46,300)

34,500
35,200 (38,900)
36,500 (39,500)
38,300 (39,300)

SW 10th St

FAU Research Park Blvd

14,500
15,200 (19,500)
16,700 (22,400)
18,050 (23,200)

13,300
13,800 (16,300)
13,500 (15,900)
13,650 (16,050)

106,300
108,100 (122,300)
106,400 (120,500)
107,400 (119,950)

10,200
10,400 (11,500)
10,400 (11,500)
10,400 (11,500)

16,500
16,900 (19,100)
20,900 (24,600)
24,400 (31,500)

15,800
16,400 (19,700)
19,000 (21,000)
20,650 (25,600)

105,600
108,800 (122,100)
107,500 (119,100)
108,500 (120,350)

9,700
10,400 (14,800)
11,900 (20,400)
11,100 (20,500)

5,100
5,400 (7,100)
5,300 (7,100)
5,400 (7,100)

58,500
59,700 (66,000)
59,600 (65,900)
59,100 (65,500)

51,000
52,300 (59,100)
52,100 (58,500)
52,000 (58,700)

Sample Rd (S.R. 834)

9,600
9,800 (10,800)
9,600 (10,900)
9,400 (10,600)

18,000
18,400 (20,300)
18,300 (20,300)
18,300 (20,400)

8,700
8,900 (9,900)
8,700 (9,800)
8,750 (9,950)

112,800
114,500 (128,300)
112,900 (127,000)
113,550 (126,000)

109,800
112,900 (125,400)
111,800 (122,500)
112,650 (123,700)

LEGEND

Signal Controlled

AADTs

Existing - 2016
No-Build - 2020 (2040)
Partial-Build - 2020 (2040)
Build - 2020 (2040)

FDOT	SW 10th Street PD&E Study Project Traffic Forecast Memorandum	SW 10th Street and I-95 (S.R. 9) - Annual Average Daily Traffic	Figure 5.4

5.3 FUTURE ORIGIN-DESTINATION MOVEMENTS

Future year origin-destination flow matrix for the study corridors were developed to estimate the Express Lanes traffic using the ELToD model for three future year scenarios: No-Build, Partial-Build, and Build SW 10th Street. The development of the origin-destination tables were done by time periods and included the following steps:

- Develop future year balanced AADTs using the SERPM subarea model results along with balanced AADTs for the existing conditions (described in Section 5.2).
- Develop corridor DDHVs using the FDOT process of applying Standard K and D factors (Section 5.4)
- Develop 3-hour AM and 3-hour PM peak period traffic by dividing the peak hour traffic by 0.38 for the Turnpike Mainline, Sawgrass Expressway, and SW 10th Street, and 0.36 for I-95. These peak hour to peak period factors were derived using existing traffic counts in these corridors.
- Calculate off-peak period (18-hours) traffic by subtracting AM and PM peak period traffic from the AADTs.
- Perform a matrix estimation process using Cube Analyst to adjust future year SERPM subarea trip tables to match with AM, PM, and off-peak control volumes. The process is very similar to what is described under the model validation section of the report (Section 4.1)

The final products of this process are subarea trip tables for each time period for future years 2020 and 2040. There are 43 zones in the subarea trip tables which were grouped into an 8-zone system. These trip tables were analyzed to identify the through movement volumes on SW 10th Street travelling between Florida's Turnpike and I-95. The through volumes represent vehicles that may use the ELs. **Tables 5.6** through **5.8** provide origin-destination summaries of daily traffic in 2040 for No-Build, Partial-Build, and Build scenarios, respectively. The highlighted cells represent through trips for the SW 10th Street Corridor.

Figures 5.5 through **5.7** depict the 2040 origin-destination patterns for eastbound trips on the SW 10th Street corridor for No-Build, Partial-Build, and Build, respectively. As shown in **Figure 5.5**, in the 2040 No-Build scenario, at the western end near Florida's Turnpike, SW 10th Street carries approximately 26,000 eastbound vehicles. Out of these 26,000 vehicles, 16,200 vehicles travel the full length of SW 10th Street, and either go onto I-95 or continue on SW 10th Street east of I-95. This value is approximately 9,500 vehicles for the existing traffic conditions. For the 2040 Partial-Build Scenario, which includes the new ramps to/from Turnpike to SW 10th Street, eastbound traffic on SW 10th Street near the Turnpike increase to 43,200, as shown in **Figure 5.6**. Out of these, 19,400 vehicles travel the full length of SW 10th Street between Turnpike and I-95. For the SW 10th Street Build Scenario, in which new express lanes are provided between Turnpike and I-95, through traffic increases significantly to 31,700, as depicted in **Figure 5.7**. The uninterrupted high speed travel facilitated by the proposed express lanes increase traffic between the Turnpike and I-95 corridors.

Table 5.6
SW 10th Street Origin-Destination Trip Summary – 2040 No-Build Scenario

Daily		Turnpike north of SW 10th Street	Sawgrass Expressway west of Turnpike	Turnpike south of SW 10th Street	I-95 north of SW 10th Street	I-95 south of SW 10th Street	SW 10th Street east of I-95	Powerline Road	Military Trail	Total
		1	2	3	4	5	6	7	8	
Turnpike north of SW 10th Street	1	0	18,300	59,800	0	0	0	0	0	**78,100**
Sawgrass Expressway west of Turnpike	2	18,300	0	9,900	8,100	2,200	5,900	5,600	4,200	**54,200**
Turnpike south of SW 10th Street	3	59,800	9,900	0	0	0	0	0	0	**69,700**
I-95 north of SW 10th Street	4	0	8,000	0	0	102,700	4,900	700	5,300	**121,600**
I-95 south of SW 10th Street	5	0	2,200	0	102,700	0	14,900	200	2,300	**122,300**
SW 10th Street east of I-95	6	0	5,900	0	5,000	14,800	0	1,300	5,000	**32,000**
Powerline Road	7	0	5,500	0	700	200	1,300	0	2,200	**9,900**
Military Trail	8	0	4,300	0	5,100	2,500	5,000	2,100	0	**19,000**
Total		**78,100**	**54,100**	**69,700**	**121,500**	**122,400**	**32,000**	**9,900**	**19,000**	**506,700**

= Eastbound Through Trips = Westbound Through Trips

Table 5.7
SW 10th Street Origin-Destination Trip Summary – 2040 Partial-Build Scenario

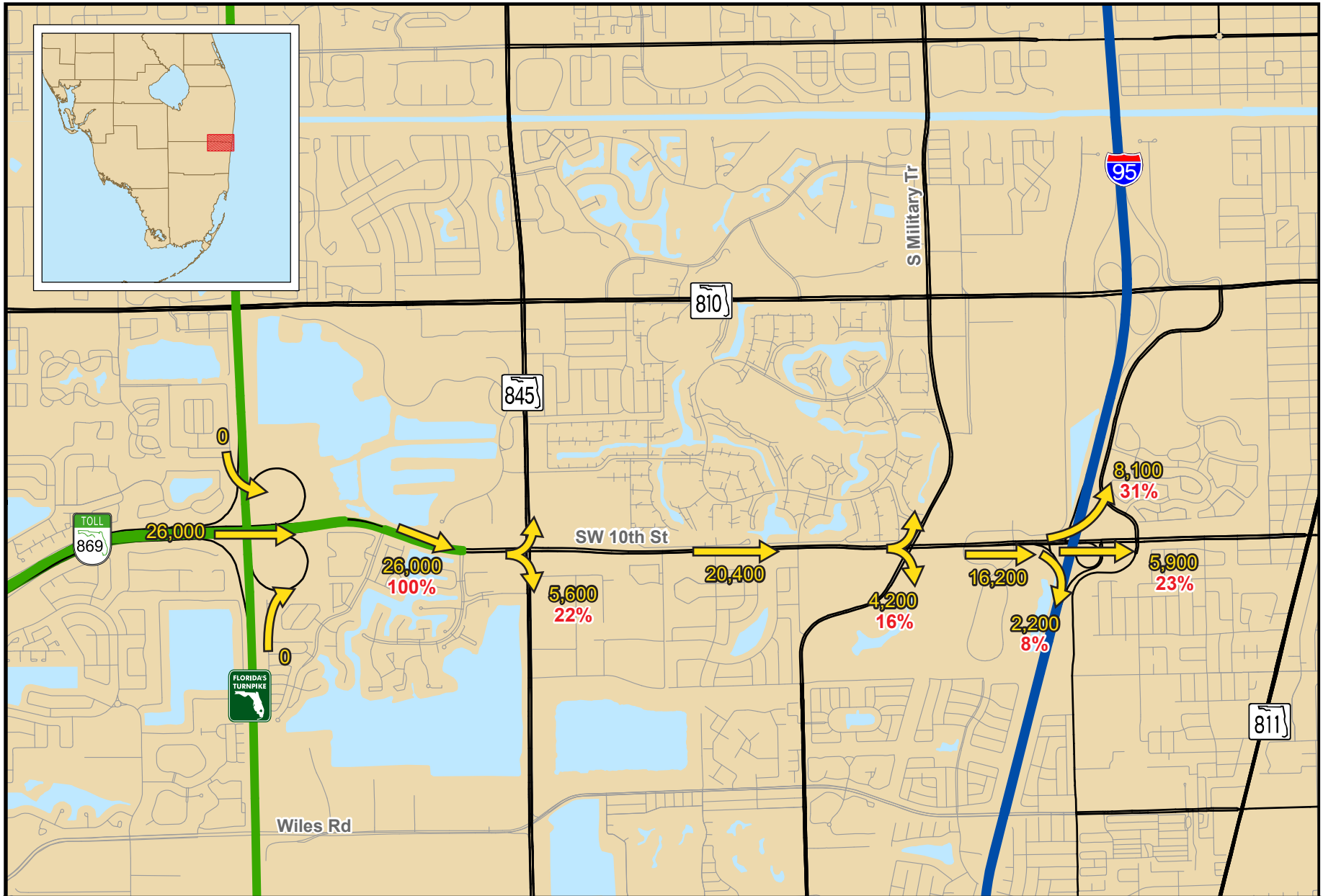
Daily		Turnpike north of SW 10th Street	Sawgrass Expressway west of Turnpike	Turnpike south of SW 10th Street	I-95 north of SW 10th Street	I-95 south of SW 10th Street	SW 10th Street east of I-95	Powerline Road	Military Trail	Total
		1	2	3	4	5	6	7	8	
Turnpike north of SW 10th Street	1	0	18,300	54,700	100	200	800	5,300	1,400	**80,800**
Sawgrass Expressway west of Turnpike	2	18,300	0	9,500	9,700	2,400	3,200	4,100	2,900	**50,100**
Turnpike south of SW 10th Street	3	54,600	9,500	0	1,100	0	1,900	8,200	1,900	**77,200**
I-95 north of SW 10th Street	4	100	9,500	1,000	0	98,200	6,100	700	6,200	**121,800**
I-95 south of SW 10th Street	5	100	2,600	0	98,200	0	15,400	800	2,800	**119,900**
SW 10th Street east of I-95	6	800	3,400	2,000	5,800	15,400	0	1,000	7,300	**35,700**
Powerline Road	7	5,300	3,800	8,200	800	800	1,100	0	1,600	**21,600**
Military Trail	8	1,400	3,000	2,000	6,100	2,900	7,100	1,400	0	**23,900**
Total		**80,600**	**50,100**	**77,400**	**121,800**	**119,900**	**35,600**	**21,600**	**24,100**	**531,100**

= Eastbound Through Trips = Westbound Through Trips

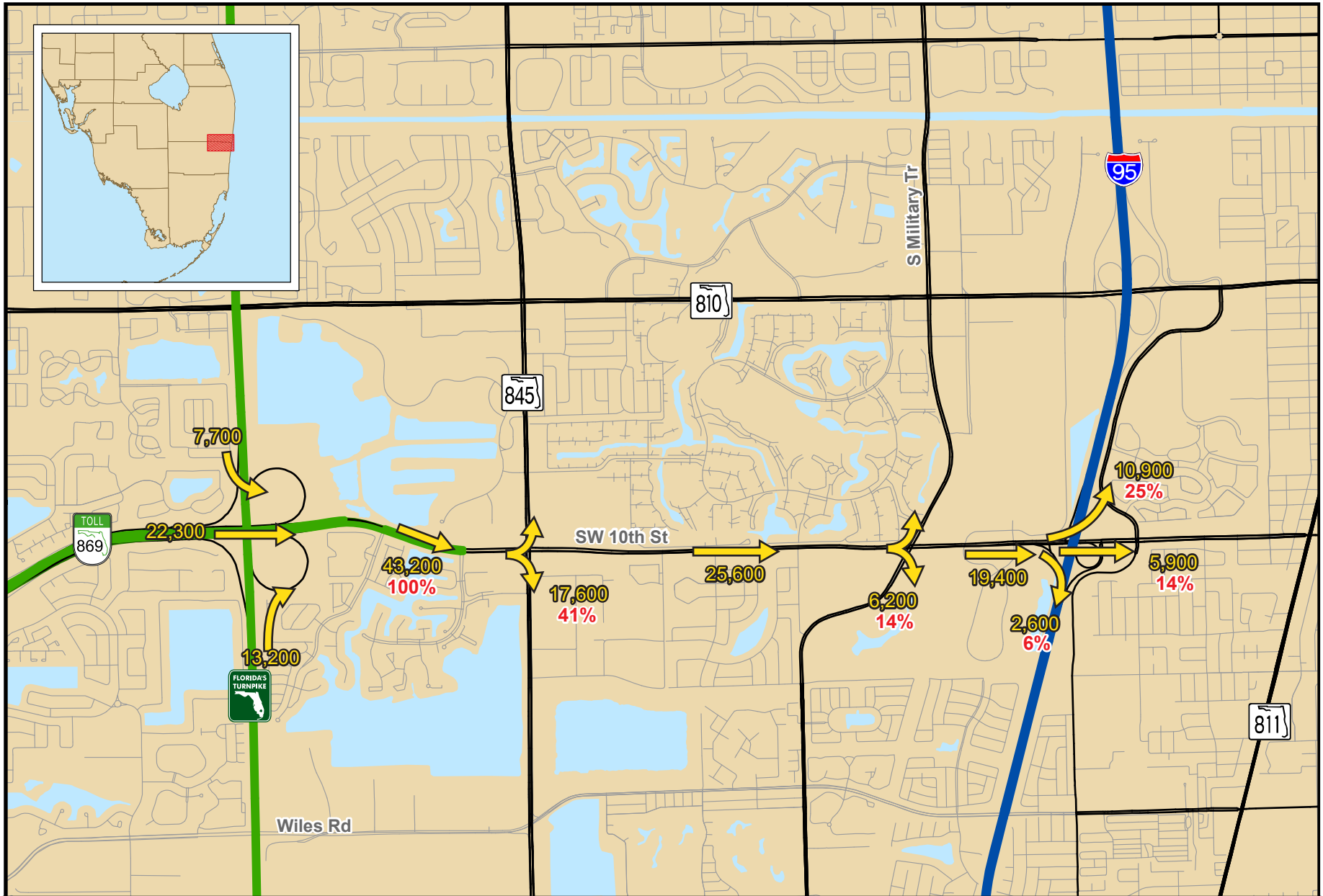
Table 5.8
SW 10th Street Origin-Destination Trip Summary – 2040 Build Option 3D-1.1 Scenario

Daily		Turnpike north of SW 10th Street	Sawgrass Expressway west of Turnpike	Turnpike south of SW 10th Street	I-95 north of SW 10th Street	I-95 south of SW 10th Street	SW 10th Street east of I-95	Powerline Road	Military Trail	Total
		1	2	3	4	5	6	7	8	
Turnpike north of SW 10th Street	1	0	18,300	55,700	100	900	1,000	5,600	500	**82,100**
Sawgrass Expressway west of Turnpike	2	18,300	0	9,300	13,800	3,100	4,100	5,600	2,800	**57,000**
Turnpike south of SW 10th Street	3	55,700	9,300	0	4,200	0	2,300	1,600	2,200	**75,300**
I-95 north of SW 10th Street	4	100	13,500	4,000	0	95,800	5,800	900	6,000	**126,100**
I-95 south of SW 10th Street	5	900	3,000	0	95,800	0	16,200	900	3,400	**120,200**
SW 10th Street east of I-95	6	1,000	4,100	2,200	5,300	16,300	0	1,200	6,000	**36,100**
Powerline Road	7	5,700	5,500	1,600	900	1,000	1,300	0	2,300	**18,300**
Military Trail	8	500	3,200	2,400	6,000	3,100	5,400	2,300	0	**22,900**
Total		**82,200**	**56,900**	**75,200**	**126,100**	**120,200**	**36,100**	**18,100**	**23,200**	**538,000**

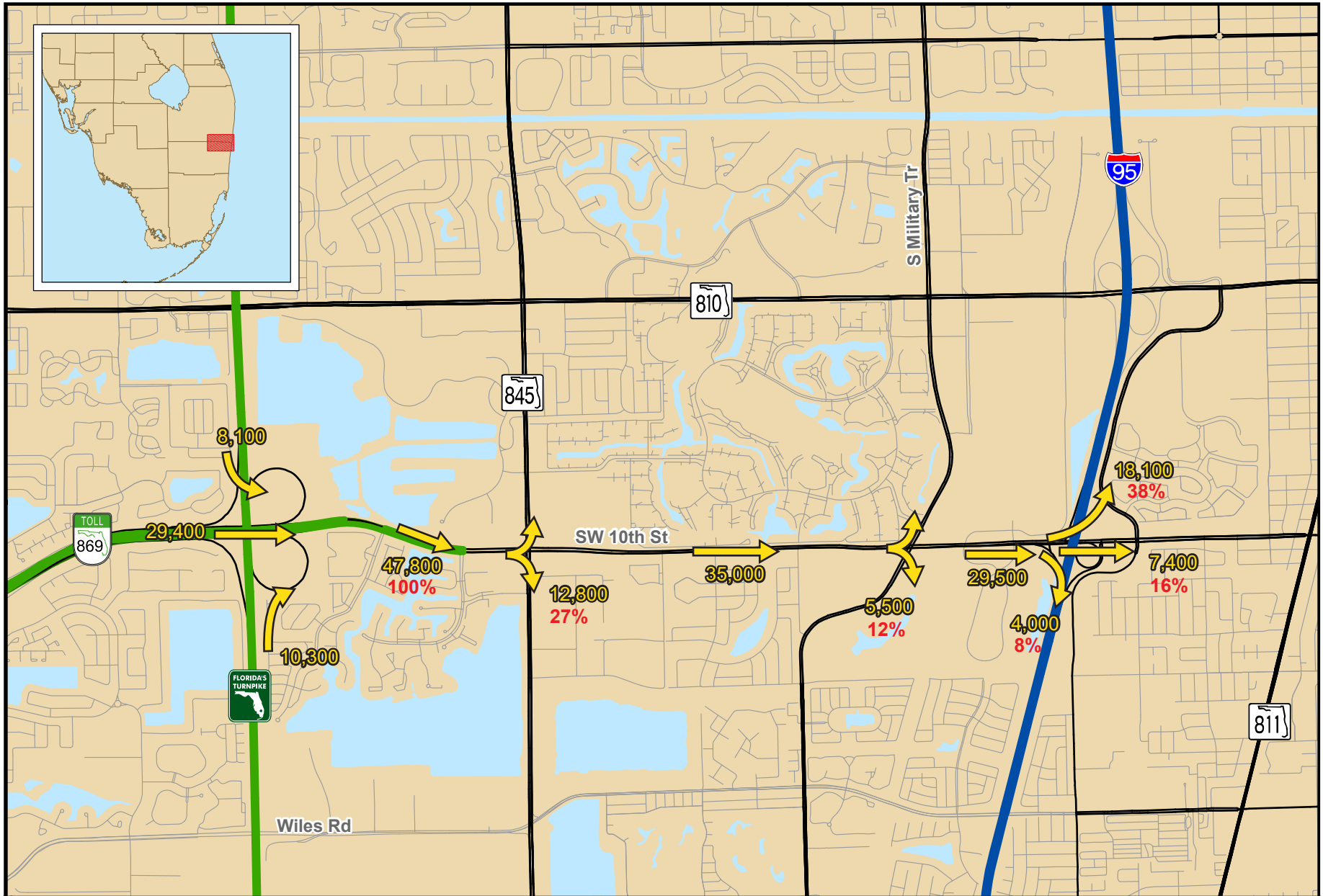
= Eastbound Through Trips = Westbound Through Trips



FDOT	SW 10th Street PD&E Study Project Traffic Memorandum	**2040 No-Build** **Eastbound Daily Origin-Destination Traffic**	**Figure 5.5**	FLORIDA'S TURNPIKE



FDOT	SW 10th Street PD&E Study Project Traffic Memorandum	**2040 Partial-Build Eastbound Daily Origin-Destination Traffic**	**Figure 5.6**



FDOT	SW 10th Street PD&E Study Project Traffic Memorandum	**2040 Build - 3D-1.1** **Eastbound Daily Origin Destination Traffic**	**Figure 5.7**

5.4 DESIGN HOUR TRAFFIC FORECASTS

The development of design hour traffic followed procedures outlined in the FDOT *Project Traffic Forecasting Handbook*. Traffic factors were used to convert AADT to corridor design hour traffic. ELToD is then used to split traffic volumes between express lane traffic and general use lane traffic. Details of the process are provided in the following sections.

5.4.1 Future Traffic Factors

The factors used for developing future year design hour traffic include the Standard K, D, and T_{24} factors. The design year K_{STD}, D, T_{24} factors used for study area roadways are presented in **Table 5.9**. The Standard K is the ratio of the traffic volume in the study hour to the AADT. The D factor is the proportion of traffic based on the median (average) for the design hour of the design year traveling in the peak direction. The T_{24} factor is the daily truck factor and the proportion of the AADT volume composed of trucks. For operational analysis, a design hour T factor is used and is calculated to be half of the T_{24}.

The Standard K factor for SW 10th Street and other local roadways is 9 percent. For the Sawgrass Expressway and Turnpike Mainline, peak hour usage is higher because many drivers elect to make off-peak trips on non-tolled roads when those alternative roadways are not as congested. This decision pattern results in a higher K factors what can be found on urban interstates. Therefore, the Standard K factor for the Turnpike Mainline and the Sawgrass Expressway Mainline is higher than the Standard K factor for I-95. Furthermore, some ramps have observed K factors that are higher than mainline Ks. In those cases, observed ramp Ks were used instead of the Standard K in order to maintain consistency growth between the existing peak hour traffic and forecasted ramp traffic.

For the I-95 Mainline, Standard K (i.e., 8 percent) was not adopted for this project because it yielded an annual growth rate of greater than 1 percent, which is higher than the 0.5 percent annual growth rate calculated from the historical AADT trend. Therefore, a K factor of 7 percent was used for I-95 Mainline, which resulted in a peak hour annual growth rate similar to the AADT trends. For the I-95 ramps, an 8 percent Standard K was used.

The D factors for the entire study area corridor were calculated by link for each peak period based on existing and historical data. It should be noted that the net effective K and D factors are different than the input K and D factors utilized for calculations because of balancing, rounding and harmonizing the design hour volumes between the different roadway systems to develop the entire study area corridor volumes. These net effective K and D factors for 2020 and 2040 are provided in **Appendix F**.

Table 5.9
K and D Factors

Roadway	Standard K Factor	D Factor	T_{24}
Sawgrass Expressway Mainline	10.0%	64.0%	4.0%
Turnpike Mainline	9.5%	51.1%	9.0%
I-95 Mainline	7.0% (mainline) and 8.0% (ramps)	56.7%	4.0% to 6.0%
SW 10th Street			
West of Powerline Road	10.0%	64.0%	3.0%
West of I-95 Interchange	9.0%	51.5%	3.0 to 8.0%
SW 10th Street Arterials			
Powerline Road	9.0%	58.0% to 60.8%	4.0%
Military Trail	9.0%	52.7% to 58.1%	4.0%
Other Cross Streets	9.0%	50.0% to 83.8%	4.0% to 6.0%

5.4.2 Future Corridor DDHVs

The 2020 and 2040 AADT volumes resulting from the corridor forecasting effort was used to calculate corridor DDHVs for the mainline and ramps. The corridor DDHVs development process for each system (i.e., Sawgrass Expressway, SW 10th Street, Turnpike Mainline, and I-95) is described below.

Sawgrass Expressway Mainline

The mainline volume for the Deerfield Mainline Toll Point and for the ramps was calculated by applying the K and D factors to the AADTs. The K factor at the Deerfield Mainline Toll Point was adjusted so that the K factor east of Turnpike Mainline interchange depicted Standard K. The volumes for entire study area corridor along the Sawgrass Expressway Mainline were then calculated by adding and subtracting the ramp volumes from the Deerfield Mainline Toll Point. Also, the volumes for the ramps connecting Sawgrass Expressway and Turnpike Mainline were maintained same to achieve balanced volumes between systems.

The development of the future intersection turning movement volumes along the Sawgrass Expressway Mainline involved multiple steps. The first step was to develop the existing turning movement percentages from the existing counts. These existing turning movement percentages were adjusted, where warranted, based on the turning movement splits produced from the future condition model runs. The second step was to develop the cross street DDHVs, which were developed by applying K and D factors to the cross street AADTs produced from the future condition model runs. The third step was to identify a control point on the cross street and apply the turning movements percentages to the cross street DDHVs. Finally, the cross street DDHVs were

balanced and adjusted so the intersection turning movements balanced with the ramp approach volumes and the selected cross street control point volumes.

The Sawgrass Expressway Mainline and ramp design hour volumes for No-Build, Partial-Build and Build alternatives are summarized in **Tables 5.10** through **5.12**, respectively.

SW 10th Street

The SW 10th Street intersection volumes were developed using TMTool. The SW 10th Street volumes development had two control points; the volumes to/from Sawgrass Expressway mainline (west of Waterways Boulevard) was the control point on the west side and the ramp volumes to/from I-95 was the control point on the east side. The SW 10th Street intersection volumes were adjusted to match the control points at each end of the SW 10th Street corridor. The SW 10th Street design hour volumes for No-Build, Partial-Build, and Build alternatives are summarized in **Tables 5.13** through **5.15**, respectively.

Turnpike Mainline

The mainline volume for the Cypress Creek Mainline Toll Point and for the ramps was calculated by applying the appropriate K and D factors to the AADTs. The volumes for entire study area corridor along the Turnpike Mainline were then calculated by adding and subtracting the ramp volumes from the Cypress Creek Mainline Toll Point as the control volume. The ramp terminal intersection turns were developed using a similar multi-step manual process as the Sawgrass Expressway. The Turnpike Mainline and ramp design hour volumes for No-Build, Partial-Build, and Build alternatives are summarized in **Tables 5.16** through **5.18**, respectively.

I-95 Mainline

The mainline segment north of Hillsboro Boulevard was used as the I-95 mainline control point to calculate the study area corridor volumes. The mainline segment north of Hillsboro Boulevard and ramps volumes were calculated by applying the K and D factors to the AADTs. The volumes for the entire corridor along the I-95 Mainline were then calculated by adding and subtracting the ramps volumes; using north of Hillsboro Boulevard as the control volume. TMTool was used at the ramp terminal intersections to determine the intersection approach volumes. The I-95 mainline and ramp design hour volumes for No-Build, Partial-Build, and Build alternatives are summarized in **Tables 5.19** through **5.21**, respectively.

Table 5.10
No-Build Design Hour Volumes – Sawgrass Expressway

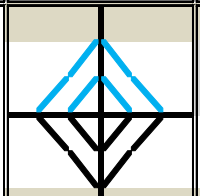
Mile Post - Description	Profile	2020 No-Build (NB)				2040 No-Build (NB)			
		AM		PM		AM		PM	
		SB	NB	SB	NB	SB	NB	SB	NB
West of Waterways Boulevard		**1,980**	**3,080**	**3,080**	**1,980**	**2,240**	**3,490**	**3,490**	**2,240**
20 - SW 10th To/From Turnpike South									
SW 10th To/From Turnpike North									
Sawgrass Expressway To/From Turnpike North		1,760	2,300	2,300	1,760	2,240	2,870	2,870	2,240
Sawgrass Expressway To/From Turnpike South		840	1,730	1,730	840	1,110	2,270	2,270	1,110
		4,580	**7,110**	**7,110**	**4,580**	**5,590**	**8,630**	**8,630**	**5,590**
19 - Lyons Road		620	820	820	620	880	1,160	1,160	880
		860	820	820	860	950	890	890	950
		4,820	**7,110**	**7,110**	**4,820**	**5,660**	**8,360**	**8,360**	**5,660**
18 - U.S. 441/ S.R. 7		510	1,070	1,070	510	660	1,360	1,360	660
		1,220	1,040	1,040	1,220	1,420	1,200	1,200	1,420
		5,530	**7,080**	**7,080**	**5,530**	**6,420**	**8,200**	**8,200**	**6,420**
15 - University Drive		920	1,680	1,680	920	1,310	2,510	2,510	1,310
		420	310	310	420	960	700	700	960
		5,030	**5,710**	**5,710**	**5,030**	**6,070**	**6,390**	**6,390**	**6,070**

Table 5.11
Partial-Build Design Hour Volumes – Sawgrass Expressway

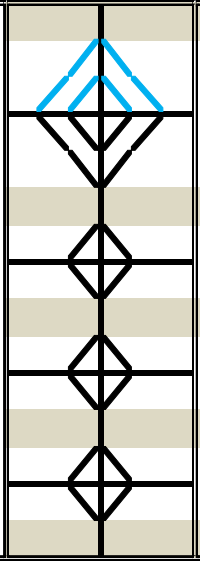
Mile Post - Description	Profile	2020 Partial-Build (PB)				2040 Partial-Build (PB)			
		AM		PM		AM		PM	
		SB	NB	SB	NB	SB	NB	SB	NB
West of Waterways Boulevard		**2,440**	**4,610**	**4,610**	**2,440**	**3,010**	**5,570**	**5,570**	**3,010**
20 - SW 10th To/From Turnpike South		620	1,320	1,320	620	800	1,690	1,690	800
SW 10th To/From Turnpike North		240	660	660	240	490	1,050	1,050	490
Sawgrass Expressway To/From Turnpike North		1,760	2,300	2,300	1,760	2,240	2,870	2,870	2,240
Sawgrass Expressway To/From Turnpike South		790	1,710	1,710	790	1,060	2,250	2,250	1,060
		4,130	**6,640**	**6,640**	**4,130**	**5,020**	**7,950**	**7,950**	**5,020**
19 - Lyons Road		590	780	780	590	860	1,130	1,130	860
		880	840	840	880	1,110	1,040	1,040	1,110
		4,420	**6,700**	**6,700**	**4,420**	**5,270**	**7,860**	**7,860**	**5,270**
18 - U.S. 441/S.R. 7		470	980	980	470	630	1,310	1,310	630
		1,250	1,060	1,060	1,250	1,440	1,220	1,220	1,440
		5,200	**6,780**	**6,780**	**5,200**	**6,080**	**7,770**	**7,770**	**6,080**
15 - University Drive		830	1,580	1,580	830	1,200	2,280	2,280	1,200
		420	310	310	420	970	710	710	970
		4,790	**5,510**	**5,510**	**4,790**	**5,850**	**6,200**	**6,200**	**5,850**

Table 5.12
Build Option 3D-1.1 Design Hour Volumes – Sawgrass Expressway

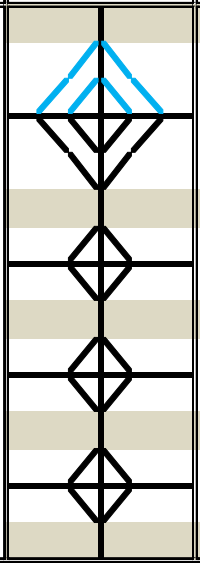
Mile Post - Description	Profile	2020 Build Option 3D-1.1 (Build)				2040 Build Option 3D-1.1 (Build)			
		AM		PM		AM		PM	
		SB	NB	SB	NB	SB	NB	SB	NB
West of Waterways Boulevard		**2,650**	**4,770**	**4,770**	**2,650**	**3,350**	**5,840**	**5,840**	**3,350**
20 - SW 10th To/From Turnpike South		420	900	900	420	530	1,130	1,130	530
SW 10th To/From Turnpike North		290	790	790	290	560	1,210	1,210	560
Sawgrass Expressway To/From Turnpike North		1,760	2,300	2,300	1,760	2,240	2,870	2,870	2,240
Sawgrass Expressway To/From Turnpike South		790	1,710	1,710	790	1,060	2,250	2,250	1,060
		4,490	**7,090**	**7,090**	**4,490**	**5,560**	**8,620**	**8,620**	**5,560**
19 - Lyons Road		590	780	780	590	860	1,130	1,130	860
		830	790	790	830	950	890	890	950
		4,730	**7,100**	**7,100**	**4,730**	**5,650**	**8,380**	**8,380**	**5,650**
18 - U.S. 441/S.R. 7		500	1,050	1,050	500	680	1,410	1,410	680
		1,220	1,040	1,040	1,220	1,420	1,200	1,200	1,420
		5,450	**7,090**	**7,090**	**5,450**	**6,390**	**8,170**	**8,170**	**6,390**
15 - University Drive		920	1,750	1,750	920	1,380	2,630	2,630	1,380
		420	310	310	420	960	700	700	960
		4,950	**5,650**	**5,650**	**4,950**	**5,970**	**6,240**	**6,240**	**5,970**

Table 5.13
No-Build Design Hour Volumes – SW 10th Street

Description	Profile	2020 No-Build (NB)				2040 No-Build (NB)			
		AM		PM		AM		PM	
		SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB
		1,600	**1,410**	**1,450**	**1,760**	**1,790**	**1,515**	**1,575**	**1,940**
Natura Boulevard (to/from North)		650	400	785	455	775	485	910	495
(to/from South)		495	450	635	445	620	520	740	540
		1,905	**1,510**	**1,735**	**1,905**	**2,130**	**1,665**	**1,905**	**2,055**
I-95									
		2,560	**2,595**	**2,570**	**2,570**	**2,845**	**2,850**	**2,845**	**2,785**
Newport Center Drive (to/from North)		125	620	440	160	135	655	485	200
(to/from South)		865	155	170	710	920	170	215	800
		2,000	**3,240**	**3,050**	**2,230**	**2,240**	**3,515**	**3,310**	**2,380**
South Military Trail (to/from North)		1,275	1,415	1,505	1,410	1,375	1,535	1,635	1,535
(to/from South)		955	1,565	1,400	1,050	1,100	1,690	1,520	1,225
		1,865	**2,635**	**2,800**	**2,235**	**2,040**	**2,885**	**3,065**	**2,330**
Driveways (to/from South)									
		1,775	**2,585**	**2,710**	**2,070**	**1,950**	**2,835**	**2,975**	**2,165**
SW 24th Avenue (to/from South)		190	80	125	85	190	85	125	85
		1,800	**2,720**	**2,740**	**2,140**	**1,975**	**2,965**	**3,005**	**2,235**
SW 28th Avenue (to/from South)		40	185	155	85	60	220	170	95
		1,910	**2,685**	**2,725**	**2,195**	**2,105**	**2,935**	**3,000**	**2,305**
SW 30th Avenue (to/from South)		150	70	50	165	150	70	60	165
		1,830	**2,685**	**2,715**	**2,070**	**2,025**	**2,935**	**2,990**	**2,190**
Driveways (Industrial Park) (to/from North)		45	135	150	40	45	135	150	50
		1,815	**2,760**	**2,760**	**2,005**	**2,010**	**3,010**	**3,035**	**2,135**
Powerline Road (S.R. 845) (to/from North)		1,800	2,190	1,915	1,780	2,015	2,465	2,235	2,120
(to/from South)		1,940	1,760	1,510	1,925	2,245	2,030	1,830	2,270
		1,940	**3,455**	**3,415**	**2,110**	**2,200**	**3,865**	**3,825**	**2,370**
Independence Drive (to/from South)		30	90	95	70	30	90	95	70
		1,950	**3,405**	**3,360**	**2,080**	**2,210**	**3,815**	**3,770**	**2,340**
Waterways Boulevard (to/from South)		90	445	385	205	90	445	385	205
		1,980	**3,080**	**3,080**	**1,980**	**2,240**	**3,490**	**3,490**	**2,240**
Turnpike									
Sawgrass Expressway									

Table 5.14
Partial-Build Design Hour Volumes – SW 10th Street

Description	Profile	2020 Partial-Build (PB)				2040 Partial-Build (PB)			
		AM		PM		AM		PM	
		SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB
		1,555	**1,485**	**1,640**	**1,840**	**1,900**	**1,675**	**1,750**	**2,085**
Natura Boulevard (to/from North)		670	415	850	500	830	595	950	605
(to/from South)		510	490	745	520	735	705	885	675
		1,920	**1,615**	**1,900**	**1,975**	**2,340**	**1,910**	**2,010**	**2,210**
I-95									
		3,015	**3,230**	**3,025**	**3,170**	**3,605**	**3,745**	**3,370**	**3,720**
Newport Center Drive (to/from North)		140	650	535	180	185	730	665	215
(to/from South)		890	170	185	760	970	200	210	910
		2,460	**3,905**	**3,615**	**2,830**	**3,040**	**4,495**	**4,080**	**3,280**
South Military Trail (to/from North)		1,295	1,485	1,720	1,305	1,340	1,625	1,845	1,405
(to/from South)		995	1,410	1,385	955	1,090	1,530	1,440	1,170
		2,140	**3,360**	**3,415**	**2,645**	**2,625**	**3,925**	**3,950**	**2,980**
Driveways (to/from South)									
		2,050	**3,310**	**3,325**	**2,480**	**2,535**	**3,875**	**3,860**	**2,815**
SW 24th Avenue (to/from South)		190	80	125	85	190	85	125	85
		2,075	**3,445**	**3,355**	**2,550**	**2,560**	**4,005**	**3,890**	**2,885**
SW 28th Avenue (to/from South)		55	205	165	110	100	300	270	155
		2,185	**3,405**	**3,340**	**2,590**	**2,730**	**3,975**	**3,860**	**2,970**
SW 30th Avenue (to/from South)		150	70	50	165	150	90	60	210
		2,140	**3,440**	**3,390**	**2,525**	**2,695**	**4,000**	**3,930**	**2,890**
Driveways (Industrial Park) (to/from North)		45	135	150	40	45	135	155	50
		2,125	**3,515**	**3,435**	**2,460**	**2,680**	**4,075**	**3,980**	**2,835**
Powerline Road (S.R. 845) (to/from North)		1,720	2,485	2,260	1,535	1,780	2,830	2,835	1,855
(to/from South)		1,990	1,560	1,285	1,960	2,325	1,795	1,590	2,230
		2,250	**4,835**	**4,820**	**2,445**	**2,820**	**5,795**	**5,780**	**3,015**
Independence Drive (to/from South)		30	90	95	70	30	90	95	70
		2,290	**4,815**	**4,790**	**2,440**	**2,860**	**5,775**	**5,750**	**3,010**
Waterways Boulevard (to/from South)		90	445	385	205	90	445	385	205
		2,440	**4,610**	**4,610**	**2,440**	**3,010**	**5,570**	**5,570**	**3,010**
Turnpike									
Sawgrass Expressway									

Table 5.15
Build Option 3D-1.1 Design Hour Volumes – SW 10th Street

Description	Profile	2020 Build Option 3D-1.1 (Build)				2040 Build Option 3D-1.1 (Build)			
		AM		PM		AM		PM	
		SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB
		1,460	**1,685**	**1,835**	**1,560**	**1,735**	**1,805**	**2,050**	**1,920**
Natura Boulevard (to/from North)		660	400	785	455	835	545	990	615
(to/from South)		480	470	635	445	725	725	940	715
		1,770	**1,745**	**2,120**	**1,705**	**2,170**	**1,950**	**2,280**	**2,000**
I-95									
		3,285	**3,810**	**3,775**	**3,230**	**4,225**	**4,695**	**4,400**	**4,220**
Newport Center Drive (to/from North)		135	675	450	155	165	810	700	230
(to/from South)		895	165	165	720	1,005	200	215	920
		2,665	**4,460**	**4,265**	**2,870**	**3,525**	**5,445**	**5,135**	**3,780**
South Military Trail (to/from North)		1,210	1,350	1,375	1,295	1,370	1,500	1,925	1,495
(to/from South)		915	1,395	1,270	990	1,025	1,560	1,550	1,300
		2,430	**3,885**	**3,965**	**2,770**	**3,225**	**4,740**	**5,020**	**3,485**
Driveways (to/from South)									
		2,340	**3,835**	**3,875**	**2,605**	**3,135**	**4,690**	**4,930**	**3,320**
SW 24th Avenue (to/from South)		190	80	125	85	190	85	125	85
		2,365	**3,970**	**3,905**	**2,675**	**3,160**	**4,820**	**4,960**	**3,390**
SW 28th Avenue (to/from South)		65	220	215	135	110	350	345	225
		2,480	**3,980**	**3,880**	**2,730**	**3,350**	**4,770**	**4,905**	**3,455**
SW 30th Avenue (to/from South)		150	125	60	260	150	125	60	260
		2,465	**3,940**	**4,000**	**2,650**	**3,335**	**4,780**	**5,025**	**3,375**
Driveways (Industrial Park) (to/from North)		45	135	150	50	45	135	150	50
		2,450	**4,015**	**4,045**	**2,595**	**3,320**	**4,855**	**5,070**	**3,320**
Powerline Road (S.R. 845) (to/from North)		1,610	2,120	1,825	1,570	1,950	2,825	2,315	2,085
(to/from South)		1,930	1,470	1,265	1,885	2,395	1,900	1,615	2,330
		2,480	**5,015**	**4,910**	**2,585**	**3,180**	**6,085**	**5,980**	**3,285**
Independence Drive (to/from South)		30	90	95	70	30	90	95	70
		2,520	**4,995**	**4,930**	**2,630**	**3,220**	**6,065**	**6,000**	**3,330**
Waterways Boulevard (to/from South)		90	445	385	205	90	445	385	205
		2,650	**4,770**	**4,770**	**2,650**	**3,350**	**5,840**	**5,840**	**3,350**
Turnpike									
Sawgrass Expressway									

Table 5.16
No-Build Design Hour Volumes – Turnpike

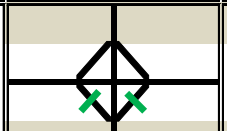
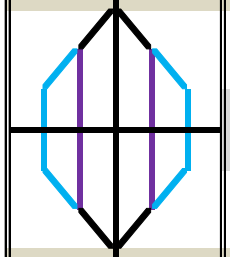
Mile Post - Description	Profile	2020 No-Build (NB)				2040 No-Build (NB)			
		AM		PM		AM		PM	
		SB	NB	SB	NB	SB	NB	SB	NB
		5,960	**4,570**	**4,570**	**5,960**	**7,840**	**6,000**	**6,000**	**7,840**
75 - Glades Road		1,000	670	670	1,000	1,430	950	950	1,430
		1,110	1,950	1,950	1,110	1,430	2,520	2,520	1,430
		6,070	**5,850**	**5,850**	**6,070**	**7,840**	**7,570**	**7,570**	**7,840**
71 - Sawgrass Expressway		1,760	2,300	2,300	1,760	2,240	2,870	2,870	2,240
Sawgrass Expressway West		1,760	2,300	2,300	1,760	2,240	2,870	2,870	2,240
SW 10th Street East									
SW 10th Street East									
Sawgrass Expressway West		1,730	840	840	1,730	2,270	1,110	1,110	2,270
		1,730	840	840	1,730	2,270	1,110	1,110	2,270
		6,040	**4,390**	**4,390**	**6,040**	**7,870**	**5,810**	**5,810**	**7,870**
69 - Sample Road		790	630	630	790	890	710	710	890
		1,430	1,620	1,620	1,430	1,720	1,940	1,940	1,720
		6,680	**5,380**	**5,380**	**6,680**	**8,700**	**7,040**	**7,040**	**8,700**
67 - Coconut Creek Parkway		1,420	770	770	1,420	1,890	1,030	1,030	1,890
		470	820	820	470	680	1,180	1,180	680
		5,730	**5,430**	**5,430**	**5,730**	**7,490**	**7,190**	**7,190**	**7,490**
66 - Atlantic Boulevard		980	1,330	1,330	980	1,050	1,420	1,420	1,050
65 - Pompano Beach Service Area		**6,710**	**6,760**	**6,760**	**6,710**	**8,540**	**8,610**	**8,610**	**8,540**

Table 5.17
Partial-Build Design Hour Volumes – Turnpike

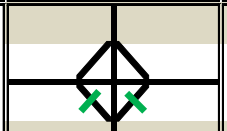
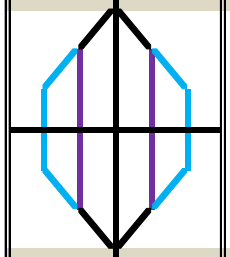
Mile Post - Description	Profile	2020 Partial-Build (PB)				2040 Partial-Build (PB)			
		AM		PM		AM		PM	
		SB	NB	SB	NB	SB	NB	SB	NB
		6,230	**4,720**	**4,720**	**6,230**	**8,360**	**6,330**	**6,330**	**8,360**
75 - Glades Road		560	500	500	560	800	650	650	800
		1,060	1,870	1,870	1,060	1,330	2,380	2,380	1,330
		6,730	**6,090**	**6,090**	**6,730**	**8,890**	**8,060**	**8,060**	**8,890**
71 - Sawgrass Expressway		2,420	2,540	2,540	2,420	3,290	3,360	3,360	3,290
Sawgrass Expressway West		1,760	2,300	2,300	1,760	2,240	2,870	2,870	2,240
SW 10th Street East		660	240	240	660	1,050	490	490	1,050
SW 10th Street East		620	1,320	1,320	620	800	1,690	1,690	800
Sawgrass Expressway West		1,710	790	790	1,710	2,250	1,060	1,060	2,250
		2,330	2,110	2,110	2,330	3,050	2,750	2,750	3,050
		6,640	**5,660**	**5,660**	**6,640**	**8,650**	**7,450**	**7,450**	**8,650**
69 - Sample Road		670	550	550	670	710	590	590	710
		1,110	920	920	1,110	1,320	1,260	1,260	1,320
		7,080	**6,030**	**6,030**	**7,080**	**9,260**	**8,120**	**8,120**	**9,260**
67 - Coconut Creek Parkway		1,440	780	780	1,440	1,930	1,050	1,050	1,930
		460	800	800	460	660	1,160	1,160	660
		6,100	**6,050**	**6,050**	**6,100**	**7,990**	**8,230**	**8,230**	**7,990**
66 - Atlantic Boulevard		960	1,270	1,270	960	1,010	1,320	1,320	1,010
65 - Pompano Beach Service Area		**7,060**	**7,320**	**7,320**	**7,060**	**9,000**	**9,550**	**9,550**	**9,000**

Table 5.18
Build Option 3D-1.1 Design Hour Volumes – Turnpike

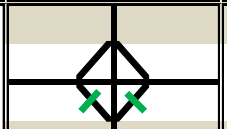
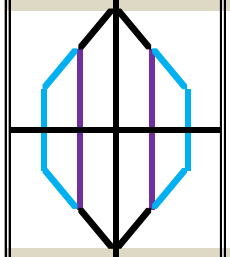
Mile Post - Description	Profile	2020 Option 3D-1.1 (Build)				2040 Option 3D-1.1 (Build)			
		AM		PM		AM		PM	
		SB	NB	SB	NB	SB	NB	SB	NB
		6,630	**4,690**	**4,690**	**6,630**	**9,070**	**6,390**	**6,390**	**9,070**
75 - Glades Road		960	630	630	960	1,270	850	850	1,270
		1,160	2,030	2,030	1,160	1,470	2,580	2,580	1,470
		6,830	**6,090**	**6,090**	**6,830**	**9,270**	**8,120**	**8,120**	**9,270**
71 - Sawgrass Expressway		2,550	2,590	2,590	2,550	3,450	3,430	3,430	3,450
Sawgrass Expressway West		1,760	2,300	2,300	1,760	2,240	2,870	2,870	2,240
SW 10th Street East		790	290	290	790	1,210	560	560	1,210
SW 10th Street East		420	900	900	420	530	1,130	1,130	530
Sawgrass Expressway West		1,710	790	790	1,710	2,250	1,060	1,060	2,250
		2,130	1,690	1,690	2,130	2,780	2,190	2,190	2,780
		6,410	**5,190**	**5,190**	**6,410**	**8,600**	**6,880**	**6,880**	**8,600**
69 - Sample Road		800	630	630	800	840	680	680	840
		1,370	1,520	1,520	1,370	1,640	1,830	1,830	1,640
		6,980	**6,080**	**6,080**	**6,980**	**9,400**	**8,030**	**8,030**	**9,400**
67 - Coconut Creek Parkway		1,440	780	780	1,440	1,940	1,060	1,060	1,940
		470	830	830	470	690	1,190	1,190	690
		6,010	**6,130**	**6,130**	**6,010**	**8,150**	**8,160**	**8,160**	**8,150**
66 - Atlantic Boulevard		960	1,310	1,310	960	1,020	1,370	1,370	1,020
65 - Pompano Beach Service Area		**6,970**	**7,440**	**7,440**	**6,970**	**9,170**	**9,530**	**9,530**	**9,170**

Table 5.19
No-Build Design Hour Volumes – I-95

Mile Post - Description	Profile	2020 No-Build (NB)				2040 No-Build (NB)			
		AM		PM		AM		PM	
		SB	NB	SB	NB	SB	NB	SB	NB
		8,740	**6,670**	**6,540**	**9,580**	**10,200**	**7,390**	**7,520**	**11,260**
50 - Congress Avenue		1,160	280	550	1,410	1,560	370	730	1,890
		280	520	440	270	420	790	680	410
		7,860	**6,910**	**6,430**	**8,440**	**9,060**	**7,810**	**7,470**	**9,780**
48 - S.R. 794 (Yamato Road)		1,820	930	1,160	1,560	2,320	1,190	1,470	1,980
		1,050	2,000	1,790	840	1,150	2,180	1,950	910
		7,090	**7,980**	**7,060**	**7,720**	**7,890**	**8,800**	**7,950**	**8,710**
Spanish River Boulevard		1,100	780	740	1,050	1,230	910	900	1,270
		580	690	650	580	970	1,210	1,030	970
		6,570	**7,890**	**6,970**	**7,250**	**7,630**	**9,100**	**8,080**	**8,410**
45 - S.R. 808 (Glades Road)		1,160	660	850	1,260	1,430	800	1,040	1,550
		750	1,280	1,270	1,040	810	1,370	1,370	1,120
		6,160	**8,510**	**7,390**	**7,030**	**7,010**	**9,670**	**8,410**	**7,980**
44 - C.R. 798 (Palmetto Park Road)		950	1,280	1,160	1,050	1,240	1,670	1,510	1,360
		1,250	1,230	1,080	1,230	1,370	1,350	1,180	1,350
		6,460	**8,460**	**7,310**	**7,210**	**7,140**	**9,350**	**8,080**	**7,970**
42 - S.R. 810 (Hillsboro Boulevard)		1,220	1,270	1,060	1,270	1,430	1,470	1,270	1,470
		1,370	1,310	1,500	1,310	1,640	1,450	1,720	1,440
		6,610	**8,500**	**7,750**	**7,250**	**7,350**	**9,330**	**8,530**	**7,940**
41 - S.R. 869 (SW 10th Street)		1,180	1,460	1,250	1,160	1,420	1,660	1,500	1,320
		1,220	1,070	1,220	1,300	1,550	1,320	1,560	1,590
		6,650	**8,110**	**7,720**	**7,390**	**7,480**	**8,990**	**8,590**	**8,210**
39 - S.R. 834 (Sample Road)		880	1,250	1,110	970	1,050	1,460	1,310	1,150
		1,790	810	1,420	1,570	1,970	970	1,580	1,810
		7,560	**7,670**	**8,030**	**7,990**	**8,400**	**8,500**	**8,860**	**8,870**
38 - Copans Road		940	950	1,040	870	1,100	1,110	1,220	1,020
		1,690	1,290	1,290	1,010	1,880	1,440	1,440	1,120
		8,310	**8,010**	**8,280**	**8,130**	**9,180**	**8,830**	**9,080**	**8,970**
36 - S.R. 814 (Atlantic Boulevard)		1,390	1,530	1,880	1,310	1,660	1,830	2,240	1,570
		1,470	1,560	1,430	1,900	1,620	1,720	1,580	2,100
		8,390	**8,040**	**7,830**	**8,720**	**9,140**	**8,720**	**8,420**	**9,500**

Table 5.20
Partial-Build Design Hour Volumes – I-95

Mile Post - Description	Profile	2020 Partial-Build (PB)				2040 Partial-Build (PB)			
		AM		PM		AM		PM	
		SB	NB	SB	NB	SB	NB	SB	NB
		8,850	**6,750**	**6,610**	**9,680**	**10,320**	**7,510**	**7,650**	**11,400**
50 - Congress Avenue		1,170	280	550	1,420	1,570	380	740	1,900
		280	530	450	270	430	800	680	410
		7,960	**7,000**	**6,510**	**8,530**	**9,180**	**7,930**	**7,590**	**9,910**
48 - S.R. 794 (Yamato Road)		1,830	930	1,160	1,560	2,320	1,190	1,480	1,990
		1,040	1,990	1,780	830	1,150	2,190	1,960	920
		7,170	**8,060**	**7,130**	**7,800**	**8,010**	**8,930**	**8,070**	**8,840**
Spanish River Boulevard		1,100	780	740	1,050	1,230	910	900	1,270
		590	700	660	590	980	1,220	1,040	980
		6,660	**7,980**	**7,050**	**7,340**	**7,760**	**9,240**	**8,210**	**8,550**
45 - S.R. 808 (Glades Road)		1,170	660	860	1,270	1,450	820	1,060	1,570
		760	1,290	1,280	1,040	820	1,390	1,380	1,120
		6,250	**8,610**	**7,470**	**7,110**	**7,130**	**9,810**	**8,530**	**8,100**
44 - C.R. 798 (Palmetto Park Road)		960	1,290	1,160	1,050	1,270	1,710	1,540	1,390
		1,240	1,220	1,070	1,220	1,360	1,340	1,170	1,340
		6,530	**8,540**	**7,380**	**7,280**	**7,220**	**9,440**	**8,160**	**8,050**
42 - S.R. 810 (Hillsboro Boulevard)		1,210	1,250	1,050	1,260	1,420	1,390	1,260	1,440
		1,290	1,250	1,410	1,250	1,600	1,330	1,690	1,320
		6,610	**8,540**	**7,740**	**7,270**	**7,400**	**9,380**	**8,590**	**7,930**
41 - S.R. 869 (SW 10th Street)		1,470	1,820	1,400	1,590	1,800	2,080	1,670	1,880
		1,390	1,220	1,320	1,440	1,750	1,460	1,700	1,760
		6,530	**7,940**	**7,660**	**7,120**	**7,350**	**8,760**	**8,620**	**7,810**
39 - S.R. 834 (Sample Road)		860	1,220	1,070	940	1,010	1,450	1,280	1,140
		1,780	800	1,410	1,560	1,980	970	1,590	1,810
		7,450	**7,520**	**8,000**	**7,740**	**8,320**	**8,280**	**8,930**	**8,480**
38 - Copans Road		960	970	1,060	880	1,140	1,150	1,260	1,050
		1,680	1,280	1,280	1,000	1,900	1,450	1,450	1,130
		8,170	**7,830**	**8,220**	**7,860**	**9,080**	**8,580**	**9,120**	**8,560**
36 - S.R. 814 (Atlantic Boulevard)		1,390	1,530	1,880	1,320	1,700	1,880	2,300	1,610
		1,490	1,580	1,450	1,930	1,660	1,760	1,610	2,140
		8,270	**7,880**	**7,790**	**8,470**	**9,040**	**8,460**	**8,430**	**9,090**

Table 5.21
Build Option 3D-1.1 Design Hour Volumes – I-95

Mile Post - Description	Profile	2020 Build Option 3D-1.1 (Build)				2040 Build Option 3D-1.1 (Build)			
		AM		PM		AM		PM	
		SB	NB	SB	NB	SB	NB	SB	NB
		8,850	**6,770**	**6,610**	**9,880**	**10,380**	**7,620**	**7,720**	**11,510**
50 - Congress Avenue		1,170	280	550	1,420	1,570	380	740	1,900
		300	560	470	280	440	830	710	420
		7,980	**7,050**	**6,530**	**8,740**	**9,250**	**8,070**	**7,690**	**10,030**
48 - S.R. 794 (Yamato Road)		1,810	920	1,140	1,540	2,300	1,180	1,460	1,970
		1,050	2,000	1,790	840	1,160	2,200	1,970	920
		7,220	**8,130**	**7,180**	**8,040**	**8,110**	**9,090**	**8,200**	**8,980**
Spanish River Boulevard		1,120	780	750	1,050	1,230	910	900	1,270
		610	730	690	610	1,030	1,290	1,100	1,030
		6,710	**8,080**	**7,120**	**7,600**	**7,910**	**9,470**	**8,400**	**8,740**
45 - S.R. 808 (Glades Road)		1,150	650	840	1,250	1,440	810	1,050	1,560
		780	1,310	1,300	1,070	830	1,400	1,390	1,130
		6,340	**8,740**	**7,580**	**7,420**	**7,300**	**10,060**	**8,740**	**8,310**
44 - C.R. 798 (Palmetto Park Road)		940	1,270	1,150	1,040	1,260	1,690	1,530	1,380
		1,260	1,250	1,100	1,250	1,420	1,390	1,220	1,390
		6,660	**8,720**	**7,530**	**7,630**	**7,460**	**9,760**	**8,430**	**8,320**
42 - S.R. 810 (Hillsboro Boulevard)		1,200	1,250	1,040	1,230	1,420	1,340	1,260	1,390
		1,320	1,260	1,480	1,240	1,620	1,340	1,700	1,330
		6,780	**8,730**	**7,970**	**7,640**	**7,660**	**9,760**	**8,870**	**8,260**
41 - S.R. 869 (SW 10th Street)		1,720	2,130	1,800	1,900	2,280	2,680	2,200	2,340
		1,510	1,360	1,540	1,570	2,010	1,720	1,950	1,990
		6,570	**7,960**	**7,710**	**7,310**	**7,390**	**8,800**	**8,620**	**7,910**
39 - S.R. 834 (Sample Road)		870	1,240	1,080	960	1,030	1,470	1,300	1,160
		1,770	790	1,370	1,550	1,960	960	1,560	1,820
		7,470	**7,510**	**8,000**	**7,900**	**8,320**	**8,290**	**8,880**	**8,570**
38 - Copans Road		950	960	1,050	870	1,120	1,140	1,250	1,040
		1,690	1,290	1,290	1,010	1,910	1,460	1,460	1,140
		8,210	**7,840**	**8,240**	**8,040**	**9,110**	**8,610**	**9,090**	**8,670**
36 - S.R. 814 (Atlantic Boulevard)		1,400	1,540	1,890	1,320	1,690	1,860	2,290	1,600
		1,490	1,590	1,450	1,930	1,660	1,760	1,610	2,140
		8,300	**7,890**	**7,800**	**8,650**	**9,080**	**8,510**	**8,410**	**9,210**

5.4.3 Express Lane Volumes

ELToD was run for both model forecast years of 2020 and 2040. The input to ELToD was the peak period origin-destination matrices developed through the matrix estimation process previously discussed. The ELToD assignment provided hourly volumes, including the design hour, for all roadway links in the study area. A final process of balancing and harmonizing the initial corridor DDHVs with ELToD splits was performed to ensure a continuous set of express lane and general purpose lane volumes for the corridor.

The No-Build alternative 2020 and 2040 DDHV turns and express lane volumes are depicted in **Figures 5.8** through **5.17**. The Partial-Build alternative 2020 and 2040 DDHV turns and express lane volumes are depicted in **Figures 5.18** through **5.29**. The Build alternative 2020 and 2040 DDHV turns and express lane volumes are depicted in **Figures 5.30** through **5.41**.

Appendix G contains the 2040 DDHV turns and express lane volumes for Build Option 3A and 3D-1.2 through 1.6 (Center Alignment).

NOT TO SCALE

University Dr (S.R. 817)

US 441 (S.R. 7)

Lyons Rd

Glades Rd (S.R. 808)

Sample Rd (S.R. 834)

Coconut Creek Pkwy

Atlantic Blvd (S.R. 814)

Matchline A

FLY-OVER TRAFFIC

(Ramp traffic to/from Blount Rd. not shown.)

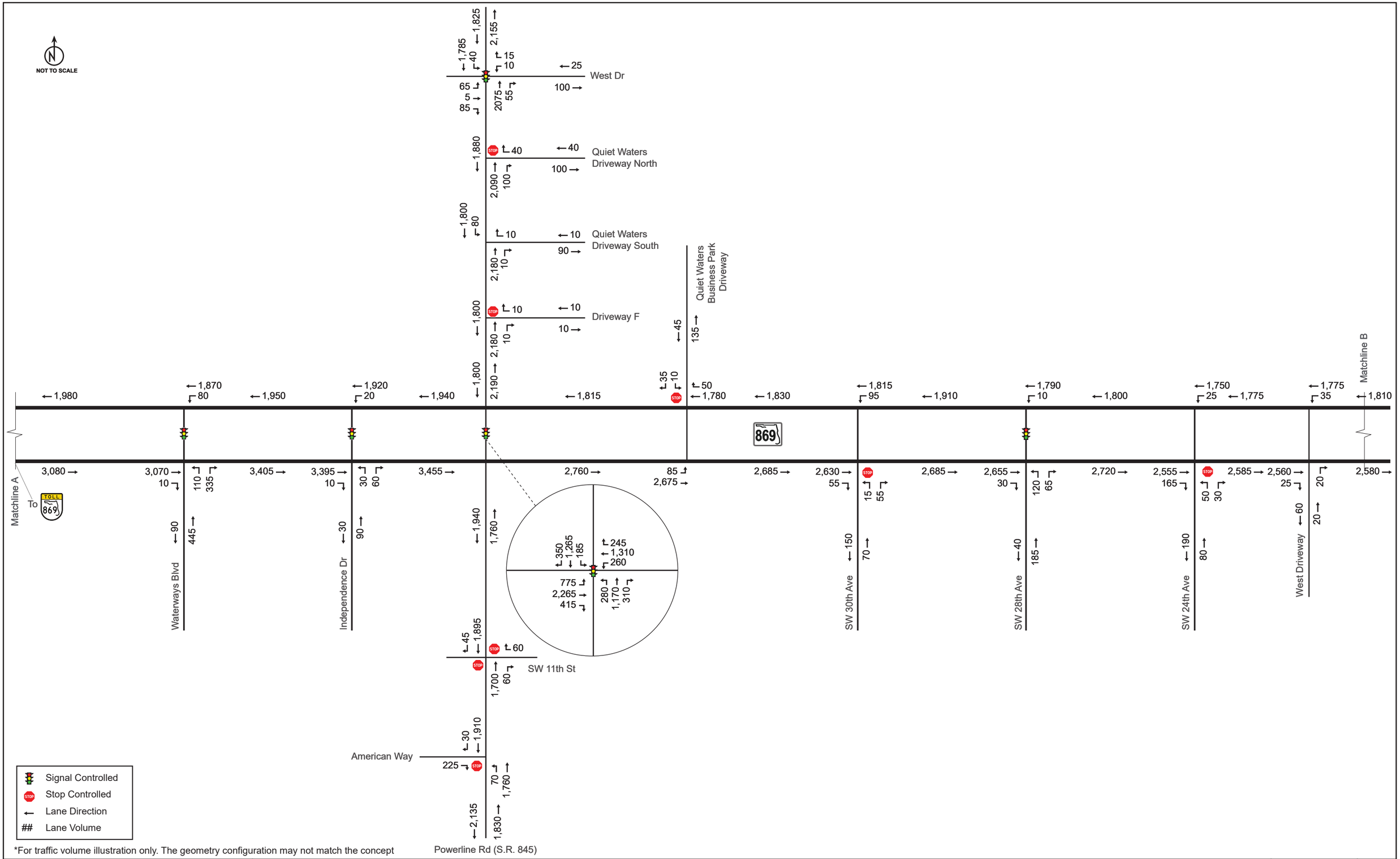
TOLL 869

FLORIDA'S TURNPIKE

Signal Controlled
Lane Direction
Expresss Lane Ingress
Express Lane Egress
Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept

FDOT	SW 10th Street PD&E Study Project Traffic Forecast Memorandum	Sawgrass Expressway (S.R. 869) and Florida's Turnpike Mainline (S.R. 91) - 2020 AM (PM) No-Build DDHV's	Figure 5.8



*For traffic volume illustration only. The geometry configuration may not match the concept

NOT TO SCALE

West Dr

Quiet Waters Driveway North

Quiet Waters Driveway South

Driveway F

Quiet Waters Business Park Driveway

Matchline B

Matchline A

To TOLL 869

Waterways Blvd

Independence Dr

SW 11th St

American Way

Powerline Rd (S.R. 845)

SW 30th Ave

SW 28th Ave

SW 24th Ave

West Driveway

- Signal Controlled
- Stop Controlled
- ← Lane Direction
- ## Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept

NOT TO SCALE

Matchline B

East Dr

SW 12th Ave

Hillsboro Blvd (S.R. 810)

SW Natura Park Blvd

SW 10th St

FAU Research Park Blvd

East Driveway

West

E Newport Center Dr

The Lakes at Deerfield Beach Driveway East

Horizon Club Driveway

S Military Trl

Sample Rd (S.R. 834)

	Signal Controlled
STOP	Stop Controlled
←	Lane Direction
←	Exp Lane ingress
←	Exp Lane egress
##	Lane Volume

*For traffic volume illustration only.The geometry configuration may not match the concept.

NOT TO SCALE

Matchline B

East Dr

SW 12th Ave

E Newport Center Dr

East Driveway

West

The Lakes at Deerfield Beach Driveway East

Horizon Club Driveway

S Military Trl

Hillsboro Blvd (S.R. 810)

SW Natura Park Blvd

SW 10th St

FAU Research Park Blvd

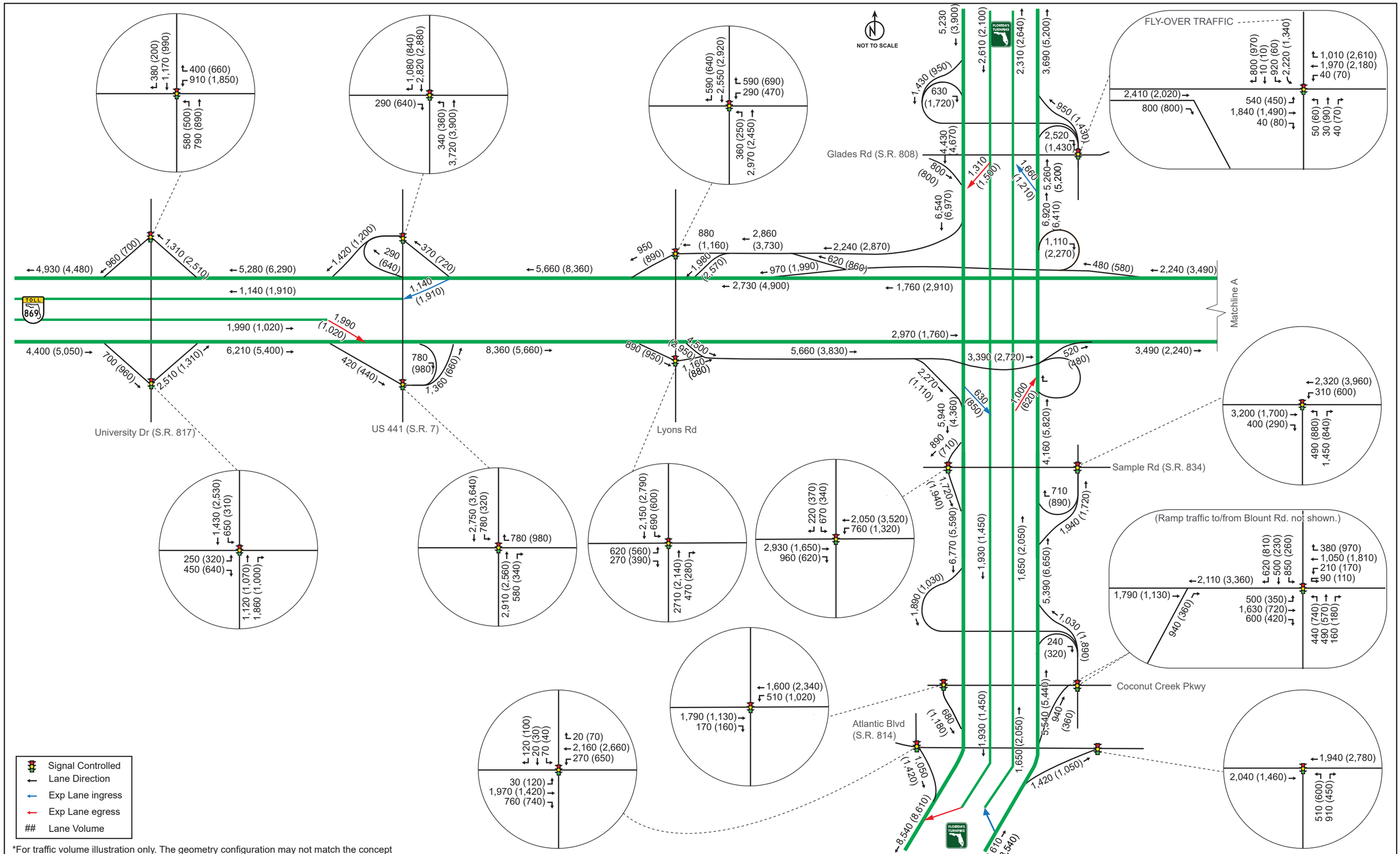
Sample Rd (S.R. 834)

869

95

	Signal Controlled
STOP	Stop Controlled
←	Lane Direction
←	Exp Lane ingress
←	Exp Lane egress
##	Lane Volume

*For traffic volume illustration only.The geometry configuration may not match the concept.



FDOT	SW 10th Street PD&E Study Project Traffic Forecast Memorandum	Sawgrass Expressway (S.R. 869) and Florida's Turnpike Mainline (S.R. 91) - 2040 AM (PM) No-Build DDHV's	Figure 5.13

NOT TO SCALE

West Dr

Quiet Waters Driveway North

Quiet Waters Driveway South

Driveway F

Quiet Waters Business Park Driveway

869

Matchline A

Matchline B

Waterways Blvd

Independence Dr

SW 30th Ave

SW 28th Ave

SW 24th Ave

West Driveway

SW 11th St

American Way

Powerline Rd (S.R. 845)

Signal Controlled

Stop Controlled

Lane Direction

Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept

NOT TO SCALE

West Dr

Quiet Waters Driveway North

Quiet Waters Driveway South

Driveway F

Quiet Waters Business Park Driveway

Matchline B

Matchline A

Waterways Blvd

Independence Dr

SW 30th Ave

SW 28th Ave

SW 24th Ave

West Driveway

SW 11th St

American Way

Powerline Rd (S.R. 845)

869

Signal Controlled
Stop Controlled
← Lane Direction
Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept

SW 10th Street - 2040 PM No-Build DDHV's

Figure 5.15

FLORIDA'S TURNPIKE

NOT TO SCALE

Matchline B

East Dr

SW 12th Ave

Hillsboro Blvd (S.R. 810)

SW Natura Park Blvd

SW 10th St

FAU Research Park Blvd

East Driveway

E Newport Center Dr

West

The Lakes at Deerfield Beach Driveway East

Horizon Club Driveway

S Military Trl

Sample Rd (S.R. 834)

I-95

869

	Signal Controlled
	Stop Controlled
←	Lane Direction
←	Exp Lane ingress
←	Exp Lane egress
##	Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept.

FDOT

SW 10th Street PD&E Study
Project Traffic Forecast Memorandum

SW 10th Street and I-95 (S.R. 9) – 2040 AM No-Build DDHVs

Figure 5.16

FLORIDA'S TURNPIKE

NOT TO SCALE

Matchline B

East Dr

SW 12th Ave

Hillsboro Blvd (S.R. 810)

SW Natura Park Blvd

SW 10th St

FAU Research Park Blvd

East Driveway

West

E Newport Center Dr

The Lakes at Deerfield Beach Driveway East

Horizon Club Driveway

S Military Trl

Sample Rd (S.R. 834)

I-95

869

Signal Controlled
Stop Controlled
Lane Direction
Exp Lane ingress
Exp Lane egress
Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept.

NOT TO SCALE

University Dr (S.R. 817)

US 441 (S.R. 7)

Lyons Rd

Glades Rd (S.R. 808)

Sample Rd (S.R. 834)

Coconut Creek Pkwy

Atlantic Blvd (S.R. 814)

Matchline A

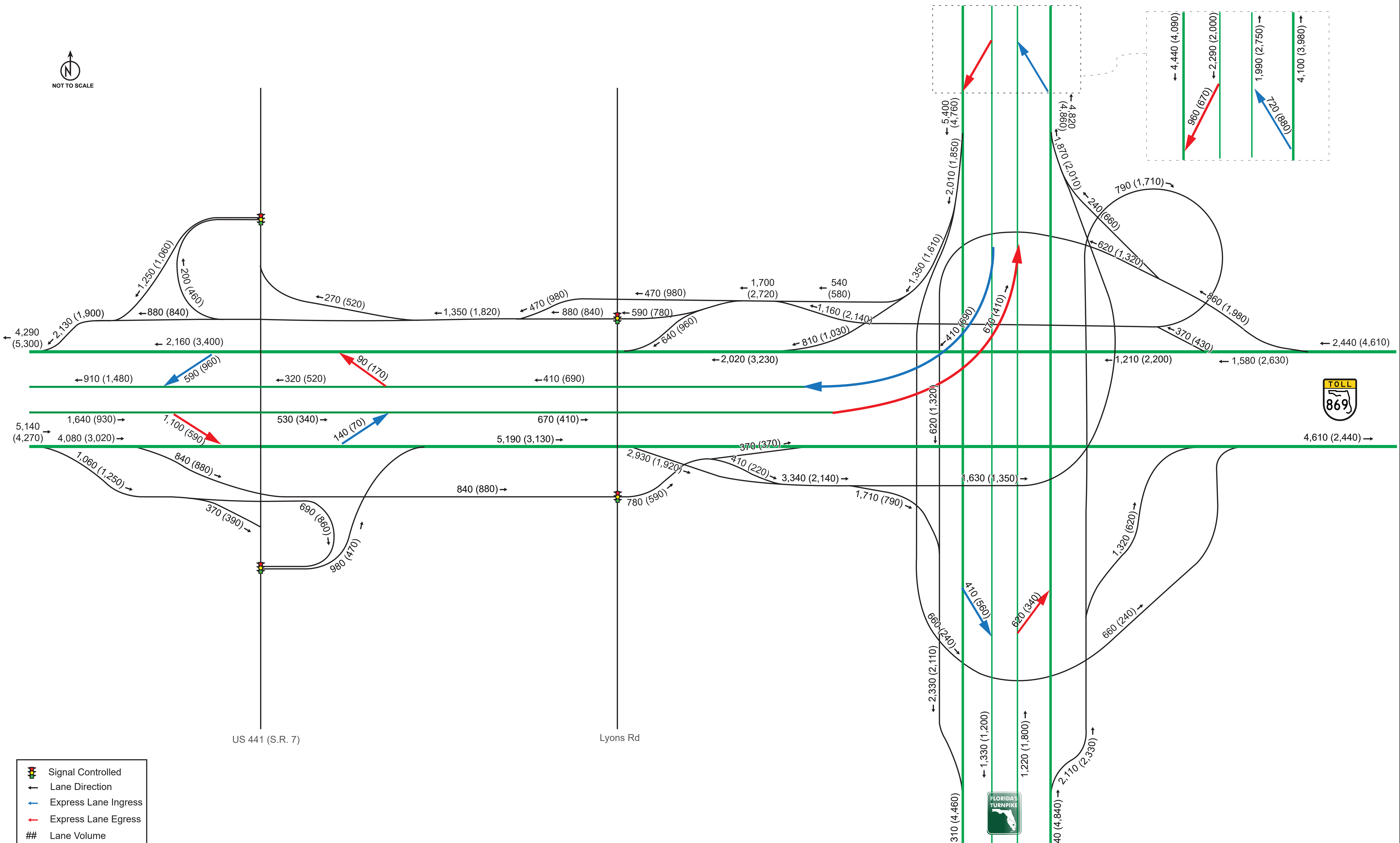
FLY-OVER TRAFFIC

(Ramp traffic to/from Blount Rd. not shown.)

See Figure 5.19

- Signal Controlled
- Lane Direction
- Express Lane Ingress
- Express Lane Egress
- ## Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept



*For traffic volume illustration only. The geometry configuration may not match the concept

SW 10th Street PD&E Study
Project Traffic Forecast Memorandum

Sawgrass Expressway (S.R. 869) and Florida's Turnpike (S.R. 91) - 2020 AM (PM) Partial-Build DDHVs

Figure 5.19

NOT TO SCALE

West Dr

Quiet Waters Driveway North

Quiet Waters Driveway South

Driveway F

Quiet Waters Business Park Driveway

Matchline B

Matchline A

Waterways Blvd

Independence Dr

SW 30th Ave

SW 28th Ave

SW 24th Ave

West Driveway

SW 11th St

American Way

Powerline Rd (S.R. 845)

- Signal Controlled
- Stop Controlled
- Lane Direction
- Exp Lane ingress
- Exp Lane egress
- ## Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept

FDOT	SW 10th Street PD&E Study Project Traffic Forecast Memorandum	SW 10th Street - 2020 AM Partial-Build DDHV's	Figure 5.20

NOT TO SCALE

West Dr

Quiet Waters Driveway North

Quiet Waters Driveway South

Driveway F

Quiet Waters Business Park Driveway

Matchline B

Matchline A

Waterways Blvd

Independence Dr

SW 30th Ave

SW 28th Ave

SW 24th Ave

West Driveway

SW 11th St

American Way

Powerline Rd (S.R. 845)

869

TOLL 869

690

520

Signal Controlled
Stop Controlled
Lane Direction
Exp Lane ingress
Exp Lane egress
Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept

SW 10th Street - 2020 PM Partial-Build DDHV's

Figure 5.21

FLORIDA'S TURNPIKE

NOT TO SCALE

Matchline B

East Dr

SW 12th Ave

Hillsboro Blvd (S.R. 810)

SW Natura Park Blvd

SW 10th St

FAU Research Park Blvd

E Newport Center Dr

West

East Driveway

The Lakes at Deerfield Beach Driveway East

Horizon Club Driveway

S Military Trl

Sample Rd (S.R. 834)

I-95

869

Signal Controlled
Stop Controlled
Lane Direction
Exp Lane ingress
Exp Lane egress
Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept.

SW 10th Street PD&E Study
Project Traffic Forecast Memorandum

SW 10th Street and I-95 (S.R. 9) - 2020 AM Partial-Build DDHV's

Figure 5.22

NOT TO SCALE

Matchline B

East Dr

SW 12th Ave

Hillsboro Blvd (S.R. 810)

SW Natura Park Blvd

SW 10th St

FAU Research Park Blvd

East Driveway

West

E Newport Center Dr

The Lakes at Deerfield Beach Driveway East

Horizon Club Driveway

S Military Trl

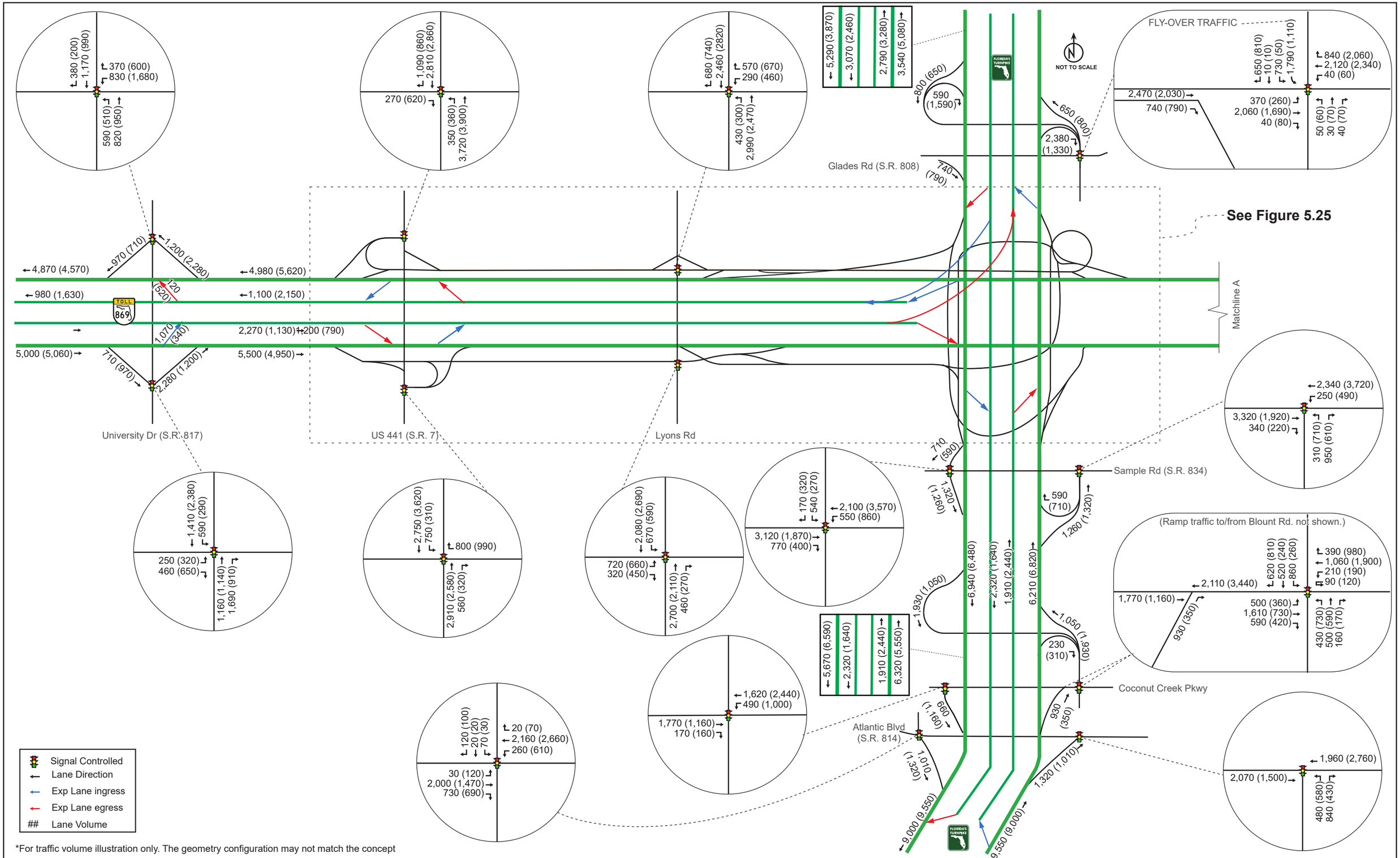
Sample Rd (S.R. 834)

I-95

869

Signal Controlled	
Stop Controlled	
←	Lane Direction
←	Exp Lane ingress
←	Exp Lane egress
##	Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept.



*For traffic volume illustration only. The geometry configuration may not match the concept

FDOT	SW 10th Street PD&E Study Project Traffic Forecast Memorandum	Sawgrass Expressway (S.R. 869) and Florida's Turnpike Mainline (S.R. 91) - 2040 AM (PM) Partial-Build DDHVs	Figure 5.24

NOT TO SCALE

US 441 (S.R. 7)

Lyons Rd

4,980 (5,620)
2,550 (2,260)
1,440 (1,220)
1,110 (1040)
270 (620)
360 (690)
1,740 (2,350)
630 (1,310)
1,110 (1,040)
630 (1,310)
860 (1,130)
680 (1,080)
2,170 (3,520)
640 (700)
1,530 (2,820)
1,070 (1,200)
1,710 (1,900)
2,760 (2,390)
6,860 (6,360)
6,180 (6,560)
2,420 (2,780)
490
1,060 (2,250)
1,050
800 (1,690)
1,290 (2,740)
470 (570)
3,010 (5,570)
2,430 (3,360)
2,320 (3,460)
530 (970)
940 (510)
1,250 (2,260)
1,720 (2,830)
1,100 (2,150)
700 (1,420)
400 (730)
130 (240)
530 (970)
2,270 (1,130)
740 (400)
940 (510)
5,500 (4,950)
4,280 (3,510)
1,530 (730)
200 (110)
5,880 (3,650)
510 (470)
3,560 (2,400)
620 (390)
4,180 (2,790)
2,250 (1,060)
1,930 (1,730)
5,570 (3,010)
1,220 (1,440)
1,040 (1,110)
420 (450)
800 (990)
1,310 (630)
1,040 (1,110)
1,130 (860)
800 (1,690)
1,050 (490)
1,690 (800)
1,050 (490)
820 (910)
970 (620)
3,050 (2,750)
6,330 (5,810)
2,320 (1,640)
1,910 (2,440)
2,750 (3,050)
5,540 (6,210)
5,820 (5,600)
1,040 (760)
3,070 (2,460)
2,790 (3,280)
910 (950)
5,270 (5,610)

TOLL 869

FLORIDA'S TURNPIKE

US 441 (S.R. 7)

Lyons Rd

Signal Controlled
Lane Direction
Express Lane Ingress
Express Lane Egress
Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept

FDOT

SW 10th Street PD&E Study
Project Traffic Forecast Memorandum

Sawgrass Expressway (S.R. 869) and Florida's Turnpike (S.R. 91) - 2040 AM (PM) Partial-Build DDHVs

Figure 5.25

NOT TO SCALE

West Dr

Quiet Waters Driveway North

Quiet Waters Driveway South

Driveway F

Quiet Waters Business Park Driveway

Matchline B

Matchline A

Waterways Blvd

Independence Dr

SW 30th Ave

SW 28th Ave

SW 24th Ave

West Driveway

SW 11th St

American Way

Powerline Rd (S.R. 845)

869

560

1,160

	Signal Controlled
STOP	Stop Controlled
←	Lane Direction
##	Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept

NOT TO SCALE

West Dr

Quiet Waters Driveway North

Quiet Waters Driveway South

Driveway F

Quiet Waters Business Park Driveway

Matchline B

Matchline A

Waterways Blvd

Independence Dr

SW 30th Ave

SW 28th Ave

SW 24th Ave

West Driveway

SW 11th St

American Way

Powerline Rd (S.R. 845)

869

880

640

Signal Controlled

Stop Controlled

← Lane Direction

Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept

NOT TO SCALE

Matchline B

East Dr

SW 12th Ave

Hillsboro Blvd (S.R. 810)

SW Natura Park Blvd

SW 10th St

East Driveway

West

The Lakes at Deerfield Beach Driveway East

Horizon Club Driveway

S Military Trl

E Newport Center Dr

FAU Research Park Blvd

Sample Rd (S.R. 834)

Signal Controlled	
Stop Controlled	
Lane Direction	
Express Lane Ingress	
Express Lane Egress	
##	Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept.

NOT TO SCALE

Matchline B

East Dr

SW 12th Ave

Hillsboro Blvd (S.R. 810)

SW Natura Park Blvd

SW 10th St

East Driveway

West

E Newport Center Dr

The Lakes at Deerfield Beach Driveway East

Horizon Club Driveway

S Military Trl

Sample Rd (S.R. 834)

FAU Research Park Blvd

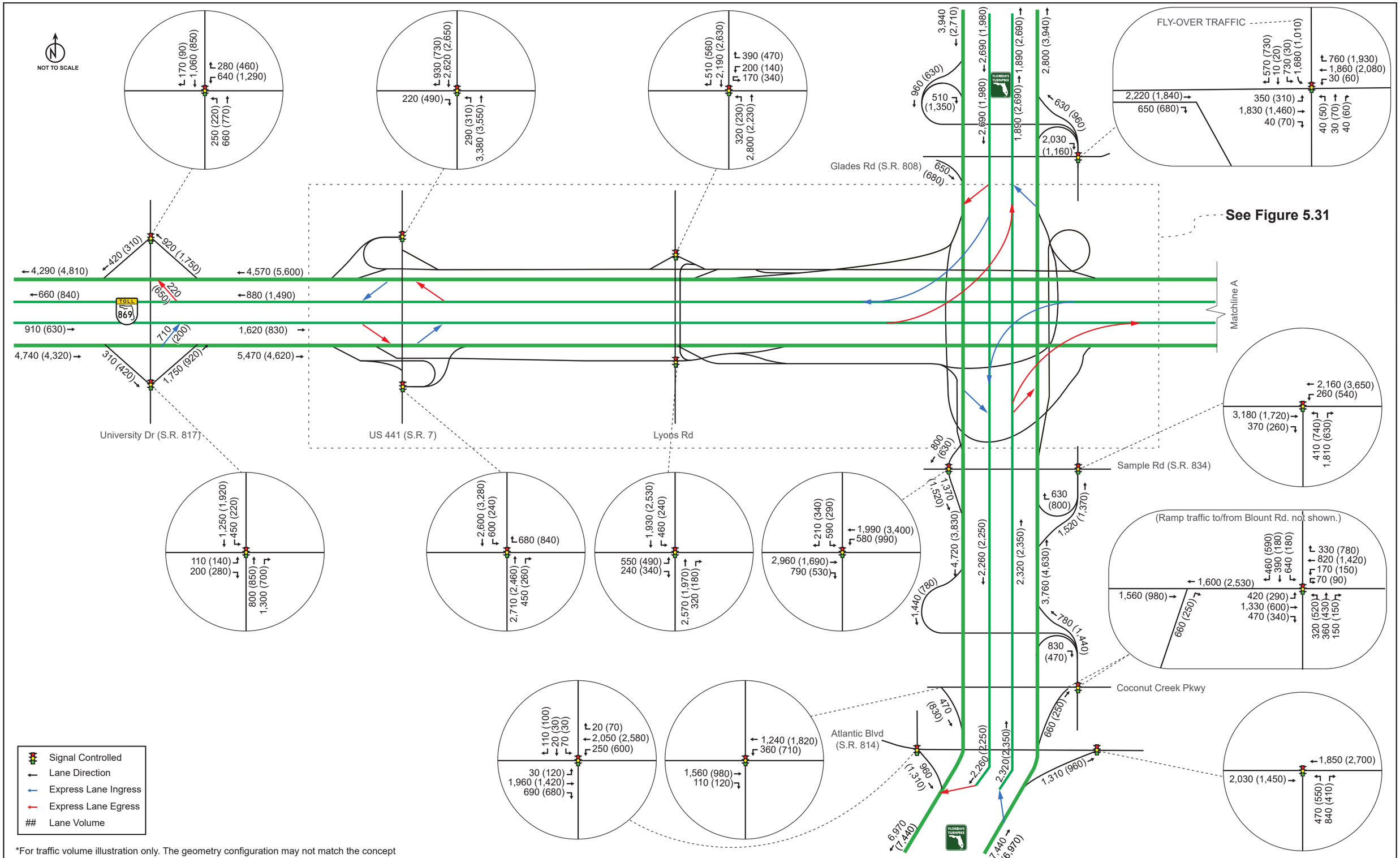
95

869

	Signal Controlled
STOP	Stop Controlled
←	Lane Direction
←	Express Lane Ingress
←	Express Lane Egress
##	Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept.

NOT TO SCALE



Signal Controlled
Lane Direction
Express Lane Ingress
Express Lane Egress
Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept

FDOT	SW 10th Street PD&E Study Project Traffic Forecast Memorandum	Sawgrass Expressway (S.R. 869) and Florida's Turnpike Mainline (S.R. 91) - 2020 AM (PM) Build DDHVs	Figure 5.30

NOT TO SCALE

4,570 (5,600)
2,050 (1,830)
1,220 (1,040)
830 (790)
220 (490)
280 (560)
2,520 (3,770)
2,660 (4,020)
1,330 (1,840)
830 (790)
500 (1,050)
760 (950)
520 (960)
2,370 (3,340)
1,780 (2,960)
1,270 (2,380)
510 (580)
720 (980)
1,850 (2,380)
1,230 (1,560)
2,020 (1,850)
530 (740)
550 (490)
2,040 (2,060)
900 (1,770)
290 (790)
370 (610)
1,130 (1,400)
1,790 (2,800)
4,140 (4,110)
2,690 (1,980)
810 (480)
1,890 (2,690)
440 (800)
4,200 (4,140)

880 (1,490)
140 (250)
740 (1,240)
290 (680)
1,030 (1,920)
860 (1,970)
1,970 (860)
TOLL 869

1,620 (830)
390 (110)
1,230 (720)
500 (270)
1,730 (990)

5,470 (4,620)
4,430 (3,400)
4,580 (2,910)
260 (170)
2,010 (1,500)
360 (790)
790 (360)
2,800 (1,790)

1,040 (1,220)
360 (380)
790 (830)
680 (840)
1,050 (500)
2,830 (1,580)
950 (760)
690 (590)
3,520 (2,170)
1,750 (1,270)
1,770 (900)
790 (290)

790 (290)
550 (700)
630 (590)
1,770 (900)
2,260 (2,250)
2,320 (2,350)
900 (1,770)
4,150 (2,940)
2,870 (4,060)

US 441 (S.R. 7)

Lyons Rd

Signal Controlled
Lane Direction
Express Lane Ingress
Express Lane Egress
Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept

FDOT

SW 10th Street PD&E Study
Project Traffic Forecast Memorandum

Sawgrass Expressway (S.R. 869) and Florida's Turnpike Mainline (S.R. 91) - 2020 AM (PM) Build DDHVs

Figure 5.31

NOT TO SCALE

West Dr

Quiet Waters Driveway North

Quiet Waters Driveway South

Driveway F

Quiet Waters Business Park Driveway

Matchline B

Matchline A

Waterways Blvd

Independence Dr

SW 30th Ave

SW 28th Ave

SW 24th Ave

West Driveway

SW 11th St

American Way

Powerline Rd (S.R. 845)

869

- Signal Controlled
- Stop Controlled
- Lane Direction
- Express Lane Ingress
- Express Lane Egress
- ## Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept

*The left-turn traffic for these intersections may need to be re-assigned depending on the Build alternative configuration.

NOT TO SCALE

West Dr

Quiet Waters Driveway North

Quiet Waters Driveway South

Driveway F

Quiet Waters Business Park Driveway

Matchline B

Matchline A

Waterways Blvd

Independence Dr

SW 30th Ave

SW 28th Ave

SW 24th Ave

West Driveway

SW 11th St

American Way

Powerline Rd (S.R. 845)

869

- Signal Controlled
- Stop Controlled
- Lane Direction
- Express Lane Ingress
- Express Lane Egress
- ## Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept
*The left-turn traffic for these intersections may need to be re-assigned depending on the Build alternative configuration.

SW 10th Street - 2020 PM Build DDHVs

Figure 5.33

NOT TO SCALE

Hillsboro Blvd (S.R. 810)

SW 12th Ave

East Dr

Matchline B

SW Natura Park Blvd

SW 10th St

FAU Research Park Blvd

E Newport Center Dr

East Driveway

West

The Lakes at Deerfield Beach Driveway East

Horizon Club Driveway

S Military Trl

Sample Rd (S.R. 834)

Signal Controlled
Stop Controlled
Lane Direction
Express Lane Ingress
Express Lane Egress
Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept.

NOT TO SCALE

Matchline B

East Dr

SW 12th Ave

Hillsboro Blvd (S.R. 810)

SW Natura Park Blvd

SW 10th St

FAU Research Park Blvd

East Driveway

West

E Newport Center Dr

The Lakes at Deerfield Beach Driveway East

Horizon Club Driveway

S Military Trl

Sample Rd (S.R. 834)

I-95

869

Signal Controlled	
Stop Controlled	
←	Lane Direction
←	Express Lane Ingress
←	Express Lane Egress
##	Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept.

FDOT

SW 10th Street PD&E Study
Project Traffic Forecast Memorandum

SW 10th Street and I-95 (S.R. 9) - 2020 PM Build DDHV's

Figure 5.35

FLORIDA'S TURNPIKE

NOT TO SCALE

FLY-OVER TRAFFIC

Glades Rd (S.R. 808)

University Dr (S.R. 817)

US 441 (S.R. 7)

Lyons Rd

Sample Rd (S.R. 834)

Coconut Creek Pkwy

Atlantic Blvd (S.R. 814)

Matchline A

See Figure 5.37

(Ramp traffic to/from Blount Rd. not shown.)

- Signal Controlled
- Lane Direction
- Express Lane Ingress
- Express Lane Egress
- ## Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept

FDOT	SW 10th Street PD&E Study Project Traffic Forecast Memorandum	Sawgrass Expressway (S.R. 869) and Florida's Turnpike Mainline (S.R. 91) - 2040 AM (PM) Build DDHV's	Figure 5.36

NOT TO SCALE

5,300 (5,780)
2,370 (2,090)
1,420 (1,200)
300 (660)
950 (890)
380 (750)
1,630 (2,300)
680 (1,410)
950 (890)
1,200 (1,470)
540 (980)
2,160 (2,310)
2,420 (3,860)
1,780 (3,160)
640 (700)
910 (1,110)
1,550 (1,810)
2,760 (2,370)
690 (1,060)
980 (740)
2,450 (2,710)
1,290 (2,360)
560 (1,210)
490 (800)
2,300 (3,210)
1,250 (1,200)
2,930 (3,690)
3,150 (4,100)
2,700 (3,290)
220 (410)
450 (810)
1,090 (2,390)
870 (1,980)
1,320 (2,790)
1,050 (2,630)
2,710 (1,370)
2,630 (1,050)
2,330 (1,090)
1,900 (920)
430 (170)
810 (450)
5,840 (5,300)
4,640 (3,880)
4,780 (3,330)
400 (260)
2,000 (1,740)
420 (900)
900 (420)
3,210 (2,300)
1,200 (1,420)
420 (440)
780 (980)
1,410 (680)
890 (950)
3,180 (1,850)
1,470 (1,200)
1,070 (940)
4,250 (2,790)
1,890 (1,500)
2,360 (1,290)
1,210 (560)
840 (1,060)
950 (890)
1,210 (560)
2,360 (1,290)
2,860 (2,860)
2,860 (2,860)
1,290 (2,360)
5,740 (4,020)
4,020 (5,740)
5,790 (5,450)
1,190 (710)
3,480 (2,670)
2,650 (3,480)
660 (1,190)
5,470 (5,790)

TOLL 869

US 441 (S.R. 7)

Lyons Rd

FLORIDA'S TURNPIKE

Signal Controlled
Lane Direction
Express Lane Ingress
Express Lane Egress
Lane Volume

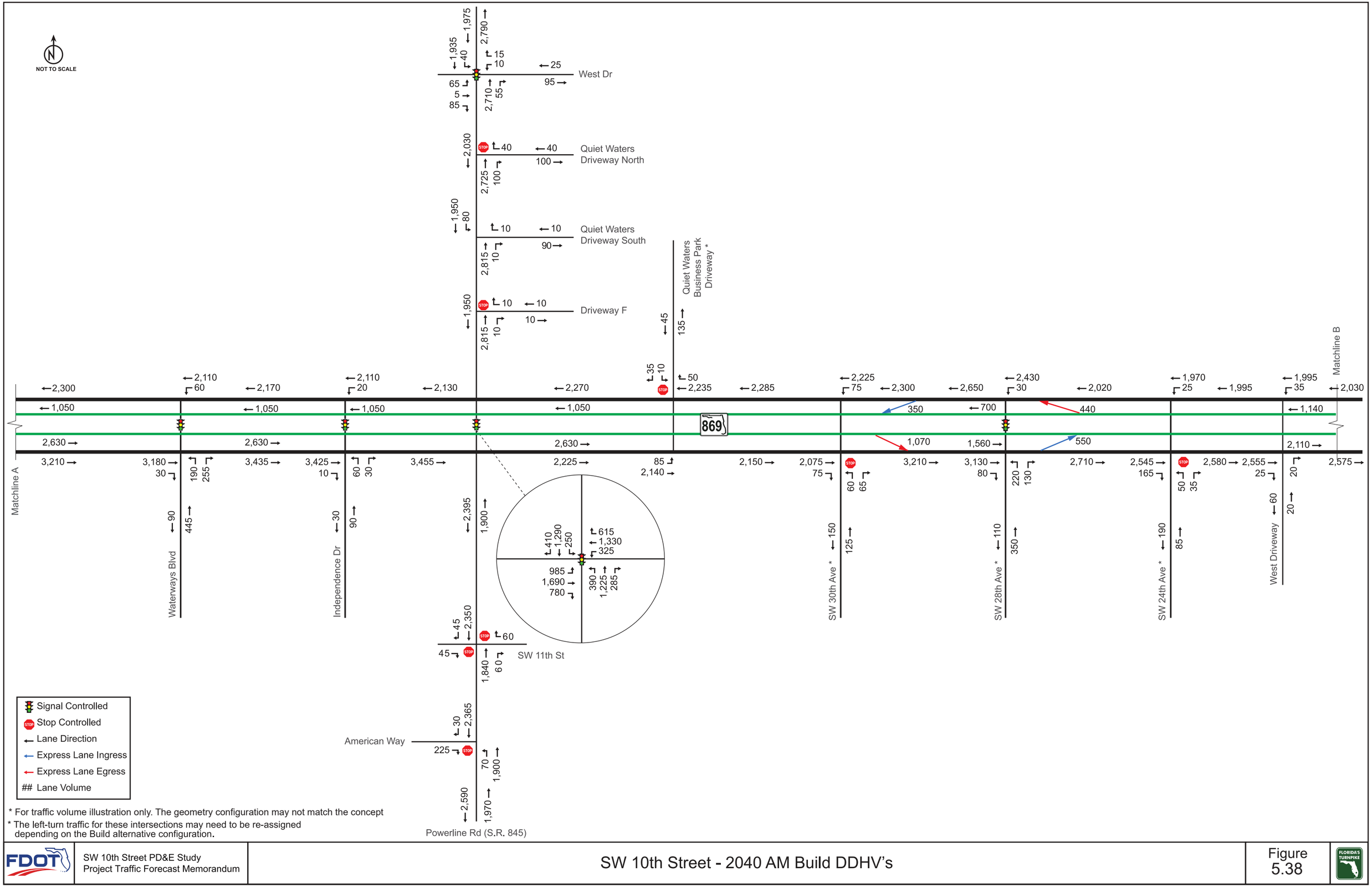
*For traffic volume illustration only. The geometry configuration may not match the concept

FDOT

SW 10th Street PD&E Study
Project Traffic Forecast Memorandum

Sawgrass Expressway (S.R. 869) and Florida's Turnpike Mainline (S.R. 91) - 2040 AM (PM) Build

Figure 5.37


NOT TO SCALE
West Dr
Quiet Waters Driveway North
Quiet Waters Driveway South
Driveway F
Quiet Waters Business Park Driveway *
Matchline B
Matchline A
869
Waterways Blvd
Independence Dr
SW 30th Ave *
SW 28th Ave *
SW 24th Ave *
West Driveway
SW 11th St
American Way
Powerline Rd (S.R. 845)
Signal Controlled
Stop Controlled
Lane Direction
Express Lane Ingress
Express Lane Egress
Lane Volume
* For traffic volume illustration only. The geometry configuration may not match the concept
* The left-turn traffic for these intersections may need to be re-assigned depending on the Build alternative configuration.

NOT TO SCALE

West Dr

Quiet Waters Driveway North

Quiet Waters Driveway South

Driveway F

Quiet Waters Business Park Driveway *

Matchline B

Matchline A

Waterways Blvd

Independence Dr

SW 30th Ave *

SW 28th Ave *

SW 24th Ave *

West Driveway

SW 11th St

American Way

Powerline Rd (S.R. 845)

869

Signal Controlled
Stop Controlled
Lane Direction
Express Lane Ingress
Express Lane Egress
Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept
* The left-turn traffic for these intersections may need to be re-assigned depending on the Build alternative configuration.

NOT TO SCALE

Matchline B

East Dr

SW 12th Ave

Hillsboro Blvd (S.R. 810)

SW Natura Park Blvd

SW 10th St

FAU Research Park Blvd

East Driveway

West

E Newport Center Dr

The Lakes at Deerfield Beach Driveway East

Horizon Club Driveway

S Military Trl

Sample Rd (S.R. 834)

I-95

869

Signal Controlled	
Stop Controlled	
Lane Direction	
Express Lane Ingress	
Express Lane Egress	
##	Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept.

NOT TO SCALE

Matchline B

East Dr

SW 12th Ave

Hillsboro Blvd (S.R. 810)

SW Natura Park Blvd

SW 10th St

FAU Research Park Blvd

East Driveway

West

E Newport Center Dr

The Lakes at Deerfield Beach Driveway East

Horizon Club Driveway

S Military Trl

Sample Rd (S.R. 834)

869

95

Signal Controlled
Stop Controlled
Lane Direction
Express Lane Ingress
Express Lane Egress
Lane Volume

*For traffic volume illustration only. The geometry configuration may not match the concept.

FDOT

SW 10th Street PD&E Study
Project Traffic Forecast Memorandum

SW 10th Street and I-95 (S.R. 9) - 2040 PM Build DDHV's

Figure 5.41

FLORIDA'S TURNPIKE

The traffic operations analysis for the roadway segments are based on *2010 Highway Capacity Manual* (HCM) methodologies.

Intersections were analyzed using Synchro software (Version 9.2, Build 914, Revision 6). A lost time adjustment of -2 seconds has been applied to all ramp intersections and major arterials originating movements.

6.1 NO-BUILD 2040

The analysis was performed with 2040 No-Build Directional Design Hour Volumes (DDHV), intersection lane configurations, and signal timing plans, as of May 2018, without optimization.

The results of the 2040 No-Build unsignalized intersection analysis on SW 10th Street and its cross streets are provided in **Table 6.1**. Results show unacceptable performances at three unsignalized intersections along SW 10th Street and one along South Military Trail.

Table 6.1
No-Build 2040 SW 10th Street Unsignalized Design Hour Intersection Analysis Results

Main Roadway	Cross Street	LOS (Delay)	
		AM	PM
SW 10th Street	Industrial Park	F (90.2)	F (285.0)
	SW 30th Avenue	F (140.4)	F (308.7)
	SW 24th Avenue	F (101.3)	F (95.3)
	Driveway East of SW 24th Avenue	A (0.5)	A (0.7)
	Driveway West of S Military Trail	A (1.9)	A (4.4)
S Military Trail	East Drive	A (0.7)	A (0.6)
	Lakes at Deerfield	A (1.2)	A (0.9)
	Horizon Club	B (13.5)	F (*)
Newport Center Drive	SW 12th Avenue	A (4.6)	B (12.7)
Powerline Road (S.R. 845)	Quiet Waters North	A (0.1)	A (0.3)
	Quiet Waters South	A (0.5)	A (0.1)
	American Way	A (0.9)	A (0.4)

Notes:
(*): No delay reported) does not meet HCM 2010 criteria)
Delay is in seconds/vehicle
Level of Service (LOS) E or F, reflecting unacceptable/failing operations

The signalized intersection analysis of the Sawgrass Expressway, SW 10th Street, Florida's Turnpike, and I-95 is summarized in **Tables 6.2** through **6.9**.

Results for signalized intersections along Sawgrass Expressway indicate that overall, no intersection fails in either design hour though individual movements operate over capacity (LOS F) in both design hours. The intersections at Lyons Road and Sawgrass Expressway Eastbound ramp and University and Sawgrass Expressway Eastbound ramp operates at capacity (LOS E) in the morning design hour.

Results for signalized intersections along SW 10th Street indicate that the Powerline Road, South Military Trail and I-95 northbound ramps intersections operate(s) at LOS F in both design hours. The East New Port Center Drive intersection operate(s) at LOS F in the afternoon design hour. The SW 28th Avenue in the morning and the FAU Research Boulevard in the afternoon operate at capacity.

Results for signalized intersections along the Turnpike Southern Coin corridor indicate that overall, the intersections Sample Road and Turnpike northbound ramp, Coconut Creek Parkway and Turnpike ramps/NW 31st Avenue operate(s) at LOS F in the morning; the intersections Glades Road and Turnpike ramps and Sample Road at Turnpike southbound ramps operate at capacity in the morning while the Coconut Creek Parkway at Turnpike ramps/NW 31st Avenue operates at capacity in afternoon. No intersection fails in the afternoon design hour.

Results for signalized intersections along the I-95 corridor indicate that the intersection at Hillsboro Boulevard and SW Natura Boulevard operate(s) at LOS F in the morning and operates at capacity in the afternoon. No intersection fails in the afternoon. The intersection of Sample Road and NE 3rd Avenue operates at LOS E in both design hour; the intersection of Hillsboro Boulevard and SW 12th Avenue operates at LOS E in the afternoon.

The Synchro analysis is provided in **Appendix I**.

Table 6.2
No-Build 2040 Sawgrass Expressway Interchange Ramp Signalized Intersection Analysis Results – AM Design Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	AM Movement/Approach LOS (Delay)												Intersection
				Eastbound			Westbound			Northbound			Southbound			AM LOS (Delay)
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Lyons Road	Sawgrass Expressway Westbound Ramps	LOS (Delay)	Movement				D (36.2)		F (247.7)	E (74.3)	C (24.0)			B (13.2)	A (2.3)	D (38.6)
			Approach				F (178.0)			C (29.2)			B (11.3)			
		Volume to Capacity ratio	Movement				0.4		1.42	1.03	0.95			0.92	0.56	
		Queue Length 95th (ft.)	Movement				136		#707	m227	m331			m280	m6	
	Sawgrass Expressway Eastbound Ramps	LOS (Delay)	Movement	D (48.8)		D (37.2)					F (112.8)	B (11.2)	F (235.7)	A (5.1)		E (75.5)
			Approach	D (45.3)						F (98.4)			E (58.9)			
		Volume to Capacity ratio	Movement	0.85		0.47					1.2	0.59	1.37	0.68		
		Queue Length 95th (ft.)	Movement	#317		176					m468	m56	m#768	148		
U.S. 441 (S.R. 7)	Sawgrass Expressway Westbound Ramps	LOS (Delay)	Movement							E (63.3)	A (0.3)			A (2.8)	A (7.0)	A (4.9)
			Approach							A (5.9)			A (3.9)			
		Volume to Capacity ratio	Movement							0.74	0.62			0.79	0.92	
		Queue Length 95th (ft.)	Movement							m214	0			m108	m86	
	Sawgrass Expressway Eastbound Ramps	LOS (Delay)	Movement								B (14.2)	A (0.1)	F (160.3)	A (0.2)		C (24.4)
			Approach							B (12.0)			D (37.1)			
		Volume to Capacity ratio	Movement								0.89	0.39	1.17	0.46		
		Queue Length 95th (ft.)	Movement								m153	m0	#687	0		
University Drive (S.R. 81)	Sawgrass Expressway Westbound Ramps	LOS (Delay)	Movement				C (29.8)		A (0.4)	C (34.8)	A (6.4)			C (25.3)	A (0.4)	B (19.4)
			Approach				C (20.8)			B (18.1)			B (19.5)			
		Volume to Capacity ratio	Movement				0.76		0.27	0.69	0.28			0.6	0.26	
		Queue Length 95th (ft.)	Movement				200		0	227	171			175	0	
	Sawgrass Expressway Eastbound Ramps	LOS (Delay)	Movement	C (33.8)		A (0.5)					B (15.3)	F (157.4)	C (34.2)	A (1.5)		E (58.3)
			Approach	B (12.4)						F (102.2)			B (11.3)			
		Volume to Capacity ratio	Movement	0.49		0.3					0.38	1.25	0.77	0.42		
		Queue Length 95th (ft.)	Movement	70		0					125	#669	251	0		

Synchro 9.2.914.6

LOS Notes:
HCM 2000 level of service (LOS) and delay results from Synchro
Delay is in sec/veh units
LOS E reflecting at capacity operations
LOS F reflecting over capacity operations

Queue Notes:
HCM methodology does not report queues, results are from Synchro outputs report
~: Volume exceeds capacity, queue is theoretically infinite
#: 95th percentile volume exceeds capacity
m: Upstream metering is in effect

Table 6.3
No-Build 2040 Sawgrass Expressway Interchange Ramp Signalized Intersection Analysis Results – PM Design Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	AM Movement/Approach LOS (Delay)												Intersection
				Eastbound			Westbound			Northbound			Southbound			AM LOS (Delay)
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Lyons Road	Sawgrass Expressway Westbound Ramps	LOS (Delay)	Movement				C (29.6)		F (203.9)	F (174.0)	C (21.8)			B (16.4)	A (1.9)	D (39.7)
			Approach				F (133.3)			D (35.2)			B (13.9)			
		Volume to Capacity ratio	Movement				0.5		1.34	1.23	0.87			1.01	0.59	
		Queue Length 95th (ft.)	Movement				184		#738	m#177	m300			m157	m0	
	Sawgrass Expressway Eastbound Ramps	LOS (Delay)	Movement	C (31.1)		C (33.4)					D (51.9)	A (3.3)	F (179.2)	B (17.2)		D (43.6)
			Approach	C (32.1)						D (46.5)			D (44.6)			
		Volume to Capacity ratio	Movement	0.6		0.65					1.08	0.34	1.28	0.99		
		Queue Length 95th (ft.)	Movement	222		258					m#460	m8	m#473	m223		
U.S. 441 (S.R. 7)	Sawgrass Expressway Westbound Ramps	LOS (Delay)	Movement							F (80.4)	A (0.5)			B (17.8)	B (15.3)	B (12.2)
			Approach							A (7.6)			B (17.2)			
		Volume to Capacity ratio	Movement							0.79	0.65			0.8	0.71	
		Queue Length 95th (ft.)	Movement							271	0			m776	m551	
	Sawgrass Expressway Eastbound Ramps	LOS (Delay)	Movement								C (21.2)	A (0.0)	E (58.9)	A (0.4)		B (11.2)
			Approach							B (18.8)			A (5.3)			
		Volume to Capacity ratio	Movement								0.71	0.23	0.73	0.6		
		Queue Length 95th (ft.)	Movement								m393	m0	m226	0		
University Drive (S.R. 81)	Sawgrass Expressway Westbound Ramps	LOS (Delay)	Movement				C (26.9)		A (0.9)	D (45.7)	B (18.9)			C (34.8)	A (0.2)	C (24.5)
			Approach				C (20.1)			C (28.2)			C (29.2)			
		Volume to Capacity ratio	Movement				0.91		0.44	0.84	0.45			0.77	0.13	
		Queue Length 95th (ft.)	Movement				#387		0	#219	216			162	0	
	Sawgrass Expressway Eastbound Ramps	LOS (Delay)	Movement	C (34.9)		A (0.9)					B (11.5)	A (2.3)	C (29.3)	A (4.1)		A (7.7)
			Approach	B (12.2)						A (7.2)			A (6.7)			
		Volume to Capacity ratio	Movement	0.6		0.43					0.31	0.67	0.52	0.74		
		Queue Length 95th (ft.)	Movement	86		0					99	0	m110	32		

Synchro 9.2.914.6

LOS Notes:
HCM 2000 level of service (LOS) and delay results from Synchro
Delay is in sec/veh units
LOS E reflecting at capacity operations
LOS F reflecting over capacity operations

Queue Notes:
HCM methodology does not report queues, results are from Synchro outputs report
~: Volume exceeds capacity, queue is theoretically infinite
#: 95th percentile volume exceeds capacity
m: Upstream metering is in effect

Table 6.4
No-Build 2040 SW 10th Street Signalized Intersection Analysis Results – AM Design Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	AM Movement/Approach LOS (Delay)												Intersection
				Eastbound			Westbound			Northbound			Southbound			AM LOS (Delay)
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
SW 10th Street	Waterways Boulevard	LOS (Delay)	Movement		E (65.9)	A (9.5)	E (75.5)	B (10.6)		E (69.1)		F (105.7)				D (49.0)
			Approach	E (65.7)			B (12.9)			F (96.7)						
		Volume to Capacity ratio	Movement		1.07	0.01	0.6	0.56		0.42		0.9				
		Queue Length 95th (ft.)	Movement		#1917	12	168	441		190		#403				
	Independence Drive	LOS (Delay)	Movement		C (31.9)	A (4.4)	F (422.5)	B (12.9)		F (85.0)		F (82.4)				C (27.1)
			Approach	C (31.8)			B (16.6)			F (83.3)						
		Volume to Capacity ratio	Movement		0.95	0.01	0.24	0.51		0.41		0.04				
		Queue Length 95th (ft.)	Movement		m1493	m2	m9	m529		79		54				
	South Powerline Road (S.R. 845)	LOS (Delay)	Movement	F (105.0)	F (119.1)	C (27.4)	F (139.3)	F (88.3)	D (46.0)	F (90.2)	F (89.3)	E (56.5)	E (73.3)	F (169.0)	F (148.3)	F (107.0)
			Approach	F (102.9)			F (90.1)			F (83.9)			F (155.1)			
		Volume to Capacity ratio	Movement	1.07	1.16	0.6	1.02	1.05	0.42	0.84	1	0.55	0.66	1.19	0.37	
		Queue Length 95th (ft.)	Movement	m#693	#1400	m245	m#298	m#822	m258	#284	#768	345	175	#856	255	
	SW 28th Avenue	LOS (Delay)	Movement		E (79.6)	A (9.8)	F (201.4)	B (19.7)		F (180.5)		E (77.9)				E (59.3)
			Approach	E (78.6)			C (21.1)			F (145.6)						
		Volume to Capacity ratio	Movement		1.05	0.03	0.18	0.67		1.08		0.24				
		Queue Length 95th (ft.)	Movement		m1495	m12	m4	m863		#364		91				
	South Military Trail	LOS (Delay)	Movement	F (95.2)	E (77.2)	C (32.4)	F (262.5)	F (152.7)	F (105.6)	F (85.6)	F (267.5)	F (452.8)	F (125.7)	E (66.5)	E (59.0)	F (151.2)
			Approach	E (76.8)			F (161.8)			F (317.7)			F (85.6)			
		Volume to Capacity ratio	Movement	0.84	1.07	0.13	1.42	1.12	0.38	0.7	1.41	1.81	1.03	0.75	0.49	
		Queue Length 95th (ft.)	Movement	m229	m#1179	m20	#408	#1386	437	173	#912	#1205	#464	463	275	
	East Newport Center Drive	LOS (Delay)	Movement	F (150.1)	B (19.2)		F (448.2)	B (17.3)	A (8.2)	F (84.9)	F (84.9)	F (82.1)	F (84.8)	F (84.4)	F (82.3)	D (53.0)
			Approach	C (30.5)			E (77.5)			F (83.2)			F (83.2)			
		Volume to Capacity ratio	Movement	1.14	0.86		1.76	0.69	0.3	0.44	0.45	0.07	0.4	0.37	0.08	
		Queue Length 95th (ft.)	Movement	m#311	m904		#998	840	176	87	89	71	72	72	59	
	I-95 Southbound On-ramp	LOS (Delay)	Movement		E (79.9)	A (0.5)	F (226.8)	A (0.2)								D (54.8)
			Approach	E (60.4)			D (50.4)									
		Volume to Capacity ratio	Movement		0.83	0.48	1.32	0.48								
		Queue Length 95th (ft.)	Movement		694	0	#1603	0								
	I-95 Southbound Off-ramp	LOS (Delay)	Movement		A (9.8)			A (7.1)					E (56.3)		A (2.2)	B (10.6)
			Approach	A (9.8)			A (7.1)						B (18.6)			
		Volume to Capacity ratio	Movement		0.68			0.68					0.5		0.66	
		Queue Length 95th (ft.)	Movement		706			m125					286		0	

Table 6.4 (continued)
No-Build 2040 SW 10th Street Signalized Intersection Analysis Results – AM Design Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	AM Movement/Approach LOS (Delay)												Intersection
				Eastbound			Westbound			Northbound			Southbound			AM LOS (Delay)
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
SW 10th Street	I-95 Northbound Ramps	LOS (Delay)	Movement		C (22.6)	A (7.4)	F (275.5)	D (41.1)		F (213.6)		F (261.0)				F (81.4)
			Approach	B (14.6)			E (72.1)			F (228.3)						
		Volume to Capacity ratio	Movement		0.65	0.91	1.38	0.81		1.3		1.38				
		Queue Length 95th (ft.)	Movement		591	1290	#683	784		#879		#993				
	FAU Research Park Boulevard	LOS (Delay)	Movement	F (126.4)	C (22.9)		C (23.2)	C (25.9)	B (17.3)	F (148.6)	E (58.0)	E (56.3)	E (75.3)	E (65.3)	F (118.8)	D (48.7)
			Approach	D (38.4)			C (25.3)			F (95.8)			F (93.1)			
		Volume to Capacity ratio	Movement	1.09	0.55		0.68	0.61	0.06	1.09	0.27	0.1	0.84	0.64	0.99	
		Queue Length 95th (ft.)	Movement	#428	410		124	476	20	#444	117	69	#372	292	#500	
Powerline Road (S.R. 845)	West Drive	LOS (Delay)	Movement	F (91.3)	F (81.0)		F (88.0)		F (86.1)		B (18.8)	A (2.8)	D (49.5)	A (9.4)		B (17.4)
			Approach	F (84.9)			F (86.9)			B (18.5)			B (10.2)			
		Volume to Capacity ratio	Movement	0.62	0.19		0.28		0.01		0.93	0.04	0.51	0.73		
		Queue Length 95th (ft.)	Movement	132	85		38		0		m1562	m0	48	732		

Synchro 9.2.914.6

LOS Notes:
HCM 2000 level of service (LOS) and delay results from Synchro
Delay is in sec/veh units
LOS E reflecting at capacity operations
LOS F reflecting over capacity operations

Queue Notes:
HCM methodology does not report queues, results are from Synchro outputs report
~: Volume exceeds capacity, queue is theoretically infinite
#: 95th percentile volume exceeds capacity
m: Upstream metering is in effect

Table 6.5
No-Build 2040 SW 10th Street Signalized Intersection Analysis Results – PM Design Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	PM Movement/Approach LOS (Delay)												Intersection
				Eastbound			Westbound			Northbound			Southbound			PM LOS (Delay)
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
SW 10th Street	Waterways Boulevard	LOS (Delay)	Movement		B (19.7)	B (10.6)	**F (101.7)**	A (5.9)		**F (84.5)**		**F (81.4)**				B (18.3)
			Approach	B (19.4)			B (14.2)			**F (82.1)**						
		Volume to Capacity ratio	Movement		0.68	0.05	0.99	0.8		0.51		0.11				
		Queue Length 95th (ft.)	Movement		671	32	m#551	473		102		82				
	Independence Drive	LOS (Delay)	Movement		A (1.9)	A (0.4)	C (22.7)	B (12.0)		**F (84.2)**		**F (83.5)**				A (9.1)
			Approach	A (1.9)			B (12.2)			**F (83.6)**						
		Volume to Capacity ratio	Movement		0.59	0.02	0.44	0.87		0.16		0.04				
		Queue Length 95th (ft.)	Movement		67	m1	m3	m116		37		54				
	South Powerline Road (S.R. 845)	LOS (Delay)	Movement	**F (224.8)**	D (48.3)	D (49.1)	**E (74.1)**	**F (158.9)**	D (48.6)	**F (252.4)**	**F (91.6)**	D (54.6)	**F (100.8)**	**F (83.3)**	**F (497.5)**	**F (146.5)**
			Approach	**F (84.2)**			**F (137.5)**			**F (129.8)**			**F (241.9)**			
		Volume to Capacity ratio	Movement	1.26	0.83	0.33	0.8	1.21	0.41	1.36	1.01	0.45	0.74	0.98	1.95	
		Queue Length 95th (ft.)	Movement	#519	544	174	m226	m#1387	m244	#645	#751	261	m214	#621	#1672	
	SW 28th Avenue	LOS (Delay)	Movement		B (11.7)	A (0.1)	D (47.0)	D (40.2)		**F (87.5)**		**F (80.2)**				C (28.7)
			Approach	B (11.1)			D (40.4)			**F (84.4)**						
		Volume to Capacity ratio	Movement		0.79	0.07	0.44	0.98		0.57		0.03				
		Queue Length 95th (ft.)	Movement		516	m0	m8	m1285		121		44				
	South Military Trail	LOS (Delay)	Movement	**F (314.4)**	**E (61.2)**	C (23.6)	**E (78.7)**	**F (342.0)**	**E (55.4)**	**F (92.2)**	**E (68.3)**	**E (61.8)**	**F (85.3)**	**F (92.3)**	**F (96.5)**	**F (157.2)**
			Approach	**F (97.7)**			**F (263.3)**			**E (70.4)**			**F (92.5)**			
		Volume to Capacity ratio	Movement	1.44	1.01	0.15	0.91	1.63	0.66	0.78	0.8	0.6	0.75	0.99	0.96	
		Queue Length 95th (ft.)	Movement	#452	#958	m31	m291	m#2176	m338	#191	507	351	217	#758	#731	
	East Newport Center Drive	LOS (Delay)	Movement	**F (83.0)**	B (16.6)		**F (208.8)**	D (51.2)	B (14.8)	**F (113.5)**	**F (115.7)**	**F (406.9)**	**E (65.1)**	**E (65.1)**	**F (262.3)**	**F (81.8)**
			Approach	B (18.7)			**E (57.5)**			**F (275.4)**			**F (215.5)**			
		Volume to Capacity ratio	Movement	0.73	0.76		1.15	1.02	0.11	0.91	0.92	1.68	0.22	0.23	1.36	
		Queue Length 95th (ft.)	Movement	m78	m229		#380	#1358	34	#408	#416	#824	122	123	#727	
	I-95 Southbound On-ramp	LOS (Delay)	Movement		**F (88.5)**	A (0.5)	**F (101.0)**	A (0.2)								D (41.4)
			Approach	**E (66.3)**			C (22.6)									
		Volume to Capacity ratio	Movement		1	0.48	1.03	0.48								
		Queue Length 95th (ft.)	Movement		m625	m0	#843	0								

Table 6.5 (continued)
No-Build 2040 SW 10th Street Signalized Intersection Analysis Results – PM Design Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	PM Movement/Approach LOS (Delay)												Intersection
				Eastbound			Westbound			Northbound			Southbound			PM LOS (Delay)
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
SW 10th Street	I-95 Southbound Off-ramp	LOS (Delay)	Movement		B (12.6)			A (9.9)					D (54.0)		A (4.1)	B (11.9)
			Approach	B (12.6)			A (9.9)						B (14.4)			
		Volume to Capacity ratio	Movement		0.66			0.63					0.36		0.79	
		Queue Length 95th (ft.)	Movement		m661			m151					205		0	
	I-95 Northbound Ramps	LOS (Delay)	Movement		D (52.5)	A (1.7)	**E (75.3)**	C (32.6)		**F (441.1)**		**F (501.6)**				**F (148.4)**
			Approach	C (31.5)			D (39.6)			**F (460.0)**						
		Volume to Capacity ratio	Movement		0.88	0.67	0.81	0.66		1.8		1.92				
		Queue Length 95th (ft.)	Movement		818	380	#528	590		#1186		#1305				
	FAU Research Park Boulevard	LOS (Delay)	Movement	D (40.1)	C (29.1)		**F (147.0)**	C (23.2)	B (17.6)	**F (567.3)**	**E (57.8)**	**E (56.1)**	**E (77.2)**	**F (113.1)**	**F (136.8)**	**E (79.2)**
			Approach	C (30.4)			D (40.0)			**F (321.3)**			**F (113.6)**			
		Volume to Capacity ratio	Movement	0.87	0.72		1.11	0.49	0.09	2.08	0.25	0.09	0.85	0.99	1.05	
		Queue Length 95th (ft.)	Movement	#272	601		#417	353	39	#655	107	63	#391	#531	#542	
Powerline Road (S.R. 845)	West Drive	LOS (Delay)	Movement	**F (85.1)**	**F (85.6)**		**F (93.7)**		**E (74.5)**		C (26.3)	A (0.2)	**F (81.2)**	B (15.7)		C (25.2)
			Approach	**F (85.5)**			**F (84.7)**			C (24.9)			B (18.6)			
		Volume to Capacity ratio	Movement	0.08	0.14		0.75		0.11		0.94	0.08	0.76	0.82		
		Queue Length 95th (ft.)	Movement	21	47		220		72		m#714	m0	140	1101		

Synchro 9.2.914.6

LOS Notes:
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Delay is in sec/veh units
LOS E reflecting at capacity operations
LOS F reflecting over capacity operations

Queue Notes:
HCM methodology does not report queues, results are from Synchro outputs report
~: Volume exceeds capacity, queue is theoretically infinite
#: 95th percentile volume exceeds capacity
m: Upstream metering is in effect

Table 6.6
No-Build 2040 Florida's Turnpike Interchange Ramp Signalized Intersection Analysis Results – AM Design Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	AM Movement/Approach LOS (Delay)												Intersection
				Eastbound			Westbound			Northbound			Southbound			AM LOS (Delay)
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Glades Road (S.R. 808)	Turnpike Ramps	LOS (Delay)	Movement	**F (111.4)**	A (9.7)		D (47.1)	**F (146.7)**	A (0.3)	D (50.9)	D (51.0)	D (48.5)	**F (137.9)**	**F (127.9)**	A (0.3)	**E (68.9)**
			Approach	C (31.6)			**F (98.1)**			D (50.2)			**E (71.6)**			
		Volume to Capacity ratio	Movement	1.14	0.74		0.46	1.25	0.39	0.44	0.45	0.03	1.17	1.14	0.31	
		Queue Length 95th (ft.)	Movement	m#327	m154		m46	m#739	m0	72	76	0	#682	#666	0	
Sample Road (S.R. 834)	Turnpike Southbound Ramps	LOS (Delay)	Movement		**F (95.6)**	A (0.2)	**F (144.1)**	A (7.7)					**F (171.0)**		A (0.2)	**E (68.5)**
			Approach	**E (72.1)**			D (44.6)						**F (128.7)**			
		Volume to Capacity ratio	Movement		1.15	0.65	1.16	0.56					1.18		0.15	
		Queue Length 95th (ft.)	Movement		m#1490	m0	#705	274					#643		0	
Sample Road (S.R. 834)	Turnpike Northbound Ramps	LOS (Delay)	Movement		**F (84.8)**	A (0.1)	**F (220.9)**	B (12.3)		**E (57.8)**		**F (224.6)**				**F (87.2)**
			Approach	**E (75.9)**			D (35.7)			**F (182.5)**						
		Volume to Capacity ratio	Movement		1.17	0.45	1.26	0.57		0.44		1.35				
		Queue Length 95th (ft.)	Movement		m554	m0	#359	444		225		#1092				
Coconut Creek Parkway (Dr. MLK Blvd.)	Turnpike Southbound on-ramp	LOS (Delay)	Movement		A (9.9)	A (0.1)	D (46.1)	A (0.2)								A (10.0)
			Approach	A (9.1)			B (10.8)									
		Volume to Capacity ratio	Movement		0.6	0.11	0.54	0.35								
		Queue Length 95th (ft.)	Movement		339	m0	274	0								
Coconut Creek Parkway (Dr. MLK Blvd.)	Turnpike Northbound Off-ramp to East	LOS (Delay)	Movement		A (1.8)			A (0.1)				D (52.6)				B (10.5)
			Approach	A (1.8)			A (0.1)			D (52.6)						
		Volume to Capacity ratio	Movement		0.6			0.31				0.79				
		Queue Length 95th (ft.)	Movement		12			0				354				
Coconut Creek Parkway (Dr. MLK Blvd.)	Turnpike Ramps/NW 31st Ave	LOS (Delay)	Movement	**E (77.1)**	**F (99.7)**	C (20.5)	**F (174.0)**	**E (56.8)**	B (15.6)	**E (72.2)**	**F (167.7)**	**E (57.8)**	**F (163.4)**	**E (68.0)**	A (0.8)	**F (83.4)**
			Approach	**E (78.2)**			**E (68.1)**			**F (113.0)**			**F (88.0)**			
		Volume to Capacity ratio	Movement	0.95	1.14	0.64	1.16	0.91	0.25	0.85	1.18	0.11	1.2	0.83	0.41	
		Queue Length 95th (ft.)	Movement	#400	#1217	218	#302	#678	63	#322	#457	37	#679	#349	0	
Atlantic Boulevard (S.R. 814)	Turnpike North Ramps	LOS (Delay)	Movement		D (37.0)			C (22.4)		**E (77.6)**		**F (110.8)**				D (44.6)
			Approach	D (37.0)			C (22.4)			**F (88.2)**						
		Volume to Capacity ratio	Movement		0.74			0.7		0.98		1.05				
		Queue Length 95th (ft.)	Movement		960			524		#762		#914				
	Turnpike South Ramps	LOS (Delay)	Movement	**E (74.4)**	B (18.2)	B (19.9)	**E (60.0)**	B (11.1)	A (5.8)					**E (65.5)**	**E (74.1)**	B (19.9)
			Approach	B (19.3)			B (16.2)						**E (70.4)**			
		Volume to Capacity ratio	Movement	0.37	0.67	0.65	0.64	0.65	0.01					0.45	0.68	
		Queue Length 95th (ft.)	Movement	72	652	456	m169	m418	m0					155	203	

Synchro 9.2.914.6

LOS Notes:
HCM 2000 level of service (LOS) and delay results from Synchro
Delay is in sec/veh units
LOS E reflecting at capacity operations
LOS F reflecting over capacity operations

Queue Notes:
HCM methodology does not report queues, results are from Synchro outputs report
~: Volume exceeds capacity, queue is theoretically infinite
#: 95th percentile volume exceeds capacity
m: Upstream metering is in effect

Table 6.7
No-Build 2040 Florida's Turnpike Interchange Ramp Signalized Intersection Analysis Results – PM Design Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	PM Movement/Approach LOS (Delay)												Intersection
				Eastbound			Westbound			Northbound			Southbound			PM LOS (Delay)
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Glades Road (S.R. 808)	Turnpike Ramps	LOS (Delay)	Movement	E (62.5)	A (5.9)		D (38.1)	C (20.3)	E (59.5)	D (44.8)	E (76.8)	D (42.5)	D (45.1)	D (45.1)	A (0.4)	C (31.1)
			Approach	B (18.0)			D (41.1)			E (58.8)			A (3.4)			
		Volume to Capacity ratio	Movement	0.91	0.49		0.53	0.97	1.01	0.45	0.82	0.05	0.33	0.33	0.38	
		Queue Length 95th (ft.)	Movement	m#221	m113		m39	m324	m526	83	#184	0	57	57	0	
Sample Road (S.R. 834)	Turnpike Southbound Ramps	LOS (Delay)	Movement		D (46.3)	A (0.7)	D (38.5)	A (7.4)					F (101.8)		A (0.4)	C (24.1)
			Approach	C (33.8)			B (15.8)						D (49.0)			
		Volume to Capacity ratio	Movement		0.94	0.42	0.99	0.9					0.99		0.25	
		Queue Length 95th (ft.)	Movement		#541	0	m#684	483					#260		0	
Sample Road (S.R. 834)	Turnpike Northbound Ramps	LOS (Delay)	Movement		A (4.2)	A (0.5)	D (37.1)	A (5.4)		E (63.6)		C (28.4)				B (15.4)
			Approach	A (3.7)			A (9.4)			D (46.4)						
		Volume to Capacity ratio	Movement		0.81	0.32	0.84	0.95		0.92		0.58				
		Queue Length 95th (ft.)	Movement		m103	m0	m206	m115		#351		283				
Coconut Creek Parkway (Dr. MLK Blvd.)	Turnpike Southbound on-ramp	LOS (Delay)	Movement		B (15.9)	A (0.1)	D (45.8)	A (0.3)								B (13.7)
			Approach	B (13.9)			B (13.6)									
		Volume to Capacity ratio	Movement		0.45	0.11	0.79	0.51								
		Queue Length 95th (ft.)	Movement		321	0	545	0								
Coconut Creek Parkway (Dr. MLK Blvd.)	Turnpike Northbound Off-ramp to East	LOS (Delay)	Movement		A (3.7)			A (0.0)				C (31.9)				A (3.1)
			Approach	A (3.7)						C (31.9)						
		Volume to Capacity ratio	Movement		0.45			0.49				0.19				
		Queue Length 95th (ft.)	Movement		38			m0				88				
Coconut Creek Parkway (Dr. MLK Blvd.)	Turnpike Ramps/NW 31st Ave	LOS (Delay)	Movement	F (162.5)	C (20.7)	A (7.5)	E (73.2)	F (122.3)	C (22.7)	F (158.9)	E (74.1)	D (53.6)	F (82.3)	E (75.0)	A (1.3)	E (75.1)
			Approach	D (50.3)			F (86.2)			F (113.7)			C (30.6)			
		Volume to Capacity ratio	Movement	1.17	0.49	0.39	0.73	1.17	0.65	1.18	0.88	0.23	0.8	0.69	0.54	
		Queue Length 95th (ft.)	Movement	#359	242	5	221	#1444	302	#661	#434	116	#213	181	0	
Atlantic Boulevard (S.R. 814)	Turnpike North Ramps	LOS (Delay)	Movement		C (29.6)			C (28.2)		E (63.4)		F (82.4)				D (36.4)
			Approach	C (29.6)			C (28.2)			E (69.4)						
		Volume to Capacity ratio	Movement		0.48			0.92		0.86		0.92				
		Queue Length 95th (ft.)	Movement		627			1090		462		#573				
	Turnpike South Ramps	LOS (Delay)	Movement	E (75.0)	C (26.2)	C (31.1)	E (56.6)	C (22.7)	B (16.1)					E (66.6)	E (74.1)	C (30.6)
			Approach	C (30.3)			C (28.8)						E (71.0)			
		Volume to Capacity ratio	Movement	0.67	0.59	0.66	0.78	0.86	0.05					0.39	0.64	
		Queue Length 95th (ft.)	Movement	205	403	356	m#503	964	m15					127	176	

Synchro 9.2.914.6

LOS Notes:
HCM 2000 level of service (LOS) and delay results from Synchro
Delay is in sec/veh units
LOS E reflecting at capacity operations
LOS F reflecting over capacity operations

Queue Notes:
HCM methodology does not report queues, results are from Synchro outputs report
~: Volume exceeds capacity, queue is theoretically infinite
#: 95th percentile volume exceeds capacity
m: Upstream metering is in effect

Table 6.8
No-Build 2040 I-95 Interchange Ramp Signalized Intersection Analysis Results – AM Design Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	AM Movement/Approach LOS (Delay)												Intersection
				Eastbound			Westbound			Northbound			Southbound			AM LOS (Delay)
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Hillsboro Boulevard (S.R. 810)	SW 12th Avenue	LOS (Delay)	Movement	F (195.4)	C (31.1)		F (82.0)	B (18.3)	A (9.5)	E (65.8)	F (82.3)	D (54.2)	E (74.5)	E (74.4)	D (53.6)	D (41.2)
			Approach	D (49.9)			C (25.9)			E (64.8)			E (67.5)			
		Volume to Capacity ratio	Movement	1.22	0.84		0.8	0.57	0.44	0.29	0.75	0.52	0.33	0.33	0.02	
		Queue Length 95th (ft.)	Movement	#603	951		m229	m504	m173	84	229	229	66	66	0	
	I-95 Southbound Ramps	LOS (Delay)	Movement		A (0.1)	A (1.0)		B (13.2)					F (151.5)		F (86.2)	C (34.5)
			Approach	A (0.4)			B (13.2)						F (114.0)			
		Volume to Capacity ratio	Movement		0.31	0.59		0.5					1.17		1	
		Queue Length 95th (ft.)	Movement		0	269		m286					#1045		#679	
	SW Natura Boulevard	LOS (Delay)	Movement	F (232.5)	B (19.4)	A (10.0)	E (73.6)	C (26.8)		F (664.4)	E (68.2)	E (65.0)	E (66.5)	E (71.4)		F (96.5)
			Approach	D (49.5)			C (28.6)			F (452.2)			E (69.9)			
		Volume to Capacity ratio	Movement	1.32	0.59	0.09	0.58	0.74		2.3	0.47	0.11	0.28	0.11		
		Queue Length 95th (ft.)	Movement	m#609	m519	m29	148	687		#984	155	76	74	66		
Sample Road (S.R. 834)	NW 5th Terrace	LOS (Delay)	Movement		B (17.1)		F (92.2)	A (2.4)		F (80.9)		E (63.2)				B (17.7)
			Approach	B (17.1)			A (9.6)			E (70.9)						
		Volume to Capacity ratio	Movement		0.54		0.79	0.5		0.75		0.13				
		Queue Length 95th (ft.)	Movement		431		#287	47		234		76				
	NW 5th Avenue	LOS (Delay)	Movement	E (61.8)	A (2.1)			C (20.1)	C (26.5)				E (70.7)		E (64.1)	B (16.4)
			Approach	A (4.4)			C (20.4)						E (68.1)			
		Volume to Capacity ratio	Movement	0.67	0.5			0.47	0.06				0.67		0.23	
		Queue Length 95th (ft.)	Movement	#188	51			413	m42				184		99	
	I-95 Southbound Ramps	LOS (Delay)	Movement		B (11.1)	A (2.0)		B (11.6)					C (25.0)		C (29.8)	B (12.8)
			Approach	A (7.6)			B (11.6)						C (27.5)			
		Volume to Capacity ratio	Movement		0.46	0.67		0.51					0.55		0.74	
		Queue Length 95th (ft.)	Movement		244	564		306					156		204	
	I-95 Northbound Ramps	LOS (Delay)	Movement		A (9.4)			B (14.5)	A (0.2)	C (28.4)		C (27.9)				B (14.2)
			Approach	A (9.4)			B (11.1)			C (28.2)						
		Volume to Capacity ratio	Movement		0.42			0.63	0.38	0.66		0.62				
		Queue Length 95th (ft.)	Movement		235			m600	m0	173		151				
	NE 3rd Avenue	LOS (Delay)	Movement	E (60.7)	D (37.4)		E (74.9)	E (67.7)		D (41.9)	D (49.2)	D (43.5)	D (43.9)	E (56.4)	F (108.2)	E (60.4)
			Approach	D (43.1)			E (67.9)			D (45.1)			F (87.7)			
		Volume to Capacity ratio	Movement	0.78	0.57		0.53	0.99		0.67	0.46	0.05	0.32	0.55	0.99	
		Queue Length 95th (ft.)	Movement	227	472		111	#882		271	297	0	124	303	#601	

Synchro 9.2.914.6

LOS Notes:
HCM 2000 level of service (LOS) and delay results from Synchro
Delay is in sec/veh units
LOS E reflecting at capacity operations
LOS F reflecting over capacity operations

Queue Notes:
HCM methodology does not report queues, results are from Synchro outputs report
~: Volume exceeds capacity, queue is theoretically infinite
#: 95th percentile volume exceeds capacity
m: Upstream metering is in effect

Table 6.9
No-Build 2040 I-95 Interchange Ramp Signalized Intersection Analysis Results – PM Design Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	AM Movement/Approach LOS (Delay)												Intersection
				Eastbound			Westbound			Northbound			Southbound			AM LOS (Delay)
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Hillsboro Boulevard (S.R. 810)	SW 12th Avenue	LOS (Delay)	Movement	**E (69.9)**	**E (59.5)**		**F (90.3)**	C (29.6)	A (2.2)	**E (76.8)**	**E (65.3)**	**F (132.5)**	**F (86.0)**	**F (86.8)**	**E (63.3)**	**E (57.1)**
			Approach	**E (59.7)**			D (35.5)			**F (110.4)**			**E (77.3)**			
		Volume to Capacity ratio	Movement	0.34	0.99		0.72	0.94	0.04	0.73	0.06	1.07	0.88	0.88	0.77	
		Queue Length 95th (ft.)	Movement	94	#1104		221	#1153	m2	178	31	#518	#421	#431	271	
	I-95 Southbound Ramps	LOS (Delay)	Movement		A (0.1)	A (0.5)		B (17.9)					**F (122.5)**		D (44.7)	C (23.7)
			Approach	A (0.2)			B (17.9)						**F (85.1)**			
		Volume to Capacity ratio	Movement		0.42	0.55		0.7					1.11		0.65	
		Queue Length 95th (ft.)	Movement		m0	m7		m441					#1080		399	
	SW Natura Boulevard	LOS (Delay)	Movement	**E (77.0)**	**E (58.9)**	C (24.1)	**F (94.3)**	**E (66.1)**		**F (161.9)**	D (50.1)	D (50.8)	D (48.6)	**F (86.9)**		**E (67.2)**
			Approach	**E (55.4)**			**E (67.7)**			**F (125.7)**			**E (77.0)**			
		Volume to Capacity ratio	Movement	0.63	1.01	0.38	0.83	1.02		1.18	0.03	0.09	0.36	0.86		
		Queue Length 95th (ft.)	Movement	m154	m#1183	m252	#274	#1300		#515	26	56	141	334		
Sample Road (S.R. 834)	NW 5th Terrace	LOS (Delay)	Movement		1 (20.3)		1.11 (65.3)	0.32 (6.0)		1 (69.9)		1 (65.5)				
			Approach	20.5 (0.2)			97.5 (25.2)			81.1 (11.2)						
		Volume to Capacity ratio	Movement		4466		298	4106		174		156				
		Queue Length 95th (ft.)	Movement		511		#451	53		196		64				
	NW 5th Avenue	LOS (Delay)	Movement	**F (87.3)**	A (1.6)			B (14.4)	C (26.0)				**E (71.4)**		**E (65.8)**	B (15.2)
			Approach	A (7.6)			B (15.7)						**E (68.9)**			
		Volume to Capacity ratio	Movement	0.93	0.5			0.64	0.2				0.61		0.11	
		Queue Length 95th (ft.)	Movement	#369	40			m413	m55				147		72	
	I-95 Southbound Ramps	LOS (Delay)	Movement		C (20.4)	A (0.9)		B (18.0)					C (25.9)		**E (62.8)**	C (23.1)
			Approach	B (15.2)			B (18.0)						D (47.0)			
		Volume to Capacity ratio	Movement		0.55	0.47		0.74					0.61		1.01	
		Queue Length 95th (ft.)	Movement		543	53		m347					183		#358	
	I-95 Northbound Ramps	LOS (Delay)	Movement		C (23.7)			B (13.1)	A (0.2)	**F (103.2)**		C (32.2)				D (35.2)
			Approach	C (23.7)			B (10.6)			**E (76.9)**						
		Volume to Capacity ratio	Movement		0.66			0.67	0.29	1.14		0.83				
		Queue Length 95th (ft.)	Movement		533			256	m0	#489		#282				
	NE 3rd Avenue	LOS (Delay)	Movement	**E (66.8)**	D (50.0)		**E (76.1)**	D (52.2)		**F (83.3)**	**E (67.5)**	D (48.5)	D (51.0)	**F (80.3)**	**E (68.6)**	**E (57.6)**
			Approach	D (53.3)			D (53.6)			**E (70.1)**			**E (70.6)**			
		Volume to Capacity ratio	Movement	0.85	0.88		0.66	0.9		0.94	0.79	0.08	0.44	0.83	0.7	
		Queue Length 95th (ft)	Movement	341	#941		183	#863		#334	441	17	102	361	283	

Synchro 9.2.914.6

LOS Notes:
HCM 2000 level of service (LOS) and delay results from Synchro
Delay is in sec/veh units
LOS E reflecting at capacity operations
LOS F reflecting over capacity operations

Queue Notes:
HCM methodology does not report queues, results are from Synchro outputs report
~: Volume exceeds capacity, queue is theoretically infinite
#: 95th percentile volume exceeds capacity
m: Upstream metering is in effect

6.2 PARTIAL-BUILD 2040

The analysis was performed with 2040 Partial-Build Directional Design Hour Volumes (DDHV), intersection lane configurations, and signal timing plans, as of May 2018, without optimization.

The results of the 2040 Partial-Build unsignalized intersection analysis on SW 10th Street and its cross streets are provided in **Table 6.10**. Results show failures at three unsignalized intersections along SW 10th Street and one along South Military Trail.

Table 6.10
Partial-build 2040 SW 10th Street Unsignalized Design Hour Intersection Analysis Results

Main Roadway	Cross Street	LOS (Delay)	
		AM	PM
SW 10th Street	Industrial Park	F (67.8)	F (*)
	SW 30th Avenue	F (*)	F (301.8)
	SW 24th Avenue	A (8.0)	A (1.4)
	Driveway East of SW 24th Ave	A (0.2)	A (0.7)
	Driveway West of S Military Trail	A (0.3)	A (1.0)
S Military Trail	East Drive	A (0.7)	A (0.8)
	Lakes at Deerfield	A (1.1)	A (1.0)
	Horizon Club	A (7.3)	F (424.1)
Newport Center Drive	SW 12th Avenue	A (5.2)	D (30.6)
Powerline Road (S.R. 845)	Quiet Waters North	A (0.1)	A (0.3)
	Quiet Waters South	A (1.3)	A (0.1)
	American Way	A (1.1)	A (0.5)

Notes:
(*): No delay reported (does not meet HCM 2010 criteria)
Delay is in seconds/vehicle
Level of Service (LOS) E or F, reflecting unacceptable/failing operations

The signalized intersection analysis of the Sawgrass Expressway, SW 10th Street, Florida's Turnpike, and I-95 is summarized in **Tables 6.11** through **6.18**.

Results for signalized intersections along Sawgrass Expressway indicate that no intersection fails in either design hour.

Results for signalized intersections along SW 10th Street indicate that the Waterways Boulevard, Independence Drive, South Powerline Road, SW 28th Avenue, and South Military Trail intersections operate at or over capacity (LOS E or LOS F) in both peak hours. The East Newport Center Drive intersection operates at LOS E in the afternoon design hour.

Results for signalized intersections along the Turnpike Southern Coin corridor indicate that the intersection at Coconut Creek Parkway and Turnpike ramps/NW 31st Avenue fail in the morning and operates at LOS E in the afternoon peak.

Results for signalized intersections along the I-95 corridor indicate that the intersection at Hillsboro Boulevard and SW Natura Boulevard operates at full capacity (LOS E) in both peak periods.

The Synchro analysis is provided in **Appendix I**.

Table 6.11
Partial-Build 2040 Sawgrass Expressway Interchange Ramp Signalized Intersection Analysis Results – AM Design Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	AM Movement/Approach LOS (Delay)												Intersection
				Eastbound			Westbound			Northbound			Southbound			AM LOS (Delay)
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Lyons Road	Sawgrass Expressway Westbound Ramps	LOS (Delay)	Movement				D (38.0)		E (59.5)	C (29.1)	B (18.4)			A (8.7)	A (4.0)	B (18.3)
			Approach				D (52.3)			B (19.7)			A (7.8)			
		Volume to Capacity ratio	Movement				0.32		0.89	0.7	0.91			0.73	0.57	
		Queue Length 95th (ft.)	Movement				93		#294	m164	422			m201	m16	
	Sawgrass Expressway Eastbound Ramps	LOS (Delay)	Movement	D (46.0)		D (47.4)					A (5.1)	A (0.7)	D (49.3)	A (2.9)		B (14.2)
			Approach	D (46.4)						A (4.5)			B (13.8)			
		Volume to Capacity ratio	Movement	0.79		0.71					0.87	0.47	0.9	0.63		
		Queue Length 95th (ft.)	Movement	226		#267					m62	m0	#335	67		
U.S. 441 (S.R. 7)	Sawgrass Expressway Westbound Ramps	LOS (Delay)	Movement							E (80.0)	A (0.3)			A (2.8)	A (6.3)	A (5.6)
			Approach							A (7.5)			A (3.7)			
		Volume to Capacity ratio	Movement							0.84	0.62			0.77	0.91	
		Queue Length 95th (ft.)	Movement							m227	0			m96	m82	
	Sawgrass Expressway Eastbound Ramps	LOS (Delay)	Movement								A (9.6)	A (0.1)	E (70.6)	A (0.2)		B (12.0)
			Approach							A (8.1)			B (15.9)			
		Volume to Capacity ratio	Movement								0.95	0.38	0.93	0.46		
		Queue Length 95th (ft.)	Movement								m211	m0	#550	0		
University Drive (S.R. 81)	Sawgrass Expressway Westbound Ramps	LOS (Delay)	Movement				C (33.2)		A (0.4)	D (39.6)	A (4.3)			C (20.6)	A (0.4)	B (18.8)
			Approach				C (23.1)			B (18.6)			B (15.8)			
		Volume to Capacity ratio	Movement				0.8		0.25	0.79	0.28			0.49	0.26	
		Queue Length 95th (ft.)	Movement				190		0	230	38			152	0	
	Sawgrass Expressway Eastbound Ramps	LOS (Delay)	Movement	C (34.1)		A (0.5)					B (13.6)	F (109.0)	D (37.9)	A (1.5)		D (41.1)
			Approach	B (12.3)						E (68.9)			B (11.8)			
		Volume to Capacity ratio	Movement	0.51		0.31					0.37	1.13	0.79	0.41		
		Queue Length 95th (ft.)	Movement	70		0					118	#477	m229	0		

Synchro 9.2.914.6

LOS Notes:
HCM 2000 level of service (LOS) and delay results from Synchro
Delay is in sec/veh units
LOS E reflecting at capacity operations
LOS F reflecting over capacity operations

Queue Notes:
HCM methodology does not report queues, results are from Synchro outputs report
~: Volume exceeds capacity, queue is theoretically infinite
#: 95th percentile volume exceeds capacity
m: Upstream metering is in effect

Table 6.12
Partial-Build 2040 Sawgrass Expressway Interchange Ramp Signalized Intersection Analysis Results – PM Design Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	AM Movement/Approach LOS (Delay)												Intersection
				Eastbound			Westbound			Northbound			Southbound			AM LOS (Delay)
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Lyons Road	Sawgrass Expressway Westbound Ramps	LOS (Delay)	Movement				C (30.8)		D (42.8)	E (59.0)	B (15.0)			A (5.9)	A (7.3)	B (15.8)
			Approach				D (37.9)			B (19.5)			A (6.2)			
		Volume to Capacity ratio	Movement				0.38		0.83	0.87	0.83			0.82	0.62	
		Queue Length 95th (ft.)	Movement				119		#269	m#180	322			m156	m16	
	Sawgrass Expressway Eastbound Ramps	LOS (Delay)	Movement	C (32.6)		E (55.1)					A (2.3)	A (0.6)	E (66.7)	B (13.0)		B (18.2)
			Approach	D (41.7)						A (2.1)			C (22.2)			
		Volume to Capacity ratio	Movement	0.55		0.88					0.76	0.26	0.88	0.9		
		Queue Length 95th (ft.)	Movement	171		#384					m21	m0	m#288	244		
U.S. 441 (S.R. 7)	Sawgrass Expressway Westbound Ramps	LOS (Delay)	Movement							E (66.7)	A (0.5)			A (4.6)	A (4.0)	A (5.5)
			Approach							A (6.4)			A (4.5)			
		Volume to Capacity ratio	Movement							0.77	0.65			0.8	0.73	
		Queue Length 95th (ft.)	Movement							255	0			m119	m80	
	Sawgrass Expressway Eastbound Ramps	LOS (Delay)	Movement								A (2.7)	A (0.0)	E (75.9)	A (0.3)		A (4.8)
			Approach							A (2.4)			A (6.6)			
		Volume to Capacity ratio	Movement								0.71	0.21	0.72	0.6		
		Queue Length 95th (ft.)	Movement								m83	m0	m214	0		
University Drive (S.R. 81)	Sawgrass Expressway Westbound Ramps	LOS (Delay)	Movement				D (35.5)		A (0.8)	D (51.4)	B (14.6)			C (27.1)	A (0.2)	C (25.7)
			Approach				C (26.4)			C (27.0)			C (22.8)			
		Volume to Capacity ratio	Movement				0.95		0.4	0.89	0.42			0.57	0.13	
		Queue Length 95th (ft.)	Movement				#405		0	#238	212			145	0	
	Sawgrass Expressway Eastbound Ramps	LOS (Delay)	Movement	C (34.9)		A (0.9)					B (11.3)	A (1.8)	C (31.7)	A (4.2)		A (8.0)
			Approach	B (12.1)						A (7.2)			A (7.1)			
		Volume to Capacity ratio	Movement	0.6		0.44					0.33	0.61	0.51	0.7		
		Queue Length 95th (ft.)	Movement	86		0					102	0	m105	m44		

Synchro 9.2.914.6

LOS Notes:
HCM 2000 level of service (LOS) and delay results from Synchro
Delay is in sec/veh units
LOS E reflecting at capacity operations
LOS F reflecting over capacity operations

Queue Notes:
HCM methodology does not report queues, results are from Synchro outputs report
~: Volume exceeds capacity, queue is theoretically infinite
#: 95th percentile volume exceeds capacity
m: Upstream metering is in effect

Table 6.13
Partial-Build 2040 - SW 10th Street Signalized Intersection Analysis Results – AM Design Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	AM Movement/Approach LOS (Delay)												Intersection
				Eastbound			Westbound			Northbound			Southbound			AM LOS (Delay)
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
SW 10th Street	Waterways Boulevard	LOS (Delay)	Movement		F (88.4)	A (2.6)	F (170.1)	A (3.5)		F (262.5)		F (307.8)				E (71.8)
			Approach	F (87.9)			A (7.0)			F (286.4)						
		Volume to Capacity ratio	Movement		1.17	0.02	0.93	0.69		1.32		1.43				
		Queue Length 95th (ft.)	Movement		m517	m0	m#152	m347		#522		#536				
	Independence Drive	LOS (Delay)	Movement		F (194.7)	A (0.1)	F (427.8)	A (8.8)		F (224.3)		F (84.5)				F (134.9)
			Approach	F (194.4)			B (11.8)			F (177.2)						
		Volume to Capacity ratio	Movement		1.42	0.01	0.25	0.64		1.07		0.08				
		Queue Length 95th (ft.)	Movement		m#2784	m0	m4	m725		#194		45				
	South Powerline Road (S.R. 845)	LOS (Delay)	Movement	F (96.9)	F (110.4)	B (13.5)	F (204.0)	E (55.9)	D (43.5)	F (190.8)	F (120.6)	F (81.5)	F (102.3)	F (211.0)	C (30.3)	F (99.8)
			Approach	F (90.6)			E (73.0)			F (130.6)			F (138.8)			
		Volume to Capacity ratio	Movement	1.06	1.19	0.54	1.23	0.93	0.73	1.19	1.06	0.86	0.89	1.3	0.48	
		Queue Length 95th (ft.)	Movement	m384	m761	m170	m#232	m804	m577	#334	#565	502	#161	#666	316	
	SW 28th Avenue	LOS (Delay)	Movement		F (212.1)	A (0.0)	F (255.8)	B (17.3)		F (276.2)		F (104.4)				F (139.8)
			Approach	F (208.1)			C (29.8)			F (215.9)						
		Volume to Capacity ratio	Movement		1.45	0.06	1.28	0.87		1.35		0.79				
		Queue Length 95th (ft.)	Movement		m#2797	m0	m#300	742		#496		#241				
	South Military Trail	LOS (Delay)	Movement	E (70.6)	F (105.7)	B (11.4)	E (56.0)	C (30.6)	A (2.0)	F (84.1)	F (190.5)	F (153.1)	F (174.5)	E (75.9)	E (62.9)	F (88.7)
			Approach	F (94.4)			C (27.4)			F (160.6)			F (108.3)			
		Volume to Capacity ratio	Movement	0.8	1.14	0.18	0.62	0.77	0.64	0.69	1.23	1.17	1.17	0.83	0.43	
		Queue Length 95th (ft.)	Movement	m168	m637	m23	m247	460	7	#193	#695	#856	#500	438	213	
	East Newport Center Drive	LOS (Delay)	Movement	E (65.3)	B (10.1)		E (79.0)	B (18.3)	A (3.2)	F (84.9)	F (82.1)	F (81.9)	F (96.1)	F (82.3)	F (80.4)	C (23.9)
			Approach	B (16.1)			C (24.7)			F (83.1)			F (85.3)			
		Volume to Capacity ratio	Movement	0.69	0.83		0.82	0.8	0.25	0.52	0.12	0.08	0.65	0.31	0.07	
		Queue Length 95th (ft.)	Movement	m210	m305		m312	m741	m2	85	37	72	122	87	30	
	I-95 Southbound Ramps	LOS (Delay)	Movement		E (65.5)	A (0.5)	F (91.3)	A (6.1)					D (45.8)		F (92.1)	D (45.5)
			Approach	D (48.7)			C (28.8)						E (77.1)			
		Volume to Capacity ratio	Movement		0.98	0.46	0.86	0.75					0.39		1.01	
		Queue Length 95th (ft.)	Movement		#658	0	m411	m143					265		#816	

Table 6.13 (continued)
Partial-Build 2040 - SW 10th Street Signalized Intersection Analysis Results – AM Design Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	AM Movement/Approach LOS (Delay)												Intersection
				Eastbound			Westbound			Northbound			Southbound			AM LOS (Delay)
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
SW 10th Street	I-95 Northbound Ramps	LOS (Delay)	Movement		A (0.6)	A (0.2)		B (10.2)	A (0.1)	F (96.0)		E (71.2)				C (23.2)
			Approach	A (0.4)			A (9.0)			F (87.5)						
		Volume to Capacity ratio	Movement		0.41	0.34		0.39	0.19	0.98		0.71				
		Queue Length 95th (ft.)	Movement		m9	m11		235	m0	#496		300				
	FAU Research Park Boulevard	LOS (Delay)	Movement	E (63.5)	C (20.1)	B (20.0)	F (102.3)	D (46.7)	C (29.6)	E (79.7)	E (59.0)	E (56.9)	E (59.9)	E (77.4)	F (106.6)	D (50.5)
			Approach	C (27.1)			D (51.7)			E (68.5)			F (86.0)			
		Volume to Capacity ratio	Movement	0.86	0.66	0.24	0.88	0.79	0.06	0.95	0.28	0.12	0.69	0.7	0.91	
		Queue Length 95th (ft.)	Movement	#275	278	57	#392	763	15	#481	147	68	306	325	#427	
Powerline Road (S.R. 845)	West Drive	LOS (Delay)	Movement	F (91.3)	F (81.0)		F (88.0)		F (86.1)		F (80.7)	F (143.7)	E (59.2)	A (7.7)		D (54.3)
			Approach	F (84.9)			F (86.9)			F (81.9)			A (8.9)			
		Volume to Capacity ratio	Movement	0.62	0.19		0.28		0.01		1.08	0.04	0.51	0.65		
		Queue Length 95th (ft.)	Movement	132	85		38		0		m#1935	m3	48	553		

Synchro 9.2.914.6

LOS Notes:
HCM 2000 level of service (LOS) and delay results from Synchro
Delay is in sec/veh units
LOS E reflecting at capacity operations
LOS F reflecting over capacity operations

Queue Notes:
HCM methodology does not report queues, results are from Synchro outputs report
~: Volume exceeds capacity, queue is theoretically infinite
#: 95th percentile volume exceeds capacity
m: Upstream metering is in effect

Table 6.14
Partial-Build 2040 - SW 10th Street Signalized Intersection Analysis Results – PM Design Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	PM Movement/Approach LOS (Delay)												Intersection
				Eastbound			Westbound			Northbound			Southbound			PM LOS (Delay)
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
SW 10th Street	Waterways Boulevard	LOS (Delay)	Movement		B (10.6)	A (3.3)	E (71.3)	F (123.2)		F (318.8)		F (84.6)				F (84.9)
			Approach	B (10.3)			F (120.9)			F (170.3)						
		Volume to Capacity ratio	Movement		0.67	0.09	0.9	1.26		1.34		0.09				
		Queue Length 95th (ft.)	Movement		412	m8	m229	m840		#246		#100				
	Independence Drive	LOS (Delay)	Movement		A (3.5)	A (0.0)	C (22.0)	F (155.5)		F (88.7)		F (86.0)				F (102.6)
			Approach	A (3.4)			F (154.4)			F (86.8)						
		Volume to Capacity ratio	Movement		0.73	0.03	0.52	1.31		0.45		0.13				
		Queue Length 95th (ft.)	Movement		97	m0	m3	m403		60		57				
	South Powerline Road (S.R. 845)	LOS (Delay)	Movement	E (79.6)	B (17.1)	A (1.1)	E (76.1)	F (284.9)	C (32.2)	F (326.8)	F (104.3)	E (62.4)	F (99.1)	F (250.8)	F (396.6)	F (194.0)
			Approach	C (27.3)			F (232.1)			F (206.7)			F (308.0)			
		Volume to Capacity ratio	Movement	0.58	0.79	0.23	0.75	1.51	0.54	1.54	0.99	0.71	1.01	1.39	1.78	
		Queue Length 95th (ft.)	Movement	263	669	27	m145	m#1427	m223	#770	#456	429	m206	m#430	m#1510	
	SW 28th Avenue	LOS (Delay)	Movement		D (42.5)	A (0.1)	F (150.7)	F (123.4)		F (343.3)		F (104.4)				F (92.0)
			Approach	D (40.2)			F (124.9)			F (234.8)						
		Volume to Capacity ratio	Movement		1.06	0.11	1.09	1.23		1.41		0.66				
		Queue Length 95th (ft.)	Movement		m#2098	m0	m#262	m#2656		#269		#141				
	South Military Trail	LOS (Delay)	Movement	F (157.0)	E (65.6)	B (14.7)	F (101.4)	F (87.9)	C (21.3)	F (161.6)	E (78.6)	D (49.8)	E (77.5)	E (63.7)	F (183.9)	F (85.3)
			Approach	E (75.1)			E (78.7)			F (86.9)			F (108.7)			
		Volume to Capacity ratio	Movement	1.14	1.03	0.19	1.06	1.1	0.59	1.08	0.83	0.57	0.79	0.81	1.23	
		Queue Length 95th (ft.)	Movement	m#268	m798	m49	m#338	m#1052	m185	#290	407	407	#372	568	#1078	
	East Newport Center Drive	LOS (Delay)	Movement	F (82.3)	C (22.8)		F (130.8)	E (62.3)	A (6.5)	E (68.6)	E (58.1)	F (182.4)	E (65.8)	F (185.0)	F (92.8)	E (62.9)
			Approach	C (25.0)			E (63.2)			F (127.2)			F (124.0)			
		Volume to Capacity ratio	Movement	0.9	0.97		0.88	1.06	0.09	0.67	0.04	1.18	0.52	1.16	0.84	
		Queue Length 95th (ft.)	Movement	m#69	m541		m#131	#1229	m12	329	40	#768	252	#598	#400	
	I-95 Southbound Ramps	LOS (Delay)	Movement		C (27.3)	A (0.4)	E (55.5)	B (19.1)					D (53.8)		F (88.5)	C (32.2)
			Approach	C (20.4)			C (29.7)						E (77.7)			
		Volume to Capacity ratio	Movement		0.94	0.54	0.81	0.57					0.35		0.96	
		Queue Length 95th (ft.)	Movement		m580	m9	m296	622					206		#614	

Table 6.14 (continued)
Partial-Build 2040 - SW 10th Street Signalized Intersection Analysis Results – PM Design Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	PM Movement/Approach LOS (Delay)												Intersection
				Eastbound			Westbound			Northbound			Southbound			PM LOS (Delay)
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
SW 10th Street	I-95 Northbound Ramps	LOS (Delay)	Movement		A (0.3)	A (0.2)		A (5.4)	A (0.2)	F (81.6)		F (92.3)				C (23.4)
			Approach	A (0.3)			A (4.6)			F (86.2)						
		Volume to Capacity ratio	Movement		0.44	0.39		0.33	0.21	0.91		0.95				
		Queue Length 95th (ft.)	Movement		m6	m46		m115	m0	#464		#478				
	FAU Research Park Boulevard	LOS (Delay)	Movement	F (89.9)	D (40.7)	B (19.6)	F (114.8)	D (42.5)	C (31.2)	F (117.7)	E (61.0)	E (59.1)	D (54.1)	F (118.7)	F (88.4)	E (59.9)
			Approach	D (44.5)			D (54.1)			F (84.8)			F (88.7)			
		Volume to Capacity ratio	Movement	0.78	0.97	0.28	0.98	0.66	0.12	1.03	0.28	0.14	0.64	0.98	0.83	
		Queue Length 95th (ft.)	Movement	m219	m#790	m80	#601	560	76	#563	152	80	341	#605	#450	
Powerline Road (S.R. 845)	West Drive	LOS (Delay)	Movement	F (85.1)	F (85.6)		F (93.1)		E (75.5)		D (37.7)	C (23.7)	D (50.3)	D (49.7)		D (46.2)
			Approach	F (85.5)			F (84.8)			D (36.8)			D (49.7)			
		Volume to Capacity ratio	Movement	0.08	0.14		0.72		0.06		0.81	0.08	0.67	1.04		
		Queue Length 95th (ft.)	Movement	21	47		199		59		m911	m35	118	#2124		

Synchro 9.2.914.6

LOS Notes:
HCM 2000 level of service (LOS) and delay results from Synchro
Delay is in sec/veh units
LOS E reflecting at capacity operations
LOS F reflecting over capacity operations

Queue Notes:
HCM methodology does not report queues, results are from Synchro outputs report
~: Volume exceeds capacity, queue is theoretically infinite
#: 95th percentile volume exceeds capacity
m: Upstream metering is in effect

Table 6.15
Partial-Build 2040 Florida's Turnpike Interchange Ramp Signalized Intersection Analysis Results – AM Design Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	AM Movement/Approach LOS (Delay)												Intersection
				Eastbound			Westbound			Northbound			Southbound			AM LOS (Delay)
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Glades Road (S.R. 808)	Turnpike Ramps	LOS (Delay)	Movement	C (31.8)	A (8.9)		D (47.2)	F (86.1)	A (0.2)	D (45.5)	D (45.5)	D (43.6)	E (69.1)	E (65.0)	A (0.2)	D (39.0)
			Approach	B (12.2)			E (62.4)			D (44.9)			D (35.8)			
		Volume to Capacity ratio	Movement	0.79	0.84		0.57	1.12	0.33	0.4	0.4	0.03	0.95	0.94	0.25	
		Queue Length 95th (ft.)	Movement	m#153	m142		m42	m#507	m0	67	70	0	#477	#469	0	
Sample Road (S.R. 834)	Turnpike Southbound Ramps	LOS (Delay)	Movement		E (62.1)	A (0.4)	F (143.4)	A (7.5)					F (140.7)		A (0.2)	D (50.3)
			Approach	D (49.9)			D (35.7)						F (107.0)			
		Volume to Capacity ratio	Movement		1.08	0.52	1.11	0.56					1.09		0.12	
		Queue Length 95th (ft.)	Movement		#1620	m0	#538	461					#513		0	
Sample Road (S.R. 834)	Turnpike Northbound Ramps	LOS (Delay)	Movement		C (28.0)	A (0.3)	F (161.1)	A (8.3)		E (69.2)		F (144.8)				D (40.7)
			Approach	C (25.6)			C (22.3)			F (126.2)						
		Volume to Capacity ratio	Movement		1.04	0.38	1.1	0.51		0.43		1.14				
		Queue Length 95th (ft.)	Movement		m257	m0	#283	354		162		#709				
Coconut Creek Parkway (Dr. MLK Blvd.)	Turnpike Southbound on-ramp	LOS (Delay)	Movement		B (10.0)	A (0.1)	D (41.5)	A (0.2)								A (9.5)
			Approach	A (9.2)			A (9.8)									
		Volume to Capacity ratio	Movement		0.59	0.12	0.52	0.35								
		Queue Length 95th (ft.)	Movement		291	m0	251	0								
Coconut Creek Parkway (Dr. MLK Blvd.)	Turnpike Northbound Off-ramp to East	LOS (Delay)	Movement		A (2.3)			A (0.1)				D (54.7)				B (11.4)
			Approach	A (2.3)			A (0.1)			D (54.7)						
		Volume to Capacity ratio	Movement		0.59			0.3				0.82				
		Queue Length 95th (ft.)	Movement		29			0				364				
Coconut Creek Parkway (Dr. MLK Blvd.)	Turnpike Ramps/NW 31st Ave	LOS (Delay)	Movement	F (90.5)	F (98.1)	B (14.1)	F (165.2)	E (58.2)	B (15.6)	E (65.6)	F (144.3)	E (56.9)	F (153.1)	E (67.4)	A (0.8)	F (80.3)
			Approach	E (78.3)			E (67.0)			F (100.4)			F (83.6)			
		Volume to Capacity ratio	Movement	0.96	1.13	0.62	1.14	0.92	0.25	0.78	1.12	0.11	1.18	0.83	0.41	
		Queue Length 95th (ft.)	Movement	#400	#1171	176	#294	#700	62	#310	#444	33	#678	341	0	
Atlantic Boulevard (S.R. 814)	Turnpike North Ramps	LOS (Delay)	Movement		B (13.5)			C (27.2)		D (51.1)		E (62.5)				C (28.3)
			Approach	B (13.5)			C (27.2)			D (54.7)						
		Volume to Capacity ratio	Movement		0.79			0.75		0.82		0.87				
		Queue Length 95th (ft.)	Movement		181			746		506		600				
	Turnpike South Ramps	LOS (Delay)	Movement	E (75.7)	B (17.6)	B (17.6)	E (55.5)	A (4.1)	A (5.5)					E (65.7)	E (74.9)	B (16.3)
			Approach	B (18.2)			A (9.3)						E (70.9)			
		Volume to Capacity ratio	Movement	0.42	0.67	0.59	0.66	0.64	0.01					0.46	0.69	
		Queue Length 95th (ft.)	Movement	74	629	316	195	170	m0					156	204	

Synchro 9.2.914.6
LOS Notes: HCM 2000 level of service (LOS) and delay results from Synchro Delay is in sec/veh units LOS E reflecting at capacity operations LOS F reflecting over capacity operations
Queue Notes: HCM methodology does not report queues, results are from Synchro outputs report ~: Volume exceeds capacity, queue is theoretically infinite #: 95th percentile volume exceeds capacity m: Upstream metering is in effect

Table 6.16
Partial-Build 2040 Florida's Turnpike Interchange Ramp Signalized Intersection Analysis Results – PM Design Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	PM Movement/Approach LOS (Delay)												Intersection
				Eastbound			Westbound			Northbound			Southbound			PM LOS (Delay)
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Glades Road (S.R. 808)	Turnpike Ramps	LOS (Delay)	Movement	D (49.5)	A (6.1)		D (40.2)	B (15.9)	A (0.2)	D (44.3)	D (50.6)	D (42.2)	D (44.8)	D (44.8)	A (0.3)	B (10.1)
			Approach	B (11.4)			A (9.2)			D (46.2)			A (3.4)			
		Volume to Capacity ratio	Movement	0.65	0.54		0.5	0.79	0.8	0.43	0.63	0.05	0.29	0.28	0.32	
		Queue Length 95th (ft.)	Movement	m107	m136		m38	m300	m0	81	114	0	52	52	0	
Sample Road (S.R. 834)	Turnpike Southbound Ramps	LOS (Delay)	Movement		C (27.1)	A (0.4)	D (37.0)	A (7.6)					E (67.2)		A (0.3)	B (17.6)
			Approach	C (22.4)			B (13.3)						C (30.9)			
		Volume to Capacity ratio	Movement		0.83	0.27	0.87	0.92					0.78		0.22	
		Queue Length 95th (ft.)	Movement		311	0	m#431	415					#185		0	
Sample Road (S.R. 834)	Turnpike Northbound Ramps	LOS (Delay)	Movement		A (7.4)	A (0.4)	D (39.0)	A (4.0)		E (55.6)		C (29.3)				B (13.4)
			Approach	A (6.7)			A (7.9)			D (43.5)						
		Volume to Capacity ratio	Movement		0.84	0.25	0.76	0.87		0.81		0.46				
		Queue Length 95th (ft.)	Movement		134	m0	m187	m145		264		206				
Coconut Creek Parkway (Dr. MLK Blvd.)	Turnpike Southbound on-ramp	LOS (Delay)	Movement		B (15.2)	A (0.1)	D (46.0)	A (0.3)								B (13.4)
			Approach	B (13.5)			B (13.3)									
		Volume to Capacity ratio	Movement		0.45	0.11	0.79	0.52								
		Queue Length 95th (ft.)	Movement		319	0	530	0								
Coconut Creek Parkway (Dr. MLK Blvd.)	Turnpike Northbound Off-ramp to East	LOS (Delay)	Movement		A (3.4)			A (0.0)				C (33.8)				A (3.1)
			Approach	A (3.4)						C (33.8)						
		Volume to Capacity ratio	Movement		0.45			0.5				0.2				
		Queue Length 95th (ft.)	Movement		30			m0				89				
Coconut Creek Parkway (Dr. MLK Blvd.)	Turnpike Ramps/NW 31st Ave	LOS (Delay)	Movement	F (164.4)	B (19.9)	A (8.2)	E (72.9)	F (122.4)	C (22.6)	F (174.1)	E (74.1)	D (52.8)	F (105.8)	E (76.2)	A (1.3)	E (77.7)
			Approach	D (51.0)			F (87.0)			F (120.6)			D (35.8)			
		Volume to Capacity ratio	Movement	1.18	0.48	0.39	0.75	1.17	0.64	1.21	0.88	0.19	0.93	0.71	0.54	
		Queue Length 95th (ft.)	Movement	#361	238	4	236	#1476	318	#653	#442	98	#240	188	0	
Atlantic Boulevard (S.R. 814)	Turnpike North Ramps	LOS (Delay)	Movement		A (1.1)			C (26.1)		E (63.8)		F (81.0)				C (26.8)
			Approach	A (1.1)			C (26.1)			E (69.1)						
		Volume to Capacity ratio	Movement		0.49			0.9		0.85		0.9				
		Queue Length 95th (ft.)	Movement		22			1049		447		#546				
	Turnpike South Ramps	LOS (Delay)	Movement	F (82.0)	C (28.6)	D (35.7)	D (41.0)	A (9.2)	A (0.5)					E (66.6)	E (78.4)	C (23.6)
			Approach	C (33.5)			B (14.6)						E (74.5)			
		Volume to Capacity ratio	Movement	0.73	0.63	0.73	0.67	0.84	0.05					0.3	0.69	
		Queue Length 95th (ft.)	Movement	213	465	542	m360	548	m1					101	183	

Synchro 9.2.914.6
LOS Notes: HCM 2000 level of service (LOS) and delay results from Synchro Delay is in sec/veh units LOS E reflecting at capacity operations LOS F reflecting over capacity operations
Queue Notes: HCM methodology does not report queues, results are from Synchro outputs report ~: Volume exceeds capacity, queue is theoretically infinite #: 95th percentile volume exceeds capacity m: Upstream metering is in effect

Table 6.17
Partial-Build 2040 I-95 Interchange Ramp Signalized Intersection Analysis Results – AM Design Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	AM Movement/Approach LOS (Delay)												Intersection
				Eastbound			Westbound			Northbound			Southbound			AM LOS (Delay)
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Hillsboro Boulevard (S.R. 810)	SW 12th Avenue	LOS (Delay)	Movement	E (75.9)	C (27.0)		E (65.7)	C (21.9)	B (15.1)	E (67.1)	F (92.9)	D (55.0)	E (74.5)	E (74.4)	D (45.5)	C (34.3)
			Approach	C (33.0)			C (27.3)			E (68.6)			E (64.8)			
		Volume to Capacity ratio	Movement	0.84	0.77		0.81	0.58	0.46	0.32	0.82	0.49	0.33	0.33	0.02	
		Queue Length 95th (ft.)	Movement	417	771		240	395	182	87	#256	186	66	66	0	
	I-95 Southbound Ramps	LOS (Delay)	Movement		A (0.1)	A (1.0)		B (14.0)					D (46.7)		D (37.9)	B (15.8)
			Approach	A (0.4)			B (14.0)						D (41.7)			
		Volume to Capacity ratio	Movement		0.29	0.57		0.58					0.83		0.7	
		Queue Length 95th (ft.)	Movement		0	141		519					652		419	
	I-95 Northbound Ramp	LOS (Delay)	Movement		B (12.5)			A (7.7)		C (28.3)		D (38.0)				B (17.3)
			Approach	B (12.5)			A (7.7)			C (34.0)						
		Volume to Capacity ratio	Movement		0.58			0.68		0.26		0.67				
		Queue Length 95th (ft.)	Movement		189			m142		162		462				
	SW Natura Boulevard	LOS (Delay)	Movement	F (96.3)	C (24.0)	B (12.1)	E (76.0)	F (89.0)		F (111.4)	D (47.9)	D (46.8)	E (71.0)	E (73.7)		E (64.5)
			Approach	C (33.8)			F (88.5)			F (88.6)			E (72.9)			
		Volume to Capacity ratio	Movement	0.99	0.73	0.08	0.61	1.07		1.06	0.2	0.11	0.39	0.13		
		Queue Length 95th (ft.)	Movement	#575	579	m14	151	#976		#746	133	64	65	#81		
Sample Road (S.R. 834)	NW 5th Terrace	LOS (Delay)	Movement		C (28.3)		D (46.9)	A (2.6)		F (81.2)		E (63.3)				C (22.1)
			Approach	C (28.3)			A (6.2)			E (71.1)						
		Volume to Capacity ratio	Movement		0.65		0.51	0.49		0.76		0.13				
		Queue Length 95th (ft.)	Movement		302		167	72		235		76				
	NW 5th Avenue	LOS (Delay)	Movement	E (59.1)	A (1.9)			B (13.2)	A (4.2)				E (71.0)		E (63.2)	B (13.2)
			Approach	A (4.2)			B (12.8)						E (67.9)			
		Volume to Capacity ratio	Movement	0.49	0.5			0.48	0.06				0.67		0.11	
		Queue Length 95th (ft.)	Movement	m139	51			371	6				184		72	
	I-95 Southbound Ramps	LOS (Delay)	Movement		A (4.2)	A (2.0)		B (10.2)					C (25.5)		C (30.4)	B (10.2)
			Approach	A (3.4)			B (10.2)						C (28.1)			
		Volume to Capacity ratio	Movement		0.47	0.67		0.51					0.55		0.74	
		Queue Length 95th (ft.)	Movement		95	401		300					139		182	
	I-95 Northbound Ramps	LOS (Delay)	Movement		A (7.4)			A (5.7)	A (0.3)	C (28.7)		C (28.1)				B (10.3)
			Approach	A (7.4)			A (4.4)			C (28.4)						
		Volume to Capacity ratio	Movement		0.41			0.62	0.38	0.67		0.63				
		Queue Length 95th (ft.)	Movement		139			m186	m0	176		155				
	NE 3rd Avenue	LOS (Delay)	Movement	F (94.1)	C (27.1)		E (78.9)	D (54.5)		D (46.8)	D (44.8)	D (39.7)	D (40.8)	D (45.9)	F (95.6)	D (54.0)
			Approach	D (43.6)			E (55.3)			D (44.9)			E (78.0)			
		Volume to Capacity ratio	Movement	0.95	0.56		0.59	0.92		0.66	0.41	0.05	0.33	0.36	0.99	
		Queue Length 95th (ft.)	Movement	#344	341		114	728		269	273	0	122	229	#695	

Synchro 9.2.914.6
LOS Notes: HCM 2000 level of service (LOS) and delay results from Synchro Delay is in sec/veh units LOS E reflecting at capacity operations LOS F reflecting over capacity operations
Queue Notes: HCM methodology does not report queues, results are from Synchro outputs report ~: Volume exceeds capacity, queue is theoretically infinite #: 95th percentile volume exceeds capacity m: Upstream metering is in effect

Table 6.18
Partial-Build 2040 I-95 Interchange Ramp Signalized Intersection Analysis Results – PM Design Hour

Arterial	Signal Controlled Intersections	Measure of Effectiveness (MOE)	Location	AM Movement/Approach LOS (Delay)												Intersection
				Eastbound			Westbound			Northbound			Southbound			AM LOS (Delay)
				Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Hillsboro Boulevard (S.R. 810)	SW 12th Avenue	LOS (Delay)	Movement	E (71.1)	D (53.7)		D (47.5)	B (17.9)	A (0.8)	F (121.9)	E (68.9)	F (84.3)	F (110.1)	F (111.1)	E (64.8)	D (50.6)
			Approach	D (54.1)			C (20.9)			F (98.2)			F (92.6)			
		Volume to Capacity ratio	Movement	0.37	0.97		0.54	0.81	0.04	0.97	0.08	0.9	0.97	0.97	0.75	
		Queue Length 95th (ft.)	Movement	93	#964		m179	331	m1	#231	33	#388	#504	#516	286	
	I-95 Southbound Ramps	LOS (Delay)	Movement		A (0.1)	A (0.4)		B (19.4)					D (52.3)		C (32.9)	B (15.4)
			Approach	A (0.2)			B (19.4)						D (42.9)			
		Volume to Capacity ratio	Movement		0.41	0.53		0.77					0.88		0.53	
		Queue Length 95th (ft.)	Movement		m0	m0		564					764		309	
	I-95 Northbound Ramp	LOS (Delay)	Movement		B (12.9)			A (8.5)		D (42.0)		E (59.5)				C (20.6)
			Approach	B (12.9)			A (8.5)			D (51.8)						
		Volume to Capacity ratio	Movement		0.64			0.73		0.39		0.87				
		Queue Length 95th (ft.)	Movement		409			m421		203		500				
	SW Natura Boulevard	LOS (Delay)	Movement	F (114.3)	D (48.2)	B (18.9)	F (132.2)	D (52.2)		F (128.9)	D (46.0)	D (46.7)	D (53.3)	F (165.5)		E (62.3)
			Approach	D (47.1)			E (56.8)			F (102.1)			F (136.5)			
		Volume to Capacity ratio	Movement	0.91	0.99	0.34	0.96	0.98		1.09	0.02	0.09	0.42	1.14		
		Queue Length 95th (ft.)	Movement	m#209	#1035	127	#312	#1052		#522	27	48	160	#582		
Sample Road (S.R. 834)	NW 5th Terrace	LOS (Delay)	Movement		C (34.3)		D (47.7)	A (4.0)		F (83.6)		E (65.9)				C (23.6)
			Approach	C (34.3)			A (8.3)			E (74.6)						
		Volume to Capacity ratio	Movement		0.76		0.62	0.61		0.74		0.08				
		Queue Length 95th (ft.)	Movement		361		279	65		199		65				
	NW 5th Avenue	LOS (Delay)	Movement	D (44.6)	A (1.6)			C (21.6)	B (14.2)				E (72.2)		E (66.1)	B (16.4)
			Approach	A (4.6)			C (20.8)						E (69.5)			
		Volume to Capacity ratio	Movement	0.61	0.5			0.69	0.2				0.63		0.11	
		Queue Length 95th (ft.)	Movement	m218	39			614	m27				150		73	
	I-95 Southbound Ramps	LOS (Delay)	Movement		A (7.1)	A (0.9)		B (17.1)					C (21.1)		C (30.2)	B (13.9)
			Approach	A (5.4)			B (17.1)						C (26.4)			
		Volume to Capacity ratio	Movement		0.6	0.47		0.8					0.48		0.83	
		Queue Length 95th (ft.)	Movement		174	50		361					154		273	
	I-95 Northbound Ramps	LOS (Delay)	Movement		B (16.0)			B (16.2)	A (0.2)	C (26.8)		B (19.6)				B (17.4)
			Approach	B (16.0)			B (13.0)			C (24.1)						
		Volume to Capacity ratio	Movement		0.79			0.8	0.29	0.86		0.62				
		Queue Length 95th (ft.)	Movement		456			m356	m0	353		211				
	NE 3rd Avenue	LOS (Delay)	Movement	E (67.5)	C (30.1)		F (91.6)	D (46.7)		F (88.3)	E (62.7)	D (47.1)	D (54.0)	F (86.6)	F (86.9)	D (51.1)
			Approach	D (37.6)			D (49.4)			E (69.4)			F (83.1)			
		Volume to Capacity ratio	Movement	0.9	0.82		0.77	0.85		0.96	0.75	0.08	0.48	0.87	0.85	
		Queue Length 95th (ft.)	Movement	#362	670		#216	704		#374	438	17	108	#383	#387	

Synchro 9.2.914.6
LOS Notes: HCM 2000 level of service (LOS) and delay results from Synchro Delay is in sec/veh units LOS E reflecting at capacity operations LOS F reflecting over capacity operations
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